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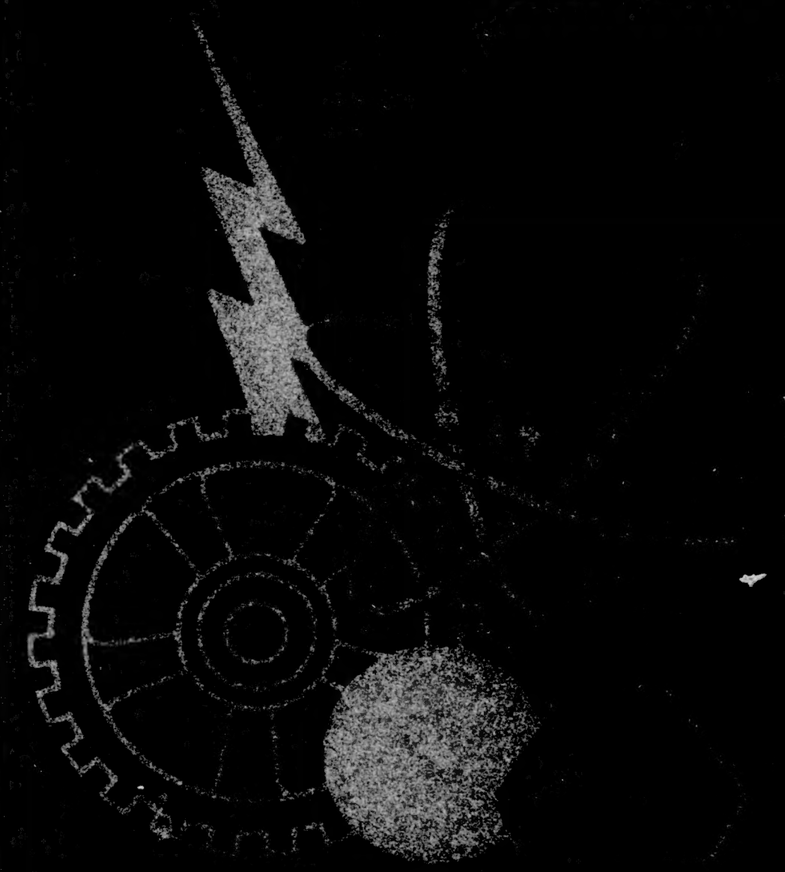
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UNITED STATES PATENT AND TRADEMARK OFFICE

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October 1, 1991



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UNITED STATES PATENT AND TRADEMARK OFFICE
October 1, 1991 Volume 1131 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1126 O.G. 2, on May 7, 1991.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on July 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the German mark, and was announced in the *Official Gazette* at 1126 O. G. 76 on May 28, 1991.

International fees were changed on August 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss franc, and were announced in the *Official Gazette* at 1128 O.G. 46, on July 23, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1320.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	490.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region for the first 10 national or regional offices	119.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	150.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

June 27, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on September 27, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,773,100 through 4,774,722
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 25, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,472,835 through 4,473,906
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$830.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 21, 1991
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,150	06/381,027	1/23/90
(4,681,162)	(06/830,824)	(7/21/87)
4,393,519	06/243,793	7/19/83
4,393,521	06/250,918	7/19/83
4,393,522	06/327,275	7/19/83
4,393,532	06/254,427	7/19/83
4,393,536	06/342,515	7/19/83
4,393,537	06/282,812	7/19/83
4,393,546	06/303,401	7/19/83
4,393,550	06/255,369	7/19/83
4,393,556	06/253,325	7/19/83
4,393,558	06/273,334	7/19/83
4,393,563	06/266,931	7/19/83
4,393,565	06/272,888	7/19/83
4,393,568	06/268,755	7/19/83
4,393,589	06/270,793	7/19/83
4,393,607	06/314,516	7/19/83
4,393,611	06/271,613	7/19/83
4,393,612	06/389,854	7/19/83
4,393,617	06/270,603	7/19/83
4,393,620	06/288,948	7/19/83
4,393,621	06/315,712	7/19/83
4,393,622	06/324,864	7/19/83
4,393,641	06/265,272	7/19/83
4,393,657	06/258,732	7/19/83
4,393,662	06/306,207	7/19/83
4,393,667	06/271,875	7/19/83
4,393,677	06/215,753	7/19/83
4,393,680	06/288,413	7/19/83
4,393,690	06/262,826	7/19/83
4,393,700	06/310,072	7/19/83
4,393,712	06/300,003	7/19/83
4,393,718	06/274,573	7/19/83
4,393,721	06/293,344	7/19/83
4,393,724	06/273,146	7/19/83
4,393,728	06/351,589	7/19/83
4,393,738	06/305,143	7/19/83
4,393,741	06/269,652	7/19/83
4,393,759	06/335,763	7/19/83
4,393,763	06/261,969	7/19/83
4,393,764	06/294,651	7/19/83
4,393,766	06/286,670	7/19/83
4,393,768	06/352,931	7/19/83
4,393,769	06/221,864	7/19/83
4,393,773	06/360,067	7/19/83
4,393,775	06/289,365	7/19/83
4,393,788	06/230,152	7/19/83
4,393,792	06/268,271	7/19/83
4,393,811	06/259,715	7/19/83
4,393,816	06/347,470	7/19/83
4,393,818	06/266,347	7/19/83
4,393,819	06/371,761	7/19/83
4,393,824	06/312,758	7/19/83
4,393,826	06/310,992	7/19/83
4,393,827	06/323,485	7/19/83
4,393,828	06/258,597	7/19/83
4,393,831	06/310,235	7/19/83
4,393,833	06/291,531	7/19/83
4,393,838	06/314,247	7/19/83
4,393,847	06/361,680	7/19/83
4,393,848	06/314,225	7/19/83
4,393,850	06/279,516	7/19/83
4,393,853	06/290,798	7/19/83
4,393,865	06/272,756	7/19/83
4,393,869	06/276,151	7/19/83
4,393,870	06/241,378	7/19/83
4,393,873	06/278,329	7/19/83
4,393,886	06/286,811	7/19/83
4,393,887	06/273,967	7/19/83
4,393,893	06/215,728	7/19/83
4,393,894	06/324,330	7/19/83
4,393,906	06/246,565	7/19/83
4,393,907	06/226,867	7/19/83
4,393,910	06/308,855	7/19/83
4,393,916	06/250,289	7/19/83
4,393,917	06/248,733	7/19/83
4,393,924	06/274,194	7/19/83
4,393,927	06/245,361	7/19/83
4,393,933	06/251,666	7/19/83
4,393,950	06/277,986	7/19/83
4,393,953	06/271,772	7/19/83
4,393,955	06/365,807	7/19/83
4,393,975	06/36-,524	7/19/83
4,393,980	06/268,030	7/19/83

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4,393,983	06/286,644	7/19/83
4,393,986	06/385,258	7/19/83
4,393,988	06/283,444	7/19/83
4,393,989	06/288,350	7/19/83
4,393,994	06/251,466	7/19/83
4,393,995	06/369,004	7/19/83
4,394,001	06/244,841	7/19/83
4,394,011	06/294,810	7/19/83
4,394,013	06/383,118	7/19/83
4,394,021	06/235,858	7/19/83
4,394,022	06/306,998	7/19/83
4,394,028	06/243,445	7/19/83
4,394,030	06/228,180	7/19/83
4,394,046	06/277,628	7/19/83
4,394,050	06/242,469	7/19/83
4,394,053	06/324,529	7/19/83
4,394,058	06/279,139	7/19/83
4,394,065	06/420,899	7/19/83
4,394,079	06/276,510	7/19/83
4,394,089	06/304,765	7/19/83
4,394,100	06/307,709	7/19/83
4,394,101	06/225,883	7/19/83
4,394,102	06/327,386	7/19/83
4,394,112	06/295,523	7/19/83
4,394,116	06/327,902	7/19/83
4,394,120	06/272,347	7/19/83
4,394,142	06/317,638	7/19/83
4,394,146	06/306,694	7/19/83
4,394,150	06/229,642	7/19/83
4,394,151	06/288,203	7/19/83
4,394,157	06/340,676	7/19/83
4,394,158	06/340,678	7/19/83
4,394,161	06/393,228	7/19/83
4,394,163	06/275,325	7/19/83
4,394,164	06/305,508	7/19/83
4,394,166	06/382,880	7/19/83
4,394,167	06/241,053	7/19/83
4,394,185	06/363,682	7/19/83
4,394,189	06/387,793	7/19/83
4,394,190	06/225,686	7/19/83
4,394,191	06/217,224	7/19/83
4,394,193	06/254,613	7/19/83
4,394,205	06/358,162	7/19/83
4,394,217	06/248,452	7/19/83
4,394,226	06/287,594	7/19/83
4,394,228	06/334,058	7/19/83
4,394,229	06/373,951	7/19/83
4,394,239	06/295,277	7/19/83
4,394,241	06/277,191	7/19/83
4,394,247	06/290,260	7/19/83
4,394,250	06/341,338	7/19/83
4,394,252	06/335,447	7/19/83
4,394,254	06/371,840	7/19/83
4,394,258	06/276,809	7/19/83
4,394,261	06/355,007	7/19/83
4,394,266	06/321,435	7/19/83
4,394,267	06/397,407	7/19/83
4,394,278	06/267,105	7/19/83
4,394,289	06/279,336	7/19/83
4,394,290	06/335,503	7/19/83
4,394,294	06/223,074	7/19/83
4,394,304	06/344,143	7/19/83
4,394,311	06/324,208	7/19/83
4,394,313	06/264,996	7/19/83
4,394,317	06/230,462	7/19/83
4,394,325	06/325,473	7/19/83
4,394,327	06/263,650	7/19/83
4,394,331	06/238,632	7/19/83
4,394,344	06/258,818	7/19/83
4,394,365	06/331,772	7/19/83
4,394,370	06/304,367	7/19/83
4,394,374	06/273,581	7/19/83
4,394,385	06/344,148	7/19/83
4,394,387	06/279,918	7/19/83
4,394,398	06/331,092	7/19/83
4,394,399	06/277,173	7/19/83
4,394,402	06/265,186	7/19/83
4,394,411	06/355,698	7/19/83
4,394,413	06/232,678	7/19/83
4,394,423	06/307,000	7/19/83
4,394,427	06/247,783	7/19/83
4,394,430	06/254,028	7/19/83
4,394,443	06/217,643	7/19/83
4,394,450	06/353,484	7/19/83
4,394,470	06/359,846	7/19/83
4,394,475	06/334,202	7/19/83
4,394,492	06/390,466	7/19/83
4,394,499	06/290,089	7/19/83
4,394,505	06/369,110	7/19/83
4,394,510	06/230,555	7/19/83
4,394,514	06/278,016	7/19/83
4,394,517	06/380,487	7/19/83
4,394,519	06/342,296	7/19/83
4,394,539	06/247,013	7/19/83
4,394,540	06/264,723	7/19/83
4,394,541	06/222,063	7/19/83
4,394,543	06/270,507	7/19/83
4,394,549	06/307,122	7/19/83
4,394,551	06/257,491	7/19/83
4,394,556	06/352,822	7/19/83
4,394,578	06/257,026	7/19/83
4,394,580	06/287,165	7/19/83
4,394,582	06/319,666	7/19/83
4,394,585	06/263,020	7/19/83
4,394,599	06/241,269	7/19/83
4,394,610	06/291,131	7/19/83
4,394,618	06/236,110	7/19/83
4,394,622	06/269,457	7/19/83
4,394,623	06/229,023	7/19/83
4,394,629	06/249,609	7/19/83
4,394,631	06/268,361	7/19/83
4,394,635	06/254,902	7/19/83
4,394,636	06/259,704	7/19/83
4,394,652	06/270,007	7/19/83
4,394,656	06/305,293	7/19/83
4,394,663	06/305,427	7/19/83
4,394,676	06/217,358	7/19/83
4,394,688	06/296,068	7/19/83
4,394,689	06/282,357	7/19/83
4,394,692	06/325,582	7/19/83
4,394,700	06/249,899	7/19/83
4,394,708	06/261,067	7/19/83
4,394,709	06/336,531	7/19/83
4,394,710	06/336,532	7/19/83
4,394,716	06/224,676	7/19/83
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4,394,718	06/360,762	7/19/83
4,394,723	06/275,075	7/19/83
4,394,726	06/258,623	7/19/83
4,394,744	06/234,063	7/19/83
4,394,757	06/249,395	7/19/83
4,394,770	06/278,739	7/19/83
4,394,776	06/251,565	7/19/83
4,394,780	06/239,254	7/19/83
4,680,813	06/711,039	7/21/87
4,680,815	06/825,897	7/21/87
4,680,820	06/814,498	7/21/87
4,680,821	06/674,986	7/21/87
4,680,825	06/774,450	7/21/87
4,680,831	06/760,591	7/21/87
4,680,832	06/915,378	7/21/87
4,680,833	06/861,497	7/21/87
4,680,837	06/816,101	7/21/87
4,680,848	06/801,215	7/21/87
4,680,856	06/816,211	7/21/87
4,680,858	06/886,357	7/21/87
4,680,861	06/721,454	7/21/87
4,680,864	06/911,887	7/21/87
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4,680,869	06/899,805	7/21/87
4,680,871	06/735,366	7/21/87
4,680,875	06/731,709	7/21/87
4,680,877	06/748,832	7/21/87
4,680,879	06/749,864	7/21/87
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4,680,887	06/843,676	7/21/87
4,680,889	06/802,477	7/21/87
4,680,890	06/854,428	7/21/87
4,680,897	06/804,039	7/21/87
4,680,898	06/716,926	7/21/87
4,680,899	06/811,204	7/21/87
4,680,900	06/709,501	7/21/87
4,680,905	06/768,985	7/21/87
4,680,907	06/791,999	7/21/87
4,680,914	06/832,049	7/21/87
4,680,921	06/850,543	7/21/87
4,680,931	06/476,819	7/21/87
4,680,936	06/813,175	7/21/87
4,680,939	06/738,218	7/21/87
4,680,942	06/863,006	7/21/87
4,680,946	06/890,264	7/21/87
4,680,947	06/879,206	7/21/87
4,680,961	06/823,038	7/21/87
4,680,962	06/572,433	7/21/87
4,680,966	06/743,222	7/21/87
4,680,968	06/798,478	7/21/87
4,680,987	06/796,475	7/21/87
4,680,989	06/814,642	7/21/87
4,681,005	06/744,335	7/21/87
4,681,009	06/897,616	7/21/87
4,681,010	06/907,892	7/21/87
4,681,021	06/860,444	7/21/87
4,681,023	06/782,633	7/21/87
4,681,034	06/829,469	7/21/87
4,681,036	06/816,854	7/21/87
4,681,038	06/825,122	7/21/87
4,681,042	06/236,637	7/21/87
4,681,046	06/873,549	7/21/87
4,681,052	06/811,023	7/21/87
4,681,053	06/884,289	7/21/87
4,681,055	06/804,870	7/21/87
4,681,057	06/710,913	7/21/87
4,681,065	06/879,052	7/21/87
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4,681,076	06/809,012	7/21/87
4,681,078	06/736,735	7/21/87
4,681,083	06/882,395	7/21/87
4,681,089	06/250,943	7/21/87
4,681,097	06/824,284	7/21/87
4,681,115	06/866,578	7/21/87
4,681,116	06/796,704	7/21/87
4,681,117	06/868,893	7/21/87
4,681,120	06/696,055	7/21/87
4,681,121	06/819,174	7/21/87
4,681,124	06/729,540	7/21/87
4,681,129	06/766,931	7/21/87
4,681,134	06/888,591	7/21/87
4,681,138	06/759,122	7/21/87
4,681,141	06/825,434	7/21/87
4,681,147	06/801,515	7/21/87
4,681,148	06/517,601	7/21/87
4,681,149	06/777,493	7/21/87
4,681,154	06/710,884	7/21/87
4,681,156	06/906,270	7/21/87
4,681,159	06/810,100	7/21/87
4,681,163	06/797,109	7/21/87
4,681,164	06/869,018	7/21/87
4,681,167	06/735,382	7/21/87
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4,681,200	06/881,589	7/21/87
4,681,215	06/811,612	7/21/87
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4,681,222	06/813,263	7/21/87
4,681,225	06/874,515	7/21/87
4,681,236	06/790,273	7/21/87
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4,681,248	06/829,245	7/21/87
4,681,257	06/895,638	7/21/87
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4,681,304	06/842,589	7/21/87
4,681,314	06/726,226	7/21/87
4,681,321	06/823,753	7/21/87
4,681,322	06/777,219	7/21/87
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4,681,328	06/927,367	7/21/87
4,681,331	06/658,794	7/21/87
4,681,334	06/881,949	7/21/87
4,681,336	06/845,716	7/21/87
4,681,337	06/855,926	7/21/87
4,681,344	06/781,041	7/21/87
4,681,345	06/888,477	7/21/87
4,681,346	06/804,081	7/21/87
4,681,347	06/903,246	7/21/87
4,681,353	06/631,795	7/21/87
4,681,354	06/935,529	7/21/87
4,681,361	06/886,422	7/21/87
4,681,362	06/837,834	7/21/87
4,681,371	06/766,141	7/21/87
4,681,372	06/828,265	7/21/87
4,681,384	06/731,316	7/21/87
4,681,385	06/851,408	7/21/87
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4,681,392	06/853,890	7/21/87
4,681,403	06/877,696	7/21/87
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4,681,439	06/791,871	7/21/87
4,681,453	06/807,618	7/21/87
4,681,461	06/919,394	7/21/87
4,681,462	06/748,158	7/21/87
4,681,476	06/858,427	7/21/87
4,681,479	06/821,480	7/21/87
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4,681,502	06/765,369	7/21/87
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4,681,510	06/815,572	7/21/87
4,681,523	06/767,956	7/21/87
4,681,526	06/849,850	7/21/87
4,681,529	06/867,682	7/21/87
4,681,531	06/648,535	7/21/87
4,681,532	06/729,690	7/21/87
4,681,535	06/856,924	7/21/87
4,681,543	06/829,746	7/21/87
4,681,550	06/786,581	7/21/87
4,681,551	06/798,247	7/21/87
4,681,554	06/814,380	7/21/87
4,681,555	06/855,744	7/21/87
4,681,556	06/668,727	7/21/87
4,681,563	06/727,840	7/21/87
4,681,570	06/813,418	7/21/87
4,681,613	06/842,525	7/21/87
4,681,622	06/587,973	7/21/87
4,681,624	06/727,529	7/21/87
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4,681,638	06/861,645	7/21/87
4,681,639	06/829,851	7/21/87
4,681,640	06/893,837	7/21/87
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4,681,774	06/819,558	7/21/87
4,681,775	06/712,319	7/21/87
4,681,776	06/823,419	7/21/87
4,681,802	06/834,990	7/21/87
4,681,814	06/770,856	7/21/87
4,681,823	06/864,242	7/21/87
4,681,824	06/369,155	7/21/87
4,681,843	06/704,350	7/21/87
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4,681,852	06/459,302	7/21/87
4,681,867	06/862,844	7/21/87
4,681,868	06/867,975	7/21/87
4,681,872	06/797,263	7/21/87
4,681,880	06/751,272	7/21/87
4,681,881	06/819,961	7/21/87
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4,681,891	06/796,806	7/21/87
4,681,892	06/834,169	7/21/87
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4,681,899	06/717,978	7/21/87
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4,681,926	06/850,657	7/21/87
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4,681,931	06/741,865	7/21/87
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4,681,961	06/827,695	7/21/87
4,681,962	06/885,994	7/21/87
4,681,964	06/700,208	7/21/87
4,681,967	06/768,960	7/21/87
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4,682,091	06/787,748	7/21/87
4,682,113	06/804,217	7/21/87
4,682,128	06/820,998	7/21/87
4,682,130	06/813,827	7/21/87
4,682,131	06/742,502	7/21/87
4,682,137	06/777,208	7/21/87
4,682,140	06/894,940	7/21/87
4,682,151	06/804,555	7/21/87
4,682,153	06/790,445	7/21/87
4,682,165	06/794,993	7/21/87
4,682,177	06/687,421	7/21/87
4,682,217	06/860,209	7/21/87
4,682,240	06/866,568	7/21/87
4,682,241	06/736,842	7/21/87
4,682,253	06/854,825	7/21/87
4,682,261	06/494,147	7/21/87
4,682,265	06/755,181	7/21/87
4,682,304	06/867,640	7/21/87
4,682,310	06/734,336	7/21/87
4,682,315	06/744,921	7/21/87
4,682,343	06/649,327	7/21/87
4,682,360	06/564,405	7/21/87
4,682,362	06/779,785	7/21/87
4,682,364	06/754,099	7/21/87
4,682,365	06/742,559	7/21/87
4,682,366	06/769,894	7/21/87

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,442,591, Re. S. N. 07/746,138, Filed Aug. 13, 1991, Cl. 357, HIGH-VOLTAGE CMOS PROCESS, Roger A. Haken, Owner of Record: *Texas Instruments, Inc., Dallas, Tex.*, Attorney or Agent: Douglas A. Sorensen, Ex. Gp.: 253

4,845,636, Re. S. N. 07/725,360, Filed July 3, 1991, Cl. 364/479, REMOTE TRANSACTION SYSTEM, Mark E. Walker, Owner of Record: *Inventor*, Attorney or Agent: Danny L. Williams, Ex. Gp.: 236

4,941,428, Re. S. N. 07/725,651, Filed July 3, 1991, Cl. 118/680, COMPUTER CONTROLLED VISCOUS MATERIAL DEPOSITION APPARATUS, Harold J. Engel, Owner of Record: *Inventor*, Attorney or Agent: Frank D. Wolffe, Ex. Gp.: 133

4,994,491 Re. S. N. 07/732,091, Filed July 18, 1991, Cl. 514/529, DERMAL USES OF TRANS-RETINOIDS FOR THE TREATMENT OF CANCER, William P. Purcell, et. al., Owner of Record: *Molecular Design International, Memphis, Tenn.*, Attorney or Agent: James S. Waldron, Ex. Gp.: 123

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,198,327, Reexam. No. 90/002,419, Requested Aug. 27, 1991, Cl. 525/073, GRAFTED POLYOLEFIN COMPOSITION HAVING IMPROVED ADHESIVENESS, Hisashi Matsumoto, et. al., Owner of Record: *Hisashi Matsumoto, Iwakumi, Japan, and Hiroji Niimi, Waki, Japan*, Attorney or Agent: Richard A. Steinberg, Sherman & Shalloway, Alexandria, Va., Ex. Gp.: 151, Requester: Mitsui Petrochemical Ind., Ltd., Tokyo, Japan

4,391,590, Reexam. No. 90/002,417, Requested Aug. 26, 1991, Cl. 433/090, CARTRIDGE FOR VISCOUS MATERIAL, Emery W. Dougherty, Owner of Record: *Dentsply Research & Development Corp., Milford, Del.*, Attorney or Agent: C. Hercus Just, Milford, Del., Ex. Gp.: 333, Requester: Centrix, Inc., Milford, Conn.

4,814,688, Reexam. No. 90/002,418, Requested Aug. 26, 1991, Cl. 323/317. REFERENCE GENERATOR, Joseph H. Colles, Owner of Record: *Brooktree Corp., San Diego, Calif.*, Attorney or Agent: Roston & Scwartz, Los Angeles, Calif., Ex. Gp.: 212, Requester: Martin C. Fliesler, Fliesler, Dubb, Meyer & Lovejoy, San Francisco, Calif.

Notice of Suspension

Glenn A. Collett of Beaverton, Oreg., formerly of Portland, Oreg., whose registration number is 29,478, has been suspended beginning April 27, 1991 for an indeterminate period from practice as a patent agent before the Patent and Trademark Office. Inasmuch as there has been no appeal to the Commissioner, this action is taken under the provisions of 35 U.S.C. 32, and 37 CFR 10.154(a).

August 27, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Notice of Suspension

In Disciplinary Proceeding D91-2, Morris S. Borenstein of New Orleans, La., whose registration number is 29,615, has been suspended beginning May 27, 1991 for an indeterminate period from practice as a patent attorney in patent, trademark and other non-patent law matters before the Patent and Trademark Office. Inasmuch as there has been no appeal to the Commissioner, this action is taken under the provisions of 35 U.S.C. 32, and 37 CFR 10.154(a).

August 27, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Errata

"All reference to Patent No. 5,029,510 to Clifford S. Elion of Calif. for `GUITAR CONTROL SYSTEM' appearing in the *Official Gazette* of July 9, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 5,038,207 to Hiroshi Itagaki of Tokyo, Japan for `COLOR IMAGE READING APPARATUS HAVING COMMON CIRCUITRY FOR THE COLOR COMPONENT SIGNALS' appearing in the *Official Gazette* of Aug. 6, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 5,040,280 to Shigeki Takada of Kurobe, Japan for `METHOD FOR PRODUCING CURVED SLIDE FASTENER CHAINS AND METHOD FOR PRODUCING CURVED SLIDE FASTENERS' appearing in the *Official Gazette* of Aug. 20, 1991 should be deleted since no patent was granted."

Rules Concerning Conduct on Patent and Trademark Premises

1. Applicability

These rules apply to all premises under the charge and control of the U.S. Patent and Trademark Office (PTO) through the General Services Administration and to all persons entering such premises.

2. *Admission to Property*

Patent and Trademark Office facilities are closed to the public outside of normal working hours. During normal working hours, a valid User Pass is required to enter PTO premises.

The individual's User Pass must be displayed at all times while on PTO premises.

3. *Preservation of Property/Conduct on PTO Premises*

The following activities are prohibited on PTO premises:

a. Improperly disposing of rubbish; willfully destroying or damaging property; theft of property; creating a hazard to persons or things; and placing Government documents or materials in storage lockers.

b. The willfull and unlawfull concealment, removal, mutilation. obliteration or destruction, or attempts to do so, or, with intent to do so, or taking and carrying away of any record, book, paper, document, or other things from the facilities shall result in a fine of not more than $2,000 or imprisonment of not more than 3 years, or both. *See* 18 U.S.C. § 2071.

c. Removal of papers, materials, or other Government property from designated areas. Within a designated area, papers or other Government property must be returned to its proper location after use, unless otherwise posted.

d. Using PTO premises and facilities as a place of business. It is prohibited to reserve work areas, use PTO as a mailing address, use PTO stationery, or a PTO telephone number as a personal telephone number.

4. *Inspection*

Packages, briefcases, storage lockers and other containers in the possession of visitors, employees, or other persons arriving at, working at, visiting, or departing from the PTO are subject to inspection. *See* 41 CFR § 101-20.301.

5. *Disturbances*

Disorderly conduct or other conduct which creates a loud or unusual noise or a nuisance which impedes or disrupts the performance of official duties by Government employees or which prevents the public from obtaining the administrative services provided on the property in a timely manner is prohibited. *See* 41 CFR § 101-20.305.

6. *Conformity with signs and directions*

Persons on the PTO premises shall at all times comply with the official signs of a prohibitory, regulatory or directory nature and with the lawful direction of PTO employees.

No rude or abusive conduct to PTO employees and fellow users.

No food or beverages are permitted.

No smoking except in designated areas.

No mechanical or electronic equipment such as radios, televisions, typewriters, computers, or photographic equipment may be used without prior permission from the Assistant Commissioner for Administration.

No use of PTO telephone and office equipment, except as specifically designated for public use.

7. *Penalties and other laws.*

Nothing in these rules shall be construed to abrogate any other Federal laws or regulations or any State and local laws and regulations applicable to any area in which property under the charge and control of the PTO through the U.S. General Services Administration is situated. *See* 40 U.S.C. §§ 318(c) and 486(c).

41 CFR § 101-20.315 provides that whoever is found guilty of violating the rules of conduct on Federal property contained in 41 CFR § 101-20.3 while on any property under the charge and control of the U.S. General Services Administration is subject to a fine of not more than $50, imprisonment of not more than 30 days, or both. *See* 40 U.S.C. § 318c.

Failure to follow these rules may result in immediate removal from the premises, suspension of user privileges, and/or enforcement of any criminal sanctions that may apply.

Aug. 30, 1991 THERSA A. BRELSFORD
Assistant Commissioner for Administration

Department of Commerce
Patent and Trademark Office
[Docket No. 910235-1173]

Agency: Patent and Trademark Office, Commerce.
Action: Notice.

Notice of Termination of Status of International Depositary Authority under Budapest Treaty

Summary: Notice is hereby given that In Vitro International, Inc.'s status as an international depositary is terminated effective Sept. 25, 1991.
Address: Questions should be submitted to H. Dieter Hoinkes, Office of Legislation and International Affairs, Box 4, Patent and Trademark Office, Washington, D.C. 20231.
For Further Information Contact: H. Dieter Hoinkes, Office of Legislation and International Affairs, (703) 557-3065.
Supplementary Information: Since Nov. 30, 1983, In Vitro International, Inc. (IVI) of Linthicum, Maryland, has been recognized as an international depositary authority under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure. The Patent and Trademark Office has received a letter from Dr. Rex A. D'Agostino, President of IVI, dated May 24, 1991, stating that IVI can no longer continue to perform its functions as an international depositary authority under the Budapest Treaty.

By letter dated June 25, 1991, the Patent and Trademark Office has notified the Director General of the World Intellectual Property Organization that "the United States withdraws its declaration of assurances made on behalf of IVI on Sept. 9, 1983". As a consequence, the termination of the status of IVI as an international depositary authority takes effect on Sept. 25, 1991.

All deposits stored with IVI under the Budapest Treaty were transferred on June 20, 1991, to a substitute authority, which is the American Type Culture Collection (ATCC), 12301 Parklawn Dr., Rockville, Md., 20852, (Telephone No. (301) 881-2600). All mail or other communications addressed to IVI regarding those deposits, including all files and other relevant information, have also been transferred to ATCC. In its capacity as a substitute authority, ATCC has agreed to store all deposits transferred from IVI for an initial period of not less than three months from July 5, 1991, the date of first notice in the Federal Register of IVI's termination as an international depository authority. Patent owners and applicants who wish to preserve their date of original deposit must contact ATCC by Oct. 5, 1991, to make arrangements to pay ATCC's fee for continued maintenance and storage of their deposits past the initial storage period. ATCC will not accept responsibility for continued storage of deposits in respect of which depositors have failed to make appropriate arrangements by Oct. 5, 1991.

For further information, contact H. Dieter Hoinkes, Office of Legislation and International Affairs, Box 4, Patent and Trademark Office, Washington, D.C. 20231; telephone (703) 557-3065.

July 10, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks

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Service by Publication

A petition to cancel the registrations identified below having been filed, and the notices of such proceedings sent by registered mail to registrants at the last known addresses having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellations will be proceeded with as in the case of default.

Permabilt Industries, Torrance, Calif., Reg. No. 1,554,567, for the mark "PERMABILT INDUSTRIES", Canc. No. 19,644

The Diversey Corp., Northbrook, Ill., Reg. No. 625,621, for the mark "HAND-AID", Canc. No. 19,573

Sarah Coventry Inc., Newark, N.Y., Reg. No. 1,116,014, for the mark "SIERRA", Canc. No. 19,373

Anex Technology, Inc., Congers, N.Y., Reg. No. 1,360,253, for the mark "ANEX (STYLIZED)", Canc. No. 19,696

American Vest Co., Lakewood, Calif., Reg. No. 1,367,779, for the mark "STAY COOL", Canc. No. 19,509

Paradox By Zalo, Inc., Coral Gables, Fla., Reg. No. 1,392,450, for the mark "PARADOX BY ZALO", Canc. No. 19,715

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

U.S. Department of Commerce

Agency: Patent and Trademark Office.
Action: Notice.
Summary: In accordance with Section 10(a)(2) of the Federal Advisory Committee Act(Public Law 92-463), announcement is made of the open meeting of the Public Advisory Committee for Trademark Affairs.
Date: The Public Advisory Committee for Trademark Affairs will meet from 10:00 a.m. until 4:00 p.m. on October 8, 1991.
Place: U.S. Patent and Trademark Office, 2900 Crystal Drive, Arlington, Va., in the Conference Room on the Lobby level.
Status: The meeting will be open to public observation; seating will be available for the public on a first-come-first-served basis. Members of the public will be permitted to make oral comments of three(3) minutes each. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed. Copies of the minutes will be available upon request.
Matters to be Considered: The agenda for the meeting is as follows:

(1) Finance
(2) Automation
(3) Strategic Planning
(4) Current Trademark Office Practice Issues
(5) International Trademark Law

Contact Person for more Information: For further information, contact Lynne Beresford, Office of the Assistant Commissioner for Trademarks, Building CPK2, Room 910, Patent and Trademark Office, Washington, D.C. 20231. Telephone: (703) 557-7464.

Sept. 10, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks

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Patent Reclassification Alert Report

This report is a summary of classification changes which became effective by issuance of Classification Orders from July through September 1991. Information includes:

- subclasses established or abolished
- subclass title, indent, or position change
- classes where existing subclass definitions have changed

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification and changes pending publication of the Manual of Classification and revisions thereto.

Sept. 3, 1991

WILLIAM S. LAWSON
Administrator for Search and Information Resources

RECLASSIFICATION ALERT REPORT
July 1991-September 1991

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
002			DEFN CHANGE	1376
016			DEFN CHANGE	1376
029			DEFN CHANGE	1376
040			DEFN CHANGE	1376
049			DEFN CHANGE	1376
051			DEFN CHANGE	1376
052			DEFN CHANGE	1376
053			DEFN CHANGE	1376
065			DEFN CHANGE	1376
073			DEFN CHANGE	1376
081			DEFN CHANGE	1376
084			DEFN CHANGE	1376
089			DEFN CHANGE	1376
106			DEFN CHANGE	1376
114			DEFN CHANGE	1376
116			DEFN CHANGE	1376
119			DEFN CHANGE	1376
126			DEFN CHANGE	1376
128			DEFN CHANGE	1376
132			DEFN CHANGE	1376
136			DEFN CHANGE	1376
160			DEFN CHANGE	1376
178			DEFN CHANGE	1376
204			DEFN CHANGE	1376
206			DEFN CHANGE	1376
219			DEFN CHANGE	1376
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251			DEFN CHANGE	1376
252			DEFN CHANGE	1376
264			DEFN CHANGE	1376
272			DEFN CHANGE	1376
283			DEFN CHANGE	1376
293			DEFN CHANGE	1376
296			DEFN CHANGE	1376
297			DEFN CHANGE	1376
307			DEFN CHANGE	1376
307	246		TITLE CHANGE	1376
307	425	430	ABOLISH	1376
310			DEFN CHANGE	1376
312			DEFN CHANGE	1376
313			DEFN CHANGE	1376
328			DEFN CHANGE	1376
330			DEFN CHANGE	1376
330	004.3		ABOLISH	1376
331			DEFN CHANGE	1376
332			DEFN CHANGE	1376
340			DEFN CHANGE	1376
341			DEFN CHANGE	1376
342			DEFN CHANGE	1376
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351			DEFN CHANGE	1376
352			DEFN CHANGE	1376
353			DEFN CHANGE	1376
354			DEFN CHANGE	1376
355			DEFN CHANGE	1376
356			DEFN CHANGE	1376
358			DEFN CHANGE	1376
359	001	896	ESTABLISH	1376

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CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
359	900	903	ESTABLISH	1376
360			DEFN CHANGE	1376
362			DEFN CHANGE	1376
363			DEFN CHANGE	1376
364			DEFN CHANGE	1376
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367			DEFN CHANGE	1376
368			DEFN CHANGE	1376
369			DEFN CHANGE	1376
370			DEFN CHANGE	1376
370	001	004	ABOLISH	1376
370	115		TITLE CHANGE	1376
370	119		TITLE CHANGE	1376
372			DEFN CHANGE	1376
375			DEFN CHANGE	1376
378			DEFN CHANGE	1376
379			DEFN CHANGE	1376
382			DEFN CHANGE	1376
385	001	147	ESTABLISH	1376
385	900	902	ESTABLISH	1376
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430			DEFN CHANGE	1376
433			DEFN CHANGE	1376
434			DEFN CHANGE	1376
435			DEFN CHANGE	1376
436			DEFN CHANGE	1376
436	502		ABOLISH	1376
436	511		ABOLISH	1376
437			DEFN CHANGE	1376
445			DEFN CHANGE	1376
446			DEFN CHANGE	1376
455			DEFN CHANGE	1376
455	007		TITLE CHANGE	1376
455	208		TITLE CHANGE	1376
455	600	620	ABOLISH	1376
455	899		ESTABLISH	1376
501			DEFN CHANGE	1376
606			DEFN CHANGE	1376

PATENT NOTICES

Certificates of Correction For Week of October 1, 1991

Re. 33,264	4,880,408	4,917,874	4,932,459
4,441,179	4,883,828	4,918,087	4,932,949
4,540,850	4,884,539	4,918,261	4,933,396
4,623,406	4,886,990	4,918,745	4,934,054
4,623,760	4,888,264	4,918,765	4,934,216
4,640,834	4,891,907	4,919,012	4,935,278
4,660,613	4,893,189	4,919,676	4,935,933
4,722,212	4,897,024	4,919,920	4,936,082
4,745,629	4,897,379	4,920,194	4,936,624
4,789,692	4,898,724	4,920,331	4,936,884
4,792,678	4,899,755	4,920,446	4,937,218
4,793,023	4,901,254	4,921,454	4,937,237
4,811,366	4,903,808	4,921,864	4,937,389
4,816,272	4,903,876	4,922,086	4,937,627
4,817,074	4,904,795	4,922,418	4,937,855
4,819,141	4,904,905	4,922,606	4,937,959
4,820,630	4,906,959	4,922,704	4,937,963
4,822,588	4,907,109	4,923,971	4,938,347
4,825,468	4,909,375	4,924,319	4,939,223
4,829,310	4,909,659	4,924,609	4,939,423
4,839,414	4,911,023	4,925,367	4,940,277
4,839,689	4,911,061	4,925,477	4,940,588
4,841,989	4,911,756	4,926,187	4,940,640
4,847,578	4,911,867	4,926,616	4,940,685
4,847,657	4,911,937	4,926,724	4,941,599
4,854,385	4,912,554	4,927,031	4,941,671
4,855,747	4,912,579	4,927,339	4,941,742
4,856,118	4,912,865	4,928,008	4,942,417
4,860,232	4,913,210	4,928,602	4,942,553
4,861,162	4,913,368	4,928,718	4,942,620
4,862,207	4,913,552	4,929,383	4,943,055
4,862,451	4,913,605	4,929,842	4,943,278
4,866,001	4,914,842	4,929,851	4,943,547
4,867,056	4,915,118	4,929,898	4,944,260
4,868,385	4,915,402	4,929,899	4,945,072
4,868,835	4,916,151	4,930,025	4,945,625
4,869,525	4,916,374	4,930,267	4,950,417
4,870,461	4,916,377	4,930,427	4,955,123
4,872,524	4,916,628	4,930,978	4,960,411
4,872,628	4,916,670	4,931,219	4,990,674
4,877,620	4,916,697	4,931,594	4,992,581
4,879,005	4,916,859	4,931,820	5,033,464
4,879,295	4,917,616	4,932,124	
4,879,326	4,917,739	4,932,212	
4,880,317	4,917,747	4,932,307	

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These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public, in gaining effctive access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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		(313) 833-1450
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	Piscataway: Library of Science and Medicine, Rutgers University	(505) 277-4412
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	Cleveland Public Library	(614) 292-6175
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	Toledo/Lucas County Public Library	(405) 744-7086
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
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	Milwaukee Public Library	(414) 278-3247

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JAMES E. DENNY, Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director.	308-0661
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	308-1235
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP— 130 BARRY S. RICHMAN, Director	308-0651
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	308-2351
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MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	308-0858
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—JOHN KITTLE, Director	308-0861
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	308-0651

Expiration of patents: The patents within the range of numbers indicated below expire during September 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,832,735 to 3,838,465 inclusive
Plant Patents ..... 3,604 to 3,627

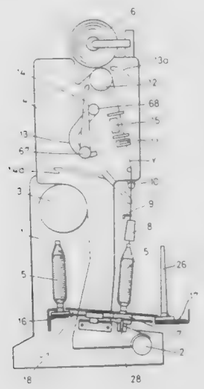
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REEXAMINATIONS

OCTOBER 1, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,463,909 (1562nd)
COP SUPPLYING SYSTEM IN AUTOMATIC WINDER
Masaharu Kiriake, and Akira Shimano, both of Kyoto, Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Reexamination Request No. 90/002,204, Nov. 15, 1990.
Reexamination Certificate for Patent No. 4,463,909, issued Aug. 7, 1984, Ser. No. 365,648, Apr. 5, 1982.
Claims priority, application Japan, Apr. 10, 1981, 56-54528; Sep. 30, 1981, 56-155540
Int. Cl.[5] **B65H** *54/20, 67/02*
U.S. Cl. 242—35.5 A



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–8**, dependent on an amended claim, are determined to be patentable.

New claims **9–16** are added and determined to be patentable.

1. In an automatic winder, for winding yarn from a cop to a package wherein said cop comprises yarn wound upon a bobbin, having a plurality of winding units, *at least one of the winding units defining an unwinding position*, the improvement comprising a cop supply system consisting of:

a device for carrying the cop, said device supporting the cop thereon by engaging said bobbin;

conveyor means for transferring said device to each winding unit of the automatic winder **[**,**]** ;

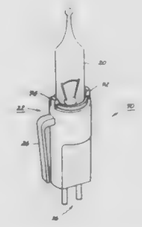
supply means for supplying the cop to the winding unit and for feeding a yarn from said cop to be wound, while retaining said cop on said device; and

transfer means for transferring said device carrying the unwound empty bobbin from the winding unit,

the supply means comprising a plurality of substantially fixed guide plates for engaging a device on at least one of the conveyor means and the transfer means and for diverting movement of the device relative to at least one of the conveyor means and the transfer means,

whereby a device having a cop thereon is diverted from the conveyor means toward the unwinding position.

B1 4,679,126 (1563rd)
MINIATURE LAMP ARRAYS HAVING IMPROVED LAMP RETENTION FEATURES
Robert H. Van Sickler, South Euclid, Ohio, assignor to General Electric Company
Reexamination Request No. 90/002,289, Mar. 1, 1991.
Reexamination Certificate for Patent No. 4,679,126, issued Jul. 7, 1987, Ser. No. 820,774, Jan. 21, 1986.
Int. Cl.[5] **H01R** *33/00*
U.S. Cl. 362—226



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** through **12** is confirmed.

Claim **13** is determined to be patentable as amended.

Claims **14** and **15**, dependent on an amended claim, are determined to be patentable.

New claims **16** and **17** are added and determined to be patentable.

1. A decorative string set comprising;

(a) a plurality of incandescent lamps, each having lead-in wires and a plug-in base having an upper rim;

(b) a plurality of housings spaced along said decorative **[**stiring**]** *string* set, said housings having affixed therein electrical sockets providing a first means for complementary acceptance and respective connection to said lead-in wires of said incandescent lamps;

(c) a separate means for locking the connection of said lamps having said plug-in base to said sockets.

B1 4,905,698 (1564th)
METHOD AND APPARATUS FOR CATHETER LOCATION DETERMINATION
Clair L. Strohl, Jr., Norfolk; Michael C. Ferragamo, N. Dighton; Donald A. Kay; Alan R. Shapiro, both of Sharon, and Gary R. Whipple, S. Attleboro, all of Mass., assignors to Pharmacia Deltec Inc., St. Paul, Minn.
Reexamination Request No. 90/002,090, Jul. 19, 1990.
Reexamination Certificate for Patent No. 4,905,698, issued Mar. 6, 1990, Ser. No. 243,689, Sep. 13, 1988.
Int. Cl.[5] **A61B** *6/12*
U.S. Cl. 128—653 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **9**, **11**, **15**, and **16** are cancelled.

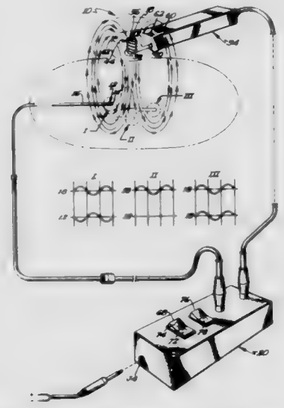
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Claims **3–8**, **10**, and **12–14** are determined to be patentable as amended.

New claims **17–21** are added and determined to be patentable.

17. An apparatus for use with a catheter, said catheter having a tip and a lumen, and the apparatus being suitable for determining the location of the tip of the catheter inside biological tissue, comprising:

energy source means for generation of an alternating current magnetic field, which means is adapted to be positionable outside the biological tissue according to external anatomical landmarks consistent with the approximate location of the tip of the catheter and is adapted to cause the flux lines of the



field to be essentially perpendicular to the plane of the tissue surface;

detecting means for development of an alternating output voltage in reaction to the alternating current magnetic field when in close proximity to the energy source means, the detecting means being adapted to be removably positioned within the catheter lumen at the catheter tip;

electronic means for connection with the energy source means and the detecting means, the electronic means being adapted for determination of the region of the alternating current magnetic field which develops zero net alternating output voltage in the detecting means when the energy source means is moved in close proximity and in a relative perpendicular arrangement past the detecting means, said determination providing a single coordinate of the location of the catheter tip.

B1 4,950,404 (1565th)

HIGH FLUX SEMIPERMEABLE MEMBRANES

Michael M. Chau, San Diego, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Reexamination Request No. 90/002,194, Nov. 7, 1990.

Reexamination Certificate for Patent No. 4,950,404, issued Aug. 21, 1990, Ser. No. 400,440, Aug. 30, 1989.

Int. Cl.[5] B01D *61/00, 67/00, 69/00*

U.S. Cl. 210—500.27

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **19** are determined to be patentable as amended.

Claims **2–18** and **20**, dependent on an amended claim, are determined to be patentable.

1. A semipermeable membrane having properties for providing increased flux while retaining salt rejection and chlorine resistance prepared by *first forming a porous solid support and directly thereafter* coating **[**a**]** *said* porous support with an aqueous solution of **[**an**]** *a* polyamine or bisphenol which contains a polar aprotic solvent not reactive with amines *and* having properties for dissolving or plasticizing said support *in an amount sufficient to increase the flux relative to a membrane prepared in the absence of said polar aprotic solvent while retaining salt rejection and chlorine resistance*, removing excess of said solution, contacting the coated porous support with an organic solvent solution of an polyacyl halide, polysulfonyl halide, or polyisocyanate to form a reaction product within and/or on the surface of said porous support, and curing the resulting composite at curing conditions to form said high flux semipermeable membrane.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED OCTOBER 1, 1991

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H968

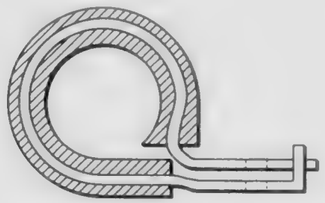
SELF LOCKING LOOP CLAMP

Mervyn W. Moyles, 20560 Reid La., Saratoga, Calif. 95070

Filed Nov. 20, 1990, Ser. No. 615,954

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—74.5 **1 Claim**



1. An apparatus for clamping a bundle of wire, comprising:

a strip of material having spring, a central region of said strip being padded to avoid cutting the wires, a first end of said strip having a keyed tang, a second end of said strip having a slot and an aperture, said slot and said aperture being adjoining, said strip being bent so that said first end almost touches said second end, said strip being bent to position said first end relative to said second end so that when said tang is retracted radially, said key can pass through said slot into said aperture, and when said tang is released, a wider portion of said tang cannot pass through said slot

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H969

FIRE, TEMPERATURE AND SHOCK RESISTANT EXPLOSIVES

Tucker T. Yee, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1988, Ser. No. 177,574

Int. Cl.[5] C06B *45/10*

U.S. Cl. 149—19.91 **6 Claims**

1. In a plastic bonded explosive containing the high explosive nitramine fillers cyclotrimethylenetrinitramine (RDX) and cyclotetramethylenetetranitramine (HMX) bound in a matrix of binder substance, the improvement residing in a binder formulation comprising consisting essentially of:

about 39.5 weight percent 2-ethylhexyl acrylate (EHA);

about 28.2 weight percent dioctyl maleate (DOM);

about 26.5 weight percent N-vinyl pyrrolidone (NVP);

about 4.5 weight percent colloidal silica;

about 1.0 weight percent tert-butyl perbenzoate initiator;

about 0.1 weight percent colbaltous acetyl-acetonate catalyst; and

from about 0.1 to 0.5 weight percent triethylene-glycoldimethylacrylate crosslinker.

H970

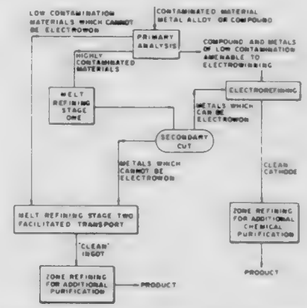
INTEGRATED DECONTAMINATION PROCESS FOR METALS

Thomas S. Snyder, Oakmont, and Graham A. Whitlow, Murrysville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1989, Ser. No. 363,019

Int. Cl.[5] C25C *1/00, 1/06, 1/12*

U.S. Cl. 204—105 R **1 Claim**



1. A process for removing radioactive contamination from metals comprising:

a first step comprising melt refining contaminated material resulting in a metal phase and a flux phase;

separating said metal phase into a first batch and a second batch, said first batch being targeted for removal of specific metals that can be electrowon from aqueous electrolyte and said second batch being targeted for removal of specific metals that cannot be electrowon from aqueous electrolyte;

a second step comprising electrorefining said first batch; and

a third step comprising melt refining said second batch.

H971

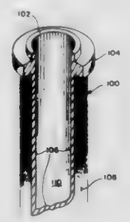
REGIDIZED POROUS MATERIAL AND METHOD

John F. Leonard, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 24, 1988, Ser. No. 261,803

Int. Cl.[5] F32B *15/04*

U.S. Cl. 428—457 **4 Claims**



4. A wicking member formed by the process of:

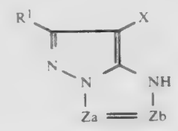
coating one surface of a substrate member with a wet slurry of finely divided metal particles and organic binder;
dusting the wet surface of said slurry coating with a coating thickening additional layer of said finely divided metal particles;
drying the thickened metallic particle coating until rigidized into a substrate attached wicking member;
driving off the liquid and organic binder components of said wicking member wet slurry in a first elevated temperature atmosphere;
sintering the wicking member at a second higher temperature

H972
DIRECT POSITIVE COLOR PHOTOGRAPHIC MATERIALS

Noriyuki Inoue, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 11, 1988, Ser. No. 255,285
Claims priority, application Japan, Oct. 8, 1987, 62-254476
Int. Cl.[5] G03C *1/08*
U.S. Cl. 430—558 **10 Claims**

1. A method of developing a direct positive color photosensitive material comprised of at least one internal latent image silver halide emulsion layer which has not been prefogged on a support and at least one color image forming magenta coupler represented by general formula (I) and at least one nucleation accelerator represented by general formula (II) and/or (III)

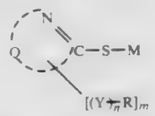


(I)

wherein Za and Zb each represents a

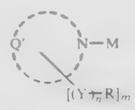


or =N— group, R^1 and R^2 each represents a hydrogen atom or a substituent group, and X represents a hydrogen atom or a group which can be eliminated by a coupling reaction with the oxidized form of a primary aromatic amine developing agent, where if Za and Zb form a carbon-carbon double bond, said double bond may be a part of an aromatic ring, R^1, R^2 or X may form dimers or higher polymers;



(II)

wherein Q represents a group of atoms required to form a 5- or 6-membered heterocyclic ring, which may be condensed with a carbon aromatic ring or a heterocyclic aromatic ring, Y represents a divalent linking group consisting of one or more atoms selected from a hydrogen atom, a carbon atom, a nitrogen atom, an oxygen atom and a sulfur atom, and R represents an organic group which contains at least one thioether group, amino group, ammonium group, ether group or heterocyclic group, n represents 0 or 1, m represents 0, 1 or 2 and M represents a hydrogen atom, an alkali metal atom, an ammonium group or a group which is cleaved under alkaline conditions;



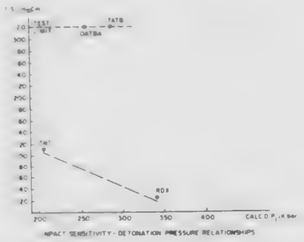
(III)

wherein Q' represents a group of atoms required to form a 5- or 6-membered heterocyclic ring which can form imino silver, Y, R, n and M are the same as for general formula (I) and m' represents 1 or 2, comprising:
developing the material with a color developing solution containing at least one p-phenylenediamine compound and having a pH of from 9 to 10.5 at a temperature of at least 36° C. for up to 2 minutes and 15 seconds.

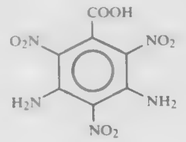
H973
5-CARBOXYL-1,3-DIAMINO-2,4,6-TRINITROBENZENE AND METHOD OF PREPARATION

Michael Chaykovsky, Columbia, and Horst G. Adolph, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1984, Ser. No. 596,123
Int. Cl.[5] C07C *211/49*
U.S. Cl. 558—411 **2 Claims**



1. 5-carboxy-1,3-diamino-2,4,6-trinitrobenzene.



REISSUES

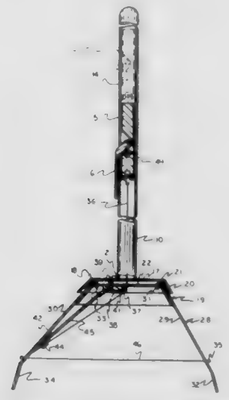
OCTOBER 1, 1991

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,702
LEAF BUNDLING RAKE

Lewis E. Allen, P.O. Box 8026, Longview, Tex. 75607

Original No. 4,848,074, dated Jul. 18, 1989, Ser. No. 251,234, Sep. 30, 1988. Application for reissue May 29, 1990, Ser. No. 529,658
Int. Cl.[5] A01D *7/10*
U.S. Cl. 56—400.12 **7 Claims**

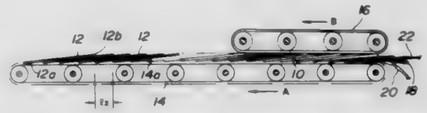


1. A hand-held rake-like device comprising:
(1) an elongated [straight] rigid hollow handle having upper and lower extremities,
(2) a rake head attached to said lower extremity and comprised of:
(a) [a] tine-holding [plate] *means* having [an upper surface of] *a* circular perimeter, and [having a multitude of equally spaced holding apertures in a circular array, and] a downwardly angled skirt emergent from said perimeter and having a series of positioning means [aligned with said holding apertures],
(b) a circular array of a multitude of [identical] elongated flexible [metal] tines, each having interior and exterior sides and upper and lower extremities, said upper extremities being bent [to form a hook] and said lower extremities being bent to form an angled portion coplanar with the [hook] *bent upper extremity* and on the same interior side of the tine, and a [rigid] retaining eye associated with the exterior side of the tine above and adjacent said angled portion, said [hooks engaging said holding apertures in a manner to seat said] interior sides *being seated* within said positioning means, and
(c) securing means for maintaining said tines in said association with the tine-holding [plate] *means*,
(3) cable means having a lower extremity provided with loop means that engages said *retaining* eyes, and an upper extremity which extends into said handle, and
(4) control means slidably retained by said handle for pulling upward on said cable, whereby
(5) when pulling force is applied to move the cable upwardly within said handle, the lower extremities of the tines are drawn radially inward in unison from their outermost disposition, and when said pulling force is released the cable moves downwardly within the handle and the *lower extremities of the* tines return to their outermost disposition.

Re. 33,703
METHOD OF PRODUCING LAMINATED PLATE

Hidenori Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works Inc., Ohbu, Japan

Original No. 4,725,325, dated Feb. 16, 1988, Ser. No. 839,066, Mar. 13, 1986. Application for reissue May 15, 1989, Ser. No. 351,656
Claims priority, application Japan, Mar. 19, 1985, 60-57452; Mar. 19, 1985, 60-57453; Jun. 10, 1985, 60-125615; Jun. 17, 1985, 60-131195; Jul. 25, 1985, 60-164921
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—254 **8 Claims**



1. A method for producing a laminated plate, comprising the steps of[:]
(a) preparing a laminated material which comprises a plurality of boards having substantially the same length and made to overlap one another so as to provide at least one toothed surface for said laminated material which includes a plurality of projections arranged side by side in accordance with predetermined equal pitches, said boards being bonded together at their overlapping portions with an adhesive material;
(b) cutting said laminated material at at least one portion thereof within a middle section of the thickness direction thereof and in a direction perpendicular to the thickness direction thereof so as to provide at least two laminated blocks, each one of which has one toothed surface and an opposed, smooth surface;
(c) applying an adhesive material to the toothed surface of at least [one] *a first* of said [two] laminated blocks;
(d) placing [a] *said* first [of said two] laminated block[s] and a second of said [two] laminated blocks on each other such that said toothed surfaces of the two laminated blocks mate with each other; and
(e) pressing together the two laminated blocks while said blocks are mated such that said blocks are bonded together to produce a laminated plate having opposed smooth surfaces.

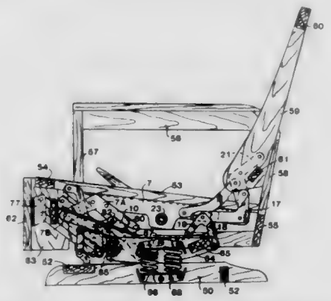
Re. 33,704
ROCKER-RECLINER CHAIR

Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Original No. 4,519,647, dated May 28, 1985, Ser. No. 457,181, Jan. 11, 1983. Continuation-in-part of Ser. No. 292,700, Aug. 13, 1981, Pat. No. 4,418,957, which is a continuation-in-part of Ser. No. 199,595, Oct. 22, 1980, Pat. No. 4,350,387. Application for reissue Jul. 17, 1989, Ser. No. 380,522
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—85 **20 Claims**

1. A rocker-recliner chair comprising in combination, a support base, a rocker cam assembly mounted on the base, a seat and armrest fixed to each other as a unitary structure, a footrest, footrest linkage means mounting the footrest to the seat for movement between retracted and extended positions, seat linkage means mounting the seat to the rocker cam assembly for movement relative to the rocker cam assembly in response to the weight of a chair occupant, linkage means inter-

connecting the seat linkage and the footrest linkage for driving the footrest linkage to place the footrest into extended position



as the seat moves relative to the rocker cam assembly, and a release means preventing the seat from moving relative to the rocker cam assembly when the footrest is retracted.

Re. 33,705

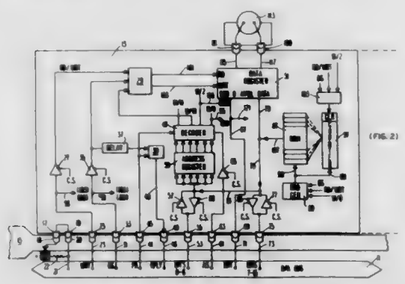
INTERCHANGEABLE INTERFACE CIRCUIT STRUCTURE

A. Ronald Caprio, Burlington; John P. Cyr, Littleton; Bernard O. Geaghan, Boylston; Paul C. Kotschenreuther, Berlin; David J. Schanin, Sudbury, and Ronald M. Salett, Framingham, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Original No. 4,670,855, dated Jun. 2, 1987, Ser. No. 788,944, Oct. 18, 1985. Continuation of Ser. No. 351,721, Feb. 24, 1982, abandoned. Application for reissue May 6, 1988, Ser. No. 191,221

Int. Cl.[5] G06F *3/00*

U.S. Cl. 364—900 **16 Claims**



7. An interchangeable interface circuit card for providing electrical circuit paths between a peripheral subsystem and a data bus in a data processing system, said data bus being coupled to a central processing unit and other interface circuit cards, and said circuit paths carrying identifying signals for identifying said interface circuit card and first control signals for requesting said identifying signals, said interchangeable interface circuit card comprising:

a circuit card substrate having an edge with connectable terminals disposed along said edge for electrical connection along said data bus to connectable terminals on said other interface circuit cards;

signal generation means, resident on said circuit card substrate and responsive to the receipt of said first control signals, for generating second control signals from said first control signals;

identification means, responsive to said second control signals and resident on said circuit card substrate, for generating said identifying signals in response to said second control signals;

identifier driver means, responsive to said first control signals and resident on said circuit card substrate, for transmitting said identifying signals to said central processing unit via said data bus;

request means, resident on said circuit card substrate, for generating a request signal for transmission to the other interface cards to obtain control of said data bus;

priority generation means, responsive to said request signal and resident on said circuit card substrate, for placing an encoded first priority arbitration signal, in parallel, onto an arbitration portion of said data bus onto which said other interface circuit cards also place other encoded priority arbitration signals in parallel, said encoded first priority arbitration signal representing a priority relative to request signals from said other interface circuit cards;

priority examination means, resident on said circuit card substrate, coupled to said data bus, and responsive to the placement of said other encoded priority arbitration signals on said data bus for decoding said encoded first priority arbitration signal and said other encoded priority arbitration signals on said data bus and for detecting the presence on said arbitration portion of said data bus of said other priority arbitration signals from said first other interface circuit cards representing a higher priority than said first priority arbitration signals; and

modifying means, resident on said circuit card substrate and coupled to said priority examination means, for modifying said priority generation means' placement of said encoded first priority arbitration signal onto said arbitration portion of said data bus when said priority examination means indicates the presence on said arbitration portion of said data bus of any of said other encoded priority arbitration signals representing a higher priority than said first priority arbitration signal.

Re. 33,706

TABLE DRIVEN TRANSLATOR

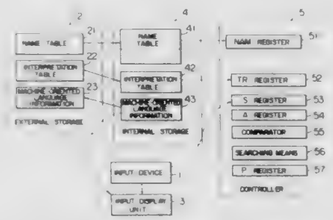
Shunji Mohri, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Original No. 4,712,189, dated Dec. 8, 1987, Ser. No. 663,944, Oct. 23, 1984. Application for reissue Jan. 31, 1989, Ser. No. 304,118

Claims priority, application Japan, Oct. 24, 1983, 58-197671

Int. Cl.[5] G06F *9/00*

U.S. Cl. 394—900 **9 Claims**



1. A language processing system for translating an input statement of a selected source language into a lower-level machine-oriented language comprising:

(a) input means for inputting an input statement written in the selected source language of a computer;

(b) storage means for storing

a first table for storing keywords of grammer of said selected source language and characteristics of the keywords and for storing characteristics of variables used in a program coded by said selected source language;

a second table for storing information of control procedures for interpreting the input statement to translate the input statement into a lower-level machine-oriented language, said information being [predetermined and] based on syntax/grammer of the selected source language;

(c) control means, *coupled to said input means, and said storage means*, for controlling translation processing of an input statement written in the selected source language from said input means, said control means including searching means *comparing means, and converting means, said searching means* responsive to said input statement for searching said first table to obtain a location therein at which a desired keyword variable is stored and to obtain an attribute associated with said keyword *and* variable;

said comparing means for comparing said attribute from said searching means with a corresponding attribute stored in said second table to check whether the syntax of the input statement [meets] *matches* the grammer of said selected source language; and

said converting means responsive to a determination of a match between said attribute as a result of the comparison by said comparing means, for converting said input statement into a lower-level machine-oriented language based on a [predetermined] conversion rule.

Re. 33,707

AUTOMATIC TRANSMISSION WITH OVERDRIVE

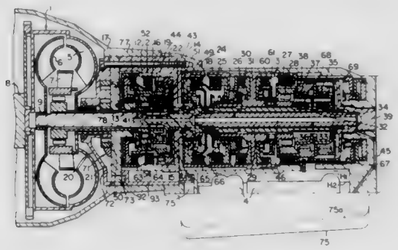
Yoshio Shindo, Toyota, and Hiroshi Ito, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha

Original No. 4,274,303, dated Jun. 23, 1981, Ser. No. 966,592, Dec. 5, 1978. Continuation of Ser. No. 832,828, Sep. 13, 1977, abandoned. Application for reissue Mar. 13, 1989, Ser. No. 323,017

Claims priority, application Japan, Apr. 27, 1977, 52-47877

Int. Cl.[5] F16H *37/00, 57/02*

U.S. Cl. 475—59 **8 Claims**



1. An automatic transmission with overdrive comprising:

a hydrokinetic torque converter having a pump impeller, stator vanes and turbine vanes;

a housing encompassing the outer periphery of said torque converter therein;

an oil pump having an oil pump body positioned adjacent to said torque converter, and an oil pump cover partitioning a pump chamber from said oil pump body;

an overdrive gear mechanism positioned adjacent to said oil pump but in coaxial relation to said torque converter, with an input side of said mechanism being coupled to said turbine vanes in said torque converter, thereby transmitting torque from an input side to an output side at a gear reduction ratio not greater than 1;

an overdrive case *having a cylindrical wall portion* surrounding said overdrive gear mechanism in cooperation with said oil pump cover and having a multiple disc brake operatively mounted within an inner circumferential face of said overdrive case;

an underdrive gear mechanism positioned adjacent to said overdrive gear mechanism but in coaxial relation to said torque converter, having an input shaft coupled to an output side of said overdrive gear mechanism, thereby transmitting torque from an input side to an output side of said underdrive gear mechanism at a plurality of reduction ratios of not less than 1, said overdrive case including a bush rotatably supporting therein said input shaft of said underdrive gear mechanism;

a transmission case encompassing the top and side of elements of said underdrive gear mechanism in cooperation with said overdrive case;

a hydraulic control device arranged under said underdrive gear mechanism and controlling a hydraulic pressure to be delivered to said overdrive gear mechanism and underdrive gear mechanism; and

an oil pan encompassing the undersurface of said underdrive gear mechanism;

said overdrive case being formed *through said cylindrical wall portion in a longitudinal direction thereof* with a first passage connected to an inlet port of said oil pump, a second passage connected to a discharge port of said oil pump, a third passage connected to an inlet port of said torque converter, and a fourth passage connected to an outlet port of said torque converter, with the second, third, and fourth passages being connected to said hydraulic control device through oil passages within the transmission case corresponding to the oil passages thereof, *and a plurality of bolts provided so as to pass through said oil pump body, said oil pump cover and said overdrive case longitudinally through said cylindrical wall portion thereof to said transmission case in order to fasten together said oil pump body, said oil pump cover and said overdrive case with said transmission case.*

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PLANT PATENTS

GRANTED OCTOBER 1, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,658
ROSE PLANT JACLAV
Jack Christensen, Ontario, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed May 8, 1990, Ser. No. 520,661
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its high annual cut flower production, long cutting stems, unusual red-purple color of blooms, strong fragrance, and unusual colored young foliage.

7,659
ROSE PLANT JACDASH
William A. Warriner, Tustin, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed Apr. 23, 1990, Ser. No. 513,893
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its long stems which make it an ideal cut rose for gardeners, deep green disease resistant foliage, bright yellow flower color, strong upright habit of growth, strong pleasing fragrance, and good petal substance.

7,660
ROSE PLANT OSIANA
Hans Evers, Uetersen, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed May 31, 1990, Ser. No. 531,800
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantialy as herein shown and described, characterized particularly as to novelty by the unique combination of its pastel-cream, long lasting, high centered blooms on long (80 to 100 cm), strong stems having very few thorns, and its medium dark green, large, long leaves.

7,661
AFRICAN VIOLET PLANT NAMED LITTLE RHODONITE
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,737
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Little Rhodonite, as described and illustrated, and particularly characterized by its miniature growth habit; single to semi-double, pink flowers with elongated petals; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse and continuous flowering; medium green, heart-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

7,662
AFRICAN VIOLET PLANT NAMED LITTLE FLUORITE
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,736
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Little Fluorite, as described and illustrated, and particularly characterized by its miniature growth habit; single, lilac flowers, frequently with 1–2 additional small petals in the center; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse and continuous flowering; dark green, spear-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

7,663
AFRICAN VIOLET PLANT NAMED ARUBA
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,496
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Aruba, as described and illustrated, and particularly characterized by its large, star-shaped, light blue flowers with white, slightly frilled edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; dark green, oval to spear-shaped, serrated leaves; profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,664
AFRICAN VIOLET PLANT NAMED DOMINICA
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,450
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Dominica, as described and illustrated, and particularly characterized by its star-shaped, purplish blue flowers with white, wavy edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval to spear-shaped, serrated leaves; profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,665
ROSE PLANT TANELORAK
Hans Evers, Uetersen, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed Jun. 1, 1990, Ser. No. 531,888
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its medium sized pointed buds, nearly black in color; its large (12 cm), open bloom of velvety red; very good fragrance; very long, strong stems with few side buds and big thorns; and its resistance to blackspot and rust.

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385-008	5,052,771
385-136	5,052,773
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PATENTS

GRANTED OCTOBER 1, 1991

GENERAL AND MECHANICAL

5,052,052
PROTECTIVE ICE SKATING OUTFIT
Katheleen Gilford, 6397 Simler Dr., Clarkston, Mich. 48106, and Jean C. Burkart, 2392 Willow La., Highland, Mich. 48031
Filed Sep. 5, 1989, Ser. No. 402,639
Int. Cl.[5] A41D *13/00, 11/00, 27/20*
U.S. Cl. 2—2 **11 Claims**



1. A protective skating suit designed to hold removable compressible padding inserts in individual pockets for protecting a skater against injuries caused by falling during skating, comprising:

a torso portion having a tailbone area;

two sleeves, each having an elbow area; and

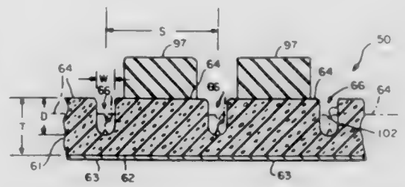
two pant legs, each having a knee area;

said suit having non-integral, individual hanging flap-type interior pockets, said interior pockets being located at the elbow areas, the front of the knee areas, and the tailbone area, and each pocket having a pocket body and an opening for holding the removable compressible padding inserts within said pockets, and each pocket being attached to the suit while inverted and in an upside down position so that the opening is exposed while in the upside down position to receive one of the compressible padding inserts, such that when the pocket is flipped down the padding is enclosed on all sides by the pocket material and thereby secured in place, the pocket opening being between the pocket body and the portion of the suit to which the pocket is attached, thereby holding the compressible padding insert therein without allowing the compressible padding insert to slip upward and out of the pocket, yet allowing for removal of the compressible padding insert so that the protective suit may be washed without the insert in place.

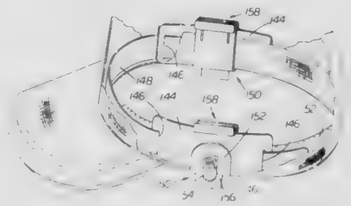
5,052,053
GARMENT FOR AQUATIC ACTIVITIES HAVING INCREASED ELASTICITY AND METHOD OF MAKING SAME
Stephen Peart, and Bradford D. Bissell, both of Los Gatos, Calif., assignors to O'Neill, Inc., Santa Cruz, Calif.
Continuation-in-part of Ser. No. 279,854, Dec. 5, 1988. This application Jan. 9, 1990, Ser. No. 462,660
Int. Cl.[5] A62B *17/00*
U.S. Cl. 2—2.1 R **27 Claims**

1. In a garment formed of a substantially water-impervious material having a thickness dimension sufficient to provide thermal insulation for a user during aquatic activities, wherein the improvement in said garment comprises:

said material having a stretch area formed with groove means having a depth dimension in said material sufficient to significantly increase the elasticity of said material in said stretch area while maintaining the sufficient mechanical integrity and thermal insulation in said stretch area to permit use of said garment in aquatic activities, said material having a density between a bottom of said groove means and an opposite side of said material which is substantially the same as the density of said material in areas of said material other than said stretch area.



5,052,054
CAP STRUCTURE WITH IMPLEMENT ADAPTER
Donald A. Birum, Rte. 1, Box 23, Clark, Mo. 65243
Filed Jan. 2, 1990, Ser. No. 459,467
Int. Cl.[5] A61F *9/00*
U.S. Cl. 2—10 **39 Claims**

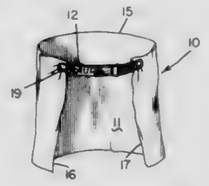


1. A structure for reinforcing a cap of the type including a soft crown body of flexible material, said crown body having a pliant rim thereon, a frontal bill joined to the crown rim to form a stiffened radial corner, said structure comprising:

supplemental means for reinforcing said crown body;

means for restraining said supplemental means adjacent said crown body, the restraining means having means for holding said crown rim.

5,052,055
APRON
Laura J. Mysliwiec, 67 Megan Rd., Hyannis, Mass. 02601
Filed Feb. 27, 1990, Ser. No. 485,442
Int. Cl.[5] A41D *13/04*
U.S. Cl. 2—48 **10 Claims**



1. Apron for use on the waist of a person, comprising:

(a) a towel of generally rectangular shape having an upper edge adapted to extend around the front of the waist and having downwardly-directed side edges, and

(b) an elongated elastic belt adapted to extend around the rear of the waist, the belt having clamps at opposite ends

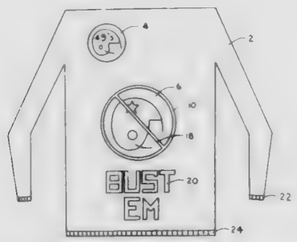
to engage and hold the side edges of the apron near the junction of the side edges with the upper edge, wherein an inner surface of the belt is provided with widely-separated elements of a hook-and-loop fabric system, so that the elements can be pressed together to form a loop in the belt for hanging storage.

5,052,056

INTERCHANGEABLE CREST SWEATSHIRT

Andrew Braun, 20 Cherrytree Drive, Apt. 704, Brampton, Ontario, Canada L6Y 3V1

Filed Jun. 28, 1990, Ser. No. 544,952
Int. Cl.[5] A41B *1/00*
U.S. Cl. 2—115 **8 Claims**



1. An article of clothing including:
(a) a first crest of a sports team silk screened exteriorally to said article;
(b) a second crest of a sports team releasably securable exteriorly to said article said second crest being a competitor of said first crest;
(c) first attachment means having a circular configuration associated with said article;
(d) second attachment means having a circular configuration associated with said second crest so as to releasably secure said second crest to said article when said second attachment means overlies said first attachment means;
(e) a circle silk screened to said article having a diameter greater than said first attachment means and adjacent thereto.

5,052,057

ADJUSTABLE CHILD'S GLOVE

Beth R. Fetner, Rockville Center, N.Y., assignor to Baby D Mittens, Inc., Rockville Center, N.Y.

Filed Jun. 29, 1990, Ser. No. 546,413
Int. Cl.[5] A41D *19/01*
U.S. Cl. 2—158 **16 Claims**



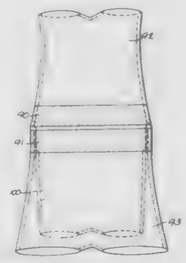
1. A child's hand convering adapted to enclose at least the fingers, palm and rear portion of the hand, comprising:
first and second complimentary members in overlying relationship, to define an interior volume for the weares's hand, each of said members including a top edge, bottom edge, and first and second opposed side edges,
said first and second members being permanently secured to each other along their top and only one of said side edges, the other side edges being unsecured to each other and initially open, said open side edges communicating with the bottom edges to provide a substantial access opening to said interior volume for readily inserting the child's hand therein,
one of said members including a panel extension which extends sidewardly from its initially open side edge,
said panel extension being foldable about its side edge juncture with its connective member to overly an appreciable area of the other member;
said panel extension and overlying area of said other member including complementary securement means, said securement means releaseably attaching said panel extension of said one member to the overlying area of the other member to close the initially open side edges of the complementary members when the child's hand is inserted within said interior volume.

5,052,058

SHORTS OR SKIRTS WITH INNER SLIP

Klaus Mueller, Schulweg 73B, 5600 Wuppertal 12, Fed. Rep. of Germany

Filed Mar. 21, 1988, Ser. No. 171,085
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3709669
Int. Cl.[5] A41B *9/14*; A41D *1/06, 1/14*
U.S. Cl. 2—228 **6 Claims**



1. Shorts including
a first body portion to be worn as an outer member and
a second body portion to be worn as an inner member, and
a waistband portion connecting said first and second portions,
said first body portion, second body portion, and waistband portion comprising a one-piece, warp knitted tube with the waistband portion disposed between and connecting said first and second body portions,
said second body portion having a front portion and a rear portion and adapted to be folded inwardly into the first body portion along the waistband portion whereby to provide a liner within said first body portion when worn by the wearer.

5,052,059

WEDDING GOWN TRAIN HOOP WITH INTEGRAL WRIST STRAP

Nancy D. Speer, P.O. Box 1257, Carthage, N.C. 28327

Filed Feb. 25, 1991, Ser. No. 659,894
Int. Cl.[5] A41F *19/00*
U.S. Cl. 2—336 **8 Claims**

1. A wedding gown train hoop with an integral wrist strap, comprising:
a) a hoop having a first end and an adjacent second end;
b) means for connecting the hoop's first and second ends;

c) a continuous hoop sock fitted about the hoop and forming a wrist strap; and
d) the hoop sock including a hoop covering section that



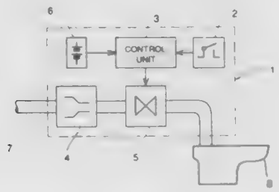
extends from the hoop's first end to the hoop's second end and a wrist strap section that extends from the hoop's second end to the hoop's first end to form an enclosed wrist strap section adjacent to the hoop.

5,052,060

FLUSH WATER SUPPLY SYSTEM FOR TOILET STOOL

Atsuo Makita; Hirofumi Takeuchi; Shinji Shibata, and Noboru Shimbara, all of Kanagawa, Japan, assignors to Toto Ltd., Fukuoka, Japan

Filed Mar. 29, 1990, Ser. No. 502,063
Int. Cl.[5] E03D *5/00*
U.S. Cl. 4—300 **5 Claims**



1. A flush water supply system for a toilet stool, comprising:
(a) a pipeline means for supplying flush water to the toilet stool;
(b) a constant flow valve mounted in said pipeline means for obtaining a predetermined amount of discharge flow, said constant flow valve including a water passage and means for adjusting the cross-sectional area of the water passage after the water supply pressure reaches a predetermined value;
(c) a valve mounted in said pipeline means and electrically operable;
(d) a starting-of-flushing input means for accepting an input for starting the supply of flush water; and
(e) a control means for driving said electrically operable valve in response to the input for starting the supply of flush water, and for keeping said valve in an opened position for a preset period of time.

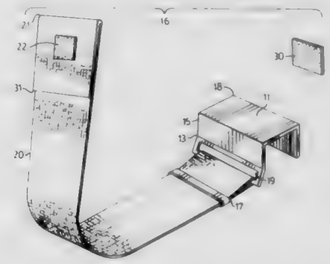
5,052,061

TOILET SEAT LATCHING DEVICE

Victor Nichols, 79 Tisdale Avenue, Toronto, Ontario, Canada M4A 1Y6

Filed Jul. 20, 1990, Ser. No. 555,007
Int. Cl.[5] E03D *9/00*
U.S. Cl. 4—661 **2 Claims**

1. A latching device for a toilet having a water tank, a seat, and a cover for said seat, said water tank having a front wall adjacent said seat, a rear wall opposite said front wall and a lid, said latching device comprising:
a resiliently stretchable strap strap having a first end portion opposite a second end portion and a first face opposite a second face;
a hook secured to said first end portion of said strap and dimensioned to mount over an upper edge of said rear wall beneath said lid and attach said first end portion to said rear wall;
releasable securing means at said second end portion of said strap for releasably securing said second end portion of said strap to one of said seat and said cover, said releasable



securing means including first and second mating members of a VELCRO type fastener with said first member being securely connected to said first face of said strap and said second member having an adhesive backing for attachment to said one of said seat and said cover;
a head piece covering said second face of said strap or said second end portion, said head piece being of a material visually compatible with said tank;
said strap when in a relaxed state having a length selected to span said walls beneath said lid and extend beyond said front wall, said second end portion of said strap when in the relaxed state having a protruding portion which is completely covered by said head piece.

5,052,062

Patent Not Issued For This Number

5,052,063

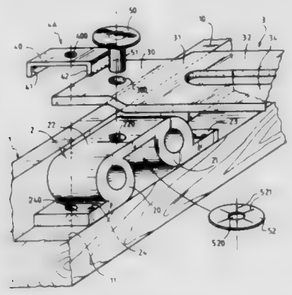
FIXING SYSTEM WITH VARIABLE SUSPENSION AND ARTICULATION, PARTICULARLY FOR BEDS OR SEATS

Pierre Elmalek, Paris, and Guy Nathan, Yerres, both of France, assignors to Vieux Chene Expansion Sarl, Montmagny, France

Filed Jul. 16, 1990, Ser. No. 552,803
Claims priority, application France, Jul. 26, 1989, 89 10037
Int. Cl.[5] A47C *23/05*
U.S. Cl. 5—238 **18 Claims**

1. Variable and articulated suspension fixing system, particularly for beds or seats having slats, comprising a suspension and articulation piece (**2**), a first means (**4A**, **4B**) for securing the suspension piece (**2**) to the frame (**1**) of the mattress or seat, a second means (**51**, **52**) for securing a slat (**3**) to the suspension piece (**2**), said suspension piece (**2**) comprising two symmetrical resilient structures (**20**, **21**) in the form of cylindrical tubes parallel to said slat and spaced apart by a distance corresponding to the dimension of a portion (**30**) of said slat bearing on a surface of said suspension piece (**2**), the two resilient structures (**20**, **21**) being joined together by a single connecting strut (**22**), characterized in that the connecting strut is connected to the

two cylindrical tubes by connecting surfaces that are situated inside the volume defined by vertical planes passing through



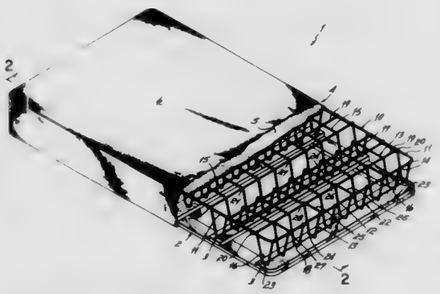
the axes of symmetry of each cylinder, said connecting strut further characterized as providing the bearing surface for said slat portion.

5,052,064

STACKABLE BEDDING FOUNDATION

Robert C. Hagemeister, Boston, Mass.; Steven E. Ogle, and Thomas J. Wells, both of Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Dec. 18, 1990, Ser. No. 629,164
Int. Cl.[5] A47C *23/00*
U.S. Cl. 5—246 5 Claims



5. A bedding foundation comprising

a rectangular base,

a nestably stackable wire core assembly fixedly attached atop said base,

a foam pad overlying said nestably stackable assembly, and

a fabric covering overlying said pad and surrounding said nestable assembly and base;

said nestably stackable assembly comprising

a rectangular border wire having two parallel sides and two parallel ends,

transversely-spaced, parallel, and longitudinally-extending support wires parallel to said border wire sides and having ends connected to said border wire ends, said support wires being formed so as to be generally corrugated along their lengths, said corrugatedly formed support wires having peaks and valleys, said peaks being flattened at their tops, said flattened peaks being generally coplanar with a plane defined by said border wire, said valleys being vertically displaced beneath and intermediate of said flattened peaks, and

longitudinally-spaced, parallel, and transversely-extending upper connector wires parallel to said border wire ends and having ends connected to said border wire sides, said upper connector wires being connected intermediate of their ends along their lengths to said flattened peaks of said support wires

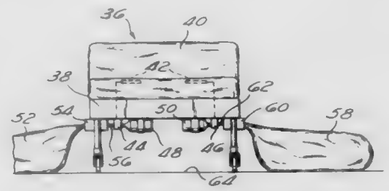
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5,052,065

IMPACT CUSHIONING DEVICE FOR BED OR WHEELCHAIR

Raymond O. West, P.O. Box 1137, Belfair, Wash. 98528

Filed Jan. 8, 1991, Ser. No. 638,542
Int. Cl.[5] A47C *27/08*; B60R *21/16*
U.S. Cl. 5—424 22 Claims



1. An impact cushioning device for protecting a wheelchair occupant from fall-related injuries, comprising the combination of:

a wheelchair having a frame portion and a horizontal seat portion;

at least one sensing means disposed in said seat portion, said sensing means being operable to generate a signal when the weight of said occupant is removed therefrom;

an inflatable air cushion attached to said frame portion;

means connected to said frame portion for inflating said air cushion, said inflating means being responsive to said signal generated by said sensing means; and

a switch means for selectively activating and deactivating said sensing means;

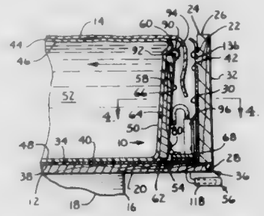
said air cushion being supported by said frame portion in a manner wherein said air cushion will inflate outwardly from said wheelchair so as to create a barrier between said wheelchair occupant and the floor when said occupant falls forward from said seat portion.

5,052,066

WATERBED SHEETING SYSTEM WITH CLAMPING DEVICE

Marvin Knetzer, 1232 Baker, Wichita, Kans. 67212

Filed Feb. 4, 1991, Ser. No. 649,955
Int. Cl.[5] A47C *27/10*
U.S. Cl. 5—451 20 Claims



1. A system for sheeting a waterbed including an elevated bed floor and a longitudinal frame rail extending upwardly from the bed floor, an upwardly-open mattress receptacle formed by said bed floor and said frame rail, a water mattress in said mattress receptacle and including a water mattress wall in proximity to said frame rail of the mattress receptacle, which comprises:

(a) a pressure panel positioned generally between said mattress wall and said frame rail;

(b) said pressure panel having a closed position in proximity

to said frame rail and an open position in spaced relation from said frame rail;

(c) hinge means hingedly connecting said pressure panel and one of said frame rail and said bed floor; and

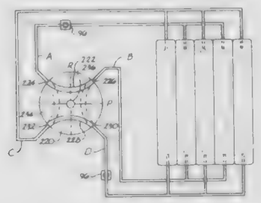
(d) pressure panel actuating means for actuating said pressure panel between its open and closed positions, the actuating means adapted to move the pressure panel between an open position in which the pressure panel is pressed by the actuating means against a water mattress wall to permit the insertion of an edge portion of a sheeting material between the pressure panel and the frame rail, and a closed position in which the actuating means permits a water mattress wall to press the pressure panel against the frame rail, thereby trapping an edge of the sheeting material between the pressure panel and the longitudinal frame rail.

5,052,067

BIMODAL SYSTEM FOR PRESSURIZING A LOW AIR LOSS PATIENT SUPPORT

James M. C. Thomas, Mt. Pleasant; James R. Stolpmann, Charleston; William T. Sutton, and James J. Romano, both of Charleston, all of S.C., assignors to SSI Medical Services, Inc., Charleston, S.C.

Division of Ser. No. 355,755, May 22, 1989, Pat. No. 4,949,414, which is a continuation-in-part of Ser. No. 321,255, Mar. 9, 1989, abandoned. This application Jul. 18, 1990, Ser. No. 555,088
Int. Cl.[5] A61G *7/057*
U.S. Cl. 5—453 6 Claims



1. A bimodal system that can be alternatively configured between two modes of pressurizing a low air loss patient support system having air flow paths for carrying pressurized air to one or more air sacks from a pressurized air source, the system comprising:

(a) a source of pressurized air;

(b) a flow diverter valve having:

(i) a first inlet and a second inlet,

(ii) a first outlet and a second outlet,

(iii) a first pathway connecting said first inlet to said first outlet,

(iv) a second pathway connecting said second inlet to said second outlet, and

(v) means for switching said pathways such that said first pathway connects said first inlet to said second outlet and said second pathway connects said second inlet to said first outlet;

(c) a first pressure control valve having an output end communicating with one of said inlets and having an input end communicating with said source of pressurized air;

(d) a second pressure control valve having an output end communicating with the other of said inlets and having an input end communicating with said source of pressurized air; and

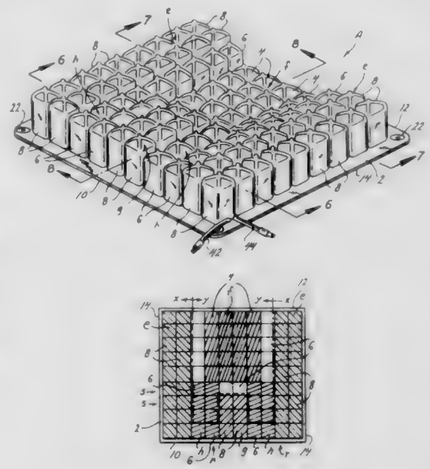
(e) wherein said diverter valve allowing the air flow paths of the support system to be reconfigured between two distinctly different ways of connecting the pressurized air source through said pressure control valves to individual air sacks of the patient support system and thereby reducing the number of valves needed for the purpose of being able to switch between the two modes of operation.

5,052,068

CONTOURED SEAT CUSHION

Robert H. Graebe, 7 Persimmon Bridge Dr., Belleville, Ill. 62221

Continuation of Ser. No. 436,459, Nov. 14, 1989, abandoned. This application Feb. 11, 1991, Ser. No. 655,205
Int. Cl.[5] A47C *7/02*
U.S. Cl. 5—455 5 Claims



1.-A cushion comprising: a base having front, rear and side margins, long cells projecting upwardly from the base along its side margins to form two spaced apart side sections to prevent the user's thighs from excessive spreading; more long cells projecting upwardly from the base near the front margin and between the side sections, yet spaced from the side sections, to form an abductor section to prevent inward rotation of the user's thighs; short cells located between the side sections and behind the abductor section to form a depression that extends to the rear margin to cradle the user's buttock; and intermediate cells, projecting upwardly from the base between the abductor section and the two side sections, the intermediate cells being shorter than the long cells to form troughs between the abductor section and the side sections, but being longer than the short cells; whereby the cushion possesses a contour that is well suited for seating, and the troughs cradle the user's legs, the short cells of the depression and at least some of the intermediate cells of the troughs adjacent to the abductor cells being in pneumatic communication through the base and pneumatically isolated from the long cells and the remainder of the intermediate cells to allow the long cell area and the short cell area to be inflated separately to provide the desired stability in the side and in the abductor areas and the desired cushioning in the depression and trough areas.

5,052,069

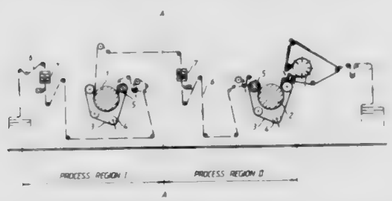
FABRIC TREATMENT

Dieter Riedel, Porta Westfalica, Fed. Rep. of Germany, assignor to Johannes Menschner Maschinenfabrik GmbH & Co. KG, Viersen, Fed. Rep. of Germany

Filed Apr. 17, 1990, Ser. No. 509,803
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914358
Int. Cl.[5] D06B *5/08*
U.S. Cl. 8—149.1 8 Claims

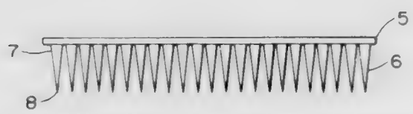
1. A process of continuous permanent decatizing and fixing of textile materials in web form including a first process step in which damped textile material is passed over a first rotatably mounted heatable cylinder, the material being pressed against

part of the cylinder surface by means of an impermeable pressure band, and a second process step in which the material is passed over a further rotatably mounted heatable cylinder, the material being pressed against part of the further cylinder surface by means of a further impermeable pressure band, wherein the textile material is damped within a moisture range of 20 to 100%, and the surface temperatures of said parts of said surfaces of said first and further cylinders are maintained above 40° C., and wherein a first side of the textile material is applied to the first heatable cylinder in the first process step and the opposite side of the textile material is applied to the further heatable cylinder in the second process step



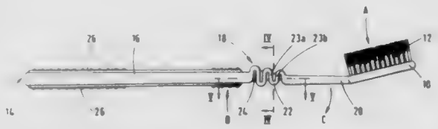
4. An apparatus for the continuous permanent decatizing and fixing of textile material in web form, including a first rotatably mounted heatable cylinder, a first impermeable pressure band arranged to press the textile material against part of the first cylinder surface, a further rotatably mounted heatable cylinder, a further impermeable pressure band arranged to press the textile material against part of the further cylinder surface, a damping unit effective to damp the textile material within a moisture range of 20–100%, and means for heating the cylinders such that their surface temperature is above 40° C., wherein the first and further cylinders are arranged such that a first side of the textile material is applied to the first heatable cylinder and the opposite side of the textile material is applied to the further heatable cylinder.

5,052,070
HAIRBRUSH
Julius Klugmann, New York, N.Y., assignor to Alkinco (Alfred Klugmann International Corporation), New York, N.Y.
Filed Sep. 20, 1988, Ser. No. 246,617
Int. Cl.[5] A46B *9/02*
U.S. Cl. 15—159 A **5 Claims**



1. A hairbrush having a reduced tendency to tear and remove hair during brushing comprising:
a base for holding bristles;
flexible, uniformly tapered natural hog bristles with each bristle having thick, stiff end having a diameter of approximately 0.003 to 0.007 mm. which tapers to a thin, flexible end having a diameter of approximately 0.001 to 0.004 mm., wherein the natural hog bristles are mounted in the base with the thick, stiff ends being held in the base, and the thin, flexible ends being outwardly directed; and
each bristle having a length of approximately 1.75 to 2.25 inches from the base, whereby the hairbrush has a reduced tendency to tear and remove hair during brushing.

5,052,071
TOOTHBRUSH WITH DISPLACEABLE HEAD
Hans Halm, Herne, Fed. Rep. of Germany, assignor to Lingner + Fischer GmbH, Fed. Rep. of Germany
Filed Mar. 29, 1989, Ser. No. 329,950
Claims priority, application United Kingdom, Mar. 31, 1988, 8807673
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **16 Claims**

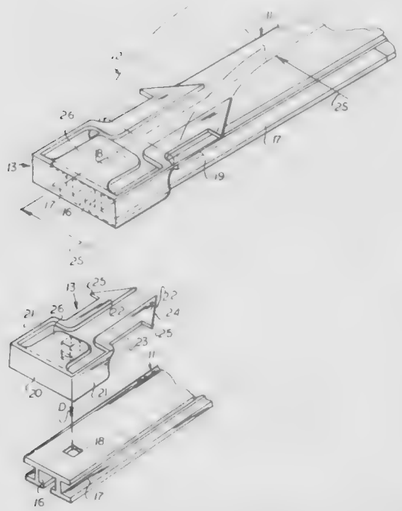


1. A toothbrush comprising:
(a) an elongated handle constituted of synthetic plastic material and extending along a central longitudinal axis between a grip handle portion and a head-carrying handle portion, said grip handle portion having a central longitudinal plane in which the grip handle portion lies in a non-flexed position;
(b) a head supported by the head-carrying handle portion and having a plurality of bristles on, and projecting from, the head; and
(c) resilient flexible means integral with the handle between the grip handle portion and the head-carrying handle portion for permitting angular joint displacement of the head-carrying handle portion and the head relative to the grip handle portion out of the non-flexed position and in a displacement plane normal to the central longitudinal plane, said resilient flexible means including at least one pair of arm interconnected at a fold that extends along a fold axis parallel to the central longitudinal plane and perpendicular to the displacement plane, said bristles on the head projecting substantially parallel to the displacement plane.

5,052,072
WINDSHIELD-WIPER END CLIP
Liang-Yuan Chen, Taipei, Taiwan, assignor to China Siper Special Rubber Co. Ltd., Taipei, Taiwan
Filed Mar. 12, 1990, Ser. No. 491,746
Claims priority, application United Kingdom, Dec. 8, 1989, 8927809
Int. Cl.[5] B60S *1/38*
U.S. Cl. 15—250.42 **5 Claims**

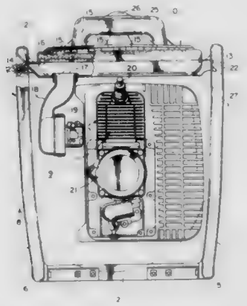
1. A retaining clip for use in combination with a wiper comprising:
a flexible wiper blade having a longitudinally extending headed rib;
a resilient backing rail formed with a longitudinally extending and forwardly open narrow-neck slot in which the rib is received and captured, with a polygonal aperture opening at a back face of the rail spaced longitudinally from an end of the rail, and with a pair of laterally oppositely open grooves and having a back face directed away from the blade; and
a yoke assembly having a plurality of claws each engaging over the rail and into the grooves thereof, the retaining clip being releasably fitted to the end of the rail and unitarily formed with
an end wall normally lying against the end of the rail blocking a longitudinal opening of the slot thereof;
a pair of parallel sides extending longitudinally from the end wall and normally lying over the grooves adjacent the end of the rail;
a air of parallel arms extending from the sides and normally lying flat on the back face of the rail, the arms normally lying under a respective claw, the arms having

points that normally project laterally past the rail, whereby the points can retain the clip in the respective claw;
a tab extending longitudinally from the end wall between the sides and normally lying flat on the back face of the rail; and



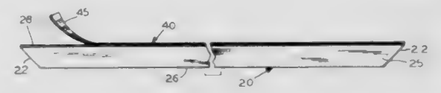
a spreadable split stud of polygonal-section projecting transversely from the tab through the aperture into the slot and having a pair of side parts that are elastically deflectable toward and away from each other and fitting complementarily in the aperture thereby locking said clip to said rail, the stud projecting into the slot, being engageable therein with an end of the blade, and thereby forming an end stop for the blade.

5,052,073
BACKPACK-TYPE POWER WORKING MACHINE
Giichi Iida, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Jan. 23, 1991, Ser. No. 644,660
Claims priority, application Japan, Jan. 24, 1990, 2-4669[U]
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—327.5 **2 Claims**



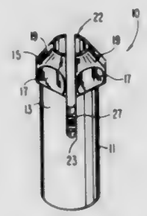
1. A backpack-type power working machine comprising: a carrying frame having side guard sections on both sides thereof, a fan attached to said carrying frame through intermediation of vibration-damping members, an engine connected to said fan, and an air cleaner having side end sections and situated at a position behind said fan and said engine, said side end sections of said air cleaner being respectively attached to said side guard sections of said carrying frame.

5,052,074
MAGNETIC PICK UP DEVICE FOR VACUUM CLEANER
David W. Korsen, 6053 Corporal La., Boise, Id. 83704
Filed Jan. 28, 1991, Ser. No. 646,837
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—339 **10 Claims**



1. A magnetic pick up device for a vacuum cleaner comprising:
a first elongated strip of magnetized material attachable to and along the front lower face of a vacuum cleaner housing;
attachment means for connecting said first strip to said housing; and
a second elongated strip of magnetized material, said second strip held to said first strip by magnetic attraction and said second strip operable to pick up magnetic debris and to be magnetically detachable from said first strip for removal of the debris.

5,052,075
APPARATUS AND METHOD FOR SECURING A CASTER TO AN OBJECT HAVING A HOLE
Charles A. Harris, Evansville, Ind., assignor to Babcock Industries Inc., Fairfield, Conn.
Filed Jan. 11, 1990, Ser. No. 463,504
Int. Cl.[5] B60B *29/00, 33/00*
U.S. Cl. 16—38 **20 Claims**



1. An apparatus for securing a caster to an object having a hole with parallel interior walls and a constant, minimum interior width along the height of the apparatus for securing the caster, comprising:
a tubular body having upper and lower ends, the lower end having connection means for connecting to a caster and the upper end being split and defining at least two upwardly extending friction grip arms, and wherein the lower end has an external cross-sectional width which is substantially equal to the interior width of the hole to provide lateral stability of said tubular body within the hole;
a caster having an upward stem accurable to said means for connecting within the lower end of the tubular body;
wherein the friction grip arms project radially outward beyond the external cross-sectional width of the lower end when the tubular body is outside of the hole, and wherein upon axial insertion of the tubular body into the

hole the interior walls of the hole bear against the friction grip arms and urge them radially inward, providing a friction fit between the friction grip arms and the interior walls; and

wherein an interior diameter of the upper end of the tubular body is greater than an outer diameter of the caster stem to allow the friction arms to deflect radially inwardly without obstruction by the stem.

5,052,076

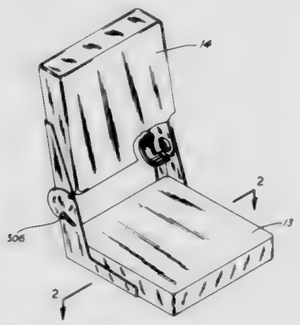
SEAT HINGE

Kenneth A. Spaeth, Two Rivers, Wis., assignor to Estran Corporation, Two Rivers, Wis.

Filed Apr. 9, 1990, Ser. No. 506,043

Int. Cl.[5] E05D *7/00*

U.S. Cl. 16—266 **7 Claims**



7. A seat hinge comprising;

a first section;

a second section;

a pivot including an inner pivot wall fitting inside an outer pivot wall, connecting said first section and said second section and having a center;

said first section having a wall portion;

and an arcuate wall section;

said arcuate wall section being mounted a fixed distance from said pivot walls;

said arcuate wall section being located adjacent said center and said wall portion of said first section;

said arcuate wall section being generally concentric to said center of said pivot of said hinge and closely fitted to said first section and said second section and means for allowing axial movement of said one section relative to said second section in only one orientation of said sections.

5,052,077

CABINET HINGE WITH ADJUSTMENTS

Karl Lautenschläger; Horst Lautenschläger, both of Reinheim, and Gerhard Lautenschläger, Brensbach, all of Fed. Rep. of Germany, assignors to Karl Lautenschläger GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

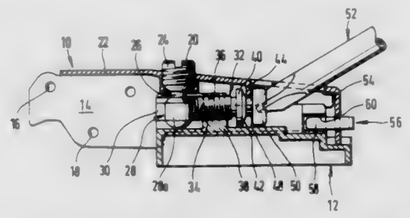
Filed Nov. 28, 1990, Ser. No. 619,027

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1990, 4011559

Int. Cl.[5] E05D *7/04*

U.S. Cl. 16—238 **15 Claims**

1. A hinge for hanging a door on the carcase of a cabinet, with a door-related part for fastening to the door and a carcase-related part which is coupled pivotingly to the door-related part by a jointed mechanism, can be fastened removably and adjustably on a mounting plate fastened on the wall of the carcase, and is configured as a supporting arm of a channel-shaped cross section straddling the mounting plate, the door-related part being releasably joined to the mounting plate by a catch mechanism having a coupling means at the front end of the mounting plate and of the supporting arm adjacent the door, which permits the rearward portion of the supporting arm inside of the carcase to pivot relative to the mounting plate, while at the inner end of the supporting arm remote from the door, which at least partially straddles the mounting plate at its end pointing into the carcase interior, two tongues resiliently flexible parallel to the carcase wall surface are provided, each having an extremity engaged with an associated catch in the mounting plate, the extremities and the catches being able to be disengaged by flexing the tongues against one another parallel to the carcase wall surface, and the tongues having finger grips whereby they can be squeezed together in this manner when the supporting arm is mounted on the mounting plate, Wherein the hanger coupling of the supporting arm (**10**, **11**) and the mounting plate (**12**, **112**) is provided with a holding head of spherical shape at least in sections, disposed on a neck (**26**, **126**) of reduced diameter at the cabinet-wall end of a threaded spindle (**24**, **124**) adapted to be screwed into a tap (**20**,



120) in the web (**22**, **122**) of the supporting arm, said holding head being introduced into a slot (**30**, **130**) in the mounting plate (**12**, **112**) which conforms approximately to the shape of the head (**28**, **128**), is open at the end pointing out of the cabinet for the insertion of the holding head, and narrowed to approximately the diameter of the neck (**26**, **126**) at the top side facing the supporting arm; the latches (**58**, **158**) of the tongues (**56**, **156**) being displaceable by a given amount lengthwise of the supporting arm, parallel to the supporting arm surface, wherein the finger grips are adapted to engage the catches (**60**, **160**) when they are not squeezed together and are secured against disengagement therefrom, and wherein on or in the mounting plate (**12**, **112**) an externally controlled adjusting means (**32**, **132**), which at one end engages the holding head and at the other end engages a portion of the supporting arm, is mounted for movement so that, depending on a direction in which it is operated, it displaces the supporting arm (**10**, **110**) lengthwise by pressing either against the holding head (**28**, **128**) or against a portion of the supporting arm.

5,052,078

HINGE MECHANISM FOR PORTABLE ELECTRONIC APPARATUS

Takashi Hosoi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 542,784, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 90,279, Aug. 28, 1987, abandoned. This application Dec. 31, 1990, Ser. No. 633,197

Claims priority, application Japan, Aug. 29, 1986, 61-131357[U]

Int. Cl.[5] E05D *11/10*

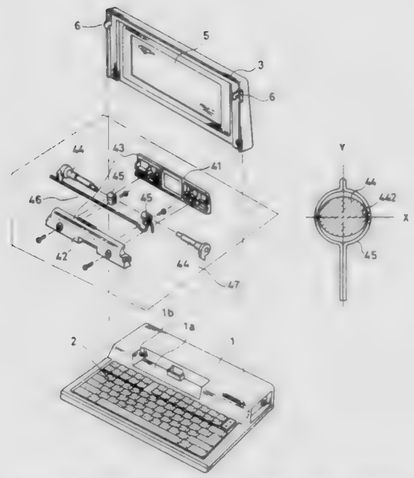
U.S. Cl. 16—297 **15 Claims**

1. In a portable electronic apparatus having a body portion and a display portion, a hinge mechanism for connecting said display portion to said body portion such that said display portion is capable of being folded down and pulled up with respect to said body portion, said hinge mechanism comprising:

a hinge member whose lower portion is pivotably jointed to said body portion;

a hinge shaft fixed to one of an upper part of said hinge member and a lower part of said display portion, said hinge shaft having an oval cross section; and

a presser spring fixed to another of said upper part of said hinge member and said lower part of said display portion so as to be pivotably engaged with said hinge shaft;



said presser spring and said hinge shaft being engaged with each other such that a minor diametral portion of said hinge shaft contacts said presser spring when said display portion is brought to an upright position, and, when said display portion is brought to a horizontal position, a major diametral portion of said hinge shaft contacts said presser spring.

5,052,079

PIVOTED FITTING OR TURN-AND-TILT FITTING FOR WINDOWS, DOORS

Alfred Vossкötter, Münster, Fed. Rep. of Germany, assignor to Aug. Winkhaus GmbH & Co. KG

Filed Aug. 18, 1989, Ser. No. 396,564

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1988, 3829053

Int. Cl.[5] E05D *3/10, 15/00, 15/52*

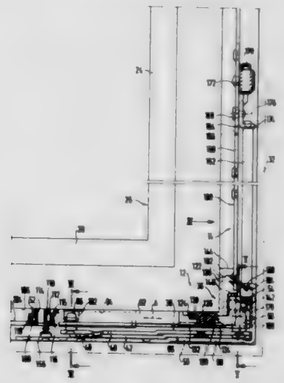
U.S. Cl. 16—367 **34 Claims**

1. Pivoted fitting for windows or doors with a fixed frame (**20**) and a leaf frame (**26**) mounted on the fixed frame (**20**) to be rotatable about a vertical pivot axis (**54**), comprising

a bottom pivot bearing which connects the fixed frame (**20**) to the leaf frame (**26**) in the region of a bottom corner of the fixed frame (**20**),

a top pivot bearing (**10**) which connects the fixed frame (**20**) to the leaf frame (**26**) in the region of a top corner of the fixed frame (**20**),

the two pivot bearings (**10**, **12**) being in each case constructed with at least two links (**40**, **42**) so that when the leaf frame (**26**) is pivoted open, the pivot axis (**54**) is shifted in a direction at right-angles to the plane of the fixed frame (**20**), wherein the leaf frame (**26**) is braced on the fixed frame (**20**) through a device (**160**) independent of the links (**40**, **42**) of the two pivot bearings (**10**, **12**), said device including a weight transferring element (**162**, **262**) arranged in a vertically extending space between said fixed frame (**20**) and said leaf frame (**26**) on a pivot axis side of said frames, said weight transferring element (**162**, **262**) having two ends, one of said ends being connected to said



fixed frame (**20**) and the other of said ends being connected to said leaf frame (**26**) so as to transfer the weight of said leaf frame (**26**) to said fixed frame (**20**) in a pivoted-open position of said leaf frame (**26**) relative to said fixed frame (**20**).

5,052,080

METHOD AND APPARATUS FOR CONTROLLING YARN PREPARATION OPERATIONS TO ENHANCE PRODUCT UNIFORMITY

Christoph Gründler, Winterthur, Switzerland, assignor to Maschinenfabrik Rieter, AG, Winterthur, Switzerland

Filed Jun. 15, 1989, Ser. No. 366,518

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 3821238

Int. Cl.[5] D01B *3/04*

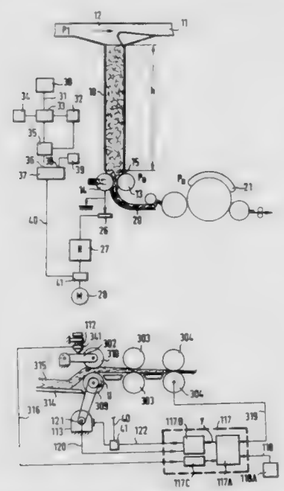
U.S. Cl. 19—65 A **18 Claims**

1. A method of producing continuous slivers of improved uniformity with respect to sliver count in a textile production facility having apparatus for processing fibers into slivers, said method including the steps of:

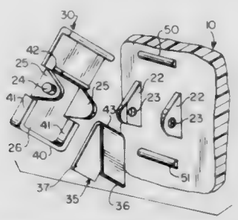
determining the absolute humidity of air in a vicinity of said apparatus; and

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controlling said apparatus in response to the absolute humidity to reduce irregularities in the sliver count of the produced slivers due to absolute humidity variations over time in the textile production facility.

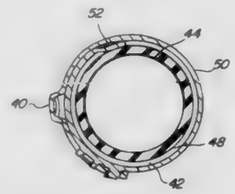


5,052,081
CLIP ASSEMBLY FOR BADGES AND SIMILAR ARTICLES
Charles Fuehrer, Scarsdale, N.Y., assignor to Stoffel Seals Corporation, Tuckahoe, N.Y.
Filed Dec. 6, 1990, Ser. No. 623,209
Int. Cl.[5] A44C *3/00*; A45F *5/02*
U.S. Cl. 24—3 J 18 Claims



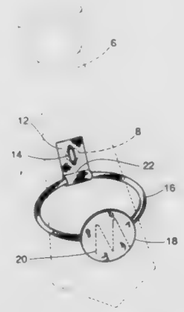
1. A clip assembly for use with a badge, pin or similar article which is to be attached to an object and wherein the badge includes front and rear surfaces and upper and lower edges and wherein the front of the badge is designed to display indicia comprising, a pair of shaped hinge posts extending from the rear surface of the badge in generally parallel relationship with respect to one another, an opening in each of said hinge posts, said hinge posts being resiliently yieldable with respect to one another, a clip having first and second end portions, side edges and upper and lower surfaces, said clip including a pair of spaced generally parallel flange elements extending outwardly with respect to said lower surface thereof and intermediate said first and second end portions, a pivot pin carried by each of said flange elements and extending outwardly therefrom and in generally perpendicular relationship thereto, said pivot pins being selectively seated within said openings in said hinge posts, and spring means mounted between said second end portion of said clip and the rear surface of the badge for positively biasing said first end portion of said clip toward the rear surface of the badge whereby the object may be releasably clampingly engaged between said first portion of said clip and the rear surface of the badge.

5,052,082
CLAMPING SYSTEM
Frederick J. Uchman, Clarkston, Mich., assignor to GKN Automotive Inc., Auburn Hills, Mich.
Filed Mar. 12, 1990, Ser. No. 491,594
Int. Cl.[5] B65D *63/02*
U.S. Cl. 24—20 CW 30 Claims



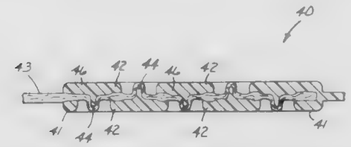
1. A clamping system comprising:
a member having at least one region to be clamped onto a cylindrical surface, said member having a first annular groove in said at least one region of said member and a concentric second annular groove axially aligned with said first annular groove, said second annular groove having a width smaller than the width of said first annular groove;
a clamping band having a body portion receivable in said first annular groove, said body portion having one end and an opposite end, a tongue portion extending from said one end of said body portion receivable in said second annular groove, means for locking said one end and said opposite end of said body portion of said clamping band to each other to lock said clamping band around said member with said body portion in said first annular groove and said tongue extending into said second annular groove; and
means for tightening said band clamp to clamp said at least one region of said member onto said cylindrical surface.

5,052,083
TIE BAND WITH DISPLAY
Charles P. Hammer, 1157 Marsh St., San Luis Obispo, Calif. 93401
Filed Aug. 7, 1990, Ser. No. 564,128
Int. Cl.[5] A41D *25/04*
U.S. Cl. 24—49 R 4 Claims



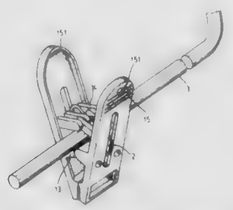
1. A tie band that can be attached to a button on the front of a shirt for holding a necktie of the four-in-hand type in a laterally-central position against the front of the shirt while also displaying an emblem in front of the necktie, said tie band comprising:
a hidden generally planar patch of a flexible material including portions defining a buttonhole at one end thereof, whereby said hidden patch can be fastened to the button on the front of the shirt, and a loop at the other end thereof;
a band of a flexible material slidably attached within said loop of said hidden patch and long enough to encircle the necktie without gathering it, whereby the necktie is held against the shirt in a laterally-central position and in front of said hidden patch; and,
a display patch bearing the emblem to be displayed, and attached to said slidable band diametrically opposite said hidden patch so as to be disposed in front of the necktie.

5,052,084
ELASTIC STRAP FASTENER ASSEMBLY
David L. Braun, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 20, 1989, Ser. No. 424,546
Int. Cl.[5] A44B *11/02*
U.S. Cl. 24—163 R 8 Claims



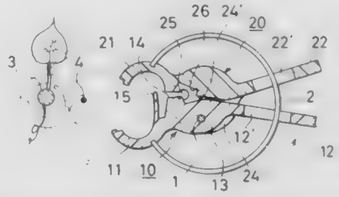
1. An elastic strap fastener assembly comprising an elastic strap having two opposite faces and a polymeric cage encompassing a length of the elastic strap, which cage has a peripheral frame including two longitudinal elements, each longitudinal element disposed adjacent a respective longitudinal side of said strap, said longitudinal elements being interconnected by at least two first transverse ribs extending across and fused to a face of said strap, with consecutive first transverse ribs extending across and fused to opposite faces of said strap and including opposed portions terminating approximately at a plane bisecting the thickness of said cage to maintain a portion of said strap between said opposed portions substantially at said plane bisecting the thickness of said cage, said first ribs further including second ribs extending from said first ribs to stretch said strap away from said plane bisecting the thickness of said cage.

5,052,085
STRUCTURE OF CLOTHES CLIP
Shwu-Jing Gau, 2 Fl., No. 24, Ming-Chuan 1 St. Chu-Wei Li, Pan-Shui Cheng, Taipei, Hsien, Taiwan
Filed Mar. 30, 1990, Ser. No. 501,704
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—501 1 Claim



1. A clothes clip, comprising two opposite clamping members retained by a substantially U-shaped spring to pivot against each other, said two clamping members being each a rectangular plate having two opposite sides, one of which being a flat surface having an elongated slot longitudinally piercing therethrough to the opposite side and an embossed grip portion on its upper part and having a hole therethrough; the other of which comprising a toothed portion on its lower part, two parallel pivots transversely disposed above said toothed portion, the left one of said two parallel pivots having a semi-circular projecting key on its front end and the right one of said two parallel pivots having a semi-circular recess on its front end, and a pair of guide rods transversely disposed on said member and spaced above said two parallel pivots a predetermined distance;
the distance between said parallel pivots and said guide rods being sufficient to receive the outer diameter of the transverse rod of a clothes hanger to mount, and the semi-circular projecting key and semi-circular recess of the two parallel pivots of one clamping member are releasably engaged with the semi-circular recess and semi-circular projecting key of the two parallel pivots of the opposite clamping member, the pair of guide rods of one clamping member extending inwardly and beyond the guide rods of the opposite clamping member so as to cross said U-shaped spring received in the respective slots to assemble said clip whereby when a transverse rod extends through said clip between said guide rods and pivots as said clip is opened and closed, said members pivot on said pivots.

5,052,086
CLAMP FOR FIXING PLANT STEM TO SUPPORT WIRE
Yasuhiro Nasuno, 469 Kakabocho, Ashikaga-shi, Tochigi-ken, Japan
Filed Jan. 15, 1991, Ser. No. 641,513
Int. Cl.[5] A01G *17/06*; A44B *21/00*
U.S. Cl. 24—511 2 Claims



1. A clamp for fixing a plant stem to a support wire, comprising:
a movable clamp member having a semicircular beak at its one end and an operating member at its other end;
a fixed clamp member having a semicircular beak at its one end, an operating member at its other end and an intermediate body portion provided with a support slot for accommodating an intermediate portion of the movable clamp member;
a support shaft for pivotally attaching with respect to the fixed clamp member the intermediate portion of the movable clamp member accommodated in the support slot of the body portion;
a spring attached to the movable clamp member and the fixed clamp member and applying a biasing force causing the beaks of the two clamp members to close onto each other in the manner of a ring and the operating members thereof to open in a V-like manner;
the body portion of the fixed clamp member being provided with slits extending part way along the floor of the support slot from the beak of the fixed clamp member in the direction of the operating member;
the floor of the support slot being provided at the location of the inner end of the slits with a notch opening toward the movable clamp member; and
a protrusion being provided on the intermediate portion of the movable clamp member for invading the notch when the beaks are closed in the manner of a ring under the

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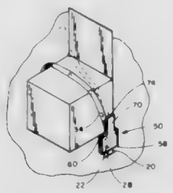
force of the spring and withdrawing from the notch when the beaks are opened by a force overcoming the force of the spring.

5,052,087

CHILD PROOF SEAT BELT RESTRAINT

Peter G. Portuese, 39 Huron St., Terryville, N.Y. 11776

Filed Feb. 6, 1991, Ser. No. 651,511
Int. Cl.[5] A44B *11/26*
U.S. Cl. 24—633 12 Claims



1. A child proof cover for preventing a child from releasing a seat buckle assembly, the seat buckle assembly including a first buckle element having a release control and which is operatively attached to one seat belt and a second buckle element which is operatively attached to another seat belt and which is adapted to be releasably coupled to the first buckle element to securely hold a child in place in a motor vehicle seat, the cover comprising:

an integral, one-piece monolithic housing into which both a first buckle element having a release control thereon and a second buckle element releasably coupled to the first buckle element are housed to prevent access to the release control by a child, said housing including

(1) a lower section having first and second ends, two sides, a top and a bottom, a slot defined in said first end, said second end being open so one of said first and second buckle elements can slide into and out of said lower section via said second end, and a longitudinal centerline extending between said first and second ends, said lower section having an opening defined in said top and extending from adjacent to said first end toward said second, said top having an opening defining edge extending from one side to another side, said lower housing section having a length dimension measured along said lower housing section longitudinal centerline,

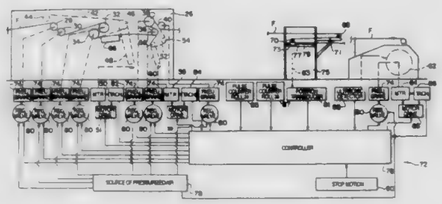
(2) a finger access channel defining means on said housing lower section top, said channel defining means including a forward end, a rear end and a hollow body connecting said channel defining means forward and rear ends together, said body having a longitudinal centerline extending between said body forward and rear ends, said channel defining means rear end being located immediately adjacent to said lower section opening defining edge, said opening defining edge being spaced from said lower section open end, said channel defining means longitudinal centerline forming an acute angle with said lower section longitudinal centerline, said finger access channel defining means having a length dimension measured along said channel defining means longitudinal centerline, said channel defining means rear end being located adjacent to said lower housing section second end, said channel defining means body extending above said lower section top surface and intersecting said lower section first end adjacent to said slot and extending forwardly of said lower section first end to have said channel defining means forward end spaced forwardly of said lower section first end, said channel defining means body terminating adjacent to said lower section opening defining edge and having the interior of said hollow body intersecting the interior of said hollow lower section to define a passage from said body forward end into said lower section body.

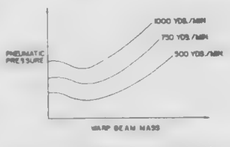
5,052,088

APPARATUS FOR CONTROLLED BRAKING OF A DRIVEN TEXTILE MATERIAL ENGAGING ROLL

John F. Hagewood, Matthews; Julius Darigo, Charlotte; Bruce S. McCoy, Monroe; John M. Single, and Charles E. Jackson, Jr., both of Matthews, all of N.C., assignors to McCoy-Ellison, Inc., Monroe, N.C.

Continuation-in-part of Ser. No. 252,497, Sep. 30, 1988, Pat. No. 4,924,567, and a continuation-in-part of Ser. No. 257,052, Oct. 30, 1988, Pat. No. 4,916,783, and a continuation-in-part of Ser. No. 457,335, Dec. 27, 1989, Pat. No. 4,984,341. This application Jan. 26, 1990, Ser. No. 470,847
Int. Cl.[5] D02H *13/08*
U.S. Cl. 28—185 35 Claims





1. In a textile draw warping system having a first set of upstream guide rolls driven by a common first drive means and a second set of downstream guide rolls driven by a common second drive means at a greater surface speed that said first set of rolls for drawing a plurality of synthetic continuous filaments traveling peripherally in sequence over said rolls, apparatus for controlled braking of said first and second sets of rolls, said apparatus comprising:

(a) a plurality of fluid actuated braking means each respectively associated with one of said rolls,

(b) a plurality of adjustable valve means each respectively associated with one of said braking means for individually supplying a pressurized operating fluid to each said braking means at independently selectively variable pressures for generation of a correspondingly variable braking force by each said braking means, and

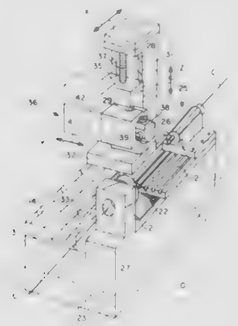
(c) braking program means for individually controlling adjustment of each said valve means for controlling the pressure at which the pressurized operating fluid is supplied respectively to each said braking means for individually controlling deceleration of each said roll of said first set in a common predetermined relationship of decreasing roll speed to elapsed time of actuation of said braking means and for individually controlling deceleration of each said roll of said second set in another common predetermined relationship of decreasing roll speed to elapsed time of actuation of said braking means related to said common relationship of said first set of rolls for maintaining a predetermined ratio between the common speed of said first set of rolls and the common speed of said second set of rolls during braking.

5,052,089

MULTI-FUNCTION MACHINE TOOL WHICH PERMITS COMPLEX MACHINING OF LONG PIECES

André Gadaud, St Geneviéve des Bois, and Michel Gagnal, Bougival, both of France, assignors to Somab, S.A., Moulins, France

PCT No. PCT/FR89/00242, § 371 Date Jan. 22, 1990, § 102(e) Date Jan. 22, 1990, PCT Pub. No. WO89/11374, PCT Pub. Date Nov. 30, 1989
PCT Filed May 22, 1989, Ser. No. 465,084
Claims priority, application France, May 25, 1988, 88 07261
Int. Cl.[5] B23B *11/00*
U.S. Cl. 29—27 R 13 Claims



1. A machine tool intended for the machining of parts by the removal of chips, of the machine-tool type comprising:

a rotary workpiece holder and a toolholder being supported by a common frame;

said workpiece holder being rotatable around a turning axis, the said turning axis overlying a table having a flat upper face which is parallel to said turning axis and includes means for fastening at least one support means;

said toolholder being moveable with respect to the workpiece along three orthogonal axes and including two clamping mandrels, one for a stationary tool and the other for a rotary tool; and

said workpiece holder is operatively connected to drive means such that said workpiece holder is capable of attaining the following group of kinematic motions: immobilization in a given angular position, a slow rotational speed for milling operations not parallel to the turning axis, and a high rotational speed for turning operations, wherein said toolholder is capable of moving in each of said three orthogonal axes during operation of said workpiece holder during said group of kinematic motions.

5,052,090

FLANGE UNIT FOR A PHOTOCONDUCTOR DRUM AND PHOTOCONDUCTOR DRUM UNIT

Katsuya Kitaura, Ibaraki, and Masaru Okamoto, Hirakata, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1990, Ser. No. 550,846
Claims priority, application Japan, Jul. 11, 1989, 1-82022[U]
Int. Cl.[5] B21B *31/08*
U.S. Cl. 29—123 6 Claims

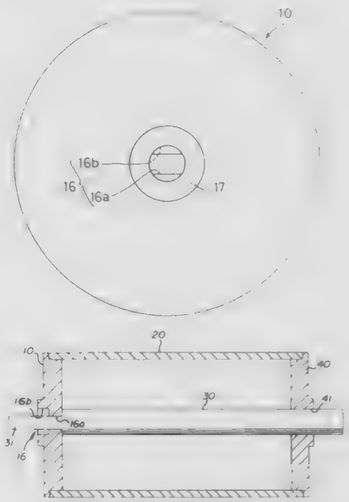
4. A photoconductor drum unit comprising:

a photoconductor drum having two ends, which is disposed in an image forming apparatus and rotates to allow an image to be formed on a circumferential surface thereof,

flanges mounted on the ends of said photoconductor drum, wherein each of said flanges has a hole coaxially formed therein and passing therethrough, the hole and the photoconductor drum having a common rotation axis, and

a rotation shaft mounted in the image-forming apparatus, with the end portions of said rotation shaft respectively passing through the holes of said flanges so as to allow the rotation of said rotation shaft to be transmitted to said flanges;

wherein the hole of one of said flanges has an inside portion having a substantially oval cross section and an outside



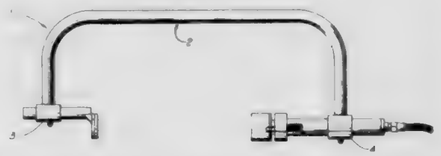
portion having a perfectly circular cross section, said inside portion being located toward said photoconductor drum while said outside portion is open away form said photoconductor drum, and one of said end portions of said rotation shaft has the same cross section as that of said inside portion, so as to be coaxially fitted into said inside portion of the hole.

5,052,091

HYDRAULIC VALVE SPRING COMPRESSOR

Kenny L. Bryan, and Randy J. Bryan, both of 9909 S. Clegern, Oklahoma City, Okla. 73139

Filed Aug. 8, 1990, Ser. No. 564,135
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—215 1 Claim



1. A hydraulic valve spring compressor, comprising a c-shaped frame having a clamping collar at each end as a means of attachment of a hydraulic slave cylinder by inserting the said slave cylinder into the said collar at one end of the frame and a means of attaching a spring seat bracket by being inserted into the said collar at the opposite end of the frame, the slave cylinder having a return spring on each side of it's housing and said springs having a means of attachment to a plate mounted on said slave cylinder's piston, the opposite end of the said springs having a means for and are attached to a plate at the end of the slave cylinder housing, said plate also having a means for connection of a hydraulic hose as a means for fluid transfer from and back to a master cylinder, which also has a

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means for attachment of the hydraulic hose, the master cylinder has a means for and is attached to a pedal assembly, which has a rectangular shaped platform and a means for mounting the said master cylinder thereon, the said platform also having a means for attachment of a pedal at it's pivot point and said pedal having a means for attachment to said master cylinder's piston, which upon actuation of said pedal, will move the master cylinder's piston to apply compression force inwhich transfers fluid to said slave cylinder to extend the slave cylinder piston, which engages the lower end of a valve, the said spring seat bracket has a tubular section to be inserted into a said clamping collar as a means of attachment to said frame, at the opposite end of the spring seat bracket's tube section there is a flat disc section, which contacts a valve spring retainer during operation, the said disc is attached to the tube section offset and has a hole in it's center, thus allowing a valve stem and locks to pass thru the hole of the disc and not enter the said tube section during the compression operation of a valve spring and allowing access to the said valve stem and locks

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5,052,092

APPARATUS FOR INSERTING A RIGID SUPPORT WITHIN A CONTRACTABLE SLEEVE FOR ELECTRIC CABLE JOINTS

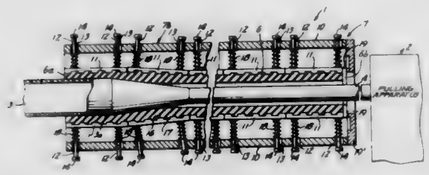
Ubaldo Vallauri, Monza, and Francesco Portas, Quattordio, both of Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 433,710, Nov. 8, 1989, abandoned. This application Nov. 29, 1990, Ser. No. 619,678

Claims priority, application Italy, Nov. 11, 1988, 22585 A/88

Int. Cl.[5] N23P *19/04*

U.S. Cl. 29—234 **7 Claims**



1. Apparatus for inserting a rigid support within a tubular, radially contractible and longitudinally distortable sleeve for an electric cable joint, said sleeve having an outer surface and a predetermined length and said support having an outer diameter greater than the internal diameter of said sleeve in its unstretched state, said apparatus comprising:

at least a pair of separable and adjacent shells which together form a chamber with a longitudinal axis for receiving the support and the sleeve therein, each shell having a arcuate outer supporting portion and an end wall, said end wall having an arcuate opening which together with the arcuate opening of the end wall of the adjacent shell provide an opening for the passage of support pulling means therethrough;

a plurality of pressure elements within said chamber and mounted on said supporting portion for radially reciprocating movement toward and away from the sleeve within said chamber, said pressure elements being uniformly distributed lengthwise and circumferentially of said chamber and having radially innermost surfaces with the radially innermost surfaces at one side of said axis in spaced relation to the radially innermost surfaces at the other side of said axis for receiving the sleeve therebetween and said innermost surfaces being adjacent to each other both circumferentially of said axis and in the direction longitudinally of said axis to provide together a substantially continuous cylindrical surface for engaging said sleeve, and said cylindrical surface having a length in the lengthwise direction of said chamber at least equal to said predetermined length of the sleeve for uniformly engaging the outer surface of the sleeve within said chamber along both the entire length of the sleeve and the circumference of the outer surface of the sleeve; and

movable pressure applying means connected to each said pressure element, and said pressure applying means being radially movable outwardly of said axis with radially outwardly directed pressure applied thereto for urging said elements radially inwardly against the outer surface of the sleeve while permitting said elements to be moved radially outwardly as the support enters the sleeve while maintaining radially inward pressure on said elements and hence, on the sleeve.

5,052,093

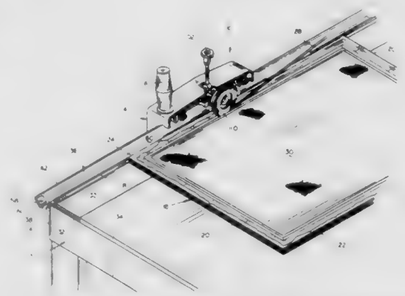
APPARATUS FOR SEATING AN ELONGATED FLEXIBLE SPLINE IN A WINDOW FRAME TO SECURE A FLEXIBLE SCREEN THERETO

Dennis P. Urlacher, Mandan, N. Dak., assignor to North Country Thermal Line, Inc., Mandan, N. Dak.

Filed Apr. 2, 1990, Ser. No. 503,211

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—235 **1 Claim**



1. An apparatus for seating an elongated flexible spline in the screen retaining groove of a screen frame to secure flexible screen material thereto, comprising,

a table means including a substantially horizontally disposed top surface having at least one side edge,

an elongated support means secured to said table means at said one side edge,

a carriage means selectively longitudinally movably mounted on said support means,

a spline roller means rotatably mounted on said carriage means and being selectively movably mounted on said carriage means between a raised inoperative position and a lowered operative position,

said spline roller means, when in its said inoperative position, permitting the window screen frame to be positioned therebelow adjacent said side edge of said table means,

said spline roller means, when in its said operative position, engaging the spline to force the spline downwardly into the groove of the window screen frame whereby the flexible screen material positioned between the spline and the screen frame will be secured to the screen frame,

said spline roller being rotatably mounted on the end of an elongated arm which is pivotally secured, about a horizontal axis, to said carriage means, said arm means being selectively movable between an upper inoperative position and a lower operative position, said arm means having first and second cam surfaces formed in its upper end, an elongated rod means having a lower end operatively pivotally secured to said carriage means and extending upwardly therefrom adjacent said cam surfaces, a cam follower mounted on said rod means for engagement with said cam surfaces, the pivotal movement of said rod means, with respect to said carriage means, causing said cam follower to move between said cam surfaces thereby moving said arm means and said spline roller between said operative and inoperative positions.

5,052,094

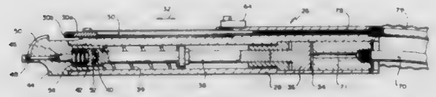
LOCK WIRE SECURING TOOL

Michel L. Plasse, Hackensack, and Thomas E. Carr, East Brunswick, both of N.J., assignors to Bergen Cable Technologies, Inc.

Filed Oct. 17, 1989, Ser. No. 422,574

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—252 **15 Claims**



1. A ferrule applicator tool for permanently attaching a ferrule having a central axis to a tensioned flexible tension element extending through the ferrule comprising:

an elongated manipulable body portion having a longitudinal axis and including proximal and distal end areas;

ferrule retaining means at the distal end area of the body portion for retaining a ferrule in a position for receiving a flexible tension element extending through the ferrule and with the central axis of the ferrule extending in a direction generally transverse to the body longitudinal axis;

movable tension element gripping means connected to the body portion adjacent the ferrule holding means for gripping a tension element extending through a ferrule located in the ferrule gripping means;

movable tension element tensioning means connected to the body portion operatively associated with the tension element gripping means for exerting a tensioning force on a flexible tension element held by the ferrule holding means;

means for moving the tension element tensioning means in a direction so as to cause movement of the tension element gripping means generally along the longitudinal axis of the body portion toward the proximal end area thereof;

ferrule deforming means connected to the body portion for permanently deforming a ferrule located in the ferrule holding means so as to permanently secure a deformed ferrule to a tensioned flexible tension element extending through the ferrule, said ferrule deforming means movable generally parallel to the tool longitudinal axis to deform a ferrule retained in the ferrule retaining means.

5,052,095

ASSEMBLING METHOD FOR ASSEMBLING FIRST AND SECOND COMPONENTS

Gerhard Heckeler, Reutlingen, and Adolf Henzler, Nürtingen-Raidwangen, both of Fed. Rep. of Germany, assignors to ManuMatik Produktionssysteme GmbH, Nürtingen, Fed. Rep. of Germany

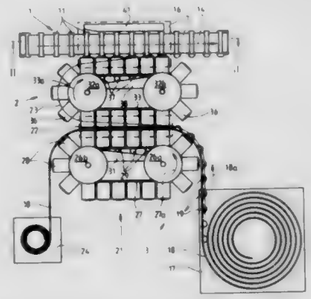
Filed Apr. 11, 1990, Ser. No. 507,983

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912105

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—423 **35 Claims**

1. A method of assembling first and second components, comprising the steps of conveying a series of first components along a first path through an assembling station and maintaining the first components in a first orientation at said station; advancing a series of second components to said station along a second path so that each second component at said station is aligned with and adjacent a first component and keeping the second components in a second predetermined orientation at said station, said advancing step including positioning the series of second components on a web-shaped carrier and moving the carrier along said second path; separating the second components from the carrier not later than at said station; and connecting each second component with the aligned first component at said station, including effecting a



predetermined movement of each second component and the aligned first component relative to each other.

5,052,096

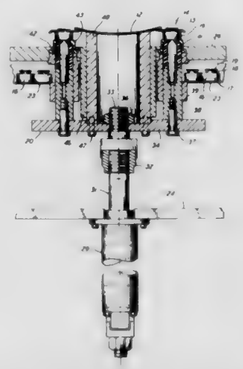
GROMMET INSERTION METHOD AND APPARATUS

Jack J. Fuller; Joseph A. Podesta, and Daniel J. Yarnold, all of Memphis, Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 23, 1988, Ser. No. 248,057

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—451 **10 Claims**



1. A method of installing a grommet into a fixed size opening of a base structure comprising the steps of:

providing an elastomeric grommet, having serially connected body, neck, and head portions;

feeding said grommet into a cylinder having serially connected receiving, contracting, and discharge opening sections, with said receiving section having a diameter which is slightly larger than that of said grommet body and said discharge opening section having a diameter which is smaller than that of said grommet head when in a non-deformed condition;

placing one side of said base structure against said cylinder discharge opening such that its opening overlays said cylinder discharge opening; and

deforming said grommet head portion by pushing it through said contracting section and, while deformed, further pushing it through said discharge opening and said base structure opening before allowing it to return to its undeformed shape as it emerges n the other side of said base structure such that the grommet is captured in said base structure opening with its head on one side thereof, its

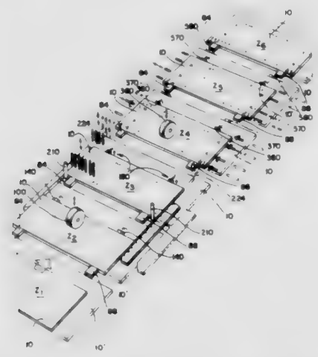
body on the other side thereof, and its neck disposed therein

5,052,097

METHOD AND APPARATUS FOR FORMING HOLES IN WOOD BOARD OR THE LIKE

Mark H. Becker, Vista, Calif., assignor to Doorway Mfg. Co., Vista, Calif.

Filed Feb. 7, 1990, Ser. No. 476,177
Int. Cl.[5] B27C 9/04; B65G 17/08
U.S. Cl. 29—563 26 Claims



1. A method of forming holes in a board made predominately of wood, wood byproducts, or like material, the board having two expansive faces, two transverse edges, and two opposite ends and being provided optionally with a polymeric veneer on one or both of the expansive faces, the method comprising automated steps of

(a) conveying the board into a punching zone, in a forward direction with the transverse edges constituting a leading edge and a trailing edge respectively,

(b) punching one or more holes through the board in the punching zone, through its expansive faces, so that each punched hole extends in a direction perpendicular to the expansive faces of the board,

(c) conveying the board from the punching zone into a drilling zone, and

(d) drilling at least one hole into the board in the drilling zone, into at least one of the opposite ends of the board, so that each drilled hole extends in a direction parallel to the expansive faces of the board.

5,052,098

MEANS FOR REMOVING WIRES FROM BALES IN PARTICULAR WASTE PAPER BALES

Helmut Thumm, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Apr. 17, 1990, Ser. No. 510,120
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1989, 3912673
Int. Cl.[5] B65B 69/00
U.S. Cl. 29—564.003 2 Claims

1. An apparatus for removing binding wire from a bale, comprising a support to support a bale containing a plurality of peripheral baling wires, said support having first and second sides, said bale being positionable between said first and second sides, cutting means disposed adjacent a first side of said support for cutting said wires, a pair of vertical guide members disposed in spaced relation adjacent a vertical guide members disposed in spaced relation adjacent a second side of said support, gripping means disposed adjacent the second side of said support, said gripping means comprising a pair of gripping knives movable horizontally from an outer position to an inner position where said gripping knives extend through the space between said guide members and into contact with said bale, first drive means for moving said gripping knives between the outer position and the inner position, said gripping knives also being movable between a first position where one of said knives is located adjacent an upper end of the bale to a second gathering position where said knives are located adjacent each other at a central portion of said bale, second drive means for moving the gripping knives between said first position and said second position to thereby gather the cut wires at the central



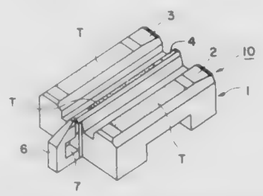
portion of the bale, subsequent movement of said gripping knives from the inner position to the outer position drawing the gathered wire outwardly through the space between said guide members, rotatable winding means for engaging the gathered wires, said winding means being mounted for movement in a vertical path between an upper storage position where said winding means is located above the bale and a winding position where the winding means is located outwardly of and aligned with the space between said guide members, and third drive means for rotating said winding means to wind said cut wires on said winding means.

5,052,099

METHOD OF FABRICATING A MAGNETIC HEAD BY SPUTTER ETCHING

Akira Taguchi; Shigetoshi Morita; Shunichi Taka; Hirohide Yamada; Yoshiaki Takada; Shinji Furuichi, and Masahiro Ao, all of Mooka, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 360,124, Jun. 1, 1989, Pat. No. 5,010,429. This application Oct. 31, 1990, Ser. No. 606,202
Claims priority, application Japan, Dec. 3, 1987, 63-306651; Dec. 3, 1987, 63-306654; Nov. 22, 1988, 63-295652
Int. Cl.[5] G11B 5/42
U.S. Cl. 29—603 14 Claims



1. A process for fabricating a magnetic head, comprising the steps of:

setting a slider of a polycrystalline ceramic material in a sputtering apparatus;

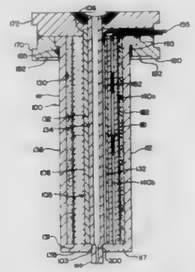
sputter-etching at least one portion of said slider surface to be opposed to a magnetic recording disk, by generating ionized gases in at least one portion of said opposed slider surface, so that lands and grooves may be formed to have a difference of 50 to 200 Å on an average and a repetition pitch of 5 to 20 microns on an average; and bonding a magnetic core to said slider.

5,052,100

METHOD OF MAKING SPRUE BUSHING ASSEMBLY WITH INNER THERMAL SLEEVE

Panos Trakas, 1820 Amelia La., Addison, Ill. 60101

Filed Apr. 10, 1990, Ser. No. 507,392
Int. Cl.[5] H05B 3/00
U.S. Cl. 29—611 13 Claims



1. A method of manufacturing an internally heated sprue bushing assembly which includes a bushing casing having an outer sidewall and outer endwall and a bushing core having an elongated inner core member, said elongated inner core member axially extending within the bushing casing and including a melt runner passage therein which is in flow communication with an inlet and an outlet of said sprue bushing assembly, and heating means surrounding said elongated inner core member, said method comprising the steps of:

shaping a metal blank to define a generally cylindrical main body portion of a bushing casing;

forming a cavity in the main body portion, the cavity extending from a first end of the main body portion of the bushing casing and terminating within said bushing casing inwardly of a second end of said main body portion to provide a bushing casing having an outer sidewall and endwall;

providing an elongated inner core member in said main body portion within said cavity to form a bushing casing-core element, the elongated inner core member axially extending within said cavity between said first and second ends of said main body portion to define a first annular space between said elongated inner core member and said bushing casing outer sidewall;

applying a layer of a thermally conductive material to the outer surface of said elongated inner core member to thereby form an inner core member thermally conductive outer layer, the thermal conductivity of the thermally conductive material being greater than the thermal conductivity of said elongated inner core member;

inserting a heating means within the annular space in surrounding relation to the outer layer of said elongated inner core member, said heating means including at least one performed electrically non-conductive sleeve sized to be received on said elongated inner core member outer layer and to occupy only a portion of said annular space;

filling the remainder of said annular space with a particulate refractory material;

compacting said particulate refractory material into a unified mass which, together with said heating means, said elongated inner core member and said elongated inner core member outer layer, fully occupies said cavity of said bushing casing-core element, the unified mass of refractory material and heating means comprising a heater-bushing blank assembly; and

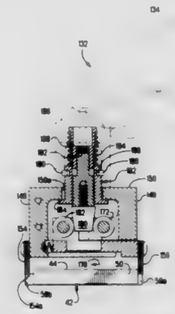
forming a melt runner passage in said elongated inner core member extending between an inlet and an outlet end of said sprue bushing assembly.

5,052,101

TOOL FOR USE WITH A ZIF PGA SOCKET

Edward J. Bright, Middletown, and James A. Hogan, Jr., Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 419,365, Oct. 10, 1989. This application Sep. 26, 1990, Ser. No. 588,256
Int. Cl.[5] H01R 43/04
U.S. Cl. 29—749 3 Claims



1. A tool for sliding an electrical socket cover across a surface of a socket housing, comprising:

an operating head having handle means extending outwardly from one surface thereof;

a fixed first jaw fixed to and extending outwardly from an opposite surface of said head to abut a side of said socket housing;

a second jaw slidingly supported by said head and spaced from and in alignment with said first jaw and extending outwardly from said opposite surface to abut a side of said socket cover, said first jaw extending outwardly further than said second jaw; and

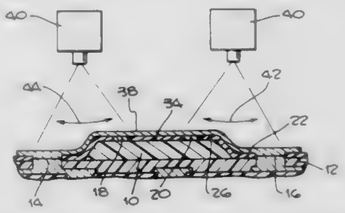
means for moving said second jaw towards said first jaw to slide the cover which is positioned therebetween.

5,052,102

LASER INDUCED ELECTRICAL CONNECTION OF INTEGRATED CIRCUITS

Stewart O. Fong, Torrance, and Flora Yeung, Augora Hills, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 19, 1989, Ser. No. 367,648
Int. Cl.[5] H05K 3/34
U.S. Cl. 29—840 11 Claims



1. A process for electrically connecting an electronic element to a motherboard comprising the steps of:

(a) providing a motherboard having an electronic element mounted on the surface thereof, said motherboard having at least one electrical connection site and said electronic

element having at least one electrical connection site and having sides which extend upwardly and inwardly away from said surface of said motherboard, wherein said electrical connection site of said motherboard and said electrical connection site of said electronic element are non-planar with respect to each other;

(b) applying a sufficient amount of a radiation sensitive metallic conversion compound to said motherboard and electronic element to form a metallic conversion coating extending at least from said motherboard connection site to said electronic element connection site;

(c) selectively radiating said metallic conversion coating with a sufficient intensity of radiation at an appropriate wavelength to convert said conversion coating to a metallic electrical connection between said non-planar electrical connection sites on said motherboard and on said electronic element; and

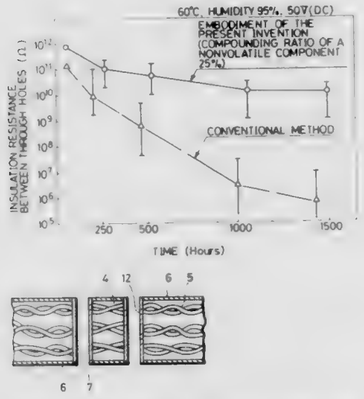
(d) removing the unconverted metallic conversion coating surrounding the metallic electrical connection to thereby provide for an electrical connection between said electronic element and said motherboard.

5,052,103

METHOD OF MANUFACTURING PRINTED WIRING BOARD HAVING NO COPPER MIGRATION

Hideo Saitou, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1989, Ser. No. 430,270
Claims priority, application Japan, Nov. 4, 1988, 63-279153
Int. Cl.[5] H05K *3/28*
U.S. Cl. 29—852 **20 Claims**



1. A method of manufacturing a printed wiring board, comprising:

a step of providing a plurality of pierced holes in prescribed positions of a laminate formed by adhering electrolytic conductive metal foils onto front and rear surfaces of a plate-type laminated base material mainly composed of resin, one of said resin layers including a laminated resin base material having glass fabric as a reinforcing material, and wherein glass fiber of the glass fabric is connected between adjacent ones of said plurality of pierced holes;

a step of forming resin layers on inner peripheral wall surfaces of said pierced holes including a step of applying unhardened liquid thermosetting resin;

a step of impregnating clearances defined between the glass fabric and the resin with the thermosetting resin from the inner peripheral wall surfaces of said pierced holes through capillarity, thereby filling the clearance and preventing copper migration between said pierced holes; and

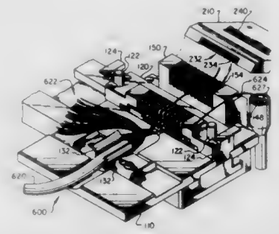
a step of forming conductive metal layers on said front and rear surfaces of said laminate and said resin layers provided on said inner peripheral wall surfaces if said pierced holes.

5,052,104

METHOD FOR TERMINATING WIRES OF A CABLE EN MASSE

Nam D. Tran, Fort Worth, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Division of Ser. No. 429,438, Oct. 31, 1989, Pat. No. 4,974,331.
This application Sep. 12, 1990, Ser. No. 580,983
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—861 **6 Claims**



1. A method for terminating wires of a cable en masse, the cable having a first end at which the wires of the cable are terminated by a first connector, the first connector having first terminals, the cable wires at the second end of the cable being free, comprising the following steps:

coupling the first connector to a discriminator;

placing the second end of the cable at a wire connector assembly, the wire connector assembly including a second connector, having second terminals, for connection to the free ends of the corresponding cable wires, a common terminal electrically coupled to the first terminals through the discriminator and a series of visual indicators electrically coupled to the first terminals and physically aligned with corresponding ones of the second terminals;

selecting a said free end and electrically contacting the said free end to the common terminal by placing said free end in a well containing a conductive liquid so to actuate the visual indicator associated with said selected free end;

positioning said selected free end at the second terminal which is aligned with the actuated visual indicator;

repeating the selecting and positioning steps for each of said free ends; and

thereafter simultaneously securing the free ends to the second connector.

5,052,105

MICRO-CABLE INTERCONNECT

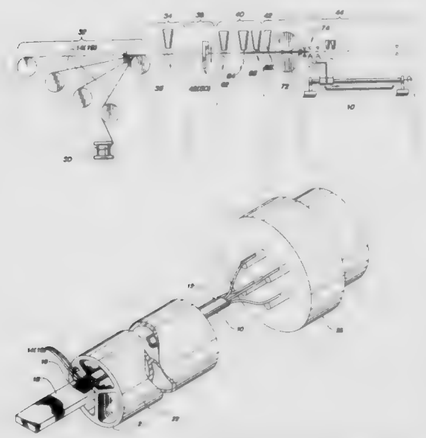
Hans A. Mische, St. Cloud; Wallace J. Devries, New Germany; John M. Hokanson, Hutchinson; Daniel J. Klima, St. Cloud, and Steven P. Mertens, Hutchinson, all of Minn., assignors to Hutchinson Technology, Inc., Hutchinson, Minn.

Filed Jun. 5, 1990, Ser. No. 533,131
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—883 **10 Claims**

1. A method of forming a micro-cable interconnect comprising the steps of:

(a) providing a continuous formation of conductors of precisely controlled spacing and tension to identically match spacing of interconnect zones operatively connected to an integrated circuit or connector to which said conductors are constructed and arranged for attachment;

(b) applying synthetic resin coating precursor to selected lengths of said formation of conductors and providing curing to said selected lengths to provide cured and uncured portions; and



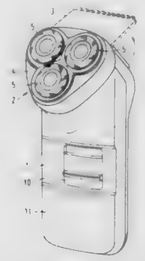
(c) cutting said conductors at said uncured portions to form micro-cable interconnect adapted and arranged for connection to said connector or to said integrated circuit.

5,052,106

ELECTRIC SHAVER

Hans Labrijn, Zwijndrecht, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Apr. 27, 1990, Ser. No. 516,010
Claims priority, application Netherlands, May 18, 1989, 8901233
Int. Cl.[5] B26B *19/06, 19/28*
U.S. Cl. 30—34.1 **7 Claims**



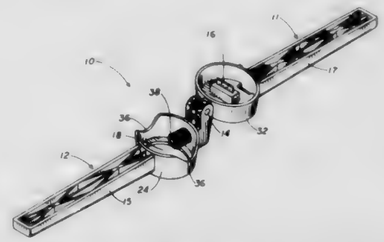
1. An electric shaver which comprises a shaving part for short hair and a trimmer for long hair which can be moved relative to the shaving part between an operational and a non-operational position, one wall of the shaver having a first control element **10** which is coupled to a first ON/OFF switching device for a drive mechanism, and another wall of the shaver having a second control element for movement of the trimmer between the operational and non-operational positions, and a third control element which is situated near the second control element and is coupled to a second ON/OFF switching device for the drive mechanism whereby the trimmer may be positioned by the second control element and the drive mechanism switched on without changing the positioning of the trimmer.

5,052,107

CHESTNUT CUTTER

Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831

Continuation-in-part of Ser. No. 325,781, Mar. 20, 1989, abandoned. This application Mar. 29, 1990, Ser. No. 500,899
Int. Cl.[5] A47J *43/26;* **B25B** *7/00;* **B26B** *17/00*
U.S. Cl. 30—120.3 **2 Claims**



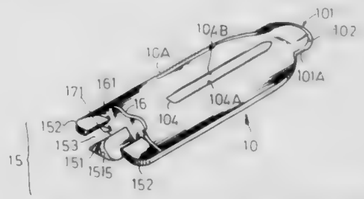
1. A hand held chestnut shell cutting device in the form of a pair of pivotally connected levers comprising: handles, one with a bowl shaped base at one end pivotally connected to a similarly shaped bowl shaped cover attached to the end of the other handle, said bowl shaped base having a round through hole at the center, a securing element and a pair of indentations at the side thereof, said bowl shaped cover having a cutting element at the center directly in front and center of the said round through hole of said bowl shaped base so that upon pressing the said handles toward each other the said cutting element of said bowl shaped cover will cut the chestnut shell of the chestnut placed on said through hole of said bowl shaped base.

5,052,108

HANDLELESS CUTTING AND PARING TOOL FOR FRUITS/VEGETABLES

Thomas Yang, 3FL.6-1 Lane 78, Song Chiang Rd., and Ching Deng, 4F.27 Lane 160 Hsin Sheng S.Rd., Sec 1,, both of Taipei, Taiwan

Filed Apr. 2, 1990, Ser. No. 502,624
Int. Cl.[5] A22B *5/16;* **B26B** *11/00, 1/00;* **A47J** *23/00*
U.S. Cl. 30—123.5 **14 Claims**



1. A handleless cutting and paring device for fruits/vegetables comprising:

a generally oblong and plate-like body with a slightly concave cross-sectional configuration;

a slitting/paring member formed on one end of said body;

a sectorial portion formed on the other end of said body;

a longitudinal central paring slot formed at the center portion of said body; and

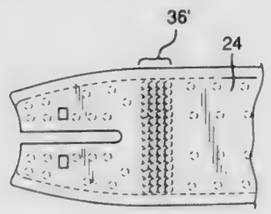
at least a side cutting blade means formed on one side portion of said body;

said slitting/paring member comprising a middle triangular paring means, a pair of paring thickness control members disposed at both sides of said middle triangular paring means, and at least one lip-shaped blade means extending vertically upward and downward from said body,

said middle triangular paring means and said paring thickness control members being disposed in such a manner

that a downwardly and outwardly slanted gap is formed between each side of said middle triangular paring means and each of said paring thickness control members to allow peeled fruit or vegetable skin to pass therethrough.

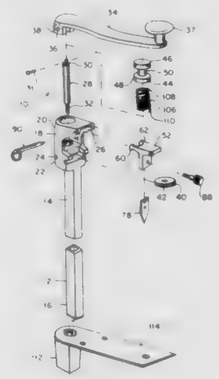
5,052,109
REPAIRABLE GUIDE BAR FOR TREE HARVESTERS
James L. Vanderzanden, Tigard, and Christopher D. Seigneur, West Linn, both of Oreg., assignors to Blount, Inc., Portland, Oreg.
Filed Oct. 26, 1990, Ser. No. 604,613
Int. Cl.[5] B23D *57/02*
U.S. Cl. 30—387 **12 Claims**



1. A chain saw guide bar for a mechanical tree harvester comprising:
a planar elongated bar having a length and width and defining an inner end having an inner end portion for mounting to a support structure of a mechanical harvester, an outer end and a pair of opposed edges extending between said inner and outer ends, said opposed edges providing guide edges for guiding a driven saw chain from said inner end along one edge to the outer end to be guided around said outer end and back to the inner end along said other edge,
a zone designated in said bar extending across the width of the bar from edge to edge, said opposed edges inside said zone being relatively softer than the opposed edges outside said zone, and said zone positioned adjacent to and outward of said inner end portion and extending a limited distance relative to the bar length whereby the majority of cutting action occurs along said edges between said designated zone and the outer end thereof and said relative softness of the bar edges in said zone providing the property of pliability for easier bending of the bar within said zone as compaired to the bar length outside said zone.

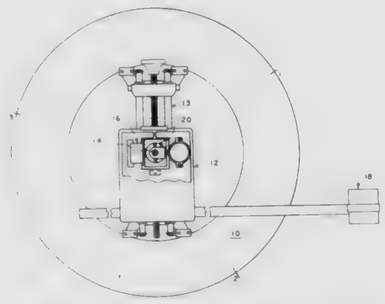
5,052,110
CAN OPENER
Laurence Bartlett, Colchester, Vt., assignor to Edlund Company, Inc., Burlington, Vt.
Filed Jul. 23, 1990, Ser. No. 557,179
Int. Cl.[5] B67B *7/32, 7/14, 7/30, 7/00*
U.S. Cl. 30—434 **10 Claims**

1. A cutting blade bell crank subassembly for use in a housing of a can opening device comprising:
a T-shaped bell crank lever having a horizontal arm connected to a vertical arm;
said horizontal arm having a cut out reverse C-shaped end comprising two spaced apart elbows, said horizontal arm having a central portion adjacent to said cut out end with said vertical arm attached to said horizontal arm at said central portion, said horizontal arm having a third portion with a horizontal arm passageway therethrough;
said vertical arm of said bell crank lever having an outside surface and in inside surface, said inside surface having a rivet adjacent to said horizontal arm lower surface;
a vertical arm passageway connecting said outside surface to said inside surface and parallel to said rivet;
a knife cutting blade having a pointed end for cutting open the top of a can to be opened, an opposite end with a cut out portion that fits around said rivet when said blade is adjacent to said inside surface of said vertical arm of said bell crank lever;
a central screw threaded opening in said knife blade that lines up with said bell crank vertical arm passageway;
an adjustable removable fastener is placed adjacent to the outside surface of said vertical arm of said bell crank lever



and extends through said vertical arm passageway and screws into said central screw threaded opening of said knife blade that lines up with said vertical arm passageway; and
a compressible spacer located between said adjustable fastener and said vertical arm of said bell crank lever and placed adjacent to said outside surface of the vertical arm.

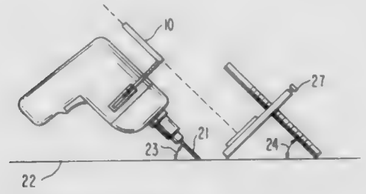
5,052,111
METHOD AND APPARATUS FOR PROVIDING RUNOUT COMPENSATION IN A WHEEL
Ronald W. Carter, Murfreesboro, and Robert E. Williams, Brentwood, both of Tenn., assignors to Ammco Tools Technology Corporation, Wilmington, Del.
Filed Oct. 9, 1990, Ser. No. 594,081
Int. Cl.[5] C01B *19/575*
U.S. Cl. 33—203.18 **5 Claims**



1. A method of measuring the respective angles between the plane of a rotatable wheel and first and second orthogonally related planes and compensating such measurements for runout, comprising the steps of
positioning said wheel at a first angular position and measuring and recording the angle of the plane of said wheel relative to said first of said orthogonally related planes and measuring and recording the angle of rotation of said wheel at said first angular position of rotation of said wheel,

positioning said wheel at a second angular position and measuring and recording the angle of the plane of said wheel relative to said first of said orthogonally related planes at said second angular position of said wheel and measuring and recording the angle of rotation of said wheel at said second angular position of rotation of said wheel,
positioning said wheel at a third angular position and measuring and recording the angle of the plane of said wheel relative to said first of said orthogonally related planes at said third angular position of said wheel and measuring and recording the angle of rotation of said wheel at said third angular position of rotation of said wheel,
positioning said wheel at another angular position and measuring the angles of said plane of said wheel relative to said first and second orthogonally related planes at said another angular position of said wheel, and
using said recorded measurements made at said first, second and third angular positions of said wheel to compute the runout of said wheel relative to said first and said second orthogonally related planes at said another angular position of said wheel to compensate said measurements of the angles of said plane of said wheel relative to said first and second orthogonally related planes for the runout of said wheel at said another angle of rotation of said wheel.

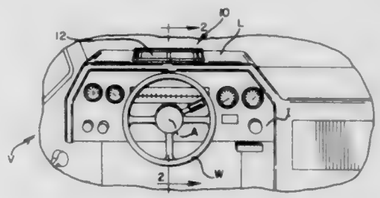
5,052,112
DRILL GUIDE AND SUPPORT THEREFOR
Stewart F. MacDonald, 2148 Beaumont Road, Ottawa, Ontario, Canada K1H 5V3
Filed Aug. 11, 1989, Ser. No. 392,554
Claims priority, application Canada, Feb. 21, 1989, 591576
Int. Cl.[5] B23B *45/14*
U.S. Cl. 33—263 **4 Claims**



1. A drill guide comprising:
front and rear apertured sights connected by a tubular housing member, the front sight having a light colored face surrounding its aperture, the rear sight having an aperture of lesser diameter than the front sight aperture, said rear aperture being framed by a translucent ring such that reflected images of the front sight and of the translucent ring may be aligned and thereby visible through the rear sight without the rear sight being open to forward illumination, both sights being adapted to be received on an electric drill in such a way that the line-of-sight through the drill guide is substantially parallel with the longitudinal axis of a drill bit held in the drill on which the drill guide would be mounted.

5,052,113
VEHICLE LANE AND PARKING GUIDE
John R. Aquino, 1837 No. 74th Ct., Elmwood Park, Ill. 61529
Filed Nov. 30, 1990, Ser. No. 621,279
Int. Cl.[5] G01C *3/00*
U.S. Cl. 33—264 **10 Claims**

1. In an automotive vehicle of the type comprising a steering wheel and an instrument panel, said steering wheel defining a longitudinal axis, said instrument panel having an upper ledge which extends on both sides of the longitudinal axis, the improvement comprising:
means for defining at least two substantially flat, low profile guide lines disposed substantially horizontally on the upper ledge, each extending generally parallel to the longitudinal axis on a respective side of the longitudinal axis such that the guide lines extend along the upper ledge without extending any substantial distance above the



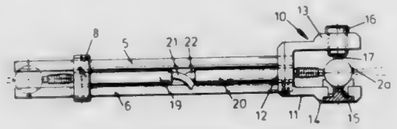
upper ledge, said guide lines positioned and having a color such that the guide lines are in the direct line of sight of a driver behind the steering wheel and can readily be seen by the driver, and said guide lines positioned to assist the driver in properly positioning the vehicle on a roadway.

5,052,114
GOLFERS OPTICAL ALIGNMENT INSTRUMENT
Howard A. Levenson, 326 Mountain View Ave., San Rafael, Calif. 94901, and James H. Smith, Jr., 132 Medinah Pl., San Ramon, Calif. 94583
Filed Mar. 14, 1990, Ser. No. 493,195
Int. Cl.[5] G01C *15/12*
U.S. Cl. 33—286 **3 Claims**



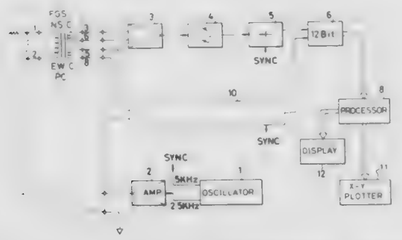
1. A golfer's optical alignment instrument, for determining the alignment of the shoe tips of a golfer with a line that perpendicularly intersects a second line that intersects a desired target determined by the golfer comprising a hollow mounting body containing a left eye transparent viewing window, a horizontal mirror within the body and a transparent window in the bottom wall of the body that allows the golfer to view the golfer's shoe tips reflected from the horizontal mirror after the image of the shoe tips has passed through the transparent viewing window, a right eye transparent viewing window, a vertical mirror within the body adjacent right side of the body and a transparent window in the left side of the mounting body that allows the right eye of the golfer to view the golfer's intended target reflected from the vertical mirror after the image of the target has passed through the transparent window.

5,052,115
ACCURACY TESTING DEVICE
Melvyn Burdekin, Hyde, United Kingdom, assignor to C. D. Measurements Limited, United Kingdom
Filed Jun. 20, 1990, Ser. No. 541,272
Int. Cl.[5] G01B *7/31*
U.S. Cl. 33—502 **3 Claims**



1. A testing device for testing the setting accuracy of a machine by measuring the spacing of a first machine locus with respect to a second machine locus at at least two points on a circular arc, comprising a first, ball-ended reference element adapted to be fixed to one part of the machine with the center of the ball representing the first locus, a second, ball-ended reference element adapted to be fixed to another part of the machine with the center of the ball representing the second locus, interconnecting means for interconnecting said ball ends of the reference elements in respective mountings and permitting relative rotation of the ball ends with respect to said interconnecting means, the mounting of said respective mountings for said first element ball end permitting relative movement of said first element ball end and said interconnecting means, and the mounting of said respective mountings for said second element ball end being at a fixed position on said interconnecting means, a single axis transducer for directly sensing the surface of said ball end of said first reference element to detect displacement thereof relative to said second reference element, and computing means for calculating from the output of said transducer the deviation from a precise arcuate path of the first locus.

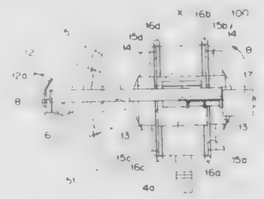
5,052,116
METHOD AND APPARATUS FOR MEASURING AZIMUTH
Sakuji Oide, Minamiuonuma, and Ryoichi Nakajima, Ojiya, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 263,658, Oct. 27, 1988, abandoned. This application Feb. 28, 1990, Ser. No. 486,627
Claims priority, application Japan, Feb. 23, 1988, 63-40487
Int. Cl.[5] G01C *17/28*
U.S. Cl. 33—361 **3 Claims**



1. A method for measuring an azimuth relative to the earth's magnetic field, comprising the steps of:
providing two coils perpendicular to each other;
measuring an output signal from each of said coils;
multiplying the output signal of each of said coils by a constant to provide a converted signal having a value within a predetermined range;
dividing the converted signal by a predetermined value to provide a normalized signal value;
computing a smaller value for the azimuth using said normalized signal value from one of said coils and computing a larger value for azimuth from said normalized signal value from the other one of said coils by substituting each said value into an inverse trigonometric function; and
adding to the smaller one of said azimuth values a product equal to a difference of said smaller and larger values of azimuth multiplied by a factor proportional to a ratio of the output signals of the two coils.

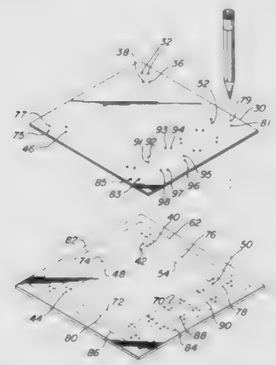
3. An azimuth measuring apparatus comprising:
two perpendicular coils each emitting a signal proportional to components of the earth's magnetic field;
means for rotating said coils;
means for multiplying a constant by each of the outputs of said coils, thereby converting the multiplied value to a value within a range of a reference value;
means for dividing said multiplied value by said reference value to provide an output value;
means for computing a value of azimuth for every output of each of the coils as said coils are rotated as an inverse trigonometric function of said output value;
means for storing signals as said coils are rotated, thereby producing a first and a second periodic signal function, one for each coil, said functions having respectively first and second phases;
means for computing a phase difference between said phases;
means for comparing said phase difference to a predetermined value; and
means for displacing said first phase toward said second phase when said phase difference exceeds said predetermined value.

5,052,117
APPARATUS FOR MEASURING GEAR
Keizou Kubodera; Toshiaki Takeda, and Hiroyuki Aoki, all of Ibaragi, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1990, Ser. No. 513,093
Claims priority, application Japan, Apr. 24, 1989, 1-104220
Int. Cl.[5] G01M *13/02*
U.S. Cl. 33—501.9 **17 Claims**



1. A gear measuring apparatus for measuring the tooth form of a gear having a involute tooth without moving the gear, said apparatus comprising:
detecting means, including a probe, for outputting detection signals corresponding to the tooth form of said gear;
an X-direction linear travel system for making said detecting means travel linearly in an X direction perpendicular to a radial line which defines a pressure angle together with a straight line connecting a pitch point on the tooth surface to the center of said gear;
rotation means for rotating said detecting means by causing said X-direction linear travel system to rotate around the rotation center of said gear;
control means for interlocking said rotation means and said X-direction linear travel system so that said probe draws the standard involute tooth form, said control means rotating said detecting means, which are set to an initial position, at substantially only an extremely small angle θ by said rotation means, and at the same time said control means causing said detecting means to travel linearly by substantially only $\theta \cdot (Dp \cdot \cos\alpha) \cdot \frac{1}{2}$ (Dp is a pitch diameter and α is a pressure angle of the gear) with the aid of said X direction liner travel system in said X direction, which is perpendicular to said radial line; and
recording means for recording the measured results based on detection signals from said detecting means during the measuring operation in which said rotation means and said X-direction linear travel system are interlocked and said interlocking operation is repeated.

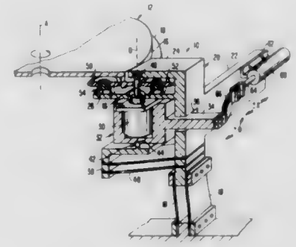
5,052,118
MAT CUTTING LAYOUT APPARATUS
Edward R. Beitler, Creamery, Pa., assignor to Edward Slater and Barbara J. Slater, both of Schwenksville, Pa.
Filed Sep. 14, 1990, Ser. No. 582,445
Int. Cl.[5] B43L *13/20*
U.S. Cl. 33—563 **23 Claims**



1. Apparatus for the layout of cut lines to be made in a mat, comprising: a template having two holes formed therein for each intersection of a pair of cut lines, said two holes being adapted to receive a marking means therethrough, said two holes being outside of an area to be cut and each of said two holes being so arranged to cooperate with one other hole to form a straight line therebetween, said other holes also being adapted to receive a marking means therethrough, the straight lines corresponding to said two holes intersecting to form an intersection which will form a corner of a cut in said mat, said template being provided with eight holes therein for the cutout of each area, said template being provided with holes adapted to lay out the cutout of multiple areas, there being eight holes for each of said multiple areas.

5,052,119
ANGULAR MICRO-POSITIONING DEVICE
Arnold T. Eventoff, Pleansantville, N.Y., assignor to North American Philips Corp., New York, N.Y.
Continuation of Ser. No. 457,436, Dec. 27, 1989, abandoned. This application Feb. 21, 1991, Ser. No. 660,242
Int. Cl.[5] G01B *5/00*
U.S. Cl. 33—569 **5 Claims**

1. An angular micro-positioning device for driving a rotating output device comprising:
a frame, said frame being disposed proximate to said rotating output device;
a rotary motor, said rotary motor having a drive shaft in engagement with said rotating output device for rotating same;
means for mounting said rotary motor, said motor mounting means being pivotally mounted to said frame for pivoting said motor along the longitudinal axis of its drive shaft;
linear motion driver means, mounted to said frame and having an output shaft connected to said rotary motor mounting means for pivoting said motor mounting means upon activation of said linear motion driver means;
means for locking said rotary motor against rotation of its drive shaft;
means for locking said linear motion driver means against movement of its output shaft; and



control means for locking said linear motion driver means and activating said rotary motor to output relatively large rotational movements to said output device and thereafter locking the drive shaft of said rotary motor and activating said linear motion driver means to pivot said rotary mounting means and thereby pivot said rotary motor to permit fine adjustment of the angular position of said rotating output device.

5,052,120
SHEET POSITIONING, CLAMPING, AND TENSIONING MEANS
Cor Lubberts, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 16, 1990, Ser. No. 509,647
Int. Cl.[5] B41F *27/06, 13/12;* **G01D** *21/00*
U.S. Cl. 33—618 **21 Claims**



1. Apparatus for receiving, positioning, clamping, and tensioning a sheet onto a cylinder, said sheet having first and second opposing ends each of which having sheet-locating indicia, comprising:
locating means, cooperative with said indicia when said first and second ends of the received sheet are superimposed, for locating said first and second ends in a predetermined configuration;
means for clamping said superimposed and located first and second opposing ends to the cylinder;
means for adjustably tensioning the clamped sheet; and
means for detecting the tension in the clamped sheet, said detecting means comprising: means defining a vernier scale on said cylinder, said vernier scale being located adjacent a lateral edge of a received sheet and cooperating with means defining a similar vernier scale located on said sheet along such lateral edge to provide a visual indication of sheet tension.

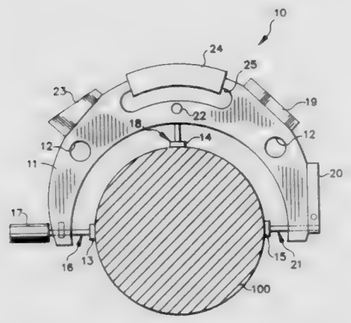
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5,052,121

TEMPERATURE-COMPENSATED QUANTITATIVE DIMENSIONAL MEASUREMENT DEVICE WITH RAPID TEMPERATURE SENSING AND COMPENSATION

William R. Wachtler, Solana Beach, Calif., assignor to Albion Devices, Inc., San Diego, Calif.

Division of Ser. No. 214,636, Jul. 1, 1988, Pat. No. 4,949,469.
This application Jul. 13, 1990, Ser. No. 553,115
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.[5] G01B 7/12
U.S. Cl. 33—813 9 Claims



1. A workpiece-temperature-compensated dimensional measuring device comprising:

a three-point snap gauge having two fixed shoes and a moveable measuring shoe

for, at a first time, measuring a dimension of a reference standard as a first dimension, and

for, at a second time, measuring a dimension of an arbitrarily-sized workpiece as a second dimension;

first thermal sensing means

held at the first time by the gauge means in thermal communication with a reference standard for measuring a temperature of the reference standard as a first temperature, and

held at the second time by the gauge means in thermal communication with the workpiece for measuring a temperature of the workpiece as a second temperature; and

computational means

for receiving at the first time the first dimension from the gauge means and the first temperature from the first thermal sensing means and for producing, in consideration of a predetermined dimensional sensitivity of the reference standard to temperature variations about a first predetermined reference temperature that is not equal to the first temperature, that temperature-normalized dimension that the reference standard would measure to and by the selfsame gauge means upon such times as the reference standard was to be at the first predetermined reference temperature, therein to calibrate the gauge means, and

for receiving at the second time the second dimension from the calibrated gauge means and the second temperature from the first thermal sensing means and for producing, in consideration of a predetermined dimensional sensitivity of the workpiece to temperature variations about the first predetermined reference temperature, that temperature-normalized dimension that the workpiece would measure to and by the selfsame gauge means upon such times as the workpiece was to be at the first predetermined reference temperature.

5,052,122

PROCESS FOR CONTINUOUSLY DRYING PASTE MATERIAL FOR A HIGH-DENSITY DETERGENT

Takeshi Ishikawa; Hideyoshi Tanaka, and Hisato Yasui, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,616
Claims priority, application Japan, Feb. 23, 1989, 1-44877
Int. Cl.[5] F26B 5/06
U.S. Cl. 34—5 5 Claims



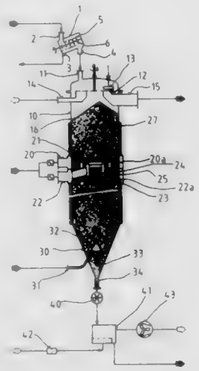
1. A process for continuously drying a paste material for a high density detergent in a drying apparatus comprising a cylindrical casing and one or more sheet blades radially attached to a rotation shaft positioned at the center of the cylindrical casing such that the tip of each of the one or more sheet blades extends to the inner wall of the cylindrical casing, comprising the steps of feeding a paste material for a high-density detergent having a moisture content of from 20 to 35% by weight into the drying apparatus; forming a film of the paste material on the inner wall of the cylindrical casing by rotating the sheet blades; and scraping the film from the inner wall of the casing while continuously dehydrating and drying the film by heating under vacuum.

5,052,123

DRYING AND HEATING OF POLYAMIDE GRANULES

Klaus J. Tischendorf, Weisenheim; Manfred Liebscher, Worms; Farid Rizk, Neuhofen, and Franz Zahradnik, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 3, 1990, Ser. No. 547,304
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1989, 3923061
Int. Cl.[5] F26B 7/00
U.S. Cl. 34—17 4 Claims



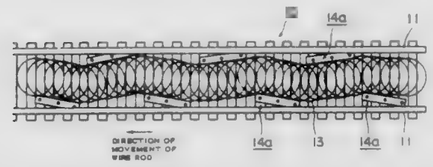
1. In a process for drying and heating polyamide granules which comprises freeing a suspension of the granules in water from a major part of the water, depositing the granules and remaining water in bed form in a drying zone of a tower dryer, which tower dryer has a lower, conically tapered area, moving the deposited granules and remaining water in plug form downwardly in the drying zone of the tower under the force of gravity, thereby freeing the granules of the remaining water, passing the dried granules into a heating zone in the form of a bed of granules, and heat-treating the downwardly flowing bed of granules in the heating zone at a temperature from 70° to 200° C., the improvement which comprises (A) dividing an inert gas stream on entry into the tower dryer at a point between the drying zone and the heating zone into (1) a stream which passes radially inward into the bed of granules in the drying zone and (2) a stream which flows radially outward and inward into the bed of granules in the drying zone and (B) passing a further stream of inert gas into the lower, conically tapered area of the tower dryer, and discharging the dried, heated granules from the conical end of the tower dryer.

5,052,124

METHOD FOR TRANSPORTING HOT-ROLLED WIRE ROD AND APPARATUS THEREFOR

Susumu Sekine; Katsumi Ito; Noriyoshi Ohwada, and Toyoaki Eguchi, all of Tokyo, Japan, assignors to Toa Steel Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 426,891
Claims priority, application Japan, Feb. 20, 1989, 1-39653
Int. Cl.[5] F26B 7/00; C21D 1/62
U.S. Cl. 34—20 4 Claims



1. A method for transporting hot-rolled wire rod, comprising:

transporting a hot-rolled wire rod on a conveyor in a state such that said wire rod is in the form of a coil of a continuous series of loops, said wire rod being cooled during said transporting, said conveyor being an elongated member having a center line, said wire being conveyed substantially always at a slant relative to said center line of said conveyor;

changing directions of slant movements of said wire rod alternately to the left and to right relative to said center line of said conveyer at an interval of d/3 to 2 d of a diameter "d" of a ring of said wire rod while the wire rod is advancing in a forward direction at a slant relative to said center line; and

shifting the center of said ring of said wire rod from said center line of the conveyer by a length of 2 d/100 to 30 d/100 at its maximum.

5,052,125

METHOD AND APPARATUS FOR SUPPORTING STRAND

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

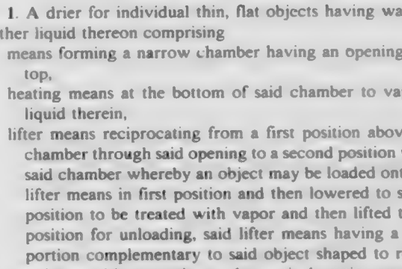
Filed Sep. 26, 1990, Ser. No. 588,623
Int. Cl.[5] F26B 13/00
U.S. Cl. 34—23 13 Claims

9. A method of supporting a strand comprising:

positioning a strand between a pair of first and second spaced apart nozzles;

tilting said nozzles generally towards each other such that a generally upwardly directed gas stream issuing from said first nozzle of each of said pairs of nozzles intersects a generally upwardly directed gas stream issuing from said second nozzle of said pair along a line;

supporting said nozzles in a generally inclined orientation;



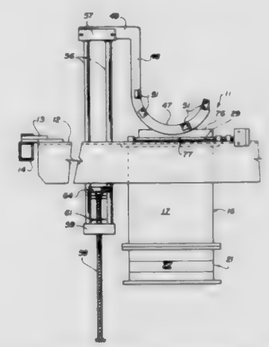
providing pressurized gas to said nozzles wherein said line of intersection between gas streams from each of said pairs of first and second nozzles and a strand positioned between each of said pairs of nozzles each forms a generally vertical plane.

5,052,126

VAPOR DRIER FOR SEMICONDUCTOR WAFERS AND THE LIKE

Rolf Moe; Nathaniel F. Spieler; David J. Correia, and James J. McMullen, all c/o Bjorne Enterprises, Inc., 46707 Fremont Blvd., Fremont, Calif. 94538-6539

Filed Jun. 21, 1990, Ser. No. 541,525
Int. Cl.[5] F26B 21/06
U.S. Cl. 34—78 6 Claims



1. A drier for individual thin, flat objects having water or other liquid thereon comprising

means forming a narrow chamber having an opening at its top,

heating means at the bottom of said chamber to vaporize liquid therein,

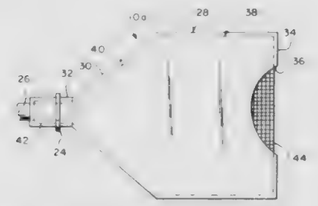
lifter means reciprocating from a first position above said chamber through said opening to a second position within said chamber whereby an object may be loaded onto said lifter means in first position and then lowered to second position to be treated with vapor and then lifted to first position for unloading, said lifter means having a lower portion complementary to said object shaped to receive only one object at a time and a vertical portion extending upward from said lower portion,

and actuating means for actuating said lifter means, said actuating means comprising at least one lifter rod, tie means connecting said lifter rod to said lifter means, a lead

screw, a nut on said tie means threaded on said lead screw and a motor connected to rotate said lead screw

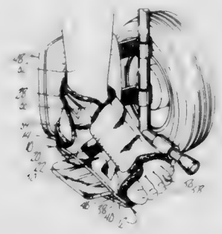
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5,052,127
DRYER BAG
Charles Blake, 660 Arrow Ave. Apt. 11G, Bronx, N.Y. 10467, and George Spector, 233 Broadway, New York, N.Y. 10007
Filed Sep. 21, 1990, Ser. No. 586,293
Int. Cl.[5] F26B *19/00*; B01D *46/02*
U.S. Cl. 34—82 3 Claims



1. A vent bag for a clothes dryer comprising:
a) a reusable outer pouch having a tapered front end with an outer sleeve and a wider rear end with an aperture therethrough;
b) a porous replaceable inner pouch having a tapered front end with a forward extending inner sleeve and a wider rear end, said inner pouch sized to be inserted through said aperture of said outer pouch whereby said rear end of said inner pouch will cover said aperture of said outer pouch to act as an air filter and wherein said outer sleeve encompasses said inner sleeve;
c) means for releasably securing said sleeves on a vent pipe of the clothes dryer so that said inner pouch can catch lint coming out of the vent pipe and recirculate the warm moist filtered exhausted air from the vent pipe for energy conservation.

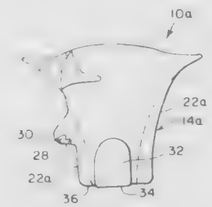
5,052,128
PADDED BOOT MEANS FOR INVALID PATIENTS
Robert Lonardo, 7360 137th St., N., Seminole, Fla. 34642, assignor to Robert Lonardo, Seminole, Fla., Trustee of the Robert Lonardo Living Trust Agreement
Filed Jul. 24, 1989, Ser. No. 383,454
Int. Cl.[5] A43B *3/12*; A61F *5/00*
U.S. Cl. 36—11.5 17 Claims



1. A padded boot for receiving an invalid patient's foot, the boot being worn for walking or for riding in a wheelchair, comprising:
a boot means for receiving a patient's foot, said boot means including a first base portion adapted to support the sole of the patient's foot and having rearward and forward ends and upper and lower surfaces, and
a secondary base portion secured to the lower surface of said first base portion and secured to the forward and rearward ends thereof to create a pocket therebetween with open opposite sides extending substantially from the ball of the boot to the heel, whereupon a support means can be laterally inserted into and through said pocket to provide support for the patient's foot

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5,052,129
HEEL REPAIR PATCHES
Jeanette A. Lobasso, 2207 W. St., Brooklyn, N.Y. 11223, and George Spector, 233 Broadway, #3815, New York, N.Y. 10007
Filed Mar. 29, 1990, Ser. No. 500,910
Int. Cl.[5] A43B *13/22*
U.S. Cl. 36—72 R 3 Claims



1. A heel repair patch for a woman's shoe comprising:
a) a panel composed of relatively resilient material characterized by a shape conforming to the heel of a woman's shoe; and
b) pressure sensitive adhesive disposed on inner surface of said panel so that when said panel is applied to the heel and folded at fold lines on two sides, said adhesive will cause said panel to stick to the heel with a seam formed at the heel breast thereof;
c) said panel having a bottom edge;
d) a built in heel lift having spaced front and rear ends, said heel lift being pivotably mounted to said bottom edge of said panel along one of said ends of the heel lift.

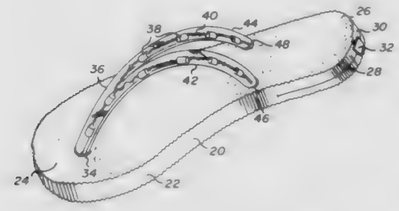
5,052,130
SPRING PLATE SHOE
Daniel T. Barry, Ann Arbor; Ray Fredericksen; Robert W. Soutas-Little, both of Okemos, and Ruk R. Peterson, Grand Rapids, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.
Continuation-in-part of Ser. No. 131,309, Dec. 8, 1987, which is a continuation-in-part of Ser. No. 942,245, Dec. 15, 1986, abandoned. This application Apr. 18, 1990, Ser. No. 510,671
Int. Cl.[5] A43B *13/12, 13/24*
U.S. Cl. 36—107 10 Claims

9. An athletic shoe comprising an upper, and a sole assembly attached to said upper;
said sole assembly comprising an outsole, a midsole and a spring plate therebetween, said sole assembly having a heel region, an arch region and a forefoot region which includes a metatarsal head region and a toe region;
said spring plate extending from beneath the medial portion of the heel region of said shoe, through the arch region of said shoe to and beneath the metatarsal head region and toe region of said shoe;
said spring plate being tapered down in said heel region to extend primarily beneath the medial portion of said heel region and not significantly beneath the lateral portion of said heel region, leaving the lateral portion of said outsole



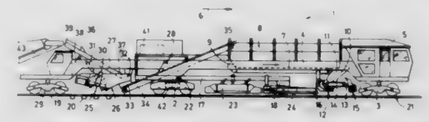
in said heel region in engagement with the lateral portion of said midsole in said heel region.

5,052,131
STRAPPED FOOTWEAR WITH DECORATIVE LIGHTING
Paul Rondini, 2804 East West Hwy., Chevy Chase, Md. 20815
Filed Oct. 26, 1989, Ser. No. 426,774
Int. Cl.[5] A43B *3/00, 7/04*; F21V *33/00*
U.S. Cl. 36—137 21 Claims



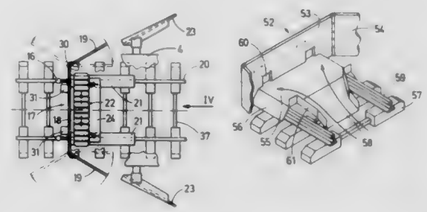
1. An article of decorative footwear comprising:
(a) a sole having a toe portion and a heel portion;
(b) at least one water resistant decorative strap having a first end and a second end and a section therebetween having a substantially hollow cross sectional configuration composed of a translucent or transparent non electrically conductive plastic material for positioning or securing the footwear to the foot;
(c) a plurality of LED light emitting sources encased in said substantially hollow cross sectional configuration of said decorative strap of a translucent or transparent non electrically conductive plastic material;
(d) terminals for a power source for supplying power to said plurality of LED light emitting sources;
(e) a circuit for connecting said terminals for said power source to said plurality of LED light emitting sources, a first portion of said circuit disposed in said sole and a second portion of said circuit disposed in said water resistant decorative strap of a translucent or transparent electrically non conductive plastic material;
(f) anchoring means for sealing said first end and said second end of said water resistant decorative strap and said first portion of said circuit in said sole; and
(g) a switch for connecting and disconnecting said terminals to said circuit.

5,052,132
BALLAST DISTRIBUTING AND PLANING MACHINE
Josef Theurer, Vienna, and Wörgötter, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed Mar. 8, 1991, Ser. No. 666,722
Claims priority, application Austria, Mar. 21, 1990, 668/90
Int. Cl.[5] E02F *5/22*
U.S. Cl. 37—104 16 Claims



1. A machine for distributing and planing ballast supporting a railroad track comprising two rails fastened to ties, each rail having a gage side and a field side, which comprises
(a) an elongated machine frame supported on the track by undercarriages for mobility along the track in an operating direction,
(b) a ballast broom extending transversely across the track and mounted on the machine frame at a rear end thereof in the operating direction,
(c) a ballast plow arrangement mounted on the machine frame,
(d) a ballast storage container mounted on the machine frame and having at least one discharge opening enabling ballast stored in the container to be discharged onto the track, and
(e) a ballast discharge conveyor band mounted immediately below each discharge opening and arranged to close the opening, each conveyor band having a drive for moving the conveyor band in a conveying direction.

5,052,133
MOBILE BALLAST REGULATING MACHINE
Pierre Mohr, Ligny en Barrois, France, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed Oct. 3, 1990, Ser. No. 592,218
Claims priority, application European Pat. Off., Nov. 23, 1989, 89121643.4
Int. Cl.[5] E02F *5/22*; E01B *27/02*
U.S. Cl. 37—104 14 Claims



1. A mobile machine for distributing and shaping the ballast

bed of a railroad track consisting of two rails fastened to ties, each rail having a gage side, a field side, a running surface and a base supported on the ballast bed, which comprises

(a) a machine frame supported by undercarriages on the track for mobility therealong in an operating direction, the machine frame having a longitudinal extension and opposite sides extending in the direction of the longitudinal extension,

(b) a vertically adjustable ballast plow arrangement comprising

(1) a substantially vertical ballast damming wall extending transversely to the longitudinal extension of the machine frame to the opposite machine frame sides,

(2) a respective ballast guide plate associated with the damming wall at each machine frame side, each guide plate being adjustable to define a desired angle with the respective machine frame side, and

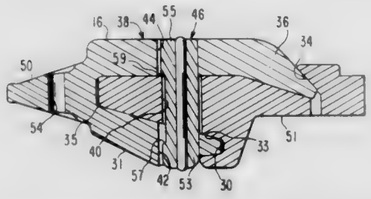
(3) a cover plate preceding the damming wall in the operating direction and connected to the damming wall, the cover plate extending substantially parallel to a plane defined by the track and immediately above the running surfaces of the rails, and the cover plate including opposite ends associated with the rails and extending in the direction of the longitudinal machine frame extension, each cover plate end projecting obliquely downwardly towards the base of the rail associated therewith along the field side thereof, and

(c) drive means vertically adjustably connecting the ballast plow arrangement to the machine frame.

5,052,134
TOOTH MOUNTING APPARATUS FOR EXCAVATION BUCKET

Robert S. Bierwith, 145 Basinside St., Alameda, Calif. 94501

Continuation-in-part of Ser. No. 427,145, Oct. 25, 1989, abandoned. This application Aug. 31, 1990, Ser. No. 576,635
Int. Cl.[5] E02F *3/76*
U.S. Cl. 37—142 A 24 Claims



16. In an ore excavation bucket having a lip with a plurality of segments with each segment having an upper pocket and a lower pocket:

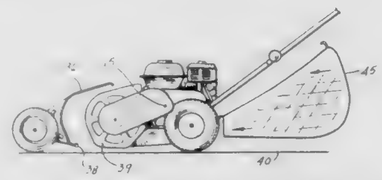
an adapter for one of the lip segments, the adapter having a pair of spaced legs, each leg having an inner end, one end of the lip segment adapted to be received in the space between the legs of the adapter when the adapter is in an operative position on the lip segment, the inner ends of the legs being receivable within respective pockets of the lip segment, the legs adapted to be coupled by pin means to the lip segment; and

means on the adapter for mounting an excavation tooth thereon.

5,052,135
CONVERTIBLE GRASS CUTTING AND SNOW BLOWING MACHINE HAVING A CYLINDRICAL ROTOR

André G. Fontaine, 891 Paul-Emile Borduas, St-Hilaire, Quebec, Canada J3H 3T8

Continuation-in-part of Ser. No. 350,699, May 9, 1989, abandoned. This application Mar. 14, 1990, Ser. No. 493,400
Int. Cl.[5] E01H *5/09*
U.S. Cl. 37—243 23 Claims

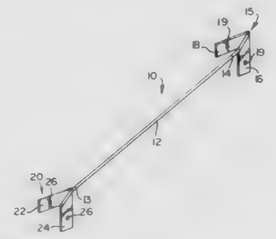


1. A convertible grass cutting and snow blowing machine comprising an engine having a driveshaft; support means supported on wheels a rotor having an outer surface and a rotor shaft, said rotor defining a longitudinal axis; a rotor housing comprising opposed side walls; handle means to displace said support means on said wheels; gate means hingedly secured to said housing, said gate means being displaceable from a retracted position, where said machine is utilized as a grass cutting machine, to a locked position, where said machine is utilized as a snow blowing machine, and opening means on said opposed sidewalls for admitting air in the direction of said rotor, said engine being mounted on said support means, said driveshaft imparting axial rotation to said rotor, said rotor shaft being disposed between said opposed side walls of said rotor housing, said rotor having at least two rigid cutting blades having opposed ends and secured longitudinally and spaced apart thereon, each said blade having an outer cutting edge, said blades extending at a substantially uniform radial distance from said rotor axis, each said blade defining a bow-shaped curve from its opposed ends whereby to direct grass cuttings or snow toward a mid-length region of said rotor when said rotor is rotatably driven, and further, in combination with said rotor, imparting a centrifugal force to direct said grass cuttings rearward through a rear chute in a lower portion of a rear wall of said housing or snow upwardly through a detachable snow chute attached to said rotor housing.

5,052,136
ARTWORK ASSEMBLY

Marcello Poggiolini, 107 Wildevy Avenue, Lynwood Manor, Pretoria, Transvaal Province, South Africa

Filed Oct. 31, 1989, Ser. No. 429,325
Claims priority, application South Africa, Nov. 2, 1988, 88/8207
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—156 6 Claims

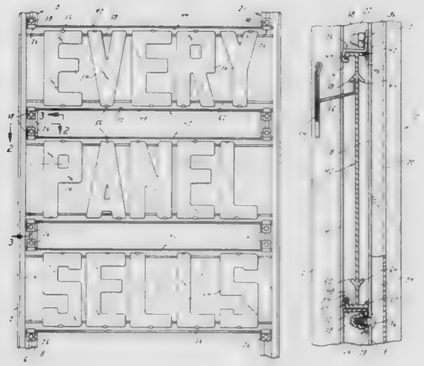


1. A mounting device for mounting an artwork within a frame, the device comprising a rigid, non-extensible elongate member; first mounting means is proximity to one end of the member and adapted for mounting to a frame such that the elongate member protrudes inwardly from the frame; and second mounting means in proximity to the other end of the elongate member and adapted for mounting to an artwork, the elongate member being non-linear and each mounting means comprising a planar bracket extending transversely to the elongate member and having at least one aperture through which a fastening element can pass to attach the bracket to the artwork or frame with the first and second brackets thus being staggered with respect to each other when the device is seen from the side, and lying in spaced parallel planes.

5,052,137
MOUNTING FOR PANELS FOR SIGNBOARDS

Lindell N. Edwards, 4367 Chateau De Ville Dr., St. Louis, Mo. 63129

Filed Feb. 7, 1990, Ser. No. 476,151
Int. Cl.[5] G09F *7/00*
U.S. Cl. 40—611 24 Claims

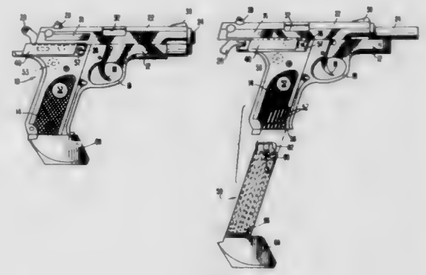


19. A signboard, which is readily mounted within an area that has a floor and a ceiling, and which comprises a support that is underlain by said floor, indicia-supporting members that are secured to and project outwardly from one side of said support, said support having the opposite face thereof free of obstructions, and an extension which abuts and is axially slidable relative to said opposite face of said support, said support and said extension having interacting surfaces at the side edges thereof which hold said support and said extension in assembled relation but which are spaced outwardly from said indicia-supporting members, whereby said extension can be slid axially relative to said support without disturbing said indicia-supporting members, wherein said indicia-supporting member has means for coacting with mounting means on said indicia and means for coacting directly with said indicia for removably mounting at least two sizes of said indicia on said indicia-supporting member.

5,052,138
AMMUNITION SUPPLY INDICATING SYSTEM

Philip Crain, 1259 7th Pl., Hermosa Beach, Calif. 90254

Filed Dec. 1, 1989, Ser. No. 444,829
Int. Cl.[5] F41A *9/62*
U.S. Cl. 42—1.02 26 Claims



1. In combination, a firearm and an ammunition supply indicating system for counting the number of rounds available for discharge from a firearm, the combination comprising:

a) a firearm including a body, a handgrip, a barrel, a slide mounted for reciprocal movement along said barrel, a trigger, and means operated by said trigger for moving said slide in at least one direction,

b) a firing chamber defined in said barrel, and said slide having an aperture movable into alignment with said chamber during the travel of said slide,

c) a magazine adapted to receive cartridges to be discharged through the barrel upon actuation of the trigger,

d) a follower in said magazine, and a spring for urging the follower to deliver a cartridge into the firing chamber,

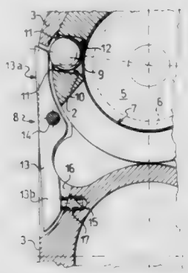
e) the ammunition supply indicating system comprising:

1) means operatively associated with said slide for detecting movement thereof to alternately expose and seal said firing chamber,

2) switch means in said magazine for monitoring the

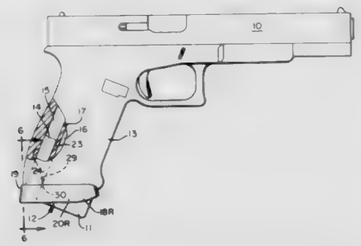
movement of the follower therewithin, and producing a signal indicative of the position of the follower,
3) electronic circuit means for combining the signals indicative of movement of said slide and said follower, and
4) display means operated by said electronic circuit means to display a running total of the number of rounds available in said firearm for discharge.

5,052,139
GUN-LOADED INDICATOR DEVICE FOR SHOTGUNS
Alessandro Marzocco, Milan, Italy, assignor to Luigi Franchi S.p.A., Fornaci, Italy
Filed Jan. 14, 1991, Ser. No. 640,723
Claims priority, application Italy, Jan. 18, 1990, 20462/90[U]
Int. Cl.[5] F41A *9/53*
U.S. Cl. 42—1.05 **2 Claims**



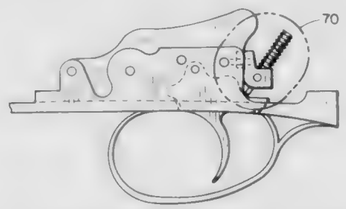
1. A gun-loaded indicator device for shotguns of the type in which a cartridge chamber (**4**) is defined at the breech end of a barrel (**1**) removably mounted in a stock (**3**), characterised by comprising a feeler ball (**9**) movable within a through hole (**10**) provided in said breech end and opening into said cartridge chamber (**4**) and extending radially to it, a bar-like lever (**13**) pivoted within said stock (**3**) and having a first end (**13***a*) maintained in contact with the feeler ball (**9**) and its second end (**13***b*) subjected to spring means (**15**), said lever (**13**) being angularly mobile within a respective conjugate seat (**16**) from a position in which said first end (**13***a*) of the lever (**13**) is in line with the stock (**3**) to a position in which said first end (**13***a*) projects laterally from it.

5,052,140
GUN MAGAZINE ENTRANCE GUIDE ACCESSORY
Alan K. Smith, 113 LaFawn Cir., Garland, Tex. 75043
Filed Oct. 3, 1990, Ser. No. 592,244
Int. Cl.[5] F41C *27/00*
U.S. Cl. 42—7 **13 Claims**



1. A wide angled gun magazine entrance guide for easier and faster insertion of fresh magazines into a gun receiver comprising: a guide back base; upward extension mounting means from said guide back base insertable into and up a gun butt bottom opening located behind a magazine receiver opening rear wall in the butt; opposite side arms extended forwardly from said guide back base; said opposite side arms having flanged out to the sides opposite outer sides extending outward beyond the projected opposite side profile of the gun butt the magazine entrance guide is mounted on to form a lower flanged out bottom of the gun butt when mounted in place thereon for improved grip; and with said opposite side arms being formed with inner side wide angled opening slopes extended outwardly wider to opposite sides than the projected profile of the opposite sides of the gun butt making it easier and faster to insert a fresh magazine into the gun receiver; wherein said guide back base is formed with a downward facing beveled surface angled toward the back of the magazine receiver opening and interconnecting said inner side wide angled opening slopes of said opposite side arms through opposite end curved surfaces blended between the wide angled surfaces; said upward extension mounting means has a flat surface on the front and a rounded back surface such as to present in transverse section a half moon shape; and wherein said magazine entrance guide has a rim and there is a groove between said rim and said upward extension mounting means.

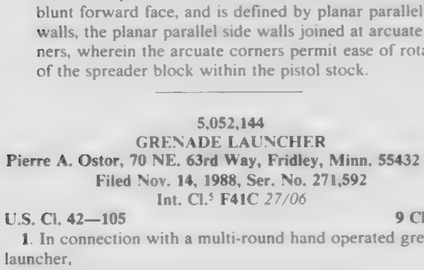
5,052,141
TRIGGER TENSION ADJUSTER
Hal C. Sammons, Rte. 3, Box 784, Tahlequah, Okla. 74464
Filed Aug. 10, 1990, Ser. No. 566,049
Int. Cl.[5] F41A *19/17*
U.S. Cl. 42—69.01 **9 Claims**



1. In a trigger assembly having a trigger housing and a trigger pivotally mounted thereon, said trigger having a rear shoulder accessible within said housing, the subcombination of a mounting block having a threaded bore therethrough, a spring biased plunger assembly threaded into one end of said bore with its plunger extending beyond the other end of said bore, means for fixing said mounting block to said housing with said plunger in contact with said shoulder throughout a range of motion of said trigger and means for releasably securing said plunger assembly at a selected depth in said mounting block whereby the pull tension of said trigger is adjustable by rotation of said plunger assembly to vary its depth in said mounting block.

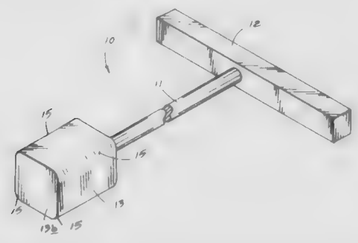
5,052,142
SAFETY LOCK FOR REVOLVERS
Edward M. Mikus, 3123 Zarieda, Metamora, Mich. 48455
Filed Jul. 16, 1990, Ser. No. 553,824
Int. Cl.[5] F41A *17/02*
U.S. Cl. 42—70.11 **8 Claims**

1. A safety device for a firearm operable from a closed to an open position which, when in its open position, prevents operation of said firearm, said safety device including:
(a) a hollow casing having a plunger receiving portion and an extension member receiving portion,
(b) a plunger mounted for reciprocal movement in said plunger-receiving portion,
(c) a plunger extension member operatively connected to said plunger to move said plunger from a retracted to an extended position,
(d) a plunger control member,



(e) a closure member, and
(f) spring-biasing means interposed between said closure member and said plunger extension control member.

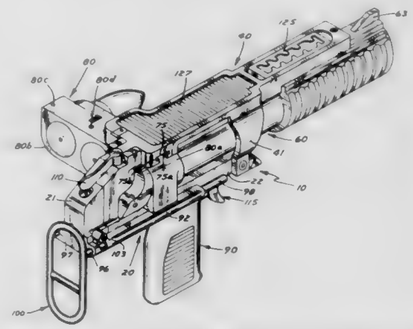
5,052,143
PISTOL STOCK SPREADING TOOL KIT
John T. Ryan, 16022 Crest Dr., Woodbridge, Va. 22191
Filed Apr. 13, 1990, Ser. No. 508,829
Int. Cl.[5] F41C *27/00*
U.S. Cl. 42—90 **7 Claims**



1. A pistol stock spreading tool kit for selective insertion within a magazine well of an associated pistol framework, wherein the kit comprises,
an elongate longitudinally aligned rigid rod, the rod including a forward terminal end and a rear terminal end, the rear terminal end fixedly mounting a handle orthogonally thereto, the handle fixedly mounted medially of its length to the rear terminal end of the elongate rod, and
a spreader block, wherein the spreader block includes a longitudinally aligned axis, the longitudinally aligned axis coextensively aligned with the elongate rod, and
wherein the spreader block includes a blunt rear face and a blunt forward face, and is defined by planar parallel side walls, the planar parallel side walls joined at arcuate corners, wherein the arcuate corners permit ease of rotation of the spreader block within the pistol stock.

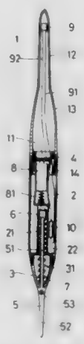
5,052,144
GRENADE LAUNCHER
Pierre A. Ostor, 70 NE. 63rd Way, Fridley, Minn. 55432
Filed Nov. 14, 1988, Ser. No. 271,592
Int. Cl.[5] F41C *27/06*
U.S. Cl. 42—105 **9 Claims**

1. In connection with a multi-round hand operated grenade launcher,
a pivotally connected upper and lower receiver,
a barrel partially disposed into said upper receiver,
means slidably retaining said barrel within said upper receiver,
a stock and grip carried by said lower receiver,
a magazine holding a plurality of rounds of grenade cartridges, said cartridges having casings disposed into said magazine and having nose portions of projectiles carried by said casings extending outwardly of said magazine,
means limiting the sliding movement of said barrel to substantially the extent of said nose portions of said projectiles extending outwardly of said magazine,



a passage receiving said magazine between said upper and said lower receivers,
means carried by said upper receiver and said barrel actuated by the sliding movement of said barrel advancing said magazine through said passage, and
said magazine being an operative extension of said barrel in cooperatively retaining a cartridge therebetween, said respective nose portions of said projectiles being received and retained in said barrel.

5,052,145
ELECTRIC FISHING FLOAT
Wen-Chang Wang, No. 208-13, Shang-Lun Village, Jen-Te Hsiang, Tainan Hsien, Taiwan
Filed Dec. 26, 1990, Ser. No. 633,963
Int. Cl.[5] A01K *75/02*
U.S. Cl. 43—17.5 **1 Claim**



1. An electric fishing float comprising:
an elongated tubular fishing float case consisting of an upper case section with a light source positioned therein adjacent a closed top end thereof, a lower case section having a first end water-tightly connected to said upper case section and a second end formed with a central opening, and a tapered hollow section having a first end water-tightly connected to the second end of the lower case section and a second end formed with a central opening

axially in alignment with the central opening of the lower case section;

an insulating cylindrical compartment coaxially formed in the lower case section to define a cylindrical chamber axially in alignment with the central openings of the lower case section and the tapered hollow section;

a piston-like member made of magnetic material and adapted to reciprocate axially within the cylindrical chamber of the cylindrical compartment between a first position axially apart from the central opening in the second end of the lower case section and a second position axially close to the central opening in the second end of the lower case section to pass through a third position between the first and second positions and imparting a rod member extending axially from the piston-like member to exterior of the fishing float case through aligned central openings of the lower case section and tapered hollow section;

a conical body attached to outer end of the rod member for connection with a conventional fishing line thereby to be pulled to move the piston-like member from its first position into second position;

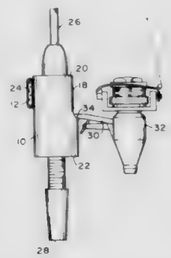
a cell having two electrodes and confined within an electrically conductive battery housing which is mounted on the cylindrical compartment in the lower case section;

a pair of lead wires for electrically connecting said light source and electrodes of the cell;

a normally open conductive switch connected to one of the lead wires and disposed next to the cylindrical compartment and conducted into a closed state to turn on the light source by the piston-like member when the piston-like member locates in its third position; and

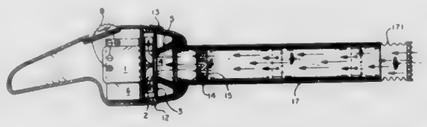
a coil spring sleeved around the rod member for retracting the piston-like member from its second position into its first position.

5,052,146
FISHING EQUIPMENT
Joseph A. Resnick, R.D. 1, Box 415-A, Natrona Heights, Pa. 15065
Filed May 22, 1987, Ser. No. 53,052
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 5 Claims



4. A manufacture comprising a pipe and attachment means for attaching the pipe to the body of a fisher such that one side of the pipe is near the body of the fisher and an opposite side of the pipe is far from the body of the fisher, whereby the butt end of a fishing pole may be inserted downwardly into the pipe when the pipe is attached to the body of a fisher, for holding the pole and freeing both hands of the fisher for tasks other than holding the pole, the pipe having a slot in the far side of the pipe extending from a top end of the pipe downwardly, whereby the center of gravity of the pole in the pipe is lowered, and a reel on the pole will be held in the slot for preventing pole rotation.

5,052,147
APPARATUS FOR THE COLLECTION AND DISPOSAL OF INSECTS
Jack M. Broomfield, and Douglas W. Broomfield, both of 940 Siskiyou Dr., Menlo Park, Calif. 94025
PCT No. PCT/US88/03856, § 371 Date Jun. 30, 1989, § 102(e) Date Jun. 30, 1989, PCT Pub. No. WO89/04604, PCT Pub. Date Jun. 1, 1989
Continuation-in-part of Ser. No. 116,464, Nov. 3, 1987, Pat. No. 4,780,986. This PCT application Oct. 31, 1988, Ser. No. 438,501
The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.
Int. Cl.[5] A01M *5/02*
U.S. Cl. 43—139 17 Claims



1. An attachment for modifying a hand-held electric vacuum cleaner so that it is suitable for the collection and disposal of insects, the vacuum cleaner being of the type which comprises

(1) a power unit comprising

(a) an electric motor,

(b) a fan which is driven by the motor, and

(c) a switch for operating the motor;

and

(2) a collection unit which is separably connected to the power unit and which comprises a housing having a first open end and a second open end, the first open end being fitted to the power unit;

whereby operation of the motor causes air to be drawn through the collection unit so that solid matter adjacent the second open end is drawn through the second open end and collected in the collection unit; said attachment being connectable to the second open end of the collection unit, and said attachment comprising

(a) a housing having a rear open end and a front open end, the rear open end being connectable to the power unit through the collection unit,

(b) a carriage which is movable between a rear position and a front position, the rear position being within the housing and relatively close to the rear open end and a front position which is relatively close to the front open end, and

(c) a receptor which

(i) is mounted on the carriage and

(ii) is such that, when it is mounted on the carriage, insects entrained by air drawn through the housing from the front open end to the rear open end are retained by the receptor,

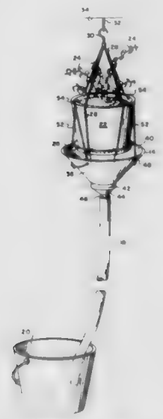
whereby, when the attachment is connected to the power unit through the collection unit, the resulting modified vacuum cleaner can be used to collect insects by operating the motor with the carriage in the rear position, and insects thus retained by the receptor can thereafter be disposed of by moving the carriage from the rear position to the front position so that the carriage comes to an abrupt stop in the front position, thus removing the insects from the carriage.

5,052,148
HANGING ROPE MOUNTED ADJUSTABLE POSITION PLANT POT
Arie N. Sharon, 1322 N. Park Dr., Richardson, Tex. 75081, and Lori L. Hendricks, 1602 Rich Rd., Rockwell, Tex. 75087
Filed Aug. 28, 1990, Ser. No. 573,807
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—67 15 Claims



1. A single hanging rope mounted adjustable height position plant pot comprising: a plant pot with a bottom having a center opening received and supported in a pot tray; a center tubular pole connected to said pot tray and extended upward through said center opening to a location above the top of said plant pot and resting on said pot tray; the through opening of said center tubular pole sized for and receiving passage therethrough a hanging rope to mount said plant; and adjustable position locking means mounted on and lockable to said hanging rope below said pot tray for supporting said pot tray and said plant pot at a desired height level on said single hanging rope.

5,052,149
PORTABLE APPARATUS FOR CAPTURING OVERFLOW FROM HANGING PLANTS
William J. Johnson, 1445 Sedalia Dr., Flower Mound, Tex. 75028, assignor to William J. Johnson, Flower Mound, Tex.
Filed Apr. 17, 1990, Ser. No. 510,454
Int. Cl.[5] A47G *7/02*
U.S. Cl. 47—67 22 Claims

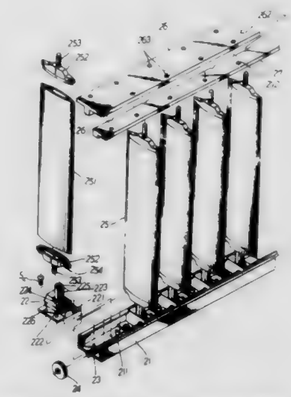


1. Apparatus for capturing overflow from a hanging plant container or the like, said apparatus comprising:

a first member having an open mouth for being positioned below said container to receive overflow of matter therefrom and a bottom opening for allowing said matter to escape from said first member; and

a second member for being disposed at least partially within said first member, such that a portion of said second member protrudes from the open mouth of the first member for engaging a bottom part of said container to maintain said first member and said container in spaced-apart relation.

5,052,150
STRUCTURE OF VENETIAN BLIND
Chih-Tsung Chen, No. 20, Ming Chuan Road, Lu Kang Chen, Changhua Hsien, Taiwan
Filed Sep. 18, 1990, Ser. No. 584,224
Int. Cl.[5] E06B *7/08*
U.S. Cl. 49—84 1 Claim



1. A plurality of equally spaced supporting seats, each seat having a seat body, a shaft lever receiver pivoted with a worm wheel, a gear at the lower end to mesh with a worm gear, the shaft lever receiver having an axial hole, flanges on the two sides of the seat having pairs of penetrating holes corresponding with penetrating holes of an above fixing rail, screws for fastening the seat body on the fixing rail, wherein the rotation of the worm wheel drives the shaft lever receiver;

a regulating shaft connected to the worm gears in series to drive the worm wheel and shaft lever receiver to move synchronously;

a regulating wheel set on one end of the regulating shaft for rotation of the regulating shaft;

slats in same number of the supporting seats, having an identical adapter on either end a shaft lever in the center of the adapter to facilitate the slats to be positioned by the inserting of the shaft lever of the adapter at their respective shaft lever receivers;

a first fixing plate in strip shape with an axial flange which has positioning troughs in equal spacing on the lateral side corresponding with axle holes of the shaft lever receivers allowing the inserting and positioning of the shaft lever on the top end of the slats and having a plurality of generating holes on outside portions of the two sides of the flange;

a second fixing plate in right angular strip shape with a plurality of positioning troughs on a lateral side corresponding with the first fixing plate troughs to form full circular holes along with a plurality of penetrating holes corresponding with the first fixing plate penetrating holes for locking the two fixing plates together;

wherein a venetian blind constituted by the above components if fixed on the lower side of the window frame by means of a fixing rail which fixes the supporting seats in equal spacing, wherein the supporting seats are connected in series by a regulating shaft on which the worm gears are

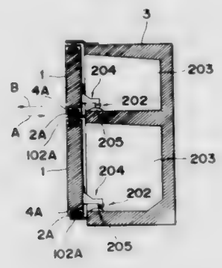
pivoted, wherein the regulating shafts combine with regulating wheels and the shaft lever receivers of the supporting seats combine with slats to insert the other end of the slats into the positioning trough between two fixing plates wherein the assembly is easy and the angle of the slats is adjusted by means of the driving of the regulating wheel.

5,052,151

OPENING/CLOSING DEVICE OF A DOOR MEMBER

Yoshio Inui; Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 347,924, May 5, 1989, Pat. No. 4,947,583.
This application May 14, 1990, Ser. No. 523,330
Claims priority, application Japan, May 10, 1988, 63-114248; Jun. 22, 1988, 63-154055; Sep. 24, 1988, 63-239362; Nov. 21, 1988, 63-294150; Dec. 5, 1988, 63-158259; Dec. 5, 1988, 63-158260; Dec. 5, 1988, 63-158352; Dec. 5, 1988, 63-307118; Dec. 5, 1988, 63-307168; Dec. 26, 1988, 63-329930; Dec. 29, 1988, 63-169228
Int. Cl.[5] E05B *65/06*; E05C *19/04*
U.S. Cl. 49—394 15 Claims



1. An opening/closing device for a door member, the door member being mounted on a main body for opening and closing, the device comprising:

a pair of hinge pin members projecting generally vertically from right and left end portions of one of the door member and the main body, the door member being supported for opening and closing by one of right and left hinge pin members as a center;

a load receiving member disposed on one of the door and the main body which the pair of hinge pin members fails to be disposed on such that the load receiving member is disposed on the door member when the pair of hinge pin members is disposed on the main body and vice versa, the load receiving member supporting the door member through contact with tip ends of the hinge pin members when the door is closed; and

an engagement pair mounted on the door member and the main body, the engagement pair raising the door member immediately before the door member is fully closed such that the hinge pin members are moved relative to the load receiving member to a noninterfering position.

5,052,152

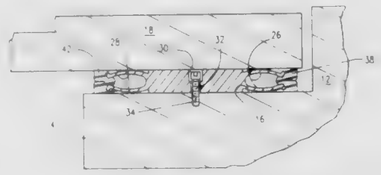
DOUBLE FACE SEALING DEVICE

Bruce C. Weddendorf, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1991, Ser. No. 657,586
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—495 20 Claims

1. A seal for sealing relation between a pair of substantially parallel surfaces comprising:

a main body having a pair of spaced side edges, each side edge having a bifurcated spring member extending therefrom, and a resilient member disposed on the distal ends of each said bifurcated spring member in enclosing relation with said distal and; and



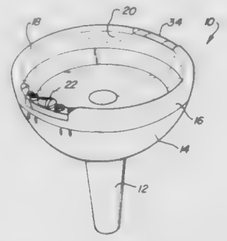
means for securing said main body to one of said substantially parallel surfaces.

5,052,153

CUTTING TOOL WITH POLYCRYSTALLINE DIAMOND SEGMENT AND ABRASIVE GRIT

Ronald C. Wiand, 1494 Heatherwood Dr., Troy, Mich. 48098

Filed Sep. 6, 1990, Ser. No. 579,869
Int. Cl.[5] B24D *7/18*
U.S. Cl. 51—5 C 4 Claims



1. A single blade polycrystalline diamond fly cutter generator wheel comprising:

a shaft portion;

a body portion attached to said shaft portion, said body portion having a substantially circular outer rim portion extending therefrom, said outer rim portion having an axially outer edge, said outer edge having an arcuate shape in its cross-section;

an abrasive grit material attached to said outer rim portion for at least covering said arcuate cross-sectional outer edge portion of said generator wheel;

a single polycrystalline cutting edge affixed to said rim portion;

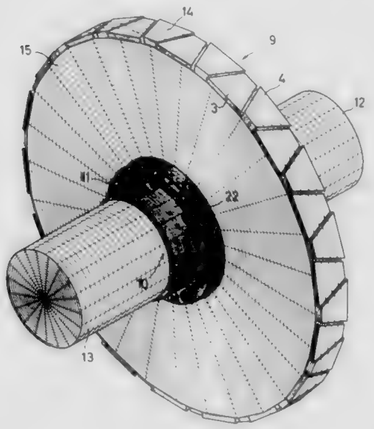
a counter balance means on said generator wheel for counter balancing said polycrystalline cutting edge during rotation of the generator wheel, whereby said polycrystalline cutting edge substantially provides for initial forming of an ophthalmic lens curvature by taking off coarse particles from the ophthalmic lens, the remaining grit material acting to further reduce the particle size of the coarse particles, thereby providing for increased efficiency in forming the lens curvature with a single polycrystalline blade fly cutter generator wheel.

5,052,154

GRINDING WHEEL HAVING ADJUSTABLE AXIAL DIMENSION

Dieter Lehmann, Dreieich, Fed. Rep. of Germany, assignor to Naxos-Union Schleifmittel- u. Schleifmaschinenfabrik, Frankfurt, Fed. Rep. of Germany

Filed Jul. 20, 1989, Ser. No. 382,293
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824543
Int. Cl.[5] B34D *5/06*
U.S. Cl. 51—206.4 21 Claims



1. A grinding wheel including a wheel supporting body, and an abrasive material provided at least at a circumferential surface of said wheel supporting body, at radially outer portions of axially spaced side surfaces thereof and at transitional areas between said circumferential and side surfaces, wherein:

said wheel supporting body is formed of first and second partial bodies that are axially movable relative to each other;

each said first and second partial body has on the outer periphery thereof a plurality of circumferentially spaced projections separated by respective axial grooves;

said projections of each said partial body fit within respective ones of said grooves in the other said partial body, such that said projections of said two bodies alternately mesh in a tooth-like manner and segmentally define said circumferential surface, said radially outer portions of said side surfaces and said transitional areas therebetween;

said abrasive material is provided on said projections;

adjusting means are provided for adjusting the relative axial spacing between said first and second partial bodies, and thereby for adjusting the axial distance between said spaced side surfaces;

said adjusting means comprises a plurality of adjustment members spaced circumferentially of said partial bodies;

each said adjustment member has an exteriorly threaded portion in adjustably threaded engagement with a respective thread provided in said first partial body;

each said adjustment member further includes an abutment portion to abut said second partial body and thereby to restrict displacement of said second partial body toward said first partial body;

each said adjustment member further includes a respective exterior toothed portion; and

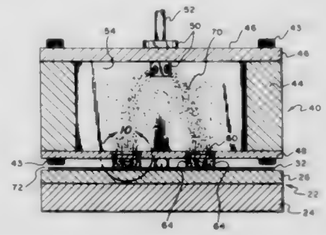
a driving ring is provided and has gear teeth in meshing engagement with said exterior toothed portions of all of said adjustment members.

5,052,155

APPARATUS FOR THE TREATMENT OF ARTICLES BY HIGH VELOCITY IMPACTING THEREOF WITH A PARTICULATE ABRASIVE MATERIAL

Robert J. Blacka, Pennsauken, and Francis J. Verderame, Berlin, both of N.J., assignors to EMC Technology, Inc., Cherry Hill, N.J.

Filed Aug. 10, 1989, Ser. No. 391,817
Int. Cl.[5] B24C *3/32*
U.S. Cl. 51—413 6 Claims



1. An apparatus for the treatment of articles having a gold plated surface by the high velocity impacting thereof with aparticulate abrasive material which comprises in combination:

a) support base means for a hold plated article to be treated;

b) masking means adapted to be disposed over the article to be treated outlining at least one selected portion of the article to be treated; and

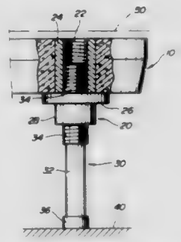
c) manifold chamber means adaptable for receiving a quantity of particulate abrasive materials and admixing therewith a fluid under high pressure, said manifold chamber means including at least one connector means for ingress of a fluid under high pressure and at least one nozzle means for dispensing at high pressure and velocity fluid-borne particulate abrasive materials from within said chamber means, said manifold chamber means further including means for engaging said masking means about said selected portion of the article to be treated, said manifold chamber means being movably mountable on said support means and spaced therefrom with said nozzle means and said means for engaging said masking means in substantial register with the portion of the article to be treated.

5,052,156

FLOORING PANEL SYSTEM

Haruo Tanaka; Hideaki Tambo, and Kazuhiko Kise, all of Fukui, Japan, assignors to 501 Fukuvi Chemical Industry Co., Ltd., Fukui, Japan

Filed Oct. 15, 1990, Ser. No. 597,896
Int. Cl.[5] F16B *39/30*
U.S. Cl. 52—126.6 4 Claims



1. A flooring system comprising a flooring panel having panel body component, and a detachable support leg component wherein:

the joining of said components can be effected by means of a female thread formed on each component and a male thread formed on said support leg, at least one of said female thread and said male thread comprising two types of threads to effect a smooth and firm joining of said two components;

one type of threads consisting of a crest and a root, a set of said crest and said root constituting a spacing of said thread, extending side by side in spiral throughout, said type of threads being referred to as the regular threads;

and another type of threads of identical spacing but whose crest includes a slit disposed at the tip of the crest in a manner so as to divide said crest into two identical portions, said slit extending throughout said threads, said crest forming a bulge by being wider in its cross-section than the regular threads and being capable of being compressed by an amount corresponding to the width of the slit, said type of threads being referred to as the slit-threads.

5,052,157

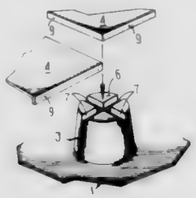
FLOORING SYSTEM ESPECIALLY DESIGNED FOR FACILITIES WHICH HOUSE DATA PROCESSING EQUIPMENT

Alain R. E. Ducroux, Garches, and Miodrag Novakovic, Maule, both of France, assignors to Servoplan, S.A., Paris, France

Filed Feb. 2, 1990, Ser. No. 474,144

Int. Cl.[5] E04B *5/00*

U.S. Cl. 52—126.6 **15 Claims**



1. Floor structure comprising:

a base plate having a plurality of apertures;

each of said base plate apertures including at least one keyway;

a floor tile having an interlocking element;

a plurality of load bearing stand-offs for insertion through said base plate apertures, said stand-offs being removably secured to said base plate to support said floor tile in spaced relation to said base plate;

said stand-offs forming a plurality of channels beneath said floor tile;

said stand-offs including means for removably engaging said floor tile locking element for removably interlocking said base plate to said floor tile; and

each of said stand-offs having a base portion including at least one radially located locking tab formed to pass through said base plate aperture keyways such that upon insertion of said stand-offs through said base plate apertures said stand-offs are removably secured to said base plate.

5,052,158

MODULAR LOCKING FLOOR COVERING

John D'Luzansky, Mesa, Ariz., assignor to Foam Design Consumer Products, Inc., Lexington, Ky.

Filed Jul. 13, 1990, Ser. No. 552,580

Int. Cl.[5] E04C *1/10*

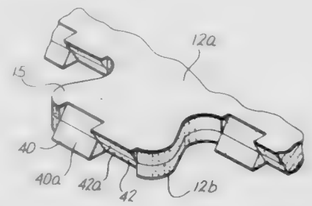
U.S. Cl. 52—177 **14 Claims**

1. A relatively light weight modular interlocking cushioned product subject to localized compression loads for use as a floor covering and the like, comprising:

at least two planar panel members of a compressible and resilient material,

each panel including at least one edge portion having interlocking means for removable interfitting and interlocking butting engagement of the respective edge portions thereof whereby said panels may be assembled together to provide a laterally interlocked flat and planar cushioning mat,

said interlocking means including spaced locking fingers with locking apertures therebetween,



said interlocking means of each panel further including secondary interlocking means to maintain the respective edge portions in a flat and planar orientation to prevent relative vertical displacement of the respective interlocked edge portions in response to compressive loads thereon, and

said secondary interlocking means including locking tabs each having an inclined face, the face of one tab being inclined oppositely from the inclined face of an adjacent tab.

5,052,159

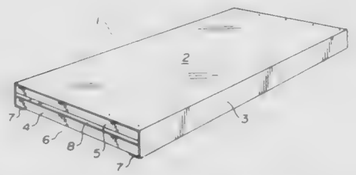
MODULAR DECKING PANEL

Gregory Shvartsburd, #308, 17304 - 105 Ave., Edmonton, Alberta, Canada T5S 1G4

Filed Jun. 8, 1990, Ser. No. 535,167

Int. Cl.[5] F16B *2/18*

U.S. Cl. 52—285 **13 Claims**



1. A modular steel decking panel comprising:

an integral, one-piece central section that is polygonal in peripheral shape and which includes a central element having side edges, end edges, a length dimension measured between said end edges, a width dimension measured between said side edges, said length dimension being greater than said width dimension, a longitudinal center axis extending between said side edges and along said length dimension; said one-piece central section further including an L-shaped side element located on each central element side edge, each side element having a leg spaced from said central element and extending toward said longitudinal center axis; a lengthwise extending gap located between each L-shaped side element leg and said central element; a first angle member attached to said central element adjacent to each central element end edge and extending along said central element width dimension; a second angle member attached to said L-shaped side element legs adjacent to each central element end edge and extending along said width dimension adjacent to said first angle member, said first and second angle members being located in each of said lengthwise extending gaps and being spaced apart from each other and forming a widthwise extending gap therebetween.

5,052,160

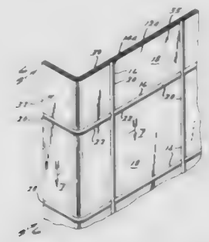
TILE BOARD

Barton K. Gentsch, and Thomas M. Whitney, both of Lapeer, Mich., assignors to Trayco, Inc., Lapeer, Mich.

Continuation-in-part of Ser. No. 906,326, Sep. 11, 1986, abandoned, which is a continuation-in-part of Ser. No. 575,217, Jan. 30, 1984, abandoned. This application Nov. 20, 1987, Ser. No. 123,487

Int. Cl.[5] B44F *3/00*; **E04F** *13/00*; **B32B** *31/30*

U.S. Cl. 52—314 **12 Claims**



1. A coextruded, grooved, plastic material tile board for bathrooms and kitchens simulating tiles embedded in grout comprising:

a top layer of plastic material;

an underlying layer of plastic material of different color, said top layer and underlying layer being integrally formed together by coextrusion and solidifying to form said tile board free from any separate adhesives therebetween;

said top layer having grooves formed therethrough by selective mechanical removal of the top layer after it solidifies to expose strips of said underlying layer, said strips having a width and simulating grout lines;

the groove having a total width that is visibly greater than said width of the exposed strips of said underlying layer; and

said exposed strips visibly dividing said top layer into finished tile sized components simulating individual tiles.

5,052,161

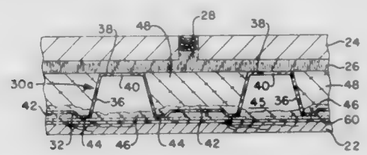
TILE APPLICATION STRUCTURE

Daniel C. Whitacre, 1827 Wales Rd., N.E., Massillon, Ohio 44646

Filed Nov. 8, 1989, Ser. No. 433,656

Int. Cl.[5] E04F *13/08*

U.S. Cl. 52—385 **17 Claims**



1. A building structure comprising

(a) an essentially rigid coherent base;

(b) an outer course comprising hard coherent fracturable material spaced from and generally parallel to said base;

(c) a crack isolation sheet interposed between said base and said outer course, said sheet being made of an impact resistant material and comprising a thin flat base sheet portion having opposite surfaces, a plurality of regularly spaced hollow projections arranged in a regular geometric pattern which includes a plurality of rows and a plurality of spaced projections in each row, said projections extending from one of said surfaces, being of substantially equal height, the other surface of said base sheet being adhesively bonded to said base, said projections extending toward said outer course, and annular recesses surrounding said projections;

(d) means for bonding said outer course to said crack isolation sheet and said base to form a unitary structure; and

(e) a layer of flexible adhesive material applied to said base and bonding said crack isolation sheet to said base, said adhesive material permitting lateral movement between said base and said crack isolation sheet.

5,052,162

ROOFING SHINGLE

Arthur B. Bush, Clearwater, Fla., and Dale P. Major, Camden, Ark., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 171,504, Mar. 21, 1988, abandoned. This application May 10, 1990, Ser. No. 521,622

Int. Cl.[5] E04D *1/00*

U.S. Cl. 52—518 **4 Claims**



1. A roofing shingle comprising a top asphalt coated sheet, a second asphalt coated sheet, adhesive means between said sheets to secure said sheets together to form a two-layered, laminated sheet, said second sheet being equal in length to said top sheet but being substantially narrower than said top sheet and having one edge of said second sheet in alignment with one edge of said top sheet, said laminated sheet having alternating tabs and cut-out portions along one edge thereof, said top sheet and said second sheet having granules embedded on opposite facing sides of said roofing shingle.

5,052,163

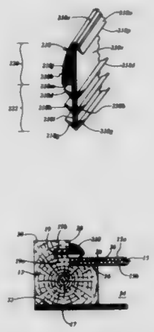
FRAMED PANEL ASSEMBLY

Michael K. Czekala, Alpharetta, Ga., assignor to Georgia Doors & Plywood Service, Inc., Alpharetta, Ga.

Filed Nov. 27, 1989, Ser. No. 441,822

Int. Cl.[5] E06B *3/62*

U.S. Cl. 52—775 **3 Claims**



1. A framed panel assembly comprising:

a rectangular frame having a front surface and a back surface and an open interior, said frame also having a shoulder in

a plane rearwardly of said front surface for forming a panel receiving surface, said frame having an inwardly opening groove forwardly of said shoulder and in a plane parallel to said panel receiving surface;

a rectangular mirror within said frame, said mirror having a plurality of edge portions being received on said panel receiving surface, throughout the perimeter of said mirror; and

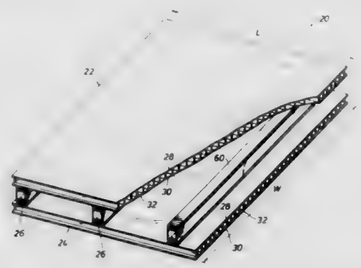
a flexible plastic bezel having an outer portion received in said groove and an inner portion extending over each edge portion of said mirror, throughout the inner perimeter of said frame, said inner portion of said bezel comprising a front edge and having a flexible bill yieldably bent towards said inner portion of said bezel, said flexible bill comprising a proximal edge and a distal edge, said proximal edge of said flexible bill being attached to said front edge and said flexible bill extending from said front edge outwardly to said distal edge and being located between said inner portion of said bezel and said mirror and exerting seating pressure against said outer edge portion of said mirror inwardly of said edges of said mirror for seating said edge portions of said mirror against said shoulder.

5,052,164

METHOD FOR MANUFACTURING A PANEL ASSEMBLY AND STRUCTURE RESULTING THEREFROM

Kiyoshi Sandow, Crosby, Tex., assignor to Plasteco, Inc., Houston, Tex.

Filed Aug. 30, 1989, Ser. No. 400,514
Int. Cl.[5] E04C *2/54*
U.S. Cl. 52—790 **11 Claims**



1. A light transparent panel assembly for fabricating wall and roof units, intended to exhibit superior insulation characteristics, said light transparent panel assembly comprising:

first and second light transparent plate members;

means for supporting said first and second light transparent plate members in a substantially parallel and spaced relation;

each said light transparent plate member comprising top and bottom sheets and a plurality of substantially parallel ribs, each said rib attached to said top and bottom sheets; and

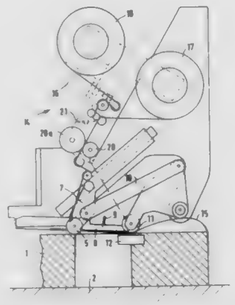
said support means comprising at least two support structures, each said support structure having top and bottom surfaces with said top surface in bearing contact with said bottom sheet of said first light transparent plate member and with said bottom surface of said support structure in bearing contact with said top sheet of said second light transparent plate member, wherein said support structures are substantially perpendicular to said ribs.

5,052,165

PROCESS AND DEVICE FOR APPLICATION OF A CARRYING GRIP DURING THE AUTOMATIC SEALING OF CARTONS

Werner T. Gunther, Neuss, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1988, Ser. No. 190,130
Claims priority, application Fed. Rep. of Germany, May 8, 1987, 3715445
Int. Cl.[5] B65B *61/14*
U.S. Cl. 53—413 **4 Claims**



1. A process for application of a handle onto cartons which are continuously moving in a row, comprising the steps of:

(a) providing a supply roll of pressure sensitive adhesive tape;

(b) attaching one end of the adhesive tape to one of the cartons;

(c) generating a length of adhesive tape in excess of a length of the carton in the direction of movement thereof by a parameter of direction or speed of movement of the adhesive tape which is different than the direction or speed of movement of the carton;

(d) covering a predetermined length of the adhesive surface of the adhesive tape with a cover tape having a width generally the same as the adhesive tape and a length generally the same as the excess length of the adhesive tape generated in step (c) and the length of the cartons, forming the handle, synchronized with the application of the adhesive tape to the carton;

(e) severing a predetermined length of the adhesive tape including the excess length of adhesive tape from the supply roll of adhesive tape; and

(f) attaching the severed end of the predetermined length of adhesive tape to the carton, whereby the predetermined length of the adhesive tape intermediate the attached ends of the adhesive tape forms the handle on the carton.

5,052,166

METHOD AND APPARATUS FOR CONTINUOUS PACKAGE MAKING

Beda Ziegler, and Ernst Wanner, both of Schaffhausen, Switzerland, assignors to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 24, 1990, Ser. No. 528,639
Claims priority, application Switzerland, May 24, 1989, 1947/89
Int. Cl.[5] B65B *9/06, 31/00*
U.S. Cl. 53—433 **11 Claims**

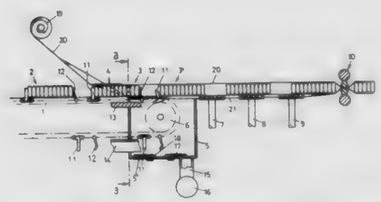
1. In a method of continuously making packages from groups of stacked items, comprising the following steps:

(a) advancing consecutive groups of flat, edgewise standing, stacked items on a conveyor;

(b) during the advancing step, supporting and holding together each item group by holders engaging each article group;

(c) during the advancing and supporting steps, wrapping a warpper sheet about an item group by a wrapper folding device, whereby the wrapper sheet supports and holds together the items in consecutive item groups jointly with the holders;

(d) subsequent to the beginning of the wrapping step, removing the holders from an at least partially wrapped article group;



(e) drawing the wrapper sheet, together with an item group wrapped in the wrapper sheet, by pulling means situated downstream of said conveyor as viewed in the direction of advancement of the items, for conveying the item groups subsequent to the removing step; and

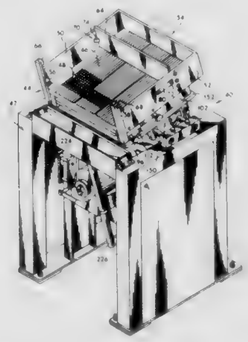
(f) withdrawing air from the wrapper sheet at a suction location where at least a partial wrapping performed during the wrapping step has been completed and where the removign step is being performed, for generating a vacuum inside the wrapper sheet for causing the wrapper sheet to be pressed against edges of items in wrapped item groups downstream of said suction location.

5,052,167

AMMUNITION BOXING MACHINE

Daniel J. Scharch, 6589 County Rd. 105, Salida, Colo. 81201

Filed Nov. 7, 1990, Ser. No. 610,397
Int. Cl.[5] B65B *35/34, 19/34, 5/06, 43/54*
U.S. Cl. 53—444 **34 Claims**



1. An apparatus for loading ammunition into boxes, said apparatus comprising:

a base assembly;

a bullet manifold mounted on said base assembly and having guide means;

a tray pan indexed beneath said bullet manifold aligned with said manifold guide means and sized to position a plurality of empty cartridge boxes into alignment with said guide means;

said guide means on said manifold being configured to guide ammunition into alignment with said empty cartridge boxes;

means mounted on said base assembly to vibrate said bullet manifold to move ammunition into alignment with said guide means;

side walls mounted adjacent three sides of said bullet manifold to contain the loose ammunition on said manifold; and

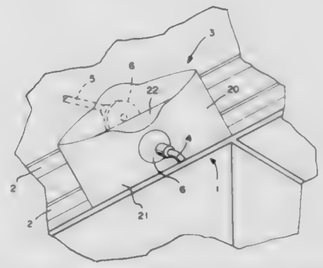
a removable front gate mounted in a first position along the front of said manifold and movable to a second position near the rear of said manifold.

5,052,168

METHOD AND APPARATUS FOR SPREADING OPEN ENVELOPES

Robert R. DeWitt, Marlton, and Michael E. York, Gibbsboro, both of N.J., assignors to Opex Corporation, Moorestown, N.J.

Filed Feb. 5, 1990, Ser. No. 475,219
Int. Cl.[5] B65B *43/30*
U.S. Cl. 53—492 **18 Claims**



1. A method for spreading open an envelope which has been severed along at least one edge, by a pair of suction arms disposed on opposite sides of said envelope, comprising the steps of:

advancing the suction arms toward said envelope;

drawing an air flow through said suction arms which is sufficient to draw faces of the envelope to said suction arms prior to contact of said suction arms with said envelope and each other; and

retracting said suction arms and said envelope faces, spreading open said envelope.

5,052,169

PACKING ARRANGEMENT FOR FILLING OF FREE-FLOWING MATERIALS

Odd Gronlie, Nesbru; Knut Ihle, Oslo; John Eilertsen, Porsgrunn, and Tor Bergli, Oslo, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO89/00082, § 371 Date Jun. 4, 1990, § 102(e) Date Jun. 4, 1990, PCT Pub. No. WO90/02081, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 16, 1989, Ser. No. 469,607
Claims priority, application Norway, Aug. 16, 1988, 883739
Int. Cl.[5] B65B *1/32, 1/06*
U.S. Cl. 53—502 **15 Claims**

1. A mobile bagging apparatus for sealingly filling weighed amounts of free-flowing material into bags, said apparatus comprising:

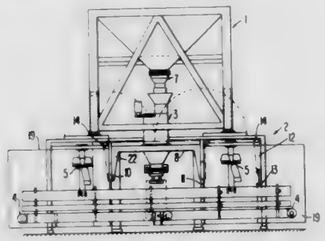
a receiving assembly for receiving and for intermediate storage of free-flowing material;

at least one weighing and filling assembly for receiving material from said receiving assembly and for filling a weighed amount of the material into a bag;

at least one transport assembly for transporting filled bags from said weighing and filling assembly;

a frame construction supporting said weighing and filling assembly and said transport assembly;

means for mounting said weighing and filling assembly on said frame construction for vertical movement relative thereto between lower and upper positions whereat said weighing and filling assembly respectively is substantially within said frame construction and is at least partly above said frame construction;



support means, separate from and independent of said frame construction, for supporting said receiving assembly above said weighing and filling assembly for vertical adjustment relative thereto; and

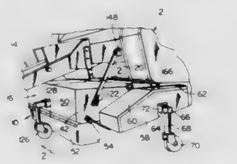
said frame construction and said weighing and filling assembly being isolated from vibrations and shocks imparted to said receiving assembly and said support means.

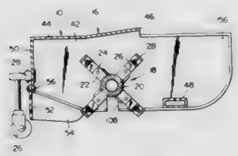
5,052,170

SHREDDER ATTACHMENT FOR ROUND HAY BALER

Michael J. Trenkamp, and Loras F. Gravel, both of P.O. Box 54, Dyersville, Iowa 52040

Filed Jun. 14, 1990, Ser. No. 537,787
Int. Cl.[5] A01D *34/44;* **A01F** *15/07*
U.S. Cl. 56—341 **9 Claims**





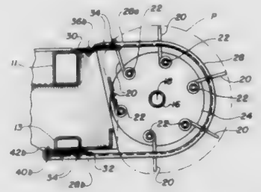
1. A shredder attachment for a round hay baler comprising a housing, means supporting the housing from the hay baler at the forward lower surface thereof, said housing having an open bottom area, a generally horizontally disposed shaft rotatably mounted in said housing and adapted to be driven from the hay baler, a plurality of cutting elements mounted on said shaft with the outer ends of the cutting elements extending through the open bottom of the housing to engage, chop and shred crop stubble and stalks and discharge shredded material into the hay baler to enable the round hay baler to form a round bale of shredded stubble and stalks for use as feed, bedding and the like, said means supporting the housing from the round hay baler including a pair of supporting arms interconnecting the forward side edge portion of the housing with the hay baler and a pair of laterally extending supporting studs on the rear portion of the housing and forwardly opening sockets mounted on the hay baler for receiving said studs and removable means retaining the studs in the sockets.

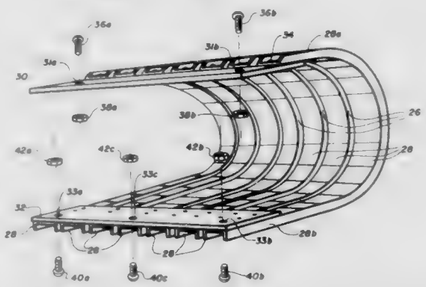
5,052,171

PICKUP TINE GUARD MOUNTING ARRANGEMENT

Gary L. Bich, New Holland, Pa.; Wilfried J. Boucquez, Zedelgem, Belgium, and Louis R. Thomas, New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Aug. 29, 1990, Ser. No. 574,024
Int. Cl.[5] A01D *57/03*
U.S. Cl. 56—364 **10 Claims**





1. In combination with a pickup for an agricultural machine wherein the pickup includes a reel having a plurality of tines movable in a predetermined path to lift crop material from the ground, a plurality of tine guards arranged side-by-side transversely of the reel and defining spaces or gaps therebetween through which said tines project during movement in said path, an arrangement for mounting said tine guards comprising:

an upper mounting plate removable attached to first frame means on said pickup;

a lower mounting plate removably attached to second frame means on said pickup; and

said tine guards each being releasable fastened to said upper and lower mounting plates so that each of said tine guards may be separated individually from said upper and lower mounting plates, said tine guards being removed from said pickup together with said upper and lower mounting plates when said upper and lower mounting plates are detached from said first and second frame means.

5,052,172

METHOD OF UNTWISTING SIZED YARN IN A YARN SPLICING DEVICE

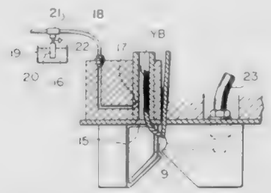
Isamu Matsui, Kyoto, and Hiroshige Maruki, Kusatsu, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 314,444, Feb. 23, 1989, abandoned. This application Jun. 20, 1990, Ser. No. 540,316
Claims priority, application Japan, Feb. 24, 1988, 63-39641
Int. Cl.[5] D01H *15/00*
U.S. Cl. 57—22 **5 Claims**

1. A method of splicing the ends of spun yarn treated by a sizing agent in a yarn splicing device, the method comprising:

facilitating untwisting of the ends of the spun yarn by dissolving at least a portion of the sizing agent from the ends of the spun yarn by applying a solution of the ends of the spun yarn,

untwisting the ends of the spun yarn such that the yarn ends are dried, and



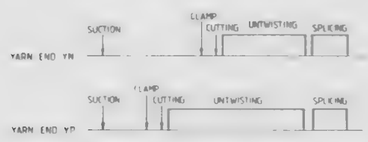
joining the dry untwisted ends of the spun yarn by a whirling stream of air.

5,052,173

METHOD OF OPERATING A SPINNING APPARATUS AND A YARN SPLICING DEVICE

Michiaki Fujiwara, Kameoka, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 221,674, Jul. 20, 1988, Pat. No. 4,939,893. This application Mar. 13, 1990, Ser. No. 492,770
Claims priority, application Japan, Jul. 21, 1987, 62-181934
Int. Cl.[5] D01H *1/115, 15/00*
U.S. Cl. 57—22 **8 Claims**



1. A method of operating a spinning apparatus having a jet nozzle device from which yarn exits, a slack reducing device by which slack in the yarn is taken up, a winding device by which yarn is wound to a yarn package, and yarn joining means for joining the end of a first yarn portion extending from the jet nozzle with the end of a second yarn portion extending from the yarn package, the yarn joining means being provided with first and second untwisting means operable for untwisting the ends of the first and second yarn portions, respectively, the method comprising the steps of:

transferring the ends of the first and second yarn portions toward the first and second untwisting means, respectively;

starting the untwisting operation of the second untwisting means;

operating the second untwisting means for a first time period; and

starting the untwisting operation of the first untwisting means at the lapse of the first time period

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5,052,174

CONTINUOUS FLOW FUEL CONTROL SYSTEM

Michael J. Bak, Union Lake, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Continuation-in-part of Ser. No. 225,193, Jul. 28, 1988, abandoned. This application Aug. 4, 1989, Ser. No. 389,770
Int. Cl.[5] F02C *9/28*
U.S. Cl. 60—39.281 **4 Claims**

1. A fuel control system for regulating fuel flow to an engine comprising

a fuel tank;

a fuel metering valve comprising

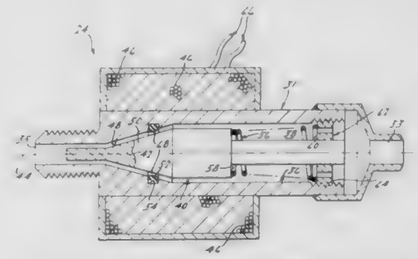
a tubular valve body with an input port at one end and a tapered output port at an opposite end;

a magnetic plunger axially aligned with the central axis of said valve body, said plunger having a tapered end portion complimentary to the tapered end of said valve body;

resilient means for biasing said plunger towards the tapered end of said valve body;

an electromagnet for biasing said plunger away from the tapered end of said valve body so as to control fuel flow through said valve body from said input port to said output port; and

control means for supplying direct current pulses to said electromagnetic biasing means, said pulses being of variable duration but of a constant frequency substantially higher than the natural frequency of said plunger under the bias of said biasing means.

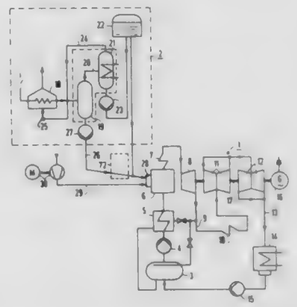


5,052,175

STEAM POWER PLANT

Hermann Brueckner, Uttenreuth; Werner Emsperger, Erlangen, and Hans-Joachim Neumann, Clausthal-Zellerfeld, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 21, 1989, Ser. No. 341,785
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1988, 3814242
Int. Cl.[5] F02C *3/20;* **B01D** *3/00*
U.S. Cl. 60—39.463 **7 Claims**



1. Steam power plant for producing energy from tarry residual oils from a refinery, comprising a steam generator, a combustion system heating said steam generator and having a fuel side, a fired tubular furnace for heating the refinery residual oils to 400° to 600° C. and producing gaseous and vaporous products and other components thereof, a separating column connected downstream of said fired tubular furnace for separating the gaseous and vaporous products from the other components, said separating column having a lower end and an outlet line at said lower end connected to said fuel side of said combustion system for supplying the other components to said combustion system, said separating column having an upper end and another outlet line at said upper end, and including a condensation apparatus into which said other outlet line dis-

charges, and said condensation apparatus having a top product serving as heating medium for said fired tubular furnace

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5,052,176

COMBINATION TURBOJET-RAMJET-ROCKET PROPULSION SYSTEM

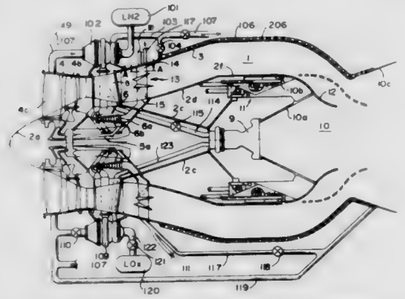
Josiane M. F. Labatut, Yerres; François M. P. Marlin, Melun; Georges Mazeaud, Yerres, and Francois J. Mirville, Melun, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Sep. 27, 1989, Ser. No. 413,379

Claims priority, application France, Sep. 28, 1988, 88 12645; Sep. 28, 1988, 88 12646; Sep. 28, 1988, 88 12647

Int. Cl.[5] F02K *9/00, 3/10*

U.S. Cl. 60—225 98 Claims



1. A combination turbojet-ramjet-rocker propulsion system having a combustion chamber and an air intake duct means to direct air into the combustion chamber defined between a central body and an external housing comprising:

a) air compressor means located in the air intake duct upstream of the combustion chamber to generate a compressed air stream passing into the combustion chamber;

b) gas driven turbine means located in the central body and operatively connected to the air compressor to drive the air compressor and having the exhaust means;

c) means to supply a pressurized gas to drive the gas driven turbine;

d) a source of combustible fuel;

e) injection means located in the combustion chamber downstream of the air compressor means in communication with the source of combustible fuel and the exhaust means of the gas driven turbine means to inject at least one of the combustible fuel and the exhaust from the gas driven turbine means into the compressed air stream when the system is operated in the turbojet and ramjet modes wherein the injection means comprises;

i) an injection device comprising a plurality of arms extending generally radially between the central body and the external housing having an aerodynamic cross-section with an extrados and an intrados extending between a leading edge and a trailing edge, each arm defining at least one interior radially extending cavity in communication with the gas driven turbine to allow exhaust gases from the gas driven turbine to pass into the cavity; and

ii) a plurality of injection orifices defined in the intrados and communicating with the at least one internal cavity to inject the exhaust gases in the cavity into the air stream passing into the combustion chamber;

f) rocket motor means located in a downstream portion of the central body;

g) adjustable exhaust nozzle means in communication with the combustion chamber and the rocket motor; and,

h) adjustment means operatively associated with the exhaust nozzle means to adjust the nozzle between a variable throat convergent-divergent nozzle in the turbojet and ramjet modes and a divergent nozzle in the rocket mode

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5,052,177

AIR-FUEL RATIO FEEDBACK CONTROL SYSTEM HAVING SINGLE AIR-FUEL RATIO SENSOR DOWNSTREAM OF OR WITHIN THREE-WAY CATALYST CONVERTER

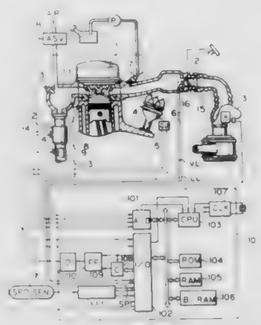
Mitsuhiro Nada, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 21, 1990, Ser. No. 483,017

Claims priority, application Japan, Mar. 3, 1989, 1-50159; Mar. 4, 1989, 1-50985

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 20 Claims



1. A method of controlling an air-fuel ratio in an internal combustion engine having a three-way catalyst converter for removing pollutants in the exhaust gas of said engine, and an air-fuel ratio sensor, disposed downstream of or within said three-way catalyst converter, for detecting a specific component in the exhaust gas, comprising the steps of:

gradually increasing a coarse-adjusting term when the output of said air-fuel ratio sensor is on the lean side with respect to the stoichiometric air-fuel ratio;

gradually decreasing said coarse-adjusting term when the output of said air-fuel ratio sensor is on the rich side with respect to the stoichiometric air-fuel ratio;

determining whether the output of said air-fuel ratio sensor is switched from the rich side to the lean side or vice versa;

remarkably increasing a fine-adjusting term when the output of said air-fuel ratio senor is switched from the rich side to the lean side;

remarkably decreasing said fine-adjusting term when the output of said air-fuel ratio sensor is switched from the lean side to the rich side;

determining whether or not a time of reversions of the output of said air-fuel ratio sensor is smaller than a predetermined time;

prohibiting the calculation of said coarse-adjusting term by the output of said air-fuel ratio sensor when said time of reversions is smaller than said predetermined time; and

adjusting an actual air-fuel ratio in accordance with said coarse-adjusting term and said fine-adjusting term.

5,052,178

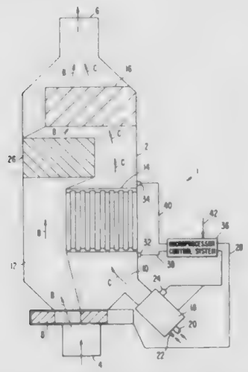
UNITARY HYBRID EXHAUST SYSTEM AND METHOD FOR REDUCING PARTICULATE EMMISSIONS FROM INTERNAL COMBUSTION ENGINES

James C. Clerc, Columbus, Ind.; John R. Gladden, Germantown Hills, Ill., and Paul R. Miller, Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 8, 1989, Ser. No. 390,884

Int. Cl.[5] F01N *3/02*

U.S. Cl. 60—274 30 Claims



1. A system for removing particulate matter from exhaust gas of an internal combustion engine, said system comprising:

a) a main flow passage and a by-pass flow passage for conducting said exhaust gas from an inlet portion to an outlet portion of said system;

b) valve means for selectively directing said exhaust gas through one of said passages;

c) filtering means for filtering said exhaust gas directed through said main flow passage;

d) regeneration means positioned intermediate said valve means and said filtering means for selectively regenerating said filtering means by removing said particulate matter therefrom;

e) an oxidation means positioned downstream of said filtering means in said main flow passage for further oxidizing said particulate matter; and

f) a control means for controlling the flow of said exhaust gas, selectively activating said regeneration means upon sensing of a predetermined condition, and deactivating said regeneration means when the regenerating of said filtering means has been completed;

wherein said system is a unitary system with said flow passages, said valve means, said filtering means, said regeneration means and said oxidation means are positions within a single housing including said inlet portion and said outlet portion.

5,052,179

PUMP DISCHARGE FLOW RATE CONTROLLED BY PILOT PRESSURE ACTING ON VEHICLE DRIVE VALVES

Kazuhiko Fujii, Hiroshima, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 16, 1990, Ser. No. 494,313

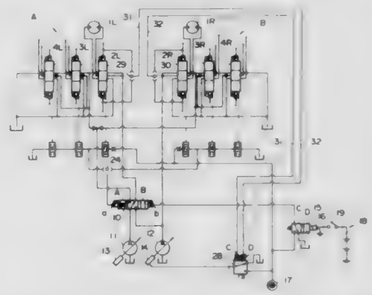
Claims priority, application Japan, Jul. 7, 1989, 1-176591

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—421 1 Claim

1. A hydraulic pump control circuit for a travelling construction machine including various hydraulic actuators divided into left and right groups to be driven by first and second pumps, respectively, left and right vehicle drive motors provided in the respective groups, said left and right vehicle drive motors being controlled by left and right vehicle drive valves, respectively, and a changeover valve located on a discharge side of said first and second pumps having a position for supplying an oil pressure from said second pump in parallel to said left and right vehicle drive motors, said hydraulic pump control circuit comprising:

a pilot proportioning valve located between a discharge



flow rate control regulator for said second pump and a pilot pressure source; and

means for applying pilot pressures acting on said left and right vehicle drive valves to pilot ports of said pilot proportioning valve;

said proportioning valve being operated by the sum of said pilot pressures applied to said pilot ports to produce a control pressure for said second pump regulator.

5,052,180

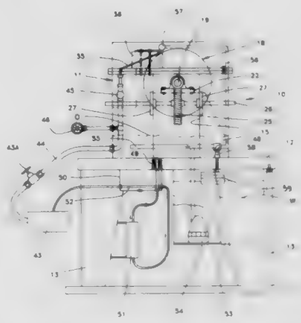
FLUID PRESSURE DRIVEN POWER SYSTEM

Audie Coker, Las Vegas, Nev., assignor to Audie Coker Enterprises, Las Vegas, Nev.

Filed Feb. 13, 1991, Ser. No. 655,559

Int. Cl.[5] F16D *31/00;* F01D *1/00*

U.S. Cl. 60—456 3 Claims



1. A fluid pressure driven power system, comprising:

a platform on which a casing is mounted,

a plurality of side by side rotors within the casing keyed for conjoint rotation to a common shaft,

each rotor having axially spaced side disks with the space therebetween spanned by radial fins extending above the perimeters of the rotors,

a pressure head mounted within the casing above the rotors,

a plurality of tubular inserts embedded within the pressure head each having an exposed end portion,

each tubular insert being aligned with a rotor and having on its exposed end portion a concavely curved cutaway

section adapted to tangentially overlie rotor fins therebeneath,

the side disks on each rotor being spaced to closely fit the width of the tubular insert exposed end cutaway section overlying the fins and having perimetral edge portions projecting into upwardly extending slots in the pressure head to provide a chamber between the side disks above the rotor,

the concavely curved cutaway sections each having an orifice therebeneath through which pressurized fluid is discharged in a direction to impact the rotor fins to cause rotor rotation,

a source of highly pressurized fluid selectively connectable to one or more of the tubular inserts to provide pressurized fluid for discharge through the orifices,

wherein the fluid being discharged through an orifice to impact the rotor fins aligned therewith will be restricted to the chamber above the rotor to minimize loss of fluid and pressure of the pressurized fluid emanating from the orifices.

5,052,181

HEAT SENSITIVE ACTUATOR

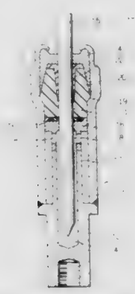
Isanu Asada, Kiyose, Japan, assignor to Nihon Seiken Kabushiki Kaisha, Tokorozawa, Japan

Filed Sep. 26, 1990, Ser. No. 589,833

Claims priority, application Japan, Dec. 25, 1989, 1-148884[U]; Mar. 7, 1990, 2-22713[U]

Int. Cl.[5] F03G *7/06*

U.S. Cl. 60—527 **8 Claims**



1. A heat sensitive actuator, comprising:

a casing including an enclosure portion bounding a predetermined interior volume, and said casing including an outer portion having a conically tapering shoulder;

a plug frictionally received within said outer portion of said casing and being in contact with said conically tapering shoulder, said plug having a first opening therethrough;

an intermediate ring fixedly connected to said plug, said intermediate ring having a second opening therethrough;

a thermal expansion fluid contained in said predetermined interior volume in said casing;

a piston rod slidably extending through said first opening in said plug and said second opening in said intermediate ring, said piston rod having an end which projects into said fluid in said predetermined interior volume, and said piston rod is movable relative to said casing by thermal expansion of said fluid;

said plug being elastomeric for sealing said fluid within said interior volume, said plug being elastically compressed against said shoulder such that it exerts pressure radially against an outer circumference of said piston rod; and

said intermediate ring being disposed in a part of said first opening of said plug, in order to reduce a contact area between said plug and said piston rod and thereby reduce a frictional resistance of said piston rod.

5,052,182

HYDRAULIC BRAKE BOOSTER SYSTEM WITH CHECK VALVE IN BRAKE FLUID RESERVOIR LINE

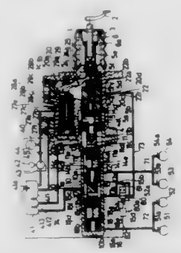
Michiharu Nishii, Toyota; Genji Mizuno, Toyoake; Yoshihiko Tada, Hazu; Yoshihisa Nomura, Toyota; Masahiko Kato, Nagoya; Kenji Shirai, Mishima, and Junichi Tanoue, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 12, 1988, Ser. No. 282,567

Claims priority, application Japan, Dec. 11, 1987, 62-314803

Int. Cl.[5] B60T *13/12, 13/68*

U.S. Cl. 60—547.1 **10 Claims**



1. A hydraulic braking system for braking the wheels of a vehicle, comprising:

first and second groups of brake cylinders operably connected with respective wheels,

reservoir means containing brake fluid,

fluid pressurizing means fluidly connected with said reservoir means for defining a source of pressurized brake fluid,

a tandem master cylinder comprising:

a housing having a bore therein, one end of said bore being open and the other end thereof being closed, and

piston means slidably disposed in said bore and defining with said housing first and second pressure chambers and first and second fluid chambers, said piston means comprising first and second pistons mounted for relative sliding movement in said bore, said first and second fluid chambers being in fluid connection with said first and second pressure chambers, respectively, for supplying brake fluid to said first and second pressure chambers, said first and second pressure chambers being fluidly connected with said first and second groups of brake cylinders, respectively,

means for imparting sliding motion to said piston means in a manner pressurizing brake fluid in said first and second pressure chambers, comprising:

a brake pedal operably connected to said piston means through said open end of said bore for imparting sliding motion to said piston means when said pedal is actuated, and

a hydraulic booster fluidly connected to said source of pressurized fluid and operably connected to said brake pedal for applying pressurized brake fluid to said piston means in response to actuation of said brake pedal to boost the sliding motion of said piston means,

said hydraulic booster, during all braking operations, being continually fluidly connected to said second fluid chamber for supplying pressurized brake fluid to the second fluid chamber in response to actuation of said brake pedal for boosting the fluid pressure in said second fluid chamber, and

fluid conduit means fluidly connecting said reservoir means and said second fluid chamber, said fluid conduit means including valve means permitting the flow of brake fluid from said reservoir means to said second fluid chamber when negative pressure is generated in said second fluid chamber and preventing the flow of brake fluid from the second fluid chamber to said reservoir means.

5,052,183

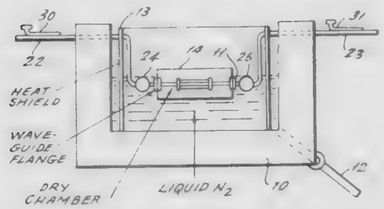
OPEN CRYOGENIC MICROWAVE TEST CHAMBER

Thomas E. Koscica, Clark; Richard W. Babbitt, Fair Haven, and William C. Drach, Trenton, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1991, Ser. No. 637,427

Int. Cl.[5] F25B *19/00*

U.S. Cl. 62—51.1 **13 Claims**



1. An open cryogenic chamber for testing superconducting apparatus comprising, in combination, an open topped chamber which is filled to a given level with a liquid gas; a dry chamber partially immersed in said open topped chamber and adapted to receive superconducting apparatus to be tested under low temperature conditions; first and second waveguides entering said open topped chamber; third and fourth waveguides fixed to and extending through end walls of said dry chamber and coupled to said first and second waveguides, respectively, which enter said open topped chamber; sealing means for forming a fluid tight seal at the regions coupling said waveguides; and coupling means within said dry chamber for coupling superconducting apparatus to be tested to said third and fourth waveguides which are fixed to said ends of said dry chamber.

5,052,184

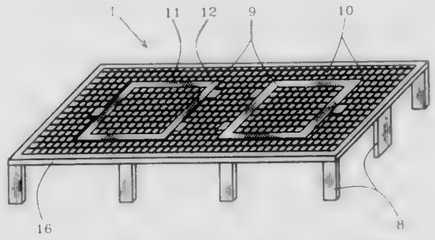
COOLER CHEST GRID AND METHODS

Paul L. Jarvis, 4014 Edgewood Dr., Cocoa, Fla. 32926

Filed Nov. 29, 1990, Ser. No. 619,516

Int. Cl.[5] B65B *63/08*

U.S. Cl. 62—60 **20 Claims**



19. A method for using a cooler-chest grid comprised of:

a screened grid with outside edges sized and shaped to fit horizontally within interior walls of a cooler chest;

orifices in communication between a bottom surface and a top surface of the screened grid, said orifices being sized and shaped to allow convective heat transfer within the cooler chest from a relatively low-temperature cooling substance to food items positioned above a top surface of the screened grid and to allow liquid from the cooling substance to drain through the grid to keep said food items dry; and

a plurality of access doors located in the screen grid for accessing food or beverages beneath the screened grid, said method comprising the following steps:

placing optional containerized beverages on the bottom inside surface of the cooler chest;

placing the cooler-chest grid over the optionally containerized beverages;

placing select non-containerized and dry food items above the cooler chest grid;

removing for select utilization the non-containerized and dry food items which will be free of water from melted ice under the grid; and

removing for select utilization the containerized beverages through the access doors.

5,052,185

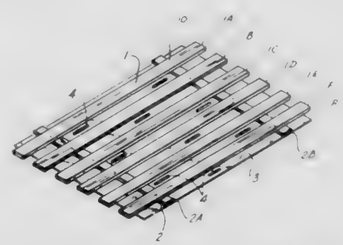
ICE CHEST RACK SYSTEM

William Spahr, P.O. Box 127, Des Allemands, La. 70030

Filed Oct. 22, 1990, Ser. No. 601,294

Int. Cl.[5] B65B *63/08*

U.S. Cl. 62—60 **1 Claim**



1. A method of decreasing the rate of melting of chopped ice, granulated ice, or ice cubes in an ice chest, comprising the following steps:

(a) providing an ice chest rack, comprising:

a plurality of upper slats arranged in parallel fashion, said upper slats having first and second ends,

at least two lower slats engaged to said upper slats at said first and second ends of said upper slats, respectively, said lower slats being arranged in parallel fashion relative one another,

a planer support surface engaged to said lower slats, said planer support surface configured to generally occupy generally a similar planer area to that established by said upper slats;

(b) placing an amount of granular ice, chopped ice, or ice cubes in an ice chest or combination thereof;

(c) placing said ice chest rack in said ice chest such that said planer support surface is in contact with said granular ice, chopped ice, or ice cubes or combination thereof;

(d) placing an amount of items having significant weight upon said upper slats of said ice chest rack; and

(e) allowing and using the weight of said items to communicate through said ice chest rack to be evenly distributed by said planer support surface to said granular ice, chopped ice, ice cubes or combination thereof, compacting said ice, and slowing the rate of melting of said ice.

5,052,186

CONTROL OF OUTDOOR AIR SOURCE WATER HEATING USING VARIABLE-SPEED HEAT PUMP

Kevin F. Dudley, Cazanovia; Lowell E. Paige, Pennellville; Kevin B. Dunshee, Syracuse, and Roger J. Voorhis, Pennellville, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

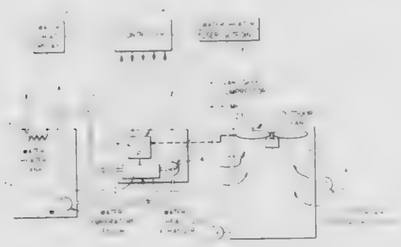
Filed Sep. 21, 1990, Ser. No. 586,004

Int. Cl.[5] F25B *7/00, 1/00*

U.S. Cl. 62—79 **8 Claims**

1. A process of controlling an integrated heat pump system of the type comprising a variable speed compressor having a discharge port and a suction port; a water heat exchanger

coupled to the discharge port of said compressor for heating water by transfer of heat from a compressed heat exchange fluid; an outdoor evaporator heat exchanger having an outdoor fan and a coil receiving the heat exchange fluid from said water heat exchanger and coupled also to the suction port of the compressor, for drawing heat from the outdoor air which heat is transferred to the water in the water heat exchanger; a controller having output channels to control an outdoor fan and the speed of said variable speed compressor and inputs respectively coupled to a water heater setpoint adjustment means, an outdoor air temperature sensor for sensing the outdoor temperature of said outdoor air; and a water temperature sensor for sensing the temperature of the water heated by said water heat exchanger; the process comprising the steps of sensing the



outdoor temperature T_O; sensing the water temperature T_W; controlling the speed of said compressor to operate at a lower speed when said outdoor temperature is high and at a higher speed when said outdoor temperature is low, within a range of outdoor temperatures from a minimum temperature to a maximum temperature; wherein said compressor speed is controlled substantially at a minimum speed for outdoor temperatures between a maximum outdoor temperature and a high temperature below said maximum outdoor temperature; substantially at a maximum speed for outdoor temperatures between a minimum outdoor temperature; and a low temperature above said minimum outdoor temperature, and at a variable speed that rises with decrease in outdoor temperature from said low temperature to said high temperature.

5,052,187

WATER FLOW CONTROL FOR HEAT PUMP WATER HEATERS

Glen P. Robinson, Jr., 1050 Mt. Paran Rd., SW., Atlanta, Ga. 30327

Continuation-in-part of Ser. No. 384,148, Jul. 21, 1989, Pat. No. 4,955,930. This application May 24, 1990, Ser. No. 528,704
The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.
Int. Cl.[5] F25B *7/00*

U.S. Cl. 62—79 **15 Claims**

10. A method of heating water in a water tank to the normal predetermined tank temperature associated with water heaters using a heat pump with a condenser heat exchanger comprising the steps of:

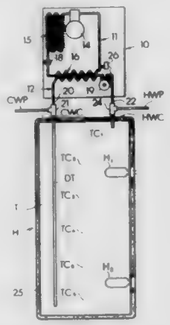
a) connecting the condenser heat exchanger between the upper and lower ends of the water tank;

b) operating the heat pump when the tank temperature falls below the normal predetermined tank temperature;

c) detecting the refrigerant temperature in the condenser heat exchanger;

d) when the refrigerant temperature in the condenser heat exchanger exceeds a first prescribed temperature corresponding to a water temperature sufficient for immediate use but below the normal predetermined tank temperature, circulating the water from the lower end of the tank to the heat exchanger and from the heat exchanger to the upper end of the tank until the refrigerant temperature is lowered a prescribed amount;

e) stopping the circulating of the water through the heat exchanger when the refrigerant temperature has been lowered said prescribed amount; and,



f) repeating steps d) and e) until the normal predetermined tank temperature is reached.

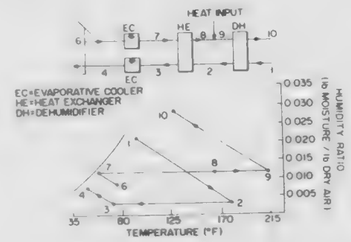
5,052,188

DESICCANT MATERIALS FOR USE IN GAS FIRED COOLING AND DEHUMIDIFICATION EQUIPMENT

Sridhar Komarneni; Prakash B. Malla, both of State College, Pa., and Shoji Yamanaka, Hiroshima, Japan, assignors to Gas Research Institute, Chicago, Ill.

Filed Oct. 24, 1990, Ser. No. 602,665
Int. Cl.[5] F25D *17/08;* **B01J** *29/06*

U.S. Cl. 62—94 **13 Claims**



1. In a desiccant cooling system process wherein a moving stream of air is progressively and sequentially adiabatically dehumidified by passing it through a desiccant material to produce warm dry air, cooled to produce cool dry air, and adiabatically humidified to produce cool nearly saturated air for introduction into the space to be cooled, the improvement which comprises utilizing as a desiccant material particles of a modified aluminosilicate having an isotherm separation factor within the range of from about 0.07 to about 0.1

5,052,189

HEAT PUMP REFRIGERATION SYSTEM FOR A MOTOR VEHICLE

Shigeru Akiike, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 264,527, Oct. 31, 1988, abandoned. This application Jun. 13, 1990, Ser. No. 539,316
Claims priority, application Japan, Oct. 29, 1987, 62-271849; Feb. 29, 1988, 63-44498
Int. Cl.[5] F25B *49/02*

U.S. Cl. 62—197 **14 Claims**

1. A heat pump refrigeration system for refrigerating a compartment comprising:

a first heat exchanger mounted outside said compartment;

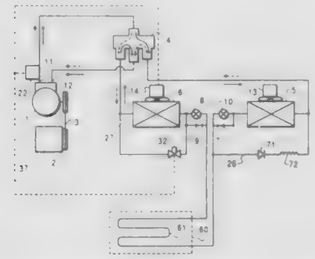
a second heat exchanger mounted inside said compartment and coupled to said first heat exchanger;

a compressor;

a refrigerant conduit coupled between said first and second heat exchangers, and between said compressor and said first and second heat exchangers, to transport refrigerant;

a valve mechanism coupled between said compressor and said first and second heat exchangers, said valve mechanism having two positions, one of which enables refrigerant to flow to said first and second heat exchangers in one direction and the other position enables refrigerant to flow in the opposite direction;

cycle control means coupled to said valve mechanism for switching the position of said valve mechanism between a refrigerating cycle in which refrigerant flows from said



first heat exchanger to said second heat exchanger and a defrosting cycle in which refrigerant flows in the opposite direction;

a bypass conduit coupled to said second heat exchanger to pass at least a portion of the refrigerant around said second heat exchanger;

temperature control means for measuring the temperature of the refrigerant discharged from said compressor during the refrigerating cycle and at least partially opening said bypass conduit when the temperature of the discharged refrigerant exceeds a predetermined temperature during the refrigerating cycle; and

a fan adjacent said second heat exchanger, said fan coupled to said temperature control means for enabling said temperature control means to measure the temperature of the refrigerant discharged from said compressor as said fan is turned on and off.

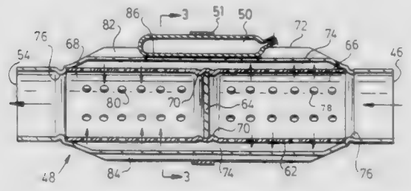
5,052,190

APPARATUS FOR THE SENSING OF REFRIGERANT TEMPERATURES AND THE CONTROL OF REFRIGERANT LOADING

Charles Gregory, Burlington, Canada, assignor to Super S.E.E.R. Systems Inc., Burlington, Canada

Continuation-in-part of Ser. No. 404,380, Sep. 8, 1989, which is a continuation-in-part of Ser. No. 229,038, Aug. 4, 1988, abandoned. This application Dec. 4, 1989, Ser. No. 444,913
Int. Cl.[5] F25B *41/04;* **G01K** *13/02*

U.S. Cl. 62—225 **18 Claims**



1. Apparatus for the sensing of the temperature of refrigerant exiting from a refrigeration system evaporator coil outlet and for the control in accordance with the temperature sensed by a sensing means of a controllable evaporator valve feeding liquid refrigerant to the evaporator coil inlet, the sensing means comprising a fluid-containing elongated cylindrical bulb connected by a metal capillary tube to a charged diaphragm capsule in the valve, the apparatus comprising:

a turbulating and mixing device having an inlet and an outlet for refrigerant and having therein a refrigerant flow path having at least part of a wall thereof of heat conductive material for sensing the enclosure device interior temperature through the wall part;

the said wall part having formed in a portion thereof a radially outwardly opening groove into which the sensing means cylindrical bulb can be inserted and from which it can be removed, the groove being of transverse cross-section corresponding to that of the part of the cylindrical bulb in the groove whereby the wall of the part of the cylindrical bulb within the groove is in heat exchange contact with the wall part, thereby increasing the area of heat conductive contact of the sensing means cylindrical bulb with the groove wall;

and turbulence and mixing producing means in the flow path intercepting the entire refrigerant flow and creating turbulence and mixing of the refrigerant with changes in the direction of the entire refrigerant flow to ensure turbulence and mixing of all liquid and vapor refrigerant phases present and contact of only mixed phases with at least the groove wall part.

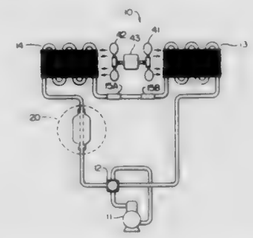
5,052,191

METHOD AND APPARATUS FOR HEAT PUMP DEFROST

Ian M. Shapiro-Baruch, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 13, 1990, Ser. No. 581,938
Int. Cl.[5] F25B *27/00*

U.S. Cl. 62—238.7 **7 Claims**



1. In a reversible vapor compression air conditioning system having

a cooling mode of operation,

a heating mode of operation and

a defrosting mode of operation

and having

a compressor with a suction and a discharge,

an outside heat exchanger,

an inside heat exchanger,

refrigerant expansion means,

a single refrigerant flow reversing valves and

interconnecting refrigerant conduit that serially connect and allow reversible refrigerant flow through said flow reversing valve, said outside heat exchanger, said expansion means and said inside heat exchanger

and having

a heating mode refrigerant flow path in which said flow reversing valve is aligned so that refrigerant from said compressor discharge flows first from said flow reversing valve to said inside heat exchanger and

a refrigerant flow path common to both said cooling and

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said defrosting modes of operation in which said flow reversing valve is aligned so that refrigerant from said compressor discharge flows first from said flow reversing valve to said outside heat exchanger,

a method of storing and supplying heat to defrost said outside heat exchanger comprising:

transferring heat, while said system is operating in said heating mode of operation, from refrigerant flowing in that portion of said interconnecting refrigerant conduit that lies between said refrigerant flow reversing valve and said inside heat exchanger to heat storage means in heat exchange relationship with said portion of said conduit and

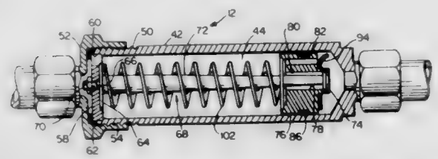
transferring heat, while said system is operating in said defrosting mode of operation, from said heat storage means to refrigerant flowing in said portion of said conduit.

5,052,192

DUAL FLOW EXPANSION DEVICE FOR HEAT PUMP SYSTEM

Alan S. Drucker, Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 14, 1990, Ser. No. 522,758
Int. Cl.[5] F25B *13/00*
U.S. Cl. 62—324.6 **6 Claims**



5. A refrigerant expansion valve for use in a heat pump comprising:

a body having a flow passage for passing a flow of refrigerant in either direction;

means within said body for metering the flow of refrigerant therethrough in one direction through an orifice that varies in cross-sectional area as a function of the pressure differential across said valve; and

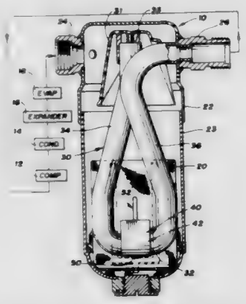
means within said body for metering the flow of refrigerant in the other direction therethrough through a fixed area metering orifice.

5,052,193

AIR CONDITIONING SYSTEM ACCUMULATOR

Edward D. Pettitt, and Douglas C. Wintersteen, both of Burt, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 7, 1990, Ser. No. 519,967
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—503 **6 Claims**



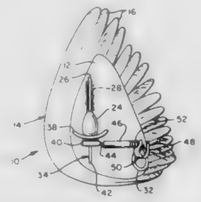
1. An accumulator for an air conditioning system charged with a refrigerant, said accumulator comprising a casing having a bottom and a top, an inlet fitting and an outlet fitting connected to said casing near said top, U-shaped tube means mounted in said casing having an open inlet end located near said top and an outlet end connected to said outlet fitting and a return bend portion located near said bottom, a baffle mounted in said casing between said inlet fitting and said open inlet end, a first lubricant bleed opening in said return bend portion calibrated to allow any lubricant collected in said bottom to enter said tube means at a limited flow rate under normal refrigerant charge conditions, and bleed valve means for establishing a secondary lubricant bleed opening in said return bend in response to a decrease in the amount of refrigerant below a normal charge level to increase the available lubricant flow rate into said tube means.

5,052,194

EAR HIDERS

Albert J. Jarus, 8201 Bay Pkwy. Apt. 2-H, Brooklyn, N.Y. 11214

Filed Feb. 19, 1991, Ser. No. 656,684
Int. Cl.[5] A44C *7/00*
U.S. Cl. 63—14.3 **6 Claims**



1. An ear cover comprising:

a mounting plate having an inside and an outside and adapted to cover a human ear;

a decorative cover secured to said outside of said mounting plate serving as a means for covering a human ear;

a first frame comprising a first length of wire having an intermediate portion secured in a substantially vertical line on said inside of said mounting plate, a curved portion extending outwardly from a top of said intermediate portion and terminating in a bead having a curved lower end, a first horizontal wire portion attached to a bottom end of said intermediate portion and extending horizontally along said inside of said mounting plate and adjacent thereto, and a wire loop portion connected to an end of said first horizontal wire portion and secured to said inside of said mounting plate;

a second frame comprising a curved seat member having a concave upper portion adapted to engage said curved lower end of said bead, said curved seat member having a convex bottom, a stem connected at one end to said convex bottom of said curved seat member with a knob at the other end of said stem, and a second length of wire attached to and extending from said stem to form a second horizontal wire portion parallel and immediately adjacent to said first horizontal wire portion of said first frame, said second frame being adapted for movement relative to said first frame so that said curved seat member is movable relative to said bead;

connecting spring means for forcing said curved seat member into engagement with said bead, said connecting spring means engaging both said first horizontal wire portion of said first frame and said second horizontal wire portion of said second frame; and

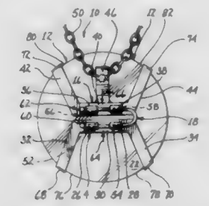
lever means connected with said second frame and being actuatable to produce movement of said second frame relative to said first frame so that said curved seat member is separated from said bead to thereby attach said ear cover to a human ear.

5,052,195

COIN HOLDER AND METHOD THEREFOR

Dean E. Lunt, 1049 W. 7th St., Mesa, Ariz. 85201

Filed Apr. 25, 1990, Ser. No. 514,313
Int. Cl.[5] A44C *11/00*
U.S. Cl. 63—21 **5 Claims**



1. A coin and holder combination, comprising:

a coin having a front face and a rear face and an edge portion;

a first clamp;

a second clamp; and

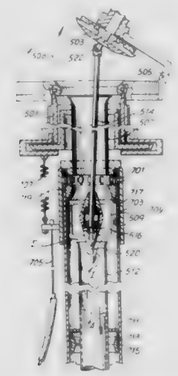
pin member means, comprising a U-shaped pin having a first leg portion for connecting to said first clamp and having a second leg portion for connecting to said second clamp, whereby said first and second clamps form a holding frame for said coin.

5,052,196

PNEUMATICALLY SOCK TENSIONING AND REVERSING DEVICE FOR KNITTING MACHINE

Francesco Turini, Via I° Maggio No. 2, Stabbia Fraz. Com. Cerreto Guidi (FI), Italy

Filed Feb. 10, 1989, Ser. No. 309,772
Claims priority, application Italy, Feb. 17, 1988, 9332 A/88; Mar. 30, 1988, 9371 A/88; Jun. 29, 1988, 9436 A/88
Int. Cl.[5] D04B *15/92*
U.S. Cl. 66—149 S **11 Claims**



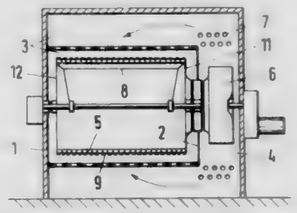
1. A device for pneumatically tensioning and reversing tubular manufactured articles such as socks, upon completion of the manufactured article by a circular knitting machine with a rotating needle cylinder, said device having an external tubular casing and an internal element for forming an interspace with an annular cross section for pneumatic tensioning, said internal element forming an axial passage inside which the manufactured article is turned inward and reversed during an operation where said article is reversed and pneumatically conveyed away, wherein both said tubular casing and said internal element each consists of two sections with different diameters, including upper sections with smaller diameters accommodated within the needle cylinder and lower sections with larger diameters located outside and adjacent to the needle cylinder; means being provided for forming an annular discontinuity between the two sections of said internal element so that, after a phase involving formation with pneumatic tensioning, a second pahse involving inward turning and reversal can be performed along an end edge of the internal element section of larger diameter, and within said tubular casing section of larger diameter, holes for the intake of external air and means for controlling the opening and closing of said holes in order to reduce the air flow rate within the tubular casing being arranged inside the needle cylinder and closer to a working zone of the needles.

5,052,197

APPARATUS FOR FLOW-THROUGH TREATMENT OF TEXTILE MATERIAL, PAPER OR THE LIKE

Gerold Fleissner, Chur, Switzerland, assignor to Fleissner Maschinenfabrik AG, Rebstein, Switzerland

Filed Mar. 8, 1990, Ser. No. 490,412
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907421
Int. Cl.[5] D06B *5/08*
U.S. Cl. 68—5 D **21 Claims**



1. An apparatus for the flow-through treatment of textile material, nonwovens, or paper, with a gaseous or liquid treatment medium circulated therein, comprising a permeable drum as a conveying element subjected to throughflow from the outside toward the inside, said drum being under a suction draft and having end plates at its end faces, said drum being covered on its periphery with a screen type cover, sheet metal strips extending in an axial direction and being arranged between the end plates of the drum, an extension in width of these sheet metal strips running substantially in a radial direction, and connecting-locking elements which connect the sheet metal strips provided in a peripheral direction between the sheet metal strips, wherein said connecting-locking elements

(a) are each of a unitary structure,

(b) are each provided with a connection portion having a width corresponding to a desired spacing of immediately adjacent sheet metal strips,

(c) are each connected with an adjacent sheet metal strip, and

(d) are each provided at least on one side with a locking element portion which can be respectively inserted through a corresponding opening in an associated sheet metal strip; the locking element portion of a first connecting-locking element being fixedly adjusted at an adjacent second connecting-locking element.

5,052,198

BATTERY LOCK AND HOLD-DOWN DEVICE

Gary Watts, Riverside, Calif., assignor to ElekTrek Partnership, Riverside, Calif.

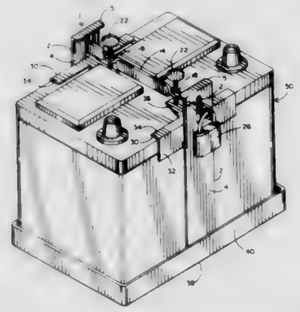
Filed Jul. 30, 1990, Ser. No. 560,088
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—58 **10 Claims**

1. A lock and hold-down device to prevent the theft of a

battery from a battery plate upon which the battery is seated, said device comprising

a pair of elongated brackets positioned at opposite sides of the battery, each of said brackets including a first end extending above the top of the battery and having an opening therein and a second end connected to said battery plate, such that said brackets stand upright and in parallel alignment from said battery plate and the openings in said first ends area axially aligned with one another;

a crossbar having a hole formed in a first end and relatively wide blocking means formed at an opposite end, said crossbar extending across the top of the battery for receipt through the openings in said brackets, such that the first end of said crossbar having said hole projects outwardly



from the opening in a first of said brackets to receive a lock through said hole and the opposite end of said crossbar having said blocking means projects outwardly from the opening in the other of said brackets to prevent the removal of said crossbar from said brackets and the battery from said battery plate, said crossbar including at least one flat surface located between the first and opposite ends thereof, said flat surface positioned in spaced, parallel alignment with the top of the battery and having a hole formed therethrough, the opposite ends of said crossbar being bent from said flat surface for receipt through the openings in said brackets; and

at least one fastener to be moved through the hole in the flat surface of said crossbar and towards the top of the battery to cause a downward force to be exerted thereon for holding said battery on the battery plate.

5,052,199

CLAMP LOCKING DEVICE FOR PC'S AND THE LIKE

Jay S. Derman, 1201 N. Catalina Ave., Redondo Beach, Calif. 90277-0949

Filed Nov. 30, 1990, Ser. No. 621,222
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—58 16 Claims

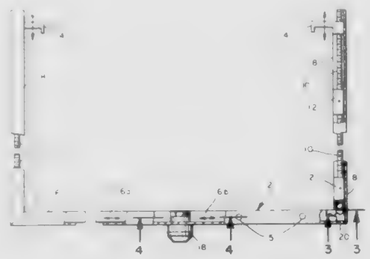
1. A clamp locking device comprising:

a frame constructed from metal channel and formed to fit a PC, said frame having two parallel arms and a front portion, said parallel arms being made long enough to project along a PC housing side and beyond its back plane, said frame front portion being made long enough to enable said frame to fit snugly around a PC housing;

a clamp adjusting means mounted inside each arm of said frame;

a pair of clamp pieces, with each clamp piece operatively connected to said clamp adjusting means so as to be operated by said adjusting means, and projecting perpendicularly to said arms and in the plane of said arms; said clamp pieces mounted in a manner permitting longitudinal movement along said frame arms;

a disk drive blocking means, said blocking means including a blocking rod which is inserted vertically in the front portion of said frame when required to block access to the PC disk drive; said blocking means alternately including a U-shaped bar which may be inserted vertically in the front portion of said frame; and



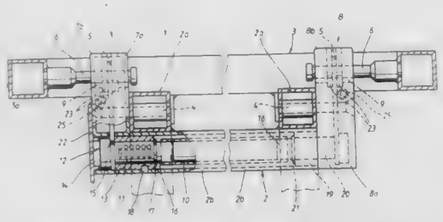
a locking means mounted inside the front of said frame, said locking means when open, permitting access to said clamp adjustment means for tightening or loosening said clamp pieces; said locking means when closed, holding said disk drive blocking means secured and preventing access to said clamp adjustment means.

5,052,200

LOCKING DEVICE FOR LOCK COMPONENTS IN/ON VEHICLES

Klaus Claar, Sindelfingen, and Jan Schilling, Gechingen, both of Fed. Rep. of Germany, assignors to Daimerler-Benz AG, Fed. Rep. of Germany

Filed Jun. 29, 1990, Ser. No. 545,624
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921314
Int. Cl.[5] B60R *9/00*; E05B *63/20*
U.S. Cl. 70—123 10 Claims



1. Locking apparatus for lock component on a vehicle comprising at least two rotary closures arranged in spaced separation from one another and connected by means of a mechanical transmission element to form a synchronously rotating closure unit, each of said rotary closures having associated therewith a catch bolt arranged on a counter component and each of said rotary closures being adapted to move into locking engagement with said catch bolt in response to movement of said catch bolt into a locking position during a closing movement of said counter component,

wherein each of said rotary closures also has a control member uniquely associated therewith, each of said control members being movable between a blocked position in which said rotary closure is prevented from moving into locking engagement with said catch bolt, and an unblocked position in which said rotary closure is permitted to move into locking engagement with said catch bolt, said control member being adapted to move from said blocked position to said unblocked position in response to movement of said catch bolt into said locking position,

wherein movement of said rotary closures into locking engagement with said catch bolts is blocked until each of said catch bolts is moved into said locking position,

wherein said rotary closures consist of closure hooks mounted pivotably in an associated closure housing, each of said closure housings having a latch orifice for the penetration of the corresponding catch bolt into said locking position,

wherein said control member comprises a detent lever articulated on the closure housing in the pivoting plane of each of the rotary closures whereby said rotary closures are prevented from moving into locking engagement with said catch bolts by being supported by one end of the associated detent lever, said detent lever passing through an end region of the latch orifice, and

wherein said detent levers are caused to pivot counter to a spring load during penetration of said catch bolts into said latch orifice, whereby, after the locking position of said catch bolts has been reached, said support of said detent levers on said rotary closures in shifted to such an extent that said rotary closures are pivotable into a locking position covering the latch orifice.

5,052,201

AUTOMOBILE STEERING WHEEL LOCK

Jaieter Liou, No. 48, Tung Hua Street, San Min District, Kaohsiung, Taiwan

Filed Jul. 18, 1990, Ser. No. 553,637
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 3 Claims



1. An automobile steering wheel lock comprising:

a stick having a hooked end and an un-hooked end and a racheted porton formed therebetween, said hooked end being so bent as to be able to hook solely onto one of a plurality of spokes of a steering wheel held together by a wheel rim of said steering wheel;

a lock block comprising a body which has a first hole running therethrough to have said un-hooked end of said said stick penetrate therethrough and slidable with respect thereto, a second hole with one end thereof closed to receive and hold therein a lock plug of which one end has a first caming surface formed thereon and the other end has a key way formed thereon to received a key and have the plug rotated by said key, a third hole connecting therebetween and holding therein a pawl being so biased by a spring to engage with said racheted portion of said stick so that said lock block is only allowed to freely slide toward said wheel rim and said hooked end of said stick in a direction towards the center of the steering wheel during the locking operation, and an elongated protrusion extending from said lock block at an angle with respect thereto so that when said lock block slides toward said hooked end of said stick, a single portion of said steering wheel rim is trapped in the space between said body and said protrusion and is tightly held by said hooked end that hooks on said one spoke and said body, together with said protrusion, said pawl having a second caming surface formed thereon to be engageable with said first caming surface formed on said lock plug so that when said lock plug is rotated by said key, said first caming surface pushes said second caming surface thus moving said pawl against said spring to have said pawl disengage said racheted portion of said stick and said lock block thus being freely slidable away from said hooked end of said stick; and

an elongated tube having a first end open to receive said unhooked end of said stick therein and securedly fixed thereon to prevent said lock block from being slid off said stick.

5,052,202

DEAD BOLT LOCKING DEVICE

Jerry A. Murphy, 7361 E. Diamond, Scottsdale, Ariz. 85257

Filed Mar. 21, 1990, Ser. No. 496,793
Int. Cl.[5] E05B *13/08*
U.S. Cl. 70—211 13 Claims



1. A locking device for locking a dead bolt latch knob in a fixed position, comprising:

a substantially planar, integrally formed member, having a continuous outer wall substantially perpendicular to the plane of said member, said member comprising a fixed head portion having an aperture passing therethrough, wherein said aperture is defined by a continuous inner wall substantially perpendicular to the plane of said substantially planar head portion, formed within said substantially planar head portion and is adapted to receive and engage the dead bolt latch knob therein; and a pair of downwardly projecting co-planar leg members defining an opening therebetween, for engaging opposing sides of a door knob shaft;

a bore passing laterally through said continuous outer wall and communicating with said continuous inner wall of said aperture in said head portion; and

locking means operably disposed in said bore for frictionally locking the dead bolt knob against said continuous inner wall of said aperture in said head portion

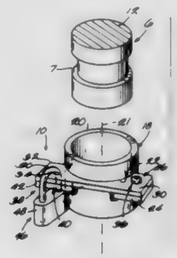
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5,052,203

LOCK FOR TRUCK TRAILERS

Donald E. Van Cuyk, 229 Darboy Rd., Combined Locks, Wis. 54113

Filed Jan. 5, 1990, Ser. No. 461,531
Int. Cl.[5] F16B *41/00*
U.S. Cl. 70—232 7 Claims



1. A lock apparatus adapted for use with a fifth wheel plate

having a king pin, the king pin characterized by a portion having a reduced diameter, the lock apparatus comprising

cup means for providing a protective enclosure of the king pin and extending over the reduced diameter portion, said cup means including slot means registerable with the reduced diameter portion,

bar means for selective engagement with the reduced diameter portion, said bar means having a movable, generally straight body having a generally uniform width less than the width of said slot and said reduced diameter portion,

hinge means for pivotal support of said body of said bar means such that said bar means is movable between a first open position and a second locked position, said hinge means supported by the cup means,

said body, when said bar means is in said second position, being housed in said slot means and extending into said reduced diameter portion, and

lock means for selectively locking said bar means in the locked position, said lock means including a lock member fixed to said cup means and registerable with said bar means when said bar means is in said locked position, said lock means including a locking mechanism selectively engagable with said bar means and said lock member.

5,052,204

SECURITY DEVICE

Frederick W. Millar, 3 Fenton Crescent, Frankston, Victoria 3199, Australia

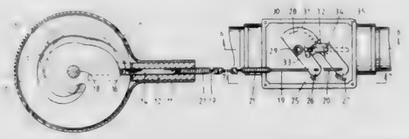
PCT No. PCT/AU88/00468, § 371 Date Jul. 26, 1990, § 102(e) Date Jul. 26, 1990, PCT Pub. No. WO89/05251, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 2, 1988, Ser. No. 477,962

Claims priority, application Australia, Dec. 3, 1987, PI5731; Jul. 29, 1988, PI9549

Int. Cl.[5] E05B *65/12*

U.S. Cl. 70—256 **10 Claims**



1. A security device for an internal combustion engine having an exhaust outlet, said device comprising:

a valve mechanism for the exhaust outlet,

valve control means for operating the valve mechanism and means for locking the valve control means,

said valve mechanism having a valve member which is capable when installed and operated of opening and closing the exhaust outlet in which it is installed.

5,052,205

LOCK CYLINDER HAVING A SLIDE PLATE WITH ONE OR MORE ROWS OF PIN TUMBLERS AND KEY THEREFOR

Julio Poli, Presidente Riesco 6445, Depto. 502, Las Condes, Santiago, Chile

Filed Aug. 17, 1990, Ser. No. 569,138

Int. Cl.[5] E05B *27/04*

U.S. Cl. 70—360 **12 Claims**

1. A lock comprising:

a housing having a longitudinal axis, first and second ends, and means defining an aperture through one of said ends for receiving a key;

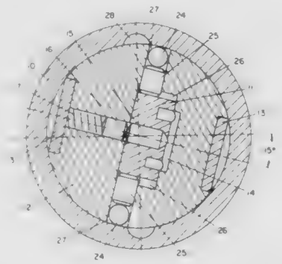
a main rotatable body mounted for rotation within said housing, said main rotatable body having a bore defined therein for receiving a key inserted through said aperture in said one end of said housing;

a flat slide plate slidably mounted within said rotatable body so as to be longitudinally slidable with respect thereto from a first, locking position to a second, opening position, said flat slide plate being mounted within said rotatable body so that a key inserted through said aperture in said one end of said housing and into said bore of said rotatable body will be disposed in immediately adjacent, parallel relation to said flat slide plate;

at least one bore defined through said flat slide plate along an axis disposed substantially perpendicular to a plane of said flat slide plate;

a tumbler element slidably disposed in each said bore of said flat slide plate, each said tumbler element being displaced upon insertion of a key configured for unlocking said lock from a position wherein longitudinal movement of said flat slide plate relative to said rotatable body is prevented to a position wherein longitudinal sliding movement of said flat slide plate relative to said rotatable body is permitted;

at least one recess defined in a lateral side edge of said flat slide plate, a corresponding bore for each said recess defined in said rotatable body, and



side bar pin means slidably disposed within said corresponding bore,

said corresponding bore and said recess being defined such that when said flat slide plate is disposed in said first position, said corresponding bore and said recess are offset from one another along said longitudinal axis of said housing, and when said flat slide plate is in said second position, each said corresponding bore is aligned with each said recess so that said side bar pin means can be displaced within said bore into engagement with said recess,

whereby when a key for unlocking said lock is inserted through said aperture in said one end of said housing and into said bore of said rotatable body and engages each said tumbler element, each said tumbler element is aligned to allow longitudinal displacement of said flat slide plate and further insertion of said key longitudinally displaces said flat slide plate, whereby each side bar pin means can enter each said recess upon rotation of said key about said longitudinal axis to thereby allow rotation of said rotatable body as said key rotates to actuate a locking mechanism of the lock.

5,052,206

METHOD AND ARRANGEMENT FOR AUTOMATICALLY ALIGNING A UNIVERSAL ROLLING MILL STAND AFTER THE STAND HAS BEEN CHANGED TO NEW TYPES OF SECTIONS

Hans-Jürgen Reismann, Düsseldorf; Burkhardt Porombka, Grevenbroich, and Walter Schmalz, Erkrath, all of Fed. Rep. of Germany, assignors to SMS Schloemann -Siemag Aktiengesellschaft

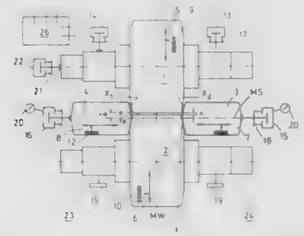
Filed May 24, 1990, Ser. No. 528,696

Claims priority, application Fed. Rep. of Germany, May 24, 1989, 3916925; May 24, 1989, 3916927

Int. Cl.[5] B21B *13/10*

U.S. Cl. 72—20 **2 Claims**

1. In a method for automatically aligning horizontal rolls and vertical rolls in a universal rolling mill stand after the stand has been changed to new types of sections in a rolling mill train, the alignment being affected by means of adjusting members and by means of position measuring devices of the roll positions connected to computing units and by taking into consideration the spring characteristic constants of the stand and the rolls, the improvement comprising using the axial geometric configuration of the vertical rolls in the stand as a fixed reference value, and sliding the horizontal rolls radially and axially into roll positions which are measured by actual position indicators, and comprising the steps of mounting the vertical rolls in the stand so as to be undisplaceable in a vertical direction of the stand and so as to be at the same vertical level in a horizontal plane, mounting the lower horizontal roll in a vertical center position of the stand, subsequently driving the lower horizontal roll alternately by the vertical rolls with a predetermined pressure and determining the roll center by the measured position values, moving the horizontal rolls toward each other and adjusting a predetermined roll gap above the horizontal center position of the vertical rolls, moving the vertical rolls against the lower horizontal roll and applying a predetermined pressure to the vertical rolls, subsequently moving the upper horizontal roll alternately against the vertical rolls, measuring the positions obtained and computing the distance of the lower horizontal roll from the roll gap center, and setting at zero actual position indicators for the horizontal rolls and actual position indicators for the vertical rolls.



5,052,207

APPARATUS FOR, AND A METHOD OF, CUTTING A BLANK

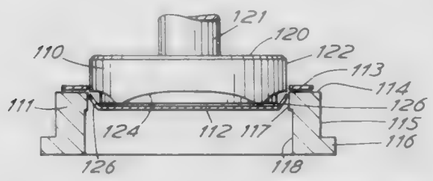
Paul Porucznik, Kennington, United Kingdom, assignor to CMB Foodcan plc, Worcester, United Kingdom

Filed Jun. 26, 1990, Ser. No. 544,617

Claims priority, application United Kingdom, Jul. 26, 1989, 8917049

Int. Cl.[5] B21D *22/28*

U.S. Cl. 72—329 **13 Claims**



1. An apparatus for cutting a blank from metal strip or sheet, said apparatus comprising a punch having a substantially circular cutting edge and a die having a substantially circular cutting edge which is arranged to cooperate with the cutting edge of the punch, in which a plurality of circumferentially extending spaced-apart lobe-forming sections are provided in the cutting edge of said punch, each lobe-forming section being constructed by forming a radial recess in the cutting edge of said punch, the recess defining an arc of less than 180 degrees, said punch and die being arranged to cooperate to produce a blank having lobes at positions corresponding to the positions of said lobe-forming sections.

5,052,208

MACHINE TOOL

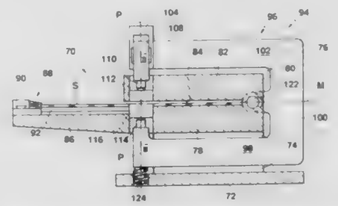
Franco Sartorio, Turin, Italy, assignor to Amada Company, Limited, Japan

Division of Ser. No. 388,478, Aug. 2, 1989. This application Jul. 12, 1990, Ser. No. 551,781

Claims priority, application Italy, Aug. 3, 1988, 67735 A/88; Aug. 3, 1988, 67736 A/88

Int. Cl.[5] B21J *13/04*

U.S. Cl. 72—407 **6 Claims**



1. A machine tool for punching a sheet workpiece positioned in a specified plane, comprising:

a base;

a pair of tools including a punch and a die which are movable toward and away from each other for punching the sheet workpiece;

tool support-and-guide means, formed in a c-shaped structure fixed on the base, for supporting the punch and the die in alignment with a specified axis perpendicular to the specified plane, wherein the punch is movably guided along the specified axis; and

means for transmitting reaction force, formed in a c-shaped structure embracing the tool support-and-guide means and mounting a driving motor which is adapted to drive the punch as guided by the tool support-and-guide means, said reaction force transmitting means being pivotally joined to the tool support-and-guide means by a pin disposed parallel to and in close proximity to the specified plane, wherein one tip end of an arm of the c-shaped structure of the transmitting means is biased relative to the base to be kept in contact with the bottom of the die for receiving a punching force which is transmitted to the die through the workpiece during operation.

5,052,209

PANEL FLANGE OPENER FOR VEHICLE PANELS

Bernard E. DeMaagd, P.O. Box 492774, Redding, Calif. 96049

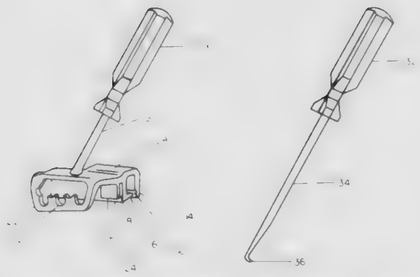
Filed Nov. 30, 1989, Ser. No. 446,389

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—458 **1 Claim**

1. A pair of hand held tools used in conjunction to pry a flange away from a vehicle panel comprising: a first and second tool, and first tool of said pair of tools comprising a handle; a shaft; and a back having an upper and a lower surface, said shaft being connected at one end to said handle and at the other end centrally to said upper surface of said back, said back comprising on the lower surface thereof a centrally located flange lip groove for locating and holding a flange to be pried, a notched rack located to one side of said lip groove for guiding the second tool of said tool pair in prying of a flange away from a vehicle panel, and a hollowed square with an elongated opening located on the other side of said lip groove for rolling over a pried away flange, the second tool of said pair of tools comprising a handle and a longitudinal shaft, said longitudinal shaft being connected at one end to said handle, the other end of said longitudinal shaft being tapered downwardly to form a

flat edge, said flat edge being curved upwardly toward the handle for prying away a flange from a vehicle panel when said



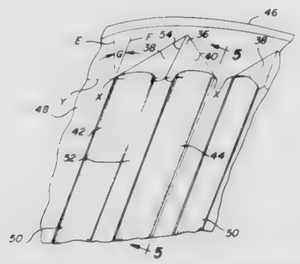
longitudinal shaft of said second tool is located within the notched rack of the first tool.

5,052,210

FORGING DIE DESIGN AND METHOD FOR MAKING A FORGING DIE

Forrest W. Hoge, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1990, Ser. No. 549,772
Int. Cl.[5] B21C *25/02, 25/10*
U.S. Cl. 72—467 13 Claims



1. A cylindrical die for cold extruding helical gears and having a cylindrical surface and spaced helically arranged die teeth extending radially from said cylindrical surface relative to the central axis of said die and extending lengthwise of the die along a helix axis, said die having an inlet end adapted to receive a cylindrical billet of predetermined outer diameter and length and an outlet end from which the billet is expelled following extrusion of the billet through said die teeth thereby forming a gear body having circumferentially arranged helical gear teeth;

said die teeth being equally spaced relative to one another about the circumference of said cylindrical surface;

said die teeth each having an end face nearest the inlet end of the die, a base located on said cylindrical surface and a crown located radially of the base and being inclined toward said outlet end at a predetermined crown angle relative to the base;

each said end face including stress directing means for resolving and directing extrusion stresses placed on the die teeth by said billet in a direction parallel to said helix axis;

each said end face including a first planar face and a second planar face intersecting one another at a crown and extending across a portion of the width of the die at said inlet end, said first planar face and said second planar face being directed at a first preselected angle and a second preselected angle, respectively, relative to a plane perpendicular to said central axis and beginning at said base;

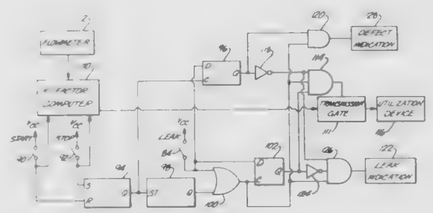
said first planar face of one die tooth and said second planar face of the next adjacent die tooth being directly opposed from one another and the respective first and second preselected angles of each opposed planar face constituting in combination said stress directing means whereby the resultant magnitude of the extrusion force and direction of extruded material flow of said billet will be parallel to said helix axis thereby causing said extruded material to flow between said opposing gear teeth substantially in compression.

5,052,211

APPARATUS FOR DETERMINING THE CHARACTERISTIC OF A FLOWMETER

Gary D. Cohrs, Tempe, and Edward E. Francisco, Jr., Paradise Valley, both of Ariz., assignors to Calibron Systems, Inc., Scottsdale, Ariz.

Continuation-in-part of Ser. No. 259,879, Oct. 19, 1988, abandoned, and Ser. No. 408,627, Sep. 18, 1989, abandoned. This application Dec. 12, 1989, Ser. No. 453,142
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 40 Claims



1. A flowmeter prover comprising:

a fluid displacement measuring cylinder;

a piston movable back and forth through the cylinder from an upstream position to a downstream position;

a shaft assembly attached to the piston;

a carriage movable back and forth from an upstream position to a downstream position;

a grabber attached to the carriage, the grabber being releasably connectable to the shaft assembly;

means for connecting the shaft assembly and grabber at the carriage's downstream position;

means for disconnecting the shaft assembly and grabber at the carriage's upstream position; and

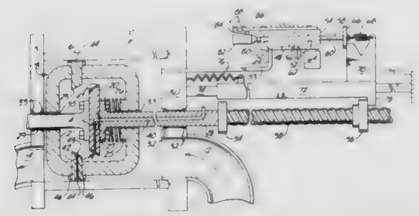
means for driving the carriage back and forth to carry the piston from the piston's downstream position to the piston's upstream position through the shaft assembly.

5,052,212

DYNAMIC LEAK DETECTOR

Gary D. Cohrs, Tempe, Ariz., assignor to Calibron Systems, Inc., Scottsdale, Ariz.

Continuation-in-part of Ser. No. 259,847, Oct. 19, 1988, abandoned. This application Oct. 18, 1989, Ser. No. 423,842
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 32 Claims



20. In a prover for measuring the flow rate of a fluid having a flow measurement chamber and a barrier sealed against the chamber which, during a prover run, travels in the chamber with the fluid flow being measured, a leak detector comprising:

means for detecting leaks in the barrier seals during a prover run;

means for detecting malfunctions in the means for detecting leaks; and

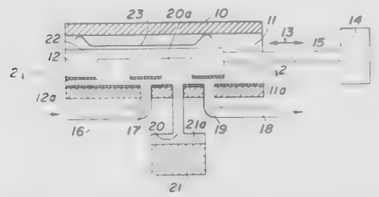
means for signalling the presence of a malfunction to a prover operator.

5,052,213

EXHALATION AIR ANALYSIS DEVICE

Burghard Stock, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 336,469
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1988, 3812235
Int. Cl.[5] G01N *27/62*
U.S. Cl. 73—23.3 10 Claims



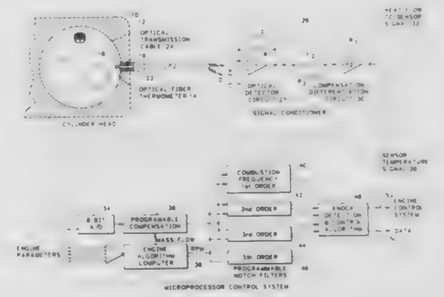
1. An apparatus for testing exhalation air of a person who is connected to an exhalation air line, comprising a housing having an inlet connection to the exhalation air line, an outlet in said housing spaced from said inlet connected to the exhalation air line, a gas test detector line in said housing spaced from said inlet and outlet, a gas test detector in said gas test detector line, and a duct element movable in said housing relative to said inlet, said outlet and said gas test detector line and having a recess defining a connecting flow passage which is selectively positionable upon movement of said duct element relative to said inlet, said outlet and said gas test detector line to selectively position said connecting flow passage between said inlet and said outlet to interconnect said inlet and said outlet and to selectively position said connecting flow passage in communication with said gas test detector line, said connecting flow passage forming a gas analysis volume with said gas test detector line.

5,052,214

KNOCK DETECTOR USING OPTICAL FIBER THERMOMETER

Ray R. Dils, Vancouver, Wash., assignor to Luxtron Corporation, Mountain View, Calif.

Filed Jan. 3, 1989, Ser. No. 293,228
Int. Cl.[5] G01L *23/22*
U.S. Cl. 73—35 24 Claims



1. A knock detector for detecting the presence of knock in an internal combustion engine comprising:

(a) temperature sensing means located in an engine cylinder of the internal combustion engine for sensing variations in temperature therein;

(b) fourier analysis means coupled to said temperature sensing means for determining the fourier components of the variations in temperature within said engine cylinder over a combustion cycle; and

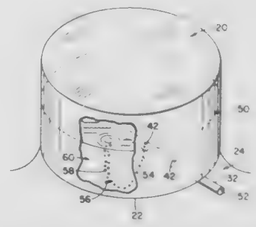
(c) detector means for determining when predetermined ones of said fourier components of the measured temperature variations vary with respect to a standard set of levels by a preset amount thereby indicating that a knock condition exists within said engine cylinder.

5,052,215

LEAK DETECTION IN STORAGE TANK BOTTOMS BY PNEUMATIC ENHANCEMENT OF ACOUSTIC EMISSIONS

Donald E. Lewis, 7714 Moritz Lake Dr., Corpus Christi, Tex. 78413

Filed Oct. 18, 1990, Ser. No. 599,890
Int. Cl.[5] G01M *3/24*
U.S. Cl. 73—40.5 A 9 Claims



1. A system for detecting leaks in the bottom of a storage tank which sits on a base, comprising:

at least one perforated conduit inserted in said base beneath said tank;

means of injecting gas under positive pressure into said conduit; and

at least one acoustical sensor placed about said tank in a position so that the sensor can detect any acoustic event

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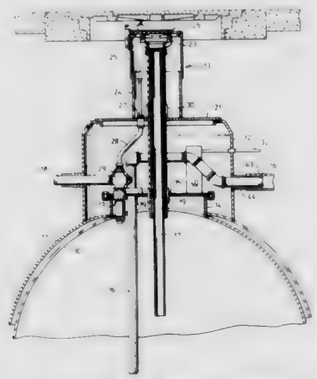
created by passage of said gas through said leaks in said tank bottom

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5,052,216
CONTAINMENT MEANS FOR STORAGE TANK SYSTEMS

Bruce R. Sharp, 7685 Fields-Ertel Rd., Cincinnati, Ohio 45241

Continuation-in-part of Ser. No. 281,816, Dec. 8, 1988, Pat. No. 4,912,966, which is a continuation-in-part of Ser. No. 66,691, Jun. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 820,027, Jan. 21, 1986, Pat. No. 4,685,327, which is a continuation-in-part of Ser. No. 740,869, Jun. 3, 1985, Pat. No. 4,607,522, which is a continuation-in-part of Ser. No. 544,013, Oct. 21, 1983, Pat. No. 4,523,454, and a continuation-in-part of Ser. No. 580,800, Feb. 16, 1984, Pat. No. 4,524,609, which is a continuation-in-part of Ser. No. 544,012, Oct. 21, 1983, abandoned, and a continuation-in-part of Ser. No. 745,540, Jun. 17, 1985, abandoned. This application Apr. 3, 1990, Ser. No. 504,124
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 23 Claims

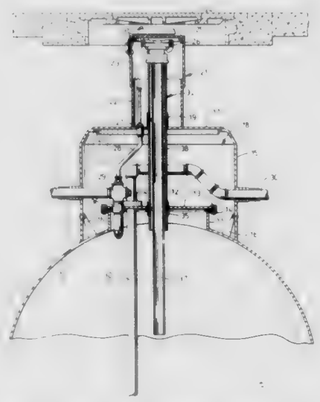


1. A storage tank system having secondary containment means comprised of:
(a) a rigid inner storage tank for storing liquid;
(b) access lines for filling and dispensing liquid to and from the interior of the tank, said access lines extending through a wall of the tank to the interior thereof;
(c) a jacket substantially encasing the inner storage tank so that a closed space exists between the inner storage tank and jacket so that any leakage which occurs through the inner storage tank will be contained by the jacket;
(d) a sleeve attached to the jacket, said sleeve having a cover to form an enclosed sleeve area through which the access lines pass; and
(e) a drip sump compartment positioned on the cover of the sleeve to catch drippings from a fill operation.

5,052,217
CONTAINMENT SYSTEM FOR FILL LINE OF UNDERGROUND STORAGE TANK

Bruce R. Sharp, 7685 Fields-Ertel Rd., Cincinnati, Ohio 45241

Continuation-in-part of Ser. No. 281,816, Dec. 8, 1988, Pat. No. 4,912,966, which is a continuation-in-part of Ser. No. 666,691, Jun. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 820,027, Aug. 11, 1987, Pat. No. 4,685,327, which is a continuation-in-part of Ser. No. 740,869, Jun. 3, 1985, Pat. No. 4,607,522, which is a continuation-in-part of Ser. No. 544,013, Oct. 21, 1983, Pat. No. 4,523,454, which is a continuation-in-part of Ser. No. 544,012, Oct. 21, 1983, abandoned, and a continuation-in-part of Ser. No. 745,540, Jun. 17, 1985, abandoned. This application Dec. 14, 1989, Ser. No. 450,820
The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 15 Claims



1. A storage tank system having secondary containment means for a fill line leading thereto, said system comprised of:
(a) a storage tank for storing liquid;
(b) a sleeve attached to the storage tank in a liquid tight fashion, said sleeve having a cover to form an enclosed sleeve area through which a fill line passes;
(c) a drip sump compartment positioned on the cover of the sleeve, said drip sump compartment capable of catching spills during a filling operation; and
(d) a fill line for adding liquid to the tank, said fill line extending through the drip sump compartment and sleeve area, said fill line having an opening at one end within the drip sump compartment for receiving liquid during a filling operation and a second opening at another end which leads to the interior of the storage tank.

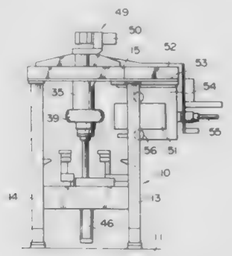
5,052,218
TIRE UNIFORMITY INSPECTING MACHINE

Atsuaki Iwama, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 30, 1990, Ser. No. 574,812
Claims priority, application Japan, Aug. 30, 1989, 1-225694
Int. Cl.[5] G01M *17/02*
U.S. Cl. 73—146 8 Claims

1. A tire uniformity inspecting machine comprising:
a framework constructed by setting first, second and third columns upright in a triangular arrangement and fixedly joining a top plate to the respective upper ends of the first, second and third columns;
tire conveying means for conveying a tire to and ejecting the same from the framework;

tire driving means disposed substantially in the central portion of the top plate;
tire lifting means disposed under the tire conveying means to lift a tire held on the tire conveying means toward the tire driving means; and
an artificial road member provided on the top plate so as to

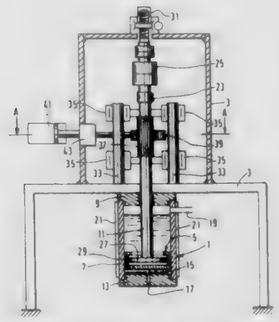


be brought into contact with the outer circumference of the tire rotated by the tire driving means;
wherein a portion of the top plate extending over the first and second columns and the tire driving means has a substantially triangular shape, and a portion of the top plate extending over the tire driving means and the third column has a substantially linear shape.

5,052,219
PROCEDURE AND CELL FOR MEASURING COEFFICIENTS OF ADHESION AND FRICTION OF A DRILLING FLUID

Jean-Jacques Fery, Bar-le-Duc, and Jean-Marc Patroni, Les Ulis, both of France, assignors to Total Compagnie Francaise des Petroles, Paris, France

Filed Feb. 9, 1990, Ser. No. 477,401
Claims priority, application France, Feb. 9, 1989, 89 01688
Int. Cl.[5] G01N *11/10*
U.S. Cl. 73—153 10 Claims

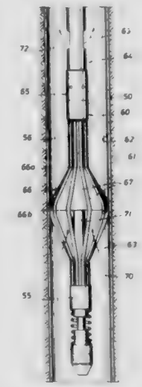


1. A procedure for measuring characteristics of a drilling fluid, comprising the steps of: implementing a standardized filtration of a drilling fluid or mud sample to obtain a solid phase filtration cake and a liquid phase or filtrate collected on a downstream side of a filter, placing a metal disk in contact with a surface of the filtration cake under pressure, driving the disk in rotation and axial translation perpendicular to the contact surface, measuring the moments of adhesion and friction during said driving, withdrawing the disk after a predetermined period of contact, and measuring the axial extraction or contact adhesion force during said withdrawal, wherein the depth of penetration of the disk into the filtration cake is measured as a function of time, contact pressure, and temperature, at the same time as conventional analytical data are obtained concerning the filtrate volume, the mud-film, and the thickness of the filtration cake.

5,052,220
APPARATUS FOR MEASUREMENTS RELATED TO FLUID FLOW IN A BOREHOLE

G. Edward Piers, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 17, 1989, Ser. No. 422,822
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—155 13 Claims



1. A logging tool for carrying our measurements in a well related to the fluid therein, comprising:
a housing, including a measuring pipe provided with measuring means;
a packer means designed to derive the whole fluid flow into said measuring pipe; and means for increasing, through the fluid flow action, the pressure of the fluid located substantially upstream of the packer means, wherein said packer means comprises funnel means including a wide end and a narrow end, and wherein the means for increasing pressure includes obstacle means disposed in the fluid flow path, at, or downstream of, the narrow end of said packer means.

5,052,221
METHOD FOR PREPARING PAPER FOR STRESS-STRAIN CHARACTERISTIC DETERMINATION

Erhard H. Glöckner, Eibelstadt, and Hans B. Pfister, Würzburg, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jun. 5, 1990, Ser. No. 533,514
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920101
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—159 2 Claims

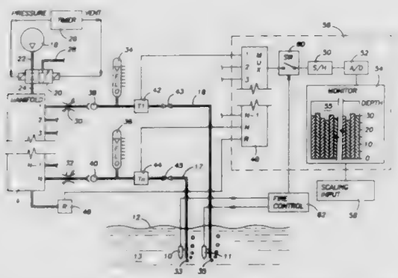
1. A method for preparing a paper sample for determination of a physical characteristic, said method including the steps of:
preparing a solvent-water mixture in which said solvent has a boiling point which is at least 30° centigrade lower than that of water and in which said solvent-water mixture is in a nonemulsified state;
placing a paper sample in said solvent-water mixture for a first time period sufficient to allow said paper sample to become saturated with said solvent-water mixture;
removing said paper sample from said solvent-water mixture; and
allowing said solvent to evaporate from said paper sample for a second period of time.

5,052,222

MULTIPLE-UNIT WATER DEPTH SENSOR SYSTEM

Daniel L. Stoepfel, Houston, Tex., assignor to Teledyne Exploration, Houston, Tex.

Filed Nov. 5, 1990, Ser. No. 609,417
Int. Cl.[5] G01F *23/14*
U.S. Cl. 73—302 6 Claims



1. A multiple-unit water depth sensor system for use with a towed array that includes a plurality of oceanographic devices submersed in a body of water, comprising in combination:

a pneumatically pressurized manifold;

a plurality of air lines interconnected between the respective devices and said manifold, one end of each said air line being in fluid communication with said manifold, the other end of each said air line being open to the water and secured adjacent a corresponding device;

each said air line including:

a. means for establishing a desired flow of air between said manifold and the open end of said air line,

b. means for inhibiting pneumatic crossfeed between said air lines within said manifold,

c. means for measuring the pressure drop of the flow of air across said means for inhibiting;

means for estimating the water density;

means for combining the estimated water density with the measured pressure drop to determine the water depth existing at the open ends of each of said air lines; and

means for continuously displaying the so-determined water depth existing at the open ends of each said air line.

5,052,223

APPARATUS INCLUDING A CAPACITIVE PROBE FOR MEASURING THE LEVEL AND/OR THE VOLUME OF A LIQUID

Serge Regnault, Paris, and Francis Dunon-Bluteau, Chevilly-La Rue, both of France, assignors to Jaeger, Levallois-Perret, France

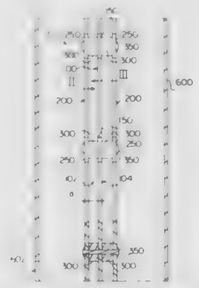
Filed May 30, 1990, Ser. No. 530,264
Claims priority, application France, May 31, 1989, 89 07164
Int. Cl.[5] G01F *23/26*
U.S. Cl. 73—304 C 44 Claims

1. Apparatus for measuring the level of a liquid contained in a tank, the apparatus comprising a capacitive probe including at least two separate, generally vertical, parallel main plates for immersion in the liquid, means for supporting the plates in the tank, spacer means placed between the plates so as to keep the plates at a constant distance from each other, capacitance-measuring means having a detection input and a ground, the detection input being connected to a first one of the main plates and the ground being connected to a second one of the main plates, guard ring surrounding the first plate, a potential copying stage having its input connected to the first plate and its output connected to the guard ring, and a central unit connected to said capacitance-measuring means so as to determine the level of the liquid by calculating a coefficient K such that:

$K=(Cmes-Cair)/(Cimm-Cair)$, where:

Cmes = the measuring capacitance between the first and second plates,

Cair = the capacitance of the first plate and the second plate in air,



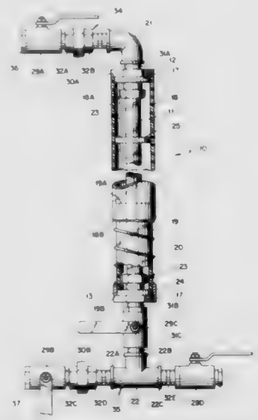
Cimm = the capacitance of the first plate and the second plate when they are totally immersed; and whereby K is defined as the area of the first plate in the liquid divided by the total area of the first plate.

5,052,224

SHIELDED SIGHT GAUGE FOR STORAGE TANKS

Glenn C. Ford, Huntingdon Valley; George H. Alexander, Jr., Hatfield, and Robert J. Nyzio, Oreland, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 15, 1990, Ser. No. 597,313
Int. Cl.[5] G01F *23/03, 23/00*
U.S. Cl. 73—325 62 Claims



1. A vertically mountable sight gauge, having one or more serially connectable sections, for visually determining the level or the volume, or both, of liquid stored in a container having upper and lower interior regions, said gauge comprising:

(a) for each section, a straight length of substantially transparent, flexible pipe;

(b) for each section, an upper housing and a lower housing, each housing having (i) a passage therethrough having a first end and a second end, said first end of each said passage being attached to an end of said flexible pipe, and (ii) a flange that is substantially concentric with said second end of said passage;

(c) for each section, a substantially transparent, rigid shield surrounding said flexible pipe, defining a continuous, inner wall surface and a continuous, outer wall surface and

respective inner and outer diameters, and having a top end and a bottom end and a circumferential top edge that conforms to and abuts said flange on said upper housing;

(d) for each section, a substantially transparent, rigid sleeve surrounding said flexible pipe, defining a continuous, inner wall surface and a continuous, outer wall surface and respective inner and outer diameters, having a top end and a bottom end and a shoulder surrounding said sleeve's bottom end, said shoulder having a circumferential bottom edge that conforms to and abuts said flange on said lower housing, and having an outer diameter that is less than said shield's inner diameter, such that said sleeve telescopically engages said shield;

(e) for each section, resilient biasing means bearing against said shield's bottom end, surrounding and overlapping said sleeve, and bearing against said shoulder, so as to urge said shield into engagement with said upper housing and said sleeve into engagement with said lower housing;

(f) means for placing said second end of said passage in said upper housing of the uppermost of said serially connectable sections in communication with the interior of the upper region of said container; and

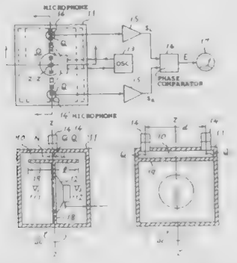
(g) means for placing said second end of said passage in said lower housing of the lowermost of said serially connectable sections in communication with the interior of the lower region of said container.

5,052,225

ACOUSTIC GYROSCOPE

Yasushi Ishii, 20-5, Kinuta 8-chome, Setagaya-ku, Tokyo, Japan

Filed Feb. 20, 1990, Ser. No. 481,251
Claims priority, application Japan, Feb. 20, 1989, 1-38451; Mar. 16, 1989, 1-62290; Mar. 31, 1989, 1-78144
Int. Cl.[5] G01P *9/00*
U.S. Cl. 73—505 17 Claims



1. A gyroscope for measuring an angular rate of rotation based on a coriolis force caused when a gas vibrated by a sound is subjected to a rotational movement, comprising:

two adjacent vessels disposed at both sides of a separator to be coupled to each other through at least one sensing duct, said vessels and said sensing duct being filled with said gas as a sound medium;

a sound source mounted on said separator to differentially provide a volume change to said two vessels and to acoustically drive the gas in the vessels;

a plurality of sound detectors each of which is coupled to said at least one sensing duct; and

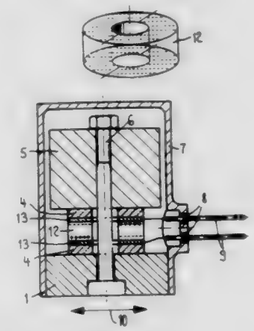
a signal processing circuit for detecting changes of the outputs of said sound detectors caused when said gyroscope is rotated.

5,052,226

ACCELEROMETER WITH PIEZOELECTRIC ELEMENT

Felix Schmid, Belfaux, Switzerland, assignor to Vibro-Meter SA, Fribourg, Switzerland

Filed Jul. 18, 1990, Ser. No. 555,671
Continuation of Ser. No. 259,244, Oct. 18, 1988, abandoned.
Claims priority, application European Pat. Off., Nov. 9, 1987, 87810642
Int. Cl.[5] G01P *15/08*; G01M *11/08*
U.S. Cl. 73—571 R 5 Claims



1. An accelerometer comprising:

a base;

a seismic mass;

a piezo element transducer mounted on said base and coupled to said seismic mass; and

an output for said transducer;

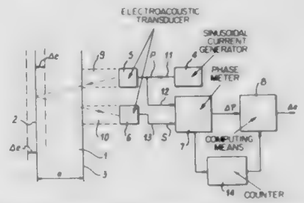
said transducer comprising a one piece piezo element having two halves polarized in different directions, said halves being electrically connected therebetween such that seismic influences acting on said seismic mass produce electrical signals on both halves which are added to produce at said output an output signal responsive to said seismic influences.

5,052,227

DEVICE AND PROBE FOR MEASURING THE VARIATION OF DISTANCE BETWEEN THE TWO FACES OF A LAYER OF MATERIAL BY MEANS OF ULTRASOUNDS

Christian M. Le Floc'H, Blanquefort, and Francois Perrot, Merignac, both of France, assignors to Societe Nationale Industrielle, Paris, France

Filed Nov. 13, 1990, Ser. No. 612,208
Claims priority, application France, Nov. 14, 1989, 89 14927
Int. Cl.[5] G02N *9/24*
U.S. Cl. 73—644 10 Claims



1. Probe for measuring the variation of the distance separating the two faces of a layer of solid material by means of ultrasounds passing transversely through said layer, comprising:

an electroacoustic transmitting transducer capable of converting a first alternating electric signal into an ultrasonic

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wave of the same fixed frequency, whose amplitude varies alternately as a function of time, said ultrasonic wave and said first electric signal being in a fixed phase relation;

a first rigid ultrasonic wave-guide, for applying said ultrasonic wave to said layer of material and disposed so that one of its ends is connected to said electroacoustic transmitting transducer whereas the other of its ends is free so as to be brought into contact with an accessible face of said layer of material;

an electroacoustic receiving transducer capable of converting the ultrasonic wave which has passed through said layer of material into a second alternating electric signal in fixed phase relation with said wave;

a second rigid ultrasonic wave-guide, intended to apply, to said electroacoustic receiving transducer, said ultrasonic wave which has passed through said layer of material and disposed so that one of its ends is connected to said electroacoustic receiving transducer, whereas the other of its ends is free so as to be brought, like the free end of the first wave-guide, in contact with the same accessible face of said layer of material;

first connection means for connecting said electroacoustic transmitting transducer to a generator generating said first alternating electric signal;

second connection means for connecting said electroacoustic receiving transducer to means able to measure continuously the variation of the phase-shift of said second electric signal with respect to said first electric signal;

a case containing said electroacoustic transmitting and receiving transducers as well as said first and second rigid ultrasonic wave-guides, the case having said first and second connection means passing therethrough;

the free ends of said rigid ultrasonic wave-guides, opposite said electroacoustic transmitting and receiving transducers, being accessible outside said case for coupling to said same accessible face of said layer of material.

5,052,228

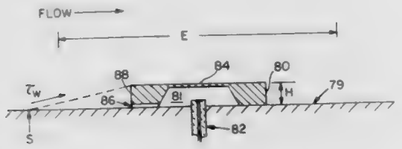
SHEAR STRESS MEASURING DEVICE

Joseph H. Haritonidis, Brookline, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass

Division of Ser. No. 360,325, Jun. 2, 1989, Pat. No. 4,942,767, which is a continuation-in-part of Ser. No. 932,780, Nov. 19, 1986, Pat. No. 4,926,696. This application May 7, 1990, Ser. No. 520,106

Int. Cl.[5] G01D *5/28;* **G01L** *7/08, 9/00*

U.S. Cl. 73—705 **5 Claims**



1. A device for measuring shear stress comprising:

a diphragm lying in a plane parallel with a target surface which is subject to shearing forces causing shear stress to be detected, the diaphragm having a reflective surface that faces the target surface and an opposite surface exposed to surrounding environment;

an optic fiber having one end facing the reflective surface of the diaphragm, the fiber end splitting coherent light carried by the fiber into a transmitted beam part and a reference beam part, the transmitted beam part being emitted from the fiber end to the reflective diaphragm surface and reflecting therefrom back to the fiber end, the reference beam part being locally reflected at the fiber end and interfering with the beam part reflected from the reflective diaphragm surface to form a light interference wave indicative of diaphragm deflection;

a support integrally mounting the fiber end and the diaphragm in a manner which fixes the fiber end across a gap from the reflective surface of the diaphragm and provides communication between the gap and surrounding environment through an opening in the support, the diaphragm deflecting as a function of pressure fluctuation at the opening generated by shearing forces in the surrounding environment; and

detection means coupled to the fiber for receiving the light interference wave and determining diaphragm deflection, the detection means further providing a measurement of shear stress from the determined diaphragm deflection.

5,052,229

VORTEX FLOWMETER

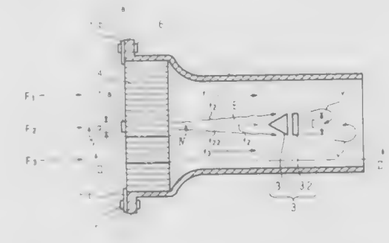
Yoshihiko Tanimura, Kyoto; Hisato Ishikuro, and Yasuo Tada, both of Himeji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed May 23, 1990, Ser. No. 527,506

Claims priority, application Japan, May 23, 1989, 1-129334; May 23, 1989, 1-129335; May 23, 1989, 1-129336; May 23, 1989, 1-129337

Int. Cl.[5] G01F *1/32*

U.S. Cl. 73—861.22 **15 Claims**



1. A vortex flowmeter comprising:

a conduit in which the fluid to be measured flows,

a vortex generating column for generating the Karman's vortex street in the downstream of the fluid to be measured, being disposed inside said conduit in such a way that its axis is substantially perpendicular to the axis of said conduit,

a straightener with plural passages through which the fluid to be measured flows into said conduit, being disposed at the inlet of said conduit, and

a columnar turbulence generating element for disturbing the downstream flow of the fluid to be measured, being disposed substantially parallel to said vortex generating column, in the upstream of said straightener.

5,052,230

METHOD AND ARRANGEMENT FOR FLOW RATE MEASUREMENT BY MEANS OF ULTRASONIC WAVES

Michael Lang, Weil-Haltingen, Fed. Rep. of Germany, and Michael Steinacher, Basel, Switzerland, assignors to Flowtec AG, Switzerland

PCT No. PCT/EP89/00775, § 371 Date Feb. 28, 1990, § 102(e) Date Feb. 28, 1990, PCT Pub. No. WO9000723, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 6, 1989, Ser. No. 460,947

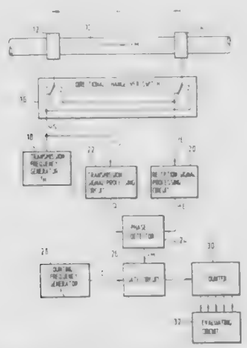
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 3823177; Dec. 23, 1988, 3843678

Int. Cl.[5] G01F *1/66*

U.S. Cl. 73—861.28 **50 Claims**

23. Arrangement for flow rate measurement by means of

ultrasonic waves comprising a measuring tube (**10**) traversed by a medium, two ultrasonic transducers (**12, 14**) arranged on the measuring tube (**10**) at a definite distance (L_M) from each other, means for applying an electrical transmission signal (U_S) with a measuring frequency (f_M) to one of the two ultrasonic transducers which operates as transmitting transducer converting said electrical transmission signal (U_S) to an ultrasonic wave of the measuring frequency which is propagated in said medium while the other ultrasonic transducer operates as receiving transducer converting the ultrasonic wave to an electrical reception signal (U_E) of the measuring frequency, means for receiving the electrical reception signal (U_E) with the measuring frequency emitted by the other ultrasonic transducer, a counting frequency generator generating a counting frequency signal (I_C) with a counting frequency (f_C) substantially greater than the measuring frequency (f_M), a counter (**30**) counting the periods of the counting frequency signal (I_C) in measuring time intervals (T_I) which correspond to the phase shift between the transmission signal (U_S) and the reception signal (U_E), and an evaluating circuit (**32**) to which the count reached in each measuring time interval (T_I) is transferred, characterized by means which vary the start phase (ϕ_S) which the counting frequency signal (I_C) has at the beginning of each counting operation with respect to the measuring time interval (T_I) from measuring time interval to measuring time interval in a measuring cycle (T_R) including a plurality of consecutive measuring time intervals (T_I)



5,052,231

MASS FLOW GAUGE FOR FLOWING MEDIA WITH DEVICES FOR DETERMINATION OF THE CORIOLIS FORCE

Herbert Christ, Reutlingen, Fed. Rep. of Germany; Mike Kellaway, Cambridge, United Kingdom, and Wolfgang Stumm, Reutlingen, Fed. Rep. of Germany, assignors to Rheometron AG, Basel, Switzerland

Continuation-in-part of Ser. No. 195,201, May 19, 1988, abandoned. This application Dec. 29, 1989, Ser. No. 458,848

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **11 Claims**

1. A Coriolis mass flow gauge of the type including at least one tube loop having fixed legs and through which a fluid can flow, exciting means coupled to said loop to mechanically oscillate the loop at a selected frequency in a direction approximately perpendicular to the nominal plane of the loop, a lateral sensor at each leg of the loop which converts the oscillations of the loop into an analogous alternating voltage signal, and a dual channel electronic circuit which receives in separate channels the alternating signals from the sensors and produces an output that is proportional to the fluid mass flow through the loop, said gauge comprising:

sampling means for producing a digital sampling signal having a selected frequency;

converter means responsive to said sampling signal for converting the sensor signal in each channel into digital measuring values;

processor means for multiplying each digital measuring value from the converter means, on the one hand, with the sine value of the phase angle at the point of sampling of the alternating voltage signal or another signal having the same frequency, but phase-shifted relative to said alternating voltage signal, and, on the other hand, with the corresponding cosine value of said phase angle;

means for storing said sine and cosine multiplication values;



means for summing

(1) the stored sine multiplication values over a predetermined time interval to form one Cartesian coordinate of a corresponding sum-vector, and

(2) the stored cosine multiplication values thus obtained over the same time interval to form another Cartesian coordinate of said sum vector, and

means for calculating from said Cartesian coordinates of the sum vectors of both sensor signals the fluid mass flow through the loop.

5,052,232

MAGNETOELASTIC TORQUE TRANSDUCER

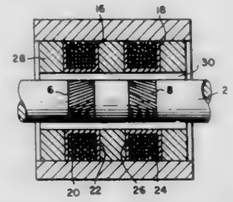
Ivan J. Garshelis, Pittsfield, Mass., assignor to Mag Dev Inc., Pittsfield, Mass.

Continuation of Ser. No. 119,531, Nov. 17, 1987, Pat. No. 4,896,544, which is a continuation-in-part of Ser. No. 938,404, Dec. 5, 1986, Pat. No. 4,760,745, and a continuation-in-part of Ser. No. 95,774, Sep. 14, 1987, Pat. No. 4,882,936. This application Jul. 14, 1989, Ser. No. 379,938

The portion of the term of this patent subsequent to Aug. 2, 2005, has been disclaimed.

Int. Cl.[5] G01L *3/10*

U.S. Cl. 73—862.36 **15 Claims**



1. A magnetoelastic torque transducer for providing an electrical signal indicative of the torque applied to a member, said member having a ferromagnetic and magnetostrictive region, said transducer comprising:

a pair of axially spaced-apart annular bands defined within said region, said bands having respectively symmetrical right and left hand helically directed residual stress created magnetic anisotropy, each said band having at least

one circumferential region which is free of residually unstressed areas over at least 50% of its circumferential length;

means for applying a cylically time varying magnetic field to said bands;

means for sensing the change in permeability of said bands caused by said applied torque; and,

means for converting said sensed change in permeability to an electrical signal indicative of the magnitude of the torque applied to said member.

5,052,233

METHOD AND APPARATUS FOR MEASUREMENT OF WEB TENSION

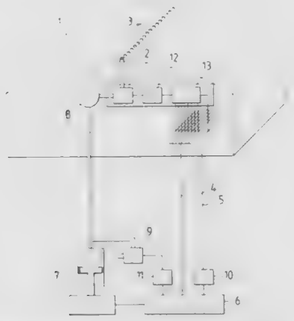
Esko Rantala, Kauniainen, Finland, assignor to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Jul. 10, 1989, Ser. No. 377,277

Claims priority, application Finland, Sep. 14, 1988, 884236

Int. Cl.[5] G01L *5/08*

U.S. Cl. 73—862.45 **13 Claims**



5 An apparatus for measuring the tension of a moving web utilizing at least one pressure transducer for measuring ambient pressure, an automatic data processing system for processing the measurement of information and control of the measurement system operation and a signal transmission channel between the automatic data processing system and each pressure transducer for the transfer of the control and measurement of information, which comprises

a gauging bar having a curved surface in the machine direction of the web, said gauging bar being provided with at least one hole in said surface,

means for moving said gauging bar into close proximity to the moving web in order to form an air cushion between the web and said gauging bar, each said pressure transducer operatively communicating with each said hole of said gauging bar for measuring an air cushion pressure between the web and said gauging bar.

5,052,234

WATER PROOF STRUCTURE FOR ENGINE STARTER MOTOR

Takeshi Sugiyama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1990, Ser. No. 487,514

Claims priority, application Japan, Mar. 3, 1989, 1-52261

Int. Cl.[5] F02N *11/00*

U.S. Cl. 74—6 **1 Claim**

1. A water proof structure for a starter motor comprising:

a front bracket (**20**) attached to a yoke core (**2**) of an electric motor for supporting one end of a rotary shaft (**7**);

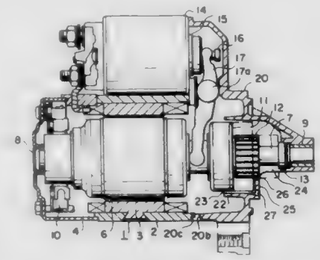
an over-running clutch (**11**) axially slidably supported on said rotary shaft; and

a pinion (**12**) mounted to said over-running clutch and movable between a forward, extended position and a rearward, retracted position;

said front bracket having formed therein an opening (**24**) for allowing said pinion in said forward position to be projected therethrough, said front bracket having a drain opening (**20c**) in the bottom portion thereof;

said water proof structure comprising:

closure means extending from said front bracket toward an axially distal, with respect to said electric motor, end of said pinion when said pinion is disposed in said rearward position for substantially closing a gap between said front bracket and said pinion, said closure means having formed



therein a moisture drain hole (**27**) at the bottom portion thereof, wherein said front bracket comprises a tubular wall (**22**) surrounding said over-running clutch with a small clearance (**23**) therebetween and extending over a distance between said forward position and said rearward position of said pinion;

said opening in said front bracket for projecting said pinion therefrom is provided in said tubular wall of said front bracket; and,

said closure means is a substantially radial wall (**25**) extending from a front end of said tubular wall, said moisture drain hole being disposed at a corner portion between said tubular wall and said radial wall.

5,052,235

SPACED BEARING ARRANGEMENT FOR COAXIAL ENGINE STARTER

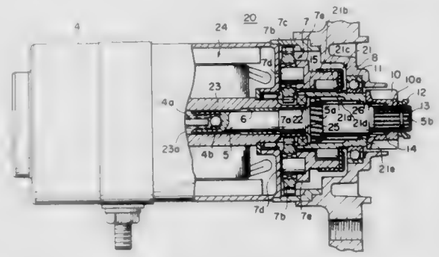
Shuzou Isozumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1990, Ser. No. 493,543

Claims priority, application Japan, Mar. 15, 1989, 1-65220

Int. Cl.[5] F02N *11/00*

U.S. Cl. 74—7 E **6 Claims**



1. A coaxial engine starter, comprising:

a machine frame (**8**);

an electric motor having a hollow armature rotary shaft (**23**);

an output rotary shaft (**5**) axially slidably supported in said machine frame and said armature rotary shaft, disposed in axial alignment with said armature rotary shaft, and having a front end distal said electric motor and a rear end proximate said electric motor;

a pinion (**10**) disposed on said front end of said output rotary shaft;

a planetary speed reduction gear (**7**) having a sun gear disposed on said armature rotary shaft, a plurality of planetary gears rotatable around said sun gear and a stationary internal gear engaging said planetary gears;

an over-running clutch (**21**) having a clutch outer member supporting said planetary gears and a clutch inner member slidably coupled to said output rotary shaft and having front and rear ends respectively distal and proximate said electric motor;

first bearing means (**11**) supported by said machine frame for rotatably supporting said front end of said clutch inner member; and

second bearing means (**25**) disposed on said armature rotary shaft in front of said sun gear of said planetary speed reduction gear for rotatably supporting said rear end of said clutch inner member of said over-running clutch.

5,052,236

FORWARD AND REVERSE HYDRAULIC CONTROL FOR TOROIDAL CONTINUOUSLY VARIABLE TRANSMISSION

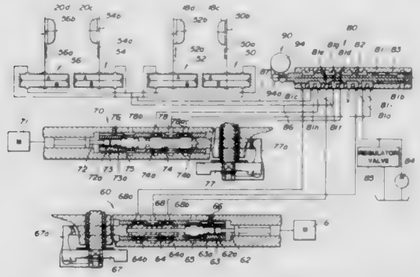
Masaki Nakano, Kawasaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 14, 1989, Ser. No. 448,194

Claims priority, application Japan, Dec. 16, 1988, 63-318107

Int. Cl.[5] E16H *15/38*

U.S. Cl. 74—200 **8 Claims**



1. A toroidal type continuously variable transmission system comprising;

a toroidal type transmission mechanism comprising an input disc, an output disc and a rolling member which is installed in a toroidal cavity formed between said input and output discs,

actuating means for tilting said rolling member to continuously vary a speed ratio between rotational speeds of said output and input discs,

first and second controlling means for controlling said actuating means to control said speed ratio,

reverse direction detecting means for detecting the direction of rotation inputted to said transmission mechanism, and

selecting means for selecting one of said first and second controlling means in dependence on the direction of rotation detected by said reverse direction detecting means.

5,052,237

TRANSMISSION DEVICE

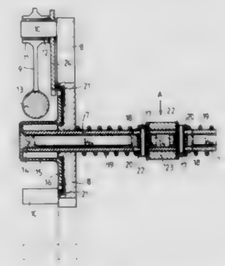
Jean Reimann, Puplinge, Switzerland, assignor to Aiuweld S.A., Geneva, Switzerland

Filed May 8, 1990, Ser. No. 520,454

Claims priority, application Switzerland, May 17, 1989, 1837/89; May 17, 1989, 1838/89

Int. Cl.[5] B60K *20/02*; **B62B** *5/02*

U.S. Cl. 74—335 **13 Claims**



1. Transmission device for the motorization of transport means, characterized by the fact that it comprises a hollow driving shaft provided at each of its ends with a rolling train idly pivoted on said hollow shaft and comprising a toothed crown; by the fact that it comprises two control shafts slidingly mounted into the hollow shaft merging each out of one end of it; by the fact that each control shaft is connected to a pinion intended to cooperate with the corresponding toothed crown of a rolling train; and by the fact that it comprises a control device of the axial position of said control shaft with respect to the hollow shaft.

5,052,238

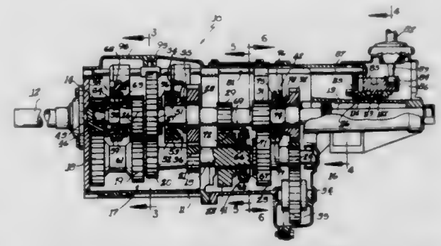
MANUAL TRANSMISSION SHIFT LINKAGE

John S. Sewell, Yorktown, Ind., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Apr. 17, 1990, Ser. No. 510,369

Int. Cl.[5] F16H *61/00*

U.S. Cl. 74—473 R **6 Claims**



1. In a sliding gear manual transmission (**10**) for an automotive vehicle including a transmission housing (**11**), an input shaft (**12**) journalled in the housing, an output shaft (**13**) axially aligned with the input shaft and journalled in said housing, a countershaft (**15**) journalled in said housing and carrying a cluster gear (**17**) thereon, said input shaft (**12**) terminating in an input gear (**14**), a plurality of gears (**26**, **27**, **28**, **29**, **31**, **31**) on said output shaft (**13**) in meshing engagement with said cluster gear (**17**), and a plurality of synchronizing clutches (**36**, **38**, **41**, **42**) on said output shaft and countershaft for engagement of gear ratios of said meshing gears, and an axially movable and rotatable shift rail (**81**) located in said housing and operatively connected to a shift lever (**82**) actuated by the vehicle operator, the improvement comprising an auxiliary shift rail (**98**) located

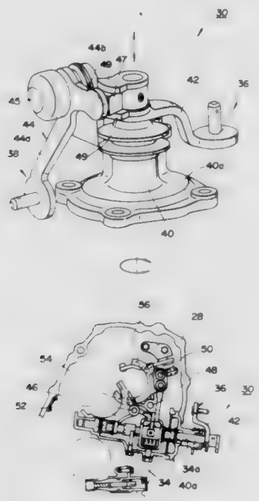
in said housing (**11**) generally paralleling said first mentioned shift rail (**81**) to provide for actuation of fifth, sixth and reverse gears, said auxiliary shift rail (**98**) having a 5-6 shift arm (**104**) journalled thereon for axial movement relative thereto, and a reverse shift arm (**99**) rotatably mounted thereon for axial movement therewith.

5,052,239

TRANSMISSION ASSEMBLY FOR THE USE IN VEHICLES

Toshikazu Ubagai, Shizuoka, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 18, 1989, Ser. No. 395,752
Claims priority, application Japan, Aug. 29, 1988, 63-214708
Int. Cl.[5] B60K *20/02*
U.S. Cl. 74—473 R **4 Claims**



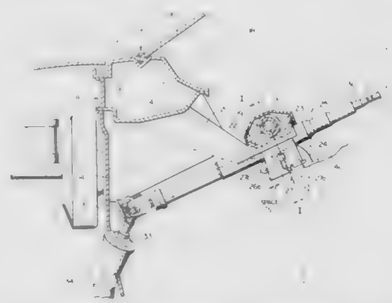
1 In a transmission assembly for a vehicle including a transmission casing, at least two generally parallel transmission shafts rotatably supported within said casing, gear means coacting between said transmission shafts for defining plural drive paths having different speed ratios, axially shiftable clutch means coacting with said gear means for permitting selection of different drive ratios between said transmission shafts, and a shift and select means for effecting shifting and selecting of said clutch means, the improvement wherein said shift and select means comprises a shift and select unit including a shift and select shaft and means for rotatably and axially slidably supporting said shift and select shaft relative to said casing, said shift and select shaft projecting into the interior of said casing in generally perpendicular relationship with respect to the rotational axes of said transmission shafts, said shift and select shaft projecting outwardly through a wall of the transmission casing and having a shaft end portion of selected axial extend disposed exteriorly of said wall, said shift and select unit including a sleevelike mounting portion which surrounds the shaft end portion and rotatably and axially slidably supports said shift and select shaft, said sleevelike mounting portion being removably attached to and projecting outwardly from the wall of the transmission casing, a shift lever nonrotatably coupled to said shaft end portion and projecting radially thereof exteriorly of said mounting portion for effecting angular displacement of said shift and select shaft, and a select lever pivotally mounted on said mounting portion for pivoting movement relative thereto about a stationary pivot axis which extends in transverse and nonintersecting relationship with respect to the rotational axis of said shift and select shaft, said select lever being coupled to said shaft end portion and extending radially from said shaft end portion to said stationary pivot axis, said pivoting movement of said select lever effecting axial displacement of said shift and select shaft, said select lever being separate from and free of any control by said shift lever.

5,052,240

STRUCTURAL ARRANGEMENT FOR SUPPORTING A TILT STEERING DRIVE

Keisuke Miyoshi, Hiroshima; Shuji Sanagi, and Michio Kado, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 6, 1990, Ser. No. 489,073
Claims priority, application Japan, Mar. 6, 1989, 1-54203; Mar. 6, 1989, 1-54204
Int. Cl.[5] B62D *1/16, 1/18*
U.S. Cl. 74—493 **14 Claims**



1. A structural arrangement for supporting a tilt steering device of a vehicle body, said structural arrangement comprising:

a steering column,

a steering shaft coupled at one end thereof with a steering wheel, said steering shaft being rotatably mounted within said steering column,

a lower steering column bracket attached to a lower end portion of said steering column,

a connecting bracket attached to the vehicle body and facing said lower steering column bracket,

a supporting shaft for supporting said lower steering column bracket to said connecting bracket so that each bracket is able to rotate relatively, and

rotation blocking means located between said lower steering column bracket and said connecting bracket for preventing relative rotation between said lower steering column bracket and said connecting bracket when a force by which a collapse occurs operates between said lower steering column bracket and said connecting bracket.

5,052,241

STEERING HANDLE APPARATUS FOR USE IN BICYCLE

Masashi Nagano, Osaka, Japan, assignor to Shimano Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1989, Ser. No. 386,187
Claims priority, application Japan, Jul. 29, 1988, 63-190952; Dec. 27, 1988, 63-334830
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.2 **9 Claims**

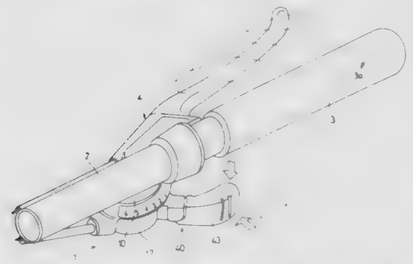
1. A steering handle apparatus for use in a bicycle, said apparatus comprising:

a handle bar including a grip portion provided with a contact portion for contacting interdigital areas of a hand;

a change-speed lever apparatus attached in a vicinity of the grip portion of the handle bar, said change-speed lever apparatus including

a winding member for effecting a change-speed operation by winding a cable,

a control lever supported to said handle bar to be pivotable about a first shaft (**11**) extending substantially normal to a longitudinal axis of said handle bar, said control lever effecting a change-speed operation by being rotated about said first shaft (**11**) thus rotating the winding member, said control lever being returned to a predetermined home position thereof by urging means with every change-speed operation,



a position-maintaining mechanism for maintaining a position of the winding member in multiple steps, and

a release mechanism for releasing the position of the winding member by the position-maintaining mechanism;

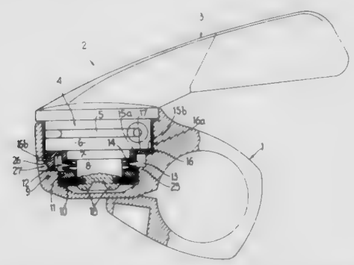
said control lever being disposed to extend toward the grip portion on a side of the handle bar opposed to the interdigital area contact portion, said forward operation on the control lever being effected in a direction aligned with a bending direction of the rider's thumb when gripping the grip portion, said control lever actuating said release mechanism by being pivoted about a second shaft (**46**) extending substantially normal to said first shaft **11**.

5,052,242

CONTROL DEVICE FOR A DERAILLEUR-GEAR FOR A BICYCLE

Günter Look, Bergrheinfeld, Fed. Rep. of Germany, and Régis Sinoquet, Fressenneville, France, assignors to Sachs Industries S.A., Nanterre, France

Filed Jul. 27, 1989, Ser. No. 386,357
Claims priority, application France, Jul. 29, 1988, 88 10320
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.2 **29 Claims**



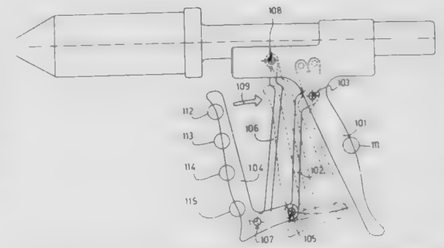
1. Control device of a dérailleur-gear for a bicycle of the type comprising a fixed part (**1**;**39**,**40**,**41**,**42**;**52**,**53**,**54**,**55**) comprising a support element adapted to be fixed on a part of the frame or the handle bar of the bicycle and a moveable part (**2**;**36**;**49**)comprising an operating hand-lever (**3**) which can rotate relative to the support element, a control mechanism (**9**) of which a first part (**11**;**29**) co-operates with the fixed part of the device and of which a second part (**10**;**28**) co-operates with the moveable part of the latter and a cable for actuation of the dérailleur-gear, characterized in that the cable for actuation of the dérailleur-gear is connected to an actuation stud (**4**), rotated by the operating hand-lever (**3**) and to which are secured the control mechanism (**9**) and means (**16**;**37**;**50**) for attaching the moveable part of the device to the fixed part of the latter, wherein said attachment means comprises a ring (**16**;**37**;**50**) placed around a part (**6**) of the stud (**4**) between the control mechanism (**9**) and the rest of the stud and including retaining means (**25**,**26**;**38**,**47**;**51**,**59**) adapted to co-operate with complementary means (**27**;**45**,**46**;**39***a*,**40***a*,**41***a*,**42***a*; **56**,**57**,**58**) of the support element to lock the ring in position on the latter and therefore to maintain the moveable part of the device on the fixed part of the latter.

5,052,243

HAND POWER TOOL MECHANISM

Slobodan Tepic, Davos, Switzerland, assignor to Laboratorium für experimentelle Chirurgie, Davos, Switzerland

PCT No. PCT/EP87/00450, § 371 Date Mar. 22, 1989, § 102(e) Date Mar. 22, 1989, PCT Pub. No. WO89/01322, PCT Pub. Date Feb. 23, 1989
PCT Filed Aug. 15, 1987, Ser. No. 337,528
Int. Cl.[5] A61F *2/46;* **B26B** *13/26*
U.S. Cl. 74—523 **9 Claims**



1. A hand power mechanism to be actuated by the fingers of the human hand for a tool of a type which is designed to be used with the hand oriented so that the index finger is closest to the tool and the little finger is farthest away from the tool, the hand power mechanism comprising

a stationary handle (**101**) for fixed attachment to the tool having a surface to be engaged during use by the palm of the hand;

a drive lever (**102**) pivotally attached to said stationary handle at a first pivot location (**103**);

a movable handle (**104**) having a surface with locations to be engaged during use by the index, middle, ring and little fingers of the hand, said movable handle being pivotally connected to said drive lever at a second pivot location (**105**);

a linkage closure bar (**106**) pivotally connected to said stationary handle and to said movable handle at third (**108**) and fourth (**107**) pivot locations, respectively, spaced from said first and second pivot locations, respectively, so that said linkage closure bar and said drive lever form a four-bar linkage with sections of said stationary handle and said movable handle between said pivot locations,

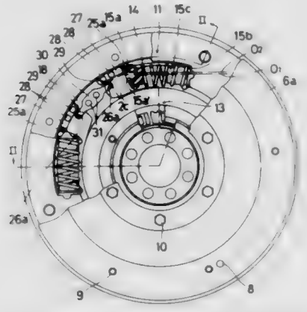
said first, second, third and fourth pivot locations being arranged so that when said movable handle is moved by the hand toward said stationary handle, the distance traveled by the index finger of said hand is greater than the distance traveled by the little finger of said hand, thereby providing an optimal force/travel ratio for said fingers.

5,052,244

TORQUE VARIATION ABSORBING DEVICE

Masakazu Kamiya, Toyoaki, and Kiyonori Kobayashi, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 14, 1990, Ser. No. 522,834
Claims priority, application Japan, May 12, 1989, 1-119281
Int. Cl.[5] F16F *15/12, 15/30*
U.S. Cl. 74—574 11 Claims



1. A torque variation absorbing device comprising:
a drive shaft;
a drive plate connected to said drive shaft and having a common axis therewith;
a first fly-wheel and a second fly-wheel having the same axis as said drive plate and being integrally connected;
a damping mechanism arranged between said first fly-wheel and said second fly-wheel, said damping mechanism including a coil spring having a first spring seat fitted into one side of said coil spring and a second spring seat fitted into the other side of said coil spring;
a driven disk contacting said first spring seat and rotatable with said fly-wheels;
first elastic means provided on said driven disk for connection with said first spring seat and including a supporting plate fixed on said driven disk and an elastic portion mounted thereon, said elastic portion projects farther than said driven disk in a circumferential direction around said driven disk; and
a second elastic means provided on said drive plate for engagement with said second spring seat.

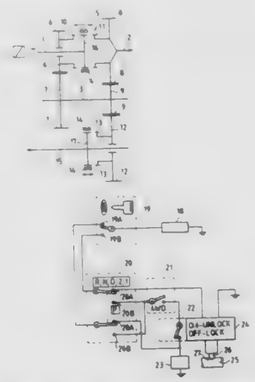
5,052,245

TRANSFER CASE FOR A FOUR WHEEL DRIVE VEHICLE WITH AUTOMATIC TRANSMISSION

Kaoru Kigoshi, Kanagawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Dec. 21, 1989, Ser. No. 454,247
Claims priority, application Japan, Dec. 29, 1988, 63-335356
Int. Cl.[5] B60K *17/34*; F16H *3/38*
U.S. Cl. 74—665 T 14 Claims

1. An operation device of an automatic transmission comprising:
an input shaft to which driving force of the automatic transmission is transmitted;
an output shaft disposed on the same axis as said input shaft;
a connecting device disposed between said input shaft and said output shaft, for connecting said input shaft and said output shaft;
a counter shaft having a first gear meshing with a gear of said input shaft and a second gear meshing with a gear of said output shaft;
first switching means for switching said input shaft either to a high speed range where it is directly coupled to said output shaft by said connecting device or to a low speed range where it is connected to said output shaft through said counter shaft by said connecting device;
the automatic transmission having a parking range, a reverse range, a neutral range, an automatic transmission range, a second range and a first range;
second switching means for shifting to either one of said ranges of said automatic transmission;
range detection means for detecting that said second detection means is positioned at said parking range;
lock means for locking said first switching means to either



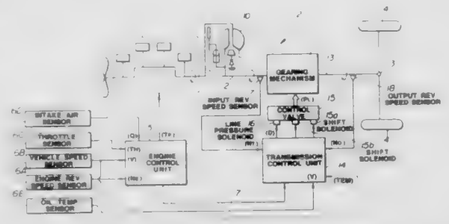
said high speed range or said low speed range in response to the detection by said range detection means that said second switching means is positioned at said parking range;
neutral position detection means for detecting that said first switching means is positioned at said neutral position between said high speed range and said low speed range; and
alarm means for raising an alarm in response to the detection by said neutral position detection means that said first switching means is at said neutral position.

5,052,246

MOTOR VEHICLE WITH LINE PRESSURE CONTROL FOR AUTOMATIC TRANSMISSION

Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 18, 1990, Ser. No. 510,554
Claims priority, application Japan, May 19, 1989, 1-126229
Int. Cl.[5] B60K *41/04, 41/06, 41/12*
U.S. Cl. 74—866 4 Claims



1. In a motor vehicle having an internal combustion engine and an automatic transmission including a transmission output member and a transmission input member drivingly connected to the internal combustion engine, the automatic transmission being shiftable between one gear ratio and another gear ratio and including a friction device which is adapted to be engaged

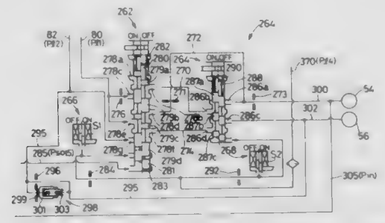
in response to a magnitude of a line pressure to effect a shifting betgeen the one and another gear ratios:
engine control unit means for controlling the internal combustion engine;
transmission control unit means for controlling the automatic transmission;
a communication line interconnecting said engine and automatic transmission control unit means to transmit information between said engine and transmission control unit means;
said transmission control unit means containing a line pressure data containing a magnitude of the line pressure to be supplied to the friction device during the shifting.
said transmission control unit means including.
means for determining whether or not said communication line is abnormal upon occurrence of the shifting and generating an abnormality indicative signal when said comunication line is abnormal,
means for evaluating quality of the shifting after said occurrence of the shiting.
means for correcting said line pressure data in response to result of evaluating the quality of the shifting when a predetermined condition is satisfied upon absence of said abnormality indicative signal, but leaving said line pressure data unchanged when said abnormality indicative signal is present;
means for adjusting the magnitude of the line pressure supplied to engage the friction device in accordance with said line pressure data upon the next occurrence of the shifting.

5,052,247

HYDRAULIC CONTROL APPARATUS FOR BELT-AND-PULLEY TYPE CONTINUOUSLY VARIABLE TRANSMISSION, INCORPORATING FAIL-SAFE PROTECTIVE MEANS

Nobuyuki Kato; Seitoku Kubo; Katsumi Kouno; Tetsuya Abe; Hiroshi Itoh; Kunio Morisawa, all of Toyota, and Ryoji Habuchi, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 8, 1990, Ser. No. 564,140
Claims priority, application Japan, Aug. 9, 1989, 1-206083; Aug. 9, 1989, 1-206084; Feb. 1, 1990, 2-23581; May 17, 1990, 2-127786
Int. Cl.[5] B60K *41/12*
U.S. Cl. 74—868 15 Claims



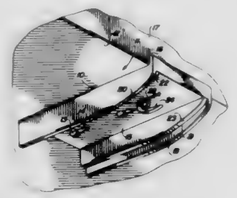
1. A hydraulic control apparatus for controlling a hydraulically operated continuously variable transmission of a motor vehicle whose speed ratio is continuously variable, comprising:
pressure generating means for producing an actuating pressure;
a directional control valve including a first spool which is movable between a shift-down position and a shift-up position for changing said speed ratio of said transmission in a shift-down and a shift-up direction, respectively, said first spool being moved to said shift-up position when said actuating pressure is not applied to said first spool;
a first solenoid-operated valve responsive to a first electric signal, for applying said actuating pressure to said first spool to move said first spool to said shift-down position;
a flow control valve including a second spool which is movable between a flow-restricting position for restricting a flow of a fluid therethrough for establishing a first rate at which said speed ratio of said transmission is changed, and a non-restricting position for establishing a second rate higher than said first rate, said second spool being moved to said flow-restricting position when said actuating pressure is not applied to said second spool; and
a second solenoid-operated valve responsive to a second electric signal, for applying said actuating pressure to said second spool to move said second spool to said non-restricting position.

5,052,248

PULL TAB CAN OPENER

Jerry W. Peeler, Vero Beach, Fla., assignor to Himittag, Inc., Orlando, Fla.

Filed Sep. 14, 1990, Ser. No. 582,419
Int. Cl.[5] B67B *7/40*
U.S. Cl. 81—3.25 6 Claims



1. A pull tab can opener comprising:
a base;
attaching means for attaching said base to a surface;
can guiding track means formed on said base for guiding a can thereon and having a pair of can side guides and a pair of can top guides for guiding a can along a predetermined path;
a pull tab grab hook movably attached to said base between said can guiding track means, for grabbing and removing a pull tab on a can when the can is slid along said can guiding track means, whereby a pull tab can opener can be used with one hand.

5,052,249

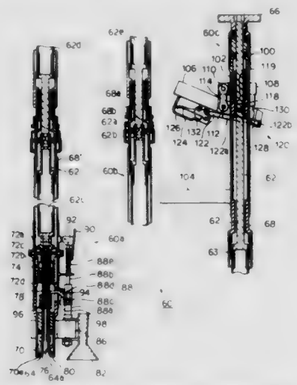
BOLT WRENCH

Seitaro Go, Tsuruga, Japan, assignor to Gotech, Limited, Fukui, Japan

Filed Mar. 30, 1990, Ser. No. 501,107
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—55 26 Claims

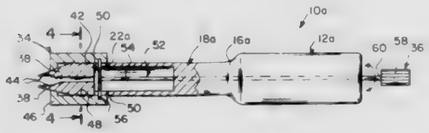
1. A bolt wrench comprising, in combination:
a control rod having a knob mounted to its first end and a socket wrench mounted to its second end, the socket wrench having a splined inner circumferential surface adapted to come into turning engagement with the head of a bolt to be removed when the bolt wrench is brought into an operative position relative to the bolt;
an outer cover for supporting the control rod for axial as well as rotational movement therein;
a plurality of releasable hooks pivotally mounted to the second end of the control rod around the socket wrench with the tips of the releasable hooks extending beyond the socket wrench, the releasable hooks being movable between a first position in which the tips of the releasable hooks are in gripping engagement with the bolt and a second position in which the tips of the releasable hooks are released from the gripping engagement with the bolt;

first control means for selectively moving the releasable hooks between the first and second positions; and



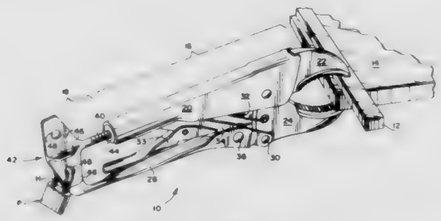
second control means for selectively moving the outer cover axially relative to the control rod.

5,052,250
STARTER PLUG
Walter G. Clarke, 27 White Oak Dr., Newport News, Va. 23601, and George Spector, 233 Broadway Rm 3815, New York, N.Y. 10007
Filed Mar. 11, 1988, Ser. No. 167,047
Int. Cl.[5] B25B *13/30*
U.S. Cl. 81—114 **2 Claims**



1. A spark plug starter tool which comprises:
a) a handle;
b) an elongated rigid shaft formed to and extending outwardly from one end of said handle;
c) an adjustable chuck head on the distal end of said rigid shaft;
said adjustable chuck head including:
a) a pair of adjustable jaws formed on the distal end of said rigid shaft, said jaws having a slot therebetween, external threads thereon and internal gripping surfaces; and
b) a shell having internal threads threaded onto said jaws and a portion adapted to move said jaws together whereby when said shell is turned in one direction said jaws will remain open and when said shell is turned in an opposite direction said portion will move said jaws together;
d) means for operating said adjustable chuck head so that said chuck head can grasp and release a spark plug, whereby turning of said handle will install and remove the spark plug with respect to a cylinder head of an engine thus eliminating cross-threading;
said means for operating said chuck head including a central T-rod; said T-rod including a short transverse segment disposed within and extending through large apertures provided within diametrically opposed sides of said rigid shaft and into said shell, and a long segment extending axially through said rigid shaft and said handle, a control knob affixed to the free end of said long segment exteriorly adjacent said handle whereby turning of said control knob will operate said adjustable chuck head to adjust the relative position of said jaws.

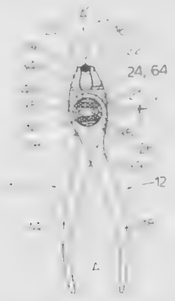
5,052,251
LOCKING WRENCHES
J. David Mills, Mobile, Ala., assignor to Blue Water Holding Company, Inc., Dauphin Island, Ala.
Continuation-in-part of Ser. No. 571,202, Aug. 23, 1990, abandoned. This application Sep. 18, 1990, Ser. No. 583,977
Int. Cl.[5] B25B *7/14, 7/12*
U.S. Cl. 81—324 **43 Claims**



40. A locking wrench comprising:
an upper handle and a lower operating handle;
said upper handle having a fixed upper jaw;
said lower operating handle having a lower jaw movably connected to said lower operating handle and to said fixed upper jaw so as to be in opposition to said upper jaw, wherein movement of said lower operating handle between open and closed states relative to said upper handle causes said lower jaw to be moved relative to said opposing upper jaw between clamped and unclamped conditions, respectively;
a toggle lever coupled operatively at one end to said lower operating handle and at another end to said upper handle;
an adjustment screw threadably coupled to said upper handle for threaded reciprocal movements between greater and lesser axial positions relative to said upper handle and acting upon said toggle lever to effect selective adjustment of a clamping force exerted by means of said upper and lower jaws;
a spring which exerts a force upon said lower jaw tending to move said lower jaw towards said unclamped condition; and
a handle-restraining system which includes
(i) a first restraining element forming a part of said lower operating handle; and
(ii) a second restraining element forming an integral fixed part of said adjustment screw to thereby be movable concurrently with said adjustment screw between said greater and lesser axial positions; whereby
(iii) said first and second elements are aligned, and thereby capable of being coupled one to another, when said lower operating handle is moved into said closed state thereof, and said lower operating handle may be restrained from moving into said opened state thereof.

5,052,252
SELF-LOCKING AND RELEASING GRIPPING TOOL
Oleg Szymber, Arlington Heights, Ill., and Eustathios Vassiliou, Newark, Del., assignors to Patcore, Incorporated, Newark, Del.
Filed Oct. 9, 1990, Ser. No. 594,547
Int. Cl.[5] B25B *7/06*
U.S. Cl. 81—416 **18 Claims**

1. A self-locking gripping tool comprising in combination an assembly of:
(a) a first member having a first hub, a first jaw rigidly connected to the first hub, and a first handle extending from the first hub in a direction substantially opposite to the direction of the first jaw;
(b) a second member having a second hub, a second jaw rigidly connected to the second hub, and a second handle extending from the second hub in a direction substantially opposite to the direction of the second jaw,
the second member being pivotally connected to the first member through a first pivot hole on the second hub,
the first handle and the second handle constituting a handle set, and the first jaw and the second jaw constituting a jaw set, and
the second hub having an outer clutching surface; and



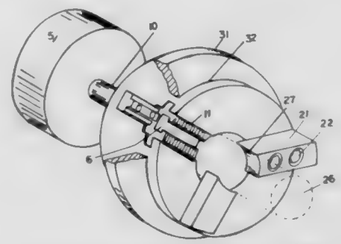
(c) wedging means for reversibly locking the tool, comprising
a clutch section having an inner clutching surface commensurate to the outer clutching surface, and
a first wedge directionally coupled with the first hub, and being adaptable to create adequate pressure between the inner clutching surface and the outer clutching surface, so as to reversibly lock the second member with respect to the first member when a clamping torque exceeding a predetermined value is applied on the handle set, the clamping torque corresponding to a simultaneous resistive torque created on the jaws by an object gripped in the jaw set.

5,052,253
SCREWDRIVER
Ching-Jou Lin, No. 148, Sec. 3, Chung-Shan Rd., Wu-Jih Hsiang, Taichung Hsien, Taiwan
Filed Aug. 1, 1990, Ser. No. 561,606
Int. Cl.[5] B25B *21/00*
U.S. Cl. 81—457 **3 Claims**



1. A screwdriver comprising:
a) a handle including a main body portion having a substantially truncated cone configuration and a hollow end portion having an outer wall and a substantially semi-spherical configuration, the hollow end portion including an internal ring-shaped flange having a bottom edge, a round hole therein and defining a continuous circular channel with the outer wall;
b) a screw driving tool secured in an opposite end of the handle for driving screws; and
c) a swivel member secured to the handle at the hollow end portion thereof, the swivel member including a plurality of retainer elements extending through the round hole of the ring-shaped flange and disposed in locking engagement with the bottom edge of the flange to permit the swivel member and the handle to rotate relative to each other through 360°, and a plurality of slide blocks disposed in sliding engagement within the circular channel for stabilizing the relative rotation of the swivel member and the handle.

5,052,254
LATHE JAW SECURING DEVICE
Glen R. Goins, 3810 Glen Willow Way, Louisville, Ky. 40299
Filed Jan. 23, 1990, Ser. No. 469,037
Int. Cl.[5] B23B *31/12*
U.S. Cl. 82—152 **1 Claim**

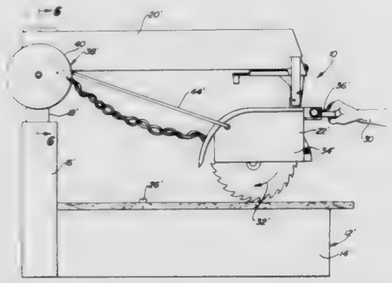


1. In a lathe having a chuck assembly including a chuck body to be rotated and receive a work piece where said chuck body includes a central opening to receive the work piece therethrough, a plurality of hard jaws radially slidable in a plurality of jaw guides circumferentially spaced about said central opening; means for radially reciprocating said hard jaws with respect to said body toward and away from said chuck body opening where each said hard jaw has a radially outer surface and radially inner surface; a plurality of soft jaws attached to said hard jaws to move therewith where said soft jaws are adapted to securely engage said work piece; and a securing device including a ring member which is intimately received about the circumference of said body and including feet members rigidly affixed thereto and extending radially inwardly therefrom and in radial alignment with said outer surfaces of the hard jaws whereby the inner surface of said feet members engage said outer surface of said hard jaws so that the work engaging surfaces of the soft jaws can be machined to the configuration of the workpiece.

5,052,255
SPEED BRAKE
Robert C. Gaines, 265 Leota, Union Lake, Mich. 48085
Filed Jun. 12, 1989, Ser. No. 364,961
Int. Cl.[5] B23D *45/02;* **B23Q** *15/08;* **B27B** *5/18*
U.S. Cl. 83—62.001 **14 Claims**

11. A brake assembly (**38**) for preventing inadvertent movement of a tool (**22**) relative to a fixed position support (**12**) thereof towards a user (**30**) thereof by the tool itself, said brake assembly (**38'''**) comprising: a fixed member (**40'''**) including first mounting means for mounting said fixed member (**40'''**) on the mounting said fixed member (**40'''**) on the fixed position support (**12**); a moveable member (**44'''**) operatively connected to said fixed member (**40**) to be moveable relative thereto as the

tool (22) drives itself relative to the fixed member (40''') or is moved towards the fixed member and including connecting means for connecting said moveable member (44''') from movement towards the user (30) driven by the tool relative to said fixed member (40''') when said moveable member (44''') moves at a predetermined speed, said fixed member including a rack (40''') having a plurality of teeth (76) extending substantially along a length thereof, said moveable member including



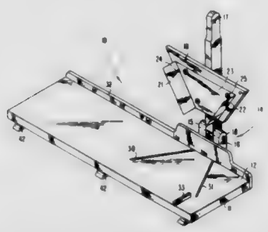
a pinion gear (44'') having an outer radial surface having teeth (78) thereon in meshing engagement with said teeth (76) of said rack (40'''), said locking means including a ratchet surface adjacent to said teeth (76) of said rack (40''') and at least one centrifugally driven locking member (82) mounted on said pinion (44'') for engaging said ratchet surface (80) when said pinion (44'') spins as said pinion (44'') moves relative to said rack (40''') at a speed greater than the predetermined speed.

5,052,256

APPARATUS FOR CUTTING SHINGLES

N. Richard Morrissey, 3405 Woodmar Ct., West Lafayette, Ind. 47906

Filed Apr. 13, 1989, Ser. No. 337,316
Int. Cl.[5] B26D *7/01*
U.S. Cl. 83—468 4 Claims



1. An apparatus for cutting shingles having a first longitudinal edge and a second longitudinal edge, the first longitudinal edge being continuous, the shingle further including spaced rain grooves extending inwardly from the second longitudinal edge, said apparatus being for cutting shingles into a six-sided shape for use in a ridge cap, said apparatus comprising:

a base having a flat, shingle-receiving surface, said base including a back stop for placement thereagainst of the continuous first longitudinal edge of a shingle to align the shingle in position for cutting;

a lever arm having a first end and a second end, the second end having a handle portion;

pivot means for pivotally mounting the first end of said lever arm to said base, said lever arm being movable between a first position adjacent the single-receiving surface;

a blade support attached to said lever arm;

a pair of blades secured to said blade support and having cutting edges facing away from said blade support, said blades being positioned in diverging relationship to one another, each blade having a first end and a second end, the first ends being positioned closer to one another than the second ends, said blades diverging in the direction away from the first end of said lever arm, the second ends of said blades being spaced apart the same distance as the spacing between adjacent rain grooves of a shingle; and

alignment means for aligning a shingle on said base to have said blades contact the shingle with the second ends adjacent the spaced rain grooves of the shingle and with the first ends extending adjacent the continuous longitudinal edge of the shingle,

said base including a pair of grooves positioned to receive the cutting edges of said blades when said lever arm is in the second position adjacent the shingle-receiving surface of said base,

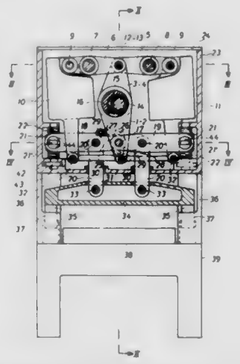
said lever arm having a first position displaced from the shingle-receiving surface to permit placement of a shingle on said surface, said lever arm having a second position with the cutting blades extending into the grooves, whereby a shingle placed on the shingle-receiving surface of said base is cut by said blades by movement of said lever arm from the first position to the second position.

5,052,257

MASS FORCES BALANCING APPARATUS IN A MACHINE HAVING A CRANK SHAFT DRIVE, SPECIFICALLY A PUNCHING MACHINE

Oskar Eigenmann, Arbon, Switzerland, assignor to Bruderer AG, Arbon, Switzerland

Filed Apr. 20, 1990, Ser. No. 512,735
Claims priority, application Switzerland, May 3, 1989, 1691/89
Int. Cl.[5] B30B *5/00*
U.S. Cl. 83—530 4 Claims



1. A punching machine having a mass forces balancing apparatus, comprising:

a frame (23);

crank shaft means (14, 15, 16) rotatably on the frame and having an eccentric sleeve;

drive means (40, 41) for rotating the crank shaft means;

first rods (1, 2) at opposite ends of the eccentric sleeve, each first rod having one end on the crank shaft for moving the first rod thereby and, extending in one direction, an axially opposite end;

pairs of single arm levers (18, 19) respectively for the first rods, each single arm lever of each pair having one end pivoted to the respective first rod between the ends of the respective first rod and an opposite end;

pivot means (21, 21', 22, 44) on the frame supporting, respectively, the opposite ends of the single arm levers for pivotal movement and movement generally parallel to and transverse to the axes to the first rods;

a ram (34) reciprocably movable on the frame;

pressing rods (20) for the respective single arm levers, each pressing rod having one end pivoted to the respective single arm lever intermediate the ends of the single arm lever and an opposite end pivoted to the ram;

whereby the ram is reciprocated for a punching operation;

second rods (3, 4) respectively associated with the first rods, each second rod having one end on the eccentric sleeve for moving the second rod thereby and, extending in a direction opposite to the direction of the first rods, an opposite end;

pairs of first reversing levers (5, 6) respectively for the second rods, each reversing rod having one end pivoted to the opposite end of the respective second rod and an opposite end, and being pivoted to the frame between the ends thereof;

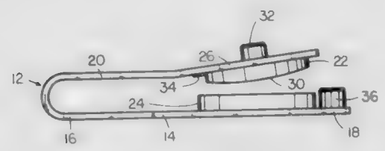
balancing weights (10, 11) respectively for the first reversing levers, each balancing weight having one end pivoted to the opposite end of the respective first reversing lever and an opposite end; and link rods (30) respectively for the pairs of first reversing levers, each link rod having one end pivoted to the opposite end of the first rod respectively for the second rod for the respective pair of first reversing levers and an opposite end pivoted to the opposite end of the balancing weight of the respective reversing lever.

5,052,258

CUTTER

Theodore K. Hunter, 6305 Buena, Atascadero, Calif. 93422

Continuation of Ser. No. 324,083, Mar. 16, 1989, abandoned. This application Mar. 1, 1991, Ser. No. 664,469
Int. Cl.[5] B26F *1/44*
U.S. Cl. 83—589 5 Claims



1. A cutter for repeatedly cutting out pieces having identical shape from a sheet of a semi-brittle and semi-rigid material, said cutter noteworthy for producing a clean cut in such material and comprising:

a base, elongated and extending in its direction of elongation from a rear end to a front end, and extending laterally to the left and right;

an arm, elongated in the same direction as said base, located above said base but spaced from it, said arm having a first portion resiliently connected at a first end to the rear end of said base for resiliently opposed motion toward said base, said arm having a second portion inclined away from said base and said first portion and attached at one end to a second end of said first portion so as to extend forward from said first portion, said arm elastically deformable in response to an applied downward force to reduce the inclination of said second portion with respect to said first portion whereby the effective length of said arm is increased as the stroke progresses.

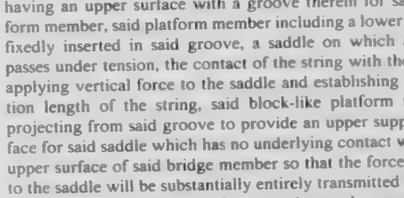
5,052,259

CHORDED ZITHER

George F. Orthey, Jr., and Mary L. Orthey, both of R.D. 1, Box 34A, Newport, Pa. 17074

Filed May 17, 1990, Ser. No. 525,128
Int. Cl.[5] G10D *1/12*
U.S. Cl. 84—288 7 Claims

6. An auxiliary damper for a chorded zither comprising a rigid bar having string-engaging damping pads mounted thereon, means on said bar for removably securing said bar to a chord bar housing of a chorded zither with said string engaging pads in engagement with predetermined strings of said zither, the damping pads of the auxiliary damper being arranged in a pattern to mute all of the strings of the zither corresponding to notes of a chromatic scale other than the strings corresponding to notes of a diatonic scale in a particular key.

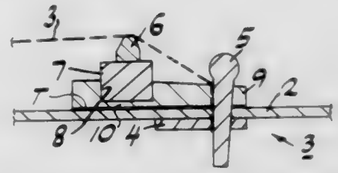


5,052,260

ADJUSTABLE BRIDGE ASSEMBLY FOR ACOUSTICAL STRINGED INSTRUMENTS

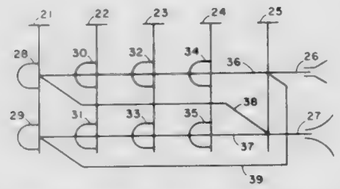
Thomas Cipriani, 1441 Lincoln Rd. #411, Miami Beach, Fla. 33139

Filed Mar. 21, 1990, Ser. No. 496,794
Int. Cl.[5] G10D *3/04*
U.S. Cl. 84—298 36 Claims



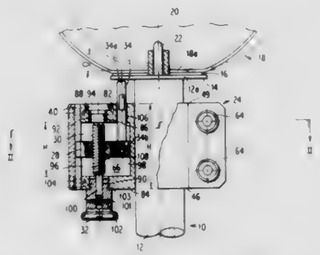
1. A bridge assembly for a stringed musical instrument having adjustment for string length fine tuning, the musical instrument having a resonating box with a sound board cover on which the bridge assembly is mounted, said bridge assembly comprising a bridge member fixed with respect to the sound board cover of the musical instrument, a block-like platform member secured to said bridge member, said bridge member having an upper surface with a groove therein for said platform member, said platform member including a lower portion fixedly inserted in said groove, a saddle on which a string passes under tension, the contact of the string with the saddle applying vertical force to the saddle and establishing a vibration length of the string, said block-like platform member projecting from said groove to provide an upper support surface for said saddle which has no underlying contact with said upper surface of said bridge member so that the force applied to the saddle will be substantially entirely transmitted through the lower portion of the platform member to the sound board cover via said groove in the bridge member without being transmitted to the upper surface of the bridge member and means connecting the saddle to the platform member, for adjustment of the saddle, longitudinally of the string, on the platform member to vary the vibration length of the string and thereby effect string length fine tuning and for longitudinally adjusted positions of the saddle between end positions the saddle transmits the vertical force applied thereto by the string substantially entirely to said lower portion of the platform member therebelow and then to said sound board cover via the groove in the bridge member.

5,052,261
COMPENSATING VALVE SYSTEM FOR BRASS INSTRUMENTS
Martin Lessen, 12 Country Club Dr., Rochester, N.Y. 14534
Continuation of Ser. No. 554,695, Nov. 23, 1983. This application Jan. 5, 1988, Ser. No. 141,329
Int. Cl.[5] G10D *9/04*
U.S. Cl. 84—389 **28 Claims**



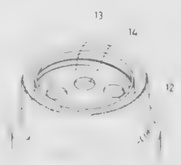
1. In a brass instrument including mouthpiece and bell sections, a compensating valve system comprising:
acoustical path means for acoustically connecting said mouthpiece and bell sections by two different acoustical paths differing in length so as to cause the instrument to sound two musical tones lower over one path than over the other path; a master valve having two positions, each of which causes a different one of said acoustical paths to be connected between said mouthpiece section and said bell section; and
three valves each having two positions such that in one position, the acoustical path connections from the master valve and passing through the three valves maintain their length and in the other position, said acoustical paths are lengthened by respective addendum acoustical paths to effect a lowering of the pitch of the instrument using each acoustical path by one tone in one valve, one-half tone in the next valve and one and one-half tones in the third valve over and above whatever lowering is caused by the action of the master valve.

5,052,262
CYMBAL TILT ADJUSTMENT MECHANISM
Richard J. Havens, 785 Monroe St., Reno, Nev. 89509
Filed Jun. 5, 1990, Ser. No. 533,556
Int. Cl.[5] G10D *13/02, 13/06*
U.S. Cl. 84—421 **7 Claims**



1. A high-hat cymbal tilt adjustment mechanism for use with a high-hat cymbal stand including a vertically upright tubular assembly having a vertical outer tube supporting an upwardly concave lower cymbal overlying the upper end of said outer tube with the axis of the lower cymbal coincident with the axis of and bearing a vertically reciprocal internal rod for raising and lowering the upper cymbal mountable thereto, said adjustment mechanism comprising:
a body,
means for fixedly mounting said body to said outer tube below the upper end of said outer tube,
means defining a cavity within said body,
a sliding block mounted in said cavity for movement vertically between extreme positions and including a tapped vertical hole therein,
a lead screw mounted to said body for rotation about its axis and having a threaded portion threaded into said tapped vertical hole of said sliding block, and
a vertically upright probe fixed to said sliding block laterally offset from an axis of said lead screw, movable therewith, and projectable vertically from a top of said body into operative contact with the lower cymbal to one side of the axis of said cymbal for tilting the cymbal relative to the axis of said tube.

5,052,263
DECORATION BOX WITH MUSIC AND COLORED FLASHING LIGHT BEAMS
Grace Feng, 8F1., No. 222, Fu Hsing N. Road, Taipei, Taiwan
Filed Jan. 16, 1991, Ser. No. 641,926
Int. Cl.[5] A63J *17/00;* **G10F** *1/06*
U.S. Cl. 84—464 R **1 Claim**

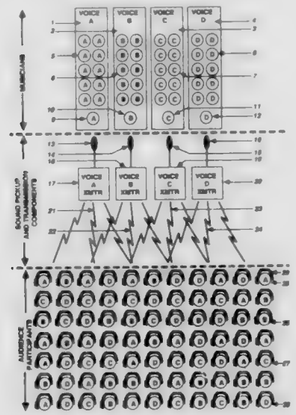


1. A decoration box for sending out music and colored flashing light beams simultaneously, comprising:
a music generator having music generating means, and a winding shaft for winding a coil spring within said music generator;
a dish, which is connected to said winding shaft, having a plurality of openings;
a plurality of colored translucent members, each of which is affixed to said opening of said dish, for allowing a white light to pass therethrough and producing a colored light beam;
at least one lamp, placed under said dish, over which each said opening will pass when rotating said dish; and
a decorative member, through which lights will pass, mounting on said dish for manually winding said coil spring and for decorative purpose.

5,052,264
MUSIC PERFORMANCE ASSISTING METHOD
Paul W. Dueweke, 1646 Portola, Palo Alto, Calif. 94306
Filed Mar. 9, 1989, Ser. No. 321,052
Int. Cl.[5] G09B *15/00*
U.S. Cl. 84—470 P **18 Claims**

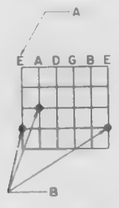
1. A method of assisting a musical performer to perform said performer's voice of a multi-voice musical piece, said method comprising the following steps:
provide said assistance in real time during a performance comprising a transmission of a lead performance of said musical performer's voice

synchronization of said lead performance transmission with said multi-voice musical piece



said transmission being received by said musical performer by a receiver and earphone means worn by said musical performer.

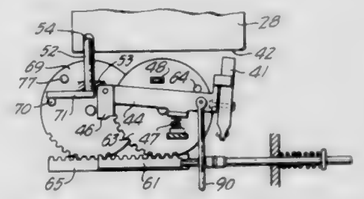
5,052,265
METHOD OF RECORDING FINGERING POSITIONS FOR STRINGED MUSICAL INSTRUMENTS
Carl S. Henry, 102 Ellsworth St., Newington, Conn. 06111
Filed Jan. 19, 1990, Ser. No. 467,686
Int. Cl.[5] G09B *15/02*
U.S. Cl. 84—483.2 **6 Claims**



1. A method of recording musical information in a musician's written repertoire which comprises: reproducing on an appropriate section of a lyric sheet of said written repertoire by means of a single ink transfer reproducing device, a diagram representing a fingerboard of a stringed musical instrument, said diagram comprising a series of parallel vertical lines representing strings of said stringed musical instrument; and a series of interconnecting parallel horizontal lines representing frets of said stringed musical instrument; and, appropriately marking said diagram for accurately depicting fingering positions relating to said written repertoire.

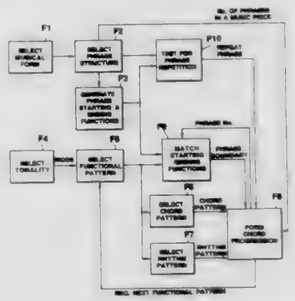
5,052,266
PAGE TURNER FOR MUSIC MANUSCRIPTS AND THE LIKE
Robert C. Burster, 321 W. 30th St., Room D1, New York, N.Y. 10001
Filed Apr. 2, 1990, Ser. No. 503,322
Int. Cl.[5] G10G *7/00*
U.S. Cl. 84—493 **10 Claims**

1. An apparatus for turning pages of a manuscript wherein the manuscript has a back surface and top and bottom edges, which comprises:
(a) a manuscript support for supporting the back surface of the manuscript as well at its bottom edge,
(b) a support shaft extending upward behind said manuscript support and having a rotation axis,
(c) a plurality of control elements mounted on said support shaft for rotation about its axis,
(d) spring means urging said control elements to rotate from a first operating position to a second operating position,
(e) a plurality of page turning elements, one mounted on each control element for movement therewith,
(f) said page turning elements including a first portion extending upward and a second portion extending laterally at or above the top edge of the manuscript pages,
(g) page clips carried by said page turning elements and engageable with individual pages of the manuscript near outer edge portions of such pages,



(h) release means associated with said control elements for effecting controlled release of said control elements in succession,
(i) said release means comprising a release pawl, retractably positioned in front of and in position to block movement of a control element positioned to be next released, and a blocking element retractably movable to a positioned behind the last mentioned control element and in front of and in position to block movement of a control element to be next released in succession, and
(j) remotely operated actuating means for effecting momentary retraction and return of said release pawl while said blocking element is in blocking position, and for retracting said blocking element after return of said release pawl.

5,052,267
APPARATUS FOR PRODUCING A CHORD PROGRESSION BY CONNECTING CHORD PATTERNS
Mayumi Ino, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Sep. 22, 1989, Ser. No. 411,541
Claims priority, application Japan, Sep. 28, 1988, 63-240660
Int. Cl.[5] G10H *1/38, 7/00*
U.S. Cl. 84—613 **26 Claims**



24. An apparatus for producing a chord progression without requiring a melody, comprising:
chord pattern network means (FIG. **45**; **440**, **450** in FIG. **34**)

for storing a hierarchical network of chord patterns comprising a plurality of nodes and a plurality of links connecting between said nodes so as to define hierarchical relationships therebetween in which each node in said hierarchical network contains at least one chord pattern and in which each chord pattern in said each node in said hierarchical network is connected by an associated one of said plurality of links to another node in said hierarchical network; and

network exploring means (**410**, **420** in FIG. **34**; FIG. **36**) for exploring said chord pattern network means according to a guidance of said links in said hierarchical network while concatenating chord patterns thus explored one after another thereby to develop a chord progression

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5,052,268

PRESELECTOR

Melville Clark, Jr., 8 Richard Rd., Wayland, Mass. 01778-4099

Continuation of Ser. No. 214,007, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 457,436, Jan. 12, 1983, abandoned. This application Jul. 9, 1990, Ser. No. 549,544

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—615 **26 Claims**



1. Preselecting apparatus for a musical instrument comprising,

manually actuable switching means for activating preselected combinations of parameters of said instrument,

memory means for storing said preselected combinations,

memory input circuit means responsive to said manually actuable switching means for providing a manually designated sequence of address signals identifying locations in said memory means for corresponding ones of said preselected combinations,

manually operable circuit means for providing said preselected combinations,

means for coupling said preselected combinations from said manually operable circuit means to said memory means in locations designated by said manually designated sequence of address signals,

output coupling network means coupled to said memory means for providing a selected one of said combinations to said instrument to control the parameters of sound signals provided by said musical instrument in accordance with the preselected combination then provided by said memory means,

sources of first and second potentials,

said manually actuable switching means including a plurality of poles one of which comprises a change-of-state contact with each connected through a resistor to said source of second potential and having a common contact connected to said source of first potential.

5,052,269

ACOUSTIC-ELECTRIC GUITAR WITH INTERIOR NECK EXTENSION

Lawrence P. Young, Jr., R.R. #1, Box 86, Gravette, Ark. 72736

Continuation-in-part of Ser. No. 385,067, Jul. 26, 1989. This application Oct. 1, 1990, Ser. No. 590,812

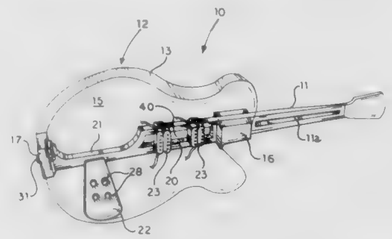
Int. Cl.[5] G10D *3/00*

U.S. Cl. 84—728 **8 Claims**

5. An acoustic stringed musical instrument of the type having a neck, a hollow body including sides, a back, and a top plate, and strings close to said top plate, wherein the improvement comprises:

a rigid extension having two ends, said extension disposed within the interior of said body, said extension fixed to said body at least one of said ends, said extension not in contact with said body except at said ends of said extension;

at least one pickup aperture through said top plate, each said aperture disposed adjacent said strings;



at least one electromagnetic pickup mounted to said extension, the number of said pickups equal to the number of said pickup apertures;

said pickups disposed within said pickup apertures to extend through said top plate;

said pickups not contacting said top plate; whereby

said pickups may be positioned close to said strings without touching said top plate and thereby be isolated from the vibrations of said top plate.

5,052,270

MULTI-SONOBUOY LAUNCH CONTAINER WITH CONSTANT FORCE SPRING

Bruce W. Travor, Holland; Richard M. Coughlan, Warminster; Edward J. Cotilla, Churchville, and Frank P. Marshall, Penns Park, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 20, 1990, Ser. No. 544,295

Int. Cl.[5] B64D *1/12;* **F41F** *5/00*

U.S. Cl. 89—1.51 **11 Claims**



1. A multi-store launch container carried by a vehicle and electronically connected to said vehicle and adapted to carry and sequentially release multiple stores, comprising:

a. a container, having a breech end connected to a vehicle and an oppositely-disposed discharge end, and being filled with a plurality of stores for sequential release through a pathway at the discharge end;

b. constant force biasing means applied against the innermost of said stores to attempt to force said stores through the discharge end;

c. gate means releasably fixed at the discharge end to alternatingly obstruct and allow the exit of a store; and

d. electronically-actuated control means connected to the vehicle and said gate means to provide reciprocating motion to said gate means.

5,052,271

ARMING DEVICE FOR MUNITIONS

William F. West, Sunland, Calif., assignor to Standard Armament, Inc., Glendale, Calif.

Filed Jul. 19, 1990, Ser. No. 553,862

Int. Cl.[5] B64D *1/04*

U.S. Cl. 89—1.55 **22 Claims**



22. A method of selectively discharging a munition from an aircraft in a safe or in an armed condition, the method comprising the steps of:

attaching a release wire to the munition;

attaching an arming wire to the munition;

attaching the release wire to an arming device connected to the aircraft, the arming device including,

(a) a housing; and

(b) means, contained within the housing and responsive to the discharge of the munition, for sensing the discharge of the munition and then selectively ejecting the arming wire from the arming device and releasing the release wire from the arming device, including,

(1) release means, rotatably disposed within the housing, for retaining the release wire and then releasing the release wire,

(2) arming means, rotatably disposed with the housing, for retaining the arming wire and selectively ejecting the arming wire, and

(3) release and arming control means, moveable within the housing and responsive to the discharge of the munition, for selectively regulating the respective rotations of the release and arming means and for selectively preventing the arming means from ejecting the arming wire when the munition is to be discharged in an armed condition,

attaching the arming wire to the arming means; and

selectively actuating the release and arming control means to cause the release means to release the release wire and the arming means to retain the arming wire.

5,052,272

LAUNCHING PROJECTILES WITH HYDROGEN GAS GENERATED FROM ALUMINUM FUEL POWDER/WATER REACTIONS

Woodrow W. Lee, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 6, 1990, Ser. No. 564,894

Int. Cl.[5] F41F *1/00*

U.S. Cl. 89—7 **23 Claims**

1. A method of propelling a projectile from a device comprising:

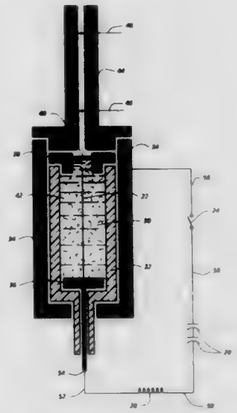
(1) applying a high power pulse of electrical current to a metal conductor causing the metal conductor to explode and thus disperse the metal into a mixture of water and an aluminum fuel powder selected from the group consisting of

(a) aluminum powder,

(b) an aluminum-lithium alloy powder comprising from more than zero to 3.0 weight percent lithium with the remainder of the alloy being essentially aluminum, and

(c) an aluminum-magnesium alloy powder comprising from more than zero to 5.0 weight percent of magnesium with the remainder of the alloy being essentially aluminum,

wherein the pieces of dispersed metal from the exploded conductor provide hot spots which initiate a chemical reaction between the aluminum fuel and water to generate hydrogen at high pressure in a chamber;



(2) continuing to supply the high powered pulse of electrical current to drive the reaction between the aluminum fuel and water after the metal conductor has exploded and initiated the reaction;

(3) allowing the hydrogen gas pressure in the chamber to build to a preselected level; and then

(4) using the hydrogen gas to push a projectile from the device.

5,052,273

FLEXIBLE TUBULAR WALL PNEUMATIC ACTUATOR WITH POSITION TRANSDUCER

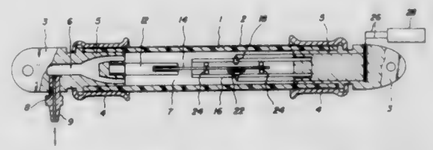
Yuji Sakaguchi, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 180,724, Apr. 4, 1988, Pat. No. 4,860,639, which is a continuation of Ser. No. 804,959, Dec. 5, 1985, abandoned. This application Jun. 1, 1989, Ser. No. 359,814

Claims priority, application Japan, Dec. 11, 1984, 59-259896; Dec. 28, 1984, 59-279771; Dec. 28, 1984, 59-279773

Int. Cl.[5] F01B *31/12*

U.S. Cl. 92—5 R **5 Claims**



1. A pneumatic actuator comprising: a tubular body made of a rubber-like elastic material, a braided structure made of organic or inorganic high tensile strength fibers reinforcing an outside of said tubular body and closure members sealingly closing ends of said tubular body, at least one of said closure members having a connecting passage, said tubular body being deformed to expand its diameter by introducing pressurized fluid therein to through said connecting passage to cause contractive force in its longitudinal direction, said actuator comprising an insertion member supported by one of said closure members and extending in an inner cavity of said tubular body, receiving cylinder supported by the other of said closure mem-

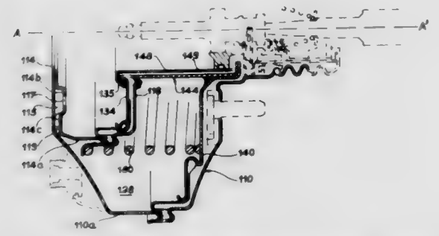
bers and telescopically receiving said insertion member, said receiving cylinder having therein an operating liquid; said receiving cylinder having displacement detecting means for detecting displacement of said insertion member and guide means for guiding movement of said insertion member positioned therein, and displacement output means for generating output signals representative of relative movement between said closure members in response to detected signals from said detecting means.

5,052,274

TANDEM BRAKE BOOSTER WITH RETURN SPRING ARRANGEMENT FOR REAR PISTON CHAMBER

Guy Meynier, Aulnay Sous Bois, France, assignor to Bendix France, Drancy, France

Filed Nov. 29, 1988, Ser. No. 277,612
Claims priority, application France, Dec. 1, 1987, 87 16618
Int. Cl.[5] B60T *13/567*
U.S. Cl. 92—49 **5 Claims**



1. A brake servo unit, comprising an outer casing, a reinforcing plate fastened internally to a front part of the casing and comprising an extension which is approximately cylindrical and oriented towards the rear of the casing, and a rigid partition supported within the casing by the reinforcing plate and fixed sealingly to an end of the extension to delimit a front space and a rear space inside the casing, a piston passing sealingly through the rigid partition, two deformable partitions dividing each of the front and rear spaces into respective front and rear chambers, at least one passage connecting the front chambers, at least one passage connecting the rear chambers, and resilient means tending to displace the deformable partitions toward rear rest positions, characterized in that the deformable partitions are fastened by internal peripheral edges onto the piston and in that he resilient means comprises a helical spring located within the front chamber of the rear space and radially surrounding the approximately cylindrical extension of the reinforcing plate.

5,052,275

HORIZONTAL RECIPROCATING COMPRESSOR WITH AN ECCENTRICALLY ADJUSTABLE PISTON THEREIN

Roland Mayer, Oberwil, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 12, 1990, Ser. No. 626,277
Int. Cl.[5] F01B *29/04*
U.S. Cl. 92—59 **10 Claims**

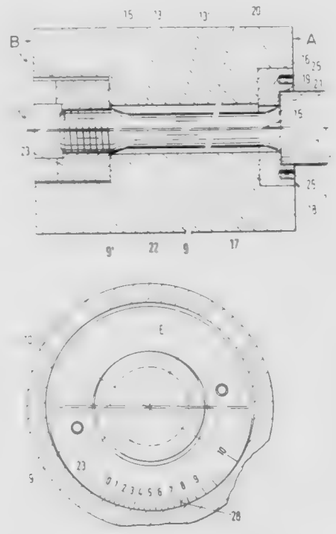
8. In a reciprocating compressor, the combination comprising

a horizontally disposed cylinder;

a piston reciprocably mounted in said cylinder along a longitudinal axis thereof;

a piston rod releaseably connected to said piston and extending along a longitudinal axis; and

an eccentric ring rotatably mounted in said piston and rotatably receiving said piston rod therein, said ring having an outer peripheral surface eccentric to an inner peripheral



surface thereof for moving said axis of said piston rod relative to said piston in response to rotation of said ring.

5,052,276

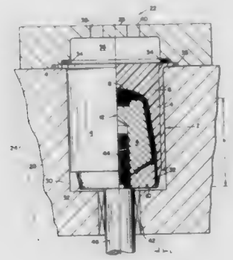
DIAPHRAGM CONSTRUCTION

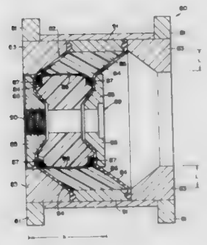
George H. Halsey, 63 Shady Dr., Indiana, Pa. 15701

Filed Jun. 18, 1990, Ser. No. 539,218
Int. Cl.[5] F01B *19/00*; **F16J** *3/00*
U.S. Cl. 92—90 **16 Claims**

1. A diaphragm, comprising:

a plug means having an upper and lower plug that define a channel therebetween; and





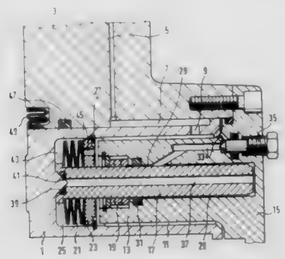
a bonding layer secured to said plug means to form a base said bonding layer also being received and retained in said channel between said upper and lower plugs.

5,052,277

HYDRAULIC CYLINDER FOR BRAKING ELEMENTS OF VEHICLES

Xaver Wirth, Ismaning, Fed. Rep. of Germany, assignor to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

Filed Jul. 19, 1990, Ser. No. 554,351
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1989, 3923943
Int. Cl.[5] F01B *31/00*
U.S. Cl. 92—110 **4 Claims**



1. Hydraulic cylinder for vehicle brakes, comprising a clamping piston (**1**) hydraulically driven in a cylinder housing (**3**) and, when actuated, acting relative to a brake lining carrier having a brake lining, an adjusting device being associated with said clamping piston and a non-return lock preventing said clamping piston from being driven in by axially directed impact forces, wherein

(a) in a neutral position of said clamping piston (**1**) an hydraulic volume, which absorbs the impact forces acting on clamping piston (**1**), is coupled to said clamping piston (**1**);

(b) said clamping piston (**1**) comprises an axially extending interior recess closed toward a front of said clamping piston and open at a rear of said clamping piston, an extension (**13**) securely attached to the housing projecting into a rearward opening of said recess;

(c) an axial chamber (**29**) within said extension (**13**) in which chamber an auxiliary piston (**17**) is guided, said auxiliary piston (**17**) being friction-locked on its outer circumference by a clamping spring (**19**) used on an inner circumference of said chamber (**29**);

(d) said auxiliary piston (**17**) having a continuous, axial bore (**37**) open on both sides of said auxiliary piston with an end of said auxiliary piston (**17**) directed toward said front of said clamping piston (**1**) carrying a seal (**39**) which surrounds said axial bore (**37**) and in neutral position of said clamping piston (**1**) sealingly abuts a sealing seat of said clamping piston in such a manner that said bore (**37**) of said auxiliary piston (**17**) is sealed with respect to the frontal inner end of said clamping piston;

(e) said bore (**37**) communicates freely at said rear of said auxiliary piston (**17**) with said chamber (**29**);

(f) said clamping piston (**1**) is resiliently prestressed with respect to said auxiliary piston (**17**) by disk spring means (**21**), in such a manner that, when hydraulically operated, said clamping piston is driven out of said cylinder housing (**3**) in accordance with an excursion of said disk spring means (**21**) until, in the event of an additional actuating path, said auxiliary piston (**17**) is carried along by said disk spring means (**21**) against frictional locking of said clamping spring (**19**); and

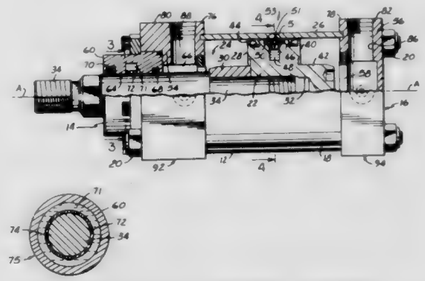
(g) said pressure chamber (**11**) for said clamping piston (**1**) communicates freely with a chamber (**43**) housing said disk spring means (**21**) at a front end of said auxiliary piston, in such a manner that, when said clamping piston is pressurized and said seal (**39**) is opened, a free connection is established between said pressure chamber (**11**) and said bore (**37**) of said auxiliary piston (**17**).

5,052,278

FLUID CYLINDER WITH IMPROVED WEAR RINGS

Charles M. Smillie, III, West Bloomfield, and Anthony J. Tomac, Troy, both of Mich., assignors to C.M. Smillie & Company, Ferndale, Mich.

Filed Mar. 27, 1989, Ser. No. 328,915
Int. Cl.[5] F01B *31/10*
U.S. Cl. 92—159 **3 Claims**



1. A pneumatic cylinder combination comprising:

a tube shaped body with an inner radius and extending along a central axis from a first tube end to a second tube end;

first and second end caps disposed at said first and second tube ends of said body, said first end cap having an end cap wall and a central end cap bore extending along said central axis axially outwardly from said body portion beyond said first tube end, said end cap bore having an inner radius that is less than said inner radius of said tube-shaped body;

a bearing cartridge received in said central end cap bore, said bearing cartridge including a lubrication assembly with a wear ring having an inner radius, an outer radius and a thickness therebetween, a plurality of apertures extending across said thickness, and a reservoir containing a lubricant, said reservoir defined by an annular recess axially aligned with and radially outward of said wear ring in said bearing cartridge, said annular recess being entirely received within said cartridge, said cartridge extending along said central axis from a first cartridge end to a second cartridge end, a first cartridge seal disposed between said first cartridge end and said wear ring and a second cartridge seal disposed between said second cartridge end and said wear ring, said first and second cartridge seals having inner peripheries extending radially inwardly to approximately the same extent as the inner radius of said wear ring, said bearing cartridge being connected to said end cap such that it is easily removable; and

a piston assembly including a generally cylindrically shaped piston head having an outer radius generally equal to the inner radius of said body and a piston rod extending from said piston head outwardly through the inner periphery of said bearing cartridge, said piston assembly reciprocating within said tube-shaped body such that said lubricant within said reservoir is metered outwardly through said apertures to lubricate said piston rod as said piston assembly reciprocates within said tube-shaped body.

5,052,279

HYDRAULIC CYLINDER FOR A HYDRAULIC ACTUATION ARRANGEMENT OF A MOTOR VEHICLE FRICTION CLUTCH

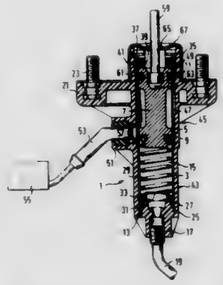
Bernhard Limbacher, and Kurt Fädler, both of Niederwerrn, Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed May 17, 1990, Ser. No. 525,100

Claims priority, application Fed. Rep. of Germany, May 19, 1989, 3916317

Int. Cl.[5] F01B *11/00*; F16J *10/00*

U.S. Cl. 92—169.1 **4 Claims**



1. A hydraulic cylinder for a hydraulic actuation arrangement of a motor vehicle friction clutch, comprising:

a plastics material molded part (**3**) provided with securing elements (**21**);

a metal cylindrical tubular piece (**5**) having an axis and being movably guided with tolerance in the molded part (**3**) in the direction of the cylinder axis, the tubular piece (**5**) being arranged with its end faces between two axial step faces;

a piston (**7**) displaceable in the tubular piece (**5**) along its cylinder axis in a sealed manner, the piston together with the tubular piece (**5**) and an end wall (**13**) of the molded part (**3**) provided with a hydraulic connection (**17**) defining a hydraulic pressure chamber (**15**);

a ring seal (**27**) arranged so as to seal the tubular piece (**5**) against the molded part (**3**) in the region of the end wall (**13**) of the molded part (**3**); and

a spring element (**41**) arranged between a first of the two stop faces and the tubular piece (**5**) so as to stress the tubular piece (**5**) resiliently against the second stop face.

5,052,280

COOLABLE TRUNK PISTON FOR INTERNAL COMBUSTION ENGINES

Eberhard Kopf, and Joachim Wille, both of Stuttgart, Fed. Rep. of Germany, assignors to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

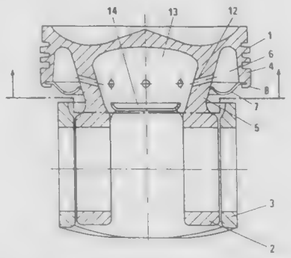
PCT No. PCT/EP87/00633, § 371 Date Jun. 8, 1989, § 102(e) Date Jun. 8, 1989, PCT Pub. No. WO88/04725, PCT Pub. Date Jun. 30, 1988

Continuation of Ser. No. 375,022, Jun. 8, 1989, abandoned. This PCT application Oct. 24, 1987, Ser. No. 609,094

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1986, 3643039

Int. Cl.[5] F02F *3/22, 3/00*

U.S. Cl. 92—186 **24 Claims**



5. A coolable trunk piston for internal combustion engines consisting of a head part with, swaged thereon, bosses to accommodate a gudgeon pin which connects the piston to a connecting rod, an outer annular wall merging at a first end into a crown of the piston head part and at its other end running out in open fashion to accommodate at least one piston ring groove and having radially adjacent an interior of this annular wall and open towards a second end thereof a cavity enclosing the bosses or bracing parts which extend to a bottom of the piston head and the cavity may in particular be a kind of annular rib which, substantially at the height of a second end of the annular wall, can be closed by a wall part adapted to be attached to the annular wall, in order to form a space through which cooling oil can flow, and a piston stem connected to the head part only by means of the gudgeon pin, characterized in that the wall part is secured to the annular wall in a region of an open end thereof by individual screws engaging into the annular wall and the wall part has over its periphery at least one radial division, individual parts bearing on each other at joints.

5,052,281

INTERNAL COMBUSTION ENGINE PISTON WITH TOP-LAND CIRCUMFERENTIAL PROJECTION ARRANGEMENT

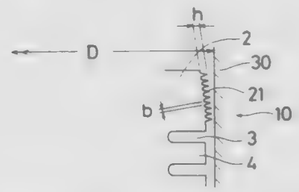
Yasuhiro Kawabata, Anjo; Soichi Hara, Toyota; Shirou Machida, Okazaki, and Hiroshi Kageyama, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 27, 1990, Ser. No. 499,893

Claims priority, application Japan, Apr. 11, 1989, 1-91126

Int. Cl.[5] F02F *3/02, 3/12, 3/28*

U.S. Cl. 92—192 **9 Claims**



1. A piston adapted for insertion into a cylinder of a motor vehicle engine having an inner wall, said piston comprising

a plurality of axially spaced lands including a top land at the upper end thereof adapted to face said cylinder inner wall, said top land being formed with a plurality of axially spaced, annular projections which, when cold, have external dimensions permitting the projection adjacent the lower end of said top land to substantially contact said cylinder inner wall with the projection adjacent the upper end of said top land being concentrically spaced from said cylinder inner wall.

5,052,282

VENTILATION SYSTEM FOR A MOTOR VEHICLE

Michael Scharamm, Neustadt/ Coburg; Klaus-Dieter Knöppel, Ludwigsburg, and Reinhold Ross, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft Berlin und München Wittelsbacherplatz and Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co., both of, Fed. Rep. of Germany

Filed Apr. 17, 1989, Ser. No. 339,103

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1988, 3813116; Dec. 8, 1988, 3841345

Int. Cl.[5] B60H *1/00*

U.S. Cl. 98—2 **13 Claims**

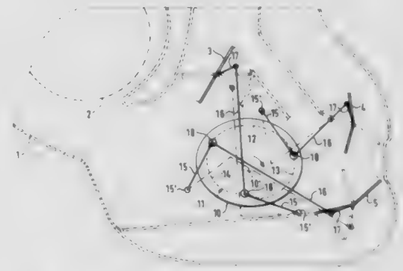
1. A ventilation system for a motor vehicle comprising:

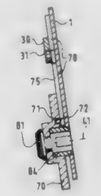
a housing;

air flaps arranged inside the housing and which are adjustable for controlling air flows;

a cam plate rotated around a shaft and having at least one guide;

lever mechanisms provided as transmission mechanisms, at least some of said lever mechanisms having a lever with a pilot, said pilot being guided in said guide, said lever mechanisms connecting at least two flaps of the plurality of flaps to the cam plate;





wherein the cam plate is disposed at a wall of the housing, and the levers of the lever mechanisms provided with the pilots are also disposed at the wall of the housing.

5,052,283

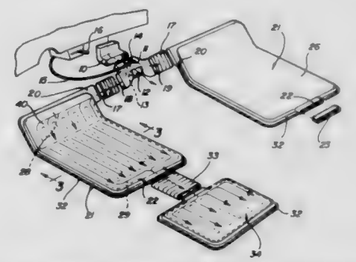
AUTOMOTIVE AIR DISTRIBUTION SYSTEM

Mark Altus, West Bloomfield, Mich., assignor to The 2500 Corporation, Farmington Hills, Mich.

Filed Oct. 25, 1989, Ser. No. 426,973

Int. Cl.[5] B60H *1/34*

U.S. Cl. 98—2.03 **42 Claims**



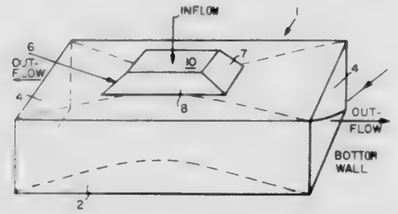
30. An automotive floormat having a top and bottom surface and including:

(a) air distribution means provided interiorly of said mat, and

(b) an air distribution inlet in fluid communication with said air distribution means, and;

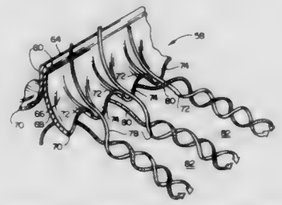
(c) air outlet means connecting said air distribution means to atmosphere through the top surface of said floormat.

5,052,284
AIR OUTLET
Wolfgang Schweikert, Stolberg, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany
Filed Aug. 13, 1990, Ser. No. 566,562
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1989, 3927227
Int. Cl.[5] F24F *13/06*
U.S. Cl. 98—40.05 **9 Claims**



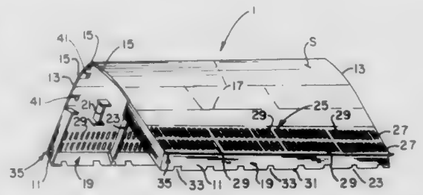
9. An air outlet for mounting to or from a ceiling, comprising double Laval nozzle means having a longitudinal central axis, a first air outlet facing in one direction of said central axis, a second air outlet facing in the opposite direction of said central axis, an air inlet between said air outlets, wall means enclosing a space between said first and second air outlets, said wall means diverging toward said air outlets and converging toward said air inlet to form a nozzle neck of said Laval nozzle means for introducing air into said air inlet in said nozzle neck and for supplying air into a room free of draft.

5,052,285
AIR DIFFUSER FOR VENTILATING APPARATUS
Donald G. Rich, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jun. 7, 1990, Ser. No. 534,395
Int. Cl.[5] F24F *13/06, 7/00*
U.S. Cl. 98—40.14 **7 Claims**



1. An air diffuser for receiving a bulk flow of conditioned air at the upstream end thereof and for directing the air from the downstream end thereof into a conditioned space, comprising:
a pair of spaced parallel walls, cooperating with one another to form an air discharge slot, at least one of said walls having a first side in fluid flow contact with the bulk flow of conditioned air and the second side thereof in fluid flow contact with the ambient air in the conditioned space;
said one wall having an exposed downstream edge such that conditioned air and ambient air flowing, respectively, over said first and second sides thereof will mix together in the conditioned space downstream from said edge;
said one wall comprising: a plurality of adjoining, alternating lobes and troughs, each lobe and trough extending in the downstream direction to said downstream edge, said troughs increasing in depth in the downstream direction from a minimum at said trough's upstream ends, each lobe on one side of said wall having a corresponding trough opposite thereto on the other side of said wall such that said wall and said downstream edge are wave shaped, said lobes and troughs being configured such that they cooperate to direct the bulk flow of conditioned air on said first side thereof into a plurality of fluid streams, each of said fluid streams originating at the upstream end of one of said troughs and gradually passing into said trough wherein the flow of conditioned air within said trough develops a vortex flow of conditioned air which extends downstream of said downstream edge of said wall, each of said vortices of conditioned air extending from a trough on said first side of said wall inducing a secondary vortex flow from the adjacent troughs on the second side of said wall within the conditioned space to thereby produce a mixing flow field downstream of said downstream edge comprising a plurality of vortices of conditioned air intertwined with induced vortices of ambient air drawn through the troughs on the second side of said wall.

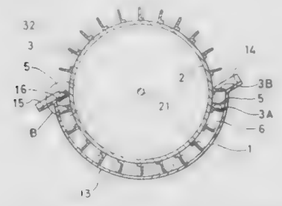
5,052,286
ROOF RIDGE VENTILATOR
Robert A. Tubbesing, and Bruce D. Carter, both of St. Louis, Mo., assignors to Greenstreak Plastic Products Company, St. Louis, Mo.
Continuation of Ser. No. 364,144, Jun. 12, 1989, Pat. No. 4,957,037. This application Apr. 27, 1990, Ser. No. 497,977
The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.
Int. Cl.[5] F24F *7/02*
U.S. Cl. 98—42.21 **11 Claims**



1. A roof ridge ventilator for an open roof ridge including a molded plastic body means including an elongated base sheet member extending over and mounted to sloping roof surfaces on both sides of said open roof ridge, the improvement comprising: a pair of end walls attached to said base member and extending both generally parallel to said open roof ridge while also extending at least partially transverse to said base sheet member, a series of upwardly facing vents provided in said molded plastic body means in the vicinity of and along each end wall for ventilating air from beneath the roof through the open roof ridge and then through the upwardly facing vents to atmosphere, said upwardly facing vents extending from adjacent an associated end wall at an angle which provides at least a substantially transverse component for said upwardly facing vents relative to its associated end wall, and an air deflector extending upwardly from each end wall adjacent the upwardly facing vents in said base sheet member, each said air deflector being positioned to direct wind and wind driven water flowing upwardly along a sloping roof surface to follow a path above and over the upwardly facing vents, while also creating a negative pressure differential above the upwardly facing vents to assist in ventilating air beneath the roof.

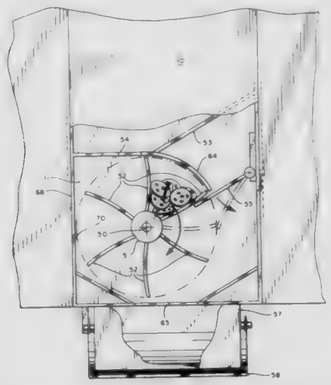
5,052,287
COOKING APPARATUS FOR OIL FRYING
Chao - Kun Chiang, No. 7,5 Alley, 129 Lane, Sec.3, Wen Hsin Rd., Taichung, Taiwan
Filed Nov. 13, 1990, Ser. No. 611,517
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—404 **1 Claim**

1. An oil-fried cooking apparatus comprising:
an outer pan being an oil container resembling a semi-round shape and being permitted for heating; said outer pan including an inlet port, an outlet port and two parallel semi-round plates; a shaft bracket being provided at the center of each semi-round plate, and an arc edge of each of said two semi-round plates being connected by an arc plate; an end of said arc plate being provided for oil-fried food sliding bias downwards into the inlet port of the outer pan and the outer end of said arc plate being bias downward to enable food to be pushed out of the outlet port, and the outlet port having an inward projecting portion;



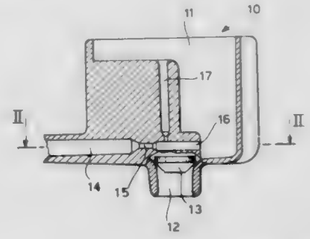
a hollow wheel body, and a support shaft pivoted on the shaft bracket of the outer pan being provided at a circular center of the wheel, and said wheel being rotatable within the outer pan by a support shaft geared by a motor; and a plurality of dummy plates pivotally mounted on the circumference of the wheel between the arc plates of the outer pan, the pivot axis of each dummy plate and axis of rotation of the wheel being in parallel, and each said dummy plate being urged forward by an elastic element, and a check bending plate being provided in front of the pivot axis of each dummy plate.

5,052,288
APPARATUS FOR DISPENSING SNACK FOODS
Al H. Marquez, San Jose; James A. Way, Cupertino, and G. Mark Remelman, Fremont, all of Calif., assignors to Hot Snacks, Inc., San Jose, Calif.
Division of Ser. No. 426,104, Oct. 24, 1989. This application Aug. 9, 1990, Ser. No. 565,944
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—407 **15 Claims**



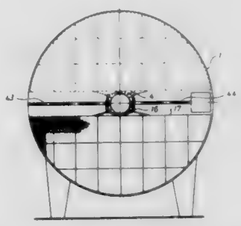
1. An apparatus for dispensing food products from a bin to a first area, the bin being connected to the first area through an opening, the apparatus comprising:
a paddle wheel assembly rotatably mounted within said bin, said assembly having a plurality of spaced-apart flanges radiating out from a center axis for guiding said food products through the opening, said flanges being comprised of a pliable material;
a flapper member attached to the interior of said bin relative to said paddle wheel assembly such that when said paddle wheel assembly is rotated said flapper member forces one of said flanges towards an adjacent flange thereby orienting and holding said food products between said flanges to reduce breakage of said food products as the food products are guided through the opening into the first area; and
a means for rotating said paddle wheel assembly

5,052,289
EMULSIFYING DEVICE FOR LIQUIDS, IN PARTICULAR MILK
Silvestro Di Girolamo, Viale Lucania, 13, 20139 Milan, Italy
Filed Oct. 30, 1990, Ser. No. 605,405
Claims priority, application Italy, Nov. 10, 1989, 22078/89[U]
Int. Cl.[5] A01J *11/00*
U.S. Cl. 99—452 **5 Claims**



1. Emulsifying device for liquids, in particular milk, of the type comprising a container and containing the liquid to be emulsified and to which is connected near the bottom a first duct connected to a steam source and characterized in that the first duct, which is virtually horizontal, has a constriction downstream from which is connected a second duct with an opening at the top flowing into said container in a position near the level of its edge so as to draw in air and emulsified liquid reaching the upper opening level as the steam passes into the first duct.

5,052,290
CHEESE-MAKING TANK
Per G. Nielsen, Silkeborg, Denmark, assignor to APV Pasilac A/S, Soborg, Denmark
Filed May 9, 1990, Ser. No. 520,910
Claims priority, application Denmark, May 16, 1989, 2372/89
Int. Cl.[5] A01J *13/00, 25/00;* **A23C** *3/02, 9/00*
U.S. Cl. 99—461 **9 Claims**



1. A cheese-making tank comprising a cylindrical container, said container being provided with a first cutting frame with cutting wires forming a netting, said cutting frame being displaceable backwards and forwards along the lower portion of the container from a first position at the one end of the container to a second position at the other end of the container, a second cutting frame with radially extending cutting wires, said cutting frame being pivotally arranged about a longitudi-

nal axis, and stirring means to be lowered into the lower portion of the container in order to carry out stirring movements, wherein the first cutting frame (**17**) is adapted to be turned into the upper portion of the container when being in the second position and while the stirring means (**44**) are working

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5,052,291

SCREEN PRINTING METHOD COMPRISING PRINTING PRESSURE REGULATION

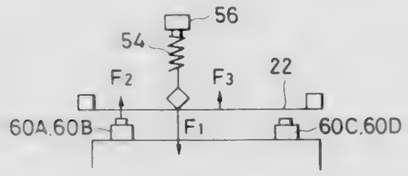
Tetsuo Takahashi; Akio Sasaki; Kunio Mogi; Hajime Shimazaki, and Masakazu Hasegawa, all of Akita, Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 155,152, Feb. 10, 1988, Pat. No. 4,893,556. This application Oct. 20, 1989, Ser. No. 424,607

Claims priority, application Japan, Feb. 23, 1987, 62-37899; Feb. 23, 1987, 62-37900; Feb. 25, 1987, 62-40149

Int. Cl.[5] **B41F** *15/08*

U.S. Cl. 101—129 **1 Claim**



1. A screen printing method comprising the steps of:

moving doctor plate means in a predetermined direction on a screen to apply a paste onto said screen;

moving squeegee means to deposit said paste applied onto said screen on a printed object while said squeegee means presses said screen against said printed object at a predetermined pressure and

further comprising steps of detecting squeegee pressure at which said squeegee presses said screen against said printed object and detecting printing pressure which said printed object receives and varying said squeegee pressure depending on a variation of tension of said screen to keep said printing pressure within a predetermined range.

5,052,292

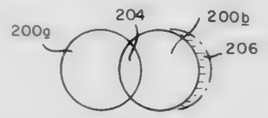
METHOD AND MEANS FOR CONTROLLING OVERBURN IN SPARK-IMAGED LITHOGRAPHY PLATES

Thomas E. Lewis, E. Hampstead, N.H., and Michael T. Nowak, Gardner, Mass., assignors to Presstek, Inc., Hudson, N.H.

Continuation of Ser. No. 410,295, Sep. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 234,475, Aug. 19, 1988, Pat. No. 4,911,075. This application Jan. 18, 1991, Ser. No. 644,490

Int. Cl.[5] **B41C** *1/05, 1/10*

U.S. Cl. 101—142 **14 Claims**



1. A method of modifying the structure of a lithographic plate having at least one highly electroconductive surface that is to be imaged with a spark-discharge recording apparatus so as to control overburn caused thereby, comprising the steps of introducing an electroconductive sheet immediately beneath the at least one surface to be imaged, and selecting the volume resistivity of said conductive sheet to be at least 0.5 ohm-cm.

5,052,293

INK CONTAINER FOR TAMPON PRINTING PRESSES

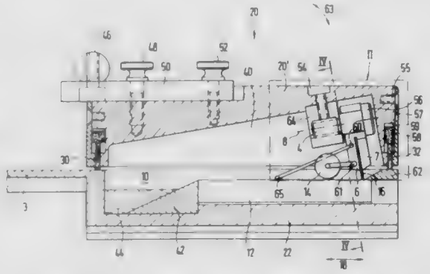
Bernd Berberich, Schwieberdingen, Fed. Rep. of Germany, assignor to Tampoflex GmbH, Fed. Rep. of Germany

Filed May 7, 1990, Ser. No. 519,449

Claims priority, application Fed. Rep. of Germany, May 5, 1989, 3914803

Int. Cl.[5] **B41F** *1/38, 1/46, 9/10*

U.S. Cl. 101—163 **14 Claims**



1. An inker for a tampon printing machine comprising:

a printing block holder fixedly connected with the body of said tampon printing machine;

said printing block holder carrying an ink container and a printing block;

a moveable cover element, said cover element supporting an ink transport element and a doctor blade, said cover element enclosing said ink container, said printing block, said ink transport element, and said doctor blade;

said ink transport element further comprising a roller;

means for moving said cover element between a first extreme position in which it covers the printing block and a second extreme position whereby it uncovers the printing block;

means for moving said printing block holder in a linear back and forth direction of movement relative to said cover element and beneath said cover element, said doctor blade and said ink transport, whereby in one direction of movement said ink container engages with said ink transport element for inking said printing block and in another direction of movement said doctor blade engages said printing block for stripping excess ink from the printing block.

5,052,294

BENDING COMPENSATED PRINTING WEB DEFLECTION ROLLER

Xaver Bachmeir, Augsburg, and Wolfgang Prem, Ustersbach, both of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 11, 1991, Ser. No. 667,502

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010192

Int. Cl.[5] **B41F** *13/08;* **B41L** *35/00*

U.S. Cl. 101—216 **7 Claims**

1. System to prevent bend-through of a roller (**1-4**) retained between a pair of side walls (**11**),

wherein the roller comprises

a shaft (**1**) having opposed end portions;

at least one bearing (**2**) located on the shaft; and

a cylindrical roller cover or sleeve (**4**) surrounding the shaft and rotatably mounted thereon by said at least one bearing; and

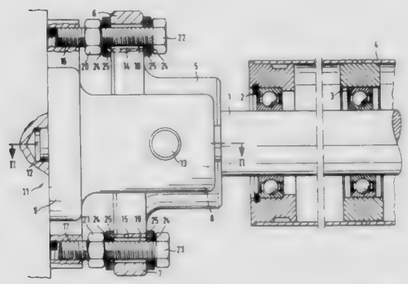
means for constraining said shaft in position to prevent bend-through of the roller,

said bend-through prevention means comprising, in accordance with the invention,

a pivot joint coupled to each of the side walls (**11**), respectively and to said shaft (**1**) end portions respectively, each pivot joint having a pivot axis extending at right angles to the axis of the shaft, and including

a support means (**9**) projecting from the side walls (**11**);

a sleeve (**5**) surrounding each of the end portions of the shaft;



coupling pin means (**13**) coupling the sleeve to said support means (**9**) and pivotably or tiltably retaining the sleeve on the support means; and

adjustment screw means (**18, 19, 20, 22, 21, 23**) for adjusting the pivot angle of the sleeve with respect to the support means to orient said sleeve therein and hence constrain the shaft (**1**) to follow said orientation.

5,052,295

PAPER WEB THREADING APPARATUS FOR ROTARY PRINTING PRESS

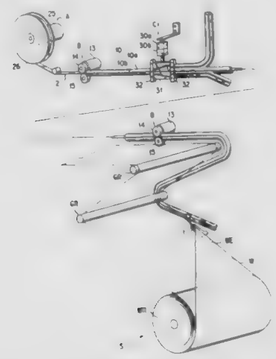
Kunio Suzuki, and Tomoshi Kawata, both of Yokohama, Japan, assignors to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Sep. 18, 1990, Ser. No. 584,228

Claims priority, application Japan, Sep. 20, 1989, 1-241681; Nov. 21, 1989, 1-302807

Int. Cl.[5] **B41F** *13/56*

U.S. Cl. 101—227 **4 Claims**



1. A paper web threading apparatus for a rotary printing press comprising: a paper web threading member guide provided along a paper web threading path of the printing press extending from a paper web supply section to a position just in front of a folding section; a paper web threading member pooling section provided downstream of the paper web threading path; a paper web threading member which is located over the whole length of said paper web threading path extending from the most upstream position thereof to said paper web threading member pooling section upon commencement of a paper web threading operation and which is run along said paper web threading member guide towards said paper web threading member pooling section during the paper web threading operation; a paper web retaining member provided on said paper web threading member for securing the paper web to be threaded along the path; and at least one paper web threading member driving unit for running said paper web threading member along said paper web threading member guide.

5,052,296

CONTROL DEVICE FOR PAPER TRAVELLING TENSION AND PAPER CUTTING POSITION IN PRINTING APPARATUS

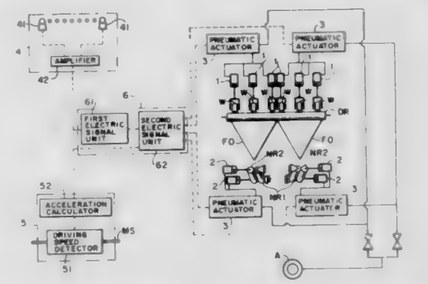
Noriyuki Shiba, Tokyo, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Aug. 30, 1990, Ser. No. 575,412

Claims priority, application Japan, Sep. 5, 1989, 1-229538

Int. Cl.[5] **B41F** *5/04*

U.S. Cl. 101—227 **1 Claim**



1. In a printing apparatus comprising a plurality of paper suppliers, a plurality of printing machines, a plurality of paper guiding means, and a paper forming means;

a control device for controlling paper travelling tension and paper cutting position comprising

a drag roller arranged at an upstream side of the paper forming means;

a plurality of propeller rollers which exert a controllable pressure force against the drag roller;

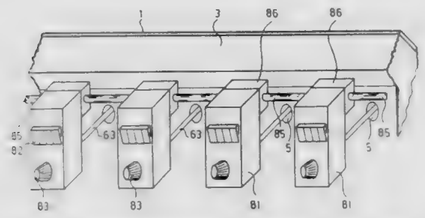
at least one pair of nipping rollers including a fixed nipping roller and a movable roller which are arranged at a downstream side of the paper forming means, wherein a pressure force of a movable nipping roller is controllable;

a paper tension detecting means, arranged at an upstream side of the roller, for detecting the paper tension and outputting the detected tension as a tension signal;

an acceleration detecting means for detecting the acceleration of the revolving speed of the printing machines and for outputting the detected acceleration as an acceleration signal; and

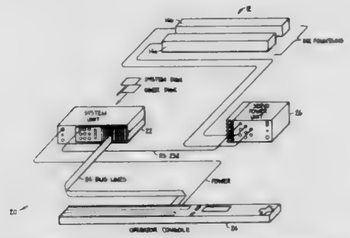
a control signal outputting means for receiving the tension signal and the acceleration signal, and for outputting a tension control signal when the acceleration signal is within a predetermined range and for outputting a tension and acceleration control signal when the acceleration signal is not within the predetermined range so that the pressure force of the propeller roller against the drag roller and the pressure force of the movable nipping roller against the fixed nipping roller of the same pair are controlled.

5,052,297
ADJUSTMENT MECHANISM FOR SECTIONALIZED DOCTOR BLADES
Patric Albiez, St. Gallerstrasse, CH-8353 Elgg, Switzerland
Filed Oct. 23, 1990, Ser. No. 602,148
Claims priority, application Switzerland, Oct. 23, 1989, 03815/89
Int. Cl.[5] B41F *31/02*
U.S. Cl. 101—365 **9 Claims**



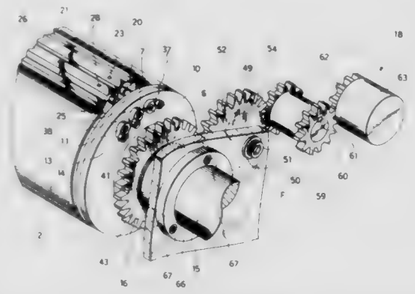
1. In an adjustment mechanism for setting doctor blades (1) used in offset printing presses, which are divided into sections and have a plurality of set screws (6), positioned next to each other, with duct-adjusting screws (61) for fine adjustment, which are in active frictional contact with one section of one of the doctor blades (1) facing a ductor roller (2), the improvement comprising each duct-adjusting screw (61) being rotatable for adjusting each said set screw (6) and having a counter (8) counting a number of rotations made.

5,052,298
INK CONTROL SYSTEM
Steven Runyan, Los Altos Hills; Jerry D. Haney, Sunnyvale, and James R. Francy, Los Gatos, all of Calif., assignors to Graphics Microsystems, Mountain View, Calif.
Continuation of Ser. No. 371,996, Jun. 27, 1989, abandoned, which is a division of Ser. No. 98,745, Sep. 16, 1987, Pat. No. 4,864,930, which is a continuation of Ser. No. 733,208, May 9, 1985, abandoned. This application Nov. 7, 1990, Ser. No. 611,477
Int. Cl.[5] B41F *31/04, 31/06*
U.S. Cl. 101—365 **5 Claims**



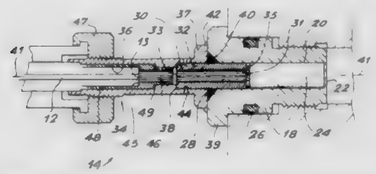
1. For use with a printing apparatus that includes at least one ink fountain for dispensing ink to an associated printing roller and an inking blade positioned adjacent to the printing roller such that a gap exists between the inking blade and the roller, the inking blade having a plurality of adjusting keys associated therewith for adjusting the gap at discrete locations along the length of the inking blade such that the printing apparatus imprints a resultant print having a plurality of printing zones, an ink control system comprising:
(a) a plurality of servo modules connected to the plurality of adjusting keys in 1:1 correspondence such that each servo module actuates its corresponding adjusting key;
(b) an operator console including a plurality of input switches for generating a plurality of ink intensity commands wherein each ink intensity command relates to the intensity of ink to be applied to the resultant print within an associated printing zone, the plurality of ink intensity commands being equal in number to the plurality of printing zones; and
(c) a system control unit which receives the ink intensity commands from the operator console and which includes means for interpolating between the plurality of servo modules and the plurality of ink intensity commands to generate interpolated servo signals to the servo modules for driving the servo modules to interpolated activation of the adjusting keys such that the ink intensity in each of the printing zones of the resultant print corresponds to the ink intensity command selected on its associated input switch.

5,052,299
PLATE CLAMPING APPARATUS FOR A LEAF-TYPE PRINTING MACHINE
Yasutaka Kojima, Tokyo, Japan, assignor to Akiyama Printing Machine Manufacturing Company Ltd., Tokyo, Japan
Filed Dec. 20, 1989, Ser. No. 453,852
Claims priority, application Japan, Mar. 30, 1989, 1-78923
Int. Cl.[5] B41F *27/12*
U.S. Cl. 101—415.1 **3 Claims**



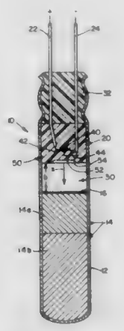
1. Clamping apparatus for leaf-type printing machines having, a plate roller with a recess formed therein, said plate roller being mounted on a rotatable shaft and having sides, a rotatable top side cam shaft and a rotatable bottom side cam shaft, a top side plate clamp having upper and lower teeth mounted in said recess for clamping and releasing a plate by means of said teeth, said clamp being operable by said rotatable top side cam shaft, a bottom side plate clamp having upper and lower teeth for clamping and releasing said plate by means of said bottom side upper and lower teeth, said bottom side plate clamp being operable by said rotatable bottom side cam shaft, and plate stretching means comprising a rotatable plate stretching cam and a plate stretching cam shaft, said plate stretching means moving said bottom side plate clamp in the stretching direction and in the loosening direction by movement of said rotatable plate stretching cam, said clamping apparatus further comprising:
top, bottom, and plate stretching cam followers having respective joints, said top, bottom and plate stretching cam followers respectively coupled to said top, bottom, and plate stretching cam shafts through said respective joints which freely transmit rotating movements, said cam followers respectively disposed on an outer side wall on the plate roller side;
a motion transmitting body arranged to be unmovable when a torque of less than a predetermined value is applied to the rotatable shaft of said plate roller and rotatable when a torque of more than the predetermined value is applied to the rotatable shaft of said plate roller;
driving means for applying to said motion transmitting body a torque of more than said predetermined value; and
a grooved cam secured to said motion transmitting body for providing a predetermined action to said top, bottom, and plate stretching cam followers for respectively rotating said top, bottom and plate stretching cam shafts.

5,052,300
PYROTECHNIC PRIMING DEVICE HAVING A MICROLENS SET BY A SHAPE MEMORY MATERIAL AND PYROTECHNIC CHAIN UTILIZING SAID DEVICE
Alain P. Josse, Saint Medard en Jalles, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France
Filed Apr. 30, 1990, Ser. No. 516,200
Claims priority, application France, May 12, 1989, 89 06286
Int. Cl.[5] F42C *19/00*
U.S. Cl. 102—201 **14 Claims**



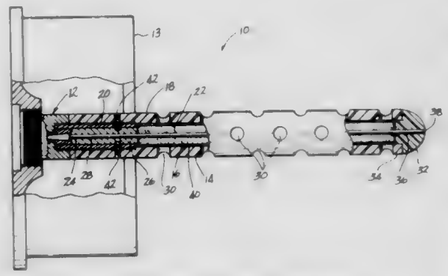
1. Miniature photopyrotechnic priming device (14) having a hollow body (18) sealed at one end (22) and serving to receive a pyrotechnic substance (24), a rigid index gradient microlens (30) inserted in a shape memory material ferrule (32) mounted (36,38, 40, 44) at the entrance (28) of the hollow body (18) and ensuring a tight, hermetic fixing of the microlens within said body, said microlens focusing a high energy light beam of given wavelength on the pyrotechnic substance, and memory material ferrule (32) having an internal diameter at ambient temperature, smaller than the microlens diameter and being made of a material selected from the group consisting of a metal and a metal alloy.

5,052,301
ELECTRIC INITIATOR FOR BLASTING CAPS
Richard E. Walker, 237 Charleston St., Cadiz, Ohio 43907
Filed Jul. 30, 1990, Ser. No. 560,349
Int. Cl.[5] F42B *3/13*
U.S. Cl. 102—202.7 **63 Claims**



1. In an electric detonator including a base charge of high explosive material, an initiator means for creating an abrupt eruption in response to application of a selected voltage across said initiator means, and means for detonating said base charge upon creation of said abrupt eruption of said initiator means, the improvement comprising: said initiator means including a junction of energetic material encapsulated in a plastic or glass confinement housing having a directional controlling partition means facing in a selected direction, said partition means having an effective spacing from said junction substantially less than the remainder of said confinement housing whereby application of a voltage pulse with a starting voltage of over about 500 volts and a sustained voltage causes said junction to form an electric arc to create a plasma by a confined, high temperature high pressure exothermic reaction, said effective spacing of said partition means being thick enough to confine said exothermic reactance until creation of said plasma and thin enough to allow said plasma to rupture said control partition means and penetrate through said partition means a given distance in said selected direction and means for fixing said base charge in said selected direction and spaced from said partition means a distance less than said given distance.

5,052,302
UNPRESSURIZED COMBUSTIBLE PRIMER FOR CANNON CARTRIDGES
Ralph M. Taddeo, St. Petersburg, Fla.; Robert W. Deas, Aberdeen; Lang-Mann Chang, Fallston, and John Grosh, Belcamp, all of Md., assignors to Olin Corporation, Cheshire, Conn. and United States Government Department of Defense, Washington, D.C.
Filed Jul. 26, 1990, Ser. No. 558,019
Int. Cl.[5] F42C *19/085*
U.S. Cl. 102—204 **38 Claims**

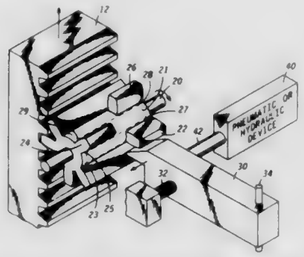


1. A combustible bayonet primer comprising:
a metal primer head assembly adapted to be inserted into a combustible cartridge case base;
a nonconfining hollow combustible tubular housing containing an ignition charge, said housing having one end axially connected to said head assembly;
an igniter strand axially disposed in said housing, said strand having an end extending into said head assembly through said one end of said housing; and
a confining means around said end of said igniter strand for confining a portion of said strand during ignition to produce a high pressure condition in said end when said primer assembly ignites said igniter strand.

5,052,303
INTERLOCKED RELEASE MECHANISM WITH TIMED, SEQUENTIAL RELEASE STEPS
Robert E. Edminster, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 30, 1990, Ser. No. 516,953
Int. Cl.[5] F42C *15/00;* **F16H** *55/00*
U.S. Cl. 102—254 **15 Claims**

1. A release mechanism for a dependent lock of a safe and arming device of a fuze comprising:
a toothed member;
a toothed pinion;
teeth of said pinion engaging teeth of said toothed member;
a predetermined number of said teeth of said pinion partially removed in a predetermined pattern;
locking means for preventing said pinion from rotating;
said locking means travelling about said predetermined

pattern of said pinion teeth to allow rotation of said pinion; and



said toothed member releasing said locking means of said safe and arming device from a safe position of said safe and arming device after said locking means has travelled through said predetermined pattern.

5,052,304

PROPELLING CHARGE CONTAINER

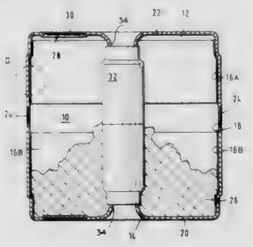
Eckhard Rahnenführer, Dormagen; Albert Schulze, Monchen-Gladbach, and Manfred Schüssler, Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 551,475

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3924986

Int. Cl.[5] F42B *5/02, 5/18, 5/295*

U.S. Cl. 102—435 **10 Claims**



3. A propelling charge receptacle for use with large-caliber gun ammunition, comprising:

a combustible receptacle which is to be filled with propelling charge agent, the receptacle having an interior surface;

a coating of wax and titanium dioxide directly applied to the interior surface of the receptacle; and

a thin metal foil covering the coating of wax and titanium dioxide.

5,052,305

SUBCALIBER PROJECTILE INCLUDING A CORE, A SABOT AND A SLEEVE

François A. Chiarelli, Bourges; Jean-Louis Chazeirat, la Chapelle Saint Ursin, and Jean-Pierre Boisnard, Bourges, all of France, assignors to Etat Francais represented by the Delegue general pour l'armement, Armees, France

Filed Oct. 26, 1990, Ser. No. 603,549

Claims priority, application France, Oct. 26, 1989, 89 14034

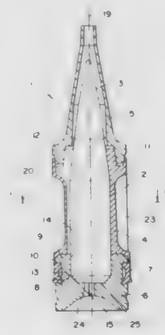
Int. Cl.[5] F42B *14/06*

U.S. Cl. 102—522 **10 Claims**

1. A subcaliber spin-stabilized projectile to be fired from a weapon, said projectile comprising a core arranged in the bore of a sabot and a sleeve, said sleeve including a rear annular area lodged in a corresponding band in said sabot to constitute a gastightness band, wherein

said sabot includes at its head a cylindrical crown having an edge delimiting said band groove;

said crown having at least three notches, separated by castellations, said notches extending axially from the head of the crown to at least said band groove;



said sleeve having a profile complementary to the profile of said sabot, wherein said sleeve penetrates said notches, and

said projectile includes means to ensure separation of said sleeve into several sectors at the time said projectile exits from the weapon barrel, under the effect of centrifugal force.

5,052,306

MOBILE TRACK POSITION CORRECTING AND TAMPING MACHINE

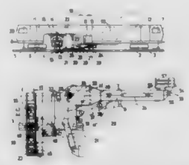
Josef Theurer, Vienna, and Friedrich Peitl, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.h., Vienna, Austria

Filed Feb. 21, 1990, Ser. No. 483,068

Claims priority, application Austria, May 3, 1989, 1062/89

Int. Cl.[5] E01B *27/17*

U.S. Cl. 104—7.2 **16 Claims**



1. A mobile machine for correcting the position of a track and for tamping ballast, the track including two rails fastened to ties defining cribs therebetween, the machine comprising

(a) an elongated machine frame mounted on the track for moving in an operating direction,

(b) a ballast tamping assembly mounted on the machine frame and including tamping tools arranged to tamp ballast under respective ones of the ties,

(c) a track lifting and lining unit for correcting the position of the track, the unit being mounted on the machine frame adjacent the ballast tamping assembly and preceding the ballast tamping assembly in the operation direction, and the track lifting and lining unit comprising

(1) a two-part carrier frame extending in the direction of elongation of the machine frame, a first tool carrier frame part being arranged adjacent the ballast tamping assembly and rearwardly of a second tool carrier frame part in the operating direction,

(2) two parts of flanged wheels supporting the tool carrier frame on the track rails, the two pairs of flanged wheels being rotatable about respective horizontal axes defining a plane and being spaced from each other to form a front pair and a rear pair of flanged wheels on the first tool carrier frame part in the direction of elongation of the machine frame and serving as track lining tools,

(3) at least two track lifting tools arranged on the first tool carrier frame part for adjustable engagement with each rail,

(4) a pivot linking the first and second tool carrier frame parts for pivoting about an axis extending substantially perpendicularly to the plane defined by the axes of the flanged wheels, and

(5) a longitudinal adjustable linking arrangement connecting the first and second tool carrier frame parts in addition to the pivot for controlling the pivoting movement of the tool carrier frame parts about the pivot,

(d) lifting and lining drives having respective ends linked to the first tool carrier frame part and to the machine frame, and

(e) an end of the second tool carrier frame part remote from the pivot being linked to the machine frame.

5,052,307

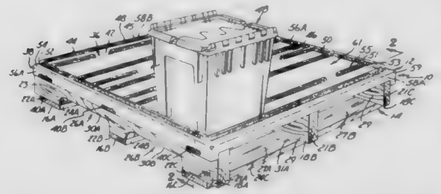
PALLET TRAY SYSTEM

Robert C. Morrison, Becker, Minn., assignor to Viking Engineering & Development, Incorporated, Fridley, Minn.

Filed Oct. 26, 1989, Ser. No. 427,469

Int. Cl.[5] B65D *19/38*

U.S. Cl. 108—53.1 **26 Claims**



1. A tray for attaching to a wooden pallet having a top surface and outwardly extending edge portions on at least two sides, each edge portion having an edge surface and an engagable underside, the tray comprising:

a top section for overlaying a top surface of a pallet;

a perimetric edge portion integral with the top section and having two sides, each side extending over an edge surface of a pallet; and

means for engaging an underside of an edge portion of a pallet including an indented segment, the means for engaging an underside being disposed on each of the two sides extending over an edge surface of an edge portion of a pallet.

5,052,308

FOLDABLE TABLE

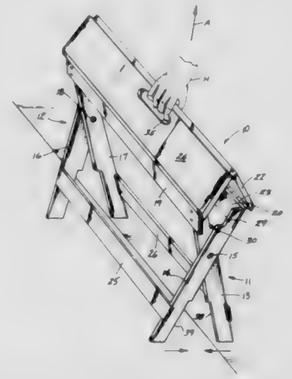
James A. Brown, 1166 Coleman Rd., Cheshire, Conn. 06410

Filed Nov. 22, 1989, Ser. No. 440,198

Int. Cl.[5] A47B *3/02*

U.S. Cl. 108—118 **7 Claims**

1. A collapsible table comprising two pairs of legs, each pair being pivotal intermediate the ends thereof to move between a support position in a generally X-shape and a stowage position where both legs of a pair are substantially parallel, said pairs of legs being spaced apart, a first bracing member extending between each of one leg of pair at the upper ends thereof, a second bracing member extending between each of the other legs of a pair at the upper ends thereto, and a pair of elongated table members having adjacent edges and outer edges, said table members being hinged together by a elongated hinge along the length of said adjacent edges, each of said table members being hinged by a elongated hinge to one of said bracing members along their outer edges whereby said table members may pivot between a horizontal support position with said leg pairs in a support position and a stowage position where said table members are in a generally vertical position



and said leg pairs are in said stowage position, and handholds defined in said table members intermediate the ends thereof and positioned sufficiently close to the hinged adjacent edges of said table members so that both of said table members maybe grasped by one hand and pivot said table members about the hinging thereof to move said table to a stowage position.

5,052,309

TRACK CARRIER FOR A HIGH SPEED MAGNETIC LEVITATION TRANSPORT SYSTEM

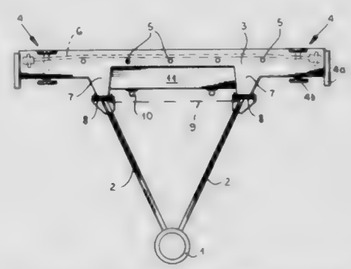
Bernhard Haselwander, Oberursel; Werner Jonas, Homburg, and Henning Riech, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Hochtief Aktiengesellschaft vorm. Gebr. Helfmann, Essen, Fed. Rep. of Germany

Filed Oct. 30, 1989, Ser. No. 429,934

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1988, 3837774

Int. Cl.[5] E01B *26/00*

U.S. Cl. 104—124 **10 Claims**



1. A track carrier for a high speed maglev track, comprising a steel lower member, a pair of upwardly and outwardly extending struts including an acute angle between them and welded to said lower member, and an upper member connected to upper ends of said struts and having mounting strips projecting laterally beyond said struts for the connection of rails for said track, said upper member being constituted as a steel fiber concrete plate with stressing elements extending therethrough and embedded therein, said stressing elements selected from the group consisting of longitudinal and trans-

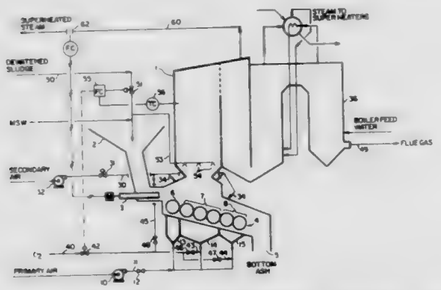
verse elements extending respectively in a longitudinal and transverse direction of said plate, said plate having substantially a Greek pi letter-shaped cross-section with first ribs extending, said steel fiber concrete plate being provided with second ribs transversely oriented with respect to said first ribs along said underside of said plate, and wherein additional longitudinal stressing elements capable of adjusting a track gradient are held without bonding adjacent to an undersurface of said second ribs.

5,052,310

SOLID WASTE-TO-STEAM INCINERATOR CAPACITY ENHANCEMENT BY COMBINED OXYGEN ENRICHMENT AND LIQUID QUENCH

Stephen P. Goff, Kutztown; Joseph Klosek, Wescosville; Donald P. Bucci, Martztown, and Paul A. Kinniry, Ambler, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 22, 1991, Ser. No. 644,190
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—234 **28 Claims**



1. In an incineration system comprising a combustion zone, a steam boiler and means for introducing air into the combustion zone, a process for converting solid waste into steam which comprises:

introducing a solid waste into the combustion zone;

feeding an air stream into the combustion zone;

measuring the temperature in the combustion zone;

measuring the flow of steam leaving the steam boiler;

measuring and adjusting the flow rate of the solid waste to the combustion zone in response to the flow of steam leaving the steam boiler;

feeding a quench into the combustion zone;

measuring and adjusting the flow rate of the quench to the combustion zone in response to the temperature in the combustion zone;

feeding an oxygen stream into the combustion zone; and

measuring and adjusting the flow rate of the oxygen stream fed in response to a change in the flow rate of the liquid quench.

5,052,311

ZERO-CLEARANCE FIREBOX

Patricia A. Kincaid, 815 E. Palace Ave., #30, Santa Fe, N. Mex. 87501

Filed Dec. 28, 1989, Ser. No. 458,075
Int. Cl.[5] F24B *1/18*
U.S. Cl. 126—500 **7 Claims**

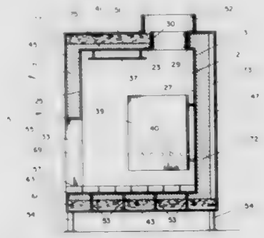
1. A zero-clearance firebox for use in building a fireplace, said firebox comprising:

(a) only two metal shells, an inner shell and an outer shell, (i) said inner shell having an inner surface which defines the combustion chamber of said firebox, said inner shell having top, bottom and first and second side portions, said inner top portion having a first opening therein for a flue, said first side portion having a second opening therein, and (ii) said outer shell having an outer surface defining the exterior of said firebox, said outer shell having top, bottom and first and second side portions surrounding, respectively, said top, bottom and first and second side portions of said inner shell to define a space therebetween, said outer top portion having a third opening therein in alignment with said first opening, said first outer side portion having a fourth opening aligned with said second opening, to form a firebox opening;

(b) at least one solid insulating material positioned between said second inner side portion and said second outer side portion whereby those portions of said outer surface defined by second outer side portion may, during installation of said firebox, be placed in contact with one or more walls of a room in which said firebox is being installed;

(c) means for connecting said inner shell to said outer shell, said means closing said space between said inner and outer shells to the outside environment;

(d) a plurality of solid insulating materials positioned between said top portion of said inner shell and said top



portion of said outer shell comprising a thermal ceramic blanket and rigid insulating fiber, said insulating materials maintaining said top portion of said outer shell at approximately, room temperature when a fire is maintained in said combustion chamber; and

(e) a plurality of solid insulating materials positioned in proximity of said bottom portion of said inner shell and said bottom portion of said outer shell comprising a layer of thermal ceramic blanket, and a layer of refractory brick, said insulating fiber and said ceramic blanket positioned between said bottom portion of said inner shell and said bottom portion of said outer shell, said brick positioned on said bottom portion of said inner shell, said insulating materials maintaining said bottom portion of said outer shell at, approximately, room temperature when a fire is maintained in said combustion chamber;

(f) insulating material positioned between said first inner side portion and said first outer side portion comprising a thermal ceramic blanket and a closed volume of air.

5,052,312

CYCLONE FURNACE FOR HAZARDOUS WASTE INCINERATION AND ASH VITRIFICATION

John M. Rackley, and Stanley J. Vecci, both of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 406,393, Sep. 12, 1989, Pat. No. 5,022,329.
This application Dec. 18, 1990, Ser. No. 629,547
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **7 Claims**

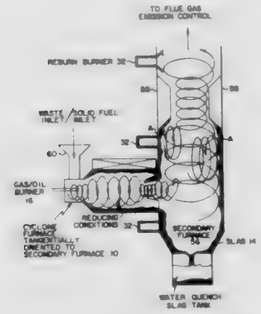
1. A method for vitrifying waste containing inorganic hazardous material, comprising the steps of:

burning a fuel in a cyclone furnace;

introducing the waste into the cyclone furnace;

forming a molten slag layer on the wall of the cyclone furnace;

operating the cyclone furnace at a temperature range to provide time for the inorganic waste to be incorporated in the slag;



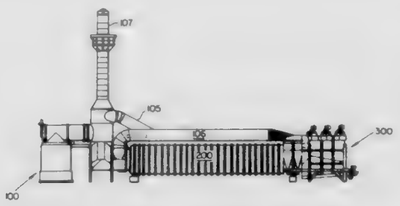
capturing the inorganic waste in the molten slag layer; and vitrifying the inorganic waste into an inert form.

5,052,313

WASTE TREATMENT SYSTEM AND METHOD

David R. Walker, Clearwater, Fla., assignor to Combustion Design Corporation, Tampa, Fla.

Filed Apr. 19, 1990, Ser. No. 510,270
Int. Cl.[5] F23G *7/04*
U.S. Cl. 110—346 **29 Claims**



1. A waste treatment system comprising

(A) generating means for generating hot gasses and (B) dryer means for drying a high-moisture material,

wherein said means (A) comprises

(a) a burner producing hot exhaust gasses,

(b) means for withdrawing moisture-laden vapor from said dryer means, and

(c) means for mixing said moisture-laden vapor withdrawn from said dryer means with at least a portion of said hot exhaust gasses from said burner;

wherein said dryer means comprises

(1) an inlet portion communicating with said generating means and

(2) conveying means for conveying said high-moisture material form said inlet portion to an outlet of said dryer means, said conveying means comprising

(i) preheating means, located within said inlet portion, for heating said material within a space where said gasses are present but do not contact said material, such that combustion of said material is avoided while the temperature of said gasses is decreased, and

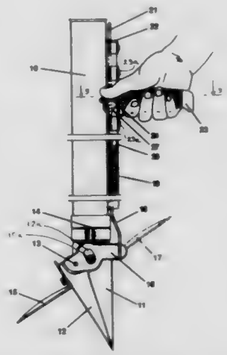
(ii) mixing means, located between said preheating means and said outlet for mixing said material with said gasses to dry said material uniformly to a predetermined moisture level.

5,052,314

PLANTING TUBE

Arvo Leini, Edsbyn, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed May 15, 1990, Ser. No. 523,533
Claims priority, application Sweden, May 18, 1989, 8901771
Int. Cl.[5] A01C *5/02, 11/02*
U.S. Cl. 111—106 **7 Claims**



1. A manually actuable planting tool for plants comprising a tube, a lower end of said tube including a fixed beak half, a hinged beak half being hingedly mounted to said tube such that said fixed and hinged beak halves together define a beak adapted to be inserted into the ground to form a hole therein, said beak being openable in response to relative rotation between said fixed and hinged beak halves to enable a plant to be dropped through said tube end into said hole, a handle attached to said tube for lifting and aiming said tube, at least one foot plate attached to said tube for pressing said beak into the ground, a releasable latching mechanism operably connected between said tube and said hinged beak half for releasably latching said beak in its open position to allow said device to be lifted from the ground without damaging the plant, said latching mechanism including a drawbar arranged to slide along and relative to said tube, said tube carrying a protective rail in which said drawbar slides, said rail including a reference edge located adjacent an upper end of said rail, said drawbar being of such a length that an upper end of said drawbar extends upwardly beyond said reference edge when said beak is closed, and extends below said reference edge when said beak is open, whereby said upper end of said drawbar constitutes an indicator of beak-open and beak-closed conditions.

5,052,315

EMBROIDERING MACHINE

Ikuo Tajima, and Hideo Hasegawa, both of Kasugai, Japan, assignors to Tokai Kogyo Mishin Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 222,100, Jul. 20, 1988, Pat. No. 5,001,996.
This application Nov. 3, 1989, Ser. No. 431,529
Claims priority, application Japan, Jul. 22, 1987, 62-181196; Aug. 19, 1987, 62-204184; Sep. 17, 1987, 62-231177; Oct. 2, 1987, 62-248121
Int. Cl.[5] D05C *5/02, 5/04;* **D05B** *21/00*
U.S. Cl. 112—103 **5 Claims**

5. An embroidering m: chine comprising:

stitch data memory means, capable of reading and writing, for storing stitch data for realizing an embroidering operation corresponding to a desired embroidery design;

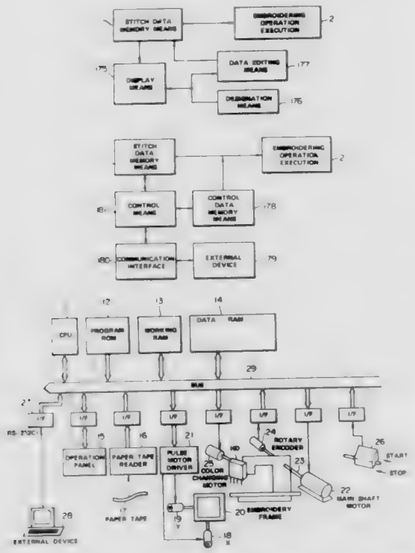
control means for continuously combining plural sets of stitch data, each corresponding to a different one of plural embroidery designs, sequentially input from an external

recording device into stitch data corresponding to a single embroidery design and writing the combined data in said stitch data memory means;

execution means for reading stitch data from said stitch data memory means and executing the embroidering operation in accordance with the read out stitch data;

control data memory means for storing respective control data for changing the stitch data and controlling the embroidering operation associated with the stitch data;

communication interface means for enabling transmission and receiving of the stitch data and the control data between the embroidering machine and an external device; and



wherein the control means writes stitch data and control data received from the external device through said communication interface means in said stitch data memory means and said control data memory means and reads stitch data and control data to be transmitted to the external device through said communication interface means from said stitch data memory means and said control data memory means; and

wherein said execution means executes the embroidering operation in accordance also with the control data read from said control data memory means.

5,052,316

FABRIC HOLDING FRAME FOR A SEWING MACHINE

Hisato Sakakibara, Inazawa, Japan, assignor to Kabushikikaisha Barudan, Aichi, Japan

Filed Jan. 8, 1991, Ser. No. 638,842

Claims priority, application Japan, Nov. 1, 1990, 2-296786

Int. Cl.[5] D05B *21/00, 13/00, 3/12, 25/00*

U.S. Cl. 112—121.15 **5 Claims**

1. A fabric holding frame for a sewing machine comprising:

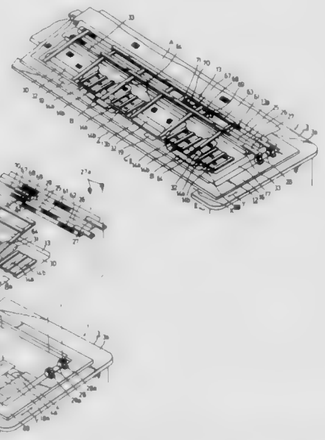
(a) a bed plate adapted to be mounted for horizontal movement on a table of a multi-head sewing machine and having a top surface to put a fabric thereon, and

(b) a presser frame connected to said bed plate for vertical movement relative to said bed plate and having a bottom surface thereof to press down said fabric,

said bed plate including:

(i) a positioning means to locate said fabric to be put thereon and

(ii) plural windows formed of a sufficient size so that each needle drop point on the table of said multi-head sewing machine can be exposed always through a respective one of said windows,



said presser frame having strap holders for holding straps, each strap holder being located at a position facing a respective one of said windows, and

each strap holder including a cut region of a sufficient size always to expose each respective needle drop point and hold members which are formed at the side edge portions of said cut region in order to hold side edges at the end portion of each of said straps.

5,052,317

APPARATUS FOR CUTTING STRIP-SHAPED SEWING MATERIAL

Helmut Schips, Klosterweidlistrasse 1, CH-9000 St. Gallen, Switzerland

Filed Nov. 22, 1989, Ser. No. 440,904

Claims priority, application Switzerland, Nov. 25, 1988, 4388/88

Int. Cl.[5] D05B *37/04*

U.S. Cl. 112—130 **10 Claims**

1. An apparatus for cutting strip-shaped sewing material on a sewing machine by'means of a power-operated cutters cooperating in a scissor-like manner, characterized by two cutter plates (**1**, **2**) which are each formed with two cutting edges (**1.1**, **1.2**; **1.2**, **2.2**), each cutter plate having a base portion and an upper end portion, a beak-like projection at the upper end portion, and a trapezoidal recess opened at one side between the base portion and the beak like projection, one cutter plate (**1**) having one cutting edge (**1.1**) disposed on its beak like projection and the other cutting edge (**1.2**) disposed on its trapezoidal recess for cooperation with the cutting edges (**2.1**, **2.2**) of the other cutter plate (**2**) having both cutter edges (**2.1**, **2.2**) disposed on the beak like projection of said other cutter plate; the cutter plates (**1**,**2**) being disposed on a support (**3**) so



as to be pressable against each other and at the same time said one cutter plate being linearly slidable in opposite directions with respect to said other cutter plate.

5,052,318

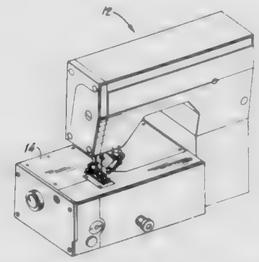
ADJUSTABLE STITCH CHAIN CUTTING ASSEMBLY INLET

Manfred Ackermann, Elmhurst, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Jun. 22, 1990, Ser. No. 542,844

Int. Cl.[5] D05B *65/06*

U.S. Cl. 112—288 **5 Claims**



2. An inlet adjusting mechanism for a stitch chain cutting assembly of a sewing machine, comprising:

a first member having a front side and a top side adjustably mounted at an inlet to the stitch chain cutting assembly;

a second member having a front side and a top side adjustably mounted at the inlet to the stitch chain cutting assembly and situated relative to the first member such that the front sides of the first and second members overlap each other and the top sides of the first and second members together define an opening to the stitch chain cutting assembly, which opening may be widened or narrowed to accommodate stitch chains of various thicknesses; and

mounting means for mounting the inlet to the stitch chain cutting assembly.

5,052,319

ON-BOARD EMERGENCY OIL DISPOSAL AND RECOVERY SYSTEM

Louis Beyrouty, 88 Robin Dr., Mercerville, N.J. 08619

Filed Feb. 26, 1990, Ser. No. 484,811

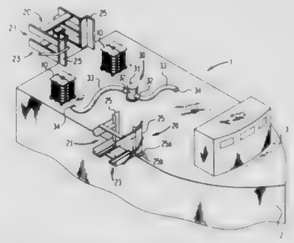
Int. Cl.[5] B63B *25/08*

U.S. Cl. 114—74 T **4 Claims**

1. An on-board emergency oil disposal and recovery system for an oil transporting vessel having an oil transfer system comprising:

a collapsible bag formed with a top and a bottom having a top plate member integrally formed with a buoyant backing and fixedly attached to the top of said bag and a bottom plate member fixedly attached to the bottom of said bag, said top plate member having at least one cable connector fixedly attached to a top surface of said top plate member and a bladder fill port which communicates with the interior of said bag, said bottom plate member having a plurality of casters fixedly attached to a bottom surface of said bottom plate member;

a bag support bracket fixedly attached to the periphery of



said vessel comprising a framed member having hingedly attached upper and lower bladder support frame members, said upper frame member being disposed to receive the top plate member of said bladder in bearing engagement and said lower frame member being formed with longitudinal slots for receipt of the casters of said bladder in rolling engagement, the hinged movement of said upper frame member being selectively operable by an upper lever and the hinged movement of said lower frame member being selectively operable by a lower lever; and

means to interconnect the oil transfer system of said vessel and the bladder fill port of said bladder, said interconnecting means including means to pump oil from said oil transfer system to said bladder.

5,052,320

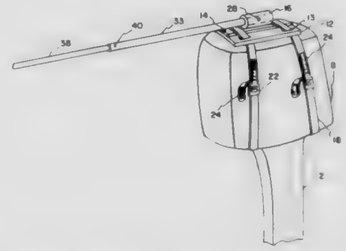
EMERGENCY TILLER FOR OUTBOARD MOTORS

David F. Cremer, Post Office, Naples Main Office, 1200 Goodlette Rd., Naples, Fla. 33941

Filed Jun. 25, 1990, Ser. No. 542,928

Int. Cl.[5] B63H *21/26*

U.S. Cl. 114—146 **23 Claims**



1. An alternate emergency steering mechanism for use in combination with an outboard motor attached to a boat as its principal power source and rotatable about a steering axis by a tiller arm, said motor enclosed within an upper motor housing and steered by a cable or hydraulic steering system, said alternate steering mechanism comprising:

an open tube socket means with mounting means to manu-

ally mount on a wall of said motor housing without the use of tools,

a tiller arm means adapted to be releasably secured within the interior of said socket means and to extend horizontally within the interior of the boat at, or above, the height of the motor housing,

securing means for releasably securing said tiller arm means to said socket means,

whereby said tiller arm means controls the steering of the boat when said cable or hydraulic steering system fails.

5,052,321

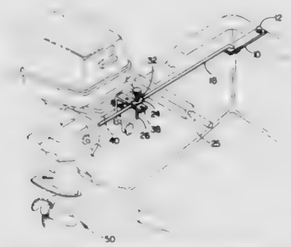
TROLL CONTROL APPARATUS

Fred G. Toniatti, 6806 Chandler Dr., Sacramento, Calif. 95828

Filed Feb. 28, 1991, Ser. No. 663,109

Int. Cl.[5] P63H *25/52*

U.S. Cl. 114—172 **13 Claims**



1. A troll control apparatus, comprising:

(a) a cylindrical rod;

(b) a mounting bracket, said mounting bracket for attachment to a wall of a boat, said mounting bracket having a hole;

(c) rod articulating means for insertion into said hole in said mounting bracket and articulation of said rod about a substantially vertical axis, said rod articulating means attached to one end of said rod;

(d) a sleeve, said rod inserted through said sleeve, said sleeve being slidable over said rod;

(e) a pin, said pin attached to said sleeve, said pin oriented substantially perpendicular to the longitudinal axis of said sleeve;

(f) a pilot bracket, said pilot bracket having a plurality of holes for mating with said pin;

(g) fastening means for fastening said pilot bracket to an outboard motor powering said boat; and

(h) locking means for locking said sleeve to said rod to fix the position of a rudder attached to said outboard motor.

5,052,322

SHIP WITH MOORING MEANS

Leendert Poldervaart, and Michael Stambouzos, both of La Turbie, France, assignors to Single Buoy Moorings Inc., Marly, Switzerland

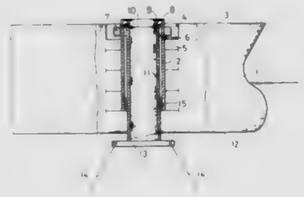
Continuation of Ser. No. 319,317, Mar. 6, 1989, abandoned. This application Jul. 23, 1990, Ser. No. 555,810

Claims priority, application Netherlands, Apr. 19, 1988, 8801007

Int. Cl.[5] B63B *21/50*

U.S. Cl. 114—230 **4 Claims**

1. Ship with mooring means, comprising a rotatable tube (**11**), which is fastened rotatably to the ship (**1**) about a vertical axis which is concentric to the rotatable tube (**11**) by means of an axial/radial bearing structure (**8, 9**) which can absorb axial and radial forces of which bearing structure at least the part absorbing the axial forces is at the top end of the rotatable tube (**11**), and said rotatable tube (**11**) being provided at its bottom end with means (**13**) for fastening anchor chains or cable (**14**), wherein the rotatable tube (**11**) is placed inside the hull of the ship (**1**) in a fixed tube (**2**) which is at least open at the bottom, and the outer ring (**8**) of the axial/radial bearing (**8, 9**) is fixed to a rigid ring (7), which is in turn fastened only to the top end of said fixed tube (**2**) which fixed tube (**2**) encloses the rotatable



tube (**11**) with clearance, said fixed tube (**2**) being fastened to the ship only some distance away from and below the rigid ring (7) and being free from fixed securement to the ship above the rigid ring.

5,052,323

BARGE TRANSPORT SYSTEM

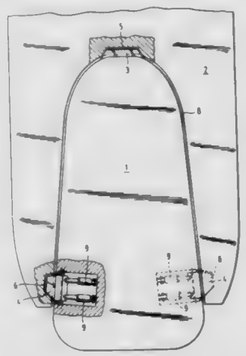
Kai Levander, Kauniainen; Tuomas Routa, and Jan Kingo, both of Helsinki, all of Finland, assignors to Masa-Yards Oy, Helsinki, Finland

Continuation of Ser. No. 366,287, Jun. 13, 1989, abandoned, which is a continuation of Ser. No. 755,206, Jul. 12, 1985, abandoned, which is a continuation of Ser. No. 545,620, Oct. 26, 1983, abandoned. This application Sep. 11, 1990, Ser. No. 581,087

Claims priority, application Finland, Nov. 9, 1982, 823849

Int. Cl.[5] B63B *35/70*

U.S. Cl. 114—248 **8 Claims**



1. An improved sea-going barge transport system comprising a barge and a powered push vessel connectable to the barge for propelling it by pushing, the barge having a stern portion and being formed in its stern portion with a notch extending vertically entirely through the stern portion to allow free vertical positioning of the push vessel relative to the barge, the push vessel and the barge being provided with connection means for rigidly connecting the push vessel to the barge, the connection means forming a three-point connection comprising a forward connecting member in the front portion of the push vessel, two side connecting members in the stern portion of the push vessel at opposite sides thereof, and counterpart structures in the barge for engagement by the connecting members, the forward connecting member forming with the counterpart structure therefor a tapered fitting that defines a final, clearance-free, fully inserted position of the forward connecting member relative to its counterpart structure, and the side connecting members being movable laterally relative to the push vessel to engage their respective counterpart structures, engagement of the connecting members and the counterpart structures locking the push vessel against vertical movement relative to the barge, and the connecting means also comprising means for continuously urging the side connecting members laterally of the push vessel, the improvement residing in the following combination: each side connecting member has a surface that is inclined relative to the central plane of the push vessel whereby a force is exerted that continuously urges the push vessel forward relative to the barge when the two side connecting members are urged laterally of the push vessel against their respective counterpart structures; the forward connecting member is rigidly and immovably connected to the push vessel; and the side connecting members are so sized relative to their counterpart structures and are so positioned relative to their counterpart structures when the forward connecting member is in its final, fully inserted position that continuous urging of the two side connecting members into engagement with their respective counterpart structures urges the push vessel forward relative to the barge, thereby continuously keeping the forward connecting member in its final, clearance-free, fully inserted position and thereby continuously eliminating connection clearance between the push vessel and the barge.

5,052,324

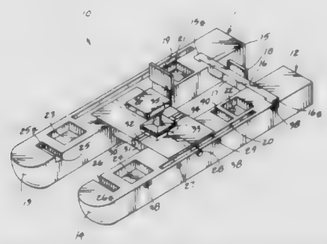
FOLDING FISHING BOAT APPARATUS

Steve Lesly, 126 Elm St., Dumas, Tex. 79029

Filed Apr. 4, 1990, Ser. No. 504,919

Int. Cl.[5] B63B *7/00*

U.S. Cl. 114—353 **3 Claims**



1. A folding fishing boat apparatus comprising, in combination,

a first elongate longitudinally aligned pontoon including a first folding plate orthogonally mounted to the first pontoon, and

a second pontoon longitudinally aligned and arranged parallel to the first pontoon, with the second pontoon including a second folding plate orthogonally and integrally mounted to the second pontoon, wherein the first folding plate and second folding plate are pivotally mounted relative to one another, by hinge means, and

said hinge means securing the first and second plate together for permitting a spaced relationship of the first and second pontoons in a first position and enabling pivoting of the first and second pontoons relative to one another to permit a contiguous relationship of the first and second pontoons relative to one another in a second position, and

first latch means mounted on the first pontoon and second latch means mounted on the second pontoon for securement to the first latch means to secure the first and second pontoons in the second position, and

wherein the first pontoon includes a first brace recess and the second pontoon includes a second brace recess, wherein the first and second brace recesses are in aligned relationship relative to one another, and an elongate "U" shaped brace receivable within the first and second brace recesses when the first and second pontoons are in the first position, and

including a third brace recess formed adjacent a forward end of the first pontoon and a fourth brace recess positioned adjacent a forward end of the second pontoon, wherein the third and fourth brace recesses are aligned relative to one another adapted to received the elongate "U" shaped brace therewithin, and the first and second brace recesses are positioned within the first and second pontoons respectively adjacent rear terminal ends of the respective first and second pontoons, and

wherein each of the brace recesses are arranged orthogonally to a longitudinal axis defined by each first and second pontoon, and

wherein the first and second folding plates each include cylindrical bores and when the first and second pontoons are in the first position, the bores of said first and second are aligned to receive a respective rigid rod therewithin to maintain the first and second pontoons in the first position.

5,052,325

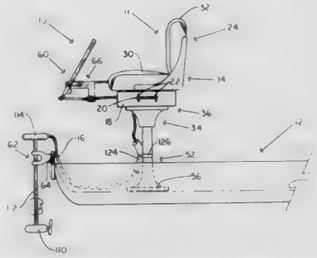
SWIVEL CHAIR STAND AND TROLLING MOTOR CONTROL

Michael Rhines, P.O. Box 1464, Orange, Tex. 77630

Filed Oct. 16, 1989, Ser. No. 422,402

Int. Cl.[5] B63B *29/00;* **B63H** *21/26*

U.S. Cl. 114—363 **5 Claims**



1. A trolling motor assembly for controlling movement of a trolling motor mounted on a boat including:

a platform support member having an opening formed therein;

a seat coupled to an upper position of the platform support member;

means coupled to a lower portion of the platform support member for supporting the platform support member and seat in an upright position on the boat in alignment with and adjacent to the trolling motor;

a laterally extending arm having portions thereof coupled to one side of the seat;

a first longitudinally extending arm coupled to extend perpendicularly from the laterally extending arm;

a second longitudinally extending arm having upper portions thereof coupled to the first longitudinally extending arm;

a downwardly projecting arm coupled to extend perpendicularly from the second longitudinally extending arm;

a shaft rotatably coupled to the trolling motor; and

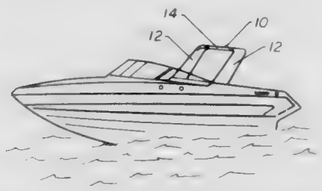
means pivotally coupled to the second longitudinally extending arm for diagonal movement so that when moved diagonally in one direction the shaft coupled to the trolling motor rotates in one direction and thus the trolling motor is moved laterally in a first direction and so that when moved diagonally in another direction the shaft coupled to the trolling motor rotates in another direction and thus the trolling motor is moved in a second direction.

5,052,326

DETACHABLE BOAT ARCH

Brian L. Wiggen, 1331 Springwood, Fort Collins, Colo. 80525, and Jerry E. Jaycox, 709 Nyssa, Loveland, Colo. 80538

Filed Jun. 1, 1990, Ser. No. 531,912
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—343 8 Claims



1. An upwardly extending supporting arch system which is detachably attachable to a marine craft of the type including first and second gunwales on opposite sides of said craft, said arch system comprising:

(a) first and second mounting plate members which are to be secured to the gunwales or opposite sides of the craft;

(b) first and second elongated upright members each having upper and lower ends; wherein the lower end of said first upright member is detachably secured to said first mounting plate member; and wherein said lower end of said second upright member is detachably secured to said second mounting plate member; and

(c) a horizontally disposed cross-member having first and second ends, wherein said cross-member is detachably secured to said upper ends of said first and second upright members; and

(d) first attachment means carried by said lower end of said first upright member, and second attachment means carried by said lower end of said second upright member; wherein said first an second attachment means are adapted to detachably secure said lower ends of said first and second upright members to said first and second mounting plate members, respectively;

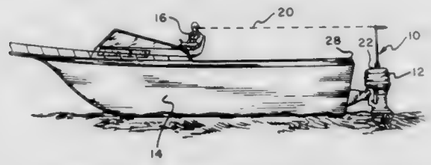
wherein each said attachment means comprises (1) a lever arm having first and second ends, wherein said first end is pivotably secured to said lower end of one said upright member, and (2) a draw bolt having upper and lower ends, wherein said upper end of said draw bolt is attached to said first end of said lever arm; wherein said lever arm is pivotable between first and second positions to move said draw bolt between upper and lower positions; and wherein said lower end of said draw bolt is adapted to engage a said mounting plate member.

5,052,327

INBOARD/OUTBOARD AND OUTBOARD GUIDING SAFETY DEVICE AND METHOD

Forrest Comfort, R.D. #5, Box 139A, Tuckahoe Rd., Williamstown, N.J. 08094

Filed Jul. 19, 1990, Ser. No. 554,444
Int. Cl.[5] B63B *49/00*
U.S. Cl. 116—26 9 Claims



1. A thrust directional guidance device for attachment to an apparatus chosen from a group consisting of an inboard/outboard propeller and steering mechanism and an outboard motor mechanism fixed to a stern of a boat, each mechanism having a thrust vector, the boat comprising a top of a transom at the stern of the boat that obscures a line of sight from a piloting position of the boat to an uppermost portion of the inboard/outboard propeller and steering mechanism or of the outboard motor, the device comprising:

(a) an upright member comprising an upper end and a lower end, the upright member being of sufficient length to extend from the lower end at a height proximate housings of the inboard/outboard propeller and steering mechanism or of the outboard motor to the upper end to a height above the transom of the boat,

(b) flag means fixed to the upper end of the upright member to visually indicate a single direction,

(c) attachment means to releasably attach the lower end of the upright member to the housing of the inboard propeller and steering mechanism or of the outboard motor, and

(d) adjustment means to fix the horizontal alignment between the lower end of the upright member and the housing of the inboard propeller and steering mechanism or of the outboard motor to assure that the single direction indicated by the flag means is either in the direction of the thrust vector or in a direction opposite to that of the thrust vector,

wherein the attachment means comprises a magnet attached to lower end of the upright member and a magnetically attracted member attached to the housing of the inboard propeller and steering mechanism or of the outboard motor, and

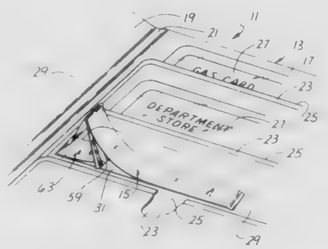
wherein the adjustment means positions the horizontal alignment of the magnet with respect to the magnetically attracted member on the housing of the inboard propeller and steering mechanism or of the outboard motor.

5,052,328

APPARATUS FOR PREVENTING CREDIT CARD LOSS

Lawrence C. Eppenbach, 130 Seward St., Juneau, Ak. 99801-2102

Filed Feb. 28, 1991, Ser. No. 662,260
Int. Cl.[5] G01D *11/00*; A45C *1/06*
U.S. Cl. 116—200 19 Claims



1. An apparatus comprising:

a billfold including first and second sections and a hinge joining the sections for pivotal movement;

said first section having a pocket with an opening which provides access to the pocket, said pocket being adapted to receive a card through said opening;

said hinge joining the first and second sections for pivotal movement between a closed position in which the sections are in confronting relationship and an open position in which the sections are out of confronting relationship and the opening of the pocket is exposed to allow insertion into and withdrawal of the card from the pocket;

a card missing indicator coupled to the billfold; and

said indicator including a signaling element adjacent the opening, said signaling element being movable between a card-out position in which at least a portion of said signaling element is spaced from the first section and a card-in position in which said portion of the signaling element is substantially closer to the first section, said indicator including biasing means for urging the signaling element toward the card-out position, said portion of the signaling element being adapted to be held in the card-in position by the card when the card is in the pocket and to be urged by the biasing means to the card-out position when the card is out of the pocket to signal the absence of the card from the pocket.

5,052,329

COMBINED MINE PROBE AND MARKER

Stephen H. Bennett, Lorton, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 6, 1989, Ser. No. 403,424
Int. Cl.[5] G01D *21/00*
U.S. Cl. 116—209 5 Claims



1. A combined probe and marker comprising:

a non-metallic rod having a distal pointed end and a proximate end;

a handle having an uper end, a lower end, a recess formed in the upper end of the handle for holding a cylindrically shaped chemical light means, a central longitudinal sheathing bore formed within the handle, and a concentric, internally threaded bore disposed at the lower end of the handle and in comunication with the sheathing bore; and

a mounting stub for connecting the proximate end of the rod to the lower end of the handle;

wherein said mounting stub has a central affixed between first and second stub ends having external threads, the threaded stub ends being in matching relationship with the threaded bore of the handle; wherein the proximate end of the rod is mounted in a bore formed within the first stub end of the mounting stub, wherein the rod is removably attached to the handle by engaging the second stub end with the threaded bore of the handle for probing and marking and wherein the rod is stored within the central sheathing bore when not in use by reversing the mounting stub and engaging the first stub end with the threaded bore of the handle.

5,052,330

BREADER FOR COATING EDIBLE FOOD PRODUCTS WITH FRESH BREAD CRUMBS

Robert M. Stacy, Sandusky, Ohio, assignor to Stein, Inc., Sandusky, Ohio

Filed Jan. 14, 1991, Ser. No. 640,704
Int. Cl.[5] B05C *5/02, 19/00*
U.S. Cl. 118—16 13 Claims

1. A coating machine for depositing coating material onto a food product comprising,

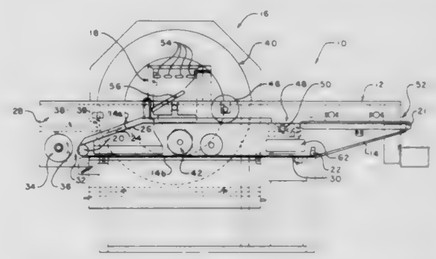
an elongated frame enclosure having an endless pervious conveyor belt supported therein and extending therealong to define an upper conveyor run providing a product conveyance path and a lower conveyor run,

drive means for moving said conveyor belt within said frame enclosure such that said conveyor belt moves in a first direction along said upper conveyor run and in the opposite direction along said lower conveyor run, wherein said drive means includes at least one support roller adapted to engage said conveyor belt,

a first hopper means comprising a housing supported on said frame enclosure above said upper conveyor run with distribution means provided in said hopper means for distributing coating material disposed therein across the width of said upper conveyor run,

a circular conveyor rotatably supported on said frame enclosure adjacent to said hopper means and said bottom conveyor run having a plurality of pocket means formed therein and opening to the center thereof,

conveyance means supported in said frame enclosure and extending transversely across said bottom conveyor run with one end thereof extending into said circular conveyor, and having drive means associated therewith to



remove a portion of coating material from said bottom conveyor run to be disposed within said pocket means of said circular conveyor, wherein said pocket means will convey coating material disposed therein to said hopper means with said distribution means accepting the portion of said coating material from said pocket means to be distributed to said hopper means, and said coating material thereafter exiting from said hopper means and onto the food product being carried on said upper conveyor run as said food product passes under said hopper means,

means to provide a bottom layer of coating material on said upper conveyor run comprising a roller means positioned in spaced apart relationship to said support roller and having drive means associated therewith to rotate said roller means in an opposite direction relative to said support roller, wherein said lower conveyor run is adapted to distribute coating material to the space between said roller means and said at least one support roller, such that said coating material will be distributed onto said upper conveyor run by means of the counter rotation of said at least one support roller and said roller means so as to provide a bottom layer of coating material on which food products are positioned to be coated therewith

5,052,331

APPARATUS FOR GAS-METAL ARC DEPOSITION

Carol L. Buhrmaster, Corning, N.Y.; Denis E. Clark, Idaho Falls, Id., and Herschel B. Smartt, Idaho Falls, Id., assignors to The United States of America as represented by the United Sates Department of Energy, Washington, D.C.

Division of Ser. No. 423,172, Oct. 18, 1989, Pat. No. 4,970,091.
This application May 29, 1990, Ser. No. 529,412
Int. Cl.[5] B05C *5/04*
U.S. Cl. 118—50.1 27 Claims

1. A gas-metal arc deposition apparatus which comprises:

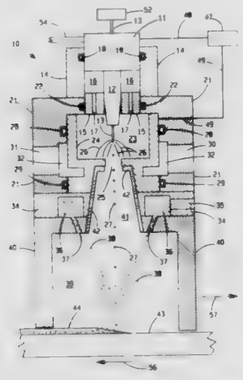
(a) an arc chamber body member defining an arc chamber

for confining a D.C. electrical arc discharge, said arc chamber body member containing an orifice for discharging ionizable inert gas and molten metal droplets from said arc chamber;

(b) a deposition chamber body member defining a deposition chamber in fluid communication with said arc chamber at said arc chamber orifice;

(c) first means for introducing a first ionizable inert gas into said arc chamber;

(d) means for continuously introducing a metal wire into said arc chamber, said means introducing said wire in alignment with said orifice, spaced from said orifice, and proximate to said orifice;



(e) means for imposing a first electrical charge on the leading end of said metal wire introduced into said arc chamber, and for imposing a second electrical charge on the arc chamber body member at said orifice, said first and second charges having opposite polarities, to thereby cause arcing between said wire leading end and the edges of said orifice to produce droplets of molten metal from said wire leading end which pass with ionizable inert gas through said orifice and into said deposition chamber; and,

(f) a deposition opening in said deposition chamber body member, spaced from said arc chamber orifice and in alignment therewith, for allowing metal droplets passing through said orifice and into said deposition chamber to coat the surface of a substrate exposed at said deposition opening.

5,052,332

APPARATUS AND SYSTEM FOR STEAM CLEANING AND COATING OF LAMINATED ARTICLES

Bedrich Hajek, New Haven, and Donald J. Gillette, Guilford, both of Conn., assignors to S. L. Electrostatic Technology, Inc., Branford, Conn.

Filed Mar. 15, 1990, Ser. No. 493,791
Int. Cl.[5] B05B *5/08, 5/03;* **B08B** *3/02*
U.S. Cl. 118—72 **8 Claims**

1. Apparatus for cleaning a workpiece transported therethrough, comprising:

an enclosure defining a chamber with entrance and exit openings thereinto and therefrom;

means for transporting a workpiece along a travel path having a section extending through said chamber and between said openings of said enclosure, said travel path section lying substantially entirely in a single horizontal plane and demarcating within said chamber a spray compartment thereabove and a collection compartment therebelow;

spray means, disposed within said spray compartment, for discharging steam upon a workpiece transported along said travel path section;

condenser means in said collection compartment for effecting condensation of vaporous substances entering thereinto;

drain means for withdrawing liquids condensed in said collection compartment; and

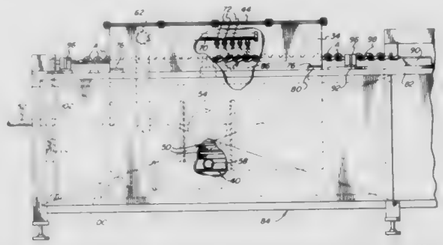
supply means operatively connected to said spray means for supplying steam thereto.

5. A system for cleaning and coating a workpiece, comprising:

a. cleaning apparatus including:

an enclosure defining a chamber with entrance and exit openings thereinto and therefrom, a horizontal plane within said chamber demarcating a spray compartment thereabove, and a collection chamber therebelow;

spray means, disposed within said spray compartment, for discharging steam upon a workpiece transported along said horizontal plane;



condenser means in said collection compartment for effecting condensation of vaporous substances entering thereinto;

drain means for withdrawing liquids condensed in said collection compartment; and

supply means operatively connected to said spray means for supplying steam thereto;

b. coating means for producing a cloud of electrostatically charged solid particles;

c. means for transporting a workpiece along a travel path having a first section extending through said chamber and between said openings of said enclosure, and having a second section, downstream of said first section, extending proximate said coating means to enable exposure of the transported workpiece to said cloud for deposition of such particles thereupon, said travel path sections lying substantially entirely in said horizontal plane; and

d. means for effecting fusion of the particulate deposit produced by said coating means upon the workpiece.

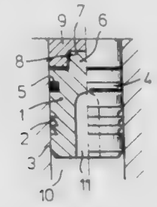
5,052,333

PLUG

Jacob Woudsma, Vogezenlaan 23, 5701 PX Venray, Netherlands

PCT No. PCT/NL87/00005, § 371 Date Aug. 31, 1988, § 102(e) Date Aug. 31, 1988, PCT Pub. No. WO87/05251, PCT Pub. Date Sep. 11, 1987
PCT Filed Feb. 23, 1987, Ser. No. 261,969
Claims priority, application Netherlands, Mar. 3, 1986, 8600528
Int. Cl.[5] B05C *1/00*
U.S. Cl. 118—100 **26 Claims**

1. A plug formed of a deformable material such as wood, synthetic material or the like, for clampingly sealing a recess in wood, having a first end to be driven in the recess and a second outer end opposite thereto, the plug comprising: a cavity for accommodating a crushable ampule or holder with a wood preservative; and a plurality of separate, cooperating clamping sealing means for engaging an inner wall of the recess, at least two of the clamping sealing means positioned at the second outer end of the plug, the clamping sealing means being mutually movable so that the sealing means positioned closest to the wood seals flush with the wood surface, and prior to driving the plug in the recess, an outer radial dimension of at least one of the sealing means is greater than the internal radial dimension of a corresponding accommodating portion of the recess to such an extent that, after the plug has been driven into the recess, no damage to the wood or leakage of the wood preservative occurs.

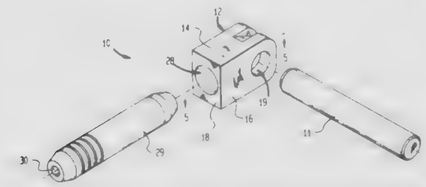


5,052,334

COATING APPLICATOR FOR MOVING FIBERS

William Sullivan, Gillete, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Feb. 27, 1990, Ser. No. 486,043
Int. Cl.[5] B05C *1/08*
U.S. Cl. 118—234 **9 Claims**



1. A device for applying a liquid coating to a moving fiber comprising:

a) a cylindrical applicator and a means attached to said applicator for rotating said applicator;

b) a support frame for supporting said cylindrical applicator, said support frame having a cylindrical opening running therethrough for closely receiving and supporting said applicator, a slot for receiving the fiber, a coating passage opening running from said slot to said cylindrical opening, and an internal passageway connected to said cylindrical opening; and,

c) a tubular delivery means which fits partially within said internal passageway of said support frame, said delivery means having an internal passageway through which the liquid coating may be delivered to said applicator, said delivery means being directly adjacent to and cooperating with said applicator so that a film of the coating may be applied to said applicator at a controlled rate.

5,052,335

ELECTROSTATIC LATENT IMAGE DEVELOPING DEVICE

Yuji Enoguchi; Toshiya Natsuhara, and Hiroshi Mizuno, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1989, Ser. No. 328,225
Claims priority, application Japan, Mar. 25, 1988, 63-72961
Int. Cl.[5] G03G *15/09*
U.S. Cl. 118—658 **18 Claims**

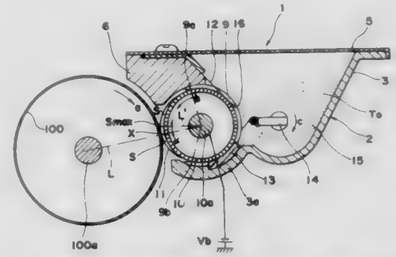
18. In a developing device disposed adjacently to a rotatably arranged image support member for developing an electrostatic latent image formed on the image support member, a method comprising the steps of:

providing a developing roller opposite to said image support member;

providing a flexible outer sleeve which has a peripheral length larger than that of said developing roller so as to be loosely mounted around said developing roller;

rotating the flexible outer sleeve;

pressing said flexible outer sleeve against said developing roller so as to form a slack of said flexible outer sleeve at



a location confronting said image support member with an angle between a line connecting a center point of the developing roller and a portion of said flexible sleeve at which a maximum slack is formed and a line connecting the center point of the developing roller and the center point of the image support member; and

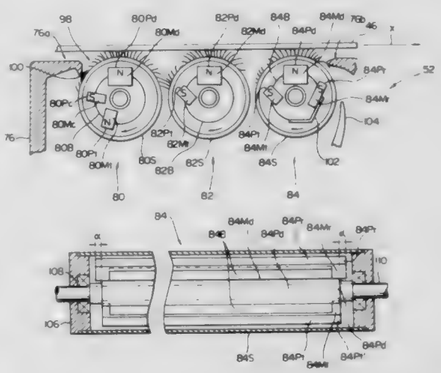
providing toner to the surface of the flexible outer sleeve, said provided toner being transported to a location confronting to the image support member to develop said electrostatic latent image.

5,052,336

DEVELOPING ROLLER FOR A DEVELOPING UNIT WITH TRANSPORT, DEVELOP AND COLLECT MAGNETS

Yutaka Fukuchi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 21, 1990, Ser. No. 570,330
Claims priority, application Japan, Aug. 26, 1989, 1-99535[U]
Int. Cl.[5] G03G *15/09*
U.S. Cl. 118—658 **6 Claims**



1. A developing roller for a developing unit which develops a latent image electrostatically formed on an image carrier of

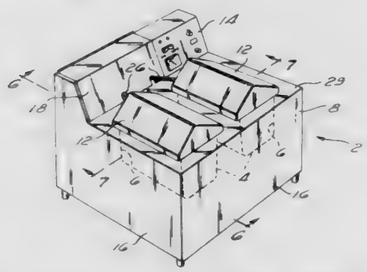
an image forming apparatus by using a magnet brush constituted by a developer, said developing roller comprising:
- a rotary sleeve for forming the magnet brush on a surface thereof and transporting said magnet brush to the image carrier carrying the latent image;
- a transport magnet accommodated in said sleeve and comprising a transport pole;
- a develop magnet accommodated in said sleeve and located downstream of said transport magnet with respect to an intended direction of rotation of said sleeve in such a manner as to face the latent image carried on the image carrier, and comprising a develop pole;
- a collect magnet accommodated in said sleeve and located in a position downstream of said develop magnet with respect to said intended direction of rotation of said sleeve, and comprising a collect pole for collecting the developer of the magnet brush remaining on said sleeve into the developing unit; and
- a support member accommodated in said sleeve for securely supporting said transport magnet, said develop magnet, and said collect magnet;
- said collect magnet being dimensioned longer than said transport magnet and said develop magnet as measured in an axial direction of said sleeve.

5,052,337

LENS DYEING METHOD AND APPARATUS COMPRISING HEATING ELEMENT CONTACTING DYEING TANK, HEAT CONTROLLER AND SENSOR FOR DYE SOLUTION TEMPERATURE

Thomas D. Talcott, 17 Pacific Coast, Laguna Niguel, Calif. 92667; James J. Ryan, III, 27143 Sunnyridge, Palos Verdes, Calif. 90274, and John L. Jones, Jr., 960 N. Enterprise, Orange, Calif. 92667

Filed Oct. 31, 1988, Ser. No. 264,690
Int. Cl.[5] B05C *11/00;* **D06P** *1/90;* **G02C** *7/02*
U.S. Cl. 118—667 **1 Claim**



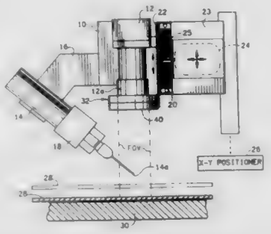
1. An apparatus for the high speed dyeing of plastic eyeglass lens material in a dye solution which is maintained throughout the dyeing operation at substantially its boiling point, comprising:
- a thermally conductive dyeing tank for holding a dye solution and sized to receive lens material to be dyed;
- a lid for covering said dyeing tank;
- an electrical heating element in direct contact with the exterior of said dyeing tank;
- a sensor for detecting the temperature of said dyeing solution within said dyeing tank; and
- a heater control responsive to said sensor for adjusting the electrical current supplied to said electrical heating element to maintain a preselected temperature at substantially the boiling point of said dye solution throughout the dyeing operation, said heater control operating to:
  - provide a first electrical current level to said heating element when said lid is covering said dyeing tank, and provide a second electrical current level, higher than said first electrical current level, to said heating element when said lid is removed from said dyeing tank.

5,052,338

APPARATUS FOR DISPENSING VISCOUS MATERIALS A CONSTANT HEIGHT ABOVE A WORKPIECE SURFACE

Philip P. Maiorca, Poway; Ronald N. Abernathy, Vista; and George H. Wadley, Carlsbad, all of Calif., assignors to Asymptotic Technologies, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 472,742, Jan. 31, 1990. This application Jul. 5, 1990, Ser. No. 549,379
Int. Cl.[5] B05C *11/00, 5/00*
U.S. Cl. 118—668 **9 Claims**



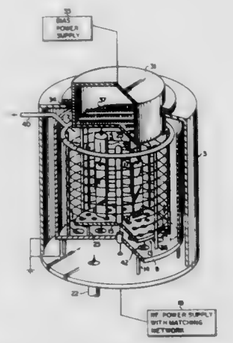
1. An apparatus for dispensing viscous materials, comprising:
- means for supporting a dispensing device adapted for holding a quantity of a viscous material and dispensing the same through a tip thereof;
- means for moving the dispensing device supporting means along an axis to selectively position the tip a predetermined distance away from the surface of a workpiece positioned adjacent thereto in response to height control signals applied thereto; and
- means for generating the height control signals including camera means mounted on the dispensing device supporting means for generating output signals representative of an image of the surface of the workpiece, and means for processing the output signals from the camera means to determine when the image is maximally in focus.

5,052,339

RADIO FREQUENCY PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION PROCESS AND REACTOR

George Vakerlis, Malden; Ward D. Halverson, Cambridge, both of Mass.; Diwakar Garg, Macungie, and Paul N. Dyer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 16, 1990, Ser. No. 598,500
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 **16 Claims**



1. A capacitively coupled RF plasma enhanced chemical vapor deposition apparatus for depositing a uniform coating of material on substrates, said apparatus comprising:
- an outer chamber;
- a secondary electrode defining a reaction zone within said outer chamber to accommodate said substrates to be coated;
- inlet conduit means for introducing reactant gases into said reaction zone;
- reactant gas distribution means mounted in the upstream end of said reaction zone for distributing reactant gases into said reaction zone;
- an RF electrode in concert with said secondary electrode for generating a plasma within said reaction zone, said electrode comprising a base mounted in the downstream end of said reaction zone and a finger extending through said reaction zone toward said upstream end, said finger for distributing a plasma field uniformly throughout said reaction zone;
- RF power supply electrically connected to said RF electrode for supplying RF energy thereto;
- holder means mounted in said upstream end for holding a plurality of substrates within said reaction zone;
- heating means for heating said substrates within said reaction zone; and
- outlet conduit means within said outer chamber for extracting said gases from said downstream end.

5,052,340

CHITIN BASED DIET FOR BIVALVES

Richard A. Smucker, Lusby, and Myron E. Taylor, Brookeville, both of Md., assignors to ATP, Ltd., Lusby, Md.

Filed Apr. 20, 1990, Ser. No. 512,189
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—4 **28 Claims**

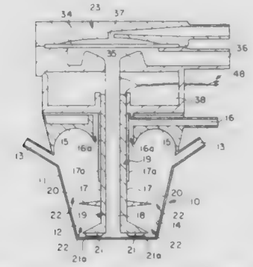
1. A method of feeding bivalves comprising periodically adding comminuted chitin-containing material, other than shells of the particular bivalve being fed, said chitin-containing material having particles smaller than 40 μm and wherein the chitin in said chitin-containing material is in its natural chemical state, to a body of water containing bivalves whereby the chitin in said chitin-containing material is digested by said bivalves.

5,052,341

MILKING MACHINERY

Murray W. Woolford; Robert A. Sherlock, and John H. Williamson, all of Hamilton, New Zealand, assignors to The Director General of the Ministry of Agriculture and Fisheries, Wellington, New Zealand

Continuation of Ser. No. 924,934, Oct. 30, 1986, abandoned. This application Mar. 8, 1989, Ser. No. 320,927
Claims priority, application New Zealand, Nov. 1, 1985, 212889; Aug. 20, 1986, 217300; Aug. 20, 1986, 217301
Int. Cl.[5] A01J *3/00*
U.S. Cl. 119—14.02 **19 Claims**



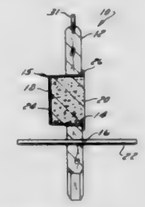
16. Apparatus for machine milking an animal comprising a teat cup cluster coupled to a milk receiving chamber, a milking vacuum means connected via a claw vacuum line to said chamber, said chamber being connected with evacuated milk transport means, said milk transport means being separate from said vacuum milking means, sensing means associated with said chamber said sensing means, during milking of an animal, sensing a presence of a volume of milk equal to or greater than a predetermined volume, a milk outlet through which milk from the milk receiving chamber can flow into a milk transport means, valve means which is operative between open and closed positions to control milk flow through or from said milk outlet and control means for controlling the opening and closing of said valve means, the control means being operative to close the valve means each time said sensing means senses a reduction to said predetermined volume and operative to open said valve means when, following closure of the valve means the milk contained within the chamber has increased to a volume greater than said predetermined volume.

5,052,342

SUET-SEED CAKE BIRD FEEDER

Paul Schneider, 2604 N. Huebner, Oconomowoc, Wis. 53066

Filed Jun. 8, 1990, Ser. No. 534,952
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—51.03 **4 Claims**



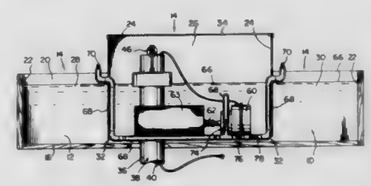
1. A bird feeder comprising:
- a frame having a front and a back,
- a cage mounted on said frame, said cage having a suet-seed cake housed therein and including a front wall and a flange connected to said front wall by a number of ribs whereby said cake is exposed to the birds,
- said frame including an opening tapered from said front to said back and said ribs on said cage being tapered from said flange inwardly to said front wall whereby said cage can be wedged into said tapered opening until said flange is flush with the front of said frame, and
- a perch mounted on said frame for supporting birds in a position accessible to said cage.

5,052,343

CATTLE WATER DRINKING ENTICE

Larry Sushelnitski, P.O. Box 187, Iron Springs, Alberta, Canada T0K 1G0

Filed Jun. 5, 1989, Ser. No. 361,640
Int. Cl.[5] A01K *7/04*
U.S. Cl. 119—78 **1 Claim**



1. A water trough, comprising:
- a. a container having a bottom and a peripheral side wall, the container having at least one section with an open top

thereby permitting cattle access to the water in the container.

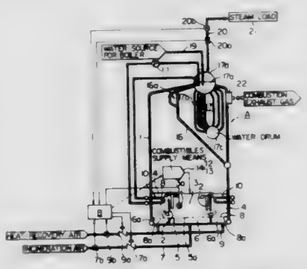
b. a pump which is adapted to circulate water within said container, said pump having an inlet which is disposed below the water line of said container, and an outlet which is disposed above the water line of the open section of said container, such that water from said container is drawn in through said inlet and sprayed by said outlet into the air whereby the water is visible to the cattle, and onto the surface of water in said container whereby a sound is produced, the sight and sound of flowing water attracting the attention of the cattle thereby enticing the cattle to drink.

5,052,344

INCINERATION CONTROL APPARATUS FOR A FLUIDIZED BED BOILER

Shigeru Kosugi; Takahiro Ohshita; Tsutomu Higo, all of Kanagawa; Naoki Inumaru, Tokyo, and Hajime Kawaguchi, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

PCT No. PCT/JP88/00693, § 371 Date Jan. 3, 1990, § 102(e) Date Jan. 3, 1990
PCT Filed Jul. 13, 1988, Ser. No. 457,794
Claims priority, application Japan, Jul. 13, 1987, 62-174467
Int. Cl.[5] B09B *3/00*; **F22B** *1/00*
U.S. Cl. 122—4 D **22 Claims**



1. An incineration control apparatus for a fluidized bed type boiler comprising:

an incineration chamber (**3**) filled with fluidizing medium for incinerating combustibles in said fluidizing medium;

combustibles supply means (**14**) for supplying a specified amount of combustibles to said incineration chamber (**3**);

incineration air supply means (**5**, **5***a*, **6**, **7**) for supplying incineration air to said incineration chamber (**3**);

a boiler drum (**17**) for receiving heat from said incineration chamber (**3**);

a heat recovery chamber (**4**) adjacent to said incineration chamber (**3**) and so defined that said fluidizing medium in said incineration chamber (**3**) may be circulated therethrough;

heat recovery air supply means (**6***a*, **8**, **8***a*, **8***a'*, **8***b*) for supplying heat recovery air to said heat recovery chamber (**4**) at a specified air velocity (or mass velocity);

heat recovery means (**10**, **11**) provided in said heat recovery chamber (**4**) for recovering and transferring to said boiler drum (**17**) the heat in said fluidizing medium circulating through said heat recovery chamber (**4**) in accordance with the specified velocity (or mass velocity) of the heat recovery air;

steam pressure detecting means (**20***b*) for detecting the steam pressure in said boiler drum (**17**) and for outputting a steam pressure signal (**PV01**) indicating said steam pressure; and

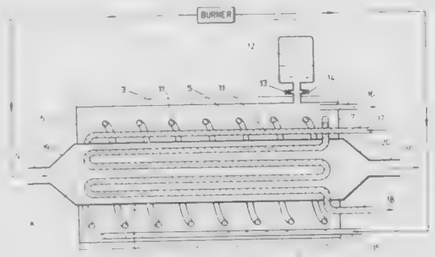
steam pressure dependent heat recovery air supply control means (**31**, **32**, **33**, **34**, **9**, **9***a*, **9***b*) adapted to respond to said steam pressure signal (**PV01**) and to control the velocity (mass velocity) of the heat recovery air at said heat recovery air supply means (**6***a*, **8**, **8***a*, **8***a'*, **8***b*) on the basis of steam pressure.

5,052,345

HEATING APPARATUS WITH A HEAT EXCHANGER

Kurt Byström, Erkiesberga, S-741 00 Knivsta, and Lars E. Johansson, Sollentuna, both of Sweden, assignors to Kurt Byström, Erkesberga, Sweden

PCT No. PCT/SE89/00561, § 371 Date Aug. 2, 1990, § 102(e) Date Aug. 2, 1990, PCT Pub. No. WO90/04139, PCT Pub. Date Apr. 19, 1990
PCT Filed Oct. 12, 1989, Ser. No. 476,458
Claims priority, application Sweden, Oct. 13, 1988, 8803657
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—20 B **8 Claims**



1. Heating apparatus including a burner connected to a heat exchanger (**1**), the burner heating a primary fluid which circulates through the heat exchanger (**1**) to transmit heat of the primary fluid to a secondary fluid in the heat exchanger (**1**), the heat exchanger (**1**) being provided with a tube (**4**) which extends through the heat exchanger and through which exhaust gases from the burner flow, the heat exchanger (**1**) including a chamber (**5**) which surrounds the tube (**4**) and through which the primary fluid flows, as well as a pipe coil (**11**) through which the secondary fluid flows, the pipe coil (**11**) being disposed into the chamber (**5**), around the tube (**4**), and then through a wall of the tube (**4**) into a passage (**8**) within the tube (**4**), the pipe coil forming one or more loops in the passage (**8**) and then extending out of the heat exchanger (**1**), the pipe coil (**11**) being so disposed so as to lead the secondary fluid first through the primary fluid in the chamber (**5**) and thereafter through the exhaust gases as the exhaust gases flow through the tube (**4**), the exhaust gases being led through the passage (**8**) for heating the wall of the tube (**4**) as well as said one or more loops.

5,052,346

WATER HEATER FOAM DAM AND FORMING METHOD

David Beck, Middleville, Mich., assignor to Bradford-White Corporation, Philadelphia, Pa.

Filed Jan. 14, 1991, Ser. No. 640,634
Int. Cl.[5] F22B *37/36*
U.S. Cl. 122—494 **8 Claims**

1. In a method of making a water heater having a tank and an outer jacket defining an annular space therebetween, which space is adapted to be filled with flowable foam forming material to provide insulation between the tank and the jacket, said tank including at least one control element accessible from outside said jacket and shielded from said foam forming material by an insulating dam, the steps which comprise:

(a) providing a flexible deformable foam dam having a thickness of at least the width of said annular space, which dam is expandable around said control element;

(b) expanding the foam dam and applying the expanded foam dam by friction to the control element; and



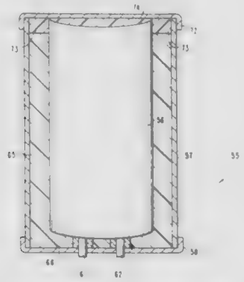
(c) positioning the jacket over the foam dam and control element.

5,052,347

WATER HEATER CONSTRUCTION

Thomas E. Nelson, Anchorage, Ky., assignor to Soltech, Inc., Shelbyville, Ky.

Division of Ser. No. 392,342, Aug. 11, 1989, Pat. No. 4,992,223.
This application Oct. 26, 1990, Ser. No. 603,428
Int. Cl.[5] F22B *37/36*
U.S. Cl. 122—494 **19 Claims**



1. A water heater construction comprising:

an inner water tank;

outer enclosure means disposed over and around said inner water tank and defining therebetween a clearance space;

thermal insulation material foamed in place between the tank and outer enclosure means in said clearance space; and

said foamed insulation material having greater uniformity in cell structure in the volume disposed over the top of said inner water tank than in the lower portion of the volume of said foamed insulation material disposed around the side of said inner water tank.

5,052,348

COOLING SYSTEM FOR AN ENGINE

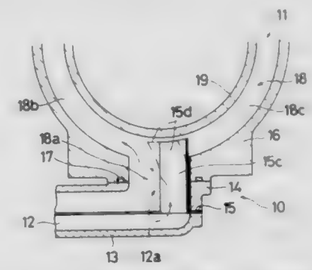
Yoshinari Takakura, Anjo; Mikio Nakashima, Okazaki, and Hidekuni Hashizume, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 7, 1990, Ser. No. 609,776
Claims priority, application Japan, Nov. 7, 1989, 1-129809
Int. Cl.[5] F01P *3/02*
U.S. Cl. 123—41.74 **4 Claims**

1. A cooling system for an engine, comprising:

a cylinder block defining a water jacket therein, said water jacket having an inlet;

means for forming a cooling water inlet passage connected to said water jacket inlet, said cooling water inlet passage means including a sealing gasket,



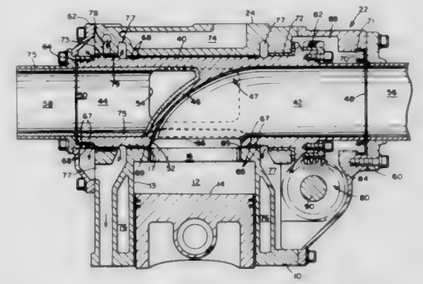
wherein said sealing gasket includes an integral projecting portion projecting into said water jacket inlet and water jacket so as to guide water into one side of said water jacket.

5,052,349

ROTARY VALVE FOR INTERNAL COMBUSTION ENGINE

Terry Buelna, 816 S. Pacific St., Apt. A, Oceanside, Calif. 92054

Filed Jul. 30, 1990, Ser. No. 560,372
Int. Cl.[5] F01L *7/00*
U.S. Cl. 123—80 BA **30 Claims**



1. Rotary valve apparatus for a cylinder of an internal combustion engine, said cylinder having therein a piston, with said cylinder and said piston defining a combustion chamber at one end of said cylinder and said combustion chamber having an opening thereinto opposite said piston, said apparatus comprising:

a valve housing positioned to cover said opening of said combustion chamber and having a cylindrical bore therein which has a longitudinal axis disposed perpendicularly to the longitudinal axis of said cylinder, said bore having an open end in fluid communication with either the intake conduit or the exhaust conduit of said engine;

circumferential bearing means positioned within said bore;

a cylindrical valve body journaled in said bearings and aligned on said axis of said bore, said valve body having an open end corresponding to said open end of said bore;

an axially aligned hollow chamber in said valve body, said open end of said bore defining one end of said hollow chamber and a second opening defining the opposite end of said hollow chamber, said hollow chamber extending longitudinally of said valve, with said second opening adapted to be aligned with said opening into said combustion chamber;

rotative means for rotating said body within said bore, in correspondence to the operating strokes of said piston in said cylinder and at a constant speed relative to crankshaft

speed, and for intermittently aligning said second opening of said hollow chamber with said opening into said combustion chamber such that gaseous material may be passed between said combustion chamber and said intake or exhaust conduit through said hollow chamber;

port sealing means disposed in the outer surface of said valve body to prevent gas flow around said outer surface of said valve body; and

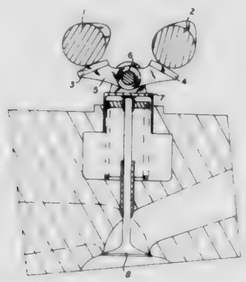
ring sealing means disposed circumferentially in the inner surface of said bore at each end of said valve body and extending around said inner surface of said bore in sealing contact with the outer surface of said valve body.

5,052,350

DEVICE TO COMBINE THE MOTIONS OF TWO CAMLOBES DIFFERENTIALLY PHASED

Brian T. King, 48000 Elkview Road, Sardis, BC, Canada V2R 1B1

Filed Nov. 2, 1990, Ser. No. 608,562
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 **7 Claims**



1. A mechanism to combine the displacement of a first camlobe and the displacement of a second camlobe, said camlobes rotating at variable relative phasings, so as to cooperatively actuate, at variable durations, a valve in the combustion chamber of an internal combustion engine, comprising:

a first lever means;

said first lever means having first and second camfollower means to engage operatively said first and second camlobes respectively, and first fulcrum means to locate rotatably a means to engage operatively said valve;

said rotation of said first and second camlobes displacing at least one of said camfollower means;

said displacement of at least one of said camfollower means causing rotation of said first lever means;

said rotation of said first lever means displacing said first fulcrum means of said first lever means locating rotatably said means to engage operatively said valve, so as to displace said means to engage operatively said valve;

said displacement of said means to engage operatively said valve actuating said valve.

5,052,351

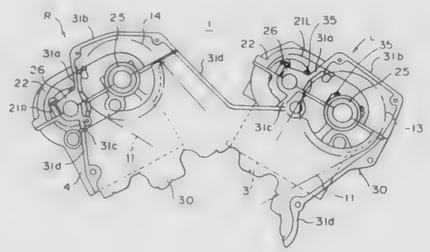
DOUBLE OVERHEAD CAMSHAFT BEARING STRUCTURE

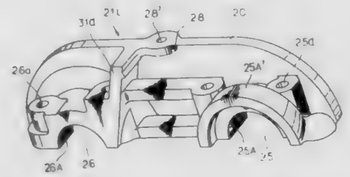
Kazuaki Nishimura, Hiroshima, and Sachiko Nakagawa, Ootake, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 2, 1990, Ser. No. 545,953
Claims priority, application Japan, Jun. 30, 1989, 1-168334
Int. Cl.[5] F01L *1/46;* **F02F** *1/24*
U.S. Cl. 123—90.27 **8 Claims**

1. A camshaft bearing structure for a double overhead camshaft engine having a pair of camshafts mounted in juxtaposition over a cylinder head of said double overhead camshaft engine and interconnected to each other by gearing, one of said pair of camshafts being coupled to a crankshaft of said double overhead camshaft engine by a timing belt, said camshaft bearing structure comprising:

a bearing member for retaining each of said pair of camshafts at one end thereof on a side where said one of said pair of camshafts is coupled to said crankshaft, said bearing member having two bearing axes in juxtaposition and being formed as an integral block;





a front cover attached to a front end of said double overhead camshaft engine so as to cover and hide said timing belt; and

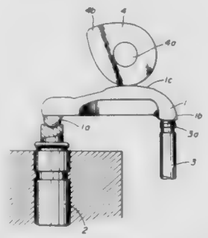
a sealing means disposed between said front end of said double overhead camshaft engine and said front cover so as to sealingly encircle said timing belt, said sealing means being at least in part formed integrally with a front surface of said bearing member.

5,052,352

MECHANICAL PART MADE OF CERAMICS

Masato Taniguchi; Juzo Yagi, and Hiroshi Takeda, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Division of Ser. No. 318,766, Mar. 3, 1989, abandoned. This application Nov. 15, 1990, Ser. No. 613,002
Claims priority, application Japan, Mar. 9, 1988, 63-55418
Int. Cl.[5] F01M *9/10*
U.S. Cl. 123—90.39 **1 Claim**



1. A ceramic rocker arm for an engine, comprising:

a ceramic contact surface for contact with a cam connected to a camshaft of an engine;

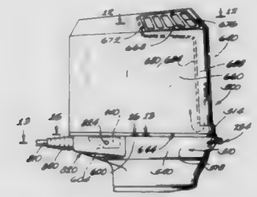
said contact surface having a profile with a roughness spacing which ranges from 5 to 100 μm and with more than half of its peaks smoothly rounded, whereby said ceramic contact surface is capable of retaining lubricant on said contact surface while providing a relatively large contact surface area.

5,052,353

MARINE PROPULSION DEVICE COWL ASSEMBLY

William D. Dunham, Waukegan; Steven D. Burmeister, Grayslake, both of Ill.; H. Norman Petersen, Kenosha, Wis.; John A. Pierman, Waukegan, Ill.; Charles T. Rogan, and Jerry A. Hladilek, both of Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 18, 1990, Ser. No. 526,499
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 P **26 Claims**



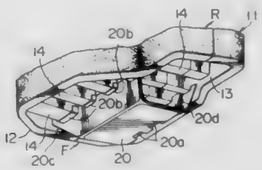
1. A marine propulsion device comprising a lower unit, a propeller shaft rotatably supported by said lower unit and adapted to support a propeller, an engine supported by said lower unit and drivingly connected to said propeller shaft, and a cowl assembly surrounding said engine and including a lower cover member having an upper end, an upper cover member having a lower end, a seal located between said upper end and said lower end, and interengaging means on said seal and on one of said upper and lower cover members for securing said seal to said one of said upper and lower cover members, said interengaging means including a recess located in said upper cover member, and a projection which is located on said seal and which extends into said recess.

5,052,354

HORIZONTALLY-OPPOSED MULTIPLE-CYLINDER ENGINE WITH A GAS BAFFLE

Masahito Kindaichi, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, JPX

Filed Oct. 18, 1990, Ser. No. 599,366
Claims priority, application Japan, Oct. 25, 1989, 1-279110
Int. Cl.[5] F02B *75/00*
U.S. Cl. 123—196 CP **4 Claims**



1. A horizontally-opposed multiple-cylinder engine provided with a cylinder block having two opposed banks respectively including cylinders in which pistons move to bottom dead center comprising:

a crank chamber defined between the two banks in said cylinder block and provided with an upper space;

an oil pan disposed below said crank chamber, in which a lubrication oil is stored; and

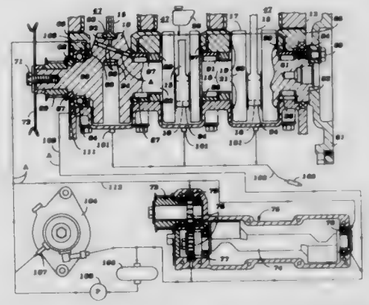
a gas baffle disposed between a lower portion of said crank chamber and the lubrication oil stored in said oil pan at a position where a gas flows downwardly from the upper space, said gas baffle being provided with an opening formed at an end portion of the gas baffle opposed to one cylinder which operates to force gas in the crank chamber to the upper space therein.

5,052,355

LUBRICATION SYSTEM FOR TWO CYCLE ENGINE

Hideaki Ito, and Masanori Miyamoto, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 15, 1990, Ser. No. 613,150
Claims priority, application Japan, Nov. 15, 1989, 1-296456
Int. Cl.[5] F01M *1/00*
U.S. Cl. 123—196 R **11 Claims**



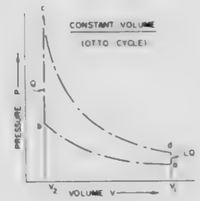
1. A lubricating system for a two cycle reciprocating engine including a crankshaft journaled for rotation within a crankcase, said crankshaft having a first journal portion journaled by an end wall of said crankcase and a second journal portion positioned within said crankcase and spaced from the end walls thereof, a first lubricating system for lubricating said first journaled portion, said first lubricating system comprising a recirculating system, and a second lubricating system for lubricating said second journal, said second lubricating system being a non recirculating system.

5,052,356

METHOD FOR CONTROL OF PRESSURE IN INTERNAL COMBUSTION ENGINES

Richard F. Blaser, Edgewater, Md., assignor to Sonex Research, Inc., Annapolis, Md.

Continuation of Ser. No. 712,460, Mar. 15, 1985, abandoned, which is a continuation of Ser. No. 230,677, Feb. 2, 1981, abandoned, which is a continuation of Ser. No. 14,479, Feb. 23, 1979, abandoned, which is a division of Ser. No. 733,962, Oct. 19, 1976, abandoned. This application Oct. 6, 1986, Ser. No. 915,970
Int. Cl.[5] F02D *35/02*
U.S. Cl. 123—279 **1 Claim**



1. A time dependent process for carrying out an energy conversion cycle involving converting chemical energy into thermal potential by utilizing the pressure waves generated during the rapid reaction of a combustible fuel in the presence of oxygen and using the thermal potential for producing useful

work in the combustion chamber of a piston type internal combustion engine operating over periodic cycles that each include an intake, compression, expansion (work producing) and exhaust event, comprising, for each cycle:

a) supplying air alone into a combustion chamber of the engine during the initial portion of the intake event;

b) adding fuel into the combustion chamber after the initial portion of the intake event but before ignition of the charge;

c) increasing the temperature of the total quantity of air and fuel admitted during the cycle by compressing at least the air during the compression event;

d) partially isolating a portion of the initially supplied air from substantially all of the later supplied fuel during the cycle by placing a portion of the initially supplied air in a reservoir chamber communicating with the combustion chamber through a narrow gap that permits transmittal of pressure gradients between the combustion and reservoir chamber, and maintaining the isolated portion of air in the reservoir chamber free from substantial contamination with fuel throughout the cycle, the ratio between the volume of the reservoir chamber and the combustion chamber at minimum volume being between 0.2 and 3.0, and the size of said gap measured across the narrowest dimension of the gap being between 0.05 and 0.2 in.;

e) igniting the fuel in the combustion chamber to initiate its rapid reaction near the end of the compression event to thereby generate a continuous series of pressure shock and expansion waves that traverse the combustion chamber and intersect the gap to produce a shock/expansion wave interaction between the combustion and reservoir chambers, and the gap;

f) repeatedly pumping air from the reservoir into the combustion chamber a plurality of times throughout the combustion reaction event by means of oscillating the shock-/expansion waves between the combustion chamber walls, the gap and the reservoir chamber walls;

g) permitting expansion of the combustion chamber during the expansion (work producing) event; and

h) exhausting the combustion chamber near the end of the expansion event.

5,052,357

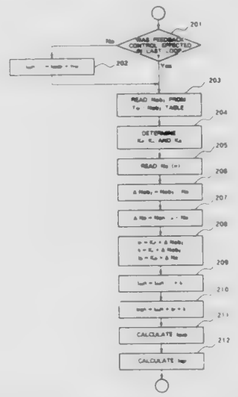
INTAKE AIR MOUNT CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Sachito Fujimoto, and Masakazu Kitamoto, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1990, Ser. No. 578,582
Claims priority, application Japan, Sep. 8, 1989, 1-106004[U]
Int. Cl.[5] F02M *3/00*
U.S. Cl. 123—339 **7 Claims**

1. In an intake air amount control system for an internal combustion engine having an intake pipe, the system including valve means for regulating an amount of intake air supplied through said intake pipe to said engine, control means for determining a difference between a desired idling rotational speed of said engine and an actual rotational speed of same and feedback-controlling said valve means by means of a control amount responsive to the determined difference such that the actual rotational speed becomes equal to the desired idling rotational speed, and learning means for learning a reference value of said control amount, by calculating an average value of values of said control amount applied during said feedback control,

the improvement comprising inhibiting means for inhibiting said learning of said reference value of said control amount when a difference between atmospheric pressure



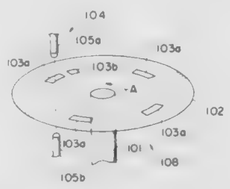
and absolute pressure within said intake pipe is smaller than a predetermined value.

5,052,358

CYLINDER RECOGNITION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1990, Ser. No. 585,469
Claims priority, application Japan, Sep. 29, 1989, 1-252080
Int. Cl.[5] F02P *7/06*
U.S. Cl. 123—414 **18 Claims**



1. A cylinder recognition apparatus for a multi-cylinder internal combustion engine comprising:

a signal generator for generating a single output signal in synchrony with the rotation of the engine, the output signal including a plurality of positional pulses each representative of prescribed rotational positions of a corresponding cylinder, and a cylinder recognition pulse at a location near a specific one of the positional pulses corresponding to a specific cylinder, the positional pulses being square pulses having substantially the same pulse width, each of the positional signals having a rising and a falling edge which correspond to a first and a second rotational position, respectively, of a corresponding cylinder, the cylinder recognition pulse being a square pulse having a rising edge and a falling edge, the cylinder recognition pulse having a pulse width different from that of the positional pulses; and

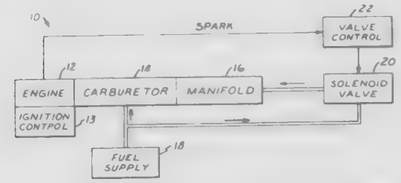
cylinder recognition means for discriminating the cylinder recognition pulse among the pulses contained in the output signal of the signal generator so as to recognize the specific positional pulse corresponding to the specific cylinder.

5,052,359

AUTOMATIC ENGINE FUEL ENRICHMENT AND IGNITION ADVANCE ANGLE CONTROL SYSTEM

Ralph G. Hardwick; William C. Eberline; Matthew L. Werner, all of Cass City, and James K. Miller, Ann Arbor, all of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jul. 26, 1989, Ser. No. 385,676
Int. Cl.[5] F02D *41/06, 43/00;* **F02P** *5/15*
U.S. Cl. 123—418 **31 Claims**



1. An automatic fuel enrichment system for cranking and warm-up of an internal combustion engine that includes a fuel supply, means responsive to application of electrical power for selectively feeding enrichment fuel from said supply to said engine, and means for controlling said power-responsive means; characterized in that said controlling means comprises:

means for measuring speed of said engine and supplying an electrical engine-speed signal as a function of engine r.p.m., and means responsive to engine speed for selectively applying electrical power to said power-responsive means, and thereby selectively energizing and de-energizing said power-responsive means, to feed enrichment fuel from said supply to said engine as a predetermined function of engine speed,

said speed-responsive means comprising means for comparing said speed signal to a first signal threshold corresponding to minimum cranking speed of said engine for energizing said power-responsive means and feeding enrichment fuel to said engine during cranking, and means for comparing said speed signal to a second signal threshold corresponding to idle speed of said engine for de-energizing said power-responsive means and terminating delivery of enrichment fuel during cranking.

18. An automatic fuel enrichment system for an internal combustion engine that includes means for varying ignition advance angle, a fuel supply, means responsive to application of electrical power for selectively feeding enrichment fuel from said supply to said engine, and means for controlling said power-responsive means; characterized in that said controlling means comprises:

means for supplying an electrical engine-speed signal as a function of engine r.p.m.,

means for comparing said speed signal to a first signal threshold corresponding to a first speed of said engine for energizing said power-responsive means and feeding enrichment fuel to said engine,

means for comparing said speed signal to a second signal threshold corresponding to a second speed of said engine greater than said first speed for de-energizing said power-responsive means and terminating delivery of enrichment fuel,

means coupled to said ignition advance angle varying means for comparing said speed signal to a third threshold automatically to increase advance angle at said ignition advance angle varying means when said speed signal decreases below said third threshold, and

means responsive to said speed signal for detecting an increase in said speed signal above a fourth threshold following a decrease below said third threshold, and means coupled to said advance varying means and responsive to said increase-detecting means for automatically decreasing ignition advance angle at said ignition advance angle varying means.

27. A system for controlling ignition angle of an internal combustion engine having means for controlling ignition angle in discrete angular increments, said system comprising:

means for sensing engine speed,

means responsive to said sensing means for comparing engine speed to a first threshold speed and to a second threshold speed greater than said first threshold speed,

means coupled to said comparing means for increasing angle of ignition advance by one of said angular increments upon each revolution of the engine when engine speed is less than said first threshold speed, and

means coupled to said comparing means for decreasing angle of ignition advance by one of said angular increments upon each revolution of the engine when engine speed is greater than said second threshold speed,

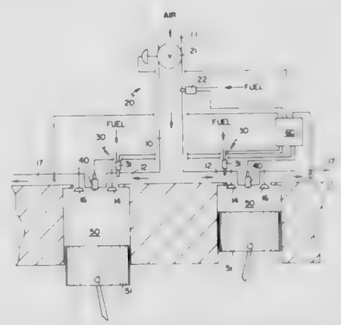
such that there is an engine speed deadband between said first and second speed thresholds within which ignition advance angle remains constant.

5,052,360

PROCESS AND APPARATUS FOR TIMED PORT INJECTION OF FUEL TO FORM A STRATIFIED CHARGE

William D. Ingle, III, and Allen D. Wells, both of Park Ridge, Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Dec. 21, 1989, Ser. No. 454,397
Int. Cl.[5] F02B *17/00, 7/08, 43/04;* **F02M** *21/04*
U.S. Cl. 123—430 **24 Claims**



1. A process for combusting gaseous fuel in an internal combustion engine including the steps of:

(a) injecting the gaseous fuel into an intake manifold at a position upstream of and adjacent to an intake valve;

(b) precisely controlling an injection pressure and timing of the gaseous fuel injection into the intake manifold for injecting the gaseous fuel relatively late during an intake phase of a combustion cycle of the internal combustion engine to form a stratified charge in only an upper portion of a combustion chamber with an enriched portion of the stratified charge localized near ignition means within the combustion chamber;

(c) igniting and combusting the enriched stratified charge within the combustion chamber; and

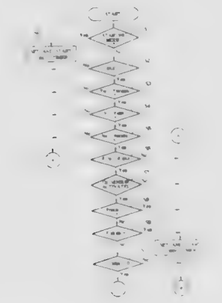
(d) exhausting combustion products from the combustion chamber.

5,052,361

METHOD OF DETECTING DETERIORATION OF AN EXHAUST GAS CONCENTRATION SENSOR FOR AN INTERNAL COMBUSTION ENGINE

Hiroshi Ono; Takashi Kiyomiya, and Masahiko Yakuwa, all of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Jun. 11, 1990, Ser. No. 535,842
Claims priority, application Japan, Jun. 15, 1989, 1-152848
Int. Cl.[5] F02D 41/14
U.S. Cl. 123—489 7 Claims



1. A method of detecting deterioration of an exhaust gas concentration sensor for an internal combustion engine, said exhaust gas concentration sensor detecting concentration of a component of exhaust gases emitted from said engine, said engine having control means responsive to an output from said exhaust gas concentration sensor for controlling an amount of fuel supplied to said engine, the method comprising the steps of:

(1) integrating a difference between said output from said exhaust gas concentration sensor and a predetermined reference value which is outside a range of said output which can be assumed during normal operation of said exhaust gas concentration sensor;

(2) comparing a thus obtained integral value with a predetermined deterioration-determining value; and

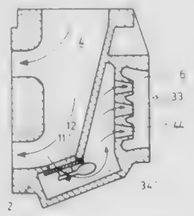
(3) determining from the result of said comparison whether said exhaust gas concentration sensor is deteriorated.

5,052,362

GAS-DYNAMIC PRESSURE-WAVE SUPERCHARGER WITH EXHAUST BYPASS

Ernst Jenny, Baden; Jbrahim El-Nashar, Kloten, and Dominique Stohr, Birmenstorf, all of Switzerland, assignors to Comprex AG, Baden, Switzerland

Filed Aug. 18, 1989, Ser. No. 395,503
Claims priority, application Switzerland, Aug. 23, 1988, 3123/88
Int. Cl.[5] F02B 33/00
U.S. Cl. 123—559.2 4 Claims



1. A gas-dynamic pressure-wave supercharger for the supercharging of an internal combustion engine with an exhaust blow-off valve, which pressure-wave supercharger has a rotor housing (1) with a cell rotor, in which the exhaust gas of the internal-combustion engine (9) compresses the combustion air required by the internal combustion engine, furthermore with an air housing (3), through which atmospheric air is taken in, and after compression in the cell rotor, is fed as charge air to the internal combustion engine, as well as with a gas housing (2), via which the exhaust gas coming from the internal combustion engine is directed into the cell rotor and, after its expansion in the cell rotor, is directed away via an exhaust outlet connection (25) into an exhaust manifold, an exhaust bypass (11) in the gas housing, with a medium-controlled gate (12), connecting the high-pressure gas inflow duct (4) to the low-pressure gas outflow duct (6), which gate (12) is in effective connection with a control device (13-20) actuated by a process pressure of the pressure-wave supercharger, wherein a waste gate ejector (33, 33', 33") for the exhaust gas to be blown off is arranged in the low-pressure gas outflow duct (6)

5,052,363

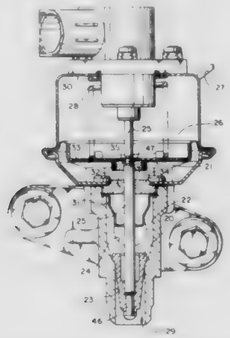
EGR CONTROL VALVE HAVING CERAMIC ELEMENTS

Ernest D. Stiles, St. Clair Shores, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 22, 1990, Ser. No. 600,649
Int. Cl.[5] F02M 25/06
U.S. Cl. 123—568 9 Claims

8. An EGR valve assembly for use in an EGR valve body having walls defining a chamber with an inlet and outlet, comprising:

(a) a stemmed reciprocable valve controlling flow into said chamber, the stem of said valve being constituted of an iron-based core impregnated at its outer surface with an ingredient compatible in sliding contact with ceramic and provides said stem with a surface hardness at room temperature of at least 90 R_c and a lubricating oxidized passivation layer at temperatures in excess of 600° C.; and



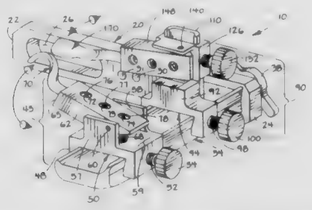
(b) a ceramic-based bushing for sealingly guiding the reciprocal movement of said stem.

5,052,364

ADJUSTABLE ARROW REST

Terry G. Martin, and George T. Newbold, both of Walla Walla, Wash., assignors to Martin Archery, Inc., Walla Walla, Wash.

Filed Aug. 15, 1990, Ser. No. 568,350
Int. Cl.[5] F41B 5/00
U.S. Cl. 124—44.5 14 Claims



1. An adjustable arrow rest apparatus for mounting to a handle of an archery bow comprising:

a generally laterally extending support bar;

a substantially upright support movably mounted to said support bar;

mounting means for securing the support bar and the upright support to an archery bow handle;

a side pressure absorbing unit to absorb side pressure exerted by an arrow in the direction of the bow handle, the side pressure absorbing unit being slidably mounted to the upright support for selective sliding elevational movement therealong; and

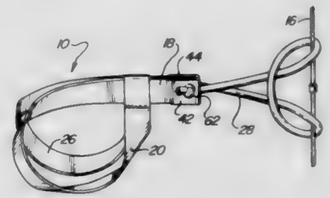
locking means for releasably setting the side pressure absorbing unit at a selected elevational position relative to the upright support.

5,052,365

ARCHERY TRAINING DEVICE

Richard F. Carella, 35572 Strathcona Dr., Mt. Clemens, Mich. 48043

Continuation-in-part of Ser. No. 58,395, Jun. 5, 1987, Pat. No. 4,909,232, and a continuation-in-part of Ser. No. 934,674, Nov. 25, 1986, Pat. No. 4,887,584, and a continuation-in-part of Ser. No. 891,863, Jul. 30, 1986, abandoned, and a continuation-in-part of Ser. No. 848,983, Apr. 7, 1986, abandoned. This application Nov. 6, 1989, Ser. No. 432,794
Int. Cl.[5] F41B 5/00; A63B 21/02
U.S. Cl. 124—90 21 Claims



1. An archery training device for teaching an archer proper upper body muscular control and positioning while shooting a bow including a bowstring, said archery training device comprising:

a string arm connector having an upper loop securable to the upper arm of the archer's string arm proximate the elbow and a lower loop securable to the forearm of the archer's string arm proximate the elbow, said upper and lower loops cooperating together upon pulling the string arm connector to prevent shifting thereof about the elbow of the string arm; and

a resilient force carrying means having one end attached to said string arm connector and an opposite end extending in a direction away from said string arm connector, said opposite end of said resilient force carrying means having means for attaching said resilient force carrying means to said bowstring such that when said archery training device is mounted to the archer's string arm by securing the upper loop to the upper portion of the string arm and the lower loop to the lower portion of the string arm and said resilient force carrying means is attached to said bowstring and said bowstring is drawn to the full draw position said resilient force carrying means is at a relaxed configuration prior to bowstring release and a stretched configuration after bowstring release, whereby the muscles associated with the upper body continue to work during and after release of the bowstring by the string fingers to restrain the archer's bow hand, string arm and shoulders from movement that would adversely affect shooting accuracy, such that said archery training device provides to said archer positional feedback based on such movement, said feedback relating to a co-planar alignment of said archer's bow hand, string arm and shoulders upon bowstring release.

5,052,366

WIRE SAW

Yasumasa Matsukura, Kashihara, Japan, assignor to Takatori Corporation and Takatori Hitech Co., Ltd., both of Nara, Japan

Filed Dec. 6, 1989, Ser. No. 446,764
Int. Cl.[5] B28D 1/08; B26D 1/547
U.S. Cl. 125—16.01 3 Claims

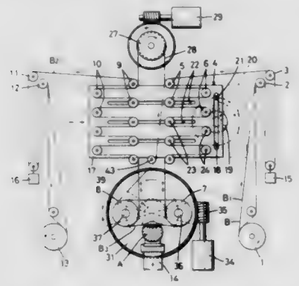
1. A wire saw for cutting a workpiece, said saw comprising:

a wire feed reel, and a supply of wire wrapped therearound;

a wire recovery reel;

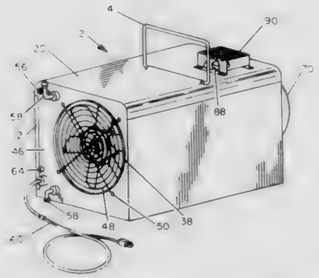
a pair of spaced apart rollers operatively disposed in the saw between said wire feed reel and said wire recovery reel,

each of said rollers having a series of grooves extending around the circumference thereof;
a revolution member supporting said grooved rollers, said revolution member rotatably supported in the saw about an axis of rotation thereof located between the axes of rotation of said grooved rollers;
revolving means operatively connected to said revolution member for revolving said revolution member about the axis of rotation thereof to wrap the wire a number of turns around said grooved rollers;
axial feed means for moving said wire and said grooved rollers relative to one another in the axial direction of said



grooved rollers as said rollers are revolved by said revolving means so as to form rows of wire extending between said rollers;
support means for supporting a workpiece adjacent the rows of wire;
continuous feed means drivingly connected to said wire for continuously gradually feeding said wire from said wire feed reel to said wire recovery reel and over said grooved rollers operatively disposed therebetween; and
reciprocating feed means drivingly connected to said wire for reciprocating the rows of wire between said grooved rollers as the wire is continuously gradually fed by said continuous feed means.

5,052,367
VENTILATING HEATER
Allan E. Beavers, 638 S. Surrey Ct., Grand Junction, Colo. 81401, and Robert A. Fulcher, 3329 N. Ridge Dr., Grand Junction, Colo. 81506
Filed Jun. 27, 1990, Ser. No. 545,349
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 B **15 Claims**



1. A portable ventilating heater comprising:
a light weight sheet metal housing of rectangular shape, said housing having a blower compartment as the front portion thereof, and adjacent heater compartment as the rear portion thereof, said blower compartment having air inlet in the front thereof and air outlet in the rear thereof which is in air passage communication with the heater compartment and said heater compartment having an air outlet in the rear thereof;
an axial air blower positioned in said blower compartment, said blower having a fan and electric motor to drive the fan and a generally cone shaped blower housing surrounding and supporting the motor and fan, the front end of said blower housing defining said air inlet and the rear end thereof defining said air outlet which is in air passage communication with said heater comprising;
a heat exchanger positioned in said heater compartment, said heat exchanger having an inlet at the base thereof to receive combustion fumes and an outlet at the top thereof to exhaust combustion fumes;
a burner box adapted to receive a burner unit, said burner being fueled by liquid propane gas, said burner box having an opening therein which is in combustion fume passage communication with the inlet of the heat exchanger and means for electrically igniting the burner unit;
means for supplying and controlling the flow of gas to the burner unit; and
means for operation of the air blower independent of the burner unit.

5,052,368
HEAT PRODUCING TEAR STRIP CONTAINER
George Bonar, G.P.O. Box 2064, New York, N.Y. 10116
Filed Jul. 13, 1990, Ser. No. 552,061
Int. Cl.[5] A47G *23/04*
U.S. Cl. 126—262 **4 Claims**

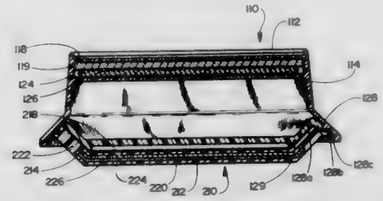


1. A container having a source of heat providing materials sealed integral with said container comprising:
a container body having a top removably held by scored lines defined within a periphery of a top portion of said container;
a tearing-strip encircling a bottom portion of said container;
a strip of an ignitable metal directly under said tearing-strip; and
a coated layer of a gel containing a mixture of a reducing agent and an oxidant in powder form directly beneath said ignitable metal strip, wherein said top portion has a key disposed thereon to unwind said tearing-strip and an anchored loop to remove said top portion by severing said scored lines.

5,052,369
HEAT RETAINING FOOD CONTAINER
Kendrick A. Johnson, 8242 Queen Ave. S., Bloomington, Minn. 55431
Continuation-in-part of Ser. No. 808,512, Dec. 13, 1985, abandoned. This application Sep. 16, 1987, Ser. No. 97,630
Int. Cl.[5] A47G *23/04*
U.S. Cl. 126—400 **15 Claims**

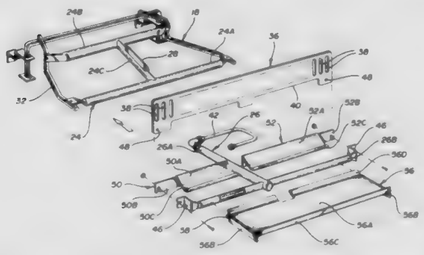
1. A heat retaining food container comprising:
(a) a wall means defining a container for food, said wall means being transparent to microwave energy, said wall means defining a first sealed chamber;
(b) at least one sealed second chamber within said first chamber; said second chamber being at least partially defined by flexible thin wall film, said wall means completely enclosing said second chamber; and

(c) a heat storing mass contained within said second chamber, said mass comprising a fusible material which may be heated using microwave radiation, said material having a fusion temperature of at least 175° F. and less than the degradation temperature of said wall means;



(d) said wall means and said heat storing mass being comprised of microwaveable materials, whereby said food container may be heated and placed adjacent to food for maintaining said food at an elevated temperature.

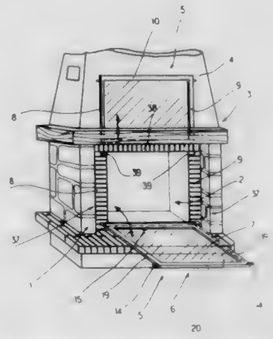
5,052,370
GAS BURNER ASSEMBLY INCLUDING EMBERIZING MATERIAL
Tadeusz Karabin, Huntington, Ind., assignor to Majco Building Specialties, L.P., Huntington, Ind.
Filed Mar. 12, 1991, Ser. No. 668,031
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—512 **18 Claims**



1. An assembly for enhancing the aesthetics of a gas fireplace comprising:
an elongated burner tube including a plurality of discharge ports;
a tray having a rear end and a front end, the rear end of said tray including a rear wall adjoining one side of said burner tube, said tray supporting a plurality of lava rocks; and
a support independently of said tray adjoining the opposite side of said burner tube, said support including an inclined surface adapted for supporting mineral wool or the like, the discharge ports of said burner tube being oriented generally towards the inclined surface of said support.

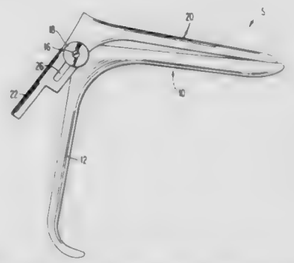
5,052,371
SASH DOOR FOR A CLOSED FIREPLACE
Richard Robert, Thann, France, assignor to Fondis, S.A., Thann, France
Filed Oct. 24, 1988, Ser. No. 261,294
Claims priority, application France, Oct. 23, 1987, 87 14885; Mar. 25, 1988, 88 04146
Int. Cl.[5] F23M *7/00*
U.S. Cl. 126—547 **20 Claims**

1. An improved guillotine-type door for enclosures, comprising:
a substantially planar door member;
at least one element projecting laterally outwardly from an upper peripheral portion of said door member;
at least one element projecting laterally outwardly from a lower peripheral portion of said door member;
vertically disposed guide means fixedly provided upon said enclosure for slidably guiding said at least one upper element of said door member and said at least one lower element of said door member as said door member is moved vertically between a first upper position at which said door member uncovers said enclosure so as to render said enclosure open, and a second lower position at which said door member covers said enclosure so as to render said enclosure closed; and



means defined within said vertically disposed guide means for releasably engaging said at least one upper transverse element of said door member when said door member is disposed at said second lower position so as to permit said door member to pivot about a horizontal axis defined by means of said at least one lower transverse element of said door member,
whereby a door member operational in two different vertically reciprocable and horizontally pivotable modes is provided for said enclosure.

5,052,372
VAGINAL SPECULUM HAVING A UNIQUE SINGLE CONTROL
Jerome J. Shapiro, Rte. 1, Box 302, Goldvein, Va. 22720
Continuation of Ser. No. 179,482, Apr. 5, 1988, abandoned. This application Sep. 25, 1989, Ser. No. 411,270
Int. Cl.[5] A61B *1/32*
U.S. Cl. 128—17 **8 Claims**

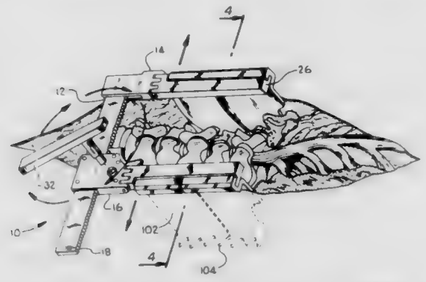


1. A vaginal speculum comprising an upper blade means and a lower blade means adapted for insertion into the vagina and having respective depending rear handles to enable holding and manipulation of the upper and lower blade means by a physician, a rear portion of said lower blade means having a pair of hinge pins respectively projecting outwardly from opposite right-hand and left-hand sides thereof and received in corresponding slots in opposite sides of the handle of said

upper blade means such that the handle of said upper blade means may pivot on said hinge pins to adjust the angulation of said upper and lower blade means and may slide along said hinge pins to adjust the aperture of said upper and lower blade means, and a covering nut locking means axially threaded to one of said hinge pins for bearing against the handle of said upper blade means to lock said upper and lower blade means relative to each other simultaneously at the adjusted angulation and aperture

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5,052,373
SPINAL RETRACTOR
Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291
Continuation of Ser. No. 225,922, Jul. 29, 1988, abandoned. This application Apr. 10, 1990, Ser. No. 506,779
Int. Cl.[5] A01B *17/02*
U.S. Cl. 128—20 **11 Claims**



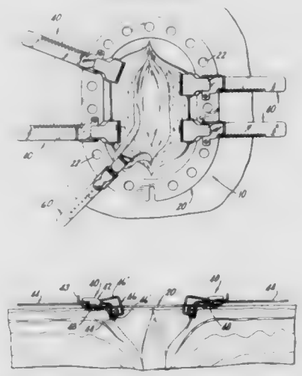
1. A surgical retractor comprising: a spine member, said spine member having a pair of arms movably attached substantially perpendicular to said spine member parallel to one another, both of said arms having a blade aligning means adapted for aligning separable blades, said separable blades having a top, slot-defining portion with a first thickness, said blade aligning means comprising a narrowed portion in the shape of a depressed cut out segment at least substantially the thickness of said first thickness of said top, slot-defining portion of said blades along substantially the length of said arms along the outer portion of said arms.

5,052,374
HERNIA RETRACTOR
Manuel Alvarez-Jacinto, 701 NW. 57 Ave., Suite 350, Miami, Fla. 33126
Filed Aug. 6, 1990, Ser. No. 563,577
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **6 Claims**

1. A retractor used in hernia surgery for separating body parts and tissues from the area being operated on, comprising:

A. flat frame means having substantially an elliptical shape and including a plurality of through openings around said flat frame means;

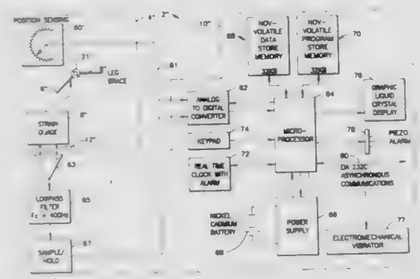
B. at least one gripping instrument means for effectively holding said tissues including gripping means and first mounting means removably and pivotably mounted through one of said openings in said frame means so that said gripping instrument means can be positioned in any desired angle for pulling said tissues away from the area being operated on and said gripping means further including upper and lower jaw means that are urged towards each other by cooperatively biased spring means, and said



gripping means being slidably and adjustably inserted through said first mounting means.

5,052,375
INSTRUMENTED ORTHOPEDIC RESTRAINING DEVICE AND METHOD OF USE
John G. Stark, 19390 Walden Trail, Deephaven, Minn. 55391; Richard G. Lund, Crystal, and Cecil H. Nelson, Chanhassen, both of Minn., assignors to John G. Stark, Deephaven, Minn.
Filed Feb. 21, 1990, Ser. No. 483,139
Int. Cl.[5] A61H *1/02*
U.S. Cl. 128—25 R **35 Claims**





1. A personal orthopedic restraining device for use to restrain flexibly connected body portions of an individual, said personal orthopedic restraining device comprising:

(a) an ambulatory housing including first and second distal end portions, said respective end portions being configured to receive respective flexibly connected body portions of the individual, said housing further including restraining means for restraining movement of said first and second distal end portions relative to one another, whereby movement of respective body portions relative to one another can be restrained by said housing;

(b) stress sensing means for sensing stress on said restraining means and for providing outputs representative of the sensed stress, said stress sensing means being attached to said restraining means; and

(c) control means including indicating means for indicating sensed stress based upon outputs from said stress sensing means, said control means being interconnected with said stress sensing means for receiving outputs from said stress sensing means, said control means further including programmed processing means for processing outputs from said stress sensing means in a previously programmed routine and memory means for retaining processed data respecting outputs from said stress sensing means, said programmed processing means being interconnected with said stress sensing means for receiving outputs from said stress sensing means and said memory means being interconnected with said programmed processing means for receiving data from said programmed processing means respecting outputs from said stress sensing means, said programmed processing means having the capability of retrieving said retained data for further processing subsequent to receipt and retention by said memory means, wherein said personal orthopedic restraining device is an ambulatory appliance which can be worn by the individual to prevent specific movements of respective body portions restrained thereby relative to one another, and wherein stress on said restraining means can be monitored with said indicating means.

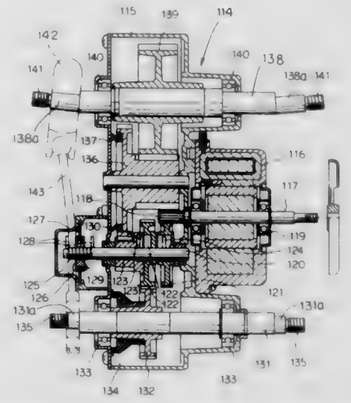
33. A personal orthopedic restraining device for use to restrain flexibly connected body portions of an individual, said person orthopedic restraining device comprising:

(a) an ambulatory housing including first and second distal end portions, said respective end portions being configured to receive respective flexibly connected body portions of the individual, said housing further including restraining means including an electromechanical hinge having brake means for restraining pivotal movement of said first and second distal end portions relative to one another, wherein the electromechanical hinge pivotally interconnects the respective first and second end portions, whereby movement of respective body portions relative to one another can be restrained by said housing;

(b) stress sensing means for sensing stress on said restraining means and for providing outputs representative of the sensed stress, said stress sensing means including at least one stress sensing device attached to said housing; and

(c) control means including indication means for indication means for indicating sensed stress based upon outputs from said stress sensing means, said control means being interconnected with said stress sensing means for receiving outputs from said stress sensing means, wherein said personal orthopedic restraining device is an ambulatory appliance which can be worn by the individual to prevent specific movements of respective body portions restrained thereby relative to one another, and wherein stress on said restraining means can be monitored with said indicating means.

5,052,376
DRIVE SECTION FOR AUTOMATIC MASSAGING APPARATUS
Yoshikiyo Yamasaki, Osaka, Japan, assignor to Kabushiki Kaisha Fuji Iryoki and Kabushiki Kaisha Japan Health, both of Osaka, Japan
Filed Sep. 15, 1989, Ser. No. 407,893
Int. Cl.[5] A61H *7/00*
U.S. Cl. 128—52 **9 Claims**



1. In a chair-type massaging apparatus including a back rest portion, a vertically extending and reversibly rotatable screw shaft arranged in said back rest portion, a massaging mechanism threadedly engaged with said screw shaft and supported for up and down vertical movement along said back rest portion, said massaging mechanism including a pair of massaging rollers, the improvement comprising:

a drive mechanism arranged in said massaging mechanism for driving said rollers, said drive mechanism including a reversible drive motor, an axially movably supported drive shaft having opposite ends which are rotatably supported in said massaging mechanism, said drive shaft being reversibly rotatably driven by said drive motor, two substantially parallel output shafts, first and second gear trains respectively drivingly connecting said output shafts to said drive shaft for rotation therewith about respective rotational axes, each of said gear trains including a drive gear, said output shafts having hubs provided at opposite ends thereof which are radially eccentric relative to respective said rotational axes of said output shafts, said hubs of one of said output shafts being oppositely angularly inclined relative to said rotational axis of said one output shaft;

clutch means for selectively engaging said drive gears with said drive shaft for rotation therewith; and

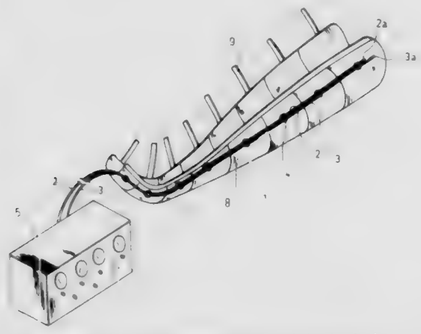
linkage means for linking each of said rollers with a respective said hub of each said output shaft, said linkage means including a connecting member and a connecting rod associated with each said roller, means for defining a ball and socket joint between said connecting member and said connecting rod, said connecting member being rotatably supported on one said hub of said one output shaft, said connecting rod being rotatably supported on one said hub of the other said output shaft, an arm for supporting each said roller cantilevered from the associated said connecting member, said arm having a fixed end connected to said connecting member and a free end which mounts said roller, said one output shaft being interposed between said fixed end of said arm and said ball and socket joint.

5,052,377

APPARATUS FOR MASSAGING THE BODY BY CYCLIC PRESSURE, AND CONSTITUENT MEANS

Jean Frajdenrajch, 28 rue Saint-Rome, 31000 Toulouse, France

Filed Jun. 1, 1989, Ser. No. 360,092
Int. Cl.[5] A61H *9/00*
U.S. Cl. 128—64 **10 Claims**



1. An apparatus for massaging parts of the body by cyclic pressure, comprising in combination:

at least one treatment accessory (**1**) comprising inflatable juxtaposed cells (**8**) arranged to be disposed in contact with the part of the body to be massaged,

a source of compressed air (**19**, **20**) connected to two pneumatic lines comprising an inflating line (**23**) and a control line (**24**), said inflating line having a first pressure reducer (**25**) for providing an inflating pressure Pg and said control line having a second pressure reducer (**29**) for providing a control pressure Pc such that Pc<Pg,

a control unit (**32**) for operating solenoid valves (**26**, **30**) arranged in said inflating line (**23**) and said control line (**24**) in such a manner as to cyclically control the opening and the closing of said solenoid valves,

an inflating conduit (**2**) connected to said pneumatic inflating line (**23**) and associated with said treatment accessory (**1**) and extending along and in proximity to said inflatable cells (**8**),

a control conduit (**3**) connected to said pneumatic control line (**24**) and associated with said treatment accessory (**1**) and extending along said accessory and said inflating conduit and in proximity thereto,

a plurality of distributors (**4**) interposed in said inflating conduit (**2**) adjacent said inflatable cells (**8**) and connected to said control conduit for receiving the control pressure (Pc), each distributor being associated with one cell and comprising:

an upstream orifice (**11***a*) connected on its upstream side to the inflating conduit (**2**),

a downstream orifice (**12***a*) connected on its downstream side to said inflating orifice,

an inflating orifice (**13***a*) connected to said inflatable cell and communicating with the upstream orifice (**11***a*), and

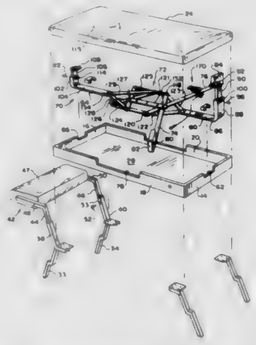
a closure membrane (**17**) subject on one side thereof to the local pressure of the inflating fluid and on the other side to the pressure of the control fluid, said membrane being arranged to open communication between said downstream orifice (**12***a*) and said upstream and inflating orifices (**11***a*, **13***a*) when the local pressure of the inflating fluid becomes greater than K times the pressure of the control fluid (Pc), wherein K is a multiplier coefficient which is a function of the geometry of said distributor, in order to permit the downstream passage of inflating fluid or to isolate the downstream orifice (**12***a*) with respect to the upstream orifice and the inflating orifice.

5,052,378

PORTABLE TRACTION APPARATUS

Ralph M. Chitwood, Kalispell, Mont., assignor to Glacier Cross, Inc., Whitefish, Mont.

Filed Nov. 3, 1989, Ser. No. 431,603
Int. Cl.[5] A61F *5/00, 5/04;* **A61H** *1/02*
U.S. Cl. 128—71 **76 Claims**



1. A portable traction apparatus comprising:

a table having an upper or head end and a lower or foot end and including a generally rectangular panel adapted to be placed in a horizontal position;

traction exerting mechanism mounted to the table and including an extension linkage assembly fixed to the table and including articulated pivotally interconnected links, an elongate upper end member connected at an inner end to said linkage assembly and having an outer end extending outwardly of said upper or head end of said table, an elongate lower end member having an inner end connected to said linkage assembly and an outer end extending outwardly of said lower or foot end of said table and, first and second lever arms pivotally connected to and forming part of said linkage assembly, each lever arm having an outer end extending outwardly from one side of said table and arm engaging means at the outer end of each lever arm; and

said lever arms being movable from and to a nontraction exerting position near said upper or head end of said table where said elongate end members are in a retracted position within the table and a second position toward said lower or foot end of said table where said extension linkage assembly is extended by the movement of said lever arms so as to extend said elongate end members to which body engaging means can be attached for applying traction to a user/patient lying on the table;

said lever arms with said arm engaging means allowing said user/patient to control the amount of traction force applied by the user/patient's forearm or elbow against the arm engaging means intermittently or continuously.

5,052,379

COMBINATION BRACE AND WEARABLE EXERCISE APPARATUS FOR BODY JOINTS

James F. Airy, and Thomas D. Kadavy, both of Bellevue, Wash., assignors to Soma Dynamics Corporation, Bellevue, Wash.

Filed Apr. 27, 1989, Ser. No. 345,035
Int. Cl.[5] A61F *3/00, 5/00*
U.S. Cl. 128—80 C **38 Claims**

1. An adjustable combination brace and wearable exercise apparatus to selectively render a body joint immovable, to control the movement of the body joint through a desired range of motion, and to exercise the muscles associated with the body joint as the body joint is moved through the controlled range of motion, comprising:

a) a first pivot arm;

b) first means to operably connect the first pivot arm to a first limb of a body joint;

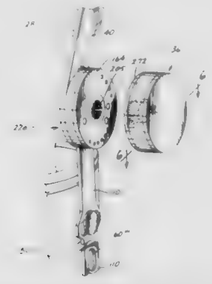
c) a second pivot arm;

d) second means to operably connect the second pivot arm to a second limb of the body joint; and,

e) a pivot joint assembly, comprising:

(i) first means pivotally interconnecting the first and second pivot arms about a pivot axis generally coinciding with the anatomical pivot axis of the associated body joint;

(ii) second means selectively controlling the permissible range of angular motion between the first and second



pivot arms from substantially no relative angular motion to relative angular motion sufficient to permit the body joint to move between a substantially fully flexed position and a substantially fully extended position; and,

(iii) third means for operably fastening replaceable resistance means thereto to impose a desired level of resistance to the relative rotation of the first and second pivot arms in either or both relative rotational directions about the pivot axis of the pivot joint assembly and without requiring disassembly of the pivot joint assembly or replaceable resistance means to releasably engage or disengage the resistance means with the pivot joint assembly.

5,052,380

COLORED ORTHOPEDIC RESINS AND ORTHOPEDIC CASTING MATERIALS INCORPORATING SAME

Charles C. Polta, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 7, 1989, Ser. No. 376,565
Int. Cl.[5] A61F *13/04;* **A61L** *15/10, 15/14*
U.S. Cl. 128—90 **15 Claims**

1. A colored orthopedic casting material, comprising:

a flexible sheet; and

a water curable resin coated onto said flexible sheet, said resin comprising an isocyanate functional, polyurethane prepolymer, said prepolymer being a liquid formed by the reaction of a polyol with an excess of a polyisocyanate, at least a portion of said polyol comprising a chromophore-containing polyol which becomes covalently bound into said prepolymer, said chromophore-containing polyol imparting a desired color to said resin-coated sheet;

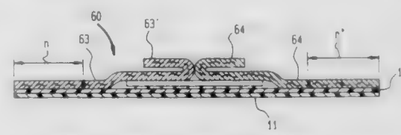
wherein said colored resin-coated sheet is stored in a moisture-free pouch until its desired usage, and wherein said colored resin-coated sheet is storage stable prior to such usage.

5,052,381

ADHESIVE WOUND DRESSING AND PERFORATED SHIELD

Eugene C. Gilbert, Brecksville, and William N. Schenk, Peninsula, both of Ohio, assignors to The B.F. Goodrich Company, Brecksville, Ohio

Filed Mar. 19, 1990, Ser. No. 495,664
Int. Cl.[5] A61F *13/00, 15/00;* **A61L** *15/00*
U.S. Cl. 128—155 **27 Claims**



1. An adhesive wound dressing comprising:

an elastomeric film having a biocompatible adhesive uniformly coated on at least a portion of the front surface thereof in an amount sufficient to secure said dressing to an injured body, said dressing having opposed first and second side-margins at first and second side-edges of said film; and,

first and second release sheets which together completely cover said adhesive, each unit area of said release sheets having the same numerically quantifiable attachment to said adhesive, said attachment being measured by the peel strength of each release sheet;

said first release sheet having a single fold therein which provides a fold-line in spaced-apart relation parallel to said first side-edge and extending the width of said first release sheet so as to define said first side-margin having a width wide enough in relation to the area of said dressing to permit said film to be tensioned, one folded portion of said first release sheet being adhesively attached at said first side-margin, the other folded portion providing a first gripping tab exteriorly folded upon and overlying the surface of said one folded portion;

said second release sheet lying substantially coextensively and planarly upon said front surface while releasably adhered thereto, one end of said second release sheet providing a second gripping tab overlying said first gripping tab, the remaining portion of said second release sheet being releasably adhered to said front surface;

said second release sheet having a single interrupting line of spaced apart incisions pierced therethrough, from the outer surface of said sheet to its inner surface in contact with said adhesive, said interrupting line being in spaced-apart relation to said second side-edge, and distally spaced apart from said fold-line, said interrupting line extending laterally over a major portion of the lateral dimension of said second side-margin;

whereby the act of pulling apart said gripping tabs facilely exposes said adhesive and allows said film to be deftly positionable aseptically upon said wound, and tensionable smoothly over the contours of the body, as a natural consequence of said act.

5,052,382

APPARATUS FOR THE CONTROLLED GENERATION AND ADMINISTRATION OF OZONE

Basil E. Wainwright, 80 Greenaleigh Rd., Yardley Wood, Birmingham, England B14 4JE

Filed Apr. 28, 1989, Ser. No. 344,649
Int. Cl.[5] A61M *15/02, 37/00*
U.S. Cl. 128—202.25 **9 Claims**

1. Apparatus for the controlled generation and administration of ozone comprising:

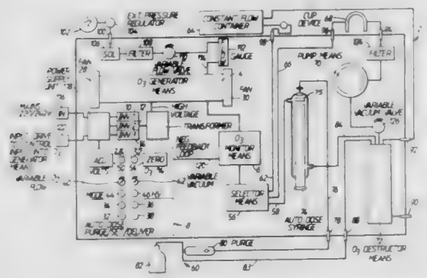
generator means for generating ozone gas;

dosage means for mixing a predetermined amount of ozone with oxygen resulting in a predetermined concentration;

monitor means for monitoring the generation and concentration of ozone;

output means for dispensing the mixture of ozone and oxygen; and

computer control means for delivering the mixture of ozone and oxygen for a predetermined period of time to the output means and for controlling the operation of at least one of the generator means, the monitor means and the dosage means;



wherein said monitor means further comprises a first and a second detector means, said first detector means for monitoring the production of ozone by the generator means and the second detector means for monitoring a portion of the mixture of ozone and oxygen after administration in order to determine the quantity of ozone consumed during administration.

5,052,383

DEVICE FOR SUPPLYING BREATHING GAS TO A DIVER

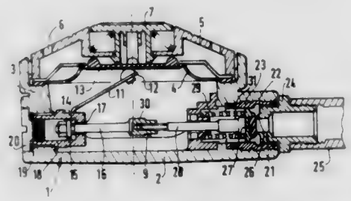
Jean-Marie Chabert, Valbonne, France, assignor to La Spirotechnique Industrielle et Commerciale, Carros, France

Filed Mar. 20, 1990, Ser. No. 496,344

Claims priority, application France, Mar. 21, 1989, 89 03696

Int. Cl.[5] A62B *7/04*

U.S. Cl. 128—204.26 **7 Claims**



1. An apparatus for supplying a breathing gas comprising: a housing defining an inner chamber and having a wall comprising a diaphragm exposed on one surface thereof to surrounding medium and on another surface thereof to the inner chamber, said housing additionally having first and second lateral walls; a pressure reducing valve in said inner chamber for injecting gas into the inner chamber, said pressure reducing valve comprising a valve body mounted on said first lateral wall of the housing; a slidable piston having a first rod extending outwardly of said valve body into said inner chamber, a valve member coupled and movable with said slidable piston, said valve member being enclosed by said valve body; a second rod threadably coupled to and longitudinally extending from said first rod and slidable therewith, said first and second rods remaining in fixed longitudinal alignment while sliding, said second rod having a distal end located closer to said second lateral wall than to said first lateral wall; and a lever connected between said distal end of said second rod and said diaphragm.

5,052,384

BREATHING APPARATUS

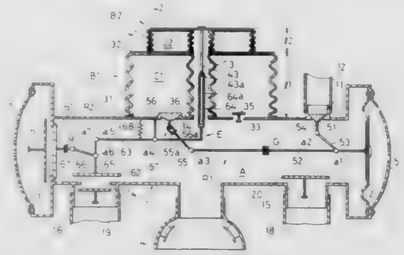
Tsuneyo Kaneko, Tokyo, Japan, assignor to Lederle (Japan), Ltd., Tokyo, Japan, a part interest

Filed Oct. 10, 1990, Ser. No. 594,142

Claims priority, application Japan, Oct. 11, 1989, 1-264626; May 31, 1990, 2-142589

Int. Cl.[5] A62B *7/00*

U.S. Cl. 128—205.14 **20 Claims**



16. A breathing apparatus having a fresh air supply circuit with a fresh air reservoir section in which fresh air is stored and an exhalation circulation circuit with an exhalation reservoir section in which exhaled air is stored, each of said fresh air supply circuit and said exhalation circulation circuit being connected to a mouth piece so as to be capable of re-employing the exhaled air as air for next inhalation, comprising:

a tubular main tube to which said mouth piece is mounted and to which said fresh air supply circuit and said exhalation circulation circuit are connected, and which is provided with an exhalation outlet for discharging the exhaled air into a surrounding circumstance;

an exhalation control valve for storing the exhaled air in said exhalation reservoir section by closing said exhalation outlet;

a biasing means for biasing said exhalation control valve in a direction of closing said exhalation control valve;

a first contraction means so constructed by a flexible member one end of which is fixed to said tubular main body as to be contractible and expandable, as to define an air control chamber inside the first contraction means, and as to expand by supplying a portion of the exhaled air from said mouth piece into the air control chamber;

a second contraction means so constructed by a flexible member one end of which is fixed to another end of said first contraction means as to be contractible and expandable and as to contain a predetermined amount of gas and as to contract as a pressure of said surrounding circumstance increases;

an operating rod so disposed as to be connected to another end of said second contraction means and as to be stroke-displaced in accordance with contraction or expansion of at least either one of said first contraction means or said second contraction means;

a link mechanism so disposed as to operatively associate said operating rod with said exhalation control valve so as to open said exhalation control valve in resistance to said biasing means when said operating rod is displaced in a predetermined direction in an amount which is equal to or larger than a predetermined value;

a diaphragm so disposed as to displace by a difference between a pressure within said tubular main body and a pressure of said surrounding circumstance;

an inhalation control valve so disposed as to be operatively associated with said diaphragm so as to control fresh air to said tubular main body from said fresh air supply circuit; and

a pressure release valve so disposed as to be operatively associated with said diaphragm, namely, eventually said inhalation control valve, so as to release the pressure within said air control chamber into said tubular main body when said inhalation control valve is opened.

5,052,385

FILTER CONTAINER FOR AN ABSORPTION FILTER AND A PARTICLE FILTER, FOR DIRECT OR INDIRECT CONNECTION TO A PROTECTIVE MASK

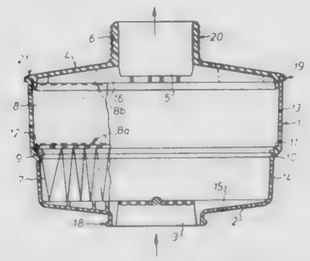
Per O. Sundström, Lidingö , Sweden, assignor to Sundström Safety AB, Lidingö , Sweden

Filed Oct. 27, 1987, Ser. No. 113,118

Claims priority, application Sweden, Oct. 30, 1986, 8604641

Int. Cl.[5] A62B *7/10*

U.S. Cl. 128—205.27 **13 Claims**



1. A filter container for direct or indirect connection to a protective mask, comprising a cup-shaped casing having a bottom wall bulging slightly outwardly toward an inhalation air intake form in said bottom wall, a cover closing said casing and having a top wall bulging slightly outwardly toward an inhalation air outtake formed in said top wall, a particle filter disposed within a bottom portion of said casing and adhesively sealed around its circumference to an inner sidewall of said casing, and an absorption filter mounted between said particle filter and said cover within an upper portion of said casing, said bottom wall having a large number of inwardly projecting, closely spaced, radially directed stiffening ribs formed thereon at small acute-angle intervals about its circumference, said stiffening ribs having inwardly facing longitudinal edges lying substantially in a single plane, and wherein said particle filter has upper and lower folds and said particle filter engages at lower folds thereof the inwardly facing longitudinal edges of at least some of said stiffening ribs and engages at upper folds thereof a member supporting a bottom of said absorption filter.

5,052,386

METHOD AND APPARATUS FOR REPLACING A PLACED ENDOTRACHEAL TUBE

Frank J. Fischer, Jr., Bloomington, Ind., assignor to Cook, Inc., Bloomington, Ind.

Filed Oct. 12, 1989, Ser. No. 420,550

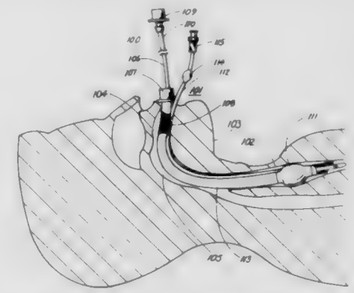
Int. Cl.[5] A61M *16/04*

U.S. Cl. 128—207.15 **23 Claims**

1. Apparatus for replacing an endotracheal tube placed in a patient, comprising:

tubular obturator means for ventilating said patient during replacement of said endotracheal tube, said obturator means being insertable into a passageway of said endotracheal tube and having distal and proximal ends, a passageway extending therethrough, an outside surface extending longitudinally therealong, and said outside surface of said obturator means being passable throughout the entire length of said passageway of said endotracheal tube so that the entirety of said obturator means may pass through said passageway of said endotracheal tube; and

removable connector means positioned about said proximal end and fixedly engaged with said outside surface of said tubular obturator means for engaging said outside surface



and connecting said tubular obturator means to a ventilator.

5,052,387

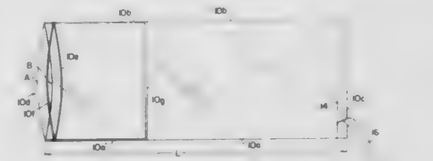
COLD PACK FOR WRAPPING INJURED LIMBS AND METHOD OF MAKING

Bernard S. Natali, 6 Laurel Dr., Wallingford, Conn. 06492

Filed Jun. 1, 1990, Ser. No. 532,210

Int. Cl.[5] A61F *7/10*

U.S. Cl. 128—402 **10 Claims**



1. A cold pack for wrapping an injured person's limb or other body part and comprising:

A generally rectangular bag formed from thermo-plastic film, said bag including front and rear panels joined along at least the two long sides, said panels being joined also along one short side, another short side opposite said one short side having complementary ribs integrally formed on inside surfaces of these panels to permit said another short side to be opened and closed, a weld line extending laterally across the front and rear panels between said two long sides to define an enclosed void between portions of said panels and to define an inner end of an ice compartment, an outer end of said ice compartment defined by said another short side, and at least one strip of adhesive on one of said panels adjacent said one short side.

5,052,388

METHOD AND APPARATUS FOR IMPLEMENTING ACTIVITY SENSING IN A PULSE GENERATOR

Joel E. Sivula, White Bear Lake, and Robert A. Betzold, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 22, 1989, Ser. No. 455,717

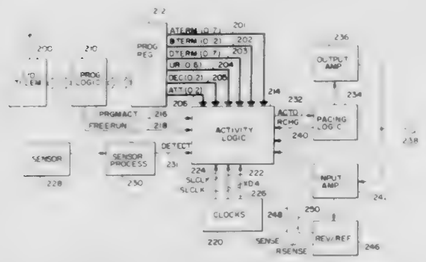
Int. Cl.[5] A61N *1/365*

U.S. Cl. 128—419 PG **14 Claims**

1. In a cardiac pacemaker comprising a pulse generator for generating stimulus pulses, sensor means for sensing physiologic demand for oxygenated blood and for generating a sensor output variable between first and second levels and sensor processing circuitry for processing said sensor output and for

controlling the rate of stimulus pulses generated by said pulse generator as a function of said sensor output, the improvement wherein:

said sensor processing means comprises means for independently selecting a first rate, a second rate and one of a plurality of predetermined sensor output levels between said first and second levels and means for defining a function relating the rate of stimulus pulses generated by said pulse generator to the output from said sensor, said stimulus pulse rate determined by said function increasing from said first rate when said sensor output is at said first level to said second rate when said sensor output is at said selected one of said plurality of predetermined sensor output levels.

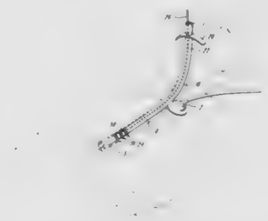


5,052,390

METHOD AND APPARATUS FOR DEFIBRILLATING THE HEART USING INTERNAL ESOPHAGEAL ELECTRODE AND EXTERNAL CHEST ELECTRODE

Carl E. Hewson, Old Ocean St., Marshfield, Mass. 02050

Filed Jul. 5, 1988, Ser. No. 214,778
Int. Cl.[5] A61N *1/39*
U.S. Cl. 128—419 D 8 Claims



1. A method of achieving atrial defibrillation of a patient's heart comprising the steps of

placing a first electrode having at least one electrical contact internally in the lower third of the patient's esophagus,

placing an electrode externally on the chest part way between the patient's left nipple and sternum and in alignment with the patient's nipples,

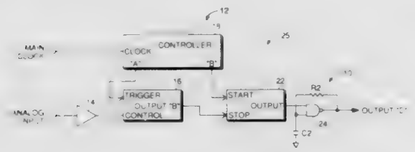
and impressing an electrical pulse for defibrillation between the internal and external electrodes in the range of 30–100 joules.

5,052,389

LOW-POWER A/D CONVERTER FOR AN IMPLANTABLE MEDICAL DEVICE AND METHOD OF USE

Donald A. Henry, Greensburg, Pa., assignor to Cook Pacemaker Corporation, Leechburg, Pa.

Filed Jul. 26, 1990, Ser. No. 558,616
Int. Cl.[5] A61N *1/36*
U.S. Cl. 128—419 PG 7 Claims



1. A low-power A/D converter for an implantable medical device operating with a main clock frequency, comprising:

high-frequency oscillator means for generating clock pulses at a predetermined frequency substantially higher than said main clock frequency;

oscillator gating means for enabling said oscillator means for a voltage-dependent variable time interval, said gating means including voltage-controlled monostable means for generating a gate control pulse having a pulse width corresponding to the value of an analog signal representative of a physiological parameter sensed by said implantable medical device; and

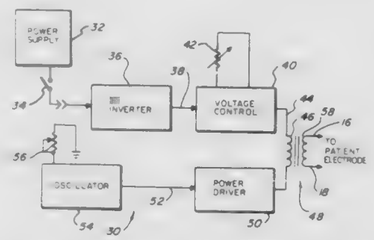
counter means coupled to said oscillator means for counting clock pulses generated during said variable time interval.

5,052,391

HIGH FREQUENCY HIGH INTENSITY TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR AND METHOD OF TREATMENT

Leon M. Silberstone, LaJolla, Calif., and Michael E. Halleck, Longmont, Colo., assignors to R.F.P., Inc., Aurora, Colo.

Filed Oct. 22, 1990, Ser. No. 601,150
Int. Cl.[5] A61N *1/34*
U.S. Cl. 128—422 20 Claims



1. A method for blocking the pain caused by a traumatic or medical procedure on a patient with the use of transcutaneous electrical nerve stimulation, comprising the steps of:

(a) generating a series of electrical pulses at a frequency in the range of 2.5 to 60 kilohertz;

(b) applying said generated electrical pulses to a desired area on a patient's body;

(c) electrically conducting the applied electrical pulses through the patient's body to stimulate selected nerves; and

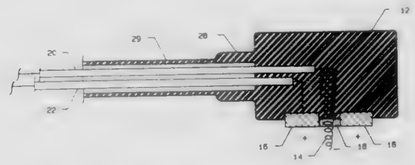
(d) performing the procedure.

5,052,392

CARDIAC SENSING LEAD

Michael P. Schullmeyer, Anoka; Lawrence M. Kane, Roseville, and James E. Revane, Minnitrista, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Feb. 14, 1990, Ser. No. 479,813
Int. Cl.[5] A61B *5/04*; A61N *1/04*
U.S. Cl. 128—642 6 Claims



1. A cardiac sensing lead, comprising:

an insulated housing having one surface thereof provided for disposition toward the heart of a patient;

an electrically conductive helical means mounted within said insulated housing and projecting outwardly from said one surface of said insulated housing for threaded engagement within said heart of said patient so as to mount said cardiac sensing lead upon said heart of said patient;

means defining a recess within said one surface of said insulated housing;

an electrically conductive mesh means mounted within said recess means of said insulated housing so as to be partially embedded within said insulated housing, so as to provide said insulated housing with a small cross-sectional profile, while being electrically insulated from said electrically conductive helical means and to project partially outwardly beyond said one surface of said insulated housing so as to be disposed in contact with a surface portion of said heart of said patient so as to promote growth of tissue from said heart of said patient so as to securely maintain said cardiac sensing lead mounted upon said heart of said patient;

a first electrical conductor electrically connected to said electrically conductive helical means; and

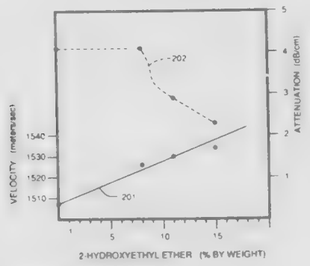
a sound electrical conductor electrically connected to said electrically conductive mesh means.

5,052,393

ULTRASOUND SYSTEM WITH IMPROVED COUPLING FLUID

Alan P. Greenstein, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 246,126, Sep. 16, 1988, abandoned. This application Nov. 13, 1989, Ser. No. 436,097
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 10 Claims



1. An apparatus comprising:

transmission electronics for providing electrical pulses;

receiver electronics for interpreting electrical signals;

a transducer for converting electrical pulses to ultrasound energy and ultrasound energy to electrical signals, said transducer being coupled to said transmission electronics for receiving said electrical pulses therefrom, said transducer being coupled to said receiver electronics for providing said electrical signals thereto;

a body supporting said transducer so that the translational position of said transducer can be controlled by moving said body;

enclosure means for enclosing said transducer, said enclosure means being rigidly coupled to said body so as to define a fluid-tight chamber including said transducer, said enclosure means including a window rigidly coupled to said body, said window being substantially transmitting of ultrasonic energy;

drive means for moving said transducer relative to said body so that ultrasound energy radiated by said transducer can be scanned relative to said body; and

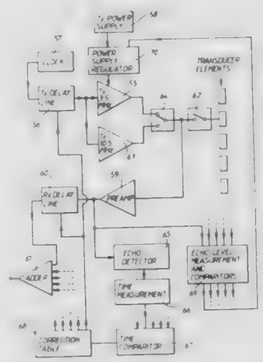
a fluid enclosed by said chamber, said fluid including a mixture 1-Butanol and Glycerol.

5,052,394

METHOD AND APPARATUS FOR ULTRASONIC BEAM COMPENSATION

David A. Carpenter, Northbridge, and George Kossoff, Killara, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

PCT No. PCT/AU88/00181, § 371 Date Mar. 28, 1989, § 102(e) Date Mar. 28, 1989, PCT Pub. No. WO88/09939, PCT Pub. Date Dec. 15, 1988
PCT Filed Jun. 10, 1988, Ser. No. 328,082
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.06 7 Claims



1. A method of generating a beam of ultrasonic energy for obtaining an echogram of an object over which there is at least one layer of a medium having different ultrasonic transmission characteristics from those of the object, said method comprising these steps of

(a) positioning an ultrasonic transducer for examination of the object, the ultrasonic transducer including an array of ultrasonic transducer elements and being adapted to generate beams of ultrasound at a fundamental frequency;

(b) operating the transducer in a higher resolution mode, in which at least one of the transducer elements is operated at a frequency which is higher than said fundamental frequency, to obtain information about the geometry of the medium or media interposed between the transducer and the object;

(c) calculating, using a knowledge of the ultrasonic transmission characteristics of the medium or media and the geometrical information obtained by step (b), the amplitude and phase correction to be applied to the transducer elements of the transducer to generate a required beam of

ultrasonic energy at said fundamental frequency within the object; and

(d) generating a beam of ultrasonic energy from the transducer by operating the transducer at said fundamental frequency and applying the corrections calculated by steps (c) to the phase amplitude of the electrical pulses applied to activate the elements of the array.

5,052,395

NON-INVASIVE ULTRASONIC PULSE DOPPLER CARDIAC OUTPUT MONITOR

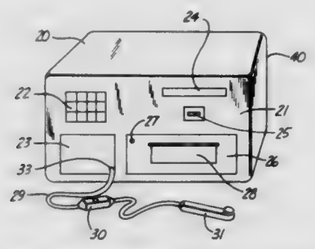
Thomas A. Burton; George F. Sedivy, both of Rochester, N.Y.; John R. Klepper; Mark A. Moehring, both of Seattle, Wash.; Richard F. Ferraro, Lake Forest, Wash., and Donald L. Davis, Seattle, Wash., assignors to Waters Instruments, Inc., Rochester, Minn.

PCT No. PCT/US88/04084, § 371 Date May 16, 1990, § 102(e) Date May 16, 1990, PCT Pub. No. WO89/04634, PCT Pub. Date Jun. 1, 1989

Continuation-in-part of Ser. No. 120,882, Nov. 16, 1987, abandoned. This PCT application Nov. 16, 1988, Ser. No. 499,292

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.09 **11 Claims**



1. A cardiac output measuring device for detecting blood flow in a patient's ascending aorta, comprising,

an ultrasonic transducer probe adapted to be received in the patient's suprasternal notch, including means for generating ultrasonic energy pulses directable toward the ascending aorta when the probe is positioned in the suprasternal notch, and receiving reflected frequency shifted energy pulses having a frequency shift related to the velocity of blood flow through the ascending aorta of a patient,

electronic means for separating the reflected frequency shifted signals from non-frequency shifted signals to form Doppler shift signals, and demodulating the Doppler shift signals into the normal audio frequency range,

computing means responsive to said Doppler-shift signals for computing the cardiac output of the patient,

means for selecting the depth within the aorta of the patient at which the velocity of blood flow is measured, said means comprising means for varying the time interval between the time at which a signal is transmitted and the time the reflected signal received by the ultrasonic transducer probe is selected for processing, the time intervals corresponding to varying distances from the probe and therefore also to linear positions within the ascending aorta,

pattern recognition means for testing a time series of received Doppler shift signals against predetermined signal quality characteristics and for accepting such signals as meet such characteristics, and

means responsive to said accepted signals for choosing the linear position within the ascending aorta corresponding to the greatest frequency shift.

5,052,396

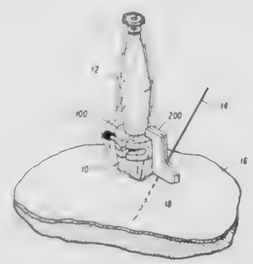
NEEDLE GUIDE FOR ULTRASOUND TRANSDUCERS

Victor J. Wedel, Rte. 3, Box 121, Washington, Iowa 52353, and Rick L. Pruter, Davenport, Iowa, assignors to Victor J. Wedel, Washington, Iowa

Continuation-in-part of Ser. No. 314,291, Feb. 22, 1989, Pat. No. 4,898,178, which is a continuation of Ser. No. 42,387, Apr. 24, 1987, abandoned. This application Nov. 8, 1989, Ser. No. 433,507

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.05 **7 Claims**



1. A needle guide apparatus comprising:

a needle guide body having means therein for receiving an ultrasound transducer;

said needle guide body having a vertical receiving hole therein;

said needle guide body having a needle retaining side thereon;

an insert having a vertical mating member thereon for insertion into said vertical receiving hole;

said insert being detachably disposed adjacent said needle retaining side, so that, a void having an exterior surface is formed with said needle receiving side providing a portion of said exterior surface of said void;

said insert further having a handle means thereon, said insert being further detachably disposed adjacent said needle retaining side, so that, said insert is detached by pulling said insert away from said needle retaining side, by applying force to said handle means, in a single direction that causes the void to immediately increase in size.

5,052,397

OSCILLOMETRIC BLOOD PRESSURE MONITOR EMPLOYING NON-UNIFORM PRESSURE DECREMENTING STEPS

Maynard Ramsey, III, Tampa; Richard Medero, Lutz, and Rush W. Hood, Jr., Tampa, all of Fla., assignors to Critikon, Inc., Tampa, Fla.

Continuation of Ser. No. 751,840, Jul. 5, 1985, abandoned. This application Dec. 4, 1986, Ser. No. 937,946

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—682 **1 Claim**

1. Automated sphygomomanometric apparatus comprising in combination:

(a) an inflatable and deflatable pressure cuff;

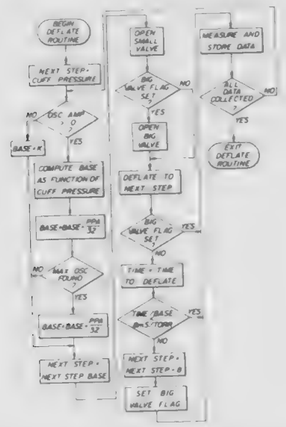
(b) inflating means operatively coupled to said cuff for selectively supplying a gaseous medium under pressure to said cuff to inflate and pressurize said cuff;

(c) cuff pressure sensing means coupled to said cuff for sensing cuff pressure including any oscillations therein;

(d) deflate valve means coupled to said cuff for selectably releasing said gaseous medium from said cuff in successive decrements; and

(e) control means interconnecting said inflating means and said deflate valve means with said cuff pressure sensing means for inflating and deflating said cuff while performing a blood pressure measurement on a subject;

characterized in that said deflate valve means comprises means for providing at least two different pressure dependent flow rates, one faster and one slower for any given cuff pressure, for releasing said gaseous medium from said cuff, and said control means comprises means for initiating release of said gaseous medium from said cuff using said deflate valve means that provides the slower flow rate and continuing to use said slower-flow-rate-providing deflate valve means until the deflation rate has slowed to a predetermined value whereupon said control means uses said



faster-flow-rate-providing deflate valve means; and further characterized in that said pressure decrementing steps are determined, at least in part, so as to satisfy the equation:

$$Decrementing\ Step = k_1 + k_2(CP)$$

where "CP"=cuff pressure and "k_1" and "k_2" are constants having respective values on the order of 4 and 0.05.

5,052,398

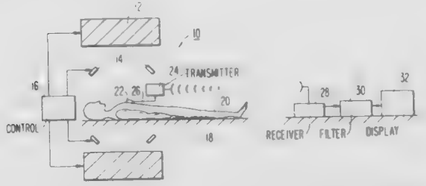
QRS FILTER FOR REAL TIME HEART IMAGING WITH ECG MONITORING IN THE MAGNETIC FIELD OF AN NMR IMAGING SYSTEM AND NMR IMAGING APPARATUS EMPLOYING SUCH FILTER

Joel R. Gober, San Pedro, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Jun. 29, 1990, Ser. No. 548,345

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **15 Claims**



1. A QRS signal filter for use in real time with an NMR imaging system with negligible delay between the image and the filtered signal, said QRS signal having a given frequency range, said filter comprising:

a low pass filter for attenuating those portions of the QRS signal applied as an input and having a frequency above said given range to produce a first output signal, said low pass filter including means for imposing a first given phase shift on said output signal relative to said input signal; and

a high pass filter responsive to said output signal applied as an input thereto for attenuating those portions of an input signal applied thereto below said given range to produce a second output signal, said high pass filter including means for imposing a second given phase shift relative to the phase shift of the first output signal, said low and high pass filters being arranged so that said first and second phase shifts substantially cancel one another such that there is negligible time delay between said QRS signal applied to the low pass filter and said second output signal.

5,052,399

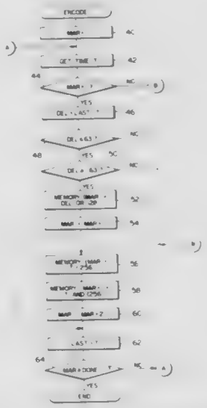
HOLTER FUNCTION DATA ENCODER FOR IMPLANTABLE DEVICE

Arthur L. Olive, Stacey, and William C. Lincoln, Coon Rapids, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Sep. 20, 1990, Ser. No. 585,509

Int. Cl.[5] A61B *5/0452*

U.S. Cl. 128—703 **19 Claims**



1. A method for encoding/decoding cardiac data for storage in a memory of a body implantable device, the method comprising the steps of:

providing a memory having addresses and storage cells each having a corresponding address;

detecting the cardiac electrical activity of the heart;

determining the time interval of successive cardiac cycles from the detected electrical activity of the heart;

encoding said cardiac data comprising the steps of:

computing the time difference between the time intervals of successive cardiac cycles;

determining if the time difference between the time intervals of successive cardiac cycles falls within a predetermined range;

storing the value of the time difference in a particular storage cell of said memory at a corresponding particular address if said time difference falls within said predetermined range and setting the value of the stored time difference to be negative; and

storing the time interval in two consecutive storage cells in said memory if said time difference does not fall within said predetermined range;

decoding the stored cardiac data comprising the steps of:

retrieving data in a storage cell at an initial address in said memory;

determining if the value of the data at said initial address is greater than zero;

retrieving said time interval at consecutive storage cells in said memory if said value of the data at said initial address is greater than zero; and

retrieving said time difference if said value of data at said initial address is not greater than zero and computing said time interval by adding a previously retrieved time interval to the time difference

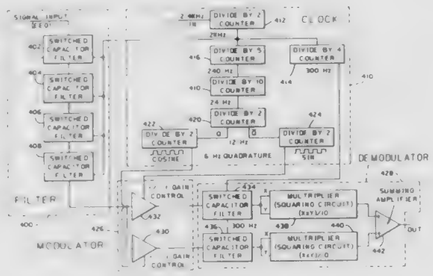
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5,052,400
METHOD AND APPARATUS FOR USING AN INHALATION SENSOR FOR MONITORING AND FOR INHALATION THERAPY
Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530
Continuation of Ser. No. 831,181, Feb. 20, 1986, abandoned. This application Oct. 25, 1988, Ser. No. 262,485
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—722 2 Claims



1. An apparatus for sensing the breathing of a human and for inhalation therapy, comprising:
a pressure capacitance transducer for developing pressure variations internally of the pressure capacitance transducer in response to the breathing of said human,
a supply of therapeutic gas,
said transducer having an inlet connected to said supply of therapeutic gas and an outlet adapted for connection to the respiratory system of said human for developing a negative pressure,
sensing means internally of said pressure capacitance transducer for sensing each time a negative pressure occurs internally of the pressure capacitance transducer corresponding to the inhalation of said human,
means responsive to said sensing means for developing individual electrical signals in response to the sensing of each said negative pressure,
timing means co-acting with said individual electrical signals for controlling predetermined periods of therapeutic gas flow through said pressure capacitance transducer to the respiratory system of said human, said gas flow being interrupted in the absence of said electrical signals,
filtering means connected between said gas supply and said pressure capacitance transducer for filtering said therapeutic gas,
said pressure capacitance transducer further comprising an eductor means for removing moisture from internally of said transducer,
said eductor means being a tube having an inlet connected to said transducer inlet and an outlet disposed internally of said transducer and substantially aligned and separated from said transducer outlet for creating suction, thereby removing any moisture within said transducer.

5,052,401
PRODUCT DETECTOR FOR A STEADY VISUAL EVOKED POTENTIAL STIMULATOR AND PRODUCT DETECTOR
Gary W. Sherwin, Yukon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 893,758, Aug. 6, 1986, Pat. No. 4,861,154. This application Mar. 22, 1989, Ser. No. 327,047
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—745 1 Claim



1. A product detector, comprising:
narrow band filter means for removing noise from evoked potentials produced by a patient at a predetermined frequency;
modulation means for detecting the evoked potentials at the predetermined frequency, said modulation means comprising a programmable gain control amplifier connected to said narrow band filter means; and
demodulation means for producing an amplitude of the evoked potentials at the predetermined frequency.

5,052,402
DISPOSABLE BIOPSY FORCEPS
Robert F. Bencini, Dracut, and Barry D. Weitzner, Chelmsford, both of Mass., assignors to C.R. Bard, Inc., Murray Hill, N.J.
Continuation of Ser. No. 304,367, Jan. 31, 1989, abandoned. This application Jan. 24, 1991, Ser. No. 646,477
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—751 22 Claims



10. Biopsy forceps comprising:
an elongate flexible tube having a proximal end and a distal end;

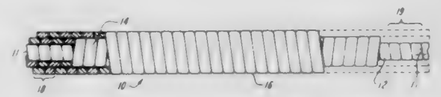
a V-shaped jaw structure having a pair of opposing biopsy jaws connected together by a hinge at one end;
means connecting the hinge to the distal tube end;
an actuator fork slidably with respect to the distal tube end, said fork having a pair of fingers, each of said fingers bearing against one of said biopsy jaws at a point distal of the hinge;
an operating mechanism connected to the tube proximal end; and
shaft means positioned within the tube and connecting the operating mechanism to the actuator fork so that the operating mechanism pushes the shaft mans through the tube towards the distal tube end causing the actuator fork fingers to bear against, and close, the biopsy jaws.

5,052,403
SELF-CONTAINED, SAFETY BLOOD COLLECTION SYSTEM
Terry M. Haber, El Toro; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.
Filed Dec. 29, 1989, Ser. No. 458,887
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—765 21 Claims



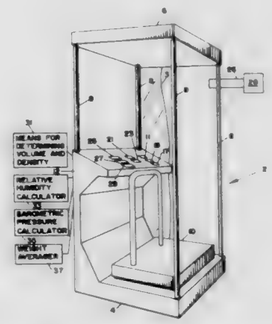
1. A fluid collection system for collecting a sample of a bodily fluid and comprising:
a fluid collection tube having distal and proximal ends and in which a vacuum is to be established so that the fluid sample is collected within said tube under the influence of suction;
stopper means located at the distal end of said fluid collection tube to seal said distal end;
a needle cannula to penetrate the tissue of a patient at a first end and to communicate fluidically with said fluid collection tube at the opposite end thereof;
rotatable knob means located at the proximal end of said fluid collection tube;
piston means located at a relatively distal position within said fluid collection tube between said stopper means and said rotatable knob means; and
linking means extending between said piston means and said rotatable knob means, such that a rotation of said knob means causes said linking means to be pulled axially through said fluid collection tube and said piston means to be relocated proximally through said tube for expulsing air therefrom and establishing a vacuum therein.

5,052,404
TORQUE TRANSMITTER
William S. Hodgson, Cohasset, Mass., assignor to The Micro-Spring Company, Inc., Norwell, Mass.
Continuation of Ser. No. 318,628, Mar. 2, 1989, abandoned. This application Aug. 17, 1990, Ser. No. 569,133
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 12 Claims



1. A torque transmitter including three coaxial helically wound springs, an inner spring, a center spring, and an outer spring, said springs having different inner and outer diameters and being positioned relative to each other such that said inner spring is surrounded by said center spring and said center spring is in turn surrounded by said outer spring, and said inner and said outer springs being wrapped in one direction and said center spring being wrapped in the opposite direction, said torque transmitter being characterized in that:
the inner generally circumferential surface of said center spring forms an interference fit with the outer generally circumferential surface of said inner spring; and,
the outer generally circumferential surface of said center spring forms an interference fit with the inner generally circumferential surface of said outer spring.

5,052,405
METHOD AND APPARATUS FOR MEASURING THE DENSITY OF AN OBJECT INCLUDING A LIVING BEING
J. Samuel Batchelder, Campbell Dr., Somers, N.Y. 10589
Filed Jul. 27, 1989, Ser. No. 387,287
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 30 Claims



1. A method of determining the volume of an object, the steps of said method including:
surrounding said object with a known gas,
weighing said object surrounded by said known gas and measuring the temperature of said known surrounding gas,
varying the temperature of said known surrounding gas to a first temperature,
measuring said first temperature and weighing said object at said first temperature,
varying said first temperature of said known surrounding gas to a second temperature,
measuring said second temperature and weighing said object at said second temperature,
determining the differences in weight of said object at least

at two of said different measured temperatures of said known surrounding gas, and

determining the volume of said object from said difference in weight of said object.

5,052,406

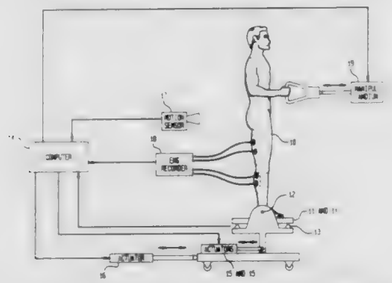
APPARATUS AND METHOD FOR MOVEMENT COORDINATION ANALYSIS

Lewis M. Nashner, Portland, Oreg., assignor to NeuroCom International, Inc., Clackamas, Oreg.

Continuation-in-part of Ser. No. 873,125, Jun. 11, 1986, Pat. No. 4,738,269, which is a continuation of Ser. No. 408,184, Aug. 16, 1982, abandoned. This application Jan. 27, 1987, Ser. No. 7,294

Int. Cl.[5] A61B *5/11*

U.S. Cl. 128—782 **7 Claims**



1. A method for selectively assessing in one body or limb part at a time a subject's ability to receive and correctly interpret somatosensory orientation information, such method comprising:

A. placing the subject on a plurality of independent support surfaces, each surface supporting a different body or limb part of the subject, and having the subject assume a position of equilibrium thereon;

B. configuring the support surfaces in such a way that each may move in functional relation to the subject's displacement from the assumed equilibrium position, and permitting all but one of such support surfaces thus to move;

C. recording the extent of spontaneous displacements of the subject from the assumed equilibrium position;

D successively repeating steps B and C in each case with a different support surface being the one that is not permitted to move, until all support surfaces have been selected in turn for exclusion from moving;

E. comparing the recorded spontaneous displacement for the support surface configurations generated in step B to each other; and

F. comparing, for each support surface configuration generated in step B, the recorded spontaneous displacements to a range of spontaneous displacements for normal individuals on a similar support surface configuration.

5,052,407

CARDIAC DEFIBRILLATION/CARDIOVERSION SPIRAL PATCH ELECTRODE

Robert G. Hauser, Long Lake; Ronald W. Heil, Roseville, and Robert C. Owens, Forest Lake, all of Minn., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation-in-part of Ser. No. 181,432, Apr. 14, 1988, abandoned. This application Apr. 10, 1989, Ser. No. 334,652

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—786 **17 Claims**

1. A cardiac defibrillation/cardioversion electrode lead device for implantation in the region of the human heart for connection to a defibrillation/cardioversion unit, said device comprising:

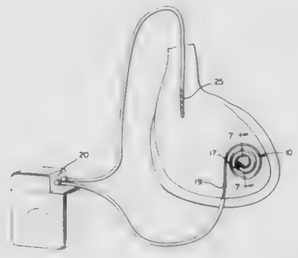
an elongated tubular body having a distal active region and a proximal lead region, said elongated tubular body being preformed to adopt a planar spiral configuration in its relaxed state;

a coil coextensive with and contained within said tubular body;

a conductive discharge surface extending along substantially the entire length of said active region of said tubular body, and occupying only a portion of the surface of said active region, said conductive discharge surface comprising at least one layer of conductive screen wrapped around the length of said active region of said tubular body;

an insulative surface coextensive with said active region on the remainder of the surface of said active region;

an insulated conductor means extending within said elongated tubular body having proximal and distal ends, said



distal end being connected to said conductive discharge surface;

connector means attached to the proximal end of said insulated conductor means for electrically connecting said insulated conductor means to said defibrillation/cardioversion unit; and

an elongated straightening means movable relative to said coil substantially along the entire length thereof for straightening said elongated tubular body for implanting said device proximate the heart, and so that when said straightening means is withdrawn from said coil, said tubular body adopts a planar spiral configuration with said conductive surface on one face thereof and said insulative surface on the opposite face thereof.

5,052,408

APPARATUS USING MICROWAVES FOR THERMOTHERAPY

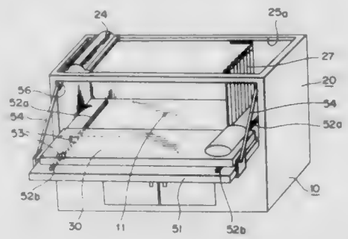
Haruo Takase, 20-16, 3-chome, Shimoochiai, Shinjuku-ku, Tokyo, Japan

Filed Jun. 26, 1989, Ser. No. 371,129

Claims priority, application Japan, Nov. 24, 1988, 63-152986[U]

Int. Cl.[5] A61N *5/02*

U.S. Cl. 128—804 **8 Claims**



1. An apparatus using microwaves for thermotherapy which comprises a base having a flat upper surface, a protective frame fixed on said base and defining inside a microwave irradiation region above said base, microwave irradiation means mounted in a horizontally movable state on at least one of said base and protective frame and adapted to irradiate microwaves toward at least a part of said microwave irradiation region, a treating bed for allowing a patient to lie down thereon, which is disposed movably on said base so as to slide in and out of said microwave irradiation region, and horizontally moving means interposed between said treating bed and base for horizontally moving said treating bed relative to said base.

5,052,409

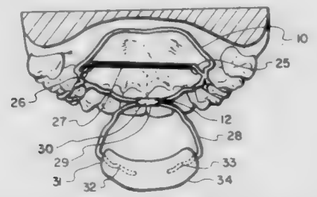
ORAL APPLIANCE FOR TONGUE THRUST CORRECTION

Harry W. Tepper, 535 Ocean Ave. #2B, Santa Monica, Calif. 90402

Division of Ser. No. 348,561, May 8, 1989, Pat. No. 4,986,283. This application Oct. 31, 1990, Ser. No. 608,979

Int. Cl.[5] A61C *5/14*

U.S. Cl. 128—859 **28 Claims**



1. An oral appliance for tongue thrust correction comprising a pair of thin wire filament loops pivotally coupled together for limited pivotal movement about a pivot axis, one loop forming a palatal portion including clasp means for anchoring the palatal portion to corresponding selected ones of the upper teeth, the other loop forming a lingual portion including bridge means for spanning the dorsum of the tongue, and spring means for urging the bridge means away from the palatal portion and against the dorsum wherein contact with the dorsum encourages the tongue to a position through the palatal and lingual portions and to seat on the rugae for maintaining proper proprioceptive sense.

5,052,410

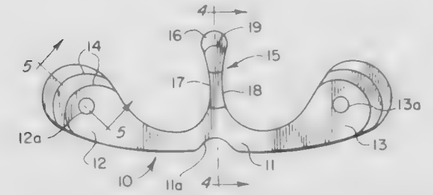
DEVICE FOR CONTROLLING EATING AND SMOKING HABITS

James M. Stubbs, 112 N. Lawrence St., Rockingham, N.C. 28379

Filed Oct. 24, 1990, Ser. No. 602,656

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—859 **3 Claims**



1. Apparatus for reducing the psychological need of excessive caloric intake, as well as the need for smoking tobacco, comprising a flexible resilient sheet member of substantially chemically inert non-absorbent material, said member having a central portion and a pair of side portions, said side portions having an exterior and an interior, said central portion being of narrow width and of a length to fit between the lower lip and the lower incisor teeth of a user, said side portions being integrally connected to said central portion and having an enlarged substantially teardrop configuration, said side portions adapted to fit between the cheeks and the molar teeth of the lower jaw of the user, and flexible resilient tab means integrally connected to said central portion and extending generally upwardly from the upper edge thereof when said central portion is positioned between the incisor teeth and lower lip of the user and being bendable rearwardly over the lower incisor teeth of the user, said central portion having upper and lower edges, the lower edges inclined upwardly intermediate the ends of said central portion and beneath the connection to said flexible tab means in order to avoid pressure on the user's frenum membrane, and said side portions having openings extending from said interior wall to said exterior wall of said teardrop configuration to facilitate the flow of saliva from the user's cheek duct through said side portions and into the mouth, whereby when said member is inserted into the mouth of the user said tab means may be manipulated both horizontally and vertically by the tongue of the user.

5,052,411

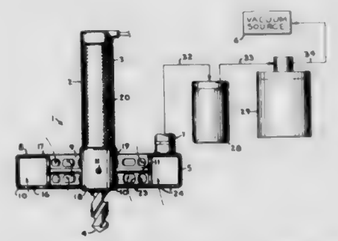
VACUUM BARRIER ATTACHMENT FOR MEDICAL EQUIPMENT

Arnold Schoolman, 1000 E. 50th St., Ste. 310, Kansas City, Mo. 64110

Continuation-in-part of Ser. No. 236,943, Aug. 26, 1988, abandoned. This application Jul. 12, 1990, Ser. No. 552,150

Int. Cl.[5] A61B *17/56, 17/16*

U.S. Cl. 128—863 **17 Claims**



15. A barrier attachment for use with a surgical drill having a drill bit rotatably mountable relative to a drill casing and a grasping region on the drill casing for an operator to grasp the drill during use, said barrier attachment comprising:

(a) an air flow directing and physical barrier removably mountable on the equipment casing between said tool and said grasping region so that said barrier is radially spaced from and encircles the equipment casing so as to allow a user to visually see between said barrier and said tool casing during use; said barrier having a ring including an inner surface facing said equipment casing and including a plurality of suction apertures therein;

(b) a vacuum source adapted to produce a vacuum during use;

(c) conduit means for flow communicating said vacuum source with said apertures in said barrier attachment;

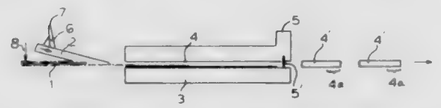
(d) filter means removably connected to said conduit means between said vacuum source and said barrier attachment; and

(e) attachment means for attaching said barrier attachment to the drill so that said primary barrier is secured to the drill casing between the drill bit and the grasping region; said attachment means including at least one radial spoke extending between said barrier and the surgical device during use and adapted to allow for relatively easy removal of said barrier attachment from the drill to allow for disposal of said barrier attachment and said filter means connected thereto.

5,052,412
MAKING OF SMOKING ARTICLES

John D. Green, Hampshire, and Philip J. Kinnard, Southampton, both of Great Britain, assignors to British-American Tobacco Company Limited, London, England

Continuation of Ser. No. 435,902, Oct. 22, 1982, abandoned.
This application Jun. 12, 1987, Ser. No. 62,361
Claims priority, application United Kingdom, Oct. 20, 1981, 8132620[U]
Int. Cl.[5] A24C *5/14, 5/18, 5/28*
U.S. Cl. 131—31 10 Claims

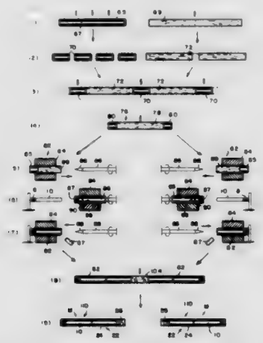


1. A method of making lengths of smoking-material rod wherein smoking material and wrapper-web material are each continuously fed to a rod maker, the web material is wrapped and seam-sealed about said smoking material to provide smoking-material rod, which is cut into uniform lengths, and liquid smoke-modifying agent is applied intermittently in synchronized relationship with said cutter to said smoking material and said wrapper web material during their feeding to the garniture of the rod maker so that, in each of the said lengths, the said agent is distributed over one end zone only, which zone is accounted for by a few puffs in the smoking of the rod length.

5,052,413
METHOD FOR MAKING A SMOKING ARTICLE AND COMPONENTS FOR USE THEREIN

Max N. Baker, Rural Hall, N.C.; Vernon B. Barnes, Clemmons, N.C.; Douglas C. Clark, Winston-Salem, N.C.; Jack F. Clearman, Blakely, Ga.; Gerhard Hensgen, Hamburg, Fed. Rep. of Germany; Michael D. Shannon, Lewisville, N.C.; Gary R. Shelar, Greensboro, N.C., and Alfred Schubert, Wentorf, Fed. Rep. of Germany, assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 19,826, Feb. 27, 1987, abandoned. This application Oct. 2, 1987, Ser. No. 104,202
Int. Cl.[5] A24C *5/14, 5/18, 5/28;* A24D *1/02*
U.S. Cl. 131—77 79 Claims

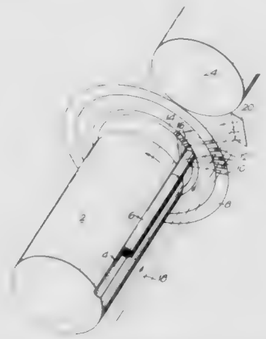


1. A method for making a smoking article, the method comprising:
providing an aerosol generating cartridge comprising a fuel element and an aerosol forming material physically separate from the fuel element;
providing a sleeve for receiving the aerosol generating cartridge; and
inserting the aerosol generating cartridge into the sleeve.

5,052,414
CIGARETTE PERFORATION APPARATUS AND METHOD

Alan M. Aindow; Michael J. Cahill, and John Dawson, all of Coventry, England, assignors to Molins plc, Milton Keynes, England

Filed Apr. 26, 1990, Ser. No. 514,554
Claims priority, application United Kingdom, Apr. 27, 1989, 8909630; Jun. 23, 1989, 9814497
Int. Cl.[5] A24C *1/38*
U.S. Cl. 131—281 50 Claims



1. A method of making perforations in cigarettes, comprising conveying cigarettes along a first arcuate path about an axis in a direction transverse to their lengths, directing a beam of laser radiation, and successively intercepting the beam with means movable with the cigarettes along a further arcuate path about said axis to cause the beam to be redirected along a plurality of second paths, said second paths intercepting said first path at positions spaced on said first path and from different directions, so that a cigarette receives circumferentially spaced perforations from the beams on said second paths as it is conveyed on said first path.

5,052,415
PROCESS FOR THE IMPREGNATION OF FIBERS OF A TOBACCO SMOKE FILTER WITH DICARBOXYLIC OR POLYCARBOXYLIC ACIDS OR ANHYDRIDES THEREOF

Paul-Georg Henning, Quickborn, and Gerald Schmekel, Elmshorn, both of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Fed. Rep. of Germany

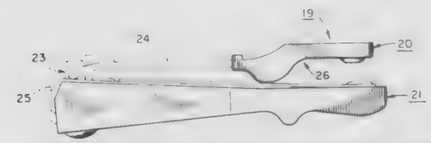
Filed May 24, 1989, Ser. No. 356,340
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1988, 3820089
Int. Cl.[5] A24D *3/14, 3/16*
U.S. Cl. 131—331 8 Claims

1. A process for the impregnation of fibers of a tobacco smoke filter with a dicarboxylic or polycarboxylic acid or anhydride thereof, which comprises;
applying a solution of a dicarboxylic or polycarboxylic acid anhydride in a volatile or physiologically acceptable organic solvent to the fibers, and exposing the fibers to an environment of high humidity.

5,052,416
CONTROL IMPROVING COMPONENTS FOR FINGERNAIL CLIPPERS

Eric Rommerdale, Brandon, Miss., assignor to The W.E. Bassett Company, Shelton, Conn.

Filed Sep. 27, 1989, Ser. No. 413,224
Int. Cl.[5] A45D *29/00*
U.S. Cl. 132—75.5 12 Claims



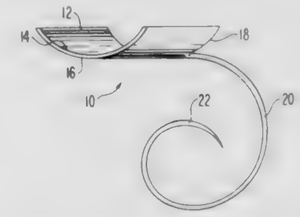
1. A control enhancing nail clipper constructed for substantially improving the handling characteristics and manipulation ease thereof by a user with reduced or impaired manual dexterity, said nail clipper comprising
A. a base incorporating nail clipping means;
B. a lever arm mounted to the base for controlling the operation of the nail clipper means; and
C. an arm engaging member mounted to the lever arm of the nail clipper, and incorporating
a. a support base
b. mounting means
1. extending from a first surface of the support base, and
2. constructed for lockingly engaging the lever arm and securely affixing the support base to the lever arm;
c. a finger/thumb receiving and supporting zone
1. formed on a second surface of the support base, and
2. constructed for comfortably and conveniently receiving the finger or thumb of the user and for securely positioning the finger/thumb in operational control over the lever arm of the nail clipper; and
D. a base engaging member incorporating
a. a support base,
b. mounting means
1. extending from a first surface of the support base, and
2. constructed for lockingly engaging the base of the nail clipper and securely affixing the support base to the base of the nail clipper, and
c. a finger/thumb receiving and supporting zone
1. formed on a second surface of the support base, and
2. constructed for comfortably and conveniently receiving the finger or thumb of the user and for securely positioning the finger/thumb in operational control over the base of the nail clipper
whereby users with impaired or reduced manual dexterity or with varying degrees of joint disease are capable of controllably operating the nail clipper by easily and readily accessing the finger/thumb receiving and support zones provided by the arm engaging members and the base engaging member.

5,052,417
EYE SHADOW COLLECTOR

Orlando Cordova, #69 Beadel St., Apt. 4, Brooklyn, N.Y. 11222

Filed Apr. 10, 1989, Ser. No. 335,380
Int. Cl.[5] A45D *40/30*
U.S. Cl. 132—216 18 Claims

1. An instrument for facilitating the application of facial cosmetics to eyelids and eyelashes comprising:
a collector means for collecting particles of facial cosmetics that to not adhere to the eyelids during the application of such cosmetics to a subject and for preventing the particles of facial cosmetics from contacting and adhering to additional facial areas of the subject, said collector means comprising a collecting surface having a face-engaging edge; and
a handle means for positioning said collector means substantially perpendicular to the facial areas underneath an eye of the subject, said handle means comprising a loop portion shaped to fit on a finger, said handle means being connected to said collector means so that said handle means can be disposed on one finger of a hand while another finger of the hand positions the eye and eyelid and said face engaging edge of said collector means engages the face of the subject below the eye;



wherein said collecting surface is U-shaped and a valley of said U-shaped collecting surface extends longitudinally away from said face-engaging edge and collects the particles which do not adhere to the eyelids and prevents the particles of facial cosmetics from contacting and adhering to facial areas of the subject.

5,052,418
SOLAR BODY TATTOO

David J. Miller, Westmount, Canada, assignor to Idea Folio Concept Developement Group, Toronto, Canada

Filed Jan. 24, 1990, Ser. No. 469,786
Int. Cl.[5] A45D *40/30*
U.S. Cl. 132—319 1 Claim



1. A method for producing a temporary predetermined image on the human skin by the action of skin tanning rays using a template means having a laminated structure comprising a flexible first layer and a removable second layer, a central opening being defined at least in said first flexible layer, said central opening defining an outline corresponding to said image, a first surface of said first layer being provided with adhesion means, said second layer being removably mounted to said first layer and being adapted for, upon removal therefrom, leaving at least some of said adhesion means on said first surface of said first layer, the method comprising the following steps:
a) removing said second layer from said first layer;
b) applying said first layer on the skin in a desired location with said first surface of said first layer and said adhesion means left thereon contacting the skin;
c) choosing a sun block from a group containing zinc oxide paste and Paba based paste;
d) applying the sun block composition at least on the skin within said central opening;
e) removing said first layer from the skin thereby leaving thereon at least part of said sun block means which corresponds to said image;
f) exposing the skin at least adjacent to said sun block means to the skin tanning rays; and

g) removing the sun block composition from the skin thereby uncovering substantially untanned skin and therefore said image,

whereby only the area previously covered by the sun block composition contrasts with adjacent surfaces which are tanned.

5,052,419

BRUSH HEAD, A METHOD AND A MACHINE FOR MANUFACTURING THEREOF

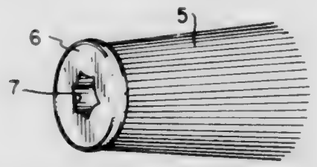
Hans Olsen, Klampenborg, Denmark, assignor to Professional Dental Technologies, Inc., Batesville, Ak.

Continuation of Ser. No. 59,663, Jun. 8, 1987, Pat. No. 4,869,277, which is a continuation-in-part of Ser. No. 591,114, Feb. 17, 1984, abandoned. This application Jul. 17, 1989, Ser. No. 380,898

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] A61C *3/06, 17/00;* A46B *13/02;* A46D *1/08*

U.S. Cl. 132—322 6 Claims



1. A method for producing a brush head from a bundle of parallel fibers or threads, comprising the steps of:

feeding the bundle of parallel fibers or threads continuously to a melting means,

melting the fibers at one end of said bundle of fibers as the bundles of fibers is continuously fed to the melting means so that said melted fibers are welded together to form a bottom plate with a surplus of the melted fibers forming an extended bottom plate, the bottom plate being sufficiently rigid so as to be directly attachable to a driving means;

removing the extended bottom plate and cutting and shaping the fiber bundle opposite the bottom plate to form a brush

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5,052,420

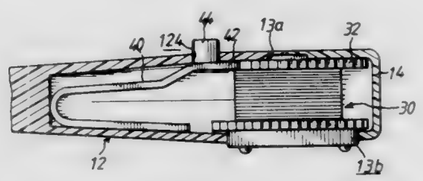
TOOTH CLEANER DEVICE FOR RETENTION OF REEL MEANS CARRYING A SPOOL OF STRINGS

Raymond Chen, No. 15, Alley 28, Lane 30, Yung Chi Rd., Taipei, Taiwan

Filed Jun. 22, 1990, Ser. No. 542,737

Int. Cl.[5] A61C *15/00*

U.S. Cl. 132—325 2 Claims



1. In a tooth cleaner device having a reel means carrying a spool of strings thereon and provided with a ratchet wheel, a frame and cover combination rotatably supporting said reel means and being capable of fixedly supporting and holding a segment of string from said reel means, and a ratchet means for controlling a rotation of said reel means relative to said frame and cover combination, the improvement comprising:

said frame and cover combination comprising a cylindrical recess and an opening for mounting said reel means and said opening exposing a side of the reel means to allow manual manipulation of said reel means, a pair of legs each having a recessed end, a string outlet, a channel thereon extending from said string outlet to said recessed ends of said legs, and an anchoring protuberance provided adjacent to said legs for anchoring the free end of the string segment; and

said ratchet means comprising a pawl releasably engaged with said ratchet wheel of the reel means, said pawl having a lateral protuberance engaged in a hole of said frame and cover combination so that said pawl is laterally manipulatable in a direction generally parallel to a rotational axis of the reel means to control the free rotation of said reel means, said ratchet means being substantially a flat plate with one end thereof forming said pawl and a second end thereof being fixedly secured on said frame and cover combination.

5,052,421

TREATMENT OF ALUMINUM WITH NON-CHROME CLEANER/DEOXIDIZER SYSTEM FOLLOWED BY CONVERSION COATING

Mark W. McMillen, Oxford, Mich., assignor to Henkel Corporation, Ambler, Pa.

Continuation of Ser. No. 374,992, Jul. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 221,065, Jul. 19, 1988, abandoned. This application Jul. 27, 1990, Ser. No. 560,478

Int. Cl.[5] C23C *22/56;* C03C *1/02*

U.S. Cl. 134—2 22 Claims

1. A process for treating an aluminum article which comprises: cleaning the aluminum article by contact with a cleaning solution; deoxidizing the cleaned aluminum article by contact with an acidic deoxidizing solution selected from the group consisting of an acidic, stabilized hydrogen peroxide containing solution; an acidic heteropoly vanadic acid containing solution, or an acidic heteropoly vanadic acid salt containing solution; and conversion coating the deoxidized aluminum article wherein the cleaning and deoxidizing steps may be combined to result in a 2-step process.

5,052,422

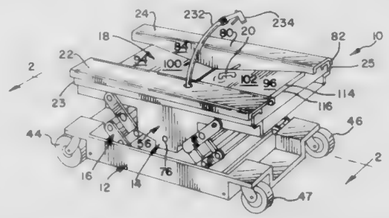
ALL WEATHER APPARATUS FOR CLEANING PIPE THREADS

Oskar Franz; John P. Kusz, both of Chicago; Rene G. Laude, Elgin, and Donald Racquet, Gurnee, all of Ill., assignors to Safety Kleen Corporation, Elgin, Ill.

Filed Apr. 16, 1990, Ser. No. 509,993

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—104.2 10 Claims



10. A mobile apparatus for supply and collection of cleaning fluids used in field cleaning of pipe threads, said apparatus comprising, in combination, a chassis assembly, a receptacle assembly and means carried by said chassis assembly for positioning said receptacle assembly in a desired position of used relative to pipe threads to be cleaned, said chassis assembly further including a chassis frame and a plurality of wheels positioned with respect to said frame so as to render said chassis readily movable, said receptacle assembly including means for receiving a supply of cleaning fluid, and a multi-purpose flow control assembly adapted, in a first position of use, to serve as a cover for protecting said receiving means against entry of rain and particulate matter, and in a second position of use, to serve as a collector for directing cleaning fluid impinging thereon to the interior of said receiving means, said multi-purpose flow control assembly including first and second drain control panels, means for positioning said panels in said first and second positions, each of said panels having an inner end, an outer end and means defining a pivot axis lying adjacent its outer end, with each of said inner panel ends including portions of an inter-locking mechanism whereby, in said first position, a portion of one of said panel ends overlies the other to prevent liquid flow between panels, and in said second position portions of each of said panel ends are spaced apart so as to permit liquid flow therebetween and said receptacle assembly further including a pair of spaced apart shroud elements, each having a generally horizontally extending top wall portion supported adjacent to said receiving means, and an inner, generally vertical side wall portion and wherein each of said drain control panels includes side edge portions positioned for substantially liquid-tight engagement with said vertical walls of said shroud elements in order to prevent flow of liquid between said side edges of said drain control panels and said shroud walls.

5,052,423

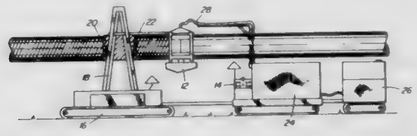
HYDROCLEANING OF THE EXTERIOR SURFACE OF A PIPELINE TO REMOVE COATINGS

Gordon R. Chapman, Tofield, and Charles M. Reid, Edmonton, both of Canada, assignors to CUPS, Inc., Edmonton, Canada

Continuation-in-part of Ser. No. 55,119, May 28, 1987, abandoned. This application May 23, 1988, Ser. No. 197,142

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—174 26 Claims



26. Apparatus for cleaning an exterior surface of a pipeline comprising:

(a) a frame defining a longitudinal passage therethrough of a size sufficient to accommodate the pipeline whereby said pipeline is able to pass longitudinally through said frame, said frame comprising a plurality of frame sections and at least one of said frame sections pivotally connected to another one of said frame sections,

(b) a plurality of jet modules mounted to said frame in spaced apart relation, each of said jet modules including at least one rotatable liquid jet nozzle, said jet modules circumferentially spaced about said longitudinal passage, each of said rotatable nozzles directed toward said pipeline to produce a liquid jet that traces a substantially circular path on the surface of said pipeline,

(c) an actuator connected between said frame and said one frame section for driving said one frame section to open and closed positions to permit said apparatus to be placed on said pipeline when said one frame section is in said open position,

(d) a wheel mounted to said one frame section for contacting said pipeline surface when said one frame section in said closed position, said actuator for biasing said wheel against said pipeline wherein said one frame section maintains an essentially fixed distance from the surface of said pipeline despite irregularities in said pipeline, and

(e) lines for supplying high pressure liquid to said jet nozzles to cause said liquid jets to be emitted from said jet nozzles.

5,052,424

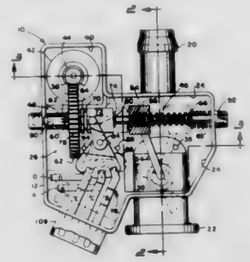
ELECTRICALLY OPERATED SERVO ACTUATOR WITH AUTOMATIC SHUT OFF

Norman E. Zerndt, Palatine, and Cyril E. Bradshaw, Wheaton, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 16, 1990, Ser. No. 553,296

Int. Cl.[5] F16K *31/04*

U.S. Cl. 137—1 14 Claims



5. A method of automatically controlling movement of a fluid flow valve mechanism between an open and closed position comprising the steps of:

(a) providing a movable fluid valve mechanism and energizing an electric motor and driving a screw and traversing a follower for moving the valve mechanism;

(b) mechanically limiting the traverse of said follower valving mechanism;

(c) continuing driving said screw after said mechanical follower limiting and permitting said screw to thereupon move axially with respect to said follower;

(d) actuating a switch in response to said screw moving axially and reversing the polarity of the power to said motor.

5,052,425

METHOD AND APPARATUS FOR CONTINUOUS REMOVAL OF A SUB-QUANTITY FROM A GAS STREAM

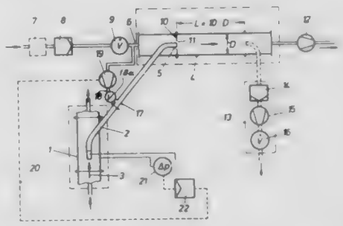
Guenter Hohenberg, and Heimo Denk, both of Graz, Austria, assignors to AVL Gesellschaft fuer Verbrennungskraftmaschinen und Messtechnik mbH. Prof. Dr. Dr. h.c. Hans List, Austria

Filed Mar. 13, 1990, Ser. No. 492,827

Claims priority, application Austria, Mar. 13, 1989, A575/89

Int. Cl.[5] F16K *11/00*

U.S. Cl. 137—1 19 Claims



1. A method for the continuous removal of a sub-quantity of gas from a main gas stream for continuous mixing of the sub-quantity with a dilutant gas stream, comprising the steps:

receiving a sub-quantity of gas flow from a main gas stream;

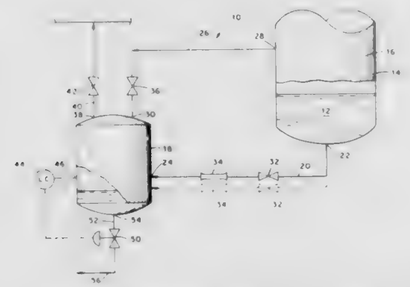
directing the sub-quantity to mix with a volume of dilutant gas;

passing the sub-quantity through a back-up region before mixing with the dilutant gas;
and supplying a controllable control stream of gas to said back-up region at a pressure greater than the pressure of the sub-quantity and controlling the flow volume of the sub-quantity by controlling the control stream.

5,052,426
SYSTEM FOR PRESSURE LETDOWN OF ABRASIVE SLURRIES

Stanley Kasper, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 16, 1991, Ser. No. 641,988
Int. Cl.[5] F17C *13/00*
U.S. Cl. 137—14 **3 Claims**



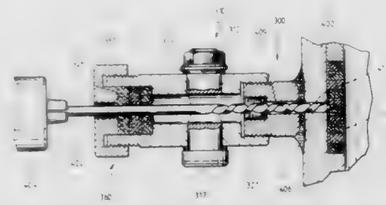
1. A method of transferring a liquid slurry containing solid particles from containment in liquid phase in a pressurized container having a gas outlet above the liquid phase and a liquid outlet below the liquid phase therein which comprises:
providing a letdown container disposed below the pressurized container so that the liquid may flow by gravity into said letdown container, pressurized gas transfer means including a first valve communicating the containers above the liquid levels therein, liquid transfer means communicating the containers and including a second valve and a choke, vent means including a third valve for releasing gas pressure from said letdown container, and outlet means including a fourth valve for releasing liquid from said letdown container;
closing said second, third, and fourth valves and opening each first valve, whereby pressure in said containers is equalized;
closing said first valve and opening said second valve, whereby flow of liquid under a low-pressure differential occurs;
opening said third valve, whereby said letdown tank is vented, and liquid flows through said second valve, with its flow being restricted by said choke; and opening said fourth valve, whereby said liquid is released.

5,052,427
METHOD AND APPARATUS TO FACILITATE THE INJECTION OF SEALANT INTO A PRESSURIZED FLUID MEMBER

Johnny L. Butler, Highlands; Richard E. Wakeland, Houston; Donald R. Batson, Dayton, and Robert E. Metzger, Baytown, all of Tex., assignors to Spinsafe, Inc., Highlands, Tex.

Continuation-in-part of Ser. No. 537,574, Jun. 14, 1990. This application Sep. 20, 1990, Ser. No. 586,569
Int. Cl.[5] F16K *43/00, 41/02*
U.S. Cl. 137—15 **16 Claims**

5. A method of injecting a sealant into a chamber formed by a packing assembly of a first valve, comprising the steps of:
attaching a driver cap to a first end portion of a fitting;
rotating said driver cap and fitting at high speed to friction weld a second end portion of the fitting to the exterior of the first valve at an area immediately adjacent the packing assembly chamber;
removing the driver cap from the fitting;
attaching a containment body having a second valve operatively positioned in a bore extending through said containment body to said fitting;
inserting a packing seal into a bore extending into a second end portion of said containment body;
inserting a boring means through the packing seal, into the bore of said containment housing;
opening said second valve;
inserting said boring means through said opened second valve;
completing a bore hole into the packing assembly chamber of said first valve so as to establish fluid communication between the bore and said packing assembly chamber;
withdrawing the boring means a preselected distance along said bore to remove said boring means from said second valve while maintaining contact between said boring means and said packing seal;



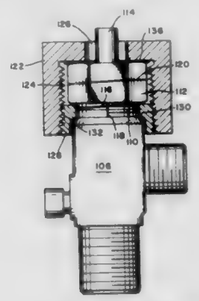
closing the second valve to interrupt fluid communication between said packing assembly chamber and said bore;
removing said boring means from said bore;
coupling to one of the containment housing and the fitting, means for injecting sealant into the packing assembly chamber of said first valve;
opening said second valve to establish fluid communication between said packing assembly chamber and said sealant injecting means;
injecting sealant into the packing assembly chamber of said first valve;
closing said second valve to interrupt fluid communication between said packing assembly chamber and said sealant injecting means;
removing said injecting means; and
inserting plug means through said containment housing and said second valve and into sealing engagement with said fitting to seal said bore from said packing assembly chamber, whereby said containment body is removable from said attachment body.

5,052,428
VALVE REPAIR DEVICE

Jeffrey G. Burr, Newark, Del., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 17, 1990, Ser. No. 554,312
Int. Cl.[5] F16K *43/00*
U.S. Cl. 137—15 **14 Claims**

12. A method of discharging gas from a seamless high pressure tube having a cracked valve thereon, said cracked valve having a cylindrical stem with a packing assembly thereon, said packing assembly including: a ring-shaped packing washer, at least two ring-shaped packings, and a ring-shaped packing gland, said valve having a cylindrical shaped body having an inner surface which engages and surrounds said packing washer and said packings and having a male threaded outer diameter, and said valve having a packing nut having an inner diameter which engages said male threaded outer diameter of said cylindrical shaped body and surrounds said packing gland so as to compress said packing assembly, wherein when said crack is on the packing nut or on said male threaded outer diameter of said cylindrical shaped body of said valve, said valve having a repair device for repairing said crack, said crack repair comprising the steps of:
(a) repairing the cracked valve with a combination of: (i) two semi-circular shaped pieces wherein each of said pieces has a first threaded surface which is the inner diameter and a second threaded surface which is the outer diameter, said outer diameter being greater than said inner diameter and the top and bottom are flat, which surround the male threaded outer diameter of said cylindrical shaped body of said cracked valve and (ii) a cylinder wherein the cylinder has a first surface which is threaded

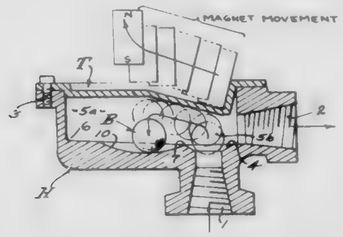


and has an end which is partially closed, which engages the second threaded surfaces of said semi-circular pieces wherein said second threaded surfaces of said two semi-circular shaped pieces and said first threaded surface of said cylinder are tapered pipe threads, said engaging tapered pipe threads applying a circumferential clamping force and a driving force on said cracked cylindrical shaped body and/or a driving force on said cracked packing nut and said packing gland to compress said packing assembly to prevent gas from said seamless high pressure tube from leaking from said valve; and
(b) discharging said gas in said seamless high pressure tube through said stem of said repaired cracked valve.

5,052,429
GAS BREAKER, AUTOMATIC GAS SHUT-OFF VALVE

Keun Young Yoo, Postmaster, LaCañada Flintridge, Calif. 91011

Continuation-in-part of Ser. No. 449,978, Nov. 13, 1989, abandoned. This application Aug. 24, 1990, Ser. No. 574,503
Int. Cl.[5] F16K *17/36*
U.S. Cl. 137—38 **8 Claims**

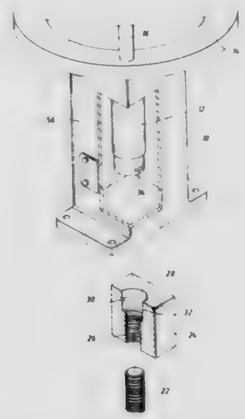


1. A normally open earthquake actuated shut-off valve having at least one vertically arranged inlet port and one outlet port, the two ports being open into a valve chamber configured laterally of said inlet port and comprising:
a flat bottom surface tilted slightly downward toward said inlet port, said surface being provided with a shallow concave dish portion;
a gravity operated ball positioned within the dish portion and free to roll in any direction in response to seismic motion;
and a valve seat associated with said inlet port and adapted to be closed by the gravity operated ball to shut off fluid flow.

5,052,430
VALVE ACTUATOR

Wayne L. Trautwein, Belleville, Tex., assignor to G. H. Bettis, Industry, Tex.

Filed Jun. 11, 1990, Ser. No. 535,556
Int. Cl.[5] F16K *43/00*
U.S. Cl. 137—315 **8 Claims**



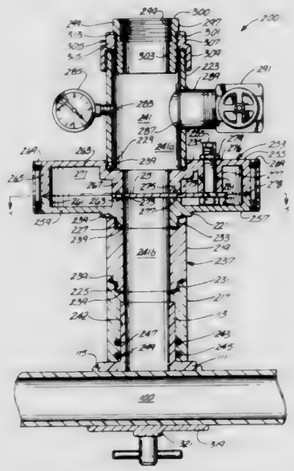
5. A fluid powered actuator for a valve having a valve body and a threaded valve stem that is reciprocated along its longitudinal axis to open and close the valve, said actuator comprising an actuator housing for attaching to the valve body, a fluid motor mounted on the housing having a cylinder, a piston in the cylinder and a piston rod having one end attached to the piston, connector means for connecting the other end of the piston rod to the valve stem to allow the fluid motor to reciprocate the valve stem and open and close the valve, said connecting means including a unitary connecting block having a threaded opening in one end to connect the block to the threads on the valve stem, a non-threaded opening in the other end to receive the end of the piston rod, grooves extending transverse the longitudinal axes of the piston rod and being disposed on opposite sides of the piston rod, and grooves being disposed in the connecting block on opposite sides of the opening in the block, and openings in the connecting block through which retaining rods can be positioned with each rod being in engagement with one of the grooves in the block and one of the grooves in the rod to connect the connecting block to the piston rod, said valve stem being adjustable within said block as required to adjust the stroke of the actuator to properly open and close the valve, a pair of sheaves mounted for rotation on axles mounted on the adapter housing in spaced relationship along a line parallel to the longitudinal axis of the valve stem, an elongated flexible member engaging the sheaves with the ends of the member connected to the connecting member, and means to rotate one of the sheaves to reciprocate the valve stem and open and close the valve when the fluid motor is inoperative or the fluid motor and piston rod have been removed for repair or replacement.

5,052,431

PIPELINE REPAIR METHOD AND APPARATUS

Stephen L. Jiles, 1513 Dogwood Ave., Anaheim, Calif. 92801

Filed Apr. 24, 1990, Ser. No. 513,599
Int. Cl.[5] F16K *43/00*
U.S. Cl. 137—318 13 Claims



1. A fixture for applying a pipe-working tool to the wall of a pressurized plastic pipe through a branching saddle fitting on said pipe, said saddle having a cylindrical pipe stub extending at a substantially 90° angle relative to the axis of said pipe and having an inside diameter closely matching the outside diameter of said tool for guiding said tool, comprising:

a) a pressure-tight barrel having proximal, intermediate, and distal sections, said bore having a principal longitudinal axis;

b) clamping means in line with said barrel and having a surface conforming to the exterior surface of said pipe along a length of said pipe for sealingly and rigidly affixing the proximal section of said barrel to said pipe so that the principal longitudinal axis of said bore is at a 90° angle to the axis of said pipe, a first portion of said clamping means attached to said barrel, and a second portion of said clamping means detachable from said first portion and adapted to be tightened against said pipe and toward said first portion so as to straighten and round said pipe;

c) first inlet means at one end of said barrel for axially admitting a pipe-working tool into said bore through the distal section of said barrel while maintaining a pressure-tight seal between said tool and said barrel;

d) second, cylindrical inlet means at the opposite end of said barrel, adapted to receive said cylindrical pipe stub with a snug sliding fit about the exterior of said pipe stub so as to maintain the longitudinal axis of said cylindrical pipe stub in coincidence with the principal longitudinal axis of said bore and at a 90° angle to the axis of said pipe, to provide access by said working tool to said pipe through said bore and through said cylindrical pipe stub, so that said tool is guided by said pipe stub to engage said pipe with the centerline of said tool at right angles to the centerline of said pipe;

e) a valve extending across the intermediate section of said barrel so as to create a pressure-tight barrier across the bore between said distal and proximal sections; and

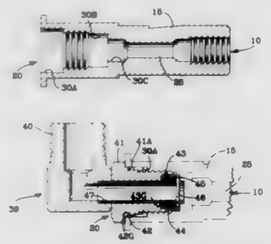
f) a pressure-release port in at least one of said proximal and distal barrel sections.

5,052,432

UNIVERSAL SWIVEL BODY FOR A FLUID HANDLING HOSE CONNECTOR

Kerry G. Vonalt, Edgerton; William R. Tate, and Ernest K. Gentit, both of Bryan, all of Ohio, assignors to The ARO Corporation, Bryan, Ohio

Filed Aug. 30, 1990, Ser. No. 576,374
Int. Cl.[5] B65H *75/34*
U.S. Cl. 137—355.16 14 Claims



1. A universal swivel body for a fluid handling hose connector, comprising:

an elongate substantially cylindrical body means having inlet and outlet means for attachment to a nonrotatable fluid supply line and a rotatable fluid service hose, respectively;

a central axial fluid passageway formed in the body means and connecting said inlet and outlet means; and

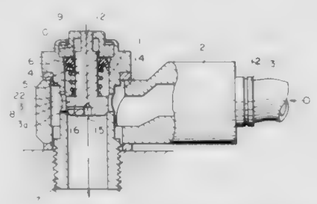
a plurality of sealing surfaces defined by radial offsets in the wall of said axial fluid passageway, each of said sealing surfaces being sized and located to provide, alone or in combination, a fluid tight seal in a specific fluid pressure range in cooperation with a swivel adapter appropriate for service at said pressure range.

5,052,433

STARTER CONNECTION FOR PROGRESSIVE PRESSURIZING OF PNEUMATIC INSTALLATIONS

Yves Levenez, Vaux le Penil, France, assignor to Legris SA, Rennes, France

PCT No. PCT/FR89/00049, § 371 Date Oct. 4, 1989, § 102(e) Date Oct. 4, 1989, PCT Pub. No. WO89/07727, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 7, 1989, Ser. No. 425,182
Claims priority, application France, Feb. 9, 1988, 88 01722
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—513.3 17 Claims



1. Connector-starter for progressive pressurization of pneumatic installation comprising:

an elbow joint composed of a hollow screw with a threaded opening at one extremity for attachment of the hollow screw into an opening of a pneumatic component, and

a separable and adjustable module,

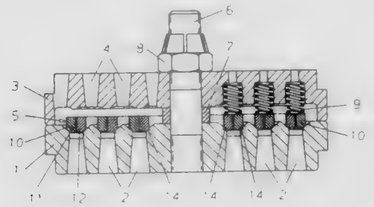
wherein the hollow screw contains a mechanism composed of a valve blocking a seat thereof at a rest position thereof, said seat comprising a main passage for fluid through the apparatus, a light return spring of insignificant force in relation to forces by arising from fluid pressure, said valve being integral with a rod extending in a direction opposite to the seat and toward an extremity of the hollow screw opposite to said threaded opening, and whose free extremity is guided in a bore of a plug which closes the hollow screw, the spring being co-axial to the rod and having a section smaller, at the location of the free extremity, than that presented by the valve on said seat, and wherein the hollow screw includes means for producing a reduced flow of fluid bypassing the seat for filling the component downstream from the seat.

5,052,434

VALVE, ESPECIALLY FOR COMPRESSORS

Friedrich Bauer, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Sep. 24, 1990, Ser. No. 587,083
Claims priority, application Austria, Sep. 27, 1989, 2249/89
Int. Cl.[5] F16K *15/08*
U.S. Cl. 137—516.13 17 Claims



1. A valve apparatus which can control the flow of a controlled medium therethrough and which comprises:

a catcher,

a valve seat which defines a discharge side that faces said catcher and an annular passage through which controlled medium can flow in a direction of flow, said annular passage defining a frustoconical seating surface which faces said catcher, and

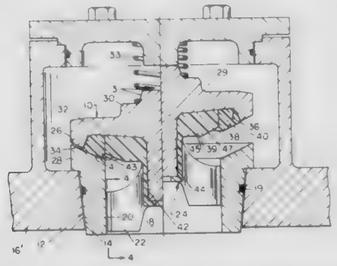
a first sealing element which includes a first sealing ring that is movably positioned between said catcher and said valve seat and can move in a lifting direction parallel to said direction of flow and into said annular passage to abut said sealing surface and close said annular passage, said first sealing ring comprising two subrings which are tightly joined together and can be moved in said lifting direction.

5,052,435

PUMP VALVE

Steven E. Crudup, 419 Dodson Lake Dr., Arlington, Tex. 76102, and Emmett T. Roberts, Houston, Tex., assignors to Steven E. Crudup, Arlington, Tex.

Filed Aug. 9, 1990, Ser. No. 565,617
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—516.29 4 Claims



1. A reciprocating pump valve for use in a valve seat having a central flow passageway, a cylindrical valve guide surface and an upwardly facing frustoconical seating face surrounding said flow passageway, comprising

a rigid valve body having a downwardly facing frustoconical annular seating surface having substantially the same included angle as the radially outward portion of the seating face of the valve seat and engageable with the seating face when the valve is closed on the seat,

a downwardly facing annular groove in said valve body adjacent and radially inward from said seating surface,

a resilient seal member secured in said groove,

said seal member having a downwardly facing frustoconical sealing surface positioned to engage the seating face of the seat when the valve is closed on the seat, the cone of said sealing surface having a greater included angle than the cone of the valve body seating surface and the outer edge of said sealing surface extending below the seating surface so that when the valve closes on the seat the seal member engages the seating face before the seating surface engages the seating face, and

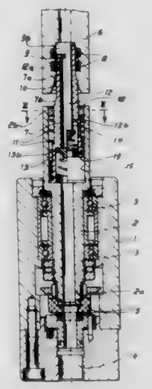
a centrally disposed guide affixed to said valve body and extending downwardly therefrom, said guide having a plurality of wear resistant inserts positioned to engage the guide surface of the seat during movement of the valve relative to the seat.

5,052,436

DEVICE FOR FEEDING A FLUID TO A ROTATING MACHINE PART

Karl Bauch, and Wolfgang Effenberger, both of Kempten, Fed. Rep. of Germany, assignors to Ott Maschinentechnik GmbH, Kempten, Fed. Rep. of Germany

Filed Mar. 23, 1990, Ser. No. 498,039
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1989, 3912659
Int. Cl.[5] F16L *27/00*
U.S. Cl. 137—580 16 Claims



1. In a device for feeding a fluid to a fluid receiving opening in a rotating machine part, said device including a housing arranged fixed against rotation and a hollow shaft mounted rotatably in said housing, one end of said hollow shaft being connected by way of a sliding ring seal member to an inlet duct in said housing and the other end of said hollow shaft being adapted to be connected to the rotating machine part in order to permit a flow of fluid under pressure between said housing through said hollow shaft and the rotating machine part, the improvement wherein a coupling tube is provided, said coupling tube being coaxially mounted on said hollow shaft and fixed against relative rotation with respect thereto, said coupling tube being axially slidable with respect to said hollow shaft and extending axially beyond an axial end of said hollow

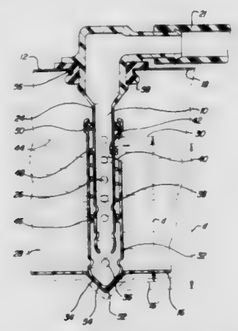
shaft, a return spring for providing a spring force which resists one direction of relative movement between said coupling tube and said hollow shaft, means defining a fluid inlet in said hollow shaft for receiving pressurized fluid therein from said inlet duct, said coupling tube and said hollow shaft including means responsive to a supply of said pressurized fluid to said fluid inlet means for urging said coupling tube and said hollow shaft axially with respect to each other to cause said coupling tube to move towards the rotating machine part in opposition to the force of said return spring and into engagement with the fluid receiving opening in the rotating machine part, wherein a sealing means is provided for effecting a fluid tight seal of said coupling tube to the fluid receiving opening in the rotatable machine part so and can be engaged with this machine part with a sealing arrangement interposed, that, in operation with fluid, said coupling tube will be engaged with the machine part by axial movement towards it under the pressure of the fluid to supply said pressurized fluid through said coupling tube to said rotating machine part and, in operation without fluid, be disengaged from the machine part by axial movement away from it under the force of said return spring.

5,052,437

VENT TUBE ASSEMBLY

Anthony J. Danna, Farmington, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1990, Ser. No. 620,951
Int. Cl.[5] F16R *24/04*
U.S. Cl. 137—587 **20 Claims**



1. A vent tube assembly for use with a supply of fuel adapted for delivering fuel to a fuel tank mounted in a vehicle, the fuel tank having a lower portion and an upper portion connected thereto, the fuel tank being provided with a filler neck into which may extend a pressure-sensitive filler nozzle in fluid communication with the supply, the filler nozzle being adapted for terminating delivery of fuel into the fuel tank when the vapor pressure therein exceeds a shut-off pressure, the vent tube assembly comprising:

an inner vent tube having at least one inner venting port defined therein, said inner vent tube extending generally downwardly through the upper portion of the fuel tank for relieving vapor pressure in the fuel tank as the volume of fuel contained therein increases during replenishment from the supply until the fuel in the fuel tank rises to a fuel shut-off level;

an outer vent tube in telescoping relationship with said inner vent tube, said outer vent tube having a base which is received by the lower portion of the fuel tank and being provided with at least one outer venting port defined therein; and

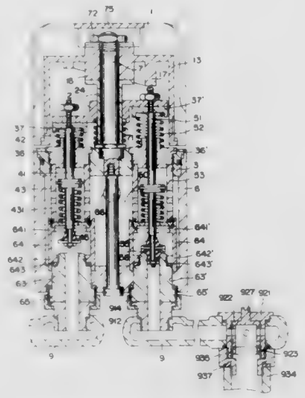
means for biassing said outer vent tube toward an extended position so that said outer vent tube is springingly engaged by said lower portion of the fuel tank, said outer vent tube being adapted to move in cooperation with the lower portion of the fuel tank, whereby the fuel shut-off level is determined at a fixed distance above said lower portion of the fuel tank, regardless of dimensional changes therein and vehicle attitude, thereby enabling an operator to fill the fuel tank with a reasonably predictable quantity of fuel to its nominal capacity.

5,052,438

HOT/COLD WATER FLOW RATE REGULATING DEVICE

Hong-Shang Wang, No. 70, Lane 139, Lien Cheng Rd., Chung-Ho, Taipei Hsien, Taiwan

Filed Oct. 23, 1990, Ser. No. 600,987
Int. Cl.[5] F16K *11/16*
U.S. Cl. 137—607 **9 Claims**



1. A hot/cold water flow rate regulating device, comprising:

a cap, being a hollow cylindrical casing for holding a tubular driving member, having an end opened and an opposite end closed, two opposite locking notches internally made on the edge of its open end, a center hole made on its closed end at the center, two relatively smaller notches made on the edge of said center hole, said tubular driving member having a closed end with raised portion made thereon and designed in size and shape corresponding to said center hole, and an opened end with two unitary keys externally made on its edge for engagement with the two locking notches of said cap, a hollow, cylindrical column made inside the opened end of said tubular driving member at the center, a spiral guide track made inside said tubular driving member spirally extending upward from its inner wall surface, and an unitary locking key made on the inner wall of said tubular driving member at the edge of its open end;

a Z-shaped link comprising a center hole vertically piercing therethrough at the center for fastening a rivet-shaped element, and two opposite extensions disposed at different level position and respectively extending outwards therefrom in opposite directions, said two opposite extensions having a bolt hole and a through-hole alternatively made thereon;

a mounting plate for coupling said cap to said holder, having a stepped hole at the center, two stepped, bolt holes on the top at two opposite locations, two side projections transversely extending outward therefrom at two opposite sides, an oil seal ring mounted on its outer diameter, and a locking key extending upward therefrom at the top;

two valve rod assemblies of same structure in different size, each comprising an elongated rod having two opposite ends properly threaded, a spring, a valve body, a base, a flexible conical insert and a bottom cap, said elongated rod having a ring-shaped projection at the middle with an oil seal ring fastened on its outer diameter, said spring being inserted inside said valve body, said valve body having a plurality of through-holes around its periphery, an oil seal ring fastened on its outer diameter at an upper end and an outer thread made on its bottom end, said base having an inner thread at one end, a center hole through its closed bottom end and an oil seal ring fastened on its outer diameter, said flexible conical insert having a ring-shaped projection at the bottom and partly fastened in said bottom cap, said bottom cap having a small hole at the center, the elongated rod of the smaller valve rod assembly being inserted downward through a spring, a valve body, a base, a conical insert and a bottom cap to lock up with a lock nut, the elongated rod of the bigger valve rod assembly being inserted downward through a spring, a valve body, a base, a conical insert and a bottom cap to further lock up with a lock nut with a washer and an inverted, flexible, conical cushion secured therebetween;

a socket-like holder having a stepped inner wall defining therewith a circular recess at the top with two locking notches internally made on its topmost edge at two opposite locations for holding said mounting plate; a closed bottom end with a stepped hole made at the center and two through-holes made at two opposite locations for mounting two tubular elements respectively for holding said two valve rod assemblies, said tubular elements having each a tapered orifice at the top, a ring-shaped projection transversely extending inward from its inner wall at a lower end and a inner thread at the bottom end; an opening on its outer wall for mounting a water outlet pipe; two stepped fastening elements respectively fastened in the two through-holes on its closed bottom end and screwed up with the inner thread of said tubular elements with two oil seal rings each respectively fastened on the outer wall at two opposite ends;

a bolt head stake having a stepped bottom end sleeved with a spring and fastened with an oil seal ring and inserted in the stepped hole at the center of said mounting plate, and a bolt head respectively inserted through the center hole of said Z-shaped link, said rivet-shaped element and the hollow cylindrical column of said cap and fixedly secured thereto by fastening means;

two bolted fastening elements respectively fastened in the two stepped, bolt holes of said mounting plate for insertion therethrough of said two valve rod assemblies to respectively fastened in the two extensions of said Z-shaped link with springs and nuts respectively retained therebetween;

a connecting rod inserted through said holder from the bottom and having a threaded top end fastened in the bolt hole on the bottom end of said bolt head stake permitting said holder to be movably connected to said cap; and

wherein said two valve rod assemblies are respectively inserted through the two extensions of said Z-shaped link from the bottom to lock up with a lock nut each permitting the elongated rod of the bigger valve rod assembly to be fixedly fastened in the bolt hole on one of the extensions of said Z-shaped link, and permitting the elongated rod of the smaller valve rod assembly to be movably inserted through the through-hole on the other extension of said Z-shaped link.

5,052,439

UNDERSEA HYDRAULIC COUPLING WITH DOVETAIL SEAL

Robert E. Smith, III, Stafford, Tex., assignor to National Coupling Company, Inc., Stafford, Tex.

Division of Ser. No. 236,026, Aug. 24, 1988, Pat. No. 4,900,071.
This application Aug. 18, 1989, Ser. No. 395,898
Int. Cl.[5] F16L *29/00*
U.S. Cl. 137—614.04 **7 Claims**

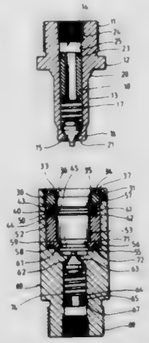
1. A coupling comprising:

a female member having a central bore extending therethrough;

a male member adapted to be inserted into the central bore forming an annulus therebetween;

a first normally closed check valve within the female member and a second normally closed check valve within the male member, and wherein the first and second check valves come into contact to force the valves open when the male member is connected to the female member; and

a two-piece retainer configured to be inserted into the annulus and engageable with the female member; and



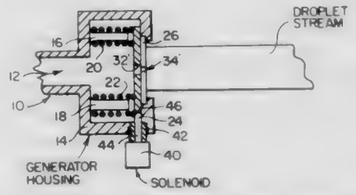
an elastomeric seal configured to engage the male member as the male member is inserted into the central bore, the elastomeric seal interposed between the first piece and second piece of the two-piece retainer and having an interfit with the first piece and second piece whereby the retainer restrains the elastomeric seal from radial movement into the central bore and retains the seal in the female member upon separation of the female member and the male member.

5,052,440

LIQUID DROPLET GENERATOR VALVE

Arthur M. Frank, deceased, late of Plainview, and Jill F. Willman, executrix, Port Washington, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 27, 1989, Ser. No. 343,647
Int. Cl.[5] F16K *3/02, 3/16*
U.S. Cl. 137—625.33 **7 Claims**



1. A valve for sharply cutting off the flow of fluid comprising:

a first plate characterized by interior and exterior surfaces and having at least one outlet orifice formed therein;

a second plate having at least one opening therein, the second plate abutting the interior of the first plate;

the abutting surfaces being optically flat to create a seal therebetween; and

means for moving the plates relative to one another between positions

(a) wherein the opening and orifice are aligned for an open valve; and

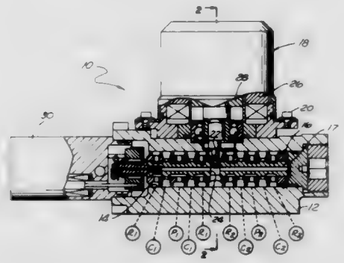
(b) wherein the opening and orifice are not aligned thereby closing the valve.

5,052,441

DIRECT DRIVE SERVOVALVE HAVING BEARING-LOCATED MOTOR HOUSING

Kenneth Hair, Valencia, and Kenneth Laux, Newhall, both of Calif., assignors to HR Textron Inc., Valencia, Calif.

Filed Sep. 27, 1990, Ser. No. 589,127
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 **3 Claims**



1. A direct drive servovalve comprising:
(1) a valve housing defining a bore therein;
(2) a valve spool reciprocally received within said bore for movement to control fluid flow therethrough from a supply port;
(3) motor means including a drive member for engagement with said valve spool at a predetermined point to move said valve spool in said bore; and
(4) means for mounting said motor means to said valve housing comprising:
(a) bearing means for receiving and supporting said drive member and having an outer surface having a predetermined longitudinal length;
(b) said valve housing defining a first recess therein conforming to said outer surface cross-sectional configuration and having a depth less than said longitudinal length, said bearing means being received within said recess with an interference fit with a portion of said bearing means protruding from said value housing;
(c) said motor means defining a second recess therein, said protruding portion of said bearing means being received within said second recess.

5,052,442

DEVICE FOR CONTROLLING FLUID FLOW

Jógen M. Johannessen, No. 6, Aspevej, Stróby Egede, DK-4600 Kóge, Denmark

PCT No. PCT/DK89/00044, § 371 Date Sep. 6, 1990, § 102(e) Date Sep. 6, 1990, PCT Pub. No. WO89/08750, PCT Pub. Date Sep. 21, 1989
PCT Filed Feb. 27, 1989, Ser. No. 571,640
Claims priority, application Denmark, Mar. 8, 1988, 1227/88
Int. Cl.[5] F15C *1/16*
U.S. Cl. 137—813 **14 Claims**

1. A vortex chamber valve for controlling fluid flow in a pipe system, comprising:
a housing forming a vortex chamber having a curved side wall, an inlet opening and an outlet opening;
an inlet valve at an upstream side of the vortex chamber inlet opening having a main section and an edge section, said edge section having a deflecting surface protruding away from the main section and towards the upstream side of the inlet valve, said section of the inlet valve covering in an operative valve position a part of said inlet opening, so that, if upstream fluid levels rise at least up to the deflecting surface, said deflecting surface acts on inflowing fluid



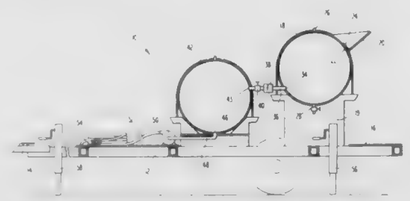
to cause contraction in said inlet opening of the cross-sectional area of the inflowing fluid.

5,052,443

MOBIL APPARATUS FOR SALVAGING MOTOR VEHICLE FUEL

Albert Evangelist, Jr., 617 Longview Dr., Huntington Valley, Pa. 19006

Filed Jul. 2, 1990, Ser. No. 547,472
Int. Cl.[5] B65B *3/00*
U.S. Cl. 137—899 **2 Claims**



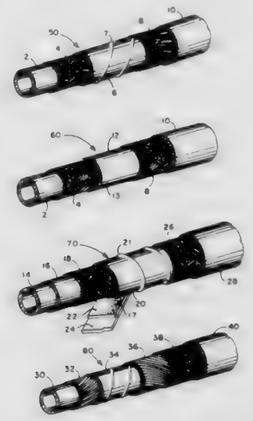
1. A mobile apparatus for salvaging motor vehicle fuel comprising:
a wheeled trailer;
a fuel settling tank mounted in a raised position on the trailer;
said tank having, at an upper external side portion thereof, a trough for receiving and draining one or more vehicle fuel tanks;
said settling tank further having a screened opening to the trough to allow fuel to drain from vehicle fuel tanks through the screened opening into the settling tank;
a drain port located at or near a lowest portion of the settling tank to drain water and particulate matter from the bottom of the settling tank;
valve means to open and close the drain port;
a transfer port, located in a side portion of the settling tank between approximately a one-fifth to one-eight height from the lowest point of the settling tank;
a storage tank mounted on the trailer in a position lower than the settling tank;
said storage tank having an inlet port located on a side portion thereof and an atmosphere vent located in an upper portion thereof;
a transfer tube connecting the transfer port of the settling tank to the inlet port of the storage tank, said tube having a valve means to selectively allow fuel to flow from the settling tank into the storage tank; and
an outlet port located at or near the lowest portion of the storage tank.

5,052,444

REINFORCED FLUID HOSE HAVING ON-BONDED TAPE

James W. Messerly, Stow; Lawrence E. Bouscher, Concord, and James E. Stahl, Garrettsville, all of Ohio, assignors to The Fluorocarbon Company, Mantua, Ohio

Filed Apr. 30, 1987, Ser. No. 44,265
Int. Cl.[5] F16L *9/16*
U.S. Cl. 138—125 **11 Claims**



1. An improved flexible reinforced hose for conveying fluids comprising a flexible polymeric core tube, at least two layers of tensioned fibrous reinforcement material disposed about the core tube, and an outer flexible protective sheath disposed about the reinforcement material, wherein the improvement is characterized by said hose including a flexible polymeric tape layer disposed between the reinforcement layers, said tape completely surrounding the core tube and having an overlapping region and in un-bonded relationship with either of the reinforcement layers so as to minimize stress imposed thereupon during bending and fluid pressure pulsing of the hose, and said tape layer adapted to prevent moisture from penetrating through the core tube from outside of the hose and contaminating the fluid being conveyed therethrough.

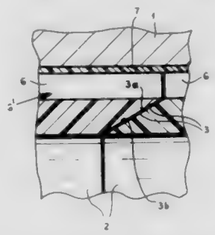
5,052,445

PIPE SECTION, ESPECIALLY FOR ABRASIVE AND/OR CORROSIVE MATERIAL PIPELINES

Rütger Berchem, Essen, Fed. Rep. of Germany, assignor to Metalpraecis Berchem+Schaberg Gesellschaft Fur Metallformgebung Mit Beschrankter Haftung, Gelsenkirchen, Fed. Rep. of Germany**

Division of Ser. No. 369,993, Jun. 22, 1989, Pat. No. 4,995,427. This application Sep. 27, 1990, Ser. No. 589,089
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3821985
Int. Cl.[5] F16L *9/02, 9/22*
U.S. Cl. 138—155 **1 Claim**

1. A piping length for a pipeline for a flowable abrasive and corrosive medium carrying a bulk material, comprising:
an outer pipe section of metallic material having ends connectable in a pipeline and formed with an inner surface; and
an inner lining formed with an outer surface spaced from said inner surface and extending substantially over the entire interior length of said outer pipe section, said inner lining being formed by a plurality of tubular lining segments disposed end to end in said outer pipe section composed of a ceramic material and removably disposed in said outer pipe section, each pair of adjacent lining segments forming a respective clearance therebetween, so that the medium from an interior of the pipeline enters through said clearances into a space defined between an outer surface of said lining and an inner surface of said outer pipe section, said segments each being shorter than said outer pipe section, said segments including terminal segments at opposite ends of said lining formfittingly engaging and braced



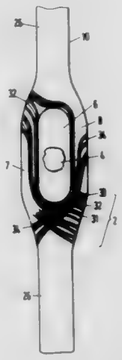
against respective ends of said outer pipe section, said outer pipe section being a steel pipe and being internally provided with an anti-corrosion coating interposed between said metallic material and said lining, said anti-corrosion coating being a galvanically-applied protective layer.

5,052,446

THERMOPLASTIC HEDDLE WITH BRAIDED FIBER TUBE REINFORCEMENT

Hans J. Gysin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 22, 1990, Ser. No. 527,045
Claims priority, application Switzerland, Jun. 12, 1989, 02188/89
Int. Cl.[5] D03C *9/02*
U.S. Cl. 139—93 **17 Claims**



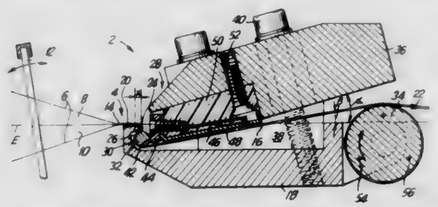
1. A rod like yarn guiding element for textile machinery comprising
an elongated compact thermoplastic body of flat cross-sectional shape, having a transversely oriented eye opening in an intermediate zone for passage of a yarn therethrough; and
a braided tube or continuous fibers reinforcing said thermoplastic body, said tube having said fibers thereof disposed about said opening.

5,052,447

GUIDE DEVICE FOR A WEB OF MATERIAL AT THE LOOM CLOTH FELL

Francisco Speich, Gipf-Oberfrick, Fed. Rep. of Germany, assignor to Textilma AG

PCT No. PCT/CH89/00053, § 371 Date Nov. 17, 1989, § 102(e) Date Nov. 17, 1989, PCT Pub. No. WO89/08734, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 17, 1989, Ser. No. 455,444
Claims priority, application Switzerland, Mar. 18, 1988, 1056/88
Int. Cl.[5] D03J 1/22
U.S. Cl. 139—291 R 17 Claims



1. Guide device for a web of material at a point of a weaving machine, at which the web of material is produced, the guide device comprising a first strip (**20**) with a guide edge (**24**), which first guide strip (**20**) is arranged subsequent to the point (**4**) at which the web of material is produced, and comprising a second guide strip (**28**) with a guide edge (**30**), which second guide strip (**28**) is arranged subsequent to the first guide strip (**20**), wherein the guide strips (**20**, **28**) extend in each instance along the entire width of the web (**16**) of material and overlap one another in such a way that the web (**14**) of material is guided at least approximately in an S-shaped manner, wherein the guide edge (**30**) of the second guide strip (**28**) is formed by means of a rotatable round bar (**32**, **32***b*) and wherein the round bar (**32**, **32***a*, **32***b*) is arranged in a loose manner in such a way that it is supported, under the influence of the tensile stress of the web (**16**) of material, along the web (**16**) of material at the first guide edge (**24**) and in direct contact at the end face (**42**) of a guide element of the second guide strip **28**.

5,052,448

SELF STITCHING MULTILAYER PAPERMAKING FABRIC

Willism R. Givin, Raleigh, N.C., assignor to Huyck Corporation, Del.

Filed Feb. 10, 1989, Ser. No. 309,785
Int. Cl.[5] D03D 11/00
U.S. Cl. 139—383 A 15 Claims



1. An endless papermaking fabric comprising:

a top fabric layer including relatively fine machine direction yarns interwoven with relatively fine cross machine direction yarns in a repeating pattern to form an upper surface and a lower surface, the top fabric layer cross machine direction yarns including alternately stitching and non-stitching cross machine direction yarns;

a bottom fabric layer including relatively coarse machine direction yarns interwoven with relatively coarse cross machine direction yarns in a repeating pattern to form an upper surface and a lower surface;

the number of the relatively fine top fabric layer cross machine direction yarns being approximately twice that of the relatively coarse bottom fabric layer cross machine direction yarns;

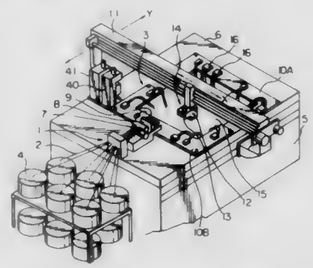
wherein said top fabric layer cross machine direction yarns travel singly and engage selected machine direction yarns of the bottom fabric layer at a highest elevation relative to the elevation of the machine direction yarns of the bottom fabric layer other than said selected machine direction yarns to bind the fabric layers together.

5,052,449

AUTOMATIC WIRE PRESS-CONNECTING AND LAYING OUT APPARATUS FOR WIRE HARNESS

Michio Fukuda, Nishinomiya; Teiji Sakuma, Inabe, and Tutomu Yoshimura, Yokkaichi, all of Japan, assignors to Sumitomo Wiring System, Ltd., Japan

Filed May 25, 1990, Ser. No. 528,940
Claims priority, application Japan, Jun. 12, 1989, 1-148797
Int. Cl.[5] H01R 43/00
U.S. Cl. 149—93 R 3 Claims



1. An automatic press-connecting and laying out apparatus for a wire harness having a press-connecting and laying out portion, comprising:

a wire feed portion having a wire feeding mechanism adapted to individually feed out a plurality of wires and a severing mechanism for individually severing each of said plurality of wires at a predetermined length;

cassette lay-out boards detachably and horizontally spaced apart with a depression therebetween, each of said boards having a group of connectors detachably arranged at predetermined positions thereon; and

a head vertically suspended over said boards and adapted to move along orthogonal X and Y axes of said cassette lay-outs boards and to rotate about a vertical axis perpendicular to said X and Y axes, said head comprising a wire drawing mechanism for individually drawing each of said plurality of wires and a wire press-connecting mechanism comprising a plurality of wire press-connecting portions adapted to individually press connect each of said plurality of wires to said connectors, said wire drawing and wire press-connecting mechanisms facing downwardly;

a wire length metering mechanism for individually measuring said length of each of said plurality individual wires on said wire feeding mechanism or on said wire drawing mechanism;

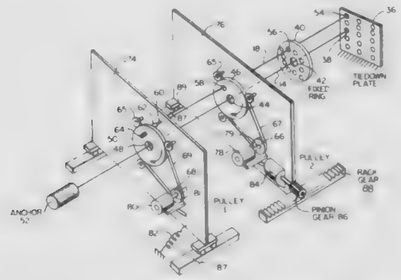
said head adapted to individually clamp each of said plurality of wires protruding from the distal end of said wire feed portion and sequentially distribute and press connect each of said plurality of wires to said connectors, whereby said wires are laid out in a required configuration with intermediate portions thereof being allowed to depend into said depression.

5,052,450

AUTOMATED FABRICATION OF WIRING HARNESS HAVING CONTINUOUS STRAIGHT AND CONTRAHELIC SECTIONS

Stuart J. Williams, Houston, Tex., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 12, 1990, Ser. No. 507,787
Int. Cl.[5] B21F 7/00
U.S. Cl. 140—149 7 Claims



1. A wire-twisting machine for fabricating continuous straight and contrahelically wound sections having:

means for securing a first wire between first and second fixed end means;

first and second coaxially spaced pulley wheels located inwardly of the fixed points and having central openings therein through which the first wire passes;

stationary guide means located between the second pulley wheel and the second fixed end means, the guide means having a coaxially located central opening for allowing the first wire to pass therethrough;

a second wire secured to a radially outward point on the first pulley wheel and positioned in parallel spaced relation to the first wire;

radially outward openings formed in the second pulley wheel and the guide means for passing the second wire for securement to a point on the second fixed end means; and

means for rotating the pulley wheels in synchronous rotation wherein the second wire is helically wound around the first wire between the second pulley wheel and the guide means while the first and second wires remain parallel and unwound outwardly of the second pulley wheel and the guide means;

the improvement comprising:

means for movably mounting the second pulley wheel;

powered means connected to the mounting means for limitingly displacing the mounted second pulley wheel toward the first pulley wheel thereby achieving limited linear displacement of the second wire as it is wound around the first wire;

means for mounting the first pulley wheel;

spring means connected to the first pulley wheel mounting means for biasing the latter as to maintain tension on the second wire during a wire-twisting operation; and

wherein the motor means for driving the pulley wheels in synchronous rotation are motor driven.

5,052,451

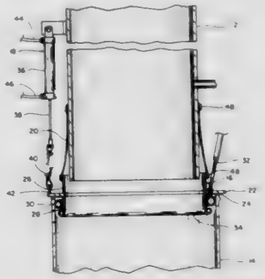
DUST CONTROL APPARATUS

Michael J. Gentilcore, Maryland Heights, Mo., and David G. Mock, Yakima, Wash., assignors to Mallinckrodt Specialty Chemicals Company, St. Louis, Mo.

Filed Feb. 26, 1991, Ser. No. 661,509
Int. Cl.[5] B65B 1/16
U.S. Cl. 141—67 20 Claims

1. A dust control apparatus comprising:

a cover member adapted to be lowered into a position inside an opening of a container, said cover member having sealing means adapted to expand radially to provide a substantially airtight seal between said cover member and the container, said cover member having a passage therethrough, said cover member being locatable in surrounding relation to a material handling conduit located in said passage and operable in telescoping relation thereto so as to be lowerable into position in a container, said passage being sufficiently larger than a material handling conduit located therein so as to have a space therebetween for the passage of air between said cover member and the conduit, said cover member being movable laterally relative to the conduit so as to enable said cover member to be lowered into a container which is not precisely aligned therewith,



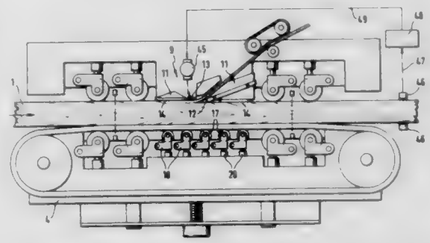
a filter sleeve having a lower end attached to said cover member and an upper end attached to the material handling conduit, said filter sleeve being adapted to prevent the escape of dust from the space between said cover member and the conduit and adapted to be expandable as said cover member is lowered into a container and compactible as said cover member is removed therefrom.

5,052,452

METHOD FOR PROCESSING SQUARED TIMBER

Siegmar Goenner, Oberkirch, Fed. Rep. of Germany, assignor to Firma Gebruder Linck Maschinenfabrik "Gatterlinck" GmbH & Co. KG, Oberkirch, Fed. Rep. of Germany

Filed Nov. 1, 1990, Ser. No. 609,167
Claims priority, application Fed. Rep. of Germany, Nov. 1, 1989, 3936313; Aug. 21, 1990, 4026346
Int. Cl.[5] B27L 9/00; B27B 1/00
U.S. Cl. 144—3 P 8 Claims



1. A method of separating a squared timber into a preset number of thin boards having a predetermined thickness, wherein a blade and a cooperating thrust element cut a thin board of the predetermined thickness from said squared timber by advancing said squared timber in a longitudinal direction toward the blade, and by pressing the squared timber in a direction transverse to the longitudinal direction of the squared timber against the blade and the cooperating thrust element by loading means wherein the distance between the blade and the cooperating thrust element in said transverse direction substan-

tially determines the thickness of the thin board, and wherein said transverse distance between the blade and the loading means during the separation of the thin board from the squared timber substantially corresponds to the thickness of the squared timber less the predetermined thickness of the thin board, said method comprising the steps of:

a) setting a distance between the blade and the cooperating thrust element equal to an amount calculated to provide a thin board having the predetermined thickness;

b) advancing a squared timber having an initial thickness equal to a sum of the thicknesses of the total number of thin boards to be produced from the squared timber across the blade to separate one or more first thin boards from the squared timber and to generate a residual squared timber;

c) measuring a thickness of the residual squared timber;

d) adjusting the distance between the blade and the cooperating thrust element in response to a measured thickness of the residual squared timber to provide a corrected thickness for one or more second thin boards to be separated from the residual squared timber, said corrected thickness being equal to the thickness of the residual squared timber divided by the number of thin boards remaining to be separated from the residual squared timber; and

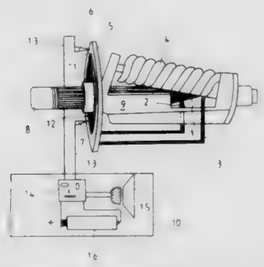
e) moving said loading means for engaging the residual squared timber with the blade and the cooperating thrust element in an amount corresponding to the predetermined thicknesses of successive thin boards to be separated from the residual squared timber.

5,052,453

STRUCTURE OF PENCIL SHARPENER

Geoffery Chen, 9F/5, No. 16, Nanking East Road, Sec. 5, Taipei, Taiwan

Filed Nov. 26, 1990, Ser. No. 617,708
Int. Cl.[5] B43L *23/02*
U.S. Cl. 144—28.5 **1 Claim**



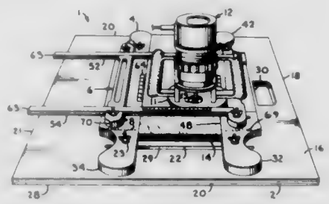
1. A pencil sharpener, comprising a swivel cutter holder having a rotary cutter for whittling a pencil, two electric contacts at one end and spaced from each other, a conductive ring at an opposite end, said conductive ring having a ring-shaped conductive surface at one side and connected to either one of said two electric contacts, a circular plate conductor fastened in said cutter holder, insulated from said ring-shaped conductive surface and connected to the other electric contact, two conductive brushes fixedly secured to the frame structure of the pencil sharpener and having each an end respectively disposed in contact with said ring-shaped conductive surface and said circular plate conductor, and an opposite end respectively connected to an alarm and characterized in that said two electric contacts are electrically connected by the protruding pencil lead of the pencil when inserted in said swivel cutter holder and sharpened by said rotary cutter, to trigger said alarm to produce an alarm signal.

5,052,454

GUIDE SYSTEM FOR ROUTERS

Gregory J. Meinhardt, 6116 NE. 61st St., Kansas City, Mo. 64119

Filed Oct. 18, 1990, Ser. No. 599,438
Int. Cl.[5] B27C *5/10*
U.S. Cl. 144—144.5 R **17 Claims**



8. A system for guiding a router on a workpiece with upper and lower workpiece surfaces and opposite workpiece edges, which comprises:

(a) a base with an upper, workpiece-engaging surface and a pair of slots extending in parallel, spaced relation;

(b) a clamp including:

(1) a pair of jaws each having a workpiece-engaging edge and a pair of holes positioned in spaced relation corresponding to the spacing between said base slots; and

(2) a plurality of mechanical clamp-to-base fasteners each extending through a respective base slot and a respective jaw hole;

(c) a fence assembly including:

(1) a pair of opposite members;

(2) means for mounting each fence member on a respective jaw;

(3) a pair of fence rails each having a fixed end fixedly connected to one of said fence members and a free end; and

(4) means for slidably connecting each said rail to the other of said fence members; and

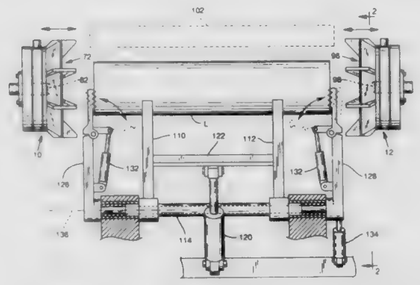
(5) said fence members and said fence rails forming a substantially rectangular fence enclosure.

5,052,455

BLOCK POSITIONER

Howard C. Mason, 31988 Country View La., Wilsonville, Oreg. 97070

Filed Feb. 20, 1990, Ser. No. 481,161
Int. Cl.[5] B27L *5/00*
U.S. Cl. 144—209 A **8 Claims**



1. Apparatus for positioning a block for rotation about an axis dictated by data obtained through scanning of the block comprising:

first and second rotatable chuck means mounted for relative movement toward and away from each other for rotatably supporting opposite ends of a block with the block rotatable about an axis extending between said chuck means,

a secondary chuck associated with at least said first chuck means and said secondary chuck being rotatable about said axis and also shiftable along said axis relative to said first chuck means,

power-operated means for relatively displacing independently of said secondary chuck said first and second chuck means in a direction extending laterally of said axis thus to shift the ends of the block with respect to said axis,

scanning means for scanning the periphery of the block with the block in different positions as rotatably supported by said chuck means and producing control data from the scanning, and

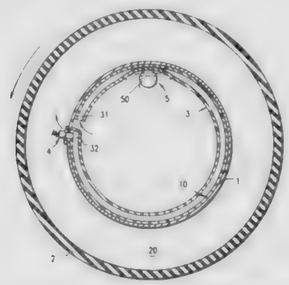
control means responding to the control data of the scanning means controlling said power-operated means.

5,052,456

DEVICE FOR DEFLATING A TIRE WHEN ROTATING

Andre Dosjoub, Chamalieres, France, assignor to Compagnie Generale Des Etablissements Michelin-Michelin & Cie, Cleremont-Ferrand, France

Division of Ser. No. 218,557, Jul. 13, 1988, Pat. No. 4,922,984. This application Jan. 18, 1990, Ser. No. 467,020
Claims priority, application France, Jul. 15, 1987, 87 10100
Int. Cl.[5] B60C *23/12;* **F04B** *17/06*
U.S. Cl. 152—415 **2 Claims**



1. A device for deflating a rotating tire mounted on a rim and comprising:

a rim having an orifice formed therein;

a pusher element extending through said rim in a gas tight manner, said pusher element having one end communicating with gas pressure of a volume inside the tire and including means for selectively closing said orifice, said pusher element being mounted to the rim for movement between a first position wherein said means for selectively closing closes said orifice and a second position wherein said means for selectively closing opens said orifice, said pusher element having another end outside of the tire;

a cam mounted to said another end of the pusher element; and

presser means mounted stationarily relative to the rotation of the tire for selectively engaging said cam and moving said pusher element to said second position to selectively reduce the pressure in the tire.

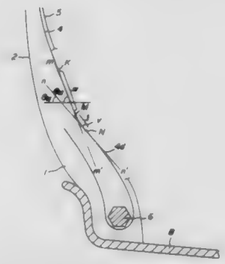
5,052,457

PNEUMATIC RADIAL TIRE WITH HIGH DURABLE BEAD PORTIONS

Hiroyuki Iida, and Hiroyuki Koseki, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 21, 1989, Ser. No. 382,594
Claims priority, application Japan, Jul. 21, 1988, 63-180292
Int. Cl.[5] B60C *3/00*
U.S. Cl. 152—454 **6 Claims**

1. A pneumatic radial tire with durable bead portions, comprising a pair of bead portions, a pair of sidewalls and a tread extending between the sidewalls, a carcass extending between the bead portions and consisting of plies whose cords are radially arranged, at least one ply being turned up about bead cores of the bead portions from inside to outside of the tire in a turn-up construction, a carcass pass line in radial section of the tire in its self-holding position filled with 5% of a normal inner pressure under no-load condition comprises curvature changing areas (v) in a carcass profile curved toward the turned-up portions in the proximities of positions corresponding to a height (h) of turn-upends of the ply from a bead base line to cause compressive stresses in the bead portions near the turn-up ends of the ply by deformations of the carcass when the tire is inflated to normal inner pressure; wherein each of



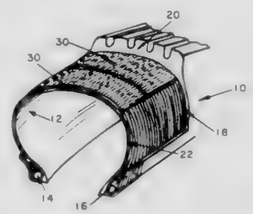
said curvature changing areas (v) of the carcass pass line is smoothly continuous with a zone (w) adjacent thereto and said zone (w) having a curvature smaller than that of the curvature changing area (v), said curvature changing area has a center of curvature inside the tire, and is positioned between two points (M, N) spaced a distance less than 10 mm apart from each other along the carcass pass line and said curvature changing area is within a carcass pass line area extending a radial distance corresponding to 8% of a maximum radial height (H) of the carcass pass line from the bead base line on radially inward and outward sides of the turn-up ends of the ply, and wherein a difference θ between angles of tangents (m—m') and (n—n') at said two points (M, N) to the carcass line is in the range of 5° to 90°.

5,052,458

LOW SPEED RADIAL TIRE FREE OF CORDED BELTS

Jacques J. Bajer, Grosse Pointe, Mich., assignor to DICO Tire, Inc., Clinton, Tenn.

Continuation-in-part of Ser. No. 279,644, Dec. 5, 1988, abandoned. This application Jan. 18, 1990, Ser. No. 467,382
Int. Cl.[5] B60C *9/18, 9/12*
U.S. Cl. 152—532 **12 Claims**



1. A low speed radial pneumatic tire comprising

a radial carcass having body cords, opposed side walls, and a tread, and

means for preventing the radial tire body cords from spreading excessively under rolling loads, said cord spreading prevention means consisting of at least one circumferential cordless belt positioned and aligned on the circumference of the tire carcass and in contact therewith, said cordless belt including an elastomeric matrix containing a plurality

of discontinuous fibers, each of said fibers having a longitudinal axis, the fibers positioned in a plurality of rows and oriented such that the axes of the fibers are parallel to each other,

said tire being free of corded belts.

5,052,459

COVERING FOR COVERING AN OPENING

Marco G. Grossenbacher, Engestrasse 1, CH-3012 Bern, Switzerland

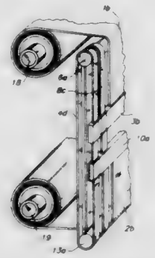
PCT No. PCT/EP89/00226, § 371 Date Dec. 20, 1989, § 102(e) Date Dec. 20, 1989, PCT Pub. No. WO89/09322, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 6, 1989, Ser. No. 455,341

Claims priority, application Switzerland, Mar. 23, 1988, 1094/88

Int. Cl.[5] E06B *9/08*

U.S. Cl. 160—122 **15 Claims**



1. A covering for covering an opening or lining a surface comprising two covering parts, each of said covering parts comprising

a web of flexible material with side edges,

tension means at both of said side edges to form said covering part into a continuous closed system,

a plurality of pulleys at both of said side edges for guiding said tension means,

means for enabling said covering part and said tension means to move independently of the other of said covering parts, and

means for fixing said covering part at any desired position,

wherein at least two of said plurality of pulleys, one at each of said side edges, are nonrotatably connected to each other, and means provide slip-free transmission of tension from said nonrotatably connected pulleys to said tension means.

5,052,460

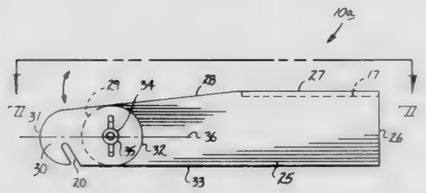
VENETIAN BLIND RESTRAINER APPARATUS

Lewis D. Buckingham, 2350 W. First St., Apt. 701, Ft. Myers, Fla. 33901

Filed Jan. 25, 1990, Ser. No. 470,374

Int. Cl.[5] E06B *9/30*

U.S. Cl. 160—178.1 **1 Claim**



1. A venetian blind restrainer apparatus for securement to a window sill to secure and position an elongate base bar of a venetian blind assembly in a spaced relationship relative to the window sill, the apparatus comprising,

a first elongate plate member and a second elongate plate member for mounting to each side edge of the window sill, and each plate member including a slot adjacent a forward edge of each plate member to receive a positioning lug therewithin, the positioning lug mounted and extending exteriorly of each end of the base bar of the venetian blind assembly, and

wherein each plate member includes a longitudinal axis positioned medially of each plate member between a bottom edge and a rear top edge, and a rear edge formed on each plate member oriented orthogonally relative to each longitudinal axis, and the bottom edge oriented orthogonally relative to the rear edge of each plate members with a top edge of each plate member spaced from the bottom edge and defined by the rear top edge spaced in a parallel relationship relative to the bottom edge and intersecting the rear edge, and the top edge including a forward top edge directed downwardly from the rear top edge to the forward edge of each plate member, and each slot of each plate member directed into the plate member from each bottom edge of each plate member and terminating below each longitudinal axis of each plate member, and

wherein each slot defines an acute angle between the slot and each longitudinal axis, and each slot directed from the bottom edge towards the forward edge of each plate member, and

wherein each plate member includes a flange mounted and integrally formed orthogonally to the rear top edge of each plate member, wherein each flange includes a plurality of mounting apertures directed therethrough to mount the flange to the window sill, and

wherein each slot is mounted within a positioning plate, and each positioning plate is pivotally mounted to each elongate plate member, the positioning plate defined by a forward arcuate plate nose and a rear arcuate plate edge, the rear arcuate plate edge defining a diameter substantially equal to the width of each plate member, at the point of pivotal attachment and each positioning plate mounted to each plate member including a threaded lug and a threaded fastening member sandwiching the positioning plate and plate member therebetween.

5,052,461

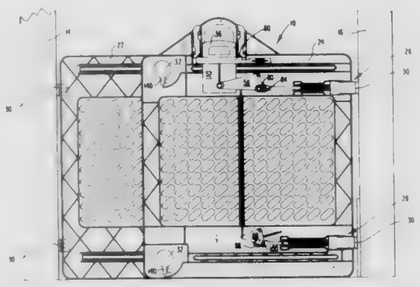
SECURITY GATE OPERABLE WITH ONE HAND

Carl M. Stern, Lawrenceville, N.J., assignor to Innova Development Corporation, Pennington, N.J.

Division of Ser. No. 326,178, Mar. 17, 1989, abandoned, which is a division of Ser. No. 100,336, Sep. 23, 1987, abandoned. This application Mar. 13, 1990, Ser. No. 492,968

Int. Cl.[5] E06B *3/12*

U.S. Cl. 160—224 **2 Claims**



1. A security gate apparatus for attachment across an opening having at least one vertical portion, said apparatus comprising:

a first gate panel;

a second gate panel;

gate extension adjusting means slidingly connecting said first and second gate panels together and releasably securing the extension of said gate apparatus;

retractable engaging means housed within said first panel for securely engaging said vertical portion, said retractable engaging means being operable independently of said first and second panels;

release means separate from said gate extension adjusting means operatively connected to said retractable engaging means for operating said retractable engaging means; and

at least one spring means attached to said retractable engaging means for biasing said retractable engaging means against said vertical portion.

5,052,462

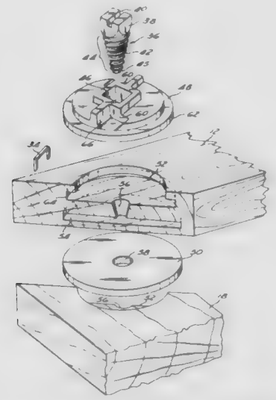
CANVAS TENSIONING PICTURE FRAME

John Stobart, Townhouse No. 23, Union Wharf, Boston, Mass. 02109

Continuation-in-part of Ser. No. 307,789, Feb. 7, 1989, Pat. No. 4,947,922. This application Jul. 27, 1990, Ser. No. 558,598

Int. Cl.[5] D06C *3/08*

U.S. Cl. 160—374.1 **9 Claims**



1. A canvas tensioning picture frame comprising:

(a) a plurality of frame members arranged to form a frame over which a canvas may be disposed;

(b) a complimentary first half-cavity formed in the end of at least two of said frame members such that when said frame members are abutted, a first cavity is formed;

(c) a complimentary second half-cavity formed adjacent said first half-cavities such that when said frame members are abutted, a second cavity is formed;

(d) a complimentary half-bore formed intermediate said first half-cavities and said second half-cavities such that when said frame members are abutted, a bore is formed, said bore extending from the first cavity to the second cavity.

(e) a first disk having a central aperture formed therein, said disk rotatably disposed within said first cavity;

(f) a second disk disposed within said second cavity, said second disk firmly engaging said complimentary second half-cavities formed in adjacent frame members to restrict the relative rotation thereof;

(g) a frusto-conical screw slidably disposed within the central aperture of said first disk such that rotation of said first disk causes a like rotation of said frusto-conical screw, the threads of said frusto-conical screw engaging said bore; and

(h) wherein rotation of said first disk drives said frusto-conical screw into said bore and operates to move the two adjacent frame members apart.

5,052,463

METHOD FOR PRODUCING A PIPE SECTION WITH AN INTERNAL HEAT INSULATION LINING

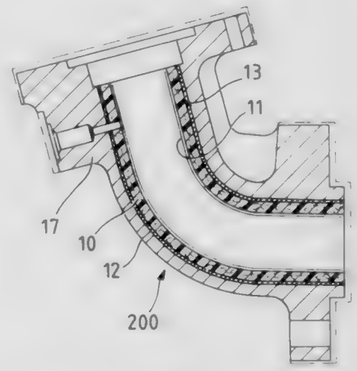
Manfred Lechner, Munich, and Dieter Kunzmann, Taufkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 9, 1990, Ser. No. 491,299

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1989, 3907923

Int. Cl.[5] B22D *19/14*; B22C *9/04*

U.S. Cl. 164—35 **15 Claims**



1. A method for producing a pipe section with an internal heat insulation lining, comprising the following steps:

(a) providing a removable jacket core having a configuration of said pipe section,

(b) applying a heat resistant carbon fiber composite, wherein the carbon fibers are embedded in a carbon matrix, onto the outside of said jacket core to form a heat insulating jacket having said configuration,

(c) removing said jacket core from said heat insulating jacket to provide a hollow heat insulating jacket still having said configuration,

(d) applying a silicon carbide coating to an inner surface of said hollow heat insulating jacket,

(e) applying a nickel coating onto an outer surface of said hollow heat insulating jacket.

(f) closing each end of said hollow heat insulating jacket with a nickel cover to form a closed, yet hollow heat insulating casting core,

(g) applying a platinum layer to an outer surface of said nickel coating on said closed hollow heat insulating casting core,

(h) forming a wax model of said pipe section around said hollow casting core so that said casting core is at least partly encased in said wax model,

(i) applying a green ceramic material to said wax model with said casting core at least partly encased in said wax model,

(j) firing said green ceramic material to form a ceramic mold, whereby said wax model melts out of said ceramic mold while said casting core remains in proper position in said ceramic mold.

(k) casting a high temperature resistant metal alloy melt into said ceramic mold, whereby said pipe section is formed around and bonded to said hollow casting core which becomes said internal heat insulation lining inside said pipe section integrally bonded to said pipe section,

(l) removing, after said melt has solidified, said pipe section with its internal heat insulation from said ceramic mold, and

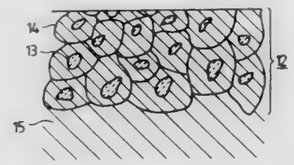
(m) finishing said pipe section.

5,052,464

METHOD OF CASTING A MEMBER HAVING AN IMPROVED SURFACE LAYER

Tatsuo Natori, Kashiwa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 5, 1989, Ser. No. 347,580
Claims priority, application Japan, May 11, 1988, 63-114148
Int. Cl.[5] B22D *19/14, 23/06*
U.S. Cl. 164—80 **4 Claims**



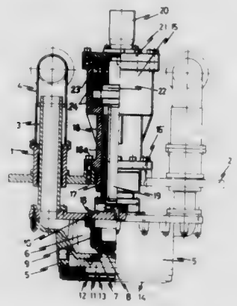
1. A process for making a member having an improved surface layer, which comprises mixing ceramic particles with metal powder, molding the mixture with a binder into a predetermined shape, placing the molded mixture in a predetermined position along an internal wall of a mold, and pouring a molten metal thereinto, so that heat from said molten metal melts said metal powder and an intermediate formation is produced by reaction of said ceramic particles with metal of said metal powder, thereby forming a mixed layer in a predetermined region of the surface of said member, said mixed layer being comprised of said ceramic particles, each of which is surrounded by said intermediate formation and an unreacted metal layer.

5,052,465

DRIVE MECHANISM FOR CORE RELEASE MACHINES

Agustin A. Eraña, Zorrostea, 4 Polg. Ind. Ali-Gobeo, 01010 Vitoria Alava, Spain

Filed Jan. 31, 1990, Ser. No. 472,774
Claims priority, application Spain, Feb. 10, 1989, 8900488
Int. Cl.[5] B22C *15/22*
U.S. Cl. 164—201 **3 Claims**



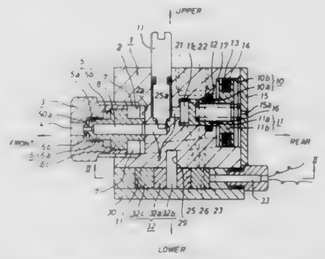
1. A release mechanism of a core blowing machine, comprising a hollow ram; means for reciprocally driving said ram to and from a blowing cartridge; a chassis and two hollow columns for supporting and guiding a movement of said ram; an air discharging valve defined in said ram; said driving means including a driving unit and a motor, said unit including threaded cylinder integral with said ram and a pin provided with a ball-type thread thereon and driven by said motor to move said threaded cylinder therealong upon rotation of said pin by said motor in either direction; a casing having a lid supporting said motor and integral with said chassis, said casing defining a cylindrical sleeve receiving and supporting said threaded cylinder in its movement, said pin in the region beyond a free end of said threaded cylinder having an annular expansion portion defining a stepping; an axial bearing resting on said stepping and transferring an axial thrust force from said pin to said lid; and a pair of radial bearings positioned at a periphery of said expansion portion and supporting said pin in said casing.

5,052,466

ATOMIZER FOR FEEDING MOLD RELEASE AGENT IN A DIE CASTING MACHINE

Takashi Hanano, Kobe, Japan, assignor to Hanano Corporation, Kobe, Japan

Filed Sep. 15, 1989, Ser. No. 407,999
Claims priority, application Japan, Sep. 26, 1988, 63-240534
Int. Cl.[5] B22D *17/00*
U.S. Cl. 164—267 **1 Claim**



1. In a die-casting machine including casting dies, an atomizer for feeding mold release agent to said dies having a mold release agent passage and a pressurized air passage for spraying misty mold release agent by mixing mold release agent coming from the mole release agent passage with pressurized air coming from the pressurized air passage, the atomizer comprising: a rotor having a plurality of vanes being installed in the mold release agent passage of the atomizer in such a way that the vanes are subjected to pressure from the mold release agent passing through the mold release agent passage and are rotated; and a rotation speed sensor installed in the rotor for detecting the rotation speed of the rotor.

5,052,467

CONTROL DEVICE AND A CONTROL METHOD FOR TWIN-ROLL CONTINUOUS CASTER

Shigenori Tanaka; Takashi Furuya, both of Hikari; Hiroyuki Kajioka, Kimitsu; Shigeru Ogawa, Kitakyushu; Kunimasa Sasaki, and Atsumu Yamane, both of Hiroshima, all of Japan, assignors to Nippon Steel Corporation and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 31, 1990, Ser. No. 560,361
Claims priority, application Japan, Aug. 3, 1989, 1-200228
Int. Cl.[5] B22D *11/06, 11/16*
U.S. Cl. 164—452 **9 Claims**

1. A control device for a twin-roll continuous caster including a pair of opposed cooling rolls which rotate in opposite directions, said cooling rolls defining a molten pool therebetween into which molten metal is supplied, and a solidified shell is formed on each cooling roll by a contact between each of said cooling rolls with said molten metal, whereby each solidified shell is bonded at the nearest point of contact of each of said cooling rolls, to thereby continuously produce a cast strip, said control device comprising;

a plurality of maps prepared prior to the operation of said twin-roll continuous caster and stored in a memory of said control device, each of said maps corresponding to a height of said molten pool and a casting speed, teaching a relationship between a thickness of said cast strip and a roll separating force under a fixed casting speed and a fixed height of said molten pool, and defining stable casting conditions under which bulging and surface cracks do not occur, and which consists of a combination of a specific range of said thickness of cast strip and a specific range of said roll separating force;

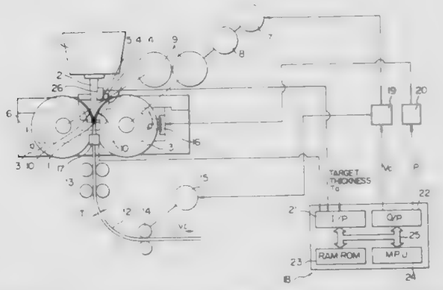
thickness detecting means for detecting an actual cast thickness of said cast strip being cast;

height detecting means for detecting an actual height of said molten pool;

selecting means for selecting an appropriate map from among said plurality of maps corresponding to the detected actual height of molten pool; and

control means for controlling at least one of said casting speed and said roll separating force in accordance with a difference between said actual cast thickness of said cast strip and an target thickness thereof, in such a manner that said cast strip of said target thickness can be cast under said stable casting conditions of said selected appropriate map.

9. A control method for a twin-roll continuous caster including a pair of opposed cooling rolls which rotate in opposite directions, said cooling rolls defining a molten pool therebetween into which molten metal is supplied, and a solidified shell is formed on each cooling roll by a contact between each of the cooling rolls with said molten metal, whereby each solidified shell is bonded at the nearest point of contact of each of the cooling rolls, to thereby continuously produce a cast strip, this control method comprising;



preparing a plurality of maps prior to the operation of the twin-roll continuous caster and storing said plurality of maps in a memory of the control device, each of the maps corresponding to a height of the molten pool and a casting speed, teaching a relationship between a thickness of the cast strip and a roll separating force under a fixed casting speed and a fixed height of the molten pool, and defining stable casting conditions under which bulging and surface cracks do not occur, and which consists of a combination of a specific range of the thickness of a cast strip and a specific range of the roll separating force;

detecting-an actual cast thickness of the cast strip being cast;

detecting an actual cast thickness of the cast strip being cast;

selecting an appropriate map from among plurality of maps corresponding to the detected actual height of molten pool;

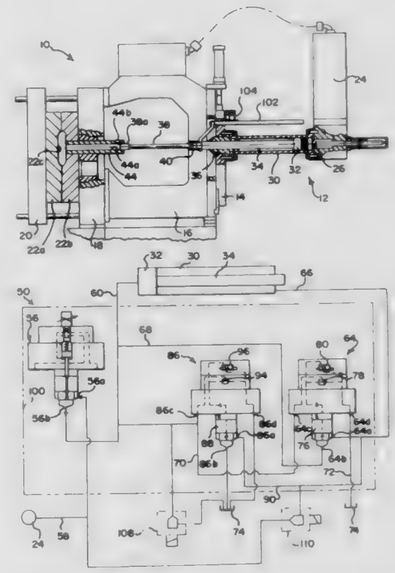
controlling at least one of the casting speed and the roll separating force in accordance with a difference between the actual cast thickness of the cast strip and an target thickness thereof; and thereby casting said cast strip to the target thickness under the stable casting conditions of the selected appropriate map.

5,052,468

METHOD AND APPARATUS FOR DIE CASTING SHOT CONTROL

Manfred M. Koenig, Kenosha, Wis., assignor to Diecasting Machinery & Rebuilding Co., Waukegan, Ill.

Filed Sep. 20, 1989, Ser. No. 409,937
Int. Cl.[5] B22D *46/00, 17/04;* **B29F** *1/04*
U.S. Cl. 164—457 **10 Claims**



1. In a die casting machine including a shot cylinder having an internal piston defining a head end and a rod end, a chamber adapted to receive molten material, means defining a die cavity, and a source of fluid pressure, said shot cylinder being cooperative with said chamber to enable injection of molten material into said die cavity from said chamber upon application of fluid pressure to the head of said shot cylinder; the improvement comprising fluid pressure control means interconnected between the shot cylinder and said fluid pressure source, said control means including a valve arrangement having a first control valve interposed between the fluid pressure source and the head end of the shot cylinder and operative to control fluid pressure flow to said head end so as to establish a predetermined maximum pressure within the die cavity during a die casting cycle, a second valve interconnected between the rod end of said shot cylinder and said head end thereof, said second valve being normally conditioned to effect fluid pressure communication between said rod and head ends of said shot cylinder and establish a regenerative mode limiting the net pressure force acting on the head end of said piston to a value wherein the pressure within said die cavity at impact is less than said predetermined maximum pressure, and a third valve operatively associated with said head and rod ends of said shot cylinder and having direct fluid pressure communication with said head end of said piston, said third valve being directly responsive to a predetermined pressure at said head end to reduce the pressure at said rod end to substantially atmospheric pressure, said second valve being responsive to said predetermined pressure at said head end to block fluid pressure communication between said head and rod ends and thereby enable said maximum pressure within said die cavity during solidification and curing of molten material within said die cavity.

5,052,469

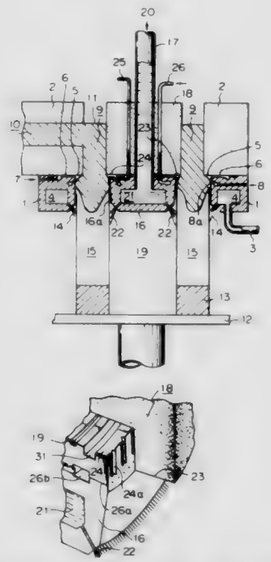
METHOD FOR CONTINUOUS CASTING OF A HOLLOW METALLIC INGOT AND APPARATUS THEREFOR

Shigeru Yanagimoto, Kitakata, and Kazuyuki Hamachi, Chiba, both of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 246,839, Sep. 20, 1988, abandoned. This application Jul. 18, 1990, Ser. No. 554,114

Int. Cl.[5] B22D *11/00, 11/08*

U.S. Cl. 164—465 7 Claims



1. A method for continuous casting a hollow ingot, comprising the step of closing, at the casting start, a lower end of an annular space formed between an inner peripheral surface of a forcedly cooled tubular mold and an outer peripheral surface of a forcedly cooled core by a movable bottom block, continuously pouring molten metal into said annular space, holding said molten metal in said annular space, cooling and solidifying said molten metal with said tubular mold and core, thereby forming the hollow ingot, and continuously displacing said movable bottom block thereby withdrawing the solidified metal as a continuous hollow ingot from said tubular mold,

characterized by covering, before pouring said molten metal into said annular space, the outer peripheral surface of said core with refractory heat-insulative material, having holes therethrough, for contact with said molten metal and for preventing contact between said molten metal and said core, bringing said molten metal poured into said annular space in the casting start into contact with said refractory heat insulative material, encasing said refractory heat insulative material with said holes therein in metal solidified thereon, withdrawing said bottom block and said refractory heat-insulative material, with said metal solidified thereon and in said holes therethrough from said mold, introducing gas in a downward flow between said outer peripheral surface of said forcedly cooled core and the inner peripheral surface of said molten metal forming said hollow ingot and forming, by said introduced gas, an annular gap surrounding an inner peripheral surface of said hollow metallic molten metal between said inner peripheral surface of said hollow molten metal and said outer peripheral surface of said forcedly cooled core and, with said gas, applying a pressure at said annular gap to said inner peripheral surface of said hollow molten metal outwardly from said core while the molten inner surface of said molten metal solidifies.

5,052,470

PROCESS FOR CONTINUOUS PRODUCTION OF AN EXTRUDED SECTION

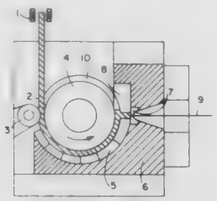
Kurt Buxmann, Sierre, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Oct. 16, 1989, Ser. No. 421,658

Claims priority, application Switzerland, Oct. 31, 1988, 4050/88

Int. Cl.[5] B22D *11/00*

U.S. Cl. 164—467 5 Claims



1. A process for the continuous production of metal extruded sections comprising providing a molten metal melt, casting said molten metal in an electromagnetic mold so as to produce a solidified cast rod, and feeding said solidified rod to a friction wheel directly after casting in said electromagnetic mold wherein said friction wheel advances said rod under extrusion force to a die through which said rod is extruded.

5,052,471

METHOD OF RAPIDLY AND UNIFORMLY WIDTHWISE COOLING CAST STAINLESS STEEL STRIP IN CONTINUOUS CASTING

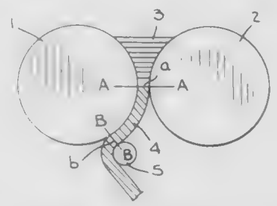
Masanori Ueda, and Shinichi Teraoka, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 8, 1990, Ser. No. 536,432

Claims priority, application Japan, Jun. 23, 1989, 1-159733

Int. Cl.[5] B22D *11/06, 11/124*

U.S. Cl. 164—480 4 Claims



1. A method of rapidly and uniformly widthwise cooling a cast stainless steel strip when casting the strip by using a vertical type twin-roll continuous caster provided with a pair of cooling rolls having an outer circumferential surface composing a casting mold wall moving synchronously with the cast strip, which comprises the step of:

pressing a cast strip having left a kissing point between the cooling rolls against the circumferential surface of one of the cooling rolls with a press roll disposed downstream of the kissing point and having a press roll surface geometry predetermined in accordance with a cooling roll crown and a cast strip crown, to rapidly cool said cast strip over the entire strip width successively from the strip solidification completion and over a temperature range in which the growth of solidified grains of the strip is accelerated.

5,052,472

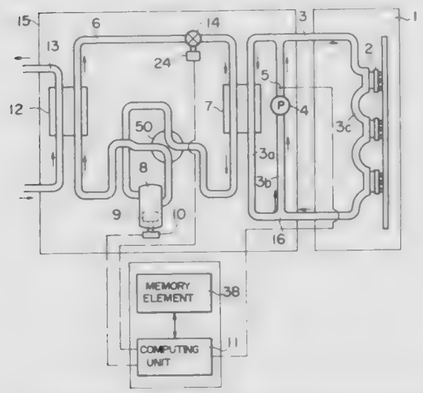
LSI TEMPERATURE CONTROL SYSTEM

Kenji Takahashi, Abiko; Takuji Torii, Ushiku; Takao Senshu; Tetsuji Yamashita, both of Shizuoka, and Shizuo Zushi, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 382,203

Int. Cl.[5] F25B *29/00, 49/00;* H01L *23/46;* F28D *15/00*

U.S. Cl. 165—1 10 Claims



10. A method of operating an LSI temperature controlling system that includes a closed fluid circuit through which water for cooling an LSI is circulated;

a refrigeration system including a refrigerant compressor, an electric motor for driving said compressor, a first heat exchanger for exchanging the heat of the LSI cooling water and the refrigerant, an expansion valve, a second heat exchanger for exchanging the heat of the refrigerant and another fluid; and an inverter for controlling the speed of said electric motor, said closed fluid circuit including a first passage at least a part of which extends through said first heat exchanger, a second passage connected to and extending fluidly in series to said first passage, a third passage at least a part of which is disposed adjacent to the LSI, said third passage connected fluidly in series to said second passage and extending fluidly in parallel to said first passage, and a water pump disposed in said second passage, said method comprising the steps of:

operating said water pump to circulate the LSI cooling water through said closed fluid circuit such that the water discharged from said pump first flows through said second passage downstream of said pump and is then divided into first and second portions;

causing said first position of the water to flow through said first passage in heat exchanging relationship to the refrigerant flowing through said first heat exchanger;

causing said second portion of the water to flow through said third passage in heat exchanging relationship to said LSI;

thereafter collecting said first and second portions of the water in said second passage upstream of said water pump and causing the thus collected water portions to flow therethrough into said water pump whereby said first and second portions of water cooperate to exchange heat from said LSI and said refrigerant;

detecting the temperature of the LSI cooling water; and

controlling a frequency of said inverter based on a difference between the thus detected temperature of the LSI cooling water and a preset reference temperature.

5,052,473

REGENERATIVE GAS TURBINE WITH HEAT EXCHANGER

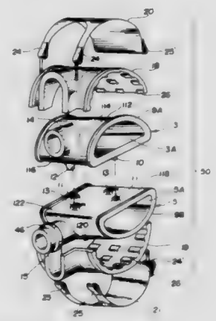
Masafumi Sasaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 5, 1990, Ser. No. 608,930

Claims priority, application Japan, Nov. 6, 1989, 1-288267

Int. Cl.[5] F28D *19/04*

U.S. Cl. 165—9 11 Claims



1. A heat exchanger, comprising:

a casing;

a heat exchange core disc having an axial end face; and

a duct housing assembly including a first duct housing with a first platform, a second duct housing with a second platform, said first duct housing being separate and distinct from said second duct housing, and means for making said first and second platforms coplanar with each other;

said heat exchange core disc being rotatable within said casing, said duct housing assembly being mounted within said casing with said first and second platforms cooperating with said axial end face of said heat exchange core disc.

5,052,474

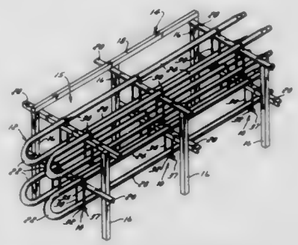
HANGER ASSEMBLY FOR A MULTIPLE TUBE HEAT EXCHANGER

Hervé X. Bronnert, 21495 Partridge Ct., Brookfield, Wis. 53005

Filed Oct. 24, 1990, Ser. No. 602,470

Int. Cl.[5] F28F *9/00;* F28D *7/06*

U.S. Cl. 165—67 4 Claims



1. A hanger assembly for a multiple tube heat exchange module, the module including a frame having cross members and a number of hair pin shaped heat exchangers having upper and lower legs, the upper legs being supported on the cross members, said assembly comprising:

a "U" shaped rod supported on the upper leg of the heat exchanger, said rod including a notch to form an end section at each end of the rod, and

a plate having a pair of holes, said end sections being aligned

in the holes of said plate with the plate located in a position to engage the bottom of the lower leg of the heat exchanger,

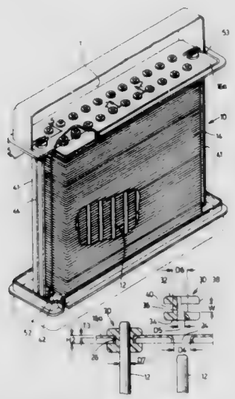
the end sections of the rod being bent at the notches at an angle to hold the plate in engagement with the lower leg of the heat exchanger.

5,052,475

RADIATOR CORE

Blake J. Grundy, 1050 Salk Road, Pickering, Ontario, Canada L1W 3C5

Filed Dec. 20, 1990, Ser. No. 631,363
Claims priority, application Canada, Dec. 19, 1989, 2006002
Int. Cl.[5] F28F *9/06*
U.S. Cl. 165—76 9 Claims



1. A light weight high efficiency radiator core adapted to be located between two spaced-apart header tank means and comprising:

a plurality of metal tubes arranged side by side, said tubes having a predetermined outer diameter, and a predetermined wall thickness;

a plurality of elongated continuous aluminum fins, having a predetermined thickness, said fins being mounted on said tubes;

openings formed in said fins for reception of said tubes therethrough;

fin collar means formed around said fin openings, said fin collar means being formed by an integral portion of respective said fins, said fin collar means being cylindrical along their length and having a diameter, corresponding to said predetermined outer diameter of said tubes, whereby to make a tight frictional metal to metal fit around said tubes whereby, in turn, to maximize heat transfer from said tubes to said fins, said fin collar means having a predetermined height and the free end of one said fin collar means abutting against the adjacent surface of the next adjacent fin on said tubes, whereby to define a predetermined spacing between said fins;

louvre means formed on said fins whereby to procure turbulent air flow therearound and maximize heat transfer;

two header plate means formed of metal having a thickness between about 0.635 mm and 1.016 mm, and being formed with a plurality of header plate openings therethrough to receive said tubes therethrough, said plate openings having a predetermined diameter greater than said tube outer diameter;

header plate collar means formed integrally with said header plate means located around said header plate openings and having a predetermined height;

grommets formed of resilient synthetic material, said grommets defining upper and under surfaces, and outer and inner surfaces, said outer surfaces defining therein an annular groove, and being resiliently compressible whereby to permit said tubes to be press-fitted therethrough, and make a good liquid tight seal thereon, said grommets being disposed in said header plate openings and receiving the ends of said tubes therein, and,

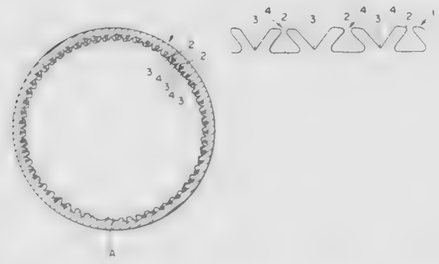
edge wall formations formed around the edge of each said header plate means defining a perimeter channel, whereby to facilitate joining to said header tank means.

5,052,476

HEAT TRANSFER TUBES AND METHOD FOR MANUFACTURING

Shunroku Sukumoda; Seizo Masukawa, and Haruo Kohno, all of Aizuwakamatsu, Japan, assignors to 501 Mitsubishi Shindoh Co., Ltd., Fukushima, Japan

Filed Aug. 28, 1990, Ser. No. 574,490
Claims priority, application Japan, Feb. 13, 1990, 2-31762; Feb. 13, 1990, 2-31763
Int. Cl.[5] F28F *1/40*
U.S. Cl. 165—133 7 Claims



1. A heat transfer tube having an inner surface in which are formed:

(a) primary grooves, having a U-shaped cross section and parallel to one another, extending at an angle to the longitudinal direction of the heat transfer tube,

(b) secondary grooves, having a V-shaped cross section and parallel to one another, extending at an angle and intersecting with the primary grooves, and

(c) pear-shaped grooves, having an opening width formed between the intersections of the primary and secondary grooves, having a trapezoidal cross sectional shape, said opening width being smaller than the dimension of their bottom portion, and are distributed regularly and uniformly along the primary grooves.

5,052,477

PIPE FOR COOLANT CONDENSER

Ichio Nakajima; Tsuneo Kousaka, and Noboru Okada, all of Isezaki, Japan, assignors to Yuugen Kaisha Marunaka Seisakusho, Gunma, Japan

Filed May 1, 1990, Ser. No. 517,356
Claims priority, application Japan, Sep. 11, 1989, 1-106343[U]
Int. Cl.[5] E28D *1/02*
U.S. Cl. 165—153 8 Claims

1. In a coolant condenser having a pair of header pipes spanned by a plurality of heat exchange tubes having ends of predetermined length inserted in slots in the header pipes, the improvement wherein said header pipe is formed of at least two tubular body sections axially joined at their ends by a coupling comprising a first cylindrical section and a second cylindrical section integrally formed with an intermediate partition section occluding passage therethrough said first and second cylindrical sections being adapted to securely engage a selected surface of the first and second pipes.

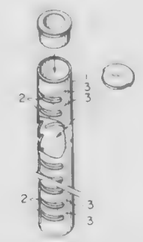


5,052,478

PIPE FOR COOLANT CONDENSER

Ichio Nakajima; Tsuneo Kousaka, and Akio Matsushima, all of Isezaki, Japan, assignors to Yuugen Kaisha Marunaka Seisakusho, Gunma, Japan

Filed May 1, 1990, Ser. No. 517,355
Claims priority, application Japan, May 19, 1989, 1-56972[U]; Sep. 11, 1989, 1-106344
Int. Cl.[5] F28D *1/02*
U.S. Cl. 165—153 6 Claims



1. In a coolant condenser having a pair of header pipes spanned by a plurality of heat exchange tubes having ends adapted to be inserted in slots in the header pipe, the improvement wherein each of the the header pipes has a plurality of longitudinal oblong slots uniformly spaced along the pipe transverse to the axis thereof adapted to receive an end of a flat tubular heat exchanger, said slots extending radially through the wall of said pipe and having an outside dimension broader than that of said tubular heat exchanger and the peripherally directed edges on the exterior surface of said pipe curved to flare radially outward to form a taper for insertion of said tubular heat exchanger.

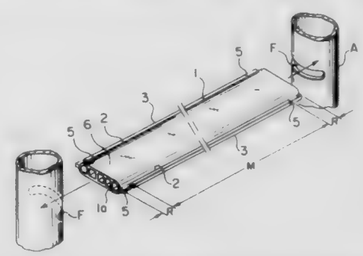
5,052,479

TUBE FOR COOLANT CONDENSER

Ichio Nakajima; Tsuneo Kousaka, and Yoshihito Takagi, all of Isezaki, Japan, assignors to Yuugen Kaisha Marunaka Seisakusho, Gunma, Japan

Filed May 1, 1990, Ser. No. 517,354
Claims priority, application Japan, Jun. 29, 1989, 1-76463; Nov. 4, 1989, 1-129210[U]
Int. Cl.[5] F28D *1/02*
U.S. Cl. 165—153 8 Claims

1. In a coolant condenser having a pair of header pipes spanned by a plurality of heat exchange tubes having ends of predetermined length inserted in slots in the header pipes, the improvement wherein said heat exchange tubes comprise a flat tubular body having an elongated rod extending in length along at least one peripheral edge of said body between the predetermined length ends thereof, said rod terminating at each of its ends in a shoulder projecting outwardly from said body to strike the surface of said associated header pipe adjacent the slot into which said end is inserted to thereby limit the insertion of said heat exchange tube in said associated header pipe to said predetermined length.

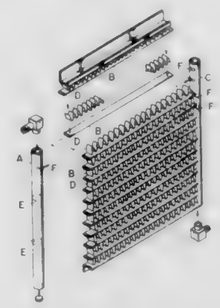


5,052,480

PIPE FOR COOLANT CONDENSER

Ichio Nakajima; Tsuneo Kousaka, and Noboru Okada, all of Isezaki, Japan, assignors to Yuugen Kaisha Marunaka Seisakusho, Gunma, Japan

Filed May 1, 1990, Ser. No. 517,353
Claims priority, application Japan, Jul. 14, 1989, 1-83194[U]
Int. Cl.[5] F28D *1/02*
U.S. Cl. 165—153 3 Claims



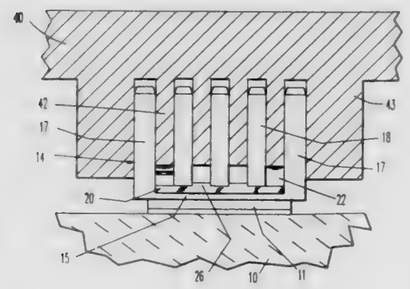
1. In a coolant condenser having a pair of header pipes spanned by a plurality of heat exchange tubes having ends adapted to be inserted in slots in said header pipes and corrugated fins arranged between adjacent heat exchange tubes, the improvement wherein the wall sections of the header pipe, between adjacent slots, has a W-shaped profile in longitudinal cross section, having a central depressed portion straddled by a pair of projecting portions such that said projecting portions engage and support the adjacent end surface of said corrugated fins.

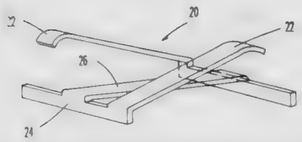
5,052,481

HIGH CONDUCTION COOLING MODULE HAVING INTERNAL FINS AND COMPLIANT INTERFACES FOR VLSI CHIP TECHNOLOGY

Joseph L. Horvath, Poughkeepsie; Robert G. Biskeborn, Pawling, and Joseph M. Harvilchuck, Billings, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1988, Ser. No. 198,962
Int. Cl.[5] F28F 7/00
U.S. Cl. 165—185 45 Claims





1. An apparatus for removing heat from a heat generating device comprising:

at least one heat conductive finned internal thermal device comprising, a base having a plurality of first substantially rigid fins on a first surface and a second surface which is flat and directly facing said heat generating device;

a heat conductive cooling hat having a plurality of second substantially rigid fins facing toward said heat generating device;

said first fins being interspersed with and at least partially overlapping said second fins so that at least one gap exists between overlapping portion of adjacent fins, and first and second channels exist, and wherein said second fins all have uniform thickness for that portions that corresponds with said first fins;

each first channel being partially bound by adjacent first fins and each second channel being partially bound by adjacent second fins;

biasing means located at least in one of said channel or secured at least to a surface of at least one of said first fins, and exerting a biasing force between said cooling hat and at least one heat conductive finned internal thermal device, thereby urging said second surface of said base toward said heat generating device.

5,052,482

CATALYTIC DOWNHOLE REACTOR AND STEAM GENERATOR

Michel Gondouin, San Rafael, Calif., assignor to S-Cal Research Corp., San Rafael, Calif.

Filed Apr. 18, 1990, Ser. No. 510,596
Int. Cl.[5] E21B 34/14, 43/12, 43/24
U.S. Cl. 166—50 19 Claims

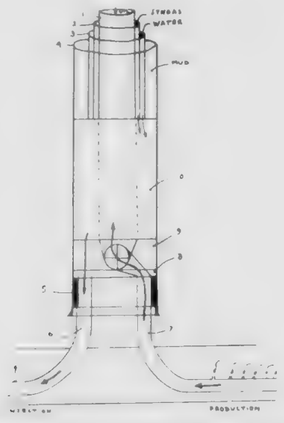
1. Apparatus for generating downhole large volumes of high quality steam and gases capable of making heavy oil more mobile; said apparatus comprising: (a) a downhole catalytic methanator reactor assembly,

(b) means for hanging said assembly into the cemented casing of a vertical well,

(c) a plurality of liner-equipped nearly horizontal drainholes, drilled into the oil reservoir for injecting said steam and gases into said reservoir,

(d) means for connecting said drainholes liners to said well casing,

(e) vertical tubings connecting said assembly to the surface,



(f) a downhole valve section including surface-operated valves for successively directing the injectant stream from said assembly into each one of said drainholes and for simultaneously directing the flow of reservoir fluids produced from at least one of the other drainholes into a production tubing, located within said well casing,

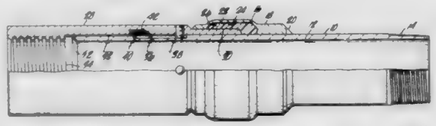
(g) means for transporting the required feed gases and water from the surface to said reactor and steam generator through said vertical tubings.

5,052,483

SAND CONTROL ADAPTER

Leo O. Hudson, Bakersfield, Calif., assignor to Bestline Liner Systems, Bakersfield, Calif.

Filed Nov. 5, 1990, Ser. No. 609,259
Int. Cl.[5] E21B 43/10
U.S. Cl. 166—55 11 Claims



1. An adapter for a well casing, comprising

a cylindrical liner;

a sleeve concentrically fixed to and outwardly of said cylindrical liner, said sleeve including a first, body portion affixed to said cylindrical liner and a second, deformable portion displaced outwardly from said cylindrical liner and extending axially from said first, body portion;

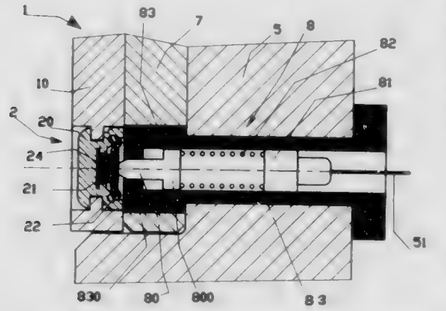
a pressure fluidizing solid between said cylindrical liner and said second, deformable portion adjacent said first, body portion.

5,052,484

ELECTRICAL CONNECTOR AND CONTACT ASSEMBLY FOR VEHICLES

Jean-Louis Gesta, Chateaugay, France, assignor to Compagnie Generale de Etablissements Michelin, Clermont-Ferrand, France

Filed Aug. 2, 1990, Ser. No. 561,899
Claims priority, application France, Aug. 10, 1989, 89 10864
Int. Cl.[5] H01R 29/00
U.S. Cl. 439—188 7 Claims



1. A connecting device having at least two electrical connectors designed to be permanently connected in parallel with a conductive wire from one part and from another part to realize a separable galvanic connection with one associated contact, each of said electrical connectors comprising a support on which are mounted two conductive stages:

a) the first conductive state having electrical connecting means to be connected to said conductive wire, and being galvanically insulated from the exterior;

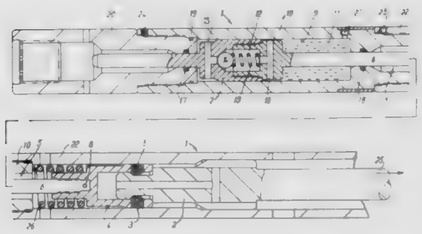
b) the second conductive stage being accessible from the exterior of said connector to be able to be pressed by said associated contact, being in a rest position galvanically isolated from said first conductive stage, and being movable in said support, to be pressed against said first conductive stage when pressed toward the inside of the contact in order that the two conductive stages are put in galvanic contact when said connector is in operation with said associated contact.

5,052,485

JAR MECHANISM

Michael A. Reid, Aberdeen, Scotland, assignor to Well-Equip Limited, Dyce, United Kingdom

Filed Jun. 22, 1990, Ser. No. 542,164
Claims priority, application United Kingdom, Jun. 29, 1989, 8914932[U]; Feb. 14, 1990, 9003372
Int. Cl.[5] E21B 31/113
U.S. Cl. 166—178 10 Claims



1. A jar mechanism comprising:

a housing having an impact surface;

a fluid chamber located within said housing and containing a fluid;

a piston movably mounted in said fluid chamber, said piston being movable within said fluid chamber between a first position and a second position;

a jar member movably mounted within said housing; and

a release device releasably coupling said jar member to said piston such that when said piston is in said first position in said fluid chamber, said jar member is coupled to said piston by said release device for movement therewith;

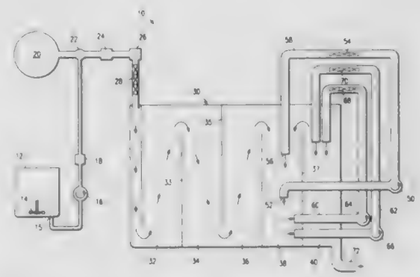
and whereby a first force exerted on said jar member moves said piston to said second position within said fluid chamber against the resistance of said fluid, whereby the action of said first force applied to said jar member, when the piston is in said second position, actuates said release device to release said jar member from said piston and said first force accelerates said jar member relative to said housing and said piston so that said jar member impacts against said impact surface to create a jarring force.

5,052,486

METHOD AND APPARATUS FOR RAPID AND CONTINUOUS HYDRATION OF POLYMER-BASED FRACTURING FLUIDS

James C. Wilson, Denver, Colo., assignor to Smith Energy Services, Chicago, Ill.

Filed Sep. 8, 1989, Ser. No. 405,210
Int. Cl.[5] E21B 43/267, 47/06
U.S. Cl. 166—250 37 Claims



25. A method for the fracturing of a subterranean formation comprising the steps of:

(a) providing a polymer slurry;

(b) providing a base liquid;

(c) combining said polymer slurry with said base liquid;

(d) dispersing the polymer slurry in the base liquid;

(e) maintaining the mixture in a first compartment for from about 45 to about 90 seconds;

(f) introducing liquid from said first compartment into a recycle compartment;

(g) removing a first portion of the mixture from the recycle compartment with a high shear pump;

(h) pumping the mixture back into the recycle compartment;

(i) removing a second portion of the mixture from said recycle compartment with a high shear pump;

(j) pumping the second portion of the mixture into an exit compartment;

(k) removing substantially fully hydrated mixture from said exit compartment;

(l) adding proppants to the substantially fully hydrated mixture; and

(m) injecting said hydrated mixture into a subterranean formation under hydraulic pressure.

37. An apparatus effective for the hydration of polymer-based fracturing fluids comprising:

(a) a first vessel for containing a polymer slurry;

(b) a second vessel for containing an aqueous base liquid;

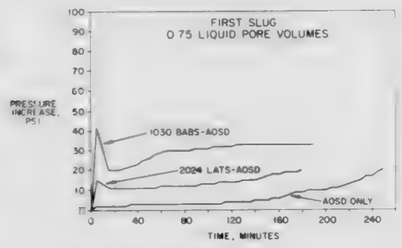
(c) means to combine said polymer slurry with said aqueous base liquid to form a mixture;
(d) an in-line static mixing device to disperse said mixture;
(e) a first compartment comprising a plurality of chambers in fluid communication with each other, said first compartment having a residence time of at least about 45 seconds;
(f) a recycle compartment in fluid communication with said first compartment;
(g) means to withdraw a first portion of fluid from said recycle compartment and return the first portion to said recycle compartment, comprising a high shear pump in fluid communication with an in-line static mixing device;
(h) an exit compartment;
(i) means to withdraw a second portion of fluid from said recycle compartment and to introduce the second portion into said exit compartment, comprising a high shear pump and an in-line static mixing device, and
(j) a means for withdrawing fluid from said exit compartment.

5,052,487

SEQUENTIAL INJECTION FOAM PROCESS FOR ENHANCED OIL RECOVERY

Robert G. Wall, Pinale, Calif., assignor to Chevron Research & Technology Company, San Francisco, Calif.

Filed Dec. 29, 1989, Ser. No. 459,091
Int. Cl.[5] E21B *43/22, 43/24*
U.S. Cl. 166—263 **14 Claims**



1. A method of enhanced recovery of oil from a petroleum reservoir comprising:
injecting into said reservoir an oil-mobilizing agent comprising a gas and a surfactant, which agent is capable of mobilizing oil present in oil-bearing formation in said reservoir, in an amount sufficient to reduce the oil concentration in said oil-bearing formation;
stopping the injection of the oil-mobilizing agent; and
injecting into said formation steam and an alpha-olefin sulfonate dimer surfactant or an alpha-olefin sulfonate surfactant sufficient to form a foam in areas of reduced oil concentration and thereby divert steam from said areas to areas of said oil-bearing formation having higher oil concentration and thereby assisting in the movement of oil through said formation and in the recovery of hydrocarbons from said reservoir.

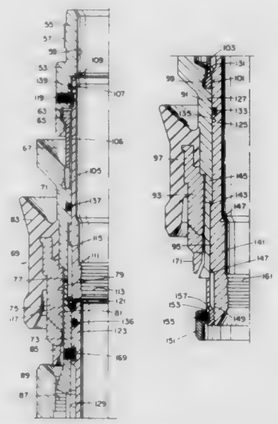
5,052,488

PLUG APPARATUS AND METHOD FOR CEMENTING A LINER IN A WELL BORE

James M. Fraser, III, Spring, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 31, 1990, Ser. No. 472,769
Int. Cl.[5] E21B *33/16*
U.S. Cl. 166—285 **5 Claims**

1. An apparatus for cementing a liner string in a well bore, comprising:
an operating string of smaller diameter than the internal diameter of the liner string and insertable therein;
means connecting said operating string within the internal diameter of the liner string operable by rotation of the operating string to release the operating string from the liner;
a plug carrying body connected to the lower most extent of the operating string;
a top plug releasably supported from the plug carrying body and a longitudinally spaced bottom plug releasably supported from the top plug;



pressure-releasable means securing the top plug to the plug carrying body, the bottom plug to the top plug, and retainer means on the bottom plug, respectively;
shiftable means for locking the top plug to the plug carrying body until the pressure-releasable means securing the bottom plug are released; and
means for hydraulically balancing the pressure-releasable means securing the retainer means on the bottom plug.

5,052,489

APPARATUS FOR SELECTIVELY ACTUATING WELL TOOLS

James V. Carisella, 7524 Garnet, New Orleans, La. 70124, and Robert B. Cook, 13 Red Cypress Ct., Mandeville, La. 70448

Filed Jun. 15, 1990, Ser. No. 538,840
Int. Cl.[5] E21B *43/11*
U.S. Cl. 166—297 **23 Claims**

1. Well bore apparatus cooperatively arranged for suspension in a well bore and comprising:
a tool body;
an impact-actuated explosive on said body;
a detonating member arranged on said body for striking said impact-actuated explosive with sufficient force to detonate said impact-actuated explosive;
an impact-attenuating barrier between said impact-actuated explosive and said detonating member which is formed of a heat-responsive substance rendering said barrier effective to at least attenuate the striking force of said detonating member so long as the temperature of said heat-responsive substance remains below a predetermined temperature and rendering said barrier ineffective to attenuate the striking force of said detonating member after said heat-responsive substance is heated above said predetermined temperature by elevated well bore temperatures exterior of said well bore apparatus; and
means selectively initiated from the surface only after said impact-attenuating barrier is rendered ineffective and operable for driving said detonating member into said ineffective barrier with sufficient striking force to detonate said explosive.



5,052,490

PERMEABILITY OF FINES-CONTAINING EARTHEN FORMATIONS BY REMOVING LIQUID WATER

Marion G. Reed, Hacienda Heights, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1989, Ser. No. 453,652
Int. Cl.[5] E21B *43/24, 43/243*
U.S. Cl. 166—303 **1 Claim**

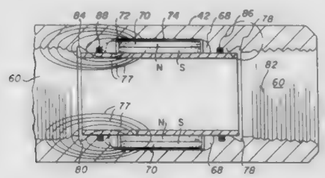
1. A method for improving the effectiveness of fluid transport in a fines-containing earthen formation comprising increasing the permeability of a portion of said formation by removing liquid water from said portion by:
(a) injecting steam into a well within said formation, and
(b) abruptly lowering of the pressure on said steam to vaporize substantially all of said liquid water and to cause said vaporized water to leave said portion.

5,052,491

OIL TOOL AND METHOD FOR CONTROLLING PARAFFIN DEPOSITS IN OIL FLOW LINES AND DOWNHOLE STRINGS

Herbert L. Harms, Alden; Charles R. Moeckly, Britt, both of Iowa; Donald Reed; April A. Reed, both of Commerce City, Colo., and Peter A. Kaiser, New Castle, Wyo., assignors to Mecca Incorporated of Wyoming, Britt, Iowa

Filed Dec. 22, 1989, Ser. No. 454,893
Int. Cl.[5] E21B *37/00;* **F17D** *1/00*
U.S. Cl. 166—304 **36 Claims**



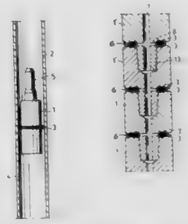
1. An oil tool for controlling paraffin related clogging in flow lines comprising:
(a) a substantially cylindrical sleeve having a first end and a second end providing an environmentally resistant outside covering and means in said first end and said second end for connection to an oil flow pipe line;
(b) a curved magnetic shield axially aligned with said substantially cylindrical sleeve and disposed intermediate said first end and said second end of said substantially cylindrical sleeve;
(c) at least one magnet disposed longitudinally inside said substantially cylindrical sleeve in axial alignment with said substantially cylindrical sleeve and said curved magnetic shield;
(d) a liner having a first end and a second end disposed intermediate said first end and said second end of said substantially cylindrical sleeve; and
(e) means for sealing said liner intermediate said first end and said second end of said substantially cylindrical sleeve.

5,052,492

METHOD FOR SEALING AN ELONGATED, HOLLOW CAVITY, AND A DEVICE FOR CARRYING OUT THE METHOD

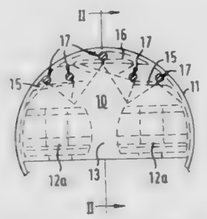
Bengt-Arne Torstensson, Höjdvägen 34, S-186 00 Vallentuna, Sweden

PCT No. PCT/SE89/00038, § 371 Date Aug. 3, 1990, § 102(e) Date Aug. 3, 1990, PCT Pub. No. WO89/07190, PCT Pub. Date Aug. 10, 1989
PCT Filed Feb. 2, 1989, Ser. No. 548,977
Claims priority, application Sweden, Feb. 5, 1988, 8800373
Int. Cl.[5] E21B *33/12;* **F16L** *55/128*
U.S. Cl. 166—387 **19 Claims**



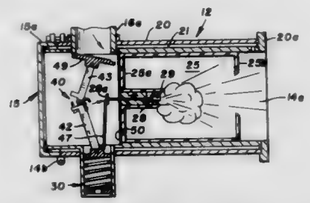
1. A method for sealing elongated hollow cavities, such as circular-cylindrical pipes, tubes and drill holes comprising the steps of: placing a body in the cavity in sealing contact with the inner surface of the cavity, with at least one essentially annular, elastic sealing element (**3**), sealingly mounted in a radially and circumferentially extending gap (**6**) present in the body (**1**); urging said sealing element radially outwards into sealing abutment with the inner surface (**4**) of the cavity (**2**), by means of applying pressure (p), internally of the body, characterized by urging two mutually concentric essentially annular elastic sealing elements (**3**, **3'**) radially outwards, and thereby bringing the radially outermost one (**3**) of said elements into said sealing abutment with the inner surface (**4**) of the cavity (**2**) and effecting a permanent seal between said body (**1**), said outermost sealing element and said sealing abutment by urging said outermost sealing element (**3**) essentially completely through said gap into a slot (**10**), extending peripherally and externally of the gap (**6**), while compressing the outermost sealing element (**3**) axially, the opening (a), between the gap (**6**) and the slot (**10**), through which the sealing element (**3**) is urged being smaller than the cross-sectional diameter, thickness, of said outermost sealing element (**3**) in its non-compressed state, and thereby preventing the outermost sealing element once disposed in said slot from reentering the gap (**6**).

5,052,493
FIRE SUPPRESSION SYSTEMS FOR VEHICLES
Anthony J. T. Court, Filton, United Kingdom, assignor to British Aerospace PLC, London, United Kingdom
Filed May 25, 1990, Ser. No. 528,545
Claims priority, application United Kingdom, May 27, 1989, 8912273
Int. Cl.[5] A62C *35/12*
U.S. Cl. 169—9 7 Claims



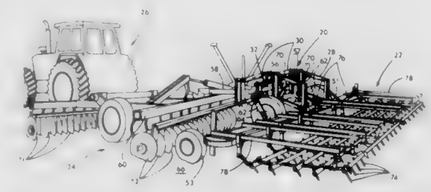
1. An aircraft fire and smoke suppression system, said system comprising a plurality of suppressant fluid spray nozzle assemblies (17) disposed at pre-selected locations within the same enclosure of said aircraft, each of said spray nozzle assemblies (17) including:
its own spray nozzle (20);
its own self-contained supply (25) of suppressant fluid;
its own self-contained supply (23) of fluid pressurizing means; and
co-ordinatable system activating means (22; 28) capable of activating each said assembly (17) selectably independently of each other said assembly (17) and simultaneously with at least some of the other said assemblies (17);
the arrangement being such that, when activated, each said individual supply (23) of fluid pressurizing means causes said suppressant fluid to be discharged within said enclosure as a dense mist or spray from said spray nozzle(s) (20) under substantially constant pressure such that, in combination, the output of the plurality of spray nozzles (20) defines a fire- and smoke-suppressing blanket for a critical time period for evacuation of the aircraft.

5,052,494
EXPLOSION SUPPRESSION DEVICE
Theodore E. Larsen, Edina, Minn., assignor to Advanced Innovations, Inc., Minn.
Filed Apr. 4, 1990, Ser. No. 504,386
Int. Cl.[5] A62C *37/12*
U.S. Cl. 169—60 17 Claims



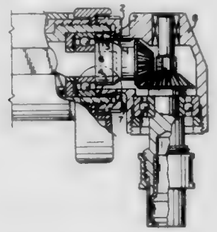
1. A device for projecting fireball suppressant material into a protected area in response to increases in pressure within such area whereby damage due to pressure increase from a developing fireball is reduced or substantially eliminated through fireball suppression, said device including:
a. a longitudinally extending housing providing a first open end and a second end including means for closing the same;
b. a pressure vessel communicating with said housing in close relation to said second end arranged and constructed for rapid introduction of pressurized gas into said housing;
c. means controlling communication between said housing and said pressure vessel;
d. suppressant containing canister receivable into said housing and positionable therein intermediate said valving means and said first open end of said housing;
e. means for releasing suppressant from said canister; and,
f. means associated with said communication controlling means and said suppressant releasing means being pressure responsive to increases in pressure within the protected area arranged and constructed to open said communication controlling means and actuating said suppressant releasing means upon an increase in pressure within the protected area whereby release of pressure from said vessel and release of suppressant cooperatively project the suppressant into the protected area.

5,052,495
IMPLEMENT HITCH
Stanley E. McFarlane, and James E. McFarlane, both of Sauk City, Wis., assignors to McFarlane Manufacturing Co., Inc., Sauk City, Wis.
Filed Nov. 7, 1990, Ser. No. 610,008
Int. Cl.[5] A01B *59/00, 73/00*
U.S. Cl. 172—140 10 Claims



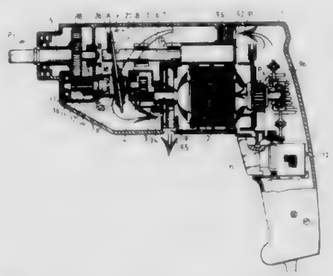
1. A hitch for connecting a first implement to a second implement pulled behind a tractor comprising:
(a) a first parallel linkage assembly having two upright members with upper and lower portions, the upper portions of the upright members being pivotally connected by an upper follower arm and the lower portions of the upright members being pivotally connected by a lower follower arm, one upright member being adapted to rigidly connect to the second implement;
(b) a central horizontal member having two opposed ends and front and rear sides, wherein the other one of said upright members of the first parallel linkage is rigidly connected to the front side of the horizontal member;
(c) ground engaging caster wheels pivotally mounted on each end of the horizontal member;
(d) a second parallel linkage having two upright members with upper and lower portions, the upper portions of the upright members being pivotally connected by an upper lifting arm, and the lower portions of the upright members being pivotally connected by a lower lifting arm, one upright member being rigidly connected to the rear side of the central horizontal member and the other upright member being adapted to connect to the first implement; and
(e) an actuator mounted between the central member and the second parallel linkage and adapted to move a connected first implement between a lowered, ground-engaging, position and an elevated position, wherein the weight of the first implement is substantially carried by the caster wheels.

5,052,496
APPARATUS FOR ATTACHING POWER TOOL HOUSING EXTENSIONS
Gregory P. Albert, Waverly, N.Y., and Bruce D. Fay, Sayre, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 11, 1989, Ser. No. 419,710
Int. Cl.[5] B25F *1/02*
U.S. Cl. 173—29 18 Claims



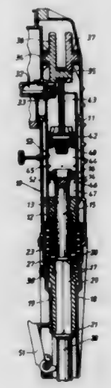
1. An apparatus for attachment of a drive head housing to a motor housing in a power tool, comprising:
a rigid flared lip on a first housing;
a coupling nut which slides over said flared lip;
a split rigid clamp ring which, when placed over the flared lip on said first housing, retains said coupling nut on said first housing;
a rigid sleeve bore means on a second housing into which said rigid flared lip and said split rigid clamp ring are inserted; and
means on said second housing to which the coupling nut is attached to secure the first housing to the second housing of the tool.

5,052,497
APPARATUS FOR DRIVING A DRILLING OR PERCUSSION TOOL
J. P. Houben, Breda, and A. J. Moolenaar, Dorst, both of Netherlands, assignors to Emerson Electric Company, St. Louis, Mo.
Filed Jun. 2, 1989, Ser. No. 360,316
Claims priority, application Netherlands, Jul. 7, 1988, 8801466
Int. Cl.[5] B25D *11/04*
U.S. Cl. 173—109 58 Claims



1. Apparatus for driving a percussion tool provided with a spindle held rotatably in a housing, said spindle having a first end and a second end, the first end is suitable for fastening to said tool and the second end is accessible to an oscillating percussion body movable in said housing by means of a guideway, a rotatable driving shaft actuates said percussion body by a transmission, said transmission being provided with means for conversion of the rotary motion of the drive shaft into an oscillatory motion of an associated drive member, said drive member joining said percussion body through an associated elastic member having non-linear spring attributes, characterized in that said drive member has a plate-like member, said drive member is mounted on the drive shaft, said elastic member is operatively connected to said plate-like member and is provided with a coupling means for engaging said percussion body.

5,052,498
PORTABLE HAMMER MACHINE
Klas R. L. Gustafsson, Kalmar, and Ulf J. Lagne, Saltsjöbaden, both of Sweden, assignors to Berema Aktiebolag, Solna, Sweden
Filed Oct. 26, 1990, Ser. No. 604,764
Claims priority, application Sweden, Oct. 28, 1989, 8903624
Int. Cl.[5] B23B *45/16*
U.S. Cl. 173—118 15 Claims



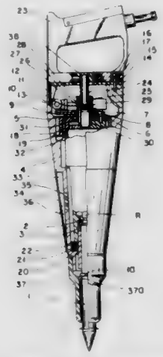
8. A portable hammer machine comprising a housing with a cylinder therein, a drive piston and a hammer piston within said cylinder, and means for reciprocatingly moving the drive piston via a gas cushion in a working chamber defined within the cylinder for repeatedly driving said hammer piston to impact against and to return from a neck of a tool carried by the machine housing in response to a feeding force applied to the tool via the machine housing and the compression of spring means interposed between the machine housing and the tool, a plurality of primary ports defined on the cylinder for the passage of gas to and from said working chamber defined within the cylinder, said primary ports being opened above sealing means on the hammer piston to ventilate the working chamber when the hammer piston delivers impacting forces to the neck of the tool, and a plurality of secondary ports defined on the cylinder for ventilating a chamber below the hammer piston during reciprocating movement of said hammer piston, said spring means in said machine housing being precompressed to balance at least a portion of the weight of the hammer machine when said hammer machine rests on said tool with the hammer piston resting in an idle position on the neck of the tool, said primary ports being disposed above the sealing means of the hammer piston, the total ventilating area of the primary ports and their distance above the hammer piston being selected to maintain the hammer piston in said idle position independent from operating frequency of said drive piston, while repeatedly driving the hammer piston to deliver impacting forces to said tool in phase with said operating frequency of the drive piston in response to a momentary application of a feeding force on the hammer machine and resultant displacement of the hammer piston from said idle position thereof towards said primary ports.

5,052,499

PNEUMATIC IMPACT TOOL

Marian W. Dobry; Czeslaw Cempel, and Wieslaw Garbatowski, all of Poznan, Poland, assignors to Politechnika Pozanska, Poznan, Poland

Filed Mar. 16, 1989, Ser. No. 325,302
Claims priority, application Poland, Mar. 29, 1988, 271527
Int. Cl.[5] B25D *17/11*
U.S. Cl. 173—162.1 11 Claims



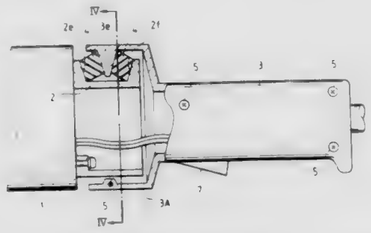
1. A pneumatic impact tool comprising a tubular casing having a central elongated axis, a pneumatic engine disposed within said casing, means for admitting compressed air into said engine for operating it, and noise suppression means for exhausting the air from said tool, said noise suppression means comprising a first chamber between said engine and said casing into which spent air from said engine is exhausted, a sleeve mounted on said casing and forming a second chamber therewith, the wall of said casing having holes therethrough providing air flow between said first and said second chambers, the axis of each of said holes being disposed at an acute angle with respect to a plane perpendicular to said central axis, and said sleeve having holes therethrough venting said second chamber to the ambient atmosphere.

5,052,500

VIBROISOLATING HANDLE JOINT STRUCTURE FOR POWER TOOL

Shinki Ohtsu, Ibaraki, Japan, assignor to Hitachi Koki Company, Limited, Tokyo, Japan

Continuation of Ser. No. 344,926, Apr. 28, 1989, Pat. No. 4,936,394. This application Feb. 9, 1990, Ser. No. 478,108
Claims priority, application Japan, Apr. 30, 1988, 63-108092
Int. Cl.[5] B25G *3/00*; B25D *17/04*
U.S. Cl. 173—162.002 11 Claims



1. A vibroisolating handle joint structure for a power tool, comprising

a vibratable power tool unit;

a tubular handle holder fastened to said power tool unit and having first axial surfaces;

a grip handle having on one end thereof a larger-diameter cup disposed radially around said handle holder and having second axial surfaces extending in substantially axially confronting relationship to said first axial surfaces; and

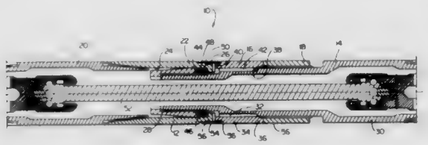
at least one pair of resilient means aligned parallel to the axis of said handle with each pair member of resilient means being positioned between different surfaces of both said grip handle and said tubular handle holder.

5,052,501

ADJUSTABLE BENT HOUSING

Douglas Wenzel; Robert Wenzel, and William Wenzel, all of 7220 - 68 Avenue, Edmonton, Alberta, Canada T6B 0A1

Filed Aug. 10, 1990, Ser. No. 566,150
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—74 2 Claims



1 An adjustable bent housing, comprising:

a a tubular outer housing having a first end, a second end, and an interior surface, the second end of the outer housing having an angularly offset clutch face;

b. a tubular inner housing having a first end, a second end and an exterior surface, the first end being telescopically received within the second end of the outer housing;

c a sleeve having a first end, a second end, and an interior surface, the first end of the sleeve having an angularly offset clutch face;

d surface engagement means for non-rotatably coupling the interior surface of the sleeve with the exterior surface of the inner housing, the sleeve being axially slidable along the exterior surface of the inner housing between an inoperative position wherein the first end of the sleeve is spaced from the second end of the outer housing and an operative position wherein the angularly offset clutch face at the first end of the sleeve engages the angularly offset clutch face at the second end of the outer housing thereby non-rotatably coupling the inner housing and the outer housing in a bent position the magnitude of which is dependent upon the relative rotational positioning of the outer housing and the inner housing;

e. a first annular member projecting from the exterior surface at the first end of the inner housing, the first annular member having a concave radiused contact surface;

f a second annular member projecting from the interior surface at the second end of the outer housing, the second annular member having a convex radiused contact surface, the convex contact surface of the second annular member engaging the concave contact surface of the first annular member thereby preventing axial separation of the inner housing and the outer housing while accommodating the bend created when the sleeve is secured in the operative position; and

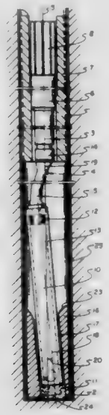
g. a locking nut threadedly engageable with the exterior surface of the inner housing, the locking nut being adapted to secure the sleeve in the operative position.

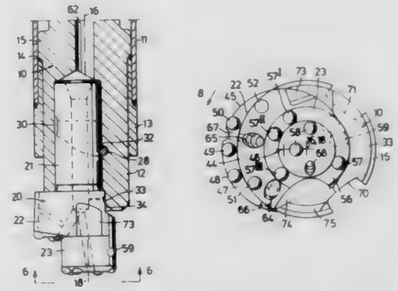
5,052,502

APPARATUS FOR DIRECTIONAL CORING

Rainer Jürgens, Celle, Fed. Rep. of Germany, and Johann van Es, Sherwood Park, Canada, assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 472,885, Jan. 31, 1990. This application Feb. 25, 1991, Ser. No. 660,490
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902869
Int. Cl.[5] E21B *4/02, 7/08, 25/02*
U.S. Cl. 175—80 13 Claims





1. A core drilling tool for sinking drill holes in underground rock formations while generating drilled cores as rock samples comprising a tubular walled outer housing with a main axis and including an upper and a lower end, and which is connectable at its upper end with a drill string and has on its lower end a main drill bit, and a core drilling unit including a deep hole motor, said motor being braced in said outer housing and liftable out of said outer housing, said core drilling unit also liftable out of said outer housing and including an upper part secured in said outer housing by a non-rotating guide device and a lower part, including a core tube driven by the deep hole motor, a core drilling bit, and a freely rotating inner tube mounted within said core tube, the lower end of said outer housing including a guide element with a guide surface which defines a guide axis for said core tube, said guide axis defining an acute angle with respect to the main axis of the outer housing.

5,052,503

ECCENTRIC DRILLING TOOL

Stig U. Löf, Sunne, Sweden, assignor to Uniroc Aktiebolag, Fagersta, Sweden

Filed Apr. 3, 1990, Ser. No. 503,540
Claims priority, application Sweden, Apr. 5, 1989, 8901199
Int. Cl.[5] E21B *10/40, 10/66*
U.S. Cl. 175—258 12 Claims

1. Eccentric drilling tool for combined rotary and percussive drilling in earth and in rock covered by overburden concurrently with a casing tube (**11**) following the drilling tool downhole, said tool comprising a guide member (**10**) rotatably centered by the mouth of said casing tube (**11**), a pilot bit (**23**) having frontal quadrants, said pilot bit positioned at the forward end of said tool supported by said guide member (**10**) and provided with a plurality of axially oriented hard metal pilot insert means (**57**, 57^{I}–57^{III}) peripherally thereon directed to define the diameter of the pilot hole to be cut during drilling, a laterally extending eccentric bit (**22**) behind said pilot bit (**23**) on said tool and having a plurality of axially oriented hard metal reamer insert means (**48–51**) at an eccentric top thereon directed to ream up the pilot hole the maximum diameter of the hole drilled, said eccentric bit (**22**) being movably supported relative to said guide member (**10**) between a drilling position, in which the eccentric bit (**22**) projects laterally beyond said casing tube (**11**) so as to drill jointly with said pilot bit (**23**) a hole larger than said casing tube (**11**), and a retracted position, in which the drilling tool can be retracted or lowered through the casing tube (**11**), and one of the frontal quadrants of the pilot bit (**23**) being void of peripheral diameter cutting pilot inserts, said diametrical non-cutting quadrant being disposed diametrically opposite to the reamer insert means (**48, 51**) of the eccentric bit (**22**) that leads in the rotational direction (**8**) of the tool.

5,052,504

SALES DATA TRANSMISSION SYSTEM

Tetsuo Ikeda, Shiga, and Hideo Nobutsugu, Kyoto, both of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Shiga, Japan

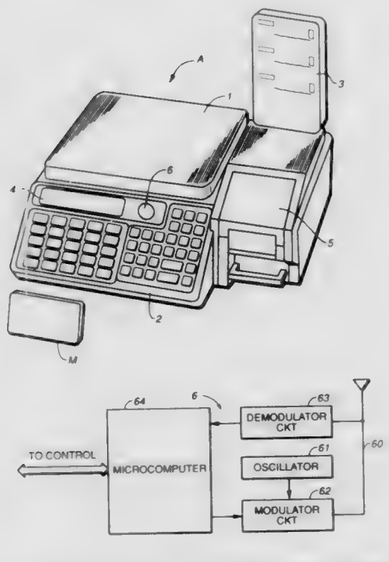
Filed Jan. 24, 1990, Ser. No. 469,151
Claims priority, application Japan, Jan. 25, 1989, 1-16684
Int. Cl.[5] G01G *19/40, 23/18*; G07G *1/12*; G06F *15/20*
U.S. Cl. 177—25.15 13 Claims

1. A sales data transmission system comprising:

a plurality of data processors for calculating and displaying a purchase price, each of said data processors having communication means for transmitting and receiving purchase data, and

a wireless portable transceiver unit having memory means for storing data, said transceiver unit being capable of receiving and storing purchase data transmitted from and

of transmitting purchase data stored in said memory means to one of said communication means within a communication range of said transceiver unit in response to a request signal from said one of said communication means.



5,052,505

LOAD CELL

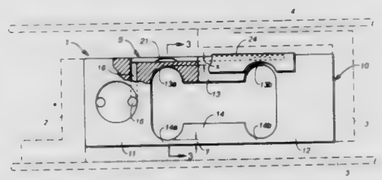
Kazufumi Naito; Seiji Nishide, both of Shiga; Hiroyuki Konishi, and Noboru Kosugi, both of Kyoto, all of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan

Filed May 24, 1990, Ser. No. 528,580

Claims priority, application Japan, May 24, 1989, 1-60663[U]

Int. Cl.[5] G01G *3/08;* **G01L** *1/22*

U.S. Cl. 177—229 **13 Claims**



1. A load cell comprising

a cantilever-type load-sensitive element having an upper beam and a lower beam, each of said beams having a pair of strain-generating parts which generate strains corresponding to a load applied to said load cell,

strain-detecting elements attached to either one but not both of said beams at positions corresponding to said strain-generating parts, said strain-detecting elements being attached to a bottom surface of an indented part formed on a surface of said one beam,

a moisture-proof material covering said strain-detecting elements, and

a moisture-proof sheet covering said moisture-proof material attached to small areas of said one beam and not attached to said moisture-proof material so as to seal the interior of said indented part and to only negligibly interfere with deformation of said load-sensitive element by said applied load.

5,052,506

CONTROL VALVE AND FOUR-WHEEL STEERING SYSTEM INCLUDING CONTROL VALVE

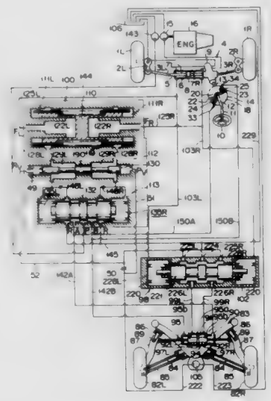
Masayoshi Nishimori, and Hiroyuki Masuda, both of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubishi Jidosha Engineering Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 510,044

Claims priority, application Japan, Jun. 15, 1989, 1-153167

Int. Cl.[5] B62D *5/08*

U.S. Cl. 180—140 **14 Claims**



1. A control valve used in a hydraulic apparatus, comprising:

first valve means including a cylinder, and a piston arranged in said cylinder and defining in said cylinder a pair of pressure-receiving chambers for receiving pilot pressure and first and second output pressure chambers, said piston being capable of moving in accordance with the difference between the pilot pressure applied to said pressure-receiving chambers to increase the volume of the first output pressure chamber and to decrease the volume of the second output pressure chamber, and vice versa;

means for connecting said first and second output pressure chambers to each other; throttling means arranged in the connecting means, for throttling the connecting means; and

main valve means including an input port receiving hydraulic pressure, an output port outputting hydraulic pressure, a pair of pressure chambers communicating with said first and second output pressure chambers of said first valve means, respectively, and a valve member arranged between said pressure chambers and between said input and output ports to be movable in accordance with the pressure difference between said first and second output pressure chambers, for controlling the hydraulic pressure output from said output port in accordance with the position of said valve member.

5,052,507

LOAD-ADJUSTING DEVICE

Jürgen Luft, Bad Soden, and Eckhart Kern, Hofheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

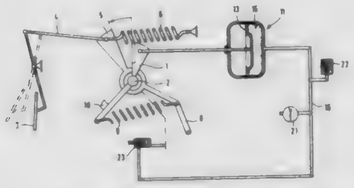
Division of Ser. No. 179,522, Apr. 8, 1988, Pat. No. 4,962,823.

This application Aug. 18, 1989, Ser. No. 395,936

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1987, 3712428

Int. Cl.[5] B60K *26/04*

U.S. Cl. 180—197 **4 Claims**



1. In a load-adjusting system having a control lever which operates throttle means of an internal combustion engine in response to movement of an accelerator pedal, the system including an intermediate lever and a coupling spring operatively interconnecting the control lever and the intermediate lever, the control lever being held by a force of the coupling spring against the intermediate lever, the intermediate lever operatively interconnected with and driven by the accelerator pedal to move in response to a movement of the pedal, the control lever being urged to move jointly with a movement of the intermediate lever in a first direction for operating said throttle means for increased output of the engine by the force of the coupling spring; the improvement wherein the system further comprises:

a damping device coupled to the control lever to counteract a sudden movement of the control lever in said first direction; and wherein

the damping device comprises a cylinder, and a piston which is coupled with the control lever, the piston being supported in the cylinder for movement therein;

a pressure chamber within the cylinder, and the piston is disposed in sealing fashion within the cylinder and forms a wall of the pressure chamber; and

the system further comprises pressure means for applying pressure to said pressure chamber, and vent-choke means for bleeding off pressure from said pressure chamber;

said vent-choke means comprises a valve; and

a pressure bleeding of the vent choke means is varied by a speed of movement of the piston upon actuation of the accelerator pedal.

5,052,508

STEERING CONTROL SYSTEM OF MOTOR VEHICLE

Yuji Soejima, Oizumi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1990, Ser. No. 530,282

Claims priority, application Japan, Jun. 6, 1989, 1-66134[U]

Int. Cl.[5] B60K *17/358;* **B62D** *5/06*

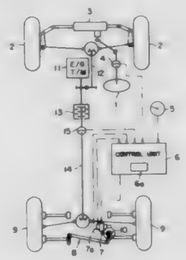
U.S. Cl. 180—234 **10 Claims**

1. A steering control system of a motor vehicle in which rear wheels are steered in response to steering angle of front wheels and a vehicle speed, comprising:

first sensor means for detecting a vehicle speed in association with a rotational speed of the front wheels and for generating a first speed signal;

second sensor means for detecting a vehicle speed in association with a rotational speed of the rear wheels and for generating a second speed signal; and

control means responsive to said first speed signal and said second speed signal for calculating a ratio of the first speed signal to the second speed signal and for controlling steering of the rear wheels in response to the second speed signal when the ratio is within a predetermined range.



5,052,509

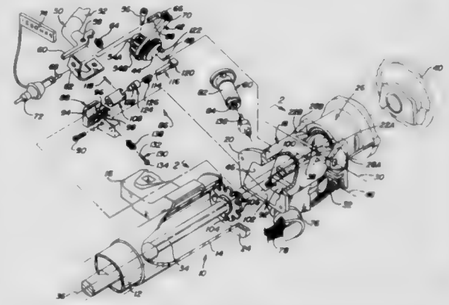
ANTI-THEFT STEERING SHAFT LOCK

Donald L. Dzioba, Midland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 20, 1990, Ser. No. 555,221

Int. Cl.[5] B60R *25/06*

U.S. Cl. 180—287 **6 Claims**



1. In an automotive vehicle, the combination comprising:

a transmission control lever supported on said vehicle for pivotal movement from a PARK position when said vehicle is parked and locked to a plurality of operating positions,

a steering column having a longitudinal centerline and a steering shaft supported thereon for rotation about said longitudinal centerline,

a keeper rotatable as a unit with said steering shaft and having a slot therein,

a dead bolt,

means supporting said dead bolt on said steering column for movement between an extended position projecting into said keeper slot and immobilizing said steering shaft and a retracted position removed from said keeper slot,

connecting means between said dead bolt and said shift lever operative to move said dead bolt from said extended position to said retracted position concurrently with movement of said shift lever from said PARK position to one of said operating positions,

an ignition lock on said steering column having a lock cylinder rotatable by an ignition key between a locked position and a plurality of unlocked positions,

a blocker on said steering column movable between a blocking position preventing movement of said dead bolt from said extended position to said retracted position and an non-blocking position permitting movement of said dead

bolt from said extended position to said retracted position, and

means connecting said blocker to said ignition lock cylinder operative to move said blocker between said blocking and said non-blocking positions concurrently with rotation of said ignition lock cylinder between said locked and unlocked positions thereof.

5,052,510

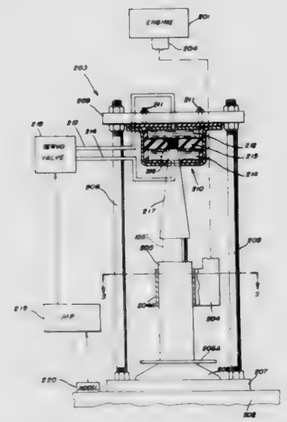
HYBRID TYPE VIBRATION ISOLATION APPARATUS

William E. Gossman, Silver Spring, Md., assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.

Filed Feb. 16, 1990, Ser. No. 480,841

Int. Cl.[5] F16M *13/00*

U.S. Cl. 180—300 **14 Claims**



1. Apparatus for isolating and attenuating vibrations between first and second members comprising:

passive vibration absorbing means located between the first and second members for absorbing forces including forces along a first axis; and

axis vibration inducing means for applying active isolating vibration forces in response to detected relative vibration between said first and second members, said active vibration inducing means further comprising,

a support mount frame attached to the second member, and

an actuator located on the support mount frame adjacent the first member for applying said active vibration isolation forces along the first axis to said apparatus along with vibration isolation forces provided by the passive vibration absorbing means, said actuator and passive vibration absorbing means being collectively disposed between said second member and said support mount frame with said first member mounted therebetween,

said an actuator additionally including a housing and a resilient diaphragm separating a pair of opposed fluid chambers contained within said housing.

5,052,511

AUTOMATIC RETURN MECHANISM FOR HYDROSTATIC TRANSMISSION PRESSURE RELEASE VALVE

Kenneth E. Hunt, Oconomowoc, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jul. 17, 1990, Ser. No. 554,213

Int. Cl.[5] B60K *17/00*

U.S. Cl. 180—305 **6 Claims**

1. In a vehicle having an engine and drive wheels with brakes, the improvement comprising:

hydrostatic transmission means including

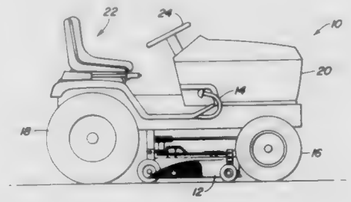
pump means coupled to a motor means by first and second pressure return lines;

a hydrostatic fluid supply for said lines;

a bypass line having bypass valve means interconnecting the pressure return lines,

said valve means being shiftable between first and second positions for respectively blocking or permitting flow of hydrostatic fluid through the valve means;

valve control means shiftable between first and second positions and effective to respectively shift the bypass valve means between its first and second positions;



detent means operatively coupled with the valve control means and moveable between first and second positions,

said detent means when in its first position being effective to retain the valve control means in its second position,

and the bypass valve means in its second position wherein fluid flow through the bypass valve means is permitted; and

brake means interconnected with the wheel brakes and the valve control means for moving the detent means to its first position as the wheel brakes are applied.

5,052,512

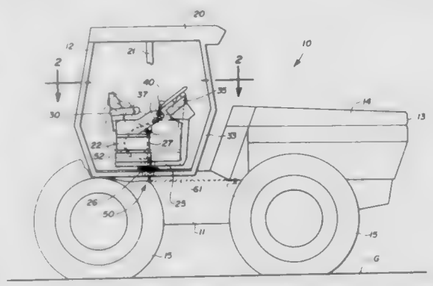
REVERSIBLE CONTROL LEVEL LINKAGE

Daniel Pakosh, and Kevin A. Walker, both of Winnipeg, Canada assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Aug. 14, 1990, Ser. No. 567,471

Int. Cl.[5] B60K *26/00*

U.S. Cl. 180—329 **13 Claims**



1. In a vehicle having a frame supported above the ground by ground engaging wheels to mobilely support said vehicle over the ground; and operator controls supported by said frame to control operative functions of said vehicle, said operator controls including a pivotable console selectively rotatable about a pivot mechanism defining a generally vertical pivot axis about which said console is rotatable for selectively orienting an operator positioned on said console in opposing directions, said console including a seat, a steering mechanism for controlling the directional movement of said vehicle, and a housing supporting said steering mechanism for rotative movement with said seat about said pivot axis, said operator controls further including a control panel having a control lever movably mounted thereon for operatively controlling the direction and speed of propulsion of said vehicle, the improvement comprising:

said control lever being mounted in a fixed relationship with said seat for rotation therewith about said pivot axis, said control lever being operably connected with propulsion means carried by said vehicle for operatively powering the movement thereof by an actuation linkage permitting operation of said propulsion means when said seat is rotated between opposing positions so that the direction of propulsion of said vehicle corresponds to the direction of movement of said control lever irrespective of the rotated position of said seat.

5,052,513

NOISE REDUCTIVE RESIN MUFFLER FOR EXHAUST SYSTEM IN COMBUSTION ENGINE

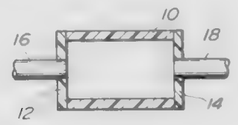
Hideo Yoshikawa, Tokyo; Katsuyoshi Takeuchi; Masami Shimada, both of Kanagawa; Yoshiharu Awaji, Tokyo; Takashi Ikeda, Tokyo, and Shunsaku Mitsuno, Tokyo, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo and Yamato Kogyo Company, Limited, Kanagawa, both of, Japan

Filed Nov. 25, 1987, Ser. No. 125,579

Claims priority, application Japan, Nov. 26, 1986, 61-281577; Mar. 11, 1987, 62-55971; Oct. 3, 1987, 62-250394

Int. Cl.[5] F01N *7/16, 1/10, 1/08*

U.S. Cl. 181—246 **28 Claims**



13. A muffler device for an exhaust system for a combustion engine comprising:

a hollow muffler body defining an internal space;

said muffler body including exhaust means for introducing an exhaust gas from said combustion engine into said internal space and including discharge means for discharging said exhaust gas from said internal space;

said muffler body being formed with a synthetic resin which contains a heat-resistant synthetic resin material and a hardener and has visco-elastic plasticity for dissipating noise-creating energy of exhaust of exhaust gas; and

a heat-protective layer structure formed on an inner periphery of said muffler body.

5,052,514

SAFETY HARNESS FOR HUNTERS

Leonard D. Rezmer, Montrose, Mich., assignor to The Game Tracker, Inc., Flushing, Mich.

Filed Mar. 30, 1990, Ser. No. 502,549

Int. Cl.[5] A62B *35/00*

U.S. Cl. 182—9 **8 Claims**



1. A safety harness comprising:

(a) a strap capable of encircling the torso of a wearer;

(b) a buckle attached to the strap for releasably closing the strap into an annular belt;

(c) a ring capable of slidably receiving the strap therethrough and encircling the strap;

(d) a cord having first and second ends, the cord being affixed at the first end thereof to the ring; and

(e) a hook assembly having:

(1) means for permitting substantially unimpeded cord travel therethrough in a first direction, while selectively impeding the travel of the cord therethrough in a second direction,

(2) a hook which is alternately engageable with either the cord or the ring, the hook having a mouth, and

(3) an armature for selectively closing the mouth of the hook.

5,052,515

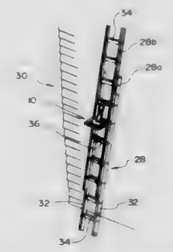
LADDER STEP SUPPORT

Bud C. Nowlan, 3958 Aldrich Ave. N., Minneapolis, Minn. 55412

Continuation-in-part of Ser. No. 555,898, Jul. 20, 1990. This application Aug. 3, 1990, Ser. No. 562,397

Int. Cl.[5] E06C *7/16*

U.S. Cl. 182—121 **7 Claims**



1. A portable, removable, substantially one piece ladder attachment comprising:

a platform having a top and a bottom, a long and a short dimension, the platform having attached, adjacent a long dimension thereof;

a vertical support, the support angularly projecting adjacent the long dimension of said platform and being aggressively secured to said platform so as to maintain said angle, the support being connected, on its distal end to an arcuate, horizontally disposed and transversely mounted upper bracket, the bracket being adapted so as to hang on and cooperate with a first rung of a ladder; the platform further comprising:

a lower, arcuate, horizontally disposed bracket, said lower bracket being located on said platform along the same dimension as the support and being adapted to be placed over a second rung of a ladder to provide lateral stability to said platform.

5,052,516

DEER STANDS

Thomas C. Jamieson, Rte. 5, Box 2110, Phenix, Ala. 36867

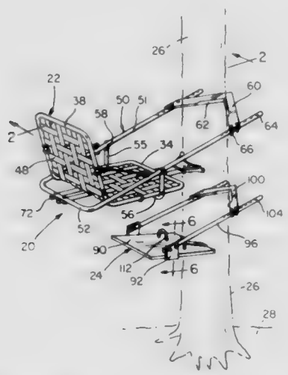
Filed Mar. 8, 1988, Ser. No. 165,505

Int. Cl.[5] A01M *31/02;* **A45F** *3/26*

U.S. Cl. 182—135 **2 Claims**

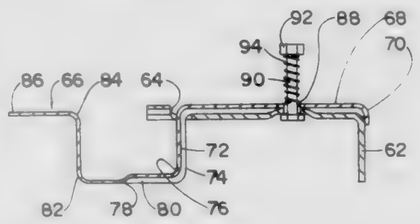
1. A deer stand for supporting a hunter in elevated position on a tree trunk comprising a chair assembly and a footrest located below a chair assembly, said chair assembly including a seat having an outwardly and upwardly inclined support assembly extending therefrom and supporting a transversely extending blade for engaging the far side of a tree trunk and an abutment extending centrally from the seat engaging the tree trunk in a position opposed to the blade and positioned below the blade for supporting the seat from the tree trunk in a man-

ner to enable vertical movement of the chair assembly when the seat is provided to disengage the blade and abutment form the tree trunk, said footrest comprising a panel for supportingly engaging the feet of a hunter occupying the chair assembly, an upwardly and outwardly inclined support assembly including a transverse blade engaging the far side of a tree trunk and an abutment extending from the panel for engaging the tree trunk on the opposite from the blade and at a position below the blade on the footrest in a manner that the footrest can be moved vertically on the tree trunk when oriented in inclined relation to disengage the blade and abutment from the tree trunk, said chair assembly also including a seat back, means pivotally supporting the seat back from the seat and including means to limit the rearward pivotal movement of the seat back to an upwardly inclined position and enabling pivoting movement of the seat back to a position alongside of the seat to enable the device to be collapsed into compact condition for easy transport to and from a site of use, said support assembly for the seat including a pair of support bars extending outwardly and upwardly from opposite sides of the chair assembly with the outer ends of the bars being interconnected by said blade, said blade including an inwardly facing V-shaped edge engaging the far side of the tree trunk and fastener means longitudinally adjustably securing the blade to the bars



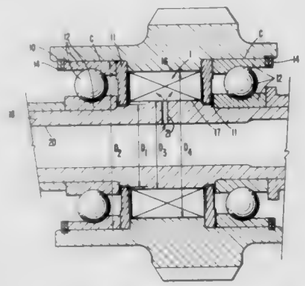
and enabling the blade to be separated from the bars to enable the chair assembly to be assembled onto a tree trunk with the adjustment of the blade enabling the chair assembly to be supported on tree trunks of different sizes, fastener means adjustably securing said blade on the footrest to the support assembly on the footrest to enable the footrest to be assembled with respect to tree trunks of different sizes, said abutment on the footrest including a V-shaped notch in the edge of the panel facing the tree trunk in opposed relation to the footrest blade, and a blade mounted on the panel along each edge of the V-shaped notch, and foot engaging stirrup means on the footrest panel receiving the toe portions of the feet of a hunter to enable the hunter to tilt and change the elevation of the footrest in relation to the chair assembly to enable the hunter to move the footrest and chair assembly vertically up and down the tree trunk in a step-by-step manner, said abutment on the chair assembly including an elongated support member extending under the chair seat and being rigidly connected to the chair seat in rigid relation to the support bars for the transverse blade, said abutment including a pair of parallel members having outwardly curved forward ends, an abutment plate interconnecting the outwardly curved forward ends in spaced relation to the terminal ends thereof whereby the outwardly curved ends will engage a tree trunk and guide the abutment plate into engagement with the trunk.

5,052,517
FOLDING SAWHORSE
Randolph J. Wallman, Winnipeg; Lindsay T. Oliver, St. Norbert, and Harvey Oliver, Winnipeg, all of Canada, assignors to CFH Corporation, Minot, N. Dak.
Continuation-in-part of Ser. No. 466078, Jan. 16, 1990, Pat. No. 4,967,877. This application Oct. 19, 1990, Ser. No. 599,739
Claims priority, application Canada, Jan. 5, 1990, 2007265
Int. Cl.[5] B27B *21/00*; B25H *1/06*
U.S. Cl. 182—155 **13 Claims**



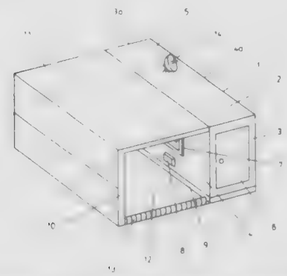
1. A sawhorse bracket comprising:
a substantially U-shaped base with outer and inner ends, the base having upwardly convergent sides, support flanges projecting from upper edges of the sides, and leg stop flanges projecting outwardly from the sides, at the outer end of the base;
locking means comprising two leg engaging means, each with a locking face and a braking face substantially perpendicular thereto, mounting means mounting each leg engaging means for movement between a locking position with the locking face projecting outwardly from a respective side of the base, substantially parallel to the adjacent support flange and a release position with the locking face withdrawn substantially and the braking face facing outwardly substantially parallel to the adjacent side of the base, and resilient means for biasing the leg engaging means into the locking position.

5,052,518
LUBRICATION SYSTEM FOR OVERRUNNING CLUTCHES
William C. Trommer, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Feb. 9, 1990, Ser. No. 477,500
Int. Cl.[5] F16D *13/74*
U.S. Cl. 184—6.12 **7 Claims**



5. A lubricating system for an overrunning clutch means including a clutch assembly interposed between a rotatable drive means and a driven means, the lubrication system comprising means for supplying a lubricating fluid to the clutch assembly, and means disposed on respective axial sides of said clutch assembly for forming a lubricating fluid dam on respective axial sides of the clutch assembly so as to ensure an adequate lubrication of the clutch assembly during operative and non-operative conditions thereof, and wherein said driving means includes a drive shaft having a longitudinally extending bore means for receiving a lubricating fluid and supplying the same to said clutch assembly.

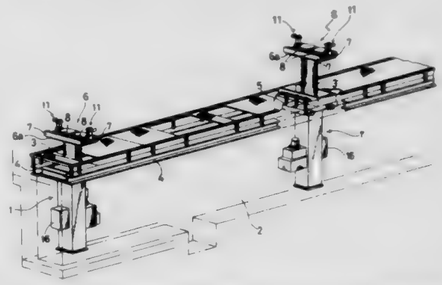
5,052,519
DISPENSING AND DEPOSITING MODULE
Gareth Woodham, P.O. Box 29, Herefordshire HR9 6PX, United Kingdom
PCT No. PCT/GB88/00866, § 371 Date Aug. 7, 1989, § 102(e) Date Aug. 7, 1989, PCT Pub. No. WO89/03467, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 14, 1988, Ser. No. 399,518
Claims priority, application United Kingdom, Oct. 14, 1987, 8724055
Int. Cl.[5] E04H *1/12*
U.S. Cl. 186—37 **8 Claims**



1. A modular unit for drive-in banking comprising:
a prefabricated structure including:
a precast, portable floor of reinforced concrete;
a precast, portable unitary body of reinforced concrete secured to said floor, said unitary body comprising a roof and side walls integral with said roof, said unitary body being free-standing and self-supporting on said floor;
a secure repository in said prefabricated structure;
means for obtaining access to said repository through one of said side walls; and
a driveway adjacent the said one of said side walls adapted for an automobile to park alongside the said one of said side walls whereby banking transactions can be accomplished through said means for obtaining access wherein said prefabricated structure also includes said driveway.

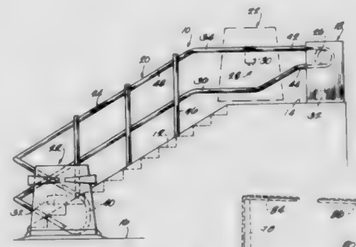
5,052,520
UNDERGROUND LIFT FOR USE IN THE REPAIR OF A VEHICLE
Koji Wakamiya, Chita, Japan, assignor to Sugiyasu Industries Co., Ltd., Takahama, Japan
Filed Oct. 5, 1990, Ser. No. 593,062
Claims priority, application Japan, Jul. 13, 1990, 2-75003
Int. Cl.[5] B66F *7/28*
U.S. Cl. 187—8.67 **2 Claims**

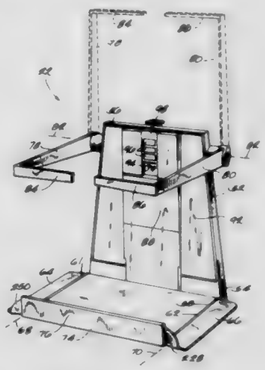
1. In an underground lift for use in the repair of a vehicle, including (i) a pair of lifting apparatuses located in a pit and each having a hydraulically-operated ram which can be extended and retracted from and into the pit and (ii) a vehicle support mounted on the ram and including a pair of sliders which can be moved toward or away from each other, at least one of said lifting apparatuses being movable toward or away from the other lifting apparatus, the improvement wherein each vehicle support further includes a pair of hydraulic actuating members each connected to one of the sliders and adapted for independently moving each slider toward or away from the other slider to position the sliders for safely and supportingly engaging the bottom of the vehicle, and wherein each of the sliders comprises an attachment holder and an attachment, wherein the attachment holder is adapted for



removably and replacably holding one of a set of attachments having varying vehicle-engaging shapes suitable for directly supporting a bottom of a vehicle.

5,052,521
STAIRWAY WHEELCHAIR LIFT
David W. Wendt, Minona; John F. Prendergast, Sr., Franklin; Hyun Liu, Milwaukee, and Edward T. Gisske, Verona, all of Wis., assignors to The Cheney Company, New Berlin, Wis.
Filed May 18, 1988, Ser. No. 195,252
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—12 **27 Claims**





1. A lift mechanism for transporting a passenger between first and second vertically displaced locations separated by stairs, said lift mechanism comprising:
a rail extending along the stairs;

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a flexible drive member disposed within said rail and adapted for movement within said rail;
a motor drive unit adapted to operatively drive said flexible drive member;
a passenger lift platform coupled to said chain and adapted to ride along said rail in response to driving movement of said flexible drive member;
wireless sensing means for sensing the position of said lift platform; and
control means responsive to said wireless sensing means for controlling the movement of said platform in accordance with the position of said platform.

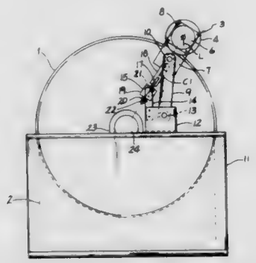
5. A carrier for supporting a passenger lift platform for movement along a rail assembly of a passenger stairway lift mechanism, the stairway lift mechanism including a drive chain housed within the rail assembly, the carrier comprising:
a platform support bracket for supporting the passenger lift platform;
coupling means for coupling said platform support bracket to the chain within the rail assembly;
a pair of opposed brake members housed within the rail assembly adjacent said coupling means;
a wedge member coupled to said platform support bracket and drivable between said brake members to bias said brake members outwardly, said wedge member being movable between an extended position wherein said brake members are biased outwardly into engagement with the rail assembly to substantially prevent movement of said platform support bracket, and a retracted position wherein said brake members do not engage the rail assembly with sufficient force to substantially prevent movement of said platform support bracket; and
brake control means responsive to a control input for causing said wedge member to move from said retracted position to said extended position in response to said control input whereby movement of said platform support bracket is substantially prevented following response of said brake control means to said control input.

5,052,522

ENCODER INSTALLING STRUCTURE

Keiichiro Nakai, Tokyo, and Manabu Suganuma, Narita, both of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 29, 1989, Ser. No. 442,884
Claims priority, application Japan, Dec. 9, 1988, 63-311542
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—20 **3 Claims**



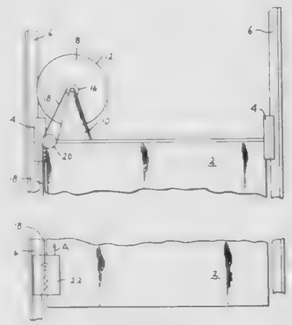
1. An assembly for mounting an encoder of the type having a rotor on an elevator sheave for monitoring rotational movement of the sheave, said assembly comprising:
a) a bracket for holding the encoder, said bracket being disposed adjacent to the sheave whereby the encoder rotor is disposed opposite the sheave circumferential periphery;
b) a pivot arm pivotable about a first pivotal axis mounting said bracket, said pivot arm being disposed adjacent to the sheave for pivotal movement with respect thereto, said bracket being pivotable on said pivot arm about a second pivotal axis spaced along said pivot arm from said first pivotal axis;
c) a connector secured to said bracket and extending therefrom toward the axis of rotation of the sheave; and
d) spring means operable to bias said connector and said bracket along a radial line passing through the sheave axis, thereby urging the encoder rotor against the circumferential periphery of the sheave when said pivot arm is moved to a position which aligns the rotational axis of the rotor, said second pivotal axis, and the axis of rotation of the sheave along said radial line.

5,052,523

ELEVATOR CAR-MOUNTED GOVERNOR SYSTEM

Richard J. Ericson, Southington, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Feb. 14, 1991, Ser. No. 655,862
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—89 **9 Claims**



1. In combination with an elevator system having a car mounted for vertical movement in a hoistway along guide rails mounted in the hoistway, which car is equipped with emergency brakes actuable upon car overspeed, a governor assembly for actuating the emergency brakes, said governor assembly comprising:
a) a governor sheave mounted on the car;
b) a fixed element in the hoistway for driving engagement with the governor sheave whereby resultant rotational speed of the governor will be proportional to the speed of the car in the hoistway;
c) a rotatable reel mounted on the car;
d) an emergency brake cable wound on said reel and connected to the emergency brakes whereby winding of the emergency brake cable onto the reel will activate the emergency brakes; and
e) means for selectively connecting said governor sheave to said reel when the rotational speed of the governor sheave reflects car overspeed, whereupon said governor sheave will drive said reel to wind the emergency brake cable onto said reel and actuate the emergency brakes.

5,052,524

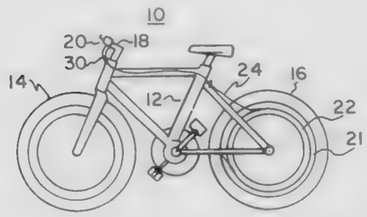
WHEEL BRAKE

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Filed Oct. 13, 1989, Ser. No. 421,405
Int. Cl.[5] B62L *1/00, 3/00*
U.S. Cl. 188—24.11 **9 Claims**

1. A brake for a wheel rotatably mounted on a frame, said wheel having an integrally formed lip adjacent its outer periphery and defining an outwardly facing trough;
friction means including a cable in a jacket positioned in said trough and encircling at least 180 radial degrees of said lip;
means for securing one end of said cable to said frame;

lever means secured to said frame and to the other end of said cable for applying tension to said cable to frictionally engage said trough and said jacket; and



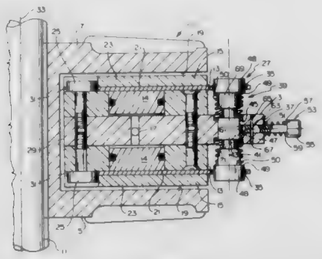
said jacket encircling said lip in the direction of rotation of said wheel.

5,052,525

QUICK RELEASE TORQUE POST ASSEMBLY FOR WEB TENSION BRAKE PADS

Kenneth E. Ekola, 574-6th St., Dover, N.H. 03820

Filed Sep. 12, 1989, Ser. No. 405,951
Int. Cl.[5] F16D *55/10*
U.S. Cl. 188—73.32 **11 Claims**



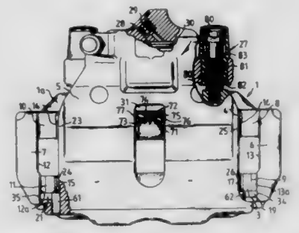
1. A friction torque transmitting device in the form of a tension brake for controlling the tension of a web comprising a friction pad disposed between relatively rotatable first and second means and moveable by said first means into frictional engagement with said second means to resist relative rotation between and first and second means, said friction pad being supported relative to said first means by a quick release torque post captively mounted on said first means for axial movement relative thereto, said torque post being resiliently biased into torque transmitting engagement with said friction pad and said torque post being moveable against said resilient bias to a position disengaged from said friction pad to facilitate removal of that pad from the device;
wherein said first means is an actuator plate carrying at least one friction pad supporting actuator, said second means is a rotatable disc defining an annular disc surface for said engagement by a said friction pad supported by said actuator, and said torque post is captively mounted for axial movement in a bore defined by said actuator plate with the resilient bias being provided by a coil spring disposed between said actuator plate and a friction pad engaging head of the torque post, and said second means defines two facing parallel annular disc surfaces with said actuator plate disposed therebetween, said actuator plate having opposed faces, one facing each disc surface, each carrying at least one said actuator and a said friction pad supported and moveable thereby into engagement with the adjacent facing disc surface, said torque post extending through said bore between torque post ends, having a said head at each said end with a said coil spring between each said head and said actuator plate to bias said torque post to a central position in said bore in which said torque post is in said torque transmitting engagement with both said friction pads.

5,052,526

SPOT-TYPE DISC BRAKE

Rolf Weiler, Frankfurt am Main, and Dieter Bieraeugel, Hochheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 15, 1987, Ser. No. 50,920
Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616695
Int. Cl.[5] F16D *65/02*
U.S. Cl. 188—73.44 **7 Claims**



1. A spot-type disc brake, comprising a brake carrier including a mounting section extending substantially in parallel to a brake disc, and two brake carrier arms protruding beyond the rim of the brake disc, a brake housing disposed on the brake carrier straddling the rim of the brake disc in a manner axially displaceable and accommodating actuating means, two brake shoes supported and guided on the brake carrier and at least one guide element fixed to the brake housing, said guide element movably mounted on and being in abutment against guide sections of one of said two brake shoes to guide the brake housing, said spot-type disc brake further comprising two guide elements in the form of two guide pins located on a side of the brake housing opposite the actuating means, wherein said one brake shoe on which the guide elements are mounted includes at least one substantially radially extending bridge portion forming at least one abutment face for receiving the guide element, said spot-type disc brake further comprising two abutment faces on said bridge portion, one abutment face extending substantially in a radial direction and a second abutment face extending substantially in a tangential direction, wherein said one brake shoe including the bridge portion is disposed on the side of the brake housing opposite the actuating means, and wherein a second of said two brake shoes is mounted for engagement by the actuating means and includes a carrier plate which is shorter in length that a carrier plate of said one brake shoe.

5,052,527

BRAKE SLACK ADJUSTER MECHANISM

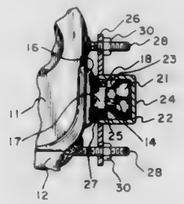
Thomas D. Stump, Rte. 1, Box 16D, Flatwoods, W. Va. 26621

Filed May 24, 1990, Ser. No. 527,951
Int. Cl.[5] F16D *65/48*
U.S. Cl. 188—79.55 **4 Claims**

1. In a brake slack adjusting mechanism for heavy duty vehicles of the type having a spline drive and worm drive adjuster housing for a spline drive actuating a spline shaft to adjust the brakes and a worm drive actuating the spline drive where the worm drive is driven by a worm drive adjusting bolt terminating in an exposed adjusting bolt head and wherein the adjusting bolt head is locked against misadjustment by a spring loaded adjusting bolt head socket lock extending from a socket lock boss formed in the adjuster housing and exposed in axial alignment with the adjusting bolt head and locked within the boss of the adjuster housing against rotational movement but movable longitudinally of the adjusting bolt into locking en-

gagement with the adjusting bolt head under spring pressure and out of locking engagement therewith when forced against the spring pressure, the improvement providing for increased adjusting bolt head locking torque while providing for environmental protection of the adjusting mechanism to prevent wear comprising:

an adjusting nut of size larger than the adjusting bolt head but smaller than the size of the socket lock boss of the adjuster housing secured to a surface of the adjusting bolt head;



a lock housing socket closed at its first end and open at its second end and of internal dimension complementary to the adjusting nut and adapted to fit thereover with the second end thereof in closing engagement with the socket lock boss of the adjuster housing, said lock housing socket preventing rotation of said adjusting nut and adjusting bolt; and

lock housing socket securing means releasably securing the lock housing socket against rotational movement relative to the adjuster housing while maintaining the second end of the lock housing socket in engagement with the socket lock boss of the adjuster housing.

5,052,528

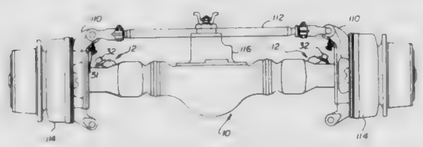
STEERING KNUCKLE DAMPER

James L. Sullivan, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1990, Ser. No. 563,478

Int. Cl.[5] F16F *5/00*

U.S. Cl. 188—317 **8 Claims**



1. A damper for absorbing the impact of a steering knuckle against a structural member of a steering axle comprising;

a close ended bore formed integrally within said structural member having a bottom portion and a cylindrical portion;

a top member having an opening defined therein disposed in said bore and sealingly connected to said cylindrical portion of said bore;

a piston disposed in said bore and having a flange portion sealingly received in said cylindrical portion;

said piston having a rod portion sealingly received in said opening defined in said top member;

said top member, said cylindrical portion of said bore and said piston forming a first annular working chamber;

said bottom and cylindrical portion of said bore and said piston forming a second annular working chamber;

a fluid disposed in said first and second chambers;

said flange portion of said piston having a first fluid flow orifice formed therein to enable fluid flow between said first and said second chambers;

a spring imparting resilient force on said piston to define an initial position; and

a stop member disposed on said steering knuckle for engaging said piston and displacing said piston from said initial position to a second position whereby the impact of said stop member against said structural member is damped by the forces encountered as fluid flows between said first and second chambers.

5,052,529

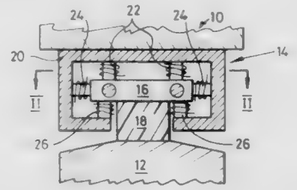
ACTIVE CONTROL OF VIBRATION

Sean G. C. Sutcliffe, London; Graham P. Eatwell, Caldecote, and Stephen M. Hutchins, Earith, all of England, assignors to Topexpress Limited, Cambridge, England

Filed Mar. 14, 1990, Ser. No. 493,410

Int. Cl.[5] F16F *7/10, 15/03*

U.S. Cl. 188—378 **11 Claims**



1. A vibration mount by means of which a subject body is mounted on a support and which includes an intermediate body between the subject body and the support, wherein at least two dimension-changing constrictive actuators are provided for applying controlled compensating forces to the intermediate body so as the reduce vibration of the intermediate body in at least two of its degrees of freedom of motion and over at least a part of the frequency range for which control of vibrations is required, wherein said intermediate body is substantially flat and rectangular in shape, and wherein a pair of said actuators are disposed at each side of said intermediate body, and opposed pairs of actuators are disposed respectively above and below said intermediate body.

5,052,530

VIBRATION ABSORBING MECHANISM FOR AN AUTOMOBILE AIR CONDITIONING COMPRESSOR

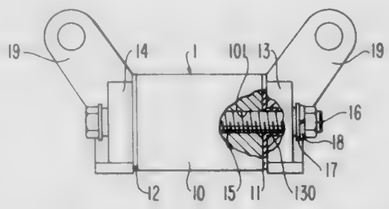
Seiji Shimazaki, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 385,890, Jul. 28, 1989, abandoned. This application Feb. 4, 1991, Ser. No. 650,982

Claims priority, application Japan, Jul. 28, 1988, 63-99958[U]

Int. Cl.[5] F60B *35/06*

U.S. Cl. 188—379 **3 Claims**



1. In combination with a compressor in an automobile air conditioning system, a vibration absorbing mechanism for attachment to said compressor in said automotive air conditioning system comprising a mass including a first penetration hole; first and second bushings, each of said bushings including an inner cylinder provided with a second penetration hole, an outer cylinder and an elastic member compressed between the outer surface of said inner cylinder and the inner surface of said outer cylinder, wherein said first and second bushings are disposed at both ends of said mass with said first penetration hole being in substantial alignment with the second penetration hole of said first and second bushings; a screw bolt passing through said first and second penetration holes and fastened by a nut; and means for attaching said vibration absorbing mechanism to said compressor, said attachment means being fixed to said outer cylinder of each of said bushings and said attachment means being attached to said compressor, wherein said mass has a mass vibration frequency and said compressor has a compressor vibration frequency and wherein said mass vibration frequency corresponds to said compressor vibration frequency at a point of resonnance of said compressor.

5,052,531

NEUTRAL CONTROL DEVICE OF AUTOMATIC TRANSMISSION

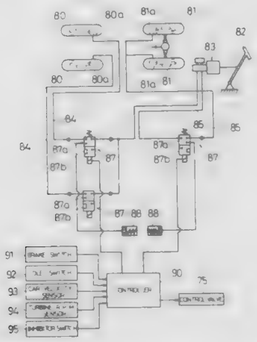
Keiji Bota, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 15, 1990, Ser. No. 567,775

Claims priority, application Japan, Aug. 23, 1989, 1-217013

Int. Cl.[5] F16D *55/24*

U.S. Cl. 192—4 A **4 Claims**



1. A neutral control device of an automatic transmission for a vehicle comprising:

speed shifting controlling means for controlling the transmission to be placed in "neutral" when a brake pedal is stepped on at a time when the vehicle is stopped;

pedal operation detecting means for detecting operation of the brake pedal;

clutched state detecting means for recieving output of the pedal operation detecting means and detecting a state that the starting gear position in the transmission is put in a clutched state by a brake pedal releasing operation; and

brake controlling means for maintaining an ON state of a brake actuator until receiving output from the clutched state detecting means after the pedal operation detecting means has detected a pedal releasing operation.

5,052,532

VEHICLE BRAKE SYSTEM

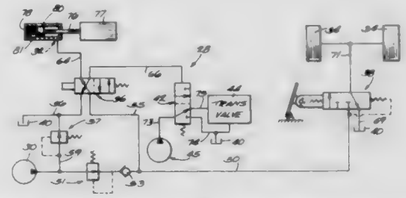
John R. Plate, Milwaukee, Wis., assignor to Trak International, Inc., Port Washington, Wis.

Filed May 29, 1990, Ser. No. 529,926

Int. Cl.[5] F16D *67/04*

U.S. Cl. 192—4 A **19 Claims**

1. Brake means for a vehicle having a transmission means, said brake means including a source of hydraulic pressure, parking brake means having a set mode and a released mode, a first valve means for coupling and uncoupling said parking brake means to said pressure source, said first valve means having a first mode for setting said parking brake means and a second mode for releasing said parking brake means, second valve means coupled to said transmission means and to said first valve means and having a first mode for disabling the transmission means and a second mode for enabling the transmission means, said first valve means being operative for setting the second valve means in its first mode when said parking brake means is set and for setting said second valve means in its



second mode when said parking brake means is released, said parking brake means includes a hydraulic cylinder for actuating said parking brake means to its released mode, hydraulically actuated brake means, third valve means for coupling said hydraulic pressure source to said hydraulically operated brake means, and means for connecting said hydraulic cylinder to said third valve means when said source of hydraulic pressure fails so that said hydraulically operated brake means may be operated by the hydraulic pressure in said cylinder.

5,052,533

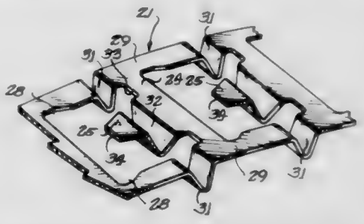
ONE-WAY CLUTCH ENERGIZING SPRING

James R. Carey, Downers Grove, and Frank J. Ferfecki, Riverside, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 9, 1987, Ser. No. 12,591

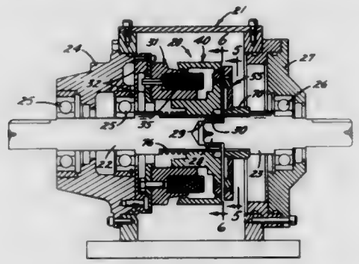
Int. Cl.[5] F16D *41/07*

U.S. Cl. 192—41 A **9 Claims**



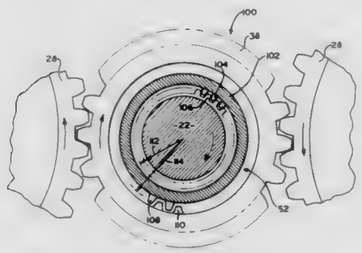
1. An energizing spring for a one-way sprag clutch having at least one relatively rigid cage between inner and outer clutch races, comprising an elongated resilient metal ribbon bent into a circular spring, said ribbon including a plurality of longitudinally spaced openings in the ribbon separated by a plurality of cross bars, a pair of side bars defined by said openings and joined by said cross bars, and a plurality of tapered energizing tabs, each cross bar having a tab extending from one edge thereof into an opening, each said tab having opposite edges converging from said cross bar to terminate within said opening, each of said side bars and said energizing tab being formed with a transverse wrinkle spaced from said cross bar.

5,052,534
ELECTROMAGNETIC SYNCHRONIZING AND SHIFTING CLUTCH
David C. Gustin, Rockton, Ill.; Robert L. Stibbe, Janesville, Wis., and Paul A. Larson, Belvidere, Ill., assignors to Dana Corporation, Toledo, Ohio
Filed Oct. 30, 1990, Ser. No. 605,517
Int. Cl.[5] F16D *13/00*
U.S. Cl. 192—53 D **13 Claims**



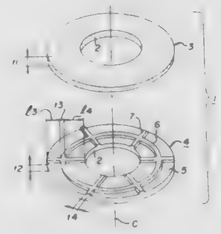
1. The combination of first and second rotatable shafts, and an electromagnetic clutch for selectively causing torque to be transmitted between said shafts, said clutch comprising a first rotary member coupled to rotate with and move axially relative to said first shaft, a second rotary member coupled to rotate with and move axially relative to said second shaft and disposed in axially opposing relation with said first rotary member, means biasing said first rotary member axially toward said second rotary member, means for preventing said biasing means from shifting said first rotary member beyond a predetermined axial position, and selectively energizable coil means for producing magnetic flux for attracting said second rotary member axially into torque-transmitting engagement with said first rotary member and for thereafter causing said first and second rotary members to move axially as a unit in opposition to said biasing means.

5,052,535
POSITIVE CLUTCH STRUCTURE
John R. Vandervoort, Richland, and Alan R. Davis, Plainwell, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Aug. 17, 1987, Ser. No. 87,181
Int. Cl.[5] F16D *11/00*
U.S. Cl. 192—67 R **10 Claims**



1. A positive clutch system for selectively rotationally coupling and decoupling first and second independently rotatable members, said clutch system comprising a first clutch member rotatable with said first rotatable member and a second clutch member rotatable with said second rotatable member, said first and second clutch members carrying first and second engagable clutch teeth, said first clutch member having a limited degree of rotational free play relative to said first rotatable member, said clutch system defining a total rotational backlash comprising a first component of an effective magnitude dependent on the direction of relative rotation between the first and second rotatable members and a second component of an effective magnitude independent of the direction of relative rotation between the first and second rotatable members, said total rotational backlash having a predetermined maximum effective magnitude equal to the total of the magnitudes of said first and second components; said system characterized by:
the magnitude of said first component being substantially equal to a predetermined minimum value.

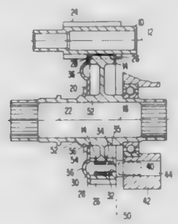
5,052,536
CLUTCH FACING
Shigeho Maeda, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
PCT No. PCT/JP89/00489, § 371 Date Jan. 11, 1990, § 102(e) Date Jan. 11, 1990, PCT Pub. No. WO89/12181, PCT Pub. Date Dec. 14, 1989
PCT Filed May 12, 1989, Ser. No. 457,780
Claims priority, application Japan, Jun. 3, 1988, 63-74478[U]
Int. Cl.[5] F16D *13/64, 69/02, 69/04*
U.S. Cl. 192—107 M **13 Claims**



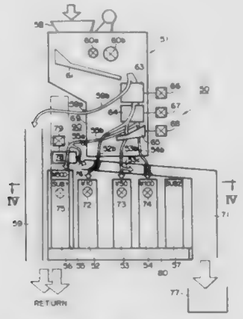
1. A clutch facing comprising:
an annular friction facing of friction material;
an annular reinforcing plate integrally connected at a connecting surface to said friction material at a side opposite to a friction face of said friction material;
wherein said reinforcing plate is formed of a material having substantially the same shrinkage as that of said annular friction material, caused by heat treatment during manufacturing of said clutch facing and friction heating thereof during operation, and
said reinforcing plate having an annular rib formed concentrically on said connecting surface and having radial ribs formed on said connecting surface crossing said annular rib.

5,052,537
ROTARY TRAVEL LIMIT STOP APPARATUS
John D. Tysver, and Gerald H. Johnson, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Dec. 14, 1989, Ser. No. 450,668
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] F16D *71/00*
U.S. Cl. 192—141 **14 Claims**

1. A rotary travel limit stop apparatus comprising:
a first member rotatable about a first axis;
a second member rotatable about a second axis;
a third member rotatable about a third axis;
said second and third members being axially adjacent each other and being driven by said first member at different rotational speeds with one of said second and third members carrying a movable stop member along a circumferential path about said one member axis;
a fixed stop member which is supported for movement on a frame along a circumferential path about said one member axis to any one of an infinite number of positions within said path; and
means associated with the other of said second and third members for physically abutting said one member at a preselected relative position between said second and third members to cause said movable stop member to translate axially in the direction of said one member axis and engage said fixed stop member.

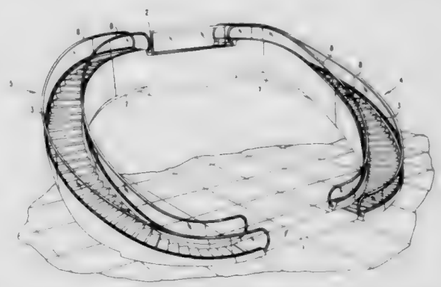


5,052,538
COIN HANDLING APPARATUS
Naoto Satoh, Maebashi, Japan, assignor to Sanden Corporation, Gunma, Japan
Continuation of Ser. No. 250,154, Sep. 28, 1988, abandoned. This application Mar. 5, 1990, Ser. No. 490,544
Claims priority, application Japan, Oct. 1, 1987, 62-149225[U]; Oct. 12, 1987, 62-154712[U]
Int. Cl.[5] G07D *3/00, 5/08*
U.S. Cl. 194—317 **15 Claims**



1. A coin handling apparatus comprising:
coin discriminating means having side and bottom surfaces, coin testing means for determining the type of the deposited coins, distributing means for distributing the deposited coins according to their type as determined by said coin testing means and a plurality of coin outlets to one of which the coin distributed by said distributing means is guided, at least one of said plurality of coin outlets being disposed on said side surface of said coin discriminating means;
a plurality of coin retaining means positioned generally below said coin discriminating means, each of said coin retaining means communicating with a corresponding one of said coin outlets each of said coin discriminating means in accordance with the type of the accepted coin; and
an overflow path extending substantially from said distributing means, the portion extending from said distributing means being common to a coin path for largest coins extending from said distributing means, said common path portion leading to a further distributing means for distributing the largest coins to a coin path communicating with the coin retaining means for the largest coin, and distributing the overflow coins to a cash box, said further distributing means being provided on said common path at a position outside of said coin discriminating means.

5,052,539
CIRCULAR ESCALATOR
Geoffrey S. Fillingsness; C. Christopher Brandt, II, both of Indianapolis, and Raymond J. Cipra, West Lafayette, all of Ind., assignors to Melvin Simon & Associates, Inc., Indianapolis, Ind.
Filed Oct. 24, 1989, Ser. No. 426,749
Int. Cl.[5] B66B *21/00*
U.S. Cl. 198—328 **36 Claims**

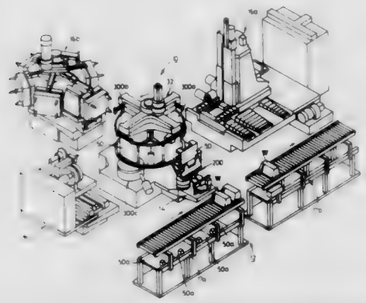


1. An escalator having a plurality of steps in series and moving in a curved path, with each step having an inboard end and an outboard end, and links at the ends of the steps connecting each step to the next adjacent step in the series, the improvement comprising:
a drive system including a drive belt separate from and engageable with said links and belt engager means on at least some of the links and engageable with the belt when the links move into registry with the belt for driving the series of steps by imputing drive force from said drive belt to said belt engager means on said links, whereby drive force is imputed from said links to said series of steps.

5,052,540
ROTARY TRANSFER SYSTEM
Taizo Matsuyama; Kaname Goto; Masao Hyuga; Akira Ozawa; Tomomi Kousaka; Minoru Asuma, and Jyun Watari, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 20, 1989, Ser. No. 382,421
Claims priority, application Japan, Jul. 26, 1988, 63-186269; Jul. 26, 1988, 63-186270; Sep. 12, 1988, 63-228029
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—346.1 **7 Claims**

1. A rotary transfer system comprising:
an attitude converting station for changing the attitude of a pallet with a workpiece supported thereon in a predetermined attitude;
at least two machining stations for machining said workpiece;
feeder means for feeding said pallet along an annular feed path from said attitude converting station successively to said machining stations;
said annular feed path includes upper and lower arcuate movable rails disposed in said attitude converting station and in each of said machining stations, and upper and lower arcuate fixed rails aligned with said movable rails; and
a rotatable pallet index jig body operatively mounted at each of said machining stations, said movable rails being disposed on said pallet index jig body and being rotatable

therewith, said movable rails also being movable toward and away from the center of said annular feed path for



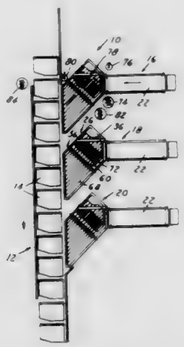
preventing said movable rails from interfering with said fixed rails when said pallet index jig body and said movable rails are rotated.

5,052,541

SORTER FEEDER SYSTEM

Wayne R. James, Roswell, Ga.; Warren D. Neal, St. Clair, and Suren A. Varjabedian, Warren, both of Mich., assignors to Babcock Industries Inc., Fairfield, Conn.

Filed Mar. 19, 1990, Ser. No. 495,483
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—368 23 Claims



1. A sorter feeder system for automatically singulating, orienting, accelerating and conveying articles of essentially square or rectangular shape comprising

a continuously moving slat or tray sorter conveyor,

at least one feed system positioned along a portion of the path of the sorter conveyor,

said feed system including an intermittently operated feeder conveyor tending to move articles in a direction generally perpendicular to the sorter conveyor,

a roller conveyor tending to move an article at an angle to the direction of movement by the feeder conveyor and rearwardly of the direction of the sorter conveyor,

means for moving the roller conveyor vertically,

a continuously operating induction conveyor having a portion extending transversely with respect to the roller conveyor and generally at an acute angle relative to the direction of movement of the sorter conveyor such that when the roller conveyor is lowered, an article thereon is moved by said induction conveyor to a position adjacent the sorter conveyor,

a side guide provided in overlying relationship to the roller conveyor and defining a vertical surface intersecting the axes of the roller conveyor,

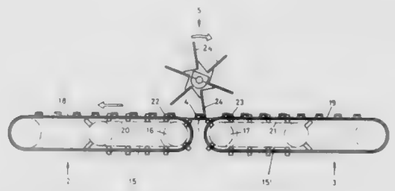
a swinging blade stop provided generally perpendicular to the feeder conveyor and in overlying relationship to the roller conveyor, such that the contact surface of the roller conveyor constitutes a plane parallel to the horizontal surface of the trays or slats on the sorter conveyor, the contact surface of the side guide being vertical and transverse to the direction of travel of the tray or slats, and the contact surface on the swing blade stop being vertical and in line with the direction of travel of the tray or slat so that the article is conveyed to, and held temporarily and stationary in a preferred orientation position by the forces of the roller conveyor, side guide and blade stop acting singularly and in combination on the three orthogonal surfaces of the article.

5,052,542

SINGLE-ITEM DISTRIBUTOR

Alfred Wipf, Jestetten, Fed. Rep. of Germany, assignor to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Feb. 20, 1990, Ser. No. 481,593
Claims priority, application Switzerland, Feb. 20, 1989, 606/89
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—372 6 Claims



1. An item transfer apparatus comprising

(a) a first conveyor means for advancing items thereon in a first advancing direction; said first conveyor means having a conveying plane;

(b) a second conveyor means for advancing items thereon in a second advancing direction;

(c) a rotatable transfer device having a rotary axis and a push member arranged for motion across the first conveyor means for displacing items from the first conveyor means to the second conveyor means; said rotary axis lying in a plane oriented parallel to said conveying plane;

(d) a third conveyor means being generally in alignment with said second conveyor means; said second and third conveyor means being disposed on opposite sides of said first conveyor means, whereby items are transferred from the first conveyor means to the second conveyor means or the third conveyor means, dependent on a direction of rotation of said rotatable transfer device; at least one of said second and third conveyor means comprising two parallel-extending endless belts; and

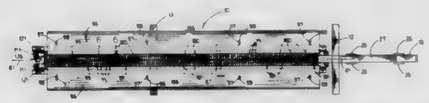
(e) an auxiliary conveyor forming a part of at least one of said second and third conveyor means; said auxiliary conveyor including an auxiliary endless belt and item holding elements attached to said auxiliary endless belt.

5,052,543

METHOD AND APPARATUS FOR POSITIONING WORK OBJECTS

James C. Hagan, Stockton, Calif., assignor to Hagan Electronics International, Stockton, Calif.

Filed Sep. 26, 1989, Ser. No. 412,408
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—387 10 Claims



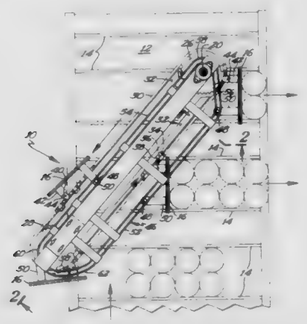
1. An apparatus for positioning irregularly shaped work objects individually having substantially longitudinal axes, the apparatus comprising a frame adapted to receive said work objects and to direct the work objects along a course; a plurality of rollers mounted on the frame in a pair of juxtaposed sets on opposite sides of said course in position for engagement by said work objects in said course and so mounted on the frame as to be rotatable about individual axes substantially transversely related to said course and having terminal ends not spaced from each other a distance permitting any substantial portions of said work objects to pass therebetween; and means for moving said rollers while in engagement with the work objects to propel the work objects along said course and into individual orientations wherein the longitudinal axes of the work objects are substantially aligned with each other and with said course.

5,052,544

TRAY LOADING MACHINE

David L. Anderson, Alexandria, Minn., assignor to APV Douglas Machine Corporation, Alexandria, Minn.

Field Dec. 29, 1989, Ser. No. 460,281
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—456 18 Claims



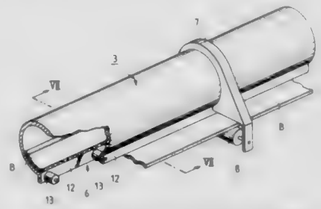
1. Machine for pushing product in a pack pattern laterally on a longitudinally moving conveyor, with the conveyor including spaced, laterally extending lugs for slideable receipt of the product in the pack pattern therebetween, comprising, in combination: at least a first paddle of an elongated length and having a front and a rear, with the elongated length of the paddle being at least generally equal to the longitudinal width of the pack pattern of the product and the spacing between the lugs of the conveyor; first and second sprockets rotatably mounted about spaced, parallel axes; an elongated flaccid member extending around the first and second sprockets and arranged along a circuitous, elongated path substantially positioned above the conveyor, with the paddle being pivotably mounted to the elongated flaccid member about a pivot axis; and means extending along the circuitous path of the elongated flaccid member substantially positioned above the conveyor for pivoting the paddle relative to the elongated flaccid member and generally perpendicular to the laterally extending lugs and parallel to the conveyor to push the products intermediate the lugs as the paddle moves along the circuitous path.

5,052,545

APPARATUS FOR CONVEYING GRAIN

Mashanori Gongen, Hiroshima, Japan, assignor to Hokoku Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 11, 1990, Ser. No. 551,376
Claims priority, application Japan, Oct. 31, 1989, 1-283802
Int. Cl.[5] B65G *47/19*
U.S. Cl. 198—534 8 Claims



1. An apparatus for conveying grain comprising:

a pair of pulleys;

an endless belt passed around said pulleys;

a cylinder having a slit extending along a bottom surface, a conveying section of said endless belt being arranged to run in one direction along said cylinder with a back surface of said endless belt in contact with the bottom surface of said cylinder;

a grain inlet provided on said cylinder; and

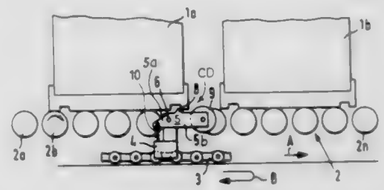
a cover with a hopper and provided to cover one of said pulleys and said endless belt at one end of said cylinder.

5,052,546

CONVEYOR HAVING A CIRCULATING ARTICLE CARRIER ELEMENT

Manfred Langen, and Gregor Gebald, both of Mönchen-Gladbach, Fed. Rep. of Germany, assignors to Trüzschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Apr. 18, 1988, Ser. No. 182,712
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1987, 3713264
Int. Cl.[5] B65G *19/00*
U.S. Cl. 198—718 8 Claims



1. In a conveyor apparatus for advancing articles in a direction of conveyance, including a conveyor track on which the articles are supported and relative to which the articles may travel in the direction of conveyance; an endless driven conveyor element extending adjacent the conveyor track parallel to said direction of conveyance; and an article carrier device including an article carrier element pivotally supported on and advanced by said endless driven conveyor element in said direction of conveyance; said article carrier element being arranged for engaging an article situated on said conveyor track and advancing the article in the direction of conveyance

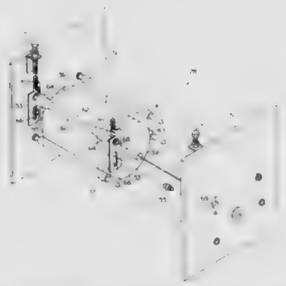
by transmitting thereto a propelling force derived from the travel of said endless driven conveyor element, said article carrier element being further arranged for being disengaged from the article; the improvement comprising the combination of the apparatus with generally cylindrical sliver coiler cans constituting said articles; each said cylindrical sliver coiler can having a bottom face provided with a circumferential groove; further wherein said article carrier element comprises a pivotal lever, a carrier lug formed on said pivotal lever and projecting therefrom; said pivotal lever having an activated pivotal position in which said carrier lug is adapted to be brought into and maintained in a force-transmitting engagement with one of the cans; said carrier lug being arranged for projecting into said groove in the activated position of said pivotal lever; said pivotal lever having a deactivated pivotal position in which said carrier lug is maintained disengaged from the cans; force-exerting means for urging said pivotal lever into said activated position; and a contact element mounted on said pivotal lever downstream of said carrier lug as viewed in said direction of conveyance; said contact element being arranged for being depressed by the bottom face of another of said cans situated downstream of said one can for causing a rotation of said pivotal lever into said deactivated position.

5,052,547

BELT MEANDERING MOTION CORRECTION DEVICE

Atsuhiro Doi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 401,307, Aug. 31, 1989, abandoned.
This application Apr. 11, 1991, Ser. No. 684,438
Claims priority, application Japan, Sep. 1, 1988, 63-218784
Int. Cl.[5] B65G *39/16*
U.S. Cl. 198—806 **8 Claims**



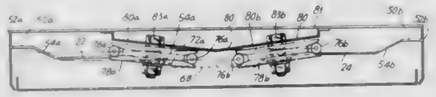
1. A belt meandering motion correcting device comprising:
a pair of tension balance changing means provided integrally with a control roller and at axial positions of said control roller corresponding to widthwise opposite side portions of a belt so as to be pressed by the tension of said opposite side portions of said belt, constructed with a cylindrical central portion and truncated cone side portions for applying tension to said widthwise opposite side portions of said belt being moved for producing a tension difference between the tension of one side portion of said belt and that of the other side portion of said belt when said belt deviates in a direction toward one side of said tension balance changing means, said control roller being supported at its opposite ends on a pair of movable plates and rotated by the tension of said belt in the moving direction during driving of said belt and displaceable in such a manner that a side thereof where tension is increased by said belt is moved toward the downstream side in the moving direction of said belt more than the other side thereof where tension remains low;
said movable plates supporting said control roller;
a displacement allowing means provided in correspondence with opposite end portions of said control roller, and said displacement allowing means including:
a resilient member connected to an upper end of each movable plate, and stretched when the tension of said side portion of said belt is increased and shrunk when the tension thereof is decreased;
a guide means formed at a lower end portion of said movable plate to guide, during stretching of said resilient member, said end portion of said control roller corresponding to said side portion of said belt toward the downstream side in the moving direction of said belt, and to guide during shrinking of said resilient member said end portion in the opposite direction; and
an adjustable screw means mounted on one end of a side plate and one end of said resilient member, being able to adjust the resilient member's tension.

5,052,548

SANITARY FLEXIBLE BAND CONVEYOR

Joseph D. Andrews, Woodstown, N.J., assignor to Caddy Corporation of America, Bridgeport, N.J.

Filed Feb. 22, 1990, Ser. No. 484,355
Int. Cl.[5] B65G *15/10*
U.S. Cl. 198—817 **23 Claims**



1. A conveyor system comprising:
a frame;
a conveyor bed mounted on said frame having first and second ends and defining an upper flight path;
a central box channel mounted on said frame below and juxtaposed to said conveyor bed defining a lower return flight path;
endless conveyor belt means moving between said upper and lower return flight paths; and
means for driving said conveyor belt means including first pulley means being fixedly secured adjacent to and extending outwardly beyond said first end and being generally horizontally aligned and angled upwardly such that said belt means in said lower return flight path of said box channel is moved upwardly to said upper flight path of said conveyor bed, said driving means also including second pulley means being disposed adjacent to said second end and being operatively connected to a belt drive unit such that said belt means is moved from said upper flight path to said lower return flight path whereby said belt means is constrained within said box channel along its lower return flight path.

5,052,549

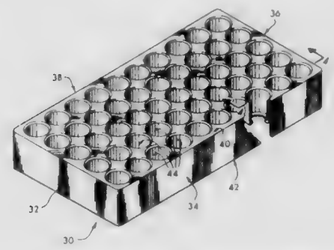
TRAY FOR AMMUNITION CARTRIDGES

Daniel J. Scharch, 6589 County Rd. 105, Salida, Colo. 81201

Filed Feb. 27, 1991, Ser. No. 661,891
Int. Cl.[5] F42B *39/00*
U.S. Cl. 206—3 **17 Claims**

1. A tray for packaging ammunition cartridges, said tray comprising:
a tray having a thin planar upper surface, and thin side walls extending downward from said upper surface;
said side walls terminating in a first plane parallel to said upper surface;
a plurality of tubular portions formed in said tray extending downward from said upper surface;
each tubular portion including a cylindrical opening extending downward from said upper surface the full length of said tubular portions for receiving cartridges;
each of said cylindrical openings having an upper portion opening into said upper surface and having an inner diameter adapted to receive said cartridges;

each of said tubular portion having a lower end which is contained in a second plane parallel to said first plane and spaced above said first plane by a predetermined distance; and



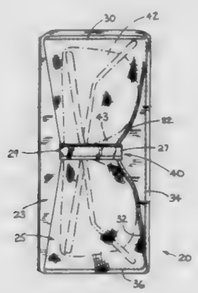
means formed in said tubular portions for holding the nose end of said cartridges above said first plane.

5,052,550

SPECTACLE CASE

Wilhelm Pfenning, Baden, Canada, assignor to Almut G. Pfenning, Baden, Canada, a part interest

Filed Jan. 29, 1991, Ser. No. 647,268
Claims priority, application Canada, Feb. 2, 1990, 2009254
Int. Cl.[5] A45C *11/04*
U.S. Cl. 206—5 **4 Claims**



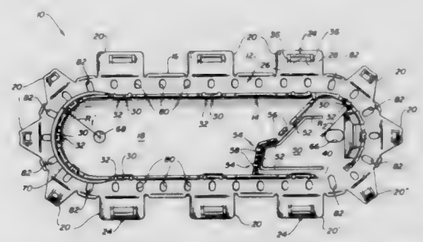
1. Spectacle case, wherein:
the case includes an outer cover and an inner lining;
the outer cover is of relatively thick and rigid material;
the inner lining is of relatively thin material, having substantially no stiffness;
the outer cover is so shaped and arranged as to be in the form of a tube, which is closed at a bottom portion of the tube, and open so as to form a mouth for receiving spectacles at an opposite, top, portion of the tube;
the inner lining is so shaped and arranged as to be in the form of a tube, which is closed at a bottom portion of the tube, and open so as to form a mouth for receiving spectacles at an opposite, top, portion of the tube;
the top portion of the inner lining is secured to the top portion of the outer cover;
the bottom portion of the inner lining is secured to the bottom portion of the outer cover;
and a centre portion of the inner lining, located between the said top and bottom portions, is substantially not secured to the outer cover, but is loose and free to move laterally with respect to the outer cover.

5,052,551

OVAL WRAP SUTURE PACKAGE WITH UNEQUAL END RADII

Robert J. Cerwin, Pipersville, Pa.; Anthony Esteves, Somerville, N.J.; Marvin Alpern, Glen Ridge, N.J.; Robert A. Daniele, and Robert J. Gibbs, both of Flemington, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 31, 1991, Ser. No. 648,708
Int. Cl.[5] A61B *17/06;* **B65D** *85/00*
U.S. Cl. 206—63.3 **13 Claims**



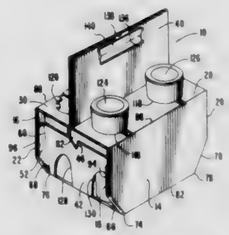
1. A suture package that defines an oval suture winding channel, comprising two substantially straight opposing sections connected by opposing first and second semicircular end sections, in which the first semicircular section has a larger radius than the second semicircular section.

5,052,552

FOLDABLE CARRIER FOR A PLURALITY OF CONTAINERS

Raymond V. Maroszek, Neenah, Wis., assignor to James River-Norwalk, Inc., Norwalk, Conn.

Filed May 2, 1985, Ser. No. 729,758
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—174 **19 Claims**



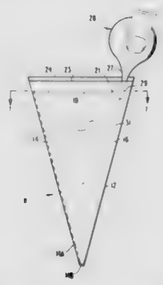
1. A carton structure erectable by folding from a substantially flat blank comprising:
two side panels, each having end edges;
a bottom panel extending between the side panels;
two top panels, each top panel extending inwardly from one of the side panels, the top panels spaced from the bottom panel;
a center divider panel intermediate the two top panels and connected to each top panel;
two end panels, each extending from the bottom panel, each end panel having slot means for engaging the center divider panel when the carton is erected; and
means for locking the slot means into engagement with the center divider panel including reinforcing areas, each reinforcing area having a first edge connected by a first fold line to a side edge of one of the end panels and a second edge connected by a second fold line to one of the side panels.

5,052,553
CONTAINER HAVING MANUALLY OPENABLE CLOSURE FOR MIXING
Attilio J. De Sanctis, R.R. 2, St-Chrysostomer, Quebec, Canada J0S 1R0
Filed Oct. 30, 1989, Ser. No. 429,084
Claims priority, application Canada, Sep. 27, 1989, 613711
Int. Cl.[5] B65D *25/08*
U.S. Cl. 206—219 16 Claims



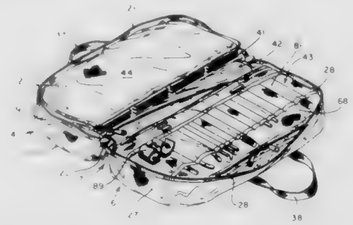
1. A packaging unit comprising an outer container and a flexible closure member detachably mounted thereto at peripheral portions thereof, an inner container mounted to an inner surface of said closure member and comprising a top wall and a bottom wall and short rigid sidewalls therebetween, said top wall being mounted at an upper surface thereof to said inner surface of said closure member, said inner container having frangible sections at said sidewalls and said bottom wall thereof along at least one plane, said at least one plane being perpendicular to a plane of said closure member and to an axis joining a first peripheral portion of said outer container and an opposite second peripheral portion thereof, said inner container having at least a partially rigid construction so that upon at least a partial removal of said closure member from said outer container in a predetermined direction from said first peripheral portion towards said second peripheral portion, sufficient flexion forces are exerted by said closure member on said inner container to cause said frangible sections to yield for releasing a content of said inner container in said outer container.

5,052,554
DENTAL IMPRESSION MATERIAL PACKAGE AND METHOD
Peter H. Leonard, 3680 Woodside Dr., Columbus, Ind. 47203
Filed Dec. 13, 1989, Ser. No. 449,808
Int. Cl.[5] B65D *30/28, 17/28, 25/08*
U.S. Cl. 206—219 4 Claims



1. A dental impression powder package comprising:
a generally flat bag of generally triangular configuration having a top and two sides;
dental impression powder in the bag and causing the bag to bulge as and where dictated by the amount of powder in the bag, but the bag being otherwise substantially flat;
the top of said bag being sealed closed along a seal line formed to provide a relatively strong seal along most of the line but having a short portion of the seal line weaker than the remainder of the seal and frangible upon intentional puncturing with a syringe nozzle to facilitate adding water to the powder.

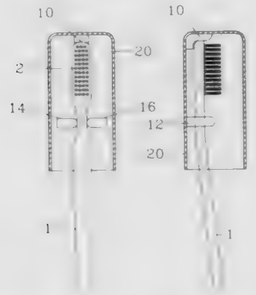
5,052,555
TOTE BAG FOR FLY-TYING EQUIPMENT AND MATERIALS
Steven L. Harmon, 5825 Dover St., Oakland, Calif. 94609
Filed Jul. 20, 1990, Ser. No. 556,654
Int. Cl.[5] A01K *97/00;* B65D *85/00;* A45G *3/00*
U.S. Cl. 206—315.11 20 Claims



1. A soft-pack tote bag for fly-tying materials, tools and equipment, comprising:
a) a main receptacle fabricated from flexible woven fabric and including a pair of laterally-spaced, generally rectangular side-wall members joined along corresponding long edge portions to a bottom-wall member and along their end edge portions to corresponding end-edge portions of a zipper panel including a zipper bisecting the long dimension of the zipper panel and extending between opposite end-edge portions of the bottom-wall member;
b) a first auxiliary receptacle formed from flexible woven fabric mounted within said main receptacle and adapted to provide a first receptacle within which fly-tying materials and equipment may be enclosed;
c) a second auxiliary receptacle formed from flexible woven fabric mounted within said main receptacle and adapted to provide a second receptacle within which fly-tying materials and equipment may be enclosed;
d) a third auxiliary receptacle formed from flexible woven fabric mounted within said main receptacle between said first and second auxiliary receptacles; and
e) a dubbing panel detachably secured to the interior of said main receptacle and adapted to be disposed between said first and second auxiliary receptacles when said tote bag is closed and selectively extendable to project out of said main receptacle when said tote bag is open.

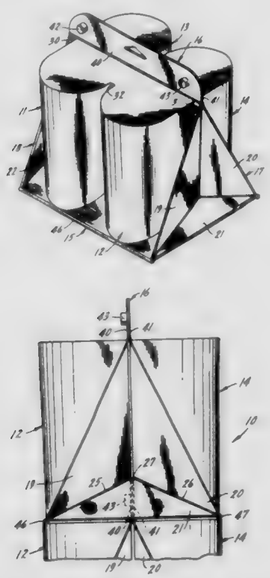
5,052,556
TOOTHBRUSH TRAVELING CASE
William T. Wilkinson, Box 378, Chesapeake City, Md. 21915
Filed Sep. 26, 1990, Ser. No. 588,352
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—362.2 7 Claims

1. I claim a travel case for a tooth brush comprising:
a case;
a tooth brush handle clip rigidly affixed to the case;
the tooth brush handle clip consists of two opposing semi-rigid jaws with the entry side of each jaw rounded, creating a narrow catch which opens to an open cavity such that as the tooth brush handle is inserted between the jaws the jaws spread and when the brush handle is seated in the cavity the jaws close;
a bumper affixed to the case such that the bumper keeps the tooth brush from contacting the case in two directions,



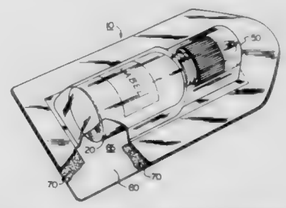
one surface of the bumper has a concave shape and the bumper is aligned with the center line of two jaws.

5,052,557
COMBINATION DISPLAY AND SHIPPING PACKAGE FOR BEVERAGEWARE
Frederic L. Contino, and Robert Greathouse, both of Lancaster, Ohio, assignors to Newell Co., Freeport, Ill.
Filed Aug. 18, 1989, Ser. No. 395,909
Int. Cl.[5] B65D *65/00*
U.S. Cl. 206—427 10 Claims



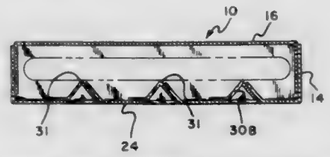
8. In a one piece shipping and display package which provides 360 degree visibility of the contents thereof in all planes, said package being stackable with similar packages disposed thereabove and therebelow, and having securement means which interlock with similar packages disposed thereabove and therebelow, the combination of
a lower section,
first side wall means and second side wall means which, following filling of the package, form, with the lower section, a unitary, enclosed container within which is received item to be shipped,
oppositely located outer edge portions of the upper end portions of the first and second side wall means being sufficiently widely spaced to provide a support surface for a similar package located thereabove,
the exterior, central portion of the bottom of the lower section being spaced a given vertical distance above a plane on which the package rests when filled and closed to thereby form an open portion which extends upwardly from said plane,
the upper end portions of the first and second side wall means forming securement means which project upwardly from said support surface a distance no greater than said vertical distance,
said securement means, when extending upwardly into an open portion in an upper stacked package, thereby resisting separation and tipping of an upper package away from a next lower package.

5,052,558
PACKAGED PHARMACEUTICAL PRODUCT
Douglas V. Carter, Lenoir, N.C., assignor to Eatravision, Inc., Lenoir, N.C.
Continuation of Ser. No. 488,259, Mar. 23, 1990, Pat. No. 4,962,856, which is a division of Ser. No. 273,605, Nov. 21, 1988, Pat. No. 4,947,620, which is a continuation of Ser. No. 137,436, Dec. 23, 1987, Pat. No. 4,805,377. This application Jul. 27, 1990, Ser. No. 559,276
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] B65D *65/38*
U.S. Cl. 206—439 9 Claims



1. A sterile pharmaceutical package comprising:
a) a translucent, resilient polymeric bottle formed of a material capable of withstanding sterilization temperatures without vapor leakage through the walls thereof;
b) a cap and means for securing said cap to the open top of said bottle;
c) sealing means positioned between the inner surface of the top wall of said cap and the rim of said bottle, said sealing means serving to absorb pressures developed by expansion of said bottle and prevent deformation of said cap during sterilization thus eliminating leakage therebetween; and
d) a blister pack formed of a prescribed polymeric material suitable for use in a sterilization procedure without melting, a closure lid placed along the open side of said blister pack and formed from a non-woven textile material having the characteristics of being permeable, said closure lid being sealed to said polymeric material around the open side thereof, and capable of remaining sealed during said sterilization procedure.

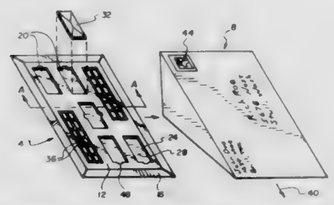
5,052,559
FOOD BOX
Thomas E. Bressi, Jr., Suite 220, 101 Bryn Mawr Ave., Bryn Mawr, Pa. 19010
Filed Aug. 22, 1990, Ser. No. 570,815
Int. Cl.[5] B65D *81/00*
U.S. Cl. 206—525 7 Claims



1. A package device for heated carry-out food comprising:
(a) a box having a first pair of two opposed spaced apart side walls, a second pair of two opposed spaced apart side walls uxtaposed to said first pair of side walls and opposed spaced apart top and bottom walls;
(b) a plurality of elongated separate support means secured in spaced parallel alignment to said bottom wall on its interior side adapted for supporting a heated carry-out food within said box in a portion spaced away from said bottom wall, each of said support means being secured along one elongated edge thereof to said bottom wall interior side.

5. A carton for heated carry-out food comprising:
(a) a box having a first pair of two opposed spaced apart side walls, a second pair of two opposed spaced apart side walls juxtaposed to said first pair of side walls and opposed spaced apart substantially planar top and bottom walls;
(b) at least two elongated longitudinally hinged support strips secured along one longitudinal edge in spaced substantially parallel alignment to said bottom wall interior surface, each of said strips being adapted to form an inverted substantially continuous channel overlying said bottom wall interior side with the elongated legs thereof being restrained to provide a support on the bottom wall interior side upon which a heated food item may be disposed spaced from the bottom wall interior side.

5,052,560
CONFECTION HOLDING STRUCTURE FOR USE IN ENVELOPES
Richard B. Stringham, 522 E. First South, Salt Lake City, Utah 84102
Filed Sep. 27, 1990, Ser. No. 588,709
Int. Cl.[5] B65D *1/36, 27/02*
U.S. Cl. 206—564 20 Claims

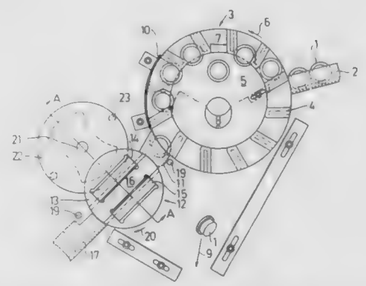


1. A confection holding structure for disposition in envelopes comprising a generally planar sheet of material having a plurality of relatively shallow recesses formed in one surface thereof to define open receptacles for receiving and holding confections whose thicknesses and perimetric shapes generally conform to the depths and shapes of corresponding receptacles, said sheet of material also including downwardly projecting support protuberances located generally adjacent at least some of the receptacles to thereby provide support for inhibiting crushing of the receptacles.

5,052,561
CRYSTALLINE SILICATE CATALYST AND A REFORMING PROCESS USING THE CATALYST
Stephen J. Miller, San Francisco, and Bernie F. Mulaskey, Fairfax, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.
Continuation of Ser. No. 398,816, Aug. 22, 1989, abandoned, which is a continuation of Ser. No. 97,789, Sep. 16, 1987, abandoned. This application Mar. 19, 1990, Ser. No. 496,119
Int. Cl.[5] C10G *35/06*
U.S. Cl. 208—137 25 Claims

1. A process for reforming a hydrocarbon feed stream to maintain production of aromatic hydrocarbons over a prolonged period of operations comprising,
contacting a hydrocarbon feedstream having less than about 1.0 ppm sulfur at a pressure of less than 100 psig and a temperature between about 599° and about 1058° F., and a molar ratio of added hydrogen to said hydrocarbon feedstream of not greater than about 1.0
with a catalyst comprising a platinum, an alkali or alkaline earth metal, and silicalite, which silicalite has at least about 80% crystallites; a silica to alumina molar ratio of at least about 1000:1, and in which the size of at least about 80 wt. % of said crystallites is less than 5 microns.

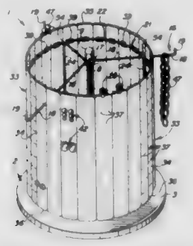
5,052,562
METHOD AND APPARATUS FOR SORTING ROUND OBJECTS
Lajos T. Pethö, Limoges, France, assignor to KabiVitrum AB, Stockholm, Sweden
PCT No. PCT/SE89/00129, § 371 Date Nov. 27, 1989, § 102(e) Date Nov. 27, 1989, PCT Pub. No. WO89/09098, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 13, 1989, Ser. No. 438,426
Claims priority, application Sweden, Mar. 25, 1988, 8801120-0
Int. Cl.[5] B07C *5/06*
U.S. Cl. 209—626 20 Claims



1. A method for sorting round objects, including the steps of:
inserting an object between a pair of dogs having converging spacing therebetween, said converging spacing having one end with a largest dimension and the other end with a smallest dimension, the smallest dimension of the spacing corresponding to the minimum acceptable dimension of the objects, such that an object with a dimension smaller than the minimum acceptable dimension can pass between the dogs, whereas an object with at least a minimum acceptable dimension is retained between the dogs;
rotating said dogs with the object inserted therebetween, such that the retained object is moved out from the spacing between the dogs through the end with the largest dimension;
transferring the object which moved out from the spacing between the dogs to a path formed between two parallel

gauging members, said gauging members being displaceable at right angles to the path, with the distance between said gauging members in a normal state corresponding to the greatest acceptable dimension of the objects such that the object with accepted dimension passes between said gauging members while too large or deformed object is retained between said gauging members;
detecting the retention of the objects between said gauging members with a sensing means;
effecting displacement of said gauging members for increasing the distance therebetween to allow the retained object to pass between the gauging members, while simultaneously rotating said gauging members about an axis at right angles to the displacement direction of the gauging members and the longitudinal direction of said path, such that the object passing between said displaced gauging members is removed and taken away separately from the objects with accepted dimensions; and
returning the gauging members to an original position with the distance therebetween corresponding to that in the normal state for receiving said objects.

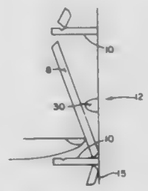
5,052,563
JEWELRY CADDY
Betty J. Camp, 3125 Mackay La., Shreveport, La. 71118
Continuation-in-part of Ser. No. 375,679, Jul. 5, 1989. This application Oct. 16, 1989, Ser. No. 421,991
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 10 Claims



1. A jewelry caddy for organizing jewelry comprising a base; an elongated support rod upward-standing from said base; a ring support mounted on the top end of said support rod; at least three struts carried by said support rod in spaced relationship with respect to said base for supporting first selected pieces of the jewelry; a top frame ring supported by said struts; a bottom frame ring spaced from said top frame ring and at least two vertical frame supports carried by said top frame ring and said bottom frame ring for joining the top frame ring to said bottom frame ring; a plurality of slats disposed around said top frame ring and said bottom frame ring; and clip means provided on said slats for removably securing said slats on said top frame ring and said bottom frame ring and supporting second selected pieces of jewelry.

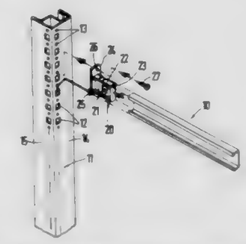
5,052,564
COMPACT DISC DISPLAY RACK
John D. Zuzack, 2634 Carousel Dr., St. Louis, Mo. 63125
Filed Jul. 10, 1989, Ser. No. 377,091
Int. Cl.[5] A47G *29/00*
U.S. Cl. 211—40 10 Claims

1. A rack for displaying generally planar objects in a manner permitting clear exhibition and an aesthetic arrangement of their displayed covers or wrappers comprising a square or rectangular frame having a top, a bottom, a back, and members at its sides, the distance between side members being an even multiple of the width of the objects to be displayed so that a given number of the objects fill the frame between side members without spaces between them, a plurality of shelves spaced from each other a distance equal to the height of the objects to be displayed such that the objects can be placed on them and leaned against the frame back to fill the shelves aesthetically with almost no spaces between them, a plurality of kick bars disposed adjacent the frame back, the kick bars



being secured between shelves so that when the object being displayed is pushed toward the frame back on either side of the dick bar, the bar kicks out the other end of the object enabling it to be gripped for removal from the frame.

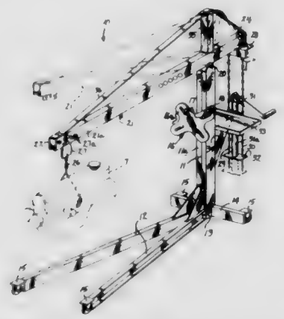
5,052,565
DEVICE FOR FASTENING A C-SHAPED MOUNTING RAIL TO A WALL PROVIDED WITH SCREW HOLES
Jurgen Zachrei, Dillenburg-Nanzenbach, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany
Filed Sep. 7, 1990, Ser. No. 579,623
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930161
Int. Cl.[5] A47F *5/14*
U.S. Cl. 211—182 13 Claims



1. A device for fastening an end of a C-shaped mounting rail to a wall with holes of one of a control cabinet and a frame piece of said control cabinet frame, having a fastening block which is inserted into said end and is adapted to an inside cross section of said mounting rail and is fastened by means of a fastening screw in said wall, the improvement comprising:
said wall (**14**) having a first row of rectangular cutouts (**12**) and, having between said cutouts and being offset by one-half spacing, a second row of screw holes (**13**),
said fastening block (**20**) being closed off with a fastening plate (**24**) on a side facing said wall (**14**),
said fastening plate (**24**) having an L-shaped hanger (**25**) on said side facing said wall (**14**) adapted to said cutouts (**12**) and a thickness of said wall (**14**) and hung in said cutout (**12**),
said fastening plate (**24**) having a screw hole (**26**) positioned outside of said fastening block (**20**) for a fastening tap screw (**27**) which can be screwed into one of said screw holes (**13**) in said wall (**14**) when said fastening plate (**24**) has been hung,
said fastening block (**20**) having a U-shaped recess (**21**) which defines a square nut (**22**) with a threaded bore (**23**) on three sides, and
said threaded bore (**23**) being directed crosswise to a longitudinal axis of said mounting rail (**10**) and vertically to a base leg of said mounting rail and receiving a tensioning screw

(28) for an axial seating of said fastening block (20) in said mounting rail (10).

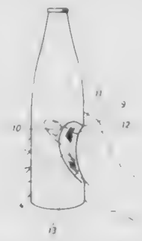
5,052,566
ENGINE HOIST AND SUPPORT APPARATUS
Geoff Ziegler, 215 21st St. SE., Massillon, Ohio 44646
Filed Nov. 29, 1990, Ser. No. 619,387
Int. Cl.[5] B66C *7/00, 23/26*
U.S. Cl. 212—257 **9 Claims**



1. An engine hoist and support apparatus comprising,
a central vertical support post with a lower terminal end, the support post including a forward surface and a rear surface, the forward surface including a plurality of horizontal support legs mounted to the forward surface at the lower terminal end of the support post, and
a lateral horizontal support beam integrally mounted and extending laterally of the support post adjacent the support legs, with the support post bisecting the lateral horizontal support beam, and
the support post including an upper terminal end defining a "U" shaped recess, the "U" shaped recess including spaced parallel flanges, the spaced parallel flanges defined by a predetermined spacing, and
each flange including a flange aperture, wherein the flange apertures are coaxially aligned and adapted to receive a pivot rod therethrough, and
a support boom, the support boom including a pivot rod cylinder with a dimension defined by the predetermined spacing between the flanges and rotatably receiving the pivot rod therethrough, the pivot rod being orthogonally oriented relative to the support boom, the support boom including a rear portion extending rearwardly of the pivot rod and a forward portion extending forwardly of the pivot rod, the forward portion of the support beam includes spaced track means, load supporting carriage means adapted to move along said track means, means for selectively securing the carriage means to a first plurality of positions on the support beam adjacent the support post and to a second plurality of positions adjacent the end of the forward portion of the support boom, and
jack means mounted to the support post and to the rear portion of the support boom to effect pivotment of the support boom about the pivot rod.

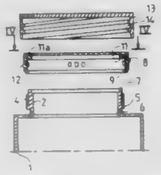
5,052,567
BOTTLE WITH A GRIPPING RECESS
Luigi Colani, Bern, Switzerland, assignor to Valser St. Petersquelle AG, Speigel, Switzerland
Filed Feb. 14, 1990, Ser. No. 482,228
Claims priority, application Switzerland, Feb. 17, 1989, 559/89
Int. Cl.[5] B65D *23/10*
U.S. Cl. 215—100 A **6 Claims**

1. A bottle having an exterior surface which includes a niche shaped to conform to the hand allowing a more secure holding of the bottle, said niche comprising a symmetrically split, substantially cardioid shape defined by bilaterally formed cavities defining wall portions, which meet along a plane de-



fined by longitudinal axis of said bottle and form a lower tip, whereby in side view, the two halves of the symmetrically split cardioid shape are located in registry behind each other along said plane and whereby the cardioid shape is arranged such that the lowered tip of the heart faces the bottom of the bottle.

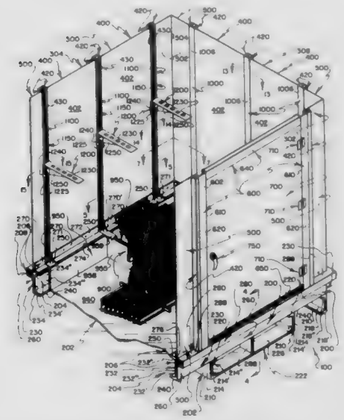
5,052,568
TIGHT CLOSING DEVICE FOR CONTAINERS, AND A PROCESS FOR MAKING IT
Patrick Simon, 7 rue Théophile Gautier, 95140 Garges Les Gonesse, Val d'Oise, France
Filed Mar. 27, 1990, Ser. No. 499,836
Claims priority, application France, Mar. 28, 1989, 89 03996
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—250 **9 Claims**



1. A tight closing device for a container having a neck, comprising a sheath of a synthetic material, said sheath having retainer members and including at least one protruding abutment for latching said sheath on the neck of the container and a fitting collar for engaging a portion of said neck, said sheath having a top provided with a sealing foil, wherein said sheath is fitted inside a lid including fixation means associated with said retainer members of said sheath so as to provide successive removal and setting in position operations of said lid independently of the sheath, wherein an annular space is defined between the sheath and the lid for accommodating resilient deformation of the protruding abutment, and wherein said neck is formed with a set of teeth cooperating with a set of ribs formed on the inner wall of the sheath.

5,052,569
SAFETY ENCLOSURE FOR STORING CONTAINERS OF HAZARDOUS MATERIAL
Clinton T. Cooper, 105 Overhill Rd., Youngstown, Ohio 44512
Filed Feb. 19, 1991, Ser. No. 656,645
Int. Cl.[5] B65D *7/26*
U.S. Cl. 220—1.5 **58 Claims**

1. A safety storage enclosure for housing containers of hazardous material and providing sump-type secondary containment for receiving spillage and leakage of materials from containers that are housed within the enclosure, comprising:
a) base assembly means including a welded assembly of steel components for defining a generally rectangular structure that has a lower stilt portion, a central containment portion, and an upper wall support portion, wherein:
i) the lower least a pair of structural steel members having first downwardly facing surface means for engaging a generally horizontal surface atop which the safety enclosure is to be installed, having first upwardly facing surface means for engaging and supporting the central containment portion, and having first web means for connecting the first downwardly facing surface means and the first upwardly facing surface means so as to position the first upwardly facing surface means in a first generally horizontal plane that is spaced above the generally horizontal surface;
ii) the central containment portion includes generally rectangular frame means that includes a pair of front and rear members, and a pair of end members that are arranged end-to-end to define a generally rectangular structure that has one end of each of the end members welded to a separate one of the opposed ends of the front member, and that has the other end of each of the end members welded to a separate one of the opposed ends of the rear member, and with the front, rear and end members of the rectangular frame means cooperating to define:



A) second downwardly facing surface means for being positioned atop and for being securely connected to the first upwardly facing means to support the generally rectangular frame means in a generally horizontally extending attitude;
B) second upwardly facing means extending in a second generally horizontal plane located in spaced relationship to and above the first generally horizontal plane;
C) second web means for connecting the second downwardly facing surface means and the second upwardly facing surface means, with the second web means having an outer surface that extends substantially continuously about and defining the outer perimeter of the generally rectangular frame means;
iii) the central containment portion also includes generally rectangular sump means including one or more generally rectangular sumps arranged to effectively define an upwardly opening catch basin that extends in an end-to-end direction substantially the entire distance between the front and rear members, and in a front-to-rear direction substantially the entire distance between the end members so as to substantially fill the space that is surrounded by the generally rectangular frame means;
iv) the upper wall support portion includes first wall support means rigidly connected to the generally rectangular frame means and extending upwardly from near the intersection of the outer surface and the second upwardly facing surface of the generally rectangular frame means for being connected to lower end regions of the wall means, and second wall support means rigidly connected to the generally rectangular frame means and extending outwardly from near said intersection for defining an upwardly facing support surface that extends substantially continuously about the perimeter of the generally rectangular frame means;
b) wall means including an assembly of relatively flat wall panels, relatively L-shaped corner-wall panels, and at least one door frame panel, with said panels extending substantially vertically from lower portions thereof that are connected to said upper wall support portion of said base assembly to upper portions thereof that have top surfaces that extend in a third generally horizontal plane located a substantial distance above the second generally horizontal plane, and with the wall means defining a substantially continuous wall structure that wraps about the perimeter of said generally rectangular structure so as to define a front wall, a rear wall, and a pair of opposed end walls, with the front wall including at least one door frame panel;
c) roof means including a roof structure for connection to said upper portions for defining a roof that substantially continuously overlies the interior space that is defined between the front and rear walls, and between the opposed end walls;
d) grate-type floor means supported by said base means and extending substantially horizontally atop the sump means and substantially continuously within the interior space that is defined between front and rear walls, and between the opposed end walls;
e) door means connected to the door frame panel and being movable relatively thereto for selectively controlling access to said interior space through a door opening that is defined at least in part by the door frame panel;
f) said relatively flat wall panels include at least one "standard" flat wall panel that is formed from a single, generally rectangular sheet of steel that has opposed side edge portions extending parallel to the length thereof, that has opposed bottom and top edge portions bordering the width thereof, and that has generally flat central portions that extend substantially continuously between the opposed side edge portions and between the opposed bottom and top edge portions;
g) said relatively L-shaped corner-wall panels include at least one "standard" L-shaped corner wall panel that is formed from a single, generally rectangular sheet of steel that has opposed side edge portions extending parallel to the length thereof, that has opposed bottom and top edge portions bordering the width thereof, and that has central portions including a pair of generally flat central portions that each extend from a separate one of the side edge portions toward a central location where a substantially right angle bend is formed along a locus that substantially parallels the opposed side edge portions thereof;
h) said wall means includes at least a pair of adjacently positioned flat and/or L-shaped panels of the aforedescribed "standard" types that are arranged to extend vertically edge-to-edge with side edge portions thereof in abutting engagement along substantially the full lengths thereof, with the abutting side edge portions including complementary substantially J-shaped formations, with each of the J-shaped formations being defined by a relatively long first leg and relatively shorter second and third legs, and wherein:
i) each of the first, second and third legs is formed as an integral part of its associated wall panel, and each such leg is defined by a substantially flat band of vertically extending sheet metal that, when viewed in horizontal cross-section, has the appearance of an elongate element with parallel sides that extend between a pair of opposite end regions;

ii) each relatively long first leg is connected at one end region thereof to adjacent central portions of its associated panel by a substantially right angle bend that causes the first leg to extend outwardly from the plane of said adjacent central portions;

iii) each second leg is connected at one end region thereof to the other end region of its associated first leg by a substantially right angle bend that causes the second leg to extend in an outer plane that substantially parallels the plane of said adjacent central portions but at a location spaced outwardly therefrom;

iv) each third leg is connected at one end region thereof to the other end region of its associated second leg by a substantially right angle bend that causes the third leg to extend inwardly from the outer plane in a direction that parallels the associated first leg but at a distance spaced therefrom;

v) each third leg has its other end region of the third leg located between the outer plane and the plane of said adjacent central portions of its associated panel;

vi) said abutting engagement along substantially the full lengths of said pair of adjacently positioned panels is provided by said third legs thereof being arranged to extend in abutting engagement along substantially their full lengths; and,

vii) such central portions of each of said pair of adjacently positioned panels as are located near the abutting side edge regions are arranged to extend in a common plane, whereby the first legs of the J-shaped formations cooperate to define substantially parallel sides of a vertically extending "groove" located between adjacent central portions of said panels;

i) groove insert means including at least one elongate member for insertion into said vertically extending "groove" is provided to bridge the juncture between the abutted third legs;

j) aligned holes are formed through selected portions of the J-shaped formations and through the elongate member; and,

k) fastener means for extending through the aligned holes and for clamping the abuttingly connected pair of adjacently positioned panels are provided to secure the connection between the adjacently positioned panels.

5,052,570

COMPOSTING BIN APPARATUS WITH U-SHAPED CONNECTING MEMBERS

Roderic Johansen, 20234 23rd Place NW., Seattle, Wash. 98177

Filed Jul. 31, 1989, Ser. No. 386,605

Int. Cl.[5] B65D *6/24, 6/26*

U.S. Cl. 220—4.33 **5 Claims**

1. A composting bin comprising:

at least one elongated sheet of semi-rigid, flexible material with one near end, one far end, an inner surface and an outer surface;

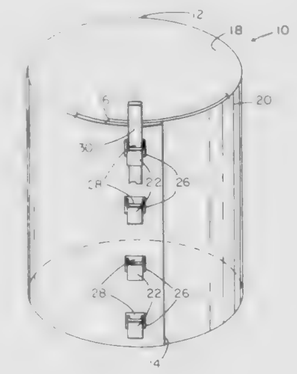
a plurality of U-shaped members, each U-shaped member having two leg sections, each leg section having one end connected to a closed end of said U-shaped member and another end extending towards an open end of said U-shaped member, each leg section further having a tab attached to it proximate said open end of said U-shaped member;

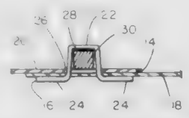
a first plurality of apertures through said elongated sheet proximate said far end;

a second plurality of apertures through said elongated sheet proximate said near end, said second plurality of apertures having sizes, shapes and locations so that when said near end overlaps said ar end, said apertures of said first plurality align with said apertures of said second plurality, so that one said U-shaped member will extend through one said overlapped, aligned aperture of said first plurality and corresponding aperture of said second plurality simultaneously while said U-shaped member tabs rest against said elongated sheet inner surface, substantially all said apertures being too small to allow said tabs to pass through;

a plurality of bores formed by extending said U-shaped members through said first plurality apertures and said second plurality apertures after said near end has overlapped said far end and said apertures of said first and said second pluralities have been aligned, and with said bores are substantially aligned so that a single rod can pass through substantially all said bores simultaneously; and

an elongated structural member with a cross-sectional area





small enough to allow said elongated structural member to pass through substantially all said bores, said elongated structural member also being sufficiently long to enable it to extend substantially through all said bores simultaneously, and said elongated structural member having a forward end that is sharpened so that once said near and far ends have been overlapped and said bores have been formed, said elongated structural member can be passed through substantially all said bores and driven into the ground stabilizing said composting bin and locking said near and far ends together.

5,052,571

AUTOMOTIVE RADIATOR CAP

Sumio Susa, Anjo; Toshio Nagara, Toyoda; Sunao Fukuda, Oobu; Seiichi Kato, Toyoake, and Satomi Muto, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 39,283, Apr. 17, 1987, abandoned. This application Jun. 2, 1989, Ser. No. 363,375

Claims priority, application Japan, Apr. 18, 1986, 61-90994; Jul. 21, 1986, 61-171294; Jul. 21, 1986, 61-171295; Oct. 8, 1986, 61-239976

Int. Cl.[5] B65D *51/16*

U.S. Cl. 220—203 **7 Claims**

1. An automotive radiator cap for a filler neck of an automotive radiator tank, comprising:

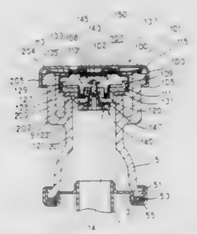
an outer cap member connected to said filler neck;

an inner cap member provided on an inner side of said outer cap member and rotatably connected with said outer cap member;

a first pressure valve operatively coupled to said inner cap member so that said pressure valve can move vertically, said pressure valve facing said inner cap member at one portion of said pressure valve and having a seal portion for sealing said filler neck at an opposite position of said one portion, and having an inner side forming a connecting hole which communicates between an upper space of said pressure valve communicated to a reservoir and a lower space of said pressure valve communicated to said tank;

a pressure modulating valve operatively coupled to said first pressure valve and having a center rod provided in said connecting hole and spaced from said inner side to form a passing area and having sealing means for closing said connecting hole when said pressure modulating valve moves upwardly upon pressure in said tank becoming higher than a predetermined value,

said pressure modulating valve operating by virtue of its own weight, when pressure in said tank is below a predetermined value, to open said connecting hole by spacing



said sealing means from said connecting hole so as to introduce coolant from said reservoir into said tank;

an outer diameter of said center rod and a diameter of said inner side decreasing around an axis of said center rod from said lower space of said first pressure valve to said upper space of said first pressure valve to cause said passing area of said connecting hole to decrease from said lower space to said upper space; and

a coil spring provided between said inner cap member and said first pressure valve so that one end of said coil spring abuts said inner cap member and the other end of said coil spring abuts said first pressure valve toward an opposite direction of said inner cap member, a contacting point between said other end of said coil spring and said first pressure valve being disposed lower than a connecting point between said sealing portion of said first pressure valve and said filler neck.

5,052,572

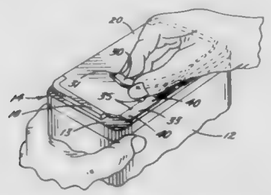
TAMPER-EVIDENT CLOSURE WITH IMPROVED TEAR STRIP HOLD-DOWN

Douglas E. Pherigo, Loves Park, Ill., assignor to J. L. Clark, Inc., Rockford, Ill.

Filed Aug. 24, 1990, Ser. No. 571,519

Int. Cl.[5] B65D *17/34*

U.S. Cl. 220—270 **3 Claims**



1. A container closure comprising a top panel piece molded of plastic, a dispensing opening formed through said panel piece, a flap molded integrally with said panel piece along a hinge line and swingable upwardly and downwardly about said hinge line and relative to said panel piece between open and closed positions with respect to said dispensing opening, said flap having a front edge extending generally parallel to said hinge line, an elongated plastic strip piece extending alongside and spaced forwardly from the front edge of said flap and overlying said panel piece when said flap is in said closed position, tearable webs molded integrally with and spaced along said strip piece and the front edge of said flap and extending between the two upright plastic pins molded integrally with one of said pieces and connected to the other of said pieces by welds formed by heating said pieces and causing portions of said pins and portions of said other piece to fuse together, said welds being sufficiently strong to normally hold said strip piece and said flap downwardly against said panel piece but sufficiently weak to break in response to an upwardly lifting force applied to one end portion of said strip piece whereby said strip piece may be lifted upwardly from said panel piece and torn away from the front edge of said flap at said webs thereby to enable the flap to be swung upwardly to its open position.

5,052,573

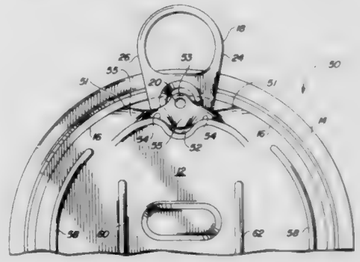
EASY OPEN END FOR CONTAINERS EMPLOYING ENLARGED MOUSTACHE SCORE

Edgar H. Zysset, St. Cloud, Fla., assignor to Automated Container Corporation, Plymouth, Fla.

Filed Feb. 21, 1990, Ser. No. 482,518

Int. Cl.[5] B65D *17/34*

U.S. Cl. 220—271 **4 Claims**



1. An easy open end for a container, comprising:

a metal end panel having a weakened area along at least a portion of its periphery;

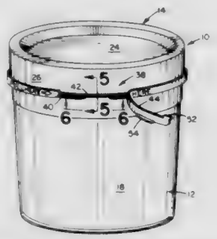
a pull tab extending generally radially across the end panel and having a pull ring disposed inwardly across the panel and a nose adjacent a point along the weakened area, the pull tab having peripheral sides between the pull ring and the nose;

means fastening the pull tab to the end panel at a point on the pull tab between the pull ring and the nose, and to the end panel at a point spaced radially inwardly from the weakened area;

a "moustache" score in the end panel inwardly of the fastening means, the "moustache" score defined by a central curve extending radially inwardly and an outwardly extending curve on either side of the inwardly extending curve, with the apex of each outwardly extending curve of the "moustache" score lies outside of the adjacent side of the pull tab; and

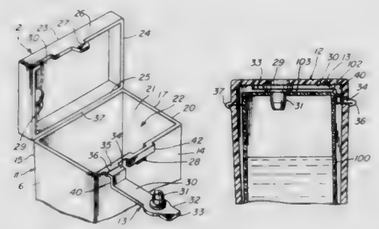
at least one lateral reinforcing bead extending across a portion of the metal end panel, the lateral reinforcing bead having an extremity in the direction of the "moustache" score which is drawn back a substantial dimension from that score so as to avoid interference with the rolling of metal about the "moustache" score during opening.

5,052,574
TAMPER-PROOF AND TAMPER-EVIDENT CONTAINER CLOSURE SYSTEM
Lee McKinnon, Aurora; Imre J. Buza, South Euclid; Terry L. Hartman, Solon, and Arthur H. Blackburn, Aurora, all of Ohio, assignors to Cardinal Packaging Inc., Streetsboro, Ohio
Filed Feb. 16, 1990, Ser. No. 480,772
Int. Cl.[5] B65D *17/40*
U.S. Cl. 220—276 8 Claims



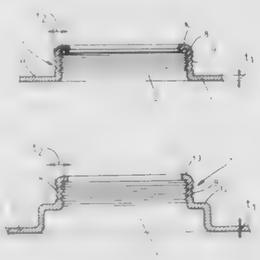
1. A tamper-proof and tamper-evident closure system for use with a plastic container body and lid of the type wherein the container body has an opening defined by a continuous side wall and the lid has a depending skirt terminating at a lower edge, the skirt overlapping the side wall adjacent the opening when the lid covers the opening, the closure system comprising:
a. means for shielding the lower edge of the skirt to inhibit removal of the lid from the container body, said shielding means including a shield flange projecting outwardly from the side wall of the container body immediately adjacent the lower edge of the lid when the lid covers the opening of the container body, said shield flange barring access to a substantial portion of the lower edge, said shield flange including a cut-out section providing access to a minor portion of the lower edge of the lid to permit removal of the lid from the container body; and
b. a tamper-evidencing band frangibly connected to said shield flange along a separation path spaced from the side wall of the container body, said tamper-evidencing band sufficiently surrounding the lower edge of the lid when the lid covers the opening of the container body to make removal of the lid difficult without separating a portion of said tamper-evidencing band from said shield flange.

5,052,575
HOLDER FOR AN ASEPTIC PACKAGE
Fred Ravreby, Framingham, Mass., assignor to Up & Adam, Inc., Framingham, Mass.
Filed Jun. 11, 1990, Ser. No. 535,821
Int. Cl.[5] B65D *7/44*
U.S. Cl. 220—278 7 Claims



1. A holder adapted for resealing an aseptic package with a straw hole in its top surface, the holder comprising:
a lower container having an interior chamber adapted to hold the package, the container having an upper opening through which the package may be inserted into the chamber and which allows access to the top surface of the package;
a cover having locking means for releasably securing the cover to the container for retaining the package in the chamber, the cover having an aperture adapted to receive a straw and juxtaposed over the hole in the package; and
a stopper having a movable arm attached to the lower container adjacent to the upper opening and a projection on the arm adapted to releasably seal the straw hole, the arm being movable to a first position wherein the arm lies under the cover and the projection seals the straw hole whereby the locking means retains both the package in the holder and the projection in the hole, and a second position wherein the projection is removed from the hole and which allows a straw to be inserted through the aperture and into the package while the cover is closed and the locking means retains the package in the holder.

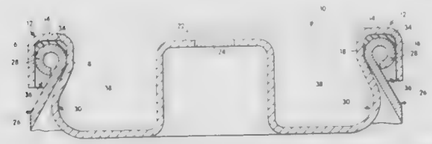
5,052,576
CONTAINER WITH CAP-TYPE CLOSURE
Bernd Büdenbender, Schubertweg 5, 2160 Stade, Fed. Rep. of Germany
Filed Aug. 14, 1989, Ser. No. 393,703
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1988, 3827551; Aug. 29, 1988, 3829230; Aug. 29, 1988, 3829240
Int. Cl.[5] B65D *53/00*
U.S. Cl. 220—304 11 Claims



1. A cap-type-closure container, comprising:
a container body;
a container bottom closing one end of said container body;
a container cover of sheet metal having a thickness and closing an opposite end of said container body, said container cover being formed with at least one filling opening and, bounding said opening and formed in one piece with said cover, a tube stub having an external screwthread and defining an annular sealing surface surrounding said opening and located on a side of said cover turned away from said container body; and
an internally threaded cap threadedly received removably on said tube stub, forming a closure for said opening and having a sealing ring pressed against said surface, said tube stub being compacted upon deforming the tube stub from said cover, thereby imparting a thickness to said tube stub in excess of the thickness of said cover.

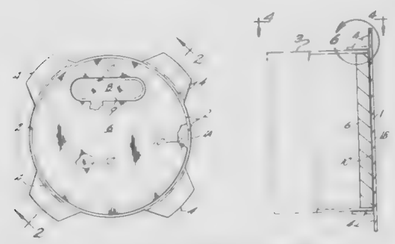
5,052,577
CONTAINER ASSEMBLY
Frank Cuns-Rial, Randolph, and David C. Lippert, Westwood, both of Mass., assignors to Armstrong Laboratories, Inc., West Roxbury, Mass.
Filed Nov. 7, 1989, Ser. No. 432,572
Int. Cl.[5] B65D *41/10*
U.S. Cl. 220—310 6 Claims

1. A container assembly comprising:
a cylindrical body having a closed end and an opening at an opposed end, said cylindrical body having an annular bead circumscribing said opening;
a mounting cup comprising a central portion having an annular bottom base, said mounting cup having a peripheral rim circumscribing said bottom base, said peripheral rim being defined by an inner wall extending perpendicularly from said annular bottom base, a horizontal wall extending perpendicularly from said inner wall, and an outer wall extending perpendicularly from said horizontal



wall, said inner wall, said horizontal wall and said outer wall together defining a rectilinear annular channel adapted to receive said annular bead, wherein said central portion is positioned within said opening, said annular bead is received within said rectilinear chamber and said inner wall of said peripheral rim is crimped to said annular bead; and
a gasket interposed between said annular bead and said peripheral rim.

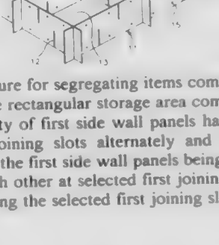
5,052,578
CLOSURE FOR A SHIPPING CONTAINER
William A. Goodwin, 111 Lomor Dr., Longview, Wash. 98632
Filed Feb. 28, 1990, Ser. No. 486,135
Int. Cl.[5] B65D *43/04*
U.S. Cl. 220—352 12 Claims



1. A closure for a tubular container comprising,
a disc including flexible tabs positionable into contact with the exterior of the tubular container for attachment thereto, said disc having a peripheral margin for abutment with an end of the tubular container, said margin having a transverse dimension corresponding to the wall thickness of the tubular container, and
an insert centrally disposed on said disc for installation within an end of said tubular container, said insert having a perimeter for frictional engagement with the inner surface of the tubular container.

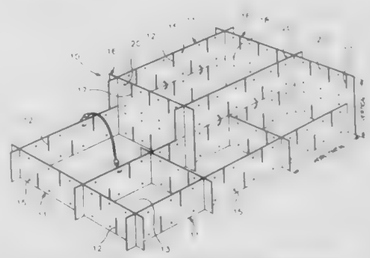
5,052,579
CONTAINER COMPRISING A SUPPORTING FRAME OF A RELATIVELY RIGID, DIMENSIONALLY STABLE MATERIAL AND A FLEXIBLE SLEEVE MEMBER
Gerardus A. M. Boots, Boskriek 72, 5401 LP Uden, Netherlands
Filed Jun. 14, 1989, Ser. No. 365,976
Claims priority, application Netherlands, Jun. 15, 1988, 8801523
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—403 6 Claims

1. A container comprising
a supporting frame with a square contour defined by four side planes forming together a continuous tubular circumferential surface and by two spaced end planes intersecting said side planes, said frame including
a rod-like element disposed at each transition of a side plane to an adjacent side plane from substantially one end plane to the other end plane, each rod-like element having a circumference and a largest transverse dimension and being of a relatively rigid, dimensionally stable material;
support means of a relatively rigid, dimensionally stable material in said end planes for supporting the rod-like elements, in use, in a rigid predetermined spatial relationship;
a flexible elongate sleeve member in which material to be packaged is receivable and having in cross-section an octagon-form when the container is empty; and



at least four flexible loop members, each loop member having the shape of a V with an apex and two legs with each an apex-end and a leg-end, the apex-ends enclosing partly one rod-like element, the total length of both legs being larger than the circumference of said partly enclosed rod-like element, the leg ends being externally attached to the sleeve member at two adjacent angular points of the octagon, said two points being spaced apart a distance which is larger than the largest transverse dimension of said partly enclosed rod-like element; said supporting frame, said sleeve member and said loop members being arranged such that the loop members are distended and keep the sleeve member within the confines of the contour of the supporting frame at all times, at any rate when the sleeve member contains material to be packaged.

5,052,580
VEHICLE CARGO STORAGE ORGANIZER
Yanka Khoury, 648 Hartford St., Chula Vista, Calif. 92013
Filed Mar. 19, 1990, Ser. No. 496,213
Int. Cl.[5] B60R *5/04*
U.S. Cl. 220—505 13 Claims



1. A structure for segregating items comprising:
at least one rectangular storage area comprising:
a plurality of first side wall panels having a plurality of first joining slots alternately and oppositely spaced apart; the first side wall panels being releasingly joined to each other at selected first joining slots by slidingly inserting the selected first joining slots into each other

the first side wall panels having a plurality of first length sizing means diametrically opposed to and connected to each of the plurality of first joining slots in the first side wall panels and extending to a longitudinal edge of the first side wall panels to shorten a length of the first side wall panels; and

a second rectangular storage area comprising:

a pair of second side wall panels having a height of approximately twice the height of the first side wall panels and having a plurality of second joining slots spaced apart in diametric pairs; the second side wall panels being releasingly joined to the first side wall panels at selected joining slots by slidingly inserting the selected second joining slots into the selected first joining slots to form two walls of the second rectangular storage area; the second side wall panels having a plurality of second length sizing means connecting the diametrically opposed second joining means to shorten a length of the second side wall panels; and

a pair of the first side wall panels, each releasingly joined to both of the second side wall panels at the diametric paired joining slots to form the upper sections of the other two walls of the second rectangular area.

5,052,581

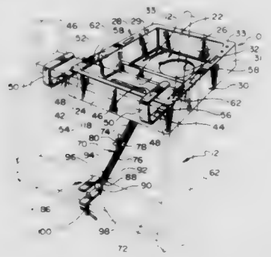
LADDER-SUPPORTED HOLDING TRAY

Joseph T. Christ, and Helen M. Christ, both of Dyer, Ind., assignors to Craft Creations Co., Inc., Dyer, Ind.

Filed Aug. 13, 1990, Ser. No. 566,117

Int. Cl.[5] E06C *7/14;* **A47L** *13/56*

U.S. Cl. 220—570 **16 Claims**



1. A detachable support tray adapted to be secured to and removed from a ladder comprising:

a horizontally disposed tray member including a floor member having integral upstanding end walls and integral upstanding side walls, said side walls each having spaced inner and outer wall members integral with an upper wall member;

tray member securing means operatively connected to the tray member for securing the tray member to a ladder in a horizontal position at a predetermined height of the ladder, said securing means comprising two U-shaped clamps, each clamp including a planar, elongated leg member received in a side wall of the tray between said spaced inner and outer wall members adjacent to said upper wall member for supporting the tray in a horizontal disposition;

means for securing an upper planar surface of each elongated leg member to an inner surface of an upper wall member; and

strut means operatively and pivotably connected to the tray member at a point on the tray member spaced from the tray member securing means, said strut means including a ladder securing member pivotably connected thereto and pivotable independently from the pivotable connection of the strut means to the tray member, for securing the tray member to the ladder at a height that is spaced downwardly from the tray member securing means and adapted to bear a load disposed within the tray member and transfer said load to the ladder.

13. A support tray kit adapted for assembly by a user, comprising:

a tray member including a floor member having an integral upstanding walls;

a pair of first U-shaped clamp members adapted to be attached to both the tray member and to a ladder;

an adjustable elongate support means, adapted to be pivotably secured, to both the tray member and a ladder, below the tray member floor member;

a second U-shaped clamp member having means adapted to be pivotably secured to the elongate support means;

means for securing the first U-shaped clamp members to the tray member;

means, for pivotably securing the adjustable elongate support means to the tray member, on the lower surface of the tray member floor member and at one end of the support means;

means for pivotably securing the adjustable elongate support means to the second U-shaped clamp member at the opposite end of the support means; and

means for securing the second U-shaped clamp member to a ladder.

5,052,582

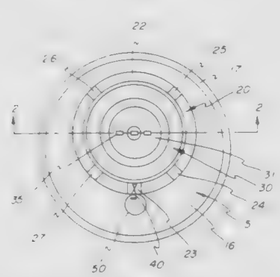
CONTAINMENT BASIN ASSEMBLY FOR CHEMICAL STORAGE TANK

Christopher C. Hall, Gwynedd Valley, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Nov. 5, 1990, Ser. No. 609,568

Int. Cl.[5] F04B *45/02*

U.S. Cl. 220—571 **11 Claims**



1. A containment basin assembly for a tank containing liquid chemical product comprising, in combination:

a containment basin having a bottom surface and an upstanding wall member surrounding and extending from said bottom surface, and

mounting means integral with said bottom surface and extending upwardly therefrom adapted to receive said tank, said mounting means being located off-center with respect to said bottom surface.

5,052,583

METHOD AND APPARATUS FOR DISPENSING ARTICLES

Reinier Hill, Hamilton, Canada, assignor to AEC Machinery Limited, Hamilton, Canada

Filed Apr. 14, 1989, Ser. No. 338,114

Int. Cl.[5] B65G *59/06*

U.S. Cl. 221—1 **5 Claims**

1. An article dispenser comprising:

a continuous carrier;

a plurality of article engaging means formed on said carrier and regularly spaced therealong;

at least two article guide means separated at a predetermined distance from one another and aligned with said carrier

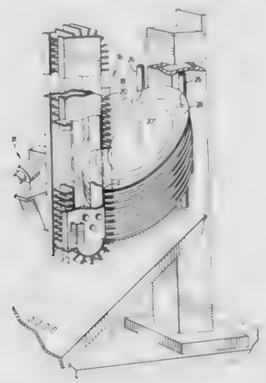
adjacent said article engaging means at a predetermined spacing therefrom; and

adjustment means for adjusting said predetermined distance and said predetermined spacing so that an article may be held between a pair of said article engaging means and leans at an angle against said at least two article guide means for sliding movement therealong.

5. A method of dispensing articles comprising the steps of:

providing a continuous carrier;

providing a plurality of article engaging members on said carrier for holding said article during travel along the carrier;



providing at least two article guiding elements in substantially parallel alignment with said carrier for guiding said articles; and

adjusting the position of said article guiding elements according to the dimensions of said article and the spacing between said article engaging members so that when positioned on said carrier, each of said articles is held between a pair of said article engaging members and leans at an angle against said at least two article guiding elements.

5,052,584

CHILDPROOF PILL DISPENSER

Werner F. Dubach, Maur, Switzerland, assignor to Firma Createchnic AG, Switzerland

Filed Mar. 28, 1990, Ser. No. 500,472

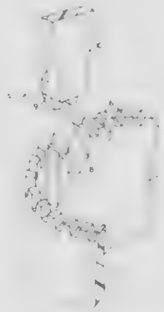
Claims priority, application Switzerland, Apr. 4, 1989, 01224/89

Int. Cl.[5] B65D *83/00*

U.S. Cl. 221—152 **7 Claims**

1. In a pill dispenser having two cylindrical main components that fit into one another, an inner concentric wall and an outer concentric wall extending concentrically relative to one another and displaceable relative to one another in a direction of a longitudinal axis of the pill dispenser, the improvement comprising: one of said outer concentric wall (1) and said inner concentric wall (2) of one of said main components having at least one recess (3, 3'), a counterpart (4) on the other of said main components of the pill dispenser being movable within said at least one recess (3, 3') upon actuation of the pill dispenser whenever said main components, which are rotatable relative to one another, are aligned in a suitable angular position with respect to one another; and

in a region of an inwardly protruding thickened wall portion (7) of said inner concentric wall (2) said thickened wall portion (7) forming a ramp surface inclined downward toward an inside of the pill dispenser, a lower edge (8) of said thickened wall portion (7) being inclined in at least one rotational direction, a radially resilient counterpart (4, 10) attached to the other of said main components, said counterpart (4) having a tracer device (9) on an end of said counterpart (4), said tracer device (9) fitting into said



recess (3'), said tracer device (9) engaging said lower edge (8) from below upon a return stroke of reciprocation of the pill dispenser.

5,052,585

DISPENSER

Lee R. Bolduc, 6416 Gainsborough Dr., Raleigh, N.C. 27612

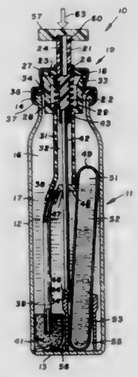
Continuation-in-part of Ser. No. 261,320, Oct. 24, 1988, Pat. No. 4,979,638, and a continuation-in-part of Ser. No. 251,806, Oct. 3, 1988, Pat. No. 4,941,615, said Ser. No. 261,320, is a continuation-in-part of Ser. No. 49,361, May 14, 1987, which is a continuation of Ser. No. 812,237, Dec. 23, 1985, abandoned.

This application Jul. 16, 1990, Ser. No. 552,884

The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.

Int. Cl.[5] B67D *5/60;* **A62C** *35/88*

U.S. Cl. 222—1 **12 Claims**



1. A dispenser comprising: a container having an internal chamber for storing a propellant and at least one first component under pressure, normally closed valve means mounted on said container to retain the propellant and one first component under pressure in said chamber, said valve means includes a housing mounted on the container, said housing having a chamber and a hole in the bottom portion thereof, said valving means further including a valving member located in said chamber for movement in a first direction from a closed position to an open position to dispense aerosol to a desired location and in a second direction from an open position to a closed

position to prevent dispensing of aerosol, frangible ampule means located within said chamber containing at least one second component that is separated from the first component within the chamber until said ampule means is broken, means for holding the ampule means in said chamber, and means connected to said valve means and connected to said means for holding the ampule means, said means connected to said valve means and connected to said means for holding the ampule means comprising a rigid push rod extended through said hole in the housing whereby when the valve means is first moved in the first direction the valve means is opened and force is transmitted through the rod and means for holding the ampule means to break the ampule means thereby releasing the second component into said internal chamber whereby the first and second components are mixed together and flow through the chamber in the housing an open means to a selected location

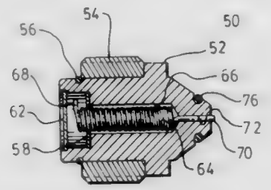
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5,052,586

GAS CYLINDER GAUGE

Juergen D. Philipp, 3238 Wilmar Crescent, Mississauga, Ontario, Canada L5L 4A9 , and Kenneth O. Miller, 60 Valley Brook La., East Amherst, N.Y. 14051

Filed Jan. 25, 1990, Ser. No. 470,242
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—3 **7 Claims**



1. In combination:
high pressure gas storage cylinder means,
valve-regulator assembly means mounted on said storage cylinder means and having:
a valve body with main conduit means in flow communication with high pressure gas in said storage cylinder means,
a high pressure outlet in direct flow communication with said main conduit means, and
a regulator in direct flow communication with said main conduit means for preventing gas flow from said main conduit means to a lower pressure outlet downstream of the regulator at a pressure valve above a predetermined maximum,
a combination pressure gauge-plug mounted in said high pressure outlet to measure the gas pressure in said cylinder means, said combination pressure gauge-plug comprising:
a cylindrical gauge mechanism and housing mounted in said high pressure outlet and having bourdon tube means communicating with high pressure gas in said main conduit means, and a retaining nut threadedly received in said high pressure outlet to retain said cylindrical gauge mechanism in said high pressure outlet.

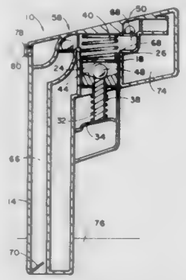
5,052,587

WATER GUN

John G. Graves, 3107 Woodward Blvd., Tulsa, Okla. 74105

Filed Dec. 4, 1989, Ser. No. 445,490
Int. Cl.[5] A63H *3/18*
U.S. Cl. 222—79 **11 Claims**

5. A water gun comprising:
a housing having a variable size chamber therein, the housing having a first, horizontal orientation and a second vertical orientation;
a small diameter ejection nozzle in said housing communicating with said chamber;
a reservoir within said housing;
a first passageway in said housing between said chamber and said reservoir;
a first valve means in said first passageway which is closed when said housing in said first orientation and said chamber is being reduced in size and is open when said chamber is enlarged in size, and is open at all times when said housing is in said second, vertical orientation;



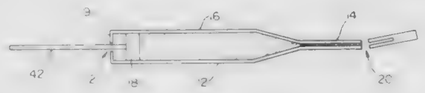
an inlet passageway between said reservoir and the exterior of said housing;
a second valve means in said inlet passageway closing said passageway when said housing is in the first, horizontal orientation and, when said housing is in the second, vertical orientation, opening said inlet passageway when said reservoir is expaned in size and closing said passageway when said reservoir is reduced in size; and
means externally of said housing of varying the volume of said chamber.

5,052,588

AMPULE HAVING A FRACTURING OUTLET END, A SWELLABLE PISTON AND A BREAKABLE END FOR GAINING ACCESS TO THE PISTON

Mark S. Schlosser, Seattle, Wash., assignor to SpaceLabs, Inc., Redmond, Wash.

Filed May 24, 1990, Ser. No. 528,684
Int. Cl.[5] B65D *47/10;* **B67D** *5/00*
U.S. Cl. 222—80 **11 Claims**



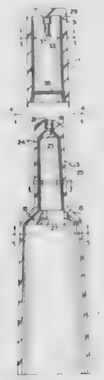
1. A positive displacement ampule, comprising:
a vessel for storing a fluid therein, said vessel having a breakable surface;
piston means disposed in said vessel for forcing said fluid from said vessel;
an opening in a wall of said vessel at a location spaced apart from said breakable surface and means for forming said opening; and
means for fracturing said breakable surface for gaining access to the interior of said vessel through said breakable surface for then pushing said piston means in the direction of said opening, thereby pushing said fluid from said vessel through said opening.

5,052,589

UNIT DOSE ASSEMBLY

John R. O'Meara, Jamesburg, N.J., assignor to CP Packaging, Inc., Jamesburg, N.J.

Filed Feb. 8, 1990, Ser. No. 476,839
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83 **3 Claims**



1. A cap and tube assembly device, comprising:
a tube for containing a product;
a nozzle having a one end mounted to one end of said tube and having a thin wall section puncturable to provide a discharge on the other end;
said nozzle having a non-threaded outer nozzle surface with a smaller axial cross section than said tube, the junction of said tube and said nozzle defining an inclined surface of transition to permit flow without cavitation from said tube to said nozzle;
a cap having an inside non-threaded cap surface with a cross section sized to slidably engage said nozzle and having an outside cross section less than the inside cross section of said tube;
said cap having an axially centered puncture means positioned in a first position spaced from said thin wall and movable to a second position to puncture said thin wall said nozzle surface and cap surface mating to locate said first position;
wherein the outside of said nozzle is provided with a surface of resistance and the inside of said cap has an interference surface, whereby said surface of resistance and said interference surface cooperate to selectively maintain said puncture means in said first position;
said puncture means having a chisel shaped edge for forming an axially centered hole in said wall without removing or fragmenting said wall; and
means positioned in said tube including a plurality of stacking ribs attached to said inclined surface of transition for preventing entry of said cap into said nozzle when a plurality of said assemblies are stacked one on another.

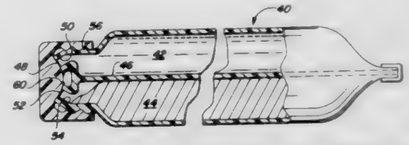
5,052,590

RESEALABLE DUAL COMPARTMENT CONTAINER

Perry A. Ratcliff, 7125 E. Lincoln Dr., Scottsdale, Ariz. 85253

Division of Ser. No. 300,752, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 855,893, Apr. 24, 1986, abandoned.
This application May 9, 1990, Ser. No. 521,275
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—94 **8 Claims**

1. Apparatus for dispensing in combined form separately housed incompatible compounds, said apparatus comprising in combination:
a) a first compartment for housing one of the compounds;
b) a second compartment for housing another of the compounds;
c) a first passageway extending from the first compartment for directing discharge of the one compound along a first axis;
d) a second passageway extending from the second compartment for directing discharge of the other compound along a second axis, which second axis intersects with the first axis downstream of said first and second passageways, the intersection of the first and second axis defining a point for combining the first and second compounds;
e) detachably attachable means for simultaneously sealing said first and second passageways to prevent flow therethrough;



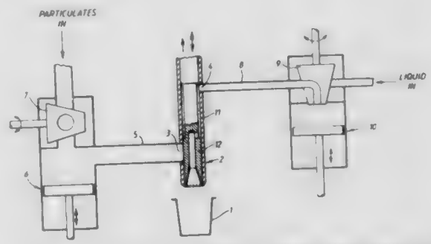
f) said first passageway including an outlet defining a first plane;
g) said second passageway including an outlet defining a second plane, the second plane defining an angle with respect to the first plane which is less than 180°; and
h) said sealing means including a first area oriented commensurate with aid first outlet to simultaneously contact the perimeter of said first outlet upon attachment of said sealing means and a second area oriented commensurate with the second outlet to simultaneously contact the perimeter of said second outlet upon attachment of said sealing means.

5,052,591

DOSING SYSTEM

John E. Divall, Grove, and John A. Perigo, Witney, both of England, assignors to Odin Development Ltd., Stevenage, Great Britain

Filed Feb. 23, 1988, Ser. No. 159,243
Claims priority, application United Kingdom, Feb. 24, 1987, 8704343
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—135 **4 Claims**



1. Dosing apparatus comprising a piston-and-cylinder device, a first peripheral port of the cylinder which port is swept by the piston as the piston moves between an open position in which said peripheral port is open and in which an axial end of said piston faces towards said port and a closed position in which said piston closes said peripheral port, means for supplying a flowable material to said port, drive means for reciprocating the piston in the cylinder, and a permanently fully open second peripheral port of said cylinder situated after the first port in the direction in which said piston moves in moving from said closed position to said open position for supplying to said cylinder a liquid, said cylinder having an outlet for both

said flowable material and said liquid, said outlet communicating with both said first peripheral port and said second peripheral port when said piston is in its open position, and the arrangement being such that the reciprocation of said piston in said cylinder does not substantially change the volume of said liquid in said cylinder.

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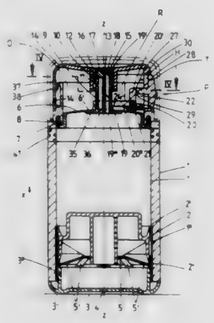
DISPENSER FOR PASTE COMPOSITIONS

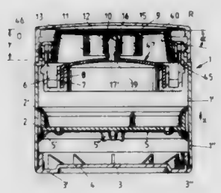
Josef Wilken; Winfried Degenhard, and Ludger Hackmann, all of Lohne/Oldenburg, Fed. Rep. of Germany, assignors to Braralage Gesellschaft mit beschränkter Haftung, Lohne/Oldenburg, Fed. Rep. of Germany

Filed Aug. 14, 1989, Ser. No. 393,484

Int. Cl.[5] B65D *37/00*

U.S. Cl. 222—212 **23 Claims**





1. A dispenser for containing and dispensing a pasty composition comprising

a housing adapted to contain the pasty-composition,

a restorable pump wall in the housing,

a piston disposed in the housing in an emptying direction toward the pump wall, the pasty composition being contained between the pump wall and the piston,

the housing having a top cover formed with an outlet opening, the housing having means comprising an external actuating handle for actuating the pump wall such that said wall is pushable in direction of the piston for dispensing the pasty composition from the outlet opening in the top cover of the housing,

said pump wall having a tube operatively connecting said cover to the pump wall,

said tube being formed with a tube channel,

a plug on the tube at an end of the tube channel, and

said plug extending into said outlet opening and releasably closing said outlet opening from therebelow.

5,052,593

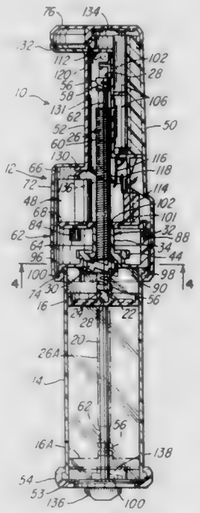
APPARATUS FOR DISPENSING COMESTIBLES HAVING A REVERSIBLE PISTON ROD ASSEMBLY

Donald C. Grome, Edmonds, Wash.; Paul P. Kolada, Bexley, and Rainer B. Teufel, Columbus, both of Ohio, assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.

Filed Dec. 28, 1989, Ser. No. 457,319

Int. Cl.[5] B65D *88/54*

U.S. Cl. 222—333 **11 Claims**



1. Apparatus for dispensing comestibles comprising:

a. a hollow, tubular barrel;

b. a housing having a seat for detachably receiving a first end of said barrel and a handle portion for gripping said apparatus;

c. means for detachably securing said barrel to said seat with the longitudinal centerline of said barrel coincident with a predetermined axis extending perpendicular to said seat;

d. a removable piston slidably arranged in said barrel and having thereon means for preventing rotation of said piston within said barrel and further having a centrally located socket open to one face thereof;

e. means on said barrel for preventing rotation of said piston in cooperation with said means on said piston;

f. a piston rod movable lengthwise in said barrel and having an end shaped for relatively nonrotatable engagement within said socket, said piston rod having external threads extending longitudinally thereof;

g. drive means rotatably mounted in said housing and having a central bore slidably receiving said piston rod, the center axis of said bore being coincident with said predetermined axis;

h. power and gearing means within said housing for rotatably driving said drive means about said predetermined axis;

i. means within said housing for activating said power and gearing means; and

j. a drive nut confined on said piston rod and having internal threads for engaging said external threads on said piston rod and having surface means thereon drivingly engageable by said drive means so that said drive nut rotates with said drive means to cause said piston rod to be driven linearly along said axis in a direction to cause said piston to be pushed through said barrel away from said seat.

5,052,594

CONTAINER FILLING NOZZLE MADE OF ELASTOMERIC MATERIAL

Tore Sørby, Hokksund, Norway, assignor to Elopak Systems A.G., Zurich, Switzerland

Filed Jan. 19, 1990, Ser. No. 467,671

Claims priority, application United Kingdom, Jan. 21, 1989, 8901320

Int. Cl.[5] F16K *23/00*

U.S. Cl. 222—490 **10 Claims**



1. A container filling nozzle comprised of elastomeric material and having an internal space which is bounded by an internal surface of said nozzle, an inlet opening provided by an open end of said nozzle and communicating directly with said internal space, an outlet slit provided by an end of said nozzle opposite to said open end and communicating directly with said internal space, said outlet slit, in the absence of any force applied to said nozzle, being maintained closed owing to the resilience of said material, and said outlet slit, owing to the resilience of said material, being openable to a relatively wide condition by action of an appropriate pressure in said internal space acting upon said internal surface, whereby a fluid stream may flow through said nozzle with said outlet slit being maintained open by pressure of said stream upon said internal surface, said internal surface, at the zone of said outlet slit, being formed with an inward protrusion extending along said outlet slit and constituting a thickening of the wall of the said nozzle.

5,052,595

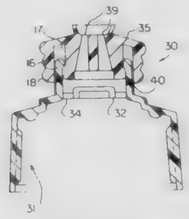
CLOSURE CAP HAVING STRUCTURE FOR MINIMIZING DRIPPING

Thomas Mon, Union, N.J., assignor to Nanlee F. Mon, Vauxhall, N.J., a part interest

Division of Ser. No. 385,579, Jul. 27, 1989, Pat. No. 4,979,653. This application Jun. 13, 1990, Ser. No. 537,892

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—525 **1 Claim**



1. A closure cap, for a container containing fluid to be dispensed through an opening in a neck portion thereof when the container is inverted from an upright position, comprising:

a mounting part mounted on the neck portion of the container having a closure element positioned over the container opening on a center axis of the neck portion, the mounting part having openings therethrough surrounding the closure element;

a movable part for covering said openings surrounding the closure element and being movable along the center axis relative to the mounting part, said movable part having a passage for liquid therethrough formed by walls in the shape of a truncated cone and defining an external orifice formed by a plurality of small openings in said movable part having a given open area at an outer portion of said passage and an internal orifice of a larger open area at an inner portion of said passage which is recessed a given distance inwardly from the external orifice, said internal orifice being closed by the closure element when movable part is pushed to a closed position toward said mounting part and being opened when it is pulled to an opened position away from said mounting part,

wherein said given open area of said external orifice is smaller in relation to the larger open area of said internal orifice and results in a suction force to suck fluid back into said orifices when the container is returned to the upright position, and

wherein said closure element has an annular shape of a given diameter which is equal to that of said internal orifice, such that no fluid is pushed toward said external orifice when said movable part is pushed to the closed position relative to said closure element.

5,052,596

UNIT FOR MELTING AND DISCHARGING SOLID PRODUCTS OUT OF BARRELS

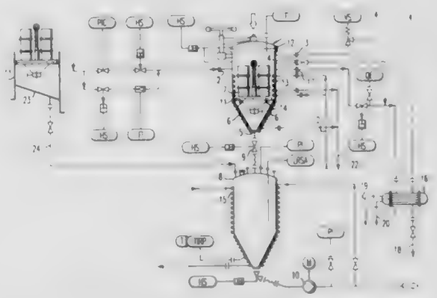
Karl-Heinz Phiippi, Gelsenkirchen-Buer, Fed. Rep. of Germany, assignor to Veba Oel Technologie GmbH, Gelsenkirchen, Fed. Rep. of Germany

Filed Jan. 5, 1990, Ser. No. 461,381

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1989, 3900696

Int. Cl.[5] B22D *35/06*

U.S. Cl. 222—593 **5 Claims**



1. An apparatus for melting and discharging solid or highly viscous products from barrels, comprising:

a vessel having an open top and a conical bottom;

heating means comprising heating coils in said vessel for forming a heating chamber in said vessel;

a frame comprising means for supporting at least one open barrel having the product with an opening of the barrel facing downward, wherein said frame is supportable in said heating chamber so that the product may be heated and flow out of the barrel;

discharge means in said conical bottom for discharging melted product from said vessel, and

a cover for closing the open top of said vessel.

5,052,597

INDUCTIVELY HEATABLE REFRACTORY MEMBER, INDUCTIVE COIL EMPLOYABLE THEREWITH, AND PROCESS FOR USE THEREOF

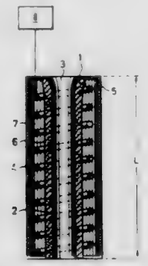
Raimund Brückner, Niedernhausen-Engenhahn, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 14, 1989, Ser. No. 450,921

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842690

Int. Cl.[5] B22D *41/60*

U.S. Cl. 222—593 24 Claims



1. In a refractory member having therethrough a flow channel and adapted for a use wherein molten metal is to flow through said flow channel, the improvement wherein:

said member defining said flow channel is of a unitary and integral construction and is entirely formed of a material that at least partially includes a ceramic material having the properties of being capable of being heated inductively and of being electrically conductive at a temperature at least equal to the liquidus temperature of the molten metal; and

primary induction coil means, positioned to surround said flow channel, for inductively heating said material of said inner wall portion and thereby for preventing freezing of molten metal within said flow channel and formation of deposits therein, said coil means comprising a primary induction coil formed of an electrically conductive ceramic material.

5,052,598

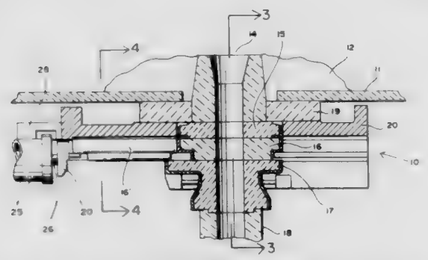
SLIDING GATE VALVE METHOD AND REPLACEABLE RETRACTORIES

Patrick D. King, Rantoul, and Gary R. Polk, Champaign, both of Ill., assignors to FLO-CON Systems, Inc., Champaign, Ill.

Continuation-in-part of Ser. No. 319,410, Mar. 3, 1989. This application Mar. 16, 1990, Ser. No. 494,779

Int. Cl.[5] B22D *41/24*

U.S. Cl. 222—600 27 Claims



1. For use with a sequential sliding gate valve having more than two plates and having a stationary plate, a slide gate, and a tube holder, and yieldable pressure means urging the plate, gate, and holder in face to face contact,

a tube holder having an upstream and downstream end;

a tube holder sealing plate at the upstream end of the tube holder proportioned for a sliding engagement with the slide gate;

means defining a teeming orifice in such tube holder;

said upstream sealing plate end being asymmetrical with respect to the orifice and having an entry and exit portion;

said tube holder having a dependent tube engaging portion beneath the tube holder sealing plate portion;

said tube holder sealing plate having an extended undercut entrance and sealing plate support portion in the direction of the entrance of the slide gate a distance whereby the slide gate, when inserted, can overlap the entrance support portion of the sealing plate of the tube holder;

and means downstream of the tube holder sealing plate portion comprising an undercut for receiving the upstream pressure of the yieldable pressure means.

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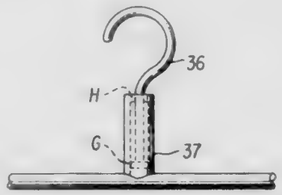
GARMENT HANGER WITH ADJUSTABLE HOOK

Rita J. Platti, 8041 Mariners Dr. - Apt. #3801, Stockton, Calif. 95209

Filed Aug. 17, 1989, Ser. No. 395,087

Int. Cl.[5] A47G *25/40, 25/14*

U.S. Cl. 223—89 1 Claim



1. In combination an adjustable hook and a garment hanger, said garment hanger having an upper tube extension with an inner diameter, said adjustable hook including at least two ends, one of said ends having a thickened portion somewhat larger than the inner diameter of said tube portion, whereby said hook member is adjustable by frictional slidable contact of said thickened portion within said tube member.

5,052,600

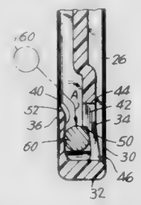
ROD COUPLING RECEPTACLE FOR GARMENT HANGERS

Michael Elchisak, Shenandoah, Pa., and Steven Z. Lewkowitz, Woodbridge Kings Mountain, N.C., assignors to A & E Products Group, a Division of Carlisle Plastics, Inc., Woodbridge, N.J.

Filed Nov. 6, 1990, Ser. No. 609,566

Int. Cl.[5] A47G *25/16, 25/14, 25/48*

U.S. Cl. 223—96 4 Claims



1. A garment hanger to support an elongated rod comprising an elongated body having two ends and a supporting portion therebetween, said ends of said body extending downwardly to form a pair of spaced legs each having a rod receiving portion, each said rod receiving portion being defined by a bottom wall, a back wall joined to said bottom wall and forming part of said body, and an upstanding resilient tongue joined to said bottom wall and spaced a predetermined distance from said back wall to define a rod receiving slot, said back wall having an opening therein in alignment with said tongue defined by said bottom wall, a top wall and opposing side walls, the surfaces of said side walls facing said tongue each having an undercut for capturing said rod when inserted in said slot, said tongue biasing said rod in said slot against said undercuts to lock said rod in said rod receiving portions.

5,052,601

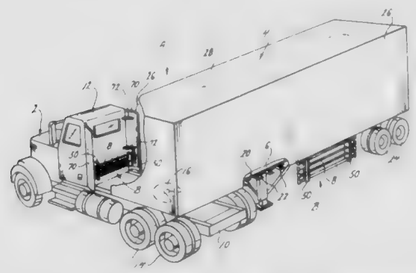
TRUCK-MOUNTED RACK FOR CARGO HOLDERS

Ralph E. Carter, Route 3, Box 30, and John W. Jennings, 626 Airway Dr., both of Fulton, Mo. 65251

Filed Jan. 25, 1990, Ser. No. 470,319

Int. Cl.[5] B60R *11/06*

U.S. Cl. 224—42.41 13 Claims



1. In combination with a truck having a bed and side walls arranged such that a cargo compartment exists between the side walls and over the bed, and elongated cargo holders which are capable of spanning the cargo compartment so as to confine cargo to a limited area of the bed; a rack mounted on the truck for holding the cargo holders when they are not confining cargo, said rack comprising: spaced apart carrier means for receiving the cargo holders at spaced apart locations on such holders and for retaining them on the truck, each carrier means including an elongated carrier bar arranged generally vertically and having notches which open out of the bar and receive the cargo holders, and retaining means for closing the notches where the notches open out of the bar, the retaining means including a retaining arm which pivots relative to the carrier bar between an open position, wherein the arm is away from the notches in the carrier bar and the open ends of the notches are exposed, and a closed position, wherein the arm extends along the carrier bar and closes the otherwise open ends of the notches, the retaining arm further having notches which align with and open toward the notches in the carrier bar when the retaining arm is closed, the carrier means also including locking means for securing the retaining arm in its closed position.

5,052,602

LANYARD

Anthony L. Duchi, Jr., Fallbrook, and Fred R. McAlister, Sr., Chino, both of Calif., assignors to Mag Instrument, Inc., Ontario, Calif.

Continuation-in-part of Ser. No. 188,369, Apr. 29, 1988. This application Nov. 15, 1989, Ser. No. 436,899

Int. Cl.[5] A45F *3/14, 5/02*

U.S. Cl. 224—218 11 Claims

1. A lanyard comprising:

a braid of predetermined length and of weaveable material, a loop at a first end of the braid defined by the braid end turned back upon itself and secured with a sleeve,



a second loop at a second end of the braid being defined by the cord having been turned back upon itself and inserted into the braid; and having the second end also secured by the sleeve.

5,052,603

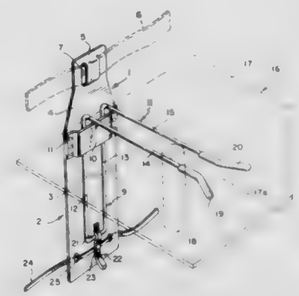
IMPLEMENT HOLDER

Philip F. Spina, Brooklyn, N.Y., assignor to Cousins Haulkholder Incorporated, New York, N.Y.

Filed Apr. 18, 1990, Ser. No. 510,541

Int. Cl.[5] A45F *5/00*

U.S. Cl. 224—270 31 Claims



1. An implement holder for supporting in a substantially horizontally position an implement having a substantially large flat underside and a vertically disposed handle, comprising a back plate provided with means to attach the holder to a user's belt; and a supporting frame attachable to said back plate, said supporting frame including a substantially vertical portion selectively attachable to said back plate, said vertical portion including two vertical arms interconnected at one vertical end thereof with a transverse web and merging at the other end thereof into two elongated arms of a substantially horizontal portion, said transverse web secured to said back plate by a strap, said horizontal portion forming an implement support including said elongated arms disposed in spaced relationship defining an unobstructed open mouth for the receipt of the handle of said implement, said mouth formed at distal ends of said elongated arms, said arms adapted to support thereon in bearing engagement said large flat underside of said implement, and said back plate including means for stably engaging said back plate to user's leg.

5,052,604

GOLF CART ATTACHMENT

Donald R. Tourangeau, 7756 SW. Green Valley Ter., Portland, Oreg. 97225

Filed Dec. 14, 1990, Ser. No. 628,386

Int. Cl.[5] B60R *9/08*

U.S. Cl. 224—274 14 Claims

1. A universally mountable auxiliary golf bag carrier for use on a golf cart having a rear bumper and a support means comprising:

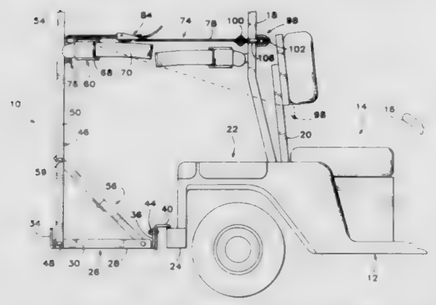
a rectangular base plate for supporting golf bags;

brackets fixed to said base plate for connecting said base plate to the rear bumper of the golf cart;

a vertical support carried on said base plate and extending upwardly therefrom;

a bag holder fixed to said vertical support for holding golf bags in a desired position, said bag holder including a transverse portion and a forward projecting portion located at each side thereof, each forward projecting portion carrying a buckle thereon, said bag holder further including a bag strap which is fixed to said transverse portion, which is trainable about a golf bag carried on said base plate, and which is secured to one of said buckles on said forward projecting portions; and

an adjustable-length strap extending from said vertical support to the golf cart.



5,052,605

ATTACHMENT ARRANGEMENT FOR A CYCLE

Uno Johansson, Borås, Sweden, assignor to J S Products AB, Dalsjofors, Sweden

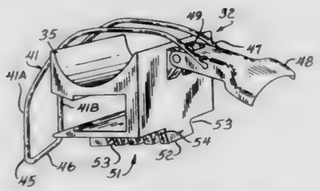
PCT No. PCT/SE88/00432, § 371 Date Feb. 21, 1990, § 102(e) Date Feb. 21, 1990, PCT Pub. No. WO89/01883, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 24, 1988, Ser. No. 465,129

Claims priority, application Sweden, Sep. 2, 1987, 8703403

Int. Cl.[5] B60R *9/048*

U.S. Cl. 224—324 **8 Claims**



1. Attachment device for mounting a cycle to a vehicle, comprising:

a vehicle-mountable load carrier,

a support bar connected to said load carrier,

a U-shaped attachment element having an accommodating recess on a top side thereof for receiving a wheel of said cycle, said attachment element being disposed on said support bar and having a transcurrent opening thereto disposed along a first side thereof and slidably receiving said support bar,

a quick action flexible clamping element arranged and constructed to fasten the wheel to said support bar,

a movable clasp pivotally connected to a second side of said attachment element opposite said first side,

a fastener disposed on a bottom side of said attachment element,

said top and bottom sides connecting said first and second sides,

said flexible clamping element having a first end secured to said movable clasp, and a second end securable to said fastener,

said clamping element arranged and constructed to surround said wheel and bridge said transcurrent opening,

said first end of said flexible element and, said movable clasp being mounted to said attaching element in an over-center locking arrangement,

whereby said attachment element and said wheel are secured with respect to said support bar by said quick action flexible clamping element.

5,052,606

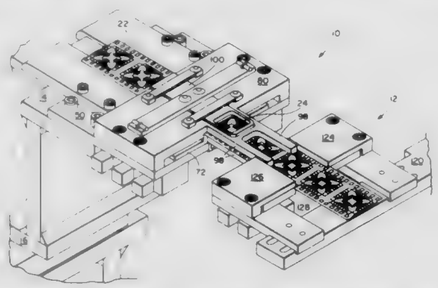
TAPE AUTOMATED BONDING FEEDER

Thomas M. Cipolla, Hopewell Junction; Raymond R. Horton, Dover Plains; Alphonso P. Lanzetta, Marlboro; Michael J. Palmer, Walden, all of N.Y., and Mark B. Ritter, Brookfield, Conn., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 29, 1990, Ser. No. 546,496

Int. Cl.[5] B65H *17/36*

U.S. Cl. 226—120 **16 Claims**



1. A hitch feeder for a TAB tape, said tape having an elongated length and a plurality of conductive lead frames positioned along said length, each frame adapted to receive a semiconductor chip on conductive leads adherent to said tape, the combination comprising:

a stationary assembly having opposing jaws for gripping edges of said tape when closed and not gripping said edges when open;

a movable gripper assembly, including lower movable gripper means positioned below said tape and upper movable gripper means positioned above said tape, both towards and away from said tape, said upper and lower movable gripper means gripping said tape when moved towards it and releasing said tape when moved away from it, both said lower and upper movable gripper means being physically clear of said lead frames when moved away from said tape;

tape feed means for reciprocally moving said movable gripper assembly along said tape length, both towards and away from said stationary jaw assembly; and

feed control means, operative when said movable gripper assembly moves towards said stationary jaw assembly, to move said upper and lower gripper means to grip said tape and to open said opposing jaws, and further operative when said movable gripper assembly moves away from said stationary assembly, to move said upper and lower gripper means away from said tape and to close said opposing jaws.

5,052,607

FASTENER DRIVING TOOL WITH POINTING DEVICE

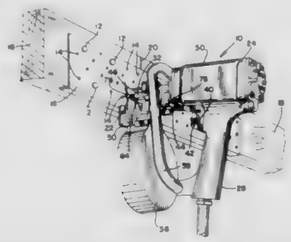
Donald M. Dutton, Milton Keynes, England, assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Mar. 11, 1991, Ser. No. 667,543

Claims priority, application United Kingdom, Mar. 30, 1990, 9007173

Int. Cl.[5] A41H *37/10*

U.S. Cl. 227—107 **6 Claims**



1. A fastener driving tool for driving a fastener into a workpiece, said fastener driving tool comprising:

a tool body defining a nose portion and a fastener drive track extending through said nose portion;

a driver blade movable in said drive track in a fastener driving stroke;

a foot assembly mounted on said tool body and having a contact portion adapted to be placed against the workpiece;

slide means mounting said foot assembly for reciprocal movement toward and away from said tool body in the direction of the fastener driving stroke between a rest position and a drive position;

spring means normally holding said foot assembly in the rest position in which said tool body is spaced from the workpiece and permitting said tool body to move relative to the foot assembly to the drive position in which said nose position is adjacent the workpiece;

the fastener driving tool being characterized by:

a pointing member carried by said foot assembly and normally disposed in an aim position in alignment with said drive track between said nose portion and said contact portion; and

means responsive to relative movement of said foot assembly from said rest position to said drive position for withdrawing said pointing member away from said aim position to a retracted position clear of said nose portion.

5,052,608

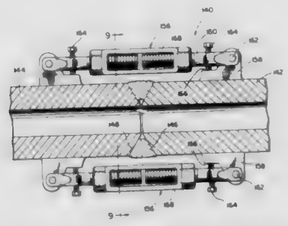
PIPE FITTING TOOL

Gary W. McClure, Rte. 7, Box 228A, South Charleston, W. Va. 25309

Filed Nov. 28, 1989, Ser. No. 442,151

Int. Cl.[5] B23K *37/053*

U.S. Cl. 228—44.5 **13 Claims**



1. A pipe fitting tool for positioning the adjacent ends of pipe sections in optimum relation for joining by welding comprising means securely fixed to each of said adjacent ends, adjusting means interconnecting the means fixed to the adjacent ends at circumferentially spaced points to adjust the adjacent ends axially in relation to each other and angularly in relation to each other and radially extending adjustment means engaging the adjusting means and the means fixed to said adjacent ends to move the adjacent ends laterally in relation to each other for aligning the adjacent ends, moving them axially and adjusting their angular relation, said means fixed to said adjacent ends including a clamp structure including two generally semicylindrical segments clamped to said adjacent ends with radially extending lugs thereon for connection with said adjusting means, one of said clamp structure being of right angular configuration for clamping engagement with angled branches of a pipe fitting.

5,052,609

DEVICE FOR THE CENTERING AND CLAMPING OF PIPE WORKPIECES

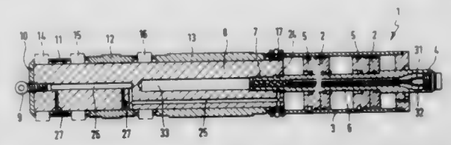
Klaus Tesch, Dorotheenstrasse 93, D-2000 Hamburg 60, Fed. Rep. of Germany

Filed Aug. 2, 1990, Ser. No. 561,959

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1989, 8909391

Int. Cl.[5] B23K *37/053*

U.S. Cl. 228—44.5 **11 Claims**



1. A device for the centering and clamping of pipe workpieces to be welded to one another, comprising:

a generally cylindrical holding body;

a welding region on the body, equipped with an inert-gas supply;

a plurality of generally annular clamping units carried on the body, at least one clamping unit positioned on each axial side of the welding region and each unit having a clamping groove opening radially outwards in a wedge-shaped manner, containing a clamping member, each groove having walls formed by annular parts which are movable axially relative to one another and are arranged releaseably on the holding body, wherein

the annular parts (**18**, **19**) defining one clamping groove (**20**) are separate from the annular parts (**18**, **19**) defining the other clamping grooves (**20**),

an annular part (**18**, **19**) of each clamping unit (**15**) is connected movably in the axial direction to an annular part of an adjacent clamping unit by a hollow-cylindrical spacer piece (**11**, **12**, **13**), one (**11**) hollow-cylindrical spacer piece defining the welding region; and

means carried by the body for drawing the spacer pieces toward each other axially so as to bear upon the clamping units, thereby urging the clamping members radially outward into clamping engagement with the workpieces.

5,052,610

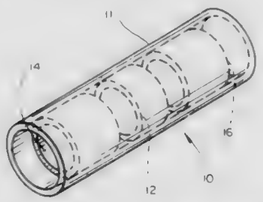
HEAT-RECOVERABLE SOLDERING DEVICE

Robert Guerra, Fremont; Michael Nordling, Santa Clara, and Pravin Soni, Union City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 443,094, Nov. 27, 1989, abandoned, which is a continuation of Ser. No. 288,335, Dec. 21, 1988, abandoned. This application Aug. 9, 1990, Ser. No. 565,874

Int. Cl.[5] **H01R** *4/72;* **B29C** *61/06*

U.S. Cl. 228—56.3 **2 Claims**



1. A heat-recoverable soldering device comprises:

(a) a hollow heat-recoverable tubular article having an open end and containing a solder insert for forming a solder connection between a plurality of elongate bodies inserted through said open end; and

(b) a curable, polymer adhesive insert positioned between said solder insert and said open end, said adhesive comprising

(1) about 30 to about 80% by weight of a thermoplastic fluoropolymer;

(2) about 5 to about 40% by weight of an elastomeric fluoropolymer;

(3) about 5 to about 25% by weight of a thermoplastic ethylene copolymer comprising at least 50 mole % of units derived from ethylene and at least 5 mole % of units derived from at least one unsaturated comonomer containing at least one polar group;

(4) about 1 to about 10% by weight of a crosslinking agent component; and

(5) 0 to about 20% by weight of a tackifier; all percentages by weight being based on the total weight of the five components (1) through (5);

wherein during heat recovery of said article, said solder melts and forms said connection, and said adhesive melts and flows to fill any voids between said elongate bodies and the recovered article, and cures such that flow of the adhesive into the solder connection or through the open end of the articles is inhibited; said cured adhesive environmentally sealing said open end when the article has recovered.

5,052,611

METHOD OF FORMING A GASKET OF INDIUM AND BRAID

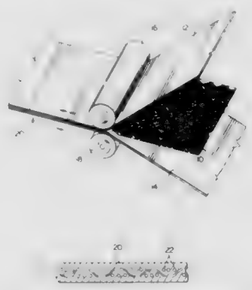
Paul A. Socha, Whitesboro, N.Y., assignor to Indium Corporation of America, Inc., New Hartford, N.Y.

Continuation of Ser. No. 340,900, Apr. 20, 1989, abandoned. This application Feb. 8, 1990, Ser. No. 477,158

Int. Cl.[5] **B23K** *20/04, 28/02*

U.S. Cl. 228—194 **2 Claims**

1. A method of forming a gasket of indium and braid, comprising applying indium metal onto a flat braid layer formed of a plurality of filaments to form an indium-braid laminate, feeding the laminate between pressure rollers at ambient temperature thereby impressing said indium metal onto said braid layer, causing said indium metal to flow thereby penetrating into interstices among the filaments of said braid and self-welding over said filaments, and cutting the indium-impressed braid layer thereby forming the gasket wherein the cutting of the indium impressed braid layer defines at least one cut edge, and



causes the indium metal to self-weld around the cut ends of the filaments at the cut edge.

5,052,612

PROCESS FOR SOLDERING ALLOWING LOW IONIC CONTAMINATION WITHOUT CLEANING OPERATION

Berhan Tecle, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1989, Ser. No. 398,214

Int. Cl.[5] **B23K** *1/00;* **H05K** *3/34*

U.S. Cl. 228—207 **14 Claims**

1. A process of making and assembling an electronic device containing at least one soldered electrically conductive component comprising the steps of:

(a) applying a composition consisting of stannous fluoride or eutectic mixture thereof to a conductive surface portion of an electrically conductive component,

(b) applying a solder to the stannous fluoride or mixture to obtain a soldered connection on a substrate surface wherein the ionic contamination on the substrate surface is not greater than 2 micrograms NaCl equivalent/sq. inch,

(c) assembling the soldered connection into an electronic device in the absence of a solder cleaning operation between steps (b) and (c).

5,052,613

TWO-WAY ENVELOPE

Sheng-Chi Lin, 6410 Terese Ter., Jamesville, N.Y. 13078

Continuation-in-part of Ser. No. 286,408, Dec. 19, 1988, abandoned. This application Jun. 6, 1990, Ser. No. 533,806

Int. Cl.[5] **B65D** *27/04, 27/06*

U.S. Cl. 229—73 **20 Claims**



1. A mailing envelope for consecutive use in both forward and return mailings comprising:

a) a front panel portion having an outer surface with mail-to and return address locations thereon;

b) a rear panel portion folded and sealed with respect to said front panel portion to form a substantially rectangular enclosure closed on three sides and open on one side for deposit of correspondence;

c) a sealing flap attached to said front panel along said one side and having an adhesive region on a surface thereof movable into sealed relation with a portion of said rear panel to close said one side and seal said envelope, said adhesive region being divided into first and second regions for use in said forward and return mailings, respectively; and

d) a removable and reuseable label formed by a succession of spaced, slit perforations in said front panel at one of said mail-to and return address locations, said label having a forward, address-bearing surface and a rear, adhesive-covered surface, whereby said label may be removed from its location for forward mailing by tearing around said slit perforations and adhesively secured in the other of said mail-to and return address locations for return mailing of said envelope from the original addressee to the original sender, removal of said label forming a window in said front panel for viewing an address on a portion of the envelope contents positioned behind said window.

5,052,614

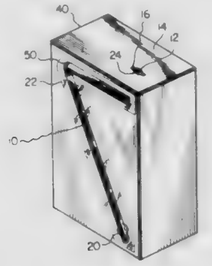
STRAW AND STRAW HOLE STRUCTURE

Jialuo Xuan, 914 Sherman Ave. #2F, Evanston, Ill. 60202

Filed Oct. 9, 1990, Ser. No. 597,802

Int. Cl.[5] **B65D** *77/28*

U.S. Cl. 229—103.1 **6 Claims**



1. A drinking straw and straw hole structure comprising, in combination:

a beverage containing package having an outer paperboard layer and an inner foil sealing layer, said outer paperboard layer having an opening overlying said inner foil, said opening having a periphery consisting of a first geometrical shape forming a portion of said periphery and at least one second geometrical shape extending outwardly from said first geometrical shape;

a drinking straw having one end adapted to be inserted into said opening, said one end comprising a tubular member with at least one outwardly extending projection, said tubular member having a cross-sectional shape substantially the same as said first geometrical shape with said projection having a cross-sectional shape correspondingly configured for fitting within the periphery defined by said second geometrical shape;

whereby insertion of said one end of said straw into said opening causes the inner foil to rupture to a greater extent than the cross-sectional shape of said tubular member, along said outwardly extending projection, to provide air exchange passages for easy consumption of the package contents.

5,052,615

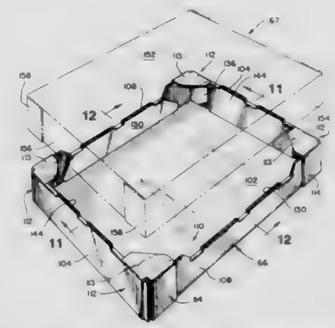
FOOD CARTON AND METHOD

Edward L. Ott, Smyrna, Ga.; Paul F. Petriekis, Palos Park, and Michael E. Janis, Naperville, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed May 25, 1989, Ser. No. 357,379

Int. Cl.[5] **B65D** *5/20*

U.S. Cl. 229—182 **9 Claims**



1. A carton suitable for containing produce formed from a single carton blank, comprising:

first and second inner fold lines defining a pair of parallel inner fold lines (**122**) and third and fourth inner fold lines defining a second pair of parallel inner fold lines (**124**), said second pair of inner fold lines (**124**) being perpendicular to said first pair of inner fold lines (**122**) wherein the intersection of said inner fold lines (**122**, **124**) defines a rectangular floor and a bottom for each of a first and second end wall (**104**) and a first and second sidewall (**108**), said end walls (**104**) extending upwardly from said first and second inner fold lines respectively said sidewalls (**108**) extending upwardly from said third and fourth inner fold lines respectively;

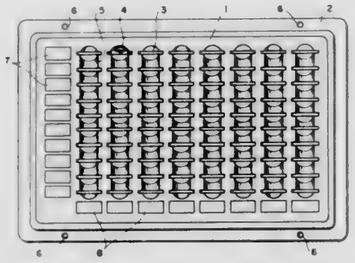
first and second outer fold lines defining a first pair of outer fold lines (**142**), said first outer fold line located at a first distance from said first inner fold line and defining a top of said first end wall wherein said first outer fold line defines at least a portion of a first flap, said first flap being folded over said first outer fold line thereby extending downwardly from said first outer fold line, said second outer fold line located at a second distance from said second inner fold line defining a top of said second end wall wherein said second outer fold line defines at least a portion of a second flap, said second flap being folded over said second outer fold line thereby extending downwardly from said second outer fold line;

at least one rectangular hole having four side edges (**141**) along each said first and second outer fold lines facilitating the folding of each said first and second flaps respectively, said first outer fold line intersecting said rectangular hole which is along said first outer fold line only at a single point on opposite edges of said rectangular hole and said second outer fold line intersecting said rectangular hole which is along said second outer fold line only at a single point on opposite edges of said rectangular hole; and

third and fourth outer fold lines defining a second pair of outer fold lines (**132**), said third outer fold line located at a first distance from said third inner fold line and defining a top of said first sidewall wherein said third outer fold line defines at least a portion of a first sidewall flap, said first sidewall flap being folded over said third outer fold line thereby extending downwardly from said third outer fold line, said fourth outer fold line located at a second distance from said fourth inner fold line defining a top of said second sidewall wherein said fourth outer fold line defines at least a portion of a second sidewall flap, said

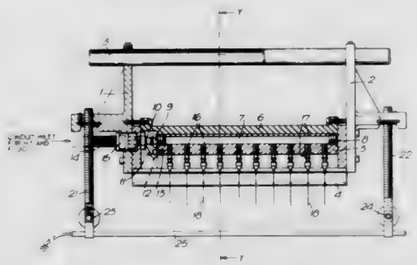
second sidewall flap being folded over said fourth outer fold line thereby extending downwardly from said fourth outer fold line whereby said carton is formed.

5,052,616
COIN RECEIVING INCENTIVE DEVICE
Allen E. Joyce, Mentor, Ohio, assignor to Gordon Warren Co., Wickliffe, Ohio
Filed Oct. 31, 1990, Ser. No. 606,526
Int. Cl.[5] A47F *7/00*
U.S. Cl. 232—1 D 3 Claims



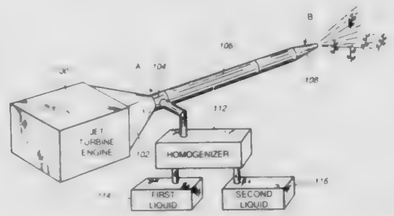
1. An incentive creating device comprising a series of coin receiving pockets arranged to support coins angularly with respect to a surface, said pockets further being related in columns longitudinally and transversely, wherein the pockets are formed to facilitate placing coins in the pockets and removing them therefrom, certain areas of the body of the device making provision for finger gripping of the coins.

5,052,617
ATOMIZATION OF LIQUIDS
Michael L. Colclough, Weybridge, and Igan Hayati, Slough, both of England, assignors to Imperial Chemical Industries PLC, London, England
Filed Nov. 8, 1989, Ser. No. 433,781
Claims priority, application United Kingdom, Nov. 10, 1988, 8826357
Int. Cl.[5] B05B *17/04, 5/02*
U.S. Cl. 239—4 14 Claims



1. A method of atomising a polar liquid utilising apparatus comprising a tube having a predetermined stiffness and having an inlet for liquid and at least one aperture providing an outlet from the tube for the liquid, mounting means whereby the tube is fixedly supported at a position remote from the aperture, a field intensifying electrode disposed adjacent said aperture, means for feeding the polar liquid to said inlet so that it flows through the tube to the aperture, and means for applying a potential difference between the liquid and the field intensifying electrode, the method comprising applying the potential difference and feeding the liquid through said tube, the potential difference and the flow rate being so related to each other and to the stiffness of the tube that the tube is maintained electrostatically in vibration or gyration to cause atomised liquid particles to be thrown from said tube at said aperture.

5,052,618
METHOD AND APPARATUS FOR PROTECTING CROPS FROM FROST BY JET-DISPERSED, MICROENCAPSULATED AEROSOLS
Hugh R. Carlon, Fallston; Raymond P. Tytus, Bel Air, and Arthur K. Stuempfle, Edgewood, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 26, 1990, Ser. No. 559,114
Int. Cl.[5] B05B *1/00, 1/24*
U.S. Cl. 239—77 12 Claims



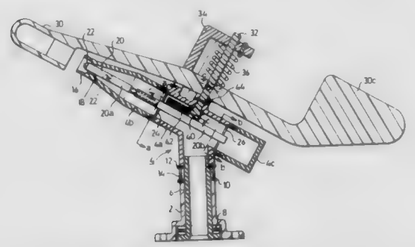
1. An apparatus for protecting plants from frost, comprising:
a first liquid;
a second liquid;
a jet engine having an exhaust port supplying a stream of exhaust gases;
means for injecting the first liquid and the second liquid into the exhaust gas stream thereby forming an aerosol of the first liquid microencapsulated in the second liquid;
said means for injecting comprising:
a homogenizer having an input for receiving the first and second liquids and having an output connected to the exhaust port for supplying a homogenized mix of the first and second liquids into the exhaust stream; and
means connected to the exhaust port for dispersing the aerosol about the plants to be protected from frost thereby to form a mist about the plants of the microcapsules which acts as a protective radiation barrier for the plants.

5,052,619
BARREL OF AN APPARATUS FOR APPLYING COATINGS BY GAS DETONATION
Valdimir J. Ulyanitsky, ulitsa Tereshkovoi, 6, kv. 129; Anatoly A. Vasiliev, ulitsa Zhemchuzhnaya, 4, kv. 23; Tamara P. Gavrilenko, ulitsa Iliicha, 19, kv. 9, all of Novosibirsk; Adolf N. Krasnov, prospekt Vernadskogo, 11, kv. 91, Moscow; Jury A. Nikolaev, ulitsa Iliicha, 19, kv. 9, Novosibirsk, and Nikolai I. Podenkov, ulitsa Perekopskaya, 11, korpus 2, kv. 46, Moscow, all of U.S.S.R.
PCT No. PCTSU88/000266, § 371 Date Aug. 17, 1990, § 102(e) Date Aug. 17, 1990, PCT Pub. No. WO90/06816, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 20, 1988, Ser. No. 555,455
Int. Cl.[5] B05B *7/20*
U.S. Cl. 239—79 3 Claims



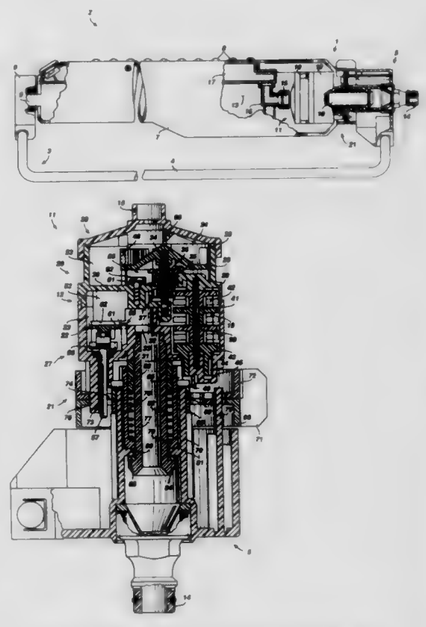
1. A barrel of an apparatus for applying coating by gas detonation comprising successively connected a unit (1) for initiating detonation, an accelerator (3) of combustion-to-detonation transformation, and a detonation chamber (2), characterized in that the accelerator (3) has the form of a space lattice arranged coaxially with the detonation chamber (2), and comprising a plurality of cells the size of each cell (4) in the lattice being equal to the size of a cell of a stationary detonation wave in an explosive mixture of preferred composition, the number of cells (4) in cross section of the lattice growing toward the open end of the barrel defining through passages (5) for conveying gases from the detonation initiation unit (1) to the detonation chamber (2), whereas the peripheral passages (5) of the lattice are arranged at an acute angle (α) to the axis of the barrel.

5,052,620
LONG-RANGE WATER SPRINKLERS
Isaac Rinkewich, 48-22 Garden View Terrace, Hightstown, N.J. 08520
Filed May 25, 1990, Ser. No. 528,396
Int. Cl.[5] B05B *1/08*
U.S. Cl. 239—101 15 Claims



1. A water sprinkler, comprising:
a sprinkler head mountable to a pressurized water supply line and rotatable with respect thereto about a rotary axis;
said sprinkler head including an inlet for receiving pressurized water from the water supply line, and a nozzle having a throat for discharging the water in the form of a jet;
a plunger reciprocatable within the nozzle through a forward stroke and a return stroke to restrict and enlarge the nozzle throat;
and a drive driven by the energy of the water for rotating said sprinkler head and reciprocating said plunger;
characterized in that said drive includes:
an arm pivotally mounted to said sprinkler head and having a jet impingement surface to be impinged by the water jet discharged from the nozzle for pivoting the arm in one direction;
energy-storing means for returning the arm in the opposite direction;
an impact surface carried by the sprinkler head and engaged by said arm during its pivotal movements to apply a rotary movement to the sprinkler head about its rotary axis;
and a coupling between said pivotal arm and said plunger for reciprocating the plunger through said forward stroke by the pivoting of the arm in said one direction, and through said return stroke by the pivoting of the arm in said opposite direction.

5,052,621
DRIVE MECHANISM FOR A SPRINKLER OR THE LIKE
Johann Katzer, Neu-Ulm; Wolfgang Lindermeir, Untermarchtal, and Franz Lopic, Nersingen, all of Fed. Rep. of Germany, assignors to Gardena Kress + Kastner GmbH, Fed. Rep. of Germany
Filed Sep. 20, 1989, Ser. No. 409,830
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1988, 3833984
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—242 24 Claims



1. A drive mechanism for a sprinkler comprising:
a base defining a central axis and adapted to be mounted on a support;
a hydraulic motor mounted on said base and having a liquid driveable drive rotor exposed to a liquid duct;
a gear chamber receiving a gear driven by said drive rotor and providing a drive output for driving an operation; and,
a control chamber separate from said gear chamber and receiving control means for controlling said drive mechanism to perform different drive operations,
wherein said separate control chamber and gear chamber are located adjacent to one another in a direction substantially transverse to said central axis.

5,052,622

SPRINKLER

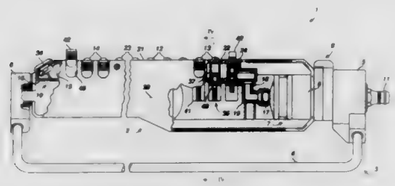
Wolfgang Lindermeir, Untermarchtal; Franz Lopic, Nersingen; Johann Katzer, Neu-Ulm; Johann Schaeffer, Laupheim; Christian Stephany, Ulm, and Roland Sauer, Ulm-Goegglingen, all of Fed. Rep. of Germany, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany

Filed Sep. 20, 1989, Ser. No. 409,802

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1988, 3833983

Int. Cl.[5] B05B *3/16, 1/16*

U.S. Cl. 239—242 **30 Claims**



1. A sprinkler comprising:

a spray nozzle casing connectable to a water pipe and having a water duct for a flow of water to at least one spray nozzle provided thereon, said casing extending proximate said at least one spray nozzle, the water duct being formed by a main channel narrower than inner cross-sections of said casing and bounded by channel wall structure including a longitudinal channel wall traversed by at least one duct connection between said main channel and said at least one spray nozzle, the casing being constructed as a support casing for said main channel, and wherein, commonly with said longitudinal channel wall, said main channel is formed at least one channel component separate from said fixedly secured to said casing as a subassembly, said at least one spray nozzle being a member of said subassembly

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5,052,623

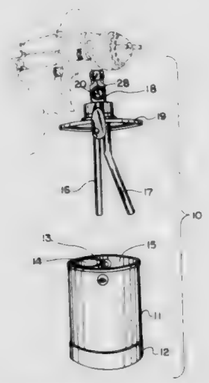
COMPARTMENTALIZED PAINT CUP WITH SELECTOR VALVE FOR SPRAY GUNS

Melvin A. Nordeen, 11053 Stout La., Coulterville, Calif. 95311

Filed Sep. 10, 1990, Ser. No. 579,800

Int. Cl.[5] A62C *31/00;* **B05B** *7/30*

U.S. Cl. 239—305 **1 Claim**



1 For use in combination with a conventional or automated hand-held spray gun:

A. a detachable paint cup comprising at least two vertical compartments for containing a different liquid coating material in each said compartment for spray application;

B. a detachable lid to cover said compartmentalized paint cup to form an air tight seal over each separate compartment in said cup when the lid is closed, said lid further comprising:

1. at least two vertical aspirator tubes projecting downwardly through the proximate center of said lid causing each tube to extend nearly to the bottom of one compartment, the forward tube being slightly bent forward towards the direction forward of said spray gun to contact a minimal level of liquid as the cup is tilted forward;
2. vent means providing an air passageway to each of the said compartments;
3. a valve housing permanently attached at the top of said lid for receiving each aspirator tube and further comprising a rotatable valve spool with an essentially triangular gate means to selectively permit fluid flow from a single aspirator tube through a common passageway into an attached spray gun.

5,052,624

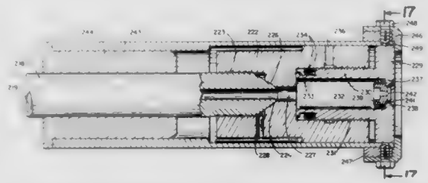
ULTRA HIGH PRESSURE WATER CLEANING TOOL

Arie N. Boers, Plymouth, and Eric J. Chalmers, Minneapolis, both of Minn., assignors to Possis Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 166,608, Mar. 11, 1988. This application Dec. 1, 1989, Ser. No. 444,288

Int. Cl.[5] B05B *9/01*

U.S. Cl. 239—525 **43 Claims**



36. A nozzle assembly for a tool used to direct a generally flat stream of water under ultra high pressure of at least 25,000 psi to a selected location having a member with a passage connectable to a supply of water under ultra high pressure of at least 25,000 psi characterized by a head mounted on the member, said head having an inside wall surrounding a chamber open to said passage for receiving the ultra high pressure water from said passage, a discharge opening open to said chamber, and an annular inwardly directed lip between the chamber and discharge opening, a fan tip located in said chamber adjacent said discharge opening for directing a generally flat stream of ultra high pressure water to a selected location, and annular compressible means surrounding the fan tip engageable with the inside wall of the head holding the fan tip on said head adjacent said discharge opening, said fan tip having a body with a passage substantially smaller in diameter than said chamber, said body having an annular shoulder located in engagement with the lip and a boss projected into the discharge opening, a transverse slot between parallel inside walls in the boss intersecting the passage forming a discharge orifice allowing ultra high pressure water to flow from the passage into the slot whereby the orifice and slot confine the ultra high pressure water to a generally flat stream of ultra high pressure water and directs the stream of ultra high pressure water to a selected location.

5,052,625

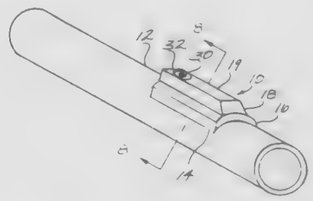
PRESSURE COMPENSATING DRIP IRRIGATION SYSTEM

Rodney R. Ruskin, 50 Pemberton Pl., San Francisco, Calif. 94114

Filed Mar. 2, 1990, Ser. No. 487,618

Int. Cl.[5] B05B *15/00*

U.S. Cl. 239—542 **21 Claims**



4. A drip irrigation system in which at least one drip emitter unit is bonded to the exterior of a continuous tubular water supply conduit without severing the conduit to attach the emitter units to the supply conduit, the system comprising:

an elongated supply conduit for conducting the flow of water under pressure, the supply conduit having a tubular outer wall of generally uniform cross sectional configuration continuous with the length of the conduit;

an emitter bonded to an exterior surface area portion of said continuous length of conduit, the emitter comprising an upright peripheral outer wall having a peripheral boundary at one end extending around and leading to an open region within the emitter; means forming a fused bond between the peripheral boundary of the emitter outer wall and the supply conduit to form a sealed chamber inside the emitter, in which a circumferential surface area portion of the continuous length of conduit forms a base of the sealed emitter chamber; and a labyrinthine channel formed in the inside surface of the emitter from spaced apart teeth projecting from the inside surface into the open region of the emitter; and

an elastomeric pressure compensating diaphragm in the open region of the sealed emitter chamber and positioned for contact with the ends of the labyrinth teeth spaced from the inside surface of the emitter, the pressure compensating diaphragm being disposed within the sealed emitter chamber between the exterior of the continuous supply conduit and the labyrinthine channel so that water flowing in the supply conduit flows through a perforated wall of the supply conduit and into the sealed chamber to thereby flow to the labyrinth, the water admitted to the sealed emitter chamber under pressure causing the diaphragm to apply pressure to the teeth of the labyrinth to seal one side of a labyrinthine channel within the emitter so that water admitted to the labyrinthine channel can pass through the channel to the exterior of the emitter at a pressure compensated slow drip rate.

5,052,626

COOLANT INTRODUCTION IN BLOW MOLDING

J. Robbin Wood, Bramalea; Robert R. Maric, Willowdale, and Jack E. Hazell, Toronto, all of Canada, assignors to Union Carbide Canada Limited, Canada

Division of Ser. No. 295,494, Jan. 11, 1989, abandoned. This application Jul. 6, 1990, Ser. No. 549,121

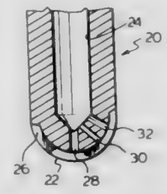
Int. Cl.[5] B05B *1/14*

U.S. Cl. 239—567 **2 Claims**

1. A nozzle for injection of refrigerant into a blow-molded article, comprising:

elongate cylindrical body means having a hemispherically-rounded head at a downstream end thereof in the intended direction of flow of refrigerant therethrough and an elongate internal bore extending from an upstream end of said body means in the intended direction of flow of refrigerant threrethrough to said hemispherically-rounded head,

a V-shaped groove formed in the outer surface of said hemispherically-rounded head having a uniform depth and a uniform width along its entire length and extending over the entire crown of said hemispherically-rounded had, and



a plurality of passageways each connecting the base of said groove to said internal bore to permit refrigerant fluid in said bore to pass out of said nozzle in a plurality of fan-shaped sprays having a pattern corresponding to the location and number of said plurality of passageways.

5,052,627

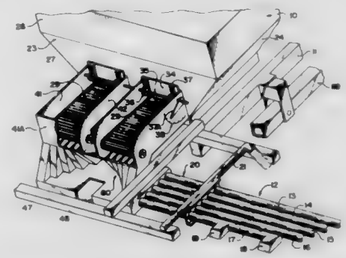
SPREADING OF PARTICULATE MATERIAL

Charles Balmer, Box 34, Elie, Manitoba, Canada R0H 0H0

Filed May 23, 1990, Ser. No. 527,312

Int. Cl.[5] A01C *15/04*

U.S. Cl. 239—655 **22 Claims**



1. Apparatus for spreading particulate material across the ground, comprising a tank for containing the material to be spread, a first boom and a second boom, each boom extending from a central position adjacent one end of the tank outwardly to a respective side of the tank, each boom including a plurality of pipes lying side by side in a common plane which is substantially horizontal, each pipe extending from an inner end adjacent the central position to an outer end spaced outwardly of the central position and having spreader means spaced outwardly from the central position for spreading across the ground the particulate material transported along the pipe, means for mounting the tank and the booms for movement in a direction substantially at right angles to the booms across the ground, the spreader means being located as staggered positions along the length of the booms such that the spreader means cooperate to spread the material across the width of the booms as the booms are moved across the ground, a first and a second endless feed belt means each having an upper run mounted within the tank such that the particulate material is carried on the upper run of the belt means from the tank in a layer on top of the upper run, means mounting the belt means such that the upper runs thereof lie in substantially the same horizontal plane for movement in mutually parallel directions outwardly from the tank at said one end thereof and at right angles to said booms, gate means for controlling the depth of the layer on the belt means so as to meter the amount of mate-

rial carried thereby, each of said belt means having an end guide member at a discharge end of the belt means around which the upper run thereof turns to discharge the material to fall therefrom by gravity, each boom being associated with a respective one of the belt means so as to receive the particulate material deposited therefrom, fan means for generating airflow, manifold means communicating airflow from the fan means to each pipe for causing an airflow therealong from the inner end thereof to the spreader means for transportation of the particulate material therealong, each of the pipes of a respective one of the booms having a feed opening for receiving particulate material from the discharge end of the respective belt means, for each of the booms, the feed openings of the pipes thereof being staggered in a direction parallel to the discharge end of the respective belt means so as to receive material from separate parts of the respective belt means, and first and second guide means each for transferring the material from the discharge end of respective one of the belt means to the feed openings of respective one of the booms, each guide means comprising a plurality of rigid duct members arranged side by side across the width of the discharge end, each duct member communicating material directly to the feed opening of a respective one of the pipes and being formed by two side dividing walls separating each duct member from the next adjacent duct member and two end walls, the side dividing walls and end walls defining at an upper end of the duct member an open mouth into which the material falls from the discharge end, the side walls being arranged in spaced relation transversely to the discharge end so that the discharged material is divided into separate portions for transmission to the pipes, the end walls of each duct member including at least one end wall which is inclined to the vertical to guide the separate portion of material from a position directly beneath the discharge end to a position aligned with the feed opening of the respective pipe.

5,052,628

APPARATUS FOR ELECTRICALLY CHARGING LIQUID DROPLETS FOR USE IN THE STIMULATION OF PLANT GROWTH AND/OR THE CONTROL OF INSECTS

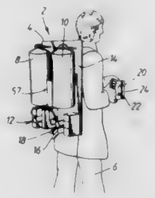
Basil E. Wainwright, Yardley Wood, England, and Terence O. McGrath, New York, N.Y., assignors to Novatech Energy Systems, Inc., New York, N.Y.

Filed Jan. 23, 1989, Ser. No. 300,362

Claims priority, application United Kingdom, Jan. 25, 1988, 8801602

Int. Cl.[5] B05B *5/00*

U.S. Cl. 239—690 **8 Claims**



1. Apparatus for electrically charging liquid droplets for use in the stimulation of plant growth and/or the control of insects, which apparatus comprises two liquid reservoir means, spray means for spraying at least one spray of liquid from the liquid reservoir means, and electronically operated liquid-charging means for causing the liquid to be electrically charged in such a manner that liquid droplets constituting the spray are able to retain their charge until earthed during use of the apparatus: the electronically operated liquid-charging means including first oscillator means for driving an extreme high tension circuit for affording an extreme high tension voltage output; transformer means having a primary winding driven by the extreme high tension voltage output, the transformer means having a first output on a secondary winding of the transformer means driven by a d.c. inverter means, and a second output on the secondary winding of the transformer means which is connected to one of the liquid reservoir means; an earth connection which is for the liquid-charging means and which is connected to one of the reservoir means; and second oscillator means which operates in parallel with the first oscillator means.

5,052,629

WHEEL WASHING APPARATUS

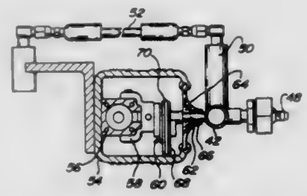
Michael J. Belanger, Walled Lake, and Graham J. Astley, Novi, both of Mich., assignors to Belanger, Inc., Northville, Mich.

Division of Ser. No. 464,338, Jan. 12, 1990, Pat. No. 4,985,957.

This application Nov. 30, 1990, Ser. No. 621,352

Int. Cl.[5] B60S *3/04*

U.S. Cl. 239—752 **6 Claims**



1. For use in a washing system of the type in which a vehicle is automatically washed by a series of cleaning apparatuses, a linear actuator for cyclically translating a cleaning apparatus, said linear actuator comprising:

a generally C-shaped elongated housing having a pair of spaced apart longitudinal edge portions defining an elongated slot therebetween, each of said edge portions being provided with a longitudinally extending groove;

a pair of elongated flexible flap seals each having an edge portion for cooperating with said elongated grooves in said C-shaped housing edge portions, a flat portion freely projecting therefrom, said flap portion overlapping one another to cover said elongated slot in said C-shaped elongated housing;

a rodless cylinder oriented within said C-shaped housing and affixed relative thereto, said rodless cylinder having an output member which is shiftable longitudinally along an axis generally parallel to said elongated slot in said C-shaped elongated housing;

a cantilever arm member affixed to said rodless cylinder output member and extending outwardly therefrom projecting between and elastically deforming said pair of flap seals locally adjacent said cantilever arm, said cantilever arm having a free end adapted to be affixed to a cleaning apparatus; and

a pair of end caps affixed to the ends of said C-shaped elongated housing to define an enclosed region substantially isolated from the vehicle wash environment external thereto.

5,052,630

METHOD AND APPARATUS TO REDUCE MATERIAL

Michael E. Hinsey, Parker, and Avon E. Bathe, Dallas, both of Tex., assignors to MAC Corporation, Grand Prairie, Tex.

Filed Feb. 27, 1990, Ser. No. 485,595

Int. Cl.[5] B02C *18/24*

U.S. Cl. 241—36 **3 Claims**

1. A shredder for reducing the size of material comprising:

a frame having a first side, a second side, a top opening and a bottom opening, said top opening adapted to receive material to be shredded and said bottom opening adapted to discharge shredded material;

a shaft mounted in said frame and adapted to rotate within said frame;

a plurality of toothed blades mounted on said shaft and adapted to rotate with said shaft;

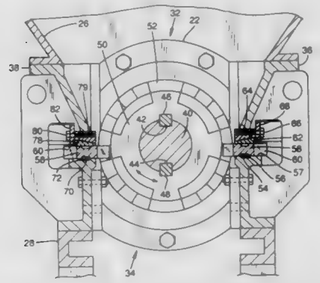
a first plurality of shear bars fixedly mounted on the first side of said frame;

a second plurality of shear bars fixedly mounted on the second side of said frame; and

a motor means to rotate the shaft in a first forward rotational direction to bring the blades into cooperative shredding relationship with the first plurality of shear bars;

said motor means also operating to rotate the shaft in a second reverse rotational direction to bring the blades into cooperating shredding relationship with the second plurality of shear bars;

each toothed blade having plural cutting teeth spaced about the periphery thereof, the cutting teeth each having a pair of cutting edges adapted to shred material bi-directionally, each toothed blade having a maximum diameter defined by said cutting teeth and a minimum diameter defined by



recessed portions located between said cutting teeth, said toothed blades being arranged in an alternating pattern on said shaft such that every other tooth blade has a maximum diameter which is substantially equal to the minimum diameter of said adjacent toothed blade;

the motor means including a reversible hydraulic motor; and

control means cooperable with said motor means for rotating the shaft and toothed blades mounted thereto alternately in the first forward direction for a predetermined period of time to shred material and then in the second reverse direction for said predetermined time to shred material, without regard to whether a jam condition exists, whereby the shredder on average shreds the same amount of material in the forward direction as the reverse direction, said control means including means for detecting a jam condition when said shaft is rotating in the forward direction and when said shaft is rotating in the reverse direction, and thereupon reversing the direction of rotation of the shaft.

5,052,631

PEPPERMILL TREE

George W. Poncy, 3725 Investment La., Riviera Beach, Fla. 33404

Filed Aug. 24, 1987, Ser. No. 88,254

Int. Cl.[5] A47J *42/04*

U.S. Cl. 241—169.1 **16 Claims**

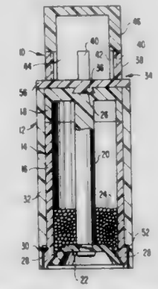
1. A food grinder comprising:

an elongate casing; and

a disposable cartridge removably mounted in said casing, said cartridge being adapted to hold a supply of food to be ground and dispensed;

said cartridge including a body, a cap rotatably mounted relative to said body, and means for grinding the food, said cap being operatively connected to said grinding means;

said casing including a body and a stem rotatably mounted relative to said casing body;



means for preventing rotation of said cartridge body relative to said casing body, and

means for connecting said stem to said cap of said cartridge.

5,052,632

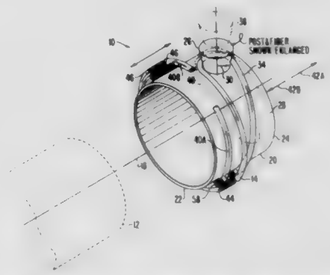
ZERO CROSSOVER WOUND FIBER OPTIC BOBBIN AND METHOD FOR FILLING SAME

Leland L. Stokes, Jr., Harvest, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed May 2, 1988, Ser. No. 189,186

Int. Cl.[5] B65H *54/10, 55/00, 75/18*

U.S. Cl. 242—47 **13 Claims**



1. A method of producing a bobbin filled with a continuous strand of compactly wound optical fiber arrayed in multiple layers, the filled bobbin being free from crossover fibers between the individual layers, the method comprising the steps of:

(a) preparing and mounting on a winding machine, a bobbin having a peripheral surface, a first axial end, a second axial end, and a pair of turning posts, one turning post located adjacent each axial end;

(b) winding a first layer of the optical fiber in a first direction around the bobbin beginning at the first axial end, continuing in a first axial filling direction, and ending at the second axial end, said first direction-winding step including the step of axially abutting adjacent turns of the optical fiber;

(c) looping the optical fiber around the turning post adjacent the second axial end to form a loop end;

(d) winding a second layer of the optical fiber in a second, reversed winding direction around the bobbin in a second, reversed axial filling direction from the second axial end to the first axial end, said second direction-winding step including the step of axially abutting adjacent turns of the optical fiber;

(e) looping the optical fiber around the turning post adjacent the first axial end to form another loop end, said loop end

and said another loop end being oriented substantially flat to said peripheral surface;

(f) repeating steps (b) through (e) in sequence until the bobbin is filled to a desired level;

(g) removing the compactly filled bobbin from the winding machine; and removing the turning posts from the filled bobbin to free said loop ends, said freed loop ends remaining oriented substantially flat to the peripheral surface of said bobbin.

6. A bobbin for holding multiple layers of a continuous strand of optical fiber comprising:

a cylindrical member having opposed axial ends and a peripheral surface; and

a pair of fiber-turning posts detachably secured to said cylindrical member, one adjacent each of said axial ends.

5,052,633

BOBBIN WINDER TENSION APPLICATION DEVICE

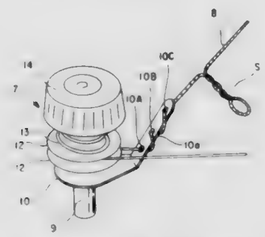
Kiyoshi Kawakubo, and Yoshimi Koguchi, both of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Aug. 21, 1989, Ser. No. 396,155

Claims priority, application Japan, Sep. 9, 1988, 63-117888

Int. Cl.[5] B65H *59/22*

U.S. Cl. 242—150 R **1 Claim**



1. A bobbin winder tension application device comprising:

a sewing machine frame;

a tension shaft projected upwardly from said frame;

a tension adjusting nut adjustably screwed onto an upper portion of the tension shaft;

a pair of like horizontal disks vertically separated and rotatably supported by the tension shaft, one of said disks being disposed above the other, said disks flaring out from each other at their adjacent external peripheries;

a tension spring supported by the tension shaft and disposed between said one disk and the tension nut for urging said one disk toward the other;

a thread guide member having a flat horizontal section with an opening through which the tension shaft extends, the horizontal section being secured to said shaft and disposed adjacent and below the other disk, said horizontal section terminating in a flat extension spaced from the disks and extending upwardly and outwardly therefrom, said extension having a plurality of spaced holes disposed therealong whereby the separation between each hole and shaft differs for each hole, said holes being disposed so that the separation is minimum for the lowest hole and increases for each additional hole, the highest hole exhibiting the largest separation, the lowest hole being horizontally aligned with the space between the flared out peripheries of said disks; and

means to feed a thread inclinedly downwardly along said extension and through said holes, the thread exiting from the lowest hole along a horizontal path and aligned with the space, the thread being disposed and being elastically clamped between said disks.

5,052,634

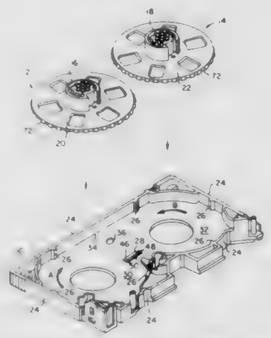
STATIC TAPE CASSETTE REEL LOCK

Timothy Bushwood, Windham, Me.; Alan Lowry, Canton, Mass., and Craig Lovecky, Old Orchard Beach, Me., assignors to Shape Inc., Biddeford, Me.

Filed Jan. 29, 1990, Ser. No. 471,648

Int. Cl.[5] G11B *23/04*

U.S. Cl. 242—198 **11 Claims**



1. A tape cassette to be received by a tape player/recorder, comprising:

(a) a cover;

(b) a base;

(c) a pair of tape reels mounted for biased rotation between the cover and base;

(d) tape wound between the tape reels; and

(e) means formed integrally of one of the cover and base and of the tape reels, for preventing despooling of the tape, when the tape cassette is not received by the tape player/-recorder,

wherein the means for preventing despooling includes

a flange formed on each tape reel, having on an outer circumference thereof a plurality of teeth, and the cassette base including a plurality of vertical, slanted ribs and a horizontal, slated rib,

wherein the teeth of the flange are able to move past the ribs in one direction, but are prevented from moving past the ribs in the opposite direction.

5,052,635

SYSTEM FOR THE RECEPTION OF GUIDANCE COMMANDS FOR A GUIDED MISSILE IN OPTOELECTRONIC MODE

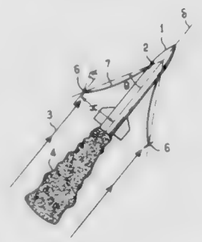
Marc Paulet, Courbevoie, and Alain Pérès, Fontenay aux Roses, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 30, 1990, Ser. No. 619,972

Claims priority, application France, Dec. 8, 1989, 89 16261

Int. Cl.[5] F41G *7/26*

U.S. Cl. 244—3.11 **8 Claims**



1. A system for the reception of in-flight guidance commands for a missile, the missile including an axial central part forming a body and, as the case may be, fins and control surfaces, and being propelled during its flight, in the course of phases known as propulsion phases, by a jet of hot gases defining a zone of turbulence behind the missile, said zone having a symmetry of revolution along the axis of the missile, the biggest radius of this zone having a value smaller than a value x, guidance commands being transmitted by a remote firing control station by means of an optical beam to at least one optical transducer linked to the missile, wherein the reception system includes at least one optical transducer carrier linked to the body of the missile by a flexible link and the carrier includes means cooperating with the flexible link to hold said carrier at a distance from the axis of the missile equal to the value x at least during the propulsion phases of the missile.

5,052,636

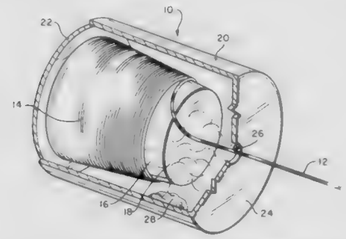
DAMPED FILAMENT DISPENSER

Ronald B. Chesler, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 1, 1989, Ser. No. 430,699

Int. Cl.[5] F42B *12/68, 15/04;* **B65H** *49/00, 55/00*

U.S. Cl. 244—3.12 **9 Claims**



1. Dispensing apparatus for filament wound onto a pack, comprising:

wall members defining a hollow enclosure within which the pack is fixedly mounted, one of the wall members having a single opening through which the filament passes on dispensing; and

a quantity of a pulverulent material being located within the enclosure which material is induced into an air-borne suspension within the enclosure by the filament movement during dispensing.

5,052,637

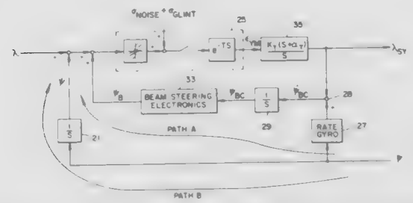
ELECTRONICALLY STABILIZED TRACKING SYSTEM

Gary D. Lipps, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 23, 1990, Ser. No. 497,611

Int. Cl.[5] F41G *7/22*

U.S. Cl. 244—3.15 **20 Claims**



1. Apparatus mounted in a first moving body for tracking a second moving body, comprising:

an array of antenna elements mounted in said first body;

means, mounted in said first moving body, for determining roll, pitch, and yaw parameters of motion of said first moving body; and

means, responsive to the parameter determining means and connected to said array, for driving said array elements in accordance with the determined parameters of motion to direct a beam of radiation from said array in a direction substantially independent of said motion of said first body, accounting for cross-coupling between roll, pitch, and yaw.

5,052,638

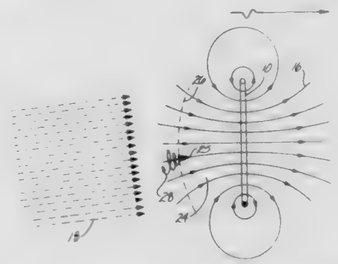
ELECTROMAGNETIC RAMJET

Michael A. Minovitch, 2832 St. George St. #6, Los Angeles, Calif. 90027

Filed Mar. 30, 1989, Ser. No. 330,632

Int. Cl.[5] B64C *39/00;* **B64D** *27/02*

U.S. Cl. 244—53 R **133 Claims**



1. A method for generating propulsive thrust comprising the steps of:

charging a superconducting coil with electric current to generate a magnetic field;

providing a source of ionized gas moving through a portion of said magnetic field; and

directing a beam of electromagnetic radiation into said magnetic field with a frequency designed to produce electron cyclotron resonance with free electrons of said ionized gas moving through said magnetic field thereby accelerating said ionized gas away from said coil and generating propulsive thrust.

5,052,639

DEVICE FOR MAINTAINING A LOAD ATTACHED TO AN AIRCRAFT INCLUDING A LOAD CONTACTING MEANS AND A SEPARATE LOAD PRESTRESSING MEANS

Jacques Lemaçon, Arcachon, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France

Filed Mar. 15, 1990, Ser. No. 493,767

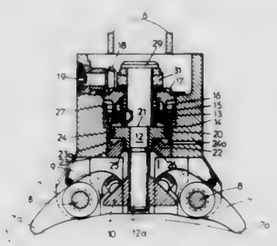
Claims priority, application France, Mar. 28, 1989, 89 03984

Int. Cl.[5] B64D *1/12*

U.S. Cl. 244—137.4 **5 Claims**

1. A device for maintaining a load which is attached to an aircraft and stationary in relation to the said aircraft, said device comprising bearing members carried by the aircraft and movable relative to the aircraft, and a) an externally operated rotary mechanical first means for moving the bearing members into contact with the said load, said means being able to provide a low force and a high movement capability to said bearing members, and b) separate second means for prestressing

said bearing members comprising a pressurized fluid actuated cylinder and piston unit having a movable assembly for exert-



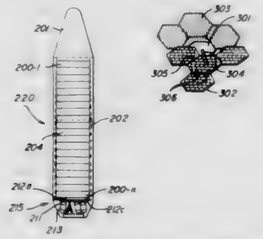
ing a prestressing force on the bearing members in order to clamp them firmly against the load.

5,052,640

SPACECRAFT DESIGN ENABLING THE FLAT PACKING OF MULTIPLE SPACECRAFT IN THE LAUNCH VEHICLE

Stanley S. Chang, Palos Verdes Estates, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 29, 1989, Ser. No. 400,208
Int. Cl.[5] B64G *1/00*
U.S. Cl. 244—173 **4 Claims**



1. In a launch vehicle including a stowage compartment for stowing spacecraft to be deployed at a time subsequent to initial launch of the vehicle, an improved arrangement for stowing the spacecraft, comprising:

a plurality of spacecraft stacked upon one another in a flat-pack configuration to thereby facilitate deployment of each of said spacecraft in a precisely controllable and aerodynamically stable manner;

wherein each of said spacecraft includes:

a base member having opposed first and second major surfaces;

a first panel member having opposed first and second major surfaces;

a second panel member having opposed first and second major surfaces;

first means for attaching said first panel member to said base member in such a manner as to facilitate movement of said first panel member from a first, stowed position whereby a substantial portion said first major surface of said base member, to thereby impart a substantially flat profile to the spacecraft, to a second, deployed position whereby said first panel member is angularly oriented with respect to said base member; and,

second means for attaching said second panel member to said base member in such a manner as to facilitate movement of said second panel member from a first, stowed position whereby a substantial portion of said first major surface of said second panel member is in direct contact with said second major surface of said base member, to thereby impart a substantially flat profile to the spacecraft, to a second, deployed position whereby said second panel member to angularly oriented with respect to said base member; and,

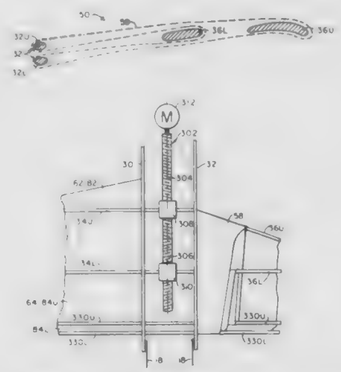
wherein said spacecraft are stacked in a manner such that said second major surface of said second panel member and said second major surface of said first panel member of intermediate ones of said spacecraft are in direct contact with one another.

5,052,641

METHOD TO CONSTRUCT VARIABLE AREA, MEMBRANE SPAR AND WING AIRFOIL AIRCRAFT AND KITE WINGS AND SUITABLE AELERONS

Henry L. Coleman, 1749 Wesley Ave., El Cerrito, Calif. 94530

Continuation-in-part of Ser. No. 334,683, Apr. 6, 1989, abandoned. This application Sep. 7, 1990, Ser. No. 581,073
Int. Cl.[5] B64C *3/54, 31/06*
U.S. Cl. 244—218 **6 Claims**



1. A variable area wing comprising

an aeronautical device comprising a fuselage having a lateral plane and a dorsal plane,

a movable leading edge spar disposed generally parallel to said lateral plane,

a first fuselage spar connected to said fuselage,

a second fuselage spar connected to said fuselage,

a movable major wing spar disposed between said leading edge spar and said first and second fuselage spars,

a flexible membrane adapted to be maintained in tension and serially wrapped about said spars beginning with said movable major wing spar, then said first fuselage spar, then said leading edge spar, then said second fuselage spar and back to said major wing spar, and

means for moving said leading edge spar and major wing spar toward and away from each other while maintaining said flexible membrane in tension about said leading edge, main wing, first fuselage and second fuselage spars.

5,052,642

SWITCH STAND

Terry D. Peters, Rt. 4, Box 19, Elkhorn, Nebr. 68022

Filed Apr. 18, 1990, Ser. No. 510,441
Int. Cl.[5] B61L *5/06*
U.S. Cl. 246—393 **1 Claim**

1. A railroad track switch stand having a reciprocating connecting rod extending therefrom for operating a railroad track switch between open and thrown positions, comprising:

a support frame;

a throw crank operably mounted to said frame and connected to said connecting rod to selectively reciprocate the connecting rod;

said throw crank including a vertically oriented shaft rotatably mounted on said frame and rotatable between a first position to move said switch to the open position, and a second position to move said switch to the thrown position;

operable biasing means connected to said throw crank for biasing said throw crank into said first position and said second position;

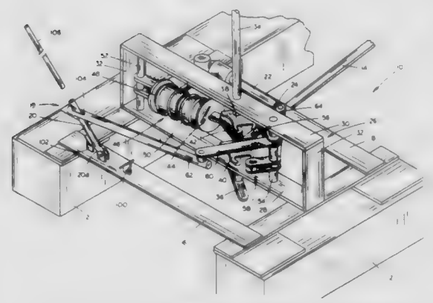
first cam means affixed to said throw crank shaft so as to rotate said shaft when said first cam means is engaged by a first throw arm, said first cam being rotatable with said throw crank between first and second positions;

said first throw arm operably connected to said frame and operable between first and second positions;

said cam first position being adjacent said throw arm first position and opposite said throw arm second position, and said cam second position being adjacent said throw arm second position and opposite said throw arm first position;

said first throw arm including means for engaging said cam when the cam and throw arm are in adjacent positions and the throw arm is moved to the opposite position, and for bypassing engagement with said cam when the cam and throw arm are in opposite positions and the throw arm is moved to the position adjacent the cam position;

means for operating said first throw arm between said first and second positions;



a second cam means affixed to said throw crank shaft so as to rotate said shaft when engaged by a second throw arm, said second cam being rotatable with said throw crank between first and second positions;

said second throw arm operably connected to said frame and operable between first and second positions;

said second cam first position being adjacent said second throw arm first position and opposite said second throw arm second position, and said second cam second position being adjacent said second throw arm second position and opposite said second throw arm first position;

said second throw arm including means for engaging said second cam when said second cam and second throw arm are in adjacent positions and the second throw arm is moved to the opposite position, and for bypassing engagement with said second cam when said second cam and second throw arm are in opposite positions and the second throw arm is moved to the position adjacent said second cam;

means for operating said second throw arm between said first and second positions;

said means for operating said first throw arm including an electrical cylinder; and

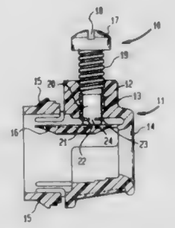
said means for operating said second throw arm including a manually operated mechanical lever.

5,052,643

SCREW AND SCREW RELEASABLE STRAIN RELIEF BUSHING WITH A NON-FALL OUT SCREW

Joseph P. Law, Scotch Plains, N.J., assignor to Heyco Molded Products, Inc., Kenilworth, N.J.

Filed Mar. 26, 1990, Ser. No. 498,535
Int. Cl.[5] F16L *5/00*
U.S. Cl. 248—56 **17 Claims**



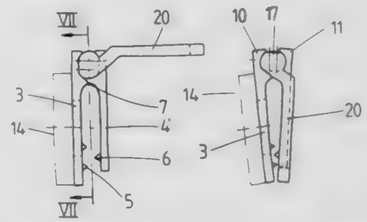
1. A non fallout screw for use in an electrical cable strain relief bushing, said screw being integral and comprising molded plastic, said screw including a shank, a threaded portion along said shank, said shank further including an unthreaded portion, said unthreaded portion of lesser outside diameter than said threads, and a radial flange portion, said radial flange being planar; thin and resilient; and substantially the diameter of said screw threads, said radial flange portion axially spaced away from said threaded portion, said radial flange portion near the end of said screw.

5,052,644

CLAMP

Simon Arieh, 24, Av. Gare des Eaux-Vives, 1208 Geneva, and Guy Courvoisier, 48A, Route des Coudres, 1298-Celigny, both of Switzerland

Filed Sep. 6, 1989, Ser. No. 403,349
Claims priority, application Switzerland, Sep. 7, 1988, 357/88
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—114 **10 Claims**



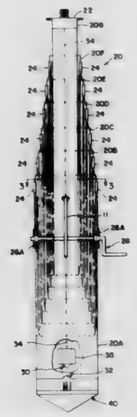
1. A clamp consisting of a clip and an actuating member for closing the clip, working by separation of two parts of the clip against the action of a resilient means, wherein the clip and the resilient means are made in a single piece (**1**), having two clip branches (**3**, **4**) connected at their base by a thin part (**7**) forming a resilient hinge and, on the other side of this thin part, a cylindrical housing of circular section or otherwise (**8**), parallel to the thin part, open laterally along a generatrix opposite said thin part, and intended to receive the member (**2**, **17**) for actuating the clip; said actuating member having at least in one lateral direction a dimension greater than the diameter of the cylindrical housing for actuating the clamp and being rotatable within said cylindrical housing, wherein said rotation of said actuating member causing the clamp to actuate.

5,052,645

GLOBAL POSITIONING POLE

Timothy R. Hixon, 1410 So. Summitview Dr., Fort Collins, Colo. 80524

Filed Mar. 28, 1990, Ser. No. 502,120
Int. Cl.[5] H01Q *1/00*
U.S. Cl. 248—125 16 Claims



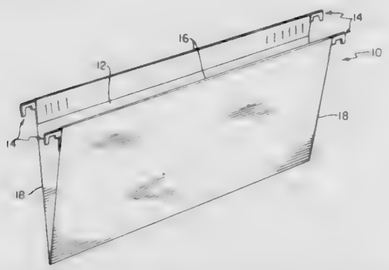
10. Telescoping pole system comprising:
(a) a plurality of telescoping pole sections each having upper and lower ends; each said pole section being tubular;
(b) elevating means for elevating said pole sections;
(c) indicating means for indicating alignment of said upper end of the upper most pole section with the lower end of the lowermost pole section; wherein said indicating means comprises first and second pointers, wherein said first pointer is suspended from said uppermost pole section by means of a flexible strip member; and wherein said second pointer is supported by said lowermost pole section; and
(d) anchor means for supporting said pole system in an upright manner.

5,052,646

LONG TIP HANGING FOLDER RODS

Robert E. Hawes, Jr., Huntington Bay, and Manfred O. Herbst, Levittown, both of N.Y., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Jul. 23, 1990, Ser. No. 556,897
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—214 19 Claims



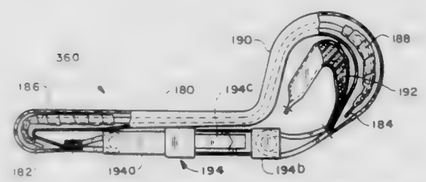
1. Rods for a hanging folder, said folder being supportable on the bars or rails of a support frame in a file by a pair of said rods, each said rod comprising:
a slender strip of extended length having a top edge, bottom edge, first end and second end, and a width transverse to said length, said width extending between said top and bottom edges;
a notch spaced from each said end and extending inwardly in the width direction of said strip from said bottom edge towards said top edge, the width of said notch in the lengthwise direction of said strip allowing a bar or rail of said support frame to be received in said notch; and
an extension from the bottom edge of said strip extending in a direction away from said top edge at each said strip end, each said extension being positioned between a respective strip end and notch;
a first one of said rods being dimensioned to nest edge-to-edge with a second one of said rods, the maximum width of the nested rods being less than the sum of the widths of said rods from the top surface to the end of the extension.

5,052,647

QUICK RELEASE COUPLER

Peter Axelson; Michael Heinrich, both of Santa Cruz; Ann Lasko-Harvill, Palo Alto, all of Calif., and Michael W. Silverman, Highland Park, Ill., assignors to Pin Dot Products, Morton Grove, Ill.

Division of Ser. No. 244,843, Sep. 15, 1988. This application Apr. 2, 1990, Ser. No. 502,866
Int. Cl.[5] A44B *13/02*
U.S. Cl. 248—231 11 Claims



1. A quick release coupler for attaching a chair frame to a support member of a base comprising:
a quick release buckle having interlocking male and female portions;
an elongated, flexible webbing coupled at respective ends to the male and female portions of said buckle, wherein said webbing is generally tubular having an internal slot extending the length thereof; and
a hook member comprised of a high strength, rigid material and disposed within the internal slot of said webbing and along a portion of the length of said webbing and having a first elongated, linear portion and a second curvilinear portion adapted for engaging the support member of the base in a loose fitting manner while allowing for sliding displacement between said coupler and the support member of a base.

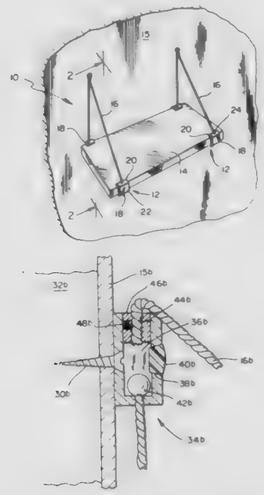
5,052,648

SUSPENSION CABLE SHELF MOUNTING SYSTEM

Brian W. Landau, 7 Northern Blvd., Greenvale, N.Y. 11548

Filed Sep. 28, 1990, Ser. No. 589,219
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—235 9 Claims

1. A shelving arrangement comprising a generally planar shelf having substantially parallel front and rear longitudinal edges and generally planar, parallel top and bottom faces, mounting means suspending the shelf in a substantially horizontal position from a substantially vertical support surface, the mounting means comprising a plurality of flexible cables, means for mounting each cable to the support surface, at least one channel associated with each longitudinal shelf edge, each channel comprising a pair of substantially planar parallel jaws, one jaw gripping the top shelf face and the other jaw gripping the bottom shelf face, the jaws being spaced apart a distance not greater than the distance between the shelf faces, each channel further including a spine interconnecting the jaws, the spine having an inner face extending substantially perpendicular to the jaws and spaced from the associated longitudinal shelf edge, each channel further including means forming an opening through each jaw adjacent the inner face of the spine, the cable extending through the opening of the jaw gripping the top face and being in contact with both the inner face of the spine and the one longitudinal shelf edge, the inner face of the spine being spaced from the associated longitudinal shelf edge a distance substantially the thickness of the cable, the cable extending through the opening of the jaw gripping the bottom face, the cable being bent substantially perpendicularly be-



neath the jaw gripping the bottom face and spanning beneath the bottom face and across the depth of the shelf, the cable being bent substantially perpendicularly and extending through the opening in the channel jaw gripping the bottom shelf face adjacent the other longitudinal shelf edge, the cable spanning the jaws substantially parallel to the plane of the bottom face and being spaced from the bottom face a distance not less than the thickness of the jaws gripping the bottom face, the cable being stabilized relative to the shelf by engagement with the jaw openings, the longitudinal shelf edges of the inner faces of the spines and the perpendicular bend in the cable at the openings through the jaws gripping the bottom face, the mounting means being free of further stabilizing means.

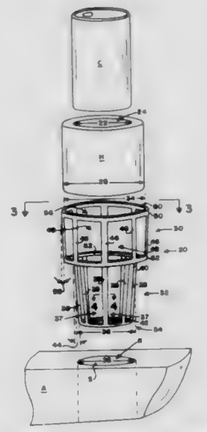
5,052,649

DRINK HOLDER ADAPTER

C. Douglas Hunnicutt, 1819 Rebsamen Park Dr., Little Rock, Ark. 72202

Filed Dec. 10, 1990, Ser. No. 625,038
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 6 Claims

1. A beverage holder adapter for placement into a beverage receptacle and for receiving a beverage container held within an insulated removable beverage holder, said adapter comprising:
a. a substantially cylindrical upper portion, said upper portion having an inner diameter sized for removably receiving the insulated beverage holder; and,
b. a substantially cylindrical lower portion, said lower portion having an outer diameter sized for placement into the beverage receptacle; and,
wherein the lower portion has openings therein and wherein the lower portion comprises securing means for retaining the beverage holder adapter within the beverage receptacle when removing the beverage holder from the beverage holder adapter and when the beverage holder adapter is empty, the beverage receptacle having an inner surface



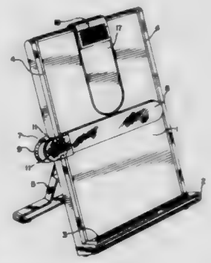
defining an inner diameter of the beverage receptacle, the securing means comprising deformable rib members for frictional contact with the inner surface of the beverage receptacle and the deformable rib members being spaced apart and separated by the openings in the lower portion.

5,052,650

COPYHOLDER

James W. Beile, Arlington Heights, and Michael Jaron, Mt. Prospect, both of Ill., assignors to Fellowes Manufacturing Company, Itasca, Ill.

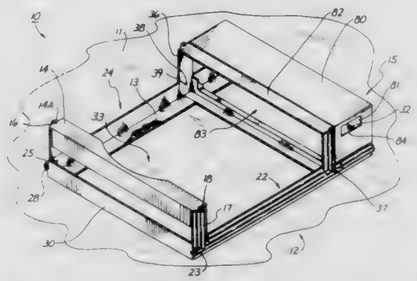
Filed Oct. 22, 1990, Ser. No. 601,414
Int. Cl.[5] A47B *63/00*
U.S. Cl. 248—451 4 Claims



1. A copyholder comprising:
a) a flat surface;
b) a ledge extending outwardly from the bottom of said flat surface;
c) an open ended housing slidably attached to one side of the flat surface, said housing having a lower hollow portion, the top of said lower hollow portion defining an internal top shoulder forming an aperture surrounded by said shoulder, said aperture having a center axis which is perpendicular to the flat surface and having internal grooves extending perpendicular to the flat surface;
d) a document holder having a pin at one end extending into said aperture and a bar extending perpendicular from the pin;

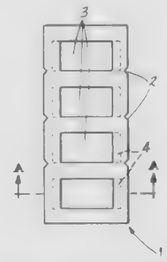
e) at least one tab radially extending from said pin and adapted to fit into any one of the internal grooves in said aperture;
f) a lock washer affixed near the distal end of said pin; and
g) a coil spring wound about said pin and abutting the inside shoulder of said housing at the top and the lock washer at the bottom.

5,052,651
FASTENER FOR PORTABLE EQUIPMENT
Robert Guddee, San Marcos, Calif., assignor to Mardesich Enterprises
Filed Mar. 13, 1990, Ser. No. 492,663
Int. Cl.[5] E05B *73/00*; F16M *13/00*
U.S. Cl. 248—552 19 Claims



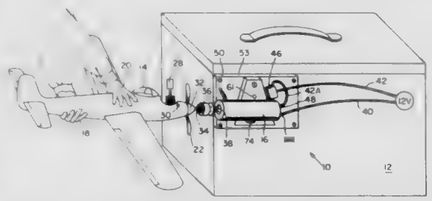
1. A fastener for protecting portable equipment, comprising:
frame means for defining a receiving space for the equipment to be protected, said receiving space being complementarily shaped to the portable equipment;
access means for defining an entranceway to said receiving space, said access means including a single locking bar movably mounted for opening and closing said entranceway and for confining the portable equipment within said receiving space when said bar is disposed in its closed position;
securing means mounted to said frame means for locking said single locking bar in place in its closed position for fastening the portable equipment within the receiving space of said frame means in a manner to permit the locking bar to be unlocked by authorized persons only;
said frame means including an elongated rigid L-shaped member having a pair of legs, one of said legs having a substantially flat surface for facilitating the attachment of said frame means to a supporting surface, the other one of said legs having a bead-like rib extending along the entire longitudinal axis thereof for rigidifying it, said rib being a smoothly contoured, rounded centrally disposed protuberance to provide said member with an aesthetically pleasing appearance, said rib extending between its pair of opposite terminal ends;
said frame means including another elongated rigid member having means defining an aperture therein to facilitate the joining of said members;
means defining a bore in one of said terminal ends of said bead-like rib for facilitating the joining of the end of the rib member to said other member at its aperture;
connecting means extending through said aperture into said bore for securing fixedly said members together to help facilitate rapid and convenient construction of said frame means; and
fastening means secured to said substantially flat leg of at least one of said L-shaped members of said frame means for securing said frame means to said supporting surface.

5,052,652
ADJUSTABLE MACHINE ISOLATION
Jose Sevilleja, Madrid, and Jose M. Sandoval, Leganes, both of Spain, assignors to Otis Elevator Company, Farmington, Conn.
Filed Sep. 13, 1990, Ser. No. 582,072
Claims priority, application Spain, Sep. 19, 1989, 8903174
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—634 4 Claims



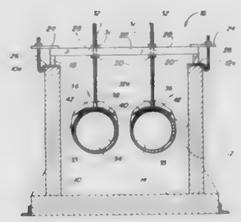
1. An adjustable support device for vibration damping of machines which allows establishment of varying compressibility of points of contact between different parts of the machine and the floor, said device including an elastic element with a constant thickness, and having transverse cuts to facilitate shortening of the support surface of the device into different length supports having different compressibilities, which said supports may be appropriately disposed under the machine so that heavier and lighter portions of the machine will be evenly supported whereby compression and deformation of the supports are kept constant in order to evenly absorb vibrations and maintain the machine level, and in addition, said elastic element includes uniformly distributed cavities in which respective elastic inserts of the same or a different hardness material can be removably positioned, for the purpose of modifying the elastic deformation of the support device.

5,052,653
AUTOMATIC SWITCHING MECHANISM FOR A MODEL PLANE STARTER MOTOR
Guy J. Coraccio, 65 Gilbert St., Waltham, Mass. 02154
Filed Jul. 23, 1990, Ser. No. 557,134
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—674 6 Claims



1. An automatic switching mechanism for selectively connecting and disconnecting an electrical power source and a model plane starter motor which motor has a clutch bushing for gripping the propeller spinner of the plane comprising:
a base member;
a movable member movably mounted to said base member;
means for mounting the starter motor to said movable member;
means for biasing said movable member to a first position; and
switch means for selectively connecting and disconnecting the electrical power source and the starter motor, said switch means connecting the power source to the starter motor as said movable member approaches a second position responsive to the engagement of the airplane propeller spinner with the starter motor clutch bushing.

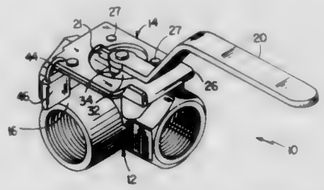
5,052,654
MOLDED PLASTIC VOID HOLD DOWN DEVICE FOR CONCRETE BEAM-SLAB FORMATION
Michael J. Means, 1041 Birch Creek Dr., Wilmington, N.C. 28403, and Donald B. Coogan, Sand Pebbles B-1 Hwy 421 S., Carolina Beach, N.C. 28424
Filed Apr. 6, 1990, Ser. No. 505,670
Int. Cl.[5] E04G *13/04, 17/00*
U.S. Cl. 249—50 12 Claims



12. A hold down device for positioning a void in a concrete mold comprising:
(a) a support structure for extending across the top of the mold and having means to secure the support structure to the mold;
(b) a down rod extending downwardly from the support structure into the concrete mold; and
(c) a void engaging member releasibly secured to the lower end of the down rod including:
(1) a lower transverse flange having a downwardly oriented concave face for engaging and restraining a void situated in the mold against upward movement due to buoyancy of the void;
(2) a coupling sleeve having a closed surrounding wall and an open top integrally formed with the lower transverse flange and extending upwardly therefrom, said coupling sleeve including an inner surface adapted to frictionally engage the lower end of the down rod to secure the void engaging member to the down rod while permitting the down rod to be removed from the coupling sleeve once the concrete in the concrete mold has set; and
(3) a web integrally formed with both the coupling sleeve and the lower transverse flange and extending outwardly from opposite sides of the closed surrounding wall of the coupling sleeve.

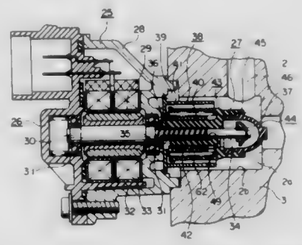
5,052,655
BALL VALVE LOCK PLATE
Rand H. Ackroyd, Methuen, Mass., assignor to Watts Regulator Company, Lawrence, Mass.
Filed Jul. 18, 1990, Ser. No. 554,693
Int. Cl.[5] F16K *35/02, 5/10*; G01M *19/00*
U.S. Cl. 251—95 6 Claims

1. For use with a three-position ball valve, said valve having a body, a valve element disposed for rotation within said body, and a handle mounted for rotation upon said body for operation of said valve element, said handle being movable among a first (off) position, a second (test) position and a third (drain) position, a lock plate assembly comprising:
a lock plate frame defining a first frame stop for said handle in said first position,
a slide latch defining a latch stop for said handle in said second position, said slide latch being mounted upon said frame for movement between a first latch position with said latch stop disposed in the path of said handle in a manner to prevent movement of said handle from said second position toward said third position, and a second latch position with said latch stop removed from the path of said handle to permit movement of said handle from said second position to said third position, said handle, when moving from said third position toward said second position, adapted to urge said latch stop toward said second latch position to permit said handle to move from said third position toward said second position, said latch stop



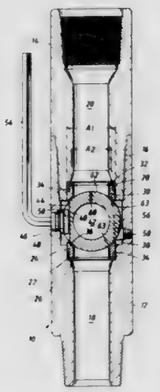
in said first latch position and in said second latch position being adapted to permit movement of said handle from said third position toward said second position,
said lock plate frame further defining a second frame stop for said handle in said third position, said first frame stop being adapted to prevent movement of said handle beyond said first position and said second frame stop being adapted to prevent movement of said handle beyond said third position, and
means for biasing said slide latch toward said first latch position.

5,052,656
FLOW CONTROL VALVE UNIT
Koji Katayama, Himeji, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan
Filed May 7, 1990, Ser. No. 519,989
Claims priority, application Japan, May 9, 1989, 1-53575[U]
Int. Cl.[5] F16K *31/04*
U.S. Cl. 251—129.11 9 Claims



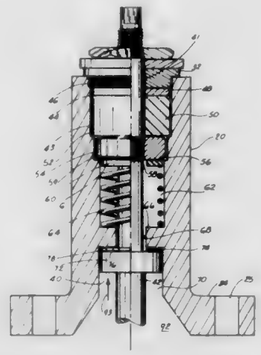
1. A valve unit for controlling a fluid flow through a fluid passage, comprising:
a motor having a rotary shaft;
a valve assembly having a substantially cylindrical valve holder axially movably mounted to said rotary shaft and a valve member securely attached to said valve holder; and
conversion means, including spiral splines disposed between said rotary shaft and said valve holder and a stationary guide disposed on said motor and said valve holder, for converting a rotation of said rotary shaft into an axial translational movement of said valve assembly;
said valve holder and said valve member being made of a resin and being welded together.

5,052,657
BALL VALVE
Thomas E. Winship, Houston, Tex., assignor to Shaw Industries, Ltd., Rexdale, Canada
Filed Nov. 2, 1990, Ser. No. 609,189
Int. Cl.[5] F16K *5/06, 25/00*
U.S. Cl. 251—160 3 Claims



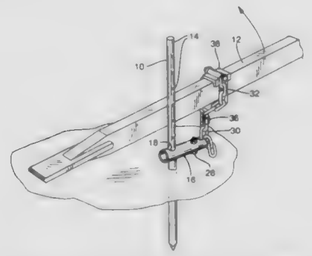
1. In a lower kelly valve positioned beneath the kelly of a drill string connected to surface drilling equipment and mounted between an internally threaded lower tubular member defining a downstream flow passage and an interfitting externally threaded upper tubular member defining an upstream flow passage; an improved ball valve structure comprising:
an enlarged valve chamber formed in said lower tubular member and having an annular groove therein adjacent said valve chamber and extending about said downstream flow passage;
a ball valve member mounted in said valve chamber for rotation between open and closed positions relative to said flow passage;
an annular downstream seat mounted in said annular groove for sealing against said ball valve member;
resilient means urging said downstream seat toward sealing engagement with said ball valve member;
an annular groove in said upper tubular member adjacent said valve chamber and extending about said upstream flow passage;
an annular upstream seat mounted in said annular groove of said upper tubular member for sealing against said ball valve member;
resilient means urging said upstream seat toward sealing engagement with said ball valve member;
said ball valve member having a generally spherical body with a central bore therethrough and a fluid equalizing opening extending in the closed position of said ball valve member from said central bore through said body to said upstream flow passage to provide fluid communication from the upstream flow passage to said valve chamber to permit equalizing the fluid pressure acting on said annular seats in said closed position from upstream fluid pressure thereby to provide equal seating forces between said ball valve member and said annular upstream and downstream seats for facilitating easy rotation of said ball valve member from said closed position to said open position, said fluid equalizing opening in the open position of said ball valve member being in direct fluid communication with said valve chamber whereby fluid pressure from said flow passages is transmitted to said valve chamber for equalizing the fluid pressure acting on said annular seats; and
manual means connected to said ball valve member to rotate said ball valve member between open and closed positions.

5,052,658
VALVE SEAL APPARATUS
John S. Heil, P.O. Box 1361, Pascagoula, Miss. 39567
Filed Jul. 16, 1990, Ser. No. 552,250
Int. Cl.[5] F16K *41/00*
U.S. Cl. 251—214 13 Claims



1. A valve sealing apparatus, comprising:
a) a valving member;
b) a valve bonnet having a continuous bore therethrough and in communication with the valving member;
c) a valve shaft housed within the bore in the valve bonnet;
d) primary sealing means, having inner and outer edges, positioned in the bore of the valve bonnet around the valve shaft;
e) means positioned between the wall of the valve shaft and the wall of the bonnet for pressing into a face of the primary sealing means, thus imparting a downward force on the primary sealing means, to prevent horizontal fluid flow between the valve bonnet and the wall of the valve shaft, on both the upper and lower faces of the primary sealing means,
wherein the means for pressing into the face of the primary sealing means comprises a shoulder portion formed in the wall of the valve bonnet having an annular raised ring portion in sealing relation against the face of the primary sealing means, the shoulder portion having inner and outer edges and the ring portion being spaced from the inner and outer edges of the primary sealing means, and
wherein the lower surface of the primary sealing means contacts an upper polished surface of a shoulder portion formed by an enlarged area of the valve shaft, thus allowing rotation of the shaft while the primary sealing means remains stationary, the enlarged area of the valve shaft having inner and outer edges, the ring portion being spaced from the inner and outer edges of the enlarged area; and
f) means associated with the valve bore for maintaining force on the primary sealing means in order to maintain a primary seal.

5,052,659
STAKE PULLER
Stephen M. Bates, 2314 SE. Pine, #6, Portland, Oreg. 97214
Continuation of Ser. No. 505,595, Apr. 6, 1990, abandoned. This application Mar. 25, 1991, Ser. No. 674,320
Int. Cl.[5] E21B *19/00*
U.S. Cl. 254—29 R 1 Claim



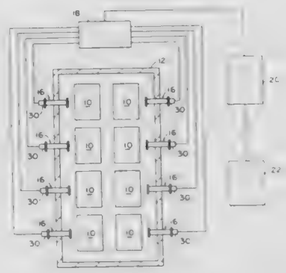
1. A manually operated stake puller comprising:
a stake engaging member comprising an elongated tubular body member having forward and rearward ends,
a first cross bore in said forward end of said body member of a size that freely receives a stake but when tilted upward at its rearward end its binds against the stake provides a connection therewith,
a flexible link having one end connected to a second cross here in the rearward end of said stake engaging member for tilting the latter when an upward lifting force is applied to the other end of said flexible link,
length adjustment means in said flexible link,
an elongated manually operated lever,
loop means on said other end of said flexible link slidably and removably receiving said manually operable lever in which when said lever is inclined relative to the stake and leveraged upward by a workman standing on the ground said lever applies an upward force to said flexible link for tilting said stake engaging member and binding the latter on the stake in a stake pulling operation.

5,052,660
ELECTRICAL WIRE THREADING APPARATUS
William Bergman, R.D. #1, Box 250, Deposit, N.Y. 13754
Filed Sep. 17, 1990, Ser. No. 583,404
Int. Cl.[5] B66D *1/36*
U.S. Cl. 254—134.3 FT 6 Claims



1. A fish device for snaking wire through an existing stud wall, comprising:
(a) a first fiberglass rod of approximately one-quarter inch in diameter, said fiberglass rod having two hollow female connections on opposite distal ends thereof, each female connection being fabricated of metal to provide strength, and each metal female connection being crimped at one end thereof, proximate said fiberglass rod, to ensure attachment thereto, the other end of each of said female section having threaded portions;
(b) a front metal section having a rounded, beveled end containing a hole for supporting a stripped electrical wire, said front section having a male screw thread connection adapted to fit into said hollow threaded portion of one of said female connections;
(c) a second fiberglass rod of approximately one-quarter inch in diameter, said second fiberglass rod having two hollow female connections on opposite distal ends thereof, each female connection being fabricated of metal to provide strength, and each meal female connection being crimped at one end thereof, proximate said second fiberglass rod, to ensure attachment thereto, the other end of each of said female sections having threaded portions; and
(d) a metal connector having two male screw thread connections on opposite ends thereof, adapted to fit into said hollow threaded portion of each of said respective first and second fiberglass rod female connections.

5,052,661
CONTROLLING HEAT TREATING FURNACES
Mark J. Dunlay, Evansville, Ind., and James G. Baker, Owensville, Ky., assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 348,413, May 8, 1989, abandoned. This application Feb. 12, 1990, Ser. No. 478,826
Int. Cl.[5] C21D *11/00*
U.S. Cl. 266—87 8 Claims

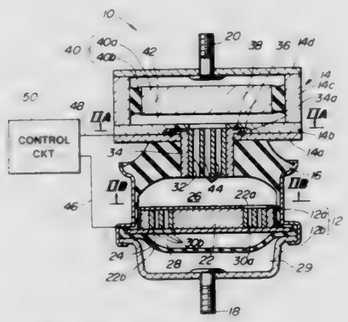


1. A method of controlling the metallurgical properties of low emissivity coils of multiple wraps of aluminum alloy material in a batch type furnace to effect desired metallurgical properties in the multiple wraps of the coils, said wraps forming an uneven, non-planar edge surface, the method comprising:
applying a spot of heat resistant material of a constant, known emissivity, which emissivity of each coil and in a manner that does not penetrate into the intersticis of the coil wraps, and which leaves edge portions adjacent said spots uncoated with the known emissivity material,
placing the coils in the furnace,
heating the atmosphere within the furnace,
aiming infrared sensors at said spots through cooled sigh tubes from locations remote from the coil edges and spots to sense the temperatures of the spots of known emissivity material,
using the temperature of said spots, as sensed by the sensors, to control the temperature of the atmosphere within the furnace and thereby control coil temperatures in a process of metallurgically controlling the properties of the coils, and
thereafter continuing to use the temperature of the spots sensed by the sensors to complete the process of metallurgically controlling the properties of the coils by controlling the temperature within the furnace until the masses of the coils exhibit the desired metallurgical properties.

5,052,662
MOUNTING ARRANGEMENT FOR AUTOMOTIVE ENGINE

Kazuhiro Doi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 21, 1989, Ser. No. 410,061
Claims priority, application Japan, Sep. 26, 1988, 63-125501[U]
Int. Cl.[5] F16F *13/00*
U.S. Cl. 267—140.1 1 Claim

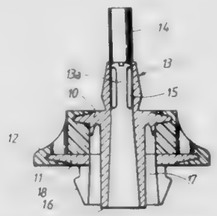


1. An engine mount comprising:
an elastomeric body;
means defining a main working chamber, said main working chamber being in part defined by said elastomeric body and filled with an electrorheopectic fluid;
a first orifice passage structure, said first orifice passage structure exhibiting a resonance frequency which falls in a relatively low frequency range;
a first set of electrodes, said first set of electrodes being disposed in said first orifice passage structure;
means defining a first auxiliary chamber, said first auxiliary chamber being fluidly communicated with said main working chamber exclusively by way of said first orifice passage structure, said first auxiliary chamber exhibiting relatively low expansion spring characteristics, said first auxiliary chamber being defined in part by a first flexible partition member;
means defining a second auxiliary chamber, said second auxiliary chamber exhibiting relatively high expansion spring characteristics, said second auxiliary chamber being defined in part by a second flexible partition member;
a transfer passage, said transfer passage providing exclusive fluid communication between said main working chamber and said second auxiliary chamber;
valve means disposed in said transfer passage, said valve means selectively opening and closing said transfer passage; and
control means, said control means being operatively connected with said electrodes and said valve means, for energizing said first set of electrodes and for conditioning said valve means to close said transfer passage when vibrational energy applied to said mount falls in a first predetermined low vibration range, for de-energizing said first set of electrodes and conditioning said valve means to close said transfer passage when vibration which is applied to said mount falls in a second predetermined intermediate vibration range which is higher than said first predetermined range, and for de-energizing said first set of electrodes and conditioning said valve means to open said transfer passage when vibration applied to said mount falls in a third predetermined high vibration range.

5,052,663
FIXATION ELEMENT AND METHOD FOR ITS PRODUCTION

Colin W. F. Clinch, Basing Stoke, England, and Per-Arne Axelsson, Hällingsjö, Sweden, assignors to ITW Fixfast AB, Gothenburg, Sweden

Filed Nov. 3, 1989, Ser. No. 431,070
Claims priority, application Sweden, Nov. 11, 1988, 8804079
Int. Cl.[5] F16F *1/54*
U.S. Cl. 267—141 10 Claims



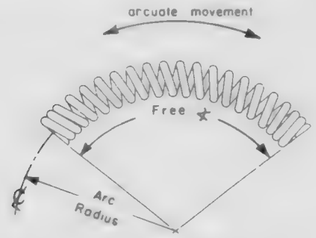
1. A fixation element for facilitating assembly of a first component at an axially spaced distance with respect to a second component in a vibration-free or shock-absorbing manner, comprising:
a first bearing plate having first bearing surface means for engaging a first surface of said first component so as to support said first component thereon, a first peripheral edge portion and first snap-in fastener means for insertion within a first through-hole defined within said first component such that said first snap-in fastener means is engageable with a second surface of said first component such that said first component is fixed upon said first bearing plate between said first bearing surface means said first snap-in fastener means;
a second bearing plate having second bearing surface means for engaging a first surface of said second component so as to support said second component thereon, a second peripheral edge portion, and second snap-in fastener means for insertion within a second through-hole defined within said second component such that said second snap-in fastener means is engageable with a second surface of said second component such that said second component is fixed upon said second bearing plate between said second bearing surface means and said second snap-in fastener means; and
a body of elastomeric plastic material interposed between and encasing said first and second peripheral edge portions of said first and second bearing plates for connecting said first and second bearing plates together with a predetermined axial distance defined therebetween.

5,052,664
ARCUATE SPRING

Roger P. Lesher, Brighton, and John J. Starzec, Azalia, both of Mich., assignors to Barnes Group Inc., Bristol, Conn.

Filed Nov. 1, 1989, Ser. No. 430,223
Int. Cl.[5] F16F *1/06;* F16D *3/66*
U.S. Cl. 267—167 17 Claims

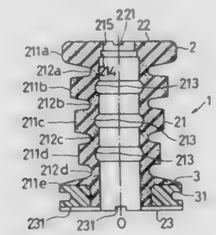
1. An arcuate spring having a plurality of helical coils configured and dimensioned to provide an arcuate shape to the entire spring in its free state and being substantially free of internal stresses which would tend to urge said coils into linear alignment, aid spring substantially retaining said arcuate shape under load conditions and having a strength sufficient to resiliently absorb and release forces in either direction along an arcuate path.



5,052,665
BUMPER RUBBER

Akihiko Sakuragi, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Jun. 19, 1990, Ser. No. 540,225
Claims priority, application Japan, Jun. 22, 1989, 1-73437[U]
Int. Cl.[5] F16F *3/10, 9/38*
U.S. Cl. 267—220 8 Claims

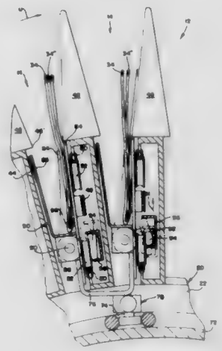


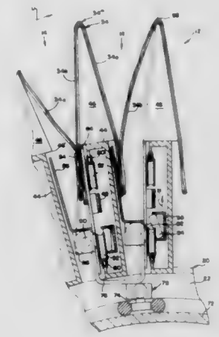
1. A bumper rubber comprising:
an elastically deformable bumper rubber body having a substantially cylindrical shape, disposed around a rod extending from a top end portion of a cylinder of a shock absorber and between said top end portion of said cylinder and a bottom end portion of a suspension insulator disposed on a vehicle body, a top end surface of said bumper rubber body being brought into contact with said bottom end portion of said suspension insulator, and a bottom end surface of said bumper rubber body being normally spaced away from said top end of said cylinder and being brought into contact with said top end portion of said cylinder when said shock absorber is fully compressed, thereby being elastically deformed and absorbing the excessive displacements of said shock absorber; and
a rigid ring disposed on an outer periphery surface of said bumper rubber body integrally with said bumper rubber body by insert-molding and having an engagement groove on an exposed outer periphery surface thereof, said engagement groove to be engaged with a dust cover, said dust cover covering an upper portion of said rod and an upper portion of said cylinder and disposed around said cylinder coaxially with and relatively movably together with said bumper rubber body in an axial direction of said cylinder, said engagement groove extending around said exposed outer periphery surface of said rigid ring in a ring-like shape.

5,052,666
DEVICE FOR PROCESSING PRINTED PRODUCTS

Egon Hänsch, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 9, 1989, Ser. No. 349,302
Claims priority, application Switzerland, May 11, 1988, 01796/88
Int. Cl.[5] B65H *5/30*
U.S. Cl. 270—55 20 Claims





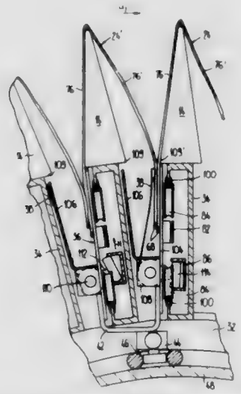
1. A device for insertion, collation or collection of printed products comprising:
at least one carriage mounted to carry out a conveyance stroke along at least one processing line for conveying to a removal point printed products delivered at at least one feed point to the carriage, said at least one carriage defining a lengthwise direction and said conveyance stroke oriented along the lengthwise direction;
at least one releasable clamp associated with the carriage and movable between an open and a closed position, said clamp operative when closed to hold printed products during at least part of the conveyance stroke; and
means for controlling the clamp to move from the open to the closed position and vice versa independently of movement of the carriage along the lengthwise direction.

5,052,667

DEVICE FOR THE COLLECTION OF FOLDED PRINTED SHEETS

Egon Hänsch, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 9, 1989, Ser. No. 349,303
Claims priority, application Switzerland, May 11, 1988, 01795/88
Int. Cl.[5] B65H 5/30
U.S. Cl. 270—55 19 Claims



1. A device for the collection of folded printed sheets comprising:

a plurality of saddle-type supports mounted for rotation along a closed trajectory and disposed parallel to each other and substantially at right angles to a direction of rotation, said supports adapted to receive at least two printed sheets astride the supports placed on top of each other by means of at least two spaced apart feed stations for transport to a discharge station for removal of the collected printed sheets, each printed sheet having two sheet halves, each sheet half of the deposited printed sheets resting on a respective side of the respective support; and

clamping means associated with the supports and operative to hold the deposited printed sheets at the sheet halves along at least part of the trajectory;

wherein said clamping means comprises a plurality of clamping arrangements, each related to two adjacent supports in order to clamp together facing portions of printed sheets placed on the two related adjacent supports.

5,052,668

AUTOMATIC PAPER SUPPLYING AND FEEDING MECHANISM IN A VIDEO PRINTER

Wan-Ha Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 14, 1990, Ser. No. 582,381
Claims priority, application D.P.R. of Korea, Nov. 30, 1989, 17661
Int. Cl.[5] B65H 5/02
U.S. Cl. 271—3 1 Claim

1. An automatic paper supplying and feeding mechanism for use in a video printer comprising a paper supplying lift lever (**5**), a reverse rotation roll (**7**) for preventing excess supplying of papers more than one sheet, an electrodeposition drum (**11**), and a sensor (**24**) for detecting the signal indicating the completion of a paper supplying, said automatic paper supplying and feeding mechanism characterized in further comprising:

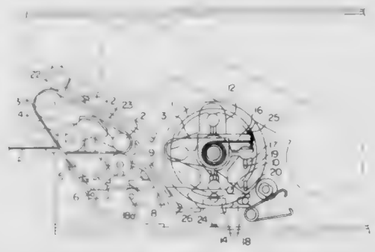
a guide plate (**9**) mounted between said reverse rotation roll (**7**) and the lower contacting surface of said drum (**11**) for guiding said papers,

a vertically moving bracket (**12**) linked to said drum (**11**),

a rotation bracket (**13**) linked to said drum,

a paper holder (**14**) attached to the lower end of said vertically moving bracket,

a feed bracket control pin (**10**) attached to said rotation bracket (**13**),



a paper discharging passage (**23**) provided between a position fixing roll (**2**) and an intermediate roll (**3**) over a paper supplying belt (**4**), and

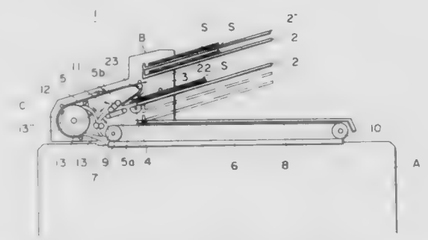
and a paper discharging sensor (**21**) and a paper discharging roll (**22**) mounted in the outlet end of said paper discharging passage (**23**).

5,052,669

AUTOMATIC DOCUMENT FEEDER

Noriyoshi Ueda, Yokohama; Yuji Takahashi; Makoto Kitahara, both of Tokyo; Masaaki Sato, Yokohama, and Naho Wakao, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 268,627, Nov. 2, 1988, abandoned, which is a continuation of Ser. No. 76,492, Jul. 22, 1987, abandoned. This application Feb. 6, 1991, Ser. No. 652,224
Claims priority, application Japan, Jul. 24, 1986, 61-174656; Sep. 24, 1986, 61-225421; Sep. 30, 1986, 61-231965; Jan. 8, 1987, 61-2846; Jan. 21, 1987, 62-12839
Int. Cl.[5] B65H 3/06
U.S. Cl. 271—3.1 34 Claims



1. An automatic document feeder, comprising:

original stacking means having a plurality of stacked trays which are spaced from one another, each tray being capable of accommodating sheet originals;

means for supporting said plural trays for movement substantially along the stacking;

feeding means for feeding sheet originals from a selected one of said trays;

conveying means for conveying the sheet originals from said feeding means to a predetermined position;

means for returning the sheet originals from the predetermined position to said selected tray; and

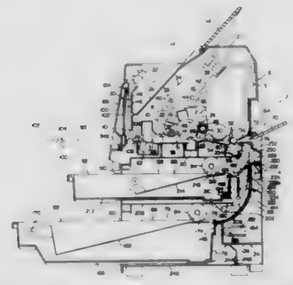
driving means for driving said plural trays so as to bring said trays selectively toward said feeding means.

5,052,670

IMAGE-FORMING MACHINE

Yoshinori Makiura, Kawachinagano; Tadakazu Ogiri, Takatsuki; Shigeki Hayashi, Ikoma; Naoyuki Ishida, Osaka; Masami Fuchi, Neyagawa; Hiroaki Nakamura, Ikoma; Katsuhide Yamaguchi, Takatsuki, and Hiroshi Kubota, Osaka, all of Japan, assignors to 501 Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1989, Ser. No. 408,275
Claims priority, application Japan, Sep. 27, 1988, 63-239830
Int. Cl.[5] B65H 3/44
U.S. Cl. 271—9 23 Claims



1. An image-forming machine comprising a conveying passage for conveying a sheet material through a transfer zone, a first and a second feed means for feeding the sheet material to the conveying passage, a first feed passage for conducting the sheet material delivered from the first feed means to the conveying passage and a second feed passage for conducting the sheet material delivered from the second feed means to the conveying passage; wherein

at least a greater portion of one side of the first feed passage is defined by a first opening-closing member and at least a greater portion of its other side is defined by one surface of a second opening-closing member,

at least a greater portion of one side of the second feed passage is defined by the other surface of the second opening-closing member,

the first opening-closing member is free to move between an operating position in the main body of the machine and a removed position removed from the operating position and is also free to pivot between a closing position at which it defines one side of the first feed passage and an opening position at which it opens the first feed passage, and

the second opening-closing member is free to pivot between a closing position at which its one surface defines the other side of the first feed passage and its other surface defines the second feed passage and an opening position at which it opens the second feed passage.

5,052,671

FEEDING DEVICE

Toshihisa Matsuo, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1990, Ser. No. 511,172
Claims priority, application Japan, May 9, 1989, 1-116436
Int. Cl.[5] B65H 3/44
U.S. Cl. 271—9 23 Claims

1. A feeding device comprising:

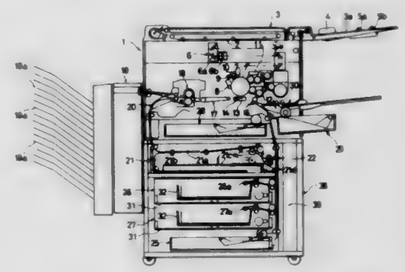
at least one movable copy material orientation changing means capable of setting copy material to at least two feed positions,

at least one fixed holding member having a fixed feed position in one of said feed positions,

position detecting means for detecting the feed position of said copy material orientation changing means,

driving means for moving said copy material orientation changing means, and

control means for controlling said driving means in response to the input from said position detecting means, such that



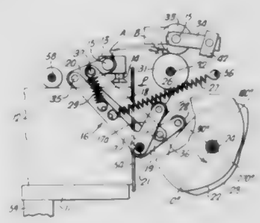
when the copy material stored in said fixed holding means and the copy material stored in said copy material orientation changing means are of the same size, the feed position of said copy material orientation changing means and the feed direction of said fixed holding means can differ.

5,052,672

PAPER FEEDING DEVICE HAVING A SUCTION MEMBER DRIVEN BY A FOUR-BAR LINKAGE ARRANGEMENT

Yoshiyuki Horii, Kyoto, Japan, assignor to Horizon International, Inc., Shiga, Japan

Filed May 23, 1990, Ser. No. 527,522
Claims priority, application Japan, Sep. 12, 1989, 1-107087[U]
Int. Cl.[5] B65H 3/44
U.S. Cl. 271—9 2 Claims



1. A paper feeding device comprising:

a frame;

a paper supply shelf arranged for substantially vertical movement, said paper supply shelf supporting a stack of paper sheets to be collated thereon;

means for urging said paper supply shelf upwardly;

stop means engageable with the top sheet in said stack for defining the upper limit of the movement of said paper supply shelf with said stack in such a manner that the top sheet is always positioned at a predetermined picking-up level;

feed roller means disposed at a paper feeding station in front of the top sheet which is positioned at said predetermined picking-up level;

suction means movable between a first position whereat said suction means is engageable with the upper surface of the top sheet in said stack at said picking-up level so as to remove said top sheet from said stack and a second position whereat said suction means is located close to said feed roller means adapted to transfer said removed paper sheet to said feed roller means;

drive means for moving said suction means between said first position and said second position, said drive means comprising a four-bar linkage mechanism pivotally carried at a horizontally extending pivot, said four-bar linkage mechanism comprising four elemental links pivotally connected one by one to form a closed loop, the first elemental link being connected to said suction means, the second elemental link being pivotally carried at said pivot and pivotally connected to said first elemental link and the third elemental link, the third elemental link being pivotally carried at said pivot, the fourth elemental link being connected at its opposite ends to said first and third elemental links, respectively, said drive means further including means for synchronously oscillating said second and third elemental links about said pivot to produce a composite movement at said first elemental link, whereby said suction means may be moved between said first position and said second position, said means for synchronously oscillating comprising a first peripheral cam for oscillating said second elemental link about said pivot through a roller attached to said second elemental link;

means for urging said roller of said second elemental link toward the edge of said first peripheral cam;

a second peripheral cam for oscillating said third elemental link through a roller attached to said third elemental link;

means for urging said roller of said third elemental link toward the edge of said second peripheral cam;

means for operatively connecting said first peripheral cam with said second peripheral cam wherein said means for operatively connecting said first peripheral cam with said second peripheral cam comprises a common drive camshaft on which said first and second cams are mounted for synchronous rotation, and;

a further cam mounted on said common drive camshaft for driving said feed roller means.

5,052,673

SHEET FEEDING DEVICE

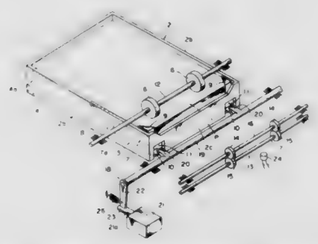
Hiroshi Tokuda, Nagoya; Shigeo Ishikawa, Hazu; Toshiaki Sugiura, Hekinan, and Hikaru Kaga, Ama, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 6, 1989, Ser. No. 403,759

Claims priority, application Japan, Sep. 9, 1988, 63-227089; Nov. 17, 1988, 63-290858

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—22 **16 Claims**



1. A sheet feeding device comprising a case member for holding a plurality of sheets in a stacked state, a pair of feed roller members located above the stacked sheets for feeding the sheet located on the top of the stacked sheets, and sheet feed means for further feeding the sheet fed from said pair of feed roller members, said sheet feeding device comprises:

a pair of sheet separation members each provided at a side edge of said case member and each having a nail portion for separating the sheet in accordance with a sheet feed operation of said pair of feed roller members, said pair of sheet separation members being movable in a direction along which the sheets are stacked;

first control means for controlling the stacked sheets in such a manner that the sheet located on the top of the stacked sheets is brought into contact with said pair of feed roller members; and

second control means for controlling said first control means so as not to be operated in case a positional relationship between the sheet fed from said pair of feed roller members and said sheet feed means becomes a predetermined state.

5,052,674

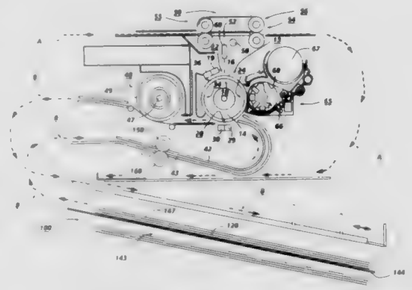
PAPER FEEDER APPARATUS

Conrad J. Bell, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1989, Ser. No. 359,611

Int. Cl.[5] B65H *3/00*

U.S. Cl. 271—42 **14 Claims**



1. A simple, low cost, hand operated paper feeder, comprising: a media chamber having a stack of media therein and a front and rear end and mounted at an acute angle with respect to a horizontal plane in order to use gravity to register the media therein against said rear end thereof and to provide a retarding force to media exiting said media chamber, said media chamber including an opening in said front end thereof that allows media to exit therethrough; two position, T-shaped actuator means positioned within said media chamber and adapted for movement from a first position removed from the media within said media chamber to a second position contacting said media, and wherein said actuator means includes a pair of non-rotating friction means mounted thereon for contacting said media when said actuator means is in said second position, rail means for slidably supporting said actuator means; a rod member connected to said actuator means and extending outside said front end of said media chamber such that movement of said rod member in a first direction also moves said actuator means to move from said first position to said second position with said friction means contacting said media and wherein continued movement of said rod member in said first direction causes a top sheet of said media to be moved by said friction means a predetermined amount through said opening in said media chamber, and lifting means positioned such that return movement of said rod means in a second and opposite direction toward its initial position moves said actuator means into contact with said lifting means whereby said actuator means is retracted from said media surface to said first position.

5,052,675

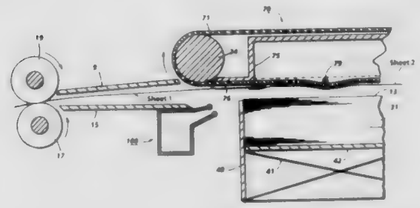
TOP VACUUM CORRUGATION FEEDER WITH AERODYNAMIC DRAG SEPARATION

Ahmed-Mohsen Shehata, Penfield, and David J. Lemmon, Hilton, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 21, 1990, Ser. No. 541,661

Int. Cl.[5] B65H *3/14*

U.S. Cl. 271—98 **11 Claims**



1. A top sheet feeding apparatus that operates with reduced air pressure, comprising: a sheet stack support tray for supporting a stack of sheets within the tray, low pressure air knife means positioned in front of said stack of sheets for applying a positive low air pressure through an exit portion thereof to the sheet stack in order to suspend and separate the top sheets in the stack from the rest of the stack, and feedhead means including a vacuum plenum chamber positioned over the front of the sheet stack with a portion thereof extending beyond the front of the sheet stack and having a negative pressure applied thereto during feeding, said vacuum plenum chamber having sheet corrugation members located in the center of its bottom surface and perforated feed belt means associated with said vacuum plenum chamber to transport the sheets acquired by said vacuum plenum chamber in a forward direction out of the stack support tray, and wherein said air knife means includes a single large slot in said exit portion spanning substantially the entire width of said air knife that is configured for air entrainment such that air pressure supplied therethrough creates a thick boundary layer at a low pressure along a portion of said feedhead and the front of the sheet stack.

5,052,676

SHEET FEEDING DEVICE

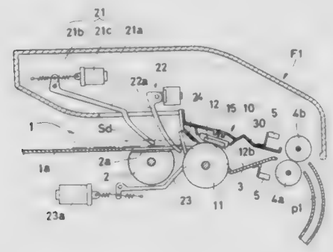
Toshihito Shiina, Yamanashi; Masahito Sano, Kofu, and Shiyuzi Ishimaru, Yamanashi, all of Japan, assignors to Nisca Corporation, Yamanashi, Japan

Filed Dec. 28, 1989, Ser. No. 458,544

Claims priority, application Japan, Dec. 28, 1988, 63-335181; Dec. 28, 1988, 63-335182; Dec. 28, 1988, 63-335183; Dec. 28, 1988, 63-335184; Dec. 28, 1988, 63-335185

Int. Cl.[5] B65H *3/32*

U.S. Cl. 271—121 **10 Claims**



1. A sheet feeding device for feeding stacked sheets one by one, comprising at least one sheet separation means including:

a driven sheet feeding roller rotatable to feed a sheet in a forward direction;

a friction pad positioned so as to contact said feeding roller at a contact point when no sheet is being fed therebetween, said friction pad including a substantially flat contact surface including said contact point, said contact surface including an uplift protrusion at a portion thereof forward of said contact point; and

means for mounting said friction pad such that said friction pad can pivot about a fulcrum substantially corresponding to said contact point,

whereby passage of a sheet past said uplift protrusion causes said friction pad to pivot about the fulcrum so that a portion of the contact surface rearward of the contact surface rearward of the contact point moves closer to the feeding roller.

5,052,677

PAPER FEEDING DEVICE

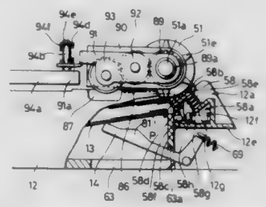
Kiyotaka Shibata, Takatsuki, Japan, assignor to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 177,903, Apr. 1, 1988, Pat. No. 4,813,612, which is a continuation of Ser. No. 866,505, May 23, 1986, abandoned. This application Oct. 28, 1988, Ser. No. 264,066

Claims priority, application Japan, May 24, 1985, 60-112399; May 30, 1985, 60-117175; Sep. 9, 1985, 60-197621; Sep. 10, 1985, 60-139322; Feb. 28, 1986, 61-299501

Int. Cl.[5] B65H *1/22*

U.S. Cl. 271—164 **10 Claims**



1. A paper feeding device for an image-forming machine, to feed a sheet of paper into the image-forming machine from a paper cassette, said device comprising:

paper feeding means positioned to be adjacent one end of the paper cassette when the paper cassette is mounted in the image-forming machine;

means for moving said paper feeding means in a paperfeeding direction to feed a sheet of paper from the cassette into the image-forming machine;

a driving force transmitting mechanism responsive to movement of the paper cassette over a first distance during removal of the paper cassette from the image-forming machine for moving said paper feeding means in the direction opposite the paper-feeding direction to withdraw a sheet of paper partially fed into the image-forming machine away from the image-forming machine a second distance greater than the first distance;

whereby upon removal of the paper cassette from the image-forming machine, the sheet of paper is withdrawn from the machine and returned into the paper cassette.

5,052,678

DUPLEX FEEDER WITH SIDE SHIFTING INVERSION

John H. Looney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

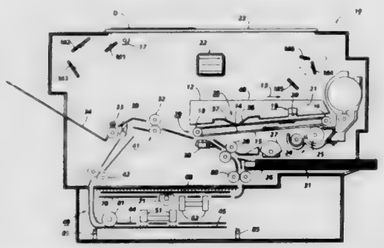
Filed Sep. 13, 1989, Ser. No. 406,491

Int. Cl.[5] B65H *29/00, 9/00*

U.S. Cl. 271—186 **31 Claims**

19. A duplex cassette for use in an automatic printing machine for producing duplex prints, said cassette including a portion of the duplex print substrate path including a side

shifting inverter to invert successive substrates once about an axis parallel to said path, said inverter comprising a first substrate guide means comprising a top sheet insertion baffle and a bottom sheet insertion baffle defining a portion of said substrate transport path, one of said top and bottom sheet insertion baffles having at least one aperture therein, a rotatable segmented drive roll having a flat segmented portion and a curved segmented portion, said curved portion extending through said



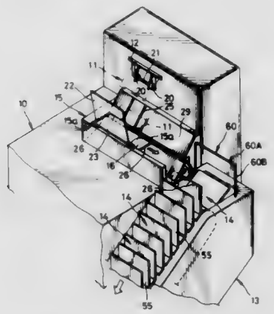
aperture when said drive roll is rotated to be in substrate driving engagement with the remaining baffle, said flat segmented portion of said drive roll not extending through said aperture when adjacent said aperture, said inverter further including direction reversing arcuate substrate guide means to guide a substrate around a direction reversing path about an axis parallel to said path direction and means to transport a substrate through said arcuate guide means.

5,052,679

SORTING APPARATUS

Shizuo Sekino, Saitama, Japan, assignor to Fuji Photo Film, Co., Ltd., Kanagawa, Japan

Filed Dec. 18, 1989, Ser. No. 451,707
Claims priority, application Japan, Dec. 19, 1988, 63-319748
Int. Cl.[5] B65H *5/04*
U.S. Cl. 271—293 **6 Claims**



1. A sorting apparatus having an endless track driven in revolving fashion, said endless track having upper and lower reaches, said endless track bearing bears a plurality of racks arranged at regular spacings so as to place said racks in a predetermined loading position at which a group of printed sheets are loaded in each of said racks one after another, thereby sorting said printed sheets by group, said sorting apparatus comprising:

driving means for driving said endless track and moving said racks along said upper and lower paths; and

a plurality of tray boards, each two adjacent ones of said tray boards forming each of said racks for receiving said group of sheets;

said tray board comprising:

a bottom wall plate attached to said endless track, said bottom wall plate being formed with at least two slots extending along a direction of said endless track;

a partition wall plate extending upwardly from one end of said bottom wall plate, said partition wall plate being bent at an angle with respect to said bottom wall plate so as to make said rack stand vertically when said rack moves from said lower path to said upper path; and

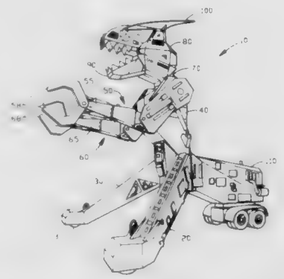
at least two supporting brackets, secured to a bottom portion of said partition wall plate and extending rearwardly from said partition wall plate, for supporting thereon said group of sheets received in said rack, each said supporting bracket being received in said slots formed in said bottom wall plate of another of said adjacent ones of said tray boards.

5,052,680

TRAILERABLE ROBOT FOR CRUSHING VEHICLES

Douglas J. Malewicki, Irvine; Philip C. Emmons, Anaheim; Robert M. Kubinski, Garden Grove, all of Calif., and Douglas D. Schumann, Southington, Conn., assignors to Monster Robot, Inc., Malibu, Calif.

Filed Feb. 7, 1990, Ser. No. 477,042
Int. Cl.[5] A63G *31/00*
U.S. Cl. 272—1 R **19 Claims**



1. A trailerable robotic figure comprising a body and a tail mounted upon at least one pair of forward wheels and at least one pair of rear wheels, said body being hinged to said tail for movement of said body between an erect exhibition position and a lowered trailerable position wherein a portion of said body extends forwardly of said tail and includes attachment means for pivotal connection to a tractor for hauling said robotic figure over roads.

5,052,681

UPPER EXTREMITY REHABILITATION DEVICE

George R. Williams, 504 Country Side Trail, Edmond, Okla. 73034

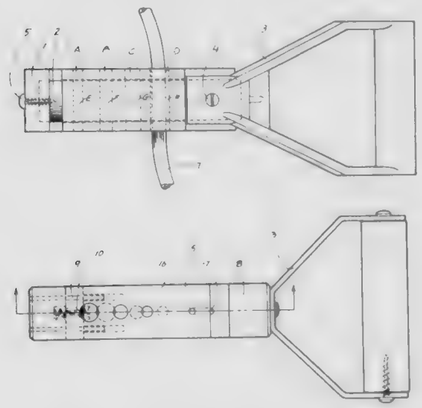
Continuation of Ser. No. 448,557, Dec. 11, 1989, abandoned. This application Aug. 27, 1990, Ser. No. 574,491
Int. Cl.[5] A63B *21/04*
U.S. Cl. 272—136 **5 Claims**

1. A hand held and upper extremity rehabilitation device comprising:

a bifurcated member having two aligned branches, each branch having a series of aligned apertures increasing in diameter along the length of the member;

a central member having a series of apertures in alignment with and of a corresponding diameter to the apertures of the branches of the bifurcated member, said central member being of a size and shape as to permit slidable insertion of the central member between the branches of the bifurcated member such that the apertures of the central member and bifurcated member may be selectively aligned or askewed; and

a length of flexible tubing having on one end means for attachment to a stationary structure, the flexible tubing being insertable into aligned apertures of the bifurcated and central members, whereby the bifurcated or central



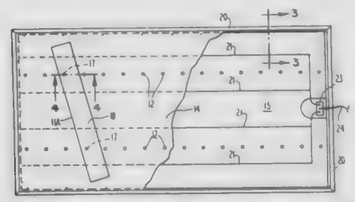
member may be grasped by the user and pulled against the tension created by the flexible member passing through selectively askewed apertures of the bifurcate and central members.

5,052,682

SKATING MOTION SIMULATOR

Pasquale W. Croce, Jr., Bryn Mawr, and James McCrossin, Media, both of Pa., assignors to Sports Physical Therapists, Inc., Broomall, Pa.

Filed Jan. 19, 1988, Ser. No. 145,397
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 **4 Claims**



1. An apparatus adapted for use by a skater in a predetermined direction of use for simulating and practicing skating comprising:

(a) a rectangular platform having a substantially flat upper surface and a longitudinal dimension of about 100 inches and a lateral dimension of about 50 inches;

(b) a low friction sheet of high molecular weight polyethylene film covering the upper surface of said platform;

(c) two spaced push off means for providing an inclined surface against which the skater encounters increased resistance to movement, said surface being inclined at an angle of between about 15° and about 45° with respect to the upper surface of said platform, said push-off means being mounted to the upper surface of said platform so as to diverge in the direction of use; and

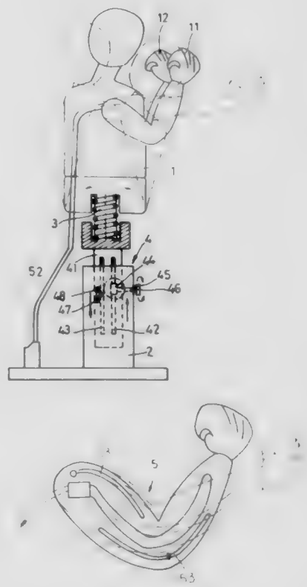
(d) means for dissipating the build-up of static electricity from said sheet of polyethylene film.

5,052,683

BOXING TRAINING PARTNER

Chuan M. Wang, and Chuan S. Wang, both of No. 3, Alley 12, Lane 188, Tung Nan St., Hsin Chu City, Taiwan

Filed Apr. 25, 1990, Ser. No. 514,247
Int. Cl.[5] A63B *69/00*
U.S. Cl. 272—76 **1 Claim**



1. A boxing training partner, comprising:

a figure body having a pair of arm members;

a hollow base;

a spring disposed between said figure body and said base, said spring having an upper end coupled to said figure body;

a height adjusting means disposed within said base for vertically positioning said figure body, said height adjusting means including **(1)** a linking block coupled on one end thereof to a lower end of said spring, **(2)** a pair of toothed racks coupled to a surface of said linking block in spaced parallel relation, **(3)** a gear wheel meshingly engaged with one of said racks, **(4)** a knob rotatively coupled to said gear wheel, **(5)** a stop block releasably engaged with a tooth of the other of said racks, and **(6)** a control lever coupled to said stop block for releasing said engagement of said stop block with said rack;

means for reciprocatingly displacing said arms, said reciprocating means including **(1)** a pair of elongated gas bags, each of said pair of gas bags being disposed in a respective one of said pair of arms, and **(2)** a pair of arched spring plates disposed in each of said arms; and,

controller means fluidally coupled to each of said gas bags for extending one of said arms responsive to inflation of a respective one of said gas bags to overcome a spring force of a respective pair of said spring plates, and subsequently retracting said arm responsive to deflation of said gas bag and said spring force of said pair of spring plates, said controller means aperiodically inflating said gas bags responsive to a predetermined sequence.

5,052,684

APPARATUS FOR TRAINING A WAIST PORTION OF A HUMAN BODY

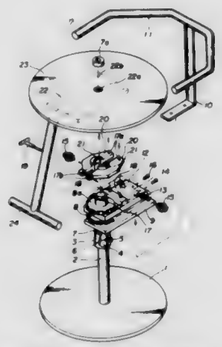
Shuichi Kosuge, and Chosaku Otaki, both of Tokyo, Japan, assignors to Senoh Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1987, Ser. No. 94,372

Claims priority, application Japan, Sep. 10, 1986, 61-139146[U]

Int. Cl.[5] A63B *21/015*

U.S. Cl. 272—132 **14 Claims**



1. A waist training apparatus, comprising:

(a) first means defining a base member having shaft means vertically extending therefrom;

(b) second means defining a seat portion having foot support means extending therefrom, said second means being connected to said shaft means at a first point;

(c) third means defining an arm portion of the chair to enable grasping by a humans hands with the human body rested on the second means, said arm portion having means extending therefrom for connecting said third means to said shaft means at a second point spaced from said first point;

(d) fourth means disposed between said first point and said second point and proximate thereto and connected to said shaft means for operatively pivoting the second means and third means mutually in opposite directions according to a twisting action of the humans body; and

(e) fifth means located proximate to said fourth means for applying an adjustable load required to pivot said first and second means.

5,052,685

SOUND PROCESSOR FOR VIDEO GAME

Danny D. Lowe, and John W. Lees, both of Calgary, Canada, assignors to QSound Ltd., Calgary, Canada

Filed Dec. 7, 1989, Ser. No. 447,422

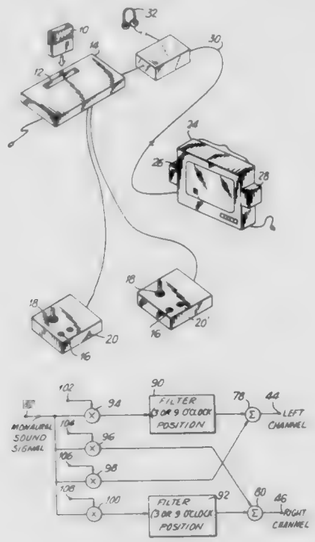
Int. Cl.[5] A63F *9/22*

U.S. Cl. 273—460 **17 Claims**

1. A processor for producing a sound image for reproduction over a pair of speakers in a video game system employing a game cartridge including video display data, audio data, and sound positioning information and an audio synthesizer producing an audio signal in accordance with the audio data from the game cartridge, the processor comprising:

means for receiving the audio signal produced by the synthesizer and producing at least two substantially identical output signals therefrom; and

a plurality of phase shift and gain adjustment means, each receiving one of said identical output signals, for shifting the phase and adjusting the gain of said identical output signal by respective predetermined amounts and being responsive to said sound positioning information from said game cartridge and for producing first and second system output signals having predetermined phase shift and amplitude differential therebetween on a frequency dependent basis for discrete frequency bands over the audio spectrum, said first and second system output signals being fed to respective ones of the pair of speakers.



5,052,686

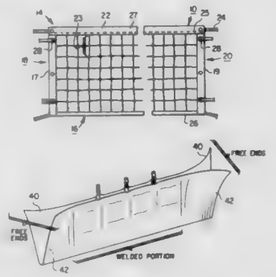
TENNIS NET AND METHOD OF MAKING

Douglas E. Pryor, Dallas, Tex., assignor to Sport Supply Group, Inc., Farmers Branch, Tex.

Filed Apr. 19, 1990, Ser. No. 510,963

Int. Cl.[5] A63B *61/00*

U.S. Cl. 273—29 B **5 Claims**



1. A net particularly adapted for use as a tennis net, comprising:

a length of netting having a top edge, a bottom edge, a first side edge and a second side edge, with the side edges of the netting being spaced apart from each other and joining the top edge to the bottom edge;

a headband having first and second ends comprising thermoplastic material and being folded upon itself along its longitudinal axis and separated along said axis a predetermined distance from each said end to form a pair of free ends at each end thereof, said headband having a medial section enclosing said top edge of the netting along the length thereof and to form a channel for receiving a net support cable and welded along substantially the length of the netting to retain the medial section of the headband on the netting;

said headband being unwelded at said free ends and said free end being folded in on themselves and secured to create a reinforced construction; and

each of said side edges of said netting having one of its ends attached to a respective first and second end of said reinforced construction.

5,052,687

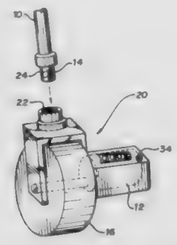
GOLF FLAGSTICK MEASURING DEVICE

Greg C. Katerba, P.O. Box 20391, Graeagle, Calif. 96103

Filed Sep. 5, 1990, Ser. No. 577,557

Int. Cl.[5] G09F *17/00*; **G01C** *22/00*; **A63B** *57/00*

U.S. Cl. 273—34 R **5 Claims**



1. A golf flagstick with a measuring device comprising:

an odometer fastened to the top of said golf flagstick, said odometer including a wheel and a digital display adjacent to said wheel;

whereby when a distance is to be measured, said golf flagstick is removed from a hole, turned upside down and wheeled between a golf ball and said hole, wherein said distance is displayed by said digital display.

5,052,688

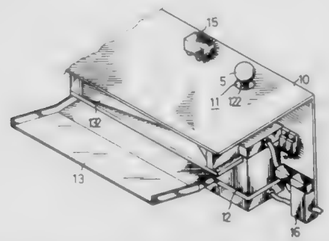
AUTOMATIC GOLF PRACTICE COURSE

R. Jang Shiau, No. 10, Lane 48, Sec. 2, Chungshan N. Rd., Taipei, Taiwan

Filed Feb. 13, 1991, Ser. No. 654,872

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—35 B **10 Claims**



1. An automatic golf practice course comprising:

a target area having an inclined plate covered with an artificial grass layer to form a plurality of fairways and being enclosed to define said target area, said inclined plate being supported by distantly disposed bases;

a tee off area being substantially a teeing plate for golfers to stand thereon, a plurality of equally spaced holes being formed on said teeing plate each having a pneumatic cylinder disposed thereunder, each said pneumatic cylinder having a vertically retractable piston rod which is passable through said holes, each said piston rod having a supporting disc on a distal end thereof for supporting a golf ball thereon, said supporting disc acting as a tee when said piston rod is in an extended position, and said supporting disc receiving a golf ball from a feeding path provided uphill from said pneumatic cylinder when said piston rod is in a retracted position, a vibrating plate driven by a motor being provided between said teeing plate and said fairways for urging said golf balls from said target area entering said feeding paths, a plurality of leading walls being provided downhill from said vibrating plate for leading golf balls to be received on said supporting discs through corresponding feeding paths, each said pneumatic cylinder being controlled by an electric eye provided adjacent to each respective tee for activating said piston rod from said extended position to said retracted position after a golf ball on a tee has been teed off, and said piston rod moving from said retracted position to said extended position after another golf ball is fed onto said supporting disc.

5,052,689

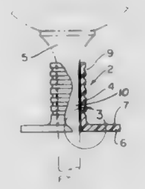
GOLF BALL AND GOLF TEE SUPPORT STRUCTURES

Kenneth P. Lettrich, 1802 Naglee Ave., San Jose, Calif. 95126

Filed Jul. 23, 1990, Ser. No. 556,888

Int. Cl.[5] A63B *69/36*, *57/00*

U.S. Cl. 273—183 A **14 Claims**



1. In combination, a golf tee and support therefor, said support for use in cooperation with said golf tee, said golf tee having a cylindrical shank pointed at one end and diverging conically into a golf ball support head at the opposite end, said support comprising:

a) an annular base member adapted to frictionally engage the cylindrical shank of said tee extending therethrough and to rest on the ground below a golf ball supported on said golf ball support head elevated a predetermined distance above the ground in position to be hit by a golf club; and

b) a tubular member of less diameter than said base member, centrally disposed on said base member and adapted to frictionally engage a portion of said cylindrical tee shank and extending upwardly from said base member to maintain said tee head at said predetermined elevation above the ground to aid in supporting a golf ball consistently at said predetermined elevated position above the ground.

5,052,690

GOLF PUTTER WITH ALIGNMENT MEANS

Jerry R. Sharp, 17315 Broken Back Dr., Crosby, Tex. 77532

Filed Jan. 29, 1991, Ser. No. 647,705

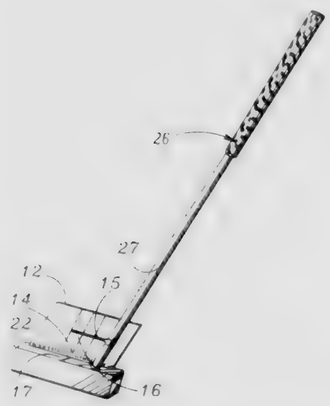
Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—183 D **4 Claims**

1. A golf club putter including means for aligning a ball to a flag stick, thus training a golfer for a correct putting stroke, comprising:

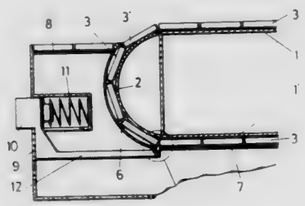
(i) a club head, having a smooth striking surface portion for contacting said ball, mounted to a shaft means at one end, having a grip means at other end of said shaft whereby permitting said golfer to grasp, address, align said club head;

(ii) a reflective plate means mounted to the top general center portion of said club head, having said reflective plates' top edge portion angled back from vertical, away from said striking surface whereby permitting said golfer to observe a reflection of a target area; and



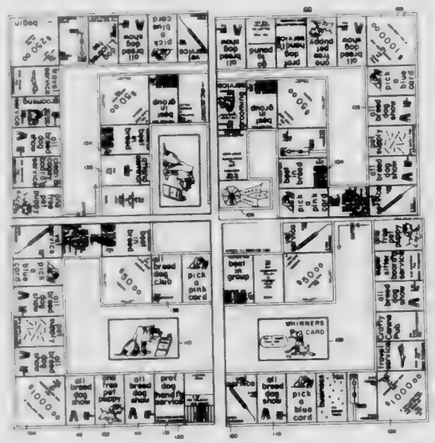
(iii) a centering standard means mounted to said shaft means and extending, horizontally parallel, over said club head, whereby said golfer will be able to view a reflection of said centering standards horizontal orientation in said reflective plate.

5,052,691
GAME OF ENTERTAINMENT
José L. Fernández Jiménez de Castro, Plaza de los Descalzos, No. 4, 45600 Talavera de la Reina (TOLEDO), Spain
Filed Sep. 13, 1990, Ser. No. 582,502
Claims priority, application Spain, Sep. 19, 1989, 8903163
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—241 **6 Claims**



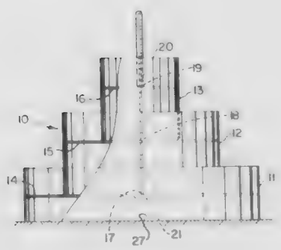
1. A game of entertainment characterized in that it comprises a basically prismatic-quadrangular, substantially flat body, whose lateral walls take a curved-convex shape (2), which defines a quadrangular upper platform (1) in which a plurality of little quadrangular pieces (3) are established, distributed according an orthogonal reticule that occupies the whole platform, these pieces being connected to one another by a tongue and groove joint, formed by nerves (5) on two of the edges of each piece and grooves (4) on the other two, with the special pecularity that said sliding pieces (3) also extend around the semicylindrical faces (2) and along the bottom base of the body, so forming a series of annular lines ups, close on themselves, that cross perpendicularly, said prismatic-quadrangular body (1) being housed in a framework (9) whose four lateral walls extend outwardly in respective deposits (8), at a level slightly lower than the one of the upper platform of the body, these deposits being able to collect a plurality of chips which may be placed on the moving pieces (3) of the game platform, and transported by said pieces until falling by gravity into the lateral deposits (8), due to the slanted level that defines the moving pieces when they reach the initial sector of the semicylindrical lateral walls (2).

5,052,692
SYSTEM FOR TEACHING THE ART OF ANIMAL EXHIBITION
Richard Gustafson, 941 S. Skagit St., Burlington, Wash. 98233
Filed Mar. 15, 1990, Ser. No. 493,883
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—249 **7 Claims**



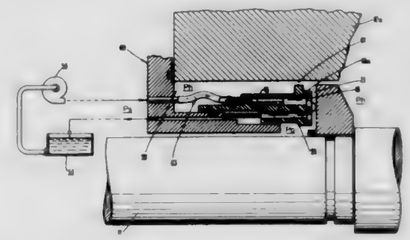
5. An animal exhibition simulator comprising:
a) a plurality of icons each of which depict contestants in an exhibition;
b) first means for generating a random numerical criteria;
c) a plurality of fact cards containing facts regarding various breeds or comments often heard at an exhibition;
d) a playing board having a plurality of contiguous fields forming first and second bands arranged in a concentric array and at least one central field, wherein each of said fields depict an event which occurs at an animal exhibition, including events of winning class events, events which occur during competition or while preparing for competition, and an instruction to the user to select one of said fact cards, wherein said icons are advanced around said bands based on said random numerical criteria, wherein said second band comprises an advanced level of competition and said central band represents the pinnacle of competition; and
e) second means for generating a random criteria for points to be awarded upon winning said class events.

5,052,693
APPARATUS AND METHOD FOR GAME OF SKILL
Carl Hicks, 4 Ridgewood Avenue, Moncton, N.B., E1A 3N9, Canada
Filed Nov. 21, 1990, Ser. No. 616,352
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—336 **5 Claims**



1. A game apparatus, comprising a target and a projectile, said target being comprised of a series of cylinders of decreasing diameter to be arranged one above another, the difference in diameter of ascending cylinders being greater than the diameter of the projectile, each said cylinder having a base, means to space each cylinder relative to the ascending cylinder so as to leave an open area about each cylinder adapted to receive said projectile, a post extending centrally upwardly from said uppermost cylinder and said projectile adapted to be received over said post.

5,052,694
HYDROSTATIC FACE SEAL AND BEARING
Abraham Lipschitz, Warwick, R.I., assignor to EG&G Sealol, Inc., Wellesley, Mass.
Continuation of Ser. No. 883,371, Jul. 8, 1986, abandoned. This application Jun. 5, 1990, Ser. No. 532,230
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—3 **11 Claims**



1. A hydrostatic seal for sealing, from the ambient having a pressure Pa, a pressurized machine fluid having a pressure Ph in the interior of a housing fitted with an axially-extending rotatable shaft, comprising:
opposed first and second sealing faces fixed to the housing and the shaft, respectively, movable axially relative to one another and forming an annular gap between each other, said annular gap defining a path from the interior of the housing radially through the gap to the ambient;
a seal ring housing fixed to the housing, said seal ring housing including an axial elongated reservoir;
a source of pressurized barrier fluid;
high pressure cavity means in said first sealing face for flowing a pressurized barrier fluid into the annular gap;
a seal ring having two axial ends slidably received in said axially elongated reservoir of said seal ring housing, wherein said seal ring includes said first sealing face at its axial end opposite the axially elongated reservoir and wherein said high pressure cavity means includes a first axial bore formed in said seal ring;
discharge cavity means in said first sealing face for removing pressurized barrier fluid from the annular gap;
a flow restriction tube fixed to said seal ring and in fluid communication at one end with said first axial bore and at the other end with the axially elongated reservoir, said flow restriction tube being subjected to pressure Ps at the first end, Ps being greater than Ph;
proportional pressure regulator means in fluid communication with said source of pressurized barrier fluid and said axially elongated reservoir at one end and said flow restriction means at the other end, for maintaining the ratio of Ps/Ph at a constant regardless of the rotational speed of the shaft;
dam means at the interface of said first and second sealing faces and between said high pressure cavity means and the machine fluid for restricting the flow of machine fluid toward the barrier fluid and the flow of barrier fluid toward the machine fluid; and
circulating means, including said high pressure cavity means, said discharge cavity means, said flow restriction means and said flow regulator means, for circulating the pressurized barrier fluid in the annular gap in physical contact with the machine fluid at a pressure substantially equal to the pressurized machine fluid pressure, said circulating means preventing the barrier fluid from penetrating beyond said dam means into the interior of the housing

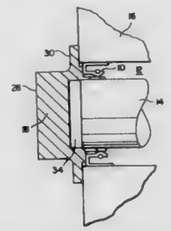
and preventing the machine fluid from penetrating beyond said dam means into the annular gap.

5,052,695

SEAL INSTALLATION

Trevor G. Curtis, Hornchurch, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 135,883, Dec. 21, 1987, abandoned.
This application Nov. 19, 1990, Ser. No. 617,308
Claims priority, application United Kingdom, Dec. 23, 1986, 8630708
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—9.5 **6 Claims**



1. A storage and application tool and seal assembly comprising

a seal to be inserted axially forwardly into a gap in a device, said seal having a radially inward facing cylindrical surface for sealing about a shaft and an axially rearward facing lateral surface extending radially outwardly of said inward facing cylindrical surface;

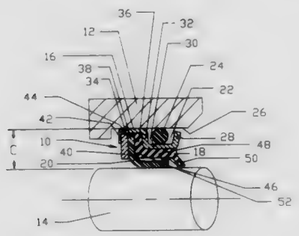
a one-piece tool comprising (i) an axially extending cylindrical projection, said projection having a first surface demountably supporting said cylindrical surface of said seal during storage and application, and said projection having a second surface engaging said shaft, and (ii) an axially forward facing third surface extending radially outwardly beyond said axially extending cylindrical first surface for supporting said lateral surface of seal, and (iii) an axially forward facing fourth surface for limiting the extent of axial insertion of said seal into said gap, said fourth surface being axially rearward and extending radially beyond said third surface.

5,052,696

COMPACT COMPRESSOR SEAL

Frederick R. Hatch, Ann Arbor, Mich., assignor to Mather Seal Company, Milan, Mich.

Filed Oct. 26, 1990, Ser. No. 604,703
Int. Cl.[5] F16K *41/02*
U.S. Cl. 277—37 **4 Claims**



1. A compact shaft seal for use within an annular space defined between a housing and a shaft, said seal comprising:

a metal casing comprising a radially inwardly facing channel and a radially outwardly facing channel;

said radially inwardly facing channel having a radially inwardly extending free end wall, a radially-extending central wall and a radially outer axially-extending wall interconnecting said radially inwardly extending free end wall and said central wall;

said radially outwardly facing channel having a radially outwardly extending fee end wall and a radially inner axially-extending wall interconnecting said radially outwardly extending free end wall and said central wall;

an o-ring disposed in said radially outwardly facing channel;

an elastomeric sealing member bonded to said radially inner axially-extending wall and adapted to seal against said shaft; and

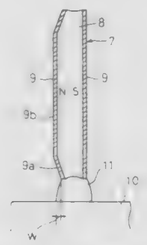
a polytetrafluoroethylene sealing member clamped within said radially inwardly facing channel and adapted to seal against said shaft, said polytetrafluoroethylene sealing member, as mounted on a shaft being axially coextensive with a portion of said radially outwardly facing channel and axially coextensive with a portion of said elastomeric sealing member and defining an axially extending clearance space between said polytetrafluoroethylene sealing member and said elastomeric sealing member.

5,052,697

SEALING MEMBER FOR FERROFLUID SEAL AND METHOD OF PRODUCING THE SAME

Ryuhei Ishikawa, Tokyo, Japan, assignor to Nippon Ferrofluidics Corporation, Tokyo, Japan

PCT No. PCT/JP89/00342, § 371 Date Nov. 29, 1989, § 102(e) Date Nov. 29, 1989, PCT Pub. No. WO89/09355, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 31, 1989, Ser. No. 444,171
Claims priority, application Japan, Mar. 31, 1988, 63-80606
Int. Cl.[5] F16J *15/40*
U.S. Cl. 277—80 **7 Claims**



1. A sealing member for a ferrofluid seal to surround an external surface of a working member to interpose ferrofluid between said sealing member and said working member, said sealing member comprising:

an annular elastic magnet composed of an elastomeric material having incorporated therein a magnetic powder, said magnet having two substantially planar side surfaces and inner and outer circumferential surfaces; and

a pair of annular pole pieces bonded, respectively, to each side surface of said annular elastic magnet said bonding extending over entire side surfaces of said annular pole pieces;

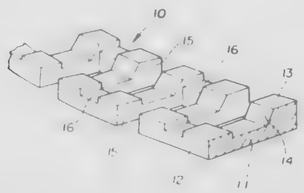
wherein said annular elastic magnet inner circumferential surface forms an area recessed from inner circumferences of said pole pieces.

5,052,698

TWO-PIECE TYPE OIL RING ASSEMBLY

Tsutomu Kimura, Kumagaya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 284,664, Dec. 15, 1988, abandoned.
This application Sep. 7, 1990, Ser. No. 579,097
Claims priority, application Japan, Dec. 17, 1987, 62-317422
Int. Cl.[5] F16J *9/056*
U.S. Cl. 277—138 **8 Claims**



1. A two-piece type oil ring assembly adapted to be mounted in an oil ring groove of a piston disposed within a cylinder, the oil ring groove having a lower side and the oil ring assembly comprising:

a single spacer expander in the form of a split annulus and a single side rail in the form of a flat split annulus,

said spacer expander having an upper surface, a lower surface, and a radial section, said radial section forming a substantially L-shaped configuration with a lower surface having substantial portions thereof making plane contact with the lower side of said oil ring groove, an outer crest portion and an inner crest portion, said outer crest portion being closer to the cylinder than said inner crest portion, said outer crest portion having an inner and outer periphery, said inner crest portion being closer to an end of the oil ring groove than said outer crest portion, said inner crest portion having an inner and outer periphery, said outer crest portion and said inner crest portion being integrally connected by a trough portion, said inner crest portion being axially taller than said outer crest portion,

said upper and lower surfaces and being formed with a multiplicity of radial slots extending alternatively from the outer periphery of said outer crest portion to the outer periphery of said inner crest portion and from the inner periphery of said inner crest portion to the inner periphery of said outer crest portion, said outer and inner crest portions being substantially axially inflexible,

said spacer expander being provided with a plurality of oil grooves radially passing through said spacer expander, at least one of said oil grooves being adjacent to one of said slots, said side rail having a lower surface placed on said outer crest portion and an inner periphery supported by said inner crest portion.

5,052,699

GROMMET

Donald L. Tucker, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 10, 1989, Ser. No. 377,378
Int. Cl.[5] F16J *9/04*
U.S. Cl. 277—178 **16 Claims**

1. An annular grommet which is composed of an elastomeric material and which has an outer circumferential surface, an inner circumferential surface, a first radial surface, and a second radial surface;

the inner circumferential surface (1) defining an axial passageway which (i) runs axially through the grommet and (ii) has an axial length x inch, and (2) comprising

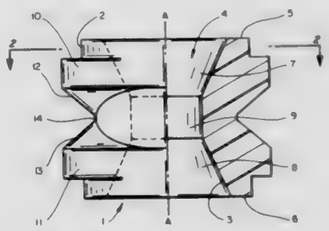
(a) a first inner end section which tapers inwardly from the first radial surface and which defines a first entry portion of the passageway,

(b) a second inner end section which tapers inwardly from the second radial surface and which defines a second entry portion of the passageway, and

(c) an inner central section which (i) lies between the inner end sections, (ii) has a substantially constant cross-section, (iii) has an axial length of 0.10x to 0.60x inch, and (iv) defines a central portion of the passageway; and

the outer circumferential surface comprising

(a) a first outer end section which (i) has a substantially constant cross-section, and (ii) has an axial length of 0.15x to 0.45x inch,



(b) a second outer end section which (i) has a substantially constant cross-section, and (ii) has an axial length of 0.15x to 0.45x inch, and

an outer central section which lies between the outer end sections and which defines a groove which runs circumferentially around the entire periphery of the grommet, the groove having tapered walls which taper to a base which lies within a radial projection of the inner central section;

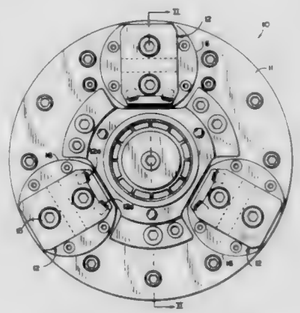
whereby an elongate substrate can be placed in the passageway and the grommet can be axially compressed to seal around and to grasp the substrate.

5,052,700

COMPENSATING AND/OR CENTRALIZING GRIP CHUCK

Carl J. Howard, Kingsley, and Donald J. Wrobel, Sterling Heights, both of Mich., assignors to Sheffer Collet Company, Traverse City, Mich.

Filed Jun. 4, 1990, Ser. No. 532,897
Int. Cl.[5] B23B *31/12*
U.S. Cl. 279—106 **15 Claims**



1. In a ball chuck the improvement comprising: a chuck body; a plurality of arms arranged concentrically at equal spacings around the central axis of the chuck; a plurality of socket means each pivotally supporting one of said arms intermediate its inner and outer ends for pivotal movement toward and away from said central axis, each of said arms having an outer portion and an inner portion integrally joined by a central portion; the outer portion of each arm having means for

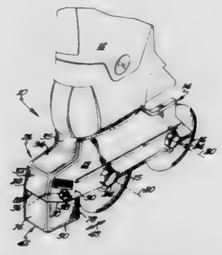
mounting a workpiece engaging and gripping element; an actuator mounted in said chuck body for reciprocal movement along the central axis of said chuck, said actuator having a plurality of openings therein, one for each of said arms, the inner end portion of each of said arms extending through one of said openings and having an elongated slot therein, a pin extending through said slot in engagement with the walls thereof, said pin being secured to said actuator, said slot being inclined to the longitudinal central axis of said arm such that one end of said slot is further radially spaced than the other end thereof from the central axis of said chuck, the walls of said slot which engage said pin during the limits of axial travel of said actuator being parallel and closely and slidably engaging said pin to effect identical distance of radial movement of each of said arms in response to axial movement of said actuator.

5,052,701

ROLLER SKATE WITH PIVOTING BRAKE

Brennan J. Olson, Minneapolis, Minn., assignor to Rollerblade, Inc., Minnetonka, Minn.

Filed Aug. 23, 1989, Ser. No. 397,184
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 **18 Claims**



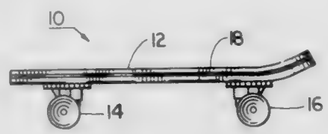
1. A roller skate and brake usable by a skater for skating on a road surface, comprising:
a roller skate boot;
a roller skate frame carried by said boot, said frame having front and rear ends and including a brake pad housing at one end of said frame;
a plurality of wheels including a rear wheel, each said wheel rotatably mounted to said frame for rotation about an axis, with all said axes being parallel and at least two of said wheels being coasting wheels positioned to contact the road surface during coasting on the skate, said axes of said coasting wheels defining a first plane;
a brake pad comprising a body of material having a high coefficient of friction and said body carried by said brake housing, extending downwardly therefrom and including a base confronting the road surface for selective frictional engagement with the road surface;
said base having a substantially flat surfaced face adapted for full facial engagement with the road surface;
said skate frame being pivotable about said rear wheel axis between a first position, wherein said coasting wheels contact the road surface, and a second position, wherein said face of said base of said brake pad is in full facial engagement with the riding surface;
said housing further including a socket, said socket having first and second lateral side walls with each said side wall having an aperture, and the said apertures being substantially coaxial, with their common axis being substantially parallel to said wheel axes;
said brake pad being mateably mounted within said socket;
said brake pad body including a rigid metal plate within said pad, said plate being closely surrounded by said material and oriented substantially perpendicular to said wheel axes when said pad is mateably received in said socket, said body and plate having a hollow bore substantially coaxial with said apertures of said frame to define a continuous passage through said pad body, plate and side walls;
said brake further including fastening means passing through said continuous passage to securely retain said brake pad within said socket; and
said rigid plate inhibiting wear on said pad which might otherwise result from rubbing of said body against said fastening means and in addition further defining a brake pad wear indicator to audibly and visibly indicate need for pad replacement when said material of said body wears away to expose said plate to direct frictional contact with the road surface.

5,052,702

TOY SKATEBOARD WITH STEERABLE TRUCK ASSEMBLIES

David M. Chan, 401 E. Mission Dr., San Gabriel, Calif. 91776

Continuation of Ser. No. 237,709, Aug. 29, 1988, Pat. No. 4,930,794. This application Jun. 5, 1990, Ser. No. 533,447
Int. Cl.[5] A63O *17/02*
U.S. Cl. 280—11.28 **9 Claims**



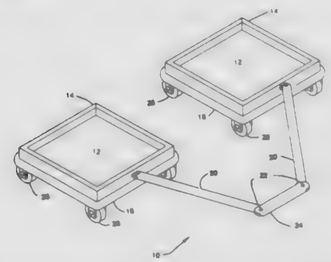
1. A toy skateboard comprising:
a platform having an undersurface;
two truck assemblies, each having walls defining a mounting aperture;
two longitudinally spaced mounting means for retaining said two truck assemblies on said platform adjacent said undersurface, one of said mounting means holding one of said truck assemblies and the other of said mounting means holding the other of said truck assemblies, each mounting means having:
a pivot projecting from said undersurface, having an inner end and an outer end, and retained on said platform only at said inner end;
said pivot passing through said mounting aperture of said truck assembly and said walls providing the only structure for radially retaining said truck assembly on said pivot; and
a pivot stop on said outer end of said pivot providing the only structure for axially retaining said truck assembly on said pivot between said pivot stop and said undersurface;
means for allowing each of said truck assemblies to be tilted in relation to said platform including:
providing said mounting aperture with a first width and said pivot with a second width less than said first width;
said inner end of said pivot having an enlarged top;
a platform aperture through said undersurface having a third width greater than the second width of said pivot and less than the width of said enlarged top;
said enlarged top positioned loosely on said platform above said undersurface with said pivot passing through said platform aperture; and
at least one of the following:
said truck assembly tilting in relation to said pivot;
said pivot tilting in relation to said platform; and
said truck assembly tilting in relation to said pivot and said pivot tilting in relation to said platform; and
means for biasing each of said truck assemblies away from said undersurface.

5,052,703

DOLLY

Stafford Bertrand, 7012 West Hwy., #105, Orange, Tex. 77630

Continuation of Ser. No. 514,118, Apr. 25, 1990, abandoned. This application Dec. 14, 1990, Ser. No. 626,401
Int. Cl.[5] B62B *5/00*
U.S. Cl. 280—47.34 **3 Claims**



1. A dolly for moving a bulky item comprising:
first and second platforms each connected to another by linkage means;
each of said platforms being supported by a plurality of wheels,
each of said platforms including an upstanding wall portion which wall portion defines a well into which may be inserted a portion of said item to be moved;
each of said platforms further including a scuff resistant bumper portion placed about an exterior portion of said respective platform;
each of said platforms further including a front portion having a respective tongue positioned exteriorally of and projecting forwardly from said front portion of each of said respective platforms; and
said linkage means including a first rigid arm pivotally attached at a rearward end for movement about a vertical axis by a first pin connection to a respective tongue carried by said first platform, a second rigid arm pivotally attached at a rearward end for movement about a vertical axis by a second pin connection to a respective tongue carried by said second platform of said plurality of platforms, and an elongated rigid handle extending transversely between said first and second arms, said first arm being pivotally attached at a forward end for movement about a vertical axis to one end of said handle by a third pin and said second arm being pivotally attached at a forward end for movement about a vertical axis to an opposite end of said handle by a fourth pin.

5,052,704

AUXILIARY SEAT FOR BICYCLES

Leonard G. Nauman, Golden Valley, Minn., assignor to Alan Design, Inc., Minneapolis, Minn.

Filed Dec. 27, 1989, Ser. No. 457,371
Int. Cl.[5] B62J *1/00*
U.S. Cl. 280—202 **4 Claims**

1. An auxiliary seat for attachment to the horizontal bar of a bicycle frame, forwardly of the main passenger seat, comprising:
an elongated seat cushion formed from material of sufficiently high density to support the weight of a person;
an elongated slot extending over the entire length of said seat cushion and terminating at its lower end in a continuous opening in the bottom of said seat cushion extending through the outer surface thereof, said slot further extending substantially vertically when said seat cushion is oriented generally horizontally for mounting on a horizontal bar of a bicycle, and the upper end of said slot being closed and terminating within the body of said seat cushion in a tubular passage sized and adapted to fit snugly around the aforesaid horizontal bar of a bicycle, said cushion having sufficient resiliency that the material of said cushion defining said tubular passage will spring back around the horizontal bar in secure, embracing engagement therewith after said slot is forced over the bar, said tubular passage being located substantially at the longitudinal central axis of said seat cushion,
a protective and decorative cover wrapped around the outside of said seat cushion and extending into and covering the portions of said seat cushion defining said slot so as to protect said portions of said cushion from wear in the course of sliding said slot onto and off of a horizontal bar



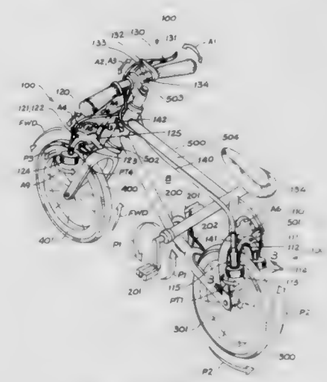
of a bicycle for installation and removal of said seat cushion,
whereby said seat cushion may be removably mounted on the horizontal bar extending between the main seat post and the handle bar post of a bicycle, at a location forwardly of the main seat on said seat post, by placing said continuous opening against the top of said horizontal bar and forcing the seat cushion downwardly so that said slot slides over said horizontal bar, until said closed end of said slot is brought into firm engagement with said horizontal bar.

5,052,705

CONTROLLED ROTARY POWER TRANSFER APPARATUS AND METHOD FOR NON-DRIVEN BICYCLE WHEELS AND THE LIKE

Thomas J. Ringle, Tucson, Ariz., assignor to Victor Flores, Tucson, Ariz.

Filed Jun. 15, 1990, Ser. No. 539,356
Int. Cl.[5] B62M *1/00*
U.S. Cl. 280—212 **9 Claims**



1. A power transfer apparatus for imparting motion to a follower, said apparatus comprising:
first caliper means having a driver idler for engaging a rotating body, said rotating body being a rotary power source;

drive means coupled to said driver idler for transferring drive motion from said rotating body;

second caliper means having a receiver idler coupled to said drive means for engaging said drive motion to said follower; and

actuator means coupled to said first and second caliper means for controlling engagement of said driver and receiver idlers,

said follower comprising a non-driven wheel of a bicycle and said rotating body comprising a pedal driven wheel of said bicycle, and

said driver idler comprises a first roller member that rotatably engages a side wall portion of a rim member associated with said pedal driven wheel, and

said receiver idler comprises a receiver roller member that rotatably engages a side wall portion of a rim member associated with said non-driven wheel,

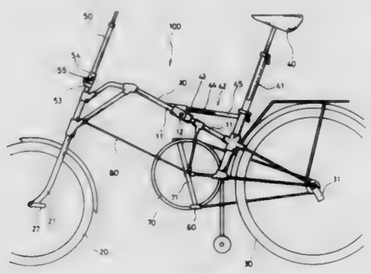
each of said first and second caliper means further including a second idler coacting with corresponding said driver and receiver idlers in a pincer-like manner to effect engagement to said rotating body and to said follower, respectively, upon being actuated by said actuator means, each of said second idlers and each of said driver and receiver roller members having a contact surface consisting of a frictional material that effects rotatable engagement with said side wall portions of said rim members.

5,052,706

FOLDABLE BICYCLE

Duan-Huey Tsai, and Shwu-Huey Tsai, both of No. 446, Chien-Kuo First Road, Kao-Hsung, Taiwan

Filed Jun. 5, 1990, Ser. No. 533,686
Int. Cl.[5] B62K *15/00*
U.S. Cl. 280—287 **5 Claims**



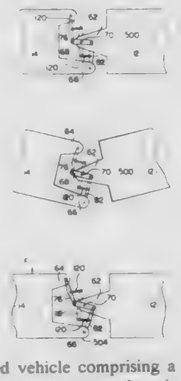
1. A foldable bicycle comprising: a main frame with a top bar: a front wheel connected to a front end of said main frame; a rear wheel connected to a rear end of said main frame; a handle-bar stem connected to an upper portion of the front end of said main frame; a saddle pillar connected to a rear end of said top bar; a saddle on top of said saddle pillar; a front chain driving sprocket rotatably mounted below a middle portion of said main frame; a pair of pedals connected to opposite sides of said sprocket; said handle-bar stem and said saddle pillar being telescopically structured to facilitate their height adjustment; said top bar of said main frame consisting of two pivotally connected sections having an angled connection therebetween for permitting the front end of said main frame to pivot at an angle toward the rear end of said main frame so that said front and rear wheels can be placed in parallel positions; a support bar connected between said top bar and said saddle pillar; said support bar comprises of a front bar and a rear bar detachably engagable with said front bar; a control lever having one end pivotally connected to said front bar; a linking plate having one end pivotally connected to said rear bar; an opposite end of said linking plate being pivotally connected to a middle portion of said control lever so that said support bar is folded by pivoting said control lever and said linking plate to disengage said front bar from said rear bar, said control lever and linking plate being pivoted to an aligned position for engaging said front bar with said rear bar.

5,052,707

TORQUE LINKAGE BISECTOR CENTRING MECHANISM

Peter E. Timan, Sydenham, Canada, assignor to UTDC Inc., Kingston, Canada

Filed Sep. 26, 1990, Ser. No. 589,917
Claims priority, application Canada, Sep. 29, 1989, 614935
Int. Cl.[5] B60D *5/00*
U.S. Cl. 280—403 **4 Claims**



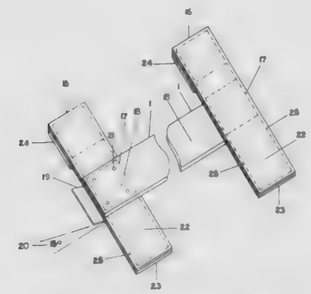
1. An articulated vehicle comprising a first chassis and a second chassis, each having an outboard end and in inboard end, and each supporting a vehicle superstructure, coupling means interconnecting said inboard ends of said chassis and including vertical pivot means to accomodate relative movement of said chassis about a vertical axis for steering movement of said vehicle and horizontal pivot to accomodate relative pivotal movement of said chassis about a transverse horizontal axis for relative vertical movement between said outboard ends, said coupling means further comprising torque transmitting means vertically spaced from said horizontal pivot means and operable to inhibit lateral movement between said chassis, said torque transmitting means including a first link pivotally connected to one of said chassis for movement about a vertical axis and a pair of transverse links extending between said one link and said other chassis and being connected thereto by vertical pivot connections to permit movement of said transverse links in a generally horizontal plane, said transverse links being connected to said first link at spaced locations whereby pivotal movement of said first link upon relative lateral displacement of said chassis is inhibited, a tunnel structure extending between adjacent ends of said superstructures to provide interconnection therebetween, said tunnel structure being pivotally supported for movement about a transverse horizontal axis adjacent said horizontal pivot means, and having a centring mechanism operable on said tunnel structure to maintain the tunnel structure in a disposition to bisect the angle between the chassis, said centering mechanism including a transverse arm pivotally connected to said tunnel structure for rotation about a vertical axis, and a pair of control members extending from opposite ends of said transverse arm at locations equidistant from said pivot axis to the midpoints of respective ones of said transverse links and connected thereto by pivotal connections to permit rotation about a vertical axis whereby displacement of said transverse links induced by rotation of said chassis about said transverse horizontal axis produces a proportional displacement of said arm to maintain said tunnel structure centrally disposed between said superstructures.

5,052,708

SHORT SKI CLIMBER

Donald R. Matthews, 2224 Temple View Dr., Provo, Utah 84604

Filed Apr. 16, 1990, Ser. No. 510,062
Int. Cl.[5] A63C *5/00*
U.S. Cl. 280—604 **3 Claims**



1. A process for providing a ski with a climber skin, the ski being of the type having a lower running surface and a tail section with a profile and cross section which is thinner than that of a central section of the ski, the process comprising the steps of:

providing an elongate climber skin having a lower snow engaging surface for frictionally engaging the snow when moved in one direction while sliding over the snow when moved in an opposite direction, forward and rearward straps secured to forward and rearward ends respectively of said climber skin, a metal plate secured to said forward strap, and an adhesive covering a portion of an upper surface of said climber skin, each of said forward and rearward straps having a pair of free end portions with mushroom and loop fasteners secured to respective ones of each pair of said free end portions;

securing the end portions of said rearward strap in a tight manner around the tail section of said ski with the upper surface of said climber skin facing the running surface of the ski;

pulling the climber skin in a forwardly direction while holding the adhesive covered portion of the climber skin away from the running surface of the ski;

pressing the adhesive covered portion of the climber skin against the running surface of the ski for adhering the climber skin to the running surface; and

securing the end portions of said forward strap in a tight manner around the central section of the ski with said metal plate extending forwardly and upwardly from said forward strap, a forward edge of said metal plate being pressed tightly into engagement with said running surface.

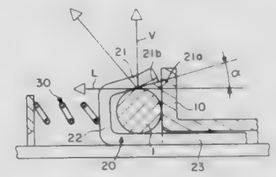
5,052,709

MOUNTING DEVICE FOR CROSS-COUNTRY SKI BOOT

Eric Girault, Synod, and Paul Arnulf, Alby Sur Cheran, both of France, assignors to Salomon S. A., Chavanod, France

Filed Apr. 12, 1990, Ser. No. 507,762
Claims priority, application France, Apr. 12, 1989, 89 05169
Int. Cl.[5] A63C *9/086*
U.S. Cl. 280—615 **4 Claims**

1. Mounting device for a cross-country ski boot having a front end comprising a freely rotatable transverse hinge pin (**1**) which is locked in position between a stationary jaw (**10**) attached to a ski and a sliding movable jaw (**20**) biased longitudinally by elastic means toward said stationary jaw, said movable jaw (**21**) having, in transverse section, substantially the shape of a hook adapted to grip said hinge pin at least longitudinally and vertically, and said hook comprising a horizontal



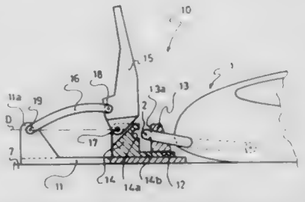
arm (**21**) having, in transverse section, a ramp-shaped profile (**21***a*) which ascends in the direction of said stationary jaw (**10**).

5,052,710

HINGE TYPE CROSS-COUNTRY SKI BINDING

Marc Provence, Thorens-les-Glieres, and Gerard Graillat, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Aug. 2, 1989, Ser. No. 388,497
Claims priority, application France, Aug. 16, 1988, 88 11104
Int. Cl.[5] A63C *9/20*
U.S. Cl. 280—615 **10 Claims**



1. A cross-country ski binding for a shoe or boot having a transverse axle to allow pivoting of said shoe or boot relative to a fixed part of said binding, said binding comprising a fixed jaw and a movable jaw adapted to latch the axle while allowing rotation thereof, said movable jaw being displaceable in the direction of the fixed jaw, for the securing of said axle, a latching lever journalled for movement about an axis on said movable jaw, said latching lever and said axis forming an overcenter linkage system, further including guidance means for said movable jaw, a longitudinally displaceable carriage, said movable jaw and said guidance means being secured to said carriage, said guidance means including at least one longitudinal slot on said carriage and an axle on said fixed part of the binding which cooperates with said at least one longitudinal slot, said axle on said fixed part of the binding being one of the axes of said overcenter linkage system.

5,052,711

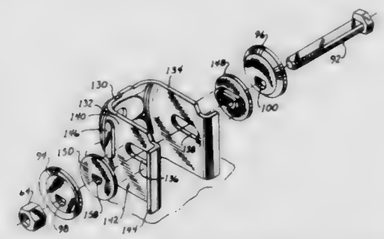
VEHICLE ALIGNMENT AND VERIFICATION SYSTEM

Herbert L. Pirkey, New Berlin, Wis.; Jon W. Hower, Byron, Ill., and Jean Lezala, Waukesha, Wis., assignors to A.O. Smith Corporation, Milwaukee, Wis.

Filed May 18, 1990, Ser. No. 525,743
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **23 Claims**

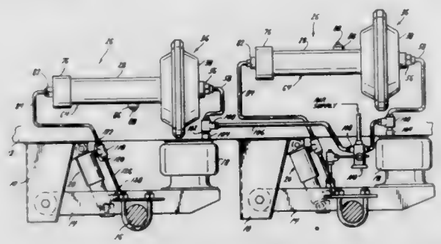
1. A method for factory pre-aligning vehicle wheels comprising providing a frame, providing a vehicle wheel control arm and pivotally mounting said arm to said frame by mounting means including a rotating eccentric cam for changing the pivot axis of said control arm according to the rotational position of said cam, singularly pre-setting the pivot axis of said control arm with pre-alignment insert means removably

mounted to said mounting means, providing said mounting means with tightening means and tightening same to hold said



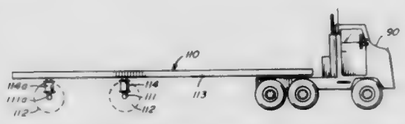
cam in place to in turn hold said pivot axis in the pre-set position, with said insert means remaining installed.

5,052,712
TORQUE BEAM, EQUALIZED PNEUMATIC AND HYDRAULIC AXLE SUSPENSION
John E. Raidel, P.O. Box 4586 G.S., Springfield, Mo. 65808
Filed Mar. 19, 1990, Ser. No. 495,644
Int. Cl.[5] B60G *11/30, 15/12*
U.S. Cl. 280—702 **19 Claims**



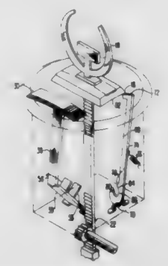
1. A frequency damping suspension system for a vehicle having a chassis and at least one axle, the system comprising:
- a pneumatic spring means having a first end adapted to be mechanically connected to the vehicle axle, and a second end adapted to be mechanically connected to the vehicle chassis;
- a hydraulic shock absorbing means having a first end adapted to be mechanically connected to the vehicle axle, and a second end adapted to be mechanically connected to the vehicle chassis; and,
- a fluid pressure accumulator means connected in fluid communication with both the pneumatic spring means and the hydraulic shock absorbing means.

5,052,713
VEHICLE SUSPENSION SAFETY SYSTEM
Jeffrey S. Corey, and Michael A. Miles, both of Lufkin, Tex., assignors to Lufkin Industries, Inc., Lufkin, Tex.
Filed Aug. 6, 1990, Ser. No. 564,271
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—711 **4 Claims**



1. In a process for shifting at least a portion of a vehicle load from one axle to another axle of a multi-axle vehicle having a pneumatic suspension system, the combination of steps comprising:
- exhausting substantially all the pneumatic pressure from the suspension system of at least one of said axles; and
- automatically restoring pneumatic pressure to said suspension system when the speed of the vehicle exceeds a predetermined speed.

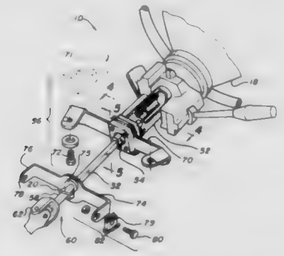
5,052,714
HOOD ORNAMENT RETRACTION DEVICE
Anthony J. Muscat, 2072 20th La., #4 ,, Brooklyn, N.Y. 11214, and Robert A. Fernald, 203 E. Springmeadow Dr., Hollbrook, N.Y. 11741
Filed Oct. 10, 1989, Ser. No. 418,867
Int. Cl.[5] B60R *13/00*
U.S. Cl. 280—762 **13 Claims**



1. A device for retracting a motor vehicle hood ornament comprising:
- a carrier for conveying said ornament between a first position in which said ornament is retracted below the hood of a motor vehicle and a second position in which said ornament is displayed atop said hood;
- a drive means for driving said carrier;
- control means for causing said drive means to drive said carrier to propel said ornament to said first position upon receipt of a first signal and to drive said carrier to propel said ornament to said second position upon receipt of a second signal;
- an opening through which said ornament passes when moving between said first and second positions;
- a door; and
- means for moving said door to close said opening as said ornament approaches said first position and for moving said door away from said opening as said ornament approaches said second position.

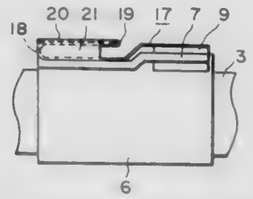
5,052,715
PASSIVE IMPACT RESTRAINING VEHICULAR STEERING COLUMN ASSEMBLY
Paul R. Ervin, Dearborn, and Ronald C. Malec, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 19, 1990, Ser. No. 495,192
Int. Cl.[5] B62D *1/18*
U.S. Cl. 280—775 **19 Claims**

1. In combination, a vehicle chassis having a dash panel dividing a frontal compartment from an interior passenger compartment, and a steering assembly within said passenger compartment;
- said steering assembly comprising a steering wheel, a steering shaft having an upper shaft section connected to said steering wheel and a lower shaft section, one said shaft section being telescopically received over a first distance and axially collapsible within the other for a predetermined total stroke;
- an upper column body, said upper column body encompassing said upper shaft section and extending to said steering wheel, said upper column body having a length substantially equal to the total length of said first distance and said predetermined stroke;
- said upper shaft section being rotatably suspended within and axially secured to said upper column body, and terminating at the lower end thereof;
- said lower shaft section extending beyond said upper shaft section a distance substantially equal to said predetermined stroke;
- a primary mounting bracket means for supporting said upper column body to said vehicle chassis;
- said bracket means including means for allowing said upper column body and upper shaft section to axially collapse in a forward direction toward said frontal compartment upon receiving a predetermined impact load in the direction of said frontal compartment at a substantially constant



rate and over a predetermined distance, thereby absorbing impact energy over said predetermined distance to bring the assembly to rest;
- coupling means at the lower end of said lower shaft section for rotatably connecting the lower shaft section to a steering means within said frontal compartment;
- said coupling means being adapted to uncouple said lower shaft section upon a predetermined relative axial displacement between said lower shaft section and the steering means in the direction of said steering wheel;
- the lower end of said lower shaft section being disposed substantially rearward of the dash panel about midway between the dash panel and said steering wheel whereby a substantial degree of dash panel intrusion can be accommodated during a frontal collision without impacting in any way the steering assembly.

5,052,716
SHOCK-ABSORBING STEERING COLUMN APPARATUS
Sakae Matsumoto, Takasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed May 25, 1990, Ser. No. 528,418
Claims priority, application Japan, Jun. 19, 1989, 1-70761[U]
Int. Cl.[5] B62D *1/19*
U.S. Cl. 280—777 **9 Claims**



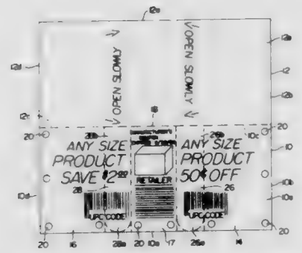
1. A shock-absorbing steering column apparatus, comprising a steering column in which passes a steering shaft having a steering wheel at an end thereof; a supporting bracket provided with fixed mounting plates for attachment to the body of an automobile; notches formed on respective lateral edges of said mounting plates; bolts inserted through said notches and secured in corresponding holes formed in the body of the automobile, thereby fixing said supporting bracket to said body; and energy-absorbing members each unseparably fixed at an end to a corresponding one of said mounting plates and at another end to a corresponding one of said bolts and provided with an intermediate first U-shaped folded portion, wherein an end of each of said energy-absorbing members is folded by 180° in a direction opposite to said first folded portion, thereby forming a second folded portion with a radius of curvature substantially smaller than that of said first folded portion, and said energy-absorbing member is provided, at an end thereof closer to said second folded portion than to said first folded portion, with an integral flat plate portion, of which both lateral portions are folded toward said first folded portion to constitute a pair of folded edges which are joined to a surface of said mounting plate, whereby the first folded portion of said energy-absorbing member is maintained between said mounting plate and said flat plate portion.

5,052,717
BOOKBINDING CLOTH
Toshikazu Ninomiya, Kawagoe, and Hiroyuki Saito, Tsukuba, both of Japan, assignors to Dynic Corporation and Dai-Ichi Seiki Kogyo Co., Ltd., both of, Japan
Filed Jul. 11, 1990, Ser. No. 551,424
Claims priority, application Japan, Sep. 14, 1989, 1-107158[U]
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—21.1 **5 Claims**



1. A bookbinding cloth for use in bookbinding of plural sheet materials into a booklet, which comprises:
- a backbone provided with a plurality of spaced, lengthwise extending first folding lines along which said backbone is easily folded;
- a pair of side extensions extending integrally from opposite sides of said backbone;
- an adhesive sheet formed of a thermally activatable adhesive resin material, said sheet having one extreme side peripheral area secured to a corresponding side of an inner surface of said backbone, said adhesive sheet being adapted to be melted by heat application to effect edge-binding of the plural sheet materials to said backbone between said side extensions;
- a plurality of spaced, lengthwise extending cutting lines provided in said adhesive sheet in position in substantial correspondence to said first folding lines formed in said backbone respectively, each of said cutting lines comprising a plurality of aligned slits with small gaps therebetween, along which said adhesive sheet is easily split, said slits having oblique ends extending toward said one extreme side peripheral area at which said adhesive sheet is secured to said backbone, said oblique ends cooperating with opposite oblique ends of adjacent slits to define said small gaps between the slits; and
- said first folding lines in said backbone and said cutting lines in said adhesive sheet being selectively utilized to adjust the widths thereof to conform with the thickness of the plural sheet materials to be edge-bound to said backbone.

5,052,718
RETAIL COUPONING SYSTEM
Raymond Gold, 8 Firethorne Cir., Lafayette Hill, Pa. 19444
Continuation-in-part of Ser. No. 537,515, Jun. 13, 1990, abandoned. This application Nov. 23, 1990, Ser. No. 617,364
Int. Cl.[5] B42D 15/00
U.S. Cl. 283—105 33 Claims



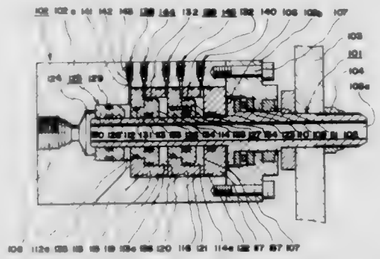
1. A couponing system having first and second sections removably attached to each other along their edges to hide from view text on the inside surface of said first section, said first section having (a) first and second coupons extending along a length of said first section with text of said coupons on the inside surface of said first section, and (b) means for tearing said first section along first and second lines, said first line extending through said first coupon and displaced from said second coupon and said second line extending through said second coupon and displaced from said first coupon.

5,052,719
METHODS AND APPARATUS FOR FIXING A PIPELINE TO A COUPLING
Peter Boehm, Friedrichsdorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 31, 1990, Ser. No. 557,371
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3929074
Int. Cl.[5] F16L 35/00
U.S. Cl. 285—4 21 Claims



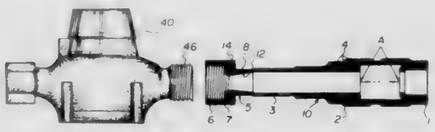
1. Apparatus for fixing a pipeline to an internal-thread coupling, comprising:
(a) integrally formed fixing means, slidable over said pipeline, including at least a first external-thread connection which may be screwed into said internal-thread coupling in order to attach one end of said pipeline thereto; and
(b) means for rupturing said fixing means so that said first external-thread connection is securely held in said internal-thread coupling and a second portion of said fixing mean is thereafter slidably displaceable from said first external-thread connection along said pipeline.

5,052,720
SWIVEL JOINT FOR HIGH PRESSURE FLUID
Akira Yoda, Yokohama, Japan, assignor to Tokyo Sharyo Seizo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 16, 1989, Ser. No. 394,568
Claims priority, application Japan, Aug. 18, 1988, 63-108375[U]; Mar. 14, 1989, 1-28732[U]
Int. Cl.[5] F16L 55/00
U.S. Cl. 285—14 5 Claims



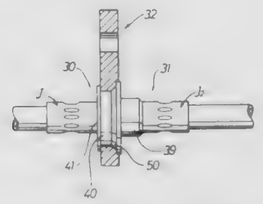
1. A swivel joint for high pressure fluid systems comprising a body having a bore in which a hollow shaft is journalled, said shaft defining a pathway for fluid under pressure and extending outwardly of said body at least at one end thereof, an inlet at one end of said pathway and an outlet at the other end of said pathway for the flow of fluid under pressure, a portion of the bore of said body being of increased diameter so as to form a cylindrical cavity about said shaft said swivel joint further including a plurality of concentrically nested seals in mutual sealing engagement and in sealing engagement with said shaft and cylindrical cavity, wherein at least one of said concentrically nested seals is slideable relative the said shaft, said annular seals dividing said cavity to define on one side of said seals an enclosed chamber for lubricating material and on the other side of said seals a closed connecting portion directly communicating with said fluid pathway so that fluid under pressure from said fluid pathway exposes said other side of said seals to the pressure of the fluid within said pathway via said connecting portion so that said seals contain said fluid under high pressure within said connecting portion and at least one of said seals is urged against the lubricant in said chamber, increasing the pressure of said lubricant in said chamber and forcing said lubricant material into the gaps between said seals, said body and said seals and between said shaft and said seals.

5,052,721
WATER METER SERVICE COUPLING
Philip P. Gorman, Jr., 1832 Malabar Dr., Germantown, Tenn. 38138
Continuation-in-part of Ser. No. 331,507, Mar. 31, 1989, abandoned. This application Jan. 29, 1990, Ser. No. 471,518
Int. Cl.[5] F16L 35/00
U.S. Cl. 285—30 19 Claims



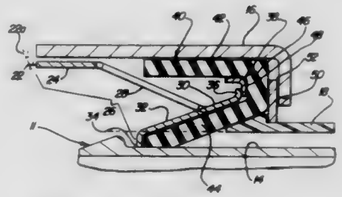
1. A water meter coupling which comprises:
a housing having first and second ends,
an expansion piston having a first end thereof slidably inserted into said first end of said housing for being slidably moved into and out of said housing, wherein said housing and said expansion piston are formed from plastic,
a connecting means disposed at the outer second end of said expansion piston for connecting said water meter thereto comprising a retaining insert disposed at the outer second end of said expansion piston, and a nut disposed about said retaining insert for coupling said expansion piston to said water meter,
wherein said second end of said housing is coupled to a water service line, and said water meter service coupling is installed in an expanded state so that upon disconnection from said water meter, said water meter service coupling may be retracted so as to allow for easy removal of said water meter.

5,052,722
INTERMEDIATE COUPLER FOR HOSES
Hiroshi Kubo, Kaisei, and Hironobu Ito, Odawara, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 239,895, Sep. 2, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 515,522
Claims priority, application Japan, Sep. 3, 1987, 62-135010[U]
Int. Cl.[5] F16L 3/08
U.S. Cl. 285—62 3 Claims



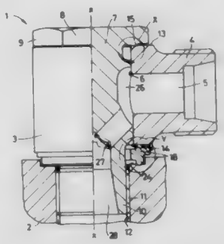
1. An intermediate coupler for hoses comprising:
a fitment body including hose joints at axially opposite ends and an intermediate base portion between the joints, the intermediate base portion being provided in a consecutively stepped manner with a bracket mounting portion and a flange having a diameter larger than the bracket mounting portion on one side of the bracket mounting portion; and
a mounting bracket formed with an insert hole therethrough, said insert hole being formed at an axially intermediate portion of an inner surface thereof with a tapered surface which is divergent toward an outer surface of the mounting bracket;
said bracket mounting portion extends through said insert hole and the mounting bracket is bound integrally to the intermediate base portion by a portion of said bracket mounting portion caulked so as to be bulged and fill and abut against the tapered surface of the insert hole and clamps the mounting bracket between the flange and the bulged portion of the bracket mounting portion; and
wherein said bracket mounting portion is formed at an outer peripheral surface thereof with a protrusion in a ridge manner and said insert hole is formed with a recess on said inner surface, said protrusion is engaged with said recess upon insertion of said bracket mounting portion into said insert hole to prevent relative circumferential rotation between the fitment body and the mounting bracket during the caulking operation.

5,052,723
LOCKING ACCOMMODATING SEALING PORT
Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.
Filed Sep. 11, 1989, Ser. No. 405,758
Int. Cl.[5] F16L 17/00
U.S. Cl. 285—108 6 Claims



1. A connector sleeve comprising:
an annular housing;
sealing means for sealing a conduit with an annular bead in said annular housing, said sealing means positioned in said housing and including an axial opening enabling passage of said conduit through said sealing means and said sealing means including an annular channel;
retaining means for coupling with the annular bead of said conduit for retaining said conduit in said housing, said retaining means extending into said channel of said sealing means for maintaining said sealing means in said housing and applying a force on said sealing means for sealingly engaging said sealing means with said conduit and said housing; and
means for maintaining position of said sealing means and retaining means against axial movement in said housing, said maintaining means associated with said housing.

5,052,724
THREADED SWIVEL CONNECTOR
Mathias Konrad, Lohmar, and Arnold Barth, Siegburg, both of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH
Filed Mar. 7, 1990, Ser. No. 490,145
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1989, 3909424
Int. Cl.[5] F16L 41/08
U.S. Cl. 285—190 12 Claims



1. A directionally adjustable threaded swivel connector comprising a housing, comprising a connecting branch, and a hollow bolt which enters the housing at right angles to the branch, the bolt comprising a collar which at least partially covers one end face of the housing and can be brought into sealing engagement therewith by means of a sealing edge, the bolt also comprising a threaded end projecting from the housing and screwable into a threaded bore in a member to which a connection is to be made, and a sealing ring, which seals by means of sealing edges, inserted between an end face of the

housing and a contact surface of said member, wherein at least one of the sealing edges of the collar and the sealing ring is formed by two inclined annular faces, the annular face which is closest to a longitudinal axis of the bolt intersecting an imaginary plane extending at right angles to said axis at an acute angle between 4 degrees and 12 degrees and the other annular face being oppositely inclined and intersecting said imaginary plane at a great angle.

5,052,725

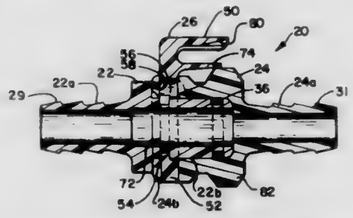
TWO PIECE MOLDED FEMALE COUPLING

David W. Meyer, Jordon, and Brian J. Blenkush, Maple Grove, both of Minn., assignors to Colder Products Company, St. Paul, Minn.

Continuation of Ser. No. 320,691, Mar. 13, 1989, abandoned. This application May 2, 1990, Ser. No. 519,339

Int. Cl.[5] F16L *37/00*

U.S. Cl. 285—308 **15 Claims**



5. A female coupling member, comprising:

(a) a one piece integrally molded plastic housing having a front end and a back end and defining a path for the flow of fluid therethrough, a slot being defined in said housing and extending generally transversely of the housing; and

(b) a one piece integrally molded quick connecting/ disconnecting clip member slidably mountable in the housing slot, the clip member being retained against axial movement by the housing, the clip member being slidable between a first position and a second position, the clip member projecting into the fluid pathway where said clip member is engageable with a male coupling member to hold the male coupling member within the front end of the female coupling member when in the second position, the clip member being biased into the second position, the clip member further including a plate portion extending generally transversely of the female coupling, the plate portion defining an aperture therein alignable with the male coupling member, the clip member further including a resilient biasing member of one piece with the clip member having an at rest position, the resilient biasing member being displaced from its at rest position and in a displaced position when the clip member is in the first position, the biasing member tending to bias the clip member back to the second position when in the displaced position, the resilient biasing member engaging the housing at a distal end of the resilient biasing member, clearance being provided between the biasing member and the housing intermediate of the distal end of the resilient biasing member at the point of attachment to the clip member.

5,052,726

SEAL STRUCTURES FOR FLANGES HAVING BOWED SEALING SURFACES

Duane D. Logsdon, Fullerton, Calif., assignor to Logsdon Foundation, Fullerton, Calif.

Filed Oct. 24, 1989, Ser. No. 426,097

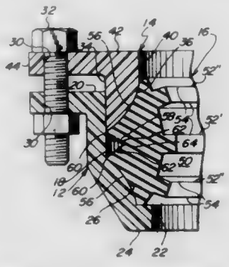
Int. Cl.[5] F16L *23/00*

U.S. Cl. 285—341 **5 Claims**

1. A seal structure for use in forming a seal against the periphery of a cylindrical member such as a sewer pipe when mounting a toilet bowl in a bathroom, said structure including an annular retainer member, an annular compression member, an elastomeric sealing member positioned against said retainer member in a position so that it is expanded internally as it is engaged by said compression member and as said compression member is moved against said sealing member and generally toward said retainer member and bolt means extending between said retainer member and said compression member for moving said compression member against said sealing member in which the improvement comprises:

said retainer member being annular and including a vertically extending internal cylindrical surface, a continuous, annular internal flange extending perpendicularly inward from the lower end of said internal cylindrical surface, a continuous, annular, internal beveled wall extending completely around the interior of said internal cylindrical surface from the ends of said internal cylindrical surface to approximately halfway between the interior and exterior extremities of said internal flange, and first connecting flange means for use in connecting said retainer member to said compression member extending from the exterior of said retainer member,

said compression member being annular and including a vertically extending external cylindrical surface fitting closely within said internal cylindrical surface and being movable with respect to said internal cylindrical surface, an internal annular beveled wall extending the lower edge of said external cylindrical surface and second connecting



flange means for use in connecting said compression member to said retainer member,

said sealing member in a uncompressed condition having a substantially cylindrical surface, at least three sealing ridges located so as to be spaced from and parallel to one another and so as to extend inwardly of said substantially cylindrical surface, the upper and lower ends of said substantially cylindrical surface being continuously tapered and a continuous "Vee" groove on the exterior of said sealing member and positioned between said tapered surfaces, and top and bottom ends, said sealing member being located generally within said internal cylindrical surface with said top tapered surface being located against said beveled wall of said compression member and said bottom tapered surface being located against said beveled wall of said retainer member and wherein said retaining member and said compression member bevelled walls are bowed generally toward said tapered surfaces of said sealing member, and

said sealing member being capable of flexing so that said substantially cylindrical surface is distorted so that the portion of said substantially cylindrical surface opposite said "Vee" groove is bowed inwardly from the ends of said sealing member as said bolt means are used to pull said compression and said retainer members together, such bowing causing said sealing ridges to be distorted against a cylindrical member located so as to extend through said sealing, retainer and compression members.

5,052,727

CUSHIONED LATCH

Phillip G. Venable, Joliet, Ill., assignor to Case Corporation, Racine, Wis.

Filed Jun. 15, 1990, Ser. No. 539,419

Int. Cl.[5] E05C *3/14*

U.S. Cl. 292—19 **10 Claims**



1. For use with a vehicle cab structure associated with agricultural and construction machinery, a window latch for supporting a window of said cab at a desired position within an opening of said cab, said cab opening having slide members disposed along opposite sides of said opening, each said slide member respectively associated with one side of said window and adapted to permit said window to slide along said slide members, said latch comprising:

a base member attached to said window proximal to one side,

a generally C-shaped shock-absorbing forked lever, said lever having first and second resilient tines, said first tine pivotally mounted to said base member and said second tine generally vertically aligned with said first tine and retainingly engaged by said slide proximal said base member,

whereby when under normal operation of said vehicle, vibrational forces are imparted to said window, said first and second associated tines flex in vertical relation to one another, thereby absorbing the vibrational energy imparted to said window.

5,052,728

LOCK DEVICE FOR KEEPING MOVABLE BODY IN AUTOMOBILE CLOSED

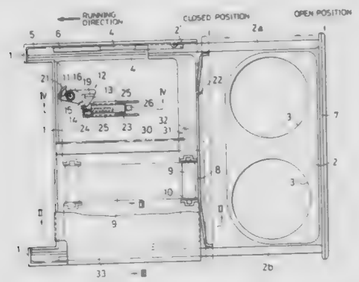
Masumi Fukumoto, Yokohama, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 31, 1990, Ser. No. 560,822

Claims priority, application Japan, Oct. 18, 1989, 1-120967[U]

Int. Cl.[5] E05B *65/12;* **E05C** *19/02*

U.S. Cl. 292—106 **6 Claims**



1. A lock device for keeping closed a movable body mounted in an automobile so as to be movable between an open position and a closed position and normally biased toward the open position, comprising:

a cam lever having a free end formed with a slit, swingable about a pivot mounted on one or the other of the automobile and the movable body, and capable of locking the movable body at the closed position when the movable body is pushed inward against the biasing force and, when the movable body now at the closed position is further pushed inward, releasing the locked state of the movable body, thereby permitting the movable body to move toward the open position;

a pin permitting from the other of the automobile and the movable body and fitted in said slit of said cam lever when the movable body is pushed inward to the closed position, thereby locking the movable body at the closed position;

an inertia stopper mounted on one or the other of the automobile and the movable body, on which said cam lever is mounted, so as to be movable in a direction in which the automobile runs and, such that if a force of inertia is exerted to push the movable body at the closed position further inward, said inertia force brings said inertia stopper into contact with said free end of said cam lever to prevent said cam lever from releasing the locked state of the movable body; and

biasing means for normally biasing the inertia stopper away from said free end of said cam lever.

5,052,729

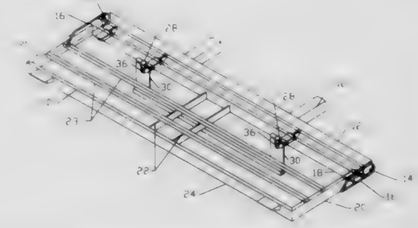
LATCH FOR TRUCK TAILGATES

Keith L. Huber, P.O. Box 3368, Gulfport, Miss. 39466

Filed Mar. 29, 1990, Ser. No. 501,598

Int. Cl.[5] E05C *17/04*

U.S. Cl. 292—162 **10 Claims**



1. An apparatus for locking a tailgate, pivotally affixed to a truck comprising:

a locking finger extending substantially horizontally to the rear from the truck;

a hinge plate pivotally affixed to the tailgate;

means for biasing said hinge plate in a downward direction;

said hinge plate interlocking with said locking finger in a down position; and

said hinge plate supported on said locking finger in an upward position.

5,052,730

LOCKING MEANS FOR A GATE IN AN AUTOMATIC TELLER MACHINE

Bruno Frank, Ehningen, and Ulrich Hengstler, Schoenaich, both of Fed. Rep. of Germany, assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 264,334, Oct. 28, 1988, Pat. No. 4,949,651. This application Jan. 26, 1990, Ser. No. 471,089

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1987, 3737882

Int. Cl.[5] E05B *47/00*

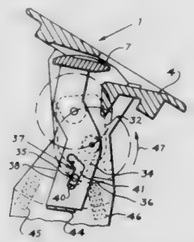
U.S. Cl. 292—201 **5 Claims**

1. Self-locking latch and actuator means for pivoting a com-

ponent to either of two positions, with at least one position being latched, the combination comprising:

a geared reversible electromotor with a drive arm, said drive arm provided with a pin at one extremity thereof, said pin creating an arc of motion when said electromotor is engaged;

rotatable actuating lever mounted on an axis, said component mounted at one end of said lever, said lever provided with a guide slot which is engaged by said pin;



said guide slot having a first part with a centerline which lies substantially on said arc, whereby said pin moves freely in said first part when actuated by said electromotor but latches said component until so actuated; and

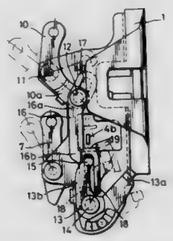
said guide slot having a second part positioned at an angle to said first part such that said pin exerts a displacement force on said lever in a direction which causes said lever to pivot about its axis.

5,052,731

CHILD PROTECTING MECHANISM IN DOOR LOCK APPARATUS

Shigeru Hayakawa, Chiryu; Yoshihiro Shimizu, Kariya; Ryoichi Fukumoto, Nagoya, and Soichiro Okudaira, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 22, 1990, Ser. No. 497,193
Claims priority, application Japan, Mar. 24, 1989, 1-33857[U]
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—336.3 **5 Claims**



1. A child protecting mechanism in a door lock apparatus, comprising:

a base internally accommodating a door opening/closing mechanism;

a locking lever for connection to a locking knob;

an opening lever pivotally supported on said base for actuating said opening/closing mechanism, said opening lever having a slide portion engageable with the locking lever for rendering the opening lever ineffective to actuate said opening/closing mechanism;

an inside lever pivotally supported on said base;

a child protecting lever pivotally supported on said base; and

an opening lift lever having one end connected to said inside lever and another end connected to said child protecting lever, said opening lift lever being capable of engaging and disengaging said opening lever,

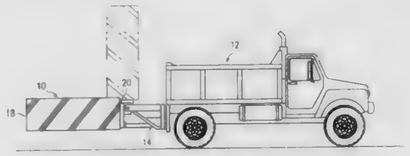
said child protecting lever when pivoted being operative to pivot said opening lift lever out of engagement with said opening lever for rendering the opening lift lever ineffective to actuate said opening/closing mechanism.

5,052,732

CRASH ATTENUATOR UTILIZING FIBROUS HONEYCOMB MATERIAL

David W. Oplet, Belleville, and Charles Kern, Keysport, both of Ill., assignors to Renco Supply, Inc., Pflugerville, Tex.

Filed Apr. 2, 1990, Ser. No. 503,223
Int. Cl.[5] B60R *19/26*
U.S. Cl. 293—102 **12 Claims**



1. A crash attenuator, comprising:

an impact plate defining the rear of the crash attenuator and for being disposed substantially perpendicular to the direction of impact and for dispersing the impact force over a wide surface area;

a mounting plate for defining the front of the crash attenuator and having a surface area at least equal to that of said impact plate and parallel thereto;

an energy absorbing body fabricated from a fibrous cellular material comprised of a plurality of adjacent elongated cells having fibrous walls, said energy absorbing body disposed between said impact plate and said mounting plate with the longitudinal axis of said adjacent elongate cells in the fibrous cellular material oriented in a plane perpendicular to said impact plate and said mounting plate;

means for securing said mounting plate and said impact plate onto said energy absorbing body such that the fibrous cellular material of said energy absorbing material is secured firmly therebetween;

a substantially moisture proof covering for covering at least said energy absorbing body to prevent moisture from invading said fibrous cellular material in said energy absorbing body; and

a mounting bracket for connecting said mounting plate to a substantially immovable surface such that said mounting bracket, said mounting plate and said impact plate are disposed a predetermined distance above ground with the planes thereof substantially perpendicular to the surface of the ground.

5,052,733

CEILING SIGN INSTALLATION POLE

Victor Cheung, 1396 Chatley Way, Woodstock, Ga. 30188, and Matthew K. Haggerty, 25 Centre St., Milton, Mass. 02186

Filed Feb. 14, 1990, Ser. No. 479,978
Int. Cl.[5] A47F *13/06;* **F16M** *13/00*
U.S. Cl. 294—19.1 **18 Claims**

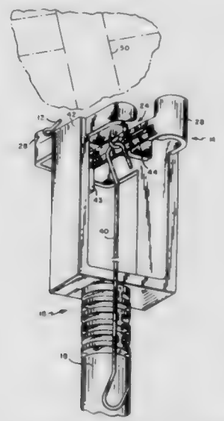
1. An installation pole comprising:

an installation head having a flat top surface area;

means, connected to said installation head, for preventing a ceiling anchor from lateral movement relative to said head;

an exit slot in said installation head located proximate to said preventing means, to permit said head to be moved away from said anchor while a hook hanging from said anchor passes out through said exit slot;

an elongated rod attached beneath said installation head for lifting the ceiling anchor on said installation head against a ceiling rail so that the flat top surface area of said installation head maintains said installation head substantially parallel with said ceiling rail when said rod is twisted to attach or remove said anchor; and



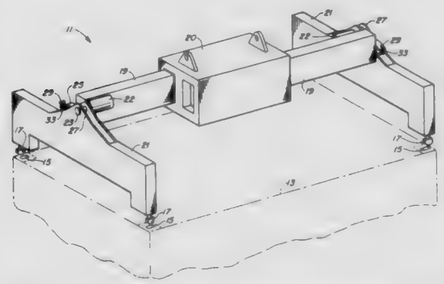
extensions of the flat surface area of said installation head which can be seen from beneath said head, said extensions being oriented so as to assist in aligning said installation head against said ceiling rail when attaching or removing said anchor.

5,052,734

LIFTING SPREADER COMPENSATING MECHANISM

Shuji Hasegawa, and Hans G. Vosskamp, both of San Mateo, Calif., assignors to Paceco Corp., San Mateo, Calif.

Filed Apr. 17, 1990, Ser. No. 510,280
Int. Cl.[5] B66C *1/00;* **B66F** *9/00*
U.S. Cl. 294—81.2 **5 Claims**



1. A cargo container lifting spreader compensating mechanism comprising

a lifting spreader having a central lifting beam and a pair of cross-members disposed at the opposite ends of the central lifting beam, at least one of said cross-members being secured to said beam with a journaled connection allowing at least partial rotation of said cross-member in a plane perpendicular to the longitudinal axis of said beam, said cross-members having twistlock lug members mounted proximate to the lower ends thereof for mating with the twistlock engagement receptacles in the corner castings of a cargo container, and

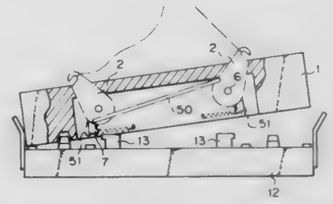
a restrictor means preventing excessive rotation of the rotatable cross-member with respect to said central beam at least when said spreader is in the process of engaging a cargo container, said restrictor means including a cantilevered projecting arm secured to said central beam and projecting therefrom with its free end disposed at a terminal position proximate to said rotatable cross-member and captured between adjustable limit stops secured to said cross-member at a position displaced from the axis rotation of said journal connection thereby allowing limited rotational movement of the cross-member relative to said projecting arm and to said central beam.

5,052,735

AUTO-CLAMPER FOR PALLETS

Hisao Kuse, Ishikawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Filed Oct. 13, 1989, Ser. No. 421,148
Claims priority, application Japan, Oct. 14, 1988, 63-258921; Dec. 23, 1988, 63-327299; May 16, 1989, 1-123966
Int. Cl.[5] B66C *1/26, 1/28*
U.S. Cl. 294—81.5 **8 Claims**



1. An improved auto-clamper for a pallet comprising

at least one hook piece fixed to a horizontal support shaft rotatably mounted to said pallet in an arrangement turnable in a vertical direction and connected to a hoist mechanism for said pallet,

a clamp piece connected to said hook piece for rotation therewith by said support shaft which has a first and second sections, said first section being thicker than and having a different center axis from said second section which is attached to said claim piece, and

a clamp spring having a first and a second end and fixed at said first end of said pallet and operably linked to said clamp piece by said second end of said clamp spring which is fixed to said hook piece such that said hook piece and said clamp piece are constantly urged in a clamping direction and wherein said clamp piece and said hook piece rotate in an unclamping direction when said pallet is lifted by a hoist mechanism.

5,052,736

MODULAR DEXTEROUS HAND

Josip Loncaric, Columbia, and Fabrice de Comarmond, Silver Spring, both of Md., assignors to The University of Maryland, College Park, Md.

Filed Feb. 2, 1990, Ser. No. 474,165
Int. Cl.[5] B25J *15/10, 15/00*
U.S. Cl. 294—106 **12 Claims**

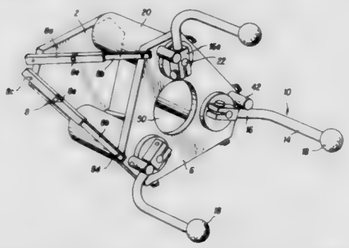
1. A dexterous hand capable of grasping a randomly shaped object, said dexterous hand comprising:

a base;

at least three grasping fingers mounted to said base for rotation about substantially parallel axes, said axes extending substantially perpendicular to said base, each of the fingers comprising a base end intersecting a respective one of said axes and comprising a distal end, each said distal end having a grasping element and being spaced from said respective axis in a direction perpendicular to said respective axis, whereby each of said distal ends describes a circle centered on the respective axis upon rotation of said

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fingers, wherein each of said fingers comprises a rigid rod or tube having said base end extending substantially transverse to said respective axis and having said distal end extending substantially parallel to said respective axis; and



means mounted to said base for independently rotating each of said fingers,

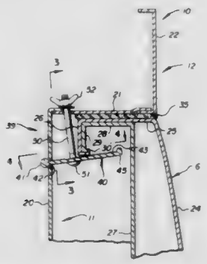
whereby said fingers can grasp the randomly shaped object by rotating said fingers in an arc within a plane substantially parallel to said base.

5,052,737

ATTACHMENT STRUCTURE AND METHOD FOR SECURING A TOOLBOX ON A PICKUP TRUCK

Wilton T. Farmer, Jr., 6709 Rotherham Rd., Mechanicsville, Va. 23111

Filed Apr. 23, 1990, Ser. No. 512,450
Int. Cl.[5] B62D *33/02*
U.S. Cl. 296—39.2 **9 Claims**



1. In combination, a toolbox mountable on side panels of a pickup truck bed and an attachment means for securing the toolbox to the side panels, wherein the toolbox has a lower part of a first length, taken in a direction transversely across the pickup truck bed, which fits down between the side panels of the bed, a longer upper part which extends over the tops of the side panels of the pickup truck bed and a shelf extending from the top of the end of the lower part to the bottom of the end of the upper part, and wherein the side panels of the pickup truck each include an inner portion which projects inwardly from a main vertical wall portion of each side panel,

said attachment means including a first member extending from inside of the toolbox out through the end of the lower part and beneath the said inner portion of the side panel, and a second member interconnecting the first member and said shelf and urging the first member against the bottom of the inner portion, squeezing the inner portion between the first member and the shelf, to secure the toolbox to the pickup truck bed.

5,052,738

SHADING COVER FOR MOTORCYCLES

Ming-Bin Li, 2-45, Lane 365, Chung Shan S. Rd., Yung Kang Shiang, Tainan Hsien, Taiwan

Filed May 21, 1991, Ser. No. 703,731
Int. Cl.[5] B60J *7/20*
U.S. Cl. 296—78.1 **1 Claim**



1. A shading cover for motorcycles comprising:

a box being set on the rear seat of a motorcycle and having an upper cover on its top, a T-shaped block on its front and a spring buckle which is on the front of said upper cover and just to the opposite side of said T-shaped block; and

a winding device having an U-shaped block on the left inside wall of said box and a fixed shaft sleeve on the right inside wall of said box, by which an assemblage of a reel with a canvas, a spring, a left shaft sleeve, a right shaft sleeve, a cross bar and a push bar can be firmly fixed between said U-shaped block and said fixed shaft sleeve;

the improvement which comprises:

said canvas being rolled up onto said reel and having a long flexible band sawn on the lower edge of said canvas, a long zipper with an additional canvas piece sawn on the upper front of said canvas, two short zippers with bags and rainhats sawn on the upper middle partof said canvas, and two canvas sleeves with short flexible bands placed on both sides of said canvas so that said canvas can be used as a sun shade and a raincoat.

5,052,739

DEVICE FOR ATTACHMENT OF MULTIPLE APPLIANCES TO A VEHICLE CARGO BED

Gary B. Irwin, P.O. Box 132, Free Port, Me. 04032

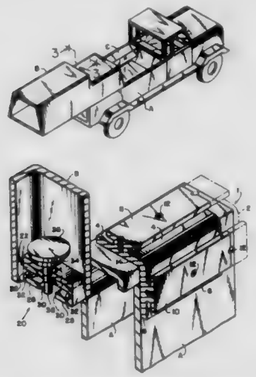
Filed Mar. 21, 1990, Ser. No. 496,803
Int. Cl.[5] B60R *9/06*
U.S. Cl. 296—37.6 **16 Claims**

1. Apparatus comprising an integral device of first and second means for attaching a plurality of independently installable and removable appliances to the side walls, having top and side surfaces, of a vehicle cargo bed, each such integral device comprising:

a main body attachable to the cargo bed side wall and having substantially perpendicular first and second elongated portions;

first and second appliance engagement means attached to and extending along the length of the first and second portions, respectively, each appliance engagement means being adapted to fit with a complementary component of an appliance so as to permit installation and removal of an appliance independent of the presence or absence of an appliance associated with the other appliance engagement means; and

means associated with each of the first and second appliance engagement means for attaching the appliance in a station-



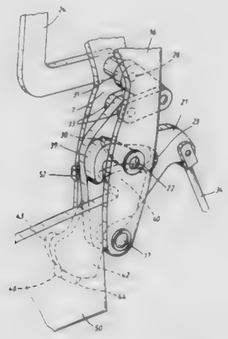
ary position with respect to the appliance engagement means.

5,052,740

FOLDING TOP FOR VEHICLES

Theodor Bauer, Altenriet, and Jürgen Schrader, Stuttgart, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Sep. 7, 1989, Ser. No. 404,191
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1988, 3830393
Int. Cl.[5] B60J *7/85*
U.S. Cl. 296—120.1 **16 Claims**



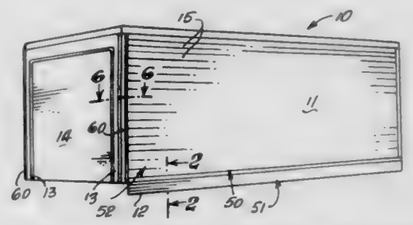
1. A folding top for vehicles comprising a common pivoting drive of a main strut and of a roof-skin retaining bow of a supporting top rod assembly via mechanical drive members for transferring the folding top between a stowed position retracted into a top box of the vehicle and a closed position of folding top at which the roof-skin retaining bow rests on a top box lid covering the top box of the vehicle, an automatically controlled lock of the main strut relative to a vehicle body at an erected end position of the main strut which is operatively associated with an uncoupling of the main strut from driving movement of the drive members, and means operatively arranged in relation to top columns of the main strut for locking the main strut fixedly to the vehicle body, such that a catching advance starts at an erected end position of the main strut, and an uncoupling of the top columns from the driving movement of the drive members is activated via the catching advance of the locking means at the fixed locking of the main strut to the vehicle body, wherein the locking means includes a catch hook which is operatively articulated on each of the top columns and operatively interacts with a retaining nose fixed to the vehicle body.

5,052,741

SIDE RAILS FOR ALUMINUM TRUCK BODY

Raynard Brown, Dana Point, and Norval L. Lopshire, Santa Fe Springs, both of Calif., assignors to Brownell Truck Bodies, Inc., Santa Fe Springs, Calif.

Filed Aug. 15, 1990, Ser. No. 567,605
Int. Cl.[5] B62D *25/02*
U.S. Cl. 296—191 **2 Claims**



1. An aluminum side rail for use in fabricating the side walls of a truck body, said rail comprising:

an elongated, hollow, rectangular central section including a top edge, a bottom edge, an outer edge, an inner edge and four exterior corners;

a pair of upwardly extending arms extending lengthwise along the top edge thereof spaced near to, but inwardly, from the two exterior corners of the top edge, and each of said upwardly extending arms having outwardly facing, elongated tabs;

a pair of downwardly extending arms extending lengthwise along the bottom edge, said downwardly extending arms being spaced apart and extending downwardly from the two exterior corners of the bottom edge, and each of said downwardly extending arms having elongated inwardly facing tabs which are spaced below the bottom edge sufficiently to mate with and securely hold the outwardly facing tabs of an identical side rail.

5,052,742

COWLSIDE JOINT STRUCTURE FOR USE WITH VEHICLE

Shigeru Akoshima, Toyota, and Ogawa Hisashi, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 29, 1990, Ser. No. 545,627
Claims priority, application Japan, Jun. 30, 1989, 1-169361; Jul. 11, 1989, 1-178237; Jul. 13, 1989, 1-82612[U]; Jul. 13, 1989, 1-82613[U]
Int. Cl.[5] B62D *25/08*
U.S. Cl. 296—192 **20 Claims**

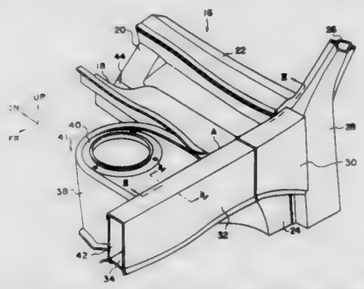
1. A cowlside joint structure for use on a vehicle, comprising:

a cowlside panel disposed at an outer end of a cowl of a vehicle, including a first flange formed along an upper edge of said cowlside panel and extending substantially parallel to the longitudinal axis of the vehicle, said first flange being formed by said upper edge of said cowlside panel being bent transversely inward, towards a longitudinal center of the vehicle;

an upper member disposed at the outer end of said cowl of the vehicle, including a second flange formed along the length of said upper member by the upper edge thereof being bent transversely inward towards the longitudinal center of the vehicle, such that said second flange lies

substantially in line with said first flange of said cowlside panel; and

a front pillar disposed substantially vertically on an outer side of said cowlside panel, including a third flange



formed by an edge of an upper inclined portion being bent transversely inward towards the longitudinal center of the vehicle, such that said third flange lies substantially in line with said first and second flanges, wherein said first, second, and third flange are all fixedly joined together.

5,052,743

OPEN-TOP TYPE VEHICLE ROOF STRUCTURE

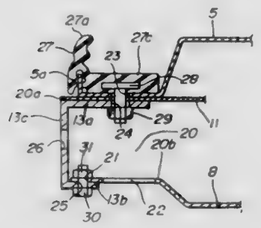
Yoshinori Inada, Zama; Takehisa Makiyama, and Hideo Sekizawa, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

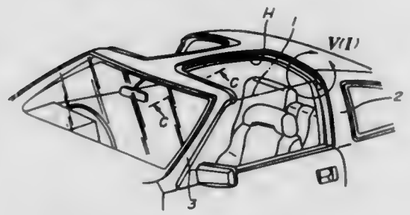
Filed Oct. 18, 1989, Ser. No. 423,011

Claims priority, application Japan, Oct. 20, 1988, 63-137100[U]

Int. Cl.[5] B60J *10/12, 7/11, 7/19*

U.S. Cl. 296—210 **12 Claims**





1. A vehicle body structure comprising:

a roof assembly comprising an inner assembly and a roof outer panel joined to said inner assembly, said roof assembly having an opening to be closed with a roof lid;

locking means for locking said roof lid, said locking means comprising a first lock member fixed to said roof outer panel;

a weather strip bordering said opening; and

a fastener that fastens said first lock member and said weather strip to said roof outer panel.

5,052,744

SLIDE ROOF SYSTEM FOR A VEHICLE

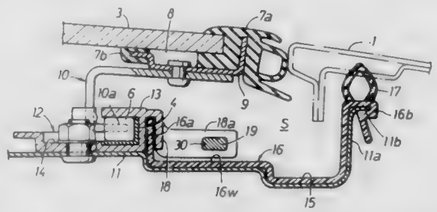
Noribide Sugimoto, Wako, Japan, assignor to Honda Giken Hogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1989, Ser. No. 407,509

Claims priority, application Japan, Sep. 14, 1988, 63-120968[U]; Sep. 14, 1988, 63-120969[U]

Int. Cl.[5] B60J *7/00, 7/22*

U.S. Cl. 296—213 **10 Claims**



1. An improved slide roof system for a vehicle, comprising:

an opening defined in a fixed roof panel of the vehicle;

an inner frame disposed under said fixed roof panel and provided with an opening which is at least partly coextensive with said opening in said fixed roof panel, defining a space between a part of said fixed roof panel peripheral to said opening in said fixed roof panel and a part of said inner frame peripheral to said opening in said inner frame;

a moveable roof panel disposed in moveable relationship with said opening in said fixed roof panel so as to be moveable between an open position and a closed position guided by a pair of guide rails mounted on said inner frame so as to extend longitudinally of said vehicle, one of said guide rails being disposed on either side of said opening in said inner frame;

a trough member received in said space to receive possible dripping of water from a peripheral part of said opening in said fixed roof panel; and

a guide rail stay securing a front end of each of said guide rails onto said inner frame outside of said trough member, wherein said improvement comprises:

providing on said guide rail stay a depending portion which hooks over and secures a portion of said trough member to said inner frame without passing through said portion of said trough member.

5,052,745

WIND DEFLECTOR FOR SLIDING ROOFS, REMOVABLE ROOF SECTIONS OR THE LIKE OF MOTOR VEHICLES

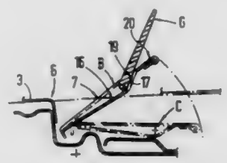
Michael Preiss, Vaihingen/Enz-Aurich, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 448,860

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842676

Int. Cl.[5] B60J *7/22*

U.S. Cl. 296—217 **11 Claims**



1. A wind deflector assembly for a motor vehicle having a

movable roof and a roof cut-out which has a transversely extending front edge, the assembly comprising:

a wind deflector movably mounted adjacent to the front edge of the cut-out, the deflector being movable between a retracted sunk-in inoperative position and an extended moved-out operative position, the wind deflector having a depression including a bottom which faces an interior of the motor vehicle; and

an air guiding element flexibly mounted on the wind deflector to be movable between a first position in which the air guiding element is in the depression of the wind deflector and a second position in which the air guiding element projects diagonally above and rearward of a trailing edge of the wind deflector when the wind deflector is in the operative position, the second position being an operative position of the air guiding element.

5,052,746

VEHICLE ROOF WITH WIND DEFLECTOR

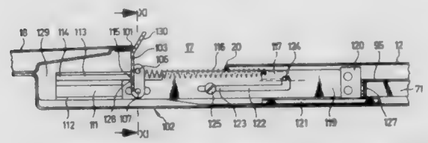
Peter Reihl, Munich, and Arpad Fuerst, Germering, both of Fed. Rep. of Germany, assignors to Webasto AG Fahrzeugtechnik, Fed. Rep. of Germany

Filed May 21, 1990, Ser. No. 525,602

Claims priority, application Fed. Rep. of Germany, May 24, 1989, 3916906

Int. Cl.[5] B60J *7/22*

U.S. Cl. 296—217 **11 Claims**



1. A vehicle roof including a stationary roof panel with a roof opening therethrough, a cover for alternately closing and at least partially opening said roof opening, said cover connected to the roof panel by adjustment means for providing an adjustment movement of the cover in a longitudinal direction of the vehicle roof, a wind deflector which is pivotally mounted to said stationary roof panel about an axis transverse to the longitudinal direction of the vehicle roof by a pivot means for permitting pivotal movement of the wind deflector between a pushed-out position and a rest position, a guide means for permitting sliding movement of said pivot means in the longitudinal direction of the vehicle roof so that the transverse axis can be longitudinally positioned at a plurality of positions, and a catch means for automatically moving the transverse axis of the wind deflector along said guide means in the longitudinal direction of the vehicle roof between said plurality of positions during at least a part of the adjustment movement of the cover in the longitudinal direction of the vehicle roof, wherein said wind deflector is positioned within a receiving space defined below a portion of the stationary roof panel in front of a front edge of the roof opening in said rest position.

5,052,747

FLEXIBLE TOP APPARATUS OF A VEHICLE

Satoshi Kubota, and Takahito Yokouchi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 385,730, Jul. 27, 1989, abandoned. This application Mar. 26, 1991, Ser. No. 676,464

Claims priority, application Japan, Jul. 30, 1988, 63-191662

Int. Cl.[5] B60J *7/06, 7/12*

U.S. Cl. 296—219 **11 Claims**

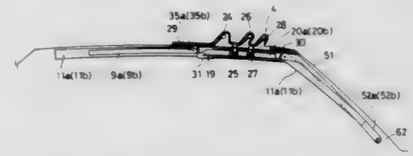
11. A flexible top apparatus of a vehicle, comprising:

a roof panel connected to a vehicle body through at least a pair of left-hand and right-hand front pillars and a pair of left-hand and right-hand rear pillars;

a roof opening formed in said roof panel having a front header, a pair of left-hand and right-hand roof side rails, and a rear header and surrounded by said front header, said left-hand and right-hand roof side rails, an d said rear header;

a rear window glass panel fixed to said rear pillars and said rear header; and

a flexible top having a size as substantially large as the roof opening in a state in which said flexible top is unfolded and expanded in a longitudinal direction of the vehicle body so as to assume an expanded state, wherein said flexible top is disposed to selectively take a first posture in which the roof opening is closed and a second posture in which said flexible top is contracted in a longitudinal direction of the



body so as to assume a contracted state and located at a position in the vicinity of said rear header to open the roof opening;

wherein the flexible top is connected to the vehicle body through a guide means containing a link member disposed so as to be pivotable in a longitudinal direction of the vehicle body, and said flexible top in the contracted state is guided in accordance with a pivotal movement of the link member in a longitudinal direction thereof between said second posture and a third posture which is located in the vicinity of a lower end portion of said rear window glass panel at a spaced relationship away from said rear window glass panel, rear header, and rear pillars.

5,052,748

SEAT WITH A TILTING AND FOLDING BACK

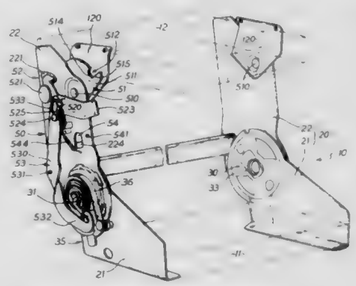
Francois Fourrey, Montbeliard, and Jean F. Mauffrey, Danjoutin, both of France, assignors to ECIA, France

Filed Jan. 30, 1990, Ser. No. 472,547

Claims priority, application France, Jan. 31, 1989, 89 01194

Int. Cl.[5] A47B *85/04*

U.S. Cl. 297—124 **9 Claims**



1. A seat (**10**) comprising, in combination;

a base (**11**);

a back (**12**) carried by a back support (**120**) tiltable relative to said base (**11**) between an upright position and other tilted positions changeable at will;

a frame (**20**) having on each of two opposite sides thereof a pair of end plates, each pair having a first end plate (**21**), for accommodating said base (**11**), and a second end plate (**22**) for accommodating said back support (**120**); 'tilt-adjustment means (**30**) inserted between said first and second end plates (**21**, **22**) and movable between a normal

blocked locking position, toward which said means (30) is normally biased in order to fix a relative position of said back (12) and base (11), and a transitional released free position to allow an adjustment of a tilted position of said back (12) relative to said base (11), said tilt-adjustment means (30) being provided with a control means (31) for changing the position of said tilt-adjustment means; and

a pivot mechanism means (50), placed between said second end plate (22) and back support (120), for making said back (12) movable between a first normal position, where said back (12) serves as a back rest, and a second folded position where said back (12) serves as a shelf;

said pivot mechanism means (50) comprising:

at least one cheek (51) carried by said back support (120) and rotatably mounted on said second end plate (22) for rotation about an axis between said first and second positions;

a lock means (52) having a catch and a bolt cooperating with said cheek (51) and said second end plate (22) and movable between a first active position, toward which it is normally biased to fix said back (12) in one of its said first normal and second folded positions, and a second inactive position to tilt said back (12);

a linkage means (53) connecting and controlling said tilt-adjustment means (30) and said lock means (52) either in order to act on said control means (31) to move said tilt-adjustment means (30) from one to the other of its said usual and transitional positions, or in order to act and move said lock means (52) from its said active position to its said inactive position; and

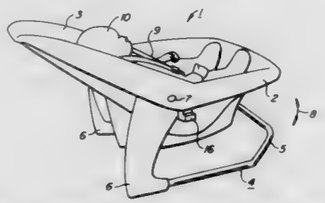
safety device means (54), pivotally mounted on said second end plate (22), and biased by a spring (544) for contacting and cooperating with said first end plate (21) and for acting on said cheek (51) to lock said cheek (51) and prevent any rotation thereof which would place said back (12) in its said shelf second folded position when said back (12) is not placed in its upright position beforehand.

5,052,749

BABY SEAT

Huibert Groenendijk, Slepersvest 5-7, 3011 MK Rotterdam, Netherlands

Filed Oct. 25, 1989, Ser. No. 426,782
Claims priority, application Netherlands, Nov. 8, 1988, 8802733
Int. Cl.[5] A47C *1/08*
U.S. Cl. 297—250 7 Claims



1. Baby seat having a seat part defining a top and a bottom and a back part defining a front and a rear, said baby seat further defining underlying positions under the bottom of said seat part and lateral positions in front of said back part and being provided with a supporting means which can be put in several positions, at least for supporting the baby seat on-/against a supporting surface, characterized in that the supporting means contains at least two arms being mutually connected by a substantially U-shaped body, said arms each being connected to the baby seat, at a longitudinal side, in such a manner that the supporting means and the baby seat can be pivoted relative to each other, at least between four positions,

with a first underlying position, in which the baby seat can rest with its supporting means on an underlying supporting surface in a sleeping position wherein said back part is substantially horizontal,

with a second underlying position, in which the baby seat can rest with its supporting means on an underlying supporting surface in a sitting position wherein said back part is elevated from said substantially horizontal sleeping position,

with a third lateral position, in which the baby seat can rest with its supporting means against a lateral supporting surface, located in front of the back part, during transport, and

with a fourth lateral position, in which the baby seat can be carried by hand, by means of the substantially U-shaped arms of the supporting means being positioned above the seat part.

5,052,750

TILTABLE AUXILIARY CHAIR HAVING LOCKING MEANS AND PIVOTAL SEAT BELT ENGAGEMENT PLATE FOR FORWARD AND REARWARD FACING

Takehiko Takahashi; Takashi Watanabe, and Tomihiro Kaneko, all of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan

Filed Mar. 26, 1990, Ser. No. 498,519
Claims priority, application Japan, Dec. 21, 1989, 1-146529[U]
Int. Cl.[5] A47C *1/08;* A47D *1/10*
U.S. Cl. 297—250 28 Claims



1. An auxiliary chair for installation on a seat of a vehicle via a seat belt associated with said vehicle, said auxiliary chair comprising:

a base having sides thereof with each side having a pair of first sliding openings;

a body having a seat portion and a back portion and being tiltably mounted on said base for selectably reclining and upward orientation with respect to said base; said body having the form of a seat;

a pair of engagement plates attached to the respective sides of said base; each said engagement plate having second sliding openings and a seat belt engagement portion comprising a third sliding opening for engagement with said vehicle seat belt and said third sliding opening;

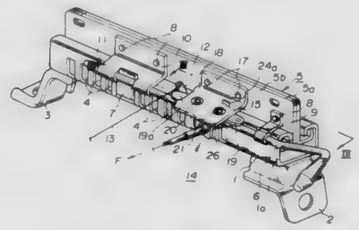
said body including two support shafts projecting out the opposite sides thereof for sliding engagement in respective first sliding openings in each of the sides of said base, and the first of said shafts further being in sliding engagement with said second sliding openings of said engagement plates.

5,052,751

WALK-IN DEVICE OF AUTOMOTIVE SEAT HAVING COOPERATING PIVOTED LEVERS

Hatsuo Hayakawa, and Mikio Honma, both of Yokohama City, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Jun. 14, 1990, Ser. No. 537,637
Claims priority, application Japan, Jun. 22, 1989, 1-72454[U]
Int. Cl.[5] B60N *1/04*
U.S. Cl. 297—341 7 Claims



1. In a seat slide device including a stationary rail, a movable rail slidably engaged with said stationary rail, and a locking mechanism for locking and unlocking said movable rail relative to said stationary rail when a first member is turned in first and second directions respectively,

a walk-in device comprising:

a base member secured to said movable rail;

a first lever pivotally connected to said base member, said first lever being turned between a first position wherein said first member is kept unchanged and a second position wherein a part of said first lever abuts against said first member to turn the same in said second direction;

a second lever pivotally connected to said base member, said second lever having a projection which is slidably engageable with a side wall of said stationary rail under a certain condition;

link means for providing a linkage connection between said first and second levers, said link means including slot means defining in said first lever a generally L-shaped guide slot and a structure held by said second lever and slidably engaged with said guide slot; and

biasing means for biasing said second lever in a direction to press said projection toward said stationary rail,

wherein said slot means and said structure of said link means are engaged whereby when said first level assumes said first position, said second lever is prevented from turning, and when said first lever assumes said second position and said projection of said second lever is disengaged from an end of said stationary rail, said second lever is turned due to the force of said biasing means in a direction to suppress the turning of said first lever toward said first position.

5,052,752

INFINITELY ADJUSTABLE LINEAR SEAT RECLINER

David L. Robinson, Sterling Heights, Mich., assignor to Fisher Dynamics Corporation, St. Clair Shores, Mich.

Filed Jun. 21, 1990, Ser. No. 542,210
Int. Cl.[5] B60N *1/02*
U.S. Cl. 297—361 24 Claims

1. A seat recliner mechanism for controllably adjusting the angular position of a seat back relative to a seat member, said mechanism being responsive to actuation by a seat occupant, comprising:

a threaded rod adapted to be operatively connected to one of said seat back and said seat member;

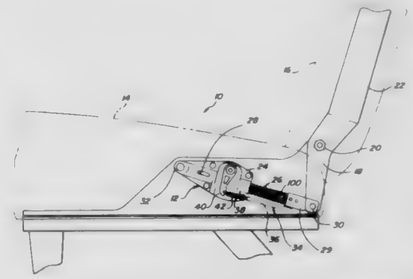
said recliner mechanism adapted to be pivotally connected to the other of said seat back and said seat member and configured to receive a portion of said rod for linear non-rotational movement relative thereto;

a plurality of threaded nut segments concentrically surrounding and threadably engaging said threaded rod, said threaded nut segments adapted for radial movement with respect to said threaded rod between a first radially inward position wherein said threaded nut segments are restrained from rotation on said threaded rod for inhibiting linear movement of said threaded rod, and a second radially outward position wherein said nut segments rotate on said threaded rod for permitting linear movement thereof;

retainer means for orientating and retaining said plurality of nut segments in threaded engagement with said threaded rod, said retainer means configured to define a range of radial movement of said nut segments relative to said threaded rod between said first and second radial positions, said nut segments and said retainer means defining a split nut assembly;

actuation means associated with said nut segments for producing movement thereof from said first radial position wherein the angular positioning between said seat back and seat member is established to said second radial position wherein said threaded rod is movable relative to said recliner mechanism such that the relative angular positioning between said seat back and said seat member is adjustable; and

first biasing means associated with said actuation means for urging said nut segments to said first radial position.



5,052,753

ADJUSTABLE SITTING DEVICE

Jurek Buchacz, "Lovli" , N-2360 Ringsaker, Norway

Continuation of Ser. No. 251,112, Sep. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 143,166, Jan. 1, 1988, abandoned. This application Feb. 2, 1990, Ser. No. 474,311
Claims priority, application Norway, May 9, 1986, 861865
Int. Cl.[5] A47C *1/024*
U.S. Cl. 297—361 4 Claims

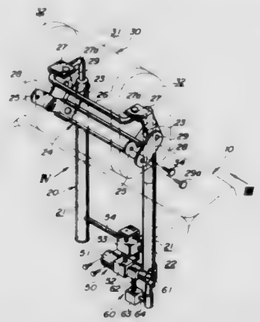


1. An adjustable sitting device having a seat and a back rest, where said back rest is adjustable, said back rest having means for mutually turning about an imaginary axis, located above the seat and in front of the back rest, comprising a lower frame portion of the back rest in the form of a curved elongated planar back rest member located along a central longitudinal

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axis of the backrest and a rear frame portion of the seat in the form of two curved seat elongated planar members that each extend along longitudinal side edge portions of the seat and are separated by said back rest member, said back rest member and said curved elongated seat members each having the same approximate thickness, mutual adjustment means for permitting said back rest member to slide between facing edges of said two curved seat members whereby said back rest member moves about said imaginary axis as it moves between said two curved seat members, said back rest member and said pair of seat members being mutually slidable and wherein said lower frame portion of said back rest has the same radius of curvature as that of said rear frame portion.

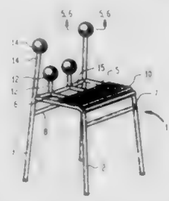
5,052,754
HEADREST ARRANGEMENT
Isamu Chinomi, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Feb. 26, 1990, Ser. No. 484,878
Claims priority, application Japan, Mar. 31, 1989, 1-38621[U]
Int. Cl.[5] A47C *1/10*
U.S. Cl. 297—408 **8 Claims**



1. A headrest arrangement for a seat, comprising:
a first stay disposed in a seat back of the seat and vertically extending, said first stay being vertically movable by motive power relative to said seat back;
a second stay disposed parallel with said first stay and along said first stay, said second stay being vertically movable along said first stay by motive power;
a headrest swingably connected to said first stay so that said headrest is swingingly movable between a first position and a second position; and
means for connecting said headrest and said second stay so that said headrest swings when said second stay moves vertically and relative to said first stay.

5,052,755
CHAIR, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Hattie Wiener, New York, N.Y., assignor to Hattie Enterprises, Inc., New York, N.Y.
Filed Jul. 25, 1990, Ser. No. 558,159
Int. Cl.[5] A47C *7/90*
U.S. Cl. 297—452 **22 Claims**

1. A chair adapted to support a user's body so as to control sitting posture, comprising:
a frame including leg members for supporting the chair on a horizontal surface;
a seat portion supported on said frame;
a back support portion mounted on said frame rearwardly of said seat portion;
said back support portion including first means for independently supporting two separate portions of a user's back, on either side of the spine, in the posterior pelvic area; and



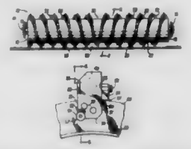
said back support portion further including second means for independently supporting two separate portions of a user's back, on either side of the spine, in the thoracic area.

5,052,756
PROCESS FOR SEPARATION OF ASBESTOS-CONTAINING MATERIAL AND PREVENTION OF FLOATING OF DUST
Eiji Wada, Kanagawa, and Nobuo Nakano, Koto, both of Japan, assignors to Taisei Corporation and JSE Corporation, both of Tokyo, Japan
Continuation of Ser. No. 319,280, Mar. 6, 1989, abandoned. This application Mar. 26, 1990, Ser. No. 501,346
Claims priority, application Japan, Mar. 4, 1988, 63-50692
Int. Cl.[5] B08B *3/02;* **F21C** *37/14*
U.S. Cl. 299—17 **13 Claims**



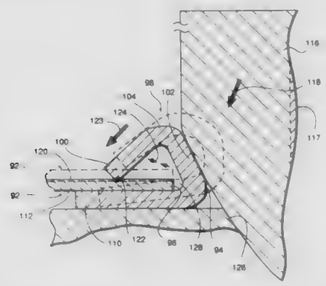
10. A process for separation of an asbestos-containing material from a surface to which the asbestos-containing material is adhered while preventing release into the atmosphere of the asbestos-containing material as a fine dust, comprising the steps of:
disposing a polymeric water absorbent material on a floor surface facing the surface to which the asbestos-containing material is adhered;
jetting pressurized water from a plurality of nozzles to an exposed surface of said asbestos-containing material at a pressure of at least 80 kg/cm^2, to thereby wet and separate from the surface the asbestos-containing material by application thereto of energy possessed by the jetted flow of pressurized water; and
collecting and disposing of said separated wet asbestos-containing material and any of said jetted water that has fallen to the floor surface together with the polymeric water absorbent.

5,052,757
FLIGHTING SECTION AND TOOTH HOLDER
Winchester E. Latham, Indianapolis, Ind., assignor to Keystone Engineering & Manufacturing Corporation, Indianapolis, Ind.
Filed Jun. 11, 1990, Ser. No. 535,657
Int. Cl.[5] E21C *35/18*
U.S. Cl. 299—87 **11 Claims**



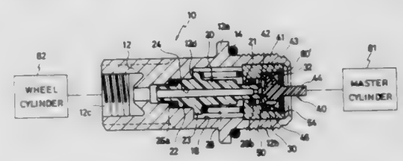
5. Apparatus secured to a rotatable cutting drum of a scarifying milling machine for holding a cutting bit comprising:
a plurality of flighting sections fixed to said cutting drum, each flighting section including a first wall generally facing the lateral center of the drum, a second wall generally parallel to the first wall and facing a lateral edge of the drum, both the first and second walls being generally perpendicular to a cylindrical surface of the drum, a top wall defining the outer periphery of the flighting section and joining the first and second walls, and at least one region for receiving a tool holder,
a plurality of tool holders, each tool holder including a recess for receiving a butt end of a replacable cutting tool, each tool holder being removably mounted in one of the tool holder receiving regions of one of the flighting sections such that the cutting tool receiving recess projects in a generally outward and rotationally forward direction with respect to the drum, each tool holder including a tapered surface on a lower forward edge facing outward from the first wall and radially downward toward the cutting drum, and
fastening means for fastening each tool holder to the flighting section including a back up seat fixed to said flighting section top wall adjacent to each tool holder, and adjusting means adjustable with respect to each back up seat and contacting a rearward surface of each tool holder for adjusting the forward pressure on the tool holder.

5,052,758
WASHER MECHANISM FOR A WHEEL COVER
Tony Patti, 1001 Carden St., San Leandro, Calif. 94577, and David J. Fitzgerald, 16571 Los Banos, San Leandro, Calif. 94578
Continuation-in-part of Ser. No. 364,128, Jun. 12, 1989, Pat. No. 4,950,036. This application Nov. 16, 1989, Ser. No. 437,124
Int. Cl.[5] B60B *7/14*
U.S. Cl. 301—108 S **8 Claims**



1. A washer mechanism for a wheel cover having at least one opening therethrough with an edge between a first and a second surface, the washer mechanism comprising:
a. a deformable member having a first portion capable of lying atop the first surface of the wheel cover, a second portion capable of lying adjacent the edge of the opening between the first and second surfaces of the wheel cover, and a third intermediate portion interconnecting said first and second portions, said first portion including an edge portion capable of frictionally engaging the first surface of the wheel cover to prevent transverse movement of said first portion of said deformable member along the first surface of the wheel cover upon application of force on said third intermediate portion of said deformable member; and
b. means for deforming said deformable member to the vicinity of said opening including a stop for limiting movement of said deformable member along the axis of the opening.

5,052,759
MECHANICAL COMPONENT AND HYDRAULIC PRESSURE CONTROL VALVE INCLUDING THE MECHANICAL COMPONENT
Ryuichi Tanaka, Yokosuka, Japan, assignor to Nippon Air Brake Co., Ltd., Hyogo, Japan
Filed Sep. 25, 1989, Ser. No. 412,280
Claims priority, application Japan, Oct. 24, 1988, 63-267898
Int. Cl.[5] F16K *51/00*
U.S. Cl. 303—9.62 **13 Claims**



1. A hydraulic control valve for use with a master cylinder and a wheel cylinder, comprising:
a valve body formed therein with a stepped bore:
a piston inserted in said stepped bore for sliding movement therealong;
an inlet chamber defined in said valve body on a first side of one end of said piston and capable of communicating with said master cylinder;
an outlet chamber defined in said valve body on a second side of a second end of said piston and capable of communicating with said wheel cylinder;
passage means formed in said piston, said inlet and outlet chambers communicating with each other through said passage means;
a valve element arranged in facing relation to an end of said passage means which is located in facing relation to said inlet chamber;
valve spring means for biasing said valve element toward a predetermined position located at the end of said passage means;
said valve body including, adjacent said inlet chamber, an opening, a first bore having a first side located at said opening and an opposite side and having a diameter of D_1, a second bore located on the opposite side of said first bore from said opening and having a diameter of D_2, where D_1 is larger than D_2, and a step through which said first and second bores are connected to each other; and
an annular element fixedly mounted to said valve body in such a manner that an annular dish-shaped plate forming said annular element is urged against said step of said valve body until said dish-shaped plate is deformed into a planar-plate configuration, to bit an outer periphery of said dish-shaped plate to a periphery of said first bore, said annular plate having a free outer diameter D_3 which is less than diameter D_1 of the first bore and that of said opening prior to mounting to said valve body, the outer peripheral portion of the annular plate being inclined in the same

direction as that in which the plate is urged during its mounting, said annular element serving as a spring retainer for supporting an end of said valve spring means which is remote from the one end of said piston with a second end of the spring being biased against the valve element

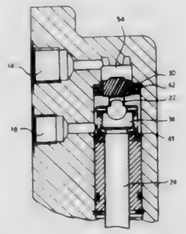
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5,052,760

HYDRAULIC PROPORTIONING VALVE

Leonardo Cadeddu, Crema, Italy, assignor to Bendix Italia S.p.a., Crema, Italy

Filed May 18, 1989, Ser. No. 353,927
Claims priority, application Italy, May 20, 1988, 20652 A/88
Int. Cl.[5] B60T *8/18*
U.S. Cl. 303—9.62 **6 Claims**



1. A hydraulic proportioning valve comprising a body in which is formed a bore which communicates with an inlet and an outlet, a piston mounted slideably in the bore and urged toward a rest position by a spring, a valve member mounted in the bore and engageable by a part of the piston when the piston moves against the spring, under the influence of hydraulic pressure in the bore, to close a passage between the inlet and the outlet, characterized in that the valve member is slideable in the bore, independently of the piston, under the effect of a pressure differential across the valve member, the valve member comprising a seal disposed about the piston by means of a central opening which may be closed by sealing engagement between the valve member and part of the piston, the sealing engagement between the part and the valve member enabling the creation of said pressure differential across the valve member, and the slideable movement of the valve member in response to said pressure differential including continuous slideable engagement of the part within the valve member such that said sealing engagement is maintained during the continuous slideable engagement and the central opening remaining closed despite said slideable movement.

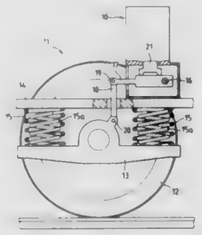
5,052,761

LOAD-DEPENDENT BRAKE VALVE FOR CONTROLLING THE BRAKE LINE PRESSURE OF COMPRESSED AIR BRAKES OF A VEHICLE

Riet Thöny, Glattbrugg, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed May 7, 1990, Ser. No. 520,068
Claims priority, application Switzerland, May 31, 1989, 02039/89-6
Int. Cl.[5] B60T *8/18*
U.S. Cl. 303—22.6 **3 Claims**

1. A load-dependent brake valve for controlling the brake-line pressure of vehicular compressed-air brakes, comprising:
- vehicular suspension springs coupled to the load-dependent brake valve;
- said vehicular suspension springs being subject to a stroke dependent upon the vehicle load;
- said vehicle suspension springs each comprising an arrangement of two coaxial coil spring elements of different coil length resulting in a bended spring characteristic; a pivotable brake lever pivotable about a stationary axle and defining a lever arm;
- said pivotable brake lever being pivotable in a predetermined pivoting range as a function of said stroke of said vehicular suspension springs;
- a piston service to actuate the load-dependent brake valve;
- said piston having a bearing surface for bearing upon said pivotable brake lever;
- said piston comprising, on said bearing surface, at least two supporting cams each having a line of support;
- said predetermined pivoting range of said pivotable brake lever being subdivided into a first pivoting range and a second pivoting range;
- said pivotable brake lever in said first pivoting range bearing



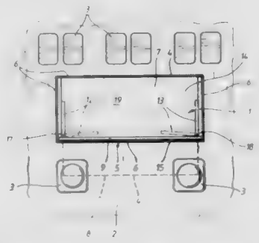
only upon one of said at least two supporting cams of said piston;
- said pivotable lever in said second pivoting range bearing only upon the other of said at least two supporting cams of said piston;
- said line of support of said one supporting cam at said pivotable brake lever defining with said stationary axle a first arm resulting together with said lever arm in a first transmission ratio;
- said line of support of said other one supporting cam at said pivotable brake lever defining with said stationary axle a second arm resulting together with said lever arm in a second transmission ratio; and
- said two supporting cams being arranged for compensating said bended spring characteristic.

5,052,762

MOTOR VEHICLE STORAGE COMPARTMENT

Van Hung Nguyen, Sindelfingen; Siegfried Eichler, Renningen, and Jürgen Körber, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1990, Ser. No. 523,998
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 3917962
Int. Cl.[5] A47B *63/02*
U.S. Cl. 312—242 **7 Claims**



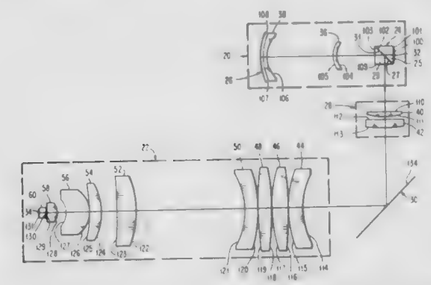
1. Storage compartment for a motor vehicle interior portion having an access opening, comprising a receptacle having a front portion situated at the access opening, a bottom well having side walls and being configured to be lowerable relative to the access opening, a carrier body into which the bottom well is arranged to be detachably inserted, and upright side wall parts formed on the sides of the bottom well so as to be foldable inwardly toward one another well when the bottom well is lowered relative to the access opening and then movable into an upright position thereafter so that, when in the upright position, the side walls parts prevent the bottom well from being removed from the carrier body.

5,052,763

OPTICAL SYSTEM WITH TWO SUBSYSTEMS SEPARATELY CORRECTING ODD ABERRATIONS AND TOGETHER CORRECTING EVEN ABERRATIONS

Rama N. Singh, Bethel, Conn., and Janusz S. Wilczynski, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1990, Ser. No. 575,043
Int. Cl.[5] G02B *1/10, 17/08, 27/14, 13/26*
U.S. Cl. 359—335 **36 Claims**



1. An optical system for projecting a substantially flat image of an object comprising:
- an input subsystem;
- an output subsystem;
- the input subsystem and the output subsystem each being separately substantially corrected for odd aberrations;
- the even aberrations of the input subsystem substantially compensating for the even aberrations of the output subsystem to form a substantially flat image field.

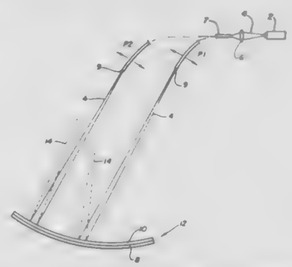
5,052,764

SYSTEM AND METHOD FOR FORMING A HOLOGRAPHIC EXPOSURE WITH A SIMULATED SOURCE

Gaylord Moss, Marina del Rey, and John E. Wreede, Monrovia, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 401,394, Aug. 31, 1989, Pat. No. 4,960,311. This application Jun. 22, 1990, Ser. No. 542,452
Int. Cl.[5] G03H *1/08*
U.S. Cl. 359—9 **10 Claims**

6. A system for exposing a reflective holographic optical element, comprising:
- a) means for illuminating a recording medium from a movable point source of illumination to provide exposure of a plurality of points on said recording medium;
- b) means for scanning said recording medium by rotating said point source about an axis of scanning, and by simultaneously providing translational motion of said point source relative to said recording medium to vary the location of the point source during said exposure of said plurality of points on said recording medium; and



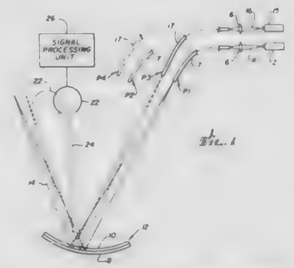
- c) means for varying the wavelength of illumination as a function of the location of the point on the recording medium being exposed.

5,052,765

SCANNING FIBER OPTIC HOLOGRAPHIC EXPOSURE AND FEEDBACK SYSTEM

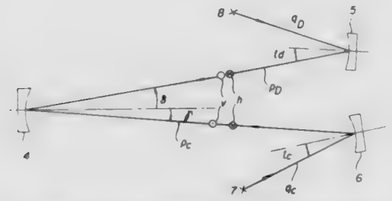
Gaylord Moss, Marina del Rey, and John E. Wreede, Monrovia, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 401,394, Aug. 31, 1989, Pat. No. 4,960,311. This application Jun. 25, 1990, Ser. No. 542,861
Int. Cl.[5] G03H *1/08*
U.S. Cl. 359—9 **13 Claims**



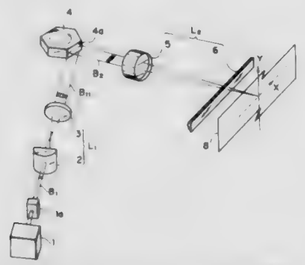
3. A system for exposing a recording medium to form a reflective holographic optical element, comprising:
- a) means for illuminating said recording medium with a primary beam of coherent light, including a primary optical fiber;
- b) means for receiving said coherent light transmitted through said recording medium and for reflecting said coherent light back to said recording medium;
- c) means for moving said optical fiber for simultaneously scanning said recording medium with angular motion and translational motion in at least one dimension to reduce multiple order scattering noise and
- d) means for monitoring efficiency of formation of said reflective holographic optical element.

5,052,766
HALOGRAPHIC GRATING AND OPTICAL DEVICE INCORPORATING THE SAME
Hideyuki Noda, Ibaraki, and Masato Koike, Kyoto, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Continuation-in-part of Ser. No. 940,469, Dec. 11, 1986, abandoned. This application Nov. 23, 1988, Ser. No. 275,600
Int. Cl.[5] G02B *5/32, 5/18*
U.S. Cl. 359—15 **8 Claims**



1. An apparatus for producing a holographic grating having a groove pattern formed thereon, comprising:
a first means for generating and projecting a first coherent light beam onto a substrate;
a second means for generating and projecting a second coherent light beam onto said substrate, such that the interference of said first and second coherent beams forms said groove pattern on said substrate to form said holographic grating,
wherein said generating means of at least one of said first and second coherent light beams generates a light beam which is astigmatic and has an off-axis orientation, wherein said astigmatism has two different focal lengths in a plane defined by the center of the grating and directions of principal rays of the beams, and a plane perpendicular thereto, and wherein said off-axis orientation results from the projection of a substantially non-paraxial light beam onto an optical surface in said generating means.

5,052,767
OPTICAL BEAM SCANNING SYSTEM
Takeshi Sugata; Junichi Oka, and Kenji Kawai, all of Hikone, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan
Filed Oct. 25, 1989, Ser. No. 427,194
Claims priority, application Japan, Oct. 25, 1988, 63-270494
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—206 **8 Claims**



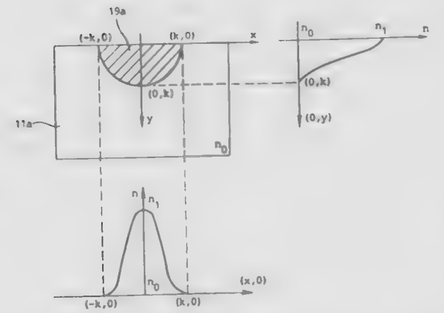
1. An optical beam scanning system, comprising:
(A) means for emitting a beam of parallel rays of light;
(B) a first optical system for converging the rays of light onto a deflector along a first axis, the first optical system including (a) a cylindrical lens which extends along the first axis and (b) a spherical convex lens having an object-side focal point essentially coincident with a focal point of the cylindrical lens, and an image-side focal point located at the deflector;
(C) the deflector for deflecting the beam along a second axis being perpendicular to the first axis; and
(D) a second optical system located along the second axis for focussing the beam deflected by the deflector onto a surface to be scanned.

5,052,768
DEVICE FOR RETAINING WIRE-LIKE OPTICAL WAVE-GUIDE
Syuji Matumoto, Tokyo, and Yasumasa Koakutsu, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo and Shin-kogiken, Ltd., Kanagawa, both of, Japan
Filed Apr. 10, 1990, Ser. No. 506,819
Claims priority, application Japan, Apr. 13, 1989, 01-091915; Nov. 13, 1989, 01-292370
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—76 **10 Claims**



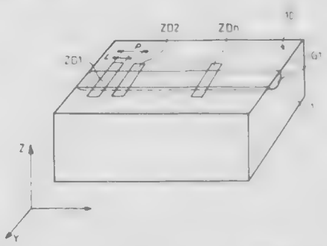
6. A device for retaining a wire-like optical wave-guide comprising:
a cylindrical plug of an elastic material for gripping an outer peripheral surface of at least one wire-like optical wave guide, at least one end portion of said cylindrical plug, having a predetermined length, being divided into a plurality of portions on the circumference, said divided portions having an expanded form in which a distance from an axis of said plug to each of the divided portions increases in a direction toward a free end of said cylindrical plug; and
a tightening member for pressing a vicinity of said free end of said cylindrical plug, which is in a state where the wire-like optical wave-guide is passed through said cylindrical plug along the axis of said plug so as to allow said wire-like optical wave-guide to be retained by said cylindrical plug, in a direction substantially perpendicular to the axis of said plug from an outside of the plug and thereby deforming said divided portions and causing a retaining force to be applied to the wire-like optical wave-guide in a proximal end or a gripping portion of the divided portions, which is separated from the pressing portion, and
wherein said tightening member includes a base portion and a plurality of divided portions which extend from one end portion of said base portion, an entirety of said tightening member has a substantially cylindrical shape, said divided portions having an expanded form in which the distance from the axis of the base portion to each of the divided portions gradually increases toward free ends of said divided portions so that all the divided portions of said cylindrical plug having an expanded form can be received in the free ends thereof and so that the wire-like optical wave-guide can be passed therethrough along an axis of said tightening member, and wherein, when a pressing force is applied to all the divided portions of said tightening member from the outside thereof in a direction substantially perpendicular to the axis of said tightening member in a state where the wire-like optical wave-guide is passed through said cylindrical plug and said tightening member along the axes thereof and in a state where all the divided portions of said cylindrical plug are placed within an inner space formed by said plurality of divided portions of said tightening member, a retaining force is applied to the wire-like optical wave-guide in said gripping portion of said divided portions of said cylindrical plug.

5,052,769
METHOD OF MANUFACTURING AN OPTICAL WAVEGUIDE BY SWITCHING A D.C. VOLTAGE
Hiroshi Aoki, Kanagawa, and Osamu Maruyama, Tokyo, both of Japan, assignors to Hoya Corporation, Tokyo, Japan
Filed Mar. 30, 1990, Ser. No. 502,849
Claims priority, application Japan, Mar. 31, 1989, 1-82282
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.12 **4 Claims**



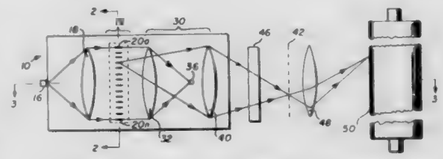
1. A method of manufacturing an optical waveguide which guides a light wave through a light transmitting passage, said method comprising:
a first step of preparing a substrate which has a primary surface and a secondary surface and which contains a primary ionizable substance providing a predetermined refractive index;
a second step of depositing a diffusion-suppressing layer on said primary surface of the substrate;
a third step of forming a slit by selectively removing said diffusion-suppressing layer in order to partially expose said primary surface and to thereby define an exposed area of said primary surface;
a fourth step of depositing an overlying layer on said exposed area and on the diffusion-suppressing layer, said overlying layer containing a secondary ionizable substance which provides a refractive index greater than said predetermined refractive index;
a fifth step of forming said optical waveguide by supplying a d.c. voltage from a d.c. voltage source on both sides of said overlying layer and said secondary surface;
said fifth step comprising the steps of:
preparing a switch circuit to switch said d.c. voltage between a positive polarity and a negative polarity;
impressing a selected polarity of said positive and said negative polarities of said d.c. voltage between said overlying layer and said secondary surface through said switch circuit to ionize said secondary ionizable substance and diffuse said secondary ions into said substrate through said slit in order to form a diffused region of said secondary ions;
switching said switching circuit to change said d.c. voltage from said selected polarity of the d.c. voltage to the other polarity of said positive and said negative polarities of said d.c. voltage and to impress said voltage of said other polarity between said overlying layer and said secondary surface; and
partially releasing said secondary ions from said diffused region towards said overlying layer to shape said light-transmitting passage.

5,052,770
OPTICAL DEVICE FOR THE PROCESSING OF AN OPTICAL WAVE, ITS FABRICATION METHOD AND A FREQUENCY DOUBLER
Michel Papuchon, Massy, France, assignor to Thomson-CSF, Puteax, France
Filed Jan. 22, 1990, Ser. No. 468,261
Claims priority, application France, Feb. 9, 1989, 89 01680
Int. Cl.[5] G02B *6/10*
U.S. Cl. 359—328 **2 Claims**



2. An optical device for frequency doubling of a guided optical wave, said wave having a determined wavelength comprising:
a polarized ferroelectric $LiTaO_3$ substrate that is transparent to said wave, wherein said substrate and said wavelength define a length of coherence;
a two dimensional optical guide in the +C surface of said substrate, said guide oriented along a first direction, wherein said guide consists essentially of $(Li_xH_{1-x})TaO_3$ with $0<X<1$;
doping zones formed by titanium implantation on the +C face of said substrate, said zones in the form of strips oriented in a second direction that is perpendicular to said first direction, said zones distributed along said first direction of said guide with a period equal to the length of coherence, each zone having a length along said first direction of one half of said length of coherence, said zones having a polarization opposite the polarization of said substrate.

5,052,771
INTEGRATED ELECTRO-OPTICAL SCANNER
David J. Williams, Fairport, and Joseph F. Revelli, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 21, 1990, Ser. No. 632,195
Int. Cl.[5] G02B *6/10;* **G01D** *15/10*
U.S. Cl. 385—8 **5 Claims**



1. An integrated electro-optic device for scanning a photosensitive medium with a focused line of light comprising a plurality of closely spaced, intensity-modulated pixels to record a two-dimensional image, said device comprising:
a base support;
a planar electrode layer disposed on a surface of said base support;
a first buffer layer disposed atop said first electrode layer, said first buffer layer comprising a transparent dielectric material;
an optical waveguide layer disposed on said base support

and overlying said first buffer layer and said planar electrode, said waveguide layer comprising an optically-transparent, electro-optic polymer material said waveguide layer being adapted to transmit therethrough, by multiple total internal reflection, a beam of light in a direction perpendicular to the layer thickness;

a second buffer layer deposited atop said polymer layer said second buffer layer comprising a transparent dielectric material, said first and second buffer layers having a refractive index lower than the refractive index of said polymer layer;

means defining a plurality of spaced parallel electrodes atop said second buffer layer;

means for producing a uniform phase front of light within said polymer layer;

means for selectively applying an electric field between each of selected spaced, parallel electrodes and said planar electrode to cause selected portions of said polymer layer therebetween to perturb selected portions of said phase front in accordance with pixel image information to be recorded;

means for converting a perturbed wavefront of light within said waveguide layer to an intensity-modulated pixel pattern; and

means for projecting an image of said intensity-modulated pixel pattern upon the surface of a photosensitive medium.

5,052,772

FIBER TYPE LIGHT WAVE-LENGTH CONVERTING APPARATUS

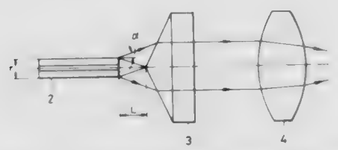
Sota Okamoto, and Kiyofumi Chikuma, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 26, 1990, Ser. No. 617,817

Claims priority, application Japan, Nov. 27, 1989, 1-306977

Int. Cl.[5] G02F *1/35*

U.S. Cl. 385—33 **1 Claim**



1. A light wave-length converting apparatus comprising:

a fiber type light wave-length converting element for converting a wave-length of an incident light;

an axicon lens for converting a light emitted from the light wave-length converting element into a parallel light; and

a condenser lens for focusing the parallel light from the axicon lens, wherein the axicon lens is arranged at a position which satisfies a condition of

$$L = D/2\tan\alpha$$

for the light wave-length converting element where L represents a distance from an emitting end surface of the light wave-length converting element to a front edge of the axicon lens, D represents an outer diameter of the light wave-length converting element, and α represents Cerenkov angle.

5,052,773

ASSEMBLIES OF TUBE AND FIBER UNITS AND A UNIT POSITION CONTROL MEMBER

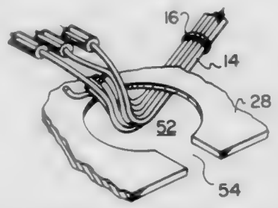
Laurence Noon, and Royston Thornhill, both of Saskatoon, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 14, 1990, Ser. No. 538,309

Int. Cl.[5] G02B *6/36*

U.S. Cl. 350—96.20 **4 Claims**

1. An assembly of a bundle of tube and fiber units and a unit position control member wherein each unit comprises at least one optical fiber disposed within and extending along a tube and the position control member is formed with an aperture and a lateral entry slot extending to the aperture, the entry slot having a width less than that of the aperture and the bundle of units having a width greater than the width of the slot and extending loosely through the aperture, and a tie wrap is provided which extends around the bundle of units and is localized



along a short axial length of the bundle of units, said short axial length being sufficiently close to the aperture to retain the units together in the bundle as it extends through the aperture, the tie wrap being held in position solely by its mounting around the bundle of units and being moveable from around the bundle to enable the units to be removed sequentially, in a direction laterally of the axis of each unit, out of the aperture through the entry slot.

5,052,774

CONNECTOR FOR A FIBER OPTIC CABLE

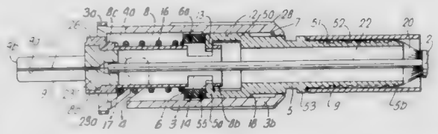
Jonathan M. Bulman, London, and Glenton P. McFarlane, Middlesex, both of England, assignors to U.S. Philips Corp., New York, N.Y.

Filed Mar. 27, 1990, Ser. No. 500,440

Claims priority, application United Kingdom, Mar. 31, 1989, 8907263

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—86 **14 Claims**



1. A connector for carrying an end portion of a fiber optic cable to enable the cable to be connected, via a coupling member, to another fiber optic cable, which connector comprises an outer sleeve having at one end connection means for coupling to the coupling member, an inner sleeve extending axially through the outer sleeve so that one end of the inner sleeve is received within the outer sleeve and the other end of the inner sleeve projects from the other end of the outer sleeve to engage a protective sheath of the cable, a support member for receiving a ferrule supporting an optical fiber of the cable, the support member being slidably received within the outer sleeve and biased by biasing means so that one end of the support member is caused to project from the one end of the outer sleeve, the other end of the support member and the one end of the inner sleeve having cooperating portions for allowing relative movement between the inner sleeve and the support member, and locating means fixedly provided within the outer sleeve, the locating means providing a bearing surface against which the biasing means acts to cause the one end of the support member to project from the one end of the outer sleeve.

5,052,775

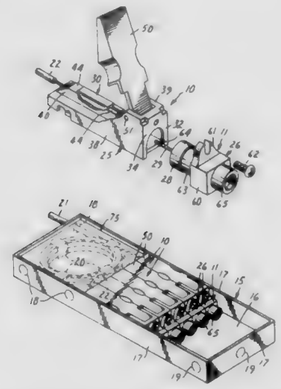
OPTICAL FIBER MODULE TERMINATION ARRAY AND PANEL

Ronald G. Bossard, and Roger H. Keith, both of St. Paul, Minn., assignors to Minnesota mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 15, 1989, Ser. No. 394,138

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—76 **23 Claims**



15. A distribution panel for use in connecting optical fibers in a cable to connectors for distribution, said panel including a support plate, said support plate having a generally planar surface and support means for positioning a rod in spaced parallel relationship to said plate, a plurality of optical fiber termination modules positioned in a side-by-side array along said rod, each module comprising

an optical fiber connector coupling and a single connector plug connected to one end of a length of optical fiber and joined to said coupling,

an optical fiber splice having opposite open ends for making connection between a second end of said length of optical fiber and the free end of an optical fiber from a cable, and

support means for supporting said coupling and said splice, said support means comprising an end wall for supporting said coupling in fixed position thereon, a base joined to said end wall and extending away from said end wall, said base including magazine means for supporting said splice with said second end of said length of optical fiber in said splice, and means affording tilting movement of said module about said rod and in relationship to other modules to position said end wall of said module in spaced relationship to the end wall of others of said modules.

5,052,776

OPTICAL WAVEGUIDE AND AN IMAGE SENSOR USING THE SAME

Tetsuo Fukushima, Osaka; Kenichiro Suetsugu, Hyogo; Munekazu Nishihara, Osake, and Junji Ikeda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

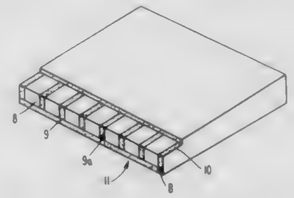
Filed Apr. 23, 1990, Ser. No. 512,702

Claims priority, application Japan, Apr. 24, 1989, 1-103890

Int. Cl.[5] G02B *6/08;* **H01J** *40/14;* **G03B** *27/00*

U.S. Cl. 385—120 **4 Claims**

1. An optical waveguide comprising a plurality of aligned bar-shaped cores, said cores being made of transparent materials with a large refractive index, and a cladding that is disposed around a portion of said cores, said cladding being made of materials with a small refractive index capable of absorbing or



scattering light, wherein part of each of said cores on which irradiated light is incident is uncovered.

5,052,777

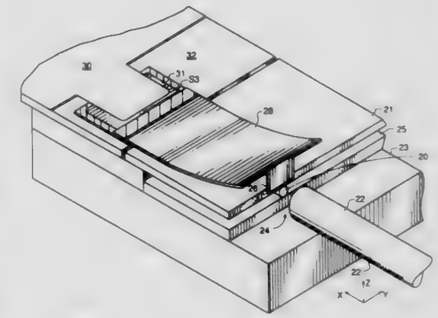
GRAPHICS DISPLAY USING BIMORPHS

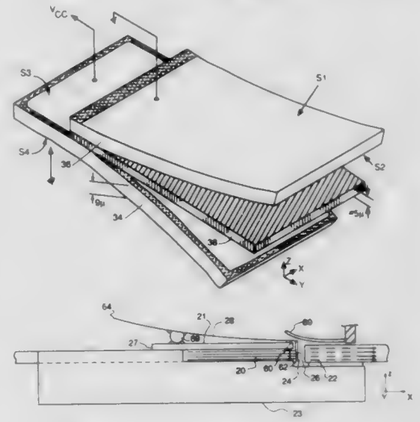
Ronald M. Ninnis, Vancouver; Allen Miller, Langley; Ralph Dyck, Vancouver, and Volker Bodegom, Fort Langley, all of Canada, assignors to Sportsoft Systems, Inc., Burnaby, Canada

Continuation-in-part of Ser. No. 188,153, Apr. 27, 1988, Pat. No. 4,844,577, which is a continuation of Ser. No. 944,695, Dec. 19, 1986, abandoned. This application Nov. 2, 1988, Ser. No. 266,458

Int. Cl.[5] G02B *6/24*

U.S. Cl. 385—19 **37 Claims**





1. An apparatus for generating visual display information from input signals, comprising:

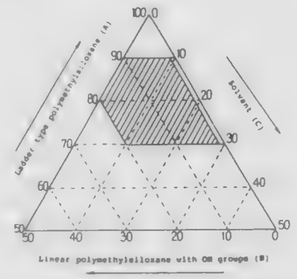
an illumination source;
a substrate;
a plurality of first optical fibers mounted on said substrate, each said first optical fiber having a first input end and a first output end, with said first input ends coupled to said illumination source for transmitting light from said source to said first output ends;
a plurality of bimorph gate means mounted on said substrate, for individually modulating the intensity of light from said illumination source which exits each of said plurality of first optical fibers by selective placement of a shutter in front of said first output ends with one said bimorph gate means adjacent each said first optical fiber, each said bimorph gate means including a bimorph having a shutter, wherein each said bimorph is translatable between a first position for causing said shutters to block said light at said first output ends and a second position for maintaining said shutter away from said first output ends for allowing said light to be transmitted from said first output ends;
a plurality of second optical fibers, each said second optical fiber having a second input end and a second output end, wherein said second input ends are optically coupled to said first output ends, and wherein said shutters are interposed between said first output ends and said second input ends when said bimorph gate means are in said first portions; and
means for translating said bimorph gate means between said first positions and said second positions in response to the input signals, such that said second optical fibers transmit the visual information to said second output ends, wherein a plurality of said second optical fibers carry information relating to a single visual pixel of the visual information, each said pixel having an intensity and/or color controlled by how many of said bimorph gate means are in said first position at said first input ends of said second optical fibers relating to said pixel.

5,052,778
OPTICAL CONDUIT WITH THERMOPLASTIC CLAD
Zarian Jamshid, Woodland Hills, Calif., assignor to Lumenyte International Corporation, Costa Mesa, Calif.
Continuation of Ser. No. 304,417, Jan. 30, 1989, Pat. No. 4,957,347. This application Aug. 13, 1990, Ser. No. 566,726
The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.
Int. Cl.[5] G02B *6/20*
U.S. Cl. 385—125 **2 Claims**



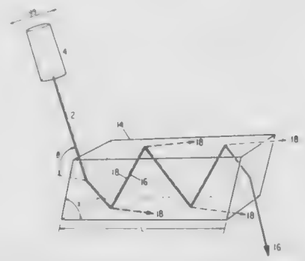
1. A flexible, clad monofilament conduit comprising:
a cylindrical, flexible polymeric core having a relatively high refractive index;
a tubular, flexible, un-shrunken heat shrinkable cladding surrounding the core; and
a tubular, thermoplastic jacket made of polyethylene.

5,052,779
POLYMER CLAD OPTICAL FIBER
Makoto Honjo; Yasuo Matsuda, and Toru Yamanishi, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jul. 25, 1990, Ser. No. 557,111
Claims priority, application Japan, Jul. 31, 1989, 1-196686; Dec. 18, 1989, 1-325831
Int. Cl.[5] G02B *6/16*
U.S. Cl. 385—145 **10 Claims**



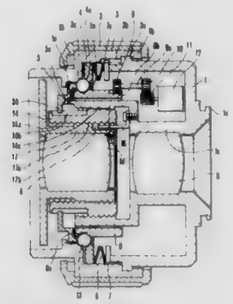
1. A polymer clad optical fiber which comprises a core made of glass selected from the group consisting of quartz glass and optical glass and a cladding made of a cured material of a polymer composition comprising a ladder type polymethylsiloxane and a linear polymethylsiloxane having hydroxyl groups.

5,052,780
DICHROIC BEAM SPLITTER
Christopher F. Klein, Manhattan Beach, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.
Filed Apr. 19, 1990, Ser. No. 510,930
Int. Cl.[5] G02B *27/12*
U.S. Cl. 359—638 **2 Claims**



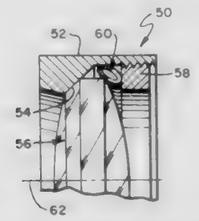
1. A method of separating an input beam of linearly polarized light into a beam of a fundamental frequency and a beam of harmonics comprising the steps of:
a. passing the linearly polarized input beam at Brewster's angle into an uncoated parallelepiped glass prism of length L, said prism having an input face and an output face which are parallel to each other and cut at the angle x, measured as illustrated in FIG. 2, such that all the light enters the prism;
b. selecting the angle x such that, at each reflection at the sides of the prism, the harmonics of input beam experiences total internal reflection and the fundamental does not;
c. selecting the length of the prism such that there are sufficient reflections that a beam emerging from the output face has at least 90% of the fundamental frequency removed.

5,052,781
LENS BARREL
Toshimi Iizuka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 19, 1990, Ser. No. 495,682
Claims priority, application Japan, Mar. 28, 1989, 1-75928
Int. Cl.[5] G02B *7/02, 15/00*
U.S. Cl. 359—823 **25 Claims**



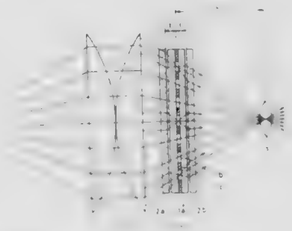
15. A lens barrel comprising:
a tube-shaped element arranged to be rotated around an optical axis by a motor serving as a drive source;
an actuating member arranged to be rotated around the optical axis by manual operation, said actuating member being supported to be only rotatable relative to a fixed tube;
a plurality of balls positioned between said tube-shaped element and said actuating member, said plurality of balls being arranged to come into contact with both of said tube-shaped element and said actuating member;
a rotary element supported to be rotatable only around the optical axis, wherein a plurality of support portions is formed in said rotary element along a circumferential direction, and wherein said plurality of balls is rotatably supported by said plurality of support portions; and
a moving mechanism responsive to rotation of said rotary element for axially moving an optical system, said plurality of balls being arranged to be rotated by rotation of one of said tube-shaped element and said actuating member so as to revolve said rotary element.

5,052,782
RESILIENT LENS MOUNTING APPARATUS
Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 14, 1989, Ser. No. 323,532
Int. Cl.[5] G02B *7/02, 21/00, 15/00*
U.S. Cl. 359—827 **17 Claims**



9. A resilient lens mounting apparatus comprising:
a lens barrel having a shoulder therein, said lens barrel having an axis;
a lens within said lens barrel and engaged against said shoulder to locate said lens with respect to said lens barrel;
a lock ring within said lens barrel and engaged with said lens barrel on the opposite side of said lens from said shoulder; and
a substantially circular coil spring having canted loops resiliently engaged with said lens to position said lens with respect to said barrel, said coil spring having canted loops, said coil spring with canted loops engaging said lens to apply both axially and radially directed positioning forces to said lens in said lens mounting apparatus with respect to said optical axis.

5,052,783
PROJECTION TYPE IMAGE DISPLAY APPARATUS
Hiroshi Hamada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 18, 1989, Ser. No. 423,335
Claims priority, application Japan, Oct. 26, 1988, 63-270181
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—40 **18 Claims**

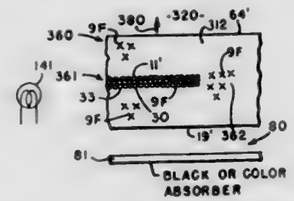


12. A projection type image display apparatus in which light from a light source is projected through a projection lens onto a non-emissive display portion, and an image of the display portion is then projected onto a predetermined projection surface,
said display portion comprising:
a display panel on which a plurality of pixels are arranged in a matrix, separated from each other by a predetermined first pitch; and
first microlens array, provided between the display panel and the light source, and including a plurality of microlenses separated from each other by a predetermined second pitch and arranged in positions corresponding to the plurality of pixels on the display panel,
said predetermined first pitch being smaller in value than said predetermined second pitch.

5,052,784
FLUORESCENT COLORED ENCAPSULATED LIQUID CRYSTAL APPARATUS USING ENHANCED SCATTERING
James L. Fergason, Atherton, Calif., assignor to Manchester R&D Partnership, Pepper Pike, Ohio
Division of Ser. No. 877,109, Jun. 23, 1986, Pat. No. 4,856,876, which is a continuation-in-part of Ser. No. 480,466, Mar. 30, 1983, Pat. No. 4,435,047. This application Aug. 10, 1989, Ser. No. 392,263
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—52 **7 Claims**

4. An optical apparatus for providing a color output comprising an operationally nematic liquid crystal, containment medium means for containing said liquid crystal, support medium means for supporting said containment medium means and liquid crystal, and a non-pleochroic dye, said liquid crystal means having positive dielectric anisotropy and having an ordinary index of refraction substantially matched to that of said containment medium means to maximize optical transmission in the presence of an electric field and to effect scattering

in the absence of an electric field, said dye comprising fluorescent material, said dye comprising a whitener, said whitener

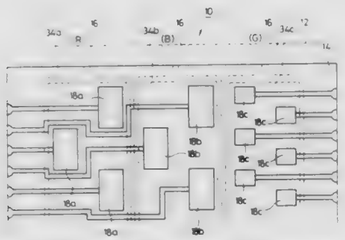


comprising a dye responsive to ultraviolet light to increase the emission of at least one of blue and green light.

5,052,785
COLOR LIQUID CRYSTAL SHUTTER HAVING MORE GREEN ELECTRODES THAN RED OR BLUE ELECTRODES

Masaaki Takimoto, and Isamu Hatanaka, both of Tokyo, Japan, assignors to Fuji Photo FIlm Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1990, Ser. No. 548,799
Claims priority, application Japan, Jul. 7, 1989, 1-176820
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—54 **11 Claims**



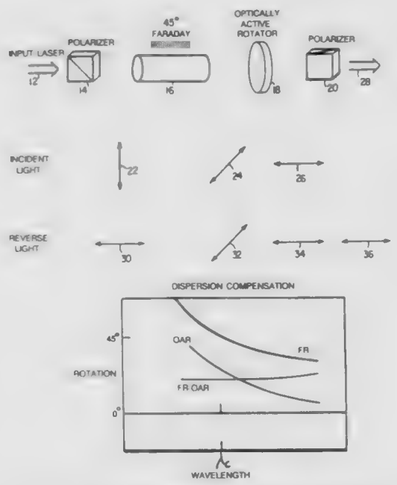
1. A color liquid crystal shutter matrix comprising:
a liquid crystal panel which is composed of a pair of transparent substrates and a liquid crystal sealed therebetween, said panel having a longitudinal dimension;
polarizing films mounted on said liquid crystal panel;
a drive electrode assembly mounted in said liquid crystal panel and drivable by color image information corresponding to three colors red, green and blue;
said drive electrode assembly comprising a plurality of arrays of pixel electrodes, each of said arrays corresponding to one of said three colors of red, green and blue wherein each of said arrays has a longitudinal dimension disposed parallel with said longitudinal dimension of said liquid crystal panel and each of said arrays is positioned adjacent to another of said arrays; and color filters mounted on said liquid crystal panel over each of said arrays, said filters being composed of thin films containing dyes or pigments of red, green and blue;
the number of the pixel electrodes corresponding to the color green is greater than the number of the pixel electrodes corresponding to each of the colors red and blue.

5,052,786
BROADBAND FARADAY ISOLATOR

Peter A. Schulz, North Andover, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 5, 1990, Ser. No. 488,690
Int. Cl.[5] G02F *1/09*
U.S. Cl. 359—484 **10 Claims**

1. An optical isolator for isolating a light source from reflections, comprising
a first polarizer configured to accept light travelling in a forward direction from said light source, said first polarizer having an axis of polarization in a first orientation;
a Faraday rotator and an optically active rotator,
one of said rotators being configured to rotate the polarization of said forward travelling light from said first orientation to a second orientation, said second orientation being at a first angle relative to said first orientation,
the other of said rotators being configured to rotate the polarization of said light in said second orientation into a third orientation, said third orientation being at a second angle relative to said second orientation; and



a second polarizer positioned to accept the output of said rotators, said second polarizer having an axis of polarization aligned with said third orientation,
wherein said optically active rotator compensates for the dispersion of said Faraday rotator to produce isolation over a wavelength range about a central wavelength, said compensation being achieved by configuring said optically active rotator and said Faraday rotator so that (i) said first and said second angles are different and (ii) the slope of said Faraday rotator's dispersion curve at said central wavelength is approximately identical to the slope of said optically active rotator's dispersion curve at said central wavelength.

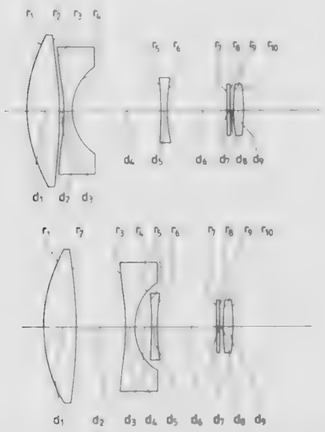
5,052,787
ZOOM FINDER

Saburo Sugawara, Kanagawa, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 426,371, Oct. 25, 1989, abandoned.
This application Mar. 12, 1991, Ser. No. 667,369
Claims priority, application Japan, Oct. 26, 1988, 63-270384
Int. Cl.[5] G02B *15/14, 13/18;* **G03B** *13/02, 13/10*
U.S. Cl. 359—683 **11 Claims**

1. A zoom finder comprising, in order from an object side:
a positive first lens movable along an optical axis;
a negative second lens movable along said optical axis;
a negative third lens having an eye-side surface which serves as a half mirror;
a parallel planar plate movable in a direction perpendicular to said optical axis and having an optical frame on one surface which indicates an imaging range; and
a positive fourth lens,
said zoom finder further satisfying the condition that:

$0.1 < R3/R2 < 0.9$, where:
R2 is the paraxial radius of curvature of the second surface from the object side; and

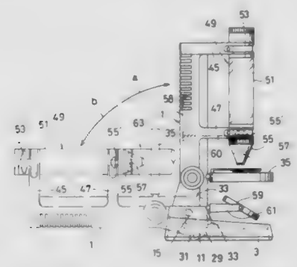


R3 is the paraxial radius of curvature of the third surface from the object side.

5,052,788
MICROSCOPE

Yoshiaki Tachibana, 26-10 Ikenohata 4-chome, Taito-ku, Tokyo, Japan 110

Filed May 24, 1990, Ser. No. 527,877
Int. Cl.[5] G02B *21/00, 23/00*
U.S. Cl. 359—391 **9 Claims**

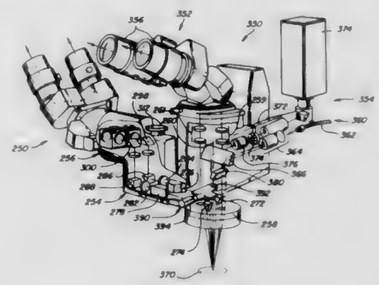


3. A microscope-telescope instrument comprising:
a base;
an arm rotatably mounted on said base;
a microscope barrel attached to said arm;
an eyepiece attached to one end of said microscope barrel;
a microscope objective-holding tube removably attachable to the other end of said microscope barrel;
an objective in said objective-holding tube;
a telescope tube removably attachable to said other end of said microscope barrel interchangeably with said objective-holding tube; and
cooperating attachment means on said arm, objective-holding tube and telescope tube for removably attaching said objective-holding tube and said telescope tube interchangeably to said other end of said microscope barrel, so that the instrument is usable alternatively as a microscope when said objective-holding tube is attached and as a telescope when said objective-holding tube is removed and said telescope tube is attached in place thereof and vice-versa;
said telescope tube comprising,
an outer tube,
an objective in and adjacent one end of said outer tube,
a base at the other end of said outer tube,
an inner tube slidably mounted in said base,
a pair of reflectors mounted in said inner tube,
retaining slots in said base,
retaining members projecting radially outwardly from said inner tube and engaging in said retaining slots for guiding said inner tube during axial adjustment thereof,
an adjustment member rotatably mounted on said base and having an internal circumferential surface, and
cam members on said internal circumferential surface having cam faces engageable with said retaining members so that rotation of said adjustment member slidably engages said cam faces with said retaining members to move said inner tube and adjust said inner tube axially relative to said outer tube.

5,052,789
MULTI-USER MICROSCOPE WITH ORIENTATION ADJUSTMENT AND METHOD

Larry K. Kleinberg, Toluca, Calif., assignor to Storz Instrument Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 251,571, Sep. 30, 1988, Pat. No. 4,938,575. This application Jun. 27, 1990, Ser. No. 544,325
The portion of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] G02B *21/20, 21/36*
U.S. Cl. 359—375 **11 Claims**



7. A microscope system comprising:
a) primary and secondary binocular viewing stations which are rotatably positionable relative to one another for simultaneously viewing an object;
b) means for compressing or stretching the paths of light to said viewing stations; and
c) illumination means.

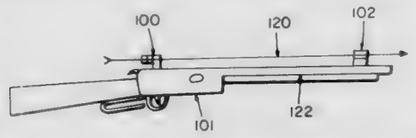
5,052,790
TELEMICROSCOPIC APPARATUS FOR SIGHTING AND BI-LEVEL VIEWING

D. Brandon Edwards; Bruce W. Edwards, both of Virginia Beach; Ian D. Howard, Norfolk, and Donald H. Ives, Chesapeake, all of Va., assignors to Edwards Optical Corporation, Virginia Beach, Va.

Continuation-in-part of Ser. No. 134,794, Dec. 18, 1987, Pat. No. 4,877,316. This application Sep. 1, 1989, Ser. No. 401,967
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] G02B *23/00;* **F41G** *1/00*
U.S. Cl. 359—399 **5 Claims**

1. A gun having sights, the sights comprising a Galilean

telescope and a target sight, the telescope having an outer diameter of less than about 16 mm. and being adapted to be



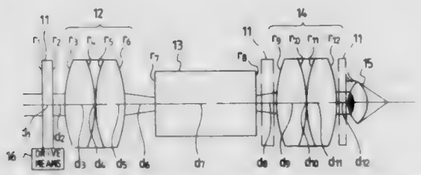
spaced from a user's eye to sight and provide a magnified image of an object past the target sight.

5,052,791

VARIABLE MAGNIFICATION VIEWFINDER OPTICAL SYSTEM WITH VARIABLE MAGNIFICATION BASED ON POLARIZATION

Juro Kikuchi, Kitatsuru, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1990, Ser. No. 550,136
Claims priority, application Japan, Jul. 10, 1989, 1-177361
Int. Cl.[5] G02B *23/14, 15/00, 1/02;* **G02F** *1/13*
U.S. Cl. 359—421 **9 Claims**



1. A variable magnification viewfinder optical system comprising:

a polarizing element for allowing incident light to emerge as a linearly polarized light,

an objective optical system comprising a first lens component having refractive power that varies depending on an oscillating direction of the incident light,

an eyepiece optical system comprising a second lens component having refractive power that varies depending on the oscillating direction of the incident light, and

means for changing the oscillating direction of said polarizing element from a first plane to a second plane perpendicular to the first plane.

5,052,792

SELECTIVELY POSITIONABLE REAR VIEW MIRROR SYSTEM FOR VEHICLES WITH TWO MIRROR SEGMENTS AND CONTROL CIRCUIT COOPERATING WITH TURN SIGNAL SYSTEM

Michael J. McDonough, 11722 Fawnview, Houston, Tex. 77070

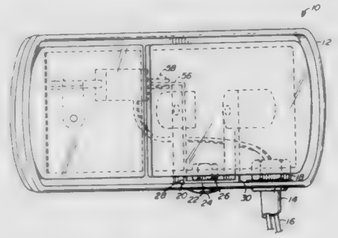
Filed Apr. 16, 1990, Ser. No. 509,327
Int. Cl.[5] B60R *1/06, 1/08;* **G02B** *7/18, 5/08*
U.S. Cl. 359—843 **20 Claims**

1. An automatically positionable mirror assembly for automotive vehicles having a turn signal system having a manually actuated turn signal lever comprising:

(a) a mirror housing adapted to be supported on the automotive vehicle;

(b) mirror means being movably supported by said mirror housing and wherein, said mirror means comprises a first mirror segment immovably supported within said housing and a second mirror segment being positionable at first and second preselected positions within said housing;

(c) motor means being carried by the vehicle and having an operative interconnection with said mirror means and adapted upon energization to induce movement of said mirror means from said first preselected positions to said second preselected position; and



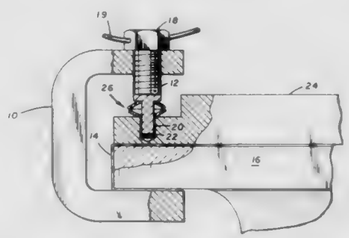
(d) a control circuit interconnected between said motor means such that upon actuation of the lever said motor means causes movement of the mirror means from said first position to said second position.

5,052,793

GLASS TO METAL ATTACHMENT DEVICE AND METHOD THEREFOR

Roger H. Lapp, Silver Spring, and Robert R. Gardner, Glen Burnie, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Feb. 10, 1989, Ser. No. 308,867
Int. Cl.[5] G02B *7/00;* **B25B** *1/00*
U.S. Cl. 359—848 **20 Claims**



1. A device for attaching glass to a support backing comprising:

a support backing for supporting said glass;

a clamp having two legs for extending about said glass and said support backing;

a force providing screw threaded through a hole in one leg of said clamp;

a screw head on the proximal end of said force providing screw, said screw head having a diameter larger than the diameter of said hole in said leg of said clamp;

a spindle extending from the distal end of said force providing screw, said spindle diameter being less than said force providing screw diameter;

a channel in said support backing for receiving said spindle; and

an energy storage device mounted on said spindle between said force providing screw and said support backing for forcing said glass and said support backing together against the other leg of said clamp when said force providing screw is tightened;

wherein said channel is sufficiently long that said spindle will not bottom out in said channel when said force providing screw is tightened such that said screw head is flush against said leg of said clamp.

5,052,794

CONTACT LENS FOR COMPENSATING EYE DOMINANCE CROSSOVER

Hugh L. Brown, 12053 N. Ridge Rd., Mequon, Wis. 53092, and Richard J. Stepniewski, 10228 W. Burleigh, Wauwatosa, Wis. 53222

Continuation-in-part of Ser. No. 405,649, Sep. 11, 1989, abandoned. This application Dec. 14, 1990, Ser. No. 629,067
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—162 **12 Claims**



1. An eye contact lens for application directly to the pupil of one dominant functioning eye of a person to compensate for the effect of the person attempting to visualize with the non-dominant eye comprising a disk having a circular central region of sufficient diameter to cover the pupil of the wearer's eye, said central region being translucent enough to nullify, totally, the visual acuity of the eye over whose pupil said central region is applied, and

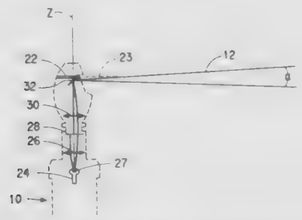
a transparent annular region of said lens surrounding the circular central translucent region.

5,052,795

MEASURING OPHTHALMOSCOPE AND OPHTHALMOSCOPIC PROCEDURE

Peter G. Gross, 714 Oxford Rd., Bala Cynwyd, Pa. 19004

Filed Mar. 16, 1989, Ser. No. 324,178
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—218 **20 Claims**



10. A measuring ophthalmoscope comprising:

aperture means for providing a line of sight;

means for projecting a divergent beam of light focused proximate said aperture means and substantially aligned with said line of sight to thereby project a spot of light onto the fundus of an eye which is observable along said line of sight;

means for selectively varying the degree of divergence of said beam of light to correspondingly vary the size of said light spot; and

calibration means associated with said varying means for measuring the degree of divergence of said beam and, accordingly, measuring the actual size of the projected light spot at the fundus.

5,052,796

FILM REGISTRATION APPARATUS FOR A CAMERA AND METHOD

Stanislav Maron, 7801 N. 54th St., Paradise Valley, Ariz. 85253

Filed Jun. 21, 1990, Ser. No. 542,259
Int. Cl.[5] G03B *1/48*
U.S. Cl. 352—221 **30 Claims**

1. Film registration apparatus for repetitively registering a frame of a film strip with respect to an aperture in an aperture plate for a camera, said apparatus comprising in combination:

a) a pressure plate for urging the film strip adjacent the aperture plate;

b) a mounting plate for supporting said pressure plate, including spring means disposed between said pressure plate and said mounting plate for urging said pressure plate away from said mounting plate and toward the aperture plate;

c) a pivot arm secured to said mounting plate for defining pivotal movement of said mounting plate;

d) pivot means for pivotally securing said pivot arm, said pivot means being disposed on a side of a drive sprocket of the camera downstream of the aperture in the aperture plate for urging the edge of said mounting plate upstream of the aperture of the apertured plate to a higher elevation than the edge of said mounting plate downstream of the aperture of the apertured plate;

e) means for urging upward pivotal movement of said mounting plate;

f) said pressure plate including support means for lifting the film strip upon upward movement of said mounting plate; and

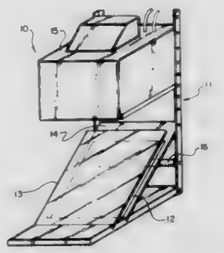
g) means responsive to a cam of the camera for urging downward movement of said mounting plate about said pivot means to urge said pressure plate against the film strip and to maintain the film strip in registration.

5,052,797

COPY VIEWER

Erik H. Madsen, 2405 Camino Way, Salt Lake City, Utah 84121

Filed Feb. 20, 1990, Ser. No. 481,617
Int. Cl.[5] B41J *13/00*
U.S. Cl. 353—28 **11 Claims**



1. A copy viewer comprising a support stand; means for supporting material to be copied on the support stand; and means for displaying copied material to overlie the material to be copied, whereby a viewer can see the copied material and look through said copied material to the material to be copied for comparison purposes.

5,052,798

HIGHLIGHTED MODULE FOR OVERHEAD VIEW PROJECTOR

Terry L. Mardis, 6855 Bryanstone Way, Fayetteville, N.C. 28314, assignor to Terry L. Mardis, Fayetteville, N.C.

Filed Mar. 23, 1990, Ser. No. 497,879
Int. Cl.[5] G03B *21/132*
U.S. Cl. 353—88 **1 Claim**

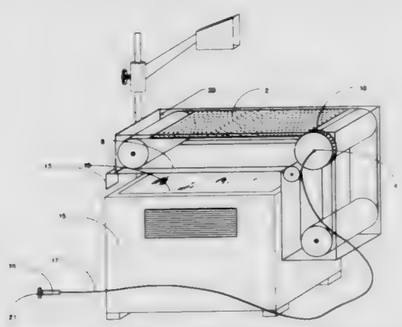
1. An improved highlighter module used as an accessory for an overhead projector to highlight a portion of a projected transparency and to be placed on top of said projector comprising:

an inverted "L" shape housing with the long side resting on top of the projection stage of said projector and with the short side of the housing pointing downward toward the bottom of said viewer; said housing having a left hand

member, a right hand member, a front member, and two "L" brackets mounted at the bottom of said housing to prevent slippage of said module from the top of said projector;

a plurality of conveyor rollers coated with non-slip material; said rollers mounted on free-rolling center shafts and mounted between the left hand member and the right hand member;

a flexible opaque curtain connected at each end by two tension cables; said cables and said curtain forming a



continuous loop engaging said plurality of rollers for allowing said curtain to travel throughout the projection area of said projector;

a main control knob fitted at an end of a conveyor roller to operate the bidirectional movement of said curtain;

a removable remote control assembly for the purpose of moving said curtain comprising:

spring wire of a suitable length, a handle and a control knob coupled to said wire; the opposite end of the wire from the control knob coupled to said main control knob with a male and female slip drive.

5,052,799

OBJECT ORIENTING SYSTEMS AND SYSTEMS AND PROCESSES RELATING THERETO

Thurman Sasser, 1826 Sarazen Dr., Orlando, Fla. 32808, and Roger L. Martin, P.O. Box 5591, Deltona, Fla. 32728

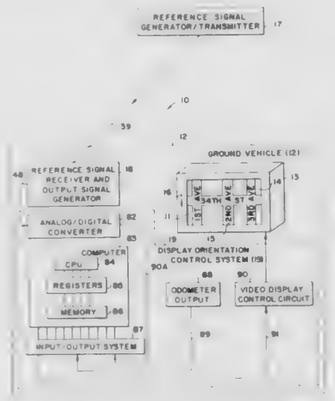
Filed Jul. 17, 1989, Ser. No. 380,521
Int. Cl.[5] G01C *1/00;* **G09G** *1/06;* **G01S** *13/00*
U.S. Cl. 356—152 **59 Claims**

58. A system for orienting the direction of a vehicle used in traversing a predetermined area comprising

(A) means for generating a reference signal with a detectable reference direction,

(B) means for passing the reference signal into said predetermined area,

(C) means mounted on the vehicle for receiving the reference signal and comparing said reference direction with either the direction of the vehicle or the direction of an object that is equated in directional orientation thereto, said reference signal receiving and comparing means having an output signal that is indicative of the angular deviation between the compared directions, and



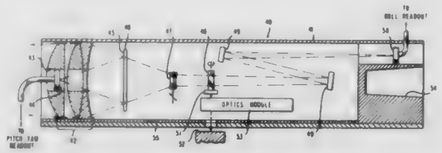
(D) means mounted on the vehicle and operating in dependence upon receipt of said output signal for controlling the directional orientation of said vehicle.

5,052,800

BORESIGHTING METHOD AND APPARATUS

William E. Mimmack, El Paso, Tex., and William J. Thompson, El Cajon, Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed May 4, 1990, Ser. No. 518,998
Int. Cl.[5] G01C *1/00*
U.S. Cl. 356—152 **23 Claims**



14. A boresighting system for a vehicle having a first station provided with a fixed reference line and a second station comprising a unit to be boresighted relative to said reference line, a transmitter positioned at one of said stations, a retroreflective catadioptric objective lens, said transmitter projecting a pair of divergent spaced-apart collimated light beams through said objective lens, a receiver positioned at the other of said stations for receiving the collimated light through a second retroreflective objective lens and focusing part of said collimated light via said second objective lens on a first light receiving module for measuring pitch and yaw, and a second light receiving module on which is focused the remainder of said light from said collimated light beams.

5,052,801

COMPACT LASER-ASSISTED WEAPON SIGHT

George R. Downes, Jr., Orlando, and Peter T. Dorman, Mt. Dora, both of Fla., assignors to Damocles Engineering, Inc., Orlando, Fla.

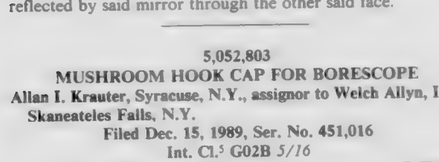
Filed Dec. 19, 1989, Ser. No. 452,303
Int. Cl.[5] F41G *1/35*
U.S. Cl. 356—153 **8 Claims**

1. A laser-assisted sight apparatus comprising:

an optical telescope having an objective lens in an optical sight axis of the telescope and a housing attached to and inserted into the side of the telescope behind the objective lens of said telescope;

a laser light source attached to the side of said telescope by the housing; and

means in the housing for transferring the light emitted from the laser light source to the optical axis of the telescope for



transmission through the objective lens of the telescope to a target comprising a rhomb mirror assembly mounted therein, said rhomb mirror assembly having a reflecting surface in front of the laser light source which is aligned such that it allows the laser light beam to be reflected along said optical axis through the objective lens of the telescope to a target toward which the telescope is aimed.

5,052,802

DEVICE FOR VIEWING BENEATH CIRCUIT BOARDS

James M. Hayes; Kevin L. Wible, and Robert L. Kelley, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 24, 1990, Ser. No. 557,251
Int. Cl.[5] G01N *21/88;* **G02B** *23/24*
U.S. Cl. 356—237 **15 Claims**

1. A hand-held, portable, visual inspection aid comprising:

(a) a light source for emitting a light beam; wherein said light source comprises an elongated housing having upper and lower ends and a bulb carried at said lower end for emitting said beam; wherein said light source further includes actuation means for turning said light beam on and off; and

(b) a prism suspended from said light source in said light beam below said lower end;

wherein said prism includes a mirror; and wherein said prism includes two faces which are perpendicular to each other, and wherein said mirror extends between said two faces at an angle such that light entering said prism through one said face is reflected by said mirror through the other said face.

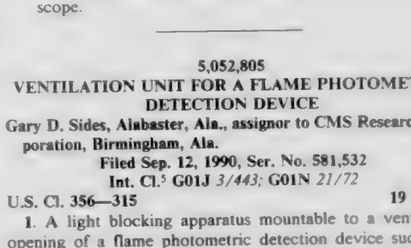
5,052,803

MUSHROOM HOOK CAP FOR BORESCOPE

Allan I. Krauter, Syracuse, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Dec. 15, 1989, Ser. No. 451,016
Int. Cl.[5] G02B *5/16*
U.S. Cl. 356—241 **17 Claims**

1. A flexible borescope comprising a flexible elongated insertion tube for penetrating a passage into an inaccessible area of a device to be visually inspected, imaging means disposed in a distal tip of said insertion tube for forming an image of a target in said inaccessible area and conducting the image to a viewing device coupled to a proximal end of the insertion tube, and hook means removably attached onto the distal tip of the insertion tube for controllably latching onto a projection in



said inaccessible area, the hook means including a sleeve circumferentially overfitting said tip and a flange projecting substantially radially from said sleeve sufficiently to hook over said projection.

5,052,804

NON-IMAGING OPTICAL DETECTOR WITH VARIABLE FIELD-VIEW

Frederick Martin, Menlo Park, Calif., assignor to GTE Government System Corporation, Stamford, Conn.

Filed Nov. 1, 1990, Ser. No. 607,976
Int. Cl.[5] G02B *23/10*
U.S. Cl. 356—256 **1 Claim**

1. A non-imaging optical telescope with a variable field-of-view, comprising:

a non-reflecting, telescopic, cylindrical tube of a certain diameter having an aperture at one end thereof;

an atomic resonance filter of generally cylindrical shape snuggly fitted within said tube, such that the light-receiving face of said filter is situated to receive light entering said tube through said aperture;

an optical sensor situated at the output side of and coupled to said atomic resonance filter to sense re-emitted light from said filter; and

positioning means to move said atomic resonance filter and said optical sensor as a unit axially within said tube to vary the distance of said atomic resonance filter from said aperture, thereby varying the field of view of said telescope.

5,052,805

VENTILATION UNIT FOR A FLAME PHOTOMETRIC DETECTION DEVICE

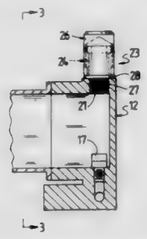
Gary D. Sides, Alabaster, Ala., assignor to CMS Research Corporation, Birmingham, Ala.

Filed Sep. 12, 1990, Ser. No. 581,532
Int. Cl.[5] G01J *3/443;* **G01N** *21/72*
U.S. Cl. 356—315 **19 Claims**

1. A light blocking apparatus mountable to a ventilation opening of a flame photometric detection device such that combustion products discharged from the detection device are adequately ventilated comprising:

(a) a tube vertically mounted within a ventilation opening of a flame photometric detection device; and

(b) means slidably and selectively releasably secured atop said tube for impeding ambient light from entering the



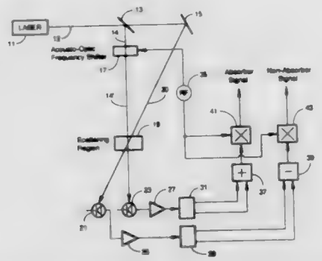
tube and the photometer while permitting sufficient ventilation of the detection device.

5,052,806

APPARATUS FOR MEASURING NON-ABSORPTIVE SCATTERING

James J. Snyder, San Jose, Calif., assignor to Blue Sky Research, Inc., San Jose, Calif.

Filed May 21, 1990, Ser. No. 527,016
Int. Cl.[5] G01N *21/49;* **G01B** *9/02*
U.S. Cl. 356—343 **7 Claims**



1. Apparatus for measuring non-absorptive scattering from a scattering region comprising:

source means for producing two laser beams having equal optical powers, with one of said beams being shifted in frequency relative to the other, said two beams oriented to cross in the scattering region;

detector means for independently detecting each of said two beams after they have traversed the scattering region, said detector means providing first and second signals, one for each of said two beams;

differencing means for providing a difference signal proportional to the difference between said first and second signals from said detector means, said difference signal corresponding to the anti-correlated portions of said first and second signals from said detector means.

5,052,807

THREE DIMENSIONAL MOIRE PATTERN ALIGNMENT

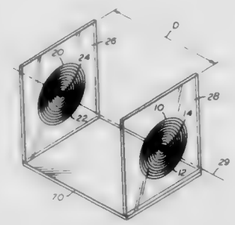
Richard D. Juday, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 28, 1990, Ser. No. 545,177
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—375 **10 Claims**

1. An apparatus for optically determining position in three dimensional space relative to a predetermined point, comprising:

(a) a rearward template, said template being part transparent and part opaque, the transparent and opaque portions form the pattern of said template forming a first regular two dimensional pattern about a center of said first pattern;

(b) a forward template, said template being part transparent and part opaque, the transparent and opaque portions form the pattern of said template forming a second regular two dimensional pattern about the center of said second pattern, said forward template being disposed in a plane a



distance D in front of said rearward template and parallel to said rearward template, the centers of said rearward and forward templates being aligned along an axis passing through said centers, such that said second pattern is complementary to said first pattern when viewed along said axis from a predetermined distance H from said rearward template; and

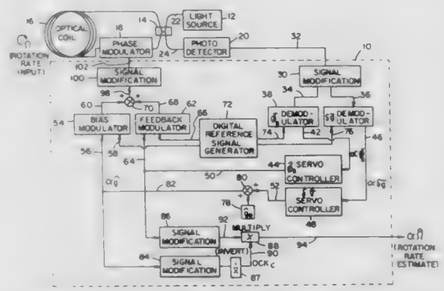
(c) a means for mounting said templates.

5,052,808

METHOD AND APPARATUS FOR INTERFEROMETRIC ROTATION SENSOR PHASE MODULATION, INTENSITY DEMODULATION, AND CONTROL

Timothy R. Hilby, Pleasant Hill; James E. Squatrito, Canoga Park, and Ray D. Dykeman, Agoura Hills, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Feb. 15, 1990, Ser. No. 480,254
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **69 Claims**



1. Apparatus for phase modulation, intensity demodulation, and control of a rotation-sensing interferometer, said interferometer including means for producing intensity interference electrical signal representing the intensity interference between first and second lightwaves counterpropagating around a closed light path, and further including reciprocal phase modulation means near one end of said closed light path for modulating the phase of said lightwaves, comprising:

bias modulation means for producing a bias modulation signal consisting of a periodic sequence of step signal transitions between at least two signal levels, said bias modulation signal having a step transition frequency that does not lie on even harmonics of the frequency $(2\tau_o)$ to the power -1 where τ_o is the time required for light to travel once around said closed light path, said bias modulation means being electrically coupled to said means for producing an intensity interference electrical signal and including output means; and

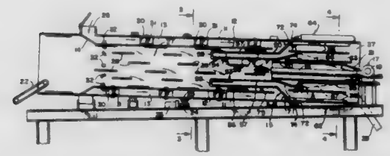
feedback modulation means for producing a feedback modulation signal consisting of a periodic amplitude-modulated square wave having spectral components at harmonics of the bias modulation signal step transition frequency, said feedback modulation means being electrically coupled to said means for producing an intensity electrical signal and including output means.

5,052,809

ROTARY DRIER

Francis M. Young, Waco, Tex., assignor to Young Brothers, Inc., Waco, Tex.

Filed Oct. 20, 1989, Ser. No. 425,153
Int. Cl.[5] B01F *9/02;* **E01C** *19/10;* **F26B** *11/04*
U.S. Cl. 366—25 **39 Claims**



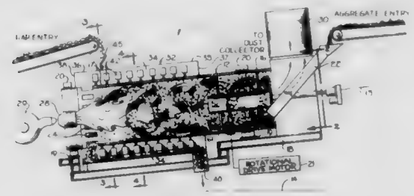
1. A rotary drier comprising a drum having an axis of rotation, means for introducing material into said drum, means for discharging material from said drum, means for creating a flame in said drum for heating a first zone of said drum to a relatively high temperature at a second zone of said drum spaced from said first zone, said second zone being located generally between said first zone and said material discharging means, means for rotating said drum to convey the material from the material introducing means to the material discharging means and through said first and second zones, and means for conducting a heated liquid along a closed path of travel between said first and second zones to extract heat created by the flame in said first zone and transfer the extracted heat to said second zone.

5,052,810

ASPHALT DRUM MIXER WITH BYPASS TEMPERATURE CONTROL

J. Donald Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Feb. 16, 1990, Ser. No. 482,064
Int. Cl.[5] E01C *19/10;* **B01F** *7/04, 9/02*
U.S. Cl. 366—25 **14 Claims**



1. A drum mixer adapted for heating and drying stone aggregate in the continuous production of asphalt paving composition or the like, and comprising

an elongate hollow drum defining a central axis,

means mounting said drum for rotation about said central axis and with said central axis being inclined with respect to the horizontal so as to define an upper end and a lower end of said drum,

aggregate inlet means positioned adjacent said upper end of said drum for introducing aggregate into the interior of said drum,

aggregate outlet means position adjacent said lower end of said drum for withdrawing the aggregate from the interior of said drum,

means for rotating said drum about said central axis so as to cause the aggregate which is introduced at said inlet means to cascade through the interior of said drum and move to said outlet means,

heating means positioned adjacent one of said ends of said drum for introducing heated gas into the interior of said drum,

exhaust duct means positioned adjacent the other of said ends of said drum for exhausting the heated gas therefrom and so that the heated gas flows through said drum and through the cascading aggregate, and

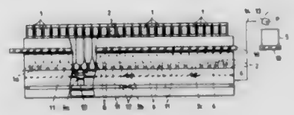
gas flow bypass means positioned within the interior of said drum for selectively permitting some of the heated gas flowing through said drum to pass freely through a portion of the length of said drum without passing through the cascading aggregate, said gas flow bypass means comprising a tube coaxially mounted within said drum to extend in the direction of said central axis, valve means for selectively controlling the flow of the heated gases through said tube and comprising plate means mounted for movement between a closed position closing one end of said tube and an open position withdrawn from said one end of said tube, and drive means for selectively moving said valve means between said open and closed positions.

5,052,811

APPARATUS FOR BLENDING FRICTION MATERIAL

Yozo Akatsu, and Toshiyasu Ichimura, both of Saitama, Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1990, Ser. No. 510,263
Claims priority, application Japan, Apr. 28, 1989, 1-107165
Int. Cl.[5] B01F *15/04*
U.S. Cl. 366—141 **4 Claims**



1. An apparatus for blending components of a friction material, comprising:

a plurality of hoppers for holding the components of the friction material, each of said hoppers having a discharge port for discharging the components;

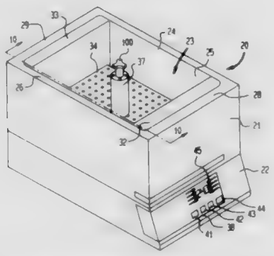
a plurality of screw feeders connected to respective ones of said hoppers for transferring the components discharged from said discharge ports;

a plurality of vibration feeders for further transferring the components transferred by respective ones of said screw feeders;

a plurality of weighing devices for receiving the components transferred by respective ones of said vibration feeders and for weighing the components, each of said weighing devices having a different weighing capacity; and

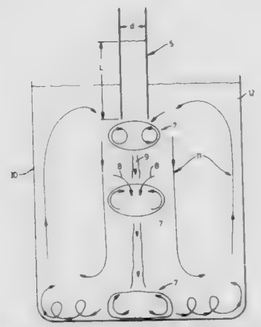
an agitator for receiving the components from each of said weighing devices and for agitating the components, each of said weighing devices being movable between each of said vibration feeders and said agitator.

5,052,812
BATH SHAKER
Myron Tannenbaum, East Brunswick, and Alan Husson, Long Valley, both of N.J., assignors to New Brunswick Scientific Co., Inc., Edison, N.J.
Filed Nov. 19, 1990, Ser. No. 615,076
Int. Cl.[5] B01F *11/00, 15/06*
U.S. Cl. 366—209 **16 Claims**



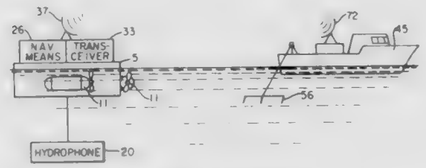
1. A water bath shaker comprising:
a shelf having means for carrying a plurality of vessels;
a tank having side walls, an open top and a bottom wall with an opening therein;
a standpipe having a lower end sealingly mounted in said opening and an upper end spaced above said bottom wall;
a drive means mounted below said bottom wall having a movable member that orbits in a plane such that a plurality of points thereon each rotate at a common speed about different centers;
a drive shaft having a lower end fixed to said movable member, an intermediate end extending through said standpipe and an upper end spaced above the upper end of said standpipe, said upper end of said shaft including mounting means for fixing said shelf thereto such that said shelf is free to orbit in said tank; and
sealing means for preventing water in said tank from entering the upper end of said standpipe.

5,052,813
TUBE TYPE VORTEX RING MIXERS
Brian Latto, R.R. #2, 153 Valley Road, Dundas, Ontario, Canada L9H 5E2
Continuation-in-part of Ser. No. 268,799, Nov. 8, 1988, abandoned. This application Mar. 19, 1990, Ser. No. 495,677
Int. Cl.[5] B01F *13/02*
U.S. Cl. 366—348 **18 Claims**



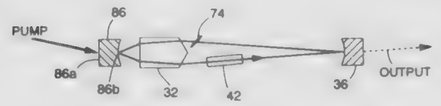
1. Apparatus for mixing or agitating fluids, comprising:
a tube of inside diameter d having an open end, the tube being adapted to be inserted into a fluid to be mixed with the open end in the fluid; means for inserting fluid into the tube; and means for propelling a slug of fluid out of said tube; the fluid being propelled a distance L along the tube; wherein the ratio of L/d is between 0.8 and 3.8, thereby creating a vortex ring at the open end of the tube for propagation through the fluid.

5,052,814
SHALLOW MARINE SEISMIC SYSTEM AND METHOD
Steven A. Stubblefield, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Sep. 19, 1990, Ser. No. 584,685
Int. Cl.[5] G01V *1/38*
U.S. Cl. 367—15 **9 Claims**



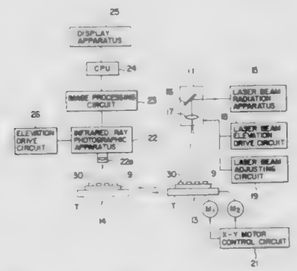
1. A marine seismic system comprising:
acquisition means including:
buoy means for floating on a body of water,
a plurality of propelling means attached to the buoy means in such a manner so as to be able to move the buoy means and responsive to control signals for moving the buoy means so as to position the buoy means on the body of water,
hydrophone means for converting seismic waves resulting from a seismic event to at least one electrical signal,
cable means for suspending the hydrophone means from the buoy means to a predetermined shallow depth and for carrying the electrical signal from hydrophone means,
navigational means for providing position signals corresponding to the position of the buoy means, and
first antenna means connected to the propelling means, to the cable means and to the navigational means for receiving first transmitted signals from a ship to provide first received signals as control signals to the propelling means, and for transmitting second transmitted signals to the ship corresponding to the electrical signal from the hydrophone means and to the position signals from the navigational means;
event means located in the body of water and connected to the ship for creating a seismic event in response to a fire signal, and
equipment located on the ship includes:
firing means connected to the event means for providing the fire signal,
second antenna means for receiving the second transmitted signals to provide second received signals and for transmitting the first transmitted signals,
data processing means connected to the second antenna means and to the firing means for processing the fire signal and at least one signal of the second received signal corresponding to the electrical signal from the hydrophone means to provide a seismic record, and
location means connected to the second antenna means for providing the control signals to the second antenna means for transmission as the first transmitted signals in accordance with desired position and the second received signals corresponding to the actual position.

5,052,815
SINGLE FREQUENCY RING LASER WITH TWO REFLECTING SURFACES
John L. Nightingale, Portola Valley, and John K. Johnson, Mountain View, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.
Filed Apr. 13, 1990, Ser. No. 509,627
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 **20 Claims**



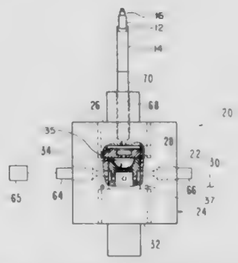
1. A ring laser comprising:
a resonant cavity defined by a pair of reflecting surfaces;
a block of lasant material located between said reflecting surfaces and;
a means for pumping said lasant material to generate a laser beam, and with said block of lasant material having at least one face oriented to deflect the path of the laser beam by refraction which in combination with said reflecting surfaces creates a ring path, and wherein said face includes an antireflective coating, and wherein the angle of incidence of the laser beam with said face is less than Brewster's angle.

5,052,816
JUNCTION INSPECTION METHOD AND APPARATUS FOR ELECTRONIC PARTS
Minoru Nakamura, and Yasuhiro Oshiro, both of Nakano, Japan, assignors to Denyo Kabushiki Kaisha, Japan
Filed Aug. 29, 1989, Ser. No. 400,009
Int. Cl.[5] G01N *25/72, 21/71*
U.S. Cl. 374—5 **3 Claims**



1. An apparatus for inspecting soldered junctions of an electronic part having a plurality of terminals to be measured said apparatus comprising:
(a) a heating station which includes:
generating means for generating a heat energy fan beam directed toward the soldered junctions to be inspected; and
irradiating means, having an adjusting means for adjusting the width of the fan beam from said generating means, for irradiating the soldered junctions with the fan beam;
(b) a photographing station which includes:
detecting means for detecting infrared rays radiated from the soldered junctions after irradiation by the fan beam at said heating station so as to produce a signal representing the condition of the soldered junctions; and
image processing means for processing the signal from the detecting means so as to make up data to be used for displaying the condition of the soldered junctions; and
(c) transferring means for transferring the electronic part between the heating station and the photographing station.

5,052,817
IGNITABILITY TEST METHOD AND APPARATUS
Laurence J. Bement, Newport News; James W. Bailey, Tabb, both of Va., and Morry L. Schimmel, St. Louis, Mo., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation-in-part of Ser. No. 426,345, Nov. 30, 1989, abandoned. This application Oct. 4, 1990, Ser. No. 593,412
Int. Cl.[5] G01N *25/50*
U.S. Cl. 374—8 **9 Claims**



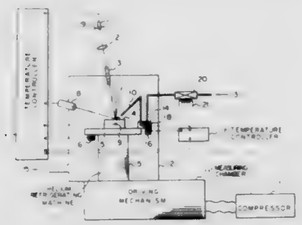
1. An apparatus for testing ignitability of an initiator, comprising:
a body having a central cavity, an upper cavity and a lower cavity, the upper and lower cavities being disposed at opposite ends of the central cavity and collectively forming with the central cavity a central passageway passing through the body;
an initiator holder for holding the initiator over the central cavity of the body;
an ignition material holder disposed in the central cavity of the body and having a cavity facing the initiator holder which receives a measured quantity of ignition material to be ignited by the initiator and a chamber in communication with the cavity of the ignition material holder and the central cavity of the body;
an adaptor removably mounted in the upper cavity and abutting the upper end of the initiator holder;
a firing mechanism slidably received in a bore extending through the adaptor and being movable into contact with the initiator, thereby firing the initiator;
a drop weight means to provide actuation of the firing mechanism;
a guiding means to guide the drop weight means to concentrically impact of the firing mechanism;
an accelerator means mounted above the drop weight means to record time of impact of the firing mechanism by the drop weight means; and
means, in communication with the central cavity of the body, for measuring pressure characteristics generated by ignition of the ignition material by the initiator.

5,052,818
METHOD OF AND APPARATUS FOR MEASURING VERY LOW WATER CONTENT IN GAS
Junichi Nishizawa, Miyagi; Taichi Tagawa, Shiga, and Takahiko Kijima, Osaka, all of Japan, assignors to Junichi Nishizawa, Miyagi and Osaka Sanso Kogyo Ltd., Osaka, both of, Japan
Continuation-in-part of Ser. No. 202,744, Jun. 6, 1988. This application May 18, 1989, Ser. No. 353,429
Claims priority, application Japan, Jun. 11, 1987, 62-145764
Int. Cl.[5] G01N *25/68, 21/47*
U.S. Cl. 374—17 **14 Claims**

1. A method for measuring the amount of water in a gas with

a very low water content at a temperature of −80° C. or less by using a dew point meter or a frost-point meter comprising: a reflecting mirror having a temperature that is variable in a range of from room temperature to the temperature of liquid nitrogen, λ wherein a reflecting surface of said mirror is formed of a silicon wafer having a surface precision of ¼ or less of the wavelength λ of a light source radiated thereon; means for cooling said reflecting mirror to a predetermined temperature; a gas ejecting means for ejecting toward said reflecting mirror a gas to be measured; means for projecting a condensed light ray onto a portion of said reflecting mirror at which said gas is blown; and means for detecting any sudden increase in the intensity of scattered light which is caused by said dew and/or frost, said method comprising:

cooling a gas to be measured so that its temperature becomes



close to that of the mirror without condensing or freezing the water content of said gas during said cooling;

ejecting the gas from said nozzle so as to hit said reflecting mirror;

projecting a condensed light ray onto that portion of the reflecting mirror against which the gas to be measured is ejected;

detecting any sudden increase in the intensity of scattered light on said reflecting mirror and measuring the predetermined temperature of said reflecting mirror with a thermocouple at said sudden increase in the intensity of scattered light, wherein said predetermined temperature corresponds to the dew point or frost point of the gas, and said dew point or frost point is used to obtain a humidity value which corresponds to the amount of water in the gas.

5,052,819

METHOD OF AND APPARATUS FOR NONDESTRUCTIVELY DETERMINING THE COMPOSITION OF AN UNKNOWN MATERIAL SAMPLE

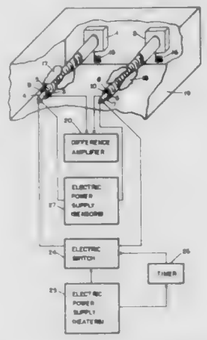
Francis I. Baratta, 138 Ridge St., Arlington, Mass. 02174

Filed Jun. 12, 1989, Ser. No. 364,462

Int. Cl.[5] G01N *25/00*

U.S. Cl. 374—43 **4 Claims**

1. Apparatus for determining nondestructively the composition of an unknown sample that comprises, in combination: means for appying heat at a rate q_{su} at one end of an elongate sample of weight W_{su}; means for simultaneously applying heat at a rate q_{st} at one end of a standard of weight W_{st} and having the same length as the length of the sample such that $q_{su}/W_{su}=q_{st}/W_{st}$; first transducer means positioned to sense the temperature at the heated said one end of the sample and to provide a first electric signal; second transducer means positioned to sense the temperature at the heated said one end of the standard located at substantially the same position as that of the sample and to provide a second electric signal; and means connected to receive and analyze the first electric signal and the second electric signal over time to determine the relative magnitudes, either qualitatively or quantitatively, of the temperatures at the said heated ends of the sample and of the standard.



5,052,820

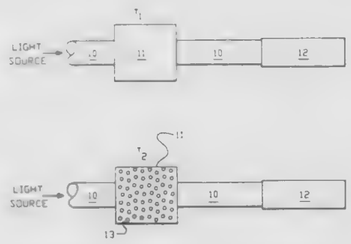
THERMAL REFRACTIVE MATERIALS FOR OPTICAL SENSOR APPLICATION

Vincent D. McGinniss, Powell; Robert S. Whitmore, Jr., and Stuart A. Kingsley, both of Columbus, all of Ohio, assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 59,545, Jun. 8, 1987, abandoned. This application Aug. 15, 1989, Ser. No. 393,977

Int. Cl.[5] G01J *5/08;* **G02B** *6/02*

U.S. Cl. 374—131 **12 Claims**



1. A thermooptical sensing device comprising an optical fiber, means for coupling light into said fiber and means for measuring changes in light transmission through said fiber to determine change in thermal environment around at least one predetermined section of said fiber, wherein said predetermined section comprises an amorphous cladding material surrounding said fiber characterized by a temperature dependent index of refraction over a predetermined temperature range such that at said section transmission of light through said section is substantially and reversibly changed when the temperature of said material is changed by a predetermined amount; the improvement wherein said cladding material comprises

(a) modified organic polymers containing inorganic modifiers, wherein said modified organic polymers are essentially transparent to light at a first temperature and are essentially opaque to light when heated to a temperature within said predetermined temperature range;

(b) a polymer system comprising discrete phases of said modified organic polymers and said inorganic additive modifiers wherein said system is essentially transparent to light at a first temperature and is essentially opaque to light when heated to a temperature within said predetermined temperature range; or

(c) thermochromic inorganic materials characterized by a change in transmission of light therethrough of a predetermined wavelength when said thermochromic inorganic materials are heated from a first temperature to a second temperature within said predetermined temperature range.

5,052,821

MEASURING INSTRUMENT FOR DETERMINING THE TEMPERATURE OF SEMICONDUCTOR BODIES AND METHOD FOR THE MANUFACTURE OF THE MEASURING INSTRUMENT

Spyridon Gisdakis, Munich; Helmut Tews, Unterhaching, and Peter Zwicknagl, Stuttgart, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

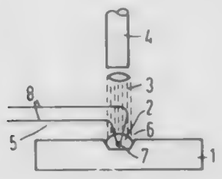
PCT No. PCT/DE88/00249, § 371 Date Dec. 1, 1989, § 102(e) Date Dec. 1, 1989, PCT Pub. No. WO88/08965, PCT Pub. Date Nov. 17, 1988

PCT Filed Apr. 27, 1988, Ser. No. 445,688

Claims priority, application Fed. Rep. of Germany, May 7, 1987, 3715231

Int. Cl.[5] G01K *7/00, 13/00*

U.S. Cl. 374—179 **5 Claims**



1. A measuring instrument for determining the temperature of a semiconductor member having a thermoelement composed of a thermoelement sphere and thermoelement wires, comprising: the thermoelement sphere surrounded on all sides in a recess of the semiconductor member with a same semiconductor material of which the semiconductor member is composed; the same semiconductor material in the recess of the semiconductor member fused to the semiconductor material of the semiconductor member; and the thermoelement wires leading toward the outside through the semiconductor material.

5,052,822

AXIAL BEARING COMPRISING A RESERVOIR WITH A PATTERN OF FEED GROOVES

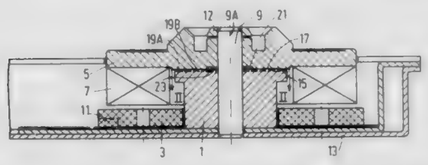
Anton Van Beek, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 59,972, Jun. 8, 1987, abandoned. This application Jul. 18, 1988, Ser. No. 220,924

Claims priority, application Netherlands, Jun. 6, 1986, 8601464

Int. Cl.[5] F16C *17/08*

U.S. Cl. 384—123 **30 Claims**



1. In an axial bearing of the type comprising two parts which are rotatable relative to each other about an axis of rotation, one of said parts comprising a first surface, and the other of said parts comprising a second surface facing the first surface to form a gap therebetween, said surfaces being coaxial with said axis of rotation; and said first surface being provided with a pattern of bearing grooves for building up pressure in a liquid lubricant present in said gap as the surfaces rotate relative to each other during bearing operation, the improvement comprising:

a reservoir for storing the liquid lubricant between the first surface and the second surface; and one of the surfaces comprises a pattern of feed grooves situated in an annular area at the location of the reservoir which is concentric with the axis of rotation for pumping the liquid lubricant from the reservoir toward the pattern of bearing grooves during bearing operation.

5,052,823

MAGNETIC BEARING BUSHING I

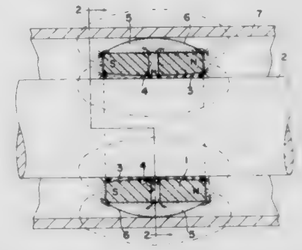
Rune Adolfsson, Varberg, and Göran Lindsten, Mölndal, both of Sweden, assignors to SKF Nova AB, Gothenburg, Sweden

Filed Jun. 19, 1990, Ser. No. 540,149

Claims priority, application Sweden, Jun. 21, 1989, 8902242

Int. Cl.[5] F16C *33/82, 32/06*

U.S. Cl. 384—133 **4 Claims**



1. A bearing bushing incorporating a sleeve (**1**) of magnetized material forming the sliding surface of the bearing and having external axial cooling flanges (**5**), a shaft (**2**) mounted in said sleeve (**1**) and a lubricant in the form of a magnetic fluid (**3**) between the sliding surface of the sleeve (**1**) and the shaft (**2**), whereby the sleeve (**1**) is magnetized in an axial direction.

5,052,824

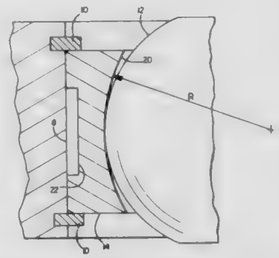
COMPLIANT SPHERICAL BEARING

J. Derek Van Wyk, Dublin, N.H., assignor to MPB Corporation, Keene, N.H.

Continuation of Ser. No. 476,889, Feb. 8, 1990, abandoned. This application Jan. 9, 1991, Ser. No. 639,327

Int. Cl.[5] F16C *23/04*

U.S. Cl. 384—203 **14 Claims**



1. A self-aligning bearing comprising:

a first member having a convex bearing surface; and

a second member having a concave bearing seat that re-

ceives the convex bearing surface of the first member, said second member also having a compliant relief region adjacent to and spaced apart from said concave seat, said second member comprising a metal material in which said concave bearing seat is formed, said relief region being located in a region about the midline of said concave seat and serving to permit deflection of said concave seat in response to loading on the first member so as to reduce susceptibility to pound out.

5,052,825

AXIAL MOUNTING WITH SKEWING COMPENSATION

Josef Bättig, Othmarsingen, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

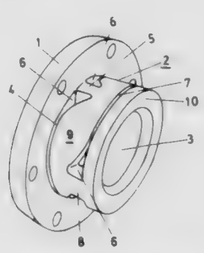
PCT No. PCT/CH89/00058, § 371 Date Oct. 30, 1989, § 102(e) Date Oct. 30, 1989, PCT Pub. No. WO89/09345, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 22, 1989, Ser. No. 432,734

Claims priority, application Switzerland, Mar. 25, 1988, 1147/88

Int. Cl.[5] F16C *23/04*

U.S. Cl. 384—223 **16 Claims**



1. An axial mounting with skewing compensation, comprising:

a bearing housing for receiving a radial plain bearing and axial bearing segments;

a fastening flange for fastening the bearing housing in the shaft housing of a rotating machine, wherein the bearing housing is subdivided into a middle housing part adjacent to said flange and into an outer housing part by means of slots interrupted on the circumference and located in two planes, normal relative to the bearing axis, wherein the ends of the slots are widened in the axis-parallel direction, in such a way that they respectively limit at least one pair of webs located diametrically opposite one another, and wherein the webs of a first of said two planes are offset relative to the webs of a second of said two planes by half the angular distance between two webs located in the same plane and adjacent to one another.

5,052,826

DISTRIBUTED LOAD JOURNAL BEARING

George R. Wisner, Deep River, and François M. Mottier, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

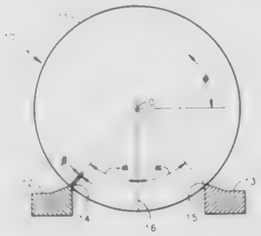
Filed Jul. 27, 1990, Ser. No. 558,912

Int. Cl.[5] F16C *17/03*

U.S. Cl. 384—310 **6 Claims**

1. A bearing arrangement for rotatably supporting a generally cylindrical journal having an outer circumferential surface exhibiting out-of-round (OOR) deviations superimposed on a perfect cylinder centered on a longitudinal axis, with the journal acting on the bearing arrangement with a basic radial action force aimed along a reference half-plane extending in a predetermined radial direction from the longitudinal axis, comprising

a pair of bearing pads situated at respective contact locations that are spaced in opposite circumferential directions from the reference half-plane and each extending substantially over the entire length, but at most only over an angle of five degrees of the circumference, of the outer circumferential surface to be at most in very limited area contact with said outer circumferential surface when the journal is supported thereon.



5,052,827

BEARING

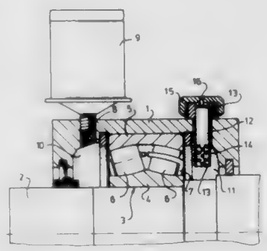
Bernhard Huiskamp, and Ronald J. van Brakel, both of Nieuwegein, Netherlands, assignors to SKF Industrial Trading & Development Co. B. V., Nieuwegien, Netherlands

Filed Oct. 31, 1990, Ser. No. 606,142

Claims priority, application Netherlands, Nov. 24, 1989, 8902910

Int. Cl.[5] F16C *19/52*

U.S. Cl. 384—448 **3 Claims**



1. Bearing for holding a rotating shaft including a housing in which elements supporting the shaft are contained and which at one end an opening has been made which can be brought into contact with a system for supplying a lubricant in the form of a grease, and which terminates inside the housing in a space on one side of the supporting elements and in which, at the other end, a second opening closed by a removable closure has been made which terminates inside the housing in a second space located on the other side of the supporting elements in which the grease flowing through said supporting elements can be captured, characterized by the fact that the removable closure of said second opening (**12**) is formed by a tubular device (**13**) closed at one end which projects into the second space, and that at least the part projecting inside this space is equipped with a number of openings (**14**) in a wall of said tubular device (**13**).

5,052,828

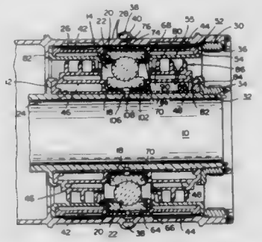
BEARING ASSEMBLY FOR USE IN HIGH TEMPERATURE OPERATING ENVIRONMENT

John J. Ciokajlo, and Jeffre G. Loewe, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 25, 1990, Ser. No. 528,520

Int. Cl.[5] F16C *37/00*

U.S. Cl. 384—476 **24 Claims**



1. Rotor support bearing assembly for supporting a rotor shaft, said assembly comprising

a bearing unit including an inner race member, an outer race member and rolling-element members captively held between said inner and outer races, the inner race member encircling an axial length portion of the rotor shaft,

a first pair of flexibly structured support members concentric with said inner race member and disposed one at each of opposite sides of said inner race member, said first pair support members having interfitting joinder with said inner race member,

a second pair of flexibly structured support members located radially outwardly of the first, said second pair being concentric with said outer race member and disposed one at each of opposite sides of said outer race member, said second pair of support members having interfitting joinder with said outer race member,

a housing encircling said second pair of support members, and

oppositely axially-directed force clamping means for urging the respective support member pairs axially against the race members associated therewith,

said support members, said housing and said bearing unit, respectively, being of materials which have high, intermediate and low thermal coefficients of expansion whereby during rotor shaft operation in a high temperature environment, the flexibly structured support members will tend to grow thermally outwardly to greater extent than the housing but such members being caused to deflect radially inwardly due to the lesser growth of the housing and therewith impose radial constraint on the outer race that prevents loosening of the outer race in the bearing unit.

5,052,829

CLAMPED BEARING HANGER ASSEMBLY

Martin Scott, Brewster, Mass., and Craig Siebert, Ossining, N.Y., assignors to Metallized Carbon Corporation, Ossining, N.Y.

Filed Aug. 30, 1990, Ser. No. 575,420

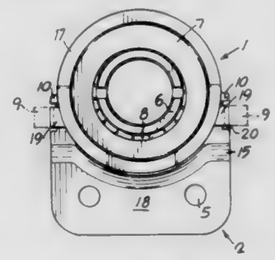
Int. Cl.[5] F16C *19/06*

U.S. Cl. 384—510 **5 Claims**

1. A hanger assembly comprising a shroud and a bearing releasably connected thereto,

said shroud comprising a plate having tongues extending from an edge of said plate toward said bearing, one of said tongues being adjacent each end of said plate, a projection on each said tongue extending outwardly and, in cooperation with a shoulder on said tongue, forming a trough therebetween,

said bearing comprising an inner race, an outer race, and ball bearings therebetween, a housing on said outer race having two slots in its periphery which are circumferentially spaced apart, at least a portion of each of said tongues in one of said slots in an inserted position, bendable tabs on said housing adjacent said slot and extending outwardly therefrom,



said tabs bent into said trough between said projections and said shoulders in said inserted position, whereby said bearing and said shroud are releasably locked together.

5,052,830

PRINTER AND DETACHABLE DEVICE FOR SETTING FUNCTIONS OF THE PRINTER

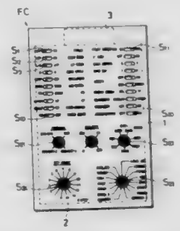
Aijiro Gohara, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 284,968, Dec. 15, 1988, abandoned. This application Jul. 31, 1990, Ser. No. 560,263

Claims priority, application Japan, Dec. 21, 1987, 62-323298; Dec. 21, 1987, 62-323299

Int. Cl.[5] B41J *11/42*

U.S. Cl. 400—76 **4 Claims**



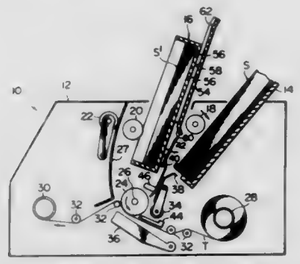
1. The combination of a printer and a function selector device for selecting and varying functions of said printer and detachably mountable on said printer, said printer having stored therein information relating to a plurality of line feed modes, carriage-return modes, and a plurality of internally stored selectable character fonts, said function selector device comprising a casing having an outer surface, a plurality of switch means having manually manipulatable operating knobs mounted on said surface of said casing and operable when installed in said printer to execute changing of a plurality of mechanical and electrical multi-choice printer functions including selecting of one of said line feed modes, one of said carriage-return modes, and one of said internally stored selectable character fonts, a circuit board disposed in said casing and connected to said switch means, and casing interconnect means on said casing connected to said circuit board, said printer having printer interconnect means, said casing interconnect means being operable to be mechanically and electrically connected to said printer interconnect means, said switch means being operable to be manually manipulated to effect setting of said multi-choice printer functions while said function selector device is detached from said printer.

5,052,831

DEVICE FOR EXACT REGISTRATION OF MONOCHROME IMAGES OF A COLOR REPRODUCTION IN A THERMAL INK TRANSFER PRINTER

Seiji Satoh, Iwai, and Osamu Tajima, Ibaraki, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 27, 1990, Ser. No. 573,577
Claims priority, application Japan, Aug. 29, 1989, 1-220351; Aug. 30, 1989, 1-223467; Aug. 31, 1989, 1-226160
Int. Cl.[5] B41J *3/20*
U.S. Cl. 400—120 **11 Claims**



1. A color printer wherein a set of monochrome images of a desired color reproduction are thermally transferred from a color transfer strip to a recipient sheet as the latter is fed back and forth by and past a platen roll disposed intermediate a sheet loading station and a sheet unloading station, including a thermal printing head for pressing the transfer strip and the recipient sheet against the platen roll for thermal ink transfer, and a pinch roller movable toward and away from the platen roll for pressing the recipient sheet against the platen roll, the pinch roller being spaced upstream from the printing head with respect to the traveling direction of the recipient sheet from the loading station to the unloading station, wherein the improvement resides in means for the exact registration of the monochrome images of each color reproduction on the recipient sheet, comprising:

(a) an end abutment disposed intermediate the printing head and the pinch roller for reciprocating movement between a working position close to the platen roll and a retracted position away from the platen roll, the recipient sheet standing endwise on the end abutment being held in the working position preparatory to being fed forwardly past the platen roll for the transfer of each monochrome image; and

(b) sheet readjustment means disposed upstream of the end abutment for readjusting the position of the recipient sheet, standing endwise on the end abutment, in the axial direction of the platen roll.

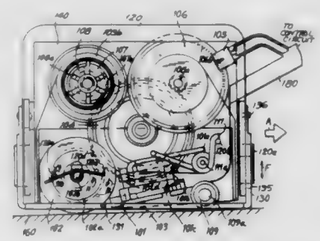
5,052,832

PRINT HEAD AND ROLLER BIASING MECHANISM FOR A HAND HELD THERMAL PRINTER

Takaaki Akiyama; Shuji Matsuo; Masahiro Fujii; Mitsukazu Kurose; Osamu Nakamura, and Masahiro Kamijo, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 198,536, May 25, 1988. This application Jul. 12, 1989, Ser. No. 378,667
Claims priority, application Japan, May 25, 1987, 62-127412; May 25, 1987, 62-127413; Jan. 13, 1988, 63-5081; Jan. 13, 1988, 63-5082
Int. Cl.[5] B41J *2/325*
U.S. Cl. 400—120 **13 Claims**

1. A printing mechanism for a hand held printer which prints characters and drawings on a print paper by manual movement of said printer over the surface of said print paper, said printer being movable in a print direction and a nonprint direction over said print paper surface by manually pressing the printing mechanism to the print paper, the printing mechanism comprising a thermal print head movably supported in the printer, a thermal transfer ribbon supported in the printer, thermal head biasing means for biasing the thermal print head through the thermal transfer ribbon to the print paper, ribbon take up means for winding the ribbon, movement measurement means for generating a signal corresponding to movement of the



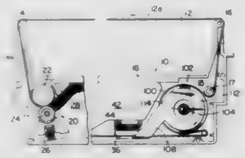
printer over the print paper, drive roller means for driving the ribbon take up means and movement measurement means, clutch means engaging the drive roller means and only rotatable in the print direction, drive roller biasing means for biasing the drive roller means in a predetermined direction, and displacement means acting independently of the thermal head biasing means for moving the drive roller means independently of the thermal print head to the print surface when the drive roller means is biased by the drive roller biasing means.

5,052,833

SELF-INKING CONTINUOUS RIBBON CARTRIDGE SYSTEM

George C. Huang, Bethany, and Peining Yu, New Haven, both of Conn., assignors to Jing Tech, Inc., Bethany, Conn.

Filed Nov. 9, 1990, Ser. No. 612,013
Int. Cl.[5] B41J *31/16, 35/08*
U.S. Cl. 400—197 **5 Claims**



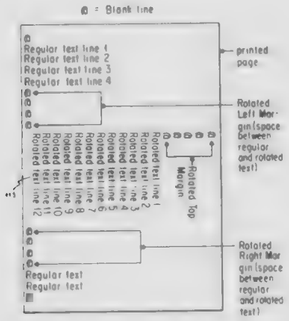
1. A ribbon cartridge adapted to being coupled to a computer printing device and comprising; an endless ribbon, a housing having means for guiding the ribbon along a path, and means for driving the ribbon along said path in response to the requirements of a printing device to which the ribbon cartridge is coupled, a self-inking reservoir defining a container for storing liquid ink, a wick provided in said reservoir and having a ribbon engageable portion adjacent to the path of said ribbon but spaced from that path, ribbon displacement means for shifting said ribbon toward said wick portion in response to ribbon movement along said path, said ribbon displacement means including a rotatably supported drum, said ribbon being wrapped at least partially around said drum to rotate said drum when said ribbon is driven, a slip clutch having a drive hub movable with said drum and a driven hub supported for incremental pivotal angular displacement on the axis of the drive hub between first and second positions, and a shoe provided in spaced relation to the pivotal axis of movement of said driven hub to engage said ribbon and shift said ribbon toward said wick portion in the second position of said driven hub.

5,052,834

SYSTEM AND METHOD OF PRINTING SIDEWAYS

Claude H. Feistel, Austin, and Subhash R. Vohra, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 338,474, Apr. 14, 1989, abandoned, which is a continuation of Ser. No. 90,878, Aug. 31, 1987, abandoned. This application May 25, 1990, Ser. No. 529,764
Int. Cl.[5] B41J *2/485*
U.S. Cl. 400—121 **8 Claims**



1. A system for controlling the presentation of a text document, represented by a data stream having a specific sequence, to a printer from a processing system, said system comprising:

a first font, electronically representative of a first orientation of characters, said first font being resident in said printer;

a second font, electronically representative of a second orientation of characters, said second font being resident in said printer;

means, in said processing system, for inserting, by a user, a marker into said text document for designating a selected portion of said text document;

means, in said processing system, for scanning said data stream for said inserted marker;

means, in response to said scanned inserted marker, for changing in said processing system the specific sequence of the data stream representing said designated portion of text, thereby electronically rearranging that portion of said data stream corresponding to said selected portion of said text document; and

means for intermixing said first orientation of characters and said second orientation of characters independently within a page boundary of said text document by printing said rearranged sequence of said data stream of said selected portion of text with said second font, and printing an unchanged sequence of said data stream with said first font.

5,052,835

ELECTRONIC TYPEWRITER WITH MULTIPLE MARGIN FORMAT CONTROL

Tsutomu Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 494,950, Mar. 15, 1990, abandoned, which is a continuation of Ser. No. 235,781, Aug. 23, 1988, abandoned, which is a continuation of Ser. No. 892,721, Jul. 28, 1986, abandoned, which is a continuation of Ser. No. 679,557, Dec. 7, 1984, abandoned. This application Dec. 17, 1990, Ser. No. 627,916
Claims priority, application Japan, Dec. 14, 1983, 58-234196
Int. Cl.[5] B41J *25/18*
U.S. Cl. 400—279 **13 Claims**

1. An apparatus for outputting information on a recording sheet comprising:

output means for outputting information on a recording sheet;

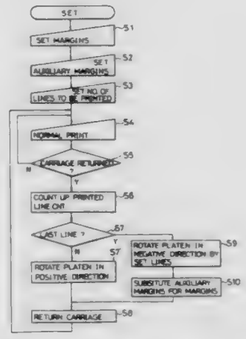
movement instruction means for instructing the moving of said output means without said output means outputting the information;

determination means for determining margin positions defining not less than two areas according to a position of said output means moved according to an instruction from said movement instruction means;

line input means for setting the number of lines common to each area determined by said determination means;

carrying means for carrying a recording sheet in forward and reverse direction;

a first memory for storing not less than two pairs of left and right margins defining each area;



a second memory for storing the number of lines; and

control means for controlling, on the basis of data stored in said first and second memories, said output means to output information on one area of a surface of the recording sheet when said carrying means carries the recording sheet in a forward direction, then said control means next controls said carrying means to carry the recording sheet in a reverse direction, wherein said control means positions said output means at a record starting position on another area of the surface of the recording sheet, and then said control means controls said output means to output information on the another area of the surface of the recording sheet.

5,052,836

PRINTER

Hirokazu Genno, Hirakata, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 15, 1989, Ser. No. 451,368
Claims priority, application Japan, Dec. 20, 1988, 63-321067
Int. Cl.[5] B41J *11/58*
U.S. Cl. 400—629 **12 Claims**

1. A method of printing, comprising the steps of:

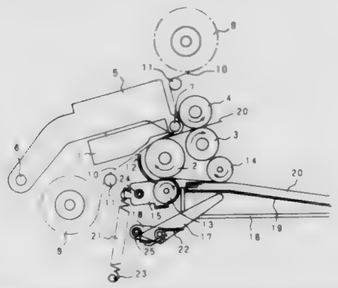
housing recording paper as a pile of sheets;

picking up one sheet of recording paper and sending the sheet to a platen roller;

conveying the sent sheet of paper to a printing position which is between a printing head and the platen roller by rotating the platen roller in a direction;

separating the one sheet of paper to be sent to the printing position from the rest of the paper in the pile by rotating

a separation roller in the same direction as that of the platen roller; and



sending back the other sheets away from the printing position by rotating the separation roller in a reverse direction.

5,052,837

MAKEUP LIQUID CONTAINER WITH APPLICATOR

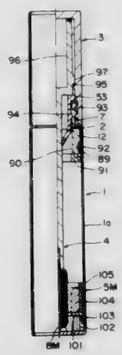
Shigeo Iizuka; Takao Kishi; Riichi Ogawa, and Hiroshi Mizushima, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 283,972, Dec. 13, 1988, Pat. No. 4,960,339. This application Aug. 14, 1990, Ser. No. 567,167

Claims priority, application Japan, Jul. 13, 1988, 63-92877; Jul. 15, 1988, 63-93780; Jul. 18, 1988, 63-94782

Int. Cl.[5] A46B *11/00*

U.S. Cl. 401—4 **1 Claim**



1. A makeup liquid container with an applicator, comprising:
an elongated container body having an opening and containing a makeup liquid;
a squeezing sleeve fixedly fitted in the opening of said container body;
a cap screwed to the outer surface of an open neck of said container body;
an applicator shaft fixed at its one end to said cap and extending downward therefrom into said container body through said squeezing sleeve;
an applicator fixed to the other end of said applicator shaft; and
a cylindrical slider received in said container body, said slider comprising a cylindrical member and a weight, the cylindrical member having a skirt in slight pressure contact with the inner surface of said container body and movable up and down along said inner surface of said container body so as to scrape makeup liquid off said inner surface of said container body when said container is shaken up and down.

5,052,838

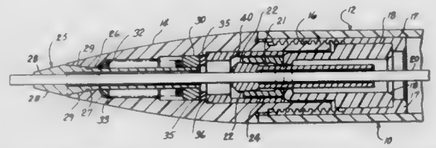
MECHANICAL PENCIL

William E. Tucker, Attleboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed May 22, 1990, Ser. No. 527,105

Int. Cl.[5] B43K *21/22*

U.S. Cl. 401—65 **9 Claims**



1. A mechanical lead pencil of the feed through type adapted for accepting replaceable leads of more than one diameter, comprising:
a cylindrical elongated barrel having an opening formed at the front end thereof through which a lead is directed;
first means for releasably engaging the lead and moving said lead toward said barrel end disposed at a point spaced releasably from said barrel end;
second means for releasably engaging the lead disposed at said opening in the front end of said barrel;
means for frictionally engaging the lead disposed between said first and second lead engaging means comprising a disc of elastomeric material having a circular opening formed in the center thereof for receiving the lead in frictional engagement, said disc having a plurality of slits formed therein directed radially outwardly from said circular opening and extending through the thickness of said disc.

5,052,839

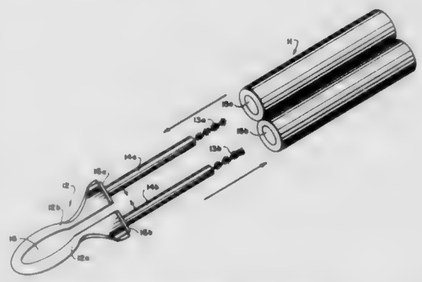
MASCARA APPLICATOR

Edwin R. Pettengill, 222B Shoshoni La., Stratford, Conn. 06497

Continuation-in-part of Ser. No. 838,227, Mar. 6, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 150,178

Int. Cl.[5] A46B *11/00*

U.S. Cl. 401—126 **10 Claims**



1. A mascara applicator which comprises:
(a) a reservoir for mascara containing dual, side-by-side openings; and
(b) a handle comprising two spaced apart, resiliently connected elements, each element connected to an application brush adapted to be placed in the openings to receive mascara on the brushes, said handle and brushes having means to sealingly engage the reservoir to seal the openings and wherein when the brushes are withdrawn from the openings the brushes can be brought closer together by applying pressure to the elements.

5,052,840

MOP USEFUL IN THE CLEANING OF TUBS

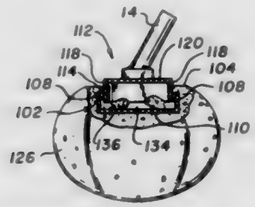
Barbara A. St. Cyer, Kelowna, Canada, assignor to Ilona Enevoldson, Kelwona; Morris Allan Shoaf, Burnaby and Merlene Hoffman, Red Deer, all of, Canada

Continuation-in-part of Ser. No. 36,835, Apr. 10, 1987, abandoned. This application Oct. 26, 1989, Ser. No. 427,533

Claims priority, application Canada, May 1, 1986, 508124

Int. Cl.[5] A47K *7/02;* **B43K** *8/10*

U.S. Cl. 401—201 **10 Claims**



1. A mop comprising:
a support member comprising a hollow body, open at its top, and having ends, sides and a base;
a locking member comprising a hollow body having an open base and having ends, sides and a top, to allow the locking member to fit within the support member with a predetermined peripheral clearance between the two members;
a socket attached to the exterior of the top of the locking member to receive a handle;
a compressible, absorbent sponge comprising a body having a top surface and flat ends;
a longitudinal slit in the sponge extending substantially parallel to the sides of the locking member;
opposed transverse slits in the sponge extending outwardly from the longitudinal slit substantially parallel to the ends of the locking member, the longitudinal and transverse slits extending from the top surface into the sponge to define a plurality of adjacent sponge flaps separated by slits, the slits being arranged and the peripheral clearance being selected so that the sponge flaps between the slits are disposed in the peripheral clearance and frictionally held between the locking member and the support member when the locking member is disposed within the support member;
whereby the support member may be located in the sponge and the locking member pressed into the support member to compress the sponge between the exterior of the locking member and the interior of the support member to locate and hold the sponge.

5,052,841

STYLO PEN TIP

Walter Jozat, Bad Bramstedt, and Steffen Wünsche, Hamburg, both of Fed. Rep. of Germany, assignors to Koh-I-Noor Inc., Hamburg, Fed. Rep. of Germany

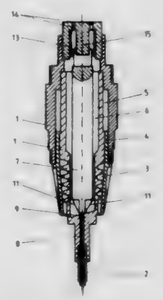
Filed May 18, 1990, Ser. No. 524,968

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1989, 3921005

Int. Cl.[5] B43K *8/16*

U.S. Cl. 401—258 **10 Claims**

1. A stylo pen tip with a drop weight body (7), located inside an inner bore (6) of a housing (1, 1') connected with a writing fluid reservoir (16), which has a cleaning wire (8) at its front end extending into a writing tube (2) supported on the front end of the housing (1, 1'), and a drop weight safety (13) supported therein which is pivotable around the longitudinal axis of the housing (1, 1') and which is in interlocking contact with the drop weight body (7), which can be moved back and forth



axially in a limited way in relation to it, characterized in that the drop weight body (7) adjoins in its forward position with the front end (10) a stop face (9) formed in the inner bore (8), and in that the plane of the front end (10) of the drop weight body (7) and the plane of the stop face (9) are inclined towards each other.

5,052,842

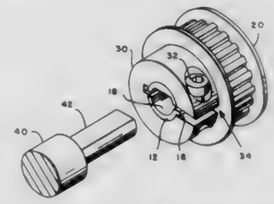
SECURE LOCKING MEANS FOR MECHANICAL DRIVE COMPONENTS

Karel J. Janatka, Southbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 27, 1991, Ser. No. 676,054

Int. Cl.[5] B25G *3/00*

U.S. Cl. 403—14 **11 Claims**



1. A device for securing a mechanical drive component to a drive shaft, comprising:
a hub having a hub member and an extended slotted member, said hub member having a knurled surface for securing said hub to said drive component by interference fit, and said slotted member including a locator rib.

5,052,843

COUPLING

Ruprecht Maurer, Bad Homburg, Fed. Rep. of Germany, assignor to Ringspann GmbH, Homburg, Fed. Rep. of Germany

Filed Apr. 6, 1990, Ser. No. 505,440

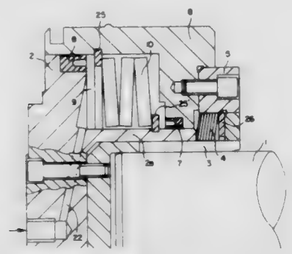
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1989, 3911513; Feb. 26, 1990, 4005965

Int. Cl.[5] F16D *1/00*

U.S. Cl. 403—15 **20 Claims**

1. An apparatus for coupling a rotationally cylindrical part, in particular a shaft means (1, 12), to an operative mechanism, comprising a coupling housing, a radially resilient bush (3, 13), a clamping means (4, 15; 3a, 6a; 13a, 16a), said clamping means adapted to clamp said resilient bush to the cylindrical part

radially when loaded by an axially operative force, a spring assembly (**10, 17**) positioned relative to said clamping means and disposed so as to exert said axially operative force upon said clamping means to effect a coupling of the cylindrical part (**1, 12**) to the bush (**3, 13**), a cylinder and piston means (**2, 6; 14,**



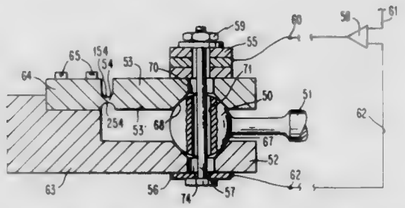
16) positioned relative to said clamping means and actuated by a pressure means to release said clamping means, said pressure means adapted to urge the spring assembly counter to its axially operative force acting upon the clamping means, said spring assembly (**10, 17**) being disposed in a cylinder chamber (**9, 19**) formed by said cylinder and piston means.

5,052,844

BALL JOINT WITH DYNAMIC PRELOAD ADJUSTMENT

Rodney A. Kendall, Ridgefield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1990, Ser. No. 516,658
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—27 **6 Claims**



1. A ball-type pivot joint with dynamic preload adjustment comprising

a) a first member terminating in a ball for said joint,

b) a pair of confronting bearing elements each including a bearing surface for one side of said ball, said ball being assembled between said bearing surfaces of said bearing elements,

c) at least one of said bearing elements being connected to a preload actuator,

d) a preload sensor attached to at least one of said bearing elements,

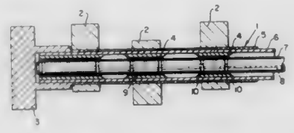
e) servo control means having an input and an output, said input being connected to the output of said preload sensor, and said output being connected to said preload actuator, whereby said preload actuator is dynamically preloaded by operation of said servo control means in response to said preload sensor.

5,052,845

MULTI-LAYER SHAFT

Wolfgang Maus, and Helmut Swars, both of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Emitec Gesellschaft fur Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Filed Jan. 10, 1989, Ser. No. 295,297
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1988, 3800913
Int. Cl.[5] F16H *53/00;* **B29P** *15/00*
U.S. Cl. 403—36 **3 Claims**



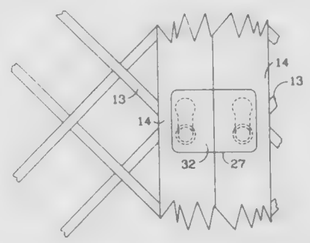
1. A hollow shaft comprised of at least two longitudinally continuous concentric layers and having drive elements attached to said hollow shaft by friction locking, said at least two concentric layers including an outer layer of a higher strength material and an inner layer of a lower strength material, and said two concentric layers being under radial pretension against each other, said inner layer being plastically expanded into said outer layer so that the drive elements are attached to the hollow shaft, said inner and outer layers being in a friction locking connection only with each other along the entire length of said hollow shaft.

5,052,846

APPARATUS FOR JOINING FENCING ENCLOSURES

Masood Behshid, 4339 Chevy Chase Dr., La Canada, Calif. 91011

Filed Sep. 13, 1990, Ser. No. 581,810
Int. Cl.[5] F16B *7/08*
U.S. Cl. 403—188 **5 Claims**



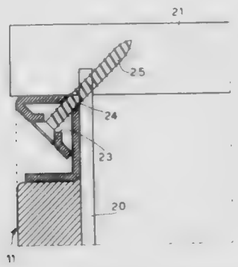
1. A fastening arrangement for joining together panels to provide secure enclosures, the arrangement including a frame from each panel to be joined, each frame having a closed exterior wall and an interior wall having a keyhole-shaped hole, the keyhole-shaped holes in abutting frames being adjacent one another; a back plate having a size adapted to cover adjacent keyhole-shaped holes in abutting side frames, a pair of arms projecting at essentially right angles from the back plate, each of the pair of arms adapted to fit within the smaller portion of the keyhole-shaped holes in the abutting frames, and an enlarged end portion on each of the arms adapted to fit through the larger portion of the keyhole-shaped holes but not to fit through the smaller portion of the keyhole-shaped holes.

5,052,847

FIXING PLATE FOR CONCEALED DEVICES USED FOR WALL-MOUNTING AN ITEM OF WALL FURNITURE

Carlo Cattaneo, Figino Serenza, Italy, assignor to Camar S.p.A., Figino Serenza, Italy

Filed Mar. 19, 1990, Ser. No. 495,342
Claims priority, application Italy, Mar. 20, 1989, 19824 A/89
Int. Cl.[5] F16B *12/46*
U.S. Cl. 403—231 **3 Claims**



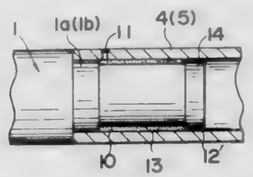
1. A plate having opposing vertical sides and upper and lower horizontal sides for mounting a fixture on a wall, comprising a box section attached to the opposing vertical sides and to the upper horizontal side of the plate, wherein each of said sides of the plate is attached to the fixture through at least a pair of holes through said box section and oblique to the fixture.

5,052,848

TUBE FIXING STRUCTURE OF A BICYCLE

Fujio Nakamura, Tokyo, Japan, assignor to Sakae Ringyo Co., Ltd., Japan

Filed Feb. 25, 1988, Ser. No. 160,153
Claims priority, application Japan, Dec. 28, 1987, 62-199891[U]
Int. Cl.[5] F16B *11/00;* **B62K** *19/22*
U.S. Cl. 403—268 **4 Claims**



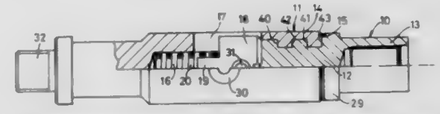
1. In an end-fitting arrangement for a pin or lug fixed to and projecting from a first frame member and interfitting with a second tubular frame member of a frame, the improvement comprising a space formed between interfitting portions of said pin and tube adapted to receive a bonding agent, an inlet formed at one axial end of and communicating with said space through which inlet the bonding agent is disposed into said space and an outlet formed at the other axial end of and communicating with said space through which air in said space is exhausted, wherein said tube has a substantially constant inner diameter along an end portion thereof interfitting with said pin, said pin including a first portion of reduced diameter between opposite ends defined by larger diameter portions, one larger diameter portion formed furthest from the pin end having an outer diameter substantially equal to the inner diameter of the tube with the other larger diameter portion having an outer diameter greater than the reduced diameter portion but less than the inner diameter of the tube to define an annular gap with the inner diameter of the tube being the outlet port, the inlet port being formed in the tube at the other end of the space.

5,052,849

QUICK-LOCKING CONNECTOR

Klaas Zwart, Aberdeen, United Kingdom, assignor to Petroline Wireline Services, Ltd., Aberdeen, Scotland

Continuation of Ser. No. 104,157, Oct. 5, 1987, abandoned. This application Nov. 13, 1990, Ser. No. 614,682
Claims priority, application United Kingdom, Oct. 8, 1986, 8624112
Int. Cl.[5] F16B *7/20*
U.S. Cl. 403—300 **4 Claims**



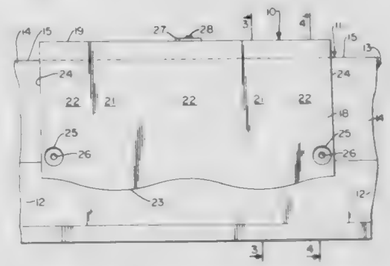
1. A quick-locking connector comprising a tubular female body member open at one end to receive a male member therein, a latch located within the female body member and urged by a spring towards said open end to engage said male member, a plurality of external, longitudinally spaced bearing surfaces on said male member and complementary bearing surfaces longitudinally spaced internally on said female body member such that, after entry of said male member, a quarter turn of said male member brings the respective bearing surfaces into engagement at longitudinally spaced intervals against pressure from said latch to provide a plurality of longitudinally spaced complementary bearing surfaces to be subjected to axial impact forces tending to pull the male and female members apart and a plurality of complementary bearing surfaces on said female body member and said male member to be subjected to impact forces in the opposite axial direction, characterized in that said latch is of light mass relative to said spring which urges said latch towards said open end of said tubular female body member, and first aperture means provided in the tubular female body and second aperture means provided in said latch, said second aperture means located offset longitudinally relative to said first aperture means located offset longitudinally relative to said first aperture means towards said open end when said male member is located within said female body member to permit entry of a lever member through said first and second aperture means at an acute angle relative to the longitudinal axis of the female member to provide leverage for moving said latch against pressure from said spring to release said male member.

5,052,850

RESILIENT SAFETY EXTENSION FOR HIGHWAY BARRIERS

Robert J. Bishop, 1083 Bloomfield Ave., West Caldwell, N.J. 07006

Filed Jul. 17, 1990, Ser. No. 554,672
Int. Cl.[5] E01F *15/00*
U.S. Cl. 404—6 **16 Claims**



1. A resilient safety extension for highway barriers, of the

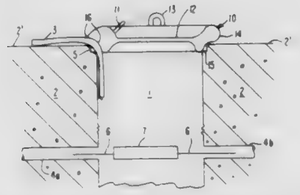
type having a broad base and upstanding central portion with opposed convergently tapered surfaces and a length which is infinitely variable, said resilient safety extension comprising an elongated resilient member having an inverted generally U-shaped transverse configuration provided by a top portion and spaced downwardly extending portions adapted to straddle the upstanding portion of the highway barrier, the downwardly extending portions being convergently tapered to provide inner surfaces closely interfitting with the upstanding portion of the barrier and outer surfaces which are slightly divergent in the direction of the top portion, and the thickness of the downwardly extending portions being variable by amounts of the order of 2 inches to provide sinusoidally curved outer surface patterns, repeating at approximately 24" intervals longitudinally of the safety extension, whereby glancing contact by a moving vehicle will generate a physical and audible warning signal without damaging the vehicle.

5,052,851

EMERGENCY MAINTENANCE HOLE COVER, AND METHOD OF INSTALLATION

Stephen H. Frishauf, 54 Riverside Dr., Apt. 6C, New York, N.Y. 10024-6551

Filed Jun. 21, 1990, Ser. No. 542,187
Int. Cl.[5] E02D *19/00*
U.S. Cl. 404—25 **19 Claims**



1. For combination with a maintenance hole (**1, 31**) in a land surface (**2'**),
an emergency water deflector for the maintenance hole, comprising
an inflatable balloon (**10, 50, 60, 70, 80**) having a plan configuration and dimension fitting in part into the maintenance hole and having the form of a hollow, ring-shaped inflatable tire-like structure,
said balloon defining hollow circumferential portions (**41, 51, 61, 71, 81**) dimensioned to fit, when limp and uninflated, into an upper portion of the maintenance hole, said hollow circumferential portions having a first surface portion (**15**) positioned for sealing itself against a wall surface within said upper portion of the maintenance hole and further surface portions (**14**) extending laterally outwardly of said first surface portion and positioned for overlapping said upper portion and said land surface (**2'**), thereby substantially sealing the circumference of the maintenance hole and providing a deflection dam to prevent ingress of water and contaminants when inflated.

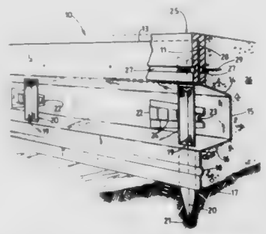
5,052,852

CONCRETE KEYED JOINTS

Paul F. Connolly, and John N. Flint, both of Casino, Australia, assignors to Alma Irene Connolly, a part interest to each and Lynne Patricia Oldfield, Australia

Filed Oct. 5, 1990, Ser. No. 593,816
Claims priority, application Australia, Oct. 5, 1989, PJ6702; Sep. 24, 1990, 63103/90
Int. Cl.[5] E01C *23/09*
U.S. Cl. 404—50 **15 Claims**

1. A keyed joint assembly for concrete including a joint plate having substantially coplanar vertical top and bottom sections interconnected to a parallel rearwardly spaced central section by rearwardly convergent upper and lower inclined sections, a plurality of pairs of holes spaced along the plate, the holes from each pair being provided respectively in the upper and lower inclined sections in vertical alignment to each other, and a substantially horizontal top edge; a plurality of stakes to support the plate substantially vertically, each stake passing through a respective pair of the vertically aligned holes; and a



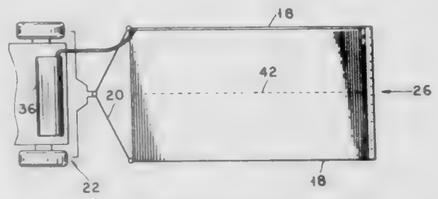
plurality of wedge members, each engageable between the central section of the joint plate and an adjacent portion of one of the stakes to releasably lock the joint plate to the respective stake, each said wedge member being formed of sheet metal and being of increasing width and height from its forward end and including a plurality of spaced transverse grooves or slots for releasably locking engagement with a respective stake.

5,052,853

APPARATUS FOR MAINTENANCE OF A GRAVEL ROAD

Anthony V. Trowbridge, Transvaal, South Africa, assignor to Matador Industries (Proprietary) Limited, Transvaal, South Africa

Continuation of Ser. No. 380,102, Jul. 14, 1989, abandoned. This application Nov. 13, 1990, Ser. No. 613,967
Claims priority, application South Africa, Jul. 15, 1988, 88/5132
Int. Cl.[5] E01C *23/08, 23/12*
U.S. Cl. 404—92 **9 Claims**



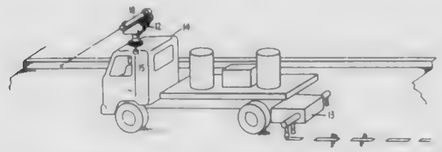
1. Apparatus for maintaining the surface of a gravel road by reducing the tendency of the road surface to develop transverse corrugations, the apparatus comprising a mat which can be dragged over the road surface by a towing vehicle, the mat comprising a plurality of flat elongated resiliently flexible members which extend lengthwise in a direction transverse to the dragging direction, said resiliently flexible members being arranged on edge relative to the road surface to form a wave form shape when viewed in a direction transverse to the road surface, said resiliently flexible members also being spaced apart one behind the other in the dragging direction to form spaces therebetween so that in use the gravel from the road surface, by the action of the flexible members as the mat is dragged over the road surface, is caused to flow upwardly in the spaces and over said flexible members to be spread out behind the mat after passage of the mat.

5,052,854

HIGHWAY GUIDANCE VEHICLE SYSTEMS

Manuel Correa; James MacKenzie; Richard Nakamoto, all of San Jose, and Lee D. Sutton, San Martin, all of Calif., assignors to SFO Enterprises, Santa Clara, Calif.

Filed Apr. 19, 1990, Ser. No. 510,985
Int. Cl.[5] E01F *9/08*
U.S. Cl. 404—94 **5 Claims**



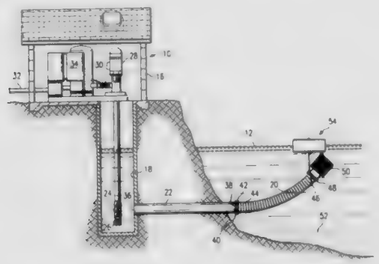
1. A system for guiding a vehicle along a roadway, said system comprising a light beam adjustably attached to said vehicle, wherein said light beam is directed against a frame of reference which parallels the roadway, and wherein the terminal position of said light beam is observed on said frame of reference when said vehicle is located at the desired position on the roadway, and wherein said vehicle is operated to travel along the roadway and maintain the terminal position of the light beam on the frame of reference.

5,052,855

METHOD AND APPARATUS FOR PROVIDING WATER FOR IRRIGATING TURF GRASS

Thomas L. Chapman, Dallas, and William T. Slingerland, Denton, both of Tex., assignors to Greenscape Pump Services, Inc., Coppell, Tex.

Filed Aug. 22, 1990, Ser. No. 570,912
Int. Cl.[5] E02B *13/00*
U.S. Cl. 405—36 **8 Claims**



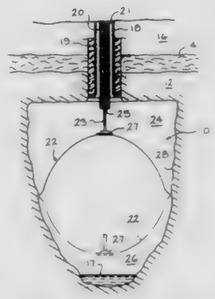
1. A system for providing water for turf grass areas and preventing the disposition of silt thereon from a variable level water body having an earthen bottom, the system comprising:
a water pump having an inlet and an outlet;
means for driving the pump;
water distribution means connected to the outlet of said pump for delivering water from said water body to said turf grass areas;
a sump located remote from said water body and having the pump inlet disposed therein;
a fixed water supply conduit having an inlet end in the said body and an outlet end in said sump connecting said sump and water body;
a flexible inlet member having an inlet end suspended a predetermined distance below the surface of the water in said water body and located above silt disposed therein and having an outlet end connected to said water supply conduit for providing water free of silt from said water body to said sump;
connecting means for joining the outlet end of said flexible inlet member to the inlet end of said water supply conduit; and
float means in said water body for buoyantly supporting the inlet end of said inlet member.

5,052,856

METHOD FOR UNDERGROUND STORAGE OF GAS

M. Rasin Tek, 73-4329C Ahiahi St., Kailua-Kona, Hi. 96740

Filed Aug. 13, 1990, Ser. No. 565,934
Int. Cl.[5] B65G *5/00*
U.S. Cl. 405—59 **14 Claims**



1. A method of storing a storage gas in an underground cavern for later retrieval comprising the steps of:
injecting into said cavern predetermined quantities of said storage gas and a substitute gas to produce a gas pressure above a minimum value at which said gas pressure forces gas to be delivered from said cavern at a given flow rate as desired for retrieval; and
physically separating with flexible means said substitute gas from said storage gas to prevent undesired mixing of said substitute gas with said storage gas, said flexible means preventing retrieval of said substitute gas with said storage gas whereby said substitute gas serves as a cushion gas.

5,052,857

PLACEMENT OF FORAMINOUS PIPING IN NON-COHESIVE SUBSOILS

James M. Parks, 3509 Merric Ct., #210, Lexington, Ky. 40502

Filed Jan. 16, 1990, Ser. No. 465,838
Int. Cl.[5] E02B *3/02*
U.S. Cl. 405—73 **18 Claims**



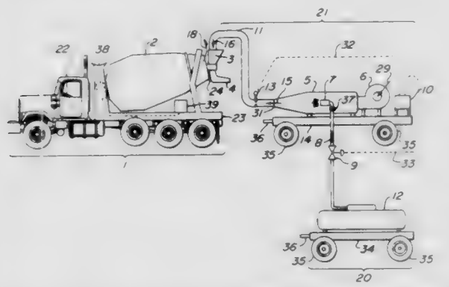
1. In placement of foraminous piping along a desired route in subsoil adapted to become non-cohesive when fluidized, the steps of
jetting a fluid medium from the foraminous piping downward onto and into such subsoil to fluidize it in the vicinity thereof,
flanking the piping with pairs of earth anchors, in the subsoil spaced apart beyond the fluidization vicinity, and through interconnection therewith,
pressing the foraminous piping downward from above by the earth anchors into the fluidized subsoil until it is below the level of adjacent subsoil located apart from the fluidization vicinity.

5,052,858

APPARATUS AND METHOD FOR THERMALLY STRIPPING VOLATILE ORGANIC COMPOUNDS FROM SOIL

Richard A. Crosby, 7257-203 Point Lake Dr., Charlotte, N.C. 28212, and Junior L. Crosby, 7819-105 Calibre Crossing, Charlotte, N.C. 28227

Filed Jun. 12, 1990, Ser. No. 537,089
Int. Cl.[5] F23G *7/14, 5/04, 5/12, 5/20*
U.S. Cl. 405—128 **36 Claims**



1. An apparatus for removing volatile organic compounds from soil comprising:
(a) an air heater for heating ambient air,
(b) a drum for holding a predetermined quantity of said soil, said drum having an opening, said opening forming both an inlet airflow path for directing said ambient air heated by said air heater into said drum and a discharge airflow path for directing said ambient air from said drum, said opening being divided into first and second portions, said first portion of said opening forming said inlet airflow path into said drum, said second portion of said opening forming said discharge airflow path from said drum, and
(c) means for mechanically aerating said soil, said aerating means disposed in said drum.

28. A method for removing volatile organic compounds from soil comprising the steps of:
(a) loading said soil into an opening in a drum,
(b) transporting said soil into said drum by rotating said drum in a first direction,
(c) mechanically aerating said soil in said drum,
(d) causing hot air to flow through said aerating soil, thereby volatilizing said volatile organic compounds into said hot air,
(e) exhausting said hot air out of said drum after said hot air has flowed through said drum, and
(f) discharging said soil from said drum through said opening by rotating said drum in a second direction.

5,052,859

SEABED STABILIZATION MATTRESSES

Keith E. J. Miller, Maidenhead, United Kingdom, assignor to SeaMark Systems Limited, Broxburn, England

PCT No. PCT/GB89/00931, § 371 Date Apr. 17, 1990, § 102(e) Date Apr. 17, 1990, PCT Pub. No. WO90/01584, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 14, 1989, Ser. No. 469,497
Claims priority, application United Kingdom, Aug. 12, 1988, 8819170; Nov. 4, 1988, 8825831; Nov. 22, 1988, 8827240
Int. Cl.[5] E03B *7/14*
U.S. Cl. 405—158 **8 Claims**

1. An articulated mattress for laying on a seabed to cover a pipeline and comprising a plurality of elongate concrete members which are articulated together for lying on a seabed in side-by-side and generally parallel relation to define said mattress, said mattress including a central member comprising a unitary rigid concrete block of greater thickness than the other members and having first and second apposed side walls, an upper surface and a generally planar undersurface for engagement on the seabed, an elongate tunnel in said undersurface extending lengthwise of said central member between said side walls to receive a seabed pipeline therein, said mattress further including first and second side members having inner edges having hinged connections with the respective first and second side walls of said central member, said side members having



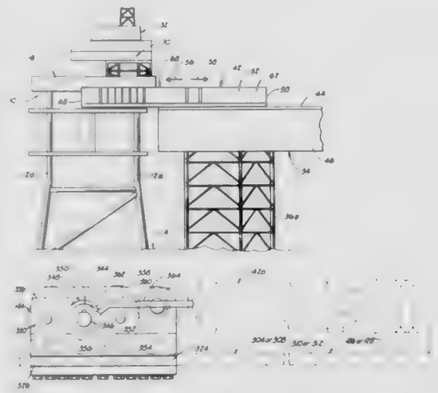
outer edges and being thinner than said central member to provide a taper in said mattress from said central member towards said outer edges, said hinged connections being arranged that said side members can be moved from a seabed position in which they extend laterally of the central member to a storage position in which they rest wholly on said upper surface of said central member.

5,052,860

SYSTEM FOR MOVING DRILLING MODULE TO FIXED PLATFORM

James E. Ingle, Edmond, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 429,728, Oct. 31, 1989, Pat. No. 4,938,628. This application Jun. 11, 1990, Ser. No. 535,792
Claims priority, application Denmark, Apr. 2, 1990, 829/90; Australia, Apr. 5, 1990, 52976/90; United Kingdom, Apr. 5, 1990, 9007728; Netherlands, May 3, 1990, 90.01064
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—201 **11 Claims**



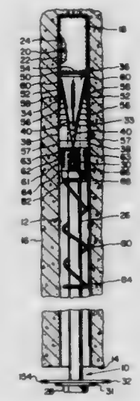
1. A method for transferring a drilling module from a jack-up rig a fixed platform wherein the fixed platform comprises a fixed platform support structure connected to legs which are secured to an ocean floor and wherein the fixed platform support structure has a drilling module support surface disposed thereon and wherein the jack-up rig comprises telescoping legs and wherein a portion of the jack-up rig is movable and upwardly and downwardly directions on each of the leg and wherein a cantilever beam assembly is supported on the jack-up rig and wherein having a forward end and a rearward end means for moving the cantilever beam assembly from a storage position wherein the cantilever beam assembly is supported generally on the jack-up rig to extended positions wherein the rearward end portion of the cantilever beam assembly is extended distances generally from the jack-up rig is supported on the jack-up rig, the method comprising:
supporting the drilling module on the cantilever beam assembly;
positioning the jack-up rig near the fixed platform;
aligning the drilling module with the drilling module support surface by moving the jack-up rig upwardly or downwardly on at least one of the legs supporting the jack-up rig until the drilling module generally is aligned with an angular disposition of the drilling module support surface on the fixed platform support structure; and
moving the cantilever beam assembly with the drilling module supported thereon to an extended position wherein the drilling module is supported generally over the drilling module support surface;
removing the drilling module form the cantilever beam assembly and supporting the drilling module on the drilling module support surface on the fixed platform;
wherein the drilling module includes a lower substructure support surface and wherein the cantilever beam assembly includes a beam support surface and wherein a portion of the drilling module is supported on the beam support surface and wherein the method further comprises:
connecting a fixed platform support structure to the fixed platform wherein the drilling module support surface is disposed on the fixed platform support structure and wherein the fixed platform support structure has a front end, an rear end and beam opening extending through the front end of the fixed platform support structure and extending a distance generally toward the rear end of the fixed platform support structure; and wherein the step of aligning the drilling module with the beam opening in the fixed platform support structure and with the lower substructure support surface of the drilling module being disposed in an angular plane spaced a distance generally above an angular plane in which the drilling module support surface of the fixed platform support structure is disposed; and wherein the step of moving the cantilever beam assembly to the extended position is further defined as moving the cantilever beam assembly with the drilling module supported thereon from the jack-up rig and through at least a portion of the beam opening in the fixed platform support structure to a position wherein the lower substructure support surface of the drilling module is disposed a distance generally above the drilling module support surface of the fixed platform support structure; and
wherein the step of removing the drilling module from the cantilever beam assembly further comprises:
lowering a portion of the jack-up rig in a generally downwardly direction to lower the cantilever beam assembly to a position wherein the lower substructure support surface of the drilling module is disposed generally on the drilling module support surface of ht fixed platform support structure and further lowering the jack-up rig to lower the cantilever beam assembly to a position wherein the beam support surface is spaced a distance generally below the lower substructure support surface of the drilling module thereby disconnecting the cantilever beam assembly from the drilling module.

5,052,861

ROOF BOLT WITH PLASTIC SLEEVE AND MECHANICAL ANCHOR

Edward C. Hipkins, Sr., Oakdale, Pa., assignor to H&S Machine & Supply Co., Inc., Coraopolis, Pa.

Filed Apr. 16, 1990, Ser. No. 509,481
Int. Cl.[5] E21D *20/02*
U.S. Cl. 405—261 **28 Claims**



1. A mine roof anchor assembly for insertion into a mine roof bore hole defined by a bore hole wall comprising:
(a) an elongated bolt having a first end with a second end, said first end having a head and said bolt threaded for a portion of its length at said second end;
(b) an expandable anchor capable of engaging with the mine roof hole wall, said anchor carried on the threaded portion of said bolt;
(c) a stopping element attached to said bolt below said mechanical anchor toward said first end, said stopping element stationary relative to said bolt during engagement of said anchor with the bore hole wall; and
(d) a frangible hollow sleeve received by said bolt and positioned between said stopping element and said mechanical anchor, whereby during engagement of the anchor with the bore hole wall said sleeve is sandwiched between said anchor and said stop and then breaks.

5,052,862

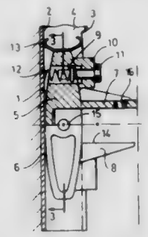
TRENCH SUPPORTING ASSEMBLY

Hans-Peter Uffmann, Aachen, Fed. Rep. of Germany, assignor to Krings Verbau GmbH, Heinsberg-Dremmen, Fed. Rep. of Germany

Filed Apr. 10, 1990, Ser. No. 507,714
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1989, 3911918; Mar. 24, 1990, 4009528
Int. Cl.[5] E02D *17/08*
U.S. Cl. 405—282 **13 Claims**

1. An assembly for shoring a trench having opposite side walls, said assembly comprising:
respective shoring plates extending generally along opposite side walls of said trench;
a pair of spaced apart posts supporting respective shoring plates on opposite sides of the trench, each of said posts being formed with a respective front wall and at least one lateral wall affixed to said front wall;
at least one spindle positioned between said posts and extending along a spindle axis transverse to a trench axis, said spindle being formed with opposite ends;
a pair of elongated support feet extending vertically generally perpendicular to said spindle axis and braced against said posts, each of said feet being operatively connected

with a respective end of said spindle and being provided with a respective curved outer side in rolling contact with the respective front wall of the respective post; and



retaining means for holding each of said support feet on the respective post so that said feet can roll on the respective front wall, said retaining means including a bolt passing through the respective lateral wall and resiliently held in a lateral bore formed in the respective foot.

5,052,863

CUTTING INSERT FOR A MILLING CUTTING TOOL

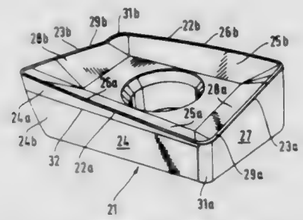
Amir Satran, Kfar Havradim, Israel, assignor to Iscar Ltd., Tefen Israel

Filed Apr. 5, 1990, Ser. No. 505,708

Claims priority, application United Kingdom, Apr. 12, 1989, 8908195

Int. Cl.[5] B23C *5/02*

U.S. Cl. 407—113 5 Claims



1. An insert for a peripheral rotary milling cutter having replaceable cutting inserts, each cutting insert having a cutting rake surface and replaceable cutting inserts, each cutting insert having a cutting rake surface and a relief flank surface and a curved cutting edge defined between the cutting rake surface and the relief flank surface, the radius of curvature of the cutting edge being given by the relationship

$$r = \frac{\left(\frac{l}{4}\right)^2 + \left(\frac{D}{2} - \sqrt{\frac{D^2}{4} - \frac{l^2}{4}\sin^2\alpha_A}\right)^2}{\frac{D}{2} - \sqrt{\frac{D^2}{4} - \frac{l^2}{4}\sin^2\alpha_A}}$$

where

r = radius of curvature of the cutting edge;

l = length of a chord joining the ends of the curved cutting edge;

D = Diameter of cylindrical envelope of the cutting edge;

α = Axial rake angle.

5,052,864

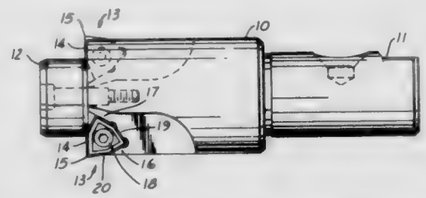
COUNTERBORE MILLING CUTTER

Jerry L. Shaw, Drayton Plains, and Stanley R. Mickel, Ortonville, both of Mich., assignors to GTE Valenite Corporation, Troy, Mich.

Filed Nov. 21, 1988, Ser. No. 274,066

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—201 9 Claims



1. A counterbore milling cutter comprising a cylindrical body having a counterbore clearance diameter, said body rotatable about a centrally disposed axis and separated by a shank at one end and a pilot at another end.

a plurality of pockets adjacent the pilot end of the body,

a plurality of insert means having three symmetrically disposed insert points separated by straight side edges, each of said points having an included angle in a range less than 90° and greater than 60° forming six sides intersecting in pairs to form three obtuse angles,

said inserts being secured within said pockets so to extend one of said side edges radially with respect to said axis so that an active cutting edge of one of said side edges is substantially coincident with the radial extent of the counterbore.

5,052,865

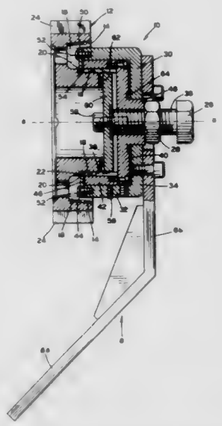
DEBURRING APPARATUS

Anthony R. Kaczmarek, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed May 22, 1990, Ser. No. 528,749

Int. Cl.[5] B23F *19/10*

U.S. Cl. 409—8 14 Claims



1. An apparatus for deburring end surfaces of splines extending along an axis of a workpiece, said apparatus comprising:

a) cutting means adapted to engage radial end surfaces of said splines;

b) means for rotatably supporting said workpiece relative to said cutting means, said support means having an axially extending surface complimentary to said splines of said workpiece and adapted to axially and radially engage said splines to prevent burr displacement into interspline surfaces of the workpiece; and,

c) axially adjustable means for locating said workpiece on said support means to assure engagement of said workpiece with said cutting means, said locating means being force biased against a radial end surface of said workpiece for providing spike force protection for said cutting means.

5,052,866

ACTUATING ARRANGEMENT FOR A CLAMPING DEVICE IN A MACHINE TOOL SPINDLE

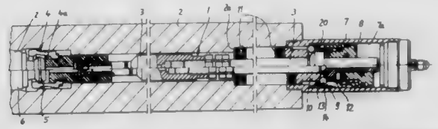
Karl Bauch; Franz Ziegeltrum, both of Kempten, and Helmut Heel, Lengenwang, all of Fed. Rep. of Germany, assignors to Ott Maschinentechnik GmbH, Kempten, Fed. Rep. of Germany

Filed Aug. 22, 1990, Ser. No. 571,315

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1989, 3936122

Int. Cl.[5] B23C *5/26;* B23B *31/10*

U.S. Cl. 409—233 17 Claims



1. In an actuating arrangement for a tool or workpiece clamping device in a machine tool spindle, comprising a clamping bar which is axially displaceable in the clamping direction in the spindle under the force of a spring arrangement, and a wedge transmission assembly which is operative between the spindle and the clamping bar, with freely movable balls which respectively bear against three cone surfaces of which the first cone surface is provided on a clamping sleeve which is axially displaceable in the clamping direction on the clamping bar under the force of the spring arrangement, the second cone surface is provided on a clamping ring connected to the clamping bar and the third cone surface is provided on a support ring arranged stationarily with respect to the spindle, wherein the second and third cone surfaces are inclined relative to each other in such a way that, upon movement of the clamping bar in opposition to the clamping direction, self-locking occurs between said cone surfaces and the balls disposed therebetween, and further comprising a piston-cylinder unit whose piston firstly acts on the clamping sleeve in a first phase of its release stroke movement directed oppositely to the clamping direction, and also acts on an annular shoulder on the clamping bar in a second phase, the improvement wherein a fourth cone surface is provided on the support ring in a region thereof which is between the third cone surface and the spring arrangement is a fourth cone surface, the fourth cone surface being inclined relative to the axis (A) of the clamping bar in opposite relationship to the third cone surface and expanding in a conical configuration towards the spring arrangement so that at the beginning of the clamping stroke movement produced by the spring arrangement the balls bear against the fourth cone surface and act on the clamping ring to produce a travel step-up effect, in a second phase of the clamping stroke movement they bear against the third cone surface and act on the clamping ring to produce a force-increasing effect, and in a last phase of the oppositely directed release stroke movement they again bear against the fourth cone surface and act on the clamping sleeve in the direction of the spring arrangement to produce a force-increasing effect, and wherein the piston of the piston-cylinder unit is releasably connected to a release ring which concentrically surrounds the clamping ring and which is provided in the region of the balls, by way of a locking means which acts in dependence on travel and which during a first phase of the release stroke movement of the piston axially locks same to the release ring in a thrust-resistant fashion and releases said locking action in dependence on travel movement just before the balls have reached the radially narrowest location of the third cone surface and at that time the piston or an extension thereof bears against the annular shoulder on the clamping bar.

5,052,867

METHOD OF PRODUCING PROFILED WORKPIECES

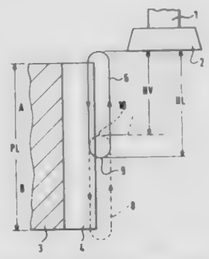
Helmut Krämer, Weingarten, Fed. Rep. of Germany, assignor to Maschinenfabrik Lorenz AG, Ettlingen, Fed. Rep. of Germany

Filed Jul. 24, 1990, Ser. No. 558,155

Claims priority, application Switzerland, Aug. 25, 1989, 3089/89

Int. Cl.[5] B23D *37/00*

U.S. Cl. 409—244 21 Claims



1. A method of producing a profiled workpiece on a machine tool having respective means for holding at least one planing or broaching forming tool that forms a workpiece during a reciprocating stroke and for holding a workpiece; said method comprising the steps of performing reciprocating stroke movements between the respective holding means, whereby said at least one tool forms a profile on the workpiece along a length of the workpiece in the direction of said movement; selecting said reciprocating stroke movements to be equal and shorter than said length of the workpiece; dividing said length of the workpiece into at least two portions; and forming said profile separately in each of said at least two portions with said selected stroke movement.

5,052,868

ALL PURPOSE CAR

Harold E. Hesch, St. John, and Phillip G. Przybylinski, Schererville, both of Ind., assignors to Trinity Industrie, Inc., Dallas, Tex.

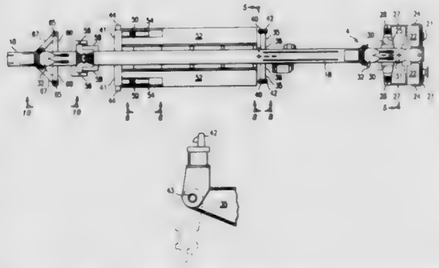
Filed Mar. 23, 1990, Ser. No. 498,227

Int. Cl.[5] B61D *45/00*

U.S. Cl. 410—54 12 Claims

1. An all purpose railway car comprising a longitudinal center sill and having a pair of runways carried at opposite sides of the center sill, and a cross-bearer at one of the ends of said runways extending transversely of the center sill and

having container locks at its ends pivotal on axes extending lengthwise of the car for upright position and folded position



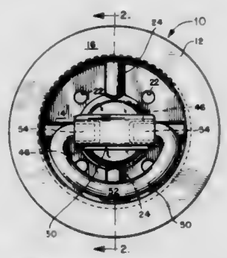
and in the latter position being hung from the ends of said cross-bearer.

5,052,869

TIE DOWN ASSEMBLY

William S. Hansen, II, Waukegan, Ill., assignor to A. L. Hansen Mfg. Co., Waukegan, Ill.

Filed Aug. 29, 1990, Ser. No. 574,600
Int. Cl.[5] B61D *45/00*
U.S. Cl. 410—111 5 Claims



1. A tie down assembly comprising:

a mounting plate having a central panel and a peripheral flange, said central panel recessed with respect to the flange to form a central recess, said central panel defining a central opening;

a cross bar mounted in the central recess, said cross bar having a central section interposed between two end sections;

said central section comprising a post that extends through the central opening, said post having an enlarged head that positively captures the central panel between the head and the central section while allowing rotation of the cross bar in the central recess about a rotation axis defined by the post, said enlarged head and post being integral with the central section and the end sections;

each of said end sections defining a rear surface adjacent the central panel, an end surface, and a bail receiving recess that opens both at the rear surface and the end surface; and

a tie down bail having a convex central portion and two opposed end portions, each of said end portions positioned in a respective one of the bail receiving recesses such that the tie down bail is free to pivot with respect to the cross bar;

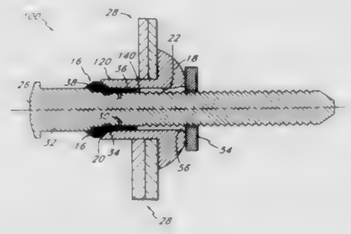
said bail receiving recesses shaped to allow the end portions of the tie down bail to pass into and out of the bail receiving recesses at the rear surface such that the central panel prevents the end portions of the tie down bail from moving out of the bail receiving recesses.

5,052,870

BULB FASTENER

John D. Pratt, Rancho Cucamonga, and Mario A. Zermeno, Garden Grove, both of Calif., assignors to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 472,897, Jan. 31, 1990, which is a continuation-in-part of Ser. No. 421,829, Oct. 16, 1989, abandoned. This application Jul. 11, 1990, Ser. No. 550,974
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—43 17 Claims



1. A blind fastener, comprising:

a tubular fastener body having a head and a tail, said fastener body being adapted for insertion through aligned apertures in a plurality of workpieces;

an elongate stem extending through said fastener body and having a cylindrical neck which fits closely within the fastener body tail, and having a stem midsection extending forwardly from said neck with a diameter reduced with respect to said neck and spaced from the surrounding fastener body, a shoulder being formed at the intersection of said midsection and said neck; and

a shear ring separate from said stem surrounding said stem, and having an anchor portion engaging said shoulder, said shear ring further having a bulbing portion extending radially outwardly beyond said neck to bulb the tail of said fastener body as the stem is drawn into said fastener body, said shear ring bulbing portion being adapted to shear from said anchor portion after the bulbing portion bulbs said body tail and as the stem is drawn further into said body; and

a lock ring surrounding said midsection having a rear wall engaging said shear ring anchor portion.

5,052,871

CONNECTED SCREW THREADS

John Collins, St. Albans, United Kingdom, assignor to Mabey Hire Company Limited, Reading, United Kingdom

Filed Jun. 14, 1990, Ser. No. 538,302
Claims priority, application United Kingdom, Jun. 20, 1989, 8914083
Int. Cl.[5] F16B *35/00*
U.S. Cl. 411—366 10 Claims

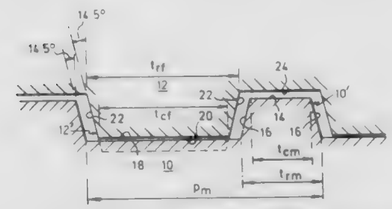
1. In a machined male screw-thread member screwed into a female screw-thread member of cast iron, the improvement wherein:

a) the female screw-thread member is machined on the crown of the thread and the thread has a substantially larger crown thickness than the root thickness thereof;

b) the crown diameter of the female screw thread is in close radial clearance with the root diameter of the male screw thread;

c) the flanks of the thread and the root of the female screw-thread member are left un-machined; and

d) there is a substantial radial clearance between the crown of the thread of the male screw-threaded member and the root diameter of the female screw-thread member and between the flanks of the thread of the female screw-



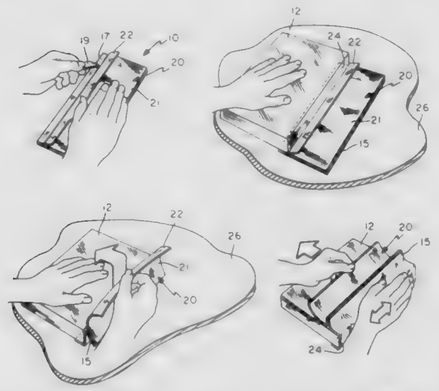
thread member and the opposed flanks of the thread of the male screw-thread member along their entire surfaces to provide substantial axial looseness between the threads of the male and female screw-thread members.

5,052,872

MANUAL SHEET BINDING STRUCTURE AND METHOD

Ray A. Hunder, Birchwood; Stephen H. Dwyer, Egan; George J. Clements, Afton, all of Minn., and Michael K. Martin, West Lake, Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 1, 1989, Ser. No. 359,504
Int. Cl.[5] B42D *1/04, 3/00;* B42C *9/00, 11/00*
U.S. Cl. 412—6 22 Claims



1. A method adapted for binding a stack of generally uniformly sized sheets, said sheets each having a spine edge, an outer edge opposite said spine edge, and opposite major side surfaces, each of said sheets, except for the outermost sheets in the stack which are each joined only along one of said edges, being joined at both of said edges to sheets adjacent its major surfaces in the stack with the spine edges of the sheet being joined to the spine edge of the sheet along one of said side surfaces, and the outer edge of the sheet being joined to the outer edge of the sheet along the other of said side surfaces, said method comprising the steps of:

manually disposing the stack of sheets with the spine edges of the sheets generally aligned in a plane generally at a right angle to the side surfaces of the sheets int he stack;

manually positioning a thick layer of pressure sensitive adhesive already adhered to a generally planar portion of a highly flexible backing having low resiliency over the spine edges;

manually pressing the side of the backing against the spine edges of the sheets to cause conformation of the backing and adhesion of the layer of pressure sensitive adhesive to the spine edges of the sheets;

providing a second stack of the sheets;

disposing the second stack of sheets on one side of the book formed by the manually disposing, manually positioning and manually pressing steps in a position with spine edges of the sheets generally aligned ion a plane generally at a right angle to the side surfaces of the sheets and to the outer surface of a portion of the backing along the spine edges of the sheets in the book;

manually positioning a thick layer of pressure sensitive adhesive already adhered to a generally planar portion of a highly flexible backing having low resiliency over the spine edges of the second stack of sheets and said portion of the backing along the spine edges of the sheets in the book; and

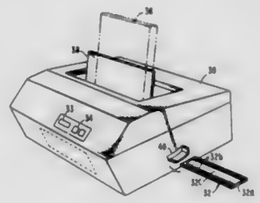
manually pressing the side of the backing against the spine edges of the sheets to and said portion of the backing along the spine edges of the sheets in the book to cause conformation of the backing and adhesion of the layer of pressure sensitive adhesive to the spine edges of the second stack of sheets.

5,052,873

APPARATUS AND METHOD OF BINDING A BOOK

Kevin P. Parker, 830 Isabella St., Oakland, Calif. 94607; Eugene E. Anderson, 100 Buckeye, Oakland, Calif. 94618, and Leo M. Fernekes, 110 W. 26th St., #713, New York, N.Y. 10001

Continuation of Ser. No. 350,041, May 10, 1989, abandoned. This application May 10, 1990, Ser. No. 509,027
Int. Cl.[5] B42C *13/04*
U.S. Cl. 412—13 42 Claims



1. Apparatus for binding a plurality of sheets arranged in a stack utilizing a binding tape which includes a flexible tape substrate which carries an adhesive, with the tape being bonded to first and second cover sheets of the stack and engaging an edge of the stack so as to form a spine, said apparatus comprising:

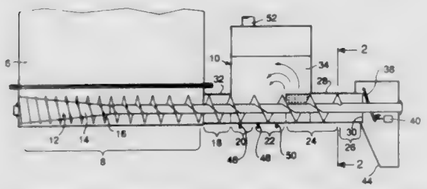
stack support means for supporting the stack of sheets, said stack support means includes a first clamp member for engaging the first cover sheet of the stack and a second clamp member for engaging the second cover sheet of the stack with said first clamp member being movable with respect to said second clamp member;

tape positioner means for positioning the tape with respect to the stack;

platen means for applying the tape to the stack of sheets; and

control means for controlling the relative position of said stack support means and said platen means so as to first seal the binding tape to the first cover by application of pressure, with the entire first cover seal being made simultaneously, and to then seal the binding tape to the second cover by application of pressure, with the entire second cover seal also being made simultaneously.

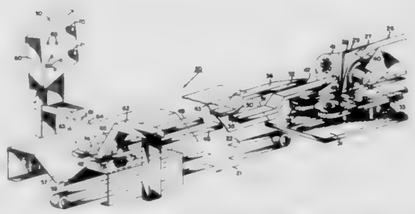
5,052,874
COMPACTING SCREW FEEDER
Jerry R. Johanson, San Luis Obispo, Calif., assignor to JR Johanson, Inc., San Luis Obispo, Calif.
Filed Apr. 12, 1990, Ser. No. 509,591
Int. Cl.[5] B65G *33/00*
U.S. Cl. 414—326 **14 Claims**



1. Apparatus for removing air from particulate solids stored in a source chamber, comprising in combination:
a screw feeder extending in a horizontal direction and including a number of sections arrayed in succession along its length so as to subject the particulate solids to a succession of operations, said sections including,
a feeding section extending into the source chamber for drawing the particulate solids from the source chamber into the apparatus;
a feed seal section, adjacent said feeding section and having the same pitch as the adjacent portion of said feeding section;
a conveying section adjacent said feed seal section and having a greater pitch to provide greater solids-moving capacity than said feed seal section;
a recirculation section adjacent said conveying section and having substantially the same pitch as said conveying section;
a high pressure section having substantially the same pitch as said recirculation section;
a recirculation chamber through which said screw feeder extends, said recirculation chamber including,
a feeder seal shroud closely surrounding said feed seal section of said screw feeder;
a high pressure shroud closely surrounding said high pressure section of said screw feeder and having an output end;
said recirculation chamber further enclosing said conveying section and said recirculation section, to confine particulate solids blown out of said high pressure section of said screw feeder as the particulate solids are compressed thereby; and,
a hingedly mounted preloaded cover in yieldable sealing engagement with the output end of said high pressure shroud to permit the particulate solids pressurized by said high pressure section to emerge under pressure from said high pressure shroud.

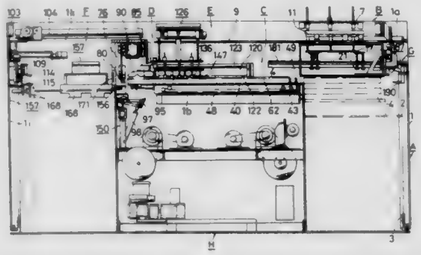
5,052,875
AUTOMATED ENVELOPE HANDLING SYSTEM
Lester Miller, Danbury, and Szee M. Yao, Norwalk, both of Conn., assignors to Agissar Corporation, Stratford, Conn.
Filed Dec. 29, 1989, Ser. No. 458,772
Int. Cl.[5] B65B *43/30*
U.S. Cl. 414—403 **16 Claims**

1. An envelope handling system for receiving pre-slit envelopes and enabling the removal of the contents from the envelope, said system comprising
A. envelope transfer means
a. for receiving pre-slit envelopes, and
b. automatically advancing the envelope through an envelope transfer pathway, a portion thereof defining a first elongated plane through which said envelope travels;
B. a first vacuum manifold
a. mounted in juxtaposed, spaced, adjacent relationship to a first side of the first plane of the envelope transfer pathway,
b. comprising a first, fixedly mounted envelope contacting face defining a second plane, said second plane forming an acute angle with the first plane, and
c. connected to a vacuum source for providing suction directly adjacent the envelope transfer pathway through said first envelope contacting face; and
C. a second vacuum manifold
a. mounted in juxtaposed, spaced, adjacent relationship to the second side of the first plane of the envelope transfer pathway in spaced relationship to the first vacuum manifold,



b. comprising a second, fixedly mounted envelope contacting face defining a third plane, said third plane forming an acute angle with the first plane, and
c. connected to a vacuum source for providing suction along the opposite side of the envelope transfer pathway through said second envelope contacting face;
whereby each side of the pre-slit envelope is separately drawn apart into sliding, contacting, following engagement with the envelope contacting faces, thereby providing a highly effective and efficient envelope separation system which virtually eliminates mishandling of the contents.

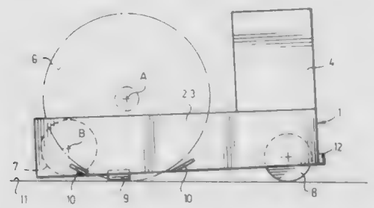
5,052,876
UNPACKAGING APPARATUS FOR PACKAGED SHEETS
Yoshie Tateno, and Tsunekazu Itaya, both of Tokyo, Japan, assignors to Kabusiki Kaisha Tateno Kikai Seisakusho, Tokyo, Japan
Filed Sep. 6, 1990, Ser. No. 581,516
Claims priority, application Japan, Sep. 19, 1989, 1-240860
Int. Cl.[5] B65B *69/00*; **B65H** *3/24, 1/26*
U.S. Cl. 414—412 **8 Claims**



1. An unpackaging apparatus for packaged sheets, comprising:
a packaging sheet loading unit capable of being loaded with packaging sheets or bulk sheets;
a housing unit for housing said processed sheets; and
a means, provided between said packaging sheet loading unit and said housing unit, for processing said packaging sheets or said bulk sheets,
said processing means including:

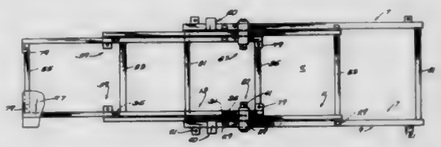
a carrier means for carrying said packaging sheet in said loading unit to a transfer unit by adsorptively holding said packaging sheets;
a guide means, provided in said transfer unit, for guiding said carried packaging sheet to a predetermined position of an unpackaging unit;
a means, provided in said unpackaging unit, for cutting front and side faces of said packaging sheet;
a means for vertically expanding said cut packaging sheet;
a rearranging means for rearranging said sheets removed from said expanded packaging sheet and loading said sheets in said housing unit;
a discharge means for discharging an empty packaging sheet from which said sheets have been removed from a part vicinal to said unpackaging unit; and
a feed means for feeding out said bulk sheets in said loading unit to said transfer unit.

5,052,877
CARRIAGE FOR THE TRANSPORTATION OF A CYLINDRICAL OBJECT
Vesa Jääskeläinen, Bro, and Gustaf Linderoth, Enköping, both of Sweden, assignors to Nokia-Maillefer Holding S.A., Ecublens, Switzerland
Filed Jun. 28, 1990, Ser. No. 544,877
Claims priority, application Finland, Jul. 4, 1989, 893251
Int. Cl.[5] B60P *3/035*
U.S. Cl. 414—458 **10 Claims**



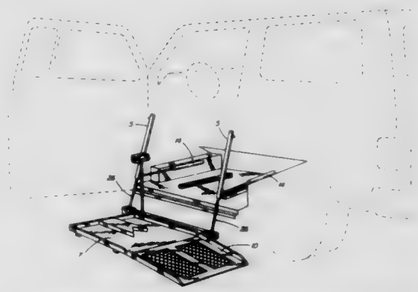
1. A carriage for the transportation of a cylindrical object having a central axis (A) along an underlying surface, comprising
two parallel support elements (**2, 3**) positioned at a distance from each other and extending in a longitudinal direction, said support elements forming a space (**5**) between them for receiving the object (**6**) and being displaceable towards and away from each other transversely to the longitudinal direction of said support elements,
supporting means (**10**) mounted in the support elements for supporting the object to be transported, and
vertically displaceable carrier wheels (**7**) mounted on the support elements, said wheels being rotatable about axes (B), said axes (B) extending in a direction transverse to the longitudinally extending support elements and being parallel to said central axis (A) of the object (**6**) supported by the supporting means (**10**), for raising and lowering the support elements,
the support elements (**2, 3**) being provided with displacing wheels (**9**), each rotatable about respective axes (C) which are perpendicular to said axes (B) of the carrier wheels, said displacing wheels supporting the support elements in a raised position of said carrier wheels for facilitating transverse displacement of the support elements,
whereby the supporting means (**10**) are mounted with respect to the displacing wheels (**9**) in such a manner that the said object carried by the supporting means contacts the underlying surface (**11**) before the displacing wheels make contact with said surface when the carrier wheels are elevated relative to the support elements to a position where they are out of contact with said surface.

5,052,878
RETRACTABLE BED FOR TRUCK
Peter B. Brockhaus, Owen, Wis., assignor to Donald Volhard, Marathon City, Wis.
Filed Aug. 4, 1989, Ser. No. 389,412
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—522 **13 Claims**



1. A retractable bed comprising:
a. a plurality of generally horizontal rail packs transversely spaced on a fixed support, each rail pack comprising:
i. an elongated base rail mounted to the fixed support, wherein the base rail comprises an elongated channel having a base leg, a top leg, and a bottom leg;
ii. an elongated intermediate rail spaced horizontally from the base rail, wherein the intermediate rail comprises an elongated tube with opposed, coextensive first and second side walls, at least two first support rollers mounted to the first side wall for rollingly supporting the intermediate roll along the base rail bottom leg, and at least two second support rollers rollingly mounted to the second side wall;
iii. an elongated primary rail adjacent the intermediate rail second side wall and parallel thereto, wherein the primary rail comprises an elongated channel having a top leg, a bottom leg, and a base leg, the primary rail top leg being in support contact with the second support rollers mounted to the intermediate rail second side wall;
iv. first guide roller means mounted to the first wall of the intermediate rail for laterally retaining the intermediate rail to the base rail; and
v. second guide roller means mounted to the second wall of the intermediate rail for laterally retaining the primary rail to the intermediate rail; and
b. a deck fastened to the primary rails,
so that cargo can be loaded on the deck and translated along the rail packs.

5,052,879
WHEELCHAIR LIFT AND TRANSFER SYSTEM
Clifford L. Wolfe, 62 Maple Ave. N., Smiths Falls, Ontario, Canada K7A 2A7
Filed Nov. 2, 1989, Ser. No. 430,423
Claims priority, application Canada, Nov. 8, 1988, 582480
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—541 **3 Claims**



1. A Wheelchair lift and transfer system for use with a vehi-

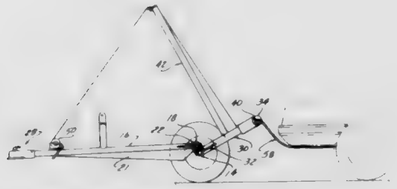
cle and comprising: a lift frame and a movable lift platform which separates from the lift frame; and means for moving the lift frame and platform between a first position with the lift platform attached to the floor of a vehicle at a driver's position, the lift frame being folded under an arm rest of a vehicle door, a second position wherein the lift frame is extended outside the vehicle on a level with the floor of the vehicle, a third position wherein the lift platform is moved side-ways through a door opening over a gap and moved onto and cantilevered over the lift frame and a fourth position wherein the lift and platform assembly are lowered to ground level with a hinged ramp deployed so that a wheelchair may be driven forward and generally parallel to the longitudinal axis of a vehicle onto said platform when the lift frame is at the ground level position and back to said third position wherein the lift frame is raised to the level of the vehicle floor portion to bring first and second portions of track means into alignment whereby said platform and wheelchair may then be moved laterally of the vehicle along the track means into the vehicle at the driver's position.

5,052,880

VEHICLE HOISTING TOW TRAILER

Kevin R. Ross, 74231 Burk, Armada, Mich. 48005

Filed Jul. 31, 1990, Ser. No. 561,013
Int. Cl.[5] B60P *3/12*
U.S. Cl. 414—563 **7 Claims**



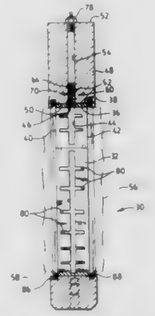
1. A towing trailer comprising:
an elongated tongue having a hitch at one end;
a pair of side by side wheels;
axle means having each of said wheels rotatably mounted at a respective end thereof;
mounting means mounting said axle means to the other end of said tongue, said axle means extending transversely to said tongue;
an upright support post attached to said axle means at a central location thereon;
a mounting member and means mounting said member to the upper end of said support post;
means for securing a towed vehicle to the mounting member;
a lever bar attached at one end to said support post at a point intermediate the height thereof and extending forwardly above said tongue, said lever bar able to be raised to lower said support post by pivoting said axle means and causing said cross arm to be lowered to enable a vehicle to be secured thereto;
winch means for drawing down the other end of the lever arm to raise the support post and so hoist the vehicle thereby;
locking means for locking the lever bar in the lowered position thereof.

5,052,881

BEARING MOUNTING ARRANGEMENT FOR A LIFT MAST

Gary L. Keffeler, Lacon, Ill., and Milford D. McVeen, Chagrin Falls, Ohio, assignors to Caterpillar Industrial Inc., Mentor, Ohio

Filed Nov. 28, 1990, Ser. No. 619,373
Int. Cl.[5] B60P *1/04*
U.S. Cl. 414—634 **26 Claims**



1. A bearing mounting arrangement, for a lift mast assembly, comprising:
a bearing member having first and second opposed surfaces, a groove disposed in the bearing member and opening at the first opposed surface, and an aperture disposed in the bearing member and opening into the groove;
a first flange member having first and second surfaces and an aperture disposed therein and opening at said first and second surfaces;
a second flange member having a bearing surface, said second flange member bearing surface being engaged with the bearing member first surface and being slidably movable relative to the bearing member; and
retaining means for maintaining the bearing member from sliding movement relative to the first flange member first surface and directing lubricating fluid from the first flange member aperture, through the bearing member aperture, and into the groove.

5,052,882

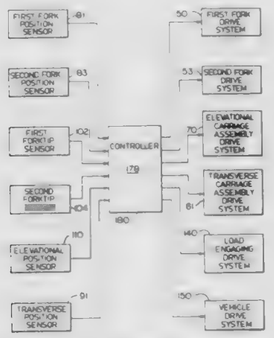
APPARATUS AND METHOD FOR CONTROLLABLY POSITIONING FORKS OF A MATERIAL HANDLING VEHICLE

Andrew P. Blau, Richmond Heights, Ohio; Paul D. Grohsmeyer, Dunlap, Ill.; Joseph J. Harding, and Darren L. Krahn, both of Mentor, Ohio, assignors to Caterpillar Industrial Inc., Mentor, Ohio

Continuation of Ser. No. 445,214, Dec. 4, 1989, abandoned. This application Oct. 24, 1990, Ser. No. 601,618
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—667 **20 Claims**

14. A material handling vehicle having a frame and a lift mast assembly, said lift mast assembly having a pair of spaced apart uprights connected to the frame, a carriage assembly connected to the uprights and movable along the uprights, first and second forks connected to the carriage assembly and movable relative to the carriage assembly transverse the uprights, comprising:
first detecting means for sensing a transverse location of the first fork relative to the carriage assembly and producing a first signal in response to said location of the first fork;
second detecting means for sensing a transverse location of the second fork relative to the carriage assembly and producing a second signal in response to said location of the second fork;

controlling means for receiving the first and second signals, processing the first and second signals in accordance with a set of preprogrammed instructions, and responsively producing first and second movement signals;
first driving means for receiving said first movement signal and responsively moving the first fork to a predetermined



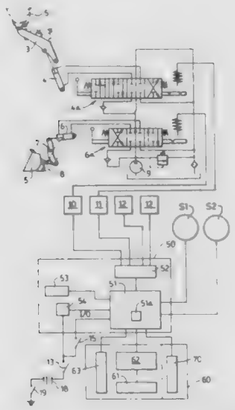
position relative to said carriage assembly as set forth by said preprogrammed instructions; and
second driving means for receiving said second movement signal and responsively moving the second fork to a predetermined position relative to said carriage assembly as set forth by said preprogrammed instructions.

5,052,883

IMPLEMENT POSITIONING CONTROL SYSTEM FOR CONSTRUCTION MACHINES

Izuru Morita, Tokyo; Shoji Tozawa; Yoshitaka Sakata, both of Kobe; Muneo Katano, Sagamihara, and Ryuzo Maeda, Atsugi, all of Japan, assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US89/03525, § 371 Date Feb. 1, 1990, § 102(e) Date Feb. 1, 1990, PCT Pub. No. WO90/02230, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 18, 1989, Ser. No. 460,835
Claims priority, application Japan, Aug. 31, 1988, 63-218215
Int. Cl.[5] E02F *3/28*
U.S. Cl. 414—700 **10 Claims**



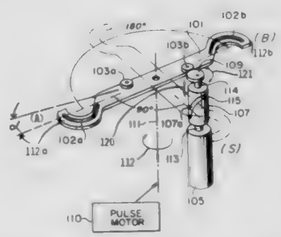
1. An automatic position control system (50) for a material loading vehicle (1) having a pivotally moveable bucket (5) connected to a pivotally moveable lift arm (3), said bucket (5) and lift arm (3) each being controllably and independently moveable to a multiplicity of preselected positions, said vehicle (1) having a power system (17) including a hydraulic pump (9) operably connected to a plurality of hydraulic cylinders (4, 6) for controllably moving the bucket (5) and lift arm (3) to said preselected positions, comprising:
a first lever (14) having locked and unlocked positions for raising the lift arm (3) and the bucket (5) and a position for lowering the lift arm (3) and;
a second lever (16) having locked and unlocked positions for pivoting the bucket (5) in a first direction and a position for pivoting the bucket (5) in a second, different direction, said first and second levers (14, 16) each being positioned in the power system (17) at a location between the pump (9) and the respective cylinders (4, 6);
operating means (S1, S2) for sensing the elevation of the bucket (5) and delivering an elevation signal (E) responsive to the elevation of said bucket (5), for sensing the orientation of the bucket (5) and delivering an orientation signal (O) responsive to the orientation of said bucket (5), and for developing a set point elevation signal (E') and a set point orientation signal (O'), responsive to respective preselected elevation and orientation positions of the bucket (5);
control means (51) for comparing elevation signals, (E) and (E'), and comparing orientation signals (O) and (O') and delivering an elevation control signal (EC) in response to the bucket (5) being at the preselected elevation and delivering an orientation control signal (OC) in response to the bucket (5) being at the preselected orientation;
first unlocking means (20) for moving the first lever (14) from the locked to the unlocked position in response to receiving the elevation control signal (EC); and,
second unlocking means (30) for moving the second lever (16) from the locked to the unlocked position in response to receiving the orientation control signal (OC).

5,052,884

TRANSFERRING DEVICE FOR SEMICONDUCTOR WAFERS

Kazufumi Igari, Machida, Japan, assignor to Tokyo Aircraft Instrument Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1989, Ser. No. 421,351
Claims priority, application Japan, Oct. 25, 1988, 63-139134[U]; Nov. 18, 1988, 63-151004[U]
Int. Cl.[5] B25J *11/00*
U.S. Cl. 414—744.2 **6 Claims**



1. A transferring device for moving a semiconductor wafer from a first location to a second location, comprising:
a rotatable carrying arm having an axis of rotation, said carrying arm including a first holding member for holding the semiconductor wafer;
a first cam follower member disposed on said rotatable carrying arm;
drive means coupled to said rotatable carrying arm, said drive means rotating said carrying arm in a first direction past a predetermined position and through an incremental angle;

an eccentric cam having a first position in which it is disengaged from said cam follower member and a second position in which it is engaged with said cam follower member; and

cam driver means coupled to said eccentric cam for translating and rotating said eccentric cam from said first position to said second position, the rotation of said eccentric cam rotating said carrying arm in a second direction opposite to said first direction through said incremental angle, and said cam driver means returning said eccentric cam to said first position.

5,052,885

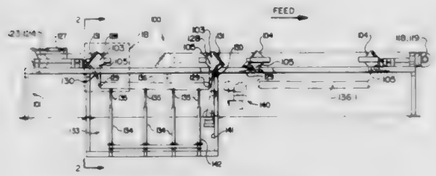
DUAL OVERHEAD ENDOGGING SYSTEM APPARATUS AND METHOD

Theodore C. Foster, Bellingham, Wash., assignor to Hawker Siddeley Canada, Inc., Ontario, Canada

Continuation-in-part of Ser. No. 161,278, Feb. 22, 1988, abandoned, which is a continuation of Ser. No. 713,500, Mar. 19, 1985, abandoned. This application Jan. 23, 1989, Ser. No. 299,533

Int. Cl.[5] B65G *47/90*

U.S. Cl. 414—746.8 **19 Claims**



1. An endogging system comprising:

(a) first and second carriage means mounted for reciprocal movement along first and second carriage support axes respectively spaced laterally apart from, and on opposite sides of, a vertical plane containing a log feed axis, each of said carriage means being operable to transport a log along the log feed axis from a first location to a second location within said vertical plane, and to return to said first location without said log,

(b) each of said carriage means having two interconnected carriages, each of said carriages including dog means extending downwardly therefrom to said vertical plane and being adapted to apply an axial force to engage transversely disposed end faces of said log substantially on said vertical plane,

(c) each of said dog means having a transition area between said dog means and said respective carriage, said transition area being off-set from said vertical plane whereby said first carriage means may pass said second carriage means when said dog means of said first carriage means are extended in a log transport mode and said dog means of said second carriage means are in a retracted mode, said dog means being substantially on said vertical plane in both said transport and said retracted mode,

(d) a pair of first and second rails located on each side of the log feed axis to provide a respective rail means for mounting the two carriages of each carriage means for reciprocal movement therealong,

(e) each carriage means having means for resisting twisting forces on the carriage mean generated as a reaction to said axial force applied by said dog means, said means for resisting said twisting forces comprises the first and second rails being spaced apart at a spacing sufficient to resist the twisting forces imposed thereon by the carriage means as a reaction to axial forces applied by said dog means, and in which each carriage means has bearing means cooperating with the respective rail means for resisting said forces, at least one of said bearing means of each carriage cooperating with the respective rail so as to resist both horizontal and vertical components of said forces.

5,052,886

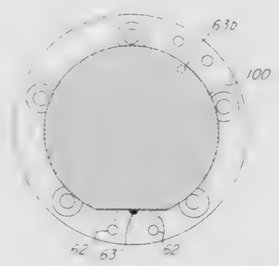
SEMICONDUCTOR WAFER ORIENTATION DEVICE

Masayuki Moroi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1988, Ser. No. 286,916

Int. Cl.[5] B65G *47/24*

U.S. Cl. 414—757 **11 Claims**



8. A method for centering and orientating a semiconductor wafer comprising the steps of;

lowering a semiconductor wafer onto tapered rollers;

rotating the tapered rollers and thereby the semiconductor wafer with one motor and centering the semiconductor wafer during rotation;

continuing rotation of the tapered rollers and semiconductor wafer until a flat of the semiconductor wafer is over a photo cell;

stopping the rotating wafer; and

moving flat finder rollers against the flat of the semiconductor wafer to establish its centered orientation, the flat finder rollers being moved into engagement with the flat due to the action of a second motor.

5,052,887

TURBOMOLECULAR VACUUM PUMP

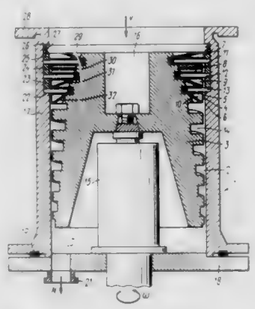
Nikolai M. Novikov, ulitsa Molodezhnaya, 2, kv. 16, Vladimirskaya oblast, Suzdalsky raion selo Novoe; Vladimir I. Vikhrev, Szudalsky prospekt, 3, kv. 52, and Valery B. Sholokhov, ulitsa Gorkogo, 75, kv. 55, both of Vladimir, all of U.S.S.R.

PCT No. PCT/SU88/00047, § 371 Date Oct. 5, 1989, § 102(e) Date Oct. 5, 1989, PCT Pub. No. WO89/08192, PCT Pub. Date Sep. 8, 1989

PCT Filed Feb. 26, 1988, Ser. No. 427,097

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **1 Claim**



1. A turbomolecular vacuum pump, comprising:

a stator having an axial hole;

a rotor, accommodated in the axial hole of the stator;

at least two bladed wheels, accommodated on the rotor and each having flat blades and a hub, the flat blades of the bladed wheels being spaced about a circumference of the hub, so that flow sections of adjacent passages formed between adjacent flat blades of the bladed wheels reduce in size from a bladed wheel at a gas suction side to a bladed wheel at a gas pressure side, planes of the flat blades of the bladed wheels being inclined, respective to planes drawn perpendicular to an axis of rotation of the rotor, in a direction of rotation of the rotor, lines of intersection being formed between the planes of the blade of the bladed wheels and the planes perpendicular to the axis of rotation of the rotor, the lines of intersection resting at an angle to radii of hubs of the bladed wheels, directed towards the direction of rotation of the rotor with respect to at least one bladed wheel at the gas pressure side, and directed away from the direction of rotation of the rotor with respect to at least one bladed wheel at the gas suction side; and

bladed discs secured to the stator between the bladed wheels of the rotor, and having flat blades, the flat blades of the bladed discs being arranged at an angle to the flat blades of the bladed wheels.

5,052,888

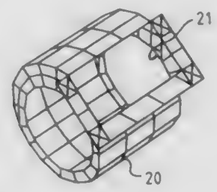
DC MOTOR DRIVEN CENTRIFUGAL FAN

Ivor W. Bolton, Winchester; David S. Gaunt, Southampton, and Ronald K. Russell, Swindon, all of England, assignors to IBM Corporation, Armonk, N.Y.

Filed Jul. 11, 1990, Ser. No. 551,967

Int. Cl.[5] F01D *9/00*

U.S. Cl. 415—182.1 **11 Claims**



1. A centrifugal fan comprising:

a brushless direct current motor;

an impeller mounted on said brushless direct current motor for rotation thereby; and

a scroll for mounting said brushless direct current motor, said scroll defining an air inlet, an air outlet and including an outer wall curved around said impeller to define a divergent path to said air outlet for air driven by said impeller, said scroll being truncated at said air outlet so as to form a plane at said air outlet which is substantially orthogonal to a radius of said scroll.

5,052,889

OFFSET RIBS FOR HEAT TRANSFER SURFACE

William Abdel-Messeh, Beloeil, Canada, assignor to Pratt & Whitney Canada, Longueuil, Canada

Filed May 17, 1990, Ser. No. 524,529

Int. Cl.[5] F01D *5/18*

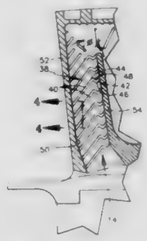
U.S. Cl. 416—97 R **8 Claims**

1. Means for preferentially augmenting the local heat transfer coefficient of two heat transfer surfaces defining an internal, spanwisely extending cooling channel in an airfoil body having an external suction side and an external pressure side and a flow of gas therethrough, comprising

a plurality of ridges disposed on the first surface and the second surface and spaced streamwisely with respect to the gas flow, each ridge including a first end portion extending generally laterally with respect to the gas flow, a second end portion parallel to the first portion, the second end portion further being offset with respect to the first portion, and

an intermediate portion, extending between the proximate ends of the first and second end portions, and oriented substantially perpendicular thereto, and wherein

the upstream end of the first portions of the first surface plurality of ridges are located adjacent a first region of the suction side subject to elevated thermal loading, and wherein,



the upstream ends of the first portions of the second surface plurality of ridges are located adjacent a first region of the pressure side subject to elevated thermal loading, and wherein

the intermediate segments of the first surface ridges are located concordally with a second region of the suction side subject to elevated thermal loading, and wherein

the intermediate segments of the second surface ridges are located concordally with a second region of the pressure side subject to elevated thermal loading.

5,052,890

DEVICE FOR DAMPING VIBRATIONS IN TURBOMACHINERY BLADES

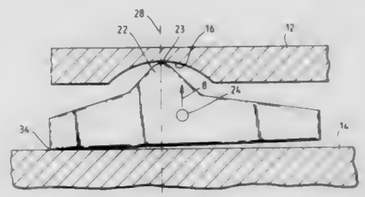
Michael C. Roberts, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Feb. 20, 1990, Ser. No. 481,193

Claims priority, application United Kingdom, Feb. 23, 1989, 8904132.1

Int. Cl.[5] F01D *5/10*

U.S. Cl. 416—193 A **4 Claims**



1. In a turbine rotor assembly comprising an annular turbine disc and a plurality of turbine blades around the rim of the disc, each blade including a platform spaced radially outwardly from and parallel to the rim, a device for damping vibrations in each of said blades, the device comprising,

an extended damper member located between said platform and the rim, the damper member including

i. a second pivot means engageable with a first pivot means located on the underside of the blade platform to define a pivot point for the damper member on the underside of the blade platform, and

ii. mutually opposed first and second limbs extending on either side of the second pivot means,

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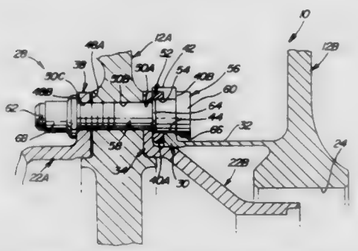
the center of gravity of the damper member being located in the first limb at a point offset from the radius vector between the axis of rotation of the disc and the pivot point, the damping device constructed such that on rotation of the disc about its axis the first limb moves outwardly under centrifugal force thereby causing the damper member to rotate about the pivot point and urge the second limb radially inwards so as to engage the rim of the disc.

5,052,891

CONNECTION FOR GAS TURBINE ENGINE ROTOR ELEMENTS

Philip S. Burkholder, Lizton, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 12, 1990, Ser. No. 492,009
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—198 A **4 Claims**



1. A connection between a first rotor element including a first annular flange having a back side and a second rotor element including a second annular flange having a back side comprising:

means defining a plurality of radially outwardly opening bolt slots in said first annular flange spaced at predetermined angular intervals around said first annular flange,

a plurality of bolts each having a shank with a bolt head at a first end and a screw thread at a second end and a locking shoulder therebetween,

said bolts being received in corresponding ones of said bolt slots with said bolt heads thereof butting against said back side of said first annular flange,

an annular locking ring having a plurality of bolt holes therein spaced therearound at said predetermined angular intervals and receiving in interference press fit corresponding ones of said locking shoulders on said bolts thereby to foreclose radial and axial dislodgment of said bolts said bolt slots,

means defining a plurality of bolt holes in said second annular flange spaced therearound at said predetermined angular intervals and receiving therethrough corresponding ones of said bolt shanks, and

a plurality of nuts screwed onto corresponding ones of said bolt shank screw threads outboard of said back side of said second annular flange thereby to clamp together said first and said second annular flanges with said locking ring captured therebetween.

4. A method of making a connection between a first rotor element including a first annular flange having a back side and a second rotor element including a second annular flange having a back side comprising the steps of:

forming on said first annular flange a plurality of radially outwardly opening bolt slots spaced at predetermined angular intervals around said first annular flange,

forming a plurality of bolts each having a shank with a bolt head at a first end and a screw thread at a second end and a locking shoulder therebetween,

installing said bolts on said first annular flange by radially inserting said bolts into corresponding ones of said bolt slots with said bolt heads thereof butting against said back side of said first annular flange,

forming an annular locking ring having a plurality of bolt holes therein spaced therearound at said predetermined angular intervals,

installing said locking ring on said bolts by interference press fitting said locking shoulders thereof in corresponding ones of said bolt holes in said locking ring thereby to foreclose radial and axial dislodgment of said bolts from said bolt slots,

forming in said second annular flange a plurality of bolt holes spaced therearound at said predetermined angular intervals,

installing said second annular flange on said bolts by inserting said bolt shanks through corresponding ones of said bolt holes in said second annular flange, and

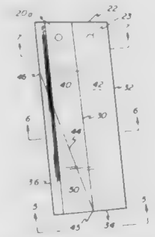
attaching a plurality of nuts to corresponding ones of said bolts outboard of said back side of said second annular flange by screwing said nuts onto corresponding ones of said bolt shank screw threads thereby to clamp together said first and said second annular flanges with said locking ring captured therebetween.

5,052,892

HIGH EFFICIENCY MIXER IMPELLER

Julian B. Fasano, Englewood, Ohio, assignor to Chemineer, Inc., Dayton, Ohio

Filed Jan. 29, 1990, Ser. No. 471,340
Int. Cl.[5] F04D *29/34, 29/38*
U.S. Cl. 416—204 R **9 Claims**



1. A high efficiency multiple bladed mixer impeller in which blades of plate material extend generally radially from a central hub, the improvement comprising:

each blade having a root joined to the hub, and a remote tip, and having a cord-wise length uniform throughout the spanwise length of said blade,

each said blade having first a span-wise camber bend extending in a line from said root end to said tip dividing the blade into a front portion defining a blade leading edge and a back portion,

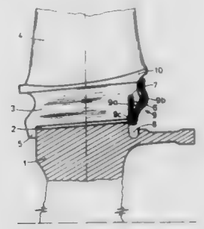
said front portion being further divided by a second camber bend, said second bend extending in a line from the intersection of said first bend with the blade tip diagonally to a point on said leading edge spaced radially outwardly from said root and extending along a major span-wise extent of the blade and forming a camber angle with the remainder of said front portion.

5,052,893

STOP MEANS AND SEALING RING OF A BLADE ASSEMBLY MOUNTED ON A GAS-TURBINE-ENGINE ROTOR-DISK

Philippe P. Catte, Chennevieres, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

PCT No. PCT/FR89/00588, § 371 Date Jul. 17, 1990, § 102(e) Date Jul. 17, 1990, PCT Pub. No. WO90/05837, PCT Pub. Date May 31, 1990
PCT Filed Nov. 16, 1989, Ser. No. 543,717
Claims priority, application France, Nov. 17, 1988, 88 14913
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—220 R **7 Claims**



1. Locking means for locking blade roots onto a rotor for a gas-turbine engine, especially for aviation, having at least one rotor disk bearing a set of blades of which the roots are mounted in alveoli defined in the disk periphery along an axis generally parallel to a longitudinal engine axis, the blade roots (3) having a fixing means (5) keeping the blades one the upstream side of the disk (1) and a downstream lip (6) with a transverse groove (7) radially pointing to the disk axis, a means locking the blades axially downstream on the disk being inserted into said groove (7) and simultaneously assuring hermeticity between the blade roots (3) and the bottoms of the alveoli (2) of the disk, the disk in turn being provided with a circular groove (8) pointing radially toward its periphery, wherein the locking means comprises: a single split ring (9) having a generally Y shaped cross-section having a first generally radial upstream arm (9*l*) adapted to be inserted into the groove (7) of the downstream lips (6) of the blade and the disk (1), and a second generally radial downstream arm (9*b*) of the ring (9) adapted to be pressed against a downstream part of the blade lips (6).

5,052,894

PORTABLE COMPRESSED AIR SUPPLY WITH REMOTE CONTROL

Richard M. Rimington, Powys, Wales, assignor to Mangar Aids Limited, Powys, Wales

Continuation-in-part of Ser. No. 250,389, Sep. 28, 1988, abandoned. This application Jun. 7, 1989, Ser. No. 362,496
Int. Cl.[5] F04B *49/02*
U.S. Cl. 417—44 **8 Claims**

1. Portable battery-powered compressed-air supply apparatus comprising:

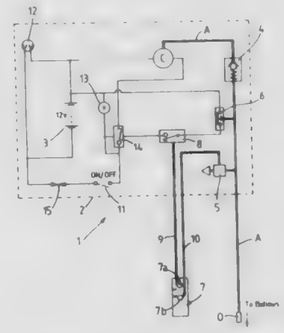
a) a compressor and means to supply compressed air to a bellows of an invalid seat assembly,

b) said compressor being mounted in a housing having a control panel,

c) means for holding a battery adjacent to the compressor to allow, in use, the compressor and battery to be transported as a portable unit,

d) a non-return valve for avoiding pressure loss from the bellows back through the apparatus when the apparatus is switched off at the control panel after use,

e) a dump valve for exiting air from the apparatus when required, and in which operation of the compressor is controlled by a hand-held control remote from the compressor and from the housing control panel,



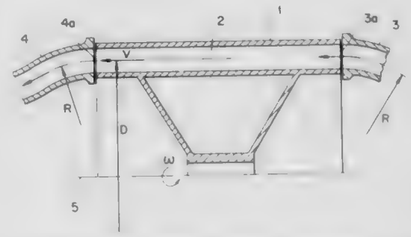
f) said hand-held control being a dual control in that it can be operated not only to switch the compressor on and off but also to open and close the dump valve.

5,052,895

PRESSURE WAVE MACHINE

Rolf Althaus, Mägenwil, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jul. 26, 1990, Ser. No. 557,744
Claims priority, application Switzerland, Aug. 17, 1989, 3005/89
Int. Cl.[5] F04F *11/02*
U.S. Cl. 417—64 **3 Claims**



1. Pressure wave machine, consisting essentially of a rotor (1) with cells (2) directed parallel to the rotor axis (5) and evenly distributed about the periphery of the rotor, which cells are intended, in operation, to accept two gaseous media for the purpose of compressing the first medium by compression waves from the second medium, and of stationary connecting casings (3, 4) for guiding the media, wherein the ducts of the connecting casings (3, 4) upstream of the inlet opening (3*a*) of the cell (2) and downstream of the outlet opening (4*a*) of the cell (2) describe a curvature running in the axial direction to the opening of the cell (2) and concave in the direction of the rotor axis (5), the radius of curvature being given by the function

$$R = \frac{2 \cdot V^2}{D \cdot W^2}$$

where V is the flow velocity of the medium, D is the average rotor diameter and W is the angular velocity of the rotor (1).

5,052,896

REGULATING VALVE FOR A HYDRAULICALLY ADJUSTABLE CONTROL PUMP

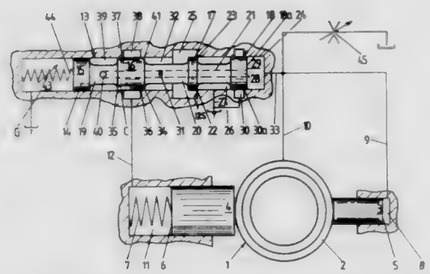
Günter Fischer, Gemünden; Rainer Knöll, Burgsinn, and Horst Fischer, Lohr, all of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Jul. 9, 1990, Ser. No. 549,941

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922829

Int. Cl.[5] F04B *49/08*

U.S. Cl. 417—220 **3 Claims**



1. A regulating valve for a hydraulically adjustable control pump, said valve comprising:
a housing (G),
a guide bore (**24**) extending in said housing (G), and
a regulating spool (**14**) reciprocably mounted within said guide bore (**24**),
said regulating spool (**14**) comprising:
a plurality of lands (**15**, **16**, **17**, **18**),
a first end face subjected to pump pressure,
a second end face subjected to the force of a spring acting in a direction against said pump pressure,
a (first) control chamber (**32**) located between two lands (**16**, **17**) and adapted to be supplied by said pump with pressure liquid flow limited by a fixed throttle means (**31**),
said one land (**17**) bordering said control chamber (**25**, **32**) defining a control edge (**22**) which opens a controlled or regulated throttle cross section to a tank (T),
the other land (**16**) bordering the control chamber (**25**, **32**) providing in the control or regulating position of the regulating spool (**14**) a throttle connection (**41**) to a pump control chamber (**11**),
said land (**16**) further providing for a direct connection between the (first) control chamber (**32**) located between said two lands (**16**, **17**) and the pump control chamber (**11**) in case that a large regulating movement or deviation of the regulating spool (**14**) occurs in the (leftward) direction in which the pressure acts upon said regulating spool,
the land (**16**) providing the throttle connection (**41**) to the pump control chamber (**11**) defines on its side opposite to the throttle connection (**41**) together with another land (**15**) a (second) control chamber (**39**),
said (second) control chamber (**39**) is connected via a bore (**40**) in the regulating spool with the pressure side (**10**) of the pump (**1**), and is further adapted to be directly connected to the pump control chamber (**11**) pump in case that pressure decrease occurs,
wherein the control chamber (**39**) which is located between the land (**16**) and the other land (**15**) is connected with the pressure side (**10**) of the pump in an unthrottled manner, and wherein said (second) control chamber (**39**) bordered by said other land (**15**) is connected with said pressure side (**10**) of the pump in an unthrottled manner.

5,052,897

COMPRESSOR AND METHOD OF DETECTING QUANTITY OF MIXTURE OF COOLANT AND LUBRICANT IN THE COMPRESSOR

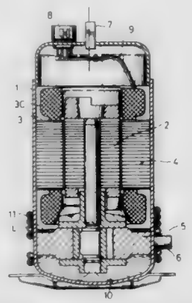
Tetsuji Yamashita, and Yukinobu Takahashi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 31, 1990, Ser. No. 606,816

Claims priority, application Japan, Oct. 31, 1989, 1-281989

Int. Cl.[5] F04B *39/04*

U.S. Cl. 417—228 **5 Claims**



1. In a compressor having a motor and a compressor mechanism connected to the motor, the motor having a coil and being lubricated with lubricant, the compressor mechanism sucking and compressing low-pressure coolant and discharging high-pressure coolant,
a method of detecting the quantity of a mixture of liquefied coolant and the lubricant comprising the step of:
detecting line-to-line impedance of the coil of the motor to know the quantity of the mixture.

5,052,898

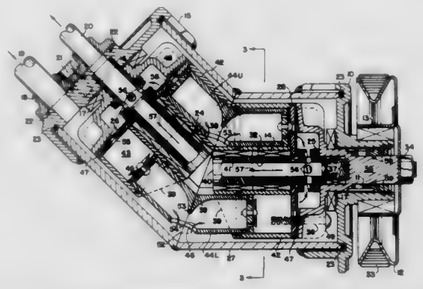
BENT AXIS COMPRESSOR

Cleo E. Cook, Jacksonville, Fla.

Filed Jun. 4, 1990, Ser. No. 532,929

Int. Cl.[5] F04B *1/24*

U.S. Cl. 417—269 **20 Claims**



1. In a vapor compressor having a plurality of bent-axis double-ended pistons with two separate cylinder blocks having straight-axis cylinders to mate sliding with the pistons as the cylinder blocks rotate around a stationary bent axis central shaft, each piston including two half pistons joined to each other in a plane common to all the pistons to form an included smaller obtuse angle on one side of the piston and an included larger obtuse angle on the opposite side of the piston; and a power transmission means attached to one of the cylinder blocks; the improvement which comprises:
a. each piston being hollow and with a vapor inlet port at said larger obtuse angle to admit vapor from outside the piston to flow into the inside of the piston;
b. suction valve means at each end of each piston to permit vapor to flow from inside the piston to outside the end of the piston into the head of the cylinder mating with that piston;
c. said central shaft having a single uninterrupted hollow extending from a closed end inside the compressor to an open end outside the compressor;
d. valved passageway means between the head of each cylinder and the hollow of the central shaft; and
e. a stationary vapor-tight housing around the compressor with a vapor inlet port passing through the housing.

5,052,899

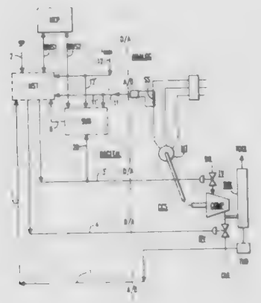
ANTI-SURGE COMPRESSOR LOADING SYSTEM

Clyde O. Peterson, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 26, 1989, Ser. No. 457,047

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—282 **6 Claims**



1. In a compressor system including a master-controller operative in one of an inlet valve modulation mode and a bypass valve modulation mode for controlling an inlet valve and a bypass valve of a compressor, respectively; the compressor supplying fluid flow to a load of smaller capacity than the compressor; the compressor being operative in response to a signal representative of the load pressure and to an assigned pressure setpoint; with means associated with the master-controller and responsive to an error between said load pressure and said assigned pressure setpoint for modulating the inlet valve in the inlet valve modulation mode and means associated with the master-controller and responsive to said error for modulating the bypass valve in the bypass valve modulation mode; the combination of :
means responsive to a loading signal generated when said bypass valve is open and said inlet valve is closed for substituting a pseudo-setpoint pressure signal for said assigned setpoint signal to the master-controller;
first means associated with the master-controller and responsive to said loading signal for bypassing said inlet valve modulating means and for establishing a minimum opening position for said inlet valve;
second means associated with the master-controller and responsive to said loading signal for bypassing said bypass valve modulating mean and responsive to said pseudo-setpoint signal for controlling the bypass valve to close;
said pseudo-setpoint signal being varied as a function of time between an initial minimum substantially less than the magnitude of said assigned pressure setpoint signal and the magnitude of said assigned pressure setpoint signal;
with said pseudo-signal being applied at said minimum initial magnitude until said second means has caused the bypass valve to close, and said function of time being initiated after said bypass valve has closed;
means being provided responsive to said load pressure signal and to said assigned pressure setpoint signal for cancelling said loading signal when the load pressure signal has become equal to said assigned pressure setpoint signal;
whereby said first and second master-controller associated means are enabled for normal valve modulation after loading.

5,052,900

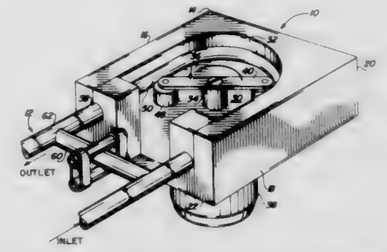
PRESSURE RELIEF VALVE FOR POSITIVE PRESSURE PUMPS

Jon W. Austin, 1909 E. Camino De Los Ranchos, Phoenix, Ariz. 85022

Filed Apr. 11, 1990, Ser. No. 508,641

Int. Cl.[5] F04B *43/12, 49/08*

U.S. Cl. 417—309 **5 Claims**



1. A pressure relief valve for a positive pressure pump having an outlet and an outlet which creates a pressure increase from the inlet to the outlet comprising:
(a) a flexible, compressible bypass tubing member have a lumen connected to said outlet and discharging at a lower pressure area;
(b) pressure limiting means associated with said bypass tubing member including compression means engaging said bypass tubing member, said compression means comprising oppositely disposed bar members extending peripherally beyond said bypass member; and
(c) elastic members extending between said oppositely disposed bar members exerting a predetermined continuous substantially constant compressive force on said compression means to occlude said lumen when pressure in said bypass tubing member is below a predetermined value and to permit flow through said bypass tubing member when said pressure exceeds a predetermined value.

5,052,901

LIFT VALVE IN A ROTARY SCREW MACHINE

Arnold Englund, Spånga, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

PCT No. PCT/SE89/00227, § 371 Date Oct. 23, 1990, § 102(e) Date Oct. 23, 1990, PCT Pub. No. WO89/10489, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 24, 1989, Ser. No. 601,687

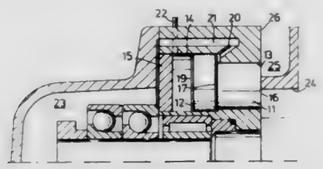
Claims priority, application Sweden, Apr. 25, 1988, 8801524

Int. Cl.[5] F04B *49/00, 17/04, 23/00;* **F01C** *1/16*

U.S. Cl. 417—310 **5 Claims**

1. A pressure actuated lift valve in a machine of the rotary screw type mounted in one of the end walls of the machine and containing a valve member (**11**) being displaceable in an axial boring (**13**), one end of the boring (**13**) facing the working space (**24**) of the machine, characterized in that the valve

member (11) is cylindrical and controlled by a separate actuating piston (12) being displaceable in a cylinder (14), which



actuating piston (12) is not joined to the valve member (11) and acts upon the valve member (11) by contact forces.

5,052,902

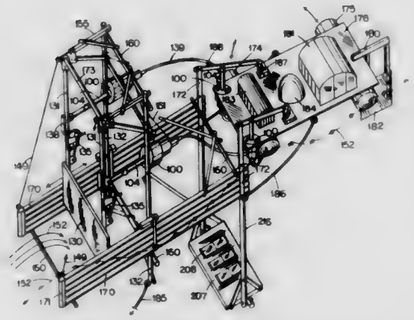
WATER-WAVE-ENERGY CONVERTER

Gaudencio A. Labrador, 10760 Gabacho Dr., San Diego, Calif. 92124

Continuation-in-part of Ser. No. 631,322, Jul. 19, 1984, abandoned. This application Jan. 21, 1986, Ser. No. 820,082

Int. Cl.[5] F04B *35/00*

U.S. Cl. 417—330 **2 Claims**



1. A water-wave-energy converter system that produces storable and consumable energy in the form of compressed air, electricity, or hydrogen gas fuel out of the energy of the water waves, constructed floating out on the ocean, comprising:

(a) a multi-stage compressor pump for compressing air and other uses, comprising:

at least two adjoining end to end compression cylindrical chambers of equal lengths with common end walls, decreasing in diameter by approximately 30% to 50% by chamber after chamber, the last being of the least diameter;

a circular piston of corresponding size having piston rings of appropriate types in each said compression chambers, having forward and reverse strokes in said chambers, and movable in response to the actuations of the driving piston rod;

a long, straight, continuous, single, smooth surface, cylindrical pipe, piston rod, that passes thru the center holes of the end walls of each and all the said chambers from the first stage to and ending at the last stage, which holds and moves back and forth each said piston in all the said chambers at the same time in a synchronous movement, the full length of which starts from the connector at the driving structure—then passing thru a holder bearing—then thru the first said chamber—thru the succeeding said chambers—and ending at the bearing chamber (115) where its end portion is carried by a roller bearing to relieve the piston-rings from carrying the weight of the pistons;

at least two circular or ball-type one-way valves set at every end wall of all the said chambers and at each of the said pistons except at the forward end wall of the said last stage chamber which has only one one-way valve, to effect the axial flow of compressed air along the length of said compressor;

a cylindrical or ring-type air sealer, of appropriate materials, to prevents the back flow escape of compressed gas through the passage of the piston rod, set at the center holes of the end walls of each said chambers and acting on the smooth surface of said piston rod;

an oil circulation system, in the form of small pipe line with a compressed air operated oil pump, separately installed in each said chambers, to lubricate the piston rings, the cylinder walls, the air sealers, and the piston rod surface;

a pivot bearing connector at the rear end of said piston rod;

an air vent with filter to serve as an inlet of atmospheric air into the pump but prevents water spray to get into the pump;

a delivery pipe to deliver compressed gas from the last said stage of the pump to the compressed gas reservoir or storage tank;

(b) a strong power board system that directly receives and converts the kinetic energy of the water waves, by direct impact of the waves against an impact wall, into a concentrated horizontal mechanical force during ordinary weather and also in times of abundance by the violent weather as well, comprising:

an impact wall made of metal, or plastic boards, or creosoted timber logs or lumber fastened together on a strong frame to form a wide and long rectangular flat face strong solid wall to have the capability to stop the surfs, or at which the bulky and heavy water waves or surfs will directly splash to unleash or impart their enormous energies;

at least two structural steel I-Beam or creosoted timber beam which has a joint at its lower third that will automatically relax to let the beams bend to yield if over loaded, with a length of at least 10 feet to 40 feet, depending upon the characteristics of surfs in the project site, which holds together and suspends vertically the said impact wall, coupled together to act as one pendulum frame, suspended vertically by a free pivot bearing connector at its upper end with the said impact wall facing the waves at an elevation where the bottom of said wall is one foot below the lowest return cycle of the water waves and at least 6 inches clear above the ocean floor;

said joint of the pendulum beam is a free pivot pin-type, and is provided with a stopper compression face to make the said pendulum beam to stay on a straight posture, not to bend forward, on the return cycle of the water waves;

said joint of said pendulum beam is provided with a hydraulic jack system that will automatically relax to allow the said beam to bend backward to allow the over size water waves spill thru under the said impact wall;

said hydraulic jack system is composed of an oil-compression chamber, a pressurized oil storage tank, a pipe for oil passage from the said compression chamber to the said pressurized storage tank, a return pipe to deliver back the oil from the said storage tank to the said compression chamber, a one-way valve that allows the oil toe enter said oil-compression chamber upon the reverse stroke of the piston, a push-type valve switch that will bump against a stopper to open the said passage pipe for the compressed oil to escape and enter into the storage tank, and a structure on which the said jack system is mounted and connected to the back side of the said pendulum beam;

said pendulum beam is held and controlled at its upper tip by a free pin pivot connector to allow the impact wall to be freely playing forward and backward, but not sideward, by the action of the waves, and suspending the whole said pendulum assembly such that said impact wall be only 1/5 submerged at the lowest return cycle of the waves so that it will move forward;

a pair or two strong support posts, in the form of creosoted timber poles, or steel pipes, or plastic pipes, erected vertically at a distance between them enough to accomodate the length of the said impact wall, which supports and suspends vertically the whole said pendulum assembly in such a way that the said impact wall is vertical facing the water waves squarely;

each of said support posts is provided at the top with a horizontal arm structure thru which said pendulum assembly is suspended by the said free pin pivote connector;

said support posts are provided with bumpers that stops the pendulum frame when it swings too far back due to over sized surfs;

said support posts are further provided with bumpers that will react on the push-type valves of the said hydraulic jack control system to relax the oil pressure inside said jack in order to effect bending of said pendulum beam yielding to oversized surfs;

said support posts are provided with a coupling structure in the form of a rigid horizontal truss that maintains a right-angle with the said vertical support posts to form a large vertical rectangular-framed space thru which the vertical rectangular frame formed by the impact wall and said pendulum beam assembly will be swinging back and forth;

a guy rope, securely attached to the top of each said vertical support posts, the lower end of which is securely tied tautly to the front end of said floating pipe foundation, and another guy rope attached to the top of said posts tied tautly to the rear end of same pipe foundation to keep said posts stand squarely on said foundation, while same will be oscillating due to the action of the water waves;

a driving bar, or pipe rod, connected to the said piston rod of the said multi-stage compressor and to the middle-third of said pendulum beam, that effects mechanical operation of said compressors mounted at horizontal position at each said support posts at the elevation of said driving bar;

a control bearing that holds and controls the said piston rod of said compressor on a fix elevation and keep it at a horizontal position, attached to the said support post by structural braces;

(c) a 90% submerged floating foundation that carry the joint assembly of components set forth in section (a) and (b) including other accessory components of the whole converter system, to help said system stay afloat on the ocean at any weather condition, comprising:

at least two sets of assembled horizontal pipes, parallel to each other, laid down on water perpendicular to the waves, made of impervious materials capable of floating on water for a long time, long enough—at least with a length equal to two wave-lengths of the average large surf—to minimize oscillation of the apparatus by the water-waves, at least with a diameter of 3 inches each pipe, a point within the middle-third of one set is attached by clamp to the base of one support post of said power board system in a formation that said pipes are stacked to form a vertical single pile, likewise, the same is done with the second set of pipes upon the second said support post, the number of pipes per set depends upon the weight of the whole converter system such that 90% of the floating pipe foundation assembly is submerged in water to minimize the oscillation effects of the water waves during violent weather; a coupling set of braces at the base of said support posts and at the ends of each set of pipe foundation assembly to fix the said floating foundation to be always parallel to each other and square to the power board;

a "Y" type of anchor chain or rope, the upper two ends of which are tied to the bottom tip of each of the support posts of the power board while the lower end is anchored to the sea bed—the effect of which is to make the power board always face the water waves automatically by pivoting at the sea bed while on that station;

said anchor chain is provided with an appropriate weight attached to the chain at a distance of 10 meters from the ground anchor so that it will be lifted up and down when over sized waves strike the power board, in order to provide caution to and to remove jerk from the structure;

(d) a means to store the compressed air produced by the said compressors, which is an apparatus that further serves as an independent water-wave energy converter by way of the vertical movements of the water waves, comprising:

a couple of cylindrical air storage tanks directly floating horizontally on water parallel to the lines of the water waves, spaced apart equal to one-half wave length of the average size water wave, having length equal to the horizontal length of the said impact wall, coupled together by set of braces to form a deck on top of said tanks;

said deck carries four multi-stage piston compressors as set forth in the forgoing section (a), anchored on said deck by a revolving connector that enables said compressors to turn left and right as well as up or down;

said compressors are positioned on the said deck such that two said compressors are set near the front end of the said deck facing towards the center of the deck at an angle of at least 40 to 50 degrees between the said two compressors, while the other two said compressors are set near the rear end of the said deck facing towards the center in the same spacing as the first said two compressors;

a strong post or bar that stands vertical 5 to 8 feet above said deck and extends down under water at least 25 feet below the said deck thru a hole at the center of said deck;

said strong bar is connected to the deck by a free pin connector at the main structures of the said deck that serves as pivote pin for said strong bar;

said strong bar is provided with a solid weight at its bottom tip that is heavy enough to keep the said Bar firmly at a vertical position, against the horizontal forces of the piston rods at the top;

said vertical strong bar is provided with a free pin connector at its upper tip to which the piston rods of the two said compressors on the left and the piston rods of the other two said compressors on the right are correspondingly connected on the left and on the right of said pin connector respectively;

said piston rods are made telescopic in the form of hydraulic pipes which are provided with bump switches to release the hydraulic oil when the amplitude of the waves goes beyond safe limits;

said air tank—deck assembly is made partially submerged during violent weather to save it from destruction;

a strong rope connected to the mid-point bottom right side of said deck tied to the rear bottom right end of said pipe floating foundation, and another strong rope connected to the mid-point bottom left side of the said deck tied to the rear bottom left end of said floating pipe foundation, in order to keep it near within reach of the air hoses coming from the compressors at the said power board system;

and a caudal tail, made of light thin materials on a strong frame to form a wide-face wall, attached to the middle of the rear tip of said deck by means of a strong struc-

ture arm to keep the said wide faced wall vertically submerged in water and aligned with the center line of said deck rigidly in order to keep said floating deck assembly stay perpendicular to the water waves.

5,052,903

COMPRESSOR HOUSING HAVING A STRUCTURE FOR PREVENTING SLIPPAGE OF VIBROISOLATING MEMBERS

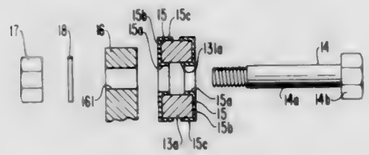
Hareo Takahashi, Iakasaki, Japan, assignor to Sanden Corporation, Japan

Continuation-in-part of Ser. No. 400,002, Aug. 29, 1989. This application Mar. 7, 1990, Ser. No. 489,540

Claims priority, application Japan, Mar. 7, 1989, 1-25178[U]

Int. Cl.[5] F04S *35/00*

U.S. Cl. 417—363 **6 Claims**



1. A compressor mount for mounting a compressor including a compressor housing in a motor vehicle engine compartment, said compressor mount comprising:

fastening means for fastening said compressor housing to said motor vehicle engine compartment, said fastening means comprising a screw means;

at least one bracket attached to said compressor housing, said bracket including a first opening;

a vibration isolating member comprising a cylindrical portion and a flange portion radially extending from a first end of said cylindrical portion, said cylindrical portion of said vibration isolating member disposed in the first opening of said bracket with the first end thereof disposed adjacent an outer surface of said bracket so as to define a second opening through which said fastening means may be received therethrough; and

said flange portion of said vibration isolating member in contact with said outer surface of said bracket such that compressor vibrations are isolated to said compressor when said fastening means is disposed within said opening so as to fasten said compressor housing to said motor vehicle engine compartment, said flange portion of said vibration isolating member being annularly shaped; and

said vibration isolating member being arranged such that the position of said vibration isolating member is maintained with respect to said bracket as said compressor housing is fastened to said motor vehicle engine compartment with said screw means.

5,052,904

AQUARIUM AIR PUMP

Tsuyoshi Itakura, Tokyo, Japan, and Allan H. Willinger, Oakland, N.J., assignors to Itakura Soki, Tokyo, Japan and Allan H. Willinger, Bros., Oakland, N.J.

Continuation-in-part of Ser. No. 357,535, May 26, 1989, abandoned. This application Aug. 17, 1990, Ser. No. 569,147

Int. Cl.[5] F04B *45/04*

U.S. Cl. 417—363 **32 Claims**

1. Air pump for aquarium aeration, comprising housing means including bottom housing means and top housing means;

at least one electromagnetic pump unit supported in said bottom housing means and including a casing including a central member, said casing being provided with air inlet means and air outlet means;

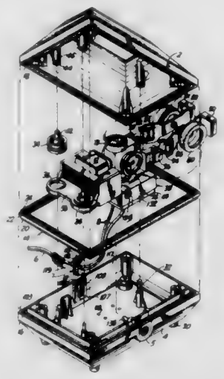
said central member having an air suction chamber receiving air from said air inlet means and an air discharge chamber;

said pump unit including two vibrators positioned at two sides of said central member, respectively, and each of said two vibrators including a diaphragm pump member;

said central member including at each side thereof a valve closure member provided with valve means to communicate with said air suction chamber, the valve closure member at each side of said central member being closed at an external side thereof with a respective diaphragm pump member to form therewith a pump chamber at each respective side of said central member;

said vibrators including magnets;

electromagnetic motor means to energize said magnets of



said vibrators upon application to said motor means of a source of energy so as to reciprocally move said vibrators and thereby pulsate said diaphragm pump cause a said air sucked into said air suction chamber of said central member to be pumped to said air discharge chamber of said central member; and

air storing means defined in said casing and communicating with said air discharge chamber so that air pumped to said air discharge chamber flows to said air storing means, said air storing means being provided with said outlet means to allow air to flow from said air storing means to said outlet means;

said air storing means storing some air to enable a more uniform air flow from said air inlet means to said outlet means to thereby dampen pump vibrations.

5,052,905

GEAR MOTOR WITH VALVE CONTROLLED PRESSURE BIASED END-PLATE SEAL

Hayno Rustige, Oberrot/Ebersberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE88/00541, § 371 Date Mar. 12, 1990, § 102(e) Date Mar. 12, 1990, PCT Pub. No. WO89/02515, PCT Pub. Date Mar. 23, 1989

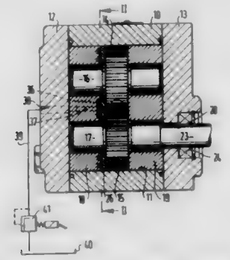
PCT Filed Sep. 2, 1988, Ser. No. 490,659

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1987, 8712245; May 14, 1988, 8806388

Int. Cl.[5] F03C *2/08;* **F04C** *15/00*

U.S. Cl. 418—132 **5 Claims**

1. A gear motor, comprising a housing having an inner space; two gears arranged in said inner space and having outer teeth meshing with each other and defining tooth chambers; a pressure plate located in said housing at one side of said two gears and adapted to a contour of said inner space of said housing; radially outer preliminary and radially inner main pressure areas arranged at a side of said pressure plate remote from said two gears; a control valve for controlling pressure in said main pressure area; two seal members for limiting said preliminary and main pressure areas, said main pressure area being defined by a radial space between said two seal members;



and means comprising a throttle hole extending through said pressure plate for communicating said main pressure area with said tooth chambers; and means for communicating to said preliminary pressure area a pressure higher than pressure in said main pressure area.

5,052,906

PLASTIC TRANSFER MOLDING APPARATUS FOR THE PRODUCTION OF FIBER REINFORCED PLASTIC STRUCTURES

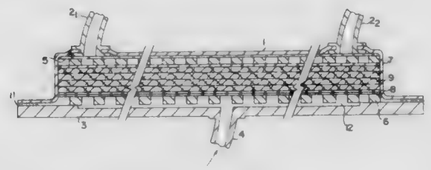
William H. Seemann, Ocean Springs, Miss., assignor to Seemann Composite Systems, Inc., Gulfport, Miss.

Continuation-in-part of Ser. No. 333,747, Mar. 30, 1989, Pat. No. 4,902,215, which is a continuation of Ser. No. 203,806, Jun. 8, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 453,824

The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.

Int. Cl.[5] B29C *43/02*

U.S. Cl. 425—112 **9 Claims**



1. In apparatus wherein is included

a fluid impervious outer sheet,

a mold surface upon which can be supported a lay up of one or more layers of a fiberous material, and over which can be placed said fluid impervious outer sheet and its edges marginally sealed upon said mold surface to form a chamber,

a resin inlet for introducing resin into said chamber for contact with said lay up of fibrous material,

a vacuum outlet for drawing a vacuum upon said chamber,

the improved combination which further includes

a pair of primary resin distribution media, one located upon the mold surface beneath the lower face of said lay up and the other atop the lay up between said lay up and said fluid impervious outer sheet; a primary distribution medium being constituted of spaced-apart lines running crisscross one with another, and an open array of separated raised segments on the surface of said structure which act as vertical pillars to prop apart the lower face of said lay up and the mold surface, and the upper face of said lay up and the impervious outer sheet, to simultaneously maintain a network of connecting upwardly faced vertical openings and connecting lateral passageways through which resin can flow freely through the first said primary resin distribution medium from the point of resin introduction to the marginal edges of said first resin distribution medium over the entire area adjacent thereto and through the lay up and thence from the downstream face of the lay up through the second said primary distribution medium when vacuum is applied upon said chamber and said impervious outer sheet is collapsed upon the mold surface.

5,052,907

RESIN SEALING APPARATUS FOR USE IN MANUFACTURING A RESIN-SEALED SEMICONDUCTOR DEVICE

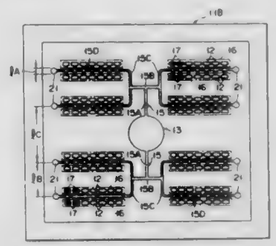
Yoshihiko Matumoto, Hyogo, and Hisanobu Takahama, Himeji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 3, 1990, Ser. No. 546,313

Claims priority, application Japan, Jul. 4, 1989, 1-172292

Int. Cl.[5] B29C *45/02, 45/27, 45/34*

U.S. Cl. 425—116 **2 Claims**



1. A resin sealing apparatus for use in sealing semiconductor chips with resin comprising:

a mold;

a pot within said mold in which the resin is injected;

cavities within said mold in which the semiconductor chips are set;

runners within said mold communicating with the pot and the cavities for leading the resin from the pot to the cavities, each of said runners having a circular cross section and a distal end closed within said mold; and

recesses closed within said mold formed at the distal end of each runner for holding the resin let out from the runner and air pressed out by the resin.

5,052,908

TOGGLE TYPE MOLD CLAMPING APPARATUS IN AN ELECTRICALLY-OPERATED INJECTION MOLDING MACHINE

Yoshiharu Inaba, Kawasaki, and Masato Yamamura, Yamanashi, both of Japan, assignors to Fanuc Ltd., Minimatsura, Japan

PCT No. PCT/JP89/00770, § 371 Date Apr. 19, 1990, § 102(e) Date Apr. 16, 1990, PCT Pub. No. WO90/02033, PCT Pub. Date Mar. 8, 1990

PCT Filed Jul. 27, 1989, Ser. No. 474,044

Claims priority, application Japan, Aug. 29, 1988, 63-212427

Int. Cl.[5] B29C *45/80*

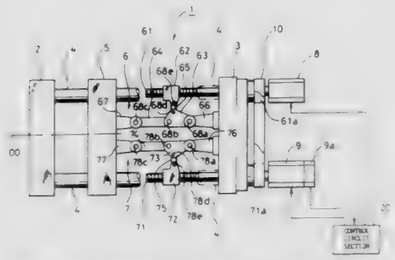
U.S. Cl. 425—150 **4 Claims**

1. A mold clamping apparatus for use in an electrically-operated injection molding machine, comprising:

a first toggle section having a plurality of links operatively coupled to a first head member threadedly engaged with a first ball screw, said toggle section being disposed radially inwardly of said mold clamping apparatus with respect to said first ball screw, said first ball screw being separated radially outwardly of said mold clamping apparatus from a central axis of said mold clamping apparatus, said first

ball screw extending in parallel to said axis, and said first ball screw being rotatably supported;

a second toggle section having a plurality of links operatively coupled to a second head member threadedly engaged with a second ball screw, said second toggle section being disposed radially inwardly of said second ball screw, said second ball screw being separated radially outwardly of said mold clamping apparatus from said axis, said second ball screw being disposed at a side of said



mold clamping apparatus remote from said first ball screw with respect to said axis, said second ball screw extending in parallel to said axis, and said second ball screw being rotatably supported;

a first servomotor operatively coupled to said first ball screw;

a second servomotor operatively coupled to said second ball screw; and

control means for controlling drive of said first and second servomotors.

5,052,909

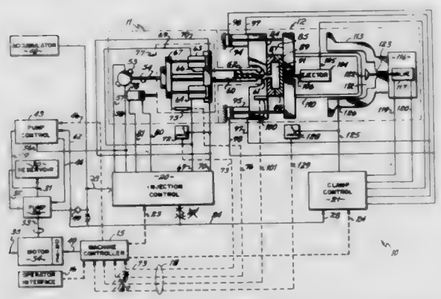
ENERGY-CONSERVING INJECTION MOLDING MACHINE

Ronald A. Hertzer, Milford; Edward A. Chorey, and Harold J. Faig, both of Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation of Ser. No. 467,634, Jan. 19, 1990, abandoned. This application Nov. 16, 1990, Ser. No. 616,752

Int. Cl.[5] B29C *45/80, 45/82*

U.S. Cl. 425—150 **10 Claims**



1. An energy-conserving injection molding machine, comprising:

(a) a clamping mechanism for supporting first and second sections of a mold and selectively moving said sections into parted relation to open the mold and mating relation to close the mold as well as for forcibly holding said mold closed;

(b) an injection mechanism coupleable to said clamping mechanism and said mold for plasticizing a material and injecting the plasticized material into the mold to form a molded part;

(c) hydraulic actuator means coupled to at least one of said clamping mechanism and said injection mechanism for operating same;

(d) electro-hydraulic control means coupled to said hydraulic actuator means for supplying hydraulic fluid to said actuator means in response to predetermined electrical operating signals;

(e) pump means coupled to said electro-hydraulic control means and to fluid reservoir means for supplying hydraulic fluid to said electro-hydraulic control means;

(f) variable speed brushless DC motor means drivably coupled to said pump means for adjusting the hydraulic fluid output of said pump means in accordance with a driving signal, and

(g) controller means for:

(i) generating said operating signals in accordance with programmed molding parameter, sequence and timing inputs, and

(ii) generating said driving signal in accordance with one of a plurality of stored values, each of said values being selected in accordance with the hydraulic fluid output required to be delivered by said pump means during at least a portion of a particular phase of operation of the machine in order to achieve said programmed inputs without significantly exceeding said required hydraulic fluid output.

5,052,910

CLAMPING UNIT FOR INJECTION MOLDING MACHINE

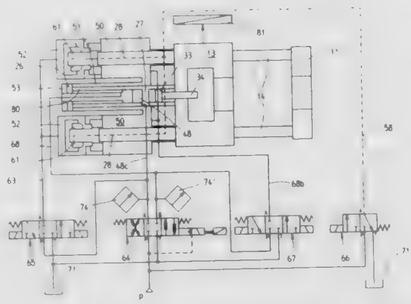
Karl Hehl, Arthur-Hehl-Str. 32, D-7298 Lossburg 1, Fed. Rep. of Germany

Filed Dec. 13, 1989, Ser. No. 450,258

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1988, 3844432

Int. Cl.[5] B29C *45/80*

U.S. Cl. 425—150 **18 Claims**



1. In a clamping unit for an injection molding machine, said clamping unit comprises

a stationary mold carrier,

a movable mold carrier reciprocable relative to said stationary mold carrier to and from a clamping position, and

hydraulic actuating means for moving said movable mold carrier to and from said clamping position and for locking said movable mold carrier in said clamping position, said actuating means defining an axis of symmetry and comprising

at least one hydraulic locking cylinder,

a locking piston connected to said movable mold carrier and contained in and operable by said at least one hydraulic locking cylinder to lock said movable mold carrier in said clamping position, said locking piston in said at least one hydraulic locking cylinder defining a high-pressure chamber and a low-pressure chamber, said locking piston having at least one valve-controlled overflow passage connecting said high-pressure and low-pressure chambers,

at least one hydraulic drive cylinder, operable to move said movable mold carrier to and from said clamping position; said at least one hydraulic drive cylinder being centered on said axis of symmetry and being connected to said movable mold carrier,

at least one buffer cylinder, and

a buffer piston contained in said at least one buffer cylinder and defining in said at least one buffer cylinder a buffer chamber, said buffer chamber communicating with said low-pressure chamber of said at least one locking cylinder,

the improvement wherein

said at least one buffer cylinder coaxially surrounds said at least one hydraulic drive cylinder,

said buffer piston being mounted on said at least one hydraulic drive cylinder,

said at least one hydraulic locking cylinder and said locking piston being symmetrically arranged with respect to said axis of symmetry, and

a separate shut-off valve being operatively connected with said at least one hydraulic locking cylinder for shutting off said at least one valve-controlled overflow passage in said locking piston.

5,052,911

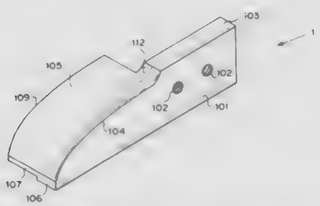
UNDERWATER PELLETIZER BLADE

Olvin J. Mikeska, 657 W. Sanders, Belville, Tex. 77418

Filed Apr. 27, 1989, Ser. No. 343,572

Int. Cl.[5] B29C *47/08*

U.S. Cl. 425—67 **9 Claims**



1. A pelletizer blade for mounting on a rotatable hub adjacent a die face of an underwater extruder-pelletizer, comprising a substantially rectangular solid body portion having opposed flat major and minor surfaces, an arcuate impeller surface portion extending generally perpendicularly away from said body portion at such an angle to the flat surfaces as to push water away from said die face as said hub is rotated, said arcuate impeller surface portion having a cutting edge on the side opposite the major flat surface, said arcuate impeller surface having a first radius of curvature adjacent the major flat surface and a second radius of curvature on a cutting edge opposite the major flat surface.

5,052,912

PELLET PRODUCTION APPARATUS

Moriyama Masao, 508-13, Tendocho 17, Nishinomiya, Hyogo, 663, Japan

Filed Apr. 14, 1989, Ser. No. 339,174

Claims priority, application Japan, Oct. 23, 1987, 62-268497

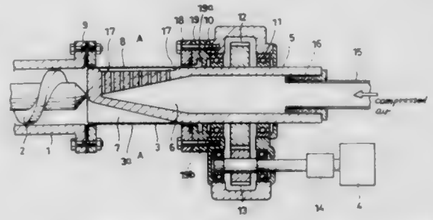
Int. Cl.[5] B29B *9/10*

U.S. Cl. 425—313 **1 Claim**

1. A pellet production apparatus to be attached to an extruder for feeding a pellet production material to said apparatus, said apparatus comprising:

a stationary multi-perforated hollow cylindrical sheath (3) provided on its cylindrical wall with a plurality of orifices (3*a*) acting as nozzles, said sheath (3) being fixed to the extrusion end of said extruder so as to accept thereinto said pellet production material fed from said extruder;

a cylindrical rotor (5) rotatably closely inserted over a predetermined length into said sheath (3) with one end directed toward said extruder, said rotor (5) having a compressed-air intake path (6) for accepting compressed air therein bored along the central axis of said rotor (5), first lengthwise surface-grooves (7) with their bottoms tapered toward said extruder, second lengthwise surface-grooves (8) with their bottoms kept parallel to the central axis of said rotor (5) and radially directed air-blow paths (17) communicating between said compressed-air intake path (6) and said second lengthwise surfaces-grooves (8), said first lengthwise surface grooves (7) and said second lengthwise surface grooves (8) being disposed alternately on the periphery of said rotor (5); and



a rotor driving means (10, 11, 12, 13, 4) for rotating said rotor (5),

whereby said pellet production material fed from said extruder is pushed out from said orifices (3*a*) through said first lengthwise surface grooves (7) and made to form pellets by being intermittently interrupted from being pushed out from said orifice (3*a*), as said cylindrical rotor (5) rotates, by ridge portions formed between said first lengthwise surface grooves (7) and said second lengthwise surface grooves (8), and whereby said pellets formed at said orifices (3*a*) are removed therefrom by being pushed out by compressed air from said compressed-air intake path (6) when said second lengthwise surface grooves (8) are positionally aligned with the orifices (3*a*) to which the formed pellets stick.

5,052,913

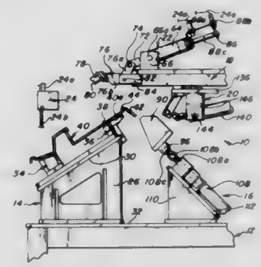
APPARATUS FOR FORMING A DOOR PANEL BELT TRIM

Robert G. Conliffe, Knoxville, Tenn., assignor to Davidson Textron Inc., Dover, N.H.

Filed Oct. 12, 1989, Ser. No. 420,471

Int. Cl.[5] B29C *53/04*

U.S. Cl. 425—394 **5 Claims**



1. Apparatus for shaping a return flange on a belt trim portion of a thermoformable plastic vehicle door panel comprising:

a machine base;

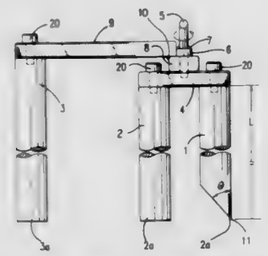
door fixture means for supporting on top thereof a door panel with a thermoformable bent end thereon, said bent end extending beyond the door fixture means;
said door fixture means supported on said base and including a movable backup means having a retracted position and an extended position and positionable in the retracted position away from said bent end when the door panel is initially loaded on the door fixture means;
movable clamp means spaced apart from said door fixture means for selectively clamping and unclamping the bent end when the door panel is supported on the door fixture means;
movable heating means spaced apart from said door fixture means and from said clamp means for spot heating the bent end when the clamp means clamp the bent end to soften the thermoformable material of the bent end without producing differential thermal stresses in the panel capable of warping the panel;
and shaping means spaced apart from said door fixture means, said clamp means and said heating means and operable following heating of the bent end to apply a selected force on the bent end to form a reversely bent return flange thereon around said movable backup means while in its extended position in contact with the bent end.

5,052,914

AUTOMATABLE INTERNAL ENDLESS FILM PARTING TOOL

Peter J. Schmitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 31, 1990, Ser. No. 560,827
Int. Cl.[5] B29C *41/42*
U.S. Cl. 425—438 **17 Claims**



1. A tool for removing an endless film from an interior surface of a mold, said tool comprising:
a) initial separation means for initiatingseparation of an endless film from an interior surface of a mold; and
b) a film collecting assembly, comprising means for winding up said film.

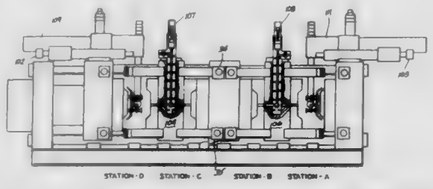
5,052,915

SEQUENTIAL INJECTION MOLDING MACHINE

Robert D. Schad, Toronto, and Paul P. Brown, Orangeville, both of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation of Ser. No. 320,581, Mar. 8, 1989, abandoned, which is a division of Ser. No. 150,157, Jan. 29, 1988, Pat. No. 4,867,938. This application Aug. 15, 1990, Ser. No. 568,242
Int. Cl.[5] B29C *45/40*
U.S. Cl. 425—556 **20 Claims**

1. Injection molding apparatus for molding plastic parts, said apparatus operating a molding cycle including injection, hold under pressure, cool and ejection, said apparatus comprising:
a first molding station and a second molding station,
at least one first mold located at said first molding station and at least one second mold located at said second molding station, said molds being operative to form molded parts,
primary and secondary clamping means operative to close and clamp said molds, wherein the secondary clamping means is operative to separately clamp said molds,
a molten plastic distributor means having individual channels for communicating sequentially and selectively with said molding stations in an overlapping cycle,



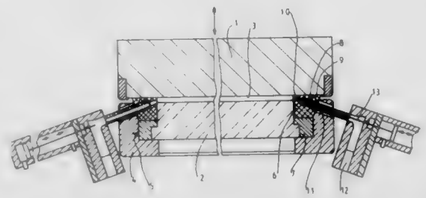
primary and secondary injection means both of which being operative to directly inject molten plastic into both of said clamped molds, wherein said secondary injection means is operative to stuff at least one of said molds,
means to open said at least one first mold while said at least one second mold is closed, including means to release the clamping force on said moles independently of each other, and
means to remove the plastic parts.

5,052,916

MOLD FOR THE PRODUCTION OF FLAT MOLDINGS OF CURABLE CASTING RESINS

Josef Düllings, Issum; Paul Vente, Leverkusen, and Werner Klöker, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1990, Ser. No. 492,744
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1989, 3908819
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—564 **1 Claim**



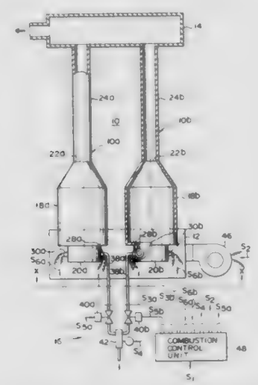
1. A mold for producing flat moldings of curable casting resins, said mold comprising a base plate and a cover plate displaceable relative to one another, a flat circumferential compressible seal between the base and cover plates defining a mold cavity with the base and cover plates, a plurality of passages opening into the mold cavity, a portion of said passages for venting the mold cavity and the remainder of said passages for introducing casting resins into the mold cavity, each passage including a fixedly arranged capillary tube partially projecting into the seal and a channel adjoining the capillary tube and opening into the mold cavity, and a closure needle movable within each passage for closing the channel.

5,052,917

DOUBLE-COMBUSTOR TYPE PULSATING COMBUSTION APPARATUS

Kazuo Saito, Fujisawa, and Ichiro Hongo, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 16, 1990, Ser. No. 568,060
Claims priority, application Japan, Aug. 22, 1989, 1-214045
Int. Cl.[5] F23C *11/04*
U.S. Cl. 431—1 **9 Claims**



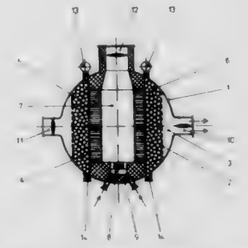
1. A double-combustor type pulsating combustion apparatus comprising:
a first pulsating combustor including
a first combustion chamber having a predetermined volume, for a series of combustions to occur within,
a first tail pipe connected to a downstream side of said first combustion chamber,
a first air-intake pipe for supplying air to said first combustion chamber, the first air-intake pipe being connected to an upstream side of said first combustion chamber, and
a first fuel-supplying pipe indirectly connected to said first combustion chamber and having
a first fuel supplying-valve located therein, for regulating the supply of fuel to said first combustion chamber;
a second pulsating combustor including
a second combustion chamber having the predetermined volume, for a series of combustions to occur within,
a second tail pipe connected to a downstream side of said second combustion chamber,
a second air-intake pipe for supplying air to said second combustion chamber, the second air-intake pipe being connected to an upstream side of said second combustion chamber, and
a second fuel-supplying pipe indirectly connected to the second combustion chamber and having
a second fuel-supplying valve located therein, for regulating the supply of fuel to said second combustion chamber, the second pulsating combustor operating at a combustion cycle whose phase is opposite to that of said first pulsating combustor; and
means for controlling said first and second pulsating combustors, for closing said first fuel-supplying valve when total quantity of air and fuel supplied to the first and second combustion chambers for two consecutive combustions, one combustion in said first combustion chamber and the other combustion in said second combustion chamber, is less than ½ of the maximum quantity of air and fuel allowed to be supplied to said first and second combustion chambers for the two consecutive combustions and for opening said first fuel-supplying valve, when in closed condition, when the total quantity of air and fuel supplied to said second combustion chamber for a combustion becomes greater than ½ of the maximum quantity of air and fuel allowed to be supplied to said first and second combustion chambers for two consecutive combustions, one combustion in said first combustion chamber and the other combustion in said second combustion chamber.

5,052,918

METHOD AND A REGENERATOR FOR HEATING GASES

Hans-Georg Fassbinder, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Klockner CRA Patent GmbH, Duisburg, Fed. Rep. of Germany

Filed Dec. 1, 1989, Ser. No. 444,231
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841708
Int. Cl.[5] F23D *3/40*
U.S. Cl. 431—7 **13 Claims**



1. A regenerator for heating gases by alternatingly first heating up heat carriers by hot gas and thereafter using the heat energy stored by the heat carriers to heat cold gases, said regenerator having an axis of symmetry and including an outer wall, an inner grate and at least one outer grate spaced therefrom and coaxial therewith, a hot gas collecting chamber located inside the inner grate, a second gas collecting chamber located between an outer grate and the regenerator outer wall, carriers located between the inner grate and the at least one outer grate, said heat carriers including a first annular bed of a first heat resistance material adjacent said inner grate, a second annular bed of a second heat resistant material between said first heat resistance material and said outer grate, said first heat resistance material having a resistance to heat greater than said second heat resistant material.

5,052,919

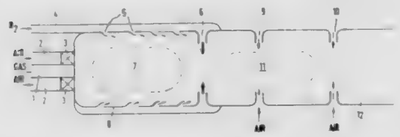
MUTI-STAGE COMBUSTION CHAMBER FOR COMBUSTION OF NITROGEN-CONTAINING GAS WITH REDUCED NO_x EMISSIONS, AND METHOD FOR ITS OPERATION

Bernard Becker, Mülheim/Ruhr, Fed. Rep. of Germany, assignor to Siemens Aktiengeselischaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 945,300, Dec. 19, 1986, Pat. No. 5,002,483. This application Jan. 22, 1991, Ser. No. 643,439
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545524
Int. Cl.[5] F23M *3/04*
U.S. Cl. 431—10 **7 Claims**

1. A method for a two-stage combustion of nitrogen-containing gas with low NO_x emissions, in a combustion chamber having a precombustion section with inlet means for introduction of gas and air, and a succeeding secondary combustion section in open communication with the precombustion section, which comprises, introducing gas and air to a primary stage in the precombustion section to provide a fuel-rich mix-

ture and effecting precombustion of the mixture at an air number of approximately =0.6 to 0.9, subsequently subjecting the reaction products from the primary stage to post-combustion in a secondary stage in the secondary combustion section at an



air number of approximately λ=1.3 to 2, and feeding an inert substance via a multiplicity of openings in the walls of the precombustion section to cool the walls and separate the walls from the fuel-rich mixture undergoing decomposition and precombustion in the primary stage.

5,052,920

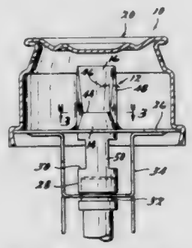
GAS BURNER AND METHOD

John F. Warren, Flat Rock, and Nelson G. Mayer, Rochester, both of Mich., assignors to Lincoln Brass Works, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 255,514, Oct. 11, 1988, abandoned. This application Jul. 5, 1989, Ser. No. 375,740

Int. Cl.[5] F23D *14/62*

U.S. Cl. 431—354 **14 Claims**



1. A range top gas burner comprising:

an enclosed body defined by an inverted cup-shaped upper portion having gaseous fuel outlet ports and a generally horizontal plate closing the bottom of said upper portion, said plate being connected to said upper portion by a crimped connection around the periphery of said plate;

means defining a central opening in said plate through which inlet gaseous fuel is injected in a vertical axial direction along with combustion air;

axially disposed venturi means permanently affixed to said plate and disposed wholly within said body and communicating directly with said opening for enhancing the air/-gas mixture being supplied to said ports; and

a support member disposed below and affixed to said plate, said support member having a hole therethrough in vertical alignment with said opening, said hole being adapted to receive gaseous fuel only and being spaced from said plate to permit air to be drawn through said opening with said fuel.

5,052,921

METHOD AND APPARATUS FOR REDUCING NO_x EMISSIONS IN INDUSTRIAL THERMAL PROCESSES

Klaus H. Hemsath, Toledo, Ohio, assignor to Southern California Gas Company, El Monte, Calif.

Filed Sep. 21, 1990, Ser. No. 585,932

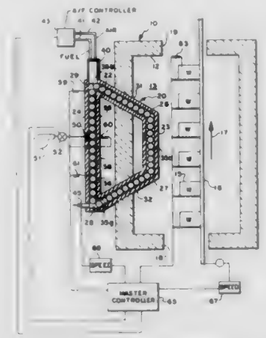
Int. Cl.[5] F27D *3/00*; **F23C** *6/00*

U.S. Cl. 432—121 **20 Claims**

1. An industrial thermal process for heating work with reduced NO_x emissions comprising the following sequential steps:

a) combusting a gaseous fuel with combustion air at a substoichiometric ratio which is sufficient to generate a reducing atmosphere having products of combustion rich in hydrogen and carbon monoxide combustibles,

b) while immediately cooling the atmosphere to a predetermined temperature by passing same through a tortuous heat treat path wherein removed heat is used to heat work



and wherein oxygen in said atmosphere continues to react with said products of combustion to produce an atmosphere substantially free of NO_x, and

c) thereafter adding completion air to said reducing atmosphere which is sufficient to combust said hydrogen and carbon monoxide combustibles while continuously controlling the temperature of said gaseous products by regulating the rate at which said gases receive said completion air to be below said predetermined temperature whereat NO_x tends to occur.

5,052,922

CERAMIC GAS BURNER FOR A HOT BLAST STOVE, AND BRICKS THEREFOR

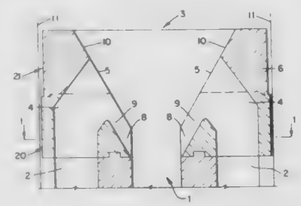
Ronald J. M. Stokman, Hillegom, and Johannes J. De Wit, Obdam, both of Netherlands, assignors to Hoogovens Groep BV, IJmuiden, Netherlands

Filed Jun. 18, 1990, Ser. No. 539,590

Claims priority, application Netherlands, Jun. 27, 1989, 8901620

Int. Cl.[5] F24H *1/00*

U.S. Cl. 432—181 **19 Claims**



1. A ceramic gas burner for a hot-blast stove comprising a burner crown essentially composed of a plurality of shaped bricks which define terminal portions of at least one combustion air duct and at least one gas duct of said burner for flow of respectively combustion air and gas, said bricks being of at most two principal types and said bricks of one of said principal types are located relative to said bricks of the other said principal type by cooperating projections and recesses on the bricks.

5,052,923

OVEN FOR PARTIAL HEAT TREATMENT OF TOOLS

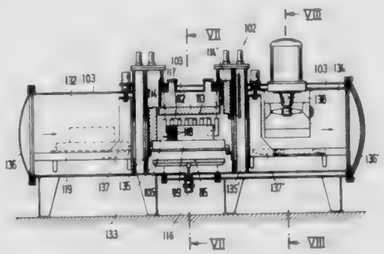
Wolfgang Peter, Emmerich, and Bernd Edenhofer, Kleve, both of Fed. Rep. of Germany, assignors to Ipsen Industries International Gesellschaft mit beschrankter Haftung, Kleve, Fed. Rep. of Germany

Filed Oct. 12, 1990, Ser. No. 596,700

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1989, 3934103

Int. Cl.[5] F27B *5/04*; **C21D** *1/74, 1/06*

U.S. Cl. 432—205 **16 Claims**



1. In a furnace for a partial heat treatment of tools having a clamping portion and a working portion, said furnace comprising a heating chamber that receives charges of tools and is equipped with a door and internal heating elements that irradiate heat for hardening of said tools under vacuum; at least one evacuating device; a quenching installation; and a charging platform for receiving tools whereby said clamping portion of said tools that is not to be heated is arranged inside said charging platform and said working portion of said tools that is to be heated is arranged outside said charging platform the improvement wherein:

said furnace has a first section in which said heating chamber is disposed which heating chamber is constantly maintained at operating temperature; and a second section for loading, unloading and quenching; with a transport device for said charges arranged between said first and said second section;

said furnace is a three-chamber vacuum furnace having three chambers wherein said first section is disposed in a first chamber and said second section is disposed in a second and a third chamber; with said first chamber such that, in sequence, said second chamber is an ante-chamber, said first chamber is a main chamber containing said heating chamber, and said third chamber is a quenching chamber; with a first pair of vacuum-tight and thermally insulating intermediate doors separating said second chamber from said first chamber and with a second pair of vacuum-tight and thermally insulating intermediate doors separating said first chamber from said third chamber, wherein each of said chambers is provided with an individual one of said evacuating devices.

5,052,924

FIBEROPTIC IMAGING DENTAL DRILL

Randy J. Berg, 6813 W. 83rd St. Terr., Bloomington, Minn. 55438

Continuation-in-part of Ser. No. 316,927, Mar. 22, 1989. This application Nov. 13, 1990, Ser. No. 612,596

Int. Cl.[5] A61C *1/00*

U.S. Cl. 433—29 **3 Claims**

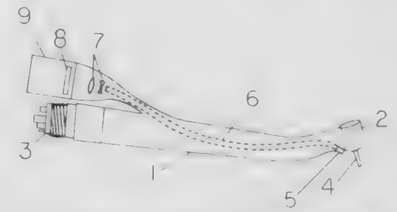
1. A dental drill comprising:

a handpiece comprising a housing having first and second ends;

a dental drill bit located at the first end;

a coherent fiberoptic imaging scope extending from the first end at a location within the housing adjacent the dental drill bit to a second end located adjacent the second end of the housing; and

an electronic means of video registration for recording a



video image of a work area of a tooth and the dental drill bit, said means operably connected and located adjacent to the second end of the coherent fiberoptic imaging scope.

5,052,925

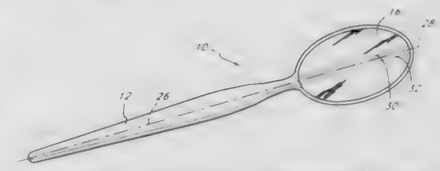
DENTAL MIRROR AND METHOD OF USING SAME

Robert W. Stalcup, 21152 Peppertree La., Mission Viejo, Calif. 92691

Filed Jan. 10, 1990, Ser. No. 462,786

Int. Cl.[5] A61B *1/24*

U.S. Cl. 433—30 **10 Claims**



1. An improved dental mirror for increasing the range of view of the mirror, illumination of the mouth and the retraction of oral tissue, for facilitating changing views by merely changing the angle of the handle, and for facilitating preparation of abutment teeth for bridge installation, comprising:

an elongated handle having a first end and a longitudinal axis;

a head integral with said handle at said first end, said head having a substantially planar mirrored surface for reflecting an image of the patient's teeth, said mirrored surface being oval-shaped with its major axis being disposed from said longitudinal axis of said handle by an angle of approximately seventy five degrees; and

a plurality of spaced parallel reference lines on said mirrored surface substantially perpendicular to said major axis of said mirrored surface for aligning with abutment teeth surfaces so as to determine parallelism of said abutment teeth surfaces.

5,052,926

PALLET FOR HANDLING DENTAL PORCELAIN MATERIALS

Tsugumichi Kawasaki, Nagoya, and Hiroyuki Hino, Ichinomiya, both of Japan, assignors to G-C Toshi Kogyo Corporation, Kasugai, Japan

Filed Mar. 29, 1990, Ser. No. 500,992

Claims priority, application Japan, Apr. 5, 1989, 1-84643; Dec. 27, 1989, 1-33636

Int. Cl.[5] A61C *1/14, 3/04*

U.S. Cl. 433—49 **7 Claims**

1. A pallet for handling water-permeable dental porcelain materials, comprising a porous ceramic material formed of one or two or more selected from the group consisting of materials based on alumina, aluminium silicate, mullite, cordierite, zirco-

nia and vitreous china and having a grain size of 1.0 to 30.0 μm and a mean grain size of 1.5 to 25.0 μm, said porous ceramic material having fine and even pores uniformly dispersed therethrough, as expressed in terms of a porosity of 15 to 65% and a mean pore size of 0.5 to 10 μm.

5,052,927

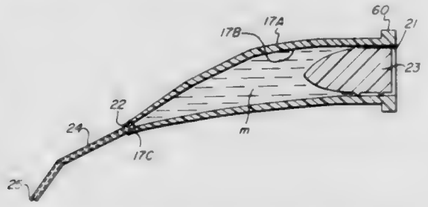
SYRINGE AND DISPOSABLE CAPSULE WITH CANNULA FOR USE THEREWITH

John Discko, Jr., 50 Laura Rd., Hamden, Conn. 06514

Filed Oct. 24, 1988, Ser. No. 261,600

Int. Cl.[5] A61C *5/04*

U.S. Cl. 433—90 **18 Claims**



1. A capsule having a plastic body portion defining a reservoir for containing a predetermined amount of material and a connected discharge tip having an orifice, a needle cannula having a bore extending therethrough, said needle cannula being projected through said orifice of said discharge tip to extend beyond the end of said discharge tip, and said needle cannula having means formed at an end thereof with said means being of one piece with said cannula for positively retaining, sealing and rotatably connecting said cannula relative to said discharge tip for 360 degree rotation relative to said discharge tip.

5,052,928

METHOD AND ARRANGEMENT FOR PRODUCING A BRIDGE FOR ANCHORAGE ELEMENTS IN DENTINE

Matts Andersson, Fåker, Sweden, assignor to Nobelpharma AB, Gothenburg, Sweden

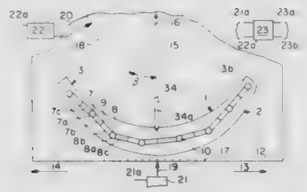
PCT No. PCT/SE87/00574, § 371 Date May 16, 1989, § 102(e) Date May 16, 1989, PCT Pub. No. WO88/04158, PCT Pub. Date Jun. 16, 1988

PCT Filed Dec. 2, 1987, Ser. No. 359,664

Claims priority, application Sweden, Dec. 9, 1986, 8605272

Int. Cl.[5] A61C *13/225*

U.S. Cl. 433—172 **16 Claims**



1. A method for producing by mechanical means a bridge made of titanium modules for anchorage elements implanted in the dentine of teeth with an artifical dental structure and through which the artificial dental structure is attached to the anchorage elements, the bridge being built up of modular elements which are adapted to interfit with each other and are treated for joining together, said method comprising:

(a) treating said modular elements in a treatment unit in at least one treatment stage to form contact surfaces between said modular elements;

(b) obtaining and storing identification data relating to the individual different heights of the anchorage elements above the dentine or a plane passing through said dentine, and different relative inclinations and the positions and directions of the modular elements in relation to one another and to the anchorage elements; and

(c) treating the resulting modular elements in a processing unit and controlling the treatment depending on the data thus obtained and stored, so that any bridge elements present in the bridge between attachment components of the bridge and the anchorage elements are assured a connection through the contact surfaces, and directions and dimensions between the attachment components are such that the bridge elements, disregarding any equalization of levels by means of the attachment components, are essentially in line with the direction of the dentine in the sense of its height and width, at the same time having the necessary strength and location within the dental structure.

5,052,929

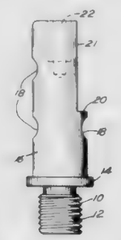
METHOD FOR CONSTRUCTING A CUSTOM ABUTMENT FOR USE IN ASSOCIATION WITH DENTAL IMPLANTS

D. Greg Seal, 6170 Sni-A-Bar Rd., Kansas City, Mo. 64129

Filed Mar. 2, 1990, Ser. No. 489,061

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **13 Claims**



1. A method of preparing a custom dental abutment comprising the steps of:

a. attaching an abutment comprising a base attaching means, a cuff, and a body to a dental implant that is anchored in a patient's mouth, the abutment made of a non-oxidizable alloy comprising from 20 to 60 wt % gold, from 15 to 50 wt % platinum, from 15 to 50 wt % palladium, and from 0.5 to 5.0 wt % iridium;

b. recording an impression of the patient's mouth;

c. removing the abutment from the patient's mouth, attaching it to a laboratory implant and inserting the abutment attached to the laboratory implant body in the impression;

d. creating from the impression a laboratory cast of the patient's mouth which retains the abutment and laboratory implant;

e. reorienting the body of the abutment; and

f. casting the reoriented abutment with a dental precious metal which molecularly bonds to the non-oxidizable abutment alloy to define a custom dental abutment.

5,052,930

DENTAL IMPLANT AND METHOD OF IMPLANTATION

Jean-Pierre Lodde, 47 Chemin De Rozarglin, and Philippe Guennal, 1 rue Saint Marc, both of 29000 Quimper, France

Continuation-in-part of Ser. No. 442,471, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 356,271, May 24, 1989, abandoned. This application Mar. 7, 1990, Ser. No. 489,691

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **16 Claims**

1. A dental implant for use as a bond between a dental pros-

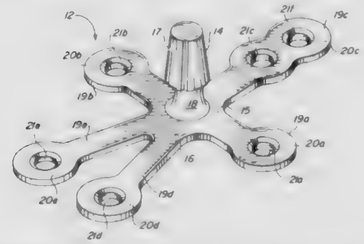
thesis and the mandible or maxilla bone at an implantation site having crestal, buccal and lingual bone portions, said implant comprising:

a spider-like base of a material, said base having a central hub region and at least three spoke-like branches extending radially outward at angularly-spaced intervals from said hub region; and

a post projecting upward from said base at said hub region, and dimensioned, configured and adapted to mount the dental prosthesis thereon;

said hub having a plate-like undersurface dimensioned, configured and adapted to be placed over said crestal bone portion at said implantation site;

said branches comprising elongated strips having proximal ends integrally connected with said hub region, and distal ends including means for individually securing said distal ends to said bone; and



said branches being dimensioned, configured and adapted, and said material and angularly-spaced intervals being chosen, so that said hub undersurface can be placed over said crestal bone portion and said branches can be drawn longitudinally and bent downward about said implantation site to individually secure them with said securing means at points of attachment to said buccal and lingual bone portions, for establishing a three-point tripod-like connection of said base to said site, providing stability in three spatial directions and against rotation, with said hub region shielding said crestal portion from vertical and horizontal forces applied to said post due to the action of mastication and lingual articulation on the received dental prosthesis, and said branches dissipating said forces by dispersing them in multiple directions radially away from said hub region, longitudinally along said branches to said points of attachment.

5,052,931

ENOSSAL IMPLANT

Axel Kirsch, Filderstadt, Fed. Rep. of Germany, assignor to IMZ Fertigungs-und Vertriebsgesellschaft für dentale Technologie mbH, Fed. Rep. of Germany

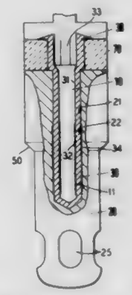
Filed Dec. 8, 1989, Ser. No. 447,910

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841705

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **13 Claims**

1. An enossal implant comprising an implantable basic structure having an axially extending bore with internal threads, a rigid inner sleeve being provided with external threads and being detachably secured in the bore of the basic structure by being threaded therein, said inner sleeve having an axially extending bore, an implant post being inserted into the axial bore of the inner sleeve to be connectible to the basic structure, said axial bore of the inner sleeve having an upper portion with engagement means for the engagement by a corresponding wrench, the basic structure and the inner sleeve being made of the same metal selected from a group consisting of titanium and titanium alloys, and a spacer sleeve being providing on an upper end of the basic structure as an extension thereof, said inner sleeve having a ring flange adjacent an upper end for engaging and holding said spacer sleeve on said basic structure, said spacer sleeve having the same external diameter as the basic structure at said upper end, and said spacer sleeve being made from an electrically insulating material selected from a



group consisting of aluminum oxide, magnesium oxide, zirconium dioxide, and combinations of magnesium oxide, aluminum oxide and zirconium dioxide.

5,052,932

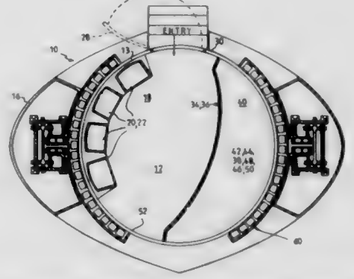
SPHERICAL SIMULATOR

James Trani, 10842 Langmuir Ave., Sunland, Calif. 91040

Filed Jan. 24, 1990, Ser. No. 469,232

Int. Cl.[5] G09B *9/00*

U.S. Cl. 434—29 **12 Claims**



1. A modular relatively portable spherical simulator, comprising:

a) a modular rotational sphere containing a wall, with an inside face, a center, a center of gravity, a center axis, and a spherical compartment, said wall of said sphere containing a door allowing the guests direct access to said guest area directly from the outside without having to climb into a cockpit;

b) modular base assembly for supporting said sphere and containing a load cell for producing feedback;

c) means void of a centrifuge for providing a full range of gravitational sensations starting from zero gravity free fall weightlessness to the restraining force of a rocket launching so that said user is exposed to various G-forces to simulate different maneuvers;

d) a pair of full height rear projection viewing screens and a speaker system;

e) rotational propulsion assemblies permitting said sphere to rotate along a first axis and a second axis by transferring power from said base to said sphere;

f) a sphere pedestal, said sphere pedestal permitting said sphere to rotate along said two axis;

g) linear induction motors for propulsion about said first axis;

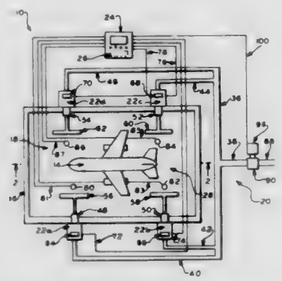
h) cantilevered supports for holding said linear induction motors used for propulsion of said first axis; and
i) additional linear induction motors for propulsion of said second axis, said base containing said linear induction motors for propulsion of said second axis.

5,052,933

FIRE FIGHTER TRAINER

William Rogers, Hopatcong; James J. Ernst, Livingston; Steven Williamson, Haledon, and Dominick J. Musto, Middlesex, all of N.J., assignors to Symtron Systems, Inc., Fair Lawn, N.J.

Filed Oct. 29, 1990, Ser. No. 605,527
Int. Cl.[5] G09B *9/00*
U.S. Cl. 434—226 **8 Claims**



1. A fire fighter trainer comprising:
a burn area disposed in a pit structure for holding a simulated crashed aircraft;
a fuel distribution and burner system for supporting a fire in the pit structure;
a burner control system connected to the fuel distribution and burner system;
a central operator control panel connected to the burner control system;
a computing system connected to the central operator control panel; and
an agent detecting system to automatically control flame response to an extinguishment agent application

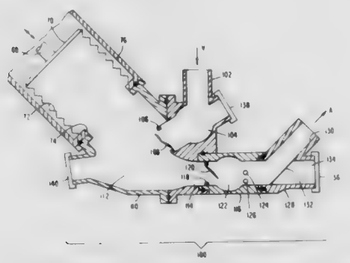
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5,052,934

PHANTOM FOR EVALUATION OF PROSTHETIC VALVES AND CARDIAC ULTRASOUND PROCEDURES

Ronald F. Carey, Columbia; Bruce A. Herman, Rockville; Ronald A. Robinson, Germantown, all of Md.; Harold F. Stewart, Nashville, Tenn.; Richard G. Hoops, Potomac, and George H. Douglas, Mt. Airy, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 20, 1990, Ser. No. 513,269
Int. Cl.[5] G09B *23/78*; **A61B** *8/00*
U.S. Cl. 434—268 **20 Claims**



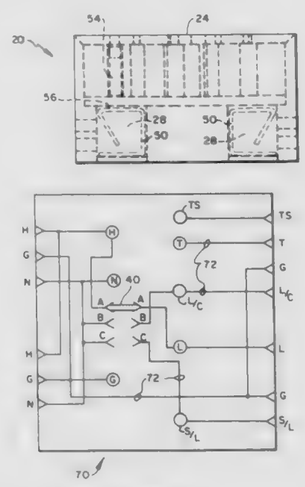
1. A multi-chambered, internally multi-ported, anthropomorphic phantom device filled with a blood-mimicking first fluid for evaluation of prosthetic heart valves and cardiac ultrasound procedures, comprising:
a first chamber provided with a first chamber inlet port and a first chamber outlet port;
a variable-volume second chamber, provided with a second chamber inlet port and a second chamber outlet port, said second chamber being connected to said first chamber with said first chamber outlet port communicating with said second chamber inlet port through a first valve;
a third chamber, comprising a third chamber inlet port and a third chamber outlet port, said third chamber being connected to aid first and second chambers with said first chamber outlet port communicating with said third chamber inlet port through a second valve;
means for controllably varying a volume of the second chamber, to thereby generate a controlled pulsatile flow of said first fluid from said first chamber inlet port through said first chamber, said first valve, said second chamber, said second valve, said third chamber and said third chamber outlet port with independent control being provided over the pulsatile flow rate and over the systolic and diastolic times of sequential pulses;
means for detecting a selected parameter of said flow of said blood-mimicking fluid through said multi-chambered phantom device; and
a closed fourth chamber sharing a common wall with said third chamber between said second valve and said third chamber outlet port and filled with a second fluid, said common wall comprising a flexible material selected to communicate pressure variations between said third and fourth chambers across the shared wall in accordance with a predetermined attenuation property of the flexible material.

5,052,935

PREWIRED CIRCUIT MODULE

Robert L. James, Cambridge, and Ronald E. Miller, Zanesville, both of Ohio, assignors to Delta Systems, Incorporated, Cambridge, Ohio

Filed Aug. 13, 1990, Ser. No. 566,110
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—49 **8 Claims**



1. A circuit module comprising:
(1) housing including:

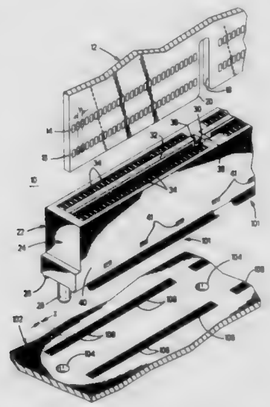
a bottom and a top section, each said section having a corresponding plurality of apertures, clip pockets and release apertures formed therein, said apertures and corresponding release apertures being positioned in adjacent relationship and providing access to corresponding said clip pockets, said top section further including a plurality of second apertures;
(2) a plurality of electrically conductive clips, each adapted for releasably retaining a wire, one of said clips being positioned in each said clip pocket; and
(3) a printed circuit board, disposed between said bottom and top sections of said housing and electrically contacting each of said plurality of clips, having a plurality of conducting paths formed thereon for providing a plurality of electrical configurations; and
(4) a shorting bar, adapted to be selectively inserted into one of said second apertures provided in said top section, for connecting two of said plurality of conducting paths on said printed circuit board, whereby when said shorting bar is inserted into another one of said second apertures, said shorting bar connects a different two of said plurality of conducting paths, thereby changing the electrical configuration of said circuit module.

5,052,936

HIGH DENSITY ELECTRICAL CONNECTOR

Donald T. Biechler, Harrisburg; Warren C. Hillbish, Hummelstown, and John W. Kaufman, Hershey, all of Pa., assignors to AMP Incroporated, Harrisburg, Pa.

Filed Oct. 26, 1990, Ser. No. 604,836
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—60 **9 Claims**



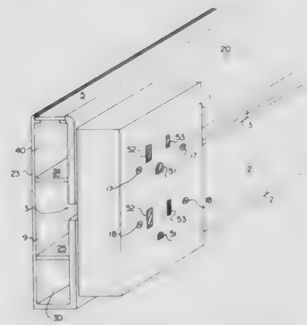
1. An electrical connector of a type used to interconnect the contact pads of a mother board having contact pads in a common row on X centers to the contact pads of a daughter board having two rows of contact pads on Y centers, substantially greater than X, said connector including a housing means to receive and position a daughter board on the mother board and further including an array of spaced-apart first and second contact members each having an upper resilient spring contact end and a lower solder tail end, said housing means including means to mount said contact members with the upper contact ends in two rows spaced apart on Y centers to engage the contact pads in two rows on the daughter board said housing means including interior relief and said contact members including the contact ends are held in said relief in a position to allow defection upon insertion of a circuit board and engagement therewith, said solder tail ends being held rigidly in the lower portion of said housing means the solder tail ends of the contacts positioned to be interdigitated in a common row on X centers to engage corresponding contact pads on the mother board.

5,052,937

BASEBOARD WITH MOVABLE ELECTRICAL OUTLET

Bryan D. Glen, 1846 W. 14th Ave., Vancouver, B.C., Canada V6J 2J9

Filed Mar. 27, 1990, Ser. No. 499,703
Int. Cl.[5] H01R *25/14*
U.S. Cl. 439—120 **14 Claims**



1. An electrical distribution system comprising:
a) an elongated housing having a front panel defining a hollow interior, and an elongated slot formed in said front panel, said front panel having an inner and outer surface;
b) first and second electrical conduction means fixed to the inner surface of said front panel, each said conduction means being parallel to and spaced from said slot;
c) means for providing an electrical differential between said first and second conduction means; and
d) movable receptacle means for releasably engaging said housing comprising a front face having electrical plug receptacle means, means for releasably securing said movable receptacle to said housing and means for engaging said conduction means, said conduction engaging means comprising an elongated bar having a width less than said slot and conductive elements fixed to an inner surface of said bar and connected to said electrical receptacle means, said conduction engaging means being adapted to engage said conduction means when said receptable means is installed in said slot, and said means for securing is movable from a first withdrawn position to a second slot-engaging position;
wherein said means for securing comprises two second elongated bars spaced to either side of said conductor engaging means, each said second elongated bar being threadably movable on a screw and provided with tenon means for mating with said slot.

5,052,938

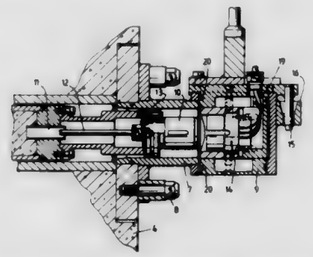
THROUGH-WALL CONNECTION ASSEMBLY

Stuart M. Hansford, Warrington, and Robert Dobson, Bolton, both of England, assignors to British Nuclear Fuels plc, Warrington, England

Filed Feb. 20, 1990, Ser. No. 481,625
Claims priority, application United Kingdom, Mar. 3, 1989, 8904957
Int. Cl.[5] H01R *13/44, 13/60*
U.S. Cl. 439—131 **4 Claims**

1. A through-wall connection assembly comprising a shield plug extending through and axially displaceable in a wall or barrier, a housing mounted on the wall or barrier to receive an end of the shield plug, a removable carrier insertable in the

housing, a first connector part in the carrier, a corresponding second connector part at the end of the shield plug releasably



engageable with the first connector part in the carrier, and a tubular liner in the wall or barrier to receive the shield plug.

5,052,939

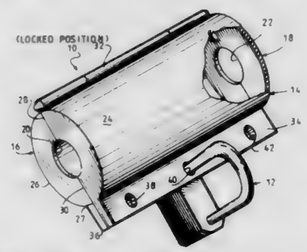
UTILITY PROTECTOR

William C. Koch, E8384 Koch Rd., North Freedom, Wis. 53951

Filed Feb. 2, 1990, Ser. No. 473,274

Int. Cl.[5] H01R *13/44*

U.S. Cl. 439—133 **4 Claims**



1. A utility protector, comprising:

a) a substantially hollow cylindrical tube portion having a first round end and a second round end, said hollow cylindrical tube portion has a longitudinal axis upon which said hollow cylindrical tube portion is split into a first half round and a second half round, said first half round contains a first side of said split and a second side of said split, said first half round is connected at said first side to a second side of said second half round of said split, by a hinge,

b) a first substantially round closed end disposed at said first round end of said tube portion and containing at least one first hole, said first hole being disposed at said center of said first substantially round closed end;

c) a second substantially round closed end disposed at said second round end of said tube portion and containing at least one second hole. said second hole being disposed at said center of said second substantially round closed end;

d. a first flat lip extending out longitudinally the complete length of said first half and a second flat lip extending out longitudinally the complete length of said second half;

e) a padlock must be closed for keeping the utility protector locked and said first flat lip and said second flat lip together form the closed portion, however, said padlock must be opened for keeping said first flat lip and said second flat lip apart in the opened position so that the interior of the utility protector can be viewed, said axis of the latch must coincide with said longitudinal axis of the opening of said lip in order to expose the contents of the interior of the utility protector;

f) a first knock out plug disposed in said first hole and removable when necessary;

g) a second knock out plug disposed in said second hole and removable when necessary.

5,052,940

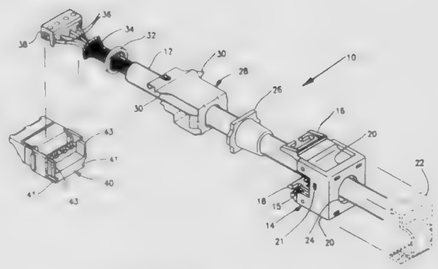
HERMAPHRODITIC SELF-SHORTING ELECTRICAL CONNECTOR

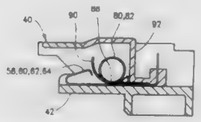
Ofer Bengal, Kfar Saba, Israel, assignor to Rit-Rad Interconnection Technologies Ltd., Tel Aviv, Israel

Filed May 11, 1990, Ser. No. 522,534

Int. Cl.[5] H01R *13/658, 13/703*

U.S. Cl. 439—188 **17 Claims**





1. A hermaphroditic self shorting electrical connector comprising:

a housing;

a plurality of electrical terminals supported within the housing; and

electrical shunt means including at least one resilient conductive member, in the general form of a spiral spring, positioned and configured such that when the connector is in an unmated condition the resilient conductive member is in electrical contact with at least two electrical terminals and such that mating engagement of the connector with a corresponding connector deflects the resilient conductive member such that it is no longer in electrical contact with at least one of the at least two electrical terminals.

5,052,941

INDUCTIVE-COUPLING CONNECTOR FOR A WELL HEAD EQUIPMENT

Ramon Hernandez-Marti, Vulaines sur Seine, and Jean-Pierre Muller, Cesson, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 447,301, Dec. 7, 1989, abandoned. This application Dec. 20, 1990, Ser. No. 631,748

Claims priority, application France, Dec. 13, 1988, 88 16353

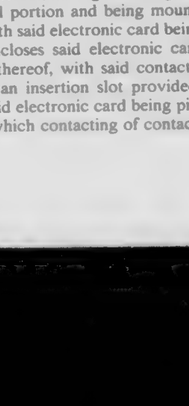
Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—194 **4 Claims**

1. An electrical connector for use in a well having a well head equipment comprising a well head having an axis, a hanger member for suspending a production tubing to said well head, a production valve assembly adapted to be removably connected to said well head, said valve assembly and said hanger member respectively including first and second removably engageable mating portions for providing fluid communication between said valve assembly and said production tubing when said valve assembly is connected to said well head, the electrical connector comprising:

at least first and second electrical coil assemblies mounted on first and second sleeves respectively, said sleeves being releasably arranged on said first and second mating portions respectively with the axes of said coils being in alignment with the axis of the well head, for providing inductive coupling between said coils when said first and second mating portions are fluidly engaged;

first electrically conductive means mounted on said valve assembly for electrically connecting said first coil to the exterior of said valve assembly; and



second electrically conductive means mounted on said hanger member for electrically connecting said second coil to a space in the well below said hanger member, wherein said first mating portion is a tubular member releasably fixed to said valve assembly and sealingly engageable with a corresponding cavity in said hanger member, said first coil being wound around said tubular member, and wherein said second coil is wound inside said second sleeve which overlies said tubing hanger and which surrounds said tubular member when said tubular member is sealingly and fluidly engaged with said hanger member.

5,052,942

DEVICE FOR ELECTRICALLY CONTACTING A PRINTED CIRCUIT BOARD WITH AN ELECTRONIC CARD, ESPECIALLY AN IC-MEMORY CARD, THAT HAS CONTACTING POLES ALONG ONE OF ITS SIDES

Paul-Georg Rauterberg, Wuppertal; Franz-G. Hiemstra, Hellenthal, and Horst Ribbeck, Wuppertal, all of Fed. Rep. of Germany, assignors to Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Dec. 14, 1990, Ser. No. 628,384

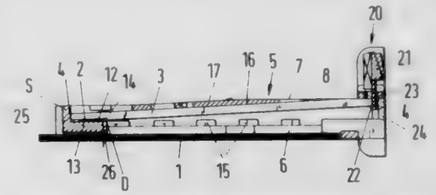
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942289

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—326 **19 Claims**

1. A device for electrically contacting a printed circuit board with an electronic card that has contacting poles along one of the sides thereof, having a housing, comprising a bottom portion and a lid portion and being mounted to said printed circuit board, with said electronic card being inserted into said housing, that encloses said electronic card completely in a contacted state thereof, with said contacting poles being inserted first, via an insertion slot provided at a face of said housing, with said electronic card being pivotable into a locking position in which contacting of contacting springs of said housing is achieved, with said contacting springs being arranged opposite said insertion slot in a manner corresponding to an arrangement of said contacting poles of said electronic card, and with said contacting poles, after inserting and before pivoting said electronic card, being without electric contact with said contacting springs, the improvement wherein:

said lid portion is arranged at an acute angle relative to said



bottom portion, and said contacting springs are disposed on the bottom portion along at least one line that is opposite and parallel to said insertion slot, with said electronic card being inserted such that said electronic card is resting on said bottom portion during insertion and subsequently is pivoted in an upward direction until abutting an underside of said lid portion, with a pivoting axis being in the vicinity of said at least one line.

5,052,943

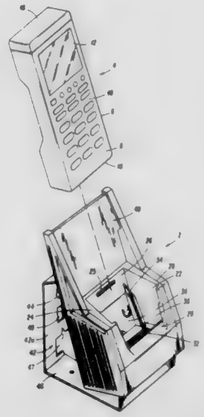
RECHARGING AND DATA RETRIEVAL APPARATUS

Patrick H. Davis, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 327,660, Mar. 23, 1989, abandoned. This application Jul. 10, 1990, Ser. No. 551,663

Int. Cl.[5] H01M *10/46;* **H01R** *13/627*

U.S. Cl. 439—357 **31 Claims**



1. Apparatus for selectively receiving a portable data entry terminal device having an elongated body with a plurality of electrical contacts on the exterior of one end wall thereof, having data entry and display means on a front wall thereof, and having first elements of complementarily shaped first and second elements, said first elements disposed spacedly on the exterior of a rear wall of the body of the data entry terminal adjacent said one end wall with the electrical contacts thereon, the invention comprising

a frame having at least one open side and having generally upstanding sidewalls, a rear wall interconnecting the

sidewalls and an end wall adjacent said sidewalls and rear wall,

a plurality of electrically conductive elements corresponding to the plurality of electrical contacts of the data entry terminal,

means for fitting said plurality of electrically conductive elements in spaced apart interrelationship below said end wall of said elongated body of said portable data entry terminal device.

said electrically conductive elements protruding through said end wall of said frame and being disposed to make touching contact engagement with the electrical contacts of the data entry terminal when said terminal is installed in said frame, and

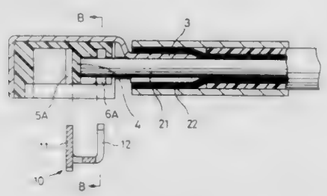
second elements spacedly and deflectively movably disposed on the rear wall of the frame, the second elements complementarily engageable with said first elements disposed on said data entry terminal device for engagement with said first elements of said data entry terminal device, whereby, upon placement of the data entry terminal device into the frame, said second elements deflectively move and engage respective ones of the first elements of the data entry terminal device for establishing mechanical rigidity between said data entry terminal device and said frame to maintain solid engagement between the electrical contacts of the data entry terminal device and the electrically conductive elements protruding through the end wall of the frame.

5,052,944

LOW PROFILE COAXIAL CONNECTOR

Ikujiro Mitani, and Fumio Kobayashi, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1991, Ser. No. 646,200
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—394 5 Claims



1. A low profile connector for a coaxial cable, comprising:

a metal shell with a cable gripper extending laterally from a side thereof for gripping said coaxial cable;

a dielectric block fitted into said metal shell and having a partition wall for defining a contact recess and a connection recess; and

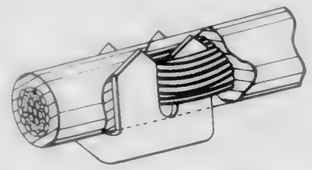
a U-shaped contact element with a pair of leg members fitted into said contact and connection recesses, respectively, such that a leg member with a connection slit bites into a dielectric body of said coaxial cable and comes into contact with a central conductor by an insulation displacement technique while the other leg member is supported by said partition wall for contact with a contact element of a mating connector upon plugging.

5,052,945

CONTACT FOR CONNECTION OF A SHIELDED WIRE

Keiko Shimomura, Muko, and Tomoya Ijiri, Kameoka, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation-in-part of Ser. No. 436,887, Nov. 15, 1989. This application Aug. 30, 1990, Ser. No. 575,494
Claims priority, application Japan, Nov. 15, 1988, 63-148044
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—394 5 Claims



1. A contact for connection with a shielded wire, comprising:

a metal strip bent generally into a U-shape;

retaining means for retaining a shielded wire; and

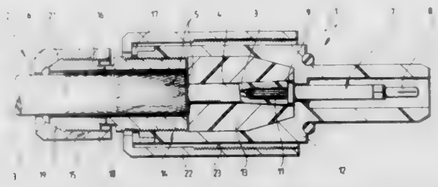
two pairs of elastic projections with sharp piercing ends formed on said strip, wherein the first pair of projections is formed to be biased outwardly by the shielded wire when the shielded wire is inserted into the U-shaped strip and the second pair of projections is formed to be biased inwardly when the shielded wire is inserted into the U-shaped strip.

5,052,946

PLUG CONNECTOR FOR HIGH-VOLTAGE COAXIAL CABLES

Jürgen Homolka, Stuttgart, Fed. Rep. of Germany, assignor to Haug GmbH & Co. KG, Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed Oct. 24, 1990, Ser. No. 602,755
Int. Cl.[5] H01R *17/18*
U.S. Cl. 439—584 1 Claim



1. A plug connector for a high-voltage coaxial cable (2) comprising an inner conductor (3) consisting of several individual wires, an inner insulation (4) enclosing the inner conductor (3), a screen netting (5) enclosing the inner insulation (4) and an outer sheath (6) of insulating material enclosing the screen netting (5), said plug connector having:

(a) an insulating housing (12) in which a contact element (7) is centrally mounted, a connecting pin (11) of which is in electrical contact with the inner conductor (3) of the coaxial cable (2);

(b) a metal sleeve (16) being slidable onto the outer sheath (6) of coaxial cable (2) from which screen netting (5) was removed, this sheath being in electrical contact with screen netting (5) and with a coupling sleeve (22) which is coaxially arranged at contact element (7) and being in mechanical contact with the insulating housing (12); characterized by the following features:

(c) a sealing sleeve (13) is mounted within insulating housing (12) on the end of coaxial cable (2) from which outer sheath (6) and screen netting (5) have been removed;

(d) an inner insulation (4) of coaxial cable (2) is arranged at the inner wall of sealing sleeve (13) which inner insulation is widened by pushing the connection pin (11) of contact element (7) into the inner conductor (3) of coaxial cable (2), so that this inner insulation forms a sealing contact with the inner wall of the sealing sleeve (13);

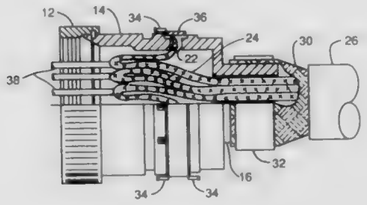
(e) the outer wall of the sealing sleeve (13) being deformed by the pressing contact between the insulating housing (12) and the threaded region (14) to bring the outer wall of sealing sleeve (13) into sealing contact with the insulating housing (12).

5,052,947

CABLE SHIELD TERMINATION BACKSHELL

Benjamin E. Brodie, Seattle, and Donald W. Fitzwater, Renton, both of Wash., assignors to United States of America as Represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 26, 1990, Ser. No. 617,706
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 4 Claims



1. A cable shield termination backshell for connecting to a shielded cable having at least one shielded conductor therein, said cable shield termination backshell comprising:

a first housing, said first housing having a braid end groove on an exterior surface thereabout, said groove having at least one hole therethrough;

a second housing, said second housing being an integral part of said first housing, said second housing having thereon means for connecting to the shielded cable;

a connecting sleeve, said connecting sleeve rotatably connected to said first housing on an end opposite to said second housing;

means for providing electrical connections, said means for providing electrical connection being located in the end of said first housing with said sleeve thereabout;

an internal shield termination ring, said internal shield termination ring being located in said braid end groove; and

a cable shield termination ring, said cable shield termination ring being located about said second housing to secure the cable shield thereto;

whereby the shielded conductors enter into the first housing, the shield about each conductor being partially removed to expose a conductor, the removed shield being formed into a pigtail braid end, each braid end being placed through the holes in the braid end groove and secured thereon by said internal shield termination ring, the exposed conductor being connected to said means for providing electrical connections.

5,052,948

CONNECTOR GROUND AND SHIELD

Peter J. Hyzin, El Toro, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Nov. 19, 1990, Ser. No. 615,764
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 9 Claims

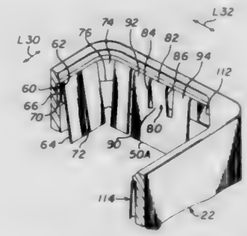
1. A receptacle connector for mating with a plug connector comprising:

a receptacle connector shell with an axis, said shell having an inside and an outside and having shell walls with inner and outer surfaces, said shell having a forward portion for receiving said plug connector and a rearward portion;

an insulative body lying at the inside of said shell;

a plurality of contacts mounted in said body and having forward mating ends;

an interference shield mounted on said shell, said shield being formed of a piece of sheet metal having a bend of about 180° and having outer and inner legs on opposite sides of said bend with said inner leg lying closer to said axis than said outer leg, said outer leg being mounted facewise against said inner surface of said shell with said forward end of said shield lying closer to said shell forward portion than to said shell rearward portion;



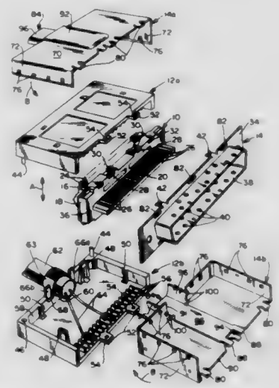
said inner leg having a forward portion with a first slot dividing said forward portion into first and second parts, with said first part of said inner leg merging with said outer leg along a portion of said bend, and with said second part forming a finger with a rear end supported on said first part and with a free forward end that is free of mechanical connection to said outer leg and to said first part and that is free to move outwardly and inwardly toward and away from an adjacent part of said shell, said finger being bent so said free end lies inward of an adjacent location on said first part, to engage said plug connector early during its insertion into said receptacle connector shell.

5,052,949

SHIELDED ELECTRICAL CONNECTOR

John E. Lopata, Naperville, Ill., and James Smith, York, Pa., assignors to Molex Incorporated, Lisle, Ill.

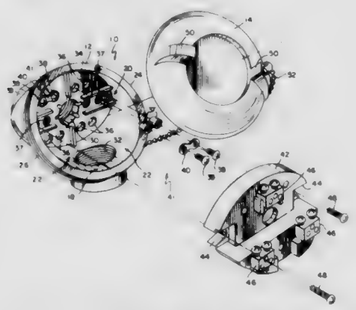
Filed Dec. 13, 1990, Ser. No. 626,148
Int. Cl.[5] H01R *13/648, 13/502*
U.S. Cl. 439—610 21 Claims



1. A shielded electrical connector assembly, comprising:

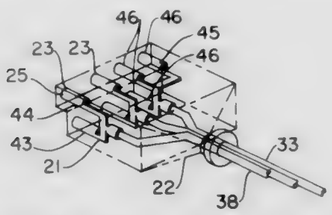
insulating housing means having a front mating end and a rear conductor receiving end for a multiconductor cable;
stamped and formed metal shield means about at least the rear conductor receiving end of the insulating housing; and
cable clamping means at a rear end of the metal shield means integral therewith and formed by metal of the shield means folded rearwardly from a point remote from the rear end thereof.

5,052,950
TERMINAL CONNECTOR HEAD
Richard F. Wilson, Fort Wayne, Ind., assignor to Pyromation, Inc., Fort Wayne, Ind.
Filed Aug. 14, 1990, Ser. No. 567,299
Int. Cl.[5] H01R *9/18*
U.S. Cl. 439—709 **9 Claims**



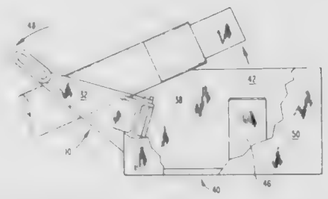
1. A terminal connector head comprising a housing and a cover for removably mounting to the housing, the housing having holes formed in an inner surfaces for alternatively receiving one of electrically conducting terminal screws and attachment screws to permit an electrical connector and a terminal block to be alternatively mounted and secured in the housing with said screws being received in said holes, the electrical connector to be mounted and secured by use of the terminal screws and the terminal block to be mounted and secured by use of the attachment screws.

5,052,951
TERMINAL BLOCK
Richard B. Johnson, Tecumseh, Mich., assignor to Draw-Tite, Inc., Canton, Mich.
Filed Jan. 24, 1990, Ser. No. 469,273
Int. Cl.[5] H01R *11/09*
U.S. Cl. 439—723 **12 Claims**



1. A terminal block for electrically connecting a single wire conductor to a plurality of wire conductors in electrical circuits comprising: at least one unitary connector made from a single blank of conductive material, said blank having longitudinally staggered tab portions with narrow interconnecting portions for reducing offal and forming a compact connector with more than two output terminals, said unitary connector having an input terminal portion for attaching a wire conductor, more than one pair of tubular output terminal portions for attaching a pair of wire conductors to said first conductor and narrow portions for connecting said input terminal portion to said output terminal portions, said output tubular terminal portions being disposed inc lose staggered and parallel relationship to each other; and an insulative housing encasing said unitary connector.

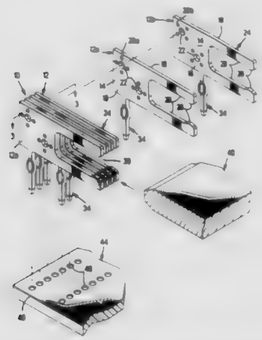
5,052,952
FUSE EJECTOR, EJECTION SYSTEM AND METHOD FOR ASSEMBLY OF FUSE EJECTION SYSTEMS
Robert P. Lawson, Snellville, Ga., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed Sep. 18, 1990, Ser. No. 584,230
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—160 **21 Claims**



1. A fuse ejector for ejecting fuses from engagement with fuse clips, comprising:
a rotatable axle having a pair of end portions, at least one female end portion on one end thereof that is rotatively engageable with a male boss, the female end portion having means for lateral engagement with the male boss, and the axle having a rotational axis about the end portions thereof;
a handle attached to the axle for causing axle rotation upon actuation of the handle; and
a cam portion attached to at least one of the axle and handle for contact with and translation of a fuse upon rotation of the axle;
the axle, handle and cam portion oriented with respect to each other so that the fuse is ejectable upon handle actuation without obstruction by the ejector.

5,052,953
STACKABLE CONNECTOR ASSEMBLY
Ronald M. Weber, Lebanon, Pa., assignor to Amp Incorporated, Harrisburg, Pa.
Filed Dec. 15, 1989, Ser. No. 451,282
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—857 **10 Claims**

1. An electrical connector for providing a plurality of contact paths between a common conductive area of at least one first electrical article and a corresponding common conductive area of at least one second electrical article, said connector comprising:
a plurality of terminal members, each said terminal member including a plate-like body portion having at least one first contact section adapted to electrically engage a corresponding first electrical article and at least one second contact section adapted to engage a corresponding second electrical article, the thickness of the material forming the terminal body portion being substantially thicker than the thickness of the material forming the at least first contact portion, at least one of said first and second contact sections being bifurcated to engage opposed surfaces of the corresponding electrical article to be mated thereto, said bifurcated contact section including compliant beams coextending in parallel from side edges of a common body section, said body section having a width that is greater than the thickness of the electrical article to which said bifurcated contact section is to be mated;
each said terminal member further including integral spacing means for spacing respective body portions of adjacent terminal members from each other, said spacing means being defined by said thicker body portion; and
means for securing said body portions of said terminal members together to form a stacked array; whereby



upon electrically engaging respective ones of each said at least one first contact section of said plurality of terminal members with said corresponding first electrical article and respective ones of each said at least one second contact section of said plurality of terminal members with corresponding said second electrical article, said terminal members provide a plurality of paths for current flow between said common area of said first electrical article and said common area of said second electrical article.

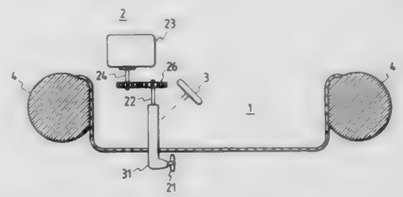
5,052,954
SOLDER-BEARING TERMINAL PIN AND LEAD
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.
Continuation of Ser. No. 129,715, Dec. 7, 1987, Pat. No. 4,883,435, which is a continuation of Ser. No. 876,820, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 600,362, Apr. 16, 1984, abandoned, which is a continuation of Ser. No. 396,764, Jul. 9, 1982, abandoned, said Ser. No. 876,820, is a continuation-in-part of Ser. No. 850,754, Apr. 11, 1986, Pat. No. 4,728,305, which is a continuation-in-part of Ser. No. 793,654, Oct. 31, 1985, Pat. No. 4,679,889, which is a continuation-in-part of Ser. No. 737,830, May 24, 1985, Pat. No. 4,605,278. This application Oct. 3, 1989, Ser. No. 416,505
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] H01R *4/02*
U.S. Cl. 439—876 **17 Claims**

1. A solderable lead designed for establishing an electrical connection with a circuit-carrying substrate having a conductive area comprising:
a conductive member having an elongated body and a curved portion bent out of said body and forming an opening on its concave side,
the curved portion having an end forming a solderable portion for soldering to said substrate conductive area,
said opening facing in a direction along said elongated body,
said solderable portion being designed to be opposed adjacent and substantially in contact with a substrate conductive area when said lead is mated with the substrate,
a mass of solder carried by said conductive member within said curved portion opening and held between and directly engaging said body and said curved portion at a position where, upon mating of said lead and said substrate with said conductive area adjacent said solderable portion, said solder mass is opposite said substrate conductive area in direct confronting and unobstructed juxtaposition and substantially in contact with said conductive area, without said curved portion being between said solder mass and said conductive area,



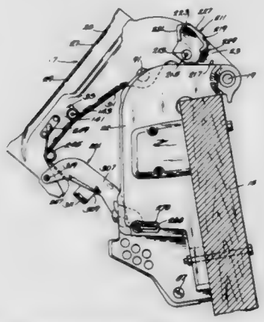
whereby, upon melting of said solder with said lead and substrate mated, said molten solder is positioned directly at said solderable portion and said substrate conductive area, so that on cooling said solder joins said solderable portion to said substrate conductive area electrically and mechanically.

5,052,955
LEISURE BOAT
Koji Shiratori, Shizuoka, Japan, assignor to Shiratori Co., Ltd., Japan
Filed May 16, 1990, Ser. No. 524,077
Int. Cl.[5] B63B *35/86*
U.S. Cl. 440—1 **9 Claims**



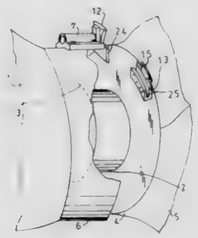
1. A leisure boat comprising:
a substantially round body, sensor means positioned on the perimeter of said boat body for sensing the application of an external force applied to said boat body, propellor means offset from the center of said boat comprising a pair of propellors adapted to drive said boat in different directions and a combined clutch and power transmission means adapted to selectively actuate one of said propellors, said combined clutch and transmission means adapted to selectively actuate one of said two propellors in response to a signal received from said sensor means indicative of the application of an external force to said boat body, and propellor drive means operatively connected to said propellor means through said combined clutch and transmission means.

5,052,956
MARINE PROPULSION DEVICE WITH DUAL POSITION TILT LOCK
Gregory J. Binversie, Grayslake, Ill.; H. Norman Petersen, Kenosha, Wis.; James E. Macier, Beach Park, and John M. Daniels, Round Lake Park, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed May 14, 1990, Ser. No. 523,029
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—53 **18 Claims**



1. A marine propulsion device comprising a transom bracket adapted to be mounted on a boat transom, a swivel bracket connected to said transom bracket for pivotal movement about a horizontal tilt axis, a propulsion unit connected to said swivel bracket for common movement therewith about said tilt axis and for pivotal movement relative to said swivel bracket about a vertical steering axis and including a propeller shaft adapted to support a propeller, and means including a holding member carried by one of said brackets for movement, without removal of said holding member from said one of said brackets, between low-tilt, high-tilt, and park positions for respectively and selectively retaining said propulsion unit in a low-tilt position wherein said propulsion unit is partially raised and said holding member is engaged with the other of said brackets, a high-tilt position wherein said propulsion unit is fully raised and said holding member is engaged with said other of said brackets, and a park position wherein said propulsion unit is in a normal running position and said holding member is free of engagement with said other of said brackets.

5,052,957
SUPPORT FOR LINE AND WEED CUTTER
Donald T. Govan, Box 350246, Fort Lauderdale, Fla. 33335
Continuation-in-part of Ser. No. 550,896, Jul. 11, 1990, Pat. No. 5,017,167. This application Dec. 7, 1990, Ser. No. 608,983
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—73 **9 Claims**



1. An apparatus that cuts foreign matter including lines, wires, nets and weeds of the type that may be encountered by propeller driven vessels when under way, said vessels having the propeller mounted to a rotatable propeller shaft that extends from a propeller shaft housing connected to the vessel's hull, said apparatus having:

A) at least one first blade means for cutting, said first blade means having a first shearing plane, said first blade means arranged to rotate in conjunction with said propeller with said first shearing plane substantially perpendicular to the axis of said shaft;

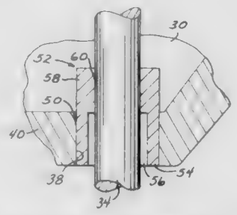
B) first support means for supporting said first blade means in position extending radially and beyond said first support means to engage said foreign matter, said first support means including means for fixedly attaching to at least one member of the pair consisting of said shaft and said propeller,

C) at least one second blade means for cutting, said second blade means having a second shearing plane, said second blade means arranged with said second shearing plane substantially parallel to said first shearing plane of said first blade means;

D) second support means for supporting said second blade means in a position extending radially parallel to said first blade means to engage said foreign matter for shearing said foreign matter between said first and second blade means,

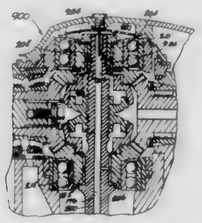
in which the improvement comprises: attaching means for attaching said second support means to a rope guard member fixedly connected to said hull, in which said rope guard member encircles said shaft and said shaft housing and is spaced apart radially therefrom.

5,052,958
MARINE DRIVE WITH EASIER SHIFTING
David C. Entringer, Wautoma, Wis.; Edward C. Eick, and Paul J. Govek, both of Stillwater, Okla., assignors to Brunswick Corporation, Skokie, Ill.
Filed Sep. 14, 1989, Ser. No. 407,202
Int. Cl.[5] B63H *21/28*
U.S. Cl. 440—75 **6 Claims**



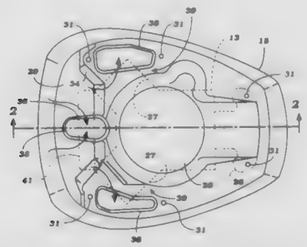
1. In a marine drive having a housing with an exhaust passage therethrough directing exhaust gas and cooling water, and a shift shaft extending through said exhaust passage and journaled in said housing by a bushing in a bore in a section of said housing, wherein said shaft rotates in said bushing about the shaft axis and wherein said bushing is non-threadingly mounted in said bore, the interface of said bushing and said bore in said section of said housing being subject to corrosion from said exhaust gas and cooling water, said bushing comprising a first portion having an outer diameter matching the diameter of said bore and received therein, said first portion of said bushing having an inner diameter greater than the diameter of said shift shaft and spaced radially outwardly therefrom to define an annular gap therebetween, said bushing comprising a second portion axially adjacent said first portion along the axis of said shift shaft, said second portion of said bushing having an inner diameter matching the diameter of said shift shaft and receiving and supporting said shift shaft for rotation therein, said annular gap enabling said first portion of said bushing to contract radially inwardly toward said shift shaft due to said corrosion at said interface, without binding said shift shaft and otherwise impeding rotation thereof, and wherein the interface of said second portion of said bushing and said shift shaft is exposed to said exhaust gas and cooling water in said exhaust passage.

5,052,959
MARINE PROPULSION DEVICE BEARING ARRANGEMENT
Martin J. Mondek, Wonderlake, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr 23, 1990, Ser. No. 512,994
Int. Cl.[5] B63H *21/28*
U.S. Cl. 440—75 **7 Claims**



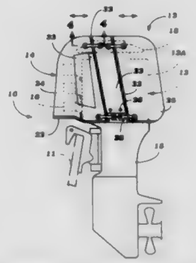
1. A marine propulsion device comprising a housing adapted to be mounted on the transom of a boat and adapted to rotatably support a propeller, a drive shaft rotatably supported by said housing and adapted to be drivingly connected to the propeller, a sleeve which is separate from said housing and which is supported in coaxial and surrounding relation to said drive shaft, a bevel gear supported in coaxial and surrounding relation to said sleeve and for rotation relative to said drive shaft, a first bearing located between said bevel gear and said housing, and a second bearing located between said bevel gear and said sleeve.

5,052,960
SUCTION DEVICE FOR OUTBOARD MOTOR
Naoki Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jan. 25, 1990, Ser. No. 470,930
Claims priority, application Japan, Jan. 26, 1989, 1-17237
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—77 **13 Claims**



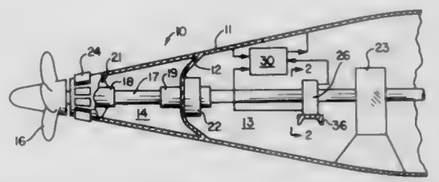
1. A protective cowling for the power head of an outboard motor to protect and provide an induction air supply for a V type internal combustion engine, said engine including a pair of angularly disposed rearwardly diverging cylinder banks, said protective cowling comprising a main cowling portion fixed to a lower tray and enclosing therewith the engine and defining a volume therearound, a cover fixed to the top of said main cowling portion and forming a cavity above said main cowling portion, an air inlet means formed between said main cowling portion and said cover for delivering atmospheric air to said cavity and at least three air delivery ducts each having opposed upwardly extending sidewalls terminating in an inlet opening at the tops thereof formed in the top of said main cowling portion for communicating said cavity with said volume for delivering atmospheric air to the engine for its operation, one of said ducts forming a center duct lying over the area between said cylinder banks and the other of said ducts each lying in part over a respective one of the cylinder banks.

5,052,961
COWLING ASSEMBLY FOR OUTBOARD MOTOR
Tatsuki Uchida, and Katsumi Torigai, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 30, 1989, Ser. No. 443,906
Claims priority, application Japan, Dec. 1, 1988, 63-302275
Int. Cl.[5] B63H *21/24*
U.S. Cl. 440—77 **13 Claims**



1. A cowling assembly for enclosing the engine of an outboard motor, comprising a center cowling member secured to sad engine, a removable front cowling member, a removable rear cowling member covering the rear of the engine and portions of the port and starboard sides of the engine, means for connecting said front and rear cowling members to said center cowling member to enclose said engine, and means for sealingly engaging said front and rear cowling members to said center cowling member to provide a water tight enclosure for said engine.

5,052,962
NAVAL ELECTROCHEMICAL CORROSION REDUCER
Howard L. Clark, Ballston Lake, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 21, 1990, Ser. No. 527,965
Int. Cl.[5] B63H *23/34*
U.S. Cl. 440—83 **10 Claims**



1. A corrosion reducer for use with a ship having a hull, a propeller mounted on a propeller shaft and extending through the hull, the hull and the shaft being of dissimilar metals, bearings supporting the shaft, at least one thrust bearing and one seal, the improvement comprising:

a current collector having an electrical contact with the shaft;

and a current reduction means which is in electrical contact with the current collector and the hull;

the current reduction means including a means for sensing

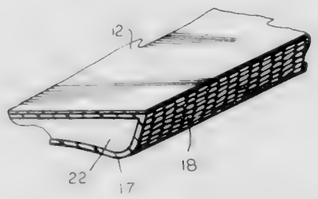
and measuring a voltage between the hull and the shaft and means for applying a reverse voltage between the hull and the shaft so that the resulting voltage differential between the hull and the shaft is from 0 to 0.05 volts and corrosion due to electrolytic reaction is thereby eliminated or substantially reduced.

5,052,963

TEXTURED WATER SKI

Joseph A. Johnson, III, Madison, Ga., assignor to Wellington Leisure Products, Inc., Madison, Ga.

Filed Feb. 1, 1990, Ser. No. 473,423
Int. Cl.[5] B32B *31/14*
U.S. Cl. 441—68 **8 Claims**



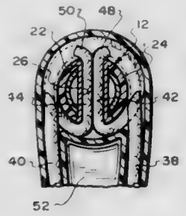
1. A water ski comprising an elongated member having a generally flat upper surface and a lower surface, a front end and a rear end, and first and second side edges, said lower surface being generally concave between said first and second side edges, said lower surface and said side edges forming a substantially continuous contact surface, said contact surface being textured with a pattern of dimples with each dimple having a depth of approximately four to six thousandths of an inch, said contact surface extending substantially the entire length of said ski.

5,052,964

ANTI-ROLL WATER SKI TOW LINE

Alan K. Pittman, 6644 Smoketree Ave., Agoura, Calif. 91301

Filed Nov. 28, 1989, Ser. No. 441,909
Int. Cl.[5] A63C *11/10*
U.S. Cl. 441—69 **9 Claims**



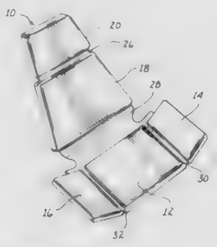
1. A water ski tow line comprising,
a handle having holes through each end, said holes being oriented horizontally parallel to a plane through the axis of said handle and the extended tow line;
a hollow braid tow line tied to each end of said handle by being threaded through each of said holes to form a connection at each end of the handle of two lines extending away from tangent points on opposite sides of said handle;
said tow line being tied to the handle by being looped around the back of the handle, the respective ends of the line being threaded parallel to each other through the holes and back through itself and extending from tangent points on opposite side of the handle;
said two lines being joined at a splice a predetermined distance from said handle;
whereby said two lines provide anti-roll torque on opposite sides of said handle to prevent rotation.

5,052,965

FLOATING RECLINER AND METHOD THEREFOR

Bruce E. Klapp, and Louanna K. Klapp, both of 3107 Mescalero Dr., Lake Havasu City, Ariz. 86403

Filed Dec. 21, 1989, Ser. No. 454,424
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—130 **8 Claims**



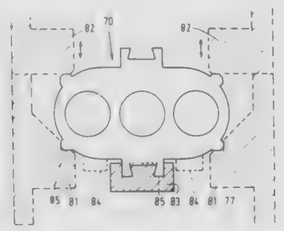
1. A floating recliner comprising:
at least one continuous sheet of waterproof material configured into said recliner;
buoyant material means encompassed by said continuous sheet of waterproof material for supporting a user in any desired position on the surface of a body of water; said continuous sheet of waterproof material is folded over and cut in the shape of a chair, said sheet having a perimeter portion and sealed along said perimeter portion forming a cavity therein, said cavity being divided into at least three sections, and said buoyant material means filling each of said three sections; said three sections are a seat section supporting said user's buttocks; a back section disposed above said seat section supporting said user's back and a head support section; said back section and head section including sides converging away from said seat section and a section of said folded over waterproof material devoid of any buoyant material located between said seat section and said back support section for supporting said user's buttocks to permit said user to use said floating recliner as a floating chair.

5,052,966

METHOD OF ASSEMBLING AN ELECTRON GUN COMPONENT

Arnoldus H. M. Van Eck, and Gerrit Van Der Heijden, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1989, Ser. No. 447,963
Claims priority, application Netherlands, Dec. 19, 1988, 8803099
Int. Cl.[5] H01J *9/18*
U.S. Cl. 445—36 **10 Claims**



1. A method of manufacturing an electron gun component

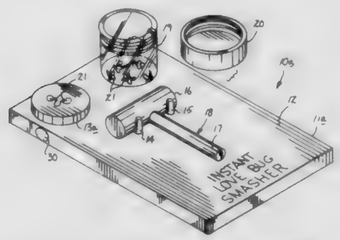
which comprises a number of electrodes having at least one aperture, at least two electrodes having positioning means and a jig having further positioning means to cooperate with said positioning means, in which method the electrodes are stacked in the jig and positioned by means of the positioning means and the further positioning means, and the at least two electrodes are interconnected, characterized in that in the stacking operation all apertures of the at least two electrodes are left clear and the positions of the at least two electrodes, transverse to a direction in which the electrodes are stacked, are determined by the positioning means and the further positioning means.

5,052,967

NOVELTY FLY SWATTING DEVICE

Gerry E. Slatter, and Mary P. Slatter, both of 9053 Salem Rd., St. Cloud, Fla. 34773

Filed Aug. 30, 1990, Ser. No. 574,885
Int. Cl.[5] A63H *3/00, 5/00;* **A01M** *3/02;* **A63B** *67/00*
U.S. Cl. 446—73 **5 Claims**



1. A novelty device comprising, in combination,
a support block, the support block including a top wall, with the top wall including an anvil plate integrally mounted to and orthogonally projecting outwardly from the top wall, and
first and second peg members integrally and orthogonally mounted to the top wall underlying the anvil plate, with the first and second peg members spaced apart a predetermined spacing, and
a hammer member mounted upon the first and second peg members, with the hammer member including a hammer head defined by an axial length greater than the predetermined spacing, with a handle integrally and orthogonally mounted medially of the hammer head, and
further including a container, the container integrally and orthogonally mounted to the top wall adjacent the anvil plate, with the container including a lid removably mounted to an upper terminal end of the container, and the container including a cavity with a plurality of simulated insect members positioned therewithin to permit selective removal of an insect member of the plurality of insect members for positioning upon the anvil plate.

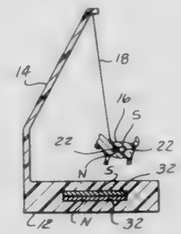
5,052,968

MAGNETICALLY ACTUATED AMUSEMENT DEVICE

Lawrence E. Lodrick, Sr., 2436 Harrison Ave., North, Rochester, Mich. 48063

Continuation-in-part of Ser. No. 740,328, Jun. 3, 1985, Pat. No. 4,690,657. This application Jun. 17, 1987, Ser. No. 63,003
Int. Cl.[5] A63H *33/26*
U.S. Cl. 416—134 **4 Claims**

1. An amusement device comprising:
a base having a center;
a flat magnet of vertically oriented polarity disposed around the center of the base with one pole thereof entirely overlying the other; and
an object having disposed therein a magnet of longitudinal polarity, said object being pendulously and freely supported above the center of the base by a flexible tether attached to an end of the object adjacent the pole of the magnet therein opposite in polarity to the one uppermost pole of the flat magnet, another end of the object adjacent the other pole of the magnet being left free;



wherein the strength of the magnetic field generated by the flat magnet is sufficiently strong to cause the free end of the object to be cantilevered up to a horizontal orientation where it is approximately as high as the tethered end.

5,052,969

DOLL WITH HEAD TILT ACTIVATED LIGHT

Robin K. Smith, Long Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.

Filed Mar. 20, 1990, Ser. No. 496,563
Int. Cl.[5] A63H *3/00, 3/36, 33/26*
U.S. Cl. 446—268 **8 Claims**

1. A doll having a kiss-activated play feature comprising:
a head having a neck and face portion;
a torso;
attachment means pivotally coupling said head to said torso such that said head pivots backward with respect to said torso when a user pivots said head backwards about an axis perpendicular to said torso;
limit means limiting the pivotal motion of said head with respect to said torso to a predetermined angular range;
feature means for producing a lighted play response in said doll; and
switch means coupled to said feature means and actuated by pivotal motion of said head with respect to said torso, spring means to return said head forwardly and deactuate said switch means;
said feature means producing said play response when said switch means are actuated.

5,052,970

GRAVITATIONALLY MOTIVATED TOY APPARATUS

John D. Balwigaire, 108 E. Ave., San Gabriel #1, San Clemente, Calif. 92672

Filed Jul. 23, 1990, Ser. No. 559,678
Int. Cl.[5] A63H *13/00*
U.S. Cl. 446—351 **2 Claims**

1. A gravitationally motivated toy apparatus comprising,
a horizontally disposed platform, the platform including a forward slot and a rear slot projecting through the platform, the forward slot and the rear slot are directed through the platform at an oblique angle relative to the

platform where projection of the forward and rear slots intersect below the platform at an acute included angle therebetween, and

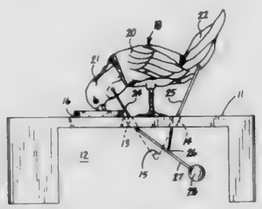
the platform includes spaced supports to position the platform to define a platform cavity between the supports where a projection of the forward and rear slots define the included angle oriented within the cavity, and

a simulation figure positioned in alignment with the forward and rear slots and medially thereof where the simulation figure includes a body member fixedly mounted relative to the platform and a head member pivotally mounted relative to the body member forwardly of the body member, and

a tail member pivotally mounted to the body member rearwardly of the body member, and

the simulation figure is arranged in a first position, wherein the motivation means is operative to effect pivotment of the head member relative to the body member in a first position and pivotment of the tail member relative to the body member in a second position, and

including a container arranged forwardly of the forward slot and in longitudinal alignment with the forward slot, the rear slot and the simulation figure, and the container fixedly mounted to the platform, and the container including a plurality of food simulation segments therewithin, and



wherein the motivation means includes a first flexible line mounted to the head member projecting to the forward slot and terminating at a line intersection below the platform, and a second pendulum line mounted to the tail member directed through the rear slot and secured to the first line at the line intersection, and a third flexible line mounted to the first and second line at the line intersection, and a pendulum weight mounted to a lowermost terminal end of the third line wherein the pendulum weight is positioned within the cavity and above lowermost terminal ends of the supports of the platform, and

wherein the body member includes a plurality of leg members, the leg members fixedly mounted to the body member, and the body member horizontally aligned overlying the platform and the leg members orthogonally and fixedly mounted to the platform medially of the forward and rear slots, and

wherein the body member includes a forward cavity and a rear cavity, wherein the head member is pivotally mounted within the forward cavity and the tail member is pivotally mounted within the rear cavity, and

wherein the head member includes a forward axle mounted to the body member within the forward cavity and includes a forward spring underlying the forward axle cooperatively mounted between the head member and the body member to bias the head member in a raised position.

5,052,971

SOFT DOLL WITH MOVABLE LIMBS

Kenneth Young, 33 Hitching Post La., Glen Cove, N.Y. 11542

Filed Dec. 31, 1990, Ser. No. 636,490

Int. Cl.[5] A63H *3/46*

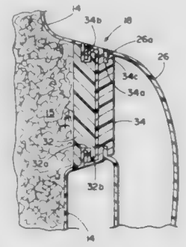
U.S. Cl. 446—376 **12 Claims**

1. An articulated soft doll having arms and legs movably joined to a torso, comprising:

a thin flexible seamless skin on said torso having shoulder and hip locations;

a flat, circular plug disposed within said skin at each shoulder and hip location each having opposed inner and outer planar surfaces connected by a sidewall and having an annular groove extending around its circumference;

a flat circular locking disk for each circular plug each having opposed inner and outer planar surfaces connected by a sidewall, an annular groove formed therein, and a flange spaced inwardly from said inner surface interlockingly



engaging the annular groove of a respective plug for trapping the skin of the torso between the plug and the locking disk and securing the locking disk at a respective shoulder or hip location of the torso; and

arm and leg members each having a hollow proximal end and an integral circular flange at said proximal end for interfittingly engaging the annular groove of a respective locking disk for attaching said arm and leg members to said torso at shoulder and hip locations, respectively, for movement relative thereto.

5,052,972

DRIVE DEVICE FOR TOY AUTOMOBILE

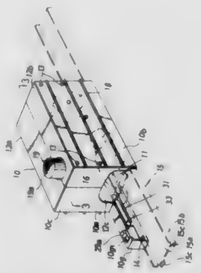
Yoshio Suimon, and Tsuneo Hanzawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Hanzawa Corporation, Tokyo, Japan

Filed Jul. 20, 1990, Ser. No. 556,532

Claims priority, application Japan, Oct. 5, 1989, 1-258843

Int. Cl.[5] A63H *29/00, 18/00, 29/24;* **A63F** *9/14*

U.S. Cl. 446—429 **10 Claims**



1. A drive device for a toy automobile, comprising:

a casing open at front and rear ends thereof and covering a path of travel;

a flywheel rotatably supported on said casing for coming into abutting contact with an upper surface of a toy automobile at a prescribed position on the path of travel;

an operating member axially slidably supported on said casing and having a rack extending axially thereof, and a push-button portion protruding externally of said casing and urged outwardly by a return spring;

a pinion turned while in mesh with said rack and extending axially thereof; and

a gear speed-up mechanism incorporating a one-way clutch and interposed between said pinion and said flywheel for rotating said flywheel in a direction which propels the toy automobile forward only when said operating member is pushed inward.

5,052,973

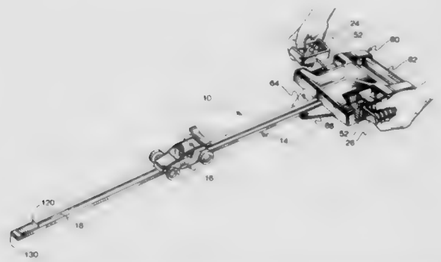
TOY CAR LAUNCHER WITH CABLE DRIVEN SHUTTLE AND PULLEYS

Elliot A. Rudell, Rancho Palos Verdes; Joseph S. Cernansky; Roger J. Gardner, Jr., both of Lomita, all of Calif.; Steven J. Huebl, Minnetonka, Minn.; Robert D. Zera, Minnetonka, Minn.; Eugene J. Kilroy, Minnetonka, Minn., and Richard S. Chang, Rolling Hills Estates, Calif., assignors to Tonka Corporation, Louis Park, Minn.

Filed Dec. 10, 1990, Ser. No. 624,650

Int. Cl.[5] A63H *29/00, 27/14, 27/00;* **F41B** *15/00*

U.S. Cl. 446—429 **17 Claims**



1. A toy vehicle launcher for launching vehicles comprising:

(a) main housing carrying a drive pulley, said drive pulley being connected by a pull line to at least one handle, which when pulled causes said pulley to rotate;

(b) an elongated track member having two ends, one of said ends being attached to said main housing, said track member including an end pulley at the other of said ends;

(c) said main housing further carrying a takeup reel and a launch reel, each of said reels operatively connected to said drive pulley so as to rotate when said drive pulley rotates;

(d) a drive line having one end attached to said takeup reel and another end attached to said launch reel such that rotation of the reels causes the line to wind on one reel and unwind on the other reel, said drive line being fed along the length of said track and positioned over said end pulley; and

(e) a slide mechanism attached to said drive line such that said slide mechanism may move along said track between said main housing and said end pulley when said reels are rotated due to rotation of said drive pulley, said track being constructed and arranged to define an elongated slot in which said slide mechanism travels, said slot allowing entry of a hook from a vehicle placed on said track such that movement of said slide mechanism will engage a vehicle hook to propel said vehicle along said track.

5,052,974

DEVICE FOR DELIVERING AND CONVEYING PASTE-LIKE SUBSTANCES

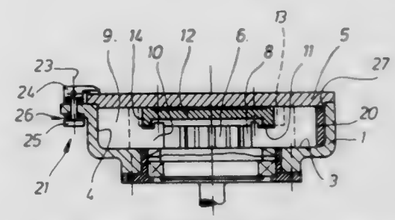
Siegfried Räther, Bad Segeberg, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. Kg, Lubeck, Fed. Rep. of Germany

Filed Mar. 21, 1990, Ser. No. 497,872

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1989, 3909137

Int. Cl.[5] A22C *11/08*

U.S. Cl. 452—41 **8 Claims**



1. A device for the delivery of paste-like substances for producing a pulsation-free and density-homogeneously conveying flow, the device including a conveying apparatus comprising

a) a casing,

b) a pump chamber surrounded by said casing, said casing defining a radially inner wall of said pump chamber,

c) a bottom part and a cover part bounding said pump chamber by forming two axial boundary faces thereof,

d) an inlet and an outlet, both arranged in said casing,

e) a pump rotor mounted in said casing and driven to rotate therein about an axis of rotation,

f) a plurality of rotor-carried plate-like slide means arranged to be guidedly displaced in said casing radially relative to said axis of rotation and provided with axial and radial boundary edges, said plurality of slide means being constructed so as to engage said bottom part and said cover part in sealingly sliding manner and, over at least part of one revolution of said pump rotor, to be kept in contact with said radially inner wall of said pump chamber, respectively, in a manner to define conveying cells between adjacent ones of said plurality of slide means, and

g) means for exerting a defined force upon at least one of said bottom part and said cover part, by which force exerting means said at least one part is held displaceably supported against said force at least in a region overlapping the conveying zone formed between said inlet and said outlet.

5,052,975

AUTOMATIC COMBING

Gary A. Handel, Madison, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Jun. 14, 1990, Ser. No. 538,365

Int. Cl.[5] A22C *17/02*

U.S. Cl. 452—187 **20 Claims**

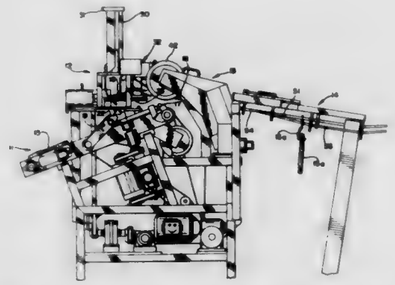
1. An automatic combing apparatus for impaling a food item and the like with a comb member having at least one impaling tooth, the apparatus comprising:

means for feeding at least one food item and the like from a flow of food items and the like to an impaling location at which said item is supported on at least one side thereof;

means for providing a plurality of comb members and for indexing one of said comb members for each of said at least one item to said impaling locations said providing means orienting said comb member whereby an impaling tooth thereof is positioned for entering into the side of said item which is generally opposite to said supported one side thereof;

means for applying a force onto said comb member whereby

said positioned impaling tooth enters into and impales the item; and



means for moving said thus impaled item away from said impaling location, whereby said impaled item and the comb impaling same are removed from said impaling location and said impaled item is suspended by said comb.

5,052,976

THRESHING DEVICE FOR PULSE CROPS

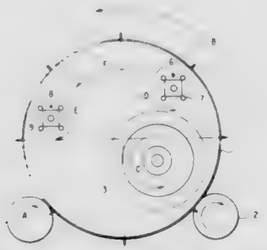
Anton M. van de Brand, Wernhout, Netherlands, assignor to Mali-Ploeger B.V., Oud-Gastel, Netherlands

Filed Jun. 29, 1990, Ser. No. 545,489

Claims priority, application Netherlands, Jun. 30, 1989, 8901658

Int. Cl.[5] **A01F** *12/18*

U.S. Cl. 460—14 **3 Claims**



1. Threshing device for pulse crops, said threshing device being provided with a drum rotatable about an at least substantially horizontally arranged axis of rotation, the surface of said drum being provided with openings, whereby in the interior of the drum there is arranged a main threshing means, said main threshing means having projecting parts and being rotatable about an axis of rotation extending at least substantially parallel to the axis of rotation of the drum, in such a manner that during operation said projecting parts of the main threshing means pass near the drum surface of the drum and move in the same direction as the adjacent part of the drum surface, said projecting parts being shaped such that besides imparting a component of movement directing towards the interior surface of the drum they also impart a component of movement to the crop in the longitudinal direction of the drum, whilst inside the drum there is arranged a first auxiliary threshing means which is rotatable about a longitudinal axis extending at least substantially parallel to the axis of rotation of the drum, characterized in that the main threshing means is arranged near the lower side of the drum, near a part of the drum surface that moves upwards during operation, whilst the first auxiliary threshing means is arranged above the main threshing means, near a part of the drum surface that moves upwards during operation, whilst inside the drum there is provided a second auxiliary threshing means, which is rotatable about a longitudinal axis extending at least substantially parallel to the axis of rotation of the drum, said longitudinal axis being located at a level intermediate the longitudinal axis of the first auxiliary threshing means and the longitudinal axis of the main threshing means, whilst the second auxiliary threshing means is arranged near a part of the drum surface that moves downwards during operation.

5,052,977

MULTIPLE WEB BUSINESS FORM

Harry Irvine, Essex, England, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Nov. 14, 1989, Ser. No. 435,958

Claims priority, application United Kingdom, Nov. 11, 1988, 8826247

Int. Cl.[5] **B41L** *1/20;* **B65D** *27/06*

U.S. Cl. 462—6 **19 Claims**



1. A business form stock comprising:

a longitudinally continuous base web divided transversely by lines of weakening to envelope lengths so that said base web can be divided into a plurality of individual mailers;

the base web being foldable along a central longitudinal fold line to provide front and back sheets of outgoing envelope portions of said mailers;

said base web adapted to receive preprinted, non-personalized information provided thereon;

adhesive means and perforation line means necessary for sealing and opening said mailers, provided on said base web; and

a plurality of inner webs secured to the base web and each extending substantially the full effective length of the base web, said plurality of inner webs including an upper web, an intermediate web and a lower web, wherein said upper web and said intermediate web are attached to each other and to the base web adjacent said longitudinal fold line, said upper of said inner webs delineated for and adapted to receive personalized printed information thereon, and said lower of said inner webs adhered to the back sheets of the outgoing envelope portions to form return envelopes arranged so that a free edge of said lower of said inner webs defines top openings in said return envelopes facing said central longitudinal fold line.

5,052,978

ELASTIC COUPLING WITH HYDRAULIC DAMPING DEVICE

Wolfgang Hanke, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

PCT No. PCT/EP88/00184, § 371 Date Nov. 14, 1988, § 102(e) Date Nov. 14, 1988, PCT Pub. No. WO88/07147, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 10, 1988, Ser. No. 272,698

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1987, 3708345

Int. Cl.[5] **F16F** *15/12, 15/16*

U.S. Cl. 464—24 **29 Claims**

1. An elastic coupling comprising:

a first coupling half comprising an intermediate disk and a hub connected with the intermediate disk for rotating together with the intermediate disk;

a second coupling half comprising two axially spaced apart side disks connected to each other in a rigid rotational manner and also rotatable about the hub, the two side disks being at opposite axial sides of the intermediate disk, the intermediate disk and the side disks being so shaped that the side disks extend around the outer circumference of and generally enclose the intermediate disk, and the side disks being of limited rotation relative to the intermediate disk;

a first plurality of apertures defined in an extending through the intermediate disk and spaced around the circumference of the intermediate disk; an second plurality of apertures defined in the side disks; at least some of the second apertures being located at circumferential locations corresponding to the first apertures;

a plurality of elastic coupling elements engaging in the first apertures in the intermediate disk and in the corresponding second apertures in the side disks for connecting the coupling halves;

the side disks defining a liquid-tight inner space for receiving the intermediate disk and the inner space being fillable with a damping medium;

the inner space having a radially outward region, radially outward of the intermediate disk, at least onc displacement chamber defined in the radially outward region by the first and second coupling halves; means on the first and second coupling halves for varying the volume of the displacement chamber upon mutual twisting of the coupling halves which moves the respective volume varying means on the coupling halves; the displacement chamber being fillable with the damping medium; a throttle opening being defined at the displacement chamber for throttling the flow of damping medium into and out of the displacement chamber;

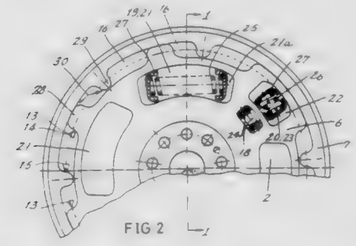


FIG 2

a further disk disposed in the inner space and being relatively rotatable around the hub with respect to the side disks and with respect to the intermediate disk; a third plurality of apertures spaced around the circumference of the further disk at locations generally corresponding to at least some of the first and the second apertures;

at least one of the elastic coupling elements being located in the third and first apertures for connecting the further disk to the first coupling half and at least another of the elastic coupling elements being located in the third and second apertures for connecting the further disk to the second coupling half; and the intermediate disk, the side disks and the further disk being shaped and the apertures therein being shaped so that at least the one and then the other elastic coupling element is stressed elastically successively upon twisting of the first and second coupling halves with respect to each other;

the further disk being at and partially bounding the displacement chamber; a radially extending surface being defined on the further disk and extending into the displacement chamber; a second radially extending surface being defined on the first coupling half and also extending into the displacement chamber; the first and the second radially extending surfaces being arranged in the same radial position relative to the displacement chamber;

at least in the region of the displacement chamber, the further disk having such a thickness that together with the thickness of the intermediate disk, the combined thickness correspond to the axial width of the inner space;

a third radial surface on the second coupling half, and circumferentially spaced from the second radial surface to the intermediate disk,

such that at a first rotation angle of the first coupling half with respect to the second coupling half, the parts of the intermediate disk including the second radial surface form therewith a displacement chamber for weaker damping, and such that at a second, greater rotation angle of the first coupling half with respect to the second coupling half, the first radial surface of the further disk together with the second radial surface of the first coupling half form with the third radial surface a displacement chamber for bringing about stronger damping.

5,052,979

SHAFT ASSEMBLY FOR THE WHEEL DRIVE OF A MOTOR VEHICLE

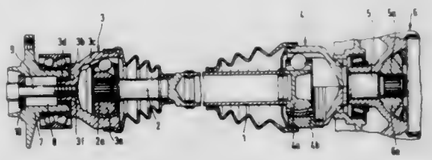
Hans-Heinrich Welschof, Rodenbach, and Rudolf Beier, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Löhr & Bromkamp GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 884,316, Jul. 11, 1986, abandoned, which is a continuation of Ser. No. 765,333, Aug. 13, 1985, abandoned. This application Mar. 18, 1987, Ser. No. 28,015

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430067

Int. Cl.[5] **B60K** *17/22*

U.S. Cl. 464—140 **7 Claims**



1. A drive shaft assembly for the wheel hub of a motor vehicle comprising:

a wheel hub rotatably mounted on said vehicle;

universal joint means including an axially plunging joint connected in a drive train for driving said wheel hub;

an axial splined journal having a limited axial length interposed in torque transmitting engagement between said universal joint means and said wheel hub permitting relative axial movement therebetween;

said limited axial length of said splined journal being smaller than an amount of axial shortening of said drive shaft assembly available by plunging movement of said plunging joint to enable disassembly of said drive shaft assembly without dismounting of said wheel hub from said vehicle;

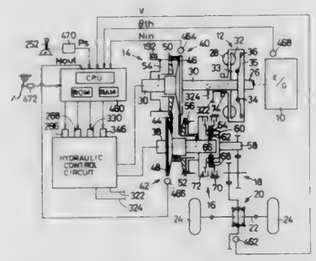
bolt means extending axially at least coextensively with said splined journal and over a total length greater than said limited axial length of said splined journal connecting said wheel hub with said universal joint means; and

opposed annular abutment faces on said wheel hub and on a part of said universal joint means arranged in direct abutting engagement with each other radially outwardly of said splined journal and axially adjacent thereto to absorb force moments acting on said splined journal, said annular abutment faces having an outer diameter which is 2.5 to 10 times said limited axial length.

5,052,980
HYDRAULIC CONTROL APPARATUS FOR VEHICLE POWER TRANSMITTING SYSTEM HAVING CONTINUOUSLY VARIABLE TRANSMISSION

Hiroshi Itoh, Toyota; Masami Sugaya; Yoshinobu Soga, both of Susono; Kunio Morisawa, Toyota; Ryoji Habuchi, Aichi; Katsumi Kouno, Toyota; Yuji Hattori, and Takashi Hayashi, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 7, 1990, Ser. No. 476,527
Claims priority, application Japan, Feb. 13, 1989, 1-33141; Feb. 13, 1989, 1-33143; Feb. 13, 1989, 1-33144; Feb. 13, 1989, 1-33145; Apr. 7, 1989, 1-89153; Dec. 21, 1989, 1-331840
Int. Cl.[5] F16H *11/02*
U.S. Cl. 474—11 **9 Claims**



1. A hydraulic control apparatus for a power transmitting system for an automotive vehicle having a continuously variable transmission which has a first and a second shaft, a pair of variable-diameter pulleys provided on the first and second shafts, a belt connecting the pulleys, and a pair of hydraulic actuators for changing diameters of the pair of pulleys, wherein a tension of the belt is controlled by directly or indirectly regulating an actuating pressure in a driven side actuator of said pair of hydraulic actuators which is provided on a driven one of said first and second shafts, and wherein the improvement comprises:

detecting means for detecting a running speed of the vehicle; and

a pressure regulating valve including a valve spool for regulating the actuating pressure in said driven side actuator, and having a pressure-reducing chamber for receiving a pressure-reducing pilot pressure which varies with the vehicle running speed for biasing said spool in one direction for reducing said actuating pressure; and

pilot pressure generating means for generating said pressure-reducing pilot pressure to be applied to said pressure-reducing chamber, when said running speed of the vehicle exceeds a predetermined value.

5,052,981
VARIABLE DIAMETER PULLEY WITH CENTRIFUGAL WEIGHTS

Jean Robert, Granby, Canada, assignor to Powerbloc Ibc Canada, Inc., Canada

Filed Apr. 4, 1990, Ser. No. 503,892
Int. Cl.[5] F16H *61/00*
U.S. Cl. 474—14 **14 Claims**

1. A variable speed transmission of the type comprising:

a pulley having a pair of side cheeks rotatable in unison about a common axis and defining a V groove between them for receiving a drive belt, one of said cheeks being axially stationary and the other being axially movable;

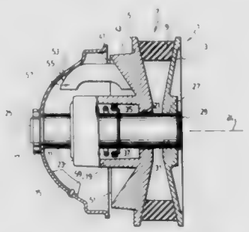
an axially stationary rotatable reaction cup located on the side of said pulley away from said stationary cheek;

said movable cheek and said reaction cup each being formed with a cam surface extending around said common axis, said cam surfaces converging toward one another and defining a chamber between them;

a plurality of centrifugal weights disposed in said chamber for free displacement thereof radially away from said common axis as said pulley rotates; said weights being elongated in a direction parallel to said common axis and being formed with end edges slidable on said cam surfaces whereby, as said pulley rotates, said weights are thrown outward from said common axis and thereby bias said movable cheek toward said stationary cheek;

the improvement wherein

said cam surfaces of said reaction cup is concave with respect to said common axis, having a radius of curvature of predetermined length, and



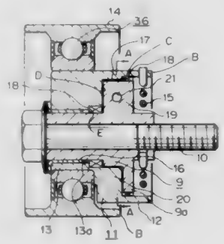
said end edges of said weights, slidable on said reaction cup, are convex on at least a portion of the radial thickness of said weights; said convex portions having a radius of curvature shorter than said predetermined length;

said cam surface and said end edges being calculated so that said end edges slide on said cam surface along a surface portion thereof that increases between start-up and cruising speed.

5,052,982
MOTION ATTENUATED HYDRAULIC AUTOTENSIONER

Hideo Ouchi, Kanagawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1990, Ser. No. 537,849
Claims priority, application Japan, Jun. 20, 1989, 1-155662
Int. Cl.[5] F16H *7/12*
U.S. Cl. 474—135 **3 Claims**



1. An autotensioner comprising:

a fixed shaft;

a pivoting member which is rotatably supported around said fixed shaft, at least the proximal portion of said member having a cylindrical configuration;

a pulley which is rotatably supported around a pivot shaft that is a part of said pivoting member, said pivot shaft being parallel to said fixed shaft;

a spring normally rotating said pivoting member in a first rotational direction for pressing said pulley against a member to which tension is to be applied;

an annular space which is provided between the outer peripheral surface of said fixed shaft and the inner peripheral surface of said pivoting member, said space being filled with a viscous fluid;

a first partition wall which is formed on a part of the outer peripheral surface of said fixed shaft to partition said annular space circumferentially;

a second partition wall which is formed on a part of the inner peripheral surface of said pivoting member to partition said annular spaced circumferentially;

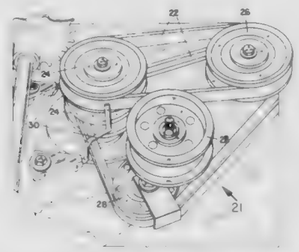
a passage which is defined by a space that is formed by separating at least either one of the outer peripheral edge of said first partition wall and the inner peripheral edge of said second partition wall from a peripheral surface that faces said peripheral edge; and

a check valve which is provided in the intermediate part of said passage, said check valve being arranged to open said passage only when said pivoting member is moved in a rotational direction opposite said first rotational direction by the member to which tension is applied.

5,052,983
BELT GUIDE ANCHOR

Glenn T. Larsen, Bloomington, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Sep. 10, 1990, Ser. No. 580,339
Int. Cl.[5] F16H *7/18*
U.S. Cl. 474—140 **15 Claims**



1. In a drive belt system including a plurality of pulleys a mounting surface, and a drive belt trained about said pulleys, a drive belt guide comprising;

(a) a member comprising means for accepting a fastener wherein said fastener accepting means establishes a pivot point for said member, a sharp protrusion spaced away from said pivot point, and an elongate finger projecting away from said pivot point and said protrusion and projecting adjacent to said drive belt: and

(b) fastening means for clamping said member to said mounting surface so as to frictionally engage said protrusion to said mounting surface, whereby said member will remain rotationally fixed relative to said pivot point and said finger of said member will remain adjacent to said drive belt once said member is fastened to said mounting surface.

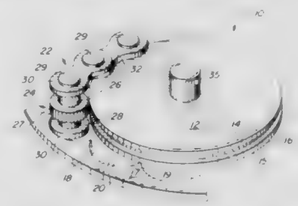
5,052,984
ROLLER CHAIN WAVE GEAR DRIVE

James E. Shaffer, Maitland, Fla., assignor to Consulier Industries, Inc., Riviera Beach, Fla.

Continuation-in-part of Ser. No. 458,149, Dec. 28, 1989. This application Feb. 23, 1990, Ser. No. 484,064
Int. Cl.[5] F16H *7/06*
U.S. Cl. 474—156 **15 Claims**

1. In combination with a first member having a cyclically undulated first surface, a second member having a cyclically undulated second surface oppositely disposed in facing relationship to said first surface, said first being movable in a drive direction relative to said second surface, a chain comprising:

a plurality of oppositely disposed pairs of link plates and a plurality of roller assemblies linking said pairs of link plates into a linear segmented unit; said roller assemblies comprising pins, and first and second rollers mounted in axially-spaced positions for independent free rotation about said pins, said first rollers being positioned to contact said first surface and said second rollers being positioned to simultaneously contact said second surface;

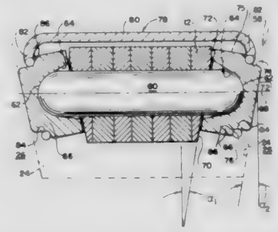


and said rollers and surfaces being relatively dimensioned, configured and adapted so that, when said first surface is moved in said drive direction, said first surface will drive said pins by said first rollers in reciprocation to cause said second rollers to act against said second surface to drive said chain in a driven direction relative to both said first and second surfaces.

5,052,985
CHAIN-TYPE POWER TRANSMISSION BELT

Takashi Masuda, Kobe; Hiroshi Takano, Miki, and Takashi Hoshiro, Takarazuka, all of Japan, assignors to Mitsubishi Belting Ltd., Nagata, Japan

Continuation-in-part of Ser. No. 370,000, Jun. 28, 1988, Pat. No. 4,944,715. This application Jun. 26, 1990, Ser. No. 543,469
Claims priority, application Japan, Jun. 30, 1989, 63-170872; Nov. 13, 1989, 63-132448[U]
Int. Cl.[5] F16G *1/21*
U.S. Cl. 474—245 **35 Claims**



1. A chain-type force transmission belt for engagement with a pulley, said transmission belt comprising:

a plurality of link plates;

a plurality of pins connecting said link plates so as to define an endless flexible belt;

at least one said pin having a lengthwise axis and axially spaced first and second ends;

a first tip member/block for placement in operative position against the first pin end and having a first surface for engagement with a pulley;

a second tip member/block for placement in operative position against the second pin end and having a second surface for engagement with a pulley; and

means in addition to the one pin for connecting between the first and second tip members/blocks and holding the first and second tip members/blocks in their operative position.

5,052,986

CONTINUOUS-ACTING HYDROSTATIC-MECHANICAL POWER-SHIFT TRANSMISSION WITH TOOTHED CLUTCHES

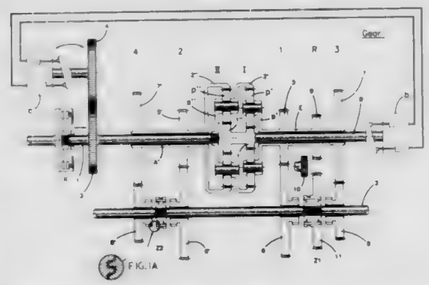
Friedrich Jarchow, Am Ruhrstein 37, 4300 Essen 1; Dietrich Haensel, Bochum; Peter Döttger, Herne; Ulrich Blumenthal, Recklinghausen; Ulrich Luning, Essen, and Bernhard Bouche, Bochum, all of Fed. Rep. of Germany, assignors to Friedrich Jarchow, Essen, Fed. Rep. of Germany

Filed Feb. 9, 1990, Ser. No. 478,212

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 3903877

Int. Cl.[5] F16H *47/04*

U.S. Cl. 475—76 **8 Claims**



1. Apparatus for employing a bracing process in a hydrostatic-mechanical transmission, which comprises:

a four-shaft planetary transmission;

an infinitely variable hydrostatic transmission, coupled in parallel with said planetary transmission, said hydrostatic transmission adapted to effectuate the infinitely variable adjustment of said hydrostatic-mechanical transmission;

a plurality of toothed gear wheels;

two toothed clutches, said toothed gear wheels and said toothed clutches coupled and adapted to achieve the various gears; and

means for adjusting said hydrostatic transmission resulting in a bracing such that gear shifting takes place synchronously, load-free, and without interrupting the tractive force.

5,052,987

STEPLESS HYDROSTATIC-MECHANICAL TRANSMISSION

Faust Hagin, and Hans Drewitz, both of Munich, Fed. Rep. of Germany, assignors to Man Nutzfahrzeuge AG, Munich, Fed. Rep. of Germany

Filed Mar. 23, 1990, Ser. No. 498,827

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912369; Apr. 14, 1989, 3912386

Int. Cl.[5] F16H *47/04*

U.S. Cl. 475—82 **14 Claims**

1. A stepless hydrostatic mechanical transmission having an input side connected to a prime mover and an output side connected to a power output train comprising:

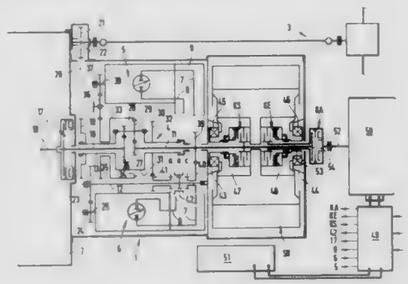
a single epicyclic differential including first and second sun wheels, two planet wheels respectively meshing with said sun wheels, a web supporting said planet wheels and an annulus,

a first main shaft driven at the input side by said prime mover and connected to said epicyclic differential to provide input drive thereto,

a second main shaft at the output side connected to said epicyclic differential and to said power output train to deliver power to the power output train from the epicyclic differential,

two hydrostatic machines coupled to said epicyclic differential for being respectively driven as a pump and a motor in successive working ranges of the power transmission,

one of said sun wheels being connected for rotation with said first main shaft, said epicyclic differential driving the other of said sun wheels in rotation, said annulus being drivingly connected to one of said planet wheels and to one of said hydrostatic machines,



clutch means for switching the other of said hydrostatic machines, when said one hydrostatic machine is stationary and during transition from one working range to another, from connection with said second main shaft at the output side to said other sun wheel and from the motor function to the pump function, said one sun wheel being located between said other sun wheel and said prime mover.

5,052,988

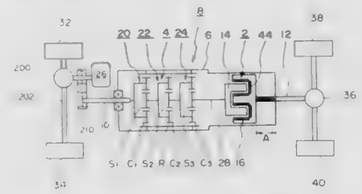
DIFFERENTIAL CONTROL SYSTEM

Wataru Ishikawa, Davis; Andrew A. Frank, El Macero, both of Calif., and Brian Hamamoto, Belleville, Mich., assignors to Aisin Aw Co., Ltd., Japan

Filed Nov. 16, 1990, Ser. No. 618,198

Int. Cl.[5] F16H *1/445*

U.S. Cl. 475—150 **10 Claims**



1. A differential control system comprising:

(a) input means for receiving an input torque T1 at a first rotational speed W1;

(b) a rotatably supported first shaft;

(c) a conductor coupled to the first shaft, said conductor being rotatable together with the first shaft;

(d) a rotatably supported second shaft;

(e) magnetic field generating means, coupled to the second shaft, for generating an electric field around said conductor thereby establishing a magnet couple between said first and second shafts, said first shaft driving said second shaft through said magnetic couple with a torque T4;

(f) relative position changing means for changing relative position between the conductor and the magnetic field generating means and thereby changing said torque T4;

(g) torque splitting means, disposed between the first and second shafts, for splitting said input torque T1 into a torque T3 driving said first shaft and a torque T2 driving said second shaft.

5,052,989

DEVICE FOR COMPENSATING CLEARANCES BETWEEN THE SATELLITE AND TOOTHINGS OF THE FLANGES OF A REDUCING MECHANISM FOR ADJUSTMENT IN POSITION OF SEATS, PARTICULARLY OF AUTOMOBILE SEATS

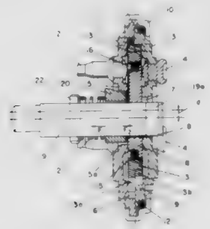
Yann Reubeuze, Orne, France, assignor to Ets. Cousin Freres, Orne, France

Filed Jul. 20, 1990, Ser. No. 556,009

Claims priority, application France, Jul. 24, 1989, 89 09930

Int. Cl.[5] F16H *35/00;* **B60N** *2/02*

U.S. Cl. 475—170 **2 Claims**



1. In a device for compensating for clearances between a satellite and toothings of flanges of a reducing mechanism that is provided for adjusting the position of a seat, with said mechanism comprising a fixed flange that is provided with a first inner toothing, and a mobile flange that is provided with a second inner toothing, with said fixed and mobile flanges being held against one another via a crimped ring and enclosing an eccentrically mounted satellite that is provided with a double toothing, with said satellite supported via a roller bearing on a cam that is driven by a driving shaft, the improvement wherein:

said driving shaft has a square section with a first conical portion, and with a cone that is disposed in a central opening of said fixed flange, with a spring being disposed between said cone and bearing means provided on said shaft, whereby when a hard point is met upon cooperation of said first and second toothings of said fixed and mobile flanges with said double toothing of said satellite, a slight longitudinal offset movement of said driving shaft in either direction and stressing of said spring is produced, resulting via one of said first conical portion and said cone in a change in eccentricity of said satellite thereby providing for passage of said hard point, whereby as soon as said hard point is passed, said spring, due to said stressing thereof, returns the various components to a starting position, thereby reestablishing an original eccentricity.

5,052,990

TRANSMISSION USING BALL AND SCREW MECHANICAL ACTUATORS

Shiro Sakakibara, and Masahiro Hasebe, both of Aichi, Japan, assignors to Aisin AW Kabushiki Kaisha, Japan

Filed Dec. 28, 1989, Ser. No. 458,429

Claims priority, application Japan, May 1, 1989, 01-112700

Int. Cl.[5] F16H *9/26, 25/22*

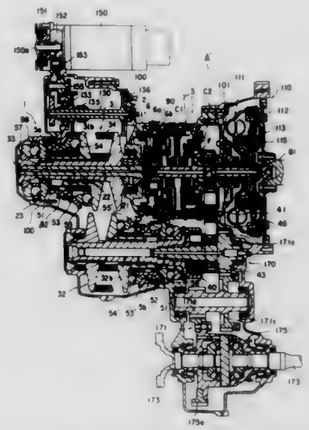
U.S. Cl. 475—210 **18 Claims**

1. A transmission including a belt drive continuously variable speed transmission and a forward/reverse rotation changeover mechanism, said belt drive continuously variable speed transmission and said forward/reverse rotation changeover mechanism being controlled responsive to, signals from a controller, said transmission comprising:

(a) a plurality of mechanical actuators for converting input torques into thrust forces for operation of said belt drive continuously variable speed transmission and said forward/reverse rotation changeover mechanism;

(b) a motor serving as a common source of said input torques received by said plurality of mechanical actuators;

(c) divergence means for distributing and transmitting torque from said motor as said input torques to said plurality of mechanical actuators; and



(d) engagement means for selective transmission of said input torques distributed from said divergence means to at least one of said plurality of mechanical actuators.

5,052,991

PLANETARY GEAR OF AUTOMATIC TRANSMISSION

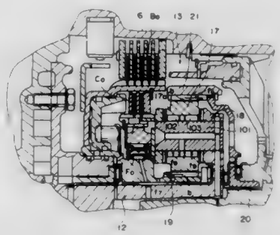
Kozo Yamaguchi; Toyoji Negi; Tadashi Kondo, and Kunihiro Iwatuki, all of Aichi, Japan, assignors to Aisin-AW Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 17, 1990, Ser. No. 510,190

Claims priority, application Japan, Apr. 19, 1989, 1-99277

Int. Cl.[5] F16H *1/28*

U.S. Cl. 475—344 **15 Claims**



1. An automatic transmission comprising at least one planetary gear unit through which power from a drive source is output while changing the output speed, said planetary gear unit including:

(a) a pinion shaft fixed to and supported on a carrier;

(b) a bearing disposed around the outer circumference of said pinion shaft;

(c) a helical planetary pinion rotatably supported on said bearing, said planetary pinion having an axial-direction cross section asymmetrical in the direction of its rotational axis such that its center of gravity is shifted toward one of its axial ends to evenly distribute the load imposed upon said bearing along the axis of said pinion shaft; and

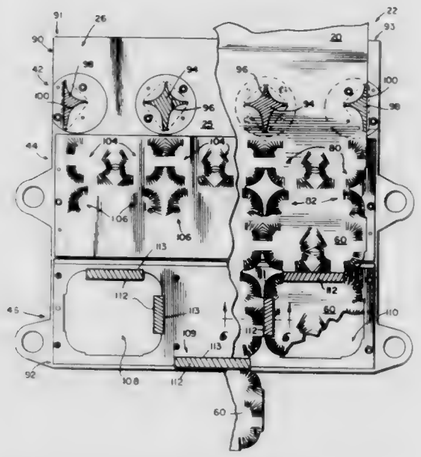
(d) a sun gear and a ring gear each meshing with said planetary pinion.

5,052,992

CUT AND SCORE DIE APPARATUS AND METHOD

L. Edward Hyder, Huntington, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Filed Feb. 6, 1990, Ser. No. 475,816
Int. Cl.[5] B31B *1/16*
U.S. Cl. 493—62 44 Claims



1. A die assembly for producing blanks from a sheet of material, the die assembly comprising

means for punching corner scrap material from the sheet of material to define an array of interconnected blanks arranged in a grid of rows and columns in the sheet of material, the blanks being arranged to lie in a series of adjacent rows of contiguous transversely aligned blanks extending across the width of the sheet of material, each row having a leading portion adjacent to a trailing portion of a downstream row and a trailing portion adjacent to a leading portion of an upstream row, and

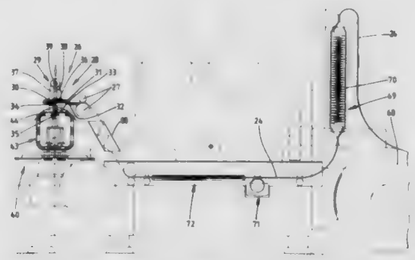
blanking means situated downstream from the punching means for piercing the sheet of material in a predetermined pattern to cut blanks of a predetermined size from the sheet of material without producing any additional scrap material, the blanking means includes a die plate having a support surface for supporting the sheet of material, the die plate being formed to include first and second blank discharge apertures positioned in a spaced apart relation, the first and second blank discharge apertures being aligned with a single row of blanks and with alternate columns of blanks in the sheet of material, the blanking means further including a first blanking portion for cutting a center blank lying in a leading row of blanks from the sheet of material, a second blanking portion for cutting the sheet of material to form a blank in a trailing row of blanks over the first blank discharge aperture, a third blanking portion for cutting the sheet of material to form a blank in the trailing row of blanks over the second blank discharge aperture, and means for simultaneously moving the first, second, and third blanking portions so that a center blank in the leading row of blanks and the blanks in the trailing row of blanks over the first and second blank discharge apertures are severed from the sheet of material and fall from the sheet of material due to gravity at the same time.

5,052,993

PROCESS AND APPARATUS FOR THE PRODUCTION OF (CIGARETTE) PACKS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Mar. 29, 1990, Ser. No. 501,205
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1989, 3910986
Int. Cl.[5] B31B *3/14*; B65B *19/02*
U.S. Cl. 493—79 11 Claims



1. An apparatus for the production of hinge lid packs from thin cardboard blanks (**20**) which are folded and filled in a rotatable folding turret (**40**), wherein:

each of the blanks (**20**) is of a generally rectangular configuration and has two long edges, and the blanks are interconnected with one another at their long edges to form a web (**24**);

the blanks (**20**) are interconnected solely by a line of residual connections (**25**);

said apparatus comprising, in a blank station (**26**), shearing means (**28**) for severing the blanks (**20**) from the web (**24**) by shearing the residual connections;

said shearing means (**28**) comprises a stationary horizontal counterplate (**32**) and a severing ram means (**29**) which is movable up and down;

said folding turret (**40**) has turret pockets (**41**, **42**), which are open at a top side for receiving respective blanks (**20**), and is disposed below said blank station (**26**);

said apparatus comprises blank turret means (**43**) for receiving the severed blanks and moving them into respective ones of said turret pockets (**41**, **42**); and

the blanks (**20**) severed from the web (**24**) are moved by the downward movement of said severing ram means (**29**) in a continuing downward movement to said blank turret means (**43**).

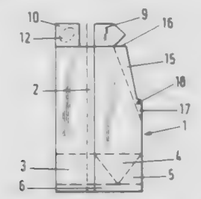
5,052,994

METHOD OF AND AN APPARATUS FOR SEALING A LIQUIDS PACKAGE

Hans-Peter Aeschlilmann, Tavel, Switzerland, assignor to Tetra Pak Holdings & Finance, Pully, Fed. Rep. of Germany

Filed Mar. 12, 1990, Ser. No. 492,985
Claims priority, application Switzerland, Mar. 21, 1989, 1032/89
Int. Cl.[5] B31B *1/84*
U.S. Cl. 493—87 1 Claim

1. A method of sealing at least one end of a liquids package, with a tube, a top having wall panels having an opening means, a handle and a bottom and at least some of the wall panels of the top consisting of synthetic plastics coated carrier material, which method comprises the steps of first laying flat an already formed tube, open at the top and bottom in a plane so that at least the wall panel having the opening means is positioned in this plane, and so that an anchoring device for the handle is positioned on a lateral edge of the laid-flat tube and a handle is injection molded onto the tube so that the main plane of the handle lies in the same plane as the laid-flat tube so that the handle is fixed in the region of the top of the package and simultaneously the opening means is injection moulded into place, and then the tube together with the opening device is unfolded and for at least one-sided sealing, its wall panels are folded over through about 90 degrees into the plane of the top



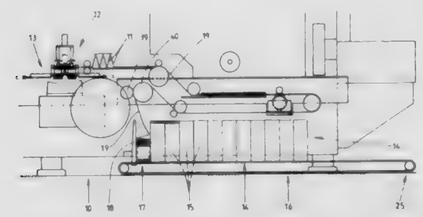
to produce a flat top and synthetic plastics bridges are injection moulded between the thus disposed wall panels, the edges of the wall panels of the top thus being connected to one another in sealing tight manner by the said injection moulded bridges of synthetic plastic material.

5,052,995

PROCESS AND APPARATUS FOR THE STOCKING (STORAGE) OF (PACK) BLANKS AND FOR FEEDING THESE TO A FOLDING UNIT OF PACKAGING MACHINE

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.,), Verden, Fed. Rep. of Germany

Filed Mar. 28, 1990, Ser. No. 501,827
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1989, 3910987
Int. Cl.[5] B65H *45/00*
U.S. Cl. 493—410 5 Claims



3. Process for storing of thin cardboard packaging blanks and for feeding the blanks to a folding unit of a packaging machine, individual blanks being connected to one another to form a continuous web of material and being subsequently severed from the web for processing, said process comprising the steps of:

storing a single continuous web (**19**) in a first group of a plurality of closely adjacent connected vertical stacks (**15**) in which the single continuous web (**19**) is folded in a zigzag-shaped manner with oppositely directed zigzag folds formed respectively along residual connections between adjacent blanks (**11**) in the single continuous web;

connecting a lowermost blank (**11**) of the first stack (**15**) to an uppermost blank (**11**) of the next following adjacent stack (**15**) via an upright vertical extended web portion (**23**) of the single continuous web (**19**), the upright extended vertical web portion (**23**) serving at the same time as a separating member between the closely adjacent stacks (**15**) to prevent said zigzag folds of said closely adjacent stacks from entering each other;

selecting said vertical extended web portion (**23**) to contain a plurality of said blanks; and

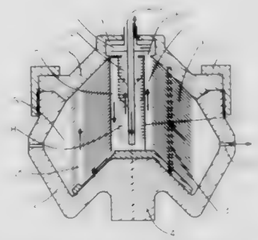
drawing off the zigzag-shaped single continuous web (**19**) from the first stack (**15**) and into an extended form for the production of the thin cardboard individual blanks (**11**), and reducing the slacks in succession.

5,052,996

CENTRIFUGAL SEPARATOR

Christer Lantz, Stocksund, Sweden, assignor to Alfa-Laval Separation AB, Tumba, Sweden

PCT No. PCT/SE89/00522, § 371 Date May 14, 1990, § 102(e) Date May 14, 1990, PCT Pub. No. WO90/04460, PCT Pub. Date May 3, 1990
PCT Filed Sep. 27, 1989, Ser. No. 487,961
Claims priority, application Sweden, Oct. 17, 1988, 8803686
Int. Cl.[5] B04B *1/08*
U.S. Cl. 494—68 12 Claims



1. Centrifugal separator for the separation of different components of a liquid mixture thereof, comprising: a rotor being rotatable around a rotor axis and having a separation chamber, a stack of frusto-conical separation discs arranged spaced from each other in the separation chamber coaxially with the rotor, inlet chamber closing means defining centrally in the stack of separation discs radially inside thereof an inlet chamber for said mixture, the inlet chamber being closed from connection with the separation chamber along the axial extension of said stack and communicating with the separation chamber at least at one end of the stack, inlet means for introducing liquid mixture into the inlet chamber, a plurality of annular acceleration discs placed coaxially with the rotor in the inlet chamber and arranged for gradual entrainment of incoming mixture into the rotation of the rotor, wherein each one of a plurality of said acceleration discs is made in one piece with a corresponding separation disc, so that a combination disc is formed, a plurality of such combination discs being arranged coaxially with the rotor and forming interspaces between adjacent combination discs, said inlet chamber closing means closing the interspaces between adjacent combination discs, and the acceleration discs having through holes for axial transport of mixture brought into rotation by the acceleration discs.

5,052,997

DIATHERMY COIL

Paul S. Ruggera, McLean, Va., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

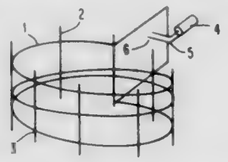
Filed Apr. 10, 1987, Ser. No. 37,203
Int. Cl.[5] A61N *1/40*
U.S. Cl. 600—13 20 Claims

1. A coil for uniform and deep heating of a part of the human body with RF waves, comprising

a sufficient size and shape as to be sloped-helix coil capable of surrounding a body part in its center of a conductor with n loops about a common axis, n being an odd integer equal to or greater than three, and feed lines extending in parallel from respective ends of respective end loops of said coil,

wherein spacing between adjacent pairs of said loops in the

direction of said axis decreases from a maximum at a respective distance from each of said ends of the respective end loops, and is constant for a central portion of said coil.

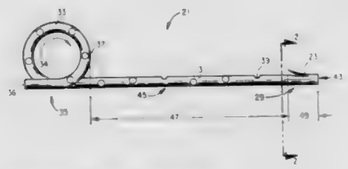


5,052,998

INDWELLING STENT AND METHOD OF USE

David S. Zimmon, 7 Farm View Rd., Port Washington, N.Y. 11050

Filed Apr. 4, 1990, Ser. No. 504,575
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—8 **17 Claims**



1. An indwelling stent, comprising:
a catheter body having a tube wall surrounding at least one lumen, said catheter body having drainage means for allowing fluids to pass in and out of said lumen, said catheter body further having a distal end for placement in a body cavity away from another body cavity to be drained, a proximal end for placement in the body cavity to be drained, and a central portion therebetween for maintaining a tubular structure in a patient open;
pigtail anchor means formed by a curl in said catheter body at said distal end for preventing entire proximal migration of said catheter body while allowing spring action in said curl to accommodate variations in length of the tubular structure in the patient; and
barb anchor means radially projecting from said proximal end for preventing entire distal migration of said catheter body out of the body cavity to be drained, wherein said proximal end of said catheter body is substantially straight and wherein said barb anchor means are radially retractable toward said proximal end to facilitate insertion of said proximal end through the tubular structure in the patient without passing said pigtail anchor means through the tubular structure in the patient.

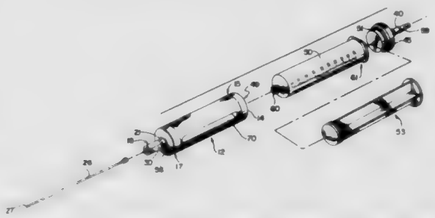
5,052,999

LIPOSUCTION METHOD AND APPARATUS

Jeffrey A. Klein, 203 Calle Conchita, San Clemente, Calif. 92672

Filed Jan. 29, 1990, Ser. No. 471,417
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—19 **4 Claims**

1. A method for the removal of subcutaneous material, comprising:
providing a surgical vacuum device having a proximal end, a distal end and a central lumen extending therethrough, said proximal end comprising a container housing adapted to removably receive a container in communication with the central lumen;
placing a remotely located anesthetic reservoir in fluid communication with the lumen, by way of a vent extending through the wall of said device and into the lumen;
removably securing a container within the container housing;
drawing a selected amount of anesthetic from the reservoir into said container through said lumen;



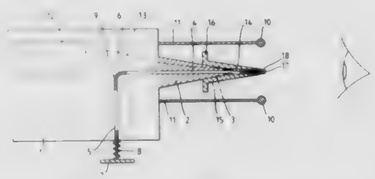
expressing anesthetic from said container through said lumen and into the subcutaneous material; and
thereafter connecting a vacuum cannula in communication with the lumen and applying a vacuum to the lumen to remove subcutaneous material through the vacuum cannula.

5,053,000

OCULAR TREATMENT

Christopher G. Booth, Middlesbrough, and Raymond C. Rowe, Congleton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 299,689, Jan. 23, 1989, Pat. No. 4,952,212, which is a continuation of Ser. No. 929,476, Nov. 12, 1986, abandoned. This application Apr. 26, 1990, Ser. No. 514,952
Claims priority, application United Kingdom, Nov. 13, 1985, 8528032
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **9 Claims**



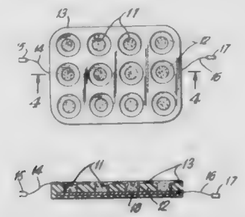
1. Electrodynamic spraying apparatus for dispensing a measured unit does of an opthalmically active liquid formulation for application to the corneal surface of an eye, said apparatus comprising:
a housing;
at least one spray nozzle attached to said housing having a liquid outlet of sufficiently small interior cross section to retain therein a measured unit does of formulation;
means within said housing for supplying said measured unit dose of formulation to said nozzle outlet;
means within said housing for causing said formulation to flow from said nozzle through said outlet;
at least one electrode adjacent said nozzle outlet, which electrode is spaced from said outlet and electrically insulated from said nozzle; and
means for applying an electrical potential difference between said spray nozzle outlet and said electrode of sufficient magnitude to draw said formulation from said outlet, and to atomize said formulation into a spray of electrically charged droplets;
said apparatus being adapted, when said nozzle outlet is in a spaced relationship with said corneal surface, to cause said measured unit dose of formulation to be drawn to said corneal surface in the form of electrically charged droplets and uniformly deposited thereon.

5,053,001

TRANSDERMAL DRUG DELIVERY DEVICE WITH MULTIPLE RESERVOIRS

Chana Reller, Petach Tikva, and Joseph Gross, Moshav Mazor, both of Israel, assignors to Inventor's Funding Company Ltd., Tel-Aviv, Israel

Continuation-in-part of Ser. No. 280,500, Dec. 6, 1988, Pat. No. 5,002,527. This application Sep. 6, 1989, Ser. No. 403,401
Claims priority, application Israel, Apr. 14, 1988, 86076
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **9 Claims**



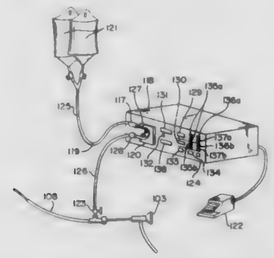
1. An iontophoretic device comprising in combination:
an insulating member having an inner surface positionable adjacent skin of a recipient,
a plurality of reservoirs formed in the insulating member, each reservoir including an opening in the inner surface and adapted to contain an ionic drug and terminating in a rim formed at the opening in the inner surface,
an outer electrode positioned on the insulating member to be in contact with the drug when the drug is in said reservoirs,
a single continuous inner electrode on the inner surface and surrounding each said reservoir and spaced from the rim of each said reservoir to define a gap between the rim and the inner electrode, and
means for the electrodes being connectable to a field generating means for energizing the electrodes to draw the drug into the skin of the recipient.

5,053,002

IRRIGATION SYSTEM FOR ANGIOSCOPE

David E. Barlow, Hicksville, N.Y., assignor to Olympus Corporation, Lake Success, N.Y.

Continuation of Ser. No. 141,936, Jan. 11, 1988, abandoned. This application Sep. 7, 1989, Ser. No. 405,046
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—30 **8 Claims**



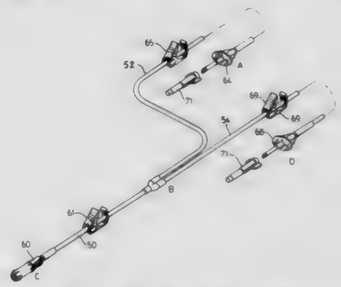
1. An angioscope irrigation system comprising:
an irrigation catheter for insertion into a blood vessel through a wall thereof for introducing an irrigation fluid into said vessel;
a tubing set connected to said irrigation catheter comprising
a) an inflow tube for receiving said irrigation fluid;
b) an outflow tube for receiving said irrigation fluid from said inflow tube and transporting said irrigation fluid to said irrigation catheter;
c) an air bubble detection means connected to said inflow tube for detecting an air bubble in said irrigation fluid being moved through said tubing set and for automatically deactivating an irrigation fluid drive means upon detection of an air bubble;
said irrigation fluid drive means comprising a peristaltic pump in contact with said tubing set for moving said irrigation fluid; said fluid drive means having a first and second mode of operation for moving fluid through said tubing set at a plurality of different flow rates, said first mode producing a high pressure and flow rate to fill said blood vessel rapidly with irrigation fluid thereby displacing blood in the vessel with a bolus of irrigation fluid and said second mode following said first mode and producing a lower flow rate sufficient to keep said blood vessel clear for visual inspection;
control means, operatively connected to said fluid drive means, whereby an operator can select said first and second mode of operation wherein said control means includes means for preselecting a volume of fluid to be delivered via said tubing set during said first mode of operation; and
means for automatically deactivating said fluid drive means upon detection of an air bubble in said air bubble detection means.

5,053,003

METHOD AND APPARATUS FOR PERITONEAL DIALYSIS USING A "Y" TUBING SET

Joseph E. Dadson, 7 Harrow Smith Place, Richmond Hill, Ontario, Canada L4E 2E1 , and Mahesh Agarwal, 7 Grant's Place, Markham, Ontario, Canada L3S 2W2

Filed Apr. 18, 1989, Ser. No. 339,977
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—28 **4 Claims**



1. A method for carrying out peritoneal dialysis on a patient whose peritoneal cavity is in fluid communication, via a tubular pathway, with a threaded patient connector, utilizing an apparatus comprising:
a tubing set having first, second and third tubing arms, each tubing am having a first end and a second end, the first end of each tubing arm being connected to and in communication with the first ends of the other two arms,
first connecting means on the second end of the first tubing arm, said first connecting means being threaded and adapted to be connected to said threaded patient connector,
second connecting means on the second end of the second tubing arm, said second connecting means being adapted to be connected to a fresh dialysate container,
third connecting means on the second end of the third tubing arm, said third connecting means being adapted to be connected to a drain bag,
clamping means at an intermediate location of each tubing arm,
threaded cover means for engaging, covering and protecting

the patient connector after the tubing set has been used and disconnected, said threaded cover means being initially closed by a threaded cap, both the cover means and its cap being filled with disinfectant,

closure means for sealing a dialysate container after it has been emptied,

said method comprising the steps:

a) closing all said clamping means,

b) then in any order: threadably connecting the first connecting means to the patient connector, connecting the second connecting means to a fresh dialysate container, and connecting the third connecting means to a drain bag,

then in consecutive order:

c) opening the clamping means on the second and third tubing arms,

d) allowing sufficient time for dialysate from said container to flow through the second and third tubing arms and into the drain bag, thus flushing the second and third tubing arms,

e) closing the clamping means on the second tubing arm,

f) opening the clamping means on the first tubing arm,

g) allowing dialysate in the patient's peritoneal cavity to drain into the drain bag,

h) closing the clamping means on said third tubing arm,

i) opening the clamping means on the second tubing arm and allowing dialysate to flow from the container into the patient's peritoneal cavity,

j) closing the clamping means on the second tubing arm,

k) closing the remaining clamping means,

l) disconnecting the patient connector from said first connecting means by unscrewing,

m) removing the cap from the cover means by unscrewing, then in any order:

n) thereby connecting the cover means to the patient connector, and

o) threadably connecting the cap to said first connecting means.

5,053,004

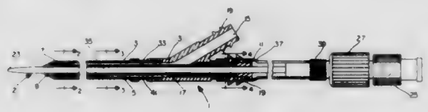
CATHETER HAVING TWO COAXIAL LUMENS

David F. Markel, Collegeville; Anthony J. Madison, Harleysville; David E. Roberts, Zieglersville, and William R. Harkins, Norristown, all of Pa., assignors to Medical Components, Inc., Harleysville, Pa.

Filed Aug. 24, 1990, Ser. No. 571,930

Int. Cl.[5] A61M *25/00*; B23P *11/00*

U.S. Cl. 604—43 **31 Claims**



1. A double-lumen catheter, comprising:

a) a generally cylindrical inner tube having interior and exterior surfaces,

b) a generally cylindrical outer tube having interior and exterior surfaces, the outer tube being arranged around the inner tube such that the inner and outer tubes are substantially coaxial, the inner tube defining an inner lumen having a generally circular cross-section, the inner and outer tubes defining an outer lumen having a generally annular cross-section, the tubes having a proximal end and a distal end,

c) a generally cylindrical sleeve inserted between the tubes at the distal end, the sleeve being bonded to the inner tube and to the outer tube,

d) a first hub formed around the exterior surface of the proximal end of the inner tube,

e) a second hub formed around the exterior surface of the proximal end of the outer tube, the second hub extending beyond the outer tube in the proximal direction, wherein the first and second hubs are bonded together, and

f) means for connecting the lumens to fluid conveying devices.

5,053,005

CHEMOMODULATION OF CURVATURE OF THE JUVENILE SPINE

Gary E. Borodic, 90 Kensington Dr., Canton, Mass. 02021, assignor to Gary E. Borodic, Canton and Edmund R. Pitcher, Hingham, both of, Mass.

Filed Apr. 21, 1989, Ser. No. 341,538

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—51 **7 Claims**



1. A nonsurgical method of modulating curvature of the spine during juvenile development of a vertebrate animal, the method comprising the step of:

percutaneously injecting an acetylcholine transmission inhibitor, comprising an agent which mimics the effects of botulinum toxin to block muscle stimulation, into the musculature of the dorsal side of a vertebrate at a site disposed axially asymmetrically of the spine, thereby to produce alternation in the balance of muscular support of the developing spine lasting for a time sufficient to alter the curvature thereof.

5,053,006

METHOD FOR THE PERMANENT OCCLUSION OF ARTERIES

Brant D. Watson, 8405 NW. 8th St., No. 306, Miami, Fla. 33126

Continuation of Ser. No. 183,046, Apr. 19, 1988, abandoned. This application Apr. 2, 1990, Ser. No. 503,130

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—52 **23 Claims**

1. A method for the permanent occlusion of arteries having a diameter of at least 21 μm, which comprises the infusion of rose bengal dye into the bloodstream and irradiation of an individual artery with a laser light beam at a wavelength sufficient to electronically excite the rose bengal molecules, the laser light beam being focussed so as to maximize the overlap of its cross-sectional intensity profile with the distribution off photosensitizer dye bound to arterial endothelium, so that rose bengal dye absorbed to the luminal surface of the artery absorbs the light, thereby initiating a photochemical reaction resulting in photochemical injury to the vascular endothelium of the artery at the point of interaction of the rose bengal dye and the laser light light beam.

5,053,007

COMPRESSION BALLOON PROTECTOR FOR A BALLOON DILATATION CATHETER AND METHOD OF USE THEREOF

Charles L. Euteneuer, Maple Grove, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Dec. 14, 1989, Ser. No. 450,664

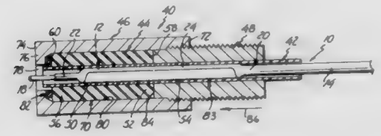
Int. Cl.[5] A61M *29/00, 29/02*

U.S. Cl. 604—96 **34 Claims**

1. A balloon protector for a balloon catheter having a balloon positioned adjacent a distal end, the balloon protector comprising:

an inner compressible tube having an interior for receiving the balloon;

an outer compression sleeve having an interior for receiving the inner tube; and



means for urging the outer compression sleeve radially inwardly.

5,053,008

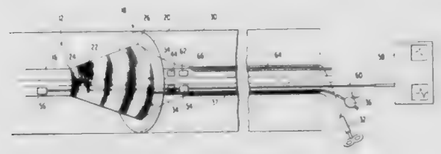
INTRACARDIAC CATHETER

Sandeep Bajaj, 512 Grinell Dr., Richmond, Va. 23236

Filed Nov. 21, 1990, Ser. No. 616,899

Int. Cl.[5] A61H *1/00*

U.S. Cl. 604—104 **33 Claims**



1. An intracardiac catheter, including:

a sheath;

an umbrella sized to fit within a patient's pulmonary artery connected to said sheath, said umbrella allowing blood and plasma to pass through freely but trapping emboli;

a means for biasing said umbrella to an open position away from said sheath;

means for controlling the degree of opening of said umbrella;

means for detecting the presence of emboli trapped in said umbrella; and

means for treating emboli trapped in said umbrella.

5,053,009

DRAINAGE AND INSTRUMENT DUCT FOR THE ARTHROSCOPY

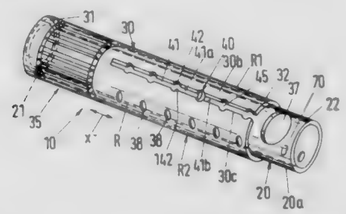
Wolfgang Herzberg, Wedel/Holstein, Fed. Rep. of Germany, assignor to Renate Dunsch-Herzberg, Holstein and Gudrun Voss, Hamburg, both of, Fed. Rep. of Germany

Filed Apr. 5, 1990, Ser. No. 505,020

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 8904371

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—104 **24 Claims**



1. Drainage and instrument duct for the arthroscopy, characterized in that the drainage and instrument duct (**10**) is formed by the hollow cylinder (**20**) and a sleeve (**30**) disposed on the hollow cylinder (**20**) and displaceable in the longitudinal direction of the hollow cylinder, the length of which, in comparison with the length of the hollow cylinder (**20**), is dimensioned so as to be shorter, the hollow cylinder and the sleeve being interconnected at their ends (**21, 31**) so as to be flush and in that the sleeve (**30**) is provided with a wall section (**35**) which, when the sleeve (**30**) is longitudinally displaced towards the end (**21**) of the hollow cylinder (**20**), is outwardly expandable and, after the fashion at a basket, enlarges the external diameter of the sleeve and is provided with a number of perforations (**135**) which are so disposed as to be distributed over the circumference and in side-by-side arrangement the sleeve (**30**) being provided with means (**40**) for arresting the sleeve on the wall (**20a**) of the hollow cylinder (**20**), which arresting means interacts with the hollow cylinder (**20**).

5,053,010

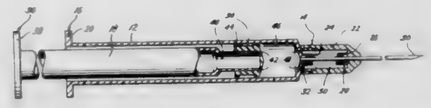
SAFETY SYRINGE WITH RETRACTABLE NEEDLE

R. Kern McGary, and S. William Jentzen, both of Cedar Creek, Tex., assignors to Triad Technology, Austin, Tex.

Filed Oct. 3, 1990, Ser. No. 592,504

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **31 Claims**



1. A syringe, comprising:

a cylindrical barrel having first and second ends and fluid contained therebetween;

a hollow plunger inserted into the first end of said barrel;

a hollow needle attached to the second end of said barrel;

biasing means attached to the second end of said barrel for biasing said needle toward said hollow plunger;

means for driving said fluid from said barrel and through said needle by applying forward pressure upon said plunger;

a sealing member attached to one end of said plunger for sliding engagement with the inside diameter of said barrel; and

a cutting tip configured inside said sealing member for cutting through said member and the second end of said barrel such that said biasing means releases said needle into the said plunger when said plunger is fully extended into said barrel.

5,053,011

DISPOSABLE PRESSURE INFUSION SYSTEM

Norman M. Strobel, Newfane, and Donald E. Nitsche, Alden, both of N.Y., assignors to Harmac Medical Products, Inc., Buffalo, N.Y.

Filed Sep. 29, 1989, Ser. No. 415,097

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—142 **32 Claims**

1. A method of fabricating a pressure cuff for use in pressurizing an infusion bag, comprising the steps of:

providing a flexible laminate having a pair of outer film layers, one of which is formed of a first plastic adapted for stretching without a substantial ballooning and the other of which is formed of a second plastic adapted for substantially preventing transmission of a fluid therethrough;

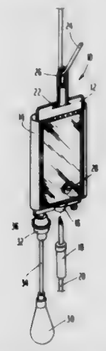
folding said flexible laminate, about in half, to provide a fold line, a pair of inner surfaces one on each side of said fold line, and a pair of outer surfaces;

joining said pair of inner surfaces along a seam extending away from said fold line and back to provide a bladder bounded by said seam and said fold line;

providing a substantially transparent sheet; and

attaching said sheet to said flexible laminate to provide a

pocket for retaining the infusion bag disposed against said bladder, whereby the infusion bag is adapted to be pressurized by transmission of a force from said bladder when said bladder is pressurized.

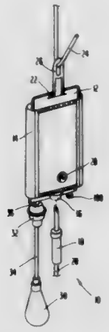


5,053,012

DISPOSABLE PRESSURE CUFF HAVING FLOW-THROUGH PRESSURE GAUGE

Floyd V. Edwards, Eggertsville, and Norman M. Strobel, Newfane, both of N.Y., assignors to Harmac Medical Products, Inc., Buffalo, N.Y.

Filed Sep. 29, 1989, Ser. No. 415,068
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—146 **17 Claims**



1. Pressure infusion apparatus for use with an infusion bag, comprising:

bladder means for maintaining a fluid under pressure;

means for pumping a flow of said fluid into said bladder means;

transparent means, attached to said bladder means to form a pocket therewith, for disposing the infusion bag in contact with said bladder means and facilitating inspections of the infusion bag during pressurization thereof by said pumping means; and

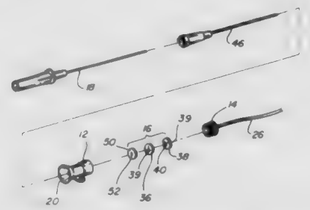
gauge means for indicating a range of pressures within said bladder means, said gauge means including a chamber, an inlet to said chamber receiving said flow of said fluid, diaphragm means for sealing said chamber, and telescoping means, mounted upon said diaphragm means for movement thereby, for indicating said range of pressures.

5,053,013

IMPLANTABLE INFUSION DEVICE

William D. Ensminger; James A. Knol, and James C. Andrews, all of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 487,541, Mar. 1, 1990. This application Jun. 18, 1990, Ser. No. 539,793
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **37 Claims**



1. An implantable patient access device for permitting access to an implanted internal catheter using a needle and enabling the introduciton of a flexible filament such as an external catheter, wire or optical fiber, comprising:

housing means defining a entrance orifice having a decreasing cross-sectional area and having a surface formed of a hard material for guiding said needle upon contacting said entrance orifice into a guide passageway within said housing means, said housing means further defining an exit orifice for attachment of said internal catheter,

an articulating catheter valve within said housing means which normally remains closed to provide resistance to flow of fluids through said valve, yet opens when penetrated by said needle enabling said needle to communicate with said internal catheter wherein said guide passageway guides and orients said needle to strike said catheter valve at a predetermined area, and

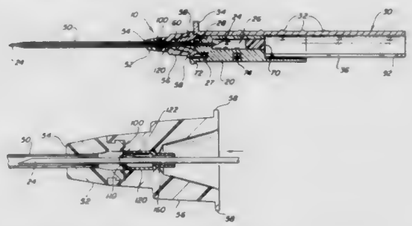
mounting means formed by said housing means for affixing said housing means subcutaneously.

5,053,014

CATHETER WITH CONTROLLED VALVE

Anthony Y. Van Heugten, Tampa, Fla., assignor to Critikon, Inc., Tampa, Fla.

Filed Feb. 1, 1990, Ser. No. 474,595
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **12 Claims**



1. A catheter assembly comprising:

a semi-tubular needle housing having an open top;

a flash chamber located in the interior of said needle housing and having a hollow needle extending from the distal end thereof;

a tubular needle guard having a proximal end and a distal end, slideably located within said needle housing and including an aperture at its distal end for passage of said hollow needle therethrough and containing said flash chamber;

a catheter and catheter hub assembly suitable for mounting on the distal end of said needle guard; and

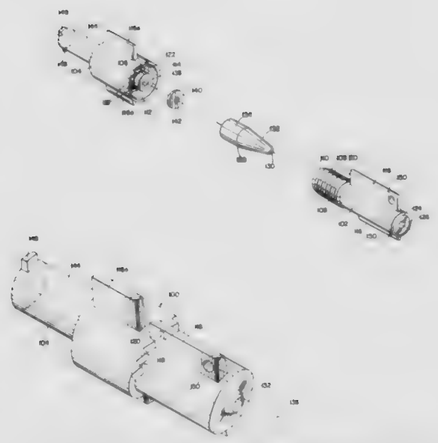
a valve and valve opener assembly held within said hub wherein said opener is slideably emplaced in said hub such that said opener is not engageable with said needleguard, and wherein said hub is attachable to a luer assembly such that with said luer assembly attached to said hub, said valve opener contacts said luer assembly and slides to open said valve.

5,053,015

LOCKING CATHETER ADAPTER

James R. Gross, Geneva, Ill., assignor to The Kendall Company, Mansfield, Mass.

Filed Aug. 30, 1989, Ser. No. 400,859
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **8 Claims**



1. A unitary adapter for placing the proximal end of a catheter which has been inserted in a patient's body in liquid communication with a source of a liquid to be administered from a syringe to said patient by means of said catheter, said adapter comprising:

a catheter connector housing having distal and proximal ends, said distal end having an opening through which said proximal end of said catheter may be inserted, said catheter connector housing having an internal bore to which said opening communicates;

an elongated elastomeric and compressible plug seated within said bore adjacent said distal end of said catheter connector in a relatively uncompressed condition, said plug having a channel extending therethrough aligned with said opening in said distal end of said catheter housing, whereby said catheter inserted within said opening can extend within said channel, the inner dimensions of said channel when uncompressed and of said opening being slightly greater than the outer dimensions of said catheter to permit insertion of said catheter therewithin;

a syringe connector housing having proximal and distal ends and a passageway for said liquid extending longitudinally between said ends thereof, said proximal end having means for releasably engaging the tip of said syringe, said distal end of said source connector housing having an opening communicating with said passageway;

retaining means inseparably housings together with said proximal end of said catheter connector housing seated within said distal end of said syringe connector housing;

means for reversibly moving said connectors longitudinally with respect to one another from an open, spaced position permitting insertion and withdrawal of said catheter from said catheter connector to a closed abutting position wherein said passageway in said syringe connector housing, said bore in said catheter connector, said channel in said plug and said catheter when contained therein are in liquid communication to define a closed channel for administering said liquid from said syringe to said patient through said catheter, said means for moving said connector housings between open and closed positions being threads on said proximal end of said catheter connector housing mating with threads on said distal end of said syringe connector housing, whereby said housings can be screwed together to provide said closed position and unscrewed to said open position;

compression means for compressing said plug when said connector housings are in said closed position, whereby to reduce the gap of said channel and thereby cause said plug to frictionally engage said catheter inserted therein and to retain said catheter in said adapter; and

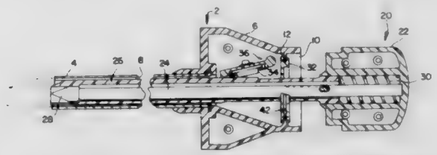
locking means for securing said connectors in said closed position, whereby to prevent accidental unscrewing of said connectors toward said open position.

5,053,016

VALVE SEAT FOR AN INSUFFLATION CANNULA ASSEMBLY

Jack R. Lander, Danbury, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 140,025, Dec. 31, 1987, Pat. No. 4,943,280. This application Mar. 2, 1990, Ser. No. 488,628
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—169 **8 Claims**



1. A flapper valve for an insufflation cannula assembly, the cannula assembly including a cannula defining a cannula passage and a housing mounted on one end of the cannula and having an opening formed therein, the flapper valve being mounted in the housing of the assembly, the flapper valve comprising:

a valve seat within the housing opening, said valve seat being formed of a resilient flexible material and having an opening formed therein, said valve seat opening being bounded by a lip extending at least generally radially inwardly of said valve seat, at least a portion of said lip being of reduced thickness, said reduced thickness portion thereby being of greater flexibility than adjacent portions of said valve seat, said valve seat opening being in communication with the cannula passage and being adapted to allow a surgical instrument to pass therethrough and into the cannula passage;

a valve plate pivotally mounted in said housing, said valve plate having front and back faces, said front face of said valve plate being dimensioned and adapted to engage said resilient flexible lip of said valve seat, said valve plate including means for obstructing said opening in said valve seat by engagement with said lip of said valve seat in a

manner to cause said lip to become resiliently flexed to thereby affect a substantially gas tight seal; and

biasing means for biasing said valve plate into engagement with said lip of said valve seat.

5,053,017

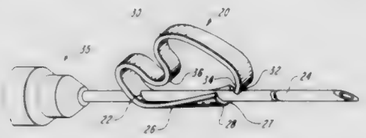
HYPODERMIC NEEDLE SAFETY CLIP

Steven R. Chamuel, 26 Murray St., Peabody, Mass. 01960

Filed Feb. 28, 1990, Ser. No. 487,457

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—192 **14 Claims**



1. A unitary safety device for use on a hypodermic needle having an injecting end, said device being slideable between a first position and a second position on said hypodermic needle, said device comprising:

a first portion having first and second engagement surfaces, said first engagement surface being in slideable contact with the periphery of said hypodermic needle when said device is in said first position and said second engagement surface being in abutting relation with said injecting end of said hypodermic needle when said device is in said second position;

a second portion having a third engagement surface being in slideable contact with said hypodermic needle; and

an integral intermediate portion disposed intermediate to said first portion and said second portion, said intermediate portion having a hole, said hole being dimensioned to fit slideably about said hypodermic needle when said device is in said first position and said hole having an inner surface that frictionally engages the periphery of said hypodermic needle to grasp said hypodermic needle when said device is in said second position.

5,053,018

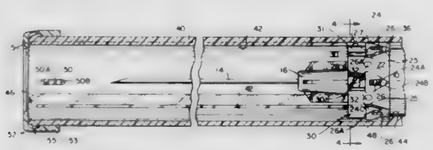
COMBINED SYRINGE AND NEEDLE SHIELD AND METHOD OF MANUFACTURE

Daniel A. Talonn, University City, and Alan B. Ranford, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jun. 28, 1988, Ser. No. 212,528

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **30 Claims**



1 In combination,

(a) a syringe comprising a barrel having distal and proximal ends, a plunger slidable within the barrel, and a needle attached to the distal end of the barrel,

(b) a collar having distal and proximal ends at the distal end of said barrel and including a plurality of locking slots on its outer surface, each of said locking slots being formed by a pair of opposing walls on the distal portion of said collar and a protrusion at the back of the locking slot extending along the proximal portion of said collar, at least one of said pair of opposing walls including a ramp shaped wall surface thereon,

(c) an elongated needle shield movable over said barrel and collar between a retracted position in which the needle is exposed and an extended position in which said shield covers said needle, said shield including a plurality of elongated keys on its interior surface, each of said keys having distal and proximal ends and being adapted to slide in a keyway displaced circumferentially from said locking slots and wherein at least one of said keys on said shield is rotatable over said wall surface into at least one of said locking slots when said shield is in its extended position, and

(d) retaining means on said collar and shield for retaining said shield in its retracted position.

5,053,019

INJECTION DEVICE

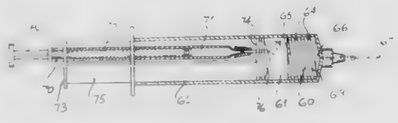
George J. Duffy, Foxrock, Ireland, assignor to Institute for Industrial Research and Standards, Dublin, Ireland

Continuation of Ser. No. 210,272, Jun. 23, 1988, abandoned, which is a division of Ser. No. 032,697, Apr. 1, 1987, Pat. No. 4,767,415, which is a continuation of Ser. No. 706,423, Feb. 27, 1985, abandoned. This application Jun. 19, 1990, Ser. No. 540,404

Claims priority, application Ireland, Mar. 2, 1984, 504/84; Jan. 30, 1985, 216/85

Int. Cl.[5] A61M *5/18*

U.S. Cl. 604—232 **9 Claims**



1. A bolus syringe comprising:

a housing having a bore therein forming a reservoir for storing a driving fluid means for driving a bolus liquid, and having an outlet therefrom,

a plunger mounted in the reservoir and movable in first and second directions through the reservoir for respectively drawing in and discharging fluid from the reservoir through the syringe outlet,

a body member mounted within a portion of the reservoir adjacent the syringe outlet, between the syringe outlet and the plunger, the outer cross sectional area of the body member defining the outer cross sectional area of the bore forming the reservoir, the body member having a single elongated non-branched tortuous passageway comprising means for storing the bolus liquid and some of the driving fluid and said passageway being of relatively small bore to minimize mixing of the bolus liquid and the driving fluid at an interface of the bolus liquid and the driving fluid, an inlet being provided adjacent one end of the body member for communicating the tortuous passageway with the reservoir and an outlet being provided adjacent the other end of the body member for communicating the tortuous passageway with the syringe outlet, so that in response to movement of the plunger in the first direction driving fluid is drawn into another portion of the reservoir through the tortuous passageway and the bolus liquid is drawn into the tortuous passageway, and in response to movement of the plunger in the second direction, first the bolus liquid and then the driving fluid are discharged through the syringe outlet.

5,053,020

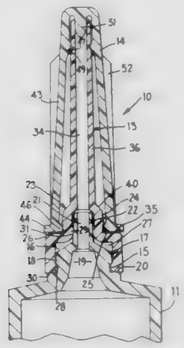
APPLICATOR HAVING TWO CANNULAS

Michael J. Manchester, Mendon, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 6, 1990, Ser. No. 506,604

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—239 **17 Claims**



1. An applicator for administering a medication, comprising: an elongated syringe having a first, blunt-tipped cannula extending longitudinally from one end thereof, said first cannula having a longitudinally extending first bore; a second, blunt-tipped cannula detachably mounted on said syringe, said second cannula having a sleeve section which encircles said first cannula and a blunt-tipped wall portion which extends beyond the outer end of said first cannula, said sleeve section having an inwardly enlarged ridge which sealingly engages against an outer peripheral surface of said first cannula in surrounding relationship to said first bore, said wall portion being coaxial with said first cannula and having a longitudinally extending second bore which is coaxial with and constitutes an extension of said first bore in a direction extending away from said syringe whereby said first and second bores provide a continuous flow path for said medication from said syringe to the outer end of said second bore; and a detachable protective cap covering the tip of said wall portion and extending longitudinally therefrom to said sleeve section and surrounding said sleeve section so that the contents of the syringe are protected from contamination, said cap including a further, annular ridge which projects inwardly to slidably and sealingly engage an outer peripheral surface of said sleeve section, said further ridge being in substantially longitudinally aligned and surrounding relationship relative to said first-mentioned ridge to reinforce the sealing engagement between said second cannula and said first cannula, said first cannula being elastically deformed by said first-mentioned ridge to define in the outer peripheral surface of said first cannula a complementary groove which cooperates with said first-mentioned ridge to effect a sealing engagement between said first cannula and said second cannula.

5,053,021

SURGICAL DRAIN

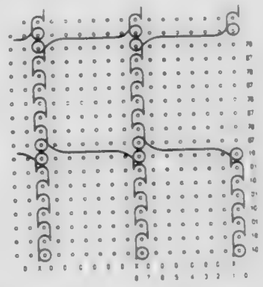
Miriam H. Feibus, 2557 Morrocroft La., Charlotte, N.C. 28211

Continuation-in-part of Ser. No. 348,324, May 5, 1989, Pat. No. 4,970,109, which is a continuation-in-part of Ser. No. 132,122, Dec. 14, 1987, Pat. No. 4,856,299, which is a continuation-in-part of Ser. No. 940,864, Dec. 12, 1986, Pat. No. 4,815,299. This application Jan. 4, 1990, Ser. No. 460,782

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—264 **16 Claims**

1. A surgical drain warp knitted fabric which comprises a knit structure of conductive and nonconductive yarns stitched together to form a fabric tape wherein the conductive yarns



make electrical contact with one another so as to form an electrically conductive matrix.

5,053,022

APPLICATOR FOR INTRANASAL ADMINISTRATION OF VACCINES TO HORSES

Sharon A. Bryant, Shawnee, Kans.; Karen K. Brown, Kansas City, Mo.; Richard E. Parizek, Lenexa, Kans.; Larry F. Moore, Greenwood, and Louis J. Travalent, Lee's Summit, both of Mo., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Jun. 28, 1990, Ser. No. 546,210

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—278 **8 Claims**



1. A device for administering antigenic material to a horse intranasally which device is composed of

a. a hollow flexible tube which (1) is long enough to reach the tonsilor tissue of a horse, (2) is sealed at one end and has an open tapered end adapted to receive a syringe and (3) has at least one opening positioned along its length through which the antigenic material may exit in the form of small droplets so that the exiting antigenic material will fall upon the tonsilor tissue of the horse and

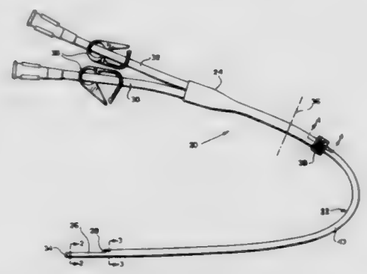
b. a blocking device containing an opening sufficiently large that the flexible tube will pass therethrough until the blocking device reaches the tapered open end of the tube.

5,053,023

CATHETER FOR PROLONGED ACCESS

Geoffrey S. Martin, Mississauga, Canada, assignor to Vas-Cath Incorporated, Canada

Continuation of Ser. No. 261,970, Oct. 25, 1988, abandoned.
This application Feb. 25, 1991, Ser. No. 662,329
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 2 Claims



1. In a catheter for use having an elongate body defining side-by-side generally D-shaped lumens and having distal and proximal ends, one of the lumens being an intake lumen for receiving body fluid and the other being a return lumen for leading fluid to the body, a pair of connecting tubes attached one to each of the lumens, the tubes being attached one to each of the intake and return lumens, and a tip adjacent the distal end and formed from the material of the body with the tip defining an intake opening spaced from the end of the body to provide access to the intake lumen and a return opening at the end of the body, the improvement in which the body is in two portions, a distal portion adjacent the distal end for enagement within body tissue, a proximal portion extending between the tubes and the distal portion, the distal portion having minimal rigidity for acceptance in the body tissue and the proximal portion having greater rigidity sufficient to minimize the risk of kinking during insertion and during normal use; and

a fibrous cuff engaged about the body where the proximal and distal portions meet to provide a seal in use where blood would clot in the cuff to seal the catheter to a patient.

5,053,024

APPLICATION SYSTEM AND METHOD FOR TREATING WARTS

Israel Dvoretzky, 39 Gate Way, Hamden, Conn. 06514

Filed Oct. 23, 1989, Ser. No. 425,328
Int. Cl.[5] A61F *7/00*; A61M *35/00*
U.S. Cl. 604—291 9 Claims

1. A method for treating warts employing an exothermic pad which is constructed from a carrier incorporating a plurality of chemicals selected for reacting exothermically in the presence of oxygen comprising the steps of

A. placing the exothermic pad on the surface of the skin bearing the wart; and

B. leaving the exothermic pad on the skin surface for an extended time period sufficient to raise the skin surface temperature and maintain the skin surface temperature at the elevated temperature for substantially the entire time period;

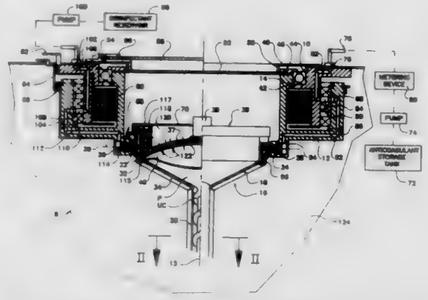
whereby the wart virus is inactivated or slowed in its growth by the direct application of heat without any damage to the skin.

5,053,025

METHOD AND APPARATUS FOR EXTRACTING FLUID

Hermann Knippscheer, Baldwin, N.Y., assignor to Cryo-Cell International, Inc., Baldwin, N.Y.

Filed Sep. 4, 1990, Ser. No. 577,269
Int. Cl.[5] A61B *5/00*
U.S. Cl. 604—317 42 Claims



1. An apparatus for extracting blood fluids from a placenta, comprising:

a frame assembly;

a rotary carriage mounted to said frame assembly for rotation about a vertical axis;

drive means operatively connected to said carriage for rotating same about said axis;

support means for holding the placenta;

connector means for pivotably connecting said support means to said carriage to enable a pivoting of said support means about a rotating horizontal axis during rotating of said carriage by said drive means; and

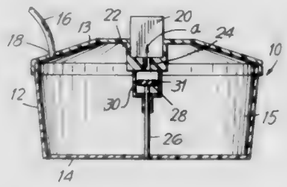
collector means attached to said support means for enabling a collection of blood fluid flowing from said placenta during operation of said drive means.

5,053,026

ASPIRATING DEVICE

Harold W. Andersen, Oyster Bay, N.Y., and Charles H. Harrison, Haw River, N.C., assignors to H. W. Andersen Products Inc., Oyster Bay, N.Y.

Filed Feb. 22, 1990, Ser. No. 483,528
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—319 18 Claims



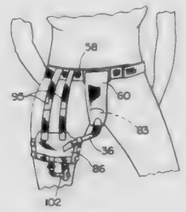
1. An aspirating device for removing fluids from a body site, comprising container means having walls defining a closed chamber for collecting aspirated fluids, suction means in communication with said container means for applying a negative pressure to said container means, tube means connected to said container means and adapted to communicate with a body site for transferring fluids from said body site to said container means in response to negative pressure in said container means, and valve means for controlling the negative pressure in said container means, one of said walls of said container means comprising diaphragmatic wall means operable to actuate said valve means.

5,053,027

FEMALE URINE COLLECTION DEVICE

Frank A. Manfredi, 2026 W. 95th St., Cleveland, Ohio 44102

Filed Apr. 27, 1990, Ser. No. 515,210
Int. Cl.[5] A61M *1/00*; A61F *5/44*; A61B *5/00*
U.S. Cl. 604—327 17 Claims



1. A waist belt for supporting a urine collection device in contact with a user's body comprising:

a waist strap for encircling such user's waist;

a crotch strap for attachment to the waist strap, said crotch strap having an opening therein adapted to receive a portion of such urine collection device, said opening in said crotch strap being elongated such that it has a minor diameter extending substantially parallel to the shoulders of such user and a major diameter extending substantially perpendicular to the shoulders of such user, said major diameter having a length substantially greater than the length of said minor diameter;

said crotch strap including a pair of crotch strap supports including loops through which said waist strap freely extends so as to allow the adjustable positioning of said crotch strap supports upon said waist strap, said crotch strap supports including a first section of hook and loop tape to engage a second section of hook and loop tape disposed along the distal ends of said crotch strap; and

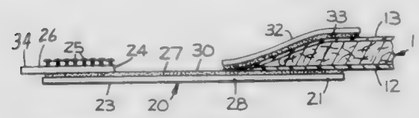
said waist strap including sections of hook and loop tape disposed at the distal ends of said waist strap to facilitate the adjustment of the diameter formed by said waist strap.

5,053,028

DISPOSABLE DIAPER WITH IMPROVED HOOK AND LOOP FASTENER SYSTEM

Anthony J. Zoia, North Oaks; Roland R. Midgley, Minneapolis; Donald L. Plaschko, Woodbury; William L. Melbye, St. Paul; Leigh E. Wood, Woodbury; Susan K. Nestegard, Woodbury, and John A. Miller, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 142,552, Jan. 11, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 419,385
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.1 10 Claims



1. A disposable diaper including

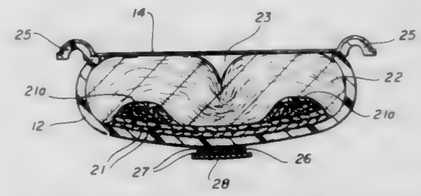
a laminate having first and second opposite major surfaces, first and second opposite ends and opposite sides extending between said opposite ends, and hook and loop fastener means for fastening together portions of said laminate to secure said diaper to an individual, said fastener means including a loop fastener portion fixed on one of said surfaces adjacent the first end of said laminate, said loop fastener portion having an outer surface opposite said laminate and comprising a multiplicity of loops along said outer surface, a pair of flexible elongate tab assemblies each having a first end portion attached to said laminate along a different one of said opposite sides adjacent the second end of said laminate, a distal end portion unattached to said laminate, and a hook fastener portion included in the distal end portion of said tab assembly, said hook fastener portion comprising a plurality of projecting hook members adapted to make releasable engagement with said loops, at least one of said tab assemblies including a layer of pressure sensitive adhesive providing, after the diaper has been soiled and removed from the individual, means for securing the soiled diaper in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal by engagement of the layer of pressure sensitive adhesive with said laminate.

5,053,029

ABSORBENT PEAT MOSS BOARD PRODUCT

Ching-Yun M. Yang, Princeton Junction, N.J., assignor to Chicopee, New Brunswick, N.J.

Filed Jan. 12, 1990, Ser. No. 464,493
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 19 Claims



1. In a disposable absorbent product having a wearer-facing side and a bottom side and comprising a liquid-impermeable, substantially flexible shell, open on the wearer-facing side, and containing therein an absorbent core having lengthwise edges; said absorbent product further provided with a liquid permeable facing overlying the wearer-facing side of said absorbent core and being adhered to said shell so as to entrap said absorbent core in said shell; the improvement which comprises:

said absorbent core comprising at least one sheet of tenderized peat moss board, said sheet having lengthwise edges and having, adjacent to each of said lengthwise edges, one or more slits to aid lateral compression folding of said at least one sheet; and

adjacent to said at least one sheet and overlying the wearer-facing side thereof, a receiving layer comprising absorbent cellulosic material;

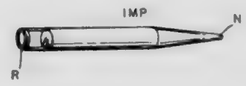
said absorbent core being pleated to form therein a center channel in a lengthwise direction.

5,053,030

INTRACANALICULAR IMPLANT FOR HORIZONTAL CANALICULAR BLOCKADE TREATMENT OF THE EYE

Robert S. Herrick, 4134 N. Rosemead Blvd., Rosemead, Calif. 90004, and William F. Sardi, 1613 Chelsea Rd., Ste. 251, San Marino, Calif. 91108

Division of Ser. No. 669,252, Nov. 7, 1984, Pat. No. 4,660,546.
This application Nov. 13, 1986, Ser. No. 929,895
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—890.1 13 Claims



1. An implant for the complete insertion into the canaliculus of the human eye comprising a substantially cylindrical, solid

element constructed of a material that is non-absorbably by the human body and having a diameter of approximately 0.3–1.2 mm capable of being completely insertable into the horizontal portion of the canaliculus of the human eye without protrusion from the canaliculus and discomfort to a human and yet preventing the drainage of tears through the canaliculus, said element having a tapered end to facilitate implantation into and removal from the canaliculus.

5,053,031

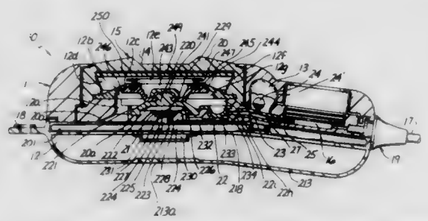
PUMP INFUSION SYSTEM

Alexander S. Borsanyi, Newport Beach, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 174,590, Mar. 29, 1988. This application Mar. 21, 1989, Ser. No. 324,589

Int. Cl.[5] A61M *9/22*

U.S. Cl. 604—891.1 **7 Claims**



1. An infusion system comprising a non-metallic housing sized to contain:

(a) a storage reservoir having inlet means leading from the exterior to the interior of the housing;

(b) a holding reservoir in fluid communication with the storage reservoir, said holding reservoir being smaller in volume than said storage reservoir;

(c) an elastomeric bladder means contained within the holding reservoir for maintaining the fluid located therein under continual constant pressure, said bladder means expanding with said fluid to exert said continual constant pressure;

(d) pump means actuated by external manual pressure for moving a dosage of fluid from the storage reservoir into the holding reservoir, wherein said bladder means expands and exerts said continual constant pressure on said fluid;

(e) an outlet port leading from the holding reservoir to the exterior of the housing; and

(f) means for restricting the rate at which fluid discharges from the holding reservoir through the outlet port.

5,053,032

METHOD OF SIGNALLING A PATIENT DURING BUCCAL AGENT DELIVERY

Brian L. Barclay, 887 Lois Ave., Sunnyvale, Calif. 94087; Jerry D. Childers, 1277 Ayala Dr., #2, Sunnyvale, Calif. 94086; Jeri Wright, 11732 Betlen Dr., Dublin, Calif. 94568; Virgil A. Place, 10 AlaKohua Dr., Kawaihae, Hi. 96743, and Patrick S. L. Wong, 2030 Cornell, Palo Alto, Calif. 94306

Continuation of Ser. No. 380,229, Jul. 14, 1989. This application Dec. 21, 1990, Ser. No. 633,590

Int. Cl.[5] A61K *9/22, 9/20*

U.S. Cl. 604—892.1 **21 Claims**

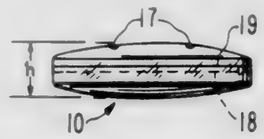
1. A method of signaling an animal when a predetermined dose of a beneficial agent has been delivered from an osmotic device for delivering a beneficial agent to an oral cavity of the animal over an extended delivery period, comprising:

(a) providing the device with a size and shape suitable for comfortably retaining the device in the oral cavity for the extended delivery period;

(b) forming a wall around a compartment containing (i) a layer of a dose of the beneficial agent and a gelling agent, the beneficial agent being insoluble to very soluble in an exterior aqueous fluid present in the oral cavity, and (ii) a layer of a hydrophilic polymer;

(c) forming a passageway in the semipermeable wall communicating with the layer of beneficial agent in the compartment and with the exterior of the device;

(d) providing the layer of the beneficial agent with a color which contrasts with the hydrophilic polymer layer;



(e) forming the semipermeable wall from a material which is (i) permeable to the passage of the aqueous fluid, (ii) substantially impermeable to the passage of the hydrophilic polymer, and (iii) sufficiently translucent to permit visual inspection of the beneficial agent present in the compartment;

(f) placing the device in the oral cavity of the animal; and

(g) periodically inspecting the device to determine when the predetermined dose of beneficial agent has been delivered.

5,053,033

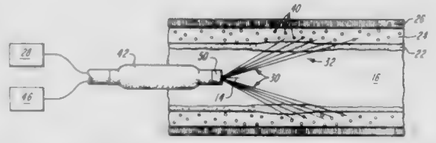
INHIBITION OF RESTENOSIS BY ULTRAVIOLET RADIATION

Richard H. Clarke, Scituate, Mass., assignor to Boston Advanced Technologies, Inc., Boston, Mass.

Filed Oct. 10, 1990, Ser. No. 595,033

Int. Cl.[5] A61N *5/00*

U.S. Cl. 606—3 **6 Claims**



1. A method of inhibiting restenosis associated with angioplasty, the method comprising:

disposing an optical waveguide means inside a blood vessel;

locating the waveguide means adjacent to an angioplasty side within the vessel; and

irradiating the angioplasty site with UV radiation having a wavelength ranging from about 240 to about 280 nanometers via said optical means to deliver non-ablative, cytotoxic radiation to smooth muscle cells forming the blood vessel in the vicinity of the angioplasty side thereby reducing susceptibility to restenosis due to blood vessel cell proliferation.

5,053,034

SPINAL JOINT

Sven Olerud, Malmen (Box 4), 740 11 Lännaholm, Sweden

Filed Oct. 26, 1990, Ser. No. 603,888

Claims priority, application Sweden, Aug. 30, 1990, 90.02569-3

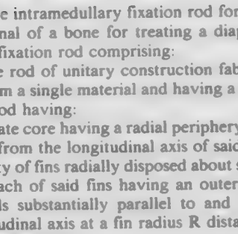
Int. Cl.[5] A61F *2/44, 2/30*

U.S. Cl. 606—61 **12 Claims**

1. A spinal joint, comprising:

a first block portion for connection to a human spine, including opposite face surface portions and a side surface portion connecting said face surface portions, said first block portion defining a first aperture extending between said opposite face surface portions, and a second aperture extending from said side surface portion to said first aperture, said first aperture having a peripheral surface, a portion of said peripheral surface being grooved by a first plurality of serrations;

a second block portion for connection to an adjacent spinal joint, including a projecting portion extending into said first aperture of said first block portion, said projecting portion having a peripheral surface grooved by a second plurality of serrations, said first and second block portions rotatable relative to one another; and



locking means for locking said first and second block portions in a selected one of a plurality of angular positions relative to one another, said locking means including a removable pin portion extendable into said second aperture of said first block portion for contacting said peripheral surface of said projecting portion of said second block portion and displacing said projected portion of said second block portion to engage at least one of the first plurality of serrations with at least one of the second plurality of serrations.

5,053,035

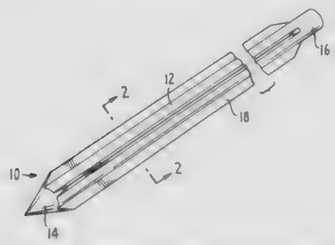
FLEXIBLE INTRAMEDULLARY FIXATION ROD

Alexander C. McLaren, 122 Whiteacres Dr., London, Ontario, Canada N6G 4E8

Filed May 24, 1990, Ser. No. 528,590

Int. Cl.[5] A61B *17/58*

U.S. Cl. 606—67 **10 Claims**



1. A flexible intramedullary fixation rod for insertion into a medullary canal of a bone for treating a diaphyseal fracture thereof, said fixation rod comprising:

an elongate rod of unitary construction fabricated substantially from a single material and having a bending rigidity B, said rod having:

an elongate core having a radial periphery at a core radius distal from the longitudinal axis of said core; and

a plurality of fins radially disposed about said core periphery, each of said fins having an outer fin edge which extends substantially parallel to and along said core longitudinal axis at a fin radius R distal from said core longitudinal axis;

wherein said core radius and fin radius R are selected to provide said rod with a bending rigidity B within an approximate range according to

$$(0.001)S \leqq B \leqq (0.0150)S$$

where:

$S=(\pi/4)\,[(R+T)^4-R^4]E$

$T \in \{3\text{ mm}, 6\text{ mm}\}$

$E=20{,}000\text{ N/mm}^2$.

5,053,036

POINT CONTACT BONE COMPRESSION PLATE

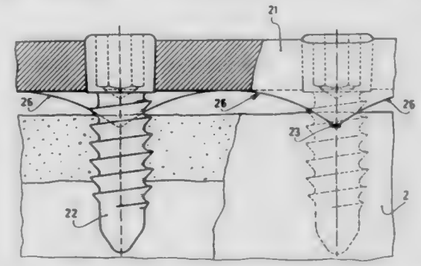
Stephan N. Perren, Dorf; Fritz Straumann, Waldenburg; Franz Sutter, Niederdorf, and Slobodan Tepic, Davos, all of Switzerland, assignors to Synthes (U.S.A.), Paoli, Pa.

Continuation of Ser. No. 247,357, Sep. 21, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 492,403

Claims priority, application PCT Int'l Appl., Nov. 3, 1987, PCT/EP87/00663

Int. Cl.[5] A61B *17/58*

U.S. Cl. 606—69 **15 Claims**



1. A compression plate for osteosynthesis, said plate having a longitudinal axis, an upper surface, a lower surface and a plurality of screw holes spaced in the direction of the longitudinal axis, said lower surface being arched concavely transversely to the longitudinal axis of the plate, in combination with open sections along the side edges of the plate between the screw holes, said open sections, with the concave lower surface of the plate, forming studs along the side edges of the lower surface for contact with a bone.

5,053,037

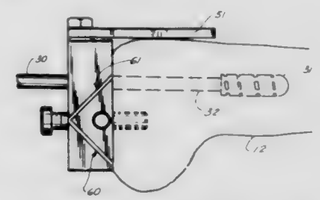
FEMORAL INSTRUMENTATION FOR LONG STEM SURGERY

Jennifer J. Lackey, Memphis, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Mar. 7, 1991, Ser. No. 666,262

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—79 **25 Claims**



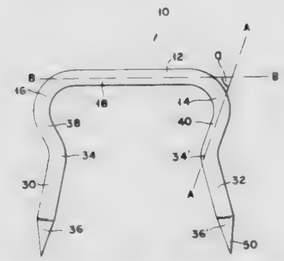
1. A femoral instrumentation apparatus for long stem surgery comprising:

(a) an elongated femoral drill/reamer for placement in the intramedullary canal to define an anatomical axis of the intramedullary canal and opening for the femoral long stem;

(b) a femoral drill guide body having a flat lower surface adapted for placement during use upon the distal femur, a

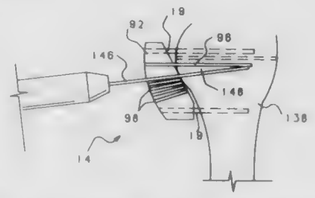
line normal to the flat lower surface defining a mechanical axis;
(c) a cylindrical drill guide opening through the guide body with a central axis that aligns with the drill/reamer anatomical axis and forms an angle of between zero and twenty degrees (0°-20°) with the mechanical axis; and
(d) a cutting block having a flat lower surface and an opening therethrough that corresponds to the drill guide opening so that the cutting block flat surface can be oriented upon the femur using the drill/reamer after removal of the drill guide and without removal of the drill reamer to ensure that the drill guide and cutting block flat surfaces are correspondingly oriented.

5,053,038
COMPRESSION BONE STAPLE
Joseph C. M. Sheehan, Oak Park, Ill., assignor to Tenstaple, Inc., Malvern, Pa.
Filed Aug. 17, 1989, Ser. No. 395,315
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—75 **4 Claims**



1. A compression bone staple, which comprises;
(a) an elongate bridge member having
(i) a first end;
(ii) a second end;
(iii) an elongate body between the first and second ends;
(b) a first leg comprising an elongate body having a first leg first end and a first leg second end, said second end including a bone penetrating point;
(c) a second leg comprising an elongate body having a second leg first end and a second leg second end, said second leg second end including a bone penetrating point;
(d) first spring means hingedly connecting the first end of the first leg to the first end of the bridge member;
(e) second spring means hingedly connecting the first end of the second leg to the second end of the bridge member;
each of said first and second spring means extending towards each other from their respective connections with the bridge member;
said first and second legs being spaced from the bridge member and extending away from the bridge member in planes transverse to the axial plane of the bridge member; said first ends of the first and second legs being spaced apart from each other a distance less than the length of the bridge member;
said bone penetrating points of the first and second legs being in the same plane.

5,053,039
UPPER TIBIAL OSTEOTOMY SYSTEM
Aaron A. Hofmann, and Albert G. Burdulis, Jr., both of Salt Lake City, Utah, assignors to Intermedics Orthopedics, Austin, Tex.
Division of Ser. No. 407,244, Sep. 14, 1989. This application Apr. 25, 1991, Ser. No. 691,394
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—87 **5 Claims**



1. A method for performing an upper tibia osteotomy comprising the steps of:
placing a first guide assembly against a tibia head;
extending a cutting blade through a first slot in said guide assembly;
cutting a first slot through said tibia to a depth less than the depth of the tibia;
placing a second guide assembly in allignment with the first slot cut in the tibia;
inserting the cutting blade through a second slot in the second guide assembly and cutting into said tibia at an angle intersecting said first slot and severing a wedge shaped segment of the tibia;
removing the segment leaving a wedge shaped void in the tibia;
drawing the sides of the void together; and
applying a fixation plate so as to hold the tibia against relative movement.

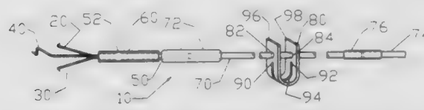
5,053,040
METHOD OF PERFORMING A MYRINGOTOMY
Manning M. Goldsmith, III, 11 Avenue of Pines, Savannah, Ga. 31406
Division of Ser. No. 434,076, Nov. 9, 1989. This application Feb. 11, 1991, Ser. No. 653,154
Int. Cl.[5] A61M *27/00*
U.S. Cl. 606—109 **7 Claims**



1. A method of performing a myringotomy and positioning a resilient otological vent tube having a distal end and a proximal end in the resulting myringotomy incision comprising,
(a) providing an otological vent tube of predetermined length with an axially extending central lumen, and providing a distal flange in the form of a truncated cone having a truncated conical surface at a distal end portion of the tube,
(b) supporting the otological vent tube on a shaft having a conical tip portion with a conical surface sized such that the truncated conical surface of the distal flange remains substantially continuous with the conical surface of the conical tip portion of the shaft during positioning of the vent tube,
(c) directing the shaft and the shaft supported otological vent tube against the tympanic membrane such that the conical tip of the shaft punctures the tympanic membrane to form the myringotomy incision, and

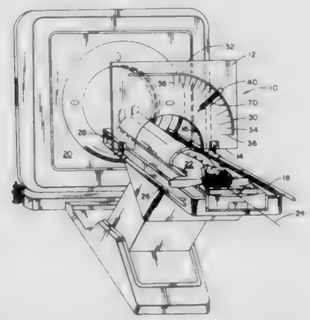
(d) penetrating the myringotomy incision substantially simultaneously with the truncated conical surface of the distal flange to distend the incision and permit smooth passage of the distal flange through the incision.

5,053,041
VESSEL HOLDER
Shapoor S. Ansari, 26229 East River, Grosse Ile, Mich. 48138, and John T. M. Wright, 10831 Oehlmann Ave., Conifer, Colo. 80433
Filed Mar. 12, 1990, Ser. No. 491,727
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **16 Claims**



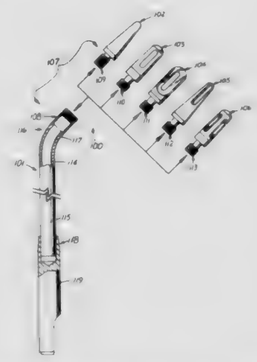
1. A generally cylindrical elongate vessel holder, having a generally linear center line, for holding a vessel graft during bypass surgery comprising three sharp wire prongs on which the cut end of the graft may be impaled, two of which prongs extend outwardly from the center line and one of which prongs extends substantially along the center line.

5,053,042
BIOPSY NEEDLE GUIDE FOR USE WITH CT SCANNER
Clifford D. Bidwell, 1395 Doliver Dr., Orlando, Fla. 32803
Filed Jan. 16, 1990, Ser. No. 465,915
Int. Cl.[5] A61B *10/00*
U.S. Cl. 606—130 **3 Claims**



1. A guide for a biopsy needle designed for use in connection with a CT scanner comprising:
a computer tomography scanning device table;
a planar member, one edge of said planar member lying on said table when said planar member is at right angles to the plane of the table and the long axis of the patient, said planar member being perforated with an arcuate slot defining reference part-circle disposed so that the center of said reference part-circle will coincide with the center reference point of images produced by a scanning device when said planar member is positioned for use and said planar member having an angular scale of radial lines adjacent said slot;
adjustable means for mounting said planar member on said table, said means allowing said planar member to be positioned in any cross-sectional plane of the patient, said adjustable mounting means comprising a pair of rails, one rail attached to each side of the table parallel to the long axis of the patient, and a pair of clamps for holding the planar member, one clamp slidably mounted on each of said rails;
an elongate sliding carriage member for holding a biopsy needle parallel thereto, said carriage member being mounted in radial alignment relative to said reference part-circle, for curvilinear travel along said arcuate slot;
adjustable needle bracket means mounted on said carriage member for holding said biopsy needle in strict radial alignment relative to said reference part-circle, and for adjusting the radial penetration of said biopsy needle relative to said reference part-circle; and
linear scale means scribed the length of said carriage member for measuring radial position of said biopsy needle relative to said reference part-circle.

5,053,043
SUTURE GUIDE AND METHOD OF PLACING SUTURES THROUGH A SEVERED DUCT
James E. Gottesman, Mercer Island, Wash., and Thomas L. Foster, Poland, Ind., assignors to Vance Products Incorporated, Spencer, Ind.
Filed Sep. 28, 1990, Ser. No. 590,178
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **20 Claims**

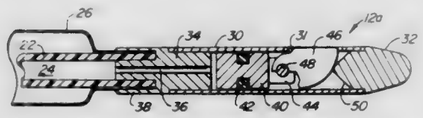


1. A urethral suture guide comprising:
an attachment mechanism having first and second interconnection parts freely longitudinally rotatable when interconnected;
an elongated member having a substantially straight portion, a distal end portion, and a curved portion positioned between said straight and distal end portions, said distal end portion including said second interconnection part; and
an interchangeable tip having a distal end and a proximal end including said first interconnection part.

5,053,044
CATHETER AND METHOD FOR MAKING INTRAVASCULAR INCISIONS
Richard L. Mueller, Mountain View, Calif.; Tommy G. Davis, Jacksonville, Tex.; Peter S. Brown, Los Altos Hills, and John B. Simpson, Woodside, both of Calif., assignors to Devices for Vascular Intervention, Inc., Redwood City, Calif.
Filed Jan. 11, 1988, Ser. No. 142,382
Int. Cl.[5] A61M *25/00;* **A61B** *17/32*
U.S. Cl. 606—159 **10 Claims**

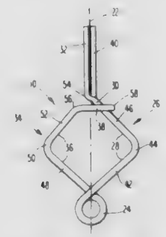
1. A catheter apparatus for forming incisions in the atheroma of a stenosed blood vessel, said catheter apparatus comprising:
an elongate catheter body having a proximate and a distal end;

a piston mounted to axially reciprocate within the distal end of the catheter body;
at least one blade pivotally mounted on the piston;



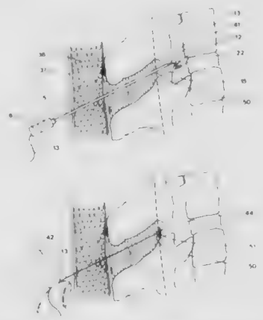
a cam member mounted to engage the blade as it is reciprocated by the piston and to shift the blade between a position projecting from the distal end; and
means for reciprocating the piston.

5,053,045
SURGICAL CLIP
Ferenc J. Schmidt, 619 Rose La., Bryn Mawr, Pa. 19010, and P. Kevin Maughan, 6012 White Heron La., Sanibel, Fla. 33957
Continuation-in-part of Ser. No. 245,354, Sep. 16, 1988, abandoned. This application Mar. 9, 1990, Ser. No. 491,455
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—157 **39 Claims**



1. A surgical clip comprising a single, continuous, resilient member formed along a clip axis without machining operations which remove material or joining operations which add material and including:
a coil spring positioned on the axis and at one end of said clip;
a first arm having
(i) a first flex section extending from said spring away from said clip axis to a point farthest from said clip axis then toward said clip axis so that said first flex section is disposed lengthwise along said clip axis, resiliently deformable from its position with respect to said clip axis, and forming a first forceps-gripping elbow at the point in said first arm farthest from said clip axis,
(ii) a first clamping jaw positioned at one free end of said resilient member, and
(iii) a guided element which makes a simple turn of less than 180 degrees between said first forceps-gripping elbow and said first clamping jaw; and
a second arm having
(i) a second flex section extending from said spring away from said clip axis to a point farthest from said clip axis then toward said clip axis so that said first flex section is disposed lengthwise along said clip axis on the opposite side of said clip axis from said first flex section, resiliently deformable from its position with respect to said clip axis, and forming a second forceps-gripping elbow at the point in said second arm farthest from said clip axis,
(ii) a second clamping jaw positioned at the second free end of said resilient member, and
(iii) a bent guide section positioned between said second forceps-gripping elbow and said second clamping jaw confining movement of said guided element at three points, with two of said points positioned in an essentially common plane on one side of said guided element and the third point positioned on the opposite side of said guided element, said movement of said guided element within said bent guide section confined to two degrees of freedom.

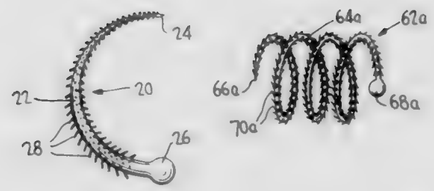
5,053,046
DURAL SEALING NEEDLE AND METHOD OF USE
Woodrow W. Janese, 2806 N. Navarro, Ste. M, Victoria, Tex. 79901, assignor to Woodrow W. Janese, Houston, Tex.
Continuation of Ser. No. 234,716, Aug. 22, 1988, abandoned. This application Sep. 6, 1990, Ser. No. 579,105
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—215 **18 Claims**



1. A dural sealing apparatus for spinal puncture and sealing comprising,
a first cannula for performing a spinal puncture,
a second cannula and a stylet, said stylet being telescopically received within said second cannula said second cannula being telescopically insertable into said first cannula,
means for sealing the dura positioned in the distal end of said second cannula including
a dry gelatin product component which softens and swells in the presence of spinal fluid for sealing the spinal puncture,
elastic, initially folded, impact wings for packing the softened gelatin product into the spinal puncture, and
an impact cone for seating in the spinal puncture behind the gelatin product and impact wings, and
seal actuating means connected with said sealing means extending out of the proximal end of said second cannula, said stylet for pushing said sealing means out of said second cannula.

5,053,047
SUTURE DEVICES PARTICULARLY USEFUL IN ENDOSCOPIC SURGERY AND METHODS OF SUTURING
InBae Yoon, 2101 Highland ridge Dr., Phoenix, Md. 21131
Filed May 16, 1989, Ser. No. 352,337
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—223 **21 Claims**

1. A needle-like suture device for joining bodily tissue comprising
an elongate body member integrally, unitarily made of bioabsorbable material having a sharp distal end for penetrating tissue and a proximal end;
means carried on said proximal end for abutting the tissue and preventing movement of said proximal end forwardly through the tissue; and
means carried on said body member at least at a position adjacent said means carried on said proximal end for moving forwardly through the tissue with said body member and for engaging the tissue to prevent movement of said body member rearwardly through the tissue when said means carried on said proximal end is in abutting relation with the tissue.



5,053,048
THROMBORESISTANT COATING
Leonard Pinchuk, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Continuation of Ser. No. 247,944, Sep. 22, 1988, abandoned. This application Nov. 8, 1990, Ser. No. 610,465
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 **9 Claims**

7. A medical device having a thromboresistant coating over a body fluid-contacting surface of the medical device for contacting blood, other body fluids and the like, wherein the thromboresistant coating comprises:
a three-dimensional copolymeric matrix secured to the body fluid-contacting surface of the medical device, said copolymeric matrix being a copolymer including an aminosilane of the formula: $H_2N\text{-}R'\text{-}Si(OR)_3$ or $H_2N\text{-}R'\text{-}SiX_3$, wherein R′ is a spacer group selected from the group consisting of alkyl groups, aromatic groups and imine-containing groups, wherein OR is an alkoxy group or an hydroxy group and wherein X is a halogen,
wherein said copolymeric matrix is a copolymer or graft copolymer of said aminosilane and of a silane other than said aminosilane, and wherein said copolymer matrix was polymerized from a composition that contains substantially only the aminosilane and the silane other than said aminosilane; and
an antithrombogenic material secured to said aminosilane polymeric matrix.

5,053,049
FLEXIBLE PROSTHESES OF PREDETERMINED SHAPES AND PROCESS FOR MAKING SAME
Todd D. Campbell, Corona, Calif., assignor to Baxter International, Deerfield, Ill.
Filed May 29, 1985, Ser. No. 738,760
The portion of the term of this patent subsequent to Jul. 7, 2006, has been disclaimed.
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 **23 Claims**

1. A method of producing a flexible, biocompatible, and non-antigenic prosthesis of a precise, intricate shape, for the replacement of a cartilaginous body part, the method comprising:
a) machining a bone segment into a desired precise, intricate shape which substantially corresponds to the shape of the cartilaginous body part which the prosthesis is to replace,
b) selectively demineralizing said bone segment to achieve the desired degree of flexibility,
c) tanning said bone segment.

5,053,050
COMPOSITIONS FOR REPAIR OF CARTILAGE AND BONE
Samuel Itay, 16/3 Sharet St., Kfar-Saba, Israel 44456
Filed Apr. 29, 1988, Ser. No. 187,730
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 **1 Claim**

1. A method of comparing a skeletal tissue implant comprising the step of:
purification, proliferation and manipulation of a cell population expressing a specific chondrogenic or osteogenic phenotype, the proliferating cells being selected from the class consisting of bone marrow stroma cells, embryonal committed chondrocytes, and any undifferentiated mesenchymal cells and being concentrated to between 80 $\times 10^6$ and 160 $\times 10^6$ cells/ml; and
embedding the cells in a biological resorbable immobilization vehicle (BRIV) comprising at least 15-14 30% serum, 100–150 mg/ml fibrinogen, and 60–90 units/ml thrombin, and wherein the BRIV further includes about 2,000 units/ml aprotonin.

5,053,051

MEANS AND METHOD FOR THE OXIDATIVE DYEING, ESPECIALLY THE REDYEING, OF LIVING HAIR: MICRO-ENCAPSULATED ACID

Jürgen Tennigkeit, Seeheim; Herbert Lorenz, Gross-Bieberau, both of Fed. Rep. of Germany, and Hirotsugu Segawa, Osaka, Japan, assignors to Goldwell GmbH, Darmstadt-Eberstadt, Fed. Rep. of Germany

PCT No. PCT/EP88/01177, § 371 Date Sep. 21, 1989, § 102(e) Date Sep. 21, 1989, PCT Pub. No. WO89/06531, PCT Pub. Date Jul. 27, 1989

PCT Filed Dec. 19, 1988, Ser. No. 411,465

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1988, 3801606

Int. Cl.[5] A61K *7/13;* B01J *13/02;* D06P *3/08*

U.S. Cl. 8—406 9 Claims

1. A composition for the oxidative dyeing of human or animal hair, prepared immediately before application to hair, comprising:

a mixture of an oxidant and at least one oxidative dye in an alkaline cream, gel or powder base having a pH between 8.0 to 10.5,

an acid encapsulated into microcapsules, said microcapsules being soluble in an alkaline environment such that within 10 to 60 minutes said microcapsules dissolve in said mixture or can be mechanically broken as by combing, and the acid is released into the mixture wherein said acid reacts with said alkaline cream, gel or powder base to change the pH of the mixture to a weakly alkaline ($pH \leqq 8$), neutral or mildly acidic range.

5,053,052

2-SUBSTITUTED PARA-AMINOPHENOLS AND THEIR USE FOR DYEING KERATINOUS FIBRES

Alex Junino, Livry-Gargan; Gerard Lang, Saint-Gratien, and Alain Genet, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

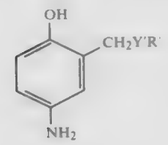
Continuation of Ser. No. 406,269, Sep. 12, 1989, abandoned. This application Dec. 28, 1990, Ser. No. 633,190

Claims priority, application France, Sep. 13, 1988, 88 11926

Int. Cl.[5] A61K *7/13*

U.S. Cl. 8—412 14 Claims

1. A dye composition for dyeing human hair, comprising, in an aqueous carrier, one or more compounds of formula (I'):



(I')

or one or more salts of a compound of formula (I') and either one or more oxidation dye precursors, one or more couplers, or one or more oxidation dye precursors and one or more couplers, wherein:

Y' is an oxygen or sulfur atom,

R' is a C_1–C_6 alkyl, C_1–C_6 hydroxyalkyl, C_2–C_6 polyhydroxyalkyl or C_1–C_6 haloalkyl radical; and

said oxidation dye precursors are selected from the group consisting of para-phenylenediamines and paraaminophenols other than those of formula (I'), orthophenylenediamines and ortho-aminophenols.

5,053,053

PROCESS FOR DYEING KERATINOUS FIBRES WITH A HYDROXYINDOLE IN COMBINATION WITH A QUINONE DERIVATIVE; AND NOVEL 1,4-BENZOQUINONES

Arnaud De Labbey, Aulnay-sous-Bois; Alain Baudry, Gonesse; Daniel Bauer, Le Raincy, and Pierre Bore, Montfermeil, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 6, 1989, Ser. No. 446,544

Claims priority, application Luxembourg, Dec. 6, 1988, 87403

Int. Cl.[5] A61K *7/13;* C07C *323/08;* D06M *3/00;* D06P *3/08*

U.S. Cl. 8—423 19 Claims

1. A process for dyeing kratinous fibers comprising

applying to said fibers at least one composition A comprising in a cosmetically acceptable medium at least one monohydroxyindole or dihydroxyindole, the application of said composition A to said fibers being preceded or followed by the application to said fibers of composition B comprising in a cosmetically acceptable medium at least one quinone derivative selected from the group consisting of orthobenzoquinone, parabenzoquinone, orthobenzoquinone monoimine, orthobenzoquinone diimine, parabenzoquinone monoimine, parabenzoquinone diimine, 1,2-naphthoquinone, 1,4-naphthoquinone, orthobenzoquinone sulphonamide, parabenzoquinone sulphonamide, α,ω-alkylene-bis-1,4-benzoquinone, 1,2-naphthoquinone monoimine, 1,2-naphthoquinone diimine, 1,4-naphthoquinone monoimine, and 1,4-naphthoquinone diimine;

the said monohydroxyindole or dihydroxyindole and said quinone derivative being chosen such that the oxidation-reduction potential difference, ΔE, between the oxidation-reduction potential E_i of said monohydroxyindole or dihydroxyindole, determined at pH 7 in a phosphate medium on a vitreous carbon electrode by voltametry, and the oxidation-reduction potential E_q of said quinone derivative, determined at pH 7 in a phosphate medium by polarography on a mercury electrode and relative to a saturated calomel electrode, is such that $\Delta E = E_i - E_q \leqq 320$ mV.

5,053,054

METHODS AND REAGENTS FOR STAINING INTRACELLULAR COMPONENTS

Stefan J. Kirchanski, Mountain View, Calif.; A. R. M. Azad, Northborough, and Peter J. Natale, Canton, both of Mass., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 244,554, Sep. 12, 1988, abandoned, which is a continuation of Ser. No. 92,017, Sep. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 581,842, Feb. 21, 1984, abandoned. This application Sep. 14, 1989, Ser. No. 407,723

Int. Cl.[5] C09D *69/10*

U.S. Cl. 8—647 7 Claims

1. Cationic staining reagent comprising polylysine molecule covalently attached to a plurality of fluorescent dye molecules.

5,053,055

WHITENER DISPERSION

Werner Fringeli, Laufen, Switzerland, and Martin Jöllenbeck, Solingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 22, 1988, Ser. No. 275,236

Claims priority, application Switzerland, Nov. 27, 1987, 4631/87

The portion of the term of this patent subsequent to Sep. 24, 2008, has been disclaimed.

Int. Cl.[5] C09B *57/00;* C09K *11/04*

U.S. Cl. 8—648 16 Claims

1. A stable dispersion comprising at least one water-insoluble or sparingly soluble fluorescent whitening agent, at least one anionic, cationic or non-ionic dispersant, and further optional assistants, which dispersion additionally comprises a copolymer of 2-vinylpyrrolidone and 3-vinylpropionic acid.

5,053,056

HYDROXYIMIDAZOLINES AND POLYAMINE FUEL ADDITIVE COMPOSITIONS

Xavier Montagne, Paris; Rémi Touet, Saint Egreve; Philippe Mullard, Saint Pierre de Chandieu, and Danièle Eber, Lyons, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Elf France, Courbevoie, both of, France

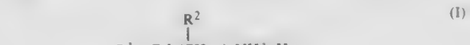
Filed Jun. 29, 1989, Ser. No. 375,317

Claims priority, application France, Jun. 29, 1988, 88 08899; Apr. 28, 1989, 89 05859

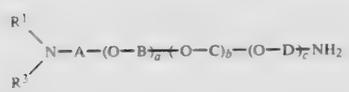
Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—330 **22 Claims**

1. A multifunction additive for engine fuels, resulting in a first stage, from the reaction of at least one succinic derivative selected from the group consisting of alkenylsuccinic acids and anhydrides, and polyalkenylsuccinic acids and anhydrides, with at least one 1-(2-hydroxyethyl-) imidazoline substituted in the 2-position by a linear or branched alkyl or alkenyl radical with 1 to 25 carbon atoms, the imidazoline to succinic derivative molar ration ranging from 0.1:1 to 0.9:1, said stage being carried out under conditions such that at least 0.15 mole of water per mole of utilized imidazoline are formed and removed; and in a second stage of the reaction of the product obtained at the end of the first stage with at least one polyamine corresponding to one of the following formulae:



(I)



(II)

wherein R^1 represents an atom of hydrogen or a hydrocarbon group with 1 to 60 carbon atoms, Z is an —O— and —NR^3— group in which R^3 represents an atom of hydrogen or a hydrocarbon group with 1 to 60 carbon atoms, R^1 and R^3 can form together with the nitrogen atoms to which they are linked a heterocycle, each R^2 independently representing an atom of hydrogen or a hydrocarbon group with 1 to 4 carbon atoms, n is an integral number from 2 to 6, m is an integral number from 1 to 10 when Z is —NR^3— and an integral number from 2 to 10 when Z is —O—, A, B, C and D each independently are a divalent hydrocarbon group with 2 to 6 carbon atoms, a is an integral number from 1 to 120, b and c are each independently zero or an integral number from 1 to 100 and the sum a+b+c is an integral number from 1 to 120, the amount of polyamine reacted being at least 0.1 mole per mole of succinic derivative employed during the first stage.

5,053,057

FIRELIGHTING FLUID CONSISTING OF ALCOHOL, WATER AND THICKENING AGENT

Wilhelm Schuster, Frankfurt am Main, Fed. Rep. of Germany, assignor to AHK Alkohol Handelskontor GmbH & Co. KG, Frankfurt, Fed. Rep. of Germany

Filed May 22, 1986, Ser. No. 188,776

Claims priority, application Fed. Rep. of Germany, May 25, 1985, 3518921

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—349 **5 Claims**

1. A firelighting liquid for igniting coal or wood, consisting of an alcohol stabilized by the addition of water and at least one alcohol-soluble thickening agent, wherein said liquid contains 10 to 30% by volume of water and 0.3 to 6% by weight of the thickening agent, said at least one thickening agent selected from the group consisting of hydroxypropylcellulose, non-ionic polyethylene oxide and mixtures thereof.

5,053,058

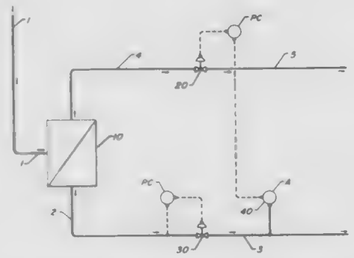
CONTROL PROCESS AND APPARATUS FOR MEMBRANE SEPARATION SYSTEMS

Michael J. Mitariten, Peekskill, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Dec. 29, 1989, Ser. No. 459,157

Int. Cl.[5] B01D *53/22*

U.S. Cl. 55—16 **16 Claims**



1. In a permeable membrane gas separation process which comprises:

(a) passing a gaseous feed stream comprising a component to a permeable membrane gas separation system at a substantially constant flow rate and elevated feed pressure, said feed pressure being equal to or higher than the pressure required to operate the permeable membrane gas separation system and said feed stream being subject to fluctuations in composition; and

(b) recovering from said permeable membrane gas separation system, an effluent stream comprising a permeate stream or a non-permeate stream; the improvement which comprises controlling the concentration of said component in said effluent stream by;

1) sensing a change in a characteristic of said effluent stream that is indicative of a change in the concentration of said component in said feed stream of from about 1 to 30%; and

2) without substantially altering the feed pressure or flow rate, performing a pressure adjustment on said permeate stream or said non-permeate stream in response to said sensed characteristic to alter the concentration of said component in said effluent stream as necessary to obtain a predetermined concentration of said component in said effluent stream.

5,053,059

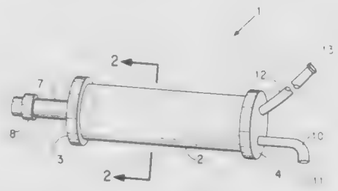
AIR-INTAKE SYSTEM FOR RESIDENTIAL FURNACES

Stuart M. Nemser, Wilmington, Del., assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Jun. 13, 1990, Ser. No. 538,064

Int. Cl.[5] B01D *53/22, 71/32*

U.S. Cl. 55—16 **23 Claims**



1. A process for the operation of a residential combustion furnace having a combustion zone and an air intake system for the combustion zone comprising feeding air to a feed side of an oxygen enrichment membrane in the air intake system in a manner that causes an oxygen enriched portion of the air to permeate the membrane to a permeate side of the membrane and then feeding the oxygen enriched air from the permeate side to the combustion zone of the residential combustion furnace, the oxygen enrichment membrane comprising a film or coating of an amorphous polymer of perfluoro-2,2-dimethyl-1,3-dioxole on a porous support, the membrane exhibiting an oxygen/nitrogen selectivity of at least 1.4:1.

7. An air intake system for a residential combustion furnace, said air intake system comprising a membrane comprising a film or coating of an amorphous polymer of perfluoro-2,2-dimethyl-1,3-dioxole on a porous support, the membrane exhibiting an oxygen/nitrogen selectivity of at least 1.4:1.

5,053,060

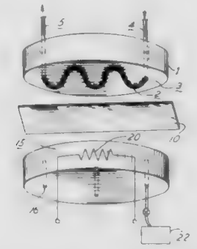
DEVICE AND METHOD FOR DEGASSING, GASSING AND DEBUBBLING LIQUIDS

Anne Kopf-Sill, Portola Valley, and Henry L. Schwartz, Los Gatos, both of Calif., assignors to Molecular Devices Corporation, Menlo Park, Calif.

Filed Jun. 29, 1990, Ser. No. 546,094

Int. Cl.[5] B01D *19/00*

U.S. Cl. 55—16 **3 Claims**



2. A method for debubbling or degassing a liquid utilizing a device having a first block with a channel on one surface and an inlet and outlet to the channel; a hydrophobic, gas-permeable membrane covering the channel in the first block; a second block with venting holes; a heating means connected to the first block or the second block; and a means for compressing the membrane between the first and second block comprising:

(a) passing the liquid through the hydroponic, gas-permeable membrane covered channel; and

(b) heating the first block or the second block whereby the liquid passing through the channel is heated and gasses and bubbles in the liquid pass through the hydrophobic, gas-permeable membrane, exiting the device via the venting holes and resulting in a deubbled and degassed liquid.

5,053,061

GAS-LIQUID CONTACTING METHOD

Atsushi Tatani; Susumu Okino, and Masakazu Onizuka, all of Kanonshin, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

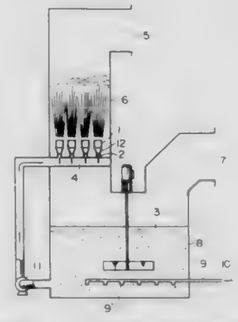
Filed Nov. 13, 1989, Ser. No. 435,692

Claims priority, application Japan, Nov. 14, 1988, 63-285869

Int. Cl.[5] B01D *53/18*

U.S. Cl. 55—90 **4 Claims**

1. In a gas-liquid contacting method for bringing a gas absorbing liquid into contact with a gas to be treated, comprising the steps of boiling the gas absorbing liquid under low pressure by bringing the pressure of the gas absorbing liquid below its vapor pressure, then squirting the gas absorbing liquid into a flow of the gas to be treated to effect contact between the gas to treated and the gas absorbing liquid, wherein using a gas-liquid contacting facility comprising a tower forming a reservoir for the gas absorbing liquid at a bottom part thereof and a space for the flow of the gas to be treated in an upper part above the reservoir, a header pipe installed in the tower above the reservoir, a pump for feeding the gas absorbing liquid from the reservoir of the gas absorbing liquid to the header pipe, a cylindrically shaped throat pipe attached to the header pipe, a cylindrically shaped discharge pipe with cross-sectional area greater than the cross-sectional area of the throat pipe, and a frusto-conically shaped diffuser pipe connecting the throat



pipe and the discharge pipe, whereby the gas absorbing liquid boils under low pressure by making the cross-sectional area of the throat pipe to be sufficiently smaller than the cross-sectional area of the discharge pipe, then the gas absorbing liquid is caused to squirt from the discharge pipe into the gas to be treated and the flow velocity of the liquid within the discharge pipe satisfies the following inequality:

$$Pw > Pt = Po - \frac{px\,(Vd)^2}{2xg} \times \left\{ \frac{1}{(m)} - 1 \right\} + px\,\Delta H + \Delta Pl$$

where

ρ is the density of the gas absorbing liquid, and (kg/m^3)

g is the acceleration of the gravity, (m/S^2)

Pw is a vapor pressure of the gas absorbing liquid,

Pt is the static pressure within the throat pipe,

Po is the static pressure at the outlet of the discharge pipe,

Vd is the flow velocity of the liquid within the discharge pipe,

m is given by

$$m = \frac{\text{(cross-sectional area of the throat pipe)}}{\text{(cross-sectional area of the discharge pipe)}}.$$

ΔH is the height difference between the outlet of the discharge pipe and the throat pipe, and

ΔPl is the pressure loss of the flow path beyond the throat pipe.

5,053,062

CERAMIC FOAM PREFILTER FOR DIESEL EXHAUST FILTER SYSTEM

Marty A. Barris, Lakeville, and Wayne M. Wagner, Apple Valley, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 22, 1989, Ser. No. 411,311

Int. Cl.[5] F01N *3/02*

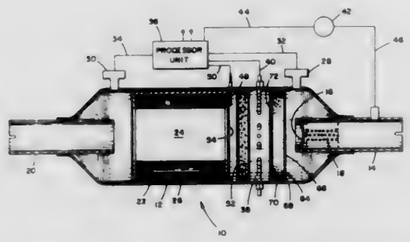
U.S. Cl. 55—282 **3 Claims**

1. Filter apparatus for reducing particulates from exhaust gases from an engine, comprising:

a housing have a chamber with an inlet, an outlet, and a fluid flow path leading from said inlet upstream to said outlet downstream;

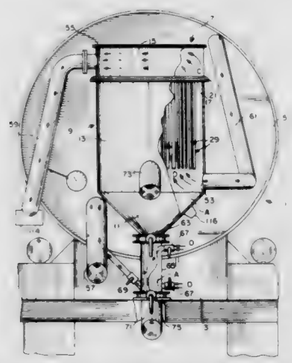
means, within said chamber along said fluid flow path, for filtering the particulates from said exhaust gases, said

filtering means including a ceramic filter element having an inlet end;
means for regenerating said ceramic filter element, said regenerating means including means for heating said ceramic filter element, said heating means having a heating element supported by said housing;
a porous ceramic disc pre-filter between said heating element and said ceramic filter element, said disc pre-filter



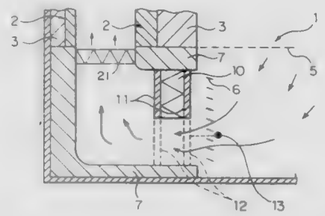
being spaced from said heating element, said disc pre-filter being supported by said housing;
a porous ceramic disc reradiator between said inlet to said chamber and said heating element;
said regenerating means including means for blowing air through said heating element and said ceramic disc pre-filter toward said ceramic filter element to initiate and maintain regenerative combustion; and
means for controlling said regenerating means.

5,053,063
DUST FILTERING AND COLLECTION SYSTEM
David E. Sisk, R.R. #1, Box 340, Bonne Terre, Mo. 63628
Continuation of Ser. No. 233,359, Aug. 18, 1988, Pat. No. 4,909,814. This application Feb. 2, 1990, Ser. No. 473,750
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—304 **14 Claims**



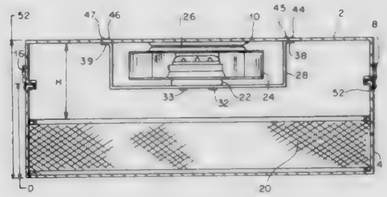
1. A dust filtering and collection system for use in a mobile vacuum loading/unloading vehicle such as a tank trailer, said system for use for moving product particles by way of a vacuum source to and from a storage chamber, comprising:
an enclosed dust filtering and collection cannister having a bottom wall, peripheral side wall and a closed top, and a transverse panel provided therein, said cannister operatively associated with the tank trailer and mounted thereto;
a product line connecting to the tank trailer for conveying bulk particulate material to its storage chamber, an air flow means connecting between the storage chamber and the dust inlet of the cannister for conveying dust ladened air into the dust filtering and collection cannister, clean air flow means connecting between a clean air outlet of the cannister and to a vacuum source for conveying clean air from the cannister after filtering of its entrained dust;
a dust filtering system suspended within said dust filtering and collection cannister, said dust filtering system including a filtration means permitting air to be drawn therethrough while removing dust particles from the incoming dust ladened air stream, said filtration means being suspended and supported by said transverse panel extending across said cannister adjacent the closed top, and said filtration means permitting air to be drawn therethrough while removing dust particles from said incoming dust ladened air stream entering into said dust inlet, and said filtering means being arranged within said cannister between the dust inlet and the clean air outlet of said cannister, said dust filtering and collection system, including its dust filtering system comprising a plurality of juxtaposed hollow polymer tubes having a closed lower end and an open upper end, said plurality of juxtaposed hollow polymer tubes being suspended and supported by said transverse panel extending across said cannister adjacent its closed top, said dust inlet provided through the side wall of said cannister below said dust filtering system and adapted to be connected to said product line conveying the incoming dust ladened air stream;
said clean air outlet connecting with the cannister and provided above the dust filtering system;
said vacuum source operatively associated with the tank trailer, and being connected to the said clean air outlet to draw the incoming dust ladened air stream past said dust filtering system and its tubes for removing the dust therefrom to allow clean air to be withdrawn through the clean air outlet while enabling the collection of dust particles as accumulated product particles around the bottom wall of said cannister; and means for recovering and returning said accumulated product particles to said storage chamber, said means including a recovery chamber and a passageway interconnecting said recovery chamber to a vacuum line carrying accumulated product particles to said storage chamber.

5,053,064
AIR CONDITIONING APPARATUS FOR A CLEAN ROOM
Masaharu Hama, and Takaaki Fukumoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 11, 1990, Ser. No. 596,544
Claims priority, application Japan, Jul. 20, 1990, 2-190482
Int. Cl.[5] B01D *53/30*
U.S. Cl. 55—270 **18 Claims**



1. An air conditioning apparatus for a clean room comprising:
an air conditioner for circulating air;
a supply duct for guiding air from the air conditioner into a clean room;
a return duct for guiding air from the clean room to the air conditioner;
a filter provided in the return duct for removing a prescribed chemical from air;
a chemical sensor for detecting the presence of the prescribed chemical in air from the clean room;
a shutter disposed in the return duct and movable between a first position allowing air from the clean room to pass through the return duct without passing through the filter and a second position allowing air from the clean room to pass through the return duct by passing through the filter; and
shutter operating means responsive to the chemical sensor for moving the shutter from the first position to the second position when the chemical sensor detects the prescribed chemical.

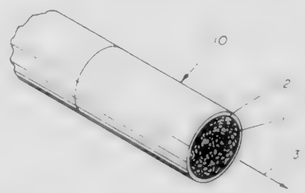
5,053,065
LOW-PROFILE BLOWER AND FILTER APPARATUS FOR SUPPLYING CLEAN AIR
Charles J. Garay, 480 Stalevicz La., Rahway, N.J. 07065; Anthony J. Romayo, 32 Park Pl., Middletown, N.J. 07701, and David McClelland, 236 McFarlane Rd., Colonia, N.J. 07067
Filed May 16, 1988, Ser. No. 194,395
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—470 **2 Claims**



1. Low profile blower and filter apparatus comprising:
filter means having first and second surfaces for receiving air to be filtered and providing a substantially uniform source of filtered air respectively, said filter means exhibiting a predetermined static pressure with respect to air to be filtered applied to said first surface thereof;
motorized impeller means including first and second motors with each motor driving a separate backward curved impeller means, each of said backward curved impeller means when driven by its motor receiving air in an axial direction at an input thereto and providing airflow radially therefrom in a direction transverse to said axial direction, each of said motors with backward curved impeller means being selected to deliver and maintain an airflow at a static pressure exceeding said predetermined static pressure exhibited by said filter means at a rate at least corresponding to federal standards through a predetermined unit of area of said first and second surfaces of said filter means;
housing means for mounting each of said first and second motors with impeller means and said filter means and forming a plenum therebetween, said plenum establishing a sufficient distance between a bottom portion of each of said motorized impeller means and said first surface of said filter means to permit uniform pressurization within said plenum and enable said motorized impeller means to establish uniform airflow across said first surface of said filter means without baffles, said housing means having an inlet means and said motorized impeller means being mounted in said housing means with said input in fluid communication with said inlet means, said housing means having an outlet with said second surface of said filter means in fluid communication with said outlet; and
said filter means being sized to a nominal 2' by 4' dimension, said predetermined unit of area is 2' by 2' and said motorized impeller means includes first and second motors each having a backward curved impeller mounted thereon

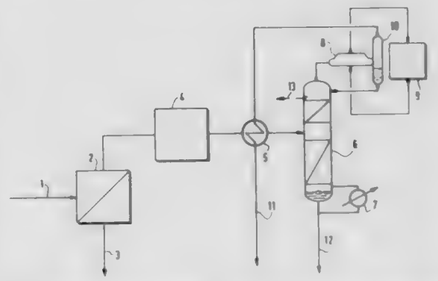
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5,053,066
NONWOVEN FILTER AND METHOD OF MANUFACTURE
Charles B. Hassenboehler, 1806 Mansfield Dr., Knoxville, Tenn. 37918
Filed May 4, 1990, Ser. No. 519,132
Int. Cl.[5] B01D *39/04, 39/16*
U.S. Cl. 55—521 **26 Claims**



17. A filter comprising
(a) a cylindrical body composed of a plurality of pleated meltblown thermoplastic web randomly bundled in a cylinder wherein the pleats extend parallel to the axis of the cylinder, being characterized by oriented longitudinal fibers and buckled crossfibers, the crossfibers extending outwardly from the thickness of the longitudinal fibers and impart bulk to the web, thereby providing permeability for the fluid; and
(b) a wrapper extending around the circumference of a longitudinal portion at least of the cylindrical body; whereby fluid flow is axially through the cylindrical body between and through the pleats.

5,053,067
PROCESS AND APPARATUS FOR THE RECOVERY OF THE HEAVIEST HYDROCARBONS FROM A GASEOUS MIXTURE
Denis Chretien, Saint Mande, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Mar. 9, 1990, Ser. No. 489,944
Claims priority, application France, Mar. 9, 1989, 89 03073
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **10 Claims**



1. Process for the recovery of the heaviest hydrocarbons from a gaseous mixture additionally containing lighter components including hydrogen, such as for the recovery of GPL (C_3^+) from a residual gas of petroleum refinery, which comprises:
removing a portion of the hydrogen from the mixture;

introducing the remaining mixture into a distillation column at an intermediate level thereof, said distillation column (6) including a head condenser (8) which provides reflux in the column, and cooling said condenser by means of a cooling device (9) to provide a cold temperature TF of the order of −40° C. or higher; and wherein

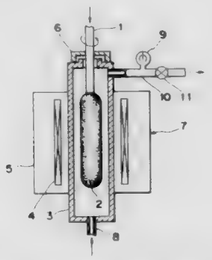
the hydrogen content of the remaining mixture introduced into the distillation column is predetermined so that the dew point at the pressure of the column, of the fraction of said remaining mixture constituted by said lighter components, is higher than the temperature TF but in the vicinity thereof.

5,053,068

HIGH PRESSURE FLUORINE METHOD FOR PRODUCING PREFORM FOR OPTICAL FIBER

Michihisa Kyoto; Akira Urano; Yoichi Ishiguro, and Minoru Watanabe, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 211,158, Jun. 22, 1988, abandoned, which is a continuation of Ser. No. 855,396, Apr. 24, 1986, abandoned. This application May 21, 1990, Ser. No. 526,522
Claims priority, application Japan, Apr. 25, 1985, 60-87580
Int. Cl.[5] C03C *25/02*
U.S. Cl. 65—3.11 **5 Claims**



1. A method for producing a silica glass body containing fluorine for use in the fabrication of an optical fiber, which comprises the steps of:

(1) forming a porous silica glass soot body from a glass forming raw material by vapor deposition,

(2) heating the soot body in an atmosphere consisting of SiF_4 under a pressure of from 2 atm. to 20 atm. for a period of time sufficient for the addition of fluorine to the soot, and

(3) heating the soot body formed in step (2) at a higher temperature than the step (2) heating temperature at which higher temperature the soot body is vitrified to thereby form the silica glass body.

5,053,069

PROCESS AND DEVICE FOR BENDING AND TEMPERING BY CONTACT

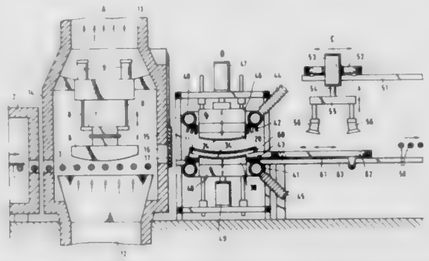
Luc Vanaschen, Eupen, Belgium; Hans-Werner Kuster, Aachen, Fed. Rep. of Germany; Benoit D'Iribarne, Essex, Great Britain; Hans-Josef Prömper, Aachen, Fed. Rep. of Germany, and René Gy, Villemomble, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Jun. 22, 1990, Ser. No. 542,086
Claims priority, application France, Jun. 22, 1989, 89 08310
Int. Cl.[5] C03B *23/033*
U.S. Cl. 65—106 **19 Claims**

1. Process of bending and tempering a glass sheet, comprising the steps of:

preshaping a heated glass sheet in a hot environment; and bending and tempering the preshaped glass sheet by contact with two compression and cooling plates whose form corresponds to the desired curve to be imparted to the glass sheet,

wherein said preshaping step is such as to impart to the glass sheet a curve such that in all directions in the plane of the



glass sheet, the curve imparted to the glass sheet by the preshaping step is such that a divergence between the desired curve and the curve imparted by the preshaping step is less than 1 m^{-1}.

5,053,070

PYRIMIDINE DERIVATIVES, PREPARATION PROCESSES THEREOF, HERBICIDE CONTAINING THE SAME, AND HERBICIDAL COMPOSITIONS CONTAINING THE SAME ALONG WITH OTHER ACTIVE INGREDIENT

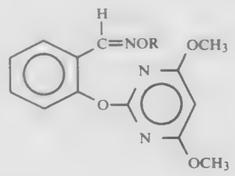
Masatoshi Gohbara; Tamotsu Asano; Shuji Ozawa; Hideo Yamazaki; Tsutomu Ishii; Makoto Nishida, all of Kanagawa; Junko Watanabe, Tokyo, and Naoki Sato, Fukuoka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 451,678, Dec. 18, 1989, Pat. No. 4,986,846. This application Aug. 9, 1990, Ser. No. 565,071
Claims priority, application Japan, Dec. 19, 1988, 63-318484
Int. Cl.[5] A01N *43/54, 43/653, 43/68;* **C07D** *239/60*
U.S. Cl. 71—92 **18 Claims**

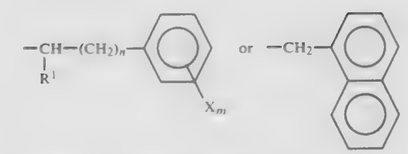
1. A herbicidal composition comprising as herbicidally active ingredients:

a) a 2-(4,6-dimethyl-2-pyrimidinyloxy)benzaldoxime represented by the following Formula [I]:

[I]



wherein R is a hydrogen atom, lower alkyl, lower alkenyl, lower alkynyl, phenyl-substituted lower alkenyl, lower haloalkenyl, cycloalkyl of 3 to 6 ring carbon atoms, lower alkenyl substituted by a phenyl group bearing one or more alkyl, alkoxyl and trifluoromethyl groups or halogen atoms, phenyl-substituted lower alkynyl, or a group represented by the formula:

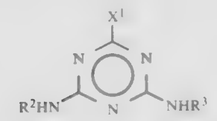


wherein R^1 is a hydrogen atom or lower alkyl, X is a halogen atom, lower alkyl or lower alkoxy, m and n each is a number from 0–2, and when m is 2, both Xs may be the same or different, and

b) at least one herbicidally active compound selected from the group consisting of:

(i) compounds represented by Formula [IV]:

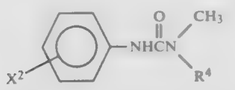
[VI]



wherein R^2 represents an isopropyl or 2-cyano-1-methylethyl group, R^3 a methyl, ethyl or isopropyl group, and X^1 a chlorine atom or a methylthio group,

(ii) compounds represented by Formula [VII]

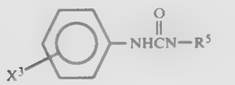
[VII]



wherein R^4 represents a methyl or methoxy group and X^2 represents 3-trifluoromethyl, 3,4-dichloro or 4-isopropyl,

(iii) compounds represented by Formula [VIII]:

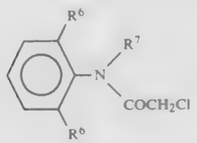
[VIII]



wherein R^5 represents an ethyl, n-propyl, α-methylbutyl or 2-methylpentenyl group and X^3 represents 3,4-dichloro or 3-chloro-4-isopropyl,

(iv) compounds represented by Formula [IX]:

[IX]



wherein R^6 represents a hydrogen atom or a methyl or ethyl group and R^7 a methoxymethyl, butoxymethyl, isopropyl or 2-methoxyl-1-methylethyl group,

(v) a 4-amino-6-tert-butyl-3-methylthio-1,2,4-trazin-5(4H)-one,

(vi) 3-isopropyl-1H-2,1,3-benzothiadiazin-(4)-3H-one-2,2-dioxide, and

(vii) 2-(1-naphthalenylaminocarbonyl)benzoic acid.

5,053,071

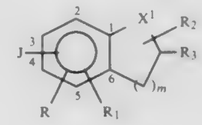
CHROMANE HERBICIDES

Joseph E. Semple, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 402,178, Aug. 30, 1989, Pat. No. 4,948,418, which is a division of Ser. No. 202,086, Jun. 2, 1988, Pat. No. 4,881,967, which is a continuation-in-part of Ser. No. 943,365, Dec. 10, 1986, abandoned. This application May 2, 1990, Ser. No. 517,892
Int. Cl.[5] A01N *43/16, 43/90, 43/42, 43/647;* **C07D** *405/04, 407/04, 417/04, 413/04*
U.S. Cl. 71—92 **30 Claims**

1. A compound of the formula

I



wherein,

R is H, Cl, F, C_1–C_2 alkyl or C_1–C_3 alkoxy;

R_1 is H, F, Cl, Br, CH_3, OCH_3, CN, CF_3, OCF_3 or OCF_2H;

X^1 is O;

R_2 is H, CH_3 or CH_2CH_3;

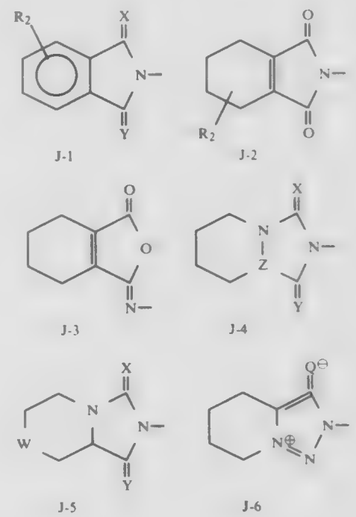
R_3 is H, C_1–C_4 haloalkyl, CR_2R_7CN, CN, $CR_2R_4R_7$, COCl, COR_4, $C(NOR_6)R_2$, CO_2R_4, $CONR_4R_2$, CHR_2OH, $CO_2(CH_2)_2Si(CH_3)_3$, $CONR_2SO_2CH_3$, $CHR_2CO_2R_4$, $CONHCH(CH_3)CONHCH(CH_3)CO_2CH_3$, CHR_2COR_4, $CHR_2OSO_2(C_1$–C_4 alkyl), $CHR_2OC(O)R_4$, $CHR_2OC(O)N(R_2)_2$, $CHR_2OC(O)N(R_2)OCH_3$, $CHR_2OC(O)N(R_2)Ph$, $HC{=}CH_2$ or $C{\equiv}CH$;

R_4 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_6 alkenyl, C_3–C_6 alkynyl, C_2–C_4 haloalkenyl, phenyl, C_1–C_4 alkylphenyl, C_3–C_6 alkoxycarbonylalkyl or $(CH_2CH_2O)_bR_2$;

b is 1 to 6;

m is 2; n is 1 or 2;

J is



5,053,072

HETEROCYCLIC N-ACYLSULFONAMIDES, AND THEIR USE AS HERBICIDES OR GROWTH REGULATORS

Oswald Ort, Kelkheim; Lothar Willms, Hillscheid; Klaus Bauer, Hanau; Hermann Bieringer, Eppstein, and Arno Schulz, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

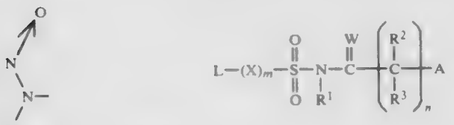
Filed Jul. 31, 1989, Ser. No. 387,531

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1988, 3826230

Int. Cl.[5] A01N *43/54;* C07D *239/52, 401/12, 403/12*

U.S. Cl. 71—92 11 Claims

1. A compound of formula I or a salt thereof



(I)

wherein

R^1 is hydrogen, $(C_1–C_4)$-alkyl, $(C_2–C_6)$-alkenyl or $(C_2–C_6)$-alkynyl,

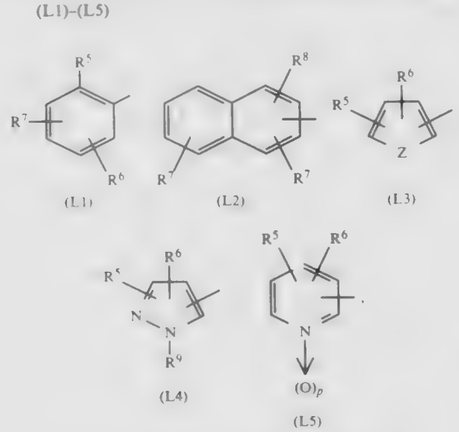
R^2 and R^3 independently of one another are hydrogen, $(C_1–C_3)$-alkyl or phenyl,

W is O, S, NR^4 or NOR^4,

R^4 is hydrogen, $(C_1–C_3)$-alkyl, $(C_1–C_3)$-haloalkyl or phenyl,

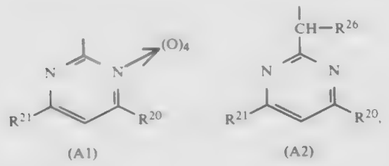
X is CHR^2, O, NR^4 or NOR^4,

L is a heterocyclic or isocyclic radical of formulae (L1)–(L5)



(L1) (L2) (L3) (L4) (L5)

A is a heterocyclic radical of formulae (A1) or (A2)



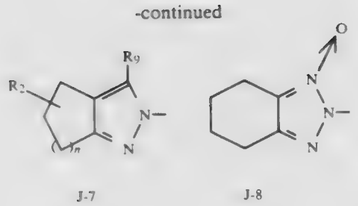
(A1) (A2)

Z is 0 or $S(O)_g$,

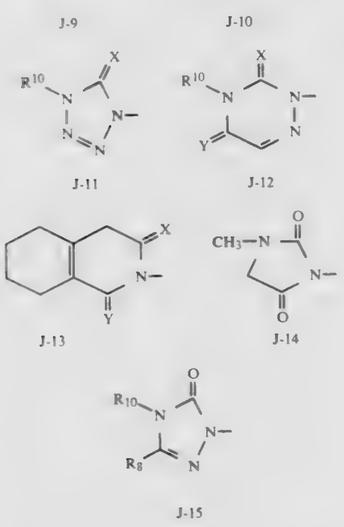
E^1 is 0 or $S(O)_b$,

R^5 is hydrogen, halogen, NO_2, CN, $(C_1–C_4)$-alkyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted by CN, OCH_3 or SCH_3, or is

-continued



J-7 J-8 J-9 J-10



J-11 J-12 J-13 J-14 J-15

wherein

X and Y each is O or S;

Z is C or N;

W is S or SO_2;

R_6 is H, $C_1–C_5$ alkyl, allyl, propargyl, benzyl, $CH_2CO_2CH_3$ or $CH_2CO_2CH_2CH_3$;

R_7 is H or CH_3;

R_8 is Cl, $C_1–C_4$ alkyl or $C_1–C_4$ haloalkyl;

R_9 is Cl, F, Br, CH_3, CN, OCH_3, SCH_3 or SO_2CH_3; and

R_{10} is $C_1–C_4$ alkyl or $C_1–C_4$ haloalkyl.

22. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

$(C_2–C_4)$-alkenyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted by OCH_3; or is $(C_2–C_4)$-alkynyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted by OCH_3 or $Si(CH_3)_3$; or is $(C_3–C_6)$-cycloalkyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or CH_3; or is $—C(O)R^{10}$, $—OCH_2CH_2OR^{10}$, —OH, $—C(R^{10})—(OR^{11})(R^{12})$; $—CO_2R^{18}$, $—C(O)NR^{14}R^{15}$, $—N_3$, $—SO_2NR^{14}R^{15}$, SO_3R^{16}, $—OSO_2R^{17}$, phenyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl, Br, CH_3 or OCH_3; or is $—E^1R^{18}$ or $—(CH_2)_5G$,

R^6 is hydrogen or halogen; CN; NO_2; $(C_1–C_4)$-alkyl which is unsubstituted or monosubstituted or polysubstituted by halogen or monosubstituted to disubstituted by CO_2R^{13}, $—SO_2NR^{14}R^{15}$, $—NR^{14}R^{15}$, $(C_1–C_2)$-alkoxy, $—E^1R^{19}$, $(C_1–C_2)$-haloalkoxy, $(C_1–C_2)$-alkylthio, $(C_1–C_2)$-haloalkylthio, CN, OH, or SH; or is $—CO_2R^{13}$, $—SO_2NR^{14}R^{15}$, $—NR^{14}R^{15}$ or $—E^1R^{19}$;

R^7 radicals independently or one another are hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-haloalkyl, $(C_2–C_4)$-alkenyl, phenyl or phenyl which is monosubstituted or polysubstituted by halogen or $—E^1R^{19}$; or is $—E^1R^{19}$ or halogen,

R^8 is hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-haloalkyl, halogen, $—CO_2R^{13}$, $—SO_2NR^{14}R^{15}$, $—OSO_2R^{17}$, $—S(O)_6R^{18}$, CN or NO_2,

R^9 is hydrogen, $(C_1–C_4)$-alkyl which is unsubstituted or monosubstituted or polysubstituted by halogen or monosubstituted or phenyl; or is $(C_2–C_4)$-alkenyl; or is phenyl or phenyl which is monosubstituted or polysubstituted by halogen, $(C_1–C_4)$-alkyl, NO_2, CN or $(C_1–C_4)$-alkoxy,

R^{10} is hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyl which is monosubstituted or polysubstituted by F, Cl, Br or OCH_3; or is $(C_3–C_6)$-cycloalkyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl, Br or CH_3; or is $(C_2–C_4)$-alkenyl or $(C_2–C_4)$-alkynyl;

R^{11} and R^{12} independently of one another are $(C_1–C_4)$-alkyl, or R^{11} and R^{12} together are $—CH_2CH_2—$, $—CH_2OCH_2—$ or $—CH_2C(CH_3)_2CH_2—$;

R^{13} is hydrogen, $(C_1–C_4)$-alkyl which is unsubstituted or monosubstituted or polysubstituted by halogen or monosubstituted or disubstituted by CN, CO_2R^{10}, $NR^{14}R^{15}$, OR^{10} or $Si(CH_3)_3$; or is $(C_3–C_4)$-alkynyl which is unsubstituted or substituted by CH_3 or $Si(CH_3)_3$; or is $(C_3–C_6)$-cycloalkyl, $(C_3–C_6)$-cycloalkyl-$(C_1–C_4)$alkyl, $(C_1–C_4)$-alkoxy or $Si(CH_3)_3$,

R^{14} is hydrogen or $(C_1–C_4)$-alkyl, or R^{14} and R^{15} together are $—(CH_2)_2(CH_2)_a(CH_2)_2—$ or $—(CH_2)_2O(CH_2)_2—$,

R^{15} is hydrogen, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkoxy, $(C_2–C_4)$-alkenyl, or R^{14} and R^{15} together are $—(CH_2)_2(CH_2)_a(CH_2)_2—$ or $—(CH_2)_2O(CH_2)_2—$,

R^{16} is $(C_1–C_4)$-alkyl or $(C_1–C_4)$-haloalkyl,

R^{17} is $(C_1–C_4)$-alkyl or $NR^{14}R^{15}$,

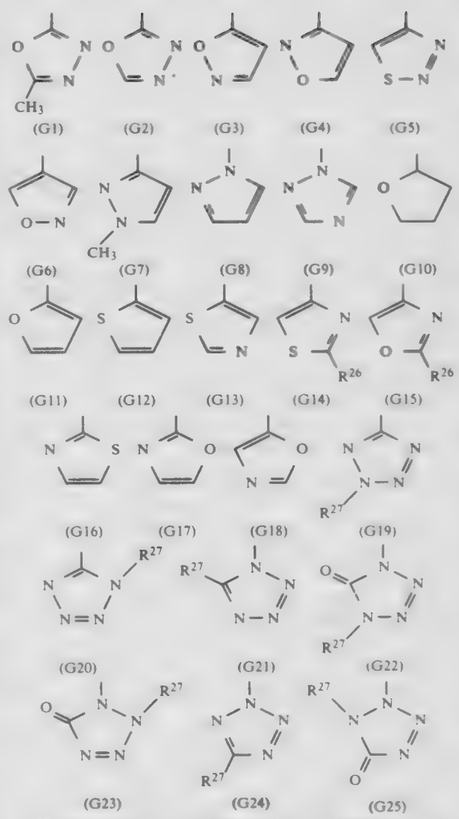
R^{18} is $(C_1–C_4)$-alkyl, $(C_1–C_4)$-haloalkyl, $(C_2–C_4)$-alkoxyalkyl, $(C_2–C_4)$-alkenyl, $(C_3–C_4)$-alkynyl, phenyl or phenyl which is monosubstituted or polysubstituted by halogen, $(C_1–C_3)$-alkyl, $(C_1–C_3)$-alkoxy or $(C_1–C_3)$-haloalkyl;

R^{19} is $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkyl which is monosubstituted or polysubstituted by F or Cl or monosubstituted by OR^{16},

R^{20} and R^{21} independently of one another are hydrogen, halogen, $(C_1–C_6)$-alkyl, $(C_1–C_6)$-alkoxy or $(C_1–C_6)$-alkylthio, it being possible for the three abovementioned radicals to be monosubstituted or polysubstituted by halogen or monosubstituted or disubstituted by $(C_1–C_4)$-alkoxy or $(C_1–C_4)$-alkylthio; or are $NR^{14}R^{15}$, $(C_3–C_6)$-cycloalkyl, $—OCHR^{14}—CO_2R^{13}$, $(C_2–C_5)$-alkenyl, $(C_2–C_4)$-alkynyl, $(C_3–C_5)$-alkenyloxy or $(C_3–C_5)$-alkenyloxy;

R^{26} is hydrogen or $(C_1–C_3)$-alkyl,

G is a heterocyclic radical (G 1)–(G 25),



(G1) (G2) (G3) (G4) (G5) (G6) (G7) (G8) (G9) (G10) (G11) (G12) (G13) (G14) (G15) (G16) (G17) (G18) (G19) (G20) (G21) (G22) (G23) (G24) (G25)

R^{27} is hydrogen, $(C_1–C_3)$-alkyl or $(C_2–C_4)$-alkenyl, a, m, n, p, r and s independently of one another are 0 or 1, and b and q independently of one another are 0, 1 or 2.

6. A herbicidal or plant growth-regulating composition, containing an effective amount of a compound of the formula I of claim 1 or a salt thereof and inert additives.

5,053,073

THIOPHENE DERIVATIVES USEFUL AS FUNGICIDAL, INSECTICIDAL OR PLANT GROWTH REGULATING AGENTS

Vivienne M. Anthony, Maidenhead; John M. Clough, Marlow; Paul deFraine, Wokingham; Christopher R.A. Godfrey, Bracknell, and Kevin Beautement, Wokingham, all of England, assignors to Imperial Chemical Industries plc, London, England

Division of Ser. No. 39,449, Apr. 17, 1987, Pat. No. 4,863,503.

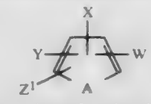
This application Jul. 11, 1989, Ser. No. 378,076

Claims priority, application United Kingdom, Apr. 17, 1986, 8609452

Int. Cl.[5] C07D *405/02, 407/02;* A01N *43/40*

U.S. Cl. 71—94 10 Claims

1. A compound of the formula (I):



(I)

or a stereoisomer thereof, wherein W is $R^1O_2C—C=CH—ZR_2$, wherein R^1 and R^2, which are the same or differ-

ent, are C_1–C_4 alkyl or C_1–C_4 fluoroalkyl containing one, two or three fluorine atoms and Z is either an oxygen or sulphur atom; A is a sulphur atom; wherein X is optionally substituted pyridinyl joined to the thienyl ring by a link selected from the group consisting of —OCH_2—, —CH_2CH_2=, —CH=CH—, —O— and —S— and Y and Z' are selected from the group consisting of hydrogen, halo, C_{1-4} alkyl, haloC_{1-4}alkyl, cyano and formyl, the optional substituents for pyridinyl being selected from the group consisting of halogen, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, halo(C_{1-4})alkoxy, C_{1-4}alkylthio, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, aryl, aryloxy, aryl(C_{1-4})alkyl, aryl(C_{1-4})alkoxy, aryloxy(C_{1-4})alkyl, acyloxy, cyano, thiocyanato, nitro, —NR'R'', —NHCOR', —NHCONR'R'', —CONR'R'', —COOR'', —OSO_2R', —SO_2R', —COR', —CR'=NR'' or —N=CR'R'' in which R' and R'' are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl (C_{1-4})alkyl, phenyl or benzyl.

7. A method of combating fungi which comprises applying to plants or seeds, or to their locus, a compound according to claim 1.

10. A method of regulating plant growth which comprises applying to a plant an effective amount of a plant growth regulating compound of formula (I) according to claim 1.

5,053,074

CERAMIC-METAL ARTICLES

Sergej T. Buljan, Acton; Helmut Lingertat, Dorchester, and Steven F. Wayne, Scituate, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 576,241, Aug. 31, 1990, abandoned. This application Dec. 20, 1990, Ser. No. 632,237

Int. Cl.[5] **C22C** *29/02*

U.S. Cl. 75—236 **18 Claims**



1. A ceramic-metal article comprising:

about 80–95% by volume of a granular hard phase consisting essentially of a ceramic material selected from the carbides, nitrides, carbonitrides, oxycarbides, oxynitrides, and carboxynitrides of a cubic solid solution selected from the group consisting of zirconium-titanium, hafnium-titanium, hafnium-zirconium, vanadium-titanium, niobium-titanium, tantalum-titanium, molybdenum-titanium, tungsten-titanium, tungsten-hafnium, tungsten-niobium, and tungsten-tantalum; and

about 5–20% by volume of a metal phase, wherein said metal phase consists essentially of a combination of nickel and aluminum having a ratio of nickel to aluminum of from about 90:10 to about 70:30 by weight and 0–5% by weight of an additive selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium molybdenum, tungsten, cobalt, boron, carbon, and combinations thereof;

wherein said article has a density of at least about 95% of theoretical.

5,053,075

ACICULAR IRON-MAGNET PIGMENTS HAVING AN ADJUSTABLE COERCIVE FIELD STRENGTH AND PROCESS FOR PRODUCING SAME

Helmut Bönnemann; Werner Brijoux, and Rainer Brinkmann, all of Müheim an der Ruhr, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Jan. 12, 1990, Ser. No. 463,764

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1989, 3901027

Int. Cl.[5] **C21C** *15/00;* **B22F** *9/00*

U.S. Cl. 75—348 **8 Claims**

1. A process for preparing an acicular iron metal pigment which comprises

a) solvatizing a metal hydride of the formula MH_x in which

M is a metal and

x is 1 or 2,

in an organic solvent with a regenerable carrier of the formula

BR_3, $BR_n(OR')_{3-n}$, BROR'H or

BR_nH_{3-n}, in which

R and R' each independently is C_1–C_6 alkyl or aryl-C_1–C_6 alkyl, and

n is 0, 1 or 2,

to form a complex of the formula

$MH_x{\cdot}[BR_3]_x$, $MH_x{\cdot}[BR_n(OR')_{3-n}]_x$, $MH_x{\cdot}[BROR'H]_x$, $MH_x{\cdot}[BR_nH_{3-n}]_x$ or $NR''_4[BR_n(OR')_{3-n}H]$

in which

R''_4 is C_1–C_6 alkyl, aryl, aryl-C_1–C_6 alkyl or tri-C_1–C_6 alkylsilyl,

b) reacting a finely divided acicular iron oxide-hydroxide or iron oxide with H_2 at from 1 to 200 bar with the metal hydrides produced in (a) in an organic solvent at a temperature from 20° C. to 150° C. and below the deoxygenation temperature in the gas phase process H_2+Fe oxides and

c) separating the resulting pigment from the liquid.

5,053,076

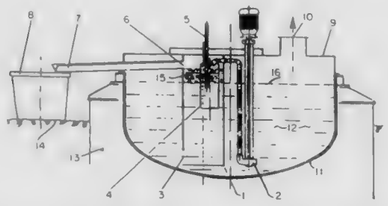
PROCESS AND DEVICE FOR REMOVAL OF ARSENIC, TIN & ARTIMONY FROM CRUDE LEAD CONTAINING SILVER

Peter Burany, Butjadingen; Juan J. von Lücken, and Bernhard Hendriks, both of Nordenham, all of Fed. Rep. of Germany, assignors to Metaleurop Weser Blei GmbH, Nordenham, Fed. Rep. of Germany

Filed Mar. 16, 1990, Ser. No. 495,278

Int. Cl.[5] **C22B** *13/06;* **F27D** *3/15*

U.S. Cl. 75—699 **14 Claims**



1. A process for the removal of As, Sn and Sb from crude lead from molten lead in a smelting crucible comprising:

introducing fluid lead into a volume which is constricted in size relative to the volume of molten lead in the crucible to produce a turbulent flow of the fluid lead in the constricted volume;

introducing oxygen into the turbulent flow of fluid lead in the constricted volume to thoroughly mix the oxygen with the fluid lead;

calming the fluid lead by passing it to a larger volume;

floating the oxides so formed to the surface of the fluid lead in the larger volume; and

removing the floating oxides from said surface.

5,053,077

FIRE RESISTANT PAINT OR COATING USING FRITS

Geoffrey Crompton, Soutport, United Kingdom, assignor to Crompton Design Manufacturing Limited, Southport, England

Filed Jun. 30, 1989, Ser. No. 374,280

Claims priority, application United Kingdom, Jun. 30, 1988, 8815593

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.[5] **C09D** *5/16, 5/18;* **C03C** *8/22, 8/14*

U.S. Cl. 106—18.16 **17 Claims**

1. A coating composition for providing or enhancing the fire resistance of a mateial comprising a polymer base selected from the group consisting of polyepoxide resins and vinyl chloride/acrylic copolymers, a first frit having a relatively low melting point; and at least one other, devitrifying frit having a relatively high melting point compared to the melting point of said first frit, said frits melting progressively under fire conditions to provide a fused protective layer for said material, a hydrated inorganic solid substance that gives off water when heated under fire conditions and a carrier.

5,053,078

INK AND INK-JET RECORDING PROCESS EMPLOYING THE SAME

Shoji Koike, Yokohama, and Yasuko Tomida, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 128,264, Dec. 1, 1987, abandoned. This application Apr. 9, 1990, Ser. No. 506,525

Claims priority, application Japan, Dec. 2, 1986, 61-287064; Dec. 2, 1986, 61-287065; Dec. 2, 1986, 61-287066; Dec. 2, 1986, 61-287067; Dec. 2, 1986, 61-287068

Int. Cl.[5] **C09D** *11/02*

U.S. Cl. 106—22 **14 Claims**

1. A liquid ink comprising water, an organic solvent, a water-soluble dye selected from the group consisting of a solubilized vat dye, a solubilized sulfur dye, a leuco salt of a vat dye, and a leuco salt of a sulfur dye, and an antioxidant, wherein said antioxidant is contained in an amount ranging between 0.1 to 10% by weight based on the total weight of the ink.

5,053,079

DISPERSED PIGMENTED HOT MELT INK

John P. N. Haxell, Bath; Edward A. Brown, Kent, and Derek E. Wilson, Somerset, all of Great Britain, assignors to Coates Electrographics Limited, Bath, United Kingdom

Filed May 23, 1990, Ser. No. 528,105

Int. Cl.[5] **C09D** *11/12;* **C08L** *91/6*

U.S. Cl. 106—31 **7 Claims**

1. A hot melt ink comprising a thermoplastic vehicle having a melting point above about 40° C., a pigment, and a dispersing agent in an amount effective to disperse said pigment selected from the group consisting of isocyanate-modified microcrystalline waxes and lignite waxes.

5,053,080

STABILIZED ASPHALT

James M. Gaidis, Ellicott City, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 20, 1990, Ser. No. 617,119

Int. Cl.[5] **C08L** *95/00;* **C09D** *201/00*

U.S. Cl. 106—278 **13 Claims**

1. A process for stabilizing blown asphalt to substantially maintain its softening point comprising introducing into the blown asphalt an effective amount to stabilize the softening point of said asphalt of a mixture composed of alkali or alkaline earth metal tall oil acid salt material and free tall oil acid material, said free tall oil acid being at least about 30 molar percent of the total acid of said mixture.

5,053,081

COMPOSITION AND METHOD FOR TREATMENT OF CONVERSION COATED METAL SURFACES WITH AN AQUEOUS SOLUTION OF 3-AMINOPROPYLTRIETHOXY SILANE AND TITANIUM CHELATE

Savarimuthu M. Jacob, Edison, N.J., assignor to Oakite Products, Inc., Berkeley Heights, N.J.

Filed Apr. 2, 1990, Ser. No. 503,321

Int. Cl.[5] **C09K** *3/00;* **B05D** *3/02*

U.S. Cl. 106—287.11 **9 Claims**

6. A composition of matter consisting essentially of an aqueous solution of:

(a) about 8 w/o 3-aminopropyltriethoxysilane; and

(b) about 1 w/o an organic titanium chelate comprising, as its reactive components, a tetraalkyltitanate, a beta-diketone and an alkanolamine, said chelate containing 8.6% titanium and having a specific gravity (25° C./25° C.) of 1.03, a viscosity (cP) at 25° C. of about 50, a thickening point of less than −25° C. and a flash point of 13° C. (closed cup), as determined by a Pensky-Martens Closed Tester.

5,053,082

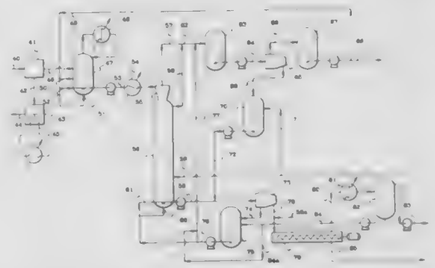
PROCESS AND APPARATUS FOR CLEANING PARTICULATE SOLIDS

David A. Flanigan, Cleveland, Okla.; Joe K. Heilhecker, and Robert E. Williams, both of Houston, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Feb. 28, 1991, Ser. No. 487,351

Int. Cl.[5] **B08B** *3/08, 13/00*

U.S. Cl. 134—25.1 **38 Claims**



1. A process for cleaning solids contaminated with a solvent-soluble contaminant which comprises:

(a) mixing contaminated solids comprising a mixture of fine and coarse particles with a solvent for the solvent-soluble contaminant to form a slurry,

(b) introducing the resulting slurry to a cyclone separation zone,

(c) withdrawing a first stream from an overflow of the cyclone separation zone, said first stream comprising a mix-

ture of fine particles and a major amount of solvent containing a relatively high concentration of dissolved contaminant,

(d) separating the fine particles having reduced contamination from the first stream and contacting said separated fine particles with additional solvent in a cleaning zone, said additional solvent containing no more than a relatively low concentration of dissolved contaminant, and withdrawing a mixture of said fine particles and at least some of said additional solvent from the cleaning zone,

(e) withdrawing a second stream from an underflow of the cyclone separation zone, said second stream comprising a mixture of coarse particles and a minor amount of solvent containing a relatively high concentration of dissolved contaminant, and introducing said second stream directly into a body of solvent contained in an upper portion of an extraction zone, said underflow being contiguous with or immersed in said body of solvent to the extent that back pressure is provided to the cyclone separation zone without flooding of said cyclone separation zone,

(f) introducing a solvent containing no more than a relatively low concentration of dissolved contaminant into the extraction zone adjacent the lower portion thereof and counter-currently contacting said second stream with said solvent in said extraction zone,

(g) withdrawing a solvent stream containing a relatively high concentration of dissolved contaminant adjacent the upper portion of the extraction zone and withdrawing coarse particles having reduced contamination together with some solvent containing no more than a relatively low concentration of dissolved contaminant from the lower portion of the extraction zone,

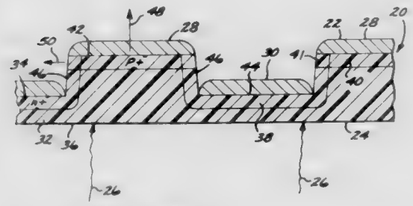
(h) combining the withdrawn coarse particles and solvent from step (g) with the withdrawn fine particles and solvent from step (d) and centrifuging the combination to remove the solvent from the coarse and fine particles and recovering the centrifuged coarse and fine particles having reduced contamination for disposal.

5,053,083

BILEVEL CONTACT SOLAR CELLS

Ronald A. Sinton, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed May 8, 1989, Ser. No. 348,371
Int. Cl.[5] H01L *31/06, 31/18*
U.S. Cl. 136—256 **14 Claims**



1. A solar cell, comprising:

a body of a semiconductor material having at least one P/N junction therein, the body including

a front face having no electrodes thereon, and

a bilevel elevation back face having at least one P-doped region at a first level interdigitated with at least one N-doped region at a second level, wherein the at least one P-doped region and the at least one N-doped region partially overlap to form at least one compensated region; and

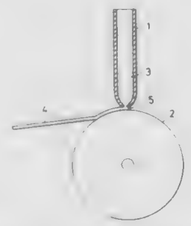
a positive electrode contacting the at least one P-doped region and a negative electrode contacting the at least one N-doped region, both electrodes contacting the solar cell on the back face.

5,053,084

HIGH STRENGTH, HEAT RESISTANT ALUMINUM ALLOYS AND METHOD OF PREPARING WROUGHT ARTICLE THEREFROM

Tsuyoshi Masumoto, 3-8-22, Kamisugi, Sendai-shi, Miyagi; Akihisa Inoue, Sendai; Katsumasa Odera, Kurobe, and Masahiro Oguchi, Okaya, all of Japan, assignors to Yoshida Kogyo K. K. and Tsuyoshi Masumoto, Tokyo, Japan, a part interest

Continuation of Ser. No. 230,427, Aug. 10, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 515,334
Claims priority, application Japan, Aug. 12, 1987, 62-199971
Int. Cl.[5] C22C *21/00*
U.S. Cl. 148—11.5 A **6 Claims**



1. A high strength, heat resistant aluminum alloy having a composition represented by the general formula:

$$Al_aM_bX_d$$

wherein:

M is at least one metal element selected from the group consisting of Cu, Ni, Co and Fe;

X is at least one metal element selected from the group consisting of Nb, Ta, Hf and Y; and

a, b and d are atomic percentages falling within the following ranges: $45 \leqq a \leqq 90$, $5 \leqq b \leqq 40$ and $0.5 \leqq d \leqq 20$,

said aluminum alloy containing at least 50% by volume of amorphous phase.

5,053,085

HIGH STRENGTH, HEAT-RESISTANT ALUMINUM-BASED ALLOYS

Tsuyoshi Masumoto, 3-8-22 Kamisugi, Sendai-shi, Miyagi; Akihisa Inoe, Sendai; Katsûmasa Odera, Kurobe, and Masahiro Oguchi, Okaya, all of Japan, assignors to Yoshida Kogyo K.K.; Piston Ring Company, Ltd. and Tsuyoshi Masumoto, Tokyo, Japan, a part interest

Filed Apr. 28, 1989, Ser. No. 345,677
Claims priority, application Japan, Apr. 28, 1988, 63-103812
Int. Cl.[5] C22C *21/00*
U.S. Cl. 148—403 **40 Claims**

1. A high strength, heat resistant aluminum-based alloy having a composition represented by the general formula:

$$Al_aFe_{d1}M_{2d2}M_{3d3}Mm_{c'}X''_{c''}$$

wherein:

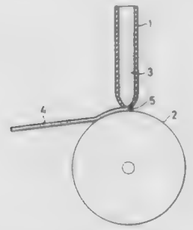
M_2 is at least one metal element selected from the group consisting of V, Cr, Co, Ni, Zr, Ti, Mo and Si;

M_3 is at least one metal element selected from the group consisting of Mn, Cu, W, Ca and Li;

X''is at least one metal element selected from the group consisting of Y, Ta, Nb and Hf; and

a, d1, d2, d3, c' and c'' are atomic percentages falling within the following ranges:

$50 \leqq a \leqq 95$, $0.5 \leqq b = d1 + d2 + d3 \leqq 35$ and $0.5 \leqq c = c' + c'' \leqq 25$,



wherein said aluminum-based alloy is composed of a microcrystalline composite structure.

5,053,086

GAS GENERANT COMPOSITIONS CONTAINING ENERGETIC HIGH NITROGEN BINDERS

Ronald A. Henry; Russell Reed, Jr., and May L. Chan, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1985, Ser. No. 733,480
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.4 **5 Claims**

1. A composition of matter for use as a gas generant comprising:

a high nitrogen content solid selected from the group consisting of: ammonium 5-nitraminotetrazole, triaminoguanidinium 5-nitraminotetrazole, aminoguanidinium 5,5'-bitetrazole and guanidinium 5,5'-bitetrazole; and

an energetic polymer selected from the group consisting of: a copolymer of 3,3-bis(azidomethyl) oxetane and 3-azidomethyl-3-methyloxetane, and a copolymer of 3,3-bis-(azidomethyl) oxetane and 3-nitratomethyl-3-methyloxetane.

5,053,087

ULTRA HIGH-ENERGY AZIDE CONTAINING GUN PROPELLANTS

Joseph E. Flanagan, Woodland Hills, and John C. Gray, Ventura, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 2, 1990, Ser. No. 487,472
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.8 **10 Claims**

1. A propellant having a mass impetus above 485,000 ft-lb_f/lb_m, and an isochoric flame temperature below 4000° K., comprising a nitrocellulose-based binder matrix and an azide compound.

5,053,088

HEAT-EXPANDABLE BEADS AS BURNING RATE ACCELERATORS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 5, 1982, Ser. No. 375,892
Int. Cl.[5] C06B *45/00*
U.S. Cl. 149—21 **5 Claims**

1. In a propellant composition selected from a composite propellant composition or a composite-modified, double-base propellant composition, said composite propellant composition consisting essentially in weight percents of the ingredients as follows:

aluminum powder	12.0
ammonium perchlorate (70 μm)	73.0
N-hexylcarborane	6.0
hydroxyl-terminated polybutadiene prepolymer	6.0
trimethylolpropane (additive)	0.06
wetting agent (reaction product of equimolar quantities of 12-hydroxystearic acid and tris[2-methylaziridinyl]phosphine oxide) (additive)	0.30
isophorone diisocyanate (additive)	0.70;

said composite-modified, double-base propellant composition consisting essentially of a casting powder portion in weight percents of the ingredients as follows:

nitrocellulose	16.6
nitroglycerin	6.1
carboranylmethyl propionate	3.7–4.7
ammonium perchlorate (1.0 μm)	32.8
aluminum powder	7.2
aluminum whiskers	2.9
resorcinol	0.7
2-nitrodiphenylamine	1.1

and a casting solvent portion in weight percents of the ingredients as follows:

nitroglycerin	25.0
triacetin	2.5
2-nitrodiphenylamine	0.3
hexane diisocyanate	0.14
triphenylbismuthine	0.02

the improvement in burning rate achieved by incorporation of from about 2.9 to about 4.0 weight percent of heat-expandable beads of discrete particles of thermoplastic styrene or its copolymers into the propellant matrix of said composite propellant composition, or substituting said heat-expandable beads for said aluminum whiskers when said selected propellant composition is said composite-modified, double-base propellant composition, said heat expandable beads containing about 5–8% by weight of an expanding or blowing agent that results in bead expansion or rupture during propellant burning when the flame front reaches said heat-expandable bead, said bead expansion or rupture bringing about disruption of the propellant's surface to permit flame penetration into the propellant to thereby achieve a major increase in burning rate of said propellant composition.

5,053,089

TIRE REPAIR PLUG

James Ristich, 294 Station Dr., Apt 1A, Wood Dale, Ill. 60191

Filed Dec. 26, 1989, Ser. No. 456,173
Int. Cl.[5] B29C *73/06*
U.S. Cl. 152—370 **5 Claims**

1. A tire repair plug for use in repairing a hole in a tubeless pneumatic tire, comprising,

a body constituting the greater portion of the length of the plug, and tapered uniformly from a pointed end to a large end, the body being covered with a coating of petroleum-soluble material,

a finger-gripper head at the large end of the body,

the plug being capable of being threaded into the hole in the tire by manual force applied to the head, and the plug being of one piece and made entirely of plastic, and being separable into parts at any position along the length of the body, thereby, in the case of partial insertion of the body into the hole to any position less than complete insertion

and leaving a part exposed exteriorly of the tire, enabling separation of the exposed part from the inner part that



remains in the hole, and that inner part thereby constituting a plug effectively sealing the hole with an end positioned closely adjacent the outer surface of the tire.

5,053,090

SELECTIVE LASER SINTERING WITH ASSISTED POWDER HANDLING

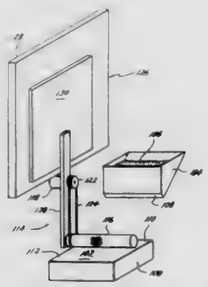
Joseph J. Beaman, Austin, and Carl R. Deckard, Round Rock, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 402,693, Sep. 5, 1989, Pat. No. 4,938,816, which is a continuation-in-part of Ser. No. 920,580, Oct. 17, 1986, Pat. No. 4,863,538. This application Jul. 2, 1990, Ser. No. 547,857

The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.

Int. Cl.[5] B27N *3/00;* B32B *31/00;* B23K *9/00;* B29C *67/00*

U.S. Cl. 156—62.2 13 Claims



1. A method of producing a part comprising the steps of:

depositing powder onto a target surface;

increasing the bulk density of said powder; and

directing an energy beam at the target surface in such a manner that a selected portion of said powder corresponding to a cross-sectional region of the part is sintered by the energy of said beam.

5,053,091

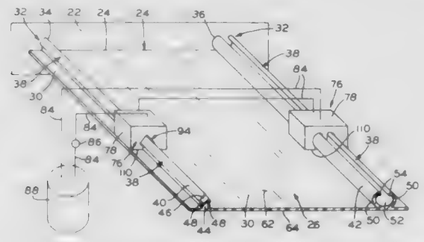
METHOD AND APPARATUS FOR MANUFACTURING PLASTIC FILM WITH INTEGRAL INTERLOCKING CLOSURE MEMBERS INCORPORATING SHAPE CONFORMING COOLING SHOES AFTER EXTRUSION

Kenneth J. Giljam, Nashville, and David C. Huseman, Brentwood, both of Tenn., assignors to Packaging Innovations, Inc., Nashville, Tenn.

Filed Jan. 18, 1990, Ser. No. 467,144

Int. Cl.[5] B29C *47/88*

U.S. Cl. 156—66 34 Claims



1. A method of manufacturing a plastic film for forming reclosable bags comprising the steps of:

simultaneously extruding through a contiguous die opening, a thin generally flat plastic film and an integral closure member extending from one side of said plastic film; and,

cooling said plastic film and integral closure member by placing a cooling shoe, which forms a heat sink and which conforms in shape to said closure member as originally extruded, in engagement with said closure member on the closure member side of said plastic film and drawing heat from said closure member.

5,053,092

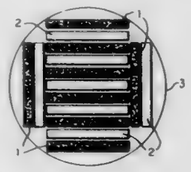
METHOD FOR PRODUCING A SINTERABLE EXTRUDED LAMINATED ARTICLE

Irwin M. Lachman, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Mar. 21, 1988, Ser. No. 170,783

Int. Cl.[5] B01J *20/28, 35/00;* B32B *18/00*

U.S. Cl. 156—89 16 Claims



1. A method producing a sinterable extruded laminated article comprising

(a) providing first multiple bodies comprising a mixture of a first sinterable material and a plasticizing/bonding agent for said material;

(b) providing second multiple bodies comprising a mixture of a second sinterable material and a plasticizing/bonding agent for said material,

where said first and second sinterable materials are different and are selected from particulate or powdered materials capable of being sintered to form high strength materials;

(c) intermingling said first and second multiple bodies in a ratio of either of said first or second sinterable materials to the other of no greater than about 1.2:1 to form an assembled body and in such a manner that, after coextrusion of said assembled body to produce said sinterable extruded laminated article, said first and second sinterable materials are present in said article in multiple, discrete, substantially discontinuous, interspersed layers which are substantially uniformly distributed throughout said article;

(d) passing said assembled body for extrusion through a die to form said sinterable extruded laminated composite article in a desired shape having said layers.

5,053,093

PROCESS FOR PRODUCING SLIDING BODIES CONTAINING HOLLOW CHAMBERS

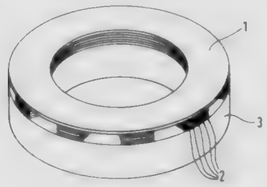
Mario Ciccarelli, and Heinrich Schelter, both of Selb, Fed. Rep. of Germany, assignors to Hoechst CeramTec Aktiengesellschaft, Selb, Fed. Rep. of Germany

Filed Mar. 28, 1989, Ser. No. 329,848

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1988, 3810820

Int. Cl.[5] F16J *15/34;* B32B *18/00*

U.S. Cl. 156—89 16 Claims



1. A process for producing a ceramic sliding body containing hollow chambers, in which process a green film body formed from a ceramic green material comprising ceramic and organic constituents and containing hollow chambers is applied to a green solid annular parent body also formed from a ceramic green material comprising ceramic and organic constituents to form a green body, said organic constituents are removed from said green body so obtained by heating or are carbonized, and said green body is then fired or siliconized, which process comprises the step of producing said green solid annular parent body from film residues which are produced in producing said green film body containing hollow members and subsequently comminuted in a mill to a material having a pulverulent consistency by pressing or dry pressing said pulverulent material.

5,053,094

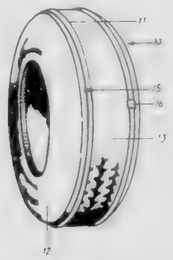
METHOD OF FORMING AT AMBIENT TEMPERATURES ANNULAR SEALS IN THE CUSHION LAYERS OF TIRES BEING RETREADED

Richard H. Detwiler, 15 Easter Ave., Windham, Me. 04062

Filed Apr. 9, 1990, Ser. No. 507,234

Int. Cl.[5] B29D *30/56*

U.S. Cl. 156—96 8 Claims



1. The method of retreading a tire having a buffed surface with precured tread material having a buffed or imprinted inner surface, said method consisting of the steps of assembling the tread material on the tire with a cushion layer of uncured rubber, curable at temperatures above 200° F. between said surfaces and in contact therewith, the width of the cushion layer equal to the width of said inner surface, stitching the assembly, encircling each margin of the tread surface with a flat and hard surfaced band of a prestressed, long chain polymer which is substantially inextensible at ambient temperatures but becomes elastic with reduced tensile strength at temperatures above 200° F., the width of the bands in the one quarter to two inch range, tensioning each band with a pulling force in the approximate range of 100 to 900 pounds and maintaining the tension at least for an interval in the approximate range of from two to forty five minutes to establish a compressive force in a PSI range such that the annular portions of the cushion layer underlying the bands are forced into complete contact with said surfaces without any significant reduction in their thickness with the annular portions becoming temporary gas impermeable seals at the interfaces of the casing and the tread material and effective to hold the tread material against movement, and then subjecting the tire to a hot fluid under pressure and for a time adequate to effect the curing of the cushion layer rubber without gas penetrating the interfaces during the curing interval, each band, as the curing temperature rises above 200° F., exerting a decreasing compressive force to about 20% of that initially applied the compressive force applied during the curing interval such that at the end of the curing interval, any extrusion of the cushion layer is in the form of an annular bead the thickness thereof not appreciably exceeding one half the thickness of the cushion layer.

5,053,095

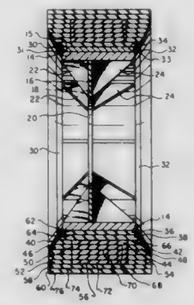
METHOD FOR CONSTRUCTING A WHEEL AND LOW PROFILE SOLID RUBBER TIRE

Giles Hill, Highway 70 East, P.O. Box 809, Idabel, Okla. 74745

Division of Ser. No. 228,982, Aug. 15, 1988, Pat. No. 4,966,212. This application Jan. 30, 1990, Ser. No. 472,590

Int. Cl.[5] B29D *30/02;* B60C *7/24*

U.S. Cl. 156—112 10 Claims



1. A method of constructing a wheel and low profile solid rubber tire assembly for use on heavy construction vehicles or equipment and said method comprising the steps of:

(a) forming a large wheel rim having a substantially flat cylindrical rim surface;

(b) forming means attached to said rim for mounting said rim to said heavy construction vehicles, equipment;

(c) affixing side support means angularly disposed outwardly from said cylindrical rim surface;

(d) fastening cross rib means laterally extending across said cylindrical rim surface;

(e) cementing a base layer composed of even thickness substantially flat hard sheet rubber to said cylindrical rim surface interposed between said cross rib means and said side support means; and

(f) bonding multiple additional layers of even thickness substantially flat sheet rubber to said base layer and to

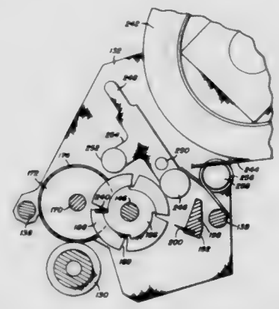
each succeeding additional layer until a desired low profile solid rubber tire thickness is obtained.

5,053,096

APPARATUS AND METHOD FOR SPLICING WEBS OF INDETERMINATE LENGTH

Michael Long; Lyndon R. Huttemann, both of Rochester; Robert W. Sanford, Wyoming, all of N.Y., and Robert D. Longboat, Ohsweken, Canada, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1990, Ser. No. 471,177
Int. Cl.[5] B31F *5/00;* **B65H** *21/00*
U.S. Cl. 156—157 **12 Claims**



1. Apparatus for cutting strips of adhesive tape from a web of such tape of indeterminate length and for applying such strips to a surface, said apparatus comprising:

a source of adhesive tape of indeterminate length, said tape having at least one sticky side;

first rotatable drum means for drawing a web of such tape from said source with said sticky side contacting said first drum means;

means for cutting such web into strips of predetermined length while such web is being drawn by said first drum means;

second rotatable drum means for overcoming the adhesion of such strips to said first drum means and thereby removing such strips sequentially from said first drum means with said sticky side contacting said second drum means;

third rotatable drum means for removing such strips from said second drum means with said sticky side facing away from said third drum means; and

means for translating said third drum means away from said second drum means and rolling said third drum means along a surface to sequentially apply such strips to such surface.

5,053,097

METHOD OF JOINING TUBES HAVING A CORRUGATED WALL OF PLASTIC MATERIAL

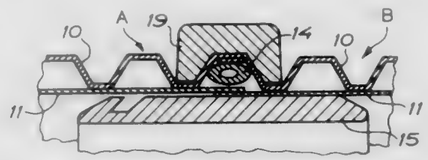
Thomas Johansson, Landvetter, and Ake Johansson, Fristad, both of Sweden, assignors to Uponor N.V., Philipsburg-Saint Maarten, Netherlands

PCT No. PCT/SE87/00291, § 371 Date Feb. 21, 1989, § 102(e) Date Feb. 21, 1989, PCT Pub. No. WO87/07935, PCT Pub. Date Dec. 30, 1987
PCT Filed Jun. 23, 1987, Ser. No. 294,064
Claims priority, application Sweden, Jun. 23, 1986, 8602760
Int. Cl.[5] B29C *65/02;* **F16L** *47/02*
U.S. Cl. 156—158 **6 Claims**

1. Method of joining first and second double-walled tubes, each having a mating end and a corrugated outer wall forming corrugation ribs and an inner wall joined to said outer wall between said ribs, both walls being made of a fusible plastic material, the outer wall of each tube having a diameter larger than the inner wall of the other tube, comprising the steps of:

a) cutting each tube through a corrugation rib at the tube mating end to open an annular groove formed between the walls at said corrugation rib;

b) positioning an annular body expandable when energy is supplied to it, in said annular groove of one of said tubes;



c) putting the tube ends together to form a closed annular space with said body enclosed therein, such that one portion of the annular body is proximate said outer wall of said first tube, and another portion of the annular body is proximate said inner wall of said second tube; and

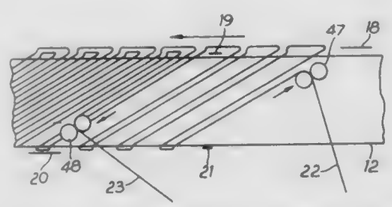
d) heating said body to expand the body and to fuse the body to the first and second tubes.

5,053,098

MANUFACTURE OF FLEXIBLE REINFORCED POLYMERIC ARTICLE

David J. B. Perkins, Liverpool, and Colin Holroyd, Lancashire, both of England, assignors to Bridgestone/Firestone Inc., Akron, Ohio

PCT No. PCT/GB88/00988, § 371 Date May 1, 1990, § 102(e) Date May 1, 1990, PCT Pub. No. WO89/04251, PCT Pub. Date May 18, 1989
PCT Filed Nov. 14, 1988, Ser. No. 474,132
Claims priority, application United Kingdom, Nov. 13, 1987, 8726664
Int. Cl.[5] B29C *67/14*
U.S. Cl. 156—177 **17 Claims**



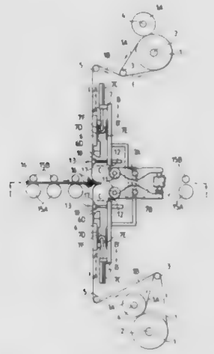
1. A method for the manufacture of a reinforced polymeric article comprising feeding a layer of polymeric material to a conveyor, applying two flexible reinforcing elements to said layer of polymeric material while supported on the conveyor by laying a first of said reinforcing elements to extend successively to and fro across the polymeric material from a first edge region to a second edge region of the conveyor, around a first support means, back to the first edge region, and around a second support means, wherein the second support means is of longer extent in the direction of movement of the polymeric material than the first support means, laying a second of said reinforcing elements to extend successively to and fro across the polymeric material from the second edge region to a first edge region, around the third support means, back to the second edge region, and around a fourth support means, wherein the fourth support means is longer extent in the direction of movement of the polymeric material than the third support means, the two elements being laid in an arrangement in which portions of the second element are caused to lie in spaces between successive portions of the first element extending to and from said first edge region whereby successive portions of each element lie interdigitated with successive portions of the other element in manner free of cross-over of the elements.

5,053,099

FILM BONDING METHOD AND APPARATUS FOR PERFORMING SAME

Mitsuhiro Seki, Tokyo; Shigeo Sumi, Saitama, and Takashi Goto, Tokyo, all of Japan, assignors to Somar Corporation, Tokyo, Japan

Filed Jan. 2, 1990, Ser. No. 459,500
Claims priority, application Japan, Nov. 4, 1989, 1-287724
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—250 **5 Claims**



1. A method of bonding a film, having a length corresponding to the length of a board, to a film bonding surface of said board by compression bonding rollers, comprising the steps of:

conveying said board in a board feeding direction to a predetermined position;

holding that portion of said board, disposed adjacent to a leading end of said board, by a board clamp and guide device at said predetermined position;

holding a leading end of a continuous film on a film feed member by suction;

moving said film feed member near or against the film bonding surface of the leading end of said board, conveyed to said predetermined position, to retain or provisionally bond the leading end of the continuous film relative thereto;

releasing the suction-holding of the film on said film feed member, and moving said film feed member away from said film bonding surface of said board;

moving said board clamp and guide device, holding said board, so as to move the leading end of the film, retained or provisionally bonded relative to said film bonding surface of the leading end of said board, toward said compression bonding rollers;

moving said compression bonding rollers vertically to press the film against said board;

releasing the holding of said board by said board clamp and guide device, and retracting said board clamp and guide device, and bonding the film to said film bonding surface of said board from its leading end toward its trailing end while the film is automatically fed by the rotation of said compression rollers;

cutting the continuous film along a trailing side into a length corresponding to the length of said board after said board is moved a predetermined distance in said board feeding direction, and while the film is bonded to said board; and

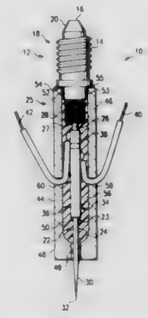
bonding the trailing end of thus cut film to the film bonding surface of the trailing end of said board.

5,053,100

METHOD OF MAKING APPARATUS FOR DISPENSING SMALL AMOUNTS OF FLUIDS

Donald J. Hayes, Plano, and John R. Pies, Dallas, both of Tex., assignors to Microfab Technologies, Inc., Plano, Tex.

Filed Sep. 1, 1989, Ser. No. 401,858
Int. Cl.[5] B01L *3/02;* **B29C** *65/48*
U.S. Cl. 156—294 **9 Claims**



1. A method of making apparatus for dispensing small amounts of fluids, said method comprising the steps of:

forming a main body portion having an upper portion and a lower portion with a bore formed coaxially therethrough;

forming a first housing having a first end, a second end and a bore formed coaxially therethrough;

attaching said second end of said first housing to said lower portion of said main body portion such that said bores are coaxial;

attaching a driver device, capable of generating a pressure wave in said first housing, to said first housing at a predetermined location;

forming a second housing having a first end and a second end;

attaching said first end of said second housing to said lower portion of said main body portion such that said driver device is enclosed by said second housing forming a cavity therebetween;

attaching a weight to said first end of said first housing; and

applying heat to said first housing at a predetermined location between said weight and said second end of said second housing, whereby said first end of said first housing is pulled away from said main body portion to form a tapered end portion on said first housing.

5,053,101

DEVICE TO PLACE FILMS IN A MOULDING MACHINE

Pierre Dromigny, Paris, France, assignor to Tölkki Oy, Nummela, Finland

Filed Dec. 14, 1989, Ser. No. 450,553
Int. Cl.[5] B65C *9/00*
U.S. Cl. 156—571 **8 Claims**

1. Device to place films with specific formats in a machine for moulding an object comprising male and female mold parts, at least one of said parts being mobile with respect to the other along a first direction, said films being intended to at least partly coat the lateral surface and one extremity face of said object, wherein said device includes:

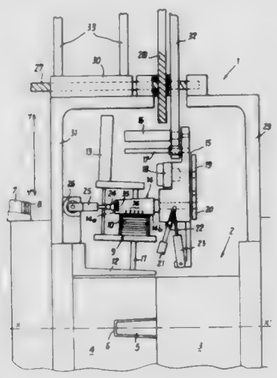
(a) a first magazine containing a plurality of first films each designed to coat one face extremity of said object,

(b) a second magazine containing a plurality of second films each designed to coat the lateral surface of said object,

(c) one member having an external shape corresponding to that of the object to be coated and able to respectively take from said first and second magazines first and second films,

(d) first and second means to apply and keep in place said first and second films against said member,

(e) means connected to said taking member and intended to cause said taking member to rotate around its longitudinal axis so that, during rotation of said member, the film applied on the lateral surface of said member winds at least partly around said member, said member having first



depression means distributed over the entire lateral surface of the latter.

(f) a support roller intended to be applied on the lateral surface of said member so as to keep a second film in place against the latter and

(g) means to convey said taking member, along with the films applied to it, into the female mold part of said machine.

5,053,102

BRAKE LINING BONDING APPARATUS

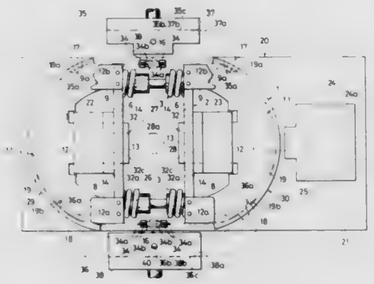
Yukio Iwata, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 254,020, Oct. 6, 1988, abandoned. This application Sep. 25, 1990, Ser. No. 587,638

Claims priority, application Japan, Nov. 5, 1987, 62-168552[U]; Nov. 5, 1987, 62-168553[U]; Nov. 5, 1987, 62-168554[U]; Nov. 5, 1987, 62-168555[U]

Int. Cl.[5] B23P *15/18;* F16D *69/04*

U.S. Cl. 156—580 21 Claims



1. A brake lining bonding apparatus in which brake linings are positioned between a loop-like pressure imposing band and a pair of brake shoes, said brake shoes being disposed at opposite locations on an inner side of said band, and said brake linings being pressure bonded to said brake shoes by expanding in opposite directions an expanding member, wherein said expanding member comprises:

left and right base plates which are central members that receive an expanding force;

shoe receiving members provided on one end of each of said base plates, said shoe receiving members being arranged to abut against one circumferential end of a rib of each of said brake shoes;

shoe positioning members provided on the other end of each one of said base plates, said shoe positioning members being shaped to fit to the other circumferential end of said rib of each of said brake shoes along a circumferential direction of said pressurizing band; and

wherein said pressure imposing band is provided with rigid strips at two circumferential locations for providing a substantially elliptical shape and for positioning itself at a predetermined position.

17. A brake lining bonding apparatus in which brake linings are positioned between a pressure imposing band and a pair of brake shoes, said brake shoes being disposed at opposite locations on an inner side of said band, and said brake linings being pressure bonded to said brake shoes by expanding in opposite directions an expanding member which is urged by springs, wherein said apparatus is provided with a lining positioning mechanism, said lining positioning mechanism comprising:

front and rear mounting seats which position said brake linings; and

lining positioning members mounted on said mounting seats, wherein said lining positioning members are arranged to abut against circumferential ends of said brake linings through elongated holes formed in said pressure imposing band.

5,053,103

STRIP MAGAZINE FOR SURFACE MOUNTED DEVICE MANIPULATORS

Adalbert Fritsch, Utzenhofen 46, D-8455 Kastl, Fed. Rep. of Germany

Filed Jun. 2, 1989, Ser. No. 361,030

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 8807239[U]

Int. Cl.[5] B32B *31/18;* B65B *69/00;* B65H *5/28*

U.S. Cl. 156—584 18 Claims



1. In a strip magazine for manually advancing a strip having components to be removed and a covering tape covering the components, said strip magazine including:

an elongated magazine body having an upper face;

two guide bars disposed adjacent said upper face of said magazine body; said two guide bars defining an upwardly open removal gap for the removal of the components from the strip; said removal gap having an entrance side and an exit side; said two guide bars and said upper face jointly defining a guide path having an entrance side and an exit side for the strip;

means disposed on said magazine body at the entrance side of the removal gap for lifting off the covering tape and for advancing the strip;

means for defining a reversal path and a return path in said magazine body and connected with the exit side of said guide path; said reversal and return paths guiding an empty strip after the components and covering tape have been removed;

the improvement comprising: and element including said two guide bars; and securing means for movably attaching said element to said magazine body for allowing said element to move between a closed position in which said two guide bars are adjacent said upper face and an insertion position in which said guide bars are spaced from said upper face for rendering said upper face freely accessible.

5,053,104

METHOD OF PLASMA ETCHING A SUBSTRATE WITH A GASEOUS ORGANOHALIDE COMPOUND

Suryadevara V. Babu, Potsdam; Joseph G. Hoffarth, Binghamton; Allan R. Knoll, Endicott; Walter E. Mlynko, Vestor, all of N.Y.; John F. Rembetski, Burlington, Vt., and Kenneth D. Mack, Sunnyvale, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 12,882, Feb. 15. 1987, abandoned, which is a continuation-in-part of Ser. No. 718,246, Apr. 1, 1985, abandoned. This application Nov. 29, 1989, Ser. No. 443,665

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 19 Claims

1. A method for increasing the etch rate of a single organic polymeric substrate material which is etchable by plasma etching using an organohalide-containing etchant gas, which comprises the steps of (1) continuously subjecting said single substrate material to high frequency energy, (2) introducing an organohalide-containing etchant gas to said high frequency energy to create an etchant plasma of said gas to etch said single substrate material through a portion of its thickness, (3) replacing said organohalide-containing etchant gas with a non-organohalide-containing etchant gas while continuing said high frequency energy, in order to create an etchant plasma of gas which produces a substantially increased etch rate of said single substrate material, and (4) repeating steps (2) and (3) until the single substrate material is completely etched.

5,053,105

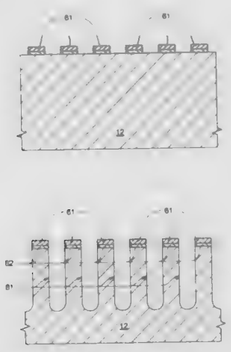
PROCESS FOR CREATING AN ETCH MASK SUITABLE FOR DEEP PLASMA ETCHES EMPLOYING SELF-ALIGNED SILICIDATION OF A METAL LAYER MASKED WITH A SILICON DIOXIDE TEMPLATE

Angus C. Fox, III, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 19, 1990, Ser. No. 555,278

Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00;* C23F *1/00*

U.S. Cl. 156—643 8 Claims



1. A process, compatible with reduced-pitch masking technology, for creating a metal etch mask on an inprocess wafer that will not erode in a halogenated-plasma etch environment, said process comprising the following sequence of steps:

a) creation of an isolation layer on top of the layer to be etched;

b) deposition of a metal layer on top of the isolation layer;

c) creation of a hard-material mask on top of the metal layer, said hard-material mask having the desired final masking pattern;

d) blanket deposition of a layer of polysilicon, thus completely covering said hard-material mask and portions of the metal layer that are not covered by said hard-material mask;

e) subjecting the in-process wafer to a temperature sufficient to cause the polysilicon to react with those portions of the metal layer that are not covered by said hard-material mask to form patches of metal silicide;

f) removal of unreacted polysilicon with a first isotropic wet etch;

g) removal of the hard-material mask with a second isotropic wet etch; and

h) removal of the metal silicide with a third isotropic wet etch; and

i) removal of exposed remnants of the isolation layer with an anisotropic etch.

5,053,106

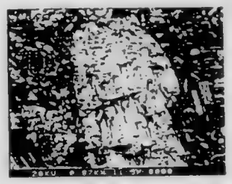
LOW FRICTION, WEAR RESISTANT PLASTIC PARTS

George T. Miller, Lewiston, and Russell J. Morgan, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 256,422, Oct. 12, 1988, Pat. No. 4,921,736. This application Feb. 7, 1990, Ser. No. 476,075

Int. Cl.[5] C23C *3/02*

U.S. Cl. 156—657 20 Claims



1. In a process where a thermoset plastic article containing a silicon based filler is subjected to friction and wear, a method of improving the friction and wear properties of said thermoset plastic article in said process consisting essentially of contacting said thermoset plastic article with an aqueous solution consisting essentially of an inorganic fluoride prior to its use in said process.

5,053,107

CERAMIC STAPLE FIBER AND GLASS FIBER PAPER

Charles R. Barber, Jr., Brookfield, N.H., assignor to Lydall, Inc., Manchester, N.H.

Continuation-in-part of Ser. No. 80,394, Jul. 29, 1987, abandoned. This application Feb. 5, 1991, Ser. No. 650,620

Int. Cl.[5] D21H *13/36*

U.S. Cl. 162—145 10 Claims

1. A high temperature resistant, insulating inorganic paper for use in high temperature environments, said paper being a finished paper consisting essentially of (1) about 0.5 to 10% by weight of staple glass fibers having a diameter of up to about 50 microns, an average length from of less than about 0.75 inch and greater than about 100 microns and (2) the remainder being man-made, staple ceramic fibers having an average length of from about 200 microns to about 1 inch and an average diameter from about 0.1 micron to about 0.01 inch, wherein the said ceramic fibers and said glass fibers are inter-

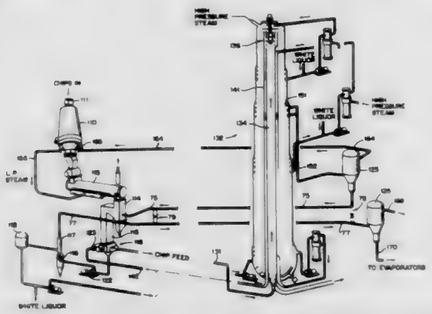
locked together into a shape-sustaining paper form having a thickness of from 10 mils to 1 inch, and wherein the finished paper is organic matter free.

5,053,108

HIGH SULFIDITY COOK FOR PAPER PULP USING BLACK LIQUOR SULFONIZATION OF STEAMED CHIPS

Johan C. F. C. Richter, Oslo, Norway, assignor to Kamyr AB, karlstad, Sweden

Filed Jun. 28, 1989, Ser. No. 372,624
Int. Cl.[5] D21C *7/12, 7/14*
U.S. Cl. 162—237 **7 Claims**



1. Apparatus for continuously digesting cellulosic fibrous material to produce paper pulp, comprising:
(a) steaming means for steaming the material;
(b) liquid slurrying means for producing a liquid slurry containing the steamed material;
(c) a high pressure feeder having a low pressure inlet, low pressure outlet, high pressure inlet, and high pressure outlet;
(d) a continuous digester comprising a slurry inlet at the bottom thereof to a central upflow conduit, said upflow conduit having a solids/liquid separator adjacent the top of said digester, and a separated-out liquid conduit extending downwardly within said digester exteriorly of the upflow conduit to the bottom of said digester for removing separated out liquid from said digester and feeding it to said high pressure inlet to said high pressure feeder;
(e) black liquor withdrawal means for withdrawing black liquor from said continuous digester;
(f) a first flash tank containing a steam outlet and a concentrated liquor outlet, and an inlet connected to said digester;
(g) connecting means for interconnecting said concentrated liquor outlet from said flash tank to said slurrying means;
(h) black liquor recovery or disposal means; and
(i) means for connecting said low pressure outlet of said high pressure feeder to said recovery or disposal means.

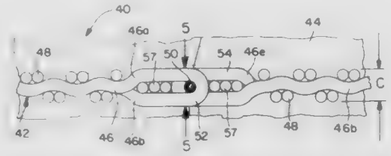
5,053,109

SINGLE LAYER SEAMED PAPERMAKERS FABRIC

Patrick H. Penven, Clinton, S.C., assignor to Asten Group, Inc., Charleston, S.C.

Filed May 4, 1988, Ser. No. 190,037
Int. Cl.[5] D03D *13/00;* **D21F** *3/00*
U.S. Cl. 162—348 **21 Claims**

1. An apparatus for manufacturing paper board having a series of forming vat means and associated suction dewatering means to facilitate the formation of an aqueous paper board web, at least one press nip for dewatering the formed web, and a papermakers fabric which traverses said vat means to form the web and transports the web through said press nip, wherein the papermakers fabric comprises:
(a) a woven, single-layer base fabric having first and second ends joined together in a seam;
(b) said base fabric including a single layer of machine direction yarns having a system of cross machine direction yarns interwoven with said machine direction yarns in a repeat pattern such that said base fabric has a substantially uniform open area and a substantially uniform weight;
(c) at each end of said base fabric, said machine direction yarns formed into loops having a vertical orientation defining series of loops across said base fabric in the cross machine direction;
(d) said base fabric seam defined by said first end series of loops intermeshed with said second end series of loops



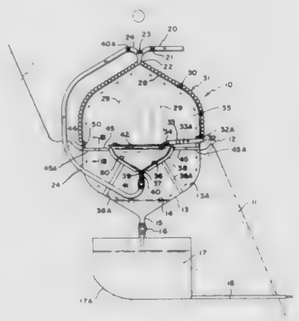
having a joining pintle inserted through the intermeshed loops;
(e) the greatest vertical dimension of said loops being proximate said joining pintle and greater than the caliper of the body of the base fabric;
(f) at least one of the series of said loops being elongated to accommodate the thickness of at least the pintle, a stuffer yarn and one machine direction yarn therein;
(g) said elongated series of loops having at least one stuffer yarn disposed therethrough outside the intermeshing loop area; and
(h) a layer of fibrous batt material needled to at least one side of said base fabric.

5,053,110

SOLAR WATER DISTILLATION SYSTEM

David Deutsch, 1013 E. Bellevue Rd., Atwater, Calif. 95301-2329

Filed Oct. 12, 1990, Ser. No. 596,317
Int. Cl.[5] B01D *3/02;* **C02F** *1/14*
U.S. Cl. 202—176 **21 Claims**



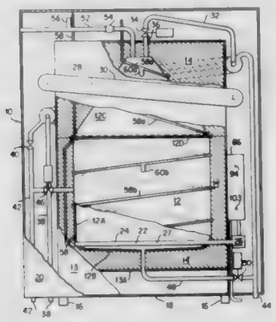
1. A solar water purification system comprising enclosure means having a domed structure and a distillate collecting means positioned below said domed structure; load tank means operably positioned in said distillate collecting means; load supply and preheater means for delivering load to said load tank means; said load tank means including a load tank having an open uppermost circular portion and an outlet at its lowermost portion; recycling means for removing cooler load from said load tank means via said outlet and redirecting said cooler load back to said preheater means whereby additional heat is added to said load prior to its return to said load tank means where it evaporates and purified vapors collect on the internal surface of said domed structure and smoothly flow by gravity down said internal surface into said distillate collecting means.

5,053,111

METHOD AND APPARATUS FOR THE BATCH DISTILLATION OF WATER

William R. Ellerbe, Jr., 32 Petit Ridge Dr., Big Canoe, Ga. 30143

Filed Dec. 1, 1989, Ser. No. 444,278
Int. Cl.[5] B01D *3/42*
U.S. Cl. 203—1 **19 Claims**



1. A batch distillation apparatus comprising:
a boiler tank;
fill means for admitting a batch of water containing contaminants to said boiler tank;
heating means for selectively applying a high heat or low heat to said batch of water containing contaminants;
condenser means connected through a condenser inlet valve to said boiler tank;
a vent pipe means having a pressure actuated valve therein, said vent pipe means being connected to one end of said boiler tank and terminating at a second end exterior of the distillation apparatus; and,
sequence control means for controlling said fill means, said heating means and said condenser inlet valve, said sequence control means including,
first means for energizing said fill means to admit a batch of water containing contaminants to said boiler tank;
second means for energizing said heating means to apply high heat to said batch of water containing contaminants, said high heat vigorously boiling said batch to vaporize contaminants therein which vaporize below the boiling point of the water, the resulting increase in vapor pressure in said boiler tank causing said pressure actuated valve to open thereby admitting vapor to said vent pipe means; and,
third means responsive to the temperature of the vapor admitted to said vent pipe means for energizing said heating means to initiate said low heat and opening said condenser inlet valve, the opening of said condenser inlet valve causing the vapor pressure in said boiler tank to drop whereby said pressure actuated valve closes.

17. A method of automatically and sequentially distilling batches of water containing contaminants therein using a boiler tank and a condenser, said batches comprising equal predetermined volumes of said water, said method comprising the execution of a distillation cycle for each of the batches, each distillation cycle comprising the following steps in sequence:
filling the boiler tank with a batch of said water having contaminants therein;
vigorously boiling said water containing contaminants while venting the boiler tank to the atmosphere to thereby remove from the water the contaminants which vaporize below the boiling point of the water;
sensing the temperature of the vapor being vented;
terminating said venting when the temperature of the vapor being vented exceeds a predetermined temperature and thereafter gently boiling said liquid while admitting the vapor produced thereby to the condenser to thereby obtain the condensate of the vaporized water;
terminating the gentle boiling of said water and draining from the boiler tank any water and contaminants remaining therein when the level of water in the boiler tank reaches a predetermined level;
flushing the boiler tank of any contaminants remaining therein by admitting flush water to the boiler tank and permitting it to drain therefrom with the remaining contaminants; and,
after said flush water has drained, automatically initiating the next distillation cycle.

5,053,112

PREPARING METAL FOR MELT-COATING

Robert D. Jones, Rhiwbina, and Charles A. Hotham, Wick, both of Wales, assignors to National Research Development Corporation, London, England

Filed Jan. 4, 1990, Ser. No. 459,539
Claims priority, application United Kingdom, Jan. 23, 1989, 8901417
Int. Cl.[5] C25D *5/00*
U.S. Cl. 204—38.5 **15 Claims**

1. A method of preparing a metal for melt-coating, said method comprising the step of actively forming on said metal lead chloride from a saturated aqueous solution of lead chloride.

5,053,113

METHOD OF CHITIN PRODUCTION FROM CHITIN CONTAINING RAW MATERIALS

Guennadi I. Krepets, Mozhaiskoe Shosse, 135/98, Moscow, Odintsovo 5, and Alexandre Y. Mikhailine, Leningradskoe Shosse, 112, k.4/kv. 1071, Moscow 125445, both of U.S.S.R.

Filed May 16, 1990, Ser. No. 523,686
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—130 **2 Claims**

1. A method of producing chitin and chitozan from chitin-containing raw materials, comprising the steps of
fragmenting a chitin-containing raw material;
alkali treating the fragmented raw material in NaOH solution and simultaneously agitating the same so as to produce chitin;
washing the thusly produced chitin;
subsequently deacetylating the washed chitin so as to produce chitosan;
washing the thusly produced chitosan,
conducting said alkali treating step by an electrochemical process with a constant electrical current source of 4–11 A, a density of 0.05–0.2 A/cm^2, a current of 15–50 V, for 10–45 minutes, with the raw material and NaOH solution at a proportion of 1:1.5–1:4 while the concentration of NaOH solution remains 0.15–2%.

5,053,114

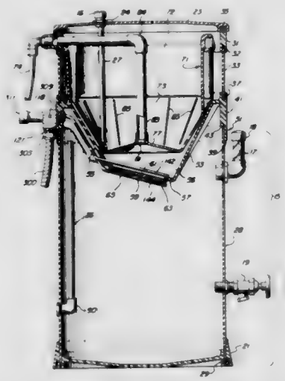
CHLORINATOR APPARATUS

Robert Maddock, 1417 E. Secretarist Dr., Tempe, Ariz. 85284

Filed Dec. 7, 1989, Ser. No. 447,390
Int. Cl.[5] C25B *9/00, 15/08;* **B01D** *61/00;* **B01J** *8/08*
U.S. Cl. 204—252 **26 Claims**

1. Chlorinator apparatus comprising:
a lower chamber means for containing a first liquid which initially comprises water;
an upper chamber means slidably interfitting vertically with said lower chamber means for containing a salt solution

and for isolating said salt solution from the liquid in said lower chamber means, said upper chamber means including membrane means permitting movement of sodium ions therethrough; and

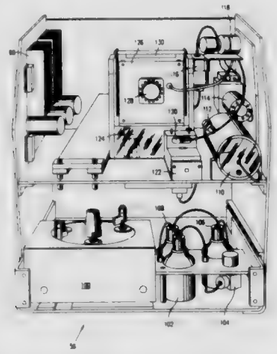


salt container means disposed in said upper chamber means.

5,053,115
AUTOMATED NEUTRAL MARKER FOR CAPILLARY ELECTROPHORESIS

Scot R. Weinberger, and Louis Hlousek, both of Reno, Nev., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Jan. 25, 1990, Ser. No. 470,202
Int. Cl.[5] G01N *27/26*; **B01D** *57/02*
U.S. Cl. 204—299 R **3 Claims**

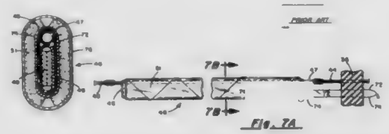


1. A method of using a neutral marker to determine electroosmotic flow velocity comprising the steps of:
adding a neutral marker to a sample solution;
subjecting the sample solution to an electrophoresis process;
detecting light propagated through the sample solution; and
identifying the neutral marker by observing a plurality of predetermined wavelengths in the detected light.

5,053,116
DEVICE FOR HUMIDIFYING GASES WITHOUT CHANGING OXYGEN CONTENT

Daniel W. Mayer, St. Paul, Minn., assignor to Modern Controls, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 437,629, Nov. 17, 1989, Pat. No. 4,973,395. This application Apr. 16, 1990, Ser. No. 509,365
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—406 **19 Claims**

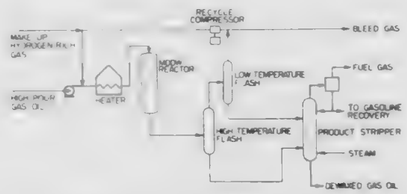


1. A device for humidifying a gas without introducing oxygen into the gas to permit subsequent analysis of the humidified gas, comprising:
a) a liquid reservoir at least partially filled with an electrolyte solution;
b) a galvanic cell having an anode and a cathode in said reservoir and immersed in said electrolyte solution;
c) a gas conduit in said reservoir and having an inlet end sealably positioned outside said reservoir, said gas conduit having a portion of its length which is permeable to water but a barrier to electrolytes, said portion being positioned closely adjacent said galvanic cell;
d) means for introducing said gas into the inlet end of said gas conduit; and
e) means for electrically interconnecting said anode and said cathode.

5,053,117
CATALYTIC DEWAXING

Chwan P. Kyan, West Deptford; Rene B. LaPierre, Medford, and Hsin-Ju J. Wang, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 25, 1990, Ser. No. 557,244
Int. Cl.[5] C10G *69/02*
U.S. Cl. 208—58 **21 Claims**



1. In a catalytic process for dewaxing a waxy lubricating oil stock boiling in the range of about 450° F.+ and selected from the group consisting of a low nitrogen content deasphalted raffinate, distilled hydrocracker bottoms, and mixtures thereof, said process comprising:
contacting said waxy stock and hydrogen gas with a catalyst comprising a crystalline aluminosilicate zeolite having a Constraint Index of 1 to about 12 and a silica to alumina ratio greater than 12, said contacting being conducted under a combination of conditions including a temperature of 400° to about 725° F., a LHSV of 0.25 to about 4.0, a total pressure of 200 to about 3500 psig, and a hydrogen circulation of 1500 to about 10,000 scf/bbl, said combination being effective to form an effluent consisting of a dewaxed lubricating oil stock and low octane olefinic by-product naphtha; and,
hydrotreating said effluent prior to recovering said dewaxed lubricating oil stock and low octane by-product naphtha, the improvement comprising:
cofeeding a small amount of high nitrogen content gas oil with said waxy stock, said amount being sufficient to increase the total nitrogen content of the combined feed to about 65 to 500 ppm by weight and thereby directly form a dewaxed effluent containing low pour point lubricating oil and high octane olefinic by-product naphtha from said combined feed;
recovering said high octane by-product olefinic naphtha prior to said hydrotreating step; and,
hydrotreating only the dewaxed lubricating oil.

5,053,118
BITUMEN EXTRACTION FROM ASPHALT PAVEMENTS

Thomas Houser, Department of Chemistry, Western Michigan University, Kalamazoo, Mich. 49008-3842

Filed Jul. 2, 1990, Ser. No. 546,887
Int. Cl.[5] C10G *21/00*
U.S. Cl. 208—45 **10 Claims**

1. A procedure for bitumen extraction from an asphalt pavement sample comprising contacting the asphalt pavement sample with an alicyclic hydrocarbon solvent and under subcritical conditions at an extranormal temperature and pressure extracting bitumen values from the asphalt pavement sample thereby.

5,053,119
ORE FLOTATION

Douglas N. Collins, Hitchin, and John D. Collins, Albrighton, both of England, assignors to Albright & Wilson Limited, Warley, England

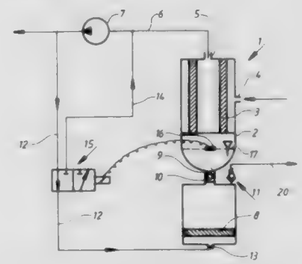
Continuation of Ser. No. 539,320, Jun. 13, 1990, abandoned, which is a continuation of Ser. No. 418,913, Oct. 5, 1989, abandoned, which is a continuation of Ser. No. 298,842, Jan. 18, 1989, abandoned, which is a continuation of Ser. No. 178,886, Mar. 31, 1988, abandoned, which is a continuation of Ser. No. 54,075, May 21, 1987, abandoned, which is a continuation of Ser. No. 879,529, Jun. 23, 1986, abandoned, which is a continuation of Ser. No. 793,716, Oct. 30, 1985, abandoned, which is a continuation of Ser. No. 703,466, Feb. 21, 1985, abandoned, which is a continuation of Ser. No. 594,572, Mar. 29, 1984, abandoned. This application Dec. 28, 1990, Ser. No. 634,803
Claims priority, application United Kingdom, Mar. 29, 1983, 8308639; Feb. 28, 1984, 8405133
Int. Cl.[5] B03D *1/014, 1/02*
U.S. Cl. 209—166 **15 Claims**

1. A process for the beneficiation of an ore comprising a lanthanide compound which is a lanthanide metal oxide, a lanthanide metal carbonate or a lanthanide metal phosphate, which comprises subjecting an aqueous slurry thereof at pH 1.5–11 to froth flotation in the presence of a sufficient amount of at least one substituted amino phosphonic acid or salt thereof to act as a collector wherein said substituted amino phosphonic acid or salt thereof is represented by a formula $R_aR_b^1R_c^2N(R^3PO_3H_2)_{3-a-b-c}$ wherein each of R, R^1 and R_2, which are the same or different, represents an organic group, R^3 represents a divalent organic group and each of a, b and c represents 0 or 1, but when a is 1, b and c are 0 and when a is 0, b and c are 1, and separating a beneficiated fraction comprising said lanthanide compound from a second fraction depleted in said lanthanide compound.

5,053,120
ARRANGEMENT FOR DRAINING WATER COLLECTING IN THE CONTAINER OF A WATER SEPARATOR OF AN INTERNAL-COMBUSTION ENGINE

Helmut Möllmann, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Feb. 8, 1991, Ser. No. 652,597
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1990, 4006216
Int. Cl.[5] B01D *35/00*
U.S. Cl. 210—86 **17 Claims**



1. An arrangement for draining water collecting in a container of a water separator for a fuel system of an internal-combustion engine, the water precipitating in the bottom part of the container because of the force of gravity, comprising.
a vertically displaceable piston arranged in the container, a first space of the container being adjacent one side of the piston and serving to collect a volume of water to be drained, said first space including an openable outlet for draining water therefrom, a second space of the container being adjacent an opposite side of the piston,
and pressure medium supplying means for selectively applying pressure medium to said second space to cause the piston to move and force water out of said first space.

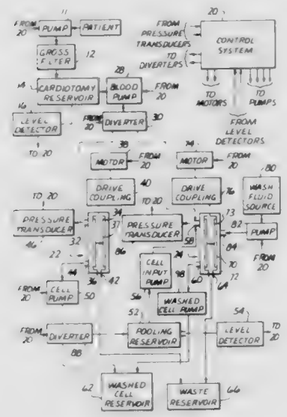
5,053,121
BLOOD CELL WASHING SYSTEMS AND METHODS

Donald W. Schoendorfer, Santa Ana, and Lee H. Williamson, El Toro, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 159,446, Feb. 18, 1988, Pat. No. 4,919,817, which is a continuation of Ser. No. 895,505, Aug. 11, 1986, abandoned. This application Nov. 29, 1989, Ser. No. 443,550
Int. Cl.[5] B01D *61/18*
U.S. Cl. 210—90 **20 Claims**

1. A system in which shed blood containing contaminants is processed to a red cell concentrate having reduced contaminants, said system comprising:
first filter means for receiving the shed blood and passing it longitudinally through a gap which extends adjacent a first filtration membrane of less than 1.2 micron pore size, the first filter means providing a filtered waste product and an intermediate cell concentrate product;
fluid flow control means receiving the intermediate cell concentrate product and providing a buffer supply thereof; and
second filter means coupled to the fluid flow control means for receiving the intermediate cell concentrate product and passing it longitudinally through a gap which extends adjacent a second filtration membrane of less than 1.2

micron pore size, wherein the second filter means is for mixing a saline solution with the intermediate cell concentrate within the gap to provide a washed red cell concentrate.

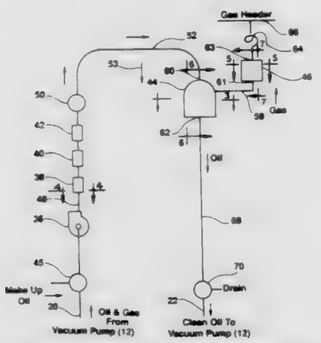


5,053,122

OIL FILTRATION AND EXHAUST APPARATUS

Syd K. Carr, Nampa, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 13, 1990, Ser. No. 581,050
Int. Cl.[5] B01D *19/00*
U.S. Cl. 210—95 **8 Claims**



1. Apparatus for removing and filtering gases from an enclosure comprising:

a. a vacuum pump with a blower adapted to remove process gases from the enclosure and having recirculating therein oil for mixing with the process gases so that the gases may be filtered and exhausted;

b. a closed conduit loop connected to said vacuum pump;

c. an oil pump having an inlet and an outlet connected within said conduit loop for pumping recirculating oil from the vacuum pump through said closed conduit loop, wherein the inlet of said oil pump is connected to said vacuum pump;

d. a particulate filter in the conduit loop downstream of said oil pump outlet for removing particulates from the recirculating oil;

e. a gas scrubbing filter in the conduit loop downstream of the particulate filter for separating gases entrained within the recirculating oil and including a filter medium, said gas scrubbing filter having an inlet for directing recirculating oil through the filter medium in a downward direction and an exhaust outlet attached to an upper portion of the gas scrubbing filter for removing gases from the recirculating oil in a upward direction and having a gas scrubbing filter outlet connected to sad vacuum pump for returning recirculating oil to said vacuum pump;

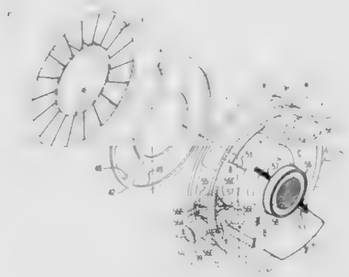
f a demister connected to said exhaust outlet of the gas scrubbing filter for removing vapor and particulates from the exhausted gases.

5,053,123

ADJUSTABLE VALVE FOR VARYING FILTRATE COMPOSITION FROM FILTERS

Ian J. H. Clarke-Pounder, Nashua, N.H.; Richard L. Smythe, Senneville, and Marcel A. Carboneau, Sherbrooke, both of Canada, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 17, 1989, Ser. No. 338,571
Int. Cl.[5] B01D *29/92*
U.S. Cl. 210—138 **11 Claims**



1. An adjustable valve for a filter comprising means comprising:

a hollow body having one end substantially open for receiving filtrate of discretely varying composition from segmented collection channels radially disposed about the center of a filter shaft;

a collection separation means having a plurality of port means for receiving said filtrate disposed at said one end of said body, each of said port means conducting said filtrate of varying composition to a plurality of discrete formed chambers located within said body;

a means for withdrawing filtrate from each of said chambers connected to each of said chambers; and

a means for varying volumes and locations of said chambers facilitated for adjustment during filter operation, for effecting timing of withdrawal of said filtrate from said segmented collection channels and distribution of filtrate to said means for withdrawing filtrate.

5,053,124
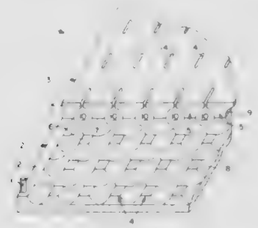
ROTTING-SLAB SYSTEM

Schumacher Liane, Feldstrasse 19, 5653 Leichlingen, Fed. Rep. of Germany

PCT No. PCT/DE88/00138, § 371 Date Oct. 5, 1989, § 102(e) Date Oct. 5, 1989, PCT Pub. No. WO88/07984, PCT Pub. Date Oct. 20, 1988
PCT Filed Mar. 11, 1988, Ser. No. 427,852
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1987, 3711816; Dec. 18, 1987, 3743027
Int. Cl.[5] B01D *24/24*
U.S. Cl. 210—151 **17 Claims**

1. Rotting-slab system for treating loose material, and gases, by means of a bed of filter material situated on the rotting-slab

system, having passage openings provided on the upper side, having an inner cavity, connected to the latter, to create a receiving space and having at least one outlet from the cavity, characterized in that at least one liquid-impermeable lower slab (2) for resting on the consolidated ground is provided, in that an upper supporting slab (3) in which the passage openings (14; 29) are formed rests on said lower slab, in that spacers (4, 5) are formed integrally at least on one of the two slabs (2, 3), in that the spacers (4, 5) are arranged at equal distances from one another in perpendicularly intersecting rows, in that, starting from bearing surfaces (6, 7) of the spacers (4,5), side faces (8, 9) of the spacers (4, 5) merge in an arc shape into the respective slab plane and in that an arrangement for locking the supporting slab (3) relative to the lower slab (2) is provided.

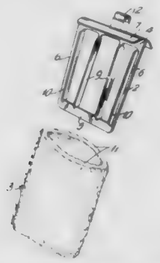


5,053,125

FILTER CARTRIDGE

Allan H. Willinger, Wright Way, and Klaus Woltmann, Demarest, both of N.J., assignors to Willinger Bros., Inc., Oakland, N.J.

Division of Ser. No. 233,246, Aug. 17, 1988, Pat. No. 4,880,549, which is a division of Ser. No. 871,106, Jun. 5, 1986, Pat. No. 4,783,258. This application Dec. 7, 1989, Ser. No. 447,386
The portion of the term of this patent subsequent to Nov. 8, 2005, has been disclaimed.
Int. Cl.[5] E04H *3/20;* **A01K** *63/04*
U.S. Cl. 210—169 **7 Claims**



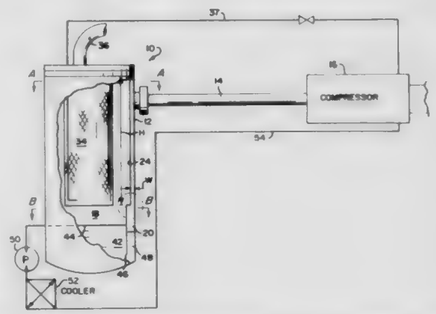
3. In a combination of a disposable filter envelope of nonwoven foraminous material and an aquarium tank in which the filter envelope is insertable for filtering the aquarium tank, said envelope having soft pliable edges and opposing walls interconnected at three sides thereof to define a mouth and an inner space so that water is circulated through the foraminous material from one side of the envelope, through said inner space and out of a second side thereof in a transversal direction of the envelope whereby water is filtered through said foraminous material of both opposing walls, and further comprising removably-insertable means for stiffening said envelope provided on said envelope to make said pliable edges rigid.

5,053,126

APPARATUS FOR GAS LIQUID SEPARATION

Eugene Krasnoff, Princeton, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 28, 1990, Ser. No. 486,575
Int. Cl.[5] B01D *19/00*
U.S. Cl. 210—188 **7 Claims**



1. An apparatus for separating liquid from a mixture of the liquid and a compressed gas comprising:

a separator tank having an interior surface;

a filter element having a given length axially disposed within the separator tank;

a baffle plate in the tank defining a first higher pressure space and a second relatively lower pressure fluid space therein, the baffle plate having first, second and third edges, the first edge sealably connected to the interior surface, the second edge having a first portion sealably connected to the interior surface and a second portion being spaced from the interior surface defining a slot therewith, the slot being adjacent to, and having a height substantially equal to, said length for expelling fluid substantially radially adjacent to said filter element substantially evenly over its length, wherein a gas passage is formed between the first and second spaces, and the third edge being separated from the slot by the first portion of the second edge, the third edge also being spaced from the interior surface;

mixture inlet means for introducing the mixture into the first space; and

a liquid collection reservoir at one end of the tank adjacent the third edge, whereby the slot is of such a cross sectional area that the higher pressure mixture in the first space flows through the slot and is dispersed along the entire length thereof, and liquid separated from the mixture is conducted to the collection reservoir via the space between the third edge and the interior surface such that the third edge is submerged relative to an upper surface level of the liquid reservoir.

5,053,127

CONTINUOUS CENTRIFUGATION SYSTEM AND METHOD FOR DIRECTLY DERIVING INTERMEDIATE DENSITY MATERIAL FROM A SUSPENSION

Donald W. Schoendorfer, Santa Ana, and Claude E. Berthe, San Dimas, both of Calif., assignors to William F. McLaughlin, Newport Beach, Calif.

Continuation of Ser. No. 256,234, Oct. 11, 1988, Pat. No. 4,944,883, which is a continuation of Ser. No. 2,804, Jan. 13, 1987, abandoned. This application May 21, 1990, Ser. No. 526,568
The portion of the term of this patent subsequent to Oct. 11, 2005, has been disclaimed.
Int. Cl.[5] B04B *1/02;* **B01D** *45/12*
U.S. Cl. 210—196 **16 Claims**

1. Apparatus for separating platelet rich flow from whole blood comprising:

a cylindrical housing including means for flowing blood constituents therealong:

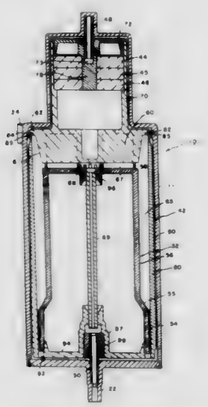
a hollow walled rotor mounted within the housing and rotatable therein about a longitudinal central axis concentric with the housing, the rotor including inner and outer walls defining a diverging centrifugation gap in the direction along the axis, the rotor including input ports adjacent one end thereof for feeding whole blood constituents into the gap;

means for rotating the rotor at centrifugation speeds to establish internal layering of the blood constituents within a given portion of the rotor spaced from the input ports;

means within the rotor and coupled into the centrifugation gap between the rotor walls to provide an output flow of platelet rich matter along the central axis of the rotor, said means including platelet concentrate ports in the inner wall of the rotor adjacent an end opposite from the input ports;

means for extracting platelet poor blood output, said means including apertures in the outer wall of the rotor disposed adjacent but spaced apart from the platelet ports in the direction of the diverging centrifugation gap; and

means for inducing localized circulation patterns that originate adjacent to said platelet poor blood extracting means



into the blood constituents in the centrifugation gap in the region of the platelet concentrate ports.

13. An apparatus for separating from a carrier having constituent parts a preselected constituent comprising:

means for establishing a rotating centrifugal zone,

means for introducing the carrier into said rotating centrifugation zone in a direction generally parallel to the axis of rotation to create within said centrifugation zone at least partial radial stratification of the constituent parts of the carrier,

means defining a first outlet for withdrawing a first portion of the radially stratified carrier from said centrifugation zone,

means defining a second outlet axially spaced from said first outlet in the direction of movement of the carrier and being operative for withdrawing a second portion of the radially stratified carrier from said centrifugation zone,

means at said second outlet for propagating a fluid convective pattern that originates adjacent to said second outlet and extends axially into said centrifugation zone to at least a region adjacent to said first outlet to remix the constituents parts of the radially stratified carrier and present carrier rich in the preselected constituent for withdrawal at said first outlet.

5,053,128

METHOD OF MANUFACTURING A DIFFUSION/FILTRATION APPARATUS

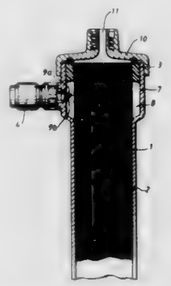
Kurt Spranger, Ammerbuch/Entirgen, Fed. Rep. of Germany, assignor to Gambro Dialysatoren GmbH & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 237,514, Aug. 26, 1988, abandoned. This application Aug. 9, 1990, Ser. No. 565,032

Claims priority, application Sweden, Aug. 31, 1987, 87033668

Int. Cl.[5] B01D *67/00*

U.S. Cl. 210—232 **3 Claims**



1. A method of manufacturing a diffusion/filtration apparatus comprising the steps of:

a) providing a bundle of semi-permeable hollow fibers, said bundle of hollow fibers having a first end, a second end, outer surfaces, and inner surfaces;

b) providing a housing which defines a longitudinally extending internal chamber including a first open end and a second open end and second outlet means for the evacuation of said internal chamber, said second outlet means being sealed from said internal chamber by a penetrable membrane at an internal location proximate to said internal chamber;

c) inserting said bundle of hollow fibers into said internal chamber;

d) flushing said inner and outer surfaces of said bundle of hollow fibers with a flushing solution;

e) inserting a predetermined quantity of a potting material into said first open end and said second open end so as to penetrate into said internal chamber a first predetermined distance and into said hollow fibers so as to penetrate said hollow fibers a second predetermined distance, said potting material sealing said internal chamber from said ends of said hollow fibers;

f) cutting said housing, said potting material and said hollow fibers transverse to said internal chamber at a predetermined point between said first and second predetermined distance so as to open said hollow fibers and provide an end wall supporting said ends of said hollow fibers; and

g) attaching lid means over said first and second ends of said housing.

5,053,129

FILTER DEVICE

Ralph W. Kitson, 5 D Great Meadow Dr., East Hanover, N.J. 07936

Filed Jun. 6, 1990, Ser. No. 534,520

Int. Cl.[5] B01D *29/00*

U.S. Cl. 210—232 **3 Claims**

1. A filter device comprising:

a housing subassembly having an inlet passage and an outlet passage and a chamber and an axis;

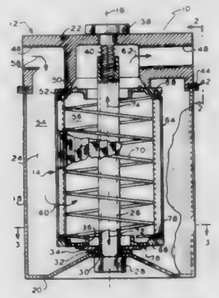
a filter subassembly coaxially disposed within the chamber and dividing the chamber into an inlet space connecting to the inlet passage and an outlet space connecting to the outlet passage;

the filter subassembly having a lower end cap and an upper end cap and a cylindrical filter mesh element covered at its ends by the end caps and having a helical compression spring disposed inside the cylindrical filter mesh element and bearing against the sides of the cylinder; and the helical spring applying forces around the circumference of the filter element in order to avoid collapsing of the cylindrical filter mesh element, wherein

the cylindrical filter mesh element in a corrugated element having longitudinal axial-parallel fold portions, and

the housing subassembly has a bottom wall and a top wall and a peripheral wall enclosing the chamber;

the bottom wall having a tubular bolt fixedly connected thereto and cantilevered therefrom along the axis;



the top wall having a hole receiving a top bolt which is threaded into the tubular bolt;

the top wall having a cylindrical bearing surface engaging a circular portion of the upper end cap;

the bottom wall having a cylindrical bearing surface engaging a circular portion of the upper end cap;

the bottom wall having a cylindrical bearing surface engaging a circular portion of the lower end cap; and

the peripheral wall having a circular assembly joint with the top wall and having a compressible ring seal in the circular assembly joint.

5,053,130

DIFFUSION AND/OR FILTRATION APPARATUS

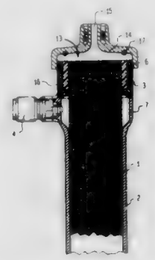
Manfred Raff, Bisingen/Thanheim, and Kurt Spranger, Ammerbuch/Entirgen, both of Fed. Rep. of Germany, assignors to Gambro Dialysatoren GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 26, 1988, Ser. No. 237,504

Claims priority, application Sweden, Aug. 31, 1987, 87033684

Int. Cl.[5] B01D *63/04*

U.S. Cl. 210—321.79 **50 Claims**



1. A diffusion/filtration apparatus comprising:

a) housing means, said housing means defining a longitudinally extending internal chamber including a first end and a second end;

b) a bundle of semi-permeable hollow fibers disposed within said internal chamber, said hollow fibers extending longitudinally from said first end of said housing to said second end of said housing, said hollow fibers having an outer surface, and a first end and a second end corresponding to said first end and said second end of said internal chamber;

c) end wall means supporting said first and second ends of said hollow fibers within said internal chamber so as to sealingly separate said first and second ends of said hollow fiber from said outer surface of said hollow fiber between said first and second ends thereof;

d) first inlet means for the introduction of a fluid into said first end of said housing means;

e) first outlet means for the evacuation of a fluid from said second end of said housing means;

f) second outlet means for the evacuation of a fluid from said internal chamber at a location between said first and second end of said housing means;

g) at least one ring member disposed between said end wall means and said housing means at one of said first and second ends of said internal chamber, said ring member being in direct contact with said housing and having a shape corresponding to said housing and defining a cavity between said ring member and said hollow fibers, the coefficient of adhesion between said end wall means and said ring member being lower than the coefficient of adhesion between said end wall means and said housing, whereby the structural integrity of said housing means and the seal between said ends of said hollow fibers and said outer surface of said hollow fibers is enhanced; and

h) at least one sealing ring interposed between said end wall and said first inlet means.

5,053,131

FILTER CARTRIDGE

Hans-Joachim Lippold, Wredeweg 8, D-1000 Berlin 22, Fed. Rep. of Germany

Filed Feb. 5, 1990, Ser. No. 474,382

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1989, 3903697; May 19, 1989, 3916838

Int. Cl.[5] B01D *21/06*

U.S. Cl. 210—493.5 **35 Claims**

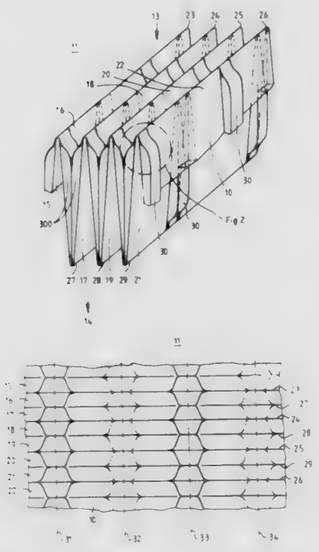
1. A filter cartridge, in particular with a block-like construction, comprising a plurality of zig-zag fold walls having fold edges between adjacent ones of said fold walls, said fold walls including a film-like filter material folded in a zig-zag fashion for a medium to be filtered to pass through from one edge area of the plurality of zig-zag fold walls in the direction of the edge area of the opposite side of the fold walls, said material of the fold walls being made of a material which can be permeated by the medium to be filtered and being provided with offsets, with those offsets which lie in contact with each other acting as spacers and stiffeners between adjacent fold walls, wherein said offsets of adjacent fold walls which face one another are stuck together for stabilizing and rigidifying said filter cartridge.

26. Method for the production of a filter cartridge having a plurality of fold walls folded in a zig-zag fashion, a plurality of offsets acting as spacers and stiffeners between adjacent ones of said plurality of fold walls, and the offsets of adjacent fold walls being stuck together for stabilizing and rigidifying said filter cartridge, comprising the steps of:

supplying a film-like filter material;

pulling the film-like filter material through a first roll opening defined by two forming rolls having raised surfaces, the raised surfaces being configured for forming offsets, areas of transition, and fold edges on the film-like filter material;

applying adhesive to the offsets formed in said pulling step; and



folding the film-like filter material worked in the previous steps to provide the finished filter cartridge.

5,053,132

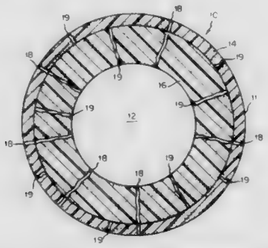
ASYMMETRICALLY-WETTABLE POROUS MEMBRANE

Kamalesh K. Sirkar, Scotch Plains, N.J., assignor to The Trustees of the Stevens Institute of Technology, Hoboken, N.J.

Continuation of Ser. No. 208,869, Jun. 15, 1988, Pat. No. 4,921,612, which is a continuation of Ser. No. 789,992, Oct. 22, 1985, abandoned. This application Oct. 10, 1989, Ser. No. 419,303

Int. Cl.[5] B01D *69/08, 71/16, 71/26*

U.S. Cl. 210—500.23 **1 Claim**



1. A hollow fiber having an asymmetrically-wettable, porous wall, the hollow fiber having a lumen passing axially through the fiber, a surface of the wall facing the lumen defining an inside surface of the wall and a surface of the wall facing radially outwardly defining an outside surface, one of the inside surface and outside surface of the wall being hydrophilic, the other of the inside surface and the outside surface of the wall being hydrophobic, the wall of the hollow fiber having pores which pass through the wall providing liquid phase communication between the inside surface and the outside surface.

5,053,133

AFFINITY SEPARATION WITH ACTIVATED POLYAMIDE MICROPOROUS MEMBRANES

Elias Klein, 5517 Hempstead Rd., and Pamela A. Feldhoff, 301 Chelsea Rd., both of Louisville, Ky. 40207

Filed Feb. 9, 1990, Ser. No. 477,512

Int. Cl.[5] B01D *71/56, 15/08*

U.S. Cl. 210—500.38 **39 Claims**

1. A composite membrane for affinity separation comprising a polyamide microporous film covalently bonded to a polysaccharide, and further including a ligand adapted for affinity separation bound to the composite membrane.

5,053,134

LYMPHOCYTE COLLECTION TUBE

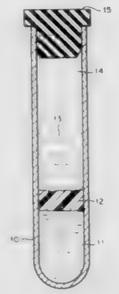
Albert A. Luderer, Marshfield, Mass., and Ward C. Smith, Big Flats, N.Y., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 117,396, Nov. 2, 1987, Pat. No. 4,917,801, which is a continuation of Ser. No. 864,443, May 16, 1986, abandoned, which is a continuation of Ser. No. 678,100, Dec. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 544,125, Oct. 21, 1983, abandoned. This application Jan. 17, 1990, Ser. No. 466,031

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—516 **7 Claims**



1. An assembly for centrifugally separating lymphocytes and monocytes from heavier phases of a sample of whole blood or a pretreated cell fraction thereof which comprises:

(a) a container having an open end and a closed bottom end;

(b) a liquid density gradient medium initially positioned adjacent said closed bottom end;

(c) means for preventing mixing of the liquid density gradient material with a blood sample prior to centrifugation of the container, the preventing means including a partition means initially positioned above the surface of said medium which seals said medium therebeneath, said partition means being movable during centrifugation in the direction of said closed bottom end of said container; and

(d) a free space initially adjacent said partition means of sufficient volume to contain said sample and added reagent where desired.

5,053,135

COMPOSITE POLYMERS, THEIR PREPARATION AND THEIR USE IN LIQUID CHROMATOGRAPHY

Egisto Boschetti, Chatou, and Pierre Girot, Paris, both of France, assignors to I.B.F., Villeneuve-La-Gareene, France

Division of Ser. No. 203,912, Jun. 8, 1988. This application May 11, 1990, Ser. No. 521,988

Claims priority, application France, Jun. 11, 1987, 87 08125

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **6 Claims**

1. A process for separating components of a liquid mixture by liquid chromatography, wherein the liquid mixture is brought into contact with a homogeneous composite hydrophilic polymer containing, in an interpenetrated form, 20% to 80% by weight of silica and 80% to 20% by weight of a three-dimensional cross-linked vinyl copolymer formed by copolymerization, in an aqueous sodium silicate medium, of 98% to 70% by weight of at least one monofunctional vinyl monomer and 2% to 30% by weight of a difunctional vinyl crosslinking monomer selected from the class consisting of difunctional acrylic and allyl cross-linking monomers.

5,053,136

METHOD FOR THE HETEROGENEOUS CATALYTIC PHOTODEGRADATION OF POLLUTANTS

Fausto Miano, Enna, and Enrico Borgarello, Turin, both of Italy, assignors to Enitricerche S.p.A., Milan, Italy

Filed Sep. 10, 1990, Ser. No. 579,700

Claims priority, application Italy, Sep. 15, 1989, 21740 A/89

Int. Cl.[5] B01D *61/00;* **B01S** *19/08*

U.S. Cl. 210—650 **14 Claims**

1. A method for purifying water containing a pollutant, consisting of immersing into said water a reactor containing a semiconductor and a lamp which emits radiation having a wavelength less than 400 nm, characterized in that the reactor walls allow water and the pollutant substances to pass through, wherein the semiconductor is dispersed in water.

5,053,137

PROCESS FOR THE PURIFICATION OR REGENERATION OF CONTAMINATED OR SPENT PROCESS SULFOLANE

Raj K. J. Lal, Baroda, and S. G. T. Bhat, Ellora Park, India, assignors to Indian Petrochemicals Corporation Limited, Gujarat, India

Filed Aug. 21, 1989, Ser. No. 396,519

Int. Cl.[5] B01D *15/04*

U.S. Cl. 210—669 **15 Claims**

1. A process for the purification or regeneration of contaminated or spent sulfolane which comprises passing said contaminated or spent sulfolane through at least a pair of columns arranged in series, the first of said columns containing cation exchange resin and the second containing anion exchange resin, the contact between said sulfolane and the ion exchange resins being effected at a temperature of from 20° C. to 80° C.

5,053,138

PROCESS FOR PURIFYING AN AQUEOUS SOLUTION OF N-METHYL-MORPHOLINE N-OXIDE

Dietmar Korger, Steinbach am Attersee; Dieter Eichinger; Stephan Astegger, both of Vöcklabruck; Karin Weinzierl, Timelkam, and Johann Männer, Weyregg, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Oct. 11, 1990, Ser. No. 595,562

Claims priority, application Austria, Oct. 16, 1989, 2373/89

Int. Cl.[5] B01D *15/04*

U.S. Cl. 210—670 **6 Claims**

1. In a process for purifying an aqueous solution of N-methyl-morpholine N-oxide (NMMO) by providing an anion exchanger, contacting the solution to be purified with said anion exchanger so as to obtain a purified solution and separating said purified solution from said anion exchanger, the improvement wherein

said process is carried out in one step,

said anion exchanger contains functional groups exclusively comprising quaternary tetraalkylammonium groups selected from the group consisting of the formulae

$-CH_2-N^{\oplus}(CH_3)_3X^{\ominus}$ and

$-CH_2-N^{\oplus}[(CH_3)_2(CH_2OH)]X^{\ominus}$

wherein $X^{\ominus}$ represents the anion of an inorganic or organic acid,

whereupon an aqueous acidic regenerating solution is provided to regenerate said anion exchanger.

5,053,139

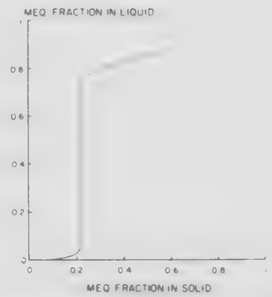
REMOVAL OF HEAVY METALS, ESPECIALLY LEAD, FROM AQUEOUS SYSTEMS CONTAINING COMPETING IONS UTILIZING AMORPHOUS TIN AND TITANIUM SILICATES

Glenn W. Dodwell, Tinton Falls, and BethAnn Smith, Edison, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Dec. 4, 1990, Ser. No. 625,731

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—688 **10 Claims**



1. A process for the removal of heavy metals from aqueous solutions thereof containing one or more of said heavy metals as well as competing ions including calcium and/or magnesium which comprises contacting said aqueous solution with amorphous gels selected from the group consisting of titanium silicates and tin silicates having a molar ratio of silicon-to-titanium or tin of from 1:4 to 1.9:1 and having a desorption pore volume of from about 0.03 to about 0.25 cubic centimeters per gram, until such heavy metals are substantially removed from said aqueous solution.

5,053,140

PROCESS AND APPARATUS FOR REMOVING IMPURITIES FROM WATER USED IN FOOD PROCESSING UTILIZING A MIXTURE OF OZONE AND AIR

William D. Hurst, Wichita, Kans., assignor to American Water Purification, Inc., Wichita, Kans.

Filed Jul. 26, 1989, Ser. No. 386,438

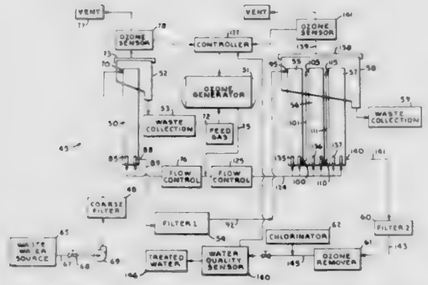
Int. Cl.[5] C02F *1/24, 1/78;* **B03D** *1/100*

U.S. Cl. 210—704 **28 Claims**

15. A process for removing impurities including fat, microorganisms, and other solids from wastewater subsequent to use of water in the wastewater for chilling food products being processed in a food processing environment so that a substantial portion of the wastewater may be returned to the food processing area for reuse, said process comprising the steps of:

(a) introducing the wastewater with the fat therein into a first tower having a top and a bottom with the wastewater being introduced through an inlet near said first tower top;

(b) flowing the wastewater from near said top of said first tower to near said bottom thereof;
(c) injecting a first ozone and air mixture into the wastewater in said first tower near said bottom thereof;
(d) flowing said first ozone and air mixture upwardly through the wastewater, counter to movement of the wastewater through said first tower, thereby forming a first foam near said top of said firs. tower, said first foam including a substantial portion of 'he fat and said ozone and air mixture;
(e) flowing said first foam with substantially all of said fat therein over the top of said tower into first waste drain means comprising a first shroud surrounding the upper end of said first tower;
(f) flowing said wastewater from said first tower;
(g) introducing the wastewater subsequent to said first tower into an initial tower of a multi-tower unit, said multi-tower unit having a plurality of successive towers, each tower in said unit having a top and a bottom, the wastewater being introduced through an inlet near said top of said initial tower;
(h) flowing the wastewater from near said top of said initial tower to near said bottom thereof;
(i) flowing the wastewater from said initial tower at an outlet near the bottom of said initial tower;



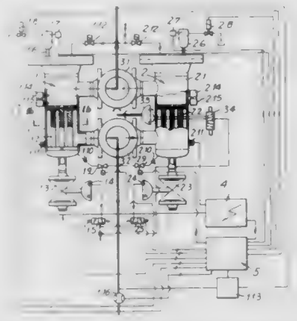
(j) subsequently introducing the wastewater into a successive tower of said multi-tower unit through an inlet near the top of said successive tower;
(k) flowing the wastewater from near the top of said successive tower to near the bottom thereof;
(l) flowing the wastewater from said successive tower from an outlet near the bottom of said successive tower;
(m) passing the wastewater through each of said towers of said multi-tower unit in the same manner as described in steps (j) through (l);
(n) injecting a second ozone and air mixture into the wastewater in each of said towers of said multi-tower unit near the bottom of each of said towers, said second ozone and air mixture flowing upwardly through the wastewater, counter to the movement of the wastewater, thereby oxidizing oxidizable material within the wastewater and forming a second foam near the top of each of said towers, said second foam including impurities and said ozone and air mixture; and
(o) flowing said second foam over the top of each of said towers of said multi-tower unit into second waste drain means comprising a second shroud surrounding the upper end of said multi-tower unit.

5,053,141

PROCEDURE AND MEANS FOR FILTERING, CLEANING AND HOMOGENIZING LIQUID SUBSTANCES USING ULTRASONICS

Kari U. Laiho, Rämpsälänkatu 13, SF-21110 Naantali, Finland

PCT No. PCT/FI88/00193, § 371 Date Jul. 19, 1989, § 102(e) Date Jul. 19, 1989, PCT Pub. No. WO89/05184, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 1, 1988, Ser. No. 382,639
Claims priority, application Finland, Dec. 2, 1987, 875330
Int. Cl.[5] C02F *1/36*
U.S. Cl. 210—739 **20 Claims**



1. A procedure for cleaning a filter unit automatically when filtering liquid substances and for simultaneously homogenizing and filtering liquid substances, by operating an ultrasonic oscillator and an ultrasonic generator, said ultrasonic oscillator and said ultrasonic generator being operated at a preselected power level during filtering which are switched to a higher power level required for cleaning the filter unit while a compressed air flushing valve is opened and a draining valve is opened, and in that said draining valve is adjusted to regulate a filter unit emptying time so that a desired cleaning time for the ultrasonic cleaning procedure may be effected.

5,053,142

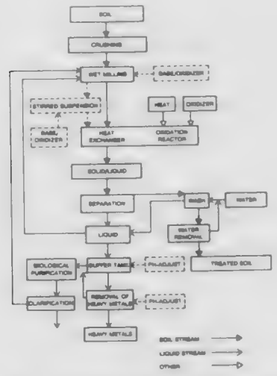
METHOD FOR TREATING POLLUTED MATERIAL

Emil Sorensen, Roskilde; Jorgen Jensen, Jyllinge; Erik Rasmussen, Gentofte; Bror S. Jensen, and Belinda Bjerre, both of Roskilde, all of Denmark, assignors to NKT A/S, Brondby and Forskningscenter Riso, Roskilde, both of, Denmark

PCT No. PCT/DK88/00024, § 371 Date Dec. 6, 1988, § 102(e) Date Dec. 6, 1988, PCT Pub. No. WO88/06144, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 15, 1988, Ser. No. 259,113
Claims priority, application Denmark, Feb. 13, 1987, 0719/87
Int. Cl.[5] C02F *11/08*
U.S. Cl. 210—742 **41 Claims**

1. A method for treating polluted soil so as to decompose or modify oxidizable polluting substances therein, and improve the filterability of solids present therein, wherein the polluted soil is in the form of an aqueous suspension and is subjected to wet oxidation in a reactor, the wet oxidation being achieved by an oxidizing agent which is added to the aqueous suspension of the polluted soil in an amount which is at least sufficient to decompose or modify the oxidizable substances, the wet oxidation being performed to such an extent that the decomposed or modified substances remaining after the wet oxidation are substantially biodegradable.

2. A method for treating polluted soil so as the decompose or modify oxidizable polluting substances therein, and improve the filterability of solids present therein, wherein the polluted soil is in the form of an aqueous suspension and is subjected to wet oxidation in a tubular reactor through which said suspension flows with a substantially continuous turbulent flow, having a reynolds number of at least 4,000, the wet oxidation being achieved by an oxidizing agent which is added to the aqueous suspension of the polluted soil in an amount which at least sufficient to decompose or modify the oxidizable substances, the wet oxidation being performed to such an extent that the decomposed or modified substances remaining after the wet oxidation are substantially biodegradable.

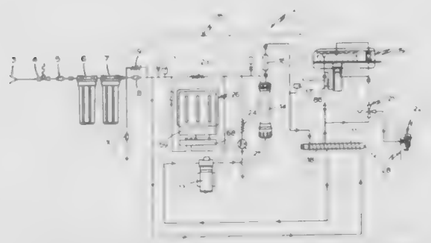


5,053,143

FLUID PURIFYING APPARATUS AND METHOD OF PURIFYING FLUIDS

Steven L. Miller, Shelby; Ronald L. Wathen, and Raymond E. Palazzo, Jr., both of Jefferson, all of Ky., assignors to Environmental Water Technology, Inc., Louisville, Ky.

Division of Ser. No. 515,459, Apr. 27, 1990. This application Oct. 11, 1990, Ser. No. 596,073
Int. Cl.[5] B01D *35/00*
U.S. Cl. 210—748 **21 Claims**



1. In a system for purifying a fluid consisting essentially of liquid, including a filter membrane, a downstream clean fluid storage receptacle and a fluid tap downstream of said clean fluid storage receptacle, an ultra-violet treating apparatus comprising a first ultra-violet treating circuit to apply ultra-violet microbial reducing radiation upstream said filter membrane to a fluid passing through said system; and a second ultra-violet treating circuit to apply ultra-violet microbial reducing radiation downstream said filter membrane, and before said storage receptacle to said fluid passing through said system; the improvement comprising: a third treating circuit to apply microbial reduction downstream said storage receptacle and before said fluid tap to said fluid passing through said system.

20. A method of purifying fluid consisting essentially of liquid, comprising:

passing said fluid to be treated from a supply source through an ion treating prefilter zone, a first ultra-violet microbial reducing radiation-treating zone;
a reverse osmosis filtering zone;
a second ultra violet microbial reducing radiation-treating zone;
a cooled storage zone;
a third microbial reducing, fluid-purifying treating zone located downstream said storage zone, and then to a fluid tap zone.

20. The fluid purification apparatus of claim 1, further comprising: a walled housing means providing a main plenum chamber preselectively sized to contain a fluid purification system therein to communicatively extend between a fluid inlet and a fluid outlet in said walled housing means, said fluid purification system including an ultra-violet radiation treatment tube having fluid surrounding conduit sections extending therearound; reflective and radiation absorbing shield surrounding said treatment tube and said conduits extending therearound; and, a transparent panel in said walled housing means through which illuminating light from said treatment tube can pass.

5,053,144

METHOD FOR THE MULTISTAGE, WASTE-FREE PROCESSING OF RED MUD TO RECOVER BASIC MATERIALS OF CHEMICAL INDUSTRY

Endre Szirmai; Sandor Babusek; Gezz Balogh; Atilla Nedves; Gyula Horvath, all of Budapest; Zoltan Lébényi, and James Pinter, both of Mosonmagyarovar, all of Hungary, assignors to Aquatech Kernyezeteedelmi, Hungary

Continuation of Ser. No. 459,705, Jan. 30, 1990. This application Apr. 2, 1990, Ser. No. 503,259
Claims priority, application Hungary, Jul. 31, 1987, 3524/87
Int. Cl.[5] C02F *11/00*
U.S. Cl. 210—770 **20 Claims**

1. A method for the processing of red mud, said red mud comprising a slurry of metal oxides, including Fe_2O_3, Al_2O_3, TiO_2, SiO_2 and Na_2O, said method comprising

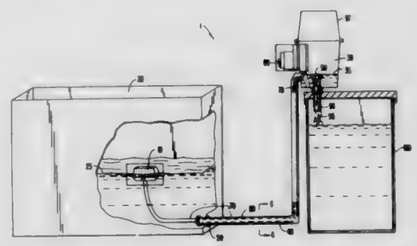
a) reacting said slurry with carbon dioxide gas whereby to form a product including a solution of Na_2CO_3, the reaction with carbon dioxide gas being allowed to proceed until said product attains a pH level of from about 5 to 9;
b) filtering the product of step a to separate the solution of Na_2CO_3 therefrom, thereby leaving a filtered mud; and
c) treating said filtered mud to form one or more inorganic pigments, fillers, and/or flocculants.

5,053,145

DUAL DIRECTION TRANSFER SYSTEM FOR TRAMP OIL COLLECTION

Billy L. Ellison, 165 Santa Clara St., Brisbane, Calif. 94005

Filed May 3, 1990, Ser. No. 518,358
Int. Cl.[5] C02F *1/40*; B01D *17/025*
U.S. Cl. 210—776 **14 Claims**



1. A dual direction transfer system of the type having a main tank and a separator tank for removing oil from aqueous liquids comprising:

a main tank for containing an aqueous oily mixture and including means for skimming oil from said mixture;
a separator tank located so that its liquid level is above the liquid level of the main tank, the separator tank providing an oil rich phase and an oil depleted phase;
a dual direction transfer pipe connecting said main tank and said separator tank and through which flows the aqueous oily mixture and oil depleted phase in opposite directions, said pipe comprising a pair of substantially concentric pipes; and
means for forcing the aqueous oily mixture from the main tank to the separator tank through said dual direction transfer pipe, while said oil depleted phase moves under force of gravity to the main tank.

5,053,146

METHOD FOR EXTINGUISHMENT OF METAL FIRE AND FIRE EXTINGUISHING AGENT THEREFOR

Hisayoshi Yamaguchi, Tokyo, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1990, Ser. No. 513,906
Claims priority, application Japan, Apr. 27, 1989, 1-108110
Int. Cl.[5] A62D *1/00*
U.S. Cl. 252—2 **2 Claims**

1. A powdery fire extinguishing agent which is a blend comprising:
(a) from 95% to 70% by weight of a powder of boron oxide having a particle diameter in the range from 5 to 1000 μm, of which the content of B_2O_3 is at least 90% by weight and the content of water does not exceed 2% by weight; and
(b) from 5% to 30% weight of an inorganic powder of particles having a spherical particle configuration, selected from the group consisting of:
(b—1) glass beads having a particle diameter in the range from 5 to 200 μm and rendered hydrophobic on the surface; and
(b—2) hollow microspheres of silica alumina having a particle diameter in the range from 50 to 600 μm.

5,053,147

METHODS AND COMPOSITIONS FOR EXTINGUISHING FIRES

Joseph B. Kaylor, Jonesboro, Ga., assignor to Jannette Gomez Kaylor, Manassas, Va.

Filed Apr. 20, 1990, Ser. No. 511,729
Int. Cl.[5] A62D *1/00*
U.S. Cl. 252—7 **17 Claims**

1. A composition for extinguishing fires comprising a particulate combustible high molecular weight thermoplastic polymer, the particles of said polymer arranged in intimate association with a sufficient quantity of a chemical extinguishing agent to protect said polymer particles during transit through a flame and onto the surface of a burning substance; said chemical extinguishing agent selected from the group consisting of alkali metal bicarbonates, alkali metal halides, alkaline earth metal carbonates, ammonium phosphates, addition products of urea with alkali metal bicarbonates and mixtures thereof.

5,053,148

HEAT RESISTANT FOAMS, THEIR PREPARATION AND USE

Wulf von Bonin, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 3, 1990, Ser. No. 504,360
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912552
Int. Cl.[5] A62D *1/00*
U.S. Cl. 252—8.05 **12 Claims**

1. Heat resistant foams obtained by heating metal phosphonates or metal phosphonate precursors to temperatures above 200° C.

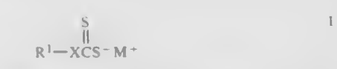
5,053,149

METHOD FOR DEWAXING OIL AND GAS PIPELINES OR WELLS

Paul J. McElligott, Jr., Abington; Stanley R. Sandler, Springfield; John F. Kennoy, Horsham, and William J. Tuszynski, Milford Township, Bucks County, all of Pa., assignors to Atochem North America, Inc., Philadelphia, Pa.

Filed Mar. 30, 1990, Ser. No. 502,094
Int. Cl.[5] E21B *37/00, 43/25*
U.S. Cl. 252—8.552 **13 Claims**

1. A process for dissolving a deposit of wax, paraffin or sulfur or mixtures thereof in an oil or gas pipeline or well comprising first providing by addition at the site of said deposit an acid, and thereafter providing at the site a compound which liberates carbon disulfide upon contact with said acid, whereby said deposit is dissolved by the liberated carbon disulfide, said compound represented by Formula I:



I

wherein X is a disulfide group; R^1 is hydrogen, $—NH_4$, a Group-IA or IIA cation, an alkyl ammonium group, an alkyl phosphonium group, an aryl ammonium group, an aryl phosphonium group, an alkyl group, an aryl group or an alkaryl group; M^{30} is a Group IA or IIA cation, $—NH_4$, an alkyl ammonium group, an aryl ammonium group, an alkyl phosphonium group or an aryl phosphonium group; wherein said alkyl, aryl and alkaryl groups contain about 1 to 25 carbon atoms; with the proviso that when R^1 is a Group IIA cation M^+ is absent.

5,053,150

POLYEPOXIDE MODIFIED ADDUCTS OR REACTANTS AND OLEAGINOUS COMPOSITIONS CONTAINING SAME

Jacob Emert, Brooklyn, N.Y., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 161,899, Feb. 29, 1988, abandoned.
This application Dec. 4, 1990, Ser. No. 625,623
Int. Cl.[5] C10M *133/56, 133/58*
U.S. Cl. 252—51.5 A **65 Claims**

14. A lubricating oil composition comprising:
(A) a major amount of lubricating oil; and
(B) a minor amount of oil soluble dispersant compound consisting essentially of reaction product of
(i) at least one nitrogen containing adduct consisting essentially of reaction product of
(a) at least one polyepoxide wherein the polyepoxide contains at least two oxirane rings joined by a divalent organic moiety selected from the group consisting of hydrocarbon moieties, and substituted hydrocarbon moieties,
(b) at least one polyamine wherein the polyamine contains at least two reactive amino groups selected from primary amino groups and secondary amino groups; and
(ii) at least one long chain hydrocarbyl substituted C_4–c_{10} dicarboxylic acid material, wherein said long chain hydrocarbyl substitutent is derived from an olefin polymer having a number average molecular weight of about 500 to about 6,000.

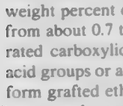
5,053,151

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER DERIVED FROM AMIDO-AMINE EXHIBITING IMPROVED LOW TEMPERATURE VISCOMETRIC PROPERTIES

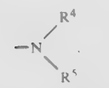
David Y. Chung, Edison; Antonio Gutierrez, Mercerville; John E. Johnston, Westfield; Mark J. Struglinski, and Robert D. Lundberg, both of Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed May 30, 1989, Ser. No. 359,058
Int. Cl.[5] C10M *149/06*
U.S. Cl. 252—51.5 A **85 Claims**

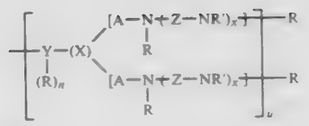
1. Composition of matter comprising reaction product of:
(i) (a) from 1 to 5 moles of a copolymer of ethylene and at least one other alpha-olefin monomer, said copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}w/\overline{M}n$ of less than 2 and a ratio of $\overline{M}z/\overline{M}w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene, said copolymer grafted with (b) from about 0.7 to 4.0 moles of ethylenically monounsaturated carboxylic acid material having 1 or 2 carboxylic acid groups or anhydride group per mole of copolymer to form grafted ethylene copolymer; and
(ii) one mole amido-amine comprising reaction product obtained by heating the following mixture of (a) from about 1 to 10 equivalents of polyamine, based upon the primary amine content of said polyamine and (b) one mole of an alpha, beta unsaturated compound represented by the formula



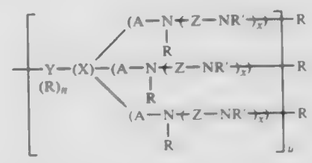
wherein X is oxygen, Y is $—OR^4$ or



and R^1, R^2, R^3, R^4 and R^5 are independently selected from hydrogen, hydrocarbyl, and substituted hydrocarbyl.



or



wherein R is independently hydrogen or C_{1-7} hydrocarbyl; R′ is hydrogen, alkyl or $NH_2R''(NR'')_{y'}$, wherein y is a number in the range from 1 to about 6 and R″ is an alkylene group of 1 to about 10 carbon atoms; Y represents N or O; X is an alkylene group; A is hydrocarbyl; Z is alkylene of 1 to about 10 carbon atoms or an oxyalkylene of 1 to about 10 carbon atoms; x is a number in the range from 1 to about 10; u is an integer greater than 1; and n is 0 or 1.

5,053,152

HIGH MOLECULAR WEIGHT NITROGEN-CONTAINING CONDENSATES AND FUELS AND LUBRICANTS CONTAINING SAME

Thomas F. Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 711,799, Mar. 14, 1985, abandoned.
This application Aug. 3, 1989, Ser. No. 390,439
Int. Cl.[5] C10M *149/22*
U.S. Cl. 252—51.5 R **40 Claims**

1. A polyamine comprising units of the formula:

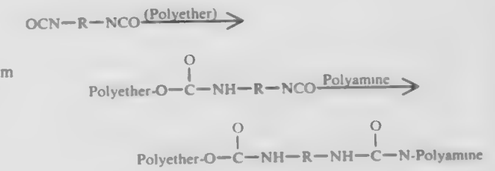
5,053,153

DIISOCYANATE DERIVATIVES AS ASHLESS DISPERSANTS AND DETERGENTS AND LUBRICANT COMPOSITIONS CONTAINING SAME

David A. Blain, Mt. Laurel; Angeline B. Cardis, Florence, and Jeffrey C. Trewella, Flemington, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 8, 1989, Ser. No. 447,728
Int. Cl.[5] C10M *133/16*
U.S. Cl. 252—51.5 R **17 Claims**

1. An improved detergent/dispersant/antioxidant lubricant composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor detergency/dispersancy/antioxidant amount of a diisocyanate bridged polyether-polyamine product of reaction prepared by connecting polyethers to polyamines with diisocyanates as generally described below:



wherein R is from about 1 to about 60 carbon atoms, and is selected from the group consisting of alkyl, aryl, alkaryl, or arylalkyl and wherein the amine is substituted by a C_6 to C_{30} aryl or alkaryl group attached via a Mannich reaction wherein the polyether is added to the diisocyanate in a 1:1 ratio and is made from epoxides selected from the group consisting of ethylene, propylene or butylene oxides or mixtures thereof, and the resultant adduct is added to the polyamine in a 1:1 to X:1 ratio and wherein X is the number of nitrogens on the polyamine and wherein the temperature of reaction varies from about 25°–250° C. at ambient pressures.

5,053,154
USE OF ADDUCTS OF 1,2-BUTYLENE OXIDE WITH H-AZIDIC ORGANIC COMPOUNDS AS LUBRICANTS, AND LUBRICANTS CONTAINING THESE ADDUCTS

Knut Oppenlaender, 23 Otto-Dill-Strasse, 6700 Ludwigshafen; Roland Schwen, 7 Im Schlossgarten, 6701 Friedelsheim; Richard Baur, 1 Nelkenstrasse, 6704 Mutterstadt; Charalampos Gousetis, 98 Carl-Bosch-Strasse, 6700 Ludwigshafen; Juergen Mohr, 48 Hochgewanne, 6718 Gruenstadt, and Helmut Mach, 5 Dantestrasse, 6900 Heidelberg, all of Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 449,010

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1988, 3844222

Int. Cl.[5] C10M *133/00*

U.S. Cl. 252—51.5 R **6 Claims**

1. A method of lubricating a surface which comprises, applying to the surface a lubricating amount of an adduct of 1,2-butylene oxide with a primary or secondary aliphatic amine having 1–30 carbon atoms.

5,053,155
COMPOSITIONS AND PROCESS FOR USE IN REFRIGERATION

Walter Mahler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1989, Ser. No. 452,406

Int. Cl.[5] C09K *5/04*

U.S. Cl. 252—68 **11 Claims**

1. A composition for use in compression refrigeration comprising:

(a) a refrigerant containing at least 10% by volume of 1,1,2,2-tetrafluoroethane in a blend with at least 10% by volume of at least one of 1,1,1,2-tetrafluoroethane and pentafluoroethane; and

(b) a lubricant comprising at least one mono-functional polyalkylene glycol with respect to hydroxly groups, containing greater than 75% propylene oxide units, having an SUS viscosity at 100° F. of 100 to 1200 and being miscible in combination with said refrigerant in the range of temperatures from −40° C. to at least =20° C.

5,053,156
PROCESS FOR PRODUCING FERRITE POWDER FOR FERRITE MAGNETS

Kunio Okumori, Kyoto, and Kazuo Terada, Amagasaki, both of Japan, assignors to Sumitomo Special Metals Co. Ltd., Osaka, Japan

Filed Nov. 28, 1990, Ser. No. 618,937

Int. Cl.[5] C04B *35/26, 35/64*

U.S. Cl. 252—62.58 **11 Claims**

1. A process for producing a ferrite powder for use in the manufacture of a ferrite magnet, which comprises: milling magnetite or mill scale to a powder comprising particles 12 μm or less in average diameter; subjecting the powder to oxidation treatment at from 600° C. to 900° C. in an atmosphere containing O_2 or in air to thereby obtain a powder containing 98.0% or more by weight of Fe_2O_3; mixing from 10 parts to 93 parts by weight of the oxidation-treated iron oxide powder with from 7 parts to 90 parts by weight of an iron oxide derived from either iron chloride or iron sulfide, and adding further thereto an oxide or a carbonate of Sr or Ba; and calcining the resulting mixture in an inclined rotary kiln to obtain the ferrite powder.

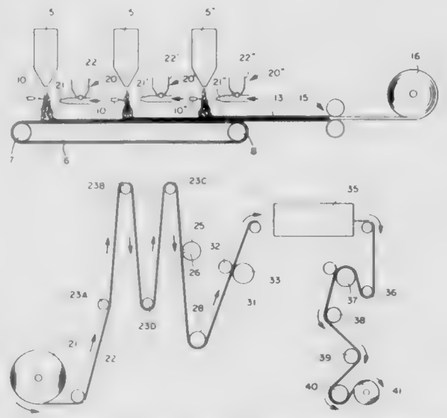
5,053,157
MELTBLOWN LAUNDRY WEB COMPRISING POWDERED DETERGENCY ENHANCING INGREDIENTS

William D. Lloyd, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 189,888, May 3, 1988, Pat. No. 4,865,755. This application Jun. 23, 1989, Ser. No. 370,439

Int. Cl.[5] C11D *17/06, 17/02*

U.S. Cl. 252—91 **5 Claims**



1. A meltblown web for use in washing laundry comprising from about 0.01 to about 1 grams of water-soluble powdered detergent ingredients per gram of web, said powdered ingredients being interspersed among the meltblown fibers and adhered thereto, wherein said powdered ingredients are released into the laundry was water when contacted therewith.

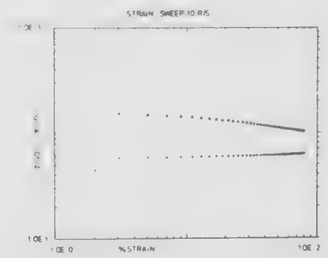
5,053,158
LINEAR VISCOELASTIC AQUEOUS LIQUID AUTOMATIC DISHWASHER DETERGENT COMPOSITION

Nagaraj Dixit, Kendall Park; Makarand Shevade, Hamilton, and Rhyta Round, Flemington, all of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 353,712, May 18, 1989. This application Oct. 4, 1990, Ser. No. 570,470

Int. Cl.[5] C11D *3/22, 3/395, 3/37, 3/50*

U.S. Cl. 252—99 **11 Claims**



1. A linear viscoelastic aqueous liquid automatic dishwasher detergent composition comprising approximately by weight:

(a) 10 to 35% of at least one alkali metal detergent builder salt, said alkali metal detergent builder salt being selected from the group consisting essentially of alkali metal tripolyphosphate, alkali metal pyrophosphate, alkali metal metaphosphate, alkali metal carbonate, alkali metal citrate and alkali metal nitrilotriacetate and mixtures thereof;

(b) 5 to 15% alkali metal silicate;

(c) 1 to 6% alkali metal hydroxide;

(d) 0.1 to 3.0% chlorine bleach stable, water-dispersible, organic detergent active material;

(e) 0 to 1.5% chlorine bleach stable foam depressant;

(f) chlorine bleach compound in an amount to provide 0.2 to 4% of available chlorine;

(g) 0.1 to 2.0% of a cross-linked polyacrylic acid thickening agent having a molecular weight of from about 1,000,000 to 4,000,000;

(h) 0.02 to 2% of a long chain fatty acid or a metal salt of a fatty acid; and

(i) water, wherein said polyacrylic acid thickening agent being selected from the group consisting essentially of acrylic acid or methacrylic acid, water-dispersible or water-soluble salts, esters, or amides thereof, and water-soluble copolymers of these acids or their salts, ester, or amides with each other or with one or more other ethylenically unsaturated monomers, wherein the aqueous phase includes both sodium and potassium ions at a K/Na weight ratio of from about 1/1 to about 45/1, wherein substantially all of the normally solid components of the composition are present dissolved in the aqueous phase, and substantially all of the water in the composition is tightly bound to the cross-linked polyacrylic acid thickening agent, said composition having a bulk density of from 1.32 g/cm^3 to 1.42 g/cm^3 and said composition does not exhibit phase separation and remains homogenous, when said composition is centrifuged at 1000 rpm for 30 minutes.

5,053,159
LAUNDRY DETERGENT BAR

David Joshi, South Plainfield, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Nov. 8, 1989, Ser. No. 433,263

Int. Cl.[5] C11D *3/48, 3/065*

U.S. Cl. 252—106 **2 Claims**

1. An antibacterial detergent laundry bar which consists of 10 to 25 percent sodium alkyl benzene sulfonate, 10 to 25 percent sodium higher fatty alcohol sulfate wherein the higher fatty alcohol is of 12 to 15 carbon atoms, 3 to 5 percent of coco amido propylamine oxide, 15 to 30 percent sodium tripolyphosphate, 5 to 25 percent sodium carbonate powder, 0.2 to 2 percent of a phenoxy ethanol antibacterial agent and 5 to 12 percent water.

5,053,160

Patent Not Issued For This Number

5,053,161
COMPOSITION FOR INHIBITING SCALE IN WATER SYSTEMS

Sherman J. Sprague, Twinsburg, Ohio, assignor to The Mogul Corporation, Chagrin Falls, Ohio

Filed Jun. 10, 1988, Ser. No. 205,117

Int. Cl.[5] C02F *5/14*

U.S. Cl. 252—180 **1 Claim**

1. A water-soluble composition for inhibiting the accumulation of mineral scale and corrosion in aqueous systems which consists essentially of from about 1.0 part by weight of a water-soluble polyacrylic acid having an average molecular weight ranging from about 1000 to 5000, about 1.0 part by weight of a water-soluble polymaleic acid having an average molecular weight ranging from about 500 to 1000, about 1.0 part by weight of 1-hydroxyethylidene 1-diphosphonic acid, and about 0.3 part by weight of ethylene-diaminetetraacetic acid sodium salt.

5,053,162
DIFLUOROALKYLCYCLOHEXYLBENZONITRILE DERIVATIVE

Kisei Kitano; Yasuyuki Goto; Manabu Uchida, and Makota Ushioda, all of Chibaken, Japan, assignors to Chisso Corporation, Osakafu, Japan

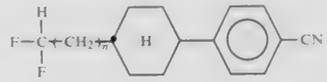
Filed Apr. 13, 1990, Ser. No. 508,415

Claims priority, application Japan, Apr. 13, 1989, 1-94141

Int. Cl.[5] C09K *19/43, 19/00*

U.S. Cl. 252—299.61 **3 Claims**

1. A compound expressed by the formula



wherein n represents an integer of 0 to 20.

5,053,163
FERROELECTRIC LIQUID CRYSTAL COMPOSITION

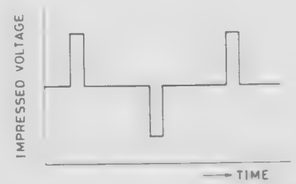
Fusayuki Takeshita; Makoto Kikuchi; Mitsuyoshi Ichihashi; Kanetsugu Terashima, and Kenji Furukawa, all of Chiba, Japan, assignors to Chisso Corporation, Ohsaka, Japan

Filed May 31, 1989, Ser. No. 359,719

Claims priority, application Japan, Jun. 3, 1988, 63-136798

Int. Cl.[5] C09K *19/34*

U.S. Cl. 252—299.61 **8 Claims**

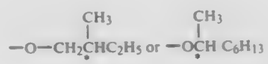


1. A ferroelectric liquid crystal composition comprising at least the following three components A, B and C in proportions of 5 to 50% by weight of said component A, 5 to 50% by weight of said component B and 5 to 50% by weight of said component C, wherein the total amount of said components A, B and C is at least 80% by weight of said composition, and said composition having a negative anisotropy value:

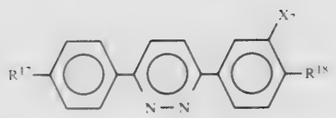
said component A being at least one compound selected from the group consisting of compounds of the formula


(A2-1)

wherein R^{15} represents a linear alkoxy group of 4 to 10 carbon atoms,

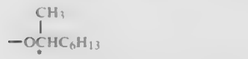


wherein * indicates an asymmetric carbon atom, R^{16} represents a linear alkyl group or alkoxy group each of 5 to 12 carbon atoms and X^6 represents H or F, and compounds of formula



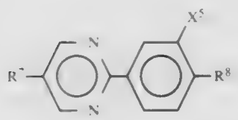
(A2-2)

wherein R^{17} represents a linear alkyl group of 3 to 9 carbon atoms, R^{18} represents



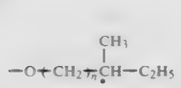
wherein * indicates an asymmetric carbon atom and X^7 represents H or F,

said component B being at least one compound selected from the group consisting of compounds of the formula



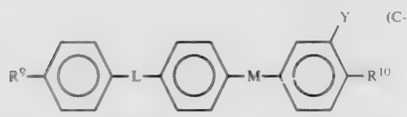
(B)

wherein R^7 represents a linear alkyl group or alkoxy group each of 7 to 15 carbon atoms, R^8 represents a linear alkyl group or alkoxy group each of 6 to 12 carbon atoms or



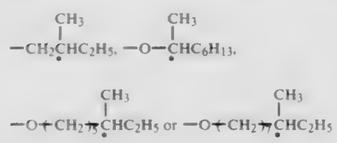
wherein n represents an integer of 2 to 7 and * indicates an asymmetric carbon atom, and X^5 represents H or F, and

said component C being at least one compound selected from the group consisting of compounds of the formula

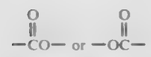


(C-1)

wherein R^9 represents a linear alkyl group or alkoxy group each of 5 to 12 carbon atoms, R^{10} represents

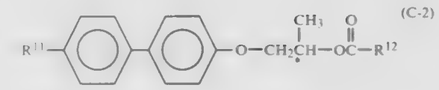


wherein * indicates an asymmetric carbon atom, one of L and M represents



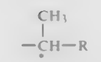
and the other represents a single bond, and Y represents F or CN, and

compounds of the formula



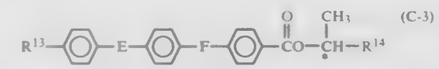
(C-2)

wherein R^{11} represents a linear alkyl group or alkoxy group each of 5 to 11 carbon atoms, R^{12} represents a linear alkyl group of 1 to 8 carbon atoms or



wherein R represents a linear alkoxy group of 2 to 5 carbon atoms or ethyl, and * represents an asymmetric carbon atom, and

compounds of the formula



(C-3)

wherein R^{13} represents a linear alkyl group or alkoxy group each of 5 to 12 carbon atoms, R^{14} represents a linear alkyl group of 3 to 6 carbon atoms, one of E and F represents $-CH_2O-$ or $-OCH_2-$ and the other represents a single bond, and * indicates an asymmetric carbon atom.

5,053,164

NOVEL SUBSTITUTED NAPHTHALENE COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING SAME

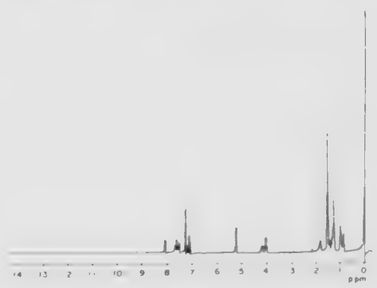
Shinichi Nishiyama; Hideo Yamaoka; Tooru Yamanaka, and Tohru Yamada, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 318,560, Mar. 3, 1989, Pat. No. 4,943,651. This application Mar. 20, 1990, Ser. No. 496,033

Claims priority, application Japan, Mar. 7, 1988, 63-54430; Mar. 7, 1988, 63-54431

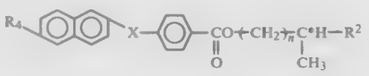
Int. Cl.[5] C09K *19/32;* **C07C** *69/76;* **G02F** *1/13*

U.S. Cl. 252—299.62 **3 Claims**



1. A liquid crystal composition comprising a compound of the formula:

[IV]



wherein

R^2 is an alkyl group having 1 to 18 carbon atoms,

R^4 is an alkyl group having 1 to 18 carbon atoms or an alkoxy group having 1 to 18 carbon atoms,

X is $-OCH_2-$ or $-CH_2CH_2-$, and n is 0 or 1.

5,053,165

GLASS OF IMPROVED THERMAL SHOCK RESISTANCE FOR HIGH AVERAGE POWER SOLID STATE LASER SYSTEM

Hisayoshi Toratani, Tokyo, Japan; Yeong Lin, Sunnyvale, and Helmuth E. Meissner, Pleasanton, both of Calif., assignors to Hoya Optics, Inc., Fremont, Calif. and Hoya Corporation, Tokyo, Japan

Filed Jul. 26, 1989, Ser. No. 385,122

Int. Cl.[5] C03C *3/17, 3/19*

U.S. Cl. 252—301.4 P **5 Claims**

1. A phosphate base laser glass consisting essentially of in mol percent

60–66% P_2O_5
6–9% Al_2O_3
8–12% Li_2O
0–15% MgO
0–15% ZnO
0–5% B_2O_3
0.1–4% Nd_2O_3,

with the sum of MgO plus ZnO being 14–16% wherein up to 2% Al_2O_3 may be replaced by La_2O_3, Gd_2O_3, Y_2O_3, Nb_2O_5 or combinations thereof; up to 3% Li_2O may be replaced by Na_2O, K_2O or combinations thereof; and up to 5% MgO plus ZnO may be replaced by CaO, SrO, BaO or combinations thereof, and wherein the glass has an emission cross section greater than 3.4×10^{-20} cm^2 and a thermal expansion coefficient less than 94×10^{-4}/° C. between 100°–300° C.

5,053,166

HETERO-ARYLENE VINYLENE POLYMER AND HIGHLY CONDUCTIVE COMPOSITION THEREOF

Ichiki Murase, Ootsu; Toshihiro Ohnishi, Itami, and Takanobu Noguchi, Ootsu, all of Japan, assignors to Director-General of the Agency of Industrial Science & Technology, Japan

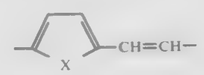
Filed Feb. 11, 1987, Ser. No. 13,628

Claims priority, application Japan, Feb. 18, 1986, 61-31794; Feb. 18, 1986, 61-31795; Aug. 26, 1986, 61-198045; Aug. 26, 1986, 61-198046; Sep. 18, 1986, 61-217970; Sep. 18, 1986, 61-217971; Dec. 25, 1986, 61-307858; Dec. 25, 1986, 61-307861; Dec. 25, 1986, 61-307862; Dec. 25, 1986, 61-307863

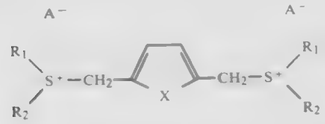
Int. Cl.[5] H01B *1/06, 1/00*

U.S. Cl. 252—500 **6 Claims**

1. A highly conductive composition comprising, as essential components, a stretched poly(hetero-arylene vinylene) molded article and a dopant, the stretched poly(hetero-arylene vinylene)molded article containing, as its major constituent unit, a repeating unit represented by the general formula:



(wherein X is a sulfur and being obtained by subjecting a sulfonium salt represented by the general formula:



(wherein X has the same definition as given above, R_1 and R_2 are independently a hydrocarbon group of 1 to 10 carbon atoms, and A^- is a counter ion) to condensation polymerization using an alkali to obtain a precursor polymer, and subjecting the precursor polymer to stretching and orientation and then to a treatment for sulfonium salt elimination or subjecting the precursor polymer in one step to stretching and orientation and to a treatment for sulfonium salt elimination, wherein the stretch ratio is at least two times.

5,053,167

METHOD FOR THE PREPARATION OF AN INTEGRAL RUBBER ARTICLE HAVING ELECTRICALLY INSULATING AND CONDUCTIVE PARTS

Toshiyuki Kawaguchi, Tokyo, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1989, Ser. No. 366,422

Claims priority, application Japan, Jun. 17, 1988, 63-149733; Jun. 17, 1988, 63-149734; Jun. 20, 1988, 63-151550

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—511 **16 Claims**

1. A method for the preparation of an integral silicone rubber article having an electrically insulating part and an electrically conductive part which comprises the steps of:

(a) curing a first silicone rubber composition comprising an organopolysiloxane and a non-acyl organic peroxide as a curing agent by heating to give a first cured silicone rubber body;

(b) contacting the first cured silicone rubber body with a second silicone rubber composition comprising an organopolysiloxane and a non-acyl organic peroxide; and

(c) curing the second silicone rubber composition in contact with the first cured silicone rubber body by heating at a temperature of 100° C. to 180° C. for a length of time of 5 seconds to 20 minutes to give a second cured silicone rubber body which is adhesively and integrally bonded to the first cured silicone rubber body, either one of the first and the second silicone rubber compositions further comprising a carbon black in such an amount as to impart the cured silicone rubber body of the composition with substantial electroconductivity and at least one of the first and the second silicone rubber compositions comprising an organopolysiloxane having at least two vinyl groups bonded to the silicon atoms in a molecule as the organopolysiloxane and further comprising an organohydrogenpolysiloxane and a platinum compound as a catalyst.

5,053,168

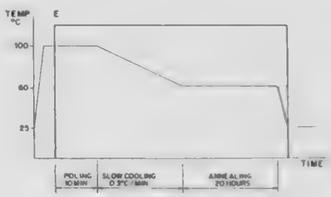
NONLINEAR OPTICAL MEDIUM WITH A STABLE NONCENTROSYMMETRIC POLYMERIC STRUCTURE

Hong-Tai Man, Basking Ridge, and Hyun-Nam Yoon, New Providence, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 181,751, Apr. 14, 1988, abandoned. This application May 22, 1990, Ser. No. 540,403

Int. Cl.[5] F21V *9/04*

U.S. Cl. 252—587 **5 Claims**



1. A process for providing a second order nonlinear optical medium having a stabilized noncentrosymmetric orientation of polymer molecules, which process comprises (1) heating a film of a polymer incorporating active units capable of exhibiting second order nonlinear optical response to a temperature of about the glass transition temperature(Tg) of the polymer; (2)

poling the polymer medium by applying an external electric field to induce noncentrosymmetry in the polymer medium by molecular orientation of said active units which exhibit second order nonlinear optical susceptibility and (3) cooling the noncentrosymmetric polymer medium to about room temperature, wherein said step of cooling the polymer includes slow cooling of from about 0.1 to about 0.5° C. per minute following poling to an annealing temperature below T_g and above room temperature which annealing temperature is maintained for a time period greater than 30 minutes, said external electric field bring maintained during said steps of slow cooling and annealing whereby the nonlinear optical medium so produced exhibits higher stabilized second order nonlinear optical activity than a corresponding medium produced by quenching the corresponding medium from about T_g to about room temperature in about 30 minutes under the influence of an electric field.

5,053,169

METHOD FOR REFINING WAX ESTERS USING AMORPHOUS SILICA

Alonzo L. Price, Baltimore, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Aug. 8, 1989, Ser. No. 390,799

Int. Cl.[5] C11B *11/00*

U.S. Cl. 260—428 **23 Claims**

1. A sequential treatment process for decreasing the phospholipid content of and decolorizing wax esters, comprising first treating said wax ester by contacting with amorphous silica having an effective average pore diameter of about 20 to 5000 Angstroms and next treating the phospholipid-depleted wax ester with bleaching earth.

5,053,170

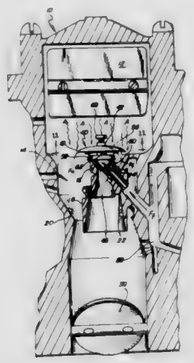
FUEL ATOMIZING DEVICE FOR CARBURETORS

Lloyd J. Drahos, 98-60th Avenue N.W., Rochester, Minn. 55901

Continuation-in-part of Ser. No. 495,404, Mar. 19, 1990. This application Oct. 9, 1990, Ser. No. 594,654

Int. Cl.[5] F02M *19/035*

U.S. Cl. 261—78.1 **18 Claims**



1. A universal fuel atomizing device for carburetors which have a fuel discharge located within a venturi stack with at least one boost venturi with a top lip that requires no carburetor adjustment, removal or disassembly, comprising:

(a) a fuel atomizing disc having top and bottom surfaces and an outer diameter atomizing edge,

(b) securing means for concentrically seating and holding the disc on the boost venturi whereby the disc draws fuel from the discharge, onto the bottom surface and towards the outer diameter atomizing edge from which the fuel is atomized by action of the localized vacuum, the air flow through the carburetor and the air turbulence at the atomizing edge.

5,053,171

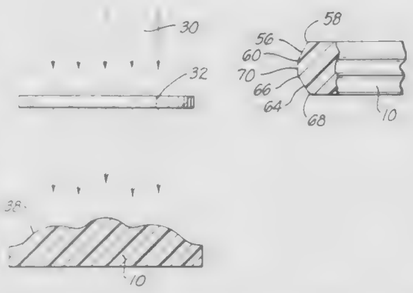
MANUFACTURE OF OPHTHALMIC LENSES BY EXCIMER LASER

Valdemar Portney, Irvine; Albert C. Ting, Laguna Niguel, and Timothy R. Willis, Lake Forest, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 919,206, Oct. 14, 1986, Pat. No. 4,842,782. This application Mar. 14, 1989, Ser. No. 323,493

Int. Cl.[5] B29D *11/00;* **B23K** *26/06;* **C03B** *23/00*

U.S. Cl. 264—1.4 **40 Claims**



1. A method of making small objects from a blank of ablatable material, comprising the steps of:

cutting a workpiece from said blank by exposing said blank to laser light in the outline of said workpiece without focusing the laser light at the workpiece;

exposing the surface of said workpiece to laser light through a mask having areas transmitting said light in varying degrees;

beveling the edges of said workpiece by exposing them to an inclined beam of laser light; and

wherein the step of cutting a workpiece from said blank includes focusing laser light in the outline of said workpiece at a location and placing the blank beyond the location so as to image the outline of the workpiece on said blank.

5,053,172

METHOD OF CLEANING SEMICONDUCTOR MOLDING APPARATUS

Katuhiko Yamasaki; Minoru Tanaka, and Kenichiro Sakamoto, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Fukuoka, Japan

Division of Ser. No. 256,466, Oct. 12, 1988, Pat. No. 4,983,115. This application Sep. 14, 1990, Ser. No. 582,101

Claims priority, application Japan, Oct. 19, 1987, 62-264155

Int. Cl.[5] B29C *45/02, 45/17*

U.S. Cl. 264—39 **2 Claims**

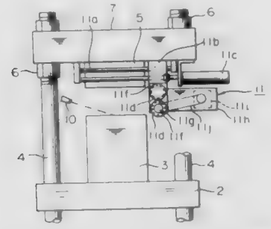
1. A molding method for sealing a semiconductor device in a resin comprising:

sealing a semiconductor device in a resin inside upper and lower mold halves respectively mounted on upper and lower platens;

removing the semiconductor device from the upper and lower mold halves after the completion of sealing;

moving a cleaning means mounted on the upper platen and having first and second brushes toward the mold halves so that the first and second brushes contact the upper and lower mold halves, respectively;

rotating and moving the first and second brushes parallel to the upper and lower mold halves, respectively, to remove



molding burrs, dust, and other foreign matter which adhere to the upper and lower mold halves; and

reciprocating up and down the first and second brushes to the upper and lower mold halves, respectively, while the first and second brushes are rotating and the cleaning means is moving parallel to the upper and lower mold halves, respectively.

5,053,173

PROCESS AND APPARATUS FOR MANUFACTURING PLASTIC MOULDINGS

Walter Sticht, Karl-Heinrich-Waggerl-Str.8, A-4800 Attnang-Puchheim, Austria

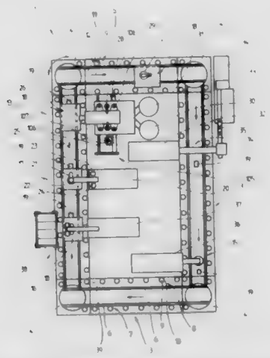
PCT No. PCT/AT88/00112, § 371 Date Aug. 16, 1990, § 102(e) Date Aug. 16, 1990, PCT Pub. No. WO89/05719, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 16, 1988, Ser. No. 474,805

Claims priority, application Austria, Dec. 17, 1987, 3324/87

Int. Cl.[5] B29C *45/04*

U.S. Cl. 264—39 **26 Claims**



1. A process for manufacturing moldings of plastic material, which comprises successive cycles of conveying a succession of mobile molding tool parts independently of each other along lateral and vertical guideways of a conveyor to a work station holding a basic molding tool part, each mobile molding tool part defining a molding cavity, and each cycle comprising the steps of joining the mobile molding tool part and the basic molding tool part together at the work station to close the mold cavity, dispensing the plastic material into the closed mold cavity from a dispensing device, connecting the mobile tool part in the work station to a temperature control circuit to impart a predetermined temperature to the mold cavity to permit the plastic material in the mold cavity to harden into a shape-retaining molding, separating the basic molding tool part from the mobile molding tool part after the molding has hardened, conveying the mobile molding tool part holding the molding in the mold cavity thereof independently of succeeding mobile molding tool parts to at least one succeeding work station for further treatment, and ejecting the monding from the mold cavity.

5,053,174

METHOD OF PRODUCING A SHRINKABLE PRODUCT

Tommi Borg, Evijarvi, Finland, assignor to Muolon Oy, Evijarvi, Finland

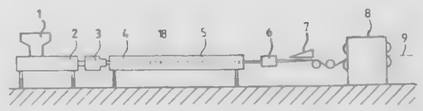
PCT No. PCT/FI88/00160, § 371 Date Sep. 27, 1989, § 102(e) Date Sep. 27, 1989, PCT Pub. No. WO89/03294, PCT Pub. Date Apr. 20, 1989

PCT Filed Oct. 5, 1988, Ser. No. 399,501

Claims priority, application Finland, Oct. 12, 1987, 874485; Mar. 8, 1988, 881067

Int. Cl.[5] B29C *47/86*

U.S. Cl. 264—146 **15 Claims**



1. A method of producing a shrinkable product of an orientable thermoplastic raw material by extrusion, comprising the steps of

extruding molten orientable plastic raw material through a die at such a low speed that the flow stays laminar, while keeping the walls of the die at as low a temperature as possible without plugging thereby to improve the adhesion of the material to said walls so as to keep the speed of the material as close to zero as possible along said walls, thus obtaining an orientation of the molecules which is longitudinal in the extrusion direction, and

quenching the plastic material after extrusion so that the longitudinal orientation of the molecules is maintained in a solidified state in the finished product.

5,053,175

PRODUCTION OF FIBRE REINFORCED CERAMIC COMPOSITE

James D. Birchall, Mouldsworth, and William J. Clegg, Upton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Nov. 27, 1989, Ser. No. 441,606

Claims priority, application United Kingdom, Dec. 8, 1988, 8828638

Int. Cl.[5] C04B *35/71*

U.S. Cl. 264—60 **16 Claims**

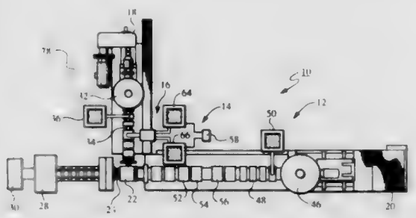
1. A process for the production of a fibre-reinforced ceramic composite by forming a precursor structure comprising a matrix of a composition comprising particulate ceramic material, liquid diluent and organic binder and fibres within the matrix, in which the fibres are formed from a composition comprising particulate ceramic material, liquid diluent and organic binder, and heating the precursor in order to evaporate the liquid diluent, decompose the organic binder and sinter the particles of ceramic material in both the matrix and the fibres.

5,053,176

METHOD AND APPARATUS FOR CREATING CONTROLLED COLOR PATTERNS IN FORMED VINYL SHEET ARTICLE

Peter D. Cameron, Kansas City, and Homer E. Galbraith, Ferrelview, both of Mo., assignors to Variform, Inc., Kearney, Mo.

Filed Nov. 1, 1989, Ser. No. 430,571
Int. Cl.[5] B29C 47/04
U.S. Cl. 264—75 20 Claims



1. An apparatus for creating controlled color patterns in at least one synthetic resin compound by mixing a synthetic resin colorant with the compound, said apparatus comprising:

processing means including an extruder for processing the compound and the colorant and heating the compound introduced therein to a temperature level within said extruder sufficient for inducing a thermoplastic state in the introduced compound and melting the colorant introduced therein;

color feeder means operably coupled with said extruder for introducing the colorant thereinto; and

cooling means operably coupled with said color feeder means for keeping the colorant at a temperature substantially below the melting point of the colorant until introduced into said extruder so that the colorant does not become heated to the melting point until after entering said extruder

5. A method for making a synthetic resin article presenting a controlled color pattern of continuous striations, the method including the steps of:

(a) providing respective quantities of a synthetic resin compound and a synthetic resin colorant;

(b) heating said quantity of compound to a temperature level sufficient to induce a thermoplastic state therein;

(c) maintaining said quantity of colorant at a temperature level substantially below its melting point prior to mixing thereof with said compound;

(d) introducing said quantity of colorant into said synthetic resin compound in a thermoplastic state with said colorant in a substantially unmelted state; and

(e) melting said colorant by mixing it in predetermined proportions with said thermoplastic compound while said compound is moving so that striations appear continuously throughout the length of the synthetic resin article

5,053,177

METHOD FOR MAKING A COATED SYNTHETIC RESIN WEB

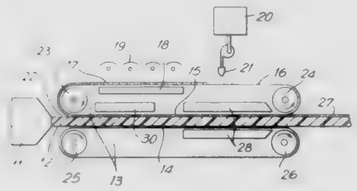
Heinz Vetter, Rossdorf, and Werner Siol, Darmstadt-Eberstadt, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed May 15, 1989, Ser. No. 352,051
Claims priority, application Fed. Rep. of Germany, May 18, 1988, 3816855
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] B29C 47/88
U.S. Cl. 264—134 15 Claims

1. A method for providing a scratch resistant film on a continuous synthetic resin web, which method comprises

(a) shaping a thermoplastic synthetic resin molding composition into said continuous web in a dual belt continuous casting machine between two parallel endless belts running in the same direction and spaced a constant distance apart to form said continuous synthetic resin web;

(b) depositing a material adapted to forming said scratch resistant film onto a shaping surface of the return run of at least one of said endless belts, said material being a liquid mixture of (1) at least one monomer susceptible of free radical polymerization and having more than one polymerizable double bond and of (2) an initiator which forms free radicals under ultraviolet radiation or at a temperature at or above the temperature of said shaping surface of said return run and at or below the temperature of said thermoplastic synthetic resin molding composition;



(c) contacting said continuous web of thermoplastic synthetic resin molding composition and said film of material formed on said belt when the monomer or monomers in the film on said belt has been partially copolymerized;

(d) keeping said film of material formed on said belt in contact with said continuous web as said web cools;

(e) curing said film, in contact with said web and said belt until said web has cooled to a temperature below the softening point of said thermoplastic synthetic resin molding composition; and

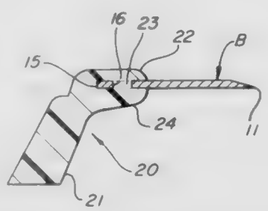
(f) removing said cooled web, having said cured film thereon, from the surface of said belt.

5,053,178

PROCESS FOR INSERT MOLDING DISPOSABLE RAZOR

C. Edward Butlin, Erie, Pa., and William T. Conrad, Jr., Shelton, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 24, 1987, Ser. No. 42,493
Int. Cl.[5] B29C 45/14
U.S. Cl. 264—254 7 Claims



1. A method for making a disposable razor with a blade, blade support means, a handle means and blade covering means wherein said blade support means, handle means, and blade covering means are made of thermoplastic material comprising:

a) mating a blade to a thermoplastic blade support by molding said blade support around said blade, said blade support forming at least part of at least one of said means and covering a longitudinally central part of one surface of said blade but terminating before the longitudinal ends of said blade; and

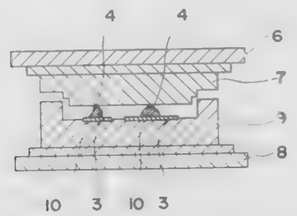
b) molding the remaining thermoplastic components around the blade-support combination.

5,053,179

PROCESS FOR PRODUCING A MULTILAYER MOLDED ARTICLE

Syohei Masui, Kyoto; Masahito Matsumoto, Ibaraki, and Nobuhiro Usui, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP88/00438, § 371 Date Nov. 29, 1988, § 102(e) Date Nov. 29, 1988, PCT Pub. No. WO88/08364, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 30, 1988, Ser. No. 283,930
Claims priority, application Japan, Apr. 30, 1987, 62-109509
Int. Cl.[5] B29C 33/14, 43/18; B32B 27/06
U.S. Cl. 264—257 11 Claims



1. A process for producing a multilayer molded article which comprises:

supplying at least one piece of a skin material and then a resin melt between unclosed upper and lower molds, wherein the resin melt is supplied after temporarily stopping the closing of the molds or decreasing the mold closing rate to 30 mm/sec. or less, and wherein a cavity clearance between the upper and lower molds is not larger than (C+100)mm and not smaller than (C+5)mm wherein C represents cavity clearance between the molds when the molding process is completed; and then

closing the molds to spread the resin melt and form the multilayer molded article comprising a resin and the skin material which covers only a part of the surface of the article, wherein the skin material is placed at a predetermined skin material position on one of the lower or upper molds to prevent displacement of the skin material due to spreading the resin melt, and the resin melt is supplied at or near a center area of an outward face of the skin material, wherein said predetermined position is a structure selected from the group consisting of a depression in the mold, a boundary wall on the mold, a telescopic element in the mold and an uneven surface area in the mold.

5,053,180

PROCESS FOR DEFORMATION OF AMORPHOUS POLYMERS

Paul T. Wang, Murrysville; Darral V. Humphries, Lower Macungie, and John H. Milsom, Allegheny Township, Westmoreland County, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 933,951, Nov. 24, 1986, Pat. No. 4,874,657, which is a continuation-in-part of Ser. No. 268,405, Nov. 8, 1988, Pat. No. 4,956,140, Continuation-in-part of Ser. No. 806,994, Dec. 9, 1985, Pat. No. 4,789,514. This application Jul. 31, 1989, Ser. No. 387,170
The portion of the term of this patent subsequent to Dec. 6, 2005, has been disclaimed.
Int. Cl.[5] B29C 55/16, 55/18
U.S. Cl. 264—290.2 15 Claims

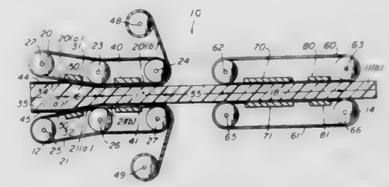
1. A process for producing a biaxially oriented amorphous polymer product having improved surface quality, said process comprising the steps of:

(a) biaxially orienting an amorphous polymer material in a deformation zone by:

(1) engaging the material between a first pair of opposed belts which converge in a downstream direction,

(2) heating the material to a first temperature above its glass transition temperature but below its viscous flow temperature, and

(3) moving the opposed belts downstream while squeezing the material so that it is elongated longitudinally, spread laterally and reduced in thickness,



(b) in a cooling zone downstream from said deformation zone, reducing the temperature of the material to a second temperature below said first temperature, and

(c) in an annealing zone downstream from said cooling zone,

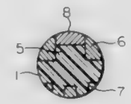
(1) annealing the material at a temperature above its glass transition temperature and below its viscous flow temperature for a sufficient time to reduce surface irregularities.

5,053,181

MOLDED RESIN ARTICLE AND A METHOD FOR THE MANUFACTURE THEREOF

Yutaka Ohashi; Kenichi Ono, and Toshihiko Goto, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 247,337, Sep. 21, 1988, abandoned, which is a division of Ser. No. 63,322, Jun. 18, 1987, abandoned.
This application Oct. 20, 1989, Ser. No. 423,724
Int. Cl.[5] B29C 45/33
U.S. Cl. 264—296 1 Claim



1. A method of manufacturing a molded resin distributor rotor of an ignition distributor for an internal combustion engine having a central section subject to the formation of voids during molding comprising:

an injection step of injecting a resin molding material into a mold cavity in a mold to completely fill said mold cavity;

a compression step of compressing a portion of the resin molding material in the mold which forms the central section of the distributor rotor;

a cooling step of solidifying the resin molding material by cooling while maintaining said portion under pressure; and

a removal step of removing the resulting molded resin article from said mold after said cooling step;

wherein said mold comprises two mold halves, each having an inner surface, which inner surfaces together define the mold cavity, one of said mold halves having a plunger with a molding surface which, in use, contacts the resin molding material, said plunger being slidably disposed such that it can be moved towards and away from the mold cavity, the molding surface of said plunger confronting said portion of the resin molding material subject to

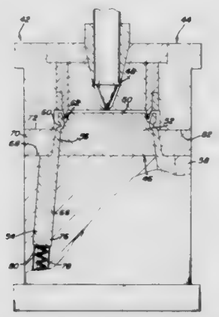
the formation of voids during molding, said plunger being retracted from the mold cavity during said injection step so that a space is formed between the molding surface of said plunger and the mold cavity, the resin molding material being injected so as to completely fill said space; and said compression step is carried out directly after said injection step before cooling wherein said compression step comprises pushing said plunger inwards until the molding surface of the plunger is flush with the inner surface of the mold, and maintaining said plunger in this position thereby maintaining substantially constant volume of material in mold, whereby the resin molding material in said space is forced into the mold cavity and said portion of the resin molding material subject to the formation of voids during molding is compressed during the cooling stage to avoid the formation of voids during cooling.

5,053,182

ONE PIECE SAFETY CAP MOLDING APPARATUS AND METHOD

Peter Hedgewick, Windsor, Canada, assignor to Caran Engineering Investments, Inc., Nassau, The Bahamas

Filed Sep. 5, 1989, Ser. No. 402,555
Int. Cl.[5] B29C *33/48*
U.S. Cl. 264—318 **6 Claims**



1. A method of molding a cap (**16**) including a base portion (**18**) and a peripheral skirt (**20**) extending axially from and about said base portion (**18**), said method including the steps of: seating an outer surface forming mold (**44**) about a core portion (**52**); forming an outer surface of the base portion (**18**) and the peripheral skirt (**20**) within a mold cavity (**70**); forming an inner surface of the base portion (**18**) and the peripheral skirt (**20**) about the core portion (**52**); retracting the outer surface forming mold (**44**) from seated engagement with the core portion (**52**); exposing the formed cap (**16**); and projecting axially from and retracting radially a peripheral molded portion (**54**) of the core portion relative to the remainder thereof for releasing and ejecting the formed cap (**16**) form the core portion (**52**), outwardly biasing the peripheral mold portion (**54**) through angled channels in the core portion 952) to eject and release the molded cap (**16**) from the core portion (**52**) to eject and release the molded cap (**16**) from the core portion (**52**) and forcing the peripheral mold portions (**54**) back into the channels against the biasing force during said forming steps.

5,053,183

METHOD OF HANDLING GREEN CERAMIC CARDS

James A. Miller, Apollo, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

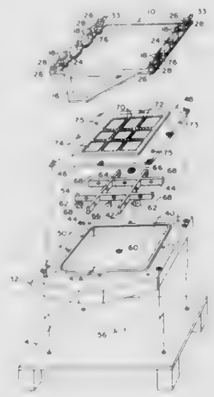
Filed Sep. 21, 1989, Ser. No. 410,412
Int. Cl.[5] B65H *9/08*
U.S. Cl. 264—547 **2 Claims**

1. A method of handling a fragile, flexible, green ceramic card and for transferring the card from one location to another location, comprising:

disposing said card on a tray having an open area in the center portion of the tray,

locating the tray with the card on a perforated plate located on a hollow platen containing intersecting walls that form center and peripheral compartments in said hollow platen,

evacuating the center compartment in said hollow platen beneath the card to draw a center portion of the card against the plate,



evacuating the peripheral compartments of said hollow platen to draw peripheral portions of the card to the plate such that the card is substantially flat,

clamping opposed edges of the card against the tray,

removing the vacuum from said compartments,

moving the tray from the plate and the platen to another location, and

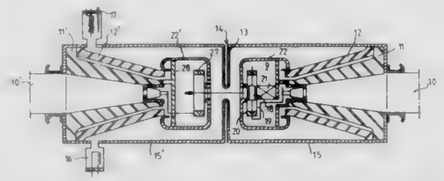
unclamping the opposed edges of the card so that the card can be removed from the tray.

5,053,184

DEVICE FOR IMPROVING THE SERVICE LIFE AND THE RELIABILITY OF A SEALED HIGH-FLUX NEUTRON TUBE

Serge Cluzeau, Boissy Saint Leger, and Gérard Verschoore, Creteil, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1989, Ser. No. 343,115
Claims priority, application France, Apr. 26, 1988, 88 05510
Int. Cl.[5] G21K *5/00;* **G01N** *23/05, 23/22, 23/202*
U.S. Cl. 376—116 **11 Claims**



1. A sealed high-flux neutron tube having improved service life and reliability comprising

(a) a first structural part containing an ion source, said ion source including a gaseous deuterium-tritium mixture to form a high-energy ion beam;

(b) a second structural part containing a target, said target receiving said high-energy ion beam to produce neutron emission;

(c) insulating walls disposed in said first structural part and in said second structural part, said insulating walls having corresponding parts in each of said first structural part and said second structural part, and said insulating walls having surfaces inclined in the same direction with respect to the direction of said ion beam;

(d) an accelerator electrode disposed between said first structural part and said second structural part, said accelerator electrode forming a shield between said first structural part and said second structural part;

(e) means connected to said accelerator electrode for applying a ground potential to said accelerator electrode through an external envelope of both said first structural part and said second structural part, said external envelope being of a conductive material;

(f) means connected to said first structural part for applying an adjustable positive potential to said ion source; and

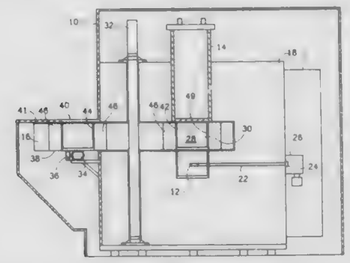
(g) means connected to said second structural part for applying another adjustable potential to said target, said another adjustable potential being negative with respect to a zero value of said potential applied to said accelerator electrode.

5,053,185

MATERIAL ANALYZER WITH CAROUSEL

Scott C. Christensen, Sioux Falls, S. Dak.; Raymond J. Proctor, San Diego, and Richard L., Conwell, Del Mar, both of Calif., assignors to Gamma-Metrics, San Diego, Calif.

Filed May 23, 1990, Ser. No. 527,483
Int. Cl.[5] G21G *1/121*
U.S. Cl. 376—157 **10 Claims**



1. An apparatus for analyzing material samples, comprising a container;

a radiation source disposed within the container;

a detector disposed within the container for detecting radiation that is secondarily emitted by a material sample within an activation region located between the radiation source and the detector when the material sample is bombarded by radiation from the radiation source and for producing signals in response to said secondarily emitted radiation;

a radiation shield within the container for shielding the outside of the container from radiation derived in the activation region from the radiation source;

means for processing said signals to determine the content of the material sample; and

means for transporting a material sample from outside the container to within said activation region;

wherein said transporting means comprise a carousel, disposed about an axis of rotation located between the activation region and a receiving region located outside the container, and having at least one sample containment chamber that is moved between the receiving region and the activation region when the carousel is rotated about said axis.

5,053,186

SOLUBLE IRRADIATION TARGETS AND METHODS FOR THE PRODUCTION OF RADIORHENIUM

Jean-Luc E. Vanderheyden; Fu-Min Su, both of Seattle, Wash., and Gary J. Ehrhardt, Columbia, Mo., assignors to NeoRx Corporation, Seattle, Wash. and The Curators of the University of Missouri, Columbia, Mo.

Filed Oct. 2, 1989, Ser. No. 416,243
Int. Cl.[5] G21G *1/00*
U.S. Cl. 376—189 **7 Claims**

1. A method of producing a rhenium-186 or rhenium-188 radionuclide for therapeutic or diagnostic use, comprising:

irradiating a water soluble irradiation target selected from the group consisting of aluminum perrhenate, lithium perrhenate and magnesium perrhenate, to obtain the radionuclide or a parent isotope of the radionuclide, and

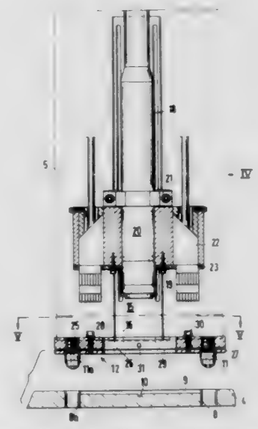
dissolving the irradiated target in aqueous solution.

5,053,187

APPARATUS FOR POSITIONING A MAST FOR THE INSPECTION AND/OR REPAIR OF A CORE SHROUD OF A WATER-COOLED NUCLEAR REACTOR

Hans Haller, Mannheim, Fed. Rep. of Germany, assignor to ABB Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 18, 1990, Ser. No. 584,728
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1989, 3931079
Int. Cl.[5] G21C *17/08*
U.S. Cl. 376—258 **5 Claims**

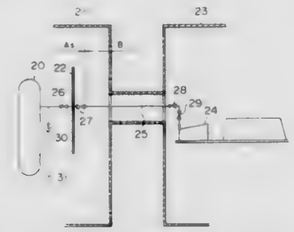


1. In a water-cooled nuclear reactor including a core shroud with a bottom, a support plate disposed at the bottom of the core shroud, a television camera, and a mast for the inspection and/or repair of the core shroud having a foot with centering pins to be introduced into respective bores formed in the support plate under surveillance by the television camera, an apparatus for positioning the mast, comprising a first marking disposed at the support plate, and a marking element associated with the mast and disposed between the television camera and the support plate, said marking element having a second marking to be brought into alignment with said first marking, and the centering pins and the respective bores being disposed concentrically to one another when said markings are in alignment.

5,053,188
REACTOR SYSTEM

Tsuyoshi Niino, Hitachi; Yoshiyuki Kataoka, Ibaraki; Matsuo Morikawa, and Kazuhito Koyama, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1989, Ser. No. 336,423
Claims priority, application Japan, Apr. 12, 1988, 63-90087
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—277 **5 Claims**

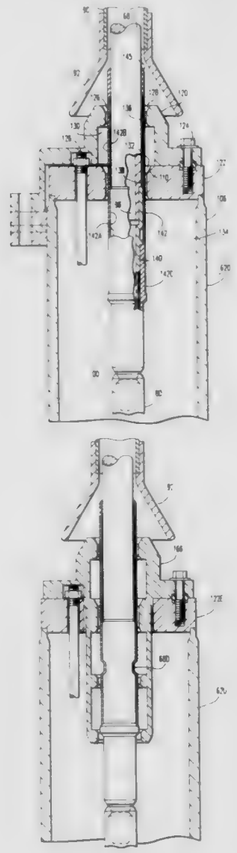


1. A reactor system of a boiling water type atomic power plant including a reactor pressure vessel, a primary containment vessel containing the reactor pressure vessel, a main turbine, a main steam piping extending through the primary containment vessel between the reactor pressure vessel and the main turbine, and inside and outside main steam isolation valves provided on the main steam piping inside and outside the primary containment vessel, respectively, at least the outside main steam isolation valve being disposed nearer to a wall of the containment vessel than other valves provided on the main steam piping outside of the containment vessel, at least one of the inside and outside main steam isolation valves being a quick closure valve enabling closure within a period of time of less than 3 seconds required for protection of a turbine at a time of interruption of turbine load, and a volume of the reactor pressure vessel allotted for accommodating steam being sufficient to permit the quick closure valve to quickly close and to mitigate a transient phenomenon associated with a pressure rise in the reactor pressure vessel due to the quick closure of the quick closure valve so as to insure safety and stability of the reactor system.

5,053,189
SYSTEM PROVIDING IMPROVED GUIDANCE SUPPORT WITH RESTRICTED COOLANT FLOW FOR CONTROL RODS IN THE UPPER HEAD PLENUM OF A NUCLEAR REACTOR

James R. Chrise; James A. Rex, both of Trafford; David E. Boyle, Spring Church, and Richard E. Schwirian, Pleasant Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1989, Ser. No. 422,261
Int. Cl.[5] G21C *1/01*
U.S. Cl. 376—353 **20 Claims**



1. A system for providing control rod guidance support with restricted rod coolant flow in a nuclear reactor pressure vessel having a fuel core with an outlet plenum for core heated coolant located thereabove and with an upper head plenum located above the outlet plenum and receiving a portion of return core coolant flow, a plurality of externally driven control rod assemblies each having a drive rod coupled to a depending control rod and extending vertically through the upper plenum and outlet plenum spaces for control rod movement into and out of the core to control the nuclear reaction, said control rod guidance support system comprising:

a generally solid upper horizontal support plate secured to the vessel above the fuel core between the upper head plenum and the outlet plenum;

a control rod guide tube assembly for each control rod assembly having an upper guide tube located in the upper plenum above the upper support plate and lower guide tube means located in the outlet plenum and aligned with the upper guide tube through an opening in the upper support plate and further aligned with a fuel assembly located in the core therebelow;

said upper guide tube and said lower guide tube means housing the control rod when it is withdrawn from the fuel core and having a plurality of horizontal support cards secured therein at vertically spaced locations and provided with openings therethrough to provide guided support of the control rod when it is positioned and as it moves along its vertical path operation;

said upper guide tube having a top enclosure plate with a drive rod opening therethrough sized to provide a predetermined clearance space between said drive rod and said top enclosure plate and to direct coolant flow between said upper and outlet plenums and through said guide tube assembly;

means for restricting coolant flow through said top plate clearance space to reduce control rod wear;

coupling means for securing the drive and control rods in end-to-end relation within the guide tube assembly and located just below said top enclosure plate with the control rod fully withdrawn;

said coolant restricting means including at least a flow restrictor located above and secured to said top enclosure plate and having an upper portion disposed about and spaced from the drive rod to provide a flow gap having a flow area substantially equal to said clearance space and otherwise structured to provide at least one contraction-expansion loss above said top guide tube plate for guide tube coolant flow;

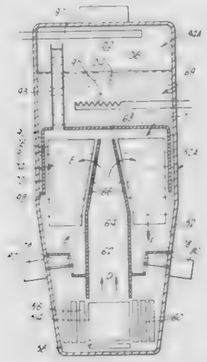
said coolant restricting means further includes a sleeve disposed about and secured to said coupling means and having a portion thereof extending upwardly over the drive rod so that said sleeve reduces the flow area in said clearance space when the control rod is fully withdrawn; and

means providing a total bypass area between said upper and outlet plenums that takes up at least some of the restricted flow from the upper control rod guide tubes.

5,053,190
WATER COOLED NUCLEAR REACTOR AND PRESSURISER ASSEMBLY

Frederick J. Gardner, Derby, and Rodney Strong, Nottingham, both of England, assignors to Rolls-Royce and Associates Limited, Derby, England

Filed Apr. 6, 1989, Ser. No. 333,975
Claims priority, application United Kingdom, Apr. 13, 1988, 8808707
Int. Cl.[5] G21C *15/00*
U.S. Cl. 376—366 **35 Claims**



1. A water cooled reactor and pressuriser assembly comprising a reactor core, a primary coolant circuit, a pressuriser, a pressure vessel, at least one vent conduit and at least one surge conduit,

the reactor core and at least a portion of the primary water coolant circuit being enclosed by the pressure vessel, the primary water coolant being arranged to cool the reactor core, the primary water coolant circuit having an upper portion and a lower portion, the lower portion being positioned below any normal effective range of water levels of the primary water coolant circuit, the upper portion being positioned above the lower portion,

the pressuriser having a water spaced and a steam space, at least a portion of the water space of the pressuriser being positioned above the upper portion of the primary water coolant circuit,

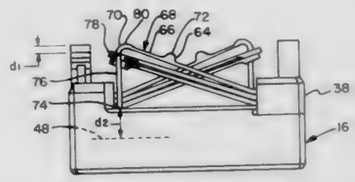
the at least one surge conduit communicating between the pressuriser and the primary water coolant circuit to connect the water space of the pressuriser with the lower portion of the primary water coolant circuit, the at least one surge conduit being arranged to have a relatively low flow resistance for water from the water space of the pressuriser to the primary water coolant circuit and a relatively high flow resistance for water from the primary water coolant circuit to the water space of the pressuriser,

the at least one vent conduit communicating between the pressuriser and the primary water coolant circuit to connect the steam space of the pressuriser with the upper portion of the primary water coolant circuit whereby the at least one vent conduit which communicates between the steam space of the pressuriser and the upper portion of the primary water coolant circuit allows excess vapour formed in the primary water coolant circuit to flow to the steam space of the pressuriser to increase the stability of the assembly.

5,053,191
FUEL ASSEMBLY HOLDDOWN SPRING

William J. Bryan, and Steven C. Hatfield, both of Granby, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 13, 1990, Ser. No. 581,795
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—446 **3 Claims**



3. In a nuclear reactor having a core defined by a plurality of side by side, vertically extending, elongated nuclear fuel assemblies each having an upper end fitting, an upper core plate oriented horizontally in closely spaced relation to the upper end fittings, and a plurality of spring packs attached to the upper end fittings and cantilevered toward the core plate so as to resiliently urge the fuel assemblies against the lower core plate, said cantilevered spring having a loading point at a preset distance from the attachment point, wherein the improvement comprises the cantilevered spring having a projection toward the upper core plate which contacts the core plate when the core plate deflects the spring a predetermined amount, thereby effectively shortening and stiffening the spring against further movement of the core plate relatively toward the upper end fitting of the spring a second loading.

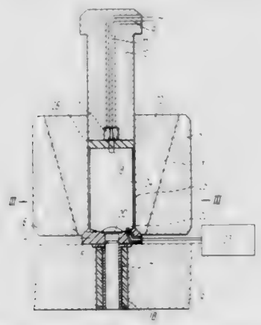
5,053,192
METHOD FOR MAKING PRODUCTS FROM POWDERED MATERIALS

Alexandr G. Merzhanov, ulitsa Tretya, 3, kv. 2; Alexandr M. Stolin, Institutsky prospekt,6,kv.86; Vadim V. Podlesov, Shkolny bulvar,11,kv.17; Leonid M. Buchatsky, ulitsa Lesnaya,5,kv.99, and Tatyana N. Shishkina, ulitsa Tsentralnaya,18,kv,110, all of Moskovskaya oblast, poselok Chernogolovka, U.S.S.R.

PCT No. PCT/SU88/00274, § 371 Date Aug. 23, 1990, § 102(e) Date Aug. 23, 1990, PCT Pub. No. WO90/07015, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 20, 1988, Ser. No. 566,360
Int. Cl.[5] B22F *3/24*
U.S. Cl. 419—10 **1 Claim**

1. A method for making products from powdered materials selected from a group consisting of at least one transition metal, at least one non-metal and at least one binder based on a metal from the periodic table, comprising preparation of a powder-like mixture from said materials, initiation of combustion reaction therein with formation of a hard phase in the combustion products from said transition metal and non-metal followed by deformation of combustion products and extraction of the finished product and wherein the combustion products are deformed by extrusion at an extrusion temperature T

of the combustion products from 0.3 T_1 to T_2 where T_1 is the melting point of the hard phase of the combustion products and



T_2 is the melting point of the binder material and at a pressure P ranging from 2000 to 5000 kgf/cm^2.

5,053,193

Patent Not Issued For This Number

5,053,194

FORMABLE THIN STEEL SHEETS

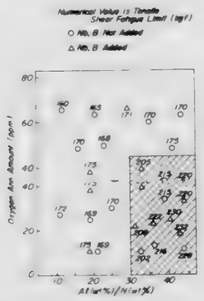
Yoshio Yamazaki; Susumu Okada; Susumu Satoh; Toshiyuki Kato; Hideo Abe, and Keiji Nishimura, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 12, 1989, Ser. No. 449,724

Claims priority, application Japan, Dec. 19, 1988, 63-318404; Oct. 26, 1989, 1-277158

Int. Cl.[5] C22C *38/06*

U.S. Cl. 420—128 **2 Claims**



1. A formable thin steel sheet having improved fatigue resistance at welded joints, comprising not more than 0.003 wt % of C., not more than 1.0 wt % of Si, not more than 1.0 wt % of Mn, not more than 0.15 wt % of P, not more than 0.020 wt % of S, not more than 0.0045 wt % of O, not more than 0.0020 wt % of N, not more than 0.15 wt % of Al provided that a ratio of Al/N is not less than 30, at least one of 0.00–1.0.025 wt % of Nb and 0.0003–0.0017 wt % of B, and the balance being Fe and inevitable impurities.

5,053,195

BONDING AMALGAM AND METHOD OF MAKING

Colin A. MacKay, Austin, Tex., assignor to Microelectronics and Computer Technology Corp., Austin, Tex.

Filed Jul. 19, 1989, Ser. No. 382,829

Int. Cl.[5] C22C *28/00*

U.S. Cl. 420—555 **13 Claims**

1. A method for preparing an amalgam for bonding two articles together comprising,

mixing the composition to thoroughly wet the metal powder with the liquid metal, and

thereafter mixing the composition with a pestle element and mechanically amalgamating the composition, wherein the mixing is in an amalgamator at approximately 3600 cpm for approximately 1–20 seconds and thereafter at approximately 3000 cpm for approximately 3–5 seconds.

2. The method of claim **1** wherein the liquid metal is selected from the group consisting of gallium, indium, gallium/tin, gallium/indium, and gallium/indium/tin.

5,053,196

METHOD FOR CONTAINER CONVEYANCE IN GERM-FREE FILLING/PACKAGING SYSTEM

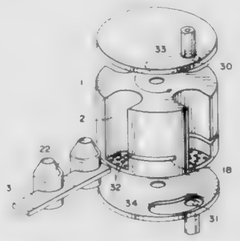
Takeo Ide, Kawagoe, and Koichi Hatanaka, Sayama, both of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Jul. 19, 1989, Ser. No. 382,201

Claims priority, application Japan, Jul. 26, 1988, 63-186448; Jul. 26, 1988, 63-186449

Int. Cl.[5] A61L *2/00;* **B65B** *55/02*

U.S. Cl. 422—28 **7 Claims**



1. In a method for conveying containers through a germ-free filling/packaging process where the containers are conveyed through a series of steps in which a preceding step is separated from a succeeding step such as to substantially separate the atmosphere of the preceding step from the atmosphere of the succeeding step, the improvement comprising:

(1) contacting the containers and associated conveying apparatus with a germicidal gas, in a preceding germicidal step, sufficiently to sterilize said containers;

(2) conveying said sterilized containers to a rotatable partition separating a preceding step from a succeeding step, said partition having cylindrical side walls partly enclosed by a member having a container entrance opening and a container exit opening and which member is spaced from said partition sufficiently so as to provide a cylindrical space therebetween and wherein said side walls have a plurality of successive recesses therein of configurations to receive successively conveyed containers;

(3) moving successive sterilized containers into the successive recesses;

(4) rotating said partition such that a conveyed container in a conveying recess of said successive recesses is moved to a position between said entrance opening and said exit opening;

(5) flowing an aseptic gas through the conveying recess sufficiently to remove germicide from the conveying recess and to separate the atmosphere of the preceding step from the atmosphere of the succeeding step;

(6) further rotating said partition such as to move the conveyed container to the exit opening; and

(7) moving said conveyed container from the conveying recess and into a succeeding step of the process.

5,053,197

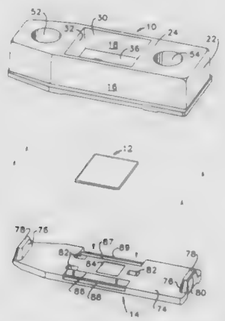
DIAGNOSTIC ASSAY MODULE

Mark S. Bowen, Medford, Mass., assignor to PB Diagnostic Systems, Inc., Westwood, Mass.

Filed Jul. 19, 1989, Ser. No. 382,552

Int. Cl.[5] G01N *33/00*

U.S. Cl. 422—58 **17 Claims**



1. A diagnostic assay module for analytical diagnostic procedures in which an optical signal developed be interaction between a component in a sample fluid and one or more reagents in a resilient assay element is read by optical means, said assay module comprising:

a first member including wall means to define side walls, end walls and a top wall wherein the bottom of the first member is open, said first member further including inner and outer surface formations, said wall means including an opening to permit sample fluid to be introduced therethrough so as to be delivered to said assay element;

a second member for closing said open bottom of said first member, said second member having an open optical read aperture positioned to be registration with at least a substantial portion of said assay element when said assay element and said first and second members are assembled; and

means for inclining opposing edges of said assay element at a downward angle to maintain the area of said assay element overlying said optical read aperture in a substantially planar configuration the assay element to maintain it in a controlled orientation.

5,053,198

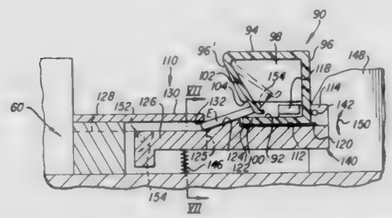
USED TEST ELEMENT COLLECTION APPARATUS AND METHOD

John A. Quenin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 310,133, Feb. 14, 1989, abandoned. This application May 26, 1989, Ser. No. 358,527

Int. Cl.[5] G01N *35/00;* **B65D** *85/48*

U.S. Cl. 422—64 **18 Claims**



1. Automatic collection apparatus for test elements useful in an analyzer to measure analytes in a biological liquid, said apparatus comprising

a container having side walls, first and second end walls, access means in one of said side walls near said first end wall defining an aperture to allow test elements to feed into said container, and biasing means for biasing a test element against said first end wall or against a test element adjacent to said first end wall, and

a stacking station for inserting test elements into said container, said station including means for releasably holding said container in position to receive used test elements, and guide means for guiding used test elements into said container in an ordered array, said guide means comprising a stationary track, means for providing relative limited vertical movement between said station and said track, between first and second limits; and means for biasing either said stacking station or said track against one of said limits, said stacking station including a camming surface shaped and positioned relative to said track to cause said stacking station a) to move against said biasing means when a test element first contacts said camming surface from said track, b) to receive said contacting test element, and c) to allow said stacking station to return under the action of said biasing means after loading said contacting test element, with said loaded test element positioned out of the plane of said track,

whereby used test elements are loaded in said ordered array.

5,053,199

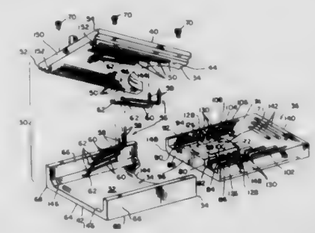
ELECTRONICALLY READABLE INFORMATION CARRIER

Dale A. Keiser, Mesa; Charles A. Jackson, Sun City, both of Ariz., and William R. Boyd, Indianapolis, Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Feb. 21, 1989, Ser. No. 313,244

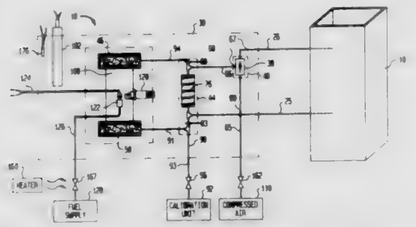
Int. Cl.[5] G01N *33/00, 35/00*

U.S. Cl. 422—68.1 **4 Claims**



1. In combination, an apparatus comprising an integrated circuit carrier means for carrying an integrated circuit and a socket means for removably receiving the carrier means and through which electrical contact is made to the integrated circuit to provide communication with the integrated circuit when the carrier means is inserted into its use orientation in the socket means, the socket means including an opening constructed so as to slidably longitudinally receive the carrier means and a first set of electrical contacts, the carrier means including a second set of electrical contacts positioned and arranged so as to be electrically contacted by respective contacts of the first set, at least one of the socket means and carrier means also comprising upstanding first wall portions extending along the longitudinal length of at least one of the socket means and carrier means to promote separation of the electrical contacts of the first set from each other when the carrier is received in the socket means, the carrier means comprising upstanding second wall portions extending between adjacent electrical contacts of the second set of electrical contacts so as to reduce the likelihood of accidental electrical contact between adjacent electrical contacts of the second set.

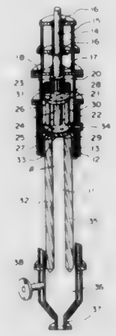
5,053,200
FLAMMABLE VAPOR ANALYZER
Matthew J. Schaeffer, 5 Oxford Dr., North Caldwell, N.J. 07006, and Christopher G. Schaeffer, 34 Watchung Ave., Montclair, N.J. 07043
Filed Aug. 25, 1989, Ser. No. 398,747
Int. Cl.[5] G01N *31/12, 31/00*
U.S. Cl. 422—83 19 Claims



1. A method for the analysis of flammable vapors in a gas in an industrial application. said method comprising the steps of:
withdrawing a sample flow of a gas from an industrial application;
dividing said sample flow into
a primary sample flow, and
a secondary sample flow comprising a flow of a test portion of said gas;
filtering said secondary sample flow to remove unwanted particles;
testing by a suitable testing means, the flammable vapor content of the test portion of said gas;
restricting the flow of said secondary sample flow by means of a secondary sample flow restriction means;
combining said secondary sample flow with the primary sample flow;
restricting said primary sample flow between the step of dividing said secondary sample flow from said primary sample flow and the step of combining said secondary sample flow with said primary sample flow, thereby creating a pressure differential enabling the flow of said secondary sample flow comprising the test portion; and
returning the sample flow to said industrial application.

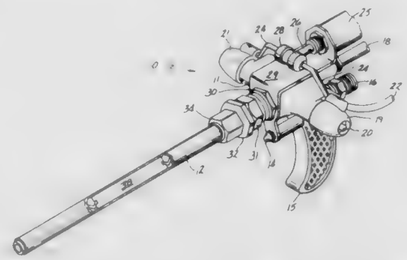
5,053,201
PROCESS AND APPARATUS FOR PREPARATION OF POLYESTERS
Shinichi Yamauchi, Matsuyama; Katsushi Sasaki, Tokyo; Eiji Matsumura, Iwakuni; Yasuhiko Saito, and Takashi Kishida, both of Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Sep. 5, 1986, Ser. No. 904,180
Claims priority, application Japan, Sep. 17, 1985, 60-203465; Sep. 27, 1985, 60-146554[U]; Dec. 4, 1985, 60-271311
Int. Cl.[5] C08F *2/00*
U.S. Cl. 422—135 8 Claims

1. An apparatus for the preparation of a polyester, which comprises a thin film polymerization tank having a substantially cylindrical roller-shaped stirring vane rotating along and in close proximity to said substantially cylindrical vertical tank wall, wherein in the upper portion of the tank, a circumscribed type non-rotatable mesh gear, an upper disk and a lower disk are arranged in this order from above, a mesh driving shaft is disposed to pierce through the center of the main gear, upper disk and lower disk, the main driving shaft is freely rotatable within the main gear, at least one of the upper and lower disks is secured to the main driving shaft, at least one supporting shaft is vertically rotatably disposed on the upper and lower disks, and an epicyclic gear in meshing engagement with the main gear is attached to the top end portion of the supporting shaft and said a stirring vane is disposed on the lower portion of the supporting shaft such that the main driving shaft rotates the stirring vane in a first rotational direction about said cylindrical vertical tank wall through said at least one of the upper and lower disks secured to the main driving shaft and the main driving shaft also rotates the stirring vane about its own axis in



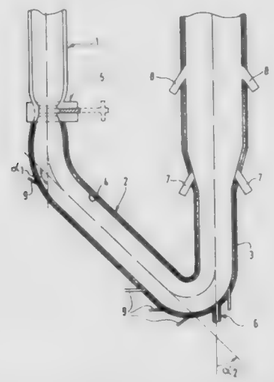
the same first rotational direction through the at least one of the upper and lower disks secured to the main driving shaft, said epicyclic gear in meshing engagement with the main gear and the supporting shaft.

5,053,202
STATIC MIXER CONFIGURATION
William P. Dwyer, Meriden, and Thomas P. Patrosh, Wallingford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.
Filed Aug. 2, 1990, Ser. No. 562,495
Int. Cl.[5] C08F *2/00*
U.S. Cl. 422—135 18 Claims



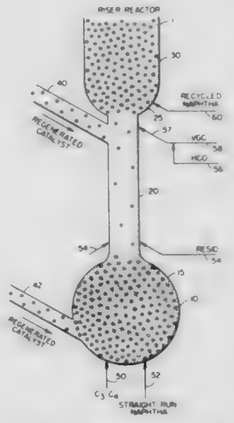
1. A static mixer adapted for use with a plural component dispensing apparatus for the dispensing of a substance formed for the mixing and reaction of plural components that are fed into a housing with a predetermined cross section at a first upstream end and exit the housing at an opposing second downstream end, comprising:
(a) a plurality of continuous helical mixer element within the housing between the first end and opposing second end, the mixer elements extending a first length within the housing; and
(b) a flat elongated planar spacer extending a second length and across substantially the entire cross section of the housing disposed intermediate at least one pair of the continuous plurality of mixer elements, downstream of the first of the pair of elements and upstream of the second of the pair of elements, the ratio of the second length of the spacer to the first length of the mixer elements being at least about 0.10 to about 0.30.

5,053,203
INSTALLATION FOR THE FLUIDIZED-BED CATALYTIC CRACKING OF A HYDROCARBON FEEDSTOCK
Jean-Louis Mauleon, Marly-Le-Roy, and Jean-Bernard Sigaud, Vaucresson, both of France, assignors to Compagnie de Raffinage et de Distribution France, Levallois-Perret, France
Filed Jan. 26, 1989, Ser. No. 302,576
Claims priority, application France, Jan. 26, 1988, 88 00849
Int. Cl.[5] B01J *8/26;* F27B *15/06*
U.S. Cl. 422—144 14 Claims



1. Apparatus for the fluidized-bed cracking of a hydrocarbon feedstock, comprising an essentially vertical, upflow tubular type of reactor having a bottom portion with a base and an upper portion; means for injecting into the reactor the feedstock to be cracked; means for introduction at the base of the reactor at least one gas capable of maintaining the catalyst particles in a fluidized bed condition; means in the upper portion of the reactor for the ballistic separation of spent catalyst particles and cracked hydrocarbons; means for regeneration of the spent particles by combustion of the coke deposited thereon; means for conducting the spent particles from the reactor to the regeneration means; and means for recycling the regenerated particles from the regeneration means to the base of the reactor, the means for recycling the regenerated catalyst particles to the base of the reactor being metallic piping free of expansion joints and internally provided with an abrasion-resistant heat-insulating refractory liner, such recycling means comprising, from upstream to downstream, a substantially vertical pipe connected to said regeneration means for receiving the discharge of the regenerated particles from the regeneration means, and a substantially straight transfer pipe connected to the vertical pipe at an obtuse angle ε; measured from the substantially vertical pipe and sloping downwardly therefrom to the bottom of the reactor to which it is connected at an acute angle a_2 measured from the longitudinal axis of said reactor, the downwardly-sloping transfer pipe being respectively connected to the vertical pipe and to the bottom of the reactor through curved portions defining elbows at said angles a_1 and a_2 respectively, the elbow which has the angle a_2 forming a continuous curved passage into the bottom of said reactor with the downstream upwardly curved portion of said elbow defining said base of said reactor and containing said means for injection, the length of said downwardly sloping transfer pipe being substantially greater than the length of the upwardly curved portion of said elbow having the angle a_2 , and the downwardly-sloping transfer pipe and the elbow connecting such transfer pipe to the base of the reactor each having a cross-sectional diameter substantially equal to that of the reactor base to which the elbow is connected.

5,053,204
MULTIPLE FEED POINT CATALYTIC CRACKING APPARATUS USING ELUTRIABLE CATALYST MIXTURE
Joseph A. Herbst, Turnersville; Hartley Owen, Bell Mead, both of N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.
Division of Ser. No. 292,206, Dec. 20, 1988, Pat. No. 4,927,522.
This application Mar. 28, 1990, Ser. No. 500,357
Int. Cl.[5] B01J *8/08*
U.S. Cl. 422—213 6 Claims



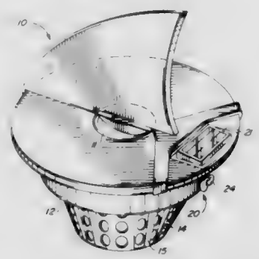
1. An apparatus for the catalytic cracking of heavy feed to lighter products comprising a vertical riser reactor adapted to maintain a fluidizable catalyst and said heavy feed as a dilute phase said reactor having an inlet in a base portion for hot, regenerated catalyst and feed and an outlet in a top portion of the reactor for cracked products and resulting spent catalyst characterized by;
a) a lower elutriating section comprising at least one inlet for a hydrocarbon feed and an inlet for an elutriable mixture of catalyst particles, said lower elutriating section having an average cross-sectional area and comprising a lower section having a cross-sectional area and an upper section having a reduced cross-sectional area relative to said lower section, and having an upper outlet in said upper section for the discharge of cracked products and catalyst;
b) a dilute phase transport riser means having an average cross-sectional area and a lower inlet connective with the outlet of said lower elutriating section, at least one inlet for a hydrocarbon containing feed, said dilute phase transport riser having a reduced cross-sectional area relative to said average cross-sectional area of said lower elutriating section, and having, at an upper portion thereof, an inlet for a mixture of hot, regenerated catalyst, and having an upper outlet for discharge of cracked products and catalyst;
c) an upper elutriating riser section having an average cross-sectional area and an inlet in a base portion connective with said dilute phase transport riser outlet, and having at least one inlet for addition of a hydrocarbon stream, said upper elutriating section comprising a lower section having a cross-sectional area and operatively connected with said outlet of said dilute phase transport riser and an upper section having an increased cross-sectional area relative to said lower section of said upper elutriating section, and an upper outlet connective with said upper section of said upper elutriating section for the discharge of cracked products and spent catalyst.

5,053,205

SOLAR PROPELLED CHEMICAL DISPENSER

Donald R. Taylor, 3525 E. St. John Rd., and Mark W. Kinzle, 17819 N. 35th Pl., both of Phoenix, Ariz. 85032

Filed Feb. 20, 1990, Ser. No. 481,878
Int. Cl.[5] B01D *11/02*
U.S. Cl. 422—265 18 Claims



1. A dispenser for releasing soluble chemicals into a body of water, comprising:

a floatable body;

a container member having a plurality of apertures passing therethrough, said container being operably associated with said floatable body and defining an interior chemical receiving chamber within said container;

active propulsion drive means, operably coupled to said floatable body, for imparting horizontal motion to said floatable body on the surface of the body of water; and

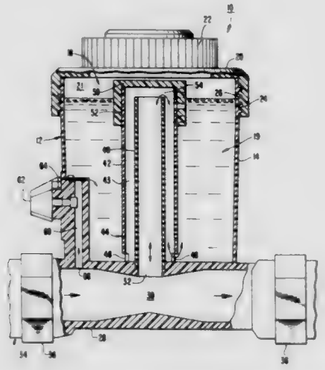
solar power means, electrically coupled to said drive means, for receiving solar energy, converting said received solar energy to electrical energy, and supplying said electrical energy to said drive means.

5,053,206

CHEMICAL DISPENSING DEVICE

Murrill W. Maglio, West Palm Beach, and Stephen D. Moore, Lake Worth, both of Fla., assignors to Universal Chemical Feeder, Inc., West Palm Beach, Fla.

Continuation of Ser. No. 139,974, Dec. 31, 1987, Pat. No. 4,908,190. This application Feb. 9, 1990, Ser. No. 456,731
The portion of the term of this patent subsequent to Mar. 13, 2007, has been disclaimed.
Int. Cl.[5] B01F *1/00*
U.S. Cl. 422—264 18 Claims



1. A device for dispensing chemical into a pipeline, the device comprising:

a conduit adapted to be disposed in-line with said pipeline, said conduit defining a liquid flow path and having an upstream end, a downstream end, and a conduit opening disposed between said upstream and downstream ends;

a pressure-tight enclosure having a bottom end and having an enclosure opening disposed in said bottom end for fluid communication with said conduit opening, said enclosure cooperating with said conduit to permit liquid to enter said enclosure through said enclosure opening when the pressure in said conduit is greater than the pressure in said enclosure, and for discharging liquid from said enclosure when the pressure in said enclosure is greater than the pressure in said conduit;

means for connecting said enclosure opening to said conduit opening for fluid communication between said openings;

means for introducing chemical into said enclosure;

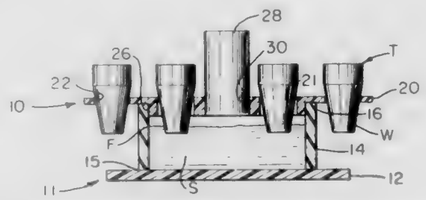
elongated tube means having a bottom end, a top end, and an aperture disposed therein between said bottom and top ends proximate said bottom end, said bottom end having a portion disposed in said enclosure opening, said tube means for directing a mixture of liquid and chemical exiting said enclosure from said aperture towards said top end of said tube means and then through said enclosure opening.

5,053,207

STERILIZER DEVICE FOR TONOMETER TIPS

Dale G. Lervick, 7872 S. Hill Dr., Littleton, Colo. 80120

Filed Nov. 6, 1989, Ser. No. 431,988
Int. Cl.[5] A61L *2/18*; A61J *1/18*; B65D *85/38*
U.S. Cl. 422—300 5 Claims



1. A sterilizer device for disinfecting tonometer tips comprising in combination a generally cup-shaped receptacle including a disinfectant solution filled to a predetermined level in said receptacle, and a lid disposed on an upper open edge of said receptacle, said lid having a plurality of circumferentially spaced, inner tip-supporting means therein disposed radially inwardly of said upper open edge of said receptacle for downward extension of a plurality of said tips into said solution, a peripheral portion of said lid extending radially beyond said upper open edge of said receptacle and provided with at least one outer tip-supporting means in said peripheral portion for drying said tips after sterilization, and means for positioning said lid in centered relation to said receptacle.

5,053,208

CONTACT LENS DISINFECTING CONTAINER STRUCTURE

Kenneth R. Seamons, Marietta; Stephen D. Prestwood, Roswell, and Herbert L. Balcome, Sawanee, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 31, 1989, Ser. No. 305,102
Int. Cl.[5] A61L *2/18*
U.S. Cl. 422—300 10 Claims

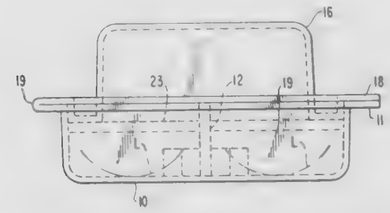
1. A contact lens disinfecting kit comprising:

an open topped lens container;

an elongated piercer mounted in said lens container in an upright position and having piercing portions thereon projecting to the vicinity of the open top of said lens container, said piercer dividing the interior of said lens container into two separate contact lens receiving parts;

an open topped solution container attached to said lens container for being foldable over against said lens container with the open top thereof facing the open top of the lens container and having a shape with a peripheral edge around the open top thereof which fits snugly into the open top of said lens container;

a sterilizing or disinfecting solution in said solution container;



a pierceable cover sealed to the edge of said solution container around the open top thereof;

said piercer means projecting sufficiently toward said solution container when said solution container is folded over against said lens container to pierce said pierceable cover; and

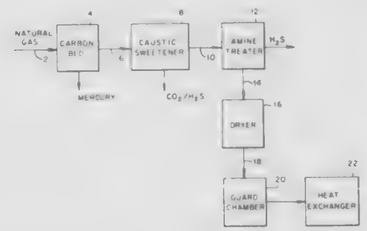
catalyst means in said lens container for decomposing the sterilizing agent in said solution.

5,053,209

REMOVAL OF MERCURY FROM NATURAL GAS AND LIQUID HYDROCARBONS UTILIZING SILVER ON ALUMINA ADSORBENT

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 145,016, Jan. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 911,185, Sep. 24, 1986, abandoned. This application Apr. 3, 1989, Ser. No. 332,149
Int. Cl.[5] B01D *47/00*
U.S. Cl. 423—210 22 Claims



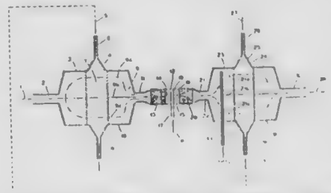
1. In a process wherein a hydrocarbon gas or liquid containing an undesired level of water and mercury is passed through a flow system comprising a drying zone comprising a drying agent upstream of aluminum equipment, the improvement comprising inserting into the drying zone a free silver reactant capable of forming an amalgam with said mercury and of being regenerated at the regeneration conditions for the drying agent

5,053,210

METHOD FOR THE PURIFICATION OF FLUE GASES

Michael Buxel, Waltrop; Friedrich-Wilhelm Pietzarka; Horst Thieme, both of Dortmund, and Manfred Koch, Holzwickede, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 13,893, Feb. 11, 1987, abandoned. This application Oct. 6, 1988, Ser. No. 227,393
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1986, 3604204
Int. Cl.[5] B01J *8/00*; C01B *17/00, 21/00*
U.S. Cl. 423—239 4 Claims



1. A process for treating a flue gas stream, including the catalytic adsorption of sulfur compounds and the catalytic reduction of nitrogen oxides, in gravity-flow beds of granular carbon-bearing material by a transversely flowing stream of the flue gas, comprising the steps of:

A) providing first and second moving beds of granular carbon-bearing material;

B) passing the stream of flue gas through the first moving bed, transversely to the direction of movement of the first moving bed, thereby obtaining a plurality of part streams of partially desulfurized flue gas separated along an axis of movement of the first moving bed, the part streams having unequal residual sulfur dioxide concentrations;

C) mixing the part streams together to form a stream of partially desulfurized flue gas having a homogeneous sulfur dioxide concentration;

D) adding a conditioning agent to the partially desulfurized flue gas stream, in an amount sufficient to enhance the reduction of nitrogen oxides;

E) adding ammonia to the partially desulfurized flue gas stream, to reduce nitrogen oxides;

F) passing the partially desulfurized flue gas stream, containing the conditioning agent and ammonia, through the second moving bed, transversely to the direction of movement of the second moving bed, to further desulfurize the flue gas and reduce nitrogen oxides in the flue gas, thereby preparing a treated flue gas stream.

5,053,211

MANUFACTURE OF AMS-1B CRYSTALLINE BOROSILICATE MOLECULAR SIEVE

Muin S. Haddad, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 909,638, Sep. 19, 1986, abandoned, which is a continuation of Ser. No. 834,606, Feb. 28, 1986, abandoned, which is a continuation of Ser. No. 543,977, Oct. 20, 1983, abandoned, which is a continuation of Ser. No. 386,285, Jun. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 279,207, Jun. 30, 1981, abandoned. This application Jun. 15, 1987, Ser. No. 62,247
Int. Cl.[5] C01B *35/12*
U.S. Cl. 423—277 21 Claims

1. A method to prepare AMS-1B crystalline borosilicate molecular sieve comprising reacting under crystallization conditions, in substantial absence of a metal or ammonium hydroxide, an aqueous mixture containing an oxide of silicon in a molar ratio of water to oxide of silicon of between about 5 to about 15, an oxide of boron, ethylenediamine in a molar ratio to silica of above about 0.05, and, optionally, an alkylammonium cation or precursor of an alkylammonium cation.

5,053,212

INTIMATE MIXTURE OF CALCIUM AND PHOSPHATE SOURCES AS PRECURSOR TO HYDROXYAPATITE

Brent R. Constantz, Scott Valley; Bryan Barr, Mountain View, and Kevin McVicker, Fremont, all of Calif., assignors to Norian Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 7,393,579, Aug. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 7,358,716, May 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 7,183,770, Apr. 20, 1988, Pat. No. 4,880,610. This application Jul. 27, 1990, Ser. No. 558,890

Int. Cl.[5] C01B *25/32*

U.S. Cl. 423—305 18 Claims

1. In a method of preparing a product for preparation of a calcium phosphate mineral product, the improvement which comprises:

mechanically mixing under reaction causing conditions as reactants at least one calcium source and an acidic phosphate source free of uncombined water for sufficient time for partial reaction of said calcium source and acidic phosphate source,

whereby a dry product is produced for combination with a lubricant to form a solid product with substantially complete reaction of said reactants.

5,053,213

PROCESS FOR SYNTHESIZING A MOLECULAR SIEVE HAVING THE FAUJASITE STRUCTURE AND CONTAINING ALUMINUM AND GALLIUM

Mario L. Occelli, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 25, 1989, Ser. No. 398,770

Int. Cl.[5] C01B *33/26*

U.S. Cl. 423—328 28 Claims

1. A process for synthesizing a crystalline, gallioaluminosilicate molecular sieve having the faujastie structure and a silica-to-(alumina + gallia) mole ratio between 3 and about 10 which comprises:

(a) mixing a substantially gallia-free aluminosilicate hydrogel having the following oxide mole ratios of components

$SiO_2/Al_2O_3 = 6$ to 15

$Na_2O/Al_2O_3 = 1$ to 5

$H_2O/Al_2O_3 = 80$ to 500

with a galliosilicate solution substantially free of alumina, said solution having the following oxide mole ratios of components

$SiO_2/Ga_2O_3 = 5$ to 30

$Na_2O/Ga_2O_3 = 6$ to 20

$H_2O/Ga_2O_3 = 200$ to 800

to form a mixture of said hydrogel and said solution, wherein said mixing is carried out by adding a sufficient amount of said galliosilicate solution to said aluminosilicate hydrogel so that said mixture of said solution and said hydrogel contains between about 1 and about 40 weight percent of said galliosilicate solution; and

(b) crystallizing said mixture in the absence of substantial agitation to form a gallioaluminosilicate molecular sieve having the faujasite structure and a silica-to-(alumina + gallia) mole ratio between 3 and about 10, wherein said crystallization takes place in less than 3 days.

5,053,214

PROCESS FOR PRODUCING ZIRCONIUM BASED GRANULES

Sivananda S. Jada, Englewood, Colo., assignor to Manville Corporation, Denver, Colo.

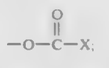
Division of Ser. No. 131,594, Dec. 11, 1987, Pat. No. 4,927,622, which is a continuation-in-part of Ser. No. 65,809, Jun. 19, 1987, abandoned. This application May 11, 1990, Ser. No. 522,348

Int. Cl.[5] C01G *25/02*

U.S. Cl. 423—608 8 Claims

1. A process for the production of amorphous zirconium based granules, said process consisting essentially of the steps of:

(a) forming a solution comprising $Zr(R)_4$ or zirconyl halide in an alcohol solvent wherein each R individually represents either



—OX; $—NO_3$; halogen; or —OH; and X represents a C_1-C_{10} hydrocarbyl group;

(b) adding in either order (i) an acid in an amount sufficient to acidify said solution comprising $Zr(R)_4$ or zirconyl halide to a pH in the range of about 2–5 and (ii) water in an amount sufficient to hydrolyze said $Zr(R)_4$ or zirconyl halide thereby forming a solution comprising a zirconium based complex;

(c) adding about 1–35 wt % of a suitable phase stabilizer to the resulting solution of step (b); and

(d) drying the solution comprising said zirconium based complex and phase stabilizer at a temperature below about 250° C. for a time sufficient to evaporate said solution thereby forming zirconium based granules containing said phase stabilizer.

5,053,215

NMR-ASSAYABLE LIGAND-LABELLED TRIFLUOROTHYMIDINE CONTAINING COMPOSITION AND METHOD FOR DIAGNOSIS OF HSV INFECTION

Kenneth H. Rand; Nicholas S. Bodor, and Wallace Brey, all of Gainsville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed May 26, 1988, Ser. No. 199,354

Int. Cl.[5] A61K *43/00, 49/02*

U.S. Cl. 424—1.1 3 Claims

1. A method for the diagnosis of an HSV infection in a human or non-human patient, said HSV infection being characterized by the presence of HSV-induced thymidine kinase present in HSV-infected cells of said patient, said method comprising intravenously administering to said patient a non-toxic amount of an NMR-assayable ligand-labelled trifluorothymidine and allowing said ligand-labelled trifluorothymidine to become phosphorylated by said HSV-induced thymidine kinase present in said HSV-infected cells to produce a phosphorylated NMR-assayable ligand-labelled trifluorothymidine compound which is substantially non-diffusible from within said HSV-infected cells and assaying the presence or absence of accumulated said phosphorylated compound in said cells by NMR spectroscopy.

5,053,216

RADIOACTIVE JOMOL, ITS DERIVATIVES, PROCESSES FOR THE PRODUCTION OF THESE COMPOUNDS, THEIR USE AND PRODUCT

Udo Ehrenfeld, Furtmayrstr. 20, 8400 Regensburg, Fed. Rep. of Germany

Filed Mar. 21, 1986, Ser. No. 842,313

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1985, 3510795

Int. Cl.[5] A61K *49/02;* G01N *1/20*

U.S. Cl. 424—1.1 16 Claims

1. Radioactively tagged Jomol or derivative thereof, said derivative comprising Jomol coupled with a crown ether, diethylene triamine pentaacetic acid, uridine, L-thyronine, L-tyrosine, tin-(II)-chloride, a dyestuff or a cytotstatic, said radioactive tag being ^{99m}technetium, ^{111}indium, ^{123}iodine, ^{125}iodine, ^{130}iodine, ^{131}iodine, ^{132}iodine or ^{224}radium,

wherein said Jomol is obtained by the following steps:

(a) Nocardia opaca cells (DSM 43 202, ATCC 21953) are cultured in a buffered culture medium,

(b) the cells are collected,

(c) the cells are suspended in a medium containing glucose and buffer, the suspension is allowed to stand for 15 minutes to several hours,

(d) the suspension is treated in a buffer with a murolytic enzyme and optionally with deoxyribonuclease,

(e) the cells are destroyed,

(f) the resulting material is separated into sediment and supernatant,

(g) the supernatant is subjected to separation on Sephadex columns using a buffer as eluent, which can optionally contain 0.1 to 0.05% EDTA-Na_2,

(h) the active fraction is obtained, and

(i) the active fraction is reacted with acetaldehyde.

5,053,217

COMPOSITION AND METHOD

Steven Lehigh, Croydon, England, assignor to Phares Pharmaceutical Research NV, Curacao, Netherlands Antilles

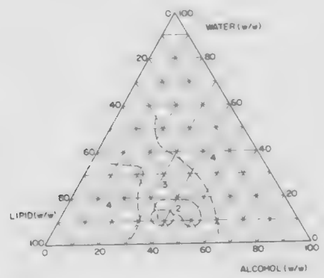
Continuation of Ser. No. 171,148, Mar. 21, 1988, Pat. No. 5,004,611, which is a continuation of Ser. No. 709,796, Mar. 8, 1985, abandoned. This application Jun. 8, 1990, Ser. No. 535,131

Claims priority, application United Kingdom, Mar. 8, 1984, 8406038; Mar. 16, 1984, 8406919

The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.

Int. Cl.[5] A61L *9/04;* A61K *37/22;* B01J *13/02*

U.S. Cl. 424—45 6 Claims



1. A method of making an aqueous dispersion of liposomes containing a biologically active compound and which consists essentially of mixing:

a) at least one part, bilayer forming membrane lipid and

b) at least one non-aqueous liquid consisting essentially of a water-miscible organic liquid which is a solvent for the lipid,

the proportion by weight of a) to b) being from 40:1 to 1:20, with sufficient water such that liposomes are spontaneously formed, the biologically active compound being added prior to, together with or subsequent to the water and being finally present in an amount sufficient that a biologically effective dosage of the biologically active compound is associated with the liposomes.

5,053,218

PRESSURIZED HAIR SPRAY COMPOSITION

Stephen Shernov, Long Valley, N.J., assignor to Cosmosol, Ltd., White Plains, N.Y.

Filed Jul. 17, 1989, Ser. No. 381,053

Int. Cl.[5] A61K *7/11*

U.S. Cl. 424—47 8 Claims

1. A non-flammable, alcohol-free, environmentally-benign, carcinogen-free, one-liquid phase, pressurized hair-fixative spray product consisting essentially of

a) shellac in the amount of about 7.5 to about 9.5 weight percent of the total fill;

b) a neutralizer for said shellac in the amount of about 1.4 to 3 weight percent of the total fill;

c) dimethyl ether in the amount of about 30 to about 38 weight percent of the total fill; and

d) water in the amount of the rest of the total fill;

whereby the hair is kept moist, the applied and consumer kept free of respiratory irritation, and the air unchanged.

5,053,219

COSMETIC PRODUCTS CONTAINING MILK CONSTITUENTS

Claude Giddey, Geneva; Guy Bunter, Carouge, and Dimitri Tzanos, Grand-Lancy, all of Switzerland, assignors to Rhone-Electra S.A., Geneva, Switzerland

PCT No. PCT/CH88/00223, § 371 Date Aug. 7, 1989, § 102(e) Date Aug. 7, 1989, PCT Pub. No. WO89/05136, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 8, 1988, Ser. No. 397,458

Claims priority, application Switzerland, Dec. 11, 1987, 4839/87-1

Int. Cl.[5] A61K *7/07, 7/15, 7/155, 7/02*

U.S. Cl. 424—63 9 Claims

1. A cosmetic or a soap product having the appearance of natural milk and comprising, other than the usual ingredients of such a product, a surface active agent and at least one substance derived from milk, wherein this substance includes a member selected from the group consisting of casein, and a mixture of casein and other milk proteins, said casein containing no more than 0.1% of lactose, said casein being present, at least in part, in the form of a colloidal and micellar solution of calcium phosphocaseinate at a pH of from 6 to 7.

5,053,220

MASCARA COMPOSITION BASED ON WAXES AND KERATIN DERIVATIVES

Jean-Pierre Arraudeau; Jeanne Patraud, both of Paris; Didier Gagnebien, Levallois-Perret; Gérard Lang, Saint-Gratien, and Alain Malaval, Marly La Ville, all of France, assignors to L'Oreal, Paris, France

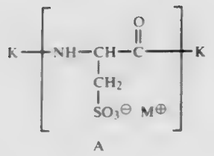
Continuation-in-part of Ser. No. 799,496, Nov. 19, 1985, abandoned. This application Jun. 21, 1989, Ser. No. 368,718

Claims priority, application France, Nov. 20, 1984, 84 17661

Int. Cl.[5] A61K *7/021, 7/035*

U.S. Cl. 424—63 27 Claims

1. A mascara composition comprising in a cosmetically acceptable carrier at least one wax, and at least one keratin derivative having the formula



(I)

A

wherein

K is a keratin residue,

$M^{\oplus}$ is hydrogen, a cation derived from an alkali metal or magnesium, or $N^{\oplus}R_4$ wherein the R radicals are identical or different and represent hydrogen, alkyl containing 1–4 carbon atoms or hydroxyalkyl containing 1–4 carbon atoms, the unit A represents from 3 to 15 weight percent of said keratin and the protein chain of the keratin being modified only by said unit A.

5,053,221

NOVEL MASCARA COMPOSITION HAVING VERY SMALL PARTICLES

Sharon R. Robertson, Collierville, and Robert J. Edmundson, Germantown, both of Tenn., assignors to Maybe Holding Co., Wilmington, Del.

Filed Nov. 20, 1989, Ser. No. 439,967

Int. Cl.[5] A61K *7/021*

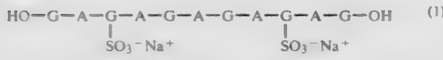
U.S. Cl. 424—63 **20 Claims**

1. A non-flaking, soapy water removable mascara composition comprising:

(a) 30–70% by weight of water;

(b) 0.05–11% by weight of microsphere particles selected from the group consisting of silica beads, polymethylmethacrylate beads, and combinations thereof; and

(c) 1.0–3.0% by weight of a clear film-forming high molecular weight amorphous anionic polyester polymer represented by Formula 1:



(1)

wherein A is an aromatic dicarboxylic acid moiety, G is a residue selected from the group consisting of an aliphatic residue and a cycloaliphatic glycol residue, —OH are hydroxy end groups, and the polymer chains have an average of five to eight ionic $SO_3^-Na^+$ substituents per molecule, and said polymer has an approximate molecular weight Mn of about 14,000 to about 16,000 and a melt viscosity at 200° C. of about 2000 to about 42,000 poise as measured with a Seiglaff-McKelvey Capillary Rheometer, 100 sec^{-1} shear rate; said composition further comprising an effective amount of at least one other cosmetically acceptable mascara ingredient selected from the group consisting of drying agents, emulsifiers, emollients, humectants, thickeners, preservatives, colorants, and pH adjusters.

5,053,222

HAIR COSMETIC COMPOSITION

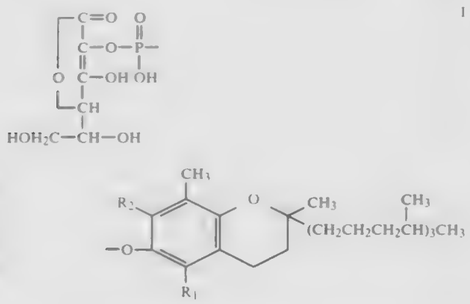
Emiko Takasu, Tokyo; Kazumi Ogata, Osaka, and Yoshihisa Sato, Yokohama, all of Japan, assignors to Shiseido Company Ltd., Tokyo and Senju Pharmaceutical Co., Ltd., Osaka, both of, Japan

Filed Jun. 7, 1989, Ser. No. 362,543

Int. Cl.[5] A61K *7/075*

U.S. Cl. 424—7 **2 Claims**

1. A method of treating a patient having dandruff, which comprises administering an anti-dandruff effective amount of a hair cosmetic composition comprising (i), as an active component, 0.1% to 10% by weight of at least one component selected from the group consisting of diesters of phosphoric acids with ascorbic acid and tocopherol, having the formula (I), and salts thereof:



(I)

wherein R_1 represents H or CH_3 and R_2 represents H or CH_3; and (ii) a carrier.

5,053,223

PROCESS AND AGENTS FOR CONTROL OF WHITE COFFEE-LEAF MINERS, ESPECIALLY *PERILEUCOPTERA COFFEELLA*

Wolfgang Krieg, Weingarten; Hansgeorg Ernst, Speyer; Ernst Buschmann, Ludwigshafen; Wittko Francke, Reinbek, and Wolf Engels, Tuebingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 171,387, Mar. 21, 1988, abandoned. This application Jul. 13, 1989, Ser. No. 379,715

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709922

Int. Cl.[5] A01N *25/00, 27/00*

U.S. Cl. 424—84 **10 Claims**

1. 5,9-Dimethylpentadecane.

2. 5,9-Dimethylhexadecane.

3. An attractant composition for white coffee-leaf miner *Perileucoptera coffeella* which comprises: a liquid or solid carrier and an effective amount of one or both of 5,9-dimethylpentadecane or 5,9-dimethylhexadecane as the active ingredient.

5,053,224

INDUCTION OF ANTIBODY RESPONSE TO SOLID TUMORS WITH ANTI-IDIOTYPE ANTIBODIES

Hilary Koprowski, 334 Fairhill Rd.; Dorothee Herlyn, 1223 Knox Rd., both of Wynnewood, Pa. 19096, and Elaine C. DeFreitas, 731 Newtown Rd., Villanova, Pa. 19085

Continuation of Ser. No. 549,505, Nov. 7, 1983, abandoned. This application Aug. 26, 1987, Ser. No. 89,574

Int. Cl.[5] A61K *39/395;* **C07K** *15/28*

U.S. Cl. 424—85.8 **17 Claims**

1. A method of stimulating production of antibodies which bind to an epitope on a solid tumor cell comprising:

administering a monoclonal anti-idiotypic antibody which bears an internal image of an epitope present on a solid tumor cell to a human in an amount sufficient to stimulate the production of an anti-anti-idiotypic antibodies which immunoreact with said solid tumor cell epitope,

wherein said monoclonal anti-idiotypic antibody immunoreacts through its paratope with a monoclonal antibody specific for said solid tumor cell epitope.

5,053,225

FUNCTIONAL ORGANIC THIN FILM CHEMICALLY BONDED TO BIOLOGICALLY ACTIVE AGENT

Tsutomu Miyasaka, and Yukio Maekawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1989, Ser. No. 325,797

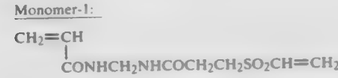
Claims priority, application Japan, Mar. 18, 1988, 63-64968

Int. Cl.[5] A61K *39/00, 37/48*

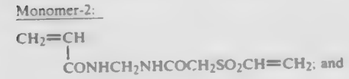
U.S. Cl. 424—85.8 **15 Claims**

1. A water-insoluble functional organic thin film comprising a binder selected from the group consisting of a high molecular weight organic compound and a lipid, each having a functional group capable of reacting with an $—SO_2CH=CH_2$ group, said binder having contained therein a biologically active protein and a polymer, said polymer comprising at least one of the following monomers:

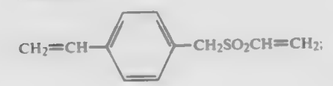
Monomer-1:



Monomer-2:



Monomer-3:



wherein covalent bonds are formed between said polymer and biologically active protein upon hardening of said film.

5,053,226

MONOCLONAL ANTIBODIES BINDING PLATINUM COMPLEXES

Michael G. Rosenblum; James L. Murray, both of Houston; Peter J. Kelleher, The Woodlands; Robert A. Newman, and Abdul R. Khokhar, both of Houston, all of Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Filed Jul. 15, 1987, Ser. No. 73,500

Int. Cl.[5] A61K *39/40, 39/42, 39/44;* **C12N** *5/00*

U.S. Cl. 424—85.8 **20 Claims**

1. A cell line resulting from fusion of a neoplastic cell with an antibody-producing animal cell obtained from an animal immunized against a platinum (II) complex, said cell line forming a monoclonal antibody specifically binding platinum (II) complex in competition with an antibody produced by hybridoma strain $1C_1H_2A_5$ having ATCC accession number HB 9411, strain $3A_2A_1$, strain $1A_6A_2$, strain $3A_6B_1$ or strain $1B_1$

5,053,227

SKIN PERMEATION ENHANCER COMPOSITIONS, AND METHODS AND TRANSDERMAL SYSTEMS ASSOCIATED THEREWITH

Chia-Ming Chiang, Foster City, and Gary W. Cleary, San Mateo, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Division of Ser. No. 327,312, Mar. 22, 1989, Pat. No. 4,973,468. This application Jun. 12, 1990, Ser. No. 537,080

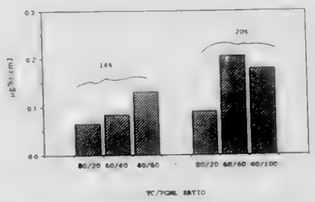
Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 **9 Claims**

1. A transdermal delivery system for administering at least one pharmacologically active agent to a patient, comprising:

(a) a source of the at least one pharmacologically active agent to be administered;

(b) a source of a permeation enhancer composition comprising an ether component selected from the group consisting of diethylene glycol monoethyl ether, diethylene glycol monomethyl ether, and mixtures thereof, and an ester component given by the formula $[CH_3(CH_2)_mCOO]_nR$, in which m is an integer in the range of 8 to 16, n is 1 or 2, and R is a lower alkyl (C_1–C_3) residue that is either unsubstituted or substituted with one



or two hydroxyl groups, wherein the ratio of ether to ester in the enhancer composition is in the range of about 90:10 to 40:60 (v/v); and

(c) a means for maintaining the transdermal delivery system in agent and enhancer composition transmitting relationship to the skin.

5,053,228

POLYMERIC TEMPERATURE SENSITIVE DRUG CARRIER

Yuichi Mori, and Toshiya Sakai, both of Kanagawa, Japan, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 13, 1990, Ser. No. 552,042

Claims priority, application Japan, Aug. 18, 1989, 1-212855

Int. Cl.[5] A61K *9/08, 31/78, 31/765*

U.S. Cl. 424—486 **4 Claims**

1. A method for administering a slow release drug to a patient comprising:

(a) selecting a temperature-sensitive polymeric compound,

(b) selecting a drug,

(c) forming a hydrolyzable covalent bond between said polymeric compound and said drug, wherein the resulting polymer/drug compound has a lower LCST than body temperature, and

(d) administering said polymer/drug compound to a patient wherein the liquid solution of said polymer/drug compound is at a temperature lower than body temperature.

5,053,229

COSMETIC COMPOSITIONS

Michihiro Hattori, Utsunomiya; Shuichi Akazaki, Ichikai; Naonobu Yoshizuka, Funabashi, and Genji Imokawa, Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 875,683, Jun. 18, 1986, abandoned. This application Jan. 24, 1989, Ser. No. 300,217

Claims priority, application Japan, Jul. 31, 1985, 60-169514

Int. Cl.[5] A61K *35/36, 31/685, 31/59, 31/20*

U.S. Cl. 424—572 **8 Claims**

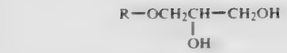
1. A cosmetic composition, consisting essentially of:

(a) a lipid derived from horny cells, which is selected from the group consisting of:

(1) a fraction substantially comprising a mixture of one or more sphingolipids and one or more glycolipids; and

(2) a fraction substantially comprising one or more phospholipids, said lipid being present in an amount effective to enhance moisture retention of a horny layer of skin when applied thereto; and a mixture of any of the above; and

(b) an effective amount of a surfactant consisting of the glyceryl ether of the formula:



wherein R is a C_8–C_{24} alkyl group.

5,053,230

COSMETIC PREPARATIONS FOR PROMOTING TROPHISM OF THE SKIN AND OF RELATED HAIR FOLLICLES

Giovanni Gazzani, Appiano Gentile, Italy, assignor to Crinos Industria Farmacobiologica S.p.A., Como, Italy

Continuation of Ser. No. 545,674, Oct. 25, 1983, abandoned. This application Dec. 15, 1987, Ser. No. 133,199

Claims priority, application Italy, Oct. 29, 1982, 23944 A/82; Jul. 13, 1983, 22047 A/83

Int. Cl.[5] A61K *35/54*

U.S. Cl. 424—582 20 Claims

1. Cosmetic preparation to promote the trophism of the skin and of the related piliferous follicles, consisting essentially of as a percent weight of said preparation, from 0.1 to 1% of said nutrient medium for in vitro culture of isolated human epithelial cells and from 2 to 10% of fetal bovine serum.

5,053,231

PROCESS FOR PREPARING AN ALCOHOLIC PRODUCT

Harry L. Riffkin, 22 Cramond Rd. S., and Thomas A. Bringhurst, 14B Double Hedges Park, James D. Gray, 110 Green North Crescent, all of Edinburgh, Scotland

This application Mar. 2, 1989, Ser. No. 318,455

Claims priority, application United Kingdom, Oct. 11, 1985, 8525116

Int. Cl.[5] C12C *11/00*

U.S. Cl. 426—11.0 7 Claims

1. A process for preparing an alcoholic product wherein the improvement comprises mixing carbohydrate or material containing carbohydrate with water, heating the mixture to 50°–95° C. in the presence of a surfactant selected from the group consisting of non-ionic detergents prior to the enzymatic conversion of said carbohydrate or material containing carbohydrate to a fermentable sugar and fermenting the said sugar to yield an alcoholic product.

5,053,232

PROTEIC INHIBITOR OF PECTINESTERASE AND USE THEREOF IN THE PREPARATION OF FRUIT AND VEGETABLE JUICES

Ciro Balestrieri; Luigi Servillo; Lucio Quagiuolo; Alfonso Giovane, all of Naples, and Domenico Castaldo, Nola, all of Italy, assignors to Stazione Sperimentale per l'Industria delle Conserve Alimentari, Parma, Italy

Filed May 10, 1990, Ser. No. 521,446

Claims priority, application Italy, May 16, 1989, 47961 A/89

Int. Cl.[5] A23B *7/00*; A23L *1/212*

U.S. Cl. 426—49 9 Claims

1. Protein having pectinesterase-inhibiting activity, extracted from fruit, made of a single polypeptide chain having molecular weight of 28,000 daltons.

5,053,233

FORAGE PRESERVATION

Jouko J. Setälä, Helsinki; Veli M. S. Suominen, Hyvinkää ; Aino L. Rauramaa, Espoo, and Seppo Sivelä, Helsinki, all of Finland, assignors to Valio Meijerien Keskusosuusliike, Finland

Filed Oct. 23, 1989, Ser. No. 424,980

Claims priority, application Finland, Nov. 14, 1988, 885252

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—53 21 Claims

1. A process of preserving forage consisting essentially of adding to the forage as fermentative microorganism an effective amount of *Lactobacillus plantarum* DSM 4904 to preserve said forage.

5,053,234

METHOD FOR PRODUCING A PROTEINACEOUS PRODUCT BY DIGESTION OF RAW ANIMAL PARTS

Paul S. Anderson, Astoria; Roger W. Law, Tualatin; Ronald R. Law, and Kenneth Lum, both of Astoria, all of Oreg., assignors to Advanced Hydrolyzing Systems, Inc., Astoria, Oreg.

Continuation-in-part of Ser. No. 398,326, Aug. 13, 1989, abandoned, which is a continuation of Ser. No. 262,140, Oct. 21, 1988, abandoned, which is a continuation of Ser. No. 148,092, Jan. 26, 1988, abandoned, which is a continuation of Ser. No. 18,848, Feb. 24, 1987, abandoned, which is a continuation of Ser. No. 605,120, Apr. 30, 1984, abandoned. This application Jun. 8, 1990, Ser. No. 535,500

Int. Cl.[5] A23L *1/31*; A23J *1/02, 3/00*; C07K *3/02*

U.S. Cl. 426—59 33 Claims

1. A method for preparing a proteinaceous product from raw protein-comprising animal parts, the method comprising the steps:

(a) reducing the raw animal parts to aground condition;

(b) hydrolyzing the proteins in the ground animal parts using proteolytic enzymes, where the hydrolysis is performed at a temperature within a range conducive for hydrolytic activity of the enzymes without denaturing the protein and for a time period sufficient to achieve a preselected degree of partial hydrolysis of the protein, to form an aqueous suspension of partially hydrolyzed animal parts;

(c) heating the aqueous suspension sufficiently to deactivate the proteolytic enzymes therein and convert fats therein to oils;

(d) separating and removing non-digestible solids from the heated aqueous suspension;

(e) adding oil to the heated aqueous suspension to form a protein-oil suspension;

(f) pasteurizing the protein-oil suspension; (g) reducing the concentration of water in the protein-oil suspension to form an oleaginous suspension of partially hydrolyzed protein; and

(h) removing a portion of the oil from the oleaginuous suspension to form a particulate, partially hydrolyzed, non-denatured proteinaceous product.

5,053,235

EXTRUDED FEED INTAKE LIMITING COMPOSITION

W. Larnce Alley, and Johnie T. Scott, both of Temple, Tex., assignors to Wendland's Farm Products, Inc., Temple, Tex.

Continuation of Ser. No. 95,829, Sep. 11, 1987, Pat. No. 4,487,095. This application Apr. 27, 1989, Ser. No. 448,561

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—74 9 Claims

9. A composition for a pleasure horse having low-to-medium energy requirements, comprising:

(a) between about 15.0 and 28.0 percent by weight grain and fat and oil products;

(b) between about 36.0 and 70.0 percent by weight high fiber material selected from grain by-products, forage products and roughage products; and

(c) a remainder of the composition including protein and nutritional additives;

wherein the composition consists essentially of a plurality of substantially homogeneous extruded feed particles having a bulk density between about 15–25 pounds per bushel with individual feed particles having a smooth texture, a length of up to 3 inches and being formed in shapes having rounded edges;

wherein the high fiber content, low density and large particle size of the composition allows free-choice feeding to the pleasure horse as substantially a sole source of nutrition excluding water.

5,053,236

GENERATION OF AROMA DURING MICROWAVE COOKING

Thomas H. Parliment, New City, N.Y.; Joseph J. Cipriano, Cranbury, and Richard Scarpellino, Ramsey, both of N.J., assignors to Kraft General Foods, Inc., Glenview, Ill.

Division of Ser. No. 166,063, Mar. 9, 1988, abandoned. This application Sep. 22, 1989, Ser. No. 411,231

Int. Cl.[5] A23L *1/226, 1/227*

U.S. Cl. 426—234 14 Claims

1. A method of producing an aroma comprising:

(a) placing an aroma-generating material comprising a sugar alone or in combination with an amino acid source in conductive heat transfer relationship with amicrowave susceptible material, said microwave susceptible material being capable of providing sufficient heat to produce a temperature within the range of rom 100° C. to 200° C. upon exposure to microwave radiation to cause a chemical reaction causing said aroma-generating material to generate an aroma; and

(b) irradiating the combination of step (a) with an effective amoung of microwave energy for from 10 seconds to 180 seconds to generate an aroma.

5,053,237

METHOD FOR TENDERIZING AND UPGRADING THE SENSORY QUALITIES OF RED MEAT

Deloy G. Hendricks, 164 North 300 East, Providence, Utah 84332, and Conly L. Hansen, 1310 East 3100 North, Logan, Utah 84321

Continuation of Ser. No. 282,386, Dec. 9, 1988, abandoned, which is a continuation of Ser. No. 29,079, Mar. 23, 1987, abandoned. This application Sep. 11, 1989, Ser. No. 405,683

Int. Cl.[5] A23L *1/318*

U.S. Cl. 426—281 18 Claims

1. A method of treating and upgrading the tenderness and sensory qualities of fresh red meats, the method comprising the steps of:

a) providing an injection apparatus having at least one nozzle, said nozzle having an orifice through which an injectate can be directed to the meat to be treated;

b) providing an injectate composition to be injected into the meat, said injectate composition comprising at least oil or fat and at least one binding substance for retaining the fat or oil in the meat;

c) placing the meat to be injected at a predetermined distance from the nozzle such that said meat is in the path of the injectate composition leaving the orifice of the nozzle and such that the injectate composition can be injected into the meat without the nozzle penetrating into the meat;

d) injecting the meat by causing the injectate to flow from the nozzle at a sufficient pressure such that the injectate composition penetrates the meat and at least a portion of the injectate composition penetrates the existing connective tissue within the meat, said injectate composition being injected into the meat so as to cut at least a portion of the connective tissue within the meat in order to mechanically tenderize the meat; and

e) moving the meat in relation to the nozzle such that the portion of connective tissue is cut both vertically and longitudinally.

5,053,238

METHOD FOR SHELL REMOVAL FROM HARD BOILED EGGS

Gideon Zeidler, Los Angeles, and David Reznik, Palo Alto, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 14, 1990, Ser. No. 538,264

Int. Cl.[5] A23L *1/32*; A23N *7/01*

U.S. Cl. 426—299 21 Claims

1. A method for peeling hard cooked eggs comprising:

(a) cooking the eggs in steam or water for 2–10 minutes;

(b) dissolving the egg shell by submerging the cooked eggs into a 0.1–10% solution of acid or of ammonium chloride for 10 seconds to 48 hours; and;

(c) mechanically removing the egg membrane from the hard-cooked eggs.

5,053,239

PROCESS AND APPARATUS FOR PRODUCING A PACKAGED SAUSAGE PRODUCT AND THE PACKAGED SAUSAGE PRODUCT THEREBY

Pentti J. Vanhatalo, and Visa A. P. Krappe, both of Pori, Finland, assignors to Food Systems Industries Oy, Ltd., Finland

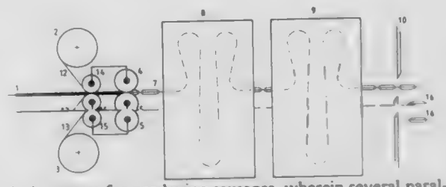
PCT No. PCT/FI89/00016, § 371 Date Jul. 27, 1990, § 102(e) Date Jul. 27, 1990, PCT Pub. No. WO89/07074, PCT Pub. Date Aug. 10, 1989

PCT Filed Jan. 27, 1989, Ser. No. 548,959

Claims priority, application Finland, Jan. 28, 1988, 880382

Int. Cl.[5] A23B *4/00*; B65B *9/00*

U.S. Cl 426—412 20 Claims



1. A process for producing sausages, wherein several parallel frankfurter type sausages are stuffed simultaneously, said process comprising the steps of

continuously advancing packaging films towards several parallel sausage stuffing horns extending in the direction of the movement of said films,

longitudinally sealing said films on both sides of each of said stuffing horns to form parallel packaging film tubes having essentially the desired sausage diameter,

intermittently stuffing discrete portions of sausage emulsion into each of said film tubes in such a way that the advancing film tubes become essentially stuffed with sausage emulsion along a path corresponding to the length of one sausage at a time,

synchronously transversely flattening, molding and sealing, by use of a mold, the open ends of said film tubes in those areas of said film tubes which are devoid of sausage emulsion after each discrete portion of sausage emulsion is stuffed into each of said tubes to mold the rear ends of one row of sausages and the fore ends of the next row of sausages,

removing the molded and sealed parallel stuffed sausage-shaped film pockets from the mold, and

heating said stuffed products to cook the sausage emulsion therein to a more stable form to provide frankfurter type sausages having no other casing than the said packaging film.

5,053,240

NORBIXIN ADDUCTS WITH WATER-SOLUBLE OR WATER-DISPERSIBLE PROTEINS OR BRANCHED-CHAIN OR CYCLIC POLYSACCHARIDES

Paul H. Todd, Jr., Kalamazoo, Mich., assignor to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Filed Oct. 24, 1989, Ser. No. 426,578

Int. Cl.[5] A23L *1/27*

U.S. Cl. 426—540 41 Claims

1. A process for preparing a red to magenta complex of norbixin and a substrate selected from the group consisting of a water-soluble branched-chain polysaccharide, a water-dispersible branched-chain polysaccharide, a cyclic polysaccha-

ride, a water-soluble protein and a water-dispersible protein, which consists essentially of admixing the substrate and norbixin in an aqueous solution at a pH above about 8.5, at which pH the norbixin is present in its water-soluble orange alkaline form, and then acidifying to drop the pH to below about 7.7, thereby complexing the norbixin in the reddish or magenta form of its complex.

5,053,241

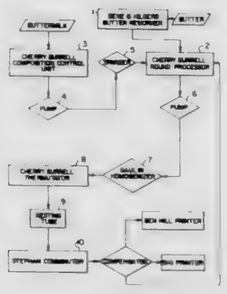
FAT REDUCED SPREADS AND PROCESS OF MAKING

Gerald Mongeau, Sherbrooke; Phillipe Bergeron, Brompton-ville; James J. Clark, Mississauga; Ronald W. Charlton, Waterloo; Mahmound Eino, Mississauga; Terrence J. Maurice, London; Estelle M. Parnell-Clunies, Cambridge, and Wen-Song Cheng, London, all of Canada, assignors to Ault Foods Limited and Investissements Mongeau Inc., both of, Canada

Continuation-in-part of Ser. No. 184,186, Apr. 21, 1988. This application Nov. 13, 1989, Ser. No. 436,042

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—603 **33 Claims**



1. A process for producing an edible fat-reduced spread of the water-in-oil type comprising:

a) providing a mixture consisting of a dispersion of water in partially uncrystallized fat;

b) feeding said mixture into a turbine-like comminuting device in which the mixture passes through an inlet into a comminuting chamber containing closely-spaced relatively-rotating concentric inner and outer rings of spaced blades to cause the mixture to pass through the rings of blades and between the blades thereof so as to be cut and mixed thereby and then passed to an outlet; and,

c) the increase in temperature of the mixture caused by said cutting and mixing being from about 1.5 Celsius degrees up to a temperature above which the mixture becomes destabilized and substantial amounts of water are released from the mixture.

5,053,242

PROCESS FOR SHAPING FISH-PASTE PRODUCTS FROM FISH PASTE MATERIAL

Shobun Goto, Shiogama; Jiro Sugihara, Miyagi, and Masayoshi Yabusaki, Shiogama, all of Japan, assignors to Kabushiki Kaisha Kibun, Tokyo, Japan

Division of Ser. No. 63,761, Jun. 22, 1987, Pat. No. 4,746,525, which is a continuation of Ser. No. 630,760, Jul. 13, 1984, abandoned. This application Apr. 28, 1988, Ser. No. 187,370

Claims priority, application Japan, Jul. 25, 1983, 58-136541

The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.

Int. Cl.[5] A23L *1/325;* **A23P** *1/00*

U.S. Cl. 426—643 **2 Claims**

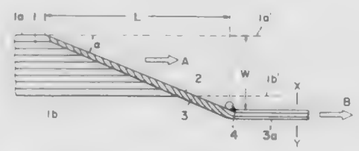
1. A process for shaping fish-paste products from fish-paste materials, which process comprises the steps of:

(1) preparing a sheet composed of a fish-paste material with specific width and indefinite length;

(2) causing the sheet to travel in its length-wise direction by applying tension to at least its front end in a length-wise direction;

(3) spirally and obliquely curling the thus traveling sheet at the front end portion thereof into a curled body having a lateral edge of the sheet as a core and extending obliquely to the sheet traveling direction and outward beyond the opposite lateral edge of the sheet;

(4) pulling the resulting curled body in a direction substantially parallel to the sheet-moving direction, the curled body being inflected at a point on or outside a line determined by extending the line of said opposite lateral edge of the sheet, at which point the curled body is supported by



a guide post means against the force biasing the curled body so that the curled body tends to be parallel to the sheet-moving direction due to the pulling, said guide post means being a roller with its axis perpendicular to the plane of the surface of the sheet, the roller having a substantially constant diameter along the axis at the area of contact with the curled body, and said curled body traveling in contact with the surface of the roller at substantially a predetermined location along the length of the roller, thereby causing said tension to be applied to the sheet and the sheet to be rolled up into a rolled-up article; and then

(5) subjecting the rolled-up article to further processing.

5,053,243

PREPARATION OF ADSORBENT LAYERS

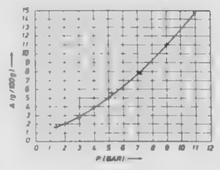
Hubertus J. A. Schuurmans; Paulus C. N. Crouzen, and Gerard Hoekstein, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

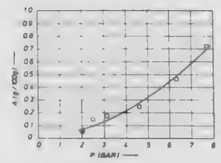
Filed Sep. 21, 1990, Ser. No. 586,125

Claims priority, application United Kingdom, Jan. 2, 1990, 9000026

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—37 **10 Claims**





1. A process for the preparation of an adsorbent layer upon a non-permeable substrate, comprising the steps of

generating a plasma by introducing a non-polymerizable fluid into a plasma generation zone using a direct current arc,

introducing hydrocarbonaceous monomers into said plasma generation zone thereby forming polymerizable hydrocarbonaceous compounds, setting a ratio of flow rates of the hydrocarbonaceous monomers and the non-polymerizable fluid in the range from >0–0.001, and

contacting the substrate with the glowing zone of said plasma.

5,053,244

PROCESS FOR DEPOSITING SILICON OXIDE ON A SUBSTRATE

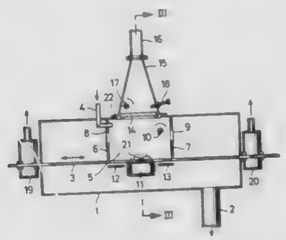
Jörg Kieser, Albstadt; Michael Geisler, Wächtersbach; Rolf Wilhelm, Calw-Stammheim, and Eberhard Räuchle, Remseck, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Feb. 19, 1988, Ser. No. 158,217

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1987, 3705666; European Pat. Off., Aug. 17, 1987, 87111855.0

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 **3 Claims**



1. Process for applying a protective coating of SiO_x to a substrate, wherein x is between 1 and 2, said coating being transparent to visible light, comprising the following steps:

introducing a first reactive gas comprising a hydrogen silicide into a chamber,

introducing a second reactive gas comprising at least one gas selected from the group consisting of oxygen and an oxygen containing compound into said chamber,

admitting microwaves into said chamber,

producing a magnetic field in said chamber, said magnetic field and said microwaves being sufficient to produce a region of electron cyclotron resonance in said chamber which produces a plasma of both said reactive gases, and

exposing a substrate to said plasma of both gases in said region, thereby depositing the coating of SiO_x on said substrate.

5,053,245

METHOD OF IMPROVING THE QUALITY OF AN EDGE SURFACE OF A CUTTING DEVICE

Seiichi Kiyama, Takatsuki; Hitoshi Hirano, Nishinomiya, and Masao Onji, Shijonawate, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 25, 1990, Ser. No. 603,114

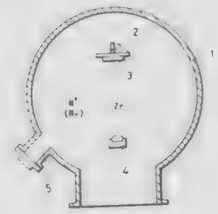
Claims priority, application Japan, Oct. 26, 1989, 1-280251; Mar. 22, 1990, 2-72513; Mar. 26, 1990, 2-76118

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 **10 Claims**

1. A method of improving the quality of an edge surface of a cutting device, the method comprising:

a first step of irradiating first ions obtained from a first substance, the first substance being a gas at room temperature, and a second substance, which is vapor-deposited from a hard material, onto a surface of a base body to form a first hard layer comprising molecules of the hard material influenced by the first ions; and



a second step of irradiating the second substance onto the first hard layer in an atmosphere of the first substance to form a second layer.

5,053,246

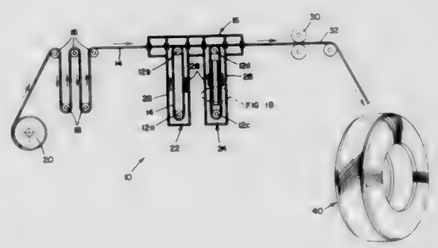
PROCESS FOR THE SURFACE TREATMENT OF POLYMERS FOR REINFORCEMENT-TO-RUBBER ADHESION

Derek Shuttleworth, Munroe Falls, Ohio; Syed K. Mowdood, Madison, Conn.; Walter H. Waddell, Fairlawn, Ohio; Jimmy L. Richards; Eilert A. Ofstead, both of Cuyahoga Falls, Ohio, and Jerry L. Brenner, Copley, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 30, 1990, Ser. No. 501,564

Int. Cl.[5] B05D *3/06, 1/36, 7/00*

U.S. Cl. 427—40 **15 Claims**



1. A method of preparing a polymer surface for chemical bonding comprising the sequential steps of:

(a) disposing a polymer having a surface in a plasma chamber containing a mixture of 10–90% O_2 and 10–90% CF_4 at a pressure of about 0.001 to 1 torr and

exposing said polymer surface to a plasma generated by electrical energy of about 50 Hz to 2.45 GHz; and

(b) further treating said polymer with a plasma of an incorporating gas generated by electrical energy of about 50 Hz to 2.45 GHz.

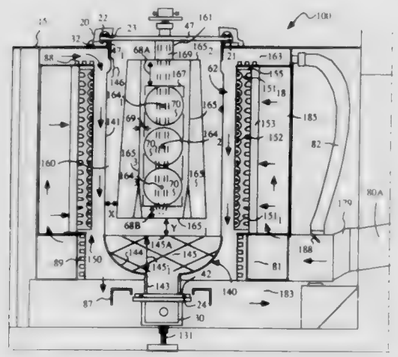
7. A method of preparing a surface of reinforcing polymer for direct bonding to rubber comprising the sequential steps of:

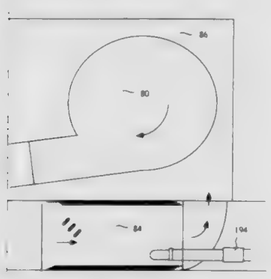
(a) disposing said reinforcing polymer in a plasma chamber containing an incorporating gas, a non-incorporating gas, an inert gas, or a mixture thereof and

exposing said reinforcing polymer surface to a plasma generated by electrical energy of about 50 Hz to 2.45 GHz; and

(b) exposing said reinforcing polymer surface to a plasma of a polymerizing gas comprising CS_2 generated by electrical energy of about 50 Hz to 2.45 GHz.

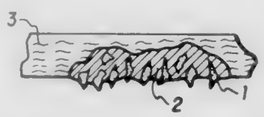
5,053,247
METHOD FOR INCREASING THE BATCH SIZE OF A BARREL EPITAXIAL REACTOR AND REACTOR PRODUCED THEREBY
Gary M. Moore, San Jose, Calif., assignor to Moore Epitaxial, Inc., San Jose, Calif.
Filed Feb. 28, 1989, Ser. No. 317,260
Int. Cl.[5] C23C *16/46*
U.S. Cl. 427—55 23 Claims





17. A method for improving the batch size of a barrel epitaxial reactor while maintaining the thickness and uniformity performance of the barrel epitaxial reactor, the barrel epitaxial reactor having a housing containing a first radiant energy heat source of a first length and a first number of lamps, a voltage controller for said first heat source, a first reaction chamber with (i) a flat zone of a first length and (ii) a wall of a first length, means for providing gas flow, and cooling means, said method comprising:
replacing said first radiant energy heat source with a second radiant energy heat source, said second radiant energy heat source having (i) a radiant energy output in the range of 10–40% greater than the radiant energy output of said first heat source (ii) a second length greater than said first radiant energy source heat length; and (iii) a second number of lamps wherein said second number of lamps is greater than said first number of lamps; and
replacing said first reactor chamber with a second reaction chamber having (i) a flat zone with a length in the range of 25–50% greater than said first flat zone length and (ii) a second wall length greater than said first wall length, wherein said second radiant energy heat source and said second reaction chamber are (i) operativcly mountable in said housing and (ii) operatively connectable with said voltage controller, said means for providing gas flow, and said cooling means.

5,053,248
METHOD FOR FIXING ON CLOTH SEMICONDUCTOR MATERIAL WITH A CONTACT-POTENTIAL DIFFERENCE, AND CLOTH BEARING SUCH SEMICONDUCTOR MATERIAL
Shigeya Hakamata; Takumi Kurihara; Shinichiro Ishigaki, and Hiroshi Fuziyasu, all of Shizuoka, Japan, assignors to Daiwa Senko Company, Ltd., Hamamatsu, Japan
Filed Oct. 5, 1988, Ser. No. 253,799
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—58 12 Claims

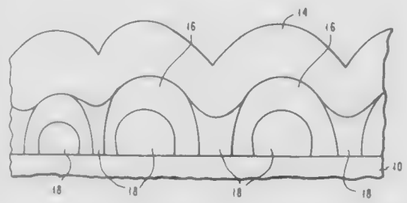


1. A method for fixing on cloth a semiconductor material capable of producing a contact-potential difference, comprising pulverizing a contact-potential difference-generating substance into a particle size smaller than 200–250μ, mixing said pulverized substance with a component selected from the group consisting of a non-conducting organic polymer resin liquid and a printing color paste to therefore form a mixture, and applying said mixture onto said cloth.

5,053,249
METHOD FOR PRODUCING RESISTORS
Kazuo Baba; Yoshiyuki Shiratsuki, and Kumiko Takahashi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 186,102, Apr. 25, 1988, abandoned. This application Sep. 28, 1989, Ser. No. 415,389
Claims priority, application Japan, Apr. 28, 1987, 62-106072; Feb. 29, 1988, 63-46405
Int. Cl.[5] B05D *5/12, 3/02*
U.S. Cl. 427—101 8 Claims

1. A method of producing a resistor which comprises coating a metal organic compound solution containing a ruthenium complex and at least one complex of an element (M) selected from the group consisting of silicon, barium, bismuth and lead on a substrate and then firing it.

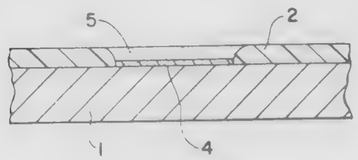
5,053,250
THIN FILM MAGNETIC MEDIUM WITH CONTROLLED GRAIN MORPHOLOGY AND TOPOLOGY FOR IMPROVED PERFORMANCE
Robert J. Baseman, Brewster, and Christopher V. Jahnes, Monsey, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 21, 1991, Ser. No. 672,992
Int. Cl.[5] H01F *10/02*
U.S. Cl. 427—131 23 Claims



1. A method of manufacturing a storage medium comprising the steps of:
providing a substantially non-wettable substrate;

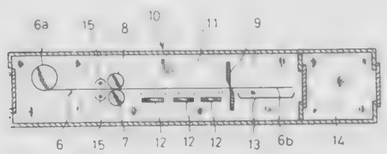
depositing a transient liquid metal layer of a predetermined thickness on said substrate while said substrate is maintained at a temperature in excess of the melting point of said liquid metal to form a distribution of disconnected molten metal spherical structures; and
maintaining said liquid metal layer in a liquid state while depositing a magnetic film layer on said transient liquid metal layer whereby the transient liquid metal reacts with the magnetic film layer.

5,053,251
METHOD FOR REPAIRING GLASS-LINED EQUIPMENT BY SOL-GEL PROCESS
Tatsuo Hara, Kobe; Koichi Wada, Miki, and Shigeo Uegaki, Kobe, all of Japan, assignors to Shinko Pantec Co., Ltd., Kobe, Japan
Filed May 29, 1990, Ser. No. 529,935
Claims priority, application Japan, May 26, 1989, 1-134255
Int. Cl.[5] B32B *35/00;* B05D *1/38*
U.S. Cl. 427—142 15 Claims



1. A method of repairing a damaged portion of a glass layer of glass-lined steel equipment by a sol-gel process comprising the steps of:
(a) applying to the damaged portion a first repair agent containing a metal alkoxide, and heating the first repair agent to a temperature in the range of about 300°–350° C. to form a first glass layer adhered to the steel substrate of the equipment;
(b) applying onto said first glass layer a second repair agent containing a metal alkoxide and an inorganic filler, and heating said second repair agent to form a second glass layer; and
(c) applying onto said second glass layer a first liquid impregnating agent containing a metal alkoxide to penetrate the first impregnating agent into voids formed in said second glass layer, and heating the first liquid impregnating agent to fill said voids.

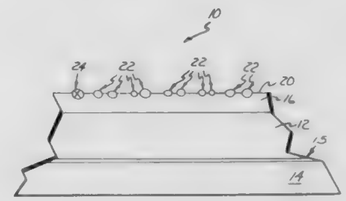
5,053,252
METHOD AND APPARATUS FOR MANUFACTURING OPTICAL MEMORY DEVICES
Kazuhiro Kimura, Nishinomiya; Hiroyuki Katayama, Nara; Junichiro Nakayama, Nara; Kenji Ohta, Nara, and Hiroyuki Ikenaga, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 21, 1989, Ser. No. 384,257
Claims priority, application Japan, Aug. 3, 1988, 63-194160
Int. Cl.[5] B05D *3/02, 3/12, 5/06;* C23C *16/54*
U.S. Cl. 427—164 11 Claims



1. A method of manufacturing an optical memory device, said method comprising the steps of continuously forming a recording medium layer on a longitudinally running tape-like substrate, and continuously forming on the running substrate guide track grooves for guiding a light beam, said step of forming the guide track grooves comprising heating the substrate to soften the same and pressurizing the substrate using a pressure roller having transcribed patterns corresponding to the guide track grooves on its cylindrical surface, and said steps of forming the guide track grooves and of forming the recording medium layer being carried out in single vacuum chamber.

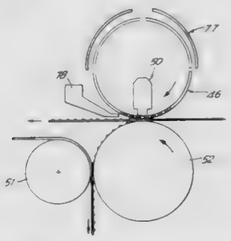
6. An apparatus for manufacturing an optical memory device, said apparatus comprising guide track groove forming means for forming guide track grooves on a substrate by heating the substrate to soften the same and pressurizing the substrate using a pressure roller having transcribed patterns corresponding to the guide track grooves on its cylindrical surface, recording medium layer forming means for forming a recording medium layer on the substrate, and a single vacuum chamber for housing the guide track groove forming means and the recording medium layer forming means.

5,053,253
SKID-RESISTANT PAVEMENT MARKINGS
Robert A. Haenggi, Woodbury, Minn., and James A. Laird, St. Joseph Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 241,318, Sep. 7, 1988, Pat. No. 4,937,127. This application Jan. 22, 1990, Ser. No. 467,988
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—204 3 Claims



1. A method of producing a skid-resistant substrate marking sheet comprising:
providing a base sheet;
coating at least a portion of an upward face of the base sheet with a liquid bonding material;
embedding a plurality of ceramic skid-resistant spheroids in the coating of liquid bonding material, wherein the ceramic spheroids are characterized by having rounded surfaces and no substantial points and characterized by a Krumbein roundness of at least 0.8.; and
curing the liquid bonding material to a solid adherent polymeric matrix coating with the ceramic skid-resistant spheroids partially embedded,
wherein the spheroids comprise a fired ceramic made from raw materials selected from the group consisting of bauxite;
refractory clay comprising a mixture of alumina and silica and less than 10 weight percent other dry ingredients, and having a proportion of alumina to silica in the range of 20:80 to 90:10; and
a mixture comprising about: 10–97 parts by weight of mineral particulate; 3–90 parts by weight alumina; and at least one part by weight binder;
wherein the mineral particulate comprises a ceramic mineral which melts below about 1300° C.; does not substantially sublime or volatilize below 1300° C., and vitrifies on cooling;
wherein the binder is characterized by adhering the mineral particulate and alumina powder together after pelletizing but before firing.

5,053,254
PROCESS FOR APPLYING PARTIAL COATINGS
Armin Billeter, Böschacherstr. 66, Grüt, Switzerland
Division of Ser. No. 11,749, Feb. 6, 1987, abandoned, which is a division of Ser. No. 476,873, filed as PCT CH82/00089 on Jul. 16, 1982, now U.S. Pat. No. 4,671,205. This application Aug. 30, 1988, Ser. No. 238,182
Claims priority, application Switzerland, Jul. 21, 1981, 4767/81; Feb. 19, 1982, 1052/82
Int. Cl.[5] B05D *5/10, 1/32, 3/04*
U.S. Cl. 427—208.2 **13 Claims**



1. A process for applying a partial surface coating to a textile cloth substrate, comprising the steps of:
providing a coating head and placing said coating head within a perforated metal cylinder whereby a coating nozzle of said coating head is situated in said perforated cylinder;
liquifying a plastic coating compound to a flowable melted state in a container for storing said coating compound;
transporting the flowable melted compound to said coating head;
moving a substrate towards said cylinder with said coating nozzle therein so that said substrate faces said cylinder at said coating nozzle, said cylinder being rotated synchronously with movement of said substrate;
supplying said compound to said coating head and thus to said coating nozzle under pressure so that said compound is pressed from said coating nozzle through perforations of said metal cylinder onto said substrate to provide a partial surface coating thereon;
heating said coating head and said cylinder to a predetermined temperature during said pressing step;
applying hot air in the vicinity of a rising portion of said cylinder facing said substrate to provide a clean breaking off of the melted compound from a surface of said cylinder during application of the coating onto said substrate; and
subjecting said substrate with the coating thereon to a calendering operation.

5,053,255
CHEMICAL VAPOR DEPOSITION (CVD) PROCESS FOR THE THERMALLY DEPOSITING SILICON CARBIDE FILMS ONTO A SUBSTRATE
Herman J. Boeglin, Waterbury, Conn., assignor to Olin Corporation, Chesire, Conn.
Filed Jul. 13, 1990, Ser. No. 553,919
Int. Cl.[5] C23C *16/32*
U.S. Cl. 427—249 **12 Claims**

1. A thermal CVD process for forming silicon carbide-type films onto a substrate comprising the steps of:
(a) introducing di-tert-butylsilane vapor into a CVD reaction zone containing said substrate on which a silicon carbide film is to be formed,
(b) maintaining the temperature of said zone and said substrate at about 400° C. to about 1,100° C.;
(c) maintaining the pressure in said zone at about 0.1 to about 10 torr; and
(d) passing said vapor into contact with said substrate for a period of time sufficient to form a silicon carbide-type film thereon.

5,053,256
SODIUM HYPOCHLORITE SURFACE TREATMENT TO IMPROVE THE ADHESION OF PAINTS TO POLYDICYCLOPENTADIENE
Harold F. Haag, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Nov. 3, 1988, Ser. No. 266,954
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—307 **7 Claims**

1. A method of improving the paint adhesion properties of a cycloolefin polymer article, wherein said cycloolefin comprises dicyclopentadiene, comprising exposing the surface of said article to a aqueous solution of sodium hypochlorite or a solution of potassium permanganate.

5,053,257
PROCESS FOR FORMING FILM OF HYDROLYZED ETHYLENE-VINYL ACETATE COPOLYMER
Kenji Hasegawa, Takatsuki; Teruo Iwanami, Ibaraki, and Shinji Miyake, Osaka, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Feb. 23, 1990, Ser. No. 483,682
Claims priority, application Japan, Feb. 27, 1989, 1-48059
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—379 **3 Claims**

1. A process for forming a film of hydrolyzed ethylene-vinyl acetate copolymer which comprises:
coating a solution comprising a hydrolyzed ethylene-vinyl acetate copolymer to a substrate,
drying the wet film at a temperature from about 60° C. to about 150° C. and
subjecting the dried film to heat-treatment at a temperature of not less than 20° C. higher than the drying temperature,
said obtained film being formed so as to have a ratio of absorbance at 1,140 cm^{-1} to absorbance at 1,090 cm^{-1} in infrared absorption spectrum of not less than 0.65.

5,053,258
LOW TEMPERATURE LAMELLAR ARTICLE STRETCHING
Jack D. Booze, and Pallatheri M. Subramanian, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 428,428, Oct. 27, 1989, abandoned, which is a continuation of Ser. No. 310,039, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 196,844, May 19, 1988, abandoned, which is a continuation of Ser. No. 68,807, Jun. 30, 1987, abandoned, which is a continuation of Ser. No. 921,880, Oct. 20, 1986, abandoned, which is a continuation of Ser. No. 384,935, Jun. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 359,510, Feb. 18, 1982, abandoned. This application Jul. 20, 1990, Ser. No. 560,496
Int. Cl.[5] B29C *55/00;* **B29D** *22/00;* **B29K** *77/00*
U.S. Cl. 428—36.6 **6 Claims**

1. A process for improving the fluid barrier properties of a laminar, shaped article of a polyethylene, a polyamide which is selected from the group consisting of poly(hexamethylene adipamide), polycaproamide and mixtures thereof, incompatible with the polyethylene, and an alkylcarboxyl-substituted polyolefin wherein the polyethylene and the polyamide have a melting point differential greater than 50° C. and wherein the polyethylene has a melting point lower than the melting point of the polyamide and is present in the article in the form of a continuous matrix phase and the polyamide is present in the article in the form of a discontinuous distribution of thin, substantially two-dimensional, parallel and overlapping layers and the alkylcarboxyl-substituted polyolefin is present between the matrix and the layers and adheres the matrix and the layers together, comprising simultaneous multiaxial stretching the

article 2 to 6 times its dimensions at a temperature of about from 115° C. to 135° C.

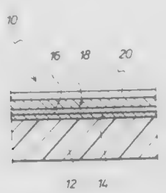
5,053,259
AMORPHOUS NYLON COPOLYMER AND COPOLYAMIDE FILMS AND BLENDS
Stephen J. Vicik, Darien, Ill., assignor to Viskase Corporation, Chicago, Ill.
Filed Aug. 23, 1988, Ser. No. 235,258
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—36.91 **50 Claims**

1. An oriented multilayer film comprising a first outer layer, a second outer layer, and at least one intermediate layer between said first outer layer and said second outer layer, said intermediate layer comprising a blend of (a) an amorphous nylon copolymer which is present in an amount of from about 10 to about 50 weight percent of said blend, and (b) a copolyamide having a melting point of at least 145° C.

13. An oriented multilayer film, as defined in claim 1, wherein said first and second outer layers and said intermediate layer are coextruded.

14. An oriented multilayer film, as defined in claim 13, wherein said film is a three layer tubular film and said first outer layer is a heat sealable layer.

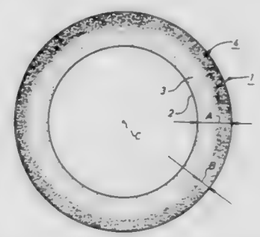
5,053,260
EMBOSSING FOIL
Ludwig Brehm, Hemhofen, Fed. Rep. of Germany, assignor to Leonhard Kurz GmbH & Co., Fuerth, Fed. Rep. of Germany
Filed May 23, 1990, Ser. No. 527,571
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1989, 3926578
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—40 **9 Claims**



1. An embossing foil of a laminate structure comprising: a backing foil; a separating layer; a transparent cover lacquer layer; a decorative layer means; and a foundation layer of a translucent material, the decorative layer adjacent to the cover lacquer layer, an opaque intermediate layer and a second decorative layer adjacent to the foundation layer.

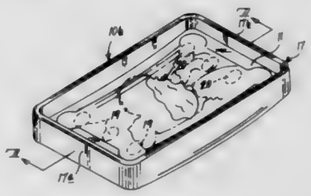
5,053,261
FRICTION MATERIAL
Yoshio Nishimura, and Shigeho Maeda, both of Osaka, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan
Continuation of Ser. No. 381,708, Jul. 3, 1989, abandoned. This application Oct. 11, 1990, Ser. No. 595,731
Claims priority, application Japan, Nov. 20, 1987, 62-177390
Int. Cl.[5] B32B *3/08, 15/00*
U.S. Cl. 428—65 **2 Claims**

1. A friction facing for use on a first member for frictional engagement with a second member, said first member having a large diameter center opening and a peripheral area around said center opening having a friction material affixed thereto and forming said friction facing thereon, said friction material having a lower friction coefficient during initial periods of use immediately after manufacture of said friction material on said first member than the friction coefficient after said initial periods of use, said friction facing having a flame sprayed metal film in an amount of 10 mg/cm^2 to 25 mg/cm^2 around the annular periphery of said peripheral area and extending radially inwardly for not more than one third the radial length of



said friction facing, said flame sprayed metal film raising said friction coefficient of said friction material during said initial period of use.

5,053,262
CHILD'S SERVING MAT
Pamela J. Kerr, 19536 Elk Ridge Dr., Keedysville, Md. 21756
Filed Jul. 16, 1990, Ser. No. 553,188
Int. Cl.[5] A47G *19/02*
U.S. Cl. 428—81 **1 Claim**



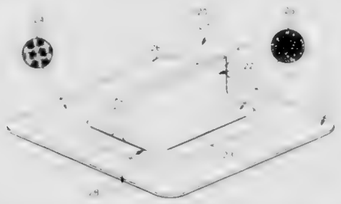
1. A unitary serving mat organization comprising,
a flexible central web, the flexible central web including a top surface coextensive with and overlying a bottom surface, and
a plurality of suction cups fixedly mounted fixedly to the bottom surface extending outwardly therefrom and
wherein the central web includes a peripheral perimeter, and a surrounding wall integrally mounted to the perimeter, and the surrounding wall formed of a flexible polymeric material, and the surrounding wall and the central web defining a fluid impermeable material, and
wherein the surrounding wall is defined by a first thickness and the central web is defined by a second thickness wherein the first thickness is less than that of the second thickness to enhance inter-folding of the surrounding wall relative to the central web and permit rolling of the mat for storage and transport, and
wherein the top surface defines an arcuate concave surface, to effect positioning of fluids directed onto the top surface medially of the top surface, and
wherein the surrounding wall includes a first side wall spaced from and parallel a second side wall, and the suction cups include a first row of suction cups arranged parallel to and adjacent the first side wall, and a second row of suction cups arranged parallel to the first row of suction cups wherein the second row of suction cups is oriented adjacent the second side wall.

5,053,263

COMPOSITE WITH INTEGRALLY MOLDED RIB AND MANUFACTURE THEREOF

James R. Krone, and John H. Barber, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 201,133, May 31, 1988, Pat. No. 4,937,032. This application Feb. 20, 1990, Ser. No. 481,523
Int. Cl.[5] B32B *1/04*
U.S. Cl. 428—120 7 Claims



1. An integral, one-piece, laminated structural composite having a generally continuous, generally flattened wall portion and at least one three-dimensional frame portion, each said frame portion being associated with a limited region of said wall portion, said wall portion being comprised of at least one first prepreg, each said frame portion including an upstanding frame member which projects outwardly from said wall portion, said frame portion further including a bottom face which is substantially completely thermally bonded to predetermined locations of one face of said wall portion, said frame portion further including a flattened base member positioned between said upstanding frame member and said wall portion which base member has a cross-sectional area taken parallelly to said wall portion which is at least about four times the correspondingly taken average cross-sectional area of said upstanding frame member, and the bottom surface of said flattened base member comprises said bottom face,

each of said first prepregs comprising a thermoplastic resin matrix which is impregnated with substantially continuous reinforcing fibers which are arranged in an ordered array in such first prepreg,

each of said second prepregs comprising a thermoplastic resin matrix which is impregnated with reinforcing fibers which are at least about ½ inch in average length and which have an average diameter to length ratio of at least about 1:10, said reinforcing fibers being randomly arranged in said second prepreg, said composite having been made by the process comprising the steps of:

(a) laminating together a first stack of prepregs positioned between a pair of spaced, generally parallel molding surface means applied against opposing outside faces of said first stack, said first stack cmoprising said at least one first prepreg interfacially arranged, said laminating being carried out while said molding surface means:

are maintained at a temperature which is at least sufficient to heat fuse together contacting surface portions of said thermoplastic resin,

apply a pressure against said opposing outside faces which is at least sufficient to compress said first prepregs to a predetermined extent, said temperature and said pressure being concurrently applied for a time which is at least sufficient to heat fuse said first prepregs together, thereby to form said wall portion, said wall portion having a generally spaced, parallel, opposed surfaces,

(b) laying up a second stack of prepregs on a predetermined location against one of said wall surfaces, said second stack being comprised of said at least one second prepreg, said second stack having prechosen exterior dimensions, and positioning configuration-defining mold means exteriorly around outside surface portions of said second stack and also against the other of said wall surfaces at said predetermined location, the interrelationship between said second stack and said configuration-defining mold means being such that, when said configuration-defining mold means is pressurized to a predetermined extent perpendicularly to said wall portion, such second stack is consolidated and defines said frame portion, and

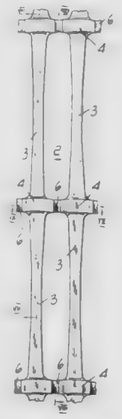
(c) compressing said configuration-defining mold means perpendicularly relative to said wall portion with a prechosen pressure, said configuration-defining mold means being heated to a prechosen temperature, and maintaining said prechosen pressure and said prechosen temperature for a time at least sufficient to heat fuse together said second prepregs to one another and to said wall surfaces at said location, thereby to produce simultaneously said frame portion and also said integral composite structure.

5,053,264

PLASTIC MATERIAL NET STRUCTURE

Mario Beretta, Sirtori, Italy, assignor to RDB Plastotecnica S.p.A., Vigano' Brianza, Italy

Filed Dec. 14, 1989, Ser. No. 450,499
Claims priority, application Italy, Dec. 20, 1988, 23021 A/88
Int. Cl.[5] B32B *3/10;* B29C *55/00*
U.S. Cl. 428—131 5 Claims



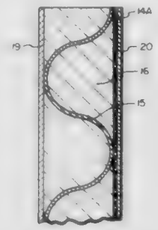
1. Plastic material net structure, comprising a sheet made of plastic material having a plurality of holes defined by a generally rectangular grid pattern of elongated portions and transverse portions interconnected by node elements, said sheet defining a plane of lay, said elongated portions extending in a stretch direction and being substantially orientated, said transverse portions extending substantially perpendicular to the stretch direction and being substantially non-orientated, said transverse portions defining a transverse portion thickness perpendicular to said plane of lay and said node elements defining a node element thickness perpendicular to said plane of lay, said transverse portion thickness being less than said node element thickness.

5,053,265

MOISTURE-IMPREVIOUS PANEL CAPABLE OF DELAYED HYDRATION

William Alexander, Naperville, Ill., assignor to American Colloid Company, Arlington Heights, Ill.

Filed Feb. 15, 1990, Ser. No. 481,454
Int. Cl.[5] B32B *3/28;* E02D *14/00*
U.S. Cl. 428—182 10 Claims



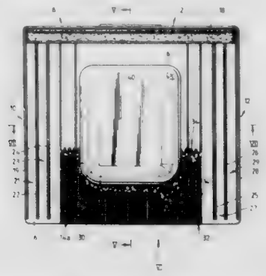
1. A panel useful as a water barrier including first and second facing sheets having a layer of water-swellable clay therebetween, at least one of said facing sheets being water premeable and coated on substantially the entire outer surface of said facing sheet with a layer of material having a predetermined water-solubility to prevent water from passing through the coated facing sheet during installation of the panel and removable by water contact after panel installation.

5,053,266

VENTILATION TILE WITH PLIABLE EDGE AREAS

Mark L. Hesketh, Whyteleafe; Peter Alker, Ross-on-Wye, both of England; Karl-Heinz Hofmann, Muecke, Fed. Rep. of Germany; Wilhelm Rottger, Heusenstamm, Fed. Rep. of Germany, and Wendelin Wanner, Geisenheim, Fed. Rep. of Germany, assignors to Dovetail Building Products Limited, England

Filed Dec. 18, 1989, Ser. No. 452,688
Claims priority, application United Kingdom, Dec. 23, 1988, 8830119; Fed. Rep. of Germany, Apr. 28, 1989, 3914025
Int. Cl.[5] E04B *7/18;* B32B *3/10*
U.S. Cl. 428—192 12 Claims



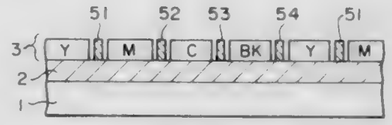
1. A ventilation tile comprising pliable portions provided by a membrane, the membrane being readily deformable to complement the shapes and configurations of adjacent roof tiles having headlap, side-lock and tail portions, whereby gaps between the headlap, side-lock and tail portions of tiles immediately adjacent the ventilation tile and adjacent portions of the membrane are substantially closed, the ventilation tile also comprising a rigid body portion for supporting the membrane, the body portion being generally of planar configuration and being provided with adapter means for accommodating another member at a central location thereon, and the membrane being generally planar and comprising a headlap portion having a rib, a sealing means, and a depending wall portion, oppositely disposed side-lock portions having ribs therein, and a tail portion, the tail portion extending beyond the rigid body portion and having an adhesive coating thereon.

5,053,267

THERMOSENSITIVE IMAGE TRANSFER RECORDING MEDIUM

Youji Ide, Mishima; Tetsuji Kunitake, Numazu; Masanaka Nagamoto, Susono, and Yoshihiko Hiyoshi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 299,658, Jan. 23, 1989, abandoned. This application Jul. 24, 1990, Ser. No. 556,858
Claims priority, application Japan, Feb. 1, 1988, 63-19596; Feb. 21, 1988, 63-11792; Apr. 4, 1988, 63-82832
Int. Cl.[5] B41M *5/20*
U.S. Cl. 428—195 23 Claims



1. A thermosensitive image transfer recording medium comprising:

a) a support,

b) a peel-off layer formed on said support, which comprises as a main component a thermofusible material, said peel-off layer having a melt viscosity A, and

c) a transparent thermofusible ink layer comprising a plurality of different color ink sections formed side by side in the form of a repeating unit on said peel-off layer, each of said ink sections comprising as the main components a thermofusible resin and a coloring agent, said transparent thermofusible ink layer having a melt viscosity B which is larger than the melt viscosity A of said peel-off layer, with the melt viscosity A of said peel-off layer being in the range of 10 cps to 10,000 cps at 110° C. and the melt viscosity B of said thermofusible ink layer being in the range of 100 cps to 500,000 cps at 110° C., and wherein said peel-off layer has an endothermic capacity in the range of 20 to 65 mcal/mg and said thermofusible ink layer has an endothermic capacity of 10 mcal/mg or less.

5,053,268

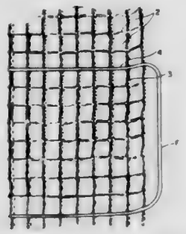
COMPOSITE PAPER

Ryohei Ehara, Saitama, and Masatoshi Tomiki, Koshigaya, both of Japan, assignors to Somar Corporation, Japan

Filed Nov. 28, 1989, Ser. No. 442,294
Claims priority, application Japan, Dec. 1, 1988, 63-305054
Int. Cl.[5] B32B *27/10, 27/28*
U.S. Cl. 428—215 2 Claims

1. A composite paper comprising a synthetic resin film having a thickness of 16–24 μm, and a sheet of paper laminated on each side of said synthetic resin film and having a Bekk smoothness of 80–100 seconds, a density of 0.82–0.90 g/cm^3, a degree of sizing of 0.9–1 second and a thickness of 22–24 μm.

5,053,269
STABILIZING SHEET WITH A HEATING INSERT FOR ABOVEGROUND CULTIVATION AND FOR A PROTECTED-CROP CONTAINER PLATFORM
Jean P. Ducol, Tarare, and Serge Lepage, Mornant, both of France, assignors to Notex S.A., Turdine, France
Filed Jun. 26, 1990, Ser. No. 543,420
Claims priority, application France, Jan. 9, 1990, 89 00340
Int. Cl.[5] B32B 7/00
U.S. Cl. 428—253 7 Claims



1. A textile material for resisting and distributing loads, comprising:
a first sheet of longitudinal threads;
a second sheet of transverse threads which extend substantially perpendicular to the threads of said first sheet, said second sheet being superposed onto said first sheet;
at least one continuous heating resistor superposed onto said first sheet such that a central axis of said resistor is parallel to and coplanar with central axes of the threads of said second sheet; and
a meshed-thread structure woven to join the threads of said second sheet and said resistor with the threads of said first sheet;
wherein said second sheet, said first sheet and said resistor each have a mechanical strength which enables elongation without breakage when subjected to the loads.

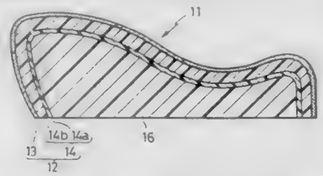
5,053,270
NON-WOVEN FABRIC CONSTRUCTION FOR DETERGENT POUCH
Robert J. Mack, Flemington, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.
Filed May 18, 1990, Ser. No. 525,788
Int. Cl.[5] C11D 9/42; B32B 7/00
U.S. Cl. 428—35.2 17 Claims



1. A laundry detergent pouch comprising a web of non-water sensitive non-woven fibers, said fibers normally having interstices therebetween which pass detergent particles, said fibers being compressed to fill said interstices and bonded with a binder to hold said fibers in the compressed condition thereby preventing passage of said particles, wherein said binder releases said compressed fibers when said pouch is laundered whereby said fibers return to an uncompressed state and said detergent particles can pass through said interstices.

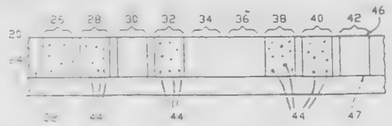
5,053,271
SKIN COVERED FOAMED PLASTIC ARTICLE
Masami Mori, and Norio Yanagishita, both of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Kanagawa, Japan
Filed Oct. 27, 1989, Ser. No. 429,234
Claims priority, application Japan, Oct. 31, 1988, 63-142209[U]; Oct. 31, 1988, 63-142210[U]; Oct. 31, 1988, 63-142211[U]
Int. Cl.[5] B32B 3/26
U.S. Cl. 428—304.4 9 Claims

1. A skin covered foamed plastic article, comprising:
a pad member; and
a skin cover covering the pad member, including:
a surface skin forming an outer surface of the skin covered foamed plastic article; and
a wadding attached on a back side of the surface skin,



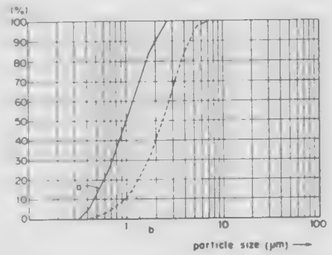
making a direct contact with the pad member, and having a soft layer contacting the surface skin and a hard layer contacting the pad member which has a constant thickness and which is harder than both the soft layer and the pad member.

5,053,272
OPTICAL STORAGE DEVICE
Kie Y. Ahn, Chappaqua; Jungihl Kim, Peeskill; Paul Lauro, Pomona, and George F. Walker, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 13, 1989, Ser. No. 297,792
Int. Cl.[5] B32B 5/16; G11B 3/70, 7/26
U.S. Cl. 428—323 19 Claims



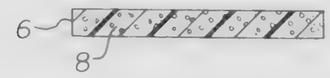
1. A structure comprising:
a polymer body having a first region containing a polymeric material said polymeric material having a deprotonated carboxyl acid group complexed with a cation and having a second region containing an anhydride of said polymeric material; and
a predetermined geometric pattern of oxide particles embedded in said second region.

5,053,273
MAGNETIC POWDER COATED WITH A COPOLYMER OF POLYOXYETHYLENE ALLYL METHYL DIETHER AND MALEIC ANHYDRIDE
Yuji Inada, Tokyo; Yutaka Tamaura, Yokohama, and Katsunobu Takahashi, Tokyo, all of Japan, assignors to Mihama Corporation, Osaka, Japan
Filed Oct. 11, 1988, Ser. No. 256,056
Int. Cl.[5] B32B 5/16; G11B 23/00
U.S. Cl. 428—323 20 Claims



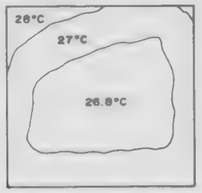
1. A magnetic powder treated with a coating agent on it surface to coat the surface of said powder, said coating agent comprising an alternating copolymer of a polyoxyethylene allyl methyl diether and maleic anhydride.

5,053,274
HIGHLY FILLED SUBSTANTIALLY SOLID POLYURETHANE, UREA AND ISOCYANNURATE COMPOSITES FOR INDOOR AND OUTDOOR APPLICATIONS, FOR LOAD BEARING, STRUCTURAL AND DECORATIVE PRODUCTS
Arthur E. Jonas, 3 Laurelwood Dr., Milford, Ohio 45150
Filed Feb. 8, 1990, Ser. No. 476,807
Int. Cl.[5] B32B 27/40
U.S. Cl. 428—332 16 Claims



1. A composite comprising a mixture having a solid matrix, selected from at least one of the group consisting of a polyurethane, a polyisocyanurate, and a polyurea, with a dry solid particulate or a dry liquid filler, wherein:
said matrix is substantialy non-foamed;
said filler is present in an amount from 50 to 95 percent by weight of the composite;
the composite being rigid, and useful itself as a structural material without a need for an additional strengthening element or reinforcement to achieve or maintain its structural integrity.

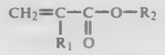
5,053,275
SOLAR HEAT SELECTIVE ABSORPTIVE FIBER MATERIAL
Shunsaku Kagechi, and Masanori Fujimoto, both of Osaka, Japan, assignors to Descente Ltd., Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 121,855
Claims priority, application Japan, Aug. 7, 1987, 62-198488
Int. Cl.[5] D02G 3/00
U.S. Cl. 428—372 10 Claims



1. A solar heat selective absorptive fiber spun from a mixture of:
a) A carbide powder a transition metal of group IV of the Periodic Table with a thermoplastic synthetic linear polymer, or
b) a mixed powder of a carbide powder of a transition metal of group IV of the Periodic Table and a powder of aluminum, with a thermoplastic synthetic linear polymer.

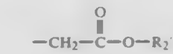
5,053,276
COMPATIBLE POLYMER BLENDS
Werner Siol, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignor to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany
Division of Ser. No. 357,264, May 26, 1989, Pat. No. 4,985,504.
This application Oct. 31, 1990, Ser. No. 606,815
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 3818837; Sep. 22, 1988, 3834599
Int. Cl.[5] C08L 37/00; B32B 27/00; D02G 3/00
U.S. Cl. 428—394 20 Claims

1. An article or object, comprising (i) a core material of a first polymer P1, said first polymer comprising 20–100 wt.% styrene monomer units; a second polymer P2, said second polymer comprising 20–100 wt.% of monomers having formula I

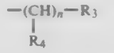


(I)

where R_1 stands for hydrogen, methyl or a



group and wherein R_2 and R_2' are the group



wherein n is 0–3, R_3 is a 5–8 membered heterocyclic ring having at least two heteroatoms in the ring, at least one of said heteroatoms being an oxygen, and R_4 is a hydrogen or a C_{1-6} alkyl group, or a polymer blend consisting essentially of 0.1–99.9 wt.% of said first polymer and 99.9–0.1 wt.% of said second polymer, and
(ii) a coating material on said core material, said coating material comprising said first or second polymer.

5,053,277
MICROCAPSULES AND THEIR PRODUCTION
Anthony E. Vassiliades, 8738 Tanager Woods Dr., Cincinnati, Ohio 45249
Filed Feb. 18, 1987, Ser. No. 15,904
Int. Cl.[5] B01J 13/10, 13/20
U.S. Cl. 428—402.2 6 Claims

1. Microcapsules consisting essentially of external encapsulating material having encapsulated therein a solution in an oleophilic solvent of the reaction product of at least one leuco chromogenic compound and at least one electron-accepting color developer capable of reacting with said leuco chromogenic compound in an oleophilic solvent, at least one organometallic salt of at least one polyvalent metal of Group IVB through IIIA of the Periodic Table, and liquid or aqueous ammonia in an amount of from 1 to 20% by weight of the weight of the reaction product solution; said oleophilic solvent being a solvent for said leuco chromogenic compound, said color developer, and said reaction product.

5,053,278
CARBONACEOUS GRANULAR HEAT INSULATOR AND PROCESS FOR PREPARING THE SAME
Toshio Nakada; Fumio Takemura, and Masao Ishiwata, all of Gotenba, Japan, assignors to Tokai Carbon Co., Ltd., Tokyo, Japan
Filed May 8, 1989, Ser. No. 348,924
Claims priority, application Japan, Jan. 30, 1987, 62-18165; Feb. 27, 1987, 62-42721; Jul. 6, 1987, 62-167003
Int. Cl.[5] B32B 9/00; C09C 1/56
U.S. Cl. 428—403 2 Claims

1. A granular carbonaceous heat insulator comprising a carbon black pellet, said pellet being produced by wet granulation or by dry granulation and the surface of said pellet being coated with a dense layer of carbon, produced by:

coating carbon black pellets having voids therein with a volatile organic solvent solution containing 5 to 40 wt. % of a binder consisting of a thermosetting resin, tar or pitch;
heating the carbon black pellets coated with the binder solution at a rate of 20° C./min or less to a temperature of about 200° C., while the pellets are being tumbled in an



inert gas stream, to remove the volatile organic solvent, and maintaining the pellets at about 200° C. for 30 min or longer to cure the binder; and
baking the carbon black pellets coated with the cured binder in a non-oxidizing atmosphere to carbonize the cured binder, said backed pellet having a pellet hardness of 100 g/pellet or more.

5,053,279

GRANULAR BITUMEN COATED WITH CARBON BLACK OR SILICA

Ivo Daniels, Hanau; Reinhard Manner, Maintal; Karl H. Mueller, Bruchkoebel, and Walter Barthel, Langenselbold, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 2, 1989, Ser. No. 388,530

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1988, 3826497

Int. Cl.[5] B32B *11/04, 11/12;* **C08L** *95/00*

U.S. Cl. 428—405 **7 Claims**

1. A friable, granular bitumen product comprising finely divided bitumen coated with from 0.5 to 6% by weight of a powdery coating and separation agent selected from the group consisting of synthetic silica and carbon black.

5,053,280

ADHESIVE COMPOSITION FOR PRINTED WIRING BOARDS WITH ACRYLONITRILE-BUTADIENE RUBBER HAVING CARBOXYL GROUPS AND 20 PPM OR LESS METAL IONIC IMPURITIES; AN ALKYL PHENOL RESIN; AN EPOXY RESIN; PALLADIUM CATALYST, AND COUPLING AGENT

Shin Takanezawa; Iwasaki Yorio, both of Shimodate; Hiroshi Takaahashi, Kasama; Toshiro Okamura, Shimodate; Saburo Amano; Hiroyoshi Yokoyama, both of Yuki; Noriyoshi Fukuoka, Takaoka, and Tatsuya Amano, Moda, all of Japan, assignors to Hitachi-Chemical Co., Ltd., Japan

Filed Sep. 18, 1989, Ser. No. 408,688

Claims priority, application Japan, Sep. 20, 1988, 63-235196

Int. Cl.[5] B32B *27/38*

U.S. Cl. 428—413 **4 Claims**

4. A printed wiring board produced by forming an adhesive layer on an insulating substrate containing a catalyst for electroless plating with an adhesive composition comprising effective adhesive amounts of
(A) acrylonitrile-butadiene rubber having carboxyl groups in the molecule and containing 20 ppm or less of metal ionic impurities, based on weight,
(B) an alkyl phenol resin,
(C) an epoxy resin,
(D) a catalyst for electroless plating selected from metallic palladium or a salt thereof, or a mixture thereof, and
(E) a coupling agent having an ethylene group or a vinyl group, masking portions other than the circuit portions with a resist, chemically roughening non-masked portions, and conducting electroless plating; said printed circuit board exhibiting excellent resistance to electrolytic corrosion.

5,053,281

AROMATIC POLYAMIDE AND GAS-BARRIER PROPERTY IMPARTING AGENT COMPOSED OF IT

Takeshi Sakashita, Iwakuni, and Tomoaki Shimoda, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

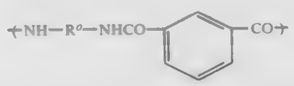
Division of Ser. No. 183,741, Apr. 8, 1988, abandoned. This application Jun. 27, 1990, Ser. No. 544,635

Claims priority, application Japan, Aug. 20, 1986, 61-192938

Int. Cl.[5] B32B *27/08, 27/32, 27/34, 27/36*

U.S. Cl. 428—412 **3 Claims**

1. A gas-barrier material comprising a laminated structure of at least one layer of an aromatic polyamide as a gas-barrier layer, said aromatic polyamide
composed of a random arrangement of isophthaloyldiamine component recurring units represented by the formula (I)



(I)

where R^o is a divalent hydrocarbon group having 4 to 25 carbon atoms, and diacyloyldiamine component recurring units represented by the formula (II)

(II)

wherein R^o is as defined above, and Ar is a divalent aromatic hydrocarbon residue containing 6 to 20 carbon atoms other than the 1,3-phenylene group,
having a composition such that, based on the entire recurring units, the proportion of the isophthaloyldiamine component units is 50 to 100 mole % and the proportion of the diacyloyldiamine component units is 50 to 0 mole %,
having a melt flow rate (MFR), measured at 300° C. under a load of 2 kg, of 0.01 to 100 g/10 min.,
having crystallinity, measured by X-ray diffractometry, of not more than 7%,
having a glass transition temperature (Tg) of 110 to 240° C.,
having an oxygen permeability coefficient, measured on a sheet having a thickness of 100 microns, at 25° C., of 0.7 to 2.1 ml.mm/m^2.day.atm, and
having a carbon dioxide permeability coefficient, measured on a sheet having a thickness of 100 microns, at 25° C., of 3.2 to 7.3 ml.mm/m^2.day.atm; and
at least one layer of polyethylene terephthalate, polycarbonate or polyolefin.

5,053,282

NON-INFLAMMABLE INSULATING COMPOSITE MATERIAL

Pierre Delvaux, Bromptonville, and Normand Lesmerises, Rock Forest, both of Canada, assignors to Ceram-Sna Inc., Sherbrooke, Canada

Filed Sep. 19, 1989, Ser. No. 409,065

Int. Cl.[5] E04B *1/74*

U.S. Cl. 428—323 **9 Claims**

1. A non-inflammable insulating, composite material comprising:
a fibrous-like, synthetic forsterite obtained by calcination of chrysotile asbestos fibers at a temperature of from 650° C. to 1450° C., said synthetic forsterite having an MgO:SiO2 ratio lower than 1.1, a raw loose density of from 3 to 40 pcf, a thermal conductivity "k" factor of from 0.25 to 0.40 BTU. in/hr. °F.ft^2 and a fusion point of from 1600° to 1700° C.;
an inorganic, lightweight filler selected from the group consisting of vermiculite, perlite and their mixtures; and
a non-inflammable binder present in such an amount as to make the material of sufficiently adhesive, after wetting to be shooted as a coating onto a surface to be insulated,
wherein the weight ratio of said synthetic forsterite to said inorganic filler is ranging from 20:80 to 80:20.

5,053,283

THICK FILM INK COMPOSITION

Kenneth Brown, Alta Loma, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.

Filed Dec. 23, 1988, Ser. No. 290,652

Int. Cl.[5] B32B *15/04, 17/06*

U.S. Cl. 428—432 **2 Claims**

1. An electronic assembly, comprising a metallic substrate comprising aluminum
a layer of ceramic coating substantially covering at least one surface of the substrate, said ceramic coating comprising a layer of flame-sprayed alumina,
a layer of a thick film ink composition disposed upon the layer of ceramic coating, wherein the thick film ink composition comprising from about 10 weight % to about 70 weight % of a glass matrix material comprising a borosilicate glass having a softening point below about 700° C., up to about 90 weight % of a particulate conductive material comprising a member of the group palladium particles and silver particles, and from about 2 weight % to about 40 weight % of a particulate reinforcement material comprising a zirconium spinel.

5,053,284

WEAR-RESISTANT COMPOUND ROLL

Akira Noda, and Kenji Maruta, both of Kitakyusyu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Feb. 1, 1990, Ser. No. 473,439

Claims priority, application Japan, Feb. 2, 1989, 1-24540

Int. Cl.[5] B22F *5/00*

U.S. Cl. 428—552 **4 Claims**

1. A wear-resistant compound roll having a shell portion produced by HIPing a uniform mixture of alloy powder consisting essentially, by weight, of 1.2–3.5%, of C, 2% or less of Si, 2% or less of Mn, 10% of less of Cr, 3–35, as W+2Mo, of one or two of W and Mo, 1–12% of V, and balance Fe and inevitable impurities, and 1–15% based on the weight of said alloy powder, of VC powder dispersed therein, wherein it has a metal structure in which said VC powder particles selectively exist in the positions corresponding to the alloy powder particle surfaces.

5,053,285

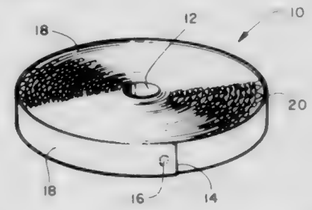
METHOD AND APPARATUS FOR MAKING INSERTS FOR HONEYCOMB PANELS

Francis J. Gojny, Bonita; Guy S. Greene, Borrego Springs; Roswell L. Stahl, Jr., San Diego, and Charles Z. Street, La Mesa, all of Calif., assignors to Rohr Industries, Inc.

Filed Nov. 25, 1988, Ser. No. 275,909

Int. Cl.[5] B32B *1/00, 3/12*

U.S. Cl. 428—593 **9 Claims**



1. A pancake insert for a honeycomb structure which comprises first and second elongated foil strips each having corrugations lying substantially perpendicular to the long dimension of said strips, the corrugations having different periods in the two strips, said strips would together around an axis substantially parallel to said corrugations, and means securing the outer end of said strips to said coil and
an uncorrugated strip wrapped around said insert in an overlapping relationship with the overlapping ends bonded together.

5,053,286

ALUMINUM-LEAD ENGINE BEARING ALLOY METALLURGICAL STRUCTURE AND METHOD OF MAKING SAME

George C. Pratt, Ann Arbor, and Warren J. Whitney, Jr., Ypsilanti, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 175,564, Mar. 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 821,716, Jan. 23, 1986, Pat. No. 4,996,025. This application Nov. 7, 1989, Ser. No. 434,528

Int. Cl.[5] B32B *15/10;* **C21C** *21/00*

U.S. Cl. 428—653 **9 Claims**

1. An aluminum-lead engine bearing alloy in continuously cast strip form with a lead content in excess of 4% by weight, in which the lead phase consists of uniformly distributed spherical particles averaging 2 to 12 microns in diameter and being no more than 25 microns in diameter, wherein the content of all remaining constituents other than aluminum totals not more than 10% by weight, the balance being aluminum.

5,053,287

MAGNETOPTICAL RECORDING MEDIA AND PROCESSES FOR PRODUCTION THEREOF

Kunihiko Mizumoto, Yamaguchi; Hirokazu Kejiura, Ootake; Yuji Togami, and Nobuo Saito, both of Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Continuation of Ser. No. 199,036, filed as PCT JP87/00620 on Aug. 21. 1987, published as WO88/01425 on Feb. 25, 1988, abandoned. This application May 1, 1990, Ser. No. 518,304

Claims priority, application Japan, Aug. 22, 1986, 61-196688; Aug. 22, 1986, 61-296689; Feb. 3, 1987, 62-2384; Feb. 3, 1987, 62-23835

Int. Cl.[5] G11B *5/62, 5/84*

U.S. Cl. 428—694 **24 Claims**

1. A magnetooptical recording medium, characterized in that said recording medium comprises a film of Nd—Dy—Co alloy system having a magnetic easy axis perpendicular to the

film, the composition of said film being represented by the formula $Nd_xDy_yCo_z$ wherein x/x+y+z (atomic ratio) is



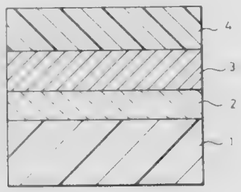
0.01–0.2, y/x+y+z (atomic ratio) is 0.1–0.3, and x/y (atomic ratio) is less than 1.

5,053,288

OPTICAL RECORDING MEDIUM

Eiichi Hashimoto, Tokyo; Tetsuo Sato, Hino, and Kiyoshi Chiba, Chofu, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 18, 1988, Ser. No. 273,440
Claims priority, application Japan, Nov. 20, 1987, 62-292174; Feb. 3, 1988, 63-22122; Mar. 14, 1988, 63-58363
Int. Cl.[5] G11B *3/68*
U.S. Cl. 428—694 **22 Claims**



1. An optical recording medium, comprising:
a hard plastic substrate;
an optical recording film formed over said hard plastic substrate; and
a UV-cured resin layer formed over said optical recording film, said UV-cured resin being formed by curing a UV-curable resin composition which comprises:
a) 15 to 85% by weight of a first ingredient of an acrylate and/or a methacrylate having at least three functionalities;
b) 15 to 70% by weight of a second ingredient of a compound having a linear structure and a molecular weight of at least 300 and a molecular weight of at least 150 per ethlenically unsaturated bond;
c) at least 0.3% by weight of a photopolymerization initiator; and
d) not more than 40% by weight of a third ingredient of an acrylate and/or methacrylate having two functionalities;
said UV-curable resin composition containing as an ingredient substantially no acrylate or methacrylate having one functionality, wherein said UV-cured resin layer has an acid value of not more than 1.5 and a softening point not lower than 50° C.

5,053,289

MAGNETIC RECORDING MEDIUM

Yasuo Nishikawa; Takashi Yoneyama, and Kunihiko Sano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 29, 1989, Ser. No. 330,009
Claims priority, application Japan, Mar. 29, 1988, 63-73356
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—694 **7 Claims**

1. A magnetic recording medium comprising a nonmagnetic support having thereon an intermediate layer and a magnetic layer, in that order, wherein said intermediate layer contains a first ester compound obtained by condensing a saturated fatty acid having from 6 to 26 carbon atoms and an unsaturated alcohol having from 8 to 26 carbon atoms, and wherein a second ester compound obtained by condensing a saturated fatty acid having from 6 to 26 carbon atoms and an unsaturated alcohol having from 8 to 26 carbon atoms is present on or in said magnetic layer

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5,053,290

DIORGANOPOLYSILOXANES COMPRISING BENZALMALONATE FUNCTIONAL GROUPS

Edith Canivenc, Lyons; Serge Forestier, Claye-Souilly; Michel Gay, Lyons; Gérard Lang, Saint-Gratien, and Hervé Richard, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Sep. 11, 1989, Ser. No. 405,299
Claims priority, application France, Sep. 9, 1988, 88 12016
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—429 **10 Claims**

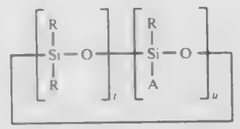
1. A functional diorganopolysiloxane polymer having one of the following formulae (1) or (2):

(1)



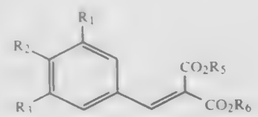
or

(2)

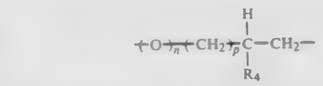


in which the radicals R, which may be identical or different, are each a C_1–C_{10} alkyl, phenyl or 3,3,3-trifluoropropyl radical, at 80% of the number of the R radicals being methyl radicals; the radicals B, which may be identical or different, are each a radical R or a radical A; r is an integer ranging from 0 to 200; s is an integer ranging from 0 to 50, with the proviso that if s is 0, at least one of the two radicals B is an A radical; u is an integer ranging from 1 to 20; t is an integer ranging from 0 to 20; t+u is equal to or greater than 3; and A is a radical of the formula:

(3)



wherein R_1 and R_2 are each a hydrogen atom, a hydroxyl radical, a trimethylsiloxy radical, a C_1–C_6 alkyl radical, a C_1–C_6 alkoxy radical or a divalent radical Y of the formula:



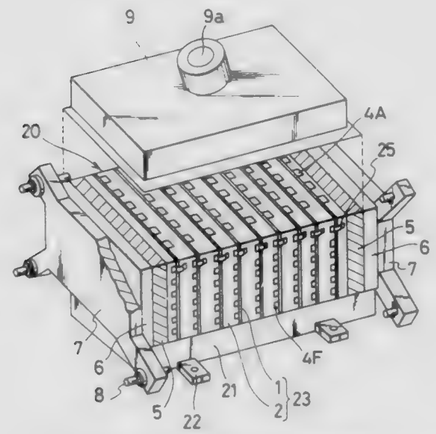
in which n is 0 or 1; p is an integer ranging from 1 to 10; and R_4 is a hydrogen atom or a C_1–C_4 alkyl radical, with the proviso that one of the two radicals R_1 and R_2 necessarily is the radical Y; R_3 is a hydrogen atom, a C_1–C_6 alkyl radical or a C_1–C_6 alkoxy radical; and R_5 and R_6, which may be identical or different, are each a C_1–C_8 alkyl radical.

5,053,291

LATERAL LAYER-BUILT FUEL CELL STACK AND MODULE STRUCTURE THEREOF

Toshio Hirota, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1990, Ser. No. 571,995
Claims priority, application Japan, Sep. 4, 1989, 1-228655
Int. Cl.[5] H01M *8/24*
U.S. Cl. 429—39 **8 Claims**



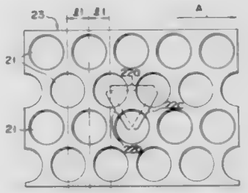
1. A fuel cell stack module structure comprising:
a pedestal connected to a manifold which also serves as a support member; and
a plurality of lateral layer-built fuel cell stacks which are laterally and vertically combined through said pedestal, each of said plurality of lateral layer-built fuel cell stacks comprising:
a fuel cell layered body including a plurality of unit cells each of which includes a matrix layer for holding an electrolyte; a pair of electrode layers which are disposed on both sides of said matrix layer; and a plurality of separators, each of said separators having a plurality of vertical passages for reaction gases which are substantially vertically arranged on one major surfaces of each of said plurality of separators and a plurality of horizontal passages for reaction gases which are substantially horizontally arranged on the other of said major surfaces of each of said plurality of separators, said unit cells and said separators being alternatively superimposed so that each of the surfaces of said plurality of unit cells and said plurality of separators is approximately vertically arranged, an oxidizing agent being supplied through said plurality of vertical passages and a fuel gas being supplied through said plurality of horizontal passages;
a pair of first manifolds which are disposed on the sides of the upper and lower surfaces of said fuel cell layered body and which are communicated with said plurality of vertical passages, one of the paired first manifolds which are positioned on the lower side of the fuel cell layered body simultaneously serving as a supporting member for the fuel cell layered body; and
a pair of second manifolds which are disposed on the side of opposite side surfaces of said fuel cell layered body and which are communicated with said plurality of horizontal passages.

5,053,292

NICKEL-METAL HYDRIDE SECONDARY CELL

Hiroyuki Hasebe; Kazuta Takeno; Yuji Sato; Hiroyuki Takahashi; Hirotaka Hayashida; Kiyoshi Mitsuyasu, all of Yokohama, and Ichirou Sawatari, Oomiya, all of Japan, assignors to Toshiba Battery Co., Ltd., Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of, Japan

Filed Sep. 18, 1990, Ser. No. 584,107
Claims priority, application Japan, Sep. 18, 1989, 1-240068; Sep. 18, 1989, 1-240069; Sep. 18, 1989, 1-240071; Oct. 27, 1989, 1-278710; Mar. 9, 1990, 2-56699; Mar. 30, 1990, 2-83925
Int. Cl.[5] H01M *4/62, 4/70*
U.S. Cl. 429—101 **6 Claims**



1. A nickel-metal hydride secondary cell comprising:
an enclosure;
a non-sinter type nickel positive electrode accommodated in said enclosure and formed of a conductive core and a layer formed on the core and made mainly of a binding medium, nickel hydroxide powder, and cobalt monoxide powder;
a hydrogen absorbing alloy negative electrode accommodated in said enclosure and formed of punched metal and a layer formed on the punched metal by applying a paste thereto, said punched metal having a plurality of apertures having a diameter of 1 to 5 mm at an aperture rate of 45 to 70% and having a thickness equal to 10 to 35% of the overall thickness of the negative electrode, and said paste made of 100 parts by weight of hydrogen absorbing alloy powder, 0.005 to 1 part by weight of polyacrylate, 0.01 to 1 part by weight of carboxymethylcellulose, 0.5 to 7 parts by weight of fluoro-resin, and 0.1 to 4 parts by weight of conductive material powder;
a separator made of synthetic resin unwoven fabric and located between said positive and negative electrodes; and
an alkali electrolyte contained in said enclosure.

5,053,293

METHOD FOR PRODUCTION OF PHOTOELECTROCHEMICAL CELL AND CELL PRODUCED THEREBY

Hiromi Yamakita, Owari-Asahi; Masato Tazawa, Meito; Kiyoshi Hayakawa, Gifu, and Hiroshi Taoda, Nagoya, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Aug. 17, 1990, Ser. No. 568,714
Claims priority, application Japan, Aug. 23, 1989, 1-216665
Int. Cl.[5] H01M *6/30*
U.S. Cl. 429—111 **22 Claims**

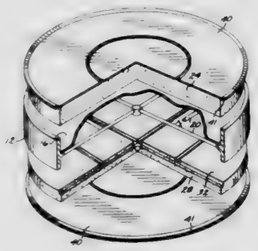
12. A photoelectrochemical cell, consisting essentially of a semiconductor having a layer of an anion-doped long-chain alkylthiophene polymer formed on one surface thereof, a transparent electrode having an electroconductive surface, a solid electrolyte interposed between said anion-doped long-chain alkylthiophene polymer layer on said semiconductor and said electroconductive surface of said electrode, and a lead wire connected to the other surface of said semiconductor.

5,053,294

PLANAR SODIUM-SULFUR ELECTRICAL STORAGE CELL

Richard P. Sernka, Long Beach, and Robert K. Tuenaka, Granada Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 10, 1990, Ser. No. 506,748
Int. Cl.[5] H01M 10/39
U.S. Cl. 429—104 21 Claims



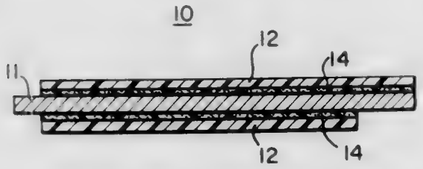
1. A planar sodium-sulfur electrical storage cell, comprising:
a solid electrolyte which permits the migration of sodium ions therethrough;
a substantially planar, electrically conductive, liquid permeable, porous cathode on one side of the electrolyte, the cathode having sulfur within the pores thereof;
a substantially planar, electrically conductive, liquid permeable, porous anode on the other side of the electrolyte, the anode having sodium within the pores thereof;
an electrically nonconductive container around the electrolyte, the cathode, and the anode, the electrolyte being sealed to the container to prevent any flow of matter from the anode to the cathode other than through the electrolyte, said nonconductive container including internal cross bracing adjacent the electrolyte to minimize deflection of the electrolyte; and
end closure means for closing at least one end of the container.

5,053,295

LIGHTWEIGHT ELECTROCONDUCTIVE SOLDERLESS INTERNAL CELL CONNECTOR FOR ALKALINE OR ALKALINE EARTH METAL BATTERIES

Henry F. Hope, and Stephen F. Hope, both of c/o Hope Industries, Inc., Willow Grove, Pa. 19090

Filed Mar. 26, 1990, Ser. No. 498,697
Int. Cl.[5] H01M 2/26
U.S. Cl. 429—161 8 Claims



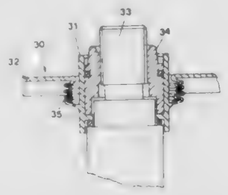
1. In combination with an alkaline metal or alkaline earth metal battery a lightweight solderless connector for internal battery electrical connection which comprises
a core of alkaline metal or alkaline earth metal,
an outer electrically insulating covering on said core,
said outer covering having an adhesive coating thereon in contact with said core.

5,053,296

LID FOR ACCUMULATOR BATTERIES SUITED TO ABSORBS THE DEFORMATION OF THE POLES

Olimpio Stocchiero, 5 Via Kennedy, 36050 Montorso Vicentino (VI), Italy

Filed May 2, 1990, Ser. No. 517,704
Claims priority, application Italy, May 26, 1989, 85597 A/89
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.
Int. Cl.[5] H01M 2/04
U.S. Cl. 429—175 4 Claims



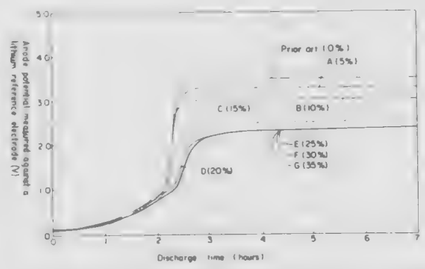
1. A lid made of plastic material for lead-acid accumulator batteries, comprising an essentially flat surface having a rectangular shape, presenting two openings for the passage of the poles and at least one opening for the inlet of the electrolyte, characterized in that it presents at least in each opening for the passage of the positive poles an externally cylindrical collar having approximately the same diameter of the opening, wherein said collar receives in its interior the bush blocking the pole of the battery and is connected with the lid through an elastic diaphragm having a circular cross-section, wherein the upper edge of said diaphragm is connected with the lid and its lower edge is connected with the outer surface of the collar

5,053,297

NONAQUEOUS ELECTROLYTE SECONDARY BATTERY

Takayuki Yamahira; Hisayuki Kato, and Masanori Anzai, all of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1990, Ser. No. 502,679
Claims priority, application Japan, Apr. 3, 1989, 1-84541
Int. Cl.[5] H01M 4/52, 10/40
U.S. Cl. 429—194 6 Claims



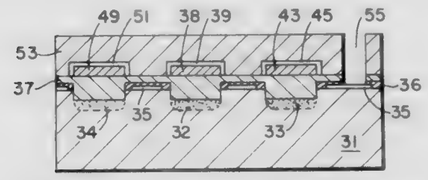
1. A nonaqueous electrolyte secondary battery comprising an anode having a carbonaceous material as an anode active material which permits lithium to be doped and undoped and an anode current collector, a cathode having a lithium compound as a cathode active material which permits lithium to be doped and undoped, and a nonaqueous electrolyte, characterized in that said cathode active material contains a primary active material of a first lithium compound having a potential which is more "noble" than a potential of said anode current collector and an auxiliary active material of a second lithium compound having the potential which is more "base" than the potential of the current collector.

5,053,298

METHOD OF MANUFACTURING COLOR FILTER INCLUDING EXPOSING PLANARIZING LAYER THROUGH OPENINGS IN A MEDIUM LAYER

Han-su Park, Kyunggi; Hyeong-seok Lee, Seoul, and Deok-ki Jeong, Kwacheon, all of Rep. of Korea, assignors to Samsung electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Mar. 9, 1990, Ser. No. 491,101
Claims priority, application Rep. of Korea, Dec. 2, 1989, 89-17828
Int. Cl.[5] G03F 9/00; G02B 5/22
U.S. Cl. 430—7 10 Claims



1. In a method for manufacturing a color filter which has a plurality of light receiving regions disposed in the form of a matrix on a substrate, said substrate having a plurality of electrodes formed between said light receiving regions in the column direction of the matrix, said color filter having a plurality of coplanar color pattern groups which overlap with said light receiving regions, said method comprising the steps of:
coating a transparent planarizing layer on the surface of said substrate to flatten the surface of said substrate;
forming on said planarizing layer a first relief pattern overlapping said light receiving region, corresponding to a first color;
coloring said first relief pattern with said first color;
forming a medium layer to prevent coloring, said medium layer covering the whole surface of the structure resulting after said coloring step;
forming openings for exposing said planarizing layer;
forming a new relief pattern within said opening, said relief pattern overlapping another light receiving region;
coloring said relief pattern with a color different from said first color;
removing said medium layer;
forming colored relief patterns with different colors by successively repeating said steps of forming a medium layer, forming openings, forming a new relief pattern overlapping a light receiving region, coloring the newly formed relief pattern, and removing said medium layer; and
coating a protective layer on the whole surface of the resultant structure after forming the colored pattern for the last desired color.

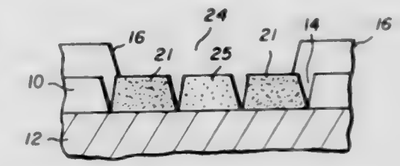
5,053,299

METHOD OF MAKING COLOR FILTER ARRAYS

Michael J. Hanrahan, Rochester, and Kathleen S. Hollis, Dalton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1990, Ser. No. 528,385
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—7 1 Claim

1. In a method of making a color filter array for a device such as an image sensor or the like comprising the steps of:
(a) forming only one transparent imagable mordant layer on the device;
(b) exposing the imagable mordant to a pattern representing an array of filter elements and developing areas of the mordant to provide filter elements separated by the separation region;
(c) coating a layer of positive photoresist over the filter element array;
(d) exposing and developing the photoresist layer to obtain first window areas in the photoresist corresponding to selected filter elements;
(e) providing a first dye through the first window areas to dye selected filter elements with a first color; and



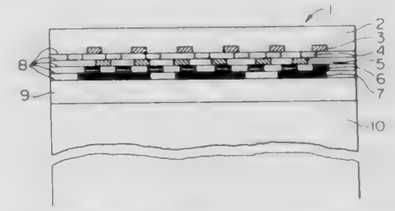
(f) exposing and developing the photoresist layer to obtain second window areas in the photoresist corresponding to other selected filter elements;
(g) providing a second dye through the second window areas to dye other selected filter elements with a second color;
(h) repeating steps (f)–(g) over as many times as desired; and
(i) removing the remaining portions of the photoresist layer.

5,053,300

DISPLAY AND PROCESS FOR PRODUCTION FOR PRODUCTION THEREOF

Takeshi Imai, Ohbu; Teruhiko Iwase, Kariya; Toshio Koura, Nagoya; Minoru Maeda, Minami-Ashigara; Junichi Fujimori, Minami-Ashigara, and Fumiaki Shinozaki, Minami-Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Sep. 28, 1990, Ser. No. 590,273
Claims priority, application Japan, Sep. 29, 1989, 1-254209
Int. Cl.[5] G03C 11/12, 1/90
U.S. Cl. 430—15 18 Claims



1. A display which comprises a color image forming layer provided on a light-transmitting permanent support via a photo-polymerizable adhesive layer, and a photo-polymerizable image-receiving layer closely adhered to the color image forming layer.

5,053,301

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1989, Ser. No. 322,965
Claims priority, application Japan, Mar. 14, 1988, 63-58256; Apr. 13, 1988, 63-88917
Int. Cl.[5] G03G 13/26
U.S. Cl. 430—49 17 Claims

1. An electrophotographic lithographic printing plate precursor comprising an electrically conductive support and at

least one photoconductive layer, provided thereon, containing photoconductive zinc oxide and a binder resin, in which said photoconductive layer contains hydrophilic resin grains having an average grain diameter of same as or smaller than the maximum grain diameter of said photoconductive zinc oxide grains

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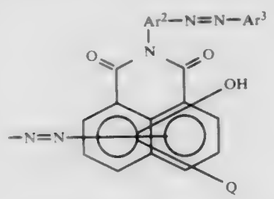
5,053,302

ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING AN AZO COMPOUND AND A CHARGE TRANSPORTING MATERIAL

Naonori Makino; Satoshi Hoshi, and Katsuji Kitatani, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 15, 1990, Ser. No. 523,505
Claims priority, application Japan, May 15, 1989, 1-120642
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—58 **13 Claims**

1. An electrophotographic photoreceptor comprising on an electrically conductive support a layer containing a charge-transporting compound and a charge-generating compound or a charge-transporting compound-containing layer and a charge-generating compound-containing layer, characterized in that as said charge-generating compound there is contained an azo compound containing an organic residue represented by formula (1):



(1)

wherein Ar^2 represents a divalent aromatic hydrocarbon or aromatic heterocyclic group: Ar^3 represents an aromatic hydrocarbon group or aromatic heterocyclic group; and Q represents a hydrogen atom, halogen atom, alkyl group, trifluoromethyl group, nitro group, cyano group or alkoxy group.

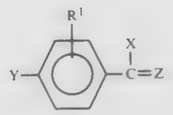
5,053,303

ELECTROPHOTOGRAPHIC ELEMENT HAVING SEPARATE CHARGE GENERATING AND CHARGE TRANSPORTING LAYERS

Junei Sakaguchi, Tokyo; Soichi Hasegawa, Misato, and Shuichi Arai, Saitama, all of Japan, assignors to Somar Corporation, Japan

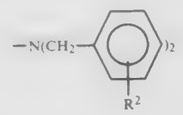
Filed May 30, 1989, Ser. No. 358,017
Claims priority, application Japan, May 31, 1988, 63-135137; May 31, 1988, 63-135138; Nov. 15, 1988, 63-289625; Feb. 1, 1989, 1-23249; Feb. 28, 1989, 1-47571; Apr. 19, 1989, 1-99196
Int. Cl.[5] G03G *5/047*
U.S. Cl. 430—59 **13 Claims**

1. An electrophotographic photosensitive material comprising a charge generating layer and a charge transporting layer formed on an electrically conducting support, said charge generating layer comprising an X-form, metal-free phthalocyanine and a substituted naphthalene, in an amount 25–200% by weight of said phalocyanine, and said charge transporting layer comprising a compound expressed by the following formula (I):



(1)

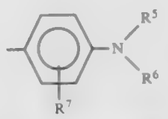
wherein Y represents:
a group Y_1 of the formula:



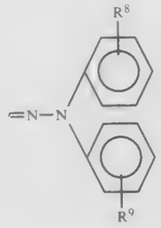
where R^2 represents hydrogen or a lower alkyl, or
a group Y_2 of the formula:



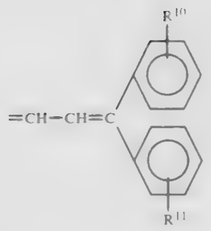
where R^3 and R^4, independently from each other, represent a lower alkyl;
R^1 represents hydrogen or a lower alkyl;
X represents hydrogen or a group X_1 of the formula:



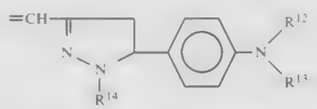
where R^5, R^6 and R^7, independently from each other, represent hydrogen or a lower alkyl; and
Z represents a group Z_1 of the formula:



where R^8 and R^9, independently from each other, represent hydrogen or a lower alkyl,
a group Z_2 of the formula:



where R^{10} and R^{11}, independently from each other, represent hydrogen or a lower alkyl, or
a group Z_3 of the formula:



where R^{12} and R^{13}, independently from each other, represent a lower alkyl and R^{14} represents a phenyl group which may contain one or more substituents; with the proviso that
when Z is Z_1, X is hydrogen,
when Z is Z_2, X is X_1 and Y is Y_2, and
when Z is Z_3, X and R^1 are each hydrogen and Y is Y_2.

5,053,304

PHOTOCONDUCTOR ELEMENT FOR MAKING MULTIPLE COPIES AND PROCESS FOR USING SAME

William Mey; Susan E. Riblett, and Orville C. Rodenberg, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1989, Ser. No. 457,675
Int. Cl.[5] G03G *5/047, 5/14*
U.S. Cl. 430—59 **5 Claims**

1. A photoconductor element having nonblurring latent image keeping memory and suitable for multiple electrophotographic copying from a single latent image stored therein comprising:
(a) a charge transport layer that comprises:
(1) about 20 to about 60 weight percent of at least one aromatic amine hole transport agent; and
(2) about 40 to about 80 weight percent of an electrically insulating, film forming organic polymeric binder;
(b) a charge generation layer that comprises at least one photoconductive phthalocyanine material;
(c) an adhesive layer;
(d) a solvent holdout layer;
(e) an electrically insulating layer;
(f) an electrically conductive layer; and
(g) a support layer.

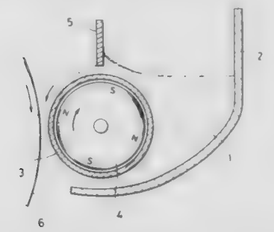
5,053,305

COMPOSITION AND METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Kazuo Aoki; Akira Kakinuma; Megumi Saito, and Motohiko Makino, all of Akita, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Sep. 5, 1989, Ser. No. 402,509
Claims priority, application Japan, Sep. 7, 1988, 63-223750; Jun. 15, 1989, 1-152978
Int. Cl.[5] G03G *9/00, 9/083, 5/00, 9/107*
U.S. Cl. 430—111 **8 Claims**

1. An electrostatic latent image developing composition, comprising:
(A) a toner component comprising magnetic toner particles having a mean particle diameter of from 5 to 25 μm and each formed from magnetic powder and a resin, and externally added magnetic particles having a mean particle diameter of from 0.01 to 10 μm in an amount of 0.1 to 10%



by wt of the magnetic toner particles, which are in admixture with the magnetic toner particles; and
(B) from 10 to 40% by wt, based on the weight of the composition of soft magnetic carrier particles which have a mean particle diameter of from 10 to 45 μm.

5,053,306

ACID-CONTAINING A-B BLOCK COPOLYMERS AS GRINDING AIDS IN LIQUID ELECTROSTATIC DEVELOPER PREPARATION

Lyla M. El-Sayed, West Chester, Pa., and Loretta A. G. Page, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 7, 1990, Ser. No. 489,650
Int. Cl.[5] G03G *9/12, 9/13*
U.S. Cl. 430—137 **42 Claims**

1. A process for preparing liquid electrostatic developers for electrostatic imaging comprising:
(A) dispersing at ambient temperature in a vessel, a colorant, a nonpolar liquid having a Kauri-butanol value of less than 30 and an A-B diblock polymer wherein the A block is a carboxylic acid-containing polymer, the B block is a polymer or copolymer which is soluble in the nonpolar liquid;
(B) adding to the dispersion a thermoplastic resin and dispersing at an elevated temperature sufficient to plasticize and liquify the resin and below that at which the nonpolar liquid degrades and the resin and/or colorant decomposes;
(C) cooling the dispersion, either
(1) without stirring to form a gel or solid mass and grinding by means of particulate media;
(2) with stirring to form a viscous mixture and grinding by means of particulate media; or
(3) while grinding by means of particulate media to prevent the formation of a gel or solid mass;
(D) separating the dispersion of toner particles having an average by area particle size of less than 10 μm from the particulate media, and
(E) adding to the dispersion during or subsequent to Step (B) at least one nonpolar liquid soluble ionic or zwitterionic charge director compound.

5,053,307

PROCESS FOR PREPARING HIGH GLOSS ELECTROSTATIC LIQUID DEVELOPERS

William A. Houle, Kimberton; Gregg A. Lane, Kennett Square, both of Pa., and Carolyn C. Legere-Krongauz, Claymont, Del., assignors to DXImaging, Lionville, Pa.

Filed Apr. 26, 1990, Ser. No. 516,005
Int. Cl.[5] G03G *9/00*
U.S. Cl. 430—137 **32 Claims**

1. A process for the preparation of toner particles for electrostatic liquid developers, which upon fusing to paper have a gloss ≧10 units over the paper gloss comprising:

(A) dispersing at least one thermoplastic resin, at least one pigment, and a hydrocarbon liquid having a Kauri-butanol value of less than 120, such that the dispersion contains a total percent solids of at least 10% by weight by means of particulate media whereby the moving particulate media creates shear and/or impact while maintaining the temperature for 5 to 180 minutes in the vessel at a temperature of at least 15° C. above the point at which the resin is plasticized or liquified by the hydrocarbon liquid and below that at which the hydrocarbon liquid boils and the resin and/or pigment decomposes,

(B) continuing dispersion of the resin, pigment and hydrocarbon liquid as in Step (A) while maintaining the temperature for 5 to 180 minutes in the vessel in the range of at least 5° C. below the point to at least 10° C. above the point at which the resin is no longer plasticized or liquified by the hydrocarbon liquid,

(C) cooling the dispersion containing a total solids of at least 10% by weight in said vessel to permit precipitation of the resin out of the dispersant, the particulate media being maintained in continuous movement during and subsequent to cooling whereby toner particles having an average particle size of 10 μm or less are formed, and

(D) separating the dispersion of toner particles from the particulate media.

5,053,308

LIGHT-SENSITIVE COMPOSITION COMPRISING SILVER HALIDE DISPERSED IN POLYMERIZABLE COMPOUND AND LIGHT-SENSITIVE MATERIAL EMPLOYING THE SAME

Keiji Takeda, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 315,206, Feb. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 3,338, Jan. 14, 1987, abandoned. This application Jul. 20, 1990, Ser. No. 559,545

Claims priority, application Japan, Jan. 14, 1986, 61-5750; Jan. 14, 1986, 61-5751

Int. Cl.[5] G03C *1/68, 1/72*

U.S. Cl. 430—138 **8 Claims**

1. A light-sensitive material comprising a light-sensitive layer containing a reducing agent and a light sensitive composition which comprises microcapsules dispersed in a ethylenically unsaturated polymerizable compound provided on a support, said microcapsules having a core material comprising a silver halide emulsion, and said polymerizable compound being present as an oil phase in an amount of 5 to 1.2×10^5 times by weight as much as the amount of the silver halide contained in the silver halide emulsion, wherein the oil phase is present as outer microcapsules in a doubly encapsulated structure

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5,053,309

COLOR IMAGE-FORMING PROCESS

Frederick W. Sanders; Gary F. Hillenbrand; Jonathan S. Arney, and Richard F. Wright, all of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 323,702, Mar. 15, 1989, abandoned, which is a continuation of Ser. No. 339,917, Jan. 18, 1982, Pat. No. 4,842,976. This application Mar. 22, 1990, Ser. No. 501,393

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.[5] G03C *1/72;* **G03F** *7/027*

U.S. Cl. 430—138 **2 Claims**



1. A color imaging system comprising an imaging sheet and dry developer material carried on a separate image receiving sheet, said imaging sheet having on one surface of a polyethylene terephthalate support a coating comprising a cyan color precursor,

a radiation curable photosensitive composition encapsulated with said cyan color precursor,

a magenta color precursor,

a radiation curable photosensitive composition encapsulated with said magenta color precursor,

a yellow color precursor, and

a radiation curable photosensitive composition encapsulated with said yellow color precursor,

said radiation curable photosensitive compositions having distinct sensitivities and being encapsulated in pressure rupturable capsules as an internal phase,

said capsules having discrete capsule walls,

said cyan, magenta and yellow color precursors being oil-soluble, and

said imaging system being capable of forming images by image-wise exposing said imaging sheet to radiation actinic with respect to said photosensitive compositions, and rupturing at least said capsules containing photosensitive compositions unexposed by said actinic radiation in the presence of said developer material to form an image by reaction of said color precursors with said developer material.

5,053,310

NEGATIVE WORKING DIAZO RESIN COLOR PROOFING MATERIAL COMPRISING POLYVINYL ACETAL/POLYVINYL, ALCOHOL/POLYVINYL ACETATE RESIN

Stephan J. W. Platzer, Eltville, Fed. Rep. of Germany, assignor to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 289,593, Dec. 22, 1988, abandoned, which is a division of Ser. No. 880,770, Jul. 1, 1986, Pat. No. 4,808,508. This application Jul. 17, 1990, Ser. No. 554,092

Int. Cl.[5] G03F *7/021, 7/085*

U.S. Cl. 430—162 **22 Claims**

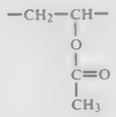
1. A photosensitive element which comprises

i) a substrate having a release surface; and

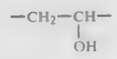
ii) a photosensitive layer on said release surface, which photosensitive layer comprises in admixture a light sensitive, negative working, polymeric diazonium compound in an amount sufficient to photosensitize the layer; a resinous binder composition, which composition in an amount sufficient to form a uniform layer contains at least 25% of a resin having the general formula

—A—B—C—

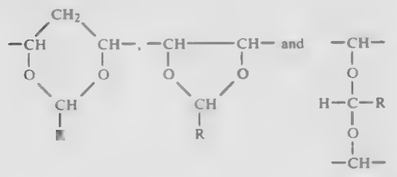
wherein a plurality of each of components A, B, and C occur in ordered or random sequence in the resin and wherein A is present in said resin at about 5% to about 20% by weight and comprises groups of the formula



B is present in said resin at about 4% to about 30% by weight and comprises groups of formula



and C is present in said resin at about 50% to about 91% by weight and comprises acetal groups consisting of groups of formulae



(I) (II) (III)

where R is lower alkyl or hydrogen, and wherein said group I. is present in component C from about 75% to about 85%; group II. is present in component C from about 3% to about 5%; and group III. is present in component C from about 10% to about 22%; and at least one colorant in an amount sufficient to uniformly color the layer; and

iii) an adhesive layer on said photosensitive layer, which adhesive layer comprises a thermoplastic polymer and which adhesive layer is non-tacky at room temperature, thermally activated and be transferred at temperatures between 60 °C. and 90° C.

5,053,311

DIRECT PLANOGRAPHIC PRINTING PLATE REQUIRING NO DAMPENING

Fumikatsu Makino, 1-15, Enoki-cho, Tokorozawa-shi, Saitama-ken, and Yoichi Shimokawa, 15-28, Nakanosho 2-chome, Ootsu-shi, Shiga-ken, both of Japan

Continuation of Ser. No. 494,684, May 17, 1983, abandoned, which is a continuation of Ser. No. 282,588, Jul. 13, 1981, abandoned. This application Sep. 5, 1984, Ser. No. 647,868

Claims priority, application Japan, Jul. 14, 1980, 55-94979; Jul. 17, 1980, 55-97755

Int. Cl.[5] G03F *7/023, 7/075;* **B41N** *1/14*

U.S. Cl. 430—166 **3 Claims**

1. A direct printing plate requiring no dampening water, comprising, in the order mentioned, a rubber support layer having a Shore A hardness of not more than 90 or a Shore D hardness of not more than 40 and a thickness of 0.01 to 1 mm, a quinone-diazide photosensitive resin layer coated on said support layer and having a thickness of 0.5 to 30 microns, a silicone rubber outer layer coated on said photosensitive resin layer and having at thickness of 1 to 100 microns, whereby upon development corresponding portions of both said silicone rubber outer layer and the photosensitive resin layer are removed to form ink receiving cavities said cavities having a depth of 1.5–130 microns and being able to retain more ink than is retained by flat or convex ink-receiving areas formed on the silicone rubber layer, or by concave ink-receiving cavities formed in the silicone rubber layer alone, whereby the printing plate in direct printing accepts and transfers a relatively large amount of ink without requiring water dampening.

5,053,312

IMAGE-RECEIVING MATERIAL AND IMAGE-FORMING METHOD EMPLOYING THE SAME

Keiji Takeda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 12, 1988, Ser. No. 282,780

Claims priority, application Japan, Dec. 11, 1987, 62-313483; Dec. 11, 1987, 62-313484

Int. Cl.[5] G03C *1/06;* **G03F** *7/029*

U.S. Cl. 430—254 **6 Claims**

1. An image-forming method which comprises the steps of:

imagewise exposing to light a light-sensitive material comprising a support and a light-sensitive layer provided thereon which contains silver halide, a reducing agent, an ethylenically unsaturated polymerizable compound and a color image forming substance;

simultaneously or thereafter developing the light-sensitive material; and

pressing the light-sensitive material on an image-receiving material comprising a support and an image-receiving layer which comprises a developer and a binder polymer mixture composed of at least two kinds of water-soluble polymers which undergo phase separation in their mixed state, and one or both of a water-soluble zinc salt and an acid, said water-soluble zinc salt being selected from the group consisting of zinc chloride, zinc sulfate, zinc nitrate and zinc acetate to transfer the unpolymerized polymerizable compound to the image-receiving layer of the image-receiving material.

5,053,313

PROCESS FOR PERFORMING PRE-PRESS COLOR PROOFING PROCESSES

Carlfried W. Osenegg, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to E. I. du Pont de Nemours Company, Wilmington, Del.

PCT No. PCT/EP88/00211, § 371 Date Sep. 14, 1989, § 102(e) Date Sep. 14, 1989, PCT Pub. No. WO88/07223, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 16, 1988, Ser. No. 411,455

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1987, 3708586

Int. Cl.[5] G03C *11/12*

U.S. Cl. 430—257 **27 Claims**

1. A method for preparing a pre-press color proof on a paper substrate intended to be used for a color press print, comprising the steps of:

a) providing a support element comprising a sample of the paper to be used for the press print, said paper having an interlayer applied to the reverse side thereof, and said paper/interlayer being removably attached to a shape-stable and dimensionally stable support, with the interlayer between the paper and support, whereby the paper/interlayer can be stripped from the support without damage;

b) laminating a tonable photosensitive film to the paper surface of said element;

c) exposing the photosensitive film to actinic radiation in an imagewise manner;

d) applying a dry toner to the exposed photosensitive film; and,

e) stripping the support from the film/paper/interlayer.

5,053,314

POSITIVELY PHOTOSENSITIVE POLYIMIDE COMPOSITION

Tsuguo Yamaoka, Chiba; Amane Mochizuki, Osaka; Kazumasa Igarashi, Osaka, and Toshihiko Omote, Osaka, all of Japan, assignors to Nitto Denko Corporation, Osaka, Japan

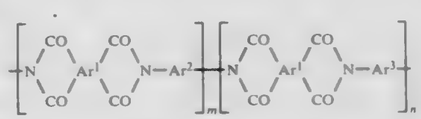
Filed Jan. 9, 1990, Ser. No. 462,243

Claims priority, application Japan, Jan. 9, 1989, 1-2500

Int. Cl.[5] G03C *7/039*

U.S. Cl. 430—270 **3 Claims**

1. A positively photosensitive polyimide composition comprising polyimide having a repeating unit represented by formula (I):



(I)

wherein Ar^1 represents a tetravalent aromatic hydrocarbon group; Ar^2 represents a divalent aromatic hydrocarbon group having at least one acyloxy or silyloxy group at the ortho-posi-

tion and/or the meta-position of the aromatic ring of said aromatic hydrocarbon group; Ar^3 represents a divalent aromatic hydrocarbon group; and the subunit having an amount ratio of m in said repeating unit is present in an amount of at least 20% by weight based on the polyimide, wherein said composition further comprises a photodecomposable proton generator in an amount of from 1% to 50% by weight based on the amount of said polyimide.

5,053,315

RADIATION-SENSITIVE COMPOSITION CONTAINING AN UNSATURATED POLYESTER AND USE THEREOF IN LITHOGRAPHIC PRINTING PLATES

Paul R. West, Fort Collins; James E. Mitchell, Windsor; Gary R. Miller, Fort Collins; Paul R. Josephson, Jr., Fort Collins, and Raymond W. Ryan, Jr., Fort Collins, all of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 17, 1990, Ser. No. 554,231

Int. Cl.[5] G03C *1/77;* **G03F** *7/027*

U.S. Cl. 430—278 **11 Claims**

1. A negative-working lithographic printing plate comprising a support having thereon a radiation-sensitive layer of a composition comprising a mixture of (A) a photocrosslinkable p-phenylene diacrylate polyester containing the photosensitive group



as an integral part of the polymer backbone and (B) a copolyester of an unsaturated dicarboxylic acid and an oxyalkylene ether of an alkylidene diphenol.

2. A negative-working lithographic printing plate as claimed in claim **1**, wherein said support is an anodized aluminum support.

5,053,316

THERMOPLASTIC ELASTOMER AND PHOTOSENSITIVE RESIN COMPOSITION BASED THEREON, AND PRINTING PLATE PRECURSOR COMPRISING THE COMPOSITION

Yoshio Suzuki; Yutaka Usubuchi, and Yakeshi Oguri, all of Fuji, Japan, assignors to Asahi Kasei Kogyokabushiki Kaisha, Japan

Filed Jun. 8, 1989, Ser. No. 363,169

Claims priority, application Japan, Jun. 10, 1988, 63-143052; Jul. 14, 1988, 63-173773

Int. Cl.[5] G03F *7/028, 7/035, 7/037*

U.S. Cl. 430—281 **5 Claims**

1. A photosensitive resin composition comprising

(i) a thermoplastic elastomer selected from the group consisting of

A. a poly(amide-imide) ester formed from

(a) a polyamide-forming monomer,

(b) at least one compound capable of forming one or more imide rings which is selected from the group consisting of aromatic tricarboxylic acids, anhydrides thereof, aromatic tetracarboxylic acids, and anhydride thereof, and

(c) at least one member selected from the group consisting of polyoxyalkylene glycols having number average molecular weights of 400 to 4000 and α-ω-dihydroxyhydrocarbons having number average molecular weights of 400 to 4000;

B. a poly(amide-imide) urethane formed from

(d) a poly(amide-imide) ester defined in (A), alone or a mixture thereof with a polymer diol, and

(e) a diisocyanate compound; and

C. a poly(amide-imide) urethane formed from

(g) a mixture of a poly(amide-imide) ester formed from (f) an alkylene glycol of 2 to 4 carbon atoms, or a polyoxyalkylene glycol having a less number average molecular weight than 400 and the above (a) and (b), with a polymer diol, and

(e) a diisocyanate compound,

(ii) an ethylenic unsaturated compound and

(iii) a photo polymerization initiator.

5,053,317

RADIATION-POLYMERIZABLE MIXTURE AND COPYING MATERIAL PRODUCED COMPRISING POLYURETHANE-POLYUREA POLYMER

Klaus Joerg, Ingelheim, and Rudolf Zertani, Mainz-Bretzenheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 443,462

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1988, 3841025

Int. Cl.[5] B03F *7/035*

U.S. Cl. 430—281 **19 Claims**

1. A radiation-polymerizable mixture which comprises:

a) a saturated polyurea-polyurethane having an acid number from about 20 to 150 and comprising

i) units which are produced from a diol comprising carboxyl groups,

ii) units which are produced from a diamine containing primary or secondary amino groups that are linked by a polyether group and

iii) units which are produced from a diisocyanate, as binder,

b) a radical-polymerizable compound containing at least one terminal olefinic double bond and having a boiling point above 100° C. at normal pressure, and

c) a compound or combination of compounds capable of initiating the polymerization of compound (b) on exposure to actinic radiation.

5,053,318

PLASMA PROCESSING WITH METAL MASK INTEGRATION

Michael Gulla, and Prasit Sricharoenchaikit, both of Millis, Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed May 18, 1989, Ser. No. 353,770

Int. Cl.[5] G03F *7/12*

U.S. Cl. 430—315 **44 Claims**

1. A process for forming a metal mask over a photoresist coating, said process comprising the steps of:

(a) forming a coating of a photoresist over a substrate; and then in either order,

(b) exposing said coating of photoresist to patterned radiation at an energy dose sufficient to form a latent image in said photoresist coating; and

(c) forming sites on said photoresist coating catalytic to electroless metal deposition;

and then,

(d) developing said photoresist coating with a developer for said exposed photoresist coating whereby photoresist together with catalytic sites are removed by contact with the developer in the exposed areas if the photoresist is a positive working photoresist or in the unexposed areas if the photoresist is a negative working photoresist whereby there is formed an imaged pattern of sites catalytic to electroless metal deposition on said photoresist coating; and

(e) electrolessly depositing metal over said imaged pattern of catalytic sites to a thickness of at least 20 angstroms.

5,053,319

AQUEOUS SOLUTIONS OF OLEOPHILIC COMPOUNDS

Anthony M. Barnett, Bushey, and Jeffrey K. Green, Harrow, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 473,986, filed as PCT GB89/01145 on Sep. 28, 1989, published as WO90/03600 on Apr. 5, 1990, abandoned. This application Feb. 11, 1991. Ser. No. 653,758

Claims priority, application United Kingdom, Sep. 28, 1988, 8822746

Int. Cl.[5] G03C *5/38*

U.S. Cl. 430—331 **7 Claims**

1. An aqueous solution capable of serving as a lithographic conditioner or lithographic fixing composition for use with lithographic plates prepared by the silver salt diffusion transfer process; said solution being free of organic solvents and consisting essentially of (a) about 2 to about 2.8 grams per liter of 1-phenyl-5-mercaptotetrazole, (b) about 1.5 to about 2 grams per liter of a quaternary ammonium surfactant that is free of alkyleneoxy groups, and (c) about 3 to about 6 grams per liter of a quaternary ammonium surfactant comprising alkyleneoxy groups.

5,053,320

DIRECT DRY NEGATIVE COLOR PRINTING PROCESS AND COMPOSITION

Jean J. A. Robillard, El Paso, Tex., assignor to Richard L. Scully, Charlottesville, Va.

Filed Apr. 16, 1990, Ser. No. 509,193

Int. Cl.[5] G03C *7/28*

U.S. Cl. 430—339 **15 Claims**

1. A direct negative color photosensitive composition comprising a binder containing a plurality of grains of semiconductor each having absorbed on its surface one of three different photo-bleachable colored complexes of spiropyran with a metal salt, each complex being sensitive to a different wavelength of light of three colors viz, yellow, magenta and cyan, a crosslinkable polymer, and a free radical initiator.

5,053,321

GRANULATED COLOUR PHOTOGRAPHIC BLEACHING AGENT AND ITS PREPARATION

Peter Kühnert, Leverkusen, Fed. Rep. of Germany, assignor to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 13, 1990, Ser. No. 537,437

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1989, 3920921

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] G03C *5/44*

U.S. Cl. 430—450 **3 Claims**

1. Colour photographic bleaching agent containing, in the form of a granulate having an average particle diameter of from 150 to 3000 μm, an iron(III) complex or an iron(III) complex salt and a rehalogenating agent.

3. A process for the preparation of a granulated preparation of the solid constituents of a colour photographic bleaching agent, characterised in that the solid constituents of the bleaching agent are mixed together, milled to a particle size of less than 10 μm, then subjected to a powder agglomeration, optionally with the addition of a granulating liquid and a binder, and dried in a vacuum.

5,053,322

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS HAVING A REFLECTIVE SUPPORT

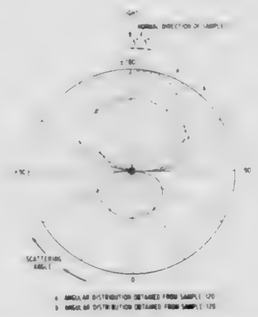
Keisuke Shiba, and Akira Abe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1989, Ser. No. 427,560

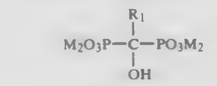
Claims priority, application Japan, Oct. 27, 1988, 63-271613; Jun. 28, 1989, 1-165652

Int. Cl.[5] G03C *7/30, 7/16, 1/76, 7/26*

U.S. Cl. 430—464 **9 Claims**

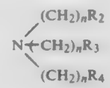


1. A method for processing a silver halide color photographic material comprising a support having a thin film of metal or metal oxide on a substrate; said thin film having mirror surface reflection properties or secondary diffuse reflection properties and having a surface reflectance of at least 0.5; said photographic material having thereon, in order outwardly from the support, an adhesive layer and at least one light-sensitive silver halide emulsion layer, by the steps which comprise developing the silver halide color photographic material with a developing bath containing a color developing agent and at least two compounds selected from the group consisting of compounds represented by formulae (I), (II), (III), and (IV):



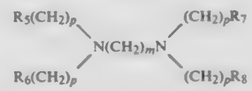
(I)

wherein M each represents hydrogen, an alkali metal or an ammonium group; and R_1 represents a lower alkyl group;



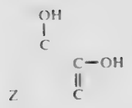
(II)

wherein R_2, R_3 and R_4 each represents —COOM, $—PO_3M_2$ or a hydroxyl group, wherein M represents hydrogen, an alkali metal atom or an ammonium group, provided that at most one group represented by R_2, R_3, and R_4 represents a hydroxyl group; and n is an integer of 1 to 3;



(III)

wherein R_5, R_6, R_7 and R_8 each represents —COOM, $—PO_3M_2$ or a hydroxyl group, wherein M represents hydrogen, an alkali metal atom or an ammonium group, provided that at most two of R_5, R_6, R_7 and R_8 represent a hydroxyl group; m is an integer of 1 to 4; and p is 1 or 2;



(IV)

wherein Z represents an atomic group necessary for forming a substituted or unsubstituted aromatic nucleus.

5,053,323

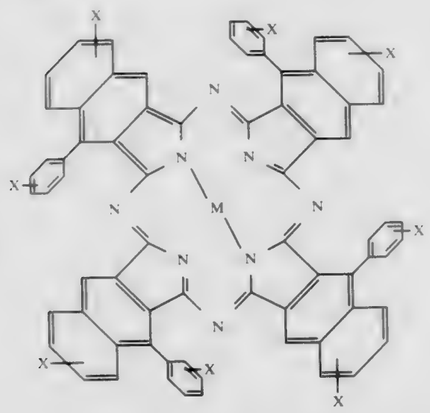
OPTICAL INFORMATION MEDIA COMPRISING PHENYL-SUBSTITUTED NAPHTHALOCYANINES AND SYNTHESIS THEREOF

James P. Shepherd, 93 Henshaw Ave., Springfield, Union County, N.J. 07081, and Palaiyur S. Kalyanaraman, 184 Marian Ave., Fanwood, Union County, N.J. 07023

Filed Feb. 27, 1990, Ser. No. 485,679
Int. Cl.[5] G03C *1/00, 1/492*
U.S. Cl. 430—495 9 Claims

1. A method of recording optical information in an optical information medium, which method comprises

(i) providing an optical information medium containing an information layer comprised of a mixture of optical isomers of a 1-phenyl-substituted naphthalocyanine compound of the general formula:



wherein, M represents a central hetero moiety comprised of a transition metal or a Group IVA element, and X represents a substituent which can be the same or different, and is a hydrogen, halogen, nitro, alkyl or alkoxy group, and

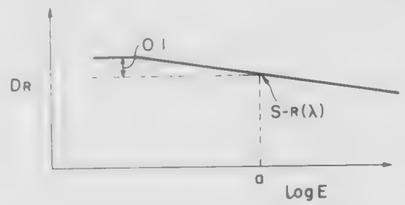
(ii) irradiating the optical information medium with circularly polarized light in order to effect a conversion of a first optical isomer to a second optical isomer in those areas irradiated to thereby create a local excess of said second optical isomer in said irradiated areas.

5,053,324

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS HAVING RED COLOR SATURATION AND INPROVED DISCRIMINATION OF GREEN COLORS

Noboru Sasaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigare, Japan

Continuation of Ser. No. 947,747, Dec. 30, 1986, abandoned. This application Oct. 29, 1990, Ser. No. 605,139
Claims priority, application Japan, Jan. 8, 1986, 61-651
Int. Cl.[5] B03C *1/46, 7/00*
U.S. Cl. 430—504 24 Claims



1. A silver halide color light-sensitive material comprising, on a support, at least one blue-sensitive silver halide emulsion layer containing a yellow dye-forming color coupler, at least one green-sensitive silver halide emulsion layer containing a magenta dye-forming color coupler and at least one red-sensitive silver halide emulsion layer containing a cyan dye-forming color coupler, the weight-averaged wavelength, λ_G, of spectral sensitivity distribution of the green-sensitive silver halide emulsion layer being in the range of from 520 nm to 580 nm, the weight-averaged wavelength, λ_{-R}, of spectral sensitivity distribution of the interlayer effect received by the red-sensitive silver halide emulsion layer in the range of from 500 nm to 600 nm being in the range of from 500 nm to 560 nm and the difference between the λ_G and λ_{-R} ($\lambda_G - \lambda_{-R}$) being 5 nm or more, wherein the spectral sensitivity distribution $S_{-R}(\lambda)$ of the interlayer effect received by the red-sensitive emulsion layer satisfies the following conditions:

(a) the wavelength λ_{-R}^{max} at which $S_{-R}(\lambda)$ is the maximum is in the range of from 490 nm to 560 nm;

(b) the wavelength λ_{-R}^{80} at which $S_{-R}(\lambda)$ equals to 80% of $S_{-R}(\lambda_{-R}^{max})$ is in the range of from 450 to 534 nm and from 512 to 566 nm; and

(c) the wavelength λ_{-R}^{40} at which $S_{-R}(\lambda)$ equals to 40% of $S_{-R}(\lambda_{-R}^{max})$ is in the range of from 400 to 512 nm and from 523 to 578 nm, and wherein the light-sensitive material contains at least one member selected from the group consisting of a DIR compound and a color masking compound which provides the interlayer effect received by the red-sensitive emulsion layer.

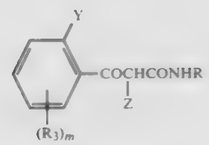
5,053,325

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toyoaki Masukawa, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Oct. 2, 1990, Ser. No. 592,784
Claims priority, application Japan, Oct. 7, 1989, 1-262791
Int. Cl.[5] G03C *7/36*
U.S. Cl. 430—557 9 Claims

1. A silver halide color photographic light-sensitive material comprising a support and a silver halide emulsion layer containing a yellow coupler represented by the following Formula I:



(I)

wherein Y is a hydrogen bond donating group; R is an alkyl group, an aryl group or a heterocyclic group; R_3 is a halogen atom, hydroxyl group, nitro group or a monovalent organic group; m is an integer of 0 to 4, provided that the groups represented by R_3 may be the same or different when m is 2 or more; and Z is a hydrogen atom or a substituent capable of splitting off upon rection with the oxidation product of an aromatic primary amine color developing agent.

5,053,326

HYBRIDIZATION METHOD AND PROBE

Manfred Renz, Heidelberg, Fed. Rep. of Germany, assignor to Europaisches Laboratorium fur Molekularbiologie (EMBL), Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 684,644, Nov. 16, 1984, abandoned. This application Apr. 17, 1989, Ser. No. 724,307
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310337
Int. Cl.[5] C12Q *1/68;* G01N *33/566;* A61K *37/08;* C07K *3/00*
U.S. Cl. 435—6 3 Claims

FIG 1

1. A method of detecting a target single-stranded nucleotide sequence in polynucleotide material by contacting the material under hybridizing conditions with a probe containing a nucleotide sequence complementary to and capable of stable hybridization with the target sequence and thereafter using the probe to detect the target sequence in the material,

wherein the material is contacted with the probe in the presence of a polyethylene glycol.

5,053,327

HIGH AFFINITY MONOCLONAL ANTIBODIES TO BOWMAN-BIRK INHIBITOR AND IMMUNOASSAY METHODS

David L. Brandon, Berkeley; Anne H. Bates, Lafayette, and Mendel Friedman, Moraga, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 20, 1988, Ser. No. 246,842
Int. Cl.[5] G01N *33/53*
U.S. Cl. 435—7.92 17 Claims

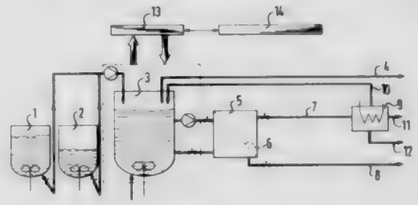
1. A continuous hybrid cell line (ATCC No. HB 9657) which produces and secretes monoclonal antibodies which bind native Bowman-Birk inhibitor (BBI) with an affinity constant of at least $8 \times 10^7 M^{-1}$ and do not bind denatured BBI.

5,053,328

PROCESS FOR THE FERMENTATIVE PREPARATION OF L-AMINO ACIDS FROM ALPHA KETO CARBOXYLIC ACIDS

Bernhard Muetze; Christian Wandrey, both of Juelich; Wolfgang Leuchtenberger, Bruchkoebel, all of Fed. Rep. of Germany, and Toshihisa Ohshima, Kyoto, Japan, assignors to Kernforschungsanlage Juelich, Juelich and Degussa AG, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Sep. 18, 1986, Ser. No. 908,777
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1985, 3533198
Int. Cl.[5] C12P *13/06*
U.S. Cl. 435—106 15 Claims



1. A process for producing an L-amino acid selected from the group consisting of L-valine, L-leucine, L-alanine and L-phenylalanine, which comprises the steps of:

(A) effecting bacterial fermentation of an α-keto carboxylic acid which corresponds to said L-amino acid by a thermophilic *Bacillus* strain in a fermenter, said fermentation occurring in the presence of ammonium ion and at a temperature above 45° C., such that a fermentation liquid containing said L-amino acid is produced; and then

(B) separating said L-amino acid from said fermentation liquid.

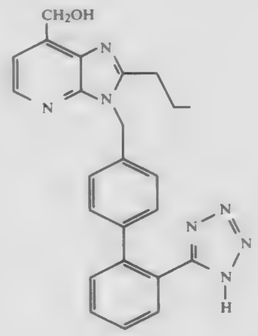
5,053,329

PROCESS FOR PREPARATION OF NOVEL ANGIOTENSIN II ANTAGONISTS

Shieh-Shung T. Chen, Morganville, and Byron H. Arison, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

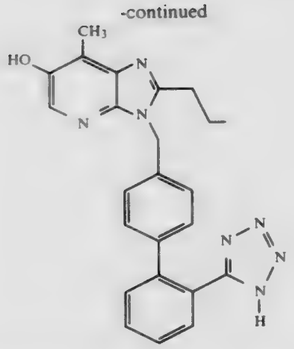
Division of Ser. No. 548,649, Jul. 5, 1990. This application Apr. 1, 1991, Ser. No. 678,774
Int. Cl.[5] C12R *1/045;* C12P *17/18*
U.S. Cl. 435—119 2 Claims

1. A process for the preparation of a compound represented by formula I or II

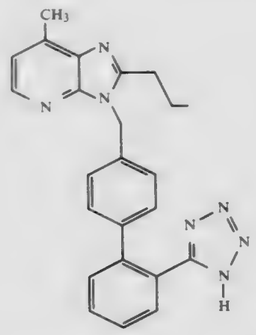


I

-continued



comprising the steps of culturing a microorganism *Actinoplanacete sp.* (MA 6559) (ATCC 53771) in a nutrient medium containing assimilable sources of nitrogen and carbon and substrate compound III



under aerobic conditions at a temperature 26°–29° C. until a substantial amount of the compounds are produced and isolating the compounds so produced.

5,053,330

METHOD FOR PRODUCING THE MWOI RESTRICTION ENDONUCLEASE AND METHYLASE

Keith D. Lunnen, Newbury, and Geoffrey G. Wilson, Boxford, both of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Filed Mar. 13, 1989, Ser. No. 332,685

Int. Cl.[5] C12N *15/52, 9/22, 1/21*

U.S. Cl. 435—172.3 **16 Claims**

1 Isolated DNA coding for the MwoI restriction endonuclease, wherein the isolated DNA is obtainable from the vector pKLMwoIRM3-1.

5,053,331

SELF-INCOMPATIBILITY GENE

Adrienne Clarke, Parkville; Shaio Lim Mau, Wheelers Hill; Marilyn Anderson, Sunbury; Edwina Cornish, Carlton, all of Australia; Hugh D. Niall, San Francisco, Calif.; Geoffrey W. Tregear, Hawthron; Robert J. Crawford, Templestowe, both of Australia, and Robert Bernatzky, New Salem, Mass., assignors to Lubrizol Genetics, Inc., Wickliffe, Ohio

Continuation-in-part of Ser. No. 854,139, Apr. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 792,435, Oct. 29, 1985, abandoned. This application May 25, 1988, Ser. No. 198,781

Int. Cl.[5] C12N *15/00, 1/00;* **C07H** *21/04;* **C12Q** *1/68*

U.S. Cl. 435—172.3 **44 Claims**

1. A recombinant vector comprising a DNA sequence encoding an S-protein of a self-incompatible plant, wherein said self-incompatible plant displays gametophytic self-incompatability and is in the family Solanaceae.

5,053,332

AGAROSE BEADS, PREFERABLY INCORPORATING BIOLOGICAL MATERIALS

Richard B. Cook, 156 Limerock, Rockland, Me. 04841; Richard B. Provonchee, 88 Mechanic St., Camden, Me. 04843, and Samuel Nochumson, 6 Overlook Ave., Randolph, N.J. 07869

Filed Jul. 24, 1989, Ser. No. 383,520

Int. Cl.[5] C12N *11/10;* **C08B** *37/04*

U.S. Cl. 435—178 **30 Claims**

1. A method for forming agarose beads incorporating biological material at least partially labile at above 40° C. comprising:

A) forming an aqueous solution consisting essentially of an agarose which gels at a temperature of about 40° C. or less;

B) cooling the agarose solution to 40° C. or less while maintaining it in liquid form;

C) admixing an aqueous broth containing biological material which is at least partially labile at above 40° C. with the gel solution, to form a liquid agarose/broth mixture;

D) forming bead-size portions of the liquid agarose/broth mixture;

E) contacting said portions with a cooled atmosphere, gas, and/or smooth hydrophobic surface and maintaining such contact until said portions gel into formed agarose beads containing biological material; and

F) collecting the formed beads.

5,053,333

PROTEASE

Hiroaki Yamamoto, Hyogo, Japan, assignor to M & D Research Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1989, Ser. No. 301,988

Claims priority, application Japan, Jan. 27, 1988, 63-16285; Aug. 12, 1988, 63-201285

Int. Cl.[5] C12N *9/48*

U.S. Cl. 435—212 **36 Claims**

1. A protease having enzymatic properties with respect to (a) function and substrate specificity, (b) optimum pH, (f) activation, and (g) inhibition, as follows:

(a) said protease hydrolyzes a peptide bond on the C-terminal side of Y of a peptide X—Y—, wherein X is Arg, Lys or Pro and has a peptide bond on the N-terminal side thereof, Y is Arg, and the hyphens each indicate a peptide bond;

(b) said protease has an optimum pH of about 7.0 in Tris-hydrochloride buffer;

(f) said protease is activated with calcium chloride or a surfactant; and

(g) said protease is inhibited with p-amidinophenylmethanesulfonyl fluoride, p-chloromercuribenzoic acid, a metal chelater, tetraacetic acid or a heavy metal.

5,053,334

PROCESS FOR PRODUCING BIOLOGICALLY ACTIVE PLASMINOGEN ACTIVATOR IN RECOMBINANT CHO CELLS USING SUSPENSION CULTURE AND REMOVING DETRIMENTAL COMPONENTS FROM MEDIUM

William R. Arathoon, San Francisco; Stuart E. Builder, Belmont; Anthony S. Lubiniecki, San Ramon, and Robert D. van Reis, Redwood City, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed May 9, 1990, Ser. No. 522,073

Int. Cl.[5] C12N *9/64*

U.S. Cl. 435—226 **8 Claims**

1. A method of producing biologically active tissue-type plasminogen activator in a recombinant host cell suspension culture capable of producing by recombinant expression biologically active human tissue-type plasminogen activator comprising:

a. growing recombinantly transfected Chinese hamster ovary (CHO) host cells in suspension culture using a growth supporting medium that permits the growth and maintenance of the host cells;

b. removing from the medium of said culture components in the medium that are detrimental to recovery and biological activity of said human tissue-type plasminogen activator, whilst retaining the expression capability of the host cells by a cross-flow filtration process characterized by a set of fluid-dynamic parameters utilizing a filtration apparatus having a suitable membrane such that cell culture suspension is recirculated through said filtration apparatus and a portion of the medium removed as a cell-free filtrate whilst retaining the homogeneous characteristic of said cell culture suspension;

c. replacing said filtrate with a medium devoid of components that are detrimental to recovery and activity of human tissue type plasminogen activator; and

d. collecting said biologically active human tissue-type plasminogen activator expression product present in the medium exchanged culture.

5,053,335

PLASMIDS FOR THE INCREASED PRODUCTION OF PENICILLIN G AMIDASE

Günter Schumacher, and Peter Buckel, both of Bernried, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 793,623, Oct. 31, 1985, abandoned. This application Jan. 27, 1989, Ser. No. 303,097

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1984, 3439843

Int. Cl.[5] C12N *9/84, 1/21, 15/70*

U.S. Cl. 435—230 **23 Claims**



1. Plasmid expressing penicillin G amidase in *E. coli* comprising a fraction of a penicillin G amidase gene, said fraction consisting of bases 79 to 705 and either bases 868 to 2538 or bases 868 to 2541 of the translation region counting from the 5' end of the complete gene as shown in FIG. 1, a promotor, a start codon, an operator and a ribosomal binding site all positioned in a reading frame which permits transcription of said fraction of a penicillin G amidase gene.

5,053,336

MONOCLONAL ANTIBODIES FOR THE SEPARATE DETECTION OF HALODEOXYURIDINES AND METHOD FOR THEIR USE

Martin Vanderlaan, Danville; Bruce E. Watkins, and Larry H. Stanker, both of Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jul. 17, 1989, Ser. No. 380,638

Int. Cl.[5] C12N *5/00, 15/00;* **C07K** *15/14*

U.S. Cl. 435—240.27 **2 Claims**

1. Monoclonal antibodies selected from the group consisting of Br-1, Br-3, and Br-5, which are deposited at the ATCC with Accession Nos. HB 10699, HB 10700 and HB 10698, respectively.

5,053,337

DNA ENCODING AN α_{2B}-ADRENERGIC RECEPTOR

Richard L. Weinshank, New York, N.Y., and Paul R. Hartig, Mahwah, N.J., assignors to Neurogenetic Corporation, Paramus, N.J.

Filed Oct. 30, 1989, Ser. No. 428,856

Int. Cl.[5] C12N *15/12, 5/10, 15/63*

U.S. Cl. 435—240.2 **37 Claims**

1. An isolated nucleic acid molecule encoding a human alpha 2B-adrenergic receptor.

2. An isolated nucleic acid molecule of claim 1, wherein the isolated nucleic acid molecule is a DNA molecule.

28. A mammalian cell comprising the DNA molecule of claim 2.

5,053,338

KINETIC RESOLUTION OF PYRIDAZINONES USING LIPASE

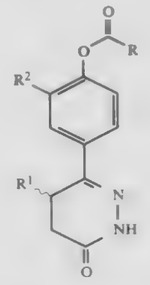
Brian L. Bray, Graham, and John J. Partridge, Chapel Hill, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 402,179, Sep. 1, 1989, abandoned. This application Jul. 20, 1990, Ser. No. 560,941

Int. Cl.[5] C12P *41/00*

U.S. Cl. 435—280 **15 Claims**

1. A process of resolving a mixture of 5R and 5S pyridazinone esters of the following formula (A):



(A)

wherein:

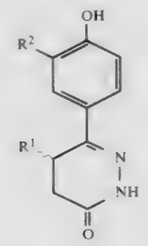
R^1 represents lower alkyl;

R^2 represents hydrogen, halogen, trifluoromethyl, cyano, lower alkyl or loweralkyloxy; and

R represents alkyl,

which comprises reacting said ester mixture with a hydrolytic

lipase enzyme and recovering i) a mixture of esters of formula (A) optically enriched of formula (A) in one of the 5R or 5S enantiomers and ii) a mixture of the phenols of the following formula (B) optically enriched in the other of the 5R or 5S enantiomers:



(B)

5,053,339

COLOR CHANGING DEVICE FOR MONITORING SHELF-LIFE OF A PERISHABLE PRODUCTS

Gordhanbhai N. Patel, Somerset, N.J., assignor to J P Labs Inc., Piscataway, N.J.

Filed Nov. 3, 1988, Ser. No. 266,690
Int. Cl.[5] G01N *31/22*
U.S. Cl. 436—2 **18 Claims**



1. A device for measuring the shelf life of a perishable product having a measurable activativation energy of product deterioration comprising:

a) an indicator tape comprised of a transparent polymer film and affixed thereto at least one matrix layer containing an indicator composition:

b) an activator tape comprised of a substrate and affixed thereto at least one matrix layer containing an activator composition:

c) a composite matrix, comprised of said indicator tape and activator tape matrix layers, bonded together by at least one water-impermeable pressure sensitive adhesive, said activator composition being capable of diffusing through said composite matrix in a predetermined time to contact and chemically react with said indicator composition producing a visually observable color change in said indicator composition, said device being substantially impermeable to moisture, and said device possessing an activation energy and rate constant for color change which are substantially the same as the activation energy and rate constant for product deterioration of the perishable product in the temperature region of monitoring.

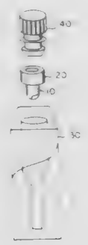
18. A perishable product having the device of claim **1**, in activated form, attached thereto.

5,053,340

IN VITRO TEST FOR DERMAL TOXIC PROPERTIES

Hyman C. Bergman, Los Angeles; Virginia C. Gordon, and Christopher P. Kelly, both of Palm Springs, all of Calif., assignors to National Testing Corporation, Palm Springs, Calif.

Filed Feb. 24, 1989, Ser. No. 315,317
Int. Cl.[5] G01N *13/00, 21/29*
U.S. Cl. 436—5 **34 Claims**



1. A method for determining the toxicity of a material to human skin or membrane which method comprises:

(a) applying said material to one face of a membrane support which mimics human skin or membrane to be tested comprising a base membrane support to which is bound a composition selected from the group consisting of cross-linked keratin, cross-linked collagen and mixtures thereof to which a dye is covalently bound, wherein said dye is released from said covalent bonding in the presence of a dermal irritant, said membrane support being in contact at its opposite face with a reagent containing at least one precipitant being present in a concentration effective in precipitation in the presence of a dermal irritant, and said reagent further containing at least one stabilizer present in a concentration effective to prevent precipitation of the precipitant in the absence of a dermal irritant, said reagent comprising an aqueous medium of pH and ionic strength compatible with said membrane support;

(b) measuring at least one of the amount of dye released into the reagent and the amount of precipitate formed in the reagent; and

(c) comparing said at least one of the amounts of dye and precipitate with at least one of the amount of dye and precipitate released using comparable amounts of a known dermal irritant.

5,053,341

TISSUE SIMULATING GEL FOR MEDICAL RESEARCH

John A. Companion, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 6, 1989, Ser. No. 418,372
Int. Cl.[5] B01J *13/00;* **G01N** *31/00*
U.S. Cl. 436—8 **20 Claims**

1. A process for producing a tissue simulating gel for use in hyperthermia research, the process comprising the steps of:

adding a gelatin to water to provide a desired rigidity;

mixing ethylene glycol to the water and gelatin to produce a mixture;

heating and constantly stirring this mixture at a temperature below approximately 45° C. to completely dissolve the gelatin such that water loss is prevented; and

catalyzing the mixture by mixing an appropriate amount of formaldehyde therein as a cross-linking agent.

11. A tissue simulating gel for use in hyperthermia research produced by a process comprising the steps of:

adding a gelatin to water to provide a desired rigidity;

mixing ethylene glycol to the water and gelatin to produce a mixture;

heating and constantly stirring this mixture at a temperature below approximately 45° C. to completely dissolve the gelatin such that water loss is prevented; and

catalyzing the mixture by mixing an appropriate amount of formaldehyde therein as a cross-linking agent.

5,053,342

FECAL OCCULT BLOOD TEST REAGENTS

Paul J. Lawrence, Campbell, Calif., assignor to Litmus Concepts, Inc., Santa Clara, Calif.

Continuation of Ser. No. 138,496, Dec. 24, 1987, Pat. No. 4,939,097, which is a continuation-in-part of Ser. No. 869,573, Jun. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 680,357, Dec. 11, 1984, Pat. No. 4,615,982. This application May 7, 1990, Ser. No. 520,088
Int. Cl.[5] G01N *33/49*
U.S. Cl. 436—66 **18 Claims**

1. A developer composition for detecting iron protoporphyrins in a fecal specimen using a leuco dye indicator, comprising a solution of a hydroperoxide and a modulating compound, wherein he solution contains at least 50% by volume of a solvent for iron protoporphyrins, and wherein the modulating compound is an accelerator selected from the group consisting of chloroquine, quinacrine and mixtures thereof.

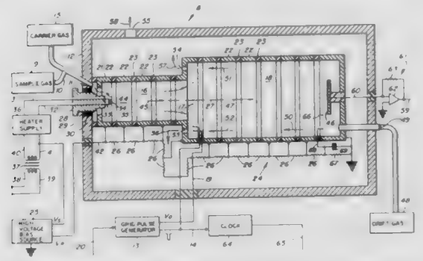
5. A developer composition for detecting iron protoporphyrins in a fecal specimen using a leuco dye indicator, comprising a solution of a hydroperoxide and a modulating compound, wherein the solution contains at least 50% by volume of a solvent for iron protoporphyrins, and wherein the modulating compound is an inhibitor selected from the group consisting of quinien, primaquine, quinidine, and mixtures thereof.

5,053,343

SELECTIVE IONIZATION OF GAS CONSTITUENTS USING ELECTROLYTIC REACTIONS

Kishore N. Vora, Annandale, Va.; Donald N. Campbell, Timonium, Md.; Robert C. Davis, Jr., Westminster, Md.; Glenn E. Spangler, Lutherville, Md., and Julio A. Reategui, Cockeysville, Md., assignors to Environmental Technologies Group, Inc., Towson, Md.

Division of Ser. No. 701,898, Feb. 15, 1985, Pat. No. 4,839,143. This application Mar. 6, 1989, Ser. No. 319,549
Int. Cl.[5] G01N *27/64, 27/66, 27/70*
U.S. Cl. 436—153 **19 Claims**



1. A method for generating product ions from sample molecules in an ion mobility spectrometer, comprising the steps of:

positioning an electrolytic ionization source consisting essentially of an electrolyte in a reaction region;

heating said electrolyte to generate reactant cations;

using an electric field to assist in the extraction of the reactant cations into the gas phase;

transporting said sample molecules in a carrier gas to said reaction region to be mixed with the reactant cations, causing ion-molecule reactions between said sample molecules and reactant cations in the gas phase, said ion-molecule reactions occurring proximate to and at a distance from said electrolyte;

whereby said ion-molecule reactions produce product ions independently of said carrier gas composition and without a need for hydrogen to catalyze said ion-molecule reactions; and

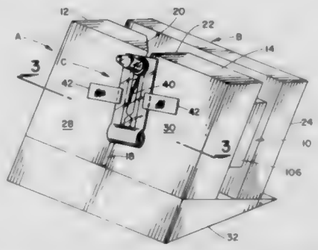
submitting said product ions to a drift tube of said ion mobility spectrometer for separation of said reactant cations from said product ions, and for separation of said product ions which have different mobilities.

5,053,344

MAGNETIC FIELD SEPARATION AND ANALYSIS SYSTEM

Maciej Zborowski, Lakewood, and Paul S. Malchesky, Painesville, both of Ohio, assignors to Cleveland Clinic Foundation, Cleveland, Ohio

Continuation of Ser. No. 81,223, Aug. 4, 1987, abandoned. This application Sep. 4, 1990, Ser. No. 579,247
Int. Cl.[5] B03C *1/02, 1/035;* **G01N** *1/00, 27/74*
U.S. Cl. 436—177 **10 Claims**



1. An apparatus for magnetic separation of materials comprising:

first and second opposed magnetic pole members spaced so as to define at least one gap region therebetween;

a fluid flow chamber means detachable from the pole members including:

first and second substantially planar members positioned so as to form a fluid pathway defining a selected flow direction adapted for passing an associated fluid through the magnetic field propagated about the pole members;

receiving means in association with the fluid flow chamber means and in fluid communication with the fluid pathway;

a sample container in fluid communication with the receiving means; and

securing means for securing the fluid flow chamber means in a selected position with respect to the at least one gap region such that the selected flow direction is disposed at a non-parallel angle tangent to the at least one gap region, whereby the associated fluid flowing in the fluid pathway is exposed to a varying amount of magnetic flux.

5,053,345

METHOD OF EDGE DOPING SOI ISLANDS

George L. Schnable, Lansdale, Pa., and Albert W. Fisher, Ringoes, N.J., assignors to Harris Corporation, Melbourne, Fla.

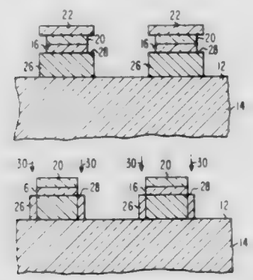
Filed Feb. 20, 1989, Ser. No. 306,356
Int. Cl.[5] H01L *21/225, 21/265*
U.S. Cl. 437—21 **11 Claims**

1. A method of forming edged doped islands of single crystalline silicon on an insulating substrate comprising the steps of:

forming a layer of single-crystalline silicon on the surface of an insulating substrate;

forming on an area of the silicon layer which is to form the island a masking layer formed of two layers, the lowermost layer of the masking layer adjacent the silicon layer being of a material which can be etched by an etchant

which will not substantially etch the material of the uppermost layer;
removing the portions of the silicon layer not covered by the masking layer to form the islands;



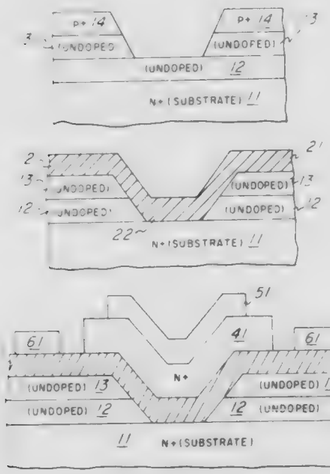
etching the edges of the lowermost layer of the masking layer laterally back from the edges of the island so as to expose a portion of the edge of the top surface of the island; and then
doping the exposed edge portion of the island.

5,053,346

METHOD FOR MAKING A HIGH SPEED GALLIUM ARSENIDE TRANSISTOR

Han-Tzong Yuan, and Liem Th Tran, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 462,926, Jan. 12, 1990, Pat. No. 4,956,689, which is a continuation of Ser. No. 338,445, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 65,433, Jun. 23, 1987, abandoned. This application Mar. 20, 1990, Ser. No. 495,951
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—22 **12 Claims**



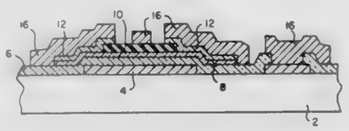
1. A method of forming a bipolar transistor in an integrated circuit comprising the steps of:
(a) providing a substrate of semiconductor material doped to a first conductivity type to provide an emitter region;
(b) forming a second layer of semiconductor material on said substrate;
(c) forming a third layer of semiconductor material on said second layer;
(d) forming a fourth layer of semiconductor material doped to a second conductivity type on said third layer to provide base contact regions;
(e) etching a trench in said third and fourth layers at selected locations to expose portions of said second layer and thereby define the active region of said bipolar transistor;
(f) doping said portions of said second layer and the sidewalls of said trench to form the active base region; and
(g) forming a fifth layer of semiconductor material on at least said portions of said second layer to provide a collector region.

5,053,347

AMORPHOUS SILICON THIN FILM TRANSISTOR WITH A DEPLETION GATE

Biing-Seng Wu, Tainan, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Continuation-in-part of Ser. No. 389,227, Aug. 3, 1989. This application Feb. 14, 1990, Ser. No. 480,475
Int. Cl.[5] H01L *29/78*
U.S. Cl. 437—40 **6 Claims**



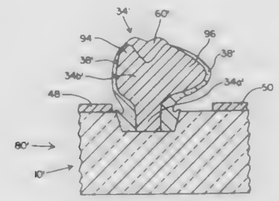
1. A process for fabricating an amorphous silicon thin film transistor, comprising the steps of:
(a) forming an accumulation gate on a substrate;
(b) depositing a bottom insulating layer on the substrate and the accumulation gate;
(c) depositing a hydrogenated amorphous silicon (a-Si) channel layer on the bottom insulating layer;
(d) depositing a top insulating layer on the amorphous silicon channel layer;
(e) partially removing said top insulating layer so as to expose separate source and drain regions of said channel layer;
(f) depositing a doped a-Si film of a first conductivity type as the ohmic-contact layer of the transistor;
(g) partially removing the doped a-Si film to expose an intermediate portion of the top insulator between the separate source and drain regions of the channel layer, so as to form separate source and drain ohmic contact layers overlying, respectively, said source and drain regions of said channel layer, and removing remaining parts of the doped a-Si film and the undoped a-Si layer outside the defined active region to expose portions of the bottom insulating layer, so as to define the active region of the transistor;
(h) partially removing the bottom insulator to expose a contact hole of the accumulation gate;
(i) depositing a metal film over said source and drain ohmic contact layers, said top insulation layer and the accumulation contact hole;
(j) partially removing the metal film so as to form a depletion gate electrode on said intermediate portion of said top insulating layer, source and drain electrodes on said source and drain ohmic contact layers, and the interconnection of the accumulation gate electrode.

5,053,348

FABRICATION OF SELF-ALIGNED, T-GATE HEMT

Umesh K. Mishra, Cary, N.C.; Mark A. Thompson, Thousand Oaks, and Linda M. Jelloian, Northridge, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 1, 1989, Ser. No. 444,708
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—41 **14 Claims**



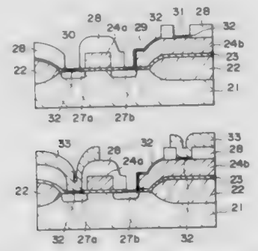
1. A process for fabricating a T-gate HEMT, comprising sequential the steps of:
(a) providing a semiconductive layer structure having a doped donor layer formed over an undoped channel layer;
(b) forming an electrically conductive T-gate on a surface of said layer structure, said T-gate including a base portion and a top portion which is wider than the base portion, the top portion including a first portion which extends laterally from the base portion in a first direction by a first distance, and a second portion which extends laterally from the base in the opposite direction by a second distance which is larger than the first distance;
(c) forming a masking layer over the surface around the T-gate, the masking layer having an opening therethrough which is aligned with and wider than the T-gate such that first and second lateral spacings are defined between opposite extremities of the cross-section of the T-gate and adjacent edges of the opening respectively; and
(d) depositing an electrically conductive material to form source and drain contacts on the surface underlying the first and second lateral spacings respectively.

5,053,349

METHOD FOR INTERCONNECTING SEMICONDUCTOR DEVICES

Fumitomo Matsuoka, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 2, 1989, Ser. No. 360,278
Claims priority, application Japan, Jun. 16, 1988, 63-149152
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—41 **6 Claims**



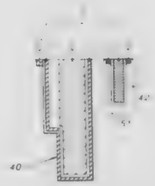
1. A method of manufacturing semiconductor devices, comprising
a first step of forming an active region and an isolation region on a semiconductor substrate;
a second step of forming a gate dioxide layer having a predetermined thickness on said active region and said isolation region;
a third step of forming a gate electrode on said active region, and an interconnection at a predetermined portion on said isolation region by stacking a conductive layer on said gate dioxide layer and patterning the conductive layer so that a predetermined pattern is formed;
a fourth step of forming a diffusional region on said active region through masking using said gate electrode and interconnection;
a fifth step of forming an inter-level dioxide layer on a pattern-formed surface of said semiconductor substrate having said predetermined pattern formed by said third step;
a sixth step of forming at the same time a first connection hole for directly connecting said diffusional region with said interconnection and a second connection hole for connecting a plurality of interconnections to each other, respectively, by partially and selectively eliminating said inter-level dioxide layer; and
a seventh step of selectively forming a metal layer at the bottoms of said first and second connection holes and having a predetermined thickness which is thicker than said predetermined thickness of said gate dioxide layer.

5,053,350

METHOD OF MAKING TRENCH MOSFET CAPACITOR CELL FOR ANALOG SIGNAL PROCESSING

Allen L. Solomon, Fullerton, Calif., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 327,688, Mar. 23, 1989, abandoned. This application Apr. 8, 1991, Ser. No. 683,509
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—47 **19 Claims**

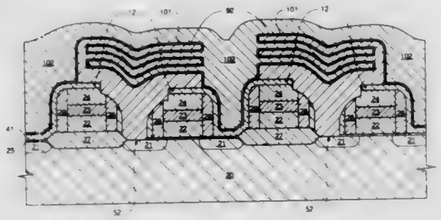


1. A method of forming an integral trench gate MOS field effect transistor/capacitor having improved 1/f noise characteristics for amplifying the low level signals output from an infrared detector element, said method comprising the steps of:
forming a first trench in a semiconductor substrate, said trench being between 10 to 20 microns deep, between 2 to 3 microns wide, and between 10 to 20 microns long;
doping a first region adjacent an upper surface of the first trench, the uppermost surface of said first region forming an accessible source electrode;
applying a first layer of insulator on the surface of the first trench;
forming a first layer of conductive material on the surface of the first trench above the insulating layer, a portion of the uppermost surface of said first layer of conductive material forming an accessible gate electrode, said gate electrode being connectable to a source of infrared detector element output signals;
forming a body of insulating material filling the first trench upon the first layer of conductive material;
forming a second trench in a semiconductor substrate, said second trench extending through a portion of said first trench and thereby excavating a portion of said first trench;
forming a first layer of doped material along the surface of said second trench, said first layer being isolated from said first layer of conductive material, said first doped layer being doped to a conductivity type opposite of the substrate, the uppermost surface of said first layer of doped material forming an accessible drain electrode and an accessible capacitor electrode;

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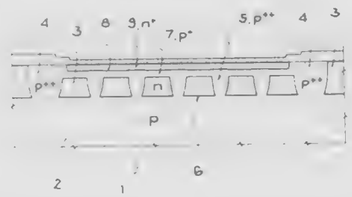
forming a second layer of insulator within said second trench upon the surface of said first doped layer;
filling the second trench with a body of conductive material such that a capacitor is formed of said first layer of doped material, said second layer of insulator, and said body of conductive material, the uppermost surface of said first layer forming an accessible capacitor counterelectrode;
wherein the gate region is formed of sufficient area to mitigate the introduction of 1/f noise into the low level signal output from the infrared detector element during the low frequency operation of the transistor.

5,053,351
METHOD OF MAKING STACKED E-CELL CAPACITOR DRAM CELL
Pierre Fazan; Hiang C. Chan; Howard E. Rhodes; Charles H. Dennison, and Yauh-Ching Liu, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Mar. 19, 1991, Ser. No. 671,312
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **18 Claims**



11. A process for fabricating a DRAM storage capacitor on a silicon substrate having active areas word lines and digit lines, said process comprising the following sequence of steps:
depositing a first dielectric layer on surface of said silicon, said first dielectric layer conforming to said waveform-like topology;
masking and etching a first aligned buried contact location allowing access to a storage node junction in each said active area;
depositing a first conductive layer superjacent existing topology, said conductive layer making contact at said storage node junction;
depositing a second dielectric layer superjacent said first conductive layer;
depositing a second conductive layer superjacent said second dielectric layer;
depositing a third dielectric layer superjacent said second conductive layer;
depositing a third conductive layer superjacent said third dielectric layer;
masking and etching said first, second and third conductive layers and said second and third dielectric layers to form a pair of storage nodes connected to one another;
depositing and anisotropically etching a conformal fourth conductive layer to form vertical conductive spacers, said spacers making contact to vertical patterned edges of said first, second and third conductive layers;
masking and etching said connected storage node pair thereby separating said storage node pair into separate storage node plates, upper portion of each said separate storage node plate having an E-shaped cross-section and lower portion connecting to said storage node junction;
depositing a cell dielectric layer superjacent and coextensive said storage node plate; and
depositing a fifth conductive layer superjacent and coextensive said cell dielectric layer, thereby forming a top cell plate, said top cell plate being common to the entire memory array.

5,053,352
METHOD OF FORMING AN INTEGRATED CIRCUIT WITH PN-JUNCTION CAPACITOR
Reinhold Kaiser, Heilbronn, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany
Division of Ser. No. 266,081, Nov. 2, 1988, Pat. No. 4,996,569. This application Dec. 8, 1989, Ser. No. 447,849
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1987, 3740302
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—47 **11 Claims**

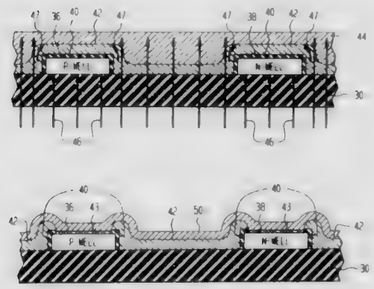


1. In a method of producing an integrated circuit array having a capacitance formed by a first pn-junction and separated from other components by a further pn-junction, wherein the array is formed in a substrate of one conductivity type having an epitaxial layer of the opposite conductivity type formed on a surface of the substrate, and wherein the capacitance includes a first semiconductor zone of said one conductivity type formed in said epitaxial layer and extending from the surface of said epitaxial layer only partially through said epitaxial layer, a second semiconductor zone of said opposite conductivity type disposed in said first semiconductor zone at said surface of said epitaxial layer and forming said first pn-junction with said first semiconductor zone, a plurality of areas of said one conductivity type extending from said first semiconductor zone through said epitaxial layer to said substrate and electrically connecting said first semiconductor zone to said substrate, and a separation zone of said one conductivity type surrounding said first semiconductor zone at said surface of said epitaxial layer and extending through said epitaxial layer to said substrate; the improvement comprising: during a step of forming said separation zone, simultaneously forming said plurality of areas of said one conductivity type.

5,053,353
FABRICATING DIELECTRIC ISOLATION OF SOI ISLAND SIDE WALL FOR REDUCING LEAKAGE CURRENT
Jimmy C. Black, Durham, N.C., assignor to Harris Corporation, Melbourne, Fla.
Division of Ser. No. 274,176, Nov. 21, 1988. This application Jan. 15, 1991, Ser. No. 641,486
Int. Cl.[5] H01L *21/302, 21/76*
U.S. Cl. 437—62 **10 Claims**

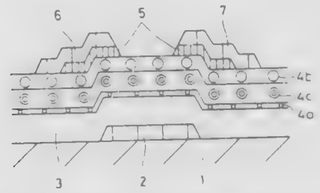
1. A method for fabricating a semiconductor on insulator integrated circuit device, wherein semiconductor material is disposed on an insulating substrate, comprising:
implanting a first part of the semiconductor material with a first dopant and a second part of the semiconductor material with a second dopant, the first part spaced from the second part so that the first and second part are electrically isolated from each other;
forming a first insulating layer on a portion of the first and second part of the semiconductor material;
forming a second insulating layer on a portion of the first insulating layer of the first and second part of the semiconductor;
forming an etch-resistant layer on a portion of the second insulating layer;

selectively removing part of the etch-resistant layer, thereby exposing part of the underlying second insulating layer;
removing the exposed part of the second insulating layer and a corresponding portion of the underlying first insulating layer, thereby exposing a respective portion of the first and second part of the semiconductor material;
removing the remainder of the etch-resistant layer;
forming gating means over a portion of the exposed first and second part of the semiconductor material; and



forming an electrically conducting layer extending from the gating means of the first part to the gating means of the second part of the semiconductor material for establishing an electrical flow communication path through the conducting layer between the first and second part of the semiconductor material, the conducting layer disposed over a portion of the second insulating layer, so that the conducting layer is spaced from the substrate and the juncture of the first and second part of the semiconductor material with the substrate.

5,053,354
METHOD OF FABRICATING A REVERSE STAGGERED TYPE SILICON THIN FILM TRANSISTOR
Sakae Tanaka; Yoshiaki Watanabe, both of Tokyo; Katsuo Shirai, and Yoshihisa Ogiwara, both of Tochigi, all of Japan, assignors to Seikosha Co., Ltd. and Nippon Precision Circuits Ltd., both of Tokyo, Japan
Division of Ser. No. 358,035, May 26, 1989, Pat. No. 4,979,006. This application Jun. 8, 1990, Ser. No. 535,440
Claims priority, application Japan, May 30, 1988, 63-132093
Int. Cl.[5] H01L *21/20, 21/205*
U.S. Cl. 437—101 **1 Claim**



1. A method of forming a reverse staggered type silicon thin film transistor, comprising the steps of:
forming a gate electrode on a substrate;
forming a gate insulating layer on said substrate and said gate electrode, said gate insulating layer having a transistor-forming portion;
forming a lower layer silicon film at a first temperature on the transistor-forming portion of the gate insulating layer and in contact therewith;
forming an intermediate silicon film on said lower layer silicon film;
forming an upper layer silicon film on said intermediate silicon film at a second temperature which is lower than said first temperature;
forming an n-type silicon layer on said upper layer silicon film and in contact therewith; and
forming a source electrode and a drain electrode on said n-type silicon layer;
said step of forming the intermediate silicon film including the step of forming the intermediate silicon film as the temperature gradually lowers from said first temperature to said second temperature.

5,053,355
METHOD AND MEANS FOR PRODUCING A LAYERED SYSTEM OF SEMICONDUCTORS
Hilmar von Campe, Bad Homburg, Fed. Rep. of Germany, assignor to Nukem GmbH, Hanau, Fed. Rep. of Germany
Filed Jan. 9, 1990, Ser. No. 462,212
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1989, 3901042
Int. Cl.[5] H01L *31/18, 21/208*
U.S. Cl. 437—114 **18 Claims**



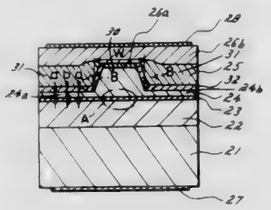
1. A method for producing a layered system of semiconductors for large-area photovoltaic components, with at least one semiconductor layer being applied to a carrier layer when the carrier layer contacts a metal melt containing dissolved semiconductor material having at least one doping substance, the semiconductor material being applied to the carrier layer due to a gradient between the metal melt and the carrier layer, comprising the steps of:
passing the carrier layer over a surface of the metal melt to apply the semiconductor material to the carrier layer; and
transporting the carrier layer and the semiconductor material applied thereto from the metal melt on a gas cushion to cool the carrier layer and the semiconductor material in a controlled manner.

5,053,356
METHOD FOR PRODUCTION OF A SEMICONDUCTOR LASER
Shigeru Mitsui, and Ryo Hattori, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 379,246, Jul. 12, 1989. This application Sep. 25, 1990, Ser. No. 587,968
Claims priority, application Japan, Jul. 20, 1988, 63-182392
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—129 **6 Claims**

1. A method of producing a semiconductor laser device capable of oscillation in a self-pulsation mode, said method comprising the steps of:
growing a lower cladding layer, an active layer and an upper cladding layer on a semiconductive substrate, the cladding layers and the active layer all being of AlGaAs with the aluminum molar proportion of the active layer being lower than that of the cladding layers, the cladding layers being of opposite conductivity types thereby to form a p-n junction at the active layer;

etching the upper cladding layer to form a central mesa separated by comparatively thin sections of the upper cladding layer, the thin sections being of sufficient thinness to be readily gauged by optical interferometrical techniques;

using MOCVD techniques to grow a buffer layer over the thin etched portions of the upper cladding layer of predetermined thickness, the buffer layer being of AlGaAs and having an aluminum content which is substantially the same as that of the upper cladding layer such that said buffer layer and upper cladding layer function as a com-



posite layer having a combined refractive index mismatched with that of the active layer;

growing a current blocking layer over the buffer layer, and forming a contact layer and electrodes to produce a completed semiconductor device having a p-n junction at the active layer so that when said device is energized carriers are injected into the active layer in the region defined by the mesa;

the thickness of the composite cladding and buffer layers being coordinated to the width of the mesa to produce a sufficiently thick composite layer for causing said laser when energized to function in the self-pulsation mode.

5,053,357

METHOD OF ALIGNING AND MOUNTING AN ELECTRONIC DEVICE ON A PRINTED CIRCUIT BOARD USING A FLEXIBLE SUBSTRATE HAVING FIXED LEAD ARRAYS THEREON

Paul T. Lin, and Michael B. McShane, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 457,648, Dec. 27, 1989. This application Aug. 14, 1990, Ser. No. 567,838

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—204 **6 Claims**

1. A method for making an electronic device suitable for surface mounting on a printed circuit board (PCB) having bonding lands comprising:

providing an insulative, flexible substrate having a periphery, where the substrate has an electronic component receiving area thereon; and where the substrate additionally has a plurality of electrically conductive traces thereon extending from the electronic component receiving area to the periphery, where the traces have

inner bonding areas near the electronic component receiving area; and

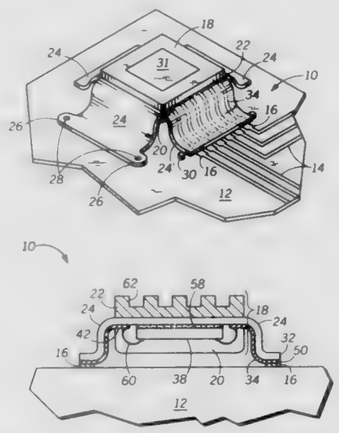
outer bonding areas near the periphery;

affixing an electronic component having a plurality of bonding pads thereon to the electronic component receiving area on the substrate;

electrically connecting the bonding pads to the inner bonding areas;

surrounding at least the electronic component and the inner bonding areas with a package body;

providing slots in the flexible substrate to separate the plurality of traces into at least two groups of traces, each of the groups being fully supported along the entire length of the traces by the flexible substrate, and each of the groups being provided with means for aligning the traces of the group to lands on a PCB; and



forming the at least two groups of traces into lead arrays to permit the outer bonding areas to contact and be bonded as a group to the bonding lands on a PCB.

5,053,358

METHOD OF MANUFACTURING HERMETICALLY SEALED COMPRESSION BONDED CIRCUIT ASSEMBLIES

Lawrence E. Crowe, Lindenwood, and Thomas A. Sutrina, Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 226,682, Aug. 1, 1988, Pat. No. 4,830,979. This application May 15, 1989, Ser. No. 351,537

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.[5] H01L *25/14*

U.S. Cl. 437—216 **39 Claims**



1. A method for manufacturing a semiconductor device having at least one hermetically sealed compression bonded circuit assembly to compression bond circuit elements within the at least one circuit assembly comprising:

forming at least one hermetically sealed circuit assembly containing at least one circuit elements to be compression bonded disposed in a column-like manner to which is applied a force, and having first and second opposed walls;

positioning the first wall of the at least one hermetically sealed circuit assembly in a fixed position with respect to a first flat surface;

positioning a spring in alignment with the at least one circuit element to be compression bonded outside of the circuit assembly containing the circuit element to be compression bonded for each circuit assembly;

inelastically deforming the spring by application of a compression force by a second flat surface parallel to the first flat surface to deform the spring with a surface of the spring after deformation lying within a plane which is parallel to the opposed first and second walls of the circuit assembly, the inelastically deformed spring having a spring rate within a range which is a function of the circuit element that the spring is in axial alignment with;

positioning the at least one formed circuit assembly, including spring which has been deformed; and

applying a compression force through top and bottom surfaces to compression bond the circuit element of the at least one circuit assembly with a pressure within a pressure range that the compression bonded circuit element is to be operated.

5,053,359

CRISTOBALITE REINFORCEMENT OF HIGH SILICA GLASS

Ted A. Loxley, Mentor, and Harold L. Wheaton, Minerva, both of Ohio, assignors to Pyromatics, Inc., Willoughby, Ohio

Division of Ser. No. 328,773, Mar. 24, 1989, abandoned, which is a continuation of Ser. No. 225,051, Jul. 27, 1988, abandoned, which is a continuation of Ser. No. 795,645, Nov. 6, 1985, abandoned. This application May 16, 1990, Ser. No. 523,982

Int. Cl.[5] C03C *10/14;* **C03B** *37/00*

U.S. Cl. 501—4 **20 Claims**

1. A process of making a silica glass with thermal shock resistance comprising shaping a refractory composition containing at least 95 percent by weight of fine vitreous silica particles and from 0.02 to 0.5 percent by weight of crystallization promoting metallic oxides to form a porous preform, heating the preform to a temperature sufficient to permit viscous flow, deforming the same to reduce the cross-sectional area at least 90 percent and to form an extended glass structure having a multiplicity of axially oriented striations embedded in a continuous matrix of vitreous silica, said composition being such that heating of said glass structure for 4 to 8 hours at a temperature of 1250° C. forms from 2 to 10 percent by weight of cristobalite concentrated at said striations, and heating said glass structure to a temperature of at least 1200° C. for a period of time to effect crystallization and to provide the silica glass with a viscosity at 1450° C. of at least 10^{12} poise.

5,053,360

ION-EXCHANGEABLE PHOSPHATE GLASS COMPOSITIONS AND STRENGTHENED OPTICAL QUALITY GLASS ARTICLES

John D. Myers, Hilton Island, S.C.; William J.S. Zhong, Stamford, Conn., assignor to Kigre, Inc., Hilton Head Island, S.C.

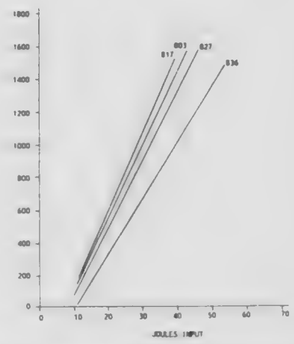
Division of Ser. No. 128,676, Dec. 4, 1987, Pat. No. 4,875,920. This application Jun. 29, 1989, Ser. No. 373,722

Int. Cl.[5] C03C *3/16;* **C09K** *11/42*

U.S. Cl. 501—48 **3 Claims**

1. A thermal shock-resistant phosphate glass article composing:

an inner tension region underlying a compressive surface layer, said phosphate glass article consisting essentially of from about 50 to about 70 mole percent P_2O_5, from about 5 to about 30 mole percent Li_2O, from about 5 to about 25 mole percent MO, where M is selected from the group consisting of Be, Mg, Ca, Sr, Ba and Zn and combinations thereof, and from about 5 to about 25 mole percent X_2O_3, where X is selected from the group consisting of Al, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu and combinations thereof, said compressive surface layer having a lower lithium ion concentration then said inner tension region, said compressive surface layer further having a greater concentration of a selected ion



than the concentration of said selected ion in said inner tension region, and said selected ion having an ionic radius greater than the ionic radius of lithium.

5,053,361

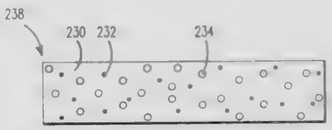
SETTER TILE FOR USE IN SINTERING OF CERAMIC SUBSTRATE LAMINATES

Lester W. Herron; Sarah H. Knickerbocker, both of Hopewell Junction; Govindarajan Natarajan, Fishkill, and Srinivasa S. N. Reddy, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 220,192, Jul. 18, 1988, Pat. No. 4,971,738. This application May 16, 1990, Ser. No. 523,949

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—94 **4 Claims**



1. A partially sintered setter tile composition comprising discrete particles of copper oxide in a matrix of refractory oxide with the copper oxide constituting at least 20 weight % of the composition, wherein the partially sintered setter tile contains at least 40% porosity.

5,053,362

CERAMIC FIBER REFRACTORY MOLDABLE COMPOSITIONS

Frank K. Chi, Williamsville, N.Y., and Tanyol Halil, Melbourne, Australia, assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sep. 27, 1988, Ser. No. 250,030

Int. Cl.[5] C04B *35/80*

U.S. Cl. 501—95 **14 Claims**

14. A moldable refractory composition consisting essentially of:

a. from about 42 to about 83% by weight liquid vehicle;

b. from about 13 to about 50% by weight ceramic fiber;

c. from about 0.5 to about 5% by weight of an inorganic binder derived from a colloidal dispersion; and

d. from about 0.5 to 5% by weight of a high molecular weight polar organic polymer selected from the group consisting of hydroxyethylcellulose, methylhydroxye-

thylcellulose, hydroxypropylmethylcellulose, carboxym, ethylcellulose and combinations thereof;

e. the liquid vehicle being a solvent for the organic polymer and a non-solvent for the ceramic fiber;

f. the composition havinga percent solid of about 25 to about 40, a density of about 67 to 72 lbs/ft^3, a dry density of about 18 to about 25 lbs/ft^3 and a fired density of about 20 to about 25 lbs/ft^3; and

g. the composition having a complex viscosity of from about 1000 poise to about 10,000 poise at about 100 rpm and a dry MOR of at least 200 psi and a fired MOR of at least 100 psi after firing at about 2000° F. for about 24 hours.

5,053,363

CERAMIC CUTTING MATERIAL REINFORCED BY WHISKERS

Nils G. L. Brandt, Solna, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Sep. 5, 1989, Ser. No. 402,778

Claims priority, application Sweden, Sep. 2, 1988, 8803090

Int. Cl.^{5} C04B *35/02, 35/08*

U.S. Cl. 501—95 **29 Claims**

1. An oxide based ceramic cutting insert for chip forming machining of steel, said insert comprising an oxide based matrix and 5–50% by volume of homogeneously dispersed whiskers of a solid solution of AlON of aluminum.

5,053,364

ALUMINUM BORATE CERAMIC MATRIX COMPOSITE

Siba P. Ray, Plum Boro, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 12, 1989, Ser. No. 364,132

Int. Cl.^{5} C04B *35/10, 35/52, 35/56*

U.S. Cl. 501—95 **23 Claims**

1. A method of forming an improved ceramic matrix composite resulting from formation of aluminum borate from alumina and boria comprising the steps of:

(a) providing a slurry comprised of aluminum oxide, boron oxide and an organic binder suspended in a liquid, the aluminum oxide and boron oxide being present to form aluminum borate having the formula $Al_xB_yO_z$ where x is in the range of 16 to 20, y is in the range of 3 to 5 and z is in the range of 30 to 36;

(b) introducing said slurry to a body of ceramic fibers to provide a green composite, the body of ceramic fibers containing at least one of silicon carbide, alumina, alumina-boria-silica, titanium boride, boron, carbon, aluminum silicate and aluminum nitride fibers;

(c) removing said liquid and said organic binder from said green composite; and

(d) sintering said green composite at a temperature of greater than 800° C. to cause a reaction of aluminum oxide and boron oxide to form a ceramic matrix composite comprised of said body of ceramic fibers and aluminum borate, the reaction providing a volume expansion which aids in removal of pores resulting from said organic binder removal.

5,053,365

METHOD FOR THE LOW TEMPERATURE PREPARATION OF AMORPHOUS BORON NITRIDE USING ALKALI METAL AND HALOBORAZINES

Sheldon G. Shore, Columbus, Ohio, and Shawn E. Dolan, Sterling Heights, Mich., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Feb. 28, 1990, Ser. No. 487,020

Int. Cl.^{5} C04B *35/02, 35/58;* **C01B** *35/14, 35/06*

U.S. Cl. 501—96 **30 Claims**

1. A method for preparing carbon-free boron nitride comprising the steps: combining substantially in the absence of oxygen and at reduced vapor pressure, an alkali metal selected from the group consisting of potassium, rubidium, cesium, and mixtures thereof with a boron-, nitrogen, and halogen-containing compound to form a mixture, wherein the alkali metal and the boron-, nitrogen-, and halogen-containing compound are present in the mixture in a mole ratio of from about 1 to 100 to about 5 to 1, respectively, and heating the mixture to a temperature above about 100 degrees Centigrade and below about 230 degrees Centigrade.

5,053,366

REFRACTORY COMPOSITIONS CONTAINING MONOCLINIC ZIRCONIA AND ARTICLES FORMED FROM THESE COMPOSITIONS EXHIBITING IMPROVED MECHANICAL STRENGTH AT HIGH TEMPERATURES AND IMPROVED RESISTANCE TO THERMAL SHOCKS

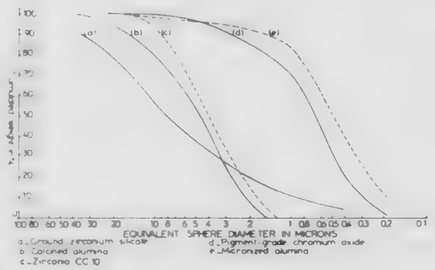
Jacques Schoennahl, Villeurbanne, France, assignor to Savoie Refractaires, Venissieux, France

Filed May 9, 1990, Ser. No. 520,750

Claims priority, application France, May 26, 1989, 89 06957

Int. Cl.^{5} C04B *35/10*

U.S. Cl. 501—127 **12 Claims**



1. A refractory composition comprising, by weight:

(A) at least 70% of aggregate particles based on refractory oxides, at least 90% by weight of which have a size larger than 20 μm but smaller than 20 mm,

(B) matrix particles comprised, on the basis of the refractory composition, of:

(i) a total of 6 to 24% of Al_2O_3, and/or Cr_2O_3 particles with the proviso that said Cr_2O_3 particles do not exceed 16%;

(ii) 1 to 9% of monoclinic zirconia particles; and

(iii) 0 to 1% of silica particles;

the total of matrix particles (i)+(ii)+(iii) constituting 7 to 25% of the refractory composition and said matrix particles being comprised of (a) fine particles at least 95% by weight of which have a size of 1 to 20 μm, said fine particles having a median diameter of 3 to 8 μm, and (b) ultra fine particles at least 70% by weight of which have a size smaller than 1 μm, said ultra fine particles having a median diameter of 0.3 to 0.8 μm, said fine particles constituting 1 to 24% of the refractory composition and said ultra fine particles constituting 1 to 24% of the refractory composition.

(C) from 0 to 6% of at least one additive.

5,053,367

COMPOSITE CERAMIC STRUCTURES

Marc S. Newkirk, Newark; Danny R. White, New Castle, and Ratnesh K. Dwivedi, Wilmington, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 267,450, Nov. 4, 1988, abandoned, which is a continuation of Ser. No. 52,806, May 21, 1987, Pat. No. 4,833,110, which is a continuation-in-part of Ser. No. 908,123, Sep. 16, 1986, abandoned. This application Jun. 22, 1990, Ser. No. 541,437

Int. Cl.^{5} C04B *35/10*

U.S. Cl. 501—127 **13 Claims**



1. A self-supporting ceramic composite body comprising:

a filler material which comprises an essentially single phase polycrystalline first oxidation reaction product characterized by having crystal lattice misalignments at oxidation reaction product crystallite grain boundaries which are less than crystal lattice misalignments which exist at interfaces between (1) neighboring oxidation reaction product crystallites and (2) at least one structural feature selected from the group consisting of metal channels and voids; and

a second oxidation reaction product of a parent metal and an oxidant comprising a ceramic matrix which is three-dimensionally interconnected and embeds said filler material, said second oxidation reaction product further comprising about 1–40% by volume of an interconnected metal phase comprising constituents of said parent metal.

5,053,368

Patent Not Issued For This Number

5,053,369

SINTERED MICROCRYSTALLINE CERAMIC MATERIAL

Herwig Winkler; Peter Janz, both of Klagenfurt, and Georg Gottschamel, Treibach, all of Austria, assignors to Treibacher Chemische Werke Aktiengesellschaft, Steiermark, Fed. Rep. of Germany

Filed Oct. 25, 1989, Ser. No. 427,239

Claims priority, application Austria, Nov. 2, 1988, 2695/88; Jan. 26, 1989, 153/89; Jul. 26, 1989, 1802/89

Int. Cl.^{5} C04B *35/50*

U.S. Cl. 501—152 **12 Claims**

1. Sintered microcrystalline ceramic material based on α-Al_2O_3 with an addition of 0.01 to 2.0 weight percent of a cerium compound, consisting of a microcrystalline matrix and 0.1 to 30 volume percent whisker-like needles,

said needles having a cerium content of up to 20 weight percent,

whereby said cerium compound is mainly present in the needles.

5,053,370

ALUMINUM OXIDE CERAMICS HAVING IMPROVED MECHANICAL PROPERTIES

Philip L. Berneburg, Potomac, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 27, 1989, Ser. No. 386,549

Int. Cl.^{5} C04B *35/10, 35/18, 35/44*

U.S. Cl. 501—153 **23 Claims**

1. A wear-resistant polycrystalline alumina material prepared by the liquid phase sintering of a mixture of about 70 to 95 percent by weight of crystalline Al_2O_3 particles and about 30 to 5 percent by weight of silicate glass phase-forming components in a nitrogenizing atmosphere from which gaseous oxygen is substantially excluded; said alumina material being enriched with regard to the amount of nitrogen incorporated within its chemical structure and having a Hv_5 hardness which is at least about 5% greater than the hardness of a corresponding alumina material made from the same amount of crystalline Al_2O_3 particles and the same amount of silicate glass phase-forming components, but which has been sintered in air rather than in a nitrogenizing atmosphere.

5,053,371

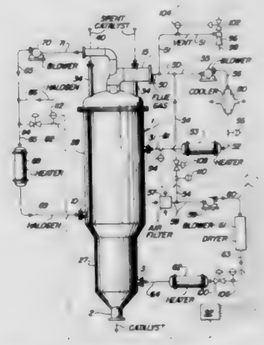
CATALYST REGENERATION METHOD WITH THREE-ZONE COMBUSTION GAS ADDITION

Robert R. Williamson, Pleasant Valley, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Nov. 2, 1990, Ser. No. 608,518

Int. Cl.^{5} B01J *38/44, 38/24, 23/96;* **C10G** *35/12*

U.S. Cl. 502—37 **24 Claims**



1. In a method of operating a continuous regeneration system for a reforming process, said regeneration section including a burn zone, a halogenation zone, and a drying zone in serial progression, comprising:

(a) passing catalyst particles containing a platinum group metal and having coke deposited thereon to said burn zone and contacting said catalyst particles with an oxygen-containing recycle gas to combust coke from said particles;

(b) continuously circulating said recycle gas from a flue gas outlet to a recycle gas inlet in a recycle gas loop, venting a vent gas comprising combustion products from said recycle loop, and adding a combustion gas comprising an oxygen-containing gas to said recycle gas loop in substantially equal mass flow to the amount of vent gas leaving the recycle loop;

(c) passing catalyst particles from said burn zone to said halogenation zone and contacting said catalyst particles with a halogen-containing gas in said halogenation zone and redispersing said platinum group metal on said catalyst;

(d) continuously circulating said halogen-containing gas from a halogenation gas outlet to a halogenation gas inlet in a halogenation loop and adding a halogen to said halogenation gas loop in an amount determined to maintain a halogen concentration in said halogenation loop;

(e) passing catalyst particles from said halogenation zone to a drying zone and contacting said catalyst particles with an oxygen-containing drying gas in said drying zone;

(f) passing said oxygen-containing drying gas to a lower portion of said drying zone;

(g) passing at least a portion of said oxygen-containing drying gas upwardly from said drying zone through said halogenation zone in admixture with said halogenation gas

to provide, in part, combustion gas for said burn zone; and,

(h) passing at least a portion of said halogenation gas into said burn zone to provide, in part, combustion gas for said burn zone,

the improvement comprising:

measuring the oxygen concentration of the recycle gas to determine the required addition of combustion gas to said regeneration zone and adding at least a portion of the combustion gas to satisfy said required addition of combustion gas to the portion of said halogenation gas flowing from said halogenation gas outlet to said halogenation gas inlet and said combustion gas is in addition to any other oxygen-containing gas that enters said halogenation loop.

5,053,372

BASIC ALKALINE EARTH METAL-ZEOLITE COMPOSITIONS

Thomas F. Brownscombe, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 31, 1989, Ser. No. 387,265
Int. Cl.[5] B01J *29/06, 29/08, 29/18*
U.S. Cl. 502—60 **24 Claims**

1. A composition prepared by impregnating a zeolite with a solution of an alkaline earth metal salt wherein the sum of said alkaline earth metal impregnated into the zeolite and any metal cation exchanged into the zeolite is in excess of that required to provide a fully metal cation-exchanged zeolite, followed by drying the thus impregnated zeolite and calcining the dried zeolite at a temperature ranging from about 150° C. to about 850° C.

10. A composition prepared by impregnating a zeolite with a solution of an alkaline earth metal salt wherein said alkaline earth metal salt is thermally decomposable upon calcination in the presence of said zeolite and wherein the sum of said alkaline earth metal impregnated into the zeolite and any metal cation exchanged into the zeolite is in excess of that required to provide a fully metal cation-exchanged zeolite, drying the thus impregnated zeolite and calcining the zeolite at a temperature in excess of the temperature at which the alkaline earth metal salt thermally decomposes.

5,053,373

ZEOLITE SSZ-32

Stacey I. Zones, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 172,730, Mar. 23, 1988, abandoned. This application Oct. 24, 1989, Ser. No. 433,382
Int. Cl.[5] B01J *29/06, 29/14*
U.S. Cl. 502—64 **13 Claims**

2. A zeolite having a composition, as synthesized and in the anhydrous state, in terms of mole ratios of oxides as follows: (0.05 to 2.0)Q_2O:(0.1 to 2.0)M_2O: Al_2O_3:(20 to less than 40) SiO_2 wherein M is an alkali metal cation, Q is an N-(C_{1-5}) lower alkyl-N'-isopropyl-imidazolium cation, said zeolite having a constraint index after calcination and in the hydrogen form of 13 or greater, and having the X-ray diffraction lines of Table 1.

10. A method for preparing a zeolite having a mole ratio of silicon oxide to aluminum oxide greater than about 20:1 to less than 40:1, and having the X-ray diffraction lines of Table 1 which method comprises:

(a) preparing an aqueous mixture containing sources of an alkali metal oxide, an N-lower alkyl-N'-isopropyl-imidazolium cation, an oxide of aluminum, and an oxide of silicon;

(b) maintaining the mixture at a temperature of at least 140° C. until the crystals of said zeolite form; and

(c) recovering said crystals.

5,053,374

METHOD FOR PREPARING A ZEOLITE CATALYST BOUND WITH A REFRACTORY OXIDE OF LOW ACIDITY

Robert P. L. Absil, West Deptford; Philip J. Angevine, Woodbury; Joseph A. Herbst, Turnersville; Donald J. Klocke, Somerdale; John P. McWilliams, Woodbury; Scott Han, Lawrenceville, and David S. Shihabi, Pennington, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 140,357, Jan. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 44,639, May 1, 1987, abandoned. This application Nov. 2, 1989, Ser. No. 431,002
Int. Cl.[5] B01J *29/04*
U.S. Cl. 502—64 **28 Claims**

1. A method for preparing a low acidity refractory oxide-bound zeolite catalyst which comprises:

a) providing a substantially homogenous mixture of zeolite, water and a low acidity refractory oxide binder containing at least a extrusion-facilitating amount of said binder in a colloidal state to provide an extrudable mass, said mixture being substantially free of added alkali metal base and/or basic salt;

b) extruding the extrudable mass resulting from step (a) using a screw extruder;

c) drying the extrudate resulting from step (b); and,

d) calcining the dried extrudate resulting from step (c).

2. The method of claim 1 where the low acidity refractory oxide is silica.

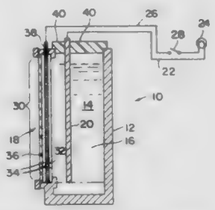
8. The method of claim 1 wherein collodial silica represents from about 2 to about 80 weight percent of the total binder.

5,053,375

ELECTROCHEMICAL CATHODE AND MATERIALS THEREFOR

Bhaskara M. L. Rao, Flemington, N.J., assignor to Alupower, Inc., Warren, N.J.

Filed Jan. 8, 1990, Ser. No. 462,019
Int. Cl.[5] H01M *4/88*
U.S. Cl. 502—101 **14 Claims**



1. A process for forming an electrochemical cathode, which comprises:

a) admixing a slurry of carbon particles with a solution of silver salt to form a slurry of silver salt and carbon particles;

b) thereafter effecting adsorption of Ag° onto said carbon particles in said slurry of step a) prior to step c) to thereby form a slurry of Ag°-adsorbed carbon particles;

c) impregnating a conductive nonwoven fibrous web with a dispersion comprised of said Ag°-adsorbed carbon particles and a nonfibrous polymeric material for holding said Ag°-adsorbed carbon particles to said web; and

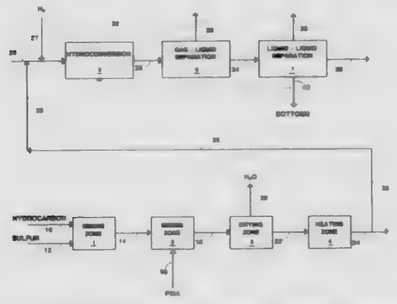
d) laminating a current collecting substrate to said impregnated web to form said electrochemical cathode.

5,053,376

METHOD OF PREPARING A SULFIDED MOLYBDENUM CATALYST CONCENTRATE

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jun. 4, 1990, Ser. No. 532,720
Int. Cl.[5] B01J *27/051, 27/047;* **C10G** *47/06, 1/08*
U.S. Cl. 502—150 **19 Claims**



1. In a process for preparing a sulfided catalyst concentrate, wherein:

(a) a catalyst precursor concentrate is formed by mixing together: (i) a hydrocarbonaceous oil containing constituents boiling above about 1050° F. and (ii) a polyacid of molybdenum in an amount to provide from about 0.2 to 2 wt.% molybdenum, based on said hydrocarbonaceous oil;

(b) the precursor concentrate is heated, in the substantial absence of added hydrogen, at a temperature from about 530° F. to about 800° F., and a total pressure of from about 0 psig to about 500 psig, for a time sufficient to convert said catalyst precursor to a solid molybdenum-containing catalyst;

the improvement which comprises using a sulfiding agent which consists essentially of elemental sulfur at any stage of the process in an amount so that the atomic ratio of elemental sulfur to metal, of the metal compound is about 2/1 to 7/1.

5,053,377

CATALYTIC COMPOSITIONS, PROCESS FOR OBTAINING THEM AND PROCESS FOR HYDROGENATION OF 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE BY MEANS OF THESE COMPOSITIONS

Luc Lerot, Brussels; Vincent Wilmet, Bierges, and Joseph Pirotton, Brussels, all of Belgium, assignors to Solvay & Cie (Société Anonyme), Brussels, Belgium

Filed Aug. 22, 1989, Ser. No. 396,899
Claims priority, application France, Aug. 22, 1988, 88 11152
Int. Cl.[5] B01J *27/12, 27/10, 21/18, 21/06*
U.S. Cl. 502—226 **6 Claims**

1. A catalytic composition consisting essentially of a porous titanium oxide support means, a metal of group VIII of the periodic table of the elements selected from the group consisting of palladium and platinum, and at least two compounds chosen from the chlorides or fluorides of potassium, cesium or barium, said metal of group VIII and said potassium, ce chlorides or fluorides present amount effective to produce a catalytic composition hydrogenation of 1,1,2-trichloro-1,2,2-trifluoroethan chlorotrifluoroethylene and trifluoroethylene

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5,053,378

MULTI-PURPOSE CATALYSTS FOR VEHICULAR CATALYTIC CONVERTERS

Gilbert Blanchard, Le Plessis Belleville; Jack Caillod, Taverny; Richard Doziere, Beynes, and Michel Prigent, Rueil Malmaison, all of France, assignors to Pro-Catalyse, Rueil Malmaison, France

Continuation of Ser. No. 23,242, Mar. 9, 1987, abandoned. This application Aug. 28, 1989, Ser. No. 399,442
Claims priority, application France, Mar. 7, 1986, 86 03221
Int. Cl.[5] B01J *23/10*
U.S. Cl. 502—304 **2 Claims**

1. A multi-purpose catalyst composition adapted for the treatment of internal combustion engine exhaust gases, which comprises a particulate refractory oxide active support having an active catalytic phase deposited thereon, said active catalytic phase consisting essentially of a catalytically effective amount of zirconium, cerium and platinum; and at least one of the metals tungsten, nickel, manganese, tin and rhenium, wherein the total amount thereof ranges from 0.2% to 5% by weight, based on the weight of the support, said particulate refractory support having a specific surface area of from 70 to 350 m2/g.

5,053,379

HIGH-ACTIVITY NICKEL CATALYST AND PROCESS FOR PREPARATION THEREOF

Nicola Giordano, Messina; Adolfo Parmaliana, Terme Vigliatore; Francesco Frusteri, Messina, all of Italy; Shigeo Sasaki, Ube, Japan; Yasushi Yoshida, Ube, Japan, and Kuniaki Nitta, Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Mar. 19, 1990, Ser. No. 594,047
Claims priority, application Japan, Mar. 20, 1989, 1-65965
Int. Cl.[5] B01J *23/78*
U.S. Cl. 502—328 **12 Claims**

1. A high-activity nickel type catalyst, which comprises a carrier composed of high-purity ultra-fine single-crystal magnesia having an average particle size of 100 to 2000 Å or a BET specific surface area of 6 to 170 m^2/g and a metallic nickel or nickel oxide uniformly and thoroughly dispersed on the surface of the carrier in a supported amount of 0.1 to 50% by weight as metallic nickel.

5,053,380

CU-AL CATALYST FOR HYDROGENATION

Richard W. Wegman, and David R. Bryant, both of South Charleston, W. Va., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 21, 1989, Ser. No. 454,457
Int. Cl.[5] B01J *21/04, 23/72*
U.S. Cl. 502—346 **1 Claim**

1. A reduced catalyst composition consisting of copper and aluminum made by a process comprising:

coprecipitating copper and aluminum from their water soluble salts to form a precipitate;

drying and calcining the precipitate to form a calcined catalyst; and

activating the calcined catalyst by heating said calcined catalyst in the presence of a reducing gas under activation conditions which comprise a reducing temperature that gradually increases from an initial temperature of about 50° C. to a final temperature of about 180° C. and wherein said reducing temperature is gradually increased at a rate of about 3° C. to about 6° C. per hour.

5,053,381
DUAL LAMINATE PROCESS FOR THERMAL COLOR PROOFING

Derek D. Chapman, and Charles D. DeBoer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

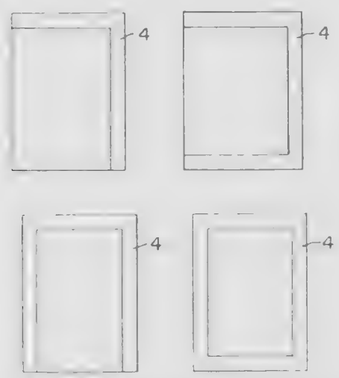
Filed Oct. 31, 1990, Ser. No. 606,408
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 17 Claims

1. A process for forming a color image comprising:
(a) forming a thermal dye transfer image in a polymeric dye image-receiving layer of an intermediate dye-receiving element by imagewise-heating a dye-donor element and transferring a dye image to the dye imagereceiving layer,
(b) applying a polymeric dye-migration barrier layer to one surface of a paper substrate, and
(c) transferring the imaged polymeric dye image-receiving layer to the surface of the paper substrate having the dye-migration barrier layer applied thereon.

5,053,382
DYE RECEIVING SHEET FOR PREPARATION OF A TRANSPARENCY

Masanori Akada, Ota; Noritaka Egashira, Ichikawa; Mikizo Mizuno, Takatsuki; Masaki Kutsukake, Chofu; Yoshikazu Ito, Setagaya; Tatsuya Kita, Shinjuku; Masahisa Yamaguchi, Nerima; Takao Suzuki, Kawagoe; Hitoshi Arita, Suginami; Kazuyoshi Sorimachi, Shinagawa, and Tamami Iwata, Arakawa, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Oct. 25, 1989, Ser. No. 426,410
Claims priority, application Japan, Oct. 23, 1986, 61-252646; Dec. 10, 1986, 61-294163; Mar. 20, 1987, 62-66880; Jul. 30, 1987, PCT/JP87/00563
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 6 Claims

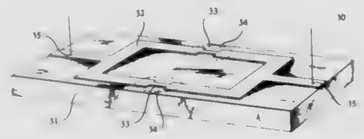


1. A dye receiving sheet for preparation of a transparency, said sheet being used in combination with a heat transfer sheet having a dye layer formed thereon, said dye receiving sheet comprising:
a transparent substrate;
a transparent receiving layer provided on said transparent substrate for receiving dye migrating from said heat transfer sheet corresponding to energy applied thereto from a thermal head; and
a strip-shaped optically detectable layer provided on said transparent receiving layer so as to cover at least two adjacent outer peripheral edge regions at the surface of said transparent receiving layer, said optically detectable layer comprising an inorganic pigment.

5,053,383
METHOD OF REDUCING CRITICAL CURRENT DENSITY OF OXIDE SUPERCONDUCTORS BY RADIATION DAMAGE

Kenneth T. Short, and Alice E. White, both of New Providence, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1988, Ser. No. 174,577
Int. Cl.[5] B05D *5/12, 3/06*
U.S. Cl. 505—1 5 Claims



1. Method of producing an article comprising a layer of superconductive oxide on a substrate, associated with at least a part of the superconductive oxide layer being a critical current density J_{cf}, the method comprising
a) forming the layer of superconductive oxide on the substrate; and
b) providing means for making electrical contact with the layer characterized in that
c) associated with the at least part of the layer formed in step a) is an initial critical current density J_{ci}, and a critical temperature $T_c(R=0)$, with $J_{ci}>J_{cf}$, and the method comprises
d) exposing the at least part of the oxide layer to a flux of particles, with the particle species, energy, and fluence selected such that the critical current density of the at least part of the oxide layer is reduced to J_{cf} with the normalized change ΔT_c in $T_c(R=0)$ being less than 0.2 of the normalized change ΔJ_c in J_c, where $\Delta T_c=(T_{cf}-T_{ci})/T_{cf}$ and $\Delta J_c=(J_{ci}-J_{cf})/J_{ci}$, and T_{ci} and T_{cf} are the initial and final value of the critical temperature $T_c(R=0)$, respectively.

5,053,384
METHOD OF PRODUCING SUPERCONDUCTING FIBERS OF BISMUTH STRONTIUM CALCIUM COPPER OXIDE (BI(2212) AND BI(2223))

Louis A. Schwartzkopf, Mankato, Minn., assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

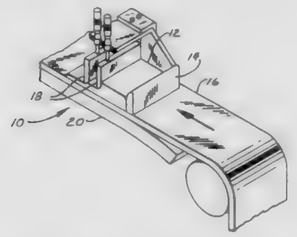
Continuation-in-part of Ser. No. 383,872, Jul. 21, 1989, Pat. No. 4,970,194. This application Mar. 12, 1990, Ser. No. 492,932
The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.
Int. Cl.[5] F04B *41/88;* H01B *12/04*
U.S. Cl. 505—1 6 Claims

1. A method of pendant drop melt extraction forming of superconductive fibers of Bismuth (2212) or (2223) compounds, comprising:
(a) heating to a temperature above the melting point of Bi(2212) or (2223) compounds, a superconductive ceramic;
(b) contacting said drops with an edge of a cool wheel rotating at a speed of from about 230 rpms to about 430 rpms, which results in formation of fibers from said liquid drops on said wheel;
(c) heat treating said fibers at a temperature at from about 820° C. to about 870° C. in air from about 16 hours to about 24 hours to allow crystals of Bismuth ceramic to form within said fibers; and
(d) slowly cooling said fibers in to a temperature of at least 200° C.

5,053,385
PREFERENTIAL ORIENTATION OF METAL OXIDE SUPERCONDUCTING MATERIALS

Donald W. Capone, Bolingbrook, and Roger B. Poeppel, Glen Ellyn, both of Ill., assignors to Arch Development Corporation, Argonne, Ill.

Continuation of Ser. No. 101,821, Sep. 28, 1987, abandoned. This application Aug. 7, 1989, Ser. No. 390,930
The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.
Int. Cl.[5] B29C *47/00;* C04B *35/00;* H01L *39/12*
U.S. Cl. 505—1 3 Claims



1. A method of forming a superconducting copper oxide with improved current carrying capacity wherein said superconducting copper oxide has a polycrystalline structure and is anisotropically superconducting having one or more longer crystal axes along which said copper oxide is superconducting, said method comprising the steps of:
pressing the superconducting copper oxide into a compact form;
heating the compacted superconducting copper oxide to a temperature in the range of 950°–1000° C. for on the order of 20–60 hours to induce large grain growth in the superconducting copper oxide;
reducing the superconducting copper oxide to a flake-like, powder form, wherein the copper oxide powder is comprised of particles of singles crystals; and
aligning said copper oxide single crystal particles along a preferential direction such that said one or more longer axes of each of said copper oxide crystals are in co-planar alignment, wherein the axes of said copper oxide crystals are along mutually orthogonal a-, b-, and c-directions, and wherein said a- and b-directions define a basal plane of said crystals within which said copper oxide is superconducting and the c-directions of each of said copper oxide crystals are aligned generally parallel.

5,053,386
ORALLY ADMINISTRABLE ANTI-METASTATIC LECTIN COMPOSITIONS AND METHODS

Ta C. Tung, 210 Lindbergh Ave., Broomall, Pa. 19008

Continuation of Ser. No. 173,826, Mar. 28, 1988, abandoned. This application May 23, 1990, Ser. No. 529,742
Claims priority, application Taiwan, Jul. 24, 1987, 76103632; Aug. 19, 1987, 76104897
Int. Cl.[5] A01N *37/18;* A61K *37/02, 35/78*
U.S. Cl. 514—2 20 Claims

1. An orally-administrable therapeutic composition useful for the suppression of post-surgical malignment tumor metastasis in mammals in need thereof after surgery which comprises a pharmaceutically and orally-acceptable carrier and an effective amount for the suppression of post-surgical malignment tumor metastasis in mammals in need thereof after surgery, of purified lectin obtained from the seeds of an a *Abrus precatorius* selected from the group of Abrin and Abris agglutinin wherein the purified lectin is present in an amount from about 1.0 to 500 micrograms and is administrable in conjunction with or subsequent to either radiation therapy or chemotherapy.

5,053,387
OMEGA-3 FATTY ACIDS IN TRAUMATIC INJURY TREATMENT

J. Wesley Alexander, Cincinnati, Ohio, assignor to Shriners Hospitals for Crippled Children

Continuation of Ser. No. 418,690, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 298,825, Jan. 18, 1989, abandoned, which is a continuation of Ser. No. 17,326, Feb. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 2,035, Jan. 12, 1987, abandoned. This application May 16, 1990, Ser. No. 524,667
Int. Cl.[5] A61K *37/02, 31/70, 35/60, 31/20*
U.S. Cl. 514—2 10 Claims

1. A method of treating a traumatic injury which manifests a resting hypermetabolic state by administrating to one suffering from such an injury, a composition comprising an amount of omega-3 fatty acids of fish oil sufficient to reduce the resting hypermetabolic state associated with the traumatic injury.

5,053,388
WOUND HEALING COMPOSITION AND METHOD

David Gibson, Irving, Calif.; Michael Lerner, Shawnee, Okla.; Robert Nordquist, Oklahoma City, Okla., and Cary Reich, Irvine, Calif., assignors to Chiron Ophthalmics, Inc., Irvine, Calif. and Dean A. McGee Eye Inst., Oklahoma City, Okla.

Continuation of Ser. No. 117,827, Nov. 9, 1987, abandoned. This application Jun. 25, 1990, Ser. No. 542,678
Int. Cl.[5] A61K *37/02, 31/21*
U.S. Cl. 514—2 20 Claims

1. A method of enhancing the healing of corneal incision or lesion which comprises:
(a) coating the surfaces of the incision or lesion with a composition comprising a protein crosslinking compound and an ophthalmologically acceptable carrier material; and
(b) applying to the incision or lesion a composition comprising an extracellular matrix material and an ophthalmologically acceptable carrier material.

5,053,389
INSULIN PREPARATION FOR NON-PARENTERAL ADMINISTRATION

Per Balschmidt, Tibberup Alle 20, 3060 Esperg rde; Finn B. Hansen, Osterbrogde 54 B, 4, 2100 Copenhagen, and Bente R. Johansen, Garderhojvej 24, 2820 Gentofte, all of Denmark

PCT No. PCT/DK87/00038, § 371 Date Dec. 14, 1987, § 102(e) Date Dec. 14, 1987
PCT Filed Apr. 14, 1987, Ser. No. 132,969
Claims priority, application Denmark, Apr. 18, 1986, 1792/86
Int. Cl.[5] A61K *37/20*
U.S. Cl. 514—4 3 Claims

1. A method for treating diabetes in a warm-blooded animal by non-parenterally administering to said warm blooded animal an insulin preparation comprising des[(B26-30)-pentapeptide] insulin-B25-amide, an absorption promoting substance, a physiologically acceptable additive and, optionally, a conventional insulin.

5,053,390
INSECTICIDAL METHOD

Marc Benoit, Roquevaire, and Jean-Pierre Demoute, Auriol, both of France, assignors to Roussel Uclaf, Paris, France

Filed Aug. 7, 1990, Ser. No. 563,490
Claims priority, application France, Aug. 8, 1989, 8910649
Int. Cl.[5] A01N *37/08, 37/34, 43/08, 57/00*
U.S. Cl. 574—7 6 Claims

1. A method of combatting insects comprising contacting insects with an insecticidally effective amount of L-2-amino-4-[(hydroxy) (methyl) phosyhinyl]-butyryl-L-alanyl-L-alanine.

5,053,391

COMPOSITION CONTAINING POLYPEPTIDE HORMONE FOR STIMULATING SKLETAL GROWTH IN POULTRY

Geoffrey Goodman, Kibbutz Amiad, Israel, assignor to Migal Galilee Technological Center Ltd., Israel

Filed Jun. 9, 1988, Ser. No. 204,571
Claims priority, application Israel, Jun. 15, 1987, 82885
Int. Cl.[5] A61K *37/02, 37/36*
U.S. Cl. 514—12 **7 Claims**

1. A method for stimulating skeletal growth in normal poultry as evidenced by increased metatarsal length of treated poultry comprising administering a growth stimulating amount of prolactin to said poultry.

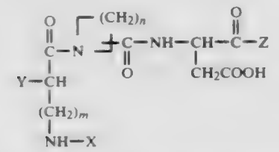
5,053,392

ARGININE, GLYCINE, ASPARTIC ACID DERIVATIVES AS PLATELET-AGGREGATION INHIBITORS

Scott I. Klein, Audubon, and Bruce F. Molino, Hatfield, both of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Fort Washington, Pa.

Filed Dec. 1, 1989, Ser. No. 444,484
Int. Cl.[5] A61K *37/00*
U.S. Cl. 514—18 **8 Claims**

1. A compound of the formula



and pharmaceutically acceptable salts thereof, wherein:
X is H, amidino or



Y is H, amino or



Z is naturally occurring L-amino acid bounded to the carbon atom at the a-amino position selected from the group consisting of: Val, Ser, Phe, Leu, Ile, Tyr, Trp, Arg, and Lys,
R is alkyl, aryl or aralkyl;
m is 0 and;
n is 1 through 2.

5,053,393

PLATELET-AGGREGATION INHIBITOR

Foe S. Tjoeng, Manchester, Mo.; Larry P. Feigen, Wauconda, Ill., and Steven P. Adams, St. Charles, Mo., assignors to Monsanto Co., St. Louis, Mo. and G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 395,614, Aug. 18, 1989, abandoned, which is a division of Ser. No. 221,703, Jul. 20, 1988, Pat. No. 4,879,313. This application Jun. 20, 1990, Ser. No. 540,953
Int. Cl.[5] A61K *31/21*
U.S. Cl. 514—18 **5 Claims**

1. N-[8-[(Aminoiminomethyl)amino]-1-oxooctyl]-N-L-α-aspartyl-L-phenylalanine.

2. A method of inhibiting platelet aggregation in a warm blooded mammal comprising administering to said mammal an effective amount for inhibiting platelet aggregation of the compound of claim 1 in a pharmaceutically acceptable carrier.

5,053,394

TARGETED FORMS OF METHYLTRITHIO ANTITUMOR AGENTS

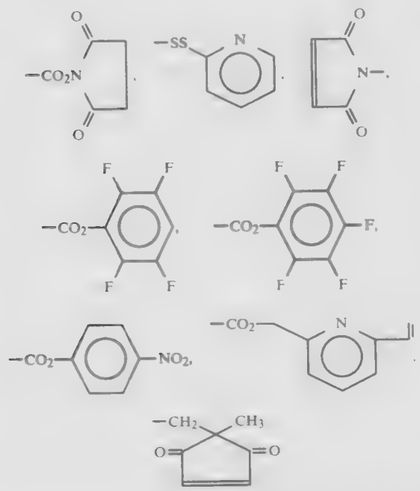
George A. Ellestad, Pearl River, N.Y.; William J. McGahren, Demarest, N.J.; Martin L. Sassiver, Spring Valley, N.Y.; Philip R. Hamann, Garnerville, N.Y.; Lois M. Hinman, Tarrytown, N.Y., and Janis Upeslacis, Pomona, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 246,248, Sep. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 114,940, Oct. 30, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 339,343
Int. Cl.[5] A01N *43/04, 45/00;* **C12P** *19/44;* **A61K** *39/00*
U.S. Cl. 514—25 **33 Claims**

1. A carrier-drug conjugate of the formula



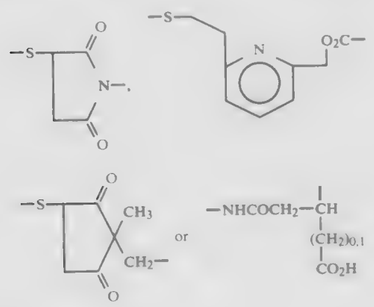
prepared from a compound of formula CH_3SSS-W wherein CH_3SSS-W is an antitumor antibiotic designated as LL-E33288α_1^{Br}, α_1^{I}, α_2^{Br}, α_3^{Br}, α_3^{I}, α_4^{Br}, β_1^{Br}, B_1^{I}, β_2^{Br}, β_2^{I}, γ_1^{Br}, γ_1^{I}, δ_1^{I}, the iodo or bromo pseudoaglycones, their dihydro or N-acyl counterparts, BBM-1675, FR-900405, FR-900406, PD 114759, PD 115028, CL-1577A, CL-1577B, CL-1577D, CL-1577E, CL-1724 or their N-acetyl counterparts comprising:
reacting CH_3SSS-W with a compound of general formula A-Sp-SH, wherein Sp is a straight or branched-chain divalent or trivalent (C_1–C_{18}) radical, divalent or trivalent aryl or heteroaryl radical, divalent or trivalent (C_3–C_{18}) cycloalkyl or heterocycloalkyl radical, divalent or trivalent aryl-or heteroaryl-alkyl (C_1–C_{18}) radical, divalent or trivalent cycloalkyl- or heterocycloalkyl-alkyl (C_1–C_{18}) radical or divalent or trivalent (C_2–C_{18}) unsaturated alkyl radical, wherein if Sp is a trivalent radical, it can be additionally substituted by amino, alkylamino, arylamino, heteroarylamino, carboxyl, lower alkoxy, hydroxy, thiol, or lower alkylthio groups; and Q is, or can be subsequently converted to, halogen, amino, alkylamino, carboxyl, carboxaldehyde, hydroxy, thiol, α-haloacetyloxy, lower alkyldicarboxyl, —$CONHNH_2$, —$NHCONHNH_2$, —$NHCSNHNH_2$, —ONH_2, —CON_3,



to produce an intermediate of formula Q-Sp-SS-W, wherein Q, Sp, and W are as hereinbefore defined,
reacting Q-Sp-SS-W with a molecule of the formula Tu-$(Y)_n$ wherein the carrier Tu is defined as a mono- or polyclonal antibody, its fragments, its chemically or genetically manipulated counterparts, or growth factors or steroids; Y is a side-chain amino, carboxy, or thiol group of a protein, an aldehyde derived from glycoprotein carbohydrate residues, or an amidoalkylathio group; and n is an integer of from 1 to 100, to produce a compound of the formula:



wherein Tu, Y, Sp, W, and n are as hereinbefore defined, and Z is formed from covalent reaction of the groups Q and Y directly or after subsequent reduction, and Z is —CONH—, —CONHN=CH—, —$CONHNHCH_2$—, —$NHCONHN$=CH—, —NHCONHNHCH$_2$, —$NHCSNHN$=CH—, —$NHCSNHNHCH_2$—, —OH=CH—, —NH—, —$NHCH_2$—, —N=CH—, —CO_2—, —$NHCH_2CO_2$—, —SS—,



and m is 0.1 to 15.

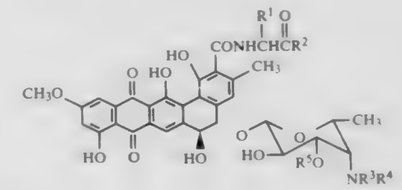
5,053,395

PRADIMICIN AMIDE DERIVATIVES

Maki Nishio; Seiji Iimura, both of Tokyo, and Toshikazu Oki, Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 24, 1989, Ser. No. 328,201
Int. Cl.[5] A61K *31/70;* **C07H** *15/24*
U.S. Cl. 514—33 **14 Claims**

1. A compound having the formula



wherein
R^1 is selected from the group consisting of H, methyl and hydroxymethyl; when R^1 is methyl or hydroxymethyl the resulting amino acid has the D-configuration;
R^2 is selected from the group consisting of —NR^6R^7, —$NHNR^6R^7$, —$NHCH_2CO_2H$ and (D)—NHCH(CH_3.)CO_2H;
R^6 is H and R^7 is selected from the group consisting of H, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{6-10}aryl, and C_{7-15}aralkyl; or
R^6 and R^7 are independently C_{1-6}alkyl; or
R^6, R^7 and the nitrogen to which they are attached form a ring selected from the group consisting of pyrrolidine and piperidine.
R^3 and R^4 are each independently selected from the group consisting of H and C_{1-6}alkyl; and
R^5 is H or β-D-xylosyl; or
a pharmaceutically acceptable salt thereof.

14. A method for treating fungal infections in a mammalian host which comprises administering to said host an antifungal effective dose of a compound of claim 1.

5,053,396

THERAPEUTIC COMPOSITION

David H. Blass, 7 Hereford Mansions, Hereford Street, London W2 5BA, Great Britain

Continuation of Ser. No. 44,402, filed as PCT EP86/00492 on Aug. 21, 1985, published as WO87/01285 on Mar. 12, 1987, abandoned. This application Aug. 1, 1990, Ser. No. 562,425.
Int. Cl.[5] A61K *31/00*
U.S. Cl. 514—45 **28 Claims**

1. A therapeutic composition for the treatment of the symptoms associated with the excessive intake of alcohol, comprising:
(a) an analgesic;
(b) 70 to 1500 mg per unit dose of nicotinamide or 70 to 300 mg of nicotinamide adenine dinucleotide (NAD);
wherein the amount of component (b) is 7% or greater by weight of component (a), further comprising one or more of the following components:
(c) a water soluble vitamin selected from the group consisting of pantothenic acid, riboflavin, pyridoxine hydrochloride, thiamine hydrochloride and ascorbic acid;
(d) an antacid component;
(e) an electrolyte salt replacing component;
(f) trace metal ions;
(g) an antihistamine selected from the group consisting of promethazine-hydrochloride, chlor-phenisamine maleate, diphenhydramine hydrochloride, dimenhydrinate, carboxamine maleate, pyrilamine maleate, tripelennamine hydrochloride or pamoate, brompheniramine maleate, hydroxyzine hydrochloride or lactate, cyclizine hydro-

chloride or lactate, meclizine hydrochloride or buclizine hydrochloride;
(h) fructose;
(i) an alkaloid having a stimulating effect; and
(j) pharmaceutically acceptable additives according to the form of administration, selected from the group consisting of sweetening agents, flavoring agents, coloring agents, effervescent components, carriers, and fillers.

5,053,397

Patent Not Issued For This Number

5,053,398

SULFATED HOMOPOLYSACCHARIDES AS ANTI-AIDS VIRUS AGENTS

Shigero Mori, Tokyo; Isamu Sugawara, Niiza, and Wataru Ito, Kobe, all of Japan, assignors to Taito Co., Ltd., Tokyo, Japan

Filed May 10, 1989, Ser. No. 349,634
Claims priority, application Japan, May 13, 1988, 63-116499
Int. Cl.[5] A61K *31/715;* **C08B** *37/00*
U.S. Cl. 514—54 **6 Claims**

1. A sulfated polysaccharide having an average molecular weight of from 10,000 to at most 1,000,000, and a sulfur content of from 3 to 17% by weight, which polysaccharide is pendulan, or a salt thereof.

6. A pharmaceutical composition for treating an AIDS virus in mammals, which comprises, as an active ingredient, an amount of the sulfated polysaccharide of claim **1** effective for inhibiting said virus, and a pharmaceutically acceptable carrier

5,053,399

MYO-INOSITOL ANALOGS AND METHODS FOR THEIR USE

Alan P. Kozikowski, Ponte Verda Beach, Fla., assignor to University of Pittsburgh, Pittsburgh, Pa.

Division of Ser. No. 306,728, Feb. 3, 1989, Pat. No. 4,988,682. This application Oct. 12, 1990, Ser. No. 596,278
Int. Cl.[5] A61K *31/655*
U.S. Cl. 514—150 **18 Claims**

1. A method for inhibiting the phosphatidylinositol cycle in a cell which comprises contacting said cell with a compound represented by the formula I:



I

wherein
R^1, R^2, R^3, R^4, R^5 and R^6 is each independently selected from the group consisting of OH, F, N_3, NH_2, SH, SeH, Cl, Br, I and CN;
with the proviso:
(i) four or five of said R^1, R^2, R^3, R^4, R^5 and R^6 are OH; and
(ii) if said R^4, R^5 or R^6 is F, Cl, Br or I then four of the said R^1, R^2, R^3, R^4, R^5 and R^6 are OH.

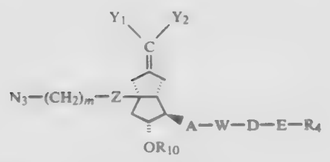
5,053,400

9-SUBSTITUTED CARBACYCLIN DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS MEDICINAL AGENTS AGENTS

Helmut Vorbruggen; Ulrich Klar; Bob Nieuweboer, and Claus-Steffen Sturzebecher, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE88/00458, § 371 Date Mar. 22, 1989, § 102(e) Date Mar. 22, 1989, PCT Pub. No. WO89/00990, PCT Pub. Date Feb. 9, 1989
PCT Filed Jul. 21, 1988, Ser. No. 332,845
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1987, 3725031
Int. Cl.[5] A61K *31/655;* **C07C** *247/06, 247/10*
U.S. Cl. 514—150 **3 Claims**

1. A carbacyclin derivative of Formula I



(I)

wherein
Y_1 is the residue $-CH_2-X-(CH_2)_n-R_1$
n is 1 or 3,
R_1 is $-COCH_3$; $-COOR_2$ wherein
R_2 is hydrogen; C_{4-10}-cycloalkyl; C_6-C_{10}aryl optionally substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_1-C_4-alkyl groups, a chloromethyl, a fluoromethyl, a trifluoromethyl, a carboxy, a hydroxy or a C_1-C_4 alkoxy group; or alkyl of 1–10 carbon atoms optionally substituted by halogen, phenyl, C_1-C_4-alkoxy or C_1-C_4-dialkylamino; or
the residue $-CONHR_3$ wherein
R_3 is hydrogen or an alkanoyl or alkanesulfonyl residue of respectively 1–10 carbon atoms,
m is 2–10,
Z is a -C≡C-, a cis-CH=CH- or a trans-CH=CH- group,
R_2 is hydrogen or a methyl or ethyl group,
X is an oxygen atom or a methylene group,
Y_2 is hydrogen or fluorine,
A is a $-CH_2-CH_2-$, trans-CH=CH- or -C≡C-group,
W is a $-CH(OR_{10})-$ group or a

group
wherein the OR_{10} group can be in a α- or β-position,
D is the group

a straight-chain, saturated alkylene group of 1–5 carbon atoms, a branched, saturated or a straight-chain or branched, unsaturated alkylene group of 2–5 carbon atoms which can optionally be substituted by fluorine atoms,
o is 1, 2 or 3,
E is a direct bond, a -C≡C-group or a -CH=CR$_7$-group wherein R_7 is a hydrogen atom, an alkyl group of 1–5 carbon atoms or halogen,
R_4 is an alkyl group of 1–10 carbon atoms, a cycloalkyl group of 3–10 carbon atoms, or an aryl group of 6–10 carbon atoms optionally substituted as defined above,
R_{10} is H or tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tri-p-benzylsilyl, acetyl, propionyl, butyryl or benzoyl residues,
and, if R_2 is a hydrogen atom,
a salt thereof with a physiologically compatible base, or a cyclodextrin clathrate thereof.

5,053,401

OSTEOGENESIS PROMOTION WITH USE OF VITAMIN D DERIVATIVES

Toshio Matsumoto, and Yasuho Nishii, both of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1990, Ser. No. 485,702
Claims priority, application Japan, Feb. 28, 1989, 1-48098
Int. Cl.[5] A61K *31/59*
U.S. Cl. 514—167 **3 Claims**

1. A method for promoting osteogenesis without causing hypercalcemia, comprising:
administering to a person in need of osteogenesis an amount effective to promote osteogenesis without causing hypercalcemia of 1α,3β-dihydroxy-20α-(3-hydroxy-3-methylbuthyloxy)-9,10-seco-5,7,10(19)-pregnatriene.

5,053,402

CERTAIN GLYCERYL PHOSPHATE-CYCLIC AMMONIUM COMPOUNDS USEFUL FOR TREATING HYPERTENSION

Mitsuo Masaki, Chiba; Hiromitsu Takeda, Washimiya; Toshiro Kamishiro, and Masao Yamamoto, both of Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 73,556, Jul. 14, 1987, abandoned. This application Nov. 22, 1989, Ser. No. 438,996
Claims priority, application Japan, Jul. 14, 1986, 61-165330; Mar. 17, 1987, 62-62194
Int. Cl.[5] C07F *9/59, 9/38, 9/553;* **A61K** *31/675*
U.S. Cl. 514—79 **19 Claims**

1. A glycerol derivative having the formula:



wherein
R^1 is a straight or branched chain alkyl group having 10–22 carbon atoms;
R^2 is a straight or branched chain acyl group having 1–6 carbon atoms or benzoyl;
each of R^3 and R^4 independently is hydrogen or a straight or branched chain alkyl group having 1–6 carbon atoms;
each of R^5, R^6 and R^7 independently is hydrogen, a straight or branched chain alkyl group having 1–6 carbon atoms, a phenyl, toluyl, or xylyl group or a benzyl or phenylethyl group; and
each of m and n independently is zero or a positive integer under the condition of n+m=3–5.

13. A method for reducing blood pressure comprising administering to human in need of such treatment beings a glycerol derivative at a dose of 10 μg/kg to 0.5 mg/kg and having the formula:

wherein R^1 is a straight or branched chain alkyl group having 10–22 carbon atoms; R^2 is a straight or branched chain acyl group having 1–6 carbon atoms or benzoyl; each of R^3 and R^4 independently is hydrogen or a straight or branched chain alkyl group having 1–6 carbon atoms; each of R^5, R^6 and R^7 independently is hydrogen, a straight or branched chain alkyl group having 1–6 carbon atoms, a phenyl, toluyl, or xylyl group or a benzyl or phenylethyl group; and each of m and n

independently is zero or a positive integer under the condition of n+m=3-5.

5,053,403

METHODS FOR TREATMENT OF MALE-PATTERN BALDNESS

Norman Orentreich, 140 E 72, New York, and Jonathan R. Matins, Richmond Hill, N.Y., assignors to Norman Orentreich, New York, N.Y.

Continuation of Ser. No. 79,609, Jul. 30, 1987, abandoned, which is a division of Ser. No. 846,498, Mar. 27, 1986, Pat. No. 4,684,635, which is a continuation of Ser. No. 609,152, May 11, 1984, abandoned. This application Nov. 20, 1989, Ser. No. 438,979

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—170 **9 Claims**

1. A method for treating male-pattern baldness in mammals comprising topically applying to the affected areas of the skin therapeutically and synergistically effective amounts of a composition comprising (a) an inhibitor of the conversion of testosterone to dihydrotestosterone by the 5α-reductase enzyme, (b) a blocking agent which blocks the binding of dihydrotestosterone to receptor protein in cell cytoplasm, and (c) a pharmaceutically and dermatologically acceptable vehicle for said inhibitor and said blocking agent.

5,053,404

STEROID DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Csaba Molnar; György Hajos; Laszlo Szporny; Jozsef Toth; Arpad Kiraly; Anna Boor nee Mezei; Janos Csörgei; Kristina Szekely; Lilla Forgacs; György Fekete; Bulcsu Herenyi; Sandor Holly, and Jozsef Szunyog, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R. T., Budapest, Hungary

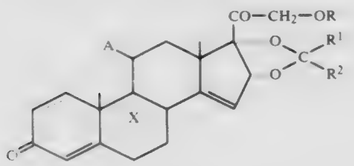
Filed Mar. 9, 1990, Ser. No. 491,682

Claims priority, application Hungary, Mar. 9, 1989, 1155/89

Int. Cl.[5] C07J *71/00*

U.S. Cl. 514—174 **6 Claims**

1. A compound of the formula (I),



(I)

wherein

A stands for hydrogen or hydroxyl group;

X stands for hydrogen or halogen with the proviso that if A is hydrogen, then X also means hydrogen;

R stands for hydrogen, benzoyl or C_{1-8}alkanoyl group;

R^1 and R^2, which are the same or different, stand for hydrogen or a C_{1-4}alkyl group; or one of R^1 and R^2 is hydrogen and the other is phenyl group; or R^1 and R^2 together form a C_{4-5}alkylene group;

means a single or double bond between two adjacent carbon atoms.

5,053,405

ANTIANDROGENIC SULFONYLSTEROIDOTHIAZOLES

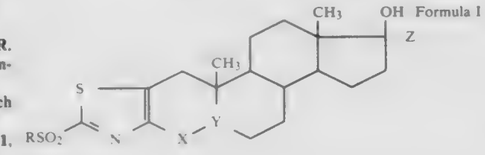
Garry M. Pilling, Nassau, and John P. Mallamo, Kinderhook, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jun. 21, 1990, Ser. No. 541,662

Int. Cl.[5] A61K *31/58;* **C07J** *71/00*

U.S. Cl. 514—176 **11 Claims**

1. A compound having the structural formula

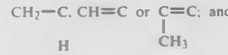


Formula I

wherein

R is CH_3, CH_3CH_2, $CH_3CH_2CH_2$ or $(CH_3)_2CH$;

X-Y is



and

Z is H, CH_3, CH_2CH_3, C≡CH or CH=CH_2.

5,053,406

COMPOSITIONS AND METHODS FOR PREVENTING AND TREATING ROTAVIRAL INFECTIONS

Cherly Srnka; Roger A. Laine, both of Alameda, and James Gilbert, Oakland, all of Calif., assignors to Glycomed, Inc., Alameda, Calif.

Filed Dec. 13, 1989, Ser. No. 450,198

Int. Cl.[5] A61K *31/575*

U.S. Cl. 514—182 **5 Claims**

1. A method for preventing or treating rotaviral infection comprising administering to a subject in need thereof a therapeutically effective amount of cholesterol 3-sulfate in combination with a pharmaceutically acceptable carrier.

5,053,407

OPTICALLY ACTIVE PYRIDOBENZOXAZINE DERIVATIVES AND ANTI-MICROBIAL USE

Isao Hayakawa; Shohgo Atarashi; Masazumi Imamura; Shuichi Yokohama; Nobuyuki Higashihashi; Katsuichi Sakano, and Masayuki Ohshima, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

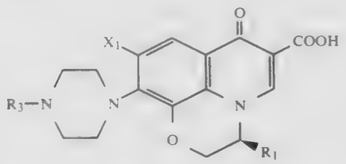
Filed Jun. 20, 1986, Ser. No. 876,623

Claims priority, application Japan, Jun. 20, 1985, 60-134712; Oct. 11, 1985, 60-226499; Jan. 28, 1986, 61-16496

Int. Cl.[5] A61K *31/535;* **C07D** *498/16*

U.S. Cl. 514—230.2 **6 Claims**

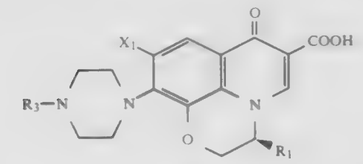
1. An S(−)-pyridobenzoxazine compound represented by the formula (VI)



(VI)

wherein X_1 represents a halogen atom, R_1 represents an alkyl group having 1 to 4 carbon atoms, and R_3 represents an alkyl group having 1 to 3 carbon atoms.

4. A process for treating a patient in need of an antimicrobial therapy which comprises administering to said patient an antimicrobially effective amount of an S(−)-pyridobenzoxazine compound represented by the formula (VI)



(VI)

wherein X_1 represents a halogen atom, R_1 represents an alkyl group having 1 to 4 carbon atoms, and R_3 represents an alkyl group having 1 to 3 carbon atoms.

5,053,408

HEXITOL DERIVATIVES HAVING VASODILATIVE ACTIVITY

Fumio Suzuki, Mishima; Hiroaki Hayashi, Shizuoka; Takeshi Kuroda, Shizuoka; Kazuhiro Kubo, Shizuoka, and Junichi Ikeda, Mishima, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

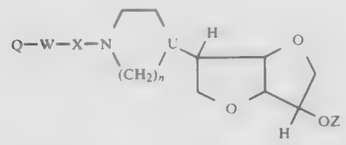
Filed Apr. 13, 1990, Ser. No. 508,701

Claims priority, application Japan, Apr. 17, 1989, 1-97032; Nov. 10, 1989, 1-293125

Int. Cl.[5] A61K *31/495;* **C07D** *487/00, 239/02, 401/00*

U.S. Cl. 514—354 **26 Claims**

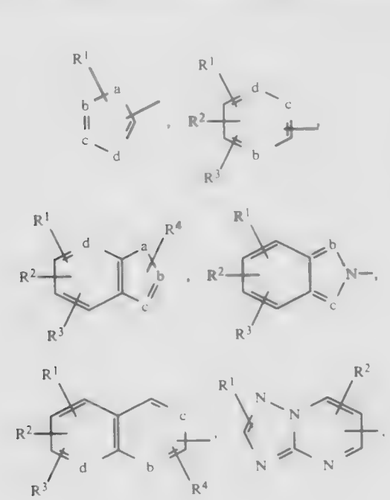
1. A hexitol derivative represented by the formula (I)



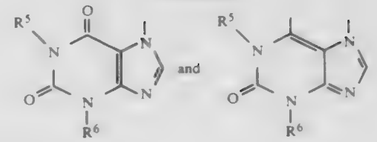
(I)

wherein

Q represents a formula selected from the group consisting of



-continued



and

wherein

a represents NH, O or S;

each of b, c and d independently represents CH or N;

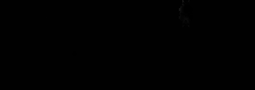
each of R^1, R^2, R^3 and R^4 independently represents hydrogen, lower alkyl, trifluoromethyl, phenyl, naphthyl lower alkanoyloxy, amino, lower alkylamino, lower alkanoylamino, lower alkanoyl, benzoyl, naphthoyl, halogen, nitro, $(CH_2)_mOR^7$, $(CH_2)_mSR^7$, $(CH_2)_mCO_2R^7$ where R^7 represents hydrogen or lower alkyl and m represents an integer of 0 to 3;

each of R^5 and R^6 independently represents hydrogen or lower alkyl;

U represents >N— or

W represents a single bond, —O— or —S—

X represents



wherein each of Y^1 and Y^2 independently represents hydrogen, lower alkyl, hydroxyl, lower alkanoyloxy, nitrile or phenyl; or Y^1 and Y^2 are combined together to form oxygen; each of Y^3 and Y^4 independently represents hydrogen or lower alkyl; and l is an integer of 0 to 6, and where l is an integer of 2 to 6, each



may be the same or different;

Z represents hydrogen or nitro; and

n is 2 or 3;

or a pharmaceutically acceptable salt thereof.

25. A coronary vasodilative composition which comprises a pharmaceutically acceptable carrier and as active ingredient, an effective amount of the compound as defined by claim 1.

5,053,409

AMINOBENZENESULFONIC ACID DERIVATIVES

Hiromi Okushima, Kawasaki; Akihiro Narimatsu, Yokohama; Makio Kobayashi, Machida; Naoya Satoh, and Miyuki Morita, both of Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

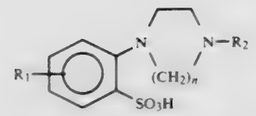
Filed Mar. 22, 1990, Ser. No. 497,184

Claims priority, application Japan, Mar. 27, 1989, 1-74684

Int. Cl.[5] A61K *31/495;* **C07D** *295/02, 295/06, 295/08*

U.S. Cl. 514—255 **24 Claims**

1. An aminobenzenesulfonic acid compound of the formula:



(I)

wherein R_1 represents hydrogen atom, a C_1-C_6 alkyl group, a C_3-C_7 cycloalkyl group, a C_1-C_4 halogenated alkyl group, a halogen atom or a C_6-C_{12} aryl group, R_2 represents hydrogen atom, a C_1-C_6 alkyl group or a C_7-C_{12} aralkyl group which may have at least one substituent selected from cyano group, nitro group, C_1-C_6 alkoxy groups, halogen atoms, C_1-C_6 alkyl groups and amino groups, and n represents an integer of 2 to 3,

or a pharmaceutically acceptable salt thereof.

5,053,410

COMBINATION OF DERIVATIVES OF PYRIMIDINE AND OF NONSTEROID ANTIINFLAMMATORY AGENTS FOR INDUCING AND STIMULATING THE GROWTH OF HAIR AND REDUCING ITS LOSS

Jean F. Grollier, Paris, and Georges Rosenbaum, Asnières, both of France, assignors to L'Oreal, Paris, France

Filed Dec. 22, 1988, Ser. No. 288,381

Claims priority, application Luxembourg, Dec. 22, 1987, 87090

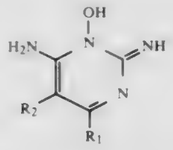
Int. Cl.[5] **A61K** *7/06, 9/12, 31/505*

U.S. Cl. 514—256 **20 Claims**

1. A combination of components that is effective for use in inducing and stimulating hair growth and for decreasing hair loss or for improving the appearance of the hair, said combination comprising:

(a) a first component (**A**), comprising a physiologically acceptable medium and an effective amount of least one nonsteroid anti-inflammatory agent selected from the group consisting of the oxicams, niflumic acid, diclofenac, diflunisal, flufenamic acid, bufexamac, fenbufen, fenoprofen and physiologically acceptable salts or esters of the oxicams, niflumic acid, diclofenac, diflunisal, flufenamic acid, bufexamac, fenbufen, or fenoprofen; and

(b) a second component (**B**), comprising a physiologically acceptable medium and an effective amount of at least one pyrimidine derivative having the formula:



(I)

as well as acid addition salts thereof, wherein R_1 represents a group having the formula:



(II)

wherein R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkylaryl and cycloalkyl, the alkyl part of which is a lower alkyl radical, or R_3 and R_4, with the nitrogen to which they are each bound, form a heterocyclic group, which is unsubstituted or is substituted on the carbon atoms with one to three lower alkyl, hydroxy, or alkoxy, and which is selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, hexahydrolazepinyl, heptamethylenimino, octamethyleneimino, morpholino and 4-(lower alkyl)piperazinyl, and wherein R_2 is selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, alkylarylalkyl, alkoxyarylalkyl and haloarylalkyl, the alkyl part of which is a lower alkyl radical,

wherein said components are used as separate components that are used either successively or intermittently or are mixed immediately prior to use for use as a composition containing said components and wherein said effective amount of each component is effective, when used as a combination, to induce and stimulate hair growth and reduce its loss.

5,053,411

N-ARYL-N-(4-(1-HETEROCYCLICALKYL)PIPERIDINYL-)AMIDES AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SUCH COMPOUNDS

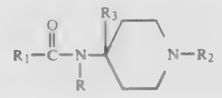
Jerome R. Bagley, North Plainfield, N.J.; Nhora L. Lalinde, West Nyack, N.Y.; Bao-Shan Huang, Edison, and H. Kenneth Spencer, Chatham, both of N.J., assignors to Anaquest, Inc., Murray Hill, N.J.

Filed Apr. 20, 1989, Ser. No. 341,094

Int. Cl.[5] **A61K** *31/505, 31/52;* **C07D** *475/02, 239/72*

U.S. Cl. 514—259 **30 Claims**

1. A compound having the formula:



optically active isometric forms thereof, and pharmaceutically acceptable acid addition salts thereof, wherein:

R is selected from the group consisting of phenyl and substituted phenyl, wherein said substituents are members independently selected from the group consisting one or more of halogen;

R_1 is selected form the group consisting of lower alkyl, lower-alkenyl, and a lower-alkoxy lower-alkyl group having from 2 to 6 carbon atoms;

R_2 is a quniazolyl lower-alkyl group or a purinyl lower-alkyl group, the lower-alkyl portion of said groups containing from 1 to 7 carbon atoms and the heterocyclic portion thereof being unsubstituted or substituted with one or more substituents selected from the group consisting of halogen, hydroxyl, nitro, amino, lower-alkoxy carbonyl, lower-alkyl, lower-cycloalkyl, lower alkoxy, halogenated lower-alkyl, aryl and halogenated aryl; and

R_3 is lower-alkoxy carbonyl or lower-alkoxy methyl.

5,053,412

SPIRO NITROGEN-BRIDGED HETEROCYCLIC COMPOUNDS

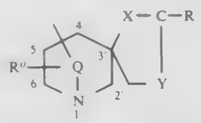
Abraham Fisher, Holon, and Ishai Karton, Nes Ziona, both of Israel, assignors to Israel Institute for Biological Research, Ness Ziona, Israel

Filed Apr. 10, 1990, Ser. No. 507,228

Int. Cl.[5] **A61K** *31/445;* **C07D** *498/10*

U.S. Cl. 514—278 **52 Claims**

2. A compound of formula (I')



(I')

including enantiomers, racemates and acid addition and quater-

nary salts thereof, wherein one of X and Y is O and the other of X and Y is N; Q is a member selected from the group consisting of $(CH_2)_n$ and $C(CH_3)_2$where n is 1, 2 or 3 and the bridge —Q— is attached at one end to position 1 and at the other end to position 4 or 5, and R^* is selected from the group consisting of hydrogen, methyl and hydroxy; in the moiety



the line connecting C—R and Y signifies the presence of a double bond when X is O and Y is N, and the presence of a single bond when X is N—and Y is O; and in C—R, R is selected from the group consisting of hydrogen, NH_2, NH-C_{1-6}-alkyl, N(C_{1-6}-alkyl)$_2$, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, C_{3-7}-cycloalkyl, C_{1-6}-alkyl substituted by 1-6 halogen atoms, hydroxy-C_{1-6} -alkyl, C_{1-6}-alkoxy-C_{1-6}-alkyl, carboxy-C_{1-6}-alkyl, (C_{1-6}-alkoxy)carbonyl-C_{1-6}-alkyl, amino-C_{1-6}-alkyl, mono-(C_{1-6}-alkyl)amino-C_{1-6}-alkyl, di-(C_{1-6}-alkyl)amino-C_{1-6}-alkyl, 2-oxo-pyrrolidin-1-ylmethyl, aryl, diarylmethylol, and C_{1-6} -alkyl substituted by one or two aryl groups, wherein aryl denotes unsubstituted phenyl and phenyl substituted by 1-3 substituents selected from the group consisting of halogen, C_{1-6}-alkyl, C_{1-6}-alkoxy and CF_3.

24. A method for treating diseases of the central and peripheral nervous system in mammals, which comprises administering to the mammal an amount effective for use in treating said diseases, of a; least one member of the group consisting of compounds of the formula (I) as defined in claim 2, including enantiomers, racemates and pharmaceutically compatible acid addition and quaternary salts thereof.

5,053,413

N-BENZYLPIPERIDINEISOINDOLINONES

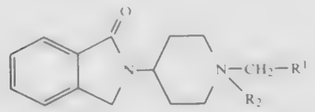
Bipinchandra N. Desai, Vernon Hills, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Sep. 5, 1989, Ser. No. 402,941

Int. Cl.[5] **C07D** *401/04;* **A61K** *31/445*

U.S. Cl. 514—323 **16 Claims**

1. A compound of the formula



the pharmaceutically acceptable salts thereof, and the hydrated forms thereof, wherein R^1 is benzodioxole and R_2 is not present or is alkyl of from one to ten carbon atoms, in which case the N of the piperidinyl ring has a plus charge with the proviso that when R_2 is alkyl of form one to ten carbon atoms R^1 can also be phenyl or phenyl substituted by alkyl of from one to ten carbon atoms.

5,053,414

HETEROCYCLIC COMPOUNDS

Masaaki Toda, Osaka; Shuichi Ohuchida, Kyoto, and Hiroyuki Ohno, Shiga, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

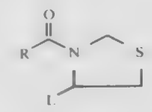
Filed Apr. 5, 1989, Ser. No. 333,227

Claims priority, application Japan, Apr. 8, 1988, 63-85288

Int. Cl.[5] **C07D** *277/04;* **A01K** *31/125*

U.S. Cl. 514—326 **5 Claims**

1. A thiazolidine derivative of the formula:

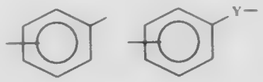


(I)

wherein R represents the formula:

G—E—D—B—A

wherein, A represents a bond, alkylene group of from 1 to 6 carbon atom(s), alkenylene group of from 2 to 6 carbon atoms, a group of the formula:



wherein, Y represents alkylene group of from 1 to 4 carbon atoms(s) or alkenylene group of from 2 to 4 carbon atoms, a saturated hydrocarbon ring of from 4 to 7 carbon atoms or heterocyclic mono ring containing 3 to 7 ring members including herero atom(s) which may be partially or fully saturated or aromatic, B represents a bond or alkylene group of from 1 to 6 carbon atom(s), D represents a bond, oxygen atom, carbonyl group or a group of the formula:

$-NR^1-CO-$ or $-CO-NR^1-$

wherein, R^1 represents hydrogen atom, alkyl group of from 1 to 6 carbon atom(s), phenyl group or benzyl group, E represents a bond, alkylene group of from 1 to 8 carbon atom(s) or alkylene group of from 1 to 8 carbon atom(s) substituted by phenyl or benzyl group

G represents a mono-, bi- or tri-carbocyclic ring(s) containing not more than 15 carbon atoms which may be partially or fully or saturated or aromatic, or mono-, bi- or tri-heterocyclic ring(s) containing not more than 15 ring members including carbon and herero atoms which may be partially or fully saturated or aromatic wherein said carbocyclic or heterocyclic ring(s) represented by G is unsubstituted or substituted by 1-3 of alkyl group of from 1 to 6 carbon atom(s), alkoxy group of from 1 to 6 carbon atom(s), halogen atom, trifluoromethyl group or nitro group,

L represents a group of the formula:

$-CH(OH)-COR^2$

$-CH(OH)-R^4$

$-CH(OH)-CH_2-COR^2$ or

$-CH(OH)-CF_2-COR^2$

wherein, R^2 represents hydrogen atom, hydroxy group, alkyl group of from 1 to 6 carbon atom(s), alkoxy group of from 1 to 6 carbon atom(s), phenyl group, alkyl group of from 1 to 6 carbon atom(s) substituted by phenyl group or alkoxy group of from 1 to 6 carbon atom(s) substituted by phenyl group,

R^4 represents alkyl group of from 1 to 6 carbon atom(s), phenyl group, alkyl group of from 1 to 6 carbon atom(s) substituted by phenyl group or trifluoromethyl group,

or non-toxic salt or hydrate thereof.

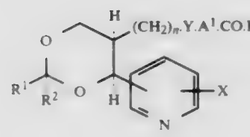
5,053,415

PYRIDINE DERIVATIVES

Andrew G. Brewster, Macclesfield; George R. Brown, Wilmslow; Alan W. Faull, Macclesfield; Reginald Jessup, Hankelow, and Michael J. Smithers, Macclesfield, all of England, assignors to Imperial Chemical Industries plc, London, England

Filed Oct. 20, 1989, Ser. No. 424,611
Claims priority, application United Kingdom, Oct. 21, 1988, 8824667; Oct. 21, 1988, 8824668; Aug. 18, 1989, 8918937
Int. Cl.[5] C07D *451/06*; A61K *31/46*
U.S. Cl. 514—336 13 Claims

1. A 1,3-dioxane alkenoic acid derivative of the formula I



I

wherein: n is the integer 1 or 2; X is hydrogen, hydroxy or (1-4C)alkoxy; Y is methyleneoxy, vinylene or ethylene; A^1 is (1–6C)alkylene; and

a) R^2 is hydrogen, and R^1 is naphthyl or phenylthio(1–6C)alkyl optionally bearing 1 to 2 substituents selected from halogeno, cyano, nitro, (1–4C)alkyl, (1–4C)alkoxy and trifluoromethyl, or R^1 is a group of the formula $R^3.A^2$—, in which:

R^3 is phenyl bearing a substituent which is selected from (1–4C)alkyl, (1–4C)alkoxy, hydroxy, (2–5C)alkenyl, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (2–5C)alkanoyl, carboxy, [(1–4C)alkoxy]carbonyl, [N-(1–4C)alkyl]carbamoyl, (1–5)alkanoylamino and (1–4C)alkyl itself bearing a (1–4C)alkoxy, cyano, carboxy or [(1–4C)alkoxy]carbonyl, and the phenyl optionally bearing a second substituent selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, nitro and cyano;

or R^3 is thienyl or furyl optionally bearing 1 or 2 substituents independently selected from halogeno, (1–4C)alkyl, nitro and cyano; and A^2 is (1–6C)alkylene, oxy(1–6C)alkylene or (2-6C)alkenylene, up to three carbon atoms of any of which may be wholly or partially fluorinated, or A^2 is a direct bond to R^3;

or R^1 is a group of the formula $Q^2.A^3.Q^1$—, in which:

Q^1 and Q^2 are aromatic moieties, one of which is a benzene moiety and the other of which is a benzene, pyridine or naphthalene moiety, any of which may optionally bear a substituent selected from halogeno, cyano, nitro, (1–4C)alkyl, (1–4C)alkoxy and trifluoromethyl, and A^3 is oxy, thio, sulphinyl, sulphonyl, carbonyl, carbamoyl, iminocarbonyl, ureido, (1–6C)alkylene, oxy(1–6C)alkylene, (2–6C-)alkenylene or a direct bond between Q^1 and Q^2;

(b) R^1 is pentafluoroethyl and R^2 is hydrogen, or both R^1 and R^2 are trifluoromethyl; or

(c) R^1 and R^2 are both independently alkyl or together form alkylene, such that R^1 and R^2 together contain 5–9 carbon atoms; and R^4 is hydroxy, a physiologically acceptable alcohol residue, or (1–4C)alkanesulphonamido;

or a pharmaceutically acceptable salt thereof.

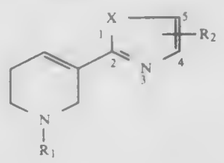
5,053,416

DERIVATIVES OF 1,2,5,6-TETRAHYDROPYRIDINE SUBSTITUTED BY A THIAZOLYL OR OXAZOLYL RADICAL, THEIR USE AS MEDICAMENTS AND COMPOSITIONS CONTAINING THEM

Emilio Toja, Milan; Carla Bonetti, Fontanella; Fernando Barzaghi, and Giulio Galliani, both of Monza, all of Italy, assignors to Roussel Uclaf, Paris, France

Filed Dec. 27, 1989, Ser. No. 457,566
Claims priority, application Italy, Dec. 28, 1988, 23121 A/88
Int. Cl.[5] A61K *31/44*; C07D *413/04*
U.S. Cl. 514—340 9 Claims

1. A compound of formula (I):



(I)

in which X represents oxygen or sulphur, R_1 represents hydroxy, R_2 represents hydrogen, a linear, branched or cyclic alkyl containing up to 6 carbon atoms, alkenyl or alkynyl containing up to 6 carbon atoms, an alkoxyalkyl alk'$_1$Oalk'$_2$ radical in which alk'$_1$ and alk'$_2$ represent alkyl containing up to 6 carbon atoms, hydroxyalkyl in which the alkyl contains up to 6 carbon atoms or aryl containing up to 14 carbon atoms, as well as its addition salts with organic or mineral acids.

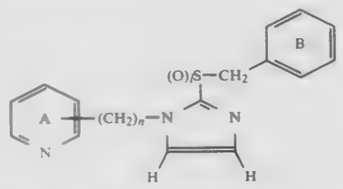
5,053,417

IMIDAZOLE DERIVATIVES AND PREPARATION THEREOF

Yasushi Honma, Ageo; Hajime Tamaki, Sakado; Tetsuo Magaribuchi, Urawa, and Mine Takido, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Division of Ser. No. 372,534, Jun. 28, 1989, Pat. No. 4,996,217, which is a continuation-in-part of Ser. No. 122,286, Nov. 18, 1987, abandoned. This application Aug. 3, 1990, Ser. No. 562,513
Claims priority, application Japan, Feb. 12, 1986, 61-287512; Mar. 31, 1987, 62-80475; Aug. 27, 1987, 62-215813
Int. Cl.[5] C07D *401/06*; A61K *31/44*
U.S. Cl. 514—341 22 Claims

1. An imidazole derivative of the formula:



wherein Ring A is a 2-, 3- or 4-pyridyl group which may be unsubstituted or have one or two substituent(s) selected from the group consisting of halogen, lower alkyl group, lower alkoxy group, phenyl-lower alkoxy group, nitro group, amino group, lower alkanoylamino group, N-lower alkyl-N-lower alkanoylamino group, mono- or di(lower alkyl)amino group, lower alkanoyloxy group, cyano group, trihalogeno-lower alkyl group, trihalogeno-lower alkoxy group, lower alkenyloxy group and hydroxy group; Ring B is a phenyl group which may be unsubstituted or have a substituent selected from the group consisting of a nitro group, amino group, mono- or di(lower alkyl)amino group, lower alkanoylamino group, phenylamino group, cycloalkylamino group of 3 to 6 ring carbon atoms, N-(tri-lower alkylphenyl)sulfonylamino group,

N-lower alkyl-N-(tri-lower alkylphenyl)sulfonylamino group, N-lower alkyl-N-phenylamino group, di(lower alkyl)amino-lower alkyl group, N-lower alkyl-N-lower alkanoylamino group, lower alkylsulfonylamino group, formylamino group, lower alkoxy group, benzoylamino group, and lower alkoxycarbonylamino group; l is 0, 1, or 2 and n is 0, 1 or 2 or a salt thereof.

5,053,418

ANTIPROTOZOAL AGENTS

Victoria S. Latter; Alan T. Hudson, both of Kent; William H. G. Richards, Herts, and Anthony W. Randall, Kent, all of United Kingdom, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 769,797, Aug. 26, 1985, abandoned, which is a continuation of Ser. No. 599,331, Apr. 12, 1984, abandoned. This application Dec. 11, 1989, Ser. No. 449,485
Claims priority, application United Kingdom, Apr. 14, 1983, 8310140
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—345 2 Claims

1. An antimalarial composition comprising an amount of a first compound 2-[4-(4-chlorophenyl)cyclohexyl]-3-hydroxy-1,4-naphthoquinone and a second compound 3,5-dichloro-2,6-dimethylpyridinol the first and second compounds being present in an amount to provide a synergistic combination.

5,053,419

TREATMENT OF AIDS DEMENTIA, MYELOPATHY AND BLINDNESS

Stuart A. Lipton, Newton, Mass., assignor to The Children's Medical Center Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 331,872, Mar. 31, 1989, abandoned. This application Mar. 30, 1990, Ser. No. 502,296
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—356 10 Claims

1. A method of reducing death of CNS neurons in a human patient infected with a human immunodeficiency virus, comprising administering to said patient a compound capable of reducing the gp120 responsive rise in free Ca^{++} ion concentration in said CNS neurons of said patient, in a concentration effective to cause such reduction.

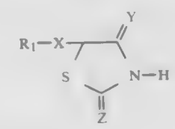
5,053,420

THIAZOLIDINE DERIVATIVES FOR THE TREATMENT OF HYPERTENSION

Harrihar A. Pershadsingh, 2812 Burger St., Bakersfield, Calif. 93305, and Theodore W. Kurtz, 1251 Lattie La., Mill Valley, Calif. 94941

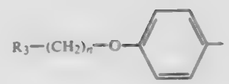
Filed Oct. 13, 1989, Ser. No. 421,102
Int. Cl.[5] A01N *43/78*
U.S. Cl. 514—369 7 Claims

1. A method for controlling essential hypertension and its related cardiovascular syndrome in a mammalian host in need thereof by administration of an effective amount of a 5-aryl substituted thiazolidine derivative of formula I



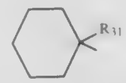
I

where: R_1 is of the formula IIa



IIa

where n is a methylene bridge of 1–4 carbons and R_3 is of the formula IIb



IIb

where R_{31} is hydrogen or lower alkyl of 1-4 carbons and the cyclohexane ring may be optionally substituted at any available methylene with single oxo or hydroxy;

X is a lower alkylidene or a bond; or —HC═CH—

Y is oxo or imino;

Z is oxo or imino; and pharmaceutically acceptable salts thereof.

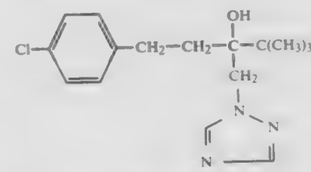
5,053,421

DI-STYRL-PHENYL-TRIGLYCOL ETHER AS CRYSTALLIZATION INHIBITOR

Heinz-Otto Horstmann, Bergisch-Gladbach; Ulrich Engelhardt, Leverkusen; Karl Reizlein, Cologne; Rolf-Jürgen Singer, Wuppertal; Klaus Wangermann, Krefeld; Wolfgang Wirth, Hennef; Frank Bartkowiak, Cologne; Günther Boehmke, Leverkusen, and Hans Schulze, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

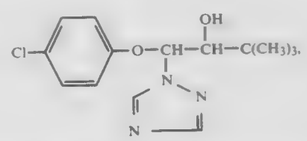
Filed Mar. 29, 1990, Ser. No. 501,692
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1989, 3910922
Int. Cl.[5] A01N *43/64*; C07D *249/14*
U.S. Cl. 514—383 2 Claims

1. An aqueous spray liquor composition comprising a) at least one component selected from the group consisting of 1-(4-chlorophenyl)-4,4-di-methyl-3-(1,2,4-triazol-1-yl-methyl)-pentan-3-ol of the formula



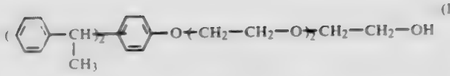
(II)

and 1-(4-chlorophenoxy)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butan-2-ol of the formula



(III)

and (b) di-styryl-phenyl-tri-glycol ether of the formula



(I)

wherein the active compounds II plus III are present in about 0.0001 to 2 per cent by weight and the ratio of compounds II plus III:I is from about 1:0.2 to 1:5.

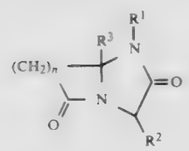
5,053,422

PSYCHOTROPIC PERHYDROAZACYCLOALKA [1,2-A] IMIDAZOLE DERIVATIVES

Mario Pinza, Corsico; Alberto Cerri, Vigevano Pavia; Carlo Farina, Valsolda Como, and Maria T. Riccaboni, Milan, all of Italy, assignors to I.S.F. Societa per Azioni, Italy

Filed Feb. 6, 1989, Ser. No. 307,012
Claims priority, application Italy, Feb. 8, 1988, 19336 A/88
Int. Cl.[5] C07D *487/04;* **A61K** *31/415*
U.S. Cl. 514—387 **22 Claims**

1. A compound structure (1)



(I)

wherein

R^1 is hydrogen, C_{1-4} alkyl, CHR^6CONHR^7 or CHR^6COOR^7 in which R^6 and R^7 are each hydrogen or C_{1-4} alkyl;

R^2 is hydrogen, C_{1-5} alkyl, or $—R^9$;

R^9 is a member selected form the group consisting of $C_6H_5CH_2—$, $—CH_2OH$, $—CH_2CH_2CONH_2$ and $—CH_2COOH$;

R^3 is hydrogen, C_{1-4} alkyl, $CONH_2$ or CO_2R^8 in which R^8 is hydrogen, or C_{1-4} alkyl, and

n is 2;

or the pharmaceutically acceptable salts thereof.

21. A method of restoring learning and treating memory difficulties which comprises administering to a subject in need thereof a non-toxic effective amount of a compound of structure (1) as described in claim 1.

5,053,423

COMPOSITIONS FOR PHOTODYNAMIC THERAPY

Daniel Liu, Vancouver, Canada, assignor to Quadra Logic Technologies Inc., Vancouver, Canada

Filed Mar. 22, 1990, Ser. No. 498,042
Int. Cl.[5] A61K *31/40;* **C07D** *487/22*
U.S. Cl. 514—410 **21 Claims**

1. A pharmaceutical composition useful for photodynamic therapy which composition contains, as active ingredient, a conjugate of a porphyrin-type photosensitizer with a hydrophilic, water soluble, multifunctional polymeric carrier, wherein the ratio of photosensitizer to carrier is 1:1 to 500:1.

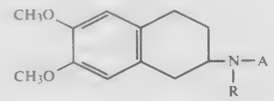
5,053,424

2-(N-ACYL)AMINO-6,7-DIMETHOXY TETRALINES, AND PHARMACEUTICAL COMPOSITIONS HAVING ANTIHYPERTENSIVE ACTIVITY CONTAINING SAME

Mauro Marzi; Maria O. Tinti; Licia Pacifici; Carla Franceschelli, and Massimo Castorina, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Jul. 30, 1990, Ser. No. 559,052
Claims priority, application Italy, Jul. 31, 1989, 48254 A/89
Int. Cl.[5] C07D *209/20, 233/39;* **A61K** *31/405, 31/16*
U.S. Cl. 514—419 **13 Claims**

1. A compound of formula (I)



(I)

wherein R is selected from hydrogen and ethyl and A is an aminoacyl radical selected from glycyl, methionyl, tryptophyl and tyrosyl, or a dipeptidyl radical selected from leucylalanyl, tryptophylalanyl, methionylalanyl and tyrosylalanyl.

12. An orally or parenterally administrable pharmaceutical composition comprising an amount of one of the compounds of formula I of claim 1 effective to bring about a pressure decrease in a hypertensive subject, and a pharmacologically acceptable excipient.

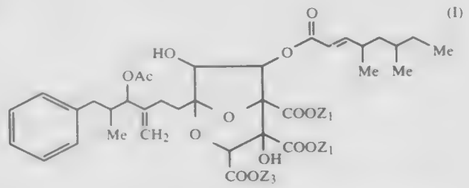
5,053,425

ANTI-FUNGAL COMPOUNDS

Kenneth F. Bartizal, Somerset; Walter Rozdilsky, Cliffwood Beach, and Janet C. Onishi, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 496,749, Mar. 21, 1990, abandoned. This application Dec. 11, 1990, Ser. No. 626,071
Int. Cl.[5] A01N *43/32;* **A61K** *31/335*
U.S. Cl. 514—452 **6 Claims**

1. A method for inhibiting fungal growth comprising applying to the area where growth is to be controlled an antifungally effective amount of a compound of formula I.



(I)

wherein Z_1 Z_2 and Z_3 are each independently selected from

a) H;

b) C_{1-5} alkyl;

c) C_{1-5} alkyl substituted with a member of the group consisting of

i) phenyl,

ii) phenyl substituted with methyl, methoxy, halogen (Cl, Br, I, F) or hydroxy; or

a pharmaceutically acceptable salt of a compound of formula (I) in which at least one of Z_1, Z_2 and Z_3 is hydrogen.

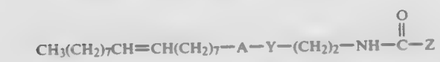
5,053,426

SIMPLIFIED THIOESTER AND ISOSTERE ANALOGS OF OLEOYL COENZYME A AS HYPOCHOLESTEROLEMIC AGENTS

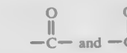
Jonathan D. Bloom, Hartsdale, and Minu D. Dutia, West Nyack, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 29, 1990, Ser. No. 501,451
Int. Cl.[5] A61K *31/335;* **C07D** *319/06*
U.S. Cl. 514—452 **7 Claims**

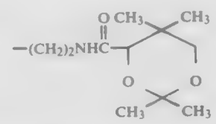
1. A compound of the formula:



wherein A is selected from the group consisting of



Y is selected from the group consisting of —S—, —O—, —NH—, and $(—CH2-)_n$ wherein n = 1 to 4; and Z is



3. A method of treating atherosclerosis in a mammal which comprises administering to said mammal an antiatherosclerotic amount of a compound selected from those of claim 1.

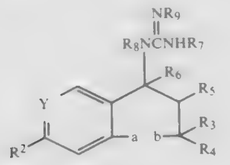
5,053,427

GUANIDINO-SUBSTITUTED BENZOPYRANS AND THEIR USE AS PHARMACEUTICALS

Geoffrey Stemp; Gordon Burrell, both of Harlow, and David G. Smith, Epsom, all of England, assignors to Beecham Group p.l.c., England

Filed Sep. 14, 1989, Ser. No. 407,227
Claims priority, application United Kingdom, Sep. 16, 1988, 8821826; Apr. 1, 1989, 8907394; Jul. 28, 1989, 8917176
Int. Cl.[5] C07D *311/04;* **A61K** *31/35*
U.S. Cl. 514—456 **12 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein

a and b together form an —O— linkage;

Y is C-R_1 wherein

either R_2 is hydrogen and R_1 is C_{1-6} alkyl, nitro, cyano, halo, CF_3, formyl, aldoxime, CF_{30}, NO_2-CH=CH—, NC—CH=CH—; a group R_xX— wherein R_x is C_{1-6} alkyl, aryl or heteroaryl either of which may be optionally substituted by one, two or three of C_{1-4} alkyl, C_{1-4} alkoxy, nitro, halo, CF_3 and cyano; and X is C=O, O.C=O C=O.O, CHOH, SO, SO_2, O.SO, O.SO_2, CONH, O.-CONH, C=S, O.C=S, C=S.O, CH.SH, SONH, SO_2NH, O.SONH, O.SO_2NH, CO—CH=CH, C=NHOH, $C=NNH_2$; or a group R_yR_zNZ— wherein R_y and R_z are independently hydrogen or C_{1-6} alkyl and Z is C=O, SO or SO_2; or

one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is a different group selected from nitro, cyano, halo, C_{1-3} alkylcarbonyl, methoxy or amino optionally substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl;

R_5 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy;

R_6 is hydrogen; or

R_5 and R_6 together are a bond;

R_7 is hydrogen, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{2-6} alkenyl or C_{2-6} alkynyl; and

R_8 is hydrogen C_{1-6} alkyl; or

R_9 is CN; and

the $R_8N(NR_9)NHR_7$ moiety is trans to the R_5 group when R_5 is hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy.

10. A method of treatment of hypertension and/or respiratory tract disorders in mammals which comprises the administration to the mammal of an effective amount of a compound according to claim 1.

5,053,428

Patent Not Issued For This Number

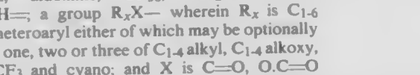
5,053,429

TREATING INFLAMMATORY PAIN WITH METHIONINE

Gerald P. Hirsch, Atlanta, Ga., and Robert K. Bayless, Austin, Tex., assignors to The Lithox Corporation, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 179,225, Apr. 8, 1988, abandoned. This application Feb. 21, 1990, Ser. No. 482,923
Int. Cl.[5] A61K *31/195*
U.S. Cl. 514—562 **8 Claims**

1. A method for treating the inflammation of joint pain in a subject in need of such treatment, comprising administration to the subject in dosage form an effective joint pain relieving amount of at least one methionine compound selected from the group consisting of a compound having the structural formula I



I

dl-, or d- form

and pharmaceutically acceptable N-acyl derivatives of methionine and alkyl esters methionine, where n is the integer 2.

5,053,430

USE OF 2,7-DIAMINO-1,2,3,4-TETRAHYDRONAPHTHALENES AS MEDICAMENTS, NEW 2,7-DIAMINO-1,2,3,4-TETRAHYDRONAPHTHALENES AND PROCESSES FOR THEIR PREPARATION

Matthias Grauert; Herbert Merz, both of Ingelheim am Rhein; Joachim Mierau, Mainz; Gunter Schingnitz, Bad Kreuznach, and Claus Schneider, Eppelheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

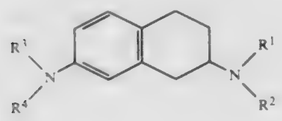
Filed Sep. 22, 1989, Ser. No. 411,146

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1988, 3832571

Int. Cl.[5] A61K *31/165;* **C07C** *233/43, 233/44*

U.S. Cl. 514—630 **6 Claims**

1. A compound of the formula



wherein

R^1 denotes C_1–C_{12} alkyl;

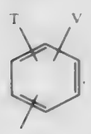
R^2 denotes $(CH_2)_b$—R^7, and

b denotes the number 1, 2, 3 or 4;

R^5 denotes acetyl;

R^6 denotes hydrogen;

R^7 denotes



wherein

T denotes hydrogen, halogen, lower alkyl, alkoxy, OH, NH_2 or NO_2.

V denotes hydrogen, halogen, lower alkyl, alkoxy, OH NH_2or NO_2.

5,053,431

DERIVATIVES OF CHRYSOPHANOL AS TOPOISOMERASE II INHIBITORS

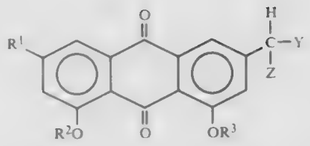
Kyoichi A. Watanabe, Rye-Brook, N.Y.; Masao Koyama, Yokohama, Japan, and Ting-Chao Chou, New York, N.Y., assignors to Sloan-Kettering Institute For Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 302,836, Jan. 27, 1989, Pat. No. 4,966,918. This application Jun. 26, 1990, Ser. No. 544,203

Int. Cl.[5] A01N *33/02, 33/10;* **C07C** *50/18*

U.S. Cl. 514—649 **8 Claims**

1. A method which comprises administering to a subject an amount of a compound having the structure:



wherein

R^1 is hydrogen, a hydroxy group or a methoxy group;

R^2 is hydrogen or a methyl group;

R^3 is hydrogen or a methyl group;

Y is a secondary amino group (NHalkyl) or a tertiary amino group ($N(alkyl)_2$); and

Z is hydrogen or a halogen, effective to inhibit topoisomerase II.

5,053,432

NAPHTHOQUINONE DERIVATIVES

Alan T. Hudson, Sevenoaks, and Anthony W. Randall, Hayes, both of United Kingdom, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

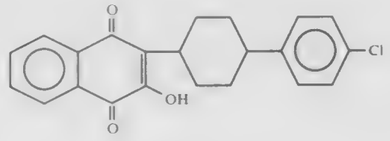
Continuation of Ser. No. 891,421, Aug. 1, 1986, abandoned, which is a continuation of Ser. No. 597,379, Apr. 6, 1984, abandoned. This application Dec. 26, 1989, Ser. No. 456,052

Claims priority, application United Kingdom, Apr. 14, 1983, 8310141

Int. Cl.[5] A01N *35/00;* **C07C** *50/38*

U.S. Cl. 514—682 **8 Claims**

3. A method of treating malaria in a human having malaria comprising administering an effective malaria treatment amount of the trans compound of the formula (I):



(I)

5,053,433

COSMETIC COMPOSITION WITH ANTICELLULITIC AND SLIMMING ACTION, IN WHICH THE ACTIVE PRINCIPLE IS A 1-HYDROXYALKYLXANTHINE

Georges Philippossian, Lausanne, Switzerland; Jean-Pierre Laugier, Antony, and Liliane Ayache, Paris, both of France, assignors to Société Anonyme Dite: L'Oreal, Paris, France

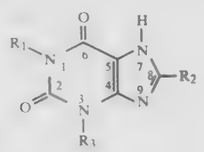
Continuation of Ser. No. 213,011, Jun. 29, 1988, abandoned. This application Jun. 18, 1990, Ser. No. 538,694

Claims priority, application Luxembourg, Jun. 30, 1987, 86934

Int. Cl.[5] A61K *7/48, 9/10, 9/12;* **A61H** *23/02*

U.S. Cl. 514—909 **13 Claims**

1. A cosmetic composition with slimming and anticellulitic action comprising, in a cosmetic carrier, as active compound, at least one 1-hydroxyalkylxanthine corresponding to the following formula:



(I)

in which:

R_1 denotes a C_2–C_5 ω-hydroxy-n-alkyl or C_3–C_5 (ω−1)-hydroxy-n-alkyl group,

R_2 denotes a hydrogen atom or a methyl or ethyl radical, and

R_3 denotes a C_1–C_4 alkyl group, the number of carbon atoms in R_1+R_3 being between 4 and 9, or a salt of said compound in an effective amount.

5,053,434

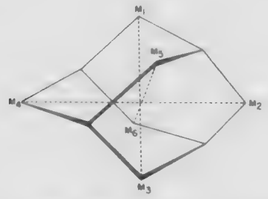
DIAMONDOID POLYMERIC COMPOSITIONS

Orville L. Chapman, Los Angeles, Calif., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 426,609, Oct. 25, 1989, abandoned. This application Oct. 16, 1990, Ser. No. 598,498

Int. Cl.[5] C08J *9/35;* **C07C** *13/28;* **C07D** *241/36*

U.S. Cl. 521—52 **51 Claims**



1. A polymer comprising at least three monomers bonded through octahedrally disposed non-metallic atoms of the monomers.

5,053,435

PRE-FOAMED PARTICLES OF UNCROSSLINKED, LINEAR LOW-DENSITY POLYETHYLENE AND PRODUCTION METHOD THEREOF

Hideki Kuwabara, Hadano; Masashi Hashiba, Isehara, and Masato Naito, Hiratsuka, all of Japan, assignors to Japan Styrene Corporation, Tokyo, Japan

Division of Ser. No. 402,010, Jun. 8, 1988, Pat. No. 4,948,817. This application May 4, 1990, Ser. No. 519,271

Claims priority, application Japan, Jun. 23, 1987, 62-156310

Int. Cl.[5] C08J *9/22*

U.S. Cl. 521—60 **5 Claims**

1. Pre-foamed particles consisting essentially of an uncrosslinked, linear low-density polyethylene having a crystalline structure characterized in that two endothermic peaks appear on a DSC curve obtained by differential scanning calorimetry of the pre-foamed particles (said DSC curve having been obtained by heating 1–5 mg of the pre-formed particles to 220° C. at a rate of 10° C./min by a differential scanning calorimeter) and the energy at the endothermic peak on the higher-temperature side is 5 J/g or more.

5,053,436

HOLLOW ACRYLATE POLYMER MICROSPHERES

Joaquin Delgado, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 276,767, Nov. 30, 1988. This application Feb. 22, 1991, Ser. No. 660,358

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—64 **8 Claims**

1. A process for preparing an aqueous suspension of hollow, polymeric, acrylate, inherently tacky, infusible, solvent-insoluble, solvent-dispersible, elastomeric pressure-sensitive adhesive microspheres having a diameter of at least 1 micrometer, said process comprising the steps of:

a) forming a water-in-oil emulsion of a water phase selected from the group consisting of water and aqueous solutions of at least one polar monomer in at least one oil phase monomer selected from the group consisting of alkyl acrylate and alkyl methacrylate esters;

b) forming a water-in-oil-in-water emulsion by dispersing the water-in-oil emulsion into an aqueous phase containing an emulsifier having a hydrophilic-lipophilic balance value of at least 6; and

c) initiating polymerization.

5,053,437

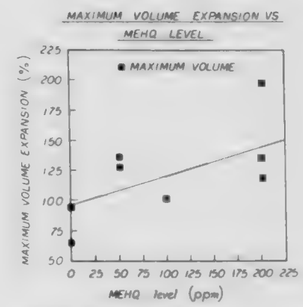
EXPANDABLE AND EXPANDED PLASTIC MATERIALS AND METHODS FOR CASTING METAL CASTINGS EMPLOYING SUCH EXPANDED CELLULAR PLASTIC MATERIALS

Norman G. Moll, Sanford, and David R. Johnson, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 475,517, Feb. 6, 1990. This application Nov. 1, 1990, Ser. No. 608,131

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—98 **4 Claims**



1. An expandable plastic material particle comprising:

A) a plastic material, polymerized from one or more monomers, containing a majority, by weight of the plastic material, of monomeric repeat units of the formula:

$$\{CH_2CR'(COOR)\}$$

wherein R is selected from the group consisting of alkanes having 1–4 carbon atoms (C), hydroxy alkanes having 1–4 C and cycloalkanes having 3–6 C, and R' is selected from the group consisting of CH_3 and C_2H_5;

B) a volatile blowing agent contained within the plastic material selected from the group consisting of:

a) 2,2-dimethylbutane;

b) 2,3-dimethylbutane;

c) 2,2-dimethylbutane and 2,3-dimethylbutane

d) mixtures of a), b) and c) with 1-chloro-1,1-difluoroethane; and

e) a mixture of at least 30 percent of a), b) and c) by weight of the mixture with one or more other volatile blowing agents.

5,053,438

FOAM MATERIAL

Matthew L. Kozma, Osterville, Mass., assignor to Packaging Industries Group, Inc., Hyannis, Mass.

Continuation of Ser. No. 361,761, Jun. 5, 1989, Pat. No. 4,900,490, which is a continuation of Ser. No. 51,141, May 15, 1987, abandoned. This application Feb. 13, 1990, Ser. No. 479,601

Int. Cl.[5] C08J *9/10*

U.S. Cl. 521—134 **8 Claims**

1. A foam material made by a process comprising:

fusing a resin mixture comprising ethylene-propylene diene

terpolymer, polyethylene and a chemically decomposing blowing agent in a dispersion mixer;
sheeting the fused resin;
cooling the sheet resin;
press molding the sheet resin in a hydraulic press;
curing the resin during the press molding step, and
expanding the cured molded resin immediately on opening the press to form a foam material having a density of about 7 to 10 lb. cu. ft. and a tear resistance of about 18 to 22 lb./in.

5,053,439

Patent Not Issued For This Number

5,053,440

POLYMERIC MATERIALS WHICH CAN BE INSCRIBED BY LASER LIGHT

Ralf Schueler, Recklinghausen; Christian Herkt-Maetzky, Haltern, and Wilfried Bartz, Marl, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Apr. 5, 1990, Ser. No. 504,840

Claims priority, application Fed. Rep. of Germany, May 27, 1989, 3917294

Int. Cl.[5] G03C *1/76;* **C08K** *3/10*

U.S. Cl. 523—137 **1 Claim**

1. A polymeric product, comprising:
a polymeric material comprising about 0.02–4.5 wt. % copper hydroxide phosphate, wherein said material absorbs laser light of a wave length which is outside the visible spectral range of 400 nm to 750 nm to produce an inscribed polymeric product having a high color contrast inscription.

5,053,441

CORE/SHELL PARTICLES AND PROCESS FOR MAKING SAME

John Biale, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 248,404, Sep. 23, 1988, abandoned. This application Jan. 25, 1991, Ser. No. 646,447

Int. Cl.[5] C08F *257/02, 279/02;* **C09D** *151/06*

U.S. Cl. 523—201 **19 Claims**

1. An opaque core/shell polymer comprising:
(a) a non-swellable core polymer having an outer surface, a T_g of at least about 50° C., and an average particle size of about 100 to about 300 nm, and comprising one or more alkenyl aromatic monomers; and
(b) a shell polymer in physical contact with and covering at least a part of the outer surface of the core polymer, the shell polymer having a composition that is different from the composition of the core polymer and either a T_g of at least about 50° C. or a crystalline structure, wherein the shell polymer comprises methyl methacrylate and about 4 to about 7 weight percent butyl acrylate and the opaque core/shell polymer has an average particle size of about 200 to about 1,000 nm.

5,053,442

LOW MODULUS SILICONE SEALANTS

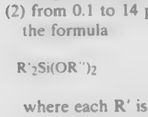
Hsien-Kun Chu, Wethersfield, Conn.; Russell P. Kamis, and Loren D. Lower, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 16, 1990, Ser. No. 465,702

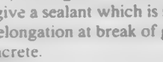
Int. Cl.[5] C08K *9/06*

U.S. Cl. 523—212 **16 Claims**

1. A process of producing silicone sealants containing polydiorganosiloxane having alkoxy endblocking, alkoxy functional chain extender, and titanium catalyst, wherein the improvement comprises a method consisting essentially of
(A) first mixing in the absence of moisture
(1) 100 parts by weight of a polymer mixture of the average formula



where each R is free of aliphatic unsaturation and is selected from the group consisting of monovalent hydrocarbon, monovalent halohydrocarbon, and monovalent cyanoalkyl radicals of 1 to 18 inclusive carbon atoms, each D is selected from the group consisting of vinyl radical and radicals of the formula



where each R'' is selected from the group consisting of methyl, ethyl, propyl, and butyl, Z is a divalent hydrocarbon radical or a combination of divalent hydrocarbon radicals and siloxane radicals, m is 0 or 1, and x is of a value such that the polymer has a viscosity of from 0.5 to 3000 Pa.s at 25° C., less than 40 percent of the total of the endblocking radicals D in the polymer mixture being vinyl radicals,
(2) from 0.1 to 14 parts by weight of a dialkoxysilane of the formula



where each R' is selected from the group consisting of methyl and vinyl, R'' is as defined above, and
(3) from 0.2 to 6.0 parts by weight of titanium catalyst, and then
(B) adding after the above are mixed,
(4) from 10 to 200 parts by weight of precipitated calcium carbonate filler, having a fatty acid surface treatment and a surface area of greater than 20 m^2/g, then
(C) storing the mixture in the absence of moisture,
to give a sealant which is stable in the absence of moisture, has an elongation at break of greater than 800, and has adhesion to concrete.

5,053,443

METHODS OF PREPARING A POLYMERIC LATEX COMPOSITION AND WATER-INSOLUBLE BIOLOGICAL REAGENT

Richard C. Sutton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 136,214, Dec. 18, 1987, abandoned. This application May 4, 1989, Ser. No. 347,537

Int. Cl.[5] C08K *3/00*

U.S. Cl. 523—332 **13 Claims**

1. A process for preparing a polymeric latex composition comprising:
A. providing a loadable latex comprising a continuous aqueous phase and a dispersed phase comprising loadable polymeric particles prepared from one or more ethylenically unsaturated polymerizable monomers, said loadable latex being essentially free of surfactant and colloidal or polymeric dispersing agents,
B. providing a solution of a hydrophobe dissolved in one or more water-miscible organic solvents, said hydrophobe being soluble in distilled water in an amount of less than about 0.5 weight percent at 25° C. and being soluble in a water-miscible organic solvent in an amount of at least about 0.2 weight percent, and said hydrophobe being selected from the group consisting of radio-labeled compounds, bioluminescent compounds, chemiluminescent compounds, chromogens, fluorescent compounds or dyes, photographic addenda, insecticides, herbicides, miticides, rodenticides, enzymes, hormones and vitamins,

C. heating said loadable latex to a temperature of from about 30° to about 95° C., and
D. gradually adding said hydrophobe solution to said heated loadable latex while retaining said hydrophobe in solution and said polymeric particles dispersed so that said polymeric particles and hydrophobe are brought into intimate association, and said water-miscible solvent is diluted with water to reduce the solubility of said hydrophobe in said continuous phase, whereby the equilibrium distribution of said hydrophobe is driven away from said continuous phase toward said polymeric particles of said dispersed phase, said addition being accomplished with continuous stirring, but without vigorous agitation, of said loadable latex.

5,053,444

POLYMER ADDITIVE CONCENTRATE

Jean-Paul Trotoir, Waret-La-Chaussee, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 82,577, Aug. 7, 1987, abandoned. This application Jun. 5, 1989, Ser. No. 361,721

Claims priority, application United Kingdom, Sep. 1, 1986, 8621094

Int. Cl.[5] C08J *3/20*

U.S. Cl. 523—351 **22 Claims**

1. A polymer concentrate which contains
(A) 40 to 80% by weight of at least one additive which is selected from the group consisting of a liquid, a paste, a waxy low-melting solid, a lubricating solid and combinations thereof and wherein the additive is an anti-fog agent, a clarifying agent, an antioxidant, a U.V. stabilizer, an infra-red absorber, a biocide, an antistatic agent, a plasticizer or a flame retardant;
(B) 5 to 20% by weight of a particulate solid which is an inorganic solid which remains solid at temperatures in excess of those used to process the polymer component of the polymer concentrate; and
(C) at least 5% weight of a thermoplastic polymer.

5,053,445

EPOXY RESIN COMPOSITION

Kunio Itoh; Toshio Shiobara; Koji Futatsumori; Kazutoshi Tomiyoshi, and Hisashi Shimizu, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

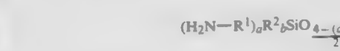
Division of Ser. No. 179,538, Apr. 8, 1988, Pat. No. 4,877,822, which is a continuation-in-part of Ser. No. 916,934, Oct. 7, 1986, abandoned. This application Aug. 23, 1989, Ser. No. 397,739

Claims priority, application Japan, Oct. 7, 1985, 60-224210; Oct. 7, 1985, 60-224211

Int. Cl.[5] C08L *63/02, 63/04*

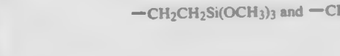
U.S. Cl. 523—435 **8 Claims**

1. An epoxy resin composition comprising a curable epoxy resin, an epoxy resin curing agent, an inorganic filler and a copolymer obtained by an addition reaction between a novolac epoxy resin having 1 to 11 epoxy groups in one molecule and an amino group-containing organopolysiloxane of following formula (2)

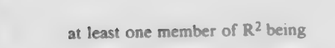


(2)

in which R^1 represents a methylene group, ethylene group, propylene group or butylene group, R^2 is independently selected from the group consisting of an alkyl group having 1 to 10 carbon atoms, an aryl group having 6 to 10 carbon atoms,



at least one member of R^2 being



"a" is a value of from 0.01 to 0.1, "b" is a value of from 1.8 to 2.2 and $1.81<a+b<2.3$, and the number of silicon atoms in one molecule is an integer of from 20 to 400.

5,053,446

POLYOLEFIN COMPOSITES CONTAINING A PHASE CHANGE MATERIAL

Ival O. Salyer, Dayton, Ohio, assignor to University of Dayton, Dayton, Ohio

Continuation of Ser. No. 96,288, Sep. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 937,866, Dec. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 801,127, Nov. 22, 1985, Pat. No. 4,711,813. This application Mar. 3, 1989, Ser. No. 319,835

Int. Cl.[5] C09K *3/18;* **C08K** *3/00, 5/01*

U.S. Cl. 524—8 **9 Claims**

1. A composite useful in thermal energy storage, said composite being thermally form stable and being formed of a first material and a second material which is different from said first material, and which has a melting point less than said first material, but which is compatible with said first material, said first material comprising a crosslinked or uncrosslinked polyolefin matrix which serves as a containment means for said second material, and said second material comprising a crystalline alkyl hydrocarbon phase change material having a heat of fusion greater than about 30 cal./g. and a melting and a freezing point in the range of 0 to 80° C., said second material being contained within the matrix of said first material, thereby forming said composite.

5,053,447

POLYAMIDE-BASED THERMOPLASTIC FORMULATION

Saadat Hussain, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 29, 1989, Ser. No. 442,891

Int. Cl.[5] C08K *3/22*

U.S. Cl. 524—412 **12 Claims**

1. A thermoplastic formulation comprising:
(a) at least 50 weight percent, based upon the total weight of said formulation, of an unreinforced nylon selected from nylon 6,6, nylon 6 and mixtures thereof; and
(b) decabromodiphenyl ethane in an amount sufficient to provide said formulation with a melt index value, as measured by ASTM D 1238-79, which is greater than the melt index value for said unreinforced nylon alone.

5,053,448

POLYMERIC THICKENER AND METHODS OF PRODUCING THE SAME

Sheng-Liang Tsaur, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 21, 1989, Ser. No. 384,360

Int. Cl.[5] C08F *2/16, 20/54*

U.S. Cl. 524—460 **5 Claims**

1. A method for producing an acidic, concentrated, polymeric emulsion that can be diluted and thereafter neutralized to provide a polymeric thickener, the method comprising the steps of:
emulsion polymerizing, in acidic aqueous media, a first monomer mixture which, based upon total weight of the first monomer mixture, comprises 30-60 wt.-% of an acidic moiety-containing emulsion-polymerizable monomer and an ethylenically-unsaturated emulsion-polymerizable monomer copolymerizable with the acidic moiety-containing monomer and selected from the group consisting

of a mono vinylidene aromatic monomer, an alpha beta ethylenically-unsaturated carboxylic acid ester and its derivatives, a vinyl ester and its derivatives, an ethylenically-unsaturated dicarboxylic anhydride and its derivatives, and mixtures thereof, at predetermined reaction conditions, for producing an alkali-soluble dispersion in said acidic aqueous media;

adding to the alkali-soluble dispersion-containing acidic aqueous media a second monomer mixture which comprises said ethylenically-unsaturated monomer and an amino moiety-containing emulsion-polymerizable monomer that is copolymerizable with said ethylenically-unsaturated monomer; and

emulsion-polymerizing the aqueous media-contained second monomer mixture in the presence of the alkali-soluble dispersion, while maintaining acidic conditions of the aqueous media, for producing the concentrated polymeric emulsion.

5,053,449

PLASTICS MATERIAL

Ian S. Biggs, High Wycombe, and Bronislaw Radvan, Flackwell Heath, both of England, assignors to The Wiggins Teape Group Limited, Basingstoke, England

Filed Nov. 29, 1988, Ser. No. 277,181

Claims priority, application United Kingdom, Aug. 3, 1988, 8818425

Int. Cl.[5] C08K *3/36*

U.S. Cl. 524—493 **19 Claims**



1. An air permeable sheet-like structure comprising 20% to 60% by weight of a fibrous component being single discrete reinforcing fibres having a high modulus of elasticity, and between about 7 and about 50 millimeters long and 40% to 80% by weight of a thermoplastics component being wholly or substantially unconsolidated elements of thermoplastics material, and in which the fibrous and thermoplastics components are bonded into an air permeable structure, at least some of said elements of thermoplastics materials each having a first dimension of not more than 1 millimeters, a second dimension of between 1.5 millimeters and 30 millimeters, a total volume of at least 1.8 but not more than 30 millimeters and a surface area to volume ratio greater than about 4:1, with any further elements of thermoplastics material present each having a volume of less than about 1.8 cubic millimeters.

5,053,450

ELASTOMER COMPOSITIONS

Aubert Y. Coran, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mich.

Filed Oct. 16, 1989, Ser. No. 422,167

Int. Cl.[5] C08L *9/02, 13/00, 15/02*

U.S. Cl. 524—506 **12 Claims**

1. A millable, vulcanizable elastomeric composition comprising 5–75 parts by weight of (A) an elastomer polymer from one or more alkyl acrylate monomers and another monomer containing carboxyl, chlorine, epoxy or hydroxy crosslinking sites and, correspondingly, 95–25 parts by weight of (B) another elastomeric polymer which is nitrile rubber, hydrogenated nitrile rubber, a fluoroelastomer, a silicone rubber or a fluorosilicone rubber, wherein (A) is in the form of vulcanized or crosslinked particles of average diameter below 50 micrometers.

10. A method for preparing a millable, vulcanizable elastomeric composition by the steps of:

i) forming a mixture comprising 5–75 parts by weight of (A) one or more elastomeric polymers from alkylacrylate monomer and another monomer containing carboxyl, chlorine, epoxy or hydroxy crosslinking sites and, correspondingly, 95–25 parts by weight of (B) another elastomeric polymer which is nitrile rubber, hydrogenated nitrile rubber, a fluoroelastomer, a silicone rubber or a fluorosilicone rubber and, ii) masticating the mixture at vulcanization temperature for (A) in the presence of an agent which preferentially vulcanizes (A) for a time sufficient to achieve at least partial vulcanization of (A).

5,053,451

IONICALLY CROSS-LINKABLE POLYPHOSPHAZENE: POLY(BIS(CARBOXYLATOPHENOXY) PHOSPHAZENE) AND ITS HYDROGELS AND MEMBRANES

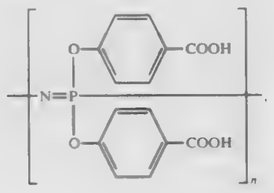
Harry R. Allcock, State College, Pa., and Sukky Kwon, Elkhart, Ind., assignors to The Pennsylvania Research Corporation, University Park, Pa.

Filed Jan. 19, 1990, Ser. No. 467,821

Int. Cl.[5] C08G *79/04*

U.S. Cl. 524—600 **4 Claims**

1. A poly(organophosphazene) polymer which is insoluble in acidic and neutral aqueous media, soluble in basic aqueous media, and cross-linkable in the presence of di- and tri-valent cations to form hydrogels which are stable in acidic and neutral aqueous media and which can be resolubilized by exchange with monovalent cations, said polymer having repeating monomeric units of the structure



in which n is an integer from 3 to 8,000.

5,053,452

PRESSURE SENSITIVE ADHESIVES AND MANUFACTURED ARTICLES

Lon T. Spada, Walnut, and Joseph J. Wilczynski, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 869,044, May 3, 1986, Pat. No. 4,759,983, and a continuation-in-part of Ser. No. 859,057, May 2, 1986, abandoned. This application Nov. 8, 1989, Ser. No. 433,693

Int. Cl.[5] C08K *5/53, 5/17, 5/09*

U.S. Cl. 524—707 **23 Claims**

1. A mixture comprising (I) a polyacid component selected from the group consisting of (a) aminopolyphosphonic acids, (b) hydroxypolyphosphonic acids, (c) aminopolycarboxylic acids, (d) mixtures of (a), (b), and (c), and (e) salts of (a), (b), (c), and (d), and (II) two or more monomers which are polymerizable to produce a copolymer containing at least one pendant functional group of formula B:

(B)

in which R_1 is a divalent organic radical of at least 3 atoms in length and X is —CO—R_4 or —CN wherein R_4 is hydrogen or a monovalent organic radical, wherein the mixture, upon polymerization, forms a pressure sensitive adhesive composition and the polyacid is free of carbon-to-carbon unsaturation.

5,053,453

THROMBORESISTANT MATERIALS AND METHODS FOR MAKING SAME

Cecilia S. L. Ku, Lake Forest, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 265,604, Nov. 1, 1988, abandoned. This application Jan. 15, 1991, Ser. No. 641,320

Int. Cl.[5] C08G *63/48, 63/91*

U.S. Cl. 525—54.1 **27 Claims**

1. A thromboresistant material comprising:

a protein having an amino acid sequence sufficiently complementary to the hirudin binding sites of thrombin so as to have antithrombotic activity;

covalently bound through a linking group to a support material.

5,053,454

MULTIPLE POLYMER SYNTHESIZER

Amrit K. Judd, Belmont, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Feb. 15, 1989, Ser. No. 312,069

Int. Cl.[5] C08F *283/00;* **C08G** *63/48, 63/91*

U.S. Cl. 525—54.11 **19 Claims**

1. An apparatus for simultaneously performing a multiplicity of solid phase synthesis chemical reactions, said apparatus comprising:

a plurality of reaction vessels, each of said reaction vessels having an access port, each of said reaction vessels including a synthesis compartment in communication with the access port and a closable exit channel in communication with said synthesis compartment and disposed opposite said access port with respect to said synthesis compartment, said closable exit channel with an exit port;

a port having a plurality of inlets, each of said inlets configured to receive said exit channel of one said reaction vessel;

a fluid outlet connected to said base and in communication through said base with said plurality of inlets;

pressure changing means in association with said fluid outlet for changing the pressure in said reaction vessel; and

shaking means for shaking each of said reaction vessels.

5,053,455

GRAFT POLYMERS, CONTAINING POLYVINYL ACETAL GROUPS, ON POLYURETHANE GRAFTING SUBSTRATES, PROCESSES FOR THE PREPARATION THEREOF, AND THE USE THEREFOR

Matthias Kroggel; Karl-Josef Rauterkus, both of Kelkheim, and Hans-Dieter Hermann, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst AG, Wiesbaden, Fed. Rep. of Germany

Division of Ser. No. 424,064, Oct. 19, 1989. This application Feb. 20, 1991, Ser. No. 658,050

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 38358409

Int. Cl.[5] C08L *29/14;* **C08F** *16/38, 216/38*

U.S. Cl. 525—58 **6 Claims**

1. A process for preparing a graft polymer, containing polyvinyl acetal groups, formed by reacting an aldehyde with a graft polymer containing polyvinyl alcohol groups on a polyurethane grafting substrate by reacting an aldehyde with a polymer containing polyvinyl alcohol groups, the latter being acetalized in aqueous solution and/or in organic solvents with the additional use of an acid catalyst and optionally an emulsifier and optionally a stabilizer as well as using the aldehyde in a small stoichiometric excess, and subsequently isolating the graft polyvinyl acetal which comprises using, for the acetalization, a graft polymer containing polyvinyl alcohol groups on a polyurethane grafting substrate, the polyurethane grafting substrate containing at least 2 urethane groups in the molecule and units from diisocyantes and optionally minor quantities of monofunctional isocyanates and units of diols and/or half-esterified or half-etherified diol radicals, and polymer radicals or polymer chains of units of vinyl carboxylates having 3 to 20 carbon atoms and/or hydrolysis products thereof and optionally units of further ethylenically unsaturated, polymerizable and optionally hydrolyzable and optionally copolymerized monomers and/or hydrolysis products thereof having been grated onto the polyurethane grafting substrate, the proportion of vinyl alcohol units in the hydrolyzed or partially hydrolyzed graft polymer before the acetalization being 10% by weight relative to the hydrolyzed or partially hydrolyzed, unacetalized graft polymer.

5,053,456

TRANSPARENT POLYBLENDS

Daniel L. Dufour, Waterloo, Belgium, assignor to Monsanto Europe S.A., Brussels, Belgium

Filed Nov. 27, 1989, Ser. No. 441,487

Claims priority, application United Kingdom, Dec. 12, 1988, 8828992

Int. Cl.[5] C08L *37/00, 51/04*

U.S. Cl. 525—74 **5 Claims**

1. A polyblend comprising from 30 to 70% by weight of a Polymer A and from 70 to 30% by weight of a Polymer B, based on the total weight of Polymers A and B in the polyblend; wherein Polymer A is a copolymer of 40% to 60% by weight of methyl methacrylate and 40 to 60% by weight of styrene grafted on a butadiene-styrene rubber based on the total weight of Polymer A; and Polymer B is a copolymer of from 35 to 50% by weight of a vinylaromatic monomer selected from the group consisting of styrene, alpha methyl styrene and vinyl toluene; from 25 to 55% by weight of a C_1–C_4-alkyl acrylate or a C_1–C_4-alkyl methacrylate ester, and from 20 to 27% by weight of maleic anhydride based on the weight of Polymer B; wherein the polyblend is characterized by having a 1 kg Vicat softening point above 125° C.; a notched Izod impact above 30 J/m and a light transmission as measured on a 0.4 mm film greater than 40%.

5,053,457

COEXTRUDABLE ADHESIVES AND PRODUCTS THEREFROM

I-Hwa Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 13, 1989, Ser. No. 365,593

Int. Cl.[5] C08L *33/02*

U.S. Cl. 525—78 **22 Claims**

1. A coextrudable adhesive composition consisting essentially of:

(a) about 60 to about 95 percent of a blend of:

(i) about 1 to 100 percent by weight of a copolymer of ethylene with about 5 to about 40 weight percent of at least one copolymerized alkyl acrylate or methacrylate comonomer and a grafted comonomer containing pendant carboxylic acid or carboxylic acid anhydride functionality, wherein the amount of said grafted comonomer comprises about 0.03 to about 2.0 percent by weight of the total adhesive composition, and

(ii) 0 about 99 percent by weight of a copolymer of ethylene with about 5 to about 40 weight percent of at least one alkyl acrylate or methacrylate comonomer,

wherein the copolymer of (i) and the copolymer of (ii) are mutually compatible; and

(b) about 5 to about 40 weight percent of a copolymer of about 40 to about 95 percent by weight ethylene with at least one comonomer selected from the group consisting of alpha olefins, nonconjugated dienes in an amount of 0 to about 10 weight percent, vinyl esters of carboxylic acids, styrene, alkyl acrylates, and alkyl methacrylates, wherein component (b) is incompatible with component (a).

5,053,458

THERMOPLASTIC MOLDING MATERIALS

Christof Taubitz, Wachenheim; Erhard Seiler, Ludwigshafen; Klaus Boehlke, Hessheim; Klaus Bronstert, Carlsberg, and Daniel Wagner, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 210,031, Jun. 22, 1988, abandoned. This application Apr. 5, 1990, Ser. No. 507,086

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1987, 3722502

Int. Cl.[5] **C08L** *53/02, 71/12*

U.S. Cl. 525—92 **4 Claims**

1. A thermoplastic molding material containing, as essential components,

A) from 5 to 94% by weight of a polyamide,

B) from 5 to 94% by weight of a modified polyphenylene ether previously prepared from

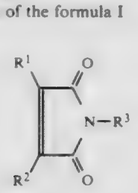
b_1) 4.95–99.95% by weight of a polyphenylene ether,

b_2) 0–90% by weight of a vinylaromatic polymer,

b_3) 0.05–10% by weight of a monomer selected from the group consisting of

b_{31}) fumaric acid,

b_{32}) a maleimide of the formula I



where R^1, R^2 and R^3 are each hydrogen or an alkyl, alkoxy, cycloalkyl, alkenyl, aryl, arylene or alkylene group of 1 to 12 carbon atoms,

b_{33}) a monomer containing amide groups and a polymerizable double bond,

b_{34}) a monomer containing lactam groups and a polymerizable double bond,

b_{35}) a half-ester or half-amide of an α, β-unsaturated dicarboxylic acid and a mixture of two or more of the monomers b_{31} to b_{35},

b_4) 0–80% by weight of further graft-active monomers and

b_5) 0–20% by weight of a free radical initiator,

C) from 1 to 20% by weight of a partially hydrogenated PQP′ block copolymer, where

α) the blocks P and P′ consist of vinylaromatic monomers and the total amount of these blocks in the block copolymer is from 25 to 40% by weight,

β) the number average molecular weight of block P is not more than 8,000 and is smaller than the number average molecular weight of block P′,

γ) block Q consists of conjugated diene monomers and accounts in total for from 60 to 75% by weight of the block copolymer and

δ) from 5 to 30% by weight of the double bonds in block Q are not hydrogenerated, and

(D) from 0 to 50% by weight of a vinylaromatic polymer.

5,053,459

AB BLOCK COPOLYMERS BASED ON BUTADIENE, ISOPRENE AND STYRENE

Christoph Herrmann, Marl; Walter Hellermann, Dorsten; Hans-Bernd Fuchs; Karl-Heinz Nordsiek, both of Marl, and Juergen Wolpers, Haltern, all of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,393

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 3818870

Int. Cl.[5] **C08L** *53/02;* **C08F** *297/04*

U.S. Cl. 525—99 **8 Claims**

1. An unsaturated elastomeric AB block copolymer comprising:

20 to 75 wt.% 1,3-butadiene monomer units;

5 to 50 wt.% isoprene monomer units; and

3 to 30% wt.% styrene monomer units;

wherein said copolymer contains less than 3 wt.% styrene blocks, wherein each of said block A and block B contain all three of said monomer units and wherein said copolymer comprises 30 to 90 wt.% of block A and 70 to 10 wt.% of block B, and wherein the average vinyl and isopropenyl content of block B are each at least 30% higher than those of block A.

5,053,460

HYDROPHILIC POLYMER BASED ON ACRYLIC ACID AND ALKALI METAL ACRYLATE, ITS PREPARATION PROCESS AND ITS USE AS AN ABSORBING AGENT

Paul Mallo, Rueil Malmaison; Marie-Thérèse Moreau, Saint Brice sous Foret, and Jean Cabestany, Stains, all of France, assignors to Societe Francaise Hoechst, Puteaus, France

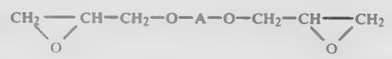
Filed Mar. 16, 1990, Ser. No. 494,366

Claims priority, application France, Mar. 16, 1989, 89 03488

Int. Cl.[5] **C08F** *8/00*

U.S. Cl. 525—116 **9 Claims**

1. Hydrophilic polymer, as microbeads, insoluble in water, based on acrylic acid and metal alkali acrylate, characterised in that it is constituted by an acrylic acid-potassium acrylate copolymer, containing in molar proportions from 55 to 85% of potassium acrylate, cross-linked with from 100 ppm to 3,000 ppm in relation to the total weight of monomers of one or more cross-linking agents chosen from the group constituted by the products of general formula 1:



(I)

in which A represents a bivalent radical derived from a C_3–C_6 alkane, branched or not, by the removal of a hydrogen atom from each of the two terminal carbon atoms and that it shows a salty physiological solution absorption capacity of the order of 30 to 70 g per gram and of the order of 10 to 35 g per gram under a pressure of 15 g per cm^2.

5,053,461

PREPARATION METHOD OF COMB COPOLYMER, ACRYLIC COMB COPOLYMER, AND IMPACT RESISTANT RESIN COMPOSITION

Seiji Tone, Ohtake; Haruko Takeda, Fujisawa, and Masahiro Sugimori, Nagoya, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1989, Ser. No. 399,992

Claims priority, application Japan, Aug. 31, 1988, 63-215128; Sep. 5, 1988, 63-220431

Int. Cl.[5] **C08F** *265/06;* **C08L** *31/02*

U.S. Cl. 525—244 **7 Claims**

1. A method for preparing a comb copolymer, comprising mixing a polymer having a main chain consisting essentially of a methacrylic ester monomer unit, acrylic ester monomer unit or styrene monomer unit and a vinyl group at one end of the main chain and having a number average molecular weight of 3,000 to 50,000 with a vinyl monomer and a polymerization initiator in a solvent which is a good solvent for said polymer and has a solubility in water of 10% by weight or more at 30° C., and subjecting the resultant mixture to aqueous suspension polymerization.

5,053,462

MODIFIED POLYISOBUTENE

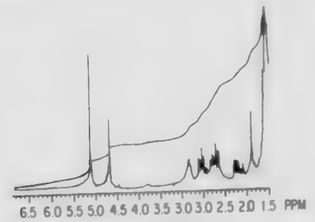
Dietmar Bender, Schifferstadt, and Klaus Bronstert, Carlsberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 15, 1990, Ser. No. 567,748

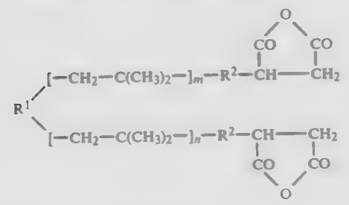
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1989, 3928811

Int. Cl.[5] **C08F** *267/04, 222/04;* **C07D** *307/60*

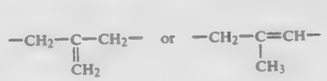
U.S. Cl. 526—285 **3 Claims**



1. A compound of the general formula I



where R^1 is an olefinically unsaturated divalent radical, R^2 is one of the divalent radicals



and m and n are at least 1.

5,053,463

NITROGEN-CONTAINING ALKYD RESIN COATING COMPOSITION

Hiroshi Inoue, Hiratsuka, Japan, assignor to Kansai Paint Company, Limited, Hyogo, Japan

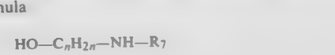
Filed Jul. 7, 1989, Ser. No. 378,352

Claims priority, application Japan, Jul. 13, 1988, 63-174332

Int. Cl.[5] **C08L** *77/00*

U.S. Cl. 525—427 **3 Claims**

1. A nitrogen-containing alkyd resin coating composition comprising (A) a nitrogen-containing alkyd resin having a hydroxyl value of about 30 to about 200, the resin being prepared by reacting an amine compound represented by the formula



wherein R_7 is an alkyl group or a cycloalkyl group, and n is an integer of 1 to 4 with a polyhydric alcohol and a polybasic acid using or without using a fatty acid, and (B) an amino resin serving as a crosslinking agent.

5,053,464

POLYURETHANE CONTAINING METAL PHTHALOCYANINE IN THE MAIN CHAIN

Hirofusa Shirai, Chiisagata; Naomi Masuda, Shizuoka; Tatsuya Hongu, Nerima, and Nobuhisa Tsutsumi, Itano, all of Japan, assignors to Hirofusa Shirai & Nisshinbo Industries, Inc., Tokyo, Japan

Filed Aug. 20, 1990, Ser. No. 570,117

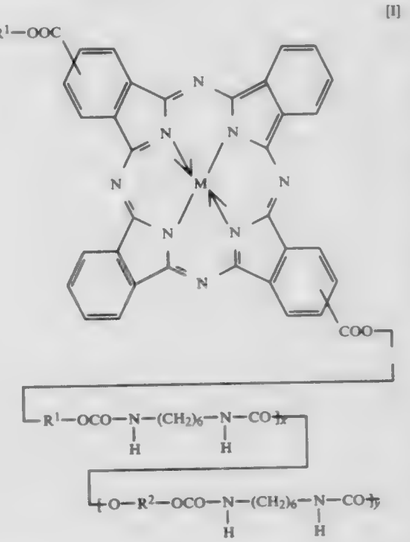
Claims priority, application Japan, Dec. 8, 1989, 1-320068; Dec. 8, 1989, 1-320069

Int. Cl.[5] **C08G** *18/34*

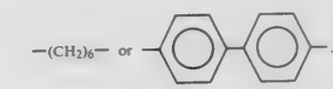
U.S. Cl. 525—454 **20 Claims**

1. A polyurethane containing a metal phthalocyanine in the main chain comprising repeating units represented by the following general formula [I]:

[I]



wherein R^1 represents a group $-(CH_2CH_2O)_n-C_2H_4-$ [n is an integer of 0 to 3],



R^2 represents a group $-(CH_2)_6-$, $-(CH_2)_{10}-$ or $-(CH_2CH_2O)_2-C_2H_4-$; M represents a metal atom selected from the group consisting of Co, Fe, Mn, Ti, V, Ni, Cu, Zn, Mo, W, Os and Ca, and x/y ranges from 0.1/99.9 to 90.0/10.0 and which has a molecular weight ranging from 1,000 to 200,000.

5,053,465

EPOXY POLYURETHANE POLYUREAS FROM EPOXY RESIN, BLOCKED ISOCYANATE PREPOLYMER AND POLYETHERPOLYAMINE

Harold G. Waddill, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

Filed May 12, 1989, Ser. No. 350,728
Int. Cl.[5] C08L 63/02
U.S. Cl. 525—528 5 Claims

1. A composition cured at ambient temperatures comprising a blend of 70% to 90% of a epoxy resin with 10% to 30%, by weight of the total epoxy resin/blocked isocyanate prepolymer blend, of a polyoxyalkylene polyol/isocyanate prepolymer blocked with an alkylated phenol and an effective curing amount of a polyetherpolyamine selected from the group consisting of a polyoxypropylenediamine having the formula:

$$H_2NCH(CH_3)CH_2[OCH_2CH(CH_3)]_xNH_2$$

wherein x is a number having an average value of 2 to 3 and an amine terminated polyethylene glycol having the formula

$$H_2N—(CH_2CH_2—O)_xCH_2CH_2NH_2$$

where x = 2.

5,053,466

METHOD OF PREVENTING POLYMER SCALE DEPOSITION

Toshihide Shimizu, Urayasu; Ichiro Kaneko, Hazaki, and Mikio Watanabe, Kamisu, all of Japan, assignors to Shin-Ftsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1989, Ser. No. 446,681
Claims priority, application Japan, Dec. 7, 1988, 63-309415; Dec. 9, 1988, 63-311601; Dec. 9, 1988, 63-311602
Int. Cl.[5] C08F 2/00, 118/04, 120/04, 122/02
U.S. Cl. 526—62 18 Claims

1. A method of preventing polymer scale deposition in a polymerization vessel during polymerization of a monomer having an ethylenically double bond, wherein said polymerization is carrier out in a polymerization vessel of which the inner wall has been previously coated with a coating solution comprising:

(A) an aromatic amine-based condensate,

(B) at least one member selected from the group consisting of alkali metal salts and ammonium salts of a sulfonation product prepared by sulfonation of an aromatic amine-based condensate, and

(C) at least one member selected from the group consisting of metal compounds, inorganic colloids, dyes and pigments.

5,053,467

PROCESS FOR PREPARATION OF STEREOREGULAR POLYOLEFINS

Yozo Kondo, Yokkaichi; Mitsuhiro Mori, Nakashima, and Toshikazu Chikusa, Yokkaichi, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

PCT No. PCT/JP87/00410, § 371 Date Feb. 19, 1988, § 102(e) Date Feb. 19, 1988, PCT Pub. No. WO87/07899, PCT Pub. Date Dec. 30, 1987
Continuation of Ser. No. 167,855, Feb. 19, 1988, abandoned. This PCT application Jun. 23, 1987, Ser. No. 524,671
Claims priority, application Japan, Jun. 23, 1986, 61-144893
Int. Cl.[5] C08F 4/651, 4/654, 10/00
U.S. Cl. 526—119 10 Claims

1. A process for preparing a stereoregular polyolefin by homopolymerizing or copolymerizing as a main component α-olefin having at least 3 carbon atoms in the presence of a catalyst comprising a transition metal compound and an organometallic compound, wherein a catalyst system comprising (A) a solid catalyst component obtained by reacting a homogeneous solution containing (i) a combination of metallic magnesium and a hydroxyl hydrocarbon compound, (ii) an electron donor compound and (iii) an oxygen-containing organic compound of titanium of the formula

$$(TiO.(OR^5)b)m$$

wherein R is a hydrocarbon group having 1 to 20 carbon atoms, a and b are numbers satisfying the requirements of a ≧0 and b>0 and compatible with the valency of titanium, and m is an integer with (iv) at least one aluminum halide compound and further reacting the obtained solid product with (v) an electron donor compound and (vi) a titanium halide compound in the presence of an inert organic solvent, (B) at least one member selected from the group consisting of organometallic compounds of metals of the groups Ia, IIa, IIb, IIIb and IVb of the periodic table, and (C) an electron donor compound is used.

5,053,468

POLYMERIZATION OF CHLOROPRENE WITH TWO CHAIN TRANSFER AGENTS

Paul Branlard, Grenoble, and Francois Sauterey, par Vis, both of France, assignors to Distugil, Neuilly/Sur/Seine, France

Continuation of Ser. No. 282,568, Dec. 12, 1988, abandoned, which is a continuation of Ser. No. 53,478, May 26, 1987, abandoned, which is a continuation of Ser. No. 877,008, Jun. 20, 1986, abandoned, which is a continuation of Ser. No. 683,568, Dec. 19, 1984, abandoned. This application Nov. 21, 1990, Ser. No. 617,256
Claims priority, application France, Dec. 20, 1983, 83 20342
Int. Cl.[5] C08F 2/38, 2/24
U.S. Cl. 526—206 22 Claims

1. A process for the preparation of a sol polychloroprene, comprising polymerizing chloroprene in aqueous emulsion in the presence of X and Y chain transfer agents, said X chain transfer agent being present upon initiation of the polymerization and having a relative reaction velocity greater than that of chloroprene, and said Y chain transfer agent being incrementally or continuously added to the polymerization reaction medium over the course of the polymerization reaction and having a relative reaction velocity essentially the same as that of chloroprene.

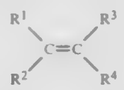
5,053,469

FLUORINE-CONTAINING COPOLYMER

Masayoshi Tatemoto, and Takayuki Nakamura, both of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

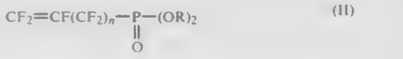
Filed May 9, 1990, Ser. No. 520,880
Claims priority, application Japan, May 17, 1989, 1-124058
Int. Cl.[5] C08F 14/18
U.S. Cl. 526—242 9 Claims

1. A fluorine-containing copolymer comprising 40 to 99% by mole of repeating units derived from an olefin of the formula:



(I)

wherein R^1, R^2, R^3 and R^4 are the same or different and are each a hydrogen atom or a fluorine atom, or one is a chlorine atom and the remainder are fluorine atoms, and 1 to 60% by mole of repeating units derived from a vinylphosphonic acid derivative of the formula:



(II)

wherein the R groups are the same or different and are each an

alkyl group having 1 to 12 carbon atoms, an alkenyl group having 2 to 12 carbon atoms or a phenyl group, and n is 0, 1 or 2.

5,053,470

COPOLYMERS OF HEXAFLUOROISOBUTYLENE WITH VINYL ESTERS AND VINYL ALCOHOL

Chengjiu Wu, Morris, N.J., assignor to Allied-Signal Inc., Morristown Township, Morris County, N.J.

Filed Oct. 9, 1990, Ser. No. 594,912
Int. Cl.[5] C08F 14/18
U.S. Cl. 526—253 13 Claims

1. A copolymer of hexafluoroisobutylene with a vinyl ester of the formula CH_2=CHOC(O)R wherein R is an alkyl group, straight chain, cyclic or branched, having 1 to 12 carbon atoms.

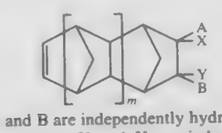
5,053,471

TRANSPARENT RESIN MATERIAL

Kohei Goto; Zen Komiya; Noboru Yamahara, and Akira Iio, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

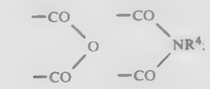
Continuation of Ser. No. 270,631, Nov. 14, 1988, abandoned. This application Nov. 13, 1990, Ser. No. 613,939
Claims priority, application Japan, Nov. 17, 1987, 62-288527; Nov. 17, 1987, 62-288528
Int. Cl.[5] C08F 232/00
U.S. Cl. 526—281 10 Claims

1. A process for producing a transparent resin material, comprising subjecting at least one compound represented by the general formula (I) or a combination of said compound and other copolymerizable monomer:



(I)

wherein A and B are independently hydrogen atoms or $C_{1\text{-}10}$ hydrocarbon group; X and Y are independently hydrogen atoms, $C_{1\text{-}10}$ hydrocarbon groups, halogen atoms, halogen-substituted $C_{1\text{-}10}$ hydrocarbon groups, $—(CH_2)_nCOOR^1$, $—(CH_2)_nOCOR^1$, $—(CH_2)_nOR^1$, $—(CH_2)_nCN$, $—(CH_2)_nCONR^2R^3$, $—(CH_2)_nCOOZ$, $—(CH_2)_nOCOZ$, $—(CH_2)_nOZ$ or $—(CH_2)_nW$ with the proviso that at least one of X and Y is selected from the above groups other than the hydrogen atom and the hydrocarbon groups, or X and Y may form together



and m is 0 or 1 to ring opening polymerization in a solvent consisting of at least one compound selected from the group consisting of alkyl esters of saturated carboxylic acids wherein the sum total of the carbon atoms of the alkyl group due to the saturated carboxylic acid and those of the alkyl group due to the alcohol are 5–10, $C_{5\text{-}10}$ saturated alicyclic hydrocarbon compounds, $C_{4\text{-}10}$ acyclic monoether compounds, $C_{4\text{-}10}$ compounds having an ether bond and a carboxylic acid ester group in the molecule using a matethesis catalyst consisting of a combination of:

(a) at least one member selected from the group consisting of compounds of W, Mo and Re, and

(b) at least one member selected from the group consisting of compounds of elements of the Ia, IIa, IIb, IIIa, IVa and IVb groups of the Deming Periodic Table, and then hydrogenating the thus obtained (co)polymer at 0°–180° C. in a hydrogen gas atmosphere at atmospheric pressure to 300 atm. in the presence of a conventional hydrogenation catalyst in the same solvent as in the polyerization step.

5,053,473

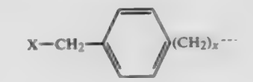
METHOD FOR THE PRODUCTION OF LIQUID-CRYSTALLINE ORGANOPOLYSILOXANES

Toshio Suzuki, and Tadashi Okawa, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,123
Claims priority, application Japan, May 15, 1987, 62-118365
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—29 5 Claims

1. A method for the production of liquid-crystalline organopolysiloxanes which comprises

(I) contacting a compound having the general formula ROA with an organopolysiloxane containing in each molecule, at least one group of the unit formula



wherein

R is a monovalent organic group which contains at least one group selected from the groups consisting of

(i) substituted monocyclic aromatic hydrogencarbon groups,

(ii) substituted polycyclic aromatic hydrocarbon groups,

(iii) unsubstituted monocyclic aromatic hydrocarbon groups,

(iv) unsubstituted polycyclic aromatic hydrocarbon groups;

A is a hydrogen atom or an alkali metal; X is a halogen; x has a value of 0 to 10 and,

(II) recovering the liquid-crystalline organopolysiloxane.

5,053,474

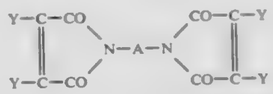
IMIDO POLYMERS

Yves Camberlin, Caluire, and Philippe Michaud, Villeubanne, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Oct. 26, 1989, Ser. No. 426,850
Claims priority, application France, Oct. 26, 1988, 88/14375
Int. Cl.[5] C08G 59/40, 65/14, 73/10, 75/00
U.S. Cl. 528—87 17 Claims

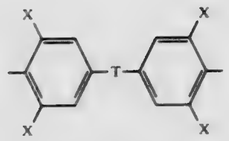
1. An imido polymer comprising the copolymerizate of:

(a) at least one N,N'-bisimide having the formula:

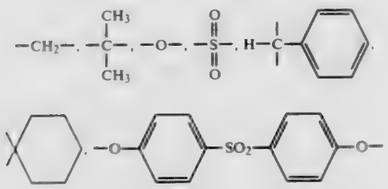


(I)

in which the symbols Y, which may be identical or different, are each H, CH_3 or Cl; the symbol A is a cyclohexylene, phenylene, 4-methyl-1,3-phenylene, 2-methyl-1,3-phenylene, 5-methyl-1,3-phenylene, or 2,5-diethyl-3-methyl-1,4-phenylene radical, or a radical of the formula:



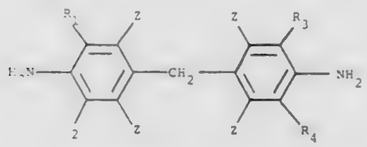
in which T is a single valence bond or one of the following atoms or groups:



and the symbols X, which may be identical or different, are each a hydrogen atom or a methyl, ethyl or isopropyl radical;

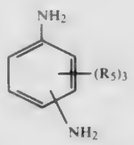
(b) at least one hindered diprimary diamine having the following formulae (II) or (III):

(i) a compound of the general formula:



in which the symbols R_1, R_2, R_3 and R_4, which may be identical or different, are each a methyl, ethyl, propyl or isopropyl radical; and the symbols Z, which may be identical or different, are each a hydrogen atom or a chlorine atom; or

(ii) a compound of the formula:



in which the amino radicals are in a meta or para position relative to each other; and the symbols R_5, which may be identical or different, are each a methyl, ethyl, propyl or isopropyl radical;

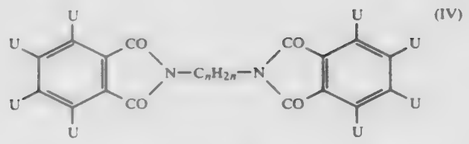
(c) optionally, at least one nonhalogenated monomer other than a bisimide of formula (I) and containing at least one polymerizable carbon-carbon double bond;

(d) optionally, an imidazole compound; and

(e) at least one of the following compounds:

(e1) a chlorinated or brominated epoxy resin;

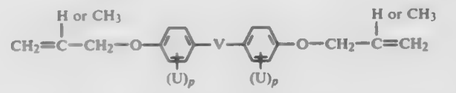
(e2) an N,N'-alkylenebistetrahalophthalimide of the formula:



(IV)

in which the symbols U, which may be identical or different, are each a chlorine or bromine atom; the alkylene radical $—C_nH_{2n}—$ may be linear or branched; and n is an integer equal to 1, 2, 3 or 4; and

(e3) a halogenated compound of the formula:



in which the symbols U are as defined above; the symbol V is a single valence bond, a linear or branched $—C_nH_{2n}—$ alkylene radical, with n being equal to 1, 2, 3 or 4, or an oxygen atom; and p is an integer equal to 2, 3 or 4.

5,053,475

EPOXY RESIN COMPOSITION

Hisashi Tada; Akira Agata, both of Nagoya; Masahiro Saruta, Otake; Takashi Murata, Nagoya, and Takatoshi Kubo, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP88/01212, § 371 Date Jun. 22, 1990, § 102(e) Date Jun. 22, 1990, PCT Pub. No. WO90/06334, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 30, 1988, Ser. No. 499,343

Int. Cl.[5] C08G *59/38, 59/50*

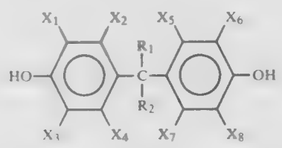
U.S. Cl. 528—98 11 Claims

1. An epoxy resin composition characterized by comprising the following components (A), (B), (C) and (D) as essential components:

(A) a bifunctional epoxy resin,

(B) a trifunctional epoxy resin,

(C) a phenol compound represented by the formula



(X_1 to X_8 each represent Br, Cl or H and at least four of X_1 to X_8 each represent Br or Cl; R_1 and R_2 each represent H or CH_3), and

(D) 4,4'-diaminodiphenyl sulfone or 3,3'-diaminodiphenyl sulfone.

5,053,476

EPOXY RESIN COMPOSITION BASED ON BISPHENOL EPOXY, POLYETHERPOLYOL, ANHYDRIDE AND IMIDAZOLE

Ichiro Akutagawa, Nagareyama; Kunimitsu Matsuzaki, Yono; Toshio Matsuo, and Toru Shirose, both of Koshigaya, all of Japan, assignors to Somar Corporation, Japan

Filed Jun. 23, 1989, Ser. No. 370,305

Claims priority, application Japan, Jun. 24, 1988, 63-154890

Int. Cl.[5] C08G *59/24, 59/40;* C08L *71/02;* H01B *3/40*

U.S. Cl. 528—103 14 Claims

1. An epoxy resin composition having a viscosity at 60° C. of 700 cps or less and comprising:

(A) a mixture containing:

(a_1) a liquid, Bisphenol epoxy resin, and

(a_2) an inorganic filler,

(a_3) a polyether polyol, and

(a_4) a reactive diluent having at least one epoxy group; and

(B) a liquid curing agent including

(b_1) an acid anhydride, and

(b_2) an imidazole compound, wherein the amounts of said polyether polyol and said reactive diluent are 4–30% and 1–50%, respectively, based on the weight of the Bisphenol epoxy resin.

5,053,477

PROCESS FOR THE PRODUCTION OF AROMATIC POLYETHER KETONES

Sabine Kern, Moers; Joachim Genz, Krefeld; Frank Kleiner, Leverkusen; Volker Eckhardt, and Karsten J. Idel, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Feb. 26, 1990, Ser. No. 484,935

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907474

Int. Cl.[5] C08G *8/02, 14/00, 65/34*

U.S. Cl. 528—125 4 Claims

1. Process for the production of a high molecular weight crystalline aromatic polyether ketone from an aromatic dihydroxy compound and an aromatic dihalogeno compound containing a keto group, characterized in that N—C_1—C_5 alkylcaprolactam solvents and a mixture of alkali metal compounds consisting of at least one alkali metal carbonate and at least one compound selected from alkali metal hydroxides, bicarbonates, fluorides, hydrides, alkoxides and alkylates are used.

5,053,478

PRODUCTION AND PROCESSING OF THERMALLY STABLE POLYENAMINONITRILES

James A. Moore, 3 Audrey La., R.D. #4, Troy, N.Y. 12180, and Douglas Robello, 1291 Foothill Cir., Webster, N.Y. 14580

Division of Ser. No. 197,651, May 23, 1988, Pat. No. 4,966,954, which is a continuation-in-part of Ser. No. 21,477, Mar. 4, 1987, abandoned. This application Aug. 2, 1990, Ser. No. 561,701

Int. Cl.[5] C08G *73/02, 73/06*

U.S. Cl. 528—125 25 Claims

1. Process for making thermally stable polyenaminonitrile comprising polymerizing a di(cyanovinyl) monomer with an organic diamine to yield polyenaminonitrile wherein said polyenaminonitrile is a polymer which is thermally and hydrolytically stable and has a backbone comprising recurring enaminonitrile units which include a carbon-carbon double bond moiety in which a nitrogen atom bearing a hydrogen atom is directly attached to one carbon atom of the carbon to carbon double bond moiety and at least one nitrile group is directly attached to the other carbon atom of the carbon-carbon double bond moiety.

25. Process comprising curing uncured thermally stable polyenaminonitrile to cured form wherein said polyenaminonitrile is a polymer which is thermally and hydrolytically stable and has a backbone comprising recurring enaminonitrile units which include a carbon-carbon double bond moiety in which a nitrogen atom bearing a hydrogen atom is directly attached to one carbon atom of the carbon to carbon double bond moiety and at least one nitrile group is directly attached to the other carbon atom of the carbon-carbon double bond moiety.

5,053,479

THERMALLY STABLE PHENOLIC RESIN COMPOSITIONS AND THEIR USE IN LIGHT-SENSITIVE COMPOSITIONS

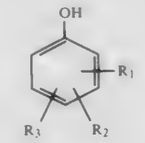
Andrew J. Blakeney, Seekonk, Mass.; Thomas Sarubbi, Providence, R.I., and Joseph J. Sizensky, Seekonk, Mass., assignors to OCG Microelectronic Materials, Inc., Cheshire, Conn.

Division of Ser. No. 217,512, Jul. 11, 1988, Pat. No. 4,959,292. This application Jun. 18, 1990, Ser. No. 540,054

Int. Cl.[5] C08G *8/08, 14/04*

U.S. Cl. 528—129 9 Claims

1. A phenolic novolak resin comprising the product of a condensation reaction of an aldehyde comprising a haloacetaldehyde source or a mixture of a haloacetaldehyde source and a formaldehyde source with a phenolic monomer comprising at least one compound of the formula:



wherein R_1, R_2 and R_3 are individually selected from hydrogen or a one to four carbon alkyl group and wherein the ratio of total carbon atoms in the sum of R_1, R_2 and R_3 to the total number of phenolic nuclei in said resin is from about 0.5:1 to about 1.5:1 in the presence of a solvent; said resin made by employing a molar ratio of total aldehyde to total phenolic monomers from about 0.33:1 to about 0.70:1.

5,053,480

POLYIMIDE RESIN FROM CYCLOBUTANE TETRACARBOXYLIC ACID DIANHYDRIDE

Noriaki Koto; Toyohiko Abe, both of Ichihara; Hideo Suzuki, and Kanji Otsuka, both of Funabashi, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

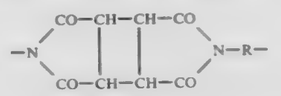
Continuation of Ser. No. 342,866, Apr. 25, 1989, abandoned, which is a continuation of Ser. No. 621,234, Jun. 15, 1984, abandoned. This application Apr. 2, 1990, Ser. No. 503,104

Claims priority, application Japan, Jun. 25, 1983, 58-114933

Int. Cl.[5] C08G *73/10*

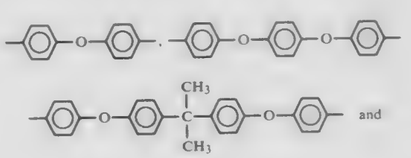
U.S. Cl. 528—188 4 Claims

1. A polyimide resin which exhibits no substantial coloring consisting of repeating units represented by the formula:

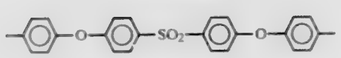


(I)

wherein R is a divalent aromatic hydrocarbon radical selected from the group consisting of:



-continued



5,053,481

WHOLLY AROMATIC POLYESTER FILM

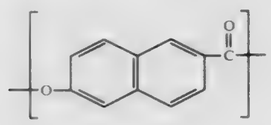
Toshinori Ishii, Okayama, and Masanori Sato, Osaka, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jun. 14, 1989, Ser. No. 365,729
Claims priority, application Japan, Jun. 17, 1988, 63-150437
Int. Cl.[5] C08G 63/06
U.S. Cl. 528—206 6 Claims

1. A wholly aromatic polyester film,

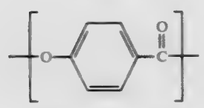
(A) which is made of a wholly aromatic polyester consisting essentially of the following recurring units I and II

I



and

II



wherein the aromatic ring is optionally substituted with at least one substituent selected from the group consisting of an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a halogen atom and a phenyl group,

said wholly aromatic polyester comprising 10 to 90 mol % of the recurring unit I and 90 to 10 mol % of the recurring unit II,

being capable of forming an optically anisotropic melt phase, and

having a melt strength at a temperature 20° C. higher than its transition temperature to liquid crystal of at least 2.0 g/mm^2;

(B) said film having an oxygen permeability of not more than 1.0 cc·20 μ/m^2·day·atm at a temperature 20° C. and a relative humidity 65%, and

(C) said film having thermal shrinkages both in the machine direction and in a direction perpendicular thereto of not more than 1% at a temperature 250° C.

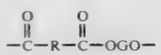
5,053,482

POLYESTERS AND THEIR USE IN COMPOSTABLE PRODUCTS SUCH AS DISPOSABLE DIAPERS

Raymond F. Tietz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

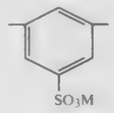
Filed May 11, 1990, Ser. No. 522,134
Int. Cl.[5] C08G 63/688
U.S. Cl. 528—272 11 Claims

1. A fiber and film forming polyester consisting essentially of recurring structural units of the formula



wherein R is

about 97 to 99.9 mole % para-phenylene and about 0.1 to 3 mole % of the sulfonate radical



where M is an alkali metal or alkaline earth metal, and

wherein G is

about 60 to 80 mole % —CH_2—CH_2— and about 20 to 40 mole % —$(CH_2)_2$—O—$(CH_2)_2$.

5,053,483

ANHYDRIDE CONTAINING SOLVENT-BORNE ALKYD RESIN COMPOSITIONS

David E. Knox, Goose Creek, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 3, 1990, Ser. No. 621,752
Int. Cl.[5] C08G 63/48
U.S. Cl. 528—295.5 13 Claims

1. A process for the production of a solvent-borne alkyd resin which comprises reacting:

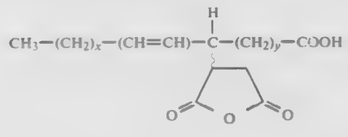
(a) 20 to 70% by weight of an unsaturated fatty acid,

(b) 10 to 50% by weight of a polyol,

(c) 10 to 50% by weight of a dibasic carboxylic acid,

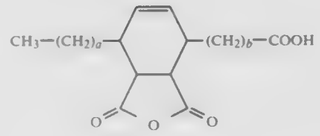
(d) up to 20% by weight of a trifunctional acid, and

(e) 0.2 to 20% by weight of a 22-carbon anhydride having the formula selected from the group consisting of



x + y = 13

and



a + b = 12

wherein x and y are integers which when added together equal 13, and a and b are integers which when added together equal 12.

5,053,484

POLYETHER AMIDE FROM MIXTURE OF POLYETHER DIAMINE

George P. Speranza; Wei-Yang Su, both of Austin, and Donald H. Champion, Pflugerville, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Apr. 10, 1990, Ser. No. 507,261
Int. Cl.[5] C08G 69/40
U.S. Cl. 528—338 16 Claims

1. A polyether amide produced by reacting a polyethylene glycol diamine and a first dicarboxylic acid or an ester thereof, with a polyoxyalkylene diamine of a molecular weight of at least 500 and a second dicarboxylic acid or an ester thereof,

where the polyethylene glycol diamine has the formula NH_2—$(CH_2CH_2O)_x$—CH_2—CH_2—NH_2, where x ranges from 2 to 6, and where the first and second dicarboxylic acid are the same or different.

5,053,485

POLYMER LACTIDE, METHOD FOR PREPARING IT AND A COMPOSITION CONTAINING IT

Jan Nieuwenhuis, Gorinchem, and Arie C. Mol, Papendrecht, both of Netherlands, assignors to C.C.A. Biochem B.V., Gorinchem, Netherlands

Continuation of Ser. No. 261,785, Oct. 24, 1988, abandoned.
This application Jun. 12, 1990, Ser. No. 537,152
Claims priority, application Netherlands, Oct. 28, 1987, 8702563
Int. Cl.[5] C08G 63/08
U.S. Cl. 528—354 10 Claims

1. A polymer composition, comprising: a surgical and pharmaceutical grade polymer lactide having at least two co-monomers therein, wherein at least one of said co-monomers is meso-3,6-dimethyl-1,4-dioxan-2,5-dione.

5,053,486

PROCESS FOR PREPARING POLY(ARYLENE SULFIDE SULFONE) WITH CONTROLLED RATIO OF ALKALI METAL CARBOXYLATE TO SULFUR SOURCE

Afif M. Nesheiwat, Charham, N.J., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 6, 1989, Ser. No. 432,693
Int. Cl.[5] C08G 75/16
U.S. Cl. 528—388 13 Claims

1. A process for the production of poly(arylene sulfide sulfone) comprising contacting:

(a) at least one dihaloaromatic sulfone,

(b) at least one organic amide,

(c) at least one sulfur-containing compound,

(d) water, and

(e) at least one alkali metal carboxylate, wherein the molar ratio of said alkali metal carboxylate to said sulfur-containing compound is about 0.01:1 to about 0.03:1.

5,053,487

METHOD TO RECOVER HIGH MOLECULAR WEIGHT POLY(ARYLENE SULFIDE) BY REPRECIPITATION

Afif M. Nesheiwat, Chatham, N.J., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 4, 1989, Ser. No. 417,173
Int. Cl.[5] C08G 75/14
U.S. Cl. 528—388 11 Claims

1. A process for preparing a particulate high molecular weight poly(arylene sulfide) resin comprising the steps of:

(a) preparing a heated liquid mixture comprising a first particulate poly(arylene sulfide) resin in a liquid phase and a polar organic compound wherein the temperature of said liquid mixture is above the solid-to-liquid phase transitional temperature of said first particulate poly(arylene sulfide) resin,

(b) slowly cooling said heated liquid mixture to a temperature of about 20° C. to about 40° C. below the liquid-to-solid phase transitional temperature of said first particulate poly(arylene sulfide) resin in said polar organic compound to form a first slurry comprising a liquid component and a solid component, wherein the liquid component of said first slurry comprises said polar organic compound and wherein the solid component of said first slurry comprises a second particulate high molecular weight poly(arylene sulfide) resin, and

(c) rapidly cooling said first slurry to a temperature of about 50° C. below said liquid-to-solid phase transitional temperature of said first particulate poly(arylene sulfide) resin, to form a second slurry comprising a liquid component and a solid component, wherein the liquid component of said second slurry comprises said polar organic compound, and wherein the solid component of said second slurry comprises a particulate polymeric mixture comprising a third particulate high molecular weight poly(arylene sulfide) resin having a higher molecular weight than its respective first and second particulate resins would when recovered by conventional means.

5,053,488

MOLECULAR CLONING AND CHARACTERIZATION OF A GENE SEQUENCE CODING FOR HUMAN RELAXIN

Peter J. Hudson, Bulleen; John Shine, Swinger Hill; Hugh D. Niall, Elwood, and Geoffrey W. Tregear, Hawthorn, all of Australia, assignors to Howard Florey Institute of Experimental Physiology & Medicine, Victoria, Australia

Continuation of Ser. No. 21,878, Mar. 4, 1987, abandoned, which is a division of Ser. No. 863,819, May 12, 1986, Pat. No. 4,758,516, which is a continuation of Ser. No. 522,956, Aug. 12, 1983, abandoned. This application Jul. 6, 1990, Ser. No. 549,668
Claims priority, application Australia, Aug. 12, 1982, PF5352
Int. Cl.[5] C07K 7/10
U.S. Cl. 530—324 5 Claims

2. An essentially pure polypeptide having relaxin activity, wherein said polypeptide comprises:

(i) a human HI-relaxin A chain selected from the group consisting of A(1-24) to A (5-24), when amino acids 1-24 have the following sequence:

1 5 10
Arg Pro Tyr Val Ala Leu Phe Glu Lys Cys Cys Leu

15 20 24
Ile Gly Cys Thr Lys Arg Ser Leu Ala Lys Tyr Cys

and

(ii) a human H-1 relaxin B chain selected from the group consisting of B(1-32) to B(4-23), when amino acids 1-32 have the following sequence:

1 5 10
Lys Trp Lys Asp Asp Val Ile Lys Leu Cys Gly Arg

15 20
Glu Leu Val Arg Ala Gln Ile Ala Ile Cys Gly Met

25 30 32
Ser Thr Trp Ser Lys Arg Ser Leu

5,053,489

GENETICALLY ENGINEERED POLYPEPTIDES WITH DETERMINANTS OF THE HUMAN DF3 BREAST CARCINOMA-ASSOCIATED ANTIGEN

Donald W. Kufe, Wellesley, Mass., assignor to Dana-Farber Cancer Institute, Inc., Mass.

Continuation-in-part of Ser. No. 149,831, Jan. 29, 1988, Pat. No. 4,963,484. This application Jan. 27, 1989, Ser. No. 302,448
Int. Cl.[5] C07K 7/00
U.S. Cl. 530—350 7 Claims



1. A polypeptide that:

(1) is free or substantially free of bound carbohydrate; and

(2) includes all or a portion of an amino acid sequence that is coded for by a double stranded DNA molecule containing in one strand a first nucleotide sequence

```
CGCACGGCTG GGGGGGCGGT GGAGCCCGGG
GCCGGCCTGC TCTCCGGGGC CGAGGTGACA   60
  CGTG. . . .  C. . . C
  . . . . . .                     120
        G . G                     180
          G   G
                                  240
                                  300
```

and containing in the other strand a second nucleotide sequence complementary to the first nucleotide sequence.

5,053,490

USEFUL SUBSTANCE-ALBUMIN COMPLEX

Toshio Satoh; Hitoshi Matsumoto, and Kakegawa Hisao, all of Tokushima, Japan, assignors to Nippon Hypox Laboratories Incorporated, Hachioji and Toshio Satoh, Tokushima, both of, Japan

Continuation of Ser. No. 945,571, Dec. 23, 1986, abandoned. This application Mar. 13, 1989, Ser. No. 323,150

Claims priority, application Japan, Dec. 28, 1985, 60-293451; Apr. 10, 1986, 61-81118

Int. Cl.[5] **A61K** *37/02*

U.S. Cl. 530—362 **6 Claims**

1. A composition which comprises a water-insoluble powdery complex of albumin and a useful substance selected from the group consisting of vitamin E, and liquid fatty oil in a ratio of 5–200 parts of the useful substance of 100 parts of the albumin.

5,053,491

MONOCLONAL ANTIBODIES AND CELL LINES FOR PARATHYROID TISSUE-SPECIFIC ANTIGEN

William G. Cance; Joseph M. Davie; Samuel A. Wells, Jr.; William G. Dilley; Michael J. Welch, and Jeremiah J. Morrissey, IV, all of St. Louis, Mo., assignors to Washington University School of Medicine, St. Louis, Mo.

Continuation of Ser. No. 808,865, Dec. 13, 1985, Pat. No. 4,864,020. This application Apr. 24, 1989, Ser. No. 342,312

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] **A61K** *39/00, 43/00;* **C12N** *5/20;* **C07K** *15/28*

U.S. Cl. 530—387 **15 Claims**

1. Monoclonal antibodies specifically immunoreactive with a human parathyroid tissue-specific antigen not secreted by said gland, wherein said antibodies are not immunoreactive with other human tissue, and

wherein said antigen has an apparent molecular weight of 191 kd (non-reduced) and an apparent molecular weight of 171 kd (reduced) on SDS-polyacylamide gel electrophoresis and

wherein said antigen is found on the surface of parathyroid tissue.

5,053,492

IMMUNOPURIFICATION USING MONOCLONAL ANTIBODIES TO MOJAVE TOXIN

Eppie D. Rael, and Richard J. Salo, both of El Paso, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Aug. 7, 1986, Ser. No. 893,919

Int. Cl.[5] **A61K** *39/395;* **C07K** *15/28, 3/20*

U.S. Cl. 530—387 **9 Claims**

1. A method for the isolation of biologically active snake venom toxins which are antigenically cross-reactive with Mojave toxin comprising the steps of:

(a) preparing an immunoadsorbent material having attached thereto a monoclonal antibody to the basic subunit of Mojave toxin, the monoclonal antibody being cross reactive with an epitope present on a toxin in venom from *C. s. scutulatus, C. d. durissus, C. d. terrificus, C. h. horridus,* and *C. v. concolor,* but not cross reactive with an epitope present on a toxin in venom from *C. adamanteus, C. atrox, C. h. atricaudatus, C. m. molassus, C. ruber, C. v. helleri, C. v. oreganus,* and *C. v. viridis;*

(b) providing a mixture which includes a snake venom having the toxin to be isolated;

(c) contacting the material with the mixture under conditions which will promote the formation of a hydrophobic antigen/antibody complex between the antibody and the desired toxin;

(d) washing the material to remove substances which have not complexed with the antibody using a buffer that will not disrupt the hydrophobic complex;

(e) eluting the toxin which has complexed with the antibody under essentially non-denaturing conditions using an eluent which will disrupt the hydrophobic complex interactions between the toxin and the antibody and provide a biologically active toxin.

5,053,493

METHOD FOR LABELING ANTIBODIES WITH A METAL ION

Koon Y. Pak, Norristown; Richard T. Dean, Downingtown, and Jeffrey A. Mattis, West Chester, all of Pa., assignors to Centocor Cardiovascular Imaging Partners, L.P., Malvern, Pa.

Filed Apr. 2, 1987, Ser. No. 34,003

Int. Cl.[5] **C07K** *3/08;* **G01N** *33/53;* **A04N** *55/02*

U.S. Cl. 530—402 **28 Claims**

1. A method of labeling a sulfhydryl-containing antibody or binding fragment thereof with a radiometal selected from the group consisting of technetium-99m, rhenium-186, rhenium-188, rhenium-189 and rhenium-191, comprising the steps of:

a. forming a mixture of:

i) the radiometal; and

ii) a reducing agent and a water-soluble polyhydroxycarboxylic acid ligand, the ligand being capable of complexing the radiometal to form a soluble radiometal-ligand complex;

b. contacting the mixture with a sulfhydryl-containing antibody or antibody fragment under conditions which permit transfer of the radiometal to the antibody or fragment to form a radiometal-labeled antibody or antibody fragment.

5,053,494

FIBER REACTIVE POLYAZO DYE HAVING TWO VINYLSULFONE TYPE REACTIVE GROUPS THROUGH TRIAZINYL BRIDGING GROUP

Takashi Omura, Ashiya; Naoki Harada, Suita, and Hirokazu Sawamoto, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

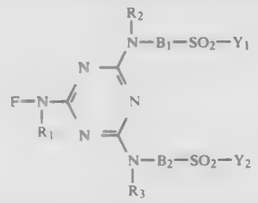
Continuation of Ser. No. 110,874, Oct. 21, 1987, abandoned. This application Oct. 20, 1989, Ser. No. 425,351

Claims priority, application Japan, Nov. 6, 1986, 61-264683; Feb. 24, 1987, 62-42222; Feb. 26, 1987, 62-44615

Int. Cl.[5] **C09B** *62/513;* **D06P** *1/384*

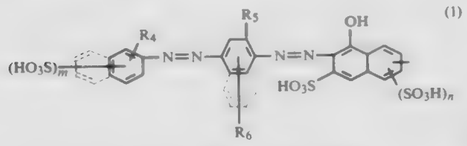
U.S. Cl. 534—642 **11 Claims**

1. A polyazo compound of the following formula (I),



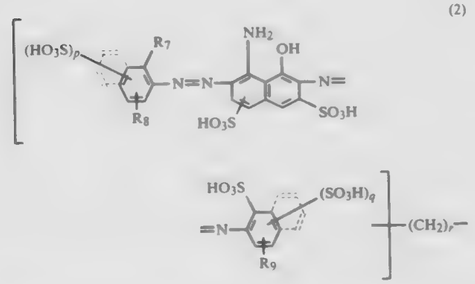
(I)

wherein R_1, R_2 and R_3 independently of one another are each hydrogen or C_{1-4} alkyl, B_1 and B_2 independently of one another are each phenylene unsubstituted or substituted once or twice by methyl, methoxy, ethyl, ethoxy, nitro, sulfo, carboxy, chloro or bromo or naphthylene unsubstituted or substituted once by sulfo, and Y_1 and Y_2 independently of one another are each $—CH=CH_2$ or $—CH_2CH_2L$ in which L is a group capable of being split by the action of an alkali, and F is a polyazo dye moiety selected from the group consisting of those represented by the following formulas (1), (2), (3) and (4) each in free acid form, the formula (1) being



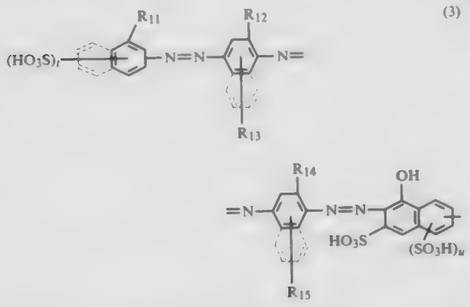
(1)

wherein R_4 is hydrogen, chloro, methyl, methoxy, ethyl, ethoxy, nitro or carboxy, R_5 is hydrogen, methyl, methoxy, ethyl, ethoxy or sulfo, R_6 is hydrogen, methyl, methoxy, ethyl, ethoxy, acetylamino, ureido or sulfo, m is 1,2 or 3and n is 0 or 1, the formula (2) being



(2)

wherein R_7 is hydrogen, methyl, methoxy, ethyl, ethoxy, chloro, carboxy or sulfo, R_8 and R_9 independently of one another are each hydrogen, methyl, methoxy, ethyl, ethoxy, chloro, bromo, acetylamino, sulfamoyl or carbamoyl and p and q independently of one another are each 0, 1 or 2, r is 0 or 1, the formula (3) being

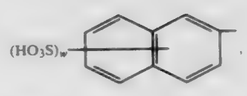


(3)

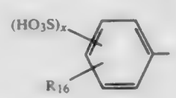
wherein R_{11} is hydrogen, chloro, C_{1-4} alkyl, C_{1-4} alkoxy, nitro or carboxy, R_{12} and R_{14} independently of one another are each hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy or sulfo, R_{13} and R_{15} independently of one another are each hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-5} alkanoylamino, benzoylamino, ureido or sulfo, t is 1,2 or 3 and u is 0 or 1, and the formula (4) being

$$A—N=N\text{-}D—N=N—E— \quad (4)$$

wherein A is sulfonaphthyl or sulfophenyl represented by the following formulas (a) and (b) each in free acid form, respectively,

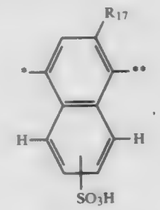


(a)

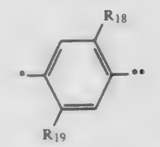


(b)

wherein R_{16} is hydrogen, C_{1-4} alkyl or C_{1-4} alkoxy, w is 2 or 3 and x is 1 or 2, D is sulfonaphthylene or phenylene represented by the following formulas (c) and (d) each in free acid form, respectively,

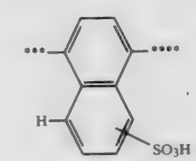


(c)

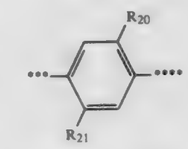


(d)

wherein the linkage marked by * and ** bond to A—N=N— and —N=N—E—, respectively, R_{17} is hydrogen, methoxy or sulfo, R_{18} is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy or sulfo, R_{19} is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-5} alkanoylamino, benzoylamino, ureido or C_{1-4} alkylsulfonylamino, and E is sulfonaphthylene or phenylene represented by the following formulas (e) and (f) each in free acid form, respectively,



(e)



(f)

where the linkage marked by *** and **** bond to the azo and



respectively, R_{20} is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy or sulfo, and R_{21} is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-5} al-

kanoylamino, benzoylamino, ureido or C_{1-4} alkylsulfonylamino, provided that at least two of A, D and E are the sulfonaphthyl or sulfonaphthylene represented by the formulas (a), (c) and (e).

5,053,495

ANIONIC DYE HAVING HIGH WATER-FASTNESS

David Greenwood; Nigel Hughes, both of Oldham; Ronald W. Kenyon, Manchester, all of England, and Suraj L. Hindagolla, Corvallis, Oreg., assignors to Imperial Chemical Industries plc, London, England

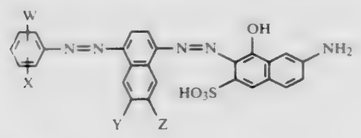
Filed Aug. 24, 1989, Ser. No. 398,369

Claims priority, application United Kingdom, Aug. 24, 1988, 8820117; Jun. 12, 1989, 8913460

Int. Cl.[5] C09B *31/08;* **C09D** *11/02*

U.S. Cl. 534—829 **12 Claims**

1. A dye which, in the free acid form, has the formula



I

wherein

W is COOH

X is selected from the group consisting of H, COOH, SO_3H, halo, nitro, cyano,

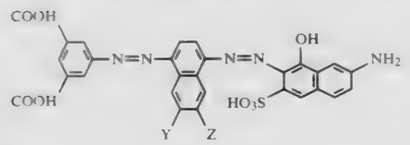
C_{1-6}-alkyl, C_{1-6}-alkoxy and C_{1-6}-acylamino

Y is H, COOH or SO_3H; and

Z is H, COOH or SO_3H;

provided that there are at least two COOH groups and that the number of COOH groups is equal to or greater than the number of SO_3H groups.

6. A dye which, in its free acid form, has the formula



II

wherein

Y is H or SO_3H

Z is H, COOH or SO_3H.

5,053,496

LOW VISCOSITY STATISTICAL MONOFUNCTIONAL CARBOXYLIC-TERMINATED, AMINE-TERMINATED, OR EPOXY-TERMINATED REACTIVE LIQUID RUBBER POLYMERS, AND A PROCESS FOR PREPARATION THEREOF

Robert J. Bertsch, Brecksville, and Alan R. Siebert, Orange Village, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Filed Apr. 27, 1990, Ser. No. 515,793

Int. Cl.[5] C08L *23/02, 25/04, 31/04, 33/00*

U.S. Cl. 534—886 **109 Claims**

1. A low viscosity monofunctional product, comprising:

a blend of statistical monofunctional carboxyl-terminated reactive liquid polymers (RLP) having a backbone of carbon-carbon linkages derived from free radical polymerization of monomers, said blend containing difunctional carboxyl-terminated RLP, monofunctional carboxyl-terminated RLP, and nonfunctional terminated RLP, said free radical polymerization being accomplished by utilizing a mixture of a first initiator fragment having a reactive carboxyl end group and a second initiator fragment having a non-reactive end group.

23. A process for providing a low viscosity statistical monofunctional carboxyl-terminated reactive liquid polymer comprising the steps of: initially mixing and reacting in a reactor vessel at least one vinyl monomer having at least one terminal vinyl group and a portion of initiator mixture, and comonomer if copolymerizing, in solvent, then after bringing the temperature to a polymerization temperature ranging from about 40° C. to about 120° C., polymerizing said vinyl monomer, and comonomer if copolymerizing, by adding and continuously metering the remaining initiator mixture, and comonomer if copolymerizing, to the vessel.

36. A low viscosity monofunctinoal polymer product, comprising:

a blend of statistical monofunctional amine-terminated reactive liquid polymers (RLP) having a backbone of carbon-carbon linkages derived from free radical polymerization of monomers, said blend containing difunctional amine-terminated RLP, monofunctional amine-terminated RLP, and nonfunctional terminated RLP, said free radical polymerization being accomplished by utilizing a mixture of a first initiator fragment having a reactive carboxyl end group and a second initiator fragment having a non-reactive end group to form a statistical monofunctional carboxyl-terminated reactive liquid polymer, and wherein said statistical monofunctional carboxyl-terminated polymer is reacted with a polyamine containing primary or secondary amine groups.

74. A low viscosity monofunctional polymer product, comprising:

a blend of statistical monofunctional epoxy-terminated reactive polymers (RP) having a backbone of carbon-carbon linkages derived from free radical polymerization of monomers, said blend containing difunctional epoxy-terminated RP, monofunctional epoxy-terminated RP, and nonfunctional terminated RP, said free radical polymerization being accomplished by utilizing a mixture of a first initiator fragment having a reactive carboxyl end group and a second initiator fragment having a non-reactive end group to form a statistical monofunctional carboxyl-terminated reactive liquid rubber, and wherein said statistical monofunctional carboxyl-terminated polymer is reacted with an epoxy resin.

90. A process for providing a low viscosity statistical monofunctional epoxy-terminated reactive polymer comprising the steps of:

reacting an epoxy resin with a statistical monofunctional carboxyl-terminated reactive liquid polymer at an effective temperature and optionally in the presence of a catalyst.

5,053,497

PHOSPHOLIPID CONJUGATES AND THEIR PREPARATION

Deng R. Hwang, Tarrytown; Mary E. Scott, Mount Vernon, and Eddie Hedaya, Hartsdale, all of N.Y., assignors to Technion Instruments Corporation, Tarrytown, N.Y.

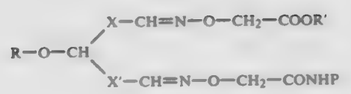
Continuation of Ser. No. 687,135, Dec. 28, 1984, abandoned.

This application Jul. 21, 1988, Ser. No. 224,195

Int. Cl.[5] C07F *9/10;* **C07H** *15/24;* **G01N** *33/531*

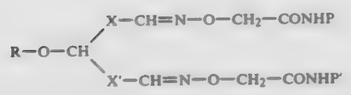
U.S. Cl. 536—6.1 **27 Claims**

1. A phospholipid conjugate compound of the formulae:



I

or



II

wherein R is derived from an organic compound containing 1,2-dihydroxy groups, which groups are subject to oxidative cleavage; X and X′ are side chain moieties connecting the carbon atoms resulting from oxidative cleavage of the 1,2-dihydroxy groups with the R moiety; P and P′ are phospholipid ethanolamine moieties; and R′ is hydrogen.

5,053,498

THERAPEUTIC AND PROPHYLACTIC AGENTS FOR PEPTIC ULCER

Yusei Shiraga, Hyogo; Chikara Fukaya, Osaka; Toshiaki Akira, Osaka; Masakazu Iwai, Osaka; Kazumasa Yokoyama, Osaka; Mamoru Tabata, Kyoto; Hiroshi Fukui, Shiga; Shigeo Tanaka, Kyoto; Yoshiro Iga, Osaka; Tadakazu Suyama, Kyoto, and Kanemichi Okano, Osaka, all of Japan, assignors to Green Cross Corporation, Osaka, Japan

Division of Ser. No. 867,169, May 27, 1986, Pat. No. 4,888,417.

This application Oct. 16, 1989, Ser. No. 421,917

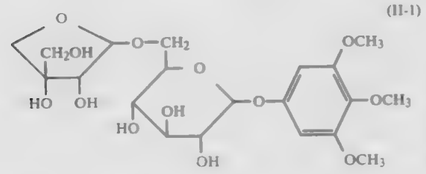
Claims priority, application Japan, May 25, 1985, 60-112836; May 25, 1985, 60-112837; May 25, 1985, 60-112838; Oct. 21, 1985, 60-234739

Int. Cl.[5] A61K *31/70*

U.S. Cl. 536—4.1 **13 Claims**

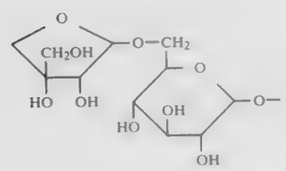
1. A process for the production of a therapeutic and prophylactic agent for peptic ulcers, which process comprises the steps of

(A) fractionating a hot water extract fraction of cinnamon by chromatography to obtain a compound of the formula (II-1):

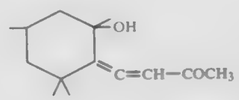


(II-1)

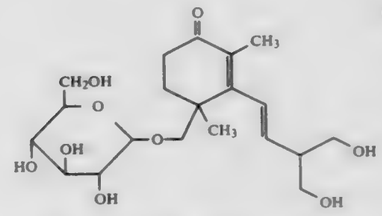
a compound of the formula (III-1):



(III-1)

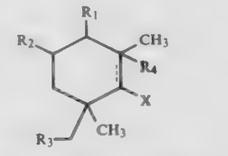


and a compound of the formula (IV-1):



(IV-1)

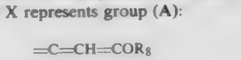
(B) thereafter chemically modifying at least one of said compounds (II-1), (III-1) or (IV-1) to obtain at least one of compound of formulae (I) or (II):



(I)

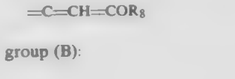
wherein R_1 represents hydrogen or =O; R_2 represents hydrogen or — OR_5; R_3 represents hydrogen or —OR_6; R_4 represents —OR_7 in the case of the absence of double bond; R_5, R_6 and R_7 each represents hydrogen or an organic residue;

X represents group (A):



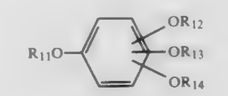
(A)

or group (B):



(B)

wherein R_8 represents alkyl, and R_9 and R_{10} each hydrogen or an organic residue; with the proviso that when X represents group (A), then R_1 and R_3 both represent hydrogen. R_2 represents —OR_5, R_4 represent OR_7 and the bond between the carbon atom to which X is attached and the carbon atom to which R_4 is attached is a single bond, and when X represents group (B), then R_1 represents =O. R_2 represents hydrogen, R_3 represent —OR_6 and the bond between the carbon atom to which X is attached and the carbon atom to which R_4 is attached is a double bond;



(II)

wherein R_{11} represents hydrogen or an organic residue, and R_{12}, R_{13} and R_{14} each represents an organic residue; and

(C) mixing said at least one compound of formulae (I) or (II) with a pharmaceutically acceptable carrier.

5,053,499

2',3'-DIDEOXY PURINE NUCLEOSIDE

Eiji Kojima; Hidetoshi Yoshioka, both of Iwakuni; Hidenori Fukunbara, Goutsu, and Kunichika Murakami, Iwakuni, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1989, Ser. No. 388,806
Claims priority, application Japan, Feb. 27, 1989, 1-46183
Int. Cl.[5] A61K *31/52, 31/70;* **C07D** *473/16, 405/4*
U.S. Cl. 536—24 **1 Claim**

1. The compound 2-Amino-6-chloropurine-9-β-D-2',3'-dideoxyribofuranoside.

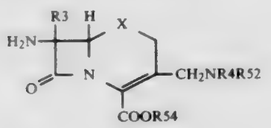
5,053,500

INTERMEDIATES FOR THE PREPARATION OF BETA-LACTAM ANTIBIOTICS

John P. Bailey, Macclesfield, England, and Georges Pasquet, Bazancourt, France, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 928,456, Nov. 10, 1986, abandoned. This application Jul. 20, 1990, Ser. No. 555,355
Claims priority, application France, Nov. 21, 1985, 85 402266
Int. Cl.[5] C07D *501/18*
U.S. Cl. 540—215 **5 Claims**

1. A compound of the formula LIV



LIV

wherein X is sulphur or sulphinyl (R or S configuration), R^3 is hydrogen or methoxy, R^{54} is hydrogen or a carboxyl protecting group and R^4 is hydrogen, (1–4C)alkyl, halo(1–4C)alkyl, hydroxy(1–4C)alkyl, (1–4C)alkoxy(1–4C)alkyl, carboxy(1–4)alkyl, amino(1–4C)alkyl, cyano(1–4C)alkyl, (1–4C)alkanoylamino(1–4C)alkyl, allyl, furfuryl, benzyl or pyridyl(1–4C)alkyl; and R^{52} is aryliC_{1-4}alkyl, di-p-anisylmethyl, furylmethyl, arylC_{1-4}alkoxycarbonyl, triC_{1-4}alkylsilyl, C_{1-4}alkylidene, benzylidene, substituted benzylidene and phthalimido, and acid-addition and base-addition salts thereof.

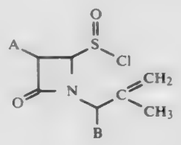
5,053,501

PREPARATION OF 3-EXOMETHYLENECEPHAM SULFOXIDES AND 2-CHLOROSULFINYLAZETIDINONES USING MOLECULAR SIEVES

Jagdfish C. Kapur, Delft; Jan J. De Koning, Rijswijk, and Roland P. Bezemer, Delft, all of Netherlands, assignors to Gist-Brocades N. V., Delft, Netherlands

Continuation-in-part of Ser. No. 384,988, Jul. 24, 1989, abandoned. This application Mar. 21, 1990, Ser. No. 497,541
Claims priority, application European Pat. Off., Mar. 22, 1989, 89200718.8
Int. Cl.[5] C07D *205/095, 501/10;* **C07B** *45/04*
U.S. Cl. 540—218 **13 Claims**

1. A process for the preparation of 2-chlorosulfinylazetidin-4-one of formula II or a pharmaceutically acceptable salt thereof:

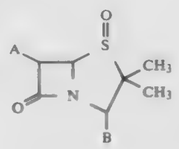


II

wherein

A is a protected amino group and
B is a protected carboxy group,

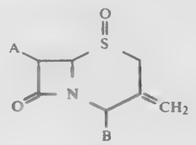
which comprises reacting a corresponding penam sulfoxide ester of the formula III



III

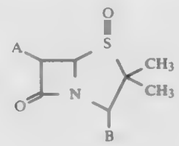
wherein A and B are as defined above, with a N-chloro halogenating agent, in the presence of molecular sieves and, optionally, converting the compound of formula II to a pharmaceutically acceptable salt thereof.

11. A one-pot process for the preparation of a 3-methylenecepham compound of formula I or a pharmaceutically acceptable salt thereof



I

wherein A and B are as defined in claim 1, which comprises reacting a corresponding penam sulfoxide of the formula III



III

wherein A and B are as defined above, with an N-chloro halogenating agent, in the presence of molecular sieves, adding an oxo compound and a Lewis acid, isolating the resulting complex and decomposing the same by adding a decomposing alcohol.

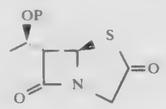
5,053,502

ANHYDRO PENICILLIN DERIVATIVES

Donald Hou, Verona; Yee-Shing Wong, Clifton; Dinesh Gala, East Brunswick, and Martin Steinman, Livingston, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 370,520, Jun. 23, 1989, Pat. No. 4,948,885, which is a division of Ser. No. 203,385, Jun. 7, 1988, Pat. No. 4,876,338, which is a division of Ser. No. 887,394, Jul. 21, 1986, Pat. No. 4,767,853. This application May 15, 1990, Ser. No. 524,185
Int. Cl.[5] C07D *499/00;* **A61K** *31/425*
U.S. Cl. 540—304 **1 Claim**

1. A compound represented by the formula



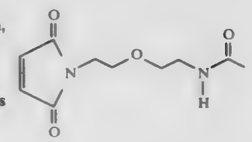
wherein P is a removable hydroxy protecting group.

5,053,503

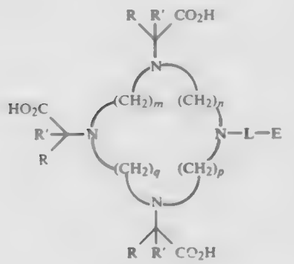
CHELATING AGENTS

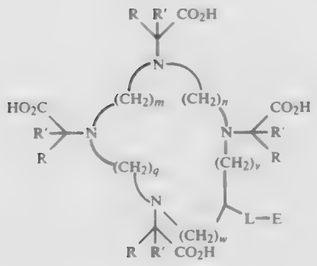
Richard T. Dean, and Robert W. Weber, both of Downingtown, Pa., assignors to Centocor, Malvern, Pa.

Filed Feb. 17, 1989, Ser. No. 312,767
Int. Cl.[5] C07D *251/02*
U.S. Cl. 540—474 **23 Claims**



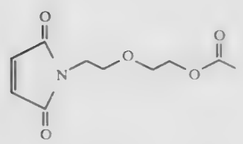
1. A coupling agent of the formulas



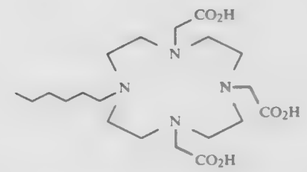


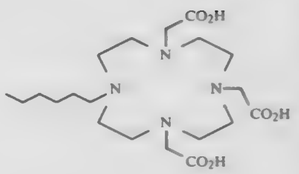
wherein E is a group capable of reacting with a site on a protein; L is an organic linking radical which may contain a cleavable site; R and R' are independently hydrogen or lower alkyl; m, n, p and q are integers which are independently selected from the group consisting of 2 and 3; v and w are integers which are independently selected the group consisting of 0, 1, and 2.

22. The bifunctional coupling agent of claim 1 which has the formula



23. The bifunctional coupling agent of claim 1 which has the formula





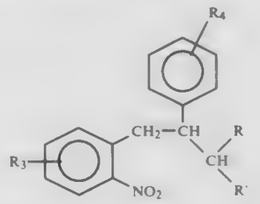
5,053,504

PROCESS FOR BENZAZEPINE INTERMEDIATES

Wen-Sen Li, Bensalem, Pa.; John K. Thottathil, Robbinsville, N.J., and Michael Murphy, Warwick, N.Y., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 29, 1989, Ser. No. 442,822
Int. Cl.[5] C07D *267/10, 295/12, 413/12, 413/14, 413/10, 213/46, 207/333, 233/60, 307/28, 333/16, 277/24*
U.S. Cl. 540—488 **2 Claims**

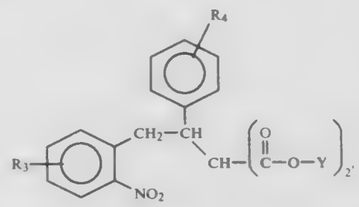
1. A process for preparing a compound of the formula



I

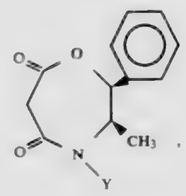
wherein R and R' are each

that is

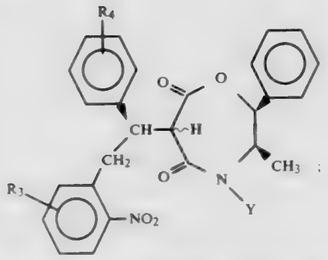


Ia

or wherein R and R' together with the methylene group to which they are attached form the ring system



that is



Ib

wherein Y is alkyl; R_3 is hydrogen, halogen, alkoxy, cyano,

fluoro substituted alkoxy, fluoro substituted alkyl, $-NO_2$, $-NY_{10}Y_{11}$, $-S(O)_m$alkyl, $-S(O)_m$aryl,

R_4 is hydrogen, halogen, alkyl, alkoxy, aryloxy, arylalkoxy, arylalkyl, cyano, hydroxy, alkanoyloxy,



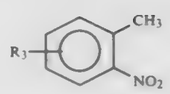
fluorosubstituted alkoxy, fluorosubstituted alkyl, (cycloalkyl-)alkoxy, $-NO_2$, $-NY_{10}Y_{11}$, $-S(O)_m$alkyl, $-S(O)_m$aryl,



m is zero, one or two; Y_8 and Y_9 are each independently hydrogen, aryl, alkyl or heteroaryl or Y_8 and Y_9 taken together with the nitrogen atom to which they are attached are pyrrolidinyl, piperidinyl or morpholinyl; Y_{10} and Y_{11} are each independently hydrogen, alkyl, alkanoyl, arylcarbonyl, heteroarylcarbonyl or

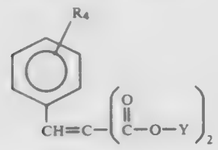
Y_{12} is hydroxy, alkoxy, aryloxy, amino, alkylamino or dialkylamino; and Y_{13} is alkyl, alkoxy or aryloxy;

comprising coupling a compound of the formula



III

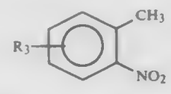
with a compound of the formula



IV

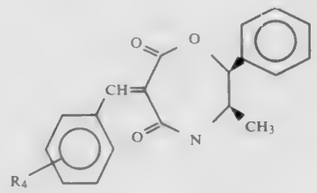
in the presence of a source of fluoride ion; or,

coupling a compound of the formula



III

to a compound of the formula



in the presence of a fluoride ion; wherein

the term "heteroaryl" refers to an aromatic heterocycle selected from the group consisting of pyridinyl, pyrrolyl, imidazolyl, furyl, thienyl and thaizolyl; and,

the term "aryl" refers to phenyl and phenyl substituted with 1, 2 or 3 substituents wherein the substituents are independently selected from the group consisting of amino, alkylamino, dialkylamino, nitro, halo, hydroxy, trifluoromethyl, C_{1-4}alkyl, C_{1-4}alkoxy, alkanoyloxy, carbamoyl and carboxy.

5,053,505

PROCESS FOR THE MANUFACTURE OF A TRI-SUBSTITUTED TRIAZINE STABILIZER

Pyong N. Son, Akron; John T. Lai, Broadview Heights, and Ronald M. Kovach, Avon Lake, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 21, 1990, Ser. No. 526,194

Int. Cl.[5] **C07D** *243/08, 403/04, 403/14*

U.S. Cl. 540—575 **23 Claims**

1. A process for substituting each halogen of a trihalotriazine with a polysubstituted cyclic amine to make a trisubstituted triazine, said process comprising, in a first sequence,

(a) charging said trihalo-s-triazine to a reaction zone containing enough alkylbenzene to form a solution of said trihalo-s-triazine;

(b) charging said amine amine charged being in the range from more than 2 but less than 3 moles of amine for each mole of said triazine;

(c) charging at least a 15% aqueous solution of inorganic base to said reaction zone so as to form a two-phase reaction mixture therewithin, the amount of said base being in a molar excess relative to said tri-halo-s-triazine, said molar excess being no more than 50% so as to maintain at least a volume ratio of alkylbenzene:water of at least 2.5; and,

(d) maintaining said reaction mixture at a temperature in the range from 20° C. to about 100° C. until at least 95% by weight of said trihalo-s-triazine is converted to monochlorointermediate ("MCI"); and, in a second sequence,

(e) charging an additional amount of said amine to said reaction zone, until the amount of amine in the reaction mixture is in the range from about 3.2 but no more than 3.5 moles of amine for 3 moles of said MCI,

(f) charging an additional amount of said aqueous solution of inorganic base to said reaction zone in a concentration no greater than 50%, the amount of said base being in a molar excess relative to said MCI, said molar excess being no more than 50% so as to maintain at least a volume ratio of alkylbenzene:water of at least 2.5; and,

(g) maintaining said reaction mixture at a temperature in the range from 125° C. but below 200° C. until at least 95% by weight of said MCI is converted to said tri-substituted triazine; and,

(h) recovering said tri-substituted triazine from said reaction mixture in at least a 90% yield and 90% purity.

5,053,506

SULFUR-CONTAINING MEROCYANINE DYES

Wolfgang H. Gunther, West Chester, Pa., and Frederick J. Sauter, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

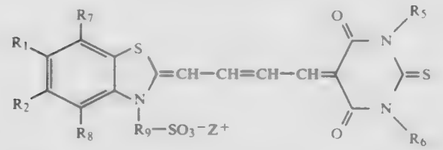
Continuation-in-part of Ser. No. 203,956, Jun. 8, 1988, Pat. No. 4,937,344. This application Feb. 26, 1990, Ser. No. 484,305

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[5] **C07D** *417/06*

U.S. Cl. 544—300 **1 Claim**

1. A compound having the following formula:



wherein:

R_1 and R_2 independently are H, alkyl of 1–10 carbon atoms, alkoxy of 1–3 carbon atoms, or carbocyclic aryl, and

R_7 and R_8 are H with the proviso that a pair of R's selected from the pairs R_1 and R_2, R_1 and R_7, and R_2 and R_8 together are the atoms necessary to form a fused 6-membered carbocyclic aromatic ring on the benzene radical to which they are attached;

R_5 and R_6 are each alkyl of 1–18 carbon atoms provided that the sum of the carbon atoms in R_5 and R_6 is at least 8;

R_9 is an alkylene group of 2–9 carbon atoms which can be interrupted by CONH; and

Z^+ is an alkali or alkaline earth metal or ammonium cation.

5,053,507

OPTICALLY ACTIVE PYRIMIDINES DERIVATIVES

Fumio Moriuchi, Suita; Hiroshi Yano, and Kazushige Kajita, both of Osaka, all of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

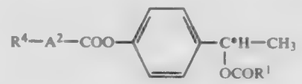
Filed Mar. 21, 1990, Ser. No. 497,057

Claims priority, application Japan, Apr. 1, 1989, 1-82700; Nov. 6, 1989, 1-289749

Int. Cl.[5] **C07D** *239/02, 309/06;* **C09K** *19/52*

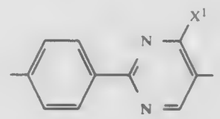
U.S. Cl. 544—334 **1 Claim**

1. An optically active compound of the formula



(4)

wherein R^1 is an alkyl group having 1 to 15 carbon atoms, R^4 is an alkyl or alkyloxy group having 1 to 15 carbon atoms and A^2 is



in which X^1 is hydrogen atom, a halogen atom or cyano group.

5,053,508

FUSED HETEROTRICYCLIC IMIDES WITH PSYCHOTROPIC ACTIVITY AND INTERMEDRATES THEREOF

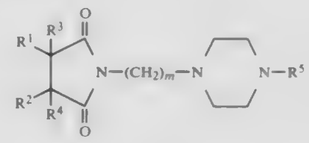
Guy A. Schiehser, Yardley; Magid A. Abou-Gharbia, Glen Mills, both of Pa., and Charles Lin, Plattsburgh, N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 9, 1990, Ser. No. 491,143

Int. Cl.[5] **C07D** *498/02*

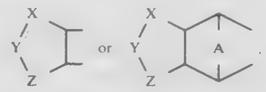
U.S. Cl. 544—357 **8 Claims**

1. A compound having the formula



wherein

R^1 and R^2 taken together represent



R^3 and R^4 are hydrogen;

R^5 is 2-pyridinyl, 2-pyrazinyl, 2-pyrimidinyl, 3-pyridazinyl or any of the foregoing R^5 moieties substituted by lower alkyl of 1–6 carbon atoms, lower alkoxy of 1–6 carbon atoms, halo lower alkyl of 1–6 carbon atoms, cyano, nitro or halo;

X, Y and Z are, independently, N, S, O, NR^6, CR^6 or CH_2, such that X, Y, and Z form a partially saturated or unsaturated 5-membered heterocycle selected from pyrrole, isopyrrole, pyrazole, 1,2,3-triazole, 1,3-dithiole, 1,2,3-oxathiole, isoxazole, or isothiazole; with the proviso that if X,

Y, or Z is CR^6, one of the adjacent positions is CR^6 or N and if X, Y, or Z is N, one of the adjacent positions is N or CR^6;

A is lower alkylene of 1–4 carbon atoms, O or S;

R^6 is hydrogen, lower alkyl of 1–6 carbon atoms, aryl of 6–10 carbon atoms, aralkyl having 1–6 carbons in the alkyl chain;

m is 3–7;

and the pharmaceutically acceptable salts thereof.

5,053,509

BENZO(1,8)NAPHTHYRIDINE DERIVATIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Michel Antoine, Paris; Michel Barreau, Montgeron; Jean-Francois Desconclois, Paris; Philippe Girard, Arpajon, and Guy Picaut, Villejuif, all of France, assignors to Laboratoire Roger Bellon, Seine, France

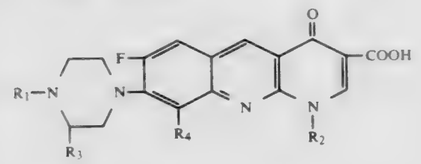
Filed Oct. 30, 1990, Ser. No. 605,340

Claims priority, application France, Oct. 30, 1989, 89 14203; Jul. 10, 1990, 90 08757

Int. Cl.[5] **A61K** *31/495;* **C07D** *471/06*

U.S. Cl. 544—361 **7 Claims**

1. A benzo[b][1,8]naphthyridine derivative of formula:



in which,

R_1 represents a hydrogen atom or a hydroxyl or alkyl radical,

R_2 represents a hydrogen atom or an alkyl or fluoroalkyl radical, a cycloalkyl radical containing 3 to 6 carbon atoms or alkyloxy or alkylamino radical,

R_3 represents a phenyl or phenylalkyl radical optionally substituted with at least one halogen atom or alkyl radical, cycloalkyl radical containing 3 to 6 carbon atoms, alkyloxy, cyano, amino, alkylamino, dialkylamino, alkyloxyalkyl, hydroxyalkyl, hydroxyalkyloxy, methylenedioxy, aminoalkyl or alkylaminoalkyl radicals or dialkylaminoalkyl radical in which the alkyl portions, with the nitrogen atom to which they are attached, can form a 5- or 6-membered heterocycle, or represents a 5-membered heterocyclic radical containing 1 or 2 hetero atoms selected from nitrogen, oxygen or sulphur, and

R_4 represents a hydrogen atom or a fluorine atom, and in which the alkyl radicals are linear or branched and contain 1 to 4 carbon atoms, in its isomeric forms or mixtures thereof, as well as its metal salts, its addition salts with nitrogenous bases, its addition salts with acids and its hydrated forms.

5,053,510

PROCESS FOR THE PREPARATION OF POLYCYCLIC COMPOUNDS

Wilhelm Kump, Biel-Benken, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

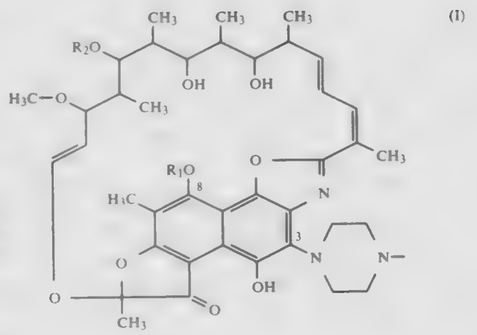
Filed Apr. 18, 1990, Ser. No. 510,753

Claims priority, application Switzerland, Apr. 26, 1989, 1595/89

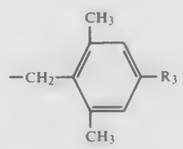
Int. Cl.[5] **C07D** *521/00*

U.S. Cl. 544—368 **10 Claims**

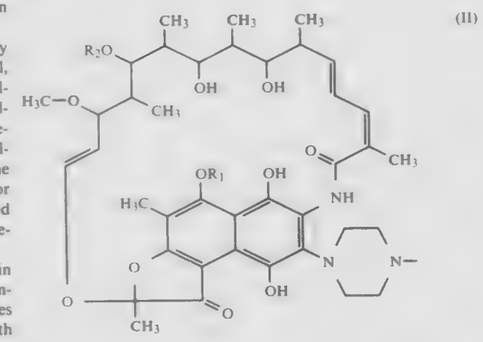
1. A process for the preparation of a compound of formula



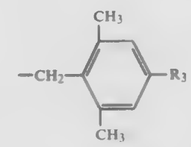
(I)



or a salt thereof, wherein R_1 is hydrogen or trialkylacetyl, R_2 is hydrogen or acetyl and R_3 is alkyl, which process comprises cyclising a compound of formula



(II)



wherein R_1 is trialkylacetyl and, if desired, converting a compound of formula I obtainable by said process or in another manner, or a salt thereof, into another compound of formula I or a salt thereof, or converting a resultant free compound of formula I into a salt and/or a resultant salt into the free compound of formula I or into another salt.

5,053,511

1,3-DIHYDRO-1-(PYRIDINYLAMINO)-2H-INDOL-2-ONES

Richard C. Effland, Bridgewater, and David G. Wettlaufer, Phillipsburg, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Continuation-in-part of Ser. No. 388,437, Aug. 2, 1989, Pat. No. 5,006,537. This application Jun. 11, 1990, Ser. No. 535,640

The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.

Int. Cl.[5] **C07D** *401/14*

U.S. Cl. 546—15 **8 Claims**

5. 1,3-Dihydro-1-(propyl-4-pyridinylamino)-3-spiro-1'-cyclopentan-2H-indol-2-one.

5,053,512

TOTAL SYNTHESIS OF 20(S) AND 20(R)-CAMPTOTHECIN AND COMPTHOTHECIN DERIVATIVES

Mansukh C. Wani, Durham; Allan W. Nicholas, Raleigh, and Monroe E. Wall, Chapel Hill, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Continuation of Ser. No. 38,157, Apr. 14, 1987, abandoned. This application Apr. 17, 1990, Ser. No. 511,953

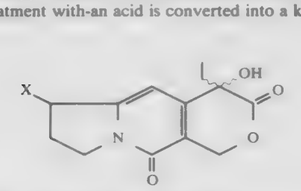
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.

Int. Cl.[5] **C07D** *491/147, 491/22;* **A61K** *31/47*

U.S. Cl. 546—41 **12 Claims**

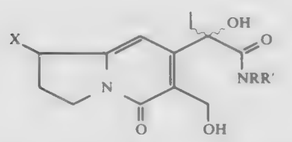
1. A method for producing substantially pure 20(S)-camptothecin, 20(R)-camptothecin or analogs thereof, comprising the steps of:

(a) reacting a mixture of enantiomeric lactones having formula (I), wherein X is an achiral ketal group which upon treatment with-an acid is converted into a keto group,



(I)

with a substantially enantiomerically pure primary or secondary amine having the formula RR^1NH, wherein R is an alkyl or aralkyl group containing a single chiral carbon and R^1 is hydrogen or an achiral alkyl, aralkyl or aryl group, to produce a mixture of diastereomeric amides with formula (II)

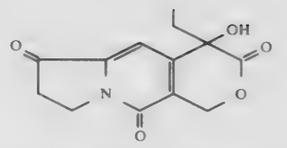


(II)

(b) triturating said diastereomeric amide mixture with a non-polar organic solvent whereby a precipitate enriched in the more polar amide of said diastereomeric mixture and a mother liquor enriched in the less polar amide of said diastereomeric amide mixture are formed;

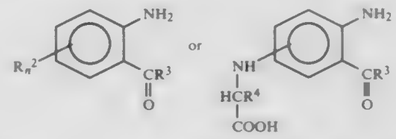
(c) separating said precipitate from said mother liquor;

(d) treating said precipitated amide with acid, whereby said precipitated amide is lactonized and deprotected to give an enantiomerically enriched ketolactone having formula (III)



(III)

(e) reacting said ketolactone with an ortho-amino carbonyl compound having the formula



wherein n=1 or 2 and R^2 is a member selected from the group consisting of C_{1-8} alkyl, C_{1-8} alkoxy, cyano, methylenedioxy, formyl, hydroxy, nitro, amino, amido, chloro, bromo, iodo, fluoro, aminomethyl, trifluoromethyl, azido, and hydrazinyl groups, R^3 is H or C_{1-8} alkyl; and R^4 is a side-chain of one of the twenty naturally occurring amino acids, to produce said camptothecin or camptothecin analog; and

(f) isolating said camptothecin or camptothecin analog.

10. The substantially pure 20(S)-camptothecin which is 10,11-methylenediox-20(S)-camptothecin.

5,053,513

METHOD OF REDUCING A CARBONYL CONTAINING ACRIDINE

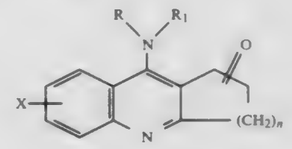
Thomas B. K. Lee, Whitehouse Station; George E. Lee, Somerville; George S. K. Wong, Summit; Donna M. Borek, New Providence, and Keith E. Goehring, Piscataway, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Mar. 29, 1990, Ser. No. 500,967

Int. Cl.[5] **C07D** *219/10*

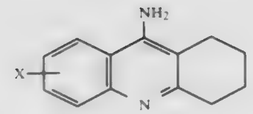
U.S. Cl. 546—79 **17 Claims**

1. A method of reducing a carbonyl containing acridine derivative of the formula

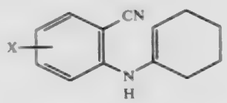


where n is 1,2 or 3 and X is hydrogen, loweralkyl, loweralkoxy, halogen, hydroxy, trifluoromethyl or NR_3R_4 where R_3 and R_4 are independently hydrogen or loweralkyl; R is hydrogen or loweralkyl; R_1 is hydrogen, loweralkyl, diloweralkylaminoloweralkyl, aryloweralkyl, diaryloweralkyl, furyloweralkyl, thienyloweralkyl, oxygen-bridged aryloweralkyl, oxygen-bridged diaryloweralkyl, oxygen-bridged furyloweralkyl or oxygen-bridged thienyloweralkyl which comprises reacting said carbonyl containing acridine with a noble metal catalyst under hydrogen pressure in the presence of an alkali metal base selected from lithium hydroxide and its hydrates in a suitable solvent.

15. A method of preparing a compound of the formula



or the pharmaceutically acceptable acid addition salts thereof which comprises cyclizing a compound of the formula



in the presence of iron halide or iron halide hydrate and a basic inorganic salt to obtain said compound.

5,053,514

CARDIOTONICS

Takafumi Fujioka, Itano; Shuji Teramoto, Tokushima; Michiaki Tominaga, Itano, and Yoichi Yabuuchi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Company, Limited, Tokyo, Japan

Filed Aug. 9, 1989, Ser. No. 391,305

Claims priority, application Japan, Aug. 10, 1988, 63-200929; Feb. 14. 1989, 63-34688; Jun. 21, 1989, 63-160170

Int. Cl.[5] C01D *215/227*

U.S. Cl. 546—157 **2 Claims**

2. 6-[3-(3,4-dimethoxy-benzylamino)-2-hydroxypropoxy]-carbostyril.

5,053,515

GLUTARIMIDO AND SUCCINIMIDO DERIVATIVES

Frank Molock, Lawrenceville; J. Richard Robertson, Jr., and Kai C. Su, both of Alpharetta, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 369,429, Jun. 21, 1989, Pat. No. 4,921,956, which is a division of Ser. No. 160,623, Feb. 26, 1988, Pat. No. 4,859,780. This application Feb. 5, 1990, Ser. No. 475,049

Int. Cl.[5] C07D *211/40, 207/50, 207/36*

U.S. Cl. 546—220 **4 Claims**

1. A compound of the formula

X—T—G

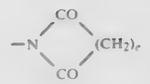
wherein

X is vinyl, 1-lower alkyl vinyl, 2-lower alkyl vinyl or 1,2-di-lower alkyl vinyl;

T is alkylene of 2 to 6 carbon atoms terminated on one side by carbonyloxy, the carbonyloxy group being bound to X, with T being terminated on the other end by —NHCO—; or

T is a divalent alkylene-arylene group wherein the alkylene group is alkylene of 1 to 6 carbon atoms and is terminated on the side bound to the arylene by —OOCNH— the nitrogen being bound to the arylene, the alkylene group being terminated on the other end by carbonyloxy with the carbonyl group being bound to X, and where the arylene is of 6 to 10 carbon atoms or is optionally substituted by alkyl of 1 to 4 carbon atoms and the arylene group being substituted on the other side by —NHCO— with the nitrogen being bound to the arylene; and

G is a group of the formula



where e is 2 or 3, said group being unsubstituted or substituted by lower alkyl.

5,053,516

SYNTHESIS OF 2-SUBSTITUTED-5-METHYLPYRIDINES FROM METHYLCYCLOBUTANECARBONITRILE, VALERONITRILE AND PENTENONITRILE INTERMEDIATES

Ludwig A. Hartmann, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 613,216, May 23, 1984, abandoned. This application Mar. 12, 1990, Ser. No. 492,004

Int. Cl.[5] C07D *213/08, 213/12*

U.S. Cl. 546—251 **5 Claims**

1. A process for synthesizing a 2-halo-5-methylpyridine wherein said halo group is selected from Br and Cl which comprises cyclizing 4-formyl-2-pentenonitrile in the presence of HBr or HCl at temperatures gradually increasing from 35°–100° C.

5,053,517

PROCESS FOR PREPARING PYRAZOLECARBOXYLIC ACID COMPOUNDS

Shinichiro Takigawa, and Shuzo Shinke, both of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

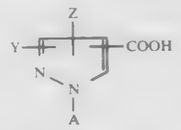
Filed Jun. 16, 1989, Ser. No. 367,428

Claims priority, application Japan, Jul. 4, 1988, 63-166274

Int. Cl.[5] C07D *401/00, 231/14, 51/16*

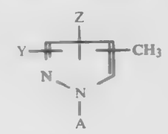
U.S. Cl. 548—376 **23 Claims**

1. A process for preparing a pyrazolecarboxylic acid compound represented by the formula (II):



(II)

wherein Y and Z each represent a hydrogen atom, a halogen atom, a nitro group, a cyano group, $COOR_1$, NR_1R_2, $CONR_1R_2$, SR_1, $SO_2NR_1R_2$, SO_2R_3, R_3CO, OR_4, CHX_2 or CX_3; A represents a methyl group; where R_1 and R_2 each represent a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; R_3 represents an alkyl group having 1 to 10 carbon atoms; R_4 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted phenyl group, CHF_2, CF_2 or CF_3CH_2; and X represents a halogen atom which comprises oxidizing a pyrazole compound represented by the formula (I):



(I)

wherein Y, Z and A have the same meanings as defined above, by contacting said compound of the formula (I) with an oxygen-containing gas in the presence of a metal compound catalyst, at a temperature of 20° to 200° C. the partial pressure of said oxygen-containing gas being from atmospheric pressure to 80 kg/cm^2 and the said metal compound catalyst is in an amount of 0.1 to 20 gram-atom based on 100 moles of the compound of the formula (I) and is at least one compound selected from the group consisting of iron compounds, cobalt compounds, nickel compounds, manganese compounds, cerium compounds and zirconium compounds.

5,053,518

HYDROXY-SUBSTITUTED CYCLIC-1,6-DIAZA[4.4]SPIRODILACTAMS

Pen-Chung Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 245,618, Sep. 16, 1988, Pat. No. 4,939,251, which is a continuation-in-part of Ser. No. 172,000, Mar. 23, 1988, abandoned, and a continuation-in-part of Ser. No. 172,052, Mar. 23, 1988, abandoned. This application May 16, 1990, Ser. No. 524,412

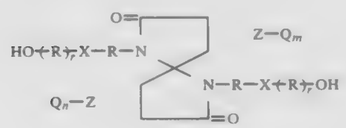
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.

Int. Cl.[5] C07D *515/10*

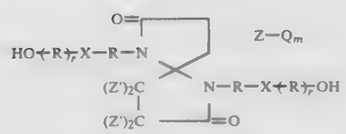
U.S. Cl. 548—410 **9 Claims**

1. A compound of the formula V

(Va)



(Vb)



wherein Z is a saturated or unsaturated ring system of from 1 to 2 rings each having 5 to 6 ring atoms, up to two of which are heteroatoms selected from nitrogen, oxygen or sulfur with the remainder of the ring atoms being carbon atoms, two of which form a bridge between the carbon atom of a carboxy function and the center ring spiro carbon atom; R independently is (cyclo)aliphatic or aromatic of up to 10 carbon atoms, inclusive; r is 0 or 1; each m and n independently is an integer of 0 to 6; each Q is independently halogen, haloalkyl, alkyl, alkoxy, alkylthio, tertiary-amino, tertiary-aminoalkyl, in which each alkyl has up to 10 carbon atoms, or aryloxy of up to 10 carbon atoms and 1 to 2 rings, with the proviso that at least one of m and n is not zero; Z′ is hydrogen, alkyl of up to 4 carbon atoms, halogen or aryl of up to 10 carbon atoms; and X is a direct valence bond, an alkylene group of up to 8 carbon atoms, inclusive, oxy, thio, sulfonyl, carbonyl, dioxyphenylene, 2,2-bis(oxyphenyl)propane or dioxydiphenylene.

5,053,519

CIS, ENDO-2-AZABICYCLO-[3.3.0]-OCTANE-5-CARBOXYLIC ACIDS

Volker Teetz, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main; Hansjörg Urbach, Kronberg/Taunus; Reinhard Becker, Wiesbaden, and Bernward Schölkens, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 71,147, Jul. 8, 1987, abandoned, which is a continuation of Ser. No. 658,902, Oct. 9, 1984, Pat. No. 4,727,160, which is a division of Ser. No. 477,081, Mar. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 438,757, Nov. 3, 1982, abandoned. This application Feb. 28, 1989, Ser. No. 318,519

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143946; Jul. 17, 1982, 3226768

Int. Cl.[5] C07D *209/02*

U.S. Cl. 548—452 **7 Claims**

1. A mixture consisting essentially of enantiomers of the formulas



or a salt of such enantiomers with an acid or a base, wherein the hydrogen atoms on the bridge-head carbon atoms in the 1- and 5-positions are in the cis configuration relative to one another and the —CO_2W group on the carbon atom in the 3-position is oriented in the endo position relative to the bicyclic ring system, and wherein W is hydrogen, alkyl having 1–6 carbon atoms, or aralkyl having 7 or 8 carbon atoms.

5,053,520

HETEROBIFUNCTIONAL MALEIMIDO CONTAINING COUPLING AGENTS

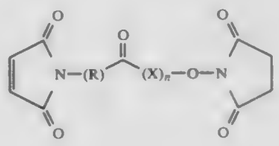
Christopher Bieniarz, Highland Park; Christopher J. Welch, Urbana, and Grady Barnes, Lindenhurst, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 246,971, Sep. 22, 1988, Pat. No. 4,994,385, Continuation-in-part of Ser. No. 114,930, Oct. 30, 1987, abandoned. This application Oct. 1, 1989, Ser. No. 402,012

Int. Cl.[5] C12N *11/14;* **C07K** *17/06*

U.S. Cl. 548—520 **6 Claims**

1. A heterobifunctional reagent for linking two proteins comprising:



wherein

X is amino acid having from three to ten carbon atoms in a straight chain;

R is cycloaklyl or alkyl-cycloalkyl; and

n is from three to ten.

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5,053,521

VARIOUS N-SUBSTITUTED 3-PIPERIDINE CARBOXYLIC ACIDS OR N-SUBSTITUTED 3-PYRIDINECARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Michael R. Pavia, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 207,688, Jun. 16, 1988, Pat. No. 4,910,312, which is a continuation-in-part of Ser. No. 110,052, Oct. 14, 1987, Pat. No. 4,772,615, which is a continuation of Ser. No. 927,908, Nov. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 897,308, Aug. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 796,345, Nov. 10, 1985, abandoned. This application Dec. 15, 1989, Ser. No. 451,393

Int. Cl.[5] C07D *207/08*

U.S. Cl. 548—572 **2 Claims**

1. 3-Pyrrolidineacetic acid, 1-[2-[bis(4-chlorophenyl)methoxy]ethyl]-.

2. 3-Pyrrolidineacetic acid, 1-[2-[bis(4-chlorophenyl)methoxy]ethyl]-, methyl ester.

5,053,522

PROCESS FOR THE PREPARATION OF LACTIDE

Manfred Muller, Bickenbach, Fed. Rep. of Germany, assignor to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 99,561, Sep. 22, 1987, abandoned. This application May 5, 1989, Ser. No. 347,856

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1987, 3708915

Int. Cl.[5] C07D *319/12*

U.S. Cl. 549—274 **3 Claims**

1. A continuous or semicontinuous process for preparing L(−) or D(+)-lactide of substantial optical purity, wherein L(−) -polylactic acid is employed as the starting material to make L(−) lactide and D(+)-polylactic acid is employed as the starting material to make D(+)-lactide, wherein the starting materials are of 90% optical purity, and wherein the polylactic acid is heated to about 130 ° to 230° C., under reduced pressure, in the presence of about 0.05 to 1.0 per cent by weight of a catalyst selected from the group consisting of tin dust, tin halide and organic tin compounds derived from C_1–C_{20} carboxylic acids.

5,053,523

ETHYNYL-CHROMAN COMPOUNDS

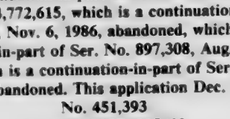
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 409,477, Sep. 19, 1989, Pat. No. 5,023,341. This application Nov. 6, 1990, Ser. No. 610,491

Int. Cl.[5] C07D *311/04*

U.S. Cl. 549—398 **9 Claims**

1. Compounds of the formula,



wherein

X is O and

R_1, R_2, R_3, R_4 and R_5 are hydrogen or lower alkyl having to 6 carbons, or salts of the compounds of the formula defined herein.

5,053,524

3-AMINOPHENYLPENTANE-1,5-DIONES

Friedrich-Wilhelm Raulfs, Mannheim; Udo Mayer, Frankenthal, and Andreas Oberlinner, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

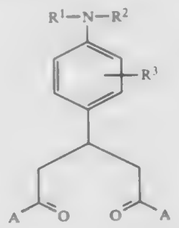
Filed Apr. 27, 1990, Ser. No. 515,840

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914379

Int. Cl.[5] C07C *211/45, 211/48, 255/17, 255/50*

U.S. Cl. 558—394 **6 Claims**

1. A 3-aminophenyl-pentane-1,5-dione of the formula I

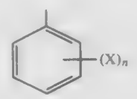


(I)

where

R^1 and R^2 are indenpendently of one another hydrogen; C_1–C_8-alkyl; C_4–C_8-cycloalkyl; cyano-C_2–C_4-alkyl; hydroxy-C_2–C_4-alkyl; chloro-C_2–C_4-alkyl; phenyl -C_1–C_2-alkyl, which can be substituted by chlorine; or phenyl, which can be substituted by chloirine or methyl;

R^3 is hydrogen, fluorine, chlorine, C_1–C_2-alkyl or C_1–C_5-alkoxy; and A is naphthyl or a radical of the formula II



(II)

where

X is fluroine, chlorine, bromine, hydroxyl, C_1–C_5-alkoxy, pehnoxy, phenyl -C_1–C_2-alkoxy, cyano or phenyl and

n is 1 or 2.

5,053,525

OXO-ANALOGS OF MEVINOLIN-LIKE ANTIHYPER-CHOLESTEROLEMIC AGENTS

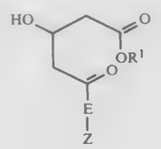
William F. Hoffman; Ta J. Lee, both of Lansdale, and Gerald E. Stokker, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 550,707, Nov. 14, 1983, abandoned. This application Feb. 13, 1986, Ser. No. 828,817

Int. Cl.[5] C07C *9/76*

U.S. Cl. 560—107 **9 Claims**

1. A compound of structural formula:



wherein:

R^1 is

(1) hydrogen,

(2) C_{1-4}alkyl,

(3) 2,3-dihydroxypropyl,

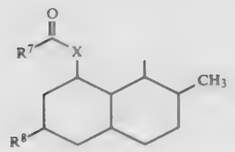
(4) alkali metal cation, or

(5) ammonium of formula $NR^3R^4R^5R^6$ wherein R^3, R^4, R^5

and R^6 are independently hydrogen or C_{1-4} alkyl or joined together to form a 5- or 6-membered heterocycle with the nitrogen to which they are attached;

E is $—CH_2CH_2—$, —CH=CH—, or $(CH_2)_3$—; and

Z is

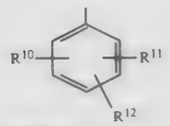


1)

wherein X is —O— or $—NR^9$ wherein R^9 is hydrogen or C_{1-3}alkyl;

R^7 is C_{2-8} alkyl;

R^8 is hydrogen or $—CH_3$;



2)

wherein R are independently

a) hydrogen,

b) halogen, such as bromo, chloro or fluoro,

c) C_{1-4}alkyl,

d) halo-C_{1-4}alkyl,

e) phenyl either unsubstituted or substituted with one or more of

i) C_{1-4}alkoxy,

ii) C_{1-4}alkyl,

iii) C_{2-8}alkanoyloxy,

iv) halo-C_{1-4}alkyl, or

v) halo,

f) OR^{13} wherein R^{13} is

i) hydrogen,

ii) C_{2-8}alkanoyl,

iii) benzoyl,

iv) phenyl,

v) halophenyl,

vi) phenyl-C_{1-3}alkyl, either unsubstituted or substituted with one or more of halogen, C_{1-4}alkoxy, C_{1-4}alkyl or halo-C_{1-4}alkyl,

vii) C_{1-9}alkyl,

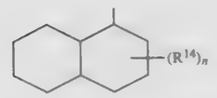
viii) cinnamyl,

ix) halo-C_{1-4}alkyl,

x) allyl,

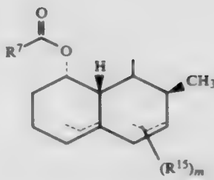
xi) C_3-6cycloalkyl-C_{1-3}alkyl, or

xii) adamantyl-C_{1-3}alkyl;



3)

wherein n is 0–2 and R^{14} is halo or C_{1-4} alkyl; or



4)

wherein the dotted lines represent possible double bonds there being 0, 1 or 2 double bonds;

m represents 1, 2 or 3; and

R^{15} is

1) methyl,

2) hydroxy,

3) C_{1-4} alkoxy,

4) oxo, or

5) halo.

5,053,526

PHARMACEUTICALS CONTAINING PROSTAGLANDIN I_2

Masakatsu Shibasaki, Tokyo; Mikiko Sodeoka; Yuji Ogawa, both of Sagamihara; Toshiaki Mase, Sagamihara; Akira Ishibashi, Ami; Daijiro Horii, Sakura; Toshiji Kanayama, Ami; Katsuhiko Iseki, Abiko; Masaki Shinoda; Chiyoko Ishiyama, both of Ami, and Yoshio Hayashi, Ushiku, all of Japan, assignors to Mitsubishi Kasei Corporation and Sagami Chemical Research Center, both of Tokyo, Japan

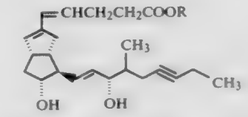
Continuation of Ser. No. 333,733, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 206,943, Jun. 13, 1988, abandoned, which is a continuation of Ser. No. 99,779, Sep. 22, 1987, abandoned, which is a continuation of Ser. No. 763,618, Aug. 8, 1985, Pat. No. 4,699,921. This application Apr. 16, 1990, Ser. No. 511,945

Claims priority, application Japan, Aug. 9, 1984, 59-165669; Jul. 31, 1985, 60-167681

Int. Cl.[5] C07L *177/00*

U.S. Cl. 560—119 **4 Claims**

1. A prostaglandin I_2 analogue for circulation amelioration having the following formula:



wherein R represents a hydrogen atom, a methyl group or an ethyl group.

5,053,527

PROCESS FOR THE MANUFACTURE OF ALKYL PYRUVATES

Yani Christidis, and Jean-Claude Vallejos, both of Paris, France, assignors to Societe Francaise Hoechst, Puteaux, France

Continuation of Ser. No. 299,692, Jan. 23, 1989, abandoned. This application May 18, 1990, Ser. No. 525,209

Claims priority, application France, Jan. 22, 1988, 88 00676

Int. Cl.[5] C07C *69/68*

U.S. Cl. 560—174 **6 Claims**

1. In a process for the manufacture of alkyl pyruvates having the general formula:

$CH_3—CO—COOR$

wherein R represents a C_1–C_8 alkyl radical, by oxidation of the corresponding alkyl lactate, the improvement comprising;

admixing a 30 to 70% by weight aqueous hydrogen peroxide solution into a solution of the alkyl lactate in an organic water-immiscible solvent containing a catalytic quantity of bromine while maintaining a temperature of 15°–30° C.

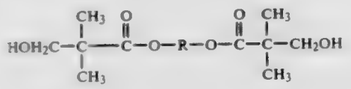
5,053,528

DIHYDROXY COMPOUNDS WITH ESTER GROUPS AND PREPARATION THEREOF

Kaspar Bott, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,227
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831681
Int. Cl.[5] C07C *69/675*
U.S. Cl. 560—189 1 Claim

1. An ester group-containing dihydroxy compound of the formula I



(I)

where R is polyoxyalkylene of from 2 to 50 oxyalkylene groups in a blockwise or random arrangement and having from 2 to 4 carbon atoms in the alkylene radical.

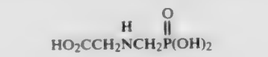
5,053,529

PROCESS FOR THE PREPARATION OF N-PHOSPHONOMETHYLGLYCINE

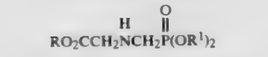
Hyun-Joon Ha, and Kyong Pae Park, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Nov. 2, 1990, Ser. No. 608,471
Claims priority, application Rep. of Korea, May 25, 1990, 7634/1990
Int. Cl.[5] C07F *9/38*
U.S. Cl. 562—18 3 Claims

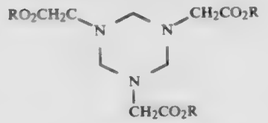
1. A process for the preparation of N-phosphonomethylglycine of the formula (I) which comprises the steps of a reacting 1,3,5-tricarboalkoxymethylhexahydro-s-triazine of the formula (III) with trialkylphosphite of the formula (IV) in the presence of titanium tetrachloride to form N-phosphonomethylglycine triester of the formula (II), and b. converting the triesters into a corresponding acid N-phosphonomethylglycine by saponification,



(I)



(II)



(III)

(IV)

wherein R and R^1 represent methyl or ethyl, respectively.

5,053,530

PREPARATION OF ISETHIONIC ACID WITH ORGANIC ACID

John S. Roberts, Bartlesville, Okla., and Harold W. Mark, Summerville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1990, Ser. No. 506,984
Int. Cl.[5] C07C *303/00*
U.S. Cl. 562—109 8 Claims

1. A process for the preparation of isethionic acid comprising: contacting an isethionate selected from the group consisting of alkali metal and alkaline earth metal isethionates with a carboxylic acid.

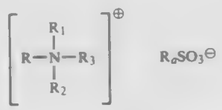
5,053,531

QUATERNARY AMMONIUM ANTISTATIC COMPOUNDS

Cheruthur Govindan, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 268,903, Nov. 8, 1988, Pat. No. 4,904,825.
This application Dec. 12, 1989, Ser. No. 449,651
Int. Cl.[5] C07C *213/00*
U.S. Cl. 562—114 6 Claims

1. A quaternary ammonium compound represented by the graphic formula:



wherein R is octyl, R_1 and R_2 are each selected form the group consisting of C_1–C_2 alkyl and the radical, $—CH_2—C(A)H—O]_xH$, R_3 is the radical, $—CH_2—C(A)H—O]_xH$, R_a is C_1–C_2 alkyl, A is selected from the consisting of hydrogen, methyl and ethyl, and x is 1.

5,053,532

ONE-POT PROCESS FOR THE PREPARATION OF α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER HYDROCHLORIDE

John B. Hill, Woodstock; Yefim Gelman, Arlington Heights; Hugh L. Dryden, Jr., Deerfield; Robert Erickson, Des Plaines; Kuang Hsu, Skokie, and Mark R. Johnson, Roselle, all of Ill., assignors to The Nutra Sweet Company, Deerfield, Ill.

Continuation of Ser. No. 156,267, Feb. 12, 1988, abandoned.
This application Jul. 3, 1990, Ser. No. 547,429
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[5] C07C *229/00*
U.S. Cl. 562—450 6 Claims

1. A method of preparing α/β-N-formyl-L-aspartyl -L-phenylalanine isomers which comprises:
(a) reacting N-formyl-L-aspartic anhydride with L-phenylalanine,
(b) in the presence of acetic acid and an alkyl ester or a hindered alcohol, and
(c) under agitation conditions sufficient to form a final reaction mixture which is pourable.

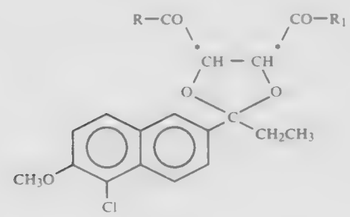
5,053,533

PROCESS FOR PREPARING NAPROXEN

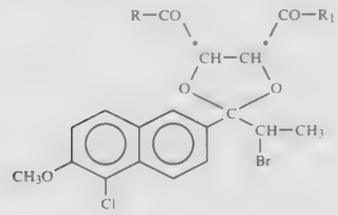
Claudio Giordano, Monza, and Marco Villa, Milan, both of Italy, assignors to Zambon Group SPA, Italy

Filed Jul. 25, 1988, Ser. No. 223,377
Claims priority, application Italy, Jul. 28, 1987, 21485 A/87
Int. Cl.[5] C07C *62/06*
U.S. Cl. 562—466 1 Claim

1. An improved commercial process for preparing naproxen from a naphthalene derivative comprising
(a) reacting under Friedel-Crafts conditions 1-chloro-2-methoxy-naphthalene with propionyl chloride in methylene chloride at a temperature of from about 0° C. to ambient temperature in the presence of aluminum chloride to form 1-(5-chloro-6-methoxy-2-naphthyl)-1-propanone,
(b) using directly, without isolation or purification, the reaction products of step (a), including 1-(5-chloro-6-methoxy-2-naphthyl)-1-propanone, to react with natural tartaric acid or its derivatives to form a compound of the formula



wherein R and R_1, which can be identified or different, represent hydroxy, alkoxy, amino, substituted amino, or O-M^+ wherein M^+ is the cation of an alkaline or an alkaline earth metal or ammonium;
(c) brominating the reaction product of step (b) to form a compound of the formula



wherein R and R_1 are as previously defined;
(d) subjecting the compound of step (c) to rearrangement in water at acid pH to obtain (2S)-2-(5-chloro-6-methoxy-2-naphthyl)-propionic acid; and
(e) subjecting the compound of step (d) to hydrogenolysis to remove the 5-chloro group and form naproxen.

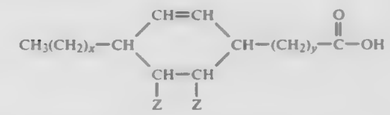
5,053,534

PROCESS FOR MAKING A DICARBOXYLIC ACID

John P. Cosgrove, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 11, 1990, Ser. No. 596,021
Int. Cl.[5] C07C *51/00*
U.S. Cl. 562—509 5 Claims

1. A process for the production of a 21 carbon dicarboxylic acid capable of being distilled to a purity of at least 95% which comprises reacting a fatty acid mixture containing conjugated linoleic acid, in the absence of a catalyst, with up to 26% by weight of said fatty acids of acrylic acid at a temperature between 180° C. to 300° C. to convert the conjugated linoleic acid portion to said dicarboxylic acid having the formula:



wherein X and Y are integers, X and Y together equal 12, at least one Z is a carboxylic acid group and any remaining Z is hydrogen.

5,053,535

PROCESS FOR PRODUCING α-HYDROXYISOBUTYRIC ACID

Yoshikazu Shima; Takafumi Abe; Hirofumi Higuchi, all of Niigata, and Koichi Kida, Tsukuba, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 23, 1990, Ser. No. 618,058
Claims priority, application Japan, Mar. 26, 1990, 2-73381
Int. Cl.[5] C07C *59/00*
U.S. Cl. 562—579 9 Claims

1. A process for producing an α-hydroxyisobutyric acid which comprises hydrolyzing α-hydroxyisobutyric acid ester in the presence of an organic sulfonic acid catalyst.

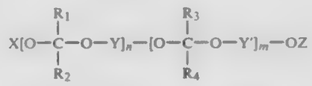
5,053,536

FLUORINATION OF ACETALS, KETALS AND ORTHOESTERS

Thomas R. Bierschenk; Timothy Juhlke, both of Round Rock; Hajimu Kawa, and Richard J. Lagow, both of Austin, all of Tex., assignors to Exfluor Research Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 250,384, Sep. 28, 1988, abandoned. This application Sep. 28, 1989, Ser. No. 413,785
Int. Cl.[5] C07C *59/245*
U.S. Cl. 562—582 4 Claims

1. A perhalogenated polyether having an average formula:



wherein Y and Y′ are the same or different and are selected from the group consisting of linear and branched perfluoroalkylenes having at least 2 carbon atoms; perfluoroalkylenehypheratehereoxyalkylene and perfluoropoly(alkyleneoxyalkylene) each having alkylene groups containing at least two carbon atoms wherein in Y or Y′ one or more of the fluorine atoms may be substituted by a halogen atom other than fluorine; wherein X and Z are the same or different and are selected from the group consisting of $—(CF_2)_rCOF$, $—(CF_2)_rOCF_3$, $—(CF_2)_rCOOH$ and $C_rF_{2r+1-q}Cl_q$, wherein r is an integer from 1 to 12 and q is an integer from 0 to 25; wherein R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of —F, —Cl, $—CF_2Cl$, $—CFCl_2$, $—CCl_3$, perfluoroalkyl of one to ten carbon atoms and perfluoroalkoxyalkyl of one to ten carbon atoms wherein one or more of the fluorine atoms may be substituted by a halogen atom other than fluorine; wherein n is an integer from 2 to 1,000; and wherein m is an integer from 0 to 1,000; provided that when R_1, R_2, R_3 and R_4 together are F, then Y or Y′ comprises an ethylene group having at least one fluorine atom which is substituted by a halogen other than fluorine.

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AMMONIUM AND IMINIUM COMPOUNDS

Jörg Gitzel, Hattersheim am Main; Hans-Tobias Macholdt, Darmstadt; Frank Wehowsky, Niedernhausen, and Günther Prossel, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

Filed Nov. 2, 1989, Ser. No. 430,740

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1988, 3837344; Jan. 17, 1989, 3901153

Int. Cl.[5] C07F *5/02*

U.S. Cl. 564—8 13 Claims

1. An ammonium compound of the formula (I)



(I)

in which at least one of the radicals R_1 to R_4 denotes a straight-chain fluorine-containing unsaturated and/or saturated alkyl radical having 4 to 30 carbon atoms and not more than three of the radicals R_1 to R_4 independently of one another denote hydrogen atoms or straight-chain or branched alkyl or hydroxyalkyl radicals having 1 to 30 carbon atoms, and R_5 to R_6 denote phenyl, p-chlorophenyl, p-fluorophenyl, p-toluyl, or naphthyl radicals or fluorine atoms.

5,053,538

PROCESS FOR ENHANCED UREA PRODUCTION

Max Linton, Beaumaris, and Anthony M. Brown, Mt. Gravatt, both of Australia, assignors to Austral-Pacific Fertilizers Ltd., Australia

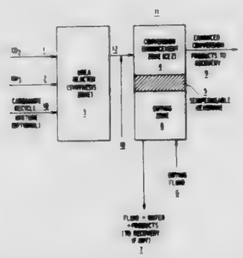
PCT No. PCT/AU88/00301, § 371 Date Apr. 12, 1990, § 102(e) Date Apr. 12, 1990, PCT Pub. No. WO89/01468, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 12, 1988, Ser. No. 473,956

Claims priority, application Australia, Aug. 13, 1987, PI3711

Int. Cl.[5] C07C *273/04*

U.S. Cl. 564—70 15 Claims



1. A process for the production of urea which comprises the steps of reacting carbon dioxide and ammonia to form ammonium carbamate and subsequent decomposition of ammonium carbamate to form a reaction mixture comprising urea and water, wherein the reaction mixture is contacted with one side of a semi-permeable membrane, a drying fluid capable of removing water and possibly other reaction product(s) from the reaction mixture is contacted with the other side of the semi-permeable membrane, and urea is recovered from the reaction mixture after contact with the semi-permeable membrane and optionally also from the drying fluid.

5,053,539

METHYLENE-CROSSLINKED POLYARYLAMINE AND PROCESS FOR PREPARING SAME

Naoyuki Yano; Tatsuya Nagayoshi; Takashi Nagou; Zunzi Tashima; Noritoshi Ishida; Hiroyuki Itoh, and Katsuyuki Nagamatsu, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 17, 1991, Ser. No. 642,338

Claims priority, application Japan, Apr. 11, 1990, 2-94065

Int. Cl.[5] C07C *211/00*

U.S. Cl. 564—333 2 Claims

1. A process for preparing a methylene-crosslinked polyarylamine by reacting aniline with formalin in the presence of hydrochloric acid under the following conditions (a), (b), (c) and (d):

(a) the amount of hydrochloric acid is in the range of from 0.1 to 0.5 mole per mole of aniline;

(b) the amount of aniline is in the range of from 1.5 to 4.0 moles per mole of formalin;

(c) the reaction is divided in at least four stages, and

the reaction in the first stage is carried out at 20 to 50° C. in a water/aniline ratio in the range of from 1.3 to 2.5 moles,

the reaction in the second stage is done at 40 to 70° C. in a water/aniline ratio in the range of from 1.9 to 5.0 moles,

the reaction in the third stage is done at 50 to 90° C. in a water/aniline ratio in the range of from 2.4 to 5.7 moles, and

the reaction in the last stage is done at a temperature of 110° C. or more; and

(d) formalin is divided into 3 or more stages and used in the reactions in the respective stages.

5,053,540

PREPARATION OF A PARA-AMINODIPHENYLAMINE

Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

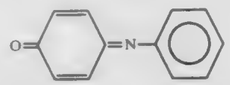
Filed Mar. 8, 1990, Ser. No. 490,222

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] C07C *209/24*

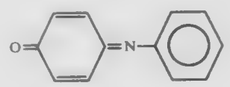
U.S. Cl. 564—397 10 Claims

1. A process for the preparation of p-aminodiphenylamine comprising reacting N-phenylquinoneimine of the formula:



with ammonia, ammonium hydroxide or mixtures thereof wherein the molar ratio of N-phenylquinoneimine to NH_3 in the reaction mixture ranges from about 1:1 to 1:80 and the reaction is conducted at a temperature ranging from about 15° C. to about 60° C.

8. A process for the preparation of a p-aminodiphenylamine comprising (a) oxidizing hydroxydiphenylamine to form N-phenylquinoneimine of the formula:



(b) isolating said N-phenylquinoneimine: and (c) reacting said N-phenylquinoneimine with ammonia, ammonium hydroxide or mixtures thereof, wherein the molar ratio of N-phenylquinoneimine to NH_3 ranges from about 1:1 to 1:80.

5,053,541

PROCESS FOR THE PREPARATION OF N-ALLYL-META-TRIFLUOROMETHYL ANILINE

Yves Béziat, Saint-Clement Lazriviere; Henri-Jean Cristau, Saint Aunes; Jean-Roger Desmurs, Communay, and Serge Ratton, La Verpilliere, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Mar. 5, 1990, Ser. No. 487,718

Claims priority, application France, Mar. 31, 1989, 89 02755

Int. Cl.[5] C07C *209/10*

U.S. Cl. 564—405 15 Claims

1. A process for the preparation of N-monoallyl-meta-trifluoromethyl aniline, which comprises condensing allylamine with meta-bromo-trifluoromethyl benzene in the presence of a nickel (II) catalyst.

15. A process for the preparation of N-monoallyl-meta-trifluoromethyl aniline comprising condensing allylamine with meta-bromo-trifluoromethyl benzene in the presence of a catalyst comprising a ligand-complexed nickel (II) salt, wherein said ligand is selected from the group consisting of hydrocarbon ligands containing at least one atom selected from nitrogen, phosphorous and oxygen, and said nickel (II) salt is selected from the group consisting of nickel dichloride, nickel dibromide, nickel sulfate, nickel dinitrate, nickel diacetate, nickel carbonate, nickel dibenzoate, nickel dihydroxide, nickelocene, and nickel oxide, and wherein the molar ratio of allylamine to meta-bromo-trifluoromethyl benzene is from 1 to 10 and the molar ratio of the ligand-complexed catalyst to meta-bromo-trifluoromethyl benzene is from 0.005 to 0.15.

5,053,542

CATALYTIC BROMINATION OF 2-FLUOROANILINE

Jerry R. Patton, and Narayanasamy Gurusamy, both of Baldwin, Mo., assignors to Mallinckrodt Specialty Chemicals Company, St. Louis, Mo.

Filed Jan. 31, 1990, Ser. No. 472,930

Int. Cl.[5] C07C *209/74*

U.S. Cl. 564—412 16 Claims

1. A process for the production of 2,4-dihaloaniline comprising halogenating 2-haloaniline with a halogenating agent in the presence of a quaternary ammonium halide and neutralizing the resulting 2,4-dihaloaniline hydrohalide salt.

5,053,543

SYNTHESIS OF 2-AMINOBENZOPHENONES

Marty C. Johnson, Mebane, and Stephen V. Frye, Durham, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Nov. 28, 1990, Ser. No. 619,147

Int. Cl.[5] C07C *209/50*

U.S. Cl. 564—414 15 Claims

1. A process for producing a 2-aminobenzophenone which is either unsubstituted or is substituted on the phenyl rings thereof, which comprises reacting:

i) an N-alkoxy-N-alkyl anthranilic acid amide or such amide where the alkoxy and alkyl groups are joined which amide is either unsubstituted or is substituted on the phenyl ring thereof; and

ii) an iodobenzene or bromobenzene compound which is either unsubstituted or is substituted on the phenyl ring thereof,

in the presence of at least 1 equivalent of an alkyllithium compound relative to the iodobenzene or bromobenzene compound.

5,053,544

DIAMINO COMPOUND AND ITS INTERMEDIATES

Shizuo Murata, and Minoru Nakayama, both of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

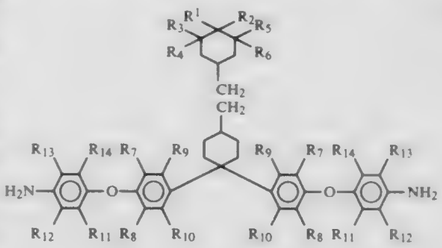
Filed Dec. 21, 1990, Ser. No. 631,448

Claims priority, application Japan, Jan. 25, 1990, 1-15746

Int. Cl.[5] C07C *217/14*

U.S. Cl. 564—430 4 Claims

1. A diamino compound expressed by the formula



(1)

wherein R_1 to R_6 each represent a hydrogen atom or an alkyl group of 1 to 22 carbon atoms, and may be the same as or different from one another, and R_7 to R_{14} each represent a hydrogen atom or an alkyl group of 1 to 3 carbon atoms, and may be the same as or different from one another.

5,053,545

METHOD OF PREPARING AMINO ALCOHOLS

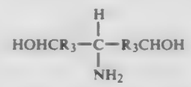
Thomas H. Marman, Palatine, and Vincent Nocito, Buffalo Grove, both of Ill., assignors to Angus Chemical Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 279,527, Dec. 2, 1988, abandoned. This application Aug. 7, 1990, Ser. No. 564,540

Int. Cl.[5] C07C *209/34*

U.S. Cl. 564—495 9 Claims

1. A method of preparing an amino alcohol of the formula



in which R_3 is H or lower alkyl which comprises reacting in a single step a halonitroalcohol with hydrogen in the presence of methanol, ammonia, and a hydrogenation catalyst, treating the resulting acid salt of the amino alcohol with an alkaline material, and recovering the resultant amino alcohol.

5,053,546

CHIRAL COMPOUNDS OF THE BETA-BINAPHTHYL TYPE, THEIR PREPARATION AND THEIR USE

Dieter Kaufman, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

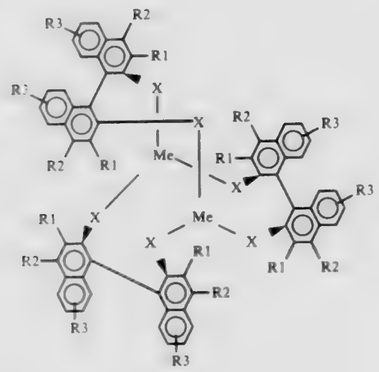
Filed Dec. 6, 1989, Ser. No. 446,843

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1988, 3842554

Int. Cl.[5] C07F *5/02*

U.S. Cl. 568—4 10 Claims

1. Chiral compounds of the B-naphthyl type of the formula (I)



(I)

in which

Me represents B

X represents O, S or NR^5 where R^5 is hydrogen, C_1–C_6-alkyl or phenyl,

R^1 represents hydrogen, C_1–C_6-alkyl, tri-C_1–C_4-alkylsilyl or substituted or unsubstituted phenyl,

R^2 and R^3 can be identical or different and each represent hydrogen, C_1–C_6-alkyl, substituted or unsubstituted phenyl, tri-C_1–C_4-alkylsilyl, halogen or O—C_1–C_6-alkyl.

5,053,547

BENZONORBORNENE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND MEDICINAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Gérard Lang, Saint-Gratien; Jean Maignan, Tremblay les Gonesse; Serge Restlé, Aulnay, Sous Bois, and Braham Shroot, Antibes, all of France, assignors to L'Oreal, Paris, France

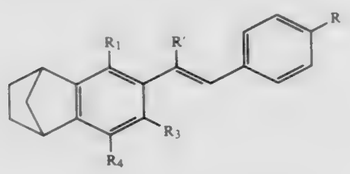
Division of Ser. No. 218,204, Jul. 13, 1988, Pat. No. 4,931,589, which is a continuation of Ser. No. 772,525, Sep. 4, 1985, Pat. No. 4,783,549. This application Nov. 14, 1989, Ser. No. 436,242

Claims priority, application Luxembourg, Sep. 5, 1984, 85531; Dec. 20, 1984, 85700

Int. Cl.[5] C07C *315/00, 02/02*

U.S. Cl. 568—28 **21 Claims**

1. A benzonorbornene derivative of formula (I) or an isomer or salt thereof having the formula



wherein

R_1, R_3 and R_4 each independently represent hydrogen, C_1–C_8 alkoxy, halogen, C_1–C_8 alkyl, C_1–C_8 acycloxy or hydroxyl,

R' is hydrogen or C_1–C_6 alkyl and

R is hydrogen, C_1–C_6 alkyl, —SR_5, —SOR_5 or —SO_2R_5, wherein R_5 is C_1–C_6 alkyl.

5,053,548

BIPHENYL DERIVATIVE COMPOSITION FOR NERVE CELL DEGENERATION REPAIRING OR PROTECTIVE AGENT AND PROCESS FOR PREPARING A PHENYL DERIVATIVE CONTAINED IN THE COMPOSITION

Tatsuyoshi Tanaka; Yoji Sakurai; Hiroshi Okazaki; Takashi Hasegawa, and Yoshiyasu Fukuyama, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

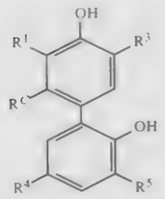
Filed Feb. 8, 1990, Ser. No. 476,913

Claims priority, application Japan, Feb. 8, 1989, 1-28983; Nov. 16, 1989, 1-299415

Int. Cl.[5] C07C *39/21*

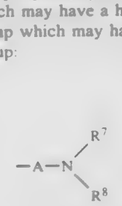
U.S. Cl. 568—47 **16 Claims**

1. A biphenyl derivative or a salt thereof, represented by the general formula (B):

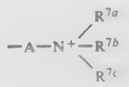


(B)

wherein R^1 and R^5 are lower alkenyl groups, R^3 is a hydroxyl group, a lower alkoxy group, a hydrogen atom, a lower alkyl group which may have a lower alkoxy group or hydroxyl group as a substituent, a lower alkenyl group, a cycloalkenyl group, a phenyl group, a halogen atom, a lower alkanoyl group which may have a halogen atom as a substituent, a thiazolyl group which may have a lower alkyl group as a substituent, group:



(where A is a lower alkylene group, R^7 and R^8 are the same or different, a hydrogen atom, lower alkyl group or lower alkanoyl group, these R^7 and R^8 together with nitrogen atom to which R^7 and R^8 are bonded may form a saturated or unsaturated heterocyclic 5- or 6-membered ring with or without a nitrogen atom or an oxygen atom, and said ring may have an amide group which may have a lower alkyl group as a substituent or an oxo group), or group:



(where R^{7a}, R^{7b} and R^{7c} are lower alkyl groups, A is a lower alkylene group), R^4 is a hydrogen atom. a lower alkyl group which may have a hydroxyl group or a lower alkoxy group as a substituent, a lower alkoxy group, a phenyl group, a phenyl-lower alkyl group, a phenoxy group, a lower alkenyl group, a lower alkylthio group, a lower alkylsulfinyl group, a lower alkylsulfonyl group, a halogen atom, a lower alkoxy-lower alkyl group or a lower alkanoyl group, R^c is a hydrogen atom or a lower alkyl group.

5,053,549

DODECYL HYDROXYMETHYL SULFIDE

John S. Roberts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 227,338, Aug. 2, 1988, Pat. No. 4,939,302. This application Apr. 30, 1990, Ser. No. 516,196

Int. Cl.[5] C07C *148/00*

U.S. Cl. 568—55 **1 Claim**

1. Dodecyl hydroxymethyl sulfide.

5,053,550

PREPARATION OF FORMYLCYCLOPROPANE

Thomas Kuekenhoener, Frankenthal, and Norbert Goetz, Worms, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

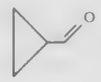
Continuation of Ser. No. 342,317, Apr. 24, 1989, abandoned. This application Jun. 4, 1990, Ser. No. 533,940

Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815485

Int. Cl.[5] C07C *45/61*

U.S. Cl. 568—420 **9 Claims**

1. A process for the preparation of formylcyclopropane



I

by cyclization of 4-chlorobutanal which comprises:

reacting 4-chlorobutanal at 50°–150° C. in a liquid two-phase system consisting of an aqueous phase containing a mineral base in solution and a water-immiscible organic phase containing the 4-chlorobutanal in solution; and

continuously removing the formylcyclopropane from the reaction mixture.

5,053,551

PROCESS FOR THE PRODUCTION OF ALDEHYDES BY HYDROFORMYLATION

George E. Harrison, Billericay, and Alan J. Dennis, Acklam, both of England, assignors to Davy McKee (London) Limited, London, England

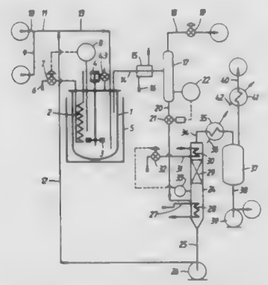
PCT No. PCT/GB87/00408, § 371 Date Nov. 21, 1988, § 102(e) Date Nov. 21, 1988, PCT Pub. No. WO88/00179, PCT Pub. Date Jan. 14, 1988

PCT Filed Jun. 12, 1987, Ser. No. 278,437

Claims priority, application United Kingdom, Jul. 1, 1986, 8616038; Mar. 5, 1987, 8705108; Mar. 17, 1987, 8706265

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 **19 Claims**



1. A continuous process for the production of aldehydes which contain from 7 to 17 carbon atoms and which are selected from unsubstituted aldehydes and aldehydes containing at least one substituent selected from ether groups and ester groups by hydroformylation of an olefin which contains from 6 to about 16 carbon atoms and which is selected from unsubstituted olefins and olefins containing at least one substituent selected from ether groups and ester groups to yield at least one product aldehyde containing one more carbon atom than said olefin, which process comprises:

providing a hydroformylation zone, a product recovery zone, and means for circulating liquid between said hydroformylation zone and said product recovery zone;

providing in said hydroformylation zone a substantially constant predetermined volume of a liquid hydroformylation medium containing uniformly distributed therein (a) a rhodium complex hydroformylation catalyst comprising rhodium in complex combination with carbon monoxide and with a ligand, (b) free ligand, (c) not more than a predetermined minor amount of at least one said aldehyde, and (d) an inert solvent that is less volatile than any aldehyde formed by the hydroformylation reaction but is more volatile than said ligand;

continuously supplying carbon monoxide and hydrogen to said hydroformylation zone;

continuously supplying said olefin to said hydroformylation zone;

maintaining said hydroformylation zone under temperature and pressure conditions effective for causing hydroformylation of said olefin in the presence of said rhodium complex hydroformylation catalyst;

passing liquid hydroformylation medium to said product recovery zone;

maintaining said product recovery zone under vaporization conditions selected to cause vaporization of said at least one optionally substituted aldehyde and at least a minor amount of said solvent;

recovering from said product recovery zone (i) a vaporous stream containing a major amount of said at least one aldehyde and a minor amount of said solvent and (ii) a liquid stream containing said catalyst and said ligand;

continuously recycling said liquid stream to said hydroformylation zone;

controlling the vaporization conditions in the product recovery zone so that the rate at which said solvent is recovered in said vaporous stream is at least equal to the rate of formation of aldehyde condensation by-products in said hydroformylation zone; and

controlling the volume of liquid in said hydroformylation zone by supplying solvent thereto, at a rate sufficient to maintain said substantially constant predetermined volume of liquid hydroformylation medium in said hydroformylation zone;

whereby the amount of said at least one aldehyde in said hydroformylation zone is maintained at or below said predetermined minor amount so as to minimize the rate of formation of aldehyde condensation by-products and whereby said solvent is gradually displaced from the hydroformylation zone by high boiling materials including aldehyde condensation by-products formed by self-condensation of said at least one aldehyde.

5,053,552

PROCESS FOR PRODUCING α,β-UNSATURATED ALDEHYDE

Toshiki Mori, Kurashiki, Japan; Shigeaki Suzuki, Mountain View, Calif.; Takashi Onishi, and Kazuo Yamamoto, both of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Jun. 14, 1990, Ser. No. 537,617

Claims priority, application Japan, Aug. 11, 1989, 1-208396

Int. Cl.[5] C07C *45/45, 45/00*

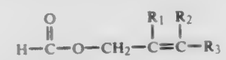
U.S. Cl. 568—460 **6 Claims**

1. A process for producing an α, β-unsaturated aldehyde of the formula



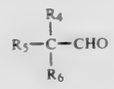
(I)

wherein R_1 and R_2 are independently a hydrogen atom or a lower alkyl group, and R_3 is a hydrogen atom, an alkyl group, an alkenyl group, an alkadienyl group or an alkatrienyl group without having a cumulative double bond, an aralkyl group, an aryl group with or without being substituted at the ring, or a hetero-aromatic group; or the aforementioned alkyl group, alkenyl group, alkadienyl group or alkatrienyl group or the alkyl group of the aralkyl group being mono-substituted by a lower alkanoyloxy group, an arylcarbonyloxy group, a lower alkoxy group or an aralkyloxy group with or without being substituted at a position on the ring; R_1 and R_3 integrated with their respectively bonding carbon atoms form a 1-cycloalkenyl group with or without being substituted, and R_2 has the same meaning as defined above; or R_2 and R_3 integrated with their respectively bonding carbon atoms form a cycloalkylidene group, and R_1 has the same meaning as defined above, comprising the reaction at a temperature in the range of from 10° C. to 120° C. between a formic acid ester of an allylic type alcohol of the formula (II),



(II)

wherein R_1, R_2 and R_3 have the same meanings as defined above, and an aldehyde of the formula (III),



(III)

wherein R_4, R_5 and R_6 are independently a lower alkyl group, a lower alkenyl group, an allenyl group, an aryl group with or without being substituted at a position on the ring or a hetero-aromatic group; any two groups selected from R_4, R_5 and R_6 are integrated to form a lower alkylidene group or an alkylene group, and the other group has the same meaning as described above; or R_4, R_5 and R_6 are integrated with their respectively bonding carbon atoms to form a 1-cycloalkenyl group, an aryl group with or without being substituted at a position on the ring, or a heterocyclic aromatic group; in the presence of an aluminum alkoxide in a catalytic amount.

5,053,553

PROCESS FOR PREPARING A NARROW MOLECULAR WEIGHT DISTRIBUTION POLY (TETRAMETHYLENE ETHER) GLYCOL

Suriyanarayanan Dorai, Lockport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 246,290, Sep. 19, 1988, abandoned. This application Jun. 25, 1990, Ser. No. 550,101

Int. Cl.[5] C07C *41/38*

U.S. Cl. 568—617 **7 Claims**

1. A process for preparing narrow molecular weight poly(-tetramethylene ether) glycol (PTMEG) having a number average molecular weight between about 1300 and about 1600, a dispersity between about 1.30 and 1.385, and a Z factor equal to or less than 1.80 which comprises:

(a) providing a PTMEG starting material having a number average molecular weight between about 800 and 1200 and having a dispersity between about 1.5 and about 1.8;

(b) mixing said PTMEG starting material with a mixture of methanol, water and a non-polar solvent having a solubility parameter between about 7.30 and about 8.20, the PTMEG starting material being in excess, by weight, of the non-polar solvent, and allowing the mixture to settle so as to form two substantially immiscible liquid phases, the top phase comprising PTMEG of the desired narrow molecular weight distribution dissolved in the non-polar solvent, and the bottom phase comprising the remaining PTMEG dissolved in the mixture of methanol and water;

(c) separating the desired PTMEG from said two phase system; said Z factor being equal to the ratio:

$$M_z/M_n$$

wherein

M_z is equal to the sum of $[W_i(M_i^2)]$ for all i values divided by the sum of $[W_i(M_i)]$ for all i values;

M_n is equal to the sum of (W_i) for all i values divided by the sum of (W_i/M_i);

w_i is the weight of the ith polymer species/oligomer, and

M_i is the molecular weight of the ith species/oligomer.

5,053,554

RADIATION-HARDENABLE DILUENTS

Francis A. Higbie, Bound Brook, N.J.; Robert A. LieBerman, Naperville, Ill., and Ira M. Rose, Millburn, N.J., assignors to Diamond Shamrock Chemical Company

Continuation of Ser. No. 74,991, Jul. 17, 1987, which is a division of Ser. No. 849,301, Apr. 8, 1986, Pat. No. 4,876,384, which is a continuation-in-part of Ser. No. 725,801, Apr. 22, 1985, abandoned, and a continuation-in-part of Ser. No. 797,483, Nov. 13, 1985, abandoned. This application Jan. 30, 1990, Ser. No. 472,138

Int. Cl.[5] C07L *43/11*

U.S. Cl. 568—622 **2 Claims**

1. A lower alkyl ether which is monomethyl ether of ethoxylated neo-pentyl glycol having an average of about two moles of ethylene oxide.

5,053,555

HYDROXY-TERMINATED ARYLENE ETHERS, AND METHOD FOR MAKING

Gary W. Yeager, Schenectady, and David N. Schissel, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 371,853, Jun. 26, 1989, which is a division of Ser. No. 226,594, Aug. 1, 1988, Pat. No. 4,873,371. This application Feb. 26, 1991, Ser. No. 660,458

Int. Cl.[5] C07C *43/23, 43/21*

U.S. Cl. 568—633 **1 Claim**

1. The compound, 4,4'[6,6'(3,3,3',3'-tetramethyl-1,1'-spirobiindanyl)bis(oxy)]bisphenol.

5,053,556

PROCESS FOR PRODUCING ALKENYL ETHERS

Noriyuki Ohnishi, Minamatashi, Japan, assignor to Chisso Corporation, Osaka, Japan

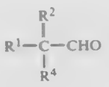
Filed Jan. 17, 1990, Ser. No. 466,582

Claims priority, application Japan, Jan. 31, 1989, 1-21778; Apr. 10, 1989, 1-90356; Apr. 25, 1989, 1-105081; May 25, 1989, 1-132407; May 26, 1989, 1-133883

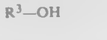
Int. Cl.[5] C07L *41/01*

U.S. Cl. 568—675 **9 Claims**

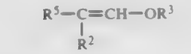
1. A one-step process for producing an alkenyl ether, which comprises reacting an aldehyde having the formula



with an alcohol of the formula



in the presence of an acidic catalyst in liquid phase, and recovering as the reaction product an alkenyl ether of the formula

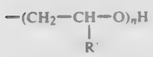


wherein

R^1 is an alkyl group of 2–8 carbon atoms or a R—CH-$_2$—CH=group wherein R represents an alkyl group of 1–8 carbon atoms,

R^2 represents an alkyl group of 1–6 carbon atoms,

R^3 represents a linear or branched alkyl group having 6–12 carbon atoms, a cyclohexyl group, a hydroxyhexamethylenyl group or



wherein R' represents a hydrogen atom and n is 2 or 3,

R^4 is hydrogen atom or R—CH_2—CH=group wherein R represents an alkyl group of 1–8 carbon atoms,

R^5 represents an alkyl group of 2–8 carbon atoms or a R—CH=CH—group wherein R represents an alkyl group of 1–8 carbon atoms, and

continuously removing the water formed during the process.

5,053,557

PROCESS FOR PREPARING 2-CHLORO-4-FLUOROPHENOL

Kenji Hirai, and Mitsuo Yamashita, both of Kanagawa, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Sep. 6, 1990, Ser. No. 578,242

Claims priority, application Japan, Sep. 12, 1989, 1-234774

Int. Cl.[5] C07C *39/27, 37/62*

U.S. Cl. 568—775 **9 Claims**

1. A process for preparing 2-chloro-4-fluorophenol which comprises chlorinating 4-fluorophenol with a chlorinating agent selected from chroline gas and sulfuryl chloride in the presence of water in an amount sufficient to substantially dissolve the hydrogen chloride generated during the reaction.

5,053,558

PROCESS THE ISOMERIZATION OF CRESOLS

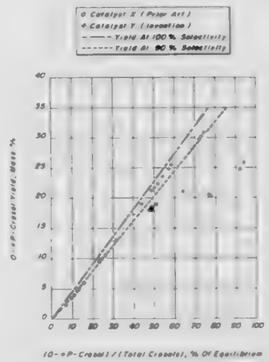
J. W. Adriaan Sachtler, Des Plaines, and R. Joe Lawson, Palatine, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 394,038, Aug. 14, 1989, Pat. No. 4,939,110, which is a division of Ser. No. 259,086, Oct. 17, 1988, Pat. No. 4,899,012. This application Jul. 3, 1990, Ser. No. 547,705

Int. Cl.[5] C07C *37/00, 39/07*

U.S. Cl. 568—783 **15 Claims**

1. A process for the isomerization of a feedstock containing a non-equilibrium mixture of cresols which comprises contacting such non-equilibrium mixture at isomerization conditions with a catalyst comprising a combination of a Group VII metal component and a modifier with a carrier material containing a pentasil zeolite and an inorganic oxide binder to produce an isomerized product.



5,053,559

CLEAVAGE OF 1,2,4-TRIOXANES

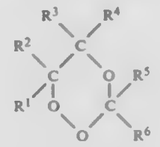
Charles W. Jefford, Troinex, Switzerland, assignor to Oxaco S.A., Geneve, Switzerland

Filed Dec. 29, 1989, Ser. No. 458,786

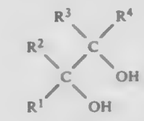
Int. Cl.[5] C07C *29/14, 27/04*

U.S. Cl. 568—814 **10 Claims**

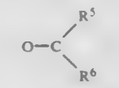
1. A process for reductive cleavage of 1,2,4-trioxanes for simultaneous preparation of 1,2-diol and carbonyl compound, the 1,2,4-trioxanes represented by formula (1); the 1,2 diols represented by formula (2); and the carbonyl compounds represented by formula (3):



(1)



(2)



(3)

wherein R^1, R^2, R^3, R^4, R^5 and R^6 are the same or different and are hydrogen, acyclic or cyclic hydrocarbyl groups;

the reductive cleavage process in the presence of an organic acid, a metal or metal compound selected from the group consisting of sodium, lithium, potassium and sodium borohydride; at a temperature of from about −10° C. to ambient temperature.

5,053,560

METHOD FOR THE CONTINUOUS PRODUCTION OF POTASSIUM TERT-BUTOXIDE

Rheinhard Matthes; Hartwig Rauleder, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 139,775, Dec. 30, 1987, abandoned. This application Jun. 7, 1989, Ser. No. 363,292

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1987, 37012681

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.[5] C07C *29/70, 31/12*

U.S. Cl. 568—851 **2 Claims**

1. Method for the continuous production of anhydrous potassium tert-butoxide by the reaction of aqueous potassium hydroxide with excess tert-butanol in a packed distillation column to the top of which the aqueous potash lye and excess tert-butanol are fed, removal of the water by distillation using a withdrawing agent, continuous feeding into the upper part of the column of an organic phase identical to the organic phase which was obtained, after phase separation, from the mixture distilled out from the top, and withdrawal of the solution of the potassium tert-butoxide in tert-butanol produced in the boiler of the column, characterized in that

a) methylcyclohexane or n-heptane is used as withdrawing agent,

b) at the beginning and during the feeding of the aqueous potash lye and tert-butanol a gas mixture is established in the column, which contains 0.5 to 2 wt.-% of the withdrawing agent, and

c) The content of withdrawing agent in the gas mixture at the middle of the column amounts to between 32 and 34 wt.-% when methylcyclohexane is the withdrawing agent and between 36 and 38 wt.-% when n-heptane is the withdrawing agent.

5,053,561

METHOD OF ISOLATING TRANS-1,1,4,4-TETRAALKYL-2-BUTENE-1,4-DIOLS

Dietmar Bender, Schifferstadt; Klaus Bronstert, Carlsberg; Martin Fischer, Ludwigshafen, and Gregor Schuermann, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

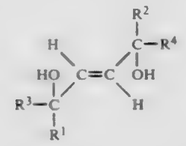
Filed Jun. 13, 1990, Ser. No. 537,137

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1989, 3919226

Int. Cl.[5] C07C *29/86, 33/03, 33/035*

U.S. Cl. 568—857 **7 Claims**

1. A method of isolating trans-1,1,4,4-tetraalkyl-2-butene-1,4-diols of formula I



(I)

in which R^1, R^2, R^3 and R^4 are the same or different and denote C_1- to C_5-alkyl, from mixtures thereof with their cis-isomers, wherein the trans-isomer is separated from the cis-isomer by liquid-liquid extraction.

5,053,562

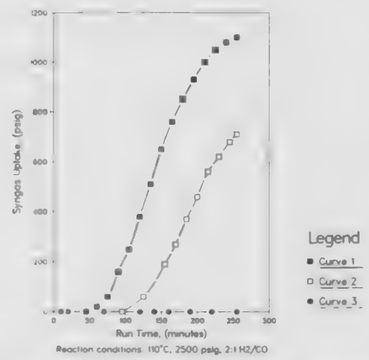
PROCESS FOR MAKING 1,3-DIOLS FROM EPOXIDES

Kwoliang D. Tau, Corpus Christi, Tex., assignor to Hoechst Celanese Corporation, Somerville, N.J.

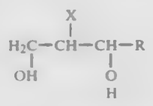
Filed Jul. 31, 1990, Ser. No. 560,709

Int. Cl.[5] C07C *29/36, 31/20, 35/08, 33/26*

U.S. Cl. 568—867 **15 Claims**

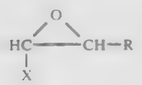


1. A single step process for manufacturing 1,3-glycols of the formula



I

wherein R represents hydrogen, a monovalent aliphatic or aromatic group having from one to about twelve carbon atoms, or a divalent aliphatic group having from 4 to about 6 carbon atoms which together with X forms a cyclic structure, and X represents hydrogen, or if R is divalent, a bond with R, wherein said process comprises reacting an epoxide of the formula



II

wherein R and X have the aforementioned meaning, with CO and H_2 in a suitable reaction solvent, said process being characterized in that the reaction mixture comprises (1) an epoxide of the foregoing structure at a concentration from about 0.01 to about 30 weight percent; (2) rhodium at a molar concentration from about 0.00001 to about 0.1 molar; (3) a phosphine having the formula

$$PR_1R_2R_3 \qquad \text{III}$$

wherein R_1, R_2, and R_3 are independently selected from the group consisting of aliphatic, cyclo-aliphatic, and aromatic hydrocarbon groups, the molar ratio of rhodium to phosphine being from about 10:1 to about 1:10; (4) CO; and (5) H_2; wherein the molar ratio of CO to H_2 is from about 10:1 to about 1:10; and (6) a member of the group consisting of lower-alkyl and β-hydroxy lower-alkyl iodides at a molar concentration of from about 0.00001 to about 0.1 molar; and wherein the reaction takes place at a temperature from about 50° to about 200° C. under a pressure from about 200 to about 10,000 psig, for a period of time which is sufficient to form at least some of the desired 1,3-glycol.

5,053,563

METHOD TO CONCENTRATE AND PURIFY ALCOHOL

Hirotoshi Horizoe, Hiroshima; Masura Maki, Kanagawa; Tetsuya Tanimoto, and Masaaki Yanagi, both of Hiroshima, all of Japan, assignors to Minister of International Trade & Industry, Tokyo, Japan

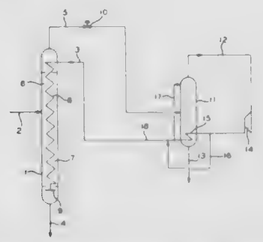
PCT No. PCT/JP88/00298, § 371 Date Feb. 20, 1990, § 102(e) Date Feb. 20, 1990, PCT Pub. No. WO89/01042, PCT Pub. Date Feb. 9, 1989

PCT Filed Mar. 22, 1988, Ser. No. 332,933

Claims priority, application Japan, Jul. 24, 1987, 62-183461; Jul. 24, 1987, 62-183462

Int. Cl.[5] C07C *29/86, 31/08*

U.S. Cl. 568—916 **2 Claims**



2. A method to concentrate and purify alcohol, wherein aqueous solution of alcohol is supplied from raw material inlet in the middle of countercurrent flow extractor, the propane solvent is supplied from lower portion of said countercurrent flow extractor, the propane solvent is maintained in supercritical or pseudocritical conditions at the portion lower than said raw material inlet, propane solvent is maintained in liquid state at the portion higher than said raw material inlet, the propane solvent phase containing concentrated alcohol, virtually separated from water, is withdrawn from upper portion of said countercurrent flow extractor, the propane solvent phase is introduced into propane solvent distillation tower, the propane liquid containing alcohol but virtually no water is recovered from the bottom of said distillation tower, the propane gas containing water but virtually no alcohol is recovered from the top of the said distillation tower, the compression heat produced by the pressurization of said propane is used as heat source for said propane solvent distillation tower, a part thereof is returned to said propane solvent distillation tower, and the remainder is sent again into lower portion of said countercurrent flow extractor either directly or after indirect heat exchange with upper fluid in said countercurrent flow extractor.

5,053,564

SELECTIVE HYDROGENOLYSIS OF PERHALOGENATED ETHANE DERIVATIVES

Bernard Cheminal, Brignais; Jean-Marie Cognion, and Dominique Guillet, both of Saint-Genis Laval, all of France, assignors to Societe Atochem, Puteaux, France

Filed Dec. 20, 1989, Ser. No. 453,997

Claims priority, application France, Jan. 19, 1989, 89 00601

Int. Cl.[5] C07C *19/08*

U.S. Cl. 570—176 **9 Claims**

1. Process for preparing chlorofluoroethanes of the formula:

$$CF_3\text{-}CHF_xCl_{2-x} \qquad \text{(I)}$$

where x is equal to 0 or 1, by the catalytic hydrogenation of a perhaloethane of the formula:

$$CF_3\text{-}CF_xCl_{3-x} \qquad \text{(II)}$$

with hydrogen in the presence of a catalytically effective amount of a catalyst consisting of ruthenium deposited on a support.

5,053,565

PROCESS FOR THE PREPARATION OF P-CHLOROTOLUENE

Artur Botta; Hans-Josef Buysch, both of Krefeld, and Lothar Puppe, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1990, Ser. No. 572,526

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930839

Int. Cl.[5] C07C *17/12, 25/02*

U.S. Cl. 570—208 **18 Claims**

1. A process for the preparation of p-chlorotoluene by catalyzed reaction of toluene with a chlorinating agent selected from the group consisting of chlorine and substances which liberate chlorine, including sulphuryl chloride, N-chloroamines and N-chloroamides, wherein a zeolite L containing metal cations is employed as the catalyst and the reaction is carried out in the presence of methylene chloride and/or chloroform, at a reaction temperature of from about −20° C. to +120° C.

5,053,566

PROCESS FOR THE PREPARATION OF OLIGOPHENYLS DIHALOGENATED IN THE 4,4'-POSITION

Artur Botta; Hans-Josef Buysch, both of Krefeld, and Lothar Puppe, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

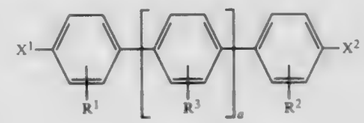
Filed Aug. 23, 1990, Ser. No. 571,956

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930848

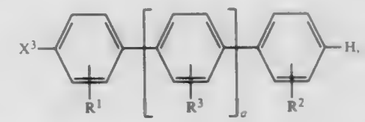
Int. Cl.[5] C07C *17/12, 25/18*

U.S. Cl. 570—208 **18 Claims**

1. A process for the preparation of oligophenyls dihalogenated in the 4,4'-position, of the formula



by halogenation of oligophenyls of the formula



wherein, in the formulae,

X^1 and X^2 independently of one another represent chlorine or bromine,

X^3 denotes hydrogen, chlorine or bromine,

R^1, R^2 and R^3 independently of one another represent hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine or bromine and

a assumes the value zero or one,

with halogenating agents selected from the group consisting of chlorine, bromine, and compounds which liberate chlorine or bromine, including sulphuryl chloride, sulphuryl bromide, N-chloro- and N-bromosuccinimide, bromine chloride and bromine fluoride, wherein the process is carried out at a temperature of from about 0°–80° C., in the presence of methylene chloride or solvent mixtures essentially containing methylene

chloride and in the presence of zeolites of the L structure type containing metal cations.

5,053,567
OXYCHLORINATION OF HYDROCARBONS

Yves Correia, Chateau-Arnoux; Jean Lesparre, Volonne, and Alain Petit, Martigues, all of France, assignors to Atochem, Puteaux, France

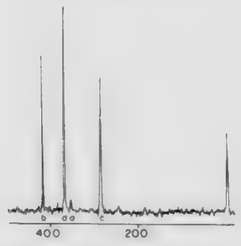
Filed Dec. 21, 1989, Ser. No. 454,528
Claims priority, application France, Dec. 26, 1988, 88 17181
Int. Cl.[5] C07C *17/156*
U.S. Cl. 570—243 13 Claims

1. A heterogeneous catalytic process for the preparation of a chlorinated hydrocarbon, comprising oxychlorinating a hydrocarbon with an oxygen-containing gas and gaseous hydrochloric acid, in a fluidized bed which comprises admixture of (i) a catalytically effective amount of an oxychlorination catalyst, (ii) diluent particles of at least one catalytically and chemically inert solid material, and (iii) copper powder or a powdered copper compound.

5,053,568
LUBRICANT COMPOSITIONS COMPRISING COPOLYMERS OF 1-VINYLADAMANTANE AND 1-ALKENES AND METHODS OF PREPARING THE SAME

Catherine S. H. Chen, Berkeley Heights, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Nov. 15, 1990, Ser. No. 614,328
Int. Cl.[5] C10M *107/10*
U.S. Cl. 585—21 27 Claims



1. A lubricant additive having the structure shown in FIG. 4 wherein n is from about 1 to about 9 and x is from about 4 to about 30.

5,053,569
PROCESS FOR OLIGOMERIZING OLEFINS TO PREPARE BASE STOCKS FOR SYNTHETIC LUBRICANTS

Edward T. Marquis, Austin; John R. Sanderson, Leander, and John F. Knifton, Austin, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Mar. 28, 1990, Ser. No. 500,631
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—255 35 Claims

1. A process for the preparation of oligomers, comprising contacting a linear olefin containing from 10 to 24 carbon atoms with a catalytically effective amount of an acidic calcium montmorillonite clay having a moisture content ranging up to about 20 wt. %, a residual acidity in the range of about 3 to about 30 mg KOH/g, and a surface area of about 300 M^2/g or greater.

5,053,570
FLUID BED PARAFFIN AROMATIZATION

Jorge L. Soto, Sewell, N.J., and Sergei Yurchak, Media, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 247,551, Sep. 22, 1988, abandoned. This application May 16, 1990, Ser. No. 524,247
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—417 18 Claims

1. A method for increasing aromatics yield in a fluid bed catalytic paraffin conversion process comprising the steps of:
(a) maintaining a fluid bed of catalyst in a reactor, said catalyst comprising a zeolite having a Constraint Index of from about 1 to about 12;
(b) determining the endothermic heat load profile of said reactor as a function of fluid bed height for a paraffinic feedstock containing at least 50% by weight of C_3–C_8 paraffins under conditions of conversion temperature, average catalyst activity and weight hourly space velocity sufficient to convert said paraffinic feedstock to a product mixture containing at least 20% by weight of C_5+ aromatics;
(c) contacting said selected paraffinic feedstock with said catalyst in said fluid bed of step (a) under conversion conditions to convert at least a portion of said selected paraffinic feedstock to product stream containing at least 20% by weight of C_5+ aromatics; and
(d) regulating the rate of heat transfer to said reactor and the location of heat transfer within said reactor in accordance with the heat load profile determined as a function of fluid bed height in step (b) to increase aromatics yield by providing substantially isothermal reaction conditions within said fluid bed.

5,053,571
REDUCTIVE ALKYLATION PROCESS

Michiel Makkee, Vlaardingen, Netherlands, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 340,326, Apr. 19, 1989, abandoned. This application Apr. 16, 1990, Ser. No. 511,912
Claims priority, application United Kingdom, Apr. 19, 1988, 8809214
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—425 13 Claims

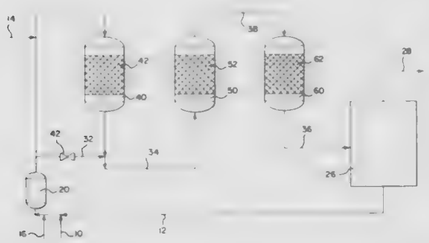
1. A process for preparing a monocycloalkyl aromatic hydrocarbon or a substituted monocycloalkyl aromatic hydrocarbon which comprises contacting respectively an aromatic hydrocarbon or an alkyl substituted aromatic hydrocarbon with hydrogen in the presence of a catalyst comprising ruthenium and nickel supported on zeolite beta.

5,053,572
MULTISTAGE ETHYLBENZENE DEHYDROGENATION PROCESS WITH SPLIT-FLOW HYDROCARBON FEED

Dae K. Kim, Naperville, and George M. Longland, Jr., Wheaton, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 350,572, May 11, 1989, abandoned. This application Sep. 18, 1990, Ser. No. 584,475
Int. Cl.[5] C07C *4/02*
U.S. Cl. 585—441 16 Claims

1. A process to catalytically dehydrogenate alkylated aromatic hydrocarbons to styrene in multiple reaction stages comprising:
(a) admixing steam and a major weight fraction between about 0.6 and about 0.95 of a hydrocarbon feed stream to form a first admixture having a first reactor steam to hydrocarbon weight ratio in the range of about 1.26 to about 5.0;
(b) contacting the first admixture with dehydrogenation catalyst in a first reaction stage under reaction conditions to form a first reaction product;
(c) admixing the first reaction product with a remaining minor weight fraction of the hydrocarbon feed stream to form a second admixture having a second reactor steam to hydrocarbon weight ratio in the range of about 1.2 to about 3.0 wherein said first reactor steam to hydrocarbon weight ratio is greater than said second reactor steam to hydrocarbon weight ratio;
(d) contacting the second admixture with dehydrogenation catalyst in a second reaction stage under reaction conditions to form a second reaction product;



(e) contacting the second reaction product with dehydrogenation catalyst in a third reaction stage under reaction conditions to form a third reaction product; and
(f) processing the third reaction product in a recovery system to recover the styrene and to recycle a recycle stream comprising unconverted ethylbenzene.

5,053,573
REDUCTION OF BENZENE CONTENT OF REFORMATE BY REACTION WITH CYCLE OILS

Diane V. Jorgensen, Wilmington, Del., and Ajit V. Sapre, West Berlin, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 14, 1990, Ser. No. 583,273
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—475 19 Claims

1. A process for converting a C6 reformate fraction containing 1–25 wt% benzene to alkyl aromatics by reacting said benzene containing reformate fraction with a complex mixture of alkyl polynucleararomatics in a benzene conversion reaction zone operating at benzene conversion conditions sufficient to convert at least 10% of said benzene to alkyl aromatics and produce a product comprising gasoline boiling range hydrocarbons having a reduced benzene content relative to the C6 reformate fraction feed.

5,053,574
HYDRODEALKYLATION OF ALKYLAROMATIC COMPOUNDS

Toshio Tsutsui, Kashiwa, and Osamu Kubota, Sodegaura, both of Japan, assignors to Fuji Oil Company, Ltd., Tokyo, Japan

Filed May 11, 1990, Ser. No. 522,365
Claims priority, application Japan, May 12, 1989, 1-119877
Int. Cl.[5] C07C *4/12, 4/18*
U.S. Cl. 585—488 7 Claims

1. A process for hydrodealkylation of alkylaromatic hydrocarbons which comprises contacting an alkylaromatic compound with a catalyst which comprises porous alumina particles with coke deposited thereon in the pores, said alumina particles having a pore volume of 0.1 to 1.5 cm^3/g and a specific surface area of 5 to 500 m^2/g, the quantity of said coke being 1 to 30% by weight of said alumina particles, and the pore volume and the specific surface area of said catalyst being 0.05 to 1.5 cm^3/g and 1 to 500 m^2/g, respectively, under a hydrogen partial pressure of 1 to 50 kg/cm^2 and at a temperature of 450° to 700° C.

5,053,575
METHOD OF CONVERSION OF NATURAL GAS OR OF LIGHT ALKANES INTO UNSATURATED HYDROCARBONS

Mehrdad Nikravech; Isabelle Vedrenne, both of Paris; Jacques Amouroux, Bures sur Yvétte, and Jacques Saint-Just, Le Pecq, all of France, assignors to Gaz de France, Paris, France

Filed Nov. 22, 1989, Ser. No. 440,301
Claims priority, application France, Nov. 24, 1988, 88 15362
Int. Cl.[5] C01C *15/393*
U.S. Cl. 585—500 16 Claims

1. A method of conversion of natural gas or light alkane(s) into unsaturated hydrocarbons wherein a natural gas or light alkane(s) is contacted with a plasma of a hydrogen-containing gas within a reaction space including a bed of catalytic material and said unsaturated hydrocarbons are recovered at the outlet of said reaction space, said method comprising the steps of:
a) using as a catalytic material, a material formed of refractory fluidizable particles;
b) causing said catalytic, refractory particles to form a fluidized bed of particles inside said space;
c) feeding said plasma into said fluidized bed at a first zone of said bed; and
d) feeding said natural gas or light alkane(s) at a second zone of said bed distant from said first zone, to produce a homogeneous transfer of heat between said plasma and said fluidized bed before the plasma comes into contact with said natural gas of light alkane(s), and thus causing said conversion reaction to be carried out at a temperature below the temperature of said plasma before said plasma enters into said bed.

5,053,576
PROCESS FOR UPGRADING METHANE TO HIGHER HYDROCARBONS

Scott Han, Lawrenceville, N.J.; Robert E. Palermo, New Hope, Pa.; Judy A. Pearson, Point Pleasant, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 26, 1989, Ser. No. 456,703
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—500 3 Claims

1. A process for synthesizing a mixture of organic compounds comprising higher hydrocarbons including C_5+ liquid hydrocarbons by the direct partial oxidation of methane, said process comprising the steps of:
(i) contacting a mixture of methane and oxygen with a ZnZSM-5 catalyst under sufficient conversion conditions including a temperature of from about 350° C. to about 475° C. and a pressure of from about 150 psig to about 3000 psig; and
(ii) recovering said mixture of organic compounds comprising higher hydrocarbons.

5,053,577
OXIDATION CATALYST AND PROCESSES USING SAME

Raymond G. Teller, Aurora; Ann M. Ebner, Lyndhurst; Christopher Bodolus, and Victor R. Gupta, both of Cleveland Hts., all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 433,678, Nov. 8, 1989, Pat. No. 4,968,661, which is a continuation-in-part of Ser. No. 305,981, Feb. 2, 1989, abandoned, which is a division of Ser. No. 144,800, Jan. 15, 1988, Pat. No. 4,836,117. This application May 25, 1990, Ser. No. 528,859
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—500 10 Claims

1. A process for converting a feedstock comprising methane and/or natural gas to higher order hydrocarbons comprising contacting said feedstock with a catalyst in the presence of an oxygen source under reaction conditions for an effective per-

iod of time to form said higher order hydrocarbons, said catalyst being represented by the formula

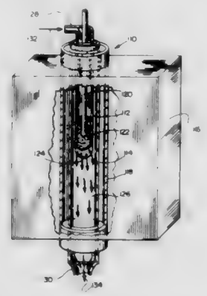
$$A_uMO_w[(DO_x)(EO_y)_a]_z$$

wherein

A is an alkalil or alkaline earth metal;

M is V, Cr, Mo, Mn, Fe, Co, Ni, Cu or a mixture of two or more thereof;

D is Zr, Ti, Hf, Ce, Th, Pr, Nb, Ta, W, Re or a mixture of two or more thereof;



E is Ca, Mg, Sr, Ba, Y, La, Yb, Sm, Gd, Nd, Sc, V, Bi, Ce, Pr, Eu, Tb, Dy, Ho, Er, Tm, Lu or a mixture of two or more thereof;

a is a number in the range of zero up to about 0.2;

u is a number in the range of zero to about 1;

w is the number of oxygens needed to fulfill the valence requirement of A and M;

x is the number of oxygens needed to fulfill the valence requirements of D;

y is the number of oxygens needed to fulfill the valence requirements of E; and

z is a number in the range of about 10 to about 100.

5,053,578

LOWER ALKANE CONVERSION

Glenn O. Michaels, South Holland, and Michael J. Spangler, Sandwich, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 295,502, Jan. 11, 1989. This application Feb. 8, 1990, Ser. No. 477,318

Int. Cl.[5] C07C *2/00, 5/327*

U.S. Cl. 585—500 **26 Claims**

1. A method for converting a feedstock alkane containing from 1 to 3 carbon atoms to a higher molecular weight hydrocarbon, said method comprising:

the step of contacting a feedstock comprising at least one alkane containing from 1 to 3 carbon atoms with an oxygen-containing gas in the presence of a catalytic composition, at a temperature in the range of from about 600° C. to about 1000° C. and with the ratio of the combined feedstock alkane partial pressure to the oxygen partial pressure being in the range of from about 2:1 to about 40:1, to produce a gaseous mixture comprising saturated and unsaturated aliphatic hydrocarbon products having higher molecular weights than the feedstock alkane from which they were formed, said catalytic composition being effective in the catalytic conversion of said feedstock alkane to a higher molecular weight hydrocarbon, said composition comprising a first component comprising a Group IA metal and a second component comprising a Group IIA metal with said Group IA metal of said first component and said Group IIA metal of said second component being in an atomic ratio of about 0.5:1 to about 2:1 and with said composition combination of said Group IA and said Group IIA metals being selected to be stable at oxidative coupling reaction conditions, and said composition also comprising a third component, the precursor of which comprises a sol with which said first and second components are thoroughly dispersed, said sol comprising an aqueous suspension of a compound of a metal selected from the group consisting of aluminum, silicon, titanium, zinc, zirconium, cadmium and tin, said third component comprising about 1 wt. % to about 30 wt. % of said catalytic composition.

5,053,579

PROCESS FOR UPGRADING UNSTABLE NAPHTHAS

James H. Beech, Jr., Wilmington, Del.; Francis P. Ragonese, Cherry Hill; James A. Stoos, Blackwood, both of N.J., and Sergei Yurchak, Media, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 16, 1989, Ser. No. 437,137

The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.

Int. Cl.[5] C01C *2/02, 2/04*

U.S. Cl. 585—533 **19 Claims**

1. A process for upgrading an unstable naphtha comprising dienes and olefins produced by thermal cracking of a heavy hydrocarbon feed comprising contacting the unstable naphtha with an upgrading catalyst comprising a zeolite having a Constraint Index of about 1 to 12, a silica to alumina mole ratio of at least 12 and an alpha value, on a pure zeolite basis, of at least 100, at oligomerization reaction conditions including a temperature, naphtha feed space velocity, and catalyst alpha value sufficient to oligomerize at least a portion of the olefins in the feed to gasoline and distillate boiling range products and to catalytically convert a majority of the dienes in the feed to produce a gasoline and distillate boiling range product with a reduced diene content.

5,053,580

METAL OXIDE POWDERS, THEIR MIXTURES, METAL MIXED OXIDE POWDERS, THEIR MIXTURES AND THEIR USE IN CATALYTIC DEHYDROGENATION OF HYDROCARBONS

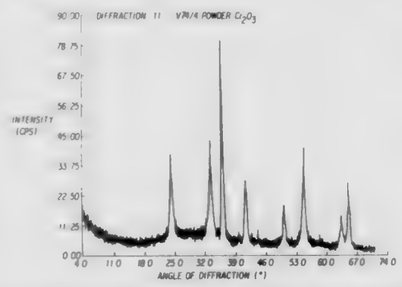
Bernhard Schramm, Heidelberg; Jurgen Kern, Bammental; Harald Schwahn, Wiesloch; August-Wilhelm Preuss, Dorsten; Klaus Gottlieb, Herdecke, and Hartmut Bruderreck, Borken, all of Fed. Rep. of Germany, assignors to Veba Oel Aktiengesellschaft, Gelsenkirchen, Fed. Rep. of Germany

Division of Ser. No. 372,358, filed as PCT DE88/00683 on Nov. 5, 1988, published as WO89/04717 on Jun. 1, 1989, Pat. No. 5,013,706. This application May 7, 1990, Ser. No. 520,375

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1987, 3739002

Int. Cl.[5] C07C *5/09, 5/373, 2/02, 5/333*

U.S. Cl. 585—624 **11 Claims**



1. A method which comprises catalyticaliy dehydrogenating branched or unbranched, saturated or unsaturated hydrocarbons having 2–6 carbon atoms, or mixtures of such hydrocarbons, at a temperature of 300°–700° C. and a pressure of 0.1–20 bar, in the presence of a metal oxide powder comprising Cr

(III) oxide, Ti (IV) oxide, V (V) oxide, or mixtures thereof, having a BET surface area of 5–50 m^2/g and a mean particle diameter of 25–350 nm, having been prepared by continuous laser pyrolysis at a pressure of 10–1000 mbar of vaporized chromyl chloride, titanium tetrachloride, vanadyl chloride, or mixtures thereof, in the presence of a gas of hydrogen, nitrogen, sulfur hexafluoride, or oxygen, or a mixture of any of these gases with a noble gas, or in the presence of a noble gas.

5,053,581

PROCESS FOR RECYCLING AND PURIFYING CONDENSATE FROM A HYDROCARBON OR ALCOHOL SYNTHESIS PROCESS

Henry W. Hildinger, Chester, and Edwin D. Carlson, Sparta, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 211,745, Jun. 27, 1988. This application Aug. 30, 1990, Ser. No. 575,026

Int. Cl.[5] C07C *1/04*

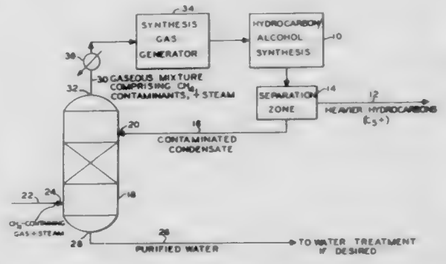
U.S. Cl. 585—638 **6 Claims**

1. A process for producing heavy hydrocarbons which comprises:

(a) reacting CO and H_2 over a catalyst at reactive conditions in a hydrocarbon synthesis to form heavy hydrocarbons and a product condensate;

(b) separately recovering the heavy hydrocarbons from the product condensate;

(c) contacting the product condensate with a hot gaseous mixture comprising CH_4 and steam to strip the product condensate of contaminants, said contaminants comprising lower molecular-weight hydrocarbons and oxygenates,



(d) recovering a gaseous stream comprising the contaminants and the gaseous mixture; and

(e) converting the gaseous stream recovered in step (d) to CO and H_2 and utilizing at least a portion of said CO and H_2 in step (a).

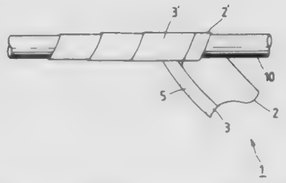
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5,053,582

ELECTROMAGNETIC WAVES SHIELD TAPE

Takashige Terakawa; Wataru Kusakabe; Yoshihisa Hiraoka, all of Kanagawa, and Toshihisa Sugiyama, Tokyo, all of Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

Filed May 25, 1990, Ser. No. 528,506
Claims priority, application Japan, May 26, 1989, 1-61126[U]
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 3 Claims



1. An electric wire shielded with an electromagnetic wave shield tape comprising:

an electric wire;

a strip-shaped conductive member and a strip-shaped insulative member, said conductive member being fixed to said insulative member so as to partially overlap said insulative member in a widthwise direction, wherein said insulative member is offset from said conductive member to define an offset portion on said insulative member, and wherein an adhesive material is applied at least to said offset portion; wherein said electromagnetic shield tape being wound helically on an outer surface of said electric wire so that said adhesive material applied to said offset portion adheres to said electric wire during a first winding turn of said tape being wound on said electric wire and so that a successive winding turn of said shield tape partially overlaps a winding turn of said shield tape just wound.

2. A method of shielding an electric wire with an electromagnetic wave shield structure having a strip-shaped conductive member and a strip-shaped insulative member, comprising the steps of:

providing an electric wire;

fixing said insulative member to said conductive member so that said insulative member partially overlaps said conductive member in the widthwise direction to thereby form an electromagnetic wave shield tape;

providing an adhesive material on a surface of an offset portion where said insulative member is offset from said conductive member; and

winding helically said electromagnetic shield tape on an outer surface of said electric wire so that said adhesive material applied to said offset portion adheres to said electric wire during a first turn of winding said tape on said electric wire and a successive winding turn of said shield tape partially overlaps a winding turn of said shield tape just wound.

5,053,583

BUNDLED HYBRID RIBBON ELECTRICAL CABLE

Vernon R. Miller, Atlanta, and Lincoln E. Roberts, Decatur, both of Ga., assignors to AMP Incorporated, Harrisburg, Pa.

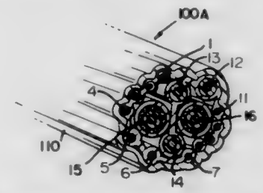
Filed Jan. 18, 1989, Ser. No. 298,528
Int. Cl.[5] H01B *11/00*
U.S. Cl. 174—36 9 Claims

1. A distribution cable for transmitting electrical signals without excessive crosstalk, comprising

at least one coaxial signal conductor having a braid surrounding a center conductor;

at least one first unshielded signal conductor;

at least one second unshielded signal conductor, each at least one said first and second unshielded signal conductor extending parallel to the at least one coaxial conductor, where said at least one first unshielded signal conductor is disposed on the opposite side of the at least one coaxial conductor from the at least one second unshielded signal conductor, and said at least one first unshielded signal conductor and the at least one second unshielded signal conductor are disposed in a common insulative web, the insulative web being wrapped at least partially around the at least one coaxial conductor; and



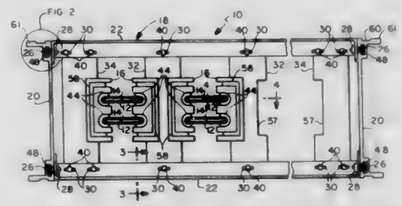
an insulative sheath surrounding said insulative web to retain the at least one first unshielded and at least one second unshielded signal conductor on opposite sides of the at least one coaxial conductor, so that crosstalk between the at least one first unshielded signal conductor and the at least one second unshielded signal conductor is reduced by the braid of the at least one coaxial conductor.

5,053,584

ADJUSTABLE SUPPORT ASSEMBLY FOR ELECTRICAL CONDUCTORS

Dean W. Chojnowski, Massillion, Ohio, assignor to Controlled Power Limited Partnership, Canton, Ohio

Filed Jul. 25, 1990, Ser. No. 557,229
Int. Cl.[5] H02G *5/06;* H01B *17/18*
U.S. Cl. 174—99 B 7 Claims



1. A conductor clamping apparatus for supporting an elongated electrical conductor having opposed lateral edges between a pair of opposed spaced apart retaining panels which have an edge portion defining a notch located adjacent each edge and extending generally perpendicular to the longitudinal axis of the conductor, the apparatus comprising a dielectric body for insulatively spacing the elongated electrical conductor from one retaining panel and for rigidly supporting the conductor from the retaining panel, the dielectric body having a front surface for facing toward the conductor, an opposed rear surface for facing away from the conductor, and a pair of spaced apart end portions extending between the front and rear surfaces, the dielectric body defining a conductor receiving recess located between the end portions extending from the front surface and the dielectric body further defining a mounting channel extending along the rear surface and at least a part of the end portions for receiving the edge portion of one retaining panel, with a portion of the dielectric body then received in the notch to thereby form an interlocking engagement between the dielectric body and the one retaining panel, said conductor clamping apparatus further comprising a resilient dielectric liner member receivable in said recess to provide a void-free engagement between a conductor when received in said recess and a portion of said dielectric body defining said conductor receiving recess, said dielectric body further including opposed side surfaces extending between said end portions and

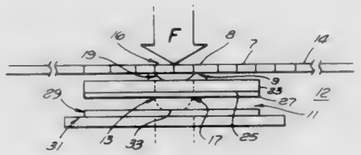
said front and rear surfaces, with said recess extending between said side surfaces, and the apparatus further including retention means for retaining said resilient dielectric liner member in said recess, comprising a pair of arcuate depressions defined by said dielectric body, one in each side surface, and each surrounding an end of said recess and cooperating with said recess so as to form a raised shoulder between the side surfaces, and said dielectric liner member has a generally U-shaped cross-section with opposed flanges received in the arcuate depressions and an intermediate portion in engagement with the raised shoulder.

5,053,585

MULTIPURPOSE KEYBOARD USING DIGITIZER PAD FEATURING SPATIAL MINIMIZATION OF A PRESSURE CONTACT AREA AND METHOD OF MAKING SAME

Stuart I. Yaniger, Ventura, Calif., assignor to Interlink Electronics, Incorporated, Carpinteria, Calif.

Filed Oct. 12, 1990, Ser. No. 598,456
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 **18 Claims**



1. A multipurpose keyboard, comprising:
an electronic pressure sensing means for simultaneously detecting the leading and trailing edges of at least one pressure contact area;
a programmable processing means for receiving location data for at least one spatial dimension from the electronic pressure sensing means and interpreting the location data;
a programmable controller means cooperatively associated with the processing means and for controlling the processing means;
at least one location data transmission means for each spatial dimension detected, transmitting location data from the electronic pressure sensing means to the processing means; and
an interchangeable active sensing element means cooperatively associated with the electronic pressure sensing means for depressing at least one pressure contact area.

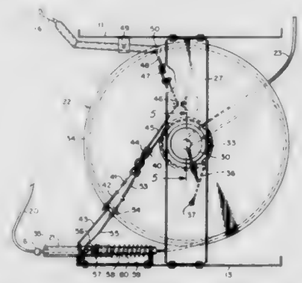
5,053,586

REEL ASSEMBLY WITH A FLEXIBLE BRAKE CORD FOR ARRESTING OR SLOWING REEL ROTATION

Gunnar C. Hansson, Stockholm, Sweden, assignor to Atlas Copco Tools Aktiebolag, Stockholm, Sweden

Filed Jun. 27, 1990, Ser. No. 544,664
Claims priority, application Sweden, Jul. 10, 1989, 8902476
Int. Cl.[5] H02G *11/02*
U.S. Cl. 191—12.2 R **9 Claims**

1. A reel assembly (22) comprising a support (13,27), a winding reel (34) rotatably mounted on said support (13,27), a brake drum (33) coaxially affixed to said reel (34), a flexible conductor cable (20) wrapped upon said reel (34) and extensible therefrom so as to rotate said drum and reel in a pay-out direction, a first biasing means (32) connected between said support (13,27) and said drum (33) and reel (34) for urging them to rotate in a rewind direction opposite said pay-out direction an elongated flexible brake element (36) fixedly connected at one end (37) thereof to said support (13,27) and wrapped on said drum (33), second biasing means (41) connected between said support (13,27) and the other end of said brake element (36) to tighten said brake element (36) frictionally around said drum (33) so as to arrest rotation of said drum and reel in said rewind direction while permitting them to rotate in said pay-out direction during which said drum tends to frictionally slide relative



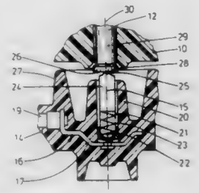
to said brake element (36), and means to relieve said second biasing means (41) so as to free rewinding rotation of said drum and reel in response to said first biasing means (32).

5,053,587

HIGH-VOLTAGE DISTRIBUTOR FOR AN IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Dieter Betz, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE89/00316, § 371 Date Jan. 10, 1990, § 102(e) Date Jan. 10, 1990, PCT Pub. No. WO90/00227, PCT Pub. Date Jan. 11, 1990
PCT Filed May 20, 1989, Ser. No. 459,754
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3821995
Int. Cl.[5] H01H *19/00;* **F02P** *7/02*
U.S. Cl. 200—19 R **5 Claims**



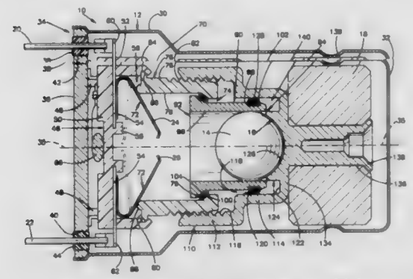
1. A high voltage distributor for an ignition system of an internal combustion engine having and driving a camshaft, comprising:
a distributor cap made of insulating material which has a center electrode and a plurality of fixed electrodes, and
a distributor rotor having a rotor electrode, said distributor rotor being connected to said camshaft so as to rotate synchronously with said camshaft and establish between each of said fixed electrodes on-after-the-other and said center electrode an electrical connection via said rotor electrode, said distributor rotor having an axis of rotation and a dome, which is an integral part of said rotor, which has a free end,,which is coaxial with said distributor rotor and which protrudes towards the distributor cap, said dome having a centrally located cylindrical guide which extends to the rotor electrode containing an axially displaceable pin-shaped sliding contacting body in a close fit and a compression spring located between said sliding contacting body and said rotor electrode, said sliding contacting body having a convex portion with a tip on a front face thereof which contacts against the center electrode under action of the compression spring, and said distributor rotor also having an annular wall surrounding said dome, spaced from the dome, integral with said dome and protruding beyond the free end of the dome, the tip of said convex portion being located approximately on said axis of rotation of said distributor rotor.

5,053,588

CALIBRATABLE CRASH SENSOR

Robert J. Bolender, Pasadena, Calif., assignor to TRW Technar Inc., Irwindale, Calif.

Filed Feb. 20, 1990, Ser. No. 482,232
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **30 Claims**



17. A deceleration sensor for activating a vehicle occupant safety apparatus in response to deceleration of a vehicle, the safety apparatus including an electrical current path, said deceleration sensor comprising:
a piston seat;
a piston having a front side, a rear side, a rest position in engagement with said piston seat, and an activated position spaced a distance from said rear position;
means for supporting said piston for inertial movement from said rest position to said activated position in response to a predetermined amount of deceleration of the vehicle;
biasing means for exerting a retaining force to releasably hold said piston in said rest position;
means for sensing movement of said piston into said activated position and for enabling electric current to flow along the current path int he safety apparatus to activate the safety apparatus in response to movement of said piston into said activated position;
means for containing a damping fluid for exerting a damping force resisting movement of said piston from said rest position to said activated position; and
means for adjusting said damping force while said retaining force is maintained at a constant level.

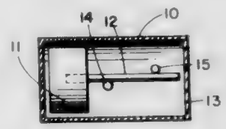
5,053,589

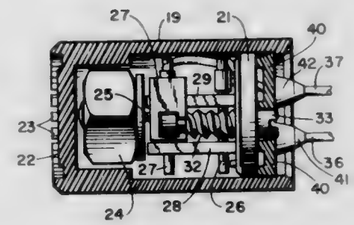
VIBRATION SENSING DEVICE

John T. Grant, Wensum Cottage, Ringland, Norfolk NR8 6AB, England

Filed Jun. 29, 1990, Ser. No. 545,709
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **8 Claims**

1. A vibration sensing device comprising a housing, an inertia body positioned in said housing and having a shaft rigidly secured thereto and extending therefrom within said housing, a pair of spaced shaft support members mounted in said housing one support member located above said shaft and one support member located below said shaft and both support members normally engaging said shaft, said body and said shaft fitting loosely in said housing and being retained in position by engagement of the shaft with said support members, said one support member located below said shaft being nearer to said body than the other support member said shaft being maintained normally in contact with both said support members simultaneously, said support members comprising conductors, said shaft including means providing a conducting path between its points of engagement with said conductors whereby said means is capable of completing an electric circuit, said shaft being subject to displacement and separation from at least





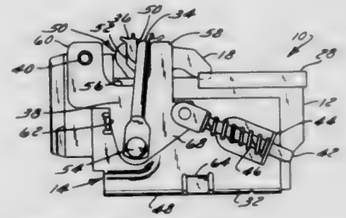
one of said conductors and opening of the electric circuit by acceleration forces to which the housing may be subjected.

5,053,590

MOUNT FOR ATTACHMENT OF A SWITCH OPERATING MECHANISM TO A SWITCH

Chester J. Vierling, Stone Mountain, Ga., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

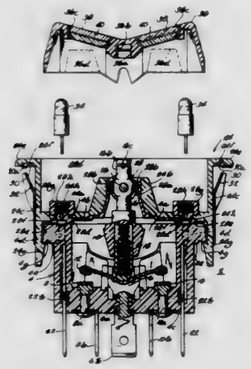
Filed Oct. 26, 1990, Ser. No. 604,558
Int. Cl.[5] H01H *1/58*
U.S. Cl. 200—293 **9 Claims**



1. A switch assembly, comprising:
a base formed of electrically insulating material, the base having at least one cavity and a bottom surface;
a blade pivotally mounted within at least one of the at least one of the cavities;
a terminal in electrical contact with at least one of the blades;
respective contact points for engagement with at least one of the at least one of the blades when the switch assembly is in a closed position; and
an operating mechanism for movement of at least one of the at least one of the blades between an open and a closed position, directly attached to the base bottom surface by means for sliding engagement therewith.

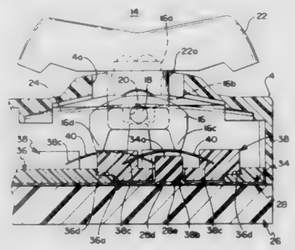
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5,053,591
ILLUMINATED SEALED ROCKER SWITCH
Walter C. Theurer, Bradenton, Fla., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 20, 1990, Ser. No. 482,119
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—315 31 Claims



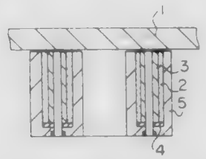
1. An illuminated environmentally sealed rocker switch comprising:
a hollow insulating base having a central cavity open to an upper surface of said base and a pair of push-in receptacle terminals mounted in an end wall of said base, said terminals being open to said upper surface;
switch contacts mounted in said cavity connected through a wall of said base to respective terminals attached externally to said base;
switching means in said cavity actuable to selectively connect respective ones of said switch contacts;
a frame attached to said base, said frame comprising a cover overlying said upper surface closing said cavity, said cover having an opening therethrough aligned with said receptacle terminals, a cylindrical bushing extending upwardly from said cover, a hole extending through said bushing communicating with said cavity;
a toggle lever extending through said hole in said bushing having an upper end disposed externally of said cover and a lower end disposed within said cavity;
a pin extending through said bushing and said toggle lever mounting said toggle lever for limited rocking movement in a plane transverse to said pin;
actuator means in said cavity connecting said lower end of said toggle lever to said switching means;
a rocker button operator attached to said toggle lever upper end;
rocker button attachment means facilitating removal and replacement of said rocker button on said toggle lever;
sealing means comprising a continuous pliable member molded in situ to said frame, toggle lever and pivot pin, intimately surrounding said toggle lever and said pivot pin and lining an interior surface of said hole in said bushing, bridging a space therebetween and closing said hole, said pliable member extending upwardly through said opening in said cover and forming a pliable lamp receiving cavity, said lamp receiving cavity being positioned to direct a lamp for emitting light at said rocker button, said pliable member establishing an environmental seal of said cover, said base and said toggle lever; and
a lamp having a cylindrical base disposed in said cavity, insertion of said lamp base into said lamp receiving cavity firmly contacting and compressing said inner surface of said lamp receiving cavity continuously along the periphery of said lamp base, said lamp having pin type terminal wires passing through openings in said lamp receiving cavity aligned with said receptacle terminals and engaging said push-in receptacle terminals whereby said lamp is replaced from a rocker side of said switch by removing said rocker button from said toggle lever, exposing said lamp, removing said lamp by pulling said lamp from said lamp receiving cavity, replacement by simply pushing said lamp into said lamp receiving cavity engaging said pin terminal wires with said push-in pin receptacle terminals, said insertion of said lamp base into said lamp receiving cavity completing an environmental seal of said switch making said switch impervious to external contaminants.

5,053,592
LOW CURRENT SWITCHING APPARATUS HAVING DETENT STRUCTURE PROVIDING TACTILE FEEDBACK
Joseph C. Zuercher, Brookfield, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 28, 1990, Ser. No. 486,570
Int. Cl.[5] H01H *21/00*
U.S. Cl. 200—553 37 Claims



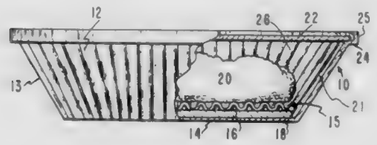
13. Low current switching apparatus comprising a multiple layer assembly comprising, in combination:
a first layer comprising a rigid insulating base;
a second layer comprising a printed circuit having spaced conductor elements defining switch contacts;
a third layer comprising an insulator covering said printed circuit and having an opening aligned with said switch contacts;
a fourth layer comprising a block of conductive rubber overlying said switch contacts in spaced relation thereto;
a fifth layer comprising a rigid insulating detent support having an aperture aligned with said block and said switch contacts;
said first through fifth layers being secured in a sandwich relation by a cover enveloping said layers and being attached to said base;
detent means comprising a flat beam leaf spring;
means on said detent support fixing opposite ends of said leaf spring at respective opposite sides of said aperture, said leaf spring being disposed over said aperture and being bowed toward said cover away from said block;
switch actuator means pivotally mounted in said cover having an operator portion extending externally of said cover, movement of said actuator means from a first position to a second position effecting compression of said conductive rubber block into current conducting bridging relation with said switch contacts; and
means on said actuator means bearing upon an intermediate portion of said leaf spring deflecting said intermediate portion from a convex to a concave shape during said movement of said actuator means, said leaf spring initially applying an increasing force to said actuator means resisting said movement and changing to a decreasing force at a predetermined point in said movement, thereby providing tactile feedback to said operator.

5,053,593
LOW-FREQUENCY ELECTROMAGNETIC INDUCTION HEATER
Atushi Iguchi, Kyoto, Japan, assignor to Nikko Corporation Ltd., Kyoto, Japan
Division of Ser. No. 469,064, Jan. 23, 1990, Pat. No. 4,999,467.
This application Aug. 15, 1990, Ser. No. 567,764
Claims priority, application Japan, Jan. 23, 1989, 1-14541; May 29, 1989, 1-137081; Aug. 8, 1989, 1-205137
Int. Cl.[5] H05B *6/12*
U.S. Cl. 219—10.493 6 Claims



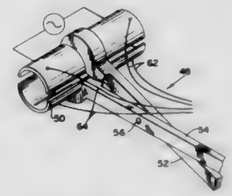
1. A low-frequency electromagnetic induction heater, comprising a plurality of leg iron cores, a corresponding yoke iron core arranged on the leg iron cores, an induction coil wound around each leg iron core, and an iron plate or metal vessel for producing Joule heat with which the leg iron cores or induction coils are in direct contact, wherein spaces between the yoke iron core, the leg iron cores and the induction coils are solidly filled with a resinous substrate which has been molded with molten resin.

5,053,594
COOK AND SERVE FOOD PACKAGE FOR THE STORING AND HEATING BY MICROWAVE ENERGY OF A FOOD ITEM
Hamsa A. P. Thota, and Shankara R. Shetty, both of St. Simons Island, Ga., assignors to Rich-Seapak Processing Corporation, St. Simons Island, Ga.
Filed Nov. 9, 1989, Ser. No. 433,945
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E 20 Claims



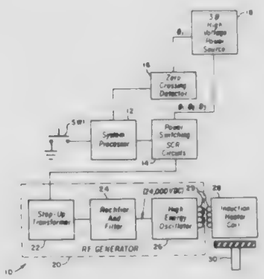
1. A package for the storing and heating of a food item contained therein, the package including a top and a bottom defining an interior for containing a food item and an exterior, the package comprising:
a shell including a laminated portion formed of a structural layer, a protective layer for engaging the food item, and a microwave interactive layer, the microwave interactive layer being interposed between the protective layer and the structural layer and including a support layer having an interior facing side and exterior facing side, said support layer being formed of a material selected from the group consisting of polyester, polyethylene, polytetrafluoroethylene, nylon, polysulphone and cellophane, said support layer including a first metallic alloy layer deposited on the interior facing side and a second metallic alloy layer deposited on the exterior facing side, said metallic alloy layers having the following components by weight:
Nickel 67%
Chromium 15.5%
Iron 8%.

5,053,595
HEAT SHRINK SLEEVE WITH HIGH MU MATERIAL
Rodney L. Derbyshire, Menlo Park, Calif., assignor to Metcal, Inc., Menlo Park, Calif.
Division of Ser. No. 170,108, Mar. 11, 1988, Pat. No. 4,914,267, which is a continuation of Ser. No. 837,559, Mar. 3, 1986, abandoned, which is a continuation of Ser. No. 568,220, Nov. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 445,819, Dec. 1, 1982, abandoned. This application Mar. 27, 1990, Ser. No. 500,195
Int. Cl.[5] H05B *6/10*
U.S. Cl. 219—10.75 17 Claims



1. A structure in which a region of the structure is to be encompassed within a heat shrinkable sleeve comprising
a structure having a region to be encompassed within a heat shrinkable sleeve,
a heat shrinkable sleeve disposed to encompass said region of said structure,
high magnetic permeability material disposed in intimate contact with said heat shrinkable sleeve, and
means for heating said high permeability material such that it becomes essentially non-magnetic,
said heat shrinkable sleeve having a shrink temperature below that at which said high permeability material becomes essentially non-magnetic.

5,053,596
APPARATUS AND METHOD OF INDUCTION-HARDENING MACHINE COMPONENTS WITH PRECISE POWER OUTPUT CONTROL
John M. Storm, and Spencer L. Gibbs, both of Canville, Ind., assignors to Contour Hardening Investors, LP, Indianapolis, Ind.
Filed Aug. 6, 1990, Ser. No. 563,398
Int. Cl.[5] H05B *6/06, 6/14*
U.S. Cl. 219—10.77 2 Claims



1. An induction-hardening machine for contour hardening of a gear comprises:
an AC power source for producing an AC power signal;
zero-crossing detector means connected to said AC power source for detecting zero crossings of said AC power signal and producing a zero-crossing signal corresponding thereto;

a high-frequency generator having a power input and an output for producing a high-frequency high-power signal in response to a signal supplied to said power input;

a high-frequency induction heater coil sized to fit said gear and connected to said output of said generator, said coil generating a high-frequency electrical signal through said gear;

thyristor power switching means having an activation input, a power input connected to said AC power source, and a power output, said power switching means supplying an AC power signal to said power input of said high-frequency generator in response to a signal supplied to said activation input; and

processor means, connected to said zero-crossing detector and said thyristor power switching means activation input, for computing activation times and supplying a corresponding activation signal to said activation input, said processor means including:

1) means for entering a desired activation time;

2) means for computing a delay time so that the sum of the activation time and the delay time corresponds to a minimum whole number multiple of the period of said AC power signal; and

3) input means for receiving a user supplied manual cycle start input signal;

said processor responding to a cycle start input signal by detecting a zero crossing signal and delaying a period of time equal to said delay time before supplying an activation signal to said activation input so that the activation signal is extinguished substantially simultaneously with a subsequent zero crossing of said AC power signal

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5,053,597

METHOD AND APPARATUS FOR FABRICATING DOUBLE-LAYER, WELDED GRID BODIES

Klaus Ritter; Gerhard Ritter; Gerhard Schmidt, and Anton Lassbacher, all of Graz, Austria, assignors to EVG Entwicklungs-u Verwertungs-Gesellschaft m.b.H., Graz, Austria

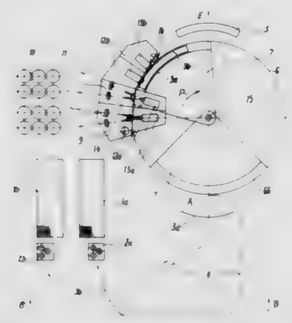
PCT No. PCT/AT89/00051, § 371 Date Jan. 16, 1990, § 102(e) Date Jan. 16, 1990, PCT Pub. No. WO89/11358, PCT Pub. Date Nov. 30, 1989

PCT Filed May 23, 1989, Ser. No. 477,827

Claims priority, application Austria, May 26, 1988, 1387/88

Int. Cl.[5] B23K *11/00*

U.S. Cl. 219—56 **16 Claims**



1. Method of fabricating double-layer, welded grid bodies, which are bent in a circular-arc shape and which have grids located opposite one another comprising longitudinal and cross wires crossing one another and welded at the intersections and of straight web wires which hold the grids apart at a predetermined mutual distance and are welded at each end to a wire of one of the two grids, in which method the grids are bent and are arranged at a distance from one another, whereupon the web wires are inserted from the outside of the grids into the intermediate space between the grids, and each web wire is welded to the adjacent wires of the grids, characterized in that, to fabricate grid bodies in the form of annular sections, the two grids, at a mutual distance corresponding to the desired thickness of the grid body, are moved forwards concentrically to one another and in a vertical position along concentric circular feed paths, and in that, after the web wires have been welded, preferably in pairs, to the grids, the finished grid body is removed from the outside of the path.

5,053,598

WIRE ELECTRODE FEEDING APPARATUS

Akihiro Sakai, and Masanori Suzuki, both of Nagoya, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Apr. 18, 1990, Ser. No. 510,632

Claims priority, application Japan, Apr. 28, 1989, 1-111702

Int. Cl.[5] B23H *7/10*

U.S. Cl. 219—69.12 **13 Claims**



1. A wire electrode feeding apparatus for feeding a wire electrode from a bobbin, comprising:

a capstan roller;

a feed motor for rotationally driving said capstan roller;

a pinch roller for pressing said wire electrode against said capstan roller with a certain pressure;

pressure adjusting means for adjusting said pressure of said pinch roller,

a pre-tension motor for applying torque to said bobbin to resist unwinding of said wire electrode; and

a control unit for controlling said pressure adjusting means and said pre-tension motor, in such a manner that said pressure is increased as said torque is increased, and said pressure is decreased when said torque is decreased.

5,053,599

WELDING GUN ASSEMBLY WITH TRANSFORMERS

Gen Tsujii, and Fumitomo Takano, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1990, Ser. No. 523,113

Claims priority, application Japan, May 15, 1989, 1-121832

Int. Cl.[5] B23K *11/24*

U.S. Cl. 219—116 **10 Claims**

1. A welding gun assembly comprising:

a linear array of transformers extending in one direction, said transformers having respective secondary coils;

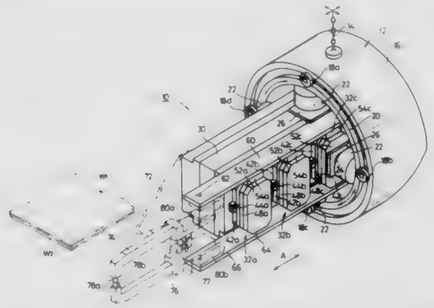
a welding gun having a pair of electrodes for sandwiching a workpiece to be welded, said welding gun being fixed at one end of said linear array;

a plurality of terminal plates connected to said secondary coils;

a plurality of center tap terminal plates connected to intermediate portions of said secondary coils;

a first conductor plate extending along said linear array and interconnecting said terminal plates, said first conductor plate being connected to one of said electrodes of the welding gun; and

a second conductor plate extending along said linear array and interconnecting said center tap terminal plates, said



second conductor plate being connected to the other electrode of the welding gun.

5,053,600

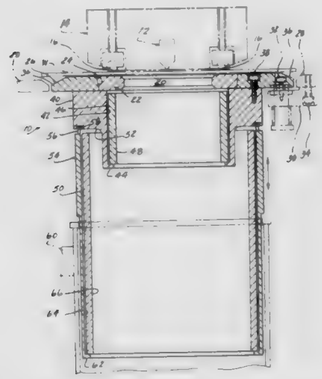
SLAG CHUTE SYSTEM

Victor L. Chun, Holland, and George M. Jaworski, Bala Cynwyd, both of Pa., assignors to Murata Wiedemann, Inc., King of Prussia, Pa.

Filed Jul. 25, 1990, Ser. No. 558,098

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.48 **11 Claims**



1. In an apparatus for cutting a workpiece by a device generating a hot discharge, a workpiece supported on a support table, said table having a planar support means formed with a discharge opening aligned with said device generating a cutting discharge to receive said hot discharge, a spatter confining chute, including:

a hollow holder piece secured immediately below said discharge opening in said support means, said holder piece having a bore aligned with said support discharge opening;

an opened ended tubular upper chute liner section loosely fit within and substantially co-extensive with said holder piece bore and supported therein to be able to be readily removed, said upper chute liner section having an internal bore aligned with said discharge opening in said support means said internal bore of larger diameter than said opening, whereby the internal bore of said upper liner section receives and confines the spatter from said cutting of said workpiece.

5,053,601

PROCESS AND APPARATUS FOR PRODUCING WELDED STAMPED PARTS

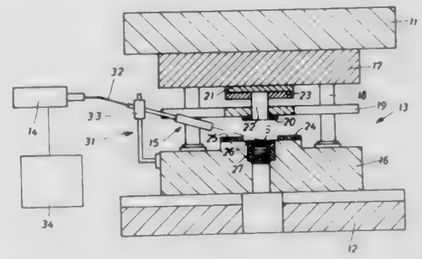
Josef Landtwing, Zug, and Waldemar Hellwig, Arbon, both of Switzerland, assignors to Bruderer AG, Frasnacht-Arbon, Switzerland

Filed May 16, 1989, Ser. No. 352,747

Claims priority, application Switzerland, May 27, 1988, 2023/88

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.63 **19 Claims**



1. A process for producing at least two joined-together stamped parts, comprising:

stamping at least two stamped parts in stamping operation of a stamping tool in a stamping press that retains the two stamped parts; and

welding the two stamped parts together at least at one location in the course of the stamping operation with the beam of a laser, the one location where the two stamped parts are welded together being at their edges.

5,053,602

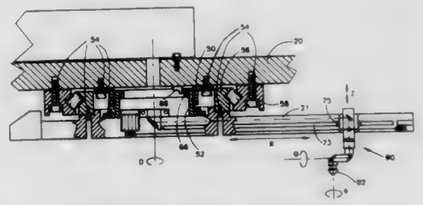
LASER BEAM DELIVERY SYSTEM

Roni Aharon, Ra'anana, Israel, assignor to Robomatix, Ltd., Petach Tikva, Israel

Filed Aug. 22, 1990, Ser. No. 570,853

Int. Cl.[5] B23K *26/08*

U.S. Cl. 219—121.78 **11 Claims**



1. A laser beam delivery system comprising:

laser means for producing a laser beam;

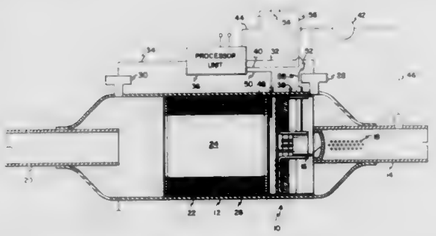
follower nozzle means for receiving said laser beam and for directing said laser beam to impinge upon a workpiece; and

polar motion means for moving said follower nozzle means in a polar coordinate system and for directing said laser beam from said laser means to said follower nozzle means, said polar motion means including means for receiving said laser beam along a first non-translatory rotation axis and for directing said laser beam along a second non-rotary translation axis, wherein said second axis is orthogonal to said first axis.

5,053,603
ELECTRICAL RESISTANCE HEATER

Wayne M. Wagner, Apple Valley; Eugene D. Wilson, Prior Lake; Douglas E. Flemming, Rosemount, and Ed Steinbrueck, Eden Prairie, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 30, 1989, Ser. No. 331,623
Int. Cl.[5] H05B *3/20*
U.S. Cl. 219—205 **5 Claims**



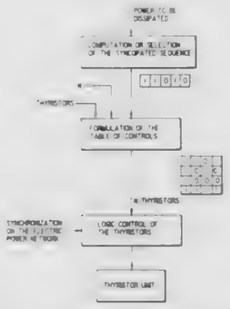
5. A heating device, comprising:
a flat array of a plurality of spiral-wound resistance rods, each of said rods having first and second ends, each of said rods including a resistance wire, insulation material, and a metallic sheath, said resistance wire being surrounded by said insulation material which is covered by said metallic sheath, the second ends of said resistance rods being formed so that said resistance wire is in contact with said sheath which is closed so as to enclose said insulation material;
a metallic, cylindrical wall which is electrically grounded, said second ends of said resistance rods being attached to said wall;
a ceramic foam disc with a central opening, said disc being located behind said array;
electrode means for electrically energizing said resistance rods, said electrode means including means behind the central opening of said ceramic foam disc for receiving the first ends of said resistance rods, said electrode means further including insulated means for carrying a conductor in electrical continuity with the first ends of said resistance rods from said receiving means to external of said metallic cylindrical wall;
means for supporting said array and said ceramic foam disc with respect to said wall and said receiving means;
whereby said resistance rods are electrically in parallel and form a relatively flat heating front.

5,053,604
PROCESS AND DEVICE FOR CONTROL OF ELECTRICAL RESISTORS, PARTICULARLY FOR AN INDUSTRIAL FURNACE

Bruno Escaravage, Entraigues sur Sorgues; Jean-Luc Lesage, Compiegne, and Francois Mehl, Lewarde-Quesnain, all of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Oct. 3, 1988, Ser. No. 251,785
Claims priority, application France, Oct. 2, 1987, 87 13626
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—483 **23 Claims**

1. A process for controlling the power dissipated in electrical resistors used in a furnace for heating glass sheets for tempering and/or bending of the glass sheets, comprising:
controlling the power to be dissipated in each resistor by means of switching devices connected to respective of said resistors; and
controlling the switching devices in a syncopated mode by means of a digital computer, including performing predetermined computing functions to define the power to be dissipated in said resistors, and controlling directly the switching devices so as to apply to said resistors an

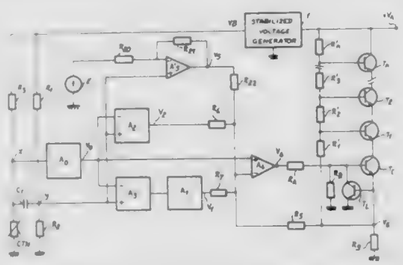


amount of power so that the previously defined power is dissipated by said resistors.

5,053,605
DEVICE FOR THERMAL REGULATION OF AN ENCLOSURE

Didier Thorax, Argenteuil, and Gérard Marotel, Sartrouville, both of France, assignors to Compagnie D'Electronique Et De Piezo-Electricite, Argenteui, France

Continuation of Ser. No. 112,717, filed as PCT FR87/00031 on Feb. 3, 1987, published as WO87/04816 on Aug. 13, 1987, Pat. No. 4,888,471. This application Sep. 19, 1989, Ser. No. 409,062
Claims priority, application France, Feb. 4, 1986, 86 01524; Dec. 12, 1986, 86 17405
The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—501 **19 Claims**



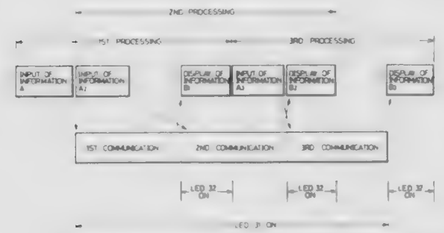
1. An improvement in a device for thermal regulation of an enclosure comprising:
a temperature measuring circuit which comprises a resistor bridge with four arms, at least one heat-sensitive element on one arm;
an output amplifier having an inverting input connected to a common point between two of said bridge arms, which is defined as a first output of said resistor bridge, and a non-inverting input connected to a second output of the resistor bridge, said second output being located at the common point between two other arms, said output amplifier delivering an output control signal which is representative of the difference between the measured temperature of the enclosure and a reference temperature;
a circuit for heating the enclosure which is supplied from a voltage source and regulated by the temperature measuring circuit, said circuit for heating comprising at least one control transistor having an emitter resistor for delivering a heating current which is adjustable based upon the output of said control transistor.

wherein the temperature measuring circuit further comprises a regulating circuit which has proportional plus integral plus derivative action, said regulating circuit having at least one output connected to the inverting input of the output amplifier, and two inputs each of which is connected to an output of said resistor bridge, and
wherein the device further comprises a negative DC current feedback loop directly mounted between the emitter resistor of said control transistor and a common point located between the inverting input of said output amplifier and the output of said regulating circuit.

5,053,606
CREDIT AUTHORIZATION TERMINAL WITH CIRCUITRY TO SERVICE PLURAL CUSTOMERS IN PARALLEL

Ryuichi Kimizu, Ootsu, Japan, assignor to Omron Tateisi Electronics Company, Kyoto, Japan

Filed Jun. 6, 1988, Ser. No. 202,667
Claims priority, application Japan, Jun. 8, 1987, 62-142595
Int. Cl.[5] G06F *15/21, 13/00*
U.S. Cl. 235—379 **9 Claims**



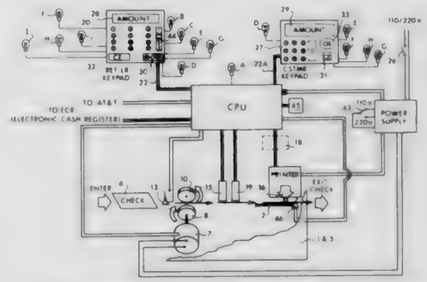
3. A single data processing terminal for connection to a host for performing information processing through a communication line, comprising:
inputting means for entering data into the single data processing terminal, the inputting means being operative to sequentially input information to be processed relating to at least a first customer and a second customer,
transmitting means, connected to said inputting means, for transmitting to the host the information that is sequentially input from the inputting means, and
control means connected to the inputting means and the transmitting means, and operative to cause input processing of the information relating to either one of the first customer or the second customer by the inputting means in parallel with causing transmission processing in which input information relating to the other one of the first customer or the second customer by is transmitted by the transmitting means to the host.

5,053,607
POINT-OF-SALE DEVICE PARTICULARLY ADAPTED FOR PROCESSING CHECKS

Steven R. Carlson, and Paul R. Carlson, both of 417 2nd Ave., Beach, N. Dak. 58621

Continuation-in-part of Ser. No. 219,735, Jul. 15, 1988, which is a continuation-in-part of Ser. No. 70,816, Jul. 6, 1987, Pat. No. 4,758,714, which is a continuation-in-part of Ser. No. 915,505, Oct. 6, 1986, Pat. No. 4,678,896. This application Jun. 6, 1989, Ser. No. 362,164
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—379 **18 Claims**

1. A point-of-sale negotiable instrument processing device comprising:
(1) a housing having a first compartment, a second compartment and a spacer means which positions the first compartment next to the second compartment so as to define a slot between said first and second compartments;
(2) MICR read head means for reading MICR information on a negotiable instrument;
(3) printer means for printing on a negotiable instrument;
(4) switching means to initiate preprogrammed CPU functions upon the negotiable instrument;
(5) motive means for moving the negotiable instrument: (a) into position in the slot so as to be read by the MICR read head means, (b) into position to be printed upon and (c) into and out of the slot;
(6) positioning means for positioning the negotiable instrument in the slot so that MICR information on the negotiable instrument can be read by the MICR read head means



and for positioning the negotiable instrument in the slot so that the rear side of the negotiable instrument can be printed upon;
(7) alpha/numerical keypad means for transmitting information to a CPU;
(8) a CPU for receiving information from the alpha/numerical keypad means and the MICR read head means in order to communicate said information to a telecommunications system in order to transfer funds represented by the negotiable instrument from an account of the maker of the negotiable instrument to an account of the payee of the negotiable instrument; and
(9) means for electronically connecting the point-of-sale negotiable instrument processing device to a telecommunications system.

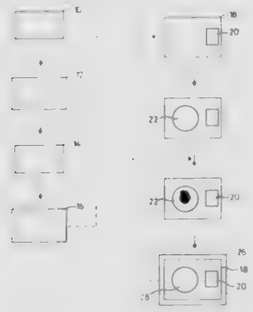
5,053,608
PERSONAL IDENTIFICATION SYSTEM

Daya R. Senanayake, 9 Ecrin Place, Colombo 8, Sri Lanka

PCT No. PCT/LK88/00002, § 371 Date Jun. 4, 1990, § 102(e) Date Jun. 4, 1990, PCT Pub. No. WO89/03100, PCT Pub. Date Apr. 6, 1989
PCT Filed Aug. 16, 1988, Ser. No. 469,449
Claims priority, application Sri Lanka, Oct. 2, 1987, 9806
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 **10 Claims**

1. A personal identification system comprising
a card having a first recording means for permanently storing a first singularity which is unique to the authorized user of the card;
a card reader;
a second recording means located on either the card or the card reader for temporarily recording a second singularity; wherein said card reader further includes comparison means for comparing said first and second singularities and indicator means for indicating either a positive or negative result of said comparison means;
wherein said second recording means further comprises a plurality of recording areas, each of said recording areas

capable of temporarily recording said second singularity upon presentation thereof, and



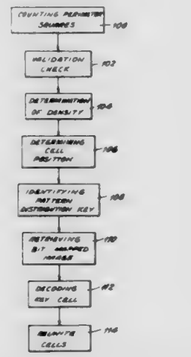
said indicator means will not indicate a positive result from at least one but not all of said recording areas.

5,053,609

DYNAMICALLY VARIABLE MACHINE READABLE BINARY CODE AND METHOD FOR READING AND PRODICING THEREOF

Dennis G. Priddy, Safety Harbor, and Robert S. Cymbalski, Clearwater, both of Fla., assignors to International Data Matrix, Inc., Clearwater, Fla.

Continuation of Ser. No. 190,205, May 5, 1988, Pat. No. 4,939,354. This application Apr. 24, 1990, Ser. No. 513,362
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] G06K *7/00*
U.S. Cl. 235—436 **22 Claims**



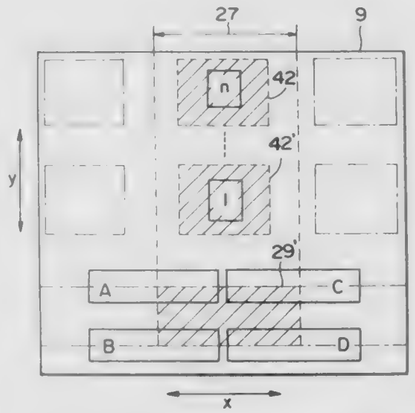
1. An apparatus for reading a dynamically variable machine optically readable binary code, said binary code comprising data formed as a plurality of data cells forming a matrix having a perimeter, said matrix having a variable number of data cells, said perimeter including density indicia for determining the density of data contained within the matrix said density indicia being disposed in said perimeter independently of the positioning of said data cells contained in the matrix, said density indicia being a function of the number of data cells in said matrix and said apparatus operating on said density indicia to determine the density of data contained within said binary code.

5,053,610

READING APPARATUS AND PHOTODETECTOR FOR OPTICAL RECORDING MEDIUM

Kiyoshi Horie, Yokohama, Japan, assignor to Kabushiki Kaisha CSK, Tokyo, Japan

PCT No. PCT/JP88/00566, § 371 Date Feb. 10, 1989, § 102(e) Date Feb. 10, 1989, PCT Pub. No. WO88/09989, PCT Pub. Date Dec. 15, 1988
PCT Filed Jun. 13, 1988, Ser. No. 315,785
Int. Cl.[5] G11B *7/00;* **H01L** *27/14*
U.S. Cl. 235—454 **10 Claims**



1. A reading apparatus for an optical recording medium having a clock line, data tracks and a tracking guide line, which apparatus comprises:

a photodetector which comprises first to fourth light-sensitive elements which receive a light image of the tracking guide line, a fifth-light sensitive element which receives a light image of said data track and a sixth light-sensitive element which receives a light image of said clock track;

a clock detecting circuit which is responsive to a signal from the clock track detected by the said sixth light-sensitive element to output a clock signal;

a data detecting circuit which encodes data read from the data tracks detected by said fifth light-senstitive element into a binary code in response to the clock signal;

a focus error detecting circuit for detecting a focus error and a tracking error detecting circuit for detecting a tracking error in response to a signal from the tracking guide line detected by said first to fourth light sensitive elements;

said first and said second light-sensitive elements being arranged in a line and said third and said fourth light-sensitive element being arranged in a line parallel with said line of the first and the second light-sensitive element in alignment with the first and the second element respectively,

said focus error detecting circuit being comprised of a summing amplifier which receives the output from said first and third light-sensitive elements, a summing amplifier which receives the output from the said second and fourth light-sensitive elements and a differential amplifier which receives outputs from said amplifier,

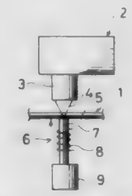
said tracking error detecting circuit being comprised of a summing amplifier which receives the output from the said first and second light-sensitive elements, a summing amplifier which receives the output from the said third and fourth light-sensitive elements and a differential amplifier which receives output from the said amplifiers.

5,053,611

DEVICE FOR REDUCING MECHANICAL VIBRATIONS WHEN UTILIZING A MAGNETO-OPTICAL CARD AS A RECORDING MEDIUM

Akira Takahashi, Nara; Yoshiteru Murakami, Nishinomiya; Junichiro Nakayama, Nara; Kenji Ohta, Nara; Hiroyuki Katayama, Nara, and Michinobu Mieda, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1988, Ser. No. 287,053
Claims priority, application Japan, Dec. 26, 1987, 62-332251
Int. Cl.[5] G06K *7/10, 7/01*
U.S. Cl. 235—454 **16 Claims**



1. A device for recording on and reproducing from a magneto-optical card, comprising:

an optical head for irradiating a magneto-optical recording medium of the magneto-optical card;

a magnetic field generator for applying a biased magnetic field to said magneto-optical recording medium;

optical system means for varying a spot to be irradiated by a laser beam;

magneto-optical card moving means for supporting the magneto-optical card and for moving the magneto-optical card in a plane parallel to a surface of the magneto-optical card; and

magnetic field generator moving means for moving a portion of said magnetic field generator into contact with the magneto-optical card when said optical head irradiates said laser beam upon the magneto-optical card;

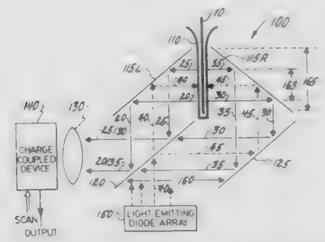
said magnetic field generator preventing vibrations caused from the movement of the magneto-optical card by said magneto-optical card moving means when said optical head irradiates said laser beam upon the magneto-optical card.

5,053,612

BARCODE BADGE AND TICKET READER EMPLOYING BEAM SPLITTING

William J. Pielemeier, Ypsilanti, and James L. Jessup, Livonia, both of Mich., assignors to Tech-S, Inc., Livonia, Mich.

Filed Mar. 28, 1990, Ser. No. 500,383
Int. Cl.[5] G06K *7/01, 7/10*
U.S. Cl. 235—462 **21 Claims**



1. A barcode reader for a planar card having a barcode imprinted on one side of one end thereof comprising:

a guide slot for accommodating the end of the planar card having the barcode imprinted thereon;

a source of illumination disposed to illuminate both sides of any planar card disposed in said guide slot;

a light sensitive device including a plurality of light sensitive elements disposed in a line having a predetermined field of view;

a beam splitter having first and second opposed faces disposed in a location within said field of view of said light sensitive device;

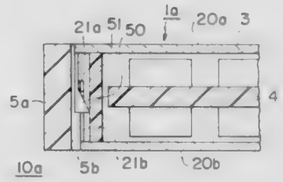
a set of reflectors disposed for reflecting light from a first side of any planar card disposed in said guide slot to said first face of said beam splitter and for reflecting light from a second side of any planar card disposed in said guide slot to said second face of said beam splitter, whereby said light sensitive device receives an overlaid image of the first and second sides of any planar card disposed in said guide slot.

5,053,613

IC CARD

Shigeo Onoda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 29, 1990, Ser. No. 529,434
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—492 **13 Claims**



1. An IC card comprising:

a card body having a predetermined thickness and accommodating at least one electronic component therein;

an input/output portion provided on said card body for exchanging signals between said electronic components and an external device;

means defining a plurality of slits extending through the thickness of said card body;

a pair of metallic panels respectively covering opposite sides of said card body to protect said card body and said electronic component; and

connecting means including at least one electrically conductive engaging portion formed on one of said metallic panels and extending into said means defining slits when said metallic panels are secured to said card body, and at least one second engaging portion formed on the other of said metallic panels and extending into said means defining slits to engage said first engaging means within said slits such that said first and second engaging means contact and retain each other.

5,053,614

EXPOSURE CONTROL METHOD AND APPARATUS COMPENSATING FOR DETECTION OF OFFSET FROM A MEASURED VALUE

Yoshikiyo Yui, and Yuji Tsuruoka, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

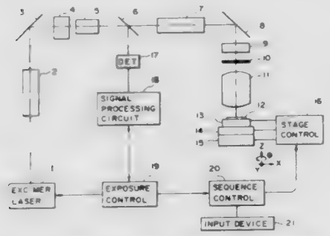
Continuation of Ser. No. 456,451, Dec. 26, 1989, abandoned. This application Oct. 2, 1990, Ser. No. 596,401
Claims priority, application Japan, Dec. 28, 1988, 63-328833
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **17 Claims**

1. An exposure apparatus, comprising:

a pulsed light source for repeatedly emitting a pulsed light;

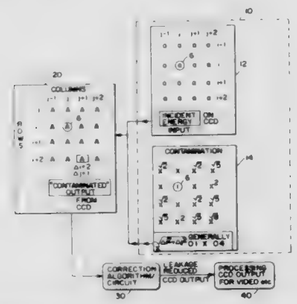
photoelectric converting means for receiving at least a portion of the pulsed light from said pulsed light source; and

control means for controlling the emission of said pulsed light source, on the basis of a value related to a difference between a photoelectric signal produced from said photo-



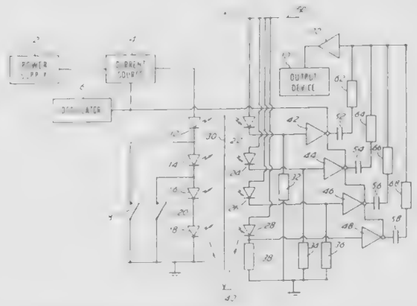
electric converting means at the time of emission of the pulsed light and an offset signal produced from said photoelectric converting means at the time of non-emission of the pulsed light.

5,053,615
CORRECTION ALGORITHM FOR CONTIGUOUS CCD ELEMENTS LEAKAGE
Chandrakant B. Patel, Hopewell, N.J., assignor to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea
Filed Apr. 6, 1990, Ser. No. 505,479
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **14 Claims**



1. An information sensing system, comprising;
a plurality of elements arranged in an ordered array, each of said elements responding to incident radiation by providing resulting signals characteristic of said incident radiation; and
means coupled to receive said resulting signals, for attenuating contributions to each of said resulting signals by said radiation incident upon first ones of said elements next adjacent to each corresponding one of said elements and by said radiation incident upon second ones of said elements diagonally adjacent to each corresponding one of said elements, to provide an adjusted image signal for each corresponding one of said elements.

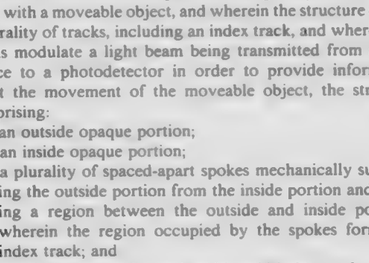
5,053,616
PHOTOELECTRIC ARRAY DETECTION CIRCUITRY WITH DUAL GATING MEANS
John Trett, Marlow, United Kingdom, assignor to Formula Systems Limited, Oxford, United Kingdom
PCT No. PCT/GB89/00400, § 371 Date Feb. 9, 1990, § 102(e) Date Feb. 9, 1990, PCT Pub. No. WO90/01773, PCT Pub. Date Feb. 8, 1990
PCT Filed Apr. 17, 1989, Ser. No. 460,900
Claims priority, application United Kingdom, Jul. 26, 1988, 8817759
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **12 Claims**



1. Detection circuitry comprising
a transmitter array having n light emitting elements where n is a whole number equal to or in excess of unity;
a receiver array having m light receiving elements where m is a whole number equal to or in excess of unity, and where at least one of m and n is greater than unity;
a power source for energizing the transmitter and receiver arrays;
first gating means for gating the power from the power source to the transmitter array;
second gating means for gating outputs of the receiver array;
synchronization means operating at a predetermined frequency for operating said first and second gating means simultaneously; and
summing means for summing outputs of said second gating means to provide an output signal which is the product of n and m greater than the output signal generated if both n and m were unity.

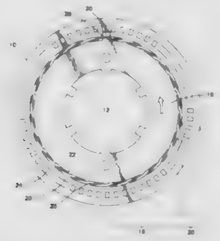
5,053,617
INSTRUMENT FOR CONCURRENTLY OPTICALLY MEASURING THERMAL AND ELECTRIC QUANTITIES
Yuichi Kakizaki, and Yoshinari Kozuka, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Aichi, Japan
Filed Apr. 2, 1990, Ser. No. 502,871
Claims priority, application Japan, Mar. 31, 1989, 1-83002
Int. Cl.[5] H01J *5/16;* **G01R** *31/00, 33/02;* **G01K** *7/00*
U.S. Cl. 250—227.21 **11 Claims**

1. An optical measuring instrument including a light-emitting portion for emitting a light beam, a sensing head portion through which said light beam is transmitted and which influences the transmitted light beam depending upon a physical quantity to be measured, a light-detective portion receiving the light beam transmitted through said sensing portion and producing an electric signal corresponding to the received light beam, and a detecting portion for selecting a component of said electric signal which changes with said physical quantity, to determine said physical quantity, wherein the improvement comprises:
said sensing head portion including thermo-optical changing means for changing a first component of said transmitted light beam with an ambient temperature, and electro-optical changing means, including a Pockel's effect element, for changing a second component of said transmitted light beam with an electric quantity;
said light-detective portion producing an electric signal having a first and a second component which correspond to said first and second components of said transmitted light beam, respectively;



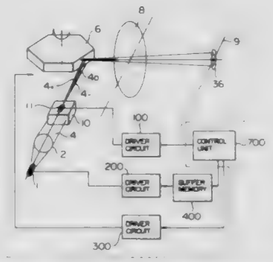
said detecting portion including means for selecting said first component of said electric signal and thereby determining said ambient temperature, and means for selecting said second component of said electric signal and thereby determining said electric quantity.

5,053,618
INDEX TRACK SUPPORT STRUCTURE
Everett McElroy, Fallbrook, Calif., assignor to Bei Electronics, Inc., San Francisco, Calif.
Filed Mar. 30, 1990, Ser. No. 502,567
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.17 **4 Claims**



1. A structure for an optical position encoding device, wherein the structure is capable of being coupled for movement with a moveable object, and wherein the structure carries a plurality of tracks, including an index track, and wherein the tracks modulate a light beam being transmitted from a light source to a photodetector in order to provide information about the movement of the moveable object, the structure comprising:
a. an outside opaque portion;
b. an inside opaque portion;
c. a plurality of spaced-apart spokes mechanically supporting the outside portion from the inside portion and forming a region between the outside and inside portions, wherein the region occupied by the spokes forms the index track; and
d. an index element located within said index track;
wherein said index element has a width sufficient to substantially block the transmission of the light beam onto the photodetector when the index element passes over the photodetector, and wherein said spokes have a width which allows substantially all of the light beam to be transmitted through the index track and onto the photodetector.

5,053,619
VARIABLE DENSITY SCANNING APPARATUS
Akira Arimoto, Kodaira, Japan, assignor to Hitachi, Ltd. and Hitachi Kiki Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 390,400, Aug. 7, 1989, Pat. No. 5,006,705. This application Mar. 30, 1990, Ser. No. 501,879
Claims priority, application Japan, Apr. 3, 1989, 1-081392
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—235 **17 Claims**

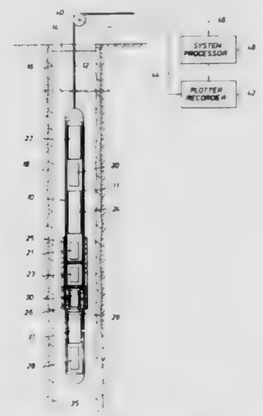


1. A variable density scanning apparatus comprising:
laser beam generating means for generating at least one laser beam;
first drive means for applying to said laser beam generating means a modulation drive signal having a fist modulation frequency when the density of dots which constitutes a pattern to be formed on the scanning surface is to be made high, and a modulation drive signal having a second modulation frequency which is lower than said first modulation frequency when the dot density is to be made low;
diffraction means responsive to a laser beam from said laser beam generation means for diffracting said laser beam into at least 0-th and first order diffraction beams;
second drive means for applying to said diffraction means a diffraction drive signal having a first high frequency when the dot density is to be made high, and a diffraction drive signal having a second high frequency which is higher than said first high frequency when the dot density is to be made low;
rotary drive means responsive to a diffraction beam from said diffraction means for scanning said diffraction beam in the main scanning direction; and
third drive means for applying to said rotary drive means a rotary drive signal having a first rotation frequency when the dot density is to be made high, and a rotary drive signal having a second rotation frequency lower than said first rotation frequency when the dot density is to be made low.

5,053,620
LOGGING APPARATUS AND METHOD FOR DETERMINING CONCENTRATIONS OF SUBSURFACE FORMATION ELEMENTS
Donald C. McKeon, Houston, Tex., and Bronislaw Seeman, Paris, France, assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Dec. 13, 1989, Ser. No. 450,355
Int. Cl.[5] G01V *5/10*
U.S. Cl. 250—270 **22 Claims**

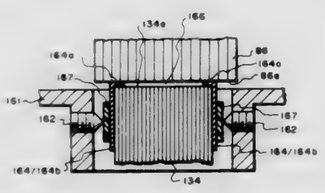
1. A method for identifying and determining the concentrations of subsurface formation elements next to a borehole, comprising the steps of:
(1) irradiating the formations with neutrons from a single energy neutron generator disposed in logging tool lowered in said borehole;
(2) detecting and counting the gamma rays resulting from the activation of atoms of at least a first element;

(3) determining from the counts of gamma rays the concentration of said first element;
(4) detecting and counting the gamma rays resulting from



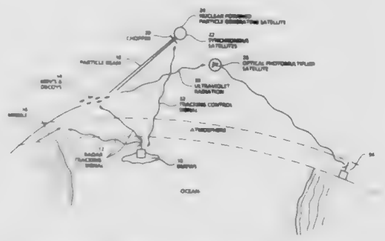
the capture of said neutrons by atoms of at least a second element; and
(5) determining from the count rates of capture gamma rays the concentration of said second element.

5,053,621
ELECTRO-OPTICAL ION DETECTOR FOR A SCANNING MASS SPECTROMETER AND METHOD OF MAKING SAME
Bruce E. Mount, Diamond Bar, Calif., assignor to Bodenseewerk Perkin Elmer GmbH, Uberlingen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 544,798, Jun. 25, 1990, Pat. No. 4,994,676, which is a continuation of Ser. No. 312,514, Feb. 21, 1989, abandoned. This application Nov. 19, 1990, Ser. No. 616,123
Int. Cl.[5] H01J *39/44*
U.S. Cl. 250—298 **6 Claims**



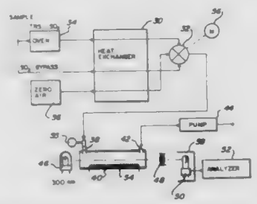
1. In a scanning mass spectrometer with a magnetic sector with an exit plane and an electro-optical ion detector which includes a channel electron multiplier assembly with an image plate and a first fiberoptic window with an exit end and wherein the image plate is placed at an angle to the exit plane and a second fiberoptic window having an entrance end coplanar with said image plate and an exit end coplanar with a photodiode detector and wherein said second fiberoptic window comprises a plurality of optic fibers arranged in a flat ribbon-like configuration and twisted and having an entrance end, the improvement wherein spacing means are provided to form a precise space between said entrance end of said second fiberoptic window and said exit end of said first fiberoptic window for maximum optical coupling.

5,053,622
EARLY BALLISTIC MISSILE DETECTION SYSTEM
Bernard V. Kessler, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 13, 1973, Ser. No. 398,296
Int. Cl.[5] G01F *23/00;* **B64D** *1/04*
U.S. Cl. 250—358.1 **18 Claims**



1. A system for detecting an object in space comprising: means for generating a beam of particles above the atmosphere, modulating means for chopping said beam, means for detecting optical radiation emitted from said object upon impact with said particles in the chopped beam, means for distinguishing said optical radiation emitted from said object from background radiation, and means for signaling the detection of said optical radiation emitted from said object.

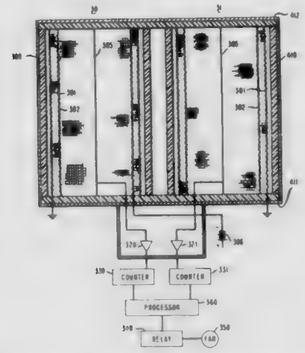
5,053,623
PHOTOMETRIC ANALYZER FOR DIFFERENTIAL TOTAL REDUCED SULFUR MEASUREMENT BY COMPARISON WITH SAMPLE GAS
Gerald F. McGowan, Parker; Ronald L. Ketchum, Littleton, and Allan L. Budd, Denver, all of Colo., assignors to Lear Siegler Measurement Controls Corporation, Englewood, Colo.
Filed Jul. 2, 1990, Ser. No. 548,481
Int. Cl.[5] G01N *21/01*
U.S. Cl. 250—373 **21 Claims**



1. A photometric analyzer for measuring differential total reduced sulfur in a sample gas stream, said analyzer comprising:
means supplying a sulfur bearing gas sample;
an oven, having an inlet connected to said supplying means, for converting total reduced sulfur to SO_2 and having an outlet through which the oven gas sample is discharged;
valve means connected to said outlet of said oven;
an SO_2 bypass line connected between said supplying means and said valve means;
means for alternatingly discharging said oven gas sample and SO_2 bypass gas from said valve means;
a generally cylindrical sample cell having an inlet adjacent one end connected to said valve means for alternately receiving sample gas from either said oven or said bypass line and having an outlet spaced from said inlet and adjacent the other end thereof, said first and second ends each being transparent;
a pump connected to said sample cell outlet to draw the gas sample through said sample cell;

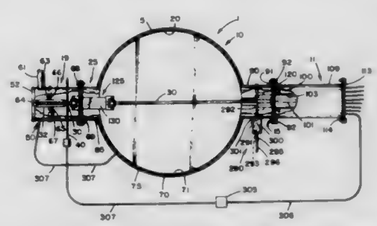
a light source mounted at said one end of said sample cell for directing light of a predetermined wavelength along said sample cell;
a light sensing device mounted at said other end of said sample cell for detecting the amount of light passing through said sample cell at any given time; and
an analyzer connected to said light sensing device to provide differential light measurements of samples from said oven and from said bypass line to determine the total reduced sulfur in the gas sample.

5,053,624
RADON CONTROL SYSTEM
Stanley Kronenberg, Hollow Rd., Skillman, N.J. 08558
Filed Jul. 18, 1990, Ser. No. 553,837
Int. Cl.[5] H01J *47/00;* **G01T** *1/18*
U.S. Cl. 250—385.1 **1 Claim**



1. An ambient air, real time, radon detector comprising:
a housing;
a plurality of conductive elements whereby at least a first, second and third conductive elements are carried by the housing and permit the free flow of ambient air through the housing;
means for electrically grounding the first conductive element;
a first integrated circuit electrically connected to the second conductive element which is capable of amplifying a voltage pulse emanating from the second conductive element;
a power source electrically connected to the third conductive element whereby the power source produces a voltage bias on the third conductive element with respect to the first and second conductive elements and whereby alpha particles cause ionization of the air in the housing by entering the housing and whereby the ionization of the air produces a voltage pulse within the second conductive element;
a first counter circuit electrically connected in series to the first integrated circuit which counts all amplified voltage pulses output by the integrated circuit;
a hermetically sealed housing substantially free of radon;
a plurality of conductive electrodes whereby at least a first, second and third conductive electrodes are carried by the hermetically sealed housing, the third conductive electrode being electrically connected to the power source producing a voltage bias on the third conductive electrode whereby the ionization of the air due to alpha particles produces a voltage pulse within the second conductive element;
means for grounding the first conductive electrode;
a second integrated circuit which is capable of amplifying a voltage pulse emanating from the second conductive electrode and electrically connected thereto;
a second counter circuit electrically connected in series to the second integrated circuit which counts all amplified voltage pulses output by the second integrated circuit; and
means electrically connected to the first and second counter circuit for calculating the difference between the voltage pulse counts of the first counter and the second counter circuit;
wherein the second conductive element and the second conductive electrode are each divided into at least three different portions, all of said portions of the second conductive element being in series with the first integrated circuit and with means to selectively preclude voltage pulses produced by all portions of the second conductive element simultaneously from being amplified by the first integrated circuit and all of said portions of the second conductive electrode being in series with the second integrated circuit and with means to selectively preclude voltage pulses produced by all portions of the second conductive electrode simultaneously from being amplified by the second integrated circuit.

5,053,625
SURFACE CHARACTERIZATION APPARATUS AND METHOD
Gary J. Follett, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 228,396, Aug. 4, 1988, Pat. No. 5,001,939. This application Oct. 31, 1990, Ser. No. 606,530
Int. Cl.[5] H01J *37/305;* **G01F** *1/37*
U.S. Cl. 250—440.1 **17 Claims**



1. An apparatus operable to facilitate preparation and analysis of a layer of material; said apparatus comprising:
(a) an enclosure defining first and second regions said first region being constructed and arranged for preparation therein of a test layer of material to be analyzed, at a first pressure less than atmospheric pressure; and, said second region being constructed and arranged to operatively receive therein a test layer of material to be analyzed and an analytical tool for conduction of selected analysis at a second pressure less than atmospheric pressure;
(b) means for maintaining said first region at said first pressure;
(c) means for maintaining said second region at said second pressure, said first and second pressures being non-equal to one another;
(d) a transport mechanism constructed and arranged to transport the test layer of material from said first region to said second region, for analysis; said transport mechanism including an elongate, flexible, substrate extending from said first region to said second region;
(e) seal means substantially isolating said first and second regions from one another; said seal means including an elongate transport channel arrangement including at least one seal means transport channel extending between, and in communication with, said first and second regions; and,
(f) said transport mechanism including means for selected movement of said elongate substrate through said seal means transport channel, thereby selectively exposing

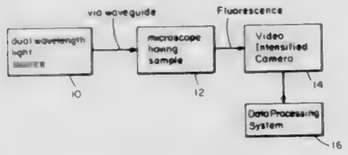
portions of said substrate, and a test layer of material thereon, to said second region.

5,053,626

DUAL WAVELENGTH SPECTROFLUOROMETER

Douglas L. Tillotson, Milton, Mass., assignor to Boston University, Boston, Mass.

Filed Sep. 29, 1989, Ser. No. 414,755
Int. Cl.[5] G01N *21/64*
U.S. Cl. 250—458.1 **47 Claims**



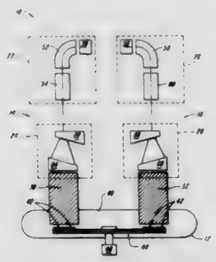
1. A microscope system comprising:
a) a means for locating a sample;
b) a source of radiation for illuminating the sample;
c) a detector for detecting radiation from the sample resulting from illumination;
d) a filtering assembly in the optical path of the radiation, the filtering assembly comprising a first filter and a second filter for removing all wavelengths from the radiation other than a first wavelength and a second wavelength, respectively; said filtering assembly further comprising a rotatable reflective disk positioned in the optical path wherein said disk has a notch that covers a portion of the disk less than 180° of a periphery of the disk, and wherein during a single rotation of the disk the notch rotates to a first position in line with the path of the radiation so that the radiation passes through the notch to the first filter and is reflected by a back surface of the disk to produce a signal of the first wavelength, and the notch rotates to a second position so that the radiation reflects off a front reflective surface of the disk to pass through the second filter and through the notch to produce a signal of the second wavelength, and the notch also rotates to a position so that the radiation reflects off the reflective surface of the disk twice so that no signal is produced; and
e) a means for synchronizing the detector and the filtering assembly.

5,053,627

APPARATUS FOR ION IMPLANTATION

John P. Ruffell, Beverly Farms, Mass., and Michael A. Guerra, Exeter,, N.H., assignors to Ibis Technology Corporation, Danvers, Mass.

Filed Mar. 1, 1990, Ser. No. 487,597
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—492.2 **6 Claims**



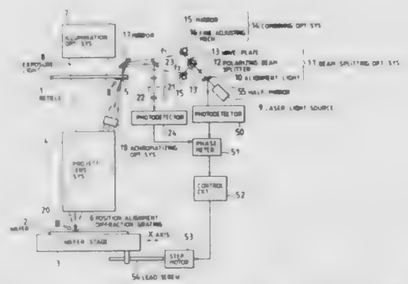
1. An apparatus for implanting a cumulative does of oxygen ions into a target, the apparatus comprising:
a support structure defining a plane on which to hold at least one target;
a plurality of oxygen ion beam generators for exposure of said target to a plurality of parallel oxygen ion beams; and
rotational means for movement of the support structure relative to said beams, such that the target travels along a circular track in a said plane with respect to the beams and is exposed to oxygen ions from each of said beams in sequence.

5,053,628

POSITION SIGNAL PRODUCING APPARATUS FOR WATER ALIGNMENT

Masaki Yamamoto, Tokyo; Takeo Sato, Kawasaki; Yoshiyuki Sugiyama, Ayase; Shinichiro Aoki, and Hiroyuki Takeuchi, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 11, 1990, Ser. No. 550,925
Claims priority, application Japan, Jul. 13, 1989, 1-181046; Dec. 27, 1989, 1-342009
Int. Cl.[5] G06K *7/015*
U.S. Cl. 250—557 **19 Claims**



1. A position signal producing apparatus, for use with an exposure apparatus for project-printing a pattern on reticle onto an wafer through a project lens system with exposure light, for producing a position signal indicative of position of said wafer along an axis, comprising:
(a) a light source for emitting coherent light whose frequency being different from that of said exposure light;
(b) means including:
(I) splitting means for splitting said coherent light into first and second light beams;
(II) first reflecting means for reflecting said first light beam toward a given place of said reticle, said given place being on an annular region within a circle defined by field angle of said project lens system on said reticle; and
(III) second reflecting means for reflecting said second light beam toward said given place to produce first interference fringes having a pitch of n1 together with said first light beam, said means being arranged to make stripes of said interference fringes perpendicular to said axis;
(c) achromatizing means provided between said reticle and said project lens system for receiving said first and second light beams passed through said reticle and for achromatizing said project lens system at wavelengths of said coherent light to form second interference fringes on said wafer in correspondence with said first interference fringes with chromatic aberration removed;
(d) diffraction grating formed on said wafer where said second interference fringes is to be made by said project lens system and said achromatizing means, said diffraction grating producing a position light signal by interference of said diffraction grating with said second interference fringes and for reflecting said second interference fringes by diffraction, pitch of said diffraction grating being n2,

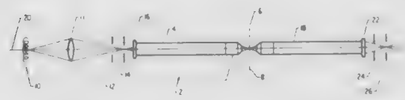
stripes of said diffraction grating being arranged perpendicular to said axis, said pitches n1 and n2 being selected such that they make a ratio of an integer; and
(e) photodetection means responsive to said position light signal from said diffraction grating received through said project lens system, said achromatizing means, and said reticle for producing said position signal in accordance with intensity of said position light signal.

5,053,629

MICRODENSITOMETER WITH SUBMICRON RESOLUTION HAVING DUAL DIAPHRAGMS AND DUAL MICROSCOPES

James S. Thompson, Los Angeles, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed Aug. 23, 1990, Ser. No. 572,200
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—571 **1 Claim**



1. A microdensitometer capable of submicron resolution, comprising:
a. a light source;
b. a condenser lens;
c. an input diaphragm for adjusting an input microscope, disposed on an axis formed by the light source and the condenser lens;
d. said input microscope with a predetermined focal plane, disposed on the axis formed by the light source, the condenser lens, and the input diaphragm;
e. an output microscope having a clear aperture and an objective, disposed on the same axis as the input microscope, having the same focal plane as the input microscope;
f. a sample disposed on said focal plane;
g. an output diaphragm for adjusting the clear aperture of the output objective to achieve non-coherent illumination;
h. whereby an image of the sample is illuminated by light traveling through the input microscope and is examined by the output microscope.

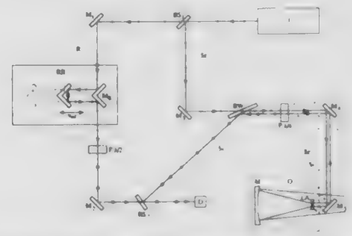
5,053,630

METHOD AND APPARATUS FOR DETERMINING THE SIGN OF THE DIRECTION OF A PARTICLE STREAM

Dieter Hausamann, Gilching, Fed. Rep. of Germany, and Brian W. Davis, Edinburgh, England, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Köln, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 366,914, Jun. 16, 1989, abandoned. This application Dec. 19, 1989, Ser. No. 452,447
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820654
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—574 **16 Claims**

1. A method for the determination of the sign of the direction of a particle stream by use of a heterodyne-laser-Doppler method to determine the velocity, in which in an interferometer device the beam of a laser source (L) is directed to a volume to be measured by means of an optical arrangement (O) used as optical emitter and in which, by use of the same optical arrangement (O) used as optical receiver, frequency difference is measured by means of heterodyne reception between the emitted laser beam and the laser beam returning into the optical arrangement (O) used as an optical receiver, the latter having been frequency-shifted as a result of scattering caused by particles moving in the particle steam with the same speed and because of the Doppler effect and where an additional frequency change is impressed on the laser beam, characterized in that
a. temporally displacing the additionally impressed frequency change;
b. measuring when the additionally impressed frequency change is smaller than the frequency shift caused by the particle movement;
c. measuring the frequency difference between the emitted and returning laser radiation at at least two points in time, where the additionally impressed frequency shifts have different values;



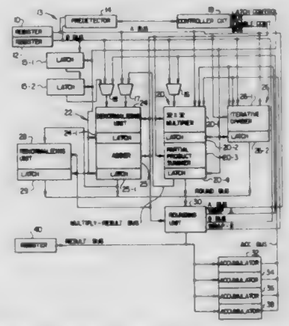
d. alternately impressing the additional frequency shift of the laser radiation in exactly defined areas of the path of radiation (R; S_o; S_i; S_o/S_i) S_o is the outgoing signal path; S_i is the incoming signal beam, S_o/S_i is the path where the incoming signal (S_i) is in the opposite direction to and parallel to S_o the outgoing signal, and R is the reference beam, and;
e. determining by a comparison of the frequencies appearing on a radiation detector during superimposition of the back-scattered, received laser beam (S_i) and of a laser reference beam (R) the sign of the direction of the particle stream.

5,053,631

PIPELINED FLOATING POINT PROCESSING UNIT

Robert M. Perlman, San Jose; Prem Sobel, Sunnyvale, both of Calif.; Brian D. McMinn, Austin, Tex.; Robert C. Thaden, Austin, Tex.; Glenn A. Tamura, Austin, Tex.; Thomas W. Lynch, Austin, Tex., and Raju Vesgesna, Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 2, 1990, Ser. No. 503,817
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **34 Claims**



1. A pipelining floating point processor comprising:
first and second arithmetic operation units;
means for providing input operands to said first and second arithmetic operation units;
at least one accumulator for storing the results of arithmetic

operations performed by said first arithmetic operation unit;

means for providing the results stored in said at least one accumulator as accumulated input operands to said second arithmetic operation unit;

first staging means for sequencing said input operands and said accumulated input operands to said second arithmetic unit; and

second staging means for latching intermediate results of arithmetic operations performed by said first arithmetic operation unit using said input operands and intermediate results produced by said second arithmetic operation unit using said input operands and said accumulated operands;

wherein said first and second staging means and said accumulator provide for the pipelining of compound arithmetic operations performed by said floating point processor using said input and accumulated operands through said floating point processor.

5,053,632

ELECTRIC BRAKING AND AUXILIARY ENGINE MECHANISM FOR A MOTOR VEHICLE

Takayuki Suzuki, Tokorozawa; Tetsuo Koike, Hachiohji; Atsuomi Obata, Hachiohji; Masashi Shigemori, Hachiohji; Kohji Sasaki; Sadayoshi Iketani, both of Yokohama; Hiroshi Uchino, Hachiohji, and Kouzou Kawata, Hino, all of Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of, Japan

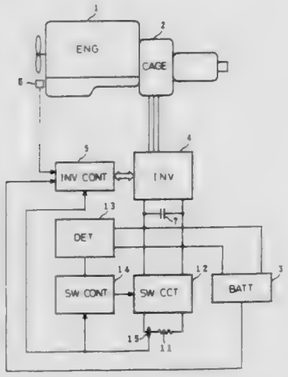
PCT No. PCT/JP88/00157, § 371 Date Oct. 11, 1989, § 102(e) Date Oct. 11, 1989, PCT Pub. No. WO88/06107, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 17, 1988, Ser. No. 415,277

Claims priority, application Japan, Feb. 18, 1987, 62-36278; Feb. 18, 1987, 62-36279; Feb. 18, 1987, 62-36280; Feb. 18, 1987, 62-36281; Feb. 16, 1988, 63-33605; Feb. 17, 1988, 63-32926

Int. Cl.[5] B60L *7/20*

U.S. Cl. 290—45 **22 Claims**



1. An electric braking an auxiliary engine mechanism for a motor vehicle including

a rotary electric machine coupled to the crankshaft of an internal combustion engine for driving the axle of the vehicle, which is characterized in that said crank shaft and the rotary shaft of said rotary machine are directly coupled, that said rotary machine is a squirrel-cage polyphase induction machine,

further including means to induce a revolving magnetic field to the squirrel-cage polyphase induction machine,

a DC power source including a rechargeable battery, and

an invertor which gives a revolving magnetic field to said squirrel-cage polyphase induction machine with the electric current supplied from said DC power source, said invertor having a frequency adjusting range to allow outputs of frequency corresponding to the revolving speed of the rotary magnetic field higher than that of said squirrel-cage polyphase induction machine and of a frequency corresponding to the revolving speed of the rotary magnetic field lower than that of said revolving speed but in the same direction.

5,053,633

MOISTURE DRAIN BUSH FOR AN ENGINE STARTER MOTOR

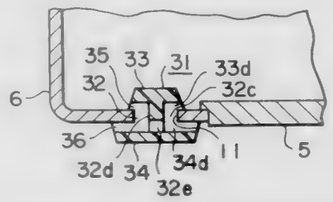
Takeshi Sugiyama; Wakaki Miyaji, and Motoi Hisamoto, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1990, Ser. No. 521,519

Claims priority, application Japan, May 12, 1989, 1-54986[U]

Int. Cl.[5] F02N *17/00*

U.S. Cl. 290—48 **5 Claims**



1. A moisture drain bush adapted to be inserted into and held by a moisture drain hole defined in a housing wall of an engine starter motor, comprising:

a stem having an inner end and an outer end, said stem having an axial length substantially equal to a thickness of said housing wall and having an axial groove having an inner end and an outer end and extending between said inner and said outer ends of said stem;

an inner flange having a substantially flat inner surface radially extending from said inner end of said stem, said inner surface having a diameter larger than the diameter of said drain hole and having a first radial groove connected at an inner end thereof to said inner end of said axial groove in said stem and radially extending therefrom to open at the outer periphery of said inner flange; and

an outer flange having a substantially flat inner surface radially extending from said outer end of said stem, said inner surface having a diameter larger than the diameter of said drain hole, said inner surface of said outer flange having an outer radial groove extending across said outer flange to open at the outer periphery of said outer flange at substantially diametrically opposite positions, said outer radial groove being connected to said outer end of said axial groove in said stem;

whereby, when said drain bush is inserted within said drain hole in said motor housing, said axial groove and said inner and said outer radial grooves as well as said drain hole together defining a continuous but bent moisture drain path extending through said housing wall and a substantially straight path substantially along said housing wall.

5,053,634

WATERPROOFING DEVICE FOR CONTROL CIRCUIT USED IN OUTBOARD ENGINES

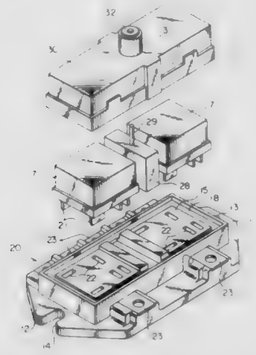
Seiichi Kakinuma, Gunma, Japan, assignor to Sawafuji Electric Co., Ltd., Tokyo, Japan

Filed May 31, 1989, Ser. No. 359,709

Claims priority, application Japan, Jul. 25, 1988, 63-98534[U]; Jul. 25, 1988, 63-98534[U]

Int. Cl.[5] H05K *5/06*

U.S. Cl. 307—9.1 **4 Claims**



1. A waterproofing arrangement for a control circuit used in outboard engines with a hydraulic pump for lifting a propeller from the water and lowering a propeller into the water, a motor for driving the hydraulic pump, said control circuit for controlling the said motor, comprising: control circuit elements including a relay for controlling the direction of revolution of said motor; a cover for covering of said relay, said relay including a plurality of leads extending from a bottom of said relay and ribs on a lower periphery of said relay; a molded casing including terminal strips, insert-molded thereon, said casing including a recess provided under said terminal strips, communicating with said terminal strips, said casing including a retaining portion provided on said terminal strips and limited by a groove extending around said retaining portion, insertion holes being formed in said retaining portion extending through said casing and said terminal strips to said recess, said leads of said relay extending from a bottom side of said relay and extending into said insertion holes through said casing and said terminal strips and being bonded to said terminal strips by solder, ribs of said relay engaging said groove to position said relay and said leads relative to said insertion holes and said casing, said recess being filled with a resin to insulate each of said leads and associated terminal strips from each other, said ribs being sealed to said casing by fitting said casing with adhesive and said cover being connected to said casing covering said relay and fixed to said casing by said adhesive and said groove.

5,053,635

UNINTERRUPTIBLE POWER SUPPLY WITH A VARIABLE SPEED DRIVE DRIVING A SYNCHRONOUS MOTOR/GENERATOR

Geoffrey West, Irvine, Calif., assignor to Atlas Energy Systems, Inc., San Diego, Calif.

Filed Apr. 28, 1989, Ser. No. 344,682

Int. Cl.[5] H02J *9/06*

U.S. Cl. 307—67 **13 Claims**

1. An uninterruptible power source for connection to an AC power mains, said power mains providing a multi-phase AC power signal, said uninterruptible power source comprising:

a standby source for providing a standby power signal;

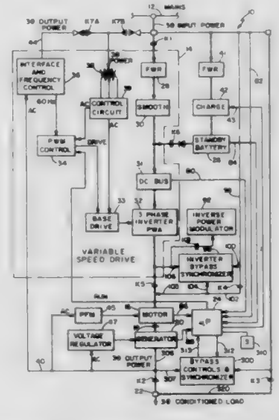
power bus means connected to said AC power mains and to said standby source for providing a power bus signal in response to said multi-phase AC power signal or in response to said standby power signal;

a variable speed drive circuit which provides a modulated drive signal in response to a multi-phase power signal;

a multi-phase inverter connected to said variable speed drive circuit and to said power bus means for providing a multi-phase motor drive signal in response to said modulated drive signal and said power bus signal;

a synchronous motor with a startup winding connected to receive said multi-phase motor drive signal, and a field winding;

a generator coupled to said synchronous motor for rotation by said synchronous motor, said generator producing a multi-phase output signal in response to rotation by said synchronous motor;



a load connection connected to said generator for coupling said multi-phase output signal to a load;

a switch connected to said mains, said generator, and said variable speed drive, said switch responsive to the condition of a first control signal for being set to a first state in which said multi-phase AC power signal is provided to said variable speed drive as said multi-phase power signal, and to a second state in which said multi-phase output signal is provided to said variable speed drive as said multi-phase power signal; and

control means connected to said synchronous motor and to said switch for conditioning said first control signal in response to rotation of said synchronous motor.

5,053,636

OVERRIDE CIRCUIT FOR MEDICAL TABLE

Francis J. Zelina, Lake City, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed May 18, 1988, Ser. No. 195,556

Int. Cl.[5] H02B *1/24;* **A61G** *13/00*

U.S. Cl. 307—112 **9 Claims**

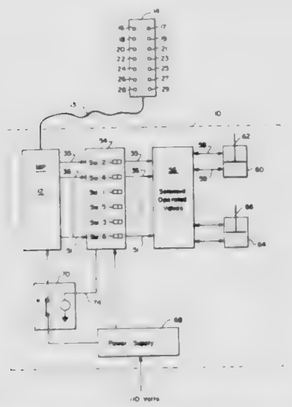
1. An override circuit for a medical table, said medical table carrying

control means for generating first control signals in response to user input; and

means for moving the medical table in response to said first control signals; said override circuit comprising:

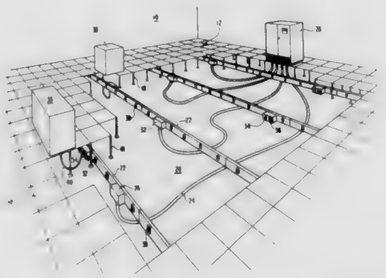
switch means for generating second control signals in response to user input; and

circuit means for selectively electrically isolating said first control signals from said means for moving the table and



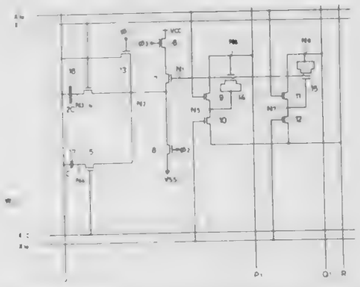
for inputting said second control signals to said means for moving.

5,053,637
COMPUTER FACILITY POWER SYSTEM
William T. Dillard, Spartanburg, S.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Filed May 31, 1989, Ser. No. 359,258
Int. Cl.[5] H02B *1/00*
U.S. Cl. 307—147 **5 Claims**



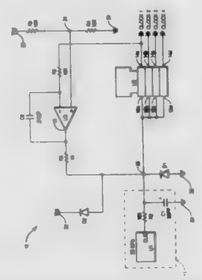
1. In a computer facility of the type having a raised floor supported above a base floor to provide a space therebetween for the location of electrical conductors which interconnect with a power distribution unit a distributed load including a plurality of powered units of the facility, the improvement comprising:
at least one substantially horizontal electrical busway mounted under the raised floor, the busway comprising outlet locations for making connection with electrical bus conductors inside it; and
electrical feeder conductor means for connecting the buses of each busway to power terminals of the power distribution unit.

5,053,638
SEMICONDUCTOR NEURAL CIRCUIT DEVICE HAVING CAPACITIVE COUPLING AND OPERATING METHOD THEREOF
Kiyohiro Furutani, and Koichiro Mashiko, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 6, 1990, Ser. No. 489,169
Claims priority, application Japan, May 25, 1989, 1-132206
Int. Cl.[5] G06F *7/00*
U.S. Cl. 307—201 **59 Claims**



1. A coupling element in a neural circuit device built on the model of a vital cell and having a first signal line for transferring a signal to be computed, an amplifier serving as the body of said vital cell and a second signal line for transferring a signal to said amplifier, said coupling element being adapted to couple said first signal line and said second signal line with each other in a specific degree of coupling, and comprising:
capacitance means for storing information indicating said degree of coupling;
means for transferring said coupling degree information stored in said capacitance means; and
capacitive coupling means capacitively coupling an output part of said information transfer means to said second signal line in response to a signal potential on said first line thereby to convert said potential on said first signal line along said coupling degree information and transfer the same onto said second signal line,
said information transfer means including means for electrically isolating said capacitance means from said capacitive coupling means.

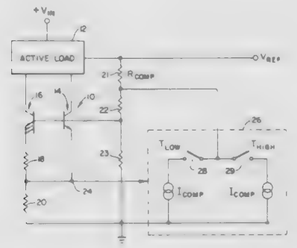
5,053,639
SYMMETRICAL CLOCK GENERATOR AND METHOD
Billy K. Taylor, Columbia, S.C., assignor to NCR Corporation, Dayton, Ohio
Filed Jun. 16, 1989, Ser. No. 367,293
Int. Cl.[5] H03K *5/13, 5/153;* **H03L** *7/00;* **G01R** *25/00*
U.S. Cl. 307—269 **26 Claims**



1. A symmetrical clock generator comprising:

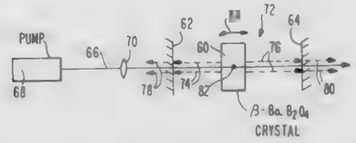
a generator for generating a periodic wave signal;
a buffer for receiving said periodic wave signal and for providing a square wave clock signal; and
a differential amplifier for receiving said clock signal and a reference voltage signal and providing an error signal to said buffer.

5,053,640
BANDGAP VOLTAGE REFERENCE CIRCUIT
Daniel Yum, Poway, Calif., assignor to Silicon General, Inc., Garden Grove, Calif.
Filed Oct. 25, 1989, Ser. No. 427,173
Int. Cl.[5] H03K *3/01, 3/26*
U.S. Cl. 307—296.6 **20 Claims**



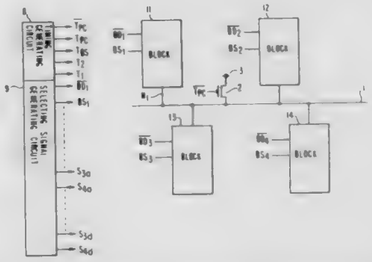
1. An improved voltage reference circuit, comprising:
means for establishing a reference voltage based on the bandgap of a semiconductor material;
voltage compensation means for adding a compensation voltage to said reference voltage;
means for sensing absolute temperature; and
switching means, coupled to said sensing means, for switching on said compensation means in response to deviations from a nominal temperature.

5,053,641
TUNABLE OPTICAL PARAMETRIC OSCILLATOR
Lap K. Cheng, Newark, Del.; Walter R. Bosenberg, and Chung L. Tang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Jul. 14, 1989, Ser. No. 379,781
Int. Cl.[5] H03F *7/00*
U.S. Cl. 359—330 **6 Claims**



1. A broadly tunable optical parametric oscillator having high total energy conversion efficiency and having a high UV damage threshold, comprising:
an oscillator cavity defined by at least first and second spaced dichroic mirrors, at least one of which is partially transparent to light oscillation in said cavity;
a β-BaB_2O_4 crystal located in said cavity, said crystal having first and second generally parallel faces and having an axis parallel to said faces, said crystal being rotatable about said axis;
a laser pumping source producing an output beam at a predetermined wavelength;
optical means directing said laser pumping output beam into said cavity and onto a surface of said crystal to stimulate light oscillation in said crystal and in said oscillator cavity, said oscillation being tunable in the visible and near infrared through a wavelength range of 0.3 to 3.3 μm by rotation of said crystal about said axis to vary the phase matching angle of said crystal with respect to said pumping source output beam; and
means for transmitting at least a part of said oscillation out of said cavity.

5,053,642
BUS CIRCUIT AND OPERATING METHOD THEREOF
Kazuya Ishihara; Hiroshi Segawa; Chikako Ikenaga; Yoshitsugu Inoue; Atsushi Kurimoto; Harufusa Kondo, and Takeo Nakabayashi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1990, Ser. No. 508,724
Claims priority, application Japan, Apr. 18, 1989, 1-99306; Mar. 26, 1990, 2-78283
Int. Cl.[5] H03K *19/17, 17/16*
U.S. Cl. 307—443 **43 Claims**



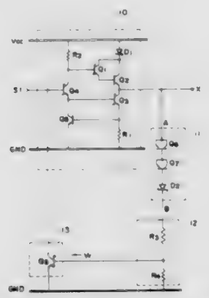
1. A bus circuit formed on one chip for transmitting information between a plurality of functional portions, comprising:
a hierarchical bus including a higher-rank bus and a plurality of lower-rank buses,
each of said plurality of lower-rank buses being coupled with a plurality of functional portions;
switching means for establishing a continuous data communications circuit from one of the lower-rank buses to another of the lower-rank buses, the communications circuit comprising a first path from the one lower-rank bus to the higher-rank bus and a second path, established simultaneously with the first path, from the higher-ranked bus to the other of the lower-rank buses; and
a plurality of transmitting means each for transmitting information between one of said functional portions on said one lower-rank bus to another of said functional portions on said another of said lower-ranked buses over said data communications circuit.

5,053,643
INTEGRATED CIRCUIT INCLUDING OUTPUT CIRCUIT HAVING INPUT LOGIC CONTROLLED BY OUTPUT LOGIC
Masahiro Tanaka, Kawasaki, and Shinichi Shiotsu, Hachioji, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 24, 1989, Ser. No. 426,040
Claims priority, application Japan, Oct. 27, 1988, 63-271350
Int. Cl.[5] H03B *1/04;* **H03K** *5/00*
U.S. Cl. 307—443 **16 Claims**

1. An integrated circuit comprising:
an output means, having an input terminal and an output terminal, to provide a current, for setting said output terminal to a high potential corresponding to logic "1" when the potential applied to said input terminal corresponds to logic "0" and setting said output terminal to a low potential corresponding to logic "0" when the potential applied to said input terminal corresponds to logic "1";
conducting means, coupled to said output terminal of the

output means, for conducting the current when the potential of said output terminal becomes equal to a predetermined potential, the predetermined potential being higher than the high potential;

trigger voltage generating means, coupled to said conducting means, for generating a trigger voltage proportional to the current when said conducting means conducts; and



setting means, coupled to said trigger voltage generating means and said output means, for setting the potential of said input terminal of the output means to the low potential corresponding to logic "0" when the trigger voltage is applied to said setting means.

5,053,644

SEMICONDUCTOR INTEGRATED CIRCUIT

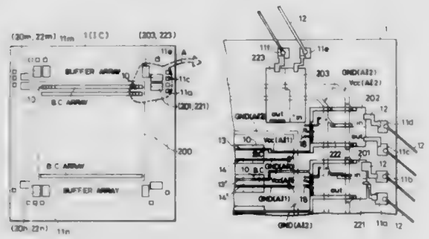
Manabu Shibata; Akira Uragami, both of Takasaki; Shinji Kadono, and Yukio Suzuki, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 16, 1986, Ser. No. 863,721

Claims priority, application Japan, May 17, 1985, 60-103728

Int. Cl.[5] H03K *19/02, 17/16*

U.S. Cl. 307—446 **9 Claims**



1. An integrated circuit device comprising:

a substrate having one main surface;

a plurality of bonding pads formed on said main surface;

a plurality of buffer regions formed on said main surface, each buffer region having predetermined elements which include n- and p-channel MOSFETs and at least one bipolar transistor;

a plurality of input circuits formed at said plurality of buffer regions by electrically connecting selected elements among said predetermined elements in said plurality of buffer regions, each input circuit having an input coupled to one of said plurality of bonding pads, an output and a predetermined signal transmission function which is provided by said selected elements between said input and output thereof, wherein said predetermined signal transmission function is a selected one of an inverter function, a common mode function and a hysteresis function; and

an internal circuit disposed on said main surface in such a manner as to receive at input terminals thereof output signals from said outputs of said plurality of input circuits.

5,053,645

THRESHOLD LOGIC CIRCUIT

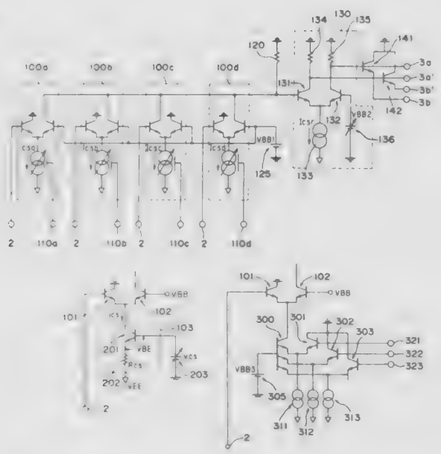
Yutaka Harada, Tokyo, Japan, assignor to Research Development Corporation, Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 510,183

Claims priority, application Japan, Apr. 18, 1989, 1-97763

Int. Cl.[5] H03K *19/023, 19/086*

U.S. Cl. 307—464 **7 Claims**



1. A threshold logic circuit comprising means for weighting and summing up digital input signals, and means for comparing the sum of the weighted digital input signals with a threshold value and outputting a digital signal depending on the result of the comparison, said threshold logic circuit being characterized in that:

said means for weighting and summing up digital signals comprises

a plurality of current switching circuits, output current each of which is switched by the respective input signal, each having current supply means for providing supply current to the respective switching circuit, and said supply current being controlled by each outer control signal, and

means for summing up the output currents from the current switching circuits.

5,053,646

PROGRAMMABLE LOGIC DEVICE HAVING EXPANDED LOGIC CAPABILITY

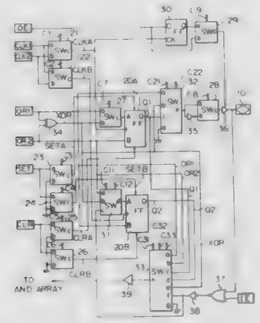
Mitsuo Higuchi, Tokyo; Kiyonori Ogura, Kawasaki; Kohji Shimbayashi, Kasugai, and Yasuhiro Nakaoka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of, Japan

Continuation of Ser. No. 355,726, May 23, 1989, abandoned. This application Mar. 19, 1991, Ser. No. 672,134

Claims priority, application Japan, May 25, 1988, 63-126014

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **17 Claims**



1. A programmable logic device comprising:

a programmable AND array;

a plurality of external terminals;

an OR array operatively connected to said AND array and divided into a number of blocks corresponding to the number of said external terminals; and

a cell block provided, respectively, for each of the plurality of external terminals, each cell block being operatively connected to the OR array, each cell block including a logical gate for receiving at least two output signals from a corresponding block of the OR array independently of other cell blocks, and selecting means for selecting an output signal from the group consisting of one of said at least two output signals and an output of the logical gate and outputting the selected signal to a corresponding external terminal.

5,053,647

PROGRAMMABLE LOGIC ARRAY HAVING FEEDBACK FLIP-FLOPS CONNECTED BETWEEN A PRODUCT ARRAY'S INPUTS AND ITS OUTPUTS

Makoto Shizukuishi, Kanagawa, and Dave W. Brauer, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1990, Ser. No. 552,671

Claims priority, application Japan, Jul. 17, 1989, 1-182586; Jul. 18, 1989, 1-183549

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **11 Claims**

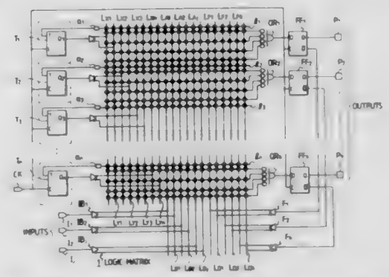
1. A programmable logic device comprising:

a plurality of flip-flop circuits;

a logical product matrix including logical product term lines which intersect inverted output lines and non-inverted output lines of said flip-flop circuits; and

a group of wiring lines for connecting outputs produced from a part of said logical product term lines to input contacts of said flip-flop circuits;

wherein a sequential logic circuit is formed by programmably connecting lattice points of said logical product matrix and feeding-back signals produced in the logical product term lines pertaining to said programmed lattice points to



input contacts of a circuit block including said flip-flop circuits through said group of wiring lines.

5,053,648

MASTER SLICE CMOS ARRAY HAVING COMPLEMENTARY COLUMNS

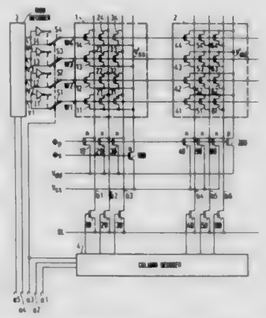
Andreas A. J. M. van den Elshout; Hendrikus J. M. Veendrick, and Dirk W. Harberts, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1990, Ser. No. 521,764

Claims priority, application Netherlands, Nov. 15, 1989, 8902820

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—469 **9 Claims**



1. An integrated semiconductor circuit of the master slice or gate array type, comprising memory cells arranged in rows and columns and which are of the read-only type, said memory cells being subdivided into a first and a second group, which first and second groups comprise transistors of a first and a second conductivity type, respectively, column selection means for selecting, in response to a column selection signal, an output of either the first or the second group, wherein inputs of the first and the second group of memory cells in one and the same row are interconnected for the reception of a common row selection signal, and row selection means for selecting a single row of memory cells of either the first or the second group of memory cells.

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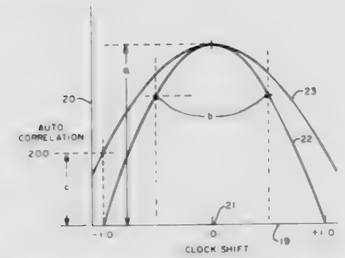
METHOD AND APPARATUS FOR HIGH SPEED PHASE DETECTION

Howard W. Johnson, Sunnyvale, Calif., assignor to Ultra Network Technologies, San Jose, Calif.

Continuation of Ser. No. 287,720, Dec. 21, 1988, abandoned. This application Dec. 6, 1990, Ser. No. 625,634

Int. Cl.[5] H03K *5/26, 9/06*

U.S. Cl. 307—514 **18 Claims**



1. An apparatus comprising:

clock generation means for generating a clock signal;

first circuit for receiving and shifting a data stream by a first period which is a function of the phase relationship between said clocking signal and said data stream, said first circuit means coupled to receive said data stream and said clocking signal;

second circuit means for shifting said data stream by a period corresponding to a period of data in said data stream, said second circuit means being coupled to receive said data stream, and to provide as an output a shifted data stream; and

correlation means for correlating signals coupled to receive signals from said first circuit means and said second circuit means, and coupled to provide a correlated output signal to said clock generation means.

5,053,650

MONOLITHIC SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING CURRENT ADJUSTING CIRCUIT

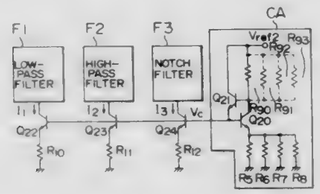
Yuichi Ohkubo, Takasaki; Satoru Sekiguchi, Osato; Toshihiko Watanabe, and Nobuaki Yoneya, both of Takasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Dec. 26, 1989, Ser. No. 457,308

Claims priority, application Japan, Dec. 27, 1988, 63-330002

Int. Cl.[5] H03K *5/00;* **H03B** *1/00*

U.S. Cl. 307—521 **27 Claims**



1. A monolithic semiconductor integrated circuit device, comprising:

a current adjusting circuit including at least one first amplifying element and first and second load resistor means for said amplifying element, said first amplifying element having a control electrode, a current receiving electrode connected with said first load resistor means and a current delivering electrode connection with said second load resistor means, at least one of said first and second load resistor means being means for trimming resistance to adjustably determine the resistance of said at least one of said first and second load resistor means for controlling the current flowing between said current receiving electrode and said current delivering electrode; and

an audio signal processing circuit including a differentially operative circuit section and a second amplifying element, said second amplifying element having a control electrode, a current receiving electrode and a current delivering electrode, one of said current receiving and delivering electrodes being connected with said differentially operative circuit section, said differentially operative circuit section having a frequency response depending on an electric current flowing in a current path between said current receiving and delivering electrodes of said second amplifying element, said first and second amplifying elements being in a current mirror circuit connection with their control electrodes being connected with each other so that said electric current flowing in the current path between said current receiving and delivering electrodes of said second amplifying element is controlled by said adjustably determined resistance of said at least one load resistor means to adjust the frequency response of said audio signal processing circuit, thereby compensating for variations of electric characteristics of the audio signal processing circuit.

5,053,651

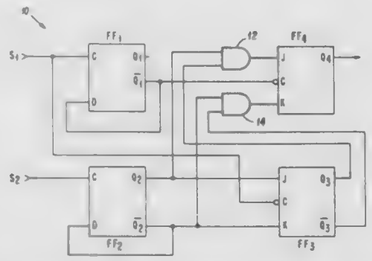
DEGLITCHED DIGITAL MIXER CIRCUIT

Marvin E. Frerking, Cedar Rapids, and Roy W. Berquist, Toddville, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 264,429, Oct. 31, 1988, abandoned. This application Aug. 28, 1990, Ser. No. 576,134

Int. Cl.[5] H03B *19/00;* **G06G** *7/00*

U.S. Cl. 307—529 **8 Claims**



1. A digital mixer circuit adapted for processing first and second mixer input signals in order to produce a beat frequency output signal and for suppressing the production of glitches in its beat frequency output signal, said circuit comprising:

means for separately dividing down said first and second mixer input signals in order to produce a first divided down signal and a second divided down signal having inverted and non-inverted components;

first flip-flop means for providing a beat frequency output signal, said first flip-flop means having a clock by said first divided down signal and having first and second signal inputs connected for receiving non-inverted and inverted components of a regulated signal from a means for gating so as to be coupled for following the transitioning of said regulated signal;

means for delaying said second divided down signal in order to produce a phase delayed signal having non-inverted and inverted components; and

means connected for receiving said non-inverted and inverted components of said second divided down signal and said non-inverted and inverted components of said phase delayed signal and for gating said components of said second divided down signal with said components of said phase delayed signal in order to generate said components of said regulated signal supplied to said first flip-flop and control the transitioning of said first flip-flop to occur only when said second divided down signal and said phase delayed signal assume similar logic states.

5,053,652

HIGH SPEED SENSOR SYSTEM USING A LEVEL SHIFT CIRCUIT

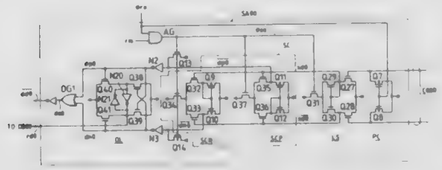
Yoichi Sato, Iruma; Masao Mizukami, Yokohama, and Toshiyuki Ookuma, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 303,472, Jan. 30, 1989, Pat. No. 4,984,204. This application Jan. 4, 1991, Ser. No. 637,591

Claims priority, application Japan, Jan. 28, 1988, 63-17586; May 24, 1988, 63-126891; Aug. 3, 1988, 63-193997; Aug. 12, 1988, 63-201470; Nov. 17, 1988, 63-290758; Nov. 25, 1988, 63-295955

Int. Cl.[5] H03F *3/45*

U.S. Cl. 307—530 **50 Claims**



1. A sense amplifier comprising:

a level shift circuit having a pair of inputs and a pair of outputs for providing level shifted differential signals, wherein said level shift circuit includes at least first and second driver MOSFETs, each driver MOSFET having a drain coupled to receive a supply voltage potential, a source for outputting a level shifted differential signal and a gate for receiving an input differential signal, and a first pair of load MOSFETs connected as a current mirror, each load MOSFET being coupled between a source of one of said first and second driver MOSFETs and reference ground; and

a MOSFET differential sensing circuit having a pair of inputs respectively coupled to the outputs of said level shift circuit and providing an output level in accordance with the level shifted differential signals, so as to effect operation of said MOSFET differential sensing circuit in the saturation region.

5,053,653

JFET ANALOG SWITCH WITH GATE CURRENT CONTROL

Derek F. Bowers, and Douglas S. Smith, both of Sunnyvale, Calif., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 316,874, Feb. 28, 1989. This application Feb. 8, 1991, Ser. No. 652,507

Int. Cl.[5] H03K *19/094, 17/684*

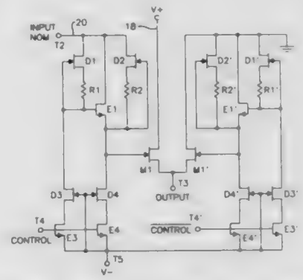
U.S. Cl. 307—581 **4 Claims**

1. An analog switching circuit for a junction field effect transistor (JFET), comprising:

an input voltage line,

a current supply menas connected with said input voltage line to supply current to the JFET gate, and

a circuit means enabling said current supply means to supply current to the JFET gate only in response to an actuating input signal and only for a transient period during which the JFET is switched from OFF to ON, said circuit means inhibiting the supply of current to the JFET gate at all other times, during both steady state operation and switching of the JFET from ON to OFF.



5,053,654

DEVICE FOR OPERATING MAGNETIC LEVITATION SYSTEMS

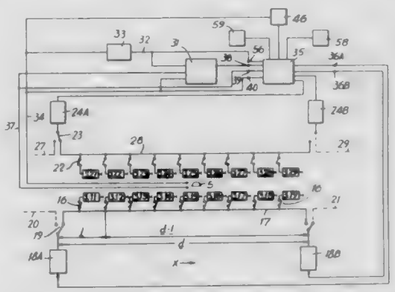
Friedemann Augsburger; Gerhard Holzinger, both of München; Friedrich Löser, Riemerling, and Hermann Von Kuepach, Landshut, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Essen, Fed. Rep. of Germany

Filed May 21, 1990, Ser. No. 527,123

Claims priority, application Fed. Rep. of Germany, May 25, 1989, 3917058

Int. Cl.[5] H02K *41/02;* **B60L** *13/06;* **H02P** *7/01*

U.S. Cl. 310—12 **10 Claims**



1. A device for driving a magnetoelectric vehicle movable along a track, comprising: a synchronous linear motor having a long-stator winding laid along the track and being subdivided into a plurality of discrete consecutive stator winding sections, and an exciter mounted on the vehicle; at least one section cable extending parallel to the track and having a plurality of consecutive tap points; a plurality of switching devices each being connected between an associated one of the consecutive stator winding sections and an assigned one of said tap points of the section cable to successively connect, if switched on, said stator winding sections to said section cable; at least two power sub-stations connectable respectively with the ends of the section cable to supply two partial currents to a stator winding section connected with said section cable; and means for adjusting the ratio of the two partial currents as a function of the operational conditions of the vehicle and/or of the lengths of the section cable between the connected stator winding section and the sub-stations.

301-457 O.G.-91-18

5,053,655

MOTOR-COMPRESSOR UNIT

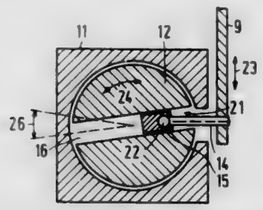
Antonius A. J. Benschop, Eindhoven, and Johannes C. M. Rolofs, Valkenswaard, both of Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jan. 2, 1991, Ser. No. 638,280

Claims priority, application Netherlands, Jan. 11, 1990, 9000078

Int. Cl.[5] H02K *33/00*

U.S. Cl. 310—15 1 Claim



1. A motor-compressor unit, comprising a vibration motor (1) having an armature (3) which can perform a rotationally vibrating movement about a drive shaft (4), and a compressor (10) having at least one piston (12) which can be reciprocated in a cylinder (11) by an arm (9) of the armature (3), a coupling (13) being arranged between the piston (12) and the arm (9), which coupling comprises a sleeve (15) which is pivotally connected to the arm (9), the piston (12) being formed with a bore (16) which is oriented substantially perpendicularly to the direction (18) of movement of the piston and in which the sleeve (15) is slidable, characterized in that the pivotal connection between the arm (9) and the sleeve (15) is constituted by a ball joint (21), comprising a ball (22) secured to one end of the arm (9), which ball (22) is rotatably supported in the sleeve (15).

5,053,656

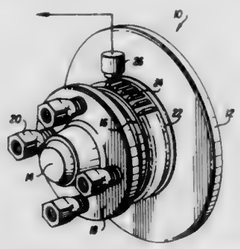
SENSING RING FOR ROTATIONAL SENSING SYSTEM

Bobby L. Hodge, Charlotte, N.C., assignor to INA Bearing Company, Inc., Fort Mill, S.C.

Filed Dec. 18, 1989, Ser. No. 452,007

Int. Cl.[5] H02K *19/20*; G01P *3/488*

U.S. Cl. 310—42 14 Claims



1. A sensor ring for use in a rotational sensing system having means spaced along the periphery thereof capable of being detected by an electromagnetic sensor positioned in proximity thereto whereby rotation of said ring may be determined;

wherein said sensor ring is constructed from a metal sheet having two parallel ledges and said means spaced along the periphery thereof comprise a plurality of drawn concave protrusions formed on one side of said metal sheet and spaced inwardly from each of said edges; and

wherein slits are provided in said metal sheet to facilitate drawing of said metal sheet to form said protrusions.

5,053,657

MINIATURE MOTOR

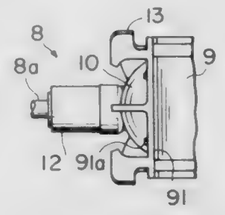
Masakazu Ikegami, and Ryouichi Someya, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Apr. 26, 1990, Ser. No. 515,162

Claims priority, application Japan, May 2, 1989, 1-52221[U]

Int. Cl.[5] H02K *9/06*

U.S. Cl. 310—63 2 Claims



1. A miniature motor, comprising: a stator having a permanent magnet field fixedly fitted to the inside of a motor case;

a rotor having laminated rotor core, said core having rotor core support elements extending radially outwardly, windings wound on said laminated rotor core and rotatably supported such that said windings face said stator, said rotor core support elements having end faces with lugs protruding in an axial direction of said rotor;

a cooling fan element including a plurality of holes corresponding to said protruding lugs, said cooling fan having a plurality of veins, each lug of said protruding lugs extending through a corresponding one of said plurality of holes and being deformed to retain said cooling fan adjacent the end face of the core.

5,053,658

ELECTRICAL MACHINE, SUCH AS ROTARY CURRENT GENERATOR, HAVING IMPROVED COOLING

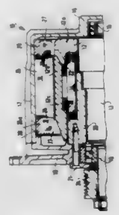
Bernhard Fakler, Esselingen; Martin Müller, Ludwigsburg; Pflüger; Klaus-Georg Bürger, both of Markgroeningen, and Kurt Weisserth, Vaihingenenz, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1990, Ser. No. 527,086

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922537; Dec. 23, 1989, 3942768

Int. Cl.[5] H02K *5/18*

U.S. Cl. 310—64 5 Claims



1. In an electrical machine comprising a surface-cooled stator composed of a stator sheet pack having a stator winding; a claw pole rotor; said surface-cooled stator winding having winding heads extending outwardly beyond said stator, a metal housing surrounding said stator and serving for withdrawal of generated heat from an interior to an exterior of said housing; and a heat conductive material in which said winding heads are electrically insulatingly embedded and which conducts heat to said metal housing, the improvement comprising an electrically insulating layer (27) completely covering each of said winding heads (26a)of said surface-cooled stator, and wherein said heat conductive material (28) consists essentially of a zinc die cast alloy, and said winding heads with said electrically insulating layer are embedded in said zinc die cast alloy and said heat conductive material is connected in a heat conducting manner with said metal housing(17,31).

5,053,659

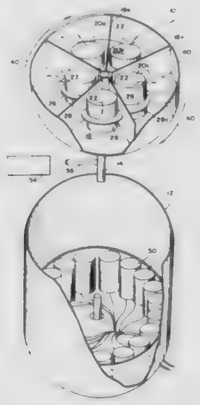
CENTRIFUGAL FORCE MAGNETIC FIELD VARIATOR

Denson Parker, 2072 Center Blvd., Springfield, Ohio 45506

Filed Oct. 5, 1990, Ser. No. 593,879

Int. Cl.[5] H02K *11/00, 1/34, 21/22, 23/54*

U.S. Cl. 310—68 E 10 Claims



1. Apparatus for the utilization of an electrical potential induced by a magnetic field subjected to centrifugal forces comprising

a platform fixedly positioned to a rotating workpiece affixed to a supporting rotating shaft,

a first series of magnets having a magnetic field slidably arranged on the platform at an inner diameter adjacent the rotating shaft,

a second series of magnets having a magnetic field positioned on the first series of magnets and magnetically retained thereon,

a barrier for limiting an outward movement of the first and second series of magnets secured to the platform and having a diameter greater than the diameter of each of the first and second series of magnets,

pickup coil means fixedly positioned beneath the platform and having a diameter greater than the diameter of the first and second series of magnets but less than the diameter of the barrier,

the first series of magnets being forced outwardly to a position impacting the barrier in response to centrifugal force of the rotating workpiece exceeding the force of the magnetic field of attraction between the first and second series of magnets, and

the first series of magnets being extended to the magnetic fields thereof to attain a vertical alignment with the pickup coil means thereby inducing therein the electrical potential.

5,053,660

LINEAR ACTUATORS AND LINEAR DRIVE SYSTEMS

John L. Sneddon, 18 Eilean Rise, Ellon, Aberdeenshire AB4 9NF, Scotland, Great Britain

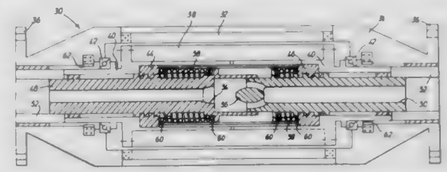
Filed Oct. 13, 1989, Ser. No. 420,923

Claims priority, application United Kingdom, Oct. 13, 1988, 8824041

Int. Cl.[5] H02K *7/06*; F16K *31/04*

U.S. Cl. 310—80 5 Claims

1. A linear drive assembly comprising an electric motor having a non-rotatable stator and a hollow rotor, the rotor being rotatably mounted on a pair of half-shafts to form a hollow rotatable assembly rotatable about a rotation axis, the hollow rotatable assembly providing an axial through passage along the rotation axis, two oppositely-handed female-threaded driving members secured to axially spaced-apart



positions on the rotatable assembly, and two corresponding male-threaded driven members each non-rotatably mounted for linear actuation by a respective said female-threaded driving member in mutually opposite directions substantially along the rotation axis upon rotation of the rotatable assembly about the rotation axis.

5,053,661

GEARED MOTOR WITH AN IMPROVED LUBRICATING SEAL

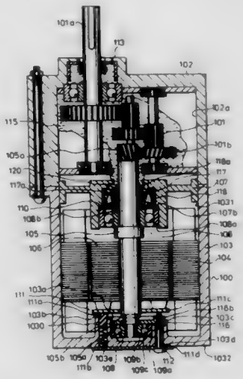
Hiroshi Kitamura, Kadoma, and Mizuo Komine, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodama, Japan

Filed Sep. 26, 1990, Ser. No. 588,617

Claims priority, application Japan, Sep. 27, 1989, 1-113723

Int. Cl.[5] H02K *7/108*

U.S. Cl. 310—83 5 Claims



1. A geared electric motor with an improved lubricating seal comprising:

a motor housing having a frame and a bracket;

a gear case fixed to said motor housing;

an electric motor disposed inside said motor housing and having a stator fixed to an inside face of said frame and having a rotor held rotatable with respect to said stator;

a plurality of reduction gears provided inside said gear case for reducing rotation speed of an output shaft of said motor, said plurality of reduction gears being lubricated by grease in said gear case;

sealing means for sealing said grease from said motor housing, said sealing means being positioned adjacent said reduction gears between a rotor shaft and said bracket, said sealing means having a main oil seal member with a main lip and a sub oil seal member with a sub lip, said main oil seal member being integrally coupled to said sub oil

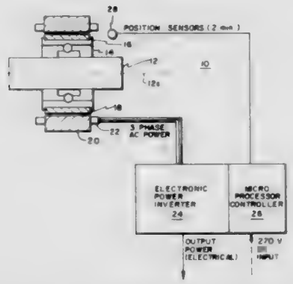
seal member, said sub lip being positioned between said grease in said gear case and said main lip;
at least two ball bearings for rotatably supporting said rotor shaft;
a cup-shaped part extending inward into said housing and being formed on a bottom of said frame, one of said ball bearings being fit into said cup-shaped part, an inwardly facing open end of said cupshaped part having guide grooves; and
bearing fixing means mated with and fixed by screws which extend from outside of said frame for fixing an outer wheel of said one of said ball bearings into said cup-shaped part of said frame.

5,053,662

ELECTROMAGNETIC DAMPING OF A SHAFT

Eike Richter, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 18, 1990, Ser. No. 510,809
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 **12 Claims**



1. A method for damping orbiting of a shaft of a gas turbine comprising the steps of:
orbiting a rotor with the shaft;
supplying an input to a controller indicating that damping of shaft orbiting is desired;
selectively closing power switches-in an inverter under the control of the controller and dependent on the input to thereby selectively energize stator windings of a stator electromagnetically coupled to the rotor, each of the stator windings being connected to at least one corresponding power switch;
applying a tangential damping force to the rotor resulting from the energizing of the stator windings such that orbiting of the shaft is dampened responsive to the input; and
having the controller control the amplitude and location of the tangential damping force responsive to the input.

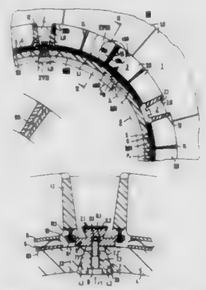
5,053,663

DEVICE FOR FIXING AN AIR-GAP WINDING OF A DYNAMO-ELECTRIC MACHINE

Joachim Böer, and Fritz Sommer, both of Mülheim/Ruhr, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE87/00162, § 371 Date Oct. 7, 1988, § 102(e) Date Oct. 7, 1988. PCT Pub. No. WO87/06400, PCT Pub. Date Oct. 22, 1987
PCT Filed Apr. 9, 1987, Ser. No. 272,981
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1986, 3612819
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—91 **15 Claims**

1. In a high-power dynamo-electric machine including:
A) a stator lamination packet with an inner periphery defining a stator bore for a machine rotor revolving with an air gap at a given operating force, said stator lamination packet having:
A1) a laminated screening packet with an inner periphery, a yoke region having an approximately circular-annular cross section, and lamination segments formed of magnetic material, and
A2) a slot and tooth system disposed on the inner periphery of the screening packet, the slot and tooth system being formed of nonmagnetic material at least in the vicinity of the stator bore and having abutment points being distributed over the inner periphery of the screening packet and slot teeth, successive slot teeth tangentially defining circumferential interstices serving as axially parallel bar receiving slots with a slot bottom, the slot and tooth system being rigidly connected to the screening packet at the abutment points, and
B) an air-gap winding on the inner periphery of the stator lamination packet having winding bars with winding bar sides oriented toward the stator bore, the winding bars being inserted in the circumferential interstices with a radial protrusion beyond the slot teeth into the air gap, a system for fixing the air-gap winding on the inner periphery of the stator lamination packet, the system comprising:
a) a retaining device mounted from the stator bore, resting against the winding bar sides, pressing the winding bars against the slot bottom, and fixing the winding bars in position, said retaining device having a multiplicity of



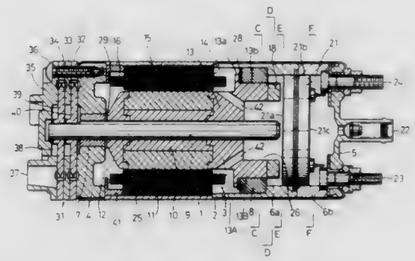
support rings being mutually aligned in axial direction of the dynamo-electric machine and having circumferences and outer peripheries, said support rings being formed of elastically deformable resilient material, being divided by dividing seams at least at one point along the circumferences thereof,
b) a turnbuckle inside the stator bore in the vicinity of at least one of said dividing seams varying the diameter and adjusting azimuthal prestressing of said support rings for diameter enlargement in order to generate a radial prestressing force engaging the winding bars being greater than the given operating force, for diameter variations upon assembly and dismantling and for post-tensioning of said support rings,
c) said turnbuckle comprising a turnbuckle plate disposed at said outer peripheries of said support rings, a tensionable locking wedge in said dividing seams having a rearward end portion, and an adjusting screws oriented in an axial insertion direction and disposed in said rearward end portion, as viewed in radial direction when installed, said adjusting screw having a shaft end protruding beyond said support ring and threadedly receiving in a threaded bore formed in said turnbuckle plate, said locking wedges of said turnbuckles of axially adjacent support rings being in mutual contact with axially aligned turnbuckles of axially aligned and assembled support rings disposed in mutual axial alignment.

5,053,664

MOTOR-DRIVEN FUEL PUMP

Hikaru Kikuta; Koichi Mine; Kazumichi Hanai; Kingo Kamiya, and Hitoshi Takeuchi, all of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 21, 1989, Ser. No. 454,448
Claims priority, application Japan, Jan. 18, 1989, 1-4294[U]; Jan. 19, 1989, 1-5371[U ; Jan. 19, 1989, 1-5372[U]; Jan. 25, 1989, 1-7169[U]
Int. Cl.[5] H02K *16/02*
U.S. Cl. 310—114 **16 Claims**



1. A motor-driven fuel pump comprising:
a brushless motor;
a motor housing for enclosing said brushless motor; and
a pump section adapted to be driven by said brushless motor for sucking a fuel and pumping the same into said motor housing;
said brushless motor comprising:
a stator fixed to an inner circumference of said motor housing;
a rotor assembly adapted to be rotated by supplying current to said stator, said rotor assembly comprising a motor shaft, a rotor magnet mounted to said motor shaft, a rotor cover mounted to one end of said rotor magnet on the side of said pump section, a timing rotor mounted to the other end of said rotor magnet, and a sensor magnet mounted to an end of said timing rotor on the side opposite to said rotor magnet;
an end cover mounted at an inlet end of said brushless motor;
a motor shaft bearing mounted in said end cover for rotatably supporting said motor shaft; and
a timing rotor bearing interposed between an outer circumference of said timing rotor and the inner circumference of said motor housing for rotatably supporting said timing rotor.

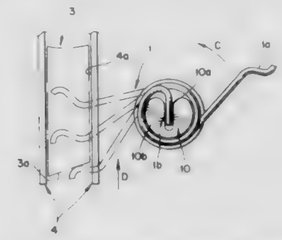
5,053,665

RETAINING STRUCTURE OF BRUSH SPRING OF ELECTRIC MOTOR

Mineo Yamaguchi, and Tetsuro Sato, both of Kosai, Japan, assignors to Asmo Co., Ltd., Kosai, Japan

Filed Aug. 8, 1990, Ser. No. 564,187
Claims priority, application Japan, Aug. 10, 1989, 1-94442[U]
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—239 **1 Claim**

1. A retaining structure of a brush spring of an electric motor, comprising a retainer for holding said brush spring provided as a projection on a support plate of said electric motor, and said brush spring having a first end thereof projecting outward from a coil portion thereof to be a brush contact part and a second end thereof bending inward to the center thereof to be an engaging part, said retainer being formed generally columnar such that said coil portion of the brush spring is inserted in an exterior part of said retainer and is provided with an engaging groove notched from an end face thereof in an axial direction, said engaging groove being open along an outer peripheral surface of said retainer to extend in a diametrical direction of said retainer and closed at an end opposite said engaging groove so that said engaging part of the



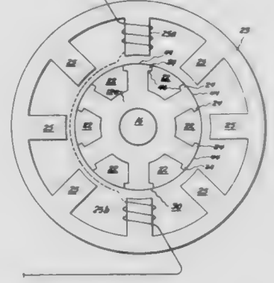
brush spring is inserted into said engaging groove only in a normal direction.

5,053,666

CONSTRUCTION OF RELUCTANCE MOTORS

Gerald B. Kliman, Schenectady, N.Y., and Eike Richter, Cincinnati, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 6, 1988, Ser. No. 202,354
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—261 **14 Claims**



1. A reluctance motor comprising:
a stator capable of establishing a rotating magnetic field; and
a rotor situated within said stator so as to be influenced by any rotating magnetic field established by said stator, said rotor comprising:
a central portion comprised of a stack of laminations of magnetic material;
multiple pole pieces, each of said pole pieces being defined by axially aligned portions of said laminations extending radially outward from said central portion; and
nonmagnetic support members arranged circumferentially around said rotor, each of said members filling the spaces, respectively, between each pair of circumferentially successive radially extending pole pieces, respectively, and bearing against said central portion, each of said nonmagnetic support members extending continuously in an axial direction through the entire length of said stack and reducing windage losses while providing support to said multiple pole pieces during rotor rotation.

5,053,667

DI- OR POLYPHASE SYNCHRONOUS ELECTRIC MOTOR WITH A DISC-SHAPED ROTOR

Claude Oudet, Besancon, France, assignor to Portescap, Switzerland

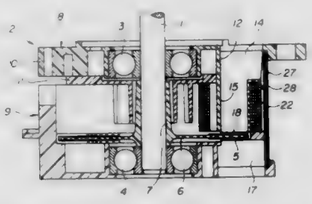
PCT No. PCT/CH89/00082, § 371 Date Feb. 9, 1990, § 102(e) Date Feb. 9, 1990, PCT Pub. No. WO89/12346, PCT Pub. Date Dec. 14, 1989

PCT Filed May 5, 1989, Ser. No. 499,366

Claims priority, application Switzerland, Jun. 10, 1988, 2340/88

Int. Cl.[5] H02K *1/18*

U.S. Cl. 310—268 5 Claims



1. A polyphase synchronous electric motor comprising a rotor part shaped as a plane annular disc, magnetized axially so as to exhibit, on each of its plane surfaces at least one series of magnetic poles disposed regularly along an annular zone, said rotor part being integral with a shaft of the motor mounted rotatably with respect to a stator assembly, this stator assembly comprising at least two groups of polar parts of a substantially plane configuration disposed substantially radially with respect to the motor shaft at least on one side of the rotor part, each of the polar parts forming part of a respective elementary magnetic circuit, having a gap in which is disposed said rotor part, said stator assembly further comprising at least two electric control coils each surrounding at least one of said groups of polar parts, the stator assembly comprising at least two separate yoke parts shaped substantially as portions of the surface of a revolution cylinder, each yoke part being disposed in contact with the polar parts of a group of polar parts, the yoke parts being comprised of magnetically permeable pieces of bent sheet material.

5,053,668

APPARATUS FOR DRIVING PIEZOELECTRIC ELEMENT FOR CLOSING AND OPENING VALVE MEMBER

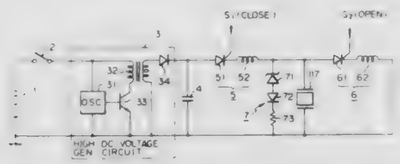
Masaki Mitsuyasu, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 5, 1990, Ser. No. 461,236

Claims priority, application Japan, Jan. 18, 1989, 1-7668

Int. Cl.[5] H01L *41/08*; F02M *51/06*

U.S. Cl. 310—317 17 Claims



1. An apparatus for driving a piezoelectric element to expand and contract a volume of a pressure chamber which is linked via a clearance of a valve member to a controlled liquid passage, to thereby close and open said valve member, comprising:

means for generating a high DC voltage;

means, including a first switch, coupled to said high Dc voltage generating means and said piezoelectric element for charging said piezoelectric element and for applying a first predetermined voltage across said piezoelectric element, thereby closing said valve member in response to operation of said first switch;

means coupled to said piezoelectric element for gradually decreasing the voltage across said piezoelectric element from said first predetermined voltage to a second predetermined voltage lower than said first predetermined voltage, said valve member remaining closed when said second predetermined voltage appears across said piezoelectric element; and

means, including a second switch, coupled to said piezoelectric element for discharging charges accumulated in said piezoelectric element and decreasing the voltage across said piezoelectric element from said second predetermined voltage to a third predetermined voltage lower than said second predetermined voltage, thereby opening said valve member in response to operation of said second switch.

5,053,669

ULTRASONIC MOTOR

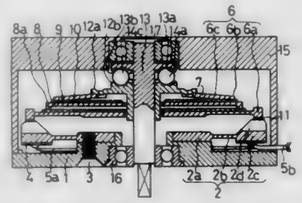
Takao Saeki, Farmington Hills, Mich.; Shoji Okada, Toyota, Japan; Mutsuro Aoyama, and Yasuo Kuwabara, both of Nagoya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 29, 1990, Ser. No. 545,818

Claims priority, application Japan, Jun. 29, 1989, 1-167277

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—323 4 Claims



1. An ultrasonic motor having a rotor and a stator comprising:

spring means for pressing the rotor to the stator with a predetermined pressure;

modulating means for increasing the pressure of the rotor to the stator in response to an increase of load;

oscillating means for generating a traveling wave on the stator,

detecting means for detecting amplitude of the traveling wave generated on the stator; and

wherein the oscillating means controls amplitude of the traveling wave by changing frequency with respect to resonance frequency of the stator while the amplitude of the traveling wave is changed.

5,053,670

PRECISION ACTUATOR

Masao Kosugi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1990, Ser. No. 616,063

Claims priority, application Japan, Nov. 20, 1989, 1-299580; Nov. 20, 1989, 1-299581; Nov. 20, 1989, 1-299581

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—328 14 Claims

1. A precision actuator, comprising:

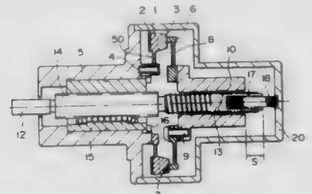
a housing;

an ultrasonic motor disposed in said housing and having a ring-like rotor and a stator;

an output shaft;

rotation-restraint rectilinear motion guide means for coupling said output shaft to said housing, slidably in an axial direction but unrotatably relative to it; and

screw means for coupling said output shaft to said rotor.



5,053,671

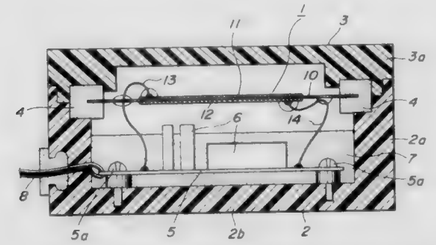
PIEZOELECTRIC SENSOR FOR MONITORING KINETIC MOMENTUM

Hiroshi Kobayashi, and Kenichi Tanaka, both of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 16, 1987, Ser. No. 120,964

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—329 27 Claims



1. A piezoelectric sensor for monitoring the kinetic momentum of a movable member, comprising:

a sensor casing defining a sealed internal space therein;

a piezoelectric sensor assembly composed of a flexible plate member having at least one plane surface and a piezoelectric element fitted onto said plane surface of said flexible plate member;

a sensor support member secured onto the inner periphery of a circumferential wall of said sensor casing and engaging the entire circumferential edge of said piezoelectric sensor assembly so as to oscillably support the latter within said enclosed internal space of said sensor casing; and

said sensor support member being made of an elastic material so as to increase the active area of the piezoelectric sensor assembly, thereby increasing its sensitivity and compliance.

5,053,672

ENERGY CONVERTER APPARATUS

Thomas J. Clapham, 2823 - 18th Ave. North, Minneapolis, Minn. 55411

Filed May 29, 1990, Ser. No. 529,625

Int. Cl.[5] H01L *71/08*

U.S. Cl. 310—334 2 Claims

1. A mass energy converter apparatus comprising:

a vibrating structure formed of metal or ceramic and including a spherical member and an elongate tapering member integral with said spherical member and extending outwardly therefrom, said spherical member having a hollow spherical chamber therein,

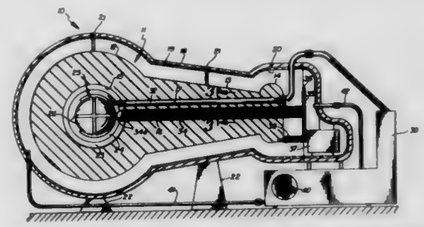
a rigid jacket positioned exteriorly of and spaced outwardly of said vibrating structure to define a cooling chamber therebetween,

a source of liquid hydrogen connected in communicating relation with said cooling chamber to permit evaporating hydrogen to circulate through the cooling chamber thereby cooling the vibrating structure,

a spherical ceramic member positioned within the cavity in the vibrating structure and engaging the inner surface thereof, said ceramic member having a plurality of piezoelectric crystals embedded therein, electrical conductors connected to said crystal and extending outwardly therefrom,

an intermediate spherical member formed of metal and positioned interiorly of said ceramic member in engaging relation with the latter,

a sectional laminated capacitive structure positioned interiorly of said intermediate member and being comprised of a plurality of substantially identical sections, said sections engaging the interior of said intermediate spherical member and being arranged to define a sphere, each section of said capacitive structure including an inner layer, an outer layer, and an intermediate layer disposed between said



inner and outer layers, said inner and outer layers being formed of electrically conductive material and said intermediate layer being formed of a dielectric material, a plurality of electrical conductors, each being connected to one of said inner and outer layers, and each being connected to a source of electric current,

insulating means disposed around the periphery of each of said sections, and

a core member formed of an explodable material and positioned interiorly of said capacitive structure whereby, when said capacitive structure is electrically energized, said capacitive structure will produce inwardly and outwardly directed vibrations to thereby cause said spherical member of said vibrating structure, said ceramic member and said intermediate spherical member to vibrate, said vibrations being transmitted to said core member to cause slight implosion of the latter, to thereby release radial kinetic energy, and outwardly directed intensified vibrations for alternately compressing and expanding the ceramic member and thereby producing electrical wave lengths in response to compression and expansion of said piezoelectric crystals as a part of the reaction.

5,053,673

FIELD EMISSION CATHODES AND METHOD OF MANUFACTURE THEREOF

Kaoru Tomii, Isehara; Akira Kaneko, Tokyo, and Toru Kanno, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 17, 1989, Ser. No. 422,883

Claims priority, application Japan, Oct. 17, 1988, 63-260807; Mar. 13, 1989, 1-59906; May 19, 1989, 1-126945; May 19, 1989, 1-126950

Int. Cl.[5] H01J *1/46*

U.S. Cl. 313—308 8 Claims

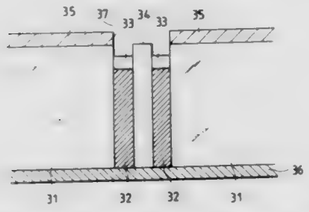
1. A field emission cathode comprising:

a pair of electrically insulating substrates having at least

respective upper faces thereof aligned in a common plane and with a gap formed between opposing side faces thereof;

a first metal layer formed within said gap, extending between said side faces;

a layer of electrically insulating material formed within said gap, extending between said side faces and in contact with a surface of said first metal layer and having a surface thereof recessed below said common plane;



a layer of cathode material formed extending substantially parallel to said side faces and positioned centrally between said side faces, extending within said metal layer and insulating layer, and with one end thereof protruding from said recessed surface of said electrically insulating layer; and

a second metal layer formed on said upper faces of said substrates, extending to said gap, to function as an electron extraction electrode.

5,053,674

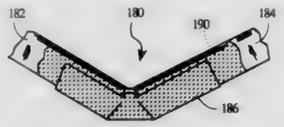
TENSIONED FOIL SHADOW MASK MOUNTING

Alfio J. Gismondo, West Dundee; Miguel A. Perez, Lake Villa, and Ramiro I. Sanchez, Chicago, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 13, 1990, Ser. No. 566,644

Int. Cl.[5] H01J *29/07, 9/02*

U.S. Cl. 313—407 **11 Claims**



1. For use in a color cathode ray tube (CRT), a support structure for supporting and maintaining a tensioned foil shadow mask in a tightly stretched condition, wherein various contaminants are produced during CRT assembly, said support structure comprising:

a plurality of elongated, generally linear rails;

a plurality of corner brackets each coupled to adjacent ends of a pair of rails to form a corner of a closed support structure adapted for receiving a foil shadow mask, wherein gaps tend to form between each corner bracket and its associated pair of rails; and

sealant means disposed over each corner bracket and its associated pair of rails for sealing said gaps between a corner bracket and coupled rails and preventing a contaminant from becoming lodged in any such gaps.

5,053,675

ELECTROLUMINESCENT DISPLAY SCREEN WITH A MEMORY AND A PARTICULAR CONFIGURATION OF ELECTRODES

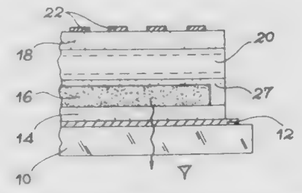
Pascal Thioulouse, Paris, France, assignor to Centre National D'Etudes Des Telecommunications, Issy Les Moulineaux, France

Filed Apr. 11, 1990, Ser. No. 508,260

Claims priority, application France, Apr. 12, 1989, 89 04811

Int. Cl.[5] H05B *33/22*

U.S. Cl. 313—505 **15 Claims**



1. Electroluminescent display screen with a memory effect and comprising on a non-conducting substrate:

a family of first transparent electrodes parallel to a first direction,

a first nonconductor covering the first electrodes,

an electroluminescent film and a photoconductive material covering the entire display surface and stacked on the first nonconductor, the photoconductive material having a lateral conductivity greater than that of the other materials constituting said screen,

a second nonconductor covering the photoconductive material,

a family of second electrodes resting on the second nonconductor and orientated along a second direction perpendicular to the first direction, a pixel being defined by the intersection of a first electrode and a second electrode, and

means for controlling the pixels connected to the two families of electrodes,

wherein at each pixel the second electrodes comprise blocks of dimension D along the first direction, the blocks of a given second electrode being electrically interconnected by at least one conductive access strip of width d along the first direction with $d<D/2$ and the edges of the second electrodes being situated inside or opposite the edges of the first electrodes.

5,053,676

HIGH-PRESSURE DISCHARGE LAMP

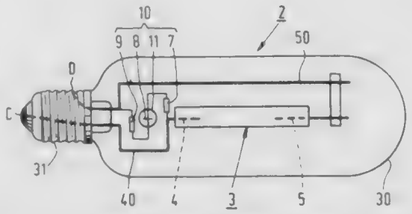
Gerardus M. J. F. Luijks, and Hendrik M. Bleeker, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 11, 1990, Ser. No. 597,619

Claims priority, application Netherlands, Dec. 6, 1989, 8902999

Int. Cl.[5] H01J *19/78*

U.S. Cl. 315—58 **4 Claims**



1. A high-pressure discharge lamp provided with a discharge vessel, which vessel is enclosed with intervening space

by an outer bulb having a lamp cap, as well as with an ignition circuit comprising a voltage-dependent capacitor, characterized in that the capacitor is mounted in a gas-filled gas-tight glass capsule in the outer bulb.

5,053,677

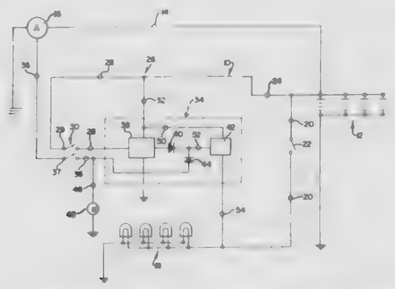
PARKING LAMP OPERATING SYSTEM

John A. Sanner, Fort Wayne, and W. Thomas Irick, New Haven, both of Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed May 3, 1990, Ser. No. 518,366

Int. Cl.[5] H60Q *1/26*

U.S. Cl. 315—77 **20 Claims**



1. A parking lamp operating system for a vehicle having a main power line including a manually operated parking lamp switch to the parking lamps, for use in conserving power when the parking lamps are being operated only on a vehicle battery, said system comprising:

selective means for connecting a steady state signal input from said vehicle battery to a conservation control module;

said conservation control module including a modulator means for converting said steady state input signal received from said vehicle battery to a waveform signal and a switching means having a first signal input connected to said waveform signal, a second power input connected to said vehicle battery, and an output connected to said parking lamps by a secondary power line which joins said main power line to the lamps downstream of said manually operated parking lamp switch, said switching means being responsive to said waveform signal input to intermittently connect, at the frequency of said waveform signal, said power input to said output to said parking lamps.

5,053,678

MICROWAVE ION SOURCE

Hidemi Koike, Katsuta; Noriyuki Sakudo, Ome; Katsumi Tokiguchi, Machida; Takayoshi Seki, Hitachi, and Kensuke Amemiya, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1989, Ser. No. 323,837

Claims priority, application Japan, Mar. 16, 1988, 63-60379

Int. Cl.[5] H01J *27/18*

U.S. Cl. 315—111.81 **6 Claims**

1. A microwave ion source comprising:

a microwave source;

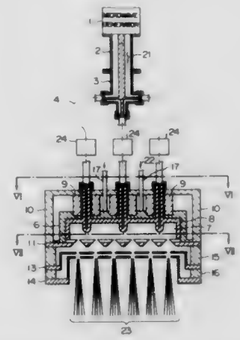
a coaxial line for supplying microwaves from said microwave source into a plasma chamber;

magnetic field generating means for generating a magnetic field in said plasma chamber; and

an acceleration electrode and a deceleration electrode for applying an ion extraction electric field to plasma generated by micrwave discharge in said plasma chamber;

wherein at least a part of said acceleration electrode is composed of a high magnetic permeability member so as to absorb said magnetic field;

wherein an ion exit hole is formed in said acceleration electrode; and



wherein said plasma chamber is provided with a plurality of sets each including one said coaxial line, one said magnetic field generating means, and at least one said ion exit hole.

5,053,679

PHOTOCONDUCTIVE-ELECTROLUMINESCENT MEMORY EFFECT POLYCHROMATIC DISPLAY

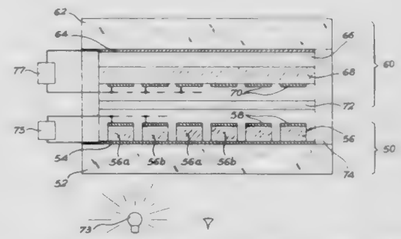
Pascal Thioulouse, Paris, France, assignor to Centre National d'Etudes des Telecommunications, Issy les Moulineaux, France

Filed Feb. 23, 1990, Ser. No. 484,047

Claims priority, application France, Mar. 21, 1989, 89 03681

Int. Cl.[5] H01J *1/62*

U.S. Cl. 315—169.3 **19 Claims**



1. A polychromatic display, comprising: a first structure having a first transparent substrate equipped with a first electroluminescent layer placed between a first system of transparent electrodes and a second system of electrodes, said first and second systems of electrodes connected to a first electrical means permitting the excitation of certain zones of the first electroluminescent layer, a second structure having a second substrate equipped with a second electroluminescent layer and a photoconductive layer stacked on one another and covering the entire display surface, said second electroluminescent layer being placed in direct contact with said photoconductive layer for obtaining a PC-EL effect, said photoconductive and second electroluminescent layers being placed between a third system of transparent electrodes and a fourth system of transparent electrodes, said third and fourth systems of electrodes being connected to a second electrical means for effecting the excitation of certain zones of the second electroluminescent layer, said first and second substrates constituting opposite faces of the display, and and wherein the first electroluminescent layer has a monochromatic or dichromatic emission spectrum, and the second electroluminescent layer has an essen-

tially monochromatic emission spectrum and a chromatic component complementary of the emission color or colors of the first electroluminescent layer.

5,053,680

SWITCHING DEVICE

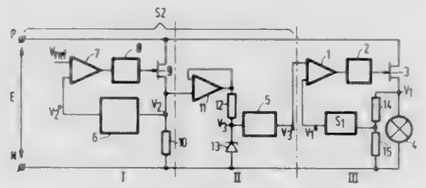
Meerten Luursema, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1990, Ser. No. 524,250

Claims priority, application Netherlands, Jun. 7, 1989, 8901443

Int. Cl.[5] H05B *41/36, 37/02*

U.S. Cl. 315—209 R **18 Claims**



1. A switching device for operating a lamp by means of a pulse-shaped voltage (V1), comprising:

switching means for generating the pulse-shaped voltage (V1) from an input voltage and with the amplitude thereof proportional to the input voltage,

a pulse width modulator for supplying control pulses to the switching means,

a first auxiliary circuit for generating a first signal derived from the pulse-shaped voltage, said first signal being proportional to an average value of the pulse shaped voltage (V1),

a control device responsive to the first signal and to a second signal for making the first signal substantially equal to the second signal by the supply of a control signal to the pulse width modulator, and

a second auxiliary circuit for generating the second signal in a manner whereby the second signal is inversely proportional to the input voltage.

5,053,681

REMOTE ELECTRICAL CONVERTER

Bernard R. Budny, Milwaukee, Wis., and Robert G. Lockwood, 7303 Finevale Dr., Downey, Calif. 90240, assignors to Robert G. Lockwood, Paramount, Calif.

Filed Apr. 17, 1989, Ser. No. 339,219

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—219 **21 Claims**



1. Electrical power conversion apparatus for energizing an electrical device, such as a fluorescent lamp, from a conventional alternating current source, said apparatus comprising:

power source means for converting the conventional alternating current to a low voltage, low current, high frequency source, said power source means includes means for rectifying the conventional alternating current, inverter means connected to the output of said rectifying means for producing high frequency alternating current, and step-down transformer means for converting said high frequency alternating current to a low voltage, low current, high frequency output at the output of said step-down transformer means;

device means remote from said power source means;

power conversion means including step-up transformer means electrically coupled to said device means;

low voltage link means connected to the output of said power source means for transmitting the energy therefrom to the input of said power conversion means for enabling conversion of said low voltage, low current, high frequency source to a voltage suitable for energizing said electrical device; and

said step-up transformer means includes first and second generally identical ferrite pot core transformers having the primary windings thereof connected in parallel for providing a symmetrical current waveform to said device means.

5,053,682

POWER SUPPLY FOR MICROWAVE DISCHARGE LIGHT SOURCE

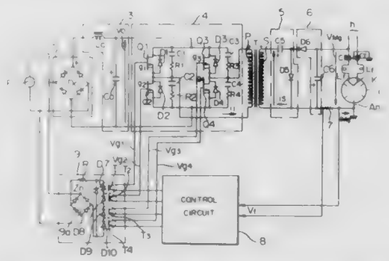
Isao Shoda; Hitoshi Kodama; Kazuo Magome, all of Kamakura; Akihiko Iwata, Amagasaki; Kenji Yoshizawa, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 329,786, Mar. 17, 1989. This application Nov. 20, 1990, Ser. No. 616,257

Claims priority, application Japan, Jul. 28, 1987, 62-188256

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—223 **15 Claims**



1. A circuit system adapted to supply microwave energy to a microwave discharge light source apparatus including an electrodeless discharge bulb, comprising:

first rectifier means, adapted to be coupled to an AC voltage source of a relatively low voltage and frequency, for outputting a rectified voltage of a relatively low voltage;

filter means, coupled to said first rectifier means, for smoothing said rectified voltage outputted from said first rectifier means, and for outputting a smoothed rectified voltage;

inverter means, coupled to said filter means, for converting said smoothed rectified voltage outputted from said filter means to an AC voltage of a relatively high frequency having a waveform of alternating pulses;

pulse width modulation control means for modulating a pulse width of said pulses of said AC voltage outputted from said inverter means;

a step-up transformer having a primary winding coupled to an output of said inverter means, a secondary winding of the step-up transformer outputting an AC voltage of said relative high frequency and of a relatively high voltage;

second rectifier means, coupled to said secondary winding of said step-up transformer, for rectifying said AC voltage of the relative high frequency and the relative high voltage outputted from said secondary winding of the step-up transformer to a rectified voltage of a relatively high voltage,

a magnetron coupled to said second rectifier means, to be supplied with and operated by said rectified voltage of the relative high voltage outputted from said second rectifier means; and

high frequency component reducing means, electrically operatively coupled to said magnetron, for reducing magnitudes of high frequency components of a current flowing through said magnetron, thereby limiting a ratio i_{max}/i_o of a peak value i_{max} to a mean value i_o of said current flowing through said magnetron under 3.75 inclusive:

$$i_{max}/i_o \leqq 3.75$$

5,053,683

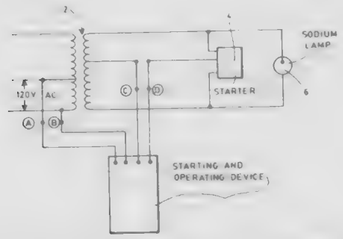
STARTING AND OPERATING DEVICE FOR CONTROLLING A STARTER THAT IGNITES A SODIUM LAMP

Luc Theroux, Montreal, Canada, assignor to Lendar Design Inc., St-Basile-le-Grand, Canada

Filed Dec. 6, 1990, Ser. No. 623,230

Int. Cl.[5] H05B *37/00, 39/00, 41/36;* **G05F** *1/00*

U.S. Cl. 315—290 **5 Claims**



1. A starting and operating device for controlling a starter that ignites a sodium lamp, AC power voltage being provided to said starter and sodium lamp by means of a power supply transformer having its secondary winding connected to said starter and sodium lamp, and its primary winding connected to an AC power source, said device comprises:

an AC/DC converter connected to said primary winding for converting AC voltage into a low DC voltage;

a high power disabling means for disabling said starter;

an optor-isolator connected to said high power disabling means for controlling said high power disabling means by means of a low DC signal, and for electrically isolating said high power disabling means;

a timer connected to said opto-isolator for generating said low DC signal after passage of a predetermined amount of time to disable said starter; and

a first delay circuit connected to said AC/DC converter for detecting energizing of said AC/DC converter, and for generating a delayed resetting signal for said timer after detection of said energizing whereby said AC/DC converter can be stabilized before resetting said timer.

5,053,684

DISPLAY TUBE CONTROL SYSTEM

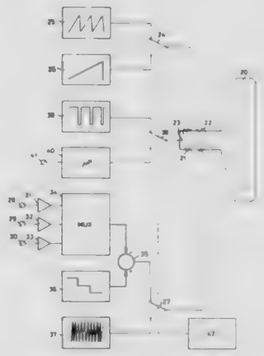
Marinus A. M. Nooyen, Aarle-Rixter, Netherlands, assignor to PPG Hellige B.V., Best, Netherlands

Filed May 19, 1989, Ser. No. 354,276

Claims priority, application Netherlands, May 20, 1988, 8801319

Int. Cl.[5] G01R *13/28;* **G09G** *1/04, 1/14*

U.S. Cl. 315—392 **7 Claims**



1. System for controlling the position and intensity of an electron beam in a display tube of a display unit in such a manner that both analog signals as well as alphanumeric characters can be made visible simultaneously on the screen of the display tube, the display unit comprising X-deflection means for deflecting the electron beam in the X-direction, Y-deflection means for deflecting the electron beam in the Y-direction and Z-control means for controlling the intensity of a light spot, written by the electron beam on the screen of the display tube, wherein the period necessary for displaying a complete picture on the screen of the display tube is divided in two successive sub periods, a first sub period in which an analog signal is supplied to the Y-deflection means and a relatively low frequency sawtooth shaped signal is supplied to the X-deflection means for scanning the width of the screen area on which said analog signal is to be displayed, and in which a beam fly back suppression signal is delivered to the Z-control means, thereby obtaining an X-Y-control of the electron beam such that for each scan of said sawtooth signal during said first sub period an uninterrupted image of the analog signal is written on the screen within said area, and a second sub period in which a first further relatively low frequency sawtooth shaped signal is supplied to the X-deflection means, a second further relatively high frequency sawtooth shaped signal is supplied to the Y-deflection means and alphanumeric character control signals are supplied to the z-control means, thereby obtaining an image scanning control of the electron beam during said second sub period whereby the scanning lines effected by said second further relatively high frequency sawtooth shaped signal are directed according to the Y-direction.

5,053,685

HIGH PRECISION LINEAR ACTUATOR

Paul E. Bacchi, Novato, Calif., assignor to Kensington Laboratories, Inc., Richmond, Calif.

Filed Jan. 31, 1990, Ser. No. 473,547

Int. Cl.[5] H02K *7/10;* **H02P** *5/00;* **G05B** *19/40*

U.S. Cl. 318—135 **12 Claims**

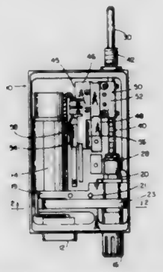
1. A high precision linear actuator comprising:

a motor drive for receiving a voltage input signal and converting said voltage input signal to rotation of a motor drive output shaft;

a linear displacement output shaft operably connected to

said motor drive output shaft to provide linear displacement of said output shaft corresponding t said rotation of said rotor drive output shaft; and

an optical linear encoder assembly comprising an array of light sources arranged to emit light along axes generally perpendicular to a longitudinal axis of said linear displacement output shaft, an array of light sensors positioned substantially opposite and aligned with said array of light



sources, a stationary grating mounting between said arrays of light sources and light sensors, and a reference grating mounted adjacent said array of light sources, said optical linear encoder assembly operably connected to said linear displacement output shaft to provide linear displacement of said optical linear encoder assembly corresponding to said linear displacement of said linear displacement output shaft.

5,053,686

DIRECT CURRENT BRUSHLESS MOTOR FOR FANS, PUMPS AND SIMILAR EQUIPMENTS

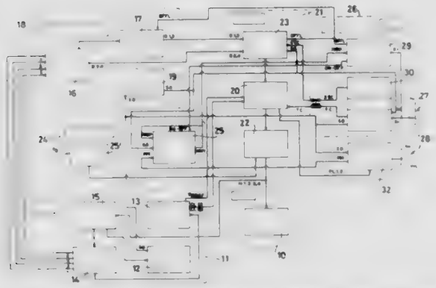
Fernando Juarez, Barcelona, Spain, assignor to Halsall Products Limited, London, United Kingdom

Continuation-in-part of Ser. No. 272,553, Nov. 17, 1988, abandoned. This application Apr. 25, 1990, Ser. No. 514,194

Claims priority, application Italy, Nov. 18, 1987, 67986 A/87

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—254 **10 Claims**



1. A direct current, brushless, biphase motor and a motor drive circuit, comprises: four unipolar windings and an electronic drive; a trapezoidal e.m.f. being generated in each winding; said trapezoidal e.m.f. allowing the electronic drive to sense the best switching point on an oblique side of a trapezoidal wave; said windings being configured to form two phases which are embodied to obtain conduction on 180° per winding as two single-phases in paralle; said motor being capable of being used in a first single-phase mode, a second single-phase mode and a third biphase mode wherein the motor selected by the drive among the first, second and third modes absorbs a substantially direct current from a line due to said mode selection to set in operation each phase with a conduction on 360° (180°+180°) for each of the two single-phases; and said electronic drive further comprises:

a "motor-sensors" block which detects position of a rotor, speed and Ri drop on the windings through the processing of voltage wave forms present at the ends of said windings;

a "starting and driving circuit" block which processes signals proceeding from the "motor-sensors" block to generate a motor starting and a sequence of driving signals of the switching on each winding to ensure rotation to occur only in the right direction and to obtain the best efficiency of said switchings;

an "input" block comprising an analog or digital input which controls the motor as regards speed or torque in a continuous way, or selects the running from single-phase to biphase; said input block also driving an ON-OFF state and staticizing a protection threshold for said motor at a preset level, on another input;

a "motor and electronic drive protection" block which processes signals relating to motor speed, current in the windings, and a preset protection threshold, and which determines the intervention of an oscillator which sets the motor ON-OFF, with sufficiently short ON times with respect to OFF times in order to protect the windings and electronic components until an anomalous condition persists; and

a "control circuit" block which act as the interface between all the above mentioned blocks and the windings of the motor, and controls both the ON-OFF state and the current level in said windings.

5,053,687

ARTICULATED DEVICE, FOR USE IN PARTICULAR IN ROBOTICS

Jean-Pierre Merlet, Antibes, France, assignor to Inria Institut National de Recherche En Information et en Automotique

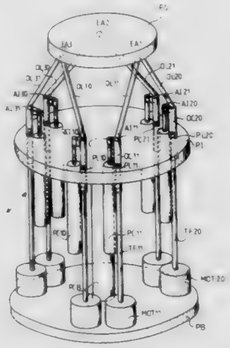
PCT No. PCT/FR89/00112, § 371 Date Dec. 19, 1989, § 102(e) Date Dec. 19, 1989, PCT Pub. No. WO89/09120, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 15, 1989, Ser. No. 455,443

Claims priority, application France, Mar. 21, 1988, 88 03630

Int. Cl.[5] B66F *9/00*

U.S. Cl. 318—568.2 **17 Claims**



1. An articulated device comprising a bottom plate (PI), a top plate (PS), and a control assembly for controlling the relative positions of the two plates (PI, PS), said control assembly comprising:

three pairs (EAi) of close-together articulation locations (EAij) situated on the top plate (PS);

three pairs (PLi) of close-together link locations (PLij) situated on the bottom plate (PI);

six link members (OLij) each having a top end articulated on a respective one of the articulation locations (EAij) and a bottom end connected via a bottom articulation (ALij) to a respective one of the link locations (PLij) such that the two articulation locations ($EAij_1$, $EAij_2$) in a same pair (EAi) are connected by two link members (OLi_1j_2, OLi_2j_1) to the two consecutive link locations (PLi_1j_2, PLi_2j_1) which are the closest to said two articulation locations ($EAij_1$, $EAij_2$), and which belong to two different pairs of link locations (PLi_1, PLi_2); and

motor means (MOTij, TFij) for independently varying on command the position of an articulation location (EAij) relative to the bottom plate (PI);

wherein the improvement comprises that each link member (OLij) is of substantially constant length, and wherein the control assembly further includes six slider member (OCij) respectively connected firstly to the six link locations (PLij) and secondly via the six bottom articulations (ALij) to the bottom ends of the six link members (OLij), each slider member (OCij) being suitable for sliding relative to the bottom plate (PI) in a predetermined sliding direction (DC) under the drive from the motor means (MOTij, TFij).

5,053,688

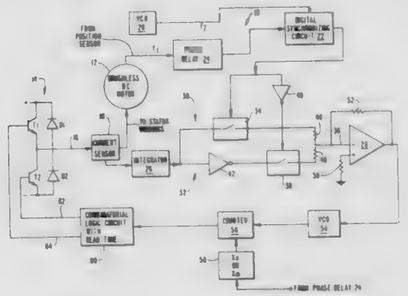
FEEDBACK CIRCUIT FOR ELIMINATING DC OFFSET IN DRIVE CURRENT OF AN AC MOTOR

Fenton L. Rees, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 320,224, Mar. 7, 1989, abandoned. This application Aug. 15, 1990, Ser. No. 569,580

Int. Cl.[5] H02P *11/00, 6/02*

U.S. Cl. 318—599 **18 Claims**



1. A motor control for an electric motor powered by an AC pulse source which applies current pulses to stator windings of the motor to cause rotation of a rotor comprising:

means for sensing a net DC current in the current pulses over a period of time flowing to the stator windings and producing a negative feedback signal which is a function of the sensed net DC current during rotation of the motor; and

a pulse width modulator, coupled to the net DC current sensing means varying pulse width modulation of the current pulses in response to the negative feedback signal to reduce the net DC current toward zero during rotation of the motor.

5,053,689

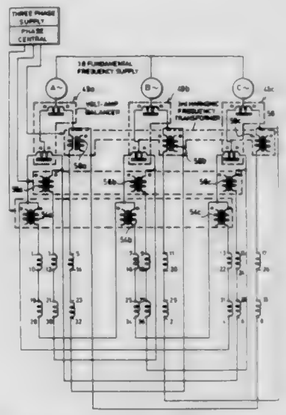
METHOD AND APPARATUS FOR IMPROVING PERFORMANCE OF AC MACHINES

Herbert H. Woodson, and John S. Hsu, both of Austin, Tex., assignors to University of Texas at Austin, Austin, Tex.

Continuation-in-part of Ser. No. 888,818, Jul. 22, 1986. This application Sep. 11, 1989, Ser. No. 405,632

Int. Cl.[5] H02P *5/00*

U.S. Cl. 318—705 **20 Claims**



1. A method of enhancing the torque in a synchronous machine having a stator and rotor, windings placed thereon, and an air gap formed therebetween, the method comprising the steps of:

generating a fundamental flux wave in the air gap of said machine by delivering a fundamental excitation signal to said stator winding;

generating an odd harmonic flux wave in said air gap of said machine by delivering an odd harmonic excitation signal to said stator winding, said odd harmonic flux wave rotating about said air gap in substantial unison with said fundamental flux wave;

generating rotor flux in the air gap of said machine by delivering an excitation signal to said rotor windings;

generating rotor space harmonics in said air gap of said machine by interaction between said fundamental flux wave and said rotor flux, said rotor space harmonics rotating in said air gap in substantial unison with said rotor and said odd harmonic flux wave; and

controlling the phase angle of said odd harmonic flux wave relative to said rotor space harmonics.

5,053,690

CONTROL METHOD OF PULSE WIDTH MODULATION INVERTER AND PULSE WIDTH MODULATION INVERTER SYSTEM

Nobuyoshi Mutoh, Katsuta; Keijiro Sakai, Hitachiota; Hiroshi Fujii, Chiba, and Kenji Nantoh, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 441,964

Claims priority, application Japan, Nov. 30, 1988, 63-300525

Int. Cl.[5] H02P *5/40*

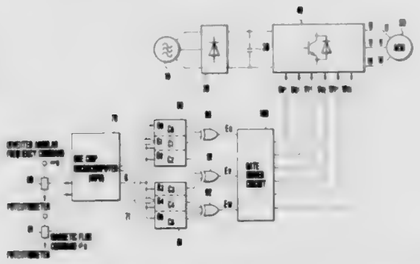
U.S. Cl. 318—811 **8 Claims**

1. A control method for a pulse width modulation (PWM) inverter in which a magnetic flux vector is determined from an inverter angular frequency command and a magnetic flux command, a plurality of voltage vectors are determined from said magnetic flux vector, unit voltage vectors, and a zero vector, and gate signals for a plurality of switching elements of the PWM inverter are generated in correspondence to said

plurality of voltage vectors to control said PWM inverter, said control method comprising the steps of

determining a current magnetic flux vector during a current sampling period on the basis of said inverter angular frequency command, said magnetic flux command, and a duration of said current sampling;

determining a difference vector representing a difference between said current magnetic flux vector and a preced-



ing magnetic flux vector determined during a preceding sampling period by synthesizing said difference vector from said unit voltage vectors and said zero vector such that the difference vector includes said zero vector such that said zero vector has at least a predetermined duration time; and

generating the gate signals for said switching elements of said PWM inverter in accordance with said synthesized difference vector.

5,053,691

METHODS AND DEVICE FOR STABILIZING AN ELECTRIC SUPPLY SYSTEM THROUGH THE ADAPTATION OF A CONTROLLER OF A STATIC COMPENSATING DEVICE

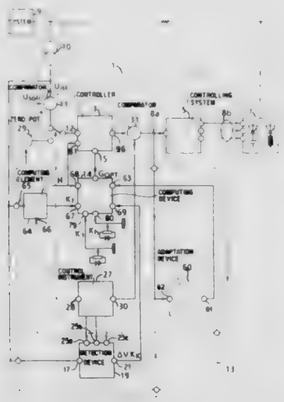
Georg Wild, Langensendelbach; Karl-Friedrich Leowald, Uttenreuth-Weiher, both of Fed. Rep. of Germany, and Vladimir E. Henner, Epping, Australia, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 20, 1990, Ser. No. 482,257

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1989, 3905261

Int. Cl.[5] G05F *1/70*

U.S. Cl. 323—211 **17 Claims**



1. A method for stabilizing an electric supply system by adapting a controller, in particular a controller of a static compensating device, where said controller has an output coupled to a controlling system, which causes compensating elements to be switched into the supply system comprising:

a) forming a signal by means of a measuring transducer for a first system voltage value and storing said signal as information in a memory of a computer;

b) modifying the circuit state of at least one compensating element, which has a defined value and is switchable to the system;

c) forming a signal resulting from this modification for a second system voltage value by means of the detecting element and storing said signal as information in a further memory of a computer;

d) calculating the difference between the signals for the first and the second system voltage values in said computer;

e) calculating in said computer at least one parameter value of said controller defining the damping from the signal representing said difference and forming a proportional signal; and

f) feeding said signal to a final controlling input of said controller.

5,053,692

TEMPERATURE DEPENDENT POWER SUPPLY FOR USE WITH A BRIDGE TRANSDUCER

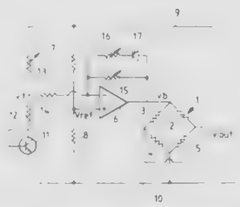
Russell W. Craddock, Birmingham, Great Britain, assignor to Lucas Industries P.L.C., Birmingham, England

Filed Apr. 9, 1990, Ser. No. 506,349

Claims priority, application United Kingdom, Apr. 14, 1989, 8908518

Int. Cl.[5] G05F *1/567*

U.S. Cl. 323—365 **11 Claims**



1. A transducer temperature compensation circuit for providing an output to a transducer having a sensitivity which varies with power supply, said circuit comprising:

a temperature sensitive element;

a power supply having an output variable in response to said temperature sensitive element in response to temperature variations;

first adjustment means for adjusting a first slope of the power supply output with respect to temperature at one side of a predetermined temperature;

second adjustment means for adjusting a second slope of the power supply output with respect to temperature at another side of the predetermined temperature independently of the first slope adjusted by said first adjustment means;

third adjustment means for adjusting the power supply output at the predetermined temperature independently o the first and second slopes adjusted by said first and second adjustment means; wherein said circuit further includes an operational amplifier having inverting and non-inverting inputs and an output, a temperature dependent potentiometer including said temperature sensitive element for providing a temperature dependent voltage, a first resistor connected between said temperature dependent potentiometer and said inverting input, a reference voltage source for providing a reference voltage connected to said non-inverting input, said first adjustment means comprising a first variable resistor and a diode connected in series between said output and said inverting input, said second adjustment means comprising a second variable resistor

connected between said output and said inverting input, and said third adjustment means comprising means for setting the reference voltage and the temperature dependent voltage at a same value at the predetermined temperature.

5,053,693

FIBREOPTICAL SENSOR

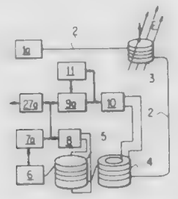
Klaus Bohnert, Niederrohrdorf, and Werner Buser, Basel, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Dec. 21, 1990, Ser. No. 631,439

Claims priority, application Switzerland, Dec. 22, 1989, 4603/89

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—96 **10 Claims**



1. Fiberoptic sensor for measuring electrical fields or voltages, in which

a) a sensor fiber having a given length section is attached to at least one piezoelectric sensor element in such a manner that the electrical field to be measured leads to a change in length of the sensor fiber by means of the inverse piezoelectric effect,

b) means for the interferometric detection of the change in length are provided and

c) a piezoelectric modulator is provided which is driven in such a manner that the change in length of the sensor fiber induced by the electrical field to be measured is compensated, wherein

d) the piezoelectric modulator comprises at least one piezoelectric modulator element which is identical with the at least one sensor element with respect to material, geometric shape and crystal orientation,

e) modulator element and sensor element are essentially at the same temperature, and

f) separate means for operating point control are additionally provided.

5,053,694

DEVICE FOR MEASURING AN ELECTRIC FIELD

Klaus Bohnert, Niederrohrdorf, and Jürgen Nehring, Wettingen, both of Switzerland, assignors to Asea Brown Boveri, Ltd., Baden, Switzerland

Filed Mar. 30, 1990, Ser. No. 502,339

Claims priority, application Switzerland, Apr. 7, 1989, 1311/89

Int. Cl.[5] G01R *19/00*

U.S. Cl. 324—96 **8 Claims**

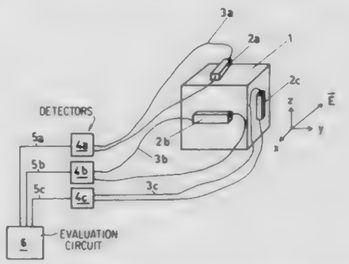
1. A device for measuring an electric field, comprising:

a cuboid piezoelectric body having mutually perpendicular faces and consisting of a material of one of the crystal classes T, T_d, T_2, D_{2d}, and thus having three 2-fold crystallographic axes of rotation, said body aligned with its edges parallel to the 2-fold crystallographic axes of rotation;

at least two optical fiber sensors for measuring the absolute value and directional components of the electric field, the directional components assigned to the sensor elements being aligned perpendicular to one another, in each case, each optical fiber sensor comprising,

a sensor fiber fixed with a section of length to a respective of said mutually perpendicular faces of said cuboid piezoelectric body, and

interferometric means for measuring a change in length of the sensor fiber induced by the inverse piezoelectric effect, so that the directional component sensed by said



sensor fiber coincides with a surface normal in each case, and producing a sensor signal corresponding to the directional component; and

means for determining the absolute value and direction of the electric field from the sensor signals produced by each said interferometric means.

5,053,695

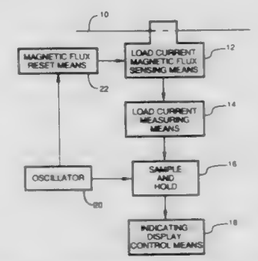
DC CURRENT MONITOR

Stanley Canter, Phoenix, Ariz., assignor to Space Systems/-Loral, Inc., Palo Alto, Calif.

Filed Mar. 9, 1990, Ser. No. 490,866

Int. Cl.[5] G01R *1/22, 33/00*

U.S. Cl. 324—117 R **17 Claims**



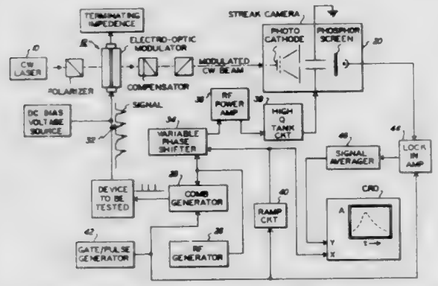
1. Apparatus for monitoring DC current comprising:

magnetic sensing means including a magnetic core and secondary winding, said sensing means being capable of sensing a DC current flowing through a conduit and producing a secondary current in said secondary winding proportional to the sensed DC current;

current measuring means coupled to said magnetic sensing means and operative to generate an output voltage signal proportional to the magnitude of said secondary current; and,

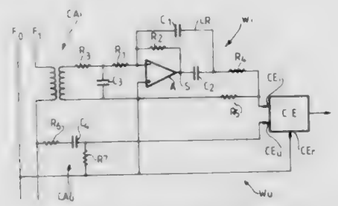
reset means coupled to said sensing means and including a first switching means for periodically applying a reset current to said secondary winding and a second switching means for periodically grounding one side of said secondary winding, said reset means being operative to periodically produce a reset current in said sensing means sufficient to reverse the polarity of the magnetic flux in said core and drive said core to saturation in a reverse flux direction relative to the flux caused by said DC current such that the magnitude of current subsequently induced in said secondary winding accurately corresponds to the magnitude of current flowing in said conduit.

5,053,696
ELECTRO-ELECTRON OSCILLOSCOPE
Steven L. Williamson, Henrietta, and Gerard A. Mourou, Rochester, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.
Continuation of Ser. No. 709,751, Mar. 8, 1985, abandoned. This application Jan. 20, 1988, Ser. No. 147,098
Int. Cl.[5] G01R *19/00, 23/16, 31/00*
U.S. Cl. 324—121 R **18 Claims**



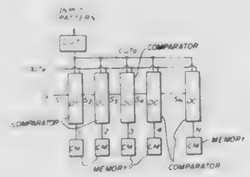
1. A system for displaying a replica of an electrical signal with temporal resolution in the picosecond and subpicosecond range which comprises a source for providing a continuous optical signal, an electro-optic modulator having subpicosecond responsivity for modulating the optical signal from said source in accordance with said electrical signal, and electron-optical means having at least picosecond resolution for translating said modulated optical signal into a visible replica of said electrical signal.

5,053,697
INPUT CIRCUIT FOR AN ELECTRICAL ENERGY METER
Alain Carnel; René Gourc, both of Poitiers, France, and Rudolph Kodras, Vienna, Austria, assignors to Schlumberger Industries, Montrouge, France
Filed Jun. 11, 1990, Ser. No. 535,699
Claims priority, application France, Jun. 16, 1989, 89 07998
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—142 **9 Claims**



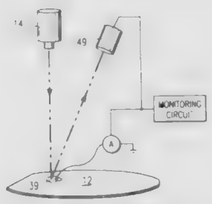
1. An input circuit for a meter unit suitable for measuring electrical energy associated with voltage and current signals, the input circuit comprising: a voltage sensor receiving the voltage signal, a current sensor receiving the current signal, and respective voltage and current paths for connecting said sensors to respective inputs of the meter unit, the current sensor being in the form of a mutual inductance transformer and the current path including a phase shifting active filter based on an amplifier having two inputs and one output, said amplifier being associated firstly with an AC gain adjusting resistance which is connected upstream from the first input of said amplifier, and secondly with a feedback connection including a feedback capacitance, thereby looping the output of the amplifier back onto the first input thereof, wherein the phase shifting active filter further includes a coupling capacitance connected between the output of the amplifier and the feedback connection.

5,053,698
TEST DEVICE AND METHOD FOR TESTING ELECTRONIC DEVICE AND SEMICONDUCTOR DEVICE HAVING THE TEST DEVICE
Koichiro Ueda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 19, 1989, Ser. No. 424,042
Claims priority, application Japan, Oct. 28, 1988, 63-272166
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **14 Claims**



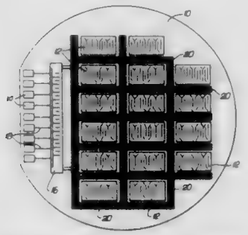
1. A test device for an electronic device, comprising:
pattern generating means for generating at least one input pattern, said electronic device under test supplied with said input pattern and said electronic device under test generating a corresponding output signal;
a plurality of comparators in parallel connected to said electronic device under test and supplied with said output signal therefrom, said plurality of comparators comparing said output signal with an expected output signal at mutually different timings of comparison; and
memory means for storing comparison results supplied from said plurality of comparators,
wherein characteristics of said electronic device under test obtained from comparison results stored in said memory means.

5,053,699
SCANNING ELECTRON MICROSCOPE BASED PARAMETRIC TESTING METHOD AND APPARATUS
Thomas J. Aton, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 25, 1990, Ser. No. 529,062
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **30 Claims**



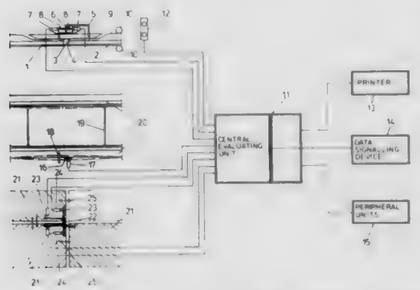
20. Apparatus for testing integrated device having first and second regions separated by a non-conductive region formed on a wafer comprising:
a voltage generating device operable to generate a voltage in the first region of the integrated circuit device;
a secondary electron detection device for determining the voltage on said first region from secondary electrons generated responsive to the voltage;
current detecting circuitry coupled to the second region for detecting the current between the first and second regions.

5,053,700
METHOD FOR WAFER SCALE TESTING OF REDUNDANT INTEGRATED CIRCUIT DIES
William J. Parrish, Santa Barbara, Calif., assignor to Amber Engineering, Inc., Goleta, Calif.
Division of Ser. No. 310,841, Feb. 14, 1989, Pat. No. 4,956,602. This application Jun. 1, 1990, Ser. No. 532,059
Int. Cl.[5] G01R *31/28;* **G06F** *11/26*
U.S. Cl. 324—158 R **3 Claims**



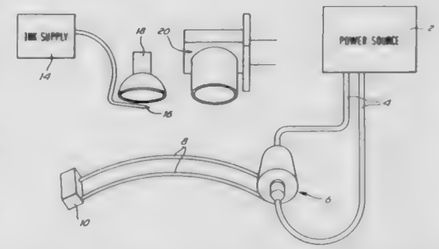
1. A method for testing redundant integrated circuit dies designed to operate at cryogenic temperatures, said dies being formed in a semiconductor wafer, said wafer having a plurality of wafer test pads formed thereon, comprising the steps of:
cooling the wafer to a cryogenic temperature corresponding to the desired operating temperature of said integrated circuit dies;
providing a first plurality of electrical test signals to selected ones of said plurality of wafer test pads on said wafer, wherein said first plurality of electrical test signals are provided from external test equipment;
converting said first plurality of electrical test signals to a second plurality of electrical test signals, said second plurality of electrical test signals including binary encoded die address signals;
providing said second plurality of electrical test signals to a selected integrated circuit die determined by said binary encoded die address signals; and
reading out a plurality of test readout signals from said integrated circuit die output leads in response to said second plurality of electrical test signals applied to said die.

5,053,701
DEVICE FOR MEASURING THE SPACING BETWEEN ALIGNED RAILS
Albert Porkristl, Fohnsdorf, and Johann Steinberger, Weisskirchen, both of Austria, assignors to Voest-Alpine Zeltweg Gesellschaft m.b.H., Linz, Austria
Filed Feb. 7, 1990, Ser. No. 477,061
Claims priority, application Austria, Feb. 15, 1989, 339/89
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.26 **5 Claims**



1. A device for measuring the distance between adjacent surfaces of rails associated with aligned one of expansion junctions and supporting structures wherein the rails are subjected to a multi-axial load, said device comprising:
at least one of a plate member and a damping element connected to said rail and transversely extending relative to a longitudinal direction of the rail, and
at least one measuring sensor having an axis oriented in normal relation to the plate member and damping element,
wherein said rails are supported proximate fixing points of the one of said at least one plate member and damping element in a sliding manner and in a manner that prevents swivelling movement out of a moving direction to be measured.

5,053,702
APPARATUS FOR MAGNETIC PARTICLE INSPECTION WITH AN ADJUSTABLE CABLE FOR MAGNETIZING INSPECTION AREAS OF VARIABLE DIMENSIONS
Richard G. J. Winchester, Newton Hill, United Kingdom, assignor to Amerada Hess Limited, London, United Kingdom
Filed Aug. 7, 1989, Ser. No. 382,633
Claims priority, application United Kingdom, Oct. 26, 1987, 8725040
Int. Cl.[5] G01N *27/84;* **G01R** *33/12*
U.S. Cl. 324—216 **28 Claims**



1. Magnetic particle inspection apparatus comprising a cable unit having a housing, and a length of power cable received within said housing, aid power cable being arranged to extend through openings in said housing to defined at least one cable inspection loop extending externally of said housing, said cable unit further comprising electrical connector means for coupling to an electrical power supply, said electrical connector means being supported by said housing and being electrically coupled to said power cable for applying electrical power to said power cable and to said externally extending cable inspection loop, and further comprising means for selectively adjusting the length of said cable inspection loop externally of said housing whereby the dimensions of an inspection area influenced by said inspection loop when electrical power is applied thereto are variable.

5,053,703
ELECTROMAGNETIC PROBE FOR MEASURING THE THICKNESS OF SKIN LAYERS
Helmut Fischer, Industriestrasse 21, 7032 Sindelfingen 6-Maichingen, Fed. Rep. of Germany
Filed Feb. 21, 1989, Ser. No. 313,603
Int. Cl.[5] G01B *7/10;* **G01R** *33/12*
U.S. Cl. 324—230 **35 Claims**

1. A single-pole, electromagnetic, active measuring probe (**11**) for the measurement of thin layers, comprising
a probe body (**12**) with a longitudinal axis (**13**) having a front region, a hollow space (**17**) coaxial with the longitudinal axis (**13**), an inner wall (**31**), and an end face with an annular surface (**92**),
a half-pot core (**52**) mounted in the probe body (**12**) coaxial

with the longitudinal axis (**13**), and having an end face (**53**), a central core portion (**58**) coaxial with the longitudinal axis (**13**), a winding space (**59**) around the central core portion (**58**) coaxial with the longitudinal axis (**13**), and an outer wall (**56**) around the winding space (**59**),

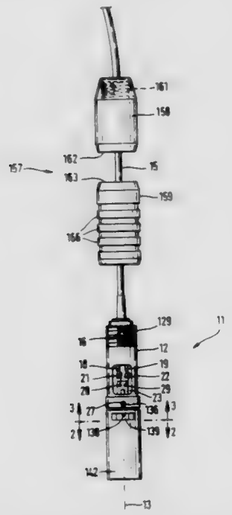
a body of abrasion resistant material (**63**) having a coaxial, convex end face (**64**) that at least partially covers the central core portion (**58**),

a coil device (**61**) coaxial with the longitudinal axis (**13**) in the coaxial winding space (**59**),

a galvanic conductor device (**18, 19, 21, 22, 26, 27, 46, 47**) connected between the coil device (**61**) and one end of the measuring probe (**11**), which conductor device (**18, 19, 21, 22, 26, 27, 46, 47**) is provided in the coaxial hollow space (**17**) of the probe body (**12**),

a cable (**15**), which leads off from said one end of the measuring probe,

said annular surface, **92** being arranged coaxial with the longitudinal axis (**13**) and at a considerable radial distance from the convex end face (**64**) of the body of abrasion resistant material for limiting axial movement of the half-pot core (**52**) in the probe body (**12**),



a spring device (**99**) in the force path between the end face (**53**) of the coaxial half-pot core and the annular surface (**92**) of the end face of the probe body, the end face of the coaxial half-pot core lying axially in front of the annular surface (**92**) of the end face of the probe body in the state of rest,

a straight-guiding device between the end face (**53**) of the coaxial half-pot core and the annular surface (**92**) of the end face of the probe body for guiding movement of the half-pot core (**52**) in the probe body (**12**),

and the improvement wherein:

(a) the coaxial half-pot core (**52**) is axially moveable in the probe body (**12**),

(b) the spring device is in the force path between the coaxial half-pot core (**52**) and the inner wall (**31**) of the probe body (**12**), and

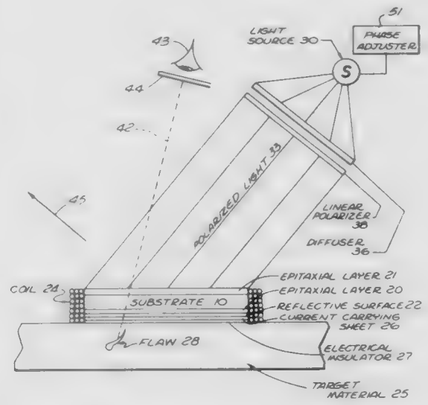
(c) the conductor device comprises a very lightweight conductor framework (**24**), which bears a very lightweight active circuit (**26, 27**) for at least partly forming a measuring signal.

5,053,704

FLOW IMAGER FOR CONDUCTIVE MATERIALS

Gerald L. Fitzpatrick, Redmond, Wash., assignor to PRi Instrumentation, Inc., Torrance, Calif.

Filed Jan. 11, 1990, Ser. No. 463,409
Int. Cl.[5] G01N *27/82, 21/21;* **G02F** *1/09*
U.S. Cl. 324—235 **23 Claims**



1. A device for detecting a flaw, void, discontinuity and the like in a conducting target material, comprising:

a layer of electrical insulator material disposed on top of said target material;

a current carrying sheet disposed on top of said electrical insulator;

a reflective surface disposed on top of said current carrying sheet;

a magneto-optic material having a plurality of magnetic domains disposed on top of said reflective surface, said magneto-optic material comprising:

a first magnetic epitaxial layer, said first magnetic epitaxial layer being optically transparent;

a non-magnetic substrate layer disposed on top of said first magnetic epitaxial layer, said substrate layer being optically transparent;

magnetic field generation means disposed about said magneto-optic material for generating and applying a variable magnetic field to said magneto-optic material;

light generation means disposed near said magneto-optic material;

a first polarizer disposed between said light generation means and said magneto-optic material;

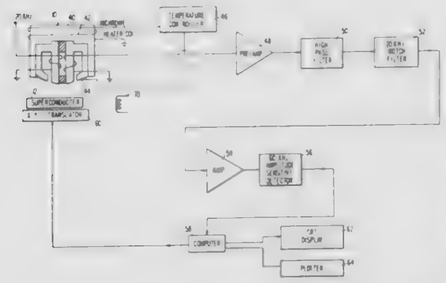
wherein said light generation means transmits a beam of light through said first polarizer and said magneto-optic material, said beam of light being reflected by said reflective surface back through said magneto-optic material, said magneto-optic material rotating a plane of polarization of said beam of light, the magnitude of said rotation being dependent on a realignment of said magnetic domains due to eddy currents in the target material, said beam of light then impinging on a second polarizer, said second polarizer passing said beam of light when said magnitude of said rotation is substantially equal to a predetermined value.

5,053,705

READ/WRITE COAXIAL MAGNETIC HEAD FOR USE WITH APPARATUS FOR MEASURING THE SURFACE OF SUPERCONDUCTORS

Samuel P. Herko, Ossining, N.Y., assignor to North American Philips Corp., New York, N.Y.

Filed Dec. 27, 1989, Ser. No. 457,455
The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.
Int. Cl.[5] G01R *33/12*
U.S. Cl. 324—240 **8 Claims**



1. In a device for mapping the superconductive regions of a sample of superconducting material, said device having means for inducing an alternating magnetic field in at least a portion of the sample, means for measuring odd harmonic components of the induced magnetic field, means for displacing said inducing and measuring means and said sample relative to each other and means for storing the amplitude of the harmonic component as a function of location in the sample of material, the improvement comprising:

wherein the means for inducing an alternating magnetic field comprise a magnetic writing head including a writing gap, said means for measuring the odd harmonic components comprise a magnetic reading head having a reading gap, said magnetic writing head and said magnetic reading head being disposed so that said writing gap of said writing head and said reading gap of said reading head comprise for at least a portion of their length and width the same gap.

5,053,706

COMPACT LOW-DISTORTION SQUID MAGNETOMETER

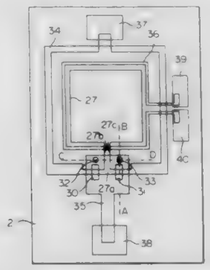
Norio Ohkawa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 29, 1988, Ser. No. 213,153
Claims priority, application Japan, Jul. 6, 1987, 62-167047
Int. Cl.[5] G01R *33/35*
U.S. Cl. 324—248 **5 Claims**

1. A SQUID magnetometer comprising:

a member having three nonparallel planar surfaces, each surface having a substrate disposed thereon; and

three planar SQUIDs, each of which is formed on one of said three substrates and each of which has a main coil formed



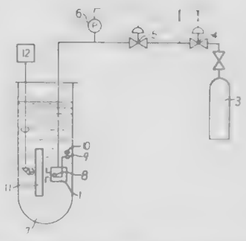
on the substrate which is threaded by the flux of a magnetic field being measured.

5,053,707

APPARATUS FOR POSITIONING A PICK-UP COIL FOR DETECTING MAGNETIC FLUX QUANTUM TRAPPED IN A SUPERCONDUCTOR

Junpei Yuyama, Oribuhaitsu-Nakano 101, 2-14-51, Numame, Isehara-shi, Kanagawa-ken; Hirofumi Minami, Chigasaki; Humio Naruse, Okurayamahaimu 8-1001, 808-2, Mamedocho, Kohoku-ku, Yokohama-shi, Kanagawa-ken, and Eiichi Goto, Fujisawa, all of Japan, assignors to Research Development Corporation of Japan; Junpei Yuyama and Humio Naruse, all of Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 494,987
Claims priority, application Japan, Mar. 17, 1989, 1-65182
Int. Cl.[5] G01R *33/12*
U.S. Cl. 324—262 **4 Claims**



1. An apparatus for positioning a pick-up coil for detecting magnetic flux quantum trapped in a superconductor comprising:

a head member having a planar surface with a bore through said planar surface in which a spout means for spouting a fluid is passed therethrough with said pick-up coil mounted on said spout means and magnetically connected to a SQUID magnetometer;

supporting means for supporting said head member so as to be freely movable along a direction perpendicular to a surface of said superconductor;

fluid supply means for supplying the fluid to the spout means through controller means for controlling the pressure of the flow rate of the fluid along the surface of the superconductor to keep constant a gap between said pick-up coil and the superconductor surface with the gap being small compared to the diameter of the pick-up coil;

cooling means for cooling the fluid supplied to said head; and

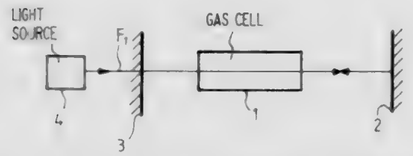
drive means for shifting the relative position of said head to said superconductor along a direction parallel to the surface of the superconductor.

5,053,708

SYSTEM FOR THE OPTICAL PUMPING OF A CELL OF ATOMIC OR MOLECULAR GASES AND ITS APPLICATION TO A MAGNETOMETER

Alain Aspect, Gif Sur Yvette; Marc Himbert, Paris; Martine Doisy, Plougonvelin; Claude Weisbuch, Paris, and Baudouin de Cremoux, Orsay, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jun. 13, 1989, Ser. No. 365,365
Claims priority, application France, Jun. 15, 1988, 88 07995
Int. Cl.[5] G01R *33/26*
U.S. Cl. 324—304 **9 Claims**



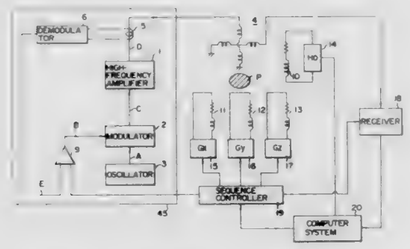
1. A system for the optical pumping of a cell of atomic or molecular gases, comprising:
at least one cell of atomic or molecular gases;
at least one resonant optical cavity containing said at least one cell of atomic or molecular gases;
a semiconductor laser generating at least one optical pumping wave being coupled to said optical cavity;
said optical cavity being formed between one face of said semiconductor laser and one face of a mirror.

5,053,709

METHOD AND SYSTEM FOR CONTROLLING AN RF PULSE IN A MAGNETIC RESONANCE IMAGING APPARATUS

Michio Mitomi, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 30, 1989, Ser. No. 357,955
Claims priority, application Japan, Jun. 1, 1988, 63-132819
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—307 **6 Claims**



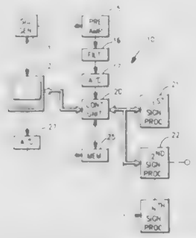
1. A system for controlling an RF (radio frequency) signal used to produce an RF pulse applied to a subject by an RF coil in a magnetic resonance imaging apparatus, the system comprising:
a sequence controller;
generating means for generating the RF signal at a frequency corresponding to a resonance frequency of a nucleus within the subject in a magnetic field;
modulating means for modulating the generated RF signal in accordance with a control signal from the sequence controller to produce the RF pulse with a predetermined frequency spectrum for slicing a portion of the subject;
amplifying means for amplifying the modulated RF signal and for supplying the RF pulse to the RF coil;
demodulating means for demodulating the amplified RF signal to produce a demodulated RF signal; and
controlling means for controlling an amplification factor of the amplifying means in accordance with the demodulated RF signal and the control signal, continuously in real time, to linearly amplify the modulated RF signal.

5,053,710

NMR MULTI-DIMENSIONAL DISCRETE FOURIER TRANSFORM

Fritz H. Schlereth, 1434 Westmoreland Ave., Syracuse, N.Y. 13210

Filed Mar. 16, 1990, Ser. No. 494,602
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **12 Claims**



1. Apparatus for providing a multi-dimensional analysis of a molecular specimen that includes
a signal generator for adding energy to one or more molecular samples to cause the molecules to oscillate periodically within a range of characteristic frequencies and provide a set of time domain waveforms, each of which contains a mixture of said periodic oscillations,
converting means for digitizing the data contained in each waveform in the set,
a first signal processing means having a multiplying means coupled to an adder means for performing a first Discrete Fourier Transform (DFT) operation on each digitized time domain waveform in the set by multiplying point by point each digitized waveform and a digitized reference frequency of a preselected frequency and summing the resultant products to provide a data point for each waveform in the set, said frequency related data points forming a frequency domain waveform,
a second signal processor means containing a multiplying means coupled to an adder means for performing a second Discrete Fourier Transform (DFT) operation on said first frequency domain waveform by multiplying the first frequency waveform and a digitized reference signal of a preselected frequency and summing the resultant products to produce a frequency data point in a second dimension.

5,053,711

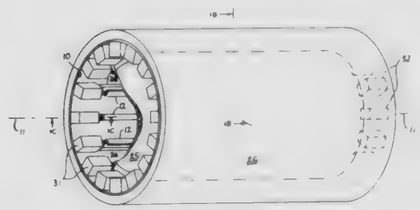
NMR RADIO FREQUENCY COIL WITH IMPROVED AXIAL FIELD HOMOGENEITY

Cecil E. Hayes, Wauwatosa, and Thomas K. Foo, Pewaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jan. 19, 1990, Ser. No. 467,474
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **10 Claims**

1. An RF coil assembly for an NMR instrument which comprises:
a cylindrical shield disposed concentrically about a central axis;
a set of linear conductors which are disposed concentrically about the central axis and radially inward from the shield, each linear conductor being oriented in substantially the same direction as the central axis;

a set of shielded conductors which are disposed around the circumference of the shield and which extend along the length of the shield and connect with the ends of the linear conductors to form one or more loops; and



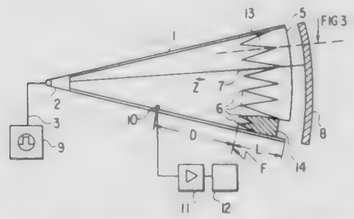
a polyphase RF signal source which has a frequency (f) and in which two phases of said polyphase RF signal source are connected to one of said loops;
wherein each loop has a length which is an integral number of wavelengths (λ) long at the frequency (f).

5,053,712

METHOD FOR COMPARING THE QUALITY OF RF ABSORBERS

Diethard Hansen, Berikon, Switzerland, assignor to Asea Brown Boveri LTD., Baden, Switzerland

Filed Nov. 8, 1989, Ser. No. 433,218
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1988, 3838259
Int. Cl.[5] G01R *27/28;* **G01N** *22/00*
U.S. Cl. 324—627 **10 Claims**



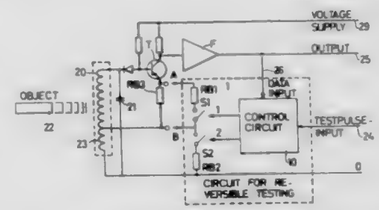
1. A method for comparing the quality of RF absorbers by means of a TEM cell, wherein
the TEM cell expands in the form of a pyramid from a point,
an absorber wall is located at the widened end of the TEM cell and has the form of a spherical cap,
a metal wall is located behind the absorber well,
the TEM cell is provided with a low-reflection line termination,
means for generating TEM pulses and
means for evaluating a scattered wave are provided; comprising the steps of
performing a first calibration measurement wherein the reflection of the absorber wall entirely equipped with reference absorbers is determined;
performing a second calibration measurement wherein the reference absorbers are removed in a test area of the absorber wall such that the reflection of the metal wall lying behind the absorber wall is determined in said test area;
performing a third measurement wherein the test absorbers are arranged in the place of the test area such that the reflection of the absorber wall with the test absorbers arranged in the test area is determined; and
determining the quality of the test absorbers based on a predetermined comparison of results of the first, second and third measurements performed.

5,053,713

TRANSDUCER MONITORING ARRANGEMENT

Bengt Henoch, Backvindeln 90, S-126 57 Hägersten, Sweden

PCT No. PCT/SE89/00210, § 371 Date Dec. 19, 1989, § 102(e) Date Dec. 19, 1989, PCT Pub. No. WO89/10542, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 17, 1989, Ser. No. 438,489
Claims priority, application Sweden, Apr. 22, 1988, 8801512
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—537 **13 Claims**



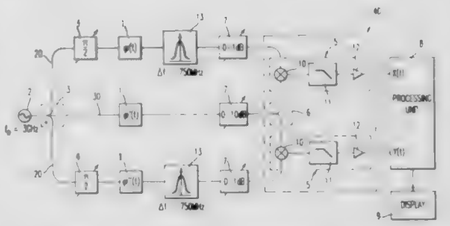
1. An arrangement for monitoring a transducer which produces an output signal that is a signal type selected from signals including analogue and digital output signals corresponding to and representative of a state detected by the transducer wherein means in the transducer includes activatable and deactivatable elements (RB 3, 23; C3, C4; 66, 67) operative to cause said transducer to produce a signal which deviates from the signal representing the actual state sensed by the transducer, regardless of which state is actual sensed; and wherein the arrangement includes a control circuit (10, 10', 10'') which is operative in activating and/or deactivating said elements in a predetermined sequence in response to a given test pulse control signal; a control device (1) is included for providing said test pulse signal, for sensing the output signal of the transducer and for comparing changes in the output signal in dependence on the activation and/or deactivation of said elements (RB 3, 23; C3, C4; 66, 67); and also wherein said control device (1) has means which will detect whether the function of the transducer is correct or not on the basis of said comparison.

5,053,714

MEASURING CIRCUIT OF THE ADDITIVE PHASE NOISE CHARACTERISTIC OF A COMPONENT IN THE VICINITY OF A CARRIER FREQUENCY

Jacques Durand, Villebon S/Yvette, France, assignor to Thomson-CSF, Puteaux, France

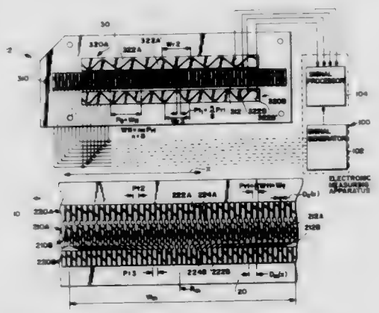
Filed May 21, 1990, Ser. No. 525,737
Claims priority, application France, May 19, 1989, 89 06586
Int. Cl.[5] G01R *27/00*
U.S. Cl. 324—613 **18 Claims**



1. A measuring circuit for measuring the additive phase noise characteristic of a component to be characterized in the vicinity of a carrier frequency, comprising:

a central channel and two side channels, each channel comprising a model of said component to be characterized;
a signal source for generating a source signal at said carrier frequency, said signal source being a common source identically feeding the central channel and the two side channels with said source signal;
means to dephase in quadrature the signals of the side channels relative to that of the central channel;
two phase detecting circuits, each combining an input signal of the central channel with an input signal of a respective one of the side channels to deliver at an output a function signal (X(t); Y(t)) of the instantaneous phase deviations (I'(t)−I(t); I'(t)−− I''(t)) between the input signals; and
means to intercorrelate the respective output signals of these two detecting circuits, the result of this intercorrelation making it possible to determine the characteristic of the characteristic additive phase noise of the component to be characterized, extracted from superadded additive phase noises of other elements of the circuit and from induced outside disturbances.

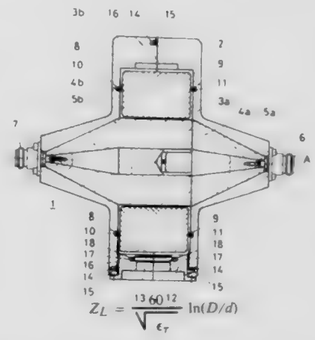
5,053,715
CAPACITANCE-TYPE MEASURING DEVICE FOR ABSOLUTE MEASUREMENT OF POSITIONS
Nils I. Andermo, Kirkland, Wash., assignor to Mitutoyo Corporation, Japan
Continuation of Ser. No. 372,773, Jun. 29, 1989, Pat. No. 5,023,559, which is a continuation-in-part of Ser. No. 200,368, May 31, 1988, Pat. No. 4,879,508, which is a continuation-in-part of Ser. No. 30,346, Mar. 26, 1987, abandoned, and a continuation of Ser. No. 31,079, Mar. 26, 1987, abandoned, and a continuation of Ser. No. 35,859, Apr. 8, 1987, abandoned. This application Dec. 28, 1990, Ser. No. 635,960
Claims priority, application Japan, Apr. 4, 1986, 61-78947; Apr. 4, 1986, 61-78948; Apr. 9, 1986, 61-83205; Apr. 11, 1986, 61-83470; Apr. 15, 1986, 61-87839
Int. Cl.[5] G01R *27/26;* **G08C** *19/16*
U.S. Cl. 324—662 **6 Claims**



1. Capacitive-type measuring apparatus comprising:
first and second support members, said support members being relatively displaceable with respect to each other, and at least one of said support members being displaceable relative to a measurement axis;
electrode array means disposed on said first and second support members in relative alignment with said measurement axis for providing a plurality of discrete signal transmission paths each having a capacitive transfer function which varies in dependence on the relative positions of said first and second support members with respect to each other; said capacitive transfer function having a first component which varies over a first predetermined wavelength W_c according to the position of the associated transmission path relative to a reference position on one of the support members, and a second component which varies according to a predetermined function of the displacement between said first and second support members over a second predetermined wavelength W_m shorter than said first predetermined wavelength;
said electrode array means comprising:
a transmitter electrode array having at least one group of N adjacent transmitter electrodes spaced from each other relative to the measurement axis, wherein N has a value which is an integer multiple of four;
an array of first receiver electrodes disposed on said second support member in alignment with said measurement axis and such that differing portions of said first receiver electrode array are capacitively coupled with said transmitter electrode array in dependence on the relative positions of said supporting members;
said first receiver electrodes being spaced from each other relative to the measurement axis by a pitch P_{r1} defining a scale wavelength W_f;
said at least one transmitter electrode group defining a transmitting wavelength W_t, and
the transmitter electrodes in each group being positioned within the group so as to respectively occupy predetermined group positions which span a distance greater than one wavelength W_f, and such that each group position corresponds to the relative position of a different one of a group of relative fine wavelength segment positions obtained by dividing the transmitting wavelength W_t into intervals corresponding to the fine wavelength, and dividing each interval into N equal segments; and
detector electrode means for producing first and second outputs in response to excitation signals applied to said at transmitter electrode array, said detector electrode outputs individually varying in accordance with said first transfer function component and producing when combined a signal which varies in accordance with said second transfer function component;
excitation signal generating means for selectively generating groups of N excitation signals for application to the respective N electrodes of said at least one group of transmitter electrodes in a selected one of first and second spatial orders;
said first spatial order being defined by a first order of connection according to the sequence of positions of the transmitter electrodes relative to each other in said at least one transmitter electrode group, and said second spatial order being defined by a second order of connection according to the sequence of relative fine wavelength segment positions in which the respective transmitter electrode group positions are arranged;
each of said groups of excitation signals comprising two sets of excitation signals which are phase inverted with respect to each other and in spatial phase quadrature when applied to said transmitter electrodes, and wherein the relative spatial phase positions occupied by the respective sets of excitation signals in each group of excitation signals successively incrementally change from one group to the next;
first control means for controlling said excitation signal generating means to selectively apply a pair of first and second ones of said groups of excitation signals to said at least one group of transmitter electrodes;
output signal selecting means for selecting a signal corresponding to said first and second detector electrode outputs or to said combined detector electrode output signal as an electrode array means output signal, and thereby producing successive first and second electrode array means output signals in response to said pair of excitation signal groups;
means for demodulating said first and second output signals to produce first and second demodulation signals, and for performing a dual ramp integration of said first and second demodulation signals wherein said first demodulation signal is integrated for a predetermined time interval by integrator means, and said second demodulation signal is integrated by said integration means until the integrator output returns to a reference level, said first and second ones of said groups of excitation signals being selected such that said integration of said second demodulation signal causes integration of the integrator output in the reverse direction from said integration of said first demodulation signal output;
means for measuring the integration time of said second demodulated signal integration and for producing an output when the integration time exceeds a predetermined limit value;
second control means responsive to said output of said integration time measuring means for resetting said demodulation and dual ramp integration means, for repetitively selectively applying a different further pair of first and second ones of said groups of excitation signals to said at least one group of transmitter electrodes, and for causing said demodulation and dual ramp integration means to integrate the resultant first and second demodulation signals until there is no output from said integration time measuring means;
means for deriving a scale position value from the integration time of the second demodulation signal integration which does not produce an output from said integration time measuring means;
master control means for controlling said excitation signal generating means and said output signal selecting means so as to perform a measurement cycle for sequentially producing:
a first scale position value from a second demodulation signal produced from a second electrode array means output signal corresponding to said first and second detector electrode outputs produced in response to a group of excitation signals generated in said first spatial order;
a second scale position value from a second demodulation signal produced from a second electrode array means output signal corresponding to said combined detector electrode output signal produced in response to a group of excitation signals generated in said first spatial order; and
a third scale position value from a second demodulation signal produced from a second electrode array means output signal corresponding to said first and second detector electrode outputs produced in response to a group of excitation signals generated in said second spatial order; and
means for combining said first, second and third scale position values to produce an absolute position measurement.

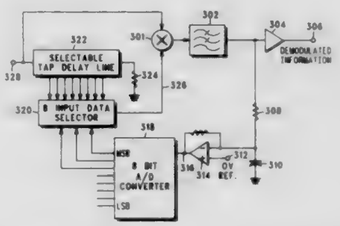
5,053,716
DEVICE FOR CALIBRATING AND TESTING RING-SHAPED CURRENT CLAMPS
Diethard Hansen, Berikon, and Dieter Köster, Turgi, both of Switzerland, assignors to ASEA Brown Boveri Ltd., Baden, Switzerland
Filed Oct. 26, 1989, Ser. No. 426,666
Claims priority, application Switzerland, Nov. 2, 1988, 4077/88
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—726 **8 Claims**

1. A calibration housing for calibrating ring-shaped current clamps, comprising:
(a) an outer conductor enclosing the current clamp; and
(b) an inner conductor passing through the current clamp; wherein:
(c) the outer conductor encloses the current clamp on all sides and is adapted to the shape of the current clamp;
(d) the calibration housing with the current clamp accomodated therein exhibits an impedance Z_L which is predetermined by a measuring system;
(e) an insulator which centers the inner conductor with respect to the current clamp is arranged between the inner conductor and the current clamp; and
(f) an inside diameter d, an outside diameter D and a dielectric constant ϵ_r of the insulator satisfy the following relation:



wherein Z_L designates the given impedance of the system.

5,053,717
FSK DEMODULATOR
Gary D. Schulz, Mount Prospect, and Dennis E. Burke, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 417,375, Oct. 5, 1989, Pat. No. 4,987,374. This application Nov. 13, 1989, Ser. No. 434,746
Int. Cl.[5] H03D *3/00, 3/06*
U.S. Cl. 329—300 **10 Claims**



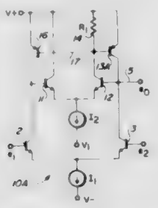
1. A demodulator for an angle modulated signal comprising:
means for splitting said modulated signal into first and second signals;
means for selectably delaying said first signal to form a signal in quadrature with said second signal;
means for generating a demodulated output signal from said first and second signals;
means for generating an error signal representative of the difference between said output signal and a reference signal; and
means for controlling said delay means in response to said error signal so that said error signal is minimized.

5,053,718
FEEDBACK CONTROL REDUCING SIGNAL DISTORTION PRODUCED BY DIFFERENTIAL AMPLIFIER STAGE
Jerald G. Graeme, and Steven D. Millaway, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.
Filed Jul. 3, 1990, Ser. No. 547,997
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—260 **20 Claims**

14. A method of operating a differential amplifier circuit to achieve low distortion, comprising the steps of:

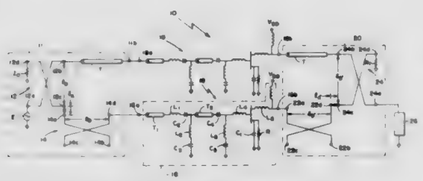
(a) applying a differential input signal between control electrodes of first and second transistors of a primary differential circuit stage;

(b) applying a differential output signal produced by the primary differential circuit stage between control electrodes of third and fourth transistors of a secondary differential circuit stage;



(c) applying an output signal produced by the secondary differential circuit stage to a control electrode of a fifth transistor having a first current-carrying electrode coupled to a supply voltage conductor and a second current-carrying electrode coupled to a control electrode of one of the third and fourth transistors to maintain substantially equal voltages on second current-carrying electrodes of the first and second transistors.

5,053,719
WIDE-BAND PUSH-PULL AMPLIFIER
Ming-Chi Tsai, Marlboro, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Aug. 13, 1990, Ser. No. 566,747
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—269 **6 Claims**



1. A radio frequency amplifier, comprising:

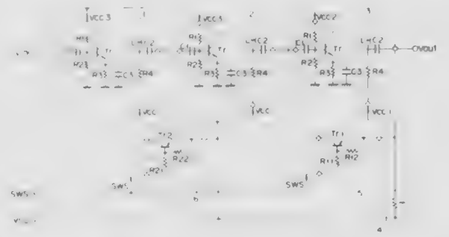
a first pair of quadrature couplers arranged to provide, in response to an input signal, first and second radio frequency signals having equal amplitudes with said second signal having a 180° differential phase relative to the phase of the first signal;

first amplifier means fed by said first signal for providing at an output thereof an amplified first signal having frequency components corresponding to a fundamental frequency of the input signal and second order products of the input signal;

second amplifier means fed by said second signal for providing at an output thereof an amplified second signal having frequency components corresponding to second order products and to the fundamental frequency of the input signal with said fundamental frequency components having a phase difference of 180° relative to the fundamental components of the first signal; and

a second pair of quadrature couplers arranged to combine said first and second amplified signals with a relative phase difference of 180° to provide a combined output signal having a frequency corresponding to said fundamental frequency and with said second order products of said first and second signals substantially canceling.

5,053,720
POWER AMPLIFYING CIRCUIT
Toru Mizumoto, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 18, 1990, Ser. No. 553,628
Claims priority, application Japan, Jul. 19, 1989, 1-184810
Int. Cl.[5] H03F *3/04*
U.S. Cl. 330—296 **9 Claims**



1. A power amplifying circuit comprising:

multi-stage amplifiers including a last stage amplifier, said amplifiers being connected in cascade;

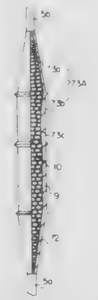
first switching means connected to at least the last stage amplifier, for controlling a bias voltage thereof;

second switching means connected to the amplifiers other than said last stage amplifier, for controlling bias voltages thereof;

voltage applying means for applying a first power source voltage to the amplifiers other than said last stage amplifier; and

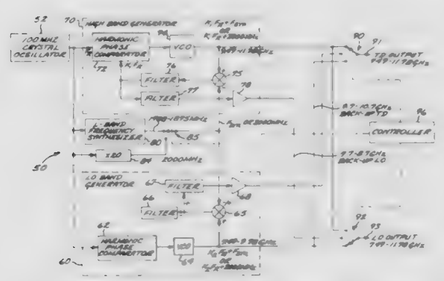
output power adjusting means connected to said last stage amplifier and said first switching means, for controlling a second power source voltage applied to said last stage amplifier and said first switching means.

5,053,721
HIGH FIDELITY REGENERATIVE AMPLIFIER WITH PHASE CORRECTION CIRCUIT
Saburoh Ohkuma, 2-20-8, Nan-yodai Hachioji-shi, Tokyo, Japan
Filed Dec. 14, 1989, Ser. No. 450,741
Claims priority, application Japan, Oct. 18, 1988, 63-262143
Int. Cl.[5] H03F *3/91*
U.S. Cl. 330—302 **1 Claim**



1. A high fidelity regenerative amplifier circuit comprising an amplifier for amplifying sound with high fidelity, a phase correction circuit connected to an input of said amplifier to correct a phase characteristic of said amplifier over a wide frequency range, and an equalizer connected to an input of said phase correction circuit and including medium frequency and high frequency correction circuits having a characteristic such that a phase of an input aural signal advances as a frequency of the aural signal is high in a higher frequency range than the vicinity of 1 KHz, a circuit constant which advances a phase of the frequency from about 1 KHz to 5 KHz relatively in order to attain far and near feeling, and a resistor and a condenser connected in parallel or series, and a low frequency correction circuit having a characteristic such that a phase of the input aural signal is delayed as a frequency of the aural signal is low in a lower frequency range than about 1 KHz, a circuit constant having a reverse characteristic to a peak of a resonance frequency of the sound field to be regenerated, and a resistor and a condenser connected in parallel or series, said medium, high and low frequency correction circuits being connected to one another.

5,053,722
FAULT-TOLERANT, WIDEBAND RADAR MICROWAVE SIGNAL GENERATOR
Timothy E. Kuo, Torrance; Paula I. Tanaka, Lawndale, and Stephen D. Taylor, Agoura, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 20, 1990, Ser. No. 633,648
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—2 **16 Claims**



1. A wide-band microwave signal generator for active radars, characterized in that separate transmit drive (TD) and receiver local oscillator (LO) signals are separately generated from a single reference oscillator, comprising:

a stable reference oscillator for generating a reference signal at a reference frequency;

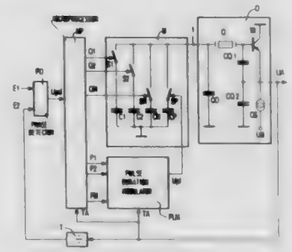
a low band frequency generator responsive to the reference signal for synthesizing a first low band output signal which is programmable over a first low frequency band comprising a wide frequency band of operation;

a high band frequency generator responsive to the reference signal for synthesizing a first high band output signal which is programmable over a first relatively high frequency band comprising said wide frequency band;

TD selection means for selecting said first low band generator output signal or said first high band output signal as the radar TD signal; and

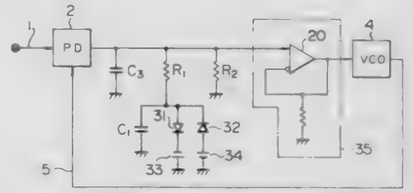
LO selection means for selecting said first low band generator output signal or said first high band generator output signal as said receiver LO signal, such that said first low band generator output signal is selected as said LO signal when said first high band generator output signal is selected as the TD signal, and said first high band generator output signal is selected as said LO signal when said first low band generator output signal is selected as the TD signal.

5,053,723
PHASE-LOCKED LOOP WITH PULSE-DURATION MODULATION FINE FREQUENCY CONTROL
Hans-Robert Schemmel, Nuremberg, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.
Filed Jun. 20, 1990, Ser. No. 541,000
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920008
Int. Cl.[5] H03L *7/099, 7/18*
U.S. Cl. 331—14 **9 Claims**



1. A phase-locked loop comprising a phase detector having an input terminal and a voltage-controlled oscillator controlled by means of a switching network, characterized in that at least one switching element (CP) of the switching network (M) is driven by a pulse duration modulator (PLM), and in that signals derived from an output of said phase detector are coupled to said switching network and said pulse duration modulator.

5,053,724
HIGH PRECISION PLL WITH CIRCUIT FOR PREVENTING ERRONEOUS CAPTURE
Masanori Ogino; Takeo Yamada, and Miyuki Ikeda, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 29, 1990, Ser. No. 530,183
Claims priority, application Japan, May 29, 1989, 1-132602
Int. Cl.[5] H03L *7/093*
U.S. Cl. 331—14 **11 Claims**



1. A high precision PLL (phase-locked loop) circuit arrangement comprising:

phase detecting means receiving an input synchronizing signal and an oscillator signal for detecting a phase difference between the input synchronizing signal and the oscillator signal and for outputting a phase difference signal representing the detected phase difference;

loop filter means receiving the phase difference signal for delaying the phase difference signal and for outputting the delayed phase difference signal;

voltage-controlled oscillator means receiving the delayed phase difference signal for outputting the oscillator signal which is received by the phase detecting means, the oscillator signal having a frequency which varies in accordance with the delayed phase difference signal; and

non-linear circuit means connected to one of the phase detecting means and the loop filter means for preventing an erroneous capture phenomenon of the PLL circuit ar-

rangement due to a ω_H/k beat in the delayed phase difference signal, wherein ω_H is an angular frequency of the input synchronizing signal and k is equal to an odd number higher than 3.

5,053,725

CIRCUIT CONFIGURATION FOR THE AUTOMATIC TUNING OF A MATCHING NETWORK

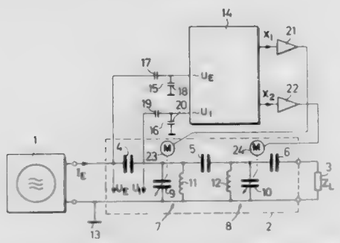
Roland Gesche, Seligenstadt, and Stefan Locher, Alzenau, both of Fed. Rep. of Germany, assignors to Leybold AG, Hanau, Fed. Rep. of Germany

Filed Sep. 28, 1989, Ser. No. 413,777

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1989, 3923662

Int. Cl.[5] H03H *11/30*

U.S. Cl. 333—17.3 **21 Claims**



1. A circuit configuration for the automatic tuning of a matching network (**2**), the matching network (**2**) being located between an electrical energy source (**1**) and a load (**3**), the matching network (**2**) further having adjustable reactances (**9**, **10**), the circuit configuration comprising:

a first measurement point in the matching network (**2**);

a second measurement point in the matching network (**2**);

means for tapping a first electrical signal (U_E) at said first measurement point;

means for tapping a second electrical signal (U_1) at said second measurement point;

means for supplying said first electrical signal (U_E) and said second electrical signal (U_1) to a control and calculating unit (**14**);

electrical means (**4**) for creating a third electrical signal (I), said electrical means (**4**) being located between said first measurement point and said second measurement point;

said third electrical signal (I) being calculated in said control and calculating unit (**14**) from said first electrical signal (U_E) and said second electrical signal (U_1);

means in said control and calculating unit for forming the absolute value of said first electrical signal ($|U_E|$), the absolute value of said second electrical signal ($|U_1|$) and the absolute value of said third electrical signal ($|I|$);

further means in said control and calculating unit for creating at least one impedance value (Z_E, Z_1) from the absolute value of said first electrical signal ($|U_E|$), the absolute value of said second electrical signal ($|U_1|$) and the absolute value of said third electrical signal ($|I|$); and

means for comparison of said at least one impedance value with a predetermined ideal value for said at least one impedance value, the result of said comparison means for being used to set the reactances of the matching network (**2**).

5,053,726

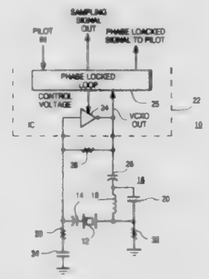
CIRCUIT FOR PREVENTING VCXO MODE JUMPING

Todd J. Christopher, and Robert E. Morris, Jr., both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Apr. 10, 1990, Ser. No. 505,202

Int. Cl.[5] H03B *5/32;* **H03L** *7/099*

U.S. Cl. 331—34 **8 Claims**



1. A mechanical resonator oscillator circuit having mode jumping prevention comprising:

an amplification means,

a mechanical resonator means coupled to the amplification means in an oscillatory manner for generating an oscillatory signal at a first frequency as determined by the mechanical resonator, the mechanical resonator having a plurality of possible oscillatory frequencies,

a resonant circuit means coupled to said mechanical resonator means and said amplification means for preventing oscillation of the oscillator circuit at an undesired one of said plurality of oscillatory frequencies, the resonant circuit means being a parallel resonant circuit coupled in series with the mechanical resonator means, and

a reactance means for resonating with the resonant circuit means at the first frequency.

5,053,727

CIRCUIT COUPLING AN OSCILLATOR TO AN ELECTRICAL LOAD

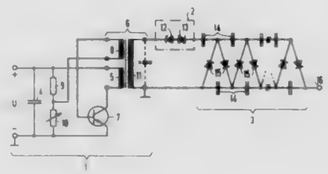
Wolfango Jann, Buckenhof, and Kurt Rottner, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 23, 1990, Ser. No. 512,469

Claims priority, application European Pat. Off., May 3, 1989, 89108061.6

Int. Cl.[5] H03K *3/16;* **H02M** *3/338;* **H03L** *3/00*

U.S. Cl. 331—62 **5 Claims**



1. A circuit comprising:

an oscillator;

an electrical load; and

at least one electronic voltage-dependent coupling element coupling said load to said oscillator that exhibits relatively high impedance at relatively low voltages and relatively low impedance at relatively higher voltages, said voltage-dependent coupling element comprising two Zener diodes connected back-to-back and in series such that for each polarity of voltage of said oscillator said voltage-dependent coupling element prevents current flow at voltages below breakdown voltages of said Zener diodes.

5,053,728

PHASE LOCKED LOOP FREQUENCY MODULATOR USING DATA MODULATED DIGITAL SYNTHESIZER AS REFERENCE

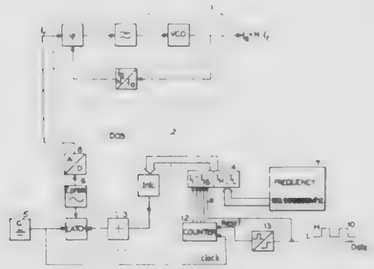
Thomas Bögl, Königsbrunn, Fed. Rep. of Germany, assignor to Rohde & Schwarz GmbH & Co., KG, Fed. Rep. of Germany

Filed Oct. 29, 1990, Ser. No. 604,253

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1989, 3939259

Int. Cl.[5] H04L *27/12;* **H03L** *7/06*

U.S. Cl. 332—100 **2 Claims**



1. In a frequency-modulated frequency generator of the type in which a phase-controlled oscillator is operated in response to an input frequency signal to alternately produce first and second frequency signals respectively above and below a reference frequency, a digital synthesizer including a memory storing interpolation nodes of a full sine wave period, cyclically operating adder means connected to the memory for incrementally reading a full sine wave period from the memory during one adding cycle, and a digital-to-analog converter connected to the memory for producing the reference frequency signal, the improvement therein comprising:

modulating means connected to the adder means for modulating the operation of the digital synthesizer in response to an input data signal having first and second levels respectively representing the first and second frequency signals, said modulating means including

an increment register storing first data representing the first frequency, second data representing the second frequency and increment data representing individual frequencies adjacent the first and second frequencies;

frequency setting means connected to said increment register for reading the first and second data into the adder means to set the frequency of the input frequency signal; and

overshoot correction means connected to receive said input frequency signal and connected to said register means and operable in response to each half cycle of the input data signal to read the increment data into said adder means as overshoot correction data ending with the respective first and second data.

5,053,729

PULSE-WIDTH MODULATOR

Khosro M. Rabii, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 31, 1990, Ser. No. 636,650

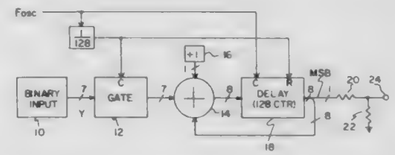
Int. Cl.[5] H03K *7/08*

U.S. Cl. 332—109 **10 Claims**

1. A method of converting a binary number of x bits into a pulse-width modulated analog signal comprising:

incrementing said binary number by one bit;

applying the incremented number to a recursive filter having a period of (2^x+1); and



recovering the most significant bit in the output of said recursive filter.

5,053,730

TERMINAL STRUCTURE FOR ELECTRONIC COMPONENTS

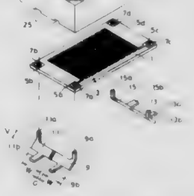
Kazuo Kameya, Tokyo, Japan, assignor to Elmec Corporation, Kawasaki, Japan

Filed Jul. 20, 1990, Ser. No. 554,888

Claims priority, application Japan, Jul. 21, 1989, 1-189572

Int. Cl.[5] H03H *7/38;* **H01P** *1/18*

U.S. Cl. 333—33 **12 Claims**



1. A terminal structure for electronic components, comprising:

a base plate of an electronic component including an impedance circuit and a ground circuit;

a signal terminal piece consisting of an electroconductive planar member connected to said impedance circuit at its one end and projecting from said base plate;

a ground terminal piece consisting of an electroconductive planar member connected to said ground circuit at its one end and projecting from said base plate in a common plane as said signal terminal piece so as to define a gap G therebetween;

wherein said signal terminal piece and said ground terminal piece are fabricated from a lead frame;

external connecting pieces integrally projecting from said signal terminal piece and said ground terminal piece, respectively, and each having a comparatively narrower width; and

a solid dielectric body interposed at least between said signal terminal piece and said ground terminal piece;

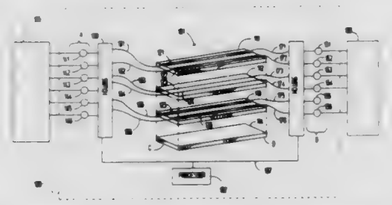
said gap being in a range between 0.1 mm and 0.6 mm.

5,053,731

SOFTWARE RECONFIGURABLE TRANSMISSION LINE APPARATUS

John L. Algiere, Loveland, and Tom T. Sesnic, Ft. Collins, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 12, 1990, Ser. No. 582,264
Int. Cl.[5] H03H *7/48*
U.S. Cl. 333—101 **25 Claims**



1. A transmission line apparatus switchably connectable to a plurality of terminals comprising:

printed circuit board means having a plurality of layers each of said layers capable of having at least one conductor deposited thereon;

a plurality of signal conductors, deposited on a first one of said layers of said printed circuit board, oriented substantially parallel to each other, extending across said first layer of said printed circuit board in a first direction and each said signal conductor having a first and second end thereto;

at least one ground plane conductor deposited on a second one of said layers of said printed circuit board, oriented substantially parallel to said plurality of signal conductors, extending across said second layer of said printed circuit board in said first direction and located directly below said plurality of signal conductors so as to be coextensive therewith, said ground plane conductor having first and second ends thereto;

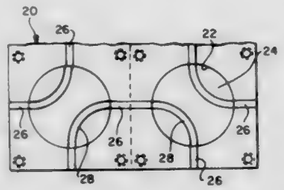
means connected to said plurality of signal conductors and said ground plane conductor for switchably connecting said first and second ends of said plurality of signal conductors and said ground plane conductor to said terminals.

5,053,732

WAVEGUIDE SWITCHING SYSTEM COMPRISING A SINGLE STATOR AND A PLURALITY OF ROTATABLE WAVEGUIDE SWITCHES THEREIN

Manfred C. Elgass, Kings Park, N.Y., and Vincent A. Colucci, New Bern, N.C., assignors to Logus Manufacturing Corp., Deer Park, N.Y.

Filed Jul. 27, 1989, Ser. No. 386,993
Int. Cl.[5] H01P *1/10*
U.S. Cl. 333—106 **7 Claims**



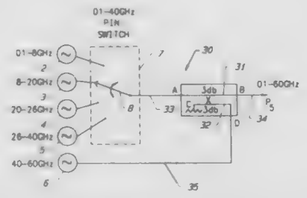
1. A multiple multipole microwave switch assembly comprising a single stator having a plurality of bores formed therein, said bores being interconnected by a network of microwave signal inlet/outlet ports, a respective switch rotor located in each of said bores, each of said respective bores and said rotors constituting an individual switch within said assembly, having at least one microwave passage therein, electrical motor means coupled to each of said switch rotors for independently rotating said switch rotors between spaced first and second positions within the respective bores to selectively align said at least one microwave passage with a selected inlet/outlet port to effect the switching of microwave signals within said network, said inlet/outlet ports and the ends of each of said at least one passage in the rotor being disposed relative to the axis of said cylindrical bore so that the ends of said passage align with said inlet/outlet ports.

5,053,733

METHOD AND APPARATUS FOR MULTIPLEXING BROAD BAND HIGH FREQUENCY SIGNALS FOR USE IN NETWORK ANALYZERS

William W. Oldfield, Redwood City, Calif., assignor to Wiltron Company, Morgan Hill, Calif.

Continuation-in-part of Ser. No. 294,882, Jan. 9, 1989, and a continuation-in-part of Ser. No. 378,012, Jul. 11, 1989. This application Oct. 10, 1989, Ser. No. 419,340
Int. Cl.[5] H03H *7/46*
U.S. Cl. 333—110 **32 Claims**



1. An apparatus for multiplexing first and second signals having a first and second range of frequencies, respectively, said first range of frequencies comprising multiple decades of frequencies, comprising:

a microwave coupler, said coupler having first arm and a second arm, said first arm and said second arm each having an input and an output said first arm being operative over a frequency band which substantially extends over said first range of frequencies;

first means for selectively applying said first signals having said first range of frequencies to said input of said first arm;

second means for selectively applying said second signals having said second range of frequencies to said input of said second arm; and

means in said microwave coupler for coupling said first and said second arm in such a manner so as to provide on said output of said first arm an output signal comprising said first range of frequencies when said first range of frequencies is applied to said first arm and said second range of frequencies when said second range of frequencies is applied to said second arm.

5,053,734

MAGNETOSTATIC WAVE DEVICE

Yasuhide Murakami; Shigeru Takeda, both of Kumagaya; Kohei Ito, Fukaya; Yasuaki Kinoshita, Hachioji, and Sadami Kubota, Tottori, all of Japan, assignors to Hitachi Metals, Ltd.; Hitachi, Ltd. and Nippon Ferrite, Ltd., all of Tokyo, Japan

Filed Mar. 22, 1990, Ser. No. 497,518
Claims priority, application Japan, Mar. 24, 1989, 1-073044
Int. Cl.[5] H01P *7/00, 1/218*
U.S. Cl. 333—219.2 **13 Claims**

1. A magnetostatic wave device comprising:

a dielectric substrate; and

a magnetostatic wave resonator;

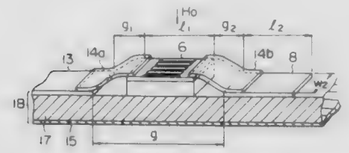
said magnetostatic wave resonator comprising:

a non-magnetic substrate mounted on said dielectric substrate;

a magnetic thin film formed on said non-magnetic substrate;

at least one electrode finger formed on said magnetic thin film;

first and second pad electrodes formed at opposite ends of said at least one electrode finger on said magnetic thin film and used for external connection of said magnetostatic wave resonator;



said magnetostatic wave resonator being responsive to a bias magnetic field to excite, propagate and resonate a magnetostatic wave; and

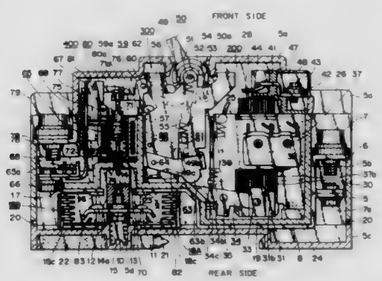
a matching stub formed of a conductive member and having first and second terminals, said first terminal of said matching stub connected to said first pad electrode to adjust impedance matching of said magnetostatic device and said second terminal of said matching stub set to be open.

5,053,735

REMOTELY-OPERATED CIRCUIT BREAKER

Hirotoshi Ohishi; Tatsunori Ikeda, and Manabu Sogabe, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1989, Ser. No. 418,192
Claims priority, application Japan, Oct. 6, 1988, 63-131089[U]; Oct. 6, 1988, 63-252310; Oct. 6, 1988, 63-252311; Oct. 6, 1988, 63-252312; Oct. 6, 1988, 63-252313
Int. Cl.[5] H01H *83/00*
U.S. Cl. 335—14 **10 Claims**



1. A remotely operated circuit breaker comprising:

electrical contacts;

a control lever for controlling said electrical contacts to open and close;

an electromagnetic driving unit responsive to a remote control signal for selectably driving said control lever to open and close said electrical contacts;

a handle having a first position and a second position;

a control mechanism for holding said electrical contacts open when said handle is positioned in said first position, for allowing said control lever to operate under control of said electromagnetic driving unit when said handle is positioned in said second position, and for holding said electrical contacts open when an excessive current flows through said electrical contacts when said handle is positioned in said second position; and

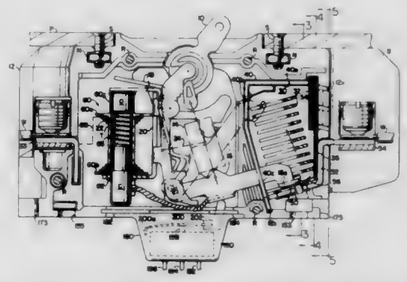
a forcible overcurrent protecting unit for actuating said control mechanism to latch said control lever such that said control lever is not controlled by said electromagnetic driving unit when said excessive current flows through said electrical contacts.

5,053,736

MOLDED SPLIT CASE ELECTROMAGNETIC CIRCUIT BREAKER ASSEMBLY

Michael A. Fasano, Watertown, Conn., assignor to Carlingswitch, Inc., Plainville, Conn.

Division of Ser. No. 240,269, Sep. 2, 1988, abandoned. This application Jul. 16, 1990, Ser. No. 553,870
Int. Cl.[5] H01H *7/02*
U.S. Cl. 335—62 **14 Claims**



1. A circuit breaker comprising a housing, a frame in the housing, fixed and movable contacts in the housing, electromagnetic means electrically coupled to said fixed and movable contacts, said electromagnetic means including armature means movably mounted on said frame, a pole piece supported in fixed relationship to said frame and having one end adapted to be engaged by said armature and an opposite end spaced from said one end, a plunger tube for so supporting said pole piece, a plunger movably mounted in said tube, a primary bobbin surrounding said tube, said primary bobbin having flanges defining an annular space for housing a primary coil for magnetically moving said plunger toward said pole piece one end in response to an over current/over voltage condition in the coil winding, an auxiliary annular space defined by said primary bobbin around said pole piece, and an auxiliary bobbin having flanges adjacent its opposite ends, said auxiliary bobbin being selectively received on said primary bobbin to occupy said auxiliary annular space, and an auxiliary coil provided on said auxiliary bobbin, between said flanges thereof, said auxiliary bobbin having one flange located adjacent a flange on said primary bobbin, and said adjacent primary and auxiliary bobbin flanges oriented in substantially the same plane as that of said pole piece opposite end.

5,053,737

LOW TENSION CONNECTING STRUCTURE FOR AN IGNITION COIL, IN PARTICULAR FOR AN INTERNAL COMBUSTION ENGINE OF AN AUTOMOTIVE VEHICLE

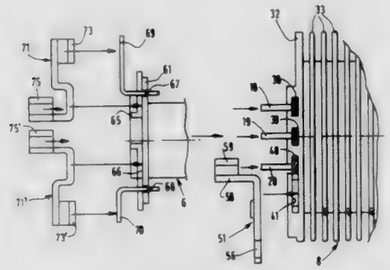
Dominique Vialaneix, Issoire, France, assignor to Valeo Electronique, Voisins-Le-Bretonneux, France

Filed Nov. 30, 1990, Ser. No. 619,982
Claims priority, application France, Dec. 6, 1989, 89 16102
Int. Cl.[5] H01F *27/04, 15/10*
U.S. Cl. 336—90 **7 Claims**

1. An ignition coil for an internal combustion engine, comprising a housing, a primary winding spool in the housing, a primary winding on the primary winding spool, a magnetic assembly comprising a magnetic core located within the pri-

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mary winding spool and a magnetic flux return circuit, low tension electrical supply means, and holding means mounting the said low tension supply means on the said magnetic assembly, wherein the low tension supply means include a connector and a plurality of connecting strips molded onto the said connector and defining ends which are external to the connector, a secondary winding on a spool having a flange with a plurality



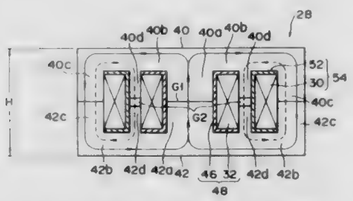
of first slots formed therein, and the said holding means being defined by the said ends of the connecting strips in said first slots, primary inserts in the primary winding spool and a secondary insert in the secondary winding spool, each primary insert having a first jaw and the secondary insert having a second jaw, said ends of two said connecting strips being introduced respectively into the first jaws and that a of a third said connecting strip being introduced into the second jaw.

5,053,738

MAGNETIC LEAKAGE TRANSFORMER

Fumihiko Sato, Shizuoka, and Snigesada Suzuki, Fuji, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1990, Ser. No. 617,190
Claims priority, application Japan, Nov. 27, 1989, 1-307331
Int. Cl.[5] H01F *21/08, 27/24*
U.S. Cl. 336—165 **7 Claims**



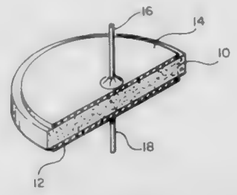
1. A magnetic leakage transformer comprising:
a core unit including a pair of cores each having a central leg, a pair of coupling arms extending from the central leg to both sides thereof, side legs extending in the same direction as the central leg at positions isolated from the central leg at the pair of coupling arms, and magnetic flux leakage legs extending in the same direction as the side legs and the central leg between the side legs and the central leg at the pair of coupling arms in a state isolated therefrom,
the pair of cores being disposed in a state that the central legs, two pairs of side legs and two pairs of magnetic flux leakage legs are opposed to each other at their extending ends, and the extending ends of the paired side legs of one core are abutted against those of the paired side legs of the other core, and
the paired cores are associated with each other so that magnetic gaps are generated between the extending end of the central leg of the one core and that of the other core and between the extending ends of the paired magnetic flux leakage legs of one core and those of the other core;
a first winding unit inserted into a pair of inner passages created between the pair of central legs of the pair of cores of the core unit and two pairs of magnetic flux leakage legs disposed at both sides of the central legs so that the first winding unit surrounds the pair of central legs; and
a second winding unit inserted into a pair of outer passages created between the two pairs of the magnetic flux leakage legs of the core unit and the two pairs of side legs disposed outside the magnetic flux leakage legs so that the second winding unit surrounds the first winding unit.

5,053,739

VERY HIGH ENERGY ABSORBING VARISTOR

Kenneth C. Radford, North Huntingdon, Pa.; Robert G. Johnson, and Andrew S. Sweetana, Jr., both of Bloomington, Ind., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Dec. 15, 1989, Ser. No. 452,261
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—21 **5 Claims**



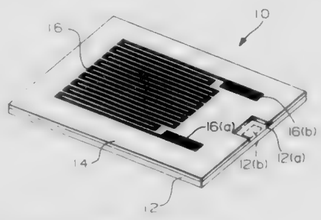
1. A varistor utilizing a disc, said disc formed by sintering a mixture in accordance with a predetermined sintering cycle, said mixture comprising primarily Zno in combination with selected additives, said additives including a selected concentration of Bi_2O_3 in the range of 1.0 M/O, a selected concentration of Sb_2O_3 in the range of 1.0 M/O, a selected concentration of SiO_2 in the range of 0.25 M/O, a selected concentration of MgO in the range of 0.5 M/O, and a selected concentration of CaO in the range of 0.05 M/O, with the remainder comprising primarily ZnO.

5,053,740

PORCELAIN ENAMEL TEMPERATURE SENSOR FOR HEATING OVENS

John Schultz, and Thomas R. Payne, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 11, 1990, Ser. No. 463,596
Int. Cl.[5] H01C *3/04*
U.S. Cl. 338—25 **15 Claims**



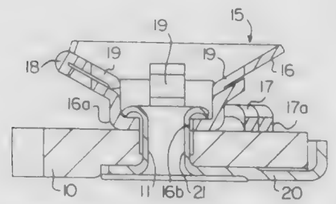
1. A temperature sensor comprising:
a metal substrate at least a portion of which is coated with a layer of porcelain enamel and at least one conductive element deposited on said coated portion of said substrate, said conductive element being arranged to provide a first sensing means for sensing temperature over a first temperature range as a function of the resistance of said element, said conductive element combination with said porcelain enamel layer being operative to provide a second sensing means for sensing temperature over a second temperature range as a function of the resistance of said porcelain enamel layer.

5,053,741

VARIABLE RESISTOR

Yukinori Ueda, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 29, 1990, Ser. No. 530,170
Claims priority, application Japan, May 29, 1989, 1-137047
Int. Cl.[5] H01C *10/30*
U.S. Cl. 338—160 **6 Claims**



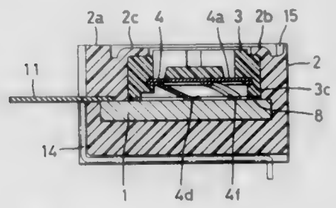
1. A variable resistor, comprising:
a substrate;
a curved resistor disposed on said substrate having a central point and resistor electrodes;
a sliding member rotatably connected with said substrate for rotation about the central point of said curved resistor, said sliding member being stamped from a thin sheet of conductive material and including a driver plate having a central projected portion and a substantially ring-shaped arm portion having a contact portion for contacting said curved resistor, said driver plate further having a substantially conical portion with a driver groove therein for rotation of said sliding member by a driver, and said sliding member further being formed by bending said thin sheet of conductive material over itself 180° such that said driver plate is bent over said arm portion; and
a collector terminal connected to said sliding member.

5,053,742

VARIABLE RESISTOR

Fumitoshi Masuda, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 3, 1989, Ser. No. 431,039
Claims priority, application Japan, Nov. 5, 1988, 63-279904; Nov. 5, 1988, 63-279905; Nov. 5, 1988, 63-279906; Nov. 5, 1988, 63-279908; Nov. 5, 1988, 63-279909
Int. Cl.[5] H01C *10/32*
U.S. Cl. 338—162 **14 Claims**



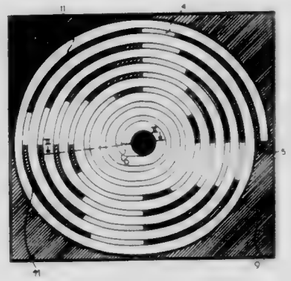
1. A variable resistor comprising:
a unitarily molded resin case including a bottom wall and a tubular side wall extending upwardly from said bottom wall so as to define a space within said case;
an insulating substrate molded into said space within said case;
a resistor and a collector electrode mounted on a surface of said insulating substrate, said resistor having opposing ends;
a collector terminal connected to said insulating substrate in electrical contact with said collector electrode and projecting outwardly of said case from said space within said case;
a pair of lead terminals connected to said insulating substrate in electrical contact with said opposing ends of said resistor, respectively, and projecting outwardly of said case from said space within said case;
a rotor rotatably mounted above said insulating substrate for rotation about a rotary axis within said space in said case; and
an electrically conductive sliding member fixed to a lower portion of said rotor so as to be rotatable therewith relative to said insulating substrate and in contact with said resistor;
wherein an upper peripheral projecting edge of said tubular sidewall is bent downwardly so as to overlie said rotor and rotatably retain said rotor within said space in said case.

5,053,743

HIGH VOLTAGE SPIRAL RESISTOR

Jacques Mille, Aix En Provence, and Daniel Quessada, Pourrieres, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Apr. 13, 1990, Ser. No. 508,614
Claims priority, application France, Apr. 14, 1989, 89 05280
Int. Cl.[5] H01C *3/14*
U.S. Cl. 338—297 **5 Claims**



1. A resister comprising a spiral region of a second conductivity type having a determined doping level, formed on a first surface of a semiconductor substrate of a first conductivity type, a first terminal connected to a first extremity of the spiral on said first surface and a second terminal electrically connected to the second surface of the substrate through an overdoped region of the same conductivity type as the substrate, wherein regions of higher conductivity than the conductivity of regions of said determined doping level are formed at determined places of the spiral.

5,053,744

COMBINATION METER SYSTEM OF VEHICLE

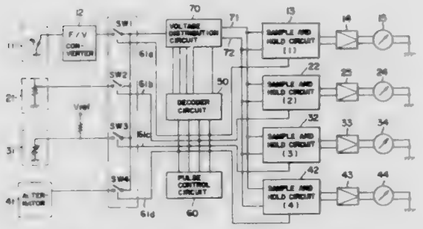
Yoshio Tozawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1990, Ser. No. 511,304
Claims priority, application Japan, Apr. 22, 1989, 1-48165[U]
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **8 Claims**

1. A combination meter system of a vehicle equipped with at least a plurality of gauges or meters, comprising:

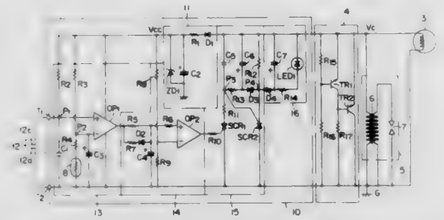
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a plurality of sensors for detecting various characteristics for the operation of a vehicle;
a plurality of analog switches operatively connected to said sensors, respectively;
a pulse control circuit transmitting pulse signals to said analog switches for selectively operating said analog switches;
a decoder circuit responsive to the pulse signals from said pulse control circuit for producing a signal indicating one of said analog switches to which said pulse signal is applied;



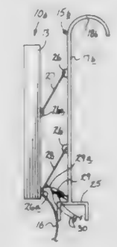
a voltage distribution circuit operatively connected to said analog switches and responsive to said signal from said decoder circuit for dividing a signal from said one of said analog switches into two kinds of signals based on the characteristic of one of said sensors corresponding to said one of said analog switches; and
a plurality of sample and hold circuits operatively connected to said voltage distribution circuit and respectively corresponding to said analog switches for sampling and holding said two kinds of signals from said distribution circuit, said sample and hold circuits being operatively connected to the gauges or meters, respectively, for driving the same.

5,053,745
APPARATUS FOR WARNING OF ENGINE OIL ABNORMALITY
Asao Sasaki, Chiba, and Yosuke Kubota, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 25, 1990, Ser. No. 542,984
Claims priority, application Japan, Jun. 26, 1989, 1-164828[U]; Jul. 4, 1989, 1-79349[U]
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—450.3 **12 Claims**



1. An apparatus for warning of the abnormality of an engine including a magneto generating an a.c. voltage and an ignition coil comprising:
first signal generation means for generating a first signal including electric quantity corresponding to insulation resistance of lubricating oil;
temperature detecting means for detecting an ambient temperature of the engine and for producing a temperature signal;
reference signal generation means responsive to the temperature signal for generating a reference signal;
oil-shortage judging means for comparing the first signal with the reference signal to determine that the engine is in shortage of the oil when the first signal is larger than the reference signal and for generating a shortage signal;
control means responsive to the shortage signal for performing a short-circuit of the primary side of the ignition coil to generate a short-circuit current; and
display means responsive to the short-circuit current for displaying the shortage of the oil.

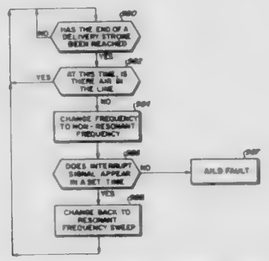
5,053,746
VEHICULAR COMMUNICATION DEVICE
Panfilo C. Taneo, Hillcrest Apt. C-3, Shelbyville, Tenn. 37160
Filed May 7, 1990, Ser. No. 519,787
Int. Cl.[5] B60Q *1/50*
U.S. Cl. 340—473 **1 Claim**



1. A vehicular display device for securement to a self-propelled vehicle to overlie the vehicle rear bumper and mounted forwardly of the forward edge of a trunk assembly of the vehicle, the device comprising, in combination,
a display panel including a plurality of light members arranged in a matrix over a forward surface of the panel, the light members selectively illuminated by a display panel control unit, the display panel control unit operative through a keyboard unit to select a message pattern and direct the control unit to selectively illuminate said light members to form said message pattern on the forward surface of the display panel,
a plurality of spaced bracket assemblies mounted to the rear surface of the display panel and extending rearwardly thereof to secure the display panel to the vehicle,
wherein each of the bracket assemblies comprises an elongate strap mounted orthogonally relative to a longitudinal axis of the display panel, the elongate strap terminating in a rearwardly extending hook at an upper portion of each said elongate strap,
wherein each said elongate strap includes a "U" shaped bracket member directed downwardly and integrally mounted to a lowermost portion of each said elongate strap for overlying the bumper of the self-propelled vehicle,
a plurality of first ears integrally mounted to a forward surface of each said elongate strap, the first ears including a first upper ear and a first lower ear, and a plurality of second ears integrally and orthogonally mounted to a rear surface of the display panel the second ears including a second upper ear and a second lower ear, and an upper link pivotally mounted to the first upper ear and the second upper ear, and a lower link pivotally mounted to the first lower ear and the second lower ear, and
a hydraulic cylinder mounted adjacent to each said "U" shaped bracket and including a piston reciprocatably mounted within each said hydraulic cylinder, the piston piviotally mounted to the lower link, and hydraulic lines secured and directed from the hydraulic cylinder to a hydraulic pump, the hydraulic pump operably associated

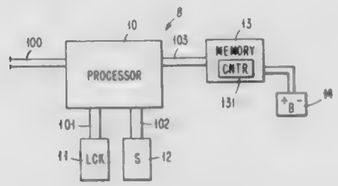
with the display panel control unit to selectively reposition the display panel relative to each of said bracket member assemblies.

5,053,747
ULTRASONIC AIR-IN-LINE DETECTOR SELF-TEST TECHNIQUE
John B. Slate, Studio City, and James L. Henke, Simi Valley, both of Calif., assignors to Pacesetter Infusion, Inc., Sylmar, Calif.
Filed Sep. 5, 1989, Ser. No. 403,259
Int. Cl.[5] G08B *29/00;* **A61B** *8/00*
U.S. Cl. 340—507 **16 Claims**



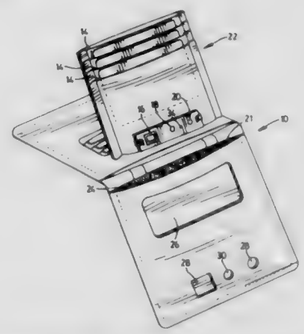
1. In an ultrasonic air-in-line detection system having an ultrasonic transmitter driven at a first resonant frequency and an ultrasonic receiver for producing a first output signal when there is fluid in a fluid passageway and a second output signal when there is an air bubble in the fluid passageway, a self-test system comprising:
means for driving said ultrasonic transmitter at a second non-resonant frequency;
means for monitoring the output signal from said ultrasonic receiver to determine whether said first output signal or said second output signal is produced; and
means for providing a fault signal if said monitoring means determines that said first output signal is produced by said ultrasonic receiver when said ultrasonic transmitter is driven at said second non-resonant frequency.

5,053,748
SYSTEM FOR THE SAFE AND SECURE TRANSPORTATION OF VALUABLE ARTICLES, SUCH AS BANK NOTES, CHEQUES
Justus Stern, Stockholm, Sweden, assignor to Inter Innovation AB, Stockholm, Sweden
Filed Jan. 24, 1989, Ser. No. 301,011
Claims priority, application Sweden, Dec. 2, 1988, 8800472
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—541 **4 Claims**



1. A system including at least two terminals and at least one cassette for the safe and secure transportation of valuables by means of such cassette from a first terminal to a second terminal of the at least two terminals of the system, said at least one cassette including a processor having a counter and a memory facility, characterized in that the memory facility includes a cassette memory (13) and the counter (131) includes means for establishing counter settings corresponding to the number of times that a cassette is opened; in that the system comprises means, disposed at the first terminal, for reading a numerical value of a prevailing counter setting, means for coding the numerical value of the prevailing counter setting and means for inserting the coded numerical value into the cassette memory (13); and in that the system further comprises means, disposed at the second terminal, for reading the coded numerical value from the cassette memory, means for decoding said coded numerical value, and means for comparing the decoded numerical value with the prevailing counter setting of the counter (131).

5,053,749
RETAINER FOR DOCUMENTS WITH ALARM
Andrew E. Weiss, 252 Oriole Pkwy., Apt. B-1, Toronto, Ontario, Canada M5P 2H1
Continuation-in-part of Ser. No. 280,333, Dec. 6, 1988, abandoned. This application Oct. 4, 1989, Ser. No. 417,194
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—568 **23 Claims**



1. A document retainer comprising:
a plurality of receptacles, each of said receptacles for receiving and holding a document therein;
sensing means associated with each of said receptacles for detecting the presence or absence of a document in said receptacle;
an electronic circuit responsive to said sensing means and being energized by a power supply upon detection of a document absent from said receptacle by said sensing means, said electronic circuit including:
an audible alarm operable to provide an audible signal;
time delay means in communication with said audible alarm and being operable to connect said audible alarm to said power supply after a pre-determined amount of time has elapsed after energization of said electronic circuit; and
switch means in communication with said time delay means, said switch means being manually actuable to reset said time delay means to inhibit said audible alarm from sounding.

5,053,750
WALLET GUARD
Leonard Alex, 55 Ridge Rd., Roseland, N.J. 07068
Filed Jun. 15, 1990, Ser. No. 538,567
Int. Cl.[5] G08B *13/14;* **H01H** *27/04*
U.S. Cl. 340—568 **17 Claims**

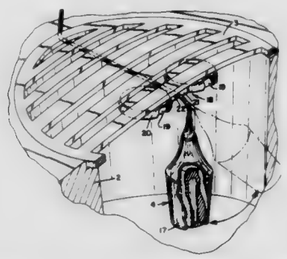
1. A guard for a wallet having a thickness that lies within a predetermined range, comprising:
a foldable panel having an inside and an outside and sized to encompass said wallet and sized to accompany it, said foldable panel being operable to fold through substantially 180°, said panel having a midsection with a non-zero area

that is operable to fold about said wallet at any wallet thickness within said predetermined range;
a pair of exposed contacts mounted at opposite ends of the inside of said panel;
an alarm mounted on said panel and serially connected to said contacts; and



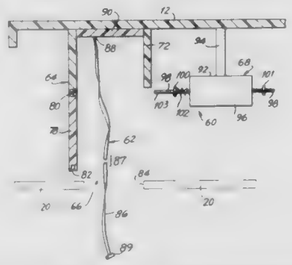
a battery holder mounted on said panel and serially connected with said alarm and said contacts, said panel being foldable about said wallet, so that said contacts are open unless said wallet is removed.

5,053,751
WATER ALARM TO SIGNAL FLOODING IN BASEMENTS
Reed D. Gould, 13813 Fawnview La., Cold Spring, Minn. 56320
Filed Jun. 1, 1990, Ser. No. 531,902
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—623 2 Claims



1. A water alarm adapted to be mounted in a basement water drain having a metal perforated drain plate comprising:
a buoyant body adapted to be mounted in said water drain beneath said metal cover;
a mercury switch carried by said body;
said body being in a first position when water is absent from said drain and moved to a second position by the presence of sufficient water filling the drain, the switch carried by said body being in an open position when the body is in its first position and being in a closed position when the body is in its second position;
an alarm actuated by said switch when it is in its closed position;
means mounting said body adjacent the upper end of said drain beneath the metal cover thereof in a generally vertically depending position;
said mounting means comprising a pair of spaced magnetic members connected together by a bridge which forms a space between the bridge and the metal cover of the drain;
electrical wiring between the switch and the alarm passing through said space;
whereby said magnetic members in contact with the lower side of the drain cover securely mount said body in position adjacent the upper end of the water drain.

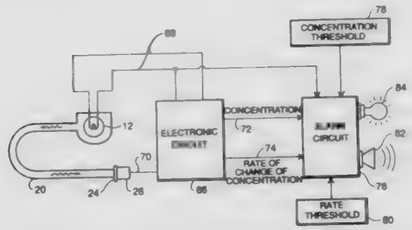
5,053,752
SMOKE DETECTOR AND METHOD USING ELONGATED FLEXIBLE LOW BATTERY CONDITION INDICATOR MEMBER
Jack Epstein, 155 E. 31 St., Apt. 28J, New York, N.Y. 10016; Morris Epstein, and Jay Monroe, both of Kings Point, all of N.Y., assignors to Jack Epstein, New York, N.Y.
Filed Feb. 26, 1990, Ser. No. 485,169
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—628 23 Claims



3. A room-mountable battery-operated detector device, said device comprising, in combination, a housing, smoke detector means mounted in said housing, low battery condition indicator means mounted in said housing, said indicator means including a signal member normally stored in said housing and issuing means responsive to the detection of a low battery condition for issuing said signal member out of said housing and into the room in which the device is mounted, in which said signal member is an elongated flexible indicator member, and in which said issuing means is adapted to cause said indicator member to enter the room by a substantial distance to bring it in into position to be readily seen by persons in the room, and in which said issuing means includes means for releasing said indicator member from said housing and using the force of gravity to pull said member from said housing.

5,053,753
Patent Not Issued For This Number

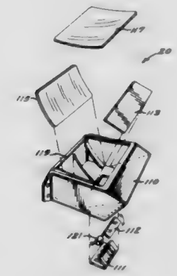
5,053,754
SIMPLE FIRE DETECTOR
Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech Corporation, Goleta, Calif.
Filed Apr. 2, 1990, Ser. No. 503,214
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—632 24 Claims



1. A fire detector that senses a build-up in the ambient air of carbon dioxide that is produced by a fire, said fire detector having no moving parts and comprising in combination:
a source capable of emitting radiation having a wavelength coinciding with an absorption band of carbon dioxide;
a detector generating an electrical signal in response to the radiation falling on it;
a sample chamber containing air and including a passage communicating with the ambient air, said sample chamber including means defining a path for emitted radiation through said sample chamber, said source located at one end of the path and said detector located at the other end of the path;
said sample chamber further including membrane means permeable to carbon dioxide gas, spanning the passage of said sample chamber and keeping smoke, dust, oil and water out of said sample chamber while freely permitting carbon dioxide in the ambient air to pass into the sample chamber;
electronic means electrically connected to said detector and responsive to an electrical signal generated by it to produce a signal representative of the rate of change of the concentration of carbon dioxide in said sample chamber, and
alarm means connected to said electronic means and responsive to an increase in the signal representative of the rate of change of the concentration of carbon dioxide generated by the fire to produce an alarm in accordance with preset criterion.

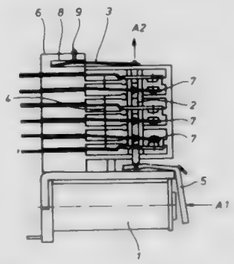
5,053,755
AUTOMOTIVE HEAD-UP DISPLAY WITH HIGH BRIGHTNESS IN DAYTIME AND HIGH CONTRAST IN NIGHTTIME
Ronald T. Smith, Redondo Beach; Mao-Jin Chern, Rancho Palos Verdes, and Ronald G. Hegg, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 18, 1989, Ser. No. 353,851
Int. Cl.[5] G09G *3/02*
U.S. Cl. 340—705 11 Claims

1. A head-up display for a vehicle, comprising:
an image source for producing imaging illumination;
an optical combiner for partially reflecting the imaging illumination to produce a virtual image of said image source viewable by an operator of the vehicle, said virtual image having a primary virtual image as well as an unwanted ghost image; and



a movable polarizer that is selectively interposed between said image source and said combiner during dark ambient light conditions for polarizing the imaging illumination provided to said combiner, whereby the primary virtual image has greater brightness relative to that of the ghost image when said polarizer is providing polarized imaging illumination as compared to when said imaging illumination is not polarized by said polarizer.

5,053,756
ELECTROMAGNETIC RELAY WITH RETURN SPRING
Gerhard Wehrle, Waldstrasse 26, D-7710 Donaueschingen; Ursula Seitz, Vorstadtstrasse 17, D-7209 Wehingen, and Karl Blaschi, Sommerain 49, 7209 Wehingen, all of Fed. Rep. of Germany
Filed Dec. 18, 1990, Ser. No. 630,214
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942340
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—274 4 Claims



1. Electromagnetic relay with a return spring, where the relay consists of a solenoid coil with a movable armature as the drive and a contact spring assembly, and an actuating rod is attached at one end of the armature and engages with spiral

springs by means of catches for actuation of the contact, such that the return spring at the other end of the actuating rod returns the contact spring assembly to home position, characterized in that return spring (3) is designed as a top-dead-center spring such that the force needed to bend the return spring (3) decreases when the relay is driven against the spring.

5,053,757

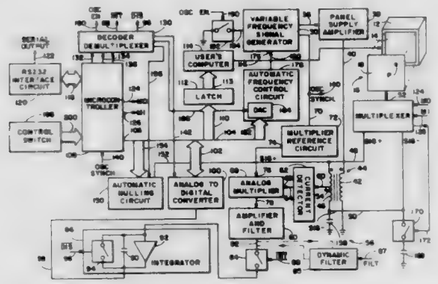
TOUCH PANEL WITH ADAPTIVE NOISE REDUCTION

Robert D. Meadows, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 58,320, Jun. 4, 1987, abandoned. This application Dec. 27, 1989, Ser. No. 455,892

Int. Cl.[5] G09G *5/00*

U.S. Cl. 340—712 **21 Claims**



1. A method of reducing the effect of noise on the determination of the location at which a touch sensing surface of a touch panel is touched from touch signals generated in response to touching of the touch panel comprising:

determining the rate of movement of touch on a touch sensing surface;

filtering noise from the touch signals; and

varying the extent of such filtering with changes in the rate of movement.

5,053,758

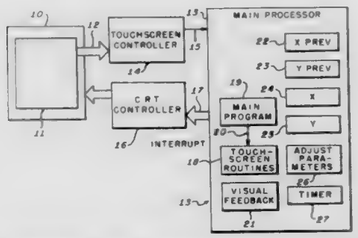
TOUCHSCREEN CONTROL PANEL WITH SLIDING TOUCH CONTROL

Johnny A. Cornett, Crozet, and James D. Corbett, Charlottesville, both of Va., assignors to Sperry Marine Inc., Charlottesville, Va.

Contiuation of Ser. No. 151,041, Feb. 1, 1988, abandoned. This application Feb. 1, 1990, Ser. No. 476,118

Int. Cl.[5] G09G *5/00*

U.S. Cl. 340—712 **12 Claims**



1. Touchscreen control panel apparatus for use in a system having actuate on release control functions, said apparatus comprising

a monitor having a display,

touchscreen means, including a touchscreen overlay on said display for providing touch coordinate signals in accordance with operator touch location on said touchscreen overlay and for providing a touchscreen release signal upon removal of said operator touch,

key generation means for providing control keys on said display, a first plurality of said control keys being associated with a plurality of said actuate on release control functions, respectively,

highlighting means coupled to said touchscreen means for highlighting only an operator touched control key,

sliding touch detecting means coupled to said touchscreen means for detecting when operator touch has slid from a first control key to a second control key,

highlight deletion means coupled to said touchscreen means for deleting said highlighting with respect to a control key from which operator touch has slid, and

first control actuation means coupled to said touchscreen means for actuating a control function associated with a highlighted control key in response to said touchscreen release signal when said highlighted control key is associated with one of said actuate on release control functions.

5,053,759

METHOD OF AND APPARATUS FOR GENERATING HIGH-QUALITY PATTERN

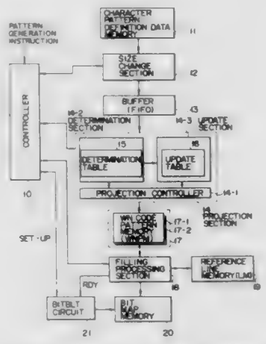
Fumitaka Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 27, 1989, Ser. No. 302,710

Claims priority, application Japan, Jan. 30, 1988, 63-20315; Nov. 18, 1988, 63-290147

Int. Cl.[5] G09G *5/00*

U.S. Cl. 340—723 **36 Claims**



1. An apparatus for generating a high-quality pattern, comprising:

pattern memory means for storing the pattern;

code pattern memory means for storing winding number codes, each winding number code substantially corresponding to a coordinate in a lattice of coordinates;

projecting means, responsive to an input projection start command and coupled to the code pattern memory means, for projecting a contour line, including

means for updating a plurality of winding number codes stored in the code pattern memory means in accordance with a drawing direction of the contour line relative to a filling direction;

filling means, responsive to an input filling start command and to the code pattern memory means, for filing an area in said pattern memory means in accordance with winding number codes read from said code pattern memory means; and

control means for generating the projection start command to said projecting means in response to an input pattern generation instruction and for generating the filling start command to said filling means.

5,053,760

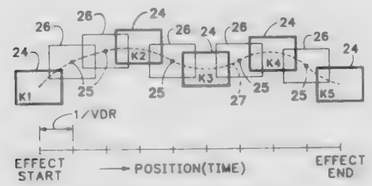
GRAPHICS PATH PREDICTION DISPLAY

Richard A. Frasier, Grass Valley; F. Andrew Witek, Nevada City; Charles Q. Hoard, Grass Valley; Neil R. Olmstead, Nevada City, and William C. Lange, Grass Valley, all of Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Jul. 17, 1989, Ser. No. 380,344

Int. Cl.[5] G09G *1/06*

U.S. Cl. 340—725 **2 Claims**



1. A method of displaying a predicted graphics path comprising the steps of:

selecting a portion of a video effect for display;

modifying various parameters of the selected portion;

generating a scratch video effect for the selected portion without actually modifying the video effect according to the modified various parameters; and

displaying the scratch video effect to show the predicted graphics path resulting from the modifying step.

5,053,761

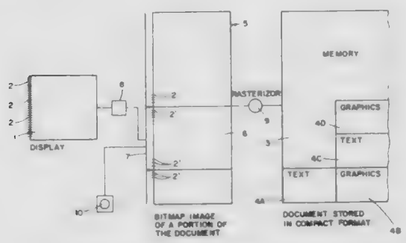
METHOD FOR SMOOTH BITMAP SCROLLING

John W. Webster, III., Apex, N.C., assignor to International Business Machines, Armonk, N.Y.

Filed Jun. 16, 1989, Ser. No. 367,434

Int. Cl.[5] G09G *5/34*

U.S. Cl. 340—726 **15 Claims**



1. A high speed and storage efficient method of processing information for smooth scroll display of a document on an all points addressable display system, said method comprising the steps of:

(1) storing the entire document in one or more compact formats,

(2) storing a cache of the document which is smaller than the complete document offscreen in fast access format, including a complete display window of the initial portion of the document to be displayed,

(3) marking the portion of the cache which contains the complete display window of the current portion of the document to be displayed with a display marker, the display marker moving in increments of the cache which corresponds to increments of at least one row of the display screen,

(4) outputting the contents of the display window marked by the display marker for display on the screen,

(5) adjusting the cache to include the complete display window of the desired screen display when the display marker is moved to a portion of the cache which does not contain the complete display window of the portion of the document to be displayed,

whereby a smooth scroll is viewed on the display when the display marker is moved by the input means such that the cache contains the complete display window of the new portion of the document to be displayed due to the display window and, consequently, the display viewed, being varied in increments corresponding to one scan line of the display; the smooth scroll being interrupted only when the display marker is moved such that the cache does not contain the complete window of the new portion of the document to be displayed.

5,053,762

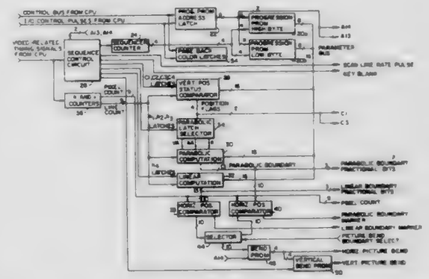
PAGE TURN SIMULATOR

Gene R. Sarra, New Britain, Conn., assignor to Microtime, Inc., Bloomfield, Conn.

Filed Apr. 28, 1989, Ser. No. 345,082

Int. Cl.[5] G09G *5/14*

U.S. Cl. 340—734 **10 Claims**



1. A method of simulating a page turning effect on a video screen having multiple scan lines, comprising the steps:

(a) defining in memory a plurality of sets of boundary lines, each set being representative of a different stage of progression of a turning page and including

(1) a first parabolic boundary line representative of a two-dimensional image of a partially turned lateral edge of said turning page;

(2) a second parabolic boundary line representative of a two-dimensional image of a partially turned top or bottom edge of said turning page; and

(3) a third boundary line representative of a fold of said turning page;

(b) reading said sets of boundary lines out of memory in succession;

(c) selecting among the first, second and third boundary lines of each set read from memory for each of a plurality of said scan lines on said video screen;

(d) calculating the intersection point of each selected boundary line on each scan line for which it is selected; and

(e) switching between first and second video sources in synchronism with line scanning, said synchronized switching step including, for each set of boundary liens read from memory, comparing current position on each particular scan line being scanned with each intersection point calculated for said particular scan line;

wherein said selecting step includes selecting said first and third boundary lines for a first subset of said plurality of scan lines and selecting said second and third boundary lines for a second subset of said plurality of said scan lines; and

wherein said switching step includes switching to said second video source for the portion of each of said plurality of scan lines located between the boundary lines in either of the pairs of boundary lines selected in said selecting step, whereby an image from said second video source is displayed on said video screen between said partially

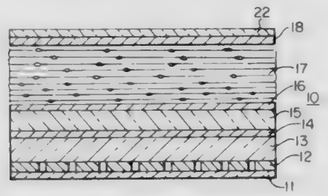
turned lateral edge, said partially turned top or bottom edge and said fold of said turning page so as to simulate an image on the back of said turning page.

5,053,763

DUAL ANODE FLAT PANEL ELECTROPHORETIC DISPLAY APPARATUS

Frank J. DiSanto, North Hills, and Denis A. Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Filed May 1, 1989, Ser. No. 345,825
Int. Cl.[5] G09G 3/34
U.S. Cl. 340—787 **10 Claims**



1. In an electrophoretic display of the type having a cathode matrix comprising a plurality of parallel lines arranged in a given direction, with a grid matrix insulated from said cathode matrix and comprising a plurality of parallel lines each perpendicular to said cathode lines to form an X-Y addressing matrix with a conventional anode electrode separated from said X-Y matrix with the space between said anode electrode and said X-Y matrix accommodating an electrophoretic dispersion including pigment particles suspended in a fluid, the improvement therewith of:

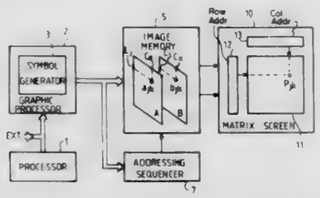
an additional anode electrode comprising a plurality of parallel lines each associated with and insulated from a respective grid line with said additional anode operative when biased to control the path of said pigment particles to and from said grid and cathode matrix and to allow excess pigment to remain at said conventional anode electrode.

5,053,764

SYSTEM FOR THE DISPLAY OF IMAGES IN HALF TONES ON A MATRIX SCREEN

Bruno Barbier, Le Bouscat; Jean N. Perbet, Eysines, and Jean J. Favoi, Martignas/Jalles, all of France, assignors to Thomson CSF, Paris, France

Filed Oct. 3, 1988, Ser. No. 252,139
Claims priority, application France, Oct. 9, 1987, 87 13959
Int. Cl.[5] G09G 3/22
U.S. Cl. 340—793 **17 Claims**



1. A system for the display of images in half tones on a matrix screen, comprising the following steps:

preparing luminance information for each pixel of one of the images according to a corresponding N-bit word, N being greater than or equal to 2;

storing the luminance information in N memory planes with respect to the N-bit word;

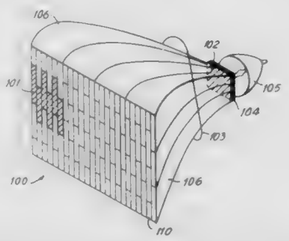
addressing the memory planes to produce, through a sequential reading of these planes, N successive displayed images wherein any grouping of N adjacent pixels is obtained by successively extracting, for a given pixel of said grouping, one luminance bit from one of the memory planes different from those already used for said given pixel when forming the preceding images so as to extract the N bits of the luminance word corresponding to said given pixel, said addressing step extracting, in a given image of said N successive displayed images, for each of the pixels of any considered one of said groupings, one luminance bit in a different memory plane from those used for the other pixels of said considered grouping, thereby obtaining for each pixel, in the course of N successive scans of images, N-1intermediate values in addition to the luminance values black and white corresponding to binary values "0" and "1" respectively, said N-1 intermediate values corresponding to half-tones.

5,053,765

LIGHT GUIDE TYPE DISPLAY APPARATUS

Tomio Sonehara; Jun Sugiyama, and Shinji Morozumi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 6, 1989, Ser. No. 294,082
Claims priority, application Japan, Jan. 11, 1988, 63-3477; Jan. 14, 1988, 63-5902; Jan. 19, 1988, 63-8897; Jan. 25, 1988, 63-14253; Jan. 26, 1988, 63-14833; Aug. 26, 1988, 63-211636
Int. Cl.[5] G09G 3/20
U.S. Cl. 340—815.31 **63 Claims**



1. A light guide type display apparatus, comprising:

image forming means for forming an image;

display means for displaying the image and including a plurality of individual display surfaces; and

optical fiber means for supplying and shifting portions of the image from the image forming means to the display means through optical coupling of the image forming means to the display means and thereby serving as a light guide between the image forming means and display screen means, said optical fiber means including a plurality of optical fiber which are effectively interlaced together to shift said portions of the image formed by the image forming means.

5,053,766

TELEMETERING SYSTEM FOR ELECTRICAL POWER CONSUMED BY VARIOUS USERS

Javier Ruiz-del-Portal, and Luis Rodriquez-Navarrete, both of San Sebastian, Spain, assignors to Iberduero, S.A. and Angel Iglesias, S.A., both of, Spain

Filed Apr. 22, 1988, Ser. No. 185,038
Claims priority, application Spain, Apr. 23, 1987, 8701182; Apr. 23, 1987, 8701183
Int. Cl.[5] G08B 23/00
U.S. Cl. 340—870.02 **31 Claims**

1. A telemetering system for electrical power consumption by individual users who previously have been supplied with a conventional meter of the type comprising a disk whose revolutions are correlated with consumption, the meter having at least one mark thereon, the system comprising:

(a) a pulse generator for each meter comprising:

(i) at least one optical sensor capable of detecting the passage of the mark during rotation of the disk and of sending a detection signal;

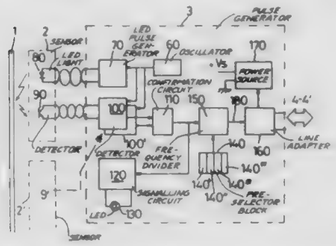
(ii) a circuit for detecting the detection signal;

(iii) a revolution preselector in which the number of revolutions of the disk is preset and corresponds to a predetermined quantity of power;

(iv) a frequency divider which is connected to

the revolution preselector and to the circuit for detecting the detection signal and which receives and meters the detection signal and sends a consumption signal to a line adaptor when the value of the signal from the detection signal corresponds to the quantity of power present in the revolution preselector;

(v) the line adaptor sending the consumption signal to:



(b) a meter concentrator comprising a connection bus which connects together:

(i) at least one analog/digital converter block which receives the consumption signals from more than one pulse generator;

(ii) a microprocessor with its program memory;

(iii) duplicated non-volatile memory means;

(iv) means for external communication having at least one series line, said series line being connected to:

(c) reading means comprising a connection bus which connects together:

(i) a microprocessor with its program memory;

(ii) duplicated non-volatile memory means;

(iii) clock means;

(iv) first means for communicating with a central computer, which means receives the signals from at least two meter concentrators;

(v) a second means for communication between the reading means and external peripherals.

5,053,767

AIRCRAFT WINDSHEAR DETECTION BASED ON ENERGY LOSS

Terry L. Zweifel, and Khosrow H. Youssefi, both of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 12, 1990, Ser. No. 491,873
Int. Cl.[5] G08B 23/00
U.S. Cl. 340—968 **14 Claims**

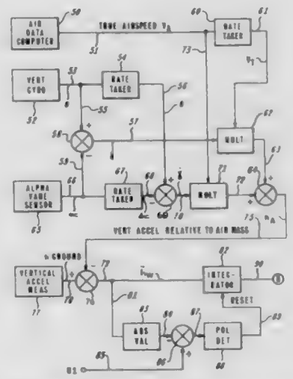
1. Windshear detection and warning apparatus for aircraft, comprising:

means for providing a signal representative of an energy level of the aircraft due to the windshear,

integrator means responsive to said signal representative of an energy level of the aircraft for providing an integral thereof with respect to time, said integral providing a measure of the change in energy level of the aircraft due to the windshear,

means for providing a reference signal corresponding to a predetermined minimum allowable magnitude of energy level of the aircraft, said predetermined minimum allowable magnitude being independent of a windshear warning threshold,

means for comparing the absolute value of said signal representative of an energy level of the aircraft and said reference signal and for providing a control signal for activating said integrator means when said absolute value exceeds said predetermined minimum allowable magnitude, and for deactivating said integrator means when said



absolute value is less than said predetermined minimum allowable magnitude, and

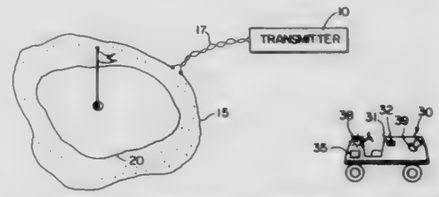
logic means responsive to said integrator means for providing a first windshear annunciation signal corresponding to an increase in energy level of said aircraft with respect to a first predetermined threshold and a second windshear annunciation signal corresponding to a decrease in energy level of said aircraft with respect to a second predetermined threshold.

5,053,768

GOLF CART CONTROL SYSTEM

Thomas S. Dix, Jr., Wayne, Pa., assignor to Invisible Fence Company, Inc., Berwyn, Pa.

Filed Dec. 21, 1989, Ser. No. 455,566
Int. Cl.[5] G08G 1/133
U.S. Cl. 340—988 **39 Claims**



1. A system for controlling the movement of a golf cart relative to a selected restricted area on a golf course comprising:

a. a signal transmitter having a transmitting antenna for placement in the vicinity of the selected restricted area o the golf course for producing a transmission signal at the restricted area;

b. a signal receiver having a receiving antenna on the golf cart for receiving the transmission signal when the golf cart moves into the vicinity of the transmitting antenna, said signal receiver producing a desired activation signal when a selected parameter of the transmission signal received by the receiving antenna meets a predetermined condition;

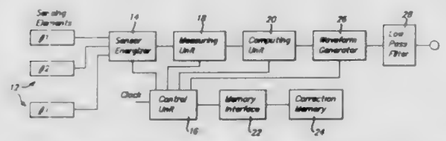
c. a first alarm on the golf cart activated by the activation signal for indicating to an operator of the golf cart that the golf cart has moved into the restricted area o the golf course;
d. first timer circuitry responsive to the activation signal for producing a trigger signal after a predetermined time period of said activation signal;
e. a second alarm on the golf cart responsive to the trigger signal for indicating that the golf cart has remained in the restricted area for the predetermined time period.

5,053,769

FAST RESPONSE DIGITAL INTERFACE APPARATUS AND METHOD

Wolf S. Landmann, Fair Lawn, N.J., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Feb. 12, 1990, Ser. No. 478,287
Int. Cl.[5] H03M *5/8*
U.S. Cl. 341—53 **16 Claims**



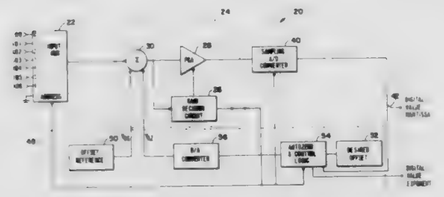
1. A method of representing an integer number N_O as a variable duty cycle pulse train of predetermined repetition rate comprising:
dividing said integer number N_O into a most significant part and a least significant part;
representing the most significant part as a sequence of a predetermined number of pulses wherein the duty cycle of each pulse represents a value corresponding to said most significant part;
representing the least significant part by selectively altering the duty cycle of selected ones of said pulses, said selected ones of said pulses being predetermined by consulting a lookup table;
wherein the sequence of pulses so altered, when integrated over the sequence, represents said integer number N_O.

5,053,770

DIGITAL AUTOZERO CIRCUIT OPERABLE IN A PLURALITY OF MODES WITH SEPARATE STORAGE FOR OFFSET CORRECTIONS FOR EACH MODE

Eliot Mayer, Tewksbury; Louis R. Poulo, Andover; Jeffrey L. Sauer, Lynn, and Hans J. Weedon, Salem, all of Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed May 18, 1990, Ser. No. 526,067
Int. Cl.[5] H02J *00/00*
U.S. Cl. 341—118 **8 Claims**



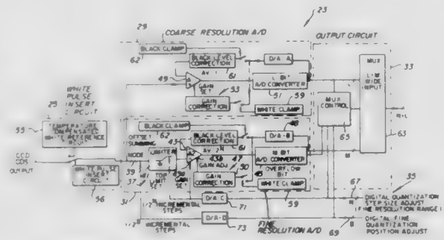
1. An autozero compensator in combination with a data conversion circuit, operable in a plurality of modes, for digitizing an analog signal as a function of the sum of said analog input signal and one of a plurality of different first analog offset signal provided respectively for each of said modes, said compensator comprising, in combination,
means for generating a plurality of desired digital offset signals, each corresponding to one of said modes;
signal comparison means for periodically comparing each of said desired offset signals with the output of said conversion circuit so as to generate a like plurality of digital corrections signals, said conversion circuit being set to operating in a corresponding one of said modes and having its input connected to system ground;
means for storing said digital correction signals;
means for periodically updating each of said digital correction signals stored in said signal storage means in response to the period comparison of said desired offset signals to said output of said conversion circuit;
digital-to-analog converter means for converting each of said stored digital signals to a corresponding autozero analog signal as a function of the corresponding operating mode; and
means for altering said sum responsively to each of said autozero analog signals so as to autozero said conversion circuit for each of said corresponding modes.

5,053,771

ADAPTIVE DUAL RANGE ANALOG TO DIGITAL CONVERTER

Bruce C. McDermott, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1990, Ser. No. 553,019
Int. Cl.[5] H03M *1/14*
U.S. Cl. 341—156 **19 Claims**



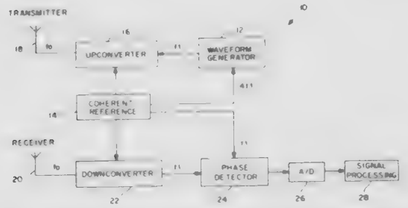
1. An adaptive dual range analog to digital converter comprising:
an input circuit for receiving an input analog signal to be digitalized;
a coarse resolution quantization analog to digital converter connected to said input circuit for receiving the input analog signal therefrom, and having a set digital quantization step size, for providing a digital word output;
a fine resolution quantization analog to digital converter connected to said input circuit for receiving the input analog signal therefrom, and having an adjustable digital quantization step size, for providing a digital word output and including an input signal range selection means for selecting a segment of the input analog signal to be converted to digital form by the fine resolution quantization analog to digital converter;
an output circuit for outputting a digital word based on the digital word outputs received from at least one of the fine and coarse resolution quantization analog to digital converters, the digital word being representative of the input analog signal received at the input circuit; and
set-up parameter input means for receiving externally generated control signals for controlling the adjustment of the digital quantization step size of the fine analog to digital converter, for controlling the selection of the segment of the input analog signal to be converted by the fine resolution analog to digital converter, and for controlling the digital word outputted by the output circuit.

5,053,772

RADAR SYSTEM EMPLOYING A METHOD FOR MOTION AND RANGE CLOSURE COMPENSATION

David Lamper, St. Charles, and Thomas L. Grettenberg, St. Louis, both of Mo., assignors to Electronics & Space Corporation, St. Louis, Mo.

Filed Sep. 4, 1990, Ser. No. 577,147
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **8 Claims**



1. An improved radar system for use in area mapping in which a signal is transmitted from a movable platform, and a reflected signal from the ground is received and processed, comprising:
means for generating a coherent reference signal;
means for generating a waveform to be transmitted;
means for transmitting the waveform from the platform and for receiving a return signal reflected from the ground; and,
means for processing the return signal to obtain information about the area being mapped including sampling the return signal, wherein the waveform generating means includes means to which the coherent reference signal is supplied, integrating means for performing a first integration and a second integration to obtain the coherent output signal phase to produce a resultant signal which automatically compensates, in processing of the return signal for both the difference between the leading edge of the sampled portion of the signal and the leading edge of the sampling window (i.e., range walk), and for any change in the received pulse-to-pulse phase and frequency due to motion of the platform occurring between the transmission of one pulse and the next (i.e. "focussing").

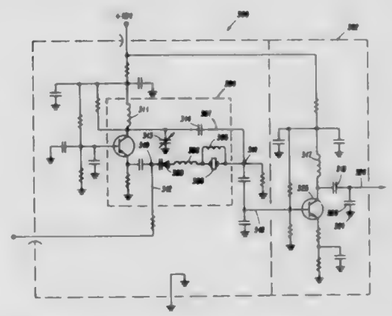
5,053,773

DOPPLER COMPENSATED AIRBORNE WEATHER RADAR SYSTEM

John D. Mosinski, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 15, 1989, Ser. No. 324,287
Int. Cl.[5] H03B *5/36*
U.S. Cl. 342—26 **8 Claims**

1. An improved airborne weather radar system comprising:
a high frequency pulsed microwave transmitter, for generating a train of microwave pulses;
a directional antenna having a plurality of operating positions for radiating the train of pulses from said transmitter out into space;
a low noise RF amplifier for amplifying received reflected signals;
a duplexer interposed between and interconnecting said antenna, said transmitter, and said low noise RF amplifier;
a local oscillator having a single low phase noise crystal oscillator which is operable at its fundamental mode at a predetermined frequency which varies with said directional antenna operating positions;
a mixer interposed between said low noise RF amplifier and said local oscillator; and



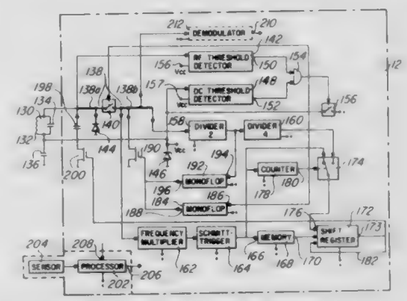
a display device for displaying the output signal from said mixer.

5,053,774

TRANSPONDER ARRANGEMENT

Josef H. Schuermann, Oberhummel; Guenter Heinecke, Langenbach, and Rudolf Kremer, Wartenberg, all of Fed. Rep. of Germany, assignors to Texas Instruments Deutschland GmbH, Friesing, Fed. Rep. of Germany

Continuation of Ser. No. 216,756, Jul. 8, 1988, abandoned. This application Feb. 13, 1991, Ser. No. 655,182
Claims priority, application European Pat. Off., Jul. 31, 1987, 87111110.0
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—44 **21 Claims**



1. A transponder system comprising:
an interrogation unit for communicating with cooperating responder units comprising;
a microprocessor,
a transmitter for transmission of at least one RF interrogation signal of a first frequency having a duration predetermined by the microprocessor, and
a receiver for receiving signal information at the termination of the interrogation signal; and
a responder unit located in spaced relation with respect to said interrogation unit for receiving on a resonant circuit said at least one interrogation signal transmitted form the transmitter of said interrogation unit and returning data as signal information on said resonant circuit to the receiver of said interrogation unit in response to the reception of said at least one interrogation signal, said responder unit comprising;
an energy accumulator for storing the energy contained in said at least one interrogation signal as received by said responder unit,

a carrier wave generator operable for providing a FSK modulated carrier wave having at least two frequencies, one of said two frequencies being said first frequency contained in said at least one interrogation signal and a second frequency selectively shifted from said first frequency,

circuitry operably connected to the output of said carrier wave generator for producing control signals for maintaining and modulating the carrier wave,

circuitry for transmitting the FSK modulated carrier wave and data from said responder unit back to the receiver of said interrogation unit as signal information, and

circuitry for initiating operation of said carrier wave generator in response to the detected power level of the RF interrogation signal decreasing and the presence of a predetermined energy amount stored in said energy accumulator.

5,053,775

DEVICE FOR DETERMINGING THE PROFILE OF THE LOADING SURFACE OF A SHAFT FURNACE

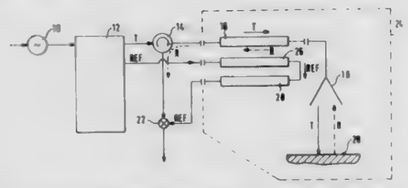
Daniel D. Mawhinney, Livingston, N.J.; Emile Lonardi, Bascharage, Luxembourg; Emile Breden, Godbrange, Luxembourg, and Jeannot Loutsch, Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Sep. 6, 1990, Ser. No. 579,855

Claims priority, application Luxembourg, Sep. 7, 1989, 87579

Int. Cl.[5] G01S *13/34, 7/40*

U.S. Cl. 342—124 **5 Claims**



1. A device for determining the profile of the loading surface of a shaft furnace, said furnace including a furnace wall comprising:

antenna means for transmitting a transmitted signal toward the loading surface and for receiving a reflected signal reflected by the loading surface;

support means, insertable through the furnace wall, for positioning the antenna means above the loading surface;

electronic means, disposed outside of said furnace, for providing said transmitted signal and a reference signal and for comparing said reflected signal to said reflected signal;

said electronic means comprising signal generator means for generating a radar signal;

divider means for dividing the radar signal into the transmitted signal and the reference signal; and

comparator means for comparing the reflected signal to the reference signal;

waveguide means for connecting said antenna means to said electronic means through said support means; and

reference waveguide means, not connected to said antenna means, for providing a path for said reference signal, said reference waveguide means comprising:

a first reference waveguide, disposed within said support means, for directing to reference signal from said divider means toward said antenna means; and

a second reference waveguide, disposed within said support means, for directing the reference signal from the first reference waveguide to said comparator;

wherein said reference waveguide means subjects the reference signal to conditions substantially identical to those imposed upon the transmitted signal and reflected signal by the waveguide means.

5,053,776

DEVICE AND METHOD FOR THE TELEMETRIC MEASUREMENT OF A DISTANCE AND APPLICATION TO A RADAR PROBE FOR DETERMINING THE TOPOGRAPHIC MAP OF THE LOADING SURFACE OF A SHAFT FURNACE

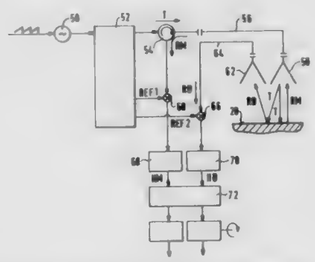
Daniel D. Mawhinney, Livingston, N.J.; Emile Lonardi, Bascharage; Emile Breden, Godbrange, both of Luxembourg, and Jeannot Loutsch, Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Sep. 6, 1990, Ser. No. 579,937

Claims priority, application Luxembourg, Sep. 7, 1989, 87577

Int. Cl.[5] G01S *13/08*

U.S. Cl. 342—124 **18 Claims**



1. A device for telemetric measurement of distance, comprising:

radar probe means for transmitting and receiving electromagnetic waves, said probe means comprising:

a transmitting and receiving antenna, and

a receiving antenna;

first signal processing means for processing input signals received by said transmitting and receiving antenna to provide a first measurement signal;

second signal processing means for processing input signal received by said receiving antenna to provide a second measurement signal; and

means for calculating a first measured value for the distance, wherein calculation of the first measured value is based on said first measurement signal if said distance is less than a predetermined threshold and calculation of the first measured value is based on the second measurement signal if the distance is greater than the threshold.

5,053,777

MEASUREMENT OF THE STABILITY OF A RADAR IN TRANSMISSION/RECEPTION

André Peyrat, Montrouge, France, assignor to Thomson-CSF, Puteaux, France

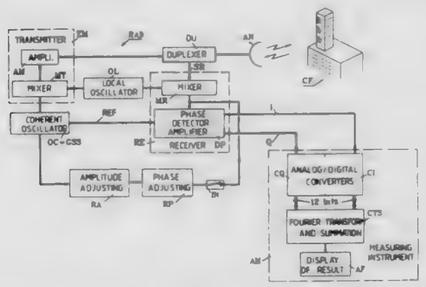
Filed Mar. 21, 1990, Ser. No. 496,868

Claims priority, application France, Mar. 31, 1989, 89 04253

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—173 **8 Claims**

1. A method for measuring the stability of a radar in transmission/reception, including a first step during which voltage signals leaving a phase detector of the radar receiver are measured at significant instants where said signals are liable to undergo fluctuations, said signals coming from a signal reflected by a fixed target and received by the radar, wherein said method includes a second step during which an additional signal, with predetermined phase and amplitude, is superimposed on the received signal in the receiver in order to substantially cancel the stable parts of the voltage signals and to allow



for the measurement of the fluctuations of the voltage signals thus obtained at said significant instants.

5,053,778

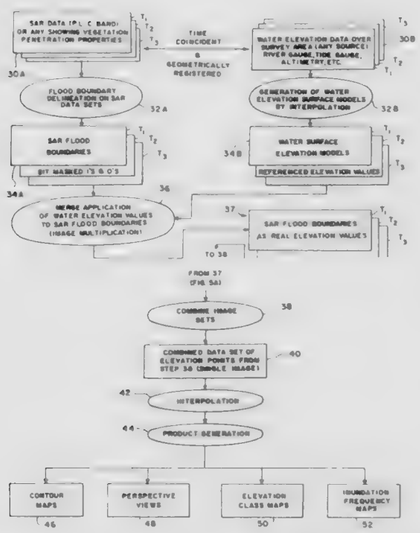
GENERATION OF TOPOGRAPHIC TERRAIN MODELS UTILIZING SYNTHETIC APERTURE RADAR AND SURFACE LEVEL DATA

Marc L. Imhoff, College Park, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 10, 1989, Ser. No. 391,896

Int. Cl.[5] G01S *13/89*

U.S. Cl. 342—191 **17 Claims**



1. A method of generating topographical terrain model of a flooded region of the earth's surface covered, at least in part, by foliage, comprising the steps of:

(a) obtaining radar generated surface image data of said region;

(b) generating a boundary map delineating two different surface types in said region for at least one time period from the radar generated surface data;

(c) concurrently acquiring water surface elevational data of said region during said time period;

(d) combining said boundary map with said water surface elevational data;

(e) generating a multi-dimensional image of said region from the combining of said boundary map with said water surface elevational data;

said step (a) of obtaining radar generated surface image data and step (c) of acquiring water surface elevational data comprises obtaining and acquiring said data for a plurality of mutually concurrent time periods and wherein step (b) of generating a boundary map comprises generating at least one flood boundary map for each of said time periods;

(f) geometrically coregistering the flood boundary maps generated in step (b) and then combining the coregistered boundary maps with said water surface elevational data acquired during said time periods; and,

wherein said step (e) comprises generating a three dimensional water surface model of said region from said water surface elevational data.

5,053,779

SIGNAL PROCESSING

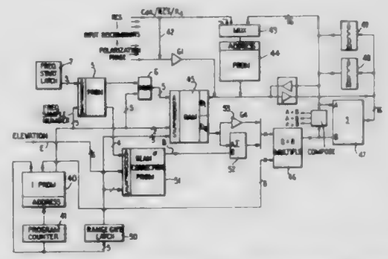
Clifford Dewhirst, Herts, England, assignor to British Aerospace Public Limited Company, London, England

Filed Jun. 1, 1989, Ser. No. 359,796

Claims priority, application United Kingdom, Jun. 1, 1988, 8812906

Int. Cl.[5] G01S *13/24*

U.S. Cl. 342—195 **12 Claims**



1. A signal processing system for collecting and outputting samples of a frequency agile radar receiver signal, the system comprising:

memory means for storing a number of samples one greater than a number of samples to be operated upon at any one time,

instruction signal supply means for producing frequency relative addresses to control writing of new samples into said memory means and reading of samples from the memory means such that said samples to be operated on are read out from said memory means and a newest sample is input to said memory means,

store means for storing a table relating frequency relative addresses and different cycles to physical location addresses of said memory means, and

counter means, connected to an address input of said store means for counting cycles of operation,

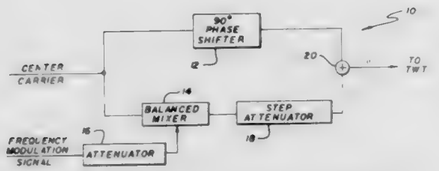
wherein said instruction signal supply means being also connected to said address input of the store means, and an output of the store means being connected to the address input of the memory means to provide addresses thereto.

5,053,780

RESPONSIVE SIMULTANEOUS FREQUENCY AGILE RADAR

Samuel Thaler, Encino, and Gordon M. Johnsen, West Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 14, 1989, Ser. No. 366,816
Int. Cl.[5] G01S *7/282*
U.S. Cl. 342—200 **4 Claims**



1. A device for transmitting a comb of radar signals, comprising

a frequency source for generating an input carrier signal;

means for splitting said input carrier signal into first and second portions;

phase shifter means for shifting the phase of said first portion of said input carrier signal, to thereby produce a first output signal which comprises a phase-shifted version of said input carrier signal;

means for generating an input frequency modulation signal;

balanced mixer means for mixing said second portion of said input carrier signal with said input frequency modulation signal, to thereby produce a second output signal which comprises at least first and second sidebands of said input carrier signal, the spectral position of said first and second sidebands being controllable by said input frequency modulation signal;

first attenuator means for adjusting the amplitude of said input frequency modulation signal, to thereby provide a firs level of control of the relative amplitude of said first and second sidebands; and,

summing means for combining said first output signal and said second output signal, to thereby produce a multiple frequency device output signal having a center carrier frequency and first and second sideband frequencies.

5,053,781

HIGH RESOLUTION PASSIVE MICROWAVE SENSORS FOR EARTH REMOTE SENSING

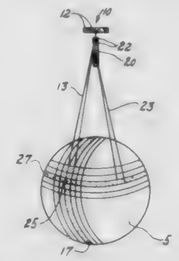
Andrew Milman, Saline, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed May 13, 1988, Ser. No. 194,673
Int. Cl.[5] G01S *3/02*
U.S. Cl. 342—351 **17 Claims**

1. An antenna for passive microwave remote sensing of the earth's surface from a satellite comprising:

a vertical linear array disposed along a line from the satellite toward nadir that includes a plurality of adjacent vertical antenna elements, each vertical antenna element producing first voltage output corresponding to the received microwave energy; and

a horizontal linear array disposed perpendicular to said vertical linear array that includes a plurality of adjacent horizontal antenna elements, each horizontal antenna



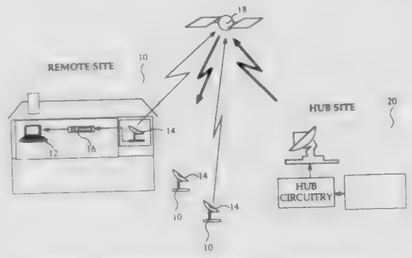
element producing a second output corresponding to the received microwave energy.

5,053,782

COMMERCIAL SATELLITE COMMUNICATIONS SYSTEM

Amiram Levinberg, Ramat Gan, and Uzi Ram, Givat Haelah, both of Israel, assignors to Gilat Communication Systems Ltd., Tel Aviv, Israel

Filed Dec. 13, 1989, Ser. No. 450,248
Int. Cl.[5] H04B *7/185;* **G01S** *13/08*
U.S. Cl. 342—352 **17 Claims**



1. A satellite communication system comprising:

a central satellite communication terminal;

a multiplicity of remote satellite communication terminals which communicate via a satellite on a random access basis;

means associated with each of the multiplicity of remote satellite communication terminals for transmitting a burst of data to be transmitted within a time slot and having a random or pseudorandom characteristic which is independent of the time slot and which does not require presynchronization with a receiving terminal; and

receiving means associated with the central satellite communication terminal for acquiring the characteristic during each time slot, receiving the burst according to the time slot and according to the characteristic, and thereby obtaining the data transmitted in said burst,

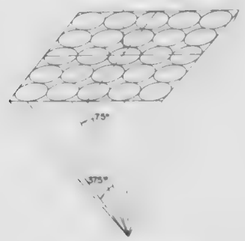
said random access communication and the provision of said random or pseudorandom characteristic enabling multiple transmissions to occur concurrently within a given frequency bandwidth.

5,053,783

HIGH POWER LOW FREQUENCY COMMUNICATIONS BY IONOSPHERIC MODIFICATION

Dennis Papadopoulos, 3705 Raymond St., Chevy Chase, Md. 20815

Filed Aug. 17, 1990, Ser. No. 568,891
Int. Cl.[5] H04B *7/00;* **H01Q** *3/22*
U.S. Cl. 342—367 **15 Claims**



1. A method for causing interruptions in an ionospheric electrojet to produce ELF/VLF signals, the method comprising the steps of:

generating an antenna beam with a high power transmitter which can be modulated in ELF and VLF frequency ranges;

directing the antenna beam generated by the high power transmitter at a first location of earth atmosphere to cause heating of ionospheric electrons in a first location;

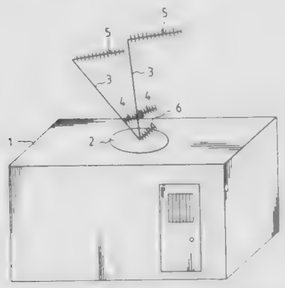
sweeping the antenna beam over a region of earth atmosphere proximate to the first location at a rate faster than a rate of cooling of the first location thereby causing heating of ionospheric electrons in the proximate area.

5,053,784

APPARATUS AND METHOD FOR MEASURING THE AZIMUTH AND ELEVATION OF AN OBJECT

Lassi Hippeläinen, Helsinki, Finland, assignor to Vaisala Oy, Helsinki, Finland

Filed Jun. 7, 1990, Ser. No. 536,015
Claims priority, application Finland, Jun. 14, 1989, 892928
Int. Cl.[5] G01S *3/26*
U.S. Cl. 342—434 **6 Claims**



1. An apparatus for measuring azimuth and elevation of an object, comprising:

a platform;

a base plate connected to said platform and is rotatable in a substantially horizontal plane;

a sensor frame connected to said base plate such that sensor frame rotates in said substantially horizontal plane;

at least three sensor elements connected to said sensor frame;

control means for controlling said sensor elements and for processing signals received from said sensor elements; and

pointing means, operatively connected to said control means and said base plate, for pointing said sensor elements in an azimuth direction having a highest field strength;

said sensor frame being rigidly attached to said base plate and being backward inclined at a range of 40 to 50 degrees;

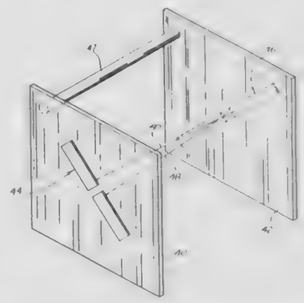
said sensor elements having a directional pattern such that an entire angle span of interest is covered in an elevational plane, while said directional pattern covers an essentially narrower angle in an azimuth plane.

5,053,785

POLARIZATION SELECTIVE SURFACE FOR CIRCULAR POLARIZATION

William V. Tilston, deceased, late of Kemptville, Canada by Stephen E. Tilston, Mark Tilston, David Tilston, co-executors ; Stephen E. Tilston, Kemptville; Mark Tilston, Kemptville; David Tilston, Kemptville, and Thomas Tralman, Kemptville, all of Canada, assignors to Her Majesty the Queen as represented by the Minister of Nat. Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Apr. 25, 1989, Ser. No. 342,888
Claims priority, application Canada, Sep. 9, 1987, 546499
Int. Cl.[5] H01Q *15/24*
U.S. Cl. 343—756 **6 Claims**



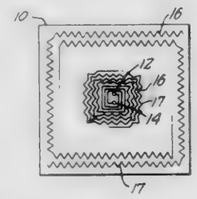
1. A surface for electromagnetic waves for use in discriminating between left hand and right hand circular polarization, comprising:

at least one pair of dipoles, each dipole of said pair having a feed point, one of said dipoles of said at least one pair of dipoles being a vertical dipole for receiving a vertical component of circular polarization and the other of said dipoles of said at least one pair of dipoles being a horizontal dipole for receiving a horizontal component of circular polarization; and

a transmission line extending between and electrically connecting said feed points of said dipoles of said at least one pair of dipoles; wherein said dipoles of said at least one pair of dipoles are separated optimum by 90 electrical degrees in time and said transmission line has an optimum length of 180 electrical degrees or integral multiples thereof;

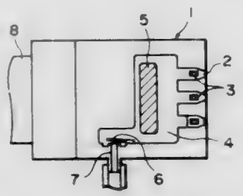
whereby, when two components of an incident circularly polarized electromagnetic wave are incident upon respective dipoles in phase, said incident wave is reflected and, when two components of an incident circularly polarized electromagnetic wave are incident upon their respective dipoles 180 electrical degrees out-of-phase, said incident wave is passed substantially unaffected, said surface for electromagnetic waves further including a support for said dipoles of said at least one pair of dipoles, said support comprising a body formed of dielectric material having parallel opposed surfaces spaced apart and a thickness of optimum 90 electrical degrees, said body having a hole extending therethrough and opening into said surfaces and constituting said transmission line.

5,053,786
BROADBAND DIRECTIONAL ANTENNA
Lawrence H. Silverman, Dix Hills, and Shakeel Siddiqi, Farmingdale, both of N.Y., assignors to General Instrument Corporation, New York, N.Y.
Continuation of Ser. No. 343,525, Jan. 28, 1982, abandoned. This application Feb. 5, 1988, Ser. No. 152,466
Int. Cl.[5] H01Q 1/36
U.S. Cl. 343—895 6 Claims



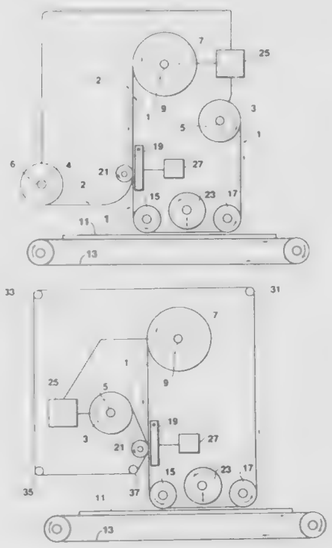
1. In combination, active antenna means, and antenna lobe suppressing chamber means coupled to said active antenna means
said active antenna means comprising two co-planar proximate spiral conductive paths,
said chamber means including an outer housing wall and interior wave absorbing means,
said outer housing wall comprising a composite sidewall structure including a first portion formed of an insulator material and a second portion formed of a conducting material, said first and second portions having a continuous interface spaced from said active antenna means at different distances, separating the wall into a first area comprising the first portion and a second area comprising the second portion, said second area being positioned and dimensioned to be relatively larger about the central or high frequency portion of the antenna so as to preserve the vertical wave directivity, whereby said active antenna means exhibit a broadband, directional characteristic for both horizontally and vertically polarized waves.

5,053,787
INK JET RECORDING METHOD AND HEAD HAVING ADDITIONAL GENERATING MEANS IN THE LIQUID CHAMBER
Koji Terasawa, Mitaka, and Hideki Yamaguchi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 303,257, Jan. 26, 1989. This application Dec. 11, 1990, Ser. No. 625,705
Int. Cl.[5] B41J 2/05, 2/055, 2/165
U.S. Cl. 346—1.1 27 Claims



1. A discharge recovery method for an ink jet recording head including discharge openings capable of discharging ink therefrom, liquid paths connected to the discharge openings, and a liquid chamber in communication with the liquid paths for supplying ink thereto, with heat energy generating members for recording being provided proximate to or in the liquid paths and heat energy generating means being provided in the liquid chamber, the method comprising the steps of:
driving the heat energy generating members in a recording mode, wherein ink is discharged through selected discharge openings to effect recording; and
driving the heat energy generating means so as to generate heat energy for discharging ink only in a non-recording mode, wherein ink is discharged through selected discharge openings but recording is not effected.

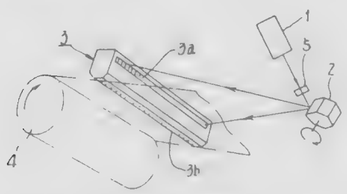
5,053,788
METHOD AND APPARATUS FOR THERMAL PRINTING SUITABLE FOR LARGE PRINTING AREA
Michiharu Tohdo, 7-34, Miyazaki 6-chome, Miyamae-ku, Kawasaki-shi, Kanagawa-ken, Japan
Filed Dec. 26, 1989, Ser. No. 456,808
Claims priority, application Japan, Dec. 28, 1988, 63-334668; Sep. 19, 1989, 1-240504
Int. Cl.[5] G01D 9/00, 15/10
U.S. Cl. 346—1.1 20 Claims



1. An apparatus for thermally printing desired printing patterns on a printing object by using a carbon ribbon, comprising:
means for moving the carbon ribbon along a first track and then along a second track which is spatially separated from the first track;
conveyer means for carrying a printing object along the second track below the carbon ribbon;
printing head means placed on the first track for imprinting the desired printing patterns on the carbon ribbon on the first track;
a platen roller placed on an opposite side of the printing head means with respect to the carbon ribbon;
transparent sheet means for taking extraneous images in which the printing patterns are excluded, the sheet means being a polyester film rolled together with the carbon ribbon which is inserted between the platen roller and the carbon ribbon in a vicinity of the printing head means, and moved along with the carbon ribbon until the carbon ribbon passes through the printing head means; and
thermal transfer roller means placed on the second track for pressing the carbon ribbon onto the printing object on the conveyer means so as to thermally transfer the desired printing patterns on the carbon ribbon to the printing object.

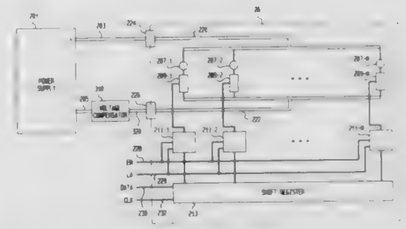
16. A method of thermally printing desired printing patterns on a printing object by using a carbon ribbon having carbon black on a carbon black side, comprising the steps of:
moving the carbon ribbon along a first track and then along a second track which are spatially separated from the first track;
carrying a printing object along the second track below the carbon ribbon;
imprinting the desired printing patterns on the carbon ribbon on the first track by a printing head means placed on the first track;
providing a platen roller placed on an opposite side of the printing head means with respect to the carbon ribbon;
pressing the carbon ribbon onto the printing object by thermal transfer roller means placed on the second track so as to thermally transfer the desired printing patterns on the carbon ribbon to the printing object, whereby transfer of the printing pattern expends the carbon ribbon; and
taking extraneous images in which the printing patterns are excluded, by utilizing the expended carbon ribbon which is inserted between the platen roller and the unexpended carbon ribbon in a vicinity of the printing head means such that the extraneous images are placed on the carbon black side of the expended carbon ribbon.

5,053,789
OPTICALLY-SWITCHED THERMAL PRINTHEAD SYSTEM
Kenichi Fujii, Osaka, and Hisashi Uemura, Nishinomiya, both of Japan, assignors to Kanzaki Paper Manufacturing Co. Ltd., Tokyo, Japan
Filed Dec. 5, 1990, Ser. No. 622,721
Claims priority, application Japan, Aug. 12, 1989, 319130
Int. Cl.[5] G01D 15/10; G03G 5/16
U.S. Cl. 346—76 PH 1 Claim



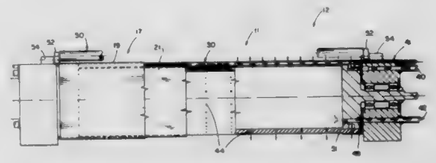
1. A scanning type printer comprising:
a printer head circuit having a number of circuit branches connected in parallel between terminals of a power supply, each of said branches being composed of a heating element and a photoelectric element, so that energization of said heating element being switched by controlling irradiation of said photoelectric element with light,
a thermal print head physically fixing and supporting said print head circuit, the photoelectric element in the respective branches being arranged along a predetermined beam scanning line and the heating element being arranged in a predetermined plane in the same order as said order of arrangement of the corresponding photoelectric element, and
a scanning optical system for emitting a modulated laser beam to be scanned to form said light beam scanning line.

5,053,790
PARASITIC RESISTANCE COMPENSATION FOR THERMAL PRINTERS
Stanley W. Stephenson, Spencerport; Young No, Pittsford, and David A. Johnson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 2, 1990, Ser. No. 547,353
Int. Cl.[5] B41J 2/325
U.S. Cl. 346—76 PH 20 Claims



1. Thermal printing apparatus comprising:
a printhead comprising first and second power terminals and a plurality of heat elements coupled in parallel across the first and second terminals;
power supply means coupled to the first and second terminals of the printhead for supplying current to the heat elements;
control means coupled to the heating elements for selecting which of the heating elements receives the current supplied by the power supply means;
power sensing means coupled between the second power terminal of the printhead and the power supply means for sensing an instantaneous power demand of the printhead as the printhead is operating; and
voltage controlling means responsive to the sensed instantaneous power demand of the printhead for directly controlling the voltage coupled to the first and second terminals of the printhead so as to maintain a prescribed essentially equal voltage across each of the selected heat elements.

5,053,791
THERMAL TRANSFER PRINT MEDIUM DRUM SYSTEM
Seung Ho. Baek, Pittsford; Robert I. Morrison, Macedon, and Sanwal P. Sarraf, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 16, 1990, Ser. No. 509,696
Int. Cl.[5] G01D 15/24, 15/10; B65H 5/02
U.S. Cl. 346—138 12 Claims



6. A thermal printer for forming an image on a thermal print medium, said medium including a dye which is transferred by sublimation from a donor to a receiver as a result of heating dye in the donor, said printer comprising:
a source of radiation;
means for supporting the thermal print medium; said supporting means including a first support means for supporting said donor, a second support means for supporting said receiver, and vacuum means for supply vacuum to said first and second support means;

means for directing radiation from said source in a form of a dot on said thermal print medium in order to provide sufficient thermal energy to said donor to cause dye to transfer to the receiver; and

means for moving said medium and said source relative to each other to form said image from a series of dots on said medium.

5,053,792

DEVICE FOR COOLING THERMAL HEAD

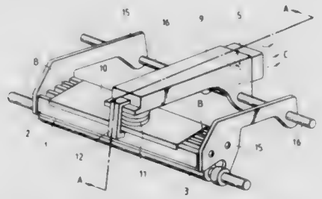
Ryuzo Une, Hiroshima, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,356

Claims priority, application Japan, Aug. 3, 1989, 1-203225

Int. Cl.[5] G01D *9/00, 15/10;* **B41J** *29/377*

U.S. Cl. 346—146 **6 Claims**



1. A device for cooling a thermal head which is arranged within an image recording apparatus, comprising:

a radiating fin;

ventilation means for producing a stream of air for cooling said radiating fin;

duct means for guiding said stream of air after having cooled said radiating fin outside said image recording apparatus; and

said duct means including a duct having an air intake end and an air exhaust end, and an expander elastically connecting said duct intake end and said radiating fin.

5,053,793

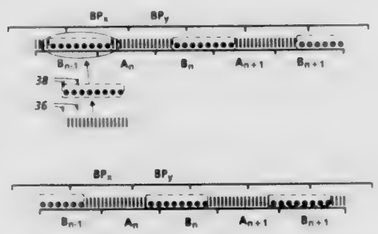
ELECTROGRAPHIC MARKING WITH DITHERED STYLUS GROUP BOUNDARIES TO ELIMINATE STRIATIONS

Stephen D. White, Santa Clara; Lorin K. Hansen, Fremont; Keith E. McFarland, Woodside, all of Calif., and Jack H. Sayre, St. Johns, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1990, Ser. No. 530,719

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—154 **5 Claims**



1. A method of producing an electrostatic image along scan lines of a recording medium, comprising a conductive layer and a dielectric layer, with recording means including a series of stylus electrodes arranged in a longitudinally extending array and divided into a series of groups, a driver associated with each stylus electrode of a group connects like stylus electrodes of each group in parallel with one another and enables a delivery of a write potential or a non-write potential to said stylus electrodes, each stylus electrode terminating adjacent to said dielectric layer, a series of complementary electrodes arranged in a longitudinally extending array for cooperating with sets of stylus electrodes for depositing a charge pattern upon a selected region of said dielectric layer when said sets of stylus electrodes and selected complementary electrodes are pushed contemporaneously, said method comprising the steps of:

delivering a digital signal to said drivers, for passing a write potential or a non-write potential to said stylus electrodes of said series of groups, and

overriding ones of said digital signals passing write potentials with said digital signals passing non-write potentials for defining said sets of stylus electrodes within said groups.

5,053,794

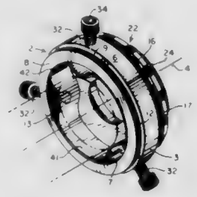
UNIVERSAL ADAPTER FOR ATTACHING A CAMERA TO ASSOCIATED OPTICAL DEVICES SUCH AS TELESCOPES, MICROSCOPES AND THE LIKE

William G. Benz, 10805 River Dr., Forestville, Calif. 95436

Filed Dec. 8, 1989, Ser. No. 447,676

Int. Cl.[5] G03B *29/00*

U.S. Cl. 354—79 **19 Claims**



1. An adapter ring to facilitate mounting of a single lens reflex camera on an outer tubular periphery of an eyepiece of an associated optical device such as a telescope or microscope so that the optical axes thereof coincide, comprising:

(a) a toroidal monolithic body having inner and outer peripheries symmetrical about a central axis and having first and second faces connecting said inner and outer peripheries;

(b) a set of at least two coaxially arranged coextensive threaded sections formed on said toroidal body and associated with said second face;

(c) at least one threaded section coaxially formed on said toroidal body and associated with said first face;

(d) a centrally apertured plate perpendicular to the central axis and integral with said toroidal body intermediate said first and second faces and defining first and second recesses associated, respectively, with said first and second faces on opposite sides of said centrally aperture plate; and

(e) means mounted on said toroidal body and adjustable to engage the outer tubular periphery of the eyepiece of the associated optical device inserted coaxially into said first recess.

5,053,795

REUSABLE CARTRIDGE FOR STORING AND DISPENSING LIGHT SENSITIVE WEB MATERIAL

Stuart J. Wyman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

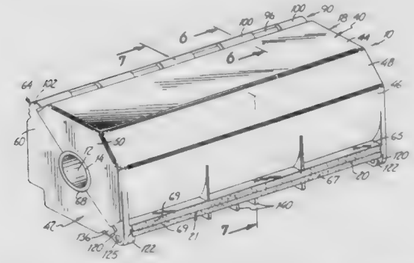
Filed Nov. 5, 1990, Ser. No. 609,376

Int. Cl.[5] G03B *17/26;* **B65H** *16/00*

U.S. Cl. 354—275 **18 Claims**

1. In an opaque dispenser cartridge providing a light-tight chamber from which to dispense a roll of light sensitive web material, the cartridge having (1) a spool including a cylindrical hub initially supporting the roll of material to be dispensed and a pair of discoid end flanges concentric with the hub, one positioned at each end of the roll, and (2) a hollow box encompassing the spool, said box being provided with a straight light-tight exit slot through which the web material can be dispensed from the spool; the improvement wherein:

(a) the outside dimensions of the box define a right angular polyhedron and the box is made up of a top section and a bottom section defining the light-tight exit slot along a first side edge of the box, these sections being connectable to each other to form a light-tight seal along an oppositely positioned second side edge of the box;



(b) each section is provided with side wall means of size and configuration to encompass about one-half of the spool and each section includes a pair of end walls, an end wall of each pair being integrally connected to one end of the side wall means of that section, every end wall being in position and of configuration to mate with a corresponding end wall of the other section to form a light-tight seal serving as part of the enclosure of the light-tight chamber; and

(c) means is provided in the box to support the spool within the chamber to position and maintain the longitudinal axis of the spool hub in parallel relation to the straight exit slot.

5,053,796

LIGHT-SENSITIVE MATERIAL PROCESSING APPARATUS

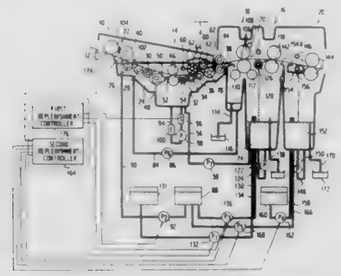
Hisao Ohba, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1990, Ser. No. 580,446

Claims priority, application Japan, Sep. 20, 1989, 1-243887

Int. Cl.[5] G03D *3/06, 3/08*

U.S. Cl. 354—322 **17 Claims**



1. A light-sensitive material processing apparatus for processing an imagewise exposed light-sensitive material while the light-sensitive material is being conveyed to a plurality of processing tanks accommodating a processing solution, said apparatus comprising:

a conductivity detector for detecting the electrical conductivity of the processing solution in a first processing tank;

first supplying means for replenishing a first replenisher to said first processing tank;

second supplying means for replenishing a second replenisher to at least a second processing tank; and

first controlling means which is adapted to supply the first replenisher to said first processing tank by actuating said first supplying means when the electrical conductivity of the processing solution in said first processing tank detected by said conductivity detector reaches a predetermined value, and is also adapted to supply the second replenisher to at least said second processing tank by actuating said second supplying means in an amount substantially proportional to the amount of the first replenisher supplied to said first processing tank.

5,053,797

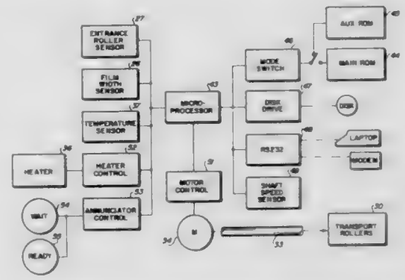
SYSTEM FOR UPDATING SOFTWARE IN AUTOMATIC FILM PROCESSOR

James T. Samuels, and Roger D. Ellsworth, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1990, Ser. No. 504,742

Int. Cl.[5] G03D *3/08*

U.S. Cl. 354—322 **1 Claim**



1. In apparatus for the automatic processing of exposed photosensitive media, said apparatus having means for automatically transporting said media from a feed point along a path through developer, fixer, wash and dryer stations and control circuitry including a microprocessor and a programmable read-only memory associated with said microprocessor to provide stored program information thereto for controlling said processor operations, a method of updating said stored program information without removal of said programmable read-only memory, comprising the steps of:

switching said control circuitry from a normal mode in which said microprocessor is connected to receive program information from said programmable read-only memory, to a programming mode in which said microprocessor is connected to receive program information from an auxiliary read-only memory; and

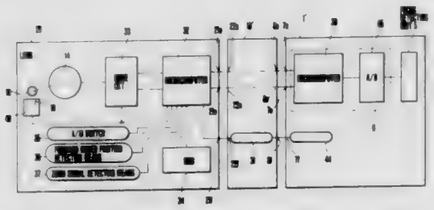
reprogramming said programmable read-only memory by said microprocessor acting in response to program information from said auxiliary read-only memory using address and data information obtained from an external source.

5,053,798

AUTOMATIC FOCUSING DEVICE

Tsunemasa Ohara, Tokyo; Tatsuo Chigira, and Tsunefumi Tanaka, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 143,051, Jan. 12, 1988, abandoned. This application Aug. 28, 1989, Ser. No. 398,332
Claims priority, application Japan, Jan. 14, 1987, 62-6346
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 10 Claims



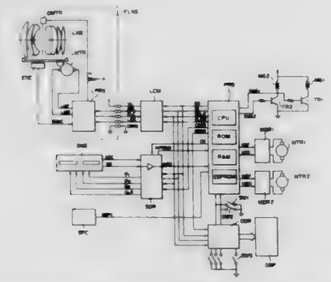
1. An automatic focus adjustment device comprising:
an objective optical system;
focus detecting means for repeatedly detecting a focus state of said objective optical system by using light passing through said objective optical system;
optical means for changing the focal length of said objective optical system;
attachment detecting means for detecting whether or not said optical means has been inserted in the optical path of said objective optical system;
focusing means for performing focusing of a composite system having said optical system and said optical means;
a driving source motor for driving said focusing means; and
means for discriminating the attachment of said optical means on the basis of an output of said attachment detecting means, and for changing a motor speed of said driving source motor depending on a property of said optical means in accordance with the focus state detected by said focus detecting means for compensating for a change in the movement rate of the image plane caused by the attachment of said optical means.

5,053,799

CAMERA HAVING AUTO-FOCUSING DEVICE

Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 550,195, Jul. 10, 1990, abandoned, which is a continuation of Ser. No. 312,312, Feb. 17, 1989, abandoned, which is a continuation of Ser. No. 138,154, Dec. 28, 1987, abandoned. This application Feb. 11, 1991, Ser. No. 653,747
Int. Cl.[5] G03B *13/36, 17/38*
U.S. Cl. 354—402 17 Claims



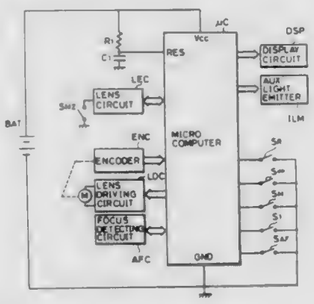
1. A camera having a first mode for effecting a single shutter release operation each time a release member is operated and a second mode for effecting said shutter release operation repeatedly for each shot while said release member is set in a certain operating state, said camera comprising:
a) a focus detecting circuit adapted to detect the focusing state of an image-forming optical system and to output a focus signal;
b) a drive circuit for driving said image-forming optical system in a direction toward an in-focus state on the basis of said focus signal from said focus detection circuit;
c) a control circuit which, in said first mode, repeatedly executes said operation of detecting said focusing state and said operation of driven said image-forming optical system until said shutter release operation is performed, and which, in said second mode, performs a predetermined number of cycles of said operation of detecting said focusing state and said operation of driving said image-forming optical system before executing said shutter release operation; and
d) a restriction circuit for restricting a driving time of said image-forming optical system, said restriction circuit being operable in said second mode while being prohibited from operating in said first mode.

5,053,800

AUTOMATIC FOCUS DETECTING APPARATUS

Tokuji Ishida; Masataka Hamada; Toshio Norita; Masayuki Ueyama; Katsumi Kozakai; Hiroshi Ootsuka; Hideo Kajita, and Kenji Ishibashi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 299,656, Jan. 23, 1989, Pat. No. 4,935,765. This application Jan. 9, 1990, Ser. No. 462,478
Claims priority, application Japan, Jan. 21, 1988, 63-11616; Jan. 21, 1988, 63-11617; Jan. 21, 1988, 63-11618; Jan. 21, 1988, 63-11619; Jan. 21, 1988, 63-11620; Jan. 21, 1988, 63-11621; Jan. 21, 1988, 63-11622; Jan. 22, 1988, 63-11623; Jan. 27, 1988, 63-17939; May 13, 1988, 63-117440; May 14, 1988, 63-117325; May 14, 1988, 63-117326; May 14, 1988, 63-117328; May 14, 1988, 63-117827
Int. Cl.[5] G03B *13/36*; G02B *7/28*
U.S. Cl. 354—402 6 Claims



1. A focus adjusting apparatus comprising:
(a) a photographic lens;
(b) focus detecting means for receiving light from an object to be photographed through said photographic lens and detecting a focusing condition of said photographic lens;
(c) reliability judging means for judging the reliability of the focusing condition detected by said focus detecting means;
(d) driving means for driving said photographic lens while performing the focus detection with the reliability of the focusing condition being below a predetermined level;
(e) first data output means for outputting a first data including a fixed focus detection enabling range inherent to said focus detecting means;

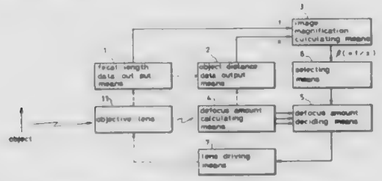
(f) second data output means for outputting a second data indicating a movable range for focus adjustment of said photographic lens; and
(g) determining means for determining based on the first data and second data whether or not the lens driving operation by said driving means is to be carried out.

5,053,801

DEVICE FOR AUTOMATICALLY ADJUSTING FOCUS OR DETECTING OBJECT DISTANCE OR CAMERA HAVING SUCH FUNCTION

Tokuji Ishida; Toshio Norita, and Azuchimachi Ootsuka, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1989, Ser. No. 404,576
Claims priority, application Japan, May 21, 1987, 62-125189
Int. Cl.[5] G03B *13/36*; G02B *7/34*
U.S. Cl. 354—402 23 Claims



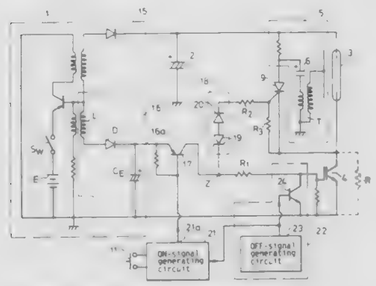
1. An automatic focus adjusting device comprising:
image magnification data calculating means for calculating image magnification data representing a magnification of an object in a scene to be photographed,
optical means for focus detection,
light receiving means having a plurality of light receiving portions for receiving light from a plurality of areas in the scene through said optical means to produce light receiving data,
focus adjusting data calculating means for calculating data relating to focus adjustment of each area in accordance with the light receiving data to produce focus adjusting data of each area, and
focus adjusting data deciding means for deciding a second focus adjusting data to be focus adjusted based on the image magnification data and the focus adjusting data.

5,053,802

ELECTRIC FLASH APPARATUS

Shinji Hirata, Toyonaka, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Mar. 28, 1990, Ser. No. 503,180
Claims priority, application Japan, Mar. 29, 1989, 1-78887
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—416 10 Claims



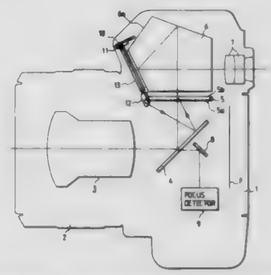
1. An electric flash apparatus comprising:
a main capacitor which is connected in parallel to a DC high voltage power source;
a series connection branch having a flash tube and a power transistor which is connected in parallel to said main capacitor;
a power source circuit for supplying driving signal to the gate of said power transistor through a first switching device when said first switching device turns ON;
a trigger circuit having a trigger capacitor and a trigger transformer for triggering said flash tube when a second switching device turns ON;
a Zener diode whereof the cathode is connected to the gate of said power transistor, and the anode is connected to the gate of said second switching device;
an ON-signal generating circuit which is actuated when said flash tube is forced to emit light, and which issues an ON signal for turning said first switching device to ON state; and
a light emission control circuit having an OFF-signal generating circuit which issues an OFF signal when light emission of said flash tube is to be stopped, to turn said power transistor OFF and reset said ON-signal generating circuit to a standby state at reception of an OFF signal from said OFF-signal generating circuit.

5,053,803

INFORMATION DISPLAY APPARATUS FOR CAMERA

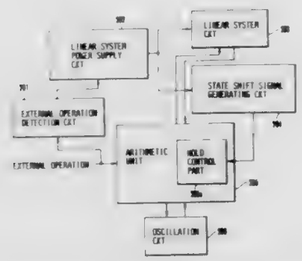
Yasuo Suda; Kenji Ito; Keiji Ohtaka, and Kenji Suzuki, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1990, Ser. No. 480,671
Int. Cl.[5] G03B *17/18*
U.S. Cl. 354—466 6 Claims



1. An information observation apparatus in which a fresnel lens is arranged near a predetermined imaging plane on which an object image is formed by an objective lens, an optical element having a display character constituted by a plurality of microprisms is arranged near said fresnel lens, and said display character is illuminated by illumination means and is observed together with the object image formed by said objective lens, wherein ridgelines of said microprisms constituting said display character are arranged to be substantially perpendicular to a tangential direction of a ridgeline of said fresnel lens.

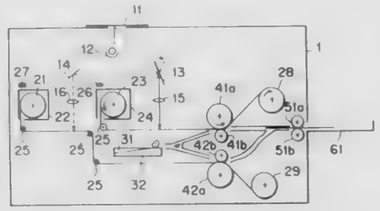
5,053,804
CAMERA HAVING COMPUTER
Yukio Odaka, Kanagawa; Yasuhiko Shiomi, Tokyo, and Masanori Ohtsuka, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 217,291, Jul. 7, 1988, abandoned. This application Jul. 24, 1990, Ser. No. 556,862
Claims priority, application Japan, Jul. 10, 1987, 62-172627; Sep. 17, 1987, 62-233380; Dec. 3, 1987, 62-306726; Dec. 3, 1987, 62-306727
Int. Cl.[5] G03B *7/26*
U.S. Cl. 354—484 **18 Claims**



1. A camera having a computer for controlling an operation of a first load circuit, comprising:
a) a second load circuit;
b) a power supply circuit for supplying a power to said first load circuit and/or said second load circuit; and
c) a detection circuit for detecting a drop in a voltage level of power supply effected by said power supply circuit, said detection circuit having a first detection level which is used when said first load circuit is driven and a second detection level which is higher than said first level; and
d) a switching circuit arranged to shift said computer from a normal operating mode to a low electric energy consuming mode in response to an output of said detection circuit produced when said voltage level is detected to have become lower than said first detection level while said first load circuit is driven or when said voltage level is detected to have become lower than said second detection level while said second load circuit is driven.

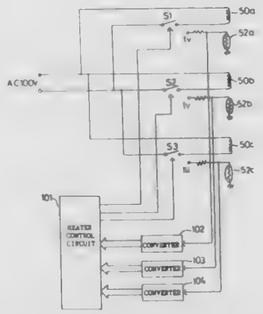
5,053,805
IMAGE RECORDING APPARATUS SELECTIVELY USING TWO KINDS OF PHOTOSENSITIVE RECORDING SHEETS
Jun Sakai, Nagoya; Osamu Nagata, Aichi, and Keiji Seo, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Aug. 24, 1990, Ser. No. 571,872
Claims priority, application Japan, Aug. 24, 1989, 1-99018[U]; Oct. 30, 1989, 1-282221
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—27 **20 Claims**

1. An image recording apparatus for recording an image of an original document, comprising:
a plurality of sheet storage means, each storing a photosensitive recording sheet having an image recording characteristic including photosensitivity, the image recording characteristics of the photosensitive recording sheets being different from one another;
sheet selection means for selecting one of the photosensitive recording sheets;
exposure means for exposing the selected photosensitive recording sheet to an imaging light carrying the image of the original document to form a latent image thereon, said exposure means having variable exposure conditions;
developing means for developing the latent image and providing a visible image on an image receiving sheet, said developing means having variable developing conditions;
fixing means for fixing the visible image on the image receiving sheet, said fixing means having variable fixing conditions;
conveying means for conveying the selected photosensitive recording sheet past said exposure means, said developing



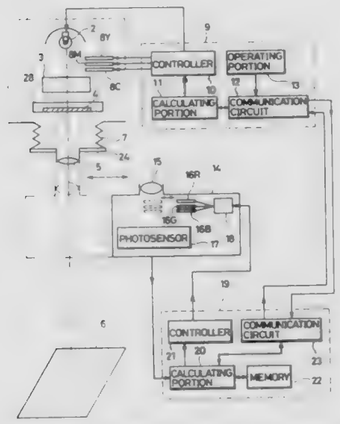
means, and said fixing means, said conveying means having variable conveying conditions; and
control means for controlling at least one of the exposure condition of said exposure means, the developing condition of said developing means, the fixing condition of said fixing means, and conveying condition of said conveying means depending upon the image recording characteristic of the selected photosensitive recording sheet.

5,053,806
HEAT FIXING APPARATUS
Hideaki Haigo, and Yoshinori Endo, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 29, 1990, Ser. No. 619,417
Claims priority, application Japan, Dec. 27, 1989, 1-342285
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—30 **16 Claims**



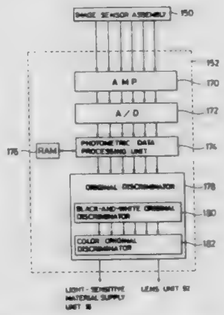
1. A heat fixing apparatus for fixing a transferred image onto a sheet with heat application, comprising:
heat generating means having a plurality of heaters for generating heat;
a plurality of sensors, each sensor located adjacent to one said heater, each said sensor detecting a temperature of the adjacent heater; and
temperature control means for individually controlling each of said heaters in response to the temperatures detected by said sensors.

5,053,807
METHOD OF PRODUCING COLOR IMAGE IN COLOR PHOTOGRAPHIC PRINT ENLARGER AND DEVICE THEREFOR
Takeshi Uryu, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co. Ltd., Japan
Filed Mar. 8, 1990, Ser. No. 490,476
Claims priority, application Japan, Mar. 8, 1989, 1-53761
Int. Cl.[5] G03B *27/80*
U.S. Cl. 355—38 **20 Claims**



1. A color image processing method for producing a color image of a color negative original based on a reference color negative original having a light transmitting property, wherein a tone of said color negative original, corresponding to the luminous intensity of each of the three primary red, green, and blue color components of light, is obtained by transmitting predetermined light through said color negative original, said method comprising the steps of:
passing said predetermined light through and detecting a difference in said tone between said reference color negative original and said color negative original with respect to each of said red, green and blue components of light, said detecting step including:
measuring a first luminous intensity of each of said red, green and blue color components of light transmitted through said color negative original and measuring a second luminous intensity of said red, green and blue color components of light transmitted through said reference color negative original when said original and reference color negatives are irradiated with said predetermined light; and
obtaining for each said red, green and blue color components the difference between said first luminous intensity and said second luminous intensity; and
offsetting said tone difference by adjusting a color balance of said predetermined light to obtain a respective final luminous intensity for each of the three red, green and blue color components of light such that the final luminous intensity of the red color component is not dependent on said difference between said first and second luminous intensities for red, the final luminous intensity of the green color component is dependent upon the difference in luminous intensity for green and the difference in luminous intensity for red, and the final luminous intensity for blue is dependent upon the difference in luminous intensity for blue and the difference in luminous intensity for red.

5,053,808
IMAGE FORMING APPARATUS
Atsushi Takagi, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 27, 1989, Ser. No. 413,557
Int. Cl.[5] G03B *27/73*
U.S. Cl. 355—38 **20 Claims**



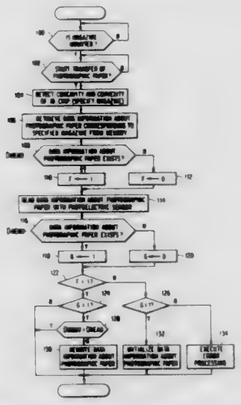
1. An image forming apparatus comprising:
at least two sensors for the light of each of at least one of three primary colors for measuring the reflected light from an original, said sensors having sensitivity peaks at different wavelengths within the wavelength region of the light of said at least one primary color,
means for identifying the type of said original by the values of measurements with said sensors, and
means for forming an image in accordance with the so identified type of original, identification of said original being performed in such a way that color photographic originals are distinguished from color printed originals and black-and-white originals based on the value of a single discriminant function that uses said plural values of measurements as parameters for said discriminant function.

5,053,809
PHOTOPRINTER
Kanji Tokuda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 27, 1990, Ser. No. 572,530
Claims priority, application Japan, Sep. 5, 1989, 1-229759
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—41 **19 Claims**

1. A photoprinter comprising:
first detecting means for detecting first information used to specify a magazine for loading a photosensitive material wound in a layered form from a first information portion provide for each magazine when the magazine is mounted;
second detecting means for determining, at the time the magazine is mounted, the existence of second information related to the setting of the exposure conditions, and for detecting said second information, including at least the type of the photosensitive material, from a second information portion provided in an end portion of the photosensitive material loaded into the magazine when said second information is determined to exist;
memory means for storing the first information detected by said first detecting means and for storing the second information detected by said second detecting means corresponding to the first information stored therein;
determination means for determining, at the time the magazine is mounted, whether corresponding second information is stored in the memory means corresponding to the first information detected by said first detecting means and for obtaining the corresponding second information stored in the memory means using the first information

detected by said first detecting means when the corresponding second information is stored in the memory means; and

rewriting means for rewriting the second information previ-



ously stored in the memory means into newly detected second information when the corresponding second information obtained by said determination means does not coincide with the second information detected by the second detecting means.

5,053,810

REPROGRAPHIC LENS SYSTEM AND A REPROGRAPHIC CAMERA COMPRISING SUCH A SYSTEM

Bo Balstrup, Fredensborg, Denmark, assignor to Helioprint A/S, Denmark

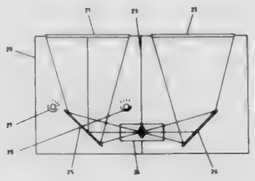
PCT No. PCT/DK89/00028, § 371 Date Sep. 27, 1990, § 102(e) Date Sep. 27, 1990, PCT Pub. No. WO89/07784, PCT Pub. Date Aug. 24, 1989

PCT Filed Feb. 14, 1989, Ser. No. 555,425

Claims priority, application Denmark, Feb. 15, 1988, 756/88

Int. Cl.[5] G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **6 Claims**



1. A reprographic lens system comprising; first, second and third subsystems aligned about the optical center of the system, the first subsystem (1) comprising a first zoom lens, the second subsystem (2) a field lens and the third subsystem (3) comprising a second zoom lens, wherein the field lens (2) is arranged to reproduce the outlet aperture of the first zoom lens in the inlet aperture of the second zoom lens.

5,053,811

MAGAZINE FOR ADMITTING PHOTOSENSITIVE MATERIALS FOR PHOTOGRAPHIC PRINTER

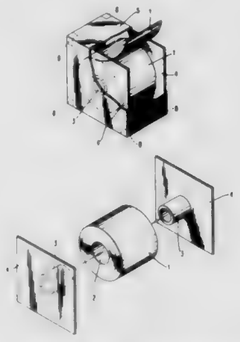
Nobuyuki Watabe, and Yoshihiro Nishiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 842,220, Mar. 21, 1986. This application Aug. 25, 1987, Ser. No. 89,057

Claims priority, application Japan, Mar. 25, 1985, 60-58114

Int. Cl.[5] G03B *27/58*

U.S. Cl. 355—72 **5 Claims**



1. A magazine for admitting a roll of photosensitive material for a photographic printer in a drawable state comprising a light-proof box made of paper, a cylindrical member made of paper which is provided in said box and which rotatably supports said roll of photosensitive material, and a support member integral with said box and made of paper which supports said cylindrical member, said support member including a pair of substantially square paper boards, the length of said cylindrical member being slightly longer than the width of said roll, said cylindrical member being divided into two cylindrical pieces, each piece of said two cylindrical pieces being perpendicularly fixed on said paper support member and secured by adhesive at a position corresponding to each other, said two cylindrical pieces being received in a center hole of said roll so as to contact each other and define a selfsupporting cylindrical member.

5,053,812

DISCONNECTABLE, REMOUNTABLE, CONNECTION SYSTEM FOR A DOCUMENT TRACK

Alistair R. Hamilton, Waterloo; Frederick W. Brouwer, Kitchener, and Robert W. Phillips, Waterloo, all of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 14, 1990, Ser. No. 627,286

Int. Cl.[5] G03B *27/52*

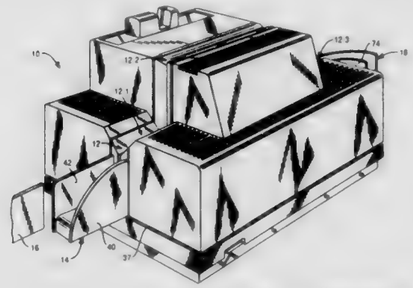
U.S. Cl. 355—133 **8 Claims**

1. An apparatus comprising:

a document processing machine having a document track for entering/exiting documents;

an extension for said document track to support a document inserted therein; and

coupling means coupling said extension to said document track to enable said extension to break away from said



document track when said extension is accidentally hit by a foreign body.

5,053,813

ELECTROPHOTOGRAPHIC COPYING APPARATUS HAVING TWO COPY-START KEYS

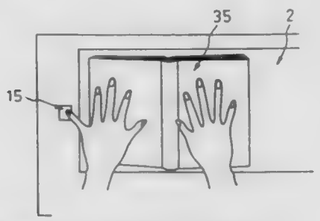
Akihiro Moro, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1989, Ser. No. 429,090

Claims priority, application Japan, Oct. 31, 1988, 63-272914

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—201 **2 Claims**



1. An image forming apparatus comprising:

a copying machine main body;

a rectangular control panel provided on the upper surface of said main body;

an original table cover provided at a position opposite to said control panel;

a transparent original table provided on the upper surface of said main body at a position between said control panel and said original table cover;

a first copy-start key provided on one end of said rectangular control panel, being continuously in an enabled state;

a rectangular periphery located around the original table;

a second copy-start key located in the center of the portion of the rectangular periphery which is perpendicular to the control panel and which is most distant from the first copy-start key, said second copy-start key normally being in a disabled state; and

controlling means for changing the second copy-start key from the disabled to an enabled state.

5,053,814

IMAGE FORMING APPARATUS

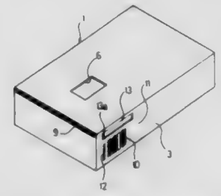
Yoshiaki Takano; Masazumi Ito; Keiji Kusumoto; Takashi Noda, and Masaaki Oyabu, all of Osaka, Japan, assignors to Minolta Camera Kubushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1987, Ser. No. 137,374

Claims priority, application Japan, Dec. 24, 1986, 61-310525; Dec. 24, 1986, 61-310526; Dec. 24, 1986, 61-310527; Dec. 24, 1986, 61-310528; Dec. 24, 1986, 61-310529

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **27 Claims**



1. An image forming apparatus comprising:

means for forming an image on copy paper,

a paper cassette containing the copy paper and removably attached to the main body of the apparatus,

marking means provided in the main body providing a mark on the outer surface of the cassette according to the number of sheets of the copy paper used, said mark being visually discernible when the cassette is attached to and detached from the main body of the apparatus.

7. An image forming apparatus comprising:

means for forming an image on copy paper;

a paper cassette containing the copy paper and removably attached to the main body of the apparatus;

data representing portion provided on the outer surface of the cassette and representing data as to the copy paper contained in the cassette;

data reading means provided in the main body for reading the data;

judging means for determining whether the operation of the image forming means is to be prohibited based on the data obtained by the data reading means; and

control means for controlling the image forming means based on the data obtained by the reading means when said judging means determines that the operation of the image forming means is not prohibited.

5,053,815

REPRODUCTION APPARATUS HAVING REAL TIME STATISTICAL PROCESS CONTROL

Michael J. Wendell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 9, 1990, Ser. No. 506,307

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **6 Claims**

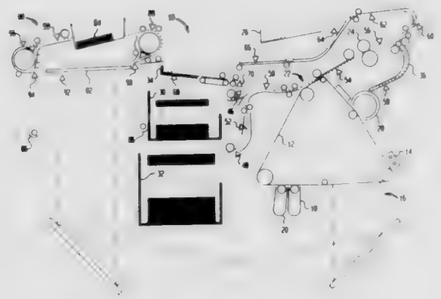
1. Document reproduction apparatus comprising:

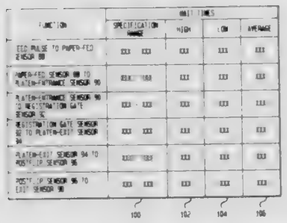
a plurality of sensors for acquiring real time process diagnostic data;

means for statistically comparing the acquired data to at least one of predetermined control limits, specifications, and reference values;

control means responsive to statistical differences between

the acquired data and the at least one of predetermined control limits, specifications, and reference values for





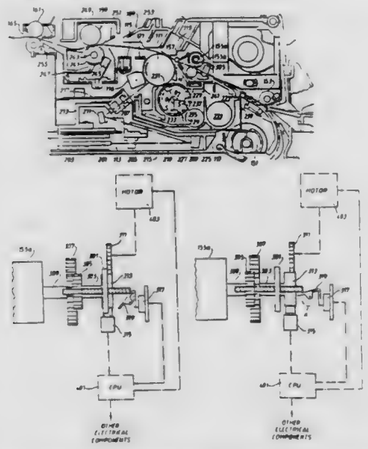
functionally and automatically optimizing operation of the document reproduction apparatus in real time.

5,053,816

APPARATUS FOR DETECTING WHETHER A REPLACEABLE CARTRIDGE IS NEW OR USED IN AN IMAGE FORMING APPARATUS

Tomohiko Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 28, 1990, Ser. No. 518,735
Claims priority, application Japan, Mar. 31, 1989, 1-083590
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **11 Claims**



1. An image forming apparatus for forming an image on an image carrier, said apparatus comprising:

image forming means for forming said image on said image carrier;

developing means for developing said image formed on said image carrier, wherein said developing means is formed of a mixture of toner and toner carriers;

mixing means for mixing said toner and said toner carriers to form said mixture;

detecting means for detecting whether said toner and said toner carriers have been mixed together, and

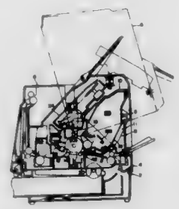
means for setting the state of said developing means to a used state in response to the detecting result by said detecting means.

5,053,817

SUPPORTING AND DRIVING MECHANISM FOR A ROTATING BODY

Tadakazu Ogiri; Katsuhide Yamaguchi, both of Takatsuki; Toshiharu Nakai, Ibaraki; Yoshio Morita, Matsubara; Koji Migita, Sakai, and Hiroyuki Tanaka, Yamatokoriyama, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1990, Ser. No. 593,641
Claims priority, application Japan, Oct. 31, 1989, 1-285797
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—211 **16 Claims**



1. A supporting and driving mechanism including a rotatable body and a supporting unit, the mechanism comprising:

an axis member provided at either end of the rotatable body and the axis member having a circular cross-section;

a driven gear provided at at least one end of the rotatable body;

supporting unit including a receiving surface portion and two rotatable rollers placed parallel to each other so that the distance between the closest surfaces of the rollers is smaller than the diameter of the cross-section of said axis member;

a driving gear provided in the supporting unit for engaging the driven gear; and

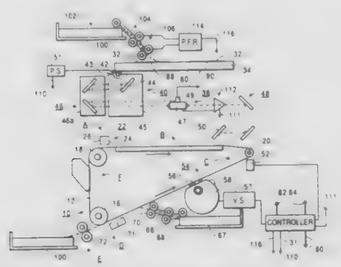
wherein the axis member of the rotatable body is supported by the receiving surface portion and the two rollers when a driving force of the driving gear is not transmitted to the rotatable body, and the axis member is rotatably supported only by the two rollers upon being pressed toward the two rollers owing to the driving force which develops when the driving force is transmitted to the rotatable body.

5,053,818

METHOD AND APPARATUS FOR COPYING SEMI-TRANSPARENT ORIGINALS USING A BLACK BACKING MEMBER

Craig A. Smith, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1990, Ser. No. 629,847
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—214 **25 Claims**



1. A reproduction apparatus comprising:

(a) a moving photoconductive member;

(b) charging means to produce a first potential on the photoconductive member;

(c) illuminating means for illuminating an original document having a background area and an image area;

(d) optical means for focusing a light image of the original document onto the photoconductive member, the document and the optical means mounted for relative movement;

(e) sensor means in the optical path for sensing the optical density of a portion of the document during illumination; and

(f) control means for controlling the illumination of the background area and means responsive to the sensor means during illumination for eliminating the power to said illumination means wherein a portion of said document being totally undeveloped, said portion corresponding to the original document.

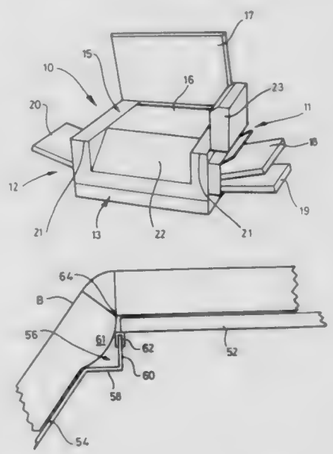
5,053,819

COPIER WITH IMPROVED PLATEN FOR BOOKS TO BE COPIED

Brian R. Malyon, Bracknell, and Simon E. Lugg, Bermondsey, both of United Kingdom, assignors to Select Information Systems Limited, Berkshire, England

PCT No. PCT/GB89/00322, § 371 Date Sep. 12, 1990, § 102(e) Date Sep. 12, 1990, PCT Pub. No. WO89/09434, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 23, 1989, Ser. No. 572,954
Claims priority, application United Kingdom, Mar. 26, 1988, 8807268
Int. Cl.[5] G03G *21/00, 15/00*
U.S. Cl. 355—230 **9 Claims**

1. In a copier comprising a casing and a platten mounted thereon, and in which the imaging optics and the paper feed require the original to be copied to be aligned with or referenced to the near edge of the platten, the improvement wherein said casing is cut away in the region of the near edge so as to slope outwardly and downwardly, thereby providing



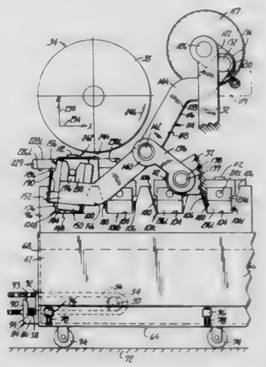
an inclined support surface on which the half of a book which is not being copied can rest while the other half is beirig copied, and wherein a recess is provided along the edge between said platten and said support surface, the recess including a horizontal portion and an upright portion extending to the platten.

5,053,820

DEVELOPING MODULE DRIVE SYSTEM FOR AN ELECTROGRAPHIC PRINTER

Duane A. Preszler, River Falls, and Gregory L. Zwadlo, Ellsworth, both of Wis., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Mar. 12, 1990, Ser. No. 491,499
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **47 Claims**



1. A drive system for positioning any one of a plurality of liquid toner developing modules relative to a photoconductor mounted to a frame, comprising:

an indexing assembly, including:

a toner cart positioned below the photoconductor for

supporting the plurality of developing modules, the toner cart being movable relative to the frame; and

a movable lift assembly mounted to the frame adjacent to the photoconductor and above the developing modules, the lift assembly being configured to releasably engage any one of the plurality of developing modules and raise the module away from the toner cart to a developing position adjacent the photoconductor to effectuate a developing process.

5,053,821

ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS USING PHOTOCONDUCTIVE TONER

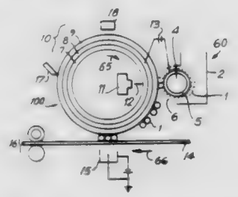
Masanao Kunugi; Hajime Kurihara, and Teruyuki Mizumoto, all of Suwa, Japan, assignors to Seiko Epson Corporation, A Corporation of Japan, Tokyo, Japan

Division of Ser. No. 253,514, Oct. 5, 1988. This application Feb. 12, 1990, Ser. No. 479,001

Claims priority, application Japan, Oct. 6, 1987, 62-252034; Feb. 22, 1988, 63-38818; Apr. 18, 1988, 63-95116

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **20 Claims**



1. A photoconductive image formation apparatus comprising:

a transparent insulating image forming substrate including a transparent conductive layer and a transparent insulating surface disposed thereon;

developer means including photoconductive toner particles and electroconductive carrier particles on an electroconductive transport support for triboelectrically charging the toner particles on the electroconductive transport support, the developer means positioned adjacent to the image forming substrate so that the charged toner particles on the electroconductive transport support contact the image forming substrate, the toner particles having lowered resistivity when exposed with an appropriate wavelength;

exposure means for exposing the toner on the electroconductive transport support contacting the substrate, through the substrate, with an exposure of an appropriate wavelength, corresponding to an image;

bias voltage means for maintaining a DC bias voltage between the electroconductive transport support and the image forming substrate, the voltage too low to reverse the charge of unexposed toner, but high enough to reverse the charge of exposed toner, so that exposed toner from the electroconductive transport support will adhere to the image forming substrate in the form of an image; and

transfer means for transferring toner from the image forming substrate to a transfer medium.

5,053,822

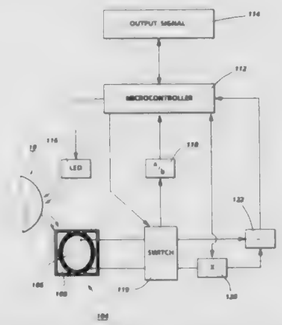
DENSITOMETER FOR MEASURING MARKING PARTICLE DENSITY ON A PHOTORECEPTOR HAVING A COMPENSATION RATIO WHICH ADJUSTS FOR CHANGING ENVIRONMENTAL CONDITIONS AND VARIABILITY BETWEEN MACHINES

Michael A. Butler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1990, Ser. No. 632,885

Int. Cl.[5] G03G *15/08*

U.S. Cl. 355—246 **19 Claims**



1. A densitometer capable of receiving electromagnetic energy input and, in response thereto, generating a diffuse component signal and a total flux component signal comprising:

a) means for generating, responsive to a first electromagnetic energy input received by the densitometer, a first diffuse component signal and a first total flux component signal;

b) means for generating a compensation factor signal, responsive to said first diffuse component signal and said first total flux component signal;

c) means for generating, responsive to a second electromagnetic energy input received by said densitometer, a second diffuse component signal and a second total flux component signal; and

d) means for generating a specular component signal, responsive to said second electromagnetic energy input received by said densitometer, being a function of said second total flux component signal and said second diffuse component signal scaled by said compensation factor signal.

5,053,823

LIQUID ELECTROPHOTOGRAPHIC TRANSFERRING APPARATUS

Hisao Oh-ishi; Tetuo Usui, and Nobuo Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1990, Ser. No. 507,286

Claims priority, application Japan, Apr. 13, 1989, 1-94181; Apr. 14, 1989, 1-94361; Apr. 14, 1989, 1-94362; Oct. 20, 1989, 1-272919

Int. Cl.[5] G03G *15/10*

U.S. Cl. 355—256 **23 Claims**

1. A liquid electrophotographic transferring apparatus for forming an image on a transferring body by using a liquid developer in which toner is retained in carrier liquid comprising:

an image support member to which toner particles in said liquid developer are adhered by an electrostatic force in accordance with an image to be formed;

drying means for drying said toner particles on said image support member so as to bring them into an aggregated state, wherein said drying is continued until a quantity of said carrier liquid remaining on said image support member per 1 mg of said toner particles becomes 20 mg or less;

transferring means for transferring a toner image onto said transferring body by an electrostatic force after said drying operation so that an image formed by aggregated toner particles is assuredly transferred to said transferring body; and

means for supplying insulating liquid to said toner particles on said image support member before said image support member is brought into hermetic contact with said transferring body thereby said image is transferred

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5,053,824

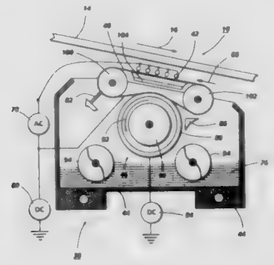
SCAVENGELESS DEVELOPMENT APPARATUS HAVING A DONOR BELT

Joseph G. Schram, Liverpool, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 16, 1990, Ser. No. 512,295

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—259 **16 Claims**



1. An apparatus for developing a latent image recorded on a surface having a planar portion, including:

a housing defining a chamber storing a supply of developer material comprising at least carrier and toner;

a donor belt having a substantially planar region opposed and spaced from the planar portion of the surface, said donor belt being adapted to transport toner to the region opposed from the planar portion of the surface;

an electrode member positioned in the space between the planar portion of the surface and the planar region of said donor belt, said electrode member being closely spaced from the planar region of said donor belt and being electrically biased to detach toner from said donor belt so as to form a toner cloud in the space between said electrode member and the planar portion of the surface with detached toner from the toner cloud developing the latent image; and

means for advancing developer material in the chamber of said housing to said donor belt, said donor belt being wrapped about a portion of said advancing means to define an extended loading zone where toner is deposited on said donor belt.

5,053,825

TONER SUPPLY CARTRIDGE HAVING PRIMARY AND SECONDARY BAFFLES

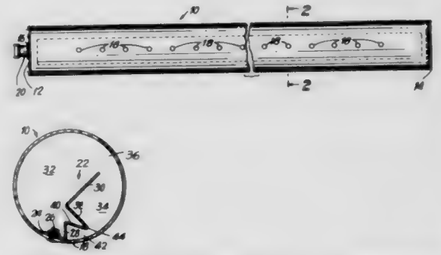
John W. Trainor, Vestal; Bruce E. Holtje, Castle Creek, and Laura M. Gilbert, Vestal, all of N.Y., assignors to Imagitek, Inc., Binghamton, N.Y.

Filed Feb. 6, 1989, Ser. No. 307,334

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **11 Claims**



1. An apparatus for dispensing toner in a photocopying device, comprising:

a container;

a primary baffle inside said container dividing said container into a main chamber and a dispensing chamber;

a secondary baffle inside said container dividing said dispensing chamber into a primary dispensing chamber and a secondary dispensing chamber; and

at least one aperture passing from said secondary dispensing chamber, through said container, through which the toner passes in a metered fashion.

5,053,826

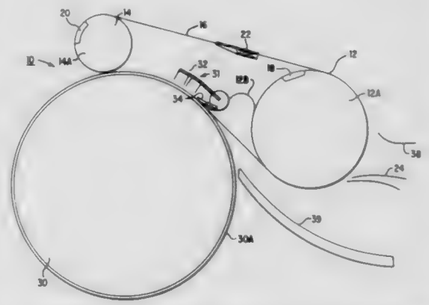
TRANSFER LOOP SYNCHRONIZATION IN RECIRCULATING COLOR PRINTERS

Vittorio R. Castelli, Yorktown Heights, N.Y., and Stephen T. Chui, Rancho Palos Verdes, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1990, Ser. No. 631,901

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—271 **8 Claims**



1. A recirculating transfer loop for a color printer comprising:

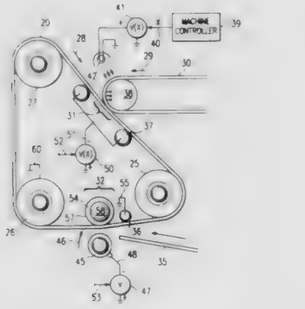
two pairs of spaced pulleys having a conveyor belt located thereabout;
a pair of idler pulleys;
a gripper bar connected to the conveyor belt for receipt and advancement of a sheet to which an image is to be transferred;
a photoconductive drum, said idler pulleys being coaxial with said photoconductive drum;
a transfer zone including a corona generating device which charges the sheet to a proper electrostatic potential and polarity for attraction of an image from the photoconductive drum, the transfer station being adjacent the area where the idler pulleys coaxial with the photoconductive drum contact the conveyor belt;
a first motion control means mounted to one of said spaced pulleys for controlled delivery of said gripper bar to said transfer zone; and
a second motion control means for separately controlling relative motion of said conveyor belt when said gripper bar is in the transfer zone.

5,053,827

METHOD AND APPARATUS FOR INTERMITTENT CONDITIONING OF A TRANSFER BELT

E. Neal Tompkins, Atlanta; Jack N. Bartholmae, Duluth; Peter A. Zuber, Norcross, and Kirk W. Charles, Atlanta, all of Ga., assignors to Coloroco Corporation, Norcross, Ga.

Filed Oct. 17, 1989, Ser. No. 422,770
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—271 **35 Claims**



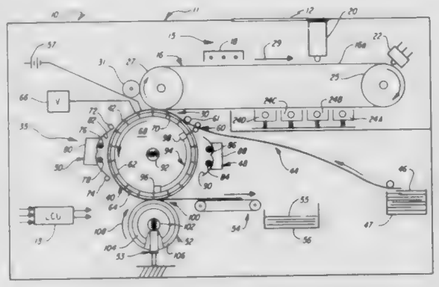
1. An electrophotographic print engine having a flexible belt for transporting at least one developed image for transfer therefrom at the end of a complete page and including page intermittent conditioning means for conditioning said flexible belt to alter the surface characteristics thereof in a first predetermined conditioning process on a page intermittent basis with said conditioning mean held inoperative for at least one page in a sequence of n pages processed by the print engine.

5,053,828

ELECTROSTATOGRAPHIC EQUIPMENT HAVING A MULTIPLE FUNCTION FUSING AND IMAGE TRANSFER ROLLER

Sylvain L. Ndebi, and Robert D. Bobo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1989, Ser. No. 453,739
The portion of the term of this patent subsequent to Oct. 18, 2008, has been disclaimed.
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **12 Claims**



1. Electrostatographic equipment for producing fused toner images on a variety of substrates such as paper, plastic film and metallic printing press plates, the equipment comprising:
(a) front end means including an image bearing member, for electrostatically forming image patterns of an original image on such image bearing member, and for developing such image patterns with fusible toner particles to form a toner image; and
(b) back end means including a rotatable multiple function fusing and image transfer device having means for receiving and holding a suitable substrate thereon, said multiple function device forming part of image transfer apparatus for transferring said toner image onto said substrate, and said back end means further including (i) non-contact fusing apparatus, including a radiant heat source positioned about said multiple function device in heating relationship with the outer surface area of said multiple function device, for fusing said toner image onto said substrate without contacting said image, (ii) contact fusing apparatus for fusing said toner image by contacting and pressing said image onto said substrate, and (iii) control means for switching said equipment between a non-contact fusing made and a contact fusing made.

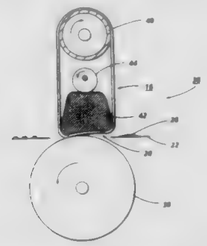
5,053,829

HEAT AND PRESSURE FUSER WITH NON-SYMMETRICAL NIP PRESSURE

John R. Field, Red Creek; Robert S. Karz, Webster; Rabin Moser, Fairport, and James E. Mathers, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1988, Ser. No. 252,336
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 **4 Claims**

1. Heat and pressure fuser apparatus, said apparatus comprising:
a first nip forming member;
a second nip forming member;
means for applying a load between said members to thereby form a nip therebetween, said nip having a substrate entrance zone and exit zone;
one of said nip forming members comprising means engaging the other of said nip forming members with different degrees of pressure when said load is applied whereby said nip has an asymmetrical pressure profile,



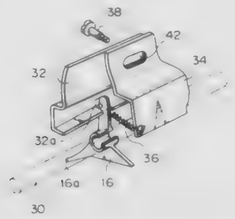
said asymmetrical nip being arranged so that the pressure in said entrance zone is lower than the pressure in said exit zone.

5,053,830

FIXING APPARATUS HAVING SHEET SEPARATOR PAWLS FOR IMAGE FORMING APPARATUS

Atsushi Arai, Ichikawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,494
Claims priority, application Japan, Nov. 30, 1988, 63-154860[U]; Nov. 30, 1988, 63-154861[U]; Jul. 12, 1989, 1-81184[U]
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—290 **9 Claims**



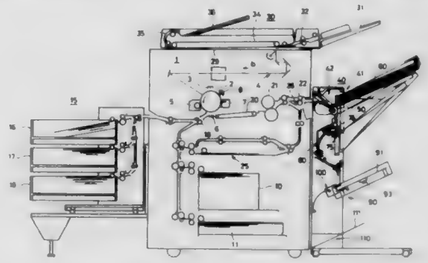
1. A fixing apparatus having sheet separator pawls for an image forming apparatus, comprising:
a pair of rollers engaged with each other and rotatable about respective axes for fusing and fixing toner images to a paper;
pivotable sheet separator pawl means having free ends resiliently engageable with the periphery of one of the said rollers for separating from the periphery of the roller a leading end portion of the paper with the fixed toner images, coming out of a nipping section of the rollers; and
moving means for moving the sheet separator pawl means in parallel with the direction of the axes of said rollers only during a time when said rollers are stopped and in response to a signal indicative of an operational condition of the image forming apparatus, whereby the life of said rollers may be extended.

5,053,831

IMAGE FORMING APPARATUS HAVING A FINISHER

Kuniaki Ishiguro; Takuma Ishikawa; Akiyoshi Johdai, and Hiroki Yamashita, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 17, 1989, Ser. No. 311,842
Claims priority, application Japan, Feb. 18, 1988, 63-35893; Mar. 28, 1988, 63-75640; Mar. 28, 1988, 63-75641
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—324 **17 Claims**



1. An image forming apparatus comprising:
image forming means for forming images on sheets of paper;
starting means for starting a first image forming operation for forming first images on said sheets of paper;
a plurality of paper containing means for receiving said sheets of paper on which said first images are formed;
sorting means carrying out a sorting operation by distributing said sheets of paper on which said first images are formed into said plurality of paper containing means;
staple means for stapling the sheets of paper contained in each of said plurality of paper containing means after said sorting operation of said sorting means;
determining means for determining whether any one of said plurality of paper containing means is not employed in said sorting operation; and
control means for permitting said starting means to start a second image forming operation wherein second images different from said first images are formed on said sheets of paper, and for permitting reception of said sheets of paper on which said second images are formed into said unemployed paper containing means during stapling by said stapling means when it is determined by said determining means that a paper containing means is not employed in said sorting operation.

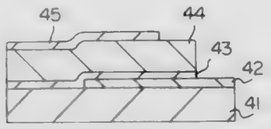
8. A copying apparatus with a photoreceptor capable of reproducing images of an original at different magnification rates on sheets of paper, comprising:
original size detecting means for detecting the size of the original;
paper size determining means for determining the size of the paper;
copying magnification rate setting means for automatically setting a suitable copying magnification rate based on said original size and said paper size;
staple means for stapling said sheets of paper on which said images are formed; wherein
said copying apparatus is operated either in a staple mode in which stapling is carried out by the staple means or in a non-staple mode in which stapling is not carried out; said apparatus further comprising
means for switching between said staple mode and said non-staple mode; and
control means for changing said copying magnification rate to the value set by said copying magnification rate setting means when said staple mode is selected by said switching means.

5,053,832

NONLINEAR RESISTANCE ELEMENT SUITABLE FOR AN ACTIVE-TYPE LIQUID CRYSTAL DISPLAY

Hiroyuki Uchida, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 27, 1989, Ser. No. 413,437
Claims priority, application Japan, Sep. 28, 1988, 63-245068; Sep. 28, 1988, 63-245070
Int. Cl.[5] H01L *45/00*
U.S. Cl. 357—2 23 Claims



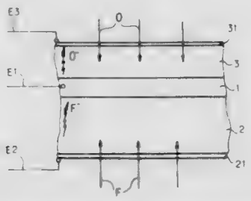
1. A non-linear diode comprising:
a first electrode;
a second electrode;
a non-linear resistance film of hydrogenated amorphous silicon nitride formed between said first and second electrodes, said hydrogenated amorphous silicon nitride film having an optical band gap ranging between 2.0 and 2.2 eV; and
an additional hydrogenated amorphous silicon nitride film between said non-linear resistance film and said second electrode, said additional hydrogenated amorphous silicon nitride film having an optical band gap greater than that of said hydrogenated amorphous silicon nitride in said non-linear resistance film.

5,053,833

DEVICE MADE OF OXIDE SUPERCONDUCTIVE MATERIAL COVERED WITH ION CONDUCTIVE MEANS FOR ADJUSTING THE DOPING LEVEL AND T_c THEREOF

Didier Pribat, Paris; Dominique Dieumegard, Mareil-Marly; Guy Garry, Reil Malmaison, and Louis Mercandalli, Montgeron, all of France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 299,444, Jan. 23, 1989, abandoned. This application Feb. 19, 1991, Ser. No. 657,364
Claims priority, application France, Jan. 22, 1988, 88 00682
Int. Cl.[5] H01L *27/12, 45/00, 49/02*
U.S. Cl. 357—4 9 Claims



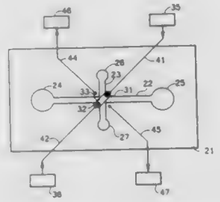
1. A device comprising a metal oxide superconductive material, constituted of elements including oxygen in the shape of a first body having two opposing surfaces and lying over one of said surfaces a first confining material which conducts fluorine anions and does not conduct oxygen anions and lying over the other of said surfaces a second confining material which is an oxygen anion conductor.

5,053,834

HIGH SYMMETRY DC SQUID SYSTEM

Michael B. Simmonds, Del Mar, Calif., assignor to Quantum Magnetics, Inc., San Diego, Calif.

Filed Aug. 31, 1990, Ser. No. 576,600
Int. Cl.[5] H01L *39/22*; G01R *33/02, 33/035*; G11C *11/44*
U.S. Cl. 357—5 49 Claims



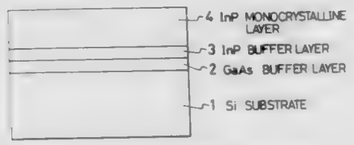
1. A balanced thin film dc SQUID system comprising:
a substrate;
a superconductive groundplane layer on said substrate formed with first and second slits forming a mutual intersection intermediate their ends, each said slit having enlarged openings at the end thereof;
thin film Josephson junction means located on diagonally opposite corners of said groundplane at said intersection of said slits, said Josephson junction means being part of a SQUID loop;
means for interconnecting said Josephson junction means across said intersection;
a thin film signal coil in coupling relationship with each said enlarged opening at opposite ends of one of said first and second slits;
an electrically balanced, physically symmetrical pair of thin film modulation coils, each said modulation coil being in coupling relationship with one of said enlarged openings at opposite ends of the other of said first and second slits; and
means for applying bias current to said Josephson junction means so as to not disturb the symmetry created by said modulation coil arrangement.

5,053,835

INP SEMICONDUCTOR THIN FILM ON SI

Hideaki Horikawa, and Masahiro Akiyama, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 308,252, Feb. 9, 1989, Pat. No. 4,965,224. This application Jul. 31, 1990, Ser. No. 560,168
Claims priority, application Japan, Feb. 16, 1988, 63-31878
Int. Cl.[5] H01L *29/161*
U.S. Cl. 357—16 4 Claims



1. An InP semiconductor thin film comprising:
a Si substrate;
a GaAs buffer layer formed on the Si substrate;
an InP buffer layer formed on the GaAs buffer layer; and
an InP monocrystalline thin film formed on the InP buffer layer.

5,053,836

CLEAVING OF DIODE ARRAYS WITH SCRIBING CHANNELS

Scott D. McClurg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 439,920, Nov. 21, 1990, Pat. No. 4,997,793. This application Mar. 1, 1991, Ser. No. 662,866
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—17 2 Claims



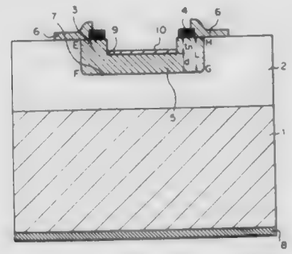
1. A diode array fabrication wafer having a plurality of rectangular diode array areas each of which includes a central line of uniformly spaced diode sites extending between its opposite ends, said areas being arranged on said wafer in multiple rows and columns, said wafer comprising a substrate provided with an epitaxial layer including said diode sites and with at least one additional layer overlying said epitaxial layer, characterized by: scribing channels exposing said epitaxial layer through said additional layer along cleavage lines separating said columns of array areas, between the confronting ends of adjacent array areas, each of said cleavage lines being spaced from an endmost diode site of an adjacent diode array area by a distance no greater than half the distance between diode sites along said row, said scribing channels extending from an edge of a row of array areas toward the center of said array areas but terminating short of said diode sites, said channels being of a width which, if extended to said diode sites, would encroach on the endmost diode sites of the adjacent array areas.

5,053,837

INGAAS/INP TYPE PIN PHOTODIODES

Ichiro Tonai, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 244,177, Sep. 14, 1987, abandoned. This application Nov. 20, 1989, Ser. No. 439,008
Claims priority, application Japan, Sep. 16, 1987, 63-231423
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—17 8 Claims



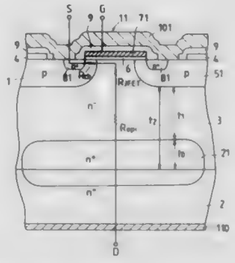
1. An InGaAs/InP type PIN photodiode comprising an n-InP substrate having one surface and an opposite surface, an n-electrode provided on said one surface of the n-InP substrate, an n-InGaAs layer formed by epitaxial growth on said opposite surface of the n-InP substrate, a p-InGaAs layer of predetermined thickness formed by a diffusion of a p-type impurity in a part of said n-InGaAs layer, and a ring-like p-electrode provided on the p-InGaAs layer:
the portion of the p-InGaAs layer encircled by the ring-like p-electrode being partly removed to form a recess having a predetermined depth, the depth of the recess of the p-InGaAs layer being less than 2.0 μm, the thickness L of the p-InGaAs layer under the p-electrode being larger than 3.0 μm, and light being introduced into said recess.

5,053,838

POWER INTEGRATED CIRCUIT

Tatsuhiko Fujihira, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 24, 1990, Ser. No. 633,145
Claims priority, application Japan, Dec. 25, 1989, 1-336051; Sep. 27, 1990, 2-258525
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.4 10 Claims



1. An integrated circuit comprising:
a semiconductor substrate of a first conductivity type and having a first doping level;
a first semiconductor region on a selected area of the substrate;
a second semiconductor epitaxial region of the first conductivity type on the first semiconductor region in an area in vertical alignment with the selected area and on the substrate in an area laterally removed from the selected area, and having a doping level less than the first doping lavel;
a semiconductor device, on the top surface of the second semiconductor epitaxial region in an area laterally removed from the selected area including
a device electrode;
an electrode on the substrate, separated from the first region, in an area in vertical alignment with the selected area and in the area laterally removed from the selected area; and
a transistor of the vertical field effect type, in vertical alignment with the selected area, including
a third semiconductor region of a second conductivity type on the second semiconductor epitaxial region,
a fourth semiconductor region of the first conductivity type on the third semiconductor region,
a source electrode, coupled to the fourth region, and
a gate electrode wherein the first semiconductor region has a resistivity related to the breakdown voltage between the device electrode and the substrate electrode.

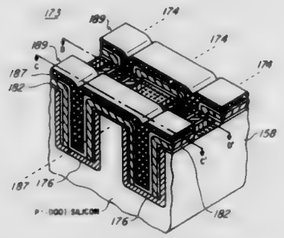
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5,053,839

FLOATING GATE MEMORY CELL AND DEVICE

Agerico L. Esquivel, Dallas; Allan T. Mitchell, Garland, and Howard L. Tigelaar, Allen, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 469,814, Jan. 23, 1990, Pat. No. 4,979,004. This application Aug. 21, 1990, Ser. No. 570,944
Int. Cl.[5] H01L *29/68, 29/06;* G11C *11/34*
U.S. Cl. 357—23.5 26 Claims



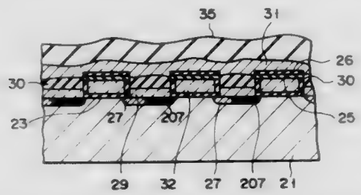
1. A nonvolatile memory cell comprising:
a post of semiconductive material having at least a first and second sidewalls on opposite sides of said post and having a first conductivity type;
a first doped region of a second conductivity type formed in said post adjacent to said first sidewall;
a second doped region of said second conductivity type formed in said post adjacent to said second sidewall, said second doped region being separated from said first doped region and being positioned opposite from said first doped region across said post;
a channel region formed in said post between said first and second doped regions;
a first dielectric layer formed on said post;
a first conductive layer formed on said first dielectric layer, said first conductive layer extending over said first and second doped regions;
a second dielectric layer formed on said first conductive layer; and
a second conductive layer formed on said second dielectric layer.

5,053,840

SEMICONDUCTOR DEVICE HAVING A GATE ELECTRODE CONSISTING OF A PLURALITY OF LAYERS

Kuniyoshi Yoshikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1989, Ser. No. 409,687
Claims priority, application Japan, Sep. 26, 1988, 63-240002
Int. Cl.[5] H01C *29/68, 29/10, 29/78, 27/02*
U.S. Cl. 357—23.5 16 Claims



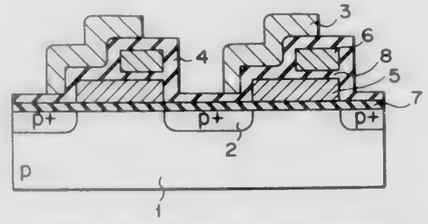
1. A semiconductor device having a gate electrode consisting of a plurality of layers, comprising:
a semiconductor substrate;
a first diffusion layer formed in the substrate;
a second diffusion layer formed in the substrate;
a floating gate electrode formed in an electrically floating state on a channel region between the first diffusion layer and the second diffusion layer, such that the floating gate electrode extends in parallel with the longer sides of the first diffusion layer and the second diffusion layer;
an insulating film formed on the floating gate electrode; and
a control gate electrode formed on the insulating film such that the control gate electrode extends in parallel with the shorter side of the floating gate electrode, the said control gate electrode extending across the first diffusion layer and the second diffusion layer;
wherein the impurity concentration in that part of the first diffusion layer which is positioned adjacent to the floating gate electrode differs from the impurity concentration in that part of the second diffusion layer which is positioned adjacent to the floating gate electrode.

5,053,841

NONVOLATILE SEMICONDUCTOR MEMORY

Tadashi Miyakawa; Masamichi Asano, both of Tokyo; Tadayuki Taura, Kawasaki; Atsushi Shoji, Yokohama, and Michiharu Inami, Tama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 18, 1989, Ser. No. 423,362
Claims priority, application Japan, Oct. 19, 1988, 63-263164
Int. Cl.[5] H01L *29/68, 29/06, 29/78*
U.S. Cl. 357—23.5 6 Claims



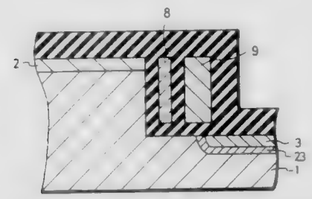
1. A nonvolatile semiconductor memory comprising:
a cell array in which electrically erasable programmable nonvolatile semiconductor memory cells, each using a cell transistor including source and drain regions in a semiconductor substrate, a channel region between said source and drain regions, and a gate electrode having a three-layered structure on said semiconductor substrate, are arranged in a matrix form;
said gate electrode having the three-layered structure, comprising a first-layer floating gate electrode which opposes a semiconductor substrate surface through a first gate insulating film, and second- and third-layer gate electrodes each of which serves as one of erase and control gate electrodes, said erase gate electrode opposing a part of said floating gate electrode through a tunnel insulating film, and said control gate electrode opposing said floating gate electrode through a second gate insulating film;
said erase and control gate electrodes arranged parallel to each other in a row direction and perpendicular to said source and drain regions arranged in a column direction array; and
said cell transistors arranged adjacent to each other in the row direction through the channel region such that the source region of one of the adjacent transistors is shared by the drain region of the other transistor to provide a common source/drain region, the adjacent cell transistors being isolated by an element isolation region formed in the semiconductor substrate between the channel regions.

5,053,842

SEMICONDUCTOR NONVOLATILE MEMORY

Yoshikazu Kojima, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed May 30, 1990, Ser. No. 530,269
Int. Cl.[5] H01L *27/01*
U.S. Cl. 357—23.5 16 Claims



1. A semiconductor nonvolatile memory comprising:
a semiconductor substrate of a first conductivity type having a stepped portion having a top face section and a bottom face section separated from one another by a side face section;
a source region of a second conductivity type provided in the top face section of the stepped portion;
a drain region of the second conductivity type provided in the bottom face section of the stepped portion;
a first channel region adjacent to the source region and formed in the side face section and in a part of the bottom face section of the stepped portion;
a second channel region formed between the first channel region and the drain region in the bottom face section of the stepped portion;
a control gate electrode formed over the first channel region and the source region through a gate insulating film for controlling the first channel region conductance; and
a floating gate electrode formed over the second channel region through a gate insulating film for controlling the second channel region conductance.

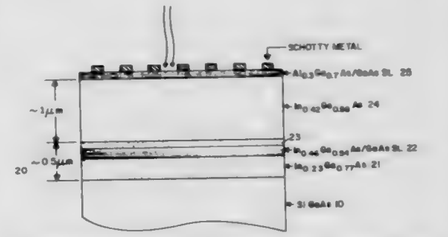
5,053,843

THERMALLY-STABLE STRUCTURE FOR IMSM PHOTODETECTORS ON GAAS SUBSTRATES

A. N. M. Masum Choudhury, West Newton; Chirravuri Jagannath, Medfield; Boris S. Elman, Newton, and Craig A. Armiento, Acton, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 12, 1990, Ser. No. 626,159
Int. Cl.[5] H01L *29/205, 27/14, 31/06*
U.S. Cl. 357—30 9 Claims

1. A photodetector structure, comprising:
a substrate;
a buffer region grown on said substrate and including in sequence a first semiconducting layer, a first superlattice structure, and a second semiconducting layer;
an optically active absorbing layer grown on said second semiconducting layer;
a second superlattice structure grown on said absorbing layer; and



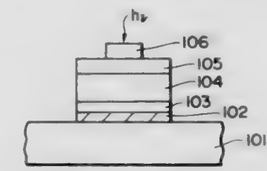
an interdigitated pattern of metal Schottky contacts fabricated on said second superlattice structure.

5,053,844

AMORPHOUS SILICON PHOTOSENSOR

Akishige Murakami, Shibata; Hiroshi Miura, Natori; Kouichi Haga, Shibata; Kenji Yamamoto, Watari, and Masafumi Kumano, Sendai, all of Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of, Japan

Continuation-in-part of Ser. No. 350,852, May 12, 1989, abandoned. This application Nov. 1, 1990, Ser. No. 609,107
Claims priority, application Japan, May 13, 1988, 63-116684
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 357—30 9 Claims



1. An amorphous silicon photosensor comprising a photoconductive layer which comprises three to four amorphous silicon layers formed on a substrate, each layer containing at least one kind of atom selected from the group consisting of hydrogen, heavy hydrogen, and halogen atoms, and having two heterojunctions, in which the optical band gap of an amorphous silicon layer laying between the two heterojunctions is in the range of 1.6 to 1.8 eV, a first end amorphous silicon layer, to which light is applied, contains oxygen, has an optical band gap of 1.9 eV or more, and at least part of the layer indicates an i-type or p-type conductivity, and a second end amorphous silicon layer, to which light is not applied, contains oxygen, having an optical band gap of 1.9 eV or more, and an electroconductivity (σd) in the dark of 10^{-11} $\upsilon.cm^{-1}$ or less at 20° C. and at least part of the layer indicates an i-type or n-type conductivity.

5,053,845

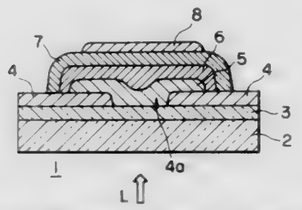
THIN-FILM DEVICE

Koji Mori, Yokohama; Hideo Segawa, Tokyo, and Masanori Itagaki, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 265,909, May 21, 1981, abandoned. This application Feb. 20, 1990, Ser. No. 483,335
Claims priority, application Japan, May 23, 1980, 55-68570; May 23, 1980, 55-68571
Int. Cl.[5] H01L *29/72*
U.S. Cl. 357—34 9 Claims

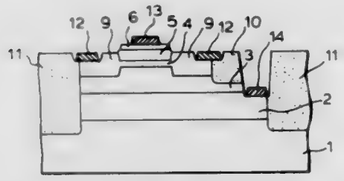
1. A thin film bipolar transistor device comprising:
a substrate;

a first conductive layer formed on said substrate;
an insulating layer formed on said first conductive layer and provided with a window;
a first deposited thin-film which is of a first conductivity type and is formed by deposition on said conductive layer and partly extends over said insulating layer and completely covers said window;



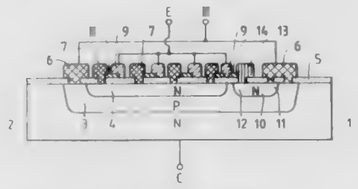
a second deposited thin-film which is of a second conductivity type opposite to said first conductivity type and is formed by deposition on said first thin-film and extends to said insulating layer to thereby enclose said first thin-film;
a third deposited thin-film which is of said first conductivity type and is formed by deposition on said second thin film and extends to said insulating layer to thereby enclose said second thin-film; and
a second conductive layer formed on said third thin-film.

5,053,846
SEMICONDUCTOR BIPOLAR DEVICE WITH PHOSPHORUS DOPING
Kouhei Morizuka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 287,585, Dec. 10, 1988, abandoned, which is a continuation of Ser. No. 897,285, Aug. 18, 1986, abandoned. This application Jul. 26, 1990, Ser. No. 559,410
Claims priority, application Japan, Aug. 26, 1985, 60-187002; Aug. 26, 1985, 60-187005
Int. Cl.[5] H01L *29/72*
U.S. Cl. 357—34 **10 Claims**



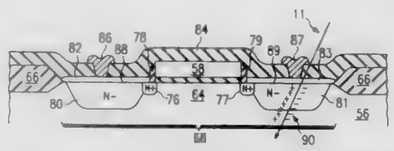
1. A semiconductor device, comprising:
a bipolar transistor structure consisting essentially of an n-type GaAs collector layer, a p-type GaAs base layer and an n-type AlGaAs emitter layer stacked upon each other with the base layer being between the emitter layer and the collector layer;
a p-type external base region formed in said structure with phosphorus and impurities selected from Group IIa elements, said external base region extending in depth from said n-type AlGaAs emitter layer to said n-type GaAs collector layer.

5,053,847
SEMICONDUCTOR DEVICE
Shinichi Ito, and Jiro Terashima, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 194,467, May 12, 1988, abandoned. This application Oct. 19, 1990, Ser. No. 600,172
Claims priority, application Japan, May 15, 1987, 62-118299; Aug. 6, 1987, 62-196926
Int. Cl.[5] H01L *29/72*
U.S. Cl. 357—36 **3 Claims**



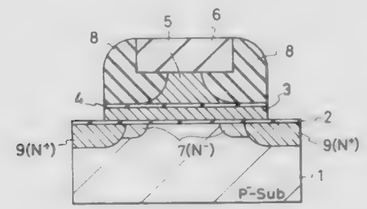
1. A semiconductor device, comprising:
a plurality of transistor units formed in a common substrate, each including an emitter contact connected to an emitter region, a base contact connected to a base region, and a collector contact connected to a collector region;
a plurality of emitter ballast resistors each coupled to a corresponding emitter contact of each of said plurality of transistor units;
a stabilizing resistive region located in said base region between a selected base contact and a selected emitter contact, said stabilizing resistive region having the same conductivity type as said emitter region;
a selected emitter electrode coupled to the corresponding selected emitter contact by a respective emitter ballast resistor;
a lead-out electrode coupled to said stabilizing resistive region; and
a supplemental resistor located between said selected emitter electrode and said lead-out electrode for coupling said selected emitter electrode to said lead-out electrode and for reducing parasitic transistor effects in said stabilizing resistive region.

5,053,848
APPARATUS FOR PROVIDING SINGLE EVENT UPSET RESISTANCE FOR SEMICONDUCTOR DEVICES
Theodore W. Houston, and Ping Yang, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 16, 1988, Ser. No. 285,440
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—51 **5 Claims**



1. A single event upset resistant field effect transistor comprising:
a drain region;
a gate;
a source region, said source region, gate and drain region being disposed along a line with said gate being interposed between said drain and source regions such that a region of discontinuity exists on said line between said drain region and gate, and between said source region and gate;
first and second coupling wells of a higher dopant concentration than said source and drain regions, each of which lie along an associated region of discontinuity on said line; and
first and second electrically conductive pads each including a cross-sectional face which lies on a plane interposed between said gate and said source and drain regions and which further lies along said line concurrently with a portion of an associated coupling well.

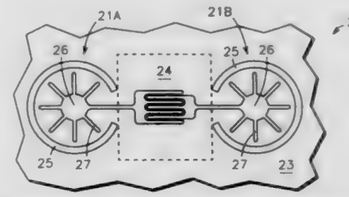
5,053,849
TRANSISTOR WITH OVERLAPPING GATE/DRAIN AND TWO-LAYERED GATE STRUCTURES
Ryuichi Izawa; Tokuo Kure, Kokubunji; Shimpei Iijima, Akishima; Eiji Takeda, Koganei; Yasuo Igura, Hachioji; Akemi Hamada, Tokorozawa, and Atsushi Hiraiwa, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 185,541, Apr. 25, 1988, abandoned. This application Apr. 25, 1990, Ser. No. 515,659
Claims priority, application Japan, Apr. 24, 1987, 62-99765; Jul. 16, 1987, 62-175854; Sep. 25, 1987, 62-238713
Int. Cl.[5] H01L *49/02, 29/04, 23/48*
U.S. Cl. 357—59 **22 Claims**



1. A semiconductor device comprising:
a semiconductor body;
a gate insulating film formed on said body;
a source region and a drain region formed in said body; and
a gate electrode formed on said gate insulating film, wherein said gate electrode comprises a first polycrystalline silicon film, a natural silicon oxide film formed on the first polycrystalline silicon film, and a second polycrystalline silicon film formed on the natural silicon oxide film, and the first polycrystalline silicon film is larger than the second polycrystalline silicon film so as to form an inverse-T shape gate electrode, and wherein said natural silicon oxide film has a thickness not larger than 20 Å, so that electrical conduction between the first and second polycrystalline silicon films is provided.

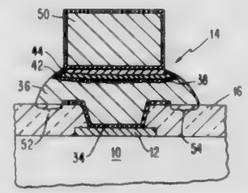
5,053,850
BONDING PAD FOR SEMICONDUCTOR DEVICES
Thomas R. Baker, and George F. Anderson, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 167,927, Mar. 14, 1988, abandoned. This application Nov. 15, 1990, Ser. No. 614,965
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—68 **7 Claims**

1. A low capacitance bonding pad for use with a semiconductor device comprising:
a conductive test pad disposed on a surface of said semiconductor device;
a plurality of finger-like conductors coupled to said test pad and extending outwardly from said test pad to compensate for alignment variations in wire bonding equipment;
said bonding pad having a total surface area of no more than one square mil; and



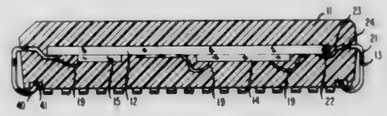
a slender alignment key substantially encircling said plurality of finger-like conductors.

5,053,851
METAL BUMP FOR A THERMAL COMPRESSION BOND AND METHOD FOR MAKING SAME
Erich Berndlmaier, Wappingers Falls; Gobinda Das, Hopewell Junction, both of N.Y., and Thomas L. Viau, Milton, Vt., assignors to International Business Machines Corp., Armonk, N.Y.
Division of Ser. No. 640,658, Jan. 14, 1991. This application Apr. 17, 1991, Ser. No. 686,765
Int. Cl.[5] H01L *23/48*
U.S. Cl. 357—68 **8 Claims**



1. A bond structure affixed to a conductive pad on a semiconductor chip, said bond structure comprising:
a glassy passivating layer having a thickness of at least approximately 3 microns over said chip, said passivating layer defining an aperture exposing a portion of said conductive pad; and
a deformable metal bump having a predetermined initial height and covering the portion of said conductive pad exposed in said aperture and extending over an edge of said glassy passivating layer and deformed so that its height is reduced by approximately 30% to 40% of said predetermined initial height, to thereby expand and further extend over said glassy passivating layer.

5,053,852
MOLDED HYBRID IC PACKAGE AND LEAD FRAME THEREFORE
Ranjit Biswas, Westford, and Hazen Curtis, III, Andover, both of Mass., assignors to AT & T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 5, 1990, Ser. No. 548,180
Int. Cl.[5] H01L *23/48, 23/28*
U.S. Cl. 357—74 **21 Claims**



1. A molded circuit package, which comprises

a carrier substrate, a plurality of leads arranged in a quad configuration around and supporting the carrier substrate, and an encapsulating material molded about the substrate and portions of the leads forming a hermetically sealed package,

the carrier substrate having various elements of a circuit thereon and conductive pads arranged around the periphery of the substrate,

an inner end portion of each lead in said plurality of leads being in contact with a corresponding conductive pad on the substrate,

each lead having an inwardly facing down-set portion including the inner end portion and laying in one plane, an outwardly facing shoulder portion laying in another plane substantially parallel to said one plane, and a compliant portion slanting away from the down-set portion and connecting said down-set and shoulder portions at an angle to each of said planes, said angle being other than a right angle, at least said down-set portions and said compliant portions forming a resilient cradle-like receptacle within which rests the carrier substrate, said substrate being supported within said craddle-like receptacle only by the down-set portions of the leads, and

the encapsulating material is molded about the carrier substrate and the leads after preassemblying the carrier substrate and the leads such that only a part of each shoulder portion projects from the encapsulating material, said encapsulating material hermetically sealing the carrier substrate and encapsulated portions of the leads against the environment.

5,053,853

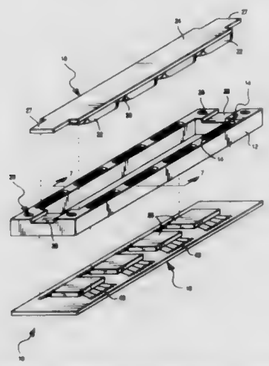
MODULAR ELECTRONIC PACKAGING SYSTEM

Javad Haj-Ali-Ahmadi; Richard F. Frankeny, and Karl Hermann, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1990, Ser. No. 520,439

Int. Cl.[5] H02B *1/00;* **H01L** *23/02, 25/04*

U.S. Cl. 357—74 **16 Claims**



1. An electronic circuit package module comprising a discrete substrate carrying a plurality of integrated circuits interconnected to respective ones of a plurality of input-output locations defined on the outer periphery of said substrate; and frame means carrying said substrate having a plurality of conductive pins extending therethrough and defining exposed upper and lower contact points on opposing respective faces of said frame means, each said pin in contact with a respective one of said input-output locations.

5,053,854

SEMICONDUCTOR COMPONENTS

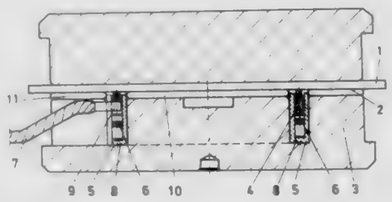
Peter Almenräder, Staufen; Jiri Dlouhy, Mägenwil; Jürg Fingerle, Boniswil, and Otto Kuhn, Lupfig, all of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Mar. 7, 1988, Ser. No. 164,902

Claims priority, application Switzerland, Mar. 25, 1987, 1138/87

Int. Cl.[5] H01L *23/10, 23/08*

U.S. Cl. 357—79 **6 Claims**



1. Semiconductor component, comprising:

a semiconductor substrate, which exhibits on a main surface a contact area for a main electrode and a contact area for a control electrode;

a main electrode and a control electrode, which are in contact with the semiconductor substrate, wherein the main electrode exhibits a groove in which the control electrode is accommodated;

a control electrode access line;

a spring, which is accommodated in the groove and presses the control electrode against the semiconductor substrate;

an independent insulation body consisting of a thermoplastic material insulating the control electrode against the main electrode;

wherein:

the control electrode is displaceable with respect to the insulation body in a direction perpendicular to the main surface of the semiconductor substrate;

the insulation body is of a U-shaped section and lines the groove of the main electrode in the manner of a jacket; the insulation body projects from the groove with the ends of the U-shaped section; and

the spring is located between the insulation body and the control electrode.

5,053,855

PLASTIC MOLDED-TYPE SEMICONDUCTOR DEVICE

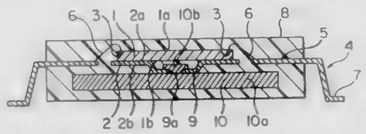
Kazunari Michii, and Tatsuya Hirai, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 291,959, Dec. 30, 1988, abandoned. This application Sep. 5, 1990, Ser. No. 577,797

Claims priority, application Japan, Oct. 25, 1988, 63-267190

Int. Cl.[5] H01L *23/02*

U.S. Cl. 357—81 **12 Claims**



1. A semiconductor device comprising:

a die pad having a chip mounting portion for mounting a semiconductor chip and a heat radiator mounting portion spaced from said chip mounting portion;

a semiconductor chip mounted on the chip mounting portion of said die pad and having a plurality of electrodes;

a heat radiator mounted on said heat radiator mounting portion of said die pad; and

a resin encapsulating said semiconductor chip, said die pad, and at least part of said heat radiator, part of said resin being disposed between said chip mounting portion and said heat radiator mounting portion, wherein said heat radiator, said heat radiator mounting portion, part of said resin, and said semiconductor chip are successively disposed in a stack.

5,053,856

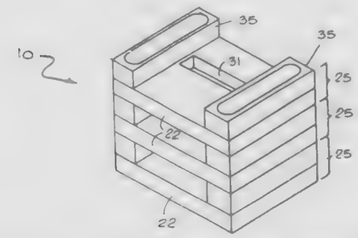
APPARATUS FOR PROVIDING ELECTRICAL CONDUITS IN COMPACT ARRAYS OF ELECTRONIC CIRCUITRY UTILIZING COOLING DEVICES

Howard L. Davidson, San Carlos, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 4, 1990, Ser. No. 577,432

Int. Cl.[5] H01L *25/04, 23/16, 39/02, 23/02*

U.S. Cl. 357—82 **7 Claims**



1. In an arrangement for packaging planar arrays of circuit components comprising a plurality of essentially parallel layers in which the layers lie adjacent one another, one or more of the layers comprising a substrate of insulating material having circuit board means imbedded therein, heat exchange means positioned against at least one of the layers for removing heat from the arrangement comprising at least one substantially planar heat exchanger abutted against one of the layers, and means for transferring a fluid through the heat exchanger having integral walls to prevent fluid leakage, the improvement comprising conduits for electrical connectors through the heat exchange means, the conduits for electrical connectors being positioned to bypass any interior passages for conducting fluids to remove heat from the arrangement.

5,053,857

TELEVISION SIGNALS

Charles P. Sandbank, Reigate; Richard Storey, Lingfield, and Martin Weston, Banstead, all of United Kingdom, assignors to British Broadcasting Corporation, London, England

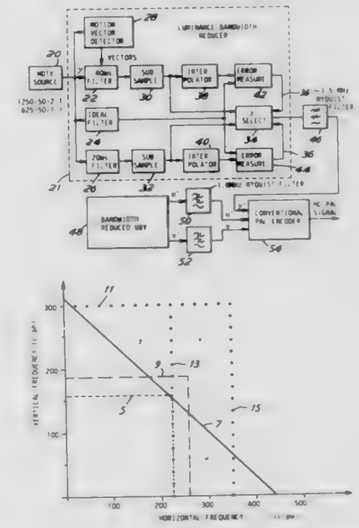
Filed Jul. 28, 1989, Ser. No. 387,022

Claims priority, application United Kingdom, Jul. 28, 1988, 8817979

Int. Cl.[5] H04N *11/02*

U.S. Cl. 358—12 **31 Claims**

1. A method of encoding a colour video signal comprising, separating the luminance Y and chrominance U, V components of a video signal source, compressing the bandwidth of each of the separated Y, U and V components by two or more different methods, selecting in response to a control signal indicative of and responsive to picture content, one set of the bandwidth compressed components compressed by one of the methods, filtering the selected luminance and chrominance components individually with a respective bandpass filter and encoding the components for transmission via a conventional transmission channel whereby the bandpass filter luminance



and chrominance signals occupy substantially mutually exclusive areas of the frequency spectrum.

5,053,858

CHROMINANCE SIGNAL PROCESSING APPARTUS FOR WIDESCREEN TELEVISION SYSTEM

Joshua L. Koslov, Windsor; Michael A. Isnardi, Plainsboro, and James J. Gibson, Princeton, all of N.J., assignors to General Electric Company, Princeton, N.J.

Filed Apr. 16, 1990, Ser. No. 509,384

Claims priority, application United Kingdom, Dec. 22, 1989, 8929143

Int. Cl.[5] H04N *11/00, 11/14*

U.S. Cl. 358—12 **14 Claims**

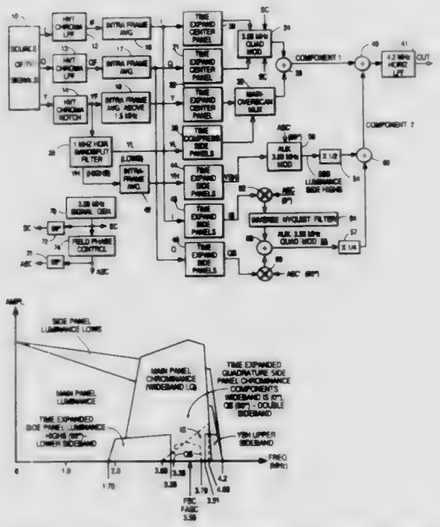
1. In a system for processing a widescreen television-type signal containing main panel image information and side panel image information containing a luminance component and first and second color components, side panel signal processing apparatus comprising:

means for providing first and second differently phased auxiliary subcarrier signals, other than a standard chrominance subcarrier conveying main panel chrominance information, at a common frequency;

means for modulating said first auxiliary subcarrier with said first side panel color component to form a double sideband modulated signal with respect to said first side panel color component; and

means for modulating said second auxiliary subcarrier with (a) said second side panel color component to form a double sideband modulated signal with respect to said second side panel color component, and with (b) side panel high frequency luminance information to form an unsymmetrical sideband modulated signal with respect to

said side panel high frequency luminance information; wherein



said first side panel color component is a wideband component having a wider bandwidth than said second side panel color component.

5,053,859

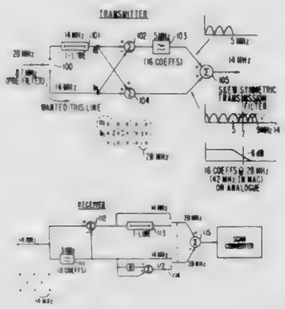
HIGH DEFINITION B-MAC TELEVISION SIGNAL TRANSMISSION SYSTEM

Keith Lucas, Oak Ridges, Canada, assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 92,305, Sep. 2, 1987, Pat. No. 4,866,519, and a continuation-in-part of Ser. No. 228,274, Aug. 4, 1988. This application Oct. 11, 1988, Ser. No. 255,317

Int. Cl.[5] H04N *7/12, 11/02, 11/10*

U.S. Cl. 358—12 **22 Claims**



1. A method at a transmitter of a television signal transmission system for encoding a high definition television signal with increased horizontal detail for transmission consistent with a multiplexed analog component signal format, the encoded signal being adapted for reception at either a standard resolution or a high definition television receiver of the system, the encoding method comprising the steps of:

(i) sampling the high definition television signal orthogonally at a first sampling rate,

(ii) filtering the orthogonally sampled television samples to filter diagonal information at frequencies higher than a rectangular baseband spectrum for standard television resolution and to preserve the rectangular baseband spectrum for standard television resolution unfiltered, and

(iii) decimating alternate samples on alternate lines leaving a quincunx pattern, for

folding a high frequency horizontal detail spectrum component of the output about a first predetermined frequency above an upper limit frequency for standard resolution television and for preserving the rectangular baseband spectrum for standard resolution television by filtering the output of the decimation step in accordance with a skew-symmetric low-pass frequency response, the filtered diagonal resolution being replaced with at least high frequency horizontal detail information,

the encoded high definition television signal being adapted for reception at either a standard resolution or a high definition television receiver, a standard resolution television receiver comprising a low pass filter for filtering the frequencies above the upper limit frequency for standard resolution television and for passing the preserved baseband spectrum and a high definition television receiver comprising spectrum unfolding means for unfolding the high frequency horizontal detail and scan conversion means for increasing vertical resolution.

8. A method at a receiver for decoding a high definition television signal comprising an encoded standard resolution television signal portion and an encoded high-definition television signal portion with increased horizontal detail consistent with a multiplexed analog components signal format comprising the steps of:

(i) digitally sampling the received multiplexed analog components signal at a first predetermined sampling rate in accordance with a quincunx sampling pattern and preserving the baseband television spectrum at standard television resolution,

(ii) upconverting the sampled output from a first high frequency spectrum portion above an upper limit frequency for standard resolution television to a second high frequency spectrum portion above the first high frequency spectrum portion, resulting in an overall spectrum including high frequency horizontal detail in accordance with a second sampling rate higher than the first sampling rate, and

(iii) scan converting the result of step (ii) for increasing vertical detail.

5,053,860

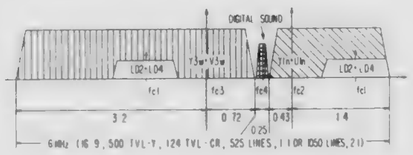
METHOD AND APPARATUS FOR THE TRANSMISSION AND RECEPTION MULTICARRIER HIGH DEFINITION TELEVISION SIGNAL

Mikhail Tsinberg, Riverdale, N.Y., assignor to North American Philips Corp., New York, N.Y.

Continuation-in-part of Ser. No. 252,954, Oct. 3, 1988. This application Oct. 25, 1989, Ser. No. 428,278

Int. Cl.[5] H04N *11/00*

U.S. Cl. 358—12 **8 Claims**



5. Apparatus for forming a frequency multiplexed television signal, comprising:

a) means for deriving from a first television signal a pair of luminance signals and a pair of chrominance signals;

b) first modulating means coupled to said deriving means, for quadrature modulating a first luminance signal with a first chrominance signal on a first subcarrier so as to form a first frequency packet;

c) second modulating means coupled to said deriving means, for quadrature modulating a second luminance signal with a second chrominance signal on a second subcarrier so as to form a second frequency packet;

d) means coupled to said first and second modulating means, for expanding each of said frequency packets; and

e) means coupled to expanding means, for combining said expanded frequency packets to generate said frequency multiplexed television signal.

5,053,861

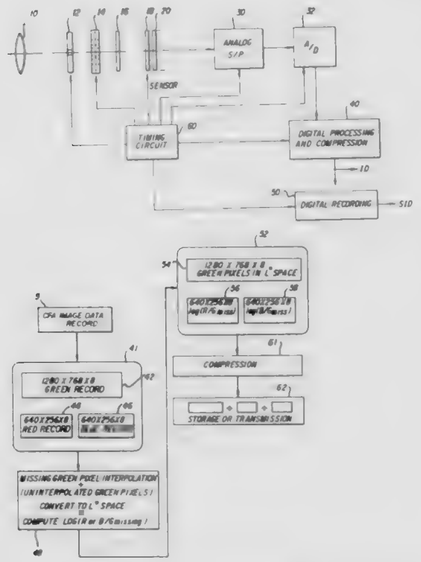
COMPRESSION METHOD AND APPARATUS FOR SINGLE-SENSOR COLOR IMAGING SYSTEMS

Yusheng T. Tsai; Kenneth A. Parulski, and Majid Rabbani, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1989, Ser. No. 384,353

Int. Cl.[5] H04N *11/04, 9/04*

U.S. Cl. 358—13 **15 Claims**



1. A color imaging apparatus, comprising:

an electronic camera, said electronic camera comprised of:

image sensing means having a discrete array of image sensing elements each representing a pixel of image data, said image sensing elements each providing an analog output signal value indicative of the intensity of incident light sensed thereby;

a color filter pattern means for separating an incident light beam into at least three different colors;

means for converting the sensor analog output signal values into digital signal values;

means for separating and forming the digital signal values into a plurality of signals according to the color of the pixels represented by the digital signal values;

means for processing and compressing the plurality of signals including means for forming interpolated values for at least one of said color signals at the same positions as the pixels of a second of said color signals;

means for digitally recording or transmitting the compressed color signals; a playback device, said playback device comprised of:

means for recovering the recorded or transmitted compressed color signals;

means for decompressing the compressed color signals;

means for interpolating the missing colored pixel values from the decompressed color signals; and

means for interfacing the interpolated color image to a device for displaying or printing the image.

5,053,862

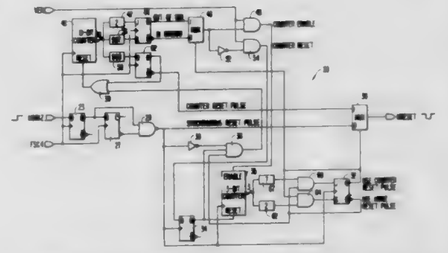
APPARATUS AND METHOD FOR GENERATING A HORIZONTAL RESET SIGNAL SYNCHRONOUS WITH A SUBCARRIER LOCKED CLOCK

Larry G. Phillips; Edwin R. Meyer, and David C. Greene, all of Knoxville, Tenn., assignors to North American Philips Corporation, New York, N.Y.

Filed Apr. 14, 1989, Ser. No. 339,032

Int. Cl.[5] H04N *5/04*

U.S. Cl. 358—17 **14 Claims**



1. Apparatus for regenerating a received television signal to provide an output signal which is synchronous with a subcarrier locked clock signal, comprising:

a) comparison means for determining whether the received television signal which is to be regenerated and the subcarrier locked clock signal have a predetermined fixed frequency relationship, and for generating a first indication when they are related and a second indication when they are not related; and

b) output signal generation means for dividing down the subcarrier locked clock signal according to said fixed frequency relationship and, when said first indication is generated by said comparison means, for providing said output signal which is synchronized with said subcarrier locked clock signal and at a frequency determined by said predetermined fixed frquency relationship; wherein

said signal generation means comprises a first counting means and a count decode means coupled to said first counting means, said first counting means having said subcarrier locked clock signal as a clock input for counting the cycles of said subscarrier locked clock signal, and said count decode means providing a change in its output signal when said first counting means reaches a predetermined count defined by said predetermined fixed frequency relationship, and wherein:

said signal generation means further comprises a flip-flop means having a first input coupled to said count decode means output, a clock input coupled to said subcarrier locked clock signal, a first output comprising said synchronous output signal with a frequency determined by said predetermined fixed frequency relationship, and a second output coupled to a reset input of said first counting means, wherein one subcarrier locked clock signal after said count decode means provides a change at its output, said first output provides said synchronous output

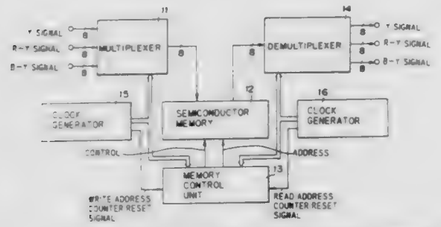
signal pulse and said second output causes said first counting means to reset.

5,053,863

CIRCUIT FOR PROCESSING DIGITAL VIDEO SIGNALS

Isao Ohtsuka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 9, 1989, Ser. No. 391,882
Claims priority, application Japan, Aug. 10, 1988, 63-200507
Int. Cl.[5] H04N *9/64, 9/89*
U.S. Cl. 358—21 R **6 Claims**



5. A circuit for processing digital video signals comprising:

first means for converting a luminance signal and first and second color difference signals received in parallel into said luminance signal and said first and second color difference signals serially arranged in time-division.

a semiconductor memory connected to said first means for storing said luminance signal and said first and second color difference signals serially arranged in time-division;

second means connected to said semiconductor memory and adapted for converting said luminance signal and said first and second color difference signals serially arranged in time-division into said luminance signal and said first and second color difference signals arranged in parallel, said serially arranged signals being read out from said semiconductor memory;

a first clock generator connected to said first means and said semiconductor memory, respectively, and including an oscillator for generating a 12 f . . . clock signal, and frequency dividers for dividing said 12 f . . . clock signal to provide ½ f . . . , f . . . , 2 f . . . , and 3 f . . . clock signals, where f . . . is a color sub-carrier frequency, said ½ f . . . , f . . . , 2 f . . . , and 3 f . . . clock signals being risen up synchronously with rising-up of said f . . . clock signal, said first clock generator generating a write address counter reset signal and clock signals used in said first means;

wherein said parallel-received luminance signal is sampled by said 2 f . . . clock signal, said parallel-received first and second color difference signals are sampled by said ½ f . . . clock signal, and said serially arranged signals are written into and read out from said semiconductor memory by said 3 f . . . clock signal; and

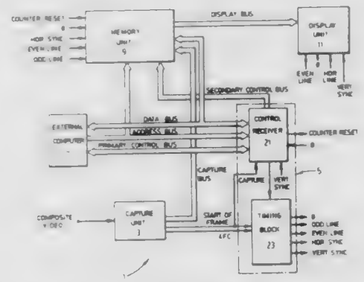
a second clock generator connected to said second means and said semiconductor memory, respectively, and generating a read address counter reset signal and clock signal used in said second means, said serially arranged signals being written and read out from said semiconductor memory.

5,053,864

VIDEO CAPTURE, COMPRESSION AND DISPLAY SYSTEM, INCLUDING AVERAGING OF CHROMINANCE INFORMATION

Peter A. Thompson, Toronto, Calif., assignor to Thompson Electronics Ltd., Toronto, Canada

Filed Jun. 1, 1989, Ser. No. 359,813
Int. Cl.[5] H04N *9/74, 9/64, 11/06*
U.S. Cl. 358—22 **19 Claims**



1. A video system for use in association with video information from a composite video signal, the system comprising:

a capture unit for capturing and digitizing video information from a composite video signal;

a manipulation block for separating the composite video information into a luminance portion and a chrominance portion, for separating the samples of the chrominance portion into samples of first and second chrominance, and for averaging the first and second chrominance samples of the video information over a given area, while retaining unaveraged samples of the luminance portion of the video information of the area, the area encompassing video information from more than one line of the video information; and a display unit for displaying the averaged samples of the chrominance portion and for displaying the samples of the luminance portion, the chrominance and luminance portions for a given area being stored in a memory word, wherein during display a sample of the luminance portion is read once for each corresponding pixel in the area and the chrominance samples are read once for each line in the area, the memory word being read from memory once for each line in the area during display.

5,053,865

PICTURE-QUALITY IMPROVING CIRCUIT

Tsuneo Ubukata, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokahama, Japan

Division of Ser. No. 344,874, Apr. 28, 1989. This application Aug. 2, 1990, Ser. No. 561,650
Claims priority, application Japan, Apr. 30, 1988, 63-107841; Jun. 24, 1988, 63-156089
Int. Cl.[5] H04N *9/64*
U.S. Cl. 358—37 **2 Claims**

1. A picture-quality improving circuit comprising:

means for generating a chroma edge signal on the basis of a color signal, the chroma edge signal representing a chroma edge;

means for generating a luminance edge signal on the basis of a luminance signal, the luminance edge signal representing a luminance edge;

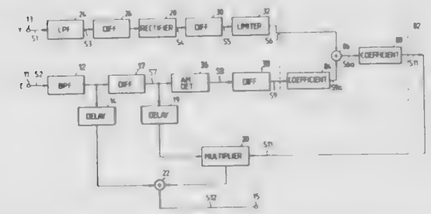
means for detecting a chroma edge signal;

means for differentiating an output signal from the detecting means;

means for amplifying an output signal from the differentiating means;

first adding means for adding an output signal from the amplifying means and the luminance edge signal;

means for multiplying a chroma edge signal and an output signal from the first adding means; and



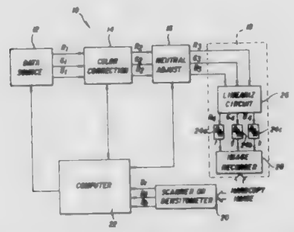
second adding means for adding an output signal from the multiplying means to the color signal to yield an enhanced color signal.

5,053,866

METHOD AND AN ASSOCIATED APPARATUS FOR CALIBRATING A COLOR DIGITAL HARDCOPY DEVICE

Stephen E. Johnson, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1989, Ser. No. 388,451
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—75 **32 Claims**



1. A method for calibrating a hardcopy device of the type that transforms an original color image into signals that are used to drive a reproduction device to create a copy of the original color image comprising the steps of:

a. processing through said hardcopy device a first test color image having patterns of desired color densities to create a copy of the first test color image;

b. determining the differences in densities between the color patterns of said first color test image and the copy of said first test color image;

c. adjusting said hardcopy device to drive said differences to zero;

d. processing through said hardcopy device a second test color image having patterns of desired neutral color densities to create a copy of said second test color image;

e. determining the differences in the neutral color densities between said second test color image and the copy of said second test color image; and

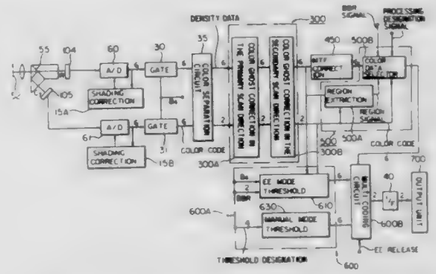
f. adjusting said hardcopy device to drive said differences in neutral color densities towards zero without thereby effecting the color imaging processing steps, a, b, c, to thereby calibrate said hardcopy device.

5,053,867

DIGITAL COLOR IMAGE PROCESSING APPARATUS

Hiroyuki Yamamoto, Yokohama; Takashi Hasebe, Hachioji; Masahiko Matsunawa, Fussa; Hiroshi Katoh, Hachioji; Yoshinori Abe, Hino, and Tetsuo Kimoto, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 12, 1988, Ser. No. 282,539
Claims priority, application Japan, Dec. 14, 1987, 62-315765
The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.
Int. Cl.[5] H04N *1/46;* **G03F** *3/8*
U.S. Cl. 358—80 **3 Claims**



1. An image processing apparatus for processing digital color image data, comprising:

input means for introducing color image signals into a conversion means;

said conversion means generating digital color image data including color data and density data;

data processing means including a plurality of image processing circuits for processing the color data and the density data; and

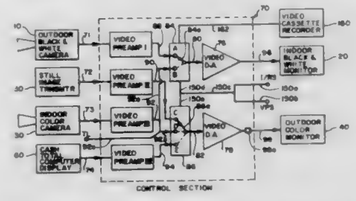
latch means provided for each of said plurality of image processing circuits so that the color data and the density data are respectively latched after every pass through said plurality of image circuits.

5,053,868

VIDEO MONITORING SYSTEM FOR AUTO DRIVE-THROUGH FAST FOOD RESTAURANTS

Clair M. Higgins, Los Angeles, and Perry O. Ward, Van Nuys, both of Calif., assignors to Broadcast Equipment Rental Company, Burbank, Calif.

Filed Sep. 18, 1990, Ser. No. 584,296
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—93 **7 Claims**



1. Apparatus for video intercommunication between a drive-through customer at the outdoor ordering station and the indoor order-taking clerk at the order processing station of a fast food restaurant comprising:

a) a first video camera located at the outdoor food ordering station of a fast food restaurant and positioned to electronically capture video images of a vehicle-borne customer at said station while placing a food order;

b) a second video camera located at the indoor order-taking

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station of said restaurant and positioned to electronically capture video images of an order-processing clerk at said station while taking a food order;

c) a first video monitor located at said indoor order-taking station for displaying the video images of said vehicle-borne customer at said food ordering station;

d) a second video monitor located at said outdoor food ordering station for displaying the video images of said order-processing clerk at said order-taking station;

e) a computerized cash register with a food order and cash total display located at said indoor order-taking station;

f) a still image video player for transmitting still video images, including logos, advertising material and menus of said fast food restaurant, to said second video monitor for viewing by said vehicle-borne customer; and

g) controller means electronically interconnected to said first and second video cameras, to said first and second video monitors, to said computerized cash register, and to said still image video player, and including first and second switch means,

said first switch means operable by said order-processing clerk for selectively interconnecting said first video camera and said second video camera to said first video monitor whereby said clerk may view the video images of the vehicle-borne customer or may view video self-images, and

said second switch means operable by said order-processing clerk for selectively interconnecting said second video camera, said computerized cash register and said still image video player to said second video monitor whereby said vehicle-borne customer may view video images of the order-processing clerk, may view the food order and cash total display of said computerized cash register, or may view still images including logos, advertising material and menus of said fast food restaurant.

5,053,869

DIGITAL CIRCUIT ARRANGEMENT DETECTING SYNCHRONIZING PULSES

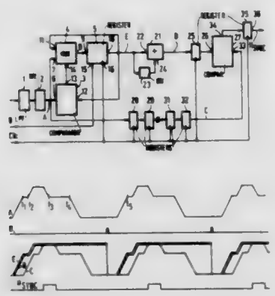
Gerhard Pletz-Kirsch, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 21, 1990, Ser. No. 587,311

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1989, 3931861

Int. Cl.[5] H04N *5/08*

U.S. Cl. 358—153 **14 Claims**



1. A digital circuit arrangement for detecting horizontal or vertical synchronising pulses in a digital video signal, comprising: means for applying the video signal to a level detector which supplies an extreme value signal which continuously provides that extreme value of the video signal which has hitherto occurred in a time interval whose duration corresponds to the time period between two consecutive synchronising pulses, which extreme value indicates the level of the synchronising pulse at the end of the time interval, means for starting a new time interval between consecutive synchronising pulses at a predetermined instant outside of the blanking interval, means for generating a comparison signal by a continuous reduction of the extreme value signal by a predetermined amount, and means for applying said comparison signal to a comparator which supplies a synchronising signal during those periods when the level of the video signal, delayed by several sample values, is higher than the level of the comparison signal.

5,053,870

GHOST CANCELLING DEVICE USING VARIABLE AMPLIFIER CONTROLLED BY CRITERION FUNCTION

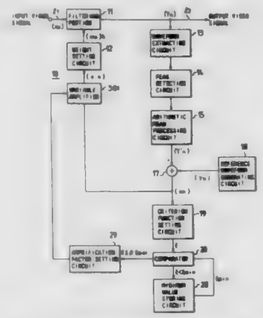
Shigehiro Ito, Toride; Yuji Nishi; Tatsushi Kouguchi, both of Iwai, and Kazuyuki Ebihara, Toride, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Oct. 25, 1989, Ser. No. 426,602

Claims priority, application Japan, Oct. 26, 1988, 63-270042

Int. Cl.[5] H04N *5/21*

U.S. Cl. 358—167 **11 Claims**



6. Apparatus for substantially eliminating ghosts from an input video signal comprising

a filter responsive to the input video signal for deriving an output video signal;

a weight setting circuit for controlling the frequency response of the filter;

means for deriving a control signal for the weight setting circuit for setting the filter frequency response to substantially eliminate the ghosts; the control signal deriving means including:

means responsive to one of the video signals for deriving a first digital signal for extracting a pulse-like signal of a predetermined time period from said one video signal;

means for detecting the position in the time axis of a peak of the first signal and generating a signal having a reference waveform at the time corresponding to the detected position in time-base of the peak;

comparison means for deriving a second signal having a value representing the magnitude of the relative values of the first signal and reference waveform; and

means for deriving a third signal representing a criterion function for the presence of a ghost in the input video signal in response to a unipolarity function of the average value of the value of the second signal,

the second and third signals controlling the value of the control signal for the weight setting circuit.

5,053,871

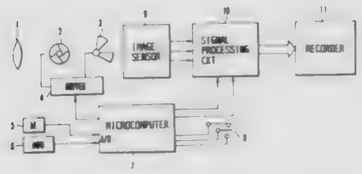
STILL VIDEO CAMERA WITH AUTOMATIC EXPOSURE CONTROL AND FLICKER DETECTION

Takeshi Ogawa, Kanagawa, and Masao Suzuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1990, Ser. No. 513,238

Int. Cl.[5] H04N *5/30*

U.S. Cl. 358—209 **22 Claims**



1. A still video camera comprising:

(a) memory means for storing an ordinary automatic exposure program chart and an automatic exposure program chart suited to a light source that has flickering;

(b) judging means for judging, prior to image sensing, whether or not a light source related to an object to be photographed is the light source that has flickering;

(c) automatic white balance adjusting means for producing an automatic white balance adjusting signal prior to image sensing, and for adjusting the white balance of a video signal obtained by image sensing on the basis of the automatic white balance signal;

(d) selecting means for selecting the ordinary automatic exposure program chart stored in said memory means when said judging means had judged that the light source related to the object is not the light source that has flickering, and for selecting the automatic exposure program chart suited to the light source that has flickering and stored in said memory means when the judging means has judged that the light source related to the object is the light source that has flickering;

(e) automatic exposure determining means for computing and determining an aperture value and a shutter speed to be used for image sensing on the basis of the automatic exposure program chart selected by said selecting means; and

(f) display means, responsive to occurrence of an event that said automatic exposure determining means is unable to determine a required shutter speed on the basis of the automatic exposure program chart suited to the light source that has flickering, for making a display indicating said event.

5,053,872

SOLID STATE CAMERA DEVICE HAVING FREE CARRIER ABSORPTION

Yoshiyuki Matsunaga, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1990, Ser. No. 514,035

Claims priority, application Japan, Aug. 31, 1989, 1-222903

Int. Cl.[5] H04N *5/335*

U.S. Cl. 358—213.11 **11 Claims**

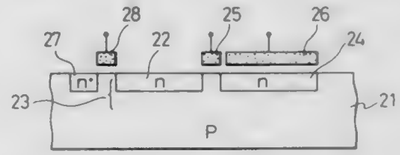
1. A solid state imaging device based on free carrier absorption, comprising:

a light acceptable means for accepting incident light under a light acceptable state in which the light acceptable means is filled with free charges during a light accepting period and outputting signal charges as the free charges activated by energy based on free carrier absorption proportional to the amount of incident light;

a store means for accumulating the signal charges outputted from the light acceptable means;

a transfer means for reading out and transferring the signal charges in the store means; and

a setting means for setting the light acceptable means in the light acceptable state by providing the free charges to the



light acceptable means after the end of the light accepting period.

5,053,873

SOLID STATE IMAGE PICKUP DEVICE CAPABLE OF PICKING UP AN IMAGE WITH A LONG TIME EXPOSURE AT A LOW NOISE

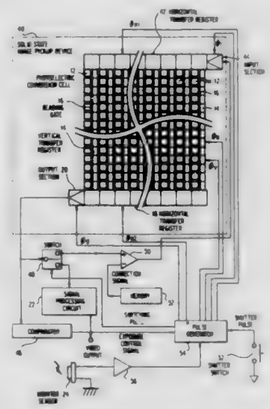
Yukio Taniji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 11, 1989, Ser. No. 421,562

Claims priority, application Japan, Oct. 11, 1988, 63-255675

Int. Cl.[5] H04N *5/335, 3/14, 3/15*

U.S. Cl. 358—213.29 **4 Claims**



1. A solid state image pickup system comprising:

a solid state image pickup device including a number of photoelectric conversion cells arranged in the from of a matrix having plurality of rows and a plurality of columns, a plurality of vertical transfer serial shift registers, each provided with one corresponding column of photoelectric conversion cells, said vertical transfer serial shift registers being coupled to all photoelectric conversion cells of said one corresponding column in parallel, a first horizontal transfer serial shift register coupled to respective first stages of said vertical transfer serial shift registers in parallel, a second horizontal transfer serial shift register couple to respective final stages of said vertical transfer serial shift registers in parallel, an input section having an output connected to a first stage of said first horizontal transfer serial shift register and an input connected to receive an input signal so as to supply the received input signal to said stage of said first horizontal transfer serial shift register in the form of an electric charge, and an output section having an input connected to a final stage of said second horizontal transfer serial shift register so as to receive an electric charge signal outputted from said final stage of said second horizontal transfer serial shift register and

having an output for generating an output signal corresponding to the received electric charge signal;

a feedback path formed between said output of said output section and said input of said input section for feeding said output signal from said output section back to said input section as said input signal;

a pulse generator for outputting timing pulses to said plurality of vertical transfer serial shift registers, said first horizontal transfer serial shift register, said second horizontal transfer serial shift register, said input section and said output section, respectively so that a signal electric charge generated by each photoelectric conversion cell is added to an electric charge which is fed back through said feedback path and which is accumulated in a corresponding state of said plurality of vertical transfer serial shift registers; and

means provided in said feedback path for subtracting from said output signal outputted from said output section a component corresponding to a dark current of a corresponding photoelectric conversion cell so as to output the subtracted signal to said input section as said input signal.

5,053,874

CONVERTER FOR A PHOTOGRAPHIC, SLIDE, OR CINEMATOGRAPHIC NEGATIVE-TO-TELEVISION CONVERSION

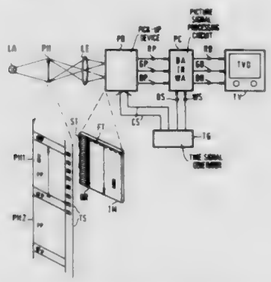
Michael A. W. Stekelenburg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1990, Ser. No. 524,249

Claims priority, application Netherlands, May 25, 1989, 8901307

Int. Cl.[5] H04N *3/36, 5/253*

U.S. Cl. 358—214 **20 Claims**



1. A converter for a photographic, slide, or cinematographic negative-to-television conversion, comprising a pick-up device for scanning of a photographic, slide or cinematographic negative having picture contents and for supplying corresponding picture pick-up signals, and a picture signal processing circuit for processing the picture pick-up signals to create picture display signals suitable for display on a television display screen, in which picture signal processing circuit the picture pick-up signals are inverted and fixed at a black level and a white level, wherein said photographic, slide or cinematographic negative comprises a picture content part and a bright reference part and said pick-up device scans said bright reference part so that said picture pick-ups signals include a picture content part signal and a bright reference part signal; and wherein said picture signal processing circuit comprises a black level adjusting circuit for setting said black level, said black level adjusting circuit being activated by receipt of a first adjusting gate signal, said first adjusting gate signal being provided when said bright reference part signal is applied to said picture signal processing circuit.

5,053,875

FLUCTUATION STABILIZATION IMAGE PICKUP DEVICE

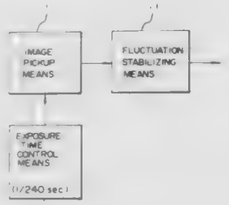
Hirofumi Ishii, Moriguchi, and Atsushi Morimura, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1990, Ser. No. 494,459

Claims priority, application Japan, Mar. 22, 1989, 1-069655

Int. Cl.[5] H04N *5/228*

U.S. Cl. 358—222 **5 Claims**



13

1. An image pickup device comprising image pickup means, stabilizing means for stabilizing an unnecessary vibration of an image output by said image pickup means according to a stabilization reference value, control means for controlling an exposure time used for said image pickup means according to an exposure time reference value, and computing means for computing said stabilization reference value and said exposure time reference value.

5,053,876

IMAGE STABILIZATION

Rodney J. Blissett, Romsey, and Martin Collar, Andover, both of United Kingdom, assignors to Roke Manor Research Limited, Romsey, England

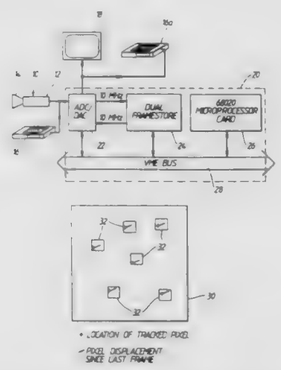
PCT No. PCT/GB89/00742, § 371 Date Apr. 30, 1990, § 102(e) Date Apr. 30, 1990, PCT Pub. No. WO90/00334, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 30, 1989, Ser. No. 465,134

Claims priority, application United Kingdom, Jul. 1, 1988, 8815714

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—222 **12 Claims**



1. An electronic image stabilisation apparatus comprising converter means for digitising a video signal to be stabilised, a framestore for storing digital information relating to a first and at least a second succeeding frame, window defining means for defining windows, means for identifying the location of at least one specific pixel within each window, means for comparing the location of the at least one specific pixel in the first frame with the location thereof in the second succeeding frame and for remapping the second frame to cancel a detected movement vector.

5,053,877

AUTOMATIC GAIN CONTROL CIRCUIT FOR USE IN A TELEVISION CAMERA

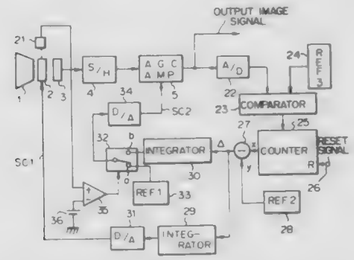
Toshiharu Kondo, Kanagawa, and Takashi Kohashi, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 24, 1990, Ser. No. 527,890

Claims priority, application Japan, May 30, 1989, 1-137242

Int. Cl.[5] H04N *5/238, 3/14, 5/335, 5/30*

U.S. Cl. 358—228 **14 Claims**



1. Apparatus for controlling the aperture of an iris in a camera, comprising: image means for producing an image signal; sampling means for sampling said image signal; detecting means for detecting the number (x) of image signal samples produced during a predetermined interval that have magnitudes greater than a threshold level; difference means for determining the difference between said number (x) and a predetermined number (y); and iris control means for controlling the aperture of said iris as a function of said difference.

5,053,878

IRIS CIRCUIT OF A VIDEO CAMERA

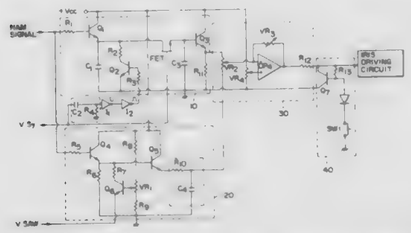
Park Sang Jo, Anyang; Lee Sang Ho, and Eom Young Ku, both of Suwon, all of Rep. of Korea, assignors to SamSung Electronics Co. Ltd., Maetan-Dong, Rep. of Korea

Filed Jul. 12, 1989, Ser. No. 378,928

Claims priority, application Rep. of Korea, Jul. 12, 1988, 1988-11355

Int. Cl.[5] H04N *5/238*

U.S. Cl. 358—228 **11 Claims**



1. An iris control circuit for a video camera, comprising:

peak value detecting means for detecting the peak value of an input non-additive magnitude (NAM) video signal and for providing a peak value signal output corresponding thereto in response to a vertical synchronizing signal applied thereto;

mean value detecting means for detecting the mean value of said NAM signal and for providing a mean value signal output corresponding thereto during a selected portion of a vertical sawtooth wave signal applied thereto; and

combining means for said peak value signal and said mean value signal, said combining means amplifying the combined value thereof by comparison with a predetermined reference voltage for providing an iris driving voltage to an iris driving circuit of a video camera so that an iris of said video camera is opened or closed according to the magnitude of said NAM signal.

5,053,879

METHOD AND DEVICE FOR DETERMINING SHADING CORRECTION DATA, AND FOR EFFECTING SHADING CORRECTION IN VIDEO PRINTER

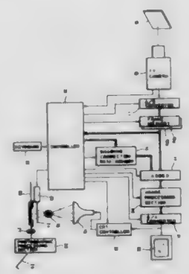
Kazufumi Kubota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 3, 1988, Ser. No. 201,721

Claims priority, application Japan, Jun. 5, 1987, 62-141249

Int. Cl.[5] H04N *5/84, 3/23*

U.S. Cl. 358—244 **5 Claims**



4. A shading correction device for a video printer, comprising; a TV camera for providing image data of a subject to be printed, a frame memory for storing said image data, an exposure CRT for displaying image data to be photographically reproduced to make a video print of said subject, said shading correction device comprising:

memory means in which shading correction data is memorized;

means for obtaining a difference between image data of a reference subject taken by said TV camera under standardized conditions, and image data of a video print of said reference subject made by said video printer, to provide said shading correction data which is memorized in said memory means; and

means for adding said shading correction data read out from said memory means and said image data read out from said frame memory, and for feeding the sum to said exposure CRT.

5,053,880

IMPLOSION-RESISTANT CATHODE-RAY TUBE WITH MOUNTING LUG HAVING A CURVED SHOULDER PROJECTION

Harry R. Swank, Lancaster, Pa., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 5, 1990, Ser. No. 533,637

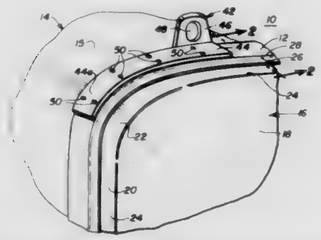
Int. Cl.[5] H04N *5/65*

U.S. Cl. 358—245 **11 Claims**

1. In an implosion-resistant cathode-ray tube having an evacuated envelope with a faceplate panel including a substantially rectangularly-shaped viewing portion extending to a peripheral sidewall, said sidewall having corners with a given radius of curvature extending into flattened portions, implosion protection means extending around said sidewall and at least one mounting lug having a base portion and an attachment portion cooperating with said implosion protection means, the improvement comprising said base portion of said

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mounting lug having a shoulder projection which substantially conforms to said given radius of curvature of the corners of



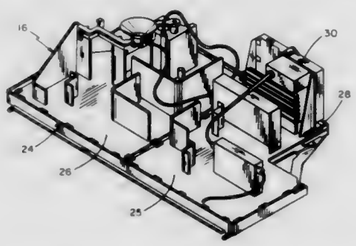
said sidewall, said attachment portion of said mounting lug being located along a section of the flattened portion of said sidewall o said faceplate panel.

5,053,881

BREAK AWAY VIDEO BOARD FOR A TELEVISION CHASSIS AND METHOD OF MANUFACTURE

Carl Campisi, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 28, 1989, Ser. No. 442,084
Int. Cl.[5] H04H *5/64*
U.S. Cl. 358—254 **9 Claims**



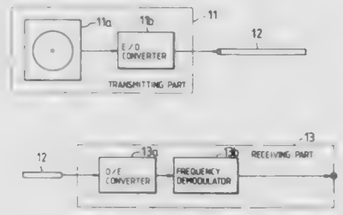
1. A television receiver, comprising: a cabinet having a rear cover with rearwardly converging side walls to accommodate an elongated rear portion of a CRT, said cabinet having a bottom wall with rearwardly converging side edges complementary to the converging side walls of the rear cover, and a chassis mounted on the cabinet bottom wall containing most of the receiving and driving circuitry for the television including a circuit board, said circuit board having a first side edge generally complementary to one of the converging bottom wall side edges, said circuit board having a break away line defining a video board portion extending outwardly from the other converging bottom wall side edge, said break away line being inside the other converging bottom wall side edge, said video board portion being located at one of the rear corners of the chassis circuit board and defining the side edges of the circuit board prior to break away, so that after the video board portion is broken away and mounted against the CRT, the remaining circuit board terminates inside the other converging bottom wall side edge maximizing the available space on the cabinet bottom wall and optimizing use of the circuit board.

5,053,882

VIDEO SIGNAL OPTICAL TRANSMISSION SYSTEM

Masatoshi Yanagidaira, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 9, 1989, Ser. No. 321,244
Claims priority, application Japan, Sep. 13, 1988, 63-227557
Int. Cl.[5] H04N *5/76;* **G02F** *1/00*
U.S. Cl. 358—342 **5 Claims**



1. A video signal optical transmission system for transmitting audio and video signals recorded on a video disk, said audio and video signals being recorded on said video disk by turning a laser beam on and off with a pulsed FM signal such that said audio and video signals are reproduced from said video disk as pulsed FM signals without additional modulation, said system comprising:

a transmitting unit for converting said audio and video signals to optical signals and outputting said optical signals, said transmitting unit including optical video disk reproducing means for reproducing said audio and video signals from said video disk as said pulsed FM signals, and electro-optical converting means for converting said pulsed FM signals to said optical signals;

an optical fiber transmission path, connected to said transmitting unit, for transmitting said optical signals; and

a receiving unit for receiving said optical signals transmitted through said optical fiber transmission path and converting said optical signals to electrical signals, said receiving unit including opto-electrical converting means for converting said optical signals transmitted through said optical fiber to said pulsed FM signals, and frequency demodulating means for demodulating said pulsed FM signals from said opto-electrical converting means and outputting said demodulated pulsed FM signals as said audio and video signals.

5,053,883

TERMINAL POLLING METHOD

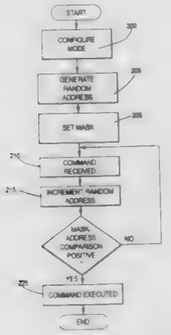
Lee R. Johnson, Lawrenceville, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 289,218, Dec. 23, 1988, Pat. No. 4,987,486. This application Apr. 20, 1989, Ser. No. 340,659
Int. Cl.[5] H04N *7/167;* **G05B** *23/02*
U.S. Cl. 358—349 **35 Claims**

18. An apparatus for controlling the transfer of data to a central location over a communication network, the central location determining a mask value and transmitting commands, said apparatus comprising:

random number generating means for generating a random number;

comparison means for comparing the random number with the mask value determined by said central location to determine whether the apparatus should transfer data to said central location in response to the commands trans-



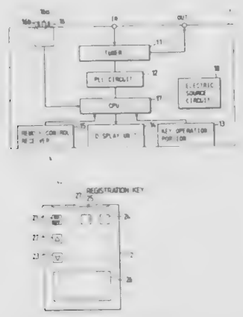
mitted by said central location based on the result of the comparison.

5,053,884

CONTROL APPARATUS FOR SELECTIVELY INHIBITING LOOKING/LISTENING IN CATV TERMINAL EQUIPMENT

Hiroyuki Kamijyo, Tokyo, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed Jan. 30, 1990, Ser. No. 472,539
Claims priority, application Japan, Feb. 15, 1989, 1-33826
Int. Cl.[5] H04N *7/167*
U.S. Cl. 358—349 **11 Claims**



1. In a CATV terminal equipment having a changeover switch of the type having a knob which can be locked by a key, said changeover switch for selectively inhibiting looking/listening on specific channels, and having an operation inhibiting means for selectively inhibiting the operation of said changeover switch, a looking/listening control apparatus comprising:

input means for inputting an identity number;

comparator means for comparing said identity number received from said input means with a predetermined number; and

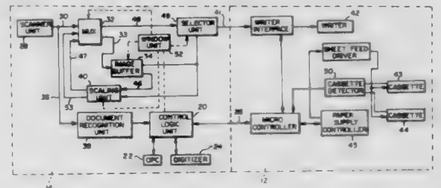
inhibition releasing means for releasing a looking/listening inhibited state set by said changeover switch when said comparator means determines that said identity number and said predetermined number agree.

5,053,885

COPIER WITH AUTO SCALING, AUTO PAPER SELECT, AND WINDOW SCALING

Lawrence B. Telle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1989, Ser. No. 443,542
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—449 **7 Claims**



1. An electronic copier for reproducing an image of an original document onto a copy sheet; said copier comprising:

image forming means for forming an image on a copy sheet based on a supplied series of electrical data signals;

document recognition means for determining the size of an original document from a series of electrical data signals;

memory means for storing a series of electrical data signals representative of the image content of a document, and for applying the stored electrical signals to said image forming means;

means, responsive to the document recognition means, for matching the size of a copy sheet and the size of the image formed by said image forming means; and

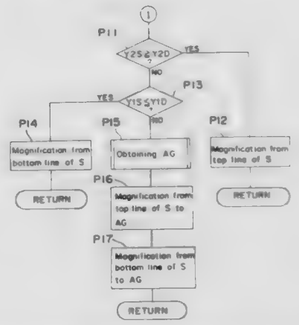
scanning means for generating, during a single scan of a document, a series of electrical data signals representative of the size and image content of the documents, and for applying the generated signals to said document recognition means and to said memory means.

5,053,886

METHOD AND APPARATUS FOR MAGNIFYING AN IMAGE

Akio Nakajima, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1988, Ser. No. 258,190
Claims priority, application Japan, Oct. 15, 1987, 62-262202; Oct. 15, 1987, 62-262203
Int. Cl.[5] H04N *1/393*
U.S. Cl. 358—451 **8 Claims**



1. A method for magnifying an original partial image stored on a first area of a memory for storing image information to restore a magnified partial image on a second area of the memory comprising:

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a step for setting locations of the first and second areas and a magnification for magnifying the original partial image;

a step for judging a possible overlap between the first and second areas in accordance with data of the locations of the first and second areas and the magnification; and

a step for performing either one of the following first to third magnifying methods selectively in the base of the result obtained by the foregoing judging step;

said first magnifying method for magnifying the original partial image in the order from the uppermost line to the lowermost line thereof when the first and second areas overlap with each other and the lowermost line of the second area locates at a position not lower than that of the first one;

said second magnifying method for magnifying the original partial image in the order from the lowermost line to the uppermost line thereof when the first and second areas overlap with each other and the uppermost line of the first area locates at a position not lower than that of the second area, and

said third magnifying method for magnifying the original partial image from the uppermost line thereof to a border line position after which a line image of the original partial image to be magnified is overlapped to a line image to be restored after magnification of the former line image, and, thereafter, magnifying it from the lowermost line to the border line when the first and second areas overlap with each other at least partially and both of the uppermost and lowermost lines of the first area are located between the uppermost and the lowermost lines of the second area.

5,053,887

TECHNIQUE FOR PRODUCING A FINE GRAINED DITHERED HALFTONE IMAGE HAVING AN INCREASED NUMBER OF GRAY LEVELS

Gerhard R. Thompson, Wappingers Falls, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Jun. 27, 1989, Ser. No. 372,736

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—457 **14 Claims**

1. A method for generating a halftone pel pattern for depicting a continuous tone image, wherein said pattern is to be reproduced on a binary output device, said method comprising the step of:

establishing a correspondence between identically shaped tiles that form a pre-defined tile pattern and individual pixel values that collectively form at least a portion of a continuous tone gray level image;

determining, for each of said tiles, a gray value, g_0, of the pixel values that correspond to that tile;

determining, for each of said tiles, one, t_0, of a plurality of pre-defined threshold values that has a highest value less than or equal to said gray values g_0 for that tile;

determining, for each of said tiles, a gray level value, g_3, of the pixels that correspond to that tile wherein said gray level value is formed in response to both the gray value, g_0, of that tile and propagated gray level error established therewith and propagated thereto;

determining, for each of said tiles, whether the gray level value, g_e, for that tile equals or exceeds the value of a successively larger threshold value, contained within said plurality of pre-defined threshold values, than threshold value t_0 associated with that tile;

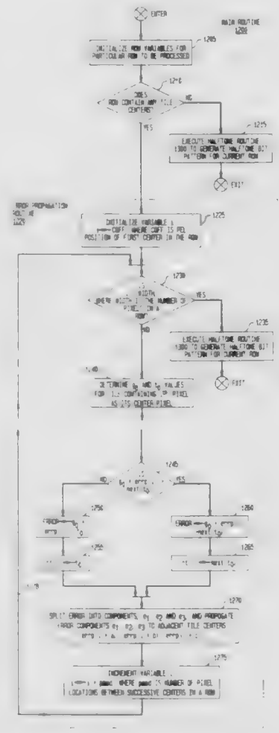
setting, in response to said determining step, a threshold value, t_s, for each of said tiles as either said threshold value t_0 for that tile or said successively larger threshold value;

ascertaining, for each of said tiles, an amount of gray value error, e, as equalling the gray level value, g_e, for said each tile less the set threshold value, t_s, associated therewith;

partitioning, for each of said tiles, the gray value error, e, into a plurality of pre-defined components;

propagating the value of each of the components for each of said tiles to a pre-determined corresponding one of a plurality of tiles situated adjacent to said each tile, wherein the gray value error is collectively propagated along identical paths from tile to tile throughout the tile pattern; and

dithering the pixel values corresponding to each one of said tiles using either a first or second matrix of pre-defined threshold values to form a halftone dithered pel pattern spatially corresponding thereto wherein the matrix to be used for said one tile is selected in response to the set



threshold value t_s associated therewith, such that a dithered halftone pel pattern that corresponds to said one tile is formed within the halftone image and which, when viewed with other such dithered halftone patterns appearing in said halftone image and associated with tiles adjacent thereto, spatially depicts a discrete gray level that can not be obtained through use of dithering said pixel values using either said first or second matrix alone.

5,053,888

METHOD OF AND APPARATUS FOR ESTABLISHING HIGHLIGHT AND SHADOW DENSITIES

Akihiro Nomura, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co. Ltd., Japan

Filed Mar. 31, 1989, Ser. No. 332,466

Claims priority, application Japan, Mar. 31, 1988, 63-80405

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—458 **11 Claims**

1. A method of establishing a gradation control density X_c employed as a highlight density or a shadow density on a gradation correction curve F(X) that is used in gradation correction of image data expressing density of each pixel in an image, the method comprising the steps of:

(a) on the basis of said image data, generating a statistical curve Y=S(X) expressing a cumulative density distribution of said image, where said statistical curve Y=S(X) is defined on an X-Y coordinate plane having an X-axis representing density levels and a Y-axis representing a cumulative number of pixels in an arbitrary scale;

(b) providing a threshold density X_{TH} on said X-axis;

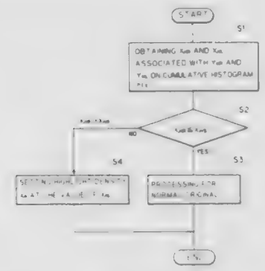
(c) finding a terminal value Y_m on said Y-axis at which said statistical curve Y=S(X) is terminated;

(d) providing a first reference value Y_{1R} on said Y-axis;

(e) finding a terminal density X_m on said X-axis at which said statistical curve Y=S(X) reaches said terminal value Y_m;

(f) converting said first reference value Y_{1R} through said statistical curve Y=S(X), to thereby obtain a first reference density X_{1R};

(g) comparing said first reference density X_{1R} with said threshold density X_{TH}, to thereby designate said statistical curve Y=S(X) as a first type corresponding to an extraordinarily-bright image or an extraordinarily-dark image when said first reference density X_{1R} is farther from said terminal density X_m than is said threshold density X_{TH}, or as a second type corresponding to an ordinary image other than said extraordinarily-bright image or said extraordinarily-dark image when said first reference density X_{1R} is closer to said terminal density X_m than is said threshold density X_{TH};



(h) selecting a first procedure for setting said gradation control density X_c at a terminal reference density X_{TR} predetermined between said terminal density X_m and said first reference density X_{1R} when said statistical curve Y=S(X) is said first type, or selecting a second procedure other than said first procedure for setting said gradation control density X_c when said statistical curve Y=S(X) is said second type; and

(i) establishing said gradation control density X_c through said first procedure or said second procedure selected at said step (h).

5,053,889

CHARGE LATENT IMAGE DETECTING DEVICE

Atsushi Nakano; Toshio Konno, both of Yokohama, and Tadsyuki Shimada, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 30, 1990, Ser. No. 530,701

Claims priority, application Japan, Jun. 15, 1989, 1-152852

Int. Cl.[5] H04N *1/04*; G02B *5/30*; G02F *1/137*

U.S. Cl. 358—480 **6 Claims**

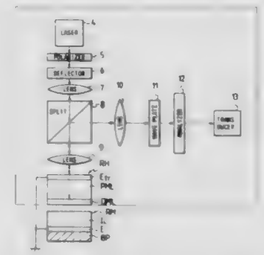
1. A device for detecting a charge latent image on a recording medium, comprising:

a photo-modulation member having an electrooptic effect, the photo-modulation member opposing the recording medium and being exposed to an electric field generated by the charge latent image;

means for applying a polarized light to the photo-modulation member, wherein the polarized light enters the photo-modulation member, and passes through the photo-modulation member and then exits from the photo-modulation member;

means for detecting a polarization of the light which exits from the photo-modulation member;

wherein the electrooptic effect of the photo-modulation member modulates a polarization of the light in accordance with the electric field applied to the photo-modulation member while the light passes through the photo-modulation member;



wherein the photo-modulation member is composed of a composite film which comprises a high polymer material and a liquid crystal material dispersed in the high polymer material.

5,053,890

MAGNETIC RECORDING AND REPRODUCING APPARATUS

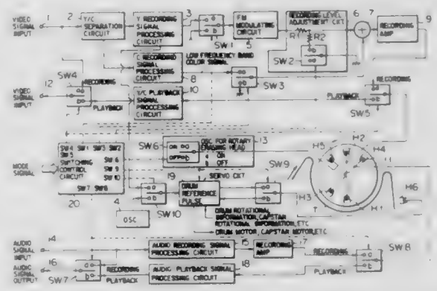
Yasuomi Namiki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 16, 1989, Ser. No. 352,469

Claims priority, application Japan, May 16, 1988, 63-116842

Int. Cl.[5] A04N *5/782*

U.S. Cl. 360—19.1 **3 Claims**



1. A magnetic recording and reproducing apparatus having a fixed control head for recording/reproducing a control signal, said fixed control head being used for tracking servo at the time of reproducing operation, and provided with a rotary drum, an audio head for recording/reproducing an audio signal, a video head for recording/reproducing a video signal, and an erasing head for erasing recorded information being provided on the outer circumferential surface of said rotary drum, a running magnetic tape being obliquely wound at a predetermined length on said outer circumferential surface;

wherein, in an audio recording mode for recording said audio signal onto said tape by means of said audio head, after a signal recorded on said tape is erased by the operation of said erasing head, and said control head records onto said magnetic tape a control signal used for tracking servo at the time of reproducing operation; and

wherein in a video recording mode for recording said video

signal at the surface layer portion of said tape by means of said video head, said erasing head is inoperative, and under the same state as the reproducing mode in which the servo system is synchronous with an input video signal, said video head records said video signal at the surface layer portion of said tape of a track on which said audio signal has been recorded in said audio recording mode while carrying out tracking servo on the basis of said control signal reproduced from said tape by said control head.

5,053,891

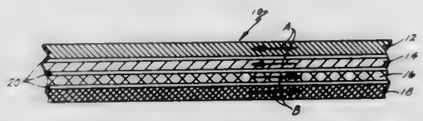
METHOD OF PRERECORDING TAPE AND APPARATUS FOR USE THEREWITH

Michael Snodgrass, 550 Slayton, Grand Haven, Mich. 49417

Continuation of Ser. No. 667,642, Nov. 2, 1984, Pat. No. 4,855,844. This application May 10, 1989, Ser. No. 350,012

Int. Cl.[5] G11B *15/02*

U.S. Cl. 360—22 **5 Claims**



1. A method of recording a conventional, stereo audio cassette tape of the type having first and second sides, and a pair of stereo tracks on each side, with continuously running, sequence dependent information, in combination with a method of playing said tape with a conventional stereophonic audio tape player of the type having a stereophonic pick-up head with first and second channels, and a balance control to vary the relative output volume of said first and second channels; said method comprising:

providing sequence dependent information comprising a single literary work;

dividing said literary work into four, consecutive portions, comprising a first quarter, a second quarter, a third quarter and a fourth quarter;

audibly rendering said first quarter of said literary work and recording said first quarter onto one of the stereo tracks on the first side of said tape in a first direction, at a location along the width of said tape corresponding to said first channel of said stereophonic pick-up head when said tape is oriented to play the first side thereof;

audibly rendering said second quarter of said literary work and recording said second quarter onto one of the stereo tracks on the second side of said tape in a second direction opposite to said first direction, at a location along the width of said tape corresponding to said first channel of said stereophonic pick-up head when said cassette tape is oriented to play the second side thereof;

audibly rendering said third quarter of said literary work and recording said third quarter onto the other of the stereo tracks on the first side of said tape in said first direction, at a location along the width of said tape corresponding to said second channel of said stereophonic pick-up head when said cassette tape is oriented to play the first side thereof;

audibly rendering said fourth quarter of said literary work and recording said fourth quarter onto the other of the stereo tracks on the second side of said tape in said second direction, at a location along the width of said tape corresponding to said second channel of said stereophonic pick-up head when said cassette tape is oriented to play the second side thereof;

inserting said cassette tape in said tape player in an operational orientation to play the first side of said cassette tape;

adjusting said balance control for maximum output volume of said first channel and minimum output volume of said second channel;

playing the first quarter of said literary work to the end of said one stereo track on the first side of said tape;

ejecting said cassette tape from said tape player, reversing the orientation of said cassette tape with respect to said tape player and reinserting said cassette tape in said tape player in an operational orientation to play the second side of said tape;

playing the second quarter of said literary work to the end of said one stereo track on the second side of said tape;

ejecting said cassette tape from said tape player, reversing the orientation of said cassette tape with respect to said tape player and reinserting said cassette tape in said tape player in an operational orientation to again play the first side of said tape;

adjusting said balance control for minimum output volume of said first channel and maximum output volume of said second channel;

playing the third quarter of said literary work to the end of said other stereo track on the first side of said tape;

ejecting said cassette tape from said tape player, reversing the orientation of said cassette tape with respect to said tape player, and reinserting said cassette tape in said tape player in an operational orientation to again play the second side of said tape;

playing the fourth quarter of said literary work to the end of said other stereo track on the second side of said tape, whereby said entire tape is played in proper sequence with only a single adjustment of said balance control;

said recording steps include spacing said stereo tracks across said tape to provide a spacing band between adjacent ones of said stereo tracks; and

encoding a masking signal on said tape at said spacing bands.

5,053,892

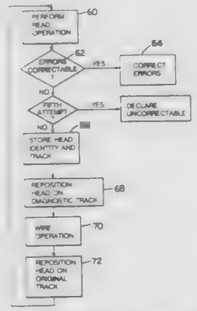
THIN FILM HEAD READ RECOVERY

Louis Supino, Jr., and Joseph M. Rinaldis, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 188,047, Apr. 29, 1988, abandoned. This application Mar. 13, 1990, Ser. No. 505,650

Int. Cl.[5] G11B *15/12, 5/02*

U.S. Cl. 360—62 **14 Claims**



1. A method of conditioning a magnetic read/write head adapted for a storage medium on which data is recorded, comprising the steps of

causing said head to perform a first operation on selected data on a storage medium,

determining if the first operation was performed acceptably, and

if not, causing said head to perform a second, different operation that is capable of increasing the likelihood that the head will be able to acceptably perform the first operation and that does not include performing an operation on data adjacent to said selected data.

5,053,893

METHOD OF AND DEVICE FOR DEMAGNETIZING MAGNETIC RECORDING MEDIUM

Youichi Hayata, and Michihiro Matsui, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

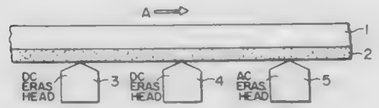
Division of Ser. No. 931,944, Nov. 19, 1986, Pat. No. 4,956,728. This application Jul. 6, 1990, Ser. No. 549,272

Claims priority, application Japan, Jul. 16, 1984, 59-147103

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] G11B *5/03*

U.S. Cl. 360—66 **3 Claims**



1. A method of demagnetizing a magnetic recording medium, comprising the steps of:

i) applying a saturating magnetic field to said magnetic recording medium;

ii) applying an unsaturating magnetic field to said magnetic recording medium in a direction opposite to the direction of said saturating magnetic field; and

iii) applying an alternating magnetic field to said magnetic recording medium to remove residual magnetism which has been left on the magnetic recording medium by said unsaturating magnetic field.

5,053,894

MAGNETIC RECORDING AND REPRODUCING APPARATUS

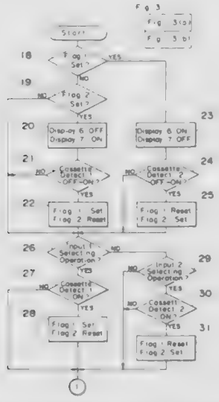
Kouichi Sakai, Suita, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 21, 1989, Ser. No. 383,532

Claims priority, application Japan, Jul. 22, 1988, 63-184359

Int. Cl.[5] G11B *13/18, 15/68*

U.S. Cl. 360—69 **2 Claims**



1. A magnetic recording and reproducing apparatus comprising:

a first mechanism and a second mechanism;

a first cassette detect switch and a second cassette detect switch for respectively detecting the presence of tape cassettes mounted on respective first and second mechanisms;

a selection switch for selecting either said first or second mechanisms;

a display means for indicating the mechanism selected by said selection switch;

a set of operation switches for enabling reproducing, fast forwarding, recording and stopping, and

a control means operatively connected to all of said switches for automatically switching to give priority to said mechanism upon which a tape cassette has been mounted subsequent to a tape cassette having been mounted on said other mechanism when mounting a tape cassette on one mechanism during stopping or operating of said other mechanism, wherein the operation of said operation switches after either of said mechanisms is selected by said selection switch results in a desired operation of said selected mechanism.

5,053,895

HEAD DRUM SERVO CONTROL METHOD FOR HIGH SPEED SEARCH IN MAGNETIC TAPE REGENERATING APPARATUS, AND DEVICE THEREOF

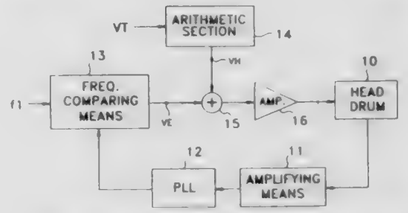
Kyeong-sun Choi, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyung, Rep. of Korea

Filed Aug. 21, 1989, Ser. No. 396,105

Claims priority, application Rep. of Korea, Dec. 17, 1988, 88-16857

Int. Cl.[5] G11B *5/52*

U.S. Cl. 360—70 **4 Claims**



1. A head drum servo control method for a high speed search in a magnetic tape regenerating apparatus capable of servocontrolling the revolution speed of a head drum having a plurality of heads for scanning a plurality of tracks on the magnetic tape in an inclined direction of a constant inclination angle, comprising the steps of:

setting a voltage corresponding to a constant relative speed between each of the plurality of heads and the tape;

inputting a voltage corresponding to a tape running speed;

comparing a frequency generated in accordance with a revolution speed of the head drum with a reference frequency, so as to generate an error voltage corresponding to the difference of both frequencies;

generating a voltage corresponding to a head drum revolution speed to be controlled in accordance with a variation of the voltage corresponding to the tape running speed based on the following operation;

$$VH = VT\cos\theta + \sqrt{(VR^2 - VT^2\sin^2\theta)}$$

wherein VT represents a voltage corresponding to a tape running speed, VR represents a voltage corresponding to a constant relative speed between the head and the tape, VH represents a voltage corresponding to a head drum speed to be controlled in accordance with the variation of the voltage corresponding to the tape running speed, and θ represents an angle at which the head traces the tape; and

generating a driving signal for controlling the head drum speed by adding and amplifying said error voltage and

said voltage corresponding to the head drum speed to be controlled.

5,053,896

RECEIVING METHOD AND APPARATUS FOR RECORDING RECEIVED DATA ONTO A RECORDING MEDIUM

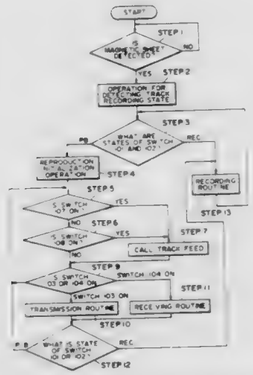
Tsuguhide Sakata, Machida; Tomishige Taguchi, Urawa; Norio Kimura, Shinagawa; Kunio Tsuruno, Tokyo; Masahiro Takei, and Yasutomo Suzuki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 48,840, May 12, 1987, abandoned. This application Dec. 26, 1989, Ser. No. 456,531

Claims priority, application Japan, May 14, 1986, 61-109894; May 14, 1986, 61-109895; May 14, 1986, 61-109896; May 14, 1986, 61-109897

Int. Cl.[5] G11B *5/02, 15/18*

U.S. Cl. 360—71 **22 Claims**



1. A receiving apparatus for recording received data onto a recording medium, comprising:

memory means for storing the received data before it is recorded onto said recording medium;

driving means for driving said recording medium; and

control means for controlling said driving means to actuate said driving means at a predetermined time before the completion of the storing operation of said memory means, wherein the predetermined time is sufficient for said driving means to attain a stable driving state of said recording medium.

5,053,897

HEAD POSITION CONTROLLING CIRCUIT FOR DISK UNIT INCLUDING SERVO HEAD SELECTION

Koji Ikeshita, Hyogo, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Dec. 23, 1988, Ser. No. 289,326

Int. Cl.[5] G11B *5/596, 21/10*

U.S. Cl. 360—77.05 **6 Claims**

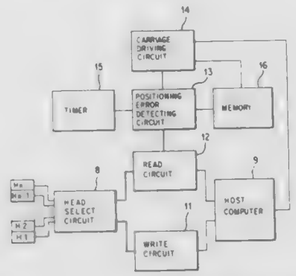
4. A head position controlling circuit for a disk unit having a plurality of recording disks having servo information on each track thereon; a plurality of read/write heads; and a movable carriage for supporting said read/write heads, which comprises:

a memory;

a timer for generating a predetermined period of time;

a positioning error detecting circuit connected to said timer for detecting at said predetermined period and storing in said memory deviations of said write/read heads from destination tracks;

a head select circuit responsive to head addresses supplied from a host computer for selecting a servo head and a data head from said write/read heads; and



a carriage driving circuit connected to said positioning error detecting circuit for computing a difference in deviation between said servo head and said data head to adjust said carriage by said difference.

5,053,898

RECORDING AND/OR REPRODUCING APPARATUS, PARTICULARLY WITH MEANS FOR SEARCHING FOR VACANT TRACKS

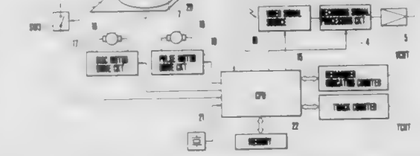
Seiji Hashimoto; Tokihiko Ogura, both of Kanagawa; Kuniji Osabe, Tokyo; Akimasa Nishimura, and Makoto Takayama, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 930,947, Nov. 10, 1986, abandoned, which is a continuation of Ser. No. 541,671, Oct. 13, 1983, abandoned. This application Oct. 22, 1990, Ser. No. 602,400

Claims priority, application Japan, Oct. 15, 1982, 57-181808

Int. Cl.[5] G11B *19/02, 21/02*

U.S. Cl. 360—72.1 **38 Claims**



1. A recording and/or reproducing apparatus comprising:

(a) mounting detection means for detecting that a recording medium is mounted on the apparatus in a recordable position and for producing an output signal;

(b) recording and/or reproducing means for recording and/or reproducing a signal on said recording medium at the recordable position;

(c) signal detection means for detecting presence or absence of a signal in each of predetermined portions on said recording medium;

(d) control means for causing said signal detection means to detect the presence or absence of the signal in each of the predetermined portions on said recording medium in predetermined sequence in response to the output of said mounting detection means;

(e) memory means for storing detection signals produced by said signal detection means in said predetermined sequence; and

(f) means for causing said recording and/or reproducing means to access to a position which is detected as a position absent of signal, on the basis of an information memorized in said memory means.

5,053,899

EXACT POSITION CONTROL OF A RELATIVE POSITION BETWEEN A MAGNETIC HEAD AND A RECORDING MEDIUM

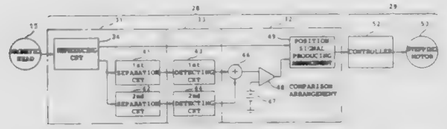
Yoshihisa Okawa, and Terumitsu Okamoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 15, 1988, Ser. No. 219,545

Claims priority, application Japan, Jul. 15, 1987, 62-177643; Jul. 30, 1987, 62-191785; Sep. 11, 1987, 62-226645

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.08 **8 Claims**



1. In a position controlling unit for controlling a relative position between a magnetic head and a recording medium having a predetermined tracking axis and a control area indicative of said predetermined tracking axis, said magnetic head being for detecting said control area to produce a detection signal, said unit including producing means responsive to said detection signal for producing a position signal representative of said relative position, and control means responsive to said position signal for controlling said relative position in a predetermined direction which intersects said predetermined tracking axis and which extends along said recording medium, the improvement wherein said producing means comprises:

first internal producing means coupled to said magnetic head and responsive to said detection signal for producing a first internal signal;

processing means coupled to said first internal producing means for processing said first internal signal into a second internal signal; and

second internal producing means coupled to said first internal producing and said processing means and responsive to said first and second internal signals for producing said position signal;

said control area having a main area and a supplementary area preceding said main area, said main area being indicative of said predetermined tracking axis, said magnetic head being for detecting said main and said supplementary areas to produce a main and a supplementary detection signal, wherein:

said first internal producing means comprises:

main producing means coupled to said magnetic head and responsive to said main detection signal for producing a main local signal; and

supplementary producing means coupled to said magnetic head and responsive to said supplementary detection signal for producing a supplementary local signal;

said main and said supplementary local signal collectively serving as said first internal signal;

said processing means comprises:

internal processing means coupled to said supplementary producing means for processing said supplementary local signal into said second internal signal; and

means coupled to said main producing and said second internal producing means for sending said main local signal to said second internal producing means;

said second internal producing means being responsive to said main local and said second internal signals for producing said position signal;

said supplementary area having a first and a second identification part, said first identification part being placed at a first predetermined position preceding said main area, said second identification part being placed at a second predetermined position which precedes said main area and is displaced from said first predetermined position in said predetermined direction, said magnetic head being for detecting said first and said second identification parts to produce a first and a second supplementary detection signal, wherein:

said supplementary producing means comprises:

first supplementary producing means coupled to said magnetic head and a responsive to said first supplementary detection signal for producing a first supplementary local signal; and

second supplementary producing means coupled to said magnetic head and responsive to said second supplementary detection signal for producing a second supplementary local signal;

said first and said second supplementary local signals collectively serving as the supplementary local signal;

said internal processing means comprises:

first detecting means coupled to said first supplementary producing means for detecting said first supplementary local signal to produce a first local detection signal; and

second detecting means coupled to said second supplementary producing means for detecting said second supplementary local signal to produce a second local detection signal; and

wherein said second internal processing means comprises:

means for combining said first and said second local detection signals into said second internal signal.

5,053,900

RECORDING AND/OR REPRODUCING APPARATUS PERFORMING A TRACKING CONTROL BY MOVING GUIDE MEMBERS FOR A RECORDING MEDIUM

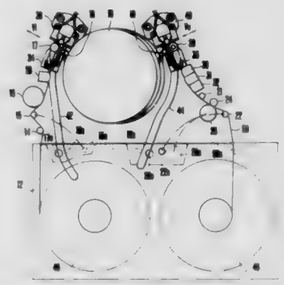
Masahide Hasegawa, and Takashi Kimura, both of Kanagawa, Japan, assignors to Cannon Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1989, Ser. No. 347,493

Claims priority, application Japan, May 16, 1988, 63-118853; May 26, 1988, 63-127002; May 26, 1988, 63-127003

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.13 **24 Claims**



1. A reproducing apparatus comprising:

(a) a head assembly carrying a rotary reproducing head for reproducing a signal from a recording medium;

(b) a pair of movable guides, disposed before and behind said head assembly as viewed in the direction of running of said recording medium while a signal is reproduced by said reproducing head from said recording medium, for guiding the running of said recording medium;

(c) detection means for detecting any positional deviation of said rotary reproducing head from a track formed on said recording medium by using signals reproduced by said rotary reproducing head to generate a tracking error signal; and

(d) drive means operable, while a signal is reproduced by said rotary reproducing head from said recording me-

VOL 1131 ISS 1 OC 1 1991 UMI

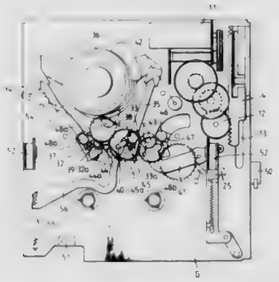
dium, for driving said pair of movable guides in relation to each other according to said tracking error signal.

5,053,901

THREADING DEVICE FOR TAPE RECORDER INCLUDING A TENSION ARM ABUTTED AGAINST A SLIDE BLOCK IN AN INITIAL POSITION

Fumiya Yamada; Akira Shimizu, and Atsushi Kurosawa, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 30, 1989, Ser. No. 330,667
Claims priority, application Japan, Jun. 23, 1988, 63-153490
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **4 Claims**



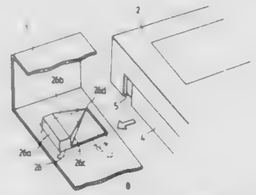
1. A threading device for a tape recorder comprising:
a cylinder head rotatably mounted on a chassis;
a pair of guide grooves formed in said chassis and extending toward said cylinder head, each of said guide grooves having a front end which is proximate to said cylinder head on a rear end which is remote with respect to said cylinder head;
slide blocks for drawing a tape of a tape cassette and winding said tape on said cylinder head, said slide blocks having at lower surfaces respective pins guided respectively by said guide grooves and having at upper surfaces respective guide rollers which contact the tape;
a series of gears rotated by a drive source so as to move said slide blocks reciprocally along said guide grooves, respectively;
biasing means extending between said gears and said chassis for biasing said slide blocks toward an initial tape-drawing position, said pin of one of said slide blocks being abutted against the rear end of one of said guide grooves under the bias of said biasing means in said initial tape-drawing position so as not to rattle, whereas the other slide block is not abutted against the rear end of the other of said guide grooves in said initial tape-drawing position; and
a tension arm for imparting tension to the tape which has been drawn by said slide blocks from said tape cassette and wound on said cylinder head, said tension arm being abutted against the other slide block in said initial tape-drawing position, thereby preventing a rattling of the other slide block in said initial tape-drawing position;
further comprising:
a linearly movable member arranged so as to be moved by said drive source and having a pin slidably received in a groove formed in said chassis;
a rotatable member, connected to said chassis and said series of gears, engageable with said pin of said linearly movable member to be rotated to move said slide blocks which draw the tape from the tape cassette;
a pivotal retainer member connected to said rotatable member and having a retaining portion which is engageable with a notch in said chassis to prevent the rotation of said rotatable member; and
projecting portion formed on said pivotal retainer member and being engageable with said pin of said linearly movable member before said rotatable member comes into contact with said pin of said linearly movable member, said pivotal retainer member thereby pivoting so as to disengage said retaining portion from said notch in said chassis to enable the rotation of said pivotal retainer member and said rotatable member.

5,053,902

DEVICE FOR PREVENTING TAPE CASSETTE FROM ERRONEOUS INSERTION INTO TAPE DECK

Takahiro Kato, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 9, 1989, Ser. No. 364,037
Claims priority, application Japan, Dec. 14, 1988, 63-313824; Dec. 17, 1988, 63-317623
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.5 **6 Claims**



1. A device for preventing a tape cassette from erroneous insertion into a tape deck having a cassette insertion hole, the tape cassette having a lid member for selectively covering a running surface of a tape which provides recorded information to the tape deck during play, a slider movable relative to a cassette body for moving the lid member, and a stop member abuttable against the slider, the slider having a front edge located nearest the lid member and a rear edge located farthest from the lid member, the slider having a first position for positioning the lid member to cover the running surface and a second position for positioning the lid member to expose the running surface to the deck, a single recessed portion, which extends the length of the cassette and is defined between the stop member and the rear edge of the slider when located in the first position, and the cassette being adapted for insertion into the insertion hole in a direction parallel to the length of the recessed portion, the device comprising:
a protruding means provided at the cassette insertion hole, for permitting the cassette to pass through the cassette insertion hole only when the cassette is properly inserted, said protruding means travels the length of and within the recessed portion during insertion of the cassette into the insertion hole.

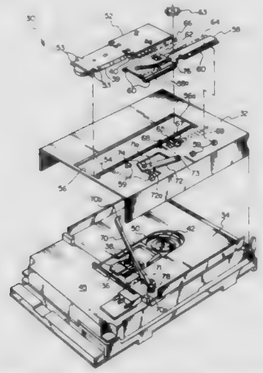
5,053,903

DISK CLAMP POSITIONING APPARATUS FOR INFORMATION STORAGE DISK DRIVE SYSTEM

James D. Harney, Rochester, N.Y.; Ronald A. Carin, San Jose, Calif.; James R. Carey, Rochester, and Philip R. Ashe, Hilton, both of N.Y., assignors to Literal Corporation, Colorado Springs, Colo.

Filed Mar. 28, 1989, Ser. No. 329,467
Int. Cl.[5] G11B *17/04, 17/02*
U.S. Cl. 360—99.06 **3 Claims**

1. An information storage disk drive system for use with a cartridge which at least partially encloses a disk, the information storage disk drive system comprising:
a cartridge guide for receiving the cartridge along an insertion path;
a disk spindle-drive positioned to be coaxially aligned with the disk when the cartridge containing the disk is loaded into a final operative position in the guide;
a disk clamp for urging the disk against the spindle drive when the disk clamp is coaxially aligned with the spindle-drive;
a disk clamp mounting plate upon which the disk clamp is mounted, the mounting plate being slidably mounted on the cartridge guide and being slidable in a path parallel to the insertion path between an operative position in which the mounting plate is positioned so that the disk clamp is coaxially aligned with the spindle-drive and a retracted position in which the disk clamp is displaced from alignment with the spindle-drive;
a drive cam slidably mounted on the cartridge guide with a slide path parallel to the insertion path;



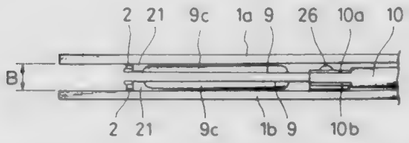
means connected to the drive cam for engaging the cartridge to drive the drive cam along the slide path as the cartridge is inserted into the cartridge guide; and
means for drivingly coupling the drive cam to the disk clamp mounting plate so that movement of the drive cam along the slide path as the cartridge is inserted into the cartridge guide causes movement of the disk clamp mounting plate from the retracted position to the opertive position, in which the means for drivingly coupling the drive cam to the mounting plate comprises:
a first rack as part of the mounting plate;
a second rack as part of the drive cam; and
pinion means for drivingly coupling the first rack to the second rack.

5,053,904

HARD DISK DRIVING DEVICE HAVING A PLURALITY OF HEAD SLIDERS WITH EQUALIZED FLOTATION HEIGHT

Takashi Yamano, Itau; Yasushi Katanuma, Sapporo; Hideyasu Takemura, Furukawa; Michiko Kumagai, Furukawa; Hiroshi Yoshida, Furukawa, and Toru Kaneko, Sendai, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1990, Ser. No. 504,143
Claims priority, application Japan, Apr. 3, 1989, 1-81512
Int. Cl.[5] G11B *5/60, 5/48*
U.S. Cl. 360—103 **3 Claims**



1. A hard disk driving device having at least two hard disks mounted in a predetermined spaced relation wherein a magnetic recording layer is formed on at least a first of each of said hard disks, and a pair of floating type head sliders opposing said first surface and a second surface of one of the hard disks such that one of said pair of head sliders is positioned inside an space between two of said hard disks and such that the other of said pair of head sliders is not positioned inside the space between two of said hard disks, characterized in that the head slider positioned inside the space between two of said hard disks has an air bearing surface which is smaller than the air bearing surface of the head slider not positioned inside the space between two of said hard disks, whereby each of said pair of head sliders have substantially equal flying heights.

5,053,905

HARDENED CENTER PIN CONTRACT AREA ON MAGNETIC DISK CARTRIDGE

Syuji Kiji, and Keizou Takahashi, both of Ichigai, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 16, 1990, Ser. No. 480,967
Claims priority, application Japan, Mar. 7, 1989, 1-25804[U]
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—133 **6 Claims**



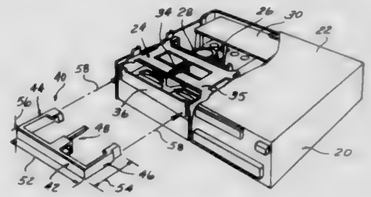
1. A magnetic disk cartridge in which a magnetic disk is rotatably disposed within a jacket, said magnetic disk cartridge being characterized in that a hardened layer of an ultraviolet ray hardening resin is formed on an inner surface of said jacket which is contacted with a tip of a center pin of a magnetic disk driving apparatus passing through an opening portion of said magnetic disk, said hardened layer having a hardness in a range from 1×10^{10}dyn/cm^2 to 1×10^{5}dyn/cm^2.

5,053,906

SERVICE CASSETTE FOR VHS VIDEO CASSETTE RECORDER

Yousif I. Rayis, 1720 Westwood, Madison Heights, Mich. 48071

Filed Mar. 6, 1990, Ser. No. 488,913
Int. Cl.[5] G11B *23/02, 5/41*
U.S. Cl. 360—137 **20 Claims**



1. A service jig for simulating the presence of a conventional VHS videotape cassette within a video cassette recorder ("VCR") designed to record or play such VHS cassettes, thereby allowing a service technician to put the VCR into virtually all of its normal operating modes and to readily observe the operation of internal mechanisms of the VCR that are normally obscured by the presence of a conventional video cassette within the VCR, the service jig comprising:

a substantially open E-shaped structure having an elongated common wall portion with first and second end regions and a central region located midway between the first and second end regions, first and second end wall portions respectively connected rigidly to the first and second end regions of the common wall portion and extending substantially perpendicularly away therefrom, and a central arm portion rigidly connected to and extending away from the central region of the common wall portion, the first and second end wall portions and the central arm portion being substantially unconnected to one another, except along the elongated common wall portion, such that the end wall portions provide no support for one another and provide no support for the central arm portion,

the overall length, width and height of the E-shaped structure being substantially equal to the overall length, width and height of a conventional VHS videotape cassette,

whereby the service the service jig provides an open viewing area that allows almost completely unobstructed visual and mechanical access to tape loop areas of a tape handling system of the VCR, even when the service jig is in a normal operating position for a conventional tape cassette of the VCR.

5,053,907

HYBRID RELAY

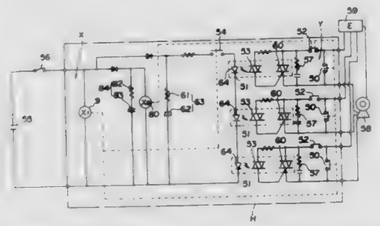
Hiroyuki Nishi; Takeshi Suzuki, and Masato Nonaka, all of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 310,160, Feb. 14, 1989, abandoned. This application Mar. 14, 1990, Ser. No. 494,805

Claims priority, application Japan, Mar. 16, 1988, 63-64429; Aug. 30, 1988, 63-218186

Int. Cl.[5] H01H *9/30*

U.S. Cl. 361—9 **3 Claims**



1. A hybrid relay comprising a mechanical relay provided with mechanical contact means adapted to be actuated by an electromagnet, a semiconductor relay including a semiconductor device, and switch means for supplying a drive current to said electromagnet, wherein said contact mechanism comprises:

a first contact mechanism having a first contact point set for controlling a load current of said hybrid relay;

a second contact mechanism having a second contact point set for controlling a control current for a control gate of said semiconductor relay;

a third contact mechanism having a third contact point set for controlling a leak current of said semiconductor relay;

a contact point gap of said first contact point set of said first contact mechanism being larger than a contact point gap of said second contact point set of said second contact mechanism, and a contact point gap of said third contact point set being smaller than said contact point gap of said second contact point set;

means for delaying the disengagement of said third contact point set when said electromagnet is de-energized; and

a pair of carriers which are capable of independent motion along their direction of action, and one of said carriers carrying said first and second contact point sets is provided with pushing means for pushing the other carrier carrying said third contact point set to its activated position for engaging said third contact point set when said electromagnet is energized, said delay means comprising an auxiliary electromagnet which holds said other carrier at its activated position for a certain time interval after said one carrier has moved towards its initial position for disengaging said first and second contact point sets when said electromagnet is de-energized.

5,053,908

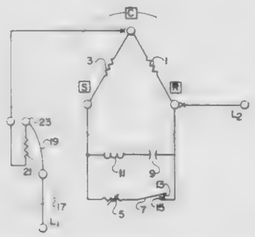
PSC MOTOR START SYSTEM

Lawrence E. Cooper, and Richard L. Jenne, both of Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1989, Ser. No. 442,802

Int. Cl.[5] H02H *5/04;* **H02P** *1/44*

U.S. Cl. 361—24 **28 Claims**



1. A motor system having a start winding and a main winding, comprising:

(a) a first and a second circuit connected in parallel to form a parallel circuit, said parallel circuit serially connected to said start winding;

(b) said first circuit including a resistor having a defined temperature coefficient of resistance and a temperature responsive switch in series therewith;

(c) said second circuit including an electromagnetic device for latching said switch in a predetermined state and a capacitor in series therewith.

5,053,909

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

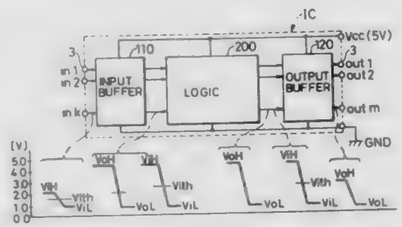
Yasunaga Suzuki; Toshiaki Matsubaru, and Akira Uragami, all of Takasaki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 97,173, Sep. 16, 1987, Pat. No. 4,827,368, which is a continuation of Ser. No. 840,655, Mar. 18, 1986, Pat. No. 4,710,842. This application May 2, 1989, Ser. No. 346,409

Claims priority, application Japan, Mar. 25, 1985, 60-58366

Int. Cl.[5] H02H *3/20*

U.S. Cl. 361—88 **11 Claims**



1. A semiconductor integrated circuit device comprising:

an input terminal for receiving an input signal;

first and second voltage supply terminals for receiving first and second supply voltages, respectively;

an input circuit including:

a first bipolar transistor having a base coupled to the input terminal, a collector coupled to the second voltage supply terminal, and an emitter,

a first resistor coupled between the first voltage supply terminal and the emitter of the first bipolar transistor,

a p-channel MOSFET having a gate coupled to the emitter of the first bipolar transistor, a source coupled to the first voltage supply terminal, and a drain, and

a n-channel MOSFET having a gate coupled to the emitter of the first bipolar transistor, a source coupled to the second voltage supply terminal, and a drain coupled to the drain of the p-channel MOSFET; and

input protection means coupled to the base of the first bipolar transistor for protecting the first bipolar transistor from an external surge, the input protection means including:

a second bipolar transistor having an emitter-collector path coupled between the base of the first bipolar transistor and the second voltage supply terminal,

a second resistor coupled between the base of the second bipolar transistor and the second voltage supply terminal,

a first diode having an anode coupled to the base of the first bipolar transistor, and a cathode, and

a third resistor coupled between the cathode of the first diode and the base of the second bipolar transistor.

5,053,911

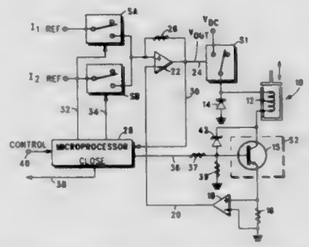
SOLENOID CLOSURE DETECTION

James W. Kopec, St. Charles, and Philip Herbert, Downers Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1989, Ser. No. 361,629

Int. Cl.[5] H01H *47/32*

U.S. Cl. 361—154 **13 Claims**



1. A method for seating a moveable armature of a solenoid that includes a coil, comprising:

a) establishing current in the coil so as to initiate movement of the armature;

b) indirectly and repeatedly sensing changes in the inductance of the coil as the armature moves towards a seated position; and,

c) reducing the current through the coil in response to sensing that the inductance of the coil has changed by a selected amount.

5,053,910

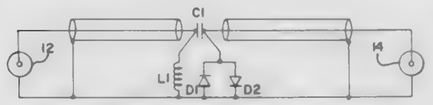
SURGE SUPPRESSOR FOR COAXIAL TRANSMISSION LINE

Richard Goldstein, Northbrook, Ill., assignor to Perma Power Electronics, Inc., Chicago, Ill.

Filed Oct. 16, 1989, Ser. No. 421,802

Int. Cl.[5] H02H *1/00*

U.S. Cl. 361—111 **24 Claims**



1. In a transmission line having first and second axially extending electrically conducting means configured to provide a given characteristic impedance and having a capacitor series-inserted into a gap formed in said first conducting means to provide confronting ends of said first conducting means, the improvement comprising:

said capacitor configured as a plate having first and second electrically conducting terminal-forming portions on first and second major faces thereof respectively and inserted between said confronting ends, said first terminal-forming portion being edge-connected to one of said confronting ends, said second terminal-forming portion being edge-connected to the other of said confronting ends, said plate being disposed transversely with respect to the axis of said first conducting means, so that the principal portion of lead inductance associated with insertion of said capacitor into said transmission line is that of said first conducting means said transmission line being configured as a coaxial structure having said first conducting means as the center conductor of said structure and said second conducting means as a conducting shell disposed therearound, and extending along the interior of said structure will said capacitor insertingly mounted into said strip.

5,053,912

AIR TRANSPORTING ARRANGEMENT

Andrzej Loreth, Akersberga, and Vilmos Török, Lidingö, both of Sweden, assignors to Astra-Vent AB, Stockholm, Sweden

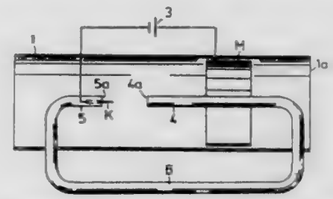
PCT No. PCT/SE89/00070, § 371 Date Sep. 27, 1990, § 102(e) Date Sep. 27, 1990, PCT Pub. No. WO89/08938, PCT Pub. Date Sep. 21, 1989

PCT Filed Feb. 17, 1989, Ser. No. 573,315

Claims priority, application Sweden, Mar. 10, 1988, 8800858

Int. Cl.[5] B03C *3/00;* **H01T** *19/04*

U.S. Cl. 361—230 **10 Claims**



1. An air transporting arrangement comprising an airflow duct (**1**), a corona electrode (**K**) and at least one target electrode (**M**) located in axial spaced relationship in the airflow duct, with the corona electrode located upstream of the target electrode, and further including a d.c. voltage source (**3**) to which the terminals of the corona electrode and the target electrode are connected, wherewith the shape of the corona electrode and the voltage of the voltage source are such as to produce an ion-generating corona discharge at the corona electrode, characterised by a first tube (**4**) having an open end (**4A**) which is located downstream of and axially in line with said corona electrode (**K**) and faces towards said corona electrode such that the air flowing in the immediate vicinity of the corona electrode (**K**) will pass into the open end (**4A**) of said first tube (**4**); a second tube (**5**) having an open end (**5A**) which is located upstream of and axially in line with the corona electrode (**K**) and directed downstream, wherein said first and said

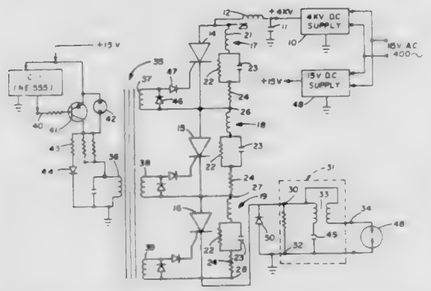
second tubes (4, 5) are so connected (6) with one another that the air flowing into the first tube (4) through the open end (4A) thereof is conducted to the second tube (5) and flows out through the open end (5A) of said tube.

5,053,913

CAPACITIVE DISCHARGE IGNITION EXCITER USING SCR DISCHARGE SWITCHES

Roy Lozito, Orange Park; Steve Kempinski, Jacksonville; Michael A. Crough, Ponte Vedra Beach, and Bruce E. Dolmovich, Jacksonville, all of Fla., assignors to Unison Industries Limited Partnership, Jacksonville, Fla.

Filed Feb. 17, 1989, Ser. No. 312,215
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 361—257 **14 Claims**



1. A gas turbine engine ignition system comprising:
a storage capacitor having a capacity to store at least 0.2 joules of energy;
a regulated power supply for charging the storage capacitor to its full capacity;
a high-voltage conditioning circuit for receiving the energy stored in the storage capacitor;
an igniter plug responsive to the conditioning circuit for generating a spark that ignites fuel in the turbine engine;
at least two solid state switches in a series connection and further connected in series with the storage capacitor and an input of the conditioning circuit;
means for substantially simultaneously applying triggering signals to gates of the solid state switches to render the series connection conductive and thereby discharge the at least 0.2 joules of energy stored in the storage capacitor through each of the solid state switches and the conditioning circuit and into the igniter plug; and
means for generating the triggering signals independently of the level of charge of the storage capacitor.

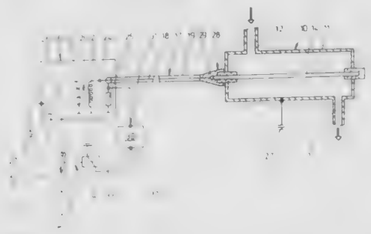
5,053,914

SAFETY CIRCUIT FOR A HIGH-VOLTAGE GENERATOR OF AN ELECTROSTATIC FILTER

Wolf Wessel, Oberriexingen; Werner Fischer, Heimsheim; Rolf Leonhard, Schwieberdingen; Wilhelm Polach, Moeglingen; Bernhard Lucas, Weissach, and Wilhelm Stahl, Laichingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE89/00063, § 371 Date Dec. 8, 1989, § 102(e) Date Dec. 8, 1989, PCT Pub. No. WO89/11338, PCT Pub. Date Nov. 30, 1989
PCT Filed Feb. 2, 1989, Ser. No. 449,836
Claims priority, application Fed. Rep. of Germany, May 24, 1988, 3817506
Int. Cl.[5] B03C *3/72, 3/68;* **F01N** *3/02;* **H02H** *11/00*
U.S. Cl. 361—235 **15 Claims**

7. A safety circuit arrangement for an electrostatic filter including a housing connected as a counter-electrode to ground, means for passing exhaust gases through the housing, a filter electrode arranged in the housing, a high voltage generator including a power source, a primary winding connectable to a power source, and a secondary side having a secondary winding, a shielded high-voltage cable including a high voltage line for connecting the secondary side to the filter electrode of the electrostatic filter and a shield surrounding the high voltage line and having opposite ends with one of the opposite ends being connected to the electrostatic filter housing, said safety circuit arrangement comprising a switching



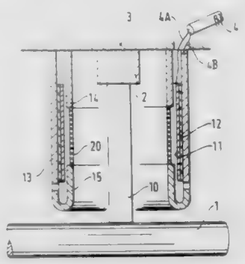
circuit including switching means for connecting a power source with one of opposite ends of the the primary winding, and a connection of the other of the opposite ends of the shield with one of the switching circuit and another of the opposite ends of the primary winding whereby a flow of current through the primary winding is interrupted in response to the breaking of at least one of the shield and the connection of the shield to the electrostatic filter housing and the filter housing to ground connection.

5,053,915

CAPACITIVE SENSOR FOR A CIRCUIT FOR MEASURING THE POTENTIAL OF A LINE CONDUCTOR IN A METALCLAD STATION

Jean-Pierre Dupraz, Lyons, France, assignor to GEC Alsthom SA, Paris, France

Filed Dec. 17, 1990, Ser. No. 628,026
Claims priority, application France, Dec. 19, 1989, 89 16815
Int. Cl.[5] H01G *7/00, 7/06*
U.S. Cl. 361—281 **4 Claims**



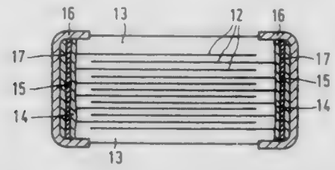
1. A capacitive sensor for a circuit for measuring the potential of a line conductor, the sensor comprising two capacitors having a common electrode, said two capacitors comprising a high tension capacitor whose second electrode is constituted by the line conductor, and an auxiliary capacitor whose second electrode is connected to ground, with the common electrode receiving a connection cable connected to the measurement circuit, the electrodes of the high tension capacitor being separated by two screens which leave a window of constant size between them, wherein the window includes spacers of invar thereby ensuring that said size remains constant.

5,053,916

SURFACE-MOUNTED MULTILAYER CAPACITOR AND PRINTED CIRCUIT BOARD HAVING SUCH A MULTILAYER CAPACITOR

Johannus W. Weekamp; Pieter Kats, both of Eindhoven, Netherlands, and Luc A. G. Jacques, Roeselare, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1990, Ser. No. 489,420
Claims priority, application Netherlands, Mar. 13, 1989, 8900594; May 19, 1989, 8901244
Int. Cl.[5] H01G *1/13*
U.S. Cl. 361—308 **6 Claims**



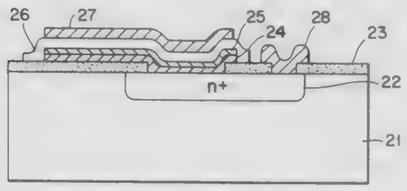
3. A surface-mountable multilayer capacitor comprising a laminate of metal electrodes and dielectric layers located between said electrodes and two end contacts, each end contact comprising a sprayed-metal layer contacting one of two parallel side faces of the laminate, each of said end contacts having a metal cap electrically conductively connected to the sprayed-metal layer and engaging the laminate in a clamping manner and an electrically conducting layer arranged between the cap and the sprayed-metal layer, said electrically conductive layer preferably being composed of solder.

5,053,917

THIN FILM CAPACITOR AND MANUFACTURING METHOD THEREOF

Yoichi Miyasaka, and Shogo Matsubara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 30, 1990, Ser. No. 574,778
Claims priority, application Japan, Aug. 30, 1989, 1-226031; Sep. 14, 1989, 1-238484; Mar. 1, 1990, 2-51010
Int. Cl.[5] H01G *4/10, 7/00;* **H01L** *27/02*
U.S. Cl. 361—321 **25 Claims**



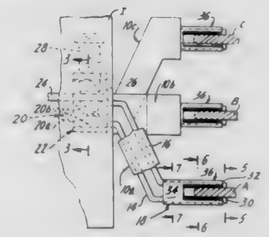
1. A thin film capacitor comprising:
a silicon electrode;
a first electrode layer consisting essentially of a member selected from the group consisting of titanium, titanium silicide, titanium nitride, tantalum, molybdenum, tungsten, tantalum silicide, molybdenum silicide, tungsten silicide, alloys thereof and compounds thereof, formed on said silicon electrode;
a second electrode layer consisting essentially of a high-melting point noble metal formed on said first electrode layer;
a dielectric layer consisting essentially of an oxide ferroelectric material formed on said second electrode layer; and
a third electrode layer formed on said dielectric layer.

5,053,918

THREE PHASE BUS BAR APPARATUS HAVING SELECTIVELY POSITIONED INTEREXCHANGEABLE LINKS

Alexander R. Norden, Boca Raton, Fla., assignor to Connectron, Inc., Laurence Harbor, N.J.

Filed Dec. 22, 1989, Ser. No. 455,587
Int. Cl.[5] H02B *1/20*
U.S. Cl. 361—355 **20 Claims**



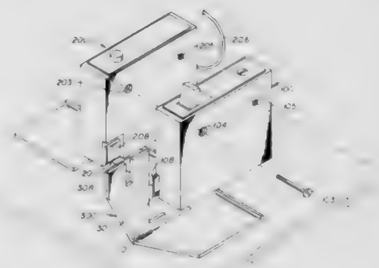
16. Electrical apparatus including a set of at least three parallel bus bars having longitudinal edges disposed in a common plane, electrical device means comprising multiple poles having respective electrical terminals disposed in a row at spaced-apart positions, said row being parallel to said bus bars and spaced from said common plane, and multiple links shaped and proportioned alike and being interchangeable for connecting any of said electrical terminals to any of said bus bars, selectively, each of said links being essentially rigid and having a device terminal and a bus bar terminal and a conductor fixedly interconnecting said device terminal and said bus bar terminal, the device terminal of each of said links being selectively securable to the electrical terminal of a respective one of said poles in any of three selective positions spaced apart angularly about an axis perpendicular to said common plane, the bus bar terminal of each said link being in contact-making relationship with respect to one of said bus bars when said link is in any of said three selective positions.

5,053,919

LOADCENTER "PLUG-IN" SURGE PROTECTOR

Ezra L. Schacht, 1620 W. Main St., Houston, Tex. 77006

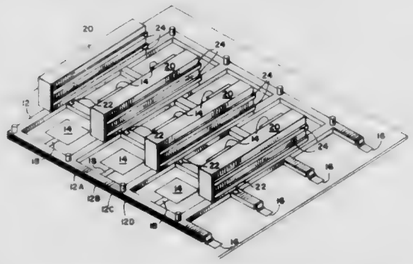
Filed Mar. 14, 1990, Ser. No. 493,420
Int. Cl.[5] H02B *1/20*
U.S. Cl. 361—363 **1 Claim**



1. A loadcenter enclosure comprising:
(i) a plurality of branch circuit breakers with operating levers;
(ii) an interior mounting pan on which said breakers are mounted;

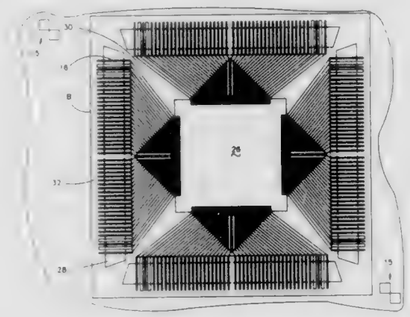
(iii) a plurality of buses, said buses insulatively mounted upon said interior mounting pan;
(iv) mounting pan supporting means;
(v) a dead-front panel, having apertures aligned with said operating levers of said breakers and means securing said dead-front panel to said enclosure;
(vi) a front cover over said dead-front panel;
(vii) neutral and grounding bus means in said enclosure;
(viii) a surge protection device, containing means of protection of said load center against line surges, the loadside contact of said surge protection device having electrical connection means to said grounding bus means;
at least one of said branch circuit breakers and said surge protection device having independent lineside contact means for mechanical and electrical engagement with contact means of at least one of said buses, said one circuit breaker and said surge protection device being fastened together by adjustable and separable means to allow adjustable spacing between said one circuit breaker and said surge protection device to allow each said independent contact means to be mechanically and electrically engaged with said one bus.

5,053,920
INTEGRATED POWER CONVERSION
Donald T. Staffiere, Wilmington, and Harvey S. Friedman, Sudbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 363,706, Jun. 9, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 595,656
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—383 **39 Claims**



1. An arrangement providing regulated power to a chip module, comprising:
a busbar mounted on said module, said busbar receiving high voltage power as an input;
at least one high density power regulator mounted on said busbar and electrically coupled to said busbar, such that the coupling length between said power regulator and said busbar is minimized, and electromagnetic interference resulting from high currents along the coupling length is also minimized, said power regulator receiving said high voltage power as an input and producing regulated power to said busbar;
wherein said busbar is adapted to be electrically coupled to a plurality of electronic devices to provide the electronic devices with said regulated power.

5,053,921
MULTILAYER INTERCONNECT DEVICE AND METHOD OF MANUFACTURE THEREOF
Gregory H. Nelson, Gilbert, and Steven C. Lockard, Phoenix, both of Ariz., assignors to Rogers Corporation, Rogers, Conn.
Continuation-in-part of Ser. No. 352,112, May 15, 1989, Pat. No. 4,995,941. This application Oct. 23, 1990, Ser. No. 601,927
Int. Cl.[5] H05K *7/20;* **B44C** *1/22;* **H01L** *23/02*
U.S. Cl. 361—386 **40 Claims**

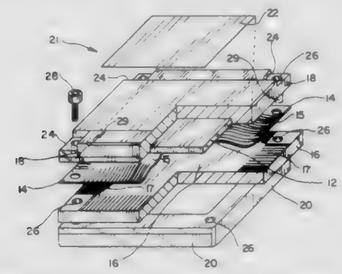


27. An interconnect device for electronic components comprising:
a conductive pattern of leads bonded to a first sheet of dielectric on one side thereof;
a first conductive sheet bonded to said first dielectric sheet on the side thereof opposite to said leads;
electrically conductive material extending along said first via holes and over said conductive sheet and cooperating with said first conductive sheet to define a first voltage plane and vias electrically interconnecting said first plurality of said leads with said first voltage plane;
a second dielectric sheet bonded to said first voltage plane;
a second conductive sheet bonded to said second dielectric sheet;
a plurality of second via holes extending through said second conductive sheet, said second dielectric sheet, said first voltage plane and said first dielectric sheet to a second plurality of said leads;
electrically conductive material extending along said second via holes and over said second conductive sheet and cooperating with said second conductive sheet to define a second voltage plane and vias electrically connecting said second plurality of said leads with said second voltage plane; and
said second via holes and the electrically conductive material extending along said second via holes passing through an opening in said first voltage plane of larger cross section than said second via holes and being surrounded by insulating material to prevent electrical contact between the conductive material in said second via holes and said first voltage plane.

5,053,922
DEMOUNTABLE TAPE-AUTOMATED BONDING SYSTEM
Farid Matta, Mountain View, and Kevin C. Douglas, San Mateo, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 31, 1989, Ser. No. 401,053
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **5 Claims**

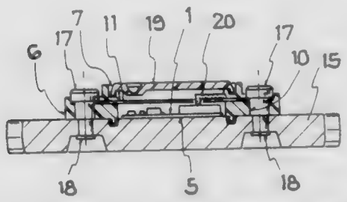
1. An apparatus providing an interface to a device having a plurality of closely-spaced conductors comprising:
cap means having a top and sides extending downward therefrom enclosing the device;

tape-automated bonding means being substantially planar with inner and outer edges and a plurality of conductive traces defined thereon extending therebetween with the inner ends of the conductive traces coupled to said closely-spaced conductors of the device; and
substrate means including a plurality of conductive traces mated with the outer ends of the conductive traces on said tape-automated bonding means and enveloping said tape-automated bonding means and the device from beneath by effecting closure between the substrate means and the bottom edges of the sides of said cap means with the outer edges of said tape-automated bonding means firmly captured therebetween;
said tape-automated bonding means further including:
an upper and a lower conductive layer;



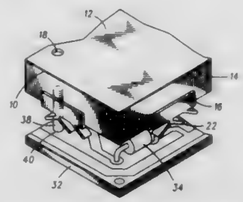
a dielectric layer located between said conductive layers of said tape-automated bonding means; and
said upper conductive layer being held in contact with said cap means; and
said substrate means further including:
a conductive upper signal line formed on said substrate means, said signal line being held in contact with said lower conductive layer;
a conductive via and a conductive lower signal line both formed within said substrate means, said via connecting said upper signal line to said lower signal line; and
a conductive ground line formed on said substrate means, said ground line being located on a side of said upper conductive layer opposite from said cap means.

5,053,923
ELECTRONIC CONTROL UNIT WITH COMMON GROUND CONNECTION TO A HEAT SINK
Linhard Niemetz, Rednitzhembach, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Nov. 9, 1989, Ser. No. 433,987
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 3837974
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—388 **6 Claims**



1. An electronic control unit, in particular an ignition control unit, comprising an electronic circuit in the form of a hybrid circuit arranged on a heat sink, and a plastic housing element containing the hybrid circuit and having a plug terminal jack with a plurality of plug terminals therein, with an electrical connection existing between a ground terminal of said hybrid circuit and a ground plug terminal of said jack, wherein said connection between the ground terminal of said hybrid circuit and said ground plug terminal is simultaneously connected to said heat sink by electrically conducting parts, including a metal board, contained in said plastic housing element.

5,053,924
ELECTROMAGNETIC SHIELD FOR ELECTRICAL CIRCUIT
Jeffery F. Kurgan, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 30, 1990, Ser. No. 502,365
Int. Cl.[5] H05K *9/00;* **H01R** *4/66, 13/648*
U.S. Cl. 361—424 **7 Claims**



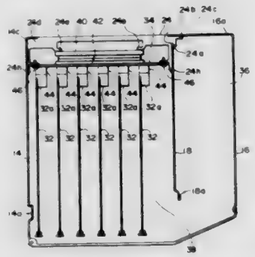
1. A shield for isolating an electrical circuit, the electrical circuit having at least one circuit path and being disposed upon a circuit board, said shield comprising:
means forming a shielding surface having a face surface for covering at least a portion of the electrical circuit, said shielding surface formed thereby being comprised of an electrically-conductive, electromagnetic wave-absorptive material for absorbing electromagnetic energy radiated by or towards the electrical circuit, the shielding surface further having flange portions extending beyond the face surface thereof for alignment with the circuit path of the electrical circuit;
means forming at least one clip member comprised of an electrically-conductive material and formed of parallel-extending side legs interconnected by a bottom leg, said parallel-extending side legs and said bottom leg together forming a U-shaped cross-section and defining a channel between the parallel-extending side legs, said channel defined thereby being of widthwise dimensions approximating, but slightly less than, widthwise dimensions of the flange portions of the shielding surface, thereby releasably fastening the parallel-extending side legs to the flange portions by elastic deformation of the parallel-extending side legs therearound whereby the parallel-extending side legs exert compressive forces thereagainst;
at least one projecting tab integral with said at least one clip member comprised of an electrically-conductive material pivotally, and electrically, fastened at a first end thereof to the bottom leg of the clip member capable of pivotal movement about an axis formed in a plane defined by the bottom leg and substantially perpendicular to the planar directions of the parallel-extending side legs, such that, with the clip member fastened to the flange portions of the shielding surface, alignment of the flange portions of the shielding surface with the circuit path of the electrical circuit disposed upon the circuit board, and lowering of the shielding surface to position the flange portions thereof in tandem with the circuit path, causes pivotal movement of the at least one projecting tab to position the at least one projecting tab in a confronting relationship with the circuit board along at least a portion of the length thereof to electrically connect the shielding circuit with the circuit path of the electrical circuit.

5,053,925

ELECTRONIC CIRCUIT UNIT MOUNTING STRUCTURE FOR AN ELECTRONIC EQUIPMENT SUPPORT

Yasuhito Kitajima, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 7, 1989, Ser. No. 376,679
Claims priority, application Japan, Jul. 8, 1988, 63-168779
Int. Cl.[5] H05K 7/18
U.S. Cl. 361—391 1 Claim



1. A mounting structure for electronic circuit units incorporating electronic equipment and having connectors, said mounting structure comprising:

a box-like equipment support having opposite vertical side panels, top panel and a bottom panel providing an open front end for access to inside said support, an inside panel parallel to said side panels and a vertical rear panel connected to said side panels at right angles;

a mother board which is secured to said equipment support to extend parallel to said rear panel, said mother board having connectors inside said support facing the front end thereof;

a pair of horizontal shelves secured to said equipment support, said shelves having vertically opposed guide channels extending generally parallel with said side panel; and

electronic circuit units held vertically in predetermined positions determined by said opposed guide channels spaced from said side panels said circuit units having connectors which mate with the connectors of said mother board;

one of said side panels having at one end a stepped portion having holes formed therethrough;

said inside panel having at one end a stepped portion which faces said stepped portion of said one side panel and is formed with holes therethrough;

said rear panel further having snap-fit lugs individually engaged with said snap-fit lugs of said rear panel and each of said shelves also having generally L-shaped protuberances engaged with holes of the facing stepped portion,

said snap-fit lugs being brought into engagement with the holes as a shelf is inserted inside said equipment support from the front end thereof to secure said shelf to said equipment support.

5,053,926

ELECTRONIC EQUIPMENT CABINET COVER PANEL WITH INTEGRATED CONNECTOR ASSEMBLY

Robert G. Dickie, Newmarket, Canada, assignor to Voice Data Image Corporation Inc., King City, Canada

Filed Nov. 16, 1989, Ser. No. 437,245
Int. Cl.[5] H05K 9/00
U.S. Cl. 361—424 17 Claims

1. A housing for electronic equipment comprising

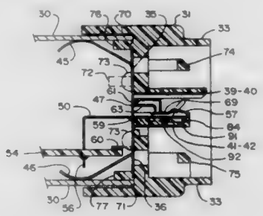
a conductive chassis open at one end,

a molded non-conductive cover panel for assembly to said chassis over said one end,

a plurality of conductive receptacle contacts,

said cover panel including molded supports for holding said plurality of receptacle contacts in an orientation disposed for electrical connection with plug contacts on a mating plug inserted into said cover panel from the outside of said housing, and

an electromagnetic shielding element attached to the interior of said cover panel and shaped to provide shielding shrouds around said receptacle contacts,



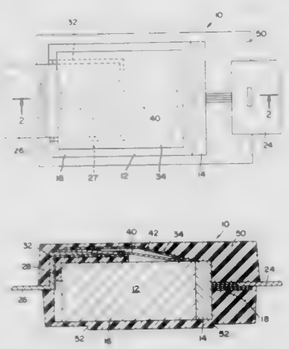
said shrouds mating with corresponding shrouds in said mating plug when said mating plug is inserted in said cover panel.

5,053,927

MOLDED FUZED SOLID ELECTROLYTE CAPACITOR

Richard D. Baker, Kennebunk, and Robert L. Foisy, Sanford, both of Me., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 29, 1991, Ser. No. 677,204
Int. Cl.[5] H01G 1/10, 9/00
U.S. Cl. 361—534 4 Claims



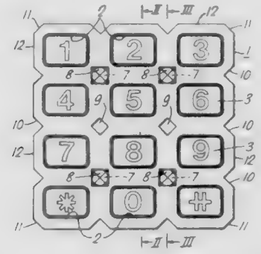
1. A solid electrolyte capacitor comprising a capacitor body mounted on a leadframe, an anode riser from said body affixed to an anode portion of said leadframe in electrical connection therewith, a cathode of said body being mechanically secured to a paddle-shaped cathode portion of said leadframe in electrical isolation therefrom, said electrical isolation including a first insulating tape between said cathode and said paddle, a fuze overlying said first tape and providing electrical connection between said paddle and said cathode, a second insulating tape overlying said fuze and said first tape so as to define a pocket around said fuze, a casing molded around said body and said fuze with extensions from said anode portion and said cathode portion extending from said casing, and with said pocket being a free volume within said casing.

5,053,928

LIGHT GUIDE

Ian K. Pasco, Slough, England, assignor to Techophone Limited, Surrey, England

Filed Aug. 15, 1990, Ser. No. 568,256
Claims priority, application United Kingdom, Aug. 24, 1989, 8919214
Int. Cl.[5] H04M 1/22
U.S. Cl. 362—24 14 Claims



1. A light guide for illuminating an information-bearing member, comprising:

a transparent plate having at least one area associated with the information-bearing member, the plate having means for reflecting light from an external light source into the plane of the plate,

wherein the reflecting means comprises first reflecting means for directing light from the light source in a first direction in the plane of the plate, second reflecting means for reflecting light from the first reflecting means in a second direction transverse to said first direction and in the plane of the plate, third reflecting means for reflecting light from the second reflecting means in a third direction transverse to the second direction and substantially parallel but in the opposite sense to the first direction and in the plane of the plate, and fourth reflecting means for reflecting light from the third reflecting means towards said first reflecting means in a fourth direction transverse to said first and third directions and substantially parallel but in the opposite sense to the second direction and in the plane of the plate.

5,053,929

DEVICE FOR ILLUMINATING A BUNDLE OF OPTICAL FIBERS

Jacques Le Gars, Gambais, France, assignor to Societe d'Etudes pour le Developpement des Productions Electroniques, Plaisir Cedix, France

Filed Apr. 12, 1990, Ser. No. 507,847
Claims priority, application France, Apr. 20, 1989, 89 05253
Int. Cl.[5] F21V 7/04
U.S. Cl. 362—32 5 Claims



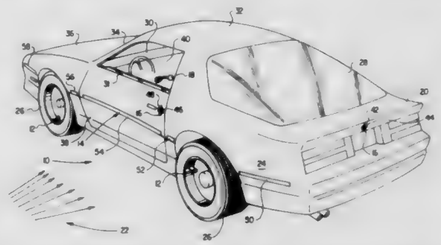
1. An illuminating assembly for illuminating a bundle of optical fibers each having an end, comprising a sleeve having a longitudinal axis and an end-piece wherein the ends of the optical fibers are grouped together, at least three low-power, narrow-beam electric lamps disposed facing the end-piece of the sleeve and regularly distributed about the longitudinal axis of the sleeve so as to illuminate the ends of the optical fibers, wherein said low-power, narrow-beam electric lamps are sufficiently distanced from the end-piece of the sleeve so as to provide light beams concentrated onto the end-piece of the sleeve with an incidence angle between each light beam and the longitudinal axis of the sleeve of not greater than 10°.

5,053,930

PHOSPHORESCENT VEHICLE PART IDENTIFICATION SYSTEM

Butch Benavides, 828 E. Parkerville Rd., DeSoto, Tex. 75115

Continuation of Ser. No. 266,887, Nov. 3, 1988, Pat. No. 4,928,212. This application Mar. 30, 1990, Ser. No. 501,474
Int. Cl.[5] B60Q 3/00
U.S. Cl. 362—80 2 Claims



1. A phosphorescent vehicle part identification accessory comprising an article of molded plastic having formed therewith a phosphorescent compound adapted for glowing for a period of time following exposure to light energy and means for securing said phosphorescent article to said vehicle in an exposed location thereon for receiving illumination from areas outside the vehicle including other vehicles and external light sources to thereby respond to said outside illumination by providing a decaying glow therefrom, said article comprising a vehicle interior item positioned to receive illumination from light sources outside the vehicle.

5,053,931

DIFFUSE PATIO LIGHTING ARRANGEMENT

John A. Rushing, 1165 Tern Dr., Palatine, Ill. 60067

Filed Aug. 13, 1990, Ser. No. 566,487
Int. Cl.[5] A45B 23/00
U.S. Cl. 362—102 13 Claims



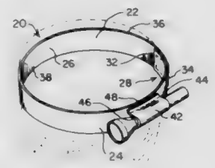
1. Alighting apparatus for outdoor use in a radially extending pattern, said apparatus comprising:

a) a power supply cord for a central outlet;

b) a plurality of miniature light strings with each string containing at least five miniature lights connected in a series circuit; and,

c) a central connection box having means for electrically connecting each of said light strings in parallel with said power supply cord, a cover cooperating with the central connection box, said cover having water impervious sides and a water impervious top, and side channels for collecting said storing a portion of the wire from each string.

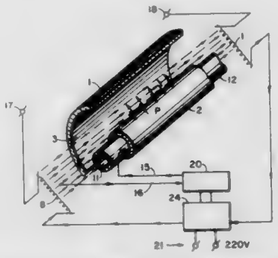
5,053,932
FLASHLIGHT RETAINER
Richard N. Case, Boulder, Colo., assignor to RCP Enterprises, Inc., Boulder, Colo.
Continuation of Ser. No. 327,165, Mar. 22, 1989, abandoned.
This application May 29, 1990, Ser. No. 530,005
Int. Cl.[5] F21L *15/14*
U.S. Cl. 362—105 14 Claims



1. An apparatus for holding a flashlight and also capable of being formed into a variably sized headband loop, comprising:
a single non-elastic strap having a first longitudinal end and a second longitudinal end, a first side edge and a second side edge, said single non-elastic, strap also having a first surface and a second surface;
loop-type material secured to said first surface of said single non-elastic strap, said loop-type material being substantially adjacent to said first longitudinal end on said first surface of said single non-elastic strap;
hook-type material secured to said second surface of said single non-elastic strap, said hook-type material being substantially adjacent to said second longitudinal end on said second surface of said single non-elastic strap, said hook-type material being designed and positioned to be removably attachable to a portion of said loop-type material for form a variably sized headband loop; and
a second of elastic material, said section of elastic material having an inner surface, a first side edge and a second side edge, said first side edge and said second side edge of said section of elastic material each being separately affixed to one of said surfaces of said strap in a manner such that a substantially cylindrical sleeve which is open at both ends is defined by a portion of said inner surface of said section of elastic material and said surface of said strap to which said section of elastic material is affixed, said substantially cylindrical sleeve having a longitudinal axis which is substantially aligned with said single non-elastic strap, said section of elastic material being expandable to a size which is suitable to receive the body of a flashlight through both of said open ends of said substantially cylindrical sleeve, said elastic material being located intermediate said first and said second ends of said strap and also being intermediate said loop-type material and said hook-type material.

5,053,933
FLUORESCENT LAMP
Pavel Imris, Hohes Feld 17, D - 3162, Uetze 5, Fed. Rep. of Germany
Filed Apr. 10, 1990, Ser. No. 507,157
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912514
Int. Cl.[5] F21V *23/02*
U.S. Cl. 362—221 9 Claims

1. A fluorescent lamp comprising
(a) an outer glass tube having an inner wall,
(b) an elongated inner element defining an elongated inner space and having an outer wall,
(1) the inner glass tube wall and the outer wall of the inner element defining a discharge space therebetween,
(c) a layer of a fluorescent material covering the walls,
(d) capacitor means supported by the inner element in the inner space along at least a part of the length of the inner space,
(1) the capacitor means being arranged to generate an electric field extending perpendicularly to the discharge space,



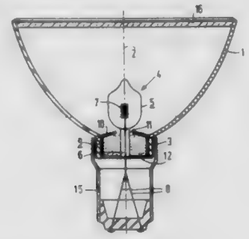
(e) a high frequency generator and electronic ballast, and
(f) electrical conductor means connecting the high frequency generator and electronic ballast to the capacitor means,
(1) the inner space being in communication with the ambient atmosphere and being gas-imperviously sealed against the discharge space.

5,053,934
OPTICAL ARRANGEMENT FOR HIGH-POWERED DIAPROJECTORS
Jürgen Krebs, Paul-Lincke-Ufer 41, 1000 Berlin 36, Fed. Rep. of Germany
Filed Feb. 9, 1990, Ser. No. 477,580
Int. Cl.[5] F21V *17/02*
U.S. Cl. 362—281 14 Claims



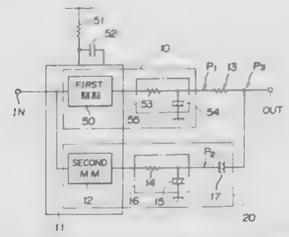
1. An optical projection system with a light source (3), said optical projection system comprising:
a shuttering device (10) for the shuttering of a cone of light from the light source;
the shuttering device including only two shutter parts (10A, 10B) continuously movable across the cone of light and relative to each other and being tooth shutters; and
each of the shutter parts including spaced apart projections, the projections on one shutter part being introduceable into openings between the projections in the other shutter part.

5,053,935
LAMP/REFLECTOR UNIT
Paul Hellwig; Mackovika Bernd, and Wolfgang Hahn, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 15, 1990, Ser. No. 567,855
Claims priority, application Netherlands, Aug. 21, 1989, 8902102
Int. Cl.[5] F21V *17/04*; H01J *5/48*
U.S. Cl. 362—296 2 Claims



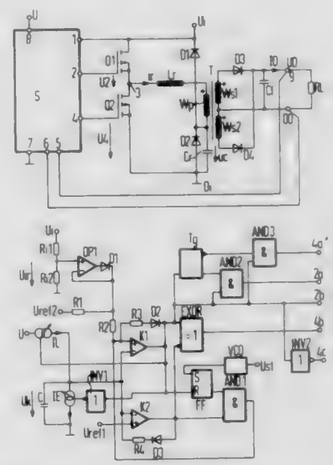
1. Lamp/reflector unit comprising
a concave reflector (1) with an axis (2), which has near its top a neck-shaped portion (3) around that axis,
an electric lamp (4) provided with
a lamp vessel (5) having a seal (6),
an electric element (7) in the lamp vessel,
current supply conductors (8) extending from the electric element through the seal to the exterior,
a metal centring member (9) in the neck-shaped portion (3) having a transverse wall (10) cross to the axis (2), of the reflector (1), which wall has an opening (11) in which the seal (6) is accommodated,
the lamp vessel being secured in the neck-shaped portion by means of cement (12), characterized in that recesses (13) extend from the opening (11) in the transverse wall (10) of the centring member (9) into that transverse wall.

5,053,936
FREQUENCY/VOLTAGE CONVERTING DEVICE
Jun Honda, and Hiroyuki Kubozoe, both of Ohta, Japan, assignors to Pioneer Electronic Corportion, Tokyo, Japan
Filed Jun. 15, 1990, Ser. No. 538,444
Claims priority, application Japan, Jun. 21, 1989, 1-71660[U]
Int. Cl.[5] H02M *7/00*
U.S. Cl. 363—8 5 Claims



1. A frequency/voltage converting device comprising:
frequency/voltage converting means for outputting a DC voltage corresponding to the frequency of an input signal;
reverse-polarity ripple voltage outputting means for outputting a ripple voltage which is equal in magnitude and reverse in polarity to a ripple voltage contained in the DC voltage output from said frequency/voltage converting means; and
adding means for adding said DC voltage output from said frequency/voltage converting means to said voltage output from said reverse-polarity ripple voltage outputting means.

5,053,937
METHOD FOR CONTROLLING PUSH-PULL SERIES-RESONANT CONVERTER SWITCHING POWER SUPPLIES WITH REGULATED OUTPUT VOLTAGE
Reinhard Blöckl, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 12, 1990, Ser. No. 596,245
Claims priority, application European Pat. Off., Oct. 12, 1989, 89118997.9
Int. Cl.[5] H02M *3/337*
U.S. Cl. 363—16 5 Claims



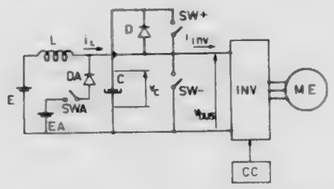
1. Method for controlling a push-pull series resonant converter switching power supply including:
an inductive transformer with a primary winding and at least one secondary winding, two semiconductor switches being interconnected at a circuit node and connected in a half-bridge circuit between an input potential and an input ground potential, a series-resonant circuit connected between the connecting node and the input ground potential including a capacitor with terminals and an inductor connected in series with the primary winding of the transformer, diodes connected between the input potential and the input ground potential for preventing a potential at one of the terminals of the capacitor not being acted upon by the input potential or the input ground potential from significantly exceeding or dropping below the respective input potential or the input ground potential, a rectifier connected to the secondary side of the transformer for rectifying a secondary voltage of the transformer, the rectifier having an output supplying an output voltage between an output terminal and an output ground terminal, a smoothing capacitor connected between the output terminal and the output ground terminal to be connected in parallel to a load, and a control circuit triggering the two semiconductor switches with turn-on pulses for regulating the output voltage to a constant value as a function of the load by variation of a turn-on pulse repetition rate, which comprises controlling a maximum allowable repetition rate of the turn-on pulses and the duration of the turn-on pulses as a function of the input potential.

5,053,938

POWER CONVERTER HAVING CONTROL CIRCUITRY FOR THE VOLTAGE SUPPLIED TO THE INVENTER

Antonino Fratta, Via Cristalliera 17, 10139 Torino, Italy

Filed Jun. 21, 1990, Ser. No. 541,497
Claims priority, application Italy, Jun. 27, 1989, 67519 A/89
Int. Cl.[5] H02M *5/45*
U.S. Cl. 363—37 **9 Claims**



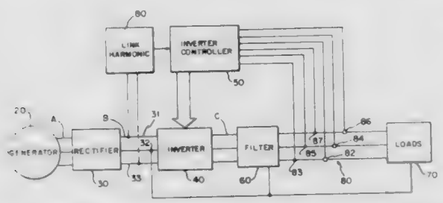
1. An electric energy power converter comprising an electric energy source which supplies a unidirectional voltage, and a voltage inverter circuit arranged to convert said unidirectional voltage into an alternate voltage intended to supply an inductive load, and further comprising a system of components inserted in parallel between said unidirectional electric energy source and said voltage inverter circuit, said system of components being adapted to control, in an active and time unconditional manner, the voltage supplied by said source to said voltage inverter circuit, in the sense of limiting the maximum value of the voltage applied to said inverter circuit, and of assisting the commutation by temporarily rendering non-positive the voltage supplied by said source to said inverter circuit, at least during the periods of time in which some commutations should be effected within the inverter circuit, wherein said system of components comprises a capacitor and a diode connected in series and together connected in parallel to said unidirectional electric energy source, a first controlled switch element inserted in parallel to said diode, and a second controlled switch element inserted in parallel at the input of said inverter circuit.

5,053,939

CONTROL OF PWM INVERTERS BY PATTERN DEVELOPMENT FROM STORED CONSTANTS RELATING D.C. LINK HARMONICS TO OUTPUT DISTORTION

Maurice A. Kirchberg, Jr., Dubuque, Iowa, and Alexander Cook, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 27, 1990, Ser. No. 573,525
Int. Cl.[5] H02M *1/12*
U.S. Cl. 363—41 **2 Claims**



1. A pulse width modulating inverter, comprising in combination:

a pulse width modulating switch having a d.c. link input and a pulse width modulated output;

means for determining one or more harmonic components of said d.c. link input;

means for controlling a switching angle at which said pulse width modulating switch operates to connect or disconnect said d.c. link input with said pulse width modulated output;

said switching angle controlling means including means storing a st of constants, said constants comprising the constant terms of an equation which describes the locus of said switching angle for an inverter output characteristic as a function of said one or more harmonic components of said d.c. link;

means responsive to said determining means for fetching said stored set of constants; and

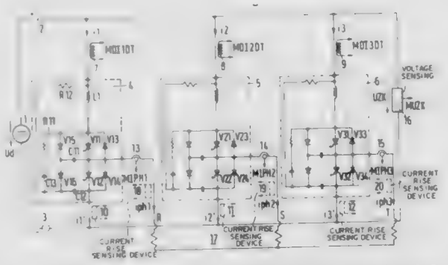
means for calculating said switching angle as a solution to said equation with said stored set of constants and said d.c. link harmonic components comprising terms of said equation.

5,053,940

EXTINCTION BLOCKING FOR GTOS

Michael Peppel, Weinheim, Fed. Rep. of Germany, assignor to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Sep. 7, 1990, Ser. No. 579,047
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 3929861; Oct. 12, 1989, 3934044
Int. Cl.[5] H02N *7/122*
U.S. Cl. 363—58 **26 Claims**



10. Device for forming an extinction blocking signal for gate-turn-off power semiconductors in static converters for suppressing unacceptable extinction attempts, comprising a current rise sensing device for a branch current, a voltage sensing device for measuring a link circuit direct voltage, an arithmetic unit connected to said voltage sensing device, and a comparator connected to said current rise sensing device and said arithmetic unit for emitting a short-circuit message when the current rise measurement value exceeds the link circuit direct voltage weighted inversely proportionally to a commutation inductance by said arithmetic unit.

5,053,941

ASYNCHRONOUS MICRO-MACHINE/INTERFACE

Susan E. Carrie, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 901,929, Aug. 29, 1986, abandoned.
This application Jan. 12, 1990, Ser. No. 464,713
Int. Cl.[5] G06F *13/12*
U.S. Cl. 364—200 **5 Claims**

2. An asynchronous micro-machine/interface responsive to a single incoming instruction transmitted from a host central processing unit (CPU) by decoding the instruction and executing a routine representative of the incoming instruction, said CPU and said micro-machine/interface being clocked on clocks from different clock sources which are asynchronous to one another, whereby it is required that the incoming instruction be synchronized to the micro-machine/interface prior to decoding the incoming instruction and executing the routine representative to the incoming instruction, said asynchronous micro-machine/interface comprising;

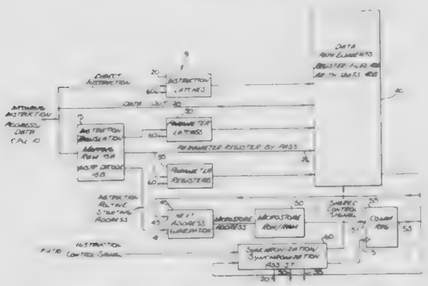
data path element means for receiving a single incoming instruction from said CPU and for performing actions associated with said instruction during the synchronization of the incoming instruction to the micro-machine/interface and decoding of the instruction, said actions comprising channeling of data associated with the incoming instruction to an arithmetic processor of the micro-machine/interface;

wherein the performance of said actions within said data path element means occurs during the synchronization of the incoming instruction to the micro-machine/interface and the decoding of the instruction such that said actions are performed prior to execution of the routine representative of the instruction;

instruction decoding means connected to the data path element means for decoding the incoming instruction to determine the routine representative of the instruction;

microstore means responsive to said CPU for storing and outputting an idle state command and a plurality of commands, said plurality of commands being a part of the routine corresponding to said incoming instruction;

command register means for receiving and outputting said idle state command said command register means having an active and an idle state, said active state being defined as a first time period in which said command register means executes the incoming instruction by outputting said plurality of commands, said idle state being defined as the period in which said command register means does not execute the incoming instruction; said command register



means being coupled to said microstore means and said data path element means, said command register means entering said idle state and outputting said idle state command upon the completion of the execution of said incoming instruction, said command register receiving said idle state command upon the completion of the execution of said incoming instruction such that upon completion of an instruction previous to said incoming instruction, said command register means transmits said idle state command to said data path element means prior to execution of said incoming instruction;

instruction translation means for translating said incoming instruction and outputting a translated instruction having a routine starting address of the routine of the incoming instruction, said instruction translation means communicating with said data path element means and outputs control bits which, when received by said data path element means convey information to said data path element means pertaining to said incoming instruction, said instruction translation means communicating with said microstore means and transmitting to said microstore means the routine starting address of said incoming instruction such that said microstore means outputs to said command register means a first command of said plurality of commands;

wherein when said command register means is in said idle state and after synchronization of said incoming instruction, said synchronization means enables said command register means such that said command register means outputs said first command to said data path elements, and thereafter, outputs the remaining commands specified by said routine to said data path element means;

synchronization assist means for assisting synchronization and execution of said incoming instruction, said synchronization assist means being coupled to said data path element means and the output of said command register means, said command register means outputting to said synchronization assist means said idle state command such that in response to said idle state command, said synchronization assist means outputs a first shared control signal and in response to said plurality of commands said synchronization assist means outputs a second shared control signal to said data path element means;

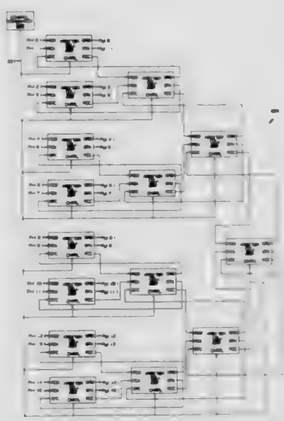
wherein said first shared control signals performs a predetermined number of said actions within said data path element means and said second shared control signal executes a predetermined portion of said incoming instruction, said first and second control signals further increment and decrement said third predetermined portion of said incoming instruction.

5,053,942

BIT-SLICED CROSS-CONNECT CHIP HAVING A TREE TOPOLOGY OF ARBITRATION CELLS FOR CONNECTING MEMORY MODULES TO PROCESSORS IN A MULTIPROCESSOR SYSTEM

Vason P. Srini, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 1, 1988, Ser. No. 265,546
Int. Cl.[5] G06F *13/00, 13/18, 13/364, 12/00*
U.S. Cl. 364—200 **7 Claims**



1. A cross-connect circuit for coupling each of a plurality of processors to one of a plurality of modules, provided a module in question has not been identified for connection to another one of said processors, said circuit comprising a plurality of input ports, one of said input ports corresponding to each of said processors, and a plurality of output ports, one of said output ports corresponding to each of said modules:

each of said input ports comprising:

means for connecting one of said processors to said cross-connect circuit;

means for receiving a module address specifying one of said modules;

means for receiving an address bit to be communicated to said one of said modules specified by said module address;

means for receiving a data bit to be transmitted to said one of said modules specified by said module address; and

means for transmitting a data bit to be received by said one of said processors connected thereto; and

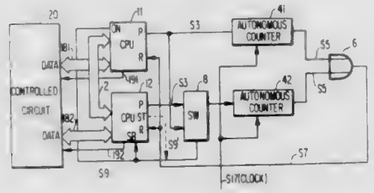
each of said output ports comprising;
means for connecting said cross-connect circuit to said one of said modules specified by said module address;
means for transmitting an address bit to be communicated to said one of said modules specified by said module address;
means for transmitting a data bit to be received by said one of said modules specified by said module address; and
means for receiving a data bit from said one of said modules connected thereto,
said cross-connect circuit further comprising:
a plurality of arbiter means for assigning each of said modules to one of said processors, wherein each said arbiter means includes a plurality of arbiter cells connected in a tree topology with more than one branch point, one of said arbiter means corresponding to each of said modules, each of said arbiter means being connected to each of said means for receiving a module address and being responsive to said module address received by said means for receiving a module address, wherein when more than one of said input ports receives an identical said module address, said one of said arbiter means corresponding to said module address selects only one of said input ports for connection to said one of said modules specified by said module address; and
cross-connect matrix means for connecting each of said input ports to each of said output ports, said arbiter means determining which of said input ports and output ports are to be connected at any given time by said cross-connect matrix means.

5,053,943

CONTROL CIRCUIT FOR AUTONOMOUS COUNTERS OF A PLURALITY OF CPU'S OR THE LIKE WITH INTERMITTENT OPERATION AND RESET AFTER A PREDETERMINED COUNT

Yukio Yokoyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 161,232, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 695,641, Jan. 24, 1985, abandoned. This application Nov. 28, 1989, Ser. No. 443,032
Claims priority, application Japan, Jan. 30, 1984, 59-14789
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 **9 Claims**



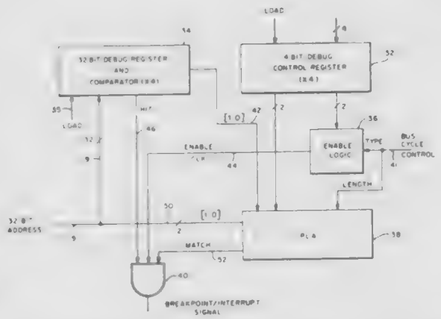
1. A control circuit for autonomous counters comprising:
first data processing means operating constantly, the constant operation of said first data processing means being its normal, error-free operation;
second data processing means operating intermittently, said intermittent operation of said second data processing means being its normal, error-free operation, said first and second processing means transmitting data to and receiving data from each other and respectively outputting first and second reset pulses with execution of a prescribed step of operation;
clock pulse generating means for generating clock pulses;
first autonomous counter means coupled to said first data processing means for generating a first auto-reset pulse when it has counted a first prescribed number of clock pulses from said clock pulse generating means without being reset, said first autonomous counter means being reset by said first reset pulse;
switching means receiving said first and second reset pulses for passing said first reset pulse when said second data processing means is in a non-operating state and for passing said second reset pulse when said second data processing means is in an operating state;
second autonomous counter means coupled to said switching means for generating a second auto-reset pulse when it has counted a second prescribed number of clock pulses from said clock pulse generating means without being reset, said second autonomous counter means being reset by an output of said switching means; and
first means responsive to one of said first and second auto-reset pulses for placing said first and second data processing means in a non-operating state.

5,053,944

MICROPROCESSOR BREAKPOINT APPARATUS

Joseph C. Krauskopf, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 370,024, Jun. 22, 1989, abandoned, which is a continuation of Ser. No. 274,636, Nov. 15, 1988, Pat. No. 4,860,195. This application Oct. 3, 1990, Ser. No. 593,399
Int. Cl.[5] G06F *9/42*
U.S. Cl. 364—200 **15 Claims**



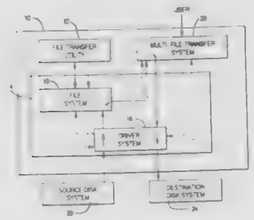
1. In an integrated circuit microprocessor formed on a single substrate which includes address generation means for generating virtual addresses for reference to program instructions and data, a virtual address bus, address translation means coupled to said virtual address bus for converting said virtual addresses to physical addresses, interpretation means for interpreting program instructions, arithmetic means coupled to said address translation means and said interpretation means for operating upon data in accordance with interpreted instructions, and bus control signals, an improvement for providing a breakpoint signal comprising:
a first register for storing a virtual address at which a breakpoint is to occur (breakpoint address), said first register coupled to said virtual address bus, said first register being loaded using a predetermined instruction interpreted by said interpretation means;
a second register for storing control bits, which determine conditions when said breakpoint is to occur and at least certain of said control bits determining the width of said breakpoint address, said second register being loaded using a predetermined instruction interpreted by said interpretation means;
comparator means for comparing at least a portion of said breakpoint address with a current virtual address to determine a match between said two addresses, said comparator means being coupled to said first register;
first logic means coupled to said second register to sense one of said stored control bits which determines if said breakpoint is to occur when said current virtual address is a reference to data or to program instructions, said first logic means coupled to receive bus control signals which identify if said current virtual address is a reference to data or to program instructions;
second logic means for determining (i) if said current virtual address is included within the width of said breakpoint address or (ii) if said reference represented by the width of said breakpoint address is included within the reference width made by said virtual address, said second logic means being coupled to said first and second registers and coupled to receive said bus control signals;
gating means for providing said breakpoint signal only if a match occurs in said comparator means and conditions set by said second register are met, said gating means coupled to said comparator means and said first logic means;
said first and second registers, comparator means, first and second logic means and gating means being incorporated on said substrate, wherein a real time breakpoint signal is provided to said microprocessor.

5,053,945

SYSTEM AND METHOD FOR PERFORMING A MULTI-FILE TRANSFER OPERATION

John W. Whisler, Raleigh, N.C., assignor to Alphatronix, Research Triangle Park, N.C.

Filed Oct. 6, 1988, Ser. No. 254,274
Int. Cl.[5] G06F *13/10, 12/08, 12/02*
U.S. Cl. 364—200 **8 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 72 Pages)



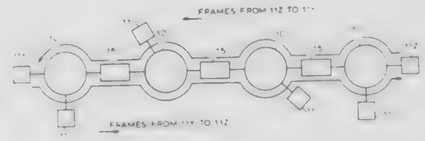
1. A method of performing a multi-file transfer of at least two files to a random access storage media using a computer where each file includes file contents and has file location information, comprising the steps of:
(a) storing the file contents of each file in a contents buffer comprising a segmented data buffer, and comprising the step of:
(a1) storing the file contents received from a source media of a data file in the data buffer;
(b) storing, separately from the contents buffer, the file location information for the at least two files in an information buffer comprising a segmented directory header buffer, a segmented header buffer and a segmented directory buffer, and comprising the steps of:
(b1) producing a file directory entry from the file description information and storing the file directory entry in the directory buffer;
(b2) producing a file header from the file description information and storing the file header in the header buffer; and
(b3) producing a directory header from the file description information and storing the directory header in the directory header buffer; and
(c) writing, to the storage media, a portion of the contents of the contents buffer when the contents buffer is a predetermined percentage full and separately writing a portion of the contents of the information buffer to the storage media, including the file location information of the at least two files, when the information buffer is the predetermined percentage full, and comprising the steps of:
(c1) separately writing the contents of a full segment of the data, directory, header and directory header buffers to the random access storage media; and
(c2) indicating on the storage media which portions of the storage media have been allocated; and
(d) storing the file description information in a file description buffer.

5,053,946

TOKEN RING NETWORK HAVING TOKEN REQUEST MECHANISM

Rajendra K. Jain, Sudbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 198,993, May 26, 1988, abandoned. This application May 7, 1990, Ser. No. 519,313
Int. Cl.[5] H04B *14/00;* **G06F** *13/00*
U.S. Cl. 364—200 **11 Claims**



1. A station for transmitting and receiving information in the form of frames over a token ring network operating in accordance with a token ring protocol, said station comprising:
A. token capturing means for capturing and holding a token, said token being held while data is transmitted;
B. frame transmitting means for transmitting, in response to the capture of the token, a data frame containing (1) the message to be transmitted (2) addresses and frame status flags required by the token ring protocol, and (3) a token request flag having first and second conditions, said frame transmitting means transmitting said token request flag in said first condition;
C. frame receiving means for receiving data frames transmitted over the network and examining the condition of the token request flag in each of the received data frames to determine if said token request flag is in said second condition; and
D. token transmitting means for transmitting the token held by the token capturing means, in response to the reception of a data frame containing a token request flag in said second condition; wherein said frame transmitting means continues to transmit data frames until either the transmission is complete or said token transmitting means transmits the token, whereby each message is accompanied by a token request flag such that the token may be held by a transmitting station until a token request flag indicates another station requests the token.

5,053,947

EXTENDED MULTISTATION BUS SYSTEM AND METHOD

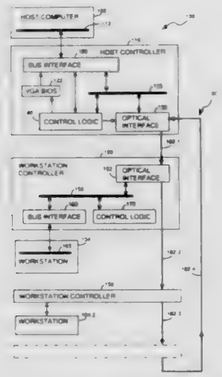
John T. Heibel, Columbus, and Raymond R. Savarda, Centerburg, both of Ohio, assignors to Allegro Microsystems, Inc., Atherton, Calif.

Filed Sep. 29, 1989, Ser. No. 415,133
Int. Cl.[5] G06F *13/38, 15/16*
U.S. Cl. 364—200 **11 Claims**

1. A multistation computer system, comprising:
a host computer having an address bus, data bus and control bus;
a plurality of workstations coupled to said host computer; each said workstation having an address bus, data bus and control bus;

said host computer including means for initiating data transfers to and from said workstations by generating corresponding signals on the address bus, data bus and control bus of said host computer; said signals generated by said host computer including signals denoting a selected one of said workstations for each said data transfer;

host controller means, coupled to the address bus, data bus and control bus of said host computer, for monitoring said signals on the address bus, data bus and control bus of said host computer, and for generating a data packet representing said data transfer; each said data packet including data denoting the selected one of said workstations for said data transfer;



a plurality of workstation controller means, each coupled to one of said workstations; each workstation controller means including packet receiving means for receiving data packets generated by said host controller and for generating signals on said address bus, data bus and control bus of said workstation which correspond to said address bus, data bus and control bus signals in said host computer monitored by said host controller means and represented by said received data packet; and

communication means, coupled to said host controller means and each of said workstation controller means, for transmitting said data packets from said host controller means to said workstation controller means.

5,053,948

FILE INDEX SYSTEM FOR MASS STORAGE DEVICE

Gary W. DeClute, Stoughton; Ann P. Varda, and Murray A. Thompson, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 149,421, Jan. 29, 1988, abandoned. This application Feb. 4, 1991, Ser. No. 651,109

Int. Cl.[5] G11B *17/04;* **G06F** *13/00*

U.S. Cl. 364—200 **10 Claims**

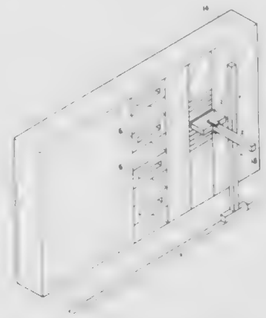
1. A mass storage system for digital data files comprising:

a plurality of individual storage units each containing at least one data file and an index log containing information about the at least one date file stored therein, each storage unit having an identification associated with it;

at least one reading device which can read the data files and index log of a storage unit placed therein;

automated means for placing a storage unit on the reading device; and

a digital computer having an associated magnetic storage device and connected to control the automated means to cause a one of the storage units to be placed on the reader, and connected to the reading device to receive data files therefrom, the computer being provided with an operating system program adapted for the maintenance, retrieval, and control of access to data files stored in the associated magnetic storage device, the computer programmed to maintain on the magnetic storage device a token file for each respective data file on each storage unit, each token file being maintained, retrieved and having access to it controlled by the operating system of the computer in accordance with the normal functioning of the operating system of the computer and each token file



having, as its data, the identification of the storage unit on which the data file is placed, the address of the data file on the storage unit, and the size of the respective data file on the storage unit, whereby the file data which the operating system assigns to the token files is used to control access to the data files on the storage units without the need for access to the storage units.

5,053,949

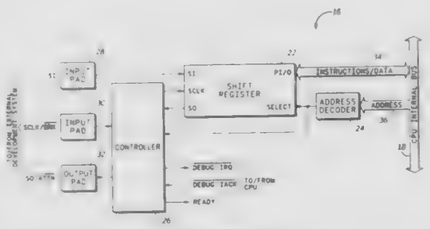
NO-CHIP DEBUG PERIPHERAL WHICH USES EXTERNALLY PROVIDED INSTRUCTIONS TO CONTROL A CORE PROCESSING UNIT

Nigel J. Allison; Rand L. Gray, and Jay A. Hartvigsen, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1989, Ser. No. 332,130

Int. Cl.[5] G06F *11/00, 11/30*

U.S. Cl. 364—200 **15 Claims**



1. A data processing system comprising:

a processor for executing a first sequence of instructions received by the processor, in response to a first sequence of instruction addresses, and for executing an alternate sequence of externally provided instructions received by said processor, in response to an alternate sequence of instruction addresses;

an internal communications bus coupled to said processor;

a memory coupled to said internal communications bus for storing a plurality of instructions and for providing said first sequence of instructions to said processor, in response to said first sequence of instruction addresses received from said processor; and

a debug peripheral, coupled to said internal communications bus for assuming control of said processor in response to a first control signal received from an external source, said debug peripheral receiving said alternate sequence of externally provided instructions from said external source, and providing said alternate sequence of externally provided instructions to said processor, said debug peripheral further storing information received from said processor and providing information to said external source, comprising:

serial interface means for receiving said alternate sequence of externally provided instructions in response to said first control signal, and for providing said information received from said processor to said external source in response to a second control signal, in said debug mode;

parallel interface means for providing said alternate sequence of externally provided instructions to said processor, and for receiving said information from said processor, in said debug mode, said parallel interface means also receiving said alternate sequence of instruction addresses from said processor.

5,053,950

MULTIPROCESSOR SYSTEM AND A METHOD OF LOAD BALANCING THEREOF

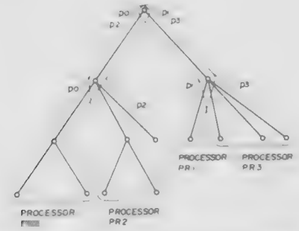
Jiro Naganuma, Zama, and Takeshi Ogura, Chigasaki, both of Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

Continuation of Ser. No. 132,788, Dec. 14, 1987, abandoned. This application May 11, 1990, Ser. No. 522,504

Claims priority, application Japan, Dec. 19, 1986, 61-303412; May 25, 1987, 62-127338

Int. Cl.[5] G06F *15/16, 15/00*

U.S. Cl. 364—200 **7 Claims**



1. A multiprocessor system that executes programs written in a predetermined programming language expressed by an inference tree constituted by nodes connected from top to bottom by branches comprising OR processes, said multiprocessor system comprising:

a plurality of processors numbered serially with identifier numbers; and

a network system for linking said processors, each of said processors comprising

(a) first means for storing initial system information representing characteristics of said multiprocessor system, which information includes

(1) first information representative of a value of the identifier number of said processor and

(2) second information representative of the number of said processors linked by said network system;

(b) second means including

(1) searching means for searching branches at a node of the program,

(2) storing means for storing third information representative of the number of said branches at each node, which number is obtained by searching the branches at each node, and

(3) selecting means for automatically and dynamically selecting a specified branch at each node of said OR process by executing a predetermined calculation by use of said initial system information and the third information without transferring information between said processors, whereby an initial load balancing is obtained in said multiprocessor system.

5,053,951

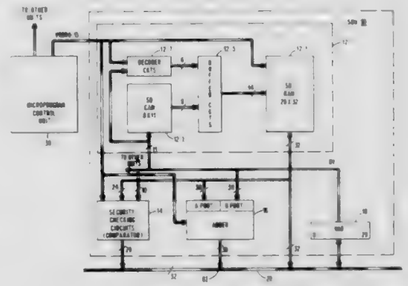
SEGMENT DESCRIPTOR UNIT FOR PERFORMING STATIC AND DYNAMIC ADDRESS TRANSLATION OPERATIONS

Eugene Nusinov, Sharon, and Thomas F. Joyce, Westford, both of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Continuation of Ser. No. 947,315, Dec. 23, 1986, abandoned. This application Mar. 28, 1989, Ser. No. 331,054

Int. Cl.[5] G06F *9/00, 12/10, 12/14*

U.S. Cl. 364—200 **22 Claims**



1. A segment descriptor unit for performing translation operations on each word received by said unit, said unit comprising:

a single random access memory (RAM) having a plurality of storage locations, each location having a plurality of bit locations, first and second groups of bit locations of each of a first number of said plurality of storage locations being positioned relative to each other in a predetermined manner for storing different types of descriptor information accessible only during first and second types of translation operations respectively;

a content addressable memory (CAM) having a plurality of storage locations for storing information required for translating a corresponding number of segment descriptor words and a plurality of outputs for generating hit signals indicating the results of comparing said each word to be translated with said information stored in said plurality of storage locations, said outputs being coupled to said RAM; and

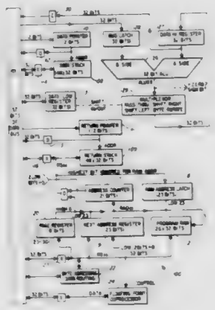
microprogrammed control means coupled to said RAM and to said CAM, said control means including a control store having a plurality of locations for storing a plurality of different types of microinstructions words, said control means in response to receiving said each word to be translated, reading out a first one of said different types of microinstruction words for generating a first group of signals for enabling a first device to perform operations for carrying out a first type of translation operation and said control means in response to said hit signals indicative of a miss condition reading out a second one of said different types of microinstruction words for generating a second group of signals for enabling a second device to generate an address from said information stored in said second group of locations for accessing missing data for completing a second type of translation operation on said received word concurrently with said first type of operating during different cycles of operation.

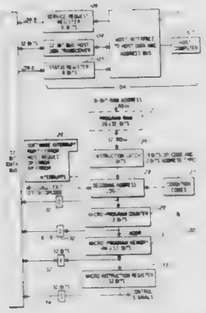
5,053,952

STACK-MEMORY-BASED WRITABLE INSTRUCTION SET COMPUTER HAVING A SINGLE DATA BUS

Philip J. Koopman, Jr., N. Kingston, R.I., and Glen B. Haydon, La Honda, Calif., assignors to WISC Technologies, Inc., La Honda, Calif.

Filed Jun. 5, 1987, Ser. No. 58,737
Int. Cl.[5] G06F *9/42, 9/22, 13/40*
U.S. Cl. 364—200 **9 Claims**





1. A writable instruction set computer comprising:

data bus means for transferring data having a predetermined number of bits;

addressable and writable main program memory means coupled to said data bus means for storing macrocode, including instructions having the predetermined number of bits, and for storing data from and loading stored data onto said data bus means;

memory address logic means coupled to said data bus means and said main program memory means for addressing said main program memory means;

addressble and writable micro-program memory means coupled to said main program memory means for storing microcode instructions addressed by the macrocode instructions;

arithmetic logic unit (ALU) means coupled to said data bus means for performign operations on data received from said data bus means as defined by the microcode stored in said micro-program memory means;

data stack memory means coupled to said data bus means for storing data received from said data bus means for use during program execution;

return stack memory means physically separate from said main memory means, and coupled to said data bus means and to said memory address logic means for storing subroutine return address used during program execution, said memory address logic means addressing said main program memory means with the subroutine return address stored in said return stack memory means while said ALU means performs operations on data transferred from said data stack memory means on said data bus means;

clock means for generating a cyclic clock signal; and

execution control logic means coupled to said micro-program memory means, ALU means, data stack memory means, return stack memory means, data bus means, and clock means for executing the microcode instructions, including performing only one data transfer on said data bus means for each clock signal cycle;
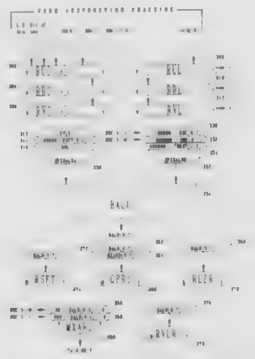
said data bus means providing only one communication path for transferring bidirectionally data between said ALU means, said data stack memory means and said main program memory means.

5,053,953

APPARATUS FOR ALIGNING ARITHMETIC OPERANDS DURING FETCH

Shirish Patel, Waltham, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Filed Jan. 5, 1990, Ser. No. 461,554
Int. Cl.[5] G06F *7/00, 7/38*
U.S. Cl. 364—200 **6 Claims**



1. In a data processing system having a memory for storing instructions and operands, and having means for sequentially retrieving the instructions and having means responsive to the instructions for performing operations upon the operands,

the memory being organized as contiguous addressable words, each word comprising an integral multiple of eight bits, the memory being adapted to retrieve and store double words each comprising two contiguous words beginning on an even-numbered word address called a double word boundary,

the operands being stored in the memory as contiguous packed (four-bit binary coded decimal (BCD)) digits which may begin and end on any four-bit boundary within a word, an operand's most significant digit being its leftmost or lowest-addressed digit,

the instructions having provision to specify each operand's length, its type as packed, the memory double word address in which it begins, and its offset in digits from its double-word boundary to its first digit,

said means for performing operations upon the operands including an arithmetic processor including a scratchpad memory organized as contiguous double words for receiving and holding operands retrieved from the memory and ALU means connected to the scratchpad memory for performing arithmetic operations upon the operands,

alignment apparatus for presenting retrieved operands to the scratchpad memory right-justified on double word boundaries, comprising:

first means coupled to said memory for receiving each instruction, said first means for calculating from said length, type and offset provided in the instruction, a number of double words that must be fetched from the memory in order to retrieve the entire operand, the number being designated NDWF:

second means operatively coupled to said first means and to said memory for receiving said each instruction, said second means for calculating from said length, type and offset provided in the instruction, a number of digit positions the operand must be shifted to the right in order to right-justify it on a double-word boundary, the number being designated RSFT;

third means operatively coupled to said first means and to said memory for receiving said each instruction, said third means (316, 350, 354, 368, 370) for calculating from said length and type provided in the instruction, a number of zeros required to precede the operand in a scratchpad memory double word, the number being designated RLZR;

fourth means operatively coupled to said first means, second means and to said memory, said fourth means for fetching from the memory, NDWF double words containing the operand, starting with the operand's highest addressed word and progressing consecutively through lower addresses;

first and second register means coupled to said memory, said first register means for holding a double word most recently fetched from the memory and second register means for holding a double word next most recently fetched from the memory;

fifth means coupled to said first and second register means and to said scratchpad memory, said fifth means selecting from the first and second register means, a number of said first register's rightmost digits, the number being equal to RSFT, and a number of said second register's leftmost digits, the number being equal to the difference between the number of digits in a double word and RSFT, and said fifth means storing in a double word location in the scratchpad memory a double word having as its leftmost digits the digits selected from the most recently fetched double word and as its rightmost digits the digits selected from the next most recently fetched double word; and

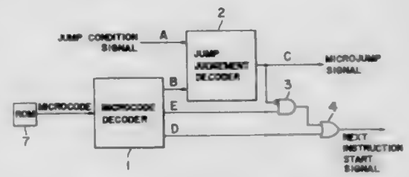
sixth means coupled to said memory and to said fifth means, said sixth means responsive to a completion of fetching NDWF double words from the memory for inserting in the double word to be stored in the scratchpad memory RLZR leading zero digits so that the operand is stored in the scratchpad memory right justified on a double word boundary and filled with leading zeros staring from a double word boundary.

5,053,954

MICROPROGRAM PROCESS FOR SINGLE CYCLE JUMP INSTRUCTION EXECUTION

Akio Miyoshi, Ome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 175,312, Mar. 30, 1988, Pat. No.
Claims priority, application Japan, Mar. 31, 1987, 62-79163
Int. Cl.[5] G06F *9/22, 9/32*
U.S. Cl. 364—200 **3 Claims**



1. A microprogram processor comprising:

memory means for storing microprograms provided with respective macro instructions and generating a microcode;

microcode decoding means for receiving and decoding said microcode generated from said memory means and generating a first signal signifying the necessity for a microjump and a second signal signifying the immediate start of a next macro instruction when a condition for jumping is not satisfied:

jump judgment decoding means for receiving a jump condition signal supplied from an external source and said first signal generated determining whether or not a jump should occur and for from said microcode decoding means and for generating a microjump signal which denotes execution of a microjump operation; and

next instruction start signal generation means for generating a signal for immediately proceeding to the next macro instruction on the basis of said second signal and nonexistence of said microjump signal, said first signal and said signal for immediately proceeding being generated during the same clock period whereby execution of a conditional jump instruction occurs within a single machine cycle.

5,053,955

PROCESS AND APPARATUS FOR ADMINISTERING PROMOTIONAL MAILINGS

John A. Peach, Monticello; Paul H. Korba, Lakeland, and Kenneth M. Rapp, St. Paul, all of Minn., assignors to Fulfillment Systems Inc., Monticello, Minn.

Filed Mar. 23, 1989, Ser. No. 328,109
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 **39 Claims**

1. A process for preparing multiple individual promotional mailing items based on a plurality of promotions, for mailing to multiple destinations in a manner selected to facilitate mailing the items at a reduced cost, including the steps of:

storing a plurality of promotion entries, each uniquely associated with one of a plurality of promotions, in a first bit-encoded data storage means, each of said promotion entries including a unique promotion flag and a promotion legend identifier unique to the associated promotion;

loading multiple data entries into a second bit-encoded data storage means, each data entry including a mailing address and one of said promotion flags;

matching the promotion flags to operatively associate said first data storage means and said second data storage means, and adding each of said promotion entries to each of its associated data entries, to form multiple combined entries;

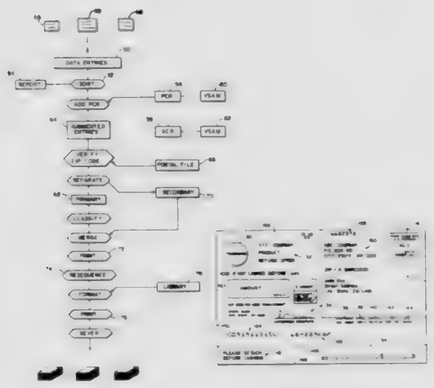
storing the combined entries in a third bit-encoded data storage means;

storing a plurality of account entries in a fourth bit-encoded data storage means, each account entry associated with one of a plurality of checking accounts and further associated with hat least one of said promotions, each account entry including a unique account flag, a checking account number corresponding to the account flag, and drawee information identifying a financial institution in which the checking account is maintained;

assigning a check number to each account entry and incrementing the check number each time its associated account flag is matched to one of its associated data entries;

storing each of said account flags in said first data storage means in connection with each of its associated promotions, and storing a check amount in said second data storage means in connection with each data entry;

assigning a check number to each of said account entries, matching the account flags to operatively associate said



third data storage means and said fourth data storage means, thereby too add each of said account entries to each of its associated combined entries, and incrementing the check number each time the associated checking account is matched with one of said combined entries;

sorting said combined entries into sets and subsets independently of said promotion flags, with each of said sets corresponding to one of a plurality of different postal mailing rate classifications, and with each of said subsets corresponding to one of a plurality of different designated postal delivery areas based upon said mailing addresses;

arranging said sets and subsets in a predetermined sequence of said combined entries;

generating a plurality of entry images, one image associated with each of said combined entries, wherein each one of said images includes its associated address, promotion legend, check number, account number, amount and drawee information; and

printing said entry images individually upon pieces of printing stock and in a printing sequence depending upon said predetermined sequence, thereby to form individual printed mailing items, with said mailing items serially arranged to facilitate their grouping into bundles corresponding to said subsets of combined entries.

7. A process for preparing multiple checks and for arranging the checks in a predetermined sequence to facilitate mailing them to multiple destinations, including the steps of:

loading multiple data entries into a first bitencoded data storage means, each data entry including a payee name, a payee mailing address, a check amount, and one of a plurality of account flags, each account flag uniquely identifying a checking account maintained in a drawee financial institution;

storing a plurality of account entries in a second bit-encoded data storage means, each account entry including one of said account flags, a checking account number and drawee information identifying the associated drawee;

sorting said data entries into sets and subsets independently of said account flags, with each of said sets corresponding to one of a plurality of different postal mailing rate classifications, and with each of said subsets corresponding to one of a plurality of different designated postal delivery areas based upon said payee mailing addresses, and arranging said sets and subsets in a predetermined sequence of said data entries;

assigning a check number to each of said account entries, matching said account flags to operatively associate said first data storage means and said second data storage means, to add each of said account entries to each of its associated data entries, and incrementing the check number each time the associated checking account is matched with one of said data entries;

generating a plurality of entry images, one image associated with each of said data entries, each of said images including its associated payee name, payee mailing address, check amount, check number, account number and drawee information; and

printing said entry images individually upon pieces of printing stock and in a printing sequence dependent upon said predetermined sequence, thereby to form individual printed checks, serially arranged to facilitate their grouping into bundles of checks corresponding to said subsets of entries.

5,053,956

INTERACTIVE SYSTEM FOR RETAIL TRANSACTIONS

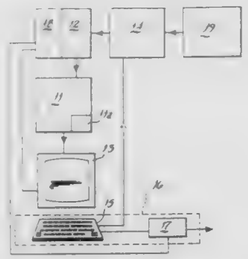
Gordon H. Donald, Clitheroe, and Jeffrey L. Hewitt, Northwood, both of England, assignors to Coats Viyella, Manchester, England

Continuation-in-part of Ser. No. 871,094, Jun. 5, 1986, abandoned. This application Apr. 25, 1989, Ser. No. 342,975

Claims priority, application United Kingdom, Jun. 17, 1985, 8515323; Oct. 29, 1988, 8825358

Int. Cl.[5] G06F *15/24*

U.S. Cl. 364—401 **13 Claims**



1. A system for retail transactions comprising:

computer control means for controlling a plurality of interconnected elements of said system;

video display means connected to said computer control means having an output display area for displaying a composite display image including an object-image of a selected salable object superimposed on a background-image of a selected background scene;

an object-image storage means connected to said computer control means for storing a plurality of object-image frames each of which contains a photographic or video image of a respective salable object, wherein each object-image frame is categorized with other related object-image frames according to at least one category of sales characteristic, wherein each object-image frame is designated by an individual object-image address, and wherein said object-image storage means under control of said computer control means provides an output of a selected object-image frame to said video display means in response to a corresponding object-image address input generated by said computer control means;

a background-image storage means connected to said computer control means for storing a plurality of background-image frames each of which contains an image representation of a respective background scene, wherein each background-image frame is selectable by an individual background-image address, and wherein said background-image storage means under control of said computer control means provides an output of a selected background-image frame to said video display means in response to a corresponding background-image address input generated by said computer control means;

indexing means of said computer control means connected to said object-image storage means and said background-image storage means for generating a respective object-image address and background-image frame address thereto in response to receipt of an object-image index code and background-image index code, respectively, thereby causing the corresponding object-image to be displayed on said video display means superimposed on the selected background-image;

input means connected to said computer control means including a keyboard for entering a category code designating a selected category of salable objects categorized by a common sales characteristic to be displayed in sequence on said video display means, and a background-image index code designating a selected background scene on which salable objects in the selected category are to be displayed; and

image retrieval means of said computer control means for receiving the category code from said input means and for generating and outputting to said indexing means a series of object-image index codes for each of the salable objects in the selected category, and for receiving the background-image index code entered from said input means and outputting it to said indexing means,

whereby the object-image of each salable object in the selected category is displayed on said video display means in sequence superimposed on the selected background scene.

5,053,957

ELECTRONIC CASH REGISTER HAVING DISCOUNT PRICES SELECTED BY CUSTOMER LEVEL

Yasuo Suzuki, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 20, 1988, Ser. No. 260,059

Claims priority, application Japan, Oct. 23, 1987, 62-267819

Int. Cl.[5] G07G *1/12*

U.S. Cl. 364—405 **15 Claims**

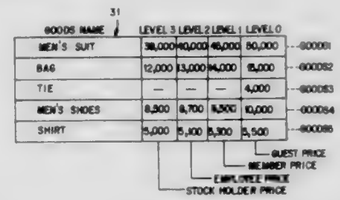
1. An electronic cash register comprising:

means for storing respective unit prices for each of a plurality of customer levels for at least one predetermined purchasable item or service which is subject to differing customer level discounts; said storing means also storing a respective unit price for at least one predetermined item or service which is not subject to said customer level discounts; said plurality of customer levels being identified by respective customer level codes;

means for entering a customer level code and an item or service code;

means responsive to an entered customer level code and an entered item or service code for selecting from said storing means a unit price of an item or service corresponding to said entered customer level code and item or service code; and,

means for using said selected unit price in a registration operation;



said storing means comprising a first storage area having a first storage level for storing regular prices for each of a plurality of items or services, and a second storage area for storing, in accordance with customer levels, respective discount prices associated with each of the customer levels for each of a plurality of items or services subject to customer level discounts, said storing means also storing an indication of whether a particular item or service is subject to customer level discounts;

said selecting means including means for examining said storing means and discriminating among items or services which are subject to customer level discounts and those which are not by said stored indication for an entered item or service code.

5,053,958

METHOD TO REDUCE IMAGE RECONSTRUCTION TIME IN LIMITED-ANGLE CT SYSTEMS INCLUDING USING INITIAL RECONSTRUCTION VALVES FOR MEASURED PROJECTION DATA DURING EACH ITERATION

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

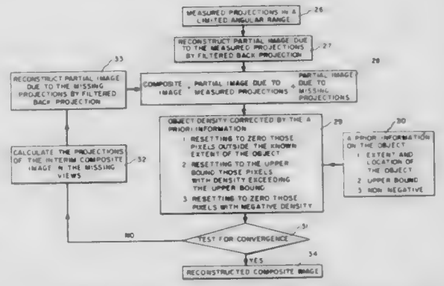
Filed Jun. 6, 1988, Ser. No. 201,784

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.13 **4 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 11 Pages)



1. A method of forming an image of an object in a x-ray computerized tomography system using an improved limited-angle image reconstruction procedure, comprising the steps of:

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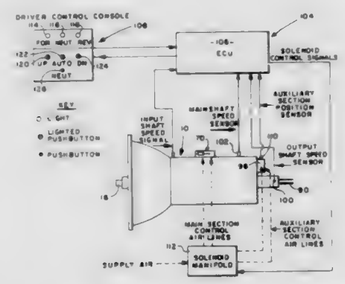
a) scanning said object with x-rays over a limited angular range and acquiring measured projections at available view angles;
b) reconstructing a measured data partial image from said measured projections by a filtered backprojection operation;
c) producing a composite image of said object by summing said measured data partial image and a calculated data partial image which is reconstructed from missing projections at missing view angles that are initially set to zero;
d) correcting object density in said composite image with a priori information about said object by 1) setting to zero any image pixels outside a known boundary of said object, 2) resetting to a prechosen upper bound any pixels with density exceeding the upper bound, and 3) resetting to zero any pixels with negative density;
e) calculating the missing projections from an interim corrected composite image by a projection operation;
f) reconstructing an improved calculated data partial image by a filtered backprojection operation from the missing projections calculated in the preceding step; and
g) iteratively repeating steps c to f and progressively improving said composite image using the same measured data partial image and the successively improved calculated data partial image.

5,053,959

CONTROL SYSTEM AND METHOD FOR SENSING AND INDICATING NEUTRAL IN A SEMI-AUTOMATIC MECHANICAL TRANSMISSION SYSTEM

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 19, 1989, Ser. No. 368,502
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] B60K *41/06*
U.S. Cl. 364—424.1 21 Claims



1. A control system (**104**) for semi-automatic implementation of selected shifts of a mechanical change gear transmission system comprising a manually controlled fuel throttle controlled engine (E), a multi-speed change gear mechanical transmission (**10**), a manually controlled master friction clutch (C) drivingly interposed between the engine and the transmission, a first sensor (**98**) for providing a first input signal indicative of transmission input shaft (**16**) rotational speed, a second sensor (**100**) for providing a second input signal indicative of the rotational speed of a transmission shaft (**90**) independently rotatable relative to the transmission input shaft under at least certain transmission operating conditions and a non-manually controllable transmission actuator (**112, 70, 96**) for controlling shifting of the transmission, said control system characterized by;

indicia means (**116/142**) for indicating (i) selection but not yet confirmed execution of a shift into neutral and (ii) a confirmed neutral condition;

means (**126/106**) for selecting a shift from a currently engaged transmission ratio into neutral and for providing a third input signal indicative of said selection;

a central processing unit (**106**) for receiving said first, second and third input signals and for processing the same in accordance with predetermined logic rules to issue command output signals, said central processing unit including;

(a) means responsive to a selection of a transmission shift from a currently engaged ratio into neutral for issuing command output signals to (i) said actuator to bias the transmission to be shifted into neutral and to (ii) said indicia means to indicate that a shift into neutral has been selected but not yet confirmed; and

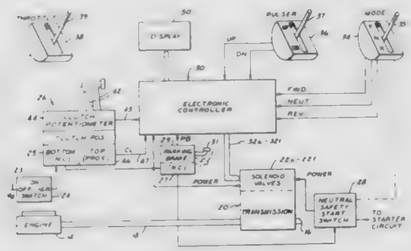
(b) means responsive to transmission neutral condition for issuing command output signals to said indicia to cause the indicia means to indicate a confirmed neutral condition.

5,053,960

ELECTRONIC CONTROL SYSTEM FOR POWERSHIFT TRANSMISSION WITH COMPENSATION FOR VARIATION IN SUPPLY VOLTAGE

Kevin L. Brekkestran, and John C. Thomas, both of Fargo, N. Dak., assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 389,392, Aug. 3, 1989, Pat. No. 4,967,385, which is a division of Ser. No. 55,820, May 29, 1987, Pat. No. 4,855,913. This application Aug. 27, 1990, Ser. No. 572,285
Int. Cl.[5] B60K *41/18*; G06F *15/50*
U.S. Cl. 364—424.1 3 Claims



1. An improved electronic control system for use with a powershift transmission having a plurality of hydraulically-actuated clutches and at least one solenoid-operated hydraulic valve means for adjusting at least one parameter within the transmission, such valve means including a solenoid coil to which a first electrical signal is applied, the electronic control system being of the type which includes electronic switching means connectable in series with the coil to form a series combination to which a D.C. supply voltage is applied across, the electronic control system including microprocessor means for operating the powershift transmission in accordance with operating parameters stored in the microprocessor means for:

determining the actual value of the supply voltage provided across the series combination of the solenoid coil and the electronic switching means;

determining the difference between the actual value of the supply voltage and a predetermined nominal voltage value of the supply voltage; and

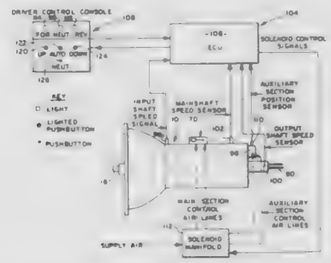
adjusting the second signal in inverse proportion to the value of the difference, thereby compensating for variation in the supply voltage.

5,053,961

SEMI-AUTOMATIC SHIFT IMPLEMENTATION FOR MECHANICAL TRANSMISSION SYSTEM

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 19, 1989, Ser. No. 368,011
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] G60K *41/04*
U.S. Cl. 364—424.1 29 Claims



17. A control method for controlling semi-automatic implementation of manually-selected shifts of a semi-automatic mechanical change gear transmission system (**104**) comprising a manually controlled fuel throttle controlled engine (E), a multiple speed change gear mechanical transmission (**10**), a manually controllable master friction clutch drivingly interposed between the engine and the transmission, a first sensor (**98**) for providing an input signal indicative of the transmission input shaft (**16**) rotational speed, a second sensor (**100**) for providing an input signal indicative of the rotational speed of a transmission shaft (**90**) independently rotatable relative to the input shaft under at least certain transmission operating conditions, a non-manually controllable actuator (**70/96**) for controlling shifting of the transmission, a driver control console (**108**) including means (**120, 124/132**) for manually selecting an upshift or a downshift from a currently engaged ratio or neutral to a selected ratio and to provide an input signal indicative of same, and a central processing unit (**106**) for receiving said input signals and for processing the same in accordance with predetermined logic rules to issue command output signals, said method characterized by:

(a) responding to manual sensed selection of a shift from a currently engaged ratio by issuing command output signals to said actuator to bias the transmission to be shifted into neutral; and

(b) responding to (i) a sensed manual selection of a shift from a currently engaged ratio into a selected ratio and (ii) confirmation of a transmission neutral condition by (i) sensing manual substantial synchronization of the transmission and (ii) thereafter issuing command output signals to said transmission actuator to cause the transmission to be shifted into the selected ratio.

5,053,962

AUTOMATIC SHIFT PRESELECTION MODE FOR MECHANICAL TRANSMISSION SYSTEM WITH SEMI-AUTOMATIC SHIFT IMPLEMENTATION

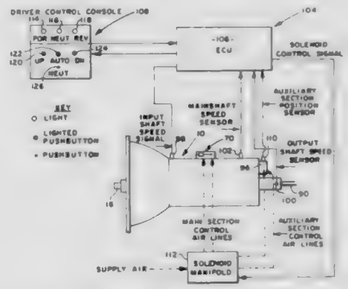
Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 19, 1989, Ser. No. 368,467
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] B60K *41/06*
U.S. Cl. 364—424.1 23 Claims

1. A control system (**104**) for semi-automatic implementation of automatically selected shifts of a mechanical change gear transmission system comprising a manually controlled fuel throttle controlled engine (E), a multi-speed change gear mechanical transmission (**10**), a manually controlled master friction clutch (C) drivingly interposed between the engine and the transmission, a first sensor (**98**) for providing a first input signal indicative of transmission input shaft (**16**) rotational speed, a second sensor (**100**) for providing a second input signal indicative of the rotational speed of a transmission shaft (**90**) independently rotatable relative to the transmission input shaft under at least certain transmission operating conditions and a non-manually controllable transmission actuator (**112, 70, 96**) for controlling shifting of the transmission, said control system characterized by;

indicia means (**120, 124**) for providing an indication of a selection but not yet confirmation of an upshift or a downshift from a currently engaged transmission ratio or from neutral to a selected ratio:

a central processing unit (**106**) for receiving said input signals and for processing the same in accordance with predetermined logic rules to issue command output signals, said central processing unit including;



(a) means for determining the desirability of a shift from a currently engaged ratio, to select such a shift if desirable and for issuing command output signals to said indicia means to provide an indication that an upshift or a downshift, as appropriate, has been selected;

(b) means responsive to a selection of a transmission shift from a currently engaged ratio for issuing command output signals to said actuator to bias the transmission to be shifted into neutral;

(c) means responsive to (i) a selection of a shift from a currently engaged ratio into a selected ratio and (ii) confirmation of a transmission neutral condition for (i) sensing manual substantial synchronization of the transmission and (ii) thereafter for issuing command output signals to said actuator to cause the transmission to be shifted into the selected ratio; and

(d) means for confirming a selected shift has been implemented and for issuing command output signals to said indicia means to terminate the indication of a selected shift.

5,053,963

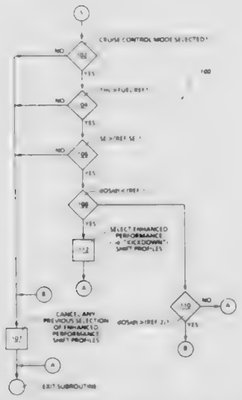
AMT CRUISE CONTROL MODE SHIFT LOGIC

William J. Mack, Clarkston, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 30, 1990, Ser. No. 559,794
Int. Cl.[5] B60K *41/04*
U.S. Cl. 364—424.1 12 Claims

1. An automated mechanical transmission system for vehicles having a fuel controlled engine (**14**), a throttling control means (**26**) for controlling the amount of fuel supplied to the engine and a multi-speed mechanical transmission (**12**) having a plurality of gear ratio combinations selectively engageable between a transmission input shaft and a transmission output shaft (**20**), said transmission input shaft being operatively connected to said engine by a coupling device (**16**), said transmission system including an information processing unit (**42**) hav-

ing means for receiving a plurality of input signals including at least an input signal (OS) indicative of the vehicle speed, said processing unit including means of processing said input signals including determining the value of a time derivative of said signal indicative of vehicle speed and for processing said input signals in accordance with predetermined logic rules to select a desirable gear ratio for a given combination of input signals and for generating command output signals whereby said transmission system is operated in accordance with said predetermined logic rules, said predetermined logic rules including a standard mode of operation wherein shift decisions are based upon a set of standard shift profiles, and an enhanced performance mode of operation wherein shift decisions are based upon a set of enhanced performance shift profiles, and means associated with said transmission system effective to actuate said transmission, fuel throttling means and coupling means to effect engagement of one of said gear ratio combinations in response to said output signals from said processing unit:



said predetermined logic rules having an operator selectable (44A) cruise control mode of operation wherein the speed of said vehicle is automatically maintained at a selected value, including automatic selection of fueling to the engine and engaged ratio of said transmission, and said processing means on the basis of said predetermined logic rules:

(i) compares said time derivative of said signal indicative of vehicle speed to a first reference value having a negative value, (ii) compares vehicle speed to the selected value to calculate a vehicle speed error and compares said vehicle speed error to a speed error reference value (REF-SE) and (iii) compares the amount of fuel (THL) being supplied to said engine to a fuel reference value and, if (i) said cruise control mode of operation is selected, (ii) said time derivative is less than said first reference value, (iii) said speed error (SE) exceeds said vehicle speed error reference value (REF-SE) and (iv) said amount of fuel is greater than said fuel reference value, causes said predetermined logic rules to base shift decisions upon an enhanced performance set of shift profiles.

5,053,964

ON-BOARD INTEGRATED VEHICLE CONTROL AND COMMUNICATION SYSTEM

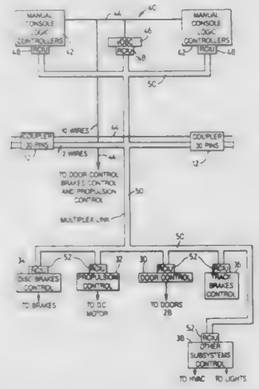
Jean M. Mister, and Richard Carlsen, both of Ontario, Canada, assignors to Utdc, Inc., Ontario, Canada

Filed Jul. 17, 1989, Ser. No. 379,798
Int. Cl.[5] B61L *27/00;* **G06F** *15/50*
U.S. Cl. 364—424.01 **31 Claims**

1. An on-board control and communication system for use on a vehicle, said vehicle being operable as a single unit or being coupled to at least one other vehicle to form a train, one of said vehicles in said train operating as a master for controlling the operation of said train and the other vehicles in said train operating as slaves responsive to said master, each of said vehicles including a control and communication system, comprising:

at least one slave control means responsive to command signals and controlling a sub-system of said vehicle in accordance with said command signals;

master control means connected to said slave control means via a communication link, said master control means generating said command signals upon reception of an enabling signal and in response to desired vehicle operation information, said communication link being coupled to the



communication link in other vehicles when vehicles are coupled to form a train;

detection means for detecting when said vehicle is coupled to another vehicle to form a train and for detecting the vehicle in said train designated as said master; and

conversion means in communication with said detection means for generating said enabling signal when said vehicle is designated and operates as said master, said slave control means on each of said vehicles further including pre-programmed sub-system operation information stored therein and executing said operation information upon loss of communications with said master control means to control the sub-system in the absence of command signals generated by the master control means.

5,053,965

ATTITUDE CHANGE SUPPRESSIVE VEHICULAR HEIGHT REGULATION SYSTEM

Itaru Fujimura; Naoto Fukushima; Yukio Fukunaga; Yohsuke Akatsu, and Masaharu Sato, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 25, 1989, Ser. No. 398,556
Claims priority, application Japan, Aug. 26, 1988, 63-211966
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 **25 Claims**

1. A vehicular height regulation system comprising:

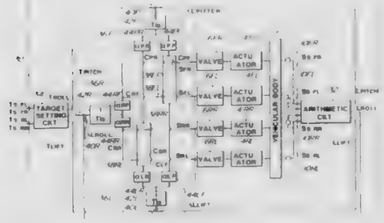
a first fluid actuator provided in a first suspension system disposed between a first side of a vehicular body and a first road wheel, said first actuator being variable of fluid pressure for adjusting relative distance between said first side of the vehicular body and said first road wheel;

a second fluid actuator provided in a second suspension system disposed between a second side of the vehicular body opposite to said first side and a second road wheel, said second fluid actuator being variable of fluid pressure for adjusting relative distance between said second side of the vehicular body and said second road wheel;

a fluid pressure source circuit connected to said first and second actuators, said fluid pressure source circuit incorporating a first valve means for adjusting fluid pressure in said first fluid actuator and a second valve means for adjusting fluid pressure in said second fluid actuator;

a sensor means for monitoring a preselected parameter affected by vehicular attitude and variable depending upon magnitude and direction of vehicular body attitude change for producing an attitude change representative signal;

means for processing said attitude change representative signal for deriving vehicular body attitude change representative data;



a target attitude change magnitude setting means for setting a target attitude change magnitude and generating reference data representative of said target attitude change magnitude;

means for comparing said vehicular attitude change representative data and said reference data for deriving difference data representative of a difference therebetween; and

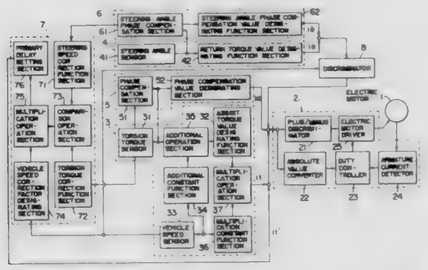
a controlling means, responsive to said difference data, for deriving first and second control signals which have opposite polarity to each other, for controlling said first and second valve means for reducing the difference between said vehicular attitude change representative data and said reference data to zero.

5,053,966

MOTOR CONTROL APPARATUS FOR ELECTRIC POWER STEERING SYSTEM OF A MOTOR VEHICLE

Tsutomu Takahashi; Shinji Ito; Saiichiro Oshita, and Toyohiko Mouri, all of Tokyo, Japan, assignors to Fuii Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,226, May 24, 1989, abandoned. This application Feb. 1, 1991, Ser. No. 649,146
Claims priority, application Japan, May 28, 1988, 63-130590
Int. Cl.[5] B62D *5/04*
U.S. Cl. 364—424.05 **11 Claims**



1. A motor control apparatus for an electric power steering system mounted on a vehicle, having wheels, a steering wheel operatively connected to said wheels, an electric motor for assisting the operation of said steering wheel, a torsion torque sensor for detecting a torsion torque of said steering system, a vehicle speed sensor for detecting a vehicle speed, a steering angle sensor for detecting a steering angle of said steering wheel, and controlling means responsive to at least said torsion torque and said vehicle speed for controlling a rotational direction and an output torque of said electric motor so as to assist the operation of said steering wheel, comprising:

detecting means for detecting a steering speed of said steering wheel; and

assist torque signal producing means responsive to said steering speed and said torsion torque for producing an assist torque signal depending upon the magnitude of said torsion torque thereby to assist holding said steering wheel at a desired steered angle away from neutral position when said steering speed is within a predetermined low range near zero and said torsion torque is generated when the vehicle is going around a curve;

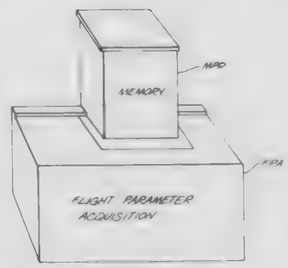
said controlling means responsive to said assist torque signal for controlling said electric motor.

5,053,967

FLIGHT RECORDER WITH STATIC ELECTRONIC MEMORY

Michel Clavelloux, Montlhery, and Maurice Ropert, Plaisir, both of France, assignors to Electronique Serge Dassault, Saint-Clod, France

Continuation of Ser. No. 102,382, Sep. 28, 1987, abandoned. This application Dec. 20, 1989, Ser. No. 455,812
Claims priority, application France, Sep. 30, 1966, 86 13616
Int. Cl.[5] G06F *15/20;* **G11B** *23/02, 5/00*
U.S. Cl. 364—424.06 **10 Claims**



1. A flight recorder comprising:

a flight protection enclosure comprising an outer wall made of a material having pores which open upon exceeding a given high temperature threshold,

an inner wall defining a useful cavity,

a fire resistant substance separating the inner and outer walls, said substance being based on chemically bonded water, and resisting fire by being vaporized and absorbing calories when subjected to a high temperature environment corresponding to said given high temperature, whil evaporating water out through said pores of the outer wall;

a plurality of printed circuit cards wedged in the cavity;

memory means comprising non-volatile EEPROM-type memory chips on such cards said chips being enclosed within casings for resisting a high pressure environment;

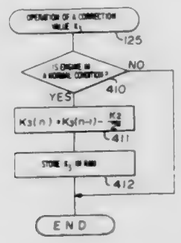
a passage through said inner and outer walls for passing electrical connection means from the exterior to the interior of said cavity; and

a corrosion resistant coating applied to said printed circuit cards whereby said flight recorder is temporarily resistant to fire and deep sea immersion despite sensitivity of said chips.

5,053,968
AIR-FUEL RATIO CONTROL APPARATUS

Masanobu Uchinami, Himeji, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jun. 15, 1989, Ser. No. 366,794
Claims priority, application Japan, Jul. 27, 1988, 63-188805
Int. Cl.[5] G06F *15/48, 15/50;* **G06G** *7/70;* **F02M** *51/00*
U.S. Cl. 364—431.05 **5 Claims**



1. An air-fuel ratio control apparatus which comprises a broad range air-fuel ratio sensor to detect continuously an air-fuel ratio sensor to detect continuously an air-fuel ratio on the basis of components of exhaust gas from an engine,

a setting means to set a target air-fuel ratio on the basis of operational conditions of said engine,

a determining means to set a target air-fuel ratio on the basis of operational conditions of said engine,

a determining means to determine a correction coefficient (K_2) by obtaining an error between said target air-fuel ratio and an actual air-fuel ratio,

an integrating means to integrate said correction coefficient (K_2), producing an integrated value (K_3), according to the relation:

$$K_3(n)=K_3(n-1)-K_2/2^{\alpha},$$

a non-volatile memory to store said integrated value (K_3) as at least a part of information of correction in relation to the operational condition of the engine,

a processing means to calculate a basic fuel injection quantity on the basis of the operational conditions of the engine, and

a correction means to correct said basic fuel injection quantity depending on said information of correction.

5,053,969
SYSTEM INCLUDING AN AUTOPILOT, WITH A SIMULATOR, FOR A FLUID BORNE VEHICLE

Thomas B. Booth, Fareham, England, assignor to Ferranti International, plc, United Kingdom

Filed Apr. 19, 1989, Ser. No. 340,363
Claims priority, application United Kingdom, Apr. 23, 1988, 8809649
Int. Cl.[5] G06F *15/50;* **G05D** *1/08*
U.S. Cl. 364—433 **15 Claims**

14. A control system for a fluid borne vehicle, described behaviourally by a set, comprising a vector, of state variables, said system including

(a) vehicle controls to effect, with vehicle motion, changes to said state variables in response to control inputs,

(b) measurement means to provide a set of observed state values representative of at least some state variables of the vehicle,

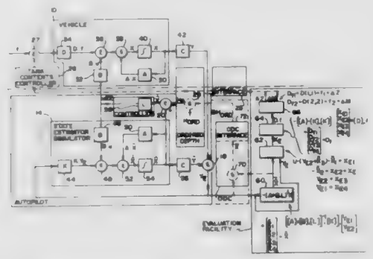
(c) autopilot means operable

(i) to simulate the behavioral response of the vehicle to values of control inputs to produce a set of estimated state variables,

(ii) to observe at least the estimated state variables corresponding to the state variables observed by the first measuring means, and

(iii) to cause, by way of said control inputs, the vehicle to assume a steady state condition in relation to state variables observed at which motion-disturbing out-of-trim forces acting on the vehicle are compensated for, and

(d) trim ballast adjustment means responsive to trim control input signals to vary the trim of the vehicle in relation to the fluid by variation in ballast and its distribution,



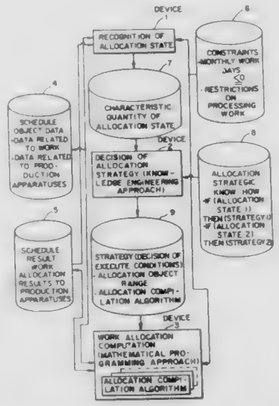
(e) an evaluation facility responsive to a set of instantaneously observed estimation error values, between observed state variables and observed estimated state variables, to determine therefrom the values of motion-disturbing out-of-trim forces acting on the vehicle, and

(f) a trim ballast adjustment interface operable to relate said derived values of out-of-trim forces to trim control input signals for such trim ballast adjustment means for elimination of said motion-disturbing out-of-trim forces.

5,053,970
WORK SCHEDULING METHOD

Kenzo Kurihara, Tokyo; Kichizo Akashi, Ebina; Keiichi Hara, Kawasaki, and Noriko Komori, Owariasahi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., Tokyo, Japan

Filed Sep. 15, 1988, Ser. No. 244,740
Claims priority, application Japan, Sep. 18, 1987, 62-234530
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **4 Claims**



1. A scheduling method for making a work schedule for allocating a plurality of work to a plurality of resources in a system including a CPU and a first and second memory means, comprising the steps of:

first representing scheduling constraints and scheduling know-how in a form of knowledge representation by knowledge engineering to make said work schedule and storing said knowledge representation in said first memory means,

second representing a part of optimal allocation in a plurality of programs built-in by mathematical programming and storing said plurality of programs in said second memory means,

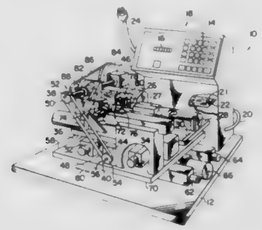
determining at least one program from said plurality of programs by use of said knowledge representation stored in said first memory means, and

repeating said determining step to obtain said work schedule.

5,053,971
METHOD AND APPARATUS FOR EDGING AN OPTICAL LENS

Kenneth O. Wood, Stafford Springs, and David J. Logan, Glastonbury, both of Conn., assignors to Gerber Optical, Inc., South Windsor, Conn.

Filed Aug. 30, 1989, Ser. No. 400,522
Int. Cl.[5] G06F *15/46;* **B24B** *7/00*
U.S. Cl. 364—474.06 **20 Claims**



1. Apparatus for edging an optical lens blank having front and rear surfaces and a thickness into a lens having the size and shape of a lens opening in an eyeglass frame, said apparatus comprising:

means for providing a plurality of data points collectively representative of the peripheral size and shape of the lens opening in an associated eyeglass frame for which the lens is being edged;

a lens chucking station;

means for chucking the lens blank at said lens chucking station;

means for rotating the lens blank chucked at the chucking station, said lens blank being rotated about a rotation axis;

cutter means for edging the lens blank and forming a bevel or groove feature in the periphery of the finished lens;

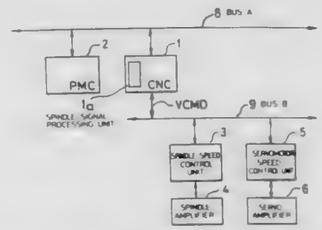
means for independently translating the chucked lens for relative movement in two axes with respect to said cutter, one axis being substantially radial relative to said axis of rotation of the chucked lens, said one axis being defined as the R-axis, and a second axis being substantially parallel to said axis of rotation of the chucked lens, said second axis being defined as the Z-axis, and

means for containing an instruction set to control said apparatus to provide continuous path control of said relative movement of said chucked lens along said R-axis and said Z-axis and relative to said rotation axis of the chucked lens in accordance with said plurality of data points and the curvature of the lens surfaces to engage the edge of the lens blank in the cutter and edge a lens having the size and shape of the lens opening in the associated eyeglass frame with the bevel or groove feature positioned on the periphery of the finished lens.

5,053,972
SPINDLE CONTROL SYSTEM

Mitsuo Kurakake, Hino, and Jiro Kinoshita, Minamitsuru, both of Japan, assignors to Fanuc Ltd.

PCT No. PCT/JP88/00874, § 371 Date Apr. 17, 1989, § 102(e) Date Apr. 17, 1989, PCT Pub. No. WO89/02103, PCT Pub. Date Mar. 9, 1989
PCT Filed Aug. 31, 1988, Ser. No. 343,264
Claims priority, application Japan, Sep. 2, 1987, 62-220012
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.12 **3 Claims**



1. A spindle control system in a numerical control apparatus (CNC), comprising:

a first bus operatively connected to the numerical control apparatus;

a second bus;

a programmable machine controller (PMC), operatively connected to said first and second buses, for outputting a spindle control signal to said first bus;

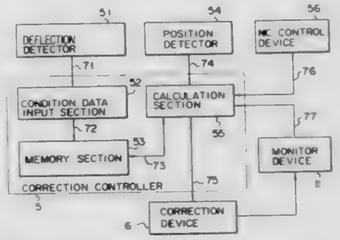
a spindle speed control unit, operatively connected to said second bus and the numerical control apparatus, a command from the numerical control apparatus being sent to said spindle speed control unit by said second bus, and a command from said PMC being sent to said spindle speed control unit, via the numerical control apparatus, by said second bus; and

a spindle signal processing unit, operatively connected to said PMC, for receiving the spindle control signal from said PMC and sending said spindle control signal to said second bus.

5,053,973
METHOD AND APPARATUS FOR CORRECTING DEFLECTION OF A MOVABLE MEMBER

Shigeharu Fujii, Numazu; Akira Ochiai, Susono, and Akio Fujii, Mishima, all of Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1989, Ser. No. 383,527
Claims priority, application Japan, Jul. 26, 1988, 63-186273
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.17 **6 Claims**



1. A method for correcting deflections occurring in a supporting member and caused by a movement of a movable member supported by the supporting member, by at least one

of the weight of the movable member and changes in loads applied by the movable member, said supporting member and movable member being coupled in a machine tool system, comprising:

a preparatory step of selecting a plurality of measurement positions in the moving direction of the movable member, at which deflections of the supporting member are to be respectively measured, detecting the deflections corresponding to the measurement positions, obtaining correction values corresponding to the measurement positions, and storing the correction values into memory means;

a position detecting step of detecting a moved position of the movable member on the supporting member; and

a correcting step of correcting the deflection of the supporting member, by activating a cylinder, based on the correction values stored in the memory means, when the moved position of the movable member corresponds to one of the measurement positions, and based on an interpolation value, when the moved position of the movable member is between adjacent two of the measurement positions, said interpolation value being determined from a distance between the moved position of the movable member and one of the adjacent two measurement positions which is farther away from an end of the supporting member than the other, and from a difference between two of the correction values corresponding to the two adjacent measurement positions, and being an integral multiple of a minimum pressure unit equal to a smallest controllable pressure of the cylinder.

5,053,974

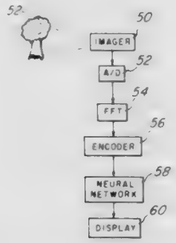
CLOSENESS CODE AND METHOD

Perry A. Penz, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 542,675, Jun. 22, 1990, abandoned, which is a continuation of Ser. No. 032,887, Mar. 31, 1987, abandoned. This application Dec. 4, 1990, Ser. No. 624,481

Int. Cl.[5] G06F *15/18*

U.S. Cl. 304—513 16 Claims



1. A information processing system comprising:

circuitry for providing a sequence of information signals;

an encoder which receives said sequence at an input of said encoder and comprises circuitry for processing a plurality of series of two state electrical signals representative of code vectors, each code vector corresponding to one of said information signals, wherein each code vector comprises circuitry for processing a fixed number of electrical component signals, wherein said circuitry is programmed such that a portion of said component signals are assigned to one of said two states and the remaining signals are assigned to the other of said two states, and wherein for any two information signals, the Hamming distance between said corresponding code vectors is within a selected closeness no greater than twice said fixed number if said two information signals are within said selected closeness; and

a neural network connected to an output of said encoder, said neural network comprising a fixed number of inputs equal to said fixed number of electrical component signals wherein said circuitry for processing each of said electrical signal components is connected such that each neural network input corresponds to one of said electrical signal components.

5,053,975

MASTER-SLAVE MANIPULATOR CONTROL

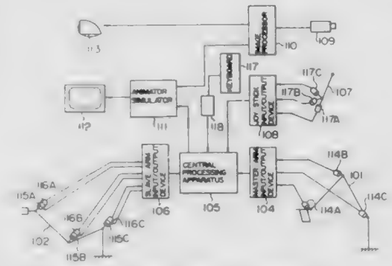
Akira Tsuchihashi, Nagareyama; Shinichi Takarada, Yokohama; Taro Iwamoto, Mito; Kichio Nakajima; Tatsu Aoki, both of Ibaraki, and Hiroshi Yamamoto, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 123,276, Nov. 20, 1987, Pat. No. 4,853,874. This application Jun. 8, 1989, Ser. No. 363,071

Claims priority, application Japan, Jun. 10, 1988, 63-141712

Int. Cl.[5] B25J *3/100*

U.S. Cl. 364—513 10 Claims



1. A manipulator control system comprising:

(a) a master arm including a plurality of first links sequentially connected by joints;

(b) a slave arm including a plurality of second links sequentially connected by joints;

(c) an operational panel having means for generating operating signals for adjusting the operability of said master arm;

(d) a plurality of controllers for effecting movement control of said slave arm by following a movement of said master arm;

(e) first transform means connected to said controllers for transforming information of positions of said master arm into first generalized world coordinates associated with instructive positional information of said slave arm based on an initial relative positional relationship between said master arm and said slave arm;

(f) second transform means for receiving the operating signals of said operation panel and the first generalized world coordinates supplied form said first transform means so as to transform the first generalized world coordinates into second generalized world coordinates for selectively establishing a change in a relative positional relationship between said master arm and said slave arm; and,

(g) inverse transform means for receiving as an input the second generalized world coordinates so as to determine coordinate values of the joints of the slave arm.

5,053,976

METHOD OF TEACHING A ROBOT

Hidetaka Nose; Kazuhiro Kawabata, and Yoshihiko Suzuki, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1989, Ser. No. 355,455

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—513 10 Claims

1. A method of teaching an articulated robot, including a plurality of articulations and an end effector having a tool center point, comprising the steps of:

determining a first coordinate transformation matrix for transforming coordinates between the articulations from

condition data of the articulations, said condition data comprising pulses produced by potentiometers mounted on the articulated robot;

calculating a present position of the tool center point based on said first coordinate transformation matrix;

determining a moving vector from said present position of the tool center point to a next position thereof;

determining a second coordinate transformation matrix for further transforming coordinates between the articulations so that a posture of the end effector at said next position of the tool center point, which is calculated based on said first coordinate transformation matrix and said moving vector, will coincide with a posture of the end effector at said present position of the tool center point;

moving the articulations according to said further transformed coordinates; and

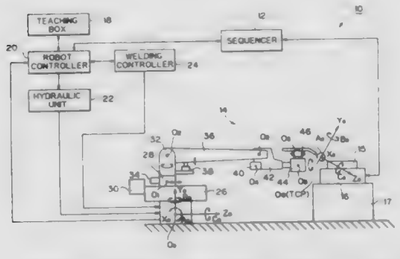
calculating new condition data of the articulations from said second coordinate transformation matrix.

2. A method of teaching an articulated robot, including a plurality of articulations and an end effector having a tool center point, comprising the steps of:

determining a first coordinate transformation matrix for transforming coordinates between the articulations from condition data of the articulations, said condition data comprising pulses produced by potentiometers mounted on the articulated robot;

calculating a present position of the tool center point based on said first coordinate transformation matrix;

determining a rotation matrix with respect to a reference



coordinate system for displacing a posture of the end effector at said present position of the tool center point;

determining a second coordinate transformation matrix for further transforming coordinates between the articulations so that the end effector with said displaced posture, which is calculated based on said first coordinate transformation matrix and said rotation matrix, coincides with said present position of the tool center point;

moving the articulations according to said further transformed coordinates; and

calculating new condition data of the articulations from said second coordinate transformation matrix.

3. A method of teaching an articulated robot, including a plurality of articulations and an end effector having a tool center point, for effecting linear interpolation between first and second teaching points, said method comprising the steps of:

determining a first coordinate transformation matrix and a second coordinate transformation matrix for the first and second teaching points, respectively, from condition data of the articulations, for transforming coordinates between the articulations, said condition data comprising pulses produced by potentiometers mounted on the articulated robot;

calculating a position of the tool center point at the first and second teaching points based on said first and second coordinate transformation matrices, respectively;

determining an interpolating number for dividing a determined distance between the first and second teaching points at intervals;

determining a cumulative change in a position of the tool center point and a cumulative change in a posture of the end effector as the end effector moves from the first teaching point to the second teaching point;

dividing said cumulative change in position and said cumulative change in posture by said interpolating number to determine incremental changes of position of the tool center point and incremental changes of posture of the end effector at respective interpolating points between the first and second teaching points;

determining corresponding positions of the tool center point and corresponding postures of the end effector at said respective interpolating points by using said incremental changes of position of the tool center point and said incremental changes of posture of the end effector between said respective interpolating points; and

moving the articulations along said corresponding positions and postures according to said transformed coordinates.

5. A method of teaching an articulated robot, including a plurality of articulations and an end effector having a tool center point, for effecting circular interpolation between first, second, and third teaching points, said method comprising the steps of:

determining first, second, and third coordinate transformation matrices for the first, second, and third teaching points, respectively, from condition data of the articulations, for transforming coordinates between the articulations, said condition data comprising pulses produced by potentiometers mounted on the articulated robot;

calculating a position of the tool center point at the first, second, and third teaching points based on said first, second, and third coordinate transformation matrices, respectively;

determining a center and a length of an arc extending from the first teaching point through the second teaching point to the third teaching point;

determining an interpolating number for dividing said arc at intervals based on said length of said arc;

determining an angle formed between a vector extending from said center to the first teaching point and a vector extending from said center to the third teaching point;

dividing said angle by said interpolating number to determine a change in a direction of a vector extending from said center to an interpolating point;

determining a rotation matrix for said vector extending to said interpolating point based on said change in said direction;

operating said rotation matrix successively on said coordinate transformation matrices with respect to said first teaching point to determine respective positions of the tool center point and respective postures of the end effector at corresponding interpolating points; and

moving the articulations along said respective positions and postures according to said transformed coordinates.

7. A method of teaching an articulated robot, having a plurality of articulations and an end effector having a tool center point, for correcting a position of the tool center point, comprising the steps of:

determining a coordinate transformation matrix for transforming coordinates between the articulations from condition data of the articulations, said condition data comprising pulses produced by potentiometers mounted on the articulated robot;

calculating a position of the tool center point before it is corrected, based on said coordinate transformation matrix;

determining an interval of movement of the tool center point with respect to a workpiece to be processed by the articulated robot;

calculating a position of the tool center point after it is corrected, from said position of the tool center point before it is corrected and said interval of movement;

determining a new coordinate transformation matrix for transforming coordinates between the articulations from said position of the tool center point after it is corrected;

moving the articulations according to said transforming coordinates corresponding to said new coordinate transformation matrix; and

calculating new condition data of the articulations from said new coordinate transformation matrix.

5,053,977

MULTIFUNCTION PRINTER WITH A JOURNAL DEVICE

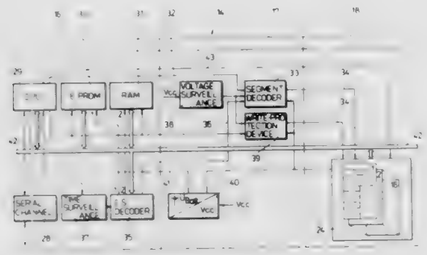
Rupert Baur; Lothar Bauer, both of Villingen; Jürgen Krause, Niedereschach, and Wilfried Rohde, Unterkirnach, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 18, 1989, Ser. No. 451,770

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1988, 3842906

Int. Cl.[5] G06K *15/00*

U.S. Cl. 364—519 **23 Claims**



1. A multifunction printer comprising

a main flat plate;

a input controller attached to the main flat plate;

a print unit for printing out of the input data;

a journal device for recording of the data processed in the printer for purposes of data protection or, respectively, documentation wherein the journal device is coordinated in each case to the print unit, which journal device includes a secondary controller selectable by the input controller, where the secondary controller is furnished with an interface and with a data storage memory, where input data can be permanently filed in the data storage memory, and where the input data are recallable again, and where the data can be printed out with the aid of the print unit.

5,053,978

AUTOMATIC BOILER ROOM EQUIPMENT MONITORING SYSTEM

Jeffrey Solomon, 2402 Neptune Ave., Brooklyn, N.Y. 11224

Filed May 26, 1989, Ser. No. 358,255

Int. Cl.[5] G06F *15/74*

U.S. Cl. 364—550 **27 Claims**

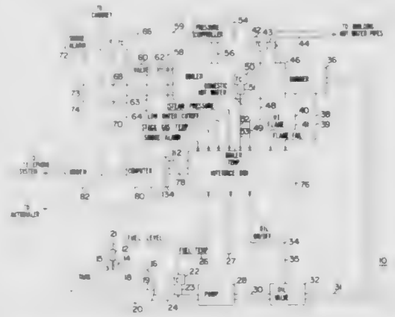
1. A system for automatically monitoring, processing, and storing operating parameters of a boiler room comprising:

(a) means for detecting a level of liquid fuel in a storage tank and generating a fist set of electrical signals indicating the level;

(b) means for measuring temperatures at various locations in the boiler room and generating a second set of electrical signals indicative of the temperatures;

(c) means for monitoring the operating status of a plurality of conventional boiler room equipment and generating a third set of electrical signals indicative of the monitored operating status;

(d) computer means located in the boiler room for selecting from the first, second and third set of electrical signals generated and internally processing and storing the selected electrical signals in accordance with a set of internally programmed instructions; and



(e) means for transmitting the processed signals stored in the computer means from the computer means located in the boiler room to a computer located in a remote location.

5,053,979

SYSTEM AND METHOD FOR AUTOMATICALLY CONTROLLING VEHICLE SPEED SO AS TO TRAIL A PRECEDING VEHICLE

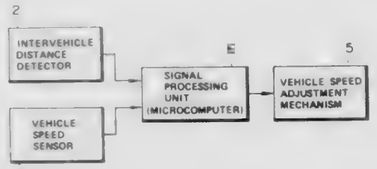
Yoshiyuki Etoh, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 10, 1985, Ser. No. 807,223

Claims priority, application Japan, Dec. 19, 1984, 59-266276

Int. Cl.[5] B60T *7/16;* **G06F** *15/60*

U.S. Cl. 364—565 **9 Claims**



1. A system for automatically trailing another moving vehicle, comprising:

(a) first means for detecting speed of a vehicle in which the system is mounted;

(b) second means for detecting intervehicle distance between the vehicle and the other moving vehicle;

(c) third means for calculating rates of changes of the intervehicle distance detected by said second means over a plurality of different sampling periods so as to derive respective relative speed values between the vehicle and other moving vehicle;

(d) fourth means for selectively outputting one of the relative speed values derived from said third means as the relative speed value according to a magnitude of the derived vehicle relative speed value over one of the sampling periods; and

(e) fifth means for controlling a speed of the vehicle on the basis of the vehicle speed detected by said first means, the intervehicle distance detected by said second means, and the relative speed value selectively output by said fourth means.

5,053,980

METHOD AND APPARATUS FOR LOGIC SIMULATION

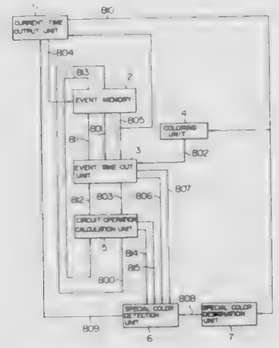
Kiyoshi Kanazawa, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 6, 1989, Ser. No. 319,430

Claims priority, application Japan, Mar. 10, 1988, 63-56616

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—578 **8 Claims**



1. A logic simulation method of a parallel processing type for calculating an operation of a logic circuit to be simulated by using an algorithm of an event driven type, wherein a value calculated as a current simulation time, denominated as current time, is used, and a change of a signal state occurring at an input terminal and an output terminal of an element included in said logic circuit is represented by data denominated as events, said events including

a value, denominated as an event time, representing a time when the change of the signal state has occurred,

a value representing to what state the signal state has changed, and

a value representing the input terminal or the output terminal of the element where the signal state has changed, and

in which algorithm,

an event having an event time equal to the current time is decided to be processible,

the signal state of the output terminal of the element is calculated anew only with respect to the element which is represented by the processible event and the signal state of whose input terminal has changed, and

only when the signal state of the output terminal has changed is an event representing the change of the signal state of the output terminal generated anew, and

wherein each of the events has an identifier for classifying the events into a plurality of groups,

said logic simulation method comprising the steps of:

(a) storing data representing changes of the states of signals applied to the input terminal of said logic circuit as unprocessed event groups;

(b) taking out, from the stored unprocessed event groups, an event having an event time equal to the current time and erasing the event which has been stored;

(c) setting a value to an identifier of the taken-out event;

(d) processing the event, to whose identifier a value has been set, by using the algorithm of the event driven type and storing, as a new unprocessed event, a newly calculated event by the processing using the algorithm of the event driven type;

(e) deciding whether or not an event having an event time equal to the current time is present in the stored unprocessed event groups;

(f) selecting one of values which can be assumed by the identifiers for classifying the events into a plurality of groups;

(g) deciding whether or not an event, to whose identifier a value equal to the selected value has been set, is present in the other stored unprocessed event groups; and

(h) updating the current time when it is decided that an event having the event time equal to the current time is not present in the stored unprocessed event groups, and when it is decided that an event, to whose identifier a value equal to the selected value has been set, is not present in the other stored unprocessed event groups;

said steps (a)–(h) being processible in parallel with one another.

5,053,981

METHOD OF MEASURING ELECTRICAL CHARACTERISTICS OF ELECTRONIC CIRCUIT

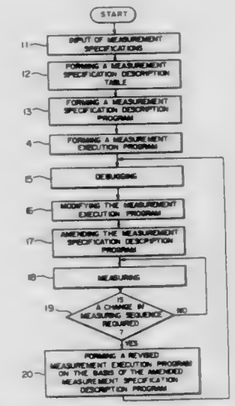
Teruaki Ogata, and Yuko Sudou, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 30, 1989, Ser. No. 428,586

Claims priority, application Japan, Jul. 28, 1989, 1-194009

Int. Cl.[5] G01R *31/28*

U.S. Cl. 364—580 **4 Claims**



1. A method of measuring characteristics of an electronic circuit by means of a measuring apparatus which operates in accordance with a measurement execution program, said method comprising:

expressing a plurality of measurement specifications corresponding to a plurality of measurement items in the form of a measurement specification description table of a fixed-word-length type;

forming a measurement specification description program in which said measurement specification description table is directly reflected;

forming a measurement execution program by appointing a measuring sequence in said measurement specification description program and by removing redundancy and combining programs of a plurality of measuring items which can be measured in parallel;

debugging said measurement execution program by operating said measuring apparatus in accordance with said measurement execution program;

amending said measurement specification description program in accordance with the modification of said measurement execution program affected through the debugging; and

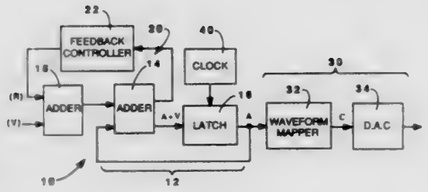
measuring the characteristics of said electronic circuit by said measuring apparatus in accordance with said measurement execution program after said debugging.

5,053,982

VARIABLE MODULUS DIGITAL SYNTHESIZER

Earl W. McCune, Jr., Santa Clara, Calif., assignor to Proxim, Inc., Mountain View, Calif.

Filed Feb. 14, 1989, Ser. No. 310,134
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—721 15 Claims



1. Apparatus for synthesizing a selected output frequency signal from a stable reference frequency input signal, comprising:

means for providing a stable reference input signal having a frequency K;

means for providing a value V indicative of a target output signal frequency, said value V being in the range of integer values between 1 and K;

means for defining a synthesizer modulus M and a rollover value R, where R equals 2^N minus M and N is a positive integer;

an accumulator responsive to said reference input signal for periodically, at the rate of said stable reference input signal, incrementing an accumulated value A by said value V until the accumulated value A exceeds 2^N-1;

said accumulator comprising a first adder electrically coupled to a latch, said latch periodically, at the rate of said reference input signal, storing the accumulated value A, and said first adder adding said value V to the accumulated value A stored in said latch;

reset means for setting the accumulated value A in said accumulator means to a value $A-2^N+R+V$ when the accumulated value A exceeds 2^N-1; and

means for delivering an output signal corresponding to the accumulated value A.

5,053,983

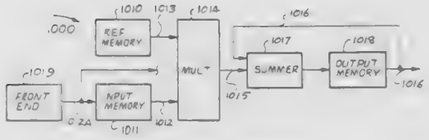
FILTER SYSTEM HAVING AN ADAPTIVE CONTROL FOR UPDATING FILTER SAMPLES

Gilbert P. Hyatt, P.O. Box 846, Cypress, Calif. 90630

Continuation-in-part of Ser. No. 425,731, Sep. 28, 1982, Pat. No. 4,581,715, which is a continuation-in-part of Ser. No. 160,872, Jun. 19, 1980, Pat. No. 4,491,930, Ser. No. 860,257, Dec. 14, 1977, Pat. No. 4,371,923, Ser. No. 101,881, Dec. 28, 1970, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Ser. No. 232,459, Mar. 7, 1972, Pat. No. 4,370,720, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Pat. No. 4,396,976, Ser. No. 302,771, Nov. 1, 1972, abandoned, Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,922, Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276, Ser. No. 402,520, Oct. 1, 1973, abandoned, Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,029,853, Ser. No. 476,743, Jun. 5, 1974, Pat. No. 4,364,110, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 727,330, Sep. 27, 1976, abandoned, Ser. No. 730,756, Oct. 7, 1976, abandoned, Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850, Ser. No. 752,240, Dec. 20, 1976, abandoned, Ser. No. 801,879, May 13, 1977, Pat. No. 4,144,582, Ser. No. 812,285, Jul. 1, 1977, Pat. No. 4,371,953, Ser. No. 844,765, Oct. 25, 1977, Pat. No. 4,523,290, Ser. No. 849,812, Nov. 9, 1977, abandoned, Ser. No. 860,278, Dec. 13, 1977, Pat. No. 4,471,385, and Ser. No. 889,301, Mar. 23, 1978, Pat. No. 4,322,819. This application Apr. 4, 1986, Ser. No. 849,071

Claims priority, application United Kingdom, Dec. 17, 1971, 58814; Canada, Dec. 23, 1971, 130959; Fed. Rep. of Germany, Dec. 23, 1971, 2164190; Japan, Dec. 28, 1971, 47-3974; Switzerland, Dec. 28, 1971, 19086

Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.03 38 Claims



5. A sampled filtering system comprising:

an input circuit for generating input signal samples;

an output memory for storing filtered signal samples;

a detector for generating a control signal in response to detection of a predetermined magnitude of a filtered signal sample stored in said output memory;

a counter for generating a count number signal by counting the control signals generated by said detector; and

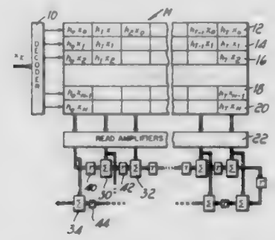
a sampled filter processor for updating the filtered signal samples stored in said output memory in response to the input signal samples generated by said input circuit under control of the count number signal generated by said counter, said sampled filter processor including control logic for enabling of the updating of the filtered signal samples stored in said output memory when the count number signal is less than a predetermined count magnitude and for disabling of the updating of the filtered signal samples stored in said output memory when the count number signal is equal to the predetermined count magnitude.

5,053,984

MEMORY FOR PROGRAMMABLE DIGITAL FILTER

Franco Cavallotti, Turin; Alessandro Cremonesi, Angelo Lodigiano, and Rinaldo Poluzzi, Milan, all of Italy, assignors to SGS Thomson Microelectronics S.R.L., Brianza, Italy

Filed Nov. 21, 1989, Ser. No. 440,021
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.16 1 Claim



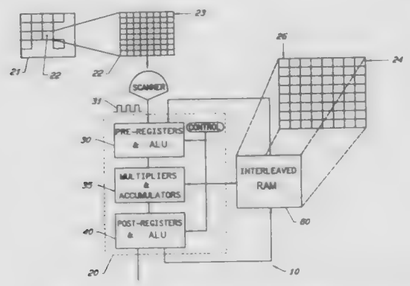
1. Programmable digital filter comprising an arithmetical chain of parallel adders alternated with delay elements, and a memory constituted by a plurality of lines of a plurality of one-bit cells, each being addressable by a decoder controlled by a digital signal to be filtered, each line of memory containing side by side values corresponding to the partial products of successive impulse response coefficients for a value equal to the line address, said memory furthermore comprising a number of read amplifiers equal to the number of cells of one line to read the bits of the addressed line, the outputs of said amplifiers being connected to respective parallel inputs of said adders of said arithmetical chain, characterized in that each memory line contains said values in two's-complement binary form in words which decrease in length by one bit for every increment of 2 in the characteristic of said coefficients starting from the one with lowest characteristic, and in that the output of each read amplifier corresponding to the most significant bit of each value is connected to the corresponding input bit of the associated adder and to all the other most significant input bits.

5,053,985

RECYCLING DCT/IDCT INTEGRATED CIRCUIT APPARATUS USING A SINGLE MULTIPLIER/ACCUMULATOR AND A SINGLE RANDOM ACCESS MEMORY

Rami Friedlander, and Rafi Retter, both of Haifa, Israel, assignors to Zoran Corporation, Santa Clara, Calif.

Filed Oct. 19, 1989, Ser. No. 424,079
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—725 5 Claims



1. A discrete cosine transform/inverse digital cosine transform (DCT/IDCT) integrated circuit processor using a single random access memory and capable of performing two pass DCT and IDCT, comprising

an input buffer for receiving data,

a first arithmetic logic unit connected to said input buffer for receiving and processing groups of incoming data for minimizing subsequent multiplications of the data by DCT coefficients,

a multiplier/accumulator having stored DCT/IDCT coefficients and connected to said first arithmetic logic unit for receiving and multiplying groups of data from said first arithmetic logic by said DCT/IDCT coefficients in first and second passes through said multiplier/accumulator,

an output buffer connected to said multiplier/accumulator for receiving said groups of data after multiplication in first and second passes by said multiplier/accumulator,

a second arithmetic logic unit connected to said output buffer for processing groups of data for IDCT output, for minimizing previous multiplications of the data by IDCT coefficients,

a random access memory for receiving and storing data in rows and in columns, and

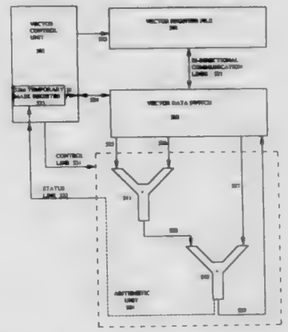
bus means for transferring data from said output buffer and from said second arithmetic logic unit to said random access memory for storage in a row or a column after a first pass through said multiplier/accumulator and for transferring data in a column or a row to said input buffer and first arithmetic logic unit for a second pass through said multiplier/accumulator.

5,053,986

CIRCUIT FOR PRESERVATION OF SIGN INFORMATION IN OPERATIONS FOR COMPARISON OF THE ABSOLUTE VALUE OF OPERANDS

Agha Y. Ahsan, San Jose, and Christopher B. Rockwood, Sunnyvale, both of Calif., assignors to Stardent Computer, Inc., Concord, Mass.

Filed Feb. 21, 1990, Ser. No. 483,074
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—736 8 Claims



1. A computer having:

(1) processing means for processing information;

(2) storage means for storing information;

(3) input/output means for communicating information with at least one peripheral device; and

(4) communication means for communicating information between said processing means, said storage means and said input/output means; wherein said processing means includes:

(5) a first input coupled to said communicating means for receiving a first operand;

(6) a second input coupled to said communication means for receiving a second operand;

(7) comparison means coupled to said first input and said second input, said comparison means for comparing the

absolute value of said first operand and said second operand, said comparison means having N stages;

(8) first sign preservation means coupled to said comparison means, said first sign preservation means for preserving sign information for said first operand, said first sign preservation means having a first N storage means corresponding to said N stages; and

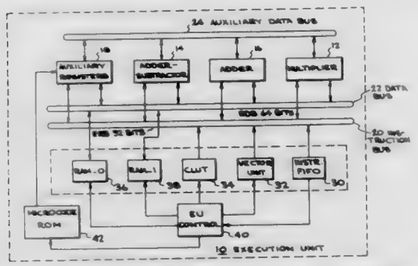
(9) second sign preservation means coupled to said comparison means, said second sign preservation means for preserving sign information for said second operand, said second sign preservation means having a second N storage means corresponding to said N stages.

5,053,987

ARITHMETIC UNIT IN A VECTOR SIGNAL PROCESSOR USING PIPELINED COMPUTATIONAL BLOCKS

Alexander Genusov; Ram B. Friedlander, both of Haifa, Israel; Peter Feldman, Pittsburgh, Pa., and Vlad Fruchter, Haifa, Israel, assignors to Zoran Corporation, Santa Clara, Calif.

Filed Nov. 2, 1989, Ser. No. 430,815
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—736 6 Claims



1. A vector arithmetic execution unit for a vector signal processor, comprising:

a first data bus means (ERB) for transferring data signals and instruction signals between said arithmetic execution unit and storage units of the vector signal processor;

a second data bus means (EDB) for transferring data between locations internal and external to said vector signal processor;

pipelined floating-point multiplier means, coupled to said first and said second data buses, for multiplying two complex numbers together;

pipelined floating-point adder-subtracter means, coupled to said first and said second buses, for adding or subtracting two complex numbers;

auxiliary data register means, coupled to said first and said second data bus means, for storing input operands, output operands, and partial results for said multiplier means and for said adder-subtracter means;

a read-only memory controlled by said execution unit,

means coupling the output of said read-only memory to said auxiliary data register means, and

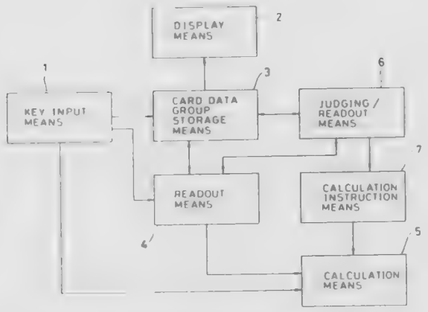
control means for controlling data-flow in said vector arithmetic execution unit including initializing the pipeline operations of said multiplier means and of said adder-subtracter means; operating said multiplier means and said adder-subtracter, and combining partial results of said multiplier and said adder-subtracter into a final result.

5,053,988

DATA PROCESSING APPARATUS

Yasuhiro Taguchi, and Kazuhiko Takata, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 233,256, Jul. 22, 1988, abandoned. This application Aug. 6, 1990, Ser. No. 563,817
Claims priority, application Japan, Jul. 24, 1987, 62-186415
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—900 8 Claims



1. A data processing apparatus comprising:

key input means having a plurality of function keys and character input keys;

display means for displaying inputted data;

card data group storage means for storing a plurality of groups of card data, said group of card data including a plurality of card data, each card data including numerical data and having a storage capacity capable of storing all information needed to display one picture on said display means, said plurality of card data groups each having a link data wherein certain card data groups are grouped together by a desired relationship through said link data;

readout means, operatively connected to said card data group storage means, for reading out a first card data group specified by said key input means from said card data group storage means;

calculation means, operatively connected to said readout means, for calculating said numerical data contained in each card data of said first card data group read out in conformity with a variety of instructions received from said key input means and for obtaining results from the calculations, said results being stored in said card data group storage means as updated data;

judging means, operatively connected to said card data group storage means, for determining whether other card data groups stored in said card data group storage means are grouped with said first card data group based on said link data;

said readout means, in response to said judging means, reading out said other card data groups grouped with said first card data group; and

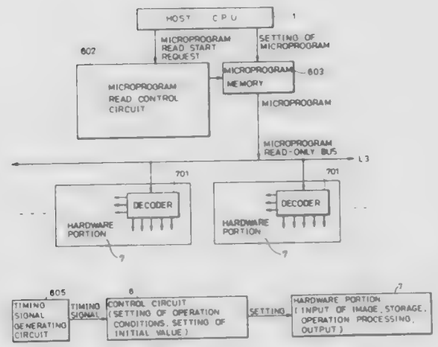
calculation instruction means, responsive to said judging means, for controlling said calculation means to calculate said numerical data of each card data of said other card data groups read out by said readout means after calculating said numerical data contained in each card data of said first card data group.

5,053,989

DIGITAL IMAGE PROCESSING APPARATUS HAVING A MICROPROGRAM CONTROLLER FOR READING MICROINSTRUCTIONS DURING A VACANT PERIOD OF THE IMAGE PROCESSING CIRCUIT

Yasuo Masaki, Kitakatsuragi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1987, Ser. No. 89,558
Claims priority, application Japan, Aug. 27, 1986, 61-201074; Aug. 27, 1986, 61-201075; Aug. 27, 1986, 61-201076
Int. Cl.[5] G06F *9/22, 9/28*
U.S. Cl. 364—900 16 Claims



1. A digital image processing apparatus comprising:

a microprogram memory for storing a microprogram formed by microinstructions,

a microprogram read control circuit connected to said microprogram memory for generating read addresses of said microprogram memory, for controlling a sequence of successive generations of read addresses, and for microprogram memory accessed by the generated read addresses,

a microprogram read-only bus connected to said microprogram memory for transmitting said microinstructions read out from said microprogram memory,

a decoder connected to said microprogram read-only bus for decoding said microinstructions,

an image processing circuit connected to said decoder for processing image data based on an output of said decoder, and for operating periodically at a periodically occurring time interval necessary for scanning the image data of one frame, each periodically occurring time interval including a vacant period in which said image processing circuit is not operated, and a real operation period occurring subsequent to said vacant period and in which said image processing circuit processes said image data, and

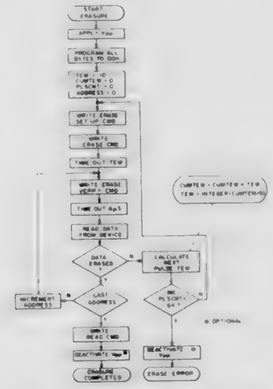
timing signal generating means connected to said microprogram read control circuit for generating a timing signal for designating said periodically occurring vacant period, wherein said microprogram read control circuit, responsive to said timing signal, during said periodically occurring vacant period, controls the readout of said microinstructions necessary for operation of said image processing circuit during said real operation period from said microprogram memory.

5,053,990

PROGRAM/ERASE SELECTION FOR FLASH MEMORY

Jerry A. Kreifels, Citrus Heights; Alan Baker, Fair Oaks; George Hoekstra, Santa Clara; Virgil N. Kynett, El Dorado Hills; Steven Wells, Orangevale, and Mark Winston, El Dorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 17, 1988, Ser. No. 157,361
Int. Cl.[5] G11C *11/407*
U.S. Cl. 364—900 6 Claims



1. An improved type of erasable and programmable read-only memory fabricated on a silicon substrate and employing a plurality of memory cells each of which has a floating gate and employing fixed numbers of data, address and control lines, wherein said data lines provide a bus for transporting data to and from said memory cells, wherein the improvement comprises using said fixed number of data lines to enter program and erase instructions as data to a port controller on said substrate, said port controller generating appropriate control signals for programming and erasing said memory cells electrically, said erasing accomplished by a method comprising the steps of:

(a) writing an erase setup command to said port controller during a first write cycle, said command originating from a microprocessor;

(b) writing an erase command to said port controller during a second write cycle, said command originating from said microprocessor;

(c) erasing said memory cells using an erase pulse during an erase cycle by one of said control signals from said port controller, said erase pulse having a predetermined pulse-width;

(d) writing an erase verify command to said port controller during a third write cycle and providing a designated address to access a location in said memory, said command and address location originating from said microprocessor;

(e) generating verify voltages in said memory for reading contents of said location in memory, said verify voltages acting as reference voltages set to a predetermined level, such that said contents of said location are compared with said verify voltages to determine if said location is erased, said verify voltages generated under control of said port controller; and

if said location is not erased then incrementing said pulse-width of said erase pulse of said erase cycle and under

control of said microprocessor repeating steps (a) through (e) until said location is erased;

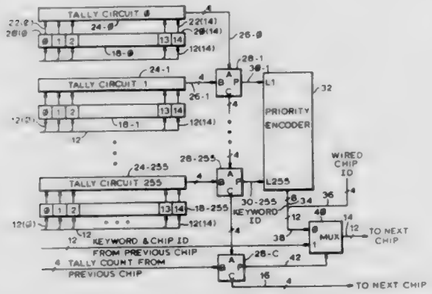
(f) repeating steps (d) and (e) until all address locations are erased and verified.

5,053,991

CONTENT-ADDRESSABLE MEMORY WITH SOFT-MATCH CAPABILITY

James L. Burrows, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 6, 1989, Ser. No. 418,300
Int. Cl.[5] G11C *15/00*
U.S. Cl. 365—49 **8 Claims**



1. For containing key words, receiving a data-word signal representing a data word, comparing the data word with the key words, and generating a memory output representative of the results, a content-addressable memory comprising:

A. word-location means forming a plurality of word locations, each word location having contents representing one of the key words and having an output word associated therewith;

B. a distance circuit associated with each word location, all distance circuits being simultaneously responsive to the data signal and the key words represented by the contents of their associated word locations to determine the distances between their respective key words and the data word represented by the data signal and to generate respective distance outputs representative of the determined distances; and

C. comparison means for receiving the distance signals from all of the distance circuits, comparing the distances represented thereby, identifying the word location whose contents represent the key word closest to the data word, and generating as the memory output a signal representing the output word associated with the identified word location.

5,053,992

PREVENTION OF INSPECTION OF SECRET DATA STORED IN ENCAPSULATED INTEGRATED CIRCUIT CHIP

Robert C. Gilberg; Chinh Hoang, both of San Diego, and James E. Smith, Escondido, all of Calif., assignors to General Instrument Corporation, New York, N.Y.

Filed Oct. 4, 1990, Ser. No. 592,650
Int. Cl.[5] B11C *11/407*
U.S. Cl. 365—53 **9 Claims**

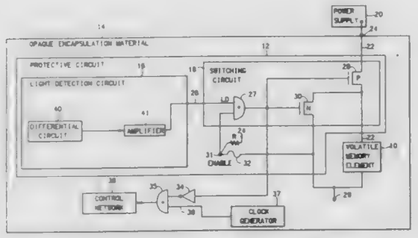
1. An integrated circuit chip including a secure memory element that stores secret data, an opaque layer of material encapsulating the chip, and means for eliminating the secret data from the secure memory element in the event that the encapsulation material is removed from the chip, wherein the eliminating means comprise

a protective circuit encapsulated by the encapsulation material and coupled to the secure memory element, with the protective circuit including

a light sensitive element having a current characteristic that has a detectable change upon exposure to light;

means for detecting said current change when the light sensitive element is exposed to light; and

switching means coupled to the secure memory element and to the detecting means for causing the secret data to



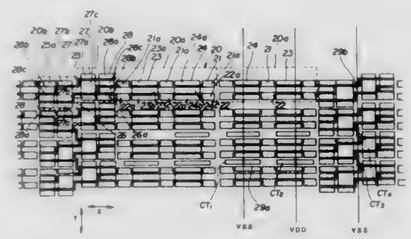
be removed from the secure memory element in response to said current change produced by the light sensitive element when the light sensitive element is exposed to light, such that should the encapsulation material be removed from the chip, the secret data is eliminated from the memory element.

5,053,993

MASTER SLICE TYPE SEMICONDUCTOR INTEGRATED CIRCUIT HAVING SEA OF GATES

Daisuke Miura, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 8, 1990, Ser. No. 490,397
Claims priority, application Japan, Jun. 8, 1987, 62-142493; Jun. 8, 1987, 62-142499
Int. Cl.[5] H01L *27/105, 27/118*
U.S. Cl. 365—104 **18 Claims**



1. A master slice type semiconductor integrated circuit comprising:

a semiconductor chip;

input/output cells arranged in a peripheral portion of said semiconductor chip; and

basic cells arranged in a portion of said semiconductor chip excluding the peripheral portion of said semiconductor chip,

each of said basic cells including a first portion containing complementary MOSFETs in the form of pairs of one N-channel MOSFET and one P-channel MOSFET,

the P-channel MOSFETs of said pairs comprising first and second P-type regions spaced from each other in a first column direction by an N-type channel region insulatingly overlaid by a conductive gate electrode;

the N-channel MOSFETs of said pairs comprising first and second N-type regions spaced from each other in said first column direction by an P-type channel region insulatingly overlaid by a conductive gate electrode;

said first regions, second regions, channel regions, and gate electrodes of the N-channel MOSFETs of said pairs being

located adjacent said first regions, second regions, channel regions, and gate electrodes of the P-channel MOSFETs of said pairs, respectively, in a direction perpendicular to said first column direction;

each of said basic cells further including a second portion containing MOSFETs of a single channel type;

said second portion of each of said basic cells being located adjacent said first portion of a respective one of said basic cells in a direction perpendicular to said first column direction;

said second portion of each of said basic cells containing at least one MOSFET comprising first and second regions of a first conductivity type, spaced from each other in said first column direction by a second conductivity type channel region insulatingly overlaid by a conductive gate electrode;

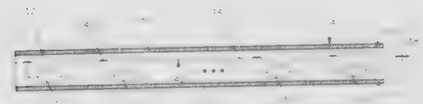
the conductive gate electrode of said at least one MOSFET being offset in said first column direction from the conductive gates of any of the MOSFETs of said first portion containing complementary MOSFETs.

5,053,994

METHOD AND APPARATUS FOR APPLYING A POTENTIAL DIFFERENCE ACROSS A SELECTED REGION OF A SUBSTRATE

Jeff A. Bullington, Albuquerque, N. Mex., assignor to Radiant Corporation, Albuquerque, N. Mex.

Filed Jul. 31, 1989, Ser. No. 387,658
Int. Cl.[5] G11C *11/42, 13/04*
U.S. Cl. 365—112 **2 Claims**



1. A method for applying a voltage to a selected circuits in a planar array of circuit elements, each said circuit element comprising a first and second terminals, said method comprising the steps of:

providing a layer of photo-conductive material in contact with said first terminals, said material being an insulator in the absence of light having a wavelength less than a predetermined wavelength;

providing a first electrode bonded to the surface of said layer of photo-conductive material which is not in contact with said first terminals, said electrode comprising a layer of conductive material;

providing a second electrode in contact with said second terminals;

providing a potential difference between said first and second electrodes; and

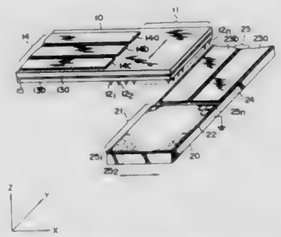
illuminating said layer of photo-conductive material in the region between said electrode and said first terminal of said selected circuit elements with light having a wavelength less than or equal to said predetermined wavelength.

5,053,995

TUNNEL CURRENT DATA STORAGE APPARATUS HAVING SEPARATE LEVER BODIES

Hiroshi Kajimura, Tokyo; Toshihito Kouchi, Tama; Akitoshi Toda, Kunitachi; Yasuo Isono, Fussa; Yoshiyuki Mimura; Hiroko Ohta, both of Hachioji, and Ryouhei Shimizu, Koshigaya, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1990, Ser. No. 468,640
Claims priority, application Japan, Feb. 3, 1989, 1-25183
Int. Cl.[5] G11C *13/00, 7/00*
U.S. Cl. 365—151 **20 Claims**



1. A data storage apparatus for storing data, comprising:

a first lever body having a driving section for driving said first lever body in a predetermined direction;

a second lever body having a driving section for driving said second lever body in a direction substantially perpendicular to said predetermined direction of said first lever body;

a recording medium, formed on a portion of one of said first and second lever bodies, for recording said data;

detection means comprising a plurality of probes disposed on a portion of the other of said first and second lever bodies, and positioned opposite and spaced from said recording medium by a predetermined distance, said detection means detecting changes at predetermined positions on said recording medium; and

voltage application means for alternately applying preselected voltage to said driving sections of said first and second lever bodies to displace said detection means and said recording medium, relative to each other in different dimensions, thereby enabling multi-dimensional scanning of said recording medium.

5,053,996

DUAL STATE MEMORY STORAGE CELL WITH IMPROVED DATA TRANSFER CIRCUITRY

Wiliam C. Slemmer, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 26, 1991, Ser. No. 661,555
Int. Cl.[5] G11C *11/412*
U.S. Cl. 365—156 **20 Claims**

1. A dual storage cell, comprising:

a first memory cell, comprising:

first and second cross-coupled inverters, driving first and second data nodes, respectively; and

an isolation circuit, having a conduction path coupled between said first and second cross-coupled inverters and a first power supply node, and having a control terminal;

a second memory cell, comprising:

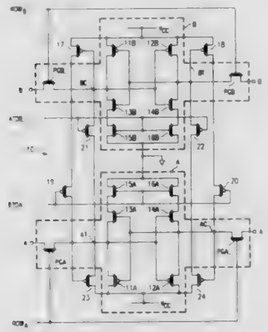
first and second cross-coupled inverters, driving first and second data nodes, respectively; and

a first transfer circuit, comprising:

a first series circuit coupled between the first data node of said first memory cell and a second power supply node, having a control terminal for receiving a transfer enable signal enabling said first series circuit to couple said second power supply node to said first data node of said

first memory cell, responsive to the data state of said second memory cell; and

a second series circuit coupled between the second data node of said first memory cell and said second power supply node, having a control terminal for receiving a transfer enable signal enabling said second series circuit to couple said second power supply node to said second



data node of said first memory cell, responsive to the data state of said second memory cell;

wherein said control terminal of said isolation circuit is controlled in such a manner as to isolate said first and second cross-coupled inverters from said first power supply node during a portion of the time that said transfer enable signal enables said first and second series circuits.

5,053,997

DYNAMIC RANDOM ACCESS MEMORY WITH FET EQUALIZATION OF BIT LINES

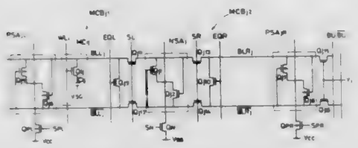
Hiroshi Miyamato, and Michihiro Yamada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 132,646

Claims priority, application Japan, Feb. 10, 1987, 62-28782

Int. Cl.[5] G11C *7/00, 11/40*

U.S. Cl. 365—189.06 **16 Claims**



1. A dynamic random access memory comprising:

memory cells arranged in a matrix of rows and columns, a plurality of word lines each associated with a respective row and a plurality of bit line pairs each associated with a respective column, each bit line pair comprising a plurality of divided bit line pair sections,

sense amplifying means for amplifying a potential difference of each said divided bit line pair section so that one divided bit line of a respective section is at a first potential and the other divided bit line of said respective section is at a second potential, and

an equalizing means in each divided bit line pair section for coupling together bit lines of each divided bit line pair section in response to an equalizing signal, said equalizing means comprising first switching means for receiving said equalizing signal;

second switching means for coupling said divided bit line pair sections of each bit line pair, and

timing controller means for applying activation signals to the equalizing means of each divided bit line pair section prior to a sensing operation, said timing controller means comprising means for continuing equalization of a first divided bit line pair section of a given bit line pair when a sensing operation begins in a second bit line pair section of said given bit line pair.

5,053,998

SEMICONDUCTOR MEMORY DEVICE WITH DUAL DRIVERS TO SENSE AMP ARRAY

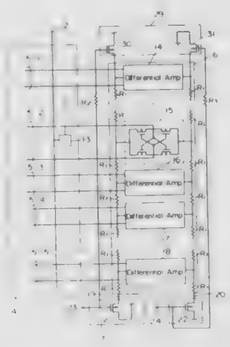
Yasushi Kannan, Otokuni; Takashi Taniguchi, Moriguchi; Michiharu Shikata, Kusatsu, and Tatsumi Sumi, Mishima, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 15, 1990, Ser. No. 493,686

Claims priority, application Japan, Mar. 15, 1989, 1-67079

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—194 **9 Claims**



1. A semiconductor memory device comprising:

a memory cell array having a plurality of memory cells arranged in the form of a matrix;

a means for reading into a plurality of data lines data from a plurality of memory cells connected to a specific word line by activating said specific word line of said memory cell array;

a sense amplifier consisting of a plurality of differential amplifiers connected to said plurality of data lines respectively for amplifying the data read into said plurality of data lines;

first and second sense amplifier drivers connected to the opposite ends of a restore signal line and a drive signal line respectively which are in turn connected to said plurality of differential amplifiers of said sense amplifiers, and

a delay means for giving a time difference to an operation start timing of said first and second sense amplifier drivers.

5,053,999

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY AND CAPABLE OF SEQUENTIALLY SELECTING MEMORY CELL LINES

Tetsuya Matsumura, and Masahiko Yoshimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1990, Ser. No. 500,328

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **14 Claims**

2. A semiconductor memory device comprising:

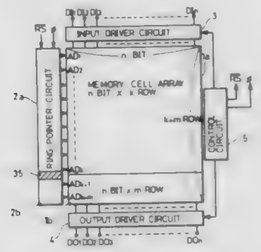
a memory cell array having memory cells for storing data signals, said memory cells being disposed on k memory cell lines in said memory cell array,

line selecting means connected to said memory cell array responsive to an externally supplied clock signal for sequentially selecting said k memory cell lines,

accessing means connected to said memory cell array for accessing memory cells on a memory cell line selected by said line selecting means,

selection invalidating means connected to said accessing means responsive to an externally supplied first designation for invalidating the selection of a designated memory cell line by said line selecting means,

redundancy memory cells for redundancy, said redundancy memory cells being disposed on at least one redundancy memory cell line, and



selection increasing means connected to said line selecting means responsive to an externally supplied second designation for increasing memory cell lines to be sequentially selected by said line selecting means,

said line selecting means sequentially selecting said plurality of memory cell lines and redundancy memory cell lines in response to the clock signal,

wherein said line selecting means comprises ring pointer means connected to said memory cell array responsive to the clock signal for sequentially and repeatedly outputting a selection signal for sequentially selecting memory cell lines.

5,054,000

STATIC RANDOM ACCESS MEMORY DEVICE HAVING A HIGH SPEED READ-OUT AND FLASH-CLEAR FUNCTIONS

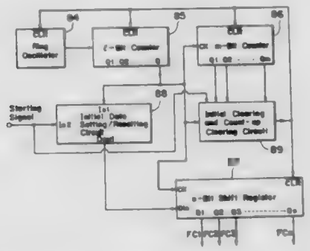
Fumio Miyaji, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 312,865

Claims priority, application Japan, Feb. 19, 1988, 63-36711; Feb. 19, 1988, 63-36712; Feb. 20, 1988, 63-37908

Int. Cl.[5] G11C *7/00, 8/00*

U.S. Cl. 365—218 **3 Claims**



1. A semiconductor memory device having a flash-clear function, comprising:

a memory cell array segmented into a plurality of memory cell groups;

a flash-clear circuit provided in common for the plurality of memory cell groups for delivering flash-clearing signals at different timings to the plurality of memory cell groups to flash-clear memory cells of the plurality of memory cell groups, wherein the flash-clear circuit includes:

a ring oscillator for generating clock pulses,

a counter for setting a flash-clearing time for each memory cell group and for counting a number of the plurality of memory cell groups,

a shift register for supplying flash-clearing signals at successively delayed timings in an order to respective ones of the plurality of memory cell groups, and

an initial data setting/resetting circuit for providing data to the shift register.

5,054,001

TRANSISTOR BREAKDOWN PROTECTION CIRCUIT

Pierre Guillot, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

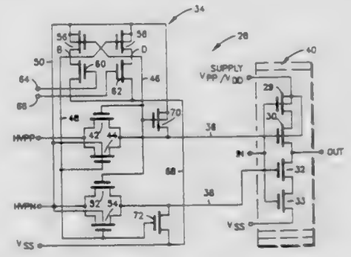
PCT No. PCT/EP89/00917, § 371 Date Apr. 16, 1990, § 102(e) Date Apr. 16, 1990, PCT Pub. No. WO90/02405, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 3, 1989, Ser. No. 474,008

Claims priority, application United Kingdom, Aug. 19, 1988, 8819733

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—226 **9 Claims**



1. A high voltage transistor breakdown protection circuit comprising:

protecting means having a first and a second input;

protection control means coupled to said first and second inputs of said protecting means to apply first and second signals thereto,

said protecting means assuming a protecting or a non-protecting mode in dependence on said protection control means applying to said first and second inputs first and second combinations of said first and second signals, characterised by,

said protecting means being arranged to assume a third mode and a fourth mode in dependence on said protection control means applying to said first and second inputs third and fourth combinations of said first and second signals.

5,054,002

MEMORY UNIT WITH COMPENSATING DELAY CIRCUIT CORRESPONDING TO A DECODER DELAY

Kazuki Ninomiya, and Seiji Yamaguchi, both of Osaka, Japan, assignors to Matsushsita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 3, 1989, Ser. No. 331,784

Claims priority, application Japan, Apr. 5, 1988, 63-83305

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—233 **1 Claim**

1. A memory unit comprising:

an array of memory cells which has a capacity of n-words by m-bits where the characters "m" and "n" denote preset natural numbers;

word lines connected to the memory cells;

bit lines connected to the memory cells;

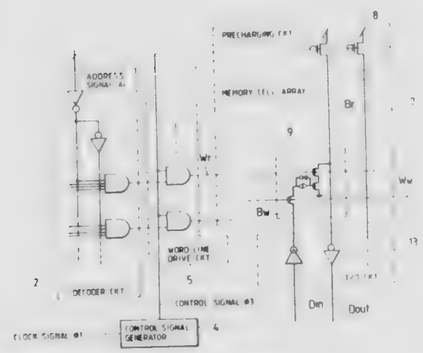
a decoder receiving an address signal at a timing which follows a timing of an occurrence of a clock signal by a given time t1, the address signal being in synchronism with the clock signal and having k-bits where the character "k" denotes a preset natural number which satisfies a relationship as "$2^k \geqq n$", the clock signal having a preset period t0, the decoder decoding the address signal into a word signal and outputting the word signal at a timing which follows a timing of the reception of the address signal by a given time t2;

delaying means for delaying the clock signal by a preset time "t" and thereby converting the clock signal into a control signal;

means for performing an access to a word of the memory cells via one of the word lines in accordance with the word signal at a timing determined by the control signal; and

means for precharging the bit lines at a timing determined by the control signal;

wherein the preset time "t" is longer than a sum of the times t1 and t2 but shorter than a half of the period t0, and wherein the delaying means has a part substantially identical in structure to a part of the decoder to adjust the time "t" in agreement with an unwanted variation of the time t2 to compensate for the unwanted variations of the time t2,



wherein the delaying means comprises:

a first flip-flop triggered by the clock signal and having an input terminal and an inverted output terminal connected to each other, the first flip-flop having a non-inverted output terminal;

a first delay circuit having an input terminal connected to the non-inverted output terminal of the first flip-flop;

an inverter having an input terminal receiving the clock signal;

a second flip-flop triggered by an output signal from the inverter and having an input terminal, a non-inverted output terminal, and an inverted output terminal;

an AND gate having a first input terminal connected to the non-inverted output terminal of the first flip-flop, a second input terminal connected to the inverted output terminal of the second flip-flop, and an output terminal connected to the input terminal of the second flip-flop:

a second delay circuit having an input terminal connected to the non-inverted output terminal of the second flip-flop:

an exclusive OR gate having first and second input terminals connected to output terminals of the first and second delay circuits respectively; and

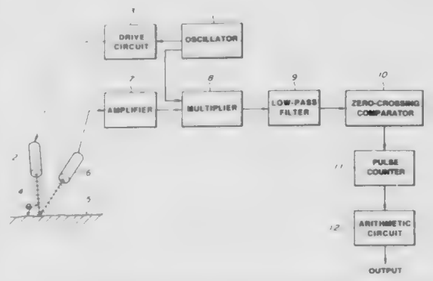
means for deriving the control signal from an output signal from the exclusive OR gate.

5,054,003

ULTRASONIC GROUND SPEEDOMETER UTILIZING DOPPLER EFFECT

Hiroshi Kobayashi, Yokohama; Toshiya Kimura, Yokosuka, and Masami Negishi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 26, 1990, Ser. No. 514,014
Claims priority, application Japan, Apr. 28, 1989, 1-107319
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—91 **6 Claims**



1. An ultrasonic ground speedometer utilizing Doppler effect comprising:

ultrasonic transmitting means for outputting an ultrasonic wave having a particular wavelength at a predetermined angle against a road surface;

ultrasonic receiving means for receiving a reflected ultrasonic wave caused by reflection of the output ultrasonic wave from the road surface;

arithmetic means for deriving ground speed from Doppler shift between frequencies of the output ultrasonic wave from said ultrasonic transmitting means and the reflected ultrasonic wave received by said ultrasonic receiving means; and

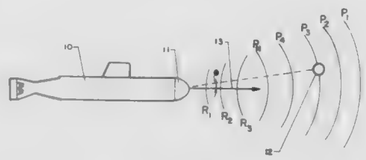
means for setting said particular wavelength to a value within a range of 2.6 mm to 3.4 mm so as to enhance a received efficiency for the reflected ultrasonic wave, said received efficiency being dependent on a product of a ratio of propagation in-air of the output ultrasonic wave and a reflectivity of the output ultrasonic wave with regard to the road surface.

5,054,004

METHOD OF ACTIVE SONAR DETECTION OF A STATIONARY TARGET

Dan Gittings, Moorestown, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1990, Ser. No. 590,272
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—100 **2 Claims**



1. In an active sonar system for detecting the presence of a stationary target located in a medium, said system residing aboard a moving vessel having means for transmitting successively a plurality of sonic pings through the medium, means for receiving a plurality reflections of said sonic pings to form a

series, means for converting said plurality of received reflection pings of said plurality of sonic pings from said target to a digitized form at a preselected frequency using a plurality of analog-to-digital converters, means for shifting each of said plurality of digitized reflections by a delay corresponding to a distance that said vessel moves during each of said plurality of successive transmission time intervals, means for storing and summing said plurality of said digitized reflections in a computer, a method of active sonar detection comprising the steps of:

providing said computer for storing and processing said plurality of reflections;

transmitting said plurality of sonic pings through said medium being successively transmitted at time intervals to form said series;

receiving said plurality of reflections each member thereof related to a corresponding member of said plurality of transmitting sonic pings;

storing each of said plurality of reflection in said computer;

digitizing each of said plurality of reflections using said plurality of analog-to-digital converters at the preselected frequency;

shifting each of said plurality of reflections by a delay corresponding to a distance moved by said vessel wherein said delay is given by an equation

$$\left[\frac{V}{3600 \times \frac{1}{f} \times \frac{V_s}{6000} \times \frac{1}{2\Delta T}}\right] \mathrm{Cos}\theta$$

where

V is the vessel speed in knots,

f is the sampling frequency of said A/D converter,

V_s is the average speed of sound in the medium,

ΔT is said transmission time interval between successive sonic pings,

θ is an angle formed between a travel direction of the moving vessel and said target; and

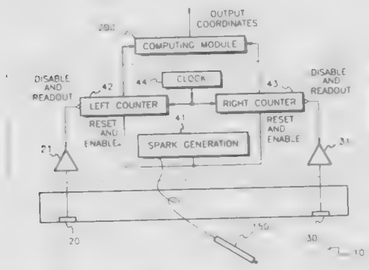
repetitively calculating in said computer for each of said transmitted series a sum of said shifted and digitized reflections wherein said sum indicates detection of said target when said sum attains a threshold value.

5,054,005

APPARATUS AND METHOD FOR DETERMINING TRAVEL TIME OF ACOUSTIC ENERGY

Stanley Schorum, Madison, Conn., assignor to Science Accessories Corp., Stratford, Conn.

Filed Mar. 16, 1990, Ser. No. 495,361
Int. Cl.[5] G01S *3/80;* **G08C** *21/00*
U.S. Cl. 367—127 **22 Claims**



1. A method for determining the transit time of acoustic energy travel between a transmitter location and a receiver location, comprising the steps of:

providing an electrode pair spark gap at the transmitter location;

providing an acoustic receiver at the receiver location;

energizing the spark gap to produce a spark by coupling an electrical potential across said electrode pair;

sensing the generation of a spark at the spark gap, and generating an initializing signal in response thereto;

initializing a timer in response to said initializing signal;

detecting, at the receiver location, the receipt of acoustic energy from the spark, and generating a terminating signal in response thereto; and

terminating the timer in response to said terminating signal;

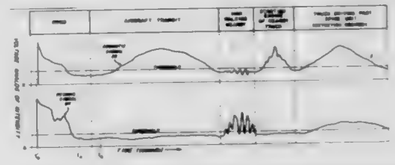
whereby the time measured by the timer is indicative of the transit time of acoustic energy travel between said transmitter and receiver locations.

5,054,006

SEISMIC-ACOUSTIC DETECTION DEVICE

George A. Gimber, Hatboro; Edward J. Cotilla, Feasterville; Salvatore R. Picard, Hatboro, and Robert F. Starry, Horsham, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 19, 1970, Ser. No. 14,834
Int. Cl.[5] H04B *1/06*
U.S. Cl. 367—136 **9 Claims**



1. A detection system for indicating the presence of an object generating sound and seismic vibration comprising:

a seismic detector means responsive to vibration of a predetermined duration and above a predetermined level for producing a first output signal;

an acoustic detector means responsive to sound for producing a second output signal replicative of the sound, and a third output signal when the sound exceeds a predetermined level; and

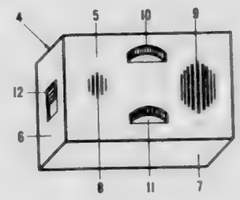
control means responsive to said first and third output signals for controlling transmission of said second output signal.

5,054,007

HANDCLAP ACTIVATED CAT REPELLING DEVICE

Rod McDonough, 1625 Hopper Ave., Santa Rosa, Calif. 95403

Filed Dec. 14, 1990, Ser. No. 627,754
Int. Cl.[5] H04B *1/02*
U.S. Cl. 367—139 **3 Claims**



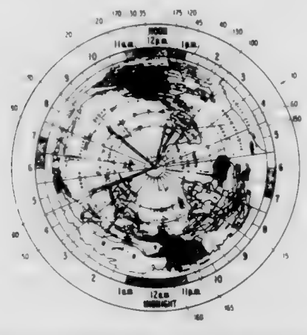
1. A handclap activated cat repelling device comprising:

a housing having external dimensions sufficiently compact to facilitate convenient placement on indoor surfaces;

means within said housing for detecting an audio signal as produced by said handclap, said housing including an

externally accessible adjustment means for regulating sensitivity of said detecting means to said audio signal;
means for transforming said audio signal into an electrical impulse;
means for converting said electrical impulse into an audible alarm sound which is detectable by and repulsive to cats;
externally accessible adjustment means for regulating the output volume of said audible alarm sound;
means for limiting the duration of said audible alarm sound; and
a power source for providing electrical current to said device.

5,054,008
WORLD TIME DEVICE
Dwight Darling, R.R. No. 1, Brockville, Ontario, Canada K6V 5T1
Filed Oct. 16, 1989, Ser. No. 421,989
Int. Cl.[5] G04B *19/22*
U.S. Cl. 368—27 **5 Claims**



1. A device for determining the time in any location in the world relative to a selected geographical area, said device comprising:
(i) a frame;
(ii) a circular world map positioned over said frame and rotatable relative to said frame, wherein said world map which includes a modified south pole projection of the world rotates about the center point of said map corresponding to the south pole and is divided into twenty-four geographical time areas according to the local time, wherein said geographical time areas are colour coded such that each adjacent area differs in colour;
(iii) a first time zone identifier defined by a circle located on said frame and substantially concentric with said map, said first time zone identifier being substantially evenly divided into twenty-four segments marked with your indications as for a calibrated twenty-four hour clock scale; and
(iv) a second time zone identifier defined by an annular band located around the perimeter of said rotatable circular map, said second time zone identifier being evenly divided into twenty-four segments distinguished by a different adjacent colour, wherein every said second time zone segment is associated with a proximate geographical time area having the same colour;
whereby aligning a second time zone segment associated to said selected geographical area to a first time zone segment according to the known local time of said selected geographical area, the actual local hour of said any location in the world can be identified by reading the hour indication on the first time zone identifier which is adjacent to a second time zone segment associated with said any location in the world.

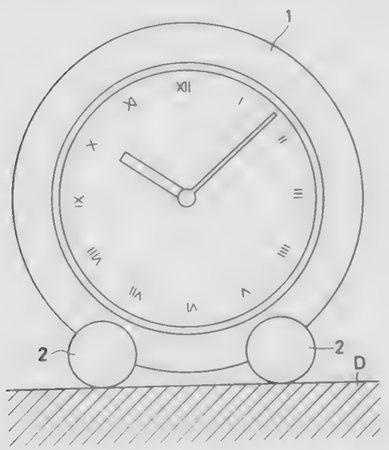
5,054,009
MOTOR, IN PARTICULAR, FOR DRIVING A CLOCKWORK
Roland Sudler, Frankfurt am Main, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 4, 1989, Ser. No. 389,969
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1988, 3828465
Int. Cl.[5] H02K *37/00;* **G04F** *5/00*
U.S. Cl. 368—157 **10 Claims**



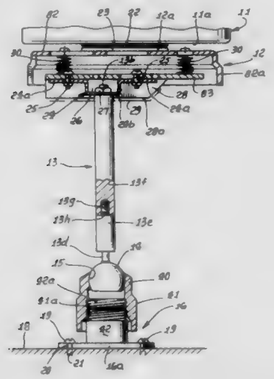
1. A motor, particularly for electrical drive of a clockwork, comprising
a shaft, and a rotor which is mounted rotatably together with the shaft, the rotor comprising a permanent magnet with diametrically opposite permanent magnet poles;
a coil arrangement with coils which are arranged, outside of and enclosing the rotor, at an angular distance apart of, particularly 90° about the shaft to permit a two-phase energization of the coils, each coil lying in a plane which includes an axis of said shaft;
a coil body of non-ferromagnetic material for supporting the coils, said shaft being rotatable relative to said coil body, the coil body being of cylindrical shape on the inside and being formed on the outside with webs spaced at equal distances apart along the circumference of the coil body, the webs being of cylindrical shape on the outside; and
a screening ring of a material of high residual coercive field strength disposed concentrically over the coil body for interaction with magnetic fields produced by currents in the coils to produce a remanent bias field retained after deenergization of the coils.

5,054,010
TABLE CLOCK
Mitsuo Wada, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 1, 1989, Ser. No. 444,630
Claims priority, application Japan, Dec. 2, 1988, 63-157318[U]
Int. Cl.[5] G04B *37/00*
U.S. Cl. 368—276 **7 Claims**

1. A table clock comprising: a casing, a timepiece movement disposed in the casing, and at least two pedestals attached to an outer periphery of said casing, each of said pedestals being slidably retained on said casing with a rear end thereof projecting rearwardly of a rear surface of said casing so that the attitude of the clock may be optionally changed.



5,054,011
ADJUSTABLY MOUNTED PORTABLE COMPACT DISC PLAYER
Roger J. Alves, Simi Valley, Calif., assignor to Scosche Industries, Inc., Moorpark, Calif.
Filed Apr. 25, 1989, Ser. No. 342,969
Int. Cl.[5] G11B *33/00*
U.S. Cl. 369—12 **23 Claims**



1. An adjustable mounting means for a compact disc player, the combination comprising:
a) a platform to support the player, the player attached to the platform,
b) an arm supporting the platform,
c) ball and socket swivel elements, one of the elements supporting the arm, and
d) a bracket supporting the other of the ball and socket elements,
e) the socket element clamping the ball element to frictionally resist relative swiveling thereof,
f) a nut carried by the bracket to progressively cause the socket element to clamp the ball element in response to nut and socket rotation in one direction,
g) the socket element integral with the nut and defining a slot into which the arm is selectively rotatable as the ball element swivels relative to the socket element, whereby the arm may rotate to an extreme angle relative to the bracket,
h) and including vehicle passenger compartment panel structure to which said bracket is attached and oriented so that the said bracket, nut and socket element are inclined relative to horizontal, and said slot is oriented to allow extreme upward pivoting of the arm relative to the inclined socket element.

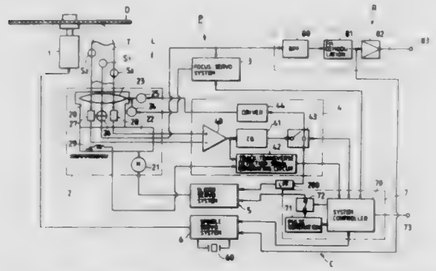
5,054,012
SOUND REPRODUCING DEVICE FOR PLAYING A RECORD DISC HAVING A PLURALITY OF RECORDED GROOVES
Eishi Koike, Sagamihara, and Yasuhiko Yusa, Machida, both of Japan, assignors to Ozen Corporation, Machida, Japan
Continuation of Ser. No. 327,762, Mar. 23, 1989, Pat. No. 4,876,678. This application Aug. 24, 1989, Ser. No. 397,872
Claims priority, application Japan, Mar. 23, 1988, 63-68702
Int. Cl.[5] G11B *17/22, 31/00;* **A63H** *3/33*
U.S. Cl. 369—31 **4 Claims**

1. A simplified sound reproducing device comprising:
(a) a casing;
(b) a record disc unit disposed in the casing and having a plurality of recorded grooves thereon which define a recorded face thereof;
(c) a center pin disposed in the casing, the disc unit being rotatably supported on the center pin;
(d) a pickup for playing a selected groove on the recorded face;
(e) means for rotating the disc unit about the center pin.
(f) a fixed indexing ring on the outside of the casing, the indexing ring having a plurality of indexing symbols thereon;
(g) a rotatable index setting knob disposed at an end of the center pin and partially extending outside of the casing to allow grasping thereof by a user of the device; the index setting knob comprising means for indicating a currently selected indexing symbol on the indexing ring; and
(h) means for fixing a given orientation of the indicating means, once selected, during playing of a selected groove and thereafter until another indexing symbol is selected;
wherein playing of a selected groove is effected by rotating the disc unit, with the means for rotating, about the center pin with the pickup engaged in the selected groove.

5,054,013
TRACK TRANSVERSE DETECTION SIGNAL GENERATING CIRCUIT

Katsumi Kawamura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 13, 1990, Ser. No. 492,165
Claims priority, application Japan, Mar. 13, 1989, 1-60071
Int. Cl.[5] G11B *7/00, 7/08*
U.S. Cl. 369—44.28 **8 Claims**



1. A track transverse detection signal generating circuit for detecting a track jumping operation of an optical pickup in an optical apparatus for reproducing information recorded on an information recording medium, which comprises;

presence signal amplifying means for amplifying a presence signal of an optical spot for reading information on a recording track of said optical information recording medium, said presence signal having an amplification level and equalization characteristics;

presence signal comparison means for receiving said presence signal which has been amplified and transmitted from said presence signal amplifying means, for making a comparison between said amplified presence signal and a reference value, and for transmitting a track transverse detection signal indicating that said optical spot for reading information has traversed said recording track;

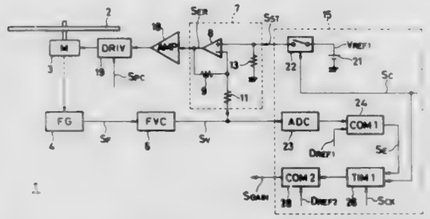
speed detecting means for detecting a moving speed of the pickup in a radial direction of the pickup; and

means for controlling said amplification level, said equalization characteristics or a reference level of said presence signal comparison means in response to said moving speed of said pickup.

5,054,014
OPTICAL DISK RECORDING/REPRODUCING APPARATUS AND ROTARY DRIVE THEREFOR

Hiroyuki Ito; Hidekazu Hattori, both of Tokyo, and Satoshi Kitani, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,527
Claims priority, application Japan, Feb. 15, 1989, 1-035665
Int. Cl.[5] G11B *19/12*
U.S. Cl. 369—190 **2 Claims**



1. An apparatus for rotationally driving a disk comprising:

a spindle motor for rotationally driving a disk;

servo means for controlling the rotation of said spindle motor and having an adjustable gain; and

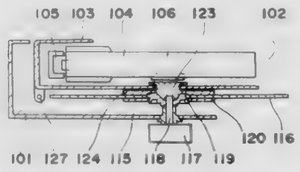
control means for detecting a response of said spindle motor upon activation thereof, and adjusting the gain of said servo means on the basis of said response;

said control means including means for activating said spindle motor, and rotational speed detecting means including means for receiving an analog signal proportional to the rotation of said spindle motor, analog/digital converting means for converting said analog signal proportional to the rotation of said spindle motor to a digital output signal, latching means for latching said digital output signal from said analog/digital converting means in response to a latch signal, means for producing an activation signal indicating the activation of said spindle motor, timer means for counting a clock signal on the basis of said activation signal and outputting said latch signal to said latching means when a count of said clock signal reaches a predetermined value, comparing means for comparing said digital signal latched by said latching means with a reference value to produce a comparison output, and means for producing a control signal for switching the gain of said servo means on the basis of the comparison output from said comparing means.

5,054,015
TAPE RECORDER WITH DISC PLAYER

Akira Tsukihashi, Gunma; Tadashi Hitomi, Ota; Yoshiaki Tsubokura, Gunma, and Takeshi Aoki, Ota, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 24, 1989, Ser. No. 427,204
Claims priority, application Japan, Oct. 25, 1988, 63-268988; Mar. 6, 1989, 1-54503; Apr. 5, 1989, 1-86550; Apr. 20, 1989, 1-100772
Int. Cl.[5] G11B *33/02, 5/02, 5/10, 5/008*
U.S. Cl. 369—258 **9 Claims**



1. A tape recorder provided with a disc player, comprising:

a case body;

a disc accommodating portion formed within the case body;

a tape transporting body having at least one tape reel shaft mounted thereon, said tape transporting body being pivotally mounted on the case body so as to cover the disc accommodating portion;

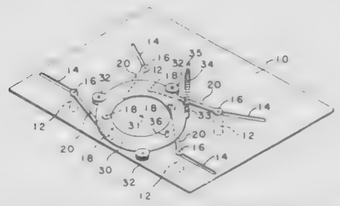
a turn table arranged within the disc accommodating portion; and

a clamper disposed at the bottom surface of the tape transporting body at a position opposite to the turn table when said tape transporting body covers said disc accommodating portion.

5,054,016
AUTOMATIC DISC CENTERING MECHANISM

Stéphane M. A. d'Alayer, Genappe, and Louis P. C. Agostini, Sint Pieters Leeuw, both of Belgium, assignors to Staar S.A., Belgium

Filed Feb. 10, 1989, Ser. No. 308,742
Claims priority, application Belgium, Mar. 2, 1988, 8800239
Int. Cl.[5] G11B *17/04*
U.S. Cl. 369—270 **20 Claims**



1. A centering mechanism for centering discs of different diameters comprising:

a plate having opposed first and second sides and containing at least three elongate slots, each slot having a first end proximate an axis along which discs are to be centered and extending generally radially to a second end remote from the axis;

a guide rotatably mounted on the first side of said plate to rotate about the axis;

at least three pins, each pin protruding through and being radially displaceable in one of the slots for engaging the periphery of different diameter discs on the second side of said plate;

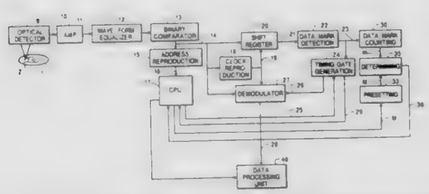
at least three links, each link being pivotally connected to said guide and connected between one of said pins and said guide, said guide coordinating radial displacement of said pins along said slots through a linkage including said links upon rotation of said guide for centering the different diameter discs; and

biasing means for urging said pins toward the respective first ends of the slots.

5,054,017
OPTICAL INFORMATION REPRODUCING APPARATUS

Jun Hiroyoshi, Moriguchi; Yuzuru Kuroki, Sapporo, and Isao Satoh, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 29, 1990, Ser. No. 501,105
Claims priority, application Japan, Mar. 29, 1989, 1-78856
Int. Cl.[5] G11B *20/10, 20/12;* **G06F** *11/00;* **G06K** *5/04*
U.S. Cl. 369—275.1 **1 Claim**



1. An optical information reproducing apparatus for reproducing data recorded on an optical recording medium, the optical recording medium having formed thereon a plurality of tracks, each of the plurality of tracks being divided into a plurality of sectors, each of the plurality of sectors having N data blocks in which data are recorded, and where $N \geq 2$, each of the N data blocks having a data mark at a leading portion thereof, said apparatus comprising:

reproducing means for reproducing the data recorded on the recording medium;

data mark detecting means for detecting each data mark of the data reproduced by said reproducing means;

counting means for counting the number of data marks detected by said data mark means, said counting means having a count value in accordance with the number of data marks thus counted;

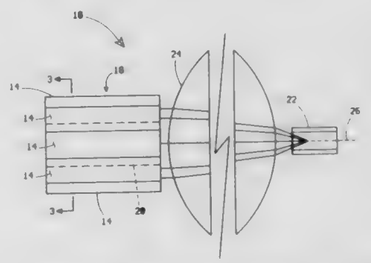
demodulating means for demodulating the data reproduced by said reproducing means to obtain a demodulated data; and

means responsive to the count value of said counting means for invalidating the demodulated data when the count value obtained from the data reproduced for each sector is smaller than a predetermined value M, where $1 < M \leq N$.

5,054,018
SPATIAL OPTIC MULTIPLEXER/DIPLEXER

Paul L. Tremblay, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1990, Ser. No. 542,215
Int. Cl.[5] H04J *1/00;* **G02F** *1/00;* **G02B** *6/32*
U.S. Cl. 359—114 **10 Claims**



1. An apparatus for simultaneous transmission of optic signals of different wavelengths over a single optic fiber comprising:

a) multiple light sources each of a different wavelength;

b) a coupling sphere proximal to the multiple light sources for focusing and combining optic signals emitted by the multiple light sources, and further where the coupling sphere has a refractive index such that about 90% of the combined optic signals from the multiple light sources emerging from said coupling sphere converge in the single optic fiber within the numerical aperture of the single optic fiber, whereby signals of different wavelengths can be transmitted by the single optic fiber simultaneously.

5,054,019
TRANSFER DIRECTION TURNAROUND IN NETWORK DATA COMMUNICATIONS

Joseph R. Mathis, Georgetown, and Gerald L. Rouse, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1989, Ser. No. 297,777
Int. Cl.[5] H04B *3/20;* **H04L** *5/16*
U.S. Cl. 370—31 **12 Claims**

1. A system for communicating data, comprising:

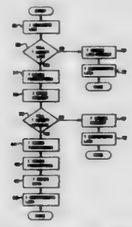
a first device for transmitting and receiving data;

a second device for transmitting and receiving data; and

a communications network coupled to said first and second devices for transmitting data therebetween;

wherein said first device creates a communications link over said communications network and transmits data to said second device and wherein, after such transmission, said second device transmits, using the same communications

link, a data direction turnaround message for signalling to said first device that said second device is preparing to



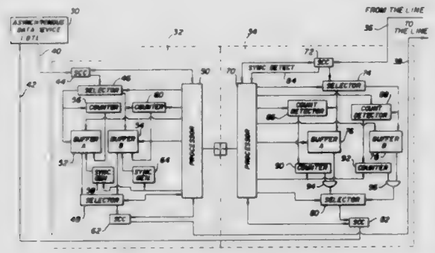
send data to said first device, followed by transmitting data from said second device to said first device.

5,054,020

APPARATUS FOR HIGH SPEED DATA COMMUNICATION WITH ASYNCHRONOUS/SYNCHRONOUS AND SYNCHRONOUS/ASYNCHRONOUS DATA CONVERSION

John L. Meagher, Fairfax, Va., assignor to Digital Access Corporation, Reston, Va.

Filed Apr. 11, 1990, Ser. No. 507,537
Int. Cl.[5] H04L *25/38, 5/24*
U.S. Cl. 370—48 **42 Claims**



1. A device for converting asynchronous data to synchronous data, comprising:

stripping means for stripping start and stop bits from each byte of received asynchronous data to form a plurality of data bytes;

means for counting the number of data bytes received from said stripping means within a predetermined time period P, and for generating a character count corresponding with the number of counted bytes; and

packet forming means for forming a message packet in synchronous form, said message packet having a fixed length and including a sync byte, said character count, and said plurality of data bytes formed from bytes received by said stripping means in a predetermined time period P.

5,054,021

CIRCUIT FOR NULLING THE TALKER'S SPEECH IN A CONFERENCE CALL AND METHOD THEREOF

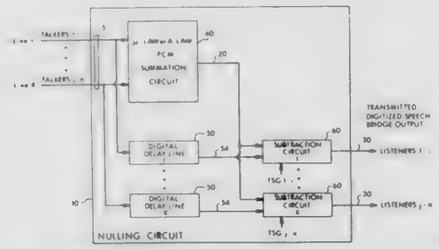
David C. Epps, Denver, Colo., assignor to ConferTech International, Inc., Golden, Colo.

Filed Mar. 6, 1990, Ser. No. 490,092
The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.
Int. Cl.[5] H04M *3/42;* **H04Q** *11/04*
U.S. Cl. 370—62 **16 Claims**

1. A circuit (**10**) for nulling each talker's speech in a conference call, said conference call having a plurality of parties (n) who are talkers and listeners on PCM telephone carrier lines (k) connected to a digitized conference bridge, said circuit comprising:

means (**40**) connected to said PCM telephone carrier lines for digitally outputting the sum of all speech (**20**) on said PCM telephone carrier lines, all of said listeners who are not talking in said conference call receiving said sum of all speech,

means (**50**) connected to said PCM telephone carrier lines for delaying the speech of each individual talker,



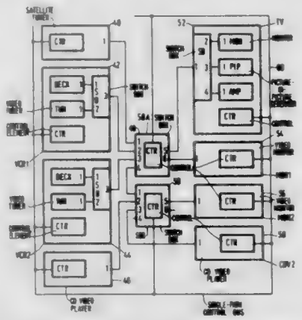
means (**60**) connected to said outputting means and to said delaying means for subtracting the digital value of said delayed speech of each individual talker from said sum of all speech, said subtracting means delivering (**30**) said sum of all speech less said individual talker's speech as said individual talker listens, said delaying means delaying said speech of each said individual talker to match the timing of each said talker's speech in said sum of all speech.

5,054,022

LOCAL COMMUNICATION BUS SYSTEM COMPRISING A SET OF INTERCONNECTED DEVICES, A CONTROL BUS, AND A SET OF SIGNAL INTERCONNECTIONS, AND A DEVICE AND A SWITCHBOX FOR USE IN SUCH SYSTEM

Bernard van Steenbrugge, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 28, 1990, Ser. No. 547,575
Claims priority, application European Pat. Off., Dec. 14, 1989, 89203197.2
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.6 **23 Claims**



15. A source device for use in a local communication bus system which includes a) a serial control bus; and b) a plurality of devices attached to the serial control bus, which devices each have at least one plug and which devices are connected between pairs of their respective plugs, at least one of the devices being a plural-plug switchbox means,

which source device comprises means for establishing and

specifying a signal path between the source device and a destination device, which establishing means comprises:

i) interconnection table means for storing information indicating:

A) any other device connected via a single pair of plugs to said source device;

B) a respective pair of plugs for each said other device, said respective pair of plugs connecting said other device and said source device;

C) for each said respective pair of plugs, a respective indication of whether and what priority code has been assigned to the corresponding connection;

ii) first message generating means for generating

A) a Connect control command, when said source device and destination device are not connected via a single pair of plugs, on said control bus, said Connect control command including

I) a priority code directed to any said switchbox means connected via a single pair of plugs to said source device, which priority code indicates a priority of the connection to be made; and

II) said destination device; and

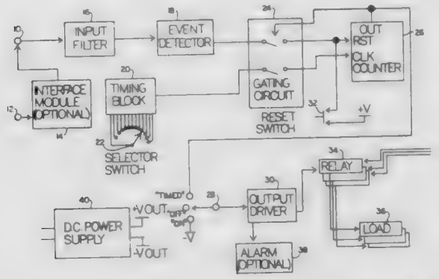
B) a Select control command, directed to said destination device, for signalling and specifying the signal path to said destination device.

5,054,023

"SMART" WATCHDOG SAFETY SWITCH

James W. Kronberg, 353 Church Rd., Beech Island, S.C. 29842

Filed May 12, 1989, Ser. No. 350,953
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—16.3 **6 Claims**



1. Method for monitoring a process having a periodic output in order to protect process equipment in the event of a controller malfunction, said method comprising the steps of

generating a series of timing pulses, each timing pulse in said series spaced from a next timing pulse in said series by a constant time interval;

filtering noise from said periodic output;

generating an event pulse for each valid change in magnitude of said filtered output;

incrementing a counter upon the arrival of each timing pulse;

resetting said counter to zero upon the arrival of each event pulse;

blocking incoming event pulses if said counter is incremented above a selected binary count; and

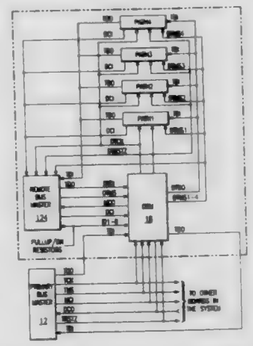
issuing an alarm if said selected binary count is reached.

5,054,024

SYSTEM SCAN PATH ARCHITECTURE WITH REMOTE BUS CONTROLLER

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 9, 1989, Ser. No. 391,801
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.3 **58 Claims**



1. Circuitry for performing serial-scan testing of a plurality of predefined circuits, each predefined circuit having a plurality of secondary scan paths, comprising:

a primary bus for carrying control and data signals to the circuits;

a primary bus controller for transmitting signals to and receiving signals from said primary bus;

a primary scan path of serially connected selected secondary scan paths of selected ones of said plurality of predefined circuits;

device select modules coupled to said primary bus and associated with each one of said predefined circuits for selectively coupling one of said secondary scan paths associated with said one predefined circuit to the primary scan path; and

a remote bus controller associated with and coupled to each of said device select modules operable to perform serial-scan testing on said associated predefined circuit independently of said primary bus controller.

5,054,025

METHOD FOR ELIMINATING ERRORS IN BLOCK PARAMETERS

Claude Galand, Cagnes sur Mer; Philippe Elie, LaGaude, and Michele Rosso, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1988, Ser. No. 185,670
Claims priority, application European Pat. Off., Jun. 12, 1987, 87480002.2
Int. Cl.[5] H03M *3/02, 13/00*
U.S. Cl. 371—49.1 **3 Claims**

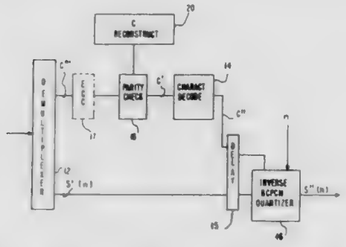
2. A method for eliminating errors associated with a digitally encoded signal wherein said encoding involves quantizing operations with the quantizer being adjusted using a signal dependent parameter said method involving:

for the encoding: forcing the parity of said parameter to a preselected parity;

forwarding to a decoder the parameter with its forced parity and quantized sampled information;

for the decoding: checking the parity of said parameter, discarding any parameter whose parity is different from

the preselected parity; and regenerating a parameter by extrapolating characteristics of at least two previously



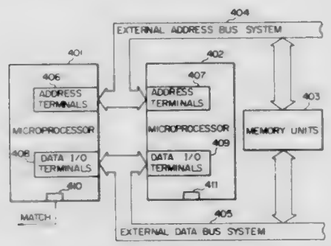
received signal dependent parameters, each being from a different block.

5,054,026

MICROPROCESSOR HAVING FUNCTIONAL REDUNDANCY MONITORING MODE OF OPERATION

Masashi Tsubota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 14, 1989, Ser. No. 393,180
Claims priority, application Japan, Aug. 12, 1988, 63-201229
Int. Cl.[5] G06F *11/16*
U.S. Cl. 371—68.3 **6 Claims**



1. A microprocessor having a data processing mode and a monitoring mode of operation, said microprocessor being coupled to another microprocessor established in one of said data processing mode and said monitoring mode, said data processing mode of operation allowing said microprocessor or said another microprocessor to achieve a task given from the outside thereof, said monitoring mode of operation causing said microprocessor or said another microprocessor to see whether or not said another microprocessor or said microprocessor achieves said task without any error, said microprocessor established in said monitoring mode of operation being operative to compare address and data codes produced therein on the basis of an instruction code concurrently fetched by itself and said another microprocessor with corresponding address and data codes produced by said another microprocessor established in said data processing mode of operation, said microprocessor being responsive to a nonpipeline bus cycle and a pipeline bus cycle in both of said data processing mode and said monitoring mode of operation, said nonpipeline bus cycle causing said microprocessor and said another microprocessor to deliver address codes and data codes upon completion of the previous nonpipeline bus cycle, said pipeline bus cycle allowing said microprocessor and said another microprocessor to deliver at least address codes for the subsequent pipeline bus cycle, said microprocessor comprising:

a) an address code source supplying said address code to an internal address bus;

b) a data code source supplying said data code to an internal data bus;

c) address terminals selectively coupled to said internal address bus and said another microprocessor and supplied with said address code in said data processing mode of operation and with said corresponding address code in said monitoring mode of operation;

d) data terminals selectively coupled to said internal data bus and said another microprocessor and supplied with said data code in said data processing mode of operation and with said corresponding data code in said monitoring mode of operation;

e) address comparator means coupled at one end thereof to said internal address bus and at the other end thereof to said address terminals, and operative to compare said address code with said corresponding address code to produce an address matching signal representative of a coincidence between the address signal and the corresponding address signal in said monitoring mode of operation;

f) data comparator means coupled at one end thereof to said internal data bus and at the other end thereof to said data terminals, and operative to compare said data code with said corresponding data code to produce a data matching signal representative of a coincidence between the data code and the corresponding data code in said monitoring mode of operation;

g) delay means operative to retard said address matching signal by a predetermined time period, thereby producing a delayed address matching signal;

h) matching signal producing means operative to produce a matching signal representative of a normal execution of said another microprocessor in the concurrent presence of said data matching signal and either address matching or delayed address matching signal; and

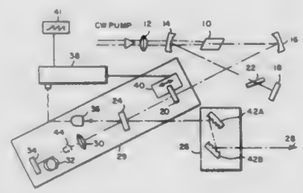
i) selecting means operative to transfer said address matching signal to said matching signal producing means in said nonpipeline bus cycle and said delayed address matching signal to the matching signal producing means in said pipeline bus cycle.

5,054,027

PULSED LASER

James Goodberlet, Reading; James G. Fujimoto, Cambridge; Peter A. Schulz, North Andover, and Jyhpyng Wang, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 10, 1989, Ser. No. 418,882
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—25 **27 Claims**



1. A pulsed laser comprising:

a lasing medium mounted in a laser cavity, said medium having a gain cross section of approximately 10^{-}~cm^2 or less, the cavity having mode beating characteristics or equivalent noise fluctuations which result in an output having intensity peaks and intensity minimums;

means for continuous wave operation of said laser, causing said laser to generate an output;

an external cavity containing an intensity dependent, nonlinear medium;

means for applying a portion of the laser output to said external cavity;

means for causing the output applied to the external cavity to be retroreflected back through the external cavity; and

means for interferometrically combining the laser output and the retroreflected output from the external cavity;

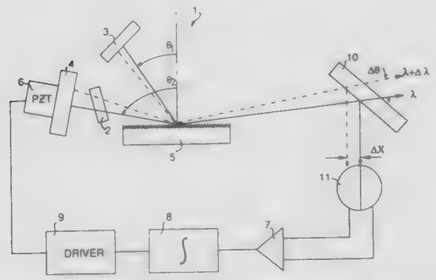
the relative lengths of said laser cavity and said nonlinear cavity being such that, at least initially, phase changes caused by the nonlinear medium result in substantially maximum enhancement of said intensity peaks, whereby a pulsed laser output is achieved.

5,054,028

FEEDBACK STABILIZATION SYSTEM FOR PULSED SINGLE LONGITUDINAL MODE TUNABLE LASERS

Peter Esherick, and Thomas D. Raymond, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 20, 1989, Ser. No. 340,823
Int. Cl.[5] H01S *3/137*
U.S. Cl. 372—32 **11 Claims**



1. A stabilization system for a tunable single longitudinal mode laser having an excited laser material contained within an adjustable length optical cavity and having an internal dispersive means, comprising:

(a) an external sensor means fixed with respect to said internal dispersive means for sensing an angular deviation of a beam reflected from said internal dispersive means which produced said angular deviation of said reflected beam responsive to detuning between a cavity-mode frequency and a passband of said internal dispersive means, said external sensor means also capable of generating a signal responsive to said reflected beam; said external sensor means further comprising a beamsplitter to receive said reflected beam from said internal dispersive means and split said beam, a portion of said reflected beam is directed to an output, and a second portion of said reflected beam is directed to a photodetector, a photodetector to receive a portion of said reflected beam and to generate a signal responsive to said angular deviation of said reflected beam, and

(b) control means for adjusting the length of said cavity based upon said signal.

5,054,029

PULSE POWER SUPPLY CIRCUIT

Hiroyuki Sugawara, Hitachi, and Tuneyoshi Oohashi, Hitachiota, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

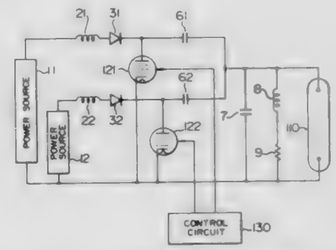
Filed Jan. 12, 1990, Ser. No. 464,213
Claims priority, application Japan, Jan. 25, 1989, 1-013945
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **14 Claims**

1. A pulse power supply circuit comprising:

a parallel circuit including a discharge device and capacitor;

a series circuit connected in series with said parallel circuit and including a plurality of gas-filled switching elements connected in parallel and at least one charging capacitor connected with at least one of said switching elements;

at least one high-voltage power source for charging said at least one charging capacitor; and



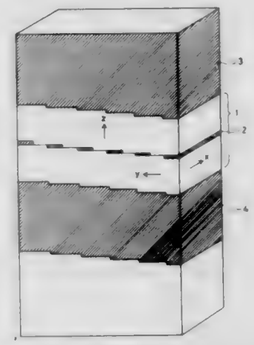
control means for controlling said plurality of gas-filled switching elements so that said switching elements are turned on alternately and repeatedly at substantially equal time intervals.

5,054,030

GRID-INSERTED QUANTUM STRUCTURE

Hiroyuki Sakaki, Yokohama, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Filed Jan. 12, 1990, Ser. No. 464,498
Claims priority, application Japan, Nov. 13, 1989, 1-294368
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **7 Claims**



1. A grid-inserted quantum structure which exhibits a quantum size effect, comprising:

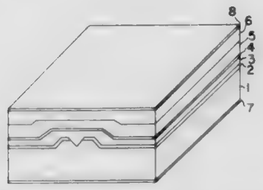
a confining layer having a high level of electron affinity;

a material dissimilar to that of said confining layer said material being disposed on at least one of both sides of said confining layer; and

a plurality of grids disposed in substantially equal intervals in said confining layer, said grids having a material dissimilar from that of said confining layer, said grid material having one of an attraction and a repulsion potential.

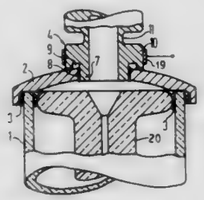
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5,054,031
SEMICONDUCTOR LASER DEVICE
Hiroyuki Hosoba, Tenri; Mitsuhiro Matsumoto, Nara; Sadayoshi Matsui, Tenri, and Taiji Morimoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 22, 1989, Ser. No. 455,574
Claims priority, application Japan, Dec. 29, 1988, 63-334138
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—48 4 Claims



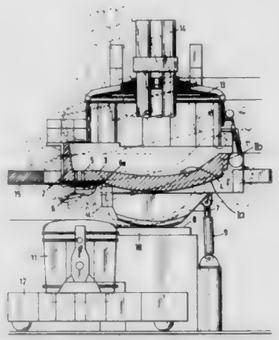
1. In a semiconductor laser device, a combination comprising: a semiconductor substrate having a ridge portion, the width of said ridge portion being smaller in the vicinity of the facets than in the inside of the device; a current blocking layer formed on said substrate including the ridge portion; at least one striped groove formed on the center of said ridge portion through the current blocking layer; and a multi-layered structure disposed on said current blocking layer, said multi-layered structure successively having a first cladding layer, an active layer for laser oscillation, and a second cladding layer; wherein at least two side grooves are symmetrically formed on both sides of the center region of said ridge portion with the same width as that of the regions thereof near the facets.

5,054,032
GAS LASER HOUSING
Hans Krueger, Munich; Wolfgang Welsch, Baldham; Michael Schulz, Bexbach, and Heinz Pape, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed May 24, 1990, Ser. No. 527,873
Claims priority, application Fed. Rep. of Germany, May 31, 1989, 3917744
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—107 8 Claims



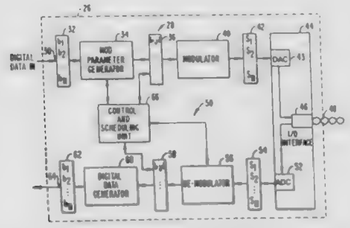
1. A gas laser housing, comprising:
a housing tube of glass;
at least one metal cap on said housing tube, said at least one metal cap having a first coefficient of thermal expansion adapted to a coefficient of thermal expansion of said housing tube;
a mirror mount having at least a portion of a second coefficient of thermal expansion that is different from the first coefficient of thermal expansion of said at least one metal cap;
a resonator mirror held in said mirror mount;
said mirror mount having an annular transition region between said at least one metal cap and said resonator mirror, said transition region absorbing thermal mechanical stresses due to differences between said first and second coefficients of thermal expansion so that thermally produced mechanical stresses between said at least one metal cap and said mirror mount in a region of mutual fastening is minimized, said annular transition region of said mirror mount being of a smaller diameter than an adjoining annular region of said mirror mount;
a second annular region of said mirror mount lying in an axial direction relative to said annular transition region and being of a larger outside diameter than said annular transition region, said second annular region including an undercut; and
solder affixing said annular transition region to said metal cap, said solder being free of said second annular region at least in a radial direction outside said undercut.

5,054,033
TILTABLE ARC FURNACE
Bodo Wronka, Duisburg; Heinrich Schnitzer, Rheinberg, both of Fed. Rep. of Germany; Rolf Baare, Frederiksvaerk, Denmark; Hannsgeorg Bauer, Witten-Bommern, and Josef Otto, Wetter, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany
Continuation of Ser. No. 915,895, Oct. 3, 1986, abandoned, Continuation of Ser. No. 549,816, Nov. 8, 1983, abandoned. This application Aug. 3, 1990, Ser. No. 563,678
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241987
Int. Cl.[5] F27B *14/02*
U.S. Cl. 373—84 3 Claims



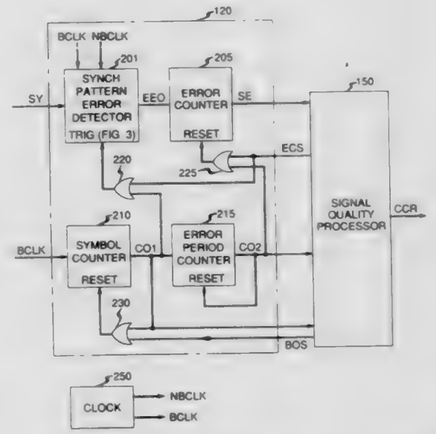
1. Arc furnace having a tiltable vessel whose interior is provided with an extension, the vessel including the extension having a bottom, there being a discharge opening in a portion of the bottom in the extension, the improvement comprising:
the extension having a lined wall being a part of a lined wall and of an interior enclosing structure of the vessel and being a bay-like extension that is enclosed from above, from all sides as well as at the bottom in that the bottom of the vessel is continued into the extension but an interior of the extension being in unrestricted communication with the interior of the vessel, the vessel being higher than the bay-like extension, said extension providing for laterally unrestricted flow from the vessel interior towards the discharge opening;
the bottom portion of the extension being substantially at the same level as the remaining portion of the bottom of the vessel except for a slight concavity in a central portion of the bottom of the vessel;
the discharge opening being plugless in the interior of the vessel; and
further including a closure plate linked to the bottom of the bay-like extension from the outside and provided for selective opening and closing of said discharge opening from the outside of the vessel.

5,054,034
ENSEMBLE MODEM STRUCTURE FOR IMPERFECT TRANSMISSION MEDIA
Dirk Hughes-Hartogs, Morgan Hill, Calif., assignor to Telebit Corporation, Sunnyvale, Calif.
Division of Ser. No. 293,839, Jan. 4, 1989, abandoned, which is a division of Ser. No. 140,848, Jan. 5, 1988, Pat. No. 4,833,706, which is a division of Ser. No. 2,096, Jan. 12, 1987, Pat. No. 4,731,816, which is a division of Ser. No. 736,200, May 20, 1985, Pat. No. 4,679,227. This application Jun. 15, 1989, Ser. No. 366,799
Int. Cl.[5] H04B *1/38, 3/50;* H04L *5/16*
U.S. Cl. 375—8 2 Claims



1. In a communication system of the type including two modems (A and B) coupled by a transmission link, each modem having an input buffer for storing data to be transmitted, a method for allocating control of the transmission link between modem A and B comprising the steps of:
allocating control of the transmission link to modem A;
determining the volume of data stored in the input buffer of modem A;
determining the number, k, of packets of data required to transmit the volume of data stored in the input buffer of modem A;
transmitting L packets of data from modem A to modem B where L is equal to I_A if K is less than I_A, and where L is equal to K if K is greater than or equal to I_A, and where L is equal to N_A if K is greater than N_A so that the number of packets transmitted by modem A is a minimum of I_A and a maximum of N_A;
allocating control of the transmission link to modem B;
determining the volume of data in the input buffer of modem B;
determining the number, J, of packets of data required to transmit the volume of data stored in the input buffer of modem B; and
transmitting M packets of data from modem B to modem A where M is equal to I_B if J is less than I_B, where M is equal to J if J is greater than or equal to I_B, and where J is equal to N_B if J is greater than N_B so that the number of packets transmitted by modem B is a minimum of I_B and a maximum of N_B;
where allocation of control between modem A and B is dependent on the volume of data stored in the input buffers of

5,054,035
DIGITAL SIGNAL QUALITY EVALUATION CIRCUIT USING SYNCHRONIZATION PATTERNS
Joseph A. Tarallo, Bedminster, and George I. Zysman, Mendham, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 21, 1989, Ser. No. 454,487
Int. Cl.[5] H04B *3/46*
U.S. Cl. 375—10 4 Claims



1. A terminal for a mobile radio communication system comprising:
means for receiving a digital signal,
means responsive to the received digital signal for generating a sequence of symbols partitioned into time frames, each time frame including a prescribed set of synchronization symbols,
means for storing a signal corresponding to the prescribed set of synchronization symbols including a first shift register for storing a sequence of symbols representing the prescribed set of synchronization signals in each time frame,
means responsive to the prescribed set of synchronization symbols for a plurality of time frames from the symbol generating means and the stored synchronization corresponding signal for generating a signal representative of the differences between the synchronization symbol set generated from the digital signal and the stored synchronization corresponding signal, the means for generating a signal representative of the differences between the synchronization symbol set generated from the digital signal and the stored synchronization corresponding signal comprises means for comparing each prescribed synchronization symbol set generated from the digital signal and the stored synchronization corresponding signal to generate a difference signal,
the comparing means comprising:
a second shift register responsive to the synchronization signals generated from the digital signal for sequentially storing the synchronization symbols generated from the digital signal,
a third shift register,
means for generating a signal identifying the symbol periods in each time frame corresponding to the prescribed set of synchronization symbols,
means connected between the second and third shift registers responsive to the symbol period identifying signal for transferring the synchronization symbols in the second shift register to the third shift register,
means responsive to the identified symbol period signal for detecting mismatches between each symbol position in the first shift register and the corresponding symbol position in the third shift register, and
means responsive to each detected mismatch for generating an error signal, and
means responsive to the differences representative signal for forming a signal representing the quality of the received digital signal.

5,054,036

DIGITAL SIGNAL CODING

John D. Brownlie, Woodbridge, and Barry G. Lloyd, Brighton, both of England, assignors to British Telecommunications Public Limited Company, London, England

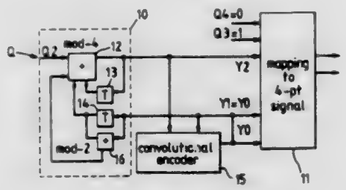
PCT No. PCT/GB87/00861, § 371 Date May 31, 1989, § 102(e) Date May 31, 1989, PCT Pub. No. WO88/04500, PCT Pub. Date Jun. 16, 1988

PCT Filed Dec. 1, 1987, Ser. No. 368,357

Claims priority, application United Kingdom, Dec. 1, 1986, 8628655

Int. Cl.[5] H04L *27/00*; H03M *13/12*

U.S. Cl. 375—27 13 Claims



1. A coding apparatus comprising:

(i) a convolutional coder having a plurality n of defined states and operable at regular intervals to assume a state which, for any preexisting state, is one of two mutually different states according to the binary value of an input thereto, such that the behaviour of the coder is capable of being represented by a diagram in which each such state is represented by a point and each transition, and its direction between two states or from a state to the same state, is represented by a line whose ends are joined to the point representing those states or that state, said diagram being unchanged when rotated by any multiple of 90 degrees;

(ii) mapping means responsive to said coder states to generate in response to each possible pair of consecutive states an assigned one of four signals having relative phases 0, 90, 180 and 270 degrees, the assignment being such that each possible sequence of three consecutive coder states gives rise to a pair of assigned signals having the same signed phase difference as would a pair generated by a corresponding coder state sequence which, in said diagram, occupies a position rotated by 90° from that of said three consecutive coder state sequence; and

(iii) input means responsive to a single bit input stream producing said binary input to said convolutional coder to control the state transitions so that one bit value gives rise to a signal of phase difference a or b from the preceding signal and the other bit value gives rise to a signal of phase difference c or d from the preceding signal, where a, b, c and d have different values and said values being in any order 0, 90, 180 and 270 degrees.

5,054,037

METHOD OF SERVO-CONTROLLING THE PARAMETERS OF A MODULATOR HAVING 2^n PHASE AND AMPLITUDE STATES, AND A CIRCUIT FOR IMPLEMENTING THE METHOD

Didier Martineau, Conflans Sainte Honorine, and Robert Ravoalavoson, Courbevoie, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jan. 18, 1990, Ser. No. 465,731

Claims priority, application France, Jan. 19, 1989, 89 00596

Int. Cl.[5] H03C *1/06*

U.S. Cl. 375—60 6 Claims

4. A circuit for servo-controlling position in a QAM modulator having 2^n phase and amplitude states, said circuit comprising

a detector;

an analog-to-digital converter responsive to an analog output signal from the detector; and

a control unit responsive to digital input trains from the converter, wherein

said control unit delivers

an X channel offset signal,

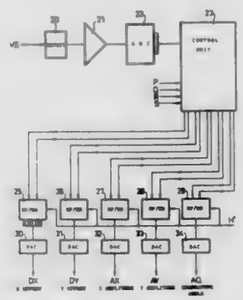
a Y channel offset signal,

an X channel amplitude control signal,

a Y channel amplitude control signal, and

a quadrature angle control signal,

said control unit further comprises



first means for measuring and correcting any amplitude difference between the X and Y channels input to the modulator, said first means further comprising

second means for measuring and correcting any quadrature error between the modulated carriers prior to any correction of said amplitude difference, said second means further comprising

third means for correcting any constellation centering error in the thus-detected amplitudes of said output signal prior to any correction of said quadrature error.

5,054,038

METHOD AND APPARATUS FOR RESTORING DATA

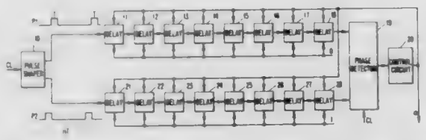
Mats O. J. Hedberg, Haninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 31, 1989, Ser. No. 429,651

Claims priority, application Sweden, Nov. 18, 1988, 8804196

Int. Cl.[5] H03K *5/159*

U.S. Cl. 375—118 13 Claims



1. An apparatus for regenerating at least a first data signal and phasing the first data signal in relation to an available periodic clock signal, comprising:

a first signal delay means which receives said first data signal and delays said first data signal a time delay, said time delay being controllable with substantially equal time increments by a first control input and the magnitude of said time increments being controllable by a second control input;

a first comparison and control means, which receives said delayed first data signal from said first signal delay means, for sampling said data signal at a plurality of sample times, and controlling the number of increments in the signal delay of said first signal delay means by generating said first control input of the first signal delay means based on the results of comparisons of said samples;

a second signal delay means which receives an input signal and delays said signal a time delay, said time delay being controllable with substantially equal time increments by a first control input and the magnitude of said time increments being controllable by a second control input, said second control input being the same as said second control input of said first signal delay means; and

a second comparison and control means, which compares the magnitude of the time increments in said second signal delay means with the magnitude of at least part of the clock signal time period and generates said second control inputs of both the first and second signal delay means to control the magnitude of the time increments of both the first and second signal delay means synchronously, wherein said time increments of said first and second signal delay means have substantially similar responses to ambience factors.

5,054,039

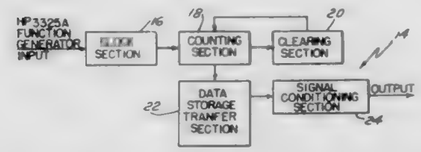
DIGITAL CALIBRATION CIRCUIT EMPLOYING COMPOSITE SINE WAVE SIGNALS

Fletcher A. Blackmon, New Bedford, and Robert J. Reid, Fall River, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1990, Ser. No. 574,869

Int. Cl.[5] G06F *1/02*

U.S. Cl. 377—42 6 Claims



1. A digital calibration circuit for audio range sensing equipment comprising:

a clock section including timing means for providing time sequenced discrete output signals on a plurality of output terminals with each of said output terminals providing a fractional number of said plurality of discrete output signals in time sequenced rotation with the other of said output terminals;

a counting section including counting means connected to receive discrete signals from one of said plurality of clock section output terminals for counting upward upon receipt of each discrete signal to a predetermined number and then repeatedly counting upward over again, said counting means for providing output signals indicative of the count;

a clearing section including clearing means connected to receive said output signals indicative of the count from said counting means, said clearing means for providing an output signal upon receipt of the output signal indicative of said predetermined number;

a data storage/transfer section connected to receive said output signals indicative of the count from said counting means, said data storage/transfer section having a sample digital sequence stored in a number of addresses, said number of addresses being equal to said predetermined number, said data storage/transfer section having storage/transfer means for supplying a plurality of sine wave signals indicative of analog representations of the digital sample at the address pointed to for a predetermined period of time; and

a signal conditioning section connected to receive said plurality of sine wave signals indicative of analog representations from said storage/transfer means, said signal conditioning section having signal conditioning means for filtering sine harmonics and making a bipolar composite of said plurality of sine wave signals indicative of said analog predetermined number of analog representations and providing an output signal thereof, whereby simultaneous calibrations of said audio range of said sensing equipment is effected.

5,054,040

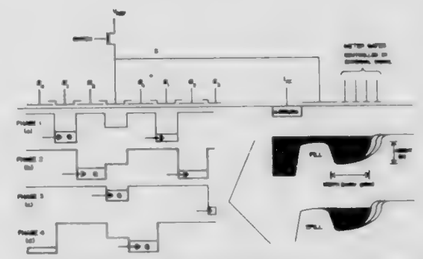
NON-DESTRUCTIVE CHARGE DOMAIN MULTIPLIER AND PROCESS THEREOF

Amnon Yariv, San Marino; Charles T. Neugebauer, and Aharon J. Agranat, both of Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jun. 7, 1990, Ser. No. 534,250

Int. Cl.[5] G11C *19/28*; H01L *29/78*

U.S. Cl. 377—60 9 Claims



1. A semiconductor charge domain device of the type in which charge packets proportional to analog values are spatially transferred between electron potential wells along a channel buried beneath an array of charge transfer electrodes, the transfer of the charge packets being controlled by the magnitude and timing of voltages applied to the transfer electrodes; the device comprising:

at least one such electrode being in a floating mode wherein said floating electrode is selectively disconnected from any source of voltage and the voltage on said floating electrode is determined by the magnitude of a charge packet passing beneath and sensed by said floating electrode;

said floating electrode being positioned adjacent said buried channel at at least two discrete and spaced apart locations, a first such location being among said transfer electrodes and a second such location being spaced therefrom along said buried channel, the depth of the electron potential well beneath said second location being proportional to the voltage on said floating electrode;

a source of charge positioned in said channel immediately adjacent said second contact location of said floating electrode; and

means for modifying the width of an electron potential well adjacent said location whereby the amount of charge therein after potential equilibration is proportional to said floating electrode-sensed charge packet and said width-modifying means.

5,054,041

HIGH PRECISION X-RAY COLLIMATOR

Willi W. Hampel, South Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Mar. 19, 1990, Ser. No. 495,687

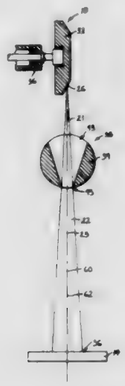
Int. Cl.[5] G21K *1/04*

U.S. Cl. 378—4 6 Claims

1. In a computed tomography system including an x-ray source producing an x-ray beam along a fan beam axis, an x-ray collimator for controlling the angle of the fan beam axis of a collimated fan beam comprising:

VOL 1131 ISS 1 OCT 1991 UMI

an elongate x-ray absorbing mandrel positioned within the x-ray beam and having a diametrically directed passage extending along the length of the mandrel within the x-ray beam to create one entrance and one exit aperture in the circumference of the mandrel; and



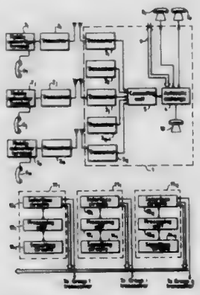
a bearing means for holding the mandrel so that it may be rotated about its axis to adjust the angle of the fan beam axis.

5,054,042

DEVICE FOR THE SETTING UP AND ROUTING OF TELEPHONE CALLS BETWEEN SUBSCRIBERS OF A RADIO NETWORK AND/OR OF A WIRED TELEPHONE NETWORK

Jean-Pierre Soury, Cholet; Pierre Bovis, Paris; Daniel Couthouis, La Tessquale, and Pierre Robert, Cholet, all of France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR89/00127, § 371 Date Nov. 15, 1989, § 102(e) Date Nov. 15, 1989
PCT Filed Mar. 21, 1989, Ser. No. 439,385
Claims priority, application France, Mar. 22, 1988, 88 03683
Int. Cl.[5] **H04M** *11/00*
U.S. Cl. 379—58 10 Claims



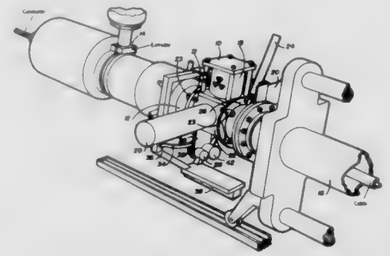
1. Device for the setting up and routing of telephone calls between subscribers of a radio telephone network and/or of a wired telephone network ($8_1 \ldots 8_n$, 9) in which the subscribers of the radio telephone network have radio transceiver sets ($2_1 \ldots 2_n$) operating in alternating mode and the subscribers of the two networds have dialing means ($8_1 \ldots 8_n$, 31) in order to call their correspondents, of the type comprising an automatic telephone exchange (4) coupled with the wired telephone network by wired telephone lines, the automatic telephone exchange (4) being coupled to the radio telephone network by a plurality of radio transceivers ($3_1 \ldots 3_4$) via a radio connecting unit (5) said radio connecting unit comprising a plurality of programmed processing units, each respectively coupled to a transceiver by interface circuits, and a signal modem, controlled by said interface circuits, for transmitting speech signals between the transceiver and the interface circuits, each of said interface circuits comprising voice activity detectors in order to enable transmission of calls in an alternating mode between the subscribers of the radio telephone network and between the subscribers of both networks, each processing unit (12_i) being programmed with hierarchic restrictions to enable an organization of the radio subscriber network into groups of radio subscribers communicating on a same frequency and/or on a same transmission channel, calls being able to take place between subscribers in a same group or between subscribers belonging to different groups, or between subscribers belonging to one group and the subscribers of the wired telephone network.

5,054,043

CABLE INSULATION ECCENTRICITY AND DIAMETER MONITOR

John M. Lucas, Montréal, and Frank W. Hintze, Thornhill, both of Canada, assignors to Canada Wire and Cable Limited, Don Mills, Canada

Continuation of Ser. No. 358,428, May 30, 1989, abandoned. This application Nov. 19, 1990, Ser. No. 614,976
Claims priority, application Canada, Sep. 9, 1988, 576977
Int. Cl.[5] **G01B** *15/02*
U.S. Cl. 378—89 7 Claims



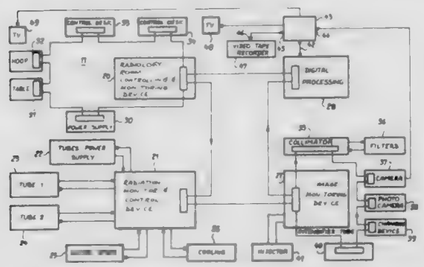
1. A cable insulation eccentricity and diameter monitor comprising:
an elongated conductor,
an extruder encasing said elongated conductor in electrical insulation to form a cable,
a pressurized catenary vulcanization line,
a revolving structure located between said extruder and said pressurized catenary vulcanization line and mounted coaxially with the cable;
a finely collimated source of gamma particles mounted on said revolving structure for generating a beam of gamma particles;
a radiation detector fixed to said revolving structure for detecting the gamma particles scattered from said beam by said conductor and by said insulation of said cable and for generating pulses the amplitude of which is dependent on the energy of the scattered gamma particles reaching the detector scattered from said conductor and scattered from said insulation;
first drive means for moving the source of gamma particles relative to said revolving structure so as to direct the beam at a first set of predetermined target positions corresponding to probable conductor and cable/atmosphere boundaries of the cable in a plane substantially normal to the axis of the cable;
second drive means for repositioning said revolving structure to move said source of gamma particles and said radiation detector to move said source of gamma particles and said radiation detector to a position around the cable which is at a predetermined angle with respect to their original position so as to direct the beam at a second set of target positions corresponding to probable conductor and cable/atmosphere boundaries;
a pulse height analyzer responsive to said detector for detecting and counting the pulses produced by the detector within a preset range of pulse height as a result of scattering of gamma particles from said conductor and scattering of gamma particles from said insulation; and
a computer responsive to the output of said pulse height analyzer and to test data stored in its memory for operating said first and second drive means to find the actual location of said boundaries and for computing insulation eccentricity and diameter of the cable from said findings.

5,054,044

RADIOLOGY INSTALLATION WITH A COMMUNICATIONS NETWORK

Philippe Audon, La Celle St. Cloud, and Daniel Courtecuisse, Auffargis, both of France, assignors to Thomson-CGR, Paris, France

Continuation of Ser. No. 45,872, May 4, 1987, abandoned. This application May 16, 1989, Ser. No. 355,818
Claims priority, application France, May 6, 1986, 86 06546
Int. Cl.[5] **H05G** *1/08*
U.S. Cl. 378—91 15 Claims



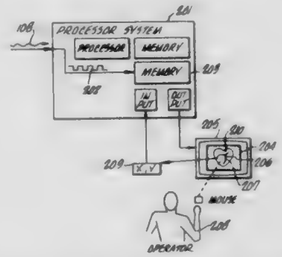
1. A radiology installation, comprising:
a first plurality of instruments for using images produced from x-ray radiation which are connected in series to form a closed primary loop in which primary loop data flows between said first plurality of instruments;
a second plurality of instruments for using images produced from x-ray radiation which are connected in series to form a closed secondary loop in which secondary loop data flows between said second plurality of instruments;
controlling and monitoring means connecting to said closed primary loop and said closed secondary loop for controlling and monitoring said closed primary loop and said closed secondary loop and for coordinating communications between said closed primary loop and said closed secondary loop which are otherwise independent of each other; and
said controlling and monitoring means comprises a central handling unit which has a memory, said central handling unit having means for determining a configuration of said radiology installation so that a location of each instrument of said first plurality of instruments and a location of each instrument of said second plurality of instruments is registered in said central handling unit's memory;
and an ancillary handling unit, said ancillary handling unit having means for transmitting a message from an instrument located in said first plurality of instruments to an instrument located in said plurality of instruments, said ancillary handling unit being located at a junction which connects said primary and secondary loops.

5,054,045

CORONARY TRACKING DISPLAY

James S. Whiting, and Neal Eigler, both of Los Angeles, Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Filed Nov. 14, 1990, Ser. No. 614,790
Int. Cl.[5] **H05G** *1/64*
U.S. Cl. 378—99 16 Claims



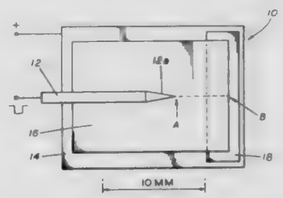
1. A method of displaying a segment of a coronary artery in a cineangiogram, comprising the step of
digitally adjusting each frame of the cineangiogram so that the segment is continually displayed at a substantially fixed location on a display screen.

5,054,046

METHOD OF AND APPARATUS FOR PRODUCTION AND MANIPULATION OF HIGH DENSITY CHARGE

Kenneth R. Shoulders, Austin, Tex., assignor to Jupiter Toy Company, Austin, Tex.

Continuation of Ser. No. 137,244, Jan. 6, 1988, abandoned. This application Jun. 13, 1990, Ser. No. 523,295
Int. Cl.[5] **H01J** *1/46*
U.S. Cl. 378—119 151 Claims



1. An electronic device comprising a source of charged particles; a solid dielectric body having an elongated groove positioned to be responsive to the charged particles; means for accelerating the charged particles in the elongated groove; a counterelectrode capacitively coupled to the groove and the charged particles; the groove being arranged and the counterelectrode being biased and the charged particles propagating in and being guided by the groove and coupled to the solid dielectric body and the counterelectrode so charged particles applied to the groove by the source during a first interval charge the dielectric to have an effect on charged particles subsequently propagating in and guided by the groove; and output means responsive to the charged particles propagating in the groove for deriving a response dependent on said propagating charged particles.

5,054,047

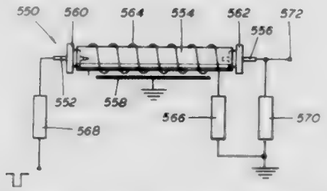
CIRCUITS RESPONSIVE TO AND CONTROLLING CHARGED PARTICLES

Kenneth R. Shoulders, Austin, Tex., assignor to Jupiter Toy Company, Austin, Tex.

Continuation of Ser. No. 183,506, May 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 137,244, Jan. 6, 1988, abandoned. This application May 14, 1990, Ser. No. 523,294

Int. Cl.[5] H01J 1/46

U.S. Cl. 378—119 100 Claims



1. An electronic device comprising a source of charged particles; a solid dielectric body having an elongated groove positioned to be responsive to the charged particles; means for accelerating the charged particles in the elongated groove; a counterelectrode capacitively coupled to the groove and the charged particles; the accelerating means including plural electrodes positioned between the groove and the counterelectrode at different longitudinal positions along the length of the groove, the plural electrodes being biased differentially with respect to each other and the source; the groove and plural electrodes being arranged and the counterelectrode and plural electrodes being biased and the charged particles propagating in and being guided by the groove and coupled to the solid dielectric body and the counterelectrode so charged particles applied to the groove by the source during a first interval charge the dielectric to have an effect on charged particles subsequently propagating in and guided by the groove; and output means responsive to the charged particles propagating in the groove for deriving a response dependent on said propagating charged particles.

5,054,048

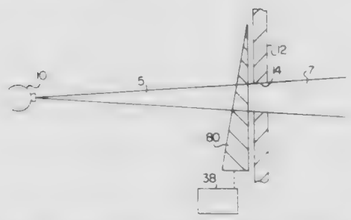
X-RAY RADIOGRAPHY METHOD AND SYSTEM

Shih-Ping Wang, Los Altos, Calif., assignor to Hologic, Inc., Waltham, Mass.

Continuation of Ser. No. 256,846, Oct. 12, 1988, Pat. No. 4,953,189, which is a continuation of Ser. No. 797,837, Nov. 14, 1985, abandoned. This application Aug. 27, 1990, Ser. No. 573,404

Int. Cl.[5] G21K 5/10

U.S. Cl. 378—146 17 Claims



1. A system for imaging an object with a scanning beam of penetrating radiation which is modulated prior to impinging on the object, comprising:

a source which generates penetrating radiation at an origin;

a scanning mechanism which forms said penetrating radiation into an impinging beam and scans an object with said impinging beam in a scanning direction to cause an object-attenuated beam to emerge from said object;

an imaging receptor which receives said object-attenuated beam and in response forms an image of said object; and

a modulator which is between the source and the object position and comprises at least one row of modulation elements which extends in a direction transverse to the scanning direction;

said modulation elements being generally wedge-shaped in a section which is in a plane that includes the radiation origin and the scanning direction; and

a control circuit which selectively moves the modulation elements along the scanning direction as the impinging beam scans the object position to selectively modulate respective portions of the impinging beam in order to selectively equalize the image formed by said imaging receptor;

wherein said modulating elements are generally wedge-shaped over a distance in the scanning direction which is at least a substantial portion of the dimension of the beam in the scanning direction at the place where the elements modulate the beam.

5,054,049

PATIENT SUPPORT MEANS FOR X-RAY ABSORPTION COMPENSATION IN COMPUTER TOMOGRAPHY SYSTEM

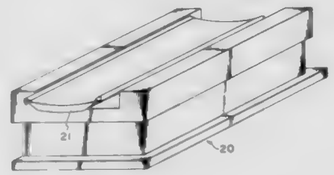
Yoshinori Manabe, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1990, Ser. No. 496,581

Claims priority, application Japan, Mar. 22, 1989, 1-67604

Int. Cl.[5] H05G 1/00; A61B 6/04

U.S. Cl. 378—208 5 Claims





1. A patient support means for x-ray absorption compensation in computer tomography system, comprising:

a patient support plate on which a patient will be laid and which includes a core member having two longitudinally extending end portions and a middle portion between the longitudinally extending end portions, both longitudinally extending end portions of the core member being lower in density than the middle portion thereof, the longitudinally extending end portions extending in a longitudinal direction of the patient and located at both sides of the patient in a width direction of the patient, whereby an x-ray absorption factor of each of the longitudinally extending end portions is lower than that of the middle portion.

5,054,050

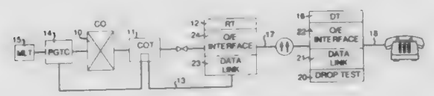
DROP TESTING IN FIBER TO THE HOME SYSTEMS

Michael E. Burke, Rockaway Township, Morris County; Samuel Colodner, Succasunna; Huy T. Luu, Lake Hiawatha, and Steven P. Saneski, Somerset, all of N.J., assignors to American Telephone & Telegraph Co., New York, N.Y.

Filed Apr. 30, 1990, Ser. No. 516,624

Int. Cl.[5] H04M 3/30

U.S. Cl. 379—27 20 Claims



1. A digital loop transmission system comprising:

a central office terminal;

a remote terminal optically and electrically coupled to the central office terminal;

a distant terminal optically coupled to the remote terminal; and

means in the distant terminal for testing electrical wires extending beyond the distant terminal and for optically transmitting the results of said test to the remote terminal.

5,054,051

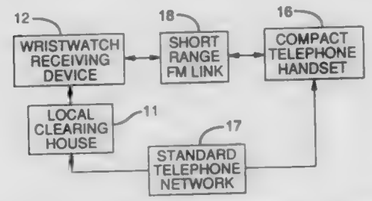
AUTODIAL FROM DATABASE IN AN ELECTRONIC WRISTWATCH

Don G. Hoff, Tiburon, Calif., assignor to AT&E Corporation, San Francisco, Calif.

Filed Jan. 31, 1990, Ser. No. 472,999

Int. Cl.[5] H04M 11/00

U.S. Cl. 379—56 2 Claims



1. A telephone dialing system comprising in combination:

an electronic wristwatch and a telephone handset,

said electronic wristwatch including,

first radio means, said first radio means comprising a one way radio means for receiving radio paging messages which include telephone numbers,

second radio means, said second radio means comprising a two way short range radio link between said electronic wristwatch and said telephone handset,

means for storing telephone numbers, and

means for retrieving telephone numbers from said memory and transmitting said telephone numbers to said telephone handset using said second radio means,

said telephone handset including

means for receiving messages electromagnetically transmitted from said electronic wristwatch using said second radio means,

means for generating DTMF dialing tones from the numbers so received and

means for transmitting to said wristwatch requests to retrieve and send to said telephone handset a number stored in said memory,

whereby numbers received via said first radio means and stored by said electronic wristwatch can be automatically transmitted to said telephone by said second radio means and automatically dialed by said telephone.

5,054,052

MOBILE TELEPHONE DEVICE WITH LOW POWER CONSUMPTION

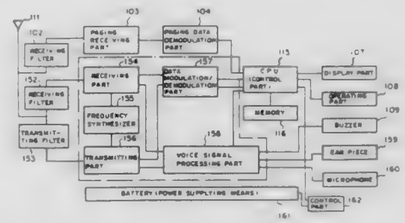
Takayuki Nonami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1989, Ser. No. 376,039

Claims priority, application Japan, Apr. 3, 1989, 1-84376

Int. Cl.[5] H04M 11/00

U.S. Cl. 379—57 93 Claims



1. A mobile telephone device comprising:

an antenna for transmitting or receiving a first high frequency signal having either a voice signal or a control signal modulated thereon and receiving a second high frequency signal having a paging signal modulated thereon;

receiver means connected to the antenna and the below recited control means for demodulating the first high frequency signal received with said antenna to a base band signal;

transmitter means connected to the antenna and the below recited control means for modulating a base band signal of either a voice signal or control signal to generate an outgoing signal of the first high frequency via the antenna;

paging signal receiver means connected to the antenna for extracting the paging signal from the second high frequency signal received by said antenna;

data modulation/demodulation means connected to said transmitter means and receiver means so as to convert either an incoming control signal or an outgoing digital control signal received by or to be output from the antenna;

frequency synthesizer means providing a tuned frequency for said transmitter means and receiver means and connected therebetween;

voice inputting means and voice outputting means for inputting and outputting voice signals into and from said device;

voice signal processing means for processing voice signals inputted from the voice inputting means to output it to said transmitter means and further processing a base band signal inputted from said receiving means to output it to said voice outputting means;

operator input means for outputting control signals selected by an operator to a control means within the device;

display means for displaying a calling party's telephone number received by the paging signal receiver means;

said control means being responsive to a control signal from said operator input means for causing the display of the calling party's telephone number on said display means;

instantaneous calling means contained in said operator input means, for detecting the calling party's telephone number in a paging signal outputted by said paging signal receiver means and outputting said calling party's telephone number as said outgoing digital control signal to said data modulation/demodulation means in response to an excitation signal inputted by an operator to said operation input means;

power supply means for supplying electrical power to said telephone device, said power supply means being con-

nected to each of the foregoing means of the mobile telephone device; and

power supply control means connected to said power supply means for shutting off the supply of electrical power from said power supply means to at least said frequency synthesizer means when waiting for an incoming paging signal.

5,054,053

SPEECH RECOGNITION SYSTEM FOR TELEPHONY

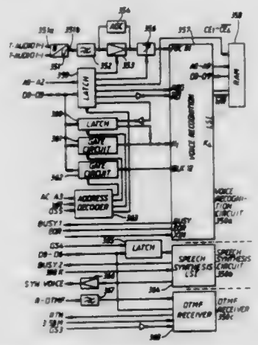
Masayuki Sakanishi; Hiroki Yoshida, both of Tokyo; Takaaki Ishii, Kanagawa; Hiroshi Sato, and Makoto Hoshino, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Division of Ser. No. 242,677, Sep. 9, 1988. This application Aug. 14, 1989, Ser. No. 393,672

Claims priority, application Japan, Sep. 11, 1987, 62-227929; Sep. 16, 1987, 62-231689; Sep. 30, 1987, 62-246230; Sep. 30, 1987, 62-247508

Int. Cl.[5] **G10L** *9/14;* **H04M** *1/272, 1/56*

U.S. Cl. 379—63 **20 Claims**



1. A speech recognition system, comprising:

means for registering one or more predetermined numbers of data each representing a speech pattern prior to a user's utterance;

means for providing a transduced speech signal representing a speech pattern in response to said user's utterance;

means, coupled to said providing means, for extracting a predetermined number of data representing a provided transduced speech signal;

means, coupled to said extracting means, for storing an extracted predetermined number of data;

means, coupled to said registering means and said storing means, for detecting a difference between said extracted predetermined number of data and each of one or more registered predetermined numbers of data; and

means, coupled to said detecting means, for providing said user with information representing whether any of said one or more registered predetermined numbers of data corresponds to said user's utterance, based on a detected difference.

5,054,054

VOICE APPLICATIONS GENERATOR

Dario Pessia, Sunnyvale, and Ralf Gliemer, Santa Clara, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1989, Ser. No. 307,429

Int. Cl.[5] **H04M** *3/50*

U.S. Cl. 379—89 **16 Claims**

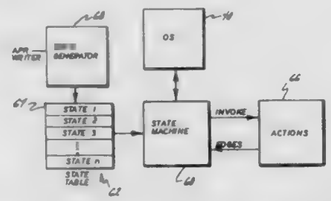
6. In a data processing system, a method of enabling a user of the system to generate a voice related application, comprising the steps of:

partitioning the application into at least two states, the step of partitioning including the steps of, for each of the states,

inputting a state identification that uniquely identifies the state;

inputting an identification of an action to be invoked during the state;

inputting, if required, one or more parameters required by the identified action; and



inputting an identification of at least one next state to be executed upon the termination of the identified action, wherein an action has a plurality of possible outcomes and wherein the step of inputting the identification of at least one next state is accomplished by entering the identification of a next state to be executed for each of the possible outcomes.

5,054,055

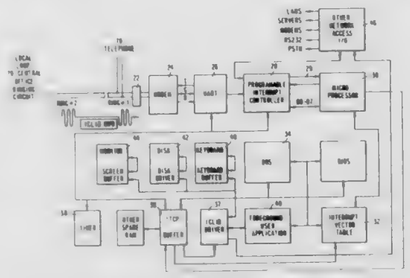
TELEPHONE SYSTEM AND METHOD FOR THE INTELLIGENT USE OF INDIVIDUAL CALLING LINE IDENTIFICATION INFORMATION

John P. Hanle, Silver Spring, Md., and James E. Curry, Herndon, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Apr. 26, 1990, Ser. No. 515,027

Int. Cl.[5] **H04M** *11/00, 1/21, 1/57*

U.S. Cl. 379—142 **18 Claims**



1. A telephone system including a central office and a remote local subscriber station interconnected by a local loop, said telephone system comprising

means at said central office for generating a multiplexed ringing signal having a ringing component and a data component;

means at said subscriber station for receiving said ringing signal, said subscriber station further comprising

a computer including a central processing unit, internal memory, permanent storage, and a keyboard;

means for inputting said ringing signal to an input port of said computer;

control means for controlling said computer in response to said ringing signal, said control means comprising

extracting means for extracting the data component of the received multiplexed ringing signal; and

means for storing the extracted data in the internal memory of the computer; said subscriber station further comprising

means for displaying on a monitor information corresponding to said extracted data; wherein

the data component of the ringing signal represents caller line identification intelligence and said control means further comprises

means for applying said extracted data to a keyboard buffer memory in said computer.

5,054,056

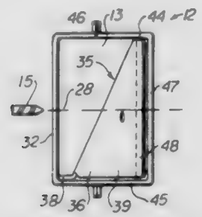
TAMPER-DETERRENT DEVICE

William H. Blythe, Roswell, Ga., assignor to Bell South Corporation, Atlanta, Ga.

Filed Aug. 29, 1990, Ser. No. 575,208

Int. Cl.[5] **B65G** *11/04;* **H04M** *17/02*

U.S. Cl. 379—145 **14 Claims**



1. A device for restricting a drilling process along a drill axis, said device comprising a deflecting member defining a deflecting surface portion intersecting said drill axis at a drill deflection angle sufficient to cause the leading point of said drill to be deflected along said surface portion and not to pass through said surface portion.

5,054,057

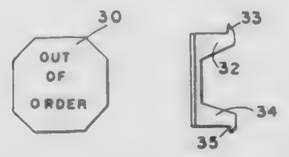
COIN BLOCKER

Clifford J. Wilson, P.O. Box 77, Fall River, Mass. 02724

Filed Jan. 17, 1991, Ser. No. 621,388

Int. Cl.[5] **H04M** *17/02*

U.S. Cl. 379—155 **1 Claim**



1. A coin slot cover for telephones in which the telephone is provided with a slot opening in the outer case thereof that communicates with an internal slot at the entrance to the coin chute, the cover comprising a plate defined by a bottom and face surface, said plate having a pair of tabs, said tabs lying in the same plane and extending perpendicular to the bottom surface of the plate, the terminal portion of the tabs having locking portions on the outer edges of the tabs whereby the tabs of the cover may be inserted in a coin slot and will be retained therein by the locking portion engaging the inner surface of the slot and will maintain the plate covering the slot, the face surface of the plate displaying a message.

5,054,058

TELEPHONE AND TELEPHONE SYSTEM HAVING IMPROVED ONE-TOUCH CALLING

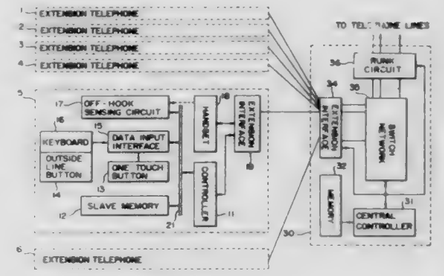
Katsuhiro Kakizawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 250,220, Sep. 28, 1988, abandoned. This application Aug. 22, 1990, Ser. No. 569,735

Claims priority, application Japan, Oct. 1, 1987, 62-245827

Int. Cl.[5] **H04M** *1/00*

U.S. Cl. 379—157 **8 Claims**



1. A telephone comprising:

numbers storing means for storing a plurality of specific telephone numbers including both extension call numbers and outside call numbers in advance;

number designating means for designating a specific telephone number stored in said number storing means; and

transmitting means for transmitting information indicative of the specific telephone number designated by said number designating means to a connecting line;

said number designating means having one-touch call number designating buttons and an outside line designating button,

wherein, when one of said one-touch call number designating buttons is pushed without the outside line designating button being pushed, one of said extension call numbers corresponding to said pushed one-touch call number designating button is dialed, and

when one of said one-touch call number designating buttons is pushed after the outside line designating button is pushed, one of the outside lines is seized and one of said outside line call numbers corresponding to said pushed one-touch call number designating button is dialed.

5,054,059

TELEPHONE DIALING SYSTEM FOR SPECIALIZED SERVICES

Joseph L. Stern, New York, N.Y., and Fred R. Cerequas, Edison, N.J., assignors to Stern Telecommunications Corp., New York, N.Y.

Filed Oct. 24, 1989, Ser. No. 426,744

Int. Cl.[5] **H04M** *1/66*

U.S. Cl. 379—200 **6 Claims**

1. A method of providing local control of access to a telephone line using an interactive, specialized dialing system having a memory, a microprocessor for directing requests for program instructions from the memory and for responding to instructions stored in the memory for generating command signals, a device for interfacing with a standard telephone line, a decoder for receiving signals from the line and for supplying decoded signals to the microprocessor, and an encoder responsive to the microprocessor providing encoded signals to the interface, the method comprising the steps of:

detecting an incoming dial tone indicating pick-up of a telephone for readying the system for use;

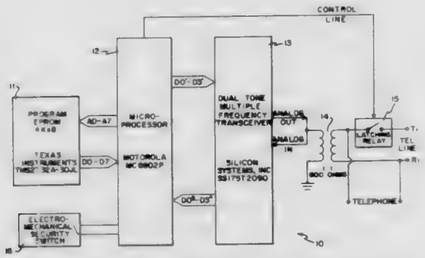
checking the signal of the first digit dialed to determine if it is an inter-LATA call;

disconnecting the telephone from the line if the signal from the first digit indicates it is an inter-LATA call;

comparing, if it is not an inter-LATA call, the signals from the initial digits dialed with stored information representing an exception list of toll calls and a list of local non-toll inter-LATA prohibited prefixes;

if the dialed area code is on the exception list, sending the dialed number over the telephone line using DTMF signals;

if the dialed area code is not on the exception list and is not prohibited, sending a DTMF signal to the dialer to indicate that a password is necessary;



comparing signals representing a dialed password with a predetermined, stored password pattern;

if there is no match between the dialed password signals and the stored password pattern, forwarding the call by sending DTMF signals representing a stored number to a preselected operator service;

if there is a match between the passwords, transmitting the dialed number using DTMF signals over the telephone line; and

transmitting, upon request, an account code in DTMF signals corresponding to the dialer's line.

5,054,060

CIRCUIT FOR REGULATING CURRENT IN A PBX LOOP

David A. Werdin, Eagan, and Reinhold Henke, St. Paul, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Continuation of Ser. No. 204,751, Jun. 10, 1988, abandoned. This application Jan. 16, 1990, Ser. No. 463,792

Int. Cl.[5] H04M *19/00*

U.S. Cl. 379—324 **9 Claims**

1. Apparatus for interfacing subscriber equipment to tip and ring lines originating from a central office source, comprising:

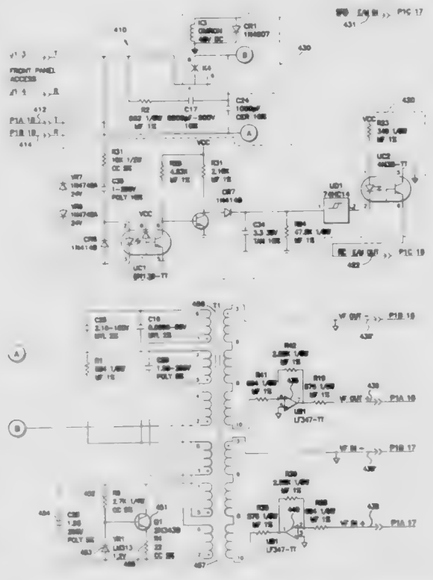
a tip connection for connection to said tip line;

a ring connection for connection to said ring line;

transformer means connected serially between said tip and said ring connections to form a subscriber loop, said transformer means for applying and extracting AC signals to and from said loop, the DC current in said loop sourced from the central office;

regulator means for actively regulating the DC current of said loop so that the loop current is maintained substantially within a predetermined range which is narrower than the unregulated range of loop current that could exist in the absence of said regulator means; and

said transformer means having an operating range corresponding to said predetermined range of loop current and



narrower than the operating range required for the unregulated range.

5,054,061

HANDS-FREE TELEPHONE

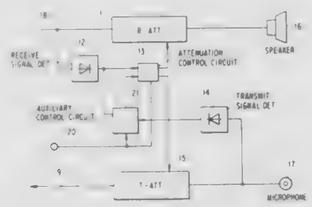
Ikio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 313,209, Feb. 21, 1989, Pat. No. 4,982,425. This application Oct. 5, 1989, Ser. No. 417,617

Claims priority, application Japan, Feb. 18, 1988, 63-33902; Oct. 7, 1988, 63-252046

Int. Cl.[5] H04M *1/60*

U.S. Cl. 379—390 **11 Claims**



1. A hands-free telephone comprising:

speaker means;

microphone means;

receive variable attenuator means connected to the input of said speaker means for changing the input level of said speaker means in accordance with a first control signal;

transmit variable attenuator means connected to the output of said microphone for changing the output level of said microphone in accordance with a second control signal;

receive signal detector means connected to the input of said receive variable attenuator means for detecting the input level of said receive variable attenuator means to produce a receive detect signal;

transmit signal detector means connected to the output of said microphone for detecting the output level of said microphone to produce a transmit detect signal;

attenuation control means responsive to said receive and transmit detect signals for providing said first and second control signals to said receive and transmit variable attenuator means, respectively; and

auxiliary control means connected between said transmit signal detector means and said attenuation control means and responsive to an enable/disable signal indicating the status of a line connected to said hands-free telephone for passing said transmit detect signal to said attenuation control means only when said transmit detect signal exceeds a predetermined reference level and said enable/disable signal indicates that said line is established.

5,054,063

DISPOSABLE SANITARY TELEPHONE COVER

Josephine N. Lo, and Peter P. Chow, both of 2317 Byrnes Rd., Minnetonka, Minn. 55343

Filed Dec. 30, 1988, Ser. No. 292,544

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—452 **7 Claims**

5,054,062

CIRCUIT FOR MAINTAINING HYBRID CANCELLATION OF SIGNALS IN A COMMUNICATION SYSTEM

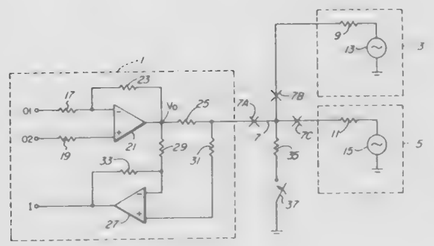
Gerald Molnar, Ottawa, Canada, assignor to Trillium Telephone Systems Inc., Canada

Continuation of Ser. No. 850,241, Apr. 10, 1986, abandoned. This application Oct. 11, 1989, Ser. No. 420,648

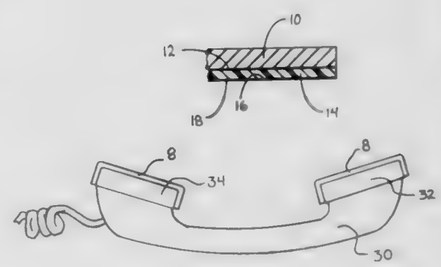
Claims priority, application Canada, Dec. 13, 1985, 497669

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—402 **15 Claims**



1. In a communication system for connecting and disconnecting a plurality of electronic hybrid circuits to and from a common signal bus, each of said hybrid circuits having a predetermined load impedance, a circuit for maintaining hybrid cancellation of signals carried by said bus; comprised of means for selectively connecting one or more balancing load impedances to said bus in response to disconnection of one or more of said plurality of hybrid circuits from the bus, and selectively disconnecting said one or more balancing load impedances from said bus in response to connection of said one or more of said plurality of hybrid circuits to the bus, such that a constant total load impedance is maintained on said bus, and gain control circuitry in each of said hybrid circuits for effecting hybrid cancellation of said signals relative to said constant total load impedance.



1. A portable pad of disposable sanitary covers for sound receiving and transmitting portions of telephones comprising:

a plurality of sanitary covers, each sanitary cover having a first layer having a water impermeable material adapted to contact the sound transmitting portions of a telephone; a second layer comprising a soft material adapted to contact the skin of a user; means for bonding the first and second layers closely together; and adhesive material carried on the side of the first layer disposed away from the second layer for removably attaching the cover to a sound receiving or transmitting portion of a telephone;

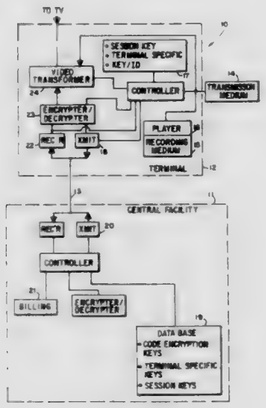
each of the sanitary covers being removably attached to another sanitary cover.

5,054,064

VIDEO CONTROL SYSTEM FOR RECORDED PROGRAMS

Stephen S. Walker, Marlborough; Clarence M. Sidlo, and Melvin J. Teare, both of Framingham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 29, 1990, Ser. No. 501,688
Int. Cl.[5] H04N 7/167
U.S. Cl. 380—5 7 Claims



1. A video system comprising:
a central facility; and
a terminal including means for playing a video recording medium storing a video program including a series of television fields including a first field containing both a random digital code encrypted according to a code encryption key and program identification data, and a second field containing an unintelligible video signal previously transformed from an intelligible video signal according to said random digital code;
said terminal including means for sending said program identification data to said central facility;
said central facility including a data base for storing and retrieving at least one code encryption key corresponding to the program identification data and means for sending said code encryption key from said central facility to said terminal, said terminal further including means for receiving the code encryption key from said central facility, decrypting means for decrypting the encrypted digital code of said first frame in accordance with said code encryption key and means for transforming said unintelligible video signal of said second frame to said intelligible video signal using the decrypted random digital code.

5,054,065

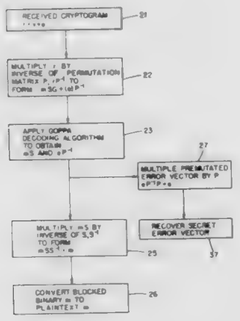
Patent Not Issued For This Number

5,054,066

ERROR CORRECTING PUBLIC KEY CRYPTOGRAPHIC METHOD AND PROGRAM

Justus Riek, Glen Cove, and Gregory McFarland, Port Jefferson, both of N.Y., assignors to Grumman Corporation, Bethpage, N.Y.

Filed Nov. 16, 1988, Ser. No. 272,502
Int. Cl.[5] H04L 9/30
U.S. Cl. 380—30 14 Claims



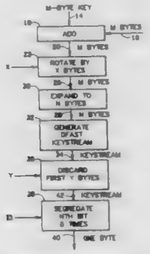
1. A method of transmitting a digital cryptogram over a communications channel by means of a public key algorithm, said method comprising:
(a) constructing a first generator matrix with a preselected finite field and an irreducitble Goppa polynomial, said polynomial providing a degree s error correcting capability,
(b) constructing a scrambled generator matrix by matrix multiplication, said scrambled generator matrix being the product of a non-singular matrix, said first generator matrix and a permutation matrix,
(c) converting plaintext message to be sent to binary form and blocking the message to a predetermined size, said size corresponding to the number of rows in said scrambled generator matrix, said blocked binary message forming a message vector,
(d) encoding the message vector with the scrambled generator matrix using matrix multiplication to form a code vector,
(e) adding a preselected error vector to the code vector in component wise fashion using modulo 2 arithmetic, to generate a cryptogram,
(f) transmitting said cryptogram over a communications channel, said channel having an channel error probability, wherein the combined predetermined error vector and the channel error vector do not exceed the degree s error correcting capability.

5,054,067

BLOCK-CIPHER CRYPTOGRAPHIC DEVICE BASED UPON A PSEUDORANDOM NONLINEAR SEQUENCE GENERATOR

Paul Moroney, Cardiff-By-The-Sea, and Christopher J. Bennett, San Diego, both of Calif., assignors to General Instrument Corporation, New York, N.Y.

Filed Feb. 21, 1990, Ser. No. 482,644
Int. Cl.[5] H04L 9/06
U.S. Cl. 380—37 17 Claims



1. A block-cipher cryptographic device for processing plaintext or encrypted input data with a key signal to provide encrypted or decrypted output data respectively, comprising
a shift register for receiving the input data; and
data processing means, including a pseudorandom nonlinear sequence generator, for executing a data processing routine for a selected number of cycles to provide the output data, wherein the data processing routine includes:
processing the contents of said shift register with a key signal to provide initially processed data;
initializing the pseudorandom nonlinear sequence generator with the initially processed data;
running the pseudorandom nonlinear sequence generator to generate a keystream;
segregating portions of the keystream;
processing said segregated portions of said keystream with a portion of the data in the shift register to provide a block of processed data; and
shifting said block of processed data into the shift register.

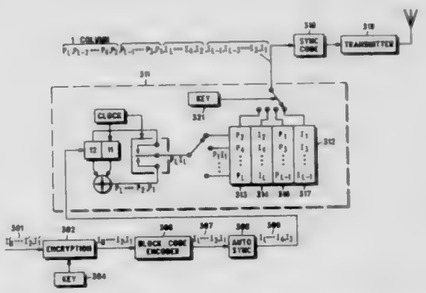
5,054,068

TRUNKED RADIO COMMUNICATION SYSTEM HAVING ENCRYPTED SYSTEM CONTROL INFORMATION

David W. Hess, Rolling Meadows; Gary W. Grube, Palatine, and Robert J. Locascio, Crystal Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1990, Ser. No. 519,615
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—49 9 Claims

1. A method for use with a trunked radio communication system, wherein the trunked radio communication system functions, at least in part, to allocate communication resources from time to time amongst a plurality of communication units, and wherein at least some of the communication resources are so allocated by transmission of system control information on a system control resource, the method comprising the steps of:
A) forming a system control message to support allocation of the communication resources, wherein the system control message includes a plurality of information bits;
B) providing a first encryption key;
C) reordering amongst themselves the information bits, as a function of the first encryption key, to form a reordered system control message;



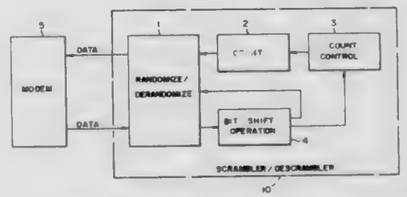
D) transmitting a signal based at least in part on the reordered system control message.

5,054,069

APPARATUS FOR SCRAMBLING/DESCRAMBLING DATA BY WORD-BY-WORD PROCESSING

Takahiro Maeno, and Yasunori Sato, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 491,067, Mar. 9, 1990, abandoned. This application Aug. 28, 1990, Ser. No. 574,147
Claims priority, application Japan, Mar. 9, 1989, 1-54900; Mar. 8, 1990, 2-54850
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—50 24 Claims



1. A scrambling/descrambling apparatus for scrambling/descrambling input data to produce output data comprising:
storing means for storing a data word, a bit invert flag, and numerical data;
bit shift operating means for performing, on receiving a bit of data to be outputted or a bit of input data, a bit shift operation with said bit and storing resultant data in said storing means in a form of a first data word;
randomizing/derandomizing means for randomizing or derandomizing the input data by using said first data word and based on a generating polynomial and, depending on a state represented by said bit invert flag, inverting said bit of said data to be outputted to develop output data;
count processing means for incrementing or decrementing the numerical value stored in said storing means and, depending on said numerical value, selectively setting said bit invert flag to a predetermined state; and
count controlling means for replacing said numerical value with a predetermined initial value on the basis of said first data word and said bit invert flag;
said storing means holding a second and a third data word, bits of which corresponding in position to a particular bit of said first data word are a ZERO and a ONE, respectively;
said count controlling means
reading selectively either one of said second and third data

words out of said storing means depending on the value of said bit which is inputted to said bit shift operating means;

Exclusive-ORing said data word read out and said first data word;

performing a masking operation with a data word resulting from the Exclusive-ORing for validating a bit corresponding in position to said particular bit position of said first data word while invalidating the remaining bits;

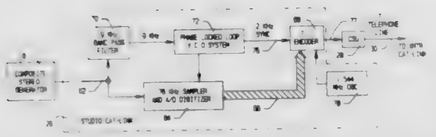
replacing said numerical value with said initial value when a data word resulting from the masking operation is indicative of a ZERO or when said bit invert flag is in said predetermined state.

5,054,070

STEREO SIGNAL COMMUNICATION SYSTEM AND METHOD

Eric A. Eckstein, Narberth, Pa., and Charles H. Haubrich, Williamstown, N.J., assignors to QEI Corporation, Williamstown, N.J.

Filed Mar. 5, 1990, Ser. No. 488,904
Int. Cl.[5] H04H *5/00*
U.S. Cl. 381—7 **13 Claims**



1. A system for conveying from one location to another location a standard composite stereo signal of the type containing a baseband of frequency components representing the sum (L+R) of the Left and Right stereo signals L and R; a suppressed subcarrier signal modulated with a signal representing the difference (L−R) between the Left and Right signals and comprising frequency components above the highest frequency in said baseband, and a pilot carrier at a frequency between the highest frequency in said baseband and the lowest frequency in said modulated subcarrier signal, synchronized in phase and frequency with said subcarrier, said system comprising:

sampling means at said first location responsive to said composite stereo signal for sampling it at the phase of the positive and negative peaks of said subcarrier;

means for transmitting the samples resulting from said sampling, from said first location to said second location;

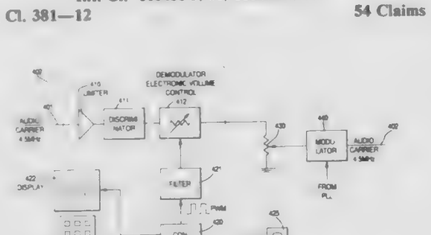
at said second location, means for processing said samples to derive therefrom signals representative of L, signals representative of R, and pilot carrier signals of the same frequency and relative level as said transmitted pilot carrier signal, and means for combining said derived L-representing signals, said derived R-representing signals and said derived pilot carrier signals for combining them to regenerate said standard composite stereo signal.

5,054,071

VOLUME CONTROL FOR OPTIMUM TELEVISION STEREO SEPARATION

Kinney C. Bacon, Duluth, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Feb. 3, 1989, Ser. No. 306,010
Int. Cl.[5] H04H *5/00*; **H04N** *5/44*
U.S. Cl. 381—12 **54 Claims**



1. Apparatus for use in a cable television converter for controlling audio volume, wherein said audio volume is controlled to predetermined levels and a particular level provides optimum stereo separation, the apparatus comprising:

a demodulator for demodulating an input signal to provide an aduio signal;

a user interface for inputting a desired volume level;

a volume control for varying the volume of the audio signal in accordance with the desired volume level and outputting a volume controlled audio signal, the volume control including a trimming control calibrated for a volume that provides optimum stereo separation when the desired volume level is at the particular level and the volume that provides optimum stereo separation has unity gain; and

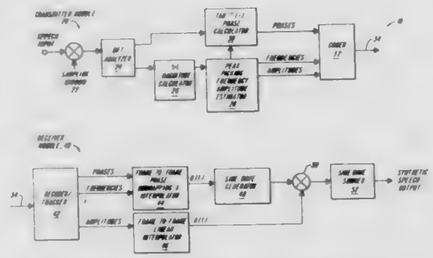
an indicator for indicating when the volume level of the audio signal provides optimum stereo separation.

5,054,072

CODING OF ACOUSTIC WAVEFORMS

Robert J. McAulay, Lexington, and Thomas F. Quatieri, Jr., Arlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 34,097, Apr. 2, 1987, abandoned. This application Dec. 15, 1989, Ser. No. 456,183
Int. Cl.[5] G10L *7/06, 9/18*
U.S. Cl. 381—31 **23 Claims**



1. A method of coding speech for digital transmission, the method comprising:

sampling the speech to obtain a series of discrete samples and constructing therefrom a series of frames, each frame spanning a plurality of samples;

analyzing each frame of samples to extract a set of variable frequency components having individual amplitudes and phases which, in summation, approximate the waveform of the speech frame;

estimating a pitch for each frame of samples;

coding data representative of the analyzed speech frame and the pitch for digital transmission;

synthesizing a set of reconstruction frequency components from the encoded data; and

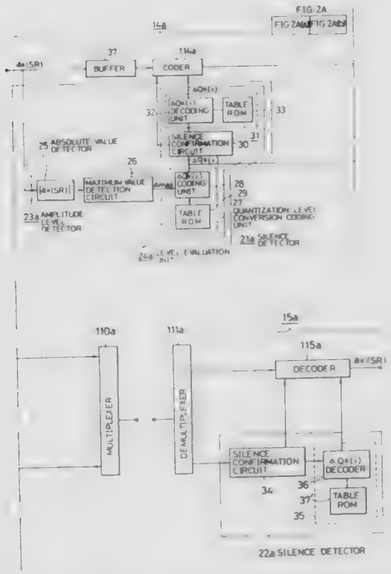
establishing a pitch onset time at which the frequency components come into phase synchrony.

5,054,073

VOICE ANALYSIS AND SYNTHESIS DEPENDENT UPON A SILENCE DECISION

Takashi Yazu, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 127,257, Dec. 1, 1987, abandoned. This application Dec. 19, 1989, Ser. No. 453,149
Claims priority, application Japan, Dec. 4, 1986, 61-289708
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—37 **6 Claims**



1. A band-subdivision-type apparatus having analysis and synthesis sides for the analysis and synthesis of voice signals, in which the frequency band of the voice signals is divided into a plurality of subdivided channels and the voice signals are divided into subdivided channel signals which fall within the respective subdivided channels, said apparatus comprising:

coding means provided on said analysis side for each subdivided channel for separately coding the subdivided channels signal by the use of a quantization step size signal determined for each of a plurality of frames, a frame being defined as a predetermined time interval of said subdivided channel signal;

decoding means provided on said synthesis side for each subdivided channel for receiving said coded subdivided channel signal from said analysis side and decoding said coded subdivided channel signal;

an analysis side amplitude level detector for detecting the amplitude level of said subdivided channel signal in each frame and providing an output corresponding thereto;

an analysis side quantization level conversion coding circuit coupled to the output of said amplitude level detector for quantizing said amplitude level for each frame to determine a quantization level, said quantization level conversion coding circuit converting said quantization level into a coded quantization level signal;

an analysis side silence signal decision circuit coupled to said quantization level conversion coding circuit for receiving said coded quantization level signal and making a decision as to whether the quantization level signal exceeds a predetermined level, said decision circuit outputting a decision signal to said coding means to indicate whether the quantization level exceeds a reference level; and

an analysis side quantization step size decoding conversion circuit interposed between said quantization level conversion coding circuit and said coding means for receiving and decoding said coded quantization level signal into said quantization step size signal, said coding means receiving said quantization step size signal and using it for the coding of said subdivided channel signal of each frame;

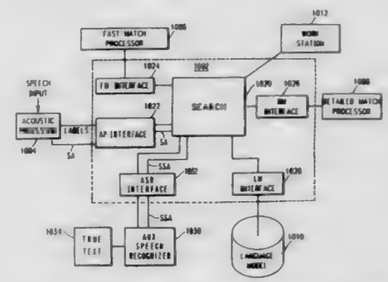
whereby said coding means effects the coding of the subdivided channel signal within each frame when the decision signal for that frame received from said analysis side silence signal decision circuit indicates that the amplitude level of said frame exceeds said reference level, and does not effect the coding of the subdivided channel signal within each frame when the decision signal for said frame indicates that the amplitude level of said frame does not exceed said reference level.

5,054,074

OPTIMIZED SPEECH RECOGNITION SYSTEM AND METHOD

Raimo Bakis, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 318,042, Mar. 2, 1989, abandoned. This application Sep. 17, 1990, Ser. No. 586,338
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—41 **8 Claims**



1. A method of modeling the sounds produced by speaking at least first and second portions of speech, said method comprising the steps of:

uttering at least the first portion of speech N times in a time interval having a series of successive subintervals, where N is an integer greater than or equal to one;

measuring the value of at least one feature of the utterance of the first portion of speech during each of the series of successive subintervals to produce a series of feature vector signals representing the feature values;

estimating the expected number of occurrences of the first portion of speech in the time interval as a combination of the values for each subinterval of a first model function of the measured value of the feature of the utterance of the first portion of speech, said first model function having at least a first parameter having an initial value;

estimating the expected number of occurrences of the second portion of speech in the time interval as a combination of the values for each subinterval of a second model func-

tion of the measured value of the feature of the utterance of the first portion of speech, said second model function having at least a second parameter having an initial value;

estimating the probability of exactly N occurrences of the first portion of speech in the time interval given the estimated expected number of occurrences of the first portion of speech;

estimating the probability of exactly zero occurrences of the second portion of speech in the time interval given the estimated expected number of occurrences of the second portion of speech;

calculating revised values of the first and second parameters to improve the value of an objective function comprising a combination of at least the estimated probability of exactly N occurrences of the first portion of speech and the estimated probability of exactly zero occurrences of the second portion of speech;

modeling the first portion of speech with the first model function with the revised value of the first parameter; and

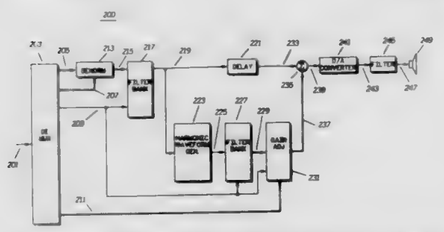
modeling the second portion of speech with the second model function with the revised value of the second parameter.

5,054,075

SUBBAND DECODING METHOD AND APPARATUS

Daehyoung Hong, Hanover Park, and Michael D. Kotzin, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1989, Ser. No. 403,245
Int. Cl.[5] G10L *7/02*
U.S. Cl. 381—36 **15 Claims**



1. In a subband coding system including an encoder having an input signal and a decoder, a method for providing an improved reconstructed signal at the decoder, comprising the following steps:

(a) providing a partially reconstructed signal based on information received from the encoder:

(b) receiving from the encoder N subband energy values E_k, where k varies from 1—N, each E_k based on the energy present in a particular spectral subband of the original input signal:

(c) providing N noise/waveform fill signals, each having an energy value E'_k, where the E'_k is provided by the following steps:

(c_1) computing values A, B which minimize

$$\sum_{k=1}^{N} [E_k - (Ak + B)]^2;$$

(c_2) computing N values Z_k based on $E_k-(Ak+B)$, where k varies from 1—N;

(c_3) identifying the largest Z_k ($Z_{k|max}$);

(c_4) computing N values E'_k based on $E_k-\xi(Z_{k|max}-Z_k)$, where k varies from 1—N and ξ is a predetermined constant;

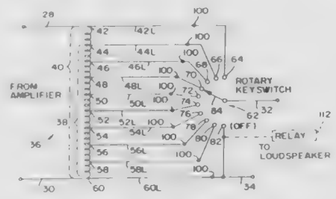
(d) combining the noise/waveform fill signals with said partially reconstructed signal.

5,054,076

KEY-ACTUATED VOLUME CONTROL

Wilhelm R. Lowell, St. Louis, Mo., assignor to Lowell Manufacturing Company, St. Louis, Mo.

Filed Nov. 13, 1989, Ser. No. 435,668
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—109 **10 Claims**



1. A device for providing limited-access volume control for at least one remote speaker in an audio system comprising an audio signal source and at least one remote speaker, the device comprising:

a lockable, key-actuable attenuator that attenuates an input audio signal to provide an attenuated output audio signal, the attenuator being adjustable by use of a key to selectively adjust the degree of attenuation, and being lockable upon the removal of the key to prevent unauthorized adjustment of the degree of attenuation,

means for providing an input audio signal from the audio signal source to the attenuator,

means for providing an output signal from the attenuator to the speaker,

means for providing an emergency signal,

the attenuator comprising a transformer connected to the means for providing an input audio signal, the transformer including a winding having a plurality of tap means for providing a corresponding plurality of levels of attenuation, and a lockable, key-actuable, multiple position switch having a contact corresponding to each switch position, each such contact being connected to a respective one of the tap means, the switch being operable upon insertion of a key to move from position to position and being lockable upon removal of the key, and

one of the tap means being connected to the winding in such a way that it can enable the means for producing an emergency signal so that when the switch is operated to the position corresponding to this tap means the emergency signal is transmitted to the speaker.

5,054,077

FADER DEVICE

Takashi Suzuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 20, 1990, Ser. No. 556,337
Claims priority, application Japan, Jul. 26, 1989, 1-193411
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—109 **6 Claims**

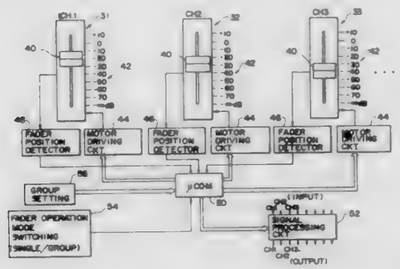
1. A fader device comprising:

fader individually operators capable of being operated both manually and by electrical means a plurality of channels;

signal processing means for applying signal processing to an input signal of each channel in accordance with an amount of operation of a corresponding one of the fader operators;

fader operation mode switching means for switching a fader opertaion between a single operation mode and a group operation mode; and

control means for performing a fader control in such a manner that, in the single operation mode, each of the fader operators can be indiviudally operated and, in the group operation mode, operation of any one of a group of the fader operators causes the other fader operators of the group to be automatically operated by said electrical means in accordance with an amount of operation of said one fader operator.

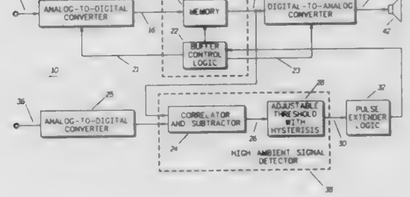


5,054,078

METHOD AND APPARATUS TO SUSPEND SPEECH

Eric R. Schorman, Bedford, and Kevin M. Laird, Halton City, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1990, Ser. No. 489,144
Int. Cl.[5] H03G *3/20*
U.S. Cl. 381—110 **18 Claims**



1. A communication device, comprising:

means for receiving a first audio signal;

means for receiving a second audio signal;

a buffer for storing the first audio signal at an input rate, and for producing an output audio signal at an output rate;

determining means for determining whether at least a portion of the output audio signal is present in the second audio signal;

subtracting means for subtracting the portion of the output audio signal from the second audio signal, to produce a third audio signal;

threshold detection means responsive to the third audio signal, for producing a first control signal when the third audio signal increases at least to a first predetermined level, and for producing a second control signal when the third audio signal decreases below a second predetermined level, the second predetermined level being lower than the first predetermined level; and

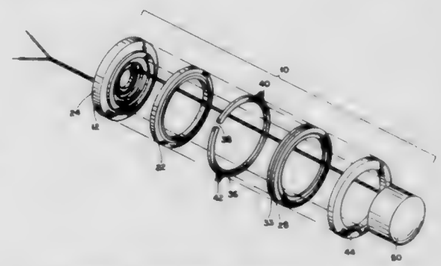
buffer control means for causing the buffer to suspend production of the output audio signal in response to the first control signal, and for causing the buffer to resume production of the output audio signal, in response to the second control signal.

5,054,079

BONE CONDUCTION MICROPHONE WITH MOUNTING MEANS

Frank Frielingsdorf, Port Jefferson; Alan Hofer, Wantagh, both of N.Y., and Peter Untersander, Ecoteaux, Switzerland, assignors to Stanton Magnetics, Inc., Plainview, N.Y.

Filed Jan. 25, 1990, Ser. No. 470,147
Int. Cl.[5] H04R *25/00;* **H04M** *1/00*
U.S. Cl. 381—151 **10 Claims**



7. A microphone assembly comprising:

a cylindrical housing including a housing cavity with disk-shaped base and interior housing sidewalls;

a microphone disposed in said housing cavity and adhesively secured to said disk shaped, and spaced radially away from said interior sidewalls;

a damper ring coupled to said housing and made of a soft, resilient material for damping extraneous noise wherein said damper ring is formed with an annular groove; and

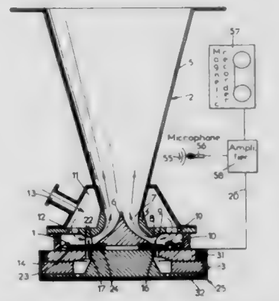
mounting means coupled to said damper ring for mounting said housing to a headgear worn by a person, said mounting means consists of a pivot ring disposed in said annular groove.

5,054,080

PNEUMATIC LOUDSPEAKER WITH A CONTINUOUS PRESSURIZED FLUID FLOW

Jean Julia, Epinay-Sur-Seine; Ferdinand Pollet, Nanterre, and Jean-Francois Foissey, Plaisir, all of France, assignors to Bertin & CIE, Plaisir Cedex, France

Continuation of Ser. No. 790,207, Oct. 22, 1985, abandoned.
This application Mar. 20, 1989, Ser. No. 325,121
Claims priority, application France, Oct. 29, 1984, 84 16480
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—165 **4 Claims**



1. A pneumatic loudspeaker having a pneumatic circuit in which a continuous pressurized fluid flows through an intermediate annular throat, said fluid flow being modulated by axial displacements of a fluid flow modulating annular obstacle

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under the control of an electromagnetic transducer driven by a sound signal; said electromagnetic transducer comprising a movable armature having thereon a movable winding between a narrow annular gap of a large diameter formed by pole pieces of a permanent magnet, said movable winding being located at one end of an annular wall of a cylindrical support with the other end thereof constituting said fluid flow modulating annular obstacle, said pneumatic circuit being separated from the electromagnetic transducer by a continuous annular elastic membrane through which the cylindrical support passes in a leakproof manner; said annular wall of said cylindrical support being composed of a lightweight composite material, with the end of said support which holds the movable winding being of a low height comparatively to its diameter and the support further being provided with a flat annular indentation formed in the thin outer wall to form a winding housing, said winding being substantially contained in said indentation and being sandwiched between a first layer of glue coating the bottom of said indentation and a second layer of glue embedding turns of the winding so as to form a rigid integral assembly with a smooth and uniform surface flush with an outermost surface of said one end of said annular wall.

5,054,081

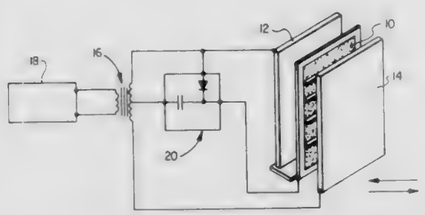
ELECTROSTATIC TRANSDUCER WITH IMPROVED BASS RESPONSE UTILIZING DISTURBED BASS RESONANCE ENERGY

Roger A. West, 6451 Mountain View Dr., Park City, Utah 84060

Continuation of Ser. No. 105,505, Oct. 1, 1987, abandoned, which is a continuation of Ser. No. 719,135, Apr. 2, 1985, abandoned. This application Mar. 15, 1989, Ser. No. 324,994

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—191 **8 Claims**



1. A transducer comprising a plurality of stretched diaphragm sections, and means electrically connected to an audio signal source for vibrating said diaphragm sections in response to variations in said signal to cause acoustic energy to emanate from opposite surfaces of each of said sections to reproduce said audio signal, the acoustic energy emanating from one side of each diaphragm section tending to cancel the acoustic energy emanating from the other side thereof through a range of relatively low frequencies, said diaphragm sections having different physical characteristics so as to create resonant peaks at different frequencies a plurality of said peaks being located within said range of frequencies to offset the effects of said cancellation.

5,054,082

METHOD AND APPARATUS FOR PROGRAMMING DEVICES TO RECOGNIZE VOICE COMMANDS

Paul F. Smith, and Kamyar Rohani, both of No. Richland Hills, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

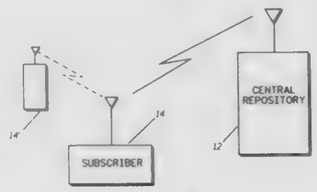
Continuation of Ser. No. 213,409, Jun. 30, 1988, abandoned. This application Mar. 26, 1990, Ser. No. 499,575

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—42 **20 Claims**

1. In a communication system having at least one communication unit being at least partially controlled by voice commands, and at least one remote repository station having a data base comprising at least voice recognition information for more than one individual, a method for programming said at least one communication unit to recognize voice commands of at least one individual, comprising the communication unit steps of:

requesting particular voice recognition information of one individual from said remote repository station;



receiving data representing a selection by said repository station of particular voice recognition information of said one individual among other individuals from said remote repository station via a radio frequency receiving means; and

storing at least a portion of the data representing said particular voice recognition information.

5,054,083

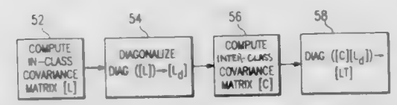
VOICE VERIFICATION CIRCUIT FOR VALIDATING THE IDENTITY OF AN UNKNOWN PERSON

Jayant M. Naik, Dallas; Lorin P. Netsch, Allen, and George R. Doddington, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 9, 1989, Ser. No. 350,060

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—42 **21 Claims**



1. A method of verifying the identity of an unknown person, whereby the unknown person's identity is determined to be either a true speaker or an imposter, comprising the steps of:

receiving input speech from the unknown person;

coding the input speech into a set of predetermined spectral and energy parameters;

transforming the parameters based on a predetermined statistically maximized discrimination between true speakers and successful impostors; and

comparing the transformed parameters with a stored reference model to verify the identity of the unknown person.

5,054,084

SYLLABLE RECOGNITION SYSTEM

Atsuo Tanaka, Mie, and Shin Kamiya, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 376,214, Jun. 29, 1989, abandoned, which is a continuation of Ser. No. 291,380, Dec. 23, 1988, abandoned, which is a continuation of Ser. No. 34,089, Apr. 2, 1987, abandoned. This application May 15, 1990, Ser. No. 524,663

Claims priority, application Japan, Apr. 5, 1986, 61-78817

Int. Cl.[5] G10L *5/06*

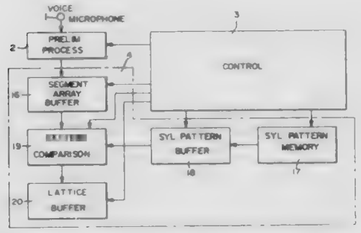
U.S. Cl. 381—43 **8 Claims**

5. An apparatus for recognizing syllables in an input voice signal comprising

sampling means for sequentially sampling an input voice signal at regular time intervals to obtain a series of sampled signals,

means for comparing said sampled signals with standard phoneme patterns to phonetically characterize each of said sampled signals and assigning character symbols individually to said sampled signals to thereby obtain an array of said character symbols, said character symbols being each indicative of a phonological characteristic,

means for obtaining an array of segments by partitioning said array of character symbols into segments, each of said segments containing at least ne of said character symbols and having its length defined by the number of said character symbols contained therein,



dictionary means containing a collection of standard syllable patterns, each of said standard syllable patterns being identified as representing a syllable and comprising an array of character groups, each of said character groups including one of said character symbols and a range symbol indicating a range of duration, said range being specified as being between a minimum and a maximum, said minimum and maximum being selected from more than three predefined values, and

processing means for assigning syllables to said array of segments by sequentially comparing said array of segments with both said character and range symbols of said standard syllable patterns.

5,054,085

PREPROCESSING SYSTEM FOR SPEECH RECOGNITION

William S. Meisel, Encino, and W. Andreas Wittenstein, Venice, both of Calif., assignors to Speech Systems, Inc., Tarzana, Calif.

Continuation of Ser. No. 871,520, Jun. 6, 1986, abandoned, and a continuation-in-part of Ser. No. 928,643, Nov. 5, 1986, Pat. No. 4,718,096, which is a continuation of Ser. No. 698,577, Feb. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 495,674, May 18, 1983, abandoned. This application Nov. 19, 1990, Ser. No. 614,991

Int. Cl.[5] G10L *9/04, 5/06*

U.S. Cl. 381—43 **10 Claims**

1. A system for preprocessing the speech of a speaker to provide a normalized signal for subsequent processing, said system comprising:

means for generating speaker specific gain settings, speaker specific spectral settings, speaker specific pitch settings and speaker specific peak normalization settings for the speech of a particular speaker, said settings being generated during an enrollment for said particular speaker wherein words spoken during said enrollment may be a different set relative to words spoken by said speaker after said enrollment;

means coupled to said generating means for generating said normalized signal using said settings, which normalized signal represents the speech of the speaker which is to be processed;

wherein said means for generating said speaker specific settings comprises:

a) gain enrollment means for generating said speaker specific settings of the gain for controlling an overall signal level;

b) spectral and pitch enrollment means for generating said speaker specific spectral settings and said speaker specific pitch settings;

c) peak normalization enrollment means for generating said speaker specific peak normalization settings;

wherein said normalized signal includes a set of parameters, said set of parameters including spectral parameters, temporal parameters, pitch parameters, said normalized signal further including a nasal energy signal, an oral energy signal and a pitch epoch timing signal, and wherein said normalized signal generating means includes data acquisition means for generating from the speech of the speaker said oral energy signal, said nasal energy signal and an oral amplitude signal, wherein said oral amplitude signal is input to:

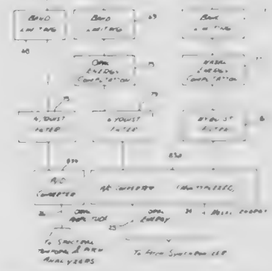
(i) spectral analyzer means for generating said spectral parameters;

(ii) temporal analyzer means for generating said temporal parameters; and

(iii) pitch analyzer means for generating said pitch parameters and said pitch epoch timing signal and

wherein said data acquisition means comprises:

(a) an oral microphone for converting sound emanating from the speaker's mouth into a first electrical signal;



(b) a nasal microphone for converting sound emanating from the speaker's nose into a second electrical signal;

(c) first gain control means coupled to said oral microphone for producing a digitally controlled gain of said first electrical signal;

(d) second gain control means coupled to said nasal microphone for producing a digitally controlled gain of said second electrical signal;

(e) first band limiting means coupled to said first gain control means for producing a voiced band oral amplitude signal from said gain controlled first electrical signal;

(f) second band limiting means coupled to said second gain control means for producing a voiced band nasal amplitude signal from said gain controlled second electrical signal;

(g) energy computation means coupled to said first and second band limiting means for performing a wide band RMS to DC conversion on the output from each of said first and second band limiting means;

(h) first filter means coupled to said first band limiting means for producing a low pass Nyquist filtered output from said voiced band oral amplitude signal;

(i) second filter means coupled to said energy computation means for producing a low pass Nyquist filtered output

from each of said DC converted outputs from said energy computation means;

(j) analog to digital converter means coupled to said first and second filter means for generating a digitalized oral amplitude signal from the output of said first filter means, and a digitalized oral energy signal and a digitalized nasal energy signal from the outputs of said second filter means; and

wherein said means for generating said speaker specific settings comprises:

(a) gain enrollment means for generating said speaker specific settings of the gain for controlling an overall signal level;

(b) spectral and pitch enrollment means for generating said speaker specific spectral settings and said speaker specific pitch settings;

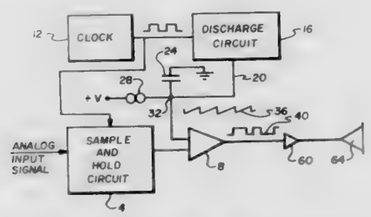
(c) peak normalization enrollment means for generating said speaker specific peak normalization settings.

5,054,086

BINARY SYSTEM FOR GENERATING SOUND

Steven L. Witzel, 4101 E. Canyon View Pl., Sandy, Utah 84092

Filed May 16, 1989, Ser. No. 352,194
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—51 **5 Claims**



1. In a computer system having a speaker responsive to drive signals for producing sound and a driver means responsive to sound information signals for supplying drive signals to the speaker, a sound generation system comprising

means for periodically sampling the amplitudes of an analog electrical signal representing sounds to be generated,

means for storing digital signals having values representing the sampled amplitudes,

means for generating timing signals having a predetermined frequency and interval, said timing signal generating means including clock means for producing a series of clock pulses, and means for developing ramp signals, each beginning in response to a clock pulse and ending upon the occurrence of the next clock pulse, and

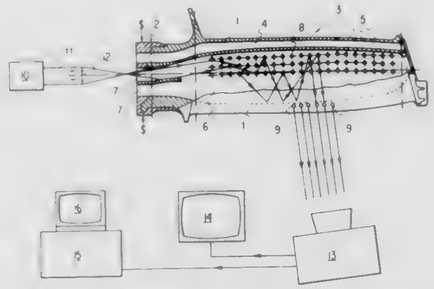
means coupled to the storing means and timing signal generating means for supplying a two-level electrical sound information signal to the driver means, with a first level subsisting for a time proportional to the value of a respective stored signal relative to the ramp signals, and a second level subsisting for a time proportional to the timing signal interval less the time duration of the first level.

5,054,087

PROCESS AND APPARATUS FOR OPTICALLY CHECKING PERFORATIONS IN HOLLOW ARTICLES SUCH AS TURBINE BLADES

Vincent A. Carbon, Paris; Jean-Luc C. Meiffren, St. Germain Les Corbeil, and Pierre M. Pailliotet, Morsang Sur Orge, all of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation "S.N.E.C.M.A.", Paris, France

Filed Sep. 15, 1989, Ser. No. 407,584
Claims priority, application France, Sep. 15, 1988, 88 12008
Int. Cl.[5] G01N *21/00*
U.S. Cl. 382—1 **10 Claims**



1. A process for optically checking the perforations of a hollow article having an internal cavity bounded by a wall provided with a plurality of perforations therethrough, and an opening into said cavity, comprising the steps of:

using a light source to illuminate the internal cavity of said article through said opening;

scanning a video camera along the outside of said article to receive light reflected from within said internal cavity outwardly through said perforations and thereby collect luminance data relating to said reflected light transmitted through said perforations;

converting the sequence of said collected luminance data into electrical signals;

storing said signals in a computing and storage unit; and

processing said signals for comparison with a predetermined train of reference signals derived from a standard article;

wherein said processing of the signals includes the steps of

binarizing said signals, the area seen by said camera being divided into pixels of known dimensions;

effecting section by section processing of the grey level intensity curve $I = f(d)$ where d is the coordinate along the section axis;

performing an erosion-expansion treatment by the addition of an interval function g(d) where g assumes the values 0 or 1 depending on the length d;

affecting smoothing on a plurality of p points of the curve $I' = f(d) + g(d)$ thus obtained, the smoothed value

$$\frac{I'(d_i) + I'(d_{i+1}) + \ldots I'(d_{i+p})}{p}$$

being reallotted to the mean index point between i and i+p to obtain a smoothed intensity curve I''(d);

extracting the point of inflection of the curve I''(d); and

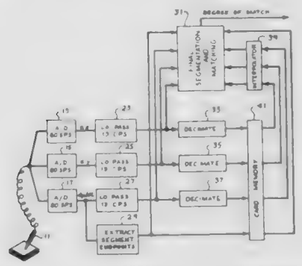
reconstructing the skeleton image of each open-perforation.

5,054,088

SIGNATURE VERIFICATION DATA COMPRESSION FOR STORAGE ON AN IDENTIFICATION CARD

Steven C. Gunderson, Carmel, N.Y., and Aspi B. Wadia, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1989, Ser. No. 409,906
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—3 **23 Claims**



1. The method of enrolling signature information of an authorized user onto an identification card comprising the steps of:

(a) acquiring a first signal and a second signal representative of a signature of said user;

(b) sampling said first signal at a rate of at least n times a highest frequency component of said first signal which is to be preserved, where n is an integer greater than three;

(c) sampling said second signal at a rate of at least m times a highest frequency component of said second signal which is to be preserved, where m is an integer greater than three;

(d) locating portions of said first signal representative of periods of time when said pen was in contact with a writing surface;

(e) storing on said card, an array of the starting and ending times identifying when said pen was in contact with said writing surface;

(f) digitally filtering said samples representing said first signal to remove substantially all energy at frequencies above said highest frequency component of said first signal to be preserved;

(g) digitally filtering said samples representing said second signal to remove substantially all energy at frequencies above said highest frequency component of said second signal to be preserved;

(h) discarding (n/2) − 1 of said filtered first samples out of each n/2 of said filtered first samples;

(i) discarding (m/2) − 1 of said filtered second samples out of each m/2 of said filtered second samples;

(j) storing the remaining of said filtered first samples on said card;

(k) storing the remaining of said filtered second samples on said card.

5,054,089

INDIVIDUAL IDENTIFICATION APPARATUS

Satoshi Uchida, and Masahiro Takeda, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1989, Ser. No. 451,873
Claims priority, application Japan, Dec. 29, 1988, 63-330915
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—4 **11 Claims**

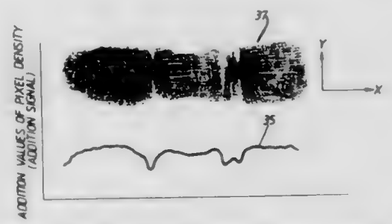
1. An apparatus for identifying an individual by scanning a finger, comprising:

means for generating an input image of the finger including at least two image portions each corresponding to joints of the finger and outputting an image signal corresponding to the input image of the finger;

means for adding the image signal output from the generating means in a direction perpendicular to a longitudinal direction of the finger and outputting an addition signal;

means for storing a previously registered addition signal output from the adding means;

rough position alignment means for performing a rough position alignment between a first signal obtained by decimation of the addition signal output from the adding means and a second signal obtained by the decimation of the addition signal stored in the storing means;



accurate position alignment means for performing an accurate position alignment after the rough position alignment by using the output addition signal and the store addition signal without decimation of either signal; and

means for comparing the output addition signal with the stored addition signal after the accurate position alignment has been performed.

5,054,090

FINGERPRINT CORRELATION SYSTEM WITH PARALLEL FIFO PROCESSOR

Arnold W. Knight, and Douglas C. Knight, both of 2105 Mississippi Cir., New Brighton, Minn. 55112

Filed Jul. 20, 1990, Ser. No. 555,173
Int. Cl.[5] G06K *9/68*
U.S. Cl. 382—4 **17 Claims**

1. Fingerprint identification apparatus comprising:

a) reference means for storing pre-recorded digital fingerprint reference data taken from a subject;

b) live fingerprint means for digitizing fingerprint data of a subject and displaying the live data in superimposed relation to the reference data and for correctionally positioning the superimposed live and reference data relative to one another;

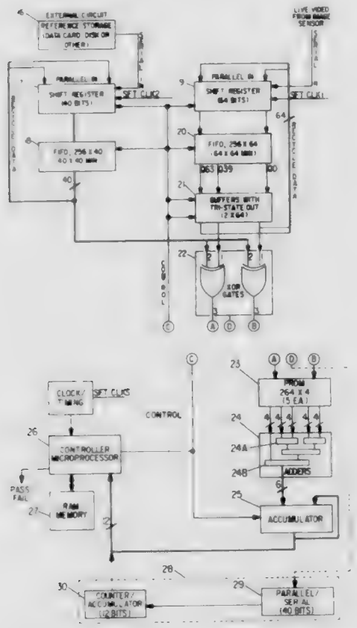
c) first and second FIFO means respectively responsive to the reference and live fingerprint means for each storing data organized into a plurality of rows and columns and sequentially and simultaneously advancing the reference and live data on a row by row basis from an input port to an output port and each including means for recycling each row of data from the output port to the input port and wherein the data of said second FIFO means comprises an $m_x \times m_y$ array and the data of said first FIFO means comprises an $n_x \times n_y$ array and wherein m_x is not equal to n_x;

d) means for comparing the data at each bit position of said reference data relative to a corresponding bit position of said live bit;

e) means for periodically reorganizing the live data relative to the reference data such that over a plurality of comparison cycles all bit positions of the reference and live data are compared with one another;

f) means for accumulating a correlation value for each of

said plurality of cycles, whereby an $m_x - n_x + 1 \times m_y + 1$ correlation array is obtained; and



g) means for processing said correlation array relative to a predetermined threshold condition to determine a PASS-/FAIL condition.

5,054,091

METHOD FOR DETERMINING COORDINATES OF CIRCUMSCRIBED RECTANGULAR FRAME OF EACH CHARACTER FOR USE IN OPTICAL CHARACTER READER

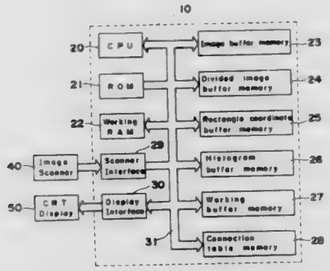
Hideaki Tanaka, Osaka; Toshiaki Morita, Nara; Yoshihiro Kitamura; Hitoshi Hirose, both of Osaka; Yasuhisa Nakamura, Kyoto, and Hisashi Saiga, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1990, Ser. No. 510,895

Claims priority, application Japan, Apr. 18, 1989, 1-99371

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—9 **4 Claims**



1. A method for determining coordinates of a circumscribed rectangular frame for enclosing each character based on image data of character images in a recognition area having been read by an image scanner, including:

a first step of determining specified image data of a predetermined data unit in a transverse direction parallel to lines including at least one bit of black pixel by scanning said read image data, and for determining a specified bit being one bit of black pixel in said specified image data;

a second step for judging whether a bit of black pixel is in either the bit located by one bit at the upper side of said specified bit of said specified image data which has been determined at said first step, or the bits located in said transverse direction by one bit of the bit located at the upper side by one bit of said specified bit of said specified image data;

a third step for determining the bit of black pixel as a newly specified bit if there is the bit of black pixel therein and for repeating said second step, otherwise the coordinate in the transverse direction of said specified bit of black pixel being determined as a top coordinate of said circumscribed rectangular frame;

a fourth step for judging whether a bit of black pixel is in either the bit located by one bit at the lower side of said specified bit of said specified image data which has been determined at said first step, or the bits located in said transverse direction by one bit of the bit located at the lower side by one bit of said specified bit of said specified image data;

a fifth step for determining the bit of black pixel as a newly specified bit if there is the bit of black pixel therein and for repeating said fourth step, otherwise the coordinate in the transverse direction of said specified bit of black pixel being determined as a bottom coordinate of said circumscribed rectangular frame;

a sixth step of calculating histogram data composed of either logical products or logical sums of respective bits in said transverse direction from plural image data located in a specified area between said determined top and bottom coordinates in a predetermined threshold range in said transverse direction from the center of said specified image data which is equal to or larger than the maximum of the transverse width of each circumscribed rectangular frame;

a seventh step of determining a coordinate in said transverse direction of a bit of black pixel located at the leftmost position in said calculated histogram data as a leftmost coordinate of said circumscribed rectangular frame; and

an eighth step of determining a coordinate in said transverse direction of a bit of black pixel located at the rightmost position in said calculated histogram data as a rightmost coordinate of said circumscribed rectangular frame.

5,054,092

HAND-OPERATED LOW COST MAGNETIC CHARACTER RECOGNITION SYSTEM

John R. LaCaze, Owens Cross Roads, Ala., assignor to Checkmate Electronics, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 46,653, May 5, 1987, abandoned, and a continuation-in-part of Ser. No. 46,654, May 6, 1987, abandoned. This application Mar. 31, 1988, Ser. No. 175,981

Int. Cl.[5] G06K *9/18*

U.S. Cl. 382—11 **23 Claims**

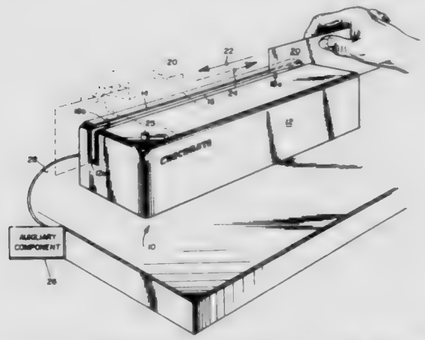
1. Apparatus for magnetically reading and recognizing plural magnetic ink characters disposed sequentially on a surface of a document during manual conveyance of said document relative to a magnetic reading station, said apparatus comprising:

structure which permits human hand movement to propel relative movement between said document and said magnetic reading station, said structure permits relative movement in a first direction and in a second direction which is opposite to said first direction;

said magnetic reading station including electromagnetic transducer means operatively coupled to said document surface for producing a first electrical signal representing magnetic characteristics of said characters during relative movement occurring between said characters and said reading station;

position sensing means for producing electrical position signals indicating a sequence of spaced apart document positions as said document and said magnetic reading station move relative to one another, said position sensing means is operative to sense position for said relative movement occurring in either of said first and second directions;

said apparatus further includes direction indicating means coupled to said position sensing means for producing a direction indicating signal indicating the direction said document is conveyed; and



character identifying means responsive to said first signal and said position signals for producing electrical output signals that accurately identify said plural characters when said manually propelled relative movement occurs between said document and said magnetic reading station at variable velocities within a velocity range of between 5 inches per second and 110 inches per second said character identifying means produces said electrical output signals in response to either direction of said relative movement;

means for sampling said first electrical signal in response to said position signal and for storing said samples; and

means connected to receive said direction indicating signal for analyzing said stored samples in an order responsive to said direction indicating signal.

5,054,093

PARALLEL, MULTI-UNIT, ADAPTIVE, NONLINEAR PATTERN CLASS SEPARATOR AND IDENTIFIER

Leon N. Cooper, 49 Intervale Rd.; Charles Elbaum, 85 Lorraine Ave.; Douglas L. Reilly, 69 E. Manning St., and Christopher L. Scofield, 478 Morris Ave., all of Providence, R.I. 02906

Division of Ser. No. 775,144, Sep. 12, 1985, Pat. No. 4,760,604, which is a continuation-in-part of Ser. No. 702,188, Feb. 15, 1985, abandoned. This application Apr. 8, 1988, Ser. No. 179,427

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—14 **70 Claims**

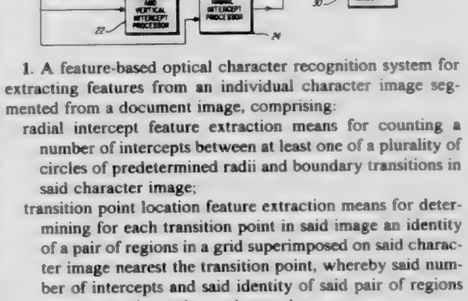
1. A method for classification and identification of patterns in a system comprising input means for receiving an input signal representing each input pattern as a location in multi-dimensional pattern space, memory means for storing information and computer means connected to said input means and said memory means, said method comprising the steps of:

(a) storing in said memory means a plurality of prototypes within said multi-dimensional pattern space, each prototype being associated with a particular pattern class;

(b) comparing an input pattern, represented by said signal, with each of said prototypes stored in said memory means to determine whether said input pattern falls within a region of influence of at least one of said prototypes;

(c) storing a new prototype in said memory means when such input pattern fails to fall within the region of influence of any previously stored prototype; and

(d) modifying one or more of said prototypes in said memory means, in response to the receipt of an input pattern, to



prevent said input pattern from falling within the sphere of influence of a prototype associated with a different pattern class than said input pattern;

whereby said method tends to develop a pattern space in which each incoming input pattern falls only within the regions of influence of prototypes associated with the same class as the input pattern.

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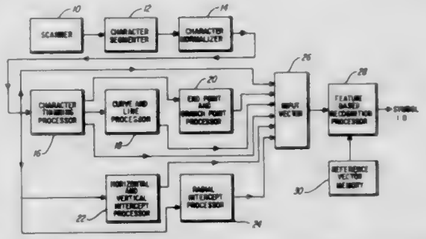
ROTATIONALLY IMPERVIOUS FEATURE EXTRACTION FOR OPTICAL CHARACTER RECOGNITION

Lori L. Barski, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1990, Ser. No. 520,336

Int. Cl.[5] G06K *9/46*

U.S. Cl. 382—18 **24 Claims**



1. A feature-based optical character recognition system for extracting features from an individual character image segmented from a document image, comprising:

radial intercept feature extraction means for counting a number of intercepts between at least one of a plurality of circles of predetermined radii and boundary transitions in said character image;

transition point location feature extraction means for determining for each transition point in said image an identity of a pair of regions in a grid superimposed on said character image nearest the transition point, whereby said number of intercepts and said identity of said pair of regions comprise an input data string; and

feature-based recognition means for comparing said input data string with a set of reference data strings corresponding to a set of known symbols.

5,054,095

METHOD OF RECOGNIZING A PATTERN IN A FIELD HAVING A MULTI-VALENT AMPLITUDE, AND DEVICE FOR PERFORMING SUCH A METHOD

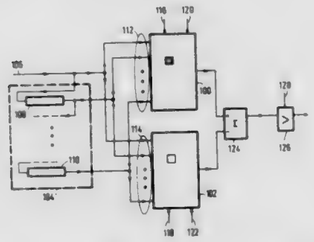
Johannes A. C. Bernsen, Eindhoven, and Reinier van den Boomgaard, The Hague, both of Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Aug. 7, 1989, Ser. No. 390,327

Claims priority, application Netherlands, Aug. 23, 1988, 8802078

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—30 **23 Claims**



1. A method of recognizing a pattern in a field of multi-valent amplitudes by using a reference mask which is composed of a reference pattern of logic high and logic low units for comparison with the amplitudes in said field, characterized in that the reference mask is sub-divided into a first sub-mask containing only certain of said logic high units defining a first window and a second sub-mask containing only certain of said logic low units defining a second window, said first and second windows having fixed relative positions in the reference mask, the method comprising the steps of:

positioning the first and second windows in the field in said fixed relative positions;

determining a relatively lowest value of the amplitudes in the field within the first window and a relatively highest value of the amplitudes in the field within the second window; and

recognizing the pattern when a difference formed by subtracting said relatively highest value from said relatively lowest value is not negative.

5,054,096

METHOD AND APPARATUS FOR CONVERTING DOCUMENTS INTO ELECTRONIC DATA FOR TRANSACTION PROCESSING

Mordechai M. Beizer, New York, N.Y., assignor to Empire Blue Cross/Blue Shield and Sigma Computer Research Associates Inc., both of New York, N.Y.

Filed Oct. 24, 1988, Ser. No. 261,515

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—41 **30 Claims**

1. A system for electronically engaging in a transaction prompted by a document, comprising:

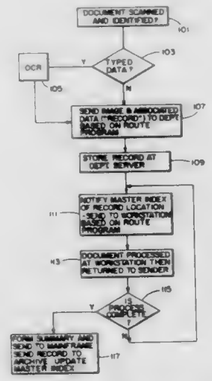
scanning means for optically scanning the document to provide electronic image signals indicative of the image of the document, at least said image signals constituting a record;

main local area network means onto which said record is placed;

at least two servers connected to said main network means for receiving the records, each server communicating its status with the other and being programmed with a routing program such that one of the servers elects to accept a record for processing based in part on the status of each server;

secondary local area network means onto which at least one of said servers places said record, said secondary network means being capable of operating at a lower speed than said main network; and

at least one workstation connected to said secondary local



area network means, said workstation modifying said record according to predetermined transactions, and returning said modified record to the server connected to said secondary local area network.

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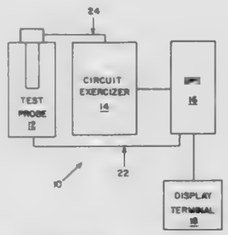
METHODS AND APPARATUS FOR ALIGNMENT OF IMAGES

Xavier A. Flinois, Mountain View, and Stefano E. Concina, San Jose, both of Calif., assignors to Schlumberger Technologies, Inc., San Jose, Calif.

Filed Nov. 23, 1988, Ser. No. 276,359

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—44 **24 Claims**



1. A method of preparing from a first image a resultant image which is aligned pixel-for-pixel with a second image, each said image comprising a set of machine-displayable pixels and having visible features defined by said pixels when displayed, each pixel defined by a display coordinate position and an intensity value, comprising the steps of:

a. i. recording coordinate positions of at least three selected features of said first image,

ii. recording coordinate positions of at least three selected features of said second image with which said at least three selected features of said first image are to be aligned in a resultant image, and

iii. calculating from said recorded coordinate positions a matrix of floating point values from which coordinate positions of said first image can be mapped into respective coordinate positions of said resultant image;

b. transforming said matrix of floating point values into respective fixed point representations;

c. using said fixed point representations to calculate with fixed point arithmetic, for each display coordinate position of said resultant image, a corresponding coordinate position of said first image; and

d. extrapolating a resultant image pixel intensity value for each display coordinate position of said resultant image, from intensity values of pixels surrounding said corresponding coordinate position of said first image, thereby producing a set of pixels defining said resultant image;

whereby said resultant image comprises a version of said first image having features aligned with features of said second image, the pixels of said resultant image being aligned with respective display coordinate positions of pixels of said second image.

5,054,098

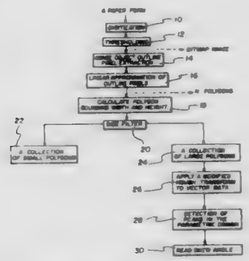
METHOD OF DETECTING THE SKEW ANGLE OF A PRINTED BUSINESS FORM

Yongchun Lee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1990, Ser. No. 526,426

Int. Cl.[5] G06K *9/32*

U.S. Cl. 382—46 **5 Claims**



1. A method for reliably determining the skew angle of a scanned digitized document image in a computer comprising the steps of:

thresholding the digitized image to produce a binary image;

converting the binary image into a collection of closed polygons formed by a series of vectors using contour vectorization;

determine the width and height of an encompassing rectangle for each polygon;

establish a threshold using either the height or width of the rectangle to separate all the polygons into two categories with a first category containing small polygons having either heights or widths smaller than a predetermined value and the second category of larger polygons wherein either the height or width is greater than a predetermined second value;

transforming the vectors of each polygon in the second category of polygons employing a modified Hough transform which includes

a) determining the center coordinates of each vector in a given polygon from the second category of large polygons;

b) calculating the length and angle (Θ) of each vector;

c) using the center coordinates and the angle of each vector in each polygon to determine the value of p in parametric space, using $p = x \cos \Theta + \text{sine } \Theta$ and plot the histogram of (p, Θ) using vector length for each vector in said polygon;

d) include on said plot of the histogram all vector lengths for all vectors in a polygon in a cumulative fashion;

e) detecting the peaks that exist at Θ_1 in the parametric domain and determine if corresponding peaks exist at $\Theta_1 + 180°$; and

f) repeat the steps a-e until all the large size polygons in the second category have been processed;

detecting peaks in the histogram in the parametric domain using a predetermined third threshold;

determining the angular value Θ of the peak values above said third threshold;

determining if any angular values Θ_1 have additional corresponding peaks at Θ_1 at 180° and if so determined, average all values of Θ_1 so determined and the average value Θ_1 will be defined as the skew angle of the document; and

rotate the digitized document image in the computer by Θ_1 degrees to properly orient the document image for further processing.

5,054,099

BINARY IMAGE REDUCTION METHOD

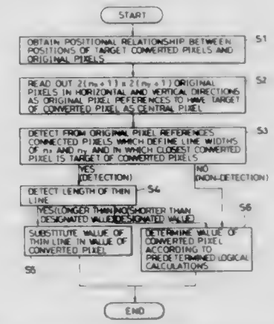
Kaoru Wakabayashi, Yokohama; Fumio Adachi, and Tadashi Ichikawa, both of Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,660

Claims priority, application Japan, Feb. 23, 1989, 1-41533; May 12, 1989, 1-119539

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—47 **4 Claims**



1. A binary image reduction method for reducing a binary original picture at a conversion ratio α_x smaller than 1 in a horizontal direction and at a conversion ration αy smaller than 1 in a vertical direction to obtain a converted picture,

x satisfying $1/n_x > \alpha_x \geqq 1/(n_x+1)$

y satisfying $1/n_y > \alpha_y > 1/(n_y+1)$

where n_x and n_y are natural numbers,

said method comprising the steps of:

obtaining a positional relationship between a target of converted pixels of the converted picture to be produced and original pixels on the original picture;

forming a rectangular area on the original picture having a side of $2(n_x+1)$ original pixels in the horizontal direction and a side of $2(n_y+1)$ original pixels in the vertical direction such that the position of the target of a converted pixel occupies a central position of said rectangular area;

detecting the presence/absence of a line segment having a predetermined width and a predetermined length in said rectangular area using some or all of $4(n_x+1)\times(n_y+1)$ original pixels in the rectangular area; and

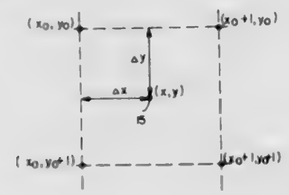
assigning values of pixels of the line segment as the values of the targets of converted pixels when the line segment is present in the rectangular area and the targets of converted pixels are each the converted pixel closest to the detected line segment.

5,054,100

PIXEL INTERPOLATOR WITH EDGE SHARPENING

Hwai T. Tai, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 16, 1989, Ser. No. 437,466
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—47 **14 Claims**



1. A method of processing signals representing existing pixel data of an image on an original document to obtain signals representing new data representative of a new image to be printed which corresponds to the existing data, said method including the steps of:

scanning with suitable means to obtain the existing pixel data;

calculating new pixel values for creating signals representing new pixels throughout the existing data based upon signals representing the magnitudes of pixel values for existing other predetermined pixels;

recognizing when said other predetermined pixels are adjacent to an image edge of large density change;

modifying the calculating step to influence the magnitude of the calculated value for creating signals representing new pixels when the new pixels are recognized as being at said image edge;

wherein the pixel value for one of said new pixels is calculated by an equation which uses weighting factors to influence the value of the new pixel based upon the position of the new pixel relative to at least one of said other pixels and the weighting factors for x, y, and diagonal directions are each modified separately; and

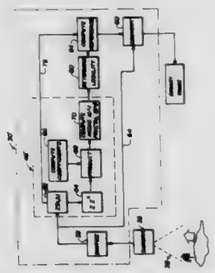
printing said new image in response to said signals representing new pixels which new image retains much of the sharpness existing in the image on the original document.

5,054,101

THRESHOLDING OF GRAY LEVEL IMAGES USING FRACTAL DIMENSIONS

Arun Prakash, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1989, Ser. No. 316,716
Int. Cl.[5] G06K *9/38*
U.S. Cl. 382—50 **8 Claims**



1. A method of converting a two dimensional gray level image to a corresponding binary image comprising the steps of:

subdividing the two dimensional image into a predetermined number of picture elements each of which has a gray level associated therewith;

computing, from the two dimensional image, the surface area A(r) of a corresponding hypothetical three dimensional surface overlying the plane of the two dimensional image, the height that a portion of the hypothetical surface lies above a given pixel in the two dimensional image being functionally related to the gray level of the pixel;

determining the fractal dimension of the hypothetical surface by computing the change in the logarithm of the area A(r) with respect to the change in the logarithm of the scale of resolution r in accordance with the relationship

$$D=2-d[\log A(r)]/d[\log (r)]$$

determining the scale of resolution r_{max} at which the fractal dimension is a maximum;

determining a reference threshold gray level for each pixel in the two dimensional image, each reference threshold gray level being functionally related to the gray levels of each pixel lying within a predetermined locality about a given pixel, the dimensions of the predetermined locality being functionally related to the value r_{max}; and

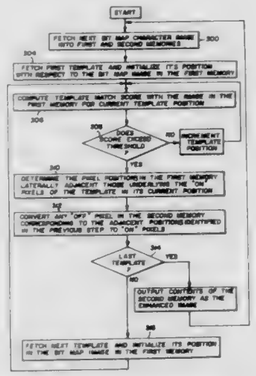
converting the gray level of each pixel in the two dimensional image into a corresponding binary representation thereof by comparing the gray level of each pixel with the reference threshold gray level for the locality surrounding that pixel and assigning a binary value to the pixel in accordance with the results of the comparison.

5,054,102

SELF-CENTERING CHARACTER STROKE THICKENING FOR OPTICAL CHARACTER RECOGNITION

Roger S. Gaborski, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1990, Ser. No. 536,125
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—54 **20 Claims**



1. A character image pre-processor which locates and widens thin character strokes in a character image comprising an array of columns and rows of pixels, said pixels characterized by individual values, said values lying within a range including a relatively high ON value and a relatively low OFF value, said pre-processor comprising:

template memory means for storing a set of n templates comprising an array of M columns and N rows of elements, each template comprising a stripe of width W of high-valued individual template elements in a field of low-valued template elements, the stripe in each of said n templates oriented in a corresponding one of n directions;

template matching means for summing the products obtained from multiplying pixels of a successive one of a set of M column-by-N row kernels of said image by corresponding elements of a successive one of said templates;

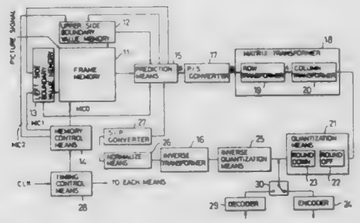
stroke strengthening means responsive whenever said means for summing obtains a sum greater than a threshold value for raising toward said ON value the values of pixels of said character image in said one kernel which are laterally adjacent a line of pixel locations corresponding to the high-valued elements in the stripe of said one template.

5,054,103

PICTURE ENCODING SYSTEM

Akira Yasuda; Hiroyoshi Yuasa; Satoshi Furukawa; Nobuo Matsuo; Hisataka Fujii; Masami Hisada; Yoshihiko Tokunaga; Tadashi Satake, all of Kadoma; Hiroshi Hamada, Okayama; Yoshitaka Morikawa, Okayama, and Nobumoto Yamane, Okayama, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Sep. 22, 1988, Ser. No. 248,915
Claims priority, application Japan, Sep. 24, 1987, 62-240453; Sep. 24, 1987, 62-240454; Sep. 24, 1987, 62-240455
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **18 Claims**



1. A picture encoding system wherein the picture is divided into blocks, having a plurality of picture elements, comprising:

a prediction means for predicting picture element values within the blocks, obtaining predicted values, and thereafter obtaining prediction error signals based on differences between the predicted values and true values;

a discrete sine transform means for carrying out a discrete sine transform with the obtained prediction error signals to obtain transform coefficients;

a quantization means for quantizing the obtained transform coefficients and obtaining quantized indexes;

an encoding means for encoding the obtained quantized indexes;

an inverse quantization means for inversely quantizing the quantized indexes to reproduce the transform coefficients;

an inverse discrete sine transform means for carrying out an inverse discrete sine transform with the reproduced transform coefficients to reproduce the transform coefficients;

a reproduction means for reproducing the picture element values within the block by adding the reproduced prediction error signals to the predicted values;

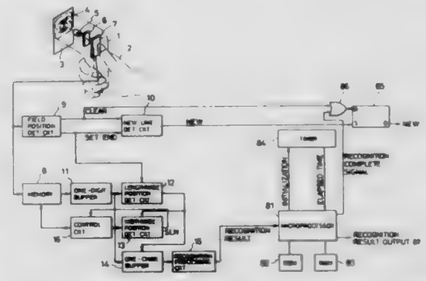
said prediction means obtaining, through extrapolation prediction, predicted element values for each block to be encoded by employing part of the reproduced picture element values of blocks adjacent to the blocks to be encoded.

5,054,104

OPTICAL CHARACTER READER

Mikio Yamaguchi, Osaka, Japan, assignor to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Apr. 5, 1990, Ser. No. 504,702
Claims priority, application Japan, Feb. 27, 1987, 62-46295; Feb. 27, 1987, 62-46296; Feb. 27, 1987, 62-46297; Feb. 27, 1987, 62-46298
Int. Cl.[5] G06K *9/22*
U.S. Cl. 382—57 **3 Claims**



1. A portable optical character reader for optically reading characters, comprising:

an image sensor comprising a plurality of photoelectric transducers disposed two dimensionally, said image sensor having a visual field sufficiently wide to encompass a plurality of characters;

a binary encoding circuit for converting analog signals output from said photoelectric transducers into binary-coded signals corresponding to character and background regions, respectively;

means for recognizing each character within the visual field on the basis of the binary-coded signals;

recognition result storing means for temporarily storing a recognition result;

recognition result comparing means for comparing a recognition result newly obtained with the content of said recognition result storing means;

timer means for measuring the time elapsed since a recognition result is obtained; and

means responsive to said timer means for outputting said recognition result when the same recognition result has been repeatedly obtained for a period of time which is longer than a predetermined time.

5,054,105

ELECTRIC SAUNA HEATER UTILIZING A THERMOSTATIC CONTROL OF STEAM GENERATION AND SAUNA ROOM HEATING

Antti Kiyimaa, Kauniainen, and Peter Sjölund, Ekenäs, both of Finland, assignors to Oy Helo-Tehtaat-Helo Factories, Ltd., Helsinki, Finland

Filed Feb. 22, 1990, Ser. No. 483,561
Int. Cl.[5] F24H *7/06;* **A61H** *33/06*
U.S. Cl. 392—394 **7 Claims**

1. An electric sauna heater for a sauna room, comprising:

at least one electrical resistor for heating the sauna room when supplied with electric power;

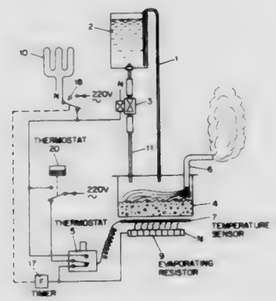
means defining an evaporation space for containing water and having an exterior surface;

means including a water supply communicating with said evaporation space and valve means for controllably feeding water to said evaporation space;

at least a second electric resistor disposed adjacent to the exterior surface of said evaporation space, which when energized, evaporates the water contained in said space; and

thermostatic control means including a sensor disposed

adjacent to the exterior surface of said evaporating space and responsive to an increase in temperature from a predetermined temperature caused by lack of water in the evaporation space to deenergize said second resistor and to



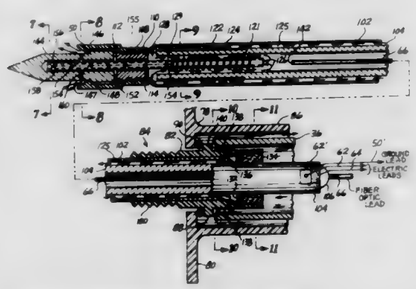
open said valve means for supplying water to said evaporation space in an amount sufficient to reduce the temperature to said predetermined temperature and then to close said valve means and reenergize said second resistor.

5,054,106

HOT GAS SOLDERING SYSTEM

William S. Fortune, 29866 Cuthbert Rd., Malibu, Calif. 90265

Filed Oct. 5, 1988, Ser. No. 253,707
Int. Cl.[5] B23K *3/053;* F24H *3/04*
U.S. Cl. 392—476 4 Claims



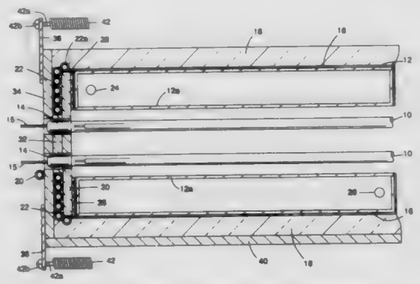
1. Hot gas soldering system comprising:
base housing body;
electric power supply means carried therein for energizing a soldering gas heater;
electronically remotely controlled temperature control circuit carried by said housing body;
gas supply flow conrol means
carried by said housing body; soldering tool holding means carried by said housing body;
hot gas soldering tool having handle portion,
electric heating element carried by said handle portion and coupled to said electric power supply and said temperature control circuit,
gas heating means connected to said gas supply control means for transferring heat from said heating element to said gas,
soldering gas jet forming means coupled to said gas heating means for causing the heated gas to impinge upon and heat a predetermined soldering point, and
combination hose and electric conductors means connecting said housing body and said handle portion, the conductors being disposed within said hose, and said hose also constituting a carrier of said gas from said housing body to said hot gas soldering tool, said hot gas tool further including:
a hollow metal tubular sheath carried by said handle portion and extending forwardly therefrom,
a hollow ceramic cylindrical heating element support tube upon the outer surface of the forward end of which is disposed said electric heating element,
said heating element support tube being carried within and radially spaced from said metal tubular sheath to form a first heating chamber component of said gas heating means,
an inner, gas circulator tube carried by the forward end of said metal tubular sheath and extending rearwardly therefrom for approximately the length of said electric heating element and being disposed within and radially spaced from said hollow ceramic support tube to form thereby a second heating chamber component of said gas heating means, and
gas flow means connecting to the interior of said handle portion for carrying gas from said combination hose means, through the interior of said handle portion, forwardly along the length of said first heating chamber, radially inwardly over the forward end of said ceramic heating element support tube, rearwardly along the length of said second heating chamber, radially inwardly over the rear end of said circulator tube, and forwardly toward said soldering work point.

5,054,107

RADIATING LAMP FLUID HEATING SYSTEM

Geoffrey Batchelder, 249 Acalanes Dr., #11, Sunnyvale, Calif. 94086

Filed May 19, 1989, Ser. No. 354,157
Int. Cl.[5] F24H *1/00*
U.S. Cl. 392—483 5 Claims



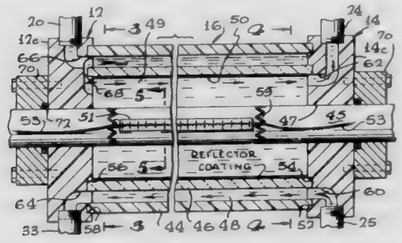
1. A system for heating a process fluid, including:
a housing;
a set of lamps mounted within the housing, for emitting radiation having a wavelength at least as long as infrared radiation; and
chemically inert tubing mounted within the housing in a position separated from the lamps, for containing the process fluid while the process fluid absorbs radiation from the lamps, wherein the tubing has a longitudinal axis, and wherein the lamps are elongated and mounted generally parallel to the longitudinal axis; and
reflective material wrapped around the tubing in such a position that radiation from the lamps that has propagated through the tubing in a direction away from the longitudinal axis will reflect from the reflective material back into the tubing toward the longitudinal axis.

5,054,108

HEATER AND METHOD FOR DEIONIZED WATER AND OTHER LIQUIDS

Arnold Gustin, and Kevin McGillivray, both of 28210 Crocker Ave., Suite 301, Valencia, Calif. 91355

Filed Mar. 30, 1987, Ser. No. 31,988
Int. Cl.[5] F24H *1/10;* H05B *3/00*
U.S. Cl. 392—492 7 Claims



1. A heater for heating a process liquid, such as deionized water, to a desired high temperature and for maintaining a flow of such heated process liquid at a desired rate comprising:
at least one heat exchange unit, each heat exchange unit comprising an elongated radiant heating element encased in a quartz tube;
an elongated heat reflecting tube of quartz with an inner reflecting layer of polysilicon, said reflecting tube enclosing said heat element and having an internal diameter substantially greater than required to enclose said quartz tube encasing said heating element to form a first flow passage therebetween;
means defining a chamber enclosing said heat reflecting tube and made of a high temperature thermoplastic material which is weldable and non-reactive with the process liquid defining a second flow passage surrounding said reflecting tube, emans closing the ends of said flow passages, said chamber including an inlet port at one end thereof connected to a source of a processing liquid, a port at the end remote from said one end of said chamber communicating said second flow passage with said first flor passage, and an outlet extending from the said first flow passage at said first end of said chamber for supplying sid liquid at said desired temperature.

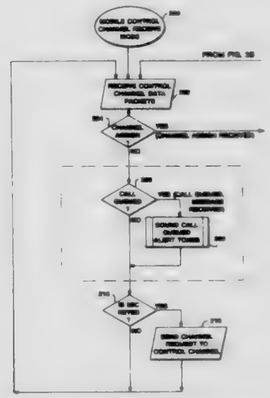
5,054,109

TRUNKED RADIO SYSTEM HAVING FLEET QUEUE ALERT

William J. Blackburn, Lynchburg, Va., assignor to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Continuation of Ser. No. 286,691, Dec. 20, 1988, abandoned.
This application Mar. 14, 1991, Ser. No. 668,398
Int. Cl.[5] H04B *7/14;* H04Q *7/00*
U.S. Cl. 455—17 30 Claims

1. A radio communications system having a plurality of channels over which a calling unit may communicate with at least one called unit comprising:
means for receiving a request for channel assignment from said calling unit;
means for determining whether a channel is available to be assigned;
means, responsive to said means for determining, for placing a request for channel assignment in a queue if no channel is available; and
means for informing said calling unit and said at least one called unit when said request for channel assignment has been placed in said queue, whereby said at least one called unit is given advance notice of an imminent call before a channel is available.

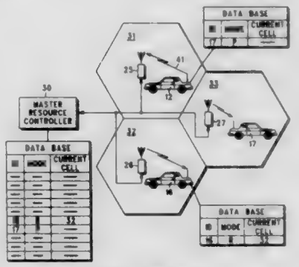


5,054,110

MULTI-SITE DISPATCHING SYSTEM CELL REGISTRATION

Richard A. Comroe, Dundee; Arun Sobti, Wheaton, and John E. Major, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1989, Ser. No. 459,024
Int. Cl.[5] H04Q *7/00;* H04M *11/00*
U.S. Cl. 455—33 4 Claims



1. A communication system having:
A) a plurality of communication units;
B) a plurality of base sites;
C) a service coverage area for each base site
D) at least one target mobile communication unit;
E) a data base; and wherein the plurality of communication units includes at least one communication unit constructed to pre-register within the data base its location by transmitting an identifying data word based upon either one of activation or upon entry into the service coverage area of a base site; and wherein a resource controller allocates communication resources between a requesting communication unit and the target communication unit based upon either one of the location of the target stored in the data base or based upon a location of the target identified through the issuance of a system-wide page;
and wherein each base site includes:
A) a service coverage area,
B) a plurality of transceiver resources,
C) control resource receiver means for receiving a transmit-

ted data word and thereby registering the presence of a communication unit within the coverage area of the base site.

5,054,111

HF DATA COMMUNICATIONS SYSTEM WITH NETWORK MANAGEMENT

Robert J. Goodwin, Hants, England, assignor to Siemens Plessey Electronic Systems Limited, Chessington, England

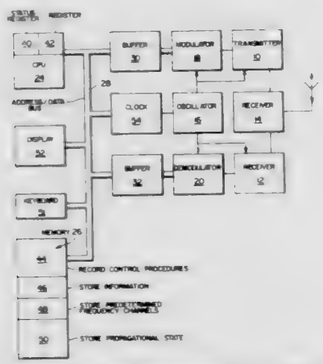
PCT No. PCT/GB87/00822, § 371 Date Sep. 29, 1988, § 102(e) Date Sep. 29, 1988, PCT Pub. No. WO88/04497, PCT Pub. Date Jun. 16, 1988

PCT Filed Nov. 19, 1987, Ser. No. 220,213

Claims priority, application United Kingdom, Dec. 2, 1986, 8628824

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—34 **3 Claims**



1. A method of network management for a radio communications network comprising a plurality of stations each of which includes a transceiver and control means therefor, the transceiver and control means of the stations of the network being substantially similar, and the stations being arranged to communicate directly with any other station, the method comprising:

assigning at least one control channel of predetermined frequency to the network for transmitting network control signals between the stations;

assigning to each station which may assume control a ranking position in a priority list of stations which may assume control of the network;

each station monitoring the control channel or channels to determine whether control has been established by another station, and if so accepting control signals from such other station, and if control has not been established, the station transmits at a time determined by the ranking position of the station control signals on said control channel or channels for assuming network control;

wherein said control signals include initialization and synchronization information and information as the to channel frequencies which may be used for communications;

and wherein each forming part of the network transmits an acknowledgement signal in a predetermined time slot in response to receipt of a control signal;

and wherein when a station seeks network control, a first control signal sequence is transmitted and replies are awaited from a predetermined subset of stations, and if these replies are satisfactory, a second control signal sequence is transmitted to all stations and replies are awaited for defining those stations which are affiliated to the network, and engineering data is then transmitted to all affiliated stations including a list of affiliated stations, timing data and channel frequency information for information transmission.

5,054,112

ELECTRONIC DATA COLLECTION SYSTEM

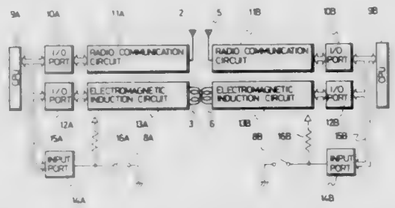
Toshimasa Ike, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Mar. 7, 1989, Ser. No. 320,172

Claims priority, application Japan, Mar. 16, 1988, 63-62893

Int. Cl.[5] H04B *5/02*

U.S. Cl. 455—41 **3 Claims**



1. An electronic data collection system comprising: a portable data entry device and an information processing apparatus provided separately from said portable data entry device;

said portable data entry device comprising data entry means for entering data into said portable data entry device,

first selectable communication means for outputting the entered data to said information processing apparatus and for receiving data from said information processing apparatus when selected by radio communication,

second selectable communication means for outputting the entered data to said information processing apparatus and for receiving data from said information processing apparatus when selected by electromagnetic induction communication, and

first selecting means coupled with said data entry means, first communication means and second communication means for selecting said first communication means and said second communication means to select a communication mode out of a radio communication mode and an electromagnetic induction communication mode;

said information processing apparatus comprising third selectable communication means for communicating with said first selectable communication means of aid portable data entry device by radio communication,

fourth selectable communication means for communicating with aid second selectable communication means of said portable data entry device by electromagnetic induction communication, and

second selecting means coupled with said third selectable communication means and fourth selectable communication means for selecting a communication mode out a radio communication mode and an electromagnetic induction communication mode.

5,054,113

COMMUNICATION SYSTEM WITH BIT SAMPLING METHOD IN PORTABLE RECEIVER FOR SIMULCAST COMMUNICATION

Leon Jasinski, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1989, Ser. No. 445,210

Int. Cl.[5] H04B *7/00*

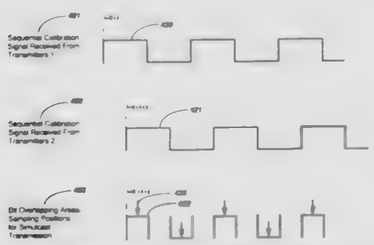
U.S. Cl. 455—51 **20 Claims**

1. A method for calibrating a simulcast communication system comprising at least two transmitting sites and at least one selective call receiver, the method comprising the steps of:

(a) sequentially transmitting from each of said at least two transmitting sites a predetermined signal to provide sequentially transmitted signals;

(b) receiving said sequentially transmitted signals by said at least one selective call receiver to provide received sequential signals;

(c) determining to what extent said received sequential signals overlap;



(d) transmitting a simulcast signal from said at least two transmitting sites; and

(e) receiving said simulcast signal by sampling said simulcast signal by a receiving means of said at least one selective call receiver at sample times determined in accordance with step (c).

5,054,114

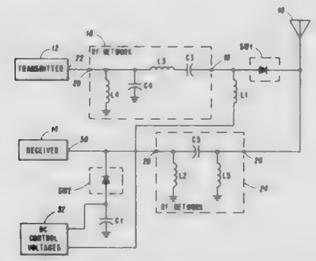
BROADBAND RF TRANSMIT/RECEIVE SWITCH

Alan R. Erickson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 27, 1988, Ser. No. 249,802

Int. Cl.[5] H04B *1/44*; **H01P** *1/10*

U.S. Cl. 455—78 **18 Claims**



1. A broadband solid state RF switch circuit for electrically coupling a common signal path alternately to a transmitter in a first branch from the common signal path and to a receiver in a second branch from said common signal path, comprising:

means for providing DC control voltages;

a first solid state means for switching in the first branch connected between said common signal path and an output port of a means for providing broadband impedance matching, an input port of said means for providing broadband impedance matching connected to an output of said transmitter, said means for providing broadband impedance matching being a first portion of a bandpass filter;

means in said second branch for providing receiver isolation having an input port connected to said common signal path and having an output port connected to an input of said receiver, at least a part of said means for providing receiver isolation being a second portion of said bandpass filter;

a second solid state means for switching connected from said output port of said means for providing receiver isolation to at least an RF ground;

said first and second means for switching being controlled by said means for providing DC control voltages.

5,054,115

RADIO TELEPHONE APPARATUS

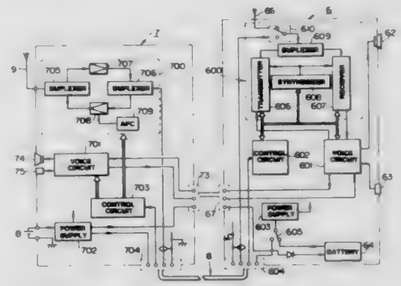
Buntaro Sawa, Sagamihara, and Noboru Koike, Tama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1988, Ser. No. 249,817

Claims priority, application Japan, Sep. 28, 1987, 63-243011

Int. Cl.[5] H04Q *7/04*

U.S. Cl. 455—89 **28 Claims**



1. A radio telephone apparatus comprising:

a portable radio device accommodating a transmission-reception antenna therein;

an additional unit mounted on a vehicle;

a transmission and reception antenna fixed to the vehicle; and

a coaxial cable removably connecting the radio device and the additional unit;

the radio device including:

a control panel operated for the transmission and reception of calls;

a telephone transmitter-receiver and a voice circuit for making telephone communication;

a connector for transmitting telephone signals between the voice circuit and the additional unit;

a battery for supplying power of the above-mentioned elements of the apparatus;

a transmitter-receiver for transmitting and receiving telephone communication signals by radio between the telephone transmitter-receiver and another radio apparatus;

an antenna changer for detecting whether the transmission-reception antenna accommodated in the radio device is in a transmission-reception enable state, connecting that transmission-reception antenna to the transmitter-receiver when the transmission-reception antenna is in the transmission-reception enable state, and for connecting the transmission-reception antenna fixed to the vehicle to the transmitter-receiver via the coaxial cable when the accommodated transmission-reception antenna is in a transmission-reception disable state; and

the additional unit including:

a rest mechanism for receiving the radio device removably thereon;

a voice amplifying telephone transmitter-receiver; and

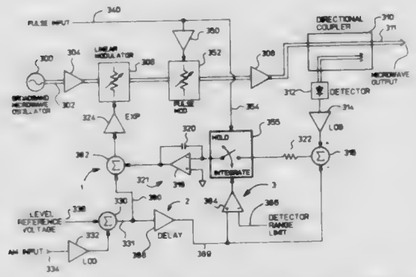
a connector connected to the connector of the radio device to connect the voice amplifying transmitter-receiver to the voice circuit when the radio device is mounted on the rest mechanism.

5,054,116

FEED-FORWARD AUTOMATIC LEVEL CONTROL CIRCUIT FOR A HIGH-FREQUENCY SOURCE

Mark N. Davidson, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 29, 1989, Ser. No. 414,834
Int. Cl.[5] H03C *1/06;* **H04B** *1/04*
U.S. Cl. 455—126 **20 Claims**



1. In an automatic level control circuit for controlling the output power amplitude of an RF source in accordance with a reference level signal, said control circuit having means for modulating the output of said RF source and a feedback loop circuit responsive to said reference level signal and to said output power amplitude for generating an amplitude control signal for controlling said modulating means so that said output power amplitude is related to said reference level signal, the improvement comprising:

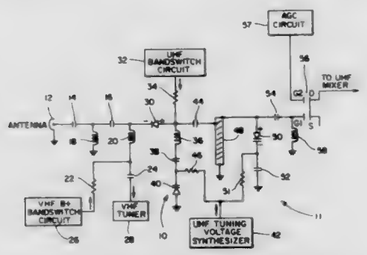
means for combining said reference level signal with said amplitude control signal so that said modulating means is controlled by a combination of said reference level signal and said amplitude control signal.

5,054,117

TUNABLE UHF FILTER FOR SWITCHABLE VHF/UHF RECEIVER

Michael S. Cruz, Buffalo Grove, and Harmon P. Vaughter, Evanston, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 1, 1989, Ser. No. 388,531
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—189 **12 Claims**



1. Apparatus for use in a multi-band RF signal receiver wherein a lower frequency local oscillator signal is heterodyned with a higher frequency RF signal to produce an IF signal, the apparatus comprising:

a VHF bandswitch circuit and a VHF tuner circuit;

a UHF bandswitch circuit and a UHF tuning voltage circuit;

a UHF tunable circuit coupled to said UHF tuning voltage circuit and responsive to a tuning voltage output therefrom for tuning to a desired UHF signal frequency;

switch means coupled to said UHF tunable circuit and to said VHF and UHF bandswitch circuits and responsive to respective outputs therefrom for either blocking a received VHF signal from said UHF tunable circuit when a VHF signal is selected or transmitting a received UHF signal to said UHF tunable circuit, when a UHF signal is selected wherein said switch means is further coupled ti said VHF tuner circuit for directing a blocked VHF signal thereto; and

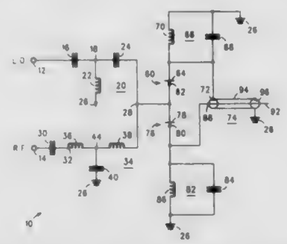
tunable filter means coupled ti said switch means and to said UHF tuning voltage circuit and responsive to said tuning voltage output therefrom for filtering out of the desired UHF signal an IF image frequency on the low side of the desired UHF signal, wherein said tunable filter means is tuned to an IF image frequency equal to the desired UHF signal frequency minus twice the IF signal frequency.

5,054,118

BALANCED MIXER UTILIZING FILTERS

Don R. Holcomb, Scottsdale, and David M. Zelinka, Fountain Hills, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1989, Ser. No. 318,103
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—326 **14 Claims**



1. A mixer circuit responsive to a first input signal having a first frequency and a second input signal having a second frequency to provide an output signal having a frequency which is a selected function of the first and second frequencies, the mixer circuit including in combination:

first filter means adapted to receive the first input signal, said first filter means having a first bandpass characteristic including a first predetermined range of frequencies including the first frequency;

second filter means adapted to receive the second input signal, said second filter means having a second bandpass characteristic including a second predetermined range of frequencies including the second frequency, said second predetermined range of frequencies being separated from said first predetermined range of frequencies;

balanced mixer means coupled to said first filter means and to said second filter means, said mixer means combining said first and second input signals to provide, between output leads of said balanced mixer means, a plurality of signals including the output signal having a frequency which is the selected function of the first and second input signals; and

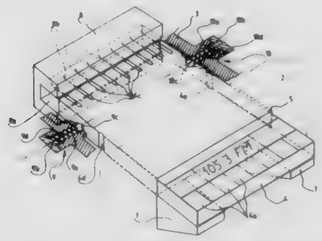
frequency selecting means having an impedance maximum at the output signal frequency coupled between said output leads of said balanced mixer means, said frequency selecting means selecting the output signal.

5,054,119

ANTI-THEFT SYSTEM FOR A RADIO RECEIVER USED PARTICULARLY IN A MOTOR VEHICLE

Marie-Christine Rolland, 38 rue de la Fédération, Paris, France

PCT No. PCT/FR88/00505, § 371 Date Jun. 9, 1989, § 102(e) Date Jun. 9, 1989, PCT Pub. No. WO89/03325, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 12, 1988, Ser. No. 381,645
Claims priority, application France, Oct. 12, 1987, 87 14030; Nov. 9, 1987, 87 15472
Int. Cl.[5] H04B *1/08;* **H05K** *11/02*
U.S. Cl. 455—346 **12 Claims**



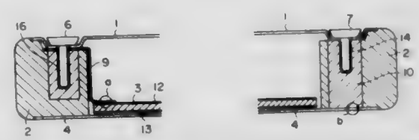
1. A radio receiving system used in an automotive vehicle, comprising: an amplifying unit for amplifying audio signals, fixed, in an inviolable manner, to a rear face of a dashboard of the vehicle and a tuner control unit for controlling the acquisition and the selection of radio waves, said tuner control unit being removably secured to said amplifying unit, the system further including means for electrically connecting said tuner control unit to said amplifying unit, said tuner control unit including a casing being in the shape of a flat parallelepiped and being approximately equal in size to a credit card, said amplifying unit including a housing having an opening that is complementary in shape to the shape of the tuner control unit, said tuner control unit being insertable through a rectangular opening in the dashboard and into said amplifying unit housing opening to electrically connect said tuner control unit to said amplifying unit, said tuner control unit includes a part which carries control elements for searching for particular radio wave frequencies and for selecting radio waves and a device for displaying the status of the radio system, when said tuner control unit is inserted into said amplifying unit said part of said tuner control unit extends from said amplifying unit so as to be visibly external thereto, said electrical connecting means comprising first and second connecting elements, said first connecting elements being provided directly on the casing of the tuner control unit side by side at the rearwards part of the casing opposite to the external visible part, said second connecting elements being provided within the amplifying unit housing such that said second connecting elements faces said first connecting elements when said tuner control unit is inserted in said amplifying unit housing opening to transmit signals between said tuner control and amplifying units, said first and second connecting elements form a capacitive coupling-type connection for transmitting high frequency signals coming from an antenna to high frequency circuits of the tuner control unit, a capacitive coupling-type connection for transmitting low frequency signals from the tuner control unit to a low frequency amplifier of the amplifying unit, an electromagnetic coupling-type connection for the power supply of the tuner control unit, said capacitive-type connection for transmitting high frequency signals comprises two capacitors each formed of two metal plates disposed opposite to each other when the tuner control unit is positioned inside said amplifying unit housing, one of said capacitors being positioned in said amplifying unit and the other of said capacitors being positioned in said tuner control unit, said capacitors being separated by a plate made from a dielectric material and fixed to the tuner control unit.

5,054,120

RECEIVER FOR PERSONAL RADIO PAGING SERVICE

Katsumi Ushiyama; Sadafumi Sakamoto, both of Hamura, and Seiji Nishikawa, Tokyo, all of Japan, assignors to Kokusai Electric Co., Ltd. and Nippon Telegraph & Telephone Corporation, both of Tokyo, Japan

Continuation of Ser. No. 325,200, Mar. 17, 1989, abandoned. This application Feb. 4, 1991, Ser. No. 651,045
Claims priority, application Japan, Mar. 24, 1988, 63-68206
Int. Cl.[5] H04B *1/08*
U.S. Cl. 455—351 **4 Claims**



1. A personal radio paging service card-shaped microminiature receiver having a think card-shaped housing for housing therein radio receiver circuitry including a tuning circuit and defining an antenna within which said circuitry is enclosed, the housing comprising an insulative frame defining a space within which said circuitry is enclosed and a pair of separate thin, flat, conductive, panels disposed overlaying opposite sides of the frame within major sides thereof in opposed relationship sandwiching the frame therebetween and secured thereto enclosing said space within which said circuitry is enclosed, a conductive fastener fixing one of the conductive panels on the frame on the one side thereof, a conductive member disposed between said frame and said one panel secured by said conductive fastener in electrical contact with said one panel and extending into said space defining a conductive input from said one panel connected to said circuitry for radio frequency inputs received from said one panel, and another conductive fastener fixing said one panel on the same frame at another side thereof, and another conductive member fixed by said another fastener for defining a conductive path between the conductive panels so that said housing functions as a radiofrequency receiving antenna connected.

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DESIGN PATENTS

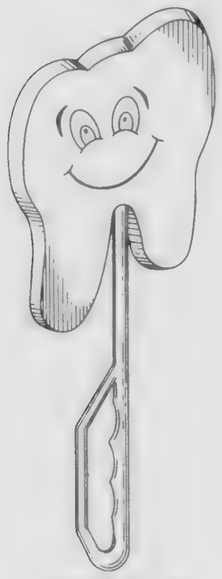
GRANTED OCT. 1, 1991

ERRATA

For CLASS	See PATENT NO.
D008-051	320,447
D034-023	320,484
D034-031	320,485
D029-006	320,486

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320,300
FLUORIDE-DISPENSING LOLLIPOP
Sherrie Good, 9271-102 Central Park Dr. SW., Ft. Myers, Fla. 33919, and Robbie McClung, 3823 SW. 6th Pl., Cape Coral, Fla. 33914
Filed Apr. 20, 1990, Ser. No. 511,534
Term of patent 14 years
U.S. Cl. D1—104



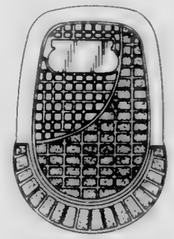
320,301
HOUSE SLIPPER OR SIMILAR ARTICLE
Wujin Park, 13 Clemens Ct., Edison, N.J. 08820
Filed Jul. 14, 1988, Ser. No. 218,606
Term of patent 14 years
U.S. Cl. D2—279



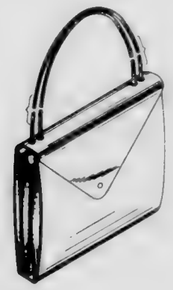
320,302
FRONT SHOE SOLE
Junichi Kiyosawa, Kobe, Japan, assignor to ASICS Corporation, Hyogo, Japan
Filed May 9, 1989, Ser. No. 349,292
Claims priority, application Japan, Nov. 16, 1988, 63-44892
Term of patent 14 years
U.S. Cl. D2—320



320,303
HEEL SOLE
Junichi Kiyosawa, Kobe, Japan, assignor to ASICS Corporation, Hyogo, Japan
Filed May 9, 1989, Ser. No. 349,290
Claims priority, application Japan, Nov. 16, 1988, 63-44893
Term of patent 14 years
U.S. Cl. D2—323



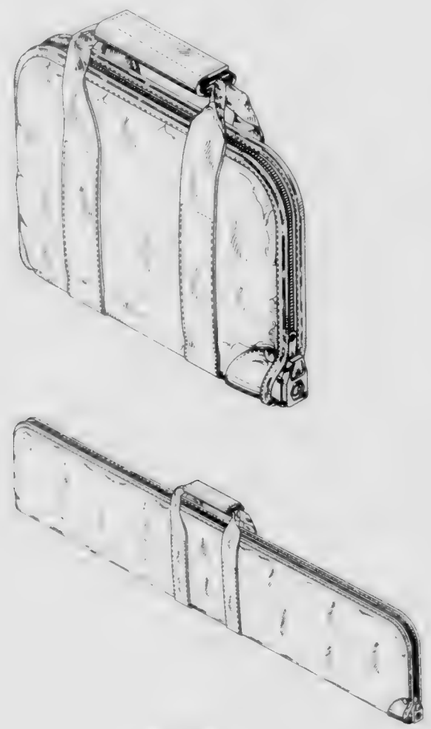
320,304
FOLDABLE SPORTWEAR BAG
Maria D'Angelo, New York, N.Y., assignor to Gitano Licensing, Ltd., Wilmington, Del.
Filed Oct. 7, 1988, Ser. No. 254,675
Term of patent 14 years
U.S. Cl. D3—36



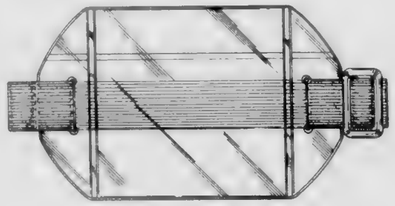
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320,305
FISHERMAN'S CARRYALL, OR SIMILAR ARTICLE
Gregg E. Silks, 6819 Cameo St., Alta Loma, Calif. 91701
Filed Mar. 28, 1988, Ser. No. 174,012
Term of patent 14 years
U.S. Cl. D3—38

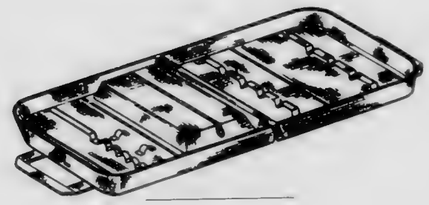
320,306
CARRYING CASE
Robert A. Schwartz, Norwalk, Conn., assignor to W. Waller & Son, Inc., Norwalk, Conn.
Filed Jul. 20, 1989, Ser. No. 383,350
Term of patent 14 years
U.S. Cl. D3—53



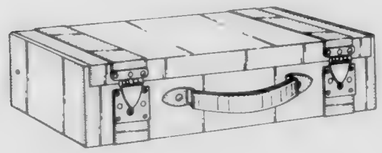
320,307
ARM BAND WITH IDENTIFICATION HOLDER OR THE LIKE
Stanley Walasek, Shavertown, Pa., assignor to Stuart Promotional Products, Inc., Nanticoke, Pa.
Filed Aug. 31, 1988, Ser. No. 238,517
Term of patent 14 years
U.S. Cl. D3—56



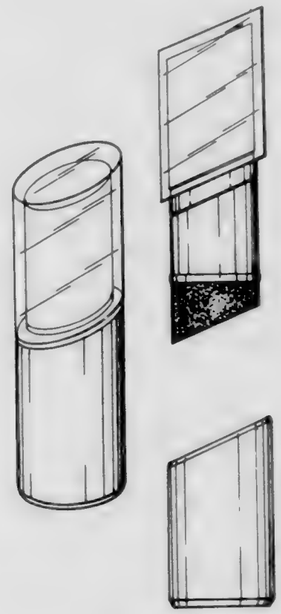
320,308
TRIAGE/DISASTER MANAGEMENT SYSTEM BAG
Joseph T. Whitworth, Kalispell, Mont., assignor to G.B. Communications Inc., Kalispell, Mont.
Filed Oct. 11, 1988, Ser. No. 256,367
Term of patent 14 years
U.S. Cl. D3—74



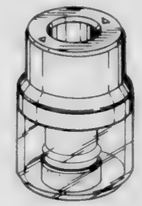
320,309
ATTACHE CASE
Roger Pardo, Paris, France, assignor to Louis Vuitton Malletier, Paris, France
Filed Mar. 27, 1989, Ser. No. 329,064
Claims priority, application Int'l Pat. Institute, Sep. 26, 1988, DMA/000837
Term of patent 14 years
U.S. Cl. D3—76



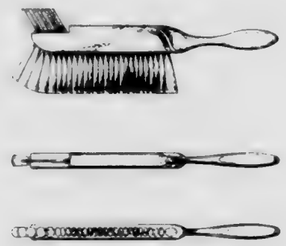
320,310
COMBINED CONTAINER AND APPLICATOR FOR SHOE POLISH
Peter H. A. N. Kuhn, Delft, Netherlands, assignor to Kortman Intradal B.V., Veenendaal, Netherlands
Filed May 5, 1989, Ser. No. 348,473
Claims priority, application Int'l Pat. Institute, Jan. 23, 1989, DM/012.642
Term of patent 14 years
U.S. Cl. D4—114



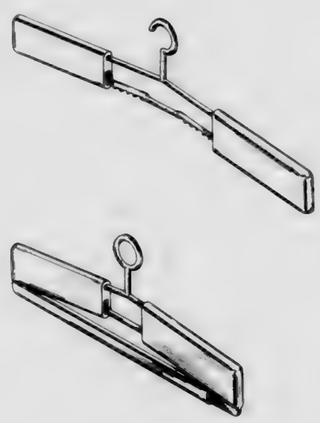
320,311
COMBINED CONTAINER AND APPLICATOR FOR SHOE POLISH
Peter H. A. N. Kuhn, Delft, Netherlands, assignor to Kortman Intradal B.V., Veenendaal, Netherlands
Filed May 5, 1989, Ser. No. 348,472
Claims priority, application Int'l Pat. Institute, Jan. 23, 1989, DM/012.642
Term of patent 14 years
U.S. Cl. D4—116



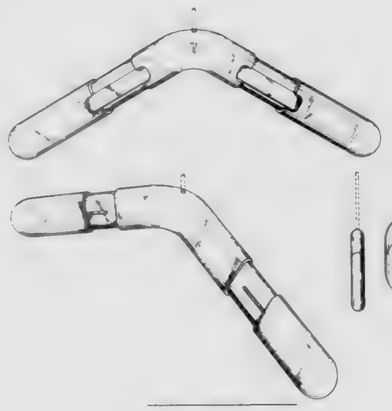
320,312
BRUSH WITH HANDLE AND DOUBLE SET OF BRISTLES
Fred W. Grant, 3177 Terrace Ct., Apt. H, Norcross, Ga. 30092
Filed Mar. 10, 1989, Ser. No. 321,342
Term of patent 14 years
U.S. Cl. D4—119



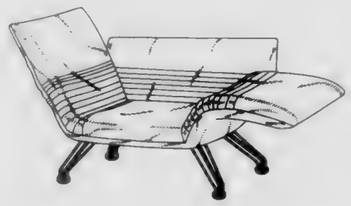
320,313
ADJUSTABLE GARMENT HANGER
Jean M. Gatling, 1918 W. Bristol St., Philadelphia, Pa. 19140
Continuation-in-part of Ser. No. 229,912, Aug. 8, 1988, Pat. No. 4,905,877, which is a continuation-in-part of Ser. No. 80,017, Jul. 31, 1987, abandoned. This application May 11, 1989, Ser. No. 350,685
Term of patent 14 years
U.S. Cl. D6—315



320,314
COAT HANGER BODY
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Aug. 25, 1989, Ser. No. 412,261
Term of patent 14 years
U.S. Cl. D6—318



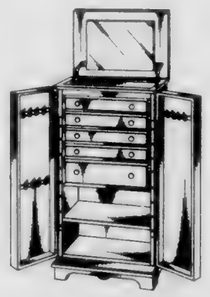
320,315
ADJUSTABLE LOUNGE SEAT
Winfried Totzek, Warendorf, Fed. Rep. of Germany, assignor to De Sede AG, Klingnau, Switzerland
Filed Jul. 8, 1988, Ser. No. 216,951
Claims priority, application Switzerland, Jan. 12, 1988, 116494
Term of patent 14 years
U.S. Cl. D6—367



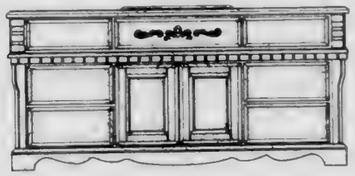
320,316
BASSINET
Pamla D. Arnold, 1395 Glendale Dr., Arcata, Calif. 95521
Filed Sep. 2, 1988, Ser. No. 239,966
Term of patent 14 years
U.S. Cl. D6—390



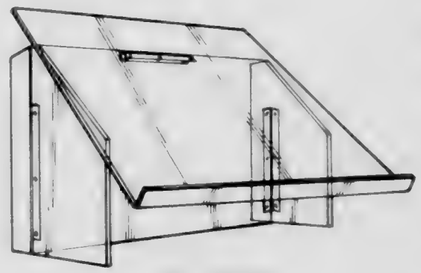
320,317
JEWELRY ARMOIRE
Larry Powell, Los Angeles, Calif., assignor to L. Powell Co., Culver City, Calif.
Filed May 25, 1989, Ser. No. 357,583
Term of patent 14 years
U.S. Cl. D6—440



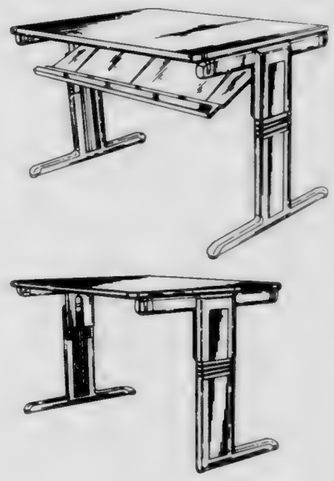
320,318
DRESSER
Jericho P. Pauer, Onalaska, and Jane Pronschinske, Cochrane, both of Wis., assignors to Ashley Furniture Industries, Inc., Arcadia, Wis.
Filed Apr. 10, 1989, Ser. No. 335,518
Term of patent 14 years
U.S. Cl. D6—446



320,319
PORTABLE LECTERN
William H. Brothers, 101 W. 4800 North, and William S. Brothers, 1815 N. 1400 East, both of Provo, Utah 84604
Filed Jul. 23, 1984, Ser. No. 633,526
The portion of the term of this patent subsequent to Aug. 1, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—419

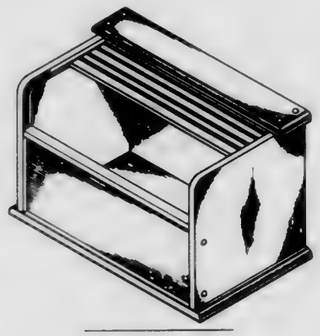


320,320
DESK
Carel A. van Ditshuizen, Wehl, Netherlands, assignor to Assenburg B.V., Tilburg, Netherlands
Filed Nov. 28, 1988, Ser. No. 277,068
Claims priority, application Int'l Pat. Institute, May 27, 1988, DMA/000779
Term of patent 14 years
U.S. Cl. D6—422

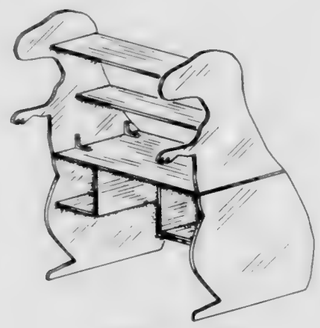


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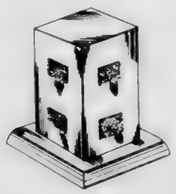
320,321
ROLLTOP TOY BOX
Hueston E. Terrell, 615 Alison, Stilwell, Okla. 74960
Filed Nov. 18, 1988, Ser. No. 272,868
Term of patent 14 years
U.S. Cl. D6—433



320,322
DESK
Glen Hendrix, 1726 Sky Lark La., Houston, Tex. 77056
Filed May 31, 1988, Ser. No. 200,198
Term of patent 14 years
U.S. Cl. D6—453



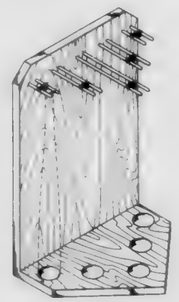
320,323
SUPPORT STAND FOR REMOTE CONTROLLERS
Calvin A. Champion, and Bernadette R. Champion, both of 13111 Glasgow Way, Ft. Washington, Md. 20744
Filed Dec. 27, 1988, Ser. No. 289,781
Term of patent 14 years
U.S. Cl. D6—455



320,324
FLOWER STAND
Theodore D. Siembieda, and Gloria H. Siembieda, both of 3133 Jefferson St., Joplin, Mo. 64804
Filed Mar. 2, 1988, Ser. No. 163,068
Term of patent 14 years
U.S. Cl. D6—469



320,325
BASEBALL BAT RACK
Jesse Barfield, 4208 Canterwood Dr., Houston, Tex. 77068
Filed Aug. 17, 1989, Ser. No. 395,417
Term of patent 14 years
U.S. Cl. D6—552



320,326
ELECTRICALLY-OPERATED FOOD COMMINUTER
Jean-Louis Barrault, 102, rue du Chateau, F-92100 Boulogne-Billancourt, France
Filed Jul. 5, 1988, Ser. No. 215,588
Claims priority, application France, Jan. 6, 1988, 88 0044
Term of patent 14 years
U.S. Cl. D7—384

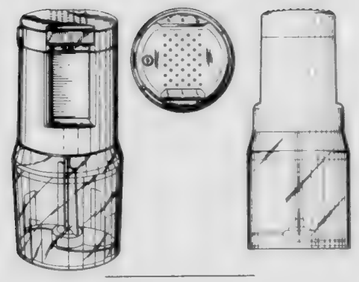
320,328
DEMITASSE CUP OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 10, 1989, Ser. No. 321,324
Term of patent 14 years
U.S. Cl. D7—536



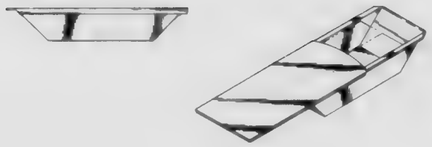
320,329
TEACUP OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 10, 1989, Ser. No. 321,329
Term of patent 14 years
U.S. Cl. D7—536

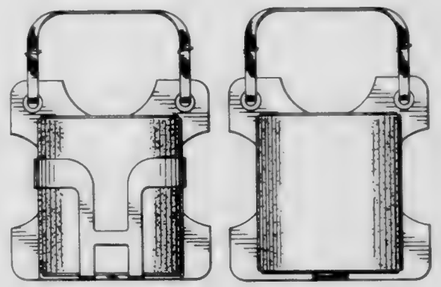


320,330
BEVERAGE CUP HOLDER
Gerald D. Stoick, 434 E. Fairmont Blvd., #18, Rapid City, S. Dak. 57701
Filed Apr. 21, 1989, Ser. No. 342,437
Term of patent 14 years
U.S. Cl. D7—620

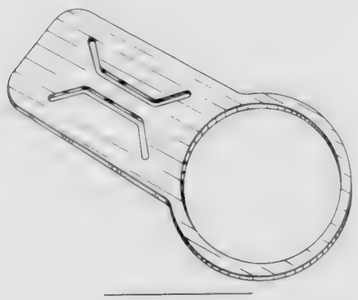


320,327
BUTTER DISH
Edward J. Hollins, 407 Locust Ave., Andalusia, Pa. 19020
Filed Apr. 6, 1989, Ser. No. 334,874
Term of patent 14 years
U.S. Cl. D7—502

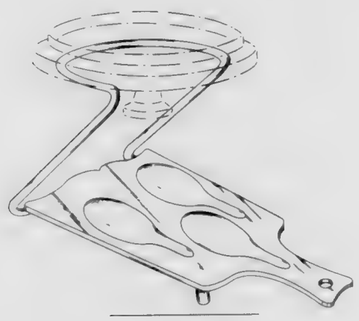




320,331
STADIUM CUP HOLDER
Anne Paone, Chicago, Ill., assignor to Paone/Barron Joint Venture, Chicago, Ill.
Continuation of Ser. No. 388,217, Jul. 31, 1989, abandoned. This application Dec. 8, 1989, Ser. No. 448,199
Term of patent 14 years
U.S. Cl. D7—620



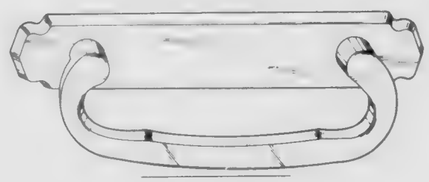
320,332
COMBINED PANLID HOLDER AND SPOONREST
Lowell L. Fetty, 4603 S. Rte. 47, Woodstock, Ill. 60102
Filed Nov. 16, 1987, Ser. No. 121,149
Term of patent 14 years
U.S. Cl. D7—638



320,333
LOPPER
James E. Grove, Van Nuys, Calif., assignor to Corona Clipper Co., Corona, Calif.
Filed Oct. 16, 1989, Ser. No. 421,718
Term of patent 14 years
U.S. Cl. D8—5



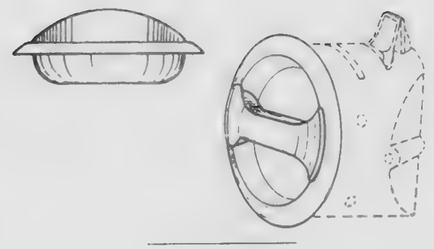
320,334
DOOR HANDLE
Joseph S. Clancy, Union Lake, Mich., assignor to Sash Controls Inc., Ferndale, Mich.
Filed Jul. 27, 1989, Ser. No. 385,477
Term of patent 14 years
U.S. Cl. D8—301



320,335
HANDLE
Alan D. Bengtson, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 17, 1989, Ser. No. 297,827
Term of patent 14 years
U.S. Cl. D8—308



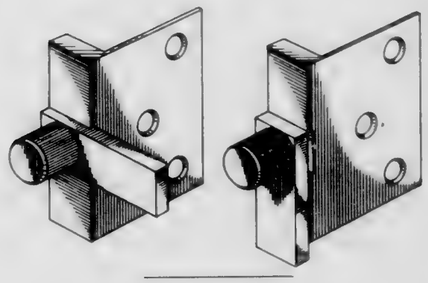
320,336
KNOB FOR LOCKS OR THE LIKE
Torsten G. A. Johansson, Köpmangatan 9, S-63356 Eskilstuna, Sweden
Filed Jul. 15, 1987, Ser. No. 73,626
Claims priority, application Sweden, Jan. 16, 1987, 870072
Term of patent 14 years
U.S. Cl. D8—311



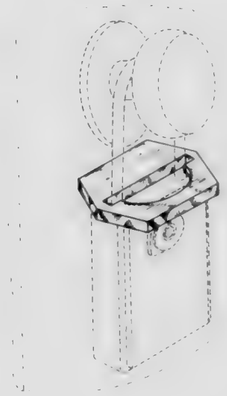
320,337
DOOR PULL
Alan P. Tye, Tring; David R. Perrett, and Simon D. E. Mills, both of Aylesbury, all of England, assignors to G. & S. Allgood (Holdings) Limited, London, England
Filed Oct. 27, 1989, Ser. No. 428,048
Claims priority, application United Kingdom, May 5, 1989, 1059245; May 5, 1989, 1059246
Term of patent 14 years
U.S. Cl. D8—319



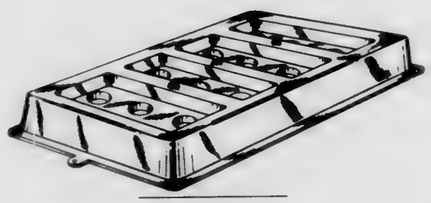
320,338
DOOR LATCHING UNIT
Marco Mastrogiovanni, 37 Mead Farm Rd., Seymour, Conn. 06483
Filed Mar. 9, 1989, Ser. No. 321,534
Term of patent 14 years
U.S. Cl. D8—331



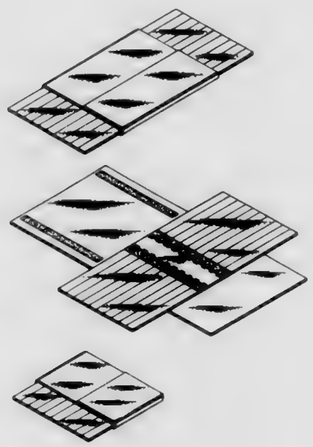
320,339
LOCK BOX BUMPER
Devra A. Stinson, and Patricia A. Bermes, both of Huntsville, Ala., assignors to D & P Visions, Inc., Huntsville, Ala.
Filed Mar. 16, 1989, Ser. No. 324,591
Term of patent 14 years
U.S. Cl. D8—402



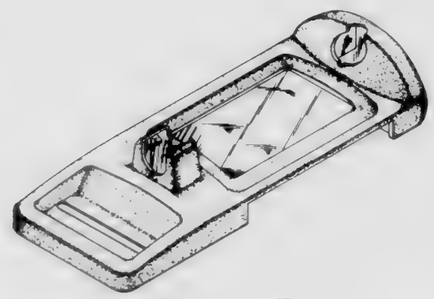
320,340
BULB TRAY
George Rademacher, East Brunswick, N.J., assignor to Radmark International, East Brunswick, N.J.
Filed Feb. 21, 1989, Ser. No. 312,241
Term of patent 14 years
U.S. Cl. D9—341



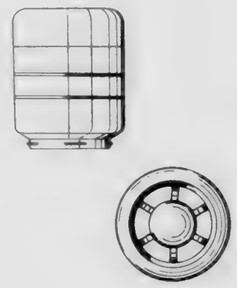
320,341
MATCHBOOK
Dalny M. Valdes, 16540 Nearview Dr., Canyon Country, Calif. 91351
Filed May 3, 1989, Ser. No. 346,822
Term of patent 14 years
U.S. Cl. D9—304



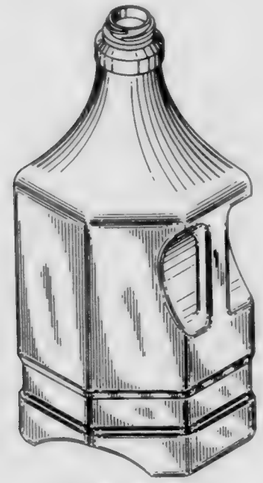
320,342
TRAY PORTION OF SALES PACKAGING FOR A RAZOR AND RAZOR BLADE CARTRIDGES
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 294,548, Jan. 9, 1989, abandoned. This application Aug. 7, 1989, Ser. No. 390,344
Term of patent 14 years
U.S. Cl. D9—342



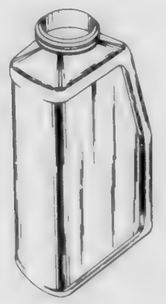
320,343
DISPENSING CONTAINER FOR LIQUID DETERGENT OR SIMILAR ARTICLE
Hans Halm, Herne, and Paul-Otto Weltgen, Hilden, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany
Filed Aug. 30, 1988, Ser. No. 238,240
Claims priority, application World Int. Prop. O., Mar. 1, 1988, DM/010 404
Term of patent 14 years
U.S. Cl. D9—351



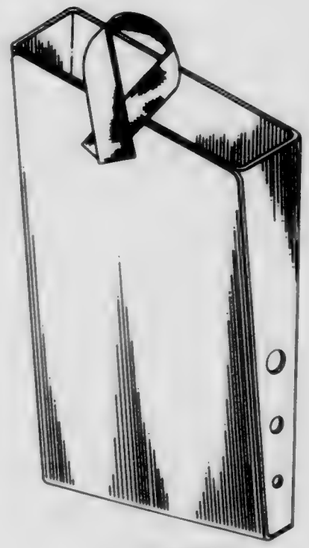
320,344
BOTTLE
Raymond L. Larson, Fargo, N. Dak., assignor to BMR, Inc., Fargo, N. Dak.
Division of Ser. No. 940,842, Dec. 11, 1986, Pat. No. Des. 307,389, which is a continuation-in-part of Ser. No. 906,156, Sep. 11, 1986, Pat. No. Des. 303,496. This application Mar. 26, 1990, Ser. No. 500,059
Term of patent 14 years
U.S. Cl. D9—370



320,345
BOTTLE
Robert B. Hamly, Kentwood, and Mark F. Mettler, Grand Rapids, both of Mich., assignors to Amway Corporation, Ada, Mich.
Filed Feb. 17, 1989, Ser. No. 312,567
Term of patent 14 years
U.S. Cl. D9—372



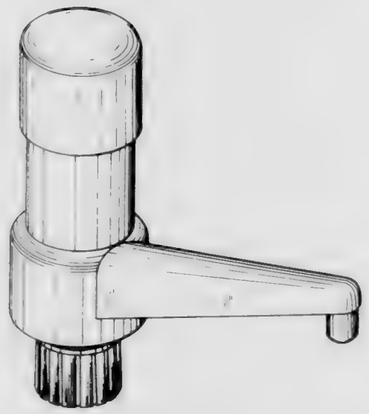
320,346
PAINT BRUSH HOLDER
Tom D. Wagner, E. 11123 Ponderosa Dr., Spokane, Wash. 99206
Filed Sep. 22, 1989, Ser. No. 410,998
Term of patent 14 years
U.S. Cl. D9—415



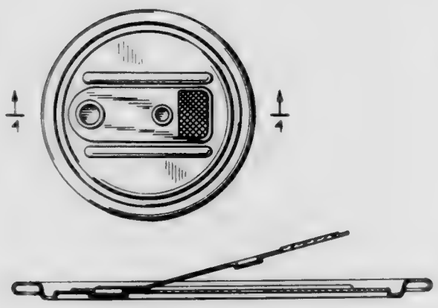
320,347
CONTAINER FOR CLOTHING
Jerome Lucarelli, 14 Linden St., Great Neck, N.Y. 11021
Filed Dec. 23, 1988, Ser. No. 290,440
Term of patent 14 years
U.S. Cl. D9—418



320,348
DISPENSER
Brian R. Law, Leicester, England, assignor to The English Glass Company Limited, Leicester, England
Filed Oct. 6, 1989, Ser. No. 417,847
Claims priority, application United Kingdom, Apr. 14, 1989, 1058724
Term of patent 14 years
U.S. Cl. D9—435



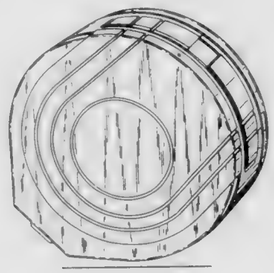
320,349
END CLOSURE FOR CONTAINERS
Klaas Martens, Damwoude, Netherlands, assignor to Cooperative Condensfabriek "Friesland" WA, Leeuwarden, Netherlands
Filed Dec. 21, 1989, Ser. No. 454,832
Claims priority, application Iran, Jun. 22, 1989, 711
Term of patent 14 years
U.S. Cl. D9—438



320,350
COMBINED SPOUT, CLOSURE AND HANDLE
Héctor Fabiano, Buenos Aires, Argentina, assignor to Weland S.A.I.C.I.A.F., Buenos Aires, Argentina
Filed Nov. 16, 1989, Ser. No. 437,917
Claims priority, application Argentina, May 17, 1989, 055.018
Term of patent 14 years
U.S. Cl. D9—447



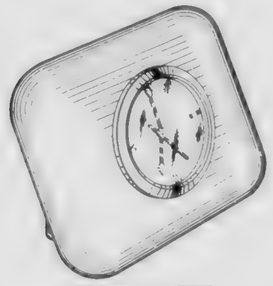
320,351
CLOCK HOUSING
Saskia H. P. M. Dingelstad, Breda, and Maarten W. van Lelyveld, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 18, 1989, Ser. No. 386,462
Claims priority, application World Int. Prop. O., Jan. 30, 1989, DM/012.708
Term of patent 14 years
U.S. Cl. D10—1



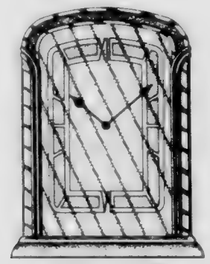
320,352
CLOCK
Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 8, 1989, Ser. No. 308,387
Claims priority, application Japan, Aug. 9, 1988, 63-31840
Term of patent 14 years
U.S. Cl. D10—23



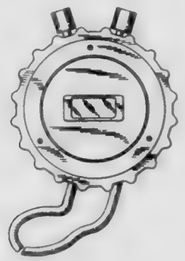
320,353
DESK CLOCK
Peter V. Ilaria, East Hanover, and William Macowski, Caldwell, both of N.J., assignors to Tropar Manufacturing Co., Inc., Florham Park, N.J.
Filed Feb. 16, 1988, Ser. No. 155,745
Term of patent 14 years
U.S. Cl. D10—26



320,354
CLOCK
Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 30, 1989, Ser. No. 304,330
Term of patent 14 years
U.S. Cl. D10—28



320,355
STOP WATCH
Carl Boyer, Glencoe, Ill., and Bernard Fernandez, Douglaston, N.Y., assignors to E. Gluck Corporation, Long Island City, N.Y.
Filed Feb. 3, 1988, Ser. No. 152,091
Term of patent 14 years
U.S. Cl. D10—30



320,356
WRIST WATCH
Carl Boyer, Glencoe, Ill., and Bernard Fernandez, Douglaston, N.Y., assignors to E. Gluck Corporation, Long Island City, N.Y.
Filed Feb. 3, 1988, Ser. No. 152,088
Term of patent 14 years
U.S. Cl. D10—32



320,357
DIGITAL TIMER
Atsuya Mizukami, Tokyo, Japan, assignor to Tanaka Manufacturing Company Limited, Tokyo, Japan
Filed Jul. 13, 1988, Ser. No. 218,930
Claims priority, application Japan, Apr. 6, 1988, 63-13907
Term of patent 14 years
U.S. Cl. D10—30

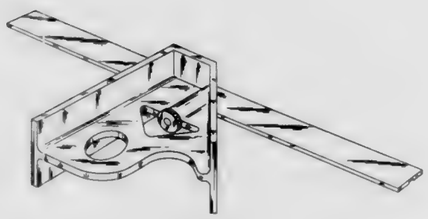


320,358
COMBINED WRISTWATCH AND STRAP
Paolo Bulgari, Rome, Italy, assignor to Bulgari Time (Switzerland) S.A., Geneva, Switzerland
Filed Nov. 3, 1988, Ser. No. 266,927
Claims priority, application Italy, May 9, 1988, 35698/88[U]
Term of patent 14 years
U.S. Cl. D10—32



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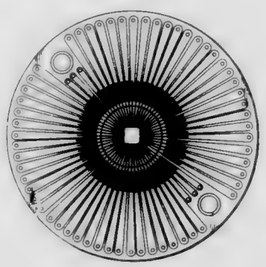
320,359
COMBINATION SQUARE
Robert J. La Gesse, and Lucille L. La Gesse, both of 510 Seventh St., Esther, Mo. 63601
Filed Dec. 2, 1988, Ser. No. 280,747
Term of patent 14 years
U.S. Cl. D10—62

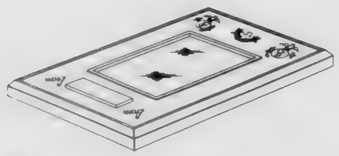


320,360
SPIRIT LEVEL
Donald F. Kennedy, 562 Rimini Rd., Del Mar, Calif. 92014
Filed May 8, 1989, Ser. No. 349,124
Term of patent 14 years
U.S. Cl. D10—69

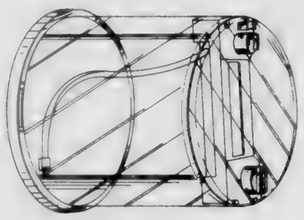


320,361
WAFER PROBE PLATE HOLDER
Wataru Karasawa, Yokohama, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Filed Jun. 2, 1989, Ser. No. 360,754
Term of patent 14 years
U.S. Cl. D10—103





320,362
DEVICE FOR USE WITH UTILITY METERS TO RECORD TIME OF USE, DEMAND AND LOAD SURVEY DATA
Cree A. Edwards, Belmont, and Larsh M. Johnson, San Francisco, both of Calif., assignors to Domestic Automation Company, Inc., Foster City, Calif.
Filed Apr. 20, 1988, Ser. No. 184,044
Term of patent 14 years
U.S. Cl. D10—99



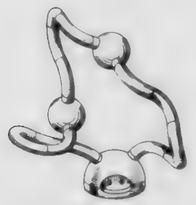
320,363
DIRECTIONAL LIGHT WARNING SYSTEM FOR VEHICLES OR THE LIKE
Harold W. Lyons, Killingworth, Conn., assignor to Whelen Technologies, Inc., Chester, Conn.
Filed Jan. 23, 1990, Ser. No. 468,954
Term of patent 14 years
U.S. Cl. D10—114



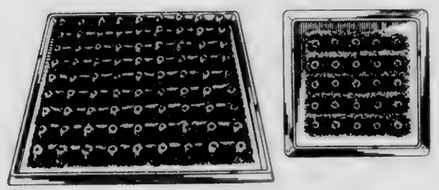
320,364
PLAQUE
Daniel Hernandez, 317 Montgomery St., Chula Vista, Calif. 92011
Filed Nov. 17, 1988, Ser. No. 272,294
Term of patent 14 years
U.S. Cl. D11—131

320,365
COMBINED KINETIC SCULPTURE AND ACOUSTICAL AMPLIFIER
Richard E. Zawitz, San Francisco, Calif., assignor to Tangle Inc., San Francisco, Calif.
Filed Apr. 26, 1989, Ser. No. 343,250
Term of patent 14 years
U.S. Cl. D11—131

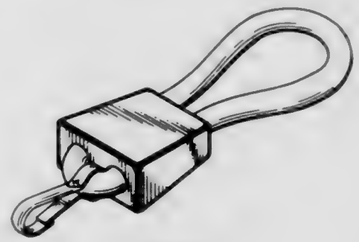




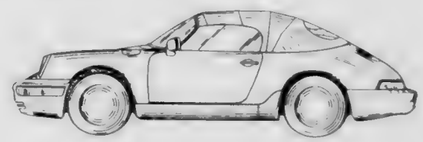
320,366
COMBINED MAGNETICALLY RESPONSIVE METAL POWDER AND TRAY
David M. Durlach, 77 Porter St., #9, Somerville, Mass. 02143
Filed Nov. 20, 1989, Ser. No. 439,515
Term of patent 14 years
U.S. Cl. D11—131



320,367
ZIPPER PULL
Edward V. L. Kaibach, 575 W. 3200 South, Nibley, Utah 84321-6337
Filed Apr. 3, 1989, Ser. No. 332,762
Term of patent 14 years
U.S. Cl. D11—221

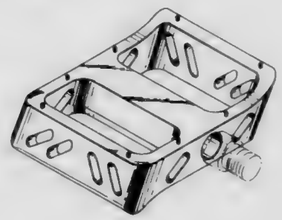


320,368
SPORTS CAR
Benjamin Dimson, Tiefenbronn/Muehlhausen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany
Filed Dec. 31, 1987, Ser. No. 140,312
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, 6265
Term of patent 14 years
U.S. Cl. D12—91





320,369
BICYCLE PEDAL OR THE LIKE
William C. Feamster, III, P.O. Box 571, Irvington, Va. 22480, and William A. Feamster, 4013 Nina Dr., Chesapeake, Va. 23321
Filed Apr. 10, 1989, Ser. No. 336,462
Term of patent 14 years
U.S. Cl. D12—125



320,370
BABY STROLLER
Takehiko Takahashi; Yoshiyasu Ishii, and Kenshun Ishii, all of Tokyo, Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1989, Ser. No. 293,902
Claims priority, application Japan, Aug. 5, 1988, 63-31166
Term of patent 14 years
U.S. Cl. D12—129



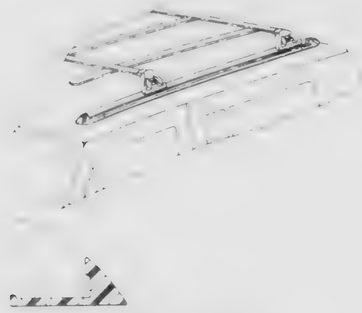
320,371
VEHICLE TIRE
Edson M. Morubayashi, Sao Paulo, Brazil, assignor to Pirelli Pneus S.A., Sao Paulo, Brazil
Filed May 9, 1989, Ser. No. 349,300
Claims priority, application Brazil, Nov. 9, 1988, MI4801333
Term of patent 14 years
U.S. Cl. D12—147



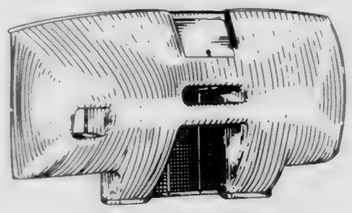
320,372
VEHICLE STORAGE BOX
Raymond W. Alberts, 10921 Elmwood Dr., Kansas City, Mo. 64137
Filed Feb. 10, 1989, Ser. No. 308,566
Term of patent 14 years
U.S. Cl. D12—157



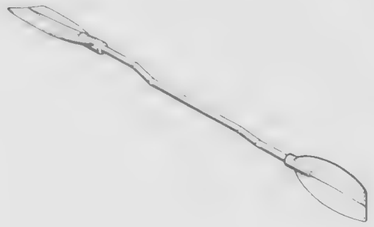
320,373
COMBINED INSULATOR PAD AND TRIM FOR AN ARTICLE CARRIER
Jon D. Sparham, Pontiac; Alan D. Lusky, Warren; Ralph J. Mandarino, Grosse Pointe Farms, and Thomas C. Nanney, Warren, all of Mich., assignors to Huron/St. Clair Incorporated, Taylor, Mich.
Continuation-in-part of Ser. No. 250,705, Sep. 28, 1988. This application Aug. 1, 1989, Ser. No. 388,224
Term of patent 14 years
U.S. Cl. D12—157



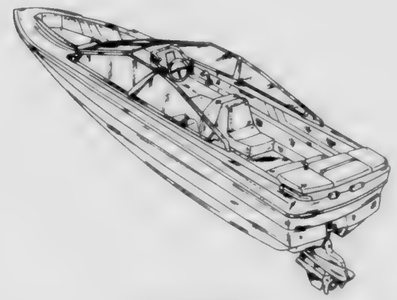
320,374
AERODYNAMIC TRUCK NOSE CONE
Brett S. Herndon, 7820 W. Capitol, #202, Little Rock, Ark. 72205
Filed Jun. 19, 1989, Ser. No. 368,228
Term of patent 14 years
U.S. Cl. D12—181



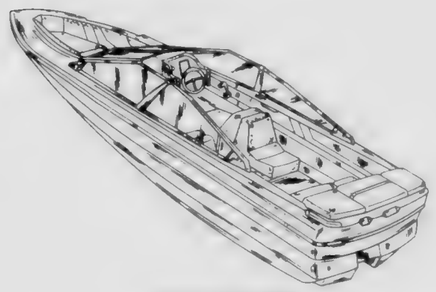
320,375
PADDLE
Andrew G. C. Bruce, Bamfurlong Depot, Bamfurlong Lane, Cheltenham GL51 6TH, England
Filed Jan. 13, 1989, Ser. No. 296,741
Term of patent 14 years
U.S. Cl. D12—215



320,376
BOAT WITH L-DRIVE
David T. Livingston, Seattle, and Roger A. Gage, Marysville, both of Wash., assignors to U.S. Marine Corporation, Hartford, Wis.
Filed Feb. 24, 1989, Ser. No. 314,834
Term of patent 14 years
U.S. Cl. D12—314



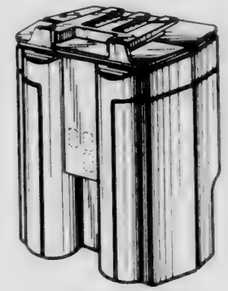
320,377
BOAT
David T. Livingston, Seattle, and Roger A. Gage, Marysville, both of Wash., assignors to U.S. Marine Corporation, Hartford, Wis.
Filed Feb. 24, 1989, Ser. No. 314,835
Term of patent 14 years
U.S. Cl. D12—314



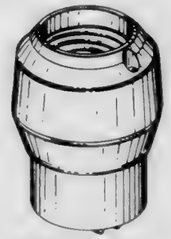
320,378
SPACECRAFT AIRCRAFT
Steven N. Webster, 351 Zenith La., Juno Beach, Fla. 33408
Filed Oct. 24, 1989, Ser. No. 425,994
Term of patent 14 years
U.S. Cl. D12—325



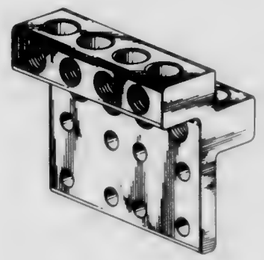
320,379
BATTERY FOR A PORTABLE RADIO
Richard Culbertson, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Filed Aug. 7, 1989, Ser. No. 390,332
Term of patent 14 years
U.S. Cl. D13—103



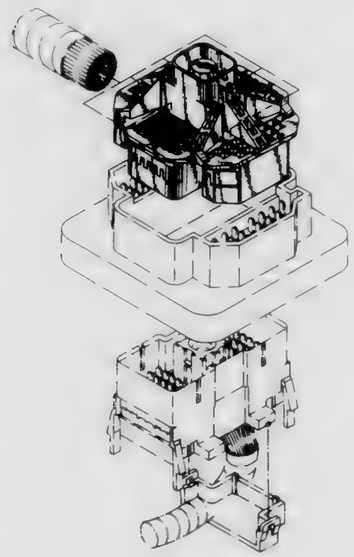
320,380
SCREW-IN ADAPTER FOR A LIGHT BULB SOCKET
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed May 1, 1989, Ser. No. 346,208
Term of patent 14 years
U.S. Cl. D13—136



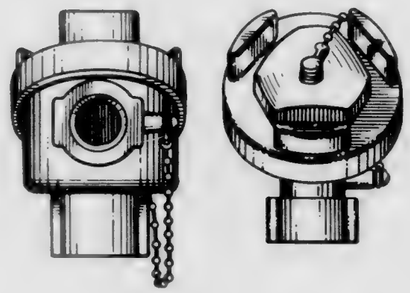
320,381
TRANSFORMER CONNECTOR
Eugene W. McGrane, Ormond Beach, Fla., assignor to Homac Mfg. Company, Ormond Beach, Fla.
Filed Jun. 19, 1989, Ser. No. 369,541
Term of patent 14 years
U.S. Cl. D13—147



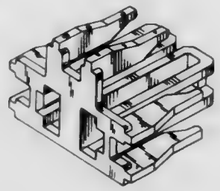
320,382
ELECTRICAL CONNECTOR HOUSING
Yasuhiro Nagasaka, Toyota, and Yuji Hatagishi, Shizuoka, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jul. 3, 1989, Ser. No. 374,858
Claims priority, application Japan, Jan. 6, 1989, 64-49
Term of patent 14 years
U.S. Cl. D13—147



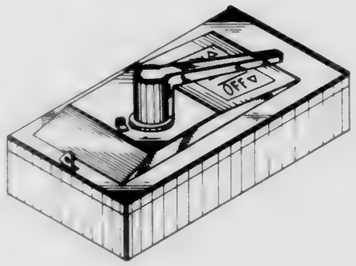
320,384
THERMOCOUPLE HOUSING
David R. Jacobs, Norwalk, Conn., assignor to Omega Engineering, Inc., Stamford, Conn.
Filed Jul. 25, 1988, Ser. No. 223,757
Term of patent 14 years
U.S. Cl. D13—155



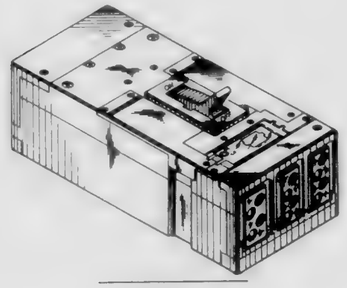
320,383
RETAINER FOR CONNECTOR HOUSING
Tatsuya Oka, Age, Japan, assignor to Sumitomo Wiring Systems, Inc., Yokkaichi, Japan
Filed Oct. 11, 1989, Ser. No. 419,787
Claims priority, application Japan, Apr. 11, 1989, 14-13194
Term of patent 14 years
U.S. Cl. D13—154



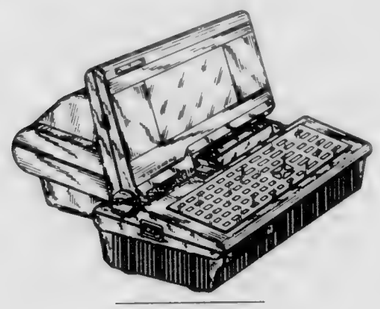
320,385
FUSIBLE PANELBOARD SWITCH
Robert L. Owens, Southington, and Paul D. Carpenter, Vernon, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed Apr. 24, 1989, Ser. No. 342,762
Term of patent 14 years
U.S. Cl. D13—160



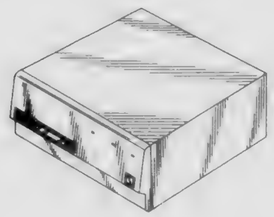
320,386
ELECTRONIC-TRIP, MOLDED-CASE CIRCUIT BREAKER
Richard E. Saunders, Granby; James I. Smith, and Dennis W. Heath, both of Avon, all of Conn., assignors to General Electric Company, New York, N.Y.
Filed Jun. 30, 1989, Ser. No. 373,534
Term of patent 14 years
U.S. Cl. D13—160



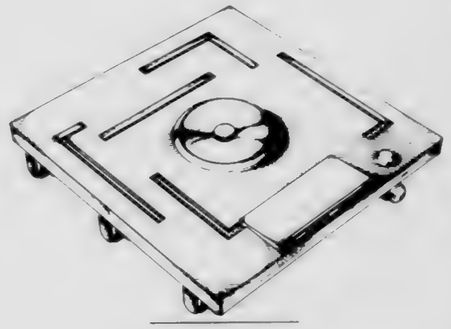
320,387
PORTABLE COMMUNICATIONS TERMINAL
Jerome E. Horsager, Eagan, Minn., and Raymond C. Lo, Solon, Iowa, assignors to RaCoTek, Inc., Burnsville, Minn.
Filed Sep. 25, 1989, Ser. No. 411,593
Term of patent 14 years
U.S. Cl. D14—106



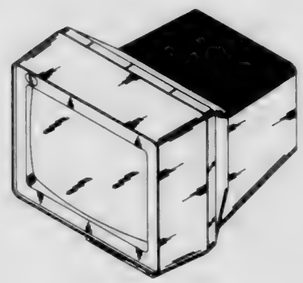
320,388
OPTICAL CARD READER/WRITER
Tetsuya Honda, Shiki, Japan, assignor to Kabushiki Kaisha Nippon Conlux, Japan
Filed May 5, 1989, Ser. No. 348,018
Claims priority, application Japan, Nov. 15, 1988, 63-44573
Term of patent 14 years
U.S. Cl. D14—105



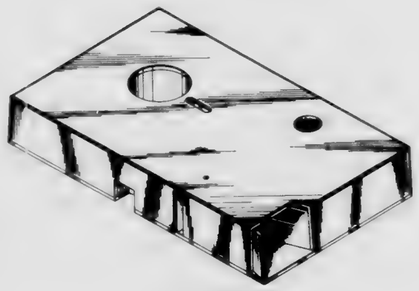
320,389
DATA COMMUNICATIONS PERIPHERAL
Frank Bowker, Lawrenceville; Samuel Harris, Norcross, both of Ga.; David Gresham, Chicago, Ill., and Mark Hicks, Norcross, Ga., assignors to Hayes Microcomputer Products, Inc., Atlanta, Ga.
Filed Nov. 6, 1989, Ser. No. 431,975
The portion of the term of this patent subsequent to Jul. 30, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—107



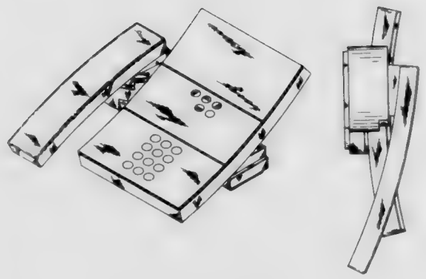
320,390
COMPUTER DISPLAY
Roger C. Williams, Raleigh, N.C., and Richard Sapper, Milan, Italy, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 2, 1989, Ser. No. 388,554
Term of patent 14 years
U.S. Cl. D14—113



320,391
TAPE SUPPLY CARTRIDGE
Michael W. Paque, Scottsdale, Ariz., assignor to Kroy Inc., Scottsdale, Ariz.
Filed Jul. 17, 1989, Ser. No. 381,002
Term of patent 14 years
U.S. Cl. D14—121



320,392
TELEPHONE SET
Timothy D. Wetzell, San Jose, Calif., assignor to ROLM Systems, Santa Clara, Calif.
Filed Aug. 13, 1990, Ser. No. 567,444
Term of patent 14 years
U.S. Cl. D14—151



320,393
CELLULAR ANTENNA
Gershon N. Cooper, Los Angeles, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Jul. 17, 1989, Ser. No. 381,017
Term of patent 14 years
U.S. Cl. D14—230



320,394
ANTENNA
Gershon N. Cooper, Encino, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Nov. 13, 1989, Ser. No. 434,164
Term of patent 14 years
U.S. Cl. D14—230



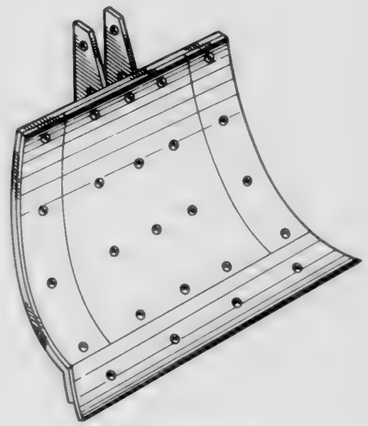
320,395
CELLULAR ANTENNA
Tetsuo Shimazaki, Tokyo, Japan, assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Apr. 10, 1989, Ser. No. 335,981
Term of patent 14 years
U.S. Cl. D14—234



320,396
CELLULAR ANTENNA
Tetsuo Shimazaki, Tokyo, Japan, assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Apr. 10, 1989, Ser. No. 335,982
Term of patent 14 years
U.S. Cl. D14—234



320,397
BIDIRECTIONAL MOLDBOARD PLOW
Pompeyo B. Gomez, Monterrey, Mexico, assignor to Industrias John Deere, S.A. de C.V., Nuevo Leon, Mexico
Continuation of Ser. No. 261,312, Oct. 24, 1988, Pat. No. 4,942,928, which is a continuation-in-part of Ser. No. 36,430, Apr. 9, 1987, Pat. No. 4,800,963. This application Apr. 24, 1990, Ser. No. 514,343
Term of patent 14 years
U.S. Cl. D15—11



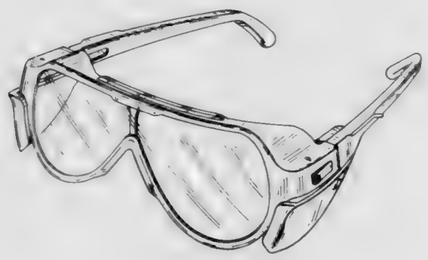
320,398
TRIMMER
Franco Clivio, Zürich, Switzerland, assignor to Gardena Kress + Kastner GmbH, Fed. Rep. of Germany
Filed Dec. 12, 1989, Ser. No. 450,008
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1989, M8904724.9
Term of patent 14 years
U.S. Cl. D15—16



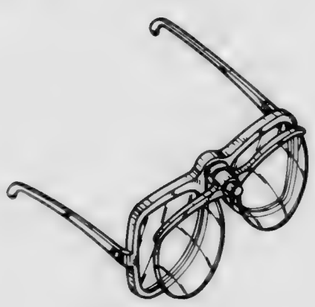
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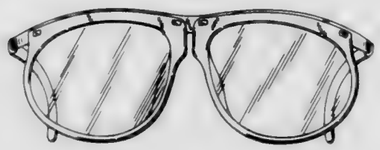
320,399
SAFETY SPECTACLES
Richard Hirschman, Albertson, N.Y., assignor to Hudson Optical Corporation, Bohemia, N.Y.
Filed Sep. 2, 1988, Ser. No. 239,977
Term of patent 14 years
U.S. Cl. D16—102



320,400
BINOCULAR GLASSES
Rita F. Hodges, 5558 B St., SE., Washington, D.C. 20019
Filed Nov. 29, 1988, Ser. No. 277,217
Term of patent 14 years
U.S. Cl. D16—102



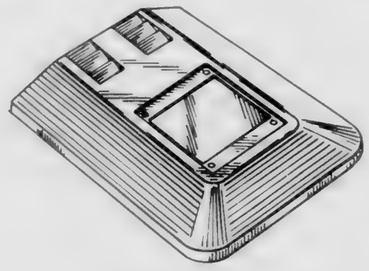
320,401
EYEGLASS FRAME
Ferdinand A. Porsche, St. Georgen, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Sep. 15, 1989, Ser. No. 408,150
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1989, M8902158.4
Term of patent 14 years
U.S. Cl. D16—102



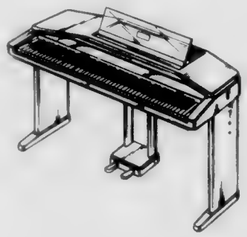
320,402
EYEGLASS TEMPLE
James H. Jannard, San Juan Capistrano, and Gregory F. Arnette, South Laguna Beach, both of Calif., assignors to Oakley, Inc., Irvine, Calif.
Division of Ser. No. 397,091, Aug. 22, 1989. This application Oct. 27, 1989, Ser. No. 428,752
Term of patent 14 years
U.S. Cl. D16—127



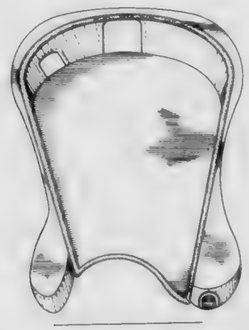
320,403
LIQUID CRYSTAL SCREEN FOR OVERHEAD PROJECTOR
Richard A. Flasck, San Ramon, and Thomas D. Stahl, Pleasanton, both of Calif., assignors to Honeywell, Inc., Minneapolis, Minn.
Filed Sep. 12, 1988, Ser. No. 242,776
Term of patent 14 years
U.S. Cl. D16—235



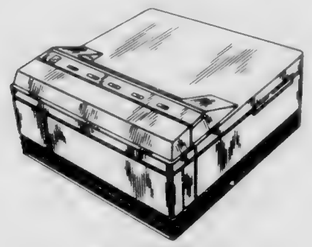
320,404
ELECTRONIC PIANO
Yasuo Yamawaki, and Kazuyuki Mizushima, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Shizuoka, Japan
Filed Nov. 15, 1988, Ser. No. 271,765
Claims priority, application Japan, May 17, 1988, 63-19385
Term of patent 14 years
U.S. Cl. D17—7



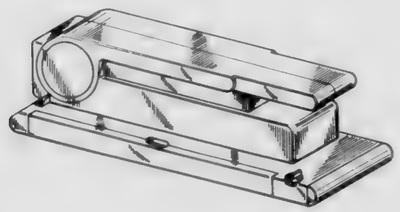
320,405
STRINGED INSTRUMENT COVER
Peter Wyant, 1635 W. 162nd St., Apt. 8, Gardena, Calif. 90247, assignor to Peter M. Wyant, Gardena, Calif.
Filed Feb. 17, 1987, Ser. No. 15,602
Term of patent 14 years
U.S. Cl. D17—20



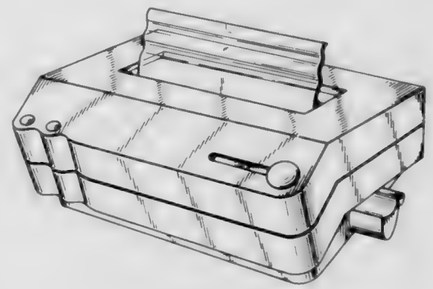
320,406
LASER BEAM PRINTER
Hiroyuki Tokuda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 12, 1988, Ser. No. 180,798
Claims priority, application Japan, Oct. 12, 1987, 62-41625
Term of patent 14 years
U.S. Cl. D18—13



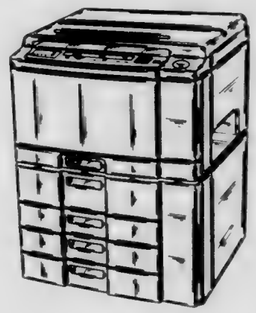
320,407
PAPER PUNCH AND BINDING MACHINE
Robert L. Lathrop, Jr., San Jose; Richard D. Phipps, Morgan Hill, and Loren D. Stirling, Pleasanton, all of Calif., assignors to Taurus Tetraconcepts, Mountain View, Calif.
Filed May 18, 1989, Ser. No. 353,737
Term of patent 14 years
U.S. Cl. D18—34



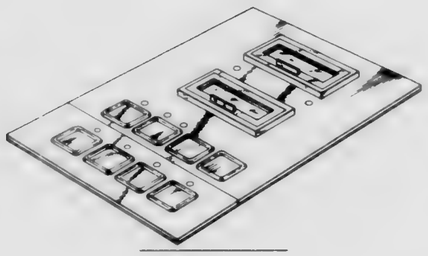
320,408
BINDING MACHINE
Calvin Q. Seid, San Francisco, Calif.; Kevin Parker, 2015 Del Norte St., Berkeley, Calif. 94707, and Wayne Kasom, San Francisco, Calif., assignors to Kevin Parker, Berkeley, Calif.
Filed Sep. 5, 1989, Ser. No. 402,930
Term of patent 14 years
U.S. Cl. D18—34



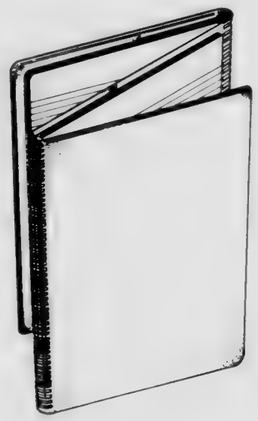
320,409
COPYING MACHINE
Mikio Kosako, and Atsuko Hattori, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jun. 27, 1989, Ser. No. 372,043
Claims priority, application Japan, Dec. 28, 1988, 63-51354
Term of patent 14 years
U.S. Cl. D18—39



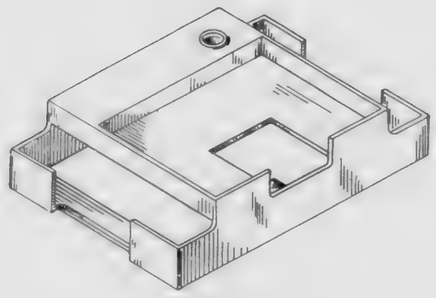
320,410
CONTROL PANEL FOR A MICROFILMER
David R. Gotham, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 10, 1988, Ser. No. 166,845
Term of patent 14 years
U.S. Cl. D18—41



320,411
NOTEBOOK
Jon R. Wyant, Spring Valley, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Jul. 31, 1989, Ser. No. 387,311
Term of patent 14 years
U.S. Cl. D19—27



320,412
COMBINED TWO-LEVEL PAPER TRAY AND WRITING INSTRUMENT HOLDER
Robert G. Cornell, Duxbury, Mass., assignor to Cornell Concepts Corp., Taunton, Mass.
Filed May 10, 1989, Ser. No. 350,025
Term of patent 14 years
U.S. Cl. D19—78



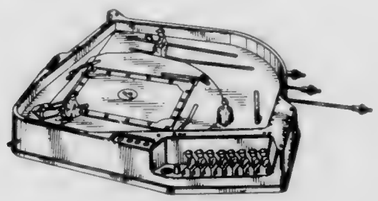
320,413
CRAYON STORAGE CONTAINER
Charles W. Dietterich, Brodheadsville; Richard E. Kenepaske; Anne M. Patino, both of Bethlehem, all of Pa., and Richard A. Tarozzi, Gales Ferry, Conn., assignors to Binney & Smith Inc., Easton, Pa.
Filed Apr. 11, 1989, Ser. No. 336,318
Term of patent 14 years
U.S. Cl. D19—85



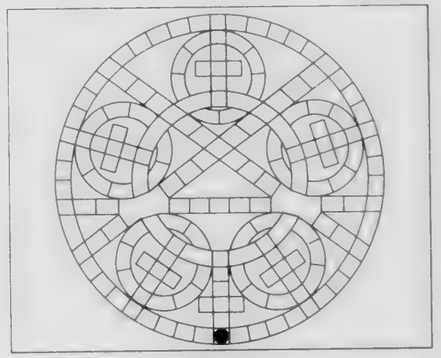
320,414
IDENTIFICATION TAG FOR METALLIC IMPLANTABLE BONE FRACTURE REDUCTION AND FIXATION DEVICES
Frank H. Morgan, Woodland Hills, Calif., assignor to TiMesh, Inc., Las Vegas, Nev.
Filed Oct. 23, 1989, Ser. No. 425,585
Term of patent 14 years
U.S. Cl. D20—22



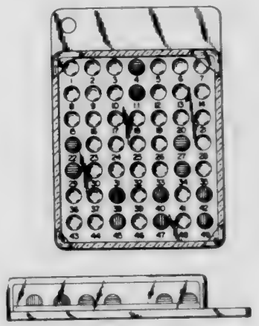
320,415
COMBINED BASEBALL GAME AND PIECES THEREFOR
Erland Wikner, Tranås, Sweden, assignor to Stiga Aktiebolag, Tranas, Sweden
Filed May 19, 1988, Ser. No. 196,103
Term of patent 14 years
U.S. Cl. D21—11



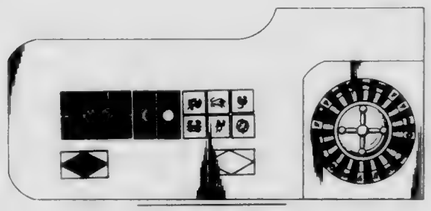
320,416
GAMEBOARD
David L. Richardson, 408 W. 32nd St., Houston, Tex. 77018
Filed Nov. 7, 1988, Ser. No. 267,768
Term of patent 14 years
U.S. Cl. D21—35



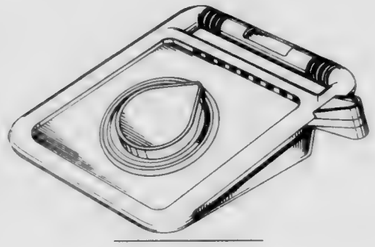
320,417
NUMBER SELECTOR FOR GAMES, SUCH AS LOTTO AND THE LIKE
Tar Beaty, 150 Columbia Heights, Brooklyn, N.Y. 11201
Filed Aug. 25, 1988, Ser. No. 236,627
Term of patent 14 years
U.S. Cl. D21—37



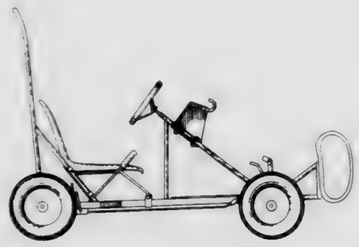
320,418
COMBINED GAME SPINNER AND PLAYING BOARD OR SIMILAR ARTICLE
David G. De Keller, Sweet Valley Farm, Soetvlei Ave., Constantia 7800, Cape Town, South Africa
Filed Aug. 3, 1988, Ser. No. 227,611
Claims priority, application United Kingdom, Mar. 30, 1988, 1049617
The portion of the term of this patent subsequent to Jun. 27, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—40



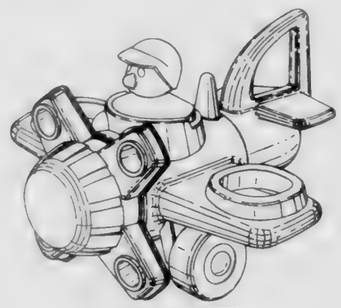
320,419
AUDIOVISUAL TOY
David J. Wohl, Kingston, R.I., assignor to Playskool, Inc., Pawtucket, R.I.
Filed Feb. 10, 1989, Ser. No. 309,535
Term of patent 14 years
U.S. Cl. D21—64



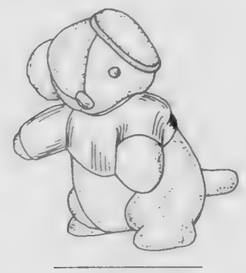
320,420
OPEN FRAME COASTER VEHICLE
André Dupont, 115 rue De Vaudreuil, Boucherville, Quebec, Canada J4B 1K7
Filed Mar. 20, 1989, Ser. No. 325,470
Term of patent 14 years
U.S. Cl. D21—71



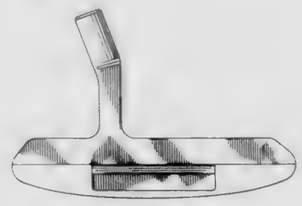
320,421
TOY AIRPLANE
Tim J. Harris, Punnettstown, England, assignor to Hestair Kiddicraft Limited, Bristol, England
Filed May 19, 1989, Ser. No. 354,688
Claims priority, application United Kingdom, Nov. 22, 1988, 1055143
Term of patent 14 years
U.S. Cl. D21—90



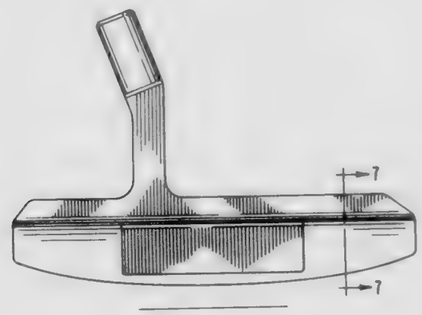
320,422
STUFFED ANIMAL TOY
Nancy M. Rechtman, 7507 Lasaine Ave., Van Nuys, Calif. 91406, and Catherine N. Lisson, 1961 Holmby Ave., Los Angeles, Calif. 90025
Filed May 23, 1988, Ser. No. 197,808
Term of patent 14 years
U.S. Cl. D21—148



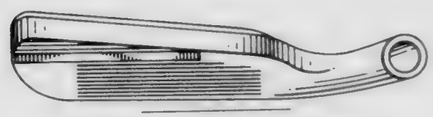
320,423
GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Mar. 2, 1989, Ser. No. 317,804
Term of patent 14 years
U.S. Cl. D21—217



320,424
GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Mar. 16, 1989, Ser. No. 324,343
Term of patent 14 years
U.S. Cl. D21—217



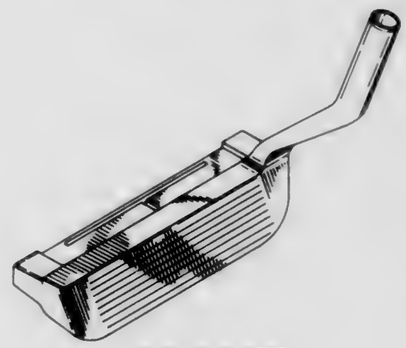
320,425
IRON GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed May 18, 1988, Ser. No. 195,546
The portion of the term of this patent subsequent to Oct. 1, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—220



320,426
IRON GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed May 18, 1988, Ser. No. 195,547
Term of patent 14 years
U.S. Cl. D21—220



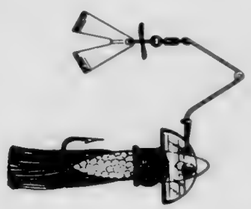
320,427
CHIPPER TYPE IRON GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Jan. 23, 1989, Ser. No. 299,516
Term of patent 14 years
U.S. Cl. D21—220



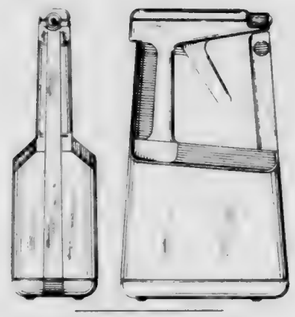
320,428
MARTIAL ARTS BAR
Jesse W. Rust, P.O. Box 989, Myrtle Creek, Oreg. 97457
Filed May 19, 1989, Ser. No. 353,920
Term of patent 14 years
U.S. Cl. D22—117



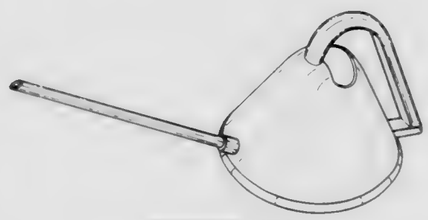
320,429
FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29710
Filed Oct. 26, 1988, Ser. No. 262,680
Term of patent 14 years
U.S. Cl. D22—129



320,430
COMBINED HORTICULTURAL SPRAY AND WATERING CAN
Bruce Renfrew, 33, Rutland Street, Leicester, England
Filed Nov. 3, 1988, Ser. No. 266,928
Term of patent 14 years
U.S. Cl. D23—212



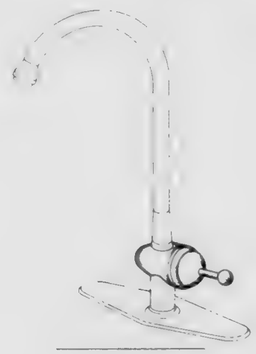
320,431
GARDEN WATERING-CAN
Maurizio Mattei, Macerata, Italy, assignor to Fratelli Guzzine S.p.A., Recanati, Italy
Filed Jul. 6, 1990, Ser. No. 548,763
Claims priority, application Italy, Jan. 9, 1990, 20 418 B/90
Term of patent 14 years
U.S. Cl. D23—212



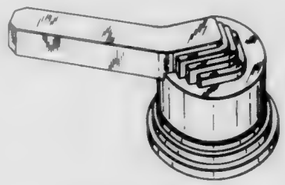
320,432
FIREFIGHTING NOZZLE
Darrell Graf, P.O. Box 7512, Fargo, N. Dak. 58109, and Kevin S. Bosche, 812 Northwestern Dr., Grand Forks, N. Dak. 58201
Filed Jan. 5, 1989, Ser. No. 293,654
Term of patent 14 years
U.S. Cl. D23—213



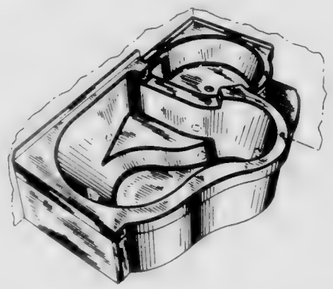
320,433
FAUCET VALVE BODY
Alfons Knapp, Biberach an der Riss, Fed. Rep. of Germany, and Daniel E. Wittum, Greensburg, Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed Feb. 15, 1989, Ser. No. 311,671
Claims priority, application Italy, Aug. 18, 1988, 53364B-88
Term of patent 14 years
U.S. Cl. D23—238



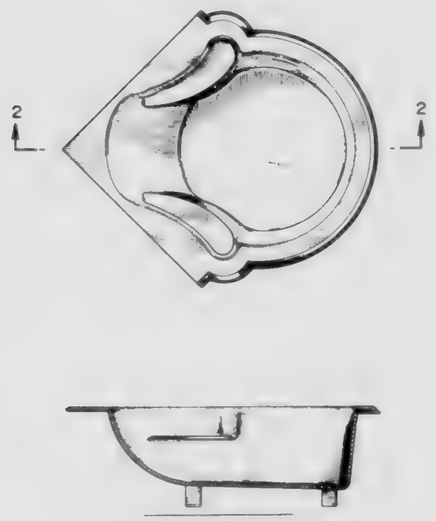
320,434
HANDLE FOR A FAUCET
Kenneth E. Rawald, Huntington Beach, Calif., assignor to Masco Building Products Corp., Taylor, Mich.
Filed Jan. 18, 1989, Ser. No. 298,701
Term of patent 14 years
U.S. Cl. D23—252



320,435
COMBINED BATHTUB AND SHOWER BASE
Todd D. Dannenberg, Sheboygan, Wis., and Keith L. Poulson, Canyon Country, Calif., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 11, 1988, Ser. No. 142,872
Term of patent 14 years
U.S. Cl. D23—275



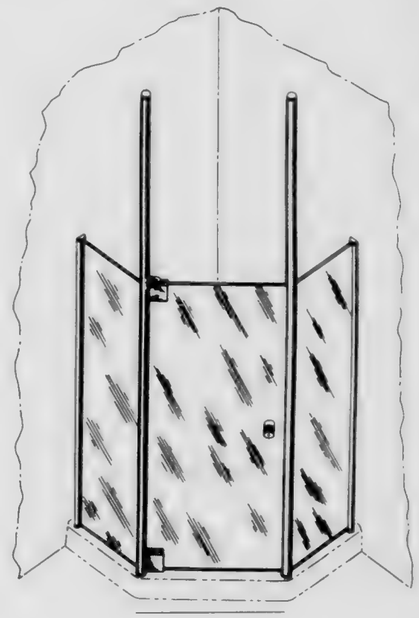
320,436
BATH
Jean-Claude Delepine, 23, rue Clapeyron, 75008 Paris, France
Filed Jul. 12, 1988, Ser. No. 217,889
Claims priority, application Int'l Pat. Institute, Jan. 13, 1988, DM/010048
Term of patent 14 years
U.S. Cl. D23—281



320,437
PEDESTAL LAVATORY
William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 26, 1989, Ser. No. 456,769
Term of patent 14 years
U.S. Cl. D23—292



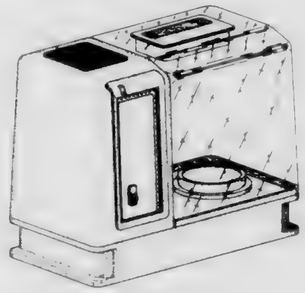
320,438
SHOWER ENCLOSURE
Keith L. Poulson, Canyon Country, Calif., and Todd D. Dannenberg, Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 11, 1988, Ser. No. 142,780
Term of patent 14 years
U.S. Cl. D23—305



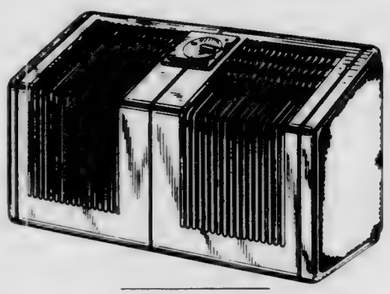
320,439
HEATER WHICH IS USED WITH A CEILING FAN
Ronald D. Harper, Rte. 2, Box 618, Tignall, Ga. 30668
Filed Nov. 15, 1990, Ser. No. 614,107
Term of patent 14 years
U.S. Cl. D23—328



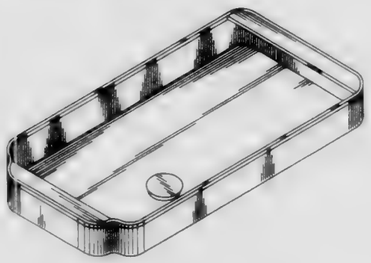
320,440
PORTABLE HUMIDIFIER
Bernard Chiu, Ashland, Mass., assignor to Duracraft Corporation, Sudbury, Mass.
Filed Apr. 17, 1990, Ser. No. 509,914
Term of patent 14 years
U.S. Cl. D23—356



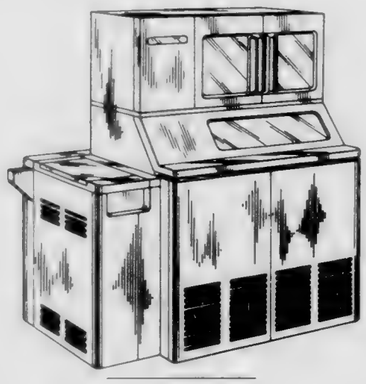
320,441
AIR CLEANER
Ronald L. Muller, Old Saybrook, Conn., assignor to North American Philips Corp., New York, N.Y.
Filed Dec. 21, 1989, Ser. No. 456,127
The portion of the term of this patent subsequent to Sep. 24, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—364



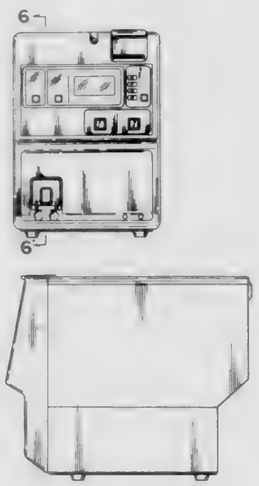
320,442
TANK LINER
David D. McKay, 3507 25th St., Lubbock, Tex. 79410
Filed Oct. 11, 1988, Ser. No. 256,379
Term of patent 14 years
U.S. Cl. D23—206



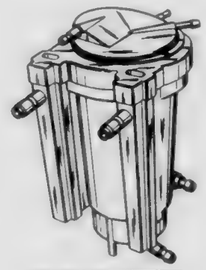
320,443
CLINICAL CHEMISTRY ANALYZER
Masaru Yokoyama, Tama; Hiroyasu Uchida, Katsuta; Tetsuaki Abe, Katsuta, and Takehide Sato, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 19, 1988, Ser. No. 259,610
Claims priority, application Japan, Jul. 22, 1988, 63-29110
Term of patent 14 years
U.S. Cl. D24—231



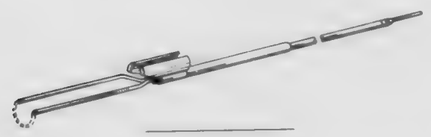
320,444
BLOOD COLLECTING UNIT
Kenichi Kida, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1988, Ser. No. 200,789
Claims priority, application Japan, Dec. 1, 1987, 62-48903
Term of patent 14 years
U.S. Cl. D24—169



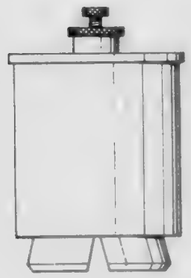
320,445
OXYGENATOR
Kenneth A. Jones, Lake Elsinore; Francis M. Servas, San Juan Capistrano, and Ned M. Santos, El Toro, all of Calif., assignors to Shiley Incorporated, Irvine, Calif.
Filed Jan. 26, 1989, Ser. No. 302,724
Term of patent 14 years
U.S. Cl. D24—169



320,446
RESECTOSCOPE ELECTRODE
Benedetto Grossi, and Raymond Ainger, III, both of Stamford, Conn., assignors to Circon Corporation, Santa Barbara, Calif.
Filed Jun. 2, 1988, Ser. No. 203,022
Term of patent 14 years
U.S. Cl. D24—144

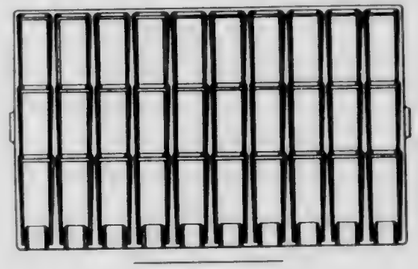


320,447
JAWS FOR CRIMPING VIALS
James A. Baxter, 73a Friern Barnet Lane, London N20 0XT, England, and Kenneth E. Marshall, Pinfold House, Almond Close, Barby, Rugby, Warwickshire CV23 8TL, England
Filed May 26, 1988, Ser. No. 198,916
Claims priority, application United Kingdom, Nov. 27, 1987, 1046687
Term of patent 14 years
U.S. Cl. D8—51

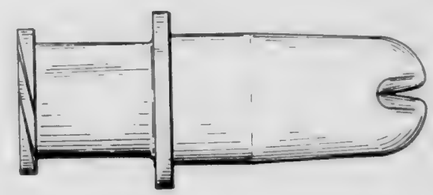




320,448
MICROSCOPE SLIDE TRAY
J. Gordon Short, Holladay, Utah, assignor to Brevis Corporation, Salt Lake City, Utah
Filed Oct. 3, 1988, Ser. No. 251,870
Term of patent 14 years
U.S. Cl. D24—225



320,449
CHECK VALVE FOR A SYRINGE OR THE LIKE
Nyan S. Shah, Mentor, Ohio, assignor to JNN International, Mentor, Ohio
Filed Sep. 23, 1988, Ser. No. 248,024
Term of patent 14 years
U.S. Cl. D24—130



320,450
BIOLOGICAL ANALYZER OR THE LIKE
Enrique Hicaro, Jr., Chicago, and James D. Morrow, Oak Park, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Feb. 24, 1989, Ser. No. 316,111
Term of patent 14 years
U.S. Cl. D24—107



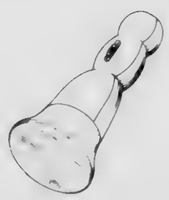
320,451
ANGULATED BONE EXTRACTOR
Randall J. Torre, 842 S. Clover, San Jose, Calif. 95128
Filed Apr. 18, 1989, Ser. No. 340,167
Term of patent 14 years
U.S. Cl. D24—143



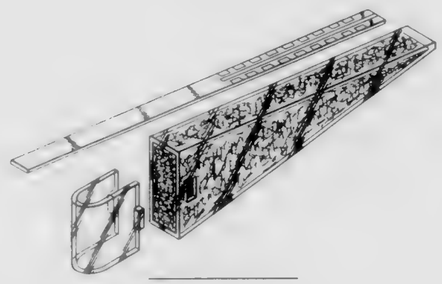
320,452
SCREW DRIVER FOR DENTAL IMPLANTS
Joseph E. Carchidi, Whitman, Mass., assignor to ACE Surgical Supply Co., Brockton, Mass.
Filed Mar. 30, 1989, Ser. No. 330,723
Term of patent 14 years
U.S. Cl. D24—172



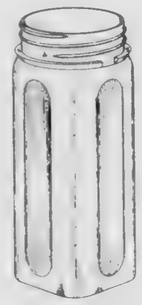
320,453
INFRARED HEAT PAIN RELIEVER
Cyril Von Winckler, Caldwell, N.J., assignor to Infralux International, Inc., Fairfield, N.J.
Filed Mar. 17, 1989, Ser. No. 324,640
Term of patent 14 years
U.S. Cl. D24—215



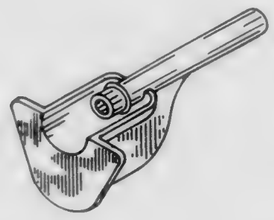
320,454
PREVACUUM STEAM STERILIZATION TEST PACK
Thomas A. Augurt, New Canaan, Conn., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.
Continuation of Ser. No. 466,048, Jan. 17, 1990. This application Jun. 25, 1990, Ser. No. 543,153
Term of patent 14 years
U.S. Cl. D24—216



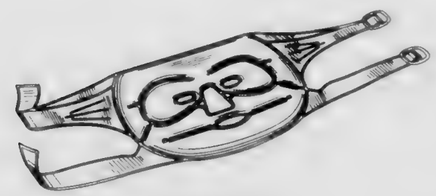
320,455
BOTTLE HOLDER FOR USE BY INFANTS, CHILDREN OR THE LIKE
Alexander R. Malcolm, Dudley, Mass., assignor to Kinder-Grip Products, Inc., Plainsboro, N.J.
Filed Jul. 18, 1990, Ser. No. 554,583
Term of patent 14 years
U.S. Cl. D24—199



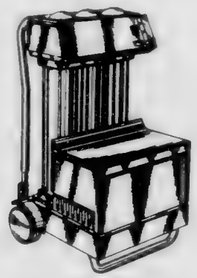
320,456
NEEDLE SAFETY GUARD
Richard A. Grossman, 1620 Forest Ave., Durango, Colo. 81301
Filed Mar. 21, 1988, Ser. No. 171,404
Term of patent 14 years
U.S. Cl. D24—130



320,457
THERAPEUTIC FACE MASK
Walter B. Dickinson, 2064 Mar Kara, Guadalajara, Jal, Mexico
Filed Feb. 21, 1989, Ser. No. 313,144
Term of patent 14 years
U.S. Cl. D24—208



320,458
OXYGEN CONCENTRATION
Francis E. Ryder, Arab, and Joseph J. Cerola, Guntersville, both of Ala., assignors to Ryder International Corporation, Arab, Ala.
Filed Mar. 9, 1989, Ser. No. 321,531
Term of patent 14 years
U.S. Cl. D24—164



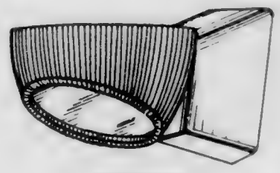
320,459
ROOF BALCONY
Jacqueline D. Pyle, 805 Ranch Rd., Connersville, Ind. 47331
Division of Ser. No. 189,738, May 3, 1988, Pat. No. Des. 312,313. This application Sep. 10, 1990, Ser. No. 579,997
Term of patent 14 years
U.S. Cl. D25—56



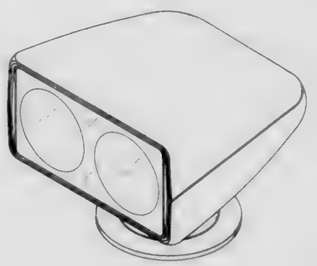
320,460
HUNTER'S TREE SEAT
Donald J. Dubroc, 2008 Roosevelt Blvd., Kenner, La. 70062
Filed Feb. 21, 1989, Ser. No. 313,140
Term of patent 14 years
U.S. Cl. D25—62



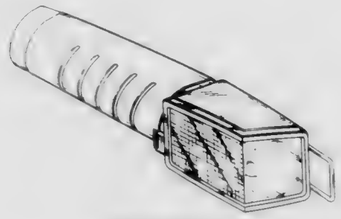
320,461
WALL LAMP
Luciano Pagani; Angelo Perversi, and Paolo Ferrari, all of Milan, Italy, assignors to Flos S.p.A., Brescia, Italy
Filed Oct. 23, 1989, Ser. No. 425,974
Claims priority, application Italy, Apr. 21, 1989, 6981/89[U]
Term of patent 14 years
U.S. Cl. D26—87



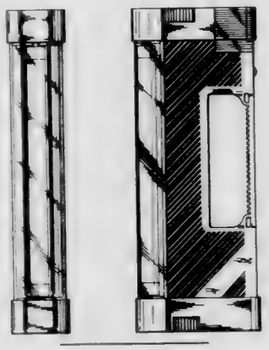
320,462
REMOTE CONTROLLED DUAL LAMP SEARCHLIGHT FOR VEHICLE, BOAT, OR THE LIKE
Jack L. Williams, Orange, Calif., and Robert J. Tiedemann, Stamford, Conn., assignors to ITT Corporation, New York, N.Y.
Filed Sep. 19, 1989, Ser. No. 410,673
Term of patent 14 years
U.S. Cl. D26—28



320,463
MULTIPURPOSE FLASHLIGHT
Tor Pettersen, Palos Verdes Peninsula, Calif.; David R. Schaller, Janesville, and Gregory L. Mills, Middleton, both of Wis., assignors to Rayovac Corporation, Madison, Wis.
Filed May 22, 1989, Ser. No. 355,250
Term of patent 14 years
U.S. Cl. D26—37



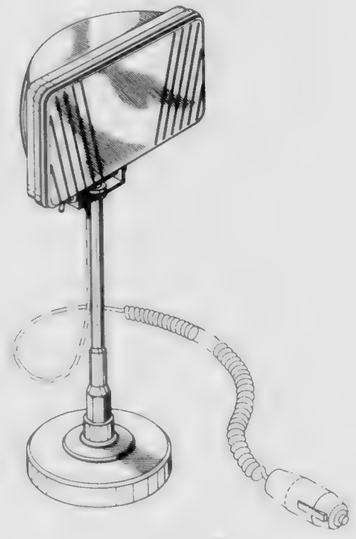
320,464
MULTI PURPOSE FLUORESCENT LANTERN
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Feb. 23, 1989, Ser. No. 314,598
Claims priority, application United Kingdom, Aug. 24, 1988, 1053196
Term of patent 14 years
U.S. Cl. D26—42



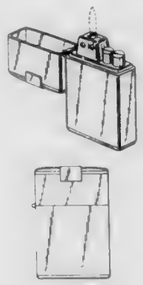
320,465
HANGING LAMP ASSEMBLY
Robert A. Sonneman, New York, N.Y., assignor to Sonneman Design Group Inc., Long Island City, N.Y.
Filed Aug. 14, 1989, Ser. No. 393,714
Term of patent 14 years
U.S. Cl. D26—86



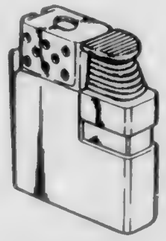
320,466
ADJUSTABLE AND MAGNETICALLY ATTACHABLE UTILITY LIGHT
Richard E. Muzquiz, 8713 Copper Canyon Rd., North Richland Hills, Tex. 76180
Filed Jun. 5, 1989, Ser. No. 361,116
Term of patent 14 years
U.S. Cl. D26—60



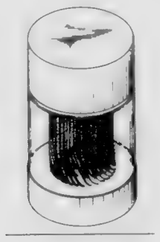
320,467
LIGHTER OR THE LIKE
Kaname Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1990, Ser. No. 604,004
Claims priority, application Japan, Aug. 31, 1990, 2-29061
Term of patent 14 years
U.S. Cl. D27—159



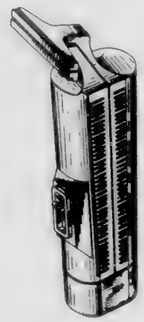
320,468
IGNITING UNIT FOR A CIGARETTE LIGHTER
Jang D. Hong, 220 Man-su-dong, Nam-ku, Inchon City, Rep. of Korea
Filed Jul. 6, 1990, Ser. No. 549,498
Term of patent 14 years
U.S. Cl. D27—154



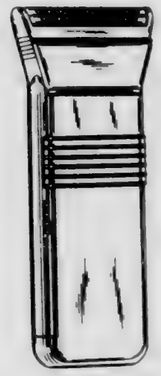
320,469
COSMETIC PRODUCT AND TRANSPARENT CONTAINER THEREFOR
David Hoenig, East Brunswick, N.J., assignor to Revlon, Inc., New York, N.Y.
Filed Feb. 28, 1989, Ser. No. 316,926
Term of patent 14 years
U.S. Cl. D28—7



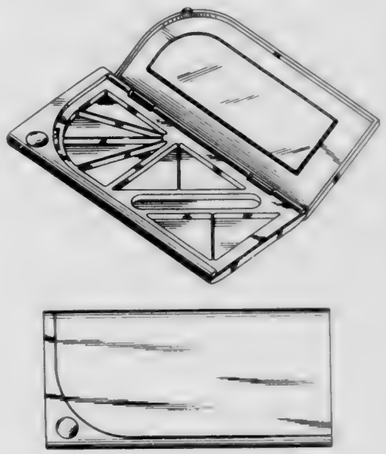
320,470
RAZOR HANDLE
David R. Locke, Bridgeport, Conn., assignor to Remington Products, Inc., Bridgeport, Conn.
Filed Jan. 6, 1988, Ser. No. 141,882
Term of patent 14 years
U.S. Cl. D28—49



320,471
DRY SHAVER
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Oct. 11, 1989, Ser. No. 419,621
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, M8902808.2
Term of patent 14 years
U.S. Cl. D28—49



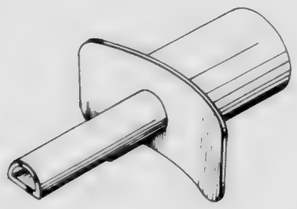
320,472
COSMETIC CASE
Bernard Favre, Chevilly-Larue Cedex, France, assignor to Lir France, Chevilly Larue, France
Filed Jul. 31, 1989, Ser. No. 387,574
Claims priority, application France, Apr. 7, 1989, 892345
Term of patent 14 years
U.S. Cl. D28—83



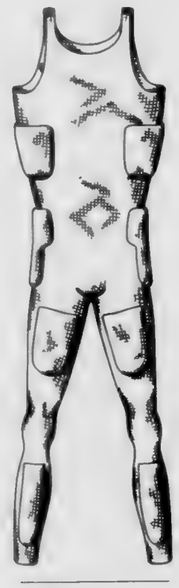
320,473
BREATHING MASK
Kaori Mano, and Nubuyuki Kitamura, both of Kyoto, Japan, assignors to Japan Oxygen Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1989, Ser. No. 415,147
Claims priority, application Japan, Mar. 31, 1989, 1-11777
Term of patent 14 years
U.S. Cl. D29—7



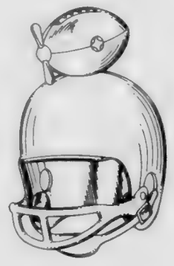
320,474
MOUTH-TO-MOUTH VENTILATOR
Ivory C. Flannagan, 4219 Northstrand Dr., Decatur, Ga. 30035
Filed Dec. 1, 1989, Ser. No. 444,387
Term of patent 14 years
U.S. Cl. D29—7



320,475
IMPACT SUIT
DeWayne F. Jeter, Jr., 3305 EdgeWood Ave., Richmond, Va. 23222
Filed Jul. 31, 1987, Ser. No. 79,903
Term of patent 14 years
U.S. Cl. D29—11



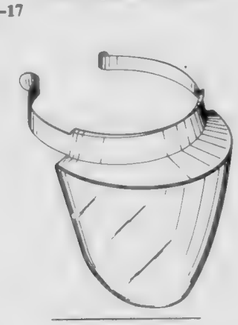
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NOVELTY HELMET
Richard V. Mele, 1881 Ohltown-Girard Rd., Mineral Ridge, Ohio 44440
Filed Mar. 17, 1988, Ser. No. 169,359
Term of patent 14 years
U.S. Cl. D29—13



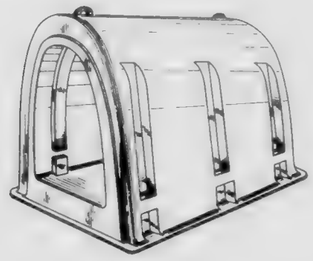
320,477
SAFETY HELMET FOR A PROJECTILE GAME
Andrew Hassfuther, 4104 W. 49th St., Cleveland, Ohio 44144
Filed Aug. 9, 1988, Ser. No. 230,126
Term of patent 14 years
U.S. Cl. D29—15



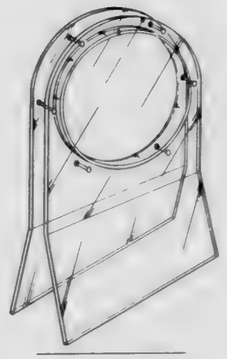
320,478
FACESHIELD
Richard T. Metcalfe, Southbridge, Mass., assignor to Cabot Safety Corporation, Southbridge, Mass.
Continuation-in-part of Ser. No. 152,984, Feb. 5, 1988. This application Jun. 14, 1988, Ser. No. 206,695
The portion of the term of this patent subsequent to Sep. 5, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D29—17



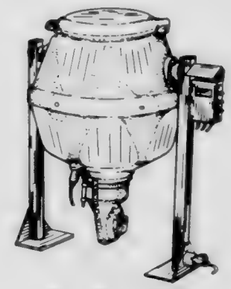
320,479
SHELTER FOR AN ANIMAL
Benoît Cheval, Saverne, and Paul Sigwalt, Drulingen, both of France, assignors to Sotralentz, Drulingen, France
Filed May 15, 1987, Ser. No. 51,009
Claims priority, application France, Nov. 17, 1986, 0000401
Term of patent 14 years
U.S. Cl. D30—108



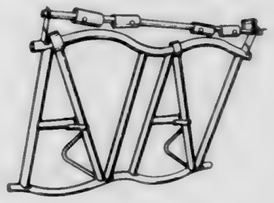
320,480
TERMITE HABITAT
Christopher H. Poehlman, 1020 Jones St., Berkeley, Calif. 94710
Filed Sep. 24, 1987, Ser. No. 100,706
Term of patent 14 years
U.S. Cl. D30—108



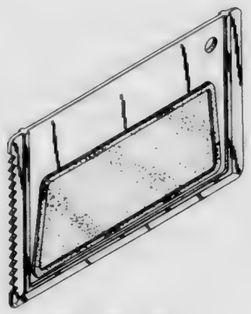
320,481
FISH FOOD DISPENSER
Karl T. Sterner, Norsgatan 27, S-793 00 Leksand, Sweden
Filed Nov. 2, 1988, Ser. No. 266,365
Claims priority, application Norway, May 3, 1988, 69335; May 3, 1988, 69336
Term of patent 14 years
U.S. Cl. D30—121



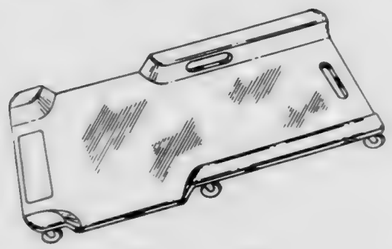
320,482
CATTLE FEEDING STANCHION
John A. DaSilveira, 25251 E. Mariposa Rd., Escalon, Calif. 95320
Filed Apr. 20, 1989, Ser. No. 341,062
Term of patent 14 years
U.S. Cl. D30—119



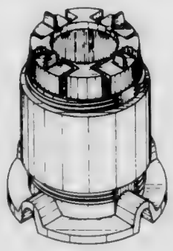
320,483
POCKET SCRAPER
Peter M. Desautel, Rte. 4, St. Cloud, Minn. 56301
Filed Aug. 29, 1990, Ser. No. 574,915
Term of patent 14 years
U.S. Cl. D32—46



320,484
CREEPER
Craig Wallin, Salt Lake City, Utah, assignor to William A. Dutro, Logan, Utah
Filed May 30, 1989, Ser. No. 358,195
Term of patent 14 years
U.S. Cl. D34—23



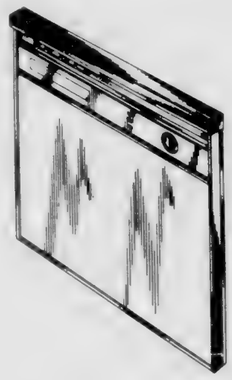
320,485
SUPPORTING DEVICE FOR HEIGHT-ADJUSTING OF FLOORS
Chien-Teh Huang, No. 105, Sec. 4, Shan-Ho Road, Shan-Chung City, Taipei Hsien, Taiwan
Filed May 17, 1989, Ser. No. 352,907
Term of patent 14 years
U.S. Cl. D34—31



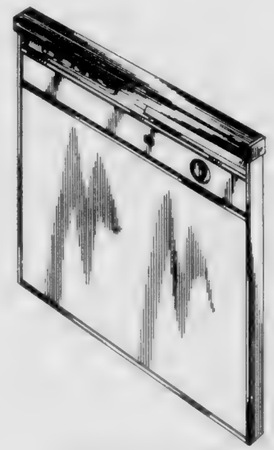
320,486
COMBINED BREATHING REGULATOR AND CONTAINER FOR UNDERWATER USE
Guy S. Nelepka, 2327 N. Tustin Ave., Newport Beach, Calif. 92660
Filed Jan. 3, 1989, Ser. No. 292,877
Term of patent 14 years
U.S. Cl. D29—6



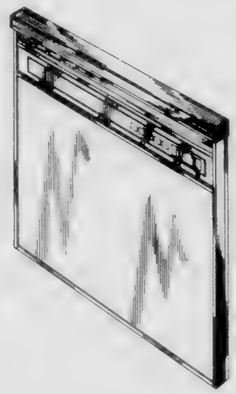
320,487
DISHWASHER FRONT PANEL
Larry D. Marks; Richard C. Stiles, both of St. Joseph; Louis L. Mastro, Milford, and Curtis J. Bailey, Birmingham, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 1, 1989, Ser. No. 317,354
The portion of the term of this patent subsequent to Oct. 1, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—3

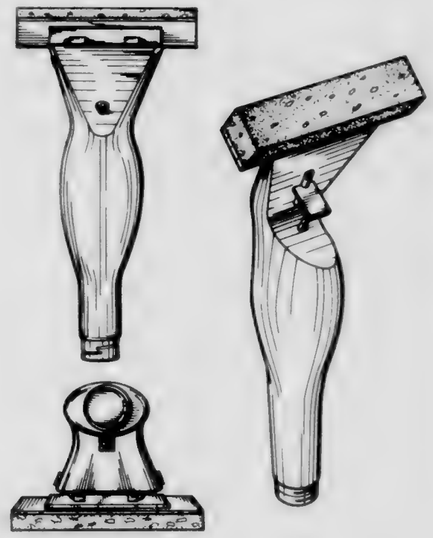


320,488
DISHWASHER FRONT PANEL
Larry D. Marks; Richard C. Stiles, both of St. Joseph; Louis L. Mastrop, Milford, and Curtis J. Bailey, Birmingham, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 1, 1989, Ser. No. 317,353
The portion of the term of this patent subsequent to Oct. 1, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—3



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Larry D. Marks; Richard C. Stiles, both of St. Joseph; Louis L. Mastro, Milford, and Curtis J. Bailey, Birmingham, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 1, 1989, Ser. No. 317,355
The portion of the term of this patent subsequent to Oct. 1, 2005, has been disclaimed.
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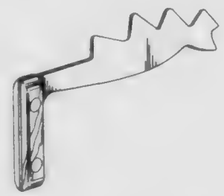
320,490
WINDOW WASHING DEVICE
Charles O. C. Andrew, III, and David H. Elder, III, both of 1418 S. George Mason Dr. Apt. 21, Arlington, Va. 22204
Filed Feb. 10, 1989, Ser. No. 308,563
Term of patent 14 years
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VACUUM CLEANER
John R. Lackner, Westlake, and Roger S. Ford, North Ridgeville, both of Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Filed Oct. 3, 1989, Ser. No. 416,448
Term of patent 14 years
U.S. Cl. D32—22



320,492
BARBECUE TOOL
George Diebert, 816 Seymour Avenue, S.W., Calgary, Alberta, Canada T2W 0N6
Filed Jul. 3, 1989, Ser. No. 374,953
Term of patent 14 years
U.S. Cl. D32—46



320,493
GRAVE STONE VASE
Terry S. Fewell, 1037 W. Vest St., Scottsburg, Ind. 47170
Filed Jan. 9, 1989, Ser. No. 294,583
Term of patent 14 years
U.S. Cl. D99—8



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Akada, Masanori; Egashira, Noritaka; Mizuno, Mikizo; Kutsukake, Masaki; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Suzuki, Takao; Arita, Hitoshi; Sorimachi, Kazuyoshi; and Iwata, Tamami, to Dai Nippon Insatsu Kabushiki Kaisha. Dye receiving sheet for preparation of a transparency. 5,053,382, Cl. 503-227.000.

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Kubodera, Keizou; Takeda, Toshiaki; and Aoki, Hiroyuki, 5,052,117, Cl. 33-501.900.
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Yamamoto, Masaki; Sato, Takeo; Sugiyama, Yoshiyuki; Aoki, Shinichiro; and Takeuchi, Hiroyuki, 5,053,628, Cl. 250-557.000.
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Tsukihashi, Akira; Hitomi, Tadashi; Tsubokura, Yoshiaki; and Aoki, Takeshi, 5,054,015, Cl. 369-258.000.
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Tsuchihashi, Akira; Takarada, Shinichi; Iwamoto, Taro; Nakajima, Kichio; Aoki, Tatsu; and Yamamoto, Hiroshi, 5,053,975, Cl. 364-513.000.
Aoyama, Mutsuro: *See—*
Saeki, Takao; Okada, Shoji; Aoyama, Mutsuro; and Kuwabara, Yasuo, 5,053,669, Cl. 310-323.000.
APV Douglas Machine Corporation: *See—*
Anderson, David L., 5,052,544, Cl. 198-456.000.
APV Pasilac A/S: *See—*
Nielsen, Per G., 5,052,290, Cl. 99-461.000.
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Szirmai, Endre; Babusek, Sandor; Balogh, Gezz; Nedves, Atilla; Horvath, Gyula; Lebenyi, Zoltan; and Pinter, James, 5,053,144, Cl. 210-770.000.
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Arai, Atsushi, to Ricoh Company, Ltd. Fixing apparatus having sheet separator pawls for image forming apparatus. 5,053,830, Cl. 355-290.000.
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Sakaguchi, Junei; Hasegawa, Soichi; and Arai, Shuichi, 5,053,303, Cl. 430-59.000.
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Moriuchi, Fumio; Yano, Hiroshi; and Kajita, Kazushige, 5,053,507, Cl. 544-334.000.
Arathoon, William R.; Builder, Stuart E.; Lubiniecki, Anthony S.; and van Reis, Robert D., to Genentech, Inc. Process for producing biologically active plasminogen activator in recombinant CHO cells using suspension culture and removing detrimental components from medium. 5,053,334, Cl. 435-226.000.
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Capone, Donald W.; and Poeppel, Roger B., 5,053,385, Cl 505-1.000.
Arieh, Simon; and Courvoisier, Guy. Clamp. 5,052,644, Cl. 248-114.000.
Arimoto, Akira, to Hitachi, Ltd.; and Hitachi Kiki Co., Ltd. Variable density scanning apparatus. 5,053,619, Cl. 250-235.000.
Arison, Byron H.: *See—*
Chen, Shieh-Shung T.; and Arison, Byron H., 5,053,329, Cl. 435-119.000.
Arita, Hitoshi: *See—*
Akada, Masanori; Egashira, Noritaka; Mizuno, Mikizo; Kutsukake, Masaki; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Suzuki, Takao; Arita, Hitoshi; Sorimachi, Kazuyoshi; and Iwata, Tamami, 5,053,382, Cl. 503-227.000.
Armiento, Craig A.: *See—*
Choudhury, A. N. M. Masum; Jagannath, Chirravuri; Elman, Boris S.; and Armiento, Craig A., 5,053,843, Cl. 357-30.000.
Armstrong Laboratories, Inc.: *See—*
Cuns-Rial, Frank; and Lippert, David C., 5,052,577, Cl. 220-310.000.
Arney, Jonathan S.: *See—*
Sanders, Frederick W.; Hillenbrand, Gary F.; Arney, Jonathan S.; and Wright, Richard F., 5,053,309, Cl. 430-138.000.
Arnulf, Paul: *See—*
Girault, Eric; and Arnulf, Paul, 5,052,709, Cl. 280-615.000.
ARO Corporation, The: *See—*
Vonalt, Kerry G.; Tate, William R.; and Gentit, Ernest K., 5,052,432, Cl. 137-355.160.
Arraudeau, Jean-Pierre; Patraud, Jeanne; Gagnebien, Didier; Lang, Gerard; and Malaval, Alain, to L'Oreal. Mascara composition based on waxes and keratin derivatives. 5,053,220, Cl. 424-63.000.
Asada, Isamu, to Nihon Seiken Kabushiki Kaisha. Heat sensitive actuator. 5,052,181, Cl. 60-527.000.
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Suzuki, Yoshio; Usubuchi, Yutaka; and Oguri, Yakeshi, 5,053,316, Cl. 430-281.000.
Asahi Kogaku Kogyo K.K.: *See—*
Sugawara, Saburo, 5,052,787, Cl. 359-683.000.
Asano, Masamichi: *See—*
Miyakawa, Tadashi; Asano, Masamichi; Taura, Tadayuki; Shoji, Atsushi; and Inami, Michiharu, 5,053,841, Cl. 357-23.500.
Asano, Tamotsu: *See—*
Gohbara, Masatoshi; Asano, Tamotsu; Ozawa, Shuji; Yamazaki, Hideo; Ishii, Tsutomu; Nishida, Makoto; Watanabe, Junko; and Sato, Naoki, 5,053,070, Cl. 71-92.000.
Asea Brown Boveri Aktiengesellschaft: *See—*
Peppel, Michael, 5,053,940, Cl. 363-58.000.
Asea Brown Boveri Ltd.: *See—*
Althaus, Rolf, 5,052,895, Cl. 417-64.000.
Battig, Josef, 5,052,825, Cl. 384-223.000.
Bohnert, Klaus; and Buser, Werner, 5,053,693, Cl. 324-96.000.
Bohnert, Klaus; and Nehring, Jurgen, 5,053,694, Cl. 324-96.000.
Hansen, Diethard, 5,053,712, Cl. 324-627.000.
Hansen, Diethard; and Koster, Dieter, 5,053,716, Cl. 324-726.000
Ashe, Philip R.: *See—*
Harney, James D.; Carin, Ronald A.; Carey, James R.; and Ashe, Philip R., 5,053,903, Cl. 360-99.060.
Asmo Co., Ltd.: *See—*
Yamaguchi, Mineo; and Sato, Tetsuro, 5,053,665, Cl. 310-239.000.
Aspect, Alain; Himbert, Marc; Doisy, Martine; Weisbuch, Claude; and de Cremoux, Baudouin, to Thomson-CSF. System for the optical pumping of a cell of atomic or molecular gases and its application to a magnetometer. 5,053,708, Cl. 324-304.000.
Astec Industries, Inc.: *See—*
Brock, J. Donald, 5,052,810, Cl. 366-25.000.
Astegger, Stephan: *See—*
Korger, Dietmar; Eichinger, Dieter; Astegger, Stephan; Weinzierl, Karin; and Manner, Johann, 5,053,138, Cl. 210-670.000.
Asten Group, Inc.: *See—*
Penven, Patrick H., 5,053,109, Cl. 162-348.000.
Astley, Graham J.: *See—*
Belanger, Michael J.; and Astley, Graham J., 5,052,629, Cl. 239-752.000.
Astra-Vent AB: *See—*
Loreth, Andrzej; and Torok, Vilmos, 5,053,912, Cl. 361-230.000.
Asuma, Minoru: *See—*
Matsuyama, Taizo; Goto, Kaname; Hyuga, Masao; Ozawa, Akira; Kousaka, Tomomi; Asuma, Minoru; and Watari, Jyun, 5,052,540, Cl. 198-346.100.
Asymptotic Technologies, Inc.: *See—*
Maiorca, Philip P.; and Wadley, George H., 5,052,338, Cl. 118-668.000.
AT&E Corporation: *See—*
Hoff, Don G., 5,054,051, Cl. 379-56.000.
AT&T Bell Laboratories: *See—*
Biswas, Ranjit; and Curtis, Hazen, III, 5,053,852, Cl. 357-74.000.
Short, Kenneth T.; and White, Alice E., 5,053,383, Cl. 505-1.000.
Tarallo, Joseph A.; and Zysman, George I., 5,054,035, Cl. 375-10.000.
Atarashi, Shohgo: *See—*
Hayakawa, Isao; Atarashi, Shohgo; Imamura, Masazumi; Yokohama, Shuichi; Higashihashi, Nobuyuki; Sakano, Katsuchi; and Ohshima, Masayuki, 5,053,407, Cl. 514-230.200.

Atlas Copco Tools Aktiebolag: *See*—
Hansson, Gunnar C., 5,053,586, Cl. 191-12.20R.

Atlas Energy Systems, Inc.: *See*—
West, Geoffrey, 5,053,635, Cl. 307-67.000.

Atochem: *See*—
Correia, Yves; Lesparre, Jean; and Petit, Alain, 5,053,567, Cl 570-243.000.

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McElligott, Paul J., Jr.; Sandler, Stanley R.; Kennoy, John F.; and Tuszynski, William J., 5,053,149, Cl. 252-8.552.

Aton, Thomas J., to Texas Instruments Incorporated. Scanning electron microscope based parametric testing method and apparatus. 5,053,699, Cl. 324-158.00R.

ATP, Ltd.: *See*—
Smucker, Richard A.; and Taylor, Myron E., 5,052,340, Cl 119-4.000.

Audie Coker Enterprises: *See*—
Coker, Audie, 5,052,180, Cl. 60-456.000.

Audon, Philippe; and Courtecuisse, Daniel, to Thomson-CGR. Radiology installation with a communications network. 5,054,044, Cl. 378-91.000.

Aug. Winkhaus GmbH & Co. KG: *See*—
Vosskotter, Alfred, 5,052,079, Cl. 16-367.000.

Augsburger, Friedemann; Holzinger, Gerhard; Loser, Friedrich; and Von Kuepach, Hermann, to Thyssen Industrie AG. Device for operating magnetic levitation systems. 5,053,654, Cl. 310-12.000.

Ault Foods Limited: *See*—
Mongeau, Gerald; Bergeron, Phillipe; Clark, James J.; Charlton, Ronald W.; Eino, Mahmound; Maurice, Terrence J.; Parnell-Clunies, Estelle M.; and Cheng, Wen-Song, 5,053,241, Cl. 426-603.000.

Austin, Jon W. Pressure relief valve for positive pressure pumps. 5,052,900, Cl. 417-309.000.

Austral-Pacific Fertilizers Ltd.: *See*—
Linton, Max; and Brown, Anthony M., 5,053,538, Cl. 564-70.000.

Automated Container Corporation: *See*—
Zysset, Edgar H., 5,052,573, Cl. 220-271.000.

Avions Marcel Dassault-Breguet Aviation: *See*—
Lemacon, Jacques, 5,052,639, Cl. 244-137.400.

AVL Gesellschaft fuer Verbrennungskraftmaschinen und Messtechnik mbH. Prof. Dr. Dr. h.c. Hans List: *See*—
Hohenberg, Guenter; and Denk, Heimo, 5,052,425, Cl. 137-1.000.

Awaji, Yoshiharu: *See*—
Yoshikawa, Hideo; Takeuchi, Katsuyoshi; Shimada, Masami; Awaji, Yoshiharu; Ikeda, Takashi; and Mitsuno, Shunsaku, 5,052,513, Cl. 181-246.000.

Axelson, Peter; Heinrich, Michael; Lasko-Harvill, Ann; and Silverman, Michael W., to Pin Dot Products. Quick release coupler. 5,052,647, Cl. 248-231.000.

Axelsson, Per-Arne: *See*—
Clinch, Colin W. F.; and Axelsson, Per-Arne, 5,052,663, Cl. 267-141.000.

Ayache, Liliane: *See*—
Philippossian, Georges; Laugier, Jean-Pierre; and Ayache, Liliane, 5,053,433, Cl. 514-909.000.

Azad, A. R. M.: *See*—
Kirchanski, Stefan J.; Azad, A. R. M.; and Natale, Peter J., 5,053,054, Cl. 8-647.000.

B.A.T. Cigarettenfabriken GmbH: *See*—
Henning, Paul-Georg; and Schmekel, Gerald, 5,052,415, Cl. 131-331.000.

B. F. Goodrich Company, The: *See*—
Gilbert, Eugene C.; and Schenk, William N., 5,052,381, Cl. 128-155.000.
Son, Pyong N.; Lai, John T.; and Kovach, Ronald M., 5,053,505, Cl. 540-575.000.

Baare, Rolf: *See*—
Wronka, Bodo; Schnitzer, Heinrich; Baare, Rolf; Bauer, Hannsgeorg; and Otto, Josef, 5,054,033, Cl. 373-84.000.

Baba, Kazuo; Shiratsuki, Yoshiyuki; and Takahashi, Kumiko, to Fuji Xerox Co., Ltd. Method for producing resistors. 5,053,249, Cl. 427-101.000.

Babbitt, Richard W.: *See*—
Kosicka, Thomas E.; Babbitt, Richard W.; and Drach, William C., 5,052,183, Cl. 62-51.100.

Babcock Industries Inc.: *See*—
Harris, Charles A., 5,052,075, Cl. 16-38.000.
James, Wayne R.; Neal, Warren D.; and Varjabedian, Suren A., 5,052,541, Cl. 198-368.000.

Babcock & Wilcox Company, The: *See*—
Rackley, John M.; and Vecci, Stanley J., 5,052,312, Cl. 110-346.000.

Babu, Suryadevara V.; Hoffarth, Joseph G.; Knoll, Allan R.; Mlynko, Walter E.; Rembetski, John F.; and Mack, Kenneth D., to International Business Machines Corporation. Method of plasma etching a substrate with a gaseous organohalide compound. 5,053,104, Cl. 156-643.000.

Babusek, Sandor: *See*—
Szirmai, Endre; Babusek, Sandor; Balogh, Gezz; Nedves, Atilla; Horvath, Gyula; Lebenyi, Zoltan; and Pinter, James, 5,053,144, Cl. 210-770.000.

Baby D Mittens, Inc.: *See*—
Fetner, Beth R., 5,052,057, Cl. 2-158.000.

Bacchi, Paul E., to Kensington Laboratories, Inc. High precision linear actuator. 5,053,685, Cl. 318-135.000.

Bachmeir, Xaver; and Prem, Wolfgang, to Man Roland Druckmaschinen AG. Bending compensated printing web deflection roller. 5,052,294, Cl. 101-216.000

Bacon, Kinney C., to Scientific-Atlanta, Inc. Volume control for optimum television stereo separation. 5,054,071, Cl. 381-12.000.

Baek, Seung Ho.; Morrison, Robert L.; and Sarraf, Sanwal P., to Eastman Kodak Company. Thermal transfer print medium drum system. 5,053,791, Cl. 346-138.000.

Bagley, Jerome R.; Lalinde, Nhora L.; Huang, Bao-Shan; and Spencer, H. Kenneth, to Anaquest, Inc. N-aryl-N-[4-(1-heterocyclicalkyl)-piperidinyl]amides and pharmaceutical compositions and methods employing such compounds. 5,053,411, Cl. 514-259.000.

Bailey, James W.: *See*—
Bement, Laurence J.; Bailey, James W.; and Schimmel, Morry L., 5,052,817, Cl. 374-8.000.

Bailey, John P.; and Pasquet, Georges, to Imperial Chemical Industries PLC. Intermediates for the preparation of beta-lactam antibiotics. 5,053,500, Cl. 540-215.000.

Bajaj, Sandeep. Intracardiac catheter. 5,053,008, Cl. 604-104.000.

Bajer, Jacques J., to DICO Tire, Inc. Low speed radial tire free of corded belts. 5,052,458, Cl. 152-532.000.

Bak, Michael J., to Williams International Corporation. Continuous flow fuel control system. 5,052,174, Cl. 60-39.281.

Baker, Alan: *See*—
Kreifels, Jerry A.; Baker, Alan; Hoekstra, George; Kynett, Virgil N.; Wells, Steven; and Winston, Mark, 5,053,990, Cl. 364-900.000.

Baker Hughes Incorporated: *See*—
Fraser, James M., III, 5,052,488, Cl. 166-285.000.
Jurgens, Rainer; and van Ea, Johann, 5,052,502, Cl. 175-80.000.

Baker, James G.: *See*—
Dunlay, Mark J.; and Baker, James G., 5,052,661, Cl. 266-87.000.

Baker, Max N.; Barnes, Vernon B.; Clark, Douglas C.; Clearman, Jack F.; Hensgen, Gerhard; Shannon, Michael D.; Shelar, Gary R.; and Schubert, Alfred, to R. J. Reynolds Tobacco Company. Method for making a smoking article and components for use therein. 5,052,413, Cl. 131-77.000.

Baker, Richard D.; and Foisy, Robert L., to Sprague Electric Company. Molded fuzed solid electrolyte capacitor. 5,053,927, Cl. 361-534.000.

Baker, Thomas R.; and Anderson, George F., to Motorola, Inc. Bonding pad for semiconductor devices. 5,053,850, Cl. 357-68.000.

Bakis, Raimo, to International Business Machines Corporation. Optimized speech recognition system and method. 5,054,074, Cl. 381-41.000.

Balcome, Herbert L.: *See*—
Seamons, Kenneth R.; Prestwood, Stephen D.; and Balcome, Herbert L., 5,053,208, Cl. 422-300.000.

Balestrieri, Ciro; Servillo, Luigi; Quagiuolo, Lucio; Giovane, Alfonso; and Castaldo, Domenico, to Stazione Sperimentale per l'Industria delle Conserve Alimentari. Proteic inhibitor of pectinesterase and use thereof in the preparation of fruit and vegetable juices. 5,053,232, Cl. 426-49.000.

Balmer, Charles. Spreading of particulate material. 5,052,627, Cl. 239-655.000.

Balogh, Gezz: *See*—
Szirmai, Endre; Babusek, Sandor; Balogh, Gezz; Nedves, Atilla; Horvath, Gyula; Lebenyi, Zoltan; and Pinter, James, 5,053,144, Cl. 210-770.000.

Balschmidt, Per; Hansen, Finn B.; and Johansen, Bente R. Insulin preparation for non-parenteral administration. 5,053,389, Cl. 514-4.000.

Balstrup, Bo, to Helioprint A/S. Reprographic lens system and a reprographic camera comprising such a system. 5,053,810, Cl. 355-57.000.

Balwigaire, John D. Gravitationally motivated toy apparatus. 5,052,970, Cl. 446-351.000.

Baratta, Francis I. Method of and apparatus for nondestructively determining the composition of an unknown material sample. 5,052,819, Cl. 374-43.000.

Barber, Charles R., Jr., to Lydall, Inc. Ceramic staple fiber and glass fiber paper. 5,053,107, Cl. 162-145.000.

Barber, John H.: *See*—
Krone, James R.; and Barber, John H., 5,053,263, Cl. 428-120.000.

Barbier, Bruno; Perbet, Jean N.; and Favoi, Jean J., to Thomson CSF. System for the display of images in half tones on a matrix screen. 5,053,764, Cl. 340-793.000.

Barclay, Brian L.; Childers, Jerry D.; Wright, Jeri; Place, Virgil A.; and Wong, Patrick S. L. Method of signalling a patient during buccal agent delivery. 5,053,032, Cl. 604-892.100.

Barlow, David E., to Olympus Corporation. Irrigation system for angioscope. 5,053,002, Cl. 604-30.000.

Barnes, Grady: *See*—
Bieniarz, Christopher; Welch, Christopher J.; and Barnes, Grady, 5,053,520, Cl. 548-520.000.

Barnes Group Inc.: *See*—
Lesher, Roger P.; and Starzec, John J., 5,052,664, Cl. 267-167.000.

Barnes, Vernon B.: *See*—
Baker, Max N.; Barnes, Vernon B.; Clark, Douglas C.; Clearman, Jack F.; Hensgen, Gerhard; Shannon, Michael D.; Shelar, Gary R.; and Schubert, Alfred, 5,052,413, Cl. 131-77.000.

Barnett, Anthony M.; and Green, Jeffrey K., to Eastman Kodak Company. Aqueous solutions of oleophilic compounds. 5,053,319, Cl. 430-331.000.

Barr, Bryan: *See*—
Constantz, Brent R.; Barr, Bryan; and McVicker, Kevin, 5,053,212, Cl. 423-305.000.

Barreau, Michel. *See*—
Antoine, Michel; Barreau, Michel; Desconclois, Jean-Francois; Girard, Philippe; and Picaut, Guy, 5,053,509, Cl. 544-361.000.

Barris, Marty A.; and Wagner, Wayne M., to Donaldson Company, Inc. Ceramic foam prefilter for diesel exhaust filter system. 5,053,062, Cl. 55-282.000.

Barry, Daniel T.; Fredericksen, Ray; Soutas-Little, Robert W.; and Peterson, Ruk R., to Wolverine World Wide, Inc. Spring plate shoe. 5,052,130, Cl. 36-107.000.

Barski, Lori L., to Eastman Kodak Company. Rotationally impervious feature extraction for optical character recognition. 5,054,094, Cl. 382-18.000.

Barth, Arnold: *See*—
Konrad, Mathias; and Barth, Arnold, 5,052,724, Cl. 285-190.000

Barthel, Walter: *See*—
Daniels, Ivo; Manner, Reinhard; Mueller, Karl H.; and Barthel, Walter, 5,053,279, Cl. 428-405.000.

Bartholmae, Jack N.: *See*—
Tompkins, E. Neal; Bartholmae, Jack N.; Zuber, Peter A.; and Charles, Kirk W., 5,053,827, Cl. 355-271.000

Bartholomew, Donald D., to Proprietary Technology, Inc. Locking accommodating sealing port. 5,052,723, Cl. 285-108.000.

Bartizal, Kenneth F.; Rozdilsky, Walter; and Onishi, Janet C., to Merck & Co., Inc. Novel anti-fungal compounds. 5,053,425, Cl. 514-452.000.

Bartkowiak, Frank: *See*—
Horstmann, Heinz-Otto; Engelhardt, Ulrich; Reizlein, Karl; Singer, Rolf-Jurgen; Wangermann, Klaus; Wirth, Wolfgang; Bartkowiak, Frank; Boehmke, Gunther; and Schulze, Hans, 5,053,421, Cl. 514-383.000.

Bartlett, Laurence, to Edlund Company, Inc. Can opener. 5,052,110, Cl. 30-434.000

Bartz, Wilfried: *See*—
Schueler, Ralf; Herkt-Maetzky, Christian; and Bartz, Wilfried, 5,053,440, Cl. 523-137.000.

Barzaghi, Fernando: *See*—
Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, 5,053,416, Cl. 514-340.000

Baseman, Robert J.; and Jahnes, Christopher V., to International Business Machines Corporation. Thin film magnetic medium with controlled grain morphology and topology for improved performance. 5,053,250, Cl. 427-131.000.

BASF Aktiengesellschaft: *See*—
Bender, Dietmar; and Bronstert, Klaus, 5,053,462, Cl. 526-285.000.
Bender, Dietmar; Bronstert, Klaus; Fischer, Martin; and Schuermann, Gregor, 5,053,561, Cl. 568-857.000.
Bott, Kaspar, 5,053,528, Cl. 560-189.000.
Krieg, Wolfgang; Ernst, Hansgeorg; Buschmann, Ernst; Francke, Wittko; and Engels, Wolf, 5,053,223, Cl. 424-84.000.
Kuekenhoener, Thomas; and Goetz, Norbert, 5,053,550, Cl. 568-420.000.
Raulfs, Friedrich-Wilhelm; Mayer, Udo; and Oberlinner, Andreas, 5,053,524, Cl. 558-394.000
Taubitz, Christof; Seiler, Erhard; Boehlke, Klaus; Bronstert, Klaus; and Wagner, Daniel, 5,053,458, Cl. 525-92.000
Tischendorf, Klaus J.; Liebscher, Manfred; Rizk, Farid; and Zahradnik, Franz, 5,052,123, Cl. 34-17.000.

Batchelder, Geoffrey. Radiating lamp fluid heating system. 5,054,107, Cl. 392-483.000

Batchelder, J. Samuel. Method and apparatus for measuring the density of an object including a living being. 5,052,405, Cl. 128-774.000.

Bates, Anne H.: *See*—
Brandon, David L.; Bates, Anne H.; and Friedman, Mendel, 5,053,327, Cl. 435-7.920

Bates, Stephen M. Stake puller. 5,052,659, Cl. 254-29.00R.

Bathe, Avon E.: *See*—
Hinsey, Michael E.; and Bathe, Avon E., 5,052,630, Cl. 241-36.000.

Batson, Donald R.: *See*—
Butler, Johnny L.; Wakeland, Richard E.; Batson, Donald R.; and Metzger, Robert E., 5,052,427, Cl. 137-15.000.

Battig, Josef, to Asea Brown Boveri Ltd. Axial mounting with skewing compensation. 5,052,825, Cl. 384-223.000.

Bauch, Karl; and Effenberger, Wolfgang, to Ott Maschinentechnik GmbH. Device for feeding a fluid to a rotating machine part. 5,052,436, Cl. 137-580.000.

Bauch, Karl; Ziegeltrum, Franz; and Heel, Helmut, to Ott Maschinentechnik GmbH. Actuating arrangement for a clamping device in a machine tool spindle. 5,052,866, Cl. 409-233.000.

Baudry, Alain: *See*—
De Labbey, Arnaud; Baudry, Alain; Bauer, Daniel; and Bore, Pierre, 5,053,053, Cl. 8-423.000.

Bauer, Daniel: *See*—
De Labbey, Arnaud; Baudry, Alain; Bauer, Daniel; and Bore, Pierre, 5,053,053, Cl. 8-423.000.

Bauer, Friedrich, to Hoerbiger Ventilwerke Aktiengesellschaft. Valve, especially for compressors. 5,052,434, Cl. 137-516.130.

Bauer, Hannsgeorg: *See*—
Wronka, Bodo; Schnitzer, Heinrich; Baare, Rolf; Bauer, Hannsgeorg; and Otto, Josef, 5,054,033, Cl. 373-84.000.

Bauer, Klaus: *See*—
Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, 5,053,072, Cl. 71-92.000.

Bauer, Lothar: *See*—
Baur, Rupert; Bauer, Lothar; Krause, Jurgen; and Rohde, Wilfried, 5,053,977, Cl. 364-519.000.

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Carsella, James V.; and Cook, Robert B. Apparatus for selectively actuating well tools. 5,052,489, Cl. 166-297.000.

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Fasano, Michael A., 5,053,736, Cl. 335-62.000

Carlon, Hugh R.; Tytus, Raymond P.; and Stuempfle, Arthur K., to United States of America, Army. Method and apparatus for protecting crops from frost by jet-dispersed, microencapsulated aerosols. 5,052,618, Cl. 239-77.000.

Carlsen, Richard: *See—*
Mister, Jean M.; and Carlsen, Richard, 5,053,964, Cl. 364-424.010.

Carlson, Edwin D.: *See—*
Hildinger, Henry W.; and Carlson, Edwin D., 5,053,581, Cl 585-638.000

Carlson, Paul R.: *See—*
Carlson, Steven R.; and Carlson, Paul R., 5,053,607, Cl. 235-379.000

Carlson, Steven R.; and Carlson, Paul R. Point-of-sale device particularly adapted for processing checks. 5,053,607, Cl. 235-379.000

Carnel, Alain; Gourc, Rene ; and Kodras, Rudolph, to Schlumberger Industries. Input circuit for an electrical energy meter. 5,053,697, Cl 324-142.000

Carpenter, David A.; and Kossoff, George, to Commonwealth Scientific and Industrial Research Organization. Method and apparatus for ultrasonic beam compensation. 5,052,394, Cl. 128-660.060

Carr, Syd K., to Micron Technology, Inc. Oil filtration and exhaust apparatus. 5,053,122, Cl. 210-95.000.

Carr, Thomas E.: *See—*
Plasse, Michel L.; and Carr, Thomas E., 5,052,094, Cl. 29-252.000.

Carrie, Susan E., to Sun Microsystems, Inc. Asynchronous micromachine/interface. 5,053,941, Cl. 364-200.000.

Carrier Corporation: *See—*
Drucker, Alan S., 5,052,192, Cl. 62-324.600.
Fuller, Jack J.; Podesta, Joseph A.; and Yarnold, Daniel J., 5,052,096, Cl. 29-451.000.
Rich, Donald G., 5,052,285, Cl. 98-40.140.
Shapiro-Baruch, Ian M., 5,052,191, Cl. 62-238.700.

Carter, Bruce D.: *See—*
Tubbesing, Robert A.; and Carter, Bruce D., 5,052,286, Cl 98-42.210.

Carter, Douglas V., to Entravision, Inc. Packaged pharmaceutical product. 5,052,558, Cl. 206-439.000.

Carter, Ralph E.; and Jennings, John W. Truck-mounted rack for cargo holders. 5,052,601, Cl. 224-42.410.

Carter, Ronald W.; and Williams, Robert E., to Ammco Tools Technology Corporation. Method and apparatus for providing runout compensation in a wheel. 5,052,111, Cl. 33-203.180.

Case Corporation: *See—*
Venable, Phillip G., 5,052,727, Cl. 292-19.000.

Case, Richard N., to RCP Enterprises, Inc. Flashlight retainer. 5,053,932, Cl. 362-105.000.

Casio Computer Co., Ltd.: *See—*
Ino, Mayumi, 5,052,267, Cl. 84-613.000.

Castaldo, Domenico: *See—*
Balestrieri, Ciro; Servillo, Luigi, Quagiuolo, Lucio; Giovane, Alfonso; and Castaldo, Domenico, 5,053,232, Cl. 426-49.000.

Castelli, Vittorio R.; and Chai, Stephen T., to Xerox Corporation. Transfer loop synchronization in recirculating color printers. 5,053,826, Cl. 355-271.000.

Castorina, Massimo: *See—*
Marzi, Mauro; Tinti, Maria O.; Pacifici, Licia; Franceschelli, Carla; and Castorina, Massimo, 5,053,424, Cl. 514-419.000

Caterpillar Inc.: *See—*
Morita, Izuru; Tozawa, Shoji; Sakata, Yoshitaka; Katano, Muneo; and Maeda, Ryuzo, 5,052,883, Cl. 414-700.000

Caterpillar Industrial Inc.: *See—*
Blau, Andrew P.; Grohsmeyer, Paul D.; Harding, Joseph J.; and Krahn, Darren L., 5,052,882, Cl. 414-667.000
Keffeler, Gary L.; and McVeen, Milford D., 5,052,881, Cl. 414-634.000.

Cattaneo, Carlo, to Camar S.p.A. Fixing plate for concealed devices used for wall-mounting an item of wall furniture. 5,052,847, Cl. 403-231.000.

Catte, Philippe P., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Stop means and sealing ring of a blade assembly mounted on a gas-turbine-engine rotor-disk. 5,052,893, Cl. 416-220.00R.

Cavallotti, Franco; Cremonesi, Alessandro; and Poluzzi, Rinaldo, to SGS Thomson Microelectronics S.r.l. Memory for programmable digital filter. 5,053,984, Cl. 364-724.160.

Cedars-Sinai Medical Center: *See—*
Whiting, James S.; and Eigler, Neal, 5,054,045, Cl. 378-99.000.

Celotex Corporation, The: *See—*
Bush, Arthur B.; and Major, Dale P., 5,052,162, Cl. 52-518.000.

Cempel, Czeslaw: *See—*
Dobry, Marian W.; Cempel, Czeslaw; and Garbatowski, Wieslaw, 5,052,499, Cl. 173-162.100.

Centocor: *See—*
Dean, Richard T.; and Weber, Robert W., 5,053,503, Cl. 540-474.000

Centocor Cardiovascular Imaging Partners, L.P.: *See—*
Pak, Koon Y.; Dean, Richard T.; and Mattis, Jeffrey A., 5,053,493, Cl. 530-402.000.

Centre National d'Etudes des Telecommunications: *See—*
Thioulouse, Pascal, 5,053,675, Cl. 313-505.000.
Thioulouse, Pascal, 5,053,679, Cl. 315-169.300.

Ceram-Sna Inc.: *See—*
Delvaux, Pierre; and Lesmerises, Normand, 5,053,282, Cl. 428-323.000

Cerberus Ltd.: *See—*
Thuillard, Marc, 5,053,753, Cl. 340-629.000.

Cerequas, Fred R.: *See—*
Stern, Joseph L.; and Cerequas, Fred R., 5,054,059, Cl. 379-200.000.

Cernansky, Joseph S.: *See—*
Rudell, Elliot A.; Cernansky, Joseph S.; Gardner, Roger J., Jr.; Huebl, Steven J.; Zera, Robert D.; Kilroy, Eugene J.; and Chang, Richard S., 5,052,973, Cl. 446-429.000.

Cerri, Alberto: *See—*
Pinza, Mario; Cerri, Alberto; Farina, Carlo; and Riccaboni, Maria T., 5,053,422, Cl. 514-387.000.

Cerwin, Robert J.; Esteves, Anthony; Alpern, Marvin; Daniele, Robert A.; and Gibbs, Robert J., to Ethicon, Inc. Oval wrap suture package with unequal end radii. 5,052,551, Cl. 206-63.300.

CFH Corporation: *See—*
Wallman, Randolph J.; Oliver, Lindsay T.; and Oliver, Harvey, 5,052,517, Cl. 182-155.000.

Chabert, Jean-Marie, to La Spirotechnique Industrielle et Commerciale. Device for supplying breathing gas to a diver. 5,052,383, Cl. 128-204.260.

Chai, Stephen T.: *See—*
Castelli, Vittorio R.; and Chai, Stephen T., 5,053,826, Cl. 355-271.000

Chalmers, Eric J.: *See—*
Boers, Arie N.; and Chalmers, Eric J., 5,052,624, Cl. 239-525.000.

Champion, Donald H.: *See—*
Speranza, George P.; Su, Wei-Yang; and Champion, Donald H., 5,053,484, Cl. 528-338.000

Chamuel, Steven R. Hypodermic needle safety clip. 5,053,017, Cl. 604-192.000

Chan, David M. Toy skateboard with steerable truck assemblies. 5,052,702, Cl. 280-11.280.

Chan, Hiang C.: *See—*
Fazan, Pierre; Chan, Hiang C.; Rhodes, Howard E.; Dennison, Charles H.; and Liu, Yauh-Ching, 5,053,351, Cl. 437-52.000.

Chan, May L.: *See—*
Henry, Ronald A.; Reed, Russell, Jr.; and Chan, May L., 5,053,086, Cl. 149-19.400.

Chandraratna, Roshantha A. S., to Allergan, Inc. Ethynyl-chroman compounds. 5,053,523, Cl. 549-398.000.

Chang, Lang-Mann: *See—*
Taddeo, Ralph M.; Deas, Robert W.; Chang, Lang-Mann; and Grosh, John, 5,052,302, Cl. 102-204.000.

Chang, Richard S.: *See—*
Rudell, Elliot A.; Cernansky, Joseph S.; Gardner, Roger J., Jr.; Huebl, Steven J.; Zera, Robert D.; Kilroy, Eugene J.; and Chang, Richard S., 5,052,973, Cl. 446-429.000.

Chang, Stanley S., to Hughes Aircraft Company. Spacecraft design enabling the flat packing of multiple spacecraft in the launch vehicle. 5,052,640, Cl. 244-173.000

Chapman, Derek D.; and DeBoer, Charles D., to Eastman Kodak Company. Dual laminate process for thermal color proofing. 5,053,381, Cl. 503-227.000.

Chapman, Gordon R.; and Reid, Charles M., to CUPS, Inc. Hydrocleaning of the exterior surface of a pipeline to remove coatings. 5,052,423, Cl. 134-174.000.

Chapman, Orville L., to Mobil Oil Corporation. Diamondoid polymeric compositions. 5,053,434, Cl. 521-52.000

Chapman, Thomas L.; and Slingerland, William T., to Greenscape Pump Services, Inc. Method and apparatus for providing water for irrigating turf grass. 5,052,855, Cl. 405-36.000.

Charles, Kirk W.: *See—*
Tompkins, E. Neal; Bartholmae, Jack N.; Zuber, Peter A.; and Charles, Kirk W., 5,053,827, Cl. 355-271.000.

Charlton, Ronald W.: *See—*
Mongeau, Gerald; Bergeron, Phillipe; Clark, James J.; Charlton, Ronald W.; Eino, Mahmound; Maurice, Terrence J.; Parnell-Clunies, Estelle M.; and Cheng, Wen-Song, 5,053,241, Cl. 426-603.000

Chazeirat, Jean-Louis: *See—*
Chiarelli, Francois; Chazeirat, Jean-Louis; and Boisnard, Jean-Pierre, 5,052,305, Cl. 102-522.000.

Checkmate Electronics, Inc.: *See—*
LaCaze, John R., 5,054,092, Cl. 382-11.000.

Cheminal, Bernard; Cognion, Jean-Marie; and Guillet, Dominique, to Societe Atochem. Selective hydrogenolysis of perhalogenated ethane derivatives. 5,053,564, Cl. 570-176.000.

Chemineer, Inc.: *See—*
Fasano, Julian B., 5,052,892, Cl. 416-204.00R.

Chen, Catherine S. H., to Mobil Oil Corp. Lubricant compositions comprising copolymers of 1-vinyladamantane and 1-alkenes and methods of preparing the same. 5,053,568, Cl. 585-21.000.

Chen, Chih-Tsung. Structure of venetian blind. 5,052,150, Cl. 49-84.000.

Chen, Geoffery. Structure of pencil sharpener. 5,052,453, Cl. 144-28.500.

Chen, Liang-Yuan, to China Siper Special Rubber Co. Ltd. Windshield-wiper end clip. 5,052,072, Cl. 15-250.420.

Chen, Raymond. Tooth cleaner device for retention of reel means carrying a spool of strings. 5,052,420, Cl. 132-325.000.

Chen, Shieh-Shung T.; and Arison, Byron H., to Merck & Co., Inc. Process for preparation of novel angiotensin II antagonists. 5,053,329, Cl. 435-119.000.

Cheney Company, The: *See—*
Wendt, David W.; Prendergast, John F., Sr.; Liu, Hyun; and Gisske, Edward T., 5,052,521, Cl. 187-12.000.

Cheng, Lap K.; Bosenberg, Walter R.; and Tang, Chung L., to Cornell Research Foundation, Inc. Tunable optical parametric oscillator. 5,053,641, Cl. 359-330.000.

Cheng, Wen-Song: *See—*
Mongeau, Gerald; Bergeron, Phillipe; Clark, James J.; Charlton, Ronald W.; Eino, Mahmound; Maurice, Terrence J.; Parnell-Clunies, Estelle M.; and Cheng, Wen-Song, 5,053,241, Cl. 426-603.000.

Chern, Mao-Jin: *See—*
Smith, Ronald T.; Chern, Mao-Jin; and Hegg, Ronald G., 5,053,755, Cl. 340-705.000.

Chesler, Ronald B., to Hughes Aircraft Company. Damped filament dispenser. 5,052,636, Cl. 244-3.120.

Cheung, Victor; and Haggerty, Matthew K. Ceiling sign installation pole. 5,052,733, Cl. 294-19.100.

Chevron Research Company: *See—*
Reed, Marion G., 5,052,490, Cl. 166-303.000.
Zones, Stacey I., 5,053,373, Cl. 502-64.000.

Chevron Research & Technology Company: *See—*
Miller, Stephen J.; and Mulaskey, Bernie F., 5,052,561, Cl. 208-137.000.
Wall, Robert G., 5,052,487, Cl. 166-263.000.

Chi, Frank K.; and Halil, Tanyol, to Carborundum Company, The. Ceramic fiber refractory moldable compositions. 5,053,362, Cl. 501-95.000.

Chiang, Chao - Kun. Cooking apparatus for oil frying. 5,052,287, Cl. 99-404.000.

Chiang, Chia-Ming; and Cleary, Gary W., to Cygnus Therapeutic Systems. Skin permeation enhancer compositions, and methods and transdermal systems associated therewith. 5,053,227, Cl. 424-448.000.

Chiarelli, Francois; Chazeirat, Jean-Louis; and Boisnard, Jean-Pierre, to L'Etat Francais represente par le Delegue Ministeriel pour l'Armement. Subcaliber projectile including a core, a sabot and a sleeve. 5,052,305, Cl. 102-522.000.

Chiba, Kiyoshi: *See—*
Hashimoto, Eiichi; Sato, Tetsuo; and Chiba, Kiyoshi, 5,053,288, Cl. 428-694.000.

Chicopee: *See—*
Yang, Ching-Yun M., 5,053,029, Cl. 604-385.100.

Chigira, Tatsuo: *See—*
Ohara, Tsunemasa; Chigira, Tatsuo; and Tanaka, Tsunefumi, 5,053,798, Cl. 354-400.000.

Chikuma, Kiyofumi: *See—*
Okamoto, Sota; and Chikuma, Kiyofumi, 5,052,772, Cl. 385-33.000.

Chikusa, Toshikazu: *See—*
Kondo, Yozo; Mori, Mitsuhiro; and Chikusa, Toshikazu, 5,053,467, Cl. 526-119.000

Childers, Jerry D.: *See—*
Barclay, Brian L.; Childers, Jerry D.; Wright, Jeri; Place, Virgil A.; and Wong, Patrick S. L., 5,053,032, Cl. 604-892.100

Children's Medical Center Corporation, The: *See—*
Lipton, Stuart A., 5,053,419, Cl. 514-356.000.

China Siper Special Rubber Co. Ltd.: *See—*
Chen, Liang-Yuan, 5,052,072, Cl. 15-250.420.

Chinomi, Isamu, to Ikeda Bussan Co., Ltd. Headrest arrangement. 5,052,754, Cl. 297-408.000.

Chiron Ophthalmics, Inc.: *See—*
Gibson, David; Lerner, Michael; Nordquist, Robert; and Reich, Cary, 5,053,388, Cl. 514-2.000.

Chisso Corporation: *See—*
Kitano, Kisei; Goto, Yasuyuki; Uchida, Manabu; and Ushioda, Makota, 5,053,162, Cl. 252-299.610.
Murata, Shizuo; and Nakayama, Minoru, 5,053,544, Cl. 564-430.000.
Ohnishi, Noriyuki, 5,053,556, Cl. 568-675.000.
Takeshita, Fusayuki; Kikuchi, Makoto; Ichihashi, Mitsuyoshi; Terashima, Kanetsugu; and Furukawa, Kenji, 5,053,163, Cl. 252-299.610.

Chitwood, Ralph M., to Glacier Cross, Inc. Portable traction apparatus 5,052,378, Cl. 128-71.000.

Choi, Kyeong-sun, to SamSung Electronics Co., Ltd. Head drum servo control method for high speed search in magnetic tape regenerating apparatus, and device thereof. 5,053,895, Cl. 360-70.000

Chojnowski, Dean W., to Controlled Power Limited Partnership. Adjustable support assembly for electrical conductors. 5,053,584, Cl. 174-99.00B.

Chorey, Edward A.: *See—*
Hertzer, Ronald A.; Chorey, Edward A.; and Faig, Harold J., 5,052,909, Cl. 425-150.000.

Chou, Ting-Chao: *See—*
Watanabe, Kyoichi A.; Koyama, Masao; and Chou, Ting-Chao, 5,053,431, Cl. 514-649.000

Choudhury, A. N. M. Masum; Jagannath, Chirravuri; Elman, Boris S.; and Armiento, Craig A., to GTE Laboratories Incorporated. Thermally-stable structure for IMSM photodetectors on GaAs substrates. 5,053,843, Cl. 357-30.000.

Chow, Peter P.: *See—*
Lo, Josephine N.; and Chow, Peter P., 5,054,063, Cl. 379-452.000

Chretien, Denis, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and apparatus for the recovery of the heaviest hydrocarbons from a gaseous mixture. 5,053,067, Cl. 62-24.000.

Chrise, James R.; Rex, James A.; Boyle, David E.; and Schwirian, Richard E., to Westinghouse Electric Corp. System providing improved guidance support with restricted coolant flow for control rods in the upper head plenum of a nuclear reactor. 5,053,189, Cl. 376-353.000.

Christ, Helen M.: *See—*
Christ, Joseph T.; and Christ, Helen M., 5,052,581, Cl. 220-570.000.

Christ, Herbert; Kellaway, Mike; and Stumm, Wolfgang, to Rheometron AG. Mass flow gauge for flowing media with devices for determination of the Coriolis force. 5,052,231, Cl. 73-861.380.

Christ, Joseph T.; and Christ, Helen M., to Craft Creations Co., Inc Ladder-supported holding tray. 5,052,581, Cl. 220-570.000.

Christensen, Scott C.; Proctor, Raymond J.; and Conwell, Richard L., to Gamma-Metrics. Material analyzer with carousel. 5,053,185, Cl. 376-157.000.

Christidis, Yani; and Vallejos, Jean-Claude, to Societe Francaise Hoechst. Process for the manufacture of alkyl pyruvates. 5,053,527, Cl. 560-174.000.

Christopher, Todd J.; and Morris, Robert E., Jr., to Thomson Consumer Electronics, Inc. Circuit for preventing VCXO mode jumping. 5,053,726, Cl. 331-34.000.

Chu, Hsien-Kun; Kamis, Russell P.; and Lower, Loren D., to Dow Corning Corporation. Low modulus silicone sealants. 5,053,442, Cl. 523-212.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Matsumoto, Toshio; and Nishii, Yasuho, 5,053,401, Cl. 514-167.000.

Chun, Victor L.; and Jaworski, George M., to Murata Wiedemann, Inc. Slag chute system. 5,053,600, Cl. 219-121.480.

Chung, David Y.; Gutierrez, Antonio; Johnston, John E.; Struglinski, Mark J.; and Lundberg, Robert D., to Exxon Chemical Patents Inc Multifunctional viscosity index improver derived from amido-amine exhibiting improved low temperature viscometric properties. 5,053,151, Cl. 252-51.50A.

Ciba-Geigy Corporation: *See—*
Fringeli, Werner; and Jollenbeck, Martin, 5,053,055, Cl. 8-648.000.
Kump, Wilhelm, 5,053,510, Cl. 544-368.000.
Molock, Frank; Robertson, J. Richard, Jr.; and Su, Kai C., 5,053,515, Cl. 546-220.000.
Seamons, Kenneth R.; Prestwood, Stephen D.; and Balcome, Herbert L., 5,053,208, Cl. 422-300.000.

Ciccarelli, Mario; and Schelter, Heinrich, to Hoechst CeramTec Aktiengesellschaft. Process for producing sliding bodies containing hollow chambers. 5,053,093, Cl. 156-89.000.

Cincinnati Milacron Inc.: *See—*
Hertzer, Ronald A.; Chorey, Edward A.; and Faig, Harold J., 5,052,909, Cl. 425-150.000.

Ciokajlo, John J.; and Loewe, Jeffre G., to General Electric Company. Bearing assembly for use in high temperature operating environment 5,052,828, Cl. 384-476.000.

Cipolla, Thomas M.; Horton, Raymond R.; Lanzetta, Alphonso P.; Palmer, Michael J.; and Ritter, Mark B., to International Business

Machines Corp. Tape automated bonding feeder. 5,052,606, Cl 226-120.000

Cipra, Raymond J.: *See—*
Fillingsness, Geoffrey S.; Brandt, C. Christopher, II; and Cipra, Raymond J., 5,052,539, Cl. 198-328.000.

Cipriani, Thomas. Adjustable bridge assembly for acoustical stringed instruments. 5,052,260, Cl. 84-298.000.

Cipriano, Joseph J.: *See—*
Parliment, Thomas H.; Cipriano, Joseph J.; and Scarpellino, Richard, 5,053,236, Cl. 426-234.000.

Claar, Klaus; and Schilling, Jan, to Daimerler-Benz AG. Locking device for lock components in/on vehicles. 5,052,200, Cl. 70-123.000.

Clapham, Thomas J. Energy converter apparatus. 5,053,672, Cl 310-334.000.

Clark, Denis E.: *See—*
Buhrmaster, Carol L.; Clark, Denis E.; and Smartt, Herschel B., 5,052,331, Cl. 118-50.100.

Clark, Douglas C.: *See—*
Baker, Max N.; Barnes, Vernon B.; Clark, Douglas C.; Clearman, Jack F.; Hensgen, Gerhard; Shannon, Michael D.; Shelar, Gary R.; and Schubert, Alfred, 5,052,413, Cl. 131-77.000.

Clark, Howard L., to United States of America, Navy. Naval electrochemical corrosion reducer. 5,052,962, Cl. 440-83.000.

Clark, James J.: *See—*
Mongeau, Gerald; Bergeron, Phillipe; Clark, James J.; Charlton, Ronald W.; Eino, Mahmound; Maurice, Terrence J.; Parnell-Clunies, Estelle M.; and Cheng, Wen-Song, 5,053,241, Cl. 426-603.000.

Clark, Melville, Jr. Preselector. 5,052,268, Cl. 84-615.000.

Clarke, Adrienne; Mau, Shaio Lim; Anderson, Marilyn; Cornish, Edwina; Niall, Hugh D.; Tregear, Geoffrey W.; Crawford, Robert J.; and Bernatzky, Robert, to Lubrizol Genetics, Inc. Self-incompatibility gene. 5,053,331, Cl. 435-172.300.

Clarke-Pounder, Ian J. H.; Smythe, Richard L.; and Carboneau, Marcel A., to Ingersoll-Rand Company. Adjustable valve for varying filtrate composition from filters. 5,053,123, Cl. 210-138.000.

Clarke, Richard H., to Boston Advanced Technologies, Inc. Inhibition of restenosis by ultraviolet radiation. 5,053,033, Cl. 606-3.000.

Clarke, Walter G.; and Spector, George. Starter plug. 5,052,250, Cl 81-114.000.

Clavelloux, Michel; and Ropert, Maurice, to Electronique Serge Dassault. Flight recorder with static electronic memory. 5,053,967, Cl. 364-424.060.

Clearman, Jack F.: *See—*
Baker, Max N.; Barnes, Vernon B.; Clark, Douglas C.; Clearman, Jack F.; Hensgen, Gerhard; Shannon, Michael D.; Shelar, Gary R.; and Schubert, Alfred, 5,052,413, Cl. 131-77.000.

Cleary, Gary W.: *See—*
Chiang, Chia-Ming; and Cleary, Gary W., 5,053,227, Cl 424-448.000.

Clegg, William J.: *See—*
Birchall, James D.; and Clegg, William J., 5,053,175, Cl. 264-60.000

Clements, George J.: *See—*
Hunder, Ray A.; Dwyer, Stephen H.; Clements, George J.; and Martin, Michael K., 5,052,872, Cl. 412-6.000.

Clerc, James C.; Gladden, John R.; and Miller, Paul R., to Cummins Engine Company, Inc. Unitary hybrid exhaust system and method for reducing particulate emmissions from internal combustion engines 5,052,178, Cl. 60-274.000

Cleveland Clinic Foundation: *See—*
Zborowski, Maciej; and Malchesky, Paul S., 5,053,344, Cl 436-177.000.

Clinch, Colin W. F.; and Axelsson, Per-Arne, to ITW Fixfast AB Fixation element and method for its production. 5,052,663, Cl. 267-141.000.

Clough, John: *See—*
Anthony, Vivienne; Clough, John; deFraine, Paul; Godfrey, Christopher R. A.; and Beautement, Kevin, 5,053,073, Cl. 71-94.000.

Cluzeau, Serge; and Verschoore, Gerard, to U.S. Philips Corporation Device for improving the service life and the reliability of a sealed high-flux neutron tube. 5,053,184, Cl. 376-116.000.

CMB Foodcan plc: *See—*
Porucznik, Paul, 5,052,207, Cl. 72-329.000.

CMS Research Corporation: *See—*
Sides, Gary D., 5,052,805, Cl. 356-315.000.

Coates Electrographics Limited: *See—*
Haxell, John P. N.; Brown, Edward A.; and Wilson, Derek E., 5,053,079, Cl. 106-31.000.

Coats Viyella: *See—*
Donald, Gordon H.; and Hewitt, Jeffrey L., 5,053,956, Cl. 364-401.000.

Cognion, Jean-Marie: *See—*
Cheminal, Bernard; Cognion, Jean-Marie; and Guillet, Dominique, 5,053,564, Cl. 570-176.000

Coherent, Inc.: *See—*
Nightingale, John L.; and Johnson, John K., 5,052,815, Cl. 372-94.000.

Cohrs, Gary D.; and Francisco, Edward E., Jr., to Calibron Systems, Inc. Apparatus for determining the characterstics of a flowmeter. 5,052,211, Cl. 73-3.000.

Cohrs, Gary D., to Calibron Systems, Inc. Dynamic leak detector. 5,052,212, Cl. 73-3.000.

Coker, Audie, to Audie Coker Enterprises. Fluid pressure driven power system. 5,052,180, Cl. 60-456.000.

Colani, Luigi, to Valser St. Petersquelle AG. Bottle with a gripping recess. 5,052,567, Cl. 215-100.00A.

Colclough, Michael L.; and Hayati, Igan, to Imperial Chemical Industries PLC. Atomization of liquids. 5,052,617, Cl. 239-4.000.

Colder Products Company: *See—*
Meyer, David W.; and Blenkush, Brian J., 5,052,725, Cl. 285-308.000

Coleman, Henry L. Method to construct variable area, membrane spar and wing airfoil aircraft and kite wings and suitable aelerons. 5,052,641, Cl. 244-218.000

Colgate-Palmolive Company: *See—*
Dixit, Nagaraj; Shevade, Makarand; and Round, Rhyta, 5,053,158, Cl. 252-99.000
Joshi, David, 5,053,159, Cl. 252-106.000.
Mack, Robert J., 5,053,270, Cl. 428-35.200.

Collar, Martin: *See—*
Blissett, Rodney J.; and Collar, Martin, 5,053,876, Cl. 358-222.000.

Collins, Douglas N.; and Collins, John D., to Albright & Wilson Limited. Ore flotation. 5,053,119, Cl. 209-166.000.

Collins, John, to Mabey Hire Company Limited. Connected screw threads. 5,052,871, Cl. 411-366.000

Collins, John D.: *See—*
Collins, Douglas N.; and Collins, John D., 5,053,119, Cl. 209-166.000

Colodner, Samuel: *See—*
Burke, Michael E.; Colodner, Samuel; Luu, Huy T.; and Saneski, Steven P., 5,054,050, Cl. 379-27.000.

Colorocs Corporation: *See—*
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Diecasting Machinery & Rebuilding Co.: *See—*
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Dietz, Henry G. Method and apparatus for using an inhalation sensor for monitoring and for inhalation therapy. 5,052,400, Cl. 128-722.000.

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Meagher, John L., 5,054,020, Cl. 370-48.000.

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Jain, Rajendra K., 5,053,946, Cl. 364-200.000.
Staffiere, Donald T.; and Friedman, Harvey S., 5,053,920, Cl. 361-383.000.
Supino, Louis, Jr.; and Rinaldis, Joseph M., 5,053,892, Cl. 360-62.000.

Dillard, William T., to Siemens Energy & Automation, Inc. Computer facility power system. 5,053,637, Cl. 307-147.000.

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Cance, William G.; Davie, Joseph M.; Wells, Samuel A., Jr.; Dilley, William G.; Welch, Michael J.; and Morrissey, Jeremiah J., IV, 5,053,491, Cl. 530-387.000.

Dils, Ray R., to Luxtron Corporation. Knock detector using optical fiber thermometer. 5,052,214, Cl. 73-35.000.

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DiSanto, Frank J.; and Krusos, Denis A., to Copytele, Inc. Dual anode flat panel electrophoretic display apparatus. 5,053,763, Cl. 340-787.000.

Discko, John, Jr. Syringe and disposable capsule with cannula for use therewith. 5,052,927, Cl. 433-90.000.

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Divall, John E.; and Perigo, John A., to Odin Development Ltd. Dosing system. 5,052,591, Cl. 222-135.000.

Dix, Thomas S., Jr., to Invisible Fence Company, Inc. Golf cart control system. 5,053,768, Cl. 340-988.000.

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Dlouhy, Jiri: *See—*
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Dobry, Marian W.; Cempel, Czeslaw; and Garbatowski, Wieslaw, to Politechnika Pozanska. Pneumatic impact tool. 5,052,499, Cl. 173-162.100.

Dobson, Robert: *See—*
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Dr. Inc. h.c.F. Porsche AG: *See—*
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Doddington, George R.: *See—*
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Dodwell, Glenn W.; and Smith, BethAnn, to Engelhard Corporation. Removal of heavy metals, especially lead, from aqueous systems containing competing ions utilizing amorphous tin and titanium silicates. 5,053,139, Cl. 210-688.000.

Doi, Atsuhiro, to Fuji Photo Film Co., Ltd. Belt meandering motion correction device. 5,052,547, Cl. 198-806.000.

Doi, Kazuhiro, to Nissan Motor Company, Ltd. Mounting arrangement for automotive engine. 5,052,662, Cl. 267-140.100.

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Donald, Gordon H.; and Hewitt, Jeffrey L., to Coats Viyella. Interactive system for retail transactions. 5,053,956, Cl. 364-401.000.

Donald R. Matthews. Short ski climber. 5,052,708, Cl. 280-604.000.

Donaldson Company, Inc.: *See—*
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Dorai, Suriyanarayanan, to Du Pont de Nemours, E. I., and Company. Process for preparing a narrow molecular weight distribution poly (tetramethylene ether) glycol. 5,053,553, Cl. 568-617.000.

Dorman, Peter T.: *See—*
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Dow Corning Corporation: *See—*
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Dow Corning Toray Silicone Company, Ltd.: *See—*
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Drach, William C.: *See—*
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Du Pont Canada Inc.: *See—*
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Dubach, Werner F., to Createchnic AG, Firma. Childproof pill dispenser. 5,052,584, Cl. 221-152.000.

Duchi, Anthony L., Jr.; and McAlister, Fred R., Sr., to Mag Instrument, Inc. Lanyard. 5,052,602, Cl. 224-218.000.

Ducol, Jean P.; and Lepage, Serge, to Notex S.A. Stabilizing sheet with a heating insert for aboveground cultivation and for a protected-crop container platform. 5,053,269, Cl. 428-253.000

Ducroux, Alain R. E.; and Novakovic, Miodrag, to Servoplan, S.A. Flooring system especially designed for facilities which house data processing equipment. 5,052,157, Cl. 52-126.600.

Dudley, Kevin F.; Paige, Lowell E.; Dunshee, Kevin B.; and Voorhis, Roger J., to Electric Power Research Institute, Inc. Control of outdoor air source water heating using variable-speed heat pump. 5,052,186, Cl. 62-79.000.

Dueweke, Paul W. Music performance assisting method. 5,052,264, Cl. 84-470.00P.

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Dunham, William D.; Burmeister, Steven D.; Petersen, H. Norman; Pierman, John A.; Rogan, Charles T.; and Hladilek, Jerry A., to Outboard Marine Corporation. Marine propulsion device cowl assembly. 5,052,353, Cl. 123-195.00P.

Dunlay, Mark J.; and Baker, James G., to Aluminum Company of America. Controlling heat treating furnaces. 5,052,661, Cl 266-87.000.

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Semple, Joseph E., 5,053,071, Cl. 71-92.000.
Tecle, Berhan, 5,052,612, Cl. 228-207.000.
Tietz, Raymond F., 5,053,482, Cl. 528-272.000.
Dupraz, Jean-Pierre, to GEC Alsthom SA. Capacitive sensor for a circuit for measuring the potential of a line conductor in a metalclad station. 5,053,915, Cl. 361-281.000.
Durand, Jacques, to Thomson-CSF. Measuring circuit of the additive phase noise characteristic of a component in the vicinity of a carrier frequency. 5,053,714, Cl. 324-613.000.
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Dvoretzky, Israel. Application system and method for treating warts 5,053,024, Cl. 604-291.000.
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Gaborski, Roger S., 5,054,102, Cl. 382-54.000.
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Edwards, Floyd V.; and Strobel, Norman M., to Harmac Medical Products, Inc. Disposable pressure cuff having flow-through pressure gauge. 5,053,012, Cl. 604-146.000.
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Givin, William R., to Huyck Corporation. Self stitching multilayer papermaking fabric. 5,052,448, Cl. 139-383.00A.
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Uchman, Frederick J., 5,052,082, Cl. 24-20.0CW.
Glacier Cross, Inc.: *See*—
Chitwood, Ralph M., 5,052,378, Cl. 128-71.000.
Gladden, John R.: *See*—
Clerc, James C.; Gladden, John R.; and Miller, Paul R., 5,052,178, Cl. 60-274.000.
Glaxo Inc.: *See*—
Bray, Brian L.; and Partridge, John J., 5,053,338, Cl. 435-280.000.
Johnson, Marty C.; and Frye, Stephen V., 5,053,543, Cl. 564-414.000
Glen, Bryan D. Baseboard with movable electrical outlet. 5,052,937, Cl 439-120.000.
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Srnka, Cherly; Laine, Roger A.; and Gilbert, James, 5,053,406, Cl. 514-182.000
Go, Seitaro, to Gotech, Limited. Bolt wrench. 5,052,249, Cl. 81-55.000.
Gober, Joel R., to North American Philips Corporation. QRS filter for real time heart imaging with ECG monitoring in the magnetic field of an NMR imaging system and NMR imaging apparatus employing such filter. 5,052,398, Cl. 128-696.000.
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Anthony, Vivienne; Clough, John; deFraine, Paul; Godfrey, Christopher R. A.; and Beautement, Kevin, 5,053,073, Cl. 71-94.000.
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Kuekenhoener, Thomas; and Goetz, Norbert, 5,053,550, Cl. 564-420.000.
Goff, Stephen P.; Klosek, Joseph; Bucci, Donald P.; and Kinniry, Paul A., to Air Products and Chemicals, Inc. Solid waste-to-steam incinerator capacity enhancement by combined oxygen enrichment and liquid quench. 5,052,310, Cl. 110-234.000.
Gohara, Aijiro, to Seikosha Co., Ltd. Printer and detachable device for setting functions of the printer. 5,052,830, Cl. 400-76.000.
Gohbara, Masatoshi; Asano, Tamotsu; Ozawa, Shuji; Yamazaki, Hideo; Ishii, Tsutomu; Nishida, Makoto; Watanabe, Junko; and Sato, Naoki, to Mitsui Toatsu Chemicals, Incorporated. Pyrimidine derivatives, preparation processes thereof, herbicide containing the same, and herbicidal compositions containing the same along with other active ingredient. 5,053,070, Cl. 71-92.000.
Goins, Glen R. Lathe jaw securing device. 5,052,254, Cl. 82-152.000.
Gojny, Francis J.; Greene, Guy S.; Stahl, Roswell L., Jr.; and Street, Charles Z., to Rohr Industries, Inc. Method and apparatus for making inserts for honeycomb panels. 5,053,285, Cl. 428-593.000.
Gold, Raymond. Retail couponing system. 5,052,718, Cl. 283-105.000.
Goldsmith, Manning M., III. Method of performing a myringotomy. 5,053,040, Cl. 606-109.000.
Goldstein, Richard, to Perma Power Electronics, Inc. Surge suppressor for coaxial transmission line. 5,053,910, Cl. 361-111.000.
Goldwell GmbH: *See*—
Tennigkeit, Jurgen; Lorenz, Herbert; and Segawa, Hirotsugu, 5,053,051, Cl. 8-406.000
Gondouin, Michel, to S-Cal Research Corp. Catalytic downhole reactor and steam generator. 5,052,482, Cl. 166-50.000.
Gongen, Mashanori, to Hokoku Kogyo Co., Ltd. Apparatus for conveying grain. 5,052,545, Cl. 198-534.000.
Goodberlet, James; Fujimoto, James G.; Schulz, Peter A.; and Wang, Jyhpyng, to Massachusetts Institute of Technology. Pulsed laser. 5,054,027, Cl. 372-25.000.
Goodman, Geoffrey, to Migal Galilee Technological Center Ltd. Composition containing polypeptide hormone for stimulating skeletal growth in poultry. 5,053,391, Cl. 514-12.000.
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Goodwin, William A. Closure for a shipping container. 5,052,578, Cl. 220-352.000
Goodyear Tire & Rubber Company, The: *See*—
Cottman, Kirkwood S., 5,053,540, Cl. 564-397.000.
Shuttleworth, Derek; Mowdood, Syed K.; Waddell, Walter H.; Richards, Jimmy L.; Ofstead, Eilert A.; and Brenner, Jerry L., 5,053,246, Cl. 427-40.000.
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Bergman, Hyman C.; Gordon, Virginia C.; and Kelly, Christopher P., 5,053,340, Cl. 436-5.000
Gordon Warren Co.: *See*—
Joyce, Allen E., 5,052,616, Cl. 232-1.00D.
Gorman, Philip P., Jr. Water meter service coupling. 5,052,721, Cl. 285-30.000
Gossman, William E., to Noise Cancellation Technologies, Inc. Hybrid type vibration isolation apparatus. 5,052,510, Cl. 180-300.000.
Gotech, Limited: *See*—
Go, Seitaro, 5,052,249, Cl. 81-55.000
Goto, Eiichi: *See*—
Yuyama, Junpei; Minami, Hirofumi; Naruse, Humio; and Goto, Eiichi, 5,053,707, Cl. 324-262.000
Goto, Kaname: *See*—
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Goto, Kohei; Komiya, Zen; Yamahara, Noboru; and Iio, Akira, to Japan Synthetic Rubber Co., Ltd. Transparent resin material. 5,053,471, Cl. 526-281.000.
Goto, Shobun; Sugihara, Jiro; and Yabusaki, Masayoshi, to Kabushiki Kaisha Kibun. Process for shaping fish-paste products from fish paste material. 5,053,242, Cl. 426-643.000.
Goto, Takashi: *See*—
Seki, Mitsuhiro; Sumi, Shigeo; and Goto, Takashi, 5,053,099, Cl. 156-250.000
Goto, Toshihiko: *See*—
Ohasi, Yutaka; Ono, Kenichi; and Goto, Toshihiko, 5,053,181, Cl. 264-296.000
Goto, Yasuyuki: *See*—
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Gottesman, James E.; and Foster, Thomas L., to Vance Products Incorporated. Suture guide and method of placing sutures through a severed duct. 5,053,043, Cl. 606-148.000.
Gottlieb, Klaus: *See*—
Schramm, Bernhard; Kern, Jurgen; Schwahn, Harald; Preuss, August-Wilhelm; Gottlieb, Klaus; and Bruderreck, Hartmut, 5,053,580, Cl. 585-624.000.
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Gould, Reed D. Water alarm to signal flooding in basements. 5,053,751, Cl. 340-623.000.
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Govan, Donald T. Support for line and weed cutter. 5,052,957, Cl. 440-73.000
Govek, Paul J.: *See*—
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Govindan, Cheruthur, to PPG Industries, Inc. Quaternary ammonium antistatic compounds. 5,053,531, Cl. 562-114.000.
Graebe, Robert H. Contoured seat cushion. 5,052,068, Cl. 5-455.000.
Graeme, Jerald G.; and Millaway, Steven D., to Burr-Brown Corporation. Feedback control reducing signal distortion produced by differential amplifier stage. 5,053,718, Cl. 330-260.000.
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Grant, John T. Vibration sensing device. 5,053,589, Cl. 200-61.45R.
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Grass Valley Group, Inc., The: *See*—
Frasier, Richard A.; Witek, F. Andrew; Hoard, Charles Q.; Olmstead, Neil R.; and Lange, William C., 5,053,760, Cl. 340-725.000.

Grauert, Mattlias, Merz, Herbert; Mierau, Joachim; Schingnitz, Gunter; and Schneider, Claus, to Boehringer Ingelheim KG Use of 2,7-diamino-1,2,3,4-tetrahydronaphthalenes as medicaments, new 2,7-diamino-1,2,3,4-tetrahydronaphthalenes and processes for their preparation. 5,053,430, Cl. 514-630.000
Gravel, Loras F.: *See*—
Trenkamp, Michael J.; and Gravel, Loras F., 5,052,170, Cl. 56-341.000
Graves, John G. Water gun. 5,052,587, Cl. 222-79.000.
Gray, John C.: *See*—
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Gray, Rand L.: *See*—
Allison, Nigel J.; Gray, Rand L.; and Hartvigsen, Jay A., 5,053,949, Cl. 364-200.000
Greathouse, Robert: *See*—
Contino, Frederic L.; and Greathouse, Robert, 5,052,557, Cl. 206-427.000
Green Cross Corporation: *See*—
Shiraga, Yusei; Fukaya, Chikara; Akira, Toshiaki; Iwai, Masakazu; Yokoyama, Kazumasa; Tabata, Mamoru; Fukui, Hiroshi; Tanaka, Shigeo; Iga, Yoshiro; Suyama, Tadakazu; and Okano, Kanemichi, 5,053,498, Cl. 536-4.100.
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Green, John D.; and Kinnard, Philip J., to British-American Tobacco Company Limited. Making of smoking articles. 5,052,412, Cl 131-31.000
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Greenscape Pump Services, Inc.: *See*—
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Greenstein, Alan P., to Hewlett-Packard Company. Ultrasound system with improved coupling fluid. 5,052,393, Cl. 128-660.010.
Greenstreak Plastic Products Company: *See*—
Tubbesing, Robert A.; and Carter, Bruce D., 5,052,286, Cl. 98-42.210
Greenwood, David; Hughes, Nigel; Kenyon, Ronald W.; and Hindagolla, Suraj L., to Imperial Chemical Industries PLC. Anionic dye having high water-fastness. 5,053,495, Cl. 534-829.000.
Gregory, Charles, to Super S.E.E.R. Systems Inc. Apparatus for the sensing of refrigerant temperatures and the control of refrigerant loading. 5,052,190, Cl. 62-225.000.
Grettenberg, Thomas L.: *See*—
Lamper, David; and Grettenberg, Thomas L., 5,053,772, Cl. 342-25.000
Groenendijk, Huibert. Baby seat. 5,052,749, Cl. 297-250.000.
Grohsmeyer, Paul D.: *See*—
Blau, Andrew P.; Grohsmeyer, Paul D.; Harding, Joseph J.; and Krahn, Darren L., 5,052,882, Cl. 414-667.000
Grollier, Jean F.; and Rosenbaum, Georges, to L'Oreal. Combination of derivatives of pyrimidine and of nonsteroid antiinflammatory agents for inducing and stimulating the growth of hair and reducing its loss. 5,053,410, Cl. 514-256.000
Grome, Donald C.; Kolada, Paul P.; and Teufel, Rainer B., to Hamilton Beach/Proctor-Silex, Inc. Apparatus for dispensing comestibles having a reversible piston rod assembly. 5,052,593, Cl. 222-333.000.
Gronlie, Odd; Ihle, Knut; Eilertsen, John; and Bergli, Tor, to Norsk Hydro A.S. Packing arrangement for filling of free-flowing materials. 5,052,169, Cl. 53-502.000.
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Gross, James R., to Kendall Company, The. Locking catheter adapter. 5,053,015, Cl. 604-167.000.
Gross, Joseph: *See*—
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Gross, Peter G. Measuring ophthalmoscope and ophthalmoscopic procedure. 5,052,795, Cl. 351-218.000
Grossenbacher, Marco G. Covering for covering an opening. 5,052,459, Cl. 160-122.000.
Grube, Gary W.: *See*—
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Grumman Aerospace Corporation: *See*—
Frank, Arthur M., deceased; and Willman, Jill F., executrix, 5,052,440, Cl. 137-625.330.
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Grumman Corporation: *See*—
Riek, Justus; and McFarland, Gregory, 5,054,066, Cl. 380-30.000.
Grundler, Christoph, to Maschinenfabrik Rieter, AG. Method and apparatus for controlling yarn preparation operations to enhance product uniformity. 5,052,080, Cl. 19-65.00A.
Grundy, Blake J. Radiator core. 5,052,475, Cl. 165-76.000.
GTE Government System Corporation: *See*—
—Martin, Frederick, 5,052,804, Cl. 356-256.000.
GTE Laboratories Incorporated: *See*—
—Buljan, Sergej T.; Lingertat, Helmut; and Wayne, Steven F., 5,053,074, Cl. 75-236.000.
—Choudhury, A. N. M. Masum, Jagannath, Chirravuri; Elman, Boris S.; and Armiento, Craig A., 5,053,843, Cl. 357-30.000
—Walker, Stephen S.; Sidlo, Clarence M.; and Teare, Melvin J., 5,054,064, Cl. 380-5.000
GTE Valenite Corporation: *See*—
Shaw, Jerry L.; and Mickel, Stanley R., 5,052,864, Cl. 408-201.000
Guddee, Robert, to Mardesich Enterprises. Fastener for portable equipment. 5,052,651, Cl. 248-552.000
Gudrun Voss: *See*—
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Guerra, Robert; Nordling, Michael; and Soni, Pravin, to Raychem Corporation. Heat-recoverable soldering device. 5,052,610, Cl 228-56.300.
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Guillot, Pierre, to Motorola, Inc. Transistor breakdown protection circuit. 5,054,001, Cl. 365-226.000
Gulla, Michael; and Sricharoenchaikit, Prasit, to Shipley Company Inc Plasma processing with metal mask integration. 5,053,318, Cl 430-315.000
Gunderson, Steven C.; and Wadia, Aspi B., to International Business Machines Corporation. Signature verification data compression for storage on an identification card. 5,054,088, Cl. 382-3.000
Gunther, Werner T., to Minnesota Mining and Manufacturing Company. Process and device for application of a carrying grip during the automatic sealing of cartons. 5,052,165, Cl. 53-413.000
Gunther, Wolfgang H.; and Sauter, Frederick J., to Eastman Kodak Company. Novel sulfur-containing merocyanine dyes. 5,053,506, Cl 544-300.000.
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Gurusamy, Narayanasamy: *See*—
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Gustafson, Richard. System for teaching the art of animal exhibition 5,052,692, Cl. 273-249.000.
Gustafsson, Klas R. L.; and Lagne, Ulf J., to Berema Aktiebolag Portable hammer machine. 5,052,498, Cl. 173-118.000
Gustin, Arnold; and McGillivray, Kevin. Heater and method for deionized water and other liquids. 5,054,108, Cl. 392-492.000
Gustin, David C.; Stibbe, Robert L.; and Larson, Paul A., to Dana Corporation. Electromagnetic synchronizing and shifting clutch. 5,052,534, Cl. 192-53.00D.
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Chung, David Y.; Gutierrez, Antonio; Johnston, John E.; Struglinski, Mark J.; and Lundberg, Robert D., 5,053,151, Cl. 252-51.50A.
Gy, Rene: *See*—
Vanaschen, Luc; Kuster, Hans-Werner; D'Iribarne, Benoit; Promper, Hans-Josef; and Gy, Rene, 5,053,069, Cl. 65-106.000.
Gysin, Hans J., to Sulzer Brothers Limited. Thermoplastic heddle with braided fiber tube reinforcement. 5,052,446, Cl. 139-93.000.
H. Krantz GmbH & Co.: *See*—
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H. W. Andersen Products Inc.: *See*—
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Ha, Hyun-Joon; and Park, Kyong Pae, to Korea Institute of Science and Technology. Process for the preparation of N-phosphonomethylglycine. 5,053,529, Cl. 562-18.000.
Haag, Harold F., to Hercules Incorporated. Sodium hypochlorite surface treatment to improve the adhesion of paints to polydicyclopentadiene. 5,053,256, Cl. 427-307.000.
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., to Habley Medical Technology Corporation. Self-contained, safety blood collection system. 5,052,403, Cl. 128-765.000.
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Habuchi, Ryoji: *See*—
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Kato, Nobuyuki; Kubo, Seitoku; Kouno, Katsumi; Abe, Tetsuya; Itoh, Hiroshi; Morisawa, Kunio; and Habuchi, Ryoji, 5,052,247, Cl. 74-868.000.
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Haddad, Muin S., to Amoco Corporation. Manufacture of AMS-18 crystalline borosilicate molecular sieve. 5,053,211, Cl. 423-277.000.
Haenggi, Robert A.; and Laird, James A., to Minnesota Mining and Manufacturing Company. Skid-resistant pavement markings. 5,053,253, Cl. 427-204.000.

Haensel, Dietrich: *See—*
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Haga, Kouichi: *See—*
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Hagan Electronics International: *See—*
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Hagan, James C., to Hagan Electronics International. Method and apparatus for positioning work objects. 5,052,543, Cl. 198-387.000.

Hagemeister, Robert C.; Ogle, Steven E.; and Wells, Thomas J., to Leggett & Platt, Incorporated. Stackable bedding foundation 5,052,064, Cl. 5-246.000

Hagewood, John F.; Darigo, Julius; McCoy, Bruce S.; Segle, John M.; and Jackson, Charles E., Jr., to McCoy-Ellison, Inc. Apparatus for controlled braking of a driven textile material engaging roll 5,052,088, Cl. 28-185.000

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Hagin, Faust; and Drewitz, Hans, to Man Nutzfahrzeuge AG. Stepless hydrostatic-mechanical transmission. 5,052,987, Cl. 475-82.000.

Hahn, Wolfgang: *See—*
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Haigo, Hideaki; and Endo, Yoshinori, to Brother Kogyo Kabushiki Kaisha. Heat fixing apparatus. 5,053,806, Cl. 355-30.000

Hair, Kenneth; and Laux, Kenneth, to HR Textron Inc. Direct drive servovalve having bearing-located motor housing. 5,052,441, Cl. 137-625.650

Haj-Ali-Ahmadi, Javad; Frankeny, Richard F.; and Hermann, Karl, to International Business Machines Corporation. Modular electronic packaging system. 5,053,853, Cl. 357-74.000

Hajek, Bedrich; and Gillette, Donald J., to S. L. Electrostatic Technology, Inc. Apparatus and system for steam cleaning and coating of laminated articles. 5,052,332, Cl. 118-72.000.

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Hakamata, Shigeya; Kurihara, Takumi; Ishigaki, Shinichiro; and Fuziyasu, Hiroshi, to Daiwa Senko Company, Ltd. Method for fixing on cloth semiconductor material with a contact-potential difference, and cloth bearing such semiconductor material. 5,053,248, Cl. 427-58.000

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Chi, Frank K.; and Halil, Tanyol, 5,053,362, Cl. 501-95.000.

Hall, Christopher C., to Betz Laboratories, Inc. Containment basin assembly for chemical storage tank. 5,052,582, Cl. 220-571.000

Halleck, Michael E.: *See—*
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Haller, Hans, to ABB Reaktor GmbH. Apparatus for positioning a mast for the inspection and/or repair of a core shroud of a water-cooled nuclear reactor. 5,053,187, Cl. 376-258.000.

Halm, Hans, to Lingner+Fischer GmbH. Toothbrush with displaceable head. 5,052,071, Cl. 15-167.100.

Halsall Products Limited: *See—*
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Halsey, George H. Diaphragm construction. 5,052,276, Cl. 92-90.000.

Halverson, Ward D.: *See—*
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Hama, Masaharu; and Fukumoto, Takaaki, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning apparatus for a clean room. 5,053,064, Cl. 55-270.000

Hamachi, Kazuyuki: *See—*
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Hamada, Akemi: *See—*
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Hamada, Hiroshi, to Sharp Kabushiki Kaisha. Projection type image display apparatus. 5,052,783, Cl. 359-40.000.

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Hamamoto, Brian: *See—*
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Hamann, Philip R.: *See—*
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Kikuta, Hikaru; Mine, Koichi; Hanai, Kazumichi; Kamiya, Kingo; and Takeuchi, Hitoshi, 5,053,664, Cl. 310-114.000

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Hanrahan, Michael J.; and Hollis, Kathleen S., to Eastman Kodak Company. Method of making color filter arrays. 5,053,299, Cl. 430-7.000

Hansch, Egon, to Ferag AG. Device for processing printed products. 5,052,666, Cl. 270-55.000.

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Kawabata, Yasuhiro; Hara, Soichi; Machida, Shirou; and Kageyama, Hiroshi, 5,052,281, Cl. 92-192.000.

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Harada, Yutaka, to Research Development Corporation. Threshold logic circuit. 5,053,645, Cl. 307-464.000.

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van den Elshout, Andreas A. J. M.; Veendrick, Hendrikus J. M.; and Harberts, Dirk W., 5,053,648, Cl. 307-469.000.

Harding, Joseph J.: *See—*
Blau, Andrew P.; Grohsmeyer, Paul D.; Harding, Joseph J.; and Krahn, Darren L., 5,052,882, Cl. 414-667.000.

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Haritonidis, Joseph H.; Senturia, Stephen D.; Warkentin, David J.; and Mehregany, Mehran, to Massachusetts Institute of Technology. Shear stress measuring device. 5,052,228, Cl. 73-705.000.

Harkins, William R.: *See—*
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Edwards, Floyd V.; and Strobel, Norman M., 5,053,012, Cl. 604-146.000
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Black, Jimmy C., 5,053,353, Cl. 437-62.000.
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Harrison, Charles H.: *See—*
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Hasegawa, Hideo: *See—*
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Takahashi, Tetsuo; Sasaki, Akio; Mogi, Kunio; Shimazaki, Hajime; and Hasegawa, Masakazu, 5,052,291, Cl. 101-129.000.

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Hasegawa, Tooru: *See—*
Inui, Yoshio; Osaka, Masayoshi; Tanaka, Mitsuo; Miyamoto, Masao; Hasegawa, Tooru; Kamitaka, Masuo; Kai, Hidekazu; and Kamikubo, Hiroshi, 5,052,151, Cl. 49-394.000.

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Hattori, Michihiro; Akazaki, Shuichi; Yoshizuka, Naonobu; and Imokawa, Genji, to Kao Corporation. Cosmetic compositions. 5,053,229, Cl. 424-572.000.

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Haubrich, Charles H.: *See—*
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Hausamann, Dieter; and Davis, Brian W., to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method and apparatus for determining the sign of the direction of a particle stream 5,053,630, Cl. 250-574.000.

Hauser, Robert G.; Heil, Ronald W.; and Owens, Robert C., to Mirowski, Mieczyslaw. Cardiac defibrillation/cardioversion spiral patch electrode. 5,052,407, Cl. 128-786.000.

Havens, Richard J. Cymbal tilt adjustment mechanism. 5,052,262, Cl. 84-421.000.

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Hayashi, Shigeki: *See—*
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Heel, Helmut: *See*—
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Heil, Ronald W.: *See*—
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Hemsath, Klaus H., to Southern California Gas Company. Method and apparatus for reducing NO_x emissions in industrial thermal processes. 5,052,921, Cl. 432-121.000

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Henoch, Bengt. Transducer monitoring arrangement. 5,053,713, Cl. 324-537.000

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Herko, Samuel P., to North American Philips Corp. Read/write coaxial magnetic head for use with apparatus for measuring the surface of superconductors. 5,053,705, Cl. 324-240.000.

Herkt-Maetzky, Christian: *See*—
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Herrick, Robert S.; and Sardi, William F. Intracanalicular implant for horizontal canalicular blockade treatment of the eye. 5,053,030, Cl. 604-890.100.

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Hiraiwa, Atsushi: *See*—
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Hiraoka, Yoshihisa: *See*—
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Hirofusa Shirai & Nisshinbo Industries, Inc.: *See*—
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Hitachi Kiki Co., Ltd.: *See*—
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Hitachi Koki Company, Limited: *See*—
Ohtsu, Shinki, 5,052,500, Cl. 173-162.002.

Hitachi, Ltd.: *See*—
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Ogino, Masanori; Yamada, Takeo; and Ikeda, Miyuki, 5,053,724, Cl. 331-14.000.
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Hixon, Timothy R. Global positioning pole. 5,052,645, Cl. 248-125.000.

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Hodge, Bobby L., to INA Bearing Company, Inc. Sensing ring for rotational sensing system. 5,053,656, Cl. 310-42.000.

Hodgson, William S., to MicroSpring Company, Inc., The. Torque transmitter. 5,052,404, Cl. 128-772.000.

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—Joerg, Klaus; and Zertani, Rudolf, 5,053,317, Cl. 430-281.000.
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—Lee, Thomas B. K.; Lee, George E.; Wong, George S. K.; Borek, Donna M.; and Goehring, Keith E., 5,053,513, Cl. 546-79.000
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Hofmann, Aaron A.; and Burdulis, Albert G., Jr., to Intermedics Orthopedics. Upper tibial osteotomy system. 5,053,039, Cl. 606-87.000.
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Horstmann, Heinz-Otto; Engelhardt, Ulrich; Reizlein, Karl; Singer, Rolf-Jurgen; Wangermann, Klaus; Wirth, Wolfgang; Bartkowiak, Frank; Boehmke, Gunther; and Schulze, Hans, to Bayer Aktiengesellschaft. Di-styrl-phenyl-triglycol ether as crystallization inhibitor. 5,053,421, Cl. 514-383.000
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Shibasaki, Masakatsu; Sodeoka, Mikiko; Ogawa, Yuji; Mase, Toshiaki; Ishibashi, Akira; Horii, Daijiro; Kanayama, Toshiji; Iseki, Katsuhiko; Shinoda, Masaki; Ishiyama, Chiyoko; and Hayashi, Yoshio, 5,053,526, Cl. 560-119.000.
Ishibashi, Akira: *See—*
Shibasaki, Masakatsu; Sodeoka, Mikiko; Ogawa, Yuji; Mase, Toshiaki; Ishibashi, Akira; Horii, Daijiro; Kanayama, Toshiji; Iseki, Katsuhiko; Shinoda, Masaki; Ishiyama, Chiyoko; and Hayashi, Yoshio, 5,053,526, Cl. 560-119.000.
Ishibashi, Kenji: *See—*
Ishida, Tokuji; Hamada, Masataka; Norita, Toshio; Ueyama, Masayuki; Kozakai, Katsumi; Ootsuka, Hiroshi; Kajita, Hideo; and Ishibashi, Kenji, 5,053,800, Cl. 354-402.000.
Ishida, Naoyuki: *See—*
Makiura, Yoshinori; Ogiri, Tadakazu; Hayashi, Shigeki; Ishida, Naoyuki; Fuchi, Masami; Nakamura, Hiroaki; Yamaguchi, Katsuhide; and Kubota, Hiroshi, 5,052,670, Cl. 271-9.000.
Ishida, Noritoshi: *See—*
Yano, Naoyuki; Nagayoshi, Tatsuya; Nagou, Takashi; Tashima, Zunzi; Ishida, Noritoshi; Itoh, Hiroyuki; and Nagamatsu, Katsuyuki, 5,053,539, Cl. 564-333.000.
Ishida Scales Mfg. Co., Ltd.: *See—*
Ikeda, Tetsuo; and Nobutsugu, Hideo, 5,052,504, Cl. 177-25.150.
Naito, Kazufumi; Nishide, Seiji; Konishi, Hiroyuki; and Kosugi, Noboru, 5,052,505, Cl. 177-229.000.
Ishida, Tokuji; Hamada, Masataka; Norita, Toshio; Ueyama, Masayuki; Kozakai, Katsumi; Ootsuka, Hiroshi; Kajita, Hideo; and Ishibashi, Kenji, to Minolta Camera Kabushiki Kaisha. Automatic focus detecting apparatus. 5,053,800, Cl. 354-402.000.
Ishida, Tokuji; Norita, Toshio; and Ootsuka, Azuchimachi, to Minolta Camera Kabushiki Kaisha. Device for automatically adjusting focus or detecting object distance or camera having such function. 5,053,801, Cl. 354-402.000.
Ishigaki, Shinichiro: *See—*
Hakamata, Shigeya; Kurihara, Takumi; Ishigaki, Shinichiro; and Fuziyasu, Hiroshi, 5,053,248, Cl. 427-58.000.
Ishiguro, Kuniaki; Ishikawa, Takuma; Johdai, Akiyoshi; and Yamashita, Hiroki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus having a finisher. 5,053,831, Cl. 355-324.000.
Ishiguro, Yoichi: *See—*
Kyoto, Michihisa; Urano, Akira; Ishiguro, Yoichi; and Watanabe, Minoru, 5,053,068, Cl. 65-3.110.
Ishihara, Kazuya; Segawa, Hiroshi; Ikenaga, Chikako; Inoue, Yoshitsugu; Kurimoto, Atsushi; Kondo, Harufusa; and Nakabayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Bus circuit and operating method thereof. 5,053,642, Cl. 307-443.000.
Ishii, Hirofumi; and Morimura, Atsushi, to Matsushita Electric Industrial Co., Ltd. Fluctuation stabilization image pickup device. 5,053,875, Cl. 358-222.000.
Ishii, Kazuo: *See—*
Kato, Eiichi; and Ishii, Kazuo, 5,053,301, Cl. 430-49.000
Ishii, Takaaki: *See—*
Sakanishi, Masayuki; Yoshida, Hiroki; Ishii, Takaaki; Sato, Hiroshi; and Hoshino, Makoto, 5,054,053, Cl. 379-63.000
Ishii, Toshinori; and Sato, Masanori, to Kuraray Co., Ltd Wholly aromatic polyester film. 5,053,481, Cl. 528-206.000.
Ishii, Tsutomu: *See—*
Gohbara, Masatoshi; Asano, Tamotsu; Ozawa, Shuji; Yamazaki, Hideo; Ishii, Tsutomu; Nishida, Makoto; Watanabe, Junko; and Sato, Naoki, 5,053,070, Cl. 71-92.000.
Ishii, Yasushi. Acoustic gyroscope. 5,052,225, Cl. 73-505.000
Ishikawa, Ryuhei, to Nippon Ferrofluidics Corporation. Sealing member for ferrofluid seal and method of producing the same. 5,052,697, Cl. 277-80.000.
Ishikawa, Shigeo: *See—*
Tokuda, Hiroshi; Ishikawa, Shigeo; Sugiura, Toshiaki; and Kaga, Hikaru, 5,052,673, Cl. 271-22.000.
Ishikawa, Takeshi; Tanaka, Hideyoshi; and Yasui, Hisato, to Kao Corporation. Process for continuously drying paste material for a high-density detergent. 5,052,122, Cl. 34-5.000.
Ishikawa, Takuma: *See—*
Ishiguro, Kuniaki; Ishikawa, Takuma; Johdai, Akiyoshi; and Yamashita, Hiroki, 5,053,831, Cl. 355-324.000.
Ishikawa, Wataru; Frank, Andrew A.; and Hamamoto, Brian, to Aisin AW Co., Ltd. Differential control system. 5,052,988, Cl. 475-150.000.
Ishikuro, Hisato: *See—*
Tanimura, Yoshihiko; Ishikuro, Hisato; and Tada, Yasuo, 5,052,229, Cl. 73-861.220.
Ishimaru, Shiyuzi: *See—*
Shiina, Toshihito; Sano, Masahito; and Ishimaru, Shiyuzi, 5,052,676, Cl. 271-121.000.
Ishiwata, Masao: *See—*
Nakada, Toshio; Takemura, Fumio; and Ishiwata, Masao, 5,053,278, Cl. 428-403.000.
Ishiyama, Chiyoko: *See—*
Shibasaki, Masakatsu; Sodeoka, Mikiko; Ogawa, Yuji; Mase, Toshiaki; Ishibashi, Akira; Horii, Daijiro; Kanayama, Toshiji; Iseki, Katsuhiko; Shinoda, Masaki; Ishiyama, Chiyoko; and Hayashi, Yoshio, 5,053,526, Cl. 560-119.000.
Isnardi, Michael A.: *See—*
Koslov, Joshua L.; Isnardi, Michael A.; and Gibson, James J., 5,053,858, Cl. 358-12.000.
Isono, Yasuo: *See—*
Kajimura, Hiroshi; Kouchi, Toshihito; Toda, Akitoshi; Isono, Yasuo; Mimura, Yoshiyuki; Ohta, Hiroko; and Shimizu, Ryouhei, 5,053,995, Cl. 365-151.000.
Isozumi, Shuzou, to Mitsubishi Denki Kabushiki Kaisha. Spaced bearing arrangement for coaxial engine starter. 5,052,235, Cl. 74-7.00E.
Israel Institute for Biological Research: *See—*
Fisher, Abraham; and Karton, Ishai, 5,053,412, Cl. 514-278.000
Isuzu Motors Limited: *See—*
Kigoshi, Kaoru, 5,052,245, Cl. 74-665.00T.
Itagaki, Masanori: *See—*
Mori, Koji; Segawa, Hideo; and Itagaki, Masanori, 5,053,845, Cl. 357-34.000.
Itakura Soki: *See—*
Itakura, Tsuyoshi; and Willinger, Allan H., 5,052,904, Cl. 417-363.000.
Itakura, Tsuyoshi; and Willinger, Allan H., to Itakura Soki; and Allan H. Willinger, Bros. Aquarium air pump. 5,052,904, Cl. 417-363.000
Itay, Samuel. Compositions for repair of cartilage and bone. 5,053,050, Cl. 623-16.000.
Itaya, Tsunekazu: *See—*
Tateno, Yoshie; and Itaya, Tsunekazu, 5,052,876, Cl. 414-412.000.
Ito, Hideaki; and Miyamoto, Masanori, to Yamaha Hatsudoki Kabushiki Kaisha. Lubrication system for two cycle engine. 5,052,355, Cl. 123-196.00R.
Ito, Hironobu: *See—*
Kubo, Hiroshi; and Ito, Hironobu, 5,052,722, Cl. 285-62.000.
Ito, Hiroyuki; Hattori, Hidekazu; and Kitani, Satoshi, to Sony Corporation. Optical disk recording/reproducing apparatus and rotary drive therefor. 5,054,014, Cl. 369-190.000.
Ito, Katsumi: *See—*
Sekine, Susumu; Ito, Katsumi; Ohwada, Noriyoshi; and Eguchi, Toyoaki, 5,052,124, Cl. 34-20.000.
Ito, Kenji: *See—*
Suda, Yasuo; Ito, Kenji; Ohtaka, Keiji; and Suzuki, Kenji, 5,053,803, Cl. 354-466.000.
Ito, Kohei: *See—*
Murakami, Yasuhide; Takeda, Shigeru; Ito, Kohei; Kinoshita, Yasuaki; and Kubota, Sadami, 5,053,734, Cl. 333-219.200.
Ito, Masazumi: *See—*
Takano, Yoshiaki; Ito, Masazumi; Kusumoto, Keiji; Noda, Takashi; and Oyabu, Masaaki, 5,053,814, Cl. 355-208.000
Ito, Shigehiro; Nishi, Yuji; Kouguchi, Tatsushi; and Ebihara, Kazuyuki, to Victor Company of Japan, Ltd. Ghost cancelling device using variable amplifier controlled by criterion function. 5,053,870, Cl. 358-167.000.
Ito, Shinichi; and Terashima, Jiro, to Fuji Electric Co., Ltd. Semiconductor device. 5,053,847, Cl. 357-36.000.

Ito, Shinji: *See—*
Takahashi, Tsutomu; Ito, Shinji; Oshita, Saiichiro; and Mouri, Toyohiko, 5,053,966, Cl. 364-424.050.

Ito, Wataru: *See—*
Mori, Shigero; Sugawara, Isamu; and Ito, Wataru, 5,053,398, Cl. 514-54.000

Ito, Yoshikazu: *See—*
Akada, Masanori; Egashira, Noritaka; Mizuno, Mikizo; Kutsukake, Masaki; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Suzuki, Takao; Arita, Hitoshi; Sorimachi, Kazuyoshi; and Iwata, Tamami, 5,053,382, Cl. 503-227.000

Itoh, Hiroshi; Sugaya, Masami; Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji; Kouno, Katsumi; Hattori, Yuji; and Hayashi, Takashi, to Toyota Jidosha Kabushiki Kaisha. Hydraulic control apparatus for vehicle power transmitting system having continuously variable transmission. 5,052,980, Cl. 474-11.000.

Itoh, Hiroshi: *See—*
Kato, Nobuyuki; Kubo, Seitoku; Kouno, Katsumi; Abe, Tetsuya; Itoh, Hiroshi; Morisawa, Kunio; and Habuchi, Ryoji, 5,052,247, Cl. 74-868.000.

Itoh, Hiroyuki: *See—*
Yano, Naoyuki; Nagayoshi, Tatsuya; Nagou, Takashi; Tashima, Zunzi; Ishida, Noritoshi; Itoh, Hiroyuki; and Nagamatsu, Katsuyuki, 5,053,539, Cl. 564-333.000.

Itoh, Kunio; Shiobara, Toshio; Futatsumori, Koji; Tomiyoshi, Kazutoshi; and Shimizu, Hisashi, to Shin-Etsu Chemical Co., Ltd. Epoxy resin composition. 5,053,445, Cl. 523-435.000.

ITT Corporation: *See—*
Hyzin, Peter J., 5,052,948, Cl. 439-607.000.

ITW Fixfast AB: *See—*
Clinch, Colin W. F.; and Axelsson, Per-Arne, 5,052,663, Cl. 267-141.000.

Ives, Donald H.: *See—*
Edwards, D. Brandon; Edwards, Bruce W.; Howard, Ian D.; and Ives, Donald H., 5,052,790, Cl. 359-399.000.

Iwai, Masakazu: *See—*
Shiraga, Yusei; Fukaya, Chikara; Akira, Toshiaki; Iwai, Masakazu, Yokoyama, Kazumasa; Tabata, Mamoru; Fukui, Hiroshi; Tanaka, Shigeo; Iga, Yoshiro; Suyama, Tadakazu; and Okano, Kanemichi, 5,053,498, Cl. 536-4.100.

Iwama, Atsuaki, to Kabushiki Kaisha Kobe Seiko Sho. Tire uniformity inspecting machine. 5,052,218, Cl. 73-146.000.

Iwamoto, Taro: *See—*
Tsuchihashi, Akira; Takarada, Shinichi; Iwamoto, Taro; Nakajima, Kichio; Aoki, Tatsu; and Yamamoto, Hiroshi, 5,053,975, Cl. 364-513.000.

Iwanami, Teruo: *See—*
Hasegawa, Kenji; Iwanami, Teruo; and Miyake, Shinji, 5,053,257, Cl. 427-379.000.

Iwasaki, Yorio: *See—*
Takanezawa, Shin; Iwasaki, Yorio; Takaahashi, Hiroshi; Okamura, Toshiro; Amano, Saburo; Yokoyama, Hiroyoshi; Fukuoka, Noriyoshi; and Amano, Tatsuya, 5,053,280, Cl. 428-413.000.

Iwase, Teruhiko: *See—*
Imai, Takeshi; Iwase, Teruhiko; Koura, Toshio; Maeda, Minoru; Fujimori, Junichi; and Shinozaki, Fumiaki, 5,053,300, Cl 430-15.000.

Iwata, Akihiko: *See—*
Shoda, Isao; Kodama, Hitoshi; Magome, Kazuo; Iwata, Akihiko; Yoshizawa, Kenji; and Taki, Masakazu, 5,053,682, Cl 315-223.000.

Iwata, Tamami: *See—*
Akada, Masanori; Egashira, Noritaka; Mizuno, Mikizo; Kutsukake, Masaki; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Suzuki, Takao; Arita, Hitoshi; Sorimachi, Kazuyoshi; and Iwata, Tamami, 5,053,382, Cl. 503-227.000

Iwata, Yukio, to Akebono Brake Industry Co., Ltd. Brake lining bonding apparatus. 5,053,102, Cl. 156-580.000.

Iwatuki, Kunihiro: *See—*
Yamaguchi, Kozo; Negi, Toyoji; Kondo, Tadashi; and Iwatuki, Kunihiro, 5,052,991, Cl. 475-344.000.

Izawa, Ryuichi; Kure, Tokuo; Iijima, Shimpei; Takeda, Eiji; Igura, Yasuo; Hamada, Akemi; and Hiraiwa, Atsushi, to Hitachi, Ltd. Transistor with overlapping gate/drain and two-layered gate structures. 5,053,849, Cl. 357-59.000.

J. I. Case Company: *See—*
Brekkestran, Kevin L.; and Thomas, John C., 5,053,960, Cl. 364-424.100.

J. L. Clark, Inc.: *See—*
Pherigo, Douglas E., 5,052,572, Cl. 220-270.000.

J. M. Voith GmbH: *See—*
Hanke, Wolfgang, 5,052,978, Cl. 464-24.000.
Thumm, Helmut, 5,052,098, Cl. 29-564.003.

J P Labs Inc.: *See—*
Nathalal, Gordhanbhai, 5,053,339, Cl. 436-2.000.

J S Products AB: *See—*
Johansson, Uno, 5,052,605, Cl. 224-324.000.

Jaaskelainen, Vesa; and Linderoth, Gustaf, to Nokia-Maillefer Holding S.A. Carriage for the transportation of a cylindrical object. 5,052,877, Cl. 414-458.000.

Jackson, Charles A.: *See—*
Keiser, Dale A.; Jackson, Charles A.; and Boyd, William R., 5,053,199, Cl. 422-68.100.

Jackson, Charles E., Jr.: *See—*
Hagewood, John F.; Darigo, Julius; McCoy, Bruce S.; Segle, John M.; and Jackson, Charles E., Jr., 5,052,088, Cl. 28-185.000

Jacob, Savarimuthu M., to Oakite Products, Inc. Composition and method for treatment of conversion coated metal surfaces with an aqueous solution of 3-aminopropyltriethoxy silane and titanium chelate. 5,053,081, Cl. 106-287.110.

Jacques, Luc A. G.: *See—*
Weekamp, Johannus W.; Kats, Pieter; and Jacques, Luc A. G., 5,053,916, Cl. 361-308.000

Jada, Sivananda S., to Manville Corporation. Process for producing zirconium based granules. 5,053,214, Cl. 423-608.000

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Regnault, Serge; and Dunon-Bluteau, Francis, 5,052,223, Cl. 73-304.00C

Jagannath, Chirravuri: *See—*
Choudhury, A. N. M. Masum; Jagannath, Chirravuri; Elman, Boris S.; and Armiento, Craig A., 5,053,843, Cl. 357-30.000.

Jahnes, Christopher V.: *See—*
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Jain, Rajendra K., to Digital Equipment Corporation. Token ring network having token request mechanism. 5,053,946, Cl. 364-200.000

James River-Norwalk, Inc.: *See—*
Maroszek, Raymond V., 5,052,552, Cl. 206-174.000

James, Robert L.; and Miller, Ronald E., to Delta Systems, Incorporated. Prewired circuit module. 5,052,935, Cl. 439-49.000.

James, Wayne R.; Neal, Warren D.; and Varjabedian, Suren A., to Babcock Industries Inc. Sorter feeder system. 5,052,541, Cl. 198-368.000

Jamieson, Thomas C. Deer stands. 5,052,516, Cl. 182-135.000.

Jamshid, Zarian, to Lumenyte International Corporation. Optical conduit with thermoplastic clad. 5,052,778, Cl. 385-125.000

Janatka, Karel J., to Pitney Bowes Inc. Secure locking means for mechanical drive components. 5,052,842, Cl. 403-14.000

Janese, Woodrow W., to Janese, Woodrow W. Dural sealing needle and method of use. 5,053,046, Cl. 606-215.000.

Janis, Michael E.: *See—*
Ott: Edward L.; Petriekis, Paul F.; and Janis, Michael E., 5,052,615, Cl. 229-182.000

Jann, Wolfango; and Rottner, Kurt, to Siemens Aktiengesellschaft. Circuit coupling an oscillator to an electrical load. 5,053,727, Cl. 331-62.000

Janz, Peter: *See—*
Winkler, Herwig; Janz, Peter; and Gottschamel, Georg, 5,053,369, Cl 501-152.000

Japan Styrene Corporation: *See—*
Kuwabara, Hideki; Hashiba, Masashi; and Naito, Masato, 5,053,435, Cl. 521-60.000

Japan Synthetic Rubber Co., Ltd.: *See—*
Goto, Kohei; Komiya, Zen; Yamahara, Noboru; and Iio, Akira, 5,053,471, Cl. 526-281.000

Jarchow, Friedrich; Haensel, Dietrich; Dottger, Peter; Blumenthal, Ulrich; Luning, Ulrich; and Bouche, Bernhard, to Jarchow, Friedrich. Continuous-acting hydrostatic-mechanical power-shift transmission with toothed clutches. 5,052,986, Cl. 475-76.000.

Jaron, Michael: *See—*
Beile, James W.; and Jaron, Michael, 5,052,650, Cl. 248-451.000.

Jarus, Albert J. Ear hiders. 5,052,194, Cl. 63-14.300.

Jarvis, Paul L. Cooler chest grid and methods. 5,052,184, Cl. 62-60.000.

Jasinski, Leon, to Motorola, Inc. Communication system with bit sampling method in portable receiver for simulcast communication. 5,054,113, Cl. 455-51.000.

Jaworski, George M.: *See—*
Chun, Victor L.; and Jaworski, George M., 5,053,600, Cl. 219-121.480.

Jaycox, Jerry E.: *See—*
Wiggen, Brian L.; and Jaycox, Jerry E., 5,052,326, Cl. 114-343.000.

Jean Walterscheid GmbH: *See—*
Konrad, Mathias; and Barth, Arnold, 5,052,724, Cl. 285-190.000.

Jefford, Charles W., to Oxaco S.A. Cleavage of 1,2,4-trioxanes. 5,053,559, Cl. 568-814.000.

Jelloian, Linda M.: *See—*
Mishra, Umesh K.; Thompson, Mark A.; and Jelloian, Linda M., 5,053,348, Cl. 437-41.000

Jenne, Richard L.: *See—*
Cooper, Lawrence E.; and Jenne, Richard L., 5,053,908, Cl. 361-24.000

Jennings, John W.: *See—*
Carter, Ralph E.; and Jennings, John W., 5,052,601, Cl. 224-42.410

Jenny, Ernst; El-Nashar, Jbrahim; and Stohr, Dominique, to Comprex AG. Gas-dynamic pressure-wave supercharger with exhaust bypass. 5,052,362, Cl. 123-559.200

Jensen, Bror S.: *See—*
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Jensen, Jorgen: *See—*
Sorensen, Emil; Jensen, Jorgen; Rasmussen, Erik; Jensen, Bror S.; and Bjerre, Belinda, 5,053,142, Cl. 210-742.000.

Jensen, Thomas H., to PPG Industries, Inc. Method and apparatus for supporting strand. 5,052,125, Cl. 34-23.000.

Jentzen, S. William: *See—*
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Jeong, Deok-ki: *See—*
Park, Han-su; Lee, Hyeong-seok; and Jeong, Deok-ki, 5,053,298, Cl. 430-7.000.

Jessup, James L.: *See—*
Pielemeier, William J.; and Jessup, James L., 5,053,612, Cl. 235-462.000.

Jessup, Reginald: *See—*
Brewster, Andrew G.; Brown, George R.; Faull, Alan W.; Jessup, Reginald; and Smithers, Michael J., 5,053,415, Cl. 514-336.000.

Jiles, Stephen L. Pipeline repair method and apparatus. 5,052,431, Cl. 137-318.000

Jing Tech, Inc.: *See—*
Huang, George C.; and Yu, Peining, 5,052,833, Cl. 400-197.000

Joerg, Klaus; and Zertani, Rudolf, to Hoechst Aktiengesellschaft. Radiation-polymerizable mixture and copying material produced comprising polyurethane-polyurea polymer. 5,053,317, Cl. 430-281.000.

Johannes Menschner Maschinenfabrik GmbH & Co. KG: *See—*
Riedel, Dieter, 5,052,069, Cl. 8-149.100.

Johannessen, Jorgen M. Device for controlling fluid flow. 5,052,442, Cl. 137-813.000.

Johansen, Bente R.: *See—*
Balschmidt, Per; Hansen, Finn B.; and Johansen, Bente R., 5,053,389, Cl. 514-4.000.

Johansen, Roderic. Composting bin apparatus with U-shaped connecting members. 5,052,570, Cl. 220-4.330.

Johanson, Jerry R., to JR Johanson, Inc. Compacting screw feeder 5,052,874, Cl. 414-326.000.

Johansson, Ake: *See—*
Johansson, Thomas; and Johansson, Ake, 5,053,097, Cl. 156-158.000.

Johansson, Lars E.: *See—*
Bystrom, Kurt; and Johansson, Lars E., 5,052,345, Cl. 122-20.00B.

Johansson, Thomas; and Johansson, Ake, to Uponor N.V. Method of joining tubes having a corrugated wall of plastic material. 5,053,097, Cl. 156-158.000.

Johansson, Uno, to J S Products AB. Attachment arrangement for a cycle. 5,052,605, Cl. 224-324.000.

Johdai, Akiyoshi: *See—*
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Johnsen, Gordon M.: *See—*
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Johnson, David A.: *See—*
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Johnson, David R.: *See—*
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Johnson, Gerald H.: *See—*
Tysver, John D.; and Johnson, Gerald H., 5,052,537, Cl 192-141.000

Johnson, Howard W., to Ultra Network Technologies. Method and apparatus for high speed phase detection. 5,053,649, Cl. 307-514.000

Johnson, John K.: *See—*
Nightingale, John L.; and Johnson, John K., 5,052,815, Cl. 372-94.000

Johnson, Joseph A., III, to Wellington Leisure Products, Inc. Textured water ski. 5,052,963, Cl. 441-68.000

Johnson, Kendrick A. Heat retaining food container. 5,052,369, Cl. 126-400.000

Johnson, Lee R., to Scientific-Atlanta, Inc. Terminal polling method. 5,053,883, Cl. 358-349.000

Johnson, Mark R.: *See—*
Hill, John B.; Gelman, Yefim; Dryden, Hugh L., Jr.; Erickson, Robert; Hsu, Kuang; and Johnson, Mark R., 5,053,532, Cl. 562-450.000.

Johnson, Marty C.; and Frye, Stephen V., to Glaxo Inc. Synthesis of 2-aminobenzophenones. 5,053,543, Cl. 564-414.000.

Johnson, Richard B., to Draw-Tite, Inc. Terminal block. 5,052,951, Cl. 439-723.000.

Johnson, Robert G.: *See—*
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Johnson, Stephen E., to Eastman Kodak Company. Method and an associated apparatus for calibrating a color digital hardcopy device. 5,053,866, Cl. 358-75.000.

Johnson, William J., to Johnson, William J. Portable apparatus for capturing overflow from hanging plants. 5,052,149, Cl. 47-67.000.

Johnston, John E.: *See—*
Chung, David Y.; Gutierrez, Antonio; Johnston, John E.; Struglinski, Mark J.; and Lundberg, Robert D., 5,053,151, Cl. 252-51.50A.

Jollenbeck, Martin: *See—*
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Jonas, Arthur E. Highly filled substantially solid polyurethane, urea and isocyannurate composites for indoor and outdoor applications, for load bearing, structural and decorative products. 5,053,274, Cl. 428-332.000.

Jonas, Werner: *See—*
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Jones, John L., Jr.: *See—*
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Jones, Robert D.; and Hotham, Charles A., to National Research Development Corporation. Preparing metal for melt-coating. 5,053,112, Cl. 204-38.500.

Jorgensen, Diane V.; and Sapre, Ajit V., to Mobil Oil Corporation. Reduction of benzene content of reformate by reaction with cycle oils. 5,053,573, Cl. 585-475.000.

Josephson, Paul R., Jr.: *See—*
West, Paul R.; Mitchell, James E.; Miller, Gary R.; Josephson, Paul R., Jr.; and Ryan, Raymond W., Jr., 5,053,315, Cl. 430-278.000

Joshi, David, to Colgate-Palmolive Company. Laundry detergent bar. 5,053,159, Cl. 252-106.000

Josse, Alain P., to Societe Nationale Industrielle et Aerospatiale. Pyrotechnic priming device having a microlens set by a shape memory material and pyrotechnic chain utilizing said device. 5,052,300, Cl 102-201.000.

Joyce, Allen E., to Gordon Warren Co. Coin receiving incentive device. 5,052,616, Cl. 232-1.00D

Joyce, Thomas F.: *See—*
Nusinov, Eugene; and Joyce, Thomas F., 5,053,951, Cl. 364-200.000

Jozat, Walter; and Wunsche, Steffen, to Koh-I-Noor Inc. Stylo pen tip. 5,052,841, Cl. 401-258.000.

JR Johanson, Inc.: *See—*
Johanson, Jerry R., 5,052,874, Cl. 414-326.000.

JSE Corporation: *See—*
Wada, Eiji; and Nakano, Nobuo, 5,052,756, Cl. 299-17.000.

Juarez, Fernando, to Halsall Products Limited. Direct current brushless motor for fans, pumps and similar equipments. 5,053,686, Cl 318-254.000.

Juday, Richard D., to United States of America, National Aeronautics and Space Administration. Three dimensional moire pattern alignment. 5,052,807, Cl. 356-375.000

Judd, Amrit K., to SRI International. Multiple polymer synthesizer 5,053,454, Cl. 525-54.110.

Juhlke, Timothy: *See—*
Bierschenk, Thomas R.; Juhlke, Timothy; Kawa, Hajimu; and Lagow, Richard J., 5,053,536, Cl. 562-582.000

Julia, Jean; Pollet, Ferdinand; and Foissey, Jean-Francois, to Bertin & CIE. Pneumatic loudspeaker with a continuous pressurized fluid flow. 5,054,080, Cl. 381-165.000.

Junichi Nishizawa: *See—*
Nishizawa, Junichi; Tagawa, Taichi; and Kijima, Takahiko, 5,052,818, Cl. 374-17.000.

Junino, Alex; Lang, Gerard; and Genet, Alain, to L'Oreal. 2-substituted para-aminophenols and their use for dyeing keratinous fibres. 5,053,052, Cl. 8-412.000.

Jupiter Toy Company: *See—*
Shoulders, Kenneth R., 5,054,046, Cl. 378-119.000.
Shoulders, Kenneth R., 5,054,047, Cl. 378-119.000

Jurgens, Rainer; and van Es, Johann, to Baker Hughes Incorporated. Apparatus for directional coring. 5,052,502, Cl. 175-80.000

KabiVitrum AB: *See—*
Petho, Lajos T., 5,052,562, Cl. 209-626.000.

Kabushiki Kaisha CSK: *See—*
Horie, Kiyoshi, 5,053,610, Cl. 235-454.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Maeda, Shigeho, 5,052,536, Cl. 192-107.00M.
Nishimura, Yoshio; and Maeda, Shigeho, 5,053,261, Cl. 428-65.000.

Kabushiki Kaisha Fuji Iryoki: *See—*
Yamasaki, Yoshikiyo, 5,052,376, Cl. 128-52.000.

Kabushiki Kaisha Hanzawa Corporation: *See—*
Suimon, Yoshio; and Hanzawa, Tsuneo, 5,052,972, Cl. 446-429.000

Kabushiki Kaisha Japan Health: *See—*
Yamasaki, Yoshikiyo, 5,052,376, Cl. 128-52.000

Kabushiki Kaisha Kibun: *See—*
Goto, Shobun; Sugihara, Jiro; and Yabusaki, Masayoshi, 5,053,242, Cl. 426-643.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Fujii, Kazuhiko, 5,052,179, Cl. 60-421.000.
Iwama, Atsuaki, 5,052,218, Cl. 73-146.000

Kabushiki Kaisha Tokyo Kikai Seisakusho: *See—*
Suzuki, Kunio; and Kawata, Tomoshi, 5,052,295, Cl. 101-227.000.

Kabushiki Kaisha Toshiba: *See—*
Hasebe, Hiroyuki; Takeno, Kazuta; Sato, Yuji; Takahashi, Hiroyuki; Hayashida, Hirotaka; Mitsuyasu, Kiyoshi; and Sawatari, Ichirou, 5,053,292, Cl. 429-101.000.
Hosoi, Takashi, 5,052,078, Cl. 16-297.000
Manabe, Yoshinori, 5,054,049, Cl. 378-208.000.
Matsunaga, Yoshiyuki, 5,053,872, Cl. 358-213.110.
Matsuoka, Fumitomo, 5,053,349, Cl. 437-41.000.
Matumoto, Yoshihiko; and Takahama, Hisanobu, 5,052,907, Cl 425-116.000.
Mitomi, Michio, 5,053,709, Cl. 324-307.000.
Miyakawa, Tadashi; Asano, Masamichi; Taura, Tadayuki; Shoji, Atsushi; and Inami, Michiharu, 5,053,841, Cl. 357-23.500.
Miyoshi, Akio, 5,053,954, Cl. 364-200.000.
Mizumoto, Toru, 5,053,720, Cl. 330-296.000.
Morizuka, Kouhei, 5,053,846, Cl. 357-34.000.
Moro, Akihiro, 5,053,813, Cl. 355-201.000.
Saito, Kazuo; and Hongo, Ichiro, 5,052,917, Cl. 431-1.000.
Sakanishi, Masayuki; Yoshida, Hiroki; Ishii, Takaaki; Sato, Hiroshi; and Hoshino, Makoto, 5,054,053, Cl. 379-63.000.
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Sawa, Buntaro; and Koike, Noboru, 5,054,115, Cl. 455-89.000.

—Suzuki, Takayuki; Koike, Tetsuo; Obata, Atsuomi; Shigemori, Masashi; Sasaki, Kohji; Iketani, Sadayoshi; Uchino, Hiroshi; and Kawata, Kouzou, 5,053,632, Cl. 290-45.000.
—Takahashi, Tomohiko, 5,053,816, Cl. 355-208.000.
—Uchida, Satoshi; and Takeda, Masahiro, 5,054,089, Cl. 382-4.000
—Yamashita, Tetsuji; and Takahashi, Yukinobu, 5,052,897, Cl. 417-228.000
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Kabushikigaisha Tokyo Kikai Seisakusho: *See*—
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Kabushikikaisha Barudan: *See*—
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Kabusiki Kaisha Tateno Kikai Seisakusho: *See*—
Tateno, Yoshie; and Itaya, Tsunekazu, 5,052,876, Cl. 414-412.000.
Kaczmarek, Anthony R., to Dana Corporation. Deburring apparatus. 5,052,865, Cl. 409-8.000
Kadavy, Thomas D.: *See*—
Airy, James F.; and Kadavy, Thomas D., 5,052,379, Cl. 128-80.00C
Kado, Michio: *See*—
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Kadono, Shinji: *See*—
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Kaga, Hikaru: *See*—
Tokuda, Hiroshi; Ishikawa, Shigeo; Sugiura, Toshiaki; and Kaga, Hikaru, 5,052,673, Cl. 271-22.000.
Kagechi, Shunsaku; and Fujimoto, Masanori, to Descente Ltd. Solar heat selective absorptive fiber material. 5,053,275, Cl. 428-372.000
Kageyama, Hiroshi: *See*—
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Kai, Hidekazu: *See*—
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Kaiser, Peter A.: *See*—
Harms, Herbert L.; Moeckly, Charles R.; Reed, Donald; Reed, April A.; and Kaiser, Peter A., 5,052,491, Cl. 166-304.000.
Kaiser, Reinhold, to Telefunken electronic GmbH. Method of forming an integrated circuit with pn-junction capacitor. 5,053,352, Cl 437-47.000
Kajimura, Hiroshi; Kouchi, Toshihito; Toda, Akitoshi; Isono, Yasuo; Mimura, Yoshiyuki; Ohta, Hiroko; and Shimizu, Ryouhei, to Olympus Optical Co., Ltd. Tunnel current data storage apparatus having separate lever bodies. 5,053,995, Cl. 365-151.000.
Kajioka, Hiroyuki: *See*—
Tanaka, Shigenori; Furuya, Takashi; Kajioka, Hiroyuki; Ogawa, Shigeru; Sasaki, Kunimasa; and Yamane, Atsumu, 5,052,467, Cl 364-452.000.
Kajita, Hideo: *See*—
Ishida, Tokuji; Hamada, Masataka; Norita, Toshio; Ueyama, Masayuki; Kozakai, Katsumi; Ootsuka, Hiroshi; Kajita, Hideo; and Ishibashi, Kenji, 5,053,800, Cl. 354-402.000.
Kajita, Kazushige: *See*—
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Kakegawa Hisao: *See*—
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Kakinuma, Akira: *See*—
Aoki, Kazuo; Kakinuma, Akira; Saito, Megumi; and Makino, Motohiko, 5,053,305, Cl. 430-111.000.
Kakinuma, Seiichi, to Sawafuji Electric Co., Ltd. Waterproofing device for control circuit used in outboard engines. 5,053,634, Cl. 307-9.100.
Kakizaki, Yuichi; and Kozuka, Yoshinari, to NGK Insulators, Ltd. Instrument for concurrently optically measuring thermal and electric quantities. 5,053,617, Cl. 250-227.210.
Kakizawa, Katsuhiro, to Canon Kabushiki Kaisha. Telephone and telephone system having improved one-touch calling. 5,054,058, Cl. 379-157.000.
Kalamazoo Holdings, Inc.: *See*—
Todd, Paul H., Jr., 5,053,240, Cl. 426-540.000.
Kalyanaraman, Palaiyur S.: *See*—
Shepherd, James P.; and Kalyanaraman, Palaiyur S., 5,053,323, Cl. 430-495.000.
Kameya, Kazuo, to Elmec Corporation. Terminal structure for electronic components. 5,053,730, Cl. 333-33.000.
Kamijo, Masahiro: *See*—
Akiyama, Takaaki; Matsuo, Shuji; Fujii, Masahiro; Kurose, Mitsukazu; Nakamura, Osamu; and Kamijo, Masahiro, 5,052,832, Cl. 400-120.000.
Kamijyo, Hiroyuki, to Pioneer Electronic Corporation. Control apparatus for selectively inhibiting looking/listening in CATV terminal equipment. 5,053,884, Cl. 358-349.000.
Kamikubo, Hiroshi: *See*—
Inui, Yoshio; Osaka, Masayoshi; Tanaka, Mitsuo; Miyamoto, Masao; Hasegawa, Tooru; Kamitaka, Masuo; Kai, Hidekazu; and Kamikubo, Hiroshi, 5,052,151, Cl. 49-394.000.
Kamis, Russell P.: *See*—
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Kamishiro, Toshiro: *See*—
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,053,402, Cl. 514-79.000.
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Kamiya, Kingo: *See*—
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Kamiya, Masakazu; and Kobayashi, Kiyonori, to Aisin Seiki Kabushiki Kaisha. Torque variation absorbing device. 5,052,244, Cl. 74-574.000.
Kamiya, Shin: *See*—
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Kamyr AB: *See*—
Richter, Johan C. F. C., 5,053,108, Cl. 162-237.000.
Kanayama, Toshiji: *See*—
Shibasaki, Masakatsu; Sodeoka, Mikiko; Ogawa, Yuji; Mase, Toshiaki; Ishibashi, Akira; Horii, Daijiro; Kanayama, Toshiji; Iseki, Katsuhiko; Shinoda, Masaki; Ishiyama, Chiyoko; and Hayashi, Yoshio, 5,053,526, Cl. 560-119.000.
Kanazawa, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for logic simulation. 5,053,980, Cl. 364-578.000.
Kane, Lawrence M.: *See*—
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Kaneko, Akira: *See*—
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Kaneko, Ichiro: *See*—
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Kaneko, Tomihiro: *See*—
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Kaneko, Toru: *See*—
Yamano, Takashi; Katanuma, Yasushi; Takemura, Hideyasu; Kumagai, Michiko; Yoshida, Hiroshi; and Kaneko, Toru, 5,053,904, Cl. 360-103.000.
Kaneko, Tsuneyo, to Lederle (Japan), Ltd., a part interest. Breathing apparatus. 5,052,384, Cl. 128-205.140.
Kannan, Yasushi; Taniguchi, Takashi; Shikata, Michiharu; and Sumi, Tatsumi, to Matsushita Electric Industrial Co., Ltd. Semiconductor memory device with dual drivers to sense amp array. 5,053,998, Cl. 365-194.000
Kanno, Toru: *See*—
Tomii, Kaoru; Kaneko, Akira; and Kanno, Tóru, 5,053,673, Cl. 313-308.000
Kansai Paint Company, Limited: *See*—
Inoue, Hiroshi, 5,053,463, Cl. 525-427.000.
Kanzaki Paper Manufacturing Co. Ltd.: *See*—
Fujii, Kenichi; and Uemura, Hisashi, 5,053,789, Cl. 346-76.0PH.
Kao Corporation: *See*—
Hattori, Michihiro; Akazaki, Shuichi; Yoshizuka, Naonobu; and Imokawa, Genji, 5,053,229, Cl. 424-572.000.
Ishikawa, Takeshi; Tanaka, Hideyoshi; and Yasui, Hisato, 5,052,122, Cl. 34-5.000.
Kiji, Syuji; and Takahashi, Keizou, 5,053,905, Cl. 360-133.000.
Kapur, Jagdfish C.; De Koning, Jan J.; and Bezemer, Roland P., to Gist-Brocades N.V. Preparation of 3-exomethylenecepham sulfoxides and 2-chlorosulfinylazetidinones using molecular sieves. 5,053,501, Cl. 540-218.000.
Karabin, Tadeusz, to Majco Building Specialties, L.P. Gas burner assembly including emberizing material. 5,052,370, Cl. 126-512.000.
Karl Lautenschlager GmbH & Co. KG: *See*—
Lautenschlager, Karl; Lautenschlager, Horst; and Lautenschlager, Gerhard, 5,052,077, Cl. 16-238.000.
Karton, Ishai: *See*—
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Karz, Robert S.: *See*—
Field, John R.; Karz, Robert S.; Moser, Rabin; and Mathers, James E., 5,053,829, Cl. 355-290.000.
Kasper, Stanley, to United States of America, Energy. System for pressure letdown of abrasive slurries. 5,052,426, Cl. 137-14.000.
Katano, Muneo: *See*—
Morita, Izuru; Tozawa, Shoji; Sakata, Yoshitaka; Katano, Muneo; and Maeda, Ryuzo, 5,052,883, Cl. 414-700.000.
Katanuma, Yasushi: *See*—
Yamano, Takashi; Katanuma, Yasushi; Takemura, Hideyasu; Kumagai, Michiko; Yoshida, Hiroshi; and Kaneko, Toru, 5,053,904, Cl. 360-103.000.
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Niino, Tsuyoshi; Kataoka, Yoshiyuki; Morikawa, Matsuo; and Koyama, Kazuhito, 5,053,188, Cl. 376-277.000.
Katayama, Hiroyuki: *See*—
Kimura, Kazuhiro; Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ikenaga, Hiroyuki, 5,053,252, Cl. 427-164.000.
Takahashi, Akira; Murakami, Yoshiteru; Nakayama, Junichiro; Ohta, Kenji; Katayama, Hiroyuki; and Mieda, Michinobu, 5,053,611, Cl. 235-454.000.
Katayama, Koji, to Mitsubishi Denki K.K. Flow control valve unit. 5,052,656, Cl. 251-129.110.
Katerba, Greg C. Golf flagstick measuring device. 5,052,687, Cl. 273-34.00R.
Kato, Eiichi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotographic lithographic printing plate precursor. 5,053,301, Cl. 430-49.000.

Kato, Hisayuki: *See*—
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Kato, Masahiko: *See*—
Nishii, Michiharu; Mizuno, Genji; Tada, Yoshihiko; Nomura, Yoshihisa; Kato, Masahiko; Shirai, Kenji; and Tanoue, Junichi, 5,052,182, Cl. 60-547.100.
Kato, Naoki, to Sanshin Kogyo Kabushiki Kaisha. Suction device for outboard motor. 5,052,960, Cl. 440-77.000.
Kato, Nobuyuki; Kubo, Seitoku; Kouno, Katsumi; Abe, Tetsuya; Itoh, Hiroshi; Morisawa, Kunio; and Habuchi, Ryoji, to Toyota Jidosha Kabushiki Kaisha. Hydraulic control apparatus for belt-and-pulley type continuously variable transmission, incorporating fail-safe protective means. 5,052,247, Cl. 74-868.000.
Kato, Seiichi: *See*—
Susa, Sumio; Nagara, Toshio; Fukuda, Sunao; Kato, Seiichi; and Muto, Satomi, 5,052,571, Cl. 220-203.000.
Kato, Takahiro, to Pioneer Electronic Corporation. Device for preventing tape cassette from erroneous insertion into tape deck. 5,053,902, Cl. 360-96.500.
Kato, Toshiyuki: *See*—
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Katoh, Hiroshi: *See*—
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Kats, Pieter: *See*—
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Katzer, Johann; Lindermeir, Wolfgang; and Lopic, Franz, to Gardena Kress & Kastner GmbH. Drive mechanism for a sprinkler or the like. 5,052,621, Cl. 239-242.000.
Katzer, Johann: *See*—
Lindermeir, Wolfgang; Lopic, Franz; Katzer, Johann; Schaeffer, Johann; Stephany, Christian; and Sauer, Roland, 5,052,622, Cl. 239-242.000.
Kaufman, Dieter, to Bayer Aktiengesellschaft. Chiral compounds of the beta-binaphthyl type, their preparation and their use. 5,053,546, Cl. 568-4.000.
Kaufman, John W.: *See*—
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Kawa, Hajimu: *See*—
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Kawabata, Kazuhiro: *See*—
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Kawabata, Yasuhiro; Hara, Soichi; Machida, Shirou; and Kageyama, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Internal combustion engine piston with top-land circumferential projection arrangement. 5,052,281, Cl. 92-192.000.
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Kosugi, Shigeru; Ohshita, Takahiro; Higo, Tsutomu; Inumaru, Naoki; and Kawaguchi, Hajime, 5,052,344, Cl. 122-4.00D.
Kawaguchi, Toshiyuki, to Shin-Etsu Polymer Co., Ltd. Method for the preparation of an integral rubber article having electrically insulating and conductive parts. 5,053,167, Cl. 252-511.000.
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Kawakubo, Kiyoshi; and Koguchi, Yoshimi, to SSMC Inc. Bobbin winder tension application device. 5,052,633, Cl. 242-150.00R.
Kawamura, Katsumi, to Pioneer Electronic Corporation. Track transverse detection signal generating circuit. 5,054,013, Cl. 369-44.280.
Kawasaki Steel Corporation: *See*—
Yamazaki, Yoshio; Okada, Susumu; Satoh, Susumu; Kato, Toshiyuki; Abe, Hideo; and Nishimura, Keiji, 5,053,194, Cl. 420-128.000.
Kawasaki, Tsugumichi; and Hino, Hiroyuki, to G-C Toshi Kogyo Corporation. Pallet for handling dental porcelain materials. 5,052,926, Cl. 433-49.000.
Kawata, Kouzou: *See*—
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Kaylor, Joseph B., to Kaylor, Jannette Gomez. Methods and compositions for extinguishing fires. 5,053,147, Cl. 252-7.000.
Keffeler, Gary L.; and McVeen, Milford D., to Caterpillar Industrial Inc. Bearing mounting arrangement for a lift mast. 5,052,881, Cl. 414-634.000.
Keiser, Dale A.; Jackson, Charles A.; and Boyd, William R., to Boehringer Mannheim Corporation. Electronically readable information carrier. 5,053,199, Cl. 422-68.100.
Keith, Roger H.: *See*—
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Kendall, Rodney A., to International Business Machines Corporation. Ball joint with dynamic preload adjustment. 5,052,844, Cl 403-27.000.
Kennoy, John F.: *See*—
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Greenwood, David; Hughes, Nigel; Kenyon, Ronald W.; and Hindagolla, Suraj L., 5,053,495, Cl. 534-829.000.
Kern, Charles: *See*—
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Kern, Sabine; Genz, Joachim; Kleiner, Frank; Eckhardt, Volker; and Idel, Karsten J., to Bayer Aktiengesellschaft. Process for the production of aromatic polyether ketones. 5,053,477, Cl. 528-125.000.
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Muetze, Bernhard; Wandrey, Christian; Leuchtenberger, Wolfgang; and Ohshima, Toshihisa, 5,053,328, Cl. 435-106.000.
Kerr, Pamela J. Child's serving mat. 5,053,262, Cl. 428-81.000.
Kessler, Bernard V., to United States of America, Navy. Early ballistic missile detection system. 5,053,622, Cl. 250-358.100.
Ketchum, Ronald L.: *See*—
McGowan, Gerald F.; Ketchum, Ronald L.; and Budd, Allan L., 5,053,623, Cl. 250-373.000.
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Latham, Winchester E., 5,052,757, Cl. 299-87.000.
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Kuroda, Takeshi: *See—*
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Laiho, Kari U. Procedure and means for filtering, cleaning and homogenizing liquid substances using ultrasonics. 5,053,141, Cl. 210-739.000.

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Liane, Schumacher. Rotting-slab system. 5,053,124, Cl. 210-151.000.

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Liou, Jaieter. Automobile steering wheel lock. 5,052,201, Cl. 70-209.000.

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Lo, Josephine N.; and Chow, Peter P. Disposable sanitary telephone cover. 5,054,063, Cl. 379-452.000.

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Locher, Stefan: *See—*
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Lozito, Roy; Kempinski, Steve; Crough, Michael A.; and Dolmovich, Bruce E., to Unison Industries Limited Partnership. Capacitive discharge ignition exciter using SCR discharge switches. 5,053,913, Cl. 361-257.000.

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Mitsubishi Rayon Co., Ltd.: *See—*
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Tone, Seiji; Takeda, Haruko; and Sugimori, Masahiro, 5,053,461, Cl. 525-244.000.
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Nishiyama, Shinichi; Yamaoka, Hideo; Yamanaka, Tooru; and Yamada, Tohru, 5,053,164, Cl. 252-299.620.
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Miyasaka, Tsutomu; and Maekawa, Yukio, to Fuji Photo Film Co., Ltd. Functional organic thin film chemically bonded to biologically active agent. 5,053,225, Cl. 424-85.800.
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Chen, Catherine S. H., 5,053,568, Cl. 585-21.000
Han, Scott; Palermo, Robert E.; Pearson, Judy A.; and Walsh, Dennis E., 5,053,576, Cl. 585-500.000
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Jorgensen, Diane V.; and Sapre, Ajit V., 5,053,573, Cl. 585-475.000
Kyan, Chwan P.; LaPierre, Rene B.; and Wang, Hsin-Ju J., 5,053,117, Cl. 208-58.000.
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Kopf-Sill, Anne; and Schwartz, Henry L., 5,053,060, Cl. 55-16.000.
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Moll, Norman G.; and Johnson, David R., to Dow Chemical Company, The. Expandable and expanded plastic materials and methods for casting metal castings employing such expanded cellular plastic materials. 5,053,437, Cl. 521-98.000.
Mollmann, Helmut, to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH. Arrangement for draining water collecting in the container of a water separator of an internal-combustion engine 5,053,120, Cl. 210-86.000
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, to Richter Gedeon Vegyeszeti Gyar R. T. Novel steroid derivatives, pharmaceutical compositions containing them and process for preparing same. 5,053,404, Cl. 514-174.000
Molnar, Gerald, to Trillium Telephone Systems Inc. Circuit for maintaining hybrid cancellation of signals in a communication system. 5,054,062, Cl. 379-402.000.
Molock, Frank; Robertson, J. Richard, Jr.; and Su, Kai C., to Ciba-Geigy Corporation. Glutarimido and succinimido derivatives. 5,053,515, Cl. 546-220.000.
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Mongeau, Gerald; Bergeron, Phillipe; Clark, James J.; Charlton, Ronald W.; Eino, Mahmound; Maurice, Terrence J.; Parnell-Clunies, Estelle M.; and Cheng, Wen-Song, to Ault Foods Limited; and Investissements Mongeau Inc. Fat reduced spreads and process of making. 5,053,241, Cl. 426-603.000.
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Morita, Izuru; Tozawa, Shoji; Sakata, Yoshitaka; Katano, Muneo; and Maeda, Ryuzo, to Caterpillar Inc. Implement positioning control system for construction machines. 5,052,883, Cl. 414-700.000.
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Murata Kikai Kabushiki Kaisha: *See*—
Fujiwara, Michiaki, 5,052,173, Cl. 57-22.000
Matsui, Isamu; and Maruki, Hiroshige, 5,052,172, Cl. 57-22.000.
Murata Manufacturing Co., Ltd.: *See*—
Masuda, Fumitoshi, 5,053,742, Cl. 338-162.000.
Ueda, Yukinori, 5,053,741, Cl. 338-160.000
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Murata Wiedemann, Inc.: *See*—
Chun, Victor L.; and Jaworski, George M., 5,053,600, Cl 219-121.480.
Murphy, Jerry A. Dead bolt locking device. 5,052,202, Cl. 70-211.000.
Murphy, Michael: *See*—
Li, Wen-Sen; Thottathil, John K.; and Murphy, Michael, 5,053,504, Cl. 540-488.000.
Murray, James L.: *See*—
Rosenblum, Michael G.; Murray, James L.; Kelleher, Peter J.; Newman, Robert A.; and Khokhar, Abdul R., 5,053,226, Cl. 424-85.800
Muscat, Anthony J.; and Fernald, Robert A. Hood ornament retraction device. 5,052,714, Cl. 280-762.000.
Musto, Dominick J.: *See*—
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Muto, Satomi: *See*—
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Myer, Jon H., to Hughes Aircraft Company. Resilient lens mounting apparatus. 5,052,782, Cl. 359-827.000.
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Mysliwiec, Laura J. Apron. 5,052,055, Cl. 2-48.000
Nada, Mitsuhiro, to Toyota Jidosha Kabushiki Kaisha. Air-fuel ratio feedback control system having single air-fuel ratio sensor downstream of or within three-way catalyst converter. 5,052,177, Cl. 60-274.000.
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Ide, Youji; Kunitake, Tetsuji; Nagamoto, Masanaka; and Hiyoshi, Yoshihiko, 5,053,267, Cl. 428-195.000.
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Kuwabara, Hideki; Hashiba, Masashi; and Naito, Masato, 5,053,435, Cl. 521-60.000.

Nakabayashi, Takeo: *See*—
Ishihara, Kazuya; Segawa, Hiroshi; Ikenaga, Chikako; Inoue, Yoshitsugu; Kurimoto, Atsushi; Kondo, Harufusa; and Nakabayashi, Takeo, 5,053,642, Cl. 307-443.000.

Nakada, Toshio; Takemura, Fumio; and Ishiwata, Masao, to Tokai Carbon Co., Ltd. Carbonaceous granular heat insulator and process for preparing the same. 5,053,278, Cl. 428-403.000.

Nakagawa, Sachiko: *See*—
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Nakai, Keiichiro; and Suganuma, Manabu, to Otis Elevator Company. Encoder installing structure. 5,052,522, Cl. 187-20.000.

Nakai, Toshiharu: *See*—
Ogiri, Tadakazu; Yamaguchi, Katsuhide; Nakai, Toshiharu; Morita, Yoshio; Migita, Koji; and Tanaka, Hiroyuki, 5,053,817, Cl. 355-211.000.

Nakajima, Akio, to Minolta Camera Kabushiki Kaisha. Method and apparatus for magnifying an image. 5,053,886, Cl. 358-451.000.

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Tsuchihashi, Akira; Takarada, Shinichi; Iwamoto, Taro; Nakajima, Kichio; Aoki, Tatsu; and Yamamoto, Hiroshi, 5,053,975, Cl. 364-513.000.

Nakajima, Ryoichi: *See*—
Oide, Sakuji; and Nakajima, Ryoichi, 5,052,116, Cl. 33-361.000.

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Correa, Manuel; MacKenzie, James; Nakamoto, Richard; and Sutton, Lee D., 5,052,854, Cl. 404-94.000.

Nakamura, Fujio, to Sakae Ringyo Co., Ltd. Tube fixing structure of a bicycle. 5,052,848, Cl. 403-268.000.

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Nakamura, Minoru; and Oshiro, Yasuhiro, to Denyo Kabushiki Kaisha Junction inspection method and apparatus for electronic parts 5,052,816, Cl. 374-5.000.

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Akiyama, Takaaki; Matsuo, Shuji; Fujii, Masahiro; Kurose, Mitsukazu; Nakamura, Osamu; and Kamijo, Masahiro, 5,052,832, Cl. 400-120.000.

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Nakamura, Yasuhisa: *See*—
Tanaka, Hideaki; Morita, Toshiaki; Kitamura, Yoshihiro; Hirose, Hitoshi; Nakamura, Yasuhisa; and Saiga, Hisashi, 5,054,091, Cl 382-9.000.

Nakano, Atsushi; Konno, Toshio; and Shimada, Tadayuki, to Victor Company of Japan, Ltd. Charge latent image detecting device. 5,053,889, Cl. 358-480.000.

Nakano, Masaki, to Nissan Motor Co., Ltd. Forward and reverse hydraulic control for toroidal continuously variable transmission. 5,052,236, Cl. 74-200.000.

Nakano, Nobuo: *See*—
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Nakaoka, Yasuhiro: *See*—
Higuchi, Mitsuo; Ogura, Kiyonori; Shimbayashi, Kohji; and Nakaoka, Yasuhiro, 5,053,646, Cl. 307-465.000.

Nakashima, Mikio: *See*—
Takakura, Yoshinari; Nakashima, Mikio; and Hashizume, Hidekuni, 5,052,348, Cl. 123-41.740.

Nakayama, Junichiro: *See*—
Kimura, Kazuhiro; Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ikenaga, Hiroyuki, 5,053,252, Cl. 427-164.000.
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Namiki, Yasuomi, to Victor Company of Japan, Ltd. Magnetic recording and reproducing apparatus. 5,053,890, Cl. 360-19.100.

Nantoh, Kenji: *See*—
Mutoh, Nobuyoshi; Sakai, Keijiro; Fujii, Hiroshi; and Nantoh, Kenji, 5,053,690, Cl. 318-811.000.

Narimatsu, Akihiro: *See*—
Okushima, Hiromi; Narimatsu, Akihiro; Kobayashi, Makio; Satoh, Naoya; and Morita, Miyuki, 5,053,409, Cl. 514-255.000.

Naruse, Humio: *See*—
Yuyama, Junpei; Minami, Hirofumi; Naruse, Humio; and Goto, Eiichi, 5,053,707, Cl. 324-262.000.

Nashner, Lewis M., to NeuroCom International, Inc. Apparatus and method for movement coordination analysis. 5,052,406, Cl. 128-782.000.

Nasuno, Yasuhiro. Clamp for fixing plant stem to support wire. 5,052,086, Cl. 24-511.000.

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Kirchanski, Stefan J.; Azad, A. R. M.; and Natale, Peter J., 5,053,054, Cl. 8-647.000

Natali, Bernard S. Cold pack for wrapping injured limbs and method of making. 5,052,387, Cl. 128-402.000

Natarajan, Govindarajan: *See*—
Herron, Lester W.; Knickerbocker, Sarah H.; Natarajan, Govindarajan; and Reddy, Srinivasa S. N., 5,053,361, Cl. 501-94.000.

Nathalal, Gordhanbhai, to J P Labs Inc. Color changing device for monitoring shelf-life of perishable products. 5,053,339, Cl. 436-2.000

Nathan, Guy: *See*—
Elmalek, Pierre; and Nathan, Guy, 5,052,063, Cl. 5-238.000

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Smith, Robert E., III, 5,052,439, Cl. 137-614.040.

National Research Development Corporation: *See*—
Jones, Robert D.; and Hotham, Charles A., 5,053,112, Cl. 204-38.500.

National Testing Corporation: *See*—
Bergman, Hyman C.; Gordon, Virginia C.; and Kelly, Christopher P., 5,053,340, Cl. 436-5.000.

Natori, Tatsuo, to Hitachi, Ltd. Method of casting a member having an improved surface layer. 5,052,464, Cl. 164-80.000.

Natsuhara, Toshiya: *See*—
Enoguchi, Yuji; Natsuhara, Toshiya; and Mizuno, Hiroshi, 5,052,335, Cl. 118-658.000.

Nauman, Leonard G., to Alan Design, Inc. Auxiliary seat for bicycles. 5,052,704, Cl. 280-202.000.

Navistar International Transportation Corp.: *See*—
Sanner, John A.; and Irick, W. Thomas, 5,053,677, Cl. 315-77.000.

Naxos-Union Schleifmittel- u. Schleifmaschinenfabrik: *See*—
Lehmann, Dieter, 5,052,154, Cl. 51-206.400.

NCR Corporation: *See*—
Hamilton, Alistair R.; Brouwer, Frederick W.; and Phillips, Robert W., 5,053,812, Cl. 355-133.000.
Taylor, Billy K., 5,053,639, Cl. 307-269.000.

Ndebi, Sylvain L.; and Bobo, Robert D., to Eastman Kodak Company. Electrostatographic equipment having a multiple function fusing and image transfer roller. 5,053,828, Cl. 355-285.000.

Neal, Warren D.: *See*—
James, Wayne R.; Neal, Warren D.; and Varjabedian, Suren A., 5,052,541, Cl. 198-368.000.

NEC Corporation: *See*—
Kitajima, Yasuhito, 5,053,925, Cl. 361-391.000.
Miyasaka, Yoichi; and Matsubara, Shogo, 5,053,917, Cl. 361-321.000
Ohtsuka, Isao, 5,053,863, Cl. 358-21.00R.
Okawa, Yoshihisa; and Okamoto, Terumitsu, 5,053,899, Cl. 360-77.080.
Taniji, Yukio, 5,053,873, Cl. 358-213.290.
Tsubota, Masashi, 5,054,026, Cl. 371-68.300.
Uchida, Hiroyuki, 5,053,832, Cl. 357-2.000.
Yokoyama, Yukio, 5,053,943, Cl. 364-200.000.
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Nedves, Atilla: *See*—
Szirmai, Endre; Babusek, Sandor; Balogh, Gezz; Nedves, Atilla; Horvath, Gyula; Lebenyi, Zoltan; and Pinter, James, 5,053,144, Cl. 210-770.000.

Negi, Toyoji: *See*—
Yamaguchi, Kozo; Negi, Toyoji; Kondo, Tadashi; and Iwatuki, Kunihiro, 5,052,991, Cl. 475-344.000.

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Nehring, Jurgen: *See*—
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Nelson, Cecil H.: *See*—
Stark, John G.; Lund, Richard G.; and Nelson, Cecil H., 5,052,375, Cl. 128-25.00R.

Nelson, Gregory H.; and Lockard, Steven C., to Rogers Corporation. Multilayer interconnect device and method of manufacture thereof. 5,053,921, Cl. 361-386.000.

Nelson, Thomas E., to Soltech, Inc. Water heater construction. 5,052,347, Cl. 122-494.000.

Nemser, Stuart M., to Du Pont Canada Inc. Air-intake system for residential furnaces. 5,053,059, Cl. 55-16.000

NeoRx Corporation: *See*—
Vanderheyden, Jean-Luc E.; Su, Fu-Min; and Ehrhardt, Gary J., 5,053,186, Cl. 376-189.000.

Nesheiwat, Afif M., to Phillips Petroleum Company. Process for preparing poly(arylene sulfide sulfone) with controlled ratio of alkali metal carboxylate to sulfur source. 5,053,486, Cl. 528-388.000.

Nesheiwat, Afif M., to Phillips Petroleum Company. Method to recover high molecular weight poly(arylene sulfide) by reprecipitation. 5,053,487, Cl. 528-388.000.

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Zoia, Anthony J.; Midgley, Roland R.; Plaschko, Donald L.; Melbye, William L.; Wood, Leigh E.; Nestegard, Susan K.; and Miller, John A., 5,053,028, Cl. 604-385.100.

Netsch, Lorin P.: *See*—
Naik, Jayant M.; Netsch, Lorin P.; and Doddington, George R., 5,054,083, Cl. 381-42.000.

Neugebauer, Charles T.: *See*—
Yariv, Amnon; Neugebauer, Charles T.; and Agranat, Aharon J., 5,054,040, Cl. 377-60.000.

Neumann, Hans-Joachim: *See*—
Brueckner, Hermann; Emsperger, Werner; and Neumann, Hans-Joachim, 5,052,175, Cl. 60-39.463.

NeuroCom International, Inc.: *See*—
Nashner, Lewis M., 5,052,406, Cl. 128-782.000.

Neurogenetic Corporation: *See*—
Weinshank, Richard L.; and Hartig, Paul R., 5,053,337, Cl. 435-240.200.

New Brunswick Scientific Co., Inc.: *See*—
Tannenbaum, Myron; and Husson, Alan, 5,052,812, Cl. 366-209.000.

New England Biolabs, Inc.: *See*—
Lunnen, Keith D.; and Wilson, Geoffrey G., 5,053,330, Cl. 435-172.300.

Newbold, George T.: *See*—
Martin, Terry G.; and Newbold, George T., 5,052,364, Cl. 124-44.500.

Newell Co.: *See*—
Contino, Frederic L.; and Greathouse, Robert, 5,052,557, Cl. 206-427.000.

Newkirk, Marc S.; White, Danny R.; and Dwivedi, Ratnesh K., to Lanxide Technology Company, LP. Composite ceramic structures. 5,053,367, Cl. 501-127.000

Newman, David B., Jr, David B.: *See*—
Tatebayashi, Makoto; and Newman, David B., Jr, David B., 5,054,065, Cl. 380-21.000.

Newman, Robert A.: *See*—
Rosenblum, Michael G.; Murray, James L.; Kelleher, Peter J.; Newman, Robert A.; and Khokhar, Abdul R., 5,053,226, Cl. 424-85.800

NGK Insulators, Ltd.: *See*—
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NGK Spark Plug Co., Ltd.: *See*—
Taniguchi, Masato; Yagi, Juzo; and Takeda, Hiroshi, 5,052,352, Cl 123-90.390.

Nguyen, Van Hung; Eichler, Siegfried; and Korber, Jurgen, to Daimler-Benz AG. Motor vehicle storage compartment. 5,052,762, Cl. 312-242.000.

Niall, Hugh D.: *See*—
Clarke, Adrienne; Mau, Shaio Lim; Anderson, Marilyn; Cornish, Edwina; Niall, Hugh D.; Tregear, Geoffrey W.; Crawford, Robert J.; and Bernatzky, Robert, 5,053,331, Cl. 435-172.300.
Hudson, Peter J.; Shine, John; Niall, Hugh D.; and Tregear, Geoffrey W., 5,053,488, Cl. 530-324.000.

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Wani, Mansukh C.; Nicholas, Allan W.; and Wall, Monroe E., 5,053,512, Cl. 546-41.000.

Nichols, Victor. Toilet seat latching device. 5,052,061, Cl. 4-661.000.

Nielsen, Per G., to APV Pasilac A/S. Cheese-making tank. 5,052,290, Cl. 99-461.000.

Niemetz, Linhard, to Telefunken electronic GmbH. Electronic control unit with common ground connection to a heat sink. 5,053,923, Cl. 361-388.000.

Nieuweboer, Bob: *See*—
Vorbruggen, Helmut; Klar, Ulrich; Nieuweboer, Bob; and Sturzebecher, Claus-Steffen, 5,053,400, Cl. 514-150.000.

Nieuwenhuis, Jan; and Mol, Arie C., to C.C.A. Biochem B.V. Polymer lactide, method for preparing it and a composition containing it. 5,053,485, Cl. 528-354.000.

Nifco Inc.: *See*—
Fukumoto, Masumi, 5,052,728, Cl. 292-106.000.

Nightingale, John L.; and Johnson, John K., to Coherent, Inc. Single frequency ring laser with two reflecting surfaces. 5,052,815, Cl. 372-94.000.

Nihon Seiken Kabushiki Kaisha: *See*—
Asada, Isamu, 5,052,181, Cl. 60-527.000.

Niino, Tsuyoshi; Kataoka, Yoshiyuki; Morikawa, Matsuo; and Koyama, Kazuhito, to Hitachi, Ltd. Reactor system. 5,053,188, Cl. 376-277.000.

Nikko Corporation Ltd.: *See*—
Iguchi, Atushi, 5,053,593, Cl. 219-10.493.

Nikolaev, Jury A.: *See*—
Ulyanitskky, Vladimir J.; Vasiliev, Anatoly A.; Gavrilenko, Tamara P.; Krasnov, Adolf N.; Nikolaev, Jury A.; and Podenkov, Nikolai I., 5,052,619, Cl. 239-79.000.

Nikravech, Mehrdad; Vedrenne, Isabelle; Amouroux, Jacques; and Saint-Just, Jacques, to Gaz de France. Method of conversion of natural gas or of light alkanes into unsaturated hydrocarbons. 5,053,575, Cl. 585-500.000.

Ninnis, Ronald M.; Miller, Allen; Dyck, Ralph; and Bodegom, Volker, to Sportsoft Systems, Inc. Graphics display using bimorphs. 5,052,777, Cl. 385-19.000.

Ninomiya, Kazuki; and Yamaguchi, Seiji, to Matsushita Electric Industrial Co., Ltd. Memory unit with compensating delay circuit corresponding to a decoder delay. 5,054,002, Cl. 365-233.000.

Ninomiya, Toshikazu; and Saito, Hiroyuki, to Dynic Corporation; and Dai-Ichi Seiki Kogyo Co., Ltd. Bookbinding cloth. 5,052,717, Cl 281-21.100.

Nippon Air Brake Co., Ltd.: *See*—
Tanaka, Ryuichi, 5,052,759, Cl. 303-9.620.

Nippon Chemiphar Co., Ltd.: *See*—
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,053,402, Cl. 514-79.000.

Nippon Ferrite, Ltd.: *See*—
Murakami, Yasuhide; Takeda, Shigeru; Ito, Kohei; Kinoshita, Yasuaki; and Kubota, Sadami, 5,053,734, Cl. 333-219.200.

Nippon Ferrofluidics Corporation: *See*—
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Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Hasegawa, Kenji; Iwanami, Teruo; and Miyake, Shinji, 5,053,257, Cl. 427-379.000.

Nippon Hoso Kyokai: *See*—
Mizumoto, Kunihiko; Kejiura, Hirokazu; Togami, Yuji; and Saito, Nobuo, 5,053,287, Cl. 428-694.000.

Nippon Hypox Laboratories Incorporated: *See*—
Satoh, Toshio; Matsumoto, Hitoshi; and Kakegawa Hisao, 5,053,490, Cl. 530-362.000.

Nippon Piston Ring Co., Ltd.: *See*—
Kimura, Tsutomu, 5,052,698, Cl. 277-138.000.

Nippon Precision Circuits Ltd.: *See*—
Tanaka, Sakae; Watanabe, Yoshiaki; Shirai, Katsuo; and Ogiwara, Yoshihisa, 5,053,354, Cl. 437-101.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Matsumoto, Sakae, 5,052,716, Cl. 280-777.000.
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Nippon Steel Corporation: *See*—
Tanaka, Shigenori; Furuya, Takashi; Kajioka, Hiroyuki; Ogawa, Shigeru; Sasaki, Kunimasa; and Yamane, Atsumu, 5,052,467, Cl. 164-452.000.
Ueda, Masanori; and Teraoka, Shinichi, 5,052,471, Cl. 164-480.000.

Nippon Telegraph and Telephone Corporation: *See*—
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Ushiyama, Katsumi; Sakamoto, Sadafumi; and Nishikawa, Seiji, 5,054,120, Cl. 455-351.000.
Wakabayashi, Kaoru; Adachi, Fumio; and Ichikawa, Tadashi, 5,054,099, Cl. 382-47.000.

Nippondenso Co., Ltd.: *See*—
Imai, Takeshi; Iwase, Teruhiko; Koura, Toshio; Maeda, Minoru; Fujimori, Junichi; and Shinozaki, Fumiaki, 5,053,300, Cl. 430-15.000.
Susa, Sumio; Nagara, Toshio; Fukuda, Sunao; Kato, Seiichi; and Muto, Satomi, 5,052,571, Cl. 220-203.000.

Nisca Corporation: *See*—
Shiina, Toshihito; Sano, Masahito; and Ishimaru, Shiyuzi, 5,052,676, Cl. 271-121.000.

Nishi, Hiroyuki; Suzuki, Takeshi; and Nonaka, Masato, to Omron Tateisi Electronics Co. Hybrid relay. 5,053,907, Cl. 361-9.000.

Nishi, Yuji: *See*—
Ito, Shigehiro; Nishi, Yuji; Kouguchi, Tatsushi; and Ebihara, Kazuyuki, 5,053,870, Cl. 358-167.000.

Nishida, Makoto: *See*—
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Nishide, Seiji: *See*—
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Arai, Atsushi, 5,053,830, Cl. 355-290.000.
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Rinkewich, Isaac. Long-range water sprinklers. 5,052,620, Cl 239-101.000.
Ristich, James. Tire repair plug. 5,053,089, Cl. 152-370.000.
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—Flanagan, Joseph E.; and Gray, John C., 5,053,087, Cl. 149-19.800
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Rudell, Elliot A.; Cernansky, Joseph S.; Gardner, Roger J., Jr.; Huebl, Steven J.; Zera, Robert D.; Kilroy, Eugene J.; and Chang, Richard S., to Tonka Corporation. Toy car launcher with cable driven shuttle and pulleys. 5,052,973, Cl. 446-429.000.
Ruffell, John P.; and Guerra, Michael A., to Ibis Technology Corporation. Apparatus for ion implantation. 5,053,627, Cl. 250-492.200.
Ruggera, Paul S., to United States of America, Health and Human Services. Diathermy coil. 5,052,997, Cl. 600-13.000.
Ruiz-del-Portal, Javier; and Rodriquez-Navarrete, Luis, to Iberduero, S.A.; and Angel Iglesias, S.A. Telemetering system for electrical power consumed by various users. 5,053,766, Cl. 340-870.020.
Runyan, Steven; Haney, Jerry D.; and Francy, James R., to Graphics Microsystems. Ink control system. 5,052,298, Cl. 101-365.000.
Rushing, John A. Diffuse patio lighting arrangement. 5,053,931, Cl 362-102.000
Ruskin, Rodney R. Pressure compensating drip irrigation system. 5,052,625, Cl. 239-542.000.
Russell, Ronald K.: *See*—
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Ryan, John T. Pistol stock spreading tool kit. 5,052,143, Cl. 42-90.000.
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Sakaguchi, Junei; Hasegawa, Soichi; and Arai, Shuichi, to Somar Corporation. Electrophotographic element having separate charge generating and charge transporting layers. 5,053,303, Cl. 430-59.000
Sakaguchi, Yuji, to Bridgestone Corporation. Flexible tubular wall pneumatic actuator with position transducer. 5,052,273, Cl. 92-5.00R.
Sakai, Akihiro; and Suzuki, Masanori, to Mitsubishi Denki K.K. Wire electrode feeding apparatus. 5,053,598, Cl. 219-69.120.
Sakai, Jun; Nagata, Osamu; and Seo, Keiji, to Brother Kogyo Kabushiki Kaisha. Image recording apparatus selectively using two kinds of photosensitive recording sheets. 5,053,805, Cl. 355-27.000.
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Sakaki, Hiroyuki, to Research Development Corporation of Japan. Grid-inserted quantum structure. 5,054,030, Cl. 372-45.000
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Seal, D. Greg. Method for constructing a custom abutment for use in association with dental implants. 5,052,929, Cl. 433-173.000.
SeaMark Systems Limited: *See—*
Miller, Keith E. J., 5,052,859, Cl. 405-158.000.
Seamons, Kenneth R.; Prestwood, Stephen D.; and Balcome, Herbert L., to Ciba-Geigy Corporation. Contact lens disinfecting container structure. 5,053,208, Cl. 422-300.000.
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Burton, Thomas A.; Sedivy, George F.; Klepper, John R.; Mochring, Mark A.; Ferraro, Richard F.; and Davis, Donald L., 5,052,395, Cl. 128-661.090.
Seeman, Bronislaw: *See—*
McKeon, Donald C.; and Seeman, Bronislaw, 5,053,620, Cl. 250-270.000
Seemann Composite Systems, Inc.: *See—*
Seemann, William H., 5,052,906, Cl. 425-112.000.
Seemann, William H., to Seemann Composite Systems, Inc. Plastic transfer molding apparatus for the production of fiber reinforced plastic structures. 5,052,906, Cl. 425-112.000
Segawa, Hideo: *See—*
Mori, Koji; Segawa, Hideo; and Itagaki, Masanori, 5,053,845, Cl. 357-34.000
Segawa, Hiroshi: *See—*
Ishihara, Kazuya; Segawa, Hiroshi; Ikenaga, Chikako; Inoue, Yoshitsugu; Kurimoto, Atsushi; Kondo, Harufusa; and Nakabayashi, Takeo, 5,053,642, Cl. 307-443.000.
Segawa, Hirotsugu: *See—*
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Segle, John M.: *See—*
Hagewood, John F.; Dargo, Julius; McCoy, Bruce S.; Segle, John M.; and Jackson, Charles E., Jr., 5,052,088, Cl. 28-185.000
Seidler, Jack, to North American Specialties Corporation. Solder-bearing terminal pin and lead. 5,052,954, Cl. 439-876.000
Seigneur, Christopher D.: *See—*
Vanderzanden, James L.; and Seigneur, Christopher D., 5,052,109, Cl. 30-387.000.
Seiko Epson Corporation: *See—*
Akiyama, Takaaki; Matsuo, Shuji; Fujii, Masahiro; Kurose, Mitsukazu; Nakamura, Osamu; and Kamijo, Masahiro, 5,052,832, Cl 400-120.000.
Sonehara, Tomio; Sugiyama, Jun; and Morozumi, Shinji, 5,053,765, Cl. 340-815.310
Seiko Epson Corporation, A Corporation of Japan: *See—*
Kunugi, Masanao; Kurihara, Hajime; and Mizumoto, Teruyuki, 5,053,821, Cl. 355-245.000.
Seiko Instruments Inc.: *See—*
Ike, Toshimasa, 5,054,112, Cl. 455-41.000
Kojima, Yoshikazu, 5,053,842, Cl. 357-23.500
Seikosha Co., Ltd.: *See—*
Gohara, Aijiro, 5,052,830, Cl. 400-76.000
Tanaka, Sakae; Watanabe, Yoshiaki; Shirai, Katsuo; and Ogiwara, Yoshihisa, 5,053,354, Cl. 437-101.000
Wada, Mitsuo, 5,054,010, Cl. 368-276.000
Seiler, Erhard: *See—*
Taubitz, Christof; Seiler, Erhard; Boehlke, Klaus; Bronstert, Klaus; and Wagner, Daniel, 5,053,458, Cl. 525-92.000
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Wehrle, Gerhard; Seitz, Ursula; and Blaschi, Karl, 5,053,756, Cl. 335-274.000
Seki, Mitsuhiro; Sumi, Shigeo; and Goto, Takashi, to Somar Corporation. Film bonding method and apparatus for performing same 5,053,099, Cl. 156-250.000.
Seki, Takayoshi: *See—*
Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; Seki, Takayoshi; and Amemiya, Kensuke, 5,053,678, Cl. 315-111.810
Sekiguchi, Satoru: *See—*
Ohkubo, Yuichi; Sekiguchi, Satoru; Watanabe, Toshihiko; and Yoneya, Nobuaki, 5,053,650, Cl. 307-521.000
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Sekino, Shizuo, to Fuji Photo Film Co., Ltd. Sorting apparatus. 5,052,679, Cl. 271-293.000.
Sekizawa, Hideo: *See—*
Inada, Yoshinori; Makiyama, Takehisa; and Sekizawa, Hideo, 5,052,743, Cl. 296-210.000
Select Information Systems Limited: *See—*
Malyon, Brian R.; and Lugg, Simon E., 5,053,819, Cl. 355-230.000
Semple, Joseph E., to Du Pont de Nemours, E. I., and Company. Chromane herbicides. 5,053,071, Cl. 71-92.000.
Senanayake, Daya R. Personal identification system. 5,053,608, Cl 235-380.000.
Senju Pharmaceutical Co., Ltd.: *See—*
Takasu, Emiko; Ogata, Kazumi; and Sato, Yoshihisa, 5,053,222, Cl. 424-7.000
Senoh Kabushiki Kaisha: *See—*
Kosuge, Shuichi; and Otaki, Chosaku, 5,052,684, Cl. 272-132.000.
Senshu, Takao: *See—*
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Senturia, Stephen D.: *See—*
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Sakai, Jun; Nagata, Osamu; and Seo, Keiji, 5,053,805, Cl. 355-27.000
Sernka, Richard P.; and Taenaka, Robert K., to Hughes Aircraft Company. Planar sodium-sulfur electrical storage cell. 5,053,294, Cl 429-104.000.
Servillo, Luigi: *See—*
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Sesnic, Tom T.: *See—*
Algiere, John L.; and Sesnic, Tom T., 5,053,731, Cl. 333-101.000
Setala, Jouko J.; Suominen, Veli M. S.; Rauramaa, Aino L.; and Sivela, Seppo, to Valio Meijerien Keskusosuusliike. Forage preservation 5,053,233, Cl. 426-53.000
Sevilleja, Jose; and Sandoval, Jose M., to Otis Elevator Company. Adjustable machine isolation. 5,052,652, Cl. 248-634.000
Sewell, John S., to Borg-Warner Automotive, Inc. Manual transmission shift linkage. 5,052,238, Cl. 74-473.00R.
SFO Enterprises: *See—*
Correa, Manuel; MacKenzie, James; Nakamoto, Richard; and Sutton, Lee D., 5,052,854, Cl. 404-94.000.
SGS-Thomson Microelectronics, Inc.: *See—*
Slemmer, William C., 5,053,996, Cl. 365-156.000
SGS Thomson Microelectronics S.r.l.: *See—*
Cavallotti, Franco; Cremonesi, Alessandro; and Poluzzi, Rinaldo, 5,053,984, Cl. 364-724.160.
SGS-Thomson Microelectronics S.A.: *See—*
Mille, Jacques; and Quessada, Daniel, 5,053,743, Cl. 338-297.000.

Shaffer, James E., to Consulier Industries, Inc. Roller chain wave gear drive. 5,052,984, Cl. 474-156.000.

Shannon, Michael D.: *See—*
Baker, Max N.; Barnes, Vernon B.; Clark, Douglas C.; Clearman, Jack F.; Hensgen, Gerhard; Shannon, Michael D.; Shelar, Gary R.; and Schubert, Alfred, 5,052,413, Cl. 131-77.000.

Shape Inc.: *See—*
Bushwood, Timothy; Lowry, Alan; and Lovecky, Craig, 5,052,634, Cl. 242-198.000.

Shapiro-Baruch, Ian M., to Carrier Corporation. Method and apparatus for heat pump defrost. 5,052,191, Cl. 62-238.700.

Shapiro, Jerome J. Vaginal speculum having a unique single control. 5,052,372, Cl. 128-17.000

Sharon, Arie N.; and Hendricks, Lori L. Hanging rope mounted adjustable position plant pot. 5,052,148, Cl. 47-67.000.

Sharp, Bruce R. Containment means for storage tank systems 5,052,216, Cl. 73-49.200

Sharp, Bruce R. Containment system for fill line of underground storage tank. 5,052,217, Cl. 73-49.200

Sharp, Jerry R. Golf putter with alignment means. 5,052,690, Cl. 273-183.00D

Sharp Kabushiki Kaisha: *See—*
Hamada, Hiroshi, 5,052,783, Cl. 359-40.000.
Hosoba, Hiroyuki; Matsumoto, Mitsuhiro; Matsui, Sadayoshi; and Morimoto, Taiji, 5,054,031, Cl. 372-48.000.
Inui, Yoshio; Osaka, Masayoshi; Tanaka, Mitsuo; Miyamoto, Masao; Hasegawa, Tooru; Kamitaka, Masuo; Kai, Hidekazu; and Kamikubo, Hiroshi, 5,052,151, Cl. 49-394.000
Kimura, Kazuhiro; Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ikenaga, Hiroyuki, 5,053,252, Cl. 427-164.000
Matsuo, Toshihisa, 5,052,671, Cl. 271-9.000.
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Taguchi, Yasuhiro; and Takata, Kazuhiko, 5,053,988, Cl 364-900.000
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Tanaka, Atsuo; and Kamiya, Shin, 5,054,084, Cl. 381-43.000.
Tanaka, Hideaki; Morita, Toshiaki; Kitamura, Yoshihiro; Hirose, Hitoshi; Nakamura, Yasuhisa; and Saiga, Hisashi, 5,054,091, Cl 382-9.000

Shaw Industries, Ltd.: *See—*
Winship, Thomas E., 5,052,657, Cl. 251-160.000.

Shaw, Jerry L.; and Mickel, Stanley R., to GTE Valenite Corporation. Counterbore milling cutter. 5,052,864, Cl. 408-201.000.

Sheehan, Joseph C. M., to Tenstaple, Inc. Compression bone staple. 5,053,038, Cl. 606-75.000

Sheffer Collet Company: *See—*
Howard, Carl J.; and Wrobel, Donald J., 5,052,700, Cl. 279-106.000

Shehata, Ahmed-Mohsen; and Lemmon, David J., to Xerox Corporation. Top vacuum corrugation feeder with aerodynamic drag separation. 5,052,675, Cl. 271-98.000.

Shelar, Gary R.: *See—*
Baker, Max N.; Barnes, Vernon B.; Clark, Douglas C.; Clearman, Jack F.; Hensgen, Gerhard; Shannon, Michael D.; Shelar, Gary R.; and Schubert, Alfred, 5,052,413, Cl. 131-77.000.

Shell Oil Company: *See—*
Brownscombe, Thomas F., 5,053,372, Cl. 502-60.000.
Fong, Stewart O.; and Yeung, Flora, 5,052,102, Cl. 29-840.000.
Schuurmans, Hubertus J. A.; Crouzen, Paulus C. N.; and Hoekstein, Gerard, 5,053,243, Cl. 427-37.000
Wang, Pen-Chung, 5,053,518, Cl. 548-410.000.

Shepherd, James P.; and Kalyanaraman, Palaiyur S. Optical information media comprising phenyl-substituted naphthalocyanines and synthesis thereof. 5,053,323, Cl. 430-495.000.

Sherlock, Robert A.: *See—*
Woolford, Murray W.; Sherlock, Robert A.; and Williamson, John H., 5,052,341, Cl. 119-14.020.

Shernov, Stephen, to Cosmosol, Ltd. Pressurized hair spray composition. 5,053,218, Cl. 424-47.000.

Sherwin, Gary W., to Westinghouse Electric Corp. Product detector for a steady visual evoked potential stimulator and product detector 5,052,401, Cl. 128-745.000.

Sherwood Medical Company: *See—*
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Shetty, Shankara R.: *See—*
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Shevade, Makarand: *See—*
Dixit, Nagaraj; Shevade, Makarand; and Round, Rhyta, 5,053,158, Cl. 252-99.000.

Shiau, R. Jang. Automatic golf practice course. 5,052,688, Cl. 273-35.00B.

Shiba, Keisuke; and Abe, Akira, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic materials having a reflective support. 5,053,322, Cl. 430-464.000.

Shiba, Noriyuki, to Kabushikigaisha Tokyo Kikai Seisakusho. Control device for paper travelling tension and paper cutting position in printing apparatus. 5,052,296, Cl. 101-227.000.

Shibasaki, Masakatsu; Sodeoka, Mikiko; Ogawa, Yuji; Mase, Toshiaki; Ishibashi, Akira; Horii, Daijiro; Kanayama, Toshiji; Iseki, Katsuhiko; Shinoda, Masaki; Ishiyama, Chiyoko; and Hayashi, Yoshio, to Mitsubishi Kasei Corporation; and Sagami Chemical Research Center Pharmaceuticals containing prostaglandin I_2. 5,053,526, Cl. 560-119.000.

Shibata, Kiyotaka, to Mita Industrial Co., Ltd. Paper feeding device. 5,052,677, Cl. 271-164.000.

Shibata, Manabu; Uragami, Akira; Kadono, Shinji; and Suzuki, Yukio, to Hitachi, Ltd. Semiconductor integrated circuit. 5,053,644, Cl. 307-446.000

Shibata, Shinji: *See—*
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Shigemori, Masashi: *See—*
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Shihabi, David S.: *See—*
Absil, Robert P. L.; Angevine, Philip J.; Herbst, Joseph A.; Klocke, Donald J.; McWilliams, John P.; Han, Scott; and Shihabi, David S., 5,053,374, Cl. 502-64.000

Shiina, Toshihito; Sano, Masahito; and Ishimaru, Shiyuzi, to Nisca Corporation. Sheet feeding device. 5,052,676, Cl. 271-121.000.

Shikata, Michiharu: *See—*
Kannan, Yasushi; Taniguchi, Takashi; Shikata, Michiharu; and Sumi, Tatsumi, 5,053,998, Cl. 365-194.000.

Shima, Yoshikazu; Abe, Takafumi; Higuchi, Hirofumi; and Kida, Koichi, to Mitsubishi Gas Chemical Company, Inc. Process for producing α-hydroxyisobutyric acid. 5,053,535, Cl. 562-579.000.

Shimada, Masami: *See—*
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Shimada, Tadayuki: *See—*
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Shimadzu Corporation: *See—*
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Shimano Industrial Co., Ltd.: *See—*
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Shimazaki, Hajime: *See—*
Takahashi, Tetsuo; Sasaki, Akio; Mogi, Kunio; Shimazaki, Hajime; and Hasegawa, Masakazu, 5,052,291, Cl. 101-129.000.

Shimazaki, Seiji, to Sanden Corporation. Vibration absorbing mechanism for an automobile air conditioning compressor. 5,052,530, Cl. 188-379.000.

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Makita, Atsuo; Takeuchi, Hirofumi; Shibata, Shinji; and Shimbara, Noboru, 5,052,060, Cl. 4-300.000.

Shimbayashi, Kohji: *See—*
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Shimizu, Akira: *See—*
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Shimizu, Hisashi: *See—*
Itoh, Kunio; Shiobara, Toshio; Futatsumori, Koji; Tomiyoshi, Kazutoshi; and Shimizu, Hisashi. 5,053,445, Cl. 523-435.000.

Shimizu, Ryouhei: *See—*
Kajimura, Hiroshi; Kouchi, Toshihito; Toda, Akitoshi; Isono, Yasuo; Mimura, Yoshiyuki; Ohta, Hiroko; and Shimizu, Ryouhei, 5,053,995, Cl. 365-151.000.

Shimizu, Toshihide; Kaneko, Ichiro; and Watanabe, Mikio, to Shin-Ftsu Chemical Co., Ltd. Method of preventing polymer scale deposition. 5,053,466, Cl. 526-62.000.

Shimizu, Yoshihiro: *See—*
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Shimoda, Tomoaki: *See—*
Sakashita, Takeshi; and Shimoda, Tomoaki, 5,053,281, Cl. 428-412.000.

Shimokawa, Yoichi: *See—*
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Shimomura, Keiko; and Ijiri, Tomoya, to Omron Tateisi Electronics Co. Contact for connection of a shielded wire. 5,052,945, Cl. 439-394.000

Shin-Etsu Chemical Co., Ltd.: *See—*
Itoh, Kunio; Shiobara, Toshio; Futatsumori, Koji; Tomiyoshi, Kazutoshi; and Shimizu, Hisashi, 5,053,445, Cl. 523-435.000.

Shin-Etsu Handotai Co., Ltd.: *See—*
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Shin-Etsu Polymer Co., Ltd.: *See—*
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Shimizu, Toshihide; Kaneko, Ichiro; and Watanabe, Mikio, 5,053,466, Cl. 526-62.000.

Shine, John: *See—*
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Shinke, Shuzo: *See—*
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Shinko Pantec Co., Ltd.: *See—*
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Shinkogiken, Ltd.: *See—*
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Shiobara, Toshio: *See—*
Itoh, Kunio; Shiobara, Toshio; Futatsumori, Koji; Tomiyoshi, Kazutoshi; and Shimizu, Hisashi, 5,053,445, Cl. 523-435.000.

Shiomi, Yasuhiko: *See—*
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Shiotsu, Shinichi: *See—*
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Shipley Company Inc.: *See—*
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Shiraga, Yusei; Fukaya, Chikara; Akira, Toshiaki; Iwai, Masakazu; Yokoyama, Kazumasa; Tabata, Mamoru; Fukui, Hiroshi; Tanaka, Shigeo; Iga, Yoshiro; Suyama, Tadakazu; and Okano, Kanemichi, to Green Cross Corporation. Therapeutic and prophylactic agents for peptic ulcer. 5,053,498, Cl. 536-4.100.

Shirai, Hirofusa; Masuda, Naomi; Hongu, Tatsuya; and Tsutsumi, Nobuhisa, to Hirofusa Shirai & Nisshinbo Industries, Inc. Polyurethane containing metal phthalocyanine in the main chain. 5,053,464, Cl. 525-454.000

Shirai, Katsuo: *See—*
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Shirai, Kenji: *See—*
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Shiratori, Koji, 5,052,955, Cl. 440-1.000.

Shiratori, Koji, to Shiratori Co., Ltd. Leisure boat. 5,052,955, Cl. 440-1.000.

Shiratsuki, Yoshiyuki: *See—*
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Shirose, Toru: *See—*
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Shiseido Company Ltd.: *See—*
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Shishkina, Tatyana N.: *See—*
Merzhanov, Alexandr G.; Stolin, Alexandr M.; Podlesov, Vadim V.; Buchatsky, Leonid M.; and Shishkina, Tatyana N., 5,053,192, Cl. 419-10.000.

Shizukuishi, Makoto; and Brauer, Dave W., to Fuji Photo Film Co., Ltd. Programmable logic array having feedback flip-flops connected between a product array's inputs and its outputs. 5,053,647, Cl. 307-465.000

Shoaf, Morris Allan: *See—*
St. Cyer, Barbara A., 5,052,840, Cl. 401-201.000.

Shoda, Isao; Kodama, Hitoshi; Magome, Kazuo; Iwata, Akihiko; Yoshizawa, Kenji; and Taki, Masakazu, to Mitsubishi Denki Kabushiki Kaisha. Power supply for microwave discharge light source. 5,053,682, Cl. 315-223.000.

Shoji, Atsushi: *See—*
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Sholokhov, Valery B.: *See—*
Novikov, Nikolai M.; Vikhrev, Vladimir I.; and Sholokhov, Valery B., 5,052,887, Cl. 415-90.000.

Shore, Sheldon G.; and Dolan, Shawn E., to Ohio State University Research Foundation, The. Method for the low temperature preparation of amorphous boron nitride using alkali metal and haloborazines. 5,053,365, Cl. 501-96.000.

Short, Kenneth T.; and White, Alice E., to AT&T Bell Laboratories. Method of reducing critical current density of oxide superconductors by radiation damage. 5,053,383, Cl. 505-1.000.

Shoulders, Kenneth R., to Jupiter Toy Company. Method of and apparatus for production and manipulation of high density charge. 5,054,046, Cl. 378-119.000.

Shoulders, Kenneth R., to Jupiter Toy Company. Circuits responsive to and controlling charged particles. 5,054,047, Cl. 378-119.000.

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Yoshikawa, Hideo; Takeuchi, Katsuyoshi; Shimada, Masami; Awaji, Yoshiharu; Ikeda, Takashi; and Mitsuno, Shunsaku, 5,052,513, Cl. 181-246.000.

Shriners Hospitals for Crippled Children: *See—*
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Shroot, Braham: *See—*
Lang, Gerard; Maignan, Jean; Restle, Serge; and Shroot, Braham, 5,053,547, Cl. 568-28.000.

Shuttleworth, Derek; Mowdood, Syed K.; Waddell, Walter H.; Richards, Jimmy L.; Ofstead, Eilert A.; and Brenner, Jerry L., to Goodyear Tire & Rubber Company, The. Process for the surface treatment of polymers for reinforcement-to-rubber adhesion. 5,053,246, Cl 427-40.000.

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Siddiqi, Shakeel: *See—*
Silverman, Lawrence H.; and Siddiqi, Shakeel, 5,053,786, Cl. 343-895.000.

Sides, Gary D., to CMS Research Corporation. Ventilation unit for a flame photometric detection device. 5,052,805, Cl. 356-315.000.

Sidlo, Clarence M.: *See—*
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Siebert, Alan R.: *See—*
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Siebert, Craig: *See—*
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Siemens Aktiengesellschaft: *See—*
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Blockl, Reinhard, 5,053,937, Cl. 363-16.000.
Boer, Joachim; and Sommer, Fritz, 5,053,663, Cl. 310-91.000
Brueckner, Hermann; Emsperger, Werner; and Neumann, Hans-Joachim, 5,052,175, Cl. 60-39.463.
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Siemens Energy & Automation, Inc.: *See—*
Dillard, William T., 5,053,637, Cl. 307-147.000
Lawson, Robert P., 5,052,952, Cl. 439-160.000.
Vierling, Chester J., 5,053,590, Cl. 200-293.000.

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Goodwin, Robert J., 5,054,111, Cl. 455-34.000.

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Wipf, Alfred, 5,052,542, Cl. 198-372.000
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Mauleon, Jean-Louis; and Sigaud, Jean-Bernard, 5,053,203, Cl. 422-144.000.

Sigma Computer Research Associates Inc.: *See—*
Beizer, Mordechai M., 5,054,096, Cl. 382-41.000.

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Yum, Daniel, 5,053,640, Cl. 307-296.600.

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Poldervaart, Leendert; and Stambouzos, Michael, 5,052,322, Cl 114-230.000.

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Look, Gunter; and Sinoquet, Regis, 5,052,242, Cl. 74-502.200.

Sinton, Ronald A., to Leland Stanford Junior University, The Board of Trustees of the. Bilevel contact solar cells. 5,053,083, Cl. 136-256.000

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Vetter, Heinz; and Siol, Werner, 5,053,177, Cl. 264-134.000.

Sirkar, Kamalesh K., to Stevens Institute of Technology, The Trustees of the. Asymmetrically-wettable porous membrane. 5,053,132, Cl 210-500.230.

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Sivula, Joel E.; and Betzold, Robert A., to Medtronic, Inc. Method and apparatus for implementing activity sensing in a pulse generator. 5,052,388, Cl. 128-419.0PG.

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Blakeney, Andrew J.; Sarubbi, Thomas; and Sizensky, Joseph J., 5,053,479, Cl. 528-129.000.

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Kiyimaa, Antti; and Sjolund, Peter, 5,054,105, Cl. 392-394.000

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Huiskamp, Bernhard; and van Brakel, Ronald J., 5,052,827, Cl. 384-448.000.

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Adolfsson, Rune; and Lindsten, Goran, 5,052,823, Cl. 384-133.000.

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Slater, Barbara J.: *See—*
Bettler, Edward R., 5,052,118, Cl. 33-563.000.

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Slemmer, Wiliam C., to SGS-Thomson Microelectronics, Inc. Dual state memory storage cell with improved data transfer circuitry. 5,053,996, Cl. 365-156.000.

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Chapman, Thomas L.; and Slingerland, William T., 5,052,855, Cl. 405-36.000.

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Watanabe, Kyoichi A.; Koyama, Masao; and Chou, Ting-Chao, 5,053,431, Cl. 514-649.000.

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Buhrmaster, Carol L.; Clark, Denis E.; and Smartt, Herschel B., 5,052,331, Cl. 118-50.100.

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Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,052,403, Cl. 128-765.000.

Smillie, Charles M., III; and Tomac, Anthony J., to C.M. Smillie & Company. Fluid cylinder with improved wear rings. 5,052,278, Cl. 92-159.000.

Smith, Alan K. Gun magazine entrance guide accessory. 5,052,140, Cl 42-7.000.

Smith, BethAnn: *See—*
Dodwell, Glenn W.; and Smith, BethAnn, 5,053,139, Cl. 210-688.000.

Smith, Craig A., to Xerox Corporation. Method and apparatus for copying semi-transparent originals using a black backing member 5,053,818, Cl. 355-214.000.

Smith, David G.: *See—*
Stemp, Geoffrey; Burrell, Gordon; and Smith, David G., 5,053,427, Cl. 514-456.000.

Smith, Douglas S.: *See—*
Bowers, Derek F.; and Smith, Douglas S., 5,053,653, Cl. 307-581.000

Smith Energy Services: *See—*
Wilson, James C., 5,052,486, Cl. 166-250.000.

Smith, James: *See—*
Lopata, John E.; and Smith, James, 5,052,949, Cl. 439-610.000.

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Gilberg, Robert C.; Hoang, Chinh; and Smith, James E., 5,053,992, Cl. 365-53.000.

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Levenson, Howard A.; and Smith, James H., Jr., 5,052,114, Cl. 33-286.000.

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Smith, Robert E., III, to National Coupling Company, Inc. Undersea hydraulic coupling with dovetail seal. 5,052,439, Cl. 137-614.040.

Smith, Robin K., to Mattel, Inc. Doll with head tilt activated light 5,052,969, Cl. 446-268.000.

Smith, Ronald T.; Chern, Mao-Jin; and Hegg, Ronald G., to Hughes Aircraft Company. Automotive head-up display with high brightness in daytime and high contrast in nighttime. 5,053,755, Cl. 340-705.000.

Smith, Ward C.: *See—*
Luderer, Albert A.; and Smith, Ward C., 5,053,134, Cl 210-516.000

Smithers, Michael J.: *See—*
Brewster, Andrew G.; Brown, George R.; Faull, Alan W.; Jessup, Reginald; and Smithers, Michael J., 5,053,415, Cl. 514-336.000.

SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Reismann, Hans-Jurgen; Porombka, Burkhardt; and Schmalz, Walter, 5,052,206, Cl. 72-20.000.

Smucker, Richard A.; and Taylor, Myron E., to ATP, Ltd. Chitin based diet for bivalves. 5,052,340, Cl. 119-4.000.

Smythe, Richard L.: *See—*
Clarke-Pounder, Ian J. H.; Smythe, Richard L.; and Carboneau, Marcel A., 5,053,123, Cl. 210-138.000.

Sneddon, John L. Linear actuators and linear drive systems. 5,053,660, Cl. 310-80.000

Snodgrass, Michael. Method of prerecording tape and apparatus for use therewith. 5,053,891, Cl. 360-22.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Ide, Takeo; and Hatanaka, Koichi, 5,053,196, Cl. 422-28.000.

Snyder, James J., to Blue Sky Research, Inc. Apparatus for measuring non-absorptive scattering. 5,052,806, Cl. 356-343.000.

Sobel, Prem: *See—*
Perlman, Robert M.; Sobel, Prem; McMinn, Brian D.; Thaden, Robert C.; Tamura, Glenn A.; Lynch, Thomas W.; and Vesgesna, Raju, 5,053,631, Cl. 364-748.000.

Sobti, Arun: *See—*
Comroe, Richard A.; Sobti, Arun; and Major, John E., 5,054,110, Cl. 455-33.000.

Socha, Paul A., to Indium Corporation of America, Inc. Method of forming a gasket of indium and braid. 5,052,611, Cl. 228-194.000.

Societa' Cavi Pirelli S.p.A.: *See—*
Vallauri, Ubaldo; and Portas, Francesco, 5,052,092, Cl. 29-234.000

Societe Anonyme Dite: L'Oreal: *See—*
Philippossian, Georges; Laugier, Jean-Pierre; and Ayache, Liliane, 5,053,433, Cl. 514-909.000.

Societe Atochem: *See—*
Cheminal, Bernard; Cognion, Jean-Marie; and Guillet, Dominique, 5,053,564, Cl. 570-176.000.

Societe d'Etudes pour le Developpement des Productions Electroniques: *See—*
Le Gars, Jacques, 5,053,929, Cl. 362-32.000.

Societe Francaise Hoechst: *See—*
Christidis, Yani; and Vallejos, Jean-Claude, 5,053,527, Cl. 560-174.000.
Mallo, Paul; Moreau, Marie-Therese; and Cabestany, Jean, 5,053,460, Cl. 525-116.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Labatut, Josiane M. F.; Marlin, Francois M. P.; Mazeaud, Georges; and Mirville, Francois J., 5,052,176, Cl. 60-225.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Carbon, Vincent A.; Meiffren, Jean-Luc C.; and Pailliotet, Pierre M., 5,054,087, Cl. 382-1.000.
Catte, Philippe P., 5,052,893, Cl. 416-220.00R.

Societe Nationale Industrielle et Aerospatiale: *See—*
Josse, Alain P., 5,052,300, Cl. 102-201.000.
Le Floc'H, Christian M.; and Perrot, Francois, 5,052,227, Cl. 73-644.000.

Sodeoka, Mikiko: *See—*
Shibasaki, Masakatsu; Sodeoka, Mikiko; Ogawa, Yuji; Mase, Toshiaki; Ishibashi, Akira; Horii, Daijiro; Kanayama, Toshiji; Iseki, Katsuhiko; Shinoda, Masaki; Ishiyama, Chiyoko; and Hayashi, Yoshio, 5,053,526, Cl. 560-119.000.

Soejima, Yuji, to Fuji Jukogyo Kabushiki Kaisha. Steering control system of motor vehicle. 5,052,508, Cl. 180-234.000.

Soga, Yoshinobu: *See—*
Itoh, Hiroshi; Sugaya, Masami; Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji; Kouno, Katsumi; Hattori, Yuji; and Hayashi, Takashi, 5,052,980, Cl. 474-11.000.

Sogabe, Manabu: *See—*
Ohishi, Hirotoshi; Ikeda, Tatsunori; and Sogabe, Manabu, 5,053,735, Cl. 335-14.000.

Solomon, Allen L., to Grumman Aerospace Corporation. Method of making trench MOSFET capacitor cell for analog signal processing. 5,053,350, Cl. 437-47.000.

Solomon, Jeffrey. Automatic boiler room equipment monitoring system. 5,053,978, Cl. 364-550.000

Soltech, Inc.: *See—*
Nelson, Thomas E., 5,052,347, Cl. 122-494.000.

Solvay & Cie (Societe Anonyme): *See—*
Lerot, Luc; Wilmet, Vincent; and Pirotton, Joseph, 5,053,377, Cl. 502-226.000

Soma Dynamics Corporation: *See—*
Airy, James F.; and Kadavy, Thomas D., 5,052,379, Cl. 128-80.00C.

Somab, S.A.: *See—*
Gadaud, Andre ; and Gagnal, Michel, 5,052,089, Cl. 29-27.00R.

Somar Corporation: *See—*
Akutagawa, Ichiro; Matsuzaki, Kunimitsu; Matsuo, Toshio; and Shirose, Toru, 5,053,476, Cl. 528-103.000.
Ehara, Ryohei; and Tomiki, Masatoshi, 5,053,268, Cl. 428-215.000.
Sakaguchi, Junei; Hasegawa, Soichi; and Arai, Shuichi, 5,053,303, Cl. 430-59.000.
Seki, Mitsuhiro; Sumi, Shigeo; and Goto, Takashi, 5,053,099, Cl. 156-250.000.

Someya, Ryouichi: *See—*
Ikegami, Masakazu; and Someya, Ryouichi, 5,053,657, Cl. 310-63.000

Sommer, Fritz: *See—*
Boer, Joachim; and Sommer, Fritz, 5,053,663, Cl. 310-91.000.

Son, Pyong N.; Lai, John T.; and Kovach, Ronald M., to B. F. Goodrich Company, The. Process for the manufacture of a tri-substituted triazine stabilizer. 5,053,505, Cl. 540-575.000.

Sonehara, Tomio; Sugiyama, Jun; and Morozumi, Shinji, to Seiko Epson Corporation. Light guide type display apparatus. 5,053,765, Cl. 340-815.310.

Sonex Research, Inc.: *See—*
Blaser, Richard F., 5,052,356, Cl. 123-279.000.

Soni, Pravin: *See—*
Guerra, Robert; Nordling, Michael; and Soni, Pravin, 5,052,610, Cl. 228-56.300.

Sony Corporation: *See—*
Ito, Hiroyuki; Hattori, Hidekazu; and Kitani, Satoshi, 5,054,014, Cl 369-190.000
Kondo, Toshiharu; and Kohashi, Takashi, 5,053,877, Cl 358-228.000.
Miyaji, Fumio, 5,054,000, Cl. 365-218.000.
Yamahira, Takayuki; Kato, Hisayuki; and Anzai, Masanori, 5,053,297, Cl. 429-194.000.

Sorby, Tore, to Elopak Systems A.G. Container filling nozzle made of elastomeric material. 5,052,594, Cl. 222-490.000.

Sorensen, Emil; Jensen, Jorgen; Rasmussen, Erik; Jensen, Bror S.; and Bjerre, Belinda, to NKT A/S; and Forskningscenter Riso. Method for treating polluted material. 5,053,142, Cl. 210-742.000.

Sorimachi, Kazuyoshi: *See—*
Akada, Masanori; Egashira, Noritaka; Mizuno, Mikizo; Kutsukake, Masaki; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Suzuki, Takao; Arita, Hitoshi; Sorimachi, Kazuyoshi; and Iwata, Tamami, 5,053,382, Cl. 503-227.000.

Soto, Jorge L.; and Yurchak, Sergei, to Mobil Oil Corporation. Fluid bed paraffin aromatization. 5,053,570, Cl. 585-417.000.

Soury, Jean-Pierre; Bovis, Pierre; Couthouis, Daniel; and Robert, Pierre, to Thomson-CSF. Device for the setting up and routing of telephone calls between subscribers of a radio network and/or of a wired telephone network. 5,054,042, Cl. 379-58.000.

Soutas-Little, Robert W.: *See—*
Barry, Daniel T.; Fredericksen, Ray; Soutas-Little, Robert W.; and Peterson, Ruk R., 5,052,130, Cl. 36-107.000.

Southern California Gas Company: *See—*
Hemsath, Klaus H., 5,052,921, Cl. 432-121.000.

Space Systems/Loral, Inc.: *See—*
Canter, Stanley, 5,053,695, Cl. 324-117.00R.

SpaceLabs, Inc.: *See—*
Schlosser, Mark S., 5,052,588, Cl. 222-80.000.

Spada, Lon T.; and Wilczynski, Joseph J., to Union Oil Company of California. Pressure sensitive adhesives and manufactured articles. 5,053,452, Cl. 524-707.000.

Spaeth, Kenneth A., to Estran Corporation. Seat hinge. 5,052,076, Cl. 16-266.000.

Spahr, William. Ice chest rack system. 5,052,185, Cl. 62-60.000.

Spangler, Glenn E.: *See—*
Vora, Kishore N.; Campbell, Donald N.; Davis, Robert C., Jr.; Spangler, Glenn E.; and Reategui, Julio A., 5,053,343, Cl. 436-153.000.

Spangler, Michael J.: *See—*
Michaels, Glenn O.; and Spangler, Michael J., 5,053,578, Cl. 585-500.000

Spector, George: *See—*
Blake, Charles; and Spector, George, 5,052,127, Cl. 34-82.000.
Clarke, Walter G.; and Spector, George, 5,052,250, Cl. 81-114.000.
Lobasso, Jeanette A.; and Spector, George, 5,052,129, Cl. 36-72.00R.

Spectra-Physics, Inc.: *See—*
Weinberger, Scot R.; and Hlousek, Louis, 5,053,115, Cl. 204-299.00R.

Spectrol Electronics Corporation: *See—*
Brown, Kenneth, 5,053,283, Cl. 428-432.000.

Speech Systems, Inc.: *See—*
Meisel, William S.; and Wittenstein, W. Andreas, 5,054,085, Cl. 381-43.000.

Speer, Nancy D. Wedding gown train hoop with integral wrist strap. 5,052,059, Cl. 2-336.000.

Speich, Francisco, to Textilma AG. Guide device for a web of material at the loom cloth fell. 5,052,447, Cl. 139-291.00R.

Spencer, H. Kenneth: *See—*
Bagley, Jerome R.; Lalinde, Nhora L.; Huang, Bao-Shan; and Spencer, H. Kenneth, 5,053,411, Cl. 514-259.000.

Speranza, George P.; Su, Wei-Yang; and Champion, Donald H., to Texaco Chemical Company. Polyether amide from mixture of polyether diamine. 5,053,484, Cl. 528-338.000.

Sperry Marine Inc.: *See—*
Cornett, Johnny A.; and Corbett, James D., 5,053,758, Cl. 340-712.000.

Spieler, Nathaniel F.: *See—*
Moe, Rolf; Spieler, Nathaniel F.; Correia, David J.; and McMullen, James J., 5,052,126, Cl. 34-78.000.

Spina, Philip F., to Cousins Haulkholder Incorporated. Implement holder. 5,052,603, Cl. 224-270.000.

Spinsafe, Inc.: *See—*
Butler, Johnny L.; Wakeland, Richard E.; Batson, Donald R.; and Metzger, Robert E., 5,052,427, Cl. 137-15.000.

Sport Supply Group, Inc.: *See—*
Pryor, Douglas E., 5,052,686, Cl. 273-29.00B.

Sports Physical Therapists, Inc.: *See—*
Croce, Pasquale W., Jr.; and McCrossin, James, 5,052,682, Cl. 272-70.000.

Sportsoft Systems, Inc.: *See—*
Ninnis, Ronald M.; Miller, Allen; Dyck, Ralph; and Bodegom, Volker, 5,052,777, Cl. 385-19.000.

Sprague Electric Company: *See—*
Baker, Richard D.; and Foisy, Robert L., 5,053,927, Cl. 361-534.000.

Sprague, Sherman J., to Mogul Corporation, The. Composition for inhibiting scale in water systems. 5,053,161, Cl. 252-180.000.

Spranger, Kurt, to Gambro Dialysatoren GmbH & Co. KG. Method of manufacturing a diffusion/filtration apparatus. 5,053,128, Cl. 210-232.000.

Spranger, Kurt: *See—*
Raff, Manfred; and Spranger, Kurt, 5,053,130, Cl. 210-321.790

Squatrito, James E.: *See—*
Hilby, Timothy R.; Squatrito, James E.; and Dykeman, Ray D., 5,052,808, Cl. 356-350.000.

SRI International: *See—*
Judd, Amrit K., 5,053,454, Cl. 525-54.110.

Sricharoenchaikit, Prasit: *See—*
Gulla, Michael; and Sricharoenchaikit, Prasit, 5,053,318, Cl 430-315.000.

Srini, Vason P., to University of California, The Regents of the. Bit-sliced cross-connect chip having a tree topology of arbitration cells for connecting memory modules to processors in a multiprocessor system. 5,053,942, Cl. 364-200.000

Srnka, Cherly; Laine, Roger A.; and Gilbert, James, to Glycomed, Inc Compositions and methods for preventing and treating rotaviral infections. 5,053,406, Cl. 514-182.000.

SSI Medical Services, Inc.: *See—*
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,052,067, Cl. 5-453.000

SSMC Inc.: *See—*
Kawakubo, Kiyoshi; and Koguchi, Yoshimi, 5,052,633, Cl. 242-150.00R.

Staar S.A.: *See—*
d'Alayer, Stephane M. A.; and Agostini, Louis P. C., 5,054,016, Cl. 369-270.000.

Stacy, Robert M., to Stein, Inc. Breader for coating edible food products with fresh bread crumbs. 5,052,330, Cl. 118-16.000

Staffiere, Donald T.; and Friedman, Harvey S., to Digital Equipment Corporation. Integrated power conversion. 5,053,920, Cl. 361-383.000.

Stahl, James E.: *See—*
Messerly, James W.; Bouscher, Lawrence E.; and Stahl, James E., 5,052,444, Cl. 138-125.000.

Stahl, Roswell L., Jr.: *See—*
Gojny, Francis J.; Greene, Guy S.; Stahl, Roswell L., Jr.; and Street, Charles Z., 5,053,285, Cl. 428-593.000.

Stahl, Wilhelm: *See—*
Wessel, Wolf; Fischer, Werner; Leonhard, Rolf; Polach, Wilhelm; Lucas, Bernhard; and Stahl, Wilhelm, 5,053,914, Cl. 361-235.000

Stalcup, Robert W. Dental mirror and method of using same. 5,052,925, Cl. 433-30.000.

Stambouzos, Michael: *See—*
Poldervaart, Leendert; and Stambouzos, Michael, 5,052,322, Cl. 114-230.000.

Standard Armament, Inc.: *See—*
West, William F., 5,052,271, Cl. 89-1.550.

Standard Oil Company, The: *See—*
Teller, Raymond G.; Ebner, Ann M.; Bodolus, Christopher; and Gupta, Victor R., 5,053,577, Cl. 585-500.000.

Stanker, Larry H.: *See—*
Vanderlaan, Martin; Watkins, Bruce E.; and Stanker, Larry H., 5,053,336, Cl. 435-240.270.

Stanton Magnetics, Inc.: *See—*
Frielingsdorf, Frank; Hofer, Alan; and Untersander, Peter, 5,054,079, Cl. 381-151.000.

Stardent Computer, Inc.: *See—*
Ahsan, Agha Y.; and Rockwood, Christopher B., 5,053,986, Cl 364-736.000.

Stark, John G.; Lund, Richard G.; and Nelson, Cecil H., to Stark, John G. Instrumented orthopedic restraining device and method of use. 5,052,375, Cl. 128-25.00R.

Starry, Robert F.: *See—*
Gimber, George A.; Cotilla, Edward J.; Picard, Salvatore R.; and Starry, Robert F., 5,054,006, Cl. 367-136.000.

Starzec, John J.: *See—*
Lesher, Roger P.; and Starzec, John J., 5,052,664, Cl. 267-167.000

Stazione Sperimentale per l'Industria delle Conserve Alimentari: *See—*
Balestrieri, Ciro; Servillo, Luigi; Quagliuolo, Lucio; Giovane, Alfonso; and Castaldo, Domenico, 5,053,232, Cl. 426-49.000

Steckel, Thomas F., to Lubrizol Corporation, The. High molecular weight nitrogen-containing condensates and fuels and lubricants containing same. 5,053,152, Cl. 252-51.50R.

Stein, Inc.: *See—*
Stacy, Robert M., 5,052,330, Cl. 118-16.000.

Steinacher, Michael: *See—*
Lang, Michael; and Steinacher, Michael, 5,052,230, Cl. 73-861.280.

Steinberger, Johann: *See—*
Porkristl, Albert; and Steinberger, Johann, 5,053,701, Cl. 324-207.260.

Steinbrueck, Ed: *See—*
Wagner, Wayne M.; Wilson, Eugene D.; Flemming, Douglas E.; and Steinbrueck, Ed, 5,053,603, Cl. 219-205.000.

Steinman, Martin: *See—*
Hou, Donald; Wong, Yee-Shing; Gala, Dinesh; and Steinman, Martin, 5,053,502, Cl. 540-304.000.

Stekelenburg, Michael A. W., to U.S. Philips Corporation. Converter for a photographic, slide, or cinematographic negative-to-television conversion. 5,053,874, Cl. 358-214.000

Stemp, Geoffrey; Burrell, Gordon; and Smith, David G., to Beecham Group p.l.c. Guanidino-substituted benzopyrans and their use as pharmaceuticals. 5,053,427, Cl. 514-456.000.

Stephany, Christian: *See—*
Lindermeir, Wolfgang; Lopic, Franz; Katzer, Johann; Schaeffer, Johann; Stephany, Christian; and Sauer, Roland, 5,052,622, Cl. 239-242.000.

Stephen, John F.: *See—*
Hartmann, Ludwig A.; and Stephen, John F., 5,053,516, Cl 546-251.000.

Stephenson, Stanley W.; No, Young; and Johnson, David A., to Eastman Kodak Company. Parasitic resistance compensation for thermal printers. 5,053,790, Cl. 346-76.0PH

Stepniewski, Richard J.: *See—*
Brown, Hugh L.; and Stepniewski, Richard J., 5,052,794, Cl 351-162.000

Sterling Drug Inc.: *See—*
Pilling, Garry M.; and Mallamo, John P., 5,053,405, Cl. 514-176.000.

Stern, Carl M., to Innova Development Corporation. Security gate operable with one hand. 5,052,461, Cl. 160-224.000.

Stern, Joseph L.; and Cerequas, Fred R., to Stern Telecommunications Corp. Telephone dialing system for specialized services. 5,054,059, Cl. 379-200.000.

Stern, Justus, to Inter Innovation AB. System for the safe and secure transportation of valuable articles, such as bank notes, cheques 5,053,748, Cl. 340-541.000.

Stern Telecommunications Corp.: *See—*
Stern, Joseph L.; and Cerequas, Fred R., 5,054,059, Cl. 379-200.000.

Stevens Institute of Technology, The Trustees of the: *See—*
Sirkar, Kamalesh K., 5,053,132, Cl. 210-500.230

Stewart, Harold F.: *See—*
Carey, Ronald F.; Herman, Bruce A.; Robinson, Ronald A.; Stewart, Harold F.; Hoops, Richard G.; and Douglas, George H., 5,052,934, Cl. 434-268.000

Stibbe, Robert L.: *See—*
Gustin, David C.; Stibbe, Robert L.; and Larson, Paul A., 5,052,534, Cl. 192-53.00D.

Sticht, Walter. Process and apparatus for manufacturing plastic mouldings. 5,053,173, Cl. 264-39.000.

Stiles, Ernest D., to Ford Motor Company. EGR control valve having ceramic elements. 5,052,363, Cl. 123-568.000

Stobart, John. Canvas tensioning picture frame. 5,052,462, Cl 160-374.100.

Stocchiero, Olimpio. Lid for accumulator batteries suited to absorb the deformation of the poles. 5,053,296, Cl. 429-175.000.

Stock, Burghard, to Dragerwerk Aktiengesellschaft. Exhalation air analysis device. 5,052,213, Cl. 73-23.300.

Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co.: *See—*
Rauterberg, Paul-Georg; Hiemstra, Franz-G.; and Ribbeck, Horst, 5,052,942, Cl. 439-326.000.

Stoepfel, Daniel L., to Teledyne Exploration. Multiple-unit water depth sensor system. 5,052,222, Cl. 73-302.000

Stoffel Seals Corporation: *See—*
Fuehrer, Charles, 5,052,081, Cl. 24-3.00J.

Stohr, Dominique: *See—*
Jenny, Ernst; El-Nashar, Jbrahim; and Stohr, Dominique, 5,052,362, Cl. 123-559.200.

Stokes, Leland L., Jr., to Boeing Company, The. Zero crossover wound fiber optic bobbin and method for filling same. 5,052,632, Cl. 242-47.000

Stokker, Gerald E.: *See—*
Hoffman, William F.; Lee, Ta J.; and Stokker, Gerald E., 5,053,525, Cl. 560-107.000.

Stokman, Ronald J. M.; and De Wit, Johannes J., to Hoogovens Groep BV. Ceramic gas burner for a hot blast stove, and bricks therefor. 5,052,922, Cl. 432-181.000.

Stolin, Alexandr M.: *See—*
Merzhanov, Alexandr G.; Stolin, Alexandr M.; Podlesov, Vadim V.; Buchatsky, Leonid M.; and Shishkina, Tatyana N., 5,053,192, Cl. 419-10.000.

Stolpmann, James R.: *See—*
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,052,067, Cl. 5-453.000.

Stoos, James A.: *See—*
Beech, James H., Jr.; Ragonese, Francis P.; Stoos, James A.; and Yurchak, Sergei, 5,053,579, Cl. 585-533.000.

Storey, Richard: *See—*
Sandbank, Charles P.; Storey, Richard; and Weston, Martin, 5,053,857, Cl. 358-12.000.

Storm, John M.; and Gibbs, Spencer L., to Contour Hardening Investors, LP. Apparatus and method of induction-hardening machine components with precise power output control. 5,053,596, Cl. 219-10.770.

Storz Instrument Company: *See—*
Kleinberg, Larry K., 5,052,789, Cl. 359-375.000.

Straumann, Fritz: *See—*
Perren, Stephan N.; Straumann, Fritz; Sutter, Franz; and Tepic, Slobodan, 5,053,036, Cl. 606-69.000.

Street, Charles Z.: *See—*
Gojny, Francis J.; Greene, Guy S.; Stahl, Roswell L., Jr.; and Street, Charles Z., 5,053,285, Cl. 428-593.000.

Stringham, Richard B. Confection holding structure for use in envelopes. 5,052,560, Cl. 206-564.000.

Strobel, Norman M.; and Nitsche, Donald E., to Harmac Medical Products, Inc. Disposable pressure infusion system. 5,053,011, Cl. 604-142.000.

Strobel, Norman M.: *See—*
Edwards, Floyd V.; and Strobel, Norman M., 5,053,012, Cl. 604-146.000.

Strong, Rodney: *See—*
Gardner, Frederick J.; and Strong, Rodney, 5,053,190, Cl. 376-366.000.

Struglinski, Mark J.: *See—*
Chung, David Y.; Gutierrez, Antonio; Johnston, John E.; Struglinski, Mark J.; and Lundberg, Robert D., 5,053,151, Cl. 252-51.50A.

Stubblefield, Steven A., to Texaco Inc. Shallow marine seismic system and method. 5,052,814, Cl. 367-15.000.

Stubbs, James M. Device for controlling eating and smoking habits. 5,052,410, Cl. 128-859.000.

Studiengesellschaft Kohle mbH: *See—*
Bonnemann, Helmut; Brijoux, Werner; and Brinkmann, Rainer, 5,053,075, Cl. 75-348.000

Stuempfle, Arthur K.: *See—*
Carlon, Hugh R.; Tytus, Raymond P.; and Stuempfle, Arthur K., 5,052,618, Cl. 239-77.000.

Stumm, Wolfgang: *See—*
Christ, Herbert; Kellaway, Mike; and Stumm, Wolfgang, 5,052,231, Cl. 73-861.380.

Stump, Thomas D. Brake slack adjuster mechanism. 5,052,527, Cl. 188-79.550.

Sturzebecher, Claus-Steffen: *See—*
Vorbruggen, Helmut; Klar, Ulrich; Nieuweboer, Bob; and Sturzebecher, Claus-Steffen, 5,053,400, Cl. 514-150.000.

Su, Fu-Min: *See—*
Vanderheyden, Jean-Luc E.; Su, Fu-Min; and Ehrhardt, Gary J., 5,053,186, Cl. 376-189.000.

Su, Kai C.: *See—*
Molock, Frank; Robertson, J. Richard, Jr.; and Su, Kai C., 5,053,515, Cl. 546-220.000.

Su, Wei-Yang: *See—*
Speranza, George P.; Su, Wei-Yang; and Champion, Donald H., 5,053,484, Cl. 528-338.000.

Subramanian, Pallatheri M.: *See—*
Booze, Jack D.; and Subramanian, Pallatheri M., 5,053,258, Cl. 428-36.600.

Suda, Yasuo; Ito, Kenji; Ohtaka, Keiji; and Suzuki, Kenji, to Canon Kabushiki Kaisha. Information display apparatus for camera. 5,053,803, Cl. 354-466.000

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co.: *See—*
Scharamm, Michael; Knoppel, Klaus-Dieter; and Ross, Reinhold, 5,052,282, Cl. 98-2.000

Sudler, Roland, to VDO Adolf Schindling AG. Motor, in particular, for driving a clockwork. 5,054,009, Cl. 368-157.000.

Sudou, Yuko: *See—*
Ogata, Teruaki; and Sudou, Yuko, 5,053,981, Cl. 364-580.000.

Suetsugu, Kenichiro: *See—*
Fukushima, Tetsuo; Suetsugu, Kenichiro; Nishihara, Munekazu; and Ikeda, Junji, 5,052,776, Cl. 385-120.000.

Suganuma, Manabu: *See—*
Nakai, Keiichiro; and Suganuma, Manabu, 5,052,522, Cl. 187-20.000.

Sugata, Takeshi; Oka, Junichi; and Kawai, Kenji, to Dainippon Screen Mfg. Co., Ltd. Optical beam scanning system. 5,052,767, Cl. 359-206.000.

Sugawara, Hiroyuki; and Oohashi, Tuneyoshi, to Hitachi, Ltd. Pulse power supply circuit. 5,054,029, Cl. 372-38.000.

Sugawara, Isamu: *See—*
Mori, Shigero; Sugawara, Isamu; and Ito, Wataru, 5,053,398, Cl. 514-54.000.

Sugawara, Saburo, to Asahi Kogaku Kogyo K.K. Zoom finder. 5,052,787, Cl. 359-683.000.

Sugaya, Masami: *See—*
Itoh, Hiroshi; Sugaya, Masami; Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji; Kouno, Katsumi; Hattori, Yuji; and Hayashi, Takashi, 5,052,980, Cl. 474-11.000.

Sugihara, Jiro: *See—*
Goto, Shobun; Sugihara, Jiro; and Yabusaki, Masayoshi, 5,053,242, Cl. 426-643.000.

Sugimori, Masahiro: *See—*
Tone, Seiji; Takeda, Haruko; and Sugimori, Masahiro, 5,053,461, Cl. 525-244.000.

Sugimoto, Norihide, to Honda Giken Hogyo Kabushiki Kaisha. Slide roof system for a vehicle. 5,052,744, Cl. 296-213.000.

Sugiura, Toshiaki: *See—*
Tokuda, Hiroshi; Ishikawa, Shigeo; Sugiura, Toshiaki; and Kaga, Hikaru, 5,052,673, Cl. 271-22.000.

Sugiyama, Jun: *See—*
Sonehara, Tomio; Sugiyama, Jun; and Morozumi, Shinji, 5,053,765, Cl. 340-815.310.

Sugiyama, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Water proof structure for engine starter motor. 5,052,234, Cl. 74-6.000.

Sugiyama, Takeshi; Miyaji, Wakaki; and Hisamoto, Motoi, to Mitsubishi Denki Kabushiki Kaisha. Moisture drain bush for an engine starter motor. 5,053,633, Cl. 290-48.000.

Sugiyama, Toshihisa: *See—*
Terakawa, Takashige; Kusakabe, Wataru; Hiraoka, Yoshihisa; and Sugiyama, Toshihisa, 5,053,582, Cl. 174-36.000.

Sugiyama, Yoshiyuki: *See—*
Yamamoto, Masaki; Sato, Takeo; Sugiyama, Yoshiyuki; Aoki, Shinichiro; and Takeuchi, Hiroyuki, 5,053,628, Cl. 250-557.000.

Sugiyasu Industries Co., Ltd.: *See—*
Wakamiya, Koji, 5,052,520, Cl. 187-8.670.

Suimon, Yoshio; and Hanzawa, Tsuneo, to Kabushiki Kaisha Hanzawa Corporation. Drive device for toy automobile. 5,052,972, Cl. 446-429.000.

Sukumoda, Shunroku; Masukawa, Seizo; and Kohno, Haruo, to 501 Mitsubishi Shindoh Co., Ltd. Heat transfer tubes and method for manufacturing. 5,052,476, Cl. 165-133.000.

Sullivan, James L., to Rockwell International Corporation. Steering knuckle damper. 5,052,528, Cl. 188-317.000

Sullivan, William, to Hoechst Celanese Corp. Coating applicator for moving fibers. 5,052,334, Cl. 118-234.000.

Sulzer Brothers Limited: *See—*
Gysin, Hans J., 5,052,446, Cl. 139-93.000.
Mayer, Roland, 5,052,275, Cl. 92-59.000.

Sumi, Shigeo: *See—*
Seki, Mitsuhiro; Sumi, Shigeo; and Goto, Takashi, 5,053,099, Cl. 156-250.000.

Sumi, Tatsumi: *See—*
Kannan, Yasushi; Taniguchi, Takashi; Shikata, Michiharu; and Sumi, Tatsumi, 5,053,998, Cl. 365-194.000.

Sumitomo Chemical Company, Limited: *See—*
Masui, Syohei; Matsumoto, Masahito; and Usui, Nobuhiro, 5,053,179, Cl. 264-257.000.
Omura, Takashi; Harada, Naoki; and Sawamoto, Hirokazu, 5,053,494, Cl. 534-642.000

Sumitomo Electric Industries, Ltd.: *See—*
Honjo, Makoto; Matsuda, Yasuo; and Yamanishi, Toru, 5,052,779, Cl. 385-145.000
Kyoto, Michihisa; Urano, Akira; Ishiguro, Yoichi; and Watanabe, Minoru, 5,053,068, Cl. 65-3.110.
Tonai, Ichiro, 5,053,837, Cl. 357-17.000.
Yamaguchi, Mikio, 5,054,104, Cl. 382-57.000.

Sumitomo Special Metals Co. Ltd.: *See—*
Okumori, Kunio; and Terada, Kazuo, 5,053,156, Cl. 252-62.580.

Sumitomo Wiring System, Ltd.: *See—*
Fukuda, Michio; Sakuma, Teiji; and Yoshimura, Tutomu, 5,052,449, Cl. 149-93.00R.

Sun Microsystems, Inc.: *See—*
Carrie, Susan E., 5,053,941, Cl. 364-200.000.
Davidson, Howard L., 5,053,856, Cl. 357-82.000.

Sundstrand Corporation: *See—*
Crowe, Lawrence E.; and Sutrina, Thomas A., 5,053,358, Cl. 437-216.000.
Kirchberg, Maurice A., Jr.; and Cook, Alexander, 5,053,939, Cl. 363-41.000.
Rees, Fenton L., 5,053,688, Cl. 318-599.000.
Trommer, William C., 5,052,518, Cl. 184-6.120.
Tysver, John D.; and Johnson, Gerald H., 5,052,537, Cl. 192-141.000.

Sundstrom, Per O., to Sundstrom Safety AB. Filter container for an absorption filter and a particle filter, for direct or indirect connection to a protective mask. 5,052,385, Cl. 128-205.270.

Sundstrom Safety AB: *See—*
Sundstrom, Per O., 5,052,385, Cl. 128-205.270.

Suominen, Veli M. S.: *See—*
Setala, Jouko J.; Suominen, Veli M. S.; Rauramaa, Aino L.; and Sivela, Seppo, 5,053,233, Cl. 426-53.000.

Super S.E.E.R. Systems Inc.: *See—*
Gregory, Charles, 5,052,190, Cl. 62-225.000.

Supino, Louis, Jr.; and Rinaldis, Joseph M., to Digital Equipment Corporation. Thin film head read recovery. 5,053,892, Cl. 360-62.000.

Susa, Sumio; Nagara, Toshio; Fukuda, Sunao; Kato, Seiichi; and Muto, Satomi, to Nippondenso Co., Ltd. Automotive radiator cap. 5,052,571, Cl. 220-203.000.

Sushelnitski, Larry. Cattle water drinking entice. 5,052,343, Cl. 119-78.000.

Sutcliffe, Sean G. C.; Eatwell, Graham P.; and Hutchins, Stephen M., to Topexpress Limited. Active control of vibration. 5,052,529, Cl. 188-378.000.

Sutrina, Thomas A.: *See—*
Crowe, Lawrence E.; and Sutrina, Thomas A., 5,053,358, Cl. 437-216.000.

Sutter, Franz: *See—*
Perren, Stephan N.; Straumann, Fritz; Sutter, Franz; and Tepic, Slobodan, 5,053,036, Cl. 606-69.000.

Sutton, Lee D.: *See—*
Correa, Manuel; MacKenzie, James; Nakamoto, Richard; and Sutton, Lee D., 5,052,854, Cl. 404-94.000.

Sutton, Richard C. Methods of preparing a polymeric latex composition and water-insoluble biological reagent. 5,053,443, Cl. 523-332.000.

Sutton, William T.: *See—*
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,052,067, Cl. 5-453.000.

Suyama, Tadakazu: *See—*
Shiraga, Yusei; Fukaya, Chikara; Akira, Toshiaki; Iwai, Masakazu; Yokoyama, Kazumasa; Tabata, Mamoru; Fukui, Hiroshi; Tanaka, Shigeo; Iga, Yoshiro; Suyama, Tadakazu; and Okano, Kanemichi, 5,053,498, Cl. 536-4.100.

Suzuki, Fumio; Hayashi, Hiroaki; Kuroda, Takeshi; Kubo, Kazuhiro; and Ikeda, Junichi, to Kyowa Hakko Kogyo Co., Ltd. Hexitol derivatives having vasodilative activity. 5,053,408, Cl. 514-354.000.

Suzuki, Hideo: *See—*
Koto, Noriaki; Abe, Toyohiko; Suzuki, Hideo; and Otsuka, Kanji, 5,053,480, Cl. 528-188.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Ubagai, Toshikazu, 5,052,239, Cl. 74-473.00R.

Suzuki, Kenji: *See—*
Suda, Yasuo; Ito, Kenji; Ohtaka, Keiji; and Suzuki, Kenji, 5,053,803, Cl. 354-466.000.

Suzuki, Kunio; and Kawata, Tomoshi, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Paper web threading apparatus for rotary printing press. 5,052,295, Cl. 101-227.000.

Suzuki, Masanori: *See—*
Sakai, Akihiro; and Suzuki, Masanori, 5,053,598, Cl. 219-69.120.

Suzuki, Masao: *See—*
Ogawa, Takeshi; and Suzuki, Masao, 5,053,871, Cl. 358-209.000.

Suzuki, Nobuo: *See—*
Oh-ishi, Hisao; Usui, Tetuo; and Suzuki, Nobuo, 5,053,823, Cl. 355-256.000.

Suzuki, Shigeaki: *See—*
Mori, Toshiki; Suzuki, Shigeaki; Onishi, Takashi; and Yamamoto, Kazuo, 5,053,552, Cl. 568-460.000.

Suzuki, Shigesada: *See—*
Sato, Fumihiko; and Suzuki, Shigesada, 5,053,738, Cl. 336-165.000.

Suzuki, Takao: *See—*
Akada, Masanori; Egashira, Noritaka; Mizuno, Mikizo; Kutsukake, Masaki; Ito, Yoshikazu; Kita, Tatsuya; Yamaguchi, Masahisa; Suzuki, Takao; Arita, Hitoshi; Sorimachi, Kazuyoshi; and Iwata, Tamami, 5,053,382, Cl. 503-227.000

Suzuki, Takashi, to Yamaha Corporation. Fader device. 5,054,077, Cl. 381-109.000.

Suzuki, Takayuki; Koike, Tetsuo; Obata, Atsuomi; Shigemori, Masashi; Sasaki, Kohji; Iketani, Sadayoshi; Uchino, Hiroshi; and Kawata, Kouzou, to Hino Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Toshiba. Electric braking and auxiliary engine mechanism for a motor vehicle. 5,053,632, Cl. 290-45.000.

Suzuki, Takeshi: *See—*
Nishi, Hiroyuki; Suzuki, Takeshi; and Nonaka, Masato, 5,053,907, Cl. 361-9.000.

Suzuki, Toshio; and Okawa, Tadashi, to Dow Corning Toray Silicone Company, Ltd. Method for the production of liquid-crystalline organopolysiloxanes. 5,053,473, Cl. 528-29.000.

Suzuki, Yasunaga; Matsubara, Toshiaki; and Uragami, Akira, to Hitachi, Ltd. Semiconductor integrated circuit device. 5,053,909, Cl. 361-88.000.

Suzuki, Yasuo, to Omron Tateisi Electronics Co. Electronic cash register having discount prices selected by customer-level. 5,053,957, Cl. 364-405.000.

Suzuki, Yasutomo: *See—*
Sakata, Tsuguhide; Taguchi, Tomishige; Kimura, Norio; Tsuruno, Kunio; Takei, Masahiro; and Suzuki, Yasutomo, 5,053,896, Cl. 360-71.000.

Suzuki, Yoshihiko: *See—*
Nose, Hidetaka; Kawabata, Kazuhiro; and Suzuki, Yoshihiko, 5,053,976, Cl. 364-513.000.

Suzuki, Yoshio; Usubuchi, Yutaka; and Oguri, Yakeshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Thermoplastic elastomer and photosensitive resin composition based thereon, and printing plate precursor comprising the composition. 5,053,316, Cl. 430-281.000.

Suzuki, Yukio: *See—*
Shibata, Manabu; Uragami, Akira; Kadono, Shinji; and Suzuki, Yukio, 5,053,644, Cl. 307-446.000.

Svenska Rotor Maskiner AB: *See—*
Englund, Arnold, 5,052,901, Cl. 417-310.000.

Swank, Harry R., to Thomson Consumer Electronics, Inc. Implosion-resistant cathode-ray tube with mounting lug having a curved shoulder projection. 5,053,880, Cl. 358-245.000.

Swars, Helmut: *See—*
Maus, Wolfgang; and Swars, Helmut, 5,052,845, Cl. 403-36.000.

Sweetana, Andrew S., Jr.: *See—*
Radford, Kenneth C.; Johnson, Robert G.; and Sweetana, Andrew S., Jr., 5,053,739, Cl. 338-21.000.

Swiss Aluminum Ltd.: *See—*
Buxmann, Kurt, 5,052,470, Cl. 164-467.000.

Symtron Systems, Inc.: *See—*
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,052,933, Cl. 434-226.000.

Synthes (U.S.A.): *See—*
Perren, Stephan N.; Straumann, Fritz; Sutter, Franz; and Tepic, Slobodan, 5,053,036, Cl. 606-69.000.

Szekely, Kristina: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,053,404, Cl. 514-174.000.

Szirmai, Endre; Babusek, Sandor; Balogh, Gezz; Nedves, Atilla; Horvath, Gyula; Lebenyi, Zoltan; and Pinter, James, to Aquatech Kernyezeteedelmi. Method for the multistage, waste-free processing of red mud to recover basic materials of chemical industry. 5,053,144, Cl. 210-770.000.

Szporny, Laszlo: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,053,404, Cl. 514-174.000.

Szunyog, Jozsef: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,053,404, Cl. 514-174.000.

Szymber, Oleg; and Vassiliou, Eustathios, to Patcore, Incorporated. Self-locking and releasing gripping tool. 5,052,252, Cl. 81-416.000.

Tabata, Mamoru: *See—*
Shiraga, Yusei; Fukaya, Chikara; Akira, Toshiaki; Iwai, Masakazu; Yokoyama, Kazumasa; Tabata, Mamoru; Fukui, Hiroshi; Ta-

naka, Shigeo; Iga, Yoshiro; Suyama, Tadakazu; and Okano, Kanemichi, 5,053,498, Cl. 536-4.100.

Tachibana, Yoshiaki. Microscope. 5,052,788, Cl. 359-391.000.

Tada, Hisashi; Agata, Akira; Saruta, Masahiro; Murata, Takashi; and Kubo, Takatoshi, to Mitsubishi Rayon Co., Ltd. Epoxy resin composition. 5,053,475, Cl. 528-98.000.

Tada, Yasuo: *See*—
Tanimura, Yoshihiko; Ishikuro, Hisato; and Tada, Yasuo, 5,052,229, Cl. 73-861.220.

Tada, Yoshihiko: *See*—
Nishii, Michiharu; Mizuno, Genji; Tada, Yoshihiko; Nomura, Yoshihisa; Kato, Masahiko; Shirai, Kenji; and Tanoue, Junichi, 5,052,182, Cl. 60-547.100.

Taddeo, Ralph M.; Deas, Robert W.; Chang, Lang-Mann; and Grosh, John, to Olin Corporation; and United States of America, Defense. Unpressurized combustible primer for cannon cartridges. 5,052,302, Cl. 102-204.000.

Taenaka, Robert K.: *See*—
Semka, Richard P.; and Taenaka, Robert K., 5,053,294, Cl 429-104.000.

Tagawa, Taichi: *See*—
Nishizawa, Junichi; Tagawa, Taichi; and Kijima, Takahiko, 5,052,818, Cl. 374-17.000.

Taguchi, Akira; Morita, Shigetoshi; Taka, Shunichi; Yamada, Hirohide; Takada, Yoshiaki; Furuichi, Shinji; and Ao, Masahiro, to Hitachi Metals, Ltd. Method of fabricating a magnetic head by sputter etching. 5,052,099, Cl. 29-603.000.

Taguchi, Tomishige: *See*—
Sakata, Tsuguhide; Taguchi, Tomishige; Kimura, Norio; Tsuruno, Kunio; Takei, Masahiro; and Suzuki, Yasutomo, 5,053,896, Cl. 360-71.000.

Taguchi, Yasuhiro; and Takata, Kazuhiko, to Sharp Kabushiki Kaisha Data processing apparatus. 5,053,988, Cl. 364-900.000.

Tai, Hwai T., to Eastman Kodak Company. Pixel interpolator with edge sharpening. 5,054,100, Cl. 382-47.000.

Taisei Corporation: *See*—
Wada, Eiji; and Nakano, Nobuo, 5,052,756, Cl. 299-17.000.

Taito Co., Ltd.: *See*—
Mori, Shigero; Sugawara, Isamu; and Ito, Wataru, 5,053,398, Cl. 514-54.000.

Tajima, Ikuo; and Hasegawa, Hideo, to Tokai Kogyo Mishin Kabushiki Kaisha. Embroidering machine. 5,052,315, Cl. 112-103.000.

Tajima, Osamu: *See*—
Satoh, Seiji; and Tajima, Osamu, 5,052,831, Cl. 400-120.000.

Taka, Shunichi: *See*—
Taguchi, Akira; Morita, Shigetoshi; Taka, Shunichi; Yamada, Hirohide; Takada, Yoshiaki; Furuichi, Shinji; and Ao, Masahiro, 5,052,099, Cl. 29-603.000.

Takaahashi, Hiroshi: *See*—
Takanezawa, Shin; Iwasaki, Yorio; Takaahashi, Hiroshi; Okamura, Toshiro; Amano, Saburo; Yokoyama, Hiroyoshi; Fukuoka, Noriyoshi; and Amano, Tatsuya, 5,053,280, Cl. 428-413.000.

Takada, Yoshiaki: *See*—
Taguchi, Akira; Morita, Shigetoshi; Taka, Shunichi; Yamada, Hirohide; Takada, Yoshiaki; Furuichi, Shinji; and Ao, Masahiro, 5,052,099, Cl. 29-603.000.

Takagi, Atsushi, to Fuji Photo Film Co., Ltd. Image forming apparatus. 5,053,808, Cl. 355-38.000.

Takagi, Yoshihito: *See*—
Nakajima, Ichio; Kousaka, Tsuneo; and Takagi, Yoshihito, 5,052,479, Cl. 165-153.000.

Takahama, Hisanobu: *See*—
Matumoto, Yoshihiko; and Takahama, Hisanobu, 5,052,907, Cl. 425-116.000.

Takahashi, Akira; Murakami, Yoshiteru; Nakayama, Junichiro; Ohta, Kenji; Katayama, Hiroyuki; and Mieda, Michinobu, to Sharp Kabushiki Kaisha. Device for reducing mechanical vibrations when utilizing a magneto-optical card as a recording medium. 5,053,611, Cl. 235-454.000.

Takahashi, Hareo, to Sanden Corporation. Compressor housing having a structure for preventing slippage of vibroisolating members. 5,052,903, Cl. 417-363.000.

Takahashi, Hiroyuki: *See*—
Hasebe, Hiroyuki; Takeno, Kazuta; Sato, Yuji; Takahashi, Hiroyuki; Hayashida, Hirotaka; Mitsuyasu, Kiyoshi; and Sawatari, Ichirou, 5,053,292, Cl. 429-101.000.

Takahsshi, Katsunobu: *See*—
Inada, Yuji; Tamaura, Yutaka; and Takahashi, Katsunobu, 5,053,273, Cl. 428-323.000.

Takahashi, Keizou: *See*—
Kiji, Syuji; and Takahashi, Keizou, 5,053,905, Cl. 360-133.000.

Takahashi, Kenji; Torii, Takuji; Senshu, Takao; Yamashita, Tetsuji; and Zushi, Shizuo, to Hitachi, Ltd. LSI temperature control system. 5,052,472, Cl. 165-1.000.

Takahashi, Kumiko: *See*—
Baba, Kazuo; Shiratsuki, Yoshiyuki; and Takahashi, Kumiko, 5,053,249, Cl. 427-101.000.

Takahashi, Takehiko; Watanabe, Takashi; and Kaneko, Tomihiro, to Combi Corporation. Tiltable auxiliary chair having locking means and pivotal seat belt engagement plate for forward and rearward facing. 5,052,750, Cl. 297-250.000.

Takahashi, Tetsuo; Sasaki, Akio; Mogi, Kunio; Shimazaki, Hajime; and Hasegawa, Masakazu, to TDK Corporation. Screen printing method comprising printing pressure regulation. 5,052,291, Cl. 101-129.000.

Takahashi, Tomohiko, to Kabushiki Kaisha Toshiba. Apparatus for detecting whether a replaceable cartridge is new or used in an image forming apparatus. 5,053,816, Cl. 355-208.000.

Takahashi, Tsutomu, to Canon Kabushiki Kaisha. Electronic typewriter with multiple margin format control. 5,052,835, Cl. 400-279.000.

Takahashi, Tsutomu; Ito, Shinji; Oshita, Saiichiro; and Mouri, Toyohiko, to Fuii Jukogyo Kabushiki Kaisha. Motor control apparatus for electric power steering system of a motor vehicle. 5,053,966, Cl. 364-424.050.

Takahashi, Yuji: *See*—
Ueda, Noriyoshi; Takahashi, Yuji; Kitahara, Makoto; Sato, Masaaki; and Wakao, Naho, 5,052,669, Cl. 271-3.100.

Takahashi, Yukinobu: *See*—
Yamashita, Tetsuji; and Takahashi, Yukinobu, 5,052,897, Cl. 417-228.000.

Takakura, Yoshinari; Nakashima, Mikio; and Hashizume, Hidekuni, to Aisin Seiki Kabushiki Kaisha. Cooling system for an engine. 5,052,348, Cl. 123-41.740.

Takanezawa, Shin; Iwasaki, Yorio; Takaahashi, Hiroshi; Okamura, Toshiro; Amano, Saburo; Yokoyama, Hiroyoshi; Fukuoka, Noriyoshi; and Amano, Tatsuya, to Hitachi-Chemical Co., Ltd. Adhesive composition for printed wiring boards with acrylonitrile-butadiene rubber having carboxyl groups and 20 PPM or less metal ionic impurities; an alkyl phenol resin; an epoxy resin; palladium catalyst, and coupling agent. 5,053,280, Cl. 428-413.000.

Takano, Fumitomo: *See*—
Tsujii, Gen; and Takano, Fumitomo, 5,053,599, Cl. 219-116.000.

Takano, Hiroshi: *See*—
Masuda, Takashi; Takano, Hiroshi; and Hoshiro, Takashi, 5,052,985, Cl. 474-245.000.

Takano, Yoshiaki; Ito, Masazumi; Kusumoto, Keiji; Noda, Takashi; and Oyabu, Masaaki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus. 5,053,814, Cl. 355-208.000.

Takarada, Shinichi: *See*—
Tsuchihashi, Akira; Takarada, Shinichi; Iwamoto, Taro; Nakajima, Kichio; Aoki, Tatsu; and Yamamoto, Hiroshi, 5,053,975, Cl. 364-513.000.

Takase, Haruo. Apparatus using microwaves for thermotherapy. 5,052,408, Cl. 128-804.000.

Takasu, Emiko; Ogata, Kazumi; and Sato, Yoshihisa, to Shiseido Company Ltd.; and Senju Pharmaceutical Co., Ltd. Hair cosmetic composition. 5,053,222, Cl. 424-7.000.

Takata, Kazuhiko: *See*—
Taguchi, Yasuhiro; and Takata, Kazuhiko, 5,053,988, Cl. 364-900.000

Takatori Corporation: *See*—
Matsukura, Yasumasa, 5,052,366, Cl. 125-16.010.

Takatori Hitech Co., Ltd.: *See*—
Matsukura, Yasumasa, 5,052,366, Cl. 125-16.010.

Takayama, Makoto: *See*—
Hashimoto, Seiji; Ogura, Tokihiko; Osabe, Kuniji; Nishimura, Akimasa; and Takayama, Makoto, 5,053,898, Cl. 360-72.100.

Takeda, Eiji: *See*—
Izawa, Ryuichi; Kure, Tokuo; Iijima, Shimpei; Takeda, Eiji; Igura, Yasuo; Hamada, Akemi; and Hiraiwa, Atsushi, 5,053,849, Cl. 357-59.000

Takeda, Haruko: *See*—
Tone, Seiji; Takeda, Haruko; and Sugimori, Masahiro, 5,053,461, Cl. 525-244.000.

Takeda, Hiromitsu: *See*—
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,053,402, Cl. 514-79.000.

Takeda, Hiroshi: *See*—
Taniguchi, Masato; Yagi, Juzo; and Takeda, Hiroshi, 5,052,352, Cl. 123-90.390.

Takeda, Keiji, to Fuji Photo Film Co., Ltd. Light-sensitive composition comprising silver halide dispersed in polymerizable compound and light-sensitive material employing the same. 5,053,308, Cl. 430-138.000.

Takeda, Keiji, to Fuji Photo Film Co., Ltd. Image-receiving material and image-forming method employing the same. 5,053,312, Cl. 430-254.000

Takeda, Masahiro: *See*—
Uchida, Satoshi; and Takeda, Masahiro, 5,054,089, Cl. 382-4.000.

Takeda, Shigeru: *See*—
Murakami, Yasuhide; Takeda, Shigeru; Ito, Kohei; Kinoshita, Yasuaki; and Kubota, Sadami, 5,053,734, Cl. 333-219.200.

Takeda, Toshiaki: *See*—
Kubodera, Keizou; Takeda, Toshiaki; and Aoki, Hiroyuki, 5,052,117, Cl. 33-501.900.

Takei, Masahiro: *See*—
Sakata, Tsuguhide; Taguchi, Tomishige; Kimura, Norio; Tsuruno, Kunio; Takei, Masahiro; and Suzuki, Yasutomo, 5,053,896, Cl. 360-71.000.

Takemura, Fumio: *See*—
Nakada, Toshio; Takemura, Fumio; and Ishiwata, Masao, 5,053,278, Cl. 428-403.000.

Takemura, Hideyasu: *See*—
Yamano, Takashi; Katanuma, Yasushi; Takemura, Hideyasu; Kumagai, Michiko; Yoshida, Hiroshi; and Kaneko, Toru, 5,053,904, Cl. 360-103.000.

Takeno, Kazuta: *See*—
Hasebe, Hiroyuki; Takeno, Kazuta; Sato, Yuji; Takahashi, Hiroyuki; Hayashida, Hirotaka; Mitsuyasu, Kiyoshi; and Sawatari, Ichirou, 5,053,292, Cl. 429-101.000.

Takeshita, Fusayuki; Kikuchi, Makoto; Ichihashi, Mitsuyoshi; Terashima, Kanetsugu; and Furukawa, Kenji, to Chisso Corporation. Ferroelectric liquid crystal composition. 5,053,163, Cl. 252-299.610.

Takeuchi, Hirofumi: *See*—
Makita, Atsuo; Takeuchi, Hirofumi; Shibata, Shinji; and Shimbara, Noboru, 5,052,060, Cl. 4-300.000.

Takeuchi, Hiroyuki: *See*—
Yamamoto, Masaki; Sato, Takeo; Sugiyama, Yoshiyuki; Aoki, Shinichiro; and Takeuchi, Hiroyuki, 5,053,628, Cl. 250-557.000.

Takeuchi, Hitoshi: *See*—
Kikuta, Hikaru; Mine, Koichi; Hanai, Kazumichi; Kamiya, Kingo; and Takeuchi, Hitoshi, 5,053,664, Cl. 310-114.000.

Takeuchi, Katsuyoshi: *See*—
Yoshikawa, Hideo; Takeuchi, Katsuyoshi; Shimada, Masami; Awaji, Yoshiharu; Ikeda, Takashi; and Mitsuno, Shunsaku, 5,052,513, Cl. 181-246.000.

Taki, Masakazu: *See*—
Shoda, Isao; Kodama, Hitoshi; Magome, Kazuo; Iwata, Akihiko; Yoshizawa, Kenji; and Taki, Masakazu, 5,053,682, Cl. 315-223.000.

Takido, Mine: *See*—
Honma, Yasushi; Tamaki, Hajime; Magaribuchi, Tetsuo; and Takido, Mine, 5,053,417, Cl. 514-341.000.

Takigawa, Shinichiro; and Shinke, Shuzo, to Nissan Chemical Industries, Ltd. Process for preparing pyrazolecarboxylic acid compounds. 5,053,517, Cl. 548-376.000.

Takimoto, Masaaki; and Hatanaka, Isamu, to Fuji Photo Film Co., Ltd. Color liquid crystal shutter having more green electrodes than red or blue electrodes. 5,052,785, Cl. 359-54.000.

Talcott, Thomas D.; Ryan, James J., III; and Jones, John L., Jr. Lens dyeing method and apparatus comprising heating element contacting dyeing tank, heat controller and sensor for dye solution temperature. 5,052,337, Cl. 118-667.000.

Talonn, Daniel A.; and Ranford, Alan B., to Sherwood Medical Company. Combined syringe and needle shield and method of manufacture. 5,053,018, Cl. 604-198.000.

Tam, Kwok C., to General Electric Company. Method to reduce image reconstruction time in limited-angle CT systems including using initial reconstruction valves for measured projection data during each iteration. 5,053,958, Cl. 364-413.130.

Tamaki, Hajime: *See*—
Honma, Yasushi; Tamaki, Hajime; Magaribuchi, Tetsuo; and Takido, Mine, 5,053,417, Cl. 514-341.000.

Tamaura, Yutaka: *See*—
Inada, Yuji; Tamaura, Yutaka; and Takahashi, Katsunobu, 5,053,273, Cl. 428-323.000.

Tambo, Hideaki: *See*—
Tanaka, Haruo; Tambo, Hideaki; and Kise, Kazuhiko, 5,052,156, Cl. 52-126.600.

Tampoflex GmbH: *See*—
Berberich, Bernd, 5,052,293, Cl. 101-163.000.

Tamura, Glenn A.: *See*—
Perlman, Robert M.; Sobel, Prem; McMinn, Brian D.; Thaden, Robert C.; Tamura, Glenn A.; Lynch, Thomas W.; and Vesgesna, Raju, 5,053,631, Cl. 364-748.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Honma, Yasushi; Tamaki, Hajime; Magaribuchi, Tetsuo; and Takido, Mine, 5,053,417, Cl. 514-341.000.

Tanaka, Atsuo; and Kamiya, Shin, to Sharp Kabushiki Kaisha. Syllable recognition system. 5,054,084, Cl. 381-43.000.

Tanaka, Haruo; Tambo, Hideaki; and Kise, Kazuhiko, to 501 Fukui Chemical Industry Co., Ltd. Flooring panel system. 5,052,156, Cl. 52-126.600.

Tanaka, Hideaki; Morita, Toshiaki; Kitamura, Yoshihiro; Hirose, Hitoshi; Nakamura, Yasuhisa; and Saiga, Hisashi, to Sharp Kabushiki Kaisha. Method for determining coordinates of circumscribed rectangular frame of each character for use in optical character reader. 5,054,091, Cl. 382-9.000.

Tanaka, Hideyoshi: *See*—
Ishikawa, Takeshi; Tanaka, Hideyoshi; and Yasui, Hisato, 5,052,122, Cl. 34-5.000.

Tanaka, Hiroyuki: *See*—
Ogiri, Tadakazu; Yamaguchi, Katsuhide; Nakai, Toshiharu; Morita, Yoshio; Migita, Koji; and Tanaka, Hiroyuki, 5,053,817, Cl. 355-211.000.

Tanaka, Kenichi: *See*—
Kobayashi, Hiroshi; and Tanaka, Kenichi, 5,053,671, Cl. 310-329.000.

Tanaka, Masahiro; and Shiotsu, Shinichi, to Fujitsu Limited. Integrated circuit including output circuit having input logic controlled by output logic. 5,053,643, Cl. 307-443.000.

Tanaka, Minoru: *See*—
Yamasaki, Katuhiko; Tanaka, Minoru; and Sakamoto, Kenichiro, 5,053,172, Cl. 264-39.000.

Tanaka, Mitsuo: *See*—
Inui, Yoshio; Osaka, Masayoshi; Tanaka, Mitsuo; Miyamoto, Masao; Hasegawa, Tooru; Kamitaka, Masuo; Kai, Hidekazu; and Kamikubo, Hiroshi, 5,052,151, Cl. 49-394.000.

Tanaka, Paula I.: *See*—
Kuo, Timothy E.; Tanaka, Paula I.; and Taylor, Stephen D., 5,053,722, Cl. 331-2.000.

Tanaka, Ryuichi, to Nippon Air Brake Co., Ltd. Mechanical component and hydraulic pressure control valve including the mechanical component. 5,052,759, Cl. 303-9.620.

Tanaka, Sakae; Watanabe, Yoshiaki; Shirai, Katsuo; and Ogiwara, Yoshihisa, to Seikosha Co., Ltd.; and Nippon Precision Circuits Ltd. Method of fabricating a reverse staggered type silicon thin film transistor. 5,053,354, Cl. 437-101.000.

Tanaka, Shigenori; Furuya, Takashi; Kajioka, Hiroyuki; Ogawa, Shigeru; Sasaki, Kunimasa; and Yamane, Atsumu, to Nippon Steel Corporation; and Mitsubishi Jukogyo Kabushiki Kaisha. Control device and a control method for twin-roll continuous caster. 5,052,467, Cl. 164-452.000.

Tanaka, Shigeo: *See*—
Shiraga, Yusei; Fukaya, Chikara; Akira, Toshiaki; Iwai, Masakazu; Yokoyama, Kazumasa; Tabata, Mamoru; Fukui, Hiroshi; Tanaka, Shigeo; Iga, Yoshiro; Suyama, Tadakazu; and Okano, Kanemichi, 5,053,498, Cl. 536-4.100.

Tanaka, Tatsuyoshi; Sakurai, Yoji; Okazaki, Hiroshi; Hasegawa, Takashi; and Fukuyama, Yoshiyasu, to Otsuka Pharmaceutical Company, Ltd. Biphenyl derivative composition for nerve cell degeneration repairing or protective agent and process for preparing a phenyl derivative contained in the composition. 5,053,548, Cl. 568-47.000.

Tanaka, Tsunefumi: *See*—
Ohara, Tsunemasa; Chigira, Tatsuo; and Tanaka, Tsunefumi, 5,053,798, Cl. 354-400.000.

Tandy Corporation: *See*—
Tran, Nam D., 5,052,104, Cl. 29-861.000.

Taneo, Panfilo C. Vehicular communication device. 5,053,746, Cl. 340-473.000.

Tang, Chung L.: *See*—
Cheng, Lap K.; Bosenberg, Walter R.; and Tang, Chung L., 5,053,641, Cl. 359-330.000.

Taniguchi, Masato; Yagi, Juzo; and Takeda, Hiroshi, to NGK Spark Plug Co., Ltd. Mechanical part made of ceramics. 5,052,352, Cl. 123-90.390.

Taniguchi, Takashi: *See*—
Kannan, Yasushi; Taniguchi, Takashi; Shikata, Michiharu; and Sumi, Tatsumi, 5,053,998, Cl. 365-194.000

Taniji, Yukio, to NEC Corporation. Solid state image pickup device capable of picking up an image with a long time exposure at a low noise. 5,053,873, Cl. 358-213.290.

Tanimoto, Tetsuya: *See*—
Horizoe, Hirotoshi; Maki, Masura; Tanimoto, Tetsuya; and Yanagi, Masaaki, 5,053,563, Cl. 568-916.000.

Tanimura, Yoshihiko; Ishikuro, Hisato; and Tada, Yasuo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha; and Mitsubishi Denki Kabushiki Kaisha. Vortex flowmeter. 5,052,229, Cl. 73-861.220.

Tannenbaum, Myron; and Husson, Alan, to New Brunswick Scientific Co., Inc. Bath shaker. 5,052,812, Cl. 366-209.000.

Tanoue, Junichi: *See*—
Nishii, Michiharu; Mizuno, Genji; Tada, Yoshihiko; Nomura, Yoshihisa; Kato, Masahiko; Shirai, Kenji; and Tanoue, Junichi, 5,052,182, Cl. 60-547.100.

Tarallo, Joseph A.; and Zysman, George I., to AT&T Bell Laboratories. Digital signal quality evaluation circuit using synchronization patterns. 5,054,035, Cl. 375-10.000.

Tashima, Zunzi: *See*—
Yano, Naoyuki; Nagayoshi, Tatsuya; Nagou, Takashi; Tashima, Zunzi; Ishida, Noritoshi; Itoh, Hiroyuki; and Nagamatsu, Katsuyuki, 5,053,539, Cl. 564-333.000.

Tatani, Atsushi; Okino, Susumu; and Onizuka, Masakazu, to Mitsubishi Jukogyo Kabushiki Kaisha. Gas-liquid contacting method. 5,053,061, Cl. 55-90.000.

Tate, William R.: *See*—
Vonalt, Kerry G.; Tate, William R.; and Gentit, Ernest K., 5,052,432, Cl. 137-355.160.

Tatebayashi, Makoto; and Newman, David B., Jr, David B., to Matsushita Electric Industrial Co., Ltd. Cryptographic key distribution method and system. 5,054,065, Cl. 380-21.000.

Tatemoto, Masayoshi; and Nakamura, Takayuki, to Daikin Industries Ltd. Novel fluorine-containing copolymer. 5,053,469, Cl. 526-242.000.

Tateno, Yoshie; and Itaya, Tsunekazu, to Kabusiki Kaisha Tateno Kikai Seisakusho. Unpackaging apparatus for packaged sheets. 5,052,876, Cl. 414-412.000.

Tau, Kwoliang D., to Hoechst Celanese Corporation. Process for making 1,3-diols from epoxides. 5,053,562, Cl. 568-867.000.

Taubitz, Christof; Seiler, Erhard; Boehlke, Klaus; Bronstert, Klaus; and Wagner, Daniel, to BASF Aktiengesellschaft. Thermoplastic molding materials. 5,053,458, Cl. 525-92.000.

Taura, Tadayuki: *See*—
Miyakawa, Tadashi; Asano, Masamichi; Taura, Tadayuki; Shoji, Atsushi; and Inami, Michiharu, 5,053,841, Cl. 357-23.500.

Taylor, Billy K., to NCR Corporation. Symmetrical clock generator and method. 5,053,639, Cl. 307-269.000.

Taylor, Donald R.; and Kinzle, Mark W. Solar propelled chemical dispenser. 5,053,205, Cl. 422-265.000.

Taylor, Myron E.: *See*—
Smucker, Richard A.; and Taylor, Myron E., 5,052,340, Cl. 119-4.000.

Taylor, Stephen D.: *See*—
Kuo, Timothy E.; Tanaka, Paula I.; and Taylor, Stephen D., 5,053,722, Cl. 331-2.000.

Tazawa, Masato: *See*—
Yamakita, Hiromi; Tazawa, Masato; Hayakawa, Kiyoshi; and Toada, Hiroshi, 5,053,293, Cl. 429-111.000.

TDK Corporation: *See*—
Aoki, Kazuo; Kakinuma, Akira; Saito, Megumi; and Makino, Motohiko, 5,053,305, Cl. 430-111.000.
Takahashi, Tetsuo; Sasaki, Akio; Mogi, Kunio; Shimazaki, Hajime; and Hasegawa, Masakazu, 5,052,291, Cl. 101-129.000.

Teare, Melvin J.: *See—*
Walker, Stephen S.; Sidlo, Clarence M.; and Teare, Melvin J., 5,054,064, Cl. 380-5.000.

Tech-S, Inc.: *See—*
Pielemeier, William J.; and Jessup, James L., 5,053,612, Cl. 235-462.000.

Technion Instruments Corporation: *See—*
Hwang, Deng R.; Scott, Mary E.; and Hedaya, Eddie, 5,053,497, Cl. 536-6.100.

Techophone Limited: *See—*
Pasco, Ian K., 5,053,928, Cl. 362-24.000.

Tecle, Berhan, to Du Pont de Nemours, E. I., and Company. Process for soldering allowing low ionic contamination without cleaning operation. 5,052,612, Cl. 228-207.000.

Teetz, Volker; Geiger, Rolf; Urbach, Hansjorg; Becker, Reinhard; and Scholkens, Bernward, to Hoechst AG. Cis, endo-2-azabicyclo-[3.3.0]-octane-5-carboxylic acids. 5,053,519, Cl. 548-452.000.

Teijin Limited: *See—*
Hashimoto, Eiichi; Sato, Tetsuo; and Chiba, Kiyoshi, 5,053,288, Cl 428-694.000.
Yamauchi, Shinichi; Sasaki, Katsushi; Matsumura, Eiji; Saito, Yasuhiko; and Kishida, Takashi, 5,053,201, Cl. 422-135.000

Tek, M. Rasin. Method for underground storage of gas. 5,052,856, Cl. 405-59.000.

Tektronix, Inc.: *See—*
Meadows, Robert D., 5,053,757, Cl. 340-712.000.

Telebit Corporation: *See—*
Hughes-Hartogs, Dirk, 5,054,034, Cl. 375-8.000.

Teledyne Exploration: *See—*
Stoepfel, Daniel L., 5,052,222, Cl. 73-302.000.

Telefonaktiebolaget L M Ericsson: *See—*
Hedberg, Mats O. J., 5,054,038, Cl. 375-118.000.

Telefunken electronic GmbH: *See—*
Kaiser, Reinhold, 5,053,352, Cl. 437-47.000.
Niemetz, Linhard, 5,053,923, Cl. 361-388.000.

Telle, Lawrence B., to Eastman Kodak Company. Copier with auto scaling, auto paper select, and window scaling. 5,053,885, Cl. 358-449.000

Teller, Raymond G.; Ebner, Ann M.; Bodolus, Christopher; and Gupta, Victor R., to Standard Oil Company, The. Oxidation catalyst and processes using same. 5,053,577, Cl. 585-500.000.

Tennigkeit, Jurgen; Lorenz, Herbert; and Segawa, Hirotsugu, to Goldwell GmbH. Means and method for the oxidative dyeing, especially the redyeing, of living hair: micro-encapsulated acid. 5,053,051, Cl. 8-406.000.

Tenstaple, Inc.: *See—*
Sheehan, Joseph C. M., 5,053,038, Cl. 606-75.000.

Tepic, Slobodan, to Laboratorium fur experimentelle Chirurgie. Hand power tool mechanism. 5,052,243, Cl. 74-523.000.

Tepic, Slobodan: *See—*
Perren, Stephan N.; Straumann, Fritz; Sutter, Franz; and Tepic, Slobodan, 5,053,036, Cl. 606-69.000.

Tepper, Harry W. Oral appliance for tongue thrust correction. 5,052,409, Cl. 128-859.000.

Terada, Kazuo: *See—*
Okumori, Kunio; and Terada, Kazuo, 5,053,156, Cl. 252-62.580.

Terakawa, Takashige; Kusakabe, Wataru; Hiraoka, Yoshihisa; and Sugiyama, Toshihisa, to Tokyo Keiki Co., Ltd. Electromagnetic waves shield tape. 5,053,582, Cl. 174-36.000.

Teramoto, Shuji: *See—*
Fujioka, Takafumi; Teramoto, Shuji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,053,514, Cl. 546-157.000.

Teraoka, Shinichi: *See—*
Ueda, Masanori; and Teraoka, Shinichi, 5,052,471, Cl. 164-480.000.

Terasawa, Koji; and Yamaguchi, Hideki, to Canon Kabushiki Kaisha. Ink jet recording method and head having additional generating means in the liquid chamber. 5,053,787, Cl. 346-1.100.

Terashima, Jiro: *See—*
Ito, Shinichi; and Terashima, Jiro, 5,053,847, Cl. 357-36.000.

Terashima, Kanetsugu: *See—*
Takeshita, Fusayuki; Kikuchi, Makoto; Ichihashi, Mitsuyoshi; Terashima, Kanetsugu; and Furukawa, Kenji, 5,053,163, Cl. 252-299.610.

Tesch, Klaus. Device for the centering and clamping of pipe workpieces. 5,052,609, Cl. 228-44.500.

Tetra Pak Holdings & Finance: *See—*
Aeschlilmann, Hans-Peter, 5,052,994, Cl. 493-87.000.

Teufel, Rainer B.: *See—*
Grome, Donald C.; Kolada, Paul P.; and Teufel, Rainer B., 5,052,593, Cl. 222-333.000.

Tews, Helmut: *See—*
Gisdakis, Spyridon; Tews, Helmut; and Zwicknagl, Peter, 5,052,821, Cl. 374-179.000.

Texaco Chemical Company: *See—*
Marquis, Edward T.; Sanderson, John R.; and Knifton, John F., 5,053,569, Cl. 585-255.000.
Speranza, George P.; Su, Wei-Yang; and Champion, Donald H., 5,053,484, Cl. 528-338.000.
Waddill, Harold G., 5,053,465, Cl. 525-528.000.

Texaco Inc.: *See—*
Stubblefield, Steven A., 5,052,814, Cl. 367-15.000.

Texas Instruments Deutschland GmbH: *See—*
Schuermann, Josef H.; Heinecke, Guenter; and Kremer, Rudolf, 5,053,774, Cl. 342-44.000.

Texas Instruments Incorporated: *See—*
Aton, Thomas J., 5,053,699, Cl. 324-158.00R.
Cooper, Lawrence E.; and Jenne, Richard L., 5,053,908, Cl. 361-24.000.
Esquivel, Agerico L.; Mitchell, Allan T.; and Tigelaar, Howard L., 5,053,839, Cl. 357-23.500.
Houston, Theodore W.; and Yang, Ping, 5,053,848, Cl. 357-51.000.
Moroi, Masayuki, 5,052,886, Cl. 414-757.000.
Naik, Jayant M.; Netsch, Lorin P.; and Doddington, George R., 5,054,083, Cl. 381-42.000.
Penz, Perry A., 5,053,974, Cl. 304-513.000.
Whetsel, Lee D., 5,054,024, Cl. 371-22.300.
Yuan, Han-Tzong; and Tran, Liem Th, 5,053,346, Cl. 437-22.000.

Textilma AG: *See—*
Speich, Francisco, 5,052,447, Cl. 139-291.00R.

Textron, Inc.: *See—*
Pratt, John D.; and Zermeno, Mario A., 5,052,870, Cl. 411-43.000.

Thaden, Robert C.: *See—*
Perlman, Robert M.; Sobel, Prem; McMinn, Brian D.; Thaden, Robert C.; Tamura, Glenn A.; Lynch, Thomas W.; and Vesgesna, Raju, 5,053,631, Cl. 364-748.000.

Thaler, Samuel; and Johnsen, Gordon M., to Hughes Aircraft Company. Responsive simultaneous frequency agile radar. 5,053,780, Cl. 342-200.000.

Theroux, Luc, to Lendar Design Inc. Starting and operating device for controlling a starter that ignites a sodium lamp. 5,053,683, Cl. 315-290.000.

Theurer, Josef; and Worgotter, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Ballast distributing and planing machine. 5,052,132, Cl. 37-104.000.

Theurer, Josef; and Peitl, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track position correcting and tamping machine. 5,052,306, Cl. 104-7.200

Theurer, Walter C., to Eaton Corporation. Illuminated sealed rocker switch. 5,053,591, Cl. 200-315.000.

Thieme, Horst: *See—*
Buxel, Michael; Pietzarka, Friedrich-Wilhelm; Thieme, Horst; and Koch, Manfred, 5,053,210, Cl. 423-239.000.

Thioulouse, Pascal, to Centre National d'Etudes des Telecommunications. Electroluminescent display screen with a memory and a particular configuration of electrodes. 5,053,675, Cl. 313-505.000.

Thioulouse, Pascal, to Centre National d'Etudes des Telecommunications. Photoconductive-electroluminescent memory effect polychromatic display. 5,053,679, Cl. 315-169.300.

Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., to SSI Medical Services, Inc. Bimodal system for pressurizing a low air loss patient support. 5,052,067, Cl. 5-453.000.

Thomas, John C.: *See—*
Brekkestran, Kevin L.; and Thomas, John C., 5,053,960, Cl. 364-424.100.

Thomas, Louis R.: *See—*
Bich, Gary L.; Boucquez, Wilfried J.; and Thomas, Louis R., 5,052,171, Cl. 56-364.000.

Thompson Electronics Ltd.: *See—*
Thompson, Peter A., 5,053,864, Cl. 358-22.000.

Thompson, Gerhard R., to International Business Machines Corporation. Technique for producing a fine grained dithered halftone image having an increased number of gray levels. 5,053,887, Cl. 358-457.000.

Thompson, James S., to Aerospace Corporation, The. Microdensitometer with submicron resolution having dual diaphragms and dual microscopes. 5,053,629, Cl. 250-571.000.

Thompson, Mark A.: *See—*
Mishra, Umesh K.; Thompson, Mark A.; and Jelloian, Linda M., 5,053,348, Cl. 437-41.000.

Thompson, Murray A.: *See—*
DeClute, Gary W.; Varda, Ann P.; and Thompson, Murray A., 5,053,948, Cl. 364-200.000.

Thompson, Peter A., to Thompson Electronics Ltd. Video capture, compression and display system, including averaging of chrominance information. 5,053,864, Cl. 358-22.000.

Thompson, William J.: *See—*
Mimmack, William E.; and Thompson, William J., 5,052,800, Cl. 356-152.000.

Thomson-CGR: *See—*
Audon, Philippe; and Courtecuisse, Daniel, 5,054,044, Cl. 378-91.000

Thomson Consumer Electronics, Inc.: *See—*
Christopher, Todd J.; and Morris, Robert E., Jr., 5,053,726, Cl. 331-34.000.
Swank, Harry R., 5,053,880, Cl. 358-245.000.

Thomson-CSF: *See—*
Aspect, Alain; Flimbert, Marc; Doisy, Martine; Weisbuch, Claude; and de Cremoux, Baudouin, 5,053,708, Cl. 324-304.000.
Barbier, Bruno; Perbet, Jean N.; and Favoi, Jean J., 5,053,764, Cl. 340-793.000.
Durand, Jacques, 5,053,714, Cl. 324-613.000.
Papuchon, Michel, 5,052,770, Cl. 359-328.000.
Paulet, Marc; and Peres, Alain, 5,052,635, Cl. 244-3.110.
Peyrat, Andre , 5,053,777, Cl. 342-173.000.
Pribat, Didier; Dieumegard, Dominique; Garry, Guy; and Mercandalli, Louis, 5,053,833, Cl. 357-4.000.
Soury, Jean-Pierre; Bovis, Pierre; Couthouis, Daniel; and Robert, Pierre, 5,054,042, Cl. 379-58.000.

Thony, Riet, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Load-dependent brake valve for controlling the brake line pressure of compressed air brakes of a vehicle. 5,052,761, Cl. 303-22.600.

Thorax, Didier; and Marotel, Gerard, to Compagnie d'Electronique et de Piezo-Electricite. Device for thermal regulation of an enclosure 5,053,605, Cl. 219-501.000

Thornhill, Royston: *See—*
Noon, Laurence; and Thornhill, Royston, 5,052,773, Cl. 350-96.200.

Thota, Hamsa A. P.; and Shetty, Shankara R., to Rich-Seapak Processing Corporation. Cook and serve food package for the storing and heating by microwave energy of a food item. 5,053,594, Cl. 219-10.55E.

Thottathil, John K.: *See—*
Li, Wen-Sen; Thottathil, John K.; and Murphy, Michael, 5,053,504, Cl. 540-488.000

Thuillard, Marc, to Cerberus Ltd. Supervised fire alarm system. 5,053,753, Cl. 340-629.000.

Thumm, Helmut, to J. M. Voith GmbH. Means for removing wires from bales in particular waste paper bales. 5,052,098, Cl. 29-564.003.

Thyssen Industrie AG: *See—*
Augsburger, Friedemann; Holzinger, Gerhard; Loser, Friedrich; and Von Kuepach, Hermann, 5,053,654, Cl. 310-12.000.

Tietz, Raymond F., to Du Pont de Nemours, E. I., and Company Novel polyesters and their use in compostable products such as disposable diapers. 5,053,482, Cl. 528-272.000.

Tigelaar, Howard L.: *See—*
Esquivel, Agerico L.; Mitchell, Allan T.; and Tigelaar, Howard L., 5,053,839, Cl. 357-23.500.

Tillotson, Douglas L., to Boston University. Dual wavelength spectrofluorometer. 5,053,626, Cl. 250-458.100.

Tilston, David: *See—*
Tilston, William V., deceased; Tilston, Stephen E.; Tilston, Mark; Tilston, David; and Tralman, Thomas, 5,053,785, Cl. 343-756.000

Tilston, Mark: *See—*
Tilston, William V., deceased; Tilston, Stephen E.; Tilston, Mark; Tilston, David; and Tralman, Thomas, 5,053,785, Cl. 343-756.000

Tilston, Stephen E.: *See—*
Tilston, William V., deceased; Tilston, Stephen E.; Tilston, Mark; Tilston, David; and Tralman, Thomas, 5,053,785, Cl. 343-756.000.

Tilston, Stephen E., Mark Tilston, David Tilston, co-executors: *See—*
Tilston, William V., deceased; Tilston, Stephen E.; Tilston, Mark; Tilston, David; and Tralman, Thomas, 5,053,785, Cl. 343-756.000.

Tilston, William V., deceased (by Tilston, Stephen E., Mark Tilston, David Tilston, co-executors); Tilston, Stephen E.; Tilston, Mark; Tilston, David; and Tralman, Thomas, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Polarization selective surface for circular polarization. 5,053,785, Cl. 343-756.000.

Timan, Peter E., to UTDC Inc. Torque linkage bisector centring mechanism. 5,052,707, Cl. 280-403.000.

Ting, Albert C.: *See—*
Portney, Valdemar; Ting, Albert C.; and Willis, Timothy R., 5,053,171, Cl. 264-1.400

Tinti, Maria O.: *See—*
Marzi, Mauro; Tinti, Maria O.; Pacifici, Licia; Franceschelli, Carla; and Castorina, Massimo, 5,053,424, Cl. 514-419.000.

Tischendorf, Klaus J.; Liebscher, Manfred; Rizk, Farid; and Zahradnik, Franz, to BASF Aktiengesellschaft. Drying and heating of polyamide granules. 5,052,123, Cl. 34-17.000.

Tjoeng, Foe S.; Feigen, Larry P.; and Adams, Steven P., to Monsanto Company; and G. D. Searle & Co. Novel platelet-aggregation inhibitor. 5,053,393, Cl. 514-18.000.

Toa Steel Co., Ltd.: *See—*
Sekine, Susumu; Ito, Katsumi; Ohwada, Noriyoshi; and Eguchi, Toyoaki, 5,052,124, Cl. 34-20.000.

Toada, Hiroshi: *See—*
Yamakita, Hiromi; Tazawa, Masato; Hayakawa, Kiyoshi; and Toada, Hiroshi, 5,053,293, Cl. 429-111.000.

Toda, Akitoshi: *See—*
Kajimura, Hiroshi; Kouchi, Toshihito; Toda, Akitoshi; Isono, Yasuo; Mimura, Yoshiyuki; Ohta, Hiroko; and Shimizu, Ryouhei, 5,053,995, Cl. 365-151.000.

Toda, Masaaki; Ohuchida, Shuichi; and Ohno, Hiroyuki, to Ono Pharmaceutical Co., Ltd. Heterocyclic compounds. 5,053,414, Cl. 514-326.000.

Todd, Paul H., Jr., to Kalamazoo Holdings, Inc. Norbixin adducts with water-soluble or water-dispersible proteins or branched-chain or cyclic polysaccharides. 5,053,240, Cl. 426-540.000.

Togami, Yuji: *See—*
Mizumoto, Kunihiko; Kejiura, Hirokazu; Togami, Yuji; and Saito, Nobuo, 5,053,287, Cl. 428-694.000.

Tohdo, Michiharu. Method and apparatus for thermal printing suitable for large printing area. 5,053,788, Cl. 346-1.100.

Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, to Roussel Uclaf. Derivatives of 1,2,5,6-tetrahydropyridine substituted by a thiazolyl or oxazolyl radical, their use as medicaments and compositions containing them. 5,053,416, Cl. 514-340.000.

Tokai Carbon Co., Ltd.: *See—*
Nakada, Toshio; Takemura, Fumio; and Ishiwata, Masao, 5,053,278, Cl. 428-403.000

Tokai Kogyo Mishin Kabushiki Kaisha: *See—*
Tajima, Ikuo; and Hasegawa, Hideo, 5,052,315, Cl. 112-103.000.

Tokai Rubber Industries, Ltd.: *See—*
Sakuragi, Akihiko, 5,052,665, Cl. 267-220.000.

Tokiguchi, Katsumi: *See—*
Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; Seki, Takayoshi; and Amemiya, Kensuke, 5,053,678, Cl. 315-111.810

Tokuda, Hiroshi; Ishikawa, Shigeo; Sugiura, Toshiaki; and Kaga, Hikaru, to Brother Kogyo Kabushiki Kaisha. Sheet feeding device 5,052,673, Cl. 271-22.000

Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Photoprinter. 5,053,809, Cl. 355-41.000.

Tokunaga, Yoshihiko: *See—*
Yasuda, Akira; Yuasa, Hiroyoshi; Furukawa, Satoshi; Matsuo, Nobuo; Fujii, Hisataka; Hisada, Masami; Tokunaga, Yoshihiko; Satake, Tadashi; Hamada, Hiroshi; Morikawa, Yoshitaka; and Yamane, Nobumoto, 5,054,103, Cl. 382-56.000.

Tokyo Aircraft Instrument Co., Ltd.: *See—*
Igari, Kazufumi, 5,052,884, Cl. 414-744.200

Tokyo Electric Co., Ltd.: *See—*
Sato, Fumihiko; and Suzuki, Shigesada, 5,053,738, Cl. 336-165.000

Tokyo Keiki Co., Ltd.: *See—*
Terakawa, Takashige; Kusakabe, Wataru; Hiraoka, Yoshihisa; and Sugiyama, Toshihisa, 5,053,582, Cl. 174-36.000.

Tokyo Sharyo Seizo Kabushiki Kaisha: *See—*
Yoda, Akira, 5,052,720, Cl. 285-14.000.

Tolkki Oy: *See—*
Dromigny, Pierre, 5,053,101, Cl. 156-571.000

Tomac, Anthony J.: *See—*
Smillie, Charles M., III; and Tomac, Anthony J., 5,052,278, Cl. 92-159.000.

Tomida, Yasuko: *See—*
Koike, Shoji; and Tomida, Yasuko, 5,053,078, Cl. 106-22.000.

Tomii, Kaoru; Kaneko, Akira; and Kanno, Toru, to Matsushita Electric Industrial Co., Ltd. Field emission cathodes and method of manufacture thereof. 5,053,673, Cl. 313-308.000.

Tomiki, Masatoshi: *See—*
Ehara, Ryohei; and Tomiki, Masatoshi, 5,053,268, Cl. 428-215.000.

Tominaga, Michiaki: *See—*
Fujioka, Takafumi; Teramoto, Shuji; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,053,514, Cl. 546-157.000.

Tomiyoshi, Kazutoshi: *See—*
Itoh, Kunio; Shiobara, Toshio; Futatsumori, Koji; Tomiyoshi, Kazutoshi; and Shimizu, Hisashi, 5,053,445, Cl. 523-435.000

Tompkins, E. Neal; Bartholmae, Jack N.; Zuber, Peter A.; and Charles, Kirk W., to Colorocs Corporation. Method and apparatus for intermittent conditioning of a transfer belt. 5,053,827, Cl. 355-271.000

Tonai, Ichiro, to Sumitomo Electric Industries, Ltd. InGaAs/InP type pin photodiodes. 5,053,837, Cl. 357-17.000.

Tone, Seiji; Takeda, Haruko; and Sugimori, Masahiro, to Mitsubishi Rayon Co., Ltd. Preparation method of comb copolymer, acrylic comb copolymer, and impact resistant resin composition. 5,053,461, Cl. 525-244.000.

Toniatti, Fred G. Troll control apparatus. 5,052,321, Cl. 114-172.000.

Tonka Corporation: *See—*
Rudell, Elliot A.; Cernansky, Joseph S.; Gardner, Roger J., Jr.; Huebl, Steven J.; Zera, Robert D.; Kilroy, Eugene J.; and Chang, Richard S., 5,052,973, Cl. 446-429.000.

Topexpress Limited: *See—*
Sutcliffe, Sean G. C.; Eatwell, Graham P.; and Hutchins, Stephen M., 5,052,529, Cl. 188-378.000.

Toratani, Hisayoshi; Lin, Yeong; and Meissner, Helmuth E., to Hoya Optics, Inc.; and Hoya Corporation. Glass of improved thermal shock resistance for high average power solid state laser system. 5,053,165, Cl. 252-301.40P.

Torigai, Katsumi: *See—*
Uchida, Tatsuki; and Torigai, Katsumi, 5,052,961, Cl. 440-77.000.

Torii, Takuji: *See—*
Takahashi, Kenji; Torii, Takuji; Senshu, Takao; Yamashita, Tetsuji; and Zushi, Shizuo, 5,052,472, Cl. 165-1.000.

Toro Company, The: *See—*
Larsen, Glenn T., 5,052,983, Cl. 474-140.000

Torok, Vilmos: *See—*
Loreth, Andrzej; and Torok, Vilmos, 5,053,912, Cl. 361-230.000

Torstensson, Bengt-Arne. Method for sealing an elongated, hollow cavity, and a device for carrying out the method. 5,052,492, Cl. 166-387.000.

Toshiba Battery Co., Ltd.: *See—*
Hasebe, Hiroyuki; Takeno, Kazuta; Sato, Yuji; Takahashi, Hiroyuki; Hayashida, Hirotaka; Mitsuyasu, Kiyoshi; and Sawatari, Ichirou, 5,053,292, Cl. 429-101.000

Toshiba Machine Co., Ltd.: *See—*
Fujii, Shigeharu; Ochiai, Akira; and Fujii, Akio, 5,053,973, Cl. 364-474.170.

Tosoh Corporation: *See—*
Kondo, Yozo; Mori, Mitsuhiro; and Chikusa, Toshikazu, 5,053,467, Cl. 526-119.000.

Total Compagnie Francaise des Petroles: *See—*
Fery, Jean-Jacques; and Patroni, Jean-Marc, 5,052,219, Cl. 73-153.000.

Toth, Jozsef: *See—*
Molnar, Csaba; Hajos, Gyorgy; Szporny, Laszlo; Toth, Jozsef; Kiraly, Arpad; Boor nee Mezei, Anna; Csorgei, Janos; Szekely, Kristina; Forgacs, Lilla; Fekete, Gyorgy; Herenyi, Bulcsu; Holly, Sandor; and Szunyog, Jozsef, 5,053,404, Cl. 514-174.000.

Toto Ltd.: *See—*
Makita, Atsuo; Takeuchi, Hirofumi; Shibata, Shinji; and Shimbara, Noboru, 5,052,060, Cl. 4-300.000.

Touet, Remi: *See—*
Montagne, Xavier; Touet, Remi; Mullard, Philippe; and Eber, Daniele, 5,053,056, Cl. 44-330.000.
Tourangeau, Donald R. Golf cart attachment. 5,052,604, Cl. 224-274.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Akoshima, Shigeru; and Hisashi, Ogawa, 5,052,742, Cl. 296-192.000.
Itoh, Hiroshi; Sugaya, Masami; Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji; Kouno, Katsumi; Hattori, Yuji; and Hayashi, Takashi, 5,052,980, Cl. 474-11.000.
Kato, Nobuyuki; Kubo, Seitoku; Kouno, Katsumi; Abe, Tetsuya; Itoh, Hiroshi; Morisawa, Kunio; and Habuchi, Ryoji, 5,052,247, Cl. 74-868.000.
Mitsuyasu, Masaki, 5,053,668, Cl. 310-317.000.
Nada, Mitsuhiro, 5,052,177, Cl. 60-274.000.
Yamaguchi, Kozo; Negi, Toyoji; Kondo, Tadashi; and Iwatuki, Kunihiro, 5,052,991, Cl. 475-344.000.
Tozawa, Shoji: *See—*
Morita, Izuru; Tozawa, Shoji; Sakata, Yoshitaka; Katano, Muneo; and Maeda, Ryuzo, 5,052,883, Cl. 414-700.000.
Tozawa, Yoshio, to Fuji Jukogyo Kabushiki Kaisha. Combination meter system of vehicle. 5,053,744, Cl. 340-438.000.
Trainor, John W.; Holtje, Bruce E.; and Gilbert, Laura M., to Imagitek, Inc. Toner supply cartridge having primary and secondary baffles. 5,053,825, Cl. 355-260.000.
Trak International, Inc.: *See—*
Plate, John R., 5,052,532, Cl. 192-4.00A.
Trakas, Panos. Method of making sprue bushing assembly with inner thermal sleeve. 5,052,100, Cl. 29-611.000.
Tralman, Thomas: *See—*
Tilston, William V., deceased; Tilston, Stephen E.; Tilston, Mark; Tilston, David; and Tralman, Thomas, 5,053,785, Cl 343-756.000.
Tran, Liem Th: *See—*
Yuan, Han-Tzong; and Tran, Liem Th, 5,053,346, Cl. 437-22.000
Tran, Nam D., to Tandy Corporation. Method for terminating wires of a cable en masse. 5,052,104, Cl. 29-861.000.
Trani, James. Spherical simulator. 5,052,932, Cl. 434-29.000.
Transworld Drilling Company: *See—*
Ingle, James E., 5,052,860, Cl. 405-201.000.
Trautwein, Wayne L., to G. H. Bettis. Valve actuator. 5,052,430, Cl 137-315.000.
Travalent, Louis J.: *See—*
Bryant, Sharon A.; Brown, Karen K.; Parizek, Richard E.; Moore, Larry F.; and Travalent, Louis J., 5,053,022, Cl. 604-278.000.
Travor, Bruce W.; Coughlan, Richard M.; Cotilla, Edward J.; and Marshall, Frank P., to United States of America, Navy. Multi-sonobuoy launch container with constant force spring. 5,052,270, Cl. 89-1.510.
Trayco, Inc.: *See—*
Gentsch, Barton K.; and Whitney, Thomas M., 5,052,160, Cl. 52-314.000.
Tregear, Geoffrey W.: *See—*
Clarke, Adrienne; Mau, Shaio Lim; Anderson, Marilyn; Cornish, Edwina; Niall, Hugh D.; Tregear, Geoffrey W.; Crawford, Robert J.; and Bernatzky, Robert, 5,053,331, Cl. 435-172.300
Hudson, Peter J.; Shine, John; Niall, Hugh D.; and Tregear, Geoffrey W., 5,053,488, Cl. 530-324.000.
Treibacher Chemische Werke Aktiengesellschaft: *See—*
Winkler, Herwig; Janz, Peter; and Gottschamel, Georg, 5,053,369, Cl. 501-152.000.
Tremblay, Paul L., to United States of America, Energy. Spatial optic multiplexer/diplexer. 5,054,018, Cl. 359-114.000.
Trenkamp, Michael J.; and Gravel, Loras F. Shredder attachment for round hay baler. 5,052,170, Cl. 56-341.000.
Trett, John, to Formula Systems Limited. Photoelectric array detection circuitry with dual gating means. 5,053,616, Cl. 250-221.000.
Trewella, Jeffrey C.: *See—*
Blain, David A.; Cardis, Angeline B.; and Trewella, Jeffrey C., 5,053,153, Cl. 252-51.50R.
Triad Technology: *See—*
McGary, R. Kern; and Jentzen, S. William, 5,053,010, Cl 604-110.000.
Trillium Telephone Systems Inc.: *See—*
Molnar, Gerald, 5,054,062, Cl. 379-402.000.
Trinity Industrie, Inc.: *See—*
Hesch, Harold E.; and Przybylinski, Phillip G., 5,052,868, Cl. 410-54.000
Trommer, William C., to Sundstrand Corporation. Lubrication system for overrunning clutches. 5,052,518, Cl. 184-6.120.
Trotoir, Jean-Paul, to Imperial Chemical Industries PLC. Polymer additive concentrate. 5,053,444, Cl. 523-351.000.
Trowbridge, Anthony V., to Matador Industries (Proprietary) Limited. Apparatus for maintenance of a gravel road. 5,052,853, Cl. 404-92.000.
Truzschler GmbH & Co. KG: *See—*
Langen, Manfred; and Gebald, Gregor, 5,052,546, Cl. 198-718.000.
TRW Technar Inc.: *See—*
Bclender, Robert J., 5,053,588, Cl. 200-61.45R.
Tsai, Duan-Huey; and Tsai, Shwu-Huey. Foldable bicycle. 5,052,706, Cl. 280-287.000.
Tsai, Ming-Chi, to Raytheon Company. Wide-band push-pull amplifier. 5,053,719, Cl. 330-269.000.
Tsai, Shwu-Huey: *See—*
Tsai, Duan-Huey; and Tsai, Shwu-Huey, 5,052,706, Cl. 280-287.000.
Tsai, Yusheng T.; Parulski, Kenneth A.; and Rabbani, Majid, to Eastman Kodak Company. Compression method and apparatus for single-sensor color imaging systems. 5,053,861, Cl. 358-13.000.
Tsaur, Sheng-Liang, to S. C. Johnson & Son, Inc. Polymeric thickener and methods of producing the same. 5,053,448, Cl. 524-460.000.
Tsinberg, Mikhail, to North American Philips Corp. Method and apparatus for the transmission and reception multicarrier high definition television signal. 5,053,860, Cl. 358-12.000.
Tsubokura, Yoshiaki: *See—*
Tsukihashi, Akira; Hitomi, Tadashi; Tsubokura, Yoshiaki; and Aoki, Takeshi, 5,054,015, Cl. 369-258.000.
Tsubota, Masashi, to NEC Corporation. Microprocessor having functional redundancy monitoring mode of operation. 5,054,026, Cl 371-68.300
Tsuchihashi, Akira; Takarada, Shinichi; Iwamoto, Taro; Nakajima, Kichio; Aoki, Tatsu; and Yamamoto, Hiroshi, to Hitachi, Ltd. Master-slave manipulator control. 5,053,975, Cl. 364-513.000.
Tsudakoma Kogyo Kabushiki Kaisha: *See—*
Kuse, Hisao, 5,052,735, Cl. 294-81.500.
Tsujii, Gen; and Takano, Fumitomo, to Honda Giken Kogyo Kabushiki Kaisha. Welding gun assembly with transformers. 5,053,599, Cl. 219-116.000
Tsukihashi, Akira; Hitomi, Tadashi; Tsubokura, Yoshiaki; and Aoki, Takeshi, to Sanyo Electric Co., Ltd. Tape recorder with disc player. 5,054,015, Cl. 369-258.000.
Tsuruno, Kunio: *See—*
Sakata, Tsuguhide; Taguchi, Tomishige; Kimura, Norio; Tsuruno, Kunio; Takei, Masahiro; and Suzuki, Yasutomo, 5,053,896, Cl. 360-71.000.
Tsuruoka, Yuji: *See—*
Yui, Yoshikiyo; and Tsuruoka, Yuji, 5,053,614, Cl. 250-205.000.
Tsutsui, Toshio; and Kubota, Osamu, to Fuji Oil Company, Ltd. Hydrodealkylation of alkylaromatic compounds. 5,053,574, Cl. 585-488.000.
Tsutsumi, Nobuhisa: *See—*
Shirai, Hirofusa; Masuda, Naomi; Hongu, Tatsuya; and Tsutsumi, Nobuhisa, 5,053,464, Cl. 525-454.000.
Tubbesing, Robert A.; and Carter, Bruce D., to Greenstreak Plastic Products Company. Roof ridge ventilator. 5,052,286, Cl. 98-42.210.
Tucker, Donald L., to Raychem Corporation. Grommet. 5,052,699, Cl. 277-178.000
Tucker, William E., to Gillette Company, The. Mechanical pencil. 5,052,838, Cl. 401-65.000.
Tung, Ta C. Orally administrable anti-metastatic lectin compositions and methods. 5,053,386, Cl. 514-2.000.
Turini, Francesco. Pneumatically sock tensioning and reversing device for knitting machine. 5,052,196, Cl. 66-149.00S.
Tuszynski, William J.: *See—*
McElligott, Paul J., Jr.; Sandler, Stanley R.; Kennoy, John F.; and Tuszynski, William J., 5,053,149, Cl. 252-8.552.
Tysver, John D.; and Johnson, Gerald H., to Sundstrand Corporation. Rotary travel limit stop apparatus. 5,052,537, Cl. 192-141.000.
Tytus, Raymond P.: *See—*
Carlon, Hugh R.; Tytus, Raymond P.; and Stuempfle, Arthur K., 5,052,618, Cl. 239-77.000.
Tzanos, Dimitri: *See—*
Giddey, Claude; Bunter, Guy; and Tzanos, Dimitri, 5,053,219, Cl. 424-63.000.
Ubagai, Toshikazu, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Transmission assembly for the use in vehicles. 5,052,239, Cl. 74-473.00R.
UBE Industries, Ltd.: *See—*
Giordano, Nicola; Parmaliana, Adolfo; Frusteri, Francesco; Sasaki, Shigeo; Yoshida, Yasushi; and Nitta, Kuniaki, 5,053,379, Cl. 502-328.000.
Ubukata, Tsuneo, to Victor Company of Japan, Ltd. Picture-quality improving circuit. 5,053,865, Cl. 358-37.000.
Uchida, Hiroyuki, to NEC Corporation. Nonlinear resistance element suitable for an active-type liquid crystal display. 5,053,832, Cl. 357-2.000
Uchida, Manabu: *See—*
Kitano, Kisei; Goto, Yasuyuki; Uchida, Manabu; and Ushioda, Makota, 5,053,162, Cl. 252-299.610.
Uchida, Satoshi; and Takeda, Masahiro, to Kabushiki Kaisha Toshiba. Individual identification apparatus. 5,054,089, Cl. 382-4.000.
Uchida, Tatsuki; and Torigai, Katsumi, to Sanshin Kogyo Kabushiki Kaisha. Cowling assembly for outboard motor. 5,052,961, Cl. 440-77.000
Uchinami, Masanobu, to Mitsubishi Denki K.K. Air-fuel ratio control apparatus. 5,053,968, Cl. 364-431.050.
Uchino, Hiroshi: *See—*
Suzuki, Takayuki; Koike, Tetsuo; Obata, Atsuomi; Shigemori, Masashi; Sasaki, Kohji; Iketani, Sadayoshi; Uchino, Hiroshi; and Kawata, Kouzou, 5,053,632, Cl. 290-45.000.
Uchman, Frederick J., to GKN Automotive Inc. Clamping system. 5,052,082, Cl. 24-20.0CW.
Ueda, Koichiro, to Fujitsu Limited. Test device and method for testing electronic device and semiconductor device having the test device. 5,053,698, Cl. 324-158.00R.
Ueda, Masanori; and Teraoka, Shinichi, to Nippon Steel Corporation. Method of rapidly and uniformly widthwise cooling cast stainless steel strip in continuous casting. 5,052,471, Cl. 164-480.000.
Ueda, Noriyoshi; Takahashi, Yuji; Kitahara, Makoto; Sato, Masaaki; and Wakao, Naho, to Canon Kabushiki Kaisha. Automatic document feeder. 5,052,669, Cl. 271-3.100.

Ueda, Yukinori, to Murata Manufacturing Co., Ltd. Variable resistor. 5,053,741, Cl. 338-160.000.
Uegaki, Shigeo: *See—*
Hara, Tatsuo; Wada, Koichi; and Uegaki, Shigeo, 5,053,251, Cl. 427-142.000.
Uemura, Hisashi: *See—*
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Ueyama, Masayuki: *See—*
Ishida, Tokuji; Hamada, Masataka; Norita, Toshio; Ueyama, Masayuki; Kozakai, Katsumi; Ootsuka, Hiroshi; Kajita, Hideo; and Ishibashi, Kenji, 5,053,800, Cl. 354-402.000.
Uffmann, Hans-Peter, to Krings Verbau GmbH. Trench supporting assembly. 5,052,862, Cl. 405-282.000.
UHDE GmbH: *See—*
Buxel, Michael; Pietzarka, Friedrich-Wilhelm; Thieme, Horst; and Koch, Manfred, 5,053,210, Cl. 423-239.000.
Ultra Network Technologies: *See—*
Johnson, Howard W., 5,053,649, Cl. 307-514.000.
Ulyanitskky, Vladimir J.; Vasiliev, Anatoly A.; Gavrilenko, Tamara P.; Krasnov, Adolf N.; Nikolaev, Jury A.; and Podenkov, Nikolai I. Barrel of an apparatus for applying coatings by gas detonation. 5,052,619, Cl. 239-79.000.
Une, Ryuzo, to Mitsubishi Denki K.K. Device for cooling thermal head. 5,053,792, Cl. 346-146.000.
Union Carbide Canada Limited: *See—*
Wood, J. Robbin; Maric, Robert R.; and Hazell, Jack E., 5,052,626, Cl. 239-567.000.
Union Carbide Chemicals and Plastics Technology Corporation: *See—*
Wegman, Richard W.; and Bryant, David R., 5,053,380, Cl. 502-346.000.
Union Oil Company of California: *See—*
Biale, John, 5,053,441, Cl. 523-201.000.
Occelli, Mario L., 5,053,213, Cl. 423-328.000.
Spada, Lon T.; and Wilczynski, Joseph J., 5,053,452, Cl. 524-707.000.
Union Special Corporation: *See—*
Ackermann, Manfred, 5,052,318, Cl. 112-288.000.
Uniroc Aktiebolag: *See—*
Lof, Stig U., 5,052,503, Cl. 175-258.000.
Unison Industries Limited Partnership: *See—*
Lozito, Roy; Kempinski, Steve; Crough, Michael A.; and Dolmovich, Bruce E., 5,053,913, Cl. 361-257.000.
United States of America
Agriculture: *See—*
Brandon, David L.; Bates, Anne H.; and Friedman, Mendel, 5,053,327, Cl. 435-7.920.
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Brodie, Benjamin E.; and Fitzwater, Donald W., 5,052,947, Cl. 439-607.000.
Army: *See—*
Bennett, Stephen H., 5,052,329, Cl. 116-209.000.
Carlon, Hugh R.; Tytus, Raymond P.; and Stuempfle, Arthur K., 5,052,618, Cl. 239-77.000.
Koscica, Thomas E.; Babbitt, Richard W.; and Drach, William C., 5,052,183, Cl. 62-51.100.
Sayles, David C., 5,053,088, Cl. 149-21.000.
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Taddeo, Ralph M.; Deas, Robert W.; Chang, Lang-Mann; and Grosh, John, 5,052,302, Cl. 102-204.000.
Energy: *See—*
Buhrmaster, Carol L.; Clark, Denis E.; and Smartt, Herschel B., 5,052,331, Cl. 118-50.100.
Esherick, Peter; and Raymond, Thomas D., 5,054,028, Cl. 372-32.000.
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Tremblay, Paul L., 5,054,018, Cl. 359-114.000.
Health and Human Services: *See—*
Carey, Ronald F.; Herman, Bruce A.; Robinson, Ronald A.; Stewart, Harold F.; Hoops, Richard G.; and Douglas, George H., 5,052,934, Cl. 434-268.000.
Ruggera, Paul S., 5,052,997, Cl. 600-13.000.
National Aeronautics and Space Administration: *See—*
Bement, Laurence J.; Bailey, James W.; and Schimmel, Morry L., 5,052,817, Cl. 374-8.000.
Companion, John A., 5,053,341, Cl. 436-8.000.
Imhoff, Marc L., 5,053,778, Cl. 342-191.000.
Juday, Richard D., 5,052,807, Cl. 356-375.000.
Weddendorf, Bruce C., 5,052,152, Cl. 49-495.000.
Navy: *See—*
Blackmon, Fletcher A.; and Reid, Robert J., 5,054,039, Cl. 377-42.000.
Clark, Howard L., 5,052,962, Cl. 440-83.000.
Gimber, George A.; Cotilla, Edward J.; Picard, Salvatore R.; and Starry, Robert F., 5,054,006, Cl. 367-136.000.
Gittings, Dan, 5,054,004, Cl. 367-100.000.
Henry, Ronald A.; Reed, Russell, Jr.; and Chan, May L., 5,053,086, Cl. 149-19.400.
Kessler, Bernard V., 5,053,622, Cl. 250-358.100.
Lee, Woodrow W., 5,052,272, Cl. 89-7.000.
Travor, Bruce W.; Coughlan, Richard M.; Cotilla, Edward J.; and Marshall, Frank P., 5,052,270, Cl. 89-1.510.
U.S. Philips Corporation: *See—*
Benschop, Antonius A. J.; and Roelofs, Johannes C. M., 5,053,655, Cl. 310-15.000.
Bernsen, Johannes A. C.; and van den Boomgaard, Reinier, 5,054,095, Cl. 382-30.000.
Bulman, Jonathan M.; and McFarlane, Glenton P., 5,052,774, Cl. 385-86.000.
Cluzeau, Serge; and Verschoore, Gerard, 5,053,184, Cl. 376-116.000.
Hellwig, Paul; Mackovika, Bernd; and Hahn, Wolfgang, 5,053,935, Cl. 362-296.000.
Labrijn, Hans, 5,052,106, Cl. 30-34.100.
Luijks, Gerardus M. J. F.; and Bleeker, Hendrik M., 5,053,676, Cl. 315-58.000.
Luursema, Meerten, 5,053,680, Cl. 315-209.00R.
Pletz-Kirsch, Gerhard, 5,053,869, Cl. 358-153.000.
Schemmel, Hans-Robert, 5,053,723, Cl. 331-14.000.
Stekelenburg, Michael A. W., 5,053,874, Cl. 358-214.000.
Van Beek, Anton, 5,052,822, Cl. 384-123.000.
van den Elshout, Andreas A. J. M.; Veendrick, Hendrikus J. M.; and Harberts, Dirk W., 5,053,648, Cl. 307-469.000.
Van Eck, Arnoldus H. M.; and Van Der Heijden, Gerrit, 5,052,966, Cl. 445-36.000.
van Steenbrugge, Bernard, 5,054,022, Cl. 370-85.600.
Weekamp, Johannus W.; Kats, Pieter; and Jacques, Luc A. G., 5,053,916, Cl. 361-308.000.
United States Surgical Corporation: *See—*
Lander, Jack R., 5,053,016, Cl. 604-169.000.
United Technologies Corporation: *See—*
Wisner, George R.; and Mottier, Francois M., 5,052,826, Cl. 384-310.000.
Universal Chemical Feeder, Inc.: *See—*
Maglio, Murrill W.; and Moore, Stephen D., 5,053,206, Cl. 422-264.000.
University of California, The Regents of the: *See—*
Srini, Vason P., 5,053,942, Cl. 364-200.000.
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Zeidler, Gideon; and Reznik, David, 5,053,238, Cl. 426-299.000.
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Salyer, Ival O., 5,053,446, Cl. 524-8.000.
University of Florida: *See—*
Rand, Kenneth H.; Bodor, Nicholas S.; and Brey, Wallace, 5,053,215, Cl. 424-1.100.
University of Maryland, The: *See—*
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University of Michigan, The Regents of the: *See—*
Ensminger, William D.; Knol, James A.; and Andrews, James C., 5,053,013, Cl. 604-167.000.
University of Missouri, The Curators of the: *See—*
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Kozikowski, Alan P., 5,053,399, Cl. 514-150.000.
University of Rochester, The: *See—*
Williamson, Steven L.; and Mourou, Gerard A., 5,053,696, Cl. 324-121.00R.
University of Texas at Austin: *See—*
Woodson, Herbert H.; and Hsu, John S., 5,053,689, Cl. 318-705.000.
Untersander, Peter: *See—*
Frielingsdorf, Frank; Hofer, Alan; and Untersander, Peter, 5,054,079, Cl. 381-151.000.
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Mitariten, Michael J., 5,053,058, Cl. 55-16.000.
Sachtler, J. W. Adriaan; and Lawson, R. Joe, 5,053,558, Cl. 568-783.000.
Williamson, Robert R., 5,053,371, Cl. 502-37.000.
Up & Adam, Inc.: *See—*
Ravreby, Fred, 5,052,575, Cl. 220-278.000.
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Ellestad, George A.; McGahren, William J.; Sassiver, Martin L.; Hamann, Philip R.; Hinman, Lois M.; and Upeslacis, Janis, 5,053,394, Cl. 514-25.000.
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Uponor N.V.: *See—*
Johansson, Thomas; and Johansson, Ake, 5,053,097, Cl. 156-158.000.
Uragami, Akira: *See—*
Shibata, Manabu; Uragami, Akira; Kadono, Shinji; and Suzuki, Yukio, 5,053,644, Cl. 307-446.000.
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Teetz, Volker; Geiger, Rolf; Urbach, Hansjorg; Becker, Reinhard; and Scholkens, Bernward, 5,053,519, Cl. 548-452.000.
Uriacher, Dennis P., to North Country Thermal Line, Inc. Apparatus for seating an elongated flexible spline in a window frame to secure a flexible screen thereto. 5,052,093, Cl. 29-235.000.
Uryu, Takeshi, to Dainippon Screen Mfg. Co. Ltd. Method of producing color image in color photographic print enlarger and device therefor. 5,053,807, Cl. 355-38.000.
Ushioda, Makota: *See—*
Kitano, Kisei; Goto, Yasuyuki; Uchida, Manabu; and Ushioda, Makota, 5,053,162, Cl. 252-299.610.
Ushiyama, Katsumi; Sakamoto, Sadafumi; and Nishikawa, Seiji, to Kokusai Electric Co., Ltd.; and Nippon Telegraph and Telephone

Corporation. Receiver for personal radio paging service. 5,054,120, Cl. 455-351.000.
Usubuchi, Yutaka: *See*—
Suzuki, Yoshio; Usubuchi, Yutaka; and Oguri, Yakeshi, 5,053,316, Cl. 430-281.000.
Usui, Nobuhiro: *See*—
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UTDC, Inc.: *See*—
Mister, Jean M.; and Carlsen, Richard, 5,053,964, Cl. 364-424.010.
Timan, Peter E., 5,052,707, Cl. 280-403.000.
Vahlensieck, Hans-Joachim: *See*—
Matthes, Rheinhard; Rauleder, Hartwig; and Vahlensieck, Hans-Joachim, 5,053,560, Cl. 568-851.000.
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Hippelainen, Lassi, 5,053,784, Cl. 342-434.000.
Vakerlis, George; Halverson, Ward D.; Garg, Diwakar; and Dyer, Paul N., to Air Products and Chemicals, Inc. Radio frequency plasma enhanced chemical vapor deposition process and reactor. 5,052,339, Cl. 118-723.000.
Valeo Electronique: *See*—
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Valio Meijerien Keskusosuusliike: *See*—
Setala, Jouko J.; Suominen, Veli M. S.; Rauramaa, Aino L.; and Sivela, Seppo, 5,053,233, Cl. 426-53.000.
Vallauri, Ubaldo; and Portas, Francesco, to Societa' Cavi Pirelli S.p.A. Apparatus for inserting a rigid support within a contractable sleeve for electric cable joints. 5,052,092, Cl. 29-234.000.
Vallejos, Jean-Claude: *See*—
Christidis, Yani; and Vallejos, Jean-Claude, 5,053,527, Cl. 560-174.000.
Valmet Paper Machinery Inc.: *See*—
Rantala, Esko, 5,052,233, Cl. 73-862.450.
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Colani, Luigi, 5,052,567, Cl. 215-100.00A.
Vanaschen, Luc; Kuster, Hans-Werner; D'Iribarne, Benoit; Promper, Hans-Josef; and Gy, Rene, to Saint-Gobain Vitrage International. Process and device for bending and tempering by contact. 5,053,069, Cl. 65-106.000
Van Beek, Anton, to U.S. Philips Corporation. Axial bearing comprising a reservoir with a pattern of feed grooves. 5,052,822, Cl. 384-123.000
van Brakel, Ronald J.: *See*—
Huiskamp, Bernhard; and van Brakel, Ronald J., 5,052,827, Cl. 384-448.000.
Vance Products Incorporated: *See*—
Gottesman, James E.; and Foster, Thomas L., 5,053,043, Cl. 606-148.000
Van Cuyk, Donald E. Lock for truck trailers. 5,052,203, Cl. 70-232.000
van de Brand, Anton M., to Mali-Ploeger B.V. Threshing device for pulse crops. 5,052,976, Cl. 460-14.000.
van den Boomgaard, Reinier: *See*—
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van den Elshout, Andreas A. J. M.; Veendrick, Hendrikus J. M.; and Harberts, Dirk W., to U.S. Philips Corporation. Master slice CMOS array having complementary columns. 5,053,648, Cl. 307-469.000.
Van Der Heijden, Gerrit: *See*—
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Vanderheyden, Jean-Luc E.; Su, Fu-Min; and Ehrhardt, Gary J., to NeoRx Corporation; and University of Missouri, The Curators of the. Soluble irradiation targets and methods for the production of radiorhenium. 5,053,186, Cl. 376-189.000.
Vanderlaan, Martin; Watkins, Bruce E.; and Stanker, Larry H., to University of California, Regents of the. Monoclonal antibodies for the separate detection of halodeoxyuridines and method for their use. 5,053,336, Cl. 435-240.270.
Vandervoort, John R.; and Davis, Alan R., to Eaton Corporation. Positive clutch structure. 5,052,535, Cl. 192-67.00R.
Vanderzanden, James L.; and Seigneur, Christopher D., to Blount, Inc Repairable guide bar for tree harvesters. 5,052,109, Cl. 30-387.000
Van Eck, Arnoldus H. M.; and Van Der Heijden, Gerrit, to U.S. Philips Corporation. Method of assembling an electron gun component. 5,052,966, Cl. 445-36.000.
van Es, Johann: *See*—
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Vanhatalo, Pentti J.; and Krappe, Visa A. P., to Food Systems Industries Oy, Ltd. Process and apparatus for producing a packaged sausage product and the packaged sausage product thereby. 5,053,239, Cl. 426-412.000.
Van Heugten, Anthony Y., to Critikon, Inc. Catheter with controlled valve. 5,053,014, Cl. 604-167.000.
van Reis, Robert D.: *See*—
Arathoon, William R.; Builder, Stuart E.; Lubiniecki, Anthony S.; and van Reis, Robert D., 5,053,334, Cl. 435-226.000.
van Steenbrugge, Bernard, to U.S. Philips Corporation. Local communication bus system comprising a set of interconnected devices, a control bus, and a set of signal interconnections, and a device and a switchbox for use in such system. 5,054,022, Cl. 370-85.600.
Van Wyk, J. Derek, to MPB Corporation. Compliant spherical bearing. 5,052,824, Cl. 384-203.000.
Varda, Ann P.: *See*—
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Variform, Inc.: *See*—
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Varjabedian, Suren A.: *See*—
James, Wayne R.; Neal, Warren D.; and Varjabedian, Suren A., 5,052,541, Cl. 198-368.000.
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Martin, Geoffrey S., 5,053,023, Cl. 604-280.000.
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Vassiliades, Anthony E. Microcapsules and their production. 5,053,277, Cl. 428-402.200
Vassiliou, Eustathios: *See*—
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Vaughter, Harmon P.: *See*—
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VDO Adolf Schindling AG: *See*—
Luft, Jurgen; and Kern, Eckhart, 5,052,507, Cl. 180-197.000.
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Veba Oel Aktiengesellschaft: *See*—
Schramm, Bernhard; Kern, Jurgen; Schwahn, Harald; Preuss, August-Wilhelm; Gottlieb, Klaus; and Bruderreck, Hartmut, 5,053,580, Cl. 585-624.000
Veba Oel Technologie GmbH: *See*—
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Vecci, Stanley J.: *See*—
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Nikravech, Mehrdad; Vedrenne, Isabelle; Amouroux, Jacques; and Saint-Just, Jacques, 5,053,575, Cl. 585-500.000.
Veendrick, Hendrikus J. M.: *See*—
van den Elshout, Andreas A. J. M.; Veendrick, Hendrikus J. M.; and Harberts, Dirk W., 5,053,648, Cl. 307-469.000.
Venable, Phillip G., to Case Corporation. Cushioned latch. 5,052,727, Cl. 292-19.000.
Vente, Paul: *See*—
Dullings, Josef; Vente, Paul; and Kloker, Werner, 5,052,916, Cl. 425-564.000
Verderame, Francis J.: *See*—
Blacka, Robert J.; and Verderame, Francis J., 5,052,155, Cl. 51-413.000
Verschoore, Gerard: *See*—
Cluzeau, Serge; and Verschoore, Gerard, 5,053,184, Cl. 376-116.000
Vesgesna, Raju: *See*—
Perlman, Robert M.; Sobel, Prem; McMinn, Brian D.; Thaden, Robert C.; Tamura, Glenn A.; Lynch, Thomas W.; and Vesgesna, Raju, 5,053,631, Cl. 364-748.000.
Vetter, Heinz; and Siol, Werner, to Rohm GmbH. Method for making a coated synthetic resin web. 5,053,177, Cl. 264-134.000.
Vialaneix, Dominique, to Valeo Electronique. Low tension connecting structure for an ignition coil, in particular for an internal combustion engine of an automotive vehicle. 5,053,737, Cl. 336-90.000.
Viau, Thomas L.: *See*—
Berndlmaier, Erich; Das, Gobinda; and Viau, Thomas L., 5,053,851, Cl. 357-68.000.
Vibro-Meter SA: *See*—
Schmid, Felix, 5,052,226, Cl. 73-571.00R.
Vicik, Stephen J., to Viskase Corporation. Amorphous nylon copolymer and copolyamide films and blends. 5,053,259, Cl. 428-36.910.
Victor Company of Japan, Ltd.: *See*—
Ito, Shigehiro; Nishi, Yuji; Kouguchi, Tatsushi; and Ebihara, Kazuyuki, 5,053,870, Cl. 358-167.000.
Nakano, Atsushi; Konno, Toshio; and Shimada, Tadayuki, 5,053,889, Cl. 358-480.000.
Namiki, Yasuomi, 5,053,890, Cl. 360-19.100.
Satoh, Seiji; and Tajima, Osamu, 5,052,831, Cl. 400-120.000.
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Vierling, Chester J., to Siemens Energy & Automation, Inc. Mount for attachment of a switch operating mechanism to a switch. 5,053,590, Cl. 200-293.000
Vieux Chene Expansion Sarl: *See*—
Elmalek, Pierre; and Nathan, Guy, 5,052,063, Cl. 5-238.000.
Vikhrev, Vladimir I.: *See*—
Novikov, Nikolai M.; Vikhrev, Vladimir I.; and Sholokhov, Valery B., 5,052,887, Cl. 415-90.000.
Viking Engineering & Development, Incorporated: *See*—
Morrison, Robert C., 5,052,307, Cl. 108-53.100.
Villa, Marco: *See*—
Giordano, Claudio; and Villa, Marco, 5,053,533, Cl. 562-466.000.
Viskase Corporation: *See*—
Vicik, Stephen J., 5,053,259, Cl. 428-36.910.
Voest-Alpine Zeltweg Gesellschaft m.b.H.: *See*—
Porkristl, Albert; and Steinberger, Johann, 5,053,701, Cl. 324-207.260.
Vohra, Subhash R.: *See*—
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Voice Data Image Corporation Inc.: *See*—
Dickie, Robert G., 5,053,926, Cl. 361-424.000.
Volhard, Donald: *See*—
Brockhaus, Peter B., 5,052,878, Cl. 414-522.000
Vonalt, Kerry G.; Tate, William R.; and Gentit, Ernest K., to ARO Corporation, The. Universal swivel body for a fluid handling hose connector. 5,052,432, Cl. 137-355.160.
von Bonin, Wulf, to Bayer Aktiengesellschaft. Heat resistant foams, their preparation and use. 5,053,148, Cl. 252-8.050.
von Campe, Hilmar, to Nukem GmbH. Method and means for producing a layered system of semiconductors. 5,053,355, Cl. 437-114.000.
Von Kuepach, Hermann: *See*—
Augsburger, Friedemann; Holzinger, Gerhard; Loser, Friedrich; and Von Kuepach, Hermann, 5,053,654, Cl. 310-12.000.
von Lucken, Juan J.: *See*—
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Voorhis, Roger J.: *See*—
Dudley, Kevin F.; Paige, Lowell E.; Dunshee, Kevin B.; and Voorhis, Roger J., 5,052,186, Cl. 62-79.000.
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Zimmon, David S. Indwelling stent and method of use. 5,052,998, Cl 604-8.000

Zoia, Anthony J.; Midgley, Roland R.; Plaschko, Donald L.; Melbye, William L.; Wood, Leigh E.; Nestegard, Susan K.; and Miller, John A., to Minnesota Mining and Manufacturing Company. Disposable diaper with improved hook and loop fastener system. 5,053,028, Cl 604-385.100

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501 Fukui Chemical Industry Co., Ltd.: *See—*
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501 Mita Industrial Co., Ltd.: *See—*
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501 Mitsubishi Shindoh Co., Ltd.: *See—*
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NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allen, Lewis E. Leaf bundling rake. Re. 33,702, Cl. 56-400.120

Caprio, A. Ronald; Cyr, John P.; Geaghan, Bernard O.; Kotschenreuther, Paul C.; Schanin, David J.; and Salett, Ronald M., to Digital Equipment Corporation. Interchangeable interface circuit structure. Re. 33,705, Cl. 364-900.000.

Cyr, John P.: *See—*
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Digital Equipment Corporation: *See—*
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Geaghan, Bernard O.: *See—*
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Hasegawa, Hidenori, to Meinan Machinery Works Inc. Method of producing laminated plate. Re. 33,703, Cl. 156-254.000.

Hitachi, Ltd.: *See—*
Mohri, Shunji, Re. 33,706, Cl. 394-900.000.

Ito, Hiroshi: *See—*
Shindo, Yoshio; and Ito, Hiroshi, Re. 33,707, Cl. 475-59.000.

Kotschenreuther, Paul C.: *See—*
Caprio, A. Ronald; Cyr, John P.; Geaghan, Bernard O.; Kotschenreuther, Paul C.; Schanin, David J.; and Salett, Ronald M., Re. 33,705, Cl. 364-900.000.

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Mohri, Shunji, to Hitachi, Ltd. Table driven translator. Re. 33,706, Cl 394-900.000.

Parma Corporation: *See—*
Rogers, Walter C., Jr., Re. 33,704, Cl. 297-85.000.

Rogers, Walter C., Jr., to Parma Corporation. Rocker-recliner chair Re. 33,704, Cl. 297-85.000.

Salett, Ronald M.: *See—*
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Shindo, Yoshio; and Ito, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Automatic transmission with overdrive. Re. 33,707, Cl. 475-59.000

Toyota Jidosha Kabushiki Kaisha: *See—*
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TO WHOM

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Chau, Michael M., to Allied-Signal Inc. High flux semipermeable membranes. B1 4,950,404, 10-1-91, Cl. 210-500.270.

Ferragamo, Michael C.: *See—*
Strohl, Clair L., Jr.; Ferragamo, Michael C.; Kay, Donald A.; Shapiro, Alan R.; and Whipple, Gary R., B1 4,905,698, Cl. 128-653.00R.

General Electric Company: *See—*
Van Sickler, Robert H., B1 4,679,126, Cl. 362-226.000.

Kay, Donald A.: *See—*
Strohl, Clair L., Jr.; Ferragamo, Michael C.; Kay, Donald A.; Shapiro, Alan R.; and Whipple, Gary R., B1 4,905,698, Cl. 128-653.00R.

Kiriake, Masaharu; and Shimano, Akira, to Murata Kikai Kabushiki Kaisha. Cop supplying system in automatic winder. B1 4,463,909, 10-1-91, Cl. 242-35.50A.

Murata Kikai Kabushiki Kaisha: *See—*
Kiriake, Masaharu; and Shimano, Akira, B1 4,463,909, Cl. 242-35.50A.

Pharmacia Deltec Inc.: *See—*
Strohl, Clair L., Jr.; Ferragamo, Michael C.; Kay, Donald A.; Shapiro, Alan R.; and Whipple, Gary R., B1 4,905,698, Cl 128-653.00R.

Shapiro, Alan R.: *See—*
Strohl, Clair L., Jr.; Ferragamo, Michael C.; Kay, Donald A.; Shapiro, Alan R.; and Whipple, Gary R., B1 4,905,698, Cl 128-653.00R.

Shimano, Akira: *See—*
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Strohl, Clair L., Jr.; Ferragamo, Michael C.; Kay, Donald A.; Shapiro, Alan R.; and Whipple, Gary R., to Pharmacia Deltec Inc. Method and apparatus for catheter location determination. B1 4,905,698, 10-1-91, Cl. 128-653.00R.

Van Sickler, Robert H., to General Electric Company. Miniature lamp arrays having improved lamp retention features. B1 4,679,126, 10-1-91, Cl. 362-226.000.

Whipple, Gary R.: *See—*
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ACE Surgical Supply Co.: *See—*
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Amway Corporation: *See—*
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Fewell, Terry S. Grave stone vase. 320,493, 10-1-91, Cl. D99-8.000.
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Flasck, Richard A.; and Stahl, Thomas D., to Honeywell, Inc. Liquid crystal screen for overhead projector. 320,403, 10-1-91, Cl. D16-235.000.
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Good, Sherrie; and McClung, Robbie. Fluoride-dispensing lollipop. 320,300, 10-1-91, Cl. D1-104.000.
Gotham, David R., to Eastman Kodak Company. Control panel for a microfilmer. 320,410, 10-1-91, Cl. D18-41.000.
Graf, Darrell; and Bosche, Kevin S. Firefighting nozzle. 320,432, 10-1-91, Cl. D23-213.000.
Grant, Fred W. Brush with handle and double set of bristles. 320,312, 10-1-91, Cl. D4-119.000
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Grossman, Richard A. Needle safety guard. 320,456, 10-1-91, Cl. D24-130.000.
Grove, James E., to Corona Clipper Co. Lopper. 320,333, 10-1-91, Cl. D8-5.000.
Halm, Hans; and Weltgen, Paul-Otto, to Henkel Kommanditgesellschaft auf Aktien. Dispensing container for liquid detergent or similar article. 320,343, 10-1-91, Cl. D9-351.000.
Hamly, Robert B.; and Mettler, Mark F., to Amway Corporation. Bottle. 320,345, 10-1-91, Cl. D9-372.000.
Harper, Ronald D. Heater which is used with a ceiling fan. 320,439, 10-1-91, Cl. D23-328.000
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Kuhn, Peter H. A. N., to Kortman Intradal B.V. Combined container and applicator for shoe polish. 320,311, 10-1-91, Cl. D4-116.000.
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Marks, Larry D.; Stiles, Richard C.; Mastrop Louis L.; and Bailey, Curtis J., to Whirlpool Corporation. Dishwasher front panel. 320,488, 10-1-91, Cl. D32-3.000.
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207.15 5,052,386
402 5,052,387
419 D 5,052,390
419 PG 5,052,388
5,052,389
422 5,052,391
642 5,052,392
653 R B1 4,905,698
660.01 5,052,393
660.06 5,052,394
661.09 5,052,395
662.05 5,052,396
682 5,052,397
696 5,052,398
703 5,052,399
722 5,052,400
745 5,052,401
751 5,052,402
765 5,052,403
772 5,052,404
774 5,052,405
782 5,052,406
786 5,052,407
804 5,052,408
859 5,052,409
5,052,410
863 5,052,411

CLASS 131
31 5,052,412
77 5,052,413
281 5,052,414
331 5,052,415

CLASS 132
75.5 5,052,416
216 5,052,417
319 5,052,418
322 5,052,419
325 5,052,420

CLASS 134
2 5,052,421
25.1 5,053,082
104.2 5,052,422
174 5,052,423

CLASS 136
256 5,053,083

CLASS 137
1 5,052,424
5,052,425
14 5,052,426
15 5,052,427
5,052,428
38 5,052,429
315 5,052,430
318 5,052,431
355.16 5,052,432
513.3 5,052,433
516.13 5,052,434
516.29 5,052,435
580 5,052,436
587 5,052,437
607 5,052,438
614.04 5,052,439
625.33 5,052,440
625.65 5,052,441
813 5,052,442
899 5,052,443

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CLASS 138
125 5,052,444
155 5,052,445

CLASS 139
93 5,052,446
291 R 5,052,447
383 A 5,052,448

CLASS 140
149 5,052,450

CLASS 141
67 5,052,451

CLASS 144
3 P 5,052,452
28.5 5,052,453
144.5 R 5,052,454
209 A 5,052,455

CLASS 148
11.5 A 5,053,084
403 5,053,085

CLASS 149
19 4 5,053,086
19.8 5,053,087
21 5,053,088
93 R 5,052,449

CLASS 152
370 5,053,089
415 5,052,456
454 5,052,457
532 5,052,458

CLASS 156
62.2 5,053,090
66 5,053,091
89 5,053,092
5,053,093
96 5,053,094
112 5,053,095
157 5,053,096
158 5,053,097
177 5,053,098
250 5,053,099
254 Re.33,703
294 5,053,100
571 5,053,101
580 5,053,102
584 5,053,103
643 5,053,104
5,053,105
657 5,053,106

CLASS 160
122 5,052,459
178.1 5,052,460
224 5,052,461
374 1 5,052,462

CLASS 162
145 5,053,107
237 5,053,108
348 5,053,109

CLASS 164
35 5,052,463
80 5,052,464
201 5,052,465
267 5,052,466
452 5,052,467
457 5,052,468
465 5,052,469
467 5,052,470
480 5,052,471

CLASS 165
1 5,052,472
9 5,052,473
67 5,052,474
76 5,052,475
133 5,052,476
153 5,052,477
5,052,478
5,052,479
5,052,480
185 5,052,481

CLASS 166
[illegible] 5,052,482
55 5,052,483
178 5,052,485
250 5,052,486
263 5,052,487
285 5,052,488
297 5,052,489
303 5,052,490
304 5,052,491
387 5,052,492

CLASS 169
9 5,052,493
60 5,052,494

CLASS 172
140 5,052,495

CLASS 173
29 5,052,496
109 5,052,497
118 5,052,498
162.002 5,052,500
162 1 5,052,499

CLASS 174
36 5,053,582
5,053,583
99 B 5,053,584

CLASS 175
74 5,052,501
80 5,052,502
258 5,052,503

CLASS 177
25.15 5,052,504
229 5,052,505

CLASS 178
18 5,053,585

CLASS 180
140 5,052,506
197 5,052,507
234 5,052,508
287 5,052,509
300 5,052,510
305 5,052,511
329 5,052,512

CLASS 181
246 5,052,513

CLASS 182
[illegible] 5,052,514
121 5,052,515
135 5,052,516
155 5,052,517

CLASS 184
6.12 5,052,518

CLASS 186
37 5,052,519

CLASS 187
8.67 5,052,520
12 5,052,521
20 5,052,522
89 5,052,523

CLASS 188
24 11 5,052,524
73.32 5,052,525
73 44 5,052,526
79 55 5,052,527
317 5,052,528
378 5,052,529
379 5,052,530

CLASS 191
12.2 R 5,053,586

CLASS 192
4 A 5,052,531
5,052,532
41 A 5,052,533
53 D 5,052,534
67 R 5,052,535
107 M 5,052,536
141 5,052,537

CLASS 194
317 5,052,538

CLASS 198
328 5,052,539
346.1 5,052,540
368 5,052,541
372 5,052,542
387 5,052,543
456 5,052,544
534 5,052,545
718 5,052,546
806 5,052,547
817 5,052,548

CLASS 200
19 R 5,053,587
61.45 R 5,053,588
5,053,589
293 5,053,590
315 5,053,591
553 5,053,592

CLASS 202
176 5,053,110

CLASS 203
1 5,053,111

CLASS 204
38.5 5,053,112
130 5,053,113
252 5,053,114
299 R 5,053,115
406 5,053,116

CLASS 206
3 5,052,549
5 5,052,550
63 3 5,052,551
174 5,052,552
219 5,052,553
5,052,554
315.11 5,052,555
362.2 5,052,556
427 5,052,557
439 5,052,558
525 5,052,559
564 5,052,560

CLASS 208
45 5,053,118
58 5,053,117
137 5,052,561

CLASS 209
166 5,053,119
626 5,052,562

CLASS 210
86 5,053,120
90 5,053,121
95 5,053,122
138 5,053,123
151 5,053,124
169 5,053,125
188 5,053,126
196 5,053,127
232 5,053,128
5,053,129
321.79 5,053,130
493.5 5,053,131
500.23 5,053,132
500.27 B1 4,950,404
500.38 5,053,133
516 5,053,134
635 5,053,135
650 5,053,136
669 5,053,137
670 5,053,138
688 5,053,139
704 5,053,140
739 5,053,141
742 5,053,142
748 5,053,143
770 5,053,144
776 5,053,145

CLASS 211
13 5,052,563
40 5,052,564
182 5,052,565

CLASS 212
257 5,052,566

CLASS 215
100 A 5,052,567
250 5,052,568

CLASS 219
10.493 5,053,593
10.55 E 5,053,594
10.75 5,053,595
10.77 5,053,596
56 5,053,597
69.12 5,053,598
116 5,053,599
121 48 5,053,600
121.63 5,053,601
121.78 5,053,602
205 5,053,603
483 5,053,604
501 5,053,605

CLASS 220
1.5 5,052,569
4.33 5,052,570
203 5,052,571
270 5,052,572
271 5,052,573
276 5,052,574
278 5,052,575
304 5,052,576
310 5,052,577
352 5,052,578
403 5,052,579
505 5,052,580
570 5,052,581
571 5,052,582

CLASS 221
1 5,052,583
152 5,052,584

CLASS 222
1 5,052,585
3 5,052,586
79 5,052,587
80 5,052,588
83 5,052,589
94 5,052,590
135 5,052,591
212 5,052,592
333 5,052,593
490 5,052,594
525 5,052,595
593 5,052,596
5,052,597
600 5,052,598

CLASS 223
89 5,052,599
96 5,052,600

CLASS 224
42 41 5,052,601
218 5,052,602
270 5,052,603
274 5,052,604
324 5,052,605

CLASS 226
120 5,052,606

CLASS 227
107 5,052,607

CLASS 228
44.5 5,052,608
5,052,609
56.3 5,052,610
5,052,611
194 5,052,612
207

CLASS 229
73 5,052,613
103.1 5,052,614
182 5,052,615

CLASS 232
1 D 5,052,616

CLASS 235
379 5,053,606
5,053,607
380 5,053,608
436 5,053,609
454 5,053,610
5,053,611
462 5,053,612
492 5,053,613

CLASS 239
4 5,052,617
77 5,052,618
79 5,052,619
101 5,052,620
242 5,052,621
5,052,622
305 5,052,623
525 5,052,624
542 5,052,625
567 5,052,626
655 5,052,627
690 5,052,628
752 5,052,629

CLASS 241
36 5,052,630
169.1 5,052,631

CLASS 242
35.5 A B1 4,463,909
47 5,052,632
150 R 5,052,633
198 5,052,634

CLASS 244
3.11 5,052,635
3.12 5,052,636
3.15 5,052,637
53 R 5,052,638
137.4 5,052,639
173 5,052,640
218 5,052,641

CLASS 246
393 5,052,642

CLASS 248
56 5,052,643
114 5,052,644
125 5,052,645
214 5,052,646
231 5,052,647
235 5,052,648
311.2 5,052,649
451 5,052,650
552 5,052,651
634 5,052,652
674 5,052,653

CLASS 249
50 5,052,654

CLASS 250
205 5,053,614
208.1 5,053,615
221 5,053,616
227 21 5,053,617
231.17 5,053,618
235 5,053,619
270 5,053,620
298 5,053,621
358.1 5,053,622
373 5,053,623
385.1 5,053,624
440 1 5,053,625
458 1 5,053,626
492 2 5,053,627
557 5,053,628
571 5,053,629
574 5,053,630

CLASS 251
95 5,052,655
129 11 5,052,656
160 5,052,657
214 5,052,658

CLASS 252
2 5,053,146
7 5,053,147
8 05 5,053,148
8.552 5,053,149
51.5 A 5,053,150
5,053,151
51.5 R 5,053,152
5,053,153
5,053,154
62 58 5,053,156
68 5,053,155
91 5,053,157
99 5,053,158
106 5,053,159
180 5,053,161
299 61 5,053,162
5,053,163
299.62 5,053,164
301.4 P 5,053,165
500 5,053,166
511 5,053,167
587 5,053,168

CLASS 254
29 R 5,052,659
134.3 FT 5,052,660

CLASS 260
428 5,053,169

CLASS 261
78.1 5,053,170

CLASS 264
1.4 5,053,171
39 5,053,172
5,053,173
60 5,053,175
75 5,053,176
134 5,053,177
146 5,053,174
254 5,053,178
257 5,053,179
290.2 5,053,180
296 5,053,181
318 5,053,182
547 5,053,183

CLASS 266
87 5,052,661

CLASS 267
140.1 5,052,662
141 5,052,663
167 5,052,664
220 5,052,665

CLASS 270
55 5,052,666
5,052,667

CLASS 271
3 5,052,668
3.1 5,052,669
9 5,052,670
5,052,671
5,052,672
22 5,052,673
42 5,052,674
98 5,052,675
121 5,052,676
164 5,052,677
186 5,052,678
293 5,052,679

CLASS 272
1 R 5,052,680
70 5,052,682
76 5,052,683
132 5,052,684
136 5,052,681

CLASS 273
29 B 5,052,686
34 R 5,052,687
35 B 5,052,688
183 A 5,052,689
183 D 5,052,690
241 5,052,691
249 5,052,692
336 5,052,693
460 5,052,685

CLASS 277
3 5,052,694
9.5 5,052,695
37 5,052,696
80 5,052,697
138 5,052,698
178 5,052,699

CLASS 279
106 5,052,700

CLASS 280
11.2 5,052,701
11.28 5,052,702
47 34 5,052,703
202 5,052,704
212 5,052,705
287 5,052,706
403 5,052,707
604 5,052,708
615 5,052,709
5,052,710
661 5,052,711
702 5,052,712
711 5,052,713
762 5,052,714
775 5,052,715
777 5,052,716

CLASS 281
21.1 5,052,717

CLASS 283
105 5,052,718

CLASS 285
4 5,052,719
30 5,052,720
62 5,052,721
108 5,052,722
190 5,052,723
308 5,052,724
341 5,052,725
5,052,726

CLASS 290
45 5,053,632
48 5,053,633

CLASS 292
19 5,052,727
106 5,052,728
162 5,052,729
201 5,052,730
336.3 5,052,731

CLASS 293
102 5,052,732

CLASS 294
19.1 5,052,733
81.2 5,052,734
81.5 5,052,735
106 5,052,736

CLASS 296
37.6 5,052,739
39.2 5,052,737
78.1 5,052,738
120.1 5,052,740
191 5,052,741
192 5,052,742
210 5,052,743
213 5,052,744
217 5,052,745
5,052,746
219 5,052,747

CLASS 297
85 Re.33,704
124 5,052,748
250 5,052,749
5,052,750
341 5,052,751
361 5,052,752
5,052,753
408 5,052,754
452 5,052,755

CLASS 299
17 5,052,756
87 5,052,757

CLASS 301
108 S 5,052,758

CLASS 303
9.62 5,052,759

5,052,760
22.6 5,052,761

CLASS 304
513 5,053,974

CLASS 307
9.1 5,053,634
67 5,053,635
112 5,053,636
147 5,053,637
201 5,053,638
269 5,053,639
296 6 5,053,640
443 5,053,642
5,053,643
446 5,053,644
464 5,053,645
465 5,053,646
5,053,647
469 5,053,648
514 5,053,649
521 5,053,650
529 5,053,651
530 5,053,652
581 5,053,653

CLASS 310
12 5,053,654
15 5,053,655
42 5,053,656
63 5,053,657
64 5,053,658
68 E 5,053,659
80 5,053,660
83 5,053,661
90.5 5,053,662
91 5,053,663
114 5,053,664
239 5,053,665
261 5,053,666
268 5,053,667
317 5,053,668
323 5,053,669
328 5,053,670
329 5,053,671
334 5,053,672

CLASS 312
242 5,052,762

CLASS 313
308 5,053,673
407 5,053,674
505 5,053,675

CLASS 315
58 5,053,676
77 5,053,677
111.81 5,053,678
169.3 5,053,679
209 R 5,053,680
219 5,053,681
223 5,053,682
290 5,053,683
392 5,053,684

CLASS 318
135 5,053,685
254 5,053,686
568.2 5,053,687
599 5,053,688
705 5,053,689
811 5,053,690

CLASS 323
211 5,053,691
365 5,053,692

CLASS 324
96 5,053,693
5,053,694
117 R 5,053,695
121 R 5,053,696
142 5,053,697
158 R 5,053,698
5,053,699
5,053,700
207.26 5,053,701
216 5,053,702
230 5,053,703
235 5,053,704
240 5,053,705
248 5,053,706
262 5,053,707
304 5,053,708
307 5,053,709
309 5,053,710
318 5,053,711
537 5,053,713
613 5,053,714
627 5,053,712
662 5,053,715
726 5,053,716

CLASS 329
300 5,053,717

CLASS 330
260 5,053,718
269 5,053,719
296 5,053,720
302 5,053,721

CLASS 331
2 5,053,722
14 5,053,723
5,053,724
34 5,053,726
62 5,053,727
[illegible]

CLASS 332
100 5,053,728
109 5,053,729

CLASS 333
17.3 5,053,725
33 5,053,730
101 5,053,731
106 5,053,732
110 5,053,733
219.2 5,053,734

CLASS 335
14 5,053,735
62 5,053,736
274 5,053,756

CLASS 336
90 5,053,737
165 5,053,738

CLASS 338
21 5,053,739
25 5,053,740
160 5,053,741
162 5,053,742
297 5,053,743

CLASS 340
438 5,053,744
450 3 5,053,745
473 5,053,746
507 5,053,747
541 5,053,748
[illegible] 5,053,749
5,053,750
623 5,053,751
628 5,053,752
629 5,053,753
632 5,053,754
705 5,053,755
712 5,053,757
5,053,758
723 5,053,759
725 5,053,760
726 5,053,761
734 5,053,762
787 5,053,763
793 5,053,764
815.31 5,053,765
870.02 5,053,766
968 5,053,767
988 5,053,768

CLASS 341
53 5,053,769
118 5,053,770
156 5,053,771

CLASS 342
25 5,053,772
26 5,053,773
44 5,053,774
124 5,053,775
5,053,776
173 5,053,777
191 5,053,778
195 5,053,779
[illegible] 5,053,780
351 5,053,781
352 5,053,782
367 5,053,783
434 5,053,784

CLASS 343
756 5,053,785
895 5,053,786

CLASS 346
1.1 5,053,787
5,053,788
76 PH 5,053,789
5,053,790
138 5,053,791
146 5,053,792
154 5,053,793

CLASS 350
96.12 5,052,769
96.20 5,052,773

CLASS 351
162 5,052,794
218 5,052,795

CLASS 352
221 5,052,796

CLASS 353
28 5,052,797
88 5,052,798

CLASS 354
79 5,053,794
275 5,053,795
322 5,053,796
5,053,797
[illegible] 5,053,798
402 5,053,799
5,053,800
5,053,801
416 5,053,802
466 5,053,803
484 5,053,804

CLASS 355
27 5,053,805
30 5,053,806
38 5,053,807
5,053,808
41 5,053,809
57 5,053,810
72 5,053,811
133 5,053,812
201 5,053,813
208 5,053,814
5,053,815
5,053,816
211 5,053,817
214 5,053,818
230 5,053,819
245 5,053,820
5,053,821
246 5,053,822
256 5,053,823
259 5,053,824
260 5,053,825
271 5,053,826
5,053,827
285 5,053,828
290 5,053,829
5,053,830
324 5,053,831

CLASS 356
152 5,052,799
5,052,800
5,052,801
153 5,052,802
237 5,052,803
241 5,052,804
256 5,052,805
315 5,052,806
343 5,052,808
350 5,052,807
375

CLASS 357
2 5,053,832
4 5,053,833
[illegible] 5,053,834
5,053,835
16 5,053,836
17 5,053,837
23.4 5,053,838
23.5 5,053,839
5,053,840
5,053,841
[illegible] 5,053,843
5,053,844
34 5,053,845
5,053,846
36 5,053,847
51 5,053,848
59 5,053,849
68 5,053,850
5,053,851
74 5,053,852
5,053,853
79 5,053,854
81 5,053,855
[illegible] 5,053,856

CLASS 358
12 5,053,857
5,053,858
5,053,859
5,053,860
13 5,053,861
17 5,053,862
21 R 5,053,863
22 5,053,864
37 5,053,865
75 5,053,866
80 5,053,867
93 5,053,868
153 5,053,869
167 5,053,870
209 5,053,871
213.11 5,053,872
213.29 5,053,873
214 5,053,874
222 5,053,875
5,053,876
228 5,053,877
5,053,878
244 5,053,879
245 5,053,880
254 5,053,881
342 5,053,882
349 5,053,883
5,053,884
449 5,053,885
451 5,053,886
457 5,053,887
458 5,053,888
480 5,053,889

CLASS 359
9 5,052,764
5,052,765
15 5,052,766
40 5,052,783
52 5,052,784
54 5,052,785
114 5,054,018
206 5,052,767
328 5,052,770
330 5,053,641
335 5,052,763
375 5,052,789
391 5,052,788
399 5,052,790
421 5,052,791
484 5,052,786
638 5,052,780
683 5,052,787
823 5,052,781
827 5,052,782
843 5,052,792
848 5,052,793

CLASS 360
19 1 5,053,890
22 5,053,891
62 5,053,892
66 5,053,893
69 5,053,894
70 5,053,895
71 5,053,896
72.1 5,053,898
77.05 5,053,897
77.08 5,053,899
77.13 5,053,900
85 5,053,901
96.5 5,053,902
99.06 5,053,903
103 5,053,904
133 5,053,905
137 5,053,906

CLASS 361
9 5,053,907
24 5,053,908
88 5,053,909
111 5,053,910
154 5,053,911
230 5,053,912
235 5,053,914
257 5,053,913
281 5,053,915
308 5,053,916
321 5,053,917
355 5,053,918
363 5,053,919
383 5,053,920
386 5,053,921
5,053,922
388 5,053,923
391 5,053,925
424 5,053,924
5,053,926
534 5,053,927

CLASS 362
24 5,053,928
32 5,053,929
[illegible] 5,053,930
102 5,053,931
105 5,053,932
221 5,053,933
226 B1 4,679,126
281 5,053,934
296 5,053,935

CLASS 363
8 5,053,936
[illegible] 5,053,937
37 5,053,938
41 5,053,939
[illegible] 5,053,940

CLASS 364
200 5,053,941
5,053,942
5,053,943
5,053,944
5,053,945
5,053,946
5,053,947
5,053,948
5,053,949
5,053,950
5,053,951
5,053,952
5,053,953
5,053,954
401 5,053,955
5,053,956
405 5,053,957
413.13 5,053,958
424.01 5,053,964
424.05 5,053,965
5,053,966
424.06 5,053,967
424.1 5,053,959
5,053,960
5,053,961
5,053,962
5,053,963
431.05 5,053,968
433 5,053,969
468 5,053,970
474.06 5,053,971
474.12 5,053,972
474.17 5,053,973
513 5,053,975
5,053,976
519 5,053,977
550 5,053,978
565 5,053,979
578 5,053,980
580 5,053,981
721 5,053,982
724.03 5,053,983
724.16 5,053,984
725 5,053,985
736 5,053,986
5,053,987
748 5,053,631
900 Re.33,705
5,053,988
5,053,989
5,053,990

CLASS 365
49 5,053,991
53 5,053,992
104 5,053,993
112 5,053,994
151 5,053,995
156 5,053,996
189.06 5,053,997
194 5,053,998
200 5,053,999
218 5,054,000
226 5,054,001
233 5,054,002

CLASS 366
25 5,052,809
5,052,810
141 5,052,811
209 5,052,812
348 5,052,813

CLASS 367
15 5,052,814
91 5,054,003
100 5,054,004
127 5,054,005
136 5,054,006
139 5,054,007

CLASS 368
27 5,054,008
157 5,054,009
276 5,054,010

CLASS 369
12 5,054,011
31 5,054,012
44.28 5,054,013
190 5,054,014
258 5,054,015
270 5,054,016
275.1 5,054,017

CLASS 370
31 5,054,019
48 5,054,020
62 5,054,021
85.6 5,054,022

CLASS 371
16.3 5,054,023
22.3 5,054,024
49.1 5,054,025
68.3 5,054,026

CLASS 372
25 5,054,027
32 5,054,028
38 5,054,029
45 5,054,030
48 5,054,031
94 5,052,815
107 5,054,032

CLASS 373
[illegible] 5,054,033

CLASS 374
5 5,052,816
[illegible] 5,052,817
17 5,052,818
43 5,052,819
131 5,052,820
179 5,052,821

CLASS 375
[illegible] 5,054,034
10 5,054,035
27 5,054,036
60 5,054,037
118 5,054,038

CLASS 376
116 5,053,184
157 5,053,185
189 5,053,186
258 5,053,187
277 5,053,188
353 5,053,189
366 5,053,190
446 5,053,191

CLASS 377
42 5,054,039
60 5,054,040

CLASS 378
4 5,054,041
89 5,054,043
91 5,054,044
99 5,054,045
119 5,054,046
5,054,047
146 5,054,048
208 5,054,049

CLASS 379
27 5,054,050
56 5,054,051
57 5,054,052
58 5,054,042
63 5,054,053
[illegible] 5,054,054
142 5,054,055
145 5,054,056
155 5,054,057
157 5,054,058
200 5,054,059
324 5,054,060
390 5,054,061
402 5,054,062
452 5,054,063

CLASS 380
5 5,054,064
21 5,054,065
30 5,054,066
37 5,054,067
49 5,054,068
50 5,054,069

CLASS 381
7 5,054,070
12 5,054,071
31 5,054,072
36 5,054,075
37 5,054,073
41 5,054,074
42 5,054,082
5,054,083
43 5,054,084
5,054,085
51 5,054,086
109 5,054,076
5,054,077
110 5,054,078
151 5,054,079
165 5,054,080
191 5,054,081

CLASS 382
1 5,054,087
[illegible] 5,054,088
[illegible] 5,054,089
5,054,090
9 5,054,091
11 5,054,092
14 5,054,093
[illegible] 5,054,094
[illegible] 5,054,095
41 5,054,096
44 5,054,097
46 5,054,098
47 5,054,099
5,054,100
50 5,054,101
54 5,054,102
56 5,054,103

57 5,054,104

CLASS 384

123 5,052,822
133 5,052,823
203 5,052,824
223 5,052,825
310 5,052,826
448 5,052,827
476 5,052,828
510 5,052,829

CLASS 385

8 5,052,771
19 5,052,777
33 5,052,772
76 5,052,768
5,052,775
[illegible] 5,052,774
120 5,052,776
125 5,052,778
145 5,052,779

CLASS 392

394 5,054,105
476 5,054,106
483 5,054,107
492 5,054,108

CLASS 394

900 Re.33,706

CLASS 400

76 5,052,830
120 5,052,831
5,052,832
121 5,052,834
197 5,052,833
279 5,052,835
629 5,052,836

CLASS 401

4 5,052,837
65 5,052,838
126 5,052,839
201 5,052,840
258 5,052,841

CLASS 403

14 5,052,842
15 5,052,843
27 5,052,844
36 5,052,845
188 5,052,846
231 5,052,847
268 5,052,848
300 5,052,849

CLASS 404

6 5,052,850
25 5,052,851
50 5,052,852
92 5,052,853
94 5,052,854

CLASS 405

36 5,052,855
59 5,052,856
73 5,052,857
128 5,052,858
158 5,052,859
201 5,052,860
261 5,052,861
282 5,052,862

CLASS 407

113 5,052,863

CLASS 408

201 5,052,864

CLASS 409

8 5,052,865
233 5,052,866
244 5,052,867

CLASS 410

54 5,052,868
111 5,052,869

CLASS 411

43 5,052,870
366 5,052,871

CLASS 412

6 5,052,872
13 5,052,873

CLASS 414

326 5,052,874
403 5,052,875
412 5,052,876
458 5,052,877
522 5,052,878
541 5,052,879
563 5,052,880
634 5,052,881
667 5,052,882
700 5,052,883

744.2 5,052,884
746.8 5,052,885
757 5,052,886

CLASS 415

90 5,052,887
182.1 5,052,888

CLASS 416

97 R 5,052,889
134 5,052,968
193 A 5,052,890
198 A 5,052,891
204 R 5,052,892
220 R 5,052,893

CLASS 417

44 5,052,894
64 5,052,895
220 5,052,896
228 5,052,897
269 5,052,898
282 5,052,899
309 5,052,900
310 5,052,901
330 5,052,902
363 5,052,903
5,052,904

CLASS 418

132 5,052,905

CLASS 419

10 5,053,192

CLASS 420

128 5,053,194
555 5,053,195

CLASS 422

28 5,053,196
58 5,053,197
64 5,053,198
68.1 5,053,199
83 5,053,200
135 5,053,201
5,053,202
144 5,053,203
213 5,053,204
264 5,053,206
265 5,053,205
300 5,053,207
5,053,208

CLASS 423

210 5,053,209
239 5,053,210
277 5,053,211
305 5,053,212
328 5,053,213
608 5,053,214

CLASS 424

1.1 5,053,215
5,053,216
7 5,053,222
45 5,053,217
47 5,053,218
63 5,053,219
5,053,220
5,053,221
84 5,053,223
85.8 5,053,224
5,053,225
5,053,226
448 5,053,227
486 5,053,228
572 5,053,229
582 5,053,230

CLASS 425

67 5,052,911
112 5,052,906
116 5,052,907
150 5,052,908
5,052,909
5,052,910
313 5,052,912
394 5,052,913
438 5,052,914
556 5,052,915
564 5,052,916

CLASS 426

11.0 5,053,231
49 5,053,232
53 5,053,233
59 5,053,234
74 5,053,235
234 5,053,236
281 5,053,237
299 5,053,238
412 5,053,239
540 5,053,240
603 5,053,241
643 5,053,242

CLASS 427

37 5,053,243
38 5,053,244
5,053,245
40 5,053,246
55 5,053,247
58 5,053,248
101 5,053,249
131 5,053,250
142 5,053,251
164 5,053,252
204 5,053,253
208.2 5,053,254
249 5,053,255
307 5,053,256
379 5,053,257

CLASS 428

35.2 5,053,270
36.6 5,053,258
36.91 5,053,259
40 5,053,260
65 5,053,261
81 5,053,262
120 5,053,263
131 5,053,264
182 5,053,265
192 5,053,266
195 5,053,267
215 5,053,268
253 5,053,269
304.4 5,053,271
323 5,053,272
5,053,273
5,053,282
332 5,053,274
372 5,053,275
394 5,053,276
402.2 5,053,277
403 5,053,278
405 5,053,279
412 5,053,281
413 5,053,280
429 5,053,290
432 5,053,283
552 5,053,284
593 5,053,285
653 5,053,286
694 5,053,287
5,053,288
5,053,289

CLASS 429

39 5,053,291
101 5,053,292
104 5,053,294
111 5,053,293
161 5,053,295
175 5,053,296
194 5,053,297

CLASS 430

7 5,053,298
5,053,299
15 5,053,300
49 5,053,301
58 5,053,302
59 5,053,303
5,053,304
111 5,053,305
137 5,053,306
5,053,307
138 5,053,308
5,053,309
162 5,053,310
166 5,053,311
254 5,053,312
257 5,053,313
270 5,053,314
278 5,053,315
281 5,053,316
5,053,317
315 5,053,318
331 5,053,319
339 5,053,320
450 5,053,321
464 5,053,322
495 5,053,323
504 5,053,324
557 5,053,325

CLASS 431

1 5,052,917
7 5,052,918
10 5,052,919
354 5,052,920

CLASS 432

121 5,052,921
181 5,052,922
205 5,052,923

CLASS 433

29 5,052,924
30 5,052,925
49 5,052,926
90 5,052,927
172 5,052,928
173 5,052,929
5,052,930
5,052,931

CLASS 434

29 5,052,932
226 5,052,933
268 5,052,934

CLASS 435

6 5,053,326
7.92 5,053,327
106 5,053,328
119 5,053,329
172.3 5,053,330
5,053,331
178 5,053,332
212 5,053,333
226 5,053,334
230 5,053,335
240.2 5,053,337
240.27 5,053,336
280 5,053,338

CLASS 436

2 5,053,339
5 5,053,340
[illegible] 5,053,341
66 5,053,342
153 5,053,343
177 5,053,344

CLASS 437

21 5,053,345
22 5,053,346
40 5,053,347
41 5,053,348
5,053,349
47 5,053,350
5,053,352
52 5,053,351
62 5,053,353
101 5,053,354
114 5,053,355
129 5,053,356
204 5,053,357
216 5,053,358

CLASS 439

49 5,052,935
60 5,052,936
120 5,052,937
131 5,052,938
133 5,052,939
160 5,052,952
188 5,052,484
5,052,940
194 5,052,941
326 5,052,942
357 5,052,943
394 5,052,944
5,052,945
584 5,052,946
607 5,052,947
5,052,948
610 5,052,949
709 5,052,950
723 5,052,951
857 5,052,953
876 5,052,954

CLASS 440

1 5,052,955
53 5,052,956
73 5,052,957
75 5,052,958
5,052,959
77 5,052,960
5,052,961
83 5,052,962

CLASS 441

68 5,052,963
69 5,052,964
130 5,052,965

CLASS 445

36 5,052,966

CLASS 446

73 5,052,967
268 5,052,969
351 5,052,970
376 5,052,971
429 5,052,972
5,052,973

CLASS 452

41 5,052,974
187 5,052,975

CLASS 455

17 5,054,109
33 5,054,110
34 5,054,111
41 5,054,112
51 5,054,113
78 5,054,114
89 5,054,115
126 5,054,116
189 5,054,117
326 5,054,118
346 5,054,119
351 5,054,120

CLASS 460

14 5,052,976

CLASS 462

[illegible] 5,052,977

CLASS 464

24 5,052,978
140 5,052,979

CLASS 474

11 5,052,980
14 5,052,981
135 5,052,982
140 5,052,983
156 5,052,984
245 5,052,985

CLASS 475

59 Re.33,707
76 5,052,986
82 5,052,987
150 5,052,988
170 5,052,989
210 5,052,990
344 5,052,991

CLASS 493

62 5,052,992
79 5,052,993
87 5,052,994
410 5,052,995

CLASS 494

68 5,052,996

CLASS 501

4 5,053,359
48 5,053,360
94 5,053,361
95 5,053,362
5,053,363
5,053,364
96 5,053,365
127 5,053,366
5,053,367
152 5,053,369
153 5,053,370

CLASS 502

37 5,053,371
60 5,053,372
64 5,053,373
5,053,374
101 5,053,375
150 5,053,376
226 5,053,377
304 5,053,378
328 5,053,379
346 5,053,380

CLASS 503

227 5,053,381
5,053,382

CLASS 505

1 5,053,383
5,053,384
5,053,385

CLASS 514

2 5,053,386
5,053,387
5,053,388
5,053,389
4 5,053,391
12 5,053,392
18 5,053,393
5,053,394
25 5,053,395
33 5,053,396
45 5,053,397
46 5,053,398
54 5,053,399
79 5,053,402
150 5,053,400
5,053,401
167 5,053,403
170 5,053,404
174 5,053,405
176 5,053,406
182 5,053,407
230.2 5,053,409
255 5,053,410
256 5,053,411
259 5,053,412
278 5,053,413
323 5,053,414
326 5,053,415
336 5,053,416
340 5,053,417
345 5,053,418
354 5,053,408
356 5,053,419
369 5,053,420
383 5,053,421
387 5,053,422
410 5,053,423
419 5,053,424
452 5,053,425
5,053,426
456 5,053,427
559 5,053,428
562 5,053,429
630 5,053,430
649 5,053,431
682 5,053,432
909 5,053,433

CLASS 521

52 5,053,434
60 5,053,435
64 5,053,436
98 5,053,437
134 5,053,438

CLASS 523

137 5,053,440
201 5,053,441
212 5,053,442
332 5,053,443
351 5,053,444
435 5,053,445

CLASS 524

8 5,053,446
412 5,053,447
460 5,053,448
493 5,053,449
506 5,053,450
600 5,053,451
707 5,053,452

CLASS 525

54.1 5,053,453
54.11 5,053,454
58 5,053,455
74 5,053,456
78 5,053,457
92 5,053,458
99 5,053,459
116 5,053,460
244 5,053,461
427 5,053,463
454 5,053,464
528 5,053,465

CLASS 526

62 5,053,466
119 5,053,467
206 5,053,468
242 5,053,469
253 5,053,470
281 5,053,471
285 5,053,462

CLASS 528

29 5,053,473
87 5,053,474
98 5,053,475
103 5,053,476
125 5,053,477
5,053,478
129 5,053,479
188 5,053,480
206 5,053,481
272 5,053,482
295.5 5,053,483
338 5,053,484
354 5,053,485
388 5,053,486
5,053,487

CLASS 530

324 5,053,488
350 5,053,489
362 5,053,490
387 5,053,491
5,053,492
402 5,053,493

CLASS 534

642 5,053,494
829 5,053,495
886 5,053,496

CLASS 536

4.1 5,053,498
6.1 5,053,497
24 5,053,499

CLASS 540

215 5,053,500
218 5,053,501
304 5,053,502
474 5,053,503
488 5,053,504
575 5,053,505

CLASS 544

300 5,053,506
334 5,053,507
357 5,053,508
361 5,053,509
368 5,053,510

CLASS 546

15 5,053,511
41 5,053,512
79 5,053,513
157 5,053,514
220 5,053,515
251 5,053,516

CLASS 548

376 5,053,517
410 5,053,518
452 5,053,519
520 5,053,520
572 5,053,521

CLASS 549

274 5,053,522
398 5,053,523

CLASS 558

394 5,053,524

CLASS 560

107 5,053,525
119 5,053,526
174 5,053,527
189 5,053,528

CLASS 562

[illegible] 5,053,529
108 5,053,530
114 5,053,531
450 5,053,532
466 5,053,533
[illegible] 5,053,534
579 5,053,535
582 5,053,536

CLASS 564

8 5,053,537
70 5,053,538
333 5,053,539
397 5,053,540
405 5,053,541
412 5,053,542
414 5,053,543
430 5,053,544
495 5,053,545

CLASS 568

4 5,053,546
28 5,053,547
47 5,053,548
55 5,053,549
420 5,053,550
454 5,053,551
460 5,053,552
617 5,053,553
622 5,053,554
633 5,053,555
675 5,053,556
775 5,053,557
783 5,053,558
814 5,053,559
851 5,053,560
857 5,053,561
867 5,053,562
916 5,053,563

CLASS 570

176 5,053,564
208 5,053,565
5,053,566
243 5,053,567

CLASS 574

7 5,053,390

CLASS 585

21 5,053,568
255 5,053,569
417 5,053,570
425 5,053,571
441 5,053,572
475 5,053,573
488 5,053,574
500 5,053,575
5,053,576
5,053,577
5,053,578
533 5,053,579
624 5,053,580
638 5,053,581

CLASS 600

13 5,052,997

CLASS 604

8 5,052,998
19 5,052,999
20 5,053,000
5,053,001
28 5,053,003
[illegible] 5,053,002
43 5,053,004
51 5,053,005
52 5,053,006
96 5,053,007
104 5,053,008
5,053,009
110 5,053,010
142 5,053,011
146 5,053,012
167 5,053,013
5,053,014
5,053,015
169 5,053,016
192 5,053,017
198 5,053,018
232 5,053,019
239 5,053,020
264 5,053,021
278 5,053,022
280 5,053,023
291 5,053,024
317 5,053,025
319 5,053,026
327 5,053,027
385.1 5,053,028
5,053,029
890.1 5,053,030
891.1 5,053,031
892.1 5,053,032

CLASS 606

[illegible] 5,053,033
61 5,053,034
67 5,053,035
69 5,053,036
75 5,053,038
79 5,053,037
87 5,053,039
109 5,053,040
130 5,053,042
148 5,053,041
5,053,043
157 5,053,045
159 5,053,044
215 5,053,046
223 5,053,047

CLASS 623

1 5,053,048
16 5,053,049
5,053,050

CLASSIFICATION OF DESIGNS

D1— 104 320,300
D2— 279 320,301
320 320,302
323 320,303
D3— 36 320,304
38 320,305
53 320,306
56 320,307
74 320,308
76 320,309
D4— 114 320,310
116 320,311
119 320,312
D6— 315 320,313
318 320,314
367 320,315
390 320,316
419 320,319
422 320,320
433 320,321
440 320,317
446 320,318
453 320,322
455 320,323
469 320,324
552 320,325
D7— 384 320,326
502 320,327
536 320,328
320,329
620 320,330
320,331
638 320,332

D8— 5 320,333
51 320,447
301 320,334
308 320,335
311 320,336
319 320,337
331 320,338
402 320,339
D9— 304 320,341
341 320,340
342 320,342
351 320,343
370 320,344
372 320,345
415 320,346
418 320,347
435 320,348
438 320,349
447 320,350
D10— 1 320,351
23 320,352
26 320,353
28 320,354
30 320,355
320,357
32 320,356
320,358
62 320,359
69 320,360
99 320,362
103 320,361
114 320,363
D11— 131 320,364
320,365
320,366
221 320,367
D12— 91 320,368
125 320,369
129 320,370
147 320,371
157 320,372
320,373
181 320,374
215 320,375
314 320,376
320,377
325 320,378
D13— 103 320,379
136 320,380
147 320,381
320,382
154 320,383
155 320,384
160 320,385
320,386
D14— 105 320,388
106 320,387
107 320,389
113 320,390
121 320,391
151 320,392
230 320,393
320,394
234 320,395
320,396

D15— 11 320,397
16 320,398
D16— 102 320,399
320,400
320,401
127 320,402
235 320,403
D17— 7 320,404
20 320,405
D18— 13 320,406
34 320,407
320,408
39 320,409
41 320,410
D19— 27 320,411
78 320,412
85 320,413
D20— 22 320,414
D21— 11 320,415
35 320,416
37 320,417
40 320,418
172 320,452
199 320,455
208 320,457
215 320,453
216 320,454
225 320,448
231 320,443
D25— 56 320,459
62 320,460
D26— 28 320,462
129 320,429
D23— 206 320,442
212 320,430
320,431
213 320,432
238 320,433
252 320,434
275 320,435
281 320,436
292 320,437
305 320,438
328 320,439
356 320,440
364 320,441
D24— 107 320,450
130 320,449
320,456
143 320,451
144 320,446
164 320,458
169 320,444
320,445
D32— 3 320,487
320,488
320,489
22 320,491
45 320,490
46 320,483
320,492
D34— 23 320,484
31 320,485
D99— 8 320,493
37 320,463
42 320,464
60 320,466
86 320,465
87 320,461
D27— 154 320,468
159 320,467
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OFFICIAL GAZETTE

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PATENTS
October 8 1991

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1126 O.G. 2, on May 7, 1991.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on July 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the German mark, and was announced in the *Official Gazette* at 1126 O. G. 76 on May 28, 1991.

International fees were changed on August 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss franc, and were announced in the *Official Gazette* at 1128 O.G. 46, on July 23, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1320.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	490.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region for the first 10 national or regional offices	119.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	150.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

June 27, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 4, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,774,723 through 4,776,041
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 2, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,473,907 through 4,475,246
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$830.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 28, 1991
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,394,781	06/359,600	7/26/83
4,394,782	06/237,205	7/26/83
4,394,795	06/263,377	7/26/83
4,394,796	06/278,043	7/26/83
4,394,798	06/265,126	7/26/83
4,394,799	06/298,205	7/26/83
4,394,801	06/262,998	7/26/83
4,394,809	06/269,136	7/26/83
4,394,811	06/275,785	7/26/83
4,394,812	06/246,587	7/26/83
4,394,814	06/249,908	7/26/83
4,394,817	06/300,573	7/26/83
4,394,819	06/408,575	7/26/83
4,394,823	06/311,052	7/26/83
4,394,832	06/231,838	7/26/83
4,394,838	06/257,978	7/26/83
4,394,843	06/222,323	7/26/83
4,394,845	06/346,282	7/26/83
4,394,846	06/300,565	7/26/83
4,394,851	06/253,279	7/26/83
4,394,852	06/264,787	7/26/83
4,394,853	06/275,739	7/26/83
4,394,857	06/268,005	7/26/83
4,394,858	06/221,589	7/26/83
4,394,859	06/315,397	7/26/83
4,394,861	06/262,232	7/26/83
4,394,865	06/223,269	7/26/83
4,394,869	06/331,362	7/26/83
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4,394,875	06/247,029	7/26/83
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4,395,135	06/375,412	7/26/83
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4,395,148	06/253,874	7/26/83
4,395,154	06/307,530	7/26/83
4,395,157	06/281,575	7/26/83
4,395,158	06/227,219	7/26/83
4,395,161	06/323,151	7/26/83
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4,395,164	06/267,800	7/26/83
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4,395,190	06/240,121	7/26/83
4,395,201	06/230,750	7/26/83
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4,395,220	06/271,599	7/26/83
4,395,225	06/241,369	7/26/83
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4,395,244	06/253,993	7/26/83
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4,395,594	06/295,858	7/26/83
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4,682,422	06/885,668	7/28/87
4,682,423	06/854,896	7/28/87
4,682,425	06/880,283	7/28/87
4,682,429	06/815,009	7/28/87
4,682,430	06/844,672	7/28/87
4,682,446	06/923,892	7/28/87
4,682,449	06/913,520	7/28/87
4,682,458	06/824,296	7/28/87
4,682,460	06/852,732	7/28/87
4,682,469	06/784,400	7/28/87
4,682,470	06/825,202	7/28/87
4,682,475	06/837,411	7/28/87
4,682,476	06/623,964	7/28/87
4,682,483	06/905,234	7/28/87
4,682,484	06/852,443	7/28/87
4,682,485	06/660,883	7/28/87
4,682,494	06/890,575	7/28/87
4,682,497	06/835,195	7/28/87
4,682,501	06/721,638	7/28/87
4,682,512	06/781,336	7/28/87
4,682,513	06/747,575	7/28/87
4,682,514	06/873,140	7/28/87
4,682,517	06/691,863	7/28/87
4,682,539	06/287,904	7/28/87
4,682,540	06/873,571	7/28/87
4,682,552	06/873,741	7/28/87
4,682,566	06/308,659	7/28/87
4,682,570	06/647,945	7/28/87
4,682,578	06/920,579	7/28/87
4,682,584	06/779,129	7/28/87
4,682,592	06/695,188	7/28/87
4,682,593	06/435,514	7/28/87
4,682,598	06/643,496	7/28/87
4,682,601	06/691,306	7/28/87
4,682,609	06/801,640	7/28/87
4,682,611	06/724,812	7/28/87
4,682,618	06/748,238	7/28/87
4,682,622	06/807,608	7/28/87
4,682,624	06/895,959	7/28/87
4,682,625	06/892,327	7/28/87
4,682,627	06/731,647	7/28/87
4,682,629	06/877,269	7/28/87
4,682,632	06/784,829	7/28/87
4,682,633	06/814,190	7/28/87
4,682,636	06/761,612	7/28/87
4,682,642	06/806,391	7/28/87
4,682,643	06/783,761	7/28/87
4,682,648	06/454,428	7/28/87
4,682,650	06/774,996	7/28/87
4,682,658	06/775,611	7/28/87
4,682,662	06/727,224	7/28/87
4,682,665	06/898,329	7/28/87

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4,682,670	06/890,813	7/28/87
4,682,678	06/815,307	7/28/87
4,682,680	06/742,699	7/28/87
4,682,690	06/863,571	7/28/87
4,682,691	06/848,804	7/28/87
4,682,692	06/856,442	7/28/87
4,682,693	06/825,914	7/28/87
4,682,695	06/595,435	7/28/87
4,682,696	06/844,789	7/28/87
4,682,697	06/866,692	7/28/87
4,682,698	06/835,938	7/28/87
4,682,701	06/871,849	7/28/87
4,682,708	06/311,337	7/28/87
4,682,712	06/678,586	7/28/87
4,682,715	06/888,520	7/28/87
4,682,716	06/774,590	7/28/87
4,682,721	06/811,902	7/28/87
4,682,731	06/702,572	7/28/87
4,682,738	06/799,904	7/28/87
4,682,746	06/678,347	7/28/87
4,682,753	06/665,945	7/28/87
4,682,756	06/886,541	7/28/87
4,682,760	06/909,220	7/28/87
4,682,764	06/844,945	7/28/87
4,682,771	06/777,452	7/28/87
4,682,775	06/832,065	7/28/87
4,682,778	06/839,262	7/28/87
4,682,782	06/928,716	7/28/87
4,682,785	06/796,018	7/28/87
4,682,794	06/757,385	7/28/87
4,682,799	06/758,673	7/28/87
4,682,800	06/748,649	7/28/87
4,682,809	06/805,292	7/28/87
4,682,815	06/839,156	7/28/87
4,682,816	06/882,262	7/28/87
4,682,822	06/682,327	7/28/87
4,682,825	06/831,817	7/28/87
4,682,827	06/769,403	7/28/87
4,682,834	06/699,424	7/28/87
4,682,843	06/583,911	7/28/87
4,682,850	06/624,080	7/28/87
4,682,867	06/718,873	7/28/87
4,682,887	06/666,390	7/28/87
4,682,901	06/426,806	7/28/87
4,682,903	06/718,387	7/28/87
4,682,905	06/826,629	7/28/87
4,682,908	06/763,263	7/28/87
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4,682,927	06/672,349	7/28/87
4,682,929	06/825,756	7/28/87
4,682,951	06/868,121	7/28/87
4,682,958	06/696,571	7/28/87
4,682,959	06/792,103	7/28/87
4,682,960	06/775,502	7/28/87
4,682,966	06/909,330	7/28/87
4,682,967	06/775,743	7/28/87
4,682,968	06/832,812	7/28/87
4,682,969	06/781,607	7/28/87
4,682,970	06/826,845	7/28/87
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4,682,983	06/842,592	7/28/87
4,682,990	06/545,385	7/28/87
4,683,006	06/817,744	7/28/87
4,683,008	06/754,860	7/28/87
4,683,025	06/828,226	7/28/87
4,682,030	06/719,879	7/28/87
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4,683,061	06/943,628	7/28/87
4,683,062	06/803,815	7/28/87
4,683,075	06/888,668	7/28/87
4,683,079	06/885,574	7/28/87
4,683,083	06/691,567	7/28/87
4,683,097	06/776,856	7/28/87
4,683,110	06/745,409	7/28/87
4,683,119	06/239,583	7/28/87
4,683,142	06/896,160	7/28/87
4,683,150	06/839,572	7/28/87
4,683,152	06/824,880	7/28/87
4,683,160	06/732,145	7/28/87
4,683,161	06/706,580	7/28/87
4,683,173	06/794,722	7/28/87
4,683,175	06/792,173	7/28/87
4,683,179	06/935,079	7/28/87
4,683,196	06/590,211	7/28/87
4,683,229	06/840,621	7/28/87
4,683,233	06/704,439	7/28/87
4,683,260	06/924,280	7/28/87
4,683,273	06/867,050	7/28/87
4,683,281	06/877,058	7/28/87
4,683,284	06/877,622	7/28/87
4,683,285	06/790,185	7/28/87
4,683,295	06/614,102	7/28/87
4,683,298	06/832,462	7/28/87
4,683,300	06/781,503	7/28/87
4,683,306	06/630,393	7/28/87
4,683,307	06/833,693	7/28/87
4,683,311	06/821,292	7/28/87
4,683,329	06/852,707	7/28/87
4,683,332	06/735,513	7/28/87
4,683,344	06/690,443	7/28/87
4,683,354	06/750,331	7/28/87
4,683,355	06/939,725	7/28/87
4,683,363	06/876,306	7/28/87
4,683,369	06/826,178	7/28/87
4,683,381	06/657,523	7/28/87
4,683,392	06/371,900	7/28/87
4,683,419	06/778,548	7/28/87
4,683,425	06/792,199	7/28/87
4,683,427	06/786,889	7/28/87
4,683,437	06/871,228	7/28/87
4,683,438	06/861,488	7/28/87
4,683,444	06/810,610	7/28/87
4,683,445	06/858,323	7/28/87
4,683,450	06/509,217	7/28/87
4,683,464	06/821,711	7/28/87
4,683,478	06/803,503	7/28/87
4,683,489	06/762,514	7/28/87
4,683,509	06/621,230	7/28/87
4,683,510	06/711,521	7/28/87
4,683,511	06/546,506	7/28/87
4,683,514	06/782,434	7/28/87
4,683,522	06/752,385	7/28/87
4,683,535	06/719,067	7/28/87
4,683,541	06/711,287	7/28/87
4,683,548	06/780,226	7/28/87
4,683,567	06/760,717	7/28/87
4,683,574	06/775,399	7/28/87
4,683,585	06/858,081	7/28/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,357,182	06/258,822	11/02/82	4/29/81	8/15/91

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,358,267	06/247,551	11/09/82	3/25/81	8/15/91
4,509,585	06/569,203	4/09/85	1/09/84	8/15/91
4,610,213	06/599,611	9/09/86	4/06/84	8/21/91
4,630,622	06/627,058	12/23/86	7/02/84	8/20/91
4,672,917	06/706,261	6/16/87	2/26/85	8/21/91
4,516,568	06/516,111	5/14/85	7/22/83	8/20/91
4,632,465	06/773,026	12/30/86	9/06/85	7/17/91

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,760,472, Re. S. N. 07/558,013, Filed July 26, 1991, Cl. 360/46, DUAL CHANNEL READBACK RECOVERY SYSTEM, Vadim Minuhin, et. al., Owner of Record: *Magnetic Peripherals, Inc., Control Data Corp., Minneapolis, Minn.*, Attorney or Agent: David R. Fairbairn, Ex. Gp.: 235

4,800,347, Re. S. N. 07/644,502, Filed Jan. 23, 1991, Cl. 333/202, DIELECTRIC FILTER, Tadahiro Yorita, et. al., Owner of Record: *Murata Manufacturing Co., Ltd., Kyoto-Fu, Japan*, Attorney or Agent: Steven I. Weisburd, Ex. Gp.: 252

4,844,077, Re. S. N. 07/725,514, Filed July 3, 1991, Cl. 28/653, N M R IMAGING METHOD, Koichi Sano, et. al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Melvin Kraus, Ex. Gp.: 335

4,861,262, Re. S. N. 07/751,864, Filed Aug. 28, 1991, Cl. 431/005, METHOD AND APPARATUS FOR WASTE DISPOSAL, Gregory M. Gitman, et. al., Owner of Record: *American Combustion, Inc., Norcross, Ga.*, Attorney or Agent: Sumner C. Rosenberg, Ex. Gp.: 344

4,861,684, Re. S. N. 07/751,867, Filed Aug. 28, 1991, Cl. 429/007, ELECTRICAL SAFTEY SYSTEM FOR BATTERIES, Dwight D. Law, Owner of Record: *Inventor*, Attorney or Agent: Andre J. Cornelius, Ex. Gp.: 114

4,862,018, Re. S. N. 07/752,286, Filed Aug. 29, 1991, Cl. 307/443, NOISE REDUCTION FOR OUTPUT DRIVERS, Ronald T. Taylor, et. al., Owner of Record: *Texas Instruments, Inc., Dallas, Tex.*, Attorney or Agent: Michael E. Melton, Ex. Gp.: 254

4,864,562, Re. S. N. 07/751,779, Filed Aug. 29, 1991, Cl. 370/84, SUB-RATE MULTI-MEDIA DATA TRANSMISSION CONTROL APPARATUS, Tokumichi Murakami, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Vincent M. Deluca, Ex. Gp.: 263

4,868,218, Re. S. N. 07/750,292, Filed Aug. 27, 1991, Cl. 514/646, METHOD OF TREATING DEPRESSION, Donald A. Buyske, Owner of Record: *Somerset Pharmaceuticals, Inc., Denville, N.J.*, Attorney or Agent: Richard A. Negin, Ex. Gp.: 125

4,903,636, Re. S. N. 07/749,976, Filed Aug. 26, 1991, Cl. 119/003, ARTIFICIAL HABITAT FOR AQUATIC ANIMALS, James Kroeker, Owner of Record: *Inventor*, Attorney or Agent: Lawrence A. Greenberg, Ex. Gp.: 333

4,940,218, Re. S. N. 07/750,384, Filed Aug. 27, 1991, Cl. 269/322, ORTHOPEDIC OPERATING TABLE FOR LIMBS, AND IN PARTICULAR FOR THE LOWER LIMBS, Patrock Akcelrod, Owner of Record: *Establissements Tassert Collemiers, Gron, France*, Attorney or Agent: Donald E. Zinn, Ex. Gp.: 323

4,953,610, Re. S. N. 07/751,346, Filed Aug. 28, 1991, Cl. 160/84.1, DOUBLE WINDOW SHADE ASSEMBLY WITH INDEPENDENT SHADE MOVEMENT, William R. Phillips, et. al., Owner of Record: *Ultimate Window Coverings, Inc., Lakewood, Colo.*, Attorney or Agent: David S. Zinger, Esq., Ex. Gp.: 355

4,959,233, Re. S. N. 07/750,069, Filed Aug. 26, 1991, Cl. 426/443, EMULSIFIER AND A METHOD FOR ITS PREPARATION, Herbert W. Schou (deceased), et. al., Owner of Record: *Nexus ApS, Juelsminde, Denmark*, Attorney or Agent: Stephen A. Bent, Ex. Gp.: 132

4,990,643, Re. S. N. 07/750,845, Filed Aug. 26, 1991, Cl. 556/439, METHOD FOR PREPARING CARBOXY FUNCTIONAL SILICONES, Frank J. Traver, Owner of Record: *General Electric Co., Waterford, N.Y.*, Attorney or Agent: John L. Young, Ex. Gp.: 126

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,555,775 Reexam. No. 90/002,424, Requested Aug. 30, 1991, Cl. 364/900, DYNAMIC GENERATION AND OVERLAYING OF GRAPHIC WINDOWS FOR MULTIPLE ACTIVE PROGRAM STORAGE AREAS, Robert C. Pike, Owner of Record: *AT & T Bell Labs, Murray Hill, N.J.*, Attorney or Agent: A. E. Hirsch, Jr., Murray Hill, N.J., Ex. Gp.: 232, Requester: Owner

4,567,359, Reexam. No. 90/002,431, Requested Sept. 3, 1991, Cl. 235/381, AUTOMATIC INFORMATION, GOODS AND SERVICES DISPENSING SYSTEM, Lawrence B. Lockwood, Owner of Record: *Lawrence B. Lockwood*, La Jolla, Calif., Attorney or Agent: Henri J.A. Charmasson, San Diego, Calif., Ex. Gp.: 239, Requester: Owner

4,746,337, Reexam. No. 90/002,426, Requested Sept. 3, 1991, Cl. 055/269, CYCLONE SEPARATOR HAVING WATER-STEAM COOLED WALLS, Byram J. Magol, et. al., Owner of Record: *Foster Wheeler Energy Corp., Clinton, N.J.*, Attorney or Agent: Marvin A. Naigur, Clinton, N.J., Ex. Gp.: 135, Requester: Owner

4,752,793 Reexam. No. 90/002,425, Requested Aug. 30, 1991, Cl. 354/173.11, CAMERA WITH MOTORIZED FILM REWINDING DEVICE, Masaharu Kawamura, Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: James A. Daley, Robin, Blecker, Daley & Driscoll, New York, N.Y., Ex. Gp.: 211, Requester: Nikon Corp., Tokyo, Japan

4,880,450 Reexam. No. 90/002,427, Requested Sept. 3, 1991, Cl. 055/269, CYCLONE SEPARATOR HAVING WATER-STEAM COOLED WALLS, Byram J. Magol, et. al., Owner of Record: *Foster Wheeler Energy Corp., Clinton, N.J.*, Attorney or Agent: Marvin A. Naigur, Clinton, N.J., Ex. Gp.: 135, Requester: Owner

4,904,286, Reexam. No. 90/002,428, Requested Sept. 3, 1991, Cl. 055/269, CYCLONE SEPARATOR HAVING WATER-STEAM COOLED WALLS, Byram J. Magol, et. al., Owner of Record: *Foster Wheeler Energy Corp., Clinton, N.J.*, Attorney or Agent: Marvin A. Naigur, Clinton, N.J., Ex. Gp.: 135, Requester: Owner

4,915,745, Reexam. No. 90/002,420, Requested Aug. 28, 1991, Cl. 136/265, THIN FILM SOLAR CELL AND METHOD OF MAKING, Gary A. Pollock, et. al., Owner of Record: *Siemens Solar Corp., A.K.A. Arco Solar, Inc., Camarillo, Calif.*, Attorney or Agent: Robert A. Green, Nilsson, Robbins, Dalgarn, Berliner, et. al., Los Angeles, Ex. Gp.: 119, Requester: Owner

4,917,196, Reexam. No. 90/002,430, Requested Aug. 30, 1991, Cl. 175/385, EXCAVATING TOOTH FOR AN EARTH AUGER, Stephen P. Stiffler, et. al., Owner of Record: *Kennametal, Inc., Latrobe, Pa.*, Attorney or Agent: Larry R. Meenan, Latrobe, Pa., Ex. Gp.: 356, Requester: Mike Henson, San Angelo, Tex.

4,917,706, Reexam. No. 90/002,421, Requested Aug. 30, 1991, Cl. 008/652, LIQUID COMPOSITIONS OF PREREDUCED SULFUR DYES AND PREPARATION THEREOF, Laszlo A. Meszaros, Owner of Record: *Sandoz Corp., A.K.A. Sandoz, Ltd., Basile, Switzerland*, Attorney or Agent: Gerald D. Sharkin, Sandoz Corp., East Hanover, N.J., Ex. Gp.: 115, Requester: George F. Helfrich, Newport News, Va.

4,944,250, Reexam. No. 90/002,429, Requested Sept. 3, 1991, Cl. 122/020B, CYCLONE SEPARATOR INCLUDING A HOPPER FORMED BY WATER-STEAM COOLED WALLS, Venkatraman Sehamani, Owner of Record: *Foster Wheeler Energy Corp., Clinton, N.J.*, Attorney or Agent: Marvin A. Naigur, Clinton, N.J., Ex. Gp.: 344, Requester: Owner

4,965,961, Reexam. No. 90/002,422, Requested Aug. 30, 1991, Cl. 047/046, TRELLIS WIRE SUPPORT CLIP AND METHOD OF ADAPTING METAL GRAPE STAKE FOR VERTICAL TRELLISING, Harry C. Broyles, Owner of Record: *Inventor, Placerville, Calif.*, Attorney or Agent: Robert B. Chickering, Flehr, Hobach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 354, Requester: Owner

Errata

"All reference to Patent No. 5,043,018 to Takashi Hamaguchi of Japan for `FAT OR OIL COMPOSITION IN POWDERY OR GRANULAR FORM AND A PROCESS FOR PRODUCING THE SAME' appearing in the *Official Gazette* of Aug. 27, 1991 should be deleted since no reexamination certificate was granted."

"All reference to Reexamination Certificate No. B1. 4,648,907 (1492nd) appearing in the *Official Gazette* of June 18, 1991 should be deleted since no patent was granted."

Notice of Examination for Registration Wednesday, April 8, 1992

Pursuant to the provisions of 37 CFR §§ 10.5, 10.6, and 10.7, an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on Wednesday, April 8, 1992. The deadline for filing applications along with the $270.00 examination fee and *all* necessary showings required by 37 CFR § 10.7(a) and (b) is January 31, 1992. *Please note, if the examination fee has increased at the time you file your application for registration, you will be required to pay any deficiency in the fee before your application will be considered. Notice of fee changes will be published in the Official Gazette.*

With the exception of those persons who actively served four years or more in the examing corps of the United States Patent and Trademark Office for whom the examination may be waived, all persons who wish to become recognized to practice before the United States Patent and Trademark Office in patent cases must, pursuant to the above noted rules, pass the examination. Note that passing the examination does not qualify one for recognition for practice before the Patent and Trademark Office in trademark cases. Such recognition is governed by 37 CFR § 10.14 which does not require the passing of an examination.

There is no limit on the number of times the registration examination may be taken. The examination consists of two parts, a morning section and an afternoon section. To pass the examination, an applicant must pass both sections. An applicant who passes one section of the examination, but who fails the other section, will not be required to retake the section passed, *provided* the applicant takes and passes the section failed in one of the next three examinations regularly scheduled by the Patent and Trademark Office. If the applicant does not pass the section failed in one of the next three examinations scheduled, the applicant must retake both sections of the examination. No extentions of time will be granted except in extraordinary circumstances, e.g., an accident or hospitalization just prior to the examintion which prevented the applicant from taking the examination.

Application forms may be obtained from the Office of Enrollment and Discipline, Suite 810, Crystal Park One, 2011 Crystal Park Drive, Arlington, Va., or by mail addressed to U.S. Patent and Trademark Office, Box OED, Washington, D.C. 20231.

Sept. 5, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Removal from Register

Pursuant to the provisions of 37 CFR § 10.11(b), a letter was directed on March 11, 1991 to John A. Bauer at Morgan & Finegan, 345 Park Ave., New York, N.Y. 10154, the last post office address furnished by them to the Office of Enrollment and Discipline. No reply was received within the period of thirty(30) days therein set.

Accordingly, his name is being removed from the Register of Attorneys and Agents.

Sept. 5, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Removal from Register

Pursuant to the provisions of 37 CFR § 10.11(b), a letter was directed on March 7, 1991 to the individuals listed below to the last post office address furnished by them to the Office of Enrollment and Discipline. No reply was received within the period of thirty (30) days therein set.

Accordingly, the following individuals are being removed from the Register of Attorneys and Agents.

Blair, John A., Harness, Dickey & Pierce, 1500 N. Woodward Ave., Birmingham, Mich. 48011
Burnett, Ralph M., GTE Data Services Inc., 111 Madison St., Tampa, Fla. 33601
Johnson, Kent R., 2 Old Colony Ln., #11, Arlington, Mass. 02174
Stam, Tobias L., 1400 Oak Meadow Rd., Arcadia, Calif. 91006

Sept. 5, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Patents Available For License or Sale

4,719,912 APPARATUS FOR CONTROLLING THE PHOTOCOAGULATION OF BIOLOGICAL TISSUE, Mike Perkins, Bonnet Resources Corp., 910 Travis, Suite 1225, Houston, Tex. 77001

4,744,557 DOWNHILL SKI EXERCISE DEVICE, Martin Korn, Esq., Ross, Howison, Clapp & Korn,

740 E. Campbell Rd., Suite 900, Richardson, Tex. 75081

4,744,558 DOWNHILL SKI EXERCISE DEVICE, Martin Korn, Esq., Ross, Howison, Clapp & Korn, 740 E. Campbell Rd., Suite 900, Richardson, Tex. 75081

4,880,001 "PROCESS FOR CONTROLLING THE PHOTOCOAGULATION OF BIOLOGICAL TISSUE", Mike Perkins, Bonnet Resources Corp., 910 Travis, Suite 1225, Houston, Tex. 77001

4,953,372 INEXPENSIVE KEYLESS USER CUSTOM CODED WINDOW SASH LOCK, Robert L. Nathans, 36 Stag Drive, Billerica, Mass. 01821

4,967,625 ADJUSTABLE JAW SOCKET, James W. Kolari, 1210 Haley Place, College Station, Tex. 77845

4,979,375 MAT FOR COOLING A PERSON DURING HOT WEATHER WITHOUT WETTING HAVING A LOW MANUFACTURING COST, Robert L. Nathans, 36 Stag Drive, Billerica, Mass. 01821

5,039,407 WATER RECLAIMATION AND COLLECTION UNIT, John H. Mohrman, POB 280, 3 Willow St., Middleport, Pa. 17953-0280

07/719,258 SCENTWICK DEER FEEDER, Charles Riggs, Box 660, Colbert, Okla. 74733

O.G. NOTICE

NEW PATENT PRINTING CONTRACTOR

In an effort to get patent printing back on schedule, the Government Printing Office has secured the services of a new printing contractor. Effective with the October 8, 1991, issue all patent printing will be done by the new contractor.

September 26, 1991

Theresa A. Brelsford
Assistant Commissioner
for Administration

PATENT NOTICES

Certificates of Correction For Week of October 8, 1991

4,552,830	4,881,257	4,917,776	4,933,142
4,612,149	4,883,534	4,918,219	4,933,143
4,646,867	4,886,892	4,918,479	4,933,353
4,654,402	4,887,051	4,918,519	4,933,411
4,713,871	4,888,291	4,918,594	4,933,841
4,723,129	4,888,632	4,918,864	4,933,875
4,729,091	4,889,828	4,918,889	4,934,137
4,737,268	4,890,259	4,918,950	4,934,199
4,740,796	4,891,837	4,919,741	4,934,835
4,759,738	4,892,947	4,920,538	4,935,162
4,763,277	4,894,688	4,920,703	4,935,361
4,767,448	4,894,737	4,920,809	4,935,900
4,767,614	4,895,535	4,921,271	4,936,059
4,782,664	4,896,172	4,922,191	4,936,439
4,791,579	4,896,593	4,922,493	4,936,620
4,794,915	4,898,118	4,922,800	4,936,991
4,802,227	4,898,609	4,923,182	4,937,024
4,810,381	4,898,976	4,923,399	4,938,660
4,815,546	4,901,062	4,923,686	4,938,892
4,817,492	4,901,183	4,923,739	4,939,164
4,825,842	4,902,028	4,924,085	4,939,194
4,826,901	4,903,970	4,924,824	4,939,541
4,829,282	4,905,060	4,925,572	4,940,386
4,830,484	4,905,257	4,926,003	4,940,441
4,833,626	4,907,020	4,926,050	4,940,503
4,834,446	4,907,504	4,926,261	4,940,585
4,841,329	4,908,315	4,926,582	4,940,780
4,844,008	4,908,943	4,926,714	4,940,866
4,846,174	4,909,215	4,927,289	4,940,897
4,846,232	4,910,016	4,927,951	4,941,313
4,846,842	4,910,550	4,928,030	4,941,477
4,851,428	4,910,602	4,928,043	4,941,539
4,855,384	4,911,033	4,928,547	4,941,643
4,855,508	4,911,995	4,928,694	4,941,676
4,856,873	4,913,170	4,929,077	4,941,734
4,865,662	4,914,403	4,929,102	4,942,023
4,866,291	4,914,834	4,929,809	4,942,244
4,869,131	4,914,854	4,930,133	4,942,356
4,869,594	4,914,889	4,930,803	4,943,351
4,870,501	4,915,270	4,931,257	4,943,467
4,873,483	4,915,361	4,932,021	4,946,687
4,874,604	4,916,038	4,932,179	4,977,904
4,874,675	4,916,342	4,932,214	4,991,894
4,878,003	4,916,798	4,932,480	4,996,717
4,878,512	4,916,808	4,932,959	5,007,124
4,879,887	4,916,868	4,932,980	5,008,950
4,880,409	4,917,371	4,933,108	

Disclaimers

4,501,629—*Ronald L. Satzler* Princeville, Ill., METHOD AND APPARATUS FOR EXTRUDING REINFORCED HOSE. Patent dated Feb. 26, 1985. Disclaimer filed Aug. 22, 1991, by the assignee, Caterpillar Inc.

Hereby enters this disclaimer to claim 3 of said patent.

4,805,067—*Kiri B. Amarakoon*, Letchworth, England. REMOVAL OF STATIC FROM THE PLATEN OF A COPYING APPARATUS. Patent dated Feb. 14, 1989. Disclaimer filed July 11, 1991, by the assignee, Xerox Corp.

Hereby enters this disclaimer to the remaining term of said patent.

4,969,430—*Tatsuyuki Masuda*, Iwata, Japan. LUBRICATION SYSTEM FOR TWO STROKE ENGINE. Patent dated Nov. 13, 1990. Disclaimer filed July 19, 1991, by the assignee, Yamaha Hatsudoki Kabushiki Kaisha.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

5,031,099—*Albrecht Kettler*, Aalen, Fed. Rep. of Germany. PROCESS FOR THE EVALUATION OF CELL PICTURES. Patent dated July 9, 1991. Disclaimer filed May 6, 1991, by the assignee, Carl-Zeiss-Stiftung.

The term of this patent subsequent to March 6, 2007 has been disclaimed.

Disclaimer and Dedication

4,741,708—*Noboru Yoshida*, Gunma, Japan. CONNECTOR PLUG. Patent dated May 3, 1988. Disclaimer and Dedication filed July 29, 1991, by the assignee, Hosiden Electronics Co., Ltd.

Hereby enters this disclaimer to all claims of said patent and dedicates to the public the remaining term of said patent.

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	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	308-0651

Expiration of patents: The patents within the range of numbers indicated below expire during September 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,832,735 to 3,838,465 inclusive
Plant Patents ..... 3,604 to 3,627

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REEXAMINATIONS

OCTOBER 8, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,883,672 (1566th)

METHOD FOR PREVENTING DIET INDUCED CARNITINE DEFICIENCY IN DOMESTICATED DOGS AND CATS

Austin L. Shug, 1201 Shorewood Blvd., and Bruce W. Keene, 625 N. Blackhawk Ave., both of Madison, Wis. 53705

Reexamination Request No. 90/002,067, Jun. 25, 1990.
Reexamination Certificate for Patent No. 4,883,672, issued Nov. 28, 1989, Ser. No. 187,870, Apr. 29, 1988.
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1,4 and 7 are determined to be patentable as amended.

Claims 2, 3, 5 and 6 dependent on an amended claim, are determined to be patentable.

1. A method for preventing diet-induced carnitine deficiency in a domesticated dog or cat[.] *fed a daily diet of water and pet food, said pet food being substantially free of raw, red meat, the method* comprising the step of: administering daily to said dog or cat a prophylactic amount of *substantially pure* L-carnitine.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,708

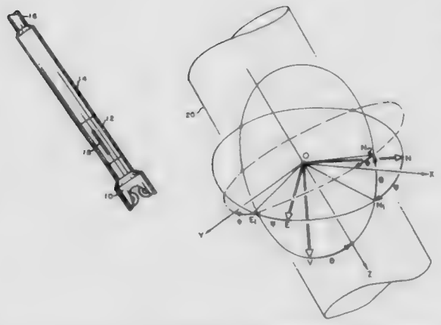
SURVEYING OF BOREHOLES USING SHORTENED NON-MAGNETIC COLLARS

Richard F. Roesler, Houston, Tex., assignor to Baroid Technology, Inc., Houston, Tex.

Original No. 4,510,696, dated Apr. 16, 1985, Ser. No. 515,716, Jul. 20, 1983. Continuation of Ser. No. 892,502, Aug. 1, 1986, abandoned. Application for reissue Nov. 21, 1990, Ser. No. 617,410

Int. Cl.[5] **E21B** *47/022*

U.S. Cl. 33—304 **24 Claims**



[1. A system for determining the orientation of a downhole instrument positioned in a drill collar in a borehole comprising: a means for determining inclination angle of the instrument at a location thereof in said borehole; a means for determining the highside angle of said instrument at said location; a means for determining the true horizontal and vertical components of the earth's magnetic field at the location of the borehole; a means for determining components of the local magnetic field perpendicular to the direction of a primary axis of the instrument aligned with the borehole at said location, said drill collar being constructed of non-magnetic material, and having a minimum length, L, determined from the equation:

$$L = 2\left[\frac{(|Pu| + |PL|)2d}{4\pi\ Bn\ \delta\psi}\right]^{\frac{1}{2}}$$

where P_u is the magnetic pole created by the magnetic material above the sensor, P_L is the magnetic pole created by the magnetic material below the sensor, d is the displacement of the poles P_u and P_L from the axis of the instrument, B_n is the North component of the earth's magnetic field at the tinstrument, and $\delta\psi$ is the error in the azimuth angle.**]**

Re. 33,709

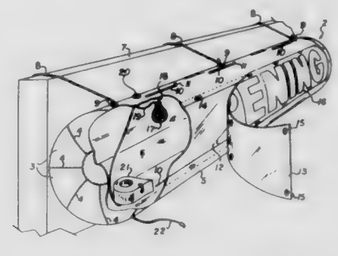
INFLATABLE SIGN

Robert K. Vicino, 6330 Nancy Ridge Dr., San Diego, Calif. 92121

Original No. 4,776,121, dated Oct. 11, 1988, Ser. No. 42,743, Apr. 27, 1987. Application for reissue Jul. 3, 1989, Ser. No. 375,310

Int. Cl.[5] **G09F** *15/00*

U.S. Cl. 40—610 **21 Claims**



1. An inflatable sign attachable to a building or the like which comprises:

a **[**sheet**]** *film* of transparent pliable material;

an envelope made from at least one sheet of pliable translucent material attached to said *film of* transparent material proximate to the edges of said **[**materials**]** *film* and forming an inflatable chamber **[**having seams and at least one resealable access port**]**, said *film of* transparent material forming a window in said envelope;

means for forcing fluid **[**through said access port**]** into said envelope **[**in excess of any fluid losses through said seams and access port**]** and for maintaining in the interior of said envelope a pressure in excess of the ambient atmospheric pressure;

means for illuminating said interior;

a display banner made of pliable translucent material commensurate with said window and means for removably affixing said banner over said window; and

means for supporting said envelope from said building.

Re. 33,710

PORTABLE SHELTER ASSEMBLIES

Theodore R. Zeigler, 205 South Columbus St., Alexandria, Va. 22314, assignor to World Shelters, Inc., Springfield, Va.

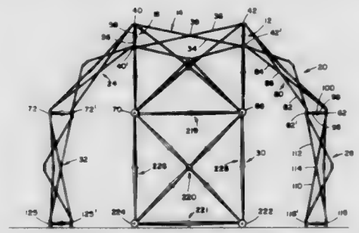
Original No. 4,689,932, dated Sep. 1, 1987, Ser. No. 795,534, Nov. 6, 1985. Application for reissue Aug. 30, 1989, Ser. No. 400,677

Int. Cl.[5] **E04H** *12/00*

U.S. Cl. 52—648 **80 Claims**

1. In a portable shelter framework formed of elongated struts and which is capable of being expanded into arched three dimensional form and collapsed into bundled form, the combination of a plurality of series of end-interconnected module each defining a separate arch portion of the framework **[**said portions **]** *at least one arch portion* extending in *a differ-*

ent. [directions] *non-parallel and non-coplanar direction* relative to [each other,] to *a second arch portion, said modules,*



when expanded, comprising sides and ends defined by crossed, pivotally connected pairs of said elongated struts.

Re. 33,711
RATCHET WRENCH

Akira Ono, Hatoyama, and Toshiro Iritani, Sagamihara, both of Japan, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

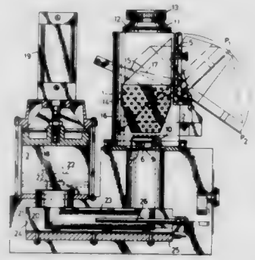
Original No. 4,919,022, dated Apr. 24, 1990, Ser. No. 363,419, Jun. 5, 1989. Continuation of Ser. No. 188,143, Apr. 29, 1988, abandoned, which is a continuation of Ser. No. 861,540, May 9, 1986, abandoned. Application for reissue Sep. 4, 1990, Ser. No. 578,363
Claims priority, application Japan, May 15, 1985, 60-103158
Int. Cl.[5] B25B *19/00*
U.S. Cl. 81—464 **6 Claims**

1. A powered ratchet wrench comprising, in axial alignment to form an elongated handle:
- a rotary motor having a rotatable output shaft;
- a rotary impact clutch mechanism also having a rotatable output shaft and rotated by
- said rotatable output shaft of said rotary motor;
- a reversible ratchet mechanism having an oscillatable ratchet yoke and being oscillatably driven through said yoke by the output shaft of said impact clutch; and
- a single ended tool drive spindle driven by said ratchet mechanism and having its drive axis normal to the axes of said rotary motor and said impact clutch.

Re. 33,712
DEEP-FRYER PAN FOR INDUSTRIAL FRYERS

Rene G. Mariotti, Saint Cloud, France, assignor to Ore-Ida Vended Products, Inc., Boise, Id.

Original No. 4,502,372, dated Mar. 5, 1985, Ser. No. 608,929, May 11, 1984. Continuation of Ser. No. 433,875, Oct. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 356,803, Mar. 10, 1982, abandoned. Application for reissue Feb. 18, 1987, Ser. No. 16,194
Claims priority, application France, Mar. 13, 1981, 8105027
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—330 **42 Claims**



1. An industrial deep-fryer for frying refrigerated foods to be consumed after frying in oil comprising:
- a frying pan formed from a closed enclosure having an opening and an air inlet and outlet;
- a frying basket mounted in said enclosure for holding food during frying in said pan;
- a door closing said opening and movable between an open and closed position;
- means for directing said refrigerated food into said basket for frying when said door is in an open position,
- means for supplying oil to said pan; and
- means connected between said air inlet and outlet for circulating oil [and] *having entrained* for droplets [entrained in the air therebetween] without [release of] *releasing* entrained oil to the atmosphere outside said pan and *for* condensing moisture and collecting entrained oil droplets.

Re. 33,713
METHOD AND APPARATUS FOR CONTROLLING AN ELECTROMAGNETIC CLUTCH FOR USE ON A VEHICLE

Tomoyuki Watanabe; Takashi Shigematsu; Setsuo Tokoro, and Takashi Hayashi, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Original No. 4,715,482, dated Dec. 29, 1987, Ser. No. 754,949, Jul. 15, 1985. Application for reissue Apr. 13, 1989, Ser. No. 337,753
Claims priority, application Japan, Nov. 20, 1984, 59-244900; Apr. 3, 1985, 60-70615
Int. Cl.[5] F16D *27/00, 37/02;* **B60K** *41/02*
U.S. Cl. 192—0.032 **16 Claims**

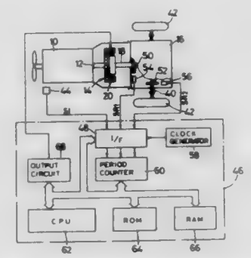
1. A method of controlling [an electromagnetic] *a* clutch *means* incorporated in a power transmission system of a vehicle to transmit an output of an engine to drive wheels of the vehicle, so as to absorb a variation in output torque of the engine, *a clutch torque transmitted by said clutch means being varied through an electromagnetic force,* said method comprising the steps of:
- detecting a variation in rotating speed or torque of an output shaft of said [electromagnetic] clutch *means*; and
- controlling an engaging action of said [electromagnetic] clutch *means* to adjust [a] *said* clutch torque transmitted by said clutch *means*, based on whether the detected variation in rotating speed or torque of said output shaft of

said [electromagnetic] clutch *means* is synchronized with an ignition period of said engine.

15. An apparatus for controlling a clutch means incorporated in a power transmission system of a vehicle for transmitting output torque of an engine to drive wheels of the vehicle, so as to absorb a variation in output torque of said engine, a clutch torque transmitted by said clutch means being varied through an electromagnetic force, said apparatus comprising:

means for detecting a variation in rotating speed or torque of an output shaft of said clutch means; and

means for controlling an engaging action of said clutch means to adjust said clutch torque transmitted by said clutch means, based on whether the detected variation in rotating speed or



torque of said output shaft of said clutch means is synchronized with an ignition period of said engine.

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PLANT PATENTS

GRANTED OCTOBER 8, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,666

ROSE PLANT—MEIDARKRO VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Apr. 12, 1990, Ser. No. 508,115
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive fully double velvet cardinal blossoms which are stable and long lasting when cut and placed in a vase,
(b) exhibits an erect growth habit,
(c) exhibits a fair greenhouse forcing capability,
(d) exhibits vigorous vegetation,
(e) is particularly suited for cut flower production, and
(f) is not particularly affected by cryptogamic diseases,

substantially as herein shown and described.

7,667

ROSE PLANT—MEIBEAUSAI VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 22, 1990, Ser. No. 526,897
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of Floribunda rose plant characterized by the following combination of characteristics:

(a) forms abundantly and continuously attractive long lasting double blossoms which are chrome yellow suffused and edged with nyron rose,
(b) forms very vigorous vegetation,
(c) exhibits a semi-erect, compact, bushy and well-balanced growth habit, and
(d) is particularly well suited for the decoration of parks and gardens;

substantially as herein shown and described.

7,668

ROSE PLANT—MEINAGRE VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 22, 1990, Ser. No. 526,988
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of Floribunda rose plant characterized by the following combination of characteristics:

(a) forms attractive long lasting semi-double bloosoms which are currant red in coloration,
(b) forms vigorous vegetation,
(c) exhibits a bushy, low, compact and well-balanced growth habit, and
(d) is particularly well suited for the decoration of parks and gardens;

substantially as herein shown and described.

7,669

NEW GUINEA IMPATIENS PLANT NAMED CELEBRATION HOT PINK

Mario A. Guillen, Cartago, Costa Rica, assignor to Ball Seed Co., West Chicago, Ill.

Filed Jun. 1, 1990, Ser. No. 531,547
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Celebration Hot Pink, as illustrated and described.

7,670

NEW GUINEA IMPATIENS PLANT NAMED CELEBRATION CANDY PINK

Mario A. Guillen, Cargato, Costa Rica, assignor to Ball Seed Co., West Chicago, Ill.

Filed Jun. 1, 1990, Ser. No. 531,548
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Celebration Candy Pink, as illustrated and described.

7,671

NEW GUINEA IMPATIENS PLANT NAMED CELEBRATION LIGHT LAVENDER

Mario A. Guillen, Cargato, Costa Rica, assignor to Ball Seed Co., West Chicago, Ill.

Filed Jun. 1, 1990, Ser. No. 531,577
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named Celebration Light Lavender, as illustrated and described.

7,672

AFRICAN VIOLET PLANT NAMED LITTLE LAPIS

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 551,741
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Little Lapis, as described and illustrated, and particularly characterized by its miniature growth habit; single, violet-shaped, blue flowers; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse and continuous flowering; bright green, spear-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

7,673

CHRYSANTHEMUM PLANT NAMED DARK YELLOW VERO

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 16, 1990, Ser. No. 481,070
Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Dark Yellow Vero, as described and illustrated.

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PATENTS

GRANTED OCT. 8, 1991

ERRATA

For CLASS	See PATENT NO.
192-034	5,054,588
297-216	5,054,845
359-617	5,054,865
359-201	5,054,866
385-031	5,054,867
385-099	5,054,868
385-133	5,054,869
385-014	5,054,870
385-030	5,054,871
385-130	5,054,872
385-027	5,054,873
385-028	5,054,874
385-027	5,054,875
385-024	5,054,876
385-033	5,054,877
385-033	5,054,878
385-059	5,054,879
385-111	5,054,880
385-113	5,054,881
385-012	5,054,882
385-145	5,054,883
359-566	5,054,884
359-618	5,054,885
359-823	5,054,886
359-059	5,054,887
359-076	5,054,888
359-076	5,054,889
359-080	5,054,890
359-043	5,054,891
359-072	5,054,892
359-254	5,054,893
359-270	5,054,894
359-265	5,054,895
359-379	5,054,896
359-680	5,054,897
359-654	5,054,898
359-745	5,054,899
359-851	5,054,900
417-043	5,054,977
414-621	5,055,091
423-034	5,055,309

ERRATA—Continued

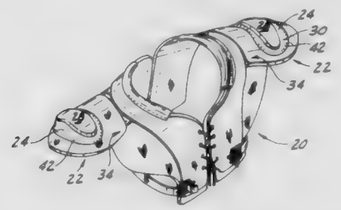
514-206 5,055,572
549-521 5,055,601
331-041 5,056,144
331-011 5,056,148
382-056 5,056,154

PATENTS

GRANTED OCTOBER 8, 1991

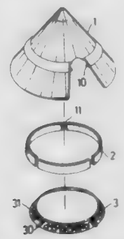
GENERAL AND MECHANICAL

5,054,121
ATHLETIC PAD
Hal D. Mitchell, Licking, Mo., assignor to Figgie International Inc., Richmond, Va.
Continuation of Ser. No. 238,113, Aug. 30, 1988, abandoned. This application Feb. 8, 1990, Ser. No. 467,154
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **15 Claims**



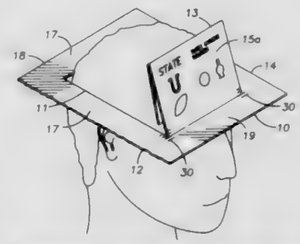
1. A protective device for body parts comprising:
a protective outer plate of a substantially stiff but flexible material having a concave inner surface;
a pliable inner ply extending across the inner surface of the plate for overlying a part of the body of the wearer;
a closed loop of stitching securing the inner ply to the edge margins of the inner surface of the outer plate to suspend the inner ply taut and spaced inwardly from the central portion of the inner surface of the outer plate so that tensioning of the inner ply, as occurs upon an impact to the outer plate, pulls portions of the edge margins of the outer plate toward each other to flex the outer plate thus increase the contact area between the inner ply and the wearer, thereby increasing the area for distributing the force of the impact.

5,054,122
STRUCTURE OF HAT WITH COOLING SYSTEM FOR THE HEAD
Cheng-Hsien Sher, No. 18, Lane 195, Nan Tai Rd., Kauhsiung City, Taiwan
Filed Apr. 30, 1990, Ser. No. 516,941
Int. Cl.[5] A42B *3/28*
U.S. Cl. 2—7 **4 Claims**



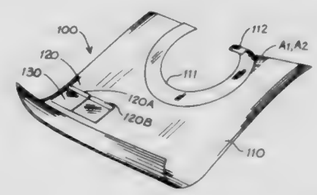
1. A hat comprising a head covering including a portion adapted to be disposed adjacent the forehead of a wearer, said portion having an inwardly opening channel on the inner surface thereof, a plurality of cooling elements disposed within said channel, said cooling elements each having opposite ends, the ends of adjacent cooling elements being spaced from one another to define gaps therebetween, a ventilating socket disposed inwardly of said cooling elements, said ventilating socket having a plurality of vent holes formed therethrough, said ventilating socket having a plurality of spaced outwardly extending strips thereon, said strips being fastened within said gaps.

5,054,123
PROGRAM SUN VISOR
James F. Helms, 511 Fall River, Houston, Tex. 77024
Filed Jun. 5, 1990, Ser. No. 533,525
Int. Cl.[5] A61F *9/00*
U.S. Cl. 2—12 **1 Claim**



1. A sun visor comprising a detachable program page having a perforated line that separates, along three sides of the page, a substantially rectangular interior portion of the page from a substantially rectangular exterior portion of the page such that the interior portion remains joined to the exterior portion along the fourth side of the page, the fourth side forming the front of the visor and the exterior portion forming a continuous, substantially rectangular band for encircling the head, and wherein the interior portion is bisected by a fold line that approximately parallels the front of the visor such that front and rear segments of the interior portion can be folded together and moved forward toward the front of the visor.

5,054,124
HAIR CUTTING CAPE KIT WITH CAPE AND PAD MEMBERS UTILIZING ADHESIVE TO SEAL AND REMOVE HAIR CLIPPINGS
Robert L. Darvas, 4601 N. Via Entrada Apt. 2010, Tucson, Ariz. 85718
Filed Sep. 4, 1990, Ser. No. 577,199
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—50 **6 Claims**

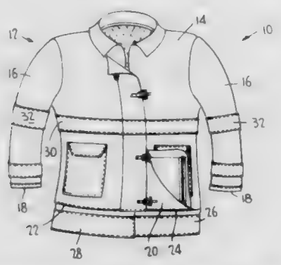


1. A hair cutting accessory apparatus, said apparatus comprising:
cape means having a collar member for draping around a person's neck area, said collar member comprising a first adhesive surface for effecting adherence and collection of hair clippings and a second adhesive surface for adhesively attaching to a neck area of a person receiving hair cutting services, said second adhesive surface being used for preventing said hair clippings from entering beneath said person's upper body clothing and contacting said

person's skin and thereby aid in eliminating related hair clippings contact annoyance; and

at least one pat-down pad means provided with an adhesive surface for further effecting said adherence and collection of said hair clippings, said cape means and said at least one pat-down pad comprise a hair cutting unit accessory, said at least one pat-down pad being detachably secured to said cape means.

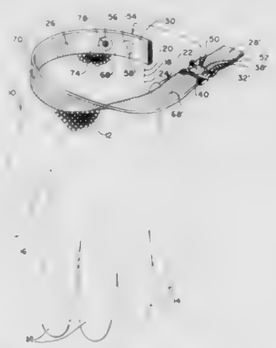
5,054,125
PROTECTIVE GARMENT WITH LINER INDICATOR
Julie A. Snedeker, Northwood, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed Dec. 29, 1989, Ser. No. 459,345
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—81 **9 Claims**



1. A garment adapted to be worn about the upper torso of a human boxy, the garment including an outer shell and a liner adapted to be worn within the outer shell, the shell and the liner each comprising a body portion and two arm portions connected to the body portion, the shell having a lower portion defining a lower edge adapted to extend around a portion of a human body, the body portion of the liner having dimensions sufficient to extend below and beneath the lower edge of the body portion o the shell to provide an extending portion having an outer surface which is visible about the entire periphery of the body portion of the garment, the outer surface of the extending and visible liner portion o the body portion of said liner having a band of reflective material thereon about its entire extending periphery.

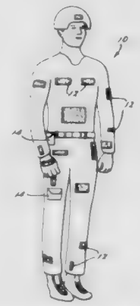
5,054,126
REVERSIBLE PROTECTIVE GLOVE
Richard A. Rivkin, Deerfield, Ill., assignor to Saf-T-Gard International, Inc., Northbrook, Ill.
Filed Sep. 21, 1990, Ser. No. 586,417
Int. Cl.[5] A41D *19/00, 13/10*
U.S. Cl. 2—161 R **4 Claims**

3. A reversible glove having finger portions formed of metal mesh material with a fabric band secured to a cuff thereof, said glove comprising, a generally V-shaped slit formed proximate the smallest finger portion thereof and opening to the cuff, said band having a free end extending beyond one edge of the V-shaped slit and a fixed end opposite the free end and terminating proximate the other edge of the V-shaped slit, a fastening member movably positioned on said free end, the fastening member including a protrusion formed on one side thereof and facing a first surface of the band, a first grommet and a second grommet affixed to the band proximate to the fixed end, said grommets being spaced apart relative to each other, the first grommet having a first grommet hole facing said first surface of the band and the second grommet having a second grommet hole facing the opposite surface of the band, said grommet holes being adapted for selected and removable receipt therein of the protrusion formed on the fastening member, whereby the band may be wrapped about the wrist of one of a user's hands with the protrusion of the fastening member engaged in



the first grommet hole to firmly secure the band on the user's wrist.

5,054,127
DETACHABLE POCKET SYSTEM FOR GARMENTS AND THE LIKE
Eric Scott Zevchak, 155 Redruth, Clawson, Mich. 48017
Filed Jun. 18, 1990, Ser. No. 539,188
Int. Cl.[5] A41D *27/20*
U.S. Cl. 2—247 **17 Claims**



1. A system of interchangeable pockets, said system comprising:

an article of clothing;

a plurality of interchangeable pockets having varying sizes, each said pocket having first and second substantially parallel sides;

a first type of fastening material non-releasably attached to said first side of each said pocket for enabling interchangeable random positioning of said pocket;

a plurality of base pads non-releasably attached at various positions about the area of said article of clothing, each said base pad constructed of a second type of fastening material capable of releasably attaching to said first type of fastening material such that said pocket may be randomly and interchangeably positioned about any one of said second type of fastening material pads.

5,054,128
ORNAMENT FOR SUSPENDERS
Merri J. Wimmer, 509 52nd St., West Des Moines, Iowa 50265
Filed Jul. 20, 1990, Ser. No. 554,836
Int. Cl.[5] A41F *3/00*
U.S. Cl. 2—300 **8 Claims**



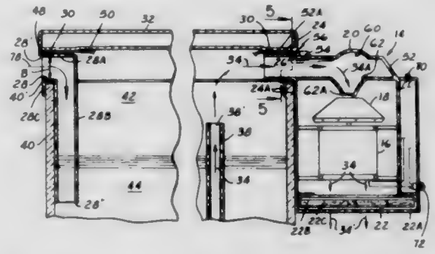
1. A suspender set comprising at least one strap having two distal ends, one of the ends having a fastener adapted for securing the strap to an article of clothing, and an ornamental device secured to the fastener, the ornamental device comprising a member of rigid material and having a major surface containing an ornamental design and a second surface opposed to the major surface having a connector element secured to and extending from the second surface and releasably secured to a portion of the fastener of the suspender set, the connector element being a loop of continuous elastic material.

5,054,129
HOSIERY GARMENT WITH OPEN-TOE, OPEN CROTCH STRUCTURE
Elsa Baehr, 8911 Ewing Ave., Evanston, Ill. 60203
Filed Sep. 4, 1990, Ser. No. 577,298
Int. Cl.[5] A41B *11/04*
U.S. Cl. 2—409 **14 Claims**



1. An open-toed pantyhose garment for wear with swimsuits, exercise and dancewear and post-surgical wear that entirely covers the lower body of a wearer having a top section with an open crotch and two leg portions wherein each leg portion has a foot portion having an edge that encircles the wearer's foot and defines an opening through which the wearer's toes protrude, each circular edge having an upper portion and a lower portion wherein the upper portion is adjacent the top of the wearer's foot and the lower portion is adjacent the bottom of the wearer's foot, said edge being bridged by strap means between the first and second toes and the fourth and fifth toes wherein the strap means hold the pantyhose securely in place at the toe end.

5,054,130
TOILET DEODORIZING DEVICE
Thomas R. Wilson, 2714 Beach Rd., Port Huron, Mich. 48060
Filed May 21, 1990, Ser. No. 526,459
Int. Cl.[5] E03D *9/052*
U.S. Cl. 4—213 **17 Claims**



1. A toilet deodorizer device, said toilet deodorizer device being connectable to a conventional tank-type toilet, the toilet having a toilet bowl, a tank connected to the toilet bowl for holding flush water, the tank having a top, a seat pivotally connected to the toilet bowl, a fluid passage channel through the toilet bowl, an over-flow pipe within the tank communicating with the fluid passage channel, and a lid for placement upon the tank top, said toilet deodorizer being structured to draw odorous air from in and about the toilet bowl, condition the air and then exit conditioned air to the ambient surrounding air, said toilet deodorizer device comprising:

a tank access duct structured for being located upon the tank top;

a deodorizer unit connected to said tank access duct, said deodorizer unit comprising:

a housing having at a first end and a second end;

an internal ducting adjacent said first end of said housing through which the odorous air may be directed, said internal ducting communicating with said tank access duct;

exit means located at said second end of said housing for exiting the conditioned air from the housing;

a motor located within said housing;

air filtration means located within said housing for converting the odorous air passing therethrough into the conditioned air; and

air movement means connected with the motor for causing the odorous air to be drawn from said tank access duct, through said air filtration means, and thereupon to said exit means of said housing as the conditioned air;

passive relief valve means structured for being located upon the tank top for passively introducing ambient air into the tank when the toilet is flushed in order to prevent reduced air pressure in the tank from interfering with flushing, said passive relief valve means having all stationary parts, said passive relief valve means comprising:

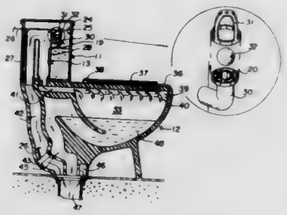
a first duct structured for being located upon the tank top, said first duct having a first duct opening located outside the tank for communicating with the ambient air; and

a second duct connected to and communicating with the first duct, said second duct having a second duct end, said second duct extending a predetermined distance for locating said second end thereof into the water of the tank so as to prevent the ambient air from entering the tank when the tank is filled with water, but permits the ambient air to enter the tank upon flushing of the toilet;

tank top seal means structured for being located upon the tank top for sealing the tank top in an at least substantially air tight manner from the ambient air; and

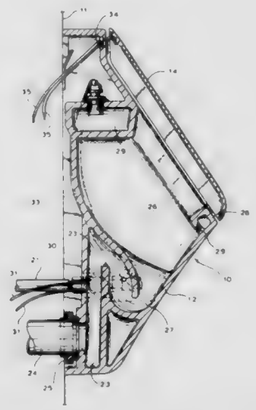
electrical circuit means for selectively operating said motor.

5,054,131
TOILET ASSEMBLY
Jae K. Sim, 619 S. Orange Dr., Los Angeles, Calif. 90036
Filed Jun. 29, 1990, Ser. No. 545,694
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—216 5 Claims



1. A ventilating toilet assembly comprising:
a toilet stool having a toilet bowl, said toilet stool including a back wall portion, a flush ring disposed at the upper end of said toilet bowl, a plurality of openings communicating with said flush ring for allowing flush water to be flushed into the toilet bowl from the flush ring, a seat ring disposed on said flush ring, a toilet seat cover disposed on a peripheral inside edge of said seat ring, and a siphon conduit connected to and communicating the toilet bowl with a sewer discharge line for discharging waste product directly from the toilet bowl to said line,
a ventilation conduit formed in said stool and being disposed adjacent to the back wall portion of said toilet stool for ventilating objectional odor from said toilet bowl, said ventilation conduit extending annularly around said siphon conduit at a lower portion of said stool at a point where they communicate with said sewer discharge line, said ventilation conduit housing a fan disposed in a slot in a portion of said conduit,
a toilet holding tank for containing flush water, said toilet holding tank having a water intake valve and an opening leading to said bowl,
a motion sensor disposed on the front exterior of said toilet holding tank facing said toilet stool, said motion sensor being free of interference from the opening and closing of the toilet seat cover,
a multifunctional tube having an inverted U-shaped configuration with a first leg of the U-shaped multifunctional tube being disposed in said opening in said toilet holding tank, which the first leg serves as a first gas exhaust tube connected to said flush ring, wherein said first leg has a water overflow tube having a ball seat disposed at the top thereof and a net ball cap extending from the ball seat, the net ball cap having the same height as that of the U-shaped multifunctional tube, a horizontal flapper tube extending laterally of said first leg and having a flapper valve seated thereon, a second leg of said U-shaped configuration tube being connected to said ventilation conduit and serving as a second gas exhaust tube, and
a water overflow controlling movable floating ball valve disposed to move between said ball seat and said net ball cap of said water overflow tube for allowing discharge of overflowing flush water in the toilet holding tank to the toilet bowl, upon water rising above in said ball seat, the water overflow movable ball valve is floated and separated from the ball seat so as to open the water overflow tube, whereby with the toilet seat cover open, while the user sits on the seat ring, the motion sensor is actuated to operate the fan and the objectionable odor is ventilated, and in turn when the user stands and flushes the toilet assembly, the motion sensor is deactivated and simultaneously, the flush water discharges the waste product and associated objectionable odor directedly to the sewer discharge line.

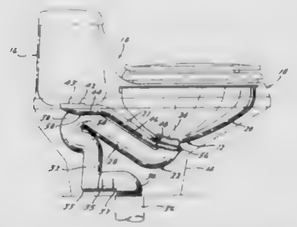
5,054,132
FLUSH CONTROL SYSTEM FOR PLUMBING FIXTURE
Luigi F. Bartella, Weston, Canada, assignor to American Standard Inc., New York, N.Y.
Filed Oct. 13, 1988, Ser. No. 257,354
Int. Cl.[5] E03D *1/00, 13/00*
U.S. Cl. 4—302 7 Claims



1. A flush control system for use with a plumbing fixture of the type having a body defining a bowl, a waste outlet and water inlet opening communicating with said bowl, a cover hingedly connected to said body and moveable between a first position where said bowl is covered and a second position where said bowl is uncovered, said flush control system comprising:
an electronic controller means mounted in said body and adapted to be electrically connected to a power source, and which is electrically connected to a valve switching means and an electrically controlled solenoid water valve;
said solenoid water valve mounted in said body, having a water inlet opening adapted to be coupled to a water source and a water outlet opening, and a conduit coupled between said valve outlet opening and said bowl inlet opening;
said valve switching means mounted in said body and operatively coupled to a valve actuating means mounted in said cover so that when said cover is initially in its first position covering said bowl, said valve switching means is in its closed inoperative position, said electronic controller means acting to flush said bowl when said cover is raised to its second position for at least 5 seconds and then lowered to its first position thereafter, said valve switch means energizing said solenoid water valve through said electronic controller means to start the flush cycle only when the cover is shifted to its first position after having first been raised for at least 5 seconds to its second position.

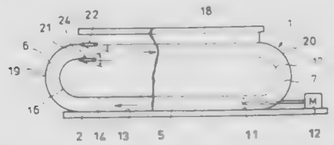
5,054,133
LOW WATER CONSUMPTION TOILET FIXTURE
Daniel A. Pickerrell, Fishers; Donald C. Schrock, Carmel, and John Inch, Indianapolis, all of Ind., assignors to Masco Corporatiopn of Indiana, Taylor, Mich.
Filed Apr. 26, 1989, Ser. No. 343,751
Int. Cl.[5] E03D *11/18*
U.S. Cl. 4—428 7 Claims

3. A toilet fixture comprising:
a tank;
a trap having a discharge outlet at a downstream end for connection with a drain pipe;
a bowl positioned longitudinally forwardly of said tank, said bowl having a large top opening and a small well at a bottom position leading into said trap, a longitudinally and vertically extending plane which bisects said bowl being defined as a reference plane;
a waterway sloping downwardly from an upper inlet which is fluidly connected to said tank, to a lower exit entering said bowl near said well, said waterway supplying water from said tank to said bowl, from said lower exit;
said upper inlet, said well and said discharge outlet all being intersected by said reference plane;
said trap being angled with respect to said reference plane;
said well being canted with respect to said reference plane vertically downwardly in a forward and lateral direction, such that distinct high and low points of said well are



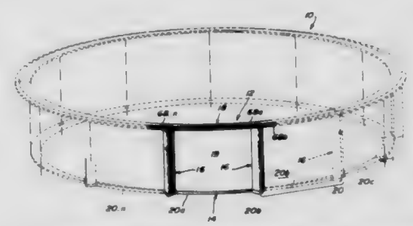
defined, said distinct high and low points being laterally spaced on opposite sides of said reference plane; and
said lower exit having an open notch, said notch being adjacent to said high point and extending from a position vertically lower than said high point to a position vertically higher than said high point to supply water into said bowl vertically above said well, a groove communicating with said lower exit at a position vertically below said well near said high point, said groove extending below said well, to communicate water from said waterway into said trap at a position generally vertically aligned with, and below said low point, such that water exiting said notch creates a vortex in said bowl, and water exiting said groove creates a second vortex in said trap.

5,054,134
UPPER LAYER WATER FLOW TYPE CIRCULATING WATER POOL
Osamu Teratsuji, Ichikawa; Keiichi Nishimura, Urawa; Yoshiro Moriya, Matsudo, and Yukihiko Ueda, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 311,652, Feb. 15, 1989, abandoned.
This application Jul. 30, 1990, Ser. No. 559,987
Claims priority, application Japan, Aug. 31, 1988, 63-217988; Aug. 31, 1988, 63-217989
Int. Cl.[5] E04H *4/12*
U.S. Cl. 4—488 1 Claim



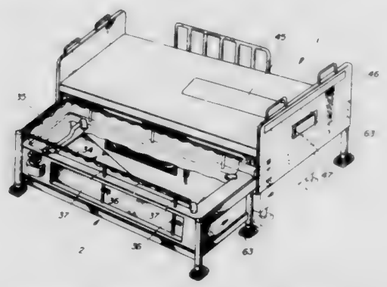
1. An upper water flow layer type circulating water pool comprising a circulating pool main body with front and rear curved portions; a swimming tank or pool defined by an opening in an upper portion of said circulating water pool main body; an observation window formed in a side of said circulating pool main body; a water circulation passage defined by a bottom partition wall spaced apart from a bottom of said circulating water pool main body and front and rear curved partition walls spaced apart from an inner surface of said front and rear curved portions of said main body within said circulating water pool main body, height of a downstream outlet to a front upper portion of said swimming tank or pool and an upstream inlet to said water circulation passage being approximately equal to a depth required to permit a swimmer to swim in said swimming tank or pool; and means disposed in said water circulation passage for producing the water flow through said water circulation passage, wherein a swingable variable blade or vane is attached to a upper portion of said downstream outlet of said water circulation passage; and is adapted to swing toward or away from said water circulation passage path to respectively impede or permit waterflow therethrough;
and another swingable variable blade or vane is attached to a lower portion of said downstream outlet of said water circulation passage, and is adapted to swing toward or away from said water circulation passage path to respectively impede or permit water flow therethrough.

5,054,135
ABOVE GROUND POOL
Michel Dallaire, Montreal, and Michel Seguin, Hull, both of Canada, assignors to Vogue Industries Ltd., LaSalle, Canada
Filed Dec. 15, 1989, Ser. No. 450,312
Int. Cl.[5] E04H *4/00;* E04B *1/346*
U.S. Cl. 4—506 12 Claims



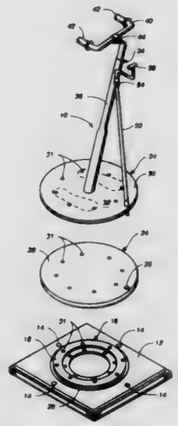
12. A framework for an above-ground pool comprising an uninterrupted base member made up of a plurality of molded interconnected base member sections defining a continuous groove for receiving a retaining wall, the base member also including spaced-apart sockets for receiving upright posts, each interconnected base member section having a first and a second end, wherein the first end of one base member section includes a first portion of a post socket molded integrally thereat and the second end of the base member section includes a complementary second portion of the post socket molded integrally thereat, whereby said groove is defined in the base member section and the first and second socket portions in an uninterrupted fashion, and wherein the first end of the base member section and the first post socket portion include a male connecting portion in a vertical plane extending laterally to the base member, and the second end of the base member section and the second post socket portion include a female connecting portion in a vertical plane extending laterally to the base member for engaging and interlocking with the first end of an adjacent base member section, a plurality of upright posts with each post including a post foot for engaging the interlocked post socket, whereby the post foot locks the mated interconnected base member sections and post socket portions together, an uninterrupted coping extending along the top of the posts, and means provided on the coping to receive the top of the posts and fasteners securing the posts to the post sockets and to the coping.

5,054,136
BED WITH A BATH-TUB
Jitsuo Inagaki, 71, Aza Kamiyashiki, Oaza Itsusiki, Itsusikicho Hazugun, Aichi, Japan
Filed Oct. 20, 1989, Ser. No. 424,817
Int. Cl.[5] A61H *33/00*; A61G *7/02*
U.S. Cl. 4—546 16 Claims



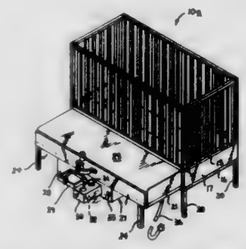
1. An article comprising a bed with a bath-tub, the bed having a generally horizontal resting surface for a human body spaced from a supporting surface for the bed, the bath-tub being slidably mounted to the bed in the space between the resting surface and the supporting surface, said bath-tub having a mat disposed therein, said mat being movable up and down within the bath-tub with a human body laid thereon, said bath-tub further having means for tilting the mat to easily transfer a human body from the mat to the resting surface of the bed, said bed also including means for tilting the resting surface to easily transfer a human body from the resting surface of the bed to the mat.

5,054,137
APPARATUS FOR MANEUVERING A PHYSICALLY IMPAIRED INDIVIDUAL
Richard H. Christensen, P.O. Box 84, Greenwood, Calif. 95635
Filed Mar. 1, 1991, Ser. No. 662,951
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—81 R 6 Claims



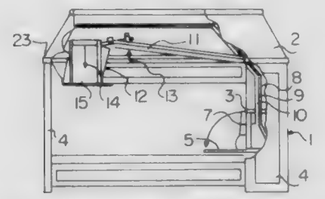
1. Apparatus for maneuvering a physically impaired individual, said apparatus comprising, in combination:
a base member defining a plurality of spaced base member apertures;
platform means having an upwardly disposed platform surface and mounted for rotatable movement relative to said base member for at least partially supporting the weight of an individual standing on said platform surface and for selectively rotating said individual, said platform means defining a platform means aperture being placed in registry seriatim with said base member apertures upon rotation of said platform means relative to said base member;
stabilizer means projecting upwardly from said platform surface to be manually grasped by the individual standing on said platform surface; and
lock means for selectively locking said platform means and said base member against relative rotatable movement, said lock means being selectively positionable in said platform means aperture and a base member aperture in registry therewith to lock said platform means against rotational movement relative to said base member and including a shaft mounted for relative movement on said stabilizer means and having a distal end positionable in said base member and platform means apertures.

5,054,138
CRIB APPARATUS
Marla Wesley, P.O. Box 490, Port Ewen, N.Y. 12466
Filed Apr. 9, 1991, Ser. No. 682,341
Int. Cl.[5] A47D *7/03*
U.S. Cl. 5—93.1 5 Claims



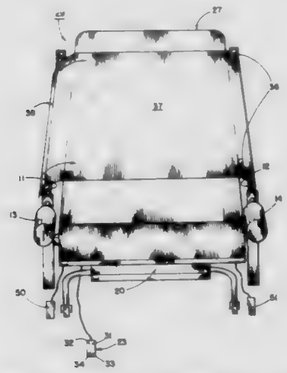
1. A crib apparatus, comprising in combination,
a rear crib wall and a forward crib wall, the forward crib wall spaced from and parallel the rear crib wall coextensively therewith, and
including a headboard wall spaced from and parallel a foot board wall, wherein each wall defines a continuous upper wall structure defined by spaced parallel vertical bar members, and
each of said walls orthogonally mounted to a top floor, and
a bottom floor coextensive with and parallel the top floor positioned below the top floor, and
a "U" shaped perimeter wall extending coextensively between the top floor and bottom floor and coextensive with the respective rear crib wall, headboard wall, and foot board wall, and
a parallelepiped mattress cavity defined between the top floor and bottom floor, and
a rectangular entrance opening directed between the top floor and bottom floor coextensively with the forward crib wall, and
a mattress cavity door hingedly mounted coextensively to a forward edge of the bottom floor, and
a mattress slide plate mounted on the bottom floor arranged for reciprocation from a first position within the mattress cavity to a second position spaced exteriorly of the mattress cavity, and
a mattress mounted upon the mattress slide plate, and
the bottom floor defining a central opening coextensive with a top surface of the crib mattress.

5,054,139
BED WITH CONCEALED ENTERTAINMENT CENTER
Thomas L. Jones, 3 Indian Pl., Asheville, N.C. 28805
Filed Oct. 10, 1989, Ser. No. 419,555
Int. Cl.[5] A47C *31/00*
U.S. Cl. 5—2.1 11 Claims



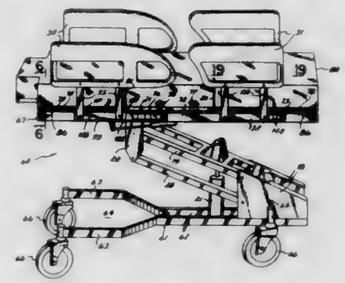
1. A combination of a bed with a TV set, comprising:
a bed frame structure including a headboard member, side board members, a footboard member and a canopy member supported by vertical members;
a supporting means provided within said frame structure for supporting a TV set thereon;
means for positioning said TV set for unobstructed viewing by a person while reclining in the bed;
means for at least partially concealing said TV set within said canopy member when said TV set is not in use;
wherein said supporting means includes a first movable panel supporting said TV set and defining a portion of a bottom wall of said canopy member and said means for positioning includes a lifting mechanism for upward and downward movement of said panel between a first position wherein said TV set is concealed inside said canopy and a second position wherein said TV set is exposed for convenient viewing by a person reclining on a bed.

5,054,140
HOSPITAL BED DEVICE
Grady A. Bingham, Buck Rd., Rte. 2, Box 741-A, Eden, N.C. 27288, and Henry P. Brown, II, Rte. 8, Box 18, Reidsville, N.C. 27320
Continuation of Ser. No. 320,539, Mar. 8, 1989, abandoned. This application Aug. 20, 1990, Ser. No. 569,592
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—61 3 Claims



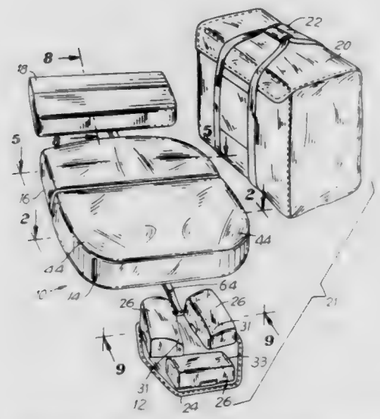
1. A hospital bed device for assisting the movement and rotation of a bedridden patient to prevent prolonged motionless periods thereof, the device for attachment to a conventional hospital bed comprising: a frame, a pair of sets of hydraulic cylinders, said frame positioned proximate said hospital bed and connected to said pair of hydraulic cylinder sets, one of said pair of hydraulic cylinder sets positioned on each side of said bed, a pump, an electric motor, said motor joined to said pump, a manifold, a fluid reservoir, said manifold in fluid communication with said pump and said reservoir, a foot actuator, said actuator joined to said pump for activating said pump, said manifold in communication with said hydraulic cylinder sets, a hydraulic cylinder selectively locking solenoid valve, said solenoid valve joined to one of said hydraulic cylinders, said locking solenoid valve for selectively locking said cylinder in a variety of extended positions, a pair of rollers, each of said pair of rollers rotatably joined to one of said hydraulic cylinder sets, means to turn said rollers, said roller turn means joined to said rollers, a hand held actuator for raising and rotating said rollers, said hand held actuator connected to said roller turn means and to said locking solenoid valve, said hand held actuator responsive to said foot actuator, a belt, said belt positioned across said bed and attached to said rollers whereby a patient positioned on said belt, upon activation of said hand held actuator, will be moved as said belt is rotated, and upon simultaneous activation of both said hand and said foot actuators said patient can be raised.

5,054,141
HOSPITAL BED HAVING A Y-SHAPED BASE
L. Dale Foster, Brookville, and David W. Hornbach, Guilford, both of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.
Division of Ser. No. 386,210, Jul. 28, 1989, Pat. No. 4,985,946. This application Jul. 23, 1990, Ser. No. 557,323
Int. Cl.[5] A61G *7/00*
U.S. Cl. 5—63 3 Claims



1. A hospital bed comprising:
a rectangular bed frame having a head end and a foot end,
a base below said bed frame,
said base having a Y-shape consisting of a stem under the foot end of the frame and two spaced branches connected to the stem, the spaced branches terminating in parallel sections underlying the head end of the bed,
said parallel sections being spaced apart substantially the same distance as the width of the bed frame,
and a cantilever linkage angled upwardly from the free end of said stem and connected to the central portion of said bed frame to support said bed frame above said base, thereby opening the area under the head end of the bed to permit the lower end of a C-arm to pass between said branches under the head end of the bed.

5,054,142
CONTOURED BODY CUSHION
Thomas P. Owens, 1094 B St. #2, Ashland, Oreg. 97520
Continuation of Ser. No. 163,337, Mar. 2, 1988, abandoned. This application Apr. 4, 1990, Ser. No. 504,705
Int. Cl.[5] A47C *20/00*
U.S. Cl. 5—431 **44 Claims**



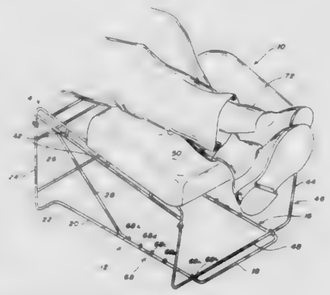
1. Apparatus for supporting at least portions of a body comprising:
a. first member configured and dimensioned for supporting the heat portion;
b. second member configured and dimensioned for supporting the chest portion, said second member formed of a plurality of preformed sheets positioned one atop the other of generally decreasing area from said lowermost sheet to said uppermost sheet, at least the two upper of said sheets having respectively progressive arcuate cut-out portions which combine to provide generally stepped recesses to support and accommodate the breasts, said sheets further defining arcuate cut-out portions to provide a recess which supports and accommodates at least a part of the abdomen of the body while the remaining portions of said sheets are configured and dimensioned to provide support at least for the sternum and collar portions; aid recesses being generally formed by a generally t-shaped portion attached to two generally rectangular portions in each of said two upper sheets, at least a portion of aid second member being at a higher elevation than at least a portion of said first member so as to provide at least for anterior cervical flexion;
c. third member formed of a plurality of preformed sheets positioned one atop the other of generally decreasing area from said lowermost sheet to said uppermost sheet, at least the two upper of said sheets having arcuate cut-out portions which combine to provide a recess to support and accommodate at least a part of the abdomen of the body while the remaining portions of said sheets are configured and respectively progressively dimensioned to provide support for the pelvic region in a manner to generally straighten the lumbar spinal curve;
d. fourth member configured and dimensioned for supporting the lower leg and ankle portions; and
e. said members being freely movable independent of each other so as to be portable and capable of selective relative positioning so as to accommodate the configuration of the body.

5,054,143
ANTI-WRINKLE PILLOW
Troy Javaher, 2325 Bolton Ct., Modesto, Calif. 95356
Filed Sep. 18, 1989, Ser. No. 408,661
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—434 **2 Claims**



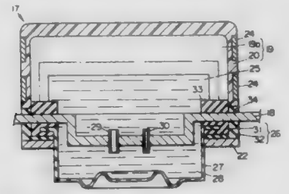
1. A pillow comprising:
a main section means having a generally rectangular planar shape with a length in a first direction, a width in a second direction perpendicular to the first direction, a thickness in a direction orthogonal to the first and second directions, and at least one corner; and
a substantially resilient, generally longitudinal extension means having a substantially tubular cross-section with a diameter substantially fixedly attached to the main section means adjacent to the corner of the main section means at a junction such that the extension means extends outwards away from the main section means generally in the direction of the second direction for a distance from the junction approximately equal to the length of the main means, the thickness of the main section means being greater than the diameter of the extension means, the main section means and the extension means comprising contact surface means at and immediately adjacent to the junction, the contact surface means being capable of supporting a person's head and neck when the person is sleeping on his or her side.

5,054,144
TILTABLE AND HORIZONTALLY ADJUSTABLE LEG OR FOOT REST
James C. Stuart, and Carole M. Stuart, both of #15 McCarty Trailer Park, Louisiana, Mo. 63353
Filed Feb. 7, 1991, Ser. No. 562,097
Int. Cl.[5] A47C *20/04*
U.S. Cl. 5—443 **10 Claims**



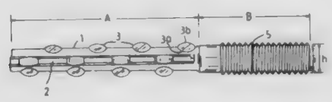
1. A leg or foot rest comprising:
a base,
a platform, said platform defined by an openwork channel having a pair of U-shaped side flanges with arms and an elongated bight, said U-shaped side flanges joined together by a connecting rail and mounted by their arms to the base on front and rear supports;
a cushion support member;
a means for mounting and horizontally and slidably adjusting the cushion support member on the platform;
and means for tiltably adjusting, at selected angles, the platform with respect to the base, said means for tiltably adjusting defined by joints on the front and rear supports permitting the front supports to fold towards the rear supports and the platform to fold towards the base.

5,054,145
CUSHION ARRANGEMENT
Kouji Tsuchiya, Akishima; Keiichiro Tsutsui, Musashino, and Masaru Koide, Nishitama, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Continuation of Ser. No. 6,130, Jan. 23, 1987, abandoned. This application Jul. 5, 1989, Ser. No. 376,205
Claims priority, application Japan, Jan. 24, 1986, 61-13251
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—448 **1 Claim**



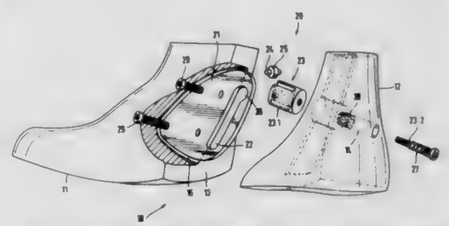
1. A cushion arrangement comprising:
a frame;
a cushioning layer which is connected to the frame;
a dynamic damper comprising a weight and means for resiliently connecting the weight to the frame;
means for defining a first chamber between the cushioning layer and the frame which is contractable and expandable in response to movement of the cushioning layer;
means for defining a contractable and expandable second chamber which is resiliently connected to the frame;
a liquid which fills the first and second chambers; and
orifice means for connecting the first and second chambers, the orifice means comprising a first orifice and a second orifice having different effective cross-sectional areas, wherein the liquid constitutes the weight.

5,054,146
ANCHOR BOLT
David Wiesenfeld, Givatiam, Israel, and Moshe Josef, Johannesburg, South Africa, assignors to Videx-Wire Products (PTY) Limited, Johannesburg, South Africa
Filed Dec. 6, 1989, Ser. No. 446,537
Claims priority, application South Africa, Dec. 8, 1988, 88/9191; Mar. 15, 1989, 89/1954; Mar. 15, 1989, 89/1955
Int. Cl.[5] B21C *37/00*; E21D *21/00*
U.S. Cl. 10—27 E **8 Claims**



1. A method of making an anchor bolt with a thread on a section thereof comprising the steps of sequentially providing a metal bar of circular or near circular cross-section having a predetermined diameter, extruding the bar along a selected section thereof to reduce its cross-section, forming a series of lateral protrusions on the selected section of the bar, straightening the bar, and, forming an uninterrupted circular thread on a further selected and unextruded section of the bar and which circular thread has a pitch diameter corresponding to said predetermined diameter, the root of the thread defining a cross-section of the bar substantially equal to said reduced cross-section whereby the tensile strength of said bolt is determined by the equal cross-sections of said root and reduced selected section.

5,054,147
FABRICATION LAST FOR SHOE MANUFACTURE ON A COMPUTER-CONTROLLED TRANSFER LINE
Gerhard Motsch, Am Sommerwald 237, 6780 Pirmasens, Fed. Rep. of Germany
Filed Jan. 23, 1990, Ser. No. 468,562
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1989, 8900722
Int. Cl.[5] A43D *3/00*
U.S. Cl. 12—133 R **22 Claims**



9. Fabrication last for use in shoe manufacture on a computer-controlled transfer line outfitted with robots and automatic processing machines, with the fabrication last extending in a first direction and comprising a toe part (**11**) and a following heel part (**12**) in the first direction connected together by a lock (**20**) whereby the toe and heel parts are movable relative to one another, and a two-piece receiving plate (**30**) extending in the first direction located above said last (**10**) and adapted for detachable connection of the last (**10**) with transfer line, robots and processing machines, wherein the improvement comprises that the last (**10**) comprises plastic, a bore hole (**31**) is inserted in each instance in the toe and heel parts (**11**, **12**) at a distance below the receiving plate (**30**) and approximately parallel to the latter, a metal part (**32**) with vertically directed threaded bore holes (**34**) is inserted into each of these bore holes (**31**), connection holes (**35**) with enlarged cross section are inserted into the last (**10**) from the receiving plate (**30**) to the threaded bore holes (**34**), and the fastening screws (**33**) for the receiving plate (**30** are inserted through these connection holes (**35**).

5,054,148
ORTHOTIC WITH TEXTURED SURFACE AND METHOD FOR PRODUCING SAME
Michael T. Grumbine, Whittier, Calif., assignor to Paragon Podiatry Laboratories, Whittier, Calif.
Filed Mar. 22, 1989, Ser. No. 327,018
Int. Cl.[5] A43D *7/14*; A61F *5/14*
U.S. Cl. 12—142 N **5 Claims**

1. A method for producing from a workpiece a non-compressive, weight bearing orthotic device for providing proper support for a patient's foot within a shoe, such orthotic device having a top surface for contacting the foot and a bottom surface for contacting a shoe's insole, comprising the steps of:
generating data geometrically descriptive of such orthotic device's desired top surface contour and bottom surface contour;
storing said data in a form suitable to provide a height position to a machine tool for any longitudinal and lateral position on such workpiece's top and bottom surfaces;
selecting a workpiece of machinable material capable of

functionally or biomechanically supporting a patient's foot; and

guiding a machine tool, subject to automatic height adjustments commensurate with said stored data, along succes-



sive passes across such workpiece so that an orthotic device having the desired top and bottom surface contours results, and spacing such passes so that closely spaced, substantially parallel grooves are formed in the top and bottom contoured surfaces.

5,054,149

ELECTRIC TOOTHBRUSH

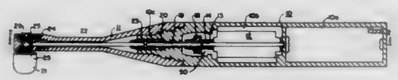
Kok S. Si-Hoe, No. 16, Greenview Crescent, Singapore 1128, and Tiong E. Ong, Block 10-D, Braddell View Estate No. 20-13, Singapore, both of Singapore

Filed Jul. 12, 1989, Ser. No. 378,806

Claims priority, application United Kingdom, Jul. 14, 1988, 8816775

Int. Cl.[3] **A46B** *13/02*

U.S. Cl. 15—28 **2 Claims**



1. An electric toothbrush, comprising:

a first member including: an electric motor having a rotary output shaft, a longitudinally elongated housing containing said motor and including a compartment for electric power storage battery means for powering said motor and a forward end of said housing configured for removable connection with a second member, a first mechanical power transmitting coupling element which is accessible at said end of said housing of said first member, and first mechanical power transmitting means operatively connecting said rotary output shaft with said first mechanical power transmitting coupling element; and

a second member including: a longitudinally elongated casing, a holder for a brush head, said holder being mounted to said casing for reversing rotation about an axis generally transverse to the longitudinal axis of said casing adjacent an outer end of said casing, a drive shaft journalled in said casing for rotation about the longitudinal axis thereof, said casing having a rear end configured for removable connection with said forward end of said first member, a second mechanical power transmitting means operatively connecting said holder with said drive shaft, and said drive shaft having a second mechanical power transmitting coupling element which is accessible at said rear end of said casing of said second member;

said forward end of said housing of said first member being removably connected with said rear end of said casing of said second member, and said first mechanical power transmitting coupling element being telescopically operatively removably coupled with said second mechanical power transmitting coupling element;

one of said first and second mechanical power transmitting means being arranged for converting a continuous unidirectional rotary input from the respective of said rotary output shaft and said drive shaft, into a periodically reversing rotary output about an axis of oscillation to the respective of said first mechanical power transmitting coupling element and said holder; said one of said first and second mechanical power transmitting means being characterized by not reciprocating longitudinally of said axis of oscillation while rotating about said axis of oscillation;

said second mechanical power transmitting means comprising a quadrant gear mounted for alternate driving relation with two bevel gears arranged for being driven in rotationally opposite directions to one another by said quadrant gear about said axis of oscillation.

5,054,150

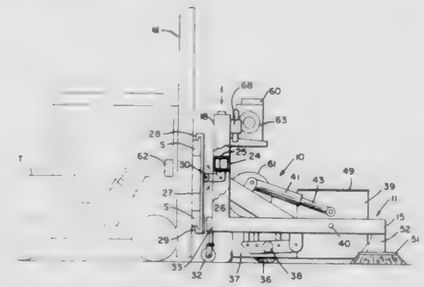
FORKLIFT MOUNTED SWEEPING MACHINE

Dan F. Best, and James A. Best, both of Jonesboro, Ark., assignors to Best Industries, Inc., Jonesboro, Ark.

Filed May 31, 1990, Ser. No. 531,064

Int. Cl.[5] **E01H** *1/04;* **A47L** *11/18*

U.S. Cl. 15—52.1 **12 Claims**



1. A sweeping machine which is selectively attachable to the lift bars of the vertical mast of a conventional forklift truck comprising, a frame, said frame having a vertical portion which extends upwardly with respect to a pair of side beam members, at least one wheel means for supporting said frame and extending downwardly with respect thereto, a cylindrical brush means, means for mounting said cylindrical brush means relative to said side beam members of said frame, first motor means for rotating said cylindrical brush means, a collection hopper mounted adjacent to said cylindrical brush and having an opening therein for receiving debris being swept by said cylindrical brush means, a portion of said frame including hollow beam members, said hollow beam members forming a fluid reservoir for hydraulic fluid, pump means mounted relative to said frame, means for driving said pump means, a hydraulic motor for driving said cylindrical brush means, means for connecting sad pump means to said hydraulic motor means, at least one mounting plate means for engaging the lift bars of the forklift, and at least one pivotable link means for connecting said frame to said mounting plate whereby said frame will be relatively free to move vertically relative to the forklift lift bars as said at least one wheel means traverse a support surface.

5,054,151

LEAF SWEEPER

Jerry C. Estes, Sr., 107 McCullouch Rd., Louisville, Miss. 39339

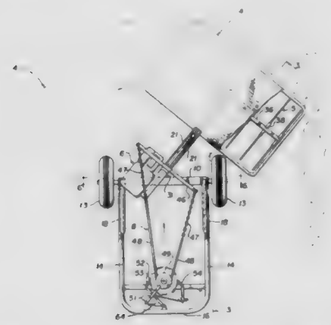
Filed Jun. 26, 1990, Ser. No. 543,427

Int. Cl.[5] **E01H** *1/04*

U.S. Cl. 15—79.2 **10 Claims**

10. A leaf sweeper comprising a wheeled main frame having a longitudinal axis and a handle, an engine support frame, means pivotally connecting one end of said engine support frame so as to pivot about a vertical axis to said wheeled main frame, a sweeper portion having a plurality of flexible rotary tines mounted on the opposite end of said engine support frame, an engine mounted on the end portion of the engine support frame in proximity to said pivotal connection, a drive

belt connected between said engine and said sweeper portion for rotating said flexible tines, a steering linkage operatively connected between said wheeled main frame and said engine support frame, whereby the engine support frame and associated sweeper portion can be pivoted about said vertical axis, to thereby move the sweeper portion through an arc on either side of the longitudinal axis of the wheeled main frame; said steering linkage comprising a mast having an upper end portion and a lower end portion, the lower end portion of said mast being connected to the engine support frame, a transversely extending arm secured to the upper end portion of the



mast, a pulley rotatably mounted on the handle of the wheeled main frame, a flexible, resilient belt reeved around said pulley, each end of said belt being connected to a respective end of the transversely extending arm, a handle connected to said pulley for turning said pulley, whereby upon turning said pulley the engine support frame is caused to move about the pivotal connection, and a locking control mechanism operatively connected between the wheeled main frame and said steering linkage, whereby the sweeper portion can be maintained at a desired orientation relative to the longitudinal axis of said wheeled main frame.

5,054,152

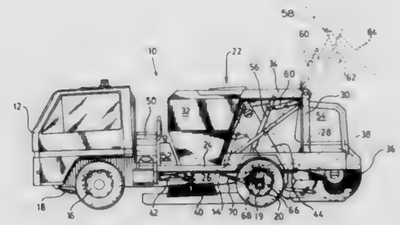
MECHANICAL STREET SWEEPER

Leslie Hulicsko, Regina, Canada, assignor to Sweeprite Manufacturing Inc., Regina, Canada

Filed Jun. 30, 1989, Ser. No. 373,464

Int. Cl.[5] **E01H** *1/04*

U.S. Cl. 15—84 **11 Claims**



1. A self-propelled mechanical street sweeper, comprising:

a) a production truck cab and chassis having a pair of longitudinally extending frame beams, a through rear axle extending transversely thereto, and a pair of rear wheels mounted to the ends of the rear axle, wherein the frame beams have been modified by removing rear portions of the frame beams extending behind the rear axle;

b) side brush means mounted to the chassis forward of the rear wheels and rotatable about a rear vertical axis for gathering debris from the sides of the path of travel of the sweeper and directing the debris inwardly to create a windrow of debris underneath the sweeper along the longitudinal axis thereof;

c) pick-up brush means mounted behind the rear wheels and rotatable about a horizontal axis for picking up the windrow of debris;

d) conveying means mounted forwardly of the pick-up brush means adjacent the rear axle for conveying upwardly the debris picked up by the pick-up brush means, wherein the conveying means has a uniform width throughout its length, which width is substantially the same as the width of the pick-up brush means;

e) hopper means mounted forwardly of the conveyor means for receiving and storing the debris conveyed thereto by the conveyor means;

f) dumping means for dumping the hopper means; and

g) rear suspension means mounted above and forwardly but not rearwardly of the rear axle for smoothing out the ride of the sweeper, wherein the rear suspension means comprises bias means mounted between the frame beams and the rear axle for biasing the rear axle away from the chassis, and connecting arm means pivotally mounted to the frame beams at a location forwardly of the rear axle for connecting the rear axle to the frame beams, wherein the connecting arm means functions as a trailing arm and torsion bar and comprises a modified leaf spring, wherein the modified leaf spring comprises a leaf spring provided with the production truck chassis which has been modified by cutting off the portion thereof which extends behind the rear axle of the chassis.

5,054,153

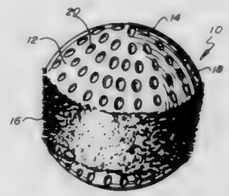
GOLF CLUB CLEANER

Paul D. Silliman, 6801 Deerwood La., Maple Grove, Minn. 55369

Filed Dec. 1, 1989, Ser. No. 444,326

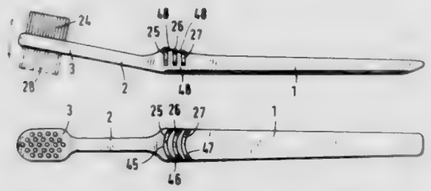
Int. Cl.[5] **A46B** *9/02*

U.S. Cl. 15—160 **8 Claims**



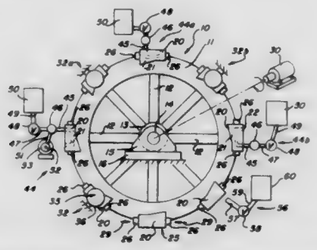
1. A golf club cleaner for conveniently cleaning a face of a golf club during a game of golf, the cleaner comprising a spherical body having an exterior surface, said surface having two portions, a relatively large and dimpled surface portion whereby the user grips the cleaner during use, a circumferential groove about said spherical body, and a relative smaller and rougher surface portion for scouring the face of a golf club, said rougher surface comprising a circumferential band of bristles embedded in a base which is affixed in said circumferential groove, said bristles extending at least slightly beyond said dimpled surface.

5,054,154
TOOTHBRUSH WITH FLEXIBLE HEAD
Carl Schiffer, and Berthold Meyer, both of Neustadt/Wied, Fed. Rep. of Germany, assignors to M & C Schiffer GmbH, Fed. Rep. of Germany
Filed Oct. 17, 1989, Ser. No. 422,833
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1989, 3923495
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **7 Claims**



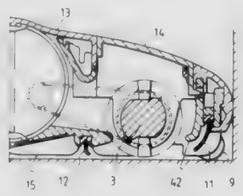
1. A toothbrush comprising a handle, a neck, a bristle head and bristles projecting generally transversely from said bristle head in a direction away from one side of said handle; said handle, neck and bristle head include a generally longitudinal axis, means for forming an elastic segment between said handle and said bristle head, said elastic segment forming means includes at least one slit disposed in generally transverse relationship to said longitudinal axis and open in a direction transversely away from said longitudinal axis, elastic material in said at least one slit, and said elastic material extends above an outer surface of said handle forming an area for a user's thumb to rest.

5,054,155
APPARATUS FOR CLEANING PASSAGEWAYS IN METAL CASTINGS
Kenneth D. McKibben, Defiance, Ohio, and Thomas E. Wuepper, Alger, Mich., assignors to CMI International, Inc., Southfield, Mich.
Division of Ser. No. 481,629, Feb. 16, 1990. This application Dec. 24, 1990, Ser. No. 633,296
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—304 **5 Claims**



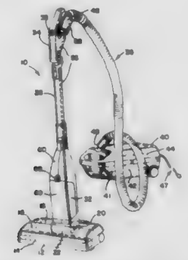
1. Apparatus for cleaning sand and other casting debris from a metal casting having a passageway extending therethrough and opening onto different surface portions of the casting, comprising:
- a horizontal axis wheel-like frame having means for rotating the frame around its horizontal axis;
- means for securing a casting upon the frame for rotation therewith around the horizontal axis;
- vibration means arranged along the path of rotation of the casting for periodically vibrating the casting;
- means for momentarily introducing a high pressure burst of air during a period measured in milliseconds into the opening in the casting passageway, between periods of vibration of the casting;
- whereby a casting is cyclically subjected to periods of vibration and periods of bursts of air for loosening and blowing sand and other casting debris from the casting and from the passageway within the casting.

5,054,156
SUCTION NOZZLE WITH ROTARY BRUSH FOR VACUUM CLEANER
Syuji Watanabe, Toukai; Susumu Satoh, Takahagi, and Koichi Sagawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 17, 1989, Ser. No. 338,859
Claims priority, application Japan, Apr. 20, 1988, 63-95578; Apr. 20, 1988, 63-97792
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—325 **6 Claims**



1. A suction nozzle with a rotary brush for a vacuum cleaner comprising:
- a suction nozzle main body having a front wall, bottom face, top face and rear portion, said suction nozzle main body being formed with a suction opening in said bottom face, said suction opening opens toward a floor surface, said suction opening having a width in left and right directions substantially equal to a width in left and right directions of said suction nozzle main body and having a suction force applied therein when said vacuum cleaner is operated;
- a rotary brush disposed rotatively in said suction nozzle main body adjacent to said suction opening of said suction nozzle main body;
- a front side flexible member mounted along a front edge of said suction opening of said suction nozzle main body; and
- a bumper constituting a flexible material which covers said front wall of said suction nozzle main body, said bumper when receiving an outside force contacts said front side flexible member causing it to bend toward said suction opening;
- wherein said front wall of said suction nozzle main body projects toward said floor surface and includes a suction guide wall which curves toward said suction opening, wherein a distal end of said suction guide wall extends to a position higher than said bottom face of said suction nozzle main body relative to said floor surface, said front side flexible member is attached to a portion of said front wall of said suction nozzle main body, and said suction guide wall projects from between said front side flexible member and said rotary brush;
- wherein said suction guide wall extends toward said floor surface and has a width substantially equal to said width of said suction opening of said suction nozzle main body;
- wherein, said suction guide wall is positioned apart from said front side flexible member so as to form a space between a front surface of said suction guide wall and a rear surface of said front side flexible member;
- wherein a portion of said front side flexible member extends beyond said distal end of said suction guide wall; and
- wherein when said bumper receives an outside force, said bumper contacts said front side flexible member causing it to bend toward said suction opening thereby causing a space between said floor surface and said front side flexible member to be increased.

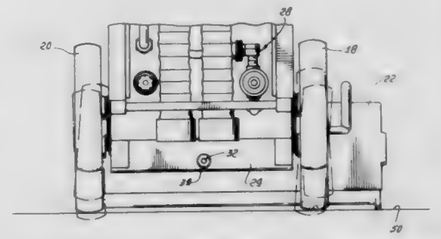
5,054,157
COMBINATION STAND ALONE AND CANISTER VACUUM CLEANER
Kurt Werner, St. Joseph Township, Berrien County; Leo G. Krieger, Bainbridge Township, Berrien County, both of Mich.; Wilbur C. Bewley, Lexington, Ky.; Ennis L. Tillman, Danville, Ky., and Richard D. Riesberg, Danville, Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed May 19, 1989, Ser. No. 354,443
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—328 **46 Claims**



1. A vacuum cleaner system operable alternatively as a stand alone vacuum cleaner or as a canister vacuum cleaner comprising:
- a nozzle assembly for directing dirt into said vacuum cleaner system;
- first receptable means for collecting dirt when said vacuum cleaner system is operated as a stand alone vacuum cleaner;
- second receptacle means for collecting dirt when said vacuum cleaner system is operated as a canister vacuum cleaner; and
- alternate directing means for alternatively directing dirt from said nozzle assembly to said first receptacle means when said vacuum cleaner system is operated as a stand alone vacuum cleaner or to said second receptacle means when said vacuum cleaner system is operated as a canister vacuum cleaner, said alternate directing means including an outlet port, and a tube assembly, said tube assembly extending from said nozzle assembly to said outlet port, said tube assembly defining a first air flow passageway extending to said outlet port for directing dirt to said second receptacle means through said outlet port and a second air flow passageway for directing dirt away from said outlet port to said first receptacle means.

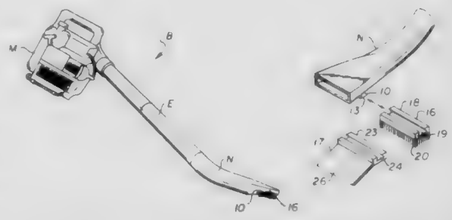
5,054,158
SCRUBBING MACHINE/VACUUM CLEANER
William H. Williams, 4936 Golden Arrow Dr., Rancho Palos Verdes, Calif. 90274, and Paul G. Jacobs, 9958 Amestoy Ave., Northridge, Calif. 91324
Filed Dec. 11, 1990, Ser. No. 625,968
Int. Cl.[5] A47L *5/34*
U.S. Cl. 15—354 **4 Claims**

1. In a scrubbing machine/vacuum cleaner which is carried by two spaced-apart front wheels and two spaced-apart rear wheels, having affixed to and extending from the front of the machine a vacuum cleaner head and brush assembly which is adapted to ride in proximity to, but in spaced-apart relationship from, the surface to be cleaned and during actual cleaning operation is adapted to press on the surface to be cleaned when the two rear wheels are raised from the surface to be cleaned; the improvement which comprises a novel front wheel assembly comprising a cross-member forming part of the frame carrying the machine, the cross-member having swivelably mounted thereto an axle, the axle carrying said front wheels at its ends whereby said cleaning head is kept flat on the floor



during operation as the machine rolls over irregularities in the surface to be cleaned.

5,054,159
DEBRIS REMOVAL APPARATUS FOR POWER BLOWERS
Paul D. Richardson, 870 Cherokee St., Vidor, Tex. 77662
Filed Sep. 25, 1989, Ser. No. 411,831
Int. Cl.[5] A47L *5/00, 5/10*
U.S. Cl. 15—400 **4 Claims**



1. A debris and trash loosening brush kit of components for attachment to the existing hollow tubular nozzle of power blowers of the type having a side wall and a longitudinal central opening extending from a forward end to a rearward end for conducting a stream of air therethrough, the kit comprising;
- a generally rectangular mounting flange component having a top portion conforming to the configuration of the nozzle side wall and adapted to be secured transversely across the underside of the nozzle forward end and having a longitudinally extending dovetail flange at the bottom thereof to removably receive and retain a brush component,
- fastener means for securing said mounting flange to an existing nozzle for power blowers, and
- a generally rectangular brush component having a top portion with a longitudinally extending dovetail groove formed therein to be slidably received on said mounting flange bottom dovetail flange and having a bottom portion comprising a plurality of depending stiff bristles configured to forcefully engage the surface to be cleaned to dislodge debris and trash therefrom while preventing the nozzle forward end from contacting the surface to be cleaned.

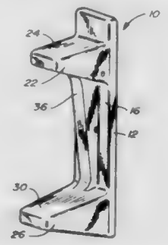
5,054,160
WATER HEATER TANK CLEANING KIT
Richard L. Marino, 2737 Demington N.W., Canton, Ohio 44718
Filed Jan. 25, 1990, Ser. No. 470,377
Int. Cl.[5] A47L 9/06
U.S. Cl. 15—401 1 Claim



1. A water tank cleaning kit apparatus for securement to a vacuum nozzle of a vacuum canister, the apparatus comprising, in combination,
a first cylindrical coupler member securable to the nozzle, and
an adapter member selectively and securably mounted to the coupler member, and
a first "L" shaped wand defining an obtuse angle and a second "L" shaped wand defining a right angle, and
the first and second "L" shaped wands telescopingly, sealingly, and selectively receivable within the adapter member, and
wherein the coupler member includes a flexible, cylindrical main body, and an axially aligned and internally threaded connector tube mounted to the main body to define vacuum communication therebetween when the coupler member is secured to the nozzle, and
wherein the adapter member includes an externally threaded first tubular shaft portion threadedly receivable within the connector tube of the coupler member, and an axially aligned second tubular shaft mounted to the first tubular shaft, wherein the first tubular shaft and the second tubular shaft are in vacuum communication with one another when the adapter member is secured to the coupler member, and the externally threaded first tubular shaft defining a first tubular shaft diameter greater than a second tubular shaft diameter defined by the second tubular shaft, and the second tubular shaft defining an internal diameter substantially equal to a predetermined external diameter defined by the first and second "L" shaped wands, and
wherein the obtuse angle of the first "L" shaped wand defines an angle between 110 and 120 degrees, and
further including a scraper blade of a generally "U" shaped cross-sectional configuration selectively mounted to a forward free end of either the first or second "L" shaped wand, and
wherein the scraper blade defines a forward surface directed forwardly and defining a forward edge of a first width, and the scraper blade further including a rear edge defining a second width substantially equal to the predetermined external diameter, and a clamp member surroundingly clamping the scraper blade and a forward end portion of either the first or second wand.

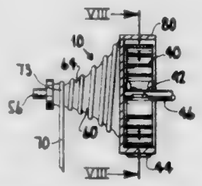
5,054,161
DISPENSER ACTUATOR HANDLE
Dean H. Heili, Manitowoc, and James A. Diring, Green Bay, both of Wis., assignors to James River Corporation, Oakland, Calif.
Filed Sep. 14, 1990, Ser. No. 582,742
Int. Cl.[5] A47B 95/00
U.S. Cl. 16—124 7 Claims

1. An actuator handle for attachment to a dispenser including a cabinet and dispenser mechanism for dispensing product from said cabinet, comprising, in combination:
a body member having an inner face and an outer face, said inner face facing toward said cabinet and said outer face facing away from said cabinet when said actuator handle is attached thereto;
a first protrusion projecting outwardly from said body member outer face and having a first upwardly disposed surface manually engageable by an individual wishing to dispense product from said dispenser;
a second protrusion projecting outwardly from said body member outer face and having a second upwardly disposed surface manually engageable by an individual wishing to dispense product from said dispenser, said second



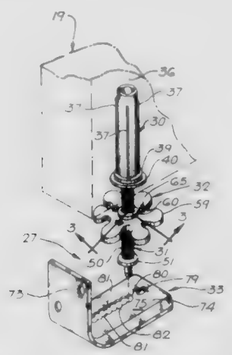
protrusion being disposed below said first protrusion and said second upwardly disposed surface located a predetermined distance from said first upwardly disposed surface and in at least partial registry therewith; and
a reinforcement rib extending between said first and second protrusions and projecting outwardly from said body member outer face, said body member defining an aperture at the inner face thereof and said reinforcement rib defining a cavity in communication with said aperture, said aperture and said cavity adapted to receive therein a portion of the dispenser mechanism.

5,054,162
CONSTANT FORCE COMPENSATION FOR POWER SPRING WEIGHT BALANCE
Tracy G. Rogers, Rochester, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.
Filed Aug. 17, 1990, Ser. No. 568,829
Int. Cl.[5] E05D 13/00
U.S. Cl. 16—198 15 Claims



1. A counterbalance apparatus for offsetting a constant force between two points of reference, over a range of movement, the points of reference respectively defining a point of attachment to the force and a fixed point, the apparatus comprising:
a spring having a length of resilient material wound in a spiral and defining opposite ends;
means for fixing one of the opposite ends of the spring relative to one of the points of reference;
a pulley attached to the other of the opposite ends of the spring, the pulley being substantially coaxial with the spring and having a rounded outer contour defining a progressively varying slope proceeding axially along the pulley, the pulley providing means for attachment of an end of a flexible connection member which leads to the other of the points of reference, such that the flexible connection member is windable on the rounded outer contour of the pulley.

5,054,163
BOTTOM PIVOT ASSEMBLY FOR FOLDING DOORS
John R. Sterling, Wonder Lake, Ill., and Richard G. Kluge, Pell Lake, Wis., assignors to John Sterling Corporation, Richmond, Ill.
Filed Jan. 4, 1991, Ser. No. 638,364
Int. Cl.[5] E05D 7/04, 7/08, 15/26
U.S. Cl. 16—244 4 Claims



1. In a folding door installation wherein a door panel is mounted in a framed opening for pivotal movement about a vertical axis defined by top and bottom pivots, a four piece bottom pivot assembly for undersupporting the door panel comprising:
a tubular mounting sleeve comprising means for non-rotatably anchoring the same in a socket formed inwardly of the bottom end of said panel, elongated linear guideways formed internally of said sleeve and extending longitudinally thereof, and an annular lip flange extending radially outwardly of the bottom end of said sleeve; a unitary rigid pivot pin comprising a generally cylindrical externally threaded body portion, guide means on said pin extending outwardly of said body portion for sliding engagement with said guideways whereby said pin is non-rotatably coupled to said sleeve for sliding movement therein, a stop collar formed at the lower end of said body portion to project radially outwardly thereof, and a stem portion extending coaxially beyond the lower end of said body portion and stop collar;
an adjusting wheel comprising an internally threaded central hub mounted for threaded movement over said body portion beneath said lip flange, plural manually engageable spokes radiating outwardly of said hub, and plural flexible fingers extending from the upper face of said wheel which are operable to snap over the periphery of said lip flange and loosely couple said wheel to said flange for rotation thereabout; said hub projecting axially upwardly from said upper face of said wheel to fit coaxially within a recessed socket opening axially inwardly of the bottom end of said sleeve whereby to effect rotational and thrust bearing engagement between said hub and sleeve; and
a rigid pivot bracket mountable beneath the bottom end of said panel comprising a floor engaging adjustment arm having an elongated platform portion operationally elevated above the floor and extending beneath said panel; said platform portion having a central elongated opening formed with multiple serrations formed along opposing lengthwise edges thereof and arranged for receiving and holding said stem portion of said pivot pin at selected locations in said opening; said stop collar limiting insertion of said stem portion into said opening.

5,054,164
DEVICE OF RAPID HOOKING FOR HINGES OF FURNITURE
Maria B. Blanco-Equiluz, Bilbao, Spain, assignor to Industria Tecnica de La Bisagra, S.A. (I.T.B.), Spain
Filed Feb. 5, 1990, Ser. No. 475,216
Claims priority, application Spain, Feb. 17, 1989, 8900505
Int. Cl.[5] E05D 7/06
U.S. Cl. 16—258 9 Claims

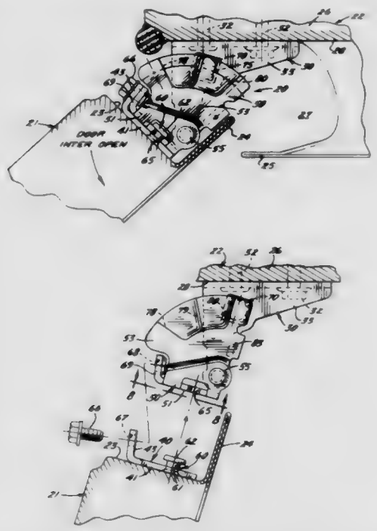


1. A rapid-hooking device for furniture hinges, characterized in that, said device comprises a fixed lower base (1) that can be anchored to a side frame of a piece of furniture, and a removable upper support (2) that can be connected to an articulated arm of the hinge by any fixed or adjustable means; said base (1) having corresponding collateral external curved bosses (3) located along a common front transverse axis with respect to the hinge joint, as well as a rear housing (4), open at the top and having corresponding longitudinal facing teeth (7), each said tooth formed by the conjunction of a descending outer surface (7*a*) and an inner retaining shoulder (7*b*); and said support (2) having corresponding collateral hook-shaped notches (5) hingeable on the curved bosses (3) of said base (1), as well as a back recess (6) open at the bottom and coincident on said housing (4) in the hinging of said base (1) and support (2) to each other, which recess (6) has corresponding moving hooks (8) mounted floatingly along its horizontal transverse axis (9) said corresponding moving hooks (8) functionally cooperating with said teeth (7), said hooks being retractable to their mutual central abutment against a tension spring (10) which is operationally inserted between said teeth; wherein, in a retracted or compressed spring (10) position, the active profiles of said hooks (8) can pass together between said teeth (7) and, once inside the housing (4), the relaxation of said spring (10) impels these active profiles of the hooks (8) to their operational coupling with said teeth (7).

5,054,165
DOOR ON-DOOR OFF VEHICLE HINGE WITH HOLD-OPEN MECHANISM
Joseph H. Marchione, Rockford, Ill., assignor to Atwood Industries, Inc., Rockford, Ill.
Filed Nov. 6, 1989, Ser. No. 432,234
Int. Cl.[5] E05D 7/12
U.S. Cl. 16—270 19 Claims

2. A hinge for mounting a door for swinging between open and closed positions on the body of a vehicle, said hinge comprising a door section, an intermediate section and a body section each having an upright web, means for securing the webs of said door section and said body section in face-to-face relation with the vehicle door and body, respectively, pivot means for pivotally connecting said intermediate section to said body section, means for detachably connecting said door section to said intermediate section whereby said door section may be quickly released from and quickly re-attached to said intermediate section to permit the door to be quickly removed from and re-installed on the vehicle body, the web of said intermediate section being disposed face-to-face with the web of said door section an extending substantially perpendicular to the web of said body section when the door section and the intermediate section are connected and when the door is in said closed position, said means for detachably connecting said door section to said intermediate section being spaced laterally from and being independent of said pivot means and comprising a pin anchored rigidly to and projecting generally horizon-

tally from the web of one of said door section and said intermediate section, a vertically opening notch formed in the web of the other of said door section and said intermediate section and receiving said pin whereby said door section hangs from said intermediate section, and a threaded fastener releasably securing said door section to said intermediate section at a location remote from said pin, said pin and said fastener coacting to locate said door section in a precise position on said intermediate section when said fastener is in place and permitting said door section to be lifted off of said intermediate section when said fastener is removed.



5,054,166

ADJUSTABLE TEXTILE CARD ELEMENT AND METHOD OF USE

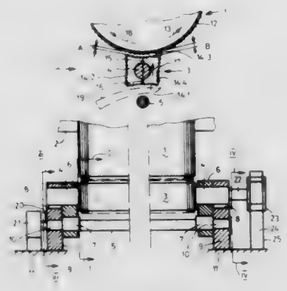
Robert Demuth, Nürensdorf; Peter Fritzsche, Winterthur; René Waeber, Winterthur; Paul Stäheli, Wilen, and Jürg Faas, Dinhard, all of Switzerland, assignors to Maschinenfabrik Rieter, AG, Winterthur, Switzerland

Filed Jun. 20, 1990, Ser. No. 540,777

Claims priority, application Switzerland, Jun. 21, 1989, 312/89

Int. Cl.[5] D01G *15/28*

U.S. Cl. 19—113 **23 Claims**



1 Carding element (3 to 3.6) with a needle or toothed clothing (12) arranged on at least a part of the periphery around a carding roller (1) and extending over the whole width of a carding said carding element having a clothing which is stepwise movable, whereby each step corresponds to a specific type and/or specific size of clothing.

5,054,167

COMBING NEEDLE FOR SPINNING MACHINES

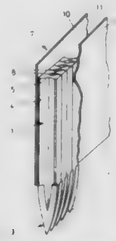
Josef Egerer, Schwabach, Fed. Rep. of Germany, assignor to Staedtler & Uhl, Schwabach, Fed. Rep. of Germany

Filed Oct. 4, 1990, Ser. No. 593,446

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 3937899

Int. Cl.[5] D01G *19/24, 15/84*

U.S. Cl. 19—218 **6 Claims**



1. A combing element for spinning machines, in particular a needle, where compressed air can be fed into an area of combing tips, wherein the combing element is provided with at least one compressed air channel in the shape of a groove (4) in the combing element itself, leading from a fastening area in the direction of the tip area (3).

5,054,168

CLIP PROVIDING IMPROVED STORAGE AND HANDLING OF FLEXIBLE BAGS

Kenneth A. Gandy, 11706 E. 75th St., Indianapolis, Ind. 46236, and Paul J. Maginot, 6179 Crittenden Ave., Indianapolis, Ind. 46220

Filed Jun. 5, 1990, Ser. No. 533,484

Int. Cl.[5] B65D *77/10*

U.S. Cl. 24—30.5 R **20 Claims**



1. A clip for closing a flexible plastic or paper bag having a first end which is open, and for removing excess bag portions therefrom, comprising:

first and second elongate members for at least substantially spanning the width of the bag on opposite sides thereof, said first and second elongate members being positionable at any one of a plurality of positions along the length of the bag;

means for directing areas of said elongate members together to close the bag, said closed bag having excess bag portions occurring toward the first end from said elongate members; and

serrations provided along at least one of said elongate members for severing the excess bag portions from the bag, said serrations being positioned apart from said held together areas of said elongate members.

5,054,169

Patent Not Issued For This Number

5,054,170

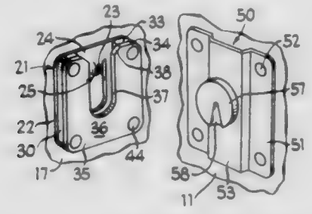
CONNECTOR ENGAGEABLE IN MULTIPLE POSITIONS AND RELEASABLE IN ONLY ONE POSITION

Edward C. Otrusina, 8118 Newport Drive South, Willow Springs, Ill. 60480

Filed Mar. 18, 1991, Ser. No. 670,727

Int. Cl.[5] A45F *5/00*

U.S. Cl. 24—597 **20 Claims**



1. Apparatus for detachably interconnecting two objects including in combination: a female member adapted to be secured to one of the objects and defining a receptacle and an entrance leading into said receptacle, a male member adapted to be secured to the other object and having an engagement portion with an axis, said engagement portion being shaped and dimensioned to be movable into and out of said receptacle through said entrance and rotatable about said axis while in said receptacle, detent means yieldably carried by said female member and projecting into said entrance for interference with passage of said engagement portion therethrough, said detent means being yieldably deflectable by said engagement portion to accommodate passage thereof into said receptacle irrespective of the rotational orientation of said male member with respect to the axis of said engagement portion, and a recess formed in said engagement portion and shaped and dimensioned to receive said detent means in only one rotational orientation of said male member when said engagement portion is disposed in said receptacle to accommodate movement of said engagement portion from said receptacle through said entrance, said engagement portion being engageable with said detent means in all rotational orientations other than said one rotational orientation of said male member when said engagement portion is disposed in said receptacle to prevent movement of said engagement portion from said receptacle through said entrance.

5,054,171

BUCKLE DEVICE

Kohbun Tanaka, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Jun. 11, 1990, Ser. No. 535,582

Claims priority, application Japan, Jun. 14, 1989, 1-69460; Aug. 29, 1989, 1-222665; Nov. 9, 1989, 1-291450; Apr. 19, 1990, 2-103994

Int. Cl.[5] A44B *11/25*

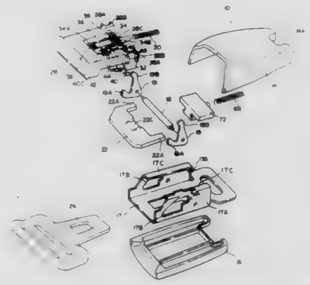
U.S. Cl. 24—637 **25 Claims**

1. A buckle device for use in a seat belt system, comprising:

a tongue plate insertable into said buckle body;

a lock member supported by said buckle body, for engaging said inserted tongue plate and being swingable between a first position for locking said tongue plate and a second position in which engagement between said lock member and said tongue plate is released;

releasing means supported by said buckle body and being movable in a predetermined direction and adapted to swing said lock member from said first position to said second position; and



emergency lock means for preventing the lock member from being released by said releasing means and thereby holding a state of engagement between said lock member and said tongue plate when an inertial force acts in said predetermined direction.

5,054,172

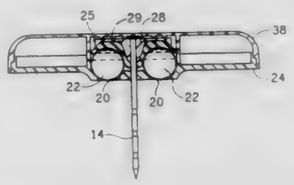
EXPULSION OF DETRIMENTAL SUBSTANCE FROM THEFT-DETERRENT DEVICE

Dennis L. Hogan, St. Petersburg; John L. Lynch, Holiday, and Lincoln H. Charlot, Jr., St. Petersburg, all of Fla., assignors to Security Tag Systems, Inc., St. Petersburg, Fla.

Filed Oct. 24, 1990, Ser. No. 602,818

Int. Cl.[5] A44B *9/00*

U.S. Cl. 24—704.1 **20 Claims**



1. A detrimental-substance-containing component of a device for deterring theft of a protected article, the device comprising means for attaching the device to the article, with said attaching means being embodied in two components that are adapted to be locked together on opposite sides of a portion of said article to prevent unauthorized removal of the device from the article, wherein the attaching means include a pin having a head that is anchored within the detrimental-substance-containing component and a clutch contained in the other component for grasping the pin to provide a predetermined retaining force for resisting separation of the components by prying or pulling the components apart,

wherein the detrimental-substance-containing component includes a surface through which the pin passes for engagement with the other component, wherein said surface contains at least one opening;

wherein the detrimental-substance-containing component includes at least one fragile vial that fractures when at least a predetermined pressure is applied thereto, with said vial being disposed adjacent said at least one opening and containing a detrimental substance that would damage an article attached to the device if the vial were to be fractured and the detrimental substance were to be released from the fractured vial through said at least one opening onto the attached article;

wherein the detrimental-substance-containing component defines a head space for enabling limited axial movement of the pinhead;

wherein the pinhead includes a breaker element having a contoured surface for applying more than said predetermined pressure against the vial in response to the pinhead being moved in response to application to the two components of at least a predetermined threshold separation force that is nevertheless less than that required to overcome said predetermined retaining force, to thereby fracture the vial and release the substance contained therein before the components are separated by prying or pulling the components apart; and

wherein the detrimental-substance-containing component includes a pliable seal disposed between the breaker element and the vial for preventing the detrimental substance that is released from the fractured vial from entering the head space and for expelling the released detrimental substance through said at least one opening in response to pressure applied against the seal by the breaker element by said movement of the pinhead that results in the vial being fractured.

5,054,173

METHOD AND APPARATUS FOR THE ENHANCED CRIMPING OF MULTIFILAMENT YARN

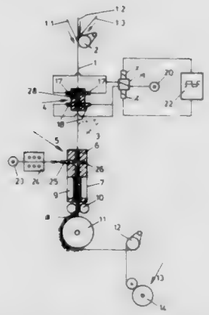
Klaus Schafer, Wuppertal, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed May 1, 1990, Ser. No. 517,211

Claims priority, application Fed. Rep. of Germany, May 18, 1989, 3916240

Int. Cl.[5] **D02J** *11/00*

U.S. Cl. 28—263 **16 Claims**



1. A method of crimping a multifilament yarn and comprising the steps of

advancing a multifilament yarn into a stuffer box to form a closely packed coherent filamentary body, and while

imparting false twist to the advancing yarn at a location upstream of the stuffer box, and with the intensity of the false twist being periodically or aperiodically varied, and

withdrawing the closely packed filamentary body from the stuffer box.

5,054,174

METHOD OF PRODUCING AN AIR TEXTURED YARN

Eberhard Krenzer, Ennepetal, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Aug. 28, 1989, Ser. No. 399,599

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1988, 3841837; Jan. 11, 1989, 3900568

Int. Cl.[5] **D02G** *1/16;* **D02J** *1/08*

U.S. Cl. 28—271 **18 Claims**

14. An apparatus for producing an air textured yarn having a relatively low residual shrinkage, and comprising

means for withdrawing a yarn from a supply package and conveying the same along a path of travel,

means positioned along said path of travel for drawing the advancing yarn, and including a yarn engaging member, a rotatable godet positioned downstream from said yarn engaging member, means for rotating said godet at a predetermined rotational speed, and means for heating said godet to a predetermined temperature,



air jet nozzle means positioned along said path of travel downstream of said drawing means for applying a jet of unheated air to the advancing yarn so as to impart loops, curls, bows and the like to the advancing yarn,

means for withdrawing the advancing yarn from said air jet nozzle, and

means for winding the yarn withdrawn from said air jet nozzle into a package.

5,054,175

MACHINE TOOL HAVING AUTOMATIC CHANGEABLE TABLES

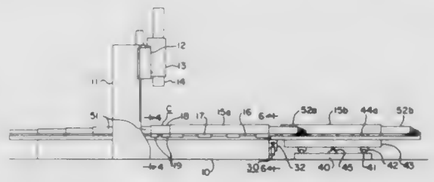
Takao Date, Shizuoka, Japan, assignor to Toshiba Kakai Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1990, Ser. No. 544,105

Claims priority, application Japan, Jun. 23, 1989, 1-162370

Int. Cl.[5] **B23Q** *41/02;* **B65G** *47/00*

U.S. Cl. 29—33 B **26 Claims**



1. A changeable table apparatus for a machine tool mounted on a foundation for machining a work piece, comprising:

an immobile bed fixedly attached to said foundation;

at least one linear guide fixedly attached to said bed;

a removable table upon which a workpiece is mounted, said table being slidably attached to said linear guide;

transferring drive means for moving said table along said linear guide;

first protective cover means, attached to said bed, for covering at least a first portion of said linear guide; and

connection means for connecting said table to said first protective cover means, said connection means including a nut carrier, said nut carrier being engaged with a feed screw of the machine tool.

5,054,176

MACHINE TOOL AND CHUCKING ATTACHMENT AND TOOL HEAD THEREFOR

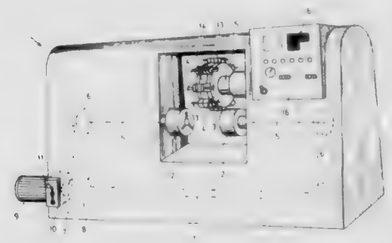
Franz Wachter, Heiligkreuz 47, Vaduz, 9490, Liechtenstein

Filed Oct. 11, 1989, Ser. No. 419,089

Claims priority, application PCT Int'l Appl., Oct. 12, 1988, PCT/EP88/00916

Int. Cl.[5] **B23Q** *1/08*

U.S. Cl. 29—40 **41 Claims**



1. A machine tool for machining workpieces by means of at least one of a plurality of headed tools having a fastening surface on a tool head, the machine tool comprising

chuck means defining a geometric axis for holding said workpiece;

turret means rotatable about an axis of rotation, said turret means including

at least one end surface,

a peripheral surface, and

first fastening means distributed along a circle within a plane extending normally to said axis of rotation and being adapted to fasten one of said tools by means of its fastening surface; and

at least one tool chucking attachment having a fastening surface to be fastened by said first fastening means instead of a tool, said tool chucking attachment including at least one second fastening means having fast-locking means for receiving said fastening surface of said tool head,

said chucking attachment extending radially beyond said peripheral surface of said turret means and comprising

a radially inner and an outer end, and

first and second surfaces extending from one end to the other in opposite relationship so as to face away from one another,

said fastening surface of said chucking attachment being arranged within the region of said radially inner end on said first surface, while said second fastening means together with said fast-locking means are on said radially outer end and are arranged on said second surface to hold one of said tools substantially parallel to said axis of rotation.

5,054,177

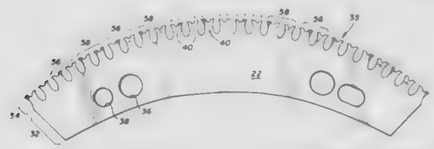
TIRE RASP BLADE

Wayne E. Jensen, Olympia Fields, Ill., assignor to B & J Manufacturing Company, Glenwood, Ill.

Continuation-in-part of Ser. No. 166,176, Mar. 10, 1988. This application Apr. 28, 1989, Ser. No. 344,920

Int. Cl.[5] **B23D** *71/00*

U.S. Cl. 29—78 **17 Claims**



1. A tire rasp blade for use in a tire buffing machine to remove rubber from a tire carcass, said tire rasp blade comprising:

an elongated body adapted for assembly in a rotating hub of the tire buffing machine;

said body having a working portion comprising a plurality of uniformly and closely spaced teeth, and said working portion also having an arcuate working perimeter protruding from the hub;

each of said teeth having a base and a working edge and being separated from neighboring teeth by generally elliptical primary cutouts, said cutouts each being oriented generally normal to the tangent of said working perimeter, each of said teeth also having leading and trailing edges defined by said cutouts, said leading edge forming a leading angle with said working edge having a leading apex that points in the direction of rotation of said hub, and said trailing edge forming a trailing angle with said working edge having a trailing apex that points away from the direction of rotation of said hub, said leading apex and said trailing apex of every neighboring pair of teeth being located within less than 0.030 inch; and

a first portion of said teeth being laterally displaced to one side of said body and a second portion of said teeth being laterally displaced to the other side of said body, and at least one of said teeth from each of said first and said second portions being angularly set relative to the plane of said body, said lateral displacement of said teeth being at an angle to the plane of said body between about 1° and 7°, and said first and second portions together comprising all of said uniformly and closely spaced teeth.

5,054,178

PROCESS AND APPARATUS FOR THE PRODUCTION OF INNERSPRINGS FOR MATTRESSES AND UPHOLSTERED FURNITURE

Jakob Züger, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland

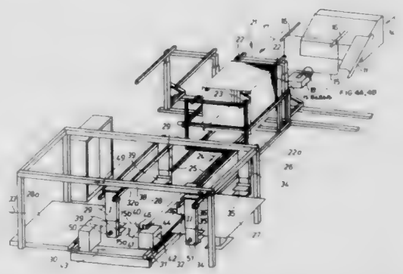
PCT No. PCT/EP88/00811, § 371 Date May 8, 1989, § 102(e) Date May 8, 1989, PCT Pub. No. WO89/02323, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 7, 1988, Ser. No. 359,748

Claims priority, application Greece, Sep. 9, 1987, 87.1408

Int. Cl.[5] **B68G** *7/00;* **B23P** *21/00*

U.S. Cl. 29—91.1 **7 Claims**



1. An automated process for the production of innerspring matresses having top and bottom frame members, said process being controlled by a microprocessor controller and comprising the mechanically automated steps of:

forming frame members from elongated steel elements, each frame member being a single steel element with its ends secured together and being precisely dimensionally accurate and consistent from frame member to frame member in accordance with settings on the microprocessor controller;

arranging the frame members so formed into a hanging stack;

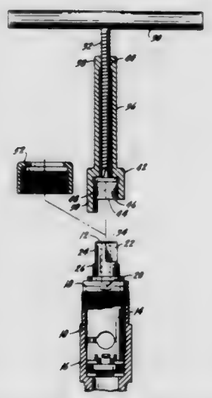
transporting a first such frame member from the hanging stack to a clamping table;
transporting an innerspring member, comprised of a multiplicity of spring elements, to a position in juxtaposition with said first frame member on the clamping table;
coupling said spring elements to said first frame member around the periphery thereof, thereby forming a combination of said first frame member and said innerspring member;
removing the combination of said first frame member and said innerspring member from the clamping table;
transporting a second such frame member to the clamping table;
turning over the combination of said first frame member and said innerspring member;
placing the turned-over combination of said first frame member and said innerspring member in juxtaposition with said second frame member;
coupling said spring elements to said second frame member, thereby forming a completed innerspring matress; and then
removing the thus completed innerspring matress from the clamping table.

5,054,179

FAUCET VALVE REMOVAL AND INSERTION TOOL

Anthony S. Rini, Westlake, Ohio, assignor to Moen Incorporated, Elyria, Ohio

Filed Jan. 30, 1990, Ser. No. 472,665
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—213.1 **3 Claims**



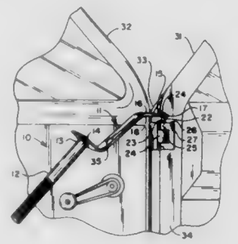
1. A water faucet removal and insertion tool for use with a water faucet valve having an axially extending projection of limited arcuate extent and an interior water faucet stem, said tool including a handle, a self-tapping threaded rod attached to said handle, the self-tapping threaded rod functioning to form an internal thread in the water faucet valve stem to thereby attach the tool to the valve, a sleeve coaxial with said threaded rod and threadedly engaged therewith, said sleeve having a socket of a size and configuration to mate with the exterior of the water faucet stem so that the stem is positioned within the socket during removal and insertion of the water faucet valve, said sleeve including a projection of limited arcuate extent extending axially beyond the end of the sleeve and being positioned circumferentially adjacent the water faucet valve axial projection when the valve stem is within said tool socket whereby a turning of the sleeve has the effect of turning a water faucet valve attached thereto for applying a turning force to an installed water faucet valve or to turn a water faucet valve during installation for the alignment thereof.

5,054,180

HINGE PIN TOOL

Paul D. Combs, 1268 Oakfield Dr., North, Columbus, Ohio 43229

Filed Mar. 21, 1990, Ser. No. 496,816
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—275 **3 Claims**



1. A hinge pin removal tool for use in removing a hinge pin from the hinge of a vehicle, said hinge pin including a shank portion having a longitudinal axis and with a head at one end, comprising:
a) a force delivering, driving portion having generally flat opposite sides including a lateral section disposed generally lateral to said longitudinal axis of the hinge pin, said lateral section having a tined end having at one edge a tapered surface with a concave recess constructed to fit around the shank portion of the hinge pin and beneath the head portion of the hinge pin, said driving portion including a connection from the lateral section to an extension section having generally flat opposite sides in extension of the flat sides of the lateral section, at a generally obtuse angle, and with the extension section connected to a tab section at a substantially right angle, and a handle portion fastened to the tab section at a position in general prolongation of and spaced apart from the lateral section by the extension section;
said tool being constructed with said flat sides in said force delivering driving portion, to receive heavy blows, in the direction of the longitudinal axis of the shank portion of the hinge pin on either side of the lateral portion, and to receive heavy blows at an angle inclined from the lateral portion on either side of the extension section, from a hand-held hammer at selected locations below and above the flat sides of the force delivering driving portion, to effect removal of a hinge pin.

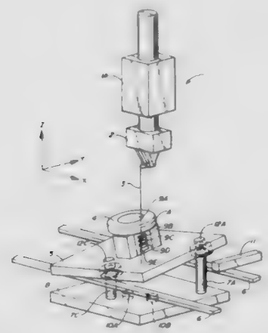
5,054,181

DIAGONAL INSERTION APPARATUS

Hideyuki Nagasawa, Suwa, Japan, assignor to Seiko Epson Corporation, Japan

Filed May 8, 1990, Ser. No. 520,516
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 29—281.1 **2 Claims**

1. A diagonal insertion apparatus for inserting a shaft-like member into an insertion receiving component having a diagonal hole inclined at an angle with respect to a reference plane and comprising
a pallet for supporting said insertion receiving member,
a positioning jig supported beneath and in aligned relation with said pallet and having a plurality of vertical pins supported from a surface thereof,
at least some of said pins having pin ends with different heights,
said jig elevated to releasably engage the botom of said pallet by said pin ends and concurrently elevate and incline said pallet relative to said reference plane in a fixed relationship relative to said jig so that the center line of said



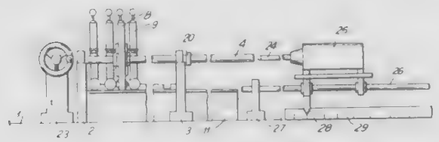
diagonal hole is positioned and aligned relative to the axis line of said shaft-like member for aligned insertion thereof.

5,054,182

ASSEMBLY DEVICE FOR ASSEMBLING CAMSHAFTS

Helmut Riemscheid, Wahlscheid; Karl Weiss, Augustin; Herbert Frielingsdorf, Lohmar; Engelbert Schwarz, Ruppichteroth, and Heribert Grewe, Overath, all of Fed. Rep. of Germany, assignors to Emitec Gesellschaft fur Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Division of Ser. No. 243,099, Oct. 19, 1988, abandoned. This application Jun. 26, 1990, Ser. No. 544,030
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1986, 3643803
Int. Cl.[5] B21D *39/00*
U.S. Cl. 29—281.5 **26 Claims**



1. An assembly device for assembling camshafts, comprising a holding device for axially fixing individual elements such as cam discs, bearing rings, gear wheels or bevel gears, including a pressure agent probe for hydraulically expanding a hollow shaft in sections, with the elements and the hollow shaft being connected to each other in a force-locking way, wherein the improvement comprises that the holding device is provided with individual fixing discs (**10**, **40**) each having an axis and comprising a central aperture (**16**, **68**) for receiving a respective element and an outer bearing ring for being received in a bearing seat (**36**, **66**) of the holding device.

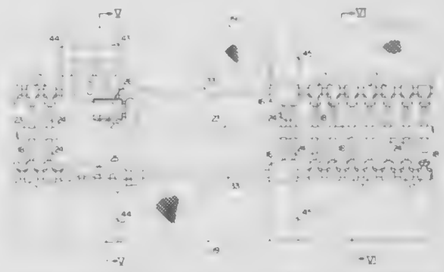
5,054,183

PROCESS FOR THE MANUFACTURE OF ZIP FASTENERS

Friedrich Mayerhofer, Lengnau, Switzerland, assignor to Saurer First Tech-Products Ltd., Arbon, Switzerland

Division of Ser. No. 368,606, Jun. 20, 1989, Pat. No. 4,979,288. This application Oct. 16, 1990, Ser. No. 598,101
Claims priority, application European Pat. Off., Jul. 15, 1988, 88810490
Int. Cl.[5] B21D *5/10*
U.S. Cl. 29—410 **4 Claims**

4. A process for manufacturing zip fasteners comprising the steps of:
placing a first portion of a first textile tape on a first set of strips having indentations so that said first tape extends over said indentations;
covering said first tape and strips with a cover so that cavities are formed around said first portion of said first tape extending over said indentations;
injecting a molding material into said cavities so as to form interlocking members integral with said first tape;
removing said cover from said first tape and said strips;
ejecting said first tape from said strips;
placing a second portion of said first tape on a second set of strips having indentations and on a transverse slide member located between said first and second set of strips, said member having depressions for forming upper stop members on a first side and recesses for forming a coupling and a mold for forming a box on a second side, so that said second portion of said first tape extends over said indentations of said second set of strips and said depressions, recesses and mold of said member;



placing a first portion of a second textile tape on said first set of strips so that said second tape extends over said indentations of said first set of strips;
covering said tapes, strips and member with a cover so that cavities are formed around said first portion of said second tape extending over said indentations of said first set of strips and said second portion of said second tape extending over said indentations of said second set of strips and said depressions, recesses and mold of said member;
injecting a molding material into said cavities so as to form interlocking members, upper stop members, a coupling and a box integral with said tapes;
removing said cover from said tapes, member and strips;
ejecting said tapes from said first and second set of strips and said member, and
repeating said steps until a desired number of zip fasteners are formed.

5,054,184

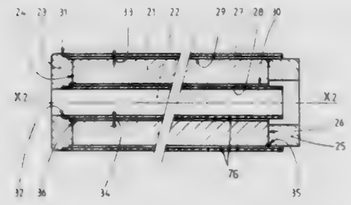
PROCESS AND APPARATUS FOR HOT SHAPING OF METALS OR METAL ALLOYS

Jacques Gérard, Venarey Les Laumes, France, assignor to Valinox, Paris, France

PCT No. PCT/FR88/00267, § 371 Date Jan. 30, 1989, § 102(e) Date Jan. 30, 1989
PCT Filed May 26, 1987, Ser. No. 328,085
Claims priority, application France, May 29, 1987, 87 07837
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—423 **51 Claims**

1. A process for shaping a billet of a metal alloy comprising, as a base component, at least one element selected from the group consisting of Fe, Ni, Co and Mo, said process comprising the steps of:
inserting said billet in a tubular metal sleeve whose dimensions are such that it surrounds with clearance, an external wall of said billet, wherein at least one of the external wall of said billet and an internal wall of said tubular metal sleeve has deposited thereon a covering layer of a thickness of at least 0.05 mm, said covering layer being formed

of a compound which comprises oxygen and at least one metal selected from the group consisting of Al, Ca, Mg, Si, Ti, Zr, Hf, Cr, Ta and Nb, wherein a melting temperature of said covering layer is higher than a shaping temperature; fixing a front end of said billet to a front end of said sleeve such that a rear end of said sleeve is free to permit relative sliding between said sleeve and at least a



rear portion of said billet, and the front end of the billet is fixed with respect to the front end of the sleeve;

heating the billet surrounded by said external tubular metal sleeve to a shaping temperature of at least 900° C.; and

extruding said heated billet surrounded by said external tubular metal sleeve by means of a pressing tool in order to shape said heated billet.

5,054,185

METHOD OF FABRICATING DOUBLE PIPE

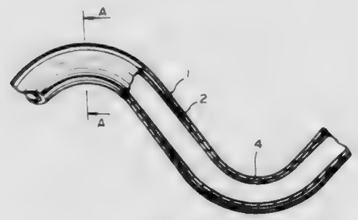
Masayoshi Usui, and Takeshi Matsumoto, both of Numazu, Japan, assignors to Usui Kokusai Sangyo Kaisha, Ltd., Japan

Filed Nov. 3, 1989, Ser. No. 431,661

Claims priority, application Japan, Nov. 15, 1988, 63-288257

Int. Cl.[5] B21D *39/00*

U.S. Cl. 29—455.1 **5 Claims**



1. A method of fabricating a double pipe, comprising the steps of:

providing an inner pipe with an outer surface and an outer pipe with an inner surface, said inner pipe being dimensioned to be fit within the outer pipe;

forming a coating on at least one of the outer surface of the inner pipe and the inner surface of the outer pipe, the coating comprising a material selected from the group consisting of epoxy resins, acrylic resins, phenolic resins, fluorocarbon resins, alkyd resins and vinyl resins;

inserting the inner pipe into the outer pipe and dimensionally changing at least a selected one of the pipes by dimensionally changing both inside and outside radii of the selected pipe such that the coating is in intimate contact with each of said pipes, thereby coupling together the inner and outer pipes; and

heating the coupled pipes beyond 400° C., whereby the heating burns off a substantial portion of the coating and leaves a substantially uniform porous residue comprised primarily of carbon connecting the inner and outer pipes.

5,054,186

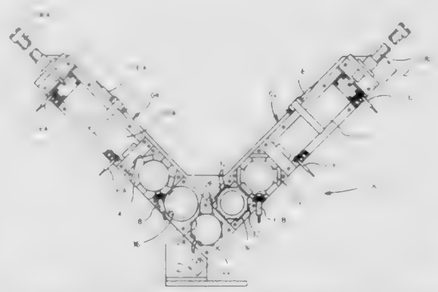
CLUTCH ASSEMBLY METHOD

Mark R. Weselak, Franklin, Tenn., assignor to Saturn Corporation, Troy, Mich.

Filed Oct. 12, 1990, Ser. No. 597,920

Int. Cl.[5] B23Q *3/00;* **B25B** *27/14*

U.S. Cl. 29—467 **6 Claims**



1. A method of assembling a clutch mechanism comprising:

providing a housing having an internally toothed peripheral cylindrical wall, an end wall and an axial facing opening;

installing a piston in said housing adjacent said end wall;

positioning said housing in a fixture with said axial facing opening being oriented upward;

providing a stack of externally toothed clutch plates in a fixture with each clutch plate having a toothed outer periphery complimentary to the toothed wall of said housing;

providing a substantially cylindrical assembly ring on said housing with a toothed inner wall aligned with the toothed wall of said housing and thereby defining an opening therein facing said stack of clutch plates;

sliding the bottom clutch plate from said stack into vertical registration with said assembly ring with said toothed outer periphery thereof aligned with said opening of said ring and said housing and thereby causing said clutch plate to descend solely by the force of gravity into said housing with said complimentary toothed wall and periphery in meshing engagement;

inserting an internally toothed clutch plate on top said externally toothed clutch plate; and

alternately inserting said plates until desired number of clutch plates has been installed.

5,054,187

METHOD AND MEANS FOR REMOTE-CONTROLLED SHEATHING INSTALLATION WHEN RENOVATING PIPELINES

Alwin Sigel, Schlatt, Switzerland, assignor to Sika Robotics AG, Grunginen, Switzerland

PCT No. PCT/CH87/00160, § 371 Date Jul. 13, 1989, § 102(e) Date Jul. 13, 1989, PCT Pub. No. WO89/03003, PCT Pub. Date Apr. 6, 1989

PCT Filed Nov. 26, 1987, Ser. No. 368,352

Claims priority, application Switzerland, Sep. 30, 1987, 3808/87

Int. Cl.[5] B23P *17/02*

U.S. Cl. 29—507 **10 Claims**

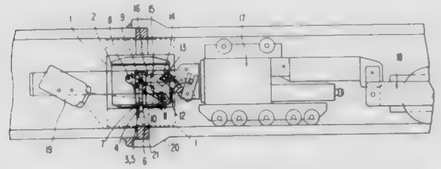
1. An insertion device for the renovation of nonwalkable pipelines having a diameter too small for a repairman to walk therein, said device comprising:

a casing;

a rustproof metal sheet adapted to be bent around said casing to form a pipe for insertion into the pipeline, said metal sheet having at least one hole formed on each of two opposite edges;

at least one projection projecting from said casing, said at least one projection being adapted to project through said at least one hole on each of the two opposite edges of said sheet to temporarily fix said sheet around said casing;

at least one retractable locking element extending from each of said at least one projections, said at least one locking element gripping said corresponding holes in said metal



sheet to prevent the release of the sheet from the casing when said locking element is extended; and

an ejection element which ejects said sheet from said casing upon retraction of said at least one locking element, so that said metal sheet attaches itself to the inner surface of said pipeline due to the electricity of said metal sheet.

5,054,188

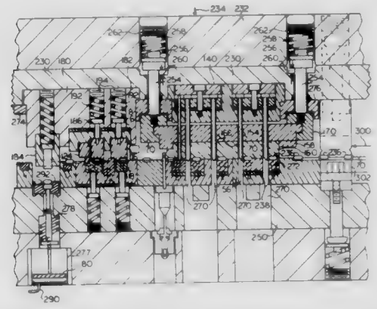
TRIM CUT AND FORM MACHINE

Gregorio T. Sabado, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 20, 1990, Ser. No. 482,047

Int. Cl.[5] B26F *1/00*

U.S. Cl. 29—564.6 **17 Claims**



1. A hydraulically operated, self-cleaning trim rm machine for the production of integrated circuit (IC) chips comprising:

a. an upper block and module holder securely affixed to a hydraulic operating means;

b. a trim module removably affixed to the module holder and containing a plurality of punches;

c. a form module removably affixed to the module holder and containing a plurality of punches;

d. a singulation punch removably affixed to the module holder;

e. a machine base supporting the hydraulic operating means and holding a plurality of removable dies to engage the trim and form modules and punches when said upper block is in a down-actuated position; and

f. a chip carrier having air operating means removably affixed to said machine base.

5,054,189

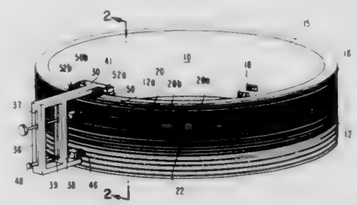
METHOD OF MANUFACTURING AN ELECTRICAL SLIP RING ASSEMBLY

Anthony L. Bowman; Norris E. Lewis; Jerry T. Perdue; James M. Wright, and Michael J. Day, all of Blacksburg, Va., assignors to Litton Systetms, Inc., Beverly Hills, Calif.

Filed Oct. 25, 1990, Ser. No. 603,155

Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—597 **5 Claims**



1. A method of manufacturing a base for an electrical slip ring assembly comprising the steps of:

casting an annular slip ring base, said base having inner and outer diameter circumferential faces,

forming annular grooves in the outer diameter face of said slip ring base, said grooves being adapted to receive rings of electrically conductive material,

cutting linear electrically conductive material to lengths, each length substantially corresponding to the circumference of said outer diameter face of said slip ring base, thereby forming a plurality of electrically conductive rings,

anchoring corresponding ends of said conductive rings, respectively, at corresponding points on said annular grooves,

pressing said conductive rings into engagement within said annular grooves to form a plurality of annular electrically conductive rings about said outer diameter face of said slip ring base and

securing the other ends of said conductive rings to said slip ring base.

5,054,190

METHOD FOR MANUFACTURING A THERMAL HEAD

Nobuhiro Inoue; Akira Nakano, both of Tokyo, and Nobuhiro Oshima, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 6, 1990, Ser. No. 623,087

Claims priority, application Japan, Mar. 19, 1990, 2-66958

Int. Cl.[5] H05B *3/00*

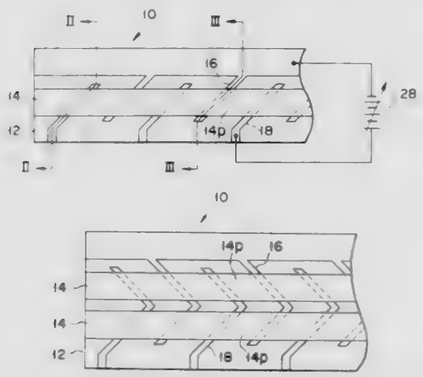
U.S. Cl. 29—611 **4 Claims**

1. A method for manufacturing a line-type thermal head which has a main scanning axis, comprising the steps of:

forming a plurality of lead electrodes on an insulating substrate such that the lead electrodes are arranged at regular intervals in parallel to one another and extend diagonally with reference to the main scanning axis; and

forming at least one strip-shaped resistor, which has parallel opposite side edges, on the insulating substrate and the lead electrodes, such that the strip-shaped resistor extends along the main scanning axis and crosses the lead electrodes.

wherein a parallelogrammatic heating resistor used for recording one pixel is defined by adjacent ones of the lead



electrodes and the opposite side edges of the strip-shaped resistor.

5,054,191

DEVICE FOR PRODUCING ELECTRICALLY CONDUCTIVE CONNECTIONS

Herbert Schule, Schillerstr. 19, D-7052 Schwaikheim, Fed. Rep. of Germany

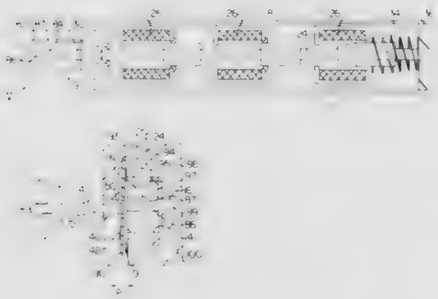
PCT No. PCT/DE89/00147, § 371 Date Sep. 10, 1990, § 102(e) Date Sep. 10, 1990, PCT Pub. No. WO89/08936, PCT Pub. Date Sep. 21, 1989

PCT Filed Mar. 9, 1989, Ser. No. 555,407

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807925

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—753 **11 Claims**



1. In a device for producing electrically conductive connections of conductive members with direct contact by crimping, the device having a driven crimping head with two jaws, the crimping head being one of supported on a carrier body and disposed in a housing, control means electrically connected to a switch that is actuated by one of the conductive members being inserted into the crimping head, the improvement comprising:

the switch (**42**) being supported by said one of the carrier body and the housing (**8**) and positioned in front of the crimping head (**9**) with respect to a direction of movement of a wire end sleeve(**12**) of the member(**10**), said wire end sleeve (**12**) operates the switch (**42**) by the switch (**42**) having a plate-shaped body with a slit (**50**) where a width of the slit (**50**) corresponds to a maximum width of a metal sleeve (**1**), and the switch (**42**) is actuated by pressure from a sleeve insulation of said wire end sleeve (**12**)

5,054,192

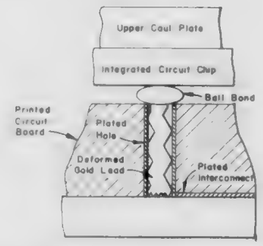
LEAD BONDING OF CHIPS TO CIRCUIT BOARDS AND CIRCUIT BOARDS TO CIRCUIT BOARDS

Seymour R. Cray, Chippewa Falls, and Nicholas J. Krajewski, Elk Mound, both of Wis., assignors to Cray Computer Corporation, Colorado Springs, Colo.

Filed May 21, 1987, Ser. No. 53,142

Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—835 **29 Claims**



1. A method of electrically and mechanically attaching at least one integrated circuit chip, the integrated circuit chip having two opposite generally planar surfaces and at least one bonding pad formed on a first one of the planar surfaces to a circuit board, the circuit board having a first planar side and a second planar side and at least one plated hole extending between the first and second sides, comprising the steps of:

(a) bonding a soft gold wire to a bonding pad of each integrated circuit chip;

(b) inserting the bonded soft gold wire into a corresponding plated hole of the circuit board; and

(c) compressing the bonded soft gold wire within the corresponding plated hole of the circuit board to deform the soft gold wire enough to contact the plate hole.

5,054,193

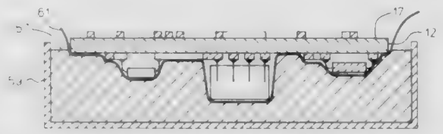
PRINTED CIRCUIT BOARD FIXTURE AND A METHOD OF ASSEMBLING A PRINTED CIRCUIT BOARD

Kurt Ohms, Los Altos, Calif., and Juan Jimenez, Beradale, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1989, Ser. No. 399,653

Int. Cl.[5] H05K *3/34*

U.S. Cl. 29—840 **4 Claims**



1. A fixture for supporting a printed circuit board, the fixture comprising a slab of controllably shapable thermally compliant foam shaped to conform to the shape of the board and any components installed on one side thereof, the fixture being sufficiently rigid to support substantially all portions of said side of the circuit board and the components installed thereon and to prevent deformation of the fixture and any resulting flexure of the board during installation of components on the other side of the board.

2. A method of assembling a printed circuit board, the method comprising installing components on a first side of the board, shaping a controllably shapable thermally compliant material to conform to the shape of the board and the components installed thereon by pressing the board against the material and applying heat to conform the material to the shape of the board and the components on the board, the material having sufficient rigidity after the shaping to prevent deformation of the material and any resulting flexure of the board when the material is used to support the board during assembly of components on the other side of the board, and supporting the board with the shaped material while installing components on the other side of the board.

5,054,194

METHOD FOR CONTROLLING BONDING WIRE LOOP WEIGHT

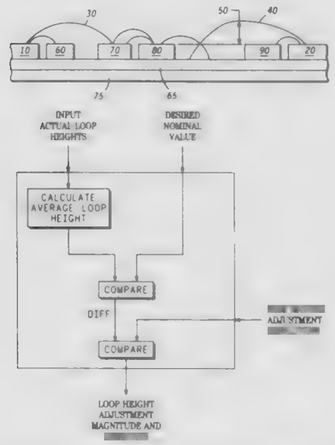
Randy Pollock, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 430,543, Nov. 2, 1989, abandoned. This application Jan. 30, 1991, Ser. No. 649,261

Claims priority, application Japan, Feb. 13, 1989, 1-311145

Int. Cl.[5] H05K *3/34*; **B23K** *31/02*

U.S. Cl. 29—840 **3 Claims**



1. A method for controlling wire loop height during the manufacture of electronic assemblies, comprising the steps of:

mounting at least one circuit element on a mounting surface of each of the assemblies and establishing a reference plane relative to the at least one circuit element on each of the assemblies, each of the assemblies being adapted to have bonded thereto pluralities of wires requiring an intended loop height above the reference plane plus or minus a certain amount in order for the electronic assembly to meet predetermined electrical specifications;

bonding a plurality of wires between the at least one circuit element and another circuit element or a predetermined area of the mounting surface of a first one of the assemblies using a wire bonder having a commanded wire loop height corresponding nominally to the intended wire loop height, thereby producing a plurality of bonded wires each having an actual loop height above the reference plane of the first one of the assemblies, the wire bonder having an adjustment for changing the commanded wire loop height by a predetermined amount to alter the actual wire loop height of subsequently bonded wires;

measuring the actual loop height of each of the plurality of bonded wires on the first one of the assemblies;

calculating an average actual loop height from the measured actual loop heights for the plurality of bonded wires on the first one of the assemblies;

comparing the calculated average actual loop height to the intended loop height to determine a difference; and

adjusting the commanded wire loop height of the wire bonder when the calculated average actual loop height differs from the intended loop height by at least the predetermined amount, thereby reducing the difference between the intended loop height and the actual loop height of bonded wires in a second and subsequent electronic assemblies.

5,054,195

PROCESS FOR THE PRODUCTION OF A VALVE

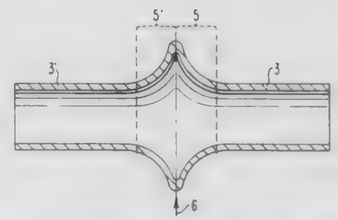
Volker Keck, Stuttgart; Pavel Hora, Kornwestheim, and Walter Conradt, Gaildorf, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Sep. 6, 1990, Ser. No. 578,288

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1989, 3929534

Int. Cl.[5] B21D *53/00*

U.S. Cl. 29—888.453 **11 Claims**



1. Process for producing a valve of the type having a separately produced tubular valve shank with a widening shank section arranged at a first end thereof and a valve disk made of highly heat resistant material, which disk has a part forming the valve base, a part forming the valve seat and a valve back which includes a common point of connection with the valve shank, said common point of connection being characterized by a diameter, the valve shank and the valve disk being connected to each other at the common point of connection, said process comprising the steps of:

providing a tubular starting material from which said valve shank is to be formed;

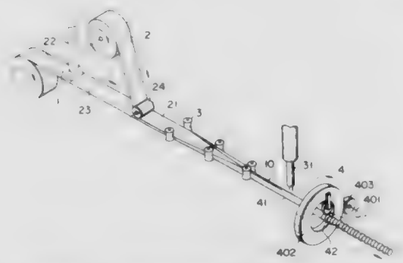
reducing a portion of said tubular starting material to a desired shank diameter by cold forming;

shaping a transitional region lying between the reduced portion of the valve shank and the tubular starting material, said transition area being in the form of an arc and constituting said widening shank section;

severing the valve shank in the widening shank section at a point corresponding to the diameter of the common point of connection between the valve disk and valve shank; and

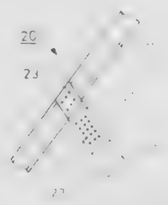
connecting said valve shank to said valve disk at said common point of connection.

5,054,196
METHOD OF MANUFACTURING A HEAT PIPE
Masuji Sakaya, Narashino; Ryuichi Okiai, Yotsukaido; Masataka Mochizuki, Nagareyama, and Kouichi Mashiko, Tokyo, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan
Continuation of Ser. No. 282,025, Dec. 7, 1988, abandoned. This application Feb. 28, 1991, Ser. No. 663,201
Claims priority, application Japan, Dec. 9, 1987, 62-309669; Apr. 27, 1988, 63-102422; Apr. 27, 1988, 63-102423; Apr. 27, 1988, 63-102424
Int. Cl.[5] B21D *53/02*
U.S. Cl. 29—890.032 **35 Claims**



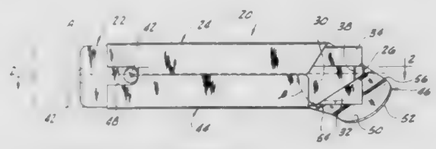
1. A method of manufacturing a heat pipe, comprising the steps of:
feeding a tape from a tape roll;
adhering a wick layer on one surface of the fed tape; and
forming the tape having the wick layer thereon into a pipe shaped member.

5,054,197
METHOD FOR JOINING SYNTHETIC RESIN STRUCTURAL MEMBERS
Kanji Kato, Chiba; Kesaaki Mochizuki, Inashiki; Akira Hamamoto, Yokosuka; Hiroshi Oya, Tokyo; Kozo Ando, Tokyo; Kazuo Namaritani, Nara; Kenichi Fujita, Takatsuki, and Futami Nagaoka, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Nippon Shokubai Kagaku Kogyo Co., Ltd., both of, Japan
Filed Mar. 13, 1990, Ser. No. 493,143
Claims priority, application Japan, Mar. 16, 1989, 1-64641
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—897.31 **2 Claims**



2. A method for joining first and second hollow, synthetic resin structural members, comprising the steps of providing a connector having a previously drilled hole for a bolt and a plurality of previously drilled holes for blind rivets, inserting a distance piece into a hollow portion of said first member so as to prevent deformation in cross section of said first member upon bolting, inserting a bolt through the connector and distance piece and tightening said bolt, placing the connector over said second structural member for use as a template for drilling aligned holes in said second structural member, drilling new holes through said second structural member one at a time such that they are aligned with said previously drilled holes of the connector, and whenever a new hole is drilled, striking one blind rivet into said new hole, thereby joining the synthetic resin structural members together.

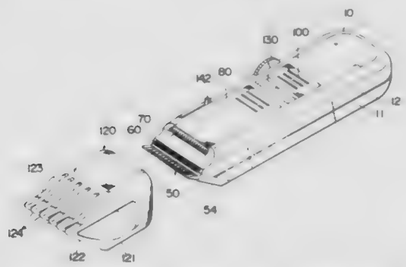
5,054,198
CARTON OPENER
Richard Gmoch, Middletown, N.J., assignor to Cosco Industries, Inc., Spring Valley, N.Y.
Filed Jul. 5, 1990, Ser. No. 548,110
Int. Cl.[5] B67B *7/00*
U.S. Cl. 30—2 **5 Claims**



1. A carton opener comprising:
a razor blade holder comprising a strip of sheet metal folded on itself to have first and second layers joined at one end, a backed razor blade being receivable between said layers adjacent the folded end, said strip at the folded end being cut away at one corner to receive and expose a corner of the blade and being rebated at an edge opposite the cut-away corner to receive the sides of the razor blade back, said layers being crimped adjacent the folded end to tightly grip the sides of the razor blade and hold it in place with respect to said holder, the layers of said folded strip being joined together at a point adjacent the end thereof opposite the folded end by striking the layers with a die from one side to form an indentation in one layer extending into the other layer to swage the layers together at the indentation and to form a boss in the other layer extending outwardly therefrom; and
a sheath comprising a body portion and a guide portion extending generally forward from a forward end of the body portion, said body portion being closely fitted about said holder and slidable thereon from a blade covering position in which the body portion covers the blade to a sheath retracted position in which the corner of the blade extends out the forward end of the body portion and adjacent the guide portion, said body portion further having a notch in one face thereof for receiving the boss of said holder and serving as a positive stop therefor when the sheath is moved to its retracted position, thereby to limit further movement of the holder and blade from the sheath, said guide portion being configured for guiding said corner of the blade along an edge of a carton.

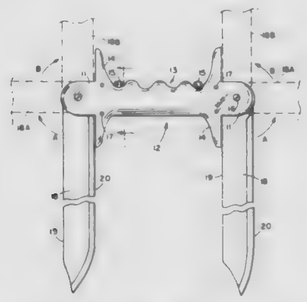
5,054,199
HAIR CUTTER
Hitoshi Ogawa, Hikone; Shoji Fujikawa, Ishibe, both of Japan assignors to Matsushita Electric Works, Ltd., Japan
Filed Dec. 6, 1990, Ser. No. 623,065
Claims priority, application Japan, Dec. 25, 1989, 1-335469
Int. Cl.[5] B26B *19/00, 19/02, 19/12, 19/10*
U.S. Cl. 30—34.1 **5 Claims**

1. A power-driven hair cutter comprising:
an elongated housing having a longitudinal axis;
a main cutter mounted at a front end of said housing and comprising a toothed stationary blade and a toothed movable blade driven by motor means in said housing to reciprocate in a hair shearing engagement with said stationary blade, said blades being cooperative with one another to define a main cutting edge arranged along the front end of said housing;
a trimmer mounted on said housing and comprising a toothed stationary trimmer blade and a toothed movable trimmer blade driven by said motor means to reciprocate in a hair shearing engagement with said stationary trimmer blade, said trimmer blades being cooperative with one another to define a trimmer edge directed forwardly of said housing and arranged substantially in a parallel relation to said main cutting edge, said trimmer movable along said longitudinal axis of said housing between a retracted



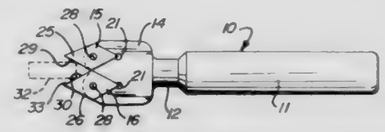
position where said trimmer edge is behind said main cutting edge and a projected position where said trimmer edge projects forwardly beyond said main cutting edge;
said trimmer blades being formed to be smaller in thickness as well as in cutting edge width than those of said main cutter blades.

5,054,200
DOUBLE-BLADED COMBAT WEAPON
James P. Davis, Jr., 2214 Strasbourg Ct., Orlando, Fla. 32808
Filed Aug. 20, 1990, Ser. No. 569,198
Int. Cl.[5] B26B *3/00, 27/00, 3/06*
U.S. Cl. 30—152 **15 Claims**



1. A combat weapon comprising:
a handle for gripping by a user's hand, said handle having a slot in each end for receiving a tang of a blade;
a pair of blades, each having a semicircular tang, each of said tangs having a plurality of index notches in a periphery thereof;
a pair of pivot screws for rotatably securing said blades in said slots;
indexing means disposed in said handle for selectively engaging one of said index notches of each of said blades; and
indexing operating means for permitting a user to selectively release and engage said index notches during combat.

5,054,201
DOUBLE INSERT DEBURRING TOOL
Edward A. Andrews, 1475 Ravine View Ct., Bloomfield Hills, Mich. 48013
Continuation-in-part of Ser. No. 520,877, May 9, 1990. This application Dec. 24, 1990, Ser. No. 640,137
Int. Cl.[5] B26B *9/00, 5/00;* **A47L** *13/02;* **B23D** *1/20*
U.S. Cl. 30—172 **8 Claims**



1. A hand tool useful for manually deburring and for breaking the corners defining sharp edges of sheet material such as sheet metal, sheet glass and the likes, comprising:
an enlogated handle of a size for fitting within a hand for manually grasping the handle along its length, and with the handle having a forward end forming a head;
a pair of substantially identical, adjacent sockets formed on the forward end head of the handle, each socket having a forwardly and sidewardly opened portion, and a substantially flat base surface arranged generally in a plane that extends longitudinally of the handle and formed with spaced apart, opposite side wall surfaces extending perpendicularly to the base surface, with the socket side wall surfaces within each socket being acutely angled relative to the forward end of the socket to form an acute angle pair of wall surfaces for receiving and supporting a corner-like portion of an insert;
a conventional flat, generally wafer-like, hard disposable cutter insert closely fitted within each of said sockets;
each socket being of a size to receive the insert with a flat face of the insert arranged in contact with the socket base surface and with the socket wall portions engaging opposite edge portions of said insert for removably positioning the insert within the socket, and with each insert having a forward portion extending forwardly of the handle and of the socket and an inner side edge portion extending forwardly of the socket;
with the side edge portion of one insert being adjacent the side edge portion of the other insert and with the two adjacent side edge portions defining and acute angle spce therebetween with the space angle widening in the forward direction;
fastening means securing each insert within its socket;
whereby a conventional cutter insert of a predetermined peripheral shape may be rigidly secured within each socket so that a sharp edge of a sheet may be positioned between the two inner side edge portions of the inserts so that said side edge portions may be manually scraped along said sheet edge for deburring and for breaking the longitudinal corners defining said edge.

5,054,202
PRUNING MACHINE
Masuhiko Takigawa, and Eiji Tadanobu, both of Osaka, Japan, assignors to ARS Edge Co., Ltd., Osaka, Japan
Filed Feb. 7, 1989, Ser. No. 307,038
Int. Cl.[5] B26B *19/02*
U.S. Cl. 30—208 **6 Claims**

1. A pruning machine, comprising:
a pruning edge unit composed of movable edges and fixed edges;
operating means for shifting said movable edges with respect to said fixed edges;
angle adjusting means for adjusting and controlling the angular position of said pruning edge unit relative to the pruning machine; and

a flexible member means connected between said movable edges and said operating means, for transmitting movement from said operating means to said movable edges, said flexible member means being able to flex in response



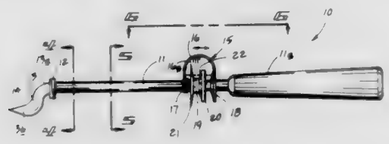
to said angle adjusting means while said operating means connected to said flexible member means effects reciprocating movement of said movable edges relative to said fixed edges.

5,054,203

ADJUSTABLE CAN OPENER

Dusan Janiw, P.O. Box 510 964, Salt Lake City, Utah 84151

Filed Jul. 23, 1990, Ser. No. 559,676
Int. Cl.[5] B67B *7/16*
U.S. Cl. 30—408 **1 Claim**



1. An adjustable can opener comprising,

an elongate cylindrical shaft defined by a predetermined diameter, the shaft including a handle fixedly mounted to a rear terminal end of the shaft,

and

piercing means integrally mounted to a forward terminal end of the shaft for piercing and anchoring the shaft relative to a can lid,

and

cutter means slidably mounted on the shaft for guided securement in association with a can seam to simultaneously permit cutting of the can lid adjacent the seam,

and

wherein the piercing means includes an "S" shaped piercing guide, the piercing guide including a top guide leg aligned with the cylindrical shaft, and a bottom guide leg arranged parallel to the shaft underlying the shaft, and the bottom leg, including a sharpened point oriented forwardly of and below the shaft,

and

wherein the "S" shaped piercing guide is defined by a piercing guide diameter substantially equal to the predetermined diameter of the shaft,

and

including an abutment collar fixedly and orthogonally mounted to a forward terminal end of the elongate cylindrical shaft with the "S" shaped piercing guide directed forwardly of the abutment collar wherein the abutment collar defines a collar diameter substantially greater than that defined by the predetermined diameter,

and

wherein the cutter means includes a tubular hub slidably and rotatably mounted about the cylindrical shaft between the handle and the collar, the hub including a guide roller fixedly mounted to a rear terminal end of the hub wherein the guide roller receives the shaft therethrough, and the guide roller is defined by a guide roller diameter,

and

wherein the cutter means further includes an annular cutter disk defined by a disk diameter greater than that of the guide roller diameter, and the cutter disk is fixedly mounted to a forward terminal end of the hub wherein the hub and the guide roller are coaxially aligned with the hub,

and

further including an arcuate generally "U" shaped cover overlying the cutter means, the cover including a forward slide collar slidably mounted about the cylindrical shaft, and a rear slide collar slidably mounted about the cylindrical shaft wherein the forward slide collar is positioned forwardly of the cutter means, and the rear slide collar is mounted rearwardly of the cutter means wherein the cover overlies the cutter disk, tubular hub, and guide roller,

and

wherein the rear slide collar is defined by a rear slide collar diameter substantially greater than that defined by a forward slide collar diameter defined by the forward slide collar and wherein the rear slide collar diameter is substantially equal to the guide roller diameter,

and

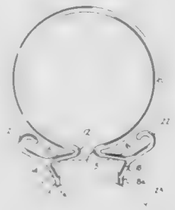
wherein the cover further includes a side cover integrally mounted to a right side portion of the cover to enclose the cutter disk and guide roller within the cover.

5,054,204

SHOTGUN SIGHTING DEVICE

Troy L. Ward, 45749 Classic Way, and Terry L. Bilbey, 45801 Clubhouse Dr., both of Temecula, Calif. 92390

Filed Feb. 19, 1991, Ser. No. 657,412
Int. Cl.[5] F41G *1/16*
U.S. Cl. 33—233 **6 Claims**



1. A shotgun sighting device in combination with a firearm, wherein the firearm includes an elongate barrel and a rib mounted coaxially of the barrel to a top surface thereof, and the device comprises,

a sighting tube, the sighting tube including a discontiuous side wall defining a left abutment surface parallel to a right abutment surface, wherein the left and right abutment surfaces are each arranged parallel to an axis of the sighting tube, and

the left and right abutment surface arranged for engagement with opposed sides of the rib, and

a left flange formed coextensively to the left abutment surface, and a right flange formed coextensively to the right abutment surface, wherein the left and right flanges are positioned underlying the tube, and

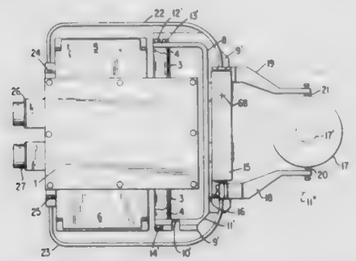
the left and right flanges each include cooperative left and right clamp legs for securement to the rib.

5,054,205

WIDE RANGE APPARATUS FOR CHECKING LINEAR DIMENSIONS OF PARTS

Franco Danielli, Zola Predosa, Italy, assignor to Marposs Societa' Per Azioni, Bentivoglio, Italy

PCT No. PCT/EP88/00830, § 371 Date May 9, 1989, § 102(e) Date May 9, 1989, PCT Pub. No. WO89/03511, PCT Pub. Date Apr. 20, 1989
PCT Filed Sep. 12, 1988, Ser. No. 358,382
Claims priority, application Italy, Oct. 9, 1987, 3639 A/87
Int. Cl.[5] G01B *7/12*
U.S. Cl. 33—555.1 **14 Claims**



1. Wide-range apparatus for checking linear dimensions, such as diameters, of parts (**17**), comprising a frame (**1**); two slides (**3**, **7**, **42**; **4**, **8**, **42'**), parallel and arranged side by side; two position transducers (**72**; **72'**), respectively coupled to the slides; control means including two motors (**36**, **36'**) and two transmission devices (**34**, **37–40**, **47**; **34'**, **37'–40'**, **47'**) for actuating the two slides, in an independent way; two measuring heads (**15**; **16**), each of which secured to a relevant slide; and processing and control means (**77**, **79**, **80**; **77'**, **79'**, **80'**) connected to the position transducers, the measuring heads and the motors, for controlling the motors and determining the part dimensions, characterized in that each slide comprises a linear guide rod (**3**; **4**), a first support structure (**7**; **8**) coupled to the rod (**3**; **4**) and arranged at a side of it for supporting the measuring head (**15**; **16**), and a second support structure (**42**; **42'**) coupled to the rod, partially arranged at the opposite side with respect to the first support structure and elongated in a direction perpendicular to the guide rod, the second support structure having a portion (**43**; **43'**) coupled to the rod and a portion (**47**; **47'**) coupled to the transmission device actuated by the motor, the position transducer coupled to the slide being arranged between the measuring head and the guide rod.

5,054,206

CHAIN SAW PROJECTION MENSURATION METHOD AND APPARATUS FOR DETERMINING THE DIAMETER OF TREES

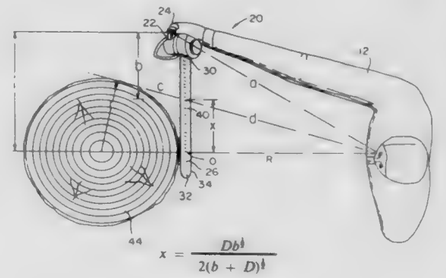
Robert A. Carlson, 2221 McDougal, Everett, Wash. 98201

Filed Apr. 14, 1989, Ser. No. 337,953
Int. Cl.[5] G01B *5/08*
U.S. Cl. 33—555.1 **8 Claims**

1. A projection mensuration apparatus for estimating the diameter of a tree, comprising:

a chain saw having a main body with a handle for holding the chain saw, a chain guide having a root section connected to the main body near the handle and a tip section at a distance therefrom, and a cutting chain rotatably supported by the chain guide; and

projection means on the chain guide for projecting the diameter of the tree along a sight line to the chain guide, including a scale having an origin adjacent to the tip of the chain guide and a plurality of markings, increasing in magnitude in the direction of the root section which substantially satisfy the following equations:



$$x = \frac{Db^{\frac{1}{2}}}{2(b + D)^{\frac{1}{2}}}$$

and

$$b = (a^2 - l^2)^{\frac{1}{2}}$$

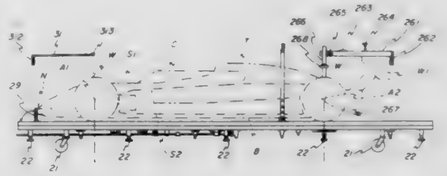
where "x" is the distance from the origin on the scale which corresponds to the diameter of the tree projected thereon, "a" is the approximate length of a user's arm, "l" is the approximate distance from the center of the handle to the origin of the scale, and D is the approximate diameter of the tree which has been measured, so that by holding the handle of the chain saw with one hand at arm's length and positioning the tip section on the circumference of the tree with the chain guide tangent thereto, the edge of the tree can be sighted along the guide and the projected diameter of the tree read therefrom.

5,054,207

DIMENSION CHECKING APPARATUS FOR VEHICLES

D. Ray Marshall, Forest, Ohio, assignor to Race Spec, Inc., Forest, Ohio

Filed Dec. 11, 1989, Ser. No. 448,399
Int. Cl.[5] G01D *21/00*
U.S. Cl. 33—600 **10 Claims**



1. A device for verifying the compliance of a wheeled race car vehicle which includes a body having a bottom and sides extending upward from the bottom, to predetermined racing qualification specifications, said device comprising

a level support platform defining a horizontal plane and adapted to receive the vehicle with its longitudinal axis parallel to and midway of said support platform, and laterally adjustable plates in said support platform adapted to receive the wheels of the vehicle for positioning the vehicle with its longitudinal axis parallel to the longitudinal axis of the horizontal plane of said support platform,

a movable lift gauge rack supported on said platform in a normally retracted position over which the vehicle can be moved onto said plates and means for raising said rack against the bottom of the vehicle for conforming to the rake and tilt of the vehicle's bottom,

a length gauge cooperable with said lift gauge rack for measuring the overall length of the vehicle,

a height gauge cooperable with said lift gauge rack and said length gauge for measuring the overall height of the vehicle,

width gauges cooperable with said lift gauge rack for measuring the width of the vehicle,

a side pod height gauge cooperable with said lift gauge rack for measuring the distance between a side pod on the vehicle and the vehicle's bottom,

a side pod tunnel height gauge cooperable with said lift gauge rack for measuring the height of a side pod tunnel on the vehicle,

side pod loading means and a deflection gauge for measuring the deflection of a side pod on the vehicle when a predetermined load is applied to such side pod by said loading means while the vehicle is on said level support, and

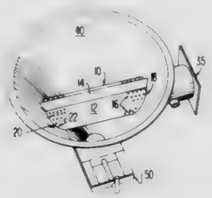
a front wing clearance gauge cooperable with said lift gauge rack for measuring the clearance between a front wing on the vehicle and the vehicle's bottom.

5,054,208

TUBULAR DIFFUSER

William J. Gillette, Severna Park, and Joseph L. Hemler, Jr., Stevensville, both of Md., assignors to Novatec, Inc., Baltimore, Md.

Filed Feb. 7, 1991, Ser. No. 651,722
Int. Cl.[5] F26B *13/10*
U.S. Cl. 34—57 A **17 Claims**



1. In a drying system used for the conditioning of plastic resins prior to use in molding or extruding processes, having a dehumidifier, a drying hopper including a conical base, air supplying means for supplying clean, dry, warm air from said dehumidifier to said drying hopper through an inlet port, and diffusing means for diffusing clean, dry, warm air throughout the resin pellets located in the drying hopper, the improvement wherein said diffusing means comprises:

a tubular diffuser mounted transversely in said drying hopper base;

said tubular diffuser further comprising a hollow cylindrical body having an open end and a closed end, said open end of said diffuser connected to said air supply means and said closed end of said diffuser terminating adjacent a conical sidewall of said drying hopper so that the resin pellets cannot flow between said diffuser and said sidewall, whereby said resin pellets are heated and dried uniformly.

5,054,209

CENTRIFUGE FOR DRYING SALAD GREENS AND OTHER FOODS

William Koff, 2100 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Feb. 5, 1991, Ser. No. 650,787
Int. Cl.[5] F26B *17/30*
U.S. Cl. 34—58 **6 Claims**

1. A food damp-drying centrifuge comprising in combination:

a housing;

a hollow, body member spaced within said housing and having a solid side wall and bearing means;

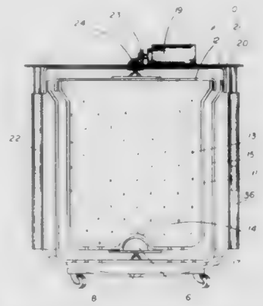
a spinner basket open at its upper end, having perforations in its side wall and coaxially spaced within and supported by said bearing means;

upper motor drive means supported by said housing;

cover means for said basket positioned below said drive means; and

driveshaft means connected to said drive means and attached to said cover means;

said housing including means for causing said cover means



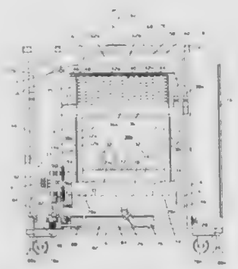
to engage said basket; said centrifuge being characterized in that when said cover means is engaged with said spinner basket, actuation of said drive means causes said basket to spin.

5,054,210

ISOPROPYL ALCOHOL VAPOR DRYER SYSTEM

Kevin Schumacher, North Caldwell, N.J.; Martin J. Striefler, New Hampton, N.Y.; Frank Cavaiuzzi, Wurtsboro, N.Y., and Orazio Domicoli, Poughkeepsie, N.Y., assignors to S&K Products International, Inc., Chestnut Ridge, N.Y.

Filed Feb. 23, 1990, Ser. No. 485,569
Int. Cl.[5] F26B *21/14, 21/06, 21/00;* **B08B** *7/00*
U.S. Cl. 34—78 **14 Claims**



1. Isopropyl alcohol vapor dryer system comprising:

a. a stainless steel housing;

b. a heater means in a base of said housing;

c. a quartz tank mounted in said housing on said heater means;

d. at least one independent side wall heater means positioned on a side wall of said quartz tank;

e. a quartz saucer in a base of said quartz tank; and,

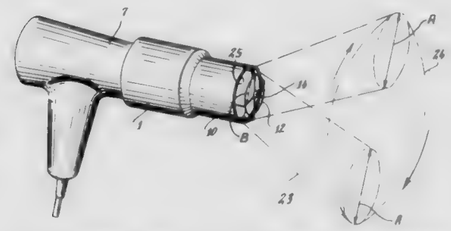
f. a cooling coil adjacent an upper portion of said quartz tank.

5,054,211

HAIR DRYER ATTACHMENT FOR CREATING AN ORBITING STREAM OF AIR

Burt H. Shulman, 4-203 Village Park Apartments, Pleasant Valley, N.Y. 12569

Filed Nov. 5, 1990, Ser. No. 608,696
Int. Cl.[5] A45D *20/00*
U.S. Cl. 34—97 **9 Claims**



6. Air deflection means for use with a hair dryer and adapted to give the air stream coming from said hair dryer an orbiting and diverging flow, said air deflection means including

an air deflector within said air stream, means for mounting said air deflector for rotation about an axis parallel to the direction of said air stream, said deflector including opposed angle vanes on the upstream end thereof and having an angled deflector on the downstream end thereof,

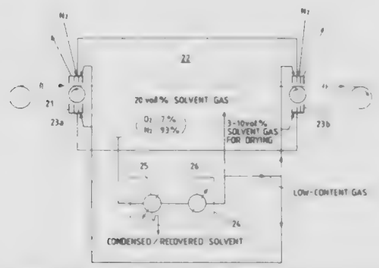
whereby said air deflector will rotate in said air stream and air exiting from said hair dryer will be orbiting and diverging.

5,054,212

GAS-SEALING DEVICE FOR WEB PASSAGE SECTION LOCATED AT TREATMENT CHAMBER WALL

Norio Ishikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 15, 1991, Ser. No. 655,600
Claims priority, application Japan, Feb. 20, 1990, 2-37161
Int. Cl.[5] F26B *25/00*
U.S. Cl. 34—155 **11 Claims**



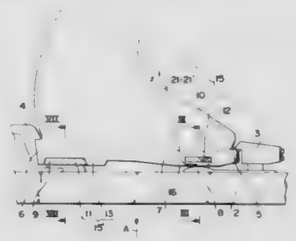
1. A gas-sealing device for a web passage section located at a wall of a treatment chamber through which a web enters and exits said treatment chamber for sealing said treatment chamber from the outside, comprising: first and second gas jetting devices facing each other through said web at said wall of said treatment chamber, each of said first and second gas jetting devices comprising means defining a first slot for jetting a pressurized inert gas, means defining a second slot for jetting a gas containing a low-content gas, said second slot being on the treatment-chamber side of said first slot, and means defining a third slot for sucking air and other gases, said third slot being on the outside side of said first slot, said first, second and third slots being juxtaposed with respect to one another.

5,054,213

ALPINE SKI BOOT WITH SHOCK ABSORBING SOLE

Laurent Bonaventure, Annecy, France, assignor to Salomon S.A., Pringy, France

Division of Ser. No. 150,202, Jan. 29, 1988, Pat. No. 4,937,955.
This application Feb. 15, 1990, Ser. No. 480,595
Claims priority, application France, Feb. 12, 1987, 87 02175
Int. Cl.[5] A43C *13/08;* **A43B** *5/04*
U.S. Cl. 36—117 **29 Claims**



1. The sole of a ski boot having a first longitudinal axis, the sole comprising:

(a) at least one rigid stiffener extending in a substantially longitudinal direction;

(b) at least one elastically deformable element located laterally adjacent said stiffener and transverse to the longitudinal direction of said stiffener;

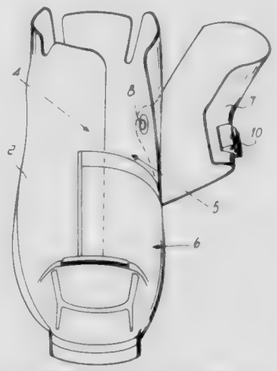
whereby at least one stiffener defines the thickness of said sole and maintains a rigid connection with a binding under all conditions encountered during skiing, and whereby said at least one elastically deformable element is adapted to deform and thereby absorb at least lateral forces encountered during skiing when said sole pivots about said at least one stiffener.

5,054,214

SHELL STRUCTURE FOR SKI BOOTS

Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jul. 19, 1989, Ser. No. 381,884
Claims priority, application Italy, Aug. 2, 1988, 82575 A/88
Int. Cl.[5] A43B *5/004*
U.S. Cl. 36—119 **3 Claims**



1. Shell structure for ski boots comprising;

a ski boot shell having internal surface,

a longitudinal axis defined by said shell,

a first side defined laterally on said shell,

an opposite side defined laterally on said shell opposite to said first side,

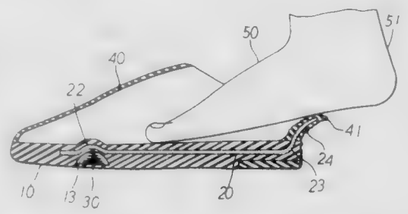
a metatarsal region defined on said first side of said shell,
at least one slot extending transversely to said longitudinal axis of said shell and affecting said metatarsal region,
at least one cover element connected to said shell and being positionable over said slot,
at least one portion defined by said cover element, and
tightening means connected to said shell and being releasably connectable to said portion of said cover element for tightening said cover element onto an inner malleolus region of a wearers foot adjacent said slot,
wherein said cover element comprises at least one band-like element, wherein said shell has a lateral surface and, wherein said band-like element has at least one end and at least one other end, said lateral surface being defined at said first side of said shell, said one end of said band-like element being integral with said lateral surface of said shell, said tightening means releasably connecting said other end of said band-like element to said opposite side of said shell, whereby a wearers foot is pressed against said internal surface of said shell and said band-like element causes said shell to adhere to the shape of the wearers foot, at the upper and lateral metatarsal regions thereof.

5,054,215
ADJUSTMENT DEVICE PARTICULARLY FOR SKI BOOTS
Valerio Tonel, Barbisano; Mario Mattiuzzo; Giancarlo Foscaro, both of Treviso, and Stéfano Soligo, Montebelluna, all of Italy, assignors to Nordica S.P.A., Montebelluna, Italy
Filed Jul. 25, 1988, Ser. No. 224,024
Claims priority, application Italy, Aug. 6, 1987, 82582 A/87; Dec. 14, 1987, 82612 A/87
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—170 **33 Claims**



1. In a composite ski boot having at least two component parts movable with respect to each other and having at least partially overlapping surface portions in overlapping relationship to each other, an adjustment device for adjusting the relative position of said two component parts relative to each other, said device comprising means defining a through-going recess in one of said two overlapping surface portions, said recess having a a delimiting edge, gliding abutment surface means in the other of said two overlapping surface portions, said gliding abutment surface means facing said through-going recess, and a slider member having a first body portion facing said gliding abutment surface means for abutting thereagainst and having a second body portion arranged at least in part within said through-going recess and in sliding engagement with said delimiting edge thereof, said second body portion having an actuation formation accessible for actuation from the outside, said gliding abutment surface means having at least two rest formations for said first body portion, said two rest formations determining a first relative posture of one of said component parts with respect to the other of said two component parts when said first body portion reaches a first of said two rest formations and said two rest formations determining at least a second relative posture of said one of said component parts relative to said other of said two component parts when said first body portion reaches a second of said two rest formations.

5,054,216
KIND OF LEISURE SHOES
Kuo-Yang Lin, No. 601, Chung Cheng Road, Tsao Tun Chen, Nantou Hsien, Taiwan
Filed Apr. 19, 1990, Ser. No. 511,368
Int. Cl.[5] A43B *11/00*
U.S. Cl. 36—138 **3 Claims**

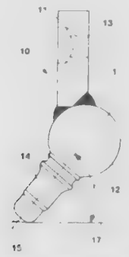


1. Shoes of the type wherein each shoe comprises
a sole having a front portion, a rear portion forming a heel portion, a middle layer, and an upper surface in connecting relation to each other;
a tunnel-like elongate chamber in said middle layer of said sole, and having a front end from which it extends from said front portion of said sole toward said rear portion of said sole, gradually elevating in a curve as it extends and reaches close to said rear portion of said sole and forming an opening in said upper surface of said sole in said rear portion;
an upwardly arched cavity formed in said sole beneath said elongate chamber in said front portion of said sole;
an elastic element contained in said upwardly arched cavity;
a strip-shaped stretch element in said tunnel-like elongate chamber with said stretch element having front and rear sections, and said stretch element fixedly attached to said front end of said tunnel-like elongate chamber;
said stretch element having a plurality of parallel and equispaced slits on its surface to facilitate its deformation following stretch and compression respectively of said elastic element in said cavity in said sole;
an upper having a back which joins with said sole at said heel portion, enclosing said rear section of said stretch element protruding out of said opening in said upper surface of said sole with said upper back connected to said stretch element;
said back movable downward when said rear section of said stretch element is pulled toward said front portion of said sole by an upward protrusion of said front section of said stretch element caused by said elastic element in said cavity in said sole below said front portion of said tunnel-like chamber;
said back automatically moving upward when said rear section of said stretch element in said back is pushed upward due to compression of said elastic element in said cavity and hence backward stretch of said stretch element.

5,054,217
HARD INSERT FOR ICE/SNOW CLEARING TOOL
Erik R. Nilsson, Sandviken; Per-Göran Sjödin, Valbo, and Bo G. Tibäck, Borlaange, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden
Continuation of Ser. No. 173,596, Mar. 25, 1988, abandoned.
This application May 29, 1990, Ser. No. 529,722
Claims priority, application Sweden, Mar. 25, 1987, 8701222-5
Int. Cl.[5] E01H *5/09;* **E02F** *3/80*
U.S. Cl. 37—244 **30 Claims**

27. In an ice and snow clearing apparatus comprising a base fixedly mounted on a vehicle and a row of horizontally spaced tools mounted on and extending downwardly from said base to clear ice and snow from a road surface, the improvement wherein each of said tools comprises:

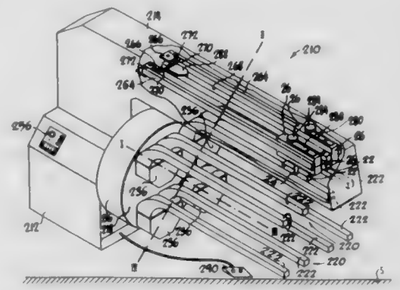
a tool blank defining a front-to-rear extending longitudinal axis, said tool blank mounted to said base for rotation relative to said base about said axis, said axis forming an angle of from twenty to ninety degrees with a road surface, and
a hard tip mounted at a front end of said tool blank and including:
a generally cylindrical rear surface portion being coaxial

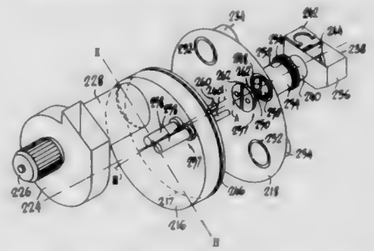


with said axis and projecting forwardly from said front end of said tool blank,
a blunt front surface portion, said front surface portion being flat and oriented perpendicular to said axis, and
a smoothly curved transition surface portion interconnecting said front and rear surface portions,
said cylindrical rear surface portion defining an axial length and a diameter, said axial length being from 0.3 to 0.7 times said diameter.

5,054,218
STEAM IRONING DEVICE HAVING ROTATABLE PAIRS OF IRONING BARS, A SLIDE BOX, AND A STEAM IRON FOR IRONING GARMENTS MOUNTED ON THE BARS
Dieter Mai, Walleshausen, Fed. Rep. of Germany, assignor to Veit GmbH & Co., Landsberg/Lech, Fed. Rep. of Germany
Division of Ser. No. 359,392, May 31, 1989, Pat. No. 4,964,230.
This application Sep. 14, 1990, Ser. No. 583,016
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 3818898
Int. Cl.[5] D06F *71/18, 71/28, 71/30*
U.S. Cl. 38—1 B **7 Claims**

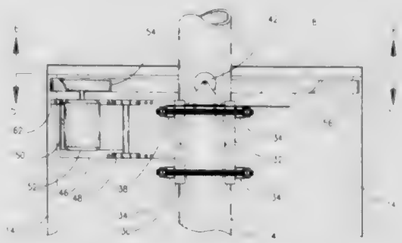
1. An ironing apparatus comprising:
a frame;
a rotatably driven plate mounted to said frame;
at least four air pipes rotatably mounted to said plate;
at least four air distribution boxes, each of said air distribution boxes being mounted to a respective air pipe;
at least four axially elongated ironing bars, each of said ironing bars being mounted to a respective air distribution box and projecting outwardly therefrom for supporting a fabric part thereon;
a blower coupled in fluid communication with at least one of said ironing bars for drawing air through said ironing bar for holding a fabric part supported thereon;
positioning means coupled to each of said ironing bars for rotating said ironing bars upon rotation of said plate, for controlling the orientation of the surfaces of said ironing bars;
at least one guide rail mounted to said frame and projecting outwardly therefrom above said ironing bars;
at least one slide box coupled to said guide rail and slidable in relation thereto; and





at least one ironing member suspended from said slide box for ironing a fabric part supported on at least one of said ironing bars.

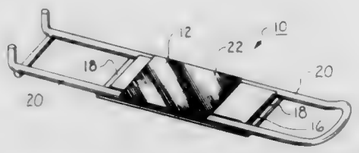
5,054,219
REVOLVING SIGN AND RELATED DRIVE
Wilber S. Hoyt, 406 Beverly Dr., Lafayette, La. 70503, and James G. Close, 16 Big Oak Cir., S.H. Malakoff, Tex. 75148
Filed Apr. 2, 1990, Ser. No. 503,043
Int. Cl.[5] G09F *11/02*
U.S. Cl. 40—473 **20 Claims**



1. A motor-driven revolving sign comprising
a rigid, multi-sided structural frame, the structural frame mounted around an existing sign post and having an upper section, and defining a plurality of sign faces therearound,
mounting means positioned at upper and lower portions of the structural frame, and supported between the structural frame in frictional contact with the sign post,
a friction ring attached to the mounting means at the upper portion of the structural frame,
a plurality of adjustable rotating stabilizing elements attached to the mounting means for maintaining the structural frame in concentric rotating alignment around the sign post,
a motor secured to the mounting means,
friction wheel drive means mounted to the motor and in

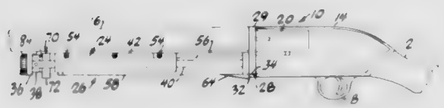
rolling contact with the friction ring for rotating the structural frame when the motor is activated.

5,054,220
PRODUCT IDENTIFICATION SYSTEM
Richard J. Touzalin, Richmond Hill, and Brian J. Zettler, Scarborough, both of Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation of Ser. No. 279,390, Dec. 2, 1988, abandoned. This application May 14, 1990, Ser. No. 523,085
Claims priority, application Canada, Nov. 25, 1988, 584182
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—642 **8 Claims**



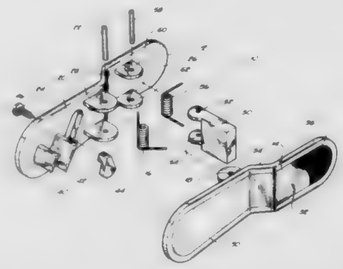
1. A product identification and support system comprising:
a pair of parallel tubular members for supporting said product;
a product identification member having a generally planar face, a first pair of side walls extending generally downwardly from said face, and a second pair of side walls extending generally downwardly from said face, at least one of said pairs of said side walls extending downwardly over a generally concave curve such that the outwardly facing surfaces of said side walls are removably engaged between said tubular members;
a lip structure extending outwardly from the lower edge of each of said side walls generally in a plane parallel to the plane of said planar face; and
a label securely but removably attached to said planar face, said label extending beyond the planar face and being further securely but removably attachable to said tubular members, said lip and label acting together with said side walls to securely but removably fasten said product identification member in place on said tubular members.

5,054,221
SHOTGUN WITH INTERCHANGEABLE MAGAZINE
Peter D. Ozols, 6 Fairmead Rd., Darien, Conn. 06820
Filed Mar. 15, 1990, Ser. No. 493,881
Int. Cl.[5] F41A *9/72*
U.S. Cl. 42—17 **25 Claims**



1. A shotgun, said shotgun comprising:
a barrel;
a first support member supported on one side of said barrel;
a second support member supported on the other side of said barrel relative to said first support member;
a forearm member supported on said first and second support members for moving relative to said support members; and
a magazine including a substantially cylindrical, tubular portion for receiving a plurality of shells in an end to end relationship, said magazine being removably coupled to said barrel between said first and second support members for feeding shells to be fired through said barrel, said magazine thus being removeable from said shotgun to replace said magazine with another preloaded magazine.

5,054,222
PROTECTIVE DEVICE FOR THE TRIGGER GUARD OF A GUN
Mark L. Hardy, 124 Hwy. 75N, Huntsville, Tex. 77340
Filed Sep. 17, 1990, Ser. No. 583,498
Int. Cl.[5] F41A *17/46*
U.S. Cl. 42—70.07 **15 Claims**

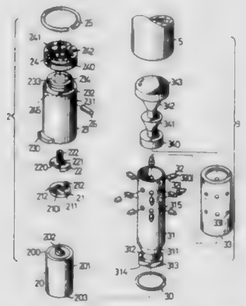


1. A protective device for the trigger guard of a gun comprising:
a first plate member having a first arm extending outwardly therefrom;
a second plate member having a first arm extending outwardly therefrom, said second plate member being pivotally connected to said first plate member; and
a block means rotatably connected to said first arm, said block means movable between a first position parallel to said first arm and a second position outward from said first arm, said block means for stopping movement of said first plate member with respect to said second plate member when said block means is in said second position.

5,054,223
BARREL LOCK ASSEMBLY FOR A GUN
Miko Lee, No. 5, Li Hsing Lane, Chung Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan
Filed Feb. 25, 1991, Ser. No. 660,636
Int. Cl.[5] F41A *17/02*
U.S. Cl. 42—70.11 **3 Claims**

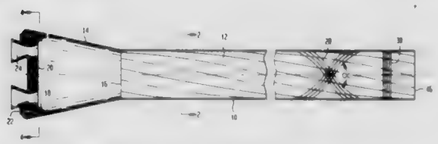
1. A barrel lock for a gun comprising:
a first lock portion comprising:
a tumbler including a key end through which a key is insertable and an actuating end;
a pawl means including a pawl actuatable by said actuating end and two upright fingers opposed to each other on said pawl;
a screw means actuatable by said pawl means including an upstanding screw and a base including two opposite peripheral cut-outs along which said fingers are slidable;
a sleeve, having said tumbler fixed thereto and enclosing said tumbler, said pawl means and said screw means, including an annular groove formed on an inner periph-

ery thereof, a means for preventing a relative rotation between said barrel lock and a barrel of a gun, and an anchoring neck formed on an end thereof; two semi-circular anchoring means mounted on said anchoring neck; and
a flexible means enclosing said anchoring means and allowing an expansion of said anchoring means and restraining a relative longitudinal movement between said anchoring neck and said anchoring means, and
a second lock portion comprising:
an apertured cylinder including threading axially extending a portion of a length therein engageable with said screw; a neck for pushing said anchoring means outward when said screw and said thread are engaged in a condition where a distance between said first lock and



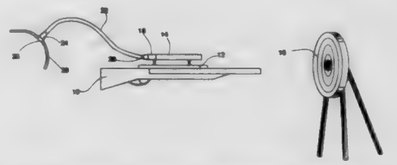
said second lock is shortest, holes formed therein; and a head axially attached thereto for preventing a relative rotation of said first lock and said second lock when engaged with each other;
a securing means for retaining said cylinder engaged with said sleeve;
an apertured collar including holes corresponding to a hole of said cylinder;
a plurality of pins each being insertable through each said hole on said collar and said corresponding hole of said cylinder; and
a column including a first end for resisting an external impact, a middle portion for pushing said pins outward when an impact is exerted on said first end of said column, and a second end for retaining said pins within said cylinder.

5,054,224
APPARATUS AND METHOD FOR A COMPOSITE POLYMER RIFLING DISPOSABLE GUN TUBE
Glenn Friar, Clifton Park; Kevin Miner, Wateruliet; Christopher Rinaldi, Ballston Lake, and David Wilson, Menands, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 19, 1990, Ser. No. 615,183
Int. Cl.[5] F41A *21/02*
U.S. Cl. 42—076.02 **3 Claims**



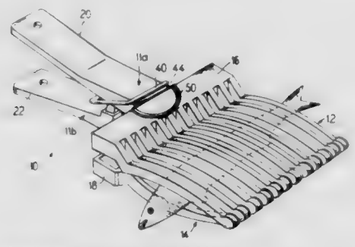
1. A disposable gun which comprises:
composite polygon rifled barrel means for generating projectile spin, said barrel tube section having multi-sided polygon rifling therein, said section further comprising:
a first composite helical wrap;
a second composite helical wrap having an angle α with respect to said first composite helical wrap;
a composite 90° hoop wrap operatively wound on top of said helical wraps; and
said disposable gun further comprising:
composite chamber means integrally connected with said barrel means for holding a propellant charge therein;
a ring seal member operatively attached to the rear end of said chamber means;
nozzle means attached to said ring seal for exhausting propellant gases, giving thrust and providing spin to a projectile operatively disposed in said chamber means, said nozzle means comprising:
a circularly shaped nozzle plate removably attached to said ring seal member;
a plurality of nozzles operatively disposed in said nozzle plate for venting gases from said chamber means; and
a plurality of cap screws for holding said nozzle plate fixedly to said chamber means.

5,054,225
GUNSIGHT FLEXIBILITY AND VARIABLE DISTANCE AIMING APPARATUS
Kenneth A. Giuffre, and Carmelo A. Giuffre, both of 201 Sagamore La., Franklin Lakes, N.J. 07417
Filed Feb. 23, 1990, Ser. No. 484,343
Int. Cl.[5] F41G *1/38*
U.S. Cl. 42—101 **1 Claim**



1. A self-contained gunsight arrangement, comprising:
an optical sight fixed to a firearm for providing an image of an object at which the firearm is directed;
coupling means, connected to said optical sight for receiving said image and outputting a conditioned image:
transmission means connected to said coupling means for receiving said conditioned image and transmitting said conditioned image to a location spaced away from said optical sight;
second coupling means connected to said transmission means for receiving said transmitted conditioned image and outputting a reconditioned image; and viewing means for viewing;
said transmission means is a flexible fiber optic trunk for transmitting light representing said conditioned image;
said first coupling means includes an ocular mechanism for reducing said image provided by said optical sight for transmission by said flexible fiber optic trunk;
said second coupling means includes an additional ocular mechanism for enlarging said image transmitted by said transmission means;
said additional viewer ocular mechanism includes means for adjusting the position of said viewer ocular mechanism with respect to said coupling means for adjusting the focus of an image visible through said viewing means.

5,054,226
UNIVERSAL BAIT HOLDER
Michael F. Hart, 1009 Park Dr., Grand Forks, N. Dak. 58201
Filed Feb. 22, 1990, Ser. No. 483,578
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—4 16 Claims



1. A universal bait holder comprising:
a first set of parallel fingers, said fingers being held at a predetermined spacing relative to one another;
a second set of parallel fingers, said fingers of said second set being held at a predetermined spacing relative to one another;
said second set of fingers being arranged to oppose said first set of fingers;
each of said fingers being flexible and having a curvature so as to present a concave surface towards said opposed set of fingers;
surface means for accepting a biasing force; biasing force means for urging said two sets of fingers towards each other about a pivot axis perpendicular to a length of said fingers such that said fingers mesh; and
means for receiving an opening force for overcoming said biasing force to effect selected movement of said two sets of fingers away from each other.

5,054,227
LOOSENER
Kuo-Yang Lin, No. 601, Chung Cheng Road, Tsao Tun Chen, Nantou Hsien, Taiwan
Filed Apr. 6, 1990, Ser. No. 505,270
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.12 3 Claims



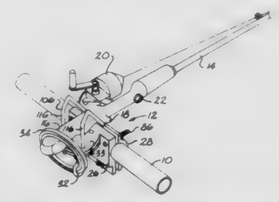
1. A loosener for automatic release of a plummet on a fishing line of a fishing rod, said loosener comprising;
an interlock ring for connecting a fishing line to a fishing rod;
a cylindrical fixture cap;
a bottom of said fixture cap being open;
said interlock ring rotatably connected to a top of said fixture cap;
a deformable elastic member;
a fixed convex head at a first end of said elastic member;
at least one connector strip at a second end of said elastic member;
said connector strip having a diameter smaller than said convex head;
said connector strip having a deformable convex bulb between a first end of said connector strip and said fixed convex head;
said convex head fixedly mounted in said open bottom of said fixture cap;
a fishing plummet having a diameter of an axial bore smaller than the diameter of said bulb;
said convex bulb compressably moved through said axial bore of said plummet to fix said plummet on said connector between said convex bulb and said fixed head;
wherein said convex bulb is sufficiently deformable to permit said plummet to be released from said connector by an upward movement of the fishing rod when said plummet is snagged.

5,054,228
POLECAT FISHING POLE HOLDER
Jack D. Elkins, Rte. 2, Box 272, Pickel Farm Rd., Kingston, Tenn. 37763
Filed Aug. 15, 1990, Ser. No. 567,639
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 19 Claims



1. A fishing pole holder comprising:
a base means for engaging a supporting surface, said base means including an extended section to act as a cantilever to counterbalance the tilting forces of the poles;
a housing means connected to and supported by at least a portion of said base means, said housing means including a selected mass to assist in preventing tilt; and
a pole handle engaging means carried by said housing means for holding at least one pole at a selected position in a first direction.

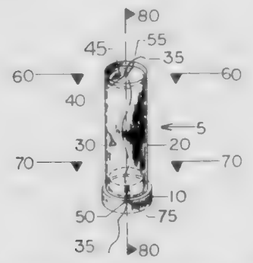
5,054,229
FISHING ROD HOLDER
Thomas M. Hughes, 310 Cardinal Dr., Taylors, S.C. 29687
Filed Jan. 19, 1990, Ser. No. 467,255
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 6 Claims



4. A fishing rod holder for mounting on a railing of a boat for supporting a fishing rod in a fishing position wherein the railing has a round or square cross-section of different sizes, the

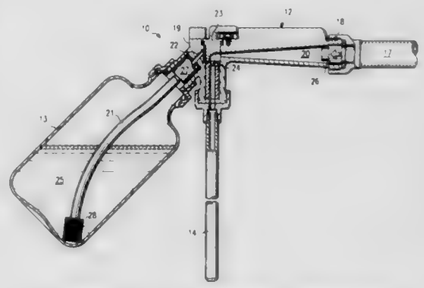
rod including a handle and a reel carried on an intermediate portion of the handle, comprising:
a bracket arranged to support the rod holder and having two members adapted to be joined together when applied on and secured to the railing, said bracket having a plurality of spaced bores formed therein,
said members being formed with opposed surfaces of circular configuration having a radius of curvature for approximately one of the sizes of a round railing for engaging portions of the round railing,
said members being formed with opposed upper and lower surfaces for engaging one side of each of the corners of a square railing having a predetermined size,
a spacer device adapted for mounting on a square railing having a size different than said predetermined size, said spacer being adapted to engage said upper and lower surfaces when in securing position, and
a one piece restricting member readily insertable into and removable from said spaced bores selectively, said restricting member including:
(i) a pair of vertically extending laterally spaced legs,
(ii) outwardly projecting arms integral with the upper ends of said laterally spaced legs for engaging the handle below the reel
(iii) a U-shaped member joining the outer ends of said outwardly projecting arms with a base portion positioned below the handle when the rod is mounted on the rod holder,
said bores being arranged to present fixed aligned pairs, each pair of which is adapted to receive said legs of said restricting member and to position the fishing rod at different predetermined angles selectively relative to the longitudinal axis of the boat.

5,054,230
REUSABLE WATER PRESSURE ACTIVATED FLEXIBLE SHELL PLASTIC FISHING CHUM SYSTEM
Stephen C. J. Woodman, 163 Pond St., Cohasset, Mass. 02025-1919
Filed Sep. 25, 1990, Ser. No. 587,670
Int. Cl.[5] A01K *97/02*
U.S. Cl. 43—44.99 1 Claim



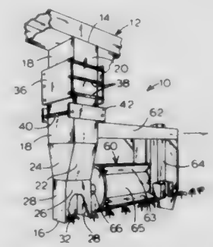
1. A water pressure activated, reuseable chum dispenser consisting of a removable circular bottom closure having an orifice opening therein; a flexible plastic cylindrical shell having a solid wall and a sealed top having an orifice opening; a fishing line attached longitudinally on said dispenser extending through said openings; whereby a release of said chum from said openings can be activated by water pressure while said dispenser is submerged in water.

5,054,231
FIRE ANT ERADICATION APPARATUS AND METHOD
Phynus R. Witherspoon, 114 N. Polk, DeSoto, Tex. 75115
Filed Sep. 14, 1989, Ser. No. 407,234
Int. Cl.[5] A01M *1/20, 7/00*
U.S. Cl. 43—124 13 Claims



9. An apparatus for use in killing fire ants comprising:
a handle having a first end, a second end, and a middle portion;
means for connecting the first end of the handle to a supply of pressurized water;
a source of fire ant insecticide attached to the second end of the handle;
a probe connected to the middle portion of the handle at an angle of approximately 90° in relation to the first end of the handle;
a conduit through the handle for passing water from the supply of water to the probe; and
means for mixing insecticide with the water passing through the conduit.

5,054,232
ROW CROP BLOCKING METHOD AND APPARATUS
Betty J. Rhode, 3255 E. Burnside, Portland, Oreg. 97214
Filed Mar. 5, 1990, Ser. No. 488,233
Int. Cl.[5] A01G *1/00*
U.S. Cl. 47—1.43 9 Claims



1. A row crop thinning device adapted to be moved over and along a crop row by a towing vehicle, comprising:
(a) A tubular header member connected to a means for creating a vacuum therein,
(b) a depending, generally vertically disposed tubular vacuum housing attached to and opening into said header, said vacuum housing being open at its lower end and said lower end being adapted to be spaced a predetermined distance above the ground line of said crop row,
(c) a plant sensing means located at the lower open end of said housing for identifying and isolating a plant to be saved which has been drawn upwardly into said housing by said vacuum, said sensing means being adapted to generate a control signal within a predetermined time from the moment of sensing of said plant to be saved,

(d) cutter blade means mounted forwardly of said housing in the direction of movement of said device, said cutter blade means being of predetermined length to establish spacing between plants to be saved and also being movable generally transversely to and below the ground line of said crop row to cut away surplus plants from said row,

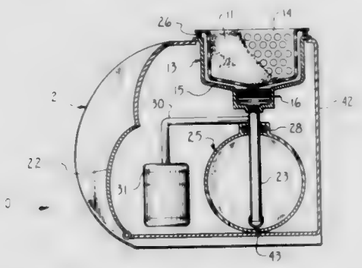
(e) vacuum control means located in said housing above said open lower end thereof including air inlet opening means above said open lower end and further including vacuum air control flap means mounted so as to have a first operable position closing said air inlet opening means and opening said housing to vacuum in said header such that vacuum is created at the lower open end of said housing and having a second operable position in which said housing is closed to shut off vacuum to said lower open end thereof and open said air inlet opening means, whereby application of vacuum to said housing is controlled selectively to sense a plant and then shut off so that said cutter blade means may be actuated to cut away surplus plants and establish spacing between saved plants.

5,054,233

HYDROPONIC APPARATUS

David A. Evans, 12059 Alta Carmel Ct. #168, San Diego, Calif. 92128

Filed Jun. 26, 1989, Ser. No. 371,630
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—62 9 Claims



1. A hydroponic plant growing apparatus providing a growing medium, light, and water with fertilizer to plants and other vegetation comprising:

a plurality of growing chambers, each chamber having a porous liner filled with a plant growth medium removably placed within;

a bottom section of the growing chamber tapering downwardly to a filter section that is part of the chamber;

a plurality of filters in the filter section comprising:

a perforated plastic first filter;

a second filter comprising a screen having a plurality of openings per square centimeter;

a foam third filter;

a fourth filter comprising a screen having a plurality of openings per square centimeter;

a perforated plastic fifth filter;

an airtight plant nutrient tank; and

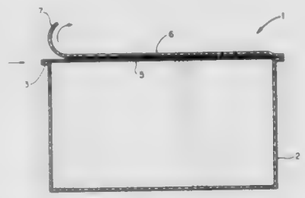
a nutrient transfer tube attached to and passing through a port in the filter section and extending downwardly to said air tight plant nutrient tank.

5,054,234

PLANT PACKAGE

Alan C. Cassells, Guileen, Ireland, assignor to 3i Research Exploitation Limited, London, England

Continuation of Ser. No. 254,473, Apr. 1, 1987, abandoned. This application May 4, 1990, Ser. No. 518,287
Claims priority, application Ireland, Apr. 2, 1986, 857/86
Int. Cl.[5] A01G *9/14*
U.S. Cl. 47—69 9 Claims



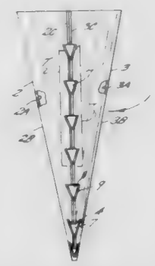
1. A package for the production and/or storage of plant source material, said package comprising a sealed container of plant source material in which at least a portion of said container is of a membraneous material, said membraneous material being a membrane assembly of at least two selectively permeable membrane layers for sealing said plant source material within said container, said membrane assembly including an innermost membrane relatively permeable to water vapor and an outermost membrane, said membranes in combination rendering said sealed container of plant source material relatively permeable to deleterious gaseous plant metabolities and oxygen but retentive of water vapor, the or each outer membrane being strippable successively from said assembly leaving the remaining innermost membrane of said assembly intact to maintain said container as a sealed container of plant source material and thereby to increase the permeabillty of the container sealed by said innermost membrane to water vapor and, in which the membrane assembly has two membranes of which the innermost and outermost membranes have moisture vapor transmission rates of greater than 100 and less than 100 grams per square meter per day, respectively.

5,054,235

NURSERY PLANT CONTAINERS

David Pilz, P.O. Box 2238, Corvallis, Oreg. 97339

Filed Aug. 24, 1990, Ser. No. 571,715
Int. Cl.[5] A01G *23/02*
U.S. Cl. 47—73 12 Claims



1. A pot for nursery plants, said pot comprising,

multiple intersecting walls each having upright edges proximate the upright edges of other of said walls and defining included acute angles, each of said walls having concave and formed convex surfaces and of flexible material,

means joining the edges of said walls, and

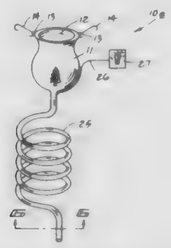
margins of said walls adjacent said edges jointly defining directly communicating open areas of fixed configuration permitting exposure of the roots of a plant in the pot to ambient air.

5,054,236

CHRISTMAS TREE SELF-WATERING ORNAMENT

Katie M. Sands, RD #7 Box 456, Tunkhannock, Pa. 18657-9324

Filed Dec. 29, 1989, Ser. No. 459,247
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—79 3 Claims



1. An apparatus for directing fluid to an associated plant comprising,

an elongate reservoir for containing a quantity of fluid therein defined by an open upper end of a predetermined diameter, and

an outlet aperture directed through a floor of said reservoir, and

a conduit means in fluid communication with said outlet aperture to direct said fluid to said plant, and

wherein the conduit means includes an elongate flexible tube defined by a lower outlet, the lower outlet medially and orthogonally formed through a lower web, and a plurality of peripheral outlets spaced through said lower web remote from said lower outlet, and an upper web spaced above the lower web containing an axially aligned upper web outlet coaxially aligned with the lower outlet, and the upper web and lower web defining a chamber therebetween spaced apart a predetermined distance, and a check ball captured within the chamber defined by a check ball diameter less than said predetermined distance, wherein said check ball is defined by a specific gravity less than that of said fluid for overlying said upper web aperture in a closed position and overlying said lower outlet in an open position to enable directing of said fluid to said plant, and

wherein said conduit means is further defined as a coiled translucent tube, and further including a fiber optic filament captured within said tube, an upper end of said fiber optic filament operably associated with a light source to direct light through said fiber optic filament for visible illumination through said translucent tube, and

further including a lid, said lid including at least one lid aperture therethrough, and

wherein said lid aperture is coaxially aligned within said lid and slidably receives a buoyant elongate fluid level indicator slidably through said lid aperture for indication of fluid level within said reservoir.

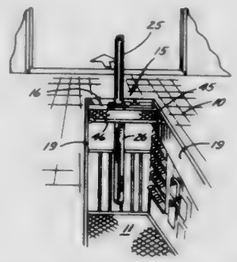
5,054,237

VEHICLE SAFETY BARRIER

Fred J. Kapala, Roscoe, and Robert A. Kapala, Belvidere, both of Ill., assignors to Rockford Ornamental Iron Incorporated, Loves Park, Ill.

Filed Jul. 16, 1990, Ser. No. 553,130
Int. Cl.[5] E01F *13/00*
U.S. Cl. 49—35 7 Claims

1. The combination of, a vehicle lubrication service pit having front and rear end portions, and a vehicle barrier selectively operable to form a safety stop adjacent the front end portion of the pit for a vehicle disposed above the pit for servicing, said barrier comprising a framework secured to the front end portion of said pit near the upper side thereof, a sleeve secured to and depending from said framework and extending downwardly into the front end portion of the pit, a barrier post supported slidably within said sleeve for up and down movement between a raised active position and a lower stored position, said post presenting an obstacle to forward movement of the vehicle when in said active position and being located below and clear of the undercarriage of the vehicle when in said stored position, means for urging said post upwardly toward said active position, and means independent of said urging means for holding said post in said active position and selectively releasable to permit lowering of said post to said stored position.

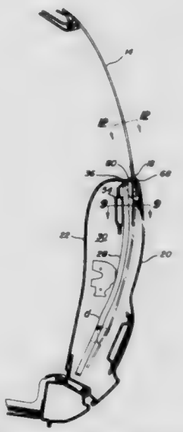


5,054,238

WINDOW PANEL POSITION REGULATING ASSEMBLY

Donald L. Glossop, Jr., Dearborn Heights; William J. Fobar, Wyandotte; Hachig A. Gopigian, Birmingham; Charles J. Haddad, Bloomfield Hills, and Thomas C. Holka, Milford, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 21, 1990, Ser. No. 525,573
Int. Cl.[5] E05F *11/52*
U.S. Cl. 49—211 18 Claims



1. In a vehicle body door including a interior door panel and an external door panel joined together in spaced relation and providing a door cavity therebetween, terminating at the upper edge of each such door panel in an elongated slot;

a window panel adapted to be raised and lowered within said door cavity and through said slot;

guide means within said door cavity for guiding said window panel through said slot as the window panel is raised and lowered;

said guide means including first and second guide members secured to the vehicle door at the front and rear edge portions of the window panel, respectively;

guide follower means secured to the lower edge portion of said window panel and operatively associated with said guide means for establishing a fixed travel path for the lower edge of said window panel as the same passes through said slot;

pivot means operatively associated with said window panel at a point substantially above said lower edge portion;

said guide means generally circumscribing an arc whereby as the window panel is raised or lowered it will travel in a predetermined path;

said window panel being of substantially uniform thickness and doubly curved at the exterior and interior surfaces thereof whereby at each such surface, the portion intermediate said front and rear edge portions is generally convexly shaped in the direction of the exterior surface and about a first axis and the portion intermediate the upper and lower edge portion is generally convexly shaped in the same direction and about a second axis substantially perpendicular to said first axis so as to appear generally bubble-shaped;

said window panel being irregularly curved about at least one axis of said first and second axes,

the window panel having a predetermined depth as measured laterally from said front edge to said rear edge as taken at any longitudinal section of said window panel, said predetermined depth varying from a predetermined minimum depth to a predetermined maximum depth;

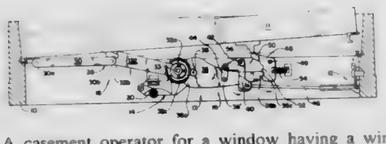
each said first and second guide member having a substantially continuously variable rate of curvature along the entire travel path of said guide follower means, whereby said window panel will be substantially continuously pivoting about said pivot means along said at least one axis as it is raised and lowered, thereby adjusting the plane of the window panel at the slot so as to pass through a slot of minimum width.

5,054,239

UNIFIED CASEMENT OPERATOR

Daniel G. Tucker, Elysian, and Gregory J. Vetter, Owatonna, both of Minn., assignors to Truth Division of SPX Corporation, Owatonna, Minn.

Filed Apr. 4, 1990, Ser. No. 504,349
Int. Cl.[5] E05F *11/02*
U.S. Cl. 49—279 **18 Claims**



1. A casement operator for a window having a window frame and a movable window sash and sash lock comprising:

a base mounted to the window frame;

a deployment linkage connectable between the window frame and said base and operable to cause movement of the window sash;

a rotatable handle;

a gear drive interconnecting said handle and said deployment linkage;

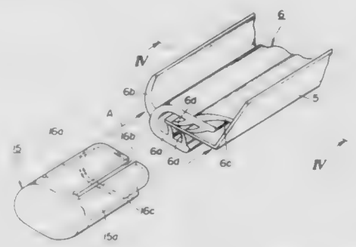
a lock linkage coacting with said deployment linkage and sash lock and having a window-actuated trigger for activating said lock linkage, said lock linkage preventing forcing of the deployment linkage in the event that the window is forced when closed.

5,054,240

END MEMBER FOR SEALING OPEN END OF VEHICLE WEATHERSTRIP

Hisao Nakahara; Hiroshi Sakuma; Noriaki Eto, and Shinichiro Nagase, all of Chiba, Japan, assignors to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan

Filed Apr. 27, 1990, Ser. No. 515,624
Claims priority, application Japan, Apr. 28, 1989, 1-109479
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—476 **21 Claims**



1. An end member for sealing an open end of a weatherstrip which borders an edge of a vehicular structural component comprising:

a sealing portion for sealing the open end of the weatherstrip; and

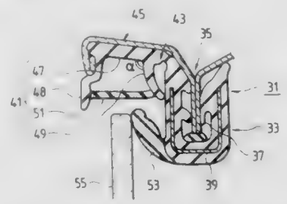
a fastening portion for elastically holding a portion of the edge of the vehicular structural component which is covered by the weatherstrip to fasten said sealing portion at the open end of the weatherstrip, said fastening portion including a plurality of slits for receiving corresponding seal lips formed on the weatherstrip.

5,054,241

DOOR GLASS WEATHER STRIP FOR VEHICLES

Kunio Mishima; Mitsuo Hamabata; Harumi Kogiso, and Masahiro Nozaki, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Sep. 26, 1990, Ser. No. 588,995
Claims priority, application Japan, Sep. 30, 1989, 1-115637[U]
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—488 **8 Claims**



1. A door glass weather strip for vehicles, comprising:

an installation member to be installed in a door sash;

a bend lip projected from said installation member to be contacted with an inner surface of a door glass; and

a seal member connected to said installation member having a sash engaging wall connected to said installation member, an outer lip and an inner lip projected from each side of said sash engaging wall, and a seal wall which bridges a free end portion of said outer lip and a free end portion of said inner lip for sealingly holding an edge of said door glass,

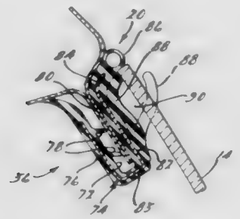
an interior angle between said sash engaging wall and said inner lip being an obtuse angle.

5,054,242

FOUR-SIDED FLUSH GLASS ASSEMBLY

James F. Keys, West Bloomfield; Robert A. Vaughan, Dearborn, and John W. Belser, Northville, all of Mich., assignors to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 272,566, Nov. 16, 1988, Pat. No. 4,932,161. This application Jun. 12, 1990, Ser. No. 537,034
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—491 **20 Claims**



1. A gasket system comprising:

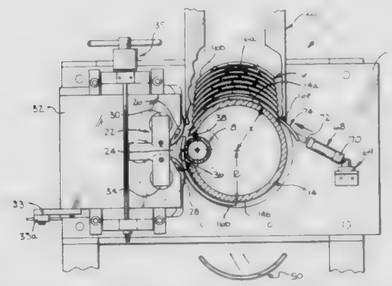
a gasket adapted too be secured about surfaces forming an opening, said gasket including means for retaining and sealing a window or the like, said gasket including one or more side weather strips, a top weather strip and a bottom weather strip, having a bead coupled therewith for providing a seal between the window perimeter and said surfaces forming the opening to prohibit contact of the window with the opening, said gasket being positioned about said opening such that when the window is positioned within the opening, the window substantially conceals said gasket and the window is flush at its perimeter with the opening with only the bead interposed therebetween for sealing between the opening and the window.

5,054,243

BRAKE LINING GRINDER APPARATUS AND METHOD

Jay A. Rex, Greenville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1989, Ser. No. 398,843
Int. Cl.[5] B24B *19/28*
U.S. Cl. 51—78 **13 Claims**



1. Apparatus for finish grinding an inside diameter of an arcuate interior surface of a lining for connection to the arcuate outer surface of a brake shoe in close conformity therewith comprising:

a support member;

grinding wheel means;

infeed and discharge track means on said support member providing a guide for directing a lining into and out of said grinding wheel means, said infeed track having a first radius conforming to the radius of an unfinished brake shoe and said discharge track having a radius conforming to a finished brake shoe;

first and second rotatable feed wheel means spaced from one another and disposed on rotational axes located at predetermined operative distances from each other and from said infeed and discharge track means respectively and operative to grip and drive the lining with respect to said infeed and discharge track means and said grinding wheel means;

said grinding wheel means including an abrasive wheel and means for mounting said abrasive wheel for rotation on an axis laterally offset from and between the axes of said feed wheel means;

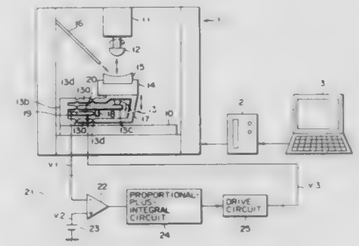
said abrasive wheel having an outer circular grinding surface spaced from said wheel means for defining a finishing throat which accommodates the thickness of the lining and which will locate the interior surface of the lining in operative engagement with said abrasive wheel to remove material from the lining to cause the interior surface of the lining to correspond to the exterior arcuate surface of a brake shoe for enhancing mounting of the lining to the brake shoe at an interface therebetween.

5,054,244

POLISHING APPARATUS

Hiroshi Takamatsu, Oomiya, and Katsunobu Ueda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 16, 1990, Ser. No. 509,155
Claims priority, application Japan, Apr. 19, 1989, 1-97560
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.71 **8 Claims**



1. A polishing apparatus comprising:

a tool for polishing a surface of a workpiece;

a table for supporting a workpiece and minutely movable in the same direction as, or the direction opposite to, the direction in which said tool applies a load to said workpiece;

electromechanical transducer means connected to said table, for minutely moving said table in accordance with an electric signal;

load-detecting means for detecting said load applied from said tool to said workpiece and generating an electric signal representing said load;

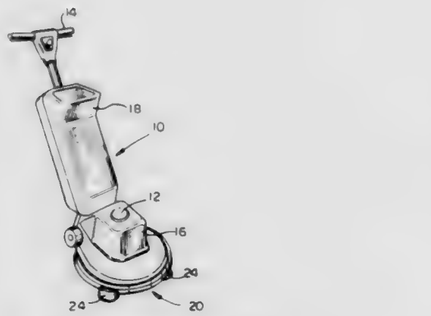
load-controlling means for controlling said electromechanical transducer means in accordance with said electric signal generated by said load-detecting means,

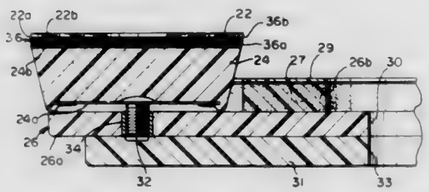
said table comprising a substantially trapezoidal frame comprises of upper and lower plates each having first and second ends and functioning as a spring, and two side plates, one side plate interposed between said first ends of said upper and lower plates, and said other side plate interposed between said second ends of said upper and lower plates;

a load-magnifying plate located below said upper plate and functioning as a spring; and

a ball interposed between said upper plate and said load-magnifying plate, said ball point-contacting both said upper plate and said load-magnifying plate.

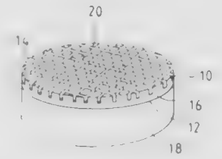
5,054,245
COMBINATION OF CLEANING PADS, CLEANING PAD MOUNTING MEMBERS AND A BASE MEMBER FOR A ROTARY CLEANING MACHINE
Dominique Coty, Philadelphia, Pa., assignor to The Butcher Company, Marlborough, Mass.
Filed Jul. 25, 1990, Ser. No. 557,231
Int. Cl.[5] B24B *23/02*; A47L *11/47*
U.S. Cl. 51—170 R 7 Claims





1. A combination of cleaning pads, cleaning pad mounting members and base member for a rotary cleaning machine, said combination comprising
a base member for attachment to a drive of the rotary cleaning machine;
a plurality of generally pliable cleaning pad mounting members releasably secured to said base member, said cleaning pad mounting members each having a first end for being releasably secured to said base member and a second end for securably receiving a cleaning pad thereon;
first securing means for releasably securing each of said cleaning pad mounting members to said base member, said first securing means comprising a bolt extending from said first end of each of said cleaning pad mounting members and a corresponding plurality of complementary nuts anchored in said base member for threadably receiving one of said bolts;
a corresponding plurality of cleaning pads having a mounting surface and a cleaning surface, one of said cleaning pads being releasably secured to said second end of each said cleaning pad mounting members; and
second securing means interconnected between each of said cleaning pad mounting surfaces and said cleaning pad mounting member second ends for releasably securing a cleaning pad to said second end of each cleaning pad mounting member whereby the cleaning surface of said cleaning pad moves toward said base member upon force being applied thereto to thereby conform to a shape of a surface being cleaned.

5,054,246
ABRASIVE COMPACTS
Cornelius Phaal, 45 Main Street, Johannesburg, Transvaal, and Nicholas Mastrantonis, 2 Kelvin Avenue, Highway Gardens Ext 1, Edenvale, Transvaal, both of South Africa
Filed Sep. 7, 1989, Ser. No. 404,085
Claims priority, application South Africa, Sep. 9, 1988, 88/6730
Int. Cl.[5] B24D *7/00*
U.S. Cl. 51—204 15 Claims



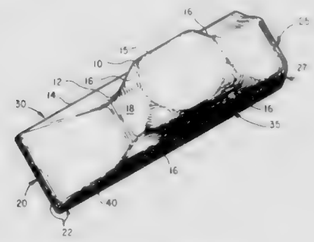
1. An abrasive compact which has major surfaces on each of opposite sides thereof and a plurality of recesses formed in one of the major surfaces thereon which provides a cutting means, the recesses being less than 0.5 mm in width and containing no solid material, wherein the cutting means are a cutting edge or point.

5,054,247
METHOD OF CONTROLLING FLOW RESISTANCE IN FLUID ORIFICE MANUFACTURE
Lawrence J. Rhoades, Pittsburgh; Nicholas P. Nokovich, Greensburg; Thomas A. Kohut, North Versailles, and Frank E. Johnson, North Huntington, all of Pa., assignors to Extrude Hone Corporation, Irwin, Pa.
Continuation of Ser. No. 842,285, Mar. 21, 1986, abandoned.
This application Jul. 19, 1990, Ser. No. 554,379
Int. Cl.[5] B24B *57/02*, *49/16*
U.S. Cl. 51—317 11 Claims



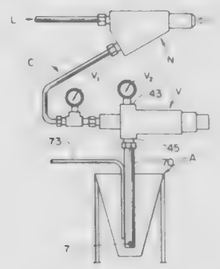
1. The method of attaining a specific fluid flow resistance of a given fluid through an orifice in a structure by working said orifice with a visco-elastic abrasive medium, whereby said visco-elastic medium is extruded through said orifice by means of a piston displacement pump, the steps comprising:
A. determining a target flow rate of said visco-elastic abrasive medium at a constant applied pressure as will provide said specific fluid flow resistance of said given fluid;
B. extruding said visco-elastic abrasive medium through said orifice with said piston displacement pump to work said orifice while maintaining said constant applied pressure on said visco-elastic abrasive medium with said piston displacement pump;
C. measuring the dynamic flow rate of said visco-elastic abrasive medium through said orifice while said visco-elastic abrasive medium is being extruded therethrough, and permitting said flow rate to increase in proportion to the processing effected on said orifice; and
D. stopping the extrusion of said visco-elastic abrasive medium through said orifice when said dynamic flow rate is equal to said target flow rate.

5,054,248
FOUR-WAY HAND SANDER
Donald R. Thayer, 2309 S. 900 E, Lafayette, Ind. 47905
Filed Sep. 3, 1989, Ser. No. 375,374
Int. Cl.[5] B24D *15/04*
U.S. Cl. 51—392 13 Claims



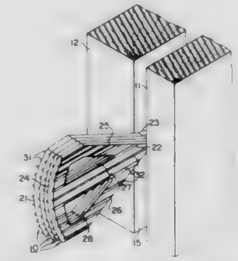
1. A hand-held sanding tool comprising:
a body composed of a resilient flexible material, said body having a top face, a bottom face, a first end, an opposite second end, a first side and an opposite second side, wherein
said top face defines a handle thereon adapted to be grasped by a user;
said first end includes a first transition portion extending from said handle to a first edge, said first transition portion being relatively more flexible than said handle to permit flexing of said first transition portion when pressure is applied at said first end;
said second end includes a second transition portion extending opposite said first transition portion from said handle to a second edge, said second transition portion being relatively shorter and thicker than said first transition portion so that said second transition portion is relatively rigid when pressure is applied at said second end; and
a working surface associated with said bottom face and extending at least from said first edge to said second edge.

5,054,249
METHOD AND APPARATUS FOR LIQUID-ABRASIVE BLAST CLEANING
George J. Rankin, 13103 Barryknoll, Houston, Tex. 77056
Filed Nov. 23, 1988, Ser. No. 275,512
Int. Cl.[5] B24C *7/00*
U.S. Cl. 51—436 9 Claims



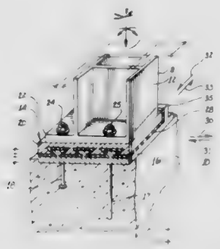
1. A pressurized liquid-abrasive blast cleaner for combining abrasive particles into a high pressure liquid stream, comprising:
a source of abrasive particles;
a nozzle means including a high pressure liquid jet with an orifice through which the high pressure liquid passes;
conduit means connecting said abrasive particle source and said nozzle means;
converging-diverging wall nozzle means aligned axially with said orifice for receiving the high pressure liquid jet for drawing the abrasive particles into such liquid jet stream for ejection from such nozzle;
metering valve means in said conduit means between said source of abrasive particles and said nozzle means for regulating the flow of abrasive particles to the nozzle by mixing the particles in the conduit means with a variable amount of air to provide a steady flow of continuously accelerating particles to said nozzle means; and
an abrasive particle pick-up probe having an opening therein for aspirating particles from a supply source with air supply means extending from outside the abrasive particle supply to a point adjacent or near the probe pick-up opening.

5,054,250
FLEXIBLE WINDOW SHIM ASSEMBLY
Robert E. Foss, Bellville, Ohio, assignor to E-Z Shim, Inc., Mansfield, Ohio
Filed Apr. 17, 1990, Ser. No. 510,300
Int. Cl.[5] B66F *13/00*
U.S. Cl. 52—126.1 6 Claims



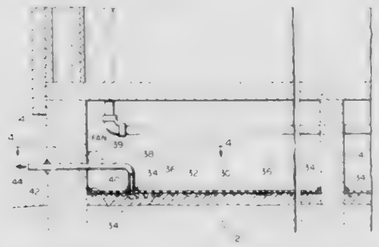
1. An adjustable shim assembly for positioning a closure unit in building framework defining a rough opening, comprising:
a plurality of flexible, generally identical shim elements formed of resilient material of generally uniform thickness, each element having
a convex outer surface and a concave inner surface,
a longitudinal axis of symmetry,
a tapered forward end defined by side edges with an angle of intersection bisected by said axis of symmetry, said edges also defining a plane that intersects said outer and inner surfaces at an acute angle to define a wedge-shaped space with a transverse cross section that diminishes progressively toward said forward end,
whereby said shim elements may be inserted forward end first in the same orientation, in the wedge-shaped space defined by the preceding element, between a frame portion and a closure assembly to shim said closure assembly into a desired position relative to said rough opening.

5,054,251
STRUCTURAL SHOCK ISOLATION SYSTEM
Zoltan A. Kemeny, 1919 E. Colgate Dr., Tempe, Ariz. 85283
Continuation of Ser. No. 162,010, Feb. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 888,963, Jul. 26, 1986, Pat. No. 4,727,695. This application Feb. 5, 1991, Ser. No. 652,244
The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.
Int. Cl.[5] E04H *9/02*
U.S. Cl. 52—167 R 10 Claims



1. In a building structure having a plurality of structural load bearing elements to be secured to each other, a vibration and shock isolation and energy absorption system comprising:
(a) a plurality of structural load bearing elements, each connected to at least one other structural load bearing element;
(b) each of said structural load bearing elements, when connected to another structural load bearing element, forming a keyed interlocking configuration with such other structural load bearing element to form a keyed interlocking load bearing joint therebetween; and
(c) a layer of compression load bearing elastomeric material positioned between and in contact with said connected structural elements at said interlocking joint to maintain separation between said elements;
whereby said structural load bearing elements are interlocked with each other at said joints and are separated at said joints by said load bearing elastomeric material.

5,054,252
SYSTEM FOR SEALING ASBESTOS CONTAMINATED MATERIAL IN BUILDING CRAWL SPACE
Eugene E. Newman, Maple Shade, N.J., assignor to GPAC, Inc., Pennsauken, N.J.
Filed Apr. 6, 1990, Ser. No. 505,486
Int. Cl.[5] E04B *1/92*; E02D *19/00*
U.S. Cl. 52—169.14 11 Claims



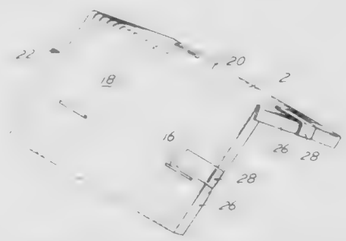
1. An arrangement for entrapping asbestos contaminated particles within a portion of a building, which comprises:
a crawl space in the building having side walls, a ceiling, and an earthen floor with said ceiling being spaced from said earthen floor,
a layer of asbestos contaminated particles located on top of said earthen floor and within said crawl space, and
sealing means located on top of said layer of asbestos contaminated particles for sealing said layer of asbestos contaminated particles between said sealing means and said earthen floor, said sealing means including an impermeable membrane sealed to said side walls.

5,054,253
RIGID GRATING MAT WITH UNIDIRECTIONAL ELEMENTS
Michael A. Bedics, Poughquag, N.Y., assignor to Pawling Corporation, Pawling, N.Y.
Filed Dec. 18, 1989, Ser. No. 452,205
Int. Cl.[5] E04C *1/30*
U.S. Cl. 52—177 10 Claims



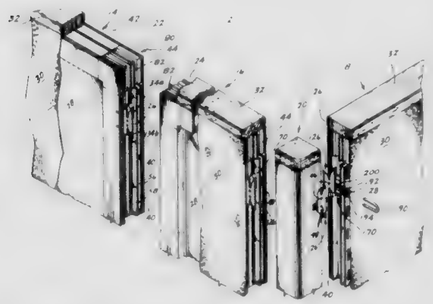
1. A rigid grating mat assembly, which comprises
(a) a plurality of elongated, transversely extending slat-like tread support elements of uniform cross section and of substantially self-rigidifying construction,
(b) each said tread support element comprising a horizontal upper wall, spaced vertical lateral walls at each lateral edge extremity, and one or more intermediate vertical walls,
(c) said vertical walls supporting said upper wall substantially rigidly above a base surface,
(d) the opposite vertical walls of a pair of adjacent tread support elements being in substantially face to face relation and having interfitting tongue and groove structures providing positive horizontal alignment of the upper walls of said adjacent elements, and
(e) means for tightly securing adjacent lateral walls of adjacent relation, providing a substantially rigid structural relation between adjacent tread support elements in the absence of longitudinally extending bracing structure interconnecting said transversely extending sections.

5,054,254
CORRUGATED ROOF VENT WITH END CAP AND METHOD OF MAKING SAME
Gary Sells, Mishawaka, Ind., assignor to Cor-A-Vent, Inc., Mishawaka, Ind.
Filed Dec. 7, 1990, Ser. No. 624,185
Int. Cl.[5] E04D *13/16*
U.S. Cl. 52—199 5 Claims



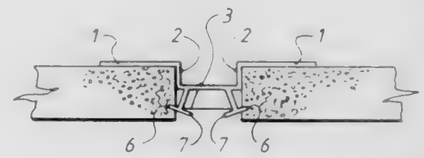
1. A corrugated roof vent for the ridge of a roof, said roof vent including a first corrugated sheet having an end edge and side edges, a plurality of second corrugated sheets having an end edge and side edges connected to said first corrugated sheet in underlying relationship adjacent one of said first corrugated sheet side edges, a plurality of third corrugated sheets having an end edge and side edges connected to said first corrugated sheet in underlying relationship adjacent another of said first corrugated sheet side edges, said plurality of second and third corrugated sheets being spaced from one another, said first corrugated sheet end edge including a flap overlying the end edges of said plurality of second and third corrugated sheets, said flap constituting means integral with said first corrugated sheet for preventing ingress through the said end edges of said plurality of second and third corrugated sheets.

5,054,255
WALL PANEL CONSTRUCTION AND CONNECTION SYSTEM
Herbert E. Maninfior, Chehalis, Wash., assignor to Herbert Maninfior Design/Engineering, Winlock, Wash.
Filed Oct. 27, 1989, Ser. No. 427,729
Int. Cl.[5] E04H *1/00*
U.S. Cl. 52—239 40 Claims



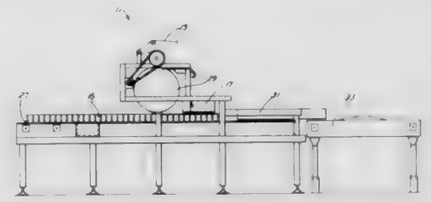
1. A system for detachably connecting a first member and a second member, comprising:
(a) a longitudinal coupling set, comprising a cam latch and an associated catch, mounted on each of the first and second members for mating the first and second members, with the cam latch and catch of each coupling set disposed in side-by-side relationship to each other so that the cam latch of the first member is engageable with the catch of the mating coupling set of the second member and the catch of the first member is engagable with the cam latch of the mating coupling set of the second member;
(b) means for mounting the coupling sets on the first and second members to permit relative shifting between the cam latch and associated catch of a coupling set a fixed distance along the member on which the coupling set is mounted; and
(c) the cam latch mounted on each of the first and second members comprising a pair of spaced apart caming surfaces formed by the cam latch, the caming surfaces extending longitudinally along the cam latch and terminating at a pair of corresponding, longitudinally spaced apart, stops formed in the cam latch, one of the caming surfaces of each pair of caming surfaces engagable with the mating catch mounted on the opposite member, the longitudinal distance separating the stops of the cam latch of each coupling set corresponding to the longitudinal distance the cam latch and associated catch of that coupling set are permitted to shift relative to each other.

5,054,256
PANEL JOINTING SYSTEM
John E. S. Glover, Angmering; Timothy N. Glover, Worthing, and Andrew J. Miller, Claygate, all of England, assignors to Thermabate Limited, Angmering, England
Filed Nov. 15, 1989, Ser. No. 436,723
Claims priority, application United Kingdom, Nov. 16, 1988, 8826833
Int. Cl.[5] E04B *1/61*
U.S. Cl. 52—765 10 Claims



1. A panel jointing system including an alignment and securing strip adapted to align the panel edges to be jointed, and engaging means on the strip capable of retaining the panel edges in position, wherein said alignment and securing strip comprises a pair of spaced parallel abutment surfaces adapted to engage the edges of the panels to preserve a predetermined spacing therebetween, and a pair of flexible walls extending substantially parallel to the abutment surfaces, the walls carrying outwardly facing barbs capable of gripping the panel edges when the flexible walls are deflected away from one another.

5,054,257
CUT-OFF DEVICE FOR CAN-CONTAINER PACKAGING EQUIPMENT
Ernest R. Cunningham, Libertyville, Ill., and Merlin Miller, Bradford, Ohio, assignors to Grip-Pak, Inc., Libertyville, Ill.
Filed Jul. 27, 1989, Ser. No. 386,285
Int. Cl.[5] B65B *21/00*
U.S. Cl. 53—48.4 2 Claims



1. A strip cutoff assembly for use in a can container packaging system for successively partitioning a continuous plastic strip which retains a continuum of can containers as the continuum of can containers moves along a first path at a predetermined rate, the plastic strip encircling an upper portion of each of the can containers which are arranged in an array of multiple rows, said strip cutoff assembly comprising:
a blade carriage;
a planar cutting blade carried by said blade carriage, said cutting blade partitioning said continuum into units;
moving means for successively moving said blade carriage along a second path disposed at a first angle with respect to said first path, said moving means driving said cutting blade with a continuous motion along said second path and including a first axle member and a second axle member being rotatably mounted for rotation about separate axes parallel to one another, and a third axle member rotatably mounted for rotation about an axis separate from and parallel to said axes of said first and second axle members, said moving means including closed loop belt means driven by said first axle member, said blade carriage being

secured to said belt means, and said moving means including means for adjustably mounting said third axle member with respect to said first and second axle members to a position for changing the orbit length of said blade carriage for changing the number of containers in the units partitioned by said cutting blade; and

alignment means for slidably engaging with said can containers as said blade carriage moves said cutting blade between the rows of containers

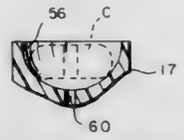
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5,054,258

CAPSULE TRANSPORT TRAY

Charles N. Tait, Manheim, and Ralph A. Volpe, Landisville, both of Pa., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 144,122, Jan. 15, 1988, Pat. No. 4,922,682. This application Jan. 24, 1990, Ser. No. 469,612
Int. Cl.[5] B65B *51/02, 35.24*
U.S. Cl. 53—137.2 **6 Claims**



1. In a machine for applying a banding or sealing fluid to a capsule, said machine having capsule supply means, means for applying at least one of a capsule sealing or banding fluid to the capsule, and capsule curing means, and wherein a rotating capsule transfer plate receives the capsules from the capsule supply means and conveys them past the means for applying a sealing or banding fluid and to the capsule curing means, the improvement comprising:

capsule support trays that are carried or a flexible conveyor means constrained to move along a serpentine path through an enclosed capsule curing chamber; and

a plurality of hemispherical recesses of continuous curvature forming circular apertures in the top surface of each tray for supporting the capsules, said recesses each being configured to hold a single capsule and to support the capsule at its opposite ends, with the midportion of the capsule being spaced from contact with any part of the tray and the capsule being free to rotate about the normal axis of the capsule, whereby all sides of the capsule are exposed to a circulating air flow.

5,054,259

APPARATUS FOR POSITIONING A SPACER PANEL

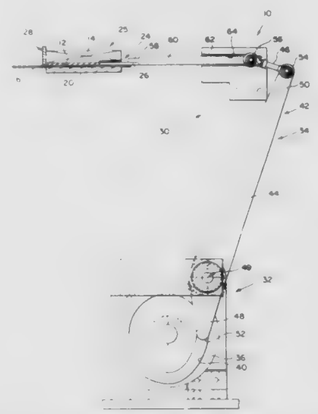
James E. Miller, Jeffersontown, Ky.; Byron L. Lowe; Everett N. Finn, both of Macon, Ga., and Kenneth M. Milliner, Macon, Ga., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sep. 27, 1990, Ser. No. 588,893
Int. Cl.[5] B65B *19/04, 41/08, 41/18, 59/00*
U.S. Cl. 53—157 **7 Claims**

1. An apparatus for positioning a spacer panel relative to a container of items and a package blank which is to be subsequently folded around the container and spacer panel to form a package enclosing the item container and spacer panel, the spacer positioning apparatus comprising:

conveyor means for moving a plurality of package components consisting of a package blank, spacer panel, and item container which are in a stacked relationship with the package blank resting On the conveyor means, the spacer panel on top of the package blank, and the item container on top of the spacer panel;

a movable spacer panel blade movable back and forth transversely over the conveyor means, the blade being positioned relative to the conveyor means to make contact with one side edge of only the spacer panel of the package component stack for moving the spacer panel relative to the package blank and item container to a predetermined position relative to the package blank and item container; and,



means for moving the spacer panel blade in reciprocating motion toward and away from the conveyor means.

5,054,260

HIGH SPEED SEALING MACHINE

James M. Herzog, Lancaster, Ohio, assignor to Anchor Hocking Packaging Company, N.J.

Filed Jun. 13, 1990, Ser. No. 538,026
Int. Cl.[5] B67B *3/20;* **B65B** *7/28*
U.S. Cl. 53—307 **13 Claims**



1. A machine for placing closures onto containers each having a finish, comprising:

a conveyor for moving the containers in a row along a linear path of movement;

an applicator wheel rotatable about an axis transverse to the path of movement of said conveyor, said applicator wheel spaced above said conveyor;

said applicator wheel having a plurality of closure carriers around it;

drive means for continuously rotating said applicator wheel in synchronism with said conveyor such that the linear speed of said carriers matches that of the containers on said conveyor;

means for feeding closures from a source to said carriers on said applicator wheel at a first rotational position of said applicator wheel, said feeding means comprising a closure feeding wheel which rotates about an axis perpendicular to the axis of said applicator wheel in synchronism with said applicator wheel, said closure feeding wheel having means around its periphery for receiving and carrying closures, and a supply for delivering closures to said closure receiving and carrying means, whereby rotation of said closure feeding wheel moves the closures to said carriers on said applicator wheel, said carriers receiving the closures from said closure receiving and carrying means:

each carrier having gripping means for engaging a closure as said applicator wheel rotates through said first position;

further rotation of said applicator wheel moving the closures carried by said carriers sequentially into convergence with tops of the respective containers as the conveyor advances the containers;

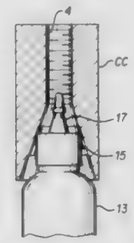
the spacing of said applicator wheel above said conveyor being such that each closure is placed onto the finish of a respective container in a partially applied position as the closure converges with the container.

5,054,261

CAP CHUCKS FOR USE WITH BOTTLE CAPPING MACHINES

Donald J. Gilbertson, 4167 Vinburn Rd., De Forest, Wis. 53532

Filed Sep. 26, 1990, Ser. No. 588,467
Int. Cl.[5] B67B *3/20;* **B65B** *7/28, 59/00*
U.S. Cl. 53—331.5 **7 Claims**



1. A bottle capping chuck comprising;

an elongated unitary body of rigid material having a longitudinal axis and provided with a central throat,

attachment means along said body axis adapted to engage a motion delivery tool,

said body having a top face adjacent said attachment means and a bottom face adjacent said throat,

said throat defined by immediately serially adjacent first, second and third frusto-conical areas each comprising an inclined surface having a lower edge and an upper edge, said frusto-conical areas having successively smaller diameters beginning with said first area adjacent said bottom face and extending toward said top face, said inclined surface upper edge of said first and second frusto-conical areas defining a greater diameter than said lower edge of said inclined surface of said second and third frusto-conical areas respectively, and

said inclined surfaces comprising an integral part of said unitary body of rigid material, whereby

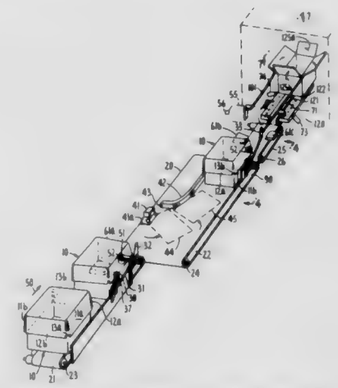
a plurality of abutting inwardly stepped tapered surfaces are defined by said inclined surfaces adapted to accommodate a substantial variety of cap diameters.

5,054,262

AUTOMATED CORRUGATED BOX PROCESSING EQUIPMENT

Philip G. Hertel, 4313 Grace Ct., Rohnert Park, Calif. 94928; James D. DuVander, Santa Rosa, and Michael K. Jewett, Windsor, both of Calif., assignors to Philip Graham Hertel, Rohnert Park, Calif.

Filed Oct. 20, 1989, Ser. No. 424,520
Int. Cl.[5] B65B *7/20;* **B31B** *1/14*
U.S. Cl. 53—381.1 **30 Claims**



1. A device for the releasing of tabs found on diagonally facing corners of tab-locked corrugated cardboard boxes, said cardboard boxes having major and minor flaps having first and second tabbed and non-tabbed corners whereby said tabs act to retain said flaps against said cardboard boxes comprising:

A. means for moving a corrugated cardboard box along a track with either a major or minor flap of the cardboard box being parallel to the track's longitudinal axis and the tabbed first corner of the corrugated box being upstream and first non-tabbed corner of the corrugated box being downstream along said longitudinal axis;

B. a first deforming means located on said track and positioned so that the downstream corner of said cardboard box across from said first non-tabbed corner passes over said first deformation means which is sized and positioned to temporarily deform said cardboard box resulting in a separation of the flap from the cardboard box at the first non-tabbed corner thereof;

C. first releasing means positioned along said track and biased toward said cardboard box such that said releasing means is capable of passing between the flap and cardboard box at the first non-tabbed corner and of releasing the first tab as the cardboard box passes said releasing means;

D. means for turning the cardboard box at least approximately 90° along said track;

E. a second deforming means located on said track and positioned so that the downstream corner of said cardboard box located across from the second non-tabbed corner passes over said second deformation means which is sized and positioned to temporarily deform said cardboard box resulting in a separation of the flap from the cardboard box at the second non-tabbed corner thereof; and

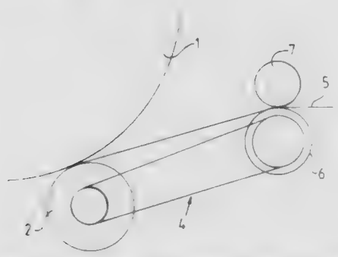
F. second releasing means positioned along said track and biased toward said cardboard box such that said releasing means is capable of passing between the flap and cardboard box at said second non-tabbed corner and of releasing the second tab as the cardboard box passes said releasing means.

5,054,263

METHOD AND APPARATUS FOR WRAPPING A PLASTIC FILM AROUND A LOAD

Jari Mäki-Rahkola, Kauhajoki; Juhani Könönen, and Jorma Surakka, both of Hyvinkää, all of Finland, assignors to Insinö öritoimisto Pesmel Oy, Kauhajoki, Finland

Filed Jun. 14, 1990, Ser. No. 538,392
Int. Cl.[5] B65B *11/04*
U.S. Cl. 53—399 **9 Claims**



1. A method of packaging a cylindrical load by wrapping a stretched plastic film around the circumference of the load, comprising:

rotating said load and a plastic-film feed roll containing stretchable plastic film each about their respective axes to unwind the stretchable plastic film from the feed roll and to wrap the stretched plastic film around the circumference of the load at a wrapping point on the load,

braking the plastic film to stretch the plastic between a braking point and the wrapping point,

directly measuring the circumferential speed of the cylindrical load; and

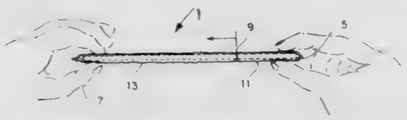
regulating the braking power which produces the stretching of the plastic film as the load is being wrapped on the basis of the measured circumferential speed of the load to form a packaged load.

5,054,264

EASY TEAR STRAW COVER

Cedric C. Miller, 4439 Pembrook Village Dr., Alexandria, Va. 22309, assignor to Cedric C. Miller and Janice L. Ferguson, Alexandria, Va.

Continuation of Ser. No. 560,815, Jul. 31, 1990. This application Dec. 13, 1990, Ser. No. 626,770
Int. Cl.[5] B65B *61/18*
U.S. Cl. 53—412 **3 Claims**



1. The method of using a sterile drinking straw having a distal portion with an open distal end and a proximal portion with an open proximal end, said sterile drinking straw being enclosed, covered, protected and sealed against bacterial contamination by a straw cover whose interior is sterile, said straw cover being weakened by a circumferential line of non-perforating indentations defining distal and proximal portions of said straw cover, said distal portion of said straw cover having a distal end and said proximal portion of said straw cover having a proximal end, said distal and proximal ends of said straw cover sealing said drinking straw against bacterial contamination, said method of use comprising the steps of:

manipulative grasping by a human operator of said distal and proximal ends of said straw cover;

longitudinally extending sufficiently said straw cover, while said distal and proximal ends of said straw cover remain grasped, to separate said straw cover into its said distal and proximal portions along its said circumferential line of indentations;

manipulatively removing said distal portion of said straw cover to expose said distal portion of said drinking straw and its said distal end, while leaving said proximal portion of said straw cover intact with said straw cover's proximal portion and end still covering and sealing, against bacterial contamination, said proximal portion and end of said drinking straw;

submerging said exposed distal end of said drinking straw beneath the liquid level of liquid in a container; and

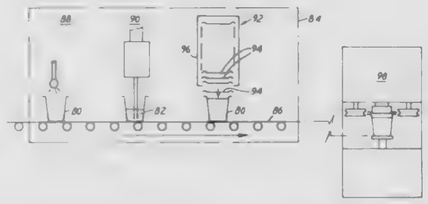
manipulatively removing said proximal portion of said straw cover to expose said proximal portion and end of said drinking straw, preparatory to the human operator's draw-liquid from the container through said distal end of said drinking straw to and through its said proximal end.

5,054,265

METHOD OF ASEPTIC PACKAGING AND CLOSING CONTAINERS

John A. Perigo, Near Witney, and Geoffrey Tucker, Swindon, both of England, assignors to CMB Foodcan plc, United Kingdom

Continuation of Ser. No. 312,427, Feb. 9, 1989, abandoned, which is a continuation of Ser. No. 220,420, Jul. 19, 1988, abandoned, which is a continuation of Ser. No. 73,886, Jun. 16, 1988, abandoned, which is a continuation of Ser. No. 828,305, Feb. 12, 1986, abandoned. This application Jul. 3, 1990, Ser. No. 548,208
Claims priority, application United Kingdom, May 14, 1984, 8412244
Int. Cl.[5] B65B *55/04, 55/12, 7/28*
U.S. Cl. 53—425 **12 Claims**



4. A method of aseptic packaging in which a sterilized product is packaged in a container closed with a double-seamed cover, the method comprising:

(a) providing a container body and a container cover in a substantially sterile condition, the container cover having a peripheral cover portion which comprises an upstanding chuck wall and a seaming panel merging with the chuck wall and including a terminal cover curl, the container body having a sidewall terminating in a peripheral body portion which comprises on upstanding sidewall end portion and a seaming flange merging with the sidewall end portion;

(b) introducing a product into the container body under substantially sterile conditions;

(c) with the container body, the product in the container, and the container cover under said substantially sterile conditions, locating the seaming panel of the container cover in overlying contact with the seaming flange of the container body so as to create an initial sealing interface therebetween, that maintains the product within the container under said sterile conditions, while locating the chuck wall within but out of contact with the sidewall end portion;

(d) removing the container body, the product in the container, and container cover from said sterile conditions while maintaining the container body and container cover in their relative location provided in step (c) so as to preserve the initial sealing interface, and thereby maintain said sterile condition of the product, and then performing the following steps (e) and (f) under non-sterile conditions;

(e) applying directly to the seaming panel, and progressively around it, a force perpendicular to a tangent to the initial sealing interface, thereby holding the seaming panel sealingly against the seaming flange at the initial sealing interface in the direction of said force, while progressively deforming the peripheral cover and body portions transversely inward to interlock them, without bringing the sidewall end portion into contact with the chuck wall and without significant relative movement between the seaming panel and the seaming flange at the initial sealing interface; and

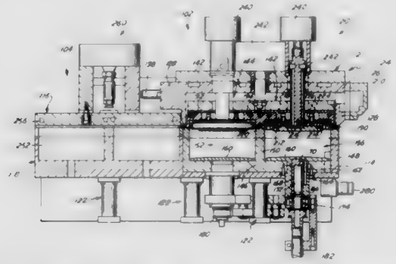
(f) applying thereafter directly to the seaming panel, and progressively around it, a substantially transverse inward force perpendicular to the tangent to the initial sealing interface, thereby reducing the sidewall end portion in girth and forcing it against the chuck wall while squeezing the peripheral cover and body portions together, without significant relative movement between the seaming panel and seaming flange at the initial sealing interface, whereby there is formed a double seam in which the initial sealing interface is preserved to maintain the sterile condition of the product in the container.

5,054,266

VACUUM SEAL STATION FOR A VACUUM PACKAGING MACHINE

Frank C. Mello, Zeeland, Mich., and Ihor Wyslotsky, Chicago, Ill., assignors to Bil-Mar Foods, Inc., Zeeland, Mich.

Continuation of Ser. No. 239,517, Sep. 1, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 516,452
Int. Cl.[5] B65B *31/00*
U.S. Cl. 53—433 **31 Claims**



27. A method of vacuum packaging a comestibles product comprising the steps of:

forming a container from a first continuous web of rigid polymeric material;

placing a refrigerated comestibles product within the container;

forming a lid from a second continuous web of rigid polymeric material disposed in spaced relationship with the formed container, said lid having a peripheral flange, a central portion and flexible means connecting the central portion to said flange:

placing said lid in registry with said container;

positioning said lid and said container within a vacuum chamber;

compressing said refrigerated comestibles product within said container to deform said product laterally and vertically to eliminate free air space both laterally and vertically by engaging the central portion of said lid which is disposed on contact with the refrigerated comestibles product;

vacuumizing said chamber while retaining in substantially non-collapsed array the as formed structures of both the container and the lid respectively formed of such rigid polymeric materials; and

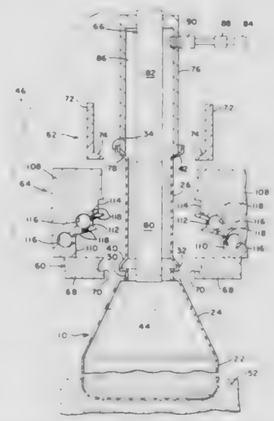
compressing and applying heat for sealing said lid to said container only in areas exteriorly of the refrigerated comestibles product with substantial avoidance of heat at the central portion of said lid, thereby to avoid substantial application of heat to the comestibles product.

5,054,267

APPARATUS FOR SEALING BLOW MOLDED BOTTLE MOLDED BOTTLE

Dennis L. Dundas, Dover, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Aug. 6, 1990, Ser. No. 562,717
Int. Cl.[5] B65B *47/02;* B29C *17/07*
U.S. Cl. 53—477 **21 Claims**



11. The method of sealing closed the necks of plastic bottles comprising the steps of:

a. continuously feeding a supply of preformed plastic bottles having elongate open necks to a loading position;

b. successively moving each bottle along a path extending from the loading position to a discharge position while

i. securing the top and the bottom of the neck in clamps to support the neck when heated,

ii. heating the middle of the supported neck to a molding temperature,

iii. molding the heated neck to form a seal extending across the neck and closing the interior of the bottle,

iv. cooling the molded neck, and

v. releasing the clamps to free the top and bottom of the cooled and sealed neck; and

c. removing the sealed bottle from the path at the discharge station.

5,054,268

PRESS ON, SCREW TIGHT MEANS FOR APPLYING A CLOSURE

Thomas H. Hayes; Charles S. Ochs, both of Lancaster, and Carl E. Koontz, Thornville, all of Ohio, assignors to Anchor Hocking Packaging Company, Lancaster, Ohio

Continuation-in-part of Ser. No. 401,966, Sep. 1, 1989, Pat. No. 4,978,016. This application Aug. 16, 1990, Ser. No. 568,591
Int. Cl.[5] B67B *3/20;* B65B *7/28*
U.S. Cl. 53—490 **10 Claims**

1. In the method of securing plastic closures on containers on a sealing line wherein the closure is turned to tighten an internal thread of the closure on an external thread of the container and a retaining means of a rupturable tamperevidenc-

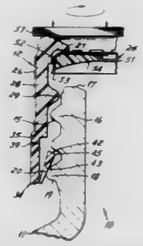
ing means of the closure is engaged inwardly below a locking rib on the container, the improvement comprising,

positioning the closure at the top of the container,

pressing the closure relatively downwardly partway onto the container, without relative turning movement, while moving said container and closure along said sealing line, until a tapered downwardly facing aligning surface of said retaining means has been moved downwardly past the thread of the container and has been brought into engagement with a tapered upwardly facing aligning surface of said container, such engagement of the aligning surfaces aligning the center axis of said closure with the center axis of said container,

constraining the closure against disalignment of the said axes, until turning has commenced, under a surface which bears downwardly on the top of said closure, and

turning said closure while so aligned on said container until said threads have drawn said retaining means below said locking rib and the closure is tight on the container

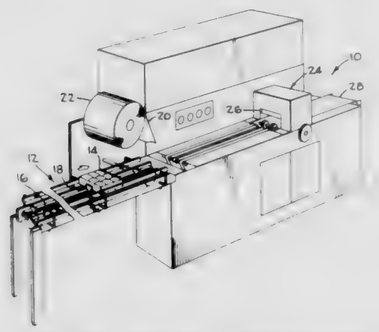


5,054,269

WRAPPER SEALING HEAD PACKAGE SUPPORT

Lawrence L. Leino, Green Bay, Wis., assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 5, 1989, Ser. No. 446,036
Int. Cl.[5] B65B 9/06, 51/16
U.S. Cl. 53—550 7 Claims



1. In a sealing head apparatus of a wrapper including a host shaft supporting a sealing head anvil the improvement in said sealing head apparatus comprising:

said host shaft having a central portion of a first diameter;

said host shaft having a reduced diameter section outboard of said central portion, said reduced diameter section readily accessible when said host shaft is mounted in said sealing head apparatus;

a pair of package support flanges each having a central aperture of a diameter substantially the same as the first diameter of the central portion of said host shaft, each of said package support flanges carried in a spaced apart relationship on said host shaft by means of said central aperture of said flanges fitting closely around said first diameter of said host shaft;

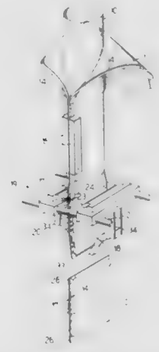
each of said package support flanges having an access slot having a width greater than the diameter of said reduced diameter section of said host shaft and having a width less than the diameter of said central aperture, said access slot extending from the periphery of said package support flange to said central aperture.

5,054,270

BAG SUPPORT/SPREADER FOR VERTICAL FORM, FILL AND SEAL MACHINES

Michael J. McMahon, Palatine, Ill., assignor to Zip-Pak Incorporated, Northbrook, Ill.

Filed Mar. 15, 1990, Ser. No. 493,618
Int. Cl.[5] B65B 9/20, 51/30, 41/14, 51/14
U.S. Cl. 53—552 4 Claims



1. In combination in a form, fill and seal package or bag making machine having a vertical forming and filling tube, and means below the discharge end of said tube for cross-sealing a continuous tubularly shaped zipper profile equipped thermosealable bag making form for thermosealing the top edge of a filled bag and the lower edge of the next succeeding bag, and pulling the film and bags downwardly a bag length distance and then releasing the bag filled bag to drop away from the next succeeding bag:

a finger means located in a bag supporting position beneath the bag and avoiding bag contents weight induced stretch stress damage to its thermosealed top edge, and to avoid by the supporting of the filled bag of bag contents weight caused pleats and tucks in the bag body film, said finger means being narrower than the bag to redistribute the filled bag contents and avoid central sagging of the filled bag;

said cross-sealing and pull down means comprising a pair of cooperating reciprocating jaws, and said finger means comprising multiple fingers carried by said jaws and cooperatingly actuated by the reciprocating jaws.

5,054,271

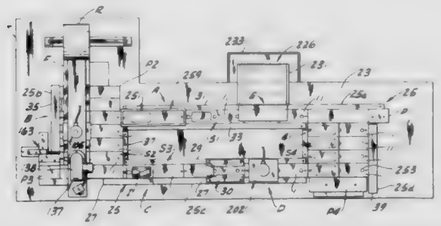
PACKAGING APPARATUS

Irvin S. DeWoskin, St. Louis, Mo., assignor to Barnhart Industries, Inc., Barnhart, Mo.

Filed Sep. 17, 1990, Ser. No. 583,455
Int. Cl.[5] B65B 47/00
U.S. Cl. 53—559 10 Claims

1. Apparatus for forming packages utilizing rectangular cards each adapted to be folded over on a fold line and having a window opening on one side of the fold line, comprising a series of jigs each of rectangular outline corresponding to the outline of the rectangular card, each jig having a first opening

therein corresponding to the window opening in the card, second openings therein to facilitate loading of the cards onto said jig and means engageable with a card for locating a card thereon with said openings in register, means for intermittently feeding forward the series of jigs through a card-applying station, a film-applying station, a packing station, and a sealing station for forming a package, each jig being fed back to the card-applying station after removal of a completed package therefrom, characterized in having means at the card-applying station for applying a card to the jig at said card applying station, said card-applying means comprising a magazine for holding a stack of cards at said card-applying station above the jig at said card-applying station, said magazine having an open



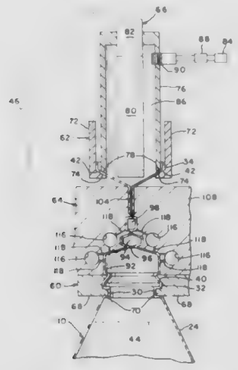
bottom and being adapted to hold the stack of cards therein while permitting the lowermost card of the stack to be pulled down out of the bottom, and means for pulling the lowermost card down out of the magazine and applying it to a jig on top of the jig, said means comprising a plurality of vacuum grippers movable up and down through said second openings provided therefor in the jigs, said grippers being movable up through said second openings into engagement with the bottom face of the lowermost card in the magazine for vacuum gripping the card, and movable down to a position below the jig to place the card on the jig properly located by the locating means on the jig and to clear the jig for being fed forward to the film applying station.

5,054,272

METHOD FOR SEALING BLOW MOLDED BOTTLE

Dennis L. Dundas, Dover, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Aug. 6, 1990, Ser. No. 562,716
Int. Cl.[5] B29C 17/07; B65B 7/16
U.S. Cl. 53—561 25 Claims



1. Apparatus for sealing the hollow neck of a preformed plastic bottle, the apparatus comprising

a. neck sealing tooling including mold means surrounding the neck and defining at least one cavity when closed, and first drive means for moving the mold means between open and closed positions;

b. lower neck clamp tooling located below the neck sealing tooling and including lower clamp means for engaging and supporting the bottom of the neck, and second drive means for moving the lower clamp means between opened and closed positions;

c. upper neck clamp tooling located above the neck sealing tooling and including upper clamp means for engaging and supporting the top of the neck and third drive means for moving the upper clamp means between opened and closed positions; and

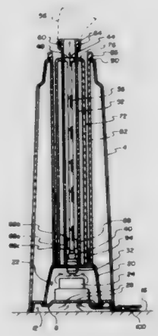
d. a heater for raising the temperature of a bottle neck held between the upper and lower clamp means sufficiently high to permit molding and sealing by the neck sealing tooling, and fourth drive means for moving the heater between a position adjacent the neck and a position remote from the neck.

5,054,273

SYSTEM FOR INFLATING BALLOONS AND INSERTING OBJECTS THEREINTO

George E. Schmitt, Brandon, Fla., assignor to Maxim Marketing, Salt Lake City, Utah

Filed Feb. 2, 1990, Ser. No. 474,365
Int. Cl.[5] B65B 43/36, 39/02, 39/06, 31/00
U.S. Cl. 53—564 11 Claims



1. Apparatus for inflating balloons and for inserting objects thereinto, comprising

a housing having a lower compartment and an upper compartment,

a first elongate tubular element disposed in the upper compartment to extend upwardly from the lower compartment, the upper end of said tubular element including one or more openings,

a second elongate tubular element telescopically disposed in the upper compartment about the first tubular element to slide longitudinally relative thereto between an upper position, in which an object may be inserted into the second tubular element to rest against the upper end of the first tubular element, and a lower position, in which the upper ends of the first and second tubular elements are generally at the same elevation, the upper end of the second tubular element being open and adapted to receive and releasably hold a balloon orifice thereover, and

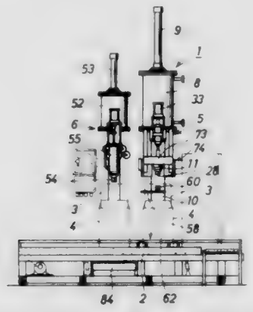
means disposed in the lower compartment of the housing for directing gas under pressure into the first tubular element, out the upper end opening thereof, and into the second tubular element to inflate a balloon whose orifice is positioned over the upper end of the second tubular element.

5,054,274

AUTOMATIC MOLTEN SUBSTANCE BAGGING METHOD AND SYSTEM

Sokichi Tanaka, 4-4-1106, Shiba-Daimon 1-chome, Minato-ku, Tokyo, Japan

Filed Sep. 10, 1990, Ser. No. 579,503
Int. Cl.[5] B65B *43/26*
U.S. Cl. 53—570 **4 Claims**



1. An automatic molten substance bagging method for filling molten substance, using an injector, into a bag which has been transported to a predetermined position below said injector together with a carrying can in which the bag is received, comprising the steps of:

holding the can at a first vertical position;

advancing a plurality of vacuum attracting pads toward each other on the opposite sides of the paper bag to attract the bag thereto by vacuum and then retracting said vacuum attracting pads away from each other to open a mouth portion of the bag;

lifting the bag held attracted to said vacuum attracting pads by lifting said vacuum attracting pads until a nozzle of said injector is inserted into the open mouth portion of the bag;

clamping the mouth portion of the bag by means of clamp members to the injector;

lifting the carrying can from the first vertical position to a second vertical position to lightly support a bottom portion of said bag;

injecting molten substance into the bag from said injector while the mouth portion of the bag is held clamped by said clamp members;

lifting the carrying can from the second position to a third position to lift the bottom portion of said bag is expanded by the weight of said molten substance and said molten substance extends to all corners of the bottom portion of the bag, while injection of molten substance is proceeding;

cancelling the clamping operation of the bag by said clamp members after a predetermined amount of molten substance is filled into the bag; and

lowering the carrying can from the third vertical position to a vertical position which is either the first vertical position or another position lower than the first vertical position and at which the carrying can be transported away from the predetermined position.

5,054,275

APPARATUS FOR SUPPLYING VALVED SACKS TO A FILLING NOZZLE

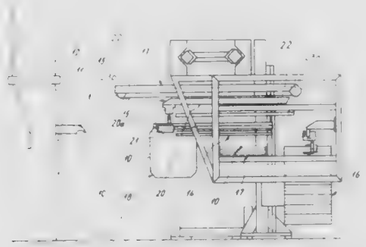
Hubert Brormann, Oelde, Fed. Rep. of Germany, assignor to Firma Haver & Boecker, Oelde, Fed. Rep. of Germany

Filed Jun. 19, 1990, Ser. No. 540,135
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1989, 3920582
Int. Cl.[5] B65B *43/16, 43/46*
U.S. Cl. 53—573 **7 Claims**

1. In an apparatus for successively supplying to the filling nozzle (**11**) of a serial packaging machine (**12**) a block bottom sack (**10**) having valve means (**10***a*) at one end thereof, said packaging machine including a source of valved sacks (**16**), separating means (**17**) for supplying a sack from said source, means for opening the valve means of said sack, transporting means for transporting the sack in a suspended inverted condition from the separating means to the filling nozzle, and valve sealing means (S) associated with said filling nozzle for sealing the valve means,

the improvement wherein said transporting means comprises:

(a) first linear conveyor means (**14**) for linearly transporting said sack from said separating means to a waiting position (**18**) spaced from said filling nozzle a distance at least as great as the width of the sack, said first linear conveyor means including:



(1) support plate means (**38,39**) for engaging the top portion of the sack to support the sack in a valve-open condition, said support plate means being at the same height as, and arranged on the opposite side of said waiting position from, said filling nozzle; and

(2) first endless conveyor means (**33**) arranged below and adjacent said support plate means for engaging opposed first side portions of the sack adjacent said sack top portion and for transporting the valve-open sack from said source toward said waiting position; and

(b) second linear conveyor means (**15**) arranged colinearly of said first endless conveyor means for engaging said opposed first side portions of the sack and for conveying the sack to said filling nozzle.

5,054,276

CUTTING BLADE FOR A MOWING APPARATUS

Akio Terai, Machida, and Minoru Wada, Tokyo, both of Japan, assignors to Komatsu Zenoah Company, Tokyo, Japan

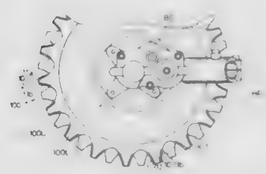
Filed Apr. 11, 1989, Ser. No. 336,154
Claims priority, application Japan, Apr. 12, 1988, 63-48319[U]
Int. Cl.[5] A01D *34/76*
U.S. Cl. 56—242 **4 Claims**

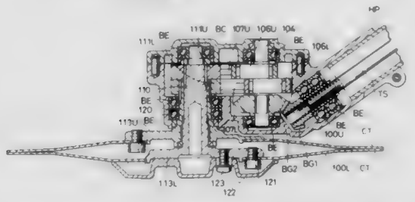
1. A cutting blade for a mowing apparatus comprising:

a pair of first and second pivotal cutting wheels slidably superposed with each other and each including a plurality of cutting teeth along its circumference, each tooth having a major surface, two sides edges and an outer peripheral edge, wherein the side edges of each tooth of the cutting wheels form a profile respectively defined by an inclined surface forming an acute angle relative to the major surface of the tooth so as to form a cutting edge, and wherein the outer peripheral edge is defined by a plane substantially perpendicular to the major surface of the tooth; and

means for reciprocatingly rotating the cutting wheels in opposite directions relative to each other through a predetermined angle;

wherein the cutting teeth of each of the cutting wheels are bent slightly toward the opposite cutting wheel so that only tip portions of said cutting teeth of each cutting wheel elastically contact each other when the cutting wheels are correspondingly superposed and the tip portions of the cutting wheels are in engagement with each other when the cutting wheels are mutually pivoted and wherein the cutting teeth of each cutting wheel are inter-





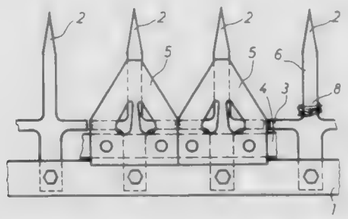
meshed so that contacting portions of the cutting teeth of the first and second cutting wheels are displaceable along the profile of each cutting edge according to pivotal motion of the cutting wheels.

5,054,277

CUTTER BLADE FOR REAPING CUTTERS OF HARVESTING MACHINES

Gustav Schumacher, II, Gartenstrasse 8, and Günter Schumacher, Raiffeisenstrasse 10, both of D-5231 Eichelhardt, Fed. Rep. of Germany

Continuation of Ser. No. 166,463, Mar. 10, 1988, abandoned. This application Mar. 15, 1990, Ser. No. 494,813
Int. Cl.[5] A01D *39/13*
U.S. Cl. 56—299 **8 Claims**



1. In a reaping cutter blade for reaping cutters of harvesting machines, wherein the blade includes a base edge and a blade leaf positioned in cutting relation with a cutter bar, the improvement which comprises a pair of elongated, rounded orifices formed in the blade leaf at an angle relative to the length of the cutter blade and extending to the cutter bar, each of said rounded orifices positioned whereby that portion of the blade leaf defining a web between the two orifices widens toward the base edge, and said base edge of said blade leaf includes an additional orifice.

5,054,278

OPERATION OF LONG-HANDLED TOOLS

Charles E. Thorndike, P.O. Box 745, Meredith, N.H. 03253

Filed May 14, 1990, Ser. No. 522,995
Int. Cl.[5] A01D *1/02, 7/00*
U.S. Cl. 56—400.14 **15 Claims**

1. Apparatus for enhancing the operability of a long-handled tool, comprising

a wheel rotationally mounted on an axis;

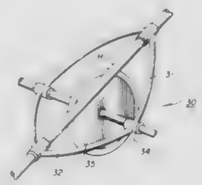
a first plurality of sleeves displaced from one another on said axle;

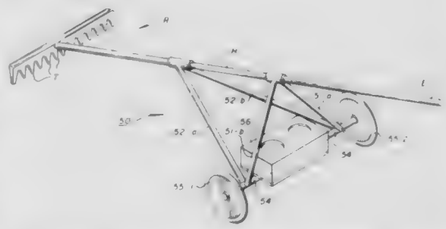
a second plurality of sleeves displaced from one another on said handle; and

means for connecting the sleeves of said axle to the sleeves on said handle of said tool.

13. The method of operating a long-handled tool with increased efficiency, comprising the steps of:

(a) providing a long-handled tool;





(b) affixing to the handle of said tool a plurality of sleeves disposed from one another;

(c) connecting to the sleeves of said handle a wheel rotationally mounted on an axle; and

(d) using said wheel to control the operation of said tool at the end of said handle opposite the position where force is applied for the use of said tool;

wherein said long-handled tool is a rake and force applied at one end of said handle is controlled with respect to the head end of said rake.

5,054,279

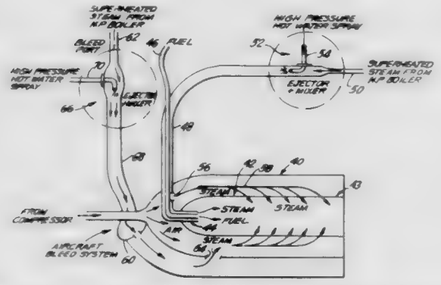
WATER SPRAY EJECTOR SYSTEM FOR STEAM INJECTED ENGINE

William R. Hines, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 434,627, Nov. 9, 1989, abandoned, which is a continuation of Ser. No. 126,090, Nov. 30, 1987, abandoned. This application Feb. 5, 1991, Ser. No. 652,234
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.05 **11 Claims**

1. A method of increasing the power output of a steam injected gas turbine engine having a compressor, a combustor having a dome which receives fuel and steam from a dual flow nozzle, and a turbine in series combination with a gas flow path passing therethrough, and a system for injection of superheated steam into the gas flow path, the method comprising spraying water into the steam injection system where the water is evaporated by the superheated steam, mixing the evaporated water with the existing steam in the steam injection system so that the resultant steam is at a temperature of at least 28 degrees celcius

(50 degrees fahrenheit) superheat and additional steam is added to the dome from the fuel nozzle to obtain a resultant increased mass flow of superheated steam mixture for injection into the

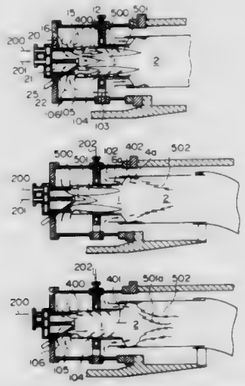


gas flow path, and controlling the amount of water sprayed into the steam injection system to maximize the mass flow of superheated steam without quenching the flame.

5,054,280
GAS TURBINE COMBUSTOR AND METHOD OF RUNNING THE SAME

Yoji Ishibashi; Hiroshi Inoue; Takashi Ohmori, all of Hitachi; Takashi Hashimoto, Ushiku; Fumio Kato, Ibaraki; Shigeyuki Akatsu, Hitachi; Akira Arai, Tsukuba; Michio Kuroda, and Katsukuni Hisano, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 387,983, Aug. 1, 1989. This application Sep. 12, 1990, Ser. No. 582,395
Claims priority, application Japan, Aug. 8, 1988, 63-195987
Int. Cl.[5] F02C *3/28;* **F23R** *3/34*
U.S. Cl. 60—39.06 **6 Claims**

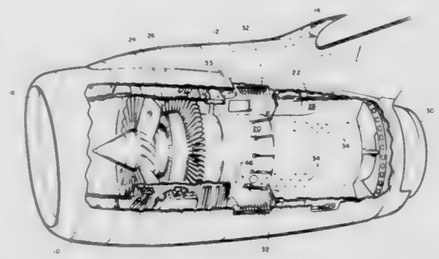


1. A method of driving a gas turbine combustor including a first-stage combustion chamber provided in an upstream portion of said combustor and having a device for supplying air and fuel, a second-stage combustion chamber provided on the downstream side of said first-stage combustion chamber and having a device for supplying air and fuel, and a combustor transition piece provided on the downstream side of said second-stage combustion chamber and arranged to conduct a high-temperature combustion gas produced in said combustion chamber into a turbine apparatus, said gas turbine combustor being arranged such that, at the time of starting of said combustor, a flame in said first-stage combustion chamber is extinguished after combustion has been brought about in said first-stage and second-stage combustion chambers and, thereafter, said first-stage combustion chamber is caused to serve as a premixing chamber for said second-stage combustion chamber, said method comprising the steps of preparing an auxiliary burner in said first-stage combustion chamber, said auxiliary burner being sparked when said combustor is fired, and causing said first-stage combustion chamber to serve as said premixing chamber for said second-stag combustion chamber by extenguishing said auxiliary burner.

5,054,281
GAS TURBINE ENGINE COMPARTMENT VENT SYSTEM

Henry Mutch, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 25, 1989, Ser. No. 411,643
Int. Cl.[5] F02C *7/12*
U.S. Cl. 60—39.83 **6 Claims**



1. In a gas turbine engine of the type having a core engine, a shroud surrounding the core engine, a tubular outer nacelle defining an annular bypass duct therebetween and a fan disposed in the nacelle inlet for directing compressed air flow into and through said bypass duct, said shroud spaced from said engine sufficiently to provide space for installation of heat sensitive engine related components, the improvement comprising:

at least one vent through said shroud, selectively positioned to direct compressed fan air from said bypass duct into said space between said shroud and engine for direct impingement on at least one of said heat sensitive engine related components for cooling same;

said vent comprising an open ended tube extending through a hole in said shroud, bonded thereto, and terminating therein adjacent to said heat sensitive engine related components.

5,054,282
DRAIN ASSEMBLY

Mark W. Costa, Storrs, Conn., and Steven P. Shach, Randalls Town, Md., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1989, Ser. No. 316,901
Int. Cl.[5] F02G *3/00;* **B65D** *51/16*
U.S. Cl. 60—39.094 **10 Claims**

9. For a gas turbine engine having an engine case, the engine case having a first side and a second side facing in opposite directions, a drain assembly disposed about an axis, which comprises:

a circular cover which has a circular edge, the cover including

a rim section which extends circumferentially about the cover, which extends inwardly from the edge, and which engages one side of the engine case, the rim section including a plurality of inlet passages bounded in part by the case which are spaced circumferentially one from the other and extend radially inward from the edge,

a raised central section having a wall extending axially inward to the rim section, the wall extending circumferentially between the inlet passages; and,

a cylindrical plug assembly having

a plate facing the second side of the engine case, the plate having an outlet passage and being spaced axially from the cover leaving a drain chamber therebetween,

a resilient seal member extending circumferentially about the outlet passage, the seal member being disposed between the plate and the case; and,

a baffle member attached to the plate which has a tab radially facing each inlet passage and which extends axially through the cover, the baffle being spaced radially from the wall and the inlet passage and extending laterally with

respect to the inlet passage and to the wall to block line of sight communication with the drain chamber and to form an annular manifold between the wall and the baffle, the baffle having an opening which is not aligned with an inlet passage to place the inlet passage in flow communication with the drain chamber via the manifold, the drain chamber being in flow communication with the outlet passage to provide a drain flowpath, wherein the inlet and outlet passages are perpendicular to each other and connected by a drain chamber without line of sight communication between the inlet passage and the drain chamber to provide a tortuous passage which blocks flames but permits the flow of fluid.

5,054,283
TURBINE ENGINE IMPINGEMENT ASSEMBLY

Anthony Jones, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

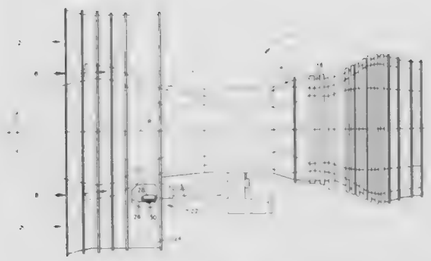
Filed Sep. 19, 1989, Ser. No. 409,314
Int. Cl.[5] F02C *7/272*
U.S. Cl. 60—39.142 **12 Claims**



1. In a turbine engine having a turbine rotor, said turbine rotor having impeller blades integral therewith, said turbine engine having a combustor associated therewith for producing hot gases of combustion, said combustor communicating with said turbine rotor through a turbine nozzle, said turbine engine normally being driven by said hot gases of combustion, the improvement comprising:

auxiliary means associated with said turbine rotor for assisting said combustor in starting said turbine engine, said auxiliary means including a self-contained independent source of hot gases, said auxiliary means including means for directing said hot gases from said self-contained independent source at said impeller blades;

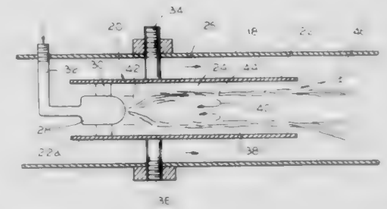
said turbine engine having an exhaust duct leading from said turbine rotor, said auxiliary means including a start cartridge mounted within the radial extend of said exhaust duct downstream of said turbine rotor, said start cartridge comprising said self-contained independent source of hot gases to be directed at said impeller blades.



5,054,284
COMBUSTION HEATED AIR TURBINE STARTER SYSTEM

Jack R. Shekleton, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 324,805, Mar. 17, 1989, abandoned. This application Sep. 13, 1990, Ser. No. 582,017
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—39.142 **8 Claims**



1. A combustion heated air turbine starter system, comprising:

an air turbine starter operatively associated with a main turbine engine;

an auxiliary power unit adapted to deliver air through a bleed duct to said air turbine starter; and

means for combusting fuel from a source with air from said auxiliary power unit;

said combusting means including an auxiliary combustor disposed within said bleed duct upstream of said air turbine starter, said auxiliary combustor including an outer wall positioned in radially inwardly spaced relation to said bleed duct, said outer wall defining an axial combustion air flow path inwardly thereof and an axial bypass air flow path outwardly thereof;

said auxiliary combustor including a fuel injector positioned centrally of said outer wall at an open upstream end thereof, said auxiliary combustor also including means for producing a rotating annulus of air about said fuel injector at said open upstream end of said outer wall;

said rotating annulus of air causing a laminerized blue flame to be produced in radially inwardly spaced relation to said outer wall and said rotating annulus of air mixing with air in said axial bypass air flow path downstream of said outer wall to produce a flame zone radially inwardly of said bleed duct.

5,054,285

THRUST REVERSER FOR TURBOFAN ENGINE

Helmjut-Arnd Geidel, Karlsfeld; Heinrich Enderle, Gröbenzell, and Alois Rohra, Munich, all of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Munchen GmbH, Fed. Rep. of Germany

Filed Dec. 15, 1989, Ser. No. 451,141

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1988, 3844188

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.2 **28 Claims**



1. A gas turbine jet engine, comprising:

a bypass duct having an inner and outer wall and a fixed extreme nozzle section, said outer wall including breakthroughs for deflection ports;

a fan delivering a fan air stream into said bypass duct to generate mainly propulsion thrust;

a thrust reversing device including flaps pivotable into the fan air stream for reverse thrust operation;

a movable extreme section of the outer wall being axially extendable, said flaps cooperating with said movable extreme section when axially extended to uncover the deflection ports located at the breakthroughs in said outer wall;

wherein said movable extreme section and said flaps are mechanically linked to an another for relative movement between them; and

an additional fan nozzle area provided by said movable extreme section in a first phase of actuation of said movable extreme section and said flaps relative to said fixed extreme nozzle section, said additional fan nozzle area communicating with inlet through flow areas uncovered by a front end of said flaps moved into said bypass duct.

5,054,286

BYPASS VALVE SYSTEM

Larry W. Stransky, West Chester; Valentine R. Boehm, Jr.; Michael A. Phillips, both of Cincinnati; Edward W. Ryan, Mason, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 546,219, Jun. 29, 1990, abandoned. This application Feb. 11, 1991, Ser. No. 653,740

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.3 **37 Claims**

1. A bypass valve system for controlling fluid flow in a gas turbine engine comprising:

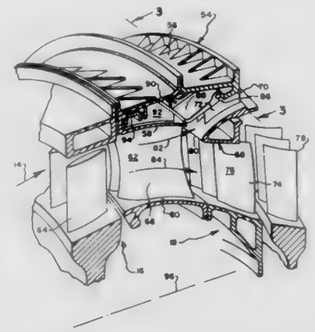
an annular frame including an outer casing, an intermediate casing spaced from said outer casing to define a cavity, said intermediate casing including an annular opening therein, and an inner casing spaced from said intermediate casing to define a first channel for channeling fluid flow;

a plurality of circumferentially juxtaposed bypass valve doors disposed in said annular opening, each of said valve doors having an inner surface for facing said fluid, an outer surface, a first end pivotally connected to said frame, and a second end, said doors being positionable in a first position generally parallel to said intermediate casing, and in a second position generally inclined from said intermediate casing;

an annular actuation ring disposed in said frame cavity;

a plurality of space links, each having a first end pivotally connected to said ring, a second end pivotally connected to a respective one of said doors, and a longitudinal axis extending from said first to second ends; and

means for rotating said actuation ring between a ring first position wherein each said link longitudinal axis has a first



inclination angle and said door is in said door first position, and a ring second position wherein said link longitudinal axis has a second inclination angle less than said first inclination angle so that said link pivots said door about said door first end to position said door in said door second position.

5,054,287

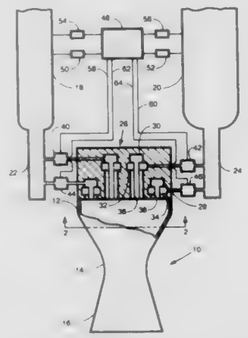
EXTENDED TEMPERATURE RANGE ROCKET INJECTOR

Steven J. Schneider, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1989, Ser. No. 443,523

Int. Cl.[5] F02R *9/52*

U.S. Cl. 60—240 **2 Claims**



1. In a fluid rocket having an injector of the type wherein liquid oxygen from a first tank and liquid hydrogen from a second tank are supplied to a combustor chamber through injector elements, the improvement comprising;

multiple sets of manifolds in said injector for feeding said liquid oxygen and liquid hydrogen to said injector elements so that said oxygen and hydrogen flow through said injector elements,

control means for maintaining the rocket thrust level in a predetermined design range by determining which manifolds are connected to said first and second tanks thereby controlling the mass flow of the liquid oxygen and the liquid hydrogen through said injector,

a first valve operably connected to one of said sets of manifolds and said first tank for selectively enabling said liquid oxygen to flow to one of said manifolds in said set,

a second valve operably connected to said one of said sets of manifolds and said second tank for selectively enabling said liquid hydrogen to flow to the other of said manifolds in said set,

a third valve operably connected to another of said sets of manifolds and said first tank for selectively enabling said liquid oxygen to flow to one of said manifolds in said other set,

a fourth valve operably connected to said other of said sets of manifolds and said second tank for selectively enabling said liquid hydrogen to flow to the other of said manifolds in said other set,

a first pressure sensor connected to said first tank for supplying the pressure of the liquid oxygen therein to said control means,

a second pressure sensor connected to said second tank for supplying the pressure of the liquid oxygen to said control means,

a first temperature sensor connected to said first tank for supplying the temperature of the liquid oxygen therein to said control means,

a second temperature sensor connected to said second tank for supplying the temperature of the liquid hydrogen to said control means, and

means for operably connecting said control means to said first, second, third, and fourth valves for opening and closing the same in response to the sensed pressures and temperatures thereby controlling the rocket thrust level whereby only said first and second valves are opened when cryogenic temperatures are sensed and said first, second, third and fourth valves are opened when ambient temperatures are sensed.

5,054,288

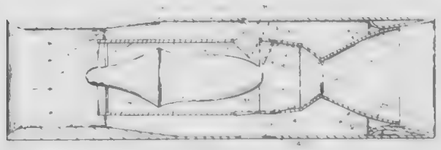
BYPASS DUCT FOR A HYPERSONIC PROPULSION SYSTEM

Victor Salemann, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 24, 1988, Ser. No. 261,570

Int. Cl.[5] F02C *7/10, 11/00*

U.S. Cl. 60—244 **19 Claims**



1. A hypersonic propulsion system comprising:

a housing enclosing a turbojet engine and a ram burner;

an air inlet coupled to said housing for providing air to said turbojet engine and said ram burner;

a turbojet nozzle having a throat coupled to said housing for providing an exhaust from said turbojet engine and said ram burner;

a bypass duct enclosed in said housing and receiving bypass air from said inlet and exhausting said bypass air at a bypass outlet, said bypass outlet being located behind the throat of said turbojet nozzle;

a vent in said bypass duct selectively permitting bypass air to enter said ram burner;

a vent member positioned within said vent for selectively opening said vent to a predetermined vent area;

a barrier member in said bypass duct selectively directing the bypass air into said vent or said bypass duct outlet; and

a bypass throat member positioned within said bypass duct, said bypass throat member being movable to provide a variable throat area within said bypass duct, said bypass throat being located aft of said turbojet nozzle throat.

5,054,289

HYDRAULIC TRANSMISSION

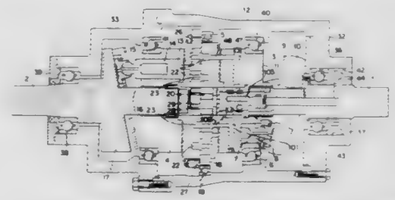
Hisao Nagatomo, Fukuoka, Japan, assignor to Nagatomo Fluid Machinery Laboratory Limited, Fukuoka, Japan

Filed Dec. 22, 1988, Ser. No. 288,478

Claims priority, application Japan, Dec. 15, 1987, 62-327443; Jun. 3, 1988, 63-135651

Int. Cl.[5] F16H *39/14;* **F16D** *31/08*

U.S. Cl. 60—468 **13 Claims**



11. A hydraulic transmission comprising: a first cylinder barrel rotatable around a common axis; a second cylinder barrel arranged coaxially with said first cylinder barrel; a valve block interposed between and united with said first cylinder barrel and said second cylinder barrel; a plurality of first cylinders formed in said first cylinder barrel to extend from an outer end face thereof substantially in the direction of said common axis and arranged at a predetermined spacing from one another in a circumferential direction around said common axis; a first swash plate having an inclined face and an axis of rotation perpendicular to said common axis; a plurality of first pistons fitted liquid-tight and slidably in said first cylinders, respectively, and adapted to be reciprocated by having outer ends thereof held in abutting contact with said first swash plate as said first cylinder barrel rotates; a plurality of second cylinders formed in said second cylinder barrel to extend from an outer end face thereof substantially in the direction of said common axis and arranged at a predetermined spacing from ne another in a circumferential direction around said common axis; a second swash plate united with a rotating shaft rotatable around said common axis and having an inclined face; a plurality of second pistons fitted liquid-tight and slidably in said second cylinders, respectively, and adapted to be reciprocated by having outer ends thereof held in abutting contact with said second swash plate as said second cylinder barrel rotates; a first change-over valve built into said valve block and switched according to rotations of said valve block for causing said first cylinders to communicate with a first common liquid passage during forward strokes of said first pistons and to communicate with a second common liquid passage during backward strokes of said first pistons; a second change-over valve built into said valve block and switched according to relative rotations of said valve block and said rotating shaft for causing said second cylinders to communicate with said first common liquid passage during backward strokes of said second pistons and to communicate with said second common liquid passage during forward strokes of said second pistons; and a safety valve pool arranged liquid-tight and slidably coaxially with said common axis and adapted to move in the axial direction, when a pushing force of liquid in one of said first and second common liquid passages acting upon one end face of said safety valve spool exceeds a pushing force by supplying liquid acting upon another end face of said safety valve spool, for providing communication between said first common liquid passage and said second common liquid passage.

5,054,290

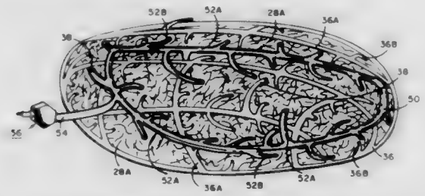
PORTABLE, SUPERABSORBENT CARRYING CONTAINER ABLE TO PROVIDE REFRIGERATION FOR ITS CONTENTS ON-DEMAND

John D. Hogan, Gloucester, Mass., assignor to Beth Israel Hospital Assoc., Boston, Mass.

Continuation-in-part of Ser. No. 529,566, May 25, 1990, which is a continuation-in-part of Ser. No. 445,008, Dec. 4, 1989, which is a continuation-in-part of Ser. No. 142,077, Jan. 11, 1988, Pat. No. 4,885,000, which is a continuation-in-part of Ser. No. 001,648, Jan. 9, 1987, abandoned. This application Jun. 18, 1990, Ser. No. 539,929

Int. Cl.[5] F17C *1/00*

U.S. Cl. 62—45.1 **13 Claims**



1. A portable, superabsorbent carrying container able to provide refrigeration on-demand for its contents, said carrying container comprising:

a portable, closed container comprising at least one wall and having a determinable internal volume and spatial configuration;

at least one superabsorbent fibrous lining disposed within the internal volume of said closed container;

means for inserting and removing an object from the spatial volume provided by said superabsorbent fibrous lining within said closed container;

first on-demand means in communication with the internal volume of said closed container for introducing a freezible liquid to said superabsorbent fibrous lining on-demand, such freezible liquid as is introduced via said first on-demand means being absorbed by said superabsorbent fibrous lining; and

second on-demand means in communication with the internal volume of said closed container for introducing a refrigerant gas to said superabsorbent fibrous lining on-demand, such refrigerant gas as is introduced via said second on-demand means causing the freezing of such liquids as have been absorbed by said superabsorbent fibrous lining.

5,054,291

MULTI-BAY SYSTEM FOR THE FORCED AIR POSTHARVEST CONDITIONING OF AGRICULTURAL CROPS

Thomas L. Davis, P.O. Box 18971, Raleigh, N.C. 27619; John P. Shell, 2706 Van Dyke Ave., Raleigh, N.C. 27607, and Robert N. Elliott, III, 4504 Boxwood Rd., Raleigh, N.C. 27612

Filed Jul. 25, 1990, Ser. No. 557,641

Int. Cl.[5] F25D *13/02, 25/00*

U.S. Cl. 62—62 **19 Claims**

1. A multi-bay system located within a building for the forced air postharvest conditioning of agricultural crop, said system being characterized by the provision of independent produce loading, conditioning and unloading at each bay, said multi-bay system comprising:

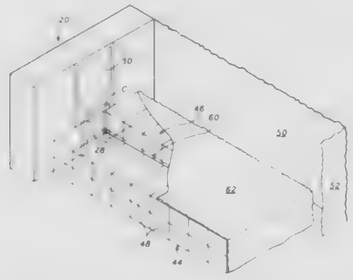
a plurality of independently operable produce conditioners, each produce conditioner providing on one face thereof an air suction port and a conditioned air discharge port;

a bay associated with each produce conditioner, during operation each bay defining a substantially fully enveloped, independent produce conditioning zone and comprising

a suction plenum defined by stacked air permeable containers of produce, said suction plenum communicating with said air suction port;

means defining a substantially sealed conditioned air input chamber in communication with said conditioned air discharge port of the produce conditioner, said air input chamber surrounding said suction plenum, said means including impermanent, movable partitions extending floor-to-ceiling in said building, one of said partitions being an end closure partition positioned at the end of the bay remote from said produce conditioner;

said end closure partition being substantially aligned with the end closure partitions of the adjacent bays such that



the plurality of end closure partitions open to a common floor portion of the building to define a common forklift corridor for accessing the aligned bays;

whereby each bay may be independently loaded through its respective end closure partition with air permeable containers of produce to define said suction plenum, each bay may be independently operated as a substantially sealed environment for conditioning its respective produce after closure of the end closure partition, and after conditioning the produce each bay may be unloaded by forklift or similar conveyances after opening the end closure partition and permitting access to the bay from the common forklift corridor.

5,054,292

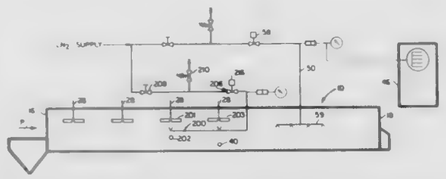
CRYOGENIC FREEZER CONTROL

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 13, 1990, Ser. No. 554,044

Int. Cl.[5] F25D *13/06*

U.S. Cl. 62—63 **10 Claims**



8. A method of enhancing to cooldown and steady state operation of a tunnel-type cryogenic freezer having a primary refrigerant spray zone and a plurality of gas circulation zones comprising the steps of:

injecting auxiliary liquid cryogen into at least one gas recirculation zone of said freezer;

continuously measuring the temperature of said gas recirculation zone;

comparing the temperature of said gas recirculation zone to a predetermined temperature level; and

changing the flow of liquid cryogen in order to maintain the predetermined level of temperature in said gas recirculation zone.

5,054,293

APPARATUS AND METHOD FOR PROTECTING A COMPRESSOR IN A HEAT PUMP

William Schwecke, 7092 Alert New London Rd., Okeana, Ohio 45053

Filed Jun. 4, 1990, Ser. No. 532,894

Int. Cl.[5] F25B *43/02*

U.S. Cl. 62—84 **5 Claims**



1. Apparatus for protecting a compressor operating in a refrigeration device such as a heat pump wherein said compressor has a crankcase containing lubricating oil and refrigerant, said apparatus comprising:

heater means for maintaining the lubricating oil and refrigerant in said crankcase at a preselected temperature; and

control means connected to a source of electrical power for controlling the operation of said compressor, said control means having current detection means for detecting electrical current in said heater means, said current detection means including a thyristor having a blocking state and a conducting state, said control means also having contact means for connecting said compressor to the electrical power source when said contact means is closed and said thyristor is in the conducting state, said thyristor being changed from the conducting state to the blocking state if no electrical current is detected in said heater means, said thyristor signaling said control means to open said contact means in order to disconnect said compressor from the electrical power source when said thyristor is in the blocking state.

5,054,294

COMPRESSOR DISCHARGE TEMPERATURE CONTROL FOR A VARIABLE SPEED COMPRESSOR

Kevin F. Dudley, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 21, 1990, Ser. No. 586,128

Int. Cl.[5] F25B *49/00*

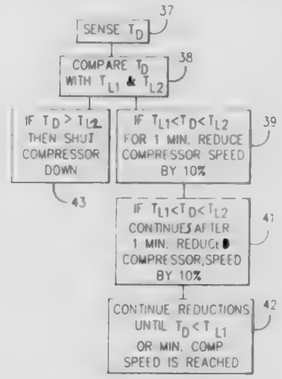
U.S. Cl. 62—228.4 **10 Claims**

1. An improved air conditioning system of a type having an evaporator and condenser coils, an expansion device, and a compressor with a variable speed drive mechanism, wherein the improvement comprises;

a sensor for sensing a discharge temperature of the compressor;

a comparator for receiving and comparing said discharge temperature with a first predetermined threshold temperature;

and a control system for decreasing the speed of the variable speed compressor drive when said comparator indicates



that said discharge temperature exceeds said first predetermined threshold temperature.

5,054,295

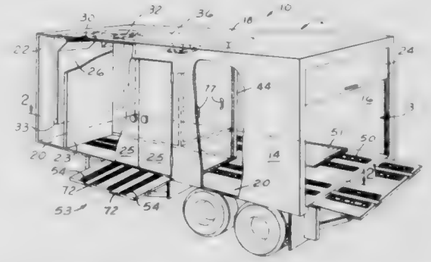
TRANSPORT WITH VARIABLE VOLUME, INDEPENDENTLY COOLED COMPARTMENTS

Gene D. Goulooze, 3129 E. Gatehouse S.E., Grand Rapids, Mich. 49546

Filed Aug. 21, 1990, Ser. No. 570,418

Int. Cl.[5] B60H *1/32*

U.S. Cl. 62—239 **10 Claims**



1. A transport with variable volume, independently cooled storage compartments, comprising:

a transport body having a front wall structure, a left side wall, a right side wall, and a rear opening, all of which bound the interior of said transport body;

a center wall structure extending from said front wall structure into said interior to define at least two storage spaces, two of said storage spaces each disposed between said center wall structure and a side wall;

at least one bulkhead means disposed within said interior generally perpendicular to, between, and in intimate contact with said center wall and a side wall, said at least one bulkhead means being slidable toward and away from said front wall structure within at least one of said storage spaces, to define at least one variable volume compartment between said front wall structure and said at least one bulkhead;

flow control means associated with each storage space for controlling air flow into each said space and into said at least one variable volume compartment; and

refrigerating means to cool air controlled by said air control means.

5,054,296

PIPE FOR COOLING UNIT, COOLING UNIT AND INDIVIDUAL COOLING SYSTEM

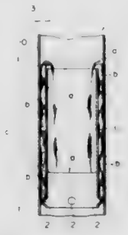
Junji Sotani, Yokohama; Tetsuo Okuyama, Tokyo; Susumu Seo, Yokohama; Tohru Ohi, Machida; Naoki Mori, Yokohama, and Minoru Mabuchi, Sagamihara, all of Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 15, 1990, Ser. No. 523,400

Claims priority, application Japan, May 16, 1989, 1-122462; May 16, 1989, 1-122464; May 16, 1989, 1-122465; Apr. 20, 1990, 2-105059

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—259.1 15 Claims



1. A cooling unit comprising:

a plurality of pipe components for use in evaporating a working liquid confined at a level in each such component with heat absorbed by said each such component from a heat source external thereof, each component comprising an outer pipe and an inner pipe shorter than said outer pipe disposed in said outer pipe to therewith provide a component evaporation portion, a circulation gap being defined between the inner wall surface of said outer pipe and the outer wall surface of said inner pipe, said plurality of pipe components being arranged as standing side-by-side vertically or obliquely, working liquid present in the component evaporation portion being caused by absorbed heat to boil mainly in the circulation gap so that a vapor form of the liquid bubbles to an upper end of the circulation gap lifting unboiled liquid therewith to overflow of said unboiled liquid at an upper edge of said inner pipe for return flow to the working liquid level;

an upper header pipe communicating with an upper end of each pipe component; and

a lower header pipe communicating with a lower end of each pipe component.

5,054,297

COLD STORAGE SYSTEM

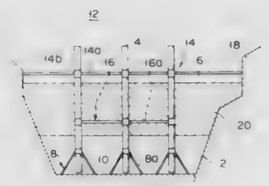
Kokichi Furuhama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 21, 1990, Ser. No. 585,903

Claims priority, application Japan, Sep. 22, 1989, 1-244962

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—260 17 Claims



1. A cold storage system installed in water storage means on the ground whose atmospheric temperature becomes 0° C. or less in winter, comprising:

at least one heat exchange means having one end located in the water stored in said water storage means and the other end located in the atmosphere and for performing one-direction heat transfer in such a manner as to absorb heat from the water of said water storage means and emit it into said atmosphere;

hold means for holding the heat exchange means in said water storage means; and

trap means located in the water of said water storage means for trapping ice produced by said heat exchange means.

5,054,298

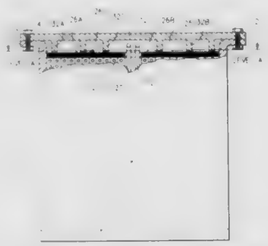
ICE-CAP PREVENTION BARRIER FOR AN ICE BANK

Mark M. MacCracken, Englewood, N.J., assignor to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Oct. 26, 1990, Ser. No. 604,067

Int. Cl.[5] F25D *3/02*

U.S. Cl. 62—434 8 Claims



8. An ice bank wherein a thermally insulated cylindrical container with a thermally insulated removable circular cover contains a tube bundle through which brine is conducted to freeze and thaw a phase-change material in which the tube bundle is immersed within the container, the liquid phase-change material initially being at a level below the cover to provide an expansion space above the tube bundle to be filled by liquid phase-changer material as freezing thereof progresses around the tube bundle, ice-cap prevention means comprising

a) a thermally insulated circular barrier of rigid closed-cell extruded plastic foam extending substantially completely laterally horizontally across the interior of the container above the tube bundle,

b) said barrier comprising two half discs co-joined along their respective interlocked straight edges,

c) apertures formed in said barrier to permit access to the tube bundle of brine supply and return headers and to allow passage of the liquid phase-change material to and from the expansion space, and

d) spacer means for preventing upward displacement of the barrier toward the cover as the liquid phase-change material rises into the expansion space above the barrier comprising molded ribs depending integrally from the cover to abut the barrier,

e) whereby the thermally insulated barrier prevents freezing of the phase-change material rising into the expansion space when the phase-change material below the barrier around the tube bundle is frozen.

5,054,299

JEWELRY, WITHOUT FASTENERS, FORMED BY THE WEARER BY BENDING FROM A PLANAR CONFIGURATION INTO CIRCULAR AND/OR OTHER CONFIGURATIONS TO BE WORN AS A NECKLACE, BRACELET, BELT, ETC, AND REFORMED MANY TIMES TO SERVE AS THE SAME OR OTHER JEWELRY

Susan C. Maveety, 9905 157th St. E., Puyallup, Wash. 98373

Filed Feb. 28, 1990, Ser. No. 486,249

Int. Cl.[5] A44C *5/00*

U.S. Cl. 63—3 15 Claims



1. An elongate, bendable, claspless jewelry which can be easily reshaped by the wearer into varied configurations comprising:

a) a pliable, elastomeric body having a first end, second end and central portion longitudinally extending therebetween;

b) said central portion comprising a first arcuate surface extending along the length of said body and a second planar surface including first and second edges extending along the length of said body;

c) said first arcuate surface extends from said first edge to said second edge of said planar surface;

d) at least one bendable, self-supporting length of core wire embedded and centrally disposed within said central portion of said body from said first end to said second end; and,

e) said core wire including bent end portions positioned in said central portion adjacent said first and second ends of said body to significantly prevent exposure of said core wire through said body.

5,054,300

VEHICLE DOOR LOCK SYSTEM

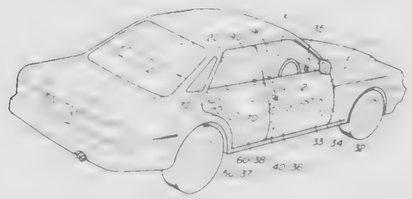
Kazumi Nakahara; Mikio Honma, and Fumio Kobayashi, all of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Nov. 7, 1989, Ser. No. 432,904

Claims priority, application Japan, Nov. 9, 1988, 63-281428; Dec. 29, 1988, 63-331108

Int. Cl.[5] E05B *53/00*

U.S. Cl. 70—262 19 Claims



1. A vehicle door system comprising:

lock means for locking and unlocking a door of a vehicle, said lock means being movable between a lock position to lock the door and an unlock position to unlock the door; and

safety means which prevents said lock means from moving from said lock position to said unlock position when said safety means is in a block position, and which allows said lock means to move from said lock position to said unlock position when said safety means is in an unblock position,

wherein said lock means comprises a lock member and a lock actuator for moving said lock member between said lock and unlock positions, and said safety means comprises a block member and a block actuator for moving said block member between said block and unblock positions;

said door lock system further comprising switch means for producing signals to operate said lock actuator and said block actuator, wherein said block actuator comprises a drive member and a driven member which is driven by said drive member and connected with said block member, said block actuator being irreversible so that said drive member can drive said driven member but said driven member cannot drive said drive member, and wherein said lock actuator comprises a drive member and a driven member which is driven by said drive member and connected with said lock member, said lock actuator being reversible so that said driven member of said lock actuator can drive said drive member of said lock actuator;

switch means for producing signals to operate said lock and block actuators, said switch means comprising a key lock switch which is connected with a key cylinder for producing a key lock command signal and a key unlock command signal when a key is inserted and moved in said key cylinder;

said switch means includes means for causing said lock actuator to move said lock member to said lock position and said block actuator to move said block member to said block position when said key lock command signal is produced, and causing said block actuator to move said block member to said unblock position and said lock actuator to move said lock member to said unlock position when said key unlock command signal is produced;

said switch means further comprising a power lock switch mounted near a driver's seat of said vehicle, for producing a power lock command signal and a power unlock command signal to operate said lock actuator;

wherein said block member is connected with said lock means so that said block member can move from said unblock position to said block position only when said lock means is in said lock position;

said switch means further comprising a lock detector which produces a lock detection signal when said lock means is in said lock position and an unlock detection signal when said lock means is in said unlock position, a block detector which produces a block detection signal when said safety means is in said block position and an unblock detection signal when said safety means is in said unblock position, first logic means which produces a block actuation signal to cause said block actuator to move said block member to said block position only when said key block command signal and said lock detection signal are both present, and second logic means which produces an unlock actuation signal to cause said lock actuator to move said lock member to said unlock position only when said key unlock command signal and unblock detection signal are both present;

wherein said lock member is a lever swingable between said lock and unlock positions about a first swing axis, and said block member is a lever swingable between said block and unblock positions about a second swing axis, said block member having a slot in which said first end of said lock member is slidably engaged, said slot including a first slot section extending from an unlock end to a lock end, and a second slot section extending from said lock end of said first slot section to a block end, said first slot section being shaped so that, when said block member is in unblock position, said fist end of said lock member can swing along said first slot section about said first swing axis, the second slot section being shaped like the arc of a circle whose center lies on said second swing axis, said first end of said lock member being located at said lock end of said first slot section when said lock member is in said lock position and said block member is in said unblock position;

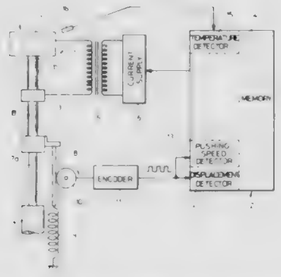
the switch means further comprising a third logic means which produces said unlock actuation signal to cause said lock actuator to move said lock member to said unlock position only when said power unlock command signal and said unblock detection signal are both present.

5,054,301

METHOD OF FORMING METALLIC PRODUCT

Ryuji Soga; Nobuaki Hojo; Kenichia Hakozaki; Hisayuki Sakurai, and Shigehisa Seya, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1990, Ser. No. 527,266
Claims priority, application Japan, Mar. 26, 1990, 2-76174
Int. Cl.[5] B21J *5/08*
U.S. Cl. 72—8 **13 Claims**



1 A method of forming a metallic product with an electric upsetter having anvil and clamp electrodes, comprising the steps of:

providing the anvil electrode, wherein said anvil electrode is made of a material having a relatively low thermal conductivity;

placing a rod-shaped blank of a metallic material between the anvil and clamp electrodes;

passing an electric current through the rod-shaped blank to heat said rod-shaped blank;

pushing the rod-shaped blank at one end thereof toward the anvil electrode under a constant force to thicken an opposite end of the rod-shaped blank;

detecting a displacement by which said one end of said rod-shaped blank is pushed toward said anvil electrode;

detecting a speed at which said one end of the rod-shaped blank is pushed toward said anvil electrode; and

controlling the electric current passed through the rod-shaped blank such that the rod-shaped blank is pushed at a predetermined speed depending on the displacement by which said one end of the rod-shaped blank is pushed toward the anvil electrode, thereby producing a preliminary product with a thickened end.

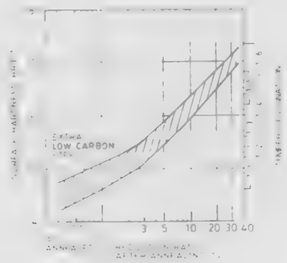
5,054,302

HARDNESS COMPENSATED THICKNESS CONTROL METHOD FOR WET SKIN-PASS ROLLED SHEET

Michio Yamashita; Kunio Isobe, and Ikuo Yarita, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Mar. 28, 1990, Ser. No. 500,414
Claims priority, application Japan, Apr. 7, 1989, 1-86717; Oct. 23, 1989, 1-273861; Oct. 23, 1989, 1-273867; Nov. 6, 1989, 1-287400
Int. Cl.[5] B21B *37/02*
U.S. Cl. 72—8 **5 Claims**

1. A wet skin pass rolling method in which the hardness of a rolled material is controlled by a 3 to 15% change in the rolling reduction, said method comprising: calculating a rolling reduction γ in accordance with the following formula (1) on the basis of the inlet material thickness H (mm) at the inlet side of a rolling mill and the command outlet material thickness h_0 (mm) to be obtained at the outlet side of said rolling mill; comparing the calculated rolling reduction γ with an upper limit value γ_u of the rolling reduction and a lower limit value γ_l of the rolling reduction determined by the surface hardness of the material to be obtained; and determining the final command outlet thickness h_0' in accordance with the following formulae (2) to (4):



$$\gamma = \{(H - h_0)/H\} \times 100\ (\%) \quad (1)$$

$$\gamma_l \leqq \gamma \leqq \gamma_u \cdot h_0' = H \quad (2)$$

$$\gamma < \gamma_l \cdot h_0' = H \times \{1 - (\gamma_l/100)\} \quad (3)$$

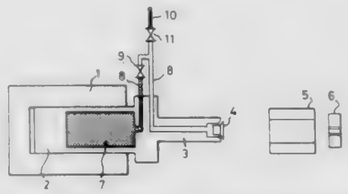
$$\gamma > \gamma_u \cdot h_0' = H \times \{1 - (\gamma_u/100)\} \quad (4)$$

5,054,303

METHOD OF EXTRUSION, AND EXTRUSION PRESS

Michael J. Newman, Gloucester, Great Britain, assignor to Indalex Limited, London, Great Britain

Filed May 8, 1990, Ser. No. 520,220
Claims priority, application United Kingdom, May 10, 1989, 8910747
Int. Cl.[5] B21C *26/00*
U.S. Cl. 72—38 **10 Claims**



1. A method of extrusion in an extrusion press including an extrusion ram, a hollow extrusion stem extending from the ram, a pressure pad engageable with the stem and having a variable outer diameter, a billet container having a bore therein with an inlet and an outlet end for receiving the pressure pad and a billet urged by the stem and pressure pad, the bore being larger than the billet to provide a void space therebetween, and an extrusion die engageable with said billet container for receiving and extruding the billet from the bore of the container, the method comprising:

sealingly engaging the extrusion die with the billet container at the outlet end of the container bore;

inserting the billet into the bore through the inlet end thereof;

urging said billet in the bore toward the die by engaging the pressure pad against the billet and urging the stem against the pressure pad;

inserting the pressure pad into the bore;

evacuating the void space between the pressure pad, billet, container bore and sealed extrusion die by applying a vacuum thereto through the hollow stem and pressure pad thereby providing a hermetically-sealed pressure vessel;

expanding the outer diameter of the pressure pad to substantially the diameter of the bore; and

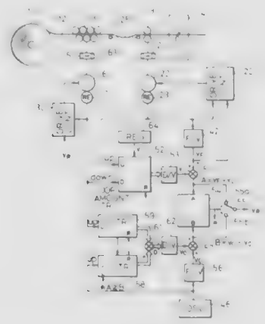
commencing extrusion of the billet in the hermetically-sealed pressure vessel.

5,054,304

SHEET STOCK FEED LINE WITH DECELERATION AND ACCELERATION

Shigeki Hayashi, and Shigeru Kusaka, both of Machida, Japan, assignors to Nusco Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1990, Ser. No. 481,164
Claims priority, application Japan, Mar. 27, 1989, 1-75629
Int. Cl.[5] B21F *11/00*
U.S. Cl. 72—131 **8 Claims**



1. A sheet stock feed line comprising:

first feed means for feeding sheet stock;

first drive control means for controlling the operation of said first feed means;

second feed means for receiving sheet stock fed by said first fed means and for feeding said sheet stock to a tool for working;

second drive control means for controlling said second feed means and operative to decelerate said second feed means to a halt each time the length of said sheet stock fed by said second feed means reaches a preset length so that said sheet stock can be worked by said tool during said halt, said second drive control means being operative thereafter to accelerate said second feed means to resume the feeding of said sheet stock by said second feed means;

said first drive control means including loop amount measuring means for measuring, as a loop amount, the difference between the amounts of sheet stock fed by said first and second feed means; first velocity reference generating means which generates, based on the feed rate by said second feed means, a first velocity reference signal for controlling said first feed means so that while said second feed means feed said sheet stock, said loop amount of said sheet stock is reduced to substantially zero and the feed rate by said first feed means follows the feed rate by said second feed means; second velocity reference generating means for generating a second velocity reference signal based on a predetermined creep velocity; and changeover means for selectively applying said first and second velocity reference generating means to said first feed means;

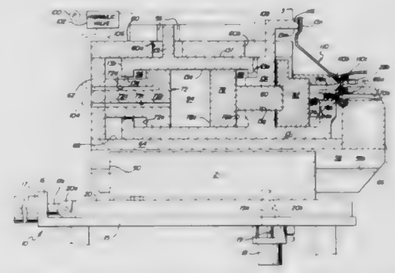
said first drive control means being operative, even while said second feed means is halted, to continue the feeding of said sheet stock by said first feed means at said creep velocity corresponding to said second velocity reference signal so as to cause a loop in said sheet stock to sag down between said first and second feed means, and said first drive control means being operative, after working of said sheet stock by said tool, to accelerate the feeding of said sheet stock by said first feed means in accordance with said first velocity reference signal so as to cause the amount of sheet stock fed by said second feed means to follow the amount of sheet stock fed by said second feed means in synchronization with the resumption of its feed, thereby minimizing the sag in said loop of sheet stock.

5,054,305

MULTIPLE FUNCTION HYDRAULIC APPARATUS

Robert E. Obrecht, Bloomfield Hills, and Edward J. Waltonen, Southfield, both of Mich., assignors to REO Hydraulic Pierce & Form Inc., Detroit, Mich.

Filed Jan. 12, 1990, Ser. No. 464,321
Int. Cl.[5] B21D *28/24*
U.S. Cl. 72—333 **31 Claims**



1. An apparatus for performing work operations on a workpiece comprising:

a frame;

a carrier mounted for reciprocal movement on said frame;

a ram mounted for reciprocal movement on said carrier;

pressure fluid means operative to move said ram relative to said carrier and said carrier relative to said frame;

a first fabricating tool mounted on said ram;

a piston assembly mounted on said ram for reciprocal movement on said ram;

piston assembly power means operative to move said piston assembly relative to said ram; and

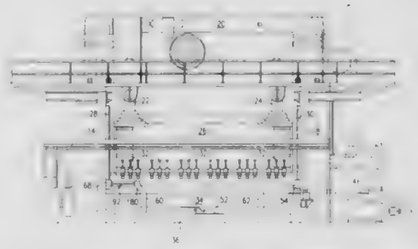
a second fabricating tool mounted on said piston assembly.

5,054,306

TRANSFER FINGER SHIFT APPARATUS FOR TRANSFER PRESSES

Edward J. Brzezniak, Orland Park, Ill., assignor to Verson, A division of Allied Products Corporation, Chicago, Ill.

Filed Feb. 21, 1990, Ser. No. 483,560
Int. Cl.[5] B21D *43/05*
U.S. Cl. 72—405 **13 Claims**



1. In a multi-station transfer press including a fixed bed, movable die bolsters adjacent the fixed bed and movable into and out of the press to permit die changing a die press member

movable toward and away from one of said die bolsters to form work pieces in said dies.

first and second transfer rail sets movable relative to said die bolster in horizontal, vertical and transverse directions, said first transfer rail set located on said bolster and said second transfer rail set located on said fixed bed, said transfer rail sets being arranged for alignment in end to end relationship;

means for moving said transfer rail sets;

first transfer finger means carried by said first transfer rail set, for engaging said work pieces and moving said work pieces through the positions of said transfer press; and

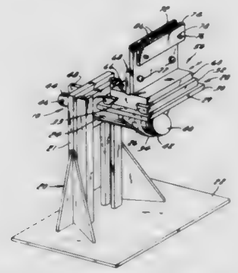
transfer finger shift means including a first shift portion located on said first transfer rail set and a second shift portion located on said second transfer rail set, said transfer finger shift means carrying second transfer finger means located on said second transfer rail set and including shift lock means separate from said transfer rail sets and mounted on said die bolster engagable with said second transfer finger means for retaining said second transfer finger means on said die bolster with said first transfer rail sets for movement into and out of said press with said die bolster.

5,054,307

UNIVERSAL BASE MEMBER FOR SECURING VEHICLES FOR DAMAGE REPAIR

Craig A. Wisner, Wauwatosa, Wis., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Sep. 25, 1990, Ser. No. 587,977
Int. Cl.[5] B21D *01/12*
U.S. Cl. 72—457 **12 Claims**



1. An assembly for securing a vehicle to a rack, said assembly comprising:

a universal base assembly, a stand for supporting said base assembly on the rack, said universal base assembly including a base mounted on said stand and a slide mounted on said base for sliding movement relative to said base, and a number of attachment heads adapted to be mounted on said slide for securing different vehicles to the rack, each attachment head including means for securing said attachment head to the vehicles at a predetermined position relative to the rack, and means for locking said slide to said base to locate said head relative to the vehicles.

5,054,308

FORGING PUNCH

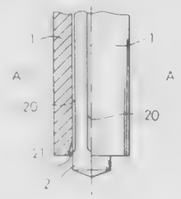
Tomohito Asai, Gifu, and Toru Isono, Kagamigahara, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 17, 1990, Ser. No. 568,866
Claims priority, application Japan, Aug. 21, 1989, 1-214635
Int. Cl.[5] B21D *37/18*
U.S. Cl. 72—463 **8 Claims**

1. A forging punch for processing a first hole of a given diameter and a second hole of a diameter smaller than that of said first hole formed concentrically at the bottom of said first hole, said forging punch comprising:

an outer punch of a cylindrical shape extending in an axial direction for forming said first hole, said outer punch having a central hole extending in said axial direction; and

an inner punch disposed in said central hole and protruding from an end surface of said outer punch for forming said second hole;



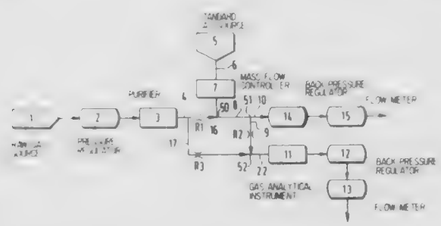
at least one of said punches having at least one groove for relieving oil extending adjacent said central hole in said axial direction formed on at least one of an inner peripheral surface of said outer punch and an outer peripheral surface of said inner punch wherein at least one of said grooves extends to an end surface of said outer punch.

5,054,309

PROCESS FOR PRODUCING LOW-CONCENTRATION GAS MIXTURES, AND APPARATUS FOR PRODUCING THE SAME

Jacques Mettes, Doylestown, Pa.; Takako Kimura, Toyosato, Japan, and Michael Schack, Dusseldorf, Fed. Rep. of Germany, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 17, 1989, Ser. No. 437,615
Claims priority, application European Pat. Off., Nov. 21, 1988, 88.402920.8
Int. Cl.[5] G01N *33/00*
U.S. Cl. 73—1 G **17 Claims**



1. A process for producing low-concentration gas mixtures, comprising the steps of:

controlling the pressure of a raw gas;

purifying the raw gas, thereby generating a high purity diluent gas;

dividing said high purity diluent gas into first and second portions;

controlling the flow rate of at least one high-concentration standard gas;

mixing said first portion of said high-purity diluent gas and the high-concentration standard gas, thereby generating a medium-concentration gas mixture;

dividing the medium-concentration gas mixture into a first flow and a second flow;

diluting the gas mixture of the first flow with said second portion of the high purity diluent gas, thereby generating a low-concentration gas mixture;

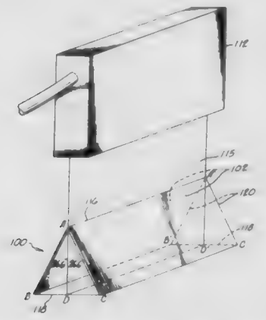
controlling both the pressure of said second flow of the medium gas mixture and the the pressure of said low concentration gas mixture downstream of their creation.

5,054,310

TEST OBJECT AND METHOD OF MEASUREMENT OF AN ULTRASONIC BEAM

John J. Flynn, Los Angeles, Calif., assignor to The California Province of the Society of Jesus, Los Gatos, Calif.

Continuation-in-part of Ser. No. 97,579, Sep. 16, 1987, Pat. No. 4,903,523, which is a continuation-in-part of Ser. No. 775,754, Sep. 13, 1985, abandoned. This application Nov. 20, 1989, Ser. No. 439,081
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] G09B *23/14*
U.S. Cl. 73—1 DV **12 Claims**



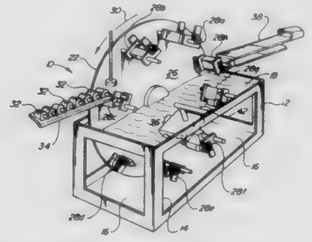
12. A test object for use in the testing and calibration of ultrasonic diagnostic equipment used in scanning a planar of tissue by emitting an ultrasonic beam comprising a planar array of targets having an edge positioned in the scanning plane and extending from said scanning plane at an angle of 26.6° with respect to the scanning plane.

5,054,311

FULLY AUTOMATED LEAK TESTING APPARATUS

Donald C. Gates, Troy, Mich., assignor to Expertek, Inc., Detroit, Mich.

Filed Dec. 11, 1989, Ser. No. 449,701
Int. Cl.[5] G01M *3/04*
U.S. Cl. 73—41.4 **21 Claims**



1. An automated apparatus for leak testing at least one fluid containing chamber by detecting bubbles of gas rising from said chamber when said chamber is submerged in a liquid, comprising:

a deflector disposed in said liquid for guiding said bubbles toward a predetermined location;

means adjacent said predetermined location for detecting said bubbles passing said predetermined location and producing a signal in response thereto;

means for registering the number of said signals; and

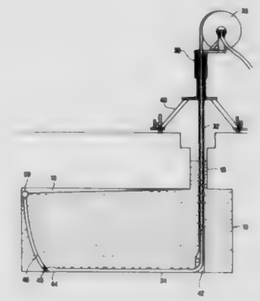
a turntable for rotating said chamber to a submerged position below said deflector to enable bubbles from said chamber to rise to said deflector.

5,054,312

FUEL TANK AIR POCKET REMOVAL DEVICE

Charles N. Wilson, II, 28B Hemon Cobb, Windham, Me. 04062

Continuation of Ser. No. 58,987, Jun. 8, 1987, abandoned. This application Sep. 7, 1989, Ser. No. 405,055
Int. Cl.[5] B65B *31/04*
U.S. Cl. 73—49.2 **21 Claims**



1. A device for the removal of air pockets from filled underground fuel storage tanks, which device is comprised of, in combination:

(a) a hollow rigid guide column of sufficient length to extend through a fuel inlet opening of said storage tank to the bottom thereof;

(b) a rotatable assembly affixed to the lower end of said column and containing guide means for facilitating the passage of a hose from said guide column to the most distant point of the walls of said storage tank;

(c) a hose slidably mounted within and extendable from and retractable into said guide column and having means for maintaining said air hose in a plane essentially parallel to the bottom of said storage tank;

(d) a first end of a tubular means connected to a first end of said hose, said tubular means comprising flotation means, said flotation means causing a second end of said tubular means to contact said air pocket; and

(e) means on a second end of said hose for extending and retracting said hose through said guide column so as to reach

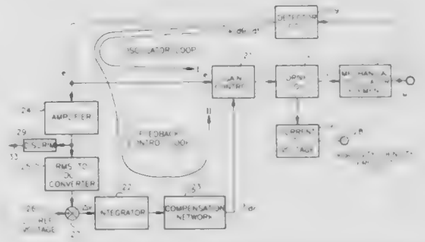
any point within said storage tank.

5,054,313

CONTROL CIRCUITRY FOR VISCOSITY SENSORS

John V. Fitzgerald, Metuchen; Teresa M. Walsh, Lawrenceville; Frank J. Matusik, Piscataway; John Stone, Vincentown, all of N.J.; Edmond Dougherty, Strafford, Pa., and John Batton, New York, N.Y., assignors to National Metal and Refining Company, Ltd., Metuchen, N.J.

Filed Jul. 17, 1990, Ser. No. 554,285
Int. Cl.[5] G01N *11/14*
U.S. Cl. 73—59 **8 Claims**



8. A control circuit for an oscillatory viscometer having a

transducer assembly including a sensor having a portion adapted for immersion in a fluid a viscous property of which is to be determined, drive means responsive to a drive signal for causing said sensor to mechanically oscillate, and detector means for generating a sensor movement signal corresponding to the movement of said sensor, said circuit comprising:

a variable gain amplifier having an input terminal coupled to said detector means for receiving said sensor movement signal, and an output terminal coupled to said drive means for providing said drive signal thereto, the gain of said variable gain amplifier having a value determined by a gain control signal applied to a gain control terminal thereof;

said transducer assembly and variable gain amplifier forming a primary oscillator loop for causing said sensor to mechanically oscillate;

AC to DC conversion means coupled to said detector means for generating at an output terminal thereof a varying DC signal having a value corresponding to the amplitude of mechanical oscillation of said sensor;

comparator means coupled to the output terminal of said conversion means for generating a difference signal corresponding to the difference between the value of said varying DC signal and a reference signal having a value corresponding to a desired amplitude of mechanical oscillation of said sensor;

integrator means coupled to said comparator means for integrating said difference signal to generate said gain control signal; and

means for coupling said gain control signal from said integrator means to said gain control terminal of said variable gain amplifier,

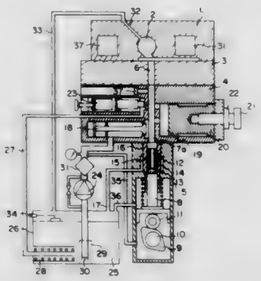
said integrator means responding to changes in said difference signal sufficiently rapidly so that said sensor is caused to oscillate with an amplitude corresponding to the value of said reference signal.

5,054,314

MECHANICAL FATIGUE TEST BENCH FOR ENGINE CYLINDER HEADS

Daniel Cofflard, Mouy; Maurice Bouvier, Villette d'Anton, and Bernard Engler, Andresy, all of France, assignors to Montupet, Levallois-Perret, France

Filed Aug. 28, 1990, Ser. No. 573,777
Claims priority, application France, Aug. 29, 1989, 89 11521
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **11 Claims**



1. A test bench for determining the mechanical fatigue resistance of cylinder heads having combustion chambers and water chambers, comprising:

an intermediate connecting member adapted for fixing a cylinder head to be tested thereto;

means for generating hydraulic pressure connected to the combustion chambers and comprising a monitoring chamber of adjustable volume for containing a hydraulic fluid, an injection pump comprising a piston and discharge system for pumping hydraulic fluid from said monitoring chamber to the combustion chambers, a supply pump for supplying hydraulic fluid to said monitoring chamber and said injection pump, and a bistable valve for regulating the pressure of fluid in said monitoring chamber and combustion chamber,

said means for generating hydraulic pressure faithfully and reproducibly simulating a pressure cycle as a function of time in the combustion chamber, by operation of said injection pump, said monitoring chamber, said bistable valve and said discharge system; and

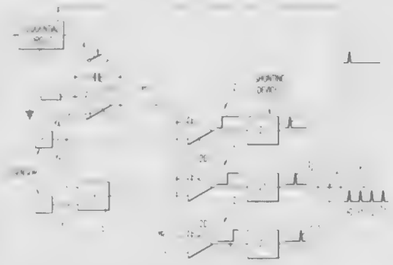
means for circulating a heat bearing fluid in the water chambers comprising first and second circuits, said first circuit for circulating a heat-bearing fluid at ambient temperature and said second circuit for circulating a heat bearing fluid at a higher temperature than said first circuit, and means for regulating the circulation of fluids from said circuits.

5,054,315

CODING OF THE VALUE OF SEVERAL QUANTITIES MEASURED IN A TIRE

Andre Dosjoub, Chamalieres, France, assignor to Compagnie Generale des Etablissements Michelin-Michelin & CIE, Clermont-Ferrand, France

PCT No. PCT/FR88/00613, § 371 Date Jul. 12, 1990, § 102(e) Date Jul. 12, 1990, PCT Pub. No. WO89/05738, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 14, 1988, Ser. No. 499,285
Claims priority, application France, Dec. 18, 1987, 87 17864
Int. Cl.[5] B60C *23/04*
U.S. Cl. 73—146.5 **4 Claims**



1. Device for coding the value of n quantities measured on a tire, making possible the transmission of said values to the frame carrying said tire, comprising:

means to mark a start of a measuring cycle by providing an output;

a generator delivering a reference signal in ramp form, said signal in ramp form being initiated by said output of said means to mark;

n means each sensitive to one of said quantities, each constantly delivering an output signal as a function of the value of said quantity to which it is sensitive;

an element delivering a reference value selected in advance to correspond to the end of the measuring cycle;

n+1 coincidence detectors receiving, at one of their two inputs, said signal in ramp form, and delivering a high signal when the signals at their two inputs are identical, and a low signal at any other time;

said other input receiving:

for first coincidence detector, the output signal of one of the means sensitive to said quantities,

for last coincidence detector, said reference value,

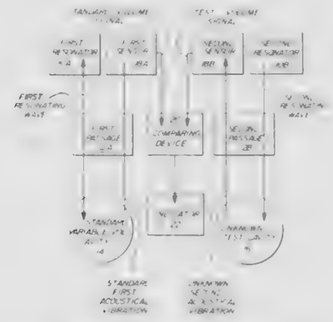
for remaining n-1 coincidence detectors, an output value of a summation device providing the sum of the value of said other input of the preceding coincidence detector and the output signal of one of n means sensitive to said quantities.

5,054,316

VOLUMETRIC MEASURING APPARATUS

Keith Pratt, 12875 Twyla La., Hartland, Mich. 48029, and Duane D. Muelling, 742 Birdsong, Milford, Mich. 48381

Filed Sep. 4, 1990, Ser. No. 577,674
Int. Cl.[5] G01F *17/00*
U.S. Cl. 73—149 **20 Claims**



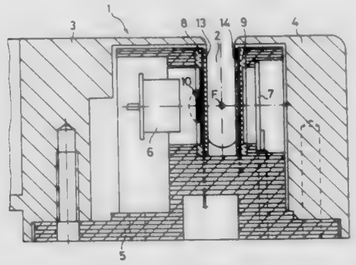
13. A unitary standard volume cavity for use in a volumetric measuring apparatus having at least two acoustic resonators, one of said acoustic resonators communicating with said unitary standard volume cavity to produce a standard acoustical vibration, and the second of said acoustic resonators communicating with an unknown volume cavity to produce an unknown acoustical vibration, whereby said acoustical vibrations are compared to determine the volume of said unknown volume cavity, wherein the improvement comprises said unitary standard volume cavity defining a variable volume.

5,054,317

DEVICE FOR MONITORING AND/OR MEASURING PARAMETERS OF A RUNNING, THREAD-LIKE OR WIRE-LIKE TEST MATERIAL AND METHOD FOR OPERATING THE DEVICE

Hanspeter Laubscher, Gossau, Switzerland, assignor to Zellweger Uster AG, Uster, Switzerland

Filed Jun. 7, 1990, Ser. No. 536,157
Claims priority, application Switzerland, Jun. 7, 1989, 02139/89
Int. Cl.[5] G01B *7/32, 11/10, 7/08*
U.S. Cl. 73—160 **13 Claims**



1. Device for monitoring parameters of a running, thread-like or wire-like elongated test material, comprising:

means for establishing a measuring gap which provides for passage of the test material, said measuring gap having two side walls each of which is provided with a measuring electrode forming part of a capacitive measuring element for monitoring the cross-section of the test material; and,

means for optically measuring the test material within said measuring gap, said optical measuring means including an optical measuring element for monitoring the diameter of the test material, said optical measurement element further including a light source arranged on a side of the measuring gap and a photoelectric element positioned to receive light from said light source, the capacitive measuring element and the optical measuring element being formed as part of a common measuring head.

5,054,318

RESONANCE FREQUENCY LIQUID LEVEL SENSOR

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Feb. 9, 1990, Ser. No. 477,489
Int. Cl.[5] G01F *23/00*
U.S. Cl. 73—290 **11 Claims**



1. An apparatus for measuring liquid level comprising in combination:

a) an elongated member extending across free surface of a liquid with one extremity disposed on one side of the free surface above the liquid and the other extremity disposed on the other side of the free surface submerged in the liquid, wherein at least one of the two extremities of the elongated member is secured to a supporting structure;

b) a movable support mounted on the elongated member and moving along the length of the elongated member in a sliding relationship following the free surface of the liquid, wherein said movable support prevents flexural vibration of the elongated member and creates a nodal section in the flexural vibration of the elongated member at section where the movable support is located;

c) means for inducing a flexural vibration of a section of the elongated member intermediate said one extremity of the elongated member and said movable support; and

d) means for detecting a natural frequency of the flexural vibration of said section of the elongated member as a measure of liquid level determined from a functional relationship wherein said natural frequency increases with rising liquid level and decreases with receding liquid level.

5,054,319

LIQUID LEVEL SENSOR AND METHOD

John J. Fling, 57 Hollister Ranch, Gaviota, Calif. 93117

Filed Sep. 12, 1990, Ser. No. 581,637
Int. Cl.[5] G01F *23/10*
U.S. Cl. 73—319 **17 Claims**

1. A liquid level sensor system for sensing the level of a fluid in a tank or the like, comprising:

a float assembly configured for placement in the liquid, the float assembly including float means that is sufficiently buoyant to move the float assembly vertically in response to changes in the level of the liquid;

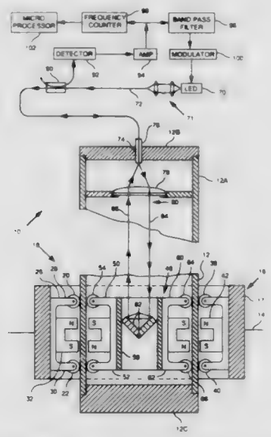
a reflector coupled to the float means such that the position of the reflector is a function of the liquid level;

a light source:

means for directing a light signal from the light source toward the reflector;

means for modulating the light source with a signal indica-

tive of the intensity of light reflected from the reflector such that the intensity of the light output from the light



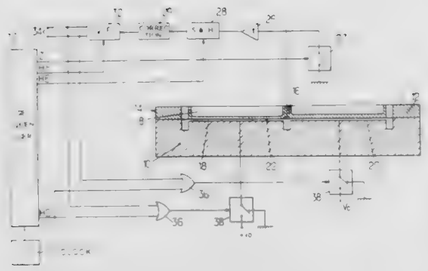
source oscillates at a frequency that is a function of the liquid level.

5,054,320

PENDULOUS ACCELEROMETER WITH ELECTROSTATIC REBALANCING

Amand Yvon, Soisy Sous Montmorency, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique Sagem

Continuation of Ser. No. 212,010, Jun. 27, 1988, abandoned.
This application Mar. 28, 1990, Ser. No. 503,123
Claims priority, application France, Jun. 30, 1987, 87 09229
Int. Cl.[5] G01P *15/13*
U.S. Cl. 73—517 B **6 Claims**



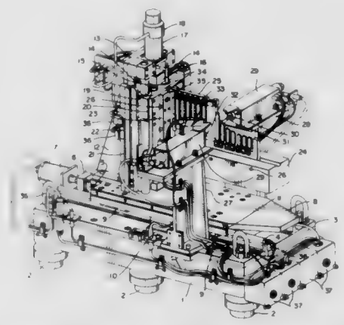
1. Rebalance electrostatic accelerometer, comprising:
a flat pendulum, having a center of gravity,
a base member including means for supporting the pendulum for oscillation of limited amplitude about a rotation axis located in the plane of the pendulum and whose distance to the center of gravity is small as compared with the span of the pendulum on both sides of the rotation axis,
a first electrode carried by one major face only of the pendulum symmetrically with respect to the axis,
a pair of mutually identical second electrodes formed on the base member, substantially parallel to the first electrode, each located on one side of the rotation axis and each forming a respective capacitor with a respective portion of the first electrode, and
means for applying respective voltages to said second electrodes for generating a rebalancing electrostatic field restoring the pendulum to a predetermined balanced condition,
wherein the pendulum has a shape of a sheet symmetrical with respect to the rotation axis, both sides of the major face of the sheet opposed to the major face carrying the pendulum electrodes being each formed with a plurality of recesses and the recesses located on one side of the rotation axis being different from the recesses located on the other side of the rotation axis.

5,054,321

METHOD AND APPARATUS FOR MEASURING SURFACE CONTOUR ON PARTS WITH ELEVATED TEMPERATURES

Mark S. Horvath, Canton, Mich.; Roy A. Nance, McMurray, Pa.; George H. Cohen, Pittsburgh, Pa., and George Fodor, Pittsburgh, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 31, 1990, Ser. No. 531,356
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—597 **10 Claims**



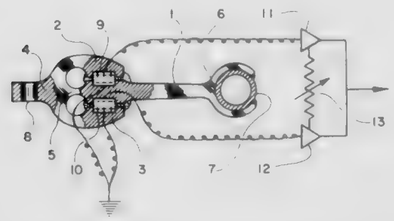
1. A method for measuring the surface contour of a test piece, which comprises submerging an ultrasonic transducer and a test piece in a liquid medium, flowing a stream of liquid at known and constant temperature between the transducer and the test piece to provide an acoustical coupling therebetween, causing the transducer to transmit ultrasonic waves through said acoustical coupling to the test piece, measuring an amount of time necessary for the waves to travel from the transducer to the test piece and for a reflected wave to be received by the transducer, calculating the distance between the transducer and the test piece based on the measured time of wave travel, and determining the contour of the test piece based thereon.

5,054,322

PIEZO ELECTRIC RELATIVE MOTION SENSOR

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 273,462, Nov. 21, 1988, Pat. No. 4,888,991. This application Dec. 12, 1989, Ser. No. 448,929
The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.
Int. Cl.[5] G01H *11/06*
U.S. Cl. 73—658 **21 Claims**



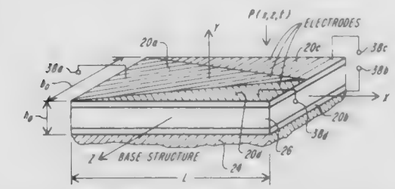
1. A device for detecting movements comprising in combination :
a) an elongated structural member connected to a supporting body in a flexible arrangement and extending therefrom in an over-hanging arrangement; said elongated structural member including a motion coupling means disposed at an over-hanging extremity thereof for converting a movement of an object under detection to a flexural movement of said elongated structural member; and
b) a first Piezo electric element disposed in a squeezed arrangement in a first gap intermediate said elongated structural member and said supporting body, and a second Piezo electric element disposed in a squeezed arrangement in a second gap intermediate said elongated structural member and said supporting body, wherein said first and second gaps are respectively disposed on two opposite sides of the central axis of the combination of said elongated structural member and said supporting body;
wherein the movement of the object converted to a flexural movement of the elongated structural member generates two electromotive forces respectively from said first and second Piezo electric elements, whereby the two electromotive forces can be combined to eliminate noises and obtain a refined electrical signal representing the movement of the object.

5,054,323

PRESSURE DISTRIBUTION CHARACTERIZATION SYSTEM

James E. Hubbard, Jr., Derry, N.H., and Shawn E. Burke, North Reading, Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 4, 1989, Ser. No. 333,108
Int. Cl.[5] G01L *9/00*
U.S. Cl. 73—754 **30 Claims**



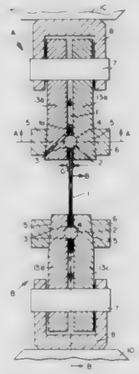
1. A device for characterizing pressure distribution on a surface with respect to at least one reference (x) axis, comprising:
A. a substrate defining said surface, said surface being rigid,
B. a substrate electrode disposed on said surface,
C. a piezo film at least partially disposed on and overlying said substrate electrode, said film being characterized by a predetermined strain response transfer function, and
D. a sensor electrode having a portion disposed on and overlying at least part of said piezo film and said substrate electrode, said portion having a predetermined width profile b(x) in the direction transverse to said reference axis, whereby a total charge on said film as a function of time, O(t), is established in said piezo film substantially proportional to: $\int_0^L b(x)P(x,t)dx$
where L is representative of the maximum dimension of said sensor electrode in said x direction, where t is representative of time, and P(x,t) is representative of said pressure distribution on said surface as a function of x and t,
E. means for generating a signal representative of O(t), said signal being representative of a predetermined characteristic of said pressure distribution on said surface.

5,054,324

APPARATUS FOR CLAMPING A TEST SAMPLE WITHOUT ANY BENDING MOMENT

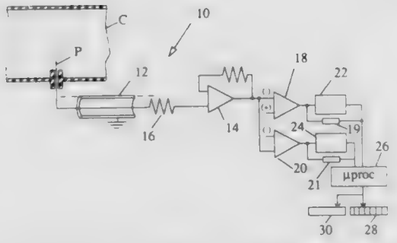
Andreas Pohl, Gross Umstadt, Fed. Rep. of Germany, assignor to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed Jul. 10, 1990, Ser. No. 551,421
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1989, 3926308
Int. Cl.[5] G01N *3/04*
U.S. Cl. 73—859 **15 Claims**



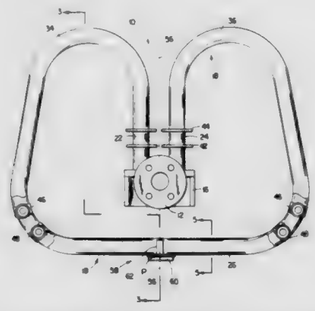
1. An apparatus for clamping a test sample having a sample thickness, comprising first and second clamping jaws, spherical segment recesses facing each other in said clamping jaws, a single piece sample holding sphere having spherical surfaces fitting into said spherical segment recesses for clamping said sample holding sphere when said clamping jaws are pressed toward each other, said sample holding sphere having a bore extending in a sample holding direction through said sphere, said test sample having an end for passing through said bore, and means for tightly holding said end of said test sample in said bore to secure said test sample through said sample holding sphere to said clamping jaws, said sample holding sphere having a dimension, relative to said spherical segment recesses, sufficient to form a gap between said clamping jaws, said gap having a gap width larger than said sample thickness for keeping said test sample out of direct contact with said clamping jaws to avoid an application of a bending moment to said test sample while permitting an application of a tension or compression force to said test sample.

5,054,325
FLOW MEASUREMENT BY COLLISION CHARACTERIZATION
Ronald L. Dechene, Boxford, Mass.; Thomas B. Smith, Atkinson, N.H., and Robert E. Newton, Tewksbury, Mass., assignors to Auburn International, Inc., Danvers, Mass.
Filed Feb. 5, 1990, Ser. No. 475,722
Int. Cl.[5] G01F *1/56*
U.S. Cl. 73—861.04 4 Claims



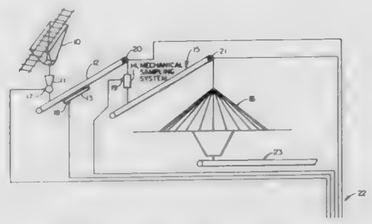
1. Method of flow measurement of fluids carrying suspended solid particles comprising the steps of:
(a) inducing collisions of individual ones of the solid particles with charge transfer means,
(b) measuring each such collision of a solid particle with the charge transfer means by sensing an alternating current from the electrode with a nanosecond order of magnitude wavelength pulse (1×10^{-8}–1×10^{-10} seconds) and a 1–10 Giaghertz gain - bandwidth product amplification.

5,054,326
DENSITY COMPENSATOR FOR CORIOLIS-TYPE MASS FLOWMETERS
Wade M. Mattar, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed Mar. 5, 1990, Ser. No. 489,340
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 26 Claims



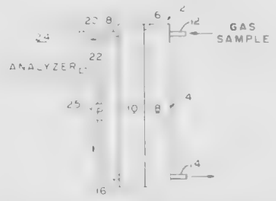
1. A density insensitive Coriolis-type mass flowmeter for measuring mass flow of fluid comprising:
a continuous loop of conduit for transporting said fluid, said loop having first and second resonant modes of oscillation;
a drive apparatus adapted to drive a section of said conduit;
a sensing apparatus adapted to measure the oscillatory motion of said conduit; and
at least one dummy mass in addition to and spaced from said drive apparatus and said sensing apparatus, said dummy mass disposed on said conduit, and having a mass and position on said conduit such that the ratio of resonant frequencies of said first and second resonant modes remains substantially constant for different densities of fluid flowing through said conduit.

5,054,327
APPARATUS FOR AUDITING MEANS USED FOR MEASURING AN ALIQUOT FROM A BULK MATERIAL FOR MEASUREMENT OF ONE OR MORE CHARACTERISTICS OF SAID BULK MATERIAL
Gregory Gould, 30 Clairmont Ave., Thornwood, N.Y. 10594
Division of Ser. No. 415,943, Oct. 2, 1989, which is a continuation-in-part of Ser. No. 144,995, Jan. 19, 1988, Pat. No. 4,882,927. This application Sep. 24, 1990, Ser. No. 587,821
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] G01D *18/00*
U.S. Cl. 73—863 48 Claims



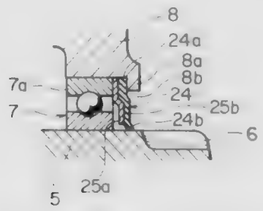
1. Apparatus for auditing for accuracy or reliability a means used for extracting an aliquot from a bulk material which comprises a first means for extracting an aliquot from said bulk materials and a second means for concurrently measuring one or more variables which directly or indirectly affect the normal operation of said first means and thereby affect the accuracy or reliability of the extraction of said aliquot by said first means, which variables are independent of said first means for extracting said aliquot from said bulk material.

5,054,328
GAS ANALYZER WITH DIFFUSION FILTER
Stephen E. Long, Murrysville, and Albert A. Poli, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Nov. 2, 1989, Ser. No. 430,377
Int. Cl.[5] G01N *1/22*
U.S. Cl. 73—864.81 4 Claims



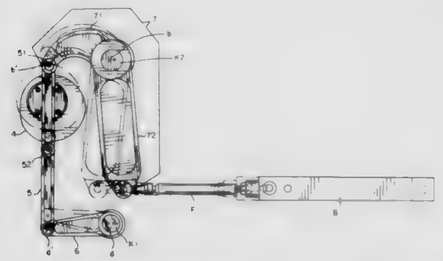
1. A gas analyzer comprising a housing forming a chamber, a gas permeable membrane dividing the chamber into a first and a second compartment, each compartment having an inlet and an outlet, means to introduce a sample stream comprising a gas phase to the first compartment inlet, the gas analyzer having an inlet and outlet, means to fluidically connect the analyzer inlet and the second compartment outlet, means to connect the analyzer outlet and the second compartment inlet, and means to circulate gas to be measured through the analyzer and second compartment, in a closed circuit said membrane being sufficiently gas permeable that the said gas to be measured is substantially the same composition as the sample stream gas phase.

5,054,329
STARTER MOTOR PINION SHAFT OIL SEAL
Akira Morishita; Shuzoo Isozumi, and Takao Tanaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 18, 1990, Ser. No. 466,846
Claims priority, application Japan, Jan. 19, 1989, 1-5874[U]; Jan. 19, 1989, 1-5875[U]; Feb. 1, 1989, 1-11610[U]; Feb. 14, 1989, 1-16012[U]; Feb. 17, 1989, 1-38680
Int. Cl.[5] F02N *15/06;* F16C *33/00;* F02F *5/00*
U.S. Cl. 74—7 R 2 Claims



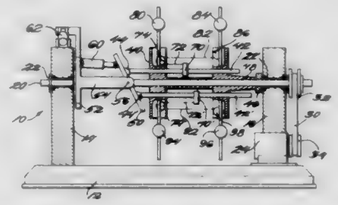
1. A starter motor, comprising: an output rotary shaft (**1**), a stationary frame (**8**), a ball bearing (**7**) secured to said frame, a clutch pinion moving member (**5**) mounted in a coaxial relationship to said rotary shaft between an outer periphery of said rotary shaft and said ball bearing for sliding movement over a predetermined distance in an axial direction thereof, said clutch pinion moving member having a pinion (**6**) at a front end thereof, and a generally planar, annular oil seal (**24**) mounted at a location on said frame forwardly of said ball bearing and extending radially inwardly toward said clutch pinion moving member to seal a location between said frame and said clutch pinion moving member, said frame having a radially inwardly extending flanged portion (**8***a*) at a front end thereof, a radially outermost portion (**24***a*) of said oil seal being sandwiched between and in contact with an inside face of said flanged portion and an end face of an outer race (**7***a*) of said ball bearing, a radially innermost portion of said oil seal terminating in a lip portion (**24***b*) at which said oil seal slidably contacts with an outer periphery of said pinion moving member.

5,054,330
MOTION TRANSFER MECHANISM WITH A LINKAGE
Sheng-Yau Wang, Tainan, Taiwan, assignor to Chun Zu Machinery Industry Co., Ltd., Kaohsiung Hsien, Taiwan
Filed Jun. 19, 1990, Ser. No. 540,380
Int. Cl.[5] F16H *28/08*
U.S. Cl. 74—53 2 Claims



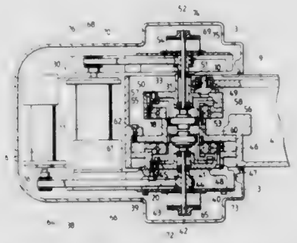
1. A motion transfer mechanism for a machine comprising:
a one-arm crank member mounted pivotally on the machine;
a two-arm crank member mounted pivotally on the machine and having a first crank arm and a second crank arm;
a coupler connected pivotally to the one-arm crank member at one end thereof and to the first crank arm of the two-arm crank member at the other end thereof;
a driving plate mounted rotatably on the machine and having a cam edge, wherein a line connecting any pair of points of the cam edge spaced by a predetermined distance also passes through a rotating axis of the driving plate;
an input unit connected to the driving plate so as to rotate the driving plate;
a pair of roller followers mounted pivotally on the coupler in association with the cam edge of the driving plate, connecting line of the roller followers passing through the rotating axis of the driving plate; and
an output unit connected to the second crank arm of the two-arm crank member such that rotation of the driving plate causes the roller followers to slide along the cam edge of the driving plate, and the one-arm and two-arm crank members to be rotated so as to activate the output unit.

5,054,331
CONTROLLABLE GYROSCOPIC PROPULSION APPARATUS
Andrew T. Rodgers, P.O. Box 3426, West Columbia, S.C. 29171
Filed Jan. 18, 1990, Ser. No. 466,995
Int. Cl.[5] F16H *27/04, 23/08*
U.S. Cl. 74—84 R 12 Claims



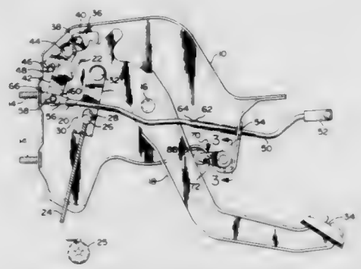
1. An apparatus for converting rotary motion to linear motion, said apparatus comprising:
a base;
a shaft rotatably mounted on said base, said shaft having a long axis;
a cylindrical frame attached to said shaft and rotating therewith;
a plurality of rods slidably and horizontally carried by said cylindrical frame;
a plurality of weights connected to with said shaft and rotating therewith;
attaching means for attaching each one of said plurality of weights to one of said plurality of rods so that said weights move radially as said rods slide horizontally within said cylindrical frame; and
controlling means for controlling said plurality of rods so that each of said weights is moved by one of said rods a desired distance between a first and a second position, each one of said desired distances relating to each other of said desired distances so as to form one set of a plurality of sets of related desired distances, each of said sets propelling said apparatus in one direction.

5,054,332
ARTICULATED ROBOT
Tsuneo Terauchi, and Takaaki Nishimura, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
PCT No. PCT/JP88/00684, § 371 Date Mar. 6, 1989, § 102(e) Date Mar. 6, 1989, PCT Pub. No. WO89/00095, PCT Pub. Date Jan. 12, 1989
PCT Filed Jul. 7, 1988, Ser. No. 354,314
Claims priority, application Japan, Jul. 7, 1987, 62-167852
Int. Cl.[5] B25J *17/00*; F16H *1/10*
U.S. Cl. 74—479 6 Claims



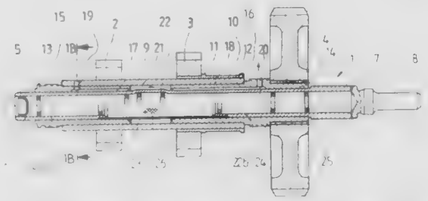
1. An articulated robot, comprising; at least two control arms, a pair of speed reducers provided at articulated portions of the two control arms and on the same axis in opposed relation to each other, said two speed reducers comprising first and second harmonic drive speed reducers which include a common circular spline fixedly secure to the articulated portion of one of the control arms, and a first bracket mounted on one end of said common circular spline for angular movement relative to said common circular spline and connected to the articulated portion of the other control arm.

5,054,333
MOVABLE PEDAL LEVER STOP
Gerald G. Scott, Troy, Mich., and Anthony R. Gurney, Toledo, Ohio, assignors to Dura Mechanical Components, Inc., Troy, Mich.
Filed May 23, 1990, Ser. No. 527,425
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—512 10 Claims



1. In a vehicle having a cable-operated device movable between extreme positions during its operation, an operating cable for shifting the device between positions, and a cable actuator for operating the cable and movable between an actuated position, a shipping position and a intermediate deactuated position, the cable actuator being operable to shift the device between extreme positions upon actuator movement from deactuated position to an actuated position,
means for positioning the cable actuator in deactuated position, characterized by
a stop member located adjacent the cable actuator for engagement thereby in deactuated position,
means mounting the stop member for movement between an operating position for engagement by the cable actuator in deactuated position during device operation, and a shipping position, enabling movement of the cable actuator beyond deactuated position to the actuator shipping position during vehicle shipment, thus creating slack in the cable to facilitate attachment of the cable to the cable-operated device for subsequent operation thereof.

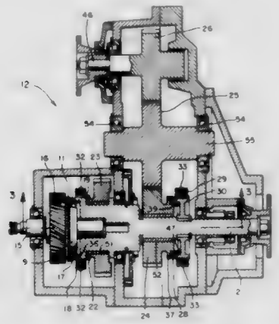
5,054,334
ASSEMBLED DRIVESHAFT
Helmut Swars, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany
Continuation of Ser. No. 307,413, Feb. 7, 1989, abandoned. This application Sep. 6, 1990, Ser. No. 581,065
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1988, 3803684
Int. Cl.[5] F16H *53/00*
U.S. Cl. 74—567 11 Claims



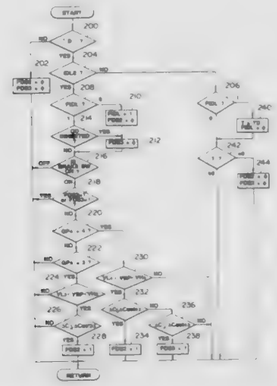
1. An assembled driveshaft, comprising: a hollow shaft; individual drive elements, said drive elements are non-rotatingly attached to said hollow shaft, with seat diameters being stepped in at least one direction, said hollow shaft being composed of several tubular members which are telescopingly connected to each other in an essentially force-locking way in a region of their radial overlap so that said hollow shaft has a stepped outer diameter, said drive elements being attached to respective of said tubular members of said hollow shaft in an essentially force-locking manner, a respective innermost one of said tubular members having a lowest yield point of the shaft material and, progressing stepwise outwardly, one of a respective outermost of said tubular member and drive element having a highest yield point, one of said drive elements being at least partially positioned in the region of the overlap of at least two tubular members inserted into each other, and the driving elements being made of a material having a yield point higher than a yield point of the material of the respective tubular member attached underneath of said driving elements.

5,054,335
SYSTEM FOR SHIFTING FOUR-WHEEL VEHICLES
Ben A. Andrews, HCR 105, Sonoita, Ariz. 85611
PCT No. PCT/US88/01804, § 371 Date Jan. 19, 1989, § 102(e) Date Jan. 19, 1989, PCT Pub. No. WO88/09453, PCT Pub. Date Jan. 12, 1988
Continuation-in-part of Ser. No. 25,826, May 29, 1987, abandoned, and Ser. No. 101,246, Sep. 24, 1987, abandoned. This PCT application May 27, 1988, Ser. No. 309,203
Int. Cl.[5] F16H *37/06*
U.S. Cl. 74—665 GA 4 Claims

1. A four wheel drive transfer unit for a vehicle comprising:
an input shaft;
a rear output shaft;
a front output shaft;
a high-low gear shifting section;
a four wheel drive-two wheel drive shifting section;
said high-low gear shifting section comprising a high range power transfer gear mounted on the input shaft, a low gear counter shaft, first and second low gear counter shaft gears, a low range power transfer gear rotatably mounted on the rear output shaft, and a synchronizer clutch between the rear output shaft and the high range power transfer gear;
said four wheel drive-two wheel drive shifting section comprising a power transfer gear rotatably mounted on the rear output shaft, an idler gear, a front output shaft drive gear fixed to the front output shaft, and a synchronizer clutch between the power transfer gear and the rear output shaft.

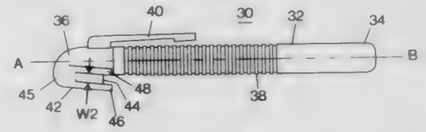


5,054,336
SHIFT CONTROL FOR AUTOMATIC TRANSMISSION FOR EFFECTIVE ENGINE BRAKE RUNNING
Satoshi Takizawa, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 24, 1989, Ser. No. 342,144
Claims priority, application Japan, Apr. 22, 1988, 63-98386
Int. Cl.[5] F16H *59/48, 59/68, 59/36*
U.S. Cl. 74—866 9 Claims



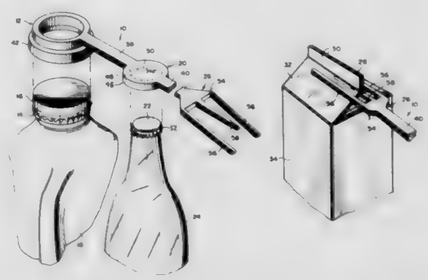
1. In an automatic transmission for an automotive vehicle, a shift control comprising:
means for detecting a present gear position which the automatic transmission is conditioned in;
control means for determining a magnitude of deceleration which the automotive vehicle is subject to, determining a predetermined deceleration value in response to said present gear position detected, comparing said magnitude of deceleration determined with said predetermined value, and determining a new gear position which the automatic transmission should be conditioned in, in response to a result from said comparing said magnitude of deceleration determined with said selected predetermined value; and
means for effecting a downshift in the automatic transmission from said present gear position down to said new gear position.

5,054,337
RING-PULLER
Derito J. Bonicelli, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Dec. 20, 1990, Ser. No. 630,691
Int. Cl.[5] B67B *7/00*
U.S. Cl. 81—3.07 9 Claims



1. A flexible-ring puller comprising:
a grippable elongated element having a longitudinal axis, a proximate end and a distal end;
a ring-engaging member attached adjacent said distal end, said ring-engaging member having means shaped to engage said ring and distribute force from a pulling action on said ring to a sufficient area of said ring to avoid breakage of said ring; and
said means comprises a convex channel defined by a first inner ridge and a second outer ridge.

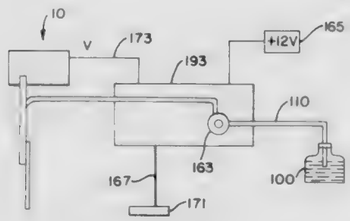
5,054,338
COMBINATION CAP REMOVER AND CARTON TOP OPENER TOOL
Jonathan C. Weis, 9 Bluebird Dr., Syosset, N.Y. 11791
Filed Oct. 31, 1990, Ser. No. 606,555
Int. Cl.[5] B67B *7/44*
U.S. Cl. 81—3.09 3 Claims



1. A combination cap remover and carton top opener tool comprising:

a) a twist-off cap remover portion to break the seal of a tamper proof zip strip from a twist-off cap on a container so as to remove the twist-off cap away from the container; said twist-off cap remover portion includes:
a collar sized to fit over the twist-off cap on the container; and
a pair of downwardly extending spaced apart tangs on said collar to engage with and break the seal of the tamper proof zip strip from the twist-off cap so that the twist-off cap can be rotated and removed from the container;
b) a bottle cap remover portion to lift off a bottle cap from a bottle so as to remove the bottle cap away from the bottle;
c) a carton top opener portion to break the seal between a pair of tabs on top of a carton and form a pouring spout from two flaps;
d) a first arm member extending between said twist-off cap portion and said bottle cap remover portion; and
e) a second arm member extending between said bottle cap remover portion and said carton top opener portion to aid a person in manually operating said tool.

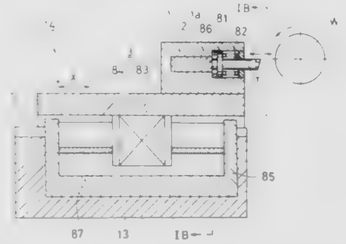
5,054,339
TATTOOING ASSEMBLY
Harold Yacowitz, 221 Second Ave., Piscataway, N.J. 08854
Continuation-in-part of Ser. No. 481,944, Feb. 20, 1990. This application Dec. 19, 1990, Ser. No. 630,004
Int. Cl.[5] B26F *1/24;* **A61B** *17/20*
U.S. Cl. 81—9.22 **8 Claims**



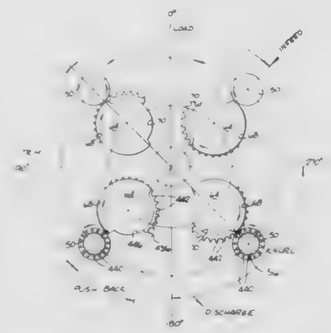
1. A tattooing apparatus comprising
a tattooing needle having an operating end adapted to penetrate the skin of a subject,
a source of tattooing pigment,
a flexible tube having a first end and a second end, said first end being secured to said source of pigment and said second end being secured to said needle near said operating end thereof whereby tattoing pigment can flow from said source and through said flexible tube to said operating end of said needle; and
a peristaltic pump coupled to said flexible tube for controlling the flow precisely from said source of pigment to said tattooing needle.

5,054,340
APPARATUS FOR MACHINING A NON-CIRCULAR WORKPIECE
Kazuhiko Sugita, Anjo; Norio Sakakibara, Kariya; Nobumitsu Hori, Ichinomiya, and Yoichi Yamakawa, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Jan. 29, 1990, Ser. No. 471,392
Claims priority, application Japan, Jan. 30, 1989, 1-22185
Int. Cl.[5] B23B *03/28*
U.S. Cl. 82—18 **7 Claims**

1. An apparatus for machining a non-circular workpiece wherein a spindle to which a workpiece is attached is rotated while a tool is moved back and forth in a direction perpendicular to the axis of said spindle to machine the workpiece so as to have a desired non-circular sectional shape, comprising:
a tool mount member disposed for movement in the direction perpendicular to the axis of said spindle;
a tool support means for supporting said tool on said tool mount member for reciprocating movement in the same moving direction as that of said tool mount member;
a high speed actuator placed on said tool mount member for moving said tool back and forth at a high speed with respect to said tool mount member;
a motor for moving said tool mount member back and forth in the direction perpendicular to the axis of said spindle;
a first control means for actuating said motor, in a synchronized relationship with the rotation of said spindle, in accordance with data indicating low frequency components of profile data calculated from said desired non-circular sectional shape so that said tool mount member is moved to produce a first movement corresponding to said low frequency components of said profile data; and
a second control means for actuating said high speed actuator, in a synchronized relationship with the rotation of said spindle, in accordance with data indicating high frequency components of said profile data so that said tool is moved relative to said tool mount member to produce a second movement corresponding to said high frequency components of said profile data, said tool being moved by a composite movement composed of said first movement of said tool mount member and said second movement of said tool relative to said tool mount member to produce a movement corresponding to said profile data.

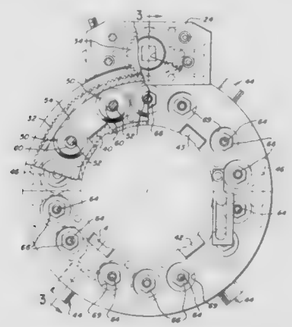


5,054,341
APPARATUS AND METHOD FOR TRIMMING A CAN BODY
Bert E. Johansson, and Ray L. Bowles, both of Golden, Colo., assignors to Coors Brewing Company, Golden, Colo.
Filed Nov. 13, 1989, Ser. No. 435,196
Int. Cl.[5] B23B *1/00*
U.S. Cl. 82—47 **41 Claims**



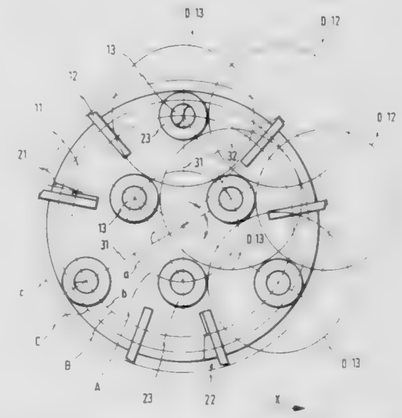
27. A method for trimming away a portion of a can body having an uneven edge on the open end thereof to form a can body of a desired axial extent comprising:
rotatably mounting a main drive shaft having a longitudinal axis on support structure;
securing a turret having a plurality of mounting surfaces on said main drive shaft for rotation therewith;
removably securing a can trimming apparatus on each of said mounting surfaces for rotation therewith;
rotating said main drive shaft;
feeding an untrimmed can body having an open end having an uneven edge to each of said can trimming apparatuses during the rotation thereof;
cutting each of said untrimmed can bodies to form a trimmed can body and a trimmed away portion;
removing said trimmed can body from said can trimming apparatus; and
moving said trimmed can body and said trimmed away portion in an axial direction parallel to the longitudinal axis of said main drive shaft; and moving only said trimmed can body in an opposite axial direction back to its original position prior to removing said trimmed can body from said can trimming apparatus and cutting, knurling and disposing of said trimmed away portion.

5,054,342
PIPE MACHINING APPARATUS
Jeffrey M. Swiatowy, Palatine, and Keith P. Polifka, Wheeling, both of Ill., assignors to The E.H. Wachs Company, Wheeling, Ill.
Filed May 9, 1989, Ser. No. 349,511
Int. Cl.[5] B23B *5/08*
U.S. Cl. 82—113 **17 Claims**



1. A pipe machining apparatus comprising, a tool carrier, a frame attachable to a pipe for mounting the tool carrier for rotation about a first axis, means for rotating the tool carrier circumferentially about the pipe, a plurality of bearings on one of the frame and the tool carrier and each having an annular surface for engaging the other of the frame and tool carrier to guide relative rotational movement therebetween, said annular surface having an axis substantially parallel to the first axis, and adjusting means for individually adjusting the radial position of the radially facing surface on each bearing independent of any other bearing.

5,054,343
TABLE OF TURRET LATHE
Wolfgang Gloser, Börtlingen; Siegfried Kuhn, Dürnau; Robert Räder, Göppingen-Faurndau, and Friedhelm Setzer, Göppingen, all of Fed. Rep. of Germany, assignors to Boehringer Werkzeugmaschinen GmbH, Göppingen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 511,349, May 20, 1983, abandoned. This application Aug. 26, 1988, Ser. No. 237,525
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137514
Int. Cl.[5] B23B *29/00*
U.S. Cl. 82—159 **2 Claims**



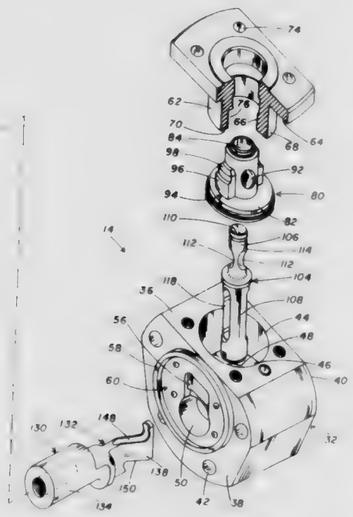
1. A turret lathe table having a center, comprising: means for holding tools, arranged on at least three concentric reference circles on said table around said center, including an innermost reference circle of a first diameter, an outermost reference circle of a second diameter larger than said first diameter, and at least one intermediate reference circle of a diameter between said first and second diameters; said means for holding tools comprising first tool holding means for holding drill tools and inner turning tools and a second tool holding means for holding outer turning tools; a predetermined number of said first tool holding means being arranged on said innermost reference circle, and a predetermined number of first tool holding means being arranged on said at least one intermediate reference circle, a predetermined number of said second tool holding means being arranged on said outermost reference circle; said tool holding means being arranged on said reference circles with a spacing such that a collision-free diameter remains between adjacent tool holding means, said collision free diameter being defined as a diameter equivalent to a workpiece of maximum dimensions capable of being machined by a respective tool in a respective tool holding means, without interference from tools in adjacent tool holding means; said first tool holding means on said at least one intermediate reference circle being located on a median perpendicular of a straight line connecting two adjacent first tool holding means on said innermost reference circle and having the same angular spacing from each other; said second tool holding means being arranged on said outermost reference circle such that tips of tools in said second tool holding means are located on mid-verticals on a straight line connecting two adjacent first tool holding means on said at least one intermediate reference circle, whereby the second tool holding means will have unequal angular distance with respect to each other and with respect to the center of the turret lathe table.

5,054,344

QUICK CHANGE CLAMPING MECHANISM

Robert A. Erickson, Raleigh, N.C., and Ted R. Massa, Latrobe, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Feb. 1, 1990, Ser. No. 473,289
Int. Cl.[5] B23B *29/00*
U.S. Cl. 82—160 42 Claims



24. A clamping assembly for releasably holding a tool holder having a shank, the clamping assembly comprising:

(a) a tool support member having a bore extending along a longitudinal axis for receiving the shank of the tool holder;

(b) locking means disposed within the bore for releasably engaging the tool holder shank to secure the tool holder to the support member; and

(c) means for actuating the locking means including:

(1) a first member for urging the locking means into engagement with the tool holder shank, the first member being mounted within the support member for reciprocal movement along a longitudinal axis between a locked position and a released position;

(2) the second member being mounted in the support member for reciprocal movement along an axis at an angle to the longitudinal axis for displacing the first member along the longitudinal axis;

(3) wherein one of the first and second members is formed with a central passage having two contact surfaces;

(4) the other of the two members having two wedge surfaces which incline in parallel fashion; and

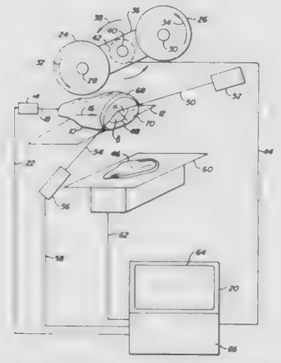
(5) at least two force transmitting elements engaged with respective wedge surfaces, the force transmitting elements also being engaged with the respective contact surfaces wherein when the second member is moved in a first direction the first member is moved towards the locked position by cooperative engagement between the first wedge surface, first force transmission element, and first contact surface, and wherein when the second member is moved in a second direction the first member is moved towards the release position by cooperative engagement of the second wedge surface, the second force transmitting element, and the second contact surface.

5,054,345

METHOD OF OBTAINING CONSTANT WEIGHT PORTIONS OR SLICES OF SLICED FOOD PRODUCTS

Guenther Weber, Oberer Birkenweg 17b, Biedenkopf-Wallau, Fed. Rep. of Germany 3560

Continuation of Ser. No. 324,359, Mar. 15, 1989, abandoned.
This application Oct. 5, 1990, Ser. No. 595,624
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1988, 3808790
Int. Cl.[5] B26D *5/20*
U.S. Cl. 83—42 7 Claims



1. A method of obtaining constant weight portions of a food product having an already cut, exposed surface by slicing the food product with a cutting device, the food product having a peripheral contour which varies over its length, each portion including a plurality of slices, the method comprising the steps of:

a) selecting a desired weight for the portion of the food product;

b) determining the surface area of the cut, exposed surface prior to cutting a slice;

c) identifying different food components and the respective food component occupies by them in the cut, exposed surfaces;

d) calculating a specific gravity of the product in the vicinity of the food product contiguous with the cut, exposed surface using data relating to a previously determined surface area, the food component areas and specific gravities of the food components;

e) advancing said product relative to said cutting device by an amount to obtain a first slice having one of a desired weight and a desired thickness;

f) cutting the first slice;

g) repeating the steps b) to f) to obtain further slices; and

h) adjusting the amount by which the food product is advanced relative to said cutting device for at least one of the slices so that a cumulative weight of said slices equals the desired weight of the portion.

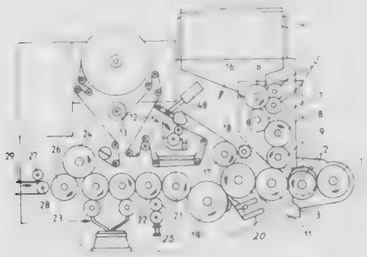
5,054,346

APPARATUS FOR REPEATEDLY SEVERING RUNNING WEBS OF TIPPING PAPER AND THE LIKE

Bob Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Jun. 9, 1989, Ser. No. 364,312
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1988, 3819933
Int. Cl.[5] B23D *25/00, 19/00*
U.S. Cl. 83—100 24 Claims

1. Apparatus for separating uniting bands from the leader of a running web of tipping paper, one side of which is coated with adhesive, in a filter tipping machine of the tobacco processing industry, comprising a drum-shaped counterknife having a peripheral surface and being rotatable about a predetermined axis, said counterknife further having at least one substantially axially parallel groove provided in said peripheral surface in parallelism with said axis, and an internal surface flanking one side of said at least one groove; means for supplying the web to said counterknife so that the leader of the web



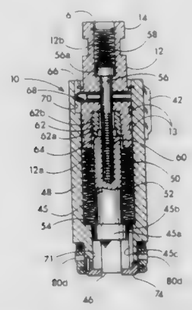
overlies a predetermined portion of said peripheral surface; and a rotary carrier adjacent said counterknife and provided with at least one knife having an elongated cutting edge arranged to penetrate into said groove once during each revolution of said carrier to sever the web in cooperation with said internal surface, said cutting edge being yieldable in the circumferential direction of said carrier.

5,054,347

PUNCH ASSEMBLY WITH IMPROVED DISASSEMBLY FEATURES

Gary E. Johnson; John T. Schneider, both of Ramsey, and Nils E. Sundquist, Plymouth, all of Minn., assignors to Mate Punch & Die Co., Anoka, Minn.

Continuation of Ser. No. 233,735, Aug. 19, 1988, Pat. No. 4,989,484. This application Sep. 17, 1990, Ser. No. 583,967
The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.
Int. Cl.[5] B26F *1/14*
U.S. Cl. 83—140 6 Claims



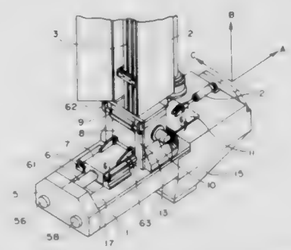
1. A punch assembly for a punch press having a quick tool change capability, said punch assembly comprising a punch sleeve having a punch slidably mounted therein, a tang extending from the sleeve, a bolt connected between the tang and the punch, an ejection spring member mounted between the tang and the bolt for yieldably biasing the bolt in the direction of the punch, an elastic retraction member mounted in the sleeve for biasing the punch and tang toward one end of the sleeve, means for retaining the ejection spring and bolt within the punch assembly during partial disassembly thereof so that only the punch is removed during said partial disassembly while the ejection spring and bolt remain in place when the punch is withdrawn after the bolt is unscrewed from the punch.

5,054,348

DEVICE FOR SHEARING A GROUP OF TUBES

Ghislain Anciaux, Champagnac la Riviere; René Guilloteau, Verrieres le Buisson; Daniel Tucoulat, Cormeilles en Parisis, and Pascal Chauvire, Paris, all of France, assignors to Societe Generale Pour les Techniques Nouvelles S.G.N., Saint Quentin en Yuelines, France

Filed Jun. 15, 1989, Ser. No. 366,671
Claims priority, application France, Jun. 15, 1988, 88 08029
Int. Cl.[5] B23D *23/00;* B26D *7/06*
U.S. Cl. 83—157 19 Claims



1. A device for shearing a group of tubes, including at least a base end section, said group of tubes being placed in a magazine, said shearing of the tubes being carried out, after cutting of said base and section, comprising:

the magazine being oriented vertically and receiving the tubes vertically;

a chassis including a counter blade connected thereto; and

a blade bearing saddle mounted for forward and backward rectilinear and horizontal movement on the chassis, said blade bearing saddle including

at an upper portion thereof, a front opening, closed at a lower portion thereof, said front opening receiving said base end section and allowing withdrawal of the base end section, after cutting of the base end section by said counter blade, during the forward and horizontal movement of the blade-bearing saddle; and

a rear opening, including a cutting blade, for receiving and cutting the tubes by moving the blade-bearing saddle forward rectilinearly and horizontally within the chassis, said tubes being compressed near to a horizontal cutting plane by a clamp, said cutting blade cooperating with the counter blade fixed on the chassis to cut the tubes, said rear opening being temporarily closable by a movable flap which prevents the group of tubes from dropping too far and allows adjustment of the cutting length; said movable flap being articulated about a horizontal axis perpendicular to the direction of movement of the blade-bearing saddle; and said flap being supported on either side by an arm positioned beneath said flap, said arm terminated by a roller on a ramp, fixed to the chassis.

5,054,349

PROCEDURE AND APPARATUS FOR PERFORATING A PRODUCT IN SHEETS AND PERFORATED PRODUCT OBTAINED LIKE THIS

Andre Vuillaume, 63 Clos des Franquieres, Biviers (Isere), France

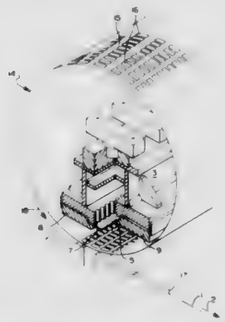
Filed Mar. 21, 1989, Ser. No. 326,292
Int. Cl.[5] B26F *3/00*
U.S. Cl. 83—177 9 Claims

1. An apparatus for forming perforations in a material, utilizing pressurized fluid comprising:

(a) means for forming a stream of pressurized fluid;

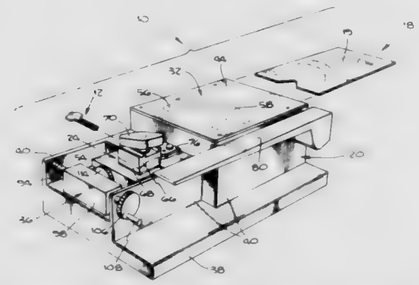
(b) means for directing the pressurized fluid through a material to be perforated, the means for directing having a plurality of perforations formed therein, the fluid being directed therethrough to perforate the material.

(c) means for interrupting the flow of pressurized fluid through the means for directing; and



(d) means for moving the material to be perforated into the flow of the pressurized fluid.

5,054,350
KEY PUNCH MACHINE
Klaus W. Gartner, Palos Verdes Estates, and Alan K. Uyeda, Rosemead, both of Calif., assignors to H.P.C., Inc., Schiller Park, Ill.
Filed Sep. 25, 1989, Ser. No. 412,016
Int. Cl.[5] B26F *1/12*
U.S. Cl. 83—414 **7 Claims**



1. Apparatus for duplicating a key having a blade portion with a plurality of spaced transverse notches of differing depths and spacing therebetween, said notches being coded to predetermined coded depth and spacing information, said predetermined coded depth and spacing information being recorded in sequential indexes corresponding to said coded depth and spacing information on coded indicia bearing cards, said apparatus comprising:

housing means including a card receiving slot for removably receiving said cards therein;

key blank holding means associated with said housing means for holding a key blank having a blank blade portion in a predetermined relationship thereon;

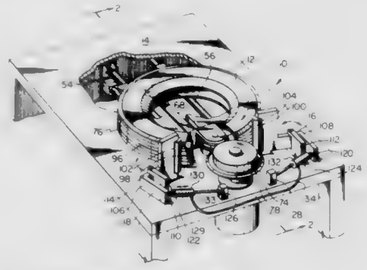
notch nipping means associated with said housing means and adapted to nip out portions of said blank to thereby cut a notch in said blank blade portion;

key blank position means associated with said housing means and having said key blank holding means affixed thereon for movign said key blank having a blank blade portion into cutting engagement with said nipping means; and

indicating means provided within said housing means and visually observable from the exterior of said housing for continuously indicating the position of said key blank having a blank blade portion and continuously indicating the depth and spacing therebetween of notches to be cut in said blank blade in comparison with said coded depth and spacing indicia on said cards,

said notch nipping means including a nipping tool constrained to reciprocating motion with respect to said housing means in substantially one direction and a slidable bar constrained to reciprocating motion with respect to said housing means in a direction substantially perpendicular to the motion of said nipping tool, said nipping tool including a cam-follower-pin affixed thereon and said slidable bar including a cam-follower-slot constructed and arranged for receiving said cam-follower-pin wherein movement of said slidable bar displaced said cam-follower-pin so as to move said nipping tool into cutting engagement with said blank blade portion of said key blank.

5,054,351
TIRE SPLITTER
William C. Jolliffe, London; Steve Mandich, St. Thomas, and Kazuhide Obukuro, Willowdale, all of Canada, assignors to MRP Recycling Technologies Inc., Mississauga, Canada
Filed Apr. 27, 1989, Ser. No. 343,653
Int. Cl.[5] B26D *1/02*
U.S. Cl. 83—430 **6 Claims**



1. Tire cutting apparatus comprising:

first and second tire locating members;

tire cutting means on at least one of the tire locating members; and

drive means for movement of a tire relative to the tire cutting means,

wherein the tire locating members are relatively moveable between a loading position, in which the members are separated to permit location of a tire therebetween, and a cutting position, in which the first tire locating member engages an inner surface of a tire, the second tire locating member engages an outer surface of a tire and the tire cutting means cuts through a portion of the tire between the members, the drive means effecting relative movement of the tire locating members and the cutting means and the tire to produce a circumferential cut in the tire and thus cut the tire into at least two parts,

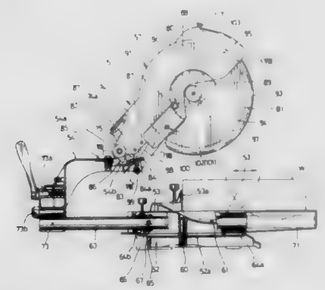
wherein the first and second tire locating members include respective first and second tire engagement portions rotatably mounted about respective first and second axes to permit movement of a tire between the members inn the cutting position and thus rotation of a tire around a third axis,

wherein the cutting means includes a cutting blade mounted to and extending from one of said first and second engagement portions of the locating members,

wherein the cutting means further includes a blade receiving slot in the other of said first and second engagement portions of the locating members, wherein when the tire locating members are in the cutting position, the cutting blade extends into the blade receiving slot,

wherein the drive means drives one of the first and second engagement portions of the tire locating members to rotate about said respective first or second axis, and further comprising a tire supporting surface wherein the first and second tire locating members extending above the surface, the first tire locating member extending from the surface to permit a tire to be located over the member.

5,054,352
MITER SAW
Fusao Fushiya; Katuyasu Ito, and Mitsuyoshi Niinomi, all of Anjo, Japan, assignors to Makita Electric Wroks, Ltd., Anjo, Japan
Filed Jan. 11, 1990, Ser. No. 463,489
Claims priority, application Japan, Jan. 17, 1989, 1-9569; Jul. 7, 1989, 1-176410
Int. Cl.[5] B27B *5/20*
U.S. Cl. 83—468.3 **6 Claims**



1. A miter saw comprising:

a base including a mounting cavity having a bottom and openings upwardly and in the front and rear sides, said base including a pair of projections formed on the right and left sides of said mounting cavity and having upper surfaces serving as workpiece supporting surfaces;

a turntable rotatably mounted within said mounting cavity and having an upper surface positioned in the same plane as the workpiece supporting surfaces of said projections, said turntable having an opening formed in the upper surface thereof and extending in the diametrical direction thereof, said turntable having a vertical wall formed on the peripheral side thereof which is of a height substantially equal to that of the mounting cavity;

a slide member extending through the vertical wall in a substantially diametrical direction of the turntable and slidable through the openings of the front and rear sides of said base;

an arm mounted on the rear end of said slide member; and

a miter saw unit located above said turntable and mounted on said arm for swinging movement in a vertical plane, said miter saw unit having a cutting tool which may enter the opening of said turntable when said miter saw is swung downwardly.

5,054,353
BLANKING PRESS
Johannes Haack, and Hans Wymann, both of Lyss, Switzerland, assignors to Feintool International Holding, Lyss, Switzerland
Continuation of Ser. No. 800,291, Nov. 21, 1985, Pat. No. 4,905,556. This application Jan. 22, 1990, Ser. No. 468,635
Claims priority, application Switzerland, Nov. 28, 1984, 5683/84
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] B21D *37/08, 51/44*
U.S. Cl. 83—639.5 **2 Claims**

1. A fine-blanking tool assembly for mounting in a press having a fixed table and an associated movable ram to effect a plurality of fine-blanking operations on a sheet-metal workpiece or a cast or forged blank during one stroke movement of said ram with respect to said table, said tool assembly comprising:

a first tool support integral with one of said ram and table, a plurality of first tool parts associated with said first tool support;

a second tool support integral with the other one of said ram and table, a plurality of second tool parts associated with said second tool support;

a first hydraulic unit associated with said first tool support;

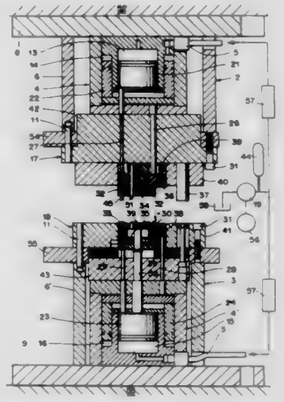
a second hydraulic unit associated with said second tool support;

each of said first and second hydraulic units including a cylinder integral with an associated one of said first and second tool supports, a piston capable of reciprocal movements within its associated cylinder, and transmission means for transmitting movements from each said piston to an associated one of said first and second tool parts;

a control device including driving means for independently and selectively driving said pistons within their associated cylinders during a course of said stroke movement of said ram;

said press including means for conveying the workpiece within the press; and

wherein at least two of the first tool parts and at least two of the second tool parts are integrally connected to a piston of an associated hydraulic unit and wherein said first tool support includes at least two of said first hydraulic unit and said second tool support includes at least two of said second hydraulic unit.



5,054,354
SAW BLADE
Leon Kubis, 8173 S. E. Cumberland Cir., Hobe Sound, Fla. 33455
Filed Oct. 31, 1989, Ser. No. 430,647
Int. Cl.[5] B27B *33/12*
U.S. Cl. 83—835 **6 Claims**

1. A saw blade comprising a body and a plurality of cutting members positioned in seatings in said body; each seating having front and back walls and a bottom, and each cutting member having front and back surfaces; a groove in each said front surface and a groove in each said back surface of each cutting member, said grooves extending in the direction of the length of each cutting member; each cutting member extending laterally on each side of said body and each groove having a width substantially equal to the thickness of said body; said body having a plurality of rib members, each rib member extending into one of said grooves to provide lateral location of each of said cutting members in said body; said front wall of

each seating being defined by a slot extending radially into said body and spaced from the seating; an aperture at a bottom end of each slot, positioned below said bottom of each of said

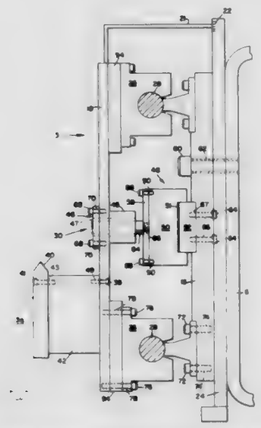


seatings; an oversize pin driven into each aperture to urge said front wall toward said back wall into a clamping engagement with the cutting member in the seating; and a layer of synthetic resin adhesive between each cutting member and seating.

5,054,355
AUTOMATIC GLASS CUTTING AND POSITIONING SYSTEM

Thor R. Tisse, Salisbury, N.C., and Ricky J. Turner, Clover, S.C., assignors to Guardian Industries Corp., Northville, Mich.

Filed Mar. 13, 1990, Ser. No. 492,766
Int. Cl.[5] B26D *3/08;* **C03B** *33/10*
U.S. Cl. 83—879 **12 Claims**

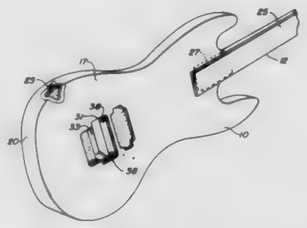


1. A positioning apparatus for use in cutting glass produced in a continuous flow process, comprising:
a base plate with first and second sides;
a rail means rigidly attached to said first side of said base plate;
a first carriage means secured to said rail means, such that said carriage means slides along said rail means;
a second carriage means with first and second sides rigidly attached to said first carriage means;
a linear step motor means, comprising:
a linear platen, a forcer and an air gap therebetween, said motor means rigidly attached to said first side of said base plate, such that said motor means is located adjacent to said rail means, and said platen is rigidly attached to said base plate;
means to prevent binding betweein said platen and said forcer connected to said second carriage means and said forcer, such that said means to prevent said binding interacts with said motor means, thereby to provide a uniform air gap between said platen and said forcer; and
a cutting means removably attached to said second carriage means.

5,054,356
GUITAR

Alfred D. Farnell, Jr., 10700 Jersey Blvd., #670, Rancho Cucamonga, Calif. 91730

Filed Sep. 13, 1990, Ser. No. 581,883
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—291 **9 Claims**

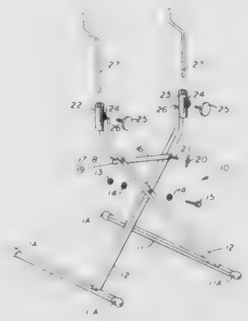


1. A guitar comprising:
a hollow guitar body including a front panel, a back panel, and an edge strip extending right angularly between edge areas of the two panels to circumscribe a hollow space within the guitar body,
a flat fretboard attached flatwise to said front panel and extending longitudinally beyond the guitar body, said front panel having a central opening therein,
a bridge support bar extending from the rear panel through the central opening in the front panel,
a bridge positioned on the front panel in spanning relation to the central opening,
means attaching the bridge to the support bar,
a plurality of tensioned strings anchored to the bridge and extending along the front panel and fretboard, and
a foam core within said guitar body hollow space.

5,054,357
MARCHING PERCUSSION INSTRUMENT STAND

Mark C. Pyle, 5726 Ludington, Houston, Tex. 77035

Filed Jun. 28, 1990, Ser. No. 545,199
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—421 **26 Claims**



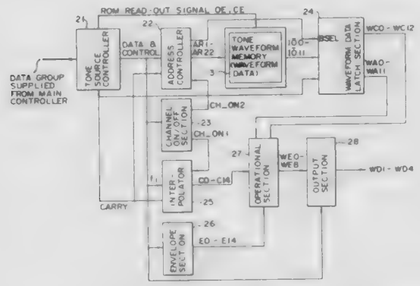
1. A marching percussion instrument stand comprising:
a pair of elongated feet members oriented to support said stand along their entire length,
a pair of elongated support members, each having one end secured on one of said elongated feet members adjacent to one end thereof,

means securing said support members together at about the midpoint thereof for pivotal movement between a collapsed position with said feet members adjacent to each other in parallel relation and an opened position with said feet members spaced apart from each other in parallel relation,
the other ends of said support members being bent to be in parallel relation when in said opened position,
releasable means for securing said support members in said opened position, and
a pair of adjustable members adjustably supported on said bent ends of said support members having ends shaped to cooperate with supporting means on a percussion instrument.

5,054,358
POLYPHONIC ELECTRONIC MUSICAL INSTRUMENT

Ryuji Usami, Akigawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 226,936, Aug. 1, 1988, Pat. No. 5,007,323.
This application Mar. 7, 1990, Ser. No. 490,735
Claims priority, application Japan, Aug. 17, 1987, 62-203200
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—617 **5 Claims**

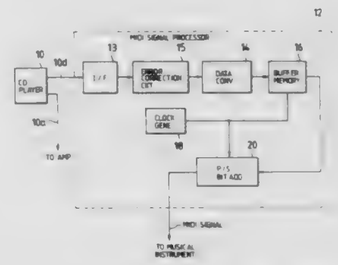


1. A polyphonic electronic musical instrument for generating a plurality of tone signals through a time-division process on a plurality of channels, said instrument comprising:
first memory means for storing a sounding on/off signal for each of the channels;
second memory means for storing frequency data for each of the channels;
third memory means for storing the sounding on/off signal stored in said first memory means;
fourth memory means for storing the frequency data stored in said second memory means;
sounding on/off signal-transferring means for transferring the sounding on/off signal stored in said first memory means to said third memory means;
frequency data-transferring means for transferring the frequency data stored in said second memory means to said fourth memory means;
first means for controlling said sounding on/off signal transferring means such that a sounding off signal is written in an area of said first memory means which corresponds to a plurality of channels assigned to one tone, and the data stored in said first memory means is transferred to said third memory means, after the sounding off signal has been written into said first memory means;
second means for controlling said frequency data-transferring means such that tone frequency data is written in an area of said second memory means which corresponds to a plurality of channels assigned to said one tone, and the frequency data stored in said second memory means is transferred to said fourth memory means, after the tone frequency data has been written into said second memory means, and after the sounding off signal has been transferred to said third memory means by said first means;
third means for controlling said sounding on/off signal-transferring means such that a sounding on signal is written in an area of said first memory means which corresponds to a plurality of channels assigned to said one tone, and the data stored in said first memory means is transferred to said third memory means, after the sounding on signal has been written into said first memory means, and after the data stored in said second memory means has been transferred to said fourth memory means by said second means; and
tone-generating means for starting generating of tone signals phase-synchronized for said channels in response to a sounding on signal and in accordance with the frequency data stored in said fourth memory means, after tone signals are stopped in response to a sounding off signal stored in said third memory means.

5,054,359
MIDI SIGNAL PROCESSOR

Kazuo Hikawa, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 21, 1989, Ser. No. 440,043
Claims priority, application Japan, Nov. 21, 1988, 63-294407
Int. Cl.[5] G10H *7/00;* **G11B** *27/10*
U.S. Cl. 84—645 **12 Claims**



3. A MIDI signal processor for use with a CD player, comprising:
means for extracting 6-bit-unit MIDI data from predetermined subcode frames of a digital output signal of the CD player;
means for rearranging the extracted 6-bit-unit MIDI data into a set of 8 bit bytes;
first adding means for adding a predetermined start bit to a head of each of the MIDI data bytes;
second adding means for adding a predetermined stop bit to an end of each of the MIDI data bytes;
wherein the first adding means and second adding means cooperate to convert the MIDI data bytes into 10-bit-unit MIDI data; and
means for serially outputting the 10-bit-unit MIDI data.

5,054,360
METHOD AND APPARATUS FOR SIMULTANEOUS OUTPUT OF DIGITAL AUDIO AND MIDI SYNTHESIZED MUSIC

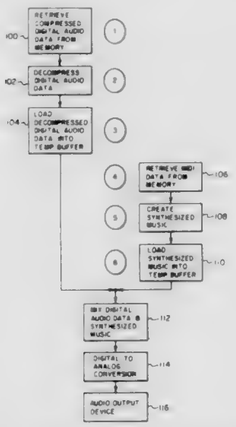
Ronald J. Lisle, Cedar Park; B. Scott McDonald, Leander, and Michael D. Wilkes, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1990, Ser. No. 608,111
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—645 **8 Claims**

1. A method for the simultaneous output of digital audio and MIDI synthesized music by a single digital signal processor, said method comprising the steps of:
storing a compressed digital audio file within a memory device associated with a single digital signal processor;

storing a MIDI file within a memory device associated with said single digital signal processor;

selectively and alternatively coupling portions of said compressed digital audio file to said single digital signal processor for creation of decompressed audio and portions of said MIDI file to said single digital signal processor for creation of MIDI synthesized music;



storing said decompressed digital audio within a first temporary buffer;

storing said MIDI synthesized music within a second temporary buffer; and

combining the contents of said first temporary buffer and said second temporary buffer to create a composite output including digital audio and MIDI synthesized music.

5,054,361

ELECTRONIC MUSICAL INSTRUMENT WITH VIBRATION FEEDBACK

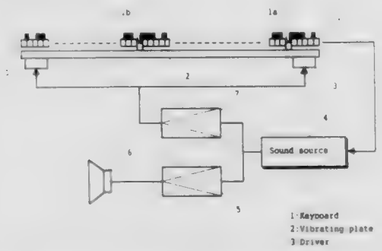
Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 19, 1989, Ser. No. 423,971

Claims priority, application Japan, Oct. 27, 1988, 63-271834

Int. Cl.[5] G10C *3/06, 9/00;* **G10H** *1/32, 3/22*

U.S. Cl. 84—737 **10 Claims**



1. An electronic musical instrument having vibrational feedback to the performer, comprising:

input means, adapted to be contacted by the performer, for providing data relating to musical tones to be produced in response to actions of the performer;

sound source means for generating musical tone signals based on data received from the input means; and

vibrator means for vibrating the electronic musical instrument in response to the musical tone signals and separate from any generation of sounds in response to the musical tone signals, thereby to impart vibration to the input means and provide vibrational feedback to the performer.

5,054,362

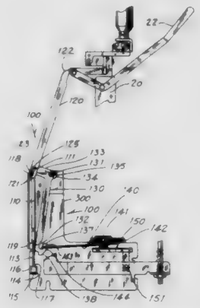
CONTROLLED SHOTSHELL ADVANCING MECHANISM FOR SHOTSHELL RELOADER

Robert L. Bachhuber, Mayville, Wis., assignor to Mayville Engineering Company, Inc., Mayville, Wis.

Filed Dec. 24, 1990, Ser. No. 632,851

Int. Cl.[5] F42B *33/02*

U.S. Cl. 86—27 **5 Claims**



1. On a shotshell reloader having a worktable, with a turret, to support shotshells to be reloaded and having a tool carriage, with shotshell reloading tools, mounted above the worktable, and having reloading actuating means for producing relative motion between the worktable and the tool carriage so as to move the tools on the tool carriage into and out of contact with the shot shells, the improvement comprising:

a shotshell advancing mechanism for advancing the shotshells located in the turret on the worktable from a first position in relation to a first pre-determined tool to a subsequent position on the worktable in relation to a subsequent tool;

said shotshell advancing mechanism having a fluid compression-expansion means for providing motive force to move the turret and advance a shotshell within the turret a predetermined distance when said fluid compression-expansion means expands;

first linkage means, connected to the loading actuating means and said fluid compression-expansion means, for compressing said fluid compression-expansion means when the reloading actuation means produces relative motion that moves the tool carriage and the worktable toward each other;

a second linkage means, connected to both said first linkage means and said fluid compression-expansion means, for engaging a section of the turret when said fluid compression-expansion means is compressed and for moving the turret section so engaged a pre-determined distance when said fluid compression-expansion means expands; and

a third linkage means for engaging a portion of said section linkage means when the tool carriage is moved toward the worktable by the reloading actuation means and for disengaging with said section linkage when the tool carriage is moved away from the worktable by the reloading actuation means;

said fluid compression-expansion means being capable of expanding when said third linkage disengages with said second linkage.

5,054,363

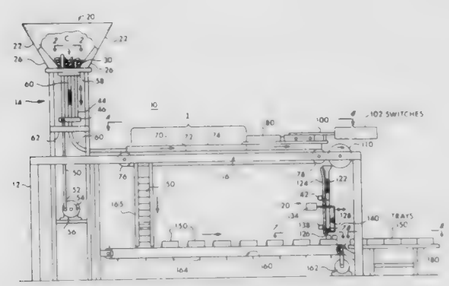
MULTI-CHANNEL APPARATUS FOR VISUALLY INSPECTING AND PACKAGING LOOSE AMMUNITION CARTRIDGES

Daniel J. Scharch, 6589 County Rd. 105, Salida, Colo. 81201

Filed Jan. 18, 1990, Ser. No. 466,869

Int. Cl.[5] F42B *39/00*

U.S. Cl. 86—47 **24 Claims**



1. An apparatus for inspecting and loading loose ammunition cartridges; said apparatus comprising:

a frame;

means on said frame for holding a plurality of loose ammunition cartridges;

first feed tube means on said frame for moving said loose ammunition cartridges from said holding means;

first feeding means on said frame for feeding said loose ammunition cartridges into said first feed tube means;

means on said frame for loading said loose ammunition cartridges into containers;

means on said frame for moving said loose ammunition cartridges from said first feed tube means to said loading means for loading said loose ammunition cartridges into containers;

means on said moving means for enabling visual inspection of said loose ammunition cartridges for defects;

said container loading means including:

means for orienting said loose ammunition cartridges nose downward;

a plurality of second feed tube means for directing said cartridges into position to be loaded into said containers by said loading means;

means for sensing the presence of said loose ammunition cartridges in each of said plurality of feed tube means;

means for generating a signal in response to said sensing means when all of said plurality of feed tubes have ammunition cartridges present;

means for selectively preventing said loose ammunition cartridges from being loaded into said containers; and

means for actuating said prevention means in response to said generated signal to load said loose ammunition cartridges into said container.

5,054,364

MULTI-SONOBUOY LAUNCH CONTAINER WITH MECHANICAL ACTUATOR

Leo Gragonuk, deceased, late of Plymouth Meeting, Pa.; by Elana D. Randall, executrix, West Chester; N. Paige Kilkenny, executrix, Haverford, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 18, 1990, Ser. No. 554,324

Int. Cl.[5] B64D *1/04*

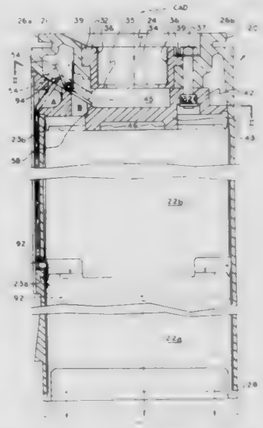
U.S. Cl. 89—1.51 **8 Claims**

1. A fluid-activated launcher system, connected to receive fluid charges, for sequentially ejecting stores releasably held in tandem position in a launch container, comprising:

a. a launch tube, having a breach end and a discharge end, loaded with a plurality of stores for ejection through the discharge end;

b. fluid producing means connected to said breach end to produce predetermined charges of fluid into said launch tube;

c. channel means connected to said fluid producing means to selectively divert the fluid charges to impact, sequentially, said plurality of stores;



d. a spring-biased flapper valve adjacent said channel means; and

e. cocking means between at least one of the stores and said flapper valve to force said valve into an initial, cocked position prior to the ejection of the first of the stores.

5,054,365

PROPELLANT IGNITER MAGAZINE FOR A WEDGE-TYPE BREECHBLOCK

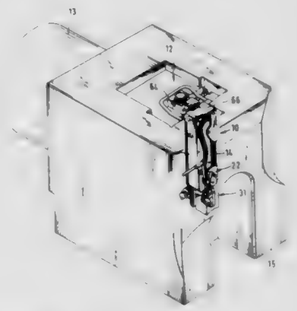
Gerd Wissing, Düsseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 2, 1990, Ser. No. 546,939

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1989, 3921767

Int. Cl.[5] F41A *19/57*

U.S. Cl. 89—24 **12 Claims**



1. A gun comprising:

(a) a gun barrel having a breech end;

(b) a wedge-type breechblock disposed at said breech end;

(c) a flash bore in said breechblock; said flash bore having an inlet opening;

(d) sealing means disposed adjacent to and surrounding said inlet opening;
(e) a propellant igniter magazine removably receivable in said breechblock and including a housing and an endless guide channel being defined in said housing;
(f) a plurality of casings received in said endless guide channel, said casings being arranged in a side-by-side contacting relationship with one another; each casing having opposite open ends and chamber means for receiving a propellant igniter cartridge therein;
(g) advancing means for step-wise advancing said plurality of casings in said endless guide channel for moving each said casing into and out of a firing position in which a respective said casing is in alignment with said flash bore and in engagement with said sealing means, said advancing means including:
(1) a star-shaped control wheel rotatably attached to said magazine, a plurality of radially extending grooves defined in said control wheel, a plurality of axially parallel locking notches defined in said control wheel, said control wheel having a plurality of axially oriented troughs arranged in a circumferential array for engaging and advancing said casings in said endless guide channel;
(2) a positioning member resiliently attached to said propellant igniter magazine adjacent to said guide channel for sequentially biasing said casings into engagement with consecutive said troughs as the control wheel rotates;
(3) a ratchet mounted on said control wheel for rotation relative thereto;
(4) guide means attached to said breech end for rotating said ratchet when said breechblock is moved;
(5) axially displaceable torque-transmitting members carried by said ratchet and arranged for projecting into said grooves of said control wheel for advancing said control wheel as the ratchet rotates; and
(6) a stop movably mounted in said propellant igniter magazine and arranged for projecting into one of said axially parallel locking notches, said stop engaging a next-following one of said locking notches during advancement of said plurality of casings by said control wheel, and said stop maintaining engagement with the next-following locking notch and restraining said control wheel until said torque-transmitting members and said ratchet have returned to their starting positions;
(h) a register attached to said magazine for counting each spent propellant igniter; said register being mounted on said propellant igniter magazine within a space surrounded by said endless guide channel; and
(i) a firing mechanism mounted on said breechblock, said firing mechanism being arranged to ignite the propellant igniter cartridge contained in the casing that dwells in the firing position, whereby a propellant igniting flame passes from the cartridge through the flash bore.

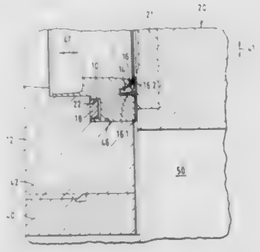
5,054,366

AXIALLY ADJUSTABLE GUN BARREL BASE RING

Rolf Bartolles, Korschenbroich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed May 25, 1990, Ser. No. 528,428
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1989, 3922334
Int. Cl.[5] F41A *3/74*
U.S. Cl. 89—26 **6 Claims**

1. An arrangement for axially adjusting play between an obturating ring and a wedge-type breechblock at the breech end of a gun barrel, comprising:
a gun barrel base ring for the breech end of the gun barrel, said base ring including a first frontal face for disposition adjacent the wedge-type breechblock of the gun barrel and having a recess opening toward the wedge-type breechblock, and a second frontal face for disposition adjacent the gun barrel and having an annular groove opening toward the gun barrel;
an angular obturating ring supported in the recess of the first frontal face of said base ring; and
a threaded ring adjustably disposed in the annular groove of the second frontal face of said base ring so as to be located between said base ring and the gun barrel for adjusting axial play between said obturating ring and the wedge-type breechblock;



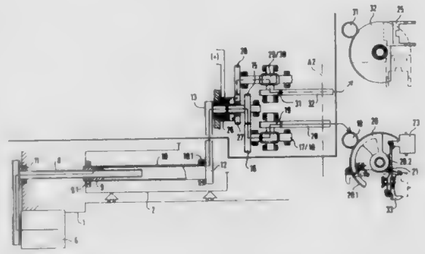
wherein said threaded ring has an exterior circumferential surface and an inner face defining a bore through said threaded ring; said base ring has axially extending faces defining the annular groove in which said threaded ring is disposed; and the exterior circumferential surface and said inner face of said threaded ring and the axially extending faces of said annular groove are each provided with a thread having the same pitch and the same starting point.

5,054,367

AMMUNITION POSITIONER, ESPECIALLY FOR A COMBAT VEHICLE

Heinrich Heldmann, Kassel, and Erich Wallwey, Vellmar, both of Fed. Rep. of Germany, assignors to Wegmann & Co., Kassei, Fed. Rep. of Germany

Filed Jun. 29, 1990, Ser. No. 546,626
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1989, 3922317
Int. Cl.[5] F41A *9/13*
U.S. Cl. 89—46 **8 Claims**



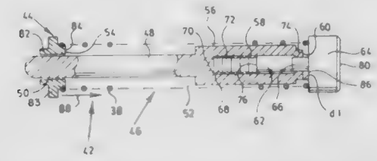
1. An ammunition positioner for upright ammunition shells, comprising: a base, an arm, means mounting the arm on the base for movement perpendicular to a longitudinal axis of the shell, wherein, the arm comprises a pincher-like pickup with two jaws pivotable perpendicular to said longitudinal axis and means for pivoting the pickup and the jaws comprising a motor secured to the base, an output wheel rotatable by the motor, a transmission having an intake wheel and means coupling the intake wheel to the output wheel comprising a rotating splined shaft and a hollow shaft, wherein the splined shaft is mounted on the base and parallel to the positioning arm, the hollow shaft is coaxial with the splined shaft and is mounted in and parallel to the arm, a sleeve slidable back and forth on the splined shaft and coupling the hollow shaft to the splined shaft for rotation therewith, two cogwheels including one cogwheel always coupled to the intake wheel and means for coupling and uncoupling the other cogwheel to the intake wheel comprising a disengageable gear, first controls responsive to said one cogwheel to shift the pickup jaws out of a phase wherein the shell is maintained stationary, through an intermediate phase wherein the shell is lifted to a prescribed level, and into a phase wherein the jaws tighten around the shell to position it and second controls responsive to the other cogwheel to effect the pivoting motion of the pickup.

5,054,368

RECOIL BUFFER UNIT

Bruce J. Wentzel, 6/1 Robin Way, Kelvin, Sandton, and Philip N. Spencer, 1099 Sparrow Avenue, Kyalami Gardens Midrand, both of Transvaal, South Africa

Filed Mar. 2, 1990, Ser. No. 487,141
Claims priority, application South Africa, Mar. 2, 1989, 89/1604
Int. Cl.[5] F41A *3/78*
U.S. Cl. 89—196 **8 Claims**



1. A recoil buffer unit for a pistol, the pistol being of the type having a slide movable on a base member which carries the barrel of the pistol, the slide including a forward end having an upper bore through which the barrel of the pistol projects during rearward movement of the slide, and a lower bore located beneath the barrel for accommodation of a return spring guide rod; a return spring surrounding the guide rod and serving to return the slide to its original position after recoil of the slide, during which the slide moves rearwardly relative to the barrel; and abutment surfaces provided on both the slide and the base member for striking against one another to halt the rearward movement of the slide, the recoil buffer unit comprising a movable member movable with the slide, and a buffer, the buffer having an abutment member at one end thereof which abuts a surface of the pistol, a guide pin extending towards the opposite end thereof on which the movable member is slidably receivable, a striking surface at the base of the guide pin which is struck by the movable member towards the end of the rearward movement of the slide, a cylinder containing elastomeric material, and a plunger slidably receivable within the cylinder for engaging the elastomeric material, one of the cylinder and the plunger being movable relative to the abutment member and the other being movable relative to the striking surface; the movable member in use impacting the striking surface towards the end of the rearward movement of the slide to cause the plunger to compress the elastomeric material in the cylinder, thereby damping rearward movement of the slide.

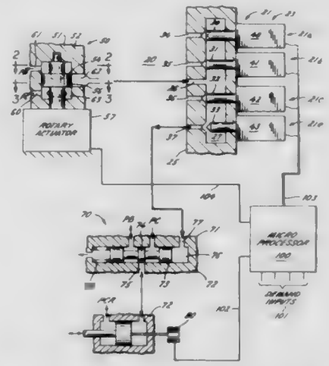
5,054,369

MULTIPLEXED HYDRAULIC CONTROL SYSTEM WITH PLURAL SELECTOR VALVES

John W. Wardle, Roscoe, and Donald E. Wernberg, Rockford, both of Ill., assignors to Woodward Governor Company, Rockford, Ill.

Filed Jul. 28, 1989, Ser. No. 387,025
Int. Cl.[5] F15B *9/09*
U.S. Cl. 91—361 **14 Claims**

1. A multiplexed hydraulic control system having a plurality of channels for individually controlling the positions of a plurality of actuators in the respective channels in accordance with the magnitude of a corresponding plurality of electrical control signals, the control system comprising the combination of:
a multiplexer comprising a plurality of selector valves, one for each channel, each selector valve having an output coupled to the associated channel, all of the selector valves sharing a common inlet;
means for coupling a source of hydraulic fluid to the common inlet of the selector valves;
feedback means associated with the actuator in each channel



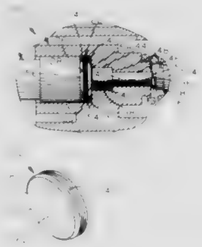
for providing a feedback signal having a magnitude indicative of actuator position; and
control means for (a) selectively energizing one or more of the selector valves to couple the inlet to the output of any selector valve which is energized, (b) individually responding to the respective electrical control signals to module the hydraulic fluid flow from the output of any selector valve which is energized in accordance with the electrical control signal for the associated channel, and (c) responding to the feedback means to position the actuators in the channels in accordance with the associated plurality of electrical control signals.

5,054,370

VACUUM BOOSTER WITH DUAL DUROMETER REACTION DISC

Craig A. Osterday, Dayton, and Donald M. Flory, Arcanum, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 13, 1991, Ser. No. 654,720
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—396.2 **10 Claims**



6. In a power brake booster having a power piston, a reaction chamber formed in said piston having an annular shoulder therein dividing the reaction chamber into a larger diameter

forward chamber section and a smaller diameter rearward chamber section, a reaction piston reciprocably received in said rearward chamber section and having its rearward end adapted to be engaged in force translating relation with a booster control valve when the booster is actuated, said reaction piston having its forward end surface positioned axially near the shoulder, an output member having its rear end reciprocably received in said forward chamber section with its end surface facing said shoulder and said reaction piston forward end surface, said output member being adapted to actuate a device to be powered by said booster, and a resilient rubber-like reaction disc in said forward chamber section having its forward surface in engagement with the output member rear end surface, its outer periphery immediately adjacent the outer wall of said forward chamber section, an annular part of its rearward surface in engagement with said shoulder, and a center part of its rearward surface at least incipiently engagageable with the forward end surface of said reaction piston, the improvement in said reaction disc comprising:

said reaction disc having an outer annular part and an inner center part, said outer annular part being the annular part in engagement with said shoulder and said inner center part being the part of its rearward surface at least incipiently engageable with the reaction piston forward end surface, said outer annular part being made of a higher durometer rating rubber-like material than the durometer rating of said said inner center part.

5,054,371

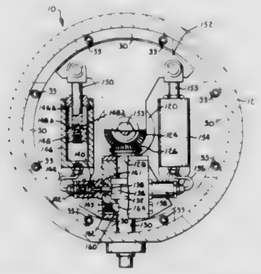
RADIAL PUMP/MOTOR

Louis E. Swinney, 807 Medford Cir., Olathe, Kans. 66062

Division of Ser. No. 165,253, Mar. 7, 1988, Pat. No. 4,864,916, which is a continuation-in-part of Ser. No. 907,576, Sep. 15, 1986, Pat. No. 4,768,422. This application Sep. 11, 1989, Ser. No. 405,334

Int. Cl.[5] F04B *1/20*

U.S. Cl. 91—497 **2 Claims**



1. In a radial fluid pump/motor machine of the type having a rotor supported to rotate about an adjustable cam to effect reciprocation of a plurality of radially oriented pistons, said pistons being operably associated with the cam so that, unless constrained, the cam position is moved by hydrostatic force generated by the reciprocation of said pistons, an improved cam adjustment mechanism comprising;

a rotatable control shaft;

a control arm supported to turn and coupled with said cam in a manner that the eccentricity between the cam and rotor is adjusted when the control arm is turned;

a pair of extensible and retractable fluid cylinders coupled with the control arm in a manner to permit the arm to turn in one direction only when one cylinder is extended and the other cylinder is retracted and to permit the arm to turn in the other direction only when said one cylinder is retracted and said other cylinder is extended; and

hydraulic circuit means operably communicating with fluid in the machine and with said cylinders to permit extension of said one cylinder and retraction of said other cylinder upon selective rotation of said control shaft in one direction and retraction of said one cylinder and extension of said other cylinder upon selective rotation of said control shaft in the opposite direction, said circuit being arranged to restrain said cam against movement in repsonse to forces applied thereto by the pistons except in response to said selective rotation of said control shaft.

5,054,372

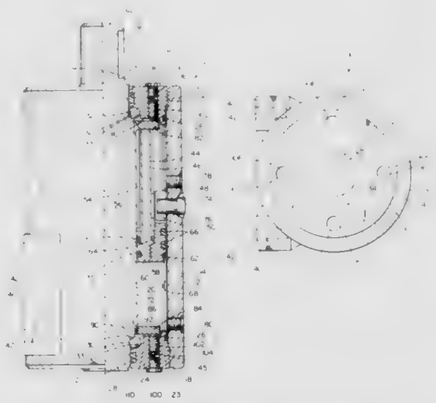
ADJUSTABLE SHAFT ACTUATOR

Paul P. Weyer, P.O. Box 398, Enumclaw, Wash. 98022

Filed Feb. 13, 1991, Ser. No. 654,768

Int. Cl.[5] F01B *31/14;* **F15B** *15/24*

U.S. Cl. 92—13.5 **7 Claims**



7. A fluid-powered rotary actuator, comprising:

a body having a longitudinal axis, and first and second ends;

a drive member extending longitudinally and generally coaxially within said body, said drive member being supported for rotational movement relative to said body, said drive member or said body being adapted for coupling to an external device to provide rotational drive thereto;

a piston sleeve mounted for reciprocal longitudinal movement within said body, said piston sleeve having a piston portion for the selective application of pressurized fluid thereto to produce selective longitudinal movement of said piston sleeve toward said body first and second ends, and a sleeve portion engaging said body and said drive member to translate longitudinal movement of said piston toward said body first end into rotational movement between said drive member and said body in a first rotational direction, and longitudinal movement of said piston toward said body second end into rotational movement between said drive member and said body in a second rotational direction;

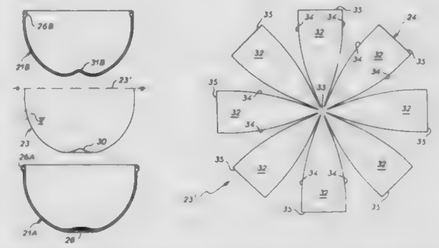
a first annular stop member having a central aperture and being positioned within said body toward said body first end, between said body first end and said piston sleeve, with said drive member extending through said first annular stop member aperture, said first annular stop member being free longitudinally, adjustably movable within said body on said drive member within at least a first limited axial range and being positionable to engage and limit travel of said piston sleeve toward said body first end to provide an end limit to rotational movement between said drive member and said body in said first rotational direction;

a second annular stop member having a central aperture and being positioned within said body toward said body second end, between said body second end and said piston sleeve, with said drive member extending through said second annular stop member aperture, said second annular stop member being free longitudinally, adjustably movable within said body on said drive member within at least a second limited axial range and being positionable to engage and limit travel of said piston sleeve toward said body second end to provide an end limit to rotational movement between said drive member and said body in said second rotational direction;

a first adjustment member toward said body first end and adjustable to engage said first annular stop member at selected longitudinal positions of said first annular stop member within said first axial range at which said first annular stop member will engage and limit axial travel of said piston sleeve toward said body first end; and

a second adjustment member toward said body second end and adjustable to engage said second annular stop member at selected longitudinal positions of said second annular stop member within said second axial range at which said second annular stop member will engage and limit axial travel of said piston sleeve toward said second body end.

is at least partly impermeable to gases and comprises a metal film, said metal film of said intermediate layer being at least



partially divided into film elements which are at least contiguous with each other in a rest configuration of the separator.

5,054,373

COMPOSITE MATERIAL FLEXIBLE SEPARATORS FOR PRESSURE VESSELS

François Brault, Paris; Alain Jaunet, Montigny Les Cormeilles, and Marc Mendowski, Beaumont Sur Oise, all of France, assignors to Olaer Industries, Beaumont sur Oise, France

Filed May 7, 1990, Ser. No. 519,872

Claims priority, application France, Jan. 19, 1990, 90 00596

Int. Cl.[5] F01B *19/00;* **F16J** *3/00;* **F16L** *55/04*

U.S. Cl. 92—92 **24 Claims**

1. Composite flexible separator for a pressure vessel comprising three adjacent layers of deformable material including an outer layer, an inner layer and an intermediate layer which

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5,054,374

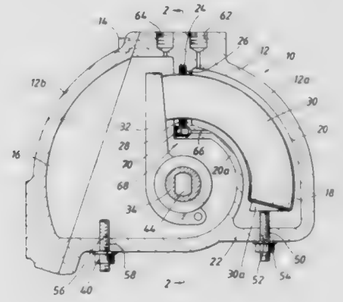
ROTARY ACTUATOR

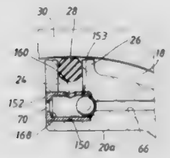
William B. Scobie, Houston, and Robert A. Frenzel, Waller, both of Tex., assignors to Keystone International Holdings Corp., Houston, Tex.

Continuation-in-part of Ser. No. 452,207, Sep. 18, 1989, Pat. No. 5,007,330. This application Dec. 7, 1990, Ser. No. 624,341

Int. Cl.[5] F01C *9/00*

U.S. Cl. 92—120 **9 Claims**





1. A rotary actuator comprising:

a housing defining a first arcuate chamber and a second chamber, said housing further defining an inwardly pro-

jecting, peripherally extending rib, said rib defining an aperture in open communication with said arcuate chamber, a peripherally extending groove being formed in said rib in surrounding relationship to said aperture, said groove having first and second peripherally extending, spaced, side surfaces;

an arcuate-shaped piston disposed in said housing for reciprocable movement in said arcuate chamber;

a shaft rotatably journaled in said housing and connected to said piston, said shaft being rotated in response to movement of said piston;

a floating seal disposed in said groove for effecting sealing between said piston and said housing, said seal being in sealing engagement with said first and second side surfaces, said seal serving to isolate said first chamber from said second chamber;

means to introduce fluid pressure into at least one of said arcuate chamber or said second chamber to provide at least one pressurized chamber and to effect movement of said piston in a first direction;

means to effect movement of said piston in an opposite, second direction; and

means to transfer pressure from said pressurized chamber to said groove outwardly of said seal whereby fluid pressure from said pressurized chamber acts to urge said seal into sealing engagement with said piston.

5,054,375

PISTON FOR INTERNAL COMBUSTION ENGINE

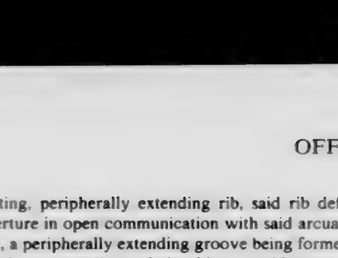
Yasuhiro Kawabata, Anjo; Soichi Hara, Toyota; Shirou Machida, Okazaki, and Hiroshi Kageyama, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki, Kariya, Japan

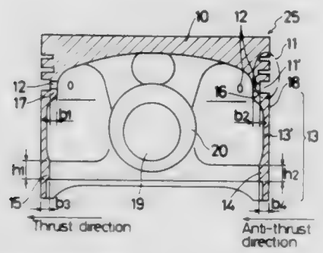
Filed Jun. 19, 1990, Ser. No. 540,638

Claims priority, application Japan, Jun. 19, 1989, 1-156378

Int. Cl.[5] F01B *31/00*

U.S. Cl. 92—126 **4 Claims**





1. A piston comprising:

a crown part;

a piston under part;

a first shoulder at a thrust side formed between the crown part and the piston under part;

a second shoulder at an anti-thrust side formed between the crown part and the piston under part;

a first in-low part at the thrust side formed in the piston under part; and

a second in-low part at the anti-thrust side formed in the piston under part;

wherein a thickness of the first shoulder is formed thinner than a thickness of the second shoulder, and

a height of the first in-low part is formed smaller than a height of the second in-low part.

5,054,376

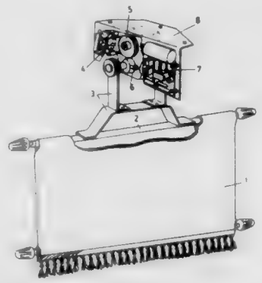
ELECTRIC CEILING FAN

Gines Sanchez Rubio, Zurbano, 84, Madrid, Spain 28010

Filed Nov. 9, 1989, Ser. No. 433,776

Int. Cl.[5] F03D *5/06*

U.S. Cl. 98—1 **5 Claims**



1. An electric ceiling fan comprising:

a support member to be mounted on a ceiling or on a ceiling beam;

a reversible electric motor mounted on said support member and having an output shaft rotatable in opposite directions;

a speed reduction system, coupled to said output shaft, for imparting to at least one arm member a reduced speed oscillating motion;

a planar shaped fan member suspended from said at least one arm member for oscillating pendulum fanning motion thereby in opposite directions; and

electronic control means, operatively connected to said motor, for controlling operation thereof in opposite directions as a function of the pendulum motion of said fan member.

5,054,377

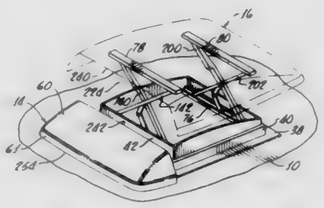
VEHICLE VENTILATION

Paul J. Mochel, Studio City, and Leonard Stobar, Oceanside, both of Calif., assignors to Elixir Industries, Gardena, Calif.

Filed Oct. 5, 1990, Ser. No. 593,095

Int. Cl.[5] B60J *7/00*

U.S. Cl. 98—2.14 **32 Claims**



1. A vent assembly for a vehicle having a ventilation opening formed in a wall thereof, said assembly comprising:

a vent frame adapted to be mounted to said vehicle to frame said opening,

a vent cover having a forward portion defining a cover front opening and having a rear portion,

means for mounting said forward portion to said frame for motion between a forward portion lower position in which said cover front opening is adjacent said frame, and a cover forward portion upper position in which said cover front opening is displaced from said frame,

a riser fixed to said frame adjacent said vent cover forward portion and configured and arranged to close said cover front opening when said cover forward portion is in said lower position and to direct air past the riser into said cover front opening when said cover forward portion is in said upper portion, said riser and cover forming a continuous low drag aerodynamic surface when said cover forward portion is in said lower position, and

means for connecting said vent cover rear portion to said frame.

5,054,378

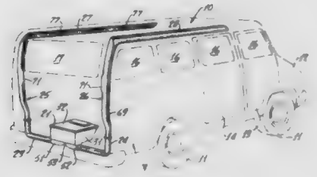
COMBINATION COMMUTER VAN AND AIR CONDITIONER SYSTEM THEREFOR

Donald R. Speece, 5317 Via Ramon, Yorba Linda, Calif. 92686

Filed Jul. 20, 1990, Ser. No. 556,040

Int. Cl.[5] B60H *1/26*

U.S. Cl. 98—2.15 **15 Claims**



1. A combination commuter van and air conditioning unit therefor; said combination comprising:

(a) a commuter van having an elongate body defining a passenger compartment,

said passenger compartment having a forwardly-extending upper corner on each side thereof and extending for at least a majority of the length thereof,

said passenger compartment having a vertically-extending corner on each side thereof at the rear of said body and outwardly of a rear window of said body, said van having rear wheels and a gas tank at the rear portion thereof,

said commuter van body having an overhanging rear portion that extends substantially rearwardly from said rear wheels and from said gas tank,

said overhanging rear portion having a horizontal floor which forms the rear portion of the floor of said passenger compartment,

(b) housing means mounted beneath said floor of said overhanging rear portion of said van body,

(c) evaporator means mounted in said housing means,

(d) conduit and expansion valve means to expand compressed refrigerant into said evaporator means to thereby chill said evaporator means,

(e) blower means mounted in said housing means to draw air from said passenger compartment for chilling by said evaporator means,

(f) means to conduct said chilled air to said vertically-extending corners of said passenger compartment,

(g) vertical conduit means provided at said vertically-extending corners to conduct said chilled air upwardly, and

(h) horizontal conduit means connected to the upper portions of said vertical conduit means to conduct chilled air forwardly therefrom and discharge such air into said passenger compartment.

5,054,379

AIR RELEASE BOX

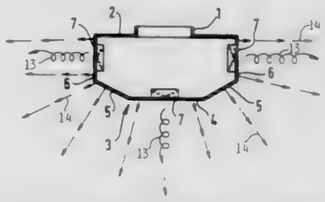
Franc Sodec, Wuerselen-Broichweiden, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Jun. 12, 1990, Ser. No. 537,043

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1989, 3921813

Int. Cl.[5] F24F *7/10, 13/068*

U.S. Cl. 98—40.05 **12 Claims**



1. An air release box for supplying air into a confined space, comprising wall means interconnected to form a box housing, a cover for said box housing, a connection air inlet in said cover for introducing air into said box housing, said wall means including a box bottom opposite said air inlet, said box bottom having a central perforated bottom wall section with apertures for releasing a low turbulence air flow, said box bottom including two further bottom wall sections slanting in opposite directions away from said perforated central bottom wall section, said wall means further including end walls and perforated side wall sections connecting said bottom wall sections to said cover, said perforated side wall sections having apertures for releasing a low turbulence air flow, and air spin outlet means at least in said central perforated bottom wall section and in said perforated side wall sections for releasing a high turbulence air flow through said spin outlet means, said air spin outlet means being surrounded by said apertures so that said high turbulence air flow through said spin outlet means entrains said low turbulence air flow through said apertures, whereby the stability of the entire air flow into said space is increased.

5,054,380

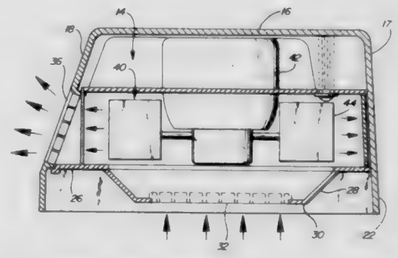
EXTERNAL BOOSTER FOR FORCED AIR HEATING AIR CONDITIONING SYSTEM

Elizabeth S. Hubbard, 2750 Mohawk La., Rochester Hills, Mich. 48064

Filed Jul. 16, 1990, Ser. No. 552,475

Int. Cl.[5] F24F *7/06*

U.S. Cl. 98—103 **9 Claims**



9. An external booster adapted to fit over an air register of a forced air heating and air conditioning system, said booster comprising:

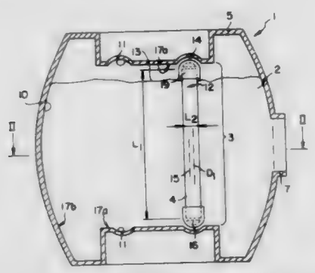
a housing defining an interior and having a top wall, front, rear and opposed side panels, and a continuous skirt disposed along bottom edges of said panels for sealing the interior of said housing when the booster is placed over the register;
an air intake shroud formed on the bottom of said housing and including an air intake grill dimensioned to cover at least a portion of an outlet aperture of said register;
an air discharge grill formed on said front panel;
a radial flow impeller and drive motor operatively associated therewith for directing system air taken in through the intake grill in a radial outward direction, said impeller and motor being mounted in said interior proximate the top wall of the housing with blades of the impeller extending downward; and
an air redirecting baffle means disposed in said interior and configured to redirect air expelled radially from the impeller toward the rear and side panels out the discharge grill when the booster is in operation, thereby increasing the air flow from the system.

5,054,381

METHOD FOR CONTRIVING AN INSERT IN A RECEPTACLE, MEANS FOR PERFORMING THE METHOD, AND RECEPTACLES PROVIDED WITH SUCH MEANS

Pierre DePeaux, and Marie F. DePeaux, both of 59 rue les Eaux Ouies, Cuigy en Bray, 60850 Saint Germer de Fly, France

Filed Apr. 19, 1990, Ser. No. 510,265
Claims priority, application France, Apr. 21, 1989, 89 05837
Int. Cl.[5] C12F *1/00*
U.S. Cl. 99—277.1 **11 Claims**



1. A method of assembling on insert structure (3) having flat wooden elements (4) in a receptacle (1), the steps comprising:
introducing elongated, flat wooden elements (4) one by one into the receptacle by way of an opening (6), each element having a length (L1) extending between two ends (12), width (L2) and thickness (E); and
securing said elements to positioning means (11) within the receptacle, said positioning means holding said elements in place and allowing disassembly and removal of said elements through said opening one at a time.

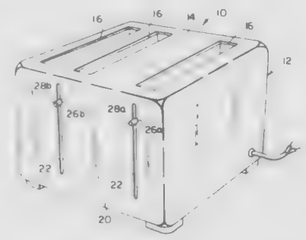
5,054,382

3 SLICE TOASTER

Edward D. Ward, 3810 Greenly St., Wheaton, Md. 20906, and George Spector, 233 Broadway Rm 3815, New York, N.Y. 10007

Filed May 4, 1990, Ser. No. 521,844
Int. Cl.[5] A47J *37/08*
U.S. Cl. 99—327 **1 Claim**

1. A three slice toaster comprising:
(a) a casing with a top wall including three longitudinally spaced openings, each adapted to receive downwardly therethrough a slice of bread and a front wall having two vertical slots;
(b) three carrier plates within said casing below the openings, each supporting one slice of bread;
(c) two operating handle bars, said first handle bar is connected to one said carrier plate and extends through one of the vertical slots, while said second handle bar is connected to other two said carrier plates and extends through other of the vertical slots;
(d) two control knobs, said first control knob is connected to a free end of said first handle bar, while said second control knob is connected to a free end of said second handle bar;
(e) a first means within said casing for toasting one slice of bread, when said first control knob is pulled down manually; and
(f) a second means within said casing for toasting the other two slices of bread independently from said first means, when said second control knob is pulled down manually; wherein said first means includes:
(g) a first electric circuit;
(h) a pair of electric heating elements in said first circuit;
(i) a normally opened first switch in said first circuit which will close when said first handle bar is pulled down; and
(j) a timer for controlling the flow of electricity from a power source to said pair of heating elements in said first electric circuit, for toasting the one slice of bread; wherein said second means includes:
(k) a second electric circuit in a parallel relationship with said first electric circuit;
(l) two pair of electric heating elements in said second circuit; and



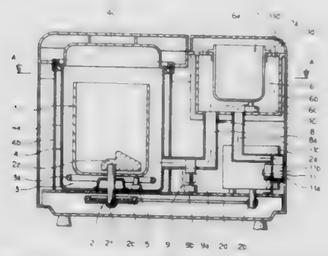
(m) a normally opened second switch in said second circuit which will close when said second handle bar is pulled down so that said timer will control the flow of electricity from the power source to said two pair of heating elements in said second electric circuit for toasting the two slices of bread, in further combination with means mounted on said front wall for engaging and operating said knobs simultaneously; wherein the last said means comprises:
(n) a pair of pins, each affixed to an inner surface of the front wall of said casing above one of the vertical slots;
(o) a pair of return springs, each affixed at its top end from one said pin;
(p) a pair of rods, each having an enlarged head positioned so that said rod extends through and slides within one of the vertical slots with the head held therein, in which bottom end of one of said spring is affixed to the head;
(q) a cross bar having two spaced apart concave bottom recesses to fit onto the top of said two control knobs, said cross bar attached at its rear surface to said rods, thus permitting a simultaneous operation of both of said control knobs when said cross bar is pulled downwardly, while allowing an independent operation of each of said control knobs; and
(r) retainer stops are affixed to an outer surface of the front wall of said casing on both sides of the vertical slots to hold said cross bar and said two control knobs in their normal non-operative position.

5,054,383

BAKING MACHINE PROVIDED WITH YOGURT MANUFACTURING DEVICE

Hae-Suk Cho, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Rep. of Korea

Filed Jul. 27, 1989, Ser. No. 385,465
Claims priority, application Rep. of Korea, Aug. 29, 1988, 88-10989
Int. Cl.[5] A47J *27/00*
U.S. Cl. 99—327 **19 Claims**



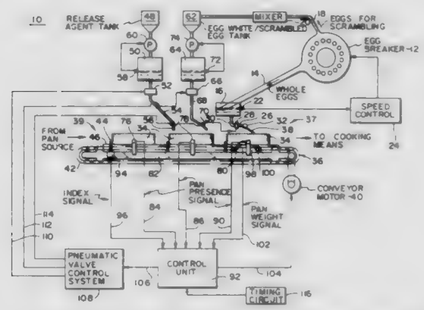
1. A baking machine provided with a yogurt manufacturing device, having first heating means, a baking room, first temperature sensing means, and a controller for controlling all the components, comprising:
a yogurt preparing vessel;
a fermenting room accommodating said yogurt preparing vessel, and having inner and outer walls for maintaining a fermenting atmosphere;
temperature elevating means for elevating the interior temperature of the fermenting room;
second temperature sensing means for detecting the interior temperature of said fermenting room;
temperature lowering means for lowering the interior temperature of the fermenting room upon elevation of the interior temperature above a level, and
wherein either yogurt can be manufactured simultaneously with the baking of bread, or only yogurt or only bread can be manufactured.

5,054,384

SYSTEM FOR FILLING COOKING PANS WITH EGGS

Richard M. Smith, Jr., Newbury Park, Calif., assignor to Louis D. Dunckel, Oxford, N.Y.

Filed Oct. 10, 1989, Ser. No. 419,272
Int. Cl.[5] A23J *1/00*; **A47J** *29/00, 37/10*
U.S. Cl. 99—335 **9 Claims**



1. A system for filling cooking pans with eggs comprising:
a) a reservoir for a plurality of deshelled intact whole eggs;
b) at least a first whole egg dispensing tube having an opening for dispensing said deshelled intact whole eggs from said reservoir into a plurality of cooking pans; and,
c) a first valve means connected between said reservoir and said whole egg dispensing tube for selectively dispensing said eggs through said dispensing tube; said first valve means comprising:
a rotary coupling disposed between said reservoir and said whole egg dispensing tube for selectively positioning the whole egg dispensing tube in a first position where said opening is positioned so that eggs will be dispensed therefrom, and in a second position in which said opening is elevated so that eggs will not be dispensed therefrom

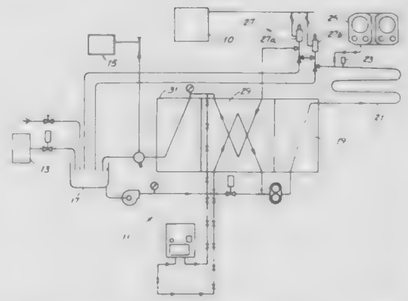
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5,054,385

PASTEURIZING CONTROL APPARATUS

Fredrick S. Scheel, Racine; Byron Bailey, and Richard Lorenzo, both of Kenosha, all of Wis., assignors to Custom Control Products, Inc., Racine, Wis.

Filed Mar. 4, 1991, Ser. No. 664,338
Int. Cl.[5] A23L *3/00*; **A23C** *3/00, 9/00*
U.S. Cl. 99—453 **28 Claims**



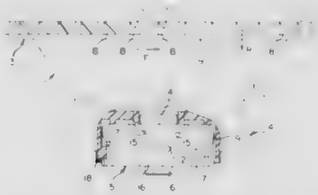
1. In pasteurizing control apparatus of the type having a flow diversion valve means controller in an enclosure with access means required to be sealed by a regulatory official, the improvement comprising:
such controller having a computer chip for executing a chip-programmed control routine, and;
means within such enclosure for preventing alteration of such control routine;
whereby in the event the access means seal is broken, such access means may be re-sealed by such official without testing such control routine.

5,054,386

CENTRIFUGE BASKET

Antonio B. San Juan, Barcelona, Spain, assignor to Moulinex (Societe Anonyme), Bagnolet, France

Filed Feb. 21, 1990, Ser. No. 484,856
Claims priority, application France, Mar. 7, 1989, 89 02983
Int. Cl.[5] A23N *1/00*
U.S. Cl. 99—511 **5 Claims**



1. Centrifuge basket (1) comprising a perforated screen (2) having a surface of revolution with a vertical axis, an upper rim (3) comprising a peripheral surface (9) and an upper edge (11) as well as a lower ring (4) comprising an internal periphery (19)

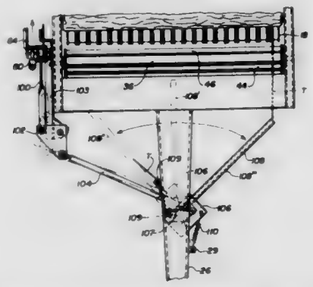
and adapted to be coupled in rotation with a drive (**5**) which comprises a peripheral surface and which is fixed to a motor shaft (**6**), said upper rim (**3**) comprising dynamic pressure means exerting during rotation of the basket (**1**) a downwardly directed force (R) from the pressure of air on said dynamic pressure means, and helping to maintain the connection between the lower ring (**4**) and the drive (**5**).

5,054,387

APPARATUS FOR WRAPPING BALES WITH TWINE

Anthony F. Diederich, Jr., Terre Hill, and John H. Merritt, New Holland, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Apr. 23, 1990, Ser. No. 512,718
Int. Cl.[5] B65B *63/04*; **B30B** *5/04*
U.S. Cl. 100—5 **5 Claims**



1. In a round baler having a bale chamber in which cylindrical bales of crop material are formed and a tongue for attachment to a tractor, apparatus for wrapping said bales comprising:

a feed roller for feeding twine;

a knife for cutting twine;

actuator means for moving said wrapping apparatus between a feeding position wherein said feed roller is driven by drive means to effect feeding of twine while said knife is retracted by link means to prevent cutting of twine and a cutting position wherein said feed roller is latched by latch means to terminate feeding of twine while said knife is actuated by said link means to effect cutting of twine;

a twine arm, rotatably mounted on said tongue and connected to said actuator means, for pivoting movement upon actuation of said actuator means in order to dispense twine that is subsequently fed into said bale chamber by said feed roller;

a first link extending along one side of the baler and connected between said actuator means and a crank lever;

a second link extending generally transverse to said first link and connected between said crank lever and said twine arm; and

said first and second links being operated by said actuator means for moving said twine arm between a twine cutting position and a twine dispensing position.

5,054,388

CONTINUOUSLY WORKING PRESS

Friedrich B. Bielfeldt, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Filed Apr. 25, 1990, Ser. No. 519,221
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1989, 3913565
Int. Cl.[5] B30B *5/06*
U.S. Cl. 100—154 **9 Claims**

1. A continuously working press, comprising:

a table member;

a press member disposed thereover defining a horizontal pressing plane therebetween;

first and second flexible bands disposed about said table member and press member, respectively;

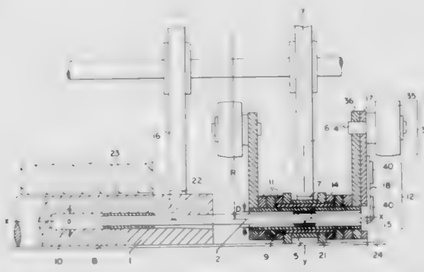
means for rotating said bands about said table member and press member, respectively;

a roller rod assembly disposed between each of said table member and said first flexible band and said press member and said second flexible band, respectively;

each of said roller rod assemblies comprising:

1) a plurality of roller rods extending transversely of the direction of rotation of said flexible bands;

2) a guide chain assembly, including a guide chain, connected to said roller rods and extending beyond the



pressing plane, said guide chain having one guide sleeve defining a guide chain bore for connection with each roller rod, each said guide sleeve including a spherical bearing sleeve disposed in said guide chain bore at a transverse central portion thereof;

3) means for force-guiding said roller rods and said guide chain assembly onto said horizontal pressing plane with the same arc and secant dimensions as the path of said roller rods; and

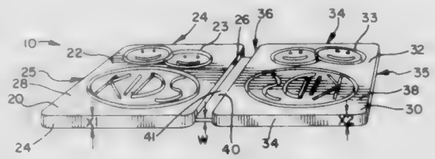
4) a centering bolt provided at each end of each roller rod, each said centering bolt having a first end rotatably disposed in a roller rod bore of said roller rod and having a second end rotatably and centrally disposed in said guide chain bore and in said spherical bearing sleeve of a respective one of said guide sleeves.

5,054,389

UNITARY PAPER IMPRESSION DEVICE

Marvin G. Kuhlman, Des Plaines; Daniel J. Finkiewicz, Elk Grove Villa, and Raymond J. Gradecki, Mundelein, all of Ill., assignors to NCM International Inc., Arlington Heights, Ill.

Filed Apr. 10, 1990, Ser. No. 508,049
Int. Cl.[5] B31F *1/07*
U.S. Cl. 101—28 **11 Claims**



1. A unitary impression device comprising:

a first embossing section having a contacting face surface and an opposite back surface, said face surface being a face plane with at least one outwardly extending projection therefrom;

a second embossing section having a contacting face surface and an opposite back surface, said face surface being a face plane with at least one complimentary inwardly extending trough therein for receiving each said projection of said first embossing section; and,

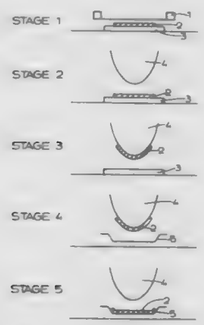
a bendable web contiguous with said back surfaces for hingedly connecting said two embossing sections, said bendable web having a thickness less than that of said first and second embossing sections and a length substantially equal to the combined thickness of said first and second embossing sections and being connected to said first and second embossing sections only at said opposite back surfaces, said sections are repeatedly movable between an open position wherein said back surfaces face substantially the same direction and a closed position wherein said respective face surfaces of said embossing sections mate to impress a content placed therebetween, and said web lies juxtaposed one edge of said impression device.

5,054,390

OFF-SET PRINTING BY SILK SCREENING AN INTERMEDIATE SURFACE AND TRANSFERRING THE IMAGE TO AN ARTICLE BY AN OFF-SET PAD

John F. Birtles, Newcastle under Lyme; Robert D. Brett, Stoke-on-Trent, and Wilfred Roberts, Newcastle under Lyme, all of England, assignors to British Ceramic Research Association Ltd., Stoke-on-Trent, England

Continuation of Ser. No. 720,261, Apr. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 486,697, Apr. 20, 1983, abandoned. This application Jan. 28, 1988, Ser. No. 149,906
Int. Cl.[5] B41F *15/00, 17/00*
U.S. Cl. 101—114 **28 Claims**



1. An off-set printing process comprising: forming a substantially continuous intermediate surface and a deformable pad, applying an ink design to said intermediate surface by silk screening, bringing said deformable pad into contact with said intermediate surface to pick up said design from said intermediate surface, and bringing said pad into contact with an article having a complex surface to apply said design to said article, said applying, bringing said deformable pad in contact with said intermediate surface, and bringing said pad in contact with an article steps being repeated successively to apply ink designs to further articles, wherein said forming step comprises condensation curing first and second silicone rubbers to provide said intermediate surface and said pad respectively, the condensation curing of said first and second silicone rubbers employing first and second curing catalysts respectively, said first and second curing catalysts being chosen such that the affinity of said first silicone rubber when cured for the ink is substantially less than the affinity of said second silicone rubber when cured for the ink, whereby when said deformable pad contacts said intermediate surface said design is substantially completely transferred from said intermediate surface to said pad thereby avoiding the need for doctoring of said intermediate surface prior to repetition of said applying, bringing said deformable pad in contact with said intermediate surface, and bringing said pad in contact with an article steps with a fresh article, or the need for applying a fluid coating to either said intermediate surface or said pad.

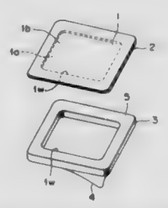
16. An off-set machine suitable for printing with a specified ink onto the curved surface of an article, comprising: a substantially continuous intermediate surface, means for applying an ink design in said ink to said intermediate surface, a deformable pad, means for bringing said deformable pad into contact with said intermediate surface to pick up said ink design, and means for bringing said pad carrying said ink design into contact with said article to transfer said ink design to said article, said intermediate surface and said pad comprised of first and second condensation cured silicone rubbers respectively, said first and second rubbers including first and second curing catalysts respectively, said first and second rubbers possessing substantially different affinities for said ink, the difference in said affinities resulting substantially from the use of said first and second curing catalysts in the curing of said rubbers, said difference being such that in use of the machine when said deformable pad contacts said intermediate surface said ink design is substantially completely transferred from said intermediate surface to said pad without the need for doctoring of said intermediate surface, and without the need for applying a fluid coating to either said intermediate surface or said pad.

5,054,391

THERMAL STENCIL SHEET ASSEMBLY WITH STENCIL SHEET TEMPORARILY DETACHABLE FROM FRAME

Toshio Tanaka; Noboru Hayama; Satoru Komata, and Kazuo Sakamoto, all of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed May 3, 1990, Ser. No. 518,406
Claims priority, application Japan, May 12, 1989, 1-117434; May 12, 1989, 1-117435
Int. Cl.[5] B05C *17/08*
U.S. Cl. 101—127.1 **4 Claims**



1. A thermal stencil sheet assembly comprising an annular frame made of a cardboard, said annular frame comprising first and second frame elements, each of said first and second frame elements having oppositely disposed first and second faces;

a thermal stencil sheet laid over said first face of said first frame element and fixed thereto along the entire peripheral portion thereof;

a detachable-reattachable adhesion means for detachably and reattachably bonding said first frame element and said second frame element together;

said adhesion means comprising a layer of sticky binding material provided on said first face of said second frame element and a slippery surface provided on said second face of said first frame element.

5,054,392

LITHOGRAPHIC PRINTING PRESS HAVING AN INK DUCT WITH A DIVIDED CHAMBER

Richard P. Greenwood, Skipton, United Kingdom, assignor to Vickers plc, United Kingdom

Filed Oct. 18, 1989, Ser. No. 422,520

Claims priority, application United Kingdom, Oct. 31, 1988, 8825412; Aug. 29, 1989, 8919515

Int. Cl.[5] B41F *31/08*

U.S. Cl. 101—142 10 Claims



1. An ink duct for containing ink under pressure and for applying the ink to the surface of a roller mounted for rotation about its cylindrical axis and having a cylindrical surface, said duct comprising a chamber having:

(i) an open side with dimensions which may be substantially closed by the roller surface, said open side being bounded by

(a) an axially extending blade having ends and an edge protruding toward the open side for contacting the roller surface to exert a doctoring action thereon,

(b) an axially extending sealing member having ends and an edge protruding toward the open side, said sealing member edge being located at no more than a slight space away from the roller surface, and

(c) end seals linking the blade and the sealing member at their ends and having edges protruding toward the open side for sealing engagement with the roller surface,

(ii) an axially extending projection located between the blade and the sealing member and having an edge protruding toward the open side in order to divide the chamber into first and second zones while enabling ink to flow past the edge from the first zone to the second zone,

(iii) a first axially extending slot in the first zone for the introduction of ink into the first zone,

(iv) an axially extending first reservoir communicating with the first axially extending slot along their respective axial lengths,

(v) a second axially extending slot in the second zone for egress of ink from the second zone, and

(vi) an axially extending second reservoir communicating with the second slot along their respective lengths.

5,054,393

INTERNAL WORM DRIVE AND OSCILLATING ROLLER ASSEMBLY FOR USE IN INKING SYSTEMS FOR PRINTING PRESSES

John MacPhee, Rowayton, Conn., assignor to Baldwin Technology Corp., Stamford, Conn.

Filed Apr. 26, 1990, Ser. No. 514,538

Int. Cl.[5] B41F *31/14, 31/26;* B41L *27/28*

U.S. Cl. 101—348 20 Claims

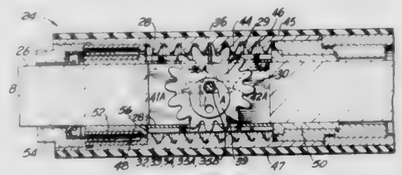
1. In an inking system for lithographic printing presses, an oscillating roller assembly suitable for use as an ink roller, comprising:

a) a shaft;

b) a bearing unit mounted along said shaft;

c) a worm gear having a plurality of teeth, said worm gear being disposed in a slotted space in said bearing unit and said shaft such that the rotational axis of said worm gear is substantially perpendicular to the longitudinal axis of said bearing unit and said shaft, said slotted space having first and second opposite ends within said shaft;

d) a pair of substantially coaxial eccentric cams integrally affixed to opposite surfaces of said worm gear, said cams alternately engaging said shaft at said opposite ends of said slotted space;



e) a roller shell having at least one internal thread circumferentially mounted around said bearing unit such that said internal thread engages said teeth of said worm gear whereupon rotation of said roller shell causes said worm gear to rotate, thereby causing said cams to alternately engage said shaft at said opposite ends of said slotted space, thereby causing said bearing unit and said roller shell to oscillate along said shaft

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5,054,394

ISOPROPYL ALCOHOL-FREE CATALYTIC FOUNTAIN SOLUTION CONCENTRATE AND METHOD FOR INTRODUCING A CATALYTIC AGENT INTO LITHOGRAPHIC PRINTING INK

Leon A. Zweig, 2336 Bennett Ave., North Bellmore, N.Y. 11710

Continuation-in-part of Ser. No. 425,063, Oct. 23, 1989, Pat. No. 4,982,661, which is a division of Ser. No. 304,594, Feb. 1, 1989, Pat. No. 4,906,296. This application Dec. 17, 1990, Ser. No. 627,840

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] C09D *5/20;* B41F *7/24*

U.S. Cl. 101—451 33 Claims

1. A fountain solution concentrate for transporting a catalytic cross-linking agent to lithographic printing ink and infusing said catalytic, cross-linking agent into said ink, said fountain solution concentrate consisting essentially of water, gum, glycol and a catalytic cross-linking agent adapted to cross-link said ink upon exposure to ultraviolet radiation, infrared radiation, blowing hot air or blowing cold air.

22. A process for imparting catalytic, cross-linking qualities to ink in a lithographic printing process having a dampening system for providing a fountain solution to said process and an inking system for providing ink to said process, comprising the steps of:

introducing into said dampening system a fountain solution concentrate consisting essentially of water, gum, glycol and a catalytic cross-linking agent adapted to cross-link said ink upon exposure to ultraviolet radiation, infrared radiation, blowing hot air, blowing cold air, or any combination thereof;

transporting said catalytic, cross-linking agent to said ink via said fountain solution; and,

infusing said catalytic, cross-linking agent into said ink.

5,054,395

PLUG CONNECTION FOR AN ELECTRIC IGNITOR

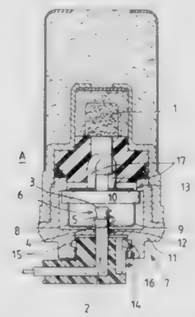
Bernhard Vetter, Bruckmühl, and Gisela Diepold, Germering, both of Fed. Rep. of Germany, assignors to Bayern-Chemie, Gesellschaft fur flugchemische Antriebe mbH GmbH, Fed. Rep. of Germany

Filed Mar. 28, 1990, Ser. No. 501,526

Claims priority, application Fed. Rep. of Germany, May 11, 1989, 8905896

Int. Cl.[5] F42B *3/182, 3/188*

U.S. Cl. 102—202.3 20 Claims



1. A plug connection for an electric ignitor having a protechnic element in which an electrical connection to an ignition circuit is carried out by plugging-together two plug elements to one another and with a short-circuiting spring being opened in the process:

wherein one plug element is connected with the pyrotechnic element and is constructed as a rotationally symmetrical pin which has at least two contact elements arranged behind one another with respect to a main axis of the pin;

wherein the at least two contact elements are insulated with respect to one another and at least one contact element is equipped with a detent arrangement;

wherein a pair of spring contacts are arranged in a base of the electric ignitor and correspond with the two contact elements;

wherein these spring contacts are connected directly with the pyrotechnic element by at least one high-frequency filter;

wherein the pair of spring contacts, act as leaf springs and are shaped such that in an unattached condition of the ignitor, a line-shaped short-circuiting contact is formed therebetween; and

wherein the pair of spring contacts are arranged inside the base in an electrically conductive housing which has a single opening that Provides a guideway for the pin.

5,054,396

FUSE ELEMENT, PREFERABLY WITH LONG DELAY PERIOD AND METHOD FOR PRODUCING THE SAME

Peter-Josef Grommes; Hans Florin, both of Troisdorf; Günther Faber, Siegburg, and Peter Röh, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

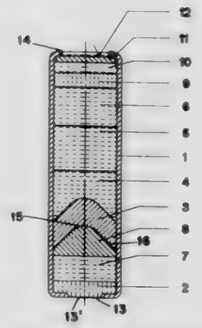
Continuation-in-part of Ser. No. 293,470, Jan. 4, 1989, abandoned. This application Jul. 17, 1990, Ser. No. 553,302

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, 3800455

Int. Cl.[5] F42C *19/08, 19/10*

U.S. Cl. 102—204 2 Claims

1. Method for manufacturing a fuse element with a cylindrical casing with a front and a rear end, in which at least one ignition charge and a delay section composed of one or more delay charges are arranged in layers one behind the other, and whereby the front end of the casing is designed as a detonating or flame-producing outlet, characterized in that in the casing, starting from its front end, first the ignition charge is pressed against the rear end of the casing and then the additional charges are pressed, whereby pressing of the charge that ignites a delay charge is accomplished with the aid of a compression pin with a concave pressing surface in such fashion that this charge extends with its central portion into a first delay charge.



5,054,397

PARACHUTE EJECTION AND RECOVERY SYSTEM FOR ROCKETS

Paul C. Hans, Scottsdale, Ariz., and Gary C. Rosenfield, Las Vegas, Nev., assignors to Aerotech, Inc., Las Vegas, Nev.

Filed May 1, 1990, Ser. No. 517,162

Int. Cl.[5] F42B *4/08, 4/12*

U.S. Cl. 102—348 10 Claims



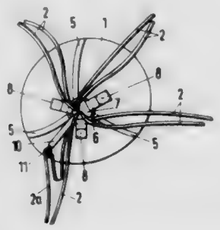
1. A parachute ejection and recovery system for a recreational rocket comprising in combination: a nose cone; a body portion, said nose cone being telescopically inserted within said body portion for launch and ejectable therefrom during rocket flight; a parachute having shroud lines attached thereto and disposed thereabout, said parachute being disposed within said body portion and ejectable from within said body portion during flight; shock cord means anchored on the longitudinal axis of said body portion, and connected to said nose cone through said shroud lines to attach said nose cone and said body portion to said parachute for descent therewith after said nose cone is ejected from said body portion during rocket flight.

5,054,398

PROCESS AND APPARATUS FOR DISPERSING SUBMUNITION BODIES

Josef Dobler, Penzberg, and Peter Kostelezky, Weingarten, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Filed Apr. 9, 1990, Ser. No. 533,085
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1989, 3911654
Int. Cl.[5] F42B *10/56, 12/58;* B64D *17/34*
U.S. Cl. 102—387 2 Claims



1. A process for dispersing submunition bodies which are expelled from a flight aggregate or a container mounted at the flight aggregate together with a parachute pack connected to them and which, after the parachute pack has opened up and flown off, float to the ground hanging on parachutes, comprising:

tightening of the grappling ropes of the parachutes after the expulsion,

pulling-out of trigger pins from cutting devices arranged at pack sack closing lines by one of the grappling ropes respectively,

activating of combustion units contained in the cutting devices with a respective given start of the burning time,

cutting of the pack sack closing lines by cutting pistons driven by the combustion units,

flying-off of the pack sacks and the cutting devices,

opening of the parachutes and the floating-down of the submunition bodies, and

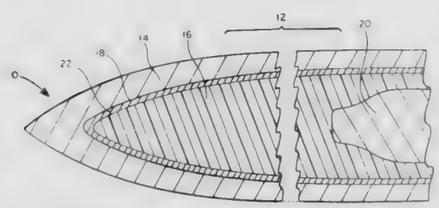
dispersing of the submunition bodies on a surface at distances depending on the start of the burning time of the combustion units for the cutting devices.

5,054,399

BOMB OR ORDNANCE WITH INTERNAL SHOCK ATTENUATION BARRIER

Andrew G. Bilek, Valparaiso; Joseph C. Foster, Jr., Ft. Walton Bch., and Thomas G. Floyd, Niceville, all of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 215,082, Jul. 5, 1988, abandoned. This application Nov. 23, 1990, Ser. No. 617,292
Int. Cl.[5] F42B *39/00*
U.S. Cl. 102—481 3 Claims



1. An explosive charge for a munition, comprising:

(a) a main explosive charge;

(b) a plurality of successive layers of explosive material surrounding the main explosive charge in layers of outwardly increasing acoustic impedance; and

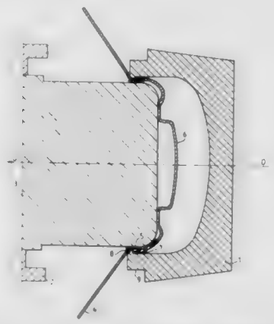
(c) wherein the plurality of successive layers of explosive material additionally surround the main explosive charge in layers of outwardly decreasing detonation sensitivity.

5,054,400

SEPARATING DEVICE FOR THE AERODYNAMIC BRAKING OF A BODY

Jean-Pierre Pineau; Jean-Pierre Frehaut, both of Orleans, and Philippe Kerdraon, Orleans la Source, all of France, assignors to Thomson-Brandt & Armements, Boulogne, France

PCT No. PCT/FR89/00166, § 371 Date Dec. 1, 1989, § 102(e) Date Dec. 1, 1989, PCT Pub. No. WO89/09919, PCT Pub. Date Oct. 19, 1989
PCT Filed Oct. 19, 1989, Ser. No. 458,734
Claims priority, application France, Apr. 12, 1988, 88 04830
Int. Cl.[5] F42B *10/50*
U.S. Cl. 102—489 5 Claims



1. A projectile having a longitudinal axis 00' comprising a front part and a rear part and carrying a pay load housed along axis 00' a sub-assembly having blades and residing in a first position and in a second position, which blades when in the first position form a tube whose axis is 00', with a part of the tube being inside the rear part and another part being outside the rear part; and which blades when in the second position forms an angle with axis 00' and which has a greater part of said blades outside the rear part, means for sliding the blades whose movement from the first position to the second position is along axis 00', and means for retaining the sub assembly to the rear part when in said second position.

5,054,401

DEVICE FOR THE CLEANING OF RAILS BY SCRAPING, LOOSENING, AND BRUSHING

Olof Lindholm, Uttran, Sweden, assignor to AB Mahler & Soner, Rosson, Sweden

PCT No. PCT/SE88/00234, § 371 Date Nov. 9, 1989, § 102(e) Date Nov. 9, 1989, PCT Pub. No. WO88/08900, PCT Pub. Date Nov. 17, 1988
PCT Filed May 5, 1988, Ser. No. 435,413
Claims priority, application Sweden, May 11, 1987, 8701932
Int. Cl.[5] B61F *19/00*
U.S. Cl. 104—279 10 Claims

1. Apparatus for cleaning plant debris from running surfaces of railway rails, comprising:

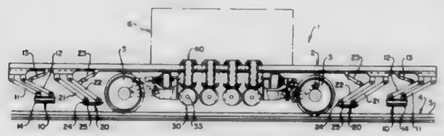
a chassis provided with a set of wheels for running longitudinally in both directions on a set of two laterally spaced railway rails having respective upwardly presented running surfaces;

for operative contact with the running surface of each rail, a respective brush set each comprising at least one brush and means for rotating each such brush about a generally horizontal axis arranged generally transverse to said directions;

for operative contact with the running surface of each rail, two looseners, one leading the respective said brush set in one of said directions and the other leading the respective said brush set in the other of said directions;

for operative contact with the running surface of each rail, two scrapers, one leading the respective said loosener in one of said directions and the other leading the respective said loosener in the other of said directions;

means supported on said chassis for raising and lowering the brushes of said brush sets out of and into operative contact with said running surfaces of said rails; and



means supported on said chassis for raising and lowering said looseners out of and into operative contact with said running surfaces of said rails, this means being operable to lower those of said looseners which lead said brushes in a selected said direction of travel of said chassis along said rails, and raise those of said looseners which trail said brushes in said selected said direction of travel of said chassis along said rails;

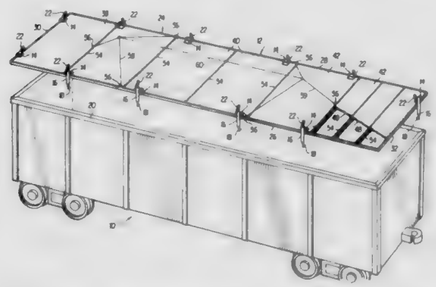
means supported on said chassis for raising and lowering said scrapers out of and into operative contact with said running surfaces of said rails, this means being operable to lower those of said scrapers which lead ones of said looseners that are disposed in engagement with said running surfaces, and raise those of said scrapers which trail ones of said looseners that are disposed out of engagement with said running surfaces.

5,054,402

REMOVABLE COVER FOR GONDOLA CARS WITH LIGHTWEIGHT COMPOSITE PANEL CONSTRUCTION

Gilbert W. Brassell, 13237 W. Eighth Ave., Golden, Colo. 80401

Filed Jan. 8, 1990, Ser. No. 461,875
Int. Cl.[5] B61D *39/00*
U.S. Cl. 105—377 11 Claims



1. A lid for covering the open top of a gondola car, the lid comprising:

a rectangular frame defining a periphery of the lid, the frame having a geometry similar to and size slightly larger than the open top of the gondola car and including an array of metal struts arranged in a grid to define a plurality of spaces of a selected geometry;

fastening means for detachably securing the lid to the gondola car, the fastening means being distributed in spaced relation around the periphery of the lid;

a plurality of lightweight panels, each panel having a geometry similar to that of a space defined in the grid and being received and supported within the corresponding space of the grid to cover the open top of the gondola car when the frame is placed thereon;

said lightweight panels comprising metal skins with lightweight material sandwiched therebetween; and

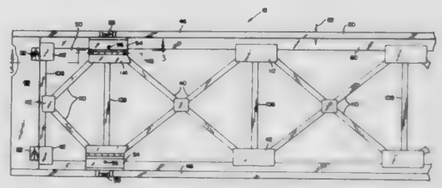
means for lifting the lid from and onto the gondola car when the fastening means are disengaged.

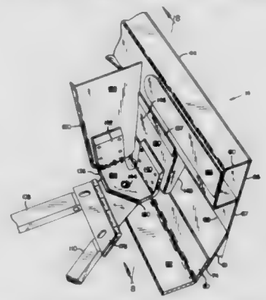
5,054,403

RAILROAD FREIGHT CAR WITH WELL FOR STACKED CARGO CONTAINERS

Charles C. Hill; Gareth R. Thomas, both of Del Mar, Calif.; Gary S. Kaleta, Warren, and Gregory J. Saxton, Portland, both of Oreg., assignors to Gunderson, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 234,332, Aug. 18, 1988, Pat. No. 4,893,567. This application Dec. 15, 1989, Ser. No. 451,378
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
Int. Cl.[5] B61D *17/08*
U.S. Cl. 105—419 5 Claims





1. A railroad freight car including a container well for carrying intermodal cargo containers, comprising:

(a) a pair of body bolsters extending transversely;

(b) a pair of upstanding side sills extending longitudinally of the car and attached respectively to said body bolsters, said container well for receiving an intermodal cargo container being defined between said body bolsters and side sills;

(c) a plurality of container support members associated with said side sills, each of said container support members consisting primarily of a thick metal plate having a generally horizontally extending portion including means for receiving a cargo container resting thereof, a generally upwardly directed portion, and a bend portion interconnecting said generally horizontally extending portion and said generally upwardly directed portion, said bend portion having greater strength than said horizontally extending portion and said upwardly directed portion to resist

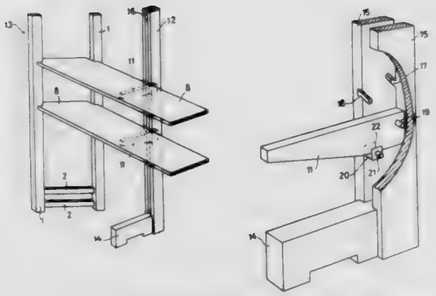
cracking of said container support member when said car is loaded;
(d) respective attachment means for connecting said container support members to said side sills;
(e) a truss structure interconnecting said side sills, said truss structure including a plurality of horizontal members extending diagonally between the lower portions of said side sills; and
(f) at least one transverse member connected to the laterally opposed horizontally extending portions by hinge means.

5,054,404

SHOWROOM FURNITURE CONSTRUCTION SYSTEM

George Meigers, Postbus 50068, 1305 AB Almere, Netherlands

PCT No. PCT/NL88/00025, § 371 Date Jan. 18, 1989, § 102(e) Date Jan. 18, 1989, PCT Pub. No. WO88/09137, PCT Pub. Date Dec. 1, 1988
PCT Filed May 24, 1988, Ser. No. 328,100
Claims priority, application Netherlands, May 22, 1987, 8701224
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—108 **6 Claims**



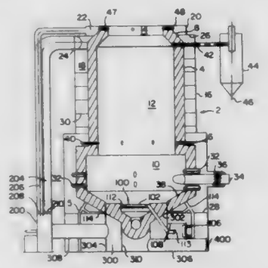
1. A showroom furniture construction system comprising a vertical stand having top and bottom ends and comprising a pair of spaced vertical profile columns, cross beams connecting said top and bottom ends of said spaced vertical profile columns, a horizontal supporting beam mounted to said vertical stand, a shelf having one end thereof supported upon said horizontal supporting beam, a vertical supporting beam spaced from said vertical stand and comprising a pair of spaced parallel strips each having top and bottom portions, said parallel strips each having a first and a second longitudinal edges and facing inner surfaces and a spacer block at each of said top and bottom portions interconnecting said inner surfaces thereof, there being a plurality of first opposed downwardly sloping grooves in said inner faces of said strips starting from said first longitudinal edges and a plurality of second opposed upwardly sloping grooves in said inner surfaces of said strips starting from said second longitudinal edges, a bracket extending horizontally from between said parallel strips of said vertical supporting beam for supporting thereon a portion of said shelf and having opposed vertical faces and an underside, a pair of pins extending laterally from said opposed vertical faces of said bracket and received within a pair of said opposed second grooves, there being a recess in said underside of said bracket and a locking block received within said recess, and a pair of second pins extending from opposed faces of said locking block and received within a pair of said opposed first grooves.

5,054,405

HIGH TEMPERATURE TURBULENT GASIFICATION UNIT AND METHOD

David R. Walker, Clearwater, Fla., assignor to Serawaste Systems Corporation, Tampa, Fla.

Filed Nov. 2, 1990, Ser. No. 607,118
Int. Cl.[5] F23G *5/00, 5/12*
U.S. Cl. 110—254 **30 Claims**



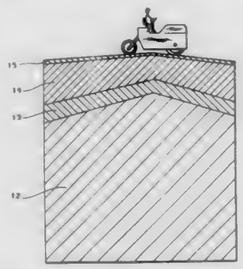
1. A gasification unit comprising:
(A) a refractory liner surrounding a primary combustion chamber;
(B) means for drawing combustion air past a portion of said refractory liner in contact with an outer surface thereof such that said combustion air is preheated and said refractory liner is cooled;
(C) means for injecting said combustion air into said primary combustion chamber via primary air inlets formed in said refractory liner;
(D) means for injecting waste materials into said primary combustion chamber via a material inlet formed in said refractory liner; and
(E) means for sterilizing and then removing residual ashes from said gasification unit.

5,054,406

WATER RETARDANT COVERING MATERIAL FOR SOLID WASTE LANDFILLS

Wendell Judd, Fairfield, Ohio, assignor to Technology Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 471,971, Oct. 27, 1989, Pat. No. 5,018,459. This application Jul. 11, 1990, Ser. No. 551,186
Int. Cl.[5] F23G *5/02*
U.S. Cl. 110—346 **9 Claims**



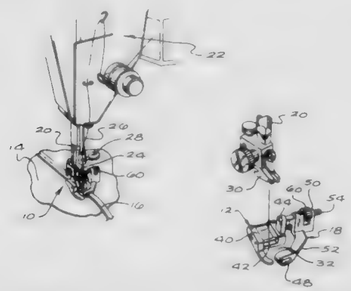
1. A water retardant material comprising a mixture of earthen clay and from 15% to 25% by weight of recycled paper pulp sludge produced according to the following process;
a) introducing paper pulp sludge into a heater wherein said heater maintains a temperature of at least 800° Fahrenheit,
b) rotating said heater containing said paper pulp sludge while maintaining said temperature of a least 800° Fahrenheit until essentially all water contained in said paper pulp sludge is removed by evaporation and further, until essentially all wood fibers and mixing catalysts contained in said paper pulp sludge are incinerated, resulting in a substantially dry incineration product,
c) extracting said incineration product from said heater.

5,054,407

PRESSER FOOT HAVING AN ADJUSTABLE GUIDE FOR SEQUIN AND RIBBON

Clare J. Rowley, 13134 Silver Creek St., Moorpark, Calif. 93021

Continuation-in-part of Ser. No. 495,999, Mar. 20, 1990. This application Aug. 30, 1990, Ser. No. 575,172
Int. Cl.[5] D05B *29/00, 29/08, 29/12*
U.S. Cl. 112—235 **16 Claims**



1. An adjustable presser foot mounted to a sewing machine having a vertically reciprocated needle, the presser foot comprising:
a sole being pressed against a fabric to be sewn, having a leading edge extending generally laterally to a fabric feeding direction;
means attached to the sole for guiding a ribbon-like material into a selected position and orientation relative to the leading edge of the sole, wherein the guiding means and the leading edge of the sole define a needle dropping gap through which the needle penetrates a fabric to sew the ribbon-like material thereto; and
means for adjustably positioning the guiding means laterally with respect to the fabric feeding direction.

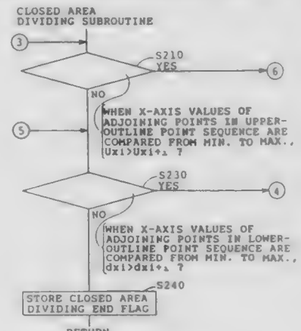
5,054,408

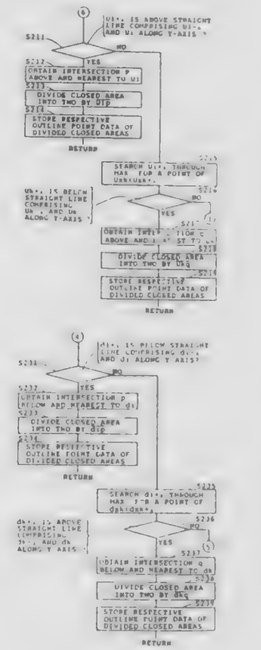
METHOD OF AND APPARATUS FOR PREPARING SEWING DATA FOR A MULTI-NEEDLE EMBROIDERY SEWING MACHINE

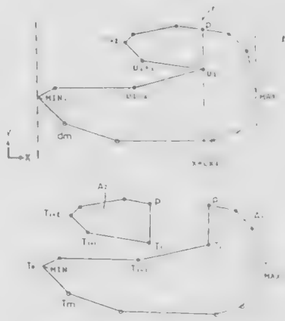
Atsuya Hayakawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 15, 1990, Ser. No. 523,359
Claims priority, application Japan, May 30, 1989, 1-136561
Int. Cl.[5] D05B *21/00;* **D05C** *5/06*
U.S. Cl. 112—266.1 **22 Claims**

8. A method of preparing control data by using a computing means for an embroidery sewing machine that stitches an embroidery pattern on a workpiece under the control of control data, comprising the steps of:
generating outline data representing an outline of the embroidery pattern; and the computing means:
automatically dividing the outline of the embroidery pattern into divided outlines based on the outline data and a predetermined stitch-forming direction;
automatically computing divided outline data representing the outlines of the divided outlines; and

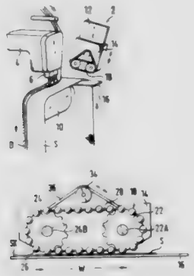






automatically computing control data from the divided outline data.

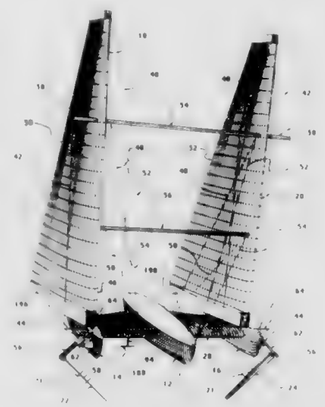
5,054,409
APPARATUS FOR LATERALLY ALIGNING A FABRIC EDGE DURING SEWING
Helmut Schips, Klosterweidlistr. 1, CH-9010 St. Gallen, Switzerland
Filed Feb. 13, 1990, Ser. No. 479,290
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1989, 3904385
Int. Cl.[5] D05B *21/00, 27/14*
U.S. Cl. 112—306 **19 Claims**



1. An apparatus for laterally aligning fabric edges during sewing of a fabric web being conveyed through a sewing head of a sewing machine in a sewing direction and having an edge laterally spaced from the sewing direction, comprising:
a sensor assembly for detecting a lateral position of the fabric edge transversely of the sewing direction and generating a sensor signal; and
a guide means controlled by the sensor signal, said guide means having:
a chain of rolling members disposed in a plane extending approximately transversely of the sewing direction, said chain being adjustable in response to the sensor signal, said rolling members having rolling axes extending parallel to a direction of adjustment, and
said chain having a fabric abutting section containing a plurality of said rolling members disposed for simultaneous contact with a fabric web in the fabric plane to thereby control the lateral position of the fabric web with respect to the sewing head without distortion of the fabric.

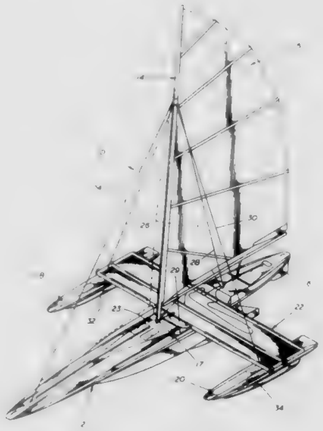
5,054,410
HYDROFOIL SAILBOAT WITH CONTROL SYSTEM
Greer T. Scarborough, 1125 Monterey, #1, Hermosa Beach, Calif. 90254
Filed Dec. 27, 1989, Ser. No. 457,848
Int. Cl.[5] B63H *9/04*
U.S. Cl. 114—391 **29 Claims**

1. A sailing vessel comprising: a central main hull, a pair of sponson located in mutually parallel alignment alongside said central main hull in spaced separation therefrom and rigidly joined thereto, a mast mounted on each sponson for carrying a sail, shrouds supporting said masts, a pair of aileron foils mounted outboard from said central main hull for rotation about separate axes of rotation which lie in a plane perpendicular to said sponsons and load sensing and foil control means coupled to at least some of said shrouds and to said aileron foils



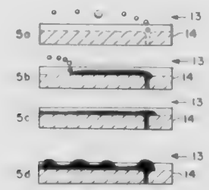
to rotate said aileron foils about said axes responsive to loads in said shrouds.

5,054,411
HIGH PERFORMANCE SAILING CRAFT
Victor A. Nelson, 14931 Cobre Valley Dr., Houston, Tex. 77062
Filed Mar. 14, 1990, Ser. No. 493,486
Int. Cl.[5] B63B *1/00*
U.S. Cl. 114—61 **9 Claims**



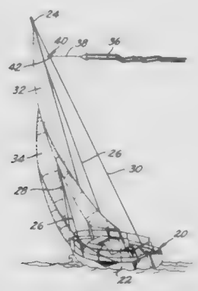
1. A sailing craft, comprising:
a wing having first and second ends;
first and second outrigger hulls mounted on said first and second ends of said wing, respectively;
a central hull located between said first and second outrigger hulls, said central hull being movably connected to said wing, whereby said central hull can be moved closer to either one of said first and second outrigger hulls; and
a pivotable mast mounted on said central hull for leaning said mast towards either one of said outrigger hulls, thereby enabling the central hull to be moved towards one of said first and second outrigger hulls and the mast leaned towards the other of said first and second outrigger hulls.

5,054,412
HYDRODYNAMIC SKIN-FRICTION REDUCTION
Jason C. Reed, Hampton; Dennis M. Bushnell, Hayes, and Leonard M. Weinstein, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 31, 1989, Ser. No. 429,737
Int. Cl.[5] B63B *1/38*
U.S. Cl. 114—67 A **12 Claims**



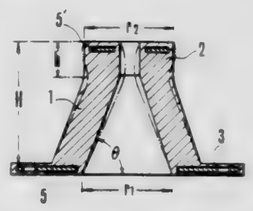
6. A mechanism for reducing skin friction between a liquid flow and a contact area of a body surface comprising:
adjacent, longitudinal grooves formed in the body surface along the entire contact area;
means for injecting individual gas streams downstream into each of said adjacent, longitudinal grooves, wherein each of said grooves is sized to trap the respective individual gas stream, whereby an array of tubes of gas are formed between the grooves and the liquid flow.

5,054,413
SAILBOAT PENNANT MOUNTING UNIT
James Galarza, 110-11 Queens Blvd., Forest Hills, N.Y. 11375, and Henry F. Skoczylas, Colonia, N.J., assignors to James Galarza, Forest Hills, N.Y.
Filed Dec. 3, 1990, Ser. No. 621,578
Int. Cl.[5] B63H *9/04*
U.S. Cl. 114—102 **14 Claims**



1. A pennant mounting unit for mounting a pennant to a stay of a sailboat for free swinging movement relative to the stay about an altitudinal axis passing through an elevated fixed altitudinal position on the stay, the stay extending along a longitudinal axis, the mounting unit comprising:
a bearing member having a longitudinal internal passage and an external surface including a first bearing surface portion following a generally spherical contour of predetermined extent, the bearing member being split longitudinally for reception of the stay in the internal passage by movement laterally into the internal passage such that the stay may be placed longitudinally coextensive with the internal passage at the fixed altitudinal position;
securing means for securing the bearing member at the elevated fixed altitudinal position on the stay;
a cage member having an internal surface including a second bearing surface portion generally complementary to the first bearing surface portion along the spherical contour for bearing engagement between the complementary first and second bearing surface portions, the cage member being split longitudinally for placement laterally over the stay and the bearing member, with the first and second bearing surface portions engaged in said bearing engagement for swinging movement of the cage member relative to the bearing member, when the bearing member is secured to the stay; and
attachment means for attaching the pennant to the cage member;
the second bearing surface portion being truncated relative to the predetermined extent of the spherical contour of the first bearing surface portion for enabling orientation of the longitudinal axis, and the stay, at an angle to the altitudinal axis while permitting free swinging movement of the cage member, and the pennant attached thereto, about the altitudinal axis, relative to the stay.

5,054,414
HOLLOW RUBBER FENDER
Tetsuo Yamaguchi, Kobe, Japan, assignor to Sumitomo Rubber Industries, Kobe, Japan
Continuation of Ser. No. 391,680, Aug. 7, 1989, abandoned, which is a continuation of Ser. No. 277,441, Nov. 28, 1988, abandoned, which is a continuation of Ser. No. 158,063, Feb. 12, 1988, abandoned, which is a continuation of Ser. No. 37,058, Apr. 13, 1987, abandoned, which is a continuation of Ser. No. 919,572, Oct. 15, 1986, abandoned, which is a continuation of Ser. No. 837,879, Mar. 6, 1986, abandoned, which is a continuation of Ser. No. 471,232, Mar. 2, 1983, abandoned. This application May 2, 1990, Ser. No. 519,262
Claims priority, application Japan, Mar. 20, 1982, 57-40181
Int. Cl.[5] B63B *59/02*
U.S. Cl. 114—219 **7 Claims**



1. A hollow rubber fender for absorbing kinetic energy of a ship approaching a quay comprising:
a substantially funnel-shaped frusto-conical hollow support portion including a small-diameter end and a large-diameter end and being made of an elastic rubber material, said small-diameter end having a first inside diameter and a first outside diameter and said large-diameter end having a second inside diameter r_1 and a second outside diameter,
a buffer portion having a generally hollow cylindrical form defining a buffer portion inside diameter and a buffer portion outside diameter r_2 and extending from said small-diameter end of said support portion in a direction substantially parallel to a longitudinal axis of said support portion, said buffer portion inside diameter being equal to said first inside diameter, said buffer portion having an inner surface inclined with respect to an inner surface of the support portion and an outer surface inclined with respect to an outer surface of the support portion, and
a mounting portion extending outwardly and integrally from said large-diameter end of said support portion along a radial plane perpendicular to the longitudinal axis of said support portion, said second inside diameter r_1 of the large-diameter end of said support portion and said buffer

portion outside diameter r_2 being determined to satisfy the condition of

$$r_1 \geq 4_2$$

and a height h of said buffer portion as measured along a longitudinal axis of said fender being determined in relation to an axial length H of the fender to satisfy the condition wherein h is in the range of about 0.15 H to about 0.35 H, said buffer portion having an outer surface that is substantially parallel to the longitudinal axis of the fender.

5,054,415

MOORING/SUPPORT SYSTEM FOR MARINE STRUCTURES

John J. Marshall, Newcastle-Upon Tyne, United Kingdom, assignor to Marshall Industries Limited, Channel Islands

PCT No. PCT/GB88/00182, § 371 Date Nov. 6, 1988, § 102(e) Date Nov. 6, 1988, PCT Pub. No. WO88/06999, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 10, 1988, Ser. No. 435,389

Claims priority, application United Kingdom, Mar. 11, 1987, 8705767; May 15, 1987, 8711544

Int. Cl.[5] B63B *21/50*

U.S. Cl. 114—293 **7 Claims**



1. A mooring/support system for anchoring a marine structure, comprising:

at least three anchor elements, each element having a given length, each anchor element including an elongated non-buoyant section having a first end for connection to a sea bed and a second end, and an elongated buoyant section for floating above said sea bed, said buoyant section having a first end connected to said second end of said non-buoyant section and a second end for disposition remote from said sea bed and near a surface of a sea covering said sea bed, each said second end defining a respective mooring point; and

a bridle element containing a plurality of bridle segments for circumferentially linking each of said second ends of said buoyant sections together via respective bridle segments so as to form a substantially polygonal configuration, said anchor elements and said bridle element cooperating to ensure that when said mooring/support system is anchored to said sea bed at said first ends of said non-buoyant sections and said buoyant sections are located above said sea bed but below and near said surface of said sea, a pre-loading force is exerted on said anchor elements, said mooring points are maintained at a distance below said surface of said sea and said mooring/support system is maintained in position independently of said marine structure, and said mooring points provide respective spaced apart sites for the attachment of mooring lines to said marine structure.

5,054,416

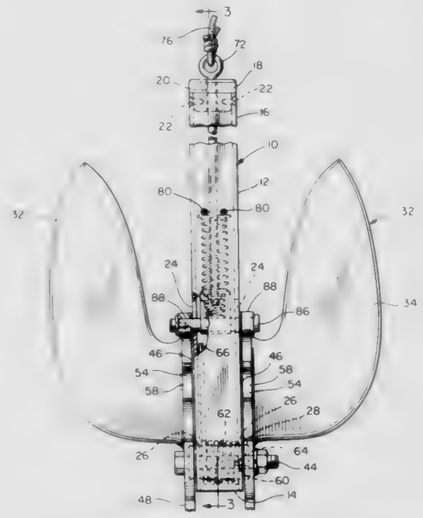
BOAT ANCHOR WITH FLUKE RELEASE AND RESET MECHANISM

Richard H. Zetah, 5665 NE. River Rd., Sauk Rapids, Minn. 56379

Filed Jul. 18, 1990, Ser. No. 553,567

Int. Cl.[5] B63B *21/38*

U.S. Cl. 114—310 **5 Claims**



1. An anchor construction including an elongated shank having first and second end portions, a pair of anchor flukes pivotally supported from said first end portion on opposite sides thereof, for oscillation relative thereto about an axis transverse to said shank, between first positions with said flukes generally paralleling said shank and extending toward said second end portion of said shank and second positions disposed on opposite sides of shank and angularly displaced at least generally 135 degrees from said first positions, said flukes and shank including co-acting deactivatable cam and stop means operative to limit angularly displacement of said flukes away from said first positions to third positions angularly displaced at least generally 30 degrees from said first positions, said cam and stop means including latch means shiftable along said shank between applied and release positions and stop means carried by said flukes engagable by said latch means, when said latch means is in said applied position, to limit angularly displacement of said flukes from said first positions to said third positions, biasing means yielding biasing said latch means to said applied position, said latch means having one end of a pull line anchored relative thereto for exerting a manual pull on said latch means to shift the latter from said applied position to position to said release position, said latch means, when in said release position, being ineffective to limit movement of said flukes from said first positions to said third positions and thereby allowing said flukes to pivot past said third positions to said second positions thereof, said cam and stop means including cam means operative to cam said latch means, against the biasing action of said biasing means, from said applied position to said release position responsive to movement of said flukes from either second position to the corresponding third position for reactivating said stop means, and spring means operatively connected between said shank and flukes yieldingly biasing said flukes toward said first positions from said third and second positions, respectively.

5,054,417

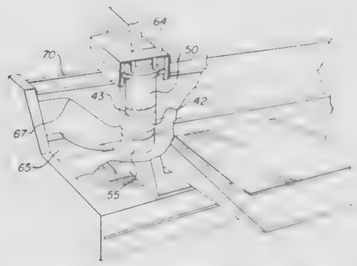
SHEET BINDING APPARATUS AND BINDERS FOR USE THEREWITH

Sushil K. Bhatia, Framingham; Paul E. Brefka, Southborough; Mihira K. Rath, Milford; Nick Misra, Hopkinton, all of Mass., and Roger N. Chevrette, Woonsocket, R.I., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 351,879, May 12, 1989. This application Feb. 20, 1990, Ser. No. 482,311

Int. Cl.[5] B05C *1/02;* **B42C** *9/00*

U.S. Cl. 118—242 **3 Claims**



1. A replaceable adhesive applicator cartridge for use with binding apparatus of the type including means for clamping a plurality of sheets with binding edges of the sheets in alignment, and means for coating the binding edges of said sheet with a liquid adhesive, comprising:

a supply of liquid adhesive:

an applicator member:

a receptacle for the adhesive; and

a cover having an aperture, said applicator member being secured to said cover, and said receptacle being movably mounted within the cover and around the applicator member wherein the receptacle may be projected to expose the applicator member through the aperture.

5,054,418

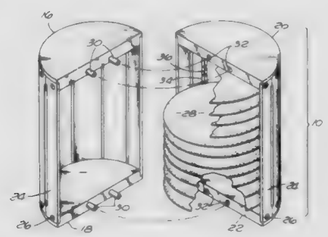
CAGE BOAT HAVING REMOVABLE SLATS

Michael S. Thompson, North Richland Hills; Steven R. Hubbard, and Franklin D. Jackson, both of Decatur, all of Tex., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 23, 1989, Ser. No. 355,989

Int. Cl.[5] B05C *13/02;* **B65D** *85/48*

U.S. Cl. 118—500 **59 Claims**



1. A cage boat comprising a pair of planar, spaced apart end pieces, each of said end pieces extending radially outward about a common axis, a plurality of substantially parallel slats, each of said slats being perpendicular to said end pieces and removably attached thereto, and a plurality of spacer rails, parallel to said slats and removably positioned thereupon, each of said rails having a plurality of groove means for receiving semiconductor wafers, said end pieces and said slats forming a cage enclosing said spacer rails.

5,054,419

IMAGE FORMING APPARATUS

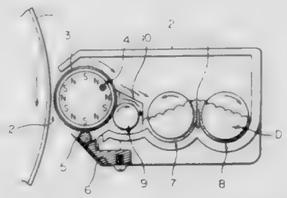
Masahiko Itaya; Yukio Okamoto; Kazuo Yasuda; Masayuki Kamegamori; Kunihisa Yoshino; Shizuo Morita; Masakazu Fukuchi; Akihiko Tamura; Hiroshi Fuma; Toshiro Fujimori, and Tsugio Sugizaki, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 346,872, May 3, 1989, abandoned. This application Oct. 25, 1990, Ser. No. 604,321

Claims priority, application Japan, May 9, 1988, 63-112975; May 18, 1988, 63-122264; Jul. 4, 1988, 63-167076; Aug. 31, 1988, 63-217417

Int. Cl.[5] G03G *15/09*

U.S. Cl. 118—657 **31 Claims**



1. A developing apparatus for supplying a developer to an image holding means so that an electrostatic latent image on said image holding means is developed with said developer, said apparatus comprising;

developer conveyance means having a rigid surface, for conveying said developer to a developing zone;

a developer layer-thickness regulating means, shaped like a bar and having a rigid surface portion with a curvature radius between 0.5 mm and 15 mm, for regulating the thickness of said developer on said developer conveyance means; and

a supporting means for supporting said developer layer-thickness regulating means, and for pressing said surface portion onto said developer conveyance means, said rigid surface of said developer conveyance means and said rigid surface portion of said developer layer-thickness regulating means having a rigidity of not less than 10^4 kg/cm^2.

5,054,420

USE OF A PARTICULATE PACKED BED AT THE INLET OF A VERTICAL TUBE MOCVD REACTOR TO ACHIEVE DESIRED GAS FLOW CHARACTERISTICS

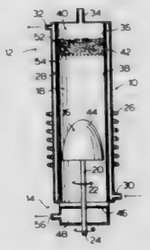
Narasimha S. Raghavan, and Roland S. Timsit, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Sep. 24, 1990, Ser. No. 586,672

Claims priority, application Canada, Sep. 29, 1989, 615293

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—715 **17 Claims**



1. In a Metal Organic Chemical Vapor Deposition (MOCVD) reactor having a reactor chamber in which a sus-

ceptor is position, means for heating said susceptor to a desired MOCVD operating temperature, an inlet for and an outlet for said reactor chamber, said reactor chamber characterized by having means for distributing reactant gas mixture at said inlet to provide a vortex-free flow of a reactant gas mixture towards said susceptor, said gas distributing means comprising:

i) a packed bed of discrete particles, said bed having a sufficient depth to provide a series of tortuous interconnecting channels around and between said particles and through said bed, and

ii) means for supporting said packed bed at said inlet for said reactor chamber, said support means being porous adjacent said reactor chamber to permit a reactant gas mixture after having passed through said packed bed to enter said reactor chamber.

5,054,421

SUBSTRATE CLEANING DEVICE

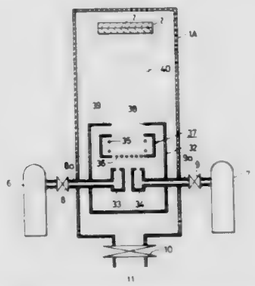
Hiroki Ito, and Teruo Ina, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Division of Ser. No. 73,249, Jul. 14, 1987, Pat. No. 4,890,575. This application May 18, 1989, Ser. No. 353,433

Claims priority, application Japan, Jul. 14, 1986, 61-165141; Mar. 25, 1987, 62-69035

Int. Cl.[5] C23C *16/02*

U.S. Cl. 118—723 **4 Claims**



1. A substrate cleaning device for cleaning a substrate, said device being housed in a vacuum tank, said device comprising:

a gas jet nozzle for jetting a cleaning gas therefrom;

an electron beam irradiation section centered above said gas jet nozzle for irradiating electron beams into gas jetted from said gas jet nozzle to induce a glow discharge therein, said electron beam irradiation section comprising a filament disposed above said gas jet nozzle, an electric field shield plate disposed around said filament, a grid disposed above said gas jet nozzle and aligned with an aperture in said electric field shield plate, and a power source for applying a potential between said filament and said grid to create said electron beams from thermoelectrons produced by said filament;

an ion acceleration section disposed above and aligned with said electron beam irradiation section for accelerating ions produced by said electron beam irradiation section through said aperture and toward said substrate; and

a substrate holder disposed above and aligned with said iron acceleration section.

5,054,422

MULTI-LAYERED GASEOUS PHASE CULTIVATION

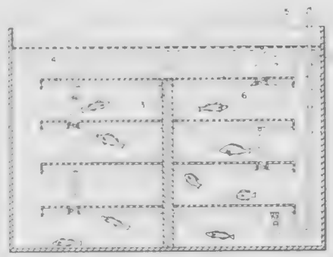
Hisatake Nojima, and Youko Nojima, both of Chiba, Japan, assignors to Yuugen-Kaisha Parasight, Chiba, Japan

PCT No. PCT/JP88/00925, § 371 Date Jul. 12, 1989, § 102(e) Date Jul. 12, 1989, PCT Pub. No. WO89/02218, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 12, 1988, Ser. No. 381,412

Int. Cl.[5] A01K *63/04*

U.S. Cl. 119—3 **2 Claims**



1. A multi-layered, gaseous phase cultivation method for culturing aquatic organisms in water, comprising the steps of:

disposing a plurality of tray-like shallow vats in a culture tank horizontally and upside down, each of said vats including a substantially horizontal flat portion, a substantially vertical perimeter wall at the perimeter of said flat portion, a hole, passing through said flat portion, and a tube surrounding and extending along a central axis of said hole;

providing a supporter to support said vats in a stack, certain intervals being provided between said vats in such a manner as to divide said culture tank into multiple spaces;

feeding air from the bottom of said culture tank to one of said vats, disposed in the lowermost portion of said culture tank, via an air supply pipe;

reserving said air in an air space in said one of said vats formed between said flat portion and said perimeter wall, said air space having a height which is a little lower than the height of the perimeter wall of said one of said vats; and

bleeding the air stored in said air space gradually upward through each vat hole in successive vats to form an aerated air reserving space, adjacent a cultivation place for aquatic organisms, between each adjacent pair of the vats.

5,054,423

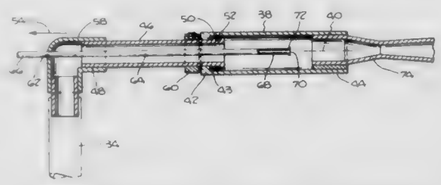
APPARATUS FOR AIR DELIVERY SYSTEM

Peter Escobal, P.O. Box 2457, Oxnard, Calif. 93033

Filed Mar. 9, 1990, Ser. No. 491,305

Int. Cl.[5] A01K *63/04*; **A62B** *7/02*

U.S. Cl. 119—5 **5 Claims**



4. An adjustable air delivery means for introducing a selected amount of aspirated air into a stream of water, said air being conducted in an air conducting tube having one end open to the atmosphere, comprising:

(a) water tube means having a first and second portion, a variable diameter throat and an axis;

(b) outlet means for discharging air from said air conducting tube into said water stream within said tube means in variable spaced relation to said throat;

(c) adjustment means for adjusting said spaced relation comprising first and second telescopically related water conducting hollow open ended members;

(d) a connector means positioned between one end of said first member and said first portion of said water tube means whereby movement of said first member with respect to said second member relative to said throat varies the space between said throat and said air outlet means thereby varying the water flow area and amount of aspirated air.

5,054,424

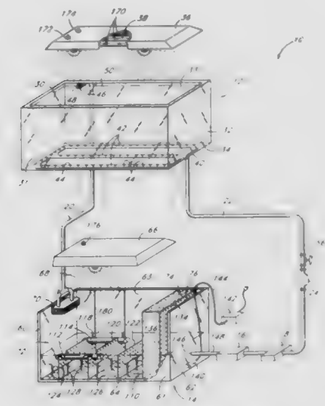
AQUARIUM ECOSYSTEM

Leng K. Sy, 34135 Pacific Coast Hwy., Ste. A, Dana Point, Calif. 92629

Filed Apr. 24, 1990, Ser. No. 513,952

Int. Cl.[5] A01K *63/04*, *63/06*

U.S. Cl. 119—5 **29 Claims**



1. An apparatus for creating a self-sustaining ecosystem for aquatic life comprising:

a main water tank having an inlet and an outlet;

a filter tank having an inlet and an outlet connected to the main tank and further comprising:

a plant section, and

a compartment with material suitable to house bacteria and remove particulate matter produced by fish;

a first conduit connected between the outlet of the main tank and the inlet of the filter tank;

a second conduit connected between the inlet of the main tank and the outlet of the filter tank;

a pump for pumping water from said filter tank into said main tank; and

a first light source providing light to the main tank, said first light source having a switching means for turning the light source on or off to simulate the light conditions of morning, day and evening; and

a second light source providing light to the filter tank, the second light source having a second switch which allows the second light source to be turned on or off independent from said first light source.

5,054,425

METHOD OF MILKING AN ANIMAL

Hartmut Grimm, Stuttgart, and Karl Rabold, Schwäbisch Hall-Wackershofen, both of Fed. Rep. of Germany, assignors to Alfa-Laval Agriculture International AB, Tumba, Sweden

PCT No. PCT/SE89/00100, § 371 Date Aug. 31, 1990, § 102(e) Date Aug. 31, 1990, PCT Pub. No. WO89/07884, PCT Pub. Date Sep. 8, 1989

PCT Filed Mar. 3, 1989, Ser. No. 571,628

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1988, 3807256

Int. Cl.[5] A01J *3/00*

U.S. Cl. 119—14.02 **27 Claims**

1. A method of milking an animal comprising the steps of:

connecting a milking machine to the teats of an animal;

operating the milking machine to treat the teats of the animal, such that milk is extracted from the teats;

controlling the milking machine to operate at a stable state, such that a substantially constant flow of milk is ejected from the teats;

sensing an uncontrolled change in a variable related to the machine treatment of the teats;

recording a milk ejection variable in response to said sensed uncontrolled change; and

utilizing said recorded milk ejection variable to control the milking machine in a subsequent milking of the animal, such that said uncontrolled change in said teat treatment variable is counteracted before it is expected to occur.

5,054,426

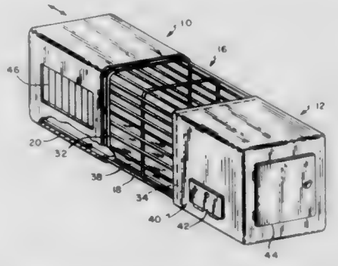
EXPANDABLE ANIMAL ENCLOSURE

Ronald J. Panarelli, 67 Edwards St., Quincy, Mass. 02169, and Michael Kelly, 86 Glendale Rd., Braintree, Mass. 02184

Filed Jun. 14, 1990, Ser. No. 538,156

Int. Cl.[5] A01K *1/03*

U.S. Cl. 119—17 **7 Claims**



1. An expandable animal enclosure comprising:

a. two complementary box-like shell housings each shell housing having an open end and sidewalls;

b. a cage comprising three sides and a base member and having two open ends, at least the ends of the cage being disposed within the open ends the shell housing,

whereby slidable separation of the shell housings results in exposure of a commensurate amount of the cage.

5,054,427

INSERTABLE STACKING PET TOY MAZE

Judith L. Hoover, 3108 Killian Rd., Uniontown, Ohio 44685

Continuation-in-part of Ser. No. 410,256, Sep. 21, 1989, Pat. No. 4,953,502. This application Aug. 28, 1990, Ser. No. 574,465

The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.

Int. Cl.[5] A01K *15/00*

U.S. Cl. 119—29 **18 Claims**

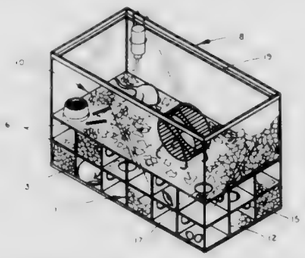
1. An insertable small animal maze for use in a containment structure and comprising:

at least one maze element for guiding and restricting animal

travel, said maze element further comprising at least one vertical wall unit;

at least one horizontal planar surface with at least one aperture large enough for animal passage;

wherein the maze elements and horizontal planar surfaces are



alternately stackable and both are insertable into said containment structure, and further,

a first means for allowing change of maze routes wherein the horizontal planar surfaces are repositionable or rearrangeable, thereby relocating said at least one aperture in the horizontal planar surfaces.

5,054,428

METHOD AND APPARATUS FOR REMOTE CONDITIONED CUE CONTROL OF ANIMAL TRAINING STIMULUS

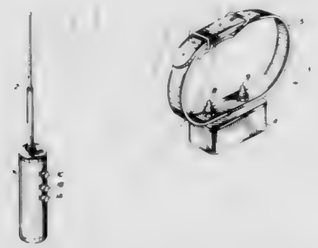
Gregory J. Farkus, Tucson, Ariz., assignor to Tri-Tronics, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 374,287, Jun. 29, 1989, Pat. No. 4,947,795. This application Nov. 17, 1989, Ser. No. 438,518

The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.

Int. Cl.[5] A01K *15/00*

U.S. Cl. 119—29 **12 Claims**



1. A method of training an animal, comprising the steps of:

(a) training the animal to conform to a desired behavior;

(b) later inducing the animal to conform to the desired behavior;

(c) if the animal fails to continue to conform to the desired behavior, producing a first control signal to produce a first conditioned cue as a low degree of electrical stimulation applied to the animal;

(d) producing the first conditioned cue as a short first preselected duration electrical stimulation signal applied to the animal in response to the first control signal to get the animal's attention and indicate to it that continued failure to conform to the desired behavior will result in a higher degree of electrical stimulation;

(e) if the animal fails to conform to the desired behavior, producing a second control signal to produce a second conditioned cue as a higher degree of electrical stimulation;

(f) producing the second conditioned cue as a second preselected duration electrical stimulation in response to the second control signal, the second preselected duration being substantially greater than the first

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5,054,429

CAT SCRATCHING POST AND METHOD FOR MAKING A CAT SCRATCHING POST

Collins Bradford, 23914 Silversmith, Katy, Tex. 77449

Filed Oct. 13, 1989, Ser. No. 420,917

Int. Cl.[5] A01K *15/00*

U.S. Cl. 119—29 **10 Claims**



1. A cat scratching post for cats comprising:

a base member having an outer surface and defining a post structure; and

at least one layer of woven pile-like material, having top and bottom surfaces, disposed upon at least a portion of the outer surface of the base member, portions of the bottom surface of the woven pile-like material being disposed in a spaced relationship from the outer surface of the base member and portions of the bottom surface of the woven pile-like material being fixedly secured to the outer surface of the base member, whereby portions of the top surface of the woven pile-like material have an undulating configuration.

5,054,430

DEVICE FOR FEEDING ANIMALS

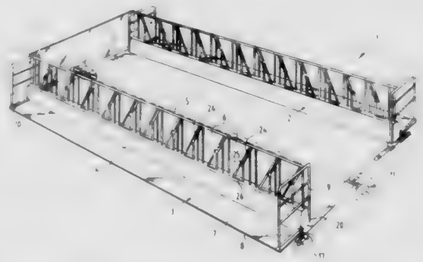
Johannes M. W. Weelink, No. 58, Tynaarlosestraat, 9481 Ad Vries, Netherlands

Filed May 3, 1990, Ser. No. 520,063

Claims priority, application Netherlands, May 8, 1989, 8901158

Int. Cl.[5] A01K *1/10*

U.S. Cl. 119—60 **16 Claims**



1. Device for feeding animals comprising at least one feeding fence with a frame displaceable over a ground surface, a number of bars attached to the frame which in pairs define openings through which the animals can place their head, and means for displacing the feeding fence over the ground surface, wherein the frame, is supported directly on the ground surface through support means, and is provided with a floor plate extending at a small interval above the ground rearward of the frame to a rear edge making contact with the ground, which plate can support at least the front legs of the animals which have pushed their head through the respective openings, wherein the feeding fence is of the self-catching type, wherein close to each opening there is a swivel bar locking behind the head of the animal after the head has been pushed through the opening, and wherein the displacing means comprise motor drive means which prevents movement of the feeding fence when said motor drive is not operated.

5,054,431

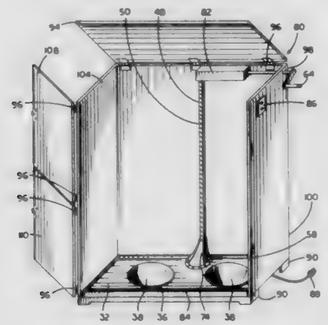
ADJUSTABLE ANIMAL FEEDER

Andrew G. Coviello, P.O. Box 11051, Greenwich, Conn. 06831

Filed Dec. 4, 1989, Ser. No. 445,042

Int. Cl.[5] A01K *5/00*

U.S. Cl. 119—61 **20 Claims**



1. A height adjustable animal feeding apparatus for an operator with limited mobility, said apparatus comprising:

a frame having a top and a bottom portion,

a food supporting platform for receiving animal food,

vertical guide means mounted on said frame for supporting said food supporting platform at any height between the top and bottom portions of said frame,

said vertical guide means comprising means for continuously moving said food supporting platform to said any height,

means for driving, attached to said means for moving for operating said means for moving, and

means for operating said means for driving, connected to said means for driving in such a manner that said means for operating is accessible to an operator who cannot handle said food supporting platform at said lowest height.

5,054,432

FOWL DRINKER

Antonio Rovira Badia, and José Franco Tarazaga, both of Vilafranca del Penedés, Spain, assignors to Tecnica E Innovaciones Ganaderas, S.A. (TIGSA), Spain

Filed Feb. 16, 1990, Ser. No. 480,839

Claims priority, application Spain, Feb. 22, 1989, 8900634; Mar. 7, 1989, 8900812

Int. Cl.[5] A01K *7/00*

U.S. Cl. 119—81 **17 Claims**

1. A poultry drinking apparatus, comprising:

a counterweight from which there extends a support column;

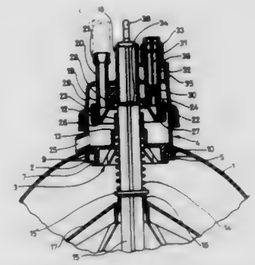
a drinker hood;

a valve body detachably threaded to the support column, the valve body being connected to a water intake device; and

a lower sleeve member disposed at least partly below the valve body, the sleeve member being detachably attached to the hood;

a spring upon which the lower sleeve member is supported, the spring being mounted around the support column; and

an upper cup-shaped cover being disposed at least partly above the valve body to cover the valve body, the cup-shaped cover being removably threaded to the lower sleeve member; the cup-shaped cover also comprising an



adjusting means for adjusting water flow to the drinker hood from the valve body, the adjusting means comprising:

a resilient stopper, a stem and a blind nut, one end of the stem engaging the resilient stopper, another end of the stem being engaged by the blind nut to move the resilient stopper to adjust said water flow to the drinker hood.

5,054,433

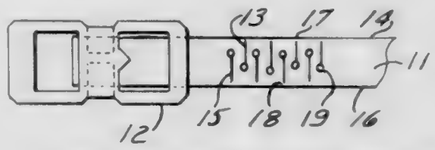
EXPANDABLE BELT

Frederick W. Pfleger, 1152 Barbara Dr., Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 536,191, May 29, 1990, Pat. No. 5,002,287. This application Oct. 1, 1990, Ser. No. 591,257

Int. Cl.[5] A01K *27/00*

U.S. Cl. 119—106 **10 Claims**



1. An integral resilient material belt of a given length having a first end and a second and of a given width having a first edge and a second edge, and of a given thickness having a first surface and a second surface, and of a predetermined elongating strength, a buckle secured to said first end, said second end adaptable to be secured by said buckle comprising; a plurality of slits each having a first slit end and a second slit end cut through said thickness of said belt in a direction substantially across the width of said belt located between said first edge and said second edge and positioned along the length of said belt, a first web formed between each of said first slit end of said slit and said first edge, a second web formed between each of said second slit end of said slit and said second edge, said first web breakable at an elongating strength lower than said predetermined elongating strength, said plurality of slits separate from each other enabling the elongation of said belt at the elongating strength lower than said predetermined elongating strength after breaking of said first web.

5,054,434

SUPPRESSION OF AMMONIA ODORS FROM ANIMAL WASTES

Michael J. Wax, Columbia, and Timothy A. Boyer, Baltimore, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 27, 1989, Ser. No. 413,135
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—171 **29 Claims**

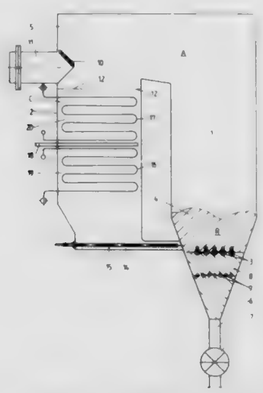
1. Animal litter, bedding or other absorbent material containing as the sole additive, which affects pH, 0.0001 to 2 wt % of a low molecular weight per acid functionality, nontoxic, non-volatile acid selected from the group consisting of malic, fumaric, tartaric, succinic, sorbic, an acid having an acidity such that the first pK_a of the acid is less than 3, and mixtures thereof to prevent the accumulation of gaseous ammonia formed from free liquid urine in animal areas where the animal litter, bedding or other absorbent material is applied, said animal litter, bedding or other absorbent material being selected from the group consisting of straw, wood shavings, wood chips, saw dust, rice hulls, vermiculite and mixtures thereof.

5,054,435

FURNACE, ESPECIALLY A FLUIDIZED FURNACE

Helmut Wiehn, Oberhausen; Heiko Rehwinkel, Bottropp; Horst Möllenhoff, Mülheim/Ruhr, and Hans-Joachim Meier, Alpen-Menzelen, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 10, 1990, Ser. No. 550,463
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1989, 3922765
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D **2 Claims**



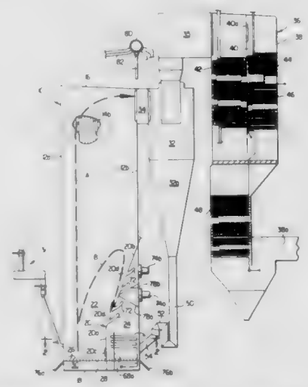
2. A furnace, particularly a fluidized bed furnace, comprising: a combustion chamber with gas flowing up from below, said combustion chamber having an outlet; a flue connected to said outlet; a precipitator connected to said outlet for separating solids from flue gas of the furnace; said precipitator comprising a filtering precipitator having a solids exit communicating with said flue; said flue comprising a solids cooler for separated solids; said solids cooler having a lower end; and a solids feedback line between said lower end of said solids cooler and said combustion chamber; said flue having flue surfaces with a heat-exchange fluid flowing through said flue surfaces; said solids having air flowing therethrough; gas flowing through said solids at a rate adjusted to control distribution of heat to be diverted between the gas and said flue surfaces; said flue being divided into compartments, each compartment having a separate gas supply source; means for injecting fuel and combustion air for generating a reactor section at a bottom of said combustion chamber; means for injecting additional combustion air to generate an after-burning section extending from said reactor section to an intake of said precipitator; said after-burning section having a temperature held substantially higher than the temperature in said reactor section; air flowing through said solids being supplied as combustion air to said after-burning section; said combustion chamber and said flue having a pressure for operating a gas turbine; separate pressurized vessels for holding said combustion chamber and said flue; a pressure line between said combustion chamber and said flue; and flue surfaces suspended in a flow of gas downstream of said reactor section.

5,054,436

FLUIDIZED BED COMBUSTION SYSTEM AND PROCESS FOR OPERATING SAME

David H. Dietz, Hampton, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Jun. 12, 1990, Ser. No. 537,397
Int. Cl.[5] F22B *1/02*
U.S. Cl. 122—4 D **33 Claims**



1. A fluidized bed combustion process comprising the steps of forming a furnace section and a recycle section in an enclosure, supporting a bed of combustible material in said furnace section, introducing air into said bed of combustible material at different locations in said enclosure to fluidize said combustible material, discharging a mixture of flue gases and entrained material from said furnace section, separating said entrained material from said flue gases, passing said separated flue gases to a heat recovery section, passing said separated material into and through said recycle section, and varying the velocities of said fluidizing air along said different locations so that said separated material is drawn from said recycle section back into said furnace section.

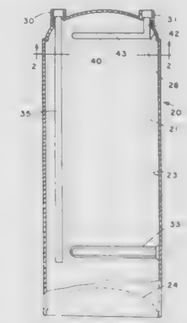
5,054,437

STORAGE TANK FOR WATER HEATERS AND THE LIKE WITH COLLECTOR OUTLET DIP TUBE

Hemant D. Kale, 8253 Sugarland Dr., Manlius, N.Y. 13104

Filed Jul. 20, 1990, Ser. No. 555,739
Int. Cl.[5] F22B *5/00*
U.S. Cl. 122—13.1 **16 Claims**

1. In a vertical storage tank having a side wall, a bottom wall and a top wall defining an internal storage area, an inlet for incoming fluid and an outlet for withdrawn fluid, the improvement comprising a collector outlet dip tube communicating with the outlet and disposed generally adjacent the top thereof, said outlet dip tube extending across the internal storage area in a relatively thin horizontal plane and having a plurality of openings adapted to deliver fluid from the internal storage area to the interior of said outlet dip tube, whereby outlet fluid is collected from a plurality of points along a relatively thin horizontal cross section of the tank and delivered to the outlet of the tank.

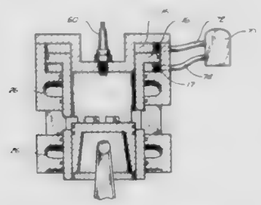


5,054,438

FLOATING CYLINDER INTERNAL COMBUSTION ENGINE

Jiro Takashima, 7203 Schiller, Houston, Tex. 77055

Filed Sep. 19, 1990, Ser. No. 585,715
Int. Cl.[5] F02B *59/00*
U.S. Cl. 123—50 R **1 Claim**



1. A floating cylinder internal combustion engine comprising:

a slidable having an intake port and an exhaust port;

a reentrant cylinder head connected to a cylinder block, said cylinder block having an intake passage and an exhaust passage communicating with said intake port and said exhaust port respectively, said intake passage and said exhaust passage formed in said cylinder block having a longitudinal dimension with respect to the cylinder axis of greater length than a longitudinal dimension with respect to the cylinder axis of said intake port and said exhaust port, said cylinder slidably positioned inside said cylinder block, said cylinder having a top portion slidably positioned within an annular recess between said reentrant cylinder head and said cylinder block;

a piston slidably positioned within said cylinder; and

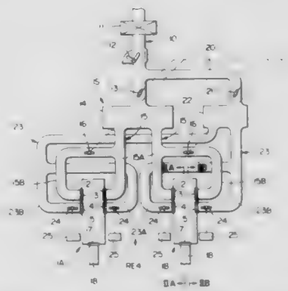
a port timing control means interactive with said cylinder for adjusting a position of said intake port and said exhaust port during movement of said piston with respect to the longitudinal dimension of said intake passage and said exhaust passage, said port timing control means causing said cylinder to move independently with respect to the movement of said piston within said cylinder.

5,054,439

INTAKE SYSTEM FOR AUTOMOTIVE ENGINE

Yuji Akagi, Hatsukaichi, and Shunki Okazaki, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 7, 1990, Ser. No. 489,055
Claims priority, application Japan, Mar. 8, 1989, 1-55454
Int. Cl.[5] F02B *75/18*
U.S. Cl. 123—52 M **13 Claims**



1. In combination, an automotive internal combustion engine and an intake system for said automotive internal combustion engine, comprising:

a cylinder provided with at least three intake ports, at least one of said at least three intake ports being timed to close after the remaining intake ports, which are timed to close closely to each other;

main intake pipe means for introducing intake air into said intake system;

first intake pipe means for commonly connecting said remaining intake ports of said cylinder to said main intake pipe means; and

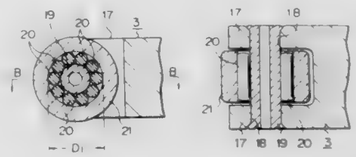
second intake pipe means provided independently from said first intake pipe means for connecting said at least one intake port to said main intake pipe means.

5,054,440

CAM FOLLOWER DEVICE FOR VALVE DRIVING MECHANISM IN ENGINE

Satoshi Kadokawa, Kanagawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 543,645
Claims priority, application Japan, Jun. 29, 1989, 1-165365
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.5 **15 Claims**



1. A cam follower device which is incorporated in a valve driving mechanism of an engine to contact the outer peripheral surface of a cam secured to a cam shaft that rotates synchronously with a crankshaft of said engine, thereby transmitting the motion of said cam to a valve that opens and closes a suction port or an exhaust port in said engine, comprising:

a pair of spaced support wall portions which are formed on a member that is provided in opposing relation to said cam to receive the motion of said cam;

through-holes which are formed in said support wall por-

tions at respective positions that are aligned with each other;

a steel shaft which has been hardened at an intermediate portion thereof, two end portions of said shaft, which are not hardened, being fitted into said through-holes and then staked toward the inner peripheral surfaces of said through-holes where said end portions are disposed, thereby being secured between said pair of support wall portions; and

a ceramic outer ring which is rotatably supported through a plurality of hardened steel needle bearings around the intermediate portion of said shaft that is located between said pair of support wall portions, said outer ring being in contact at the outer peripheral surface with the outer peripheral surface of said cam, wherein the size of a clearance which is present where said steel needle bearings are disposed at ordinary temperature is set within the range of from (5 $\mu m + 9.5 \times 10^{-4}$ Di) to (18 $\mu m + 9.5 \times 10^{-4}$ Di), where Di is the inner diameter of said outer ring.

5,054,441

DECOMPRESSION DEVICE IN A TWO-CYCLE ENGINE

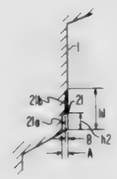
Yoshihide Nakatani; Shigeichi Okada; Eiji Yaezawa; Makoto Takata, and Takafumi Nakahara, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1989, Ser. No. 353,322

Claims priority, application Japan, Jun. 17, 1988, 63-79519[U]; Jun. 27, 1988, 63-83989[U]

Int. Cl.[5] F02N *17/00*

U.S. Cl. 123—182 **7 Claims**



1. A decompression arrangement in a two-cycle engine including a cylinder having an inner wall, a compression chamber, a crankcase, and means forming a cylinder cooling airflow, said decompression arrangement comprising:

a scavenging passageway formed in said cylinder inner wall and extending axially of said cylinder;

a decompression groove formed in said cylinder wall and extending axially of said cylinder at a position communicating with an end of said scavenging passageway directed toward said compression chamber and to be on an upstream side of the cylinder cooling airflow;

said decompression groove including a first portion with a base end communicating with said end of said scavenging passageway and an opposite end directed toward said combustion chamber and a second portion with a base end communicating with said opposite end of said first portion and an opposite end directed toward said combustion chamber;

said first portion having a depth greater than the depth of said second portion;

said base end of said first portion having a width less than the width of said end of said scavenging passageway, and said base end of said second portion having a width less than said width of said base end of said first portion; and

said first portion having an axial length less than the total axial length of said decompression groove.

5,054,442

BEARING BRIDGE CONSTRUCTION FOR THE CRANKSHAFT MOUNTING OF A COMBUSTION ENGINE

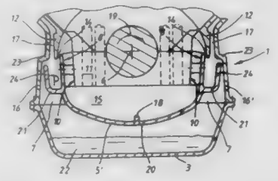
Albert Pietsch, Illingen; Georg Eiermann, Fellbach-Schmiden, and Wolf Boll, Weinstadt, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 18, 1990, Ser. No. 553,621

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1989, 3923986

Int. Cl.[5] F02F *7/00;* **F01M** *11/02, 1/02*

U.S. Cl. 123—195 H **9 Claims**



1. A crankshaft mounting arrangement for a reciprocating-piston combustion engine including a cylinder block, comprising a bearing bridge for connecting main bearing seats to one another in a longitudinal direction of a crankshaft, wherein the bearing bridge forms a screen between the main bearing seats for the rotating drive parts of the combustion engine with respect to a crank case space, wherein the bearing bridge is designed as a dish-shaped casing, the casing having dish rims of which extend into a transitional zone to the cylinder block.

5,054,443

HEAT-INSULATING ENGINE WITH SWIRL CHAMBER

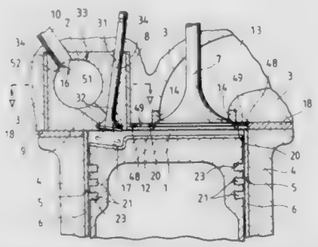
Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 24, 1989, Ser. No. 427,207

Claims priority, application Japan, Oct. 28, 1988, 63-270923

Int. Cl.[5] F02B *19/02*

U.S. Cl. 123—254 **26 Claims**



1. A heat-insulating engine with swirl chamber comprising:

a cylinder block having cylinders;

cylinder liners fitted to said cylinders;

a cylinder head provided with a head lower surface fixed to said cylinder block and formed with intake and exhaust ports;

intake and exhaust valves arranged in said intake and exhaust ports;

pistons provided with piston heads reciprocating within said cylinder liners;

main combustion chambers constituted by said cylinder liners, said heat lower surface of said cylinder head and said piston heads;

swirl chambers formed in said cylinder head and constituted by heat-insulating wall bodies;

fuel injection nozzles having injection ports opened into said swirl chambers;

communication holes formed in said cylinder head and made by said heat-insulating wall bodies communicating said swirl chambers with said main combustion chambers; and

control valves for use in opening or closing said communication holes;

wherein said heat-insulating engine with swirl chamber further comprises:

control valves having ceramic valve heads and ceramic valve stems which are integral with said valve heads, and said valve stems of said control valves are passed through the heat-insulating wall bodies forming said communication holes and said valve stems of said control valves are spaced apart from swirl chambers;

wherein said communication holes are closed by operating said control valves in order to shut off communication between said swirl chambers and said main combustion chambers near the end of a low-exhaust-gas-pressure compression stroke during an exhaust stroke where residual gas in said swirl chambers is reduced, said communication holes are closed by said control valves during an intake stroke to maintain shut-off of the communication between said swirl chambers and said main combustion chambers in order to suppress heating of intake air by heat from said swirl chambers that have been heated, and said communication holes are opened by operating said control valves near the end of the compression stroke so that the intake air is quickly fed into said swirl chambers from said main combustion chambers via said communication holes, is expanded by the heat from the wall surfaces of said swirl chambers, and is combusted at a high temperature after being mixed with fuel injected from said fuel injection nozzles, so that the combustion cycle can be shifted to an exhaust step.

5,054,444

FUEL INJECTION CONTROL SYSTEM FOR A TWO-CYCLE ENGINE

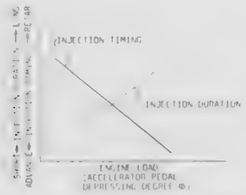
Koji Morikawa, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1989, Ser. No. 390,209

Claims priority, application Japan, Aug. 11, 1988, 63-201439

Int. Cl.[5] F02D *41/34;* **F02M** *67/02*

U.S. Cl. 123—295 **8 Claims**



1. A system for controlling quantity of fuel for a two-cycle engine having at least one cylinder, a scavenge port, an exhaust port, an intake passage communicated with said scavenge port, a fuel injector provided for injecting the fuel directly in the cylinder, the system comprising:

detector means for detecting engine speed and load on the engine and for producing an operating condition signal;

first calculator means responsive to the operating condition signal for calculating an amount of air actually induced into the cylinder;

second calculator means for calculating a quantity of fuel injected by the fuel injector based on a desired air-fuel ratio and the amount of air induced in the cylinder; and

determining means responsive to the operating condition signal for advancing timing and increasing duration of fuel injection with increasing engine load.

5,054,445

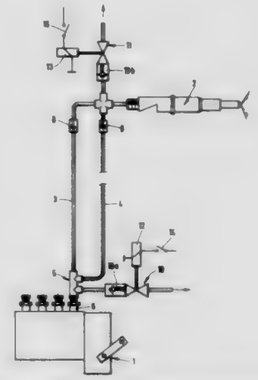
FUEL INJECTION SYSTEM FOR SELF-IGNITION INTERNAL COMBUSTION ENGINES

Dietmar Henkel, Neumarkt, and Max Garbisch, Nürnberg, both of Fed. Rep. of Germany, assignors to MAN Nutzfahrzeuge AG, Munich, Fed. Rep. of Germany

Filed Nov. 9, 1990, Ser. No. 612,262

Int. Cl.[5] F02B *3/00*

U.S. Cl. 123—300 **4 Claims**



1. In a fuel injection system for self-ignition internal combustion engines, in which a fuel volume to be injected is divided into a pre-injection volume and a main-injection volume, said fuel injection system comprising a line injection pump and an injection valve, with fuel being supplied from said line injection pump to said injection valve via two injection lines of different lengths, with a shorter one of said injection lines, before connecting with said injection valve, being provided with a spring-loaded first check valve, the improvement wherein:

a longer one of said injection lines branching off a first distributor portion of a pressure connection of said line injection pump with a first by-pass valve, that is electrically actuatable, being connected to said distributor portion, and with both injection lines, at an down-stream end facing said injection valve, opening into a second distributor portion that is provided with connections for a second by-pass valve, that is electrically actuatable, and said injection valve, and with a second spring-loaded check valve being disposed in said second longer injection line before said second longer injection line opens into said second distributor portion, whereby said difference in length between said two injection lines and is such that a time delay is achieved between a pre-injection and a main injection due to different time requirements for a fuel pressure wave traveling said different lengths of said injection lines.

5,054,446

IDLE REVOLUTION SPEED CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Hirofumi Ohuchi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,764

Claims priority, application Japan, Feb. 13, 1990, 2-32801

Int. Cl.[5] F02D *41/16*

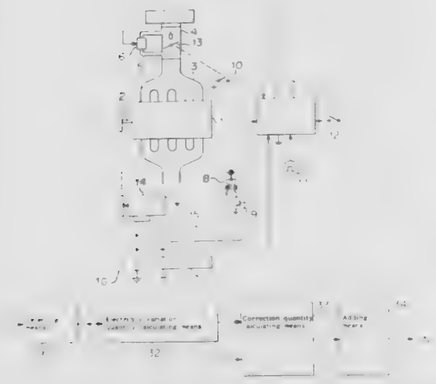
U.S. Cl. 123—339 **3 Claims**

1. An idle revolution speed control apparatus for an internal combustion engine wherein an idle revolution speed is corrected in response to the operational condition of the engine which comprises:

a detecting means to detect an electric quantity produced at

an electricity generating unit consisting of a generator and a generator control device,

an electricity variation quantity calculating means to calculate a variation quantity with respect to the electric quantity obtained by the detecting means,



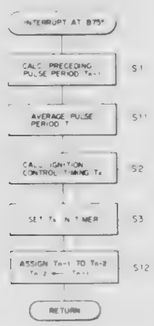
a correction quantity calculating means to calculate an idle revolution speed correction quantity on the basis of data obtained by the detecting means and the electricity variation quantity calculating means, and an adding means for adding the correction quantity obtained by the correction quantity calculating means.

5,054,447

IGNITION TIMING CONTROL DEVICE AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1990, Ser. No. 603,352
Claims priority, application Japan, Oct. 30, 1989, 1-279932
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—414 **5 Claims**



1. A control device for a multi-cylinder internal combustion engine, comprising:

signal generator means for generating a position signal indicative of a crank angle reference position of respective cylinders of the multi-cylinder internal combustion engine;

period determining means, coupled to an output of said signal generator means, for determining a period between successive reference positions of respective cylinders;

memory means, coupled to said period determining means, for storing a period determined previously by the period determining means;

averaging means, coupled to said period determining means and said memory means, for taking an average of a period as determined by the period determining means and a period stored in the memory means;

updating means, coupled to said period determining means and said memory means, for updating the period stored in said memory means to the period lastly determined by the period determining means, each time after the average means takes said average;

ignition timing determining means, coupled to said averaging means, for determining, at each reference position of each cylinder, a length of time from the reference position to a target ignition timing in accordance with the average of the periods as determined by the averaging means; and

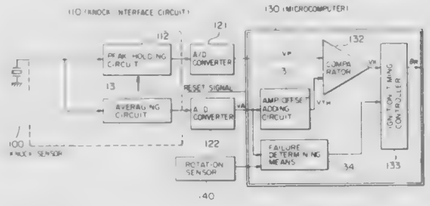
ignition control means, coupled to said ignition timing determining means, for igniting said cylinder in accordance with the length of time from the reference position as determined by the ignition timing determining means.

5,054,448

KNOCKING SUPPRESSION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Atsuko Matsuoka, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1990, Ser. No. 489,622
Claims priority, application Japan, Mar. 8, 1989, 1-53872; Mar. 8, 1989, 1-53873; Apr. 28, 1989, 1-107689
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—425 **13 Claims**



1. A knocking suppression apparatus for an internal combustion engine comprising;

a knock sensor mounted on an engine for sensing knocking therein;

a knock interface circuit connected to receive an output signal of said knock sensor for generating a peak-hold signal (V_P) representative of a peak in the knock sensor output signal and for generating an average signal (V_A) representative of an average of the knock sensor output signal; and

a microcomputer including a threshold setting means for setting, based on the average signal (V_A), a threshold level (V_{TH}) for knocking determination,, a knocking determining means for making a comparison between the peak-hold signal (V_P) and the threshold level (V_{TH}) and determining, based on a result of the comparison, whether there is knocking int he engine, and an ignition timing controller for controlling ignition timing of the engine, said ignition timing controller including a retard angle modifying means for modifying the retard angle (θ_R) based on an output signal (V_K) of said knocking determining means and retarding the ignition timing based on a modified retard angle (θ_R') so as to suppress the knocking,

wherein said threshold determining means determines the threshold level (V_{TH}) as follows:

$$V_{TH}=V_A\times K+Vofs$$

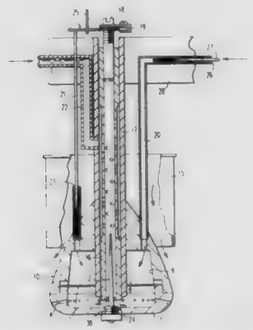
where K is a constant; and Vofs is an offset value.

5,054,449

CCAC (CYLINDER-CONE AIR CHAMBER) CARBURETOR

Charles E. Stark, 155 Gass Rd., Pittsburgh, Pa. 15229

Filed Jan. 30, 1991, Ser. No. 647,795
Int. Cl.[5] F02M *15/00*
U.S. Cl. 123—434 **5 Claims**



1. A carburetion process for internal combustion engines comprising in combination, a cylinder-cone air intake valve controlling the main intake air flow through a carburetor bore, a pre-mix chamber or cavity in the base of said cone, said pre-mix chamber acting as a controlled pressure chamber into which controlled amounts of both fuel and air are admitted by a combination of ports and tapered metering rods resulting in the controllability of the absolute pressure in the pre-mix chamber, said pressure control thereby regulating the rate of fuel admitted to the pre-mix chamber through the fuel metering tube port and at the same time providing for the positive intermingling of fuel and air, said intermingling being enhanced by a circular baffle plate which directs the air flow from a constricted area surrounding the centrally located cone support tube and directing it outward toward the 32 equally spaced orifices radiating outward through the cone cap wall to communicate with the main carburetor bore at which point the fuel driven by air through the orifices in a spray nozzle effect interfaces with the main intake air stream as admitted by the cylinder throttle valve resulting in a high degree of despersion of fuel throughout the entire mass of the intake air stream by virtue of its distribution by the 32 orifices, thereafter passing into the intake manifold, said process taking place continuously throughout all throttle settings using the same metering components.

5,054,450

CONTROL SYSTEM FOR AN AUTOMOBILE ENGINE WITH AUTOMATIC TRANSMISSION

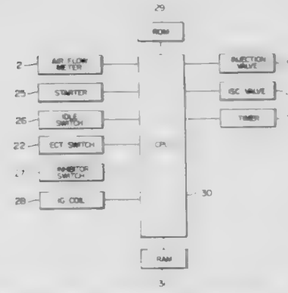
Yuji Oota, Higashihiroshima; Katsuhiro Momii, Hiroshima, and Kenji Okamoto, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 14, 1990, Ser. No. 522,954
Claims priority, application Japan, May 12, 1989, 1-119047
Int. Cl.[5] F02D *41/08*
U.S. Cl. 123—478 **8 Claims**

1. An engine control system for an internal combustion engine with an automatic transmission, said internal combustion engine having intake air control means for causing an increased quantity of intake air to be introduced into said internal combustion engine when said automatic transmission shifts from a neutral range to a drive range, said engine control system comprising:

inhibitor means for detecting when said automatic transmission is operating in neutral and drive ranges;

fuel increasing means for causing an increased quantity of fuel to be introduced into said internal combustion engine according to said increased quantity of intake air; and



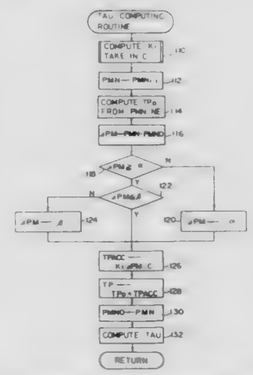
fuel injection control means for determining, based on signals from said inhibitor means, when said transmission has shifted from the neutral range to the drive range, and causing fuel injection at said increased quantity of fuel to begin at a timing prior to increasing the quantity of intake air when said automatic transmission shifts from the neutral range to the drive range.

5,054,451

CONTROL APPARATUS FOR INTERNAL COMBUSTION

Naoto Kushi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 328,563, Mar. 24, 1989, abandoned.
This application Sep. 20, 1990, Ser. No. 586,394
Claims priority, application Japan, Mar. 25, 1988, 63-71295; Mar. 25, 1988, 63-71296
Int. Cl.[5] F02M *55/02*
U.S. Cl. 123—478 **22 Claims**



1. A control apparatus for an internal combustion engine comprising:

a pressure sensor for detecting an intake pressure;

coefficient means for detecting a rotational speed of the engine and setting a K1 coefficient based thereon;

operating value determining means for determining an operating value based on an output of said pressure sensor;

change rate computing means for computing a change rate of said operating value;

change rate restricting means for restricting said change rate so that it does not exceed a predetermined value;

correction value means for computing a correction value based on said restricted change rate and said K1 coefficient and for correcting said control factor on the basis of said correction value; and

control means for controlling said engine on the basis of said control factor which has been corrected by said correction value means.

5,054,452

METHOD AND APPARATUS FOR DETECTING A FAULT CONDITION OF A LAMBDA PROBE

Helmut Denz, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

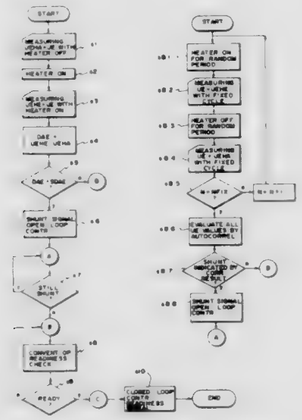
PCT No. PCT/DE89/00727, § 371 Date Jul. 30, 1990, § 102(e) Date Jul. 30, 1990, PCT Pub. No. WO90/06431, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 21, 1989, Ser. No. 548,925

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1988, 3840148

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—479 **10 Claims**



1. A method for detecting a fault condition of a lambda probe which can be heated by a probe heater and for taking measures in response to a fault signal which is emitted when the fault condition is detected, the method comprising the steps of

measuring the probe voltage with the heater switched off;

switching the heater on;

measuring the probe voltage with the heater switched on; and,

issuing a fault signal when the measured values indicate the voltage to be greater when the heater is switched on than when the heater is switched off with each measured value being referred to the same lambda value.

5,054,453

MOBILE FUEL TANK VAPOR EMISSION CONTROL SYSTEM AND METHOD

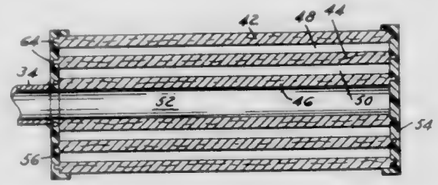
George R. Onufer, Ypsilanti, Mich., assignor to James M. Deimen, Pinckney, Mich.

Division of Ser. No. 6,928, Jan. 27, 1987, Pat. No. 4,829,968. This application May 12, 1989, Ser. No. 351,019

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—516 **5 Claims**

1. A completely submersible sparger to cause the dissolution of vaporous fuel into liquid fuel comprising a plurality of concentric cylinders, said cylinders being spaced apart to form concentric passageways therebetween, and said cylinders formed of a porous material with a pore size sufficient to provide liquid and vapor communication through the cylinders between the passageways.



5,054,454

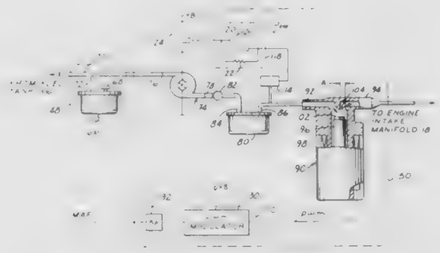
FUEL VAPOR RECOVERY CONTROL SYSTEM

Douglas R. Hamburg, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 9, 1989, Ser. No. 435,234

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **18 Claims**



1. A control system for an internal combustion engine having an air/fuel intake system coupled to a fuel system, comprising:

fuel vapor recovery means coupled to the fuel system for receiving fuel vapors;

an electronically actuated solenoid valve coupled between said fuel vapor recovery means and the air/fuel intake system for controlling flow rate of said vapors into the air/fuel intake system; and

regulating means for providing a minimal pressure differential across said valve greater than a critical pressure required to achieve substantially sonic flow through said valve such that flow through said valve is substantially independent of pressure variations in the air/fuel intake system.

5,054,455

REGULATED FLOW CANISTER PURGE SYSTEM

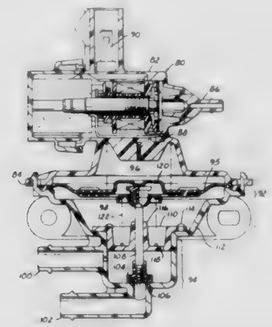
John E. Cook, Chatham, Canada, assignor to Siemens-Bendix Automotive Electronics Limited, Chatham, Canada

Continuation-in-part of Ser. No. 452,664, Dec. 18, 1989, Pat. No. 4,995,369. This application Mar. 8, 1990, Ser. No. 490,791

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **10 Claims**

1. For controlling the purging of a fuel vapor collection canister of an evaporative emission control system associated with the fuel system of an internal combustion engine, a regulated flow canister purge arrangement comprising an electronic vacuum regulator having a vacuum inlet at which engine manifold vacuum is received, an outlet at which is delivered a percentage of the engine manifold vacuum received at the vacuum inlet as determined by an electronic control signal supplied to a control input of the electronic vacuum regulator, a canister purge inlet to which a canister that is to be purged of gaseous fuel vapors is communicated, a canister purge outlet that is communicated to engine manifold vacuum, valve means for controlling flow between said canister purge inlet and said canister purge outlet, and a movable wall for operating said valve means, one side of said movable wall bounding one variable volume chamber and another side of said movable wall bounding another variable volume chamber, a helical coil spring disposed in said one variable volume chamber and acting on said movable wall so as to cause said valve means to be biased toward blocking flow between said canister purge inlet and said canister purge outlet, means communicating the outlet of said electronic vacuum regulator with said one variable volume chamber to cause the volumes of said chambers to vary in relation to the percentage of manifold vacuum applied to said one variable volume chamber, and a coupling mechanism between said movable wall and said valve means, characterized in that said coupling mechanism comprises a straight rod that is guided by a guide means disposed in said another variable volume chamber for essentially straight linear displacement, and a joint between said rod and said movable wall that substantially precludes the transmission of a bending moment from said movable wall, through said rod, to said valve means, and further characterized in that said joint comprises a spherically contoured surface on said movable wall disposed tangentially against a flat surface portion of an element that is disposed on an end of said rod.



5,054,456

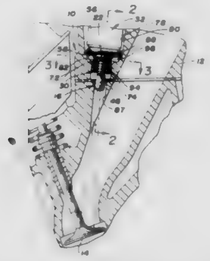
FUEL INJECTION

William B. Rush, II, Clarkston, and Jack E. Elder, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1989, Ser. No. 432,030

Int. Cl.[5] F02M *23/00, 55/02*

U.S. Cl. 123—531 **18 Claims**



1. A fuel injection assembly for an engine comprising a fuel injector having an injector outlet,

a nozzle having a nozzle passage with a nozzle inlet and outlet, said nozzle passage including a converging portion adjacent said nozzle inlet and a diverging portion adjacent said nozzle outlet, said converging and diverging portions being disposed between said nozzle inlet and outlet, and

a nozzle support for attaching said nozzle to said fuel injector so that said injector outlet registers with said nozzle passage adjacent said nozzle inlet enabling injection of fuel from said fuel injector into said nozzle passage and so that said nozzle is supported solely by said fuel injector,

said nozzle having a nozzle port adjacent said nozzle inlet enabling the establishment of an air flow which enters said nozzle passage adjacent said nozzle inlet and exits said nozzle passage through said nozzle outlet, said converging portion being disposed between said nozzle port and diverging portion, at least a portion of the air flow in said nozzle passage being sonic enabling the fuel injected into said nozzle passage to mix with said sonic air flow and be carried by it through said nozzle passage and said nozzle outlet.

5,054,457

WATER ELIMINATING SYSTEM FOR FUEL INJECTION SYSTEM

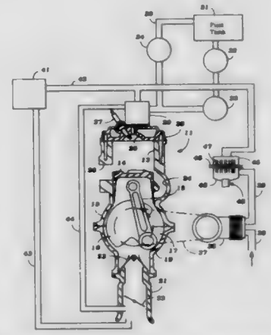
Osamu Sakamoto, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 1, 1990, Ser. No. 532,202

Claims priority, application Japan, Jun. 19, 1989, 1-156175

Int. Cl.[5] F02M *39/00*

U.S. Cl. 123—533 **16 Claims**



13. An internal combustion engine comprising an air compressor for delivering compressed air to said engine, means for cooling the air delivered from said air compressor to said engine, said cooling means providing adequate cooling for condensing any water vapor contained within the air compressed by said air compressor, and valve drain means for draining condensed water vapor from said cooling means.

5,054,458

COMBUSTION ENGINE WITH FUEL INJECTION SYSTEM, AND A SPRAY VALVE FOR SUCH AN ENGINE

Guus V. Wechem; Gerrit Beunk; Fritz Van Den Elst, all of Holland, and Philips M. Gerson, Velp-Holland, all of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 370,519, Jun. 23, 1989, abandoned, which is a division of Ser. No. 55,481, May 28, 1987, Pat. No. 4,898,142. This application May 15, 1990, Ser. No. 523,520

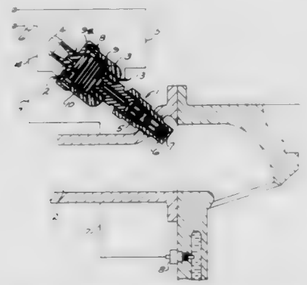
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—549 **10 Claims**

1. Fuel system for a combustion engine having a cylinder

with an air inlet passage comprising a fuel spray valve having a fuel injection nozzle for spraying fuel into the cylinder air inlet passage and having a fuel spray valve passage leading to the nozzle, means for mounting the fuel spray valve to position the nozzle to open into the cylinder air inlet passage adjacent the cylinder, a fuel pump for providing fuel under pressure to the fuel spray valve passage to be sprayed from the fuel spray valve nozzle, and a fuel heating device connectable to an electrical power supply and disposed adjacent to the valve to be energized for heating the fuel to enhance finer spraying thereof by the fuel spray valve nozzle, the fuel heating device



comprising means defining a spiral fuel flow path of selected length connected to and coaxial with the fuel spray valve passage to dispose said selected length of fuel flow path closely adjacent to the fuel spray valve passage, and a fuel heating element comprising a thermistor of a ceramic material of positive temperature coefficient of resistivity arranged to heat said selected length of the spiral fuel flow path to transfer heat to the fuel flowing in the spiral fuel flow path throughout said selected length of the spiral fuel flow path to substantially heat the fuel at a location closely adjacent to the fuel spray valve passage to enhance vaporizing of fuel being sprayed from the valve nozzle.

5,054,459

PREHEATING DEVICE FOR INTERNAL COMBUSTION ENGINE INTAKE AIR AND METHOD OF MAKING SAME

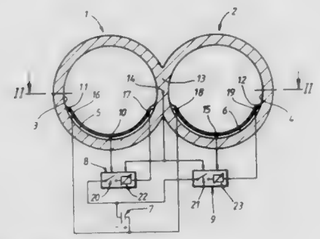
Uwe Reimer, Hochdorf; Jürgen Kretschmer, and Klaus Brecht, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed May 29, 1990, Ser. No. 529,440

Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917107

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—549 **23 Claims**



1. Intake apparatus for an internal combustion engine comprising:

at least one intake pipe for conveying intake gases to an internal combustion engine,

and an electrical resistance heating device for heating the intake gases as they are conveyed in the intake pipe,

wherein said heating device includes a malleable layer of carbon fibers laminated to an inwardly facing surface of the intake pipe and an electric current supply circuit for supplying current to the carbon fibers, whereby said heating device is adapted to be applied to irregularly shaped intake pipe inwardly facing surfaces.

5,054,460

EXHAUST GAS RECIRCULATION SYSTEM

Tamotu Ogita, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 26, 1990, Ser. No. 634,007

Claims priority, application Japan, Dec. 28, 1989, 1-338540

Int. Cl.[5] F02M *25/07*

U.S. Cl. 123—571 **8 Claims**



1. An exhaust gas recirculation system comprising:

a recirculation passage provided between an exhaust passage of an internal combustion engine and an intake passage thereof;

a valve provided at an intermediate portion of the recirculation passage for regulating a flow of an exhaust gas from the exhaust passage to the intake passage through the recirculation passage;

engine temperature means for sensing an engine temperature of the internal combustion engine;

fuel distillation means for sensing a fuel distillation characteristic of a fuel within a fuel tank;

first valve control means, responsive to a first signal indicative of the fuel distillation characteristic supplied from the fuel distillation means, for generating a reference value of the engine temperature at which the valve is turned ON allowing the exhaust gas to recirculated through the recirculation passage to the intake passage, said reference value being varied to a first level when the fuel within the fuel tank shows a relatively low fuel distillation characteristic and said reference value being varied to a second level when the fuel within the fuel tank shows a relatively high fuel distillation characteristic, the first level of the reference value being higher than the second level; and

second valve control means for comparing the engine temperature from the engine temperature means with the reference value from the first valve control means, ans, so that the valve is placed at a closed position stopping the flow of the exhaust gas through the recirculation passage to the intake passage when the engine temperature is not higher than the reference value, and after the engine temperature is raised to exceed the reference value the valve is placed at an open position allowing the exhaust gas to be recirculated through the recirculation passage to the intake passage

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5,054,461

IONIZATION CONTROL FOR AUTOMOTIVE IGNITION SYSTEM

Robert W. Deutsch, Sugar Grove, and Koushun Sun, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1990, Ser. No. 636,351

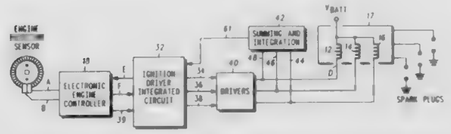
Int. Cl.[5] F02P *3/45*

U.S. Cl. 123—609 **27 Claims**

1. In an internal combustion engine having N spark plugs having ionization times that are controllable by the duration of current dwell in at least one ignition coil, a method of controlling the ionization time of the spark plugs, comprising:

(a) measuring the ionization times (T1–Tn) of the spark plugs;

(b) providing a reference ionization time;



(c) using the measured ionization times and the reference ionization time to develop an error signal that is representative of an undesired deviation from the reference ionization time; and

(d) adjusting the duration of the current dwell time in the ignition coil so as to change ionization time and reduce the size of the error signal.

5,054,462

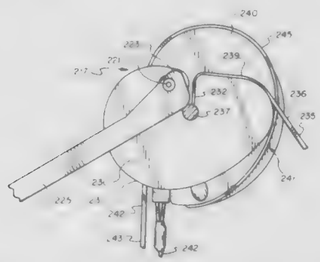
COMPOUND ARCHERY BOW

Marlow W. Larson, Ogden, Utah, assignor to Browning, Morgan, Utah

Continuation-in-part of Ser. No. 198,231, May 25, 1988, which is a division of Ser. No. 236,781, Feb. 23, 1981, Pat. No. 4,748,962, and a continuation-in-part of Ser. No. 12,799, Feb. 9, 1987, Pat. No. 4,774,927, which is a continuation-in-part of Ser. No. 676,740, Nov. 29, 1984, Pat. No. 4,686,955. This application Apr. 25, 1989, Ser. No. 343,088

Int. Cl.[5] F41B *5/10*

U.S. Cl. 124—25.6 **12 Claims**



1. In an archery compound bow including a handle member, two resilient limbs carried by and projecting oppositely substantially symmetrically from the handle member, pulley means mounted on the tip portion of each of the limbs for turning about an axis relative to the handle member, a bowstring extending between the two pulley means and a take-up cable engaged with each pulley means, the improvement comprising each pulley means including a noncircular string track engaged by the bowstring and a noncircular take-up cable track in side by side relationship with said string track in a unit with substantially the entire peripheries of said two tracks out of registration with each other, each of said string tracks having bowstring lever arm means and each of said take-up cable tracks having take-up lever arm means for requiring a force to draw the bowstring which increases to a maximum during draw, the effective length of the bowstring lever arm means acting during such required increase in force to draw the bowstring being between about one-fifth to about one-half of the maximum length of the bowstring lever arm means.

5,054,463

POWER SPRING BOW

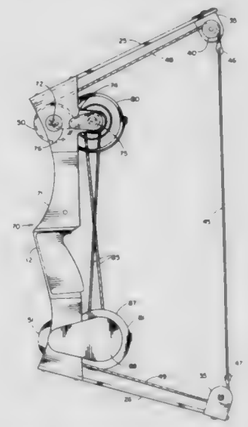
David E. Colley, 1715 Ozora Rd., Loganville, Ga. 30249; Donald G. Fain, 365 Jordan Dr., Tucker, Ga. 30084, and Frederick R. Arnett, 1609 Carter Rd., Decatur, Ga. 30032

Continuation-in-part of Ser. No. 266,066, Nov. 2, 1988, Pat. No. 4,903,677. This application Dec. 28, 1989, Ser. No. 458,415

The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.

Int. Cl.[5] F41B *5/00*

U.S. Cl. 124—25.6 **15 Claims**



1. An archery bow, comprising:

an elongate riser having opposite ends, and means between the ends defining a hand grip;

a flexible limb secured on each end of the riser, each limb secured at one end to a respective end of the riser and extending outwardly therefrom to a free end;

an idler wheel at the free end of each limb;

a single bow string for both propelling and drawing extending between the free ends of the opposing limbs and entrained over the idler wheels; and

recoil means connected with opposite ends of the bow string, said recoil means including spring means, a take-up spool mounted on the riser, to which one end of the bow string is attached for winding up a length of said bow string, and a cam connected between the spring means and the take-up spool, said cam being rotatably connected to the take-up spool and functioning as a let-off for reducing the force required to move and hold the bow string at full draw.

5,054,464

RAPID FIRE GAS POWERED PROJECTILE GUN

William G. Young, 2034 Arnold Acres Dr., Pittsburgh, Pa. 15205

Filed Aug. 7, 1987, Ser. No. 83,633

Int. Cl.[5] F41B *11/2, 11/6*

U.S. Cl. 124—72 **12 Claims**

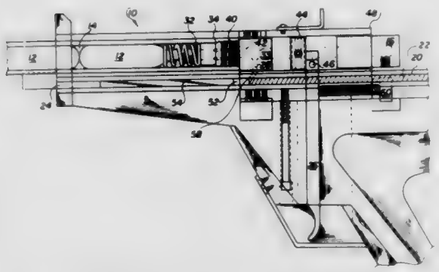
1. A fully automatic gas operated gun for shooting projectiles comprising:

a means for holding projectiles in series;

a barrel having rifling therein and connected to the projectile holding means such that projectiles can pass from the projectile holding means to the barrel;

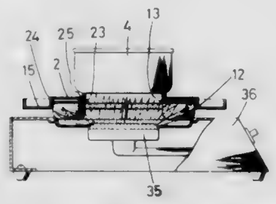
a sealed gas chamber tube with at least one CO_2 cartridge disposed therein for pressurization, with a gas port hole which runs from the gas chamber tube to the projectile holding means and which supplies pressure to the projectile holding means when a trigger is pulled and an element

for piercing the CO_2 cartridge being disposed in the gas chamber tube so as to pressurize the gas chamber tube;
a spring for biasing, said spring located within said holding means for forcing any projectile in the holding means to be pushed toward the barrel, but with a spring constant such that the spring is not able to supply enough force to the projectile about to be fired to push the projectile past the rifling into the barrel;
a gas check valve and ram located in the holding means and between the spring and any projectile to be fired, said gas check valve and ram being positioned by the spring at the location where the gas port hole is fluidically connected



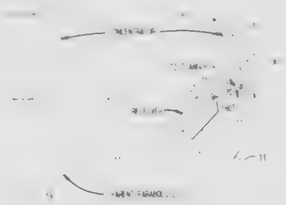
to the holding means when no projectiles remain in the holding means to be fired, said gas check valve and ram being of sufficient diameter so it is capable of slowing pressures from passing between the holding means and barrel when it is so positioned;
said trigger connected to the gas chamber tube in such a way that when the trigger is pulled pressure in the gas chamber tube is capable of passing into the projectile holding means forcing the projectiles just before the barrel into and through the barrel; and
a ramrod for pushing a projectile through the barrel into the projectile holding means.

5,054,465
FOOD UTENSIL
Ching-Shyang Chern, Tainan, Taiwan, assignor to Ying Hung Enterprise Co., Ltd., Tainan, Taiwan
Filed Oct. 2, 1990, Ser. No. 591,763
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—39 R **2 Claims**



1. A food utensil system for an electric heater having a heating plate member for removeably mounting a pot thereon comprising:
a pot positioning member having a central opening, said pot positioning member including a substantially planar and annularly contoured flat annular section, said flat annular section having an upwardly directed projection ring formed on a radial inner surface of said annularly contoured flat annular section for mounting said pot thereon in alignment with said central opening, said pot positioning member including a plurality of substantially semi-circular sections positioned radially external said semi-circular sections defining a plurality of food hearing compartments, having a continuous upwardly directed flange member for maintaining food to be heated within said food heating compartments whereby food may be heated in said pot and said food compartments simultaneously.

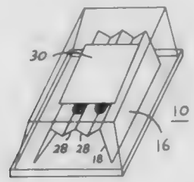
5,054,466
OFFSET TRUSS HEX SOLAR CONCENTRATOR
John E. White, Melbourne; James D. Sturgis, Palm Bay; Raymond J. Erikson, Orlando; Gregg A. Waligroski, Palm Bay, all of Fla., and Michael A. Scott, Charlottesville, Va., assignors to Harris Corporation, Melbourne, Fla.
Filed Feb. 27, 1987, Ser. No. 19,699
Int. Cl.[5] F24J *2/12*
U.S. Cl. 126—438 **11 Claims**



1. A concentrating solar collector for use in a solar energy system comprising:
a solar energy reflective surface having the configuration of a portion of a surface of revolution rotated about a prescribed focal axis, said portion of said surface of revolution being offset from said prescribed focal axis; and
a solar energy receiver having a solar energy receiving aperture and a three-dimensional optical flux receiving surface exposed thereby, said three-dimensional optical flux receiving surface being symmetrical with respect to a plane containing a solar energy receiver axis which passes through and forms an acute angle with said prescribed focal axis and intersects said solar energy reflective surface, wherein
said solar energy reflective surface is comprised of a plurality of interconnected reflector panel sections, each panel section containing a plurality of reflector facets the reflective surface of which effectively focus light reflected thereby to preselected surface portions of the optical flux collecting surface of said receiver that are symmetric with respect to said plane, and wherein
the perimeter of a reflector panel section is shaped in the form of regular polygon and the perimeter of a perspective reflector facet contained therein is shaped in the form of a regular polygon; and wherein
a respective reflector panel section comprises a hexagonally shaped support framework and a plurality of base members interconnecting diametrically opposed corners of said hexagonal framework.

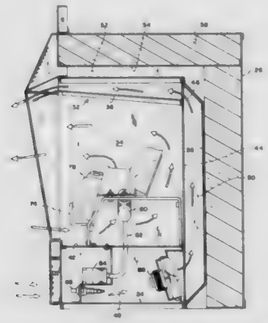
5,054,467
SOLAR HOT DOG COOKER
Donald W. Videtto, Jr., 420 N. Basque Ave., Fullerton, Calif. 92633
Filed Dec. 10, 1990, Ser. No. 625,083
Int. Cl.[5] A47J *33/00, 37/00*
U.S. Cl. 126—451 **1 Claim**

1. A solar hot dog cooker, comprising:
a rugged flat base having closed and slightly raised edges and fabricated from a heat generally non conductive material generally impervious to hot dog grease in air at temperatures generated in solar cooking;
a dark, rugged solar energy absorbing generally cylindrical cross sectioned hot dog holder wherein the cylinder has a length substantially greater than its width and a non circular cross section resembling a capital M changed in that the v which forms the center two lines of the capital M is replaced by a small w shape defining two adjacent v shaped cross section grooves capable of holding meat such as hot dogs to be cooked, so that the symmetrical cross section has a long outer edge member coupled at an angle of about 90 degrees to a center member coupled at an angle of about 90 degrees to the center member of the opposite side thereby forming two adjacent v shapes along the top of the generally M shaped cross section capable of holding at least two hot dogs and fabricated from a heat conducting material relatively impervious chemically to hot dog grease in air at solar cooking temperatures, which



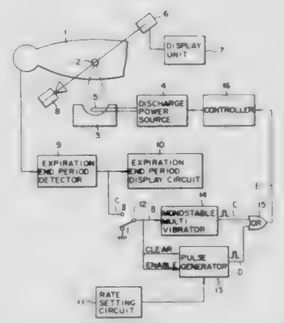
is oriented during use with both M and W upright and is placed during use in the rugged flat base, and holds at least two hot dogs;
a generally planar, dark, solar energy absorbing impervious to hot dog grease at temperatures generated in solar cooking, hot dog cover fabricated from rugged, heat conductive material and of length and width less than that of the hot dog holder, but large enough to cover cooking hot dogs on the hot dog holder; and
a rugged, cap fitting relatively air tight and coupled to the base, the cap being generally transparent to major solar energy bearing radiation frequencies, the cap being fabricated from a generally non heat conductive material impervious to hot dog grease at solar cooking temperatures.

5,054,468
UNVENTED GAS-FIRED FIREPLACE HEATER
W. Larry Moon, Russellville, and Paul N. Hand, Tuscumbia, both of Ala., assignors to Martin Industries, Inc., Florence, Ala.
Filed Mar. 23, 1990, Ser. No. 498,023
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—512 **7 Claims**



1. An unvented fireplace heater for directing heated air into an enclosure comprising:
combustion means including a gas burner carried in said heater and disposed for communication with a source of gas;
an unvented combustion chamber defined by top, side, bottom, and rear walls and a forward closure member, said walls and forward closure member completely enclosing said combustion chamber, said forward closure member having opening means for directing primary air from said enclosure into said combustion chamber wherein a portion of said primary air supplies oxygen to said gas burner, and the remaining primary air is exhausted through said closure member through further opening means back into said enclosure after heating thereof by said combustion means;
means forming a plenum chamber having an inlet and an outlet, said means forming said plenum chamber including inner bottom, inner rear, and inner top walls which are common with the respective said bottom, rear, and top walls of said combustion chamber; and outer bottom, outer rear, and outer and top walls respectively disposed in spaced relation with said inner bottom, inner rear, and inner top walls, said plenum chamber being completely enclosed between said inlet and said outlet and sealed from said combustion chamber; and
fan means for directing secondary air through said plenum chamber and around said bottom, rear, and top walls of said combustion chamber for heating of said secondary air and for directing the heated secondary air back into said enclosure independent of said primary air.

5,054,469
APPARATUS FOR DESTROYING CALCULUSES
Akinori Ishida, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 23, 1989, Ser. No. 327,821
Claims priority, application Japan, Mar. 31, 1988, 63-76096
Int. Cl.[5] A61B *17/22*
U.S. Cl. 128—24 EL **8 Claims**

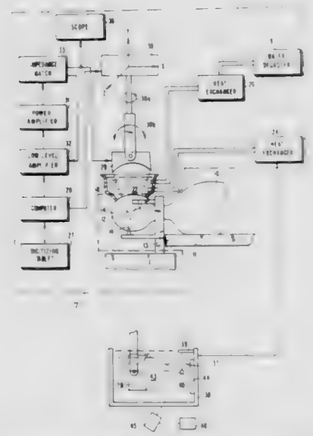


1. An apparatus for destroying calculuses comprising:
means for generating focused destroying energy;
means for positioning a focus of the destroying energy at a location of a calculus in a human body;
means for detecting a period during which the location of the calculus coincides with the focus of the destroying energy;
means for generating a first control pulse to control generation of the destroying energy at a time point coincident with a start point of said period, said first control pulse generating means being coupled with said period detecting means; and
means coupled to said focused destroying energy generating means, for generating during said period of train of control pulses to repeatedly generate destroying energy at a predetermined rate, succeeding to the generation of said first control pulse.

5,054,470
ULTRASONIC TREATMENT TRANSDUCER WITH PRESSURIZED ACOUSTIC COUPLING

Francis J. Fry, and Narendra T. Sanghvi, both of Indianapolis, Ind., assignors to Laboratory Equipment, Corp., Mooresville, Ind.

Continuation of Ser. No. 312,041, Feb. 17, 1989, , which is a division of Ser. No. 163,260, Mar. 2, 1988, Pat. No. 4,951,653.
This application Dec. 5, 1989, Ser. No. 449,373
Int. Cl.[5] A61B 17/00
U.S. Cl. 128—24 AA 7 Claims



1. An ultrasound treatment transducer assembly for directing a focused ultrasound beam at an anatomical site, said transducer assembly comprising:

an acoustic focusing lens having a concave front surface and a substantially flat back surface;

a substantially flat piezoelectric transducer plate disposed in spaced relation to said focusing lens and having a rear surface and a front surface which is disposed at a fixed distance of separation with respect to the back surface of said acoustic focusing lens;

an acoustic coupling medium disposed between the back surface of said focusing lens and the front surface of said transducer plate;

first pressurizing means contacting said acoustic coupling medium for maintaining said acoustic coupling medium between said transducer plate and said focusing lens at a desired pressure; and

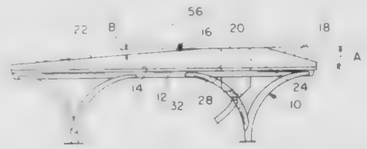
air pressure means contacting the rear surface of said transducer plate for applying air pressure against said rear surface, wherein the pressure applied against said rear surface by said air pressure means is higher than the desired pressure on the front surface of said transducer plate due to said acoustic coupling medium to maintain the spaced relation between said front surface of said transducer plate and said back surface of said lens.

5,054,471
FEMALE BREAST TREATMENT ARRANGEMENT

Sven-Ake Ohlson, Lindgatan 1 B, S-653 42 Karlstad, Sweden

Filed Mar. 22, 1990, Ser. No. 497,516
Int. Cl.[5] A61H 9/00
U.S. Cl. 128—24 R 7 Claims

6. A female breast treatment arrangement comprising a table, an elastically compressible mattress on the table, a through-going breast receiving opening in a chest-supporting portion of the mattress, a mounting opening in the table aligned with the breast-receiving opening, a shower tray mounted below the mounting opening, said openings having a greater extension transversely of the mattress than in its longitudinal direction, a water outlet in the tray, upwardly directed spray means mounted in the tray and connected to means for supplying cold water at a lower temperature during a first interval and warm water at a higher temperature during a second interval, the elastically compressible mattress being at the ends of the chest-supporting portion extended with a leg-supporting

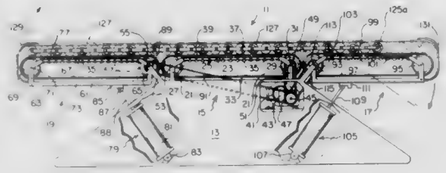


portion and a forward portion for supporting the shoulders, arms and head of the women, the forward portion sloping downwardly from the end of the chest-supporting portion so as to obtain a bow of the chest when resting on the chest-supporting portion and on the forward portion to attain relaxed breasts depending down into the breast-receiving opening of the mattress.

5,054,472
MASSAGE MACHINE

Alexander Stefan, 216 E. Arby Ave., Las Vegas, Nev. 89119

Filed Nov. 13, 1989, Ser. No. 436,312
Int. Cl.[5] A61H 7/00
U.S. Cl. 128—58 5 Claims



1. A massage machine, comprising:

a) support frame;

b) conveyor belt assembly, mounted to said support frame and including at least a first pair of horizontally spaced apart front and rear drums rotatable on horizontal axes and supporting an endless belt, and a plurality of rollers supported by said frame and spanning the width of said endless belt and engaging the under surface of the upper run of said belt to rollingly support it in a general horizontal plane;

c) means, mounted to said frame, for driving said endless belt in reciprocal motion;

d) bed of massage discs, including a plurality of horizontally spaced parallel axles with outer ends linked together by a plurality of pivotal linking members, each said axle rotatably supporting a plurality of free-turning massage discs, said bed of discs lying in frictional engagement with the top of the upper run of said conveyor belt and supported thereby, and said bed having a length that is shorter, by a predetermined distance, than the length of the upper run of said conveyor belt; and

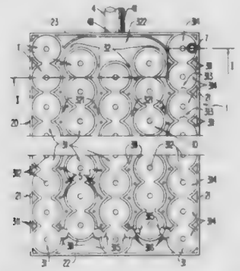
e) top cover sheet of flexible material, providing an upper surface adapted to receive a person to be massaged, the lower surface of which sheet directly engages the tops of said bed of massage discs in rolling contact and said sheet held stationarily relative to said bed of massage discs, and wherein reciprocal movement of said endless belt in conjunction with the engagement of said top sheet with said discs causes said bed to rollingly move along the lower

surface of said sheet, first in one direction and then in the opposite direction.

5,054,473
HYDROMASSAGE CARPET

Glannino Sandrin, Pordenone, Italy, assignor to Albatros System S.p.A., Pordenone, Italy

Filed May 23, 1990, Ser. No. 527,735
Claims priority, application Italy, May 23, 1989, 45731 A/89
Int. Cl.[5] A61H 9/00
U.S. Cl. 128—66 2 Claims



1. A hydromassage carpet for use on the bottom of a bath tub or the like, said carpet comprising: two sheets of flexible material secured to one another along the respective peripheries thereof so as to define an envelope therebetween; circumferential toes at which portions of said sheets inwardly of the peripheries thereof are secured to one another, said circumferential toes partitioning said envelope into a first duct and a second duct sealed from one another, said first duct defined between opposing pairs of said circumferential toes, said second duct defined on opposite sides of said circumferential toes from said first duct, and one of said sheets having a plurality of holes therethrough at locations over said second duct and distributed therealong whereby said holes communicate with said second duct; a feeding pipe connected to said sheets in communication with said second duct; and central toes at which portions of said sheets located centrally between said opposing pairs of said circumferential toes are secured to one another so that a respective hollow annular space is formed in said first duct between each opposing pair of circumferential toes and the central toe located centrally thereof,

the other of said sheets defining a plurality of cavities therein open at a surface of the carpet when said first duct is expanded under pressure, and

each of said cavities having a generally V-shaped cross section in the form of a suction cup, the vertex of which terminates at a respective said central toe.

5,054,474
WATER MASSAGE APPARATUS

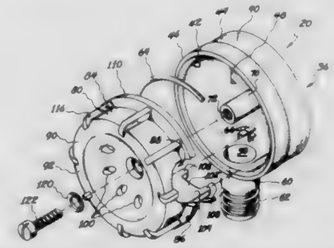
Greg Jacob, 9588 Everglades Park La., Boca Raton, Fla. 33428, and Joseph Outhyse, 6086 NW. 74th Terr., Parkland, Fla. 33067

Continuation-in-part of Ser. No. 252,935, Oct. 4, 1988, abandoned. This application May 17, 1989, Ser. No. 342,873
Int. Cl.[5] A61H 9/00
U.S. Cl. 128—66 11 Claims

1. Water massage apparatus for use with a portable spa, in-ground spa, or pool spa having an interior wall including at least one receptacle into which a water jet having proximal and distal ends can be selectively inserted, said apparatus comprising:

a head including a cap and a base having an inlet port and outlet apertures, said inlet port including first attaching means for selective engagement with one end of a hollow tube;

a hollow adapter dimensioned to register with the receptacle and selectively coupled therewith, said adapter having opposed sets of holes for maintaining entrainment of air in the water flowing therethrough said adapter including second attaching means for selective engagement with the other end of the tube; and,

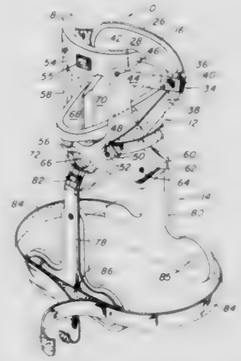


a hollow replacement bushing selectively insertable into the receptacle, said bushing being dimensioned to receive the proximal end of the water jet therewithin, and including means mating with said adapter to form a water-tight connection.

5,054,475
EMERGENCY MEDICAL COLLAR, COLLAR/STABILIZER, COLLAR/STABILIZER/HEAD IMMOBILIZER

Anthony Calabrese, Philadelphia, and Sandy Scialli, Richboro, both of Pa., assignors to Charles Greiner and Company, Inc., Westville, N.J.

Continuation-in-part of Ser. No. 121,490, Nov. 17, 1987, abandoned. This application Mar. 18, 1988, Ser. No. 171,245
Int. Cl.[5] A61F 5/00, 5/04
U.S. Cl. 128—75 33 Claims



1. A head immobilizer for use with a cervical collar adapted for application to a victim's neck at least substantially encircling the neck between the victim's head and torso to substantially immobilize the victim's neck and head, comprising:

a head rest for supporting the rear of the victim's head above the cervical collar;

means adapted for releasably coupling said head rest to said cervical collar such that said head rest and cervical collar are rigidly secured together;

a unitary mask means for encircling the front of the victim's face having an opening therethrough for substantially exposing said victim's face while securing said victim's head to said head rest;

means for connecting said mask means to said head rest, such that at least one portion of said mask means is adapted to

overlap the victim's forehead and another portion of said mask means is adapted to overlap a front end of said cervical collar beneath the victim's face;

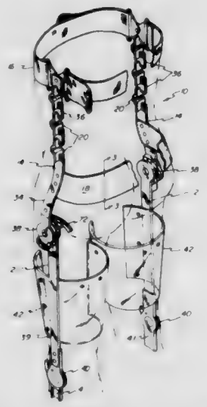
whereby a victim's head is immobilized between said head rest, mask means, and cervical collar.

5,054,476

ORTHOSIS FOR ASSISTANCE IN WALKING

Jerrold S. Petrofsky, El Toro; Wes Piotrowski, and Jannike Petrovska, both of Los Angeles, all of Calif., assignors to Petrofsky Research, Inc., Laguna Hills, Calif.

Division of Ser. No. 328,417, Mar. 24, 1989, Pat. No. 4,969,452.
This application Aug. 10, 1990, Ser. No. 565,773
Int. Cl.[5] A61F *4/00, 5/00, 2/68*
U.S. Cl. 128—80 R **4 Claims**



1. An orthosis for stimulated walking comprising a pair of leg braces including lockable hip and knee joints for supporting the legs of an assisted person, a thoracic band for attachment to the upper body of said person, a pair of risers having lower ends secured to said leg braces and upper ends secured to said thoracic band, and a pelvic band shaped to fit around the body of said person and interconnect the lower ends of said risers; characterized in that said pelvic band conforms to the body of the wearer and is constructed from an energy storing material which is sufficiently flexible to twist during walking movement by said person and sufficiently stiff to untwist at the end of a step with a force which will initiate forward movement of a rearward leg.

5,054,477

NEBULIZER

Takao Terada, Higashiosaka; Toshiyuki Kobayashi, Kyoto, and Tamio Miyake, Otokuni, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 99,813, Sep. 22, 1987, abandoned. This application Jan. 10, 1989, Ser. No. 296,314
Claims priority, application Japan, Sep. 22, 1986, 61-223997; Sep. 25, 1986, 61-226595; Feb. 17, 1987, 61-21909
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **8 Claims**

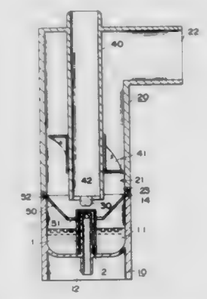
1. A nebulizer, comprising:

a housing having a liquid reservoir located at a lower portion thereof and an atomizer space and an atomized liquid discharge port located at an upper portion thereof, said atomizer space and said atomized liquid discharge port communicating with said liquid reservoir;

a compressed air introduction pipe provided at the lower portion of the housing, said compressed air introduction pipe having a nozzle;

a liquid suction pipe provided at the lower portion of the housing for sucking liquid in the liquid reservoir, said liquid suction pipe being removably fitted to said compressed air introduction pipe so that a liquid suction passage is formed between said liquid suction pipe and said compressed air introduction pipe, said liquid suction passage having an opening;

a baffle support disposed around said liquid suction pipe;



two support poles projecting from said baffle support;

an arm extending between said support poles; and

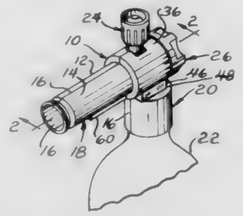
a baffle connected to said arm, said baffle being disposed near the nozzle of the compressed air introduction pipe and the opening of the liquid suction passage, said baffle being formed as a parallelpiped of narrow width with a curved lower surface facing said nozzle and said opening.

5,054,478

NEBULIZER

Jerry R. Grychowski, Lake Zurich; Alfred G. Brisson, Kildeer; Exequiel D. Cruz, Arlington Heights, and Christopher Nowacki, Long Grove, all of Ill., assignors to Trudell Medical, London, Canada

Filed Apr. 21, 1989, Ser. No. 341,794
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.21 **13 Claims**



1. A nebulizer for introducing water vapor into oxygen supplied to a patient comprising a body, oxygen inlet means opening into said body, oxygen outlet means from said body, aspirating means in said body and in oxygen flow relation to said oxygen inlet means, water inlet means to said body, float valve means interconnecting said water inlet means to said aspirating means to control the flow of water into the oxygen flowing through said nebulizer, said float valve means being disposed above said water inlet means, a float cell disposed below said float valve means, said float valve means including a valve seat at the upper portion of said float cell and a float member in said cell and floatable against said valve seat to close off water flow, means providing an inlet pool above said float cell and communicating therewith through said float valve means, said nebulizer further including a water passage between said water inlet means and said pool-providing means and having an upward rise, said aspirating means reducing

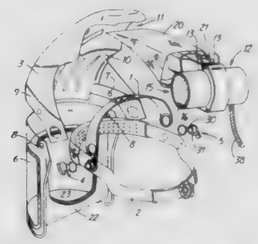
pressure through said front cell to said pool-providing means to effect upflow of water through said water passage.

5,054,479

SAFETY VISOR HAVING A ROTATABLY MOUNTED SHIELD AND FILTER

David R. Yelland, Redhill; John G. Gilbert, Reigate, and John Ewans, High Wycombe, all of United Kingdom, assignors to Pulsafe Safety Products Limited, United Kingdom

Filed Apr. 11, 1989, Ser. No. 336,338
Claims priority, application United Kingdom, Apr. 19, 1988, 8809221
Int. Cl.[5] A62B *7/10, 9/04;* **A42B** *3/00*
U.S. Cl. 128—201.25 **3 Claims**



1. A safety visor comprising a head-harness to fit a wearer's head, a face screen carried by the harness and having sealing means to enclose the space between the face of the wearer and the face screen, and a supply means to provide a flow of clean air under elevated pressure to said space, in which the air supply means is mounted on an upward extension of the face screen and the air supply means is mounted at he end of the upward extension remote from the face screen, the face screen and the air supply means being rotatable as a unit about the harness between an operable position where the face screen covers the face of a wearer with the sealing means in engagement with the face of the wearer, and an inoperable position where the face screen is above the face of the wearer and the air supply means is behind the head of the wearer, the upward extension of the face screen having a cavity at said remote end, the air supply means comprising a detachable unit which can be attached to the cavity in a gas tight manner, said unit having an air filter to be located in the cavity and a pump to pump ambient air through the filter into the cavity and hence into said space, the air supply means detachable unit being removably located in the cavity by two spring clips which are inserted into corresponding slots in a wall defining the cavity.

5,054,480

PERSONAL AIR FILTRATION AND CONTROL SYSTEM

Rex O. Bare; David R. Millar, both of Irvine, and Harry N. Herbert, Fullerton, all of Calif., assignors to Bio Medical Devices, Inc., Fullerton, Calif.

Filed Jun. 14, 1990, Ser. No. 537,700
Int. Cl.[5] A62B *7/00*
U.S. Cl. 128—201.25 **23 Claims**

1. An air flow and filtration system comprising:

a headgear structure adapted to be mounted on the head of a wearer,

a shroud which is selectively mounted over said headgear structure,

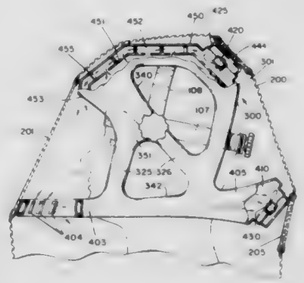
a transparent shield mounted to said shroud,

fan means mounted at said headgear structure to create a gaseous fluid flow relative thereto,

said fan means includes intake fan means and outlet fan means,

said intake fan means and said outlet fan means are mounted at different locations on said structure, whereby said gaseous fluid flow passes over the head of a wearer in a uniform manner,

filter means included in said shroud and adapted to be located adjacent to said fan means when said shroud is mounted over said headgear structure whereby said gaseous fluid flow created by said fan means is filtered through said filter means.

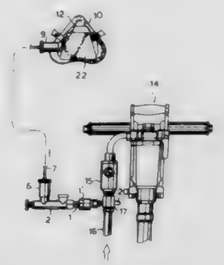


5,054,481

INFUSION APPARATUS TO SUPPLY COMPRESSED AIR INTO AN INDUSTRIAL MASK

Hae-Ryun Shin, Rm.401 Jam-sil Apt. 272, 22 Jamsil-dong, Songpa-Ku, Seoul, Rep. of Korea

Filed Aug. 29, 1990, Ser. No. 574,343
Int. Cl.[5] A62B *7/02*
U.S. Cl. 128—205.12 **5 Claims**



1. An infusion apparatus for supplying compressed air into an industrial mask, comprising:

a T-shaped decompressing regulator having a first coupling device at a first end and an inner threaded portion at a second end;

an air supply channel formed in said regulator;

a pressure bolt inserted into said threaded portion to regulate the opening of said air supply channel;

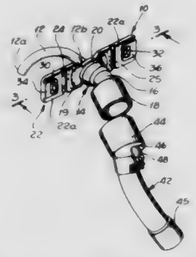
a first purification receptacle, having a carbon filter disposed therein, provided immediately below said air supply channel;

a second purification receptacle, having a carbon filter disposed therein, fixedly attached to the industrial mask;

a hose linking said first and second purification receptacles; and

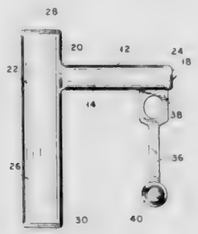
an air exhaust hose arranged in a substantially circular loop having an end portion extending out of said mask and connected to said second purification receptacle.

5,054,482
ROTATABLE TRACHEOSTOMY TUBE ASSEMBLY
Joseph H. Bales, 23991 Ironhead, Laguna Niguel, Calif. 92677
Filed Sep. 26, 1990, Ser. No. 588,764
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 **23 Claims**



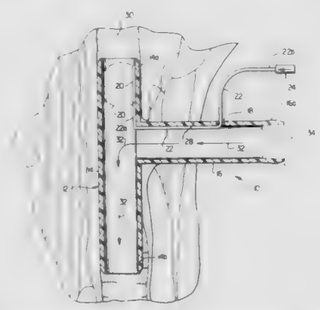
1. A tracheostomy tube comprising:
a generally arcuate cannula having a first end, a second end, and a hollow lumen extending therethrough, said cannula being sized and configured to be insertable through a tracheostomy to a first position whereat the first end of the cannula resides within the trachea of the patient and the second end of the cannula is substantially flush with the anterior surface of the neck of the patient;
a flange member having an inner surface and an outer surface, said flange member extending laterally outward from the second end of the cannula such that the inner surface of the flange member will abut against the anterior surface of the neck of the patient when the cannula is inserted in said first position; and
a rotatable tubular elbow having a proximal end, a distal end and a hollow bore extending therethrough the proximal end of said rotatable tubular elbow being rotatably connected to the second end of the cannula so as to rotate at least partially thereon and such that the bore of said rotatable elbow is in fluid connection with the lumen of said cannula.

5,054,483
TRACHEAL CANNULAS AND STENTS
Lewis H. Marten, Quincy, and Charles Lane, Duxbury, both of Mass., assignors to Hood Laboratories, Pembroke, Mass.
Division of Ser. No. 319,534, Mar. 6, 1989, Pat. No. 5,017,188.
This application May 22, 1990, Ser. No. 527,032
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 **15 Claims**



1. A tracheal cannula comprising:
A. a hollow tube having
(i) a first open end for insertion within the trachea of a mammal through a tracheotomy incision;
(ii) a second open end for communication with the atmosphere outside said trachea, said second open end being adapted by size and configuration to be closed in a fluid seal; and
(iii) a tube body between the open ends; and
B. closure means integral with said hollow tube and having:
(i) a severable stem frangibly attached to said hollow tube at a point adjacent to said second open end;
(ii) a plug adapted by size and configuration to fit in said second open end to form a fluid seal therewith; and
(iii) handle means for connecting said plug to said stem and for gripping the closure means, said handle means including a perforation adapted by size, and configuration to fit over said tube to hold the closure means on said tube body after separation from said tube, said handle means having a length selected to allow said plug to be inserted in said second open end without separating said stem from said tube.

5,054,484
TRACHEOSTOMY DEVICE
Robert F. Hebeler, Jr., 3720 Beverly Dr., Dallas, Tex. 75205
Filed Nov. 21, 1990, Ser. No. 616,855
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.16 **10 Claims**



1. A combination ventilator fitting/tracheal stent device comprising:
a hollow, generally T-shaped tracheal stent formed from a flexible, resiliently yieldable material and having:
a tubular, open-ended body portion having top and bottom longitudinal sections, said body portion being insertable, through a neck incision, into the tracheal passage of a patient to coaxially position said body portion therein with said top longitudinal section extending toward the head of the patient, and
a tubular arm portion extending transversely outwardly from a longitudinally intermediate section of said body portion and having an open outer end, and an interior which communicates with the interior of said body portion, said arm portion being positioned and configured to project outwardly through the nest incision when said body portion is operably inserted into the tracheal passage; and
means for selectively and internally blocking or unblocking said top longitudinal section of said body portion when it is operatively inserted in the tracheal passage, where said stent may be used:
(1) as a ventilator fitting by internally blocking said top longitudinal section of said body portion and connecting said outer end of said arm portion to the outlet of a mechanical ventilator to cyclically flow ventilator air downwardly through said body portion and the tracheal passage into the patient's lungs, or
(2) to hold open the tracheal passage section into which said body portion is inserted, and permit essentially normal patient breathing through such tracheal passage section, by unblocking said top longitudinal section of said body portion and plugging said outer end of said arm portion.

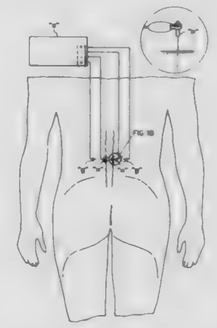
5,054,485
HEMODYNAMICALLY RESPONSIVE SYSTEM FOR AND METHOD OF TREATING A MALFUNCTIONING HEART
Todd J. Cohen, San Francisco, Calif., assignor to Leonard Bloom, Towson, Md., a part interest
Filed Jun. 1, 1990, Ser. No. 531,867
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 D **43 Claims**



1. In a system for treating a malfunctioning heart of the type which includes storage means for storing electrical energy, electrode means for electrically coupling the storage means to the heart, determining means for determining either right atrial pressure and right ventricular pressure or central venous pressure and right ventricular pressure, means responsive to an output from the determining means for providing a signal whenever a relationship between either right atrial pressure and right ventricular pressure or central venous pressure and right ventricular pressure reaches at least a predetermined value indicative of hemodynamic compromise, and means responsive to the signal for charging and enabling discharge of the electrical energy stored by the storage means across the electrode means upon the relationship reaching at least the predetermined value.

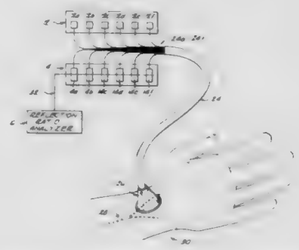
5,054,486
REMEDIAL TECHNIQUES FOR THE TREATMENT OF PAINFUL DISORDERS SUCH AS INTERVERTEBRAL DISC HERNIA AND THE LIKE
Mamoru Yamada, 1-40-6, Toro-machi, Omiya City, Saitama Prefecture, Japan
Filed May 31, 1990, Ser. No. 531,089
Int. Cl.[5] A61N *1/02*
U.S. Cl. 128—421 **12 Claims**

1. A remedial technique comprising the steps of:
inserting an acupuncture needle into a preselected radicular of a spinal cord of a patient;
providing a ground by which electrical current applied to the body of the patient through the acupuncture needle can be grounded; and



applying a pulsed electrical current across the needle and the ground until the preselected radicular is blocked.

5,054,487
LASER SYSTEMS FOR MATERIAL ANALYSIS BASED ON REFLECTANCE RATIO DETECTION
Richard H. Clarke, Scituate, Mass., assignor to Boston Advanced Technologies, Inc., Boston, Mass.
Filed Feb. 2, 1990, Ser. No. 474,344
Int. Cl.[5] A61B *5/00;* **G01N** *33/48*
U.S. Cl. 128—633 **11 Claims**



1. An apparatus for detecting non-oxygen analyte in a subject's blood, the apparatus comprising:
illumination means for generating illuminating light at a plurality of distinct wavelengths, said light having an intensity sufficient to non-invasively illuminate blood circulating in a blood vessel below the surface of a subject's skin, the plurality of wavelengths further comprising at least one wavelength further at which the reflectance of the light is substantially uneffected by the concentration of said analyte in the blood, and at least one infrared wavelength at which the reflectance varies with the concentration of said analyte in the blood;
detector means for non-invasively detecting light reflected from the material at said plurality of wavelengths and for converting said detected light into electrical signals, said signals being indicative of the intensity of said reflected light at each wavelength;
sampling means for optical delivery of said illuminating light to a subject's skin, including affixation means for affixing a sampling head to said skin and alignment means for optically aligning the illuminating means with a blood vessel below the surface of the skin;
at least one optical fiber means for transmitting illuminating light for the illumination means to the sampling means and for the illumination means to the sampling means and for returning reflected light from the sampling means to the detector means; and

analyzing means for non-invasively receiving and comparing said electrical signals to derive a reflectance ratio for at least two of said wavelengths, such that said ratio can be compared with predetermined values to non-invasively detect the presence of said analyte in said material.

5,054,488

OPTOELECTRONIC SENSOR FOR PRODUCING ELECTRICAL SIGNALS REPRESENTATIVE OF PHYSIOLOGICAL VALUES

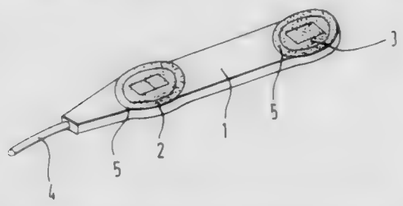
Edwin Muz, Reutlingen, Fed. Rep. of Germany, assignor to Nicolay GmbH, Kirchhein/Teck, Fed. Rep. of Germany

Filed Mar. 26, 1990, Ser. No. 498,750

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1989, 3912993

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **9 Claims**



1. An optoelectronic sensor for producing electrical signals representative of physiological values, especially human circulation parameters, comprising:

a radiation transmitter having a radiation outlet surface;

a radiation receiver sensitive to receiving radiation emitted by said transmitter and influenced by the physiological values, said receiver having a radiation admission surface; and

a transparent adhesive layer covering said transmitter and said receiver on at least sides thereof facing an object to be measured, said adhesive layer directly engaging said radiation outlet surface and said radiation admission surface.

5,054,489

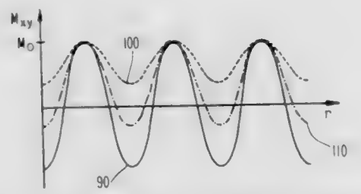
MAGNETIC RESONANCE IMAGING USING SPATIAL MODULATION OF MAGNETIZATION

Leon Axel, Philadelphia, Pa., and Lawrence Dougherty, Wenonah, N.J., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Oct. 6, 1988, Ser. No. 254,454

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653 A **19 Claims**



1. A method of magnetic resonance imaging of a body portion of a patient, comprising the steps of:

applying to the body portion an external magnetic field so as to produce a resultant magnetization;

applying a pre-imaging sequence to the body portion so as to spatially modulate transverse and longitudinal components of the resultant magnetization, thereby producing a spatial modulation pattern of magnetization;

applying an imaging sequence to the body portion to make visible said spatial modulation pattern of magnetization; and

providing an image representing the intensity of magnetic resonance signals having said spatial modulation pattern of magnetization which are emitted from the patient.

5,054,490

ULTRASONIC DENSITOMETER DEVICE AND METHOD

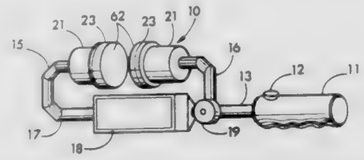
Phillip J. Rossman, Rochester, Mich., and Scott A. Wiener, Mt. Horeb, Wis., assignors to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 193,295, May 11, 1988, Pat. No. 4,930,511. This application Apr. 25, 1989, Ser. No. 343,170

The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.03 **16 Claims**



1. A method for measuring the physical properties and integrity of a member in vivo, at a given region of interest comprising the steps of:

(a) providing an ultrasonic testing instrument having an array of ultrasonic transducer elements;

(b) positioning the testing instrument generally in the area of the region of interest on the member;

(c) launching ultrasonic signals successively from the elements in the array;

(d) sensing the received ultrasonic signals launched from the elements;

(e) deriving from the received ultrasonic signals at least one parameter related to the physical properties of the member at each point in the array and

(f) selecting among the parameters by criteria selected to repeatedly select a similar region of interest and using one of the parameters at that region of interest as an indication of the physical properties of the member at that region of interest.

5,054,491

ULTRASONIC ENDOSCOPE APPARATUS

Yoshitake Saito, Kunitachi, and Kenji Hirooka, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1989, Ser. No. 417,485

Claims priority, application Japan, Oct. 17, 1988, 63-259495; Jun. 28, 1989, 1-163722

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **17 Claims**

1. An ultrasonic endoscope apparatus comprising:

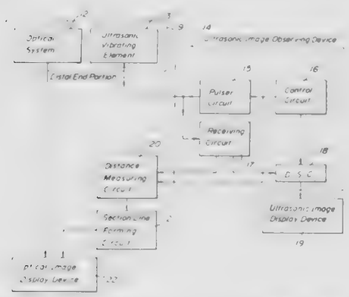
an endoscope having an insertion section which is insertable into a cavity of a body under inspection:

optical image observing means for forming an optical image of the cavity and having an objective lens arranged in a distal end of said insertion section of said endoscope;

ultrasonic image observing means for forming an ultrasonic sectional image of the cavity and having at least one ultrasonic vibrating element arranged in the distal end of said insertion section of said endoscope; and

means for obtaining image data representing a section line of the ultrasonic sectional image;

display means, responsive to said optical image observing means and said means for obtaining said section line image data, for displaying an image of said section line of the



ultrasonic sectional image and said optical image of the cavity in a superimposed manner.

5,054,492

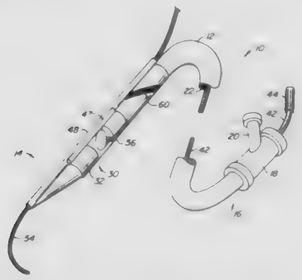
ULTRASONIC IMAGING CATHETER HAVING ROTATIONAL IMAGE CORRELATION

Robert M. Scribner; Stephen M. Salmon, both of Sunnyvale, and Mark L. Pomeranz, Los Gatos, all of Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

Filed Dec. 17, 1990, Ser. No. 628,745

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **31 Claims**



1. An ultrasonic imaging catheter comprising:

a catheter body having a proximal end and a distal end;

means within the distal end of the catheter body for producing an ultrasonic cross-sectional image in an image plane generally normal to the longitudinal axis of the catheter body;

means for producing a marker on the ultrasonic cross-sectional image, where the position of the marker corresponds to the rotational orientation of the distal end of the catheter at the time the image is produced; and

means on the catheter body for producing a fluoroscopically visible marker which is in a fixed relative rotational alignment with the ultrasonic image marker, whereby the orientation of the ultrasonic image may be correlated with the physical orientation of the catheter body observed by fluoroscopy.

5,054,493

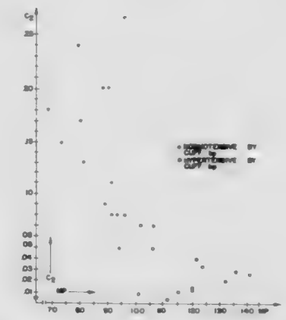
METHOD FOR DIAGNOSING, MONITORING AND TREATING HYPERTENSION

Jay N. Cohn, Minneapolis, and Stanley M. Finkelstein, St. Louis Park, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 250,315, Sep. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 228,820, Aug. 2, 1988, Pat. No. 4,899,758, which is a continuation of Ser. No. 824,629, Jan. 31, 1986, abandoned. This application Feb. 5, 1991, Ser. No. 652,294

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—672 **26 Claims**



1. A method for diagnosing the hypertensive disease condition in a human patient comprising the steps of:

a) determining for said patient a measure of distal compliance of the patient's vasculature;

b) diagnosing said patient as having the hypertensive disease condition according to, at least in part, if said measured distal compliance is below a first predetermined diagnostic threshold; and

c) diagnosing said patient as not having the hypertensive disease condition according to, at least in part, if said measured distal compliance is above a second predetermined diagnostic threshold.

5,054,494

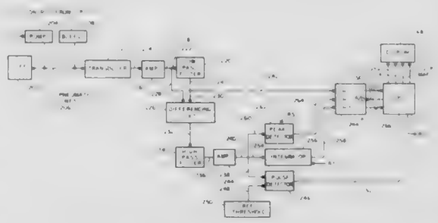
OSCILLOMETRIC BLOOD PRESSURE DEVICE

Gerard M. Lazzaro, Bethlehem, and Raymond J. Huey, Stratford, both of Conn., assignors to U.S. Medical Corporation, Cheshire, Conn.

Filed Dec. 26, 1989, Ser. No. 456,768

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—677 **33 Claims**



1. An oscillometric blood pressure device for measuring systolic and diastolic blood pressures, and adapted to be interconnected to a cuff attachable to a test subject, said blood pressure device comprising:

means adapted to be coupled to said cuff for applying an occluding pressure greater than said systolic pressure in the vicinity of an artery of said test subject;

means adapted to be coupled to said cuff for decreasing said occluding pressure to a pressure below said diastolic pressure;

a pressure transducer adapted to be coupled to said cuff for generating analog pressure signals representative of instantaneous cuff pressure, said analog pressure signals comprising a first analog signal representative of blood pressure pulses occurring in said artery, and a second analog signal representative of static cuff pressure;

circuit means responsive to said first analog signal for generating, for each of said blood pressure pulses, a difference measurement indicative of the difference between a peak amplitude of a pulse and an integral of said pulse, so that for a plurality of said blood pressure pulses, said circuit means generates a plurality of difference measurements; and

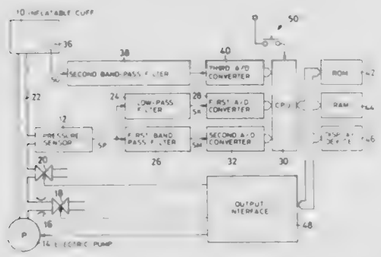
said circuit means generates signals indicating values of said systolic pressure and said diastolic pressure based on said difference measurements.

5,054,495

AUTOMATIC BLOOD-PRESSURE MEASURING APPARATUS

Masahiro Uemura, Komaki; Hideichi Tsuda, Kasugai; Hifumi Yokoe, Kosai, and Tokuji Hayakawa, Komaki, all of Japan, assignors to Colin Electronics Co., Ltd., Aichi, Japan

Filed Jul. 10, 1989, Ser. No. 377,566
Int. Cl.[5] A61B *5/0225*
U.S. Cl. 128—680 **9 Claims**



1. An automatic blood pressure measuring apparatus for automatically measuring a blood pressure of a subject having a heartbeat, comprising:

a pressing device including an inflatable cuff for pressing a body portion of said subject;

detecting means for detecting a pressure in said cuff;

first blood pressure measuring means for detecting pulse sounds which are produced from said body portion as the pressure of said cuff is varied, and determining as a first blood pressure of said subject a pressure of said cuff detected by said detecting means at a time of detection of at least one of an appearance and a disappearance of said pulse sounds;

second blood pressure measuring means for detecting an oscillatory pressure wave which is produced from said body portion and transmitted to said cuff in synchronization with said heartbeat of said subject as the pressure of said cuff is varied, and determining as a second blood pressure of said subject a pressure of said cuff detected by said detecting means at a time of detection of a significantly large variation in amplitude of said oscillatory pressure wave; and

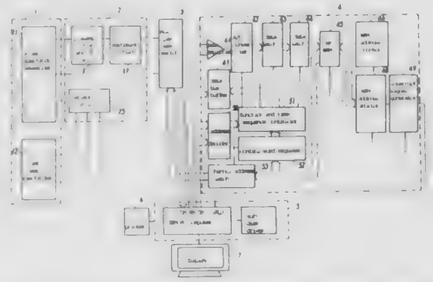
judging means for judging at least one of said first and second blood pressures to be abnormal if a degree of inequality between said first and second blood pressures exceeds a reference valve.

5,054,496

METHOD AND APPARATUS FOR RECORDING AND ANALYZING BODY SURFACE ELECTROCARDIOGRAPHIC PEAK MAPS

Yingmei Wen; Zhengping Wang; Xiaojie Liu; Yuping Zhang; Qiding Fang; Xiaoyin Wang, and Chun Shen, all of Beijing, China, assignors to China-Japan Friendship Hospital, Beijing, China

Filed Jul. 13, 1989, Ser. No. 379,608
Claims priority, application China, Jul. 15, 1988, 88208287; Dec. 30, 1988, 88108998
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—696 **12 Claims**



1. A body surface electrocardiographic mapping apparatus comprising:

means for continually detecting electrocardiographic signals at n selected points on the surface of a person's chest to provide signals in n channels, n being a positive integer, each channel containing signals detected at a selected point on the person's chest; and

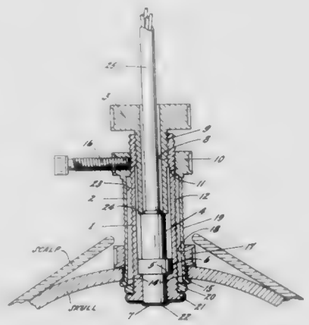
means for identifying, mapping the maxima and minima of the signals with respect to a predetermined reference point in time and processing said maxima and minima, wherein said identifying, mapping and processing means also comprises means for correlating the maxima or minima of the signals detected at said n selected points.

5,054,497

CRANIAL SENSOR ATTACHING DEVICE AND METHOD FOR ITS USE

John P. Kapp, Galax, Va., and Albert B. Cecchini, Jamestown, N.Y., assignors to Biomedical Monitors and Implants, Inc., Galax, Va.

Filed Feb. 21, 1990, Ser. No. 483,555
Int. Cl.[5] A61B *5/03*
U.S. Cl. 128—748 **6 Claims**



1. A cranial sensor attaching device for securing a cylindrical end-sensitive sensor to a person's skull through a hole made

in the skull so that the sensitive end of the sensor is securely positioned in tangential relationship to the brain and its covering membranes comprising:

a first cylinder having an internal device adapted to receive and hold said sensor;

said first cylinder having a flange on its lower end;

a second cylinder surrounding the first cylinder and threaded thereon, said second cylinder being slotted to provide a plurality of readily positioned flexible leg portions adapted to extend within the hole in the skull exteriorly of the lower end of the first cylinder;

means for moving the second cylinder relative to the first cylinder to cause the flange on the end of the first cylinder to expand the leg portions of the second cylinder into enlargement with the hole in the skull; and

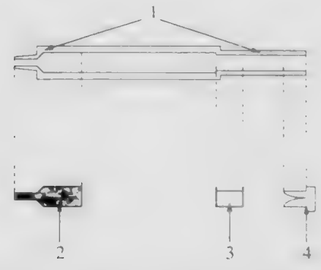
a third cylinder positioned within the first cylinder and asapted to hold the sensor securely in place within the first cylinder.

5,054,498

DEVICE FOR TAKING SAMPLES OF BLOOD WITH FLOATING PISTON

Francois Melet, 9, chaussée Jules César, 95520 Osny, France

PCT No. PCT/FR88/00622, § 371 Date Aug. 16, 1989, § 102(e) Date Aug. 16, 1989, PCT Pub. No. WO89/05607, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 16, 1988, Ser. No. 399,544
Claims priority, application France, Dec. 17, 1987, 87 17627
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—763 **12 Claims**



1. A device for sampling arterial blood for gasometric analysis comprising:

a main body (**1**) defining a chamber functioning as a blood reservoir with an anterior section (A) having an orifice, a central section (C), and a posterior section (T),

a piston (**2**) positioned inside the central section of said main body and having a first part (O) of complementary cross-section to said central section so as to be freely movable only in response to an increased or reduced pressure at the orifice of said anterior section (A), said piston comprising a second part (P) concentric to said first part, said second part being shaped and positioned to mate with the interior of said anterior section so as to minimize the residual air volume in said anterior section before sampling the arterial blood,

a piston stop (**F**) at a posterior end of the central section (C) of the main body formed by an anterior end of the posterior section (T) of the main body,

a pressure regulator and blood contamination barrier means comprising a blood-tight filter (**3**) porous to air positioned inside the posterior section (T) of the main body, posterior to said piston stop (F), and

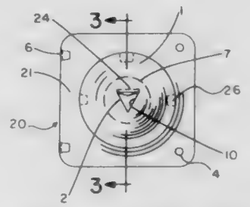
a transportation facilitator and supplementary air barrier means comprising a removable plug (**4**) positioned inside a posterior end of the posterior section (T) of the main body.

5,054,499

DISPOSABLE SKIN PERFORATOR AND BLOOD TESTING DEVICE

Remi D. Swierczek, 6399 Ledge Lake Ct., Concord, Ohio 44077

Continuation-in-part of Ser. No. 328,907, Mar. 27, 1989, abandoned. This application Aug. 10, 1990, Ser. No. 566,160
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—770 **22 Claims**



1. A skin perforator for obtaining a sample of blood by puncturing the skin comprising:

(a) a pressure plate containing an aperture formed therein wherein said pressure plate is placed adjacent to the area of skin to be punctured;

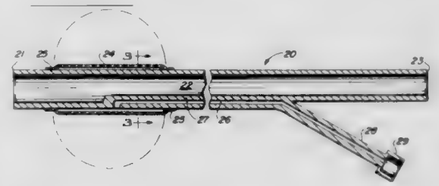
(b) a cover plate having a resilient convex panel formed therein, said cover plate being attached to said pressure plate and said convex panel having a point penetrating barb formed integrally therefrom and directed inward toward said aperture in said pressure plate wherein a pressure applied to the convex panel and directed toward said pressure plate overcomes the resistance of said convex panel and said convex panel undergoes at least a partial inversion to cause said barb to suddenly and rapidly penetrate the skin causing a puncture, said convex panel having a memory so as to resiliently return to its original convex shape upon removal of said pressure thereby withdrawing the barb from the skin.

5,054,500

CATHETER GUIDING AND POSITIONING METHOD

Philip O. Littleford, deceased, late of Winter Park, Fla., and H. Richard Bates, personal representative, 322 E. Central Blvd., Orlando, Fla. 32801

Filed Apr. 13, 1989, Ser. No. 337,475
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **8 Claims**



1. A method of guiding and centering a treatment catheter at a treatment site within a passageway in a human body by way of a guiding tube, the guiding tube including a distal end dimensioned to pass freely along the passageway, a longitudinal lumen through the tube dimensioned to receive the treatment catheter, and a radially expandable membrane at the distal end of the tube, comprising the steps of:

extending a guidewire through the lumen and along the tube;

passing the distal end of the tube and the guidewire through the passageway to the treatment site;

expanding the membrane so that the membrane pushes against an inner wall of the passageway to center the distal end of the tube;

removing the guidewire; and

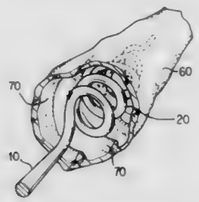
passing the treatment catheter through the longitudinal lumen of the tube to the treatment site.

5,054,501

STEERABLE GUIDE WIRE FOR CANNULATION OF TUBULAR OR VASCULAR ORGANS

Ram Chuttani, North Quincy; Michael D. Apstein, Newton, and David L. Carr-Locke, Chestnut Hill, all of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Filed May 16, 1990, Ser. No. 524,307
Int. Cl.[5] A61B *25/01*
U.S. Cl. 128—772 **15 Claims**



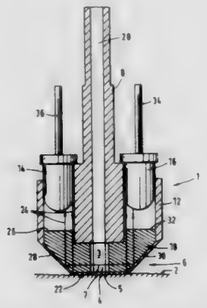
1. A steerable guide wire comprising,
a) a flexible wire shaft having a proximal end and a distal end; and
b) means formed by the distal end of the flexible wire shaft for navigating and advancing the guide wire by contacting the walls of a vessel in corkscrew-type fashion.

5,054,502

DEVICE AND A METHOD FOR MEASURING THE ELASTIC AND ELASTICOVISCOUS DEFORMABILITY OF SKIN

Wilfried Courage, Cologne, Fed. Rep. of Germany, assignor to Courage + Khazaka electronic GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1989, Ser. No. 411,133
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1988, 3832690
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—774 **30 Claims**



1. A measuring probe for measuring the elastic and elasticoviscous deformability of skin comprising a measuring head (6), a measuring channel (3) in said measuring head (6), said measuring channel (3) having a first end portion adapted to be subject to pneumatic pressure and an opposite second end portion adapted to be placed in contact with the skin, means (14) for providing light to be measured, means (16) for receiving measured light, and mirror means (28, 30) for defining a light path for the provided light which is substantially normal to an axis of and in spanning relationship to said measuring channel (3) whereby skin drawn into said channel second end portion restricts the travel of the light provided along said light path

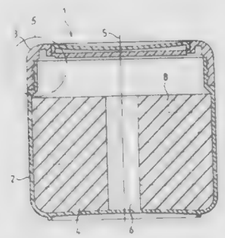
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5,054,503

CLOSABLE CONTAINER HAVING ABASIVE BODY IN FINGER TREATING SOLUTION

Walter Keller, Huebwiesenstrasse 7b, Geroldswil, Switzerland

PCT No. PCT/CH88/00028, § 371 Date Oct. 18, 1988, § 102(e) Date Oct. 18, 1988, PCT Pub. No. WO88/06015, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 5, 1988, Ser. No. 274,808
Claims priority, application Switzerland, Feb. 18, 1987, 598/87; Apr. 3, 1987, 1304/87
Int. Cl.[5] A45D *29/00*
U.S. Cl. 132—73 **27 Claims**



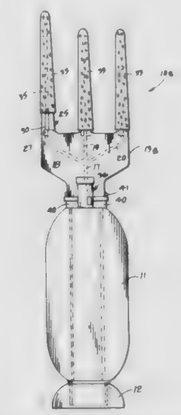
1. Closable container comprising a cup; an abrasive sponge inserted in said cup and immersed therein in a solution for the treatment of fingers, particularly for the removal of nail varnish, the sponge being absorptive and centrally provided with a hole for receiving at least one finger; a lid for closing said cup; and means for holding the abrasive sponge in said cup, said sponge being constructed in such a way and made from a material such that an outflow of liquid is still prevented if said cup with said lid removed accidentally comes to rest upside down, wherein said sponge has a density between 60 and 70 kg/m^3.

5,054,504

SCALP APPLICATOR APPARATUS

Robert L. Winrow, P.O. Box 81, Earlsboro, Okla. 74840

Filed May 7, 1990, Ser. No. 519,813
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—114 **1 Claim**



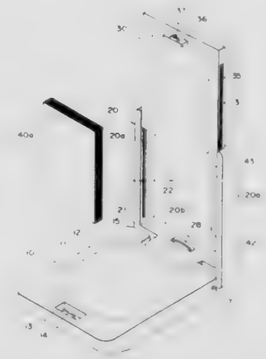
1. A scalp applicator apparatus comprising,
an elongate flexible bladder body, the flexible bladder body longitudinally aligned about a central body axis and including a cap threadedly mounted to a rear terminal end of the flexible body, and
a rigid head member integrally mounted to a forward terminal end of the flexible bladder body longitudinally aligned therewith, the rigid head member including a rigid shank and a series of spaced parallel fingers mounted onto the rigid shank, wherein the fingers are of rigid construction and arranged parallel to the longitudinal axis of the flexible bladder body portion, and
wherein the rigid head member includes a primary fluid channel in fluid communication with the flexible bladder body directed through the rigid shank of the rigid head member, and the primary fluid channel including a first, second, and third fluid channel mounted within the rigid head member, and the fingers including a first, second, and third finger member, each first, second, and third finger member including a respective first, second, and third finger channel directed therethrough, and the first, second, and third finger channels in respective fluid communication with the respective first, second, and third fluid channel, and
wherein each finger member includes a respective first, second, and third forward tip, and each finger member further including a first, second, and third outlet port, wherein each first, second, and third outlet port is in respective fluid communication with the respective first, second, and third finger channel, and wherein the first, second, and third outlet ports are directed through each first, second, and third finger members spaced from and adjacent the respective first, second, and third forward tip of each finger member, and
wherein each finger member is formed of a generally conical body defined about a central axis, and each finger member includes a planar rear base orthogonally arranged relative to the conical axis of each finger member, and further each finger member includes a threaded rear terminal end extending rearwardly of each planar base and each threaded rear terminal end is of a reduced diameter relative to the planar base, wherein each threaded rear terminal end is received within a threaded socket within the rigid head member, and
wherein each conical finger body includes a series of equally spaced aligned semi-spherical projections directed exteriorly of the conical finger body in alignment with the respective outlet port of each finger member, and
wherein each conical finger body further includes an alignment rib mounted on each conical finger body diametrically opposed to the projections, and further including a sponge sleeve, the sponge sleeve including a conical internal cavity of a complementary configuration to that defined by each conical finger body, and the conical sleeve further including an elongate slot, wherein the elongate slot complementarily receives the alignment rib of each conical finger body, and
wherein each outlet port of each finger member is positioned in a single plane, and
further including a vibratory assembly selectively securable about the rigid shank of the rigid head member, the vibratory assembly including an elongate housing including an on/off switch mounted within the housing, and a battery mounted within the housing, and a plurality of arcuate fingers directed downwardly from the housing and biased together including a biasing spring, the biasing spring positioned between the arcuate fingers in a surrounding relationship relative to the rigid shank of the rigid head member.

5,054,505

FACIAL COMPACT HAVING A STORAGE SPACE

Yukitomo Yuhara, Abiko, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1990, Ser. No. 541,495
Claims priority, application Japan, May 8, 1990, 2-47408[U]; May 10, 1990, 2-48097[U]
Int. Cl.[5] A45D *33/24, 33/26, 42/02;* **B65D** *85/08*
U.S. Cl. 132—294 **8 Claims**



1. A facial compact having a storage space and comprising:
a receptacle member having a space for accommodating cosmetic material;
a cover member connected to said receptacle member at respective rear ends thereof for closing and opening said receptacle member;
a recess formed in a lower surface of said cover member to define therein a storage space;
a plate member slidably mounted on a lower portion of said cover member and adapted to close said storage space, said plate member having a front end portion projecting forwardly from a front edge of said cover member when said plate member is in a projected position;
means, mounted between said plate member and said cover member, for urging said plate member to said projected position;
first engaging means provided on said receptacle member;
second engaging means provided on said plate member for engagement with said first engaging means;
said first and second engaging means being disengagable from each other upon inward movement of said plate member against the force of said urging means, thereby opening said cover member; and
said storage space being opened upon forward movement of said plate member relative to said cover member when said cover member is in the open position thereof.

5,054,506

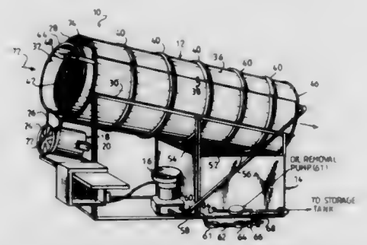
ROCK AND GRAVEL CLEANER

Shahrokh Shakeri, P.O. Box 3211, Wichita Falls, Tex. 76309

Filed Sep. 7, 1990, Ser. No. 578,453
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—105 **4 Claims**

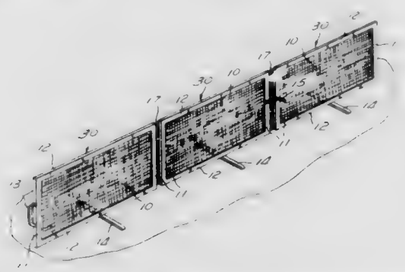
1. A rock and gravel cleaner, comprising:
a) a rectilinear tank having a frame, said tank containing a partition that separates said tank into a first part for oil and a second part for oil and water but no part for stones, gravel, and solids;
b) a water heater externally connected to said rectilinear tank, said water heater includes an input pipe and an output pipe, said output pipe includes an oil removal pump, a pressure switch, a pump, a filter, a three way valve, and a primary filter, so that an oil removal pump

instead of being located in said output pipe with said water heater being located on its own pipe from the oil tank part;
c) a motor containing an idler pulley arrangement and a fan belt;
d) a revolving cylinder having open ends and having a reel



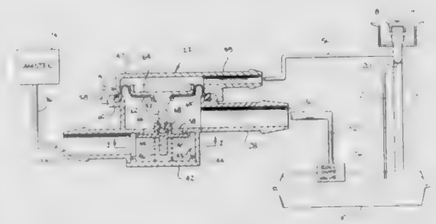
at each end revolves via the energy transported from said motor to said reel by said fan belt so that said cylinder revolves on said frame; and
e) a substantially full length spiral screen disposed beneath said cylinder, said cylinder having a pair of end caps for aiding in the holding of the spiral screen in place.

5,054,507
PORTABLE BEACH CACHE
Terry L. Sparks, 14 Vittoria St., Laguna Niguel, Calif. 92677
Continuation of Ser. No. 362,754, Jun. 9, 1990, abandoned. This application Aug. 10, 1990, Ser. No. 565,805
Int. Cl.[5] E04H *15/18*
U.S. Cl. 135—97 **3 Claims**



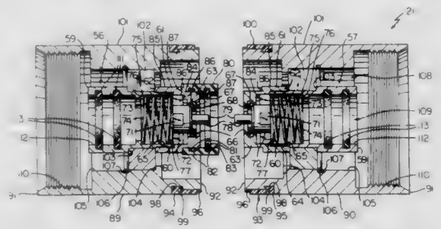
1. A portable beach cache for sheltering the user from the wind and wind-blown debris comprising:
(a) a plurality of screens formed to fit within a corresponding plurality of frames, said screens formed of a material adapted to diffuse the wind's power;
(b) a rigid frame, having two horizontal support members and two vertical support members, attached about the periphery of each of said screens for providing support to said screens;
(c) a hinge for pivotally connecting said vertical support members of said rigid frames, said hinge being comprised of the same material as said screen, said rigid frames being operable between a stowably disposed position and an operably disposed position;
(d) at least two feet pivotally attached to at least one of said horizontal support members for supporting the portable beach cache upon the ground, said feet not extending substantially beneath the surface of the ground; and
(e) a plurality of apertures formed in said screens, said apertures being sized between 0.010 inch and 0.250 inch in diameter and spaced apart by approximatelythe length of their diameter to prevent the wind from blowing forcibly therethrough while permitting a portion of the wind to blow non-forcibly therethrough such that the power of the wind is diffused in order to prevent the portable beach cache from blowing over;
(f) a latch attached to the rigid frame for securing the portable beach cache in the stowably disposed position; and
(g) a handle attached to the rigid frame for carrying the portable beach cache when it is in the stowably disposed position.

5,054,508
FUEL TANK VENT SYSTEM AND DIAPHRAGM VALVE FOR SUCH SYSTEM
Robert P. Benjey, Webster Township, Mich., assignor to G.T. Products, Inc., Ann Arbor, Mich.
Continuation of Ser. No. 470,318, Jan. 25, 1990, abandoned. This application Oct. 29, 1990, Ser. No. 607,744
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—43 **19 Claims**



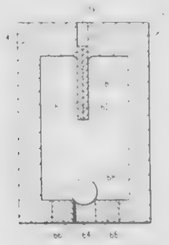
1. In a vehicle fuel system of the type which includes a fuel tank, a filler pipe having an inlet opening for admitting fuel to the tank, a cap for closing the outer end of the filler pipe inlet opening and a vapor trap for collecting fuel vapor vented from the tank, the fuel system further comprising:
a vent valve connected between the tank and the vapor trap and having an open condition and a closed condition; said vent valve including first means for placing said valve in an open, venting condition when the outer end of the filler pipe inlet opening is closed; and second means for placing said valve in a closed, non-venting position when the outer end of the filler pipe inlet opening is open.

5,054,509
BREAKAWAY COUPLING, CONDUIT SYSTEM UTILIZING THE COUPLING AND METHODS OF MAKING THE SAME
Rodger P. Grantham, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio
Continuation of Ser. No. 482,429, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 366,977, Jun. 15, 1984, abandoned, which is a continuation of Ser. No. 209,661, Jun. 21, 1988, Pat. No. 4,854,338. This application Sep. 25, 1990, Ser. No. 587,704
The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.
Int. Cl.[5] F16L *29/00*
U.S. Cl. 137—68.1 **8 Claims**



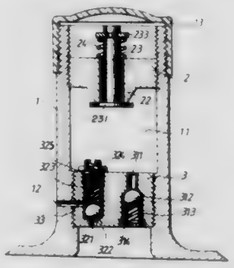
1. In a method of making a breakaway coupling for incorporation into a conduit system and comprising the steps of forming a pair of tubular coupling members each having opposed end means one of which is adapted to be interconnected to a part of said conduit system and the other of which is held in sealing and coupling engagement with the other end means of the other coupling member until uncoupled therefrom by a certain axial force means being created therebetween, forming said breakaway coupling to have frangible means holding said coupling members in their coupling engagement until said certain axial force means breaks said frangible means to thereby uncouple said coupling members, forming said frangible means to comprise a tubular sleeve means having opposed ends and an annular frangible section intermediate said ends of said sleeve means that breaks in an annular manner when said certain axial force means is applied between said coupling members, forming said frangible section to comprise a tubular sleeve that is disposed in telescoped relation on said sleeve means and has opposed ends that are respectively disposed in spaced inboard relation relative to said ends of said sleeve means, forming said sleeve to have an annular frangible area between said ends of said sleeve, forming said sleeve means to have two parts respectively provided with free ends disposed adjacent each other and respectively having said opposed ends of said sleeve means outboard of said free ends, and forming said sleeve to have said ends thereof provided with means respectively interconnected to said free ends of said two parts, the improvement comprising the steps of forming said free ends of said parts of said sleeve means to each have an annular dovetail groove formed therein and then disposing a portion of its respective end of said sleeve therein in an interlocking mechanical dovetail manner whereby said ends of said sleeve are respectively interconnected to said sleeve means by said annular dovetail grooves.

5,054,510
SELECTIVE VALVE TO PASS FLUIDS
Marcos P. Ribeiro, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S. A., Rio de Janeiro, Brazil
Filed Dec. 12, 1989, Ser. No. 449,213
Int. Cl.[5] F04B *21/00*
U.S. Cl. 137—199 **1 Claim**



1. A selective valve to pass fluids, for a subsurface oilfield pump within a column, said selective valve comprising a means inside the pump and the column, for separating purposes, said means having a predetermined surface roughness forming a fluid flow control gap, dynamically governed by the subsurface oilfield fluid pressure inside the pump, whereby said selective valve acts when fluid pressure is low inside the pump to enable low surface tension and viscosity fluids to flow through said fluid flow control gap, said selective valve consisting of a body provided above and in the middle with communicating passages for low surface tension and viscosity fluid, said passages being provided inside with controlling blades stretching from said body communicating with said passage, said blades having opposing faces defining a flow passage therebetween with at least one of said faces having said predetermined surface roughness and providing said flow control gap, the subsurface oilfield fluid acting upon the outside surfaces of said flow controlling blades, and said body being provided below and in the middle with a communicating passage in touch with said subsurface oilfield fluid compressed by the pump, and with seats in juxtaposition therewith, and a non-return ball housed within said communicating passage open to said subsurface oilfield fluid compressed by said pump for contact with said seats for closing off a fluid passage through said seats and about said non-return ball.

5,054,511
TIRE VALVE HAVING AN AUTOMATIC PRESSURE RELEASE DEVICE
C. T. Tuan, and T. L. Duan, both of 4F, 64, Lane 283, Chung Cheng Rd., Yung Ho, Taipei Hsien, Taiwan
Filed Sep. 11, 1990, Ser. No. 580,285
Int. Cl.[5] F16K *15/20*; **B60C** *29/00*
U.S. Cl. 137—224 **20 Claims**



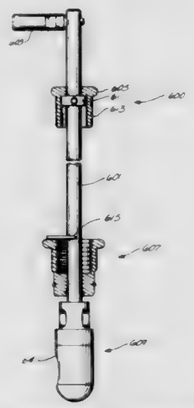
1. A valve for use with a tire, comprising:
a valve body having a chamber formed therein opening through top and bottom ends of said valve body, and an exhaust hole formed through said valve body at a lower portion thereof;
an inlet assembly mounted in an upper portion of said chamber and including
an inlet assembly body having a central hole formed therethrough,
a valve pole slidably extending through said central hole and having a sealing ring, larger in diameter than said valve pole, mounted to a bottom end thereof, and
first biasing means for biasing said valve pole upwardly such that said sealing ring is biased into engagement against a bottom surface of said inlet assembly body to seal said central hole; and
an inlet/outlet assembly mounted in a lower portion of said chamber and including
an inlet/outlet assembly body having formed therein an intake room in communication with portions of said chamber above and below said inlet/outlet assembly body, a releasing room in communication with a portion of said chamber below said inlet/outlet assembly body, and a bypass hole extending between said releasing room and said exhaust hole to communicate said releasing room to an outside of said valve body,
a one-way intake valve means for allowing air to flow from the portion of said chamber above said inlet/outlet assembly body through said intake room to the portion of said chamber below said inlet/outlet assembly body only when air pressure in the portion of said chamber above said inlet/outlet assembly body is greater than a first predetermined pressure, and
a one-way releasing valve means for allowing air to flow from the portion of said chamber below said inlet/outlet assembly body through said releasing room, said bypass hole and said exhaust hole to the outside of said valve body only when air pressure in the portion of said chamber below said inlet/outlet assembly body is greater than a second predetermined pressure.

5,054,512

INSERTION ASSEMBLY FOR A PIPE STOPPER

Stephen L. Jiles, 1513 Dogwood Ave., Anaheim, Calif. 92801

Division of Ser. No. 513,599, Apr. 24, 1990. This application Oct. 29, 1990, Ser. No. 605,988
Int. Cl.[5] F16L *55/12*; F16K *43/00*
U.S. Cl. 137—317 4 Claims



1. An insertion assembly for providing a fluid bypass through an opening in the wall of a pressurized pipe and through a branching saddle having a pipe stub, said branching saddle being attached to said pipe at said opening, comprising:
a) a shaft;
b) a deformable stopper mounted on and extending from the end of said shaft, said stopper comprising a cylindrical, hollow body having a wall penetrated by an inlet port and terminating in a hemispherical head at one end and an outlet port at the opposite end in fluid communication with said inlet port, said head and body having a common rigid core, U-shaped in cross-section, and a continuous elastomeric skin covering said core; and
c) a block attached to said U-shaped core at its outlet end, structurally interconnecting said shaft and said core, said block having an axial passage in fluid communication with said outlet port and at least one radial passage in communication with said axial passage, whereby a portion of said pipe on one side of said stopper may be blocked from said opening by inserting said stopper through the pipe stub of said branching saddle and through the said opening and by forcing the head of said stopper against the wall of said pipe opposite said opening, thereby deforming said elastomeric skin until said skin conforms to the cross-section of the pipe, while said stopper continues to provide fluid communication from another portion of said pipe on the other side of said stopper, through said ports, axial passage and radial passage of said stopper and of said block and into said pipe stub.

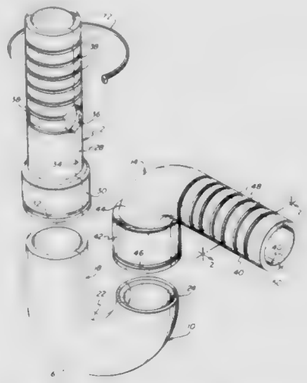
5,054,513

PROTECTIVE SYSTEM FOR P-TRAP

Steven R. Trueb, 78 Mountain Rd., Vernon, Conn. 06066, and Thomas W. Trueb, 105 Pinnace Rd., Ellington, Conn. 06029

Filed Aug. 20, 1990, Ser. No. 569,995
Int. Cl.[5] F16L *7/00, 9/22*
U.S. Cl. 137—375 15 Claims

1. A thermal insulation system for the P-trap piping assembly of a sink or the like, comprising a first, substantially J-shaped tubular piece, a second, substantially straight tubular piece, and a third, substantially L-shaped tubular piece; each of said pieces having opposite end portions, each being fabricated as a single unit from a resiliently yieldable material having thermal insulating properties, and each being longitudinally slit to permit spreading of the marginal portions extending along said slit, for facile installation; said first piece having a substantially uniform external cross section along its entire length, and said second and third piece having said uniform external cross section along major portions of their lengths of each of said



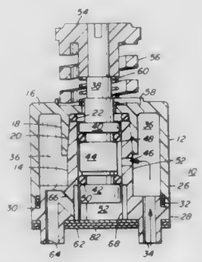
second and third pieces constituting a collar portion of enlarged cross-section relative to said uniform cross section, and defining therewithin an inwardly extending recess having said uniform cross section so as to permit said collar portions to telescopically overlap and engage said end portions of said first piece when installed thereadjacent.

5,054,514

DRINKING FOUNTAIN CARTRIDGE VALVE

Osvaldo Valdes Marin, Santiago, Chile, assignor to Plumbmaster, Inc., Irving, Tex.

Filed May 25, 1989, Ser. No. 356,708
Int. Cl.[5] F16K *27/00*
U.S. Cl. 137—454.2 9 Claims



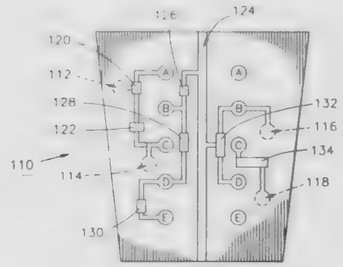
1. A cartridge-type control valve comprising:
(a) a fluid transfer member integrally formed with an outlet nozzle and an inlet nozzle;
(b) a valve stem slidably extending into said fluid transfer member;
(c) a substantially cylindrical flow control member eccentrically protruding from said valve stem;
(d) a housing open at one end and having a cylindrical receptacle integrally formed therein receiving said fluid transfer member; and
(e) a valve stem cap affixed to said valve stem, said valve stem having an integrally formed coiled section.

5,054,515

CARTRIDGE VALVE

Mario J. Quinto, 70 Dannell Dr., Stamford, Conn. 06905

Continuation-in-part of Ser. No. 293,110, Jan. 3, 1989, abandoned. This application Feb. 2, 1990, Ser. No. 474,228
Int. Cl.[5] F16K *51/00*
U.S. Cl. 137—454.5 19 Claims



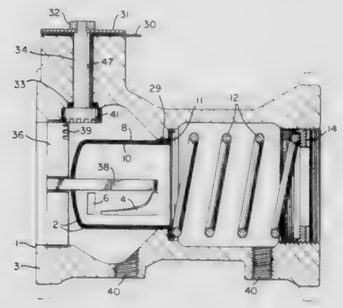
1. An improved cartridge valve of the type having a generally round, hollow sleeve, said sleeve having at least one annular sealing means thereon which at least one annular sealing means, when said cartridge valve is inserted into a cavity, forms a seal with the wall of said cavity around said sleeve, wherein said improvement comprises:
(a) said at least one sealing means comprises a raised annular ridge formed on said sleeve;
(b) the peripheral surface of said annular ridge defines a truncated cone having a major axis coincident with the major axis of said sleeve, such that when said sleeve is positioned in said cavity, said peripheral surface of said ridge will form said seal with said wall of said cavity; and
(c) said peripheral surface includes fluid control circuitry therein.

5,054,516

AUTOMATIC FLOW CONTROL VALVE

Charles L. Okerblom, Cranston, R.I., assignor to Taco, Inc., Cranston, R.I.

Continuation of Ser. No. 203,525, May 24, 1988, abandoned, which is a continuation of Ser. No. 923,871, Oct. 28, 1986, abandoned. This application Apr. 4, 1989, Ser. No. 334,815
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—504 15 Claims



9. An automatic flow control valve comprising:
a generally cylindrical valve housing having an upstream end and a downstream end and having a reduced bore section intermediate said ends;
said reduced bore section defined by an upstream surface, a downstream surface and an inner surface; a flow control set slidably received by said inner surface, said set including a first cup and an outer sleeve;
said first cup having a cylindrical portion which includes at least one port hole of predetermined configuration for passage of fluid from the outside to the inside thereof;
said outer sleeve having generally cylindrical shape disposed about said cylindrical portion of said cup and having at least one port hole of predetermined configuration which overlaps at least partially with said port hole of said first cup according to a predetermined arrangement so that fluid can flow through said holes;
a range spring disposed between said downstream end and said set for biasing said set upstream;
means to fixedly secure said first cup and said sleeve in fixed radial relationship with one another so that said cup and said sleeve can be positioned in predetermined relative orientations to adjust the degree of overlap of said port holes;
wherein said means to fixedly secure include means responsive to operator manipulation to vary the orientation of said sleeve with respect to said cup so as to adjust the degree of overlap of said port holes;
wherein said at least one port hole of said sleeve and said cup respectively include at least one fixed port hole and at least one throttling port hole;
wherein said plurality of predetermined relative orientations are in rotational offset from each other, and said varying means is operative to rotate one of said outer sleeves and said cup relative to the other;
wherein said varying means comprises:
a center pin axially inserted through said cup and said second cup; said pin being loosely engaged with said cup in a guided relationship, and fixedly engaged relative to said inner cup;
a pin retainer ring through which a portion of said center pin outside of said cup is fixedly engaged and operative to be rotationally driven via gear teeth extending therefrom; and
a turndown shaft having circulatory arranged teeth for engaging said teeth on said peripheral structure of said pin retainer ring, whereby rotation of said turndown shaft responsive to an external force caused a corresponding rotation of said pin retainer ring and thus the center pin, resulting in rotation of said inner sup relative to said outer sleeve whereby the selected flow rate is maintained and effected by the rotational position of said turndown shaft.

5,054,517

ONE-WAY RESTRICTOR

Thomas Liesenhoff, Hannover; Hans-Friedrich Meyer, Gehrden; Manfred Schmitz, Garbsen; Ernst-August Meyer, Algermissen, and Rudolf Möller, Gehrden, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Steuerungstechnik GmbH & Co., Hannover, Fed. Rep. of Germany

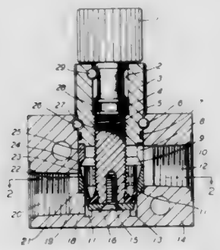
Filed Aug. 31, 1989, Ser. No. 401,585
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1988, 3831554
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—513.5 60 Claims

1. A one-way restrictor for use in a fluid pressure communication system to control flow of a fluid pressure-medium, said one-way restrictor comprising:
(a) a housing member;
(b) an intake chamber formed in said housing member and connectable to a source of such fluid pressure-medium;
(c) an outlet chamber formed in said housing member and connectable to a consumer of such fluid-pressure medium;
(d) a check valve disposed in said housing member intermediate said intake chamber and said outlet chamber, said check valve capable of being brought into an open position in a direction of fluid communication of such fluid pressure-medium from said intake chamber to said outlet chamber;

(e) a bypass flow channel disposed in said housing member, said bypass flow channel having a variable cross-section, at least a portion of said bypass flow channel being formed by an at least one opening located intermediate said intake chamber and said outlet chamber;

(f) a control member positioned for movement in a predetermined manner within a cavity formed in said housing member intermediate said intake chamber and said outlet chamber; and

(g) said check valve having a sealing element disposed within said housing member and engageable with said



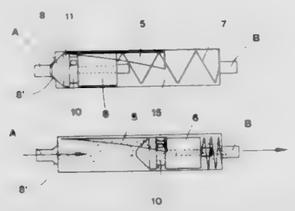
control member, said sealing element being capable of covering at least a portion of said bypass flow channel, said sealing element being movable relative to said bypass flow channel by said control member, movement of said sealing element is carried out in a manner such that when said sealing element is moved a cross-section of said bypass flow channel covered by said sealing element can be adjusted, said sealing element having at least a portion formed of a resiliently deformable material and being deformable from a sealing position to said open position by a fluid pressure differential across said at least a portion.

5,054,518

VARIABLE FLOW SELF-CLEANING VALVE PREFERABLY FOR VENTRICULAR OFFTAKE BRANCHES OF CEPHALORACHIDIAN FLUID

Claudio Rancani, Via Col. G. Fincato, 55, Verona, Italy

Filed Jul. 27, 1990, Ser. No. 559,172
Claims priority, application Italy, Aug. 4, 1989, 84971 A/89
Int. Cl.[5] F16K *15/02*
U.S. Cl. 137—516.27 **10 Claims**



1. A self-cleaning variable flow valve for passing ventricular cephalorhachidian fluid which is at any one of a normal pressure, a minimum elevated pressure, a maximum elevated pressure and any pressure between the minimum and maximum elevated pressures, the valve comprising:

a hollow cylindrical body (**1**) having a front inlet opening (A) for receiving fluid at one end, and a rear outlet opening (B) at an opposite end, said hollow body having an inner cylindrical surface with a tapered recess (**5**) therein, which tapers outwardly in a direction from said inlet opening toward said outlet opening from a vertex of said tapered recess to a base of said tapered recess, said hollow body containing a profile (**8'**) defining a valve seat adjacent said inlet opening (A);

a piston (**6**) slidably mounted in said cylindrical body (**1**), said piston having a forward tapered section (**8**) engageable with said profile for blocking a flow of fluid into said hollow body through inlet opening, a seal ring (**11**) to the rear of said tapered section (**8**), and a cylindrical surface (**9**) to the rear of said seal ring, said piston having a linking channel (**12**) extending therein, said linking channel having an inlet port (**13**) between said seal ring and said cylindrical surface, and an outlet port at a rear end of said piston which communicates with said outlet opening of said cylindrical body, said seal ring being engaged against the inner surface of said cylindrical body and said piston being movable away from the profile so that when said seal ring passes the vertex of said recess, fluid flows through said inlet opening (A) over said seal ring (**11**) and into said inlet port for discharging fluid from inlet opening to said outlet opening, and, when said seal ring passes the base of said recess, flow of fluid between said inlet and outlet opening is blocked; and

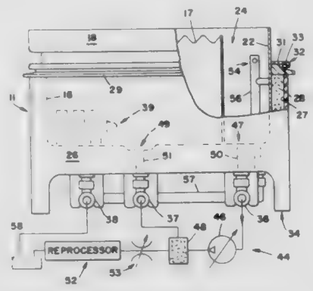
biasing means (**7**) engaged between said cylindrical body and said piston for urging said tapered section (**8**) into engagement with said profile (**8'**), said biasing means being selected to have a biasing force which engages said tapered section against said profile under the normal pressure, which permits the piston to move so that the seal ring passes the vertex but is adjacent the vertex at the minimum elevated pressure, which allows the piston to move so that the seal ring is in the recess and adjacent base under the maximum elevated pressure, and which allows the piston to move so that the seal ring passes the base under pressure above the maximum elevated pressure.

5,054,519

RECIRCULATING CHEMICAL BATH WITH INFLOW AND SELF BALANCING OUTFLOW

Allan Berman, Sunnyvale, Calif., assignor to Imtec Products, Inc., Sunnyvale, Calif.

Filed Dec. 26, 1990, Ser. No. 633,690
Int. Cl.[5] E03B *7/07*
U.S. Cl. 137—563 **13 Claims**



1. A chemical bath for immersing articles in a volume of liquid chemical comprising:

a processing vessel for receiving said liquid chemical and said products, said processing vessel having a flow inlet and an upper edge across which liquid chemical may overflow from said processing vessel,

an inclined trough positioned to receive said overflow from said processing vessel,

a sump vessel positioned to receive said overflow from said trough and having upper and lower vertically spaced flow outlets, said sump vessel having a liquid storage region between said upper and lower outlets that has a Volume which exceeds the volume of liquid chemical that is displaced from said processing vessel as said products are immersed therein,

pump and filter means for withdrawing liquid chemical through said lower outlet of said sump vessel and for recirculating the withdrawn liquid chemical to said processing vessel in filtered condition, and

means for delivering an inflow of liquid chemical to said bath,

whereby outflow of liquid chemical through said upper outlet of said sump vessel temporarily increases in response to immersion of said articles and is temporarily interrupted when said product is removed from said processing vessel but is substantially equivalent in volume to said inflow over a period of time.

5,054,520

REMOTELY ACTUATED FUEL TANK VAPOR VENT VALVE

Carl H. Sherwood, Brockport; Kenneth W. Turner, Webster; Patti S. DuBois, Hamlin, and Charles H. Covert, Manchester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1990, Ser. No. 514,458
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—587 **3 Claims**



1. In a vehicle having a fuel tank, a fuel tank closure that is moved from a closed to an open position and back when said fuel tank is filled, and a fuel vapor storage canister, a valve assembly for selectively admitting to said canister fuel vapors displaced from said fuel tank when it is filled, comprising,

a seal seat opening into said fuel tank of a size sufficient to vent said displaced fuel vapors from said tank,

a canister line running between said seal seat and said canister,

a primary bellows proximate said fuel tank closure that is expandable and contractible so as to draw air into or expel air therefrom,

an actuator movable by said closure as it moves between its closed and open position to concurrently contract and expand said primary bellows,

a secondary bellows proximate said seal seat that is expandable against said seal seat and contractible away from said seal seat as air is forced into and withdrawn from said secondary bellows, and,

an air tight line running between said primary and secondary bellows,

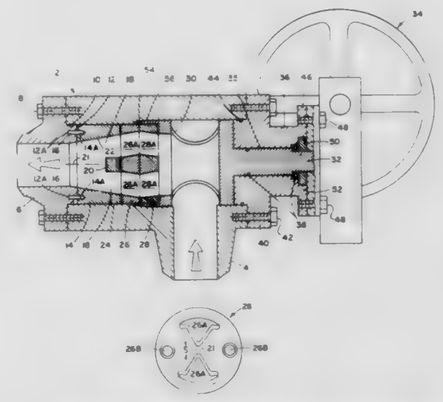
whereby, when said fuel tank closure is moved to its open position, said actuator expands said primary bellows to draw air through said air tight line and withdraw air from said secondary bellows, thereby contracting said secondary bellows away from said seal seat to allow said fuel tank to vent through said seal seat, and when said fuel tank closure is moved back to its closed position, said actuator contracts said primary bellows to expel air through said air tight line and force air into said secondary bellows, thereby expanding said secondary bellows back against said seal seat.

5,054,521

MULTIPLE ORIFICE VALVE WITH IMPROVED TURN-DOWN RATIO

Fred W. Hendrick, Cerritos, Calif., assignor to Automatic Control Components, Inc., Denver, Colo.

Filed Jun. 13, 1990, Ser. No. 537,259
Int. Cl.[5] F16K *47/04, 3/08*
U.S. Cl. 137—625.31 **9 Claims**



1. A valve having an improved turn-down ratio and low-erosion discharge flow, the valve including the combination of:

a valve body having an internal cavity with an inlet and outlet for fluid;

an upstream disk rotatably supported in the cavity of said valve body and having two openings for conducting fluids;

means for rotating said upstream disk;

a stationary downstream disk arranged in a face-to-face and confronting relation with said upstream disk in the cavity of said valve body, said downstream disk having two openings for conducting fluid from the fluid conducting openings in said upstream disk said upstream and downstream disks having a common central axis extending perpendicular to end faces of the disks;

each of said fluid conducting openings in said upstream disk and said fluid conducting openings in said downstream disk comprising a circular sector shaped primary opening portion and a secondary openings portion the secondary opening portion including two substantially semicircular supplemental openings, a first one of said supplemental openings being located at a radially outermost position along a first of two radially directed walls defining a central angle of the circular sector shaped primary openings portion and a second one of said supplemental openings being located at a radially outermost position along a second of said two radially directed walls the secondary openings portion of the fluid conducting openings of the upstream disk when the fluid conducting openings of the upstream disk are brought into a turn-down position with respect to the fluid conducting openings of the downstream disk, aligns with the secondary opening portion of the fluid conducting openings of the downstream disk to permit discharge flow from the downstream disk which is essentially always parallel with a plane bisecting the fluid

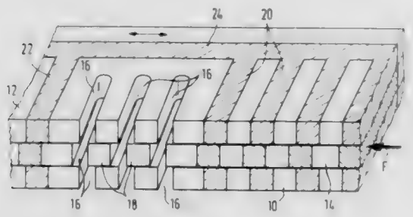
conducting openings of the downstream disk and passing through the common central axis of the disks

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5,054,522
MICROVALVE

Bernd Kowanz, Linkenheim; Dirk Schmidt, Stutensee, and Wolfgang Ehrfeld, Karlsruhe, all of Fed. Rep. of Germany, assignors to Burkert GmbH Werk Ingelfingen, Ingelfingen and Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, both of Fed. Rep. of Germany

Filed May 23, 1990, Ser. No. 527,194
Claims priority, application Fed. Rep. of Germany, May 29, 1989, 3917396
Int. Cl.[5] F16K *31/02, 11/65*
U.S. Cl. 137—625.33 **17 Claims**



1. A microvalve, comprising:

(a) at least a first and a second valve plate each provided with elongated valve ports therethrough and with elongated lands between the valve ports, said valve plates being arranged mutually adjacent and movable with respect to each other substantially in perpendicular to said valve ports between an open setting, in which the valve ports of the first valve plate are aligned with the valve ports of the second valve plate, and a shut setting, in which the lands of the first valve plate are opposite to the valve ports of the second valve plate and the lands of the second valve plate are opposite to the valve ports of the first valve plate to thereby shut off said valve ports;

(b) each of said first and second valve plate having surfaces which are opposite each other with a small distance therebetween and which are provided with strip-like electrodes thereon;

(c) said electrodes being aligned substantially in perpendicular to the direction of motion of the valve plates; and

(d) the electrodes of the first valve plate and of the second valve plate being adapted to be supplied with an electrical potential

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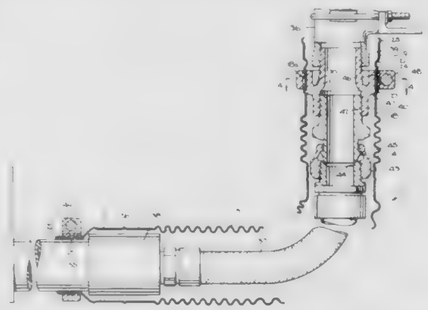
5,054,523
CONTAINMENT SYSTEM FOR FLEXIBLE UNDERGROUND PIPING

Helm A. Rink, North Haledon, N.J., assignor to Unidynamics Corporation, New York, N.Y.

Filed Mar. 23, 1990, Ser. No. 498,272
Int. Cl.[5] F16L *35/00*
U.S. Cl. 137—377 **45 Claims**

1. A clamp for applying radially inwardly directed pressure uniformly circumferentially about a cylindrical surface of circular right section, said clamp comprising a split ring of substantially rigid non-metallic material extending between first and second end faces that are in confrontation on opposite sides of a split, the inside diametral surface of said ring having a uniform radius circumferentially about said ring for substantially a full 360° when said two end faces are in stress free contact, at least one of said end faces having a circumferentially projecting lip portion adjacent said inside diametral surface and a recessed region contiguous to said lip portion which region is spaced from said opposite end face by a predetermined gap when said lip portion is in stress free contact with said opposite end face, and means for applying force to said ring on opposite sides of said split in a direction tending to close said gap which means is constructed in relation to the compressive yield strength of said lip portion for causing said lip portion to yield and said gap to decrease with concomitant reduction in the circumference of said inside diametral surface.

13. A containment sleeve for underground hydrocarbon fuel piping systems comprising a thin walled tube of hydrocarbon fuel resistant polyester elastomer having first and second end sections joined by a corrugated intermediate section, said first end section, commencing adjacent its free end, comprising a

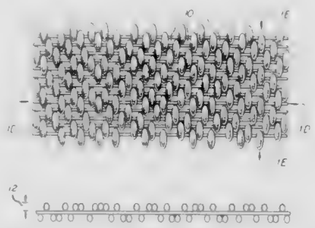


first right circular cylindrical portion of a first internal diameter, a frusto-conical transition portion, and a second right circular cylindrical portion of a second internal diameter larger than said first diameter, said transition portion joining said first and second portions, and said second portion being joined to said currugated intermediate section whose minimum internal diameter is less than said second diameter but greater than said first diameter, and said second end section comprises a third right circular cylindrical portion joined to said intermediate section and having an internal diameter substantially equal to said minimum diameter of said intermediate section.

5,054,524
SOLID-COLOR WEAVE PATTERN BELT

Yasushi Kato, Shizuoka; Noriyoshi Tsurugi, Shimada; Hiroaki Suzuki, Shizuoka, and Shigeji Ogata, Ayase, all of Japan, assignors to Nippon Seiko K.K., Tokyo, Japan

Filed Jun. 13, 1989, Ser. No. 365,639
Claims priority, application Japan, Jun. 14, 1988. 63-144699
Int. Cl.[5] D03D *25/00*
U.S. Cl. 139—383 R **8 Claims**

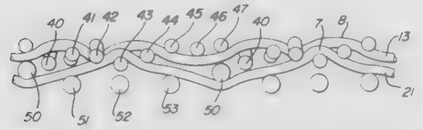


1. A solid-color weave pattern belt comprising warps arranged at such a high density that wefts are substantially hidden behind said warps and are arranged with selectively omitted one to three warp threads omitted from the weave of a 2/2 twill weave consisting of four warp threads, said selectively omitted warp threads being successively adjacent to each other, thereby providing an uneven weave pattern of recesses in said weave pattern on a surface of said belt in a depth as large as about at least 50% of the thickness of the warp.

5,054,525
DOUBLE LAYER FORMING WIRE FABRIC

Fritz Vöhringer, Heidenheim, Fed. Rep. of Germany, assignor to F. Oberdorfer GmbH & Co. and KG Industriegewebe-Technik, Fed. Rep. of Germany

Filed Jun. 23, 1989, Ser. No. 370,447
Int. Cl.[5] D03D *13/00*
U.S. Cl. 139—383 A **21 Claims**

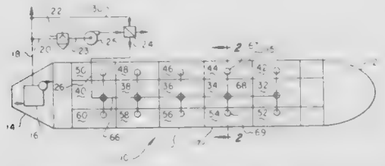


1. Double fabric as forming wire for the wet end of a paper making machine for dewatering and formation of a paper web, which wire consists of two sets of longitudinal threads and at least one upper and one lower layer of cross threads, wherein the first set of longitudinal threads are interwoven only with the upper layer of cross threads, and the second set of longitudinal threads are interwoven with the lower layer of cross threads as well as at least partly with the upper layer of cross threads, characterized therein that the two sets of longitudinal threads configure with the upper layer of cross threads a repeating weave pattern in which at least some of the upper cross threads are undercrossed by at least three subsequently following longitudinal threads and are thereafter overcrossed by at least three subsequently following longitudinal threads, wherein of the last mentioned at least three subsequently following longitudinal threads at least two belong to the first set and one belongs to the second set and the last mentioned longitudinal thread of the second set overcrosses only one upper cross thread within the weave pattern (repeat), whereas the longitudinal threads of the first set of longitudinal threads overcross within the weave pattern at least one time two subsequently following upper cross threads.

5,054,526
METHOD AND SYSTEM FOR REDUCING HYDROCARBON VAPOR EMISSIONS FROM TANKERS

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 22, 1990, Ser. No. 497,278
Int. Cl.[5] B65B *1/04;* **F24H** *3/00*
U.S. Cl. 141—1 **4 Claims**



1. A method for minimizing the generation and emission of hydrocarbon vapors from the cargo tanks of a tank ship during loading of liquid cargo, said tank ship including an arrangement of plural cargo tanks including at least one inboard tank and opposed outboard tanks, said method comprising the steps of:

providing a supply of substantially inert gas for introduction into said cargo tanks;

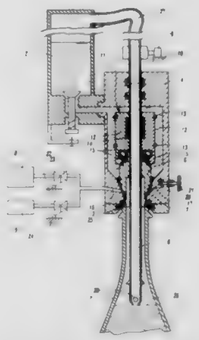
introducing said inert gas into said cargo tanks prior to the filling and above a liquid-gas interface during the filling of said tanks at a temperature which is at least about equal to or above the temperature of liquid cargo being loaded into said cargo tanks; and

filling said outboard tanks with said inert gas and liquid cargo prior to filling said inboard tank with said liquid cargo to aid in heating said inboard tank prior to filling said inboard tank with said liquid cargo.

5,054,527
FILLER HEADS FOR PRESSURIZED BOTTLES

Alain Rozier, Calella de Palafrugell, Spain, assignor to Zona Industrial De Montras, Palafrugell, Spain

Continuation of Ser. No. 325,670, Mar. 20, 1990, abandoned. This application Aug. 30, 1990, Ser. No. 575,176
Claims priority, application Spain, Mar. 21, 1988, 8800857
Int. Cl.[5] B65B *31/00, 43/42*
U.S. Cl. 141—39 **3 Claims**



1. An improved filler head for pressurized bottles, said filler head being operatively connected to a tank having liquid for filling the bottles, and being operatively connected to a pressure source, the improvement comprising:

a body remote from the tank having a passageway therein with an inlet in communication with said tank and an outlet adapted to be positioned over a bottle so as to fill the bottle with liquid from the tank;

a tube extending through the body and having a lower end extensible into a bottle and an upper end communicating with said tank for venting gases from said bottle, the tube being remote from the tank;

a closing bushing slidably mounted on said tube and within the body, said bushing being movable between a lowered closed position sealingly blocking the passageway between the inlet and outlet thereof and a raised open position unblocking the passageway; and

a cam operatively connected to the tube for raising and lowering the tube, and thus the closing bushing, whereby the tube vents gases from the bottle when the liquid level in the bottle is below the lower end of the tube and whereby the tube is capable of expelling excess liquid residing above the lower end of the tube.

5,054,528
VENTING DEVICE OF A FUEL TANK FOR A MOTOR VEHICLE

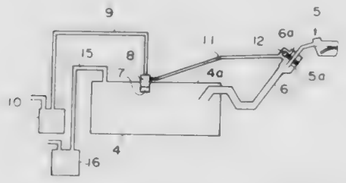
Shirou Saitoh, Yabuzukahonmachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1990, Ser. No. 497,498
Claims priority, application Japan, Apr. 19, 1989, 1-46143[U]
Int. Cl.[5] B65B *31/00, 57/14*
U.S. Cl. 141—59 **3 Claims**

1. A vent device of a fuel tank for a motor vehicle, the fuel tank having a filler pipe, a float valve provided on an upper wall of the fuel tank and arranged to close a first passage formed in the upper wall with a float moved by a fuel level in the fuel tank, and a vent tube communicating to atmosphere via a carbon canister, comprising:

a solenoid-operated valve adapted to be mounted adjacent

the float valve and having a second passage therein, a reciprocally movable plunger, spring means for biasing the plunger to close said second passage, and a solenoid for retracting the plunger by energization thereof so as to open the second passage, said second passage adapted to fluidly communicate the first passage to said vent tube:



the plunger being arranged to engage the float valve so as to open the first passage when the solenoid is energized; and

a switch is adapted to be mounted in the filler pipe and operatively connected to said solenoid-operated valve so as to be operated by a filler nozzle inserted in the filler pipe for energizing the solenoid.

5,054,529

FILLING CAR FOR A OVEN BATTERY

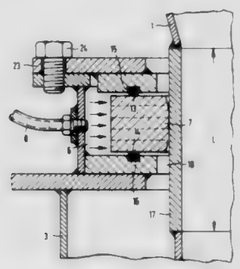
Horst Schröter, Viersen, and Horst Andreas, Düsseldorf, both of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 5, 1990, Ser. No. 505,701

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1989, 3913320

Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—312 **7 Claims**



1. A filling car for filling coal into oven chambers of a coke oven battery, comprising an immovable filling connection piece mountable on a coal container; a filling pipe closely surrounding said connecting piece and having a lower end lowerable to a filling opening frame of filling openings of a coke oven battery, said filling pipe also having an upper end; a housing arranged on said upper end of said filling pipe; a solid elastic sealing ring accommodated in said housing and mechanically pressable against said filling pipe, said solid elastic sealing ring surrounding said connecting piece and being displaceable with said filling pipe and also pressed against said filling pipe during a filling process so as to provide a sealing between said filling pipe and said connecting piece; and means for mechanically pressing said sealing ring against said filling pipe.

5,054,530

PNEUMATIC TIRE HAVING A GROUNDING CENTERLINE OFFSET FROM A WIDTHWISE CENTERLINE

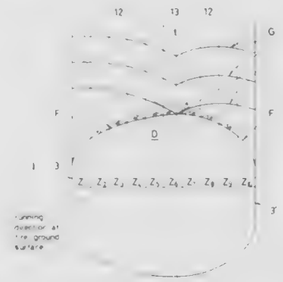
Akira Shiraishi, Chigasaki, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1989, Ser. No. 365,638

Claims priority, application Japan, Jun. 15, 1988, 63-145825

Int. Cl.[5] B60C *11/08*

U.S. Cl. 152—209 A **5 Claims**



1. A pneumatic tire having a tread with a grounding surface when inflated to regular internal pressure and under a normal load and a grounding center line extending in a circumferential direction of said tire tread across a maximum circumferential length of said grounding surface, said grounding surface being formed with V-shaped grooves, each of which has an apex located on said grounding center line of said tire grounding surface and transverse branches extending across the full width of said grounding surface and inclined widthwise of said tire in the forward direction of movement of a footprint of said tire, said grounding center line being offset from a widthwise center line of said tire wherein the average angle of the angles of said transverse branches made with a leading edge of said grounding surface within each of eight of ten widthwise equidistantly divided sections of said grounding surface excepting the two side sections is set at an angle with 5° of a constant angle α.

5,054,531

PNEUMATIC RADIAL TIRE WITH 1×2 STEEL BELT CORD STRUCTURE

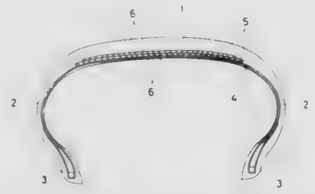
Issey Nakakita, and Hisao Kato, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1990, Ser. No. 608,425

Claims priority, application Japan, Nov. 13, 1989, 1-292385

Int. Cl.[5] B60C *9/00, 9/18, 9/20*

U.S. Cl. 152—527 **3 Claims**



1. A pneumatic radial tire including a belt structure for reinforcing a tread portion, which comprises at least one steel belt layer, each of which is constituted by mixing and arranging at random a plurality of steel cords having a 1×2 twist structure of an S twist and a plurality of steel cords having a 1×2 twist structure of a Z twist, and has a mixing ratio of said steel cords having said 1×2 twist structure of the S twist to said steel cords having said 1×2 twist structure of the Z twist within a range of 4:6 to 6:4 and a difference in the twist pitche of at least 1.5 mm.

5,054,532

PNEUMATIC TIRES WITH WAVY OR ZIGZAG CORD PLY BETWEEN BELT AND CARCASS

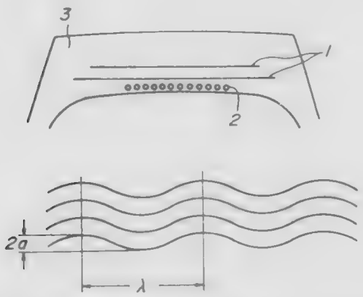
Yoshihide Kohno, Kodaira; Yasuhiko Kobayashi, Hachioji; Kiyoshi Sato, and Hiroyuki Koseki, both of Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jan. 4, 1990, Ser. No. 460,787

Claims priority, application Japan, Feb. 6, 1989, 1-25636; Mar. 9, 1989, 1-54978

Int. Cl.[5] B60C *9/18, 9/00, 9/02*

U.S. Cl. 152—527 **3 Claims**



1. A pneumatic tire comprising; at least one radial carcass ply toroidally extending between a pair of bead portions and a belt reinforcing a tread on said radial carcass, said belt being comprised of at least two belt layers, each belt layer crossing each other containing cords or filaments as a reinforcing element and crossed with each other at an equator of the tire, at least one crown reinforcing layer disposed between said carcass ply and said cross belt layer comprised of a strip containing wavy or zigzagged cords or filaments arranged substantially in parallel with the equator of the tire as a reinforcing element, and a ratio of amplitude (a) to wavelength (λ) in the wavy or zigzagged reinforcing element is in the range of 0.015–0.06.

5,054,533

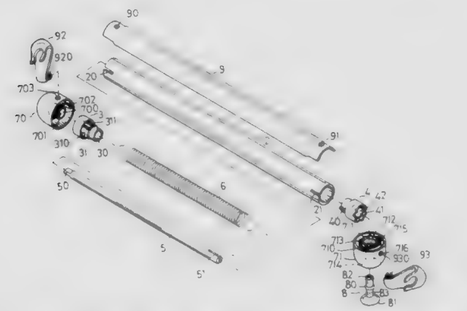
WIND-SHIELD BLIND SYSTEM

Jong-Yih Lii, No. 17, Alley 160, Lane 164, Jong-Shan N. Road, Yung-Kang Hsiang, Tainan Hsien, Taiwan

Filed Jan. 4, 1991, Ser. No. 637,535

Int. Cl.[5] E06B *9/56*

U.S. Cl. 160—302 **2 Claims**



1. A wind-shield blind system for thermally insulating a car wind-shield comprising:

a roller blind mechanism having an elongated tubular member carrying an opaque plastic blind and end plugs non-rotatably attached to opposite ends of the tubular member, wherein a first end plug of said end plugs is formed with a central passage extending axially therethrough and a second end plug is formed with a toothed rim at outer side thereof and an axial cylindrical recess extending outwardly;

a rod member adapted to extend through the central passage of the first plug, which is rotatable about the rod member, and having a first end and a second end;

a helical spring disposed around the rod member;

means for fixing one end of the helical spring to the first end of the rod member and the other end of the helical spring to the first end plug;

means for interconnecting two end cap members which are arranged in spaced-apart relation, wherein a first end cap member is axially provided with an aperture means for non-rotatably receiving the second end of the rod member and a second end cap member formed with a central passage extending axially therethrough and a toothed rim at an inner side thereof adjacent to and meshable with the toothed rim of the second plug to serve as a catch to the toothed rim of the second plug for preventing the tubular member from rewinding after having been driven to extend the blind thereon; and

a control means having an axle extending through the central passage of the second plug and into the cylindrical recess of the second plug, which is rotatable about the axle, and enabling the roller blind mechanism to be displaced on said rod member between a first position, wherein the adjacent toothed rims of the second plug and the second end cap member are in spaced-apart relation, and a second position, wherein the adjacent toothed rims are in interengaged state.

5,054,534

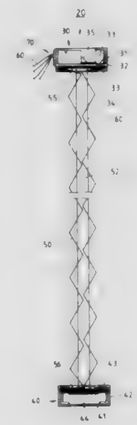
WINDOW SHADE WITH DUAL BLINDS

Amy Hong, No. 9, Jenn-Shing Lane, Fu-Nan Village, Fu-Shing, Changhua Sheann, Taiwan

Filed Feb. 6, 1991, Ser. No. 651,177

Int. Cl.[5] E06B *3/94*

U.S. Cl. 160—84.1 **1 Claim**



1. A window shade with dual blinds comprising:

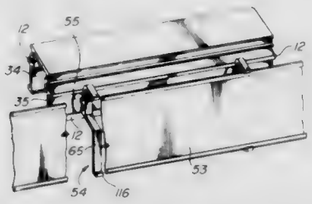
(a) a headrail;

(b) a bottom rail;

(c) dual blinds each having a length and a width arranged in parallel between said headrail and said bottom rail and being substantially coextensive so as to form an interspace

located therebetween, each of said dual blinds having string holes arranged therein at offset noncorresponding positions along the width thereof to obstruct one another;
(d) means of positioning said bottom rail, wherein positioning means includes a draw lock; and
(e) means for lifting and lowering said bottom rail, wherein said lifting and lowering means includes a draw cord.

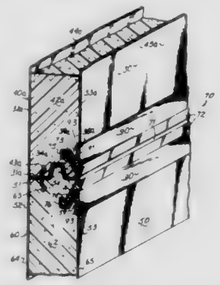
5,054,535
VERTICAL BLIND
David P. Rozon, Bourget, Canada, assignor to 139088 Canada Ltee, Quebec, Canada
Filed Jan. 24, 1989, Ser. No. 301,319
Claims priority, application Canada, Feb. 5, 1988, 558302
Int. Cl.[5] E06B *9/00*
U.S. Cl. 160—38 **3 Claims**



1. An arrangement for supporting a plurality of vanes of a vertical blind comprising an elongate blind head, a pair of rails mounted on an external surface of said head and oriented longitudinally thereto, each of said rails comprising an inner portion attached to said surface and transverse thereto and an outer portion in a spaced apart relation to said surface and extending towards the opposing rails thereto so as to form a groove between said outer portion and said surface, and a plurality of valence clips adapted to be releasably engaged to said rails and to releasably engage a decorative valence, said valence clips including a mounting element comprises of an elongate plate adapted to engage said grooves, wherein said elongate plate of said mounting element is shaped to engage said grooves and having a first flat plate element mounted to said clip and a second flat plate element attached to said first plate element, said first plate element overhanging an edge thereof of said second plate element, said overhand flexible for flexing when said mounting element is mounted to said rails so as to provide an outward force in relation thereto.

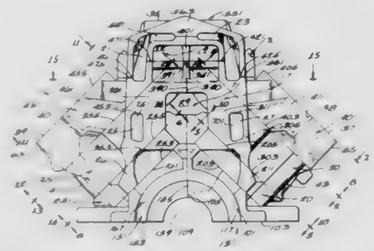
5,054,536
SECTIONAL DOORS AND FLEXIBLE HINGE ASSEMBLIES
Alan R. Leist; Thomas G. Mushaben, both of Cincinnati, Ohio, and Thomas E. Youtsey, Bellevue, Ky., assignors to Clopay Corporation, Cincinnati, Ohio
Continuation of Ser. No. 345,562, May 1, 1989, Pat. No. 4,995,441. This application Jan. 17, 1991, Ser. No. 642,671
Int. Cl.[5] E06B *3/70*
U.S. Cl. 160—229.1 **14 Claims**

1. A flexible hinge assembly for securing together abutting panel sections of a sectional door for articulation of the panel sections with respect to each other, the flexible hinge assembly comprising a hinge member having first and second arm flanges, each of which is connected to an elongated central web and spaced from the other, one arm flange being insertable into an elongated slot provided in a panel section and the other arm flange being insertable into another elongated slot in another abutting panel section for hingedly connecting said panel sections in an abutting relationship, said elongated central web having an exterior side and an elongated area along the middle of the exterior side for flexing thereat, said elongated central web further having a pair of elongated receiving means extending along the exterior side surface and being spaced from each other and two elongated retainer slats, each retainer slat having first and second elongated edges, each first elongated edge of each retainer slat being adapted to be inserted into an elongated slot of an abutting panel section in contact with the flange of the hinge member inserted therein and each second



elongated edge of each retainer slat being received by the receiving means along the exterior side of the elongated central web for locking the elongated flexible hinge in the elongated slots of the abutting panel sections.

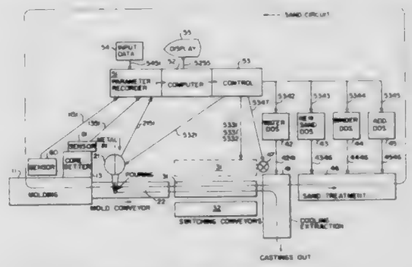
5,054,537
LOST FOAM PATTERN ASSEMBLY FOR V-BLOCK ENGINE
Russell J. VanRens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation of Ser. No. 202,970, Jun. 3, 1988, abandoned. This application Jan. 7, 1991, Ser. No. 636,561
Int. Cl.[5] B22C *9/04*
U.S. Cl. 164—34 **34 Claims**



16. A lost foam pattern assembly for a V-block multi-cylinder two stroke internal combustion engine, said pattern comprising a port crankcase section including first and second surfaces extending at a right angle to each other, and a third surface extending in inclined relation to said first and second surfaces, a starboard crankcase section including first and second surfaces extending at a right angle to each other and a third surface extending in inclined relation to said first and second surfaces of said starboard crankcase section, said second surfaces of said port and starboard crankcase sections being fixed to each other and said first surfaces of said port and starboard crankcase sections being co-planar, a port lower cylinder section having a first surface fixed to said third surface of said port crankcase section, a second surface in spaced and parallel relation to said first surface of said port lower cylinder section, and a cylindrical bore extending between said first and second surfaces of said port lower cylinder section, a starboard lower cylinder section having a first surface fixed to said third surface of said starboard crankcase section, a second surface in spaced parallel relation to said first surface of said starboard lower cylinder section, and a cylindrical bore extending between said first and second surfaces of said starboard lower cylinder section, a port middle cylinder section having a first surface fixed to said second surface of said port lower cylinder

section, a second surface in spaced parallel relation to said first surface of said port middle cylinder section, a third surface in inclined relation to said second surface of said port middle cylinder section, a cylindrical bore extending between said first and second surfaces of said port middle cylinder section and in alignment with said cylindrical bore in said port lower cylinder section, and wall means defining a cavity extending in said second surface in said port middle cylinder section and communicating with said bore in said port middle cylinder section and extending to said third surface of said port middle cylinder section and partially defining a first exhaust passage, a starboard middle cylinder section having a first surface fixed to said second surface of said starboard lower cylinder section, a second surface in spaced parallel relation to said first surface of said starboard middle cylinder section, a third surface in inclined relation to said second surface of said starboard middle cylinder section and co-planar with said third surface of said port middle cylinder section, a cylindrical bore extending between said first and second surfaces of said claim starboard middle cylinder section and in alignment with said bore in said starboard lower cylinder section, and wall means defining a cavity extending in said second surface of said starboard middle cylinder section and communicating with said bore in said starboard middle cylinder section and extending to said third surface of said starboard middle cylinder section and partially defining a second exhaust passage, a port upper cylinder section including a first surface fixed to said second surface of said port middle cylinder section, a second surface in spaced parallel relation to said first surface of said port upper cylinder section, a third surface in inclined relation to said second surface of said port upper cylinder section and in co-planar relation to said third surfaces of said port and starboard middle cylinder sections, a cylindrical bore extending between said first and second surfaces of said port upper cylinder section and in alignment with said cylindrical bore in said port middle cylinder section, and wall means defining a cavity extending in said first surface of said port upper cylinder section and communicating with said bore in said port upper cylinder section and extending to said third surface of said port upper cylinder section and partially defining said first exhaust passage, a starboard upper cylinder section including a first surface fixed to said second surface of said starboard middle cylinder section, a second surface in spaced parallel relation to said first surface of said starboard upper cylinder section, a third surface in inclined relation to said second surface of said starboard upper cylinder section and in co-planar relation to said third surfaces of said port and starboard middle cylinder sections and said port upper cylinder section, a cylindrical bore extending between said first and second surfaces of said starboard upper cylinder section and in alignment with said cylindrical bore in said starboard middle cylinder section, and wall means defining a cavity extending in said first surface of said starboard upper cylinder section and communicating with said bore in said starboard upper cylinder section and extending to said third surface of said starboard upper cylinder section and partially defining said second exhaust passage, an exhaust manifold section having a first surface fixed to said third surfaces of said port and starboard middle and upper sections, and wall means defining a cavity extending in said first surface of said claim exhaust manifold section and partially defining said first and second exhaust passages, and a water jacket cover section having a first surface fixed to said port and starboard upper cylinder sections, and a cover surface extending from said first surface of said water jacket section and in spaced and covering relation to said exhaust manifold section.

5,054,538
AUTOMATIC FOUNDRY PLANT
Peter Ibsen, Charlottenlund, Denmark, assignor to Dansk Industri Syndikat A/S, Denmark
Filed May 21, 1990, Ser. No. 525,707
Claims priority, application Denmark, May 19, 1989, 2454/89
Int. Cl.[5] B22P *25/00*
U.S. Cl. 164—154 **9 Claims**



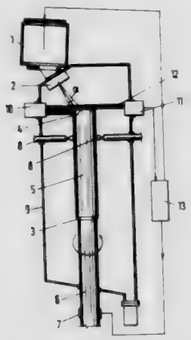
1. An automatic foundry plant comprising:
a plurality of work stations, at least one conveyor for conveying molds and cores, and castings produced by a casting process carried out at the foundry plant, between and from said work stations, said work stations comprising a mold production and preparation station and a pouring station in which molten metal is poured into the molds arriving from the mold production and preparation station, and an extraction station in which molds and castings are separated from each other, said extraction station being connected to water dosing units for maintaining the required moisture content of the mold material produced at separation, which material is returned to the mold production and preparation station, and said plant further comprising parameter recording means, associated with at least one of said stations, for recording those parameters with respect to each individual formed mold that relate to at least the moisture content of the material of the formed mold and for producing an output in accordance with the parameters thus recorded, and control means, associated with the water dosing units, for, at least near to the time when the individual mold in question is moved into the extraction station, controlling the water dosing units in dependence upon the parameters related to the moisture content.

5,054,539
PROCESS AND APPARATUS FOR THE MANUFACTURE OF AXIALLY SYMMETRICAL BODIES
Franz Keutgen, Lissendorf; Erich Willems, Oberstadtfeld, and Siegbert Wagner, Dahlem, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Düsseldorf, Fed. Rep. of Germany
Filed May 15, 1990, Ser. No. 523,795
Claims priority, application Fed. Rep. of Germany, May 16, 1989, 3916115
Int. Cl.[5] B22D *23/00*
U.S. Cl. 164—457 **11 Claims**

1. A process for manufacturing axially symmetrical bodies from molten metal droplets comprising:
rotating a base;
spraying molten metal droplets and collecting the metal droplets on the rotating base in a spray plane, whereby the base is covered with said collected metal droplets after one complete revolution of the base;
continuously measuring the position of the spray plane during the spraying of the metal droplets; and
moving the base relative to the spray plane, while rotating the base, so as to form a body having axial symmetry on the base by further collection of metal droplets.

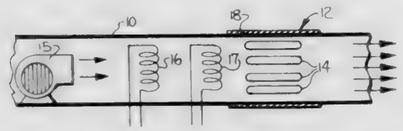
VOL 1131 ISS 2 OCT 8 1991 UMI

7. An apparatus for the manufacture of axially symmetrical bodies by spraying molten metal droplets and collecting the metal droplets on a rotating base comprising:
a housing;
a reservoir for molten metal;
a nozzle in the housing for discharging molten metal from the reservoir as molten metal droplets;
a base in the housing, said base spaced from the nozzle to receive and collect sprayed molten metal droplets in a spray plane, which collected molten metal droplets solidify to form a body;



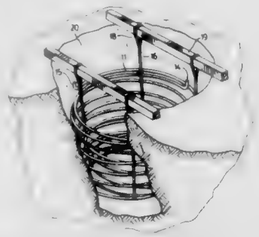
means for rotating the base;
means for transporting the base for movement relative to the spray plane;
means for controlling the axial symmetry of a body formed on the base by collection of said molten metal droplets; and
wherein the means for controlling the axial symmetry of said body comprises an optical transmitter-receiver unit located such that the spray plane lies in the optical path of the transmitter, and a controller communicating with the receiver to process measurements from the receiver.

5,054,540
THERMAL ENERGY STORAGE APPARATUS
Peter Carr, Cary, N.C., assignor to Instatherm Company, Cary, N.C.
Division of Ser. No. 117,239, Nov. 5, 1987, Pat. No. 4,922,998. This application Mar. 21, 1990, Ser. No. 496,605
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] F28D *20/00*
U.S. Cl. 165—10 **16 Claims**



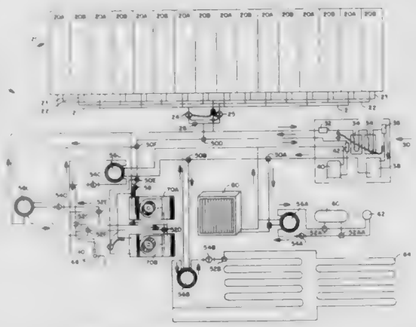
1. A thermal energy storage apparatus adapted to transfer heat to or from a moving air stream, and comprising
an air duct,
a plurality of individual sealed containers mounted within said air duct such that air flowing through said duct is adapted to pass across each of said containers in a heat exchange relationship, and
an energy storage medium disposed in each of said containers, said medium including water and a gas capable of forming a gas hydrate with the water at a transition temperature which is above 32° F.

5,054,541
GROUND COIL ASSEMBLY
Benjamin A. Tripp, Orangeville, Canada, assignor to Robert Rumball, North York, Canada
Filed Nov. 6, 1990, Ser. No. 609,737
Int. Cl.[5] F28D *21/00*
U.S. Cl. 165—45 **4 Claims**



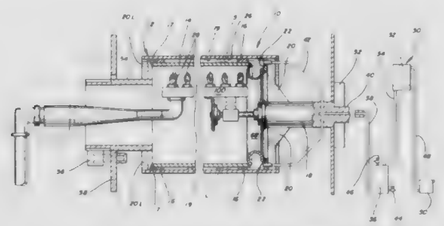
1. A prefabricated ground coil assembly for use in association with a ground source heat pump, comprising:
a flexible pipe configured as a double spiral defined by first and second sets of pipe turns, the outermost turns of said first and second sets providing, respectively, an inlet connection and an outlet connection for heat exchange fluid, and
flexible constraining means interconnecting adjacent turns of said first and second sets,
the assembly being extendible axially from a nested annular configuration to an elongate coniform configuration in which the turns of said sets are supported in predetermined spaced relation by said flexible constraining means.

5,054,542
HEAT TRANSFER SYSTEM
Tommis E. Young; John L. Curtis, and Dennis A. Barnett, all of Las Vegas, Nev., assignors to Thermotaxis Development, Inc., Las Vegas, Nev.
Filed Sep. 11, 1989, Ser. No. 405,735
Int. Cl.[5] F25B *27/00;* **G04D** *23/00*
U.S. Cl. 165—58 **44 Claims**



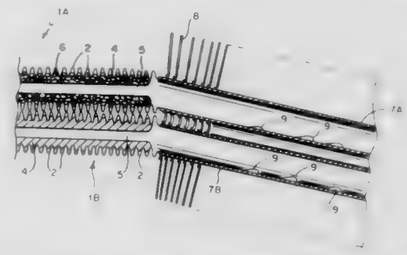
1. A heat transfer system comprising:
a) a series of environmental panels for supplying heat values from the ambient atmosphere to a heat transfer medium circulated within the panels,
b) a heat transfer medium handling station downstream of the environmental panels having an accumulator and a compressor joined together in fluid communication,
c) a first helix coil downstream of the compressor for transferring heat values from the heat transfer medium to water for use in heating a swimming pool,
d) a second helix coil downstream of the compressor for transferring heat values from the heat transfer medium to water for use in a hydronic hose for heating the floors of a building,
e) a third helix coil downstream of the compressor for transferring heat values from the heat transfer medium to water for use in a hot water tank and for use in an air handler,
f) an air handler downstream of the third helix coil for transferring heat values from the water to air for heating a building, and
g) a receiver downstream of the helix coils for receiving the heat transfer medium after the heat values have been transferred therefrom.

5,054,543
EXPANSION JOINT FOR ROTARY IRONERS
Ronald Thomas, Chicago, and Kasimir Kober, Niles, both of Ill., assignors to Chicago Dryer Company, Chicago, Ill.
Filed Jan. 24, 1990, Ser. No. 469,325
Int. Cl.[5] F28F *5/02;* **F26B** *11/04*
U.S. Cl. 165—89 **8 Claims**



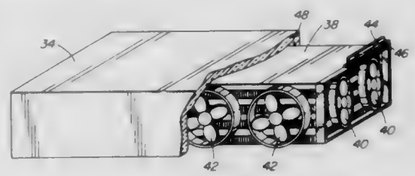
1. An ironer construction comprising substantially concentric cylinders of different diameters having opposed longitudinal ends and defining a cylindrical passageway therebetween through which a fluid heating medium may circulate; means secured to one longitudinal end of each of said cylinders for securing said cylinders together and maintaining a fluid-tight seal between said cylinders at said one longitudinal end of each of said cylinders; heating means for heating the interior of the cylinder of smaller diameter whereby heat may be conducted through the smaller-diameter cylinder to a fluid heating medium in said cylindrical passageway; means for allowing longitudinal movement of the smaller diameter cylinder relative to the larger diameter cylinder while maintaining a fluid-tight seal between said cylinders at second longitudinal ends of said cylinders oppositely disposed to said one ends; said means for allowing longitudinal movement comprising a toroidal segment disposed within said larger diameter cylinder and having substantially concentric first and second free edges defining a slot about the circumference of said segment; said toroidal segment being welded in fluid-sealing engagement to the second longitudinal end of the smaller diameter cylinder along said segment first free edge; an anchor ring having concentric inner and outer peripheries and welded along its outer periphery in fluid-sealing engagement to the inner periphery of the larger diameter cylinder, and said toroidal segment being welded along tis second free edge in fluid-sealing engagement to the inner periphery of said anchor ring whereby movement of said smaller diameter cylinder relative to said larger diameter cylinder occurring during expansion of said smaller diameter cylinder results in flexing of said toroidal segment as the slot thereof is narrowed.

5,054,544
SORPTION CONTAINER FOR SOLID SORPTION MEDIUM
Peter Maier-Laxhuber, Munich, and Fritz Kaubek, Gauting, both of Fed. Rep. of Germany, assignors to Zeo-Tech (Zeolith-Technologie Gmbh), Munich, Fed. Rep. of Germany
Filed Jan. 12, 1990, Ser. No. 464,143
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1989, 3901558
Int. Cl.[5] F25B *17/12*
U.S. Cl. 165—104.12 **15 Claims**



1. A sorption container for containing sorption medium capable of adsorbing an operating medium, said sorption container comprising:
a flexible corrugated hose having an inner space and a plurality of waves formed therealong wherein the flexible corrugated hose flexes when a negative pressure is exerted upon the interior of the flexible metal corrugated hose; and
sorption medium filler disposed inside of said corrugated hose, and filling at least a portion of said waves.

5,054,545
HEAT EXCHANGER FOR A SEALED CABINET
Allen Ghaemian, Atlanta, Ga., assignor to Northern Telecom Limited, Montreal, Canada
Filed Dec. 4, 1990, Ser. No. 621,987
Int. Cl.[5] F28F *3/02;* **H01L** *23/467*
U.S. Cl. 165—104.33 **2 Claims**



1. A sealed cabinet for housing heat generating electronic equipment, said cabinet comprising:
a door on a face of the cabinet for access to the equipment, the door sealingly engaging the cabinet in a closed position;
a head space within the cabinet and above the door;
a heat exchanger mounted in the head space;
a plurality of louvered openings in opposite faces of the cabinet for the passage of outside air through the heat exchanger;
wherein the heat exchanger includes:
a plurality of longitudinal air channels communicating with the louvered openings;
a plurality of transverse air channels, the longitudinal and transverse air channels being formed by a plurality of layers of convoluted fins, wherein each of the layers is oriented approximately orthogonally with respect to an adjacent layer;
a first plurality of fans for forcing outside air through the

longitudinal air channels and the louvered openings;
a second plurality of fans for forcing air within the sealed cabinet through the transverse air channels;
a separating sheet disposed between adjacent layers;
a layer of insulation lining inner faces of the head space adjacent the faces having the plurality of louvered openings; and
an air filter disposed between the louvered openings and the first plurality of fans;
wherein the first plurality of fans are adjacent each longitudinally opposed face of the heat exchanger and the second plurality of fans are adjacent each transversely opposed face of the heat exchanger.

5,054,546

VAPORIZER FOR GENERATING A MIXTURE OF SUPERHEATED STEAM AND FUEL VAPOR

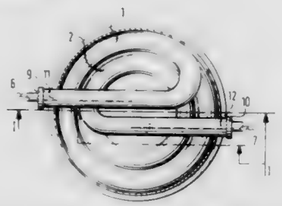
Siegfried Förster, Alsdorf, Fed. Rep. of Germany, assignor to Forschungszentrum Jülich GmbH, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 311,839, Feb. 16, 1989, Pat. No. 5,002,481, which is a continuation-in-part of Ser. No. 84,337, Aug. 15, 1987, abandoned. This application Jul. 19, 1990, Ser. No. 555,256

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1989, 3924012

Int. Cl.[5] F23D *11/44*

U.S. Cl. 165—110 **3 Claims**



1. Vaporizer for generating a combustible mixture of water vapor and superheated steam;
comprising
means (**5**) defining an outlet channel (**5**) for a flow (**4**) of combustion effluent gas;
a generally helical steam generator (**1**) located in said channel (**5**);
a generally helical mixing conduit (**2**) located in said channel (**5**);
a steam conduit (**3**) connecting one end of said steam generator (**1**) to said mixing conduit (**2**);
a water supply line (**6**) terminating in an injection nozzle (**11**) located in said steam generator;
a fuel supply line (**7**) terminating in an injection nozzle (**12**) located in said steam conduit (**3**); and
means (**15**, **16**; **17**, **18**; **19**) for metering controlled amounts of water and fuel under pressure into said water supply and fuel supply lines (**6**,**7**), said means for metering including a geared pump (**15**, **16**) and a magnetic valve (**17**, **18**) in each of said water supply and fuel supply lines (**6**, **7**).

5,054,547

VERTICAL TUBE HEAT EXCHANGER APPARATUS HAVING RESILIENT DISTRIBUTOR DEVICES AND A RESILIENT DISTRIBUTOR DEVICE THEREFOR

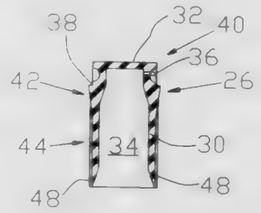
Kenneth R. Shipley, Memphis, Ind., assignor to Henry Vogt Machine Co., Louisville, Ky.

Filed Sep. 28, 1990, Ser. No. 589,278

Int. Cl.[5] F28D *3/02*

U.S. Cl. 165—115 **19 Claims**

1. A vertical tube heat exchanger apparatus comprising:
a shell;
a bottom tubesheet located in the shell proximate the bottom end of the shell, the bottom tubesheet being formed with a plurality of tube bottom end receiving apertures;
a top tubesheet located in the shell spaced above and parallel to the bottom tubesheet, the top tubesheet being formed with a plurality of tube top end receiving apertures equal in number to the number of tube bottom end receiving apertures, and each one of the tube top end receiving apertures being in alignment with a different one of the tube bottom end receiving apertures;
a plurality of parallel flow tubes extending between the top and bottom tubesheets, each tube having the open top end received in one of the tube top end receiving apertures of the top tubesheet and the open bottom end received in the aligned one of the tube bottom end receiving apertures of the bottom tubesheet; and,
a distributor having a generally cylindrical side wall defining an interior chamber coaxially inserted into the open top end of each tube, a plurality of ribs integrally formed on



the exterior surface of the cylindrical side wall extending longitudinally of the cylindrical side wall and projecting outwardly from the distributor side wall to provide an interference fit with the inside peripheral dimension of the tube open top end;
the distributor being fabricated of a material which is of sufficient resilience to be compressively deformed circumferentially of the distributor side wall to conform to irregularities in shape and size of the tube open top end, to create a continuous uninterrupted peripheral seal at the interface of the distributor side wall and the circumferential top edge of the tube open top end when the distributor is inserted in the tube open top end, and to recover the original circumferential size and shape of the distributor side wall when the distributor is removed from the tube open top end.

5,054,548

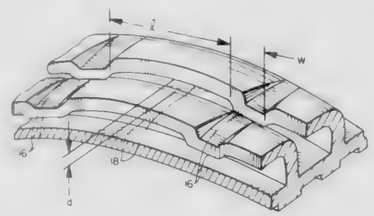
HIGH PERFORMANCE HEAT TRANSFER SURFACE FOR HIGH PRESSURE REFRIGERANTS

Steven R. Zohler, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 24, 1990, Ser. No. 602,539

Int. Cl.[5] F28F *1/36*

U.S. Cl. 165—133 **9 Claims**



1. A heat exchanger comprising;
a heat conductive base member for transferring heat from a heat source on one side thereof to a boiling fluid on the other side thereof;
a plurality of spaced apart fins extending from said other side of said base member, each of said fins having a base portion joined to said base member and a tip portion, said tip portions being bent over toward the next adjacent one of said fins to define a sub-surface channel between adjacent fins, said sub-surface channel having alternating closed sections where a length of said tip portion is bent over an additional amount so that said length of said tip portion contacts an adjacent fin, and, open sections wherein said bent over tip portion is spaced from said adjacent fin, each of said open sections having a cross sectional area of from 0.000220 square inches to 0.000440 square inches, and, the total open area of said open sections is from 14% to 28% of the total surface area of said other side.

5,054,549

HEAT EXCHANGER

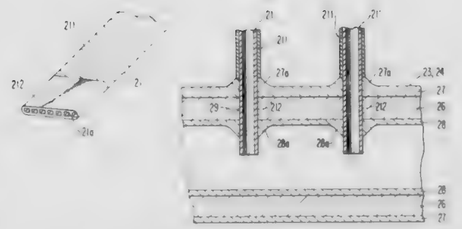
Kazuhiro Nakaguro, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Mar. 5, 1990, Ser. No. 487,877

Claims priority, application Japan, Mar. 6, 1989, 1-24727[U]

Int. Cl.[5] F28F *19/02*

U.S. Cl. 165—133 **34 Claims**



1. In a heat exchanger comprising a plurality of tubes having first and second open ends, first and second header pipes disposed at said first and second open ends, respectively, said first and second header pipes having a plurality of slots formed therein, said open ends of said tubes fixedly disposed through said slots such that the interior of each said tube is in fluid communication with the interior of said first and second header pipes, and a plurality of fin units disposed between said plurality of tubes, the improvement comprising:
each of said plurality of tubes coated with a layer of zinc, said layer of zinc extending throughout the exterior surfaces of said tubes except for first and second uncoated areas disposed adjacent each open end of said tubes.

11. In a refrigerant fluid circuit comprising a compressor, a heat exchanger, an accumulator, an expansion device and an evaporator sequentially disposed, said heat exchanger comprising a plurality of tubes having first and second open ends, first and second header pipes disposed at said first and second open ends, respectively, said first and second header pipes having a plurality of slots formed therein, said open ends of said tubes fixedly disposed through said slots such that the interior of each said tube is in fluid communication with the interior of said first and second header pipes, and a plurality of fin units disposed between said plurality of tubes, the improvement comprising:
each of said plurality of tubes coated with a layer of zinc, said layer of zinc extending throughout the exterior surfaces of said tubes except for first and second uncoated areas disposed adjacent each open end of said tubes.

5,054,550

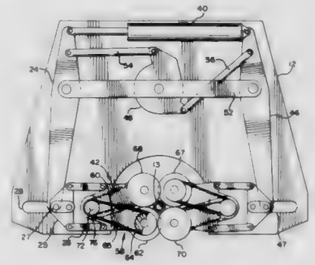
CENTERING SPINNING FOR DOWN HOLE TUBULARS

Lee R. Hodge, Corsicana, Tex., assignor to W-N Apache Corporation, Wichita Falls, Tex.

Filed May 24, 1990, Ser. No. 528,246

Int. Cl.[5] B25B *17/00*

U.S. Cl. 166—78 **31 Claims**



1. A centering spinner for centering and spinning down hole tubulars having a range of diameters comprising:
a frame capable of admitting a down hole tubular therein, and
a plurality of convergeable roller assemblies coupled to said frame for pivotal independent movement in relation therewith whereby a down hole tubular having a diameter within a large range of diameters can be centered and spun by said plurality of convergeable roller assemblies

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5,054,551

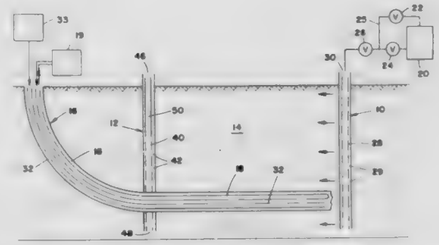
IN-SITU HEATED ANNULUS REFINING PROCESS

John H. Duerksen, Fullerton, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Aug. 3, 1990, Ser. No. 562,779

Int. Cl.[5] E21B *43/24*

U.S. Cl. 166—272 **20 Claims**



1. A method of assisting the recovery of viscous petroleum from a petroleum-containing formation comprising:
(a) forming a hole through a petroleum-containing formation to provide a flow path in said formation for flow of fluid through at least a portion of said formation;
(b) flowing a hot fluid through said flow path out of contact with said formation to heat viscous petroleum in said formation outside said flow path to reduce viscosity of at least a portion of said petroleum adjacent to the outside of said flow path to provide a potential passage for fluid flow through said formation adjacent the outside of said flow path; and
(c) injecting a drive fluid and a hydrogen-containing gas

through said passage at a temperature sufficient to promote hydrogenation of at least a portion of the petroleum in said formation zone to promote movement of at least a portion of the petroleum through said passage adjacent to the outside of said flow path to a recovery position for recovery from said formation.

5,054,552

BREAKER SYSTEM FOR AQUEOUS FLUIDS CONTAINING XANTHAN GUMS

Bobby E. Hall, Houston; Clarita A. Szemenyei, and D. V. Satyanarayana Gupta, both of The Woodlands, all of Tex., assignors to The Western Company of North America, The Woodlands, Tex.

Filed Aug. 31, 1990, Ser. No. 575,986
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 **7 Claims**

1. A process for gravel packing a well by injecting particles suspended in a thickened aqueous carrier fluid into the well and into contact with the formation at a matrix rate, said aqueous carrier fluid comprising:

(a) an aqueous liquid,

(b) as a thickening agent to increase the viscosity of the aqueous liquid, a viscosity increasing amount of xanthan gum, and

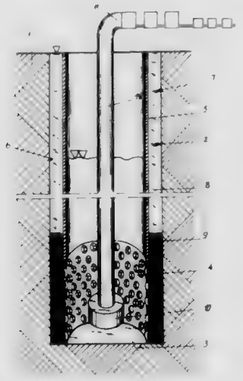
(c) as a breaker to reduce the viscosity of the fluid after the fluid has served its intended purpose as a carrier fluid, the combination comprising an effective amount of a mixture of at least two oxidizers, an organic acid, and at least two catalysts.

5,054,553

METHOD OF UNDERGROUND-WATER EXPLORATION DURING WELL-CONSTRUCTION BY HYDRAULIC-SYSTEM DRILLING

Gerhard Grotendorst, Borken, Fed. Rep. of Germany, assignor to Terratronic GmbH, Munich, Fed. Rep. of Germany

PCT No. PCT/DE87/00558, § 371 Date Aug. 1, 1989, § 102(e) Date Aug. 1, 1989, PCT Pub. No. WO88/04352, PCT Pub. Date Jun. 16, 1988
PCT Filed Nov. 29, 1987, Ser. No. 392,963
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1986, 3641306; Apr. 23, 1987, 3713577
Int. Cl.[5] E21B *43/04, 43/10*
U.S. Cl. 166—278 **5 Claims**



1. A method of exploring underground water comprising the steps of:

drilling a longitudinal bore extending downwardly in subterranean strata from a ground surface to a water-bearing stratum, said bore being formed with an inner peripheral wall and a bottom;

inserting a filter-pipe segment having an upper end into said bore and connecting an elongated extension-pipe segment thereto at said upper end and extending upwardly toward said surface, said segments forming an annular space directly with said inner peripheral wall;

filling said annular space with a filtering layer including a filter sand having a grain size of 0.3 mm to 0.7 mm or 0.7 mm to 1.2 mm to a level higher than said upper end of said filter-pipe segment so that said filtering layer of said filter sand completely bridges between said wall and said filter-pipe segment over an entire length of the filter-pipe segment;

introducing flushing water mixed with flushing additives and entraining fine-grain particles forming sealing material into said annular space above said filtering layer;

introducing a pump into an interior of said filter-pipe segment and pumping water out of said filter-pipe segment with said pipe to draw said flushing water through said filter layer and form an annular seal by deposition of said sealing material on at least a surface of said filtering layer located higher than said upper end of said filter-pipe segment; and

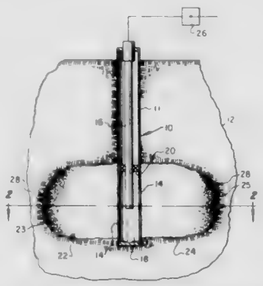
thereafter slowly pumping out of said segment a water to be analyzed originating solely from said water-bearing stratum in the vicinity of said filter-pipe segment and penetrating into said interior of said filter-pipe segment through said filtering layer, said water originating from the water-bearing stratum being hydraulically sealed from said flushing water by said seal.

5,054,554

RATE CONTROL METHOD FOR HYDRAULIC FRACTURING

C. Mark Pearson, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 13, 1990, Ser. No. 552,404
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—280 **9 Claims**



1. A method of forming a fracture in an earth formation, said fracture extending from a wellbore, said fracture being formed for the eventual production of fluids from said formation through the fracture and into the wellbore, said method comprising the steps of:

pumping a liquid into the wellbore at a pressure sufficient to extend a fracture having opposed faces and a tip portion into said formation until a predetermined fracture length is indicated;

injecting a liquid containing a proppant of relatively low concentration and decreasing the rate of injection to a rate approximately equal to the fluid leak off rate from said faces; and

injecting liquid containing higher concentrations of proppant than previously mentioned until screenout of said tip portion.

5,054,555

TENSION-ACTUATED MECHANICAL DETONATING DEVICE USEFUL FOR DETONATING DOWNHOLE EXPLOSIVE

Phillip T. Lalande, and W. Keith Acker, both of Lafayette, La., assignors to Technical Concepts, Inc., Lafayette, La.

Filed Nov. 21, 1990, Ser. No. 616,905
Int. Cl.[5] E21B *43/116*
U.S. Cl. 166—298 **9 Claims**



1. A method for performing an explosively initiate-operation downhole in a bore, comprising:

making up on a slick line a tool to include a latching device, an explosively initiated operator, a mechanically actuatable initiator for the explosively initiated operator, and a tension-cocked, spring-fired hammer;

lowering the tool into the bore until the latching device latches at a predetermined level;

thereafter, pulling an upward tension on the slick line to successively cock the hammer, compressing its spring, and releasing the hammer so that the spring accelerates the hammer against the initiator, thereby causing explosive initiation of the operator to provide the explosively initiated operation.

5,054,556

METHOD OF AND MEANS FOR OPERATING GEOTHERMAL WELLS

Yeshayahu Greitzer, Ramat Hasharon, and Lucient Y. Bronicki, Yavne, both of Israel, assignors to Ormat Turbines (1965) Ltd., Yavne, Israel

Filed May 17, 1990, Ser. No. 524,433
Int. Cl.[5] E21B *33/138, 43/27*
U.S. Cl. 166—302 **29 Claims**

1. A method for operating a geothermal well located in a geological formation, said method comprising the steps of:

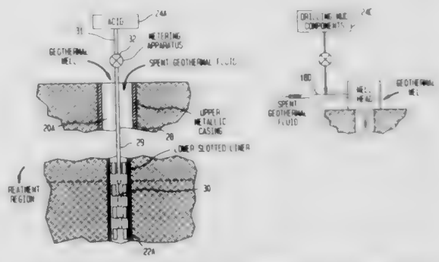
a) continuously supplying spent geothermal fluid to the well for effecting dissipation of the spent fluid in the geological formation; and

b) continuously adding concentrated acid to the spent geothermal fluid in the well such that the concentration of acid in the fluid is sufficient to increase the permeability of said geological formation.

10. A method for reducing leakage between an injection well that receives spent geothermal fluid and a production well that produces hot geothermal fluid, said method comprising the steps of:

a) inserting a conduit into the injection well to a depth consistent with the stratum at which leakage occurs between the injection well and the production well; and

b) pumping components of drilling mud into the conduit for effecting a flow of mud into said stratum for suppressing further leakage between the injection well and the production well.



5,054,557

DEVICE FOR EXTRACTING A LIQUID OUT OF A TUBE OF GREAT LENGTH

Christian Wittrisch, Rueil-Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

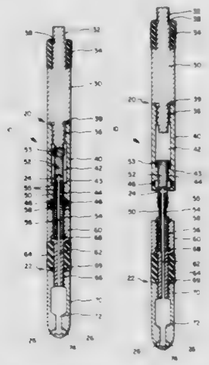
Filed Jun. 7, 1990, Ser. No. 533,751
Claims priority, application France, Jun. 7, 1989, 89 07632
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—309 **11 Claims**



1. A device for evacuating fluids out of a tube of great length closed at one first end and open at an opposite end, said tube being equipped with retractable means for immobilizing the tube in a well; said device comprising a mobile element the displacement of which towards the open end of the tube ejects the fluids outwardly and motor means for displacing the mobile element, an electric carrying cable for permanently con-

necting the mobile element with a surface installation, closing means which can be remotely controlled through said electric carrying cable in order to separate portions of the well on either side of the mobile element, means for measuring the pressure prevailing in the well on either side of the mobile element, means for generating a substitution gas on the mobile element and a lifting device connected to the cable for displacing the mobile element towards the open end at a velocity adapted to the outflow of gas released by the gas generating means.

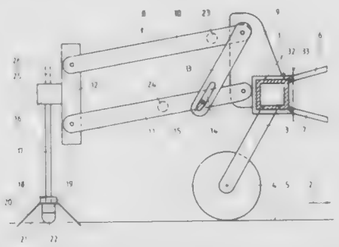
5,054,558
EQUALIZING BLANK VALVE APPARATUS AND METHODS
Michael R. Barneck, Rte. 1, Box 1538, Roosevelt, Utah 84066
Filed May 4, 1990, Ser. No. 518,446
Int. Cl.[5] E21B *23/03, 34/14, 43/12*
U.S. Cl. 166—373 **11 Claims**



1. An equalizing blank valve apparatus, comprising:
a first body member having a chamber therein;
a second body member having a first orifice, a second orifice, and a passageway therethrough communicating with the said first and second orifices, the second body member being configured such that a portion of the second body member including said first orifice is slidably insertable into the chamber in the first body member;
means cooperating with the first and second body members for substantially sealing said chamber in the first body member around said portion of the second body member including the first orifice when said portion of the second body member is inserted into the chamber in the first body member, thereby effectively sealing said first orifice and preventing unrestricted communication between said first and second orifices; and
means for maintaining said first orifice inside the chamber in the first body member, the means for maintaining said first orifice inside the chamber comprising a shear screw passing through the first body member and engaging the second body member.

10. A method for equalizing a pressure differential between a tubing and a casing in an underground well, the method comprising the steps of:
installing an equalizing blank valve apparatus in a sidepocket mandrel in the well, the sidepocket mandrel forming a part of the tubing, the equalizing blank valve apparatus comprising:
a first body member having a chamber therein;
a second body member having a first orifice, a second orifice, and a passageway therethrough communicating with the said first and second orifices, a portion of the second body member including said first orifice being slidably positioned inside the chamber in the first body member; and
means cooperating with the first and second body members for substantially sealing said first orifice when said portion of the second body member including the first orifice is positioned inside the chamber in the first body member;
latching onto the equalizing blank valve apparatus with a wireline valve pulling tool;
jarring the equalizing blank valve apparatus upward with the wireline valve pulling tool so as to cause said first orifice to slide out of the chamber in said first body member.

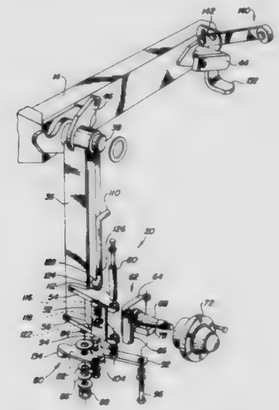
5,054,559
SOIL-WORKING MACHINE FOR PLANTS GROWN IN ROWS
Karl-Heinz Paul, Zur Wilde 8, D - 3590 Bad Wildungen-Wega, Fed. Rep. of Germany
Filed Jul. 6, 1990, Ser. No. 549,462
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922565
Int. Cl.[5] A01B *33/06, 33/28*
U.S. Cl. 172—59 **10 Claims**



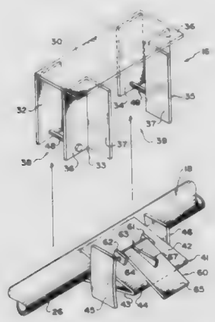
1. A cultivator for crops such as beets, maize, potatoes and similar crops, planted in rows in ground comprising: a machine frame mountable on a three-point hitch of a tractor; a plurality of chopping tools mounted on said machine frame; tool holders rotatable on vertical shafts, said chopping tools being detachable from said tool holders; common drive means for driving said shafts at substantially high speeds; transmission means between said drive means and said shafts, force from said drive means being distributed to said shafts through said transmission means; each chopping tool being rotated by one shaft and being mounted on a parallelogram; each chopping tool having at least one brush securable to one of said tool holders; said brush having bristles of flexible resilient material; said chopping tool having a frustoconical shape with an inside space; stop means within said inside space and resting against the ground at an adjustable level; said stop means being hemispherically shaped and exerting slight compacting action to the ground; means for adjusting said level relative to the chopping tool, said stop means being detachable from a center of the said chopping tool, said chopping tools being out of contact with said crops.

5,054,560
TRANSPORTING CASTER WHEELS
Daniel M. Foley, Des Moines, and Vernon E. Rettig, Bondurant, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Aug. 7, 1990, Ser. No. 564,015
Int. Cl.[5] A01B *73/00*
U.S. Cl. 172—248 **19 Claims**

1. In a wide agricultural implement adapted for towing forwardly through a field in a field-working position and in an endwise fashion for narrow transport, the implement having a plurality of transversely spaced lift wheel assemblies for raising and lowering the implement between transport and field-working positions and for facilitating endwise transport when the implement is raised, wherein the lift wheel assemblies include at least a first lift wheel arm, a caster wheel including a wheel spindle assembly, pivot means connecting the wheel spindle assembly to the arm for rocking about an upright axis to prevent side loading on the arm and wheel when the implement is turned while in the endwise transport position, the pivot means including hinge structure connecting the lower end of the arm with the wheel spindle assembly closely adjacent the center of the wheel, a caster control assembly including a control member pivotally connected to the arm and to the wheel spindle assembly for rocking with the spindle assembly, means for contacting the control member for limiting free castering of the wheel, and wherein the pivot means hinge structure includes a first hinge portion connected to the lower end of the arm, and the wheel spindle assembly includes a wheel spindle and a second hinge portion fixed to and closely adjacent to the wheel spindle and means pivotally connecting the hinge portions, and wherein the caster control assembly includes a drag link pivotally connected at one end to the control member and at the opposite end to the second hinge portion.

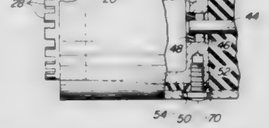


5,054,561
BRACKET FOR ATTACHMENT OF A GROUND WORKING TOOL ON A TOOL BAR
Raymond Bussiere, Vonda, Canada, assignor to High-Line Manufacturing Inc., Vonda, Canada
Filed Jan. 22, 1991, Ser. No. 644,290
Int. Cl.[5] A01B *73/00*
U.S. Cl. 172—674 **14 Claims**



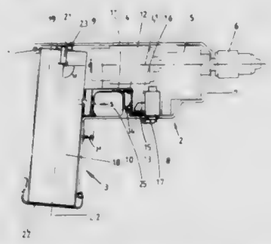
1. A ground working implement comprising a tool bar for transportation in a horizontal orientation across ground to be worked, a ground working tool for engagement with the ground and an attachment bracket for mounting the tool on the tool bar for applying a pulling force to the tool to draw the tool across the ground in a working operation thereon, the tool including an attachment link member extending from the tool forwardly into engagement with the bracket and including an elongate transverse portion generally transverse to the pulling force for engaging the bracket, the bracket defining a channel member for receiving the transverse portion therein having a front restraining wall means and a rear restraining wall means spaced sufficiently to receive the transverse portion therebetween, means for mounting the channel member on the tool bar with said front and rear wall means generally upright, spaced first and second limit means for defining upper and lower limits allowing limited up and down movement of the transverse portion within the channel member, the transverse portion being shaped to allow rotation of the transverse portion about a longitudinal axis of the transverse portion within said channel member and cooperating engagement means including a first engagement means on the transverse portion and a second engagement means on the channel member for preventing movement of the transverse portion relative to the length of the channel member.

5,054,562
VIBRATION-ISOLATED POWER TOOL
Thomas W. Honsa, and Thomas S. Honsa, both of Moline, Ill., assignors to Honsa Ergonomic Technologies, Inc., Rock Island, Ill.
Filed May 2, 1990, Ser. No. 518,000
Int. Cl.[5] B25D *9/04*
U.S. Cl. 173—139 **4 Claims**



1. A portable, powered hand-held tool of the type generating vibration during operation and having a rigid handle for association with a separate, rigid fore-and-aft work member including a rear part adjacent to the handle and wherein the handle has a fore part providing a rigid, generally cylindrical wall on a fore-and-aft axis and defining a cavity having a front opening, a hollow, cylindrical work-member-receiving cup of rigid material coaxially disposed within the cavity and having an annular wall including an outer surface of a diameter less than that of the handle wall and combining with the handle wall to provide an annular space, and vibration-isolating material contained within the annular space and locking the cup to and within the handle wall, characterized in that a rigid interlock element traverses at least part of the annular space and is embedded in at least part of the vibration-isolating material and has first and second opposite end portions, said first end portion being connected to the cup and the second end portion projecting into the wall, said wall having an opening therein exposed to the aforesaid annular space and of greater diameter than the element so as to provide a space surrounding the second end portion of the element, and said vibration-isolating material permanently filling the said last named space and adhered to the interior periphery of the wall opening and tightly surrounding the second end portion of the element.

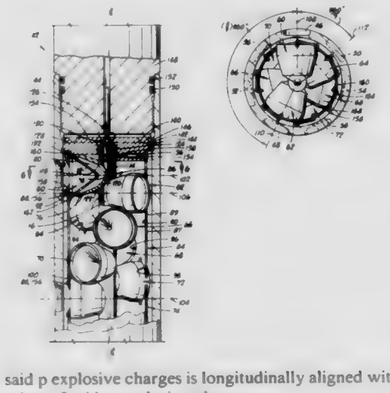
5,054,563
ELECTRICAL HAND TOOL
Jürgen Zapf, Salmtal, Fed. Rep. of Germany, assignor to Proxxon Werkzeug GmbH, Niersbach, Fed. Rep. of Germany
Filed Nov. 22, 1989, Ser. No. 441,031
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1988, 3839840
Int. Cl.[5] H02K *7/14*; **B25G** *1/00*
U.S. Cl. 173—163 **14 Claims**



1. An electrical hand tool, powered by at least one battery for use as a screwdriver and/or drill, comprising:
a housing including a drive housing component and a handle housing component, said drive housing component defining a drive compartment and a drive housing subcompartment, said drive compartment being connected to a chuck at one end of said drive compartment, said handle housing component joining said drive housing component subcompartment at a location, said location being adjacent an end of said drive housing component, opposite said chuck, said handle housing component and said drive housing component each having longitudinal axes which are fixed, with respect to one another at an angle, a motor and a gear box being positioned in said drive compartment, a switch positioned in said drive housing component mounted between said subcompartment and the said chuck, a trigger connected to said switch and connected to said drive housing component and mounted within grasp of said handle housing component; said handle housing component defining a space in communication with said subcompartment, said at least one battery being positionable in said handle housing space extending into said subcompartment.

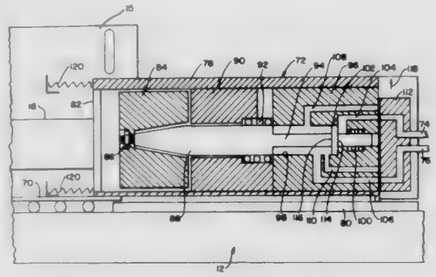
5,054,564
WELL PERFORATING APPARATUS
Michael L. Oestreich, and Norman S. Pollard, both of Katy, Tex., assignors to Halliburton Company, Duncan, Okla.
Continuation of Ser. No. 865,239, May 19, 1986, Pat. No. 4,726,431. This application Jan. 18, 1988, Ser. No. 145,583
Int. Cl.[5] E21B *43/117*
U.S. Cl. 175—4.6 **5 Claims**

1. A perforating apparatus, comprising:
a perforating gun body;
a plurality, p, of explosive charges, where p is an odd whole number greater than 4; and
carrier means, disposed in said perforating gun, for carrying said p explosive charges so that a majority of said p explosive charges are disposed on no more than half of said perforating apparatus thereby permitting directional firing thereof, said carrier means including a longitudinal section of length h in which said p explosive charges are retained so that said p explosive charges define multiple spirals about said section within the length h wherein at most one of said p explosive charges is bisected by any one transverse plane of said section and further wherein none of



said p explosive charges is longitudinally aligned with any other of said p explosive charges.

5,054,565
STEERING MECHANISM FOR A SUBSOIL BORING APPARATUS
Frank R. Kinnan, Camas Valley, Oreg., assignor to Underground Technologies, Inc., Byron, Calif.
Filed May 25, 1990, Ser. No. 528,872
Int. Cl.[5] E21B *11/02*
U.S. Cl. 175—19 **5 Claims**

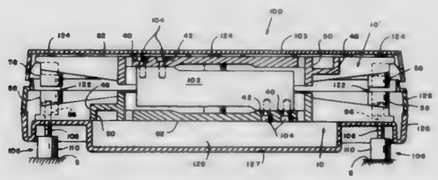


1. A subsoil boring apparatus comprising:
a rotatable, steerable boring assembly;
motor means for producing rotary motion;
pipe string means coupled to said motor means and said boring assembly to import rotation thereto; and
impacting means coupled to said motor means to apply impact forces to said pipe string means to improve the steerability of said boring assembly
wherein only one of said motor means and said impact means can be applied to said pipe string means at one time.

5,054,566
WEIGHING SCALE WITH IMPROVED DAMPING OF OSCILLATIONS
Gerald C. Freeman, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jul. 11, 1990, Ser. No. 550,930
Int. Cl.[5] G01G *21/10*
U.S. Cl. 177—184 **9 Claims**

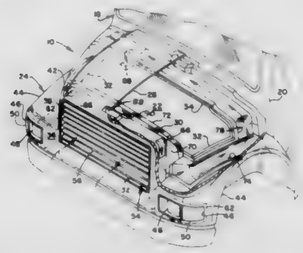
1. A weighing cell for determining the weight of an object, comprising:
(a) a base;

(b) first damping means operatively positioned between said base and a mechanical ground;
(c) a load cell supported by said base;
(d) means for supporting a platform, said platform supporting means being supported by said load cell;
(e) a platform for supporting such object, said platform being supported by said platform supporting means; and
(f) second damping means operatively positioned between said platform and said platform supporting means;
wherein said first damping means is chosen to substantially dampen the oscillations of a mass spring system consisting



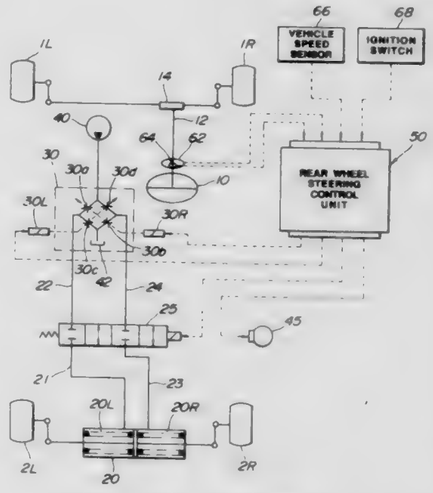
of a spring equivalent in compliant effect to said load cell, said first damping means and said second damping means and a mass equal to the combined mass of the heaviest object to be weighed and of the weighing cell and said second damping means is chosen to substantially dampen the oscillations of a mass spring system consisting of a spring equivalent in compliant effect to said load cell, said first damping means and said second damping means and a mass equal to the combined mass of the weighing cell and of an object having a mass that is substantially less than the mass of said heaviest object.

5,054,567
TRUCK HOOD REINFORCEMENT SYSTEM
Lawrence A. Hoffman, Hoagland, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.
Filed Jun. 30, 1989, Ser. No. 374,500
Int. Cl.[5] B60K *11/00*
U.S. Cl. 180—68.2 **12 Claims**



1. In a vehicle hood of the type disposed to open forwardly of said vehicle and pivot about a horizontal axis to expose an engine compartment thereof, said hood having a plastic composite exterior skin defining a portion of said engine compartment, said skin including a forwardly located generally vertical portion defining an ambient air inlet to said engine compartment, and a generally vertical plastic composite front reinforcement member bonded to the inner side of said skin adjacent said vertical portion thereof, said front reinforcement member further defining an ambient air inlet passage between said ambient air inlet and said engine compartment, the improvement comprising grillework integrally formed in said front reinforcement member within said ambient air inlet passage.

5,054,568
AUXILIARY STEERING CONTROL APPARATUS
Yasuhiro Shiraishi, Atsugi City, and Yasuki Ishikawa, Sagamihara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 3, 1990, Ser. No. 518,727
Claims priority, application Japan, May 18, 1989, 1-124973
Int. Cl.[5] B62D *5/06, 7/06*
U.S. Cl. 180—140 **7 Claims**



1. An auxiliary steering control apparatus for use with a motor vehicle having a steering handle operable to provide a driver's vehicle steering demand, the apparatus comprising:
first sensor means sensitive to a driver's vehicle steering demand;
second sensor means sensitive to a vehicle speed; and
a control unit coupled to the first and second sensor means, the control unit including means for sampling the sensed vehicle speed at time intervals, means for calculating a vehicle speed change between a new value of the sensed vehicle speed and a last value of the sensed vehicle speed, means for calculating a control vehicle speed value which is equal to the new vehicle speed value when the calculated vehicle speed change is less than a limit value and is equal to the last vehicle speed value plus the limit value when the calculated vehicle speed change exceeds the limit value, means for producing a failure signal when a difference between the new vehicle speed value and the control vehicle speed value exceeds a predetermined value, means for performing an auxiliary steering operation to provide an oversteer and understeer characteristic when the vehicle moves in a curve in the absence of the failure signal, means for performing an auxiliary steering operation to provide an understeer characteristic when the vehicle moves in a curve in the presence of the failure signal, means for calculating a front wheel steering angle θF based on the sensed driver's vehicle steering demand, means for calculating a first constant K as a function of the control vehicle speed to provide an understeer characteristic to the vehicle, means responsive to the failure signal for calculating a target value θR for rear wheel steering angle value as $\theta R = K \times \theta F$, and means for performing the auxiliary steering operation to provide the calculated rear wheel steering angle.

5,054,569

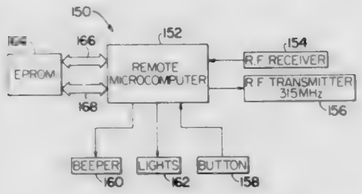
REMOTE VEHICLE STARTING SYSTEM

Steven S. Scott, Caribou, Me.; Robert W. Franklin, Farmington, Conn., and Manfred Davis, New York, N.Y., assignors to Comfort Key Corporation, New Britain, Conn.

Continuation-in-part of Ser. No. 78,079, Jul. 27, 1987, abandoned. This application Aug. 23, 1988, Ser. No. 236,295

Int. Cl.[5] B60T *7/16*

U.S. Cl. 180—167 **37 Claims**



1. A system for use in selectively operating components of a vehicle, said system comprising:

an apparatus remote from the vehicle, said apparatus including

an input means for providing signals indicative of a desired operational state of the vehicle components;

a digital controller for generating command signals from said input signals and for generating, from decoded component status signals, signals indicative of the operational state of the vehicle components;

a transmitter means receiving said command signals for encoding and providing radio frequency transmission thereof;

a receiver means for receiving and decoding said encoded status signals;

a means for displaying said engine and accessory operational state signals; and

an apparatus affixed to the vehicle, said apparatus including

a receiver means for receiving and decoding said digitally encoded command signals;

a means configured with the vehicle components for providing signals indicative of the operational state thereof;

a digital controller for generating component status signals from said operational state signals, said controller further for providing component control signals in dependence on said received command signals;

a transmitter means receiving said component status signals, for encoding and providing radio frequency transmission thereof; and

a means for operating the vehicle's components in dependence on said control signals;

said vehicle digital controller, during a first time period, further not responding to command signals subsequent to a first received command signal until the expiration of said first time period unless said operational state signal generation means provides signals corresponding to said desired vehicle operational state.

5,054,570

CRUISE CONTROL APPARATUS FOR VEHICLE

Yasuo Naito, and Hiroyuki Kouzuki, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1991, Ser. No. 679,126

Claims priority, application Japan, Dec. 24, 1988, 63-327074

Int. Cl.[5] B60K *31/00*

U.S. Cl. 180—170 **4 Claims**

1. A cruise control apparatus for a vehicle having an engine with a throttle valve, a brake system and an actuator for controlling the opening degree of the throttle valve, said cruise control apparatus comprising:

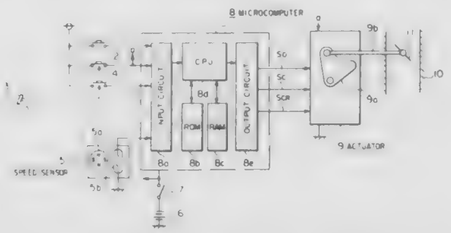
a speed sensor for sensing the speed of a vehicle;

cruise control setting means for setting cruise control;

a first switch (2) operatively connected with the brake system in such a manner that it turns on and off the power supply to the actuator in response to brake release and application, respectively;

a second switch (4) for cancelling the setting of cruise control;

fault detecting means for detecting a fault in either one of said first and second switches when said fault continues



for more than a time period sufficient to determine that an application of the brake is not inadvertent and when the speed of the vehicle sensed by said speed sensor is greater than a predetermined non-zero level, said fault detecting means generating a fault detection signal when such a fault is detected; and

cruise control inhibiting means for inhibiting said cruise control setting means from setting cruise control when it receives the fault detection signal from said fault detecting means.

5,054,571

OIL TANK DEVICE FOR MOTORCYCLE

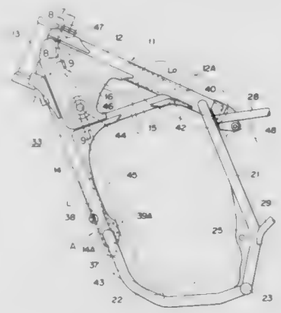
Masao Takasaka, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jan. 23, 1990, Ser. No. 468,504

Claims priority, application Japan, Jan. 31, 1989, 1-21156

Int. Cl.[5] G62K *11/08*

U.S. Cl. 180—219 **6 Claims**



1. An oil tank device for storing engine oil therein, mounted upon a body frame of a motorcycle which is provided with a head pipe for mounting a front wheel fork of said motorcycle, and frame members for mounting an engine of said motorcycle, comprising:

a tank rail connected to said head pipe and formed as a tubular member which is provided with an inner hollow portion and a lower end portion;

a down tube connected to said head pipe so as to extend downwardly therefrom, and which is formed as a tubular member which is provided with an inner hollow portion and a lower end portion;

a bridge frame connected to said tank rail and said down tube and which is formed as a tubular member which is provided with an inner hollow portion;

front reinforcements connected to bilateral sides of said tank rail, said down tube, and said bridge frame so as to define an inner space between said front reinforcements;

said lower end portions of said tank rail and said down tube having wall thicknesses which gradually increase in the downward direction so as to permit said frame members of said body frame to be welded at the thickest portions of said lower end portions thereof so as to substantially eliminate stress forces impressed upon said frame members, said tank rail, and said down tube by means of welding operations; and

means, comprising oil passageways, for fluidically connecting said inner space formed between said front reinforcements with said respective inner hollow portions of said tank rail, said down tube, and said bridge frame, provided within said thickest portions of said lower end portions of said tank rail and said down tube so as to prevent weakness within said tank rail and said down tube when said oil passageways are formed within said tank rail and said down tube

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5,054,572

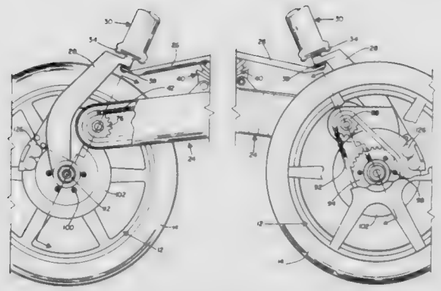
FRONT WHEEL DRIVE SYSTEM FOR A MOTORCYCLE

James G. Parker, 229 Anita Pl., Santa Fe, N. Mex. 87501

Filed Jun. 20, 1990, Ser. No. 541,274

Int. Cl.[5] B62K *11/12*

U.S. Cl. 180—224 **28 Claims**



1. A front wheel drive system for a motorcycle having a motorcycle body and a front wheel, comprising:

an arm having a forward end and a rear end, said arm being hinged at said rear end to said motorcycle body and extending generally forwardly therefrom, said arm extending along one side of said front wheel of said motorcycle and being spaced outwardly therefrom sufficiently to allow for steering motion of said front wheel;

an upright kingpin extending along the same side of said front wheel as said arm, said kingpin being oriented at a rake angle with respect to said front wheel; said forward end of said arm being connected for universal pivotal motion to said kingpin;

said arm supporting a drive means extending its length and operably connecting a takeoff drive shaft extending from said motorcycle body with a forward drive shaft extending transversely from said journalled in said forward end of said arm, said forward drive shaft being connected through a constant velocity joint to a wheel drive means mounted on said kingpin, said wheel drive means including a kingpin sprocket journalled to said kingpin and an axle assembly including a wheel sprocket, said wheel sprocket and said kingpin sprocket being connected by a wheel drive chain extending along said kingpin, said wheel drive means thereby connecting said constant velocity joint with said front wheel so as to transmit power from said forward drive shaft to said front wheel;

whereby power may be continuously transmitted directly to said front wheel while also allowing said front wheel to undergo limited rotational and translational displacement due to steering rotation and suspension travel.

5,054,573

VEHICLE WITH MULTIPLE DRIVEN AXLES

John S. Bennett, Leamington Spa, United Kingdom, assignor to Massey-Ferguson Services N.V., Netherlands Antilles

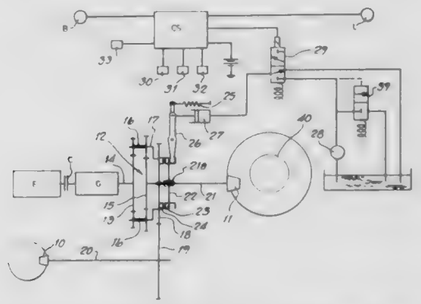
PCT No. PCT/GB89/00948, § 371 Date Mar. 30, 1990, § 102(e) Date Mar. 30, 1990, PCT Pub. No. WO90/01430, PCT Pub. Date Feb. 22, 1990

PCT Filed Aug. 14, 1989, Ser. No. 469,411

Claims priority, application United Kingdom, Aug. 13, 1988, 8819325

Int. Cl.[5] B60K *17/35*

U.S. Cl. 180—244 **15 Claims**



1. A four wheel drive system for a vehicle comprising:

a prime mover;

front and rear axle drive shafts;

inter-axle differential means connected to said prime mover for rotating said front and rear axle drive shafts, said inter-axle differential means being operable in a locked mode, wherein said front and rear axle drive shafts are locked for rotation at the same speed, and an unlocked mode, wherein said front and rear axle drive shafts are capable of rotating at different speeds;

front axle means connected to said front axle drive shaft for rotating left and right front wheels;

rear axle means connected to said rear axle drive shaft for rotating left and right rear wheels;

independently operable left and right brakes for independently braking the rotation of said left and right rear wheels, respectively; and

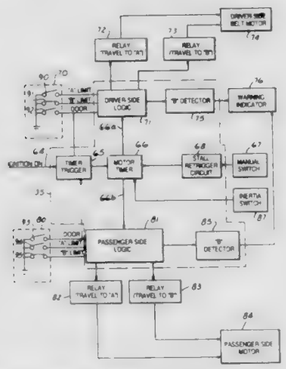
means responsive to the concurrent actuation of both of said left and right brakes for causing said inter-axle differential means to operate in said locked mode.

5,054,574

CONTROL FOR AUTOMOTIVE PASSIVE RESTRAINT SYSTEM WITH MANUAL RETRIGGER

David E. Scroggie, Union Lake; Timothy K. Willis, Northville, and Keith R. Waineo, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 5, 1990, Ser. No. 488,171
Int. Cl.[5] B60R *22/06*
U.S. Cl. 180—268 **9 Claims**



1 A passive restraint system for a vehicle comprising:
a track extending between a forward position and a rearward position;
a torso belt for restraining an occupant of said vehicle;
a retractor having one end of said torso belt spooled thereon;
a carrier movable in said track and releasably connected to the other end of said torso belt;
a carrier motor for causing movement of said carrier;
relay means connected to said carrier motor for providing electrical power to said carrier motor in a manner to cause selectable movement of said carrier toward either one of said positions;
logic means coupled to said relay means for controlling the direction of said movement depending on predetermined conditions;
motor timer means coupled to said relay means for establishing a limited time period during which said carrier motor can be energized and for causing said relay means to remove electrical power from said carrier motor after said carrier motor has been energized for said limited time period; and
stall retrigger means coupled to said motor timer means for restarting said limited time period in response to a manual retrigger signal.

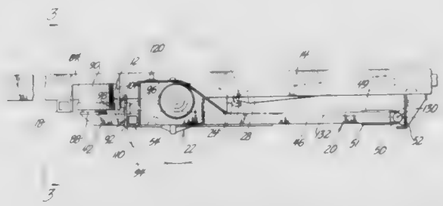
5,054,575

DEAD AXLE SUSPENSION FOR A PAIR OF DRIVEN WHEELS INCLUDING A LATERAL GUIDE

William T. Collins, Pontiac, Mich., assignor to DLMA Transportation, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 460,994, Jan. 4, 1990. This application Oct. 24, 1990, Ser. No. 602,815
Int. Cl.[5] B60G *9/04*
U.S. Cl. 180—354 **5 Claims**

1. A rear suspension assembly of the type including a dead axle (**20**) adapted to support driving wheels (**38–40**) outboard thereof; a vehicle body supporting chassis (**10**), the forward end of said dead axle having a single and transversely central joint of articulation (**50**) to said chassis and which joint includes a transverse axis (**130**) about which relative rotation between the chassis and dead axle occurs; a differential (**22**) mounted to said chassis and having a power input shaft (**24**) and a pair of output shafts (**30–32**), a pair of axles drivingly connected between said output shafts (**34–36**) and said wheels; and spring means (**90**) supporting said chassis upon said dead axle, said dead axle having a pair of longitudinally extending beam means (**42, 44, 46, 48**) disposed on laterally opposite sides of the differential and having inwardly inclined forward sections (**46, 48**) forming the joint of articulation to said chassis, a transverse beam (**54**) integrally connecting the longitudinal beam means rearward of said wheels, and a mechanism (**92**) for limiting relative lateral movement between the dead axle and the chassis, the improvement comprising:
said mechanism (**92**) having
A. a first link member (**94**) pivotally supported at its midpoint through a spindle (**98**) upon said transverse beam;



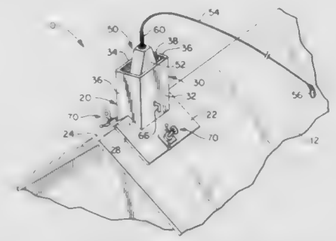
B. a dead axle roll axis (**132**) extending between the spindle and the transverse axis (**130**) of the joint of articulation, the roll axis rearward of the transverse axis being coincident with or upwardly inclined above a horizontal line (**136**) extending through the transverse axis;
C. second and third link members (**100** and **102**) articulated at their respective inner ends (**104, 106**) to said first link member at points equidistant from said midpoint;
D. said second and third link members having outer ends (**108, 110**) respectively articulated to laterally opposite sides of said chassis whereby said first, second and third link members coact to prevent lateral movement of said dead axle relative to said chassis when the dead axle moves vertically relative to the chassis while permitting dead axle rotation about said roll axis.

5,054,576

ROOF LIFELINE SAFETY SYSTEM AND ANCHOR ASSEMBLY THEREFOR

William D. Glynn, West Suffield, Conn., assignor to SINCO, Incorporated, East Hampton, Conn.

Filed Sep. 24, 1990, Ser. No. 586,895
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—3 **10 Claims**



1. A safety system for a pitched roof comprising:
lifeline means comprising a housing, a lifeline receivable by said housing and extendable and retractable relative thereto;

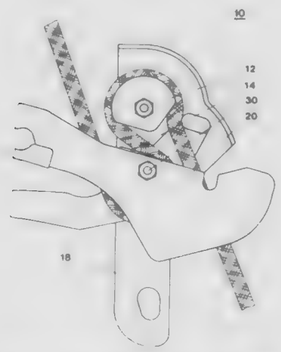
bracket means for mounting said lifeline means for generally upright disposition above the roof at the peak thereof comprising frame means for receiving said lifeline means and shoulder means extending from said frame means for engagement against said roof on opposing pitched sides thereof;
securing means for securing said lifeline means to said frame means; and
anchoring means for anchoring said shoulder means to said roof.

5,054,577

SELF-JAMMING DESCENDER FOR A ROPE WITH TWO JAMMING POSITIONS

Paul Petzl, and Pierre Petzl, both of Crolles, France, assignors to Petzl S.A., Crolles, France

PCT No. PCT/FR90/00167, § 371 Date Oct. 31, 1990, § 102(e) Date Oct. 31, 1990, PCT Pub. No. WO90/10476, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 13, 1990, Ser. No. 598,674
Claims priority, application France, Mar. 16, 1989, 89 03582
Int. Cl.[5] A63B *29/00*
U.S. Cl. 182—5 **10 Claims**



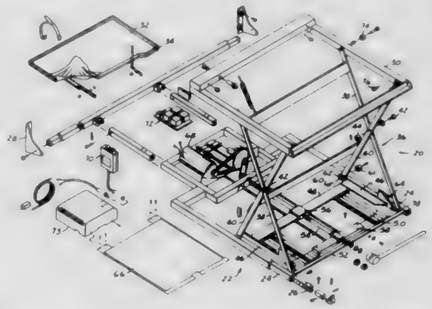
1. A self-jamming descender with two jamming positions for a user to descend along a rope, and comprising :
a first base flange, equipped with a first fixed pulley offset with respect to an articulation spindle, perpendicular to the first flange,
a second pulley securedly united to a mobile support plate, pivotally mounted around the spindle in a parallel plane to the base flange,
an operating handle secured to the support plate and second pulley assembly to form a jamming device with two jamming positions of the rope, which is wound in an S in guide grooves of the two pulleys, unjamming taking place in an intermediate position of the operating lever,
a second flange parallel to the first base flange with the two pulleys being interposed in a transverse gap, said second flange being retractable to allow the rope to be wound on the pulleys,
attachment means on the two flanges to attach a harness,
and a first braking surface arranged on the first fixed pulley against which the rope is pressed by a boss of the second pulley in a first jamming position of the operating lever, wherein the pivoting support plate comprises opposite from the operating lever, a jamming cleat separated from the second pulley by a space for the rope to pass, and the first pulley is provided with a second braking surface, against which the rope is pressed by the jamming cleat when the operating handle is moved to a second jamming position.

5,054,578

POWER-OPERATED LIFT AND PRESENTING MECHANISM

Charles M. Smillie, III, West Bloomfield, and Anthony J. Tomac, Troy, both of Mich., assignors to C. M. Smillie & Company, Ferndale, Mich.

Continuation-in-part of Ser. No. 138,916, Dec. 28, 1987, Pat. No. 4,941,797, which is a continuation-in-part of Ser. No. 17,922, Feb. 24, 1987, Pat. No. 4,725,183. This application Jan. 16, 1990, Ser. No. 465,298
Int. Cl.[5] B65G *67/00;* **B66B** *11/04*
U.S. Cl. 182—63 **5 Claims**



1. A power-operated lift and presenting mechanism comprising:
a base;
a platform member, and a movable carriage assembly movably connecting said platform member to said base;
motor means for moving said platform member, via said carriage assembly, from a first lowered storage position to a second upwardly lifted position and returning said platform member to said lowered storage position;
assist means to assist the movement of said carriage assembly as it initially beings movement from either the first lowered storage position to the second upwardly lifted position or from the second upwardly lifted position to the first lowered storage position;
said carriage assembly including two lift bars, said lift bars being connected to each other at a central position by a central roller, one of said lift bars being pinned to said platform member and slidably mounted by a roller to said base, the other of said lift bars being pinned to said base and slidably mounted by a roller to said platform member;
said assist means including a ramp member with an inclined face that begins moving said central roller vertically upwardly;
said assist means also including a slot, said slot receiving a pin member connected to said one lift bar, said slot allowing an initial movement of said ramp member before said slot engages and begins to move said pin member.

5,054,579

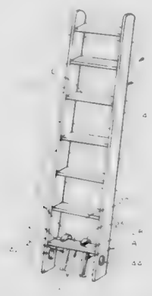
LADDER HAVING AN ANCHORING SYSTEM

John A. Moson, 21C Maple Ave., Little Compton, R.I. 02837

Filed Aug. 24, 1990, Ser. No. 571,785
Int. Cl.[5] E06C *5/36, 7/46*
U.S. Cl. 182—107 **5 Claims**

1. A ladder having an anchoring system comprising in combination:
a ladder including a pair of rails supporting a plurality of parallel spaced apart rungs, said ladder having a lower end to be positioned on the ground with the side rails extending upwardly in a normal position of use of the ladder and a lowermost rung of the ladder in said normal position of use including at least one aperture; and
at least one stake adapted to be inserted through said at least

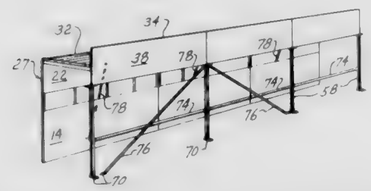
one aperture in said lowermost rung including a first portion adapted to be driven into the ground and a second portion adapted to engage an upwardly facing portion associated with the lowermost rung in said normal up-



wardly extending position of use of the side rails with said first portion driven in the ground for anchoring the lower end of said ladder to the ground against movement in substantially all directions

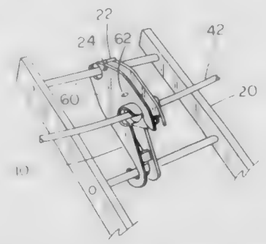
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5,054,580
MODULAR WALKWAY SYSTEM
William B. Cheek, 11504 Golden Gate Dr., Yucaipa, Calif. 92399
Filed Sep. 24, 1990, Ser. No. 587,342
Int. Cl.[5] E04G *21/32*
U.S. Cl. 182—179 **11 Claims**



1. A modular walkway system, at least one module thereof comprising:
(a) a rectangular wall structure having a top, bottom, and sides;
(b) a rectangular roof structure rigidly joined perpendicular to the wall structure proximate the top thereof, and having a roof extremity that extends parallel to the wall structure;
(c) a rectangular face structure connected to the roof structure proximate the roof extremity and having a face width, the roof structure, the wall structure, and the face structure having a common length;
(d) means for holding the face structure perpendicular to the roof structure, the face structure strengthening the roof structure; and
(e) support means spaced from the wall structure for supporting the roof extremity with the roof structure elevated above a supporting surface and the wall structure extending vertically from the supporting surface.

5,054,581
SAFETY DEVICE FOR SECURING A LADDER TO AN AERIAL CABLE
Kenneth H. Henson, 180 Ridge Rd., Candler, N.C. 28715
Filed Jul. 13, 1990, Ser. No. 552,009
Int. Cl.[5] E06C *7/48*
U.S. Cl. 182—206 **16 Claims**



1. A safety device for use with a ladder comprising:
a clamp adapted to be connected to a ladder between a first rung and a second rung thereof;
means for securing said clamp to said first rung;
means for securing said clamp to said second rung;
a locking mechanism connected to said clamp for securing said clamp and thus the ladder to an aerial cable; said locking mechanism including a portion which is swivelably mounted to said clamp; said swivelable portion of said locking mechanism including a first surface for contacting the aerial cable whereby upon contacting the aerial cable said swivelable portion will rotate; a cavity located above said swivelable portion; said cavity forming a part of said locking mechanism; a second surface located in said cavity; said second surface contacting the aerial cable after said swivelable portion of said locking mechanism is rotated by contact with the aerial cable.

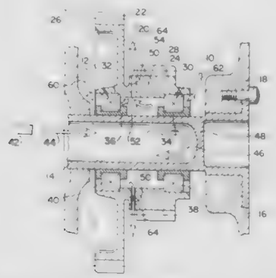
5,054,582
STICK COATING APPLICATOR HOLDER
Claude Aracil, 2128 E. Baltimore St., Baltimore, Md. 21231
Filed Aug. 10, 1988, Ser. No. 230,425
Int. Cl.[5] B61K *3/00*
U.S. Cl. 184—3.2 **4 Claims**



1. In a device for adjustably holding and applying stick lubricants frictionally to the flanges of the rotating a frame of a vehicle the improvement comprising;
A slotted elongated tubular stick receiving and holding means open at both ends, and having a narrow elongated slot opening located substantially parallel to the axis and centrally on a first face of said holding means, said slot opening elongation is located centered of the length of the holding means and of a slot length of about 65% to 90% of the length of the holding means.
A stick-urging arm means of a length substantially equal in arcuate rotation to the slot length pivoted at one end and free at the opposite end and having the pivot located mid

length of the slot and at a distance from the tubular holding means sufficient to allow the arm to swing within the slot opening as in a chord, and of a thinness sufficient to and having said pivoted end positioned to allow the free end of the arm to move in an arcuate path, thru said slot opening from a cocked or restrained position by urging the lubricating stick to the end of the arc swing and guided within the holding means, in continual urging contact with one end face of the stick lubricant,
An adjustable bracket means having a first end and an opposite second adjustable end, said first end adapted to attach to the vehicle frame and said second end adapted to adjustably attach to said holding means to hold said holding means axis in a position against the travel path of the flange of the wheel to allow the urging contact with one end face of the stick lubricant to force the contact of the stick lubricant to frictionally contact the flange of the wheel as it rotates.

5,054,583
BEARING ARRANGEMENT WITH CENTRIFUGAL MIST LUBRICATION FLOW AND ISOLATE DEAD SHAFT CONDUCTIVE COOLING FLOW
Jack A. Wrzyszczynski, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed May 15, 1990, Ser. No. 523,583
Int. Cl.[5] F01M *1/00*
U.S. Cl. 184—6.26 **15 Claims**

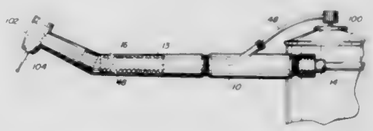


12. A cooling and lubricating system for use with a bearing assembly comprising:
bearings having inner and outer races with interposed bearing elements;
a source of oil;
means for circulating oil from said source in a path in heat exchange relation with one of said races, said path being isolated from said interposed rotary elements;
a rotary machine element on said outer race; and
a rotary pump means on one of said outer race and said machine element

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5,054,584
LUBRICATING DEVICE FOR AIR DRIVEN DENTAL DRILLS
Elliott S. Hoffman, 5001 Desert Jewel Dr., Paradise Valley, Ariz. 85253
Filed Sep. 24, 1990, Ser. No. 586,684
Int. Cl.[5] F16N *7/30*
U.S. Cl. 184—55.1 **9 Claims**

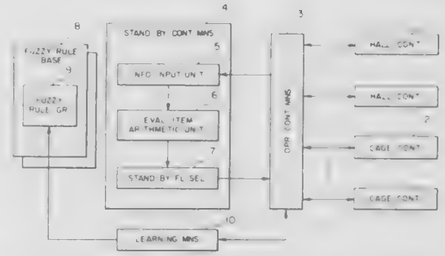
1. A device for lubricating an air driven turbine rotor of a dental drill handpiece or the like, the handpiece having a proximal end providing at least an air inlet passage for supplying pressurized air to the turbine rotor, and having an opposing distal end for rotating a tool, said device comprising:
a) a housing having a distal end adapted to be connected to the proximal end of the handpiece, and having an opposing proximal end adapted to be coupled to a supply hose, the housing having at least an air inlet passage extending therethrough and providing a fluid connection from the supply hose to the air inlet passage of the handpiece;
b) fastening means for releasably fastening the distal end of said housing to the proximal end of the handpiece;
c) a conduit extending at an angle from the housing, said conduit having a first end secured to said housing between the distal and proximal ends thereof, the first end of said conduit being in fluid connection with the air inlet passage of said housing, said conduit having an opposing second end adapted to slidingly receive therein a nozzle of a lubricant reservoir, the nozzle having a tip;



d) a cap releasably secured to the second end of said conduit to seal the second end of said conduit when the nozzle is not received therein; and
e) said conduit being generally direct toward the distal end of said housing to convey the tip of the nozzle through the housing toward the turbine rotor, and to guide the tip of the nozzle into a coaxial relationship with the air inlet passage of the handpiece, whereby lubricant can be supplied from the lubricant reservoir through the nozzle toward the turbine rotor

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5,054,585
ELEVATOR CONTROL APPARATUS
Masaaki Amano, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Oct. 3, 1989, Ser. No. 416,598
Claims priority, application Japan, Oct. 25, 1988, 63-267191
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—124 **3 Claims**



1. An elevator control apparatus for group supervising a plurality of elevator cages comprising:
operation control means for detecting stand-by free elevator cage in a pause state and suitably moving the free cage,
a fuzzy rule base for storing a plurality of fuzzy rules of IF-THEN format written with conditions necessary to move the free cage and executing procedure;
learning means for altering the parameters of said fuzzy rules on the basis of information from said operation control means; and
stand-by control means for determining an optimum stand-by floor having an evaluation arithmetic unit operative to calculate fuzzy amounts of the fuzzy rules for the stand-by state of said free cage and to select a fuzzy rule that the fuzzy amount exceeds a maximum and lower limiting value, thus generating a signal directed to said operation control means and responsive to said selected fuzzy rule, for moving the free cages to the optimum stand-by floor,

5,054,586

PROTECTIVE COVER FOR SLACK ADJUSTERS

Darrell H. Nordine, 12231 Mary Ave., Anchorage, Ak. 99515

Filed Mar. 21, 1990, Ser. No. 496,596
Int. Cl.[5] F16D *65/42, 65/46*
U.S. Cl. 188—79.55 20 Claims



1. A protective cover for a brake slack adjuster that has a body with a slack adjusting element associated with said body, comprising:

cover means for covering said element to protect it, and

elongated means, including an elastic element, extending, from said cover means around said body and back to said cover means, for holding said cover means in a position wherein it protects said slack adjusting element from contaminants,

said elastic element pulling said cover means against said body,

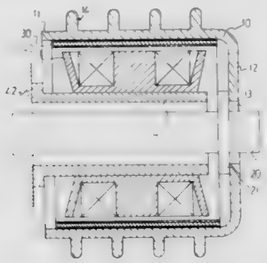
said elongated means having at least one removal connection for connecting said elongated means to said cover means.

5,054,587

EDDY-CURRENT BRAKE

Norio Matsui, Isehara; Isao Sanjo, and Shuuichi Chiba, both of Sagamihara, all of Japan, assignors to Tokyo-Buhin Kogyo Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 295,602, Dec. 16, 1988, abandoned.
This application Jun. 28, 1990, Ser. No. 545,779
Claims priority, application Japan, Apr. 30, 1987, 62-104451; Sep. 28, 1987, 62-240640
Int. Cl.[5] F16F *15/03;* F16D *63/00;* H02K *49/04*
U.S. Cl. 188—267 9 Claims



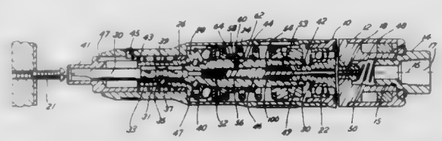
1. An eddy-current brake comprising a rotator and electromagnets arranged so that said rotator will intercept the magnetic flux of said electromagnets, wherein a braking torque is produced by an eddy current generated in said rotator, said rotator having a peripheral wall portion extending parallel to and concentrically with a drive shaft; wherein a three-layer thin metallic cladding made entirely of magnetic materials is formed over the entirety of an inner surface of said peripheral wall portion, said cladding including an inner nickel layer on said inner surface and having a thickness in the range of 10–50 μm, a copper layer provided on said inner nickel layer and having a thickness in the range of 0.1–0.2 mm, and an outer nickel layer provided on said copper layer and having a thickness in the range of 40–60 μm; wherein said inner surface of said peripheral wall portion has triangular threads, said metallic cladding being provided on said threads; wherein an outer surface of said peripheral wall portion has a plurality of axially spaced, circumferentially extending ribs; including a stationary brake block disposed within said peripheral wall portion, said electromagnets being supported on said brake block at circumferentially spaced locations; wherein each of said electromagnets includes a pole case which is made of a ferromagnetic material and has a flat bottom plate secured to said brake block, a side wall projecting away from said brake block from peripheral edges of said bottom plate and having a surface facing and adjacent said cladding, and a magnetic pole projecting away from said brake block from a central portion of said bottom plate and having a surface facing and adjacent said cladding, and includes a coil extending around said pole within said side wall; and wherein said surface on said side wall has an area at least as large as the area of said surface on said pole where lines of magnetic force pass.

5,054,588

TORQUE SENSING AUTOMATIC SHUT-OFF AND RESET CLUTCH FOR SCREWDRIVERS, NUTSETTERS AND THE LIKE

Phil D. Thorp; Ward W. Harvey, and Douglas E. Pyles, all of Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed Aug. 31, 1990, Ser. No. 576,283
Int. Cl.[5] F16D *43/20;* B25B *23/14*
U.S. Cl. 192—0.034 6 Claims



1. In a fluid powered tool of the type including a housing with a forward end, an intermediate section and a rear end, a fluid driven motor in the housing with a rotary output shaft defining an axis of rotation, a fluid inlet to the motor, a valve member cooperative with the fluid inlet to control fluid flow to the motor, a bit holder for a tool bit at the forward end of the tool and a clutch mechanism in the intermediate section and connecting the output shaft with the bit holder, the output shaft, bit holder and clutch mechanism being substantially coaxial, the improvement comprising, in combination:

a torque responsive, fluid flow start, shut-off and reset mechanism incorporated in the clutch mechanism, said torque responsive mechanism including:

(a) means for support of the bit holder in the housing to permit both rotary and axial movement;

(b) a driving clutch member keyed at one end to the output shaft for simultaneous rotation with the output shaft and attached at its opposite end to the bit holder to permit simultaneous axial movement with the bit holder and independent rotary movement relative to the bit holder;

(c) clutch engaging means for mechanically connecting the driving clutch member to the bit holder for simultaneous rotary movement, said means including at least one biased roller member intermediate the clutch member and the bit holder, said roller member radially spaced from the axis of rotation and axially movable with respect to one of the driving clutch member and bit holder, said roller member biased by roller member biasing means into a receiving pocket of the other of the driving clutch member and bit holder during rotary driving operation of the tool below a torque threshold, said roller member axially translatable from said receiving pocket during driving operation of the tool above said torque threshold whereby the bit holder and driving clutch member rotationally disengage;

(d) an axial counterbore in the driving clutch member extending from the motor output shaft;

(e) a valve control rod in the counterbore having a forward end and mechanically connected at the other end to the valve member;

(f) valve control rod biasing means for axially biasing the valve member and the valve control rod toward a valve member closed position;

(g) driving clutch member biasing means in the axial counterbore of the driving clutch member for biasing the driving clutch member axially toward the forward end relative to the output shaft;

(h) a radial passage in the driving clutch member intersecting the counterbore;

(i) a radially displaceable member in the radial passage cooperative with the forward end of the valve control rod;

(j) an axially displaceable sleeve over the driving clutch member radial passage, said disposable sleeve having first and second radial limiting means both cooperative with the radially displaceable member to control the position of said radially displaceable member in the radial passage to thereby control the axial position of the valve control rod in the counterbore;

(k) sleeve biasing means for normally biasing the sleeve to a first radial limiting position corresponding to engagement with the first radial limiting means wherein the valve control rod is extended axially toward a valve open position; and

(l) one of the bit holder and the clutch member including a transverse flange with a pocket defined therein and the other of the bit holder and the clutch member including an axial bore for receipt of the roller member said pocket having a shaped configuration with a planar base section, an inclined ramp section for cooperation with the roller during driving of the bit holder, said base section being generally planar and transverse to the axis of rotation, said ramp section forming an angle in the range of 25° and 45° with the base section, said inclined ramp section connected to a downwardly inclined surface which connects with the opposite side of the next adjacent pocket, the opposite side defining a curved surface having a radius of curvature substantially identical to the radius of the roller member;

whereby to start the motor by opening the valve member the bit holder is axially translated rearwardly against the force of the value control and biasing means and the driving clutch member biasing means as the driving clutch member and bit holder are rotationally engaged, and the sleeve is in the first limiting position to hold the valve control rod in the rearward position and cause the valve member to open;

whereby to control torque the rotatably connected driving clutch member and bit holder are disengaged when the torque threshold is exceeded and the roller member is axially translated rearwardly against the force of the ball members biasing means to simultaneously translate the sleeve to the second limiting position thereby permitting the radially displaceable member to move radially outward in the passage and release the control rod for movement toward the forward end and close the valve member to terminate operation of the motor; and

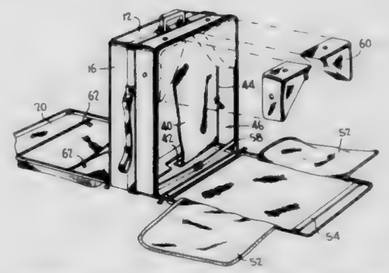
whereby to reset the mechanism, release of axial force on the bit holder permits the bit holder and shaft to move axially forward in response to drive clutch member biasing means and the sleeve biasing means to effect subsequent radial movement of the radially displaceable member to the first limiting position.

5,054,589

LUGGAGE WITH MOVABLE PARTITION

Harvey J. Bomes, and Jack L. Barber, both of Baltimore, Md., assignors to The Baltimore Luggage Company, Baltimore, Md.

Filed Sep. 12, 1990, Ser. No. 581,054
Int. Cl.[5] A45C *5/14, 13/02, 5/12*
U.S. Cl. 190—18 A 5 Claims



1. A luggage case comprising a luggage frame covered with a lightweight material and having a top wall, bottom wall, end walls, and side walls defining an enclosure, said side walls being connectively attached to said top, bottom, and end walls by a fastening means which allows each of said side walls to open for access to the enclosure of said luggage case wherein the improvement comprises a flexible partition extending longitudinally from said top nd bottom walls and spaced inwardly from each of said side walls, said partition being fastened by stitching means to said bottom wall and being removably fastened to said top and end walls by a zipper means such that when in the unfastened position said partition will overlie one of said side walls for ease of packing whereby said luggage case may be converted to have two separate compartments each accessible from one side only or one compartment accessible from each side.

5,054,590

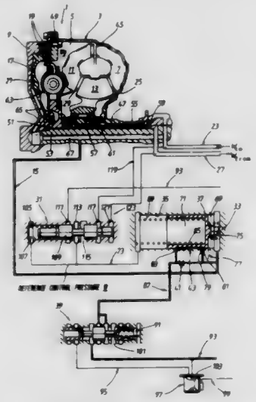
CONTROL DEVICE AND METHOD FOR A PRESSURE ACTUATABLE BRIDGING COUPLING OF A HYDRODYMANIC TORQUE CONVERTER

Lutz Paulsen, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed May 1, 1990, Ser. No. 517,189
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1989, 3915186
Int. Cl.[5] F16H *45/02*
U.S. Cl. 192—3.3 3 Claims

1. A control device for a pressure-actuatable bridging coupling of a hydrodynamic torque converter having an engine driven converter housing, with a housing interior of the converter housing, having respectively a pump wheel, a turbine wheel and a guide wheel, and with the converter housing having a radial housing wall, an actuator element with an annular axial piston for actuating the bridging coupling, a working-pressure chamber for subjecting the axial piston to pressure, a hydrodynamic working circuit positively controlled by blades between the pump wheel, the turbine wheel and the guide wheel, a pressure-medium feed system having a converter inflow pressure, a pressure-medium discharge system having a converter flow-off pressure, and a working-pressure line, the pump wheel, the turbine wheel, the guide wheel and the axial piston being arranged in the housing interior, such that the pump wheel is rotationally fixed to the converter housing, the turbine wheel is arranged axially between the radial housing wall and the pump wheel, the axial piston is arranged axially between the turbine wheel and the radial housing wall, the working-pressure chamber is enclosed by the radial housing wall and the axial piston and is connected to the working-pressure line, and the working circuit is connected

both to the pressure-medium feed system between the pump wheel and the guide wheel and to the pressure-medium discharge system between the turbine wheel and the guide wheel, wherein a pressure-regulating valve is connected to the pressure-medium feed system, to the pressure-medium discharge system and to a sensor and, as a function both of the converter inflow pressure and of the converter flow-off pressure, sets a



reference control pressure analogous to the internal housing pressure of the converter housing, and a separating piston guided axially displaceably in a cylinder bore of the sensor, also connected to the working-pressure line, is selectively operable by a resilient element and by the reference control pressure, or the working pressure of the working pressure chamber

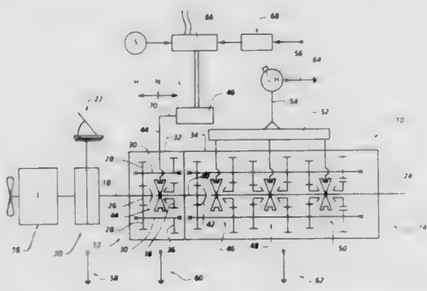
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5,054,591

TRANSMISSION INPUT SECTION CONTROL

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 11, 1990, Ser. No. 595,873
Int. Cl.[5] F16H *3/08*
U.S. Cl. 192—3.63 **11 Claims**



1. A control system (**68**) for a splitter type input section of a manually shifted compound vehicular transmission (**10**) comprising a multi-speed synchronized splitter type input section (**12**) connected in series with a multi-speed manually shifted synchronized main transmission section (**14**), said input section adapted to be drivingly connected to a vehicular prime mover (**16**) by a manually operated normally closed master friction clutch (**20**), a manually operated shift control (**54**) for selective engagement and disengagement of selected main transmission section ratios, a master control unit (**56**) for operator selection/preselection of either a low-speed or high-speed input section transmission ratio, and a remote actuator unit (**46**) for causing said input section to be (i) engaged in the high-speed ratio thereof, (ii) engaged in the low-speed ratio thereof or (iii) maintained in a not engaged condition thereof, said actuator responsive to command signals from said control, said control system characterized by:

a sensor (**58**) for providing a signal indicative of the engaged or disengaged condition of said master clutch (**20**);

a sensor (**62**) for providing input signals indicative of either said main transmission section being engaged or not engaged in a main transmission section ratio; and

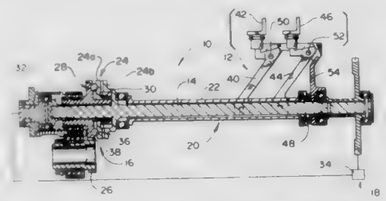
means effective upon sensing disengagement of said master clutch and said main transmission section not engaged in a main transmission section ratio to cause said input section to be shifted to the not engaged (N) condition thereof.

5,054,592

MANUAL/POWERED OPERATION SAFETY DEVICE

John D. Tysver, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 222,785, Jul. 22, 1988, abandoned. This application Apr. 25, 1990, Ser. No. 515,666
Int. Cl.[5] F16D *67/00*
U.S. Cl. 192—8 R **11 Claims**



1. A safety device for a drive unit adapted for manual and powered driven movement of a drive shaft, comprising:

brake means operatively associated with said drive shaft, said brake means normally being engaged, said brake means being released upon actuation of either manual or powered driven movement of said drive shaft;

manual input means for releasing said brake means and effecting the manual driven movement of said drive shaft; and

powered input means for releasing said brake means and effecting the powered driven movement of said drive shaft;

said powered input means being operable to disengage said manual input means before effecting the powered driven movement of said drive shaft;

said manual input means including axially separable gear means operable through manual drive means, said axially separable gear means including a first gear portion operably associated with said manual input means and normally engaged with a second gear portion operably associated with said drive shaft, said manual drive means being operable through said axially separable gear means to drive said drive shaft when said first and second gear portions are engaged;

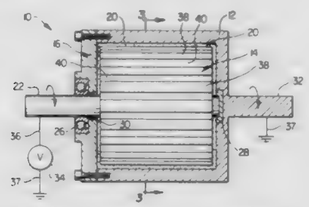
said manual input means also including a ball ramp gear disposed between said manual drive means and said first gear portion, said first gear portion being operably associated with said manual input means through said ball ramp gear, and including biasing means between said first and second gear portions applying a biasing force tending to disengage said first and second gear portions.

5,054,593

ELECTROPHORETIC FLUID TORQUE TRANSMISSION APPARATUS AND METHOD

J. David Carlson, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Jan. 10, 1990, Ser. No. 463,245
Int. Cl.[5] F16D *27/00*
U.S. Cl. 192—21.5 **19 Claims**



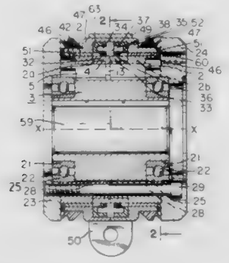
1. A controllable electrophoretic fluid apparatus, said apparatus comprising at least two relatively spaced, electrically conductive members, said members movable relative to each other, an electrophoretic fluid occupying a space between said members for transmitting force between said members, wherein said fluid separates into particle-rich and particle-deficient phases in the presence of an electric field, means for forming a plurality of spaced and electrically insulating, raised surfaces affixed to at least one of said members, and means for applying an electric field between said members and to said fluid in first and second directions, wherein in said first direction said particle-rich phase occupies spaces between said raised surfaces leaving said particle-deficient phase in contact with the other of said members for decreasing the force transmission between said members by said fluid, and wherein in said second direction said particle-rich phase migrates to the other of said members and extends between said other member and said raised surfaces for increasing the force transmission between said members.

5,054,594

PAWL FREEWHEEL CLUTCH

Klaus Kämpf, and Hubert Geisthoff, both of Lohmar, Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH

Filed Jul. 6, 1990, Ser. No. 549,360
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1989, 3922222
Int. Cl.[5] F16D *13/04, 23/00*
U.S. Cl. 192—35 **17 Claims**



1. A freewheel clutch, comprising:

two coupling parts, namely an inner part and an outer part; and

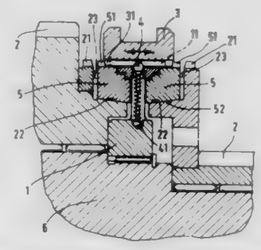
blocking pawls in between both coupling parts pivotable by means of a control mechanism having a friction arrangement for braking against rotation, the pawls being pivotable into an engaged position and a disengaged position with respect to both rotational directions, a first set and a second set of blocking pawls being provided, which are configured to transmit torque in opposite rotational directions and freewheel in a respective other direction of rotation, all the blocking pawls being pivotably supported in recessed distributed across the circumference of one coupling part and engageable into support recesses in the other coupling part, the blocking pawls (**4**, **5**) of the first est and the second set being respectively pivotable by separate control rings (**32**, **33**), which control rings (**32**, **33**) are held respectively to be rotatable relative to the coupling part (**2**) which supports the blocking pawls (**4**, **5**).

5,054,595

LOCKING SYNCHRONIZING MEANS FOR TRANSMISSION SHIFTS

Rolf Lutz, Tettnang; Franz Reinalter, Friedrichshafen, and Heinz Fiechtner, Markdorf, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 272,773, Aug. 26, 1988, Pat. No. 4,964,505. This application Jun. 1, 1990, Ser. No. 531,905
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[5] F16D *21/04, 23/06, 9/00*
U.S. Cl. 192—53 F **5 Claims**



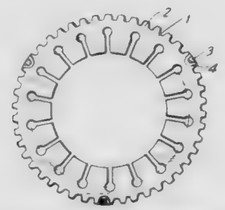
1. In a locking synchronizing device for a gearshift system in which a sliding sleeve support and a gearwheel, which rotate at different speeds, are positively coupled together when in synchronism by means of an axially displaceable annular sliding sleeve, a synchro-mesh tooth system of the sliding sleeve meshing with a respective external tooth system of the sliding sleeve support and the synchro-mesh tooth system of the gearwheel, with thrust bolts, which are arranged between the sliding sleeve support and the sliding sleeve, engage in the uncoupled state in a recess at the inside of the sliding sleeve and comprise thrust surfaces which are operatively connected to thrust surfaces on a synchronizing ring, which is arranged axially between the sliding sleeve support and the gearwheel and is connected with circumferential play to the sliding sleeve support so as to be driven in both circumferential directions, parts of a gearwheel forming with parts of the synchronizing ring a frictional coupling having friction surfaces and with locking teeth on the synchronizing ring for temporarily stopping the axial movement of the sliding sleeve, the improvement wherein, if there is still a speed differential between the gearwheel and the sliding sleeve support, the locking effect of the locking teeth is limited, so that when the sliding sleeve moves axially the locking teeth on the synchronizing ring are turned in the circumferential direction with respect to the sliding sleeve support by the synchro-mesh tooth system of the sliding sleeve, the locking effect being limited by a reduction in the frictional moment due to the synchronizing ring heating up and a taper of the friction surfaces, so that when the sliding sleeve moves axially in the direction of the gearwheel the contact between the two synchro-mesh tooth systems give rise to chattering noises which cause the driver to refrain from completing the gearshift operation until the speeds are equal.

5,054,596

SPACING MEANS FOR SPACING PLATES IN A FLUID FRICTION COUPLING

Herbert Taureg, Hennef, and Paul-Erich Schönenbrücher, Much-Kranüchel, both of Fed. Rep. of Germany, assignors to Viscodrive GmbH

Filed Aug. 20, 1990, Ser. No. 570,303
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1989, 3927584
Int. Cl.[5] F16D *35/00, 33/18*
U.S. Cl. 192—58 B 20 Claims



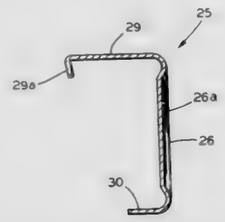
1. A fluid friction coupling, comprising: a coupling hub; a coupling housing rotatable on the coupling hub; an outer set of plates arranged in the coupling housing and non-rotatingly connected thereto via outer teeth; an inner set of plates arranged on the coupling hub and non-rotatingly connected thereto via inner teeth; and spacing means for spacing the plates of one set of plates, and the plates of the other set of plates being axially movable in free spaces provided in this way, the spacing means including axially extending spacing strips (3) uniformly distributed on one of the toothed circumferences of the plates (1 or 31) and having spacing tabs (5) held between the plates (1 or 31) associated with the teeth.

5,054,597

ADAPTER CLIP FOR FRICTION CLUTCH HAVING INTERMEDIATE PLATE POSITIONING MEANS

James K. Tarlton, Sr., Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 29, 1989, Ser. No. 458,988
Int. Cl.[5] F16D *13/75*
U.S. Cl. 192—70.25 12 Claims



1. An adapter clip adapted to be attached to an axial extension of a cover of a multiple plate friction clutch so as to extend over a slot formed in the extension, the adapter clip comprising:

a central web portion adapted to extend across the slot formed in the extension;

flange means formed on said web portion for engaging the extension so as to position said web portion relative thereto; and

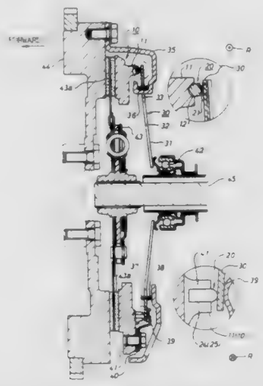
leg means formed on said web portion for releasably attaching said adapter clip to the cover.

5,054,598

CLUTCH COVER ASSEMBLY

Hiromi Tojima, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

PCT No. PCT/JP89/00704, § 371 Date Mar. 15, 1990, § 102(e) Date Mar. 15, 1990, PCT Pub. No. WO90/01641, PCT Pub. Date Feb. 22, 1990
PCT Filed Jul. 12, 1989, Ser. No. 465,233
Claims priority, application Japan, Aug. 1, 1988, 63-102206[U]; Feb. 8, 1989, 1-14388
Int. Cl.[5] F16D *13/50*
U.S. Cl. 192—70.27 16 Claims



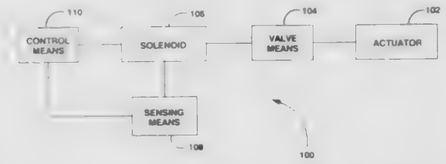
6. A clutch cover assembly comprising an annular-shaped pressure plate and diaphragm spring disposed at the rear side of said pressure plate, said pressure plate having a rear surface having forming thereon a series of projections arranged in a circumferential direction with spaces therebetween and projecting toward an outer periphery of said diaphragm spring, characterized by that said projections have formed thereon fulcrum portions for receiving the outer periphery of said diaphragm spring while said pressure plate is being engaged and mounted thereon a damper member for receiving the outer periphery of said diaphragm spring while said pressure plate is being disengaged.

5,054,599

END OF FILL DETECTOR FOR A HYDRAULIC CLUTCH

Tony L. Marcott, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 24, 1990, Ser. No. 632,906
Int. Cl.[5] F16D *25/14;* F15B *13/00*
U.S. Cl. 192—85 R 17 Claims



1. An apparatus for detecting an end-of-fill condition of an actuator having a varying control volume, said end-of-fill condition corresponding to said varying control volume being pressurized to a predetermined end-of-fill pressure, comprising:

a solenoid having a coil and an armature, said armature being movable relative to said coil in response to energization of said coil;

valve means for delivering a flow of fluid to said actuator, said fluid flow having a rate responsive to the movement of said armature; and,

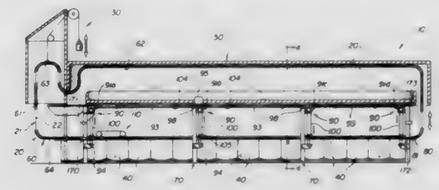
sensing means for detecting a voltage condition of said coil and responsively producing an end-of-fill signal, said voltage condition being produced in response to said control volume achieving said predetermined end-of-fill pressure.

5,054,600

TRANSFERRING SYSTEM FOR TRANSFERRING ARTICLES THROUGH A PROCESSING APPARATUS

James C. Blankemeyer, Columbus Grove; Robert L. Blankemeyer, Fort Jennings, and James C. Miller, Lima, all of Ohio, assignors to MetoKote Equipment Corporation, Lima, Ohio

Filed Jan. 29, 1990, Ser. No. 471,951
Int. Cl.[5] B65G *15/64*
U.S. Cl. 198—345.2 16 Claims



1. An apparatus for processing articles through a plurality of processing stations comprising:

a plurality of processing stations for sequentially processing a plurality of articles as said articles are moved from station to station through said plurality of processing stations;

endless conveyor means for conveying each of said articles along a conveying path, a section of said conveying path being adjacent to said plurality of processing stations, said conveyor means being displaceable along said section of said conveying path for moving said plurality of articles into and out of said processing stations;

guide means for guiding said endless conveyor means through said conveying path and for displacing a portion of said conveyor means located along said section of said conveying path, said guide means including a movable displacement means for actively displacing only said portion of said conveyor means from a first position to a second position in order to move said plurality of articles into said plurality of processing stations and for displacing said portion from said second position to said first position in order to move said plurality of articles out of said plurality of processing stations;

conveyor drive means for driving said endless conveyor means along said conveying path; and

processor means for controlling the operation of said conveyor drive means so that said conveyor drive means is only actuated to drive said endless conveyor means along said conveying path when said portion of said endless conveyor means is in said first position.

5,054,601

SORTING CONVEYOR

Christer A. Sjogren, Miami, Fla.; J. D. Houseman, Lake Saint Louis, Mo., and Henri T. Paets, Miami, Fla., assignors to Quipp, Incorporated, Miami, Fla.

Filed Sep. 19, 1989, Ser. No. 409,520
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—365 50 Claims

1. Apparatus for use in a conveyor system comprising:

a body having a longitudinal tilt axis;

rotatable wheel means arranged near a rear end of said body for rollingly supporting said body;

a support tray swingably mounted upon said body and being swingable along a longitudinal axis substantially coincident with the longitudinal tilt axis;

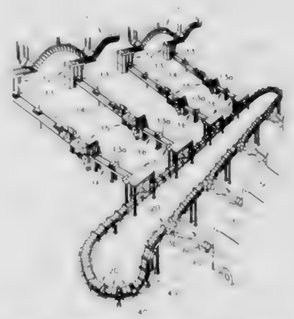
a coupling releasably secured to the forward end of said body;

said body having a coupling receiving pin near said rear end for receiving the coupling of a similar apparatus;

a locking means on said body;

tilt means coupled to said tray and swingable therewith;

said tilt means including a rod having follower rollers aligned along a predetermined axis of rotation and extending beyond opposite sides of said body;



said tilt means including a swingable locking plate swingable about an axis transverse to said longitudinal axis; and

said rotational axis being parallel to said transverse axis;

having means cooperating with said locking means when in a first position to lock the support tray in the upright position;

bias means normally urging said locking plate toward said locking means;

said locking plate being swingable away from said locking means to a second position displaced from said locking means when said tilt means is tilted through a first predetermined angle away from the upright position and said tilting assembly and said tilt tray being tilted in the same direction as said tilting apparatus as said tilting assembly moves through a second predetermined angle.

5,054,602

SORTING SYSTEM

Graham B. Kent, Almondsbury, and Moolamkuzhiel R. V. Nair, Freshbrook, both of United Kingdom, assignors to The Post Office, London, United Kingdom

Continuation of Ser. No. 419,882, Oct. 11, 1989, abandoned.
This application Mar. 25, 1991, Ser. No. 675,114
Claims priority, application United Kingdom, Jun. 23, 1989, 8914412
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—370 2 Claims

1. A sorting system comprising:

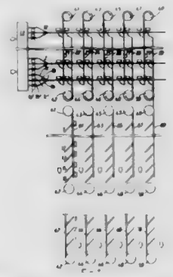
(a) a plurality of sorting conveyors each being capable of selectively discharging items fed onto the conveyor at an input thereto, from any one number of destination outlets;

(b) a plurality of aggregating conveyors corresponding in number to that of the outlets of each sorting conveyor and extending transversely of the sorting conveyors, each aggregating conveyor being capable of receiving items from the respective sorting conveyors at a corresponding outlet and of feeding the received items towards an output;

(c) means at each outlet of each sorting conveyor for transferring items to the associated aggregating conveyor, the

aggregating conveyors being at a lower level to that of the sorting conveyors; and

(d) a plurality of secondary sorting conveyors corresponding in number to that of the aggregating conveyors and means for transferring the aggregated items from each aggregating conveyor to a respective one of the secondary conveyors which are at a lower level to that of the aggregating conveyors, each secondary conveyor being



capable of selectively discharging the items from any one of a number of destination outlets;

(e) said means for transferring items from the sorting to the aggregating conveyors including a helical chute associated with the outlet of each sorting conveyor, which is of a construction such that items descend the chute at a constant controlled speed or at least under conditions in which their speed does not exceed a controlled maximum.

5,054,603

APPARATUS FOR LAYING ELONGATE MEMBERS

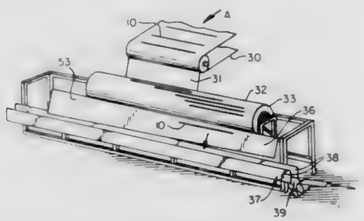
Mark T. Churchland, Vancouver, and Walter W. Schilling, Delta, both of Canada, assignors to MacMillan Bloedel, Limited, Vancouver, Canada

Division of Ser. No. 154,440, Feb. 9, 1988, Pat. No. 4,872,544, which is a continuation of Ser. No. 882,372, Jul. 7, 1986, abandoned, which is a continuation of Ser. No. 738,542, May 28, 1985, Pat. No. 4,706,799, which is a division of Ser. No. 547,578, Nov. 1, 1983, Pat. No. 4,563,237. This application Aug. 4, 1989, Ser. No. 389,405

The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—382 **30 Claims**



1. An apparatus for continually laying elongate members in a lay-up mat having a mat longitudinal axis, said apparatus including a longitudinal lay-up trough conveying means for conveying the lay-up mat to be compressed and bonded into a composite product, wherein the improvement comprises:

mechanical depositing means for depositing the elongate members onto said longitudinal lay-up trough conveying means over a length thereof that is at least about one and a half times the length of the elongate members and parallel to the mat longitudinal axis and thereby forming the lay-up mat.

5,054,604

CONVEYING ROD-LIKE ARTICLES

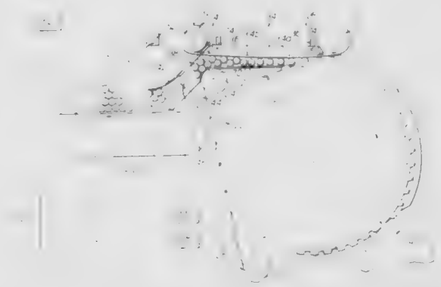
John K. Horsley, and John E. Nixon, both of High Wycombe, Great Britain, assignors to Molins, PLC, London, England

Division of Ser. No. 640,883, Aug. 15, 1984, Pat. No. 4,938,340. This application May 3, 1990, Ser. No. 518,563

Claims priority, application United Kingdom, Aug. 10, 1984, 8420347

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—444 **10 Claims**



1. Apparatus for conveying rod-like articles in a direction transverse to their lengths, including first conveyor means having spaced article carriers for conveying a first stream of articles, second conveyors means arranged downstream of the first conveyor means for receiving articles from the first stream and for conveying them in a second stream, said second stream being of greater height than said first stream, and means including at least one substantially horizontally disposed driven endless band conveyor extending from the region of said first conveyor means so as to receive articles substantially directly from said articles carriers and defining a substantially horizontal path along which articles are conveyed between said first conveyor means and said second conveyor means for progressively decelerating the articles as they are conveyed along at least a part of said path, said path including a progressively divergent channel portion extending along a major part of the length of said path, which channel portion progressively diverges over a distance corresponding to plural article diameters and is formed at least in part by said one driven endless band conveyor.

5,054,605

FLEXIBLE DRIVE CONVEYOR SYSTEM

Edward F. Bavis, 201 Grandin Rd., Maineville, Ohio 45039

Filed Mar. 29, 1990, Ser. No. 501,610

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 **39 Claims**

1. A conveyor system for conveying items between spaced apart stations, said system comprising:

a carrier to be moved between at least two spaced apart stations, said stations each providing user access to said carrier for insertion and withdrawal of items to be conveyed;

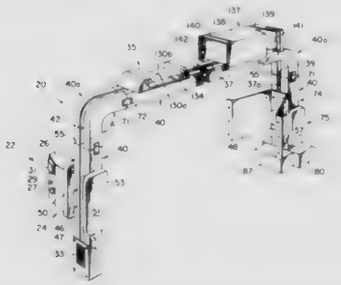
a first guide track extending between said at least two spaced apart stations;

a flexible drive tape having a leading edge and a trailing edge, and having said leading edge reciprocally mounted within said first guide track for moving said carrier between said spaced apart stations, said flexible drive tape being attached to said carrier adjacent said leading edge

by a plurality of connectors, at least one of said connectors allowing controlled relative movement between said tape and said carrier;

a second guide track extending substantially parallel to and along at least a portion of said first guide track for longitudinally guiding and supporting said trailing edge and excess length of said drive tape;

means for driving said drive tape, said driving means comprising a toothed cog wheel and a cog surrounding at least partially enclosing said cog wheel and drive tape therein,



said surround further comprising a pair of tape peeler tips situated closely adjacent opposite sides of said cog wheel to peel said tape away from said cog wheel as said wheel is rotated in use, said drive tape being wound around a substantial portion of the periphery of said cog wheel for driving interaction, and extending from opposite sides thereof into said first and second guide tracks, respectively; and

means for supporting said carrier adjacent said first guide track as it is conveyed by said drive tape between stations.

5,054,606

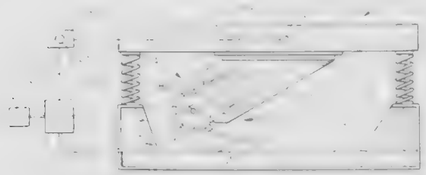
CONTROL SYSTEM FOR VIBRATORY APPARATUS

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Division of Ser. No. 192,728, May 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 21,526, Feb. 26, 1987, abandoned, which is a continuation of Ser. No. 586,633, Mar. 6, 1984, abandoned, which is a continuation of Ser. No. 279,342, Jul. 1, 1981, abandoned. This application Dec. 4, 1989, Ser. No. 444,959

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—751 **6 Claims**



1. A vibratory apparatus comprising:

a material carrying member;

exciter means in operative relationship with the material carrying member for imparting a vibratory force on the material carrying member and comprising a motor and a rotatable eccentric counter weight connected to the motor to be rotated thereby, said motor comprising a variable speed motor operational at a speed controlled by frequency of voltage applied thereto;

an accelerometer for sensing the acceleration of vibratory movement of said material carrying member, said accelerometer developing a signal having a level representing vibrational frequency of said material carrying member;

user adjustable means for setting a desired operating condition of said vibratory apparatus; and

control means coupled to said accelerometer, said user adjustable means and said exciter means for automatically controlling frequency of voltage applied to said motor to controllably vary the speed of the motor to vary the vibratory force responsive to a difference between said sensed vibration frequency and said desired operating condition to maintain the vibratory apparatus at the desired operating condition.

5,054,607

DRIVE STATION FOR A LONGWALL CONVEYOR

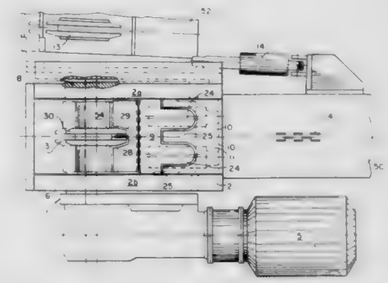
Gert Braun, and Ernst Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun Industrieanlagen, Fed. Rep. of Germany

Filed Feb. 12, 1987, Ser. No. 13,736

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1986, 3604488

Int. Cl.[5] B65G *23/44*

U.S. Cl. 198—813 **6 Claims**



1. A drive station for a chain of a longwall conveyor having a winning machine, comprising first machine frame having spaced apart side walls each with a bearing recess, a first rotatable chain drive shaft rotatably supported by said frame, bearing block means rotatably supporting said drive shaft and being movably engaged in respective ones of said bearing recess of said side walls, a chain drive sprocket carried by said shaft for rotating therewith, a tensioning device carried by said first frame engageable with said shaft for shifting said first shaft with said sprocket for tensioning said chain thereon, a second drive unit for said winning machine including a second chain drive sprocket shaft, a second chain drive sprocket affixed to said second drive sprocket shaft, said second drive sprocket shaft having a rotation axis, a second frame supporting said second chain drive sprocket shaft adjacent said first frame and being movable in directions perpendicular to said second chain drive sprocket shaft rotation axis, and a second tensioning device connected to said second frame moving said second frame for tensioning said second chain drive sprocket.

5,054,608

LINEAR ACTUATOR WITH IMPROVED FORCE DISTRIBUTION CHARACTERISTICS

Charles B. Bryant, 32380 Wildwood Point Rd., Hartland, Wis. 53209

Filed Aug. 23, 1990, Ser. No. 572,046

Int. Cl.[5] B65G *23/44*

U.S. Cl. 198—816 **19 Claims**

1. A belt tensioner for translation of an object, which object is subject to forces of tension and compression in the direction of translation, the belt tensioner being mountable upon a surface and comprising:

(a) a tube having an outer boundary, a forward end, and a

rearward end, the forward and rearward ends axially opposing each other and the rearward end of the tube having a threaded aperture that leads to an axial passageway within the tube;

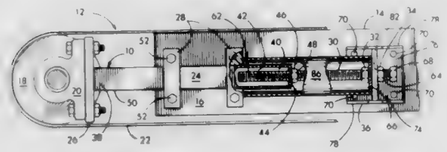
(b) a mount located upon the tube and designed to receive the object;

(c) a bracket capable of being attached to the surface in fixed relation and having an inner boundary that is shaped to receive the outer boundary of the tube to allow axial translation of the tube within the inner boundary in a telescoping arrangement;

(d) a screw rod having a first end and a second end, the first and second ends of the rod axially opposing each other and the rod threadably engaging with the threaded aperture at the rearward end of the tube such that the first end of the rod is inserted into the axial passageway of the tube upon rotation of the rod on its axis in one direction and withdrawn from the axial passageway of the tube upon rotation of the rod on its axis in the opposite direction;

(e) a stop that is attached to the screw rod in fixed relation between the first end of the screw rod and the second end of the screw rod;

(f) a nut that threadedly engages with the screw rod proximate the second end of the screw rod;



(g) a buttress including

(i) a base capable of being attached to the surface in fixed relation; and

(ii) a plate that extends outward from the base, the plate having a hole through which the screw rod passes such that the second end of the screw rod extends beyond the hole, the hole being sized smaller than the stop and the nut and located therebetween, the nut being capable of being tightened against the buttress to draw the stop, the buttress, and the nut together and prevent turning of the rod and the nut being capable of being loosened from the buttress to space the buttress and the nut apart to allow turning of the rod, the turning of the rod when the buttress and the nut are spaced apart resulting in a translation of the tube and the mount by the insertion of the screw rod into and the withdrawal of the screw rod from the axial passageway, the buttress being located proximate the second end of the screw rod and of sufficient bracing so as to not deflect under the forces of compression and tension applied to the buttress, the buttress substantially redirecting the forces to the surface upon which the buttress is attached.

5,054,609

CONVEYER

Nikolaas J. Poerink, AA Borne, Netherlands, assignor to Jonge Poerink B.V., Borne, Netherlands

Filed Jan. 3, 1990, Ser. No. 460,312

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1989, 8900158; European Pat. Off., May 10, 1989, 89108392

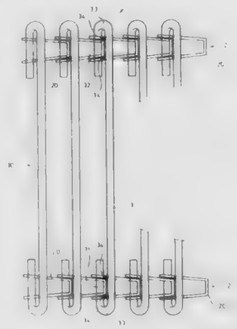
Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—852 11 Claims

1. Conveyor comprising:

at least two parallel, continuous chains which are driven by sprocket wheels and each having a number of overlapping chain links;

a number of carrying bars which have end portions and which are disposed transversely to the chains and are connected thereto approximately at their ends, end portions of these carrying bars serving as pins for the chain links, two of which each end portion penetrates and the remaining part of each carrying bar which is between the end portions serving as the carrying zone of the conveyor; at both longitudinal sides of the conveyor — with respect to



the top, conveying side of the conveyor — the carrying bars extending over the top of the chain links toward the exterior and end portions of the carrying bars being U-like bent toward the bottom and toward the inside and penetrating the chain links from the exterior.

5,054,610

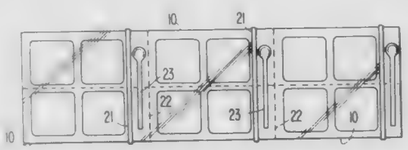
DISPOSABLE SINGLE-USE CONTACT LENS CONDITIONING PACKAGE

Marc Ajello, Atlanta, Ga., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 31, 1989, Ser. No. 359,720

Int. Cl.[5] B65D *81/24*

U.S. Cl. 206—5.1 7 Claims



1. A disposable single-use contact lens conditioning package, comprising:

two pairs of adjacent open-topped containers of a size for accommodating a contact lens to be conditioned;

a contact lens conditioning means in one container of each pair;

a conditioning-counteracting solution in the other container of each pair;

cover means in sealing engagement with said pairs of containers around the open tops thereof and capable of being peeled off said containers for opening the tops of said containers; and

a cover means holddown for holding said cover means in place over said containers, said cover means holddown being sealed under said cover means against said containers.

5,054,611

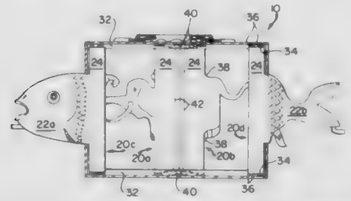
LUNCH BOX HAVING SELECTABLE DISPLAYS

Anthony Russomanno, and Gary Russomanno, both of 1996 Rte. 27, Edison, N.J. 08817

Filed Mar. 26, 1990, Ser. No. 498,730

Int. Cl.[5] B65D *81/36*

U.S. Cl. 206—45.28 15 Claims



1. A device for decorating a carrying box comprising:

(a) at least one pair of representational members contained within said box, a portion of each of said representational members being selectively deployable external to said box and selectively retractable into said box, a first representational member of said pair telescoping through a first opening in a side of said box and a second representational member of said pair telescoping through a second opening in said box disposed opposite to said first opening, said representational members deploying in opposite directions, said deployable portion of said first representational member representing a part of an identifiable form, said deployable portion of said second representational member representing another part of said identifiable form, each of said representational members of said pair including retainer means disposed distal to said deployable portion for preventing said representational member from being withdrawn from said box and gripping means for gripping said representational member, said representational members being deployable by a user gripping said gripping means with the fingers and pulling a selected said representational member through said opening until said retainer means engages said box internally and prevents further deployment;

(b) alignment means internal to said box for maintaining said representational members in alignment with said openings; and

(c) lock means for releasably locking said representational members in a retracted position.

5,054,612

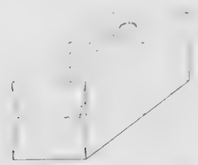
FACIAL TISSUE SANITARY SYSTEM INCLUDING CLOSURE SEALER

Otto E. Meyer, Jr., 3507 Aston St., Annandale, Va. 22003

Filed Nov. 7, 1988, Ser. No. 147,936

Int. Cl.[5] B65D *71/00*; B65H *1/00*

U.S. Cl. 206—233 4 Claims



1. A facial tissue sanitary system comprising a container having a generally rectangular parallelepipedic shape including a first endwall, a second endwall, a first sidewall, a second sidewall, a bottom surface, an upper surface, the interior of said container being divided into a tissue dispensing section and a tissue disposing section by a dividing wall extending between said sidewalls and said upper and lower surfaces, said tissue dispensing section having a first opening in said upper surface to permit withdrawal of tissue therefrom, said tissue disposing section having a second opening in said upper surface to permit insertion of tissue therein, and a removable adhesive closure sealer disposed on said upper surface of said container, said closure sealer having a surface area greater than the dimensions of said second opening and being removable from said container and affixable to the perimeter area surrounding said second opening.

5,054,613

DEVICE FOR FIXATION OF THE SPATIAL INTERRELATIONSHIP OF UPENDED FRAMES

Evald V. Johansson, Brevduvegatan 3, S-421 69 Västra Frölunda, Sweden

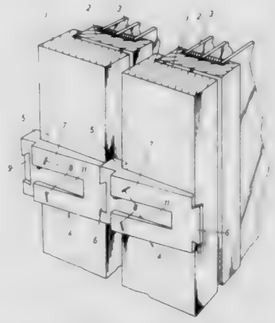
PCT No. PCT/SE88/00119, § 371 Date Sep. 8, 1989, § 102(e) Date Aug. 9, 1989, PCT Pub. No. WO88/07011, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 10, 1988, Ser. No. 401,446

Claims priority, application Sweden, Mar. 12, 1987, 8701028

Int. Cl.[5] B65D *85/48*

U.S. Cl. 206—325 6 Claims



1. An improved device for fixation of a spatial interrelationship of upended, spaced apart frame, said device comprising an elongated, generally wedge-shaped connection member extending from a thicker end to a thinner end; said connection member including a cross-bar insert protruding from said thicker end transversely to the elongated direction of the connection member, an interconnecting recess at said thicker end, and an interconnecting part at said thinner end, wherein said recess and said part are configured such that said part is capable of interlocking with a like recess of an identical connection member for the purpose of interlocking plural connection members.

5,054,614

TWISTABLE WIRE CLAMP FOR CONNECTING OR CLOSING OBJECTS

Heinrich Glaus, Niederwangen; Peter Lehmann, Kirchdorf; Hans Joehr, Kehrsatz, and René Freiburghaus, Bern, all of Switzerland, assignors to Styner & Bienz AG, Niederwangen, Switzerland

Filed Mar. 8, 1990, Ser. No. 490,373

Claims priority, application European Pat. Off., Mar. 15, 1989, 89810202.5

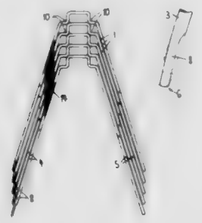
Int. Cl.[5] B65D *85/24*

U.S. Cl. 206—343 4 Claims

1. A wire clamp comprising:

a first shank having a first end and a second end, said first end having a shoulder, said second end being oblong in shape and having a lower portion which is inwardly directed and thinner than said first end;

a second shank having a first end and a second end, said first end of said second shank having a shoulder, said second end of said second shank being oblong in shape and wider than said second end of said first shank, and having a



lower portion with a locking means for locking said second end of said first shank with said second end of said second shank; and

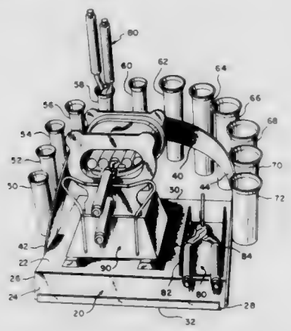
a transitional portion extending between said first end of said first shank and said first end of said second shank.

5,054,615

HOT WORK ORGANIZER

Ross I. Stillwagon, 12741 Los Nietos Rd., Santa Fe Springs; Fernando Fischbach, 8363 Dinsdale St., Downey, and Jon F. Linscott, 12741 Los Nietos Rd., Santa Fe Springs, all of Calif. 90670

Filed Dec. 28, 1990, Ser. No. 635,244
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—373 9 Claims



1. A hot work organizer including:

a base;

a supporting band mounted on said base and extending upwardly therefrom; and

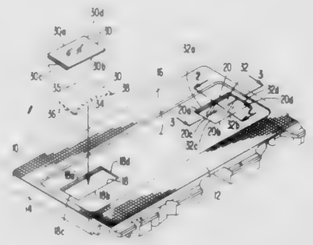
a plurality of curling iron holders carried by said band positioned above and toward the rear of said base, said holders adapted to recieve a variety of different size curling irons having handle and heating iron portions at the opposite ends thereof.

5,054,616

REMOVABLE WINDOWS FOR VIDEO TAPE CASSETTE AND RELATED METHODS OF ASSEMBLY

Anthony Gelardi, Cape Porpoise; Craig Lovecky, Old Orchard Beach, both of Me., and Alan Lowry, Canton, Mass., assignors to Shape, Inc., Biddeford, Me.

Filed Jan. 29, 1990, Ser. No. 471,325
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—393 9 Claims



1. A tape cassette window/cover combination, comprising:

(a) a cassette cover including two openings, each opening for receiving a window and each opening including a border;

(b) two planar windows, each including sides; and

(c) means for removably mounting each window relative to one of the openings of the cassette cover, said means including upper and lower projections formed on the window which removably receive therebetween the border.

5,054,617

IMPROVEMENTS RELATING TO CONTAINERS

Michael E. Young, Cardiff; David M. Edwards, South Glamorgan, and Robin S. Lyons, Cardiff, all of Great Britain, assignors to Creative Design and Packaging Cardiff Limited, United Kingdom

Continuation of Ser. No. 10,887, Apr. 6, 1987, Pat. No. 4,919,268. This application Oct. 25, 1989, Ser. No. 426,616
Claims priority, application United Kingdom, Jun. 8, 1985, 8514554
Int. Cl.[5] B65D *81/36*
U.S. Cl. 206—509 12 Claims



1. A container, comprising opposite ends, one end of the container having a laterally extending flange plate with a removable foil closure, a portion of the flange plate and an opposite end of the container incorporating respective mutually interengageable connection parts for enabling two or more similar containers to be interconnected with one another in a desired spatial relationship, said interengageable connection part of said flange plate being spaced from a peripheral edge thereof.

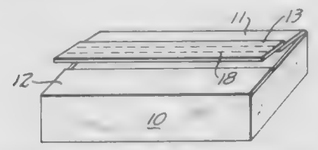
11. A building system comprising a plurality of containers each comprising opposite ends, one end of the container having a laterally extending flange plate with a removable foil closure, a portion of the flange plate and an opposite end of the container incorporating respective mutually interengageable connection parts for enabling two or more similar containers to be interconnected with one another in a desired spatial relationship, said interengageable connection part of said flange plate being spaced from a peripheral edge thereof, said containers being interconnected together in a single assembly.

5,054,618

SEALED CONTAINER WITH TEAR OPENING FEATURE

Myun H. Kim, 141 Meserole Ave. #22, Brooklyn, N.Y. 11222

Continuation-in-part of Ser. No. 77,443, Jul. 24, 1987, Pat. No. 4,936,464. This application Jun. 14, 1990, Ser. No. 538,129
Int. Cl.[5] B65D *3/26, 5/54*
U.S. Cl. 206—605 10 Claims



1. A sealed container with tear-opening feature, which comprises,

(a) a container provided with a pair of opposed closure flaps,

(b) said closure flaps, when closed, defining an elongated closure line extending for the length of the container,

(c) a tear-open tape structure extending continuously along said closure line, bridging over said line and adhesively secured to outer surfaces of respective closure flaps on opposite sides of said closure line to join said flaps across said closure line,

(d) said tear-open tape structure being formed of a thin, strip of tearable carrier tape having upper and lower surfaces and opposite side edges,

(e) a tear band bonded to the lower surface of said tearable carrier tape and extending longitudinally of said tape, along its full length,

(f) said tear band being of substantially less width than said tearable carrier tape and being located inwardly of the respective side edges of said tearable tape,

(g) said tear band having an exposed bottom surface free of adhesive material and being positioned on outer surface of said container to bridge over said closure line along its length,

(h) guide means on each side of and immediately adjacent to opposite side edges of said tear band and extending in longitudinally coextensive relation with said tear band,

(i) said tear-open tape structure being coated with an adhesive material over portions of its bottom surface on opposite sides of said tear band but excluding the bottom surface of said tear band,

(j) means including said adhesive material for retaining said guide means in position on said container flaps during removal of said tear band, whereby the tearing of said tearable carrier tape by said tear band is confined to clean, straight lines defined by inner edges of said guide means,

(k) said flaps being freed to open by removal of said tear band.

5,054,619

SIDE OPENING FLEXIBLE BAG WITH LONGITUDINALLY ORIENTED CARRYING HANDLE SECURED TO SIDE PANELS

Delmar R. Muckenfuhs, Middletown, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 15, 1989, Ser. No. 451,498
Int. Cl.[5] B65D *33/06*
U.S. Cl. 206—610 16 Claims

1. An easy open substantially rectangular flexible bag of compressed flexible articles, said flexible articles being arranged in a stack and held in compression in a direction substantially parallel to their thickness, said bag of articles comprising:

(a) a front and a back panel connected to one another by means of a pair of side panels, a bottom panel and a top panel, all of said panels being comprised of flexible material;

(b) a stack of compressed flexible articles, each of said articles having a pair of opposed, substantially planar surfaces, said articles being oriented so that said substantially planar surfaces are aligned substantially parallel to the side panels of said bag and the outermost peripheral edges of the articles contained within said stack are aligned substantially parallel to the front, back, bottom and top panels of said bag, whereby the entire exposed substantially planar surface of the outermost article at each end of said stack intimately contacts the innermost surface of the adjacent side panel, while only the outermost peripheral edges of said articles contained within said stack contact said front, back, top and bottom panels, said side panels and said front and back panels being subject to tension imposed by said stack of compressed flexible articles, said top and bottom panels being in a substantially untensioned condition;

(c) a carrying handle overlying said top panel of said bag,

said carrying handle having its opposing ends secured to the opposing side panels of said bag; and

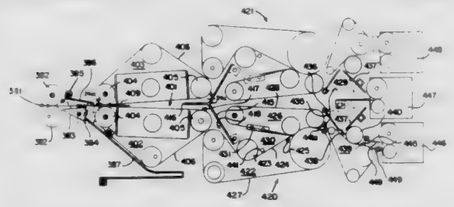
(d) an easy open device comprising a substantially continuous line of weakness located at least partially within one of said tensioned side panels, said substantially continuous line of weakness defining a predetermined portion of said side panel to be at least partially separated from the remainder of said side panel without releasing the tension in the remainder of said side panel and without impairing the functionality of said carrying handle, said predetermined portion of said side panel having a total surface area amounting to as much as about 75 percent of the total surface area of one of said substantially planar surfaces of said articles contained in said stack, whereby said predetermined portion of said side panel is at least partially separated from the remainder of said side panel by applying a grasping force to said predetermined portion of said side panel defined by said line of weakness to propagate tears along said line of weakness, whereupon the portion of the stack of articles coinciding with the aperture thus formed in said side panel expands through said aperture in a fan-like array while the portion of said stack coinciding with the remaining tensioned portion of said side panel is retained in a substantially compressed condition

5,054,620

APPARATUS FOR THE AUTOMATED PROCESSING OF BULK MAIL AND THE LIKE

Robert R. DeWitt, Marlton; William R. Lile, Medford; Paul Mitchell, Hilltop, and Albert F. Stevens, Moorestown, all of N.J., assignors to Opex Corporation, Moorestown, N.J.

Division of Ser. No. 904,966, Sep. 5, 1986, Pat. No. 4,863,037.
This application Jun. 8, 1989, Ser. No. 363,146
Int. Cl.[5] B07C *5/02*
U.S. Cl. 209—3.1 40 Claims



1. An apparatus for extracting contents from a plurality of envelopes, comprising:

means for severing edge portions of said envelopes, and for delivering said edge-severed envelopes from the severing means serially and one at a time; and

means for extracting said contents from said edge-severed envelopes including;

a pair of conveyor belts which diverge progressively from a nip for receiving said edge-severed envelopes from said severing means, and vacuum means cooperating with said conveyor belts to separate faces of said envelopes from one another; and

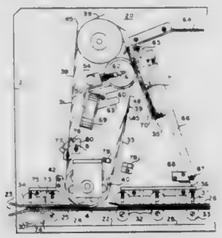
means for separating said contents from the separated faces of said envelopes, for discharge from said apparatus.

5,054,621

DOCUMENT SORTING APPARATUS

Gary J. Murphy, Birmingham, Ala.; Derrick L. Murphy; Michael J. Murphy, both of Middletown, Md., and Michael Barnes, Frederick, Md., assignors to Hybrid Systems, Inc., Birmingham, Ala.

Filed Dec. 18, 1989, Ser. No. 451,925
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—534 15 Claims



1. Apparatus for automated sorting and stacking of sheet items, documents, notes, cards, envelopes and the like having a common unit mechanical conveyor for receiving and transporting said sheet items in sequential progression, one after another, at a specified velocity in a defined flow path, and having a multiplicity of like diverting mechanisms distributed along said conveyor in communication with said defined flow path, said apparatus operable by a microprocessor and digital controller, wherein the improvement comprises:

a. a perforated endless belt for said sorting and stacking of said sheet items comprising a multiplicity of integral capture fingers in said belt that are distributed uniformly along the circumferential length of said belt, said distributed fingers in any straightened segment of said belt are biased to project inward at an acute angle, all in the same direction, in reference to the inner surface of said belt, said fingers in curved segments along the circumference of said belt of sufficiently small forced local radius then shift, by the resultant deformation of said belt, to project outward at acute angles in reference to the outer flat surface of said belt;

b a means for shaping said endless belt in said straight segments and in said curved segments of sufficiently small radius for said shift of said capture fingers;

c a means for communicating one said curved segment of said endless belt with said conveyor defined flow path for the capture of designated sheet items form said sequential progression by an outward projecting capture finger with trailing edge thereof facing the advancing sheet item;

d a means for advancing said endless belt for a transition of said outward projecting fingers in the curved belt segment to inward projecting fingers in a straight belt segment said transition for grasping said sheet items between said finger and said belt outer surface for transport by pulling a section to a stacking pocket; and

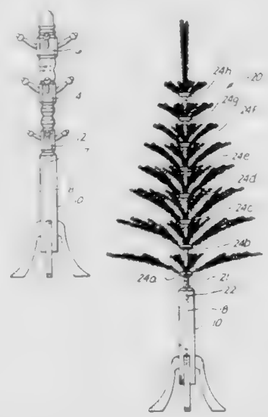
e a means for initiating and controlling the motion of said endless belt for rendezvous and interception of said sheet items, responsive to a determination that an advancing specific sheet item is to be captured from said sequential progression in the flow of said sheet items in said conveyor path.

5,054,622

ROTATING CLOTHES HANGER AND ARTIFICIAL CHRISTMAS TREE

Kil J. Lee, Pacific Grove, Calif.

Filed Sep. 5, 1990, Ser. No. 578,085
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—2 1 Claim



1. A clothes stand convertible to a Christmas tree, said stand being of the type comprising:

(a) a base member, said member being at least partially axially orificed, from its top downwardly, said base member including means to support said base member on a horizontal surface with the axis of said orifice in a substantially vertical orientation;

(b) a cylindrical axle rod, said rod having a portion of a configuration to fit into the orifice in said base member, and being removably inserted therein;

(c) a plurality of spool-like elements disposed in series on said axle rod, each of said spool-like elements having an internal diameter slightly greater than the external diameter of said axle rod, thereby being rotatable about said axle rod, each of said spool-like elements being rotatable independently of the others;

(d) at least one support arm longitudinally extending angularly upwardly from each of said spool-like elements to support a coat or other garment therefrom; and

(e) each spool-like element above the lowermost said element being of greater outside diameter than that immediately below it, and each support arm extending from the spool-like element above the lowermost such element, being of a greater longitudinal dimension than that of any of the arms extending from the spool-like element immediately below

whereby garments placed on the several support arms on the different spool-like elements may be rotated about said axis for different angular dispositions relative to said rod, and garments hung on the upper support arms will not hang on the same vertical line as the garments hung on the lower support arms, so that garments hung on the support arm of any spool-like element may be rotated about the axle rod in a different concentric cylindrical path from that defined by the rotation of garments hung on the support arms of any other spool-like element;

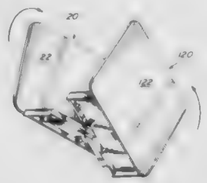
wherein for conversion, upon removing said axle rod and said spool-like elements from the base member, there is provided a support shaft, means insertable into the orifice in said base member to provide vertical support for said shaft, and a plurality of elongated branch bearing trunk-like members, said trunk-like members being axially orificed to be mountable in series one above the other on said shaft, each of said trunk-like members having a plurality of needled branches extending angularly upwardly and the uppermost member being tipped in the manner of a Christmas tree.

5,054,623

VERTICAL SORTER SYSTEM

Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.

Filed Apr. 5, 1990, Ser. No. 504,871
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—11 6 Claims



1. A vertical sorter system that includes at least two vertical sorter modules, each vertical sorter module having a base with a bottom, a top, a front side, and a back side and a divider wall that extends vertically upward from the base, the back said module:

a first means for coupling the at least two vertical sorter modules in an aligned position relative to one another when the front sides of the bases of the at least two vertical sorter modules are coupled to one another; and

a second means for coupling the at least two vertical sorter modules in variable positions relative to one another when the front side of one of the vertical sorter modules is coupled to the back side of the other vertical sorter module;

5,054,624

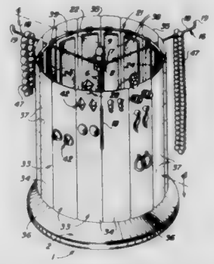
JEWELRY CADDY

Betty J. Camp, 3125 Mackey La., Shreveport, La. 71118

Filed Jul. 5, 1989, Ser. No. 375,679
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 4 Claims

1. A jewelry caddy for organizing jewelry, comprising a base;

an elongated rod having one end attached to said base and upward-standing from said base; at least three struts carried by the opposite end of said rod for supporting first selected pieces of the jewelry; a top frame ring supported by said at least three struts, a bottom frame ring spaced from said top frame ring and at least two vertical frame supports carried by said top frame ring and said bottom



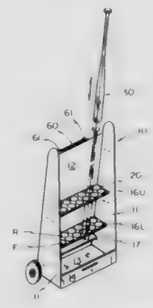
frame ring; a plurality of slats disposed around said top frame ring and said bottom frame ring; and clip means provided on said slats for removably securing said slats on said top frame ring and said bottom frame ring for supporting second selected pieces of the jewelry.

5,054,625

BAT RACK

Kevin M. Foley, 20 Manor Rd., St. Catharines, Ontario, Canada L2N 3B5

Filed Jun. 21, 1990, Ser. No. 541,754
Claims priority, application Canada, Apr. 9, 1990, 2014206
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 10 Claims

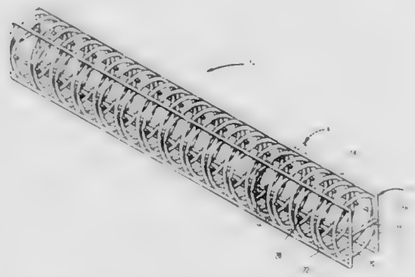


1. A portable rack for housing a plurality of baseball bats in a pre-determined array comprising:

(a) opposite vertical triangular side walls, with upper, lower-rear and lower-forward, apexes, a back and bottom interconnecting and disposed between respective back and bottom edges of the side walls, the side walls carrying at least three rigid laterally extending forwardly protruding bat carrying members, each vertically and spatially disposed one from the other, the upper two bat carrying members each defining an array of bat accommodating retaining means wherein the upper two carrying members define orifices through which the bats extend, the orifices arranged in at least two rows, a forward and rearward row, and means for holding the bats in a rearward row at an elevation higher than the bats in a forward row, a bottom flat sheet extending forward from near the lower-rear apex toward the lower-forward apex, and wheel members mounted in closer proximity to the lower-rear apex than the lower-forward apex so as to permit the lower-forward apexes, when the rack is in the standing

and used position, to engage the ground and with the wheels to tilt the rack forward.

5,054,626
STORAGE RACK
George Stempinski, 24 S. Minisink Ave., Sayreville, N.J. 08872
Filed Sep. 13, 1990, Ser. No. 582,406
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—40 17 Claims



1. A storage rack for holding a plurality of articles, said storage rack comprising a plurality of retaining members fixed in adjacent relationship to one another to define a plurality of storage slots arranged to provide for the storage and display of articles on a first side and a second side of said storage rack, said retaining members being constructed and arranged to provide access to a first portion of said storage slots only from the first side of said storage rack and access to a second portion of said storage slots only from the second side of said storage rack, said retaining members being further constructed and arranged to secure therebetween articles stored in said storage slots.

5,054,627
DISPLAY DEVICE FOR MERCHANDISING NUTS AND BOLTS
Frederic M. Gregory, 4322 Lakewood Blvd., Long Beach, Calif. 90808
Filed Sep. 24, 1990, Ser. No. 586,698
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—94 5 Claims



1. A cantilever display device for the merchandising or storage of nuts and bolts comprising:
a) a first side-wall member having a longitudinal axis and a mounting end where said mounting end has a laterally inwardly projecting mating surface;
b) a second side-wall member having a longitudinal axis and a mounting end having a receiving slot therein for slideably engaging said laterally projecting mating surface;
c) an axially extending first lower flange member projecting laterally inward from said first side-wall member;
d) an axially extending second lower flange member projecting laterally inward from said second side-wall member in the direction of said first side-wall member such that said lower projecting flange members define a lower longitudinally extending slot;
e) means for connecting said first side-wall member to said second side-wall member such that the lateral width of said lower slot is adjustable to a preselected dimension thereby permitting the shank of a bolt to extend through said lower slot and the head of said bolt to be supported by said lower flanges;
f) attachment means for attaching said mounting ends to a support platform for cantilever extension therefrom.

5,054,628
WALL MOUNTED FOLDING CARRIER
Christopher B. Allen, 29 Devens St., Concord, Mass. 01742
Filed Feb. 4, 1991, Ser. No. 650,064
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—104 17 Claims

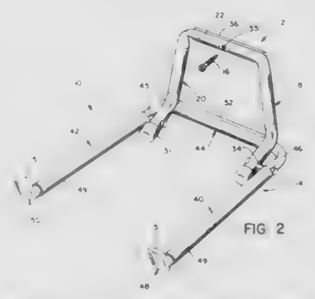
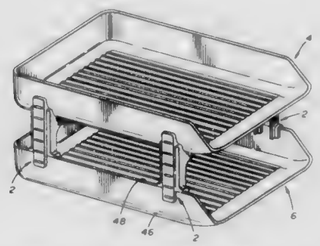


FIG 2

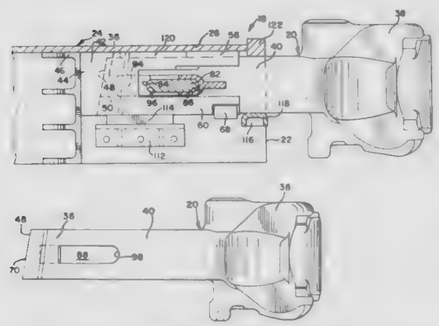
1. A foldable carrier that is mountable on a generally planar member for storing bicycles, skis, and the like, said carrier comprising:
(a) a frame that is configured to be mounted on the generally planar member, said frame having a back member and leg means that extend from said back member, an end portion of said leg means being bent to form a foot, said bend defining a stop means; and
(b) a carrying member rotatably mounted to said frame and constrained for limited movement relative to said frame;
(c) said carrying member is movable between a stored position and a carrying position when said frame is mounted on the generally planar member, said frame and said carrying member are in substantially side-by-side relationship when said frame is mounted on the generally planar member and said carrying member is in its stored position, said carrying member is tilted backwardly toward the generally planar member when said carrying member is in its stored position, said frame and said carrying member are in substantially perpendicular relationship when said frame is mounted on the generally planar member and said carrying member is in its carrying position, said carrying member being moved from said stored position to said carrying position by rotating said carrying member away from the generally planar member until said carrying member engages said stop means, said stop means preventing further rotational movement of said carrying member and holding said carrying member in a substantially perpendicular relationship with respect to said frame.

5,054,629
ADJUSTABLE TRAY RISER
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 6, 1990, Ser. No. 563,652
Int. Cl.[5] A47B *47/04*
U.S. Cl. 211—128 22 Claims



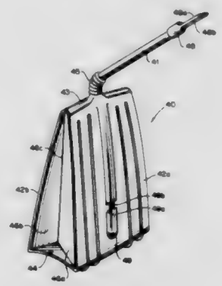
1. An adjustable stacking letter tray system, comprising:
upper and lower letter trays, said trays having longitudinally extending sidewalls and said upper letter tray having at least one profiled protrusion projecting downwardly from a bottom surface;
at least one riser body having lower attachment means for securing to a longitudinally extending sidewall of said lower letter tray, and upper attachment means for receiving said upper tray protrusion, whereby attaching to said upper letter tray and placing said upper and lower trays in a spaced apart orientation, and
said upper attachment means having adjustment means for selectively placing said upper letter tray in alternate longitudinal alignments relative to said lower letter tray with said riser lower attachment means remaining in a fixed location along said lower tray sidewall.

5,054,630
SLACKLESS COUPLER CONNECTION FOR A RAILWAY VEHICLE
Russell G. Altherr, Munster, Ind., assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 4, 1990, Ser. No. 518,925
Int. Cl.[5] B61G *7/00*
U.S. Cl. 213—56 25 Claims



1. In an improved slackless coupler connection for a railway car of the type having a coupler member extending into a railway car center sill, said coupler member having a head end, a butt end and a shank between said head end and said butt end, said coupler member vertically restrained within said center sill, the improvement comprising:
a conical surface about said butt end of said coupler member;
a self-adjusting follower member located within said center sill, said follower member having a pocket for receiving said butt end of said coupler member, said follower member pocket having a corresponding conical surface interfacing with and in mated alignment with said conical surface about said butt end of said coupler member, said interfacing surfaces configured to allow horizontal angling of said coupler member while restraining said butt end of said coupler member in a lateral and longitudinal position within said center sill.

5,054,631
DISPOSABLE BEVERAGE CONTAINERS HAVING INTEGRAL DRINKING STRAWS
Edward S. Robbins, III, 459 North Ct., Florence, Ala. 35630
Filed Sep. 25, 1989, Ser. No. 411,893
Int. Cl.[5] B65D *25/46, 25/48, 1/46*
U.S. Cl. 215—1 A 9 Claims

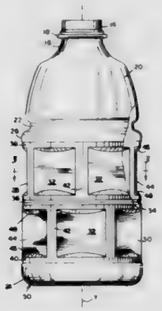


1. A beverage container comprising:
a flexible container body which defines an interior volume for containing a liquid beverage therein;
said container body including a bottom wall, opposing front and rear panels each joined at a lower region to said bottom wall and converging towards one another at an upper region, and a pair of opposing generally triangularly shaped side panels joined to respective side edges of said front and rear panels and to said bottom wall;
a drinking straw integrally coupled to said upper regions of said front and rear panels and in fluid-communication with said interior volume for allowing a user to withdraw said contained beverage from said interior volume; and
bellows means for integrally coupling said drinking straw to said container body and for allowing said drinking straw to be foldable between a stowed position wherein said drinking straw is closely adjacent said container body, and an erected position wherein said drinking straw outwardly extends from said container body, wherein
said front panel of said container body includes means defining a recess sized and configured to hold said drinking straw therein when in said stowed position.

5,054,632
HOT FILL CONTAINER WITH ENHANCED LABEL SUPPORT
Alfred C. Alberghini, Dunwoody; David A. Brunson, Marietta, and Stephen R. Lynn, Douglasville, all of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.
Filed Jul. 23, 1990, Ser. No. 556,535
Int. Cl.[5] B65D *1/02, 1/42, 23/08*
U.S. Cl. 215—1 C 13 Claims

11. A container made of thermoplastic material especially adapted for hot filling comprising: a bottom portion, a neck portion, and a generally cylindrical intermediate body portion

including at least two circumferential rows of panels including means for providing controlled volumetric reduction of the container in response to the presence of a partial vacuum within the container, a land separating each adjacent pair of



panels in each row, a circumferential band separating each of the at least two circumferential rows of panels from each other, the rows of panels being staggered with respect to each other such that the lands of one row are vertically aligned with the panels of any adjacent row.

5,054,633

TAMPER EVIDENT SAFETY CLOSURE

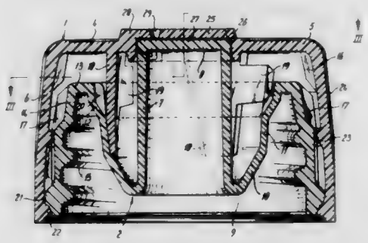
Tjerk Reijenga, Oisterwijk, Netherlands, assignor to Technoplast B.V., Tilburg, Netherlands

Filed Dec. 22, 1989, Ser. No. 454,984

Claims priority, application Netherlands, Dec. 27, 1988, 8803179

Int. Cl.[5] B65D *55/02*

U.S. Cl. 215—220 **22 Claims**



1. A tamper evident safety closure, to safely close containers, which closure comprises an assembled combination of an inner cap housed in and surrounded by an outer cap and whereby the inner cap is provided with means to screw it onto a container to be closed, at least part of the outer cap being axially movable with respect to the inner cap, with resilient means to urge the caps axially away from each other and means to limit such axial movement and thus avoid separation of the caps from each other, cooperating camming means on both caps so as to allow screwing of the inner cap onto a container without depressing the outer cap down onto the inner cap and to allow rotation of the outer cap in the offscrewing direction without rotation of the inner cap, in which the camming means of the outer cap pass the camming means on the inner cap, said camming means on both caps entering into engagement with each other to cause rotation of the inner cap with the outer cap in the offscrewing direction only upon depression of the outer cap, the inner cap having a central upstanding part and the outer cap having a top end wall with a central opening bridged by a wall portion connected thereto by a rupturable connection, so that, on depressing the outer cap the said upstanding part of the inner cap contacts said bridging wall portion and ruptures it from said top end wall of the outer cap, and in which at least one of the parts, the upstanding part of the inner cap and the bridging wall portion on the outer cap, cooperating for rupturing the connection on depressing the outer cap, has an asymmetrical shape with respect to at least one of the references, constituted by the central vertical axis of the closure and a plane perpendicular thereto, so that depression of the outer cap will load the connection between the bridging wall portion and the top end wall of the outer cap differently in different zones along the periphery of said wall portion and, said bridging wall portion is also connected in at least one zone around its periphery to the outer cap by a non rupturable connection, there being an eccentric weakening in said bridging wall portion close to said non rupturable connection, which weakening is embodied by its material, dimensions and shape, so that it deforms lastically at an upward load, exerted in the rupturing direction by the inner cap upon depression of the outer cap.

5,054,634

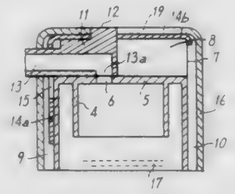
CAPSULE WITH A DRAWER AND A SLIDING CURSOR

Jacques Margotteau, La Grande Motte, France, assignor to Societe de Conseils et d'Etudes de Emballages - S.C.E.E., Seine er Marne, France

Filed Feb. 21, 1989, Ser. No. 607,436

Int. Cl.[5] B65D *43/12*

U.S. Cl. 215—322 **11 Claims**



1. A capsule with a sliding drawer for a container, has a capsule body provided for closing one end of the container, the capsule body includes a top wall formed with a port and from which is formed a slide for a drawer cover by a top of an envelope fixedly connected to the capsule body and formed with an incision for a control knob, said control knob controlling the drawer and being associated with a cursor for closing said incision, and wherein said cursor includes a posterior portion for closing the incision of the envelope when said drawer is placed in a position in which it protrudes through an opening of the cursor and a hole of the envelope at the same time as an opening of a longitudinal passage of said drawer is brought in register with the port of said capsule body.

5,054,635

RAPID ASSEMBLY AND LOAD DISTRIBUTION SYSTEM FOR NESTABLE CONTAINER SECTIONS

Aaron L. Kolom, Los Angeles, Calif., assignor to Alcoa/Tre, Inc., Los Angeles, Calif.

Continuation of Ser. No. 138,594, Dec. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 926,283, Feb. 5, 1986, abandoned. This application Jun. 1, 1990, Ser. No. 532,187

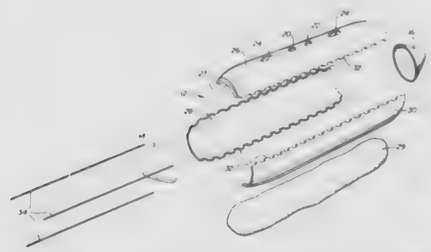
Int. Cl.[5] B64D *37/12;* **B65D** *8/04*

U.S. Cl. 220—4.15 **15 Claims**

1. A aircraft fuel tank that maybe quickly assembled and disassembled, comprising:

at least two separable tank sections that abut each other along common boundaries, each tank section having an outer surface and an inner surface;

a plurality of substantially rectangular extensions spaced at generally uniform intervals along each tank section common boundary, wherein each extension has an outer and inner surface which are contiguous with the tank section outer surface and inner surface, respectively, and wherein each extension has a solid metal construction with a hole passing through the extension in a direction parallel to the common boundary and spaced substantially equidistant between the inner and outer surface of the extension, such



that the extensions of abutting tank sections may be fitted together with the extension of one tank section fitting into an interval of the abutting tank section having no extension; and

a flexible pin adapted to be inserted through the extension of two adjacent tank sections, thereby coupling the tank sections together.

5,054,636

DRUM STORAGE SYSTEM UTILIZING DETACHABLE BLOCKS

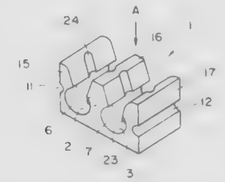
Karl Netzer, Bahnhofstrasse 14, 6143 Lorsch, Fed. Rep. of Germany

Continuation of Ser. No. 261,362, Oct. 24, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 517,515

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1987, 3735876

Int. Cl.[5] B65D *21/02*

U.S. Cl. 220—23.4 **5 Claims**



1. A drum storgage system comprising:

a plurality of drums of substantially equal diameter and height, each drum having an upper rim and a lower rim, the drums being arranged in a plurality of rows and columns and having an uppermost set and lowermost set of drums so that for each two adjacent drums of a row the lower rims of the two adjacent drums are juxtaposed each other and the upper rims of the two adjacent drums are juxtaposed each other, and for each two adjacent drums of each column the lower rim of one drum overlies the upper rim of another, adjacent drum;

a plurality of first blocks, each first block having a body made of flexible material and having a first set of three projections on one side which forms a first set of two clips and a second set of three projections on an opposite side which forms a second set of two clips, one first block being provided at each pair of juxtaposed upper rims and each pair of juxtaposed lower rims to clamp together the juxtaposed lower rims and the juxtaposed upper rims of the adjacent drums of each row, and the coresponding lower rim of a drum in one column with the corresponding upper rim in the same column, and

a plurality of second blocks, each second block consisting of a base and a first set of three projections on one side which forms a first set of two clips, one second block being provided at each pair of juxtaposed lower rims of the lowermost set of drums to clamp together adjacent lower rims of the lowermost set of drums and at each pair of juxtaposed upper rims of the adjacent drums of the uppermost set of drums to clamp together adjacent upper rims of the uppermost set of drums.

5,054,637

CAN END FOR A TUBULAR CONTAINER

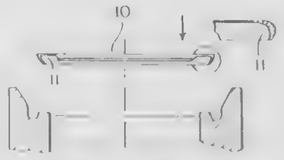
Ruggiero La Rovere, Rio de Janeiro, Brazil, assignor to Rheem Empreendimentos Industrials E Comercials S/A, Rio De Janeiro, Brazil

Filed Mar. 31, 1989, Ser. No. 331,397

Claims priority, application Brazil, Nov. 21, 1986, PI 8605741[U]

Int. Cl.[5] B65D *6/34, 8/04*

U.S. Cl. 220—660 **3 Claims**



1. A can end adapted to be mounted to the end portion of a cylindrical container and having an inside surface and an outside surface, said can end comprising

a flat circular central panel,

an annular wall portion extending from the periphery of the flat circular central panel in the upward or downward direction relative to said central panel,

a flat circular area extending radially from the annular wall portion, said flat circular area having a down turned edge portion so arranged that the down turned edge portion, flat circular area and annular wall portion define a channel, and

a gasket in the form of a sealing material, disposed in a corner defined by the down turned edge and the flat circular area and on the side of the can end corresponding to the outside of the cylindrical container for achieving a leak proof seal when engaged by the end portion of the cylindrical container.

5,054,638

BEVERAGE CAN HANDLE WITH KEY RING ATTACHED

Steven B. Rose, 4080 Huerfano Ave., #246, San Diego, Calif. 92117-5226

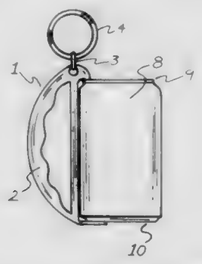
Filed Mar. 23, 1990, Ser. No. 484,495

Int. Cl.[5] B65D *25/26*

U.S. Cl. 220—85 H **4 Claims**

1. A handle device for releasable attachment to a beverage can, said handle device comprising: a one-piece, expansible, approximately D-shaped holder of resilient material having a curved hand-graspable portion, a portion to grip a top bead of

a beverage can, a portion to grip the bottom bead of the beverage can, a verticle portion connecting the bead gripping portions and spanning the curved hand-graspable portion, and a key-ring attached to said D-shaped holder.

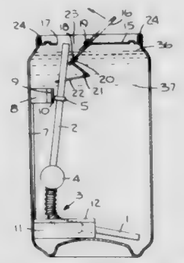


5,054,639

FLOATING STRAW FOR BEVERAGE CANS

Si Y. Ahn, 61-43 Springfield Blvd., Oakland Gardens, N.Y. 11364, assignor to Si Y. Ahn, Bayside, N.Y.

Filed Aug. 27, 1990, Ser. No. 573,633
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—90.2 **1 Claim**



1. In combination, a beverage can arrangement containing:
(a) a tab that does not separate completely from the can when opened, instead it pivots downwardly and inwardly into a drinking slot of said can,
(b) a straw having a flexible portion, a float made of a material of a lesser specific gravity than water and a ring that prevents the straw from floating until the tab is opened,
(c) a straw guide attached underneath the tab of said can and having a straw hole fitting the straw,
(d) a straw holder having an extended C-shaped clamp that resembles a broom handle holder on a top end of said straw holder and an eaves shaped straw retainer on a bottom end of said straw holder,
said straw holder is attached to an inside wall of said can, so that the straw is held vertically adjacent to the inside wall by both the straw holder and the straw guide; when tab is opened and pivots downwardly and inwardly the straw hole detaches the straw from the said clamp and guides it radially inwardly away from the inside wall towards the drinking slot of said can.

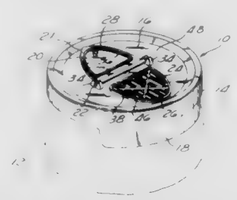
5,054,640

PROTECTIVE CAP FOR BEVERAGE CONTAINERS

Terence Tucker, 33811 Shannon La., San Juan Capistrano, Calif. 92675

Filed Oct. 15, 1990, Ser. No. 598,175
Int. Cl.[5] A47G *19/22;* **B65D** *51/18*
U.S. Cl. 220—90.2 **9 Claims**

1. A protective cap for preventing insects, airborne debris, and the like from entering beverage containers, the cap comprising:
(a) a generally planar surface;
(b) a peripheral portion formed substantially perpendicular to said planar surface at the periphery of said planar surface, said peripheral portion having a detent formed thereon for releasably attaching the protective cap to a beverage container;
(c) an opening formed in said planar surface;
(d) a grate formed within said opening; and



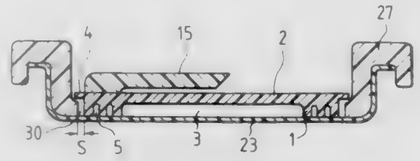
(e) a cover hingeably attached to said planar surface such that said cover can be rotated between an opened position and a closed position; and
(f) a detent pin formed upon the lower surface of said cover; and
(g) wherein said detent pin engages said grate when said cover is in the closed position, said detent pin and said grate cooperating to latch said cover in the closed position.

5,054,641

LID FOR CAN-LIKE CONTAINER AND METHOD OF MANUFACTURING SAME

Wasuke Sato, Tokyo, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,632
Claims priority, application Japan, Apr. 7, 1988, 63-84018
Int. Cl.[5] B65D *17/34*
U.S. Cl. 220—270 **8 Claims**



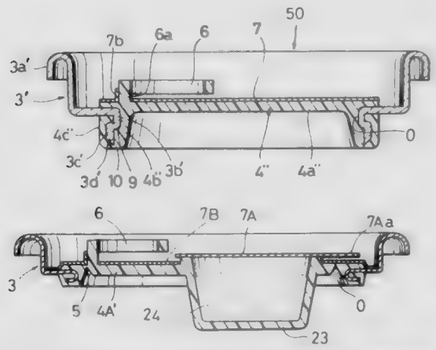
1. A lid for a can-like container comprising:
a gas barrier-type multi-layer base for the lid;
a reinforcing thermoplastic resin layer formed on said multi-layer base; and
a tab seat of a synthetic resin having a tab and formed on that portion of an upper surface of said multi-layer base surrounded by said reinforcing thermoplastic resin layer, said tab seat being disposed in spaced relation to said upper surface to form a space covering substantially the entire of said upper surface beneath said tab seat and disposed in such a manner that a score portion having as small a width as possible is formed between the outer periphery of said tab seat and the inner peripheral edge of said reinforcing thermoplastic resin layer, and said upper surface being exposed through said score portion, whereby said space absorbs energy when said container is dropped so as to prevent said energy from concentrating at said score portion.

5,054,642

LID DEVICE FOR WIDE-MOUNTED CONTAINER AND METHOD OF PRODUCING THE SAME

Yoshiaki Yoshida, Nara, Japan, assignor to Tenryu Chemical Industry Co., Ltd., Nara, Japan

Filed Oct. 24, 1989, Ser. No. 426,012
Claims priority, application Japan, Mar. 15, 1989, 1-30204[U]; May 18, 1989, 1-125657
Int. Cl.[5] B65D *17/40*
U.S. Cl. 220—276 **16 Claims**



1. A lid device for a wide-mouthed container comprising:
a lid body fittable to an open mouth of the container, said lid body having an inner margin defining an opening of a predetermined shape;
a closure member for closing said opening of said lid body, said closure member being integrally made of a soft synthetic resin, said closure member being formed with a weakening line extending along said inner margin of said lid body to define an openable portion; and
an externally located pull tab connected to said openable portion of said closure member at a position adjacent to said weakening line; wherein
said inner margin of said lid body has a bent portion directed radially outward; and
said closure member has an anchoring portion located radially outwardly of said weakening line, said anchoring portion completely enclosing said inner margin, including said bent portion, of said lid body for connection thereof; whereby
said anchoring portion remains entirely connected to said inner margin even when said openable portion is tear-opened along said weakening line.

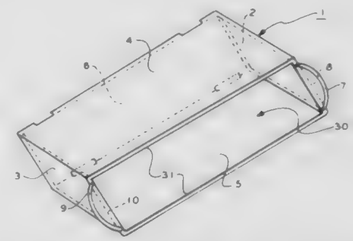
5,054,643

CASSETTE HOUSING

Michael Joyce, Kinnelon, N.J., assignor to Joyce Molding Corp., Rockaway, N.J.

Filed Jul. 16, 1990, Ser. No. 553,229
Int. Cl.[5] B65D *43/24, 43/14, 85/672*
U.S. Cl. 220—335 **11 Claims**

1. An improved case for an item, the case having a plurality of walls defining a volume into and out of which the item may be inserted and removed through an opening communicating with the volume; wherein the improvement comprises:
a swingable, snap-action, bistable member on one of the walls adjacent the opening, the member overlying and blocking a portion of the opening in a first stable position thereof and unblocking the opening in a second stable position thereof, the member comprising
a tab, and
a film hinge which is integral with the tab and the wall and is arcuately shaped as viewed generally perpendicularly to the plane of the wall, the tab having an arcuate, generally parabolic shape in its stable positions;
whereby applied forces tending to move the tab out of its stable positions effect deformation of the tab, which deformation cooperates with the film hinge to apply stress forces to the tab which bias the tab to one of the stable positions thereof as a function of the magnitude and duration of the applied forces.



5,054,644

BOX

Robert C. Greenslade, Bristol, United Kingdom, assignor to Nomix Manufacturing Company Limited, Bristol, United Kingdom

Filed Sep. 25, 1990, Ser. No. 587,396
Claims priority, application United Kingdom, Sep. 26, 1989, 892689
Int. Cl.[5] B65D *5/54, 5/74*
U.S. Cl. 220—403 **9 Claims**



1. A box made from a rigid blank of stiff material, having a closure including an aperture for receiving a flanged fitting, the closure comprising an inner panel and an outer panel provided with openings which cooperate to define the aperture, the opening in the outer panel comprising a recess extending from an edge of the outer panel, the outer panel being hinged to a side wall of the box and being creased to enable it to be displaced from a buckled configuration, in which the region of the outer panel having the recess lies substantially flat on the inner panel with the recess at least partially disengaged from the fitting, to a flat configuration, in which the entire outer panel lies substantially flat on the inner panel with the recess fully engaging beneath the flange of the fitting, the outer panel having a locking tab which, when the outer panel is in the flat configuration, is insertable into a slot defined between panels of the box, the locking tab, when inserted, preventing displacement of the outer panel from the flat configuration to the buckled configuration.

5,054,645

STORAGE TANK SYSTEMS WITH ENHANCED STRENGTH HAVING IN SITU FORMED INNER TANK

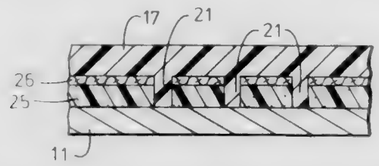
Bruce R. Sharp, 7685 Fields-Ertel Rd., Cincinnati, Ohio 45241

Filed May 2, 1990, Ser. No. 518,076

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.[5] G01M *3/16*

U.S. Cl. 220—445 **11 Claims**



1. A storage tank system for liquids having secondary containment capability and sufficient integral structural strength to withstand external load forces normally encountered by underground storage tanks, comprising:

(a) a rigid outer tank shell;

(b) a separating material positioned around an interior surface of the outer tank shell, said separating material characterized in having a series of holes extending therethrough rough with each hole at least about one-eighth inches in its minimum cross-dimension and less than about three inches in its maximum cross-dimension and further wherein said holes are filled with a resinous material to form attachment columns; and

(c) an inner tank made of a fibrous reinforced resinous material which is completely encased by the outer tank shell to form a closed space therebetween, said inner tank being partially structurally independent from the outer tank shell because of the separating material, and structurally connected by the resinous material attachment columns to the outer tank shell so that said inner tank and outer tank shell reinforce one another to achieve enhanced structural strength

5,054,646

DISPENSING DEVICE FOR PARKING LOT

John W. Hammerschlag, Evanston; Arne Weingart, and Andrew R. McLaughlin, both of Chicago, all of Ill., assignors to General Parking Corporation, Chicago, Ill.

Filed Sep. 13, 1990, Ser. No. 581,961

Int. Cl.[5] B65H *3/58*

U.S. Cl. 221—26 **4 Claims**



1. A dispenser for holding imprinted cards at a parking lot in order that they can be grasped and removed from the dispenser to indicate where the care is parked, comprising:

a base member that has upper and lower fastening means extending therethrough for association on the base member to a wall,

a metal cover with a front thereof that has an access opening therein,

said access opening being formed by a pair of opposing parallel rectangular end walls and a front face plate disposed and spanning the top of said dispenser and covering the card holding means and upper fastening means of said base member,

said cover being pivotally associated with said base member, and being rotatable from an open position to a closed position,

said base member having card holding means extending therefrom to hold the cards to be dispensed from said dispensing means; and

locking means selectively locking the dispensing cover to said base means when the cover is in its closed position,

said cover being shaped to preclude access to the fastening means holding the base member and having a rear opening that is formed by the ends of a plurality of opposing parallel end walls with one of said end walls having a lower face plate that covers said lower fastening means when said cover is locked in its closed position whereby easy access to the fastening means cannot be obtained unless said cover is unlocked and rotated to its open position.

5,054,647

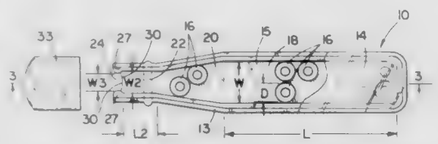
ASEPTIC ORTHODONTIC DISPENSER

Haruyasu Yawata, Huntington Beach, Calif., assignor to Ormco Corporation, Glendora, Calif.

Filed Mar. 2, 1989, Ser. No. 317,731

Int. Cl.[5] B65H *3/00*

U.S. Cl. 221—41 **24 Claims**



11. A dispenser for dispensing orthodontic O-rings comprising:

a main rigid body portion having at least one storage and delivery chamber for holding and dispensing at least one individual orthodontic O-ring made of an elastomeric material, said at least one storage and delivery chamber having a substantially constant height which is slightly greater than the thickness of an orthodontic O-ring but less than twice the thickness of the O-rings, said at least one storage and delivery chamber having an outlet for allowing dispensing of said O-ring one at a time, said main body further includes means for restricting said O-ring from freely coming out of said outlet such that said O-rings must be deformed to allow dispensing from said outlet.

5,054,648

HIGHWAY CONE DISPENSER AND COLLECTOR

Eugene H. Luoma, 1325 Normanna Rd., Duluth, Minn. 55803

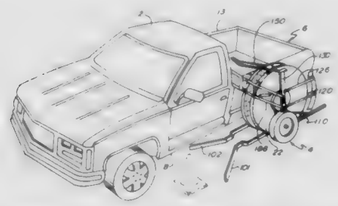
Filed Jan. 23, 1990, Ser. No. 468,569

Int. Cl.[5] B65G *65/18*

U.S. Cl. 221—185 **41 Claims**

1. An apparatus for delivering highway markers with base plates between upper and lower locations and dispensing the markers at one of such locations, comprising:

a marker conveying means having upper and lower portions and conveying the markers therebetween, said means comprising marker gripping means and further comprising dispensing means adjacent one of said portions, said dispensing means comprising base plate engaging portions



for loosening the markers for removal from the conveying means.

5,054,649

RECIPROCATING OBJECT DISPENSER

Françoise Lemaire, and Jean-Michel Farce, both of Paris, France, assignors to I.G. Design, Paris, France

Filed Apr. 27, 1990, Ser. No. 515,423

Int. Cl.[5] B65G *59/00*

U.S. Cl. 221—248 **17 Claims**



1. A device for dispensing objects, the device comprising a first member forming a magazine for the objects to be dispensed and a second member capable of performing reciprocating motion in translation relative to the first member in order to release a predetermined number of objects during each back-and-forth movement of said motion, the device comprising:

a dispensing chamber, provided with a retractable shutter and suitable for receiving the said number of objects;

means for bringing the objects contained in the magazine successively into the dispensing chamber, said means defining a single retaining location which, after each back-and-forth movement, contains the next object that is to enter the chamber;

retractable retaining means for holding in place the object that is to be found in the said retaining location;

means for retracting the shutter and adapted, under the action of said reciprocating motion, to open a passage during a fraction of the duration of a back-and-forth movement, said passage being large enough to allow the object(s) contained in the dispensing chamber to exit therefrom; and

means subjected to the action of said reciprocating motion for engaging the retaining means to hold the object present in said retaining location at least during the time that the passage is opened by retraction of the shutter;

wherein the shutter is on the second member and the corresponding means for retracting the shutter comprises an abutment on the first member and bearing against the shutter in order to retract it during said reciprocating motion.

5,054,650

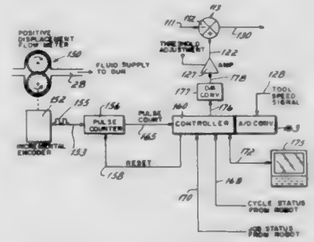
METHOD OF COMPENSATING FOR CHANGES IN THE FLOW CHARACTERISTICS OF A DISPENSED FLUID TO MAINTAIN THE VOLUME OF DISPENSED FLUID AT A SETPOINT

Richard P. Price, Parma Heights, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Division of Ser. No. 243,238, Sep. 7, 1988, Pat. No. 4,922,852, which is a continuation of Ser. No. 924,940, Oct. 23, 1986. This application Mar. 8, 1990, Ser. No. 494,500

Int. Cl.[5] B67B *7/00*; **B67D** *5/08*

U.S. Cl. 222—1 **11 Claims**



1. A method of compensating for changes in the flow characteristics of a fluid being dispensed from a nozzle under the control of a metering valve in order to maintain the volume of fluid dispensed over a predetermined time interval at a desired setpoint, said method comprising the steps of:

(a) measuring the volume of fluid delivered to the metering valve during at least one said interval;

(b) calculating a correction factor correlated to the difference between said measured volume and said setpoint,

(c) multiplying a signal by said factor to generate a driving signal, and

(d) controlling said valve in accordance with at least said driving signal to maintain the volume of fluid dispensed at said desired setpoint.

5,054,651

METHOD OF PACKAGING UNDER PRESSURE OF A FLUID, USING A SYSTEM OF FERMENTATION CREATING A PROPULSIVE GAS

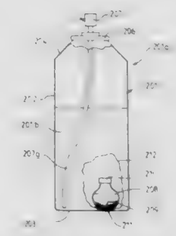
Bruno Morane, Neuilly, France, assignor to L'Oreal, Paris, France

Division of Ser. No. 263,358, Oct. 27, 1988, Pat. No. 5,009,340. This application Nov. 5, 1990, Ser. No. 609,367

Claims priority, application France, Oct. 30, 1987, 87 15050

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **7 Claims**



1. A method for packing under pressure a liquid or pasty fluid intended to be distributed from a packing container (1*a*,

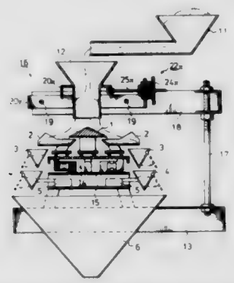
101*a*, 201*a*) provided with a distribution valve (7, 107, 207), with said fluid to be distributed (1*b*, 101*b*, 201*b*) being placed under pressure by means of a propulsive gas, in accordance with which method the propulsive gas is carbon gas obtained by anaerobic fermentation of a system (9, 109, 209) for fermentation of sugars using yeasts, with the components of said fermentation system (9, 109, 209) being selected qualitatively and quantitatively such that the carbon gas produced creates, inside the packing container (1*a*, 101*a*, 201*a*), a pressure capable of ensuring the distribution of the fluid (1*b*, 101*b*, 201*b*) by said valve (7, 107, 207), wherein the fermentation system is contained in a chamber (8, 108, 208) provided inside the container.

5,054,652

DEVICE AND METHOD FOR CONTROLLING DISTRIBUTIVE FEEDING DEVICE

Yasushi Oshima, Akashi; Isao Miyamoto, Himeji, and Shogo Harada, Hyogo, all of Japan, assignors to Yamato Scale Company, Limited, Akashi, Japan

Filed Oct. 18, 1989, Ser. No. 422,955
Claims priority, application Japan, Nov. 16, 1988, 63-290570
Int. Cl.[5] G01G *13/00*
U.S. Cl. 222—1 **20 Claims**



1. A feed control device for a distributive feeding device of the type comprising a dispersion feeding device having a central axis for dispersively dispensing product fed thereto in the vicinity of said central axis radially toward the periphery thereof, and feeding means for feeding the product to a product feeding position on the dispersion feeding device in the vicinity of said central axis; said control device comprising:

displacement detecting means for supporting the dispersion feeding device and detecting the direction and magnitude of the displacement of the horizontal position of the center of gravity of the dispersion feeding device due to the product being carried thereon to produce a signal indicative thereof, and

displacement compensating means responsive to said signal from said displacement detecting means to move said feeding means in a direction opposite to said direction of displacement with respect to the dispersion feeding device to change the product feeding position on the dispersion feeding device.

5,054,653

PNEUMATIC MATERIAL ALARM

John G. McNab, Hudson, Canada, assignor to Graves Spray Supply, Incorporated, Clearwater, Fla.

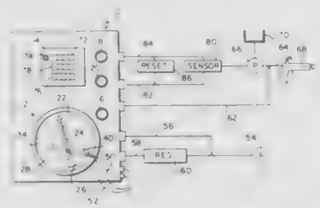
Filed May 4, 1990, Ser. No. 519,154
Int. Cl.[5] G01D *13/10*
U.S. Cl. 222—28 **30 Claims**

1. A non-electrical gauge alarm comprising:

a gauge having a needle movable along a path in response to an input;

a non-electric sensor means for sensing a predetermined position of said needle;

adjustment means for variably adjusting a mounting of said sensor means relative to said path of said needle to determine said predetermined position; and



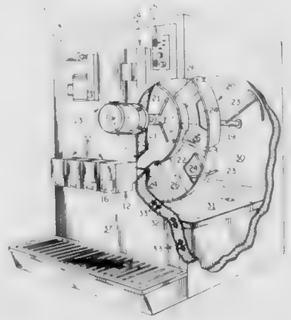
annunciator means for annunciating when said needle is not at said predetermined position as sensed by said sensor means.

5,054,654

COMBINATION ICE AND CHILLED BEVERAGE DISPENSER

Alfred A. Schroeder, 2811 Whisper Fawn, San antonio, Tex. 78230; Samuel Durham, 3539 Oakhorne, San Antonio, Tex. 78247, and Robert W. Niedheiser, 14310 Stoddard, San Antonio, Tex. 78232

Filed Nov. 14, 1989, Ser. No. 436,915
Int. Cl.[5] F25C *1/00*; **G01F** *11/28*
U.S. Cl. 222—146.6 **13 Claims**



1. A combination ice and beverage dispenser comprising:

an enclosure for ice storage;

an ice discharge means communicating between the interior and exterior of said enclosure;

a circular lifting means comprising a circular rotating tray and a stationary cone chute mounted in the center of said circular rotation tray, a plurality of vanes inside said tray extending axially toward said cone chute, said cone chute having an opening therein communicating with the inside of said rotating tray; and

a means for rotating said circular rotating tray such that ice deposited on said vanes is elevated from a lowermost portion of said enclosure for discharge through said opening in said cone chute.

5,054,655

DISPENSING APPARATUS FOR HANDLING CARTRIDGES

Wilhelm A. Keller, Riedstrasse 1, CH-6330 Cham, Switzerland

Filed Mar. 6, 1989, Ser. No. 319,539
Claims priority, application Switzerland, Mar. 7, 1988, 00847/88
Int. Cl.[5] B67D *5/32*
U.S. Cl. 222—153 **3 Claims**

1. A dispensing apparatus for actuation by auxiliary power means and for handling cartridges having feeder pistons, said apparatus comprising:

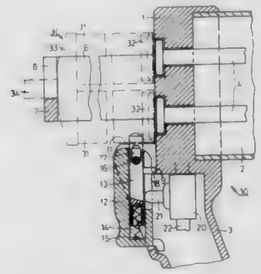
retaining means for the exchangeable insertion and retention of said cartridges in a discharging position;

at least one extensible ram subject to actuation by said auxiliary power means for feeder piston advancement within each said cartridge located in said discharging position;

control means controlling said auxiliary power means;

a manually operated triggering member for actuating said control means,

said control means including a movably supported cartridge sensing element, said sensing element being subject to movement between a first position and a second position, in said first position of said sensing element, said triggering member being able to actuate said control means, and in



said second position of said sensing element, said triggering member being blocked from actuating said control means, said sensing element being placed in said first position by proper insertion of a cartridge into said retaining means, said sensing element being guided within a bore inside said triggering member for essentially transverse motion with respect to the direction of travel of said ram;

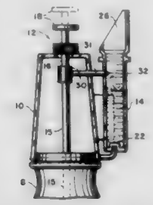
and means for maintaining said sensing element in said second position when said cartridge is not retained in said retaining means, no actuation of said control means being possible when said cartridge is not present in said apparatus, actuation being possible only with said cartridge in said retaining means, said means for maintaining said sensing element in said second position including a spring urging said sensing element towards its blocking position.

5,054,656

FLUID CONTAINER WITH PUMP AND ATTACHED DOSAGE DISPENSER

Jeffrey I. Lasner, 4 Baltusrol Dr., Purchase, N.Y. 10577

Filed Apr. 14, 1989, Ser. No. 338,224
Int. Cl.[5] B67D *5/38*
U.S. Cl. 222—158 **3 Claims**



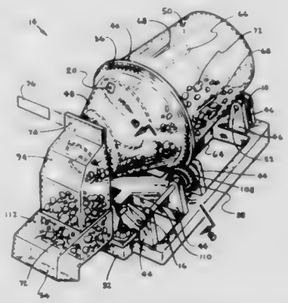
1. A fluid container and dosage dispenser receptacle assembly comprising a dosage dispenser receptacle and pump in said container having an outlet pipe, said dosage dispenser receptacle having at least one opening, spaced guides on said fluid container for removably holding said dosage dispenser receptacle, a projection on said container and a corresponding recess in the bottom of said dosage dispenser receptacle for receiving the projection when the receptacle is correctly aligned relative to said container whereby said outlet pipe is aligned with said opening in the dispenser receptacle for pumping predetermined amounts of fluid therein.

5,054,657

SANITARY BULK FOOD DISPENSER WITH ROTARY CONE FEEDER

Hugh B. Morse, 680 Wildwood Dr., Watsonville, Calif. 95076, and John V. Ciolino, 13558 Paseo Terrano St., Salinas, Calif. 93908

Filed Jul. 30, 1990, Ser. No. 559,339
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—162 **34 Claims**



1. A sanitary dispenser for dispensing a measured quantity of foodstuff comprising:

a base,

drive assembly means for rotating a container is secured to said base, said container to be at least partially filled with a preselected quantity of foodstuffs and having a plurality of elongated internal ribs and a plurality of external locking tabs integral with the container and said container being removeably mounted to said drive assembly means,

a feed cone having a spiral auger blade disposed therein and being detachably secured to said container, said spiral auger blade extends into said container when said feed cone is secured thereto so that the spiral auger blade is continuously exposed to the foodstuffs contained in the container,

measuring means, being detachably secured to said feed cone means and to said base, having a system of walls forming a chamber having a bottom opening, and an exit opening, and

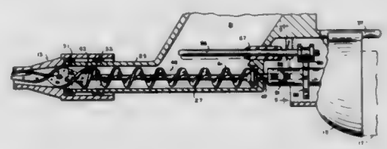
dispensing means, moveably mounted on said measuring chamber means, for dispensing a measured quantity of foodstuff from said measuring chamber means.

5,054,658

MORTAR DISPENSER

Alan B. Aronie, 27 Seymour St., Concord, Mass. 01742

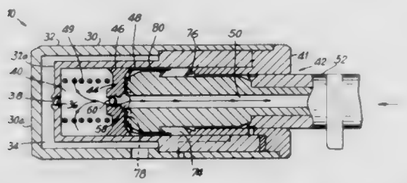
Filed Oct. 19, 1989, Ser. No. 424,133
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—232 **4 Claims**



1. A portable mortar dispenser for tuck pointing which comprises:

a generally vertical hopper for holding mortar to be dispensed;
a tubular feed barrel extending from the bottom of said hopper;
a nozzle on the distal end of said barrel;
a feed auger extending along the bottom of said hopper, through said barrel and into said nozzle, said auger including a driving shaft which extends out of the hopper opposite said feed barrel;
coupling means for connecting said shaft to motor means for rotating the auger;
a cam carried by the coupling means;
an agitator rod pivotally mounted on and extending through a portion of said hopper above said shaft;
a cam follower carried on said agitator rod and engaging said cam for oscillating said agitator rod during rotation of said auger.

5,054,659
DOUBLE ACTING PUMP
Lewis A. Micallef, Fort Lee, N.J., assignor to Leeds and Micallef, Fort Lee, N.J.
Filed Sep. 26, 1990, Ser. No. 582,955
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—321 **23 Claims**



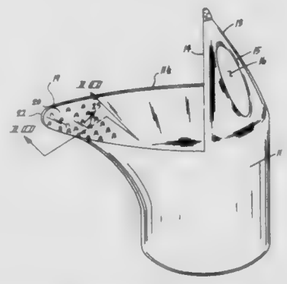
1. A double acting dispensing pump for dispensing product from the container, the pump serving as a container closure comprising:
a cylinder having a forward end and rearward end having an inner shell open at its rear end and closed at its forward end, and an outer shell surrounding the inner shell and defining a cavity there between;
a piston having a forward end rear end and being reciprocally mounted in the inner shell and defining a primary pump chamber therewith, and the piston being relatively reciprocal through a pressure stroke from an extended position to an inserted position and through a suction stroke from an inserted position to the extended position;
inlet port means including a passage in the outer shell for cooperating in communicating the container interior with the primary pump chamber during the suction stroke to permit product to pass through the inlet port means into the cavity and then into the pump chamber;
outlet port means for product to be dispensed under pressure from the primary pump chamber during the pressure stroke;
venting means for replacing product removed from the container interior into the pump chamber with air;
a supplemental pump chamber defined by cooperating surfaces of the inner shell and the piston;
supplemental port means for communicating the supplemental pump chamber with the outlet port means;
outlet valve means at the forward end of the piston for communicating the primary pump chamber with the outlet port means during the pressure stroke for directing product from the primary pump chamber through the outlet port means and for directing product through the supplemental port means into the supplemental pump chamber, the outlet valve means operating to seal the communication between the primary pump chamber and the outlet port means during the suction stroke while permitting product in the supplemental pump chamber to be directed to the supplemental port means through the outlet port means; and
inlet valve means for opening the inlet port means during the suction stroke and for closing the inlet port means during the pressure stroke.

5,054,660
SELF-DOSING MEASURING CHAMBER AND CONTAINER
Adam Sherman, Brooklyn, N.Y., and Peter Stagl, Morris Plains, N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.
Filed Jan. 2, 1990, Ser. No. 459,616
Int. Cl.[5] G01F *11/26*
U.S. Cl. 222—454 **21 Claims**



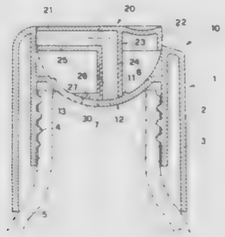
1. A measuring chamber for a container comprising a closure adapted to be sealably connected to the neck of a container and a separable housing extending upwardly from said closure and defining a chamber, a sealable exit spout in the sidewall of said chamber, and an inlet delivery spout extending vertically upwardly from said closure into said chamber to deliver a substance to said chamber and located adjacent but separated from the chamber wall opposite the sealable exit spout, said inlet delivery spout having a shape whereby the inlet delivery spout wall adjacent the measuring chamber wall is of a height less than the remainder of the inlet delivery spout wall and of a height less than the lower edge of the skit spout opening with the highest part of said inlet delivery spout being at a height above the lower edge of the exit spout and adjacent the top of said chamber.

5,054,661
PAINT BUCKET CONSTRUCTION
Anthony K. Hollje, 835 Woodlawn, Paris, Tex. 75460
Filed Mar. 15, 1990, Ser. No. 493,632
Int. Cl.[5] A47G *19/14*
U.S. Cl. 222—465.1 **1 Claim**



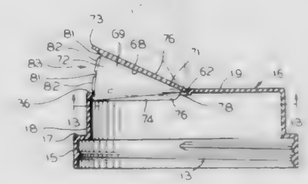
1. A paint bucket construction comprising,
a cylindrical container defined about a vertical container axis, the container including an upper container edge, the upper container edge aligned in a single first plane arranged orthogonally relative to the container axis defined by the container, and
a support projection integrally mounted to the upper container edge extending over the container and including a support projection forward edge, the support projection forward edge arranged in a second plane arranged orthogonally relative to the first plane, and wherein the second plane includes the container axis, and
the support projection including a handle arranged orthogonally relative to the second plane, and
wherein the container upper edge includes a pouring spout, the pouring spout aligned with the handle and the pouring spout including a pouring spout upper edge, and wherein the pouring spout upper edge is contained within the first plane, and
wherein the pouring spout upper edge is of a generally elliptical configuration, and
wherein the pouring spout includes an interior surface directed interiorly of the container, and wherein the upper surface includes a matrix of projections mounted orthogonally thereon for engaging a painting implement positioned on the projections, and
wherein each of the projections includes an upper tip, and each upper tip is directed forwardly towards the elliptical pouring spout edge, and
wherein the container includes a lowermost end, the lowermost end defined by an externally threaded surface, and further including a cup-shaped bottom end portion, the cup-shaped bottom end portion including an internally threaded surface securable to the externally threaded surface of the container.

5,054,662
CAP WITH A DISPENSER FOR LIQUIDS
Evans Santagiuliana, Vicenza, Italy, assignor to Taplast SNC di Evans Santagiuliana & C., Vicenza, Italy
Filed Feb. 13, 1990, Ser. No. 479,413
Claims priority, application Italy, Mar. 7, 1989, 85542 A/89
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—531 **4 Claims**



1. A cap for liquids, made of plastic material, comprising:
a main essentially cylindrical body which tightens on a bottle or flagon, said main cylindrical body including
an upper concave surface facing an exterior of the body,
an opening formed in the concave surface, the opening being defined by a ring shaped projection at an upper peripheral edge thereof;
a dispensing element connected to said main cylindrical body for dispensing liquids, said dispensing element being rotatable around an axis which is perpendicular to the geometrical axis of said body and including
a channel formed therein, said channel having a first section essentially vertically oriented with an opening formed in a distal base end thereof, and a second section perpendicularly oriented with respect to the first section with an opening formed in a distal end thereof,
an upper flat round portion defining a lateral rim hinged onto an upper rim of the main body, and
a lower part in the shape of a socle having a partially cylindrical base surface slidable on the corresponding concave surface of said main body; and
a round sunken indentation found on the base surface of the lower part of the dispensing element surrounds the ring shaped projection of the opening formed in said main body in the closed position and, an inner periphery of the opening formed in the distal end of the first section receives said ring shaped projection in the dispensing position, thereby providing a fluid-tight seal between said dispensing element and said main cylindrical body.

5,054,663
SIDE DISPENSING CLOSURE
Robert J. Groya, Norridge, and Richard W. Hofmann, Chicago, both of Ill., assignors to Magenta Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 234,568, Aug. 22, 1988, abandoned, and a continuation-in-part of Ser. No. 317,463, Mar. 1, 1989, Pat. No. 4,984,720. This application Aug. 14, 1989, Ser. No. 393,675
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—531 **9 Claims**



1. A one-piece molded plastic container closure having an open bottom and a closed top wall, comprising a peripheral skirt defining the open bottom, said skirt having internal means formed thereon for fixing the closure to a container, said top wall having an aperture therein of a predetermined size, said top wall having a lid with a lid rear hingedly connected to said top and being pivotable to and from a closed position to an open position, said lid having a lid front terminating adjacent a periphery of said top wall, side walls for said lid depending from an undersurface of said lid, a reinforcing web interconnecting said side walls at a forward end of said sidewalls remote from said hinge connection, said web being spaced from said undersurface, said undersurface and said side walls and said web defining a dispensing orifice when said lid is pivoted to an open position, said dispensing orifice having an outermost edge adjacent the periphery and spaced from the periphery of the top only by a narrow inturned lip whereby the dispensing orifice is substantially at the periphery of the top, said lid has a plurality of dividing walls depending from the undersurface thereof, said dividing walls terminating in close space relation to said inturned lip and being parallel to one another and extending a predetermined distance from said terminating position towards the hinge, said web having latch means thereon projecting forwardly of said sidewalls, said latch means cooperating with said inturned lip extending inwardly of the periphery of said top wall to limit opening of said lid, said side walls and lid undersurface defining a chute-like dispensing passage, and at least one dividing wall having a plurality of projections formed at its terminating end which cooperate with said inturned lip to retain said lid in selected positions.

5,054,664

INDUCTIVELY HEATABLE REFRACTORY MEMBER, INDUCTIVE COIL EMPLOYABLE THEREWITH, AND PROCESS FOR USE THEREOF

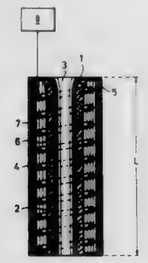
Raimund Brückner, Niedernhausen-Engenhahn, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Division of Ser. No. 450,921, Dec. 14, 1989. This application Aug. 3, 1990, Ser. No. 562,382

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842690

Int. Cl.[5] B22D *35/06*

U.S. Cl. 222—590 **22 Claims**



1. In a process of flowing a molten metal through a flow channel extending through a refractory member, the improvement comprising:

providing said member defining said flow channel to be of a unitary and integral construction and entirely formed of a material that at least partially includes a ceramic material having the properties of being capable of being heated inductively and of being electrically conductive at a temperature at least equal to the liquidus temperature of said molten metal; and inductively heating said ceramic material.

5,054,665

ELONGATED NOZZLE ASSEMBLY INCLUDING STATOR AND ROTOR MEMBERS WITH ELONGATED SLOTS

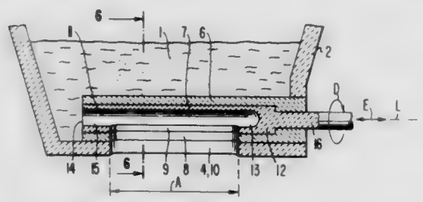
Jose Gimpera, Wiesbaden, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 6, 1990, Ser. No. 623,363

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1990, 4000656

Int. Cl.[5] B22D *41/14*

U.S. Cl. 222—598 **15 Claims**



1. An elongated nozzle assembly for closing and/or regulating the discharge from a metallurgical vessel of molten metal in the form of a wide strip, said assembly comprising:

a refractory tubular stator member having extending through a wall thereof a discharge opening in the form of a slot elongated in the direction of a longitudinal axis of said stator member;

a refractory tubular rotor member having extending through a wall thereof a discharge opening in the form of a slot elongated in the direction of a longitudinal axis of said rotor member;

said stator and rotor members being assembled with one said member comprising an inner member fitted within the other member comprising an outer member, said inner and outer members having outer and inner surfaces, respectively, that seal molten metal-tight relative to each other, and said rotor member being rotatable about said axis thereof relative to said stator member to bring said discharge opening of said rotor member into and out of alignment with said discharge opening of said stator member; and

said inner member having therein a cavity elongated in the direction of said axis of said inner member and into which opens said discharge opening of said inner member, a first longitudinal end of said cavity being closed by an end wall of said inner member, a second longitudinal end of said cavity being open axially through an inlet opening in the respective longitudinal end of said inner member, and said inlet opening communicating via said cavity with said discharge opening of said inner member.

5,054,666

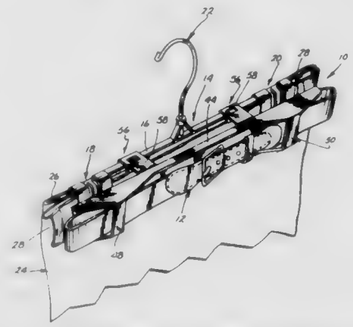
BELT DISPLAY HANGER

Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.

Filed Sep. 24, 1990, Ser. No. 586,898

Int. Cl.[5] A47G *25/18, 25/28*

U.S. Cl. 223—88 **31 Claims**



1. A device for displaying a belt with a garment on a hanger, said device comprising:

a body having a longitudinal axis;

belt mounting means on said body for removably receiving a belt, said belt mounting means defining a portion having the appearance of a belt loop; and

hanger attachment means on said body for attaching the body to a garment and hanger.

5,054,667

BOOT REMOVER WITH CONE DRIVEN PLATES TO CLAMP HEEL FROM SIDES

Sol Levy, 1860 E. 12 St., Brooklyn, 11229, and George Spector, 233 Broadway, New York City, both of N.Y. 10007

Filed Aug. 20, 1990, Ser. No. 570,011

Int. Cl.[5] A47G *25/80*

U.S. Cl. 223—116 **2 Claims**

1. A boot remover comprising:

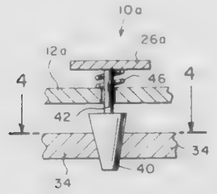
a) a platform having a forked end;

b) means on said platform for positioning said platform on a floor with said forked end elevated therefrom, so that when a person steps on said platform with a first boot, said platform will be retained and said forked end will hold the heel of a second boot securely to allow the person to withdraw their foot from the second boot;

c) a plate movably mounted above said platform to be stepped on by the first boot;

d) a pair of jaws pivotly mounted below said platform at said forked end;

e) a coil spring carried on said pivotly connected jaws to normally keep said jaws apart;



f) a wedge engaging said jaws having a shaft that is connected to the bottom of said plate whereby said wedge moves said jaws together when pressure is applied to said plate by the first boot thus causing said jaws to grip the heel of the second boot snugly; and

g) a compression spring between said plate and said platform to normally bias said plate in an upward position to release said jaws.

5,054,668

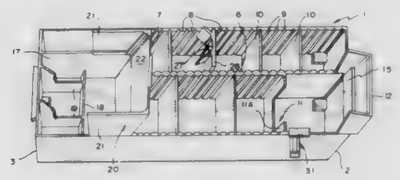
CAR TRUNK CARRIER TRAY

Patrick J. Ricchiuti, 11235 Oakleaf Ave., #1201, Silver Spring, Md. 20901

Filed Jun. 27, 1990, Ser. No. 544,645

Int. Cl.[5] B60R *11/00*

U.S. Cl. 224—42.42 **15 Claims**



1. A vehicle having a trunk floor covered with fabric having carrier tray adapted to fit into the trunk of (a) said vehicle, wherein said tray comprises a semi-trapezoidal like member having one vertical side wall, and another vertical side wall, said side walls having inner and outer sides, an inclined front wall, having an inner and an outer side, a vertical rear wall and a flat bottom, having an underside, a first divider element having two sides, arranged in parallel relationship to said side walls and extending a certain distance from the inner side of the front wall to a second divider extending transversely between said side walls, a non adjustable front pocket defined by said inclined front wall, said one side wall, and said first divider and an inclined fixed slat having respective ends between said one side wall and said first divider, a non adjustable rear pocket defined by said second divider said one and said other side wall and said rear wall, a plurality of (compartments) bracing members in said rear pocket comprising fixed slats running transversely and longitudinally, a plurality of spaced inclined ribs mounted on said two sides of said first divider and one the respective inner sides of said one and said other side wall, said ribs on said one side wall extending between said front pocket and said rear pocket, said ribs on said other side wall extending for the same said distance as the ribs on the divider, said ribs defining grooves, a plurality of slats selectively insertable into said grooves to form compartments of various sizes, a cradle shaped front restraining module having a slotted lower portion for engaging said inclined front wall, a larger cradle shaped rear restraining module having a slotted lower portion for engaging said second divider and an intermediate restraining module for selectively engaging one of said insertable slats, said modules comprising an intermediate wall section and opposing end walls, a strip of hook and pile material secured at said underside of said bottom for fastening said tray to the fabric of the trunk floor.

5,054,669

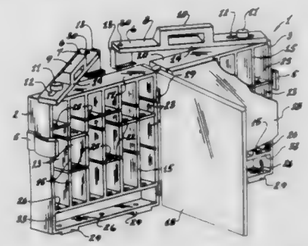
PORTABLE LURE CONTAINER

D. John Zimbardi, 122 Thompson Ave., Little Valley, N.Y. 14755, and Wayne H. Matthies, 10 S. Franklin St., Cattaraugus, N.Y. 14719

Filed Jul. 12, 1990, Ser. No. 552,175

Int. Cl.[5] B60R *9/00;* **A01K** *97/00*

U.S. Cl. 224—42.45 R **14 Claims**



1. A lure container comprising a housing, a series of vertical partitions, a plurality of horizontal partitions, an adjustable dual purpose handle means and a substantially transparent closure means, said housing containing said vertical partitions each disposed substantially parallel to each other, said vertical partitions having means therein to receive said horizontal partitions to form with said housing independent compartments thereby, said transparent closure means positioned over open portions of said compartments, said adjustable dual purpose handle means having means for the user to carry said lure container and having adjustable means for securing said container to the side of a boat or the like, said adjustable dual purpose handle means has an L-shaped structure having a horizontal face and a vertical face, said horizontal face having a handle grip and at least two elongated slots, said handle means adjustable along the elongation of said slots.

5,054,670

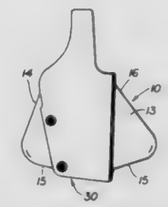
HOLSTER PADDLE

Richard N. Gallagher, 2019 W. Quail Ave., Phoenix, Ariz. 85027

Filed Jul. 31, 1990, Ser. No. 561,012

Int. Cl.[5] F41C *33/00*

U.S. Cl. 224—191 **4 Claims**



1. A holster for pistols comprising in combination

(a) a pocket member shaped and dimensioned to slidably receive a pistol and including a first side (**11**) normally positioned to face the body of the holster user and a second side (**12**) normally positioned to face away from the body of the holster user;

(b) a mounting member (**10**) insertable at the waist inside the

pants of the holster user to position a section of the pants intermediate said mounting member and said first side of said holster and including

(i) a first portion attached to said first side of said pocket member,

(ii) a second portion attached to said first portion and extending downwardly over and spaced apart from at least a part of said first side of said pocket member, and

(iii) at least one tooth means extending outwardly from said second portion toward said first side of said holster and including

a planar contact surface positioned against said first side, and

an edge positioned above said planar surface and intermediate said planar surface and said first portion,

said tooth means being shaped and dimensioned such that when said

mounting member is inserted at the waist inside the pants of the holster user in a first normal operative position with said pocket member outside the pants,

said planar surface is normally adjacent said first side and slidably contacts and presses said section of the pants against said first side, and

said tooth edge is normally adjacent said first side such that the pants are prevented from bunching over said edge while said section slides intermediate said planar surface and said first side, and

pocket member is pulled up and out from the body of the holster user and said first portion and second portion tilt away from the body of the holster user to move said pocket member and mounting member from said first operative position to a second operative position,

said planar surface tilts away from the body of the holster user, and

said edge tilts outwardly from the body of the holster user into the pants to increase the force exerted on the pants by said edge, improve the engagement of the pants by said edge, and facilitate the bunching of the pants over the edge.

5,054,671

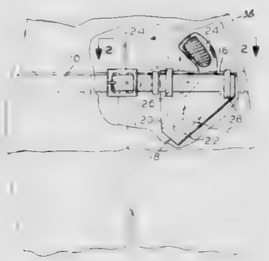
QUICK-DRAW HANDGUN HOLSTER

Robert L. Else, Umatilla, Oreg., assignor to David D. Farley, Portland, Oreg.

Filed Feb. 26, 1990, Ser. No. 484,270

Int. Cl.[5] F41C *33/00*; **A45C** *1/04*

U.S. Cl. 224—192 **8 Claims**



1. A quick-draw handgun holster adapted to hold a handgun having a top surface extending substantially normal to a butt and to be worn concealed between the waistband of a garment and a wearer's waist in the abdominal area and offset from the center thereof and comprising, in the worn position, front and back panels joined to form a pouch contoured and dimensioned to provide a top, a bottom, an inner side margin proximate the navel of the wearer and an outer side margin proximate the wearer's hips;

the top being open and wide-mouthed to receive a gun;

the bottom being substantially closed to provide an inner bearing area against which the muzzle of a gun bears and pivots during its sheating in, and withdrawal from, the holster;

the inner side margin being open along its upper length to permit pivoting of a gun during its sheathing and withdrawal;

the outer side margin being substantially closed and configured to provide an inner bearing area against which the top surface of a gun rests when it is in its sheathed position within the holster;

means for attaching said holster to the waistband of a garment such that the inner and outer side margins would be disposed at an angle relative to each other such that when the holster is mounted between the waistband and a wearer's waist, the inner side margin would be positioned substantially vertically, and its outer side margin would lie substantially parallel to and received in the groin area of the wearer; and

the length of the holster being such that when a gun is sheathed obliquely within the holster with its muzzle bearing against the holster bottom and its top surface bearing against the holster outer side margin, its butt will project angularly upwardly above the holster top to a predetermined position in which it is readily available for engagement by the hand of the wearer.

5,054,672

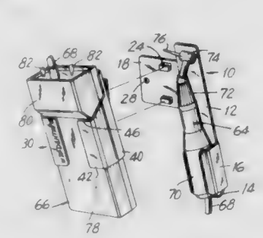
PORTABLE POWER PACK AND ELECTRIC MOTOR DENTAL TOOL HOLSTER

Bernard Weissman, 225 E. 48th Street, New York, N.Y. 10017

Filed Oct. 4, 1990, Ser. No. 592,106

Int. Cl.[5] A45F *5/00*

U.S. Cl. 224—252 **7 Claims**



1. A holster assembly for supporting a dental handpiece and power pack, which holster assembly comprises a handpiece holster adapted to receive and releasably hold the dental headpiece and a power pack holster adapted to receive and releasably hold the power pack wherein the handpiece holster has mounting means to attach it to a vertical surface, the power pack holster has apparel-engageable means to support the power pack holster on apparel, and the handpiece holster and the apparel-engageable means on the power pack holster further have mutually cooperative support means to releasably interengage the two holsters when the handpiece holster is attached to the vertical surface.

5,054,673

VEHICLE SKI CARRIER SYSTEM

Michael Dixon, Applecross, Australia, assignor to Rola Roof Racks International, Inc., Torrance, Calif.

Filed Mar. 19, 1990, Ser. No. 495,057

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—324 **5 Claims**

1. A ski carrier system for carrying a plurality of skis on a surface of a vehicle, the ski carrier system comprising:

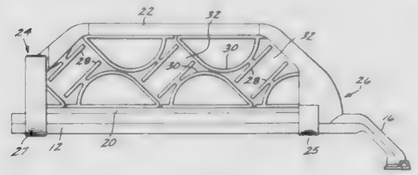
a pair of lower arms;

means for mounting said lower arms above the surface of the vehicle in spaced apart, parallel relationship;

a pair of upper arms;

means for releasably fixing each of said upper arms in spaced apart, generally parallel relationship to one of said lower arms to form a pair of carrier frames;

a plurality of holding members disposed within each of said carrier frames, said holding members arranged as opposed pairs spaced apart to receive and grip opposite surfaces of a pair of skis when the skis are inserted endwise between said holding members, said holding member pairs oriented so that the top surfaces of the skis are angled relative to the vehicle surface; and



a plurality of compression members disposed within each of said carrier frames, each of said compression members supporting one of said holding members and arranged to urge that holding member toward the opposite holding member of the holding member pair when a pair of skis is inserted between them and to thereby secure the pair of skis therein, the compression members comprising compressible curvilinear sections; and

the holding members comprise planar segments that are attached at their midpoint to one of the curvilinear sections.

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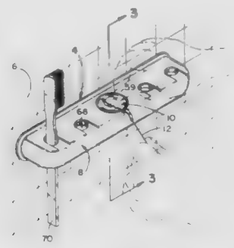
DISPOSABLE DENTAL FLOSS CASSETTE DISPENSER SYSTEM

Eugene J. Fortman, 2111 Telemark La., Rochester, Minn. 55901

Continuation-in-part of Ser. No. 316,094, Feb. 27, 1989, abandoned. This application Feb. 23, 1990, Ser. No. 483,669

Int. Cl.[5] B65H *75/32*; **A47B** *81/02*; **A61C** *15/04*

U.S. Cl. 225—6 **16 Claims**



1. A dental floss container for storage of dental floss, said container for engagement with a support member, the support member having means for supporting said container, said container comprising:

a) a housing, said housing including an enclosure for substantially cleanly storage of the dental floss prior to being dispensed, said housing including introduction means for introducing dental floss into said enclosure, said housing including a floss dispensing opening through which the floss can be passed and withdrawn; wherein said housing includes a receptacle and cap means for covering said receptacle, said receptacle has interior and exterior walls and said cap means has inside and outside surfaces; and wherein said inside surface and said interior wall define said enclosure when said cap means is engaged with said receptacle; wherein said housing includes cutting means for cutting the floss after it is withdrawn from said container; and wherein said cap means includes a cap having a plurality of pins, said receptacle including a plurality of pin receiving openings which receive said pins when the cap is joined with the receptacle to form a single two-piece housing unit.

5,054,675

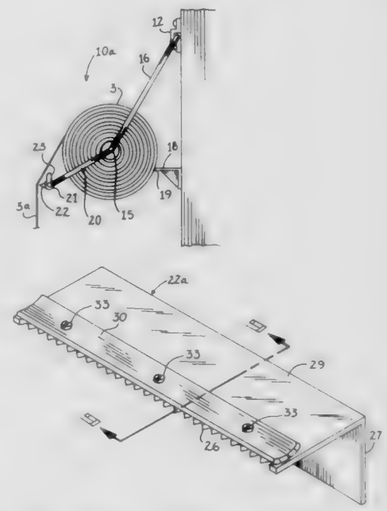
TISSUE DISPENSER

Bill Taves, 150 Quail Glen, Felton, Calif. 95018

Filed Feb. 28, 1990, Ser. No. 486,285

Int. Cl.[5] A47K *10/32*

U.S. Cl. 225—20 **3 Claims**



1. A tissue dispenser comprising in combination,

a "U" shaped support frame, the "U" shaped support frame including spaced parallel side legs and a single base leg mounted orthogonally to rear terminal ends of each side leg, the base leg mounted within a bracket means, the bracket means arranged for securement of the base leg to a vertical support surface, and

each side leg including a forward end, and

an aperture directed through each side leg adjacent each forward end, and

the aperture of each side leg coaxially aligned relative to one another, wherein the apertures are oriented parallel to the base leg, and

a tissue support axle mounted to the aligned apertures, and

the support axle arranged for securement of a tissue roll rotatably thereon, the tissue roll including a free end portion directed forwardly of the tissue roll, and

an abutment means is mounted to the support surface positioned vertically below and rearwardly of the aligned apertures for abutment of the tissue roll, and

wherein the abutment means includes an elongate abutment member of a triangular cross-sectional configuration including an elongate engagement edge oriented forwardly of the abutment means for engagement of a rear surface of the tissue roll wherein an engagement is positioned below and rearwardly of the tissue support axle and forwardly of the support surface, and

further including a lower side leg integrally mounted to each forward terminal end of each side leg, each lower side leg defining an obtuse angle between the lower side leg and the side leg, and each lower side leg including a lower side

leg forward terminal end, and a cutter bar mounted into the forward terminal end of each lower side leg, and

wherein the cutter bar further includes a plate member with a forward serrated edge formed thereon, the forward serrated edge aligned parallel to and below the support axle, and the plate member including a side plate orthogonally mounted and coextensive with each plate member, and each side plate including a rear plate coextensively mounted to the plate member and integrally mounted to each side plate orthogonally thereto, and the side plates each including a "U" shaped grasp plate integrally and orthogonally mounted in a spaced relationship above each plate member, each grasp plate including a concave engagement recess to provide an engagement surface for a finger portion of a user to displace the "U" shaped support frame relative to the engagement edge, and

further including a flexible concave polymeric strip mounted onto the plate member, the polymeric strip of a flexible memory retentent construction including a forward side edge spaced above and overlying the serrated edge and displaceable therefrom upon application of the free end portion of the tissue roll against the serrated edge.

5,054,676

TOILET ROLL HOLDER

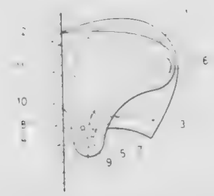
Kazu Ban, 13-13, 3-Chome, Yamatedai, Ibaraki-Shi, Osaka, Japan, assignor to Inax Corporation, Tokoname and Kazu Ban, Ibaraki, both of Japan

Filed Jun. 12, 1990, Ser. No. 536,753

Claims priority, application Japan, Jun. 22, 1989, 1-74189[U]

Int. Cl.[5] A47K *10/38;* **B65H** *35/10*

U.S. Cl. 225—42 **5 Claims**



1. A toilet roll holder for holding a toilet roll and permitting cutting of toilet paper unrolled therefrom, comprising:

a frame adapted to be attached to a wall and having a pair of projections,

a cover pivotally mounted between the projections of the frame and having a rear portion and a lower portion, said cover being movable between an open position and a using position,

a support attached to the rear portion of the cover so that the support rotationally supports the toilet roll thereon at the using position of the cover,

a brake plate pivotally mounted between the projections of the frame, said brake plate being located below the toilet roll,

an operating plate pivotally mounted on the lower portion of the cover, said operating plate, at the using position, being located under the support and situated at least adjacent to the brake plate and said operating plate, at the open position, being located above and away from the brake plate, and

holding means attached to the brake plate for slidably holding the operating plate relative to the brake plate so that at the using position, when toilet paper passing between the brake plate and the operating plate is pulled downwardly, the toilet paper is withdrawn without restriction, and when the toilet paper is pulled forwardly to incline the brake plate and the operating plate, the brake plate and the operating plate cooperate together to hold the toilet paper at forward ends thereof.

5,054,677

PIPE BURSTER

Alec R. Carruthers, Bratton, England, assignor to British Gas plc, London, England

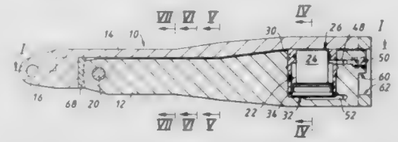
Filed Jun. 8, 1990, Ser. No. 535,203

Claims priority, application United Kingdom, Jun. 9, 1989, 8913318

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] F16L *55/18*

U.S. Cl. 225—106 **6 Claims**



1. A pipe burster comprising an elongated body tapering in the lengthwise direction of the body and comprising first and second parts extending in said direction, a transverse pivot pin connecting said parts together, and a hydraulically actuated piston and cylinder means for producing separation of said parts about the pin of an amount such as to crack the pipe and displace the cracked pipe and surrounding earth so as to provide a clearance into which the burster can be advanced, the first part carrying the piston and cylinder means and second part being of channel shape and including side walls between which the first part is received, the circumference of the body being substantially a closed curve and the circumference of the body being increased by said separation of said parts within the length of the first part.

5,054,678

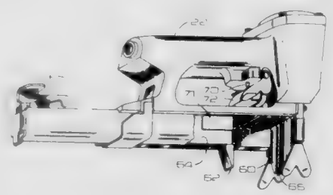
FURNITURE CLIP/TOOL

John R. Nasiatka, Northbrook, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Jul. 17, 1989, Ser. No. 380,903

Int. Cl.[5] B25C *7/00*

U.S. Cl. 227—8 **9 Claims**



1. A fastener driving tool for securing furniture spring clips to a workpiece including two or more generally substantially perpendicular planar surfaces comprising:

a housing;

a drive assembly disposed in said housing for driving fasteners along a drive track into a workpiece;

a nosepiece assembly forming a drive track, disposed adjacent said drive assembly;

a magazine assembly, mechanically coupled to said nosepiece assembly, for supplying fasteners to said drive track;

actuating means for selectively actuating said drive assembly to drive a fastener into a workpiece; and

means for positioning said drive track at a predetermined acute angle with respect to one of said planar surfaces which includes one or more members adapted to engage each of a plurality of substantially perpendicular planar surfaces forming a workpiece, said one or more members extending outwardly relative to said magazine assembly and disposed adjacent to said drive track.

5,054,679

APPARATUS FOR MANUFACTURING PLASTIC-LINED PIPE

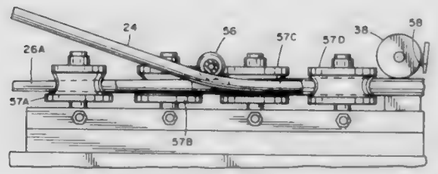
David A. Shotts, Naperville, and Raffaele Basile, Chicago Heights, both of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Division of Ser. No. 275,010, Nov. 22, 1988, Pat. No. 5,000,369.

This application Jul. 26, 1990, Ser. No. 558,105

Int. Cl.[5] B29C *55/22;* **B23K** *101/06*

U.S. Cl. 228—17.5 **2 Claims**



1. Apparatus for continuously manufacturing plastic-lined metallic pipe, said apparatus comprising:

an extruder having an output providing a plastic sleeve;

a continuous roll-forming tubing mill production line including a series of forming rolls for progressively deforming a substantially flat steel strip to a generally tubular configuration as the strip moves along a straight-line longitudinal path, and a resistance welder for continuously welding the lateral edges of the moving strip to complete the pipe; and

means for feeding the plastic sleeve into the incipient metallic pipe upstream of said welder, said plastic sleeve having an outside diameter slightly smaller than the inside diameter of the metallic pipe in its as-formed condition, said plastic sleeve retaining its generally tubular configuration from the time said sleeve is introduced into said incipient pipe until the manufacture of said plastic-lined metallic pipe is complete, said production line further including means for reducing the inside diameter of said metallic pipe to substantially the outside diameter of said plastic sleeve.

5,054,680

BONDING ELECTRICAL CONDUCTORS

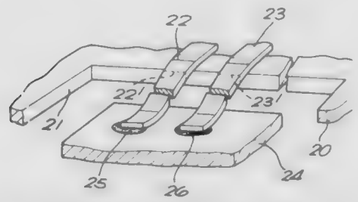
Norman R. Stockham, Sawston, England, assignor to The Welding Institute, Cambridge, England

Filed Jul. 10, 1990, Ser. No. 550,382

Claims priority, application United Kingdom, Jul. 11, 1989, 8915816

Int. Cl.[5] H01L *21/66*

U.S. Cl. 228—104 **9 Claims**



1. A method of bonding an electrical conductor to a contact of an integrated circuit device comprising bonding a conductor to a support member and to a contact of an integrated circuit device; and subsequently severing said bonded conductor to release said integrated circuit device and the bonded conductor from said conductor support member.

5,054,681

COMPONENT DESOLDERING TOOL

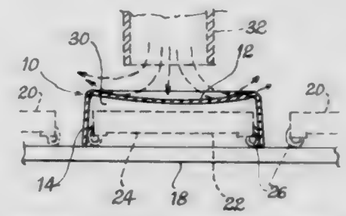
Henry I. Kim, 12665 Salmon River Rd., San Diego, Calif. 92129

Filed Jul. 25, 1990, Ser. No. 557,451

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] B23K *3/02*

U.S. Cl. 228—191 **7 Claims**



1. A desoldering tool for desoldering the peripheral leads of an electronic component having leads on at least two sides, comprising:

(a) a heat-conductive hood;

(b) said hood having a substantially planar base portion and depending skirt portions corresponding to said at least two sides of said component; and,

(c) said tool being shaped and dimensioned such that when said base lies over said component, said skirt portions extend down around said component such that said depending skirt portions contact said leads, such that heating said hood heats said leads and any solder in contact therewith, said base being downwardly concave to deflect a hot air blast away from circuit areas adjacent to said component.

5,054,682

METHOD OF BONDING A TOOL MATERIAL TO A HOLDER AND TOOLS MADE BY THE METHOD

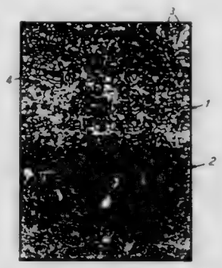
Pravin Mistry, Grove, Near Wantage, United Kingdom, assignor to CMB Foodcan plc, Worcester, United Kingdom

Filed Sep. 6, 1989, Ser. No. 403,669

Claims priority, application United Kingdom, Sep. 8, 1988, 8821044

Int. Cl.[5] B23K *20/00, 20/22, 103/16*

U.S. Cl. 228—194 **18 Claims**



1. A method of diffusion bonding a composite tool material comprising

(i) titanium carbide and/or titanium diboride in a metal matrix; or

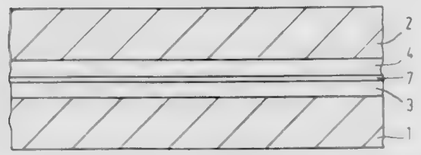
(ii) titanium carbide and titanium nitride in a metal matrix; or

(iii) silicon carbide or aluminum nitride in an alumina matrix; or
(iv) silicon nitride or aluminum nitride in a silicon carbide matrix; or
(v) silicon carbide in a silicon nitride matrix or a steel matrix to a holder material of ferrous alloy, wherein the method includes the steps of applying an intermediate layer chosen from a group consisting of nickel, titanium and tungsten and having a thickness less than 50 microns between the tool material and the holder material; and subjecting the assembly to a temperature above the melting point of the intermediate layer and to a bonding pressure of between 10 bar and 28 bar to completely diffuse the intermediate layer into said tool material and holder material to bond them together.

5,054,683
METHOD OF BONDING TOGETHER TWO BODIES WITH SILICON OXIDE AND PRACTICALLY PURE BORON

Jan Haisma; Gijsbertus Spierings; Joseph G. Van Lierop, and Hendrik F. Van Den Berg, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1990, Ser. No. 576,328
Claims priority, application Netherlands, Sep. 12, 1989, 8902271
Int. Cl.[5] B23K *26/00, 20/00, 20/16*
U.S. Cl. 228—198 **7 Claims**



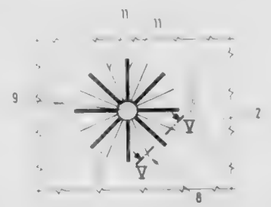
1. A method of bonding together a first body and a second body comprising the steps of
(a) providing each of a first body and a second body with a flat surface,
(b) coating said flat surface of at least one of said first body and said second body with a silicon oxide layer,
(c) providing said silicon oxide layer with a flat surface,
(d) applying a layer of practically pure boron to at least one of said flat surfaces,
(e) pressing said first and second bodies together at said flat surfaces for a period of time at an elevated temperature, said layer of practically pure boron being a connecting layer, and then
(f) removing material from one of said two bodies to make said one body thin.

5,054,684
PACKAGE FOR LIQUID

Jürgen Färber, Kaarst, and Matthias Dammers, Alsdorf, both of Fed. Rep. of Germany, assignors to PKL Verpackungssysteme GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 27, 1990, Ser. No. 515,863
Claims priority, application Fed. Rep. of Germany, May 2, 1989, 3914497
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—103.1 **15 Claims**

1. A package for holding a liquid, comprising:
a container made from cardboard walls having a coating thereon, said cardboard walls having inside and outside wall surfaces,
a pierceable opening in said container for receiving a drinking straw, and

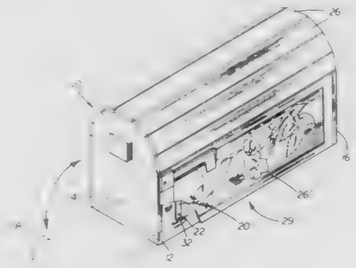


a plurality of incisions in said container extending radially from said opening in the form of rays.

5,054,685
CLAD MAILBOX

Dan V. Roach, Star Route E, Monterey, Va. 24465

Filed May 1, 1990, Ser. No. 517,212
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—17 **8 Claims**



1. A clad mailbox, comprising:
a main housing including at least one side panel, a bottom panel and an end panel;
track means mounted on an outer face of one of said panels of said housing;
cladding means received on and positively retained to said one panel, said cladding means including guide means cooperatively shaped to be received over and engaged by said track means to hold said cladding means in proper alignment and position on said one panel.

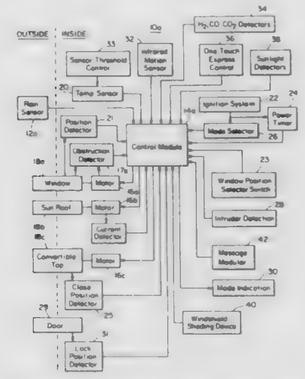
5,054,686
AUTOMOBILE ENVIRONMENT MANAGEMENT SYSTEM

Cliff L. Chuang, Lowell, Mass., assignor to Prospect Corporation, Lowell, Mass.

Filed Nov. 5, 1990, Ser. No. 609,266
Int. Cl.[5] F24F *7/00;* **B60H** *1/00*
U.S. Cl. 236—49.3 **28 Claims**

1. An automatic venting system for a vehicle having a plurality of motor-operated vents, comprising:
means for resolving the vehicle interior temperature;
means for detecting the presence of a living being in the vehicle;
means for sensing precipitation outside the vehicle;
means, responsive to said means for resolving, for operating at least one of the motors to at least partially open the respective vehicle vent when the interior temperature rises above a preselected threshold temperature to cool the vehicle;
means, responsive to said means for sensing, for commanding the motor of at least one open vehicle vent to close the vent when precipitation is sensed; and

means, responsive to said means for detecting, for inhibiting said means for commanding when a living being is present

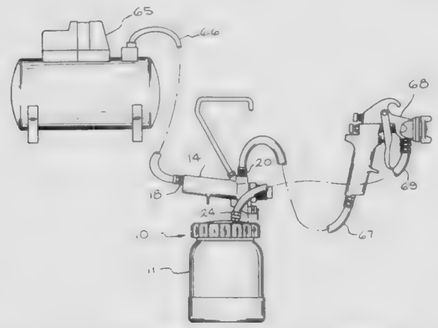


in the vehicle to prevent at least one open vent from closing for providing fresh air for the being and for the safety of the being.

5,054,687
PRESSURE FEED PAINT CUP

Marvin D. Burns, Millbury, and Albert S. Orr, Sylvania, both of Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Mar. 14, 1990, Ser. No. 494,175
Int. Cl.[5] B05B *9/04*
U.S. Cl. 239—373 **10 Claims**

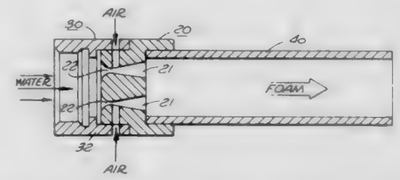


1. An improved pressure feed paint cup comprising a pressure tank, said tank having an upper opening for receiving paint and for cleaning, said tank having an externally threaded neck surrounding said opening, a lid adapted to fit over said tank opening, internally threaded ring means adapted to fit over and engage said lid and to engage said external neck threads for releasably securing said lid on said tank, means for forming a pressure seal between said lid and said tank when said lid is secured to said tank, a handle integrally formed with said lid, said handle having a stem projecting from one side of the center of said lid and a grip extending substantially parallel to said lid and over the center of said lid whereby the center of gravity for said cup and its contents is vertically under said handle, and means for supplying compressed air through said handle to pressurize said tank.

5,054,688
FOAM PRODUCING NOZZLE

John R. Grindley, Los Angeles, Calif., assignor to Robwen, Inc., Los Angeles, Calif.

Filed Dec. 20, 1989, Ser. No. 454,021
Int. Cl.[5] B05B *7/12*
U.S. Cl. 239—407 **6 Claims**

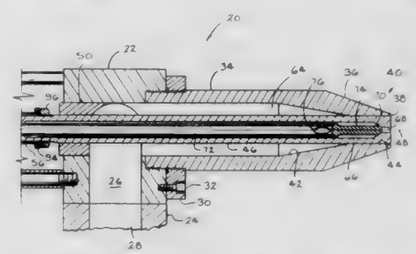


1. In a nozzle assembly adapted for connection to a pressurized liquid conduit, the improvement comprising:
a cylindrical venturi housing having an arcuate venturi throat disposed intermediate the central axis and the periphery of said housing and extending axially therethrough; and
a radially extending air inlet passage communicating at its inner end with said throat and located at substantially the most constricted portion thereof.

5,054,689
COMBINATION PLASTIC AND GAS INJECTION NOZZLE ASSEMBLY AND SEQUENTIAL METHOD OF OPERATION

Edward C. Hunerberg, Tecumseh, and Neil Daly, Jackson, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed May 11, 1990, Ser. No. 522,190
Int. Cl.[5] B05B *7/12*
U.S. Cl. 239—412 **8 Claims**



1. A combination plastic and gas injection nozzle assembly, comprising:
a hollow nozzle body having a longitudinal axis and forming a resin flow passage therein and a resin outlet at one end of said body;
means coaxially extending in said body for closing said resin outlet, said closure means being movable between positions opening and closing said resin outlet;
first moving means coaxial with said body for moving said closure means;
means forming a coaxial gas passage within said body for a pressurized gas, said gas passage terminating in a gas orifice in said closure means;
a gas valve member movable between positions opening and closing said gas orifice;
second moving means coaxial with said body for moving said gas valve member, said second moving means forming a gas supply channel to supply gas to said gas passage, said gas supply channel extending coaxially with said nozzle assembly, said first moving means including a first actuating cylinder having a piston rod coupled to said

closure means, said piston rod being hollow with said gas supply channel extending therethrough, said second moving means comprising a second actuating cylinder having a hollow piston rod forming said gas supply channel therein.

5,054,690

DRIP IRRIGATION MULTI-OUTLET EMITTER HEAD ASSEMBLY

Donald O. Olson, 1935 Altozana Dr., El Cajon, Calif. 92020

Filed Mar. 16, 1990, Ser. No. 495,437
Int. Cl.[5] B05B *1/14, 15/00*
U.S. Cl. 239—542 **10 Claims**



1. A drip irrigation emitter head assembly comprising:
a body member having a tubular inlet portion for connection with a water supply conduit;
circular wall mans surrounding said tubular inlet portion forming a plurality of passages having open upper and lower ends;
flow control means in each said passage forming a constricted emitter orifice;
cap means connected to said body member covering said tubular inlet portion and surrounding said upper ends of said passages;
filter means retained between said cap means and said body member for filtering water before it enters said passages at their upper ends; and
flexible distribution tubes having inner and outer ends, said inner ends being connected to the lower ends of at least one of said passages in said body member for carrying fluid to preselected locations at the outer ends of said tubes.

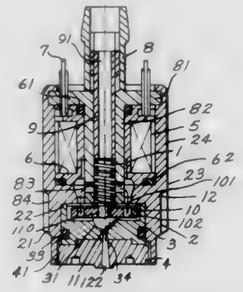
5,054,691

FUEL OIL INJECTOR WITH A FLOATING BALL AS ITS VALVE UNIT

Huei-Huay Huang; Yu-Yin Peng, and Tien-Ho Gau, all of Hsin Chu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Nov. 3, 1989, Ser. No. 431,152
Int. Cl.[5] F02M *51/06, 61/18*
U.S. Cl. 239—585 **4 Claims**

1. A fuel injector for a gasoline engine comprising:
a magnetic housing having a leading end, a rear end, a central hole connecting said leading and rear ends and a shoulder portion disposed within said central hole between said leading and rear ends, wherein said housing is made of a soft magnetic material and said rear end is in communication with a pressurized fuel supply;
a magnetic coil assembly disposed within said magnetic housing central hole at the rear end of said housing, wherein said magnetic coil includes a central hole disposed coaxially with the magnetic housing central hole;
a magnetic stator assembly disposed within the central hole of said coil assembly;
a valve seat member having a hollow formed in a concave rear face and having an oblique cone leading to an injection nozzle disposed at a centermost portion thereof, disposed within the housing central hole at the leading end of said housing;
screw block means for securing said valve seat member rear face tightly against said shoulder portion of said housing;
a ball valve assembly disposed within said hollow formed in said valve seat member and having a semi-circular ball at a leading end and a flat armature at a rear end;



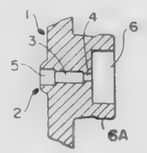
a nonmagnetic plate interposed between said housing shoulder portion and said valve seat member; and
spring means biasing said ball valve assembly against said valve seat member whereby said semi-circular ball normally seats against said valve seat member oblique cone in a closed condition;
wherein said ball valve assembly is moveable to an open position in response to energization of said magnetic coil assembly whereby said pressurized fuel flows from said housing rear end, past said ball valve assembly, through said valve seat member oblique cone and through said injection nozzle.

5,054,692

FLUID DISCHARGE APPARATUS

Donald D. Foster, St. Charles, and Harry T. Auer, St. Peters, both of Mo., assignors to Contico Internation, Inc., St. Louis, Mo.

Filed Jun. 5, 1990, Ser. No. 533,454
Int. Cl.[5] B05B *1/00*
U.S. Cl. 239—589 **28 Claims**



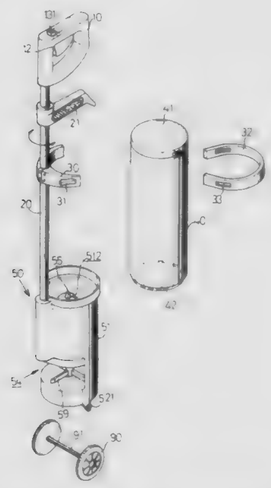
1. A fluid discharge apparatus for imparting a stream configuration to a current of fluid, said fluid discharge apparatus comprising a nozzle containing a passageway having at least a receiving portion with a substantially rectilinear cross-section and an issuing portion immediately adjacent said receiving portion, said issuing portion having a substantially curvilinear cross-section, whereby a fluid current passing sequentially through said receiving portion and said issuing portion emerges therefrom in a stream configuration.

5,054,693

PORTABLE DISTRIBUTOR FOR SEEDS OR FERTILIZER

Jessie Chow, No. 15-30, Kuang Ming Rd., Hsi Twen Chu, Taichung, Taiwan

Filed Jun. 19, 1990, Ser. No. 540,859
Int. Cl.[5] B65D *47/28;* **A01C** *17/00*
U.S. Cl. 239—681 **4 Claims**



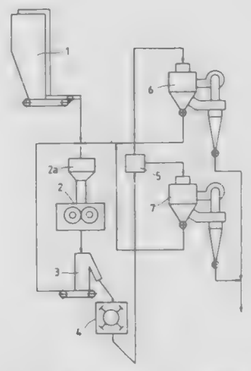
1. A portable distributor comprising a handle portion coupled to a body by a rod; a retaining element being horizontally and movably provided in an upper end of said handle portion, a button being fixed on an upper and front end of said retaining element and extending beyond an upper surface of said handle portion; a rear end of a trigger being pivoted to said handle portion; one end of a cable being connected to a front end of said trigger; a spring being biased between said retaining element and said trigger for biasing said trigger downward and biasing said retaining element rearward, said front end of said trigger being retained by said retaining element when said trigger is pulled upward by a user, said trigger being released when said retaining element is pushed forward by said button; a microswitch being provided in said handle portion, a resilient element being provided on said microswitch; a protuberance being formed on said retaining element, said resilient element of said microswitch being depressed by said protuberance of said retaining element when said resilient element is caused to move forward; a tank being disposed upon said body for receiving contents to be distributed; a hollow space being formed in an upper end of said body for receiving a lower end of said tank, an aperture being formed in a lower end of said hollow space, said body being substantially separated into an upper part and a lower part by an opening, a control means being provided in said upper part of said body below said hollow space and being coupled to an other end of said cable, said aperture being controlled to be opened or closed by said control means which is controlled by said trigger via said cable, said aperture being opened when said trigger is pulled upward so that said contents may flow into said opening therethrough; a shaft being rotatably provided between said upper part and said lower part of said body, a stirrer which is located in said opening being fixed to said shaft; a motor which is coupled to said shaft for driving said shaft being controlled by said microswitch; and when said aperture is opened, said contents which flow into said opening via said aperture being motivated by said stirrer in order to be distributed.

5,054,694

METHOD AND APPARATUS FOR CRUSHING MATERIAL FOR GRINDING

Osbert R. Knobloch, Rheda-Wiedenbruck; Ludger Brentrop, Oelde; Ludger Kimmeyer, Beckum; Manfred Müller, Enniger-loh, and Peter Wenningkamp, Gütersloh, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Jun. 11, 1990, Ser. No. 536,295
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1989, 3921823
Int. Cl.[5] B02C *4/00*
U.S. Cl. 241—24 **18 Claims**



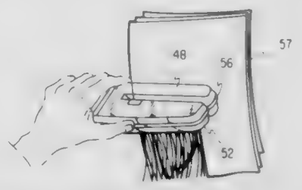
1. Method of crushing material for subsequent grinding comprising the steps of:
(a) passing the material through a grinding device operating on the pressure crushing principle, including returning a proportion of the throughout of the grinding device thereto for another pass through said grinding device,
(b) distributing the remainder of the throughput of the grinding device to multiple classification assemblies set to different degrees of fineness, and
(c) mixing the fines from the classification assemblies.

5,054,695

SHREDDER FOR PAPER AND THE LIKE

Pieter G. J. Koornhof, Post Office Box 0776, Orchard Point, Singapore

Filed Dec. 20, 1989, Ser. No. 451,965
Claims priority, application United Kingdom, Dec. 20, 1988, 8829631
Int. Cl.[5] B02C *19/12;* **B26D** *1/03*
U.S. Cl. 241—30 **9 Claims**



1. A method of shredding a cuttable sheet by a portable shredder having an entrance for a sheet and an exit for a shredded sheet, said entrance and exit having one side which is at all times open, comprising holding the shredder with one hand by way of a hand grip with said shredder and said open sides extending away from said hand grip in cantilever fashion, said hand grip being spaced to one side of a pair of rotatable rollers

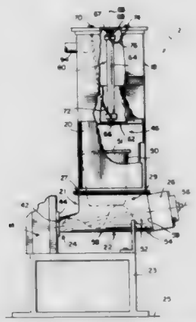
located within said shredder, causing the rollers to rotate, feeding a first part of said cuttable sheet to the rollers with the other hand and with the remaining part of said sheet projecting through and beyond said open sides of said entrance and exit, continuing to feed said sheet until said first part is shredded and discharged through said exit, and then feeding said remaining part of said sheet continuously through said entrance until it also is shredded and discharged through said exit.

5,054,696

MEDICAL WASTE DISPOSAL SYSTEM

David B. Mennel, Greenwood; Joseph H. Wilson, Speedway; Martin E. Elliott, Indianapolis, and Gary D. Gann, Greenwood, all of Ind., assignors to Medical SafeTEC, Inc., Indianapolis, Ind.

Filed Jan. 29, 1990, Ser. No. 471,374
Int. Cl.[5] B02C *19/22*; B01D *36/00*
U.S. Cl. 241—34 23 Claims



1. A waste disposal system for disposing of biologically contaminated waste material situated inside a self-supporting, form-stable container, the system comprising

means for processing the entire container and any waste material therein, the processing means including an input for receiving the container, means for shredding the container and the waste material therein to form a shredded mass, and an output for discharging the shredded mass from the processing means, the shredding means feeding the shredded mass through the output of the processing means,

means for disintegrating the shredded mass into a particulate waste material, the disintegrating means including an input coupled to the output of the processing means for receiving the shredded mass from the output of the processing means,

wherein the shredding means includes a trough portion and a rotatable auger screw situated within the trough portion for shredding the container into the shredded mass, the trough portion including an output opening coupled to the input of the disintegrating means.

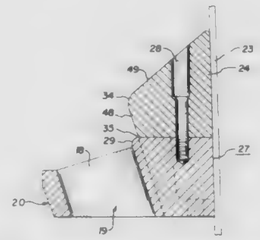
5,054,697

REMOVABLE MILL THROAT AND WEAR RING FOR PULVERIZER

Robert S. Provost, Suite 283, 6393 Penn Ave., Pittsburgh, Pa. 15206

Filed Jan. 2, 1990, Ser. No. 459,430
The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.
Int. Cl.[5] B02C *15/06*
U.S. Cl. 241—61 3 Claims

1. In a coal pulverizer of generally cylindrical shape and vertical central axis and having 1) a mill assembly which thrusts pulverized coal centrifugally from the mill, and 2) a source of forced air directed into the so-thrust pulverized coal to transport the same upward to combustion means, apparatus comprising in combination: a radially segmented throat ring concentric to the mill, in which ring are angularly disposed channels through which the forced air is upwardly flowed, each said channel having an exit port of greater cross-section than that of the remainder of each corresponding channel, said port being formed by a convex outer diameter exit bevel coterminous with an upper surface of the throat ring; and a radially



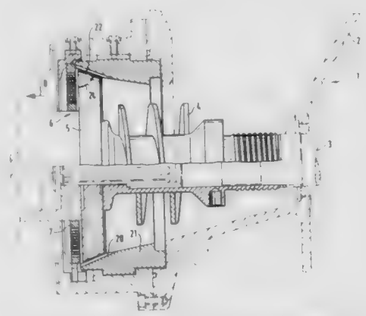
segmented wear ring encircling the mill assembly and disposed upon a radially outer surface of the throat ring clear of said exit ports, said wear ring having an inward inclined face extending upward from intersection with said throat ring, said face being disposed in substantial opposition to the resultant stream of forced air and pulverized coal dispersed therein, and an outward inclined face extending thereabove to the pulverizer housing.

5,054,698

CUTTING UNIT FOR A COMMINUTING MACHINE

Karl Schnell, deceased, late of Winterbach, Fed. Rep. of Germany by Dr. Ernst Otto Schnell, sole heir, assignor to Karl Schnell GmbH & Co. Maschinenfabrik, Winterbach, Fed. Rep. of Germany

Filed Sep. 18, 1990, Ser. No. 584,471
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1989, 3931813
Int. Cl.[5] A23K *3/00*
U.S. Cl. 241—82.6 8 Claims



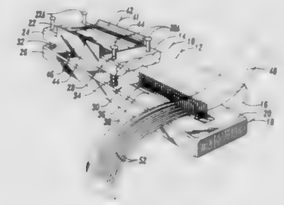
1. In a cutting unit for a comminuting machine for meat materials, the comminuting machine including a housing, the cutting unit including a perforated disk and a drivable cutting knife body with main cutting edges interacting with the perforated disk, the improvement comprising the cutting knife body having a generated surface, additional cutting edges extending approximately in radial direction on the generated surface of the cutting knife body in direction of or slightly inclined to a generatrix of the generated surface, and counter-cutting edges provided on an inner surface of the machine housing, such that the additional cutting edges and the counter-cutting edges face each other, whereby the counter-cutting edges have an approximately radial cutting effect in cooperation with the additional cutting edges.

5,054,699

RIBBON CURLING AND SHREDDING DEVICE

Arnold M. DeJaynes, R.R. #1, Box 168, New London, Iowa 52645

Continuation-in-part of Ser. No. 204,787, Jun. 10, 1988. This application Dec. 21, 1989, Ser. No. 454,429
Int. Cl.[5] B26B *13/00*
U.S. Cl. 241—101.2 9 Claims



1. A ribbon shredding device, comprising,

an upper base portion having upper and lower surfaces,

a lower base portion having an upper portion,

said upper base portion and said lower base portion having first and second ends,

resilient means resiliently connecting said upper and lower base portions and yieldingly holding them in vertical spaced relationship along their entire lengths,

said resilient means comprising four vertical posts extending upwardly from said lower base portion with said upper base portion being slidably mounted on said four vertical posts,

two of said posts being located adjacent said first ends of said upper and lower base portions,

two of said posts being mounted centrally of said upper and lower base portions to leave the second end of said upper and lower base portions in spaced relationship to permit a length of ribbon to be moved into the space between said second ends by passing between said second ends,

compression springs on said posts normally holding said upper and lower base portions in spaced apart relation,

a plurality of downwardly extending needles having lower ends being secured to the lower surface of said upper base portion and extending downwardly toward said lower base portion so that when said base portions are yieldably moved towards each other, the lower ends of said needles will engage said lower base portion,

said needles being positioned adjacent said second end of said upper base member whereby a length of ribbon can be laterally moved into said space between said second ends of said base portions in the area adjacent said needles without interference from said posts.

5,054,700

APPARATUS FOR THE AUTOMATED PROCESSING OF BULK MAIL AND THE LIKE

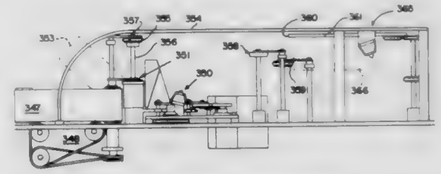
Robert R. DeWitt, Marlton, N.J., assignor to Opex Corporation, Moorestown, N.J.

Division of Ser. No. 904,966, Sep. 5, 1986, Pat. No. 4,863,037. This application Jun. 8, 1989, Ser. No. 363,605
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—101.4 29 Claims

1. An apparatus for severing envelope edges in continuous fashion, comprising:

a plurality of means for severing an envelope edge; and

means for conveying envelopes past said plurality of severing means, and for rotating said envelopes to present envelope edges to said plurality of severing means in an



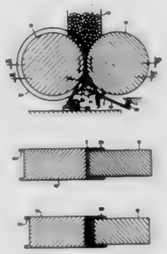
orientation which permits edge-severing of each presented envelope edge.

5,054,701

MILLING PROCESS AND APPARATUS

René Durinck, Villeneuve D'Ascq; Philippe Lagache, Marcq-en Baroeul, and Alain Cordonnier, Lille, all of France, assignors to Fives-Cail Babcock, Montreuil Cedex, France

Filed Jun. 18, 1990, Ser. No. 540,220
Claims priority, application France, Jun. 20, 1989, 89/08165
Int. Cl.[5] B02C *4/02*, *4/40*
U.S. Cl. 241—167 4 Claims



1. An apparatus for milling particulate mineral material, comprising

(a) two cylinders having opposite end faces and rotatable in opposite directions about parallel axes defining a plane while being yieldingly pressed towards each other, the cylinders defining therebetween a milling compression space having an inlet for the particulate material above the plane and an outlet for the milled material below the plane,

(b) respective flanges at the opposite cylinder end faces laterally closing the outlet space below the plane, the flanges comprising, at each one of the cylinder end faces,

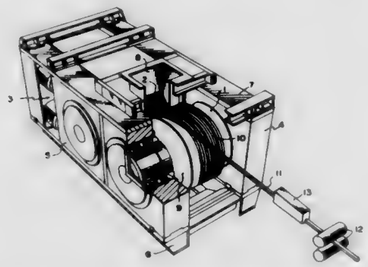
(1) an annular flange integral with one of the cylinders and having a circular edge, and

(2) a fixed flange arranged in the plane of the annular flange and having an arcuate edge conforming to the circular edge of the annular flange, and

(c) a barrier including a scraping bar extending across the outlet space below the plane into contract with the flanges and having one edge in contact with the peripheral surface of one of the cylinders and defining a milled material output of reduced cross sectional area with the peripheral surface of the other cylinder,

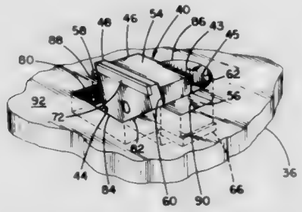
(1) the fixed flanges extending downwardly from the plane defined by the cylinder axes to the level of the barrier whereby the milled mineral material is kept under pressure in the space defined by the peripheral cylinder surfaces, the flanges and the barrier.

5,054,702
ROTARY CRUSHING ROLL
Otto Heinemann, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany
Filed Jun. 12, 1989, Ser. No. 365,356
Int. Cl.[5] B02C *4/30*
U.S. Cl. 241—230 13 Claims



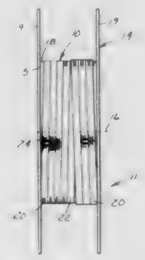
1. A crushing mill for crushing brittle material for subsequent grinding comprising at least one rotary cylindrical crushing roll having an outer surface provided with a coating of wear-resistant material, characterised in that said coating is formed by a substantially uniform cross-section strip of said wear-resistant material helically wound on and secured to said roll, adjacent convolutions of said wound strip engaging one another to avoid the presence of a gap between said adjacent convolutions.

5,054,703
STUMP CHIPPER KNIFE ASSEMBLY
Norval Morey, Winn, Mich., assignor to Wood Technology, Inc., Winn, Mich.
Filed Oct. 12, 1990, Ser. No. 597,548
Int. Cl.[5] B02C *7/12*; B27C *1/00*
U.S. Cl. 241—296 16 Claims



1. A knife assembly for a chipping disintegrator of the type having a drivingly rotated chipping disk comprising:
a unitary holder body adapted to be carried within an opening formed through the chipping disk disposed spanning radially across said opening, said holder body including a central portion having a leading face, a trailing face spaced apart from said leading face, and a hole formed therethrough extending between said leading face and said trailing face;
a cutting blade insert carried directly on said leading face; and
fastener means extending through said hole engaging said cutting blade insert and fixing said insert to said leading face.

5,054,704
LEVEL WOUND REEL OF COMPONENT CARRIER TAPE
Ronald J. Eshleman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 493,440, Mar. 14, 1990, abandoned. This application Mar. 8, 1991, Ser. No. 667,343
Int. Cl.[5] B65H *00/00*
U.S. Cl. 242—1 3 Claims



1. In combination,
a length of component carrier tape having elongate edges, and a uniform width between said edges; and
a reel including a hub having an axis, opposite axially spaced ends and a cylindrical peripheral surface between said ends, and a pair of flanges, one fixed to said hub adjacent each of said ends and projecting radially from said hub, said flanges having opposed inner surfaces spaced by a distance significantly greater than the width of said carrier tape;
said component carrier tape being helically level wound around the peripheral surface of said hub in layers with the wraps of carrier tape in each layer being disposed edge to edge so that those wraps are displaced axially from each other by the width of the carrier tape, and with the opposite edges of wraps of carrier tape in successive layers being angled in opposite directions with respect to the axis of the hub;
said peripheral surface of the hub having a minimum diameter "D" in millimeters determined by the formula:

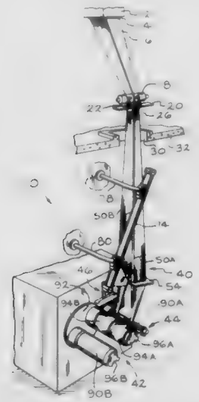
$$D = \frac{2}{\pi}\sqrt{(7813)^2 - (7813 - W)^2}$$

where "W" is the width of the carrier tape in millimeters.

5,054,705
RECIPROCATING STRAND GUIDE FOR SPLIT STRAND ROVING PACKAGES
Roy E. Smith, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed May 4, 1990, Ser. No. 519,181
Int. Cl.[5] B65H *54/02, 54/20, 67/048*
U.S. Cl. 242—42 19 Claims

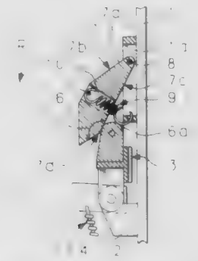
1. An apparatus for winding packages from a plurality of multi-filament strands comprising, in combination,
means for providing a plurality of multi-filament strands in a spaced, aligned array having a pair of marginal edges,
a strand guide disposed for reciprocation along a first axis, said strand guide defining an elongate slot having parallel sidewalls, said elongate slot oriented at an angle to said first axis,
a pair of parallel pin means disposed adjacent the limits of reciprocation of said strand guide for engaging a respective one of said pair of marginal edges, said pair of pin means disposed at an acute angle to said elongate slot of said strand guide at an acute angle to said first axis, and

a rotating collet means adjacent said strand guide for receiving said spaced, aligned array of strands,



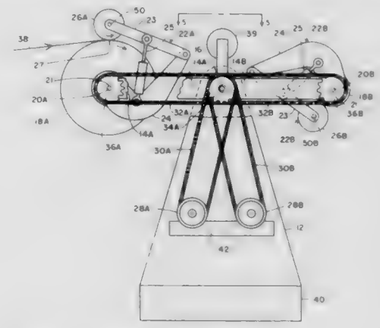
whereby said spaced array of strands are received within said elongate slot and said pair of marginal edges alternately engage a respective one of said pair of pin means as said strand guide reciprocates.

5,054,706
DEVICE TO ADJUST AND DISPENSE WEBS OF ROLLED UP MATERIAL
Granger Maurice, 17 Rue Marcel Pagnol, 42270 Saint Priest en Jarez, France
Continuation of Ser. No. 251,844, Oct. 3, 1988, abandoned. This application Mar. 19, 1990, Ser. No. 499,211
Claims priority, application France, Oct. 2, 1987, 87 14069
Int. Cl.[5] B65H *16/04, 23/16*
U.S. Cl. 242—55.200 1 Claim



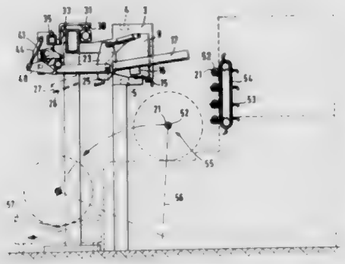
1. A dispenser for dispensing web material from a roll of web material including means for varying the pressure applied to said roll of web material in proportion to the diameter of the roll comprising:
the dispenser having a vertical wall,
two horizontally spaced ears attached to and extending perpendicularly from the said vertical wall,
a first L-shaped lever,
a second L-shaped lever,
said first L-shaped lever being hingedly attached proximate its elbow to one of said ears,
said second L-shaped lever being hingedly attached proximate its elbow to the other of said ears,
an axle,
said axle being journalled between the longer legs of the first L-shaped lever and the second L-shaped lever,
whereby a roll of web material may be rotatably mounted on said axle when said device is employed,
a rotatable drum having a friction producing surface mounted in said dispenser parallelly below the roll of web material and in frictional engagement with the roll of web material when said device is employed,
at least one first spring having one end attached to a longer leg of one of said L-shaped levers and the other end being attached to said vertical wall whereby the longer leg of said L-shaped lever is urged arcuately in a direction towards said drum,
the shorter leg of said L-shaped levers terminating in a convex cam surface,
a second lever,
hinge means for pivotally mounting said second lever on said vertical wall,
said second lever journalled at one end to said hinge means,
a second spring having one end attached to said vertical wall and the other end attached to the second lever,
said second lever having a cam surface at the other end,
said second spring urging the cam surface of the second lever against said convex cam surface of said shorter leg of said second L-shaped lever thereby to diminish the pull of the first spring on the long leg of the second L-shaped lever when the roll of web material has more wound up web material and greater pull when the roll of web material has less wound up web material.

5,054,707
WINDER RIDER ROLL
Jayme B. Olson, Neenah, Wis., assignor to American National Can Company, Chicago, Ill.
Filed Apr. 4, 1986, Ser. No. 848,069
Int. Cl.[5] B65H *18/10, 19/22, 18/26*
U.S. Cl. 242—64 37 Claims



1. A rider roll assembly, comprising:
(a) a rider roll;
(b) means rotatably mounting said rider roll for rotation about its own first axis of rotation;
(c) jointed arms having first and second arm segments, said first arm segment being attached to said rider roll about said first axis of rotation, and said second arm segment being rotatably mountable to a winder roll at its own second winder roll axis of rotation, such that said arm segments, and thus said rider roll assembly, can be rotated with respect to the winder roll; and
(d) control means for controlling rotations of said assembly about the winder roll.

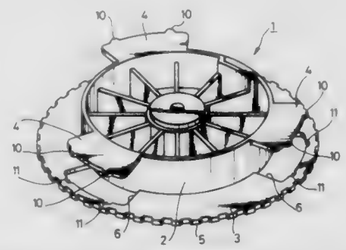
5,054,708
DEVICE FOR SLIPPING WINDING CORES ONTO EXPANDING SHAFTS WITH A GIVEN RELATIVE POSITIONING
Winfried Wiggers, Rheine, Fed. Rep. of Germany, assignor to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany
Filed Feb. 2, 1990, Ser. No. 473,662
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1989, 3903270
Int. Cl.[5] B65H *19/30*
U.S. Cl. 242—67.10 R 13 Claims



1. A device for placing a plurality of winding cores on an expandable winding shaft with a given relative positioning of the winding shaft, said device comprising:
a stand,
a frame mounted on said stand,
said frame having sets of mutually parallel guide tracks for a coaxial, adjacent plurality of winding cores fed thereto in a transverse position and spaced from each other by said mutually parallel guide tracks,
a distance between the guide tracks being equal to a width of the winding cores and a distance between the winding cores located on the tracks corresponds to a desired spacing of winding cores on the winding shaft,
abutments and recesses located in front parts of said tracks for engaging foremost winding cores,
tong-like grippers located in the stand for each respective winding core, said grippers having gripping jaws arranged to substantially simultaneously engage opposite sides of the winding cores, and
the grippers and the frame being moved relative to each other so that the winding shaft may be inserted through aligned bores of the plurality of winding cores when the winding cores are separated from the tracks and held by the grippers.

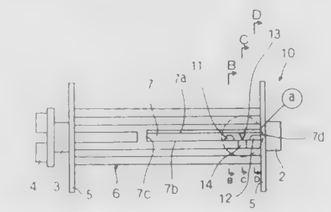
5,054,709
TAPE CASSETTE REEL HAVING UPPER FLANGES MOLDED THEREWITH
Masanori Sato, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 13, 1989, Ser. No. 407,043
Claims priority, application Japan, Oct. 31, 1988, 63-275326
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—71.8 20 Claims

1. A tape cassette reel of the type having a reel hub and upper and lower flanges which are integrally molded on upper and lower ends of the reel hub, said upper flange being formed in correspondence with an opening portion formed trough said lower flange, wherein the improvement comprises:
at least one protrusion of a predetermined shape formed on a portion of the outer periphery of said upper flange and



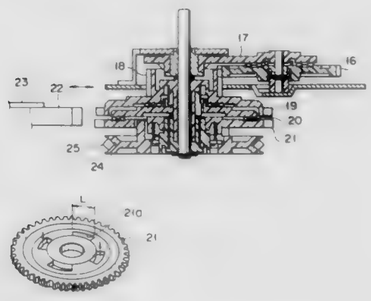
which protrudes form significantly less than the entire periphery of said upper flange.

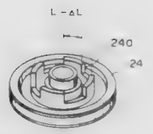
5,054,710
SPOOL FOR FILM AND LENS UNITS
Toshiyuki Ikariya, and Osamu Shibazaki, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Apr. 30, 1990, Ser. No. 516,435
Claims priority, application Japan, May 15, 1989, 1-55929[U]; May 15, 1989, 1-55930[U]
Int. Cl.[5] B65H *75/28*
U.S. Cl. 242—74 6 Claims



1. A spool on which photographing film is wound when the spool is turned in a winding rotation, said film having a tongue insertable into a slot of said spool in an inserting direction generally parallel to elongation of said film and attachable to said spool, by which tongue the film is pulled as the spool is turned in said winding rotation, said tongue including at least first and second perforations with said second perforation being further from a leading edge of said tongue in said inserting direction than said first perforation, said spool comprising:
a shaft having two opposed walls defining a slit adapted to extend transversely of said inserting direction, said slit having an entry portion through which said tongue is received;
one of said two opposed walls of the slit having a first protrusion extending into said slit and adapted to fit into said first perforation as said tongue is advanced into said slit;
the other of said two opposed walls having two ribs extending therefrom into said slit with said first protrusion being aligned therebetween in an axial direction of said shaft, said ribs being adapted to engage said film as it is advanced into the slit to thereby position said first protrusion into said first perforation, said other wall at the slit entry portion thereof having a second protrusion spaced from said first protrusion and oriented so as to fit into said second perforation as the spool is turned in said winding rotation following insertion of the film tongue into the slit so as to place the first protrusion into said first perforation, said second protrusion having a clearance area between itself and said one wall; and
wherein said first protrusion is tapered such that it includes a wall adapted to engage a leading edge in the inserting direction of said first perforation, with said wall being angled toward said slit entry, whereby the angle of said wall enables the leading edge of the said first perforation to slide off the first protrusion when the tongue is in the clearance area and in response to a force moving said film in a direction opposite to said inserting direction.

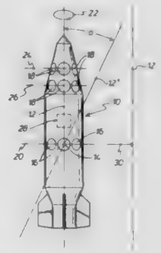
5,054,711
BELT DRIVEN TAPE RUNNING APPARATUS WITH AFTER SHOCK PROTECTION
Masao Kato, Kumagaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 27, 1989, Ser. No. 457,980
Claims priority, application Japan, Dec. 27, 1988, 63-329759
Int. Cl.[5] G11B *15/00*; F16H *55/18*
U.S. Cl. 242—201 3 Claims





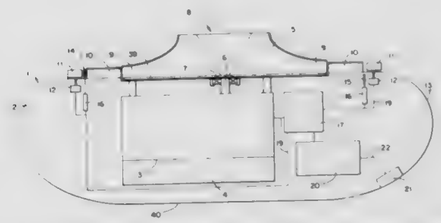
1. A belt driven tape running apparatus comprising:
a pair of reel bases for mounting a tape cassette in which a tape to be run is wound;
a rotating member provided between said pair of reel bases;
a belt driving mechanism including a belt for transmitting a rotational force from a driving source to said rotating member; and
a rotation transmission mechanism, including first and second rotation transmission member, said rotation transmission members provided coaxially with said rotating member and contacting with one of said reel bases in correspondence with a rotational direction of said rotating member, said first rotation transmission mechanism engaging with said second rotation transmission member and having a predetermined gap in a circumferential direction therebetween for transmitting a rotational force, the predetermined gap having a size sufficient for absorbing a reverse rotation of said reel bases caused by an after shock of said belt after the stopping of said tape.

5,054,712
PROJECTILE WITH CORRECTABLE TRAJECTORY
Klaus Bar, Lauf, and Gunther Lehrieder, Rothenbach, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Sep. 10, 1990, Ser. No. 580,333
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1989, 3931173
Int. Cl.[5] F42B *15/18*
U.S. Cl. 244—3.22 7 Claims



1. A spin-stabilized projectile having a correctable trajectory; including propulsion devices for producing a lateral thrust being distributed about the circumference of said projectile, each said propulsion device having an impulse-generating charge including an electrical-actuatable detonator arranged below a cover which is radially outwardly expellable relative to the longitudinal axis of the projectile, said detonator having a connecting cable which initially extends coaxially with the cover and then at an angle relative thereto and being arranged in a transitional region intermediate the impulse-generating charge and the cover, said cover having an external surface contour conforming with the contour of the encompassing casing surface of the projectile being fastened to the structure of the projectile through a rupture location, and which is hermetically closed radially inwardly of the impulse-generating charge with regard to the center of the projectile.

5,054,713
CIRCULAR AIRPLANE
Lawrence W. Langley, 910 Cardinal Dr., Christiansburg, Va. 24073, and Hal L. Moses, Rte. 1, Box 78, Newport, Va. 24128
Filed Apr. 3, 1989, Ser. No. 332,489
Int. Cl.[5] B64C *29/04, 29/02, 29/00*
U.S. Cl. 244—12.2 19 Claims



9. An unmanned autonomous vehicle having a nearly circular plan form, comprising:
an oblately spheroidal hollow aerodynamic body with its smallest dimension vertical and its largest dimension horizontal, having an aperture at the center of its upper surface;
an engine mounted within said aerodynamic body having a vertical output shaft extending upwards through said aperture;
a mixed flow fan rotatably attached to the end of said output

shaft having its axial induction opening facing upward and its bottom surface flush with the upper surface of said aerodynamic body;

a guide vane assembly for removing the swirl from the discharge of said mixed flow fan, fixedly mounted to the upper surface of said aerodynamic body, surrounding and closely coupled to the discharge opening of said mixed flow fan, wherein said discharge flow exiting said guide vane assembly follows the external contour of said aerodynamic body and is directed essentially vertically downward, producing aerodynamic lift;

means for adjustably reducing the flow of said mixed flow fan over a sector of its radial discharge opening;

means for adjustably imparting a swirl to part of the discharge flow of said guide vane assembly;

means for controlling the speed of said engine;

flight control means connected to said means for adjustably reducing the flow of said mixed flow fan over a sector of its radial discharge opening, to said means for adjustably imparting a swirl to part of the discharge flow of said guide vane assembly and to said means for controlling the speed of said engine, for controlling the flight path of said vehicle;

mission command means connected to said flight control means, for predetermining the flight path for said vehicle; and

sensor means connected to said mission command means for detecting signals and conditions from the environment of said vehicle.

5,054,714

AIRCRAFT TRACTOR WITHOUT TOW-BAR WITH ADJUSTABLE TOW ARMS

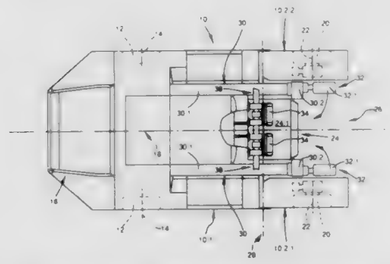
Wilhelm Franken, Wesel; Dieter Pohé, Gelsenkirchen, and Lars T. Michaelsen, Herdecke, all of Fed. Rep. of Germany, assignors to Man Gutehoffnungshütte Aktiengesellschaft

Filed Apr. 27, 1990, Ser. No. 515,117

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1989, 89107731

Int. Cl.[5] **B64C** *25/50*

U.S. Cl. 244—50 **4 Claims**



1. An aircraft tractor without tow-bar comprising:

a divided chassis having both a front part and a rear part hinged together by means of a single articulated axle; a front wheel axle mounted on said front part; a rear wheel axle mounted on said rear part, said rear wheel axle being substantially parallel to said articulated axle; a recess defined by said rear part, for receiving an aircraft nose wheel landing gear; a lifting paddle connected to said front part and extending into a front end of said recess, said lifting paddle giving support for lifting said aircraft nose wheel landing gear; first and second tow arms connected to said divided chassis extending to a rear end of said recess, one of each said tow arms being provided on each side of each recess, said tow arms being moveable to receive the aircraft nose wheel entering said recess, and being movable into a position behind the nose wheel where it can also move longitudinally and vertically into a plurality of non-linear positions, optimally securing the nose wheel in place; a hollow roller positioned around an end of each of said tow arms adjacent a location where each of said tow arms contacts said aircraft nose wheel; at least one nose wheel holder positioned at the front of said recess above said lifting paddle, said at least one nose wheel holder being simultaneously moveable in a vertical and longitudinal direction to position said at least one nose wheel holder in a plurality of non-linear positions; a hollow roller around said nose wheel holder at a location where said nose wheel holder contacts said aircraft nose wheel.

5,054,715

APPARATUS AND METHODS FOR REDUCING AIRCRAFT LIFTING SURFACE FLUTTER

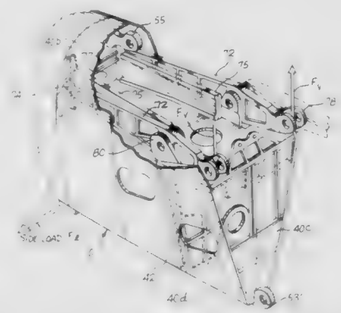
Thomas R. Hager, Bothell; Gerald C. Lakin, Bellevue, and John T. Rogers, Snohomish, all of Wash., assignors to The Boeing Company, Del.

Continuation of Ser. No. 269,839, Nov. 19, 1988, Pat. No. 4,917,331. This application Nov. 28, 1989, Ser. No. 442,094

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] **B64D** *27/26;* **B64C** *17/02*

U.S. Cl. 244—54 **13 Claims**



1. A method of reducing flutter in an aircraft, the method comprising the steps of:

a. providing an aircraft having a fuselage and first and second lifting surfaces which are attached to different locations of the fuselage;

b. providing a first object and a second object;

c. attaching the first object to the first lifting surface and the second object to the second lifting surface in a manner so that (i) when the first and second objects are subjected to a force, the first object oscillates at a different frequency than the second object, and (ii) the oscillations of the first object are transmitted to the first lifting surface and the oscillations of the second object are transmitted to the second lifting surface; and

d. oscillating the first lifting surface at a different frequency than the second lifting surface in response to the oscillations transmitted from the first object and the second object to reduce flutter of the first and second lifting surfaces.

5,054,716

DRIVE SYSTEM FOR TILTROTOR AIRCRAFT

Harold K. Wilson, Arlington, Tex., assignor to Bell Helicopter Textron Inc., Fort Worth, Tex.

Filed Oct. 16, 1989, Ser. No. 422,140

Int. Cl.[5] **B64C** *29/00, 27/52;* **B64D** *35/06, 35/08*

U.S. Cl. 244—56 **13 Claims**

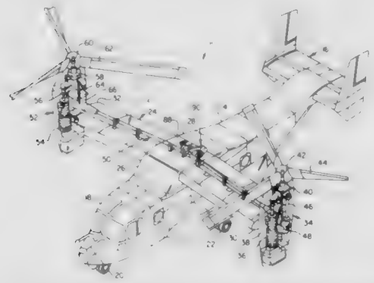
8. A system for driving a pair of spaced proprotors that are remotely located adjacent to opposite ends of the wing which is mounted on a fuselage of a tiltrotor aircraft, said system comprising:

port and starboard engine pylons pivotally located on the ends of said wing, each said pylon including an engine having an output shaft;

gearbox means for each engine located in each pylon and drivingly connected to said engine output shaft, said gearbox means each having a propeller shaft carrying one of said proprotors an each having a drive shaft;

pivot means for pivotally supporting each engine on said wing, said pivot means having an input connected with said drive shaft and having an output;

shaft means extending across and mounted for rotation on said wing, said shaft means having port and starboard ends connected to the outputs form said pivot means, thereby



connecting each engine to both proprotors whereby either engine can drive either or both proprotors, said shaft means comprising a central shaft member located generally centrally of said wing and parallel to a wing spar, said central shaft member journaled in a case and carrying a drive gear thereon in said case whereby said drive gear is driven by said engine through said shaft means;

a lateral support beam extending parallel to said spar and has each end connected to a wing rib; and

a mid-wing gearbox including said case having upper and lower front supports attached to said lateral support beam generally centrally of said wing, said case having a third support attached to said fuselage generally centrally of said wing whereby flexure of said wing has little effect on said mid-wing gear box.

5,054,717

AIRCRAFT CAPTURE SYSTEMS

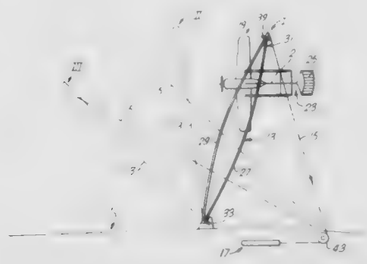
Douglas R. Taylor, Cliftonville, England, assignor to GEC Marconi Limited, England

Filed Apr. 16, 1990, Ser. No. 509,604

Claims priority, application United Kingdom, May 3, 1989, 8910108

Int. Cl.[5] **B64C** *25/68*

U.S. Cl. 244—110 F **7 Claims**



1. An aircraft capture system comprising: a homing station at which an aircraft is captured; an elongate boom arrangement at the homing station mounted for pivotal movement about a substantially vertical hinge axis; a first elongate flexible arrester member connected at one end to said boom arrangement at a position spaced from said hinge axis; energy absorber means at the homing station connected to the other end of said first arrester member; a second elongate flexible arrester member connected at one end to the aircraft; arrester hook means attached to said second arrester member at a position spaced from said one end of said second arrester member; and aerodynamic lift means operable when deployed, with the aircraft in flight, to support said second arrester means by aerodynamic lift action; said boom arrangement being appreciably flexible under forces applied thereto in a direction substantially perpendicular to the hinge axis whilst being substantially inflexible under forces applied thereto in a direction parallel to the hinge axis.

5,054,718

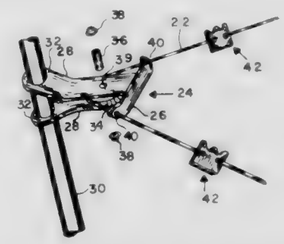
STUNT KITE BRIDLE

Harold L. Hull, 401 Canyon Way, Sparks, Nev. 89434, and Anthony R. Cocucci, 645½ N. Center St., Reno, Nev. 89501

Filed Mar. 13, 1991, Ser. No. 668,910

Int. Cl.[5] **B64C** *31/06*

U.S. Cl. 244—155 A **12 Claims**



1. A kite apparatus comprising; a bracket, mounting means to mount said bracket directly on a spar of a kite, a pulley, mounting means to mount said pulley to said bracket, a double yoke, said yokes being suitably affixed to said kite with at least one of their strings being common to both yokes, said common string being captured by said pulley, said common string having a first and second position, said first position dividing said common string into two substantially equal lengths by said pulley, said second position dividing said common string into two substantially un-equal lengths by said pulley, at least two control strings, said control strings being suitably attached at one of their ends to a common tie point on each of said yokes, respectively, whereby, when one of said control strings is tensioned more than the other, said common string of said yokes will move from its said first position to its said second position.

5,054,719

ACTIVE THREE-AXIS ATTITUDE CONTROL SYSTEM FOR A GEOSTATIONARY SATELLITE

P. A. Alexandre Maute, Valbonne, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Oct. 5, 1989, Ser. No. 417,759

Claims priority, application France, Oct. 6, 1988, 88 13122

Int. Cl.[5] **B64G** *1/24, 1/36*

U.S. Cl. 244—164 **18 Claims**

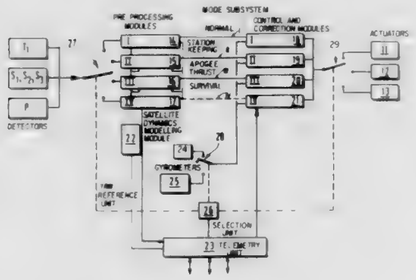
1. Attitude control system for stabilizing in at least a normal mode and a station keeping mode the attitude of a geostationary satellite about mutually perpendicular East-West, North-South and geocentric axes referred to as axes X, Y and Z comprising a plurality of detectors including at least one terrestrial detector to be oriented towards the Earth and a stellar

detector to be oriented towards the North along the North-South axis and a plurality of actuators further comprising:

a processing line means for each of at least the normal mode (I) and the station-keeping mode (II), each processing line means being adapted to be connected to the detectors and to at least some of the actuators and comprising:

a pre-processing module adapted to determine for each axis i, with i being X, Y or Z, an angular offset ϵ_i relative to the axis i between a measured angle determined from signals from the plurality of detectors and a predetermined reference angle; and a control and correction module adapted to determine for each axis i a corrective torque of the form:

$$c = k_i\epsilon_i + h_i\dot{\epsilon}_i$$



where k_i and h_i are parameters specific to each axis and to each processing line means where ϵ_i is the rate of variation of this angular offset,

a speed measuring unit adapted to measure the angular rate ϵ_i and to be connected to at least the control and correction module of the station-keeping processing line means (II), and

a mode selection unit adapted to control an input selector connecting the plurality of detectors to any selected one of said processing line means and an output selector adapted to connect that processing line means to at least one actuator

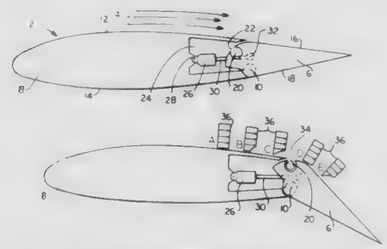
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5,054,720

TRAPPED VORTEX CAVITY

Mark A. Page, Cypress, Calif., assignor to McDonnell Douglas Corporation, Calif.

Filed Sep. 18, 1989, Ser. No. 408,552
Int. Cl.[5] B64C *5/00, 23/06*
U.S. Cl. 244—199 **7 Claims**



1. An airfoil exposed to a fluid stream, having a retractable vortex generator, comprising:

(a) a leading edge member having an airfoil surface;

(b) a trailing edge member pivotally attached to said leading edge member, said trailing edge member having an airfoil surface;

(c) at least one vortex generating cavity structure disposed in said trailing edge member, extending transversely to the direction of fluid flow over said airfoil surface, said cavity structure having an opening in said airfoil surface of said trailing edge member, said cavity structure and said opening being constructed such that when said cavity structure is exposed to the fluid stream, vortices form within said cavity structure, said vortices forming entirely from the free stream flow of said fluid stream, said leading edge member covering said opening when said trailing edge member is in a neutral position; and

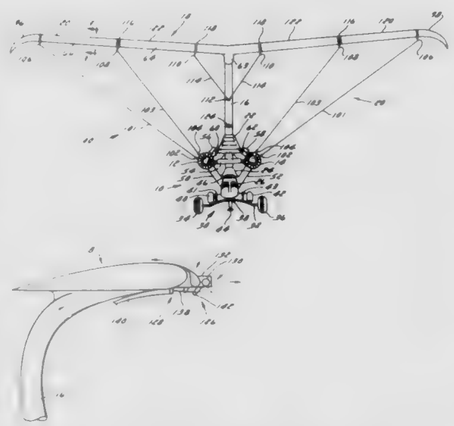
(d) actuator means operatively connected to said trailing edge member, for rotating said trailing edge member with respect to said leading edge member, said cavity opening being uncovered when said actuator means rotates said trailing edge member into a non-neutral position, whereby when said actuator rotates said trailing edge into said non-neutral position, vortices form within said vortex generating cavity structure and delay fluid stream separation from the airfoil.

5,054,721

VERTICAL TAKEOFF AIRCRAFT

David L. Brenholt, Menomonie, Wis., assignor to Translab, Inc., Menomonie, Wis.

Filed Mar. 22, 1989, Ser. No. 327,298
Int. Cl.[5] B64C *3/00*
U.S. Cl. 244—903 **28 Claims**



28. A vertical takeoff ultralight aircraft, comprising:

a compressor means for generating a gas stream;

a conduit, cooperating with said compressor means, for directing said gas stream;

a wing assembly, comprising:

an airfoil having a fore edge, an aft edge, a bottom surface, and a curved top surface; and

spanwise ducting means, spaced apart from and disposed forwardly of said airfoil and communicating with said conduit, for discharging said gas stream proximate said airfoil fore edge such that said gas stream flows over said curved top surface of said airfoil in a predetermined manner and creates a zone of reduced static pressure above said wing;

a rotatably mounted reversing valve cooperating with said gas stream for selectively diverting said gas stream forwardly; and

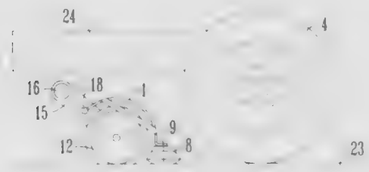
a reverse actuator including a cable connected to said reversing valve.

5,054,722

ROAD-RAIL SHUNT

James R. Bartel, and Dennis S. Lusk, both of Oroville, Calif., assignors to Bartel Welding Shop, Oroville, Calif.

Filed Oct. 22, 1990, Ser. No. 561,309
Int. Cl.[5] B61L *1/02;* **B60L** *5/00*
U.S. Cl. 246—126 **4 Claims**



1. An improved shunt device for a road rail vehicle which can be driven both on rails of a railway and off the rails of a railway, comprising;

an axle fixedly secured to said vehicle,

a first arm mounted for rotation about said axle,

said first arm including a guide wheel for engaging one of said rails to aid in guidance of the road-rail vehicle along the rails,

a curved arm with a reinforcing bar having one end mounted for rotation about said axle and having at the other end a wire brush for engaging said one of the rails of the railway when said vehicle is driven on a railway,

a second arm and a spring being connected to the device in such a way as to provide a downward force on the brush against said one of the rails of the railway,

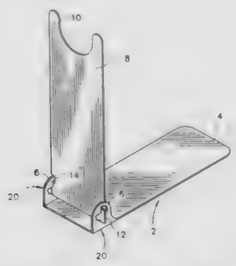
and insulation means disposed in the vicinity of one of the curved arm's ends to resist the flow of electricity through the curved arm.

5,054,723

HINGED TUBE SUPPORT

Randall C. Arnold, Maplewood, Minn., assignor to Augustine Medical, Inc., Eden Prairie, Minn.

Filed Apr. 19, 1990, Ser. No. 510,988
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—65 **7 Claims**



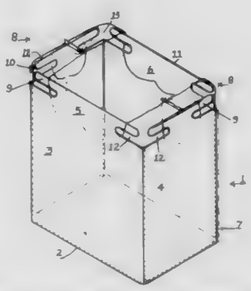
1. A medical apparatus comprising a tube holding element pivotally connected to a bed engagement member, said tube holding element and bed engagement members being of substantially planar sheet material, said tube holding element comprising a generally U-shaped tube holding shoulder sized to engage and grip the sides of a tube, said tube holding element further comprising a pair of lower trunnions formed by a pair of notches disposed from the lower end of said tube holding element, said trunnions extending from the bottom of said notches to the lower end of said tube holding element, said bed engagement member having a first end configured to extend under a mattress and a second end having a pair of trunnion plates attached thereto, said trunnion plates supporting said tube holding element trunnions to provide a pivotal connection between said tube holding element and said bed attachment member, said trunnion plate also being formed from substantially planar sheet material and including a pair of opposing arcuate guide surfaces defining a pivoting path for said tube holding element, said trunnion plates further including a pair of stop surfaces defined at the respective ends of each of said opposing arcuate guide surfaces, said trunnions extending substantially between said arcuate guide surfaces and engaging said stop surfaces at the respective ends of the tube holding element rotational path, said trunnion plates further including at one end of one of said opposing arcuate guide surfaces a slot defined on one side by one of said stop surfaces and at the other side by an opposing surface extending radially beyond an associated one of said arcuate guide surfaces, said slot being sized to receive said trunnions when said tube holding element has rotated to a predetermined angle with respect to said bed attachment member, said trunnions being translationally positionable into said slot.

5,054,724

CONTAINER FOR SUPPORTING A LIMP PLASTIC BAG IN AN UPRIGHT, FOUR CORNERED CONFIGURATION

Mabel C. Hutcheson, 914 Granada Blvd. S., Jacksonville, Fla. 32207

Filed Aug. 27, 1990, Ser. No. 572,487
Int. Cl.[5] B65B *67/00*
U.S. Cl. 248—97 **8 Claims**



1. A container for holding in a fully opened, four cornered configuration, the body and mouth of a plastic bag having upwardly extending and pleated handles, while supporting, on the sides and the bottom, a plastic bag in an upright position: said container comprising:

a. a horizontal planar surface forming the bottom of said container, and a plurality of side walls formed from substantially vertical planar surfaces attached to said bottom and forming a rim along their upper extremities;

b. a plurality of pairs of support members integrally formed with said side walls, such support members being positioned one pair connected to one said vertical planar wall; each support member having a horizontally extending projection extending oppositely from its paired support member, and pointing toward respective corner locations defined between adjacent pairs of side walls; each pair of horizontal support members being generally parallel to and in alignment with the plane of respective said side wall upon which each said pair of support members is mounted; each support member being capable of insertion within an inner pleat of a bag handle at a location where an outside fold of a plastic bag makes the transition from an open 90° angled configuration sufficient to form a four cornered fully opened bag to a 0° angled and closed configuration of a folded bag handle; all of said support members being generally equal to one another in height; and

c. a plurality of openings, equal to the number of said support members, each said opening being located directly

below and adjacent to respective said support member, each said opening being adjacent to respective corner location.

5,054,725

APPARATUS FOR MANOEUVRING A TV CAMERA REMOTELY IN SPECIAL SHOOTING CONDITIONS

Massimo Bucefari, Via A. Mantegna, 1-Arezzo, and Giovanni Giogli, Via Madonna del Vento, 25-Citta' Di Castello, both of Italy

Filed Aug. 8, 1990, Ser. No. 564,508
Claims priority, application Italy, Sep. 1, 1989, 9516 A/89
Int. Cl.[5] G03B *17/00;* **F16M** *3/00*
U.S. Cl. 248—123.1 **9 Claims**



1. Apparatus for remote maneuvering of a television camera in special shooting situations, wherein the camera (**15**) is mounted on an articulated structure comprising:
- a column (**2**);
- a lifting arm (**10**) having a first end adjustably connected to slide vertically on said column;
- said lifting arm (**10**) rotatably connected to said column in a vertical plane containing said column (**2**);
- drive means for vertically sliding said first end of said lifting arm (**10**);
- drive means (**11**) for rotating said lifting arm (**10**) in said vertical plane;
- a camera supporting arm (**13**) connected at a first end to a second end of said lifting arm (**10**) through a first horizontally rotatable support (**12**);
- means (**10***a*, **10***b*) for maintaining a vertical axis of rotation for said first support;
- a mechanism (**14**) mounted at a second end (**13***b*) of said camera supporting arm (**13**);
- said mechanism comprising a second horizontally rotatable support (**16**) and a third vertically rotatable support (**17**) to which the camera is mounted;
- drive means (**49**, **53**, **63**) associated with each of said supports for rotating said supports; and
- control console means (**8**) for independently and remotely operating and monitoring each said drive means.

5,054,726

COMMUNION CUP HOLDER

Robert T. Mattox, 11029 E. Weaver Ave., South El Monte, Calif. 91733

Filed Sep. 26, 1990, Ser. No. 589,398
Int. Cl.[5] A47G *1/17*
U.S. Cl. 248—206.5 **5 Claims**

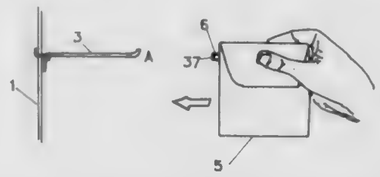
1. An apparatus for holding a cup, said apparatus being attachable to the metallic leg of a chair and comprising:
- a means for magnetically attaching said apparatus to said chair leg, said attaching means comprising an angle support and a first and second magnetic block, said angle support having a first and second interior wall and a first and second exterior wall, each of said magnetic blocks being permanently affixed to a respective one of said interior walls; and
- a means for supporting said cup in an upright position, said supporting means comprising a ring, said ring being tangentially attached to said first exterior wall such that said ring extends horizontally from said magnetic attachment means, said cup frictionally engaging said ring.

5,054,727

RAPID RACKER

John W. Campbell, Montgomery, Ala., and Welbourne D. McGahee, Melbourne, Fla., assignors to Rapid Racker Systems, Montgomery, Ala.

Filed Jul. 26, 1989, Ser. No. 385,157
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—220.3 **25 Claims**



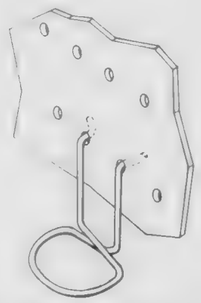
1. A racker for a package support of the type which includes peg means for supporting items including an opening dimensioned to permit said peg to pass therethrough whereby said items are hung from said peg, comprising:
- a transfer member including a section dimensioned to pass through said opening in said items, said section including a peg receiving opening; and
- means for supporting said transfer member including front and rear means for retaining said items on said section.

5,054,728

PEGBOARD HANGER

Philip Nigro, Jr., 1 Cricket La., Worcester, Mass. 01602

Filed Sep. 12, 1990, Ser. No. 581,373
Int. Cl.[5] F16B *17/00*
U.S. Cl. 248—220.4 **3 Claims**



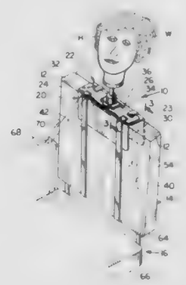
1. An object-holding hanger for positioning on a pegboard having at least one pair of spaced-apart apertures defined therein, said hanger comprising:
- base means to retain objects positioned on said hanger;
- a pair of spaced-apart shoulder members disposed parallel to one another, each having first and second ends for positioning through two selected apertures;
- a pair of support members each having first and second ends, each interconnected at their first ends to said base means and at their second ends to the first ends of said shoulder members respectively, said support members being resiliently biased apart by said base member positioning said shoulder members, when said hanger is in an uncompressed state, further apart than the distance between said selected apertures, said support members being compressible to align said shoulder members individually into said selected apertures; and
- a pair of neck members of smaller diameter than the diameter of said apertures in said pegboard, each neck member having first and second ends with the first ends of said neck members affixed respectively to the second ends of said shoulder members, said neck members each extending outwardly away from one another in opposite directions, each at an approximately 30–45 degree angle to a vertical axis generally parallel to said support members when said hanger is installed on said pegboard, said hanger when installed in said selected apertures in said pegboard being compressed inwardly sufficiently for the engagement of the oppositely directed second ends of said neck members into said apertures while said neck members are held in a generally horizontal position and maneuvered through said apertures while releasing the inward compression on said support members at the same time as moving said hanger to a generally vertical position when said neck members have passed through said apertures and said shoulder members are positioned in said apertures and wherein the second ends of said neck members are positioned beyond the perimeters of said apertures.

5,054,729

MANIKIN HEAD SUPPORT

Shoichi Mogi, 240 S. Wetherly Dr., Beverly Hills, Calif. 90211

Filed May 30, 1990, Ser. No. 530,234
Int. Cl.[5] A45D *8/00*
U.S. Cl. 248—225.31 **1 Claim**



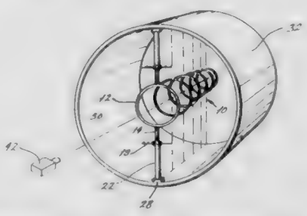
1. Apparatus for mounting a manikin head with a wig, at the level of a seated person, for enabling cutting of the wig by a hair stylist, comprising:
- a chair having a chair back with front and rear faces and a top;
- a first mount having a primarily horizontal plate-like top part lying on said seat top, and a primarily vertical plate-like part lying against a first of said chair back faces;
- a manikin head-holding pedestal mounted on said plate-like top part of said first mount;
- a second mount having a primarily horizontal plate-like top part lying on said first mount top part and having a slot that receives said pedestal, said second mount having a plurality of strap-receiving slots and having a primarily vertical plate-like side part lying against a second of said seat back faces;
- a pair of straps, each extending around said seat back, in a path extending through at least one of said slots and around said vertical plate-like parts of said first and second mounts.

5,054,730

PIPE STRUT SYSTEM AND METHOD FOR USING SAME

Norman G. Pensoneau, St. Clair County, Ill., assignor to Pensoneau Excavating Co., Inc., Belleville, Ill.

Filed Feb. 12, 1990, Ser. No. 478,520
Int. Cl.[5] E04G *25/00*
U.S. Cl. 248—231.2 **18 Claims**



1. A strut device for use within flexible pipe to be buried, the strut device comprising a central member sized for extending interiorly of the flexible pipe, at least first and second adjusting means having outer ends and spacedly extending from the central member, a base member respectively carried at the outer end of each adjusting means for contacting spaced surface portions of an inner wall of the flexible pipe for providing strutted support between said spaced pipe surface portions, the adjusting means each being selectively adjustable relative to the central member for selectively varying the overall dimension of the strut device between the spaced pipe surface portions and for selectively establishing the position of the central member within the flexible pipe, the central member including sighting means for sighting along a plurality of such strut devices whereby to permit sighted alignment of the flexible pipe before burial thereof.

5,054,731

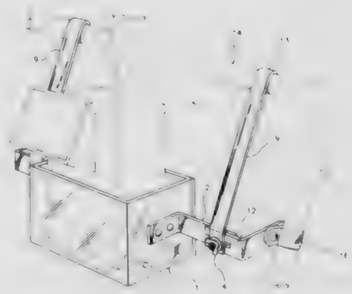
Patent Not Issued For This Number

5,054,732

INTRAVENOUS FEEDER SUPPORT FOR STROLLER

Eldon R. Sukup, R.R. 2, Box 49T, Neola, Iowa 51559

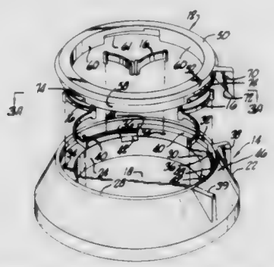
Continuation of Ser. No. 380,667, Jul. 17, 1989, abandoned. This application Feb. 19, 1991, Ser. No. 673,524
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—309.1 **1 Claim**



1. A box-like carrier for an intravenous feeding regulator incorporating a vertical support for an I.V. bottle wherein the improvement comprises:
- (a), means for mounting the box-like carrier horizontally between the handle of a stroller;
- (b), means for mounting a vertical pole I.V. bottle support over the box-like carrier;

(c), the box-like carrier retainer having longitudinal metal straps extending from opposite sides, said straps having inward and outward ends;
(d), the outward ends of the straps having central longitudinal slots;
(e), metal brackets with matching longitudinal slots slidably attached at one end to the metal straps by a thumb screw extending through the longitudinal slots;
(f), the other ends of the brackets terminating in clamping means for attachment to a vertical portion of the stroller handle;
(g), a reinforcing strap fastened to the intersecting metal strap/bracket function extending upwards terminating in a clamping means on the horizontal portion of the stroller handle;
(h), a slidable clamp on a vertical structural member of the stroller handle accommodating a vertical pole extending upwardly;
(i), the vertical pole terminating in a horizontal arm; and,
(j), means for suspending an I.V. feeder bottle from the horizontal arm.

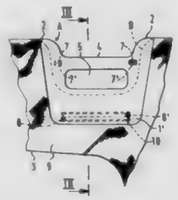
5,054,733
CONTAINER SUPPORT DEVICE
Michael P. Shields, Box 91, Mammoth Lake, Calif. 93516
Filed Feb. 14, 1990, Ser. No. 480,473
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—313 **46 Claims**



1. An adjustable support device particularly adapted for use in a vehicle for releasably securing therein an open container to prevent the spillage of the contents thereof, said device comprising:
a first ring member;
a second ring member;
means for securing said first ring member to said second ring member so as to allow relative rotation of said ring members about a common central axis; and
a plurality of container gripping members carried by and disposed between said ring members, each of said gripping members having hinge means disposed intermediary the ends thereof and being adapted to pivot about said hinge means and project in a substantially radial direction from said ring members in response to relative rotation of said ring members to abut the container proximate said hinge means and secure said device to the container.

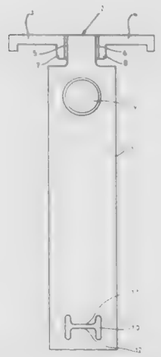
5,054,734
SUPPORT BRACKET FOR ATTACHMENT TO AUTOMOBILE SUN VISORS
Carlos Gabas, Barcelona, Spain, assignor to Industrias Techno-Matic, S.A., Barcelona, Spain
Filed May 25, 1990, Ser. No. 529,231
Claims priority, application Spain, May 26, 1989, 8901785
Int. Cl.[5] B60J *3/02*
U.S. Cl. 248—316.5 **1 Claim**

1. A sun visor assembly for automobiles, comprising a sun visor having a portion with a substantially U-shaped outline, said sun visor also having a throughgoing slot; and a support bracket including two leaf members having identical U-shaped outline and pivotally connected with one another to be pivoted between an open position in which they do not hold said sun visor and a closed position in which they surround said portion of said sun visor and hold the same, each of said leaf members having a slot provided in an area which is free of said sun visor in said closed position and adapted to receive a support for securing the sun visor in a predetermined position in a vehicle, each of said leaf members having an interlocking catch which in said closed position extends through said throughgoing slot of said sun visor and interlocks with another one of said inter-



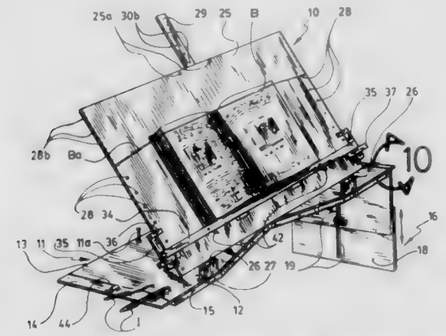
locking catches, each of said leaf members also having a further interlocking catch which in said closed position is located outside said sun visor and interlocks with another of said further interlocking catches wherein one of said two leaf members has a cross-piece defining a sun visor support in said closed position while the other of said leaf members has a recess for receiving said cross-piece in said closed position.

5,054,735
ACTIVE-SUBSTANCE SUPPORT FOR BEEHIVES
Michael Bayer, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jun. 7, 1990, Ser. No. 534,804
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1989, 8907584[U]
Int. Cl.[5] A01N *25/00*
U.S. Cl. 248—215 **3 Claims**



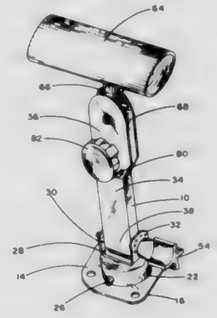
1. An active-substance support for beehives comprising a rectangular substrate of a thermoplastic material, a T-shaped head piece connected to an upper end of the substrate and having symmetrically arranged hook-like side arms extending perpendicularly to a longitudinal direction of the substrate and bendable at a right angle to the substrate along folding lines extending parallel to the longitudinal direction of the substrate.

5,054,736
LAPTOP READING AND WRITING STAND
Bruno Champoux, 5187 Berri Street, Apt. 3, Montreal, Canada H2J 2S4
Filed Jun. 1, 1990, Ser. No. 531,774
Int. Cl.[5] A47B *97/00*
U.S. Cl. 248—444 **2 Claims**



1. A laptop reading and writing stand comprising a base panel defining a front edge portion and a rear edge portion, a worktable panel having a front and a rear edge and top and bottom main walls and pivotally secured to the base panel at the front edge thereof and operatively defining therewith a front pivot axis, a series of stoppers secured against said bottom wall of the worktable panel and serially extending away from the front edge portion of the base panel towards said rear edge of the worktable panel, an elongated inclination adjustment leg having a lower end pivotally secured to the base panel at the rear edge portion thereof and an upper end selectively and freely abutting against one of the stoppers above the base panel and said pivot axis and constructed and arranged to pivotally rest the worktable panel substantially transversely thereon, and a workholder bar, extending transversely over said top wall of the worktable panel for supporting a document in open condition to be read by a person facing said panel top wall, and having a catch device mounted on each end thereof and constructed and arranged to catchingly and adjustably engage the worktable panel along the opposite lateral edges thereof; a first hinge pivotally securing the inclination adjustment leg on the base panel in transverse registry with the series of stoppers and centrally relative to the opposite lateral edges of the worktable panel; biasing number extending between and attached to said adjustment leg and to said base panel and biasing said adjustment leg against said bottom wall of said worktable panel; further including an elongated support bar, fixed flatly against said bottom wall of said worktable panel and extending beyond the rear edge thereof, said support bar extending about a plane substantially parallel to that of said worktable panel so as to be substantially coextensive therewith, said elongated support bar being coplanar with said inclination adjustment leg and destined to extend along a lengthwise axis substantially transverse to the lengthwise axis of said elongated inclination adjustment leg, said support bar carrying said stoppers, some of said stoppers fixed to the portion of said support bar projecting beyond said worktable panel rear edge; wherein said person, in order to at least modify and fully adjust the inclination of said worktable panel from his reading position facing said panel top wall, needs only to hand grasp and pull toward him the free projecting end of said support bar, so as to release said adjustment leg from said stopper engaged by same, without having to reach out through and beyond the general plane of said worktable panel to said bottom wall thereof, and then to tilt said worktable panel freely over the released adjustment leg.

5,054,737
UNIVERSAL SUPPORT APPARATUS FOR A FISHING ROD
Daniel D. DeLancey, 12915 Lillian St., Omaha, Nebr. 68138
Filed Feb. 20, 1990, Ser. No. 481,230
Int. Cl.[5] A01K *97/10*
U.S. Cl. 248—515 **3 Claims**



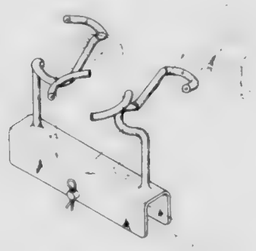
1. In combination,
a fishing rod having a handle, and
a universal support apparatus for a fishing rod, comprising,
a base having a pedestal adapted to be mounted on a surface,
an open-ended generally hollow fishing rod handle receptacle adapted for removably receiving said fishing rod handle,
support means for mounting said receptacle on said base,
said support means being operative to provide freedom of pivotal movement of the receptacle about three perpendicular axes relative to said base,
coacting ratchet and pawl means operatively associated with said receptacle and support means to block pivotal movement of said receptacle in one direction,
said support means comprising,
a post on said base,
said post having an upper end,
a cup-shaped receptacle adjustably rotatably supported on said upstanding post mounted on said pedestal for providing rotational motion about a first axis,
said support means further comprising,
for providing motion about a second axis perpendicular to said first axis, a generally U-shaped member connected to the upper surface of said cup-shaped member,
a support member having one end adapted to be removably insertable into said generally U-shaped member,
a center positioning pin pivotally connecting said one end to said U-shaped member, and
coacting stop means on said support member and U-shaped member whereby said support member is adjustably moveable relative to said U-shaped member.

5,054,738
FISHING ROD AND BEVERAGE HOLDER
Harold J. Harding, 1945 Maywood, Independence, Mo. 64052
Filed Jun. 29, 1990, Ser. No. 545,555
Int. Cl.[5] A01K *97/10*
U.S. Cl. 248—538 **3 Claims**

1. A utility device for fishermen, comprising:
an upright body including structure defining and inclined passageway therein for receiving and holding the handle end of a fishing rod;
support structure for holding a beverage container including arcuate container-engaging member rigidly secured to said body; and

means for releasably securing said body and support structure to a rail or the like,

there being a pair of said bodies laterally spaced from one another, each body including structure defining an inclined passageway therein for receiving and holding the handle end of a respective fishing rod.



said container-holding support structure comprising a pair of opposed, arcuate segments respectively secured to a corresponding body, said securing means including a downwardly opening, generally U-shaped in cross section channel supporting said bodies and presenting a bight section and a pair of depending legs, the upper surface of said bight section defining a surface for supporting of a bottom of a beverage container.

5,054,739

AUTOMATIC LEVELLING DEVICE

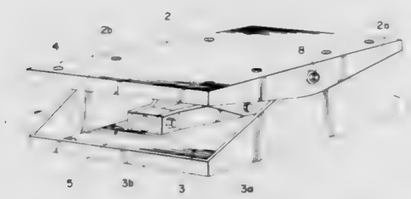
Jan Wallin, Hesse 55, S-781 96 Borlänge, Sweden

PCT No. PCT/SE87/00122, § 371 Date Sep. 6, 1989, § 102(e) Date Sep. 6, 1989, PCT Pub. No. WO88/06894, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 11, 1987, Ser. No. 411,487

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—550 **18 Claims**



1 Automatic levelling device for a vehicle seat comprising:

an upper plate capable of supporting a vehicle seat;

a lower plate capable of being mounted on a vehicle;

said upper plate being pivotally journalled to said lower plate about at least one axis;

at least one linearly operable drive means for moving said upper plate with respect to said lower plate, said at least one drive means being mounted between and completely within the space delimited by said upper plate and said lower plate, and said at least one drive means including a linearly extending control rod which is extendable and retractable substantially parallel to said lower plate, said control rod having a free end that is firmly connected to a block by a pair of arms, said pair of arms being firmly attached to said block at one end and pivotally mounted in a first support plate depending from said upper plate at another end; and

at least one detecting means for detecting the horizontal position of said upper plate and for delivering a signal to said at least one drive means for returning the seat to a substantially horizontal position.

5,054,740

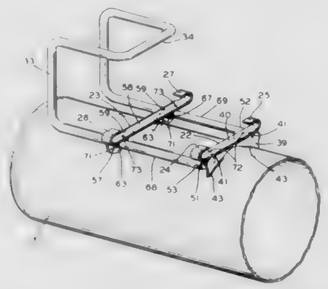
AIR COMPRESSOR TANK MOUNT

Roger D. Wheeler, Jackson, Tenn., assignor to DeVilbiss Air Power Company, Jackson, Tenn.

Filed Oct. 1, 1990, Ser. No. 591,082

Int. Cl.[5] F16M *3/00*

U.S. Cl. 248—675 **13 Claims**



1. In combination with an air compressor and a compressed air storage tank, a mount for releasably attaching said air compressor to said air tank, said mount comprising first and second brackets, each of said brackets having a saddle portion with an edge shaped to abut said air tank, weldments attaching said bracket edges to said air tank with said brackets spaced apart, said first bracket having first and second hooked ends, said second bracket having third and fourth hooked ends, said air compressor having a bottom and first and second opposed spaced grooves formed adjacent said bottom with said grooves spaced for said first groove receiving said first and third hooked bracket ends and said second groove simultaneously receiving said second and fourth hooked bracket ends, and means for retaining said hooked bracket ends in said grooves.

5,054,741

MULTIPLE SIZE TUBING HANGER

Joseph P. Ismert, Kansas City, Mo., assignor to Sioux Chief Manufacturing Co., Inc., Peculiar, Mo.

Filed Oct. 15, 1990, Ser. No. 598,363

Int. Cl.[5] F16L *3/08*

U.S. Cl. 248—74.5 **7 Claims**



1. A tube hanger for selectively supporting at least two different sizes of tubes from a mounting surface and comprising:

a. a body portion sized to extend transversely across a tube to be supported by said hanger, said body portion having a base end generally for abutment with a support surface and arm means with a tip end extending outwardly from said base end in a semi-circular arc segment, said arm means defining a partially enclosed cavity sized for receipt of a first size of tube; and

b. supplemental finger means connected to said arm means and extending substantially concentrically with said arm means into said cavity, said supplemental finger means being opposed and sized for cradling and gripping a second size of tube of lesser diameter than said first size of tube.

5,054,742

MAGNETIC VALVE

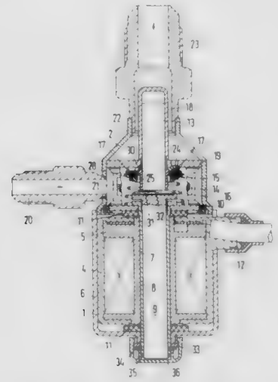
Holger Nicolaisen, Nordborg, Denmark, assignor to Danfoss A/A, Nordborg, Denmark

Filed Sep. 4, 1990, Ser. No. 576,983

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1989, 3930785

Int. Cl.[5] F16K *31/06*

U.S. Cl. 251—129.19 **10 Claims**



1. A magnetic valve comprising a valve housing, first means for dividing the housing into an inlet chamber and an outlet chamber and defining at least one valve seat for fluidly connecting the first chamber to the second chamber, an electromagnet in the housing and operable between an energized and a deenergized condition for forming a magnetic field, the electromagnet including an energizable magnetic coil and an axially extending valve shaft axially movable by the magnetic field from a first position to a second position relative to the coil when the electromagnet is energized, the shaft being made of a magnetic material, an annular valve plate member in surrounding relationship to the shaft, abuttable against the valve seat for blocking fluid flow therethrough and axially movable relative to the shaft, second means mounted on the shaft for movement therewith for acting against the valve plate member to move the plate member relative to the valve seat to permit fluid flow through the seat when the shaft is in its second position, and a resetting spring acting against the plate member for resiliently retaining the plate member in abutting relationship to the valve seat to block fluid flow through the valve seat and therethrough resiliently retain the shaft in the shaft first position, the annular valve plate member comprising an annular valve plate made of resilient metal and having an annular inner edge, and a first plurality of angularly spaced teeth joined to the annular inner edge to extend radially inwardly thereof, and an elastic plastic coating joined to at least the valve plate of the valve member, the teeth having at least partially uncoated parts.

5,054,743

FLUID CONNECTOR

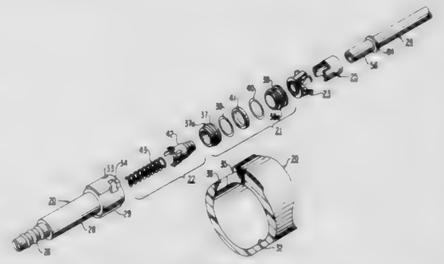
Phillip J. Norkey, Jackson, and David A. Bocson, Mt. Clemens, both of Mich., assignors to U.S. Plastics Corporation, Madison Heights, Mich.

Filed May 10, 1990, Ser. No. 521,391

The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.

Int. Cl.[5] F16L *37/40*

U.S. Cl. 251—149.6 **20 Claims**



1. A fluid connector comprising:

a housing having a longitudinal opening therethrough, said housing having at least one transverse opening therethrough intersecting said longitudinal opening and providing at least one transversely disposed bearing surface;

a conduit having a leading end portion insertable in said longitudinal housing opening in a coupling position, said conduit having a fluid passageway communicating with said longitudinal housing opening and an annular flange disposed within said longitudinal housing opening and spaced from said transverse bearing surface when said conduit leading end portion is in said coupling position;

means providing a seal between said housing and said conduit when said conduit leading end portion is in said coupling position;

means disposed in said longitudinal housing opening for releasably retaining said conduit leading end portion in said coupling position, said retaining means including at least one leg section having a transversely deflectable retaining leg portion disposed between said conduit annular flange and said housing, said retaining leg portion having a pad portion engageable with said transverse bearing surface whereby upon application of fluid pressure to said connector tending to eject said conduit from its coupling position in said housing, the force exerted thereby is caused to be transmitted through said conduit annular flange, said retaining leg portion and the pad portion thereof engaging said transverse bearing surface to said housing; and

means for selectively deflecting said retainer leg portion transversely to permit the removal of said conduit from said housing.

5,054,744

PULLING DEVICE FOR REMOVING GROUND EMBEDDED STRUCTURES

Jimmie D. Essex, 108 Locust La., Cuba, Ill. 61427

Filed Aug. 25, 1989, Ser. No. 398,740

Int. Cl.[5] B66D *11/00*

U.S. Cl. 254—228 **13 Claims**

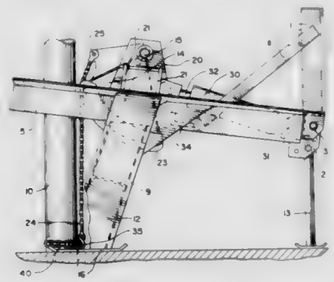
1. A pulling device suitable for the removal of ground embedded structures comprising:

a ground engaging support structure;

leverage means mounted on said ground engaging support structure and rotatable about a pivot point between pull and lift positions;

flexible load bearing means attached to said leverage means and configured such that as said leverage means is rotated

between said pull and said lift positions, said flexible load bearing means is progressively wrapped onto the leverage means and conformed to the shape of a curve, an initially conformed section having a relatively smaller radius of curvature than a later conformed section; and



force application means for providing a directional force to said leverage means at a point distant from said pivot point.

5,054,745

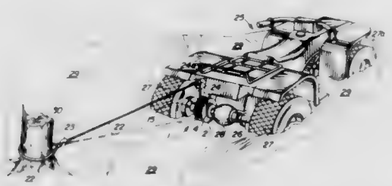
AUXILIARY WINCH FOR ALL TERRAIN VEHICLE

Frank A. Swayze, 1807 St. Joseph Pl., Monroe, La. 71201, and Irvin R. Bourell, 344 Ragland Rd., Monroe, La. 71202

Filed Dec. 26, 1989, Ser. No. 456,959

Int. Cl.[5] B66D *1/36*

U.S. Cl. 254—325 **6 Claims**



1. An auxiliary winch for an all terrain vehicle having at least one drive axle, said auxiliary winch comprising a split shaft fitting characterized by a pair of split shaft halves, each having a matching split shaft neck, a matching large flange provided on one end of said split shaft neck and a matching small flange provided on the opposite side of said split shaft neck, said split shaft halves carried by the drive axle in releasable, frictionally-engaging relationship; a split reel characterized by a pair of matching split reel halves provided with a winch line groove, said split reel halves seated on said split shaft neck between said large flange and said small flange in interlocking, normally rotatable relationship; a winch line adapted for winding in said winch line groove with one end of said winch line attached to said split reel; and coupling means adapted for engaging at least one of said split reel halves and said split shaft halves and selectively joining said split reel to said split shaft fitting, whereby said split shaft fitting rotates with respect to said split reel with the drive axle when said coupling means is detached from said split reel and said split shaft fitting, and said split reel rotates with said split shaft fitting and the drive axle when said coupling means engages said split reel and said split shaft fitting, to wind said winch line on said split reel responsive to rotation of the drive axle.

5,054,746

APPARATUS FOR HARDENING RAILS

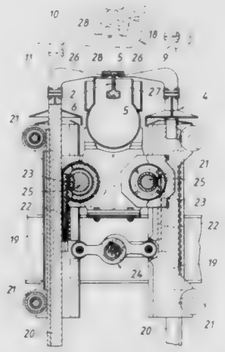
Rudolf Buchegger, St. Florian, Austria, assignor to Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H., St. Florian, Austria

Filed Feb. 1, 1991, Ser. No. 649,760

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1990, 4003363

Int. Cl.[5] C21D *9/08*

U.S. Cl. 266—114 **8 Claims**



1. In an apparatus for hardening rails, each of which has a rail head, which is to be hardened, a rail foot, and a web connecting said foot to said head, which apparatus comprises

an elongate dip basin extending in a longitudinal direction and adapted to hold a quenching bath,

a feeder for feeding each rail toward said dip basin while said rail is supported on said head and foot,

a manipulator for receiving each rail from said feeder and for supporting said rail and causing it to be dipped into said dip basin to quench said rail in said bath, and

a delivery conveyor for delivering each rail after it has thus been quenched,

the improvement residing in that

said manipulator comprises a plurality of pairs of carrying arms, which are disposed on mutually opposite sides of said dip basin and pivoted each on an axis which extends in said longitudinal direction, which pairs of arms are spaced along said basin,

said carrying arms comprise respective supporting brackets and are operable to move said brackets to a position in which said supporting brackets protrude toward each other over said dip basin and are adapted to support a rail extending in said longitudinal direction in a position in which said head of said rail faces down and the supporting brackets protrude toward said web and support said foot on its underside on opposite sides of said web, and

said carrying arms are mounted to be extensible and retractable up and down along predetermined paths to raise and lower said rail when it is thus supported by said brackets.

5,054,747

SCRAP RECOVERY APPARATUS

Ophneil H. Perry, Kingswinford, England, assignor to Stein Atkinson Stordy Limited, England

Filed Mar. 28, 1990, Ser. No. 500,676

Claims priority, application United Kingdom, Mar. 28, 1989, 8906936

Int. Cl.[5] C22B *7/04*

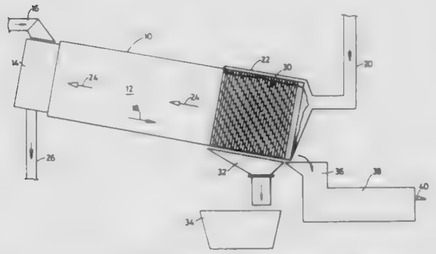
U.S. Cl. 266—205 **9 Claims**

1. Apparatus for sorting and recovering scrap material in solid form having metallic constituents of different compositions, said apparatus comprising:

a) a kiln defining a furnace chamber having a material feed path extending therethrough from a material input end of the chamber to a material outlet end remote from the input end;

b) means for heating the chamber to a temperature at which metallic constituents therein separate from one another into solid particles of different sizes;

c) means for maintaining a subatmospheric pressure in said chamber;



d) separating means immediately adjacent the material outlet end of said chamber for separating the metallic constituents into relatively larger and relatively smaller particles; and

e) a melting furnace immediately adjacent but beyond the separating means for receiving and melting the relatively larger particles with minimum heat loss from said larger particles during their passage from said chamber to said furnace.

5,054,748

MULTI-CHAMBER VACUUM INSTALLATION

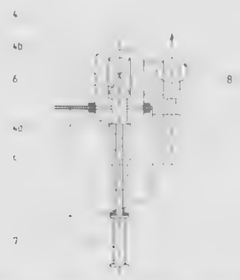
Gerhard Hild, Asslar, Fed. Rep. of Germany, assignor to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Oct. 18, 1990, Ser. No. 599,668

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1989, 3935014

Int. Cl.[5] C21C *7/10*

U.S. Cl. 266—208 **3 Claims**



1. Multi-chamber vacuum installation comprising a housing forming a charge-changing chamber (**5**), and a plurality of angularly spaced processing chambers (**1**, **2**, **3**, **4**) located within said charge-changing chamber for processing the material within the processing chambers in the charge-changing chamber, wherein the improvement comprises that one of said processing chambers (**4**) acts as an air lock chamber for introducing material to be treated into said charge-changing chamber and for removing treated material out of said charge-changing chamber, said processing-air lock chamber (**4**) comprises two parts (**4***a*, **4***b*) with a lower part (**4***a*) connected with the inside of the charge-changing chamber (**5**) and with an upper part (**4***b*) connected with the outside of the charge-changing chamber and each connection of said lower part (**4***a*) and upper part (**4***b*) being vacuum tight.

5,054,749

TUNDISH FOR CONTINUOUS CASTING OF STEEL

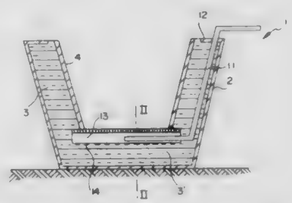
Francois Weisang, Antony, and Pierre Charlery-Adele, Maurepas, both of France, assignors to L'Air Liquide, Societe Anonyme pur l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jun. 14, 1990, Ser. No. 537,704

Claims priority, application France, Jun. 16, 1989, 89 08008

Int. Cl.[5] C21C *5/48*

U.S. Cl. 266—220 **12 Claims**



1. Tundish for continuous casting of steel, comprising a permanent refractory cast on a sheet metal frame defining an external all of the tundish and on which a refractory wear lining is laid, wherein gaseous injection means are provided in the body of said permanent refractory, said gaseous injection means comprising at the level of the bottom of the tundish a gaseous distribution chamber being at the level of the bottom of the permanent refractory of the tundish, a renewable part in the form of a gas permeable refractory wear plate surmounting and extending over said gaseous distribution center, and a gas inlet duct opening through an upper edge of the tundish and extending down through the permanent refractory of said distribution chamber to supply gas to said distribution chamber.

5,054,750

APPARATUS FOR METER-FEEDING AND HEATING OF MOLTEN METAL

David G. Bykhovsky, ulitsa Esenina, 32, korpus 2, kv. 95, and Alexandr N. Panov, nabe rezhnaya reki Fontanki, 26, kv. 3, both of Leningrad, U.S.S.R.

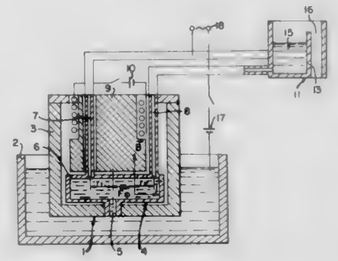
PCT No. PCT/SU88/00217, § 371 Date Jul. 6, 1990, § 102(e) Date Jul. 6, 1990, PCT Pub. No. WO90/04880, PCT Pub. Date May 3, 1990

PCT Filed Oct. 28, 1988, Ser. No. 536,636

Claims priority, application U.S.S.R., Dec. 17, 1987, 4344540

Int. Cl.[5] C21C *5/42*

U.S. Cl. 266—237 **3 Claims**



1. An apparatus for meter-feeding and heating of molten metal, comprising a centrifugal conduction MHD-pump (**1**) installed in a metal body (**3**) whereof coaxially therewith is a cylindrical working chamber (**4**) communicating with a reser-

voir (2) with molten metal, tightly coupled with a branch pipe (8) for draining molten metal and acted upon by a magnetic field induced by a magnetic system, and at least one d.c. power source (17) connected between molten metal and the branch pipe (8) for draining molten metal, wherein the cylindrical working chamber (4) is additionally provided with a connecting pipe (7) and a hole in the body of the cylindrical chamber (4) through which the branch pipe (8) for draining molten metal is tightly coupled with the cylindrical working chamber (4) is offset from the longitudinal central axis of the cylindrical working chamber (4) by a distance greater than the hole in the body of the cylindrical chamber (4) through which the cylindrical working chamber (4) is tightly coupled with the connecting pipe (7), and the bottom of the cylindrical working chamber (4) and the bottom of the metal body (3) have central holes forming a channel (5) through which the cylindrical working chamber (4) communicates with the reservoir (2) with molten metal and, besides, the apparatus is additionally provided with a container (11) whose inner space is divided by a partition (13) into two communicating spaces, and a side wall one of the spaces being associated with the outlet ends of the branch pipe (8) for draining molten metal and of the connecting pipe (7).

5,054,751

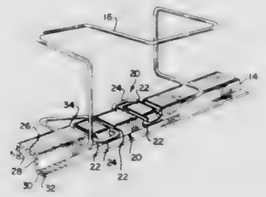
NOTCHED SPAN FOR PRESS-FIT MOUNTED SPRINGS

Daniel E. Brown, Chicago, Ill., assignor to The Ohio Mattress Company Licensing and Components Group, Cleveland, Ohio

Filed Jan. 23, 1990, Ser. No. 468,554

Int. Cl.[5] F16F *3/02*

U.S. Cl. 267—103 **9 Claims**



1. A cross rail for a spring assembly which includes a plurality of wire springs, each wire spring having an attaching foot including a pair of generally opposed substantially parallel segments, comprising:

a channel-shaped elongated cross rail member having a longitudinal axis, a top portion and side portions depending from said top portion, and paired mounting slots defined in said cross rail member for mounting of a spring attaching foot therein, said slots beginning at said top portion in an opening extending cross said top portion, then extending into said side portions in a direction generally following a plane which is perpendicular to said cross rail member longitudinal axis, and terminating at a point generally aligned with said top portion opening and along said plane, whereby a spring is mounted on the cross rail be inserting the pair of parallel segments of the spring into a respective pair of slot openings and then pressing the segments into said mounting slots with a force applied substantially only in the direction of said plane.

5,054,752

FLUID-FILLED POWER UNIT MOUNT

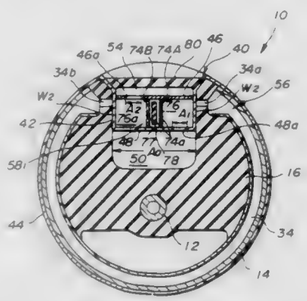
Toshiyuki Tabata, Sagamihara City, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Continuation of Ser. No. 391,384, Aug. 9, 1989, abandoned, which is a continuation of Ser. No. 136,801, Dec. 22, 1987, abandoned. This application Oct. 30, 1990, Ser. No. 608,625

Claims priority, application Japan, Dec. 23, 1986, 61-306760

Int. Cl.[5] F16F *1/38, 13/00*

U.S. Cl. 267—140.1 **24 Claims**



1. A power unit mount for a vehicle, said power unit mount comprising:

an inner elongate member;

an outer cylindrical member disposed around said inner elongate member;

means for applying relative movement of a power unit and a vehicle body between said inner elongate member and said outer cylindrical member;

an elastic support member securely disposed between said inner elongate member and said outer cylindrical member to support a load of said power unit, said elastic support member being formed with a hollow defining therein a first fluid chamber;

a diaphragm member disposed to define a second fluid chamber;

means for locating said first and second fluid chambers adjacent to each other through a vibratable member such that vibration in said first fluid chamber is transmittable to said second fluid chamber, said first and second fluid chambers being respectively located on lower and upper sides of said vibratable member in a direction perpendicular to a horizontal plane passing through an axis of said inner elongate member, said load of said power unit being applied generally perpendicularly to said horizontal plane, said first and second fluid chambers being located above said horizontal plane;

an orifice passage through which said first and second fluid chambers communicate with each other, said orifice passage extending along an inner periphery of said outer cylindrical member and having a length of over ¾ of a periphery of said outer cylindrical member, said orifice passage forming part of a first vibration damping mechanism for damping vibration in a first frequency region such that said first and second fluid chambers vibratingly communicate with each other through said orifice passage when vibrations are in said first frequency region; and

a second vibration damping mechanism for damping vibration in a second frequency region different from said first frequency region, said second vibration damping mechanism including said vibratable member and being cooperative with said first fluid chamber such that said first and second fluid chambers vibratingly connect with each other through said vibratable member when vibrations are in said second frequency region.

5,054,753

DAMPING DEVICE FOR SHOCK LOADING

Michael Polus, Welserstrasse 65,, D-8500 Nürnberg 20,, Fed. Rep. of Germany

PCT No. PCT/DE89/00299, § 371 Date Jan. 12, 1990, § 102(e) Date Jan. 12, 1990, PCT Pub. No. WO89/11047, PCT Pub. Date Nov. 16, 1989

PCT Filed May 11, 1989, Ser. No. 459,768

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1989, 3906466; May 13, 1989, 3816400

Int. Cl.[5] A43B *21/26;* **B60N** *1/06;* **F16F** *13/00*

U.S. Cl. 267—153 **8 Claims**



1. In an energy-absorbing damping device for shock loading, the device including a basic body of elastically deformable and elastically compressible material, the basic body defining a chamber filled with liquid, the basic member further defining valve-free narrow flow restriction channels in communication with the chamber, the basic body having an outer side, the flow restriction channels having an external outlet each at the outer side of the basic body, the external outlets being covered by an elastically extensible diaphragm which yields elastically when subjected to liquid pressure, the diaphragm being circumferentially sealingly mounted on the outer side of the basic body and being mounted partially loosely from the basic body, the basic body forming a torus with an apex surrounding the chamber, the chamber having the shape of a trough-like cavity, a covering formation extending across the cavity, the basic body having a support face and a load application face which are located opposite each other and extend essentially in the direction of the flow restriction channels, the improvement comprising the flow restriction channels extending radially, one of the support face and the load application face being at the apex of the torus of the basic body, the covering formation being formed by the diaphragm and being mounted on the apex of the torus, the basic body defining the trough-like cavity, the other of the support face and the load application face being plane, wherein the diaphragm is loosely mounted up to the apex of the torus, wherein the flow restriction channels are provided at one of the load application and support face of the basic body forming the cavity so as to be open on one side and are covered by the covering formation, and wherein the flow restriction channels are bounded on the side by ridges (16) formed by the basic body.

5,054,754

INVERSION SPRING FOR THERMAL OVERLOAD RELAY AND METHOD FOR MAKING THE SAME

Katsumi Akiike; Nobuhiro Sekine; Tadashi Matsuoka, and Tsutomu Oyama, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Sep. 14, 1989, Ser. No. 407,290

Claims priority, application Japan, Sep. 20, 1988, 63-235463

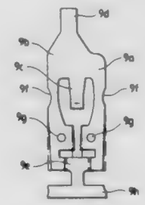
Int. Cl.[5] H01H *61/00*

U.S. Cl. 267—159 **6 Claims**

1. An inversion spring contact driver for an electrical relay having a drive portion, the unit comprising;

a support member including protrusions;

spring plate means having a first end and a second end, an elongated central axis, and first and second side portions disposed on opposite sides of the central axis, each of said side portions having a first end and a second end corresponding to the first and second ends of the spring plate, said spring plate having a connecting portion extending between and connecting said first ends of said side portions, said side portions being bent towards each other at said first ends thereof and attached to said support member to thereby cause the second end of the spring plate means to curve in a first direction away from the central axis, said side portions each including an opening disposed



therein, at locations intermediate said first and second ends and spaced from said connecting portion, for receiving the protrusions of the support member;

lug means disposed intermediate said first and second ends for selective engagement with the drive portion to cause the second end of the spring plate means to curve in a second direction opposite said first direction.

5,054,755

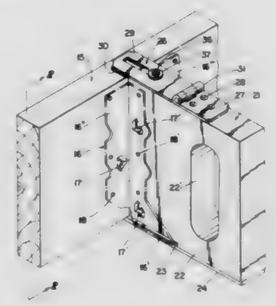
JOIST HANGER MOUNTING TOOL

Lester K. Hawkes, H.C.R. 72, Box 3176, E. Waterboro, Me. 04030

Filed Aug. 16, 1990, Ser. No. 568,180

Int. Cl.[5] B25B *5/14*

U.S. Cl. 269—3 **4 Claims**



1. In a hand tool for mounting a joist hanger upon a header beam in which the joist hanger has upwardly-extending parallel legs of angle section interconnected by a bottom portion, a handle body having a horizontally-extending slot adapted to receive the interconnecting bottom portion of the joist hanger to permit the parallel legs of angle section to extend upwardly respectively over respective opposite sides of the mounting tool and aligned to lie flush with the front of the mounting upon placing the hanger upon a vertical face of the beam, said handle body having a plate projection underlying the bottom slot and extending forwardly of the mounting tool to underlie the underedge of the beam when affixing the hanger thereto and a vertically opposing projection extending from the top of the mounting tool to engage with the top edge of the beam, whereby the joist hanger may be retained upon the beam free of the hands in position to be nailed thereto.

5,054,756

DEVICE FOR HYDRAULIC EXPANSION

Helmut Riemscheid; Herbert Frielingsdorf, both of Lohmar; Heribert Grewe, Overath; Karl Weiss, St. Augustin; Rudolf Schulze, Much; Engelbert Schwarz, Ruppichteroth; Helmut Swars, Bergisch Gladbach, and Arnold Palussek, Engelskirchen, all of Fed. Rep. of Germany, assignors to Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 305,865, Mar. 17, 1989, abandoned. This application Jan. 8, 1991, Ser. No. 639,315

Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3716986

Int. Cl.[5] B23B *31/40*

U.S. Cl. 269—48.1 **26 Claims**



1. Device for the simultaneous hydraulic expansion of a plurality of longitudinal portions of a hollow shaft for the production of at least one of force-locking and positive-locking connections between the hollow shaft portions and elements slid thereon, such as cams, toothed wheels or bearing seats, in the form of a pressure medium probe comprising at least one longitudinally extending feed channel and radial feed bore holes to each of the longitudinal portions of the hollow shaft to be expanded and comprising sealing means which seal longitudinal portions of the hollow shaft which remain un-deformed against the action of the pressure medium from longitudinal portions of the hollow shaft to be expanded which lie between them, characterized in that the probe comprises a probe base body (**1**) of substantially uniform diameter, which contains the feed channels (**8**) and feed bore holes (**9**), and expansion arrangements (**2**, **24**) which are slid thereon and communicate with the feed bore holes (**9**), the expansion arrangement comprising a one-piece expansion sleeve (**2**, **24**) and spacer pieces (**3**) arranged between the expansion arrangements (**2**, **24**), the expansion sleeves being sealed at their respective ends directly against at least one of the spacer pieces and the probe base body, said probe base body (**1**) having a longitudinally extending relief channel (**11**) and radial discharge bore holes (**12**) which open out below the spacer pieces (**3**).

5,054,757

MECHANISM AND METHOD FOR ACCUMULATING AND FOLDING SHEETS

Samuel W. Martin, Martin Rd., Weston, Conn. 06883; Carl A. Miller, 641 Jennings Rd., Fairfield, Conn. 06430; William V. Pickering, Jr., 15 Hillside Ave., New Canaan, Conn. 06840; Steven A. Supron, 11 Comstock Hill Ave., Norwalk, Conn. 06850; David Murcko, deceased, late of Sandy Hook, Conn., and by Linda Murcko, administrator, 57 Tody Hill Rd., Sandy Hook, both of Conn. 06481

Filed Mar. 12, 1990, Ser. No. 491,881

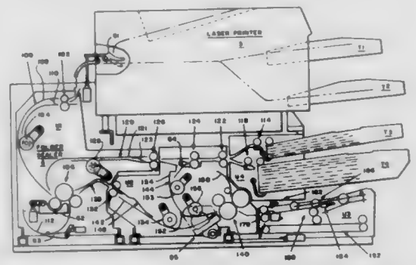
Int. Cl.[5] B42C *1/00*

U.S. Cl. 270—45 **26 Claims**

1. An mechanism for accumulating and folding a plurality of sheets, comprising:

a) means for folding an accumulation of sheets, said folding means including means for activating said apparatus and a pair of intake rollers;

b) means for urging a plurality of sheets into the nip of said pair of intake rollers while said intake rollers are inoperative to form an accumulation having the leading edges of said sheets, aligned; and wherein,



c) said activating means is responsive to formation of said accumulation to activate said apparatus to fold said accumulation.

5,054,758

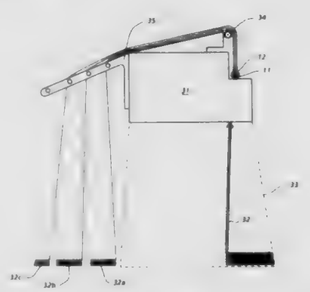
MULTI-PLY PAPER SEPARATOR

Bruce M. Windsor, III, Norfolk, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1989, Ser. No. 443,619

Int. Cl.[5] B65H *41/00*

U.S. Cl. 270—52.5 **6 Claims**



1. A separating apparatus attachable to a printer, typewriter, tabulator, or other inscribing device capable of processing a plurality of collectively interfolded webs of paper comprising:

a plurality of separator elements for separating individual leaves of collectively interfolded webs of paper, disposed such that the paper webs are drawn around said various separator elements comprise,

a. two rigid flat support brackets attached to either end of a roller axle of an inscribing machine by passing said axle through a circular hole disposed in the first end of each of the said brackets, the first ends being rounded into semicircular shapes, the second ends being flat with a plurality of coincident holes disposed parallel to the ends of the brackets; and

b. a plurality of wires disposed parallel one to another through the holes in the flat ends of said brackets and secured in said holes by crimping the wire ends and

a paper feed mechanism to pull the webs of paper into the inscribing device.

5,054,759

APPARATUS FOR FEEDING INDIVIDUAL SHEETS IN OFFICE MACHINES

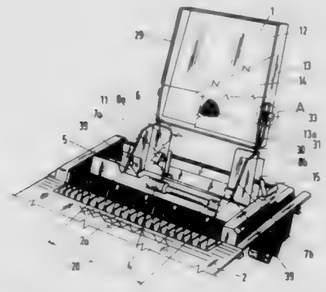
Gerhard Lohrmann, Elchingen, and Michael Setz, Beimerstetten, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 27, 1989, Ser. No. 457,282

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1988, 3844325

Int. Cl.[5] B65H *3/30*

U.S. Cl. 271—22 **6 Claims**



1. Apparatus for feeding individual sheets (**1**) in an office machine (**2**) from a stack (**3**) of sheets, comprising:

a positionally-fixed delivery roll (**4**) for contact with an uppermost sheet (**1**) in the stack (**3**) and operatively rotatable for drawing the uppermost sheet from the stack;

a paper-receiving frame (**6**);

separating corners (**5**) on said frame (**6**) at a predetermined spacing to said delivery roll (**4**);

a spring action swing plate (**8**) for selectively and directly supporting a sheet stack (**3**) and movable between first and second positions, said plate (**8**) being spaced further from said delivery roll (**4**) in said second position than in said first position;

lateral paper-guide frames (*7a, 7b*) on said frame (**6**) and between which lies the sheet stack (**3**) in supported relation on said swing plate (**8**);

means for releasably locking said swing plate (**8**) in said second position; and

an additional paper cassette (**12**) for releasably mounted engagement with said apparatus against said swing plate (**8**), said cassette comprising a housing (**13**) and a resilient insertion bottom (**14**) for supporting a stack (**3**) of sheets (**1**) in the absence of the provision of a sheet stack (**3**) directly on said swing plate (**8**).

5,054,760

APPARATUS FOR CONVEYING FLAT PRODUCTS

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

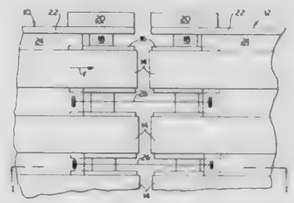
Filed Aug. 15, 1989, Ser. No. 394,094

Claims priority, application Switzerland, Aug. 16, 1988, 03065/88

Int. Cl.[5] B65H *29/00*

U.S. Cl. 271—69 **11 Claims**

1. An apparatus for conveying flat products comprising two conveyor systems connected in series, and a supporting device bridging the region between them, the supporting device having at least one supporting element extending essentially in the conveyance direction of the conveyor system, for supporting the flat products during their passage from one conveyor system to the other, wherein the supporting element (**26**) is disposed so that it is stationary ad is made narrow in form, and wherein the supporting element (**26**) is in the form of a thread, wire, cord or cable and is stretched between the conveyor systems (**10**, **12**), and the supporting element (**26**) is fastened at



opposite ends to fixed fastening points in the ends or receiving regions of the conveyor systems (**10**, **12**).

5,054,761

APPARATUS FOR TRANSFERRING FLAT ARTICLES

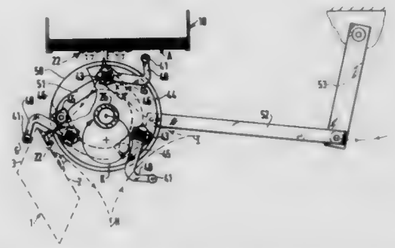
Walter Dietrich; Eberhard Krieger, both of Weinstadt, and Siegfried Weber, Rudersberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 17, 1990, Ser. No. 568,815

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1989, 3941866

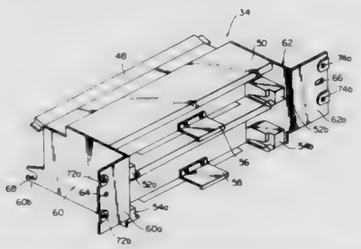
Int. Cl.[5] B65H *3/12*

U.S. Cl. 271—95 **6 Claims**



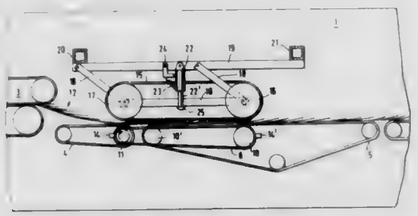
1. An apparatus for transferring flat blanks (**1**; **5**), in particular foldable boxes, from a delivery station (**A**) to a receiving station (**B**), having at lest one suction cup holder (**22**) for grasping one of said flat blanks, which revolves along a self-contained cycloid path (**C**) having a plurality of reversal points (**F**, **G**, **H**, **I**) with curve arcs between them, an eccentrically revolving planet rotor adapted to carry the suction cup, a planet carrier (**30**) rotatable about a drive shaft and in which the eccentrically revolving planet rotor is supported rotatably and in an axially parallel manner by an eccentric shaft (**26**, **31**), gear elements (**33**, **34**, **35**) associated therewith which gear elements upon rotation of the planet carrier superimpose a rotational motion upon the eccentrically revolving planet rotor, said eccentrically revolving planet rotor (**20**) further including at least one movable part (**40**; **61**) for action upon the grasped flat blanks (**1**; **5**), and the motion of said at least one movable part is controlled by a cam element (**50**; **68**), which is rotatably supported on the eccentric shaft of said eccentrically revolving planet rotor but prevented from rotating with it.

5,054,762
REMOVABLE UNIT FOR AN IMAGE FORMING APPARATUS ADAPTED TO RECEIVE SHEET CASSETTES AND GUIDE PAPER SHEETS THEREFROM
Yutaka Kodama, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Sep. 26, 1989, Ser. No. 412,931
Claims priority, application Japan, Sep. 28, 1988, 63-240674
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—162 4 Claims



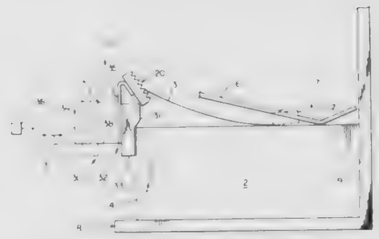
1. A sheet feeder for an image forming apparatus for feeding paper sheets from a sheet cassette which is removably loaded in said sheet feeder, comprising:
cassette supporting means comprising a guide member for guiding the sheet cassette when said sheet cassette is mounted, and a pusher member for raising a bottom plate of said sheet cassette;
sheet guiding means for guiding the paper sheet fed from the sheet cassette;
a pair of side plate members attached to the cassette supporting means, each having a bent portion to be fastened to a post of the image forming apparatus and a projection to be engaged with a bottom panel of said image forming apparatus;
a hole formed through said bent portion for mating with a first positioning pin which is studded on the post; and
a notch formed in said projection for mating with a second positioning pin which is affixed to the bottom panel.

5,054,763
APPARATUS FOR DIVIDING A CONTINUOUSLY CONVEYED STREAM OF SHINGLED WORKPIECES
Fritz Achelpohl, and Richard Feldkamper, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Oct. 29, 1990, Ser. No. 604,644
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1989, 3941184
Int. Cl.[5] B65H *29/68*
U.S. Cl. 271—182 7 Claims



1. An apparatus for dividing a continuously conveyed stream of shingled workpieces, such as bags or sacks, into leading and trailing parts, comprising' consecutive upstream and downstream endless belt conveyors, drive means for driving the downstream belt conveyor during a dividing operation at a higher velocity than the upstream conveyor in order to pull the stream apart, and after the shingled stream has been divided into the leading and trailing parts, for driving the downstream conveyor at the same velocity as the upstream conveyor, separating means between the belt conveyors comprising an intermediate endless belt conveyor, extending in parallel to a trailing portion of the downstream belt conveyor for moving during the dividing operation at a lower velocity than the downstream belt conveyor, and retaining means on the intermediate belt conveyor for arresting at least a leading workpiece of the trailing part of the shingled stream during the dividing operation.

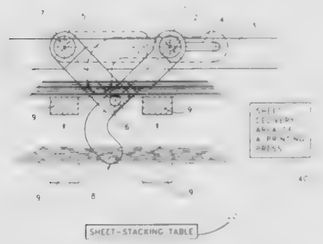
5,054,764
EDGE ALIGNER/HOLDER DEVICE
Gregory Phillips, and Douglas Langton, both of Seattle, Wash., assignors to EMF Corporation, Redmond, Wash.
Filed Oct. 12, 1989, Ser. No. 421,081
Int. Cl.[5] B65H *31/38*
U.S. Cl. 271—189 15 Claims



1. An edge aligner/holder for receiving sheets in a sheet stacking device for creating a job stack having a rearward stack registration edge, the apparatus comprising:
a) at least one edge aligner reciprocating between a forward position and a rearward position in a cycle for each received sheet, said edge aligner having a compressible and resilient front end and a tail piece, said tail piece cooperatively interengaged by a reciprocating mechanism for reciprocating said edge aligner; and
b) at least one holder, each holder having at least one step, each step having a backstop and a rest, said holder disposed upon said edge aligner above said front end such that a portion of at least one of said rests lies forward of said stack edge when said edge aligner is reciprocated to said forward position.

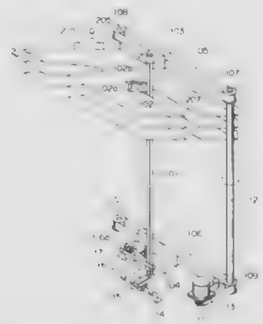
5,054,765
SHEET STOP FOR A SHEET DELIVERY APPARATUS OF A PRINTING PRESS
Manfred Henn, Heidelberg, and Carsten Kelm, Mannheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed May 10, 1990, Ser. No. 521,431
Int. Cl.[5] B65H *31/04, 31/26*
U.S. Cl. 271—213 15 Claims

1. A sheet delivery apparatus for a printing press, the printing press being for the production of printed sheets and the sequential horizontal delivery of the printed sheets to a sheet delivery location, said sheet delivery apparatus comprising:
receiving surface means for receiving the sequentially horizontally delivered printed sheets, one after the other, so as to produce a stack of the printed sheets;
height adjustment means for selectively vertically displacing said receiving surface means;
stop member means for contacting the sequentially delivered printed sheets, at least a portion of said stop member means being positioned adjacent said receiving surface means;
generally vertical stop member displacement means being configured for producing a generally vertical displacement of at least a lower portion of said stop member means;
wherein said stop member means comprises a substantially elongated stop member, a first end of said substantially elongated stop member being said lower portion of said stop member means and being positioned adjacent said receiving surface means, and wherein said generally vertical stop member displacement means comprises:



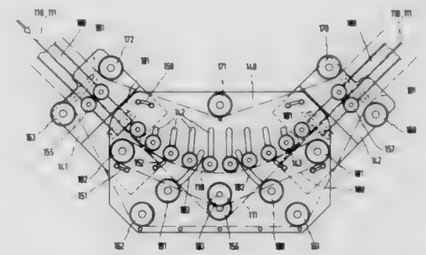
first pivotal mounting means for pivotally mounting the second end of said substantially elongated stop member to the printing press;
substantial horizontal displacement guide means for guiding a substantially horizontal displacement of the pivotally mounted second end of said substantially elongated stop member; and
a lever arm, a first end of said lever arm being pivotally connected to the printing press, and the second end of said lever arm being pivotally connected to said substantially elongated stop member.

5,054,766
PAPER POSITIONING DEVICE
Nobuyoshi Seki; Nobuyuki Morii; Takashi Komada; Masatoshi Hosoi; Yoshihide Sugiyama; Atuhisa Hujiwara; Masashi Shimada; Tsutomu Ichinose; Yuji Ueno, all of Nagoya; Goro Mori, Tokyo; Toshiyuki Kikuchi, Tokyo; Masahiro Minato, Tokyo; Shin Umeda, Tokyo, and Hirobumi Yoshino, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 10, 1990, Ser. No. 462,760
Claims priority, application Japan, Jan. 19, 1989, 1-4588[U]; Jan. 19, 1989, 1-4589[U]; Jan. 19, 1989, 1-8467; Jan. 19, 1989, 1-8468; Jan. 19, 1989, 1-8469; Jan. 19, 1989, 1-8470; Jan. 19, 1989, 1-8471; Jan. 19, 1989, 1-8472; Jan. 19, 1989, 1-8473; Dec. 8, 1989, 1-319989
Int. Cl.[5] B65H *31/31*
U.S. Cl. 271—221 9 Claims



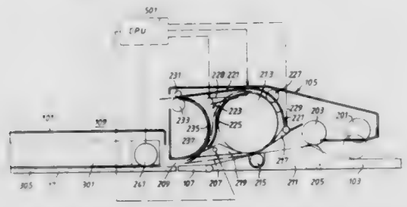
8. A paper positioning device comprising a pivotable paper positioning member which abuts against an edge of a paper sheet loaded on a receptacle for positioning said paper sheet, said device comprising:
driving means comprising a drive shaft for imparting a torque;
a connecting member driven by said driving means in a rotary motion about said drive shaft;
an arm having at one end an engaging portion in which said connecting member is slidably received and being rotatable about a fulcrum defined at the other end in response to a rotary motion of said connection member;
a rotatable shaft rigidly connected to said fulcrum and rotatable in response to rotation of said arm, said paper positioning member being mounted on said rotatable shaft and pivotable into abutment against the edge of the paper sheet; and
control means for controlling said driving means such that said drive shaft is rotated in one direction by more than 180° for causing said paper positioning member to pivot past a maximum pivoting position and, after said paper positioning member has passed the maximum pivoting position, rotated in the other direction so that said paper positioning member is caused to pivot twice.

5,054,767
CONVEYING APPARATUS FOR PAPER PRODUCTS, IN PARTICULAR IN STREAM FORM
Hagen Gämmerler, D-8021 Icking, Ichoring 44, Fed. Rep. of Germany
Division of Ser. No. 160,275, Feb. 25, 1988, Pat. No. 4,889,333. This application Oct. 2, 1989, Ser. No. 415,870
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1987, 3707540; Sep. 16, 1987, 3731151
Int. Cl.[5] B65H *5/02*
U.S. Cl: 271—272 4 Claims



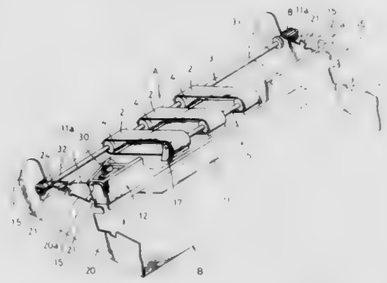
1. A conveying apparatus for paper products, along a curved conveying path, comprising a first mounting plate positioned normal to said curved conveying path, a first plurality of rollers mounted to said first mounting plate at spaced apart positions along said curved conveying path, at least some of said first plurality of rollers being mounted in slotted apertures in said first mounting plate, and at least one first endless conveyor belt supported and guided by said first plurality of rollers; a second plurality of rollers mounted to said first mounting plate at spaced apart positions, including at least one roller spaced away from said curved conveying path, and at least one second endless conveyor belt supported and guided by said second plurality of rollers; and a third plurality of rollers mounted to said first mounting plate, including at least one roller positioned proximate each end of said curved conveying path, and at least one-third endless conveyor belt supported and guided by said third plurality of rollers, said at least one-third endless conveyor belt intersecting the path of travel of said at least one second endless conveyor belt proximate each end of said curved conveying path and said at least one-third endless conveyor belt being closely aligned with said at least one first conveyor belt over said curved conveying path.

5,054,768
SHEET CONVEYING APPARATUS
Ken Iseda, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 27, 1990, Ser. No. 499,965
Claims priority, application Japan, Mar. 27, 1989, 1-071943
Int. Cl.[5] B65H *29/20*
U.S. Cl. 271—291 **12 Claims**



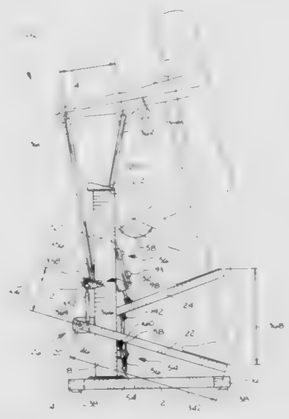
1. A sheet conveying apparatus for conveying a sheet from a stack to a first position, removing said sheet from said first position, reversing it and reconveying it to the first position, said apparatus being further operative for conveying the reversed sheet from the first position to a second position, the apparatus comprising:
first conveying means for conveying a sheet from the stack toward the first position;
second conveying means for removing the sheet from the first position; and
third conveying means disposed between said first conveying means and said second conveying means, said third conveying means being reversely drivable to cooperate with said first conveying means for moving said sheet in one direction from said stack to said first position, and with said second conveying means for removing said sheet from said first position, and means cooperable therewith for directing said sheet about said third conveying means into a reversed condition for return to said first position.

5,054,769
DELIVERY UNIT ATTACHING STRUCTURE
Masahiro Watashi, Ikoma, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Jan. 8, 1990, Ser. No. 461,747
Claims priority, application Japan, Jan. 13, 1989, 1-6575
Int. Cl.[5] B65H *29/54*
U.S. Cl. 271—306 **13 Claims**



1. A delivery unit adapted for attaching to the body of an image forming apparatus for delivering paper to the image forming apparatus, said delivery unit comprising:
a delivery unit housing;
a first shaft rotatably mounted on said housing;
a first plurality of pulleys mounted on said first shaft for rotation therewith;
a second shaft adapted to be rotatably mounted on the image forming apparatus;
a second plurality of pulleys mounted on said second shaft for rotation therewith;
drive means for rotating one of said first shaft and second shaft;
a plurality of endless belts, each endless belt positioned around one pulley of the first plurality of pulleys and one pulley of the second plurality of pulleys so that when said second shaft is rotatably mounted on the body of the image forming apparatus, said delivery unit is pivotably mounted on the body of the image forming apparatus, and when said drive means rotates said one of said first shaft and said second shaft, said endless belts rotate;
engagement means adapted to engage with engaging means on the body of the image forming apparatus when said delivery unit is pivotably mounted on the body of the image forming apparatus, for releasably holding said delivery unit in a delivery position for delivering of paper to the image forming apparatus, with each of said endless belts tightly engaging its associated pulleys from said first and second pluralities to restrain said engagement means from disengaging from the engaging means, while allowing limited movement of said delivery unit against the restraint of said tightly engaging endless belts to a disengaged position in which said engagement means is disengaged from the engaging means, allowing said delivery unit to pivot about said second shaft to a position away from the body of the image forming apparatus.

5,054,770
SHOCK-FREE AEROBIC AND ANAEROBIC EXERCISING MACHINE FOR USE IN THE STANDING POSITION
John W. Bull, 2505 Wedgewood Ct., Olympia, Wash. 98501
Continuation-in-part of Ser. No. 351,846, May 12, 1989, Pat. No. 4,934,690, which is a continuation-in-part of Ser. No. 181,302, Apr. 13, 1988, Pat. No. 4,830,362. This application Jun. 15, 1990, Ser. No. 538,803
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 **15 Claims**

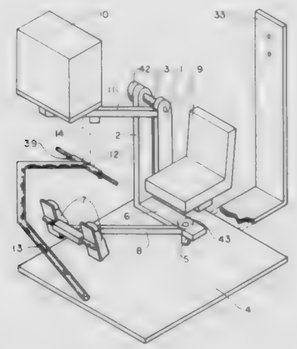


1. An exercise machine for exercising of an user's legs and arms while remaining in an upright standing position, the exercise machine comprising:
(a) a support structure;
(b) right and left lower lever arms having first ends pivotally mounted on the support structure at a first, traverse lower pivot axis, the opposite, free ends of the right and left lower lever arms being operable for standing on by the user's right and left feet, respectively, the distance between the first, traverse lower pivot axis and the free end of the lower lever defining a lower-lever-longitudinal length;
(c) means for synchronizing the movement of the lower lever arms, said synchronizing means being operable when one of the lower lever arms is moving downwardly to cause the other one of the lower lever arms to move upwardly, and when the free end of one of the lower lever arms is at its lowest elevation, the free end of the other of the lower lever arms is at its highest elevation;
(d) right and left upper lever assemblies each having an upper lever arm pivotally mounted on the support structure at a second, traverse upper pivot axis at an elevation above the elevation of the first, traverse lower pivot axis, the distance between the second, traverse upper pivot axis and the first, traverse lower pivot axis defining a pivot-to-pivot separation, the ratio defined by

$$\frac{\text{the pivot-to-pivot separation}}{\text{the lower-lever-longitudinal length}}$$

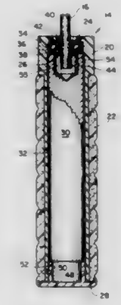
being at least about ¼, the upper lever assemblies being operable for rotating in a principally forward to rearward to forward motion;
(e) means for synchronizing the movement of one of the upper lever arms to one of the lower lever arms;
(f) means for synchronizing the movement of the other one of the upper lever arms to the other one of the lower lever arms; and
(g) resistance means for resisting the movement of at least one of the lever arms.

5,054,771
COMPUTER-INTERACTIVE GAME MACHINE WITH SWING-ACTION
Michael R. Mansfield, Lee County, Fla., assignor to Outer Sports, Inc., Fort Myers, Fla.
Filed Jul. 17, 1989, Ser. No. 381,107
Int. Cl.[5] A63B *69/16*
U.S. Cl. 272—73 **15 Claims**



1. A computer interactive game machine having a video monitor interconnected with said machine, such that said video monitor is generally visible to a user of said machine, said machine comprising:
a support structure;
a swing apparatus including a seat and means for swingably mounting said seat to said support structure, said means for swingably mounting including first pivot means from which said seat is suspended and second pivot means interconnected between said support structure and said first pivot means, said first pivot means being pivotable about a first axis and said second pivot means being pivotable about a second axis, which is transverse to said first axis;
engagement means mounted to said support structure generally in front of said seat and being engagable by an operator seated in said seat for pivoting said seat in selected directions about said first and second axes; and
position sensing means interconnected between said swing apparatus and the video monitor and being responsive to movement of said seat about said first and second axes for generating a signal representative of the position of said seat.

5,054,772
JUMP ROPE HANDLE
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11735
Filed Jul. 20, 1990, Ser. No. 556,324
Int. Cl.[5] A63B *5/20*
U.S. Cl. 272—75 **2 Claims**

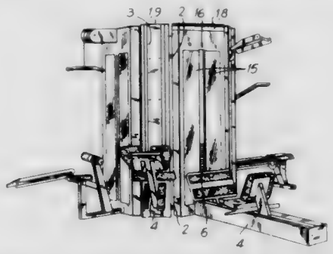


1. A pair of handle grips for each of the opposite ends of an exercise rope comprising for each a hollow cylindrical housing bounding an internal exercise weight storage compartment, said housing having an inturned flange of a prescribed length at one end forming an internal shoulder at one end of said storage compartment and having a weight-insertion opening into said storage compartment at said opposite end, a ball bearing consisting of an outer race and an inner race and having a central opening therethrough having an operative position with said outer race disposed in seated relation in said housing internal shoulder and said inner race freely rotatable in relation therewith, an exercise weight sized to fit in said housing storage compartment and having an end clearance chamber disposed through said housing weight-insertion opening into said storage compartment with an edge of said exercise weight bounding said end clearance chamber positioned in holding relation against said ball bearing outer race on the side opposite said shoulder, and an exercise rope having each opposite end projected through said ball bearing central opening into each said weight end clearance chamber and having retaining means thereon preventing reverse direction movement thereof, whereby in the rotating use of said exercise rope the rotation thereof is enhanced by the rotation of said ball bearing inner race.

5,054,773
SYSTEM OF EQUIPMENT FOR PHYSICAL EXERCISE
Arno Parviainen, Vantaa, Finland, assignor to David International Ltd., Vantaa, Finland
Filed Feb. 7, 1990, Ser. No. 476,267
Claims priority, application Finland, Feb. 7, 1989, 890580
Int. Cl.[5] A63B *21/062*
U.S. Cl. 272—118 **7 Claims**

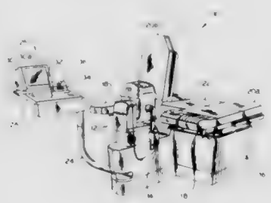
1. A modular system of equipment for physical exercise upon which various devices designed for the exercising of

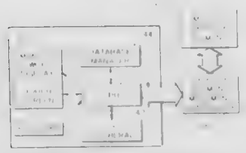
different muscles may be mounted comprising a plurality of frame modules, each of said frame modules having an essentially rectangular form with height, width, sides and faces and having a plurality of coupling elements on said sides, so that each of said plurality of frame modules may be fitted and detachably connected to another of said plurality of frame modules to be mounted side by side in a vertical position, each



of said plurality of frame modules further having a plurality of mounting elements on said faces, so that various exercising devices may be mounted on and supported by each of said plurality of frame modules, and at least one frame module of said plurality housing a counterforce device, said counterforce device being a stack of plate-like weights, said counterforce device being linkable to an exercising device, when an exercising device is mounted on said frame module.

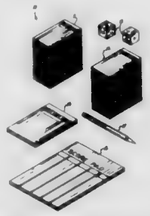
5,054,774
COMPUTER-CONTROLLED MUSCLE EXERCISING MACHINE HAVING SIMPLIFIED DATA ACCESS
Anne W. Belsito, Chattanooga, Tenn., assignor to Chattecx, Hixson, Tenn.
Filed Jun. 12, 1990, Ser. No. 537,039
Int. Cl.[5] A63B *23/04, 24/00*
U.S. Cl. 272—130 **60 Claims**





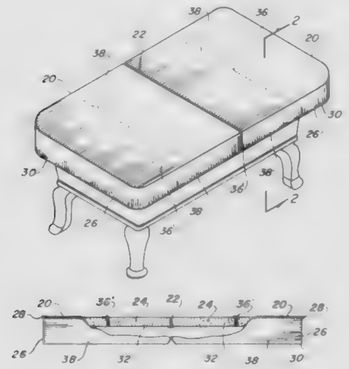
1. A muscle exercise machine comprising:
an exercise element adapted for manipulation by a user;
a processing unit, operationally connected to said exercise element, for controlling movement of said exercise element upon manipulation by a user;
a display device, operationally connected to said processing unit;
an input device, operationally connected to said processing unit;
data storage means for storing therein names of users of said muscle exercise machine, dates of use of said exercise machine by users thereof and exercises performed by users on a date of use;
name display means included in said processing unit, for displaying on said display device, at least some of the names of users of said muscle exercise machine,
name input accepting means included in said processing unit, for accepting selection of one name at said input device, from the at least some of the names displayed on said display device;
date display means included in said processing unit, for displaying on said display device, at least some of the dates of use of said muscle exercise machine for a selected one name;
date input accepting means included in said processing unit, for accepting selection of one date at said input device, from the at least some of the dates of use displayed on said display device;
test display means included in said processing unit, for displaying on said display device, at least some of the exercises performed on said muscle exercise machine for the selected one name and the selected one date;
test input accepting means included in said processing unit, for accepting selection of one exercise at said input device, from the at least some of the exercises displayed on said display device; and
movement controlling means included in said processing unit, for controlling movement of said exercise element to perform the selected one exercise upon manipulation of said exercise element by a user.

5,054,775
GAME RELATING TO PERSONAL RELATIONSHIPS
Silvia Banks, and Robert C. Banks, both of 4406 Milburn Dr., Colorado Springs, Colo. 80906
Filed Jun. 4, 1990, Ser. No. 533,013
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—431 **2 Claims**



1. A method of playing a game relating to personal relationships, comprising the steps of,
providing a stack of questions cards, and
providing an adjacent stack of category cards, and
providing a plurality of dice, and
including at least four players, and
further including the step of directing a first player of the at least four players to select a question card and a category card, and
forming the question cards of the stack of question cards with questions relating to interpersonal relationships between couples, and
forming the category cards in the stack of category cards into four categories including a first "true" category, a second "false" category, a third "pass" category, and a fourth "challenge" category, and
the first player requesting a second player to respond to a question formed on the drawn question card, and to associate the question card with the drawn category card, and
including a further step of a correct response by the second player effecting a rolling of the dice by the first player to indicate a point total, and
inscribing the point total upon a score card, and
directing a further player of the at least four players to initiate a further cycle including a drawing of a further question from the stack of question cards and a further category card from the stack of category cards.

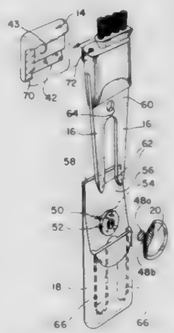
5,054,776
FOLDABLE POOL TABLE COVER
Robert W. Wyman, 4389 Trail St., Norco, Calif. 91760
Filed Sep. 27, 1990, Ser. No. 588,810
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—13 **11 Claims**



1. A foldable pool table cover comprising:
(a) a pliable top having at least one downwardly depending abutting fold, also an outside surface and an inside surface, the cover sized to completely overlay a pool table;
(b) a plurality of contiguous rectangular semi-rigid blocks abutting each other having a thickness equal to the recess between the pool table carpeted bed and uppermost cushion supporting frame with a combined size completely filling the pool table playing surface, the blocks juxtapositioned with the inside of the top creating a level surface on the table;
(c) said pliable top enclosing the blocks therein, for protection and to maintain the contiguous relationship of the blocks to the top; and,
(d) said top defining integral hinging surfaces indivisibly disposed on the top between the adjacent matching pairs of blocks and at least one at each downwardly depending fold allowing the cover to be doubled over with each block on top of the other resulting in a compact pleated cover suitable for convenient storage when not in use.

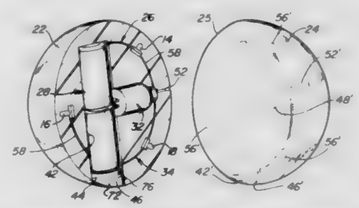
5,054,777
GOLF ACCESSORY
Teddy H. Borden, 315 W. Braeside, Arlington Heights, Ill. 60004, and Prithvi P. Singh, 2919 Floral, Northbrook, Ill. 60062
Filed Jan. 11, 1991, Ser. No. 640,104
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32 B **6 Claims**

1. A golf accessory, comprising:
a divot repair having a pair of prongs extending therefrom at one end and a gripping portion connected to the other end thereof, said divot repair having a hole located generally central thereon;
a holding base having a pair of recesses extending longitudinally therein corresponding in size and depth to a predetermined length of said prongs for slideably receiving the prongs therein, said base having a snap receptacle mounted thereon;
a ball marker having a snap member extending therefrom which passes through said hole on the divot repair and snaps into the receptacle on said base to interlock the divot repair to the holding base to form the assembled golf accessory wherein the tips of said prongs are concealed



within the recesses of the base to prevent damage to pockets of golf slacks and the like.

5,054,778
LIGHTED BALL
John R. K. Maleyko, 609 Belle River Rd., Belle River, Ontario, Canada N0R 1A0
Filed Jan. 18, 1991, Ser. No. 642,830
Int. Cl.[5] A63B *43/06;* **A63H** *33/26*
U.S. Cl. 273—58 G **5 Claims**



1. An amusement device for throwing, catching and bouncing comprising:
a solid spherical body of soft pliable transparent rubber having a high degree of elasticity for providing said body with high velocity bounce capability,
a plurality of LEDs embedded in said body in spaced relation with each other,
an electrical switch embedded in said body and having a push responsive switch actuator for operating said switch between open and closed positions,
a battery compartment in said body adapted to receive a battery set with first and second electrical terminals adapted to be engaged by battery terminals of said battery set,
electrical conductor means in said body connecting said electrical terminals and said switch in series with each other and for connecting said LEDs with said battery set through said switch,
said battery compartment having a battery access passage extending therefrom to the exterior surface of said body for removal and replacement of said battery set,
a removable closure in said battery access passage and having an outer surface conforming to the surrounding exterior surface of said body,
said LEDs, switch, actuator, conductor means and said battery compartment being disposed entirely inside the exterior surface of said body,
and a switch access passage extending from said switch actuator to the exterior surface of said body and being

adapted to receive a slender rod-like tool for pushing said switch actuator.

5,054,779

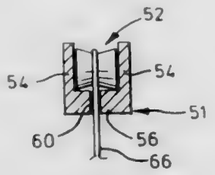
TENNIS RACQUET

Hugo Marrello, 119 Elgin Street, Thornhill, Ontario, Canada L3T 1W7

Continuation of Ser. No. 249,337, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 236,832, Aug. 26, 1988, abandoned, and a continuation-in-part of Ser. No. 128,381, Dec. 3, 1987, abandoned. This application Apr. 26, 1990, Ser. No. 515,685

Int. Cl.[5] A63B *49/14*

U.S. Cl. 273—73 D **6 Claims**



1. A racquet for tennis or the like, comprising:

a circumferential frame with an appended handle, the frame having a plurality of outwardly opening sockets spaced circumferentially along the frame in the plane of the frame, each socket having side walls and a bottom, the bottom of each socket having a centrally disposed ridge, a pair of spaced passages in the plane of the frame opening into each of the sockets, and a plurality of guides each comprising a spool of self-lubricating and shock absorbent material, the guides each having a centrally recessed circumferential surface, the guides resting freely one in each of the sockets astride the ridge and between the pair of adjacent passages opening into said each socket, the passages being oriented substantially tangential to the guides; and

a string laced through the passages and around the guides in the centrally recessed surfaces thereof to form a ball impact grid within the frame.

5,054,780

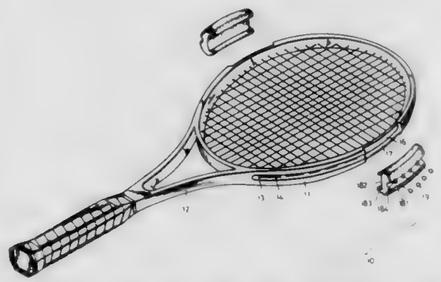
WEIGHT ADJUSTABLE TENNIS RACQUET

Dennis Chen, 293 Pei Tun Road, Taichung, Taiwan

Filed Aug. 30, 1990, Ser. No. 575,389

Int. Cl.[5] A63B *49/04*

U.S. Cl. 273—73 R **1 Claim**



1. A weight adjustable tennis racquet comprising a head frame, a net defined by a string threaded through a plurality of thru holes in a criss-crossing manner, and a handle extending from said head frame; said head frame comprising an inner circumference, an outer circumference, on which at least one counter-weight recess is formed for at least one resilient counter-weight holder securingly inserted to said counter-weight recess at a position corresponding to the transverse axis extending through the center of percussion of said racquet; an elongate retaining bar extending across said counter-weight recess to conform with the general profile of said head frame;

said counter-weight holder including an inner side, on which a reentrant cavity is formed, and an outer side, on which a semi-circular retaining groove is formed; a pair of lips extending slightly outwards from said inner side of said reentrant cavity for gripping said inner circumference of said head frame; a plurality of counter weights is in the form of steel spheres; said retaining groove has a base, on which a plurality of circular recesses are formed; said circular recesses have a depth and diameter similar to the diameter of said steel spheres;

whereby, said counter-weight holder is secured to said head frame by enveloping said counter-weight recess with said pair of lips on said reentrant cavity gripping said inner rim of said head frame and said retaining groove engages and envelops said retaining bar; said steel spheres can be selectively positioned among and within said circular recesses and secured in place by said retaining bar upon insertion of said counter-weight holder into said counter-weight recess, to adjust the weight and balance of said racquet.

5,054,781

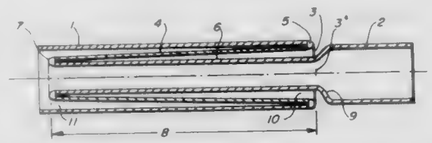
SPORTS EQUIPMENT WITH ENHANCED FLEXIBILITY

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14625

Filed May 10, 1990, Ser. No. 521,415

Int. Cl.[5] A63B *53/08, 53/14, 49/08, 59/00*

U.S. Cl. 273—80 B **24 Claims**



1. A sports equipment having a handle, a head and a shaft connecting the handle and the head, wherein along the length of the shaft there is at least one shaft segment that is at least partially hollow, has an insertion point, and includes an assembly, wherein the assembly comprises:

(a) a central member, at least partially disposed within the hollow portion of the shaft segment through the insertion point of the shaft segment, wherein the central member is connected to the portion of the shaft disposed beyond the insertion point, and there is provided sufficient spacing around at least a portion of the central member disposed within the hollow portion of the shaft segment to allow lateral movement of at least a portion of the central member relative to the shaft segment during bending of the shaft; and

(b) wherein the other end of said central member farthest from the insertion point is connected directly to the butt end of the handle.

5,054,782

TOY GAMING DEVICE

James J. Sutter, New Territories, Hong Kong, assignor to Kulay Manufacturing Limited, Hong Kong, Hong Kong

Filed Jan. 16, 1990, Ser. No. 464,833

Int. Cl.[5] A63F *5/04*

U.S. Cl. 273—143 R **14 Claims**

1. A toy money box comprising:

an outer casing,

a coin inlet formed in said casing,

a money store within said casing into which coins pass when inserted through said coin inlet,

a number of rotatable chance wheels mounted in said casing and arranged to be spun and stopped at random orientations,

indicia carried by said wheels, only certain of said indicia being winning indicia when a respective wheel stops with one of said certain indicia in a winning orientation, whereby when said wheels stop in a winning orientation the resulting array of indicia corresponds to a jackpot position,

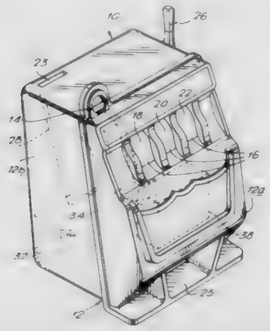
means within said casing for determining a jackpot position and releasing stored coins from said money store upon determination of a jackpot position,

a handle pivotally mounted to said casing at an outer surface thereof about an axis of pivoting for setting said wheels spinning,

spring loaded fingers mounted in said casing for engaging respective wheels,

said fingers being movable to a loaded position in contact with said wheels whereby their release spins a respective wheel as said fingers moves to a retracted rest position,

a clutch mechanism driven by said handle, said clutch mechanism moving said fingers towards said loaded position as said handle is pivoted, continued pivoting of said handle releasing said clutch and said fingers whereby said fingers can then move to said retracted rest position, and said clutch mechanism including a crank pivotally mounted to said casing about said axis of pivoting and including a first arm having an outer end spaced from said axis, a substantially straight resilient finger integrally formed with said first arm and projecting from said outer end alongside said arm, recess means defined between said resilient finger and said first arm, engagement means projecting from said spring loaded fingers and normally engaged in said recess means, so that pivoting movement of said handle and crank will produce a corresponding pivotal movement of said spring loaded fingers to said located position, a stationary abutment on said casing, a forward end of said resilient finger engaging said abutment as said fingers approach said loaded positions, continued pivoting of said handle and said crank causing said abutment to displace said resilient finger to release said engagement means from said recess means.



5,054,783

BINGO CADDY

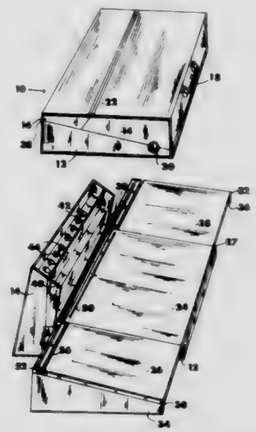
Harold L. Hull, 401 Canyon Way, Sp 43, Sparks, Nev. 89434; Mary K. Rodriquez, 955 Thoma St., Reno, Nev. 89502, and Patricia H. Foster, 166220 Lonehill Dr., Morgan Hill, Calif. 95037

Filed Feb. 19, 1991, Ser. No. 657,467

Int. Cl.[5] A45C *11/36;* **A63F** *9/00;* **B65D** *85/20*

U.S. Cl. 273—148 A **18 Claims**

1. A bingo caddy adapted to be a combined carrying case and a compartmentalized container for holding bingo paraphernalia while resting on a horizontal surface during use in a bingo game, said bingo caddy comprising; a housing including a base and a lid means movably connected to one another and positionable between a first closed and a second open position, both said base and said lid means including a substantially hollow interior, said lid means including a first and second section movably connected to one another and positionable between a first closed and a second open position, said first and second sections of said lid being adapted to receive and hold paraphernalia pertinent to the game of bingo, a panel positioned substantially between said base and said lid, said panel movably connected to said base, said panel having at least one substantially smooth side suitable for use as a writing surface, said writing surface having holding means to hold writing material, said writing surface being of a size to hold at least one bingo game document, whereby, when said lid and said first and second sections of said lid are in said open second positions, said writing surface and said first and second sections of said lid are at an angle to said horizontal surface.



5,054,784

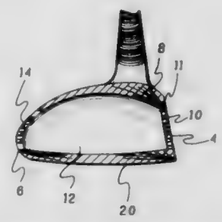
GOLF CLUB HEAD

Frank T. Collins, HC01 Pilot Knob Rd., Kattskill Bay, N.Y. 12844

Filed Sep. 24, 1990, Ser. No. 586,886

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—167 E **3 Claims**



2. A golf club head for a golf club comprising:

a face forming a surface for hitting a golf ball;

a back at the opposite side of the face;

an outer top surface extending from the face to the back;

an outer bottom surface extending from the face to the back wherein said face, back, outer top surface and outer bottom surface form a wood-type golf club head;

a plurality of vertically spaced entrances leading to one or more passages within the golf club head formed within and extending in a direction substantially horizontally

across substantially the entire face, said passages extending in a direction substantially normal to the face towards the back of the club head;

a cavity within the club head, said cavity being in air flow relationship with one or more of the passages; and

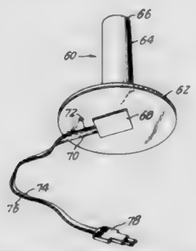
one or more vents in the back of the golf club head, the one or more vents being in air flow relationship with one or more of the passages wherein as the club is swung air flows through the passages, cavity, and vents.

5,054,785

GAME BALL SUPPORT DEVICE AND PIEZOELECTRIC BALL MOTION DETECTOR

William Gobush, North Dartmouth, and Charles Days, South Dartmouth, both of Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Dec. 18, 1990, Ser. No. 629,437
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—184 R **4 Claims**



4. A device for holding a game ball to be launched by the striking thereof with a game implement, said device having a place thereon for said game ball to rest and said device having a piezoelectric switch attached thereto in a condition in which it will produce a voltage upon the striking of said game ball with said game implement.

5,054,786

TETHERED GOLF BALL

Bart R. Solomon, 2325 Old Shakopee Rd., Bloomington, Minn. 55425

Filed Jun. 4, 1990, Ser. No. 533,273
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—200 R **1 Claim**



1. In golf practice apparatus of the type having a golf ball attached to an anchor by a tether having an elastic portion, the improvement comprising:

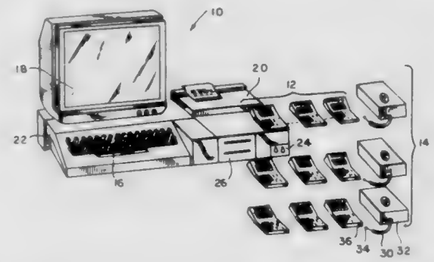
(a) said elastic portion of said tether being formed of material having a generally circular shaped cross-section fabricated into a coil shape having a series of generally uniform sized loops which advance along a center from loop to loop, said coil having two separate parts, an outer coiled part made of plastic having a hollow interior extending along the length of the coil, and an inner part made of coiled spring metal, said inner part being dimensioned and fabricated such as to fit within the hollow interior whereby said coiled spring metal and plastic provide a wide array of spring and damping characteristics, respectively.

5,054,787

PORTABLE VALIDATION UNIT FOR GAMING SYSTEM

John Richardson, San Diego, Calif., assignor to Selectro-Vision, Ltd., San Diego, Calif.

Continuation of Ser. No. 271,419, Nov. 10, 1988, abandoned, which is a continuation of Ser. No. 820,245, Jan. 17, 1986, abandoned. This application Jul. 23, 1990, Ser. No. 559,430
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—369 **10 Claims**



1. A portable validation unit for use in a bingo gaming system having a system base station with a bidirectional data communications port and a plurality of electronic handsets each with a bidirectional data communications port, said system base station providing base station security information including a validation code which uniquely identifies a specific bingo game and assignment codes each of which uniquely identifies one of said electronic handsets of one of said validation units; each of said handsets providing handset security information including a validation code which uniquely identifies a specific bingo game and an assignment code which uniquely identifies the respective said electronic handset; each of said handsets further allowing play on at least one bingo card electronically stored in said handset and further providing auditing information including any win card data indicative of a specific bingo card on which a win occurred, said validation unit comprising:

a bidirectional data communications port;

interfacing means for selectively connecting said bidirectional data communications port of said validation unit alternatively to one of (a) said bidirectional data communications port of said system base station and (b) said bidirectional data communications port of one of said plurality of electronic handsets;

memory means for receiving through said interfacing means said base station security information provided by said system base station and for storing said received base station security information;

memory means for receiving through said interfacing means handset security information provided by a said electronic handset and for storing said received handset security information;

security checking means for determining whether an electronic handset is designated for use during a specific bingo game said security checking means including:

means for comparing said validation code received from a respective said electronic handset with said validation code received from said system base station, and

first indicator means for providing a handset validation indication if said validation code received from said electronic handset corresponds to said validation code received from said system base station, whereby said first indicator means reveals whether or not the respective electronic handset is designated for use during a specific bingo game; and

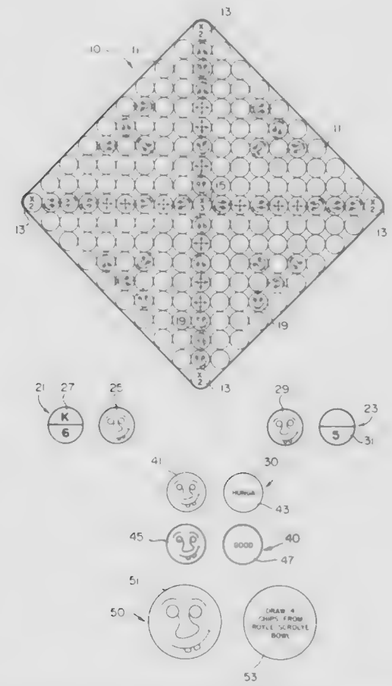
memory means for receiving through said interfacing means auditing information provided by respective said electronic handsets and for storing said received auditing information for subsequent analysis.

5,054,788

BOARD GAME

Agnes L. Kirby, 2409-16 Street, Box 547, Nanton, Alberta, Canada T011R0

Filed Sep. 27, 1989, Ser. No. 413,062
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—272 **3 Claims**



1. An improved board game comprising:

(a) a game board having a multiplicity of spaces thereon, including:

i) blank spaces;

ii) spaces with a design thereon;

iii) spaces with a plurality of arrows thereon for indicating directions in which words may be created including a space including said arrows; and

iv) spaces including indicia thereon, said indicia being provided for multiplication of scoring during play;

(b) a multiplicity of instruction means each having instructions thereon as to manner of play;

(c) three sets of tiles, each set including a multiplicity of tiles, said tiles further comprising:

i) a first set of tiles, each tile in said first set of tiles having a letter and a number on a face thereof;

ii) a second set of tiles, each tile in said second set of tiles having a number and a blank portion on a face thereof; and

iii) a third set of tiles, each tile in said third set of tiles comprising a final play tile having a word or expression on a face thereof;

iv) whereby each of said tiles in said first second and third sets of tiles have said design on an opposite face thereof; and,

(d) said multiplicity of final play tiles consisting of tiles which may be randomly drawn by said players at conclusion of play of said game, each of said final play tiles, when drawn by a player, aiding in determining final scoring based upon the said word or expression;

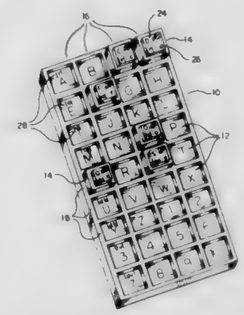
(e) whereby a plurality of players may play said game by selectively dividing the tiles from said first and second sets of tiles between them, and one at a time, first using some of said tiles from said first and second sets of tiles to form a word and thereafter picking a said instruction means and following the said instructions thereon, with each player picking at least one tile of said third set of tiles during a final play portion of said game.

5,054,789

METHOD AND APPARATUS FOR THE PLAY OF A MATCHING GAME

Curtis L. Pellerin, 4400 E. Owens Ave. #80, Las Vegas, Nev. 89110

Filed Oct. 31, 1990, Ser. No. 606,125
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—288 **19 Claims**



1. A board game involving the matching of randomly drawn playing tiles with corresponding playing blocks,

said board game including a playing board,

said playing board divided into spaces providing for the separate containment of a corresponding number of said playing blocks,

said spaces of said playing board, said playing blocks and each of one or more sets of said playing tiles corresponding to and marked with the set of characters comprising the twenty six letters of the English alphabet and the numbers one through ten inclusive, and

separate containers for the placement and storage of said playing tiles.

5,054,790

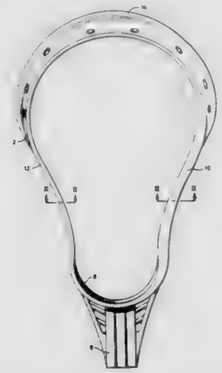
LACROSSE STICK HEAD

William H. Brine, III, Mendon, Mass., and Peter J. Brine, Hanover, N.H., assignors to Sports Licensing, Inc., Hanover, N.H.

Filed Dec. 14, 1990, Ser. No. 628,492
Int. Cl.[5] A63B *59/02*
U.S. Cl. 273—326 **22 Claims**

1. A lacrosse stick head comprising a frame and netting attached to said frame, said frame comprising a throat portion, first and second side walls extending divergently from said

throat portion, and a lip portion joined to ends of said walls remote from said throat portion, said first side wall having



structure rendering said first side wall substantially more rigid than said second side wall.

5,054,791

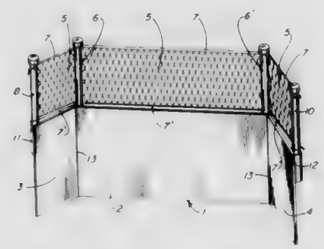
BACKGROUND SHIELD FOR SOCCER PRACTICE

Alan F. Ball, 2601 70th Ave. South, St. Petersburg, Fla. 33712

Filed Mar. 11, 1991, Ser. No. 666,904

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—396 **8 Claims**



1. A background shield for soccer practice comprising:

(a) a back panel having a first and a second side opposite to each other, said panel being of a strong rigid material capable of withstanding the impact of a kicked soccer ball, said back panel being capable of being positioned in a vertical position with said first and second sides thereby being extended vertically;

(b) first and second side panels of a similar rigid material, said first side panel being hingedly connected to said first side of said back panel and said second side panel being hingedly connected to said second side of said back panel;

(c) first and second posts extending vertically upward from the back of said back panel, said first post being rigidly fixed to said back panel and adjacent to said first side of said back panel and said second post being rigidly fixed to said back panel and adjacent said second side of said back panel, said first and second posts extending a substantial distance above said back panel;

(d) a third post extending vertically upward from and rigidly fixed to said first side panel, the position of said third post being spaced from and parallel to that side of said first side panel which is hingedly connected to said back panel, said third post extending a substantial distance above said first side panel;

(e) a fourth post extending vertically upward from and rigidly fixed to said second side panel, the position of said fourth post being spaced from and parallel to that side of said second side panel which is hingedly connected to said back panel, said fourth post extending a substantial distance above said second side panel;

(f) a netting of strong cord having a sufficient length to reach from said third post, behind said first and second posts and to said fourth post, the height of said netting being sufficient to reach from the upper edge of said first side panel, said back panel and said second side panel vertically to a substantial height above said first side, back, and second side panels, said netting being at least temporarily affixed to said third post and to said fourth post; and

(g) a bracing means capable of maintaining the back panel in upright position against the impact of a kicked soccer ball.

5,054,792

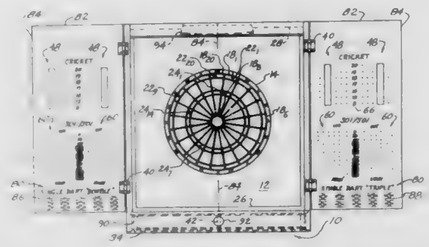
DART GAME SCORING SYSTEM

Robert J. G. Danielson, 755 E. Virginia Way, No. 34, Barstow, Calif. 92311

Continuation-in-part of Ser. No. 370,465, Jun. 23, 1989, Pat. No. 4,948,148. This application Aug. 13, 1990, Ser. No. 566,998

Int. Cl.[5] F41J *1/16*

U.S. Cl. 273—408 **25 Claims**



1. A scoring system for a dart game apparatus having a target and a plurality of darts for shooting at selected regions of the target, each of the regions having an associated scoring value for generating a corresponding intermediate outcome when a dart hits that region of the target, the system comprising:

(a) a supply of markers for use by players of the game;

(b) a scoring panel comprising:

(i) a modular pattern of marker positions on the scoring panel, the positions forming at least one distinct array portion;

(ii) means for releasably holding one or more of the markers in association with a selected marker position; and

(c) selector means for removably registering a selected game pattern of score keeping indicia relative to the scoring panel, each of the indicia being visually associated with one of the marker positions and defining a scoring indicator for the associated marker position,

wherein progress of the game is indicated by the positioning of markers in the array portion.

5,054,793

RESILIENT GASKET WITH SPACERS

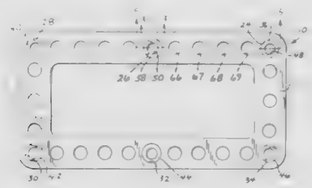
Frederick M. Hauenstein, and George C. Hedge, both of Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 11, 1988, Ser. No. 255,630

Int. Cl.[5] F16J *15/12*

U.S. Cl. 277—1 **1 Claim**

1. A method for sealing an interface between a pair of parts mounted to each other in torqued engagement by a plurality of bolts, said parts having facing surfaces thermally expanding towards each other upon heating, and contracting away from each other upon cooling, comprising providing a gasket comprising a resilient member between and engaging said facing surfaces in sealing relation, providing a plurality of apertures through said resilient member, providing a plurality of rigid spacers each received in a respective said aperture, providing each spacer with an aperture receiving a respective said bolt therethrough, providing said spacers with a thickness less than the thickness of said resilient member and permitting a given amount of compression of said resilient member upon torqued engagement of said parts and permitting such torqued engagement without squeezing out said resilient member from between said facing surfaces, providing said facing surfaces with central portions between said spacers thermally warping upon heating towards each other to a space therebetween less than the thickness of said spacers and further compressing a central



portion of said resilient member therebetween, providing said spacers with said thickness preventing compression of said resilient member at said central portion beyond its permanent deformation elastic limit even upon said thermal warpage of said central portions of said facing surfaces between said spacers, determining said thickness of said spacers such that said thickness of said spacers less said thermal warpage at said central portions still leaves a space between said central portions of said facing surfaces great enough to prevent compression of said resilient member at said central portion beyond its permanent deformation elastic limit, such that upon contraction of said facing surfaces away from each other upon cooling, said resilient member recovers and expands to maintain the seal against said facing surfaces including at said central portions.

5,054,794

CLAMPING BAND FOR GASKETS AND THE LIKE AND EXPANSION MEANS THEREFOR

James Westhoff, Langhorne, and James A. Kelly, Warrington, both of Pa., assignors to A-LOK Products, Inc., Tullytown, Pa.

Filed Mar. 13, 1989, Ser. No. 322,302

Int. Cl.[5] F16J *15/10;* **B23P** *19/00;* **F16L** *5/02, 21/08*

U.S. Cl. 277—1 **20 Claims**



1. An expansion ring assembly for urging an annular resilient gasket into intimate contact with an opening in a surface to provide a water-tight seal comprising:

an annular-shaped band having a concave interior surface and first and second free ends movable relative to one another to either expand or reduce the diameter of said band;

said band having a continuous outer convex surface engaging said gasket;

a generally arcuate-shaped spanning member located along the concave interior surface of said band, one end of the spanning member being secured to the concave interior surface of said band at a position along said band and a spaced circumferential distance inward from one of said first and second free ends, the remaining end of said spanning member extending toward and beyond the remaining one of said first and second free ends;

said remaining end of said spanning member having a locking tongue extending toward the concave interior surface of said band;

said band including locking means arranged along said concave interior surface and having a plurality of spaced-apart slots selectively adapted to receive said tongue to adjustably lock said band at a predetermined diameter;

said locking tongue extending downwardly toward said locking means at an angle such that said tongue is released from a slot when said band is expanded and is locked in a slot when said band is urged in a direction to reduce the diameter of said band;

guiding means joined to said band and cooperating with said band to form a hollow guide region for slidably receiving and guiding said spanning member along the concave interior surface of said band and limiting lateral movement in mutually perpendicular directions of the remaining end of the spanning member relative to said band; and

said resilient gasket, when compressed by said band, applying a force to said band to urge said band in a direction to reduce the diameter of said band, thereby preventing removal of the locking tongue from the slot in which it is presently inserted.

5,054,795

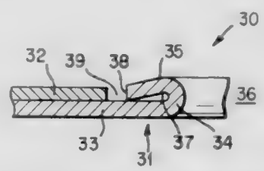
METAL LAMINATE GASKET

Tsunekazu Udagawa, Ichikawa, and Susumu Inamura, Tokyo, both of Japan, assignors to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 928,937, Nov. 10, 1986, abandoned. This application May 11, 1988, Ser. No. 193,215

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—234 **6 Claims**



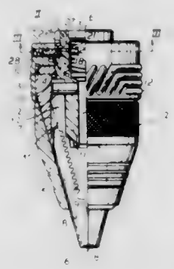
1. A meal laminate gasket for an internal combustion engine having at least one hole therein, said gasket consisting essentially of metal and comprising:

a main plate consisting essentially of steel and including a base section having at least one first opening corresponding to the hole of the engine, a flange situated over the base section around the first opening, and a curved portion situated between the flange and the base section to define the first opening and having resiliency to tightly seal around the first opening when the gasket is tightened, and

a pressure regulation plate consisting essentially of metal and placed over the base section of the main plate, said pressure regulation plate forming an outer plate of the gasket and having at least one second opening, the diameter of said second opening being larger than the diameter of the flange to permit the pressure regulation plate to be placed over and in direct contact with the base section without laying over the flange, the thickness of the metal pressure regulation plate being thinner than that of the main plate

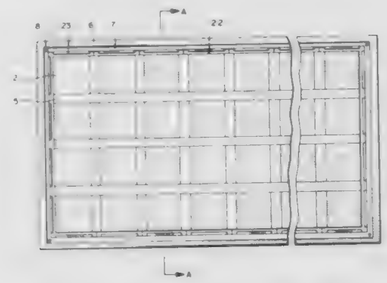
to provide high sealing pressure around the hole of the engine when the gasket is tightened.

5,054,796
SELF-TIGHTENING HAMMER-DRILL CHUCK
Günter H. Röhm, Heinrich-Röhm-Str. 50, D-7927 Sontheim, Fed. Rep. of Germany
Filed Jul. 24, 1990, Ser. No. 557,386
Claims priority, application European Pat. Off., Aug. 18, 1989, 89115229
Int. Cl.[5] B23B *31/10*
U.S. Cl. 279—60 12 Claims



1. A drill chuck for rotation about an axis of a drill spindle to rotate a drill bit about and reciprocate it along the axis, the chuck comprising:
a chuck body securable to the spindle;
a sleeve rotatable but axially nondisplaceable on the chuck body;
a plurality of jaws engaged between the sleeve and chuck body;
means including angled guides and a screwthread formed on the body, sleeve, and jaws for radial displacement of the jaws toward each other on relative rotation of the sleeve and chuck body in a tightening direction and for radial displacement of the jaws away from one another on opposite relative rotation in a loosening direction;
a locking-ring body axially displaceable between a rear unlocked position and a front locking position on the chuck body, the sleeve and locking-ring body having complementary axially open and projecting teeth fittable within each other to inhibit substantial relative angular movement of the ring body and sleeve about the axis only in the front locking position, the teeth being out of engagement with one another in the rear unlocked position; and
a pin radially displaceable in and extending radially from one of the bodies toward the other body and having a predetermined angular dimension, the other body being formed with
an angularly extending slot having angularly opposed and spaced end surfaces spaced apart angularly by a distance greater than the angular dimension of the pin and a plurality of angularly spaced abutments, whereby when the pin is engaged in the slot same limits relative angular displacement of the bodies, and
an axially backwardly extending cutout opening axially forward into the slot adjacent one of the end surfaces thereof at a mouth having an angular dimension generally equal to the axial dimension of the pin, whereby the cut-out only allows axial travel of the locking ring into its locked position when the pin is aligned axially with the cutout at the one end surface of the slot;
a spring urging the pin radially toward the floor of the slot, the pin having an end interfittable with the abutments, the end and abutment being so shaped that the pin can move angularly in one direction along the slot but cannot move angularly in the opposite direction.

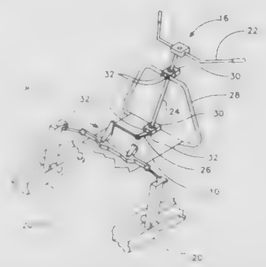
5,054,797
ROLLER BRACKET STRUCTURE FOR A SKATEBOARD
Tsai Shuei-Lai, No. 6, 21 Alley, 306 Lane, 2 Sec, Tai-Lin Rd, Tai-Shan Town, Taipei Hsien, Taiwan
Filed Apr. 9, 1990, Ser. No. 506,092
Int. Cl.[5] B62M *1/00*
U.S. Cl. 280—11.28 2 Claims



1. A roller bracket for a skateboard comprising:
a) an integrally formed body for attachment to a skateboard;
b) the body including an upper portion having a passage formed therein for receiving a shaft, a first inclined surface portion extending from the upper portion in a first direction to an edge of the body for sustaining forces and torque exerted by a user of the skateboard, a second surface portion extending from the upper portion in a second opposite direction and terminating in a nose-shaped portion, a cushioning seat provided with a first recess therein, and a convex portion positioned below the upper portion; and
c) a block attachable to the convex portion, the block including a second recess formed therein, the first and second recesses corresponding in configuration for receiving the nose-shaped portion therein, and the cushioning seat and the block collectively serving to steady and control the upward, downward and sideward movements of the nose-shaped portion

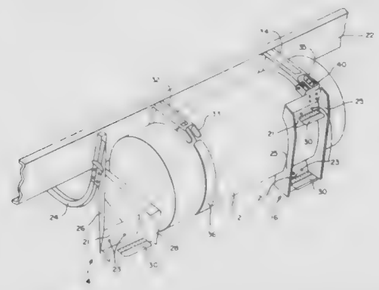
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5,054,798
ADJUSTABLE STEERING POST WITH BEARINGS
Dennis P. Zulawski, St. Hilaire, Minn., assignor to Arcteo, Inc., Thief River Falls, Minn.
Filed Mar. 12, 1990, Ser. No. 491,518
Int. Cl.[5] B62B *17/02*; B62K *21/16*
U.S. Cl. 280—16 20 Claims



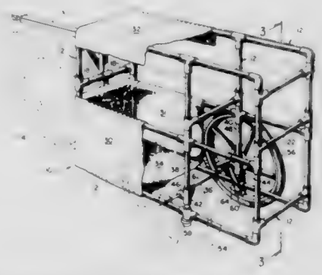
1. An improved steering post for a snowmobile, the snowmobile including a chassis having a powered endless belt traction unit, a pair of forwardly mounted steerable skis, a front suspension system attaching the steerable skis to the chassis, and a steering linkage assembly interconnecting the skis wherein the steering post assembly cooperates with the steering linkage to steerably control the skis, the improvement comprising:
a steering post of a predetermined diameter positionable at more than one angle relative to the snowmobile chassis and having a manually engageable torque inducing means at an upper end and a pitman means for inducing torque at a lower end;
upper and lower bearing means for rotatably supporting the steering post relative to the snowmobile chassis, each of said bearing means including a split bearing block and a bearing having a generally spherical body with axially aligned oppositely extending cylindrical extensions of a predetermined diameter, each said spherical body having a bore substantially the same diameter as the steering post axially aligned with and extending through said spherical body and said extensions, said bearing block having a cavity for supporting the spherical body therein and axially aligned openings of a diameter larger than the diameter of said extensions communicating with said cavity; and
attachment means for fastening said bearing blocks to the chassis of said snowmobile whereby said steering post is positionable at more than one angle relative to the snowmobile chassis by said attachment means and wherein said bearing means permits non-binding rotation of the steering post both when the axis of the steering post is coaxially aligned with the axially aligned openings and when the steering post is at an angle relative to the bearing blocks and the axially aligned openings.

5,054,799
CAB FAIRING MOUNTING FOR TRUCK
Robert F. Fingerle, Fremont, Calif., assignor to Paccar Inc., Bellevue, Wash.
Division of Ser. No. 398,614, Aug. 25, 1989, Pat. No. 4,925,235.
This application Mar. 2, 1990, Ser. No. 488,602
Int. Cl.[5] B60R *3/00*
U.S. Cl. 280—164.1 6 Claims



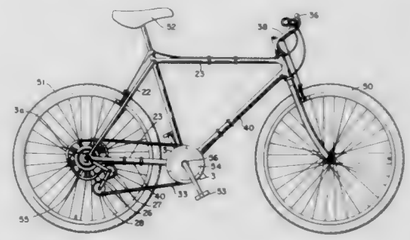
1. A step assembly for mounting to a fuel tank brace member supporting a truck's fuel tank, said brace member being mounted to a longitudinal main frame of said truck in any one of a plurality of longitudinal positions long said main frame as determined by the size of the truck's fuel tank, said step assembly comprising:
a step member formed for support of a human foot thereon;
step mounting means connected to said step member and a including a plurality of longitudinally spaced mounting positions, said step mounting means mounting said step member to said brace member in a selected one of said plurality of longitudinally spaced mounting positions relative to said brace member to mount said step member in a fixed location relative to said main frame and thereby permit a standard cab skirt fairing panel having step depressions located in predetermined spaced apart locations to be mounted over said step member.

5,054,800
BICYCLE TRAILER FOR SMALL CHILDREN
Linda B. Christensen, and Brent R. Christensen, both of 47 Cuesta Way, Walnut Creek, Calif. 94596
Filed Jun. 11, 1990, Ser. No. 536,305
Int. Cl.[5] B62K *27/06*
U.S. Cl. 280—204 5 Claims



1. A trailer occupied by personnel intended to be drawn behind a pulling vehicle, the trailer comprising:
a frame having upright members in fixed spaced-apart relationship;
an axle slideably carried on said upright members for vertical movement on said upright members with respect to said frame;
stretchable elastic loops resiliently joining said axle to said frame;
said frame further having protuberances fixed on said frame in vertical alignment with said upright members; and
each of said elastic loops having opposite ends defining a midsection whereby said axle passes through said loop ends and said midsection passes about said protuberance respectively.

5,054,801
BICYCLE WITH BELT DRIVE
Lowell L. Maguire, 836 M St., Anchorage, Ak. 99501
Continuation-in-part of Ser. No. 250,444, Sep. 28, 1988, Pat. No. 4,909,529. This application Mar. 15, 1990, Ser. No. 493,616
Int. Cl.[5] B62M *1/02*
U.S. Cl. 280—261 8 Claims



2. In a bicycle,
a front wheel,
a rear wheel,
rotatable means for driving the bicycle,
a driving pulley rotated by said rotatable means,
a driven pulley for rotating said rear wheel,
a belt connecting said driving and said driven pulleys,
at least one of said pulleys having an axis of rotation and a plurality of first sections, each said section being spaced outwardly from said axis and shaped to receive said belt, and
first control means operable to move said first sections,

radially, relative to said axis, for changing the effective size of such one pulley,

said first control means including a first friction element, contiguous with said one pulley, that normally is rotated by said one pulley,

said first control means also including a brake under control of the rider of the bicycle for applying a braking action to said element.

said first control means also including means responsive to any relative angular movement between said element and said one pulley to move said first sections radially with reference to said axis.

5,054,802

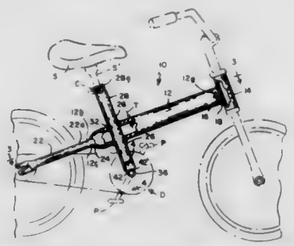
BICYCLE FRAME

Stephen W. Smith, Bedford, Pa., assignor to Hedstrom Corporation, Bedford, Pa.

Continuation of Ser. No. 345,092, Apr. 28, 1989, abandoned. This application Sep. 26, 1990, Ser. No. 588,148

Int. Cl.[5] B62K *19/18*

U.S. Cl. 280—279 **3 Claims**



1. A children's bicycle frame composed essentially of only five tubes comprising an elongated relatively large diameter crossbar having walls, a front and a rear, the front of said crossbar being flattened to a vertical front end having a width that is twice the wall thickness of said crossbar, the rear end of said crossbar having upper and lower walls which are turned toward each other and shaped to form an inwardly curved horizontal rear end; a tubular headpost aligned with and abutting said crossbar front end; first weld means connecting said headpost and crossbar front end around said front end; a generally U-shaped tubular rear fork having rear ends and a rounded bridge end that has a smaller diameter than that of the crossbar and engaged from above and below by said crossbar rear end upper and lower walls and following the curve of those walls so that the plane of said rear fork is perpendicular to said headpost; second weld means connecting said rear end upper and lower walls of said crossbar to said rear fork bridge end; means defining registering openings in the top and bottom walls of said crossbar forward of the rear end of said crossbar; a tubular seat post having upper and lower ends and snugly received in said crossbar openings so that the lower end of said seat post extends appreciably below said crossbar; third weld means connecting said seat post to said crossbar around said crossbar openings; a short pedal crank tube positioned crosswise against the lower end of said seat post; and fourth weld means connecting said pedal tube and the lower end of said seat post.

5,054,803

BICYCLE TRAINING WHEEL ASSEMBLY

Paul N. Ellingsen, Jr., 204 Triton Cir., Encinitas, Calif. 92024

Filed Jul. 12, 1990, Ser. No. 551,873

Int. Cl.[5] B62H *1/10*

U.S. Cl. 280—301 **7 Claims**

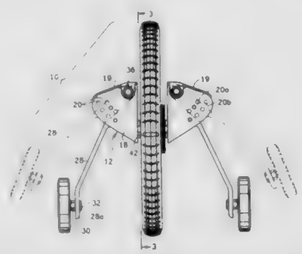
1. A bicycle training wheel assembly, comprising:

a U-shaped brace having a planar inner mounting member for attachment over a rear fork member of a bicycle frame, a pair of planar side support members connected to and extending orthogonally from the inner mounting member, the side support members having a plurality of pairs of aligned angular adjustment holes therethrough which define a plurality of discrete angular adjustment positions, and the inner mounting member having an aperture formed therein for receiving therethrough an end of a threaded rear axle of a bicycle wheel so that the mounting member can be attached to the fork member by tightening a bolt over the rear axle;

a elongate arm having an inner end and an outer end;

an auxiliary wheel;

means for rotatably mounting the auxiliary wheel to the outer end of the arm;



means for mounting the inner end of the arm between the side support members of the brace so that the arm can pivot to raise and lower the auxiliary wheel through a predetermined range of angular movement which encompasses the plurality of discrete angular adjustment positions, the arm amounting means including a shaft which extends through the inner end of the arm and has a pair of opposite ends which are connected between the side support members; and

means for selectively locking the arm at one of a plurality of discrete angular adjustment positions including a removable pin which is slideable through a hole in the inner end of the arm and through a selected pair of the aligned angular adjustment holes in the side support members.

5,054,804

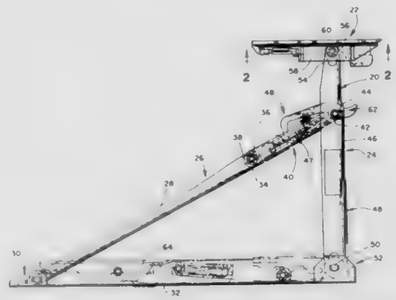
COLLAPSIBLE HITCH

Thomas Stewart, Asheville, N.C., assignor to Trinity Industries, Inc., Dallas, Tex.

Filed May 30, 1990, Ser. No. 530,645

Int. Cl.[5] B62D *53/10*

U.S. Cl. 280—435 **6 Claims**



1. In a collapsible hitch adapted to secure a king pin extending from a container or a trailer, comprising a king pin locking plate assembly adapted to receive said king pin on said container, said king pin locking assembly being mounted on a collapsible strut arrangement, said king pin locking assembly comprising lock plate means supporting a pair of spaced jaw members, bias means biasing said jaw members to an open position, said jaw members cooperatively defining a locking face, base means extending from said lock plate means, pivot bar means extending transversely through said base means and pivotally supporting jaw lock means, a free end of said jaw lock means defining an abutting face for engaging said locking face, spring means biasing said jaw lock means toward engagement with said jaw members, and a jaw lock stop means cooperatively engaged with said jaw locking means and said pivot bar means for placing said jaw lock means in contact with said locking face and alternatively out of contact therewith

wherein said jaw lock means has a bifurcated end engaging said pivot bar means, said bifurcated end having spaced rounded portions defining therebetween a slot provided with a locking face, said jaw lock stop means having a rounded configuration terminating in a locking face for slidable locking engagement with said slot locking face, said jaw lock stop means having an elongated aperture transfixed by said pivot bar means, said aperture having semi-circular end alternately engageable with said pivot bar means, said jaw lock stop means being slidably movable transversely to a longitudinal axis of said pivot bar means for upsetting said slot locking face into two positions with respect to said pivot bar means.

5,054,805

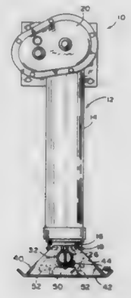
TRAILER LANDING GEAR CUSHION FOOT

Gerald W. Hungerink, Holland, and John P. Heeb, West Olive, both of Mich., assignors to Holland Hitch Company, Holland, Mich.

Filed Nov. 27, 1989, Ser. No. 441,710

Int. Cl.[5] B60D *1/66*

U.S. Cl. 280—475 **38 Claims**



31. A landing gear assembly comprising:

a telescopic leg;

a foot;

a suspension axle suspending said foot from said leg in a manner allowing vertical movement therebetween;

a load support abutment in the form of a horizontally oriented housing around said suspension axle;

a resilient pad beneath said abutment and engageable to be depressed by said abutment when said assembly is under initial compressive load; and

means for limiting the maximum load applied to said pad through said axle.

5,054,806

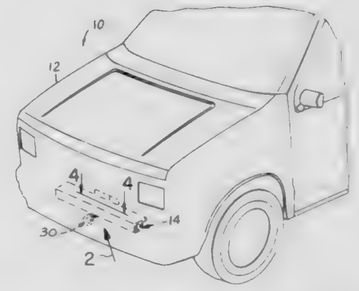
DUAL FUNCTION VEHICLE TOW HOOK

Darren D. Chester, Utica, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 12, 1990, Ser. No. 596,260

Int. Cl.[5] B60D *1/04*

U.S. Cl. 280—495 **2 Claims**



1. For use in combination with an automobile vehicle substructure flange, a toe hook comprising:

a one-piece generally P-shaped tow hook bent from steel rod stock of circular section, said tow hook comprising upper and lower horizontally extending parallel rod-stem portions each having forward and aft ends, each said upper and lower rod-stem portion aft end terminating in a horizontally disposed eyelet, whereby a pair of vertically spaced upper and lower eyelet portions are provided with each said upper and lower eyelet defining a semi-circular opening;

said upper eyelet portion including fastener engaging means secured thereto with said fastener engaging means provided with a threaded circular opening, whereby said threaded circular opening and said lower eyelet semi-circular opening located with the centers thereof aligned on a common vertical axis;

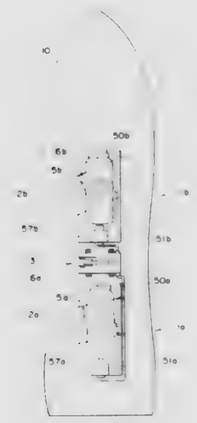
said upper rod-stem portion having a length at least twice the length of said lower rod-stem portion, said upper and lower rod-stem portions having their respective forward ends joined by an open loop portion available for either a towing line, a tie down line, or a tow bar;

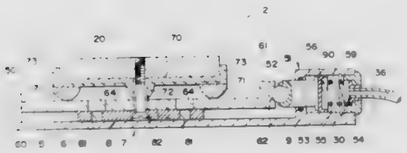
said upper and lower rod-length portions and their associated eyelet portions spaced a predetermined vertical distance apart defining a gap therebetween, said substructure including a horizontally disposed flange having a transversely extending forward free edge, said gap sized for receiving therein said flange such that an aperature in said flange is aligned with said common axis for receiving a threaded fastener therethrough;

whereby upon the threaded fastener being received first in said lower eyelet semi-circular opening and thereafter passing through the flange aperature and said fastener engaging means threaded circular opening, whereby tightening said threaded fastener causing said eyelets to clamp said flange therebetween fixedly securing said tow hook thereon; and

wherein said flange aperature having its center spaced a predetermined longitudinal dimension from said flange transverse free edge, such that said lower rod-stem portion forward end substantially coincides with said flange free edge, whereby upon a tow bar being coupled to said tow hook open loop portion so as to transmit a predetermined force thereto causing said open loop portion to deform downwardly in a controlled manner whereby damage to said vehicle substructure flange is obviated.

5,054,807
RELEASABLE BINDING ASSEMBLY
Jean-Francois Fauvet, Grenoble, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Nov. 24, 1989, Ser. No. 440,861
Claims priority, application France, Nov. 25, 1988, 88 15732
Int. Cl.[5] A63C *5/03, 9/08*
U.S. Cl. 280—607 31 Claims





11. A binding apparatus comprising a first binding assembly for retaining a first boot upon a ski, a second binding assembly for retaining a second boot upon the ski, and means for linking said first binding assembly and said second binding assembly and for reducing a threshold force exerted by one of said first binding assembly and said second binding assembly in response to release of a boot from the other of said first binding assembly and said second binding assembly, wherein each of said first binding assembly and said second binding assembly comprises a respective fluid biasing mechanism for exerting a retention force against a respective one of said first boot and said second boot, and wherein said means for linking comprises a fluid circuit in fluid communication between said fluid biasing mechanism of said first binding assembly and said fluid biasing mechanism of said second binding assembly.

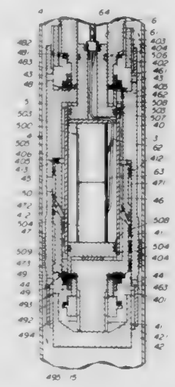
5,054,808
WORKING FLUID CIRCUIT FOR ACTIVE SUSPENSION SYSTEM WITH SURGE SUPPRESSIVE FEATURE
Masahiro Tsukamoto, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 27, 1990, Ser. No. 514,034
Claims priority, application Japan, Apr. 27, 1989, 1-108400
Int. Cl.[5] B60G *17/00*
U.S. Cl. 280—707 10 Claims

1. An actively controlled suspension system comprising:
a hydraulic cylinder disposed between a vehicle body and a suspension member rotatably supporting a vehicular wheel, said hydraulic cylinder defining therein a working chamber
a pressure source means including a pump means associated with an automotive internal combustion engine to be driven by the output of said engine
a pressure control valve means having a first port connected to said working chamber, a second port connected to said pressure source means via a supply line and a third port connected to said pressure source means via a drain line, said pressure control valve means being variable of valve position for selectively establishing and blocking fluid communication between said first port and said second port and between said first port and said third port for adjusting fluid pressure in said working chamber for controlling suspension characteristics



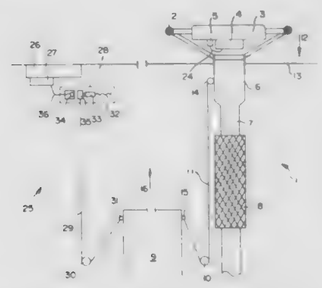
a back pressure absorbing means, associated with said drain line, for absorbing back pressure in said drain line, said back pressure absorbing means containing a pressure medium having a predetermined first pressure and
a drain pressure maintaining means, associated with a drain line and active on said drain line at an orientation downstream of said back pressure absorbing means for maintaining fluid pressure in the drain line upstream thereof at a predetermined second pressure higher than said first pressure.

5,054,809
VARIABLE DAMPING CHARACTERISTICS SHOCK ABSORBER
Fumiyuki Yamaoka; Shinobu Kakizaki, and Shigeru Kikushima, all of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Kanagawa, Japan
Filed Nov. 22, 1989, Ser. No. 440,215
Claims priority, application Japan, Nov. 25, 1988, 63-297774
Int. Cl.[5] B60G *17/00, 17/08;* F16F *9/50*
U.S. Cl. 280—707 4 Claims



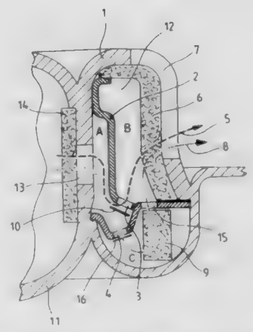
1. A variable damping characteristics shock absorber comprising:
a hollow cylinder filled with a working fluid;
a piston thrustingly disposed within the internal space of said hollow cylinder for dividing the internal space into first and second fluid chambers, said piston defining a first fluid flow path for fluid communication between said first and second fluid chambers during a piston compression stroke and a second fluid flow path for fluid communication between said first and second fluid chambers during a piston expansion stroke;
a first flow restriction valve associated with said first fluid flow path for restricting fluid flow therethrough and for generating a first damping force against said piston compression stroke;
a second flow restriction valve associated with said second fluid flow path for restricting fluid flow therethrough and for generating a second damping force against said piston expansion stroke;
a piezoelectric actuator disposed between said first and second flow restriction valves for adjusting magnitude of flow restriction for the fluid flow through said first and second fluid flow path depending upon a level of a control signal applied thereto and;
a controller means for deriving the level of said control signal for controlling damping characteristics at a desired damping characteristics.

5,054,810
VEHICLE WITH A SAFETY SYSTEM
Hans-Gert Backhaus, and Elmar Vollmer, both of Wettstetten, Fed. Rep. of Germany, assignors to Audi AG., Ingolstadt, Fed. Rep. of Germany
PCT No. PCT/EP86/00657, § 371 Date Jun. 29, 1990, § 102(e) Date Jun. 29, 1990, PCT Pub. No. WO87/04673, PCT Pub. Date Aug. 13, 1987
PCT Filed Nov. 14, 1986, Ser. No. 272,833
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1986, 3602923
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—734 13 Claims



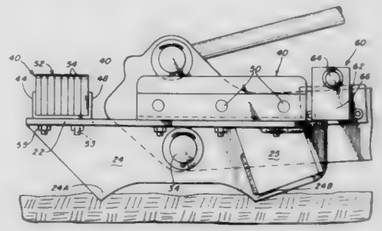
1. In an apparatus for enhancing the safety of a person in an automotive vehicle of the kind comprising a chassis having a portion deforming in a collision of a predetermined force, drive means mounted for movement relative to said chassis in response to the deformation, steering means mounted on a column extending in the direction of said person, elongate means connected to said chassis and said drive means for displacing said steering means in a direction away from said person in response to said movement, first inflatable means for providing protection between said person and said steering means in such collision, the improvement comprising:
means for inflating said inflatable means in response to the displacing of said steering means.

5,054,811
ARRANGEMENT FOR AN AIRBAG GAS GENERATOR
Karl Unterforsthuber, Oberhaching, and Karl-Heinz Sommer, Stockdorf, both of Fed. Rep. of Germany, assignors to Bayern-Chemie, Gesellschaft fur Flugchemische Antriebe mbH, Fed. Rep. of Germany
Filed May 22, 1990, Ser. No. 526,704
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3921472; Jun. 30, 1989, 3921473
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—742 23 Claims



1. An airbag gas generator arrangement comprising:
a propellant chamber,
a filter chamber arranged adjacent the propellant chamber for accommodating flow of airbag propellant gas therethrough to an airbag cushion, said filter chamber providing first and second alternative gas flow paths therethrough with said alternative gas flow paths having respective different filter resistances,
and temperatures dependent change-over means for controlling the flow of gas via the first and second alternative gas flow paths as a function of ambient temperature at the generator.

5,054,812
STABILIZER PAD FOR EARTH-MOVING APPARATUS
Andry Lagsdin, 54 King Hill Rd., Hanover, Mass. 02339
Continuation of Ser. No. 386,706, Jul. 31, 1989, abandoned, which is a continuation of Ser. No. 183,844, Apr. 20, 1988, Pat. No. 4,889,362. This application Oct. 19, 1990, Ser. No. 601,032
Int. Cl.[5] B60S *9/02*
U.S. Cl. 280—764.1 18 Claims



1. For an earth-moving apparatus having at least one support arm,
a stabilizer comprising a plate-like piece having alternate surfaces one of which is resilient and the other of which includes a flanged web means,
means pivotably supporting said piece to an end of said arm along a pivot axis,
said piece being revolvably rotatable relative to said support

means between alternate positions wherein either said resilient surface is facing downwardly or said flanged web means is engaging the ground,

said plate-like piece being comprised of a substantially flat plate, having a first end and a second end, said flanged web means being comprised of a pair of flanged webs, means securing the flanged webs to the other surface of the flat plate disposed substantially orthogonal thereto and in spaced apart relative position, each of said flanged webs having multiple grouser points spacedly disposed therealong with all said grouser points disposedly spaced from said flat plate to provide enhanced gripping by said flanged webs,

said grouser points of each flanged web being disposed symmetrically relative to the pivot axis,

said grouser points of each web being located on opposite sides of the pivot axis thereby preventing rocking of the pad and allowing the pad to engage and penetrate surfaces while reducing the tendency of the pad to flip,

said grouser points of each flanged web being adapted for separate ground engagement with the flanged web having a flange wall intermediate the grouser points that extends a smaller distance from the plate-like piece than the grouser points.

5,054,813

ROLLING SUPPRESSIVE CONTROL SYSTEM FOR AUTOMOTIVE SUSPENSION SYSTEM WITH ENHANCED RESPONSE CHARACTERISTICS

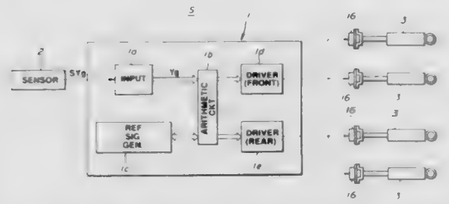
Shinobu Kakizaki, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Kanagawa, Japan

Filed Dec. 22, 1989, Ser. No. 454,962

Claims priority, application Japan, Dec. 26, 1988, 63-168684[U]

Int. Cl.[5] B62D *9/02*

U.S. Cl. 280—772 **8 Claims**



1. A suspension control system for an automotive vehicle, comprising:

a suspension system provided between a vehicle body and a suspension member rotatably supporting a road wheel, said suspension system incorporating means for varying suspension characteristics between at least a first mode with a softer suspension characteristic and a second mode with a harder suspension characteristic;

a lateral acceleration sensor for monitoring lateral acceleration exerted on the vehicle body to produce a lateral acceleration indicative signal; and

a control unit receiving said lateral acceleration indicative signal for deriving a variation rate of lateral acceleration on the basis thereof, deriving a sum value of said lateral acceleration and said variation rate of lateral acceleration, and comparing said sum value with a predetermined first threshold value for detecting when said sum value is greater than or equal to said first threshold value in order to produce a suspension control signal for ordering said second mode of said suspension system.

5,054,814

PASSIVE TYPE SEAT BELT MOUNTING STRUCTURE

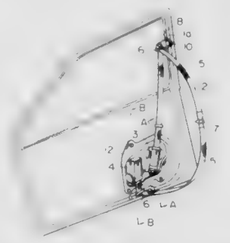
Kiyoshi Hirasawa, and Nobunari Yamamoto, both of Shizuoka, Japan, assignors to Suzuki Motor Company Limited, Shizuoka, Japan

Filed Jun. 22, 1990, Ser. No. 542,174

Claims priority, application Japan, Jun. 23, 1989, 1-74162[U]; Jun. 23, 1989, 1-161030

Int. Cl.[5] B60R *22/08*

U.S. Cl. 280—803 **4 Claims**



1. A seat belt mounting structure for a vehicle with a door and a seat positioned adjacent the door, the door having an interior door panel, comprising: a fixing hole formed in the interior door panel; a shoulder belt retractor including a shoulder belt and a lap belt retractor including a lap belt; a bracket, said shoulder belt retractor and said lap belt retractor each being mounted to said bracket, said bracket carrying said shoulder belt retractor and said lap belt retractor being positioned in said fixing hole, fixed to said door panel with said shoulder belt retractor and lap belt retractor being positioned substantially in parallel with said shoulder belt retractor being positioned rearwardly of said lap belt retractor with respect to a forward and rearward end of the vehicle; a belt anchor connected to an upper part of the door panel, said shoulder belt retractor being slanted slightly from a parallel position with respect to said lap belt retractor such that a pulling direction of said shoulder belt, from said shoulder belt retractor, is substantially in a direction of said belt anchor, said shoulder belt being positioned engaging said belt anchor; a through ring connected to a lower part of the door panel, said lap belt retractor being positioned such that said lap belt is pulled in a direction of said through ring and engages said through ring, said shoulder belt and said lap belt being connected, at a position beyond the engagement between said shoulder belt and said belt anchor and said lap belt and said ring, by a through tongue element, said through tongue element being engagable with a buckle provided on a side of the seat opposite said door.

5,054,815

SHOULDER BELT COMFORT MECHANISM

James A. Gavagan, Centerline, Mich., assignor to Takata, Inc., Auburn Hills, Mich.

Filed Mar. 2, 1990, Ser. No. 487,654

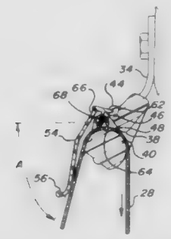
Int. Cl.[5] B60R *22/18*

U.S. Cl. 280—808 **11 Claims**

1. A guide assembly for seat belt webbing which selectively restricts retraction of the webbing into a retractor to provide enhanced comfort and convenience for a vehicle occupant by reducing the tension of the shoulder belt segment of the webbing which passes across the upper torso of the occupant, comprising:

guide means located to define an upper anchorage point for the shoulder belt segment, and defining a guide surface over which the belt webbing passes as the webbing is withdrawn from or retracted into the retractor, and further defining an abutment surface,

a sensing lever affixed to the guide means by a pivot means for allowing the sensing lever to pivot and having an end contacting the webbing shoulder belt segment for sensing the tension on the webbing should belt segment such that the sensing lever is positioned within a first normal angular range corresponding to a desired tension level in the webbing shoulder belt segment, and positioned at a second angle outside of the normal angular range when the tension on the webbing shoulder belt segment is less than the desired tension level, and positioned at a third angle outside of the normal angular range when the tension on the webbing shoulder belt segment is greater than the desired tension, said sensing lever further having a flange which contacts said abutment surface when said sensing lever is in said third angular position,



webbing engaging means formed by an engagement surface of the sensing lever for contacting the belt webbing and creating friction on the webbing thereby inhibiting retraction of the webbing when the sensing lever is in the first normal angular range, and wherein the engagement surface rotates with said sensing lever and moves out of contact with the webbing when the sensing lever is at the second angular position, and when said third position is reached said flange and said abutment surface engage to prevent continued rotation of said lever causing the engagement surface to be pulled from contact with the webbing.

5,054,816

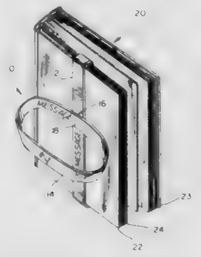
COMBINED BOOK CLOSURE AND PAGE INDEXING DEVICE

Gerald J. Rosengarten, 30 W. 13th St., New York, N.Y. 10011

Filed Oct. 3, 1990, Ser. No. 592,136

Int. Cl.[5] B42D *9/00*

U.S. Cl. 281—42 **20 Claims**



1. A combined book closure and page indexing device for use with a book having a front cover and a back cover and a plurality of pages interposed therebetween, comprising yieldable page indexing means adapted for snug securement around at least one of said front and back covers along a longitudinal axis with respect to the book and over a selected number of pages, further including book closure means connected to the page indexing means at a common locus, said book closure means being adapted for selectively circumscribing the front and back covers along at least one of a transverse axis with respect to the book and the longitudinal axis for simultaneously securing the book in a closed position.

5,054,817

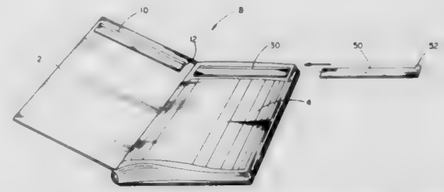
MOVABLE HEADING SYSTEM

Anita G. Geinert, 316 E. Laurel Ave., Foley, Ala. 36535

Filed Jul. 25, 1990, Ser. No. 557,004

Int. Cl.[5] B42D *11/00*

U.S. Cl. 283—66.1 **9 Claims**



1. A movable heading system in combination with a record keeping book, said book including a front cover, a back cover, and sheets bearing column indicia, said heading system comprising:

a generally rectangular heading strip for column headings indicia;

a plurality of transparent rectangular envelopes adapted to internally accept said heading strip,

each of said envelopes having two closed sides, and an open end to internally accept said heading strip through said open end; and

an adhesive layer disposed over an area of said envelope for fastening said envelopes to said sheets; whereby

said heading strip may be inserted into any of said envelopes and headings written upon said heading strip may be visible through each of said envelopes and thereby useful as column headings.

5,054,818

JOINING AND CONNECTING BLOCK BETWEEN FLEXIBLE ELASTOMER MATERIAL DUCTS

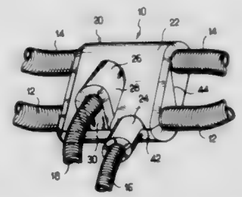
Gilles Briet, Geugnon, France, assignor to Hutchinson, Paris, France

Filed Nov. 1, 1989, Ser. No. 429,982

Claims priority, application France, Nov. 9, 1988, 88 14658

Int. Cl.[5] F16L *39/00*

U.S. Cl. 285—137.1 **7 Claims**



1. A joining a connecting block for flexible, elastomeric ducts comprising at least two main ducts and two branch ducts, each branch duct having an end connected to a corresponding main duct within the block, said block being made from an elastomer material molded as a single piece about the main ducts and the connected ends of the branch ducts, and wherein the main ducts extend substantially parallel to each other within the block forming parallel axes in the joining block, and wherein the ends of the branch ducts connected to

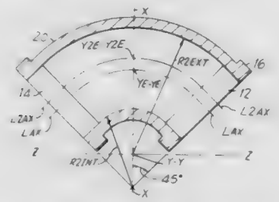
the main ducts extend obliquely with respect to the plane defined by the axes of the main ducts.

5,054,819

PLUMBING ELBOWS OR BENDS

Donald R. Grunwald, Bethlehem, Pa., assignor to Victaulic Company of America, Easton, Pa.

Filed Feb. 16, 1990, Ser. No. 481,876
Int. Cl.[5] F16L *43/00*
U.S. Cl. 285—179 **13 Claims**



1. A plumbing fitting having an outer wall defining a tubular arcuate fluid flow path, said outer wall including a first arcuate wall portion providing an extrados of said arcuate fluid flow path, said extrados lying on a first radius taken from a first point located on an axis Y—Y that extends perpendicular to the X, Z plane of the fitting, said first point and said Y—Y axis each being positioned externally of said fitting, and a second arcuate wall portion positioned radially inwardly of said first wall portion and which provides an intrados of said fluid flow path, said second arcuate wall portion having a radius greater than a radius taken from said first point and which is taken from a point located on an X—X axis that intersects said Y—Y axis at said first point on said Y—Y axis, further including:

third and fourth wall portions each providing a curved transition between said extrados provided by said first wall portion and said intrados provided by said second wall portion;

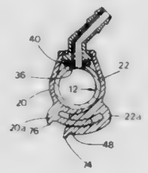
said third and fourth wall portions each being configured in radial planes that include and extend perpendicular to said Y—Y axis to define a cross-sectional area of said flow path having a centroid positioned further from said first point on said Y—Y axis than is a center positioned equidistantly between said extrados and said intrados.

5,054,820

CONNECTOR FOR SAP COLLECTING SYSTEM

Dominique Lesquir, Rockland, and Bernard Landry, St Foy, both of Canada, assignors to IPL, Inc., Quebec, Canada

Filed Nov. 13, 1989, Ser. No. 434,211
Int. Cl.[5] F16L *41/00*
U.S. Cl. 285—197 **10 Claims**



1. For use with a network of mains and tubes for directing sap collected from trees to a central sap-processing unit, a connector for conveying sap from a tube to a main, comprising:

clip means for encircling said main; said clip means including a separatable band having interlockable ends, said ends being so shaped as to draw said band onto said main while being interlocked; said band defining an opening at an intermediate section thereof and first cooperating means adjacent said opening; and

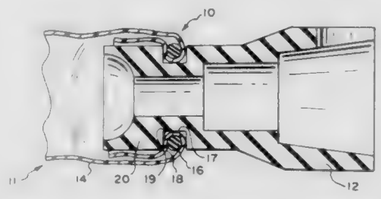
sap conveying means having one end adapted to engage said tube and an opposite end adapted to penetrate a pre-pierced hole in said main; second cooperating means adjacent to said opposite end and freely engaging said first cooperating means to allow said sap conveying means to be freely rotated (in) relative to said clip means when said clip means is mounted to said main and said opposite end of said sap conveying means is received in said pre-pierced hole of said main whereby said sap conveying means may be 360° orientable relative to a vertical axis extending through said opening to allow for various angles of tube connections.

5,054,821

STERILE SLEEVE/CONNECTOR ASSEMBLY

Richard A. Hillstead, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 295,680, Jan. 11, 1989, abandoned, which is a division of Ser. No. 163,746, Mar. 3, 1988, Pat. No. 4,821,398. This application Jan. 12, 1990, Ser. No. 464,554
Int. Cl.[5] F16L *39/00*
U.S. Cl. 285—321 **2 Claims**



1. A sterile sleeve/connector assembly for mounting on a medical catheter and comprising: (a) a tubular connector including a hub, (b) a sterile sleeve for protecting the catheter received therein from contaminants thereby to maintain the catheter in a sterile condition, and (c) a joint formed between an end portion of said sterile sleeve and said hub of said connector, said hub comprising a cylindrical end portion having an external annular groove therein, said sterile sleeve being made of a tube of thin flexible material and having an end portion which is received on said hub end portion and which is folded inwardly within the sleeve so as to form an inner sleeve ring within an outer sleeve ring which are connected by a generally toroidally extending bight portion and said joint including an elastic O-ring which is positioned within said bight portion received within said groove and connecting said inner and outer sleeve rings of said inwardly inverted end portion of said sleeve, said O-ring bearing against the bight portion and the inner sleeve ring of said sleeve and within and against the bottom of said groove in said cylindrical end portion of said hub.

5,054,822

ANTI-TWIST UNION

Kevin D. McGushion, Santa Monica, Calif., assignor to Go, Inc., Whittier, Calif.

Continuation of Ser. No. 403,741, Sep. 16, 1985, abandoned. This application Aug. 1, 1990, Ser. No. 561,277
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—330 **3 Claims**

1. In a union for joining two tubing segments together which union has a central axis and includes:

a first nut with an external thread, a wrench-engaging section, a central passage and a compression shoulder;

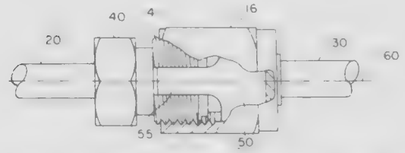
a second nut with an internal thread for mating with said external thread, a compression shoulder, and a central passage, the union including no other nuts or threads;

a first tubing segment passing through the passage in the first nut with a side clearance, a head at one end thereof, a peripheral compression shoulder on said head facing the compression shoulder on the first nut and a flow passage extending from end to end of said first segment;

a second tubing segment passing through said passage in said second nut with a side clearance, a head at one end thereof, a peripheral compression shoulder on said head facing said compression shoulder on said second nut, and a flow passage extending from end to end of said second segment;

a sealing face on each of said heads at said one end of said segments, said sealing faces facing toward one another;

a peripheral bead formed on each said sealing face, and a mating surface on each said sealing face to form a pair of compressive fluid seals, a sealing washer interposed between said sealing beads for compressive fluid sealing content, tightening the nuts serving to axially press the heads against the washer to form said fluid seals; the improvement comprising:



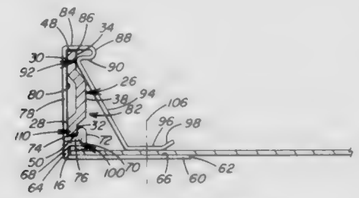
a thrust cap having a flat annular flange disposed between the compression shoulders respective to said second nut to be firmly axially clamped between them when the union is tightened, an axially-extending tongue rigidly integral with said flange, and an axially extending spline in said first nut, said tongue fitting in said spline and preventing rotation of said thrust cap relative to said first nut, thereby preventing transmission of torque between the compression shoulders relative to both of said nuts when said second nut is tightened on said first nut, the forces exerted against the washer being purely axial, and said thrust cap preventing counter-rotation of the tubing segments relative to each other.

5,054,823

FLANGE TYPE DUCT CONNECTOR

Peter J. Arnoldt, Clairton, Pa., assignor to Ductmate Industries, Inc., Monongahela, Pa.

Filed Feb. 5, 1990, Ser. No. 475,156
Int. Cl.[5] F16L *23/02*
U.S. Cl. 285—363 **4 Claims**



1. A duct connector frame comprising,

a plurality of corner pieces each having;

(a) a pair of angularly extending legs, each of said legs having a front planar surface portion, a rear planar surface portion, a lower portion and an upper portion,

a plurality of flange sections each having;

(a) a horizontal bottom wall,

(b) a front wall extending upwardly from said bottom wall,

(c) a rear wall extending downwardly relative to said front wall and terminating in a horizontal end portion, said rear wall extending angularly away from said front wall, said rear wall having an inturned stop member adjacent the upper portion of said rear wall,

(d) a top wall extending generally perpendicularly from said front wall and terminating in a downwardly bent end,

(e) a horizontal leg having two longitudinal ends, said horizontal leg being connected at one longitudinal end to said downwardly bent end and at said other longitudinal end to said inturned stop member, said horizontal leg positioned in a plane generally parallel to said top wall,

(f) said flange sections each having openings therein for receiving one of said leg portions of said corner piece,

(g) said flange sections each having a support member within said opening and extending longitudinally in said opening adjacent said bottom wall, and

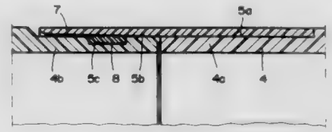
said corner piece leg portions positioned in said flange section openings with said lower portion supported by said support member in said flange section opening and said upper portion abutting said inturned stop member on said rear wall in said opening to fixedly position said corner piece relative to the end portions of adjacent flange sections.

5,054,824

COUPLING FOR PLASTIC PIPE FORMED BY CENTRIFUGAL CASTING

Walter Wyss, Kappel, Switzerland, assignor to Hobas Engineering & Durotec AG, Basel, Switzerland

Filed Nov. 13, 1989, Ser. No. 435,713
Claims priority, application Switzerland, Oct. 11, 1988, 4169/88
Int. Cl.[5] F16L *21/00*
U.S. Cl. 285—369 **6 Claims**



1. A glass fiber-reinforced filler-containing pipe, arrangement comprising: a glass fiber-reinforced filler-containing pipe formed by centrifugal casting in a rotated mold to define a first end part having a recess shaped by a mold insert ring and a second end part having a recess shaped during centrifugal casting by a mold insert ring each recess having a finished glass fiber reinforced surface, a coupling sleeve extending axially beyond the first end part formed as a laminate adhering to the first end part, a sealing ring received by the second end part recess, in a coupling position, coupling a first end of one pipe with second end of another pipe, the sealing ring being overlapped by the coupling sleeve.

5,054,825

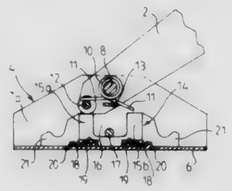
ANTIPANIC LOCK AND HOUSING FOR SUCH A LOCK

Robert Mangin, St. Benoit sur Seine; Jean-Pierre Muller, Cormost, and Francois Weil, Romilly sur Seine, all of France, assignors to Vachette, France

Filed Jun. 18, 1990, Ser. No. 539,811
Claims priority, application France, Jun. 20, 1989, 8908179
Int. Cl.[5] E05B *65/10, 15/04*
U.S. Cl. 292—92 **14 Claims**

1. An antipanic lock for a door comprising a first housing including a bolt mounted in said first housing and movable from a retracted position to allow opening a door to an extended position where said bolt extends exteriorly to said housing to engage a keeper to lock the door, said lock including a second housing with said housings being adapted to be mounted in spaced apart locations on a surface of a door, an actuating rod extending between said first and second housings

and having end portions each connected to a respective first and second lever at one end thereof, each lever having an opposite end pivotally mounted in a respective housing, said first lever being a control lever which engages an operating member in said first housing so as to move said bolt when said control lever is moved from a neutral position to an actuated position corresponding to movement of said bolt from said extended, position to said retracted position, said second lever having torsion spring means including two, spaced spring legs,



said second housing including a pivot means on which said second lever is pivotably mounted, said second lever having an end portion and a projecting part on said end portion for engaging a said spring leg corresponding to a selected door opening direction, said second lever being movable about said pivot means so that said projecting part engages the other of said spring legs corresponding to a door opening direction opposite to said selected direction, said second housing including abutment means for engaging the said spring leg that is unengaged by said projecting part.

5,054,826

COMPARTMENT LATCH REMOTE RELEASE WITH FOLDING MEMBER FOR DISABLING THE REMOTE RELEASE

Ian J. Dow, Royal Oak; David Kowalczyk, Sterling Heights; Carl D. May, Farmington Hills, and Charles M. Wilson, Westland, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1991, Ser. No. 650,273
Int. Cl.[5] F05C *3/26*
U.S. Cl. 292—125 **4 Claims**



1. In a vehicle having a luggage compartment panel openable upon release of a latch from a striker, the improvement comprising:

a trigger carried by the latch and positioned near the striker when the latch engages the striker and holds the panel in the closed position,

an actuator member movably mounted on the striker and having an actuator arm extending into proximity with the trigger,

a remote release handle mounted in the operator compartment and operably connected to the actuator member so that operator actuation of the release handle moves the actuator relative the striker to carry the actuator arm into engagement with the trigger and actuate the trigger to unlatch the latch,

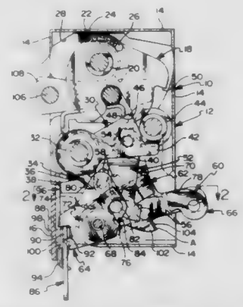
and hinge means interposed in the actuator member by which the operator may fold the actuator member to a folded condition removing the actuator arm from proximity with the latch so that operator actuation of the remote release handle moves the actuator member without releasing the latch.

5,054,827

VEHICLE DOOR LATCH

Jeffrey L. Konchan, Clarkston, and Jiri Paulik, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1990, Ser. No. 494,002
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—216 **8 Claims**



1. In a vehicle door latch including bolt means movable between latched and unlatched positions and detent means movable between detented and undetented positions with respect to the bolt means, the combination comprising, coupling means operatively connected to the detent means for moving the detent means to undetented position to allow movement of the bolt means to unlatched position, operating means operable by an operator, locking means operable to move the coupling means either to a coupled position wherein the coupling means is coupled to the operating means to move the detent means to undetented position upon operation of the operating means or to an uncoupled position wherein the coupling means is uncoupled from the operating means, and blocking means blocking movement of the coupling means to uncoupled position by the locking means when the bolt means is in unlatched position.

5,054,828

DOG FECES DISPOSAL IMPLEMENT KIT

Bruce Hantover, 9613 Aurora Ave. N, Seattle, Wash. 98103

Continuation-in-part of Ser. No. 313,928, Feb. 22, 1989, Pat. No. 4,909,553. This application Mar. 16, 1990, Ser. No. 495,237
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] A01K *29/00*
U.S. Cl. 294—1.3 **9 Claims**

1. In a dog feces disposal implement kit, a double scoop component including two scoop leaves extending oppositely from each other and having adjacent ends joined by means

including a folding and tear line, and at least one of said leaves having spaced folding lines extending from such folding and



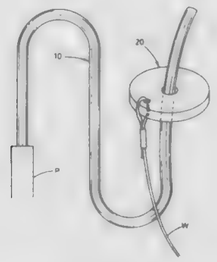
tear line toward the end of such leaf opposite said folding and tear line.

5,054,829

WIRE PLACING DEVICE

Peter F. Olsen, 2105 Lorraine Pl., Carrollton, Tex. 75006

Filed May 14, 1990, Ser. No. 523,033
Int. Cl.[5] B25J *1/04*
U.S. Cl. 294—19.1 **3 Claims**



1. A device adapted to be mounted on a pole and used for placing wire over a series of open ceiling joists or other elevated objects, said device comprising:

a disk, with a means of having wire attached thereto, a rod, shaped to define a trap for retrieval of said disk, a tip, a base, an outward arm, an inner arm, an elongate arm and an end, said base releasably supporting said disk, said rod mounted on the end of a pole, with said pole operated by a person at floor level, elevating said rod and said disk supported thereby, to a position above an object over which wire is to be installed, with said pole disposed on one side of said object and said rod disposed on the opposite side of said object, the free end of said wire extending from said disk downwardly on said one side of said object, whereby an upward thrust of said pole propels said disk, with said wire attached thereto, up and off said outward arm, whereby gravity causes said disk to descent to floor level on said opposite side of said object, thereby pulling said attached wire to floor level.

5,054,830

SHOVEL

Philip Nisenbaum, P.O. Box 214133, Sacramento, Calif. 95821

Continuation of Ser. No. 447,437, Dec. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 346,580, May 2, 1989, which is a continuation-in-part of Ser. No. 824,735, Jan. 31, 1986, Pat. No. 4,824,427. This application Mar. 8, 1991, Ser. No. 667,243
Int. Cl.[5] B25G *1/00;* **A01B** *1/00*
U.S. Cl. 294—58 **6 Claims**

1. A shovel, comprising:

an elongated shaft having first and second opposite ends;

means securing a shovel blade at said first end of said shaft;

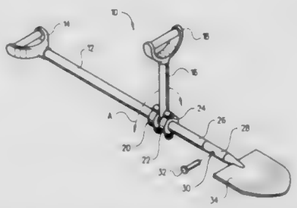
a first hand grip at said second end of said shaft, said first hand grip including a first linear bar extending perpendicular to said elongated shaft;

a pair of split cylindrical collars;

fastening means securing said split cylindrical collars in axially spaced, frictional engagement around said elongated shaft in a selected adjustable axial position on said shaft;

a lateral extension member extending perpendicular to said elongated shaft between said split cylindrical collars;

a second hand grip on said lateral extension member, said second hand grip including a second linear bar extending perpendicular to said elongated shaft and said lateral extension member; and



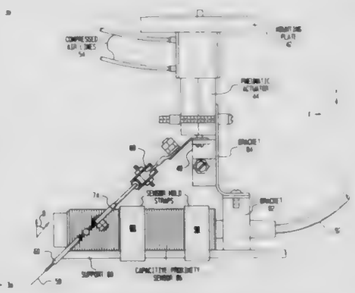
a pivot pin extending between said split cylindrical collars and transversely through said lateral extension member, said pivot pin pivotally mounting said lateral extension member for selective movement in either opposite rotational direction about a pivot axis parallel to longitudinal axes of said shaft and said split cylindrical collars and constraining said lateral extension member from pivotal movement about axes oblique and perpendicular to said longitudinal axes of said shaft and split cylindrical collars, said pivot axis lying in a plane perpendicularly bisecting said elongated shaft, said first and second linear bars and said shovel blade.

5,054,831

PIERCING ELEMENT GRIPPING APPARATUS

Kuan-Chong Ting, East Brunswick; Gene A. Giacomelli, Milltown; David R. Mears, Belle Mead; Witold P. Kabala, New Brunswick, all of N.J.; Shou-Jin Shen, Shanghai, China, and Steven E. Williamson, Levittown, Pa., assignors to Rutgers University, Piscataway, N.J.

Filed Apr. 7, 1989, Ser. No. 335,109
Int. Cl.[5] A01C *11/02;* **B25J** *15/00, 19/02*
U.S. Cl. 294—61 **47 Claims**



1. An apparatus for gripping an object, comprising:

a first elongated gripping element which is movable along a first line between a first retracted position and a second

gripping position and which is capable of piercing an object to be gripped;

a second elongated gripping element which is spaced a predetermined distance from the first gripping element, which is movable along a second line which is not parallel to the first line between a first retracted position and a second gripping position, and which is capable of piercing an object to be gripped;

the first and second gripping elements being arranged such that the distance between the first and second gripping elements decreases when either one or both of the gripping elements is moved from their respective first retracted positions to their respective gripping positions;

means for selectively moving the first and second gripping elements between their respective first retracted positions and their respective second gripping positions;

a scissors mechanism between the moving means and the first an second gripping elements which renders the moving means capable of simultaneously moving the first and second gripping elements between their respective first retracted positions and their respective second gripping positions; and

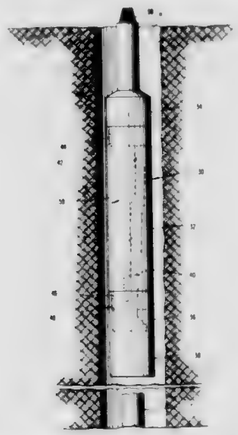
a sensor which is attached to said apparatus such that said sensor is positioned within an area defined by said gripping elements and said moving means so as to sense the presence of a plant being grasped.

5,054,832

FISHING TOOL FOR RETRIEVING IMPLEMENTS FROM A HOLE

Bob G. Davis, and Barry L. Antweil, both of Hobbs, N. Mex., assignors to WADA Ventures, Hobbs, N. Mex.

Filed Jul. 10, 1990, Ser. No. 550,561
Int. Cl.[5] E21B *31/18*
U.S. Cl. 294—86.3 **34 Claims**



11. A tool for retrieving implements from a hole, comprising:

an elongated one-piece body having a bore extending from a bottom end of the body towards an oppositely positioned top end of the body, said bore having an inner surface which includes a first portion and an oppositely positioned second portion which both extend along the length of the bore, said first portion of the inner bore surface extending substantially parallel to the longitudinal axis of the body and said second portion of the inner bore surface extending at an angle to the longitudinal axis of the body, said first and second portions of the inner bore surface being defined about respective longitudinal axes, the longitudinal axis of the first portion of the inner bore surface being radially offset with respect to the longitudinal axis of the body, said bore having oppositely positioned male keys formed integrally with and extending inwardly from the inner surface of the bore, said male keys extending substantially parallel to the second portion of the inner bore surface; and

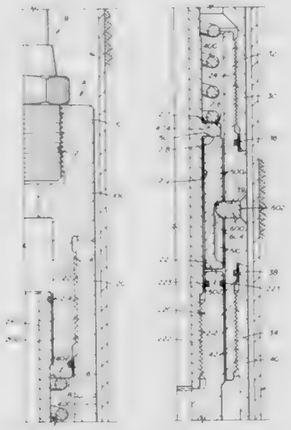
a catch slip slidably positioned within the bore, said catch slip having means for interacting with the male keys to guide the catch slip in a direction substantially parallel to the second portion of the inner surface as the catch slip slides along the length of the bore in the body, said catch slip having a rear surface that is in contact with and supported by the second portion of the inner bore surface from one male key to the other male key, structural support for the catch slip during retrieval operations being provided by the one-piece body while the male keys serve to guide the catch slip as it moves along the bore in the body.

5,054,833

RELEASABLE OVERSHOT

Thomas R. Bishop, Houston, Tex., and Herschel E. Zirger, 21 Durham Dr., Conroe, Tex. 77302, assignors to Herschel E. Zirger, Conroe, Tex.

Continuation of Ser. No. 462,343, Jan. 2, 1990, abandoned, which is a continuation of Ser. No. 242,039, Sep. 8, 1988, abandoned. This application Nov. 26, 1990, Ser. No. 617,952
Int. Cl.[5] E21B *31/18*
U.S. Cl. 294—86.3 **3 Claims**



1. An overshot for retrieving a downhole tool in a well, comprising:

a cylindrical housing adapted to be attached to a support member extending to the surface of the well;

a grappling mechanism body;

a plurality of elongated slip members having slip teeth thereon;

a slip ramp on an outwardly facing surface of each slip member;

a housing ramp on an inner surface of said housing, each housing ramp being positioned adjacent to an opposing slip ramp, said slip ramp movable relative to said housing ramp between an inward slip engaging position with the downhole tool and an outward slip release position;

tab means having an opening mounted on each slip member;

pin connection means disposed within said tab means opening for connecting each of said slip members independent of the other slip members to said grappling mechanism body for permitting each slip member to move translationally towards each other slip member into engagement with the downhole tool;

a cam cylinder engaged by a cam follower pin to operably connect said housing and said grappling mechanism body;

said cam cylinder rotatable relative to said grappling mechanism body;

said cam cylinder having a continuous groove on the exterior of said cam cylinder including a series of upwardly facing corners, downwardly facing corners, and upwardly open passages, connected by sloped passages, configured to provide alternating, restrained and unrestrained, upper positions for said cam follower pin; and

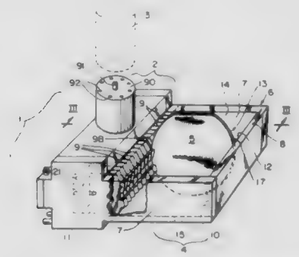
said alternating upper positions alternate between an unrestrained position for engaging said slip members with the downhole tool and a restrained position for disengaging the slip member from the downhole tool.

5,054,834

GRIPPER FOR THE ADVANTAGEOUSLY ROBOTIZED HANDLING OF ONE OR MORE SILICON WAFERS AND/OR OF A SUPPORT FOR SUCH WAFERS

Mauro Alessandri; Renzo Carrera, and Giulio Iannuzzi, all of Milan, Italy, assignors to SGS - Thomson Microelectronics S.R.L., Milan, Italy

Filed Dec. 5, 1989, Ser. No. 446,196
Claims priority, application Italy, Dec. 20, 1988, 23031 A/88
Int. Cl.[5] B66C *1/62;* **B25J** *9/20*
U.S. Cl. 294—87.1 **7 Claims**



1. A gripper for robotized handling of a silicon wafer holder, comprising:

a) a part;

b) a handling means secured to said part; and

c) a wafer support structure, said wafer support structure being rigid with said part, and comprising,

1) at least two mutually cooperating opposing jaws being mobile relative to each other, each of said jaws being provided with at least one seat for adapting said jaws to the shape of the lateral edge of the silicon wafers supported by said jaws, and

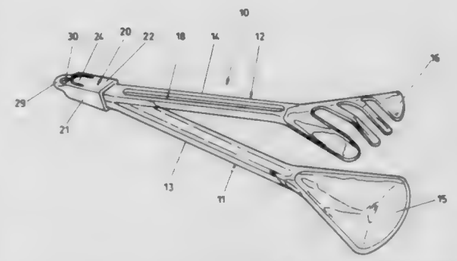
2) on at least one side of said wafer support structure, at least two wafer holder support members mobile relative to said one side and arranged to cooperate with said silicon wafer holder to enable the silicon wafer holder to be supported and handled, said wafer holder support members operated by actuator means driven against eleastic means, said actuator means being controlled by a microprocessor circuit, there being provided sensor means connected to said microprocessor circuit to sense when engagement between said wafer holder support members and said silicon wafer has taken place, said actuator means comprising pistons with heads, said pistons mobile in a cylindrical seat and carrying, rigid with their heads, arms which engage projecting parts of pins, said pins being located in seats provided in a frame of the gripper, said pins carrying further projecting parts which define the members for supporting the silicon wafer holder.

5,054,835

FOOD HANDLING IMPLEMENT

Stephen J. Loechel, Woodville, and Kerry W. Henderson, South Australia, both of Australia, assignors to Tango Proprietary Limited, Woodville, Australia

Filed Sep. 18, 1990, Ser. No. 584,200
Claims priority, application Australia, Sep. 21, 1989, PJ6474
Int. Cl.[5] A47G *21/02*
U.S. Cl. 294—99.2 **9 Claims**



1. A food serving implement comprising a pair of separable elements, each having an elongate resilient handle connected to a head portion, the elongated handle of each of said elements being formed with an end portion which is angled with respect to the longitudinal axis of the handle, and connector means for releasably connecting together said elements to enable said elements to be coupled together, one on top of the other, wherein said handles are in one of a first position in which said handles are approximately parallel for storage purposes, and a second position in which the angled end portions are retained in facing relationship with the handles diverging away from said connector means and in which the implement can be used as a pair of tongs wherein the head portions of the elements can be urged relative to each other by virtue of the resilience of the handles, said connector means comprising a removable end retention cap having walls defining a socket portion for snuggly receiving said angled end portions of said handles, said angled end portions when thus received, having respective facing surfaces thereof contiguous with one another, said end retention cap being provided with at least one flexible resilient finger formed in a wall thereof, said finger having an inner surface and a projection formed thereon which projects into the socket portion of said cap and is arranged so that when said elements are inserted into the cap, said projection lockingly engages in an opening formed adjacent a free end of a respective element to effect a snap fitting engagement of the angled end portion of the element within said cap, said socket portion of the cap being horizontally divided into two halves by longitudinally extending ribs formed on opposed side walls of said cap, each socket portion half slidably accommodating a respective angled end portion.

5,054,836

GRIPPER MECHANISM HAVING SPRING-LOADED JAWS

Gordon R. Schulz, Villa Park, Calif., assignor to Odetics, Inc., Anaheim, Calif.

Filed Jul. 26, 1989, Ser. No. 385,713
Int. Cl.[5] B25J *15/08;* **B66C** *1/42*
U.S. Cl. 294—116 **15 Claims**

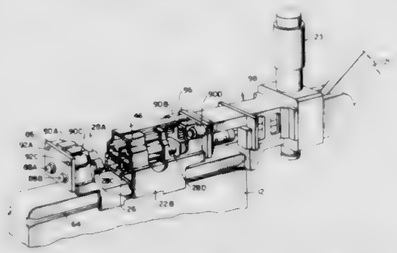
1. A gripper for grasping an article, comprising:

first and second spaced jaws movable toward each other to grasp opposite sides of an article;

a support member situated between the jaws; cams operable to move each of the jaws;

force means contacting the support member and an inner surface of each jaw, for exerting force against each jaw; and

hold means contacting an outer surface of each jaw for exerting force in opposite to the force means;



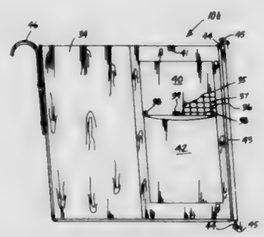
wherein the cams do not contact the jaws in a grip mode and the article is held between the jaws by way of the force means acting against the hold means.

5,054,837

VEHICULAR CHILD DIVIDER APPARATUS

Dorothy L. Chapman, P.O. Box 5037, Westport, Oreg. 97016

Filed Mar. 15, 1990, Ser. No. 493,693
Int. Cl.[5] B60N *3/00*
U.S. Cl. 296—24.1 **1 Claim**



1. A vehicular child divider apparatus in combination with a single "L"-shaped seat within an automotive passenger compartment, wherein the single "L"-shaped seat is positioned rearwardly of a forward seat, and the apparatus includes a central rigid planar panel, the planar panel including a rear vertical edge, the rear vertical edge including securement means mounted thereto,

the planar panel including a further panel mounted coextensively with a forward edge of the planar panel and the further panel extending forwardly and coextensively aligned with opposed side surfaces of the planar panel, the further panel including a forward edge, and the forward edge of the further panel including a further securement means mounted coextensively with the forward edge of the further panel, and

wherein the further securement means includes an inverted "J" shaped hook member mounted to the further panel, wherein the "J" shaped hook member is securable overlying the forward seat, and

wherein the securement means includes a central tube, the central tube includes a plurality of leg members telescopingly mounted to the central tube, and each leg member includes a friction pad mounted to a free terminal end of each leg member extending exteriorly of the central tube, and

wherein the planar panel includes a through-extending opening, and the through-extending opening includes a mesh member coextensively mounted within the opening, and

including a covering flap selectively overlying the opening, the covering flap including a plurality of snap fasteners mounted to remote lower end portions of the covering flap, and further including a first hook and loop fastener member mounted intermediate of the snap fasteners adjacent a lower terminal edge of the covering flap, and a further hook and loop fastening member mounted adjacent an upper end edge of the planar panel positioned above the covering flap for selective securement of the covering flap spaced from the opening, and

including an elongate pocket for storage mounted underlying the opening along the planar panel.

5,054,838

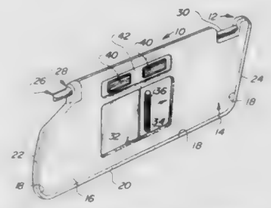
Patent Not Issued For This Number

5,054,839

VEHICULAR SUN VISOR ASSEMBLY

Jay E. White, 4079 Willoway Pl., Bloomfield Hills, Mich. 48013, and Jay R. White, 4388 Lehigh Dr., Troy, Mich. 48098

Filed Aug. 31, 1990, Ser. No. 576,357
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.1 **15 Claims**



1. A vehicular sun visor assembly comprising:

a molded plastic base core member;

a molded plastic cover core member;

means for locking said core members together in face to face alignment;

said base core member having a rounded leading edge which faces the passenger compartment of a vehicle when the visor assembly is located in a storage position facing the vehicle roof, and said leading edge is the bottom of said visor assembly when the visor assembly is located in its downward use position;

upholstery material covering the outside of said base core member, wrapped around said leading edge, and said upholstery material extending into said visor assembly when said core members have been locked together forming a seam facing towards said cover core member and towards the vehicle roof when said visor is located in the storage position; and

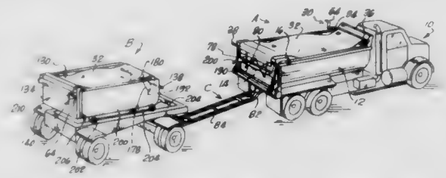
retention means independent of said locking means for holding said upholstery material on said visor assembly.

5,054,840

METHOD AND APPARATUS FOR COVERING OPEN TRUCK BEDS

Dennis Wilhite, 18261 Bowman Rd., Cottonwood, Calif. 96022

Filed Sep. 21, 1990, Ser. No. 586,405
Int. Cl.[5] B60P *7/04*
U.S. Cl. 296—98 **2 Claims**



2. The apparatus to cover a load in an open bed truck or

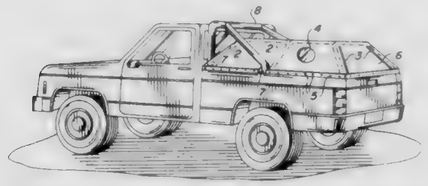
trailer having a bottom, a first end wall extending a distance vertically from said bottom, a second end wall extending a distance vertically from said bottom and in the same direction as said first end wall, a first side extending a distance from said bottom, a second side connected and fastened to said bottom and extending vertically a distance in the same direction as said first side, means connecting said bottom, first end, second end, first side and second side so as to form a truck bed container open at its top; a first bearing mounted adjacent the connection of said first side and first end wall; a second bearing mounted adjacent the connection of said second side and said first end wall; an axle mounted within the first and second bearings; a handle fastened to said axle adjacent a first end thereof; a means to releaseably lock said axle against rotation; a first end of a tarpaulin mounted upon said axle; a second end of said tarpaulin mounted upon an elongated member having an extension upon each side of the second end of said tarpaulin, said extensions resting upon the upper edge of the two sides of said open truck bed; a loop of elastic material fastened to said second end of said tarpaulin; a hook suitable to engage said elastic loop mounted upon a telescoping pole; and means upon said second end of said open bed to engage said second end of said tarpaulin.

5,054,841

PORTABLE PICKUP TRUCK CAMPER SHELL STANDARD OR ROLL BAR MODEL

George R. Zalman, 15246 N. Delray Dr., Fountain Hills, Ariz. 85268

Filed Nov. 28, 1990, Ser. No. 618,975
Int. Cl.[5] B60P *3/33*
U.S. Cl. 296—165 **8 Claims**



1. A portable pickup truck camper shell, for enclosing a bed of a pickup truck, comprising:

a quickly removable frame;

a plurality of inserts to secure the frame in place, wherein the frame is slid into said inserts;

mounting means for permanently mounting said inserts onto the bed; and

a cover;

wherein: the cover is made of heavy-duty plastic material and is made to fit onto the frame; and said mounting means comprises straps, clamps, and L-shaped brackets.

5,054,842

FLOOR PANEL FOR OFF-ROAD VEHICLE

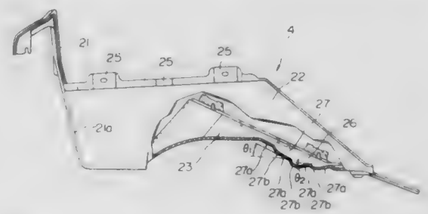
Makoto Ishiwatari, Tokyo; Akio Handa, Saitama; Takeshi Kobayashi, Tokyo; Takerou Shibukawa, Saitama; Yutaka Murata, Saitama, and Tatsuo Masuda, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1989, Ser. No. 406,089
Claims priority, application Japan, Sep. 12, 1988, 63-228143
Int. Cl.[5] B62D *25/20*
U.S. Cl. 296—191 **7 Claims**

1. In a vehicle, particularly of an off-road type, having a frame forming a vehicle body, a pair of oppositely spaced front wheels supporting said frame, a seat disposed substantially at a central position in the vehicle body, an upstanding steering column disposed forwardly of said seat, and a floor panel extending from a rear end adjacent a position under said seat to a front end at a position between said front wheels, said floor panel comprising:

a first inclined portion having a surface disposed forwardly of, and in facing relation to, said seat to form a foot rest;

a bottom plate containing a second inclined portion intermediate said first inclined portion and the rear end of said floor panel, said second inclined portion having a surface disposed forwardly of, and in facing relation to, said seat at an angle of inclination less than that of said first inclined portion; said bottom plate having a column cover upstanding therefrom and intersecting said second inclined portion to divide the same into laterally spaced sections; and



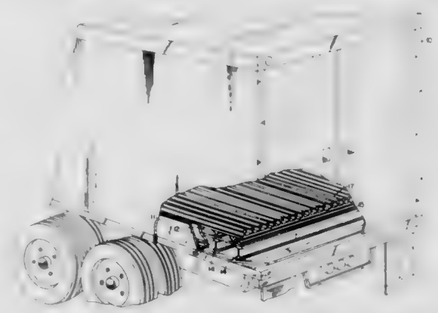
said sections of said second inclined portion each having an irregularly formed surface containing a plurality of longitudinally spaced, laterally extending foot-receiving flats mutually spaced in non-uniformly, inclined disposition along a length of the surface of said sections.

5,054,843

BONDED COMPOSITE INSULATED FLOOR CONSTRUCTION

Larry J. Gray, Charleston, Ill., assignor to Trailmobile, Inc., Charleston, Ill.

Filed Apr. 6, 1990, Ser. No. 506,442
Int. Cl.[5] B62D *25/20*
U.S. Cl. 296—191 **14 Claims**



1. A composite sandwich floor for an insulated vehicle body comprising:

a framework having transverse support members;

an underpan above said transverse support members;

floor means for supporting cargo, said floor means being disposed above said underpan;

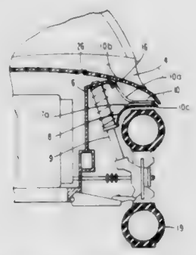
transverse stringer means interposed between said underpan and said floor means and fastened to said support members;

said stringer means, said underpan, and said floor means defining a void therebetween; and

expanded foam insulation means filling the void;

said insulation means adhesively and mechanically bonding said underpan, said floor means, and said stringer means together into a unitary structure.

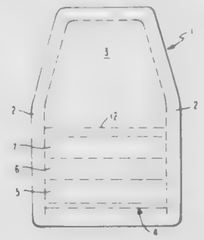
5,054,844
AERODYNAMIC MOTORCAR
Tsutomu Miwa, 3010-8, Sayamagaoka 1-chome, Tokorozawa-shi, Saitama, 359, Japan 359
Continuation of Ser. No. 440,450, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 162,305, Feb. 29, 1988, abandoned, which is a division of Ser. No. 926,412, Oct. 7, 1986, abandoned. This application Aug. 20, 1990, Ser. No. 569,483
Claims priority, application Japan, Dec. 7, 1984, 59-257479
Int. Cl.[5] B62D *35/00*
U.S. Cl. 296—198 **24 Claims**



1. In a vehicle having a plurality of front and rear wheels supporting a vehicle body frame to which is mounted a body shell defining a vehicle exterior, each wheel being disposed within a wheel housing defined between the vehicle body frame and the body shell, the improvement comprising:
- a wheel cover means extending within at least one of the housings above the corresponding wheel therein,
- wherein said wheel cover means defines an air passage established in part by an upper surface of the wheel cover means and extending in a longitudinal direction of the vehicle directly above the wheel, said air passage including an air inlet and an air outlet respectively disposed forwardly and rearwardly of the associated wheel,
- said wheel cover means comprising a thin sheet of a flexible and resilient material secured at one portion thereof to the wheel housing and at another portion to an element supported by a spring support means capable of upward and downward movement related to movement of said corresponding wheel rotatably connected to said spring support,
- said air passage thereby having an inlet and an outlet and a cross-section that varies with upward and downward movement of the corresponding wheel, transmitted via said spring support means and element, which causes a deformation of the flexible and resilient sheet.

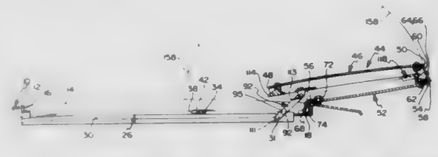
5,054,845
PASSENGER SEAT HAVING YIELDING BAND STRUCTURE
Ignaz Vogel, Karlsruhe, Fed. Rep. of Germany, assignor to Ignaz Vogel GmbH & Co. KG Fahrzeugsitze, Karlsruhe, Fed. Rep. of Germany
Filed May 14, 1990, Ser. No. 522,981
Claims priority, application European Pat. Off., Feb. 21, 1990, 90103289.6
Int. Cl.[5] B60R *21/00*
U.S. Cl. 297—216 **7 Claims**

1. A passenger seat for a people mover with rows of seats arranged behind one another, said seat having a seating structure and a backrest extending upwardly from the seating structure and including a circumferential frame having side members and a back support mounted thereon, said back support having an opening formed therein just above the seating structure at about knee level of a passenger seated behind and a metal band structure arranged so as to extend laterally across said opening between the side members of said frame, said band structure being relatively rigid and providing with corrugated portions so as to yield irreversibly to a predetermined limit



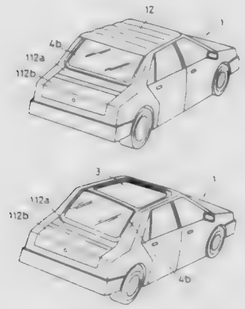
when subjected to a knee impact by a passenger thrown forward onto the backrest of the seat ahead.

5,054,846
FOLDING GLASS SUNROOF
Gerald L. Simin, Holly, and Randy L. Carroll, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 23, 1990, Ser. No. 513,411
Int. Cl.[5] B60J *7/11, 7/12, 7/19*
U.S. Cl. 296—218 **1 Claim**



1. A motor vehicle with a fixed roof having a roof opening defining a forward edge; a rear edge and a pair of side edges and a closure panel for the roof opening comprising:
- a central hinge hingedly dividing the closure panel into a forward panel having a forward edge and an aft edge, and a rear panel having a forward edge and an aft edge and permitting jackknife folding movement of the panels in relation to each other between an unfolded position closing the roof opening and a folded position;
- a central handle integral with the central hinge for assisting the moving of the panel to and from the unfolded position closing the roof opening;
- a separable hinge hingedly connecting an aft edge of the rear panel and the rear edge of the roof opening permitting rotation of the jackknife folded forward and rearward panels to a stored position cantilevered rearwardly of the roof opening and overlying the fixed roof, and separation of the separable hinge permitting the removal of the panels;
- a pair of brackets mounted on the fixed roof on the side edges of the roof opening, each bracket having a channel and a slot above the channel;
- a pair of slot covers, each slot cover covering a slot for limiting egress from the slot;
- a pair of rotatable attachment links, each link interconnected between one of the channels and the forward panel near the forward edge for guiding the panels, the pair of rotatable attachment links disengageable from the channels to enable removal of the panels;
- a pair of hinge latches located at the junction of the forward edge of the rear panel and the aft edge of the forward panel on the sides of the panel, the hinge latches each having a latch engageable within the slot in the bracket covered by the slot cover for retaining the panels in the unfolded position covering the roof opening, and the latch being positionable above the slot and propped on the slot cover establishing the panels in a partially open position;
- a front wedge handle mounted on the forward panel for engaging the fixed roof at the forward edge of the roof opening to hold the panels in the unfolded position closing the roof; and
- the channels each having a downward inclination for receiving the rotatable attachment links for retaining the panels in a stored position cantilevered rearwardly of the roof opening and overlying the fixed roof.

5,054,847
FLEXIBLE TOP APPARATUS FOR A VEHICLE
Seiichi Asoh; Satoshi Kubota; Hitoki Fukuda; Kajuhiro Ushijima; Fumiyuki Murakami; Tomoo Taguchi, and Shigefumi Kohno, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Jun. 19, 1989, Ser. No. 367,749
Claims priority, application Japan, Jun. 20, 1988, 63-153291; Jun. 28, 1988, 63-162045
Int. Cl.[5] B60J *7/06*
U.S. Cl. 296—219 **20 Claims**



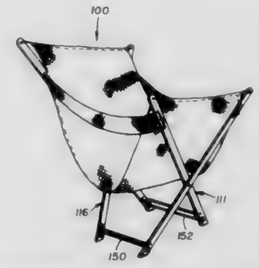
1. A flexible top apparatus for a vehicle, comprising:
- a roof panel connected to a vehicle body through at least a pair of left-hand and right-hand front pillars and a pair of left-hand and right-hand rear pillars;
- said roof panel having therein a roof panel opening surrounded by a front header, a pair of left-hand and right-hand roof side rails and a rear header;
- a rear window glass panel fixed to said pair of left-hand and right-hand rear pillars and said rear header; and
- a flexible top which can be extended and contracted in a longitudinal direction of the vehicle body and which is as large in size in its extended state as said roof panel opening in order to close said roof panel opening;
- wherein said flexible top is in abutment at its forward end portion with said front header, at its left-hand and right-hand side end portions with said left-hand and right-hand roof side rails, and at its rearward end portion with said rear header when said roof panel opening is closed by said flexible top in its extended state; and
- wherein said flexible top is displaceable along said left-hand and right-hand roof side rails and left-hand and right-hand pillars so as to selectively take a first posture and a second posture, said first posture being taken by said flexible top in its extended state, said second posture being taken when said flexible top is housed or accommodated in its contracted state at a position to the rear of and below a lower portion of said rear window glass panel.

5,054,848
FOLDING CHAIR FRAME TUBE POSITIONING DEVICE
Chung-Hsin Liu, No. 6, Lane 46, 20 Chang Rd, Chang Ling Li, Hsin Tien City, Taipei, Taiwan
Filed Aug. 29, 1990, Ser. No. 574,034
Int. Cl.[5] A47C *4/00*
U.S. Cl. 297—39 **1 Claim**



1. A folding chair frame tube positioning device, comprising a pivot device having a transverse axle secured to the lower end of a back frame tube at an outer side, and two parallel plates vertically extending downward therefrom to pivotably bilaterally connect to the middle part of a back stand frame tube; and a coupling buckle having a C-shaped ring portion sleeved on said back stand frame tube and incorporated with two side projections, said two side projections being closed at an outer side and defining an arch-shaped retaining notch at the bottom for engaging with said transverse axle to firmly secure said back frame tube to said back stand frame tube.

5,054,849
ULTRA-PORTABLE COLLAPSIBLE CHAIR
Richard Hoff, 1187 Delaware St., Berkeley, Calif. 94702
Filed Aug. 13, 1990, Ser. No. 566,268
Int. Cl.[5] A47C *4/28*
U.S. Cl. 297—45 **16 Claims**



1. In a collapsible chair comprising a rear, foldable scissor-linkage; a front foldable scissor-linkage, each of said scissor-linkages having a pair of elongated members pivoted together at a mid-section of each said elongated member, each said elongated member of each said scissor-linkage having a lower end-portion and an upper end-portion; and a seat proper having a rearward end-section secured to said rear scissor-linkage, and a forward end-section secured to said front scissor-linkage, said seat proper being made of flexible material to allow for the folding-in thereof, and a pair of armrest brace elements, wherein the improvement comprises:
- a first, lower spacer-element and a second lower spacer-element, said spacer-elements being spaced apart in the lateral, widthwise direction;
- said first spacer-element having a first, forward end-portion and a second, rear end-portion, said first, forward end-

portion thereof being pivotally coupled to said lower end-portion of one said elongated member of said front scissor-linkage, and said second, rear end-portion thereof being pivotally coupled to said lower end-portion of one said elongated member of said rear scissor-linkage, said lower end-portions of said one elongated members of said front and rear scissor-linkages being substantially on the same lateral side;

said second spacer-element having a first, forward end-portion and a second, rear end-portion, said first, forward end-portion thereof being pivotally coupled to said lower end-portion of the other of said elongated member of said front scissor-linkage, and said second rear end-portion thereof being pivotally coupled to said lower end-portion of the other of said elongated member of said rear scissor-linkage, said lower end-portions of said other elongated members of said front and rear scissor-linkages being substantially on the same lateral side but different from the lateral side of said lower end-portions of said one elongated members;

each said spacer-element having a length so as to space said lower end-portions of said front and rear scissor-linkages a predetermined horizontal distance apart when the chair is erected, said horizontal predetermined distance apart being less than the horizontal distance between said upper endportions of said front scissor-linkage and said upper end portions of said rear scissor-linkage, whereby said front scissor-linkage, when the chair is erected, slopes upwardly and forwardly away from said rear scissor-linkage, whereby the chair is made lightweight and still capable of supporting a person seated thereon; and

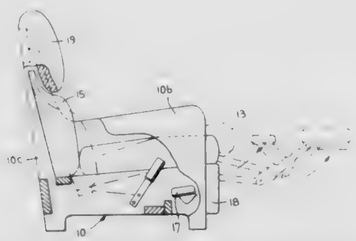
pivot-mounting means for pivotally mounting each said end of each said spacer-element to a respective said lower end portion of said elongated members, whereby said spacer-elements may be pivoted relative to said scissor-linkages to allow for the collapsing of the chair by moving said front and rear scissor-linkages toward each other.

5,054,850

SHIFTABLE CARRIAGE MECHANISM FOR INCLINER CHAIR

James J. Pine, Tupelo, Miss., assignor to DBJU Inc., Verona, Miss.

Filed Sep. 26, 1990, Ser. No. 588,538
Int. Cl.[5] A47C *1/02;* **A61G** *15/00*
U.S. Cl. 297—84 **8 Claims**



7. A shiftable carriage mechanism for movably supporting the seat, backrest, footrest and legrest of an incliner chair, said shiftable carriage mechanism being shiftable from a retracted condition which corresponds to the incliner chair being in an upright state to an extended condition which corresponds to the incliner chair being in a reclined state, said shiftable carriage mechanism comprising:

mirror-image right and left support assemblies which each include (1) a frame subassembly which includes an elongated base member that is fixedly connectable to the incliner chair, an elongated mounting rail for supporting the seat and backrest of the incliner chair in a fixed relation to one another, and front and rear strut members which pivotally mount the mounting rail above the base member, (2) an extendable footrest-legrest subassembly which is connected to said frame subassembly for supporting the footrest and legrest of the incliner chair, said footrest-legrest subassembly including a drive arm, and (3) a toggle drive subassembly which comprises an upper toggle link being pivotally connected at said forward end to the mounting rail, a lower toggle link which is pivotally connected by a first pivot pin to said base member and by a second pivot pin to said rearward end of said upper toggle link, and a drive spring which extends from said drive arm of the footrest-legrest subassembly to said upper toggle link, said upper and lower toggle links being repositionable from a locked state wherein the mounting rail is fixedly positioned above the base member to an unlocked state wherein the drive spring will cause the mounting rail to move towards the base member,

a torque tube connected between the toggle drive subassemblies of the right and left support assemblies, and

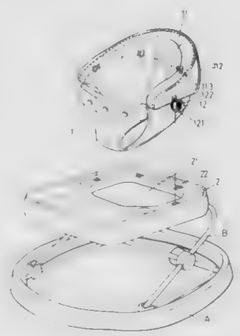
an actuating mechanism which is manually operable to cause the toggle drive subassemblies of both the right and left subassemblies to become unlocked.

5,054,851

SEAT ATTACHMENT DEVICE FOR INFANT WALK SUPPORT

Hsiu-Hui Chiu, Tainan Hsien, Taiwan, assignor to Sunshon Molding Co., Ltd., Tainan Hsien, Taiwan

Filed Sep. 25, 1990, Ser. No. 587,748
Int. Cl.[5] A47D *13/04*
U.S. Cl. 297—136 **1 Claim**



1. An attachment device for releasably securing an infant seat to a table of an infant walk support, comprising:

a frame having a table formed with an opening within a perimeter thereof;

an infant seat adapted to be suspended from the opening of the table; the improvement comprising:

a plurality of perforations formed in the perimeter of the table;

a back member mounted on the infant seat along a back portion and arm portions of the infant seat and adapted to be rested on the perimeter of the table;

a reinforcement plate attached to a rear side wall of the back member from inside thereof;

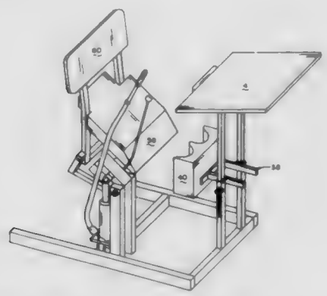
a plurality of securing pieces adapted to be fitted into corresponding perforations in the perimeter of the table, each having a first leg attaching to the reinforcement plate and a second leg spaced from the first leg and formed with a free end extending outwardly for pressing with a finger tip to move the second leg towards the first leg and a radially extending stop means for engaging an edge of the perforation in the perimeter of the table.

5,054,852

UTILITY STATION WITH CONTROLLED SEATING

Alan L. Tholkes, 913 S. Washington, Redwood Falls, Minn. 56283

Filed Aug. 30, 1989, Ser. No. 400,338
Int. Cl.[5] A47B *83/02;* **A61G** *7/00*
U.S. Cl. 297—172 **10 Claims**



1. Seating support apparatus comprising:

a) a support framework having a fore and an aft end and including a plurality of frame members coupled to one another to form a base portion, an upright extensible means secured to said fore end and first and second stationary uprights mounted adjacent one another along one side of the framework;

b) a tabletop secured to said extensible means;

c) a cushion projecting from said extensible means and coupled to at least one arm having a plurality of notches in one surface and wherein said arm is mounted relative to a pair of pins secured to said extensible means such that a first one of said pins pivotally supports said arm relative a second pin which is selectively mountable within one of said plurality of notches upon rotating and extending said arm relative to said first pin and whereby the knees and calves of a user are selectively supported via said cushion;

d) hydraulic pump means secured to said framework adjacent said first and second uprights including a hand pump lever and pressure release means for extending and retracting a piston;

e) a support framework including a first member pivotally mounted between said first and second uprights, means for pivotally coupling said piston to said first member, a seat portion, a backrest portion, a follower member pivotally secured at one end to one of said first and second uprights and at an opposite end to said backrest portion, and wherein said seat portion is rigidly secured at a fore end to said first member and pivotally secured at an aft end to said backrest portion such that movement of the piston rotates said first member and seat portion with the backrest portion rotating in unison via said follower member between a first planar orientation wherein said seat and backrest portions are transverse to each other and a second planar orientation wherein said seat and backrest portions are parallel to one another.

5,054,853

INFANT SAFETY CHAIRS

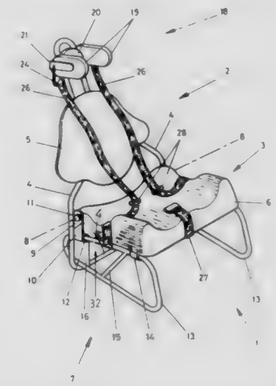
John D. Gillies, 58a Lake Crescent, Hamilton, New Zealand, and Robin S. Bisley, Hamilton, New Zealand, assignors to John D. Gillies, Hamilton, New Zealand

Filed Sep. 15, 1989, Ser. No. 407,548
Int. Cl.[5] A47C *1/08*
U.S. Cl. 297—250 **5 Claims**

1. An infant safety chair comprising a seat assembly, a back assembly, and a support for said seat assembly, in which:

said back assembly is pivotally connected to said seat assembly at a position spaced upwardly from a lowermost portion of said back assembly when said chair is in use, said pivotal connection having an axis of pivoting extending in the same general direction as a rear edge of said seat assembly; and,

said support for said seat assembly being comprised of support members, and hinged connections between said seat assembly and those portions of said support members that are uppermost when said chair is in use, said hinged connections each having an axis of hinging extending longitudinally of an associated side edge of said seat assembly;



rear portions of said support members extending within and beyond the confines of said lowermost portion of said seat back when said chair is in an erected position for use;

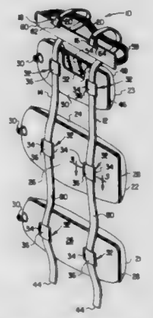
whereby, said lowermost portion of said seat back assembly prevents outward splaying movement of said support members in the erected condition of said chair, and provides reaction members for said support members preventing said outward splaying under the influence of straps attached to said support members and which are employed to secure said infant chair to a vehicle seat.

5,054,854

INFLATABLE STRUCTURE SECURED BY TENSION

John D. Pruit, 3009 Glen Hollow Circle, Carrollton, Tex. 75007

Filed Aug. 31, 1990, Ser. No. 576,377
Int. Cl.[5] A47C *7/38*
U.S. Cl. 297—284 **39 Claims**



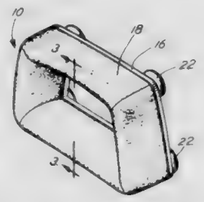
1. An inflatable bladder adjustably positionable along an elongate flexible positioning member comprising a bladder having a tensioned extensible wall in an inflated condition, being deflatable to an untensioned condition of said wall; and an extensible pocket fixed to said wall at spaced apart seams,

the pocket having a panel across said seams for receiving a section of a flexible elongate positioning member in sliding contact between the pocket and the wall in the untensioned condition, the pocket being extensible with said wall in the inflated condition of the bladder to compressibly secure a section of a positioning member in said pocket.

5,054,855
DETACHABLE WINDOW MOUNTABLE SEAT HEADREST

Thomas J. Williams, Elkhart, and Gary D. Mills, Goshen, both of Ind., assignors to Goshen Cushion Inc., Elkart, Ind.

Filed Aug. 2, 1989, Ser. No. 389,058
Int. Cl.[5] A47C 7/38
U.S. Cl. 297—395 **2 Claims**

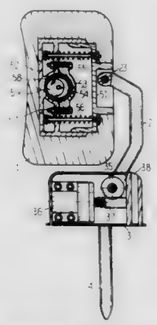


1. A headrest for a seat comprising cushioned abutment means for the head and attachment means carried by said abutment means for securing the abutment means independently of said seat to a generally planar object positioned to the rear of the seat, said attachment means being adhesion members connected to said abutment means, said abutment means having a cushioned front surface and a rear surface with said adhesion members attached to said rear surface, said abutment means including a support member having a cloth fabric covering over one side and a rigid base member at its opposite side, fasteners carried by said base member and having parts protruding from the base member, said adhesion means connected to said fastener parts, and a backing member independent of said cover applied over and enclosing said base member, said backing member forming said rear surface of said abutment means, said fasteners parts protruding from said backing member.

5,054,856
HEADREST OF A CAR SEAT

Chuan M. Wang, No. 3, Alley 12, Lane 188, Ton Nan St., Hsin-chu, Taiwan

Filed Jun. 13, 1990, Ser. No. 538,014
Int. Cl.[5] A47C 7/36
U.S. Cl. 297—408 **1 Claim**



1. An adjustable headrest of a car seat including a base member, a head member, and means for controlling inclination between said base member and said head member wherein

the base member is U-shaped having a pair of upstanding hollow leg members, a pair of plates threadedly secured to each of the said hollow leg members, respectively leg members for providing enclosed chambers, a pair of inserts of the base member extending downwardly for insert into a back portion of a car seat;

the head member being connected to a support member by a pivot, whereby the head member is capable of angular adjustment at a user's discretion; a lower end of the support member is secured to a laterally extending shaft which has an axial rectangular hole;

said means for controlling inclination between said base member and said head member including

a controller including a laterally extending rectangular beam which extends across the base member and penetrates through the hole of the shaft, one end of the beam being positioned in one of the hollow leg members of the base member and coupled to fixed circular spring which provides the beam a torque bias, the controller being located in the other hollow leg member and includes an arched surface with teeth, wherein said teeth being separated into two sets of parallel intervals;

a pair of holding members are pivoted about said hollow leg member containing said controller pivoted about a pin and are positioned under the arched surface of the controller in relation to two sets of teeth respectively, each of the holding members having an inclined concave surface to interface with the teeth, each of said holding members is provided with a spring under a free end thereof to provide an upwardly directed biasing force, whereby the concave surface is engageable with one of the teeth;

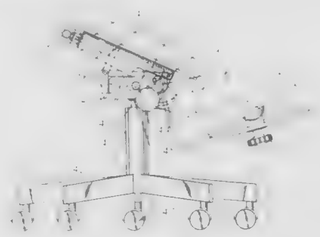
a control rod pivoting about a pillar extending from one of said plates and coupled to a lateral rod extending over the free ends of the holding members, and

a coil spring pivoted about the pillar to provide a biasing force to maintain the control rod in an upwardly directed position.

5,054,857
CONVERTIBLE CHAIR

Andrew M. Kvalheim, 825 Petaluma Blvd. S., Petaluma, Calif. 94953

Filed Aug. 27, 1990, Ser. No. 572,692
Int. Cl.[5] A47C 7/50
U.S. Cl. 297—423 **6 Claims**



1. A chair adapted for supporting a person alternately in a conventional sitting position and in a knee rest position and having a basic supporting structure comprising:

a first cushion mounted on a first support housing and being disposed to support the posterior of a person;

said first support housing being pivotally mounted on a second support housing;

a second cushion pivotally mounted on an arm on said second support housing and being initially disposed to support the back of a person,

said first and said second support housings being mounted on said basic supporting structure;

means for simultaneously tilting and adjusting the position of said first support housing and said first cushion in a vertical plane to a second predetermined position comprising:

an actuating piston and movable cylinder mounted on said first housing;

a linkage mechanism engaging said cylinder;

a first end of said linkage mechanism pivotally connected to said cylinder;

a second end of said linkage mechanism pivotally engaging said second housing;

means for actuating said piston and said cylinder;

whereby said first support housing and said first cushion are adjustably tilted to said second predetermined position;

means for combined pivoting and adjusting the position of said arm and said second cushion in a vertical plane to a second predetermined position relative to said second position of said first cushion;

whereby said second position of said second cushion is disposed to support the knees of a person while seated on said first cushion in the said second position of said first cushion.

5,054,858
SELECTIVELY PHASED WATER SUPPLY OF A CUTTER HEAD

William Harrison, Stirling, Great Britain, assignor to Anderson Group PLC, Glasgow, United Kingdom

PCT No. PCT/GB88/00555, § 371 Date Feb. 21, 1990, § 102(e) Date Feb. 21, 1990, PCT Pub. No. WO89/00236, PCT Pub. Date Jan. 12, 1989
PCT Filed Jul. 8, 1988, Ser. No. 438,474
Claims priority, application United Kingdom, Jul. 8, 1987, 8716059
Int. Cl.[5] E21C 35/22
U.S. Cl. 299—81 **9 Claims**

1. A mining machine having a boom assembly, said boom assembly being selectively movable in a plurality of directions and including:

a rotary cutting head having an arcuate surface, said arcuate surface forming a water phasing arc which is no greater than 180° and is infinitely position-adjustable around said cutting head such that the selected direction of movement of said boom assembly always bisects said water phasing arc;

a plurality of picks carried by said cutting head;

water jet means for supplying water jets directed onto or adjacent said picks;

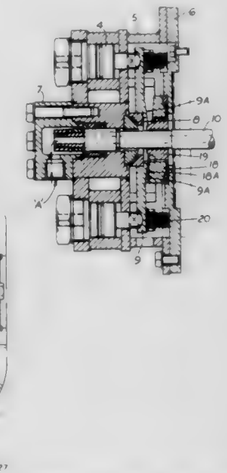
valve means for opening and closing said water jet means;

a longitudinal rotatable tubular shaft;

a selectively rotatable drive swash plate mounted on said tubular shaft, said drive swash plate rotatably driving said shaft and said drive swash plate when stationary selectively actuating said valve means to phase the supply of water to those of said picks which engage the face to be cut out;

a brake swash plate mounted on said tubular shaft in relatively fixed disposition with respect to said drive swash plate, said brake swash plate being rotatable with said tubular shaft; and

brake means braking said brake swash plate, whereby when said brake wash plate is braked, the rotation of said tubular shaft is halted and said drive swash plate is correctly

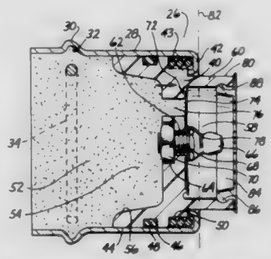


positioned to open said valve means to provide water jets over the selected water phasing arc.

5,054,859
GREASE PRESSURIZING HUBCAP FOR A WHEEL HUB

Bernhardt P. Goettker, Escondido, Calif., assignor to Unique Functional Products, San Marcos, Calif.

Filed Oct. 9, 1990, Ser. No. 594,568
Int. Cl.[5] F16C 1/24; B60B 27/00
U.S. Cl. 301—108 R **11 Claims**



1. A grease pressurizing hubcap for a wheel hub, comprising:

(a) a generally cylindrical stainless steel barrel open at inner and outer ends, said inner end being press fitted into said wheel hub,

(b) said barrel being inturned at said outer end forming an internal flange providing an outer abutment,

(c) said barrel being annularly formed near said inner end to form an external annular rib limiting entry into said wheel hub and to form an internal annular groove, and a stainless steel wire split ring of polygon configuration secured in said annular groove and forming an inner abutment,

(d) a plastic piston disposed in said barrel and limited in inward movement by said inner abutment, said piston having a full diameter portion slidable axially of said barrel and an O-ring seal in said full diameter portion sealing against the inner surface of said barrel,

(e) said piston having a reduced diameter outer end portion and a stainless steel compression spring disposed in said reduced diameter portion and bearing on said outer abutment normally pressing said piston to an inner position,

(f) said piston having an outer central cavity at its outer end forming an outer annular flange of diameter close to the inside diameter of said internal flange and said piston having an inner central cavity at its inner end forming an inner annular flange, said outer cavity providing a receptacle to receive grease in over-pressurization conditions and said inner cavity providing a receptacle for grease open to said wheel hub, a central bore in said piston and a hexagonal recess at the inner end of said bore and a zinc plated steel lubricating fitting disposed in said outer cavity and having a threaded shank disposed in said bore and a zinc plated steel nut on said shank disposed in said hexagonal recess, whereby grease under pressure can be applied through said fitting to fill said wheel hub and to press said piston outwardly until said piston strikes said outer abutment so that pressure on grease in said inner cavity will be maintained by said compression spring,

(g) said piston having a plurality of pressure relief openings spaced around said bore and extending between said cavities, said piston having an annular plastic rib in said outer cavity concentric to said bore and facing outwardly and a thin circular spring steel disc having a central bore through which said shank extends, said disc having an annular margin lapping and abutting said annular plastic rib thereby sealing said pressure relief openings and giving upon over-pressurization, said piston having a thin walled annular flange outwardly extending around said bore and said fitting by force of said nut on said threaded shank turning said thin walled flange outwardly during initial assembly to secure said disc with said thin walled flange spacing said disc from said fitting to prevent galvanic action therebetween,

(h) said outer annular flange of said piston having its walls adjacent to said barrel contrasting in appearance to said barrel so that how far said piston extends outwardly relative to said flange of said barrel can be readily observed by a user to estimate how much pressurized grease is in said inner cavity, said outer annular flange in the absence of pressurized grease being withdrawn substantially inside said barrel and said outer annular flange in the presence of pressurized grease compressing said compression spring extending outwardly of said barrel distances corresponding to the degree of grease pressurization and to the degree of compression of said compression spring, and

(i) a dust cap at the outer end of said piston covering said outer cavity.

5,054,860

HYDRAULIC BRAKING SYSTEM FOR AN AUTOMOTIVE VEHICLE

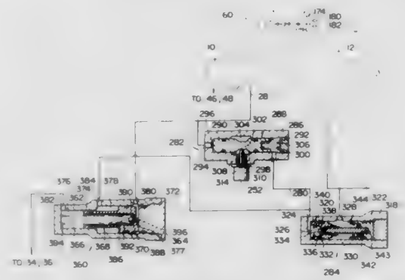
Yoshihisa Nomura; Masahiko Kato, and Michiharu Nishii, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 2, 1990, Ser. No. 474,333

Claims priority, application Japan, Feb. 4, 1989, 1-12376[U]

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—92 **2 Claims**



1. A hydraulic braking system for an automotive vehicle comprising:

a power source for generating a hydraulic power pressure;

a master cylinder for generating a hydraulic braking pressure in a pressure chamber defined therein in response to operation of a brake operating member;

a hydraulic booster for introducing into a boost chamber defined therein said hydraulic power pressure from said power source and actuating said master cylinder by said hydraulic power pressure in said boost chamber in response to operation of said brake operating member;

a plurality of wheel brake cylinders for braking respective road wheels, said wheel brake cylinders divided into a first group of wheel brake cylinders for front road wheels communicating with said master cylinder through a first hydraulic circuit and a second group of wheel brake cylinders for rear road wheels communicating with said master cylinder through a second hydraulic circuit;

changeover valves disposed between said master cylinder and each of said wheel brake cylinders in said first and second hydraulic circuits, and selectively placed in one of a first operating position for communicating said wheel brake cylinders with said pressure chamber and blocking the communication between said wheel brake cylinders and said boost chamber, and a second operation position for communicating said wheel brake cylinders with said boost chamber and blocking the communication between said wheel brake cylinders and said pressure chamber;

anti-skid control means for actuating said changeover valves into said second operating position and regulating hydraulic pressures in said wheel brake cylinders on the basis of said hydraulic power pressure when each of said road wheels is in a slip condition;

failure detecting means for producing a power pressure failure signal when said hydraulic power pressure in said boost chamber is lower than said hydraulic braking pressure in said pressure chamber by at least a predetermined value;

anti-skid prohibiting means for prohibiting anti-skid control operation of said anti-skid control means in accordance with said power pressure failure signal;

detection preventing means for preventing said failure detecting means for producing said power pressure failure signal when said hydraulic power pressure in said boost chamber exceeds a predetermined pressure which is lower than a limit pressure for boosting operation of said hydraulic booster; and

an auxiliary cylinder disposed in said first hydraulic circuit for applying said hydraulic braking pressure from said master cylinder directly to said first group of wheel brake cylinders in an inoperative condition of said auxiliary cylinder and increasing said hydraulic braking pressure applied to said first group of wheel brake cylinders in response to operation of said brake operating member in an operative condition of said auxiliary cylinder, said operative condition being made when said hydraulic power pressure in said hydraulic booster is lower than said hydraulic braking pressure by a predetermined difference.

5,054,861

BRAKING SYSTEM FOR A VEHICLE WITH DRIVE-SLIP CONTROL (ASR) AND ANTI-LOCK SYSTEM (ABS)

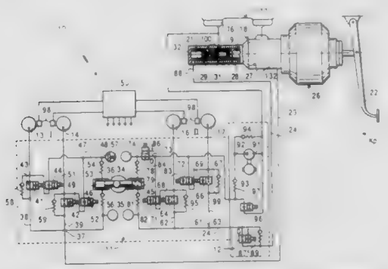
Reinhard Resch, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgard, Fed. Rep. of Germany

Filed Dec. 26, 1989, Ser. No. 456,855

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1989, 3900852

Int. Cl.[5] B60T *8/34*

U.S. Cl. 303—110 **31 Claims**



1. A braking control system for a vehicle equipped with driven and driveable wheels and brake therefor which is provided with a drive-slip control device, ASR, with an anti-lock control system, ABS, and with a hydraulic dual-circuit brake system comprising:

one brake circuit operatively associated with the driven vehicle wheels;

another brake circuit operatively associated with non-driven vehicle wheels;

the two brake circuits operatively associated with non-driven vehicle wheels;

the two brake circuits constituting static brake circuits;

a brake unit provided for brake actuation of all the brakes and having an outlet-pressure space for each brake circuit and a reservoir; and

and auxiliary pressure source and a buffer accumulator;

wherein at least on the brake circuit of the driven vehicle wheels, the ABS acts curing pressure reduction phases of anti-lock control such that a quantity of brake fluid corresponding to that quantity of brake fluid flow off from at least one of the wheel brakes subjected to the control, is pumped back into the reservoir of the brake unit through a return line connected between the driven wheel brakes and the reservoir by a return pump which has an inlet side connected to the buffer accumulator and an outlet side connected to the brake unit;

the ASR acts as a decelerating vehicle wheel tending to spin by subjecting its wheel brake to pressure from the auxiliary-pressure source to maintain its drive slip within a value range compatible with sufficient dynamic stability of the vehicle;

during ASR, the return pump of the ABS, is connected to the return line of the brake circuit of the driven vehicle wheels to withdraw brake fluid from a reservoir of the brake unit and pump the withdrawn fluid, during pressure build-up phases, to the wheel brake of the vehicle wheel to be decelerated by the ASR;

an ASR control valve has a basic position in which brake fluid can be positively displaced from the brake unit through a main brake line into the wheel-brake cylinders of the brakes of the driven vehicle wheel as a result of the actuation of the brake unit during normal braking mode and an alternative functional position in which a flow-off of brake fluid from the main brake line of the brake circuit (II) of the driven vehicle wheels to that outlet-pressure space assigned to driven wheels is prevented;

an accumulator isolating valve is provided to shut off the return line of the brake circuit of the driven vehicle wheels from the brake unit to the buffer accumulator and inlet of the return pump during normal braking;

said accumulation isolating valve opens the return line between driven wheel brakes and the buffer accumulator during ABS control;

an outlet non-return valve is connected between the return line and the brake-fluid reservoirs and is held in a shutoff position by a high pressure in the return line;

at least one isolating valve is connected in the return line between the inlet of the return pump and the outlet non-return valve to provide the high pressure in the return line; and

the at least one isolating valve shuts off the inlet of the return pump from the at least one driven wheel brake during a pressure build-up phase of the ASR.

5,054,862

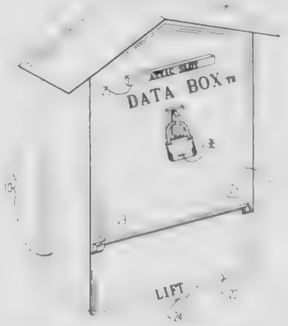
INFORMATION DISPENSING CONTAINER

Cynthia L. Vanaman, 1091 Vessel La., Manahawkin, N.J. 08050

Filed May 25, 1990, Ser. No. 529,121

Int. Cl.[5] A47B *81/00*

U.S. Cl. 312—100 **4 Claims**



1. An information dispensing container for containing information data sheets and receiving reply cards, said container including a body portion and a front cover;

said body portion having bottom, top, side and rear walls and an open front face;

said front cover extending across the open front face of the body portion extending from the top wall thereof toward the bottom wall, said front cover terminating short of the bottom wall providing an access opening to the interior of the body portion;

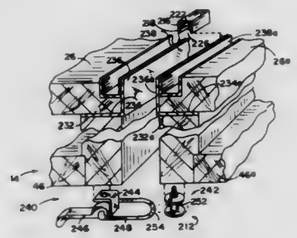
said top wall being in the form of a peaked roof having eave portions overhanging the side walls o the body portion and the front cover to protect the same from the elements;

support means within said body portion for supporting said information data sheets with said sheets accessible to be removed from the container through said access opening;

a cover plate pivotally mounted to said front cover to cover said access opening;

a divider plate extending between said side walls of the main body portion above said support means dividing said main body portion into a lower chamber containing the information data sheets and an upper chamber;
means defining a mail slot inn the front cover providing access to the upper chamber;
and means for securing said front cover to said main body portion.

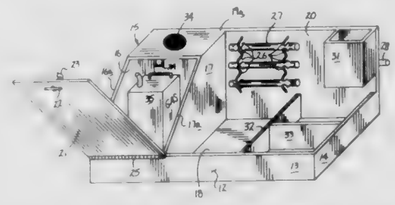
5,054,863
LIGHTED DISPLAY CASE
Douglas D. Amstutz, Muskegon, and Ronald A. Vanderboegh, Twin Lakes, both of Mich., assignors to Amstore Corporation, Muskegon, Mich.
Division of Ser. No. 279,591, Dec. 2, 1988, Pat. No. 4,955,044. This application Jun. 1, 1990, Ser. No. 531,555
Int. Cl.[5] F16B *12/00*
U.S. Cl. 312—111 **5 Claims**



1. A display case assembly comprising:
a pair of display cases each including a framework having a top frame and a bottom frame, a plurality of panels, and a base supporting said framework and said panels, said base including a bottom member having an undersurface hidden from view, said display cases being positioned against one another such that said top frames and said bottom frames include portions in abutting relation with one another, said bottom members disposed adjacent to one another;
a plurality of short coupling clips, at least one of said clips engaging and securing together short segments of said abutting portions of said top frames, and at least one of said clips engaging and securing together short segments of said abutting portions of said bottom frames; and
at least one latch element connected to said undersurface of each of said bottom members generally hidden from view, said latch elements being complementary in shape such that the latch element of one display case is adapted to engage and lock with the latch element of the other display case;
whereby said display cases are securely engaged together to form an integral display case assembly.

5,054,864
TRUNK STORAGE APPARATUS
Richard Cesena, 806 S. Liberty, Visalia, Calif. 93277
Filed Jul. 19, 1990, Ser. No. 554,545
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—328 **6 Claims**

1. A trunk storage apparatus for securement to a support surface of an automobile trunk for storage of articles therewithin, comprising in combination,
a housing including a rear planar wall, a planar forward panel orthogonally fixed to a lower edge of the rear wall and extending forwardly thereof, and
a right side wall fixed to the rear wall and floor orthogonally thereto and extending a vertical height less than that defined by a rear height defined by the rear wall, and
a forward wall orthogonally and coextensively fixed to a forward edge of the floor and a forward edge of the right side wall, and
a left cabinet positioned between the forward wall and rear wall and fixedly mounted thereto and including a left cabinet wall fixedly mounted between a left edge of the rear wall and a left edge of the forward wall and a left edge of the floor, and
a spaced parallel right cabinet wall spaced from the left cabinet wall orthogonally mounted between the forward wall and rear wall, and
a lower storage housing defined between the left cabinet wall and the right side wall, and
wherein the left cabinet wall and the right cabinet wall are of a generally equal pentagonal configuration and are formed with a respective left forward edge and a right forward edge oriented at an acute angle relative to the floor, and a top cabinet wall fixedly mounted between a top edge of



the rear wall and the left forward edge and the right forward edge, and further including a lid overlying the left forward edge and right forward edge hingedly mounted at a lower edge of the lid to an upper edge of the forward wall, and
wherein the lid further includes a lock means including a handle mounted to the lid for securing the lid to the top cabinet wall, the top cabinet wall including a flange extending downwardly therefrom cooperative with a latch member mounted to the handle to selectively secure the latch member to the flange, and
wherein the top cabinet wall further includes a charcoal filtration unit mounted therethrough, wherein the lid is sealingly secured relative to the left cabinet wall and right cabinet wall, and wherein the cabinet further includes a fuel storage container mounted therewithin, wherein the charcoal filtration unit permits filtration of vapors from the fuel storage container.

5,054,865
MULTI-OCULAR KALEIDOSCOPE
Stanley Huang, 5F No. 474, Sec. 5, Chung Hsio East Rd., Taipei, Taiwan
Filed Oct. 22, 1990, Ser. No. 600,838
Int. Cl.[5] G02B *23/00*
U.S. Cl. 359—617 **4 Claims**

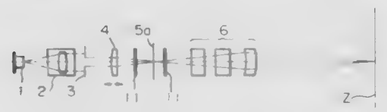
1. A multi-ocular kaleidoscope, comprising:
a transparent, spherical shell formed of a first transparent semi-spherical shell and a second transparent semi-spherical shell, said first transparent semi-spherical shell having a projecting edge, five internally and externally threaded semi-circular projections equidistantly formed around said projecting edge, an externally threaded circular projection at the center of its outer wall surface, said second transparent semi-spherical shell having a recessed edge for engagement with said projecting edge, five internally and externally threaded semi-circular projections equidistantly formed around said recessed edge and respectively connected to the five internally and externally threaded semi-circular projections of said first semi-spherical shell forming into a circular projection each and respectively fastened in shape by a lock nut each, said lock nut having an inner thread and a flange at one end, an externally threaded circular projection at the center of its outer wall

surface, either of said first or second transparent semi-spherical shell having a water filling hole releasably sealed with a rubber cap;
five lock nuts for fastening said first and second transparent semi-spherical shells together;
a plurality of colored bits of glass or plastic floating on the liquid filled inside said transparent spherical shell; and
seven pieces of visual tubes respectively fastened in the circular projections formed on the outer wall of said



transparent spherical shell having each an outer thread on a projecting end at its one end which is covered with a colored glass, an inner thread at its opposite end for mounting a glass holder, and a triangular prism formed of three elongated mirrors fastened on its inside; and
seven pieces of visual glasses respectively colored in red, orange, yellow, green, blue, indigo and violet and respectively fastened in the glass holder on said seven pieces of visual tubes.

5,054,866
SCANNING OPTICAL APPARATUS
Kan Tomita, Kawasaki, and Tomohiro Oikawa, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 27, 1989, Ser. No. 458,183
Claims priority, application Japan, Dec. 29, 1988, 63-332470; Jan. 5, 1989, 64-789; Jan. 20, 1989, 1-11034; Jan. 30, 1989, 1-20528; Feb. 1, 1989, 1-23175; Feb. 6, 1989, 1-27132; Oct. 31, 1989, 1-283911
Int. Cl.[5] G02B *26/10*
U.S. Cl. 359—201 **31 Claims**



1. A scanning optical apparatus comprising:
a light source for emitting a light beam;
collimator optical means for substantially parallelizing said emitted light beam;
first image forming optical means for making said parallelized light beam form a linear image;
a rotary polygon mirror having deflective reflection surfaces for deflecting and scanning said light beam forming said linear image thereon;
second image forming optical means disposed between a medium to be scanned and said deflective reflection surfaces for making said deflected light beam form an image on said medium to be scanned and for maintaining said deflective reflection surfaces and said medium to be scanned in a geometrically optical conjugate relationship in a plane perpendicular to a deflective scanning plane of said deflected light beam; and
vibration means for vibrating said first image forming optical means in a direction of an optical axis of said emitted light beam in synchronization with a deflective scanning of said rotary polygon mirror so as to vibrate in said direction an image forming position at which said parallelized light beam is made to form said linear image by said first image forming optical means.

5,054,867
APPARATUS FOR IRRADIATING THE BRONCHI OF A PATIENT FOR THE PURPOSE OF PHOTODYNAMIC THERAPY
Georges Wagnières, Lutry; Hubert van den Bergh, Goumoens-la-Ville, and Philippe Monnier, Lausanne, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jan. 4, 1991, Ser. No. 638,254
Claims priority, application Switzerland, Jan. 9, 1990, 58/905
Int. Cl.[5] G02B *23/26*
U.S. Cl. 385—31 **10 Claims**



1. An apparatus for irradiating the bronchi of a patient for the purpose of photodynamic therapy, which apparatus has an optical fibre that feeds the light of a laser into a bronchoscope, wherein the fibre (**11**) is surrounded by a light-guide tube (**8**) which projects beyond the light-emitting fact (**16**) of the end (**15**) of the fibre by many times the fibre's diameter, and the end (**15**) of the fibre is embedded in a silicone composition (**17**) that contains TiO_2 powder and that extends from the end (**15**) of the fibre tot he end (**7**) of the light-guide tube.

5,054,868
ARMORED OPTICAL FIBER CABLE INTERCONNECTION FOR DUAL PAYOUT SYSTEMS
Fay A. Hoban; Harold S. Duff, and Andrew W. Marten, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 29, 1990, Ser. No. 576,250
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—99 **18 Claims**

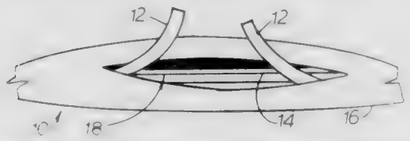
1. An armored interconnection for an optic fiber cable, comprising:
an interconnection defined by a plurality of layered coverings, including an outer protective jacket and an intermediate armored jacket relative to the outer protective jacket, the interconnection having one end portion and another opposite end portion, the interconnection defining an opening intermediate the end portions for providing access to the interior of the interconnection, an end por-

tion of the intermediate armored jacket extending towards its opposing end portions and over the outer protective jacket;

means for carrying an optical fiber enclosed within the interconnection;

opposing lengths of optical fiber carried within the carrying means, one length of optical fiber extending through the interconnection from one end portion and another length of optical fiber extending from the other end portion;

splice means connecting the optical fiber, the splice means located proximate the interconnection opening;



retaining means for retaining the intermediate armored jacket portion at each end of the interconnection, the retaining means located at the one end and the other end, the retaining means enclosed within each opposite extending intermediate armored jacket;

a plurality of closure means for enclosing and sealing the interconnection end portions, the retaining means and the opposite extending intermediate armored jacket portions, and the intermediate opening; and

gasket means for restraining, strengthening and further sealing the respective intermediate armored jacket and closure means over associated retaining means.

5,054,870

ELECTRO-OPTICAL MULTIPLE CONNECTION ARRANGEMENT

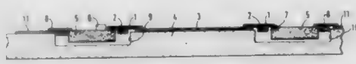
Kurt Lösch, Stuttgart, and Matjaz Florjancic, Murr, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

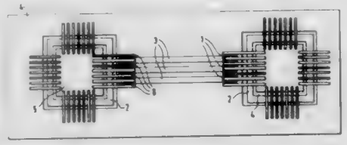
Filed Apr. 3, 1990, Ser. No. 504,550

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1989, 3910710

Int. Cl.[5] G02B *6/12*

U.S. Cl. 385—14 **12 Claims**





1. Multiple connection arrangement for connecting a substrate to an integrated circuit comprising at least one optical component, the connection arrangement comprising:

a flexible interconnect member between the integrated circuit and the substrate, and

at least one optical waveguide extending across the flexible interconnect member and optically coupled to a corresponding said optical component.

5,054,871

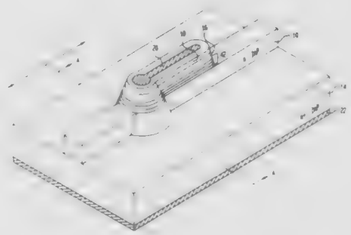
SEMICONDUCTOR WAVEGUIDE AND IMPEDANCE-MATCHED DETECTOR

Robert J. Deri, Rumson, Monmouth, N.J., and Osamu Wada, Isehara, Japan, assignors to Bell Communications Research, Inc., Livingston, N.J. and Fujitsu Limited, Kanagawa, Japan

Filed Jul. 2, 1990, Ser. No. 547,592

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—30 **19 Claims**



1. An impedance-matched optical detector, comprising:

a substrate;

an optical waveguide layer linearly extending along a surface of said substrate and having a first refractive index for propagating therein light of a predetermined wavelength parallel to said surface;

a light absorbing layer for absorbing said light of said predetermined wavelength and thereby providing an electrical signal for said detector, said light absorbing layer being formed adjacent to a first linear portion of said optical waveguide layer and having a second refractive index different from said first refractive index;

an impedance matching region formed between said waveguide layer and said light absorbing layer adjacent within

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5,054,869

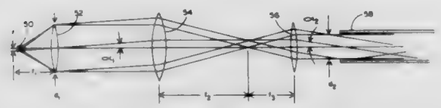
LIGHT PIPE SYSTEM HAVING MAXIMUM RADIATION THROUGHPUT

Walter M. Doyle, Laguna Beach, Calif., assignor to Axiom Analytical, Inc., Laguna Beach, Calif.

Filed Mar. 2, 1990, Ser. No. 487,601

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—133 **17 Claims**



1. A radiation transmission system, for a spectrometer system having a source which provides pre-sample radiation and a detector which receives post-sample radiation, comprising:

means for causing a substantial portion of the radiation to be in the form of a collimated beam; and

a hollow light pipe for the collimated radiation beam having a longitudinal passage therethrough whose axis of symmetry coincides with the axis of symmetry of the collimated beam, whose cross-sectional area is substantially equal to the cross-sectional area of the collimated beam, and whose inner surface is highly reflective.

an optical intensity distribution to only a second linear portion of said optical waveguide layer and having a third refractive index between said first and second refractive indices, said third refractive index being averaged over said impedance matching region; and

cladding media disposed immediately above and below said optical waveguide layer at least in linear portions away from said first and second linear portions, said cladding media having respective refractive indices smaller than said first refractive index and respective thicknesses larger than corresponding optical intensity distributions in said cladding media.

5,054,872

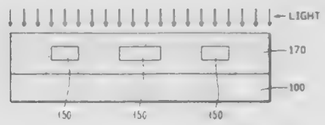
POLYMERIC OPTICAL WAVEGUIDES AND METHODS OF FORMING THE SAME

Bunsen Fan, Peekskill, N.Y.; Donis G. Flagello, Ridgefield; Jeffrey D. Gelorme, Plainville, both of Conn.; Modest M. Oprysko, Mahopac, N.Y.; Albert Speth, Yokners, N.Y., and Jeannine M. Trewhella, Peekskill, N.Y., assignors to IBM Corporation, Yorktown Heights, N.Y.

Filed Mar. 16, 1990, Ser. No. 495,241

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—130 **34 Claims**



14. A planar thin film optical polymeric waveguide structure comprising a discrete zone of an unexposed and thermally crosslinked polymeric material containing epoxy groups, which unexposed and thermally crosslinked polymeric material has itself a first index of refraction and is embedded in an exposed and thermally crosslinked matrix of the same polymeric material containing epoxy groups, which exposed and thermally crosslinked matrix itself has a second index of refraction which differs from said first index of refraction, said first and second index of refraction having been photoinduced.

5,054,873

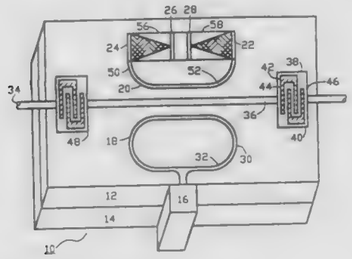
HIGH DENSITY INTEGRATED OPTICAL MULTIPLEXER/DEMULTIPLEXER

Richard L. Davis, Redondo Beach, and Harold M. Stoll, Rancho Palos Verdes, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 4, 1989, Ser. No. 444,908

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—27 **27 Claims**



1. An optical coupler, comprising:

a planar optical medium;

a first channel waveguide in the medium;

a second channel waveguide in the medium having dissimilar propagation characteristics from the first channel waveguide; and

means for propagating a surface acoustic wave along the waveguides having an acoustic wavelength selected to reduce the propagation dissimilarity between the waveguides and thereby to couple at least a substantial portion of optical energy of a corresponding optical wavelength between the waveguides.

5,054,874

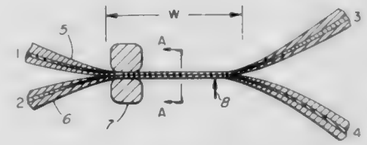
COUPLER FABRICATION TECHNIQUES FOR DISSIMILAR FIBERS

Kenneth O. Hill, Kanata; Derwyn C. Johnson, Ottawa, and Robert G. Lamont, Nepean, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Communications, Ottawa, Canada

Filed Dec. 17, 1990, Ser. No. 627,861

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—28 **12 Claims**



1. A fused twin biconical taper fiber optic splitter comprised of a pair of non-identical monomode or nominally monomode optical fibers, said fibers each having a core and a cladding, having predetermined cladding diameters fused at respective narrowed waists, the cores being narrowed over biconical region adjacent said narrowed waists sufficiently to cause an optical signal carried by a core of one of said optical fibers to be passed into and to be carried by each said cladding, the cladding diameter of one fiber before coupler fabrication being greater than the other, whereby coupling between one and the other fiber is obtained.

5,054,875

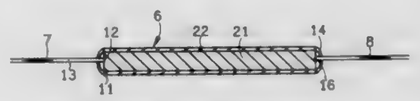
FIBER-OPTIC EQUALIZER

Mark E. Curran, Oceanside, Calif., assignor to General Dynamics, San Diego, Calif.

Filed Aug. 1, 1990, Ser. No. 561,176

Int. Cl.[5] G02B *6/26, 6/42*

U.S. Cl. 385—27 **6 Claims**



1. A method of extending the useful flat frequency response and increasing optical power of an optical device carrying an optical transmission of radio frequency signals which comprises:

selecting a multi-mode optical fiber segment with a length equal to one-half the wavelength of a predetermined frequency;

forming a pair of mirrors, one mirror on each end of said fiber segment so that a resonant cavity is formed to resonate light at said predetermined frequency;

directing light into said fiber segment through a first mirror; and

emitting light out of said fiber segment through a second mirror so that the emitted light has an extended useful flat

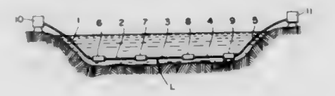
frequency response and increased optical power beyond that of a non-equalized optical device.

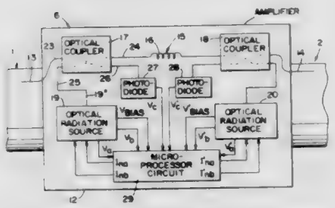
5,054,876

OPTICAL FIBER TELECOMMUNICATION LINE INCLUDING AMPLIFIERS DISTRIBUTED ALONG THE LINE FOR THE TRANSMITTED SIGNALS

Giorgio Grasso, Monza; Aldo Righetti, Milan, and Flavio Fontana, Cormano, all of Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Jul. 20, 1990, Ser. No. 555,941
Claims priority, application Italy, Jul. 21, 1989, 21258 A/89
Int. Cl.[5] G02B *6/28*
U.S. Cl. 385—24 **13 Claims**





1. An optical fiber communication line comprising at least first and second optical fiber cables arranged in series end-to-end, an amplifier interposed between and connecting said first and second optical fiber cables, said amplifier comprising an enclosure connected to facing ends of said optical fiber cables, an active core optical fiber length within said enclosure having opposite ends optically connected respectively to an optical fiber of said first cable and to an optical fiber of said second cable, a first pumping optical radiation energy source optically coupled to one end of said active core optical fiber length for supplying pumping optical energy to said one end of said active core optical fiber length, a second pumping optical radiation energy source optically coupled to the other end of said active core fiber length for supplying pumping optical energy to said other end of said active core optical fiber length, processing means coupled to said active core optical fiber length for monitoring variations in the intensity of pumping optical energy within said active core optical fiber portion and transmitting control signals which are a function of the intensity variations of said pumping optical energy, and signal generating and modulating means associated with each pumping optical radiation energy source responsive to said control signals for modulating the pumping optical radiation energy with a signal which is a function of intensity variations of the pumping optical energy.

5,054,877

MULTI-FIBER OPTICAL COUPLER FOR A HIGH POWER LASER BEAM

Angel L. Ortiz, Jr., Scotia, N.Y., and Tushar S. Chande, Pittsburgh, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed May 2, 1988, Ser. No. 189,074
Int. Cl.[5] G02B *6/32*
U.S. Cl. 385—33 **15 Claims**

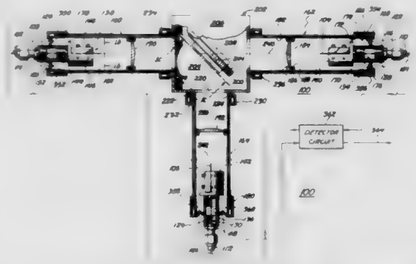
1. Apparatus for coupling into a plurality of outgoing optical fibers a high power laser beam delivered through an incoming optical fiber, comprising:

means for splitting the high power laser beam emitted from an end of the incoming fiber into a plurality of split beam portions equal in number to the plurality of outgoing fibers;

lens means for optically shaping the plurality of split beam portions for respective injection into the ends of the outgoing fibers;

the respective ends of the incoming and outgoing fibers being prepared in advance for fiber coupling;

the optical shaping performed by said lens means resulting in each said split beam portion being focussed as a spot onto a respective one of the outgoing fiber ends for injection therein such that the focussed portion of the shaped beam



has an entry cone angle that is less than two times an angle corresponding to a numerical aperture of the outgoing fiber and a focussed spot size with a diameter that is less than the diameter of a core portion of the outgoing fiber; and

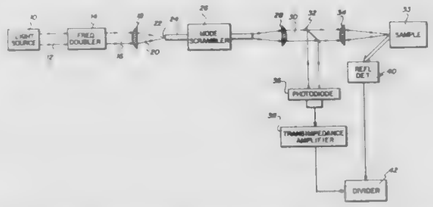
means for mounting said lens means and beam splitting means in alignment with the incoming and outgoing fiber ends so that the high power laser beam emitted from the incoming fiber end is split into the plurality of split beam portions which are respectively shaped and injected into the ends of the plurality of outgoing fibers for continued transmission through the outgoing fibers.

5,054,878

DEVICE FOR SOURCE COMPENSATING A FIBER OPTIC COUPLER OUTPUT

John S. Gergely, Ponca City, Okla., and Wilbur J. Myers, Ft. Worth, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 4, 1990, Ser. No. 533,186
Int. Cl.[5] G02B *6/32;* **G01N** *21/55*
U.S. Cl. 385—33 **5 Claims**



1. A device for source compensating a fiber optic coupler output comprising: a light source for providing a polarized light beam; frequency doubler for doubling the frequency of said polarized light beam to produce a doubled frequency output; first lens for focusing said doubled frequency output; first optic cable for receiving said focused output; mode scrambler associated with said fiber optic cable to provide an output light with uniform intensity distribution;

collimating lens to collimate said output light with uniform intensity distribution;

beam splitter to reflect a predetermined amount of said collimated output light and pass another predetermined amount of said collimated output light;

focusing lens to focus said passed collimated output light to illuminate a sample;

means to provide a signal representing light illuminating said sample;

calibrated photodiode to receive said reflected collimated output light;

transimpedance amplifier to provide a signal proportionate to said reflected collimated output light; and

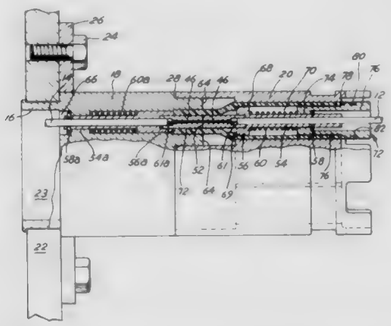
means for dividing said signal representing light illuminating said sample by said transimpedance signal to obtain a ratio whereby said signal representing light illuminating said sample is source compensated.

5,054,879

PUSH/PULL FIBER OPTIC CONNECTOR

Vincent B. Brown, Prospect Heights, Ill., assignor to Mthode Electronics, Inc., Chicago, Ill.

Filed Apr. 9, 1990, Ser. No. 506,296
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—59 **5 Claims**



1. A fiber optic connector for terminating and connecting at least a pair of fiber optic cables, said cables each having a central fiber optic core covered by insulation, said fiber optic connector comprising:

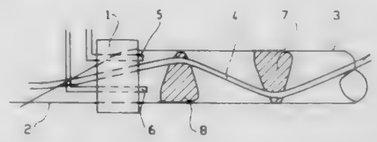
a pair of ferrules, each having a bore proportioned to received the stripped end of one of said cables having an exposed fiber optic core, said ferrules having outer walls that are parallel to the axis of said bore, an outer sleeve defining a tubular portion for snug contact with said ferrule outer walls while the ferrules are in end-abutting relation, the relative transverse positioning of said ferrules in end-abutting relation being determined by the position and shape of said tubular portion and its engagement with said ferrule outer walls, whereby fiber optic core ends within said abutting ferrules may also abut each other with precisely controlled transverse alignment, each ferrule being of molded, nonmetallic construction and connected at an end opposed to said ferrule abutting end to a tubular metal sleeve for receiving a length of optic cable spaced from the stripped cable end, each tubular metal sleeve defining a locking flange, said sleeves being carried within connectable housing portions, and means for engaging said locking flanges to limit longitudinal forward motion of said tubular sleeves and connected ferrules relative to said housing portions, and a flexible locking member positioned to inwardly abut one of said locking flanges to limit forward movement of said locking flange, said locking member comprising a pair of flexible arms removably engagable with one of said housing portions, whereby said fiber optic connector is carried with locking retention with said housing.

5,054,880

METHOD OF MANUFACTURING AN OPTICAL LINE

Siegfried Bruggendieck, Bergisch Gladbach, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Dec. 5, 1989, Ser. No. 446,494
Claims priority, application United Kingdom, Dec. 24, 1988, 3843778
Int. Cl.[5] G02B *6/44;* **B65H** *20/24, 18/28*
U.S. Cl. 385—111 **8 Claims**



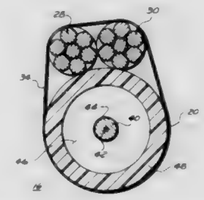
1. A method of manufacturing an optical line, in which at least one LWG (**4, 11, 15, 19**) extends with excess length in an envelope (**3, 9, 13, 18**) and is fixed with respect to the envelope by positioning elements (**7, 8, 12, 20**), characterized in that the positioning elements (**7, 8, 12, 20**) are being formed while provided on the at least one LWG (**4, 11, 15, 19**) prior to or during the insertion in the envelope (**3, 9, 13, 18**) and that the LWGs are pulled in by unreeling forces acting on the envelope (**3, 9, 13, 18**).

5,054,881

SUBMARINE FIBER OPTIC CABLE ASSEMBLY

William C. Fisher, Arlington, Wash., and Michael E. Bevis, Coeur d'Alene, Id., assignors to GTE Northwest Incorporated, Everett, Wash.

Filed Dec. 20, 1988, Ser. No. 287,363
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—113 **25 Claims**



1. A cable assembly for installation underwater, said assembly comprising:

a fiber optic cable of a predetermined length;

a non-conductive subduct surrounding said fiber optic cable throughout said predetermined length;

at least one sinkable cable residing substantially parallel to said subduct throughout said predetermined length; and

means for attaching said sinkable cable to said subduct throughout said predetermined length, said sinkable cable and said attaching means together exhibiting, with respect to water, a weight-to-buoyancy ratio that is greater than one.

5,054,882

MULTIPLE OPTICAL FIBER EVENT SENSOR AND METHOD OF MANUFACTURE

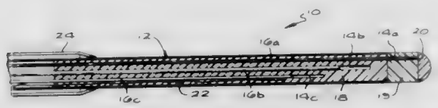
Samuel D. Riccitelli, Murrieta, and Thomas A. Shern, San Diego, both of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Filed Aug. 10, 1990, Ser. No. 565,495
Int. Cl.[5] G02B *6/16*
U.S. Cl. 385—12 **19 Claims**

1. A multiple optical fiber event sensor apparatus, comprising:

a semi-permeable tubular sleeve having proximal and distal ends;

a plurality of optical fiber gas sensors, each having a distal end bearing a sensor module, said sensor modules being disposed within said sleeve in axially staggered relationship; and



a semi-permeable polymeric matrix having a hydrophobic portion surrounding said sensor modules of said gas sensors for fixing the position of said sensor modules within said sleeve and substantially filling said sleeve; and

a rounded tip formed of said polymeric matrix extending beyond the distal end of said sleeve.

5,054,883

COATED OPTICAL FIBERS

Richard P. Eckberg, Saratoga Springs, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 527,313, Aug. 26, 1983. This application Apr. 13, 1987, Ser. No. 38,474

Int. Cl.[5] D02G *3/00;* **G02B** *6/00*

U.S. Cl. 385—145 **10 Claims**

1. A coated optical fiber comprising:

(a) a core of high transparency silica glass and

(b) a coating deposited on said core comprising an ultraviolet radiation-curable silicon coating composition comprising (i) a diorganopolysiloxane comprising units of the formula $RR'SiO$, wherein R of each said units is hydrogen or monovalent hydrocarbon radical of from 1 to 8 carbon atoms, R' of each said units is selected from the group consisting of hydrogen, a monovalent hydrocarbon of from 1 to 20 carbon atoms, a monovalent organic radical of from 2 to 20 carbon atoms having epoxy functionality, and a branched organosiloxane derived from a vinyl MQ resin, a sufficient amount of R' is said epoxy functionality to permit crosslinking, and a sufficient amount of R' is said MQ resin to render coating composition viscosity dependent on MQ resin content and to control coating composition viscosity between about 1000 cps and 10,000 cps, and (ii) a catalytic amount of a photoinitiator; said coating having a refractive index higher or lower than said silica glass.

5,054,884

BEAM SPLITTER INCLUDING A DIFFRACTION GRATING AND ONE OF STEP SHAPED, INCLINED, OR CURVED TRANSPARENT SURFACE

Toshihiro Kubota, Hirakata, Japan, assignor to Dainippon Screen Mfg Co. Ltd., Japan

Filed Mar. 5, 1990, Ser. No. 488,863

Claims priority, application Japan, Mar. 6, 1989, 1-53531; Feb. 22, 1990, 2-42145

Int. Cl.[5] G02B *5/18, 5/32, 27/10*

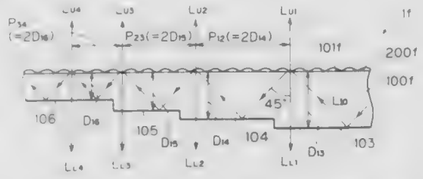
U.S. Cl. 359—566 **3 Claims**

1. A beam splitter, comprising:

a transparent layer,

an introduction member for introducing a light beam into said transparent layer such that said light beam is totally reflected in said transparent layer, and

a diffraction grating formed on at least a part of a first surface of said transparent layer, at which part said light beam is totally reflected, said diffraction rating diffracting said light beam to produce a plurality of diffracted beams going out of said transparent layer,



said first surface of said transparent layer being flat, said transparent layer further comprising a second, step shaped surface each step of which is parallel to said flat surface.

5,054,885

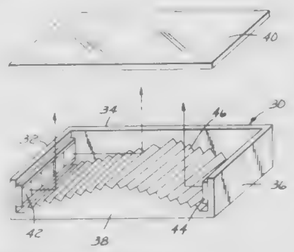
LIGHT FIXTURE INCLUDING A PARTIALLY COLLIMATED BEAM OF LIGHT AND REFLECTIVE PRISMS HAVING PEAKS LYING ON A CURVED SURFACE

Jeffrey J. Melby, Saint Paul, Minn., assignor to Minnesota Mining and Manfuacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 255,784, Oct. 11, 1988, abandoned. This application Feb. 4, 1991, Ser. No. 651,110

Int. Cl.[5] F21V *7/00;* **G02B** *27/14*

U.S. Cl. 359—618 **5 Claims**



1. A light fixture comprising:

a housing defining an optical cavity having an optical window, said housing having an inner surface on a side opposite said optical window;

light emitting means in said housing for emitting a partially collimated beam of light having an axis of collimation;

a plurality of prisms on said inner surface, each of said prisms having a specularly reflective surface on a side adjacent said light emitting means for reflecting light from said light emitting means out of said fixture through said optical window, the peaks of said prisms defining a surface, at least a portion of said surface being smoothly curving and forming an acute angle with said axis of collimation such that said optical window will receive a substantially uniform level of illumination.

5,054,886

LENS FRAME

Yukio Ozaki, and Hideki Yamamoto, both of Tokyo, Japan, assignors to Pioneer Electric Corporation, Tokyo, Japan

Filed Apr. 24, 1990, Ser. No. 513,274

Claims priority, application Japan, Sep. 27, 1989, 1-112088[U]

Int. Cl.[5] G02B *7/02*

U.S. Cl. 359—823 **7 Claims**

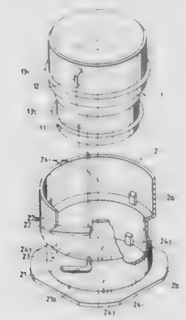
1. A lens frame comprising:

a lens barrel means for supporting a lens, said lens having an optical axis;

lens barrel support means for supporting said lens barrel means, said lens barrel means being rotatable about said optical axis of said lens to a selected rotational position; and

fixing means for securing said lens barrel means to said lens barrel support means and for frictionally maintaining said lens barrel means in said selected rotational position without displacement of said lens barrel means with respect to the optical axis of said lens, wherein said fixing means comprises:

a guide slot formed in said lens barrel support means;



a guide protrusion formed on said lens barrel means, said guide protrusion being slidably engaged with said guide slot to create a contact friction therebetween;

a rib having a slidable-contact surface formed on said lens barrel support means; and

an abutment protrusion formed on said lens barrel means, said abutment protrusion slidably abutting on said slidable-contact surface to create a contact friction therebetween.

5,054,887

ACTIVE MATRIX TYPE LIQUID CRYSTAL DISPLAY

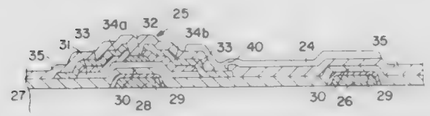
Hiroaki Kato, Nara; Toshihiko Hirobe, Sakai, and Yoshitaka Hibino, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 9, 1989, Ser. No. 391,244

Claims priority, application Japan, Aug. 10, 1988, 63-200782

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—59 **13 Claims**



1. An active matrix type liquid crystal display device comprising:

a substrate;

a plurality of picture element electrodes arranged in a matrix on said substrate;

a plurality of switching elements, each of said picture element electrodes being associated with a picture element electrode;

capacitor electrodes, each of said picture element electrodes being partially opposed to at least one capacitor electrode to form a capacitor; and

a dielectric lamination structure consisting essentially of three insulating layers between said picture element electrode and said capacitor electrode, a first insulating layer extending over the associated switching element to provide protection thereto.

5,054,888

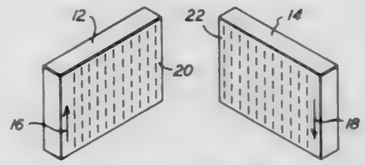
METHODS OF MAKING COMPOSITE OPTICAL DEVICES EMPLOYING POLYMER LIQUID CRYSTAL

Stephen D. Jacobs, Pittsford; Kenneth L. Marshall, Henrietta, and Kathleen A. Cerqua, Fairport, all of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Apr. 24, 1987, Ser. No. 42,185

Int. Cl.[5] G02F *1/13;* **C09K** *19/52*

U.S. Cl. 359—76 **3 Claims**



1. The method of making a composite optical device which comprises placing a polymer liquid crystal compound in a liquid state between opposing surfaces of optically transparent substrate elements, then orienting the molecules of the polymer while in its liquid crystal state and at a temperature above the polymers plass transition temperature (T_g) between the substrate elements, and cementing said substrate elements together with said polymer liquid crystal as it solidifies from the liquid state after said orienting step to form the composite optical device, and wherein said orienting step is carried out by rubbing said surfaces of said substrates.

5,054,889

LIQUID CRYSTAL DISPLAY HAVING AN ALIGNMENT LAYER IN THE FORM OF A POROUS ALUMINA LAYER

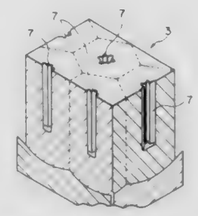
Masao Imanishi; Atsushi Ohtaka; Kunio Hiyama, and Takanori Kawamura, all of Shizuoka, Japan, assignors to Yamaha Corp., Japan

Filed Feb. 8, 1990, Ser. No. 477,229

Claims priority, application Japan, Feb. 8, 1989, 1-29255

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—76 **6 Claims**



1. A liquid crystal display comprising:

a substrate;

an electrode layer; and

an alignment layer given in the form of a porous alumina layer;

a liquid crystal layer, said substrate, electrode layer, liquid crystal layer and alignment layer being coupled to one another to form a liquid crystal display.

5,054,890

LIQUID CRYSTAL DEVICE

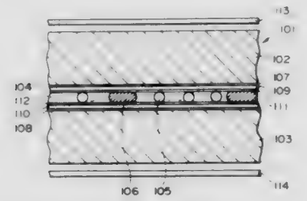
Yukio Hanyu, Atsugi; Osamu Taniguchi, Chigasaki; Toshiharu Uchimi, Atsugi, and Masanobu Asaoka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,857

Claims priority, application Japan, Jun. 23, 1988, 63-155453; May 12, 1989, 1-120044

Int. Cl.[5] G02F *1/133*

U.S. Cl. 350—344 **11 Claims**



8. A liquid crystal device, comprising:

a pair of parallel electrode plates, and

a ferroelectric liquid crystal, adhesive particles and spacer members disposed between the electrode plates, wherein said spacers are rods having a length of at most about 3 μm and are dispersed at from 5–100 spacers/mm^2, and wherein said rods have a length l and a diameter d of from about 0.55 l to about 0.85 l.

5,054,891

LIQUID CRYSTAL SHUTTER WITH SUBSTRATES HAVING AN OPTICAL ANISOTROPY CAUSED BY TEMPERATURE GRADIENT

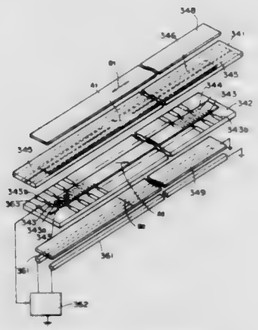
Masakatsu Higa, Fussa; Yasushi Nakajima, and Hisashi Aoki, both of Hamura, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 339,187

Claims priority, application Japan, Apr. 15, 1988, 63-92713

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—43 **20 Claims**



1. A liquid crystal shutter, comprising:

a liquid crystal element having a first substrate, a plurality of first electrodes formed on one surface of the first substrate, first aligning means formed on the electrodes, a second substrate located parallel to the first substrate, at least one second electrode formed on that surface of the second substrate which opposes the at least one of the first electrodes, second aligning means formed on the second electrode, and liquid crystal material sealed in the gap between the first and the second substrates, liquid crystal molecules of which are arranged in a direction predetermined by the first and the second aligning means;

light source means for applying light to the liquid crystal element;

heating means for heating the liquid crystal element; and

a pair of polarizing means arranged outside the liquid crystal element, a polarization axis of at least one of said polarizing means being substantially parallel or orthogonal to a direction of an optical axis of a respective one of said substrates having an optical anisotropy caused by a temperature gradient created over the liquid crystal element in a direction toward a periphery from a center of the liquid crystal element heated by said heating means, and crossing at a certain degree with an arrangement direction of said liquid crystal molecules oriented by said aligning means.

5,054,892

PHOTO-TO-PHOTO CONVERSION ELEMENT AND ITS APPLIED SYSTEM

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Fujisawa; Hirohiko Shinonaga; Tsutou Asakura, both of Yokohama, and Masato Furuya, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

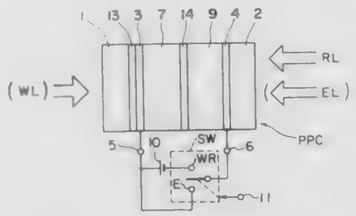
Division of Ser. No. 313,073, Feb. 21, 1989, Pat. No. 4,920,417, which is a continuation-in-part of Ser. No. 139,005, Dec. 29, 1987, Pat. No. 4,831,452. This application Feb. 27, 1990, Ser. No. 485,933

Claims priority, application Japan, Feb. 21, 1988, 63-37800

The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.

Int. Cl.[5] G02F *1/01*; H04N *3/14*

U.S. Cl. 359—72 **3 Claims**



1. A photo-to-photo conversion element comprising, in an arranged sequence in line;

a first optical member for passing a write light having a first wavelength range;

a first transparent electrode;

a photoconductive layer;

a second optical member having a wavelength selectively reflecting a light in a wavelength band in which a read light having a second wavelength falls;

a third optical member for electrooptically modulating a light incident thereto through the second optical member in response to the strength distribution of an electric field applied thereto; and

a second transparent electrode.

5,054,893

ELECTRO-OPTIC CELL LINEAR ARRAY

David Schoon, Mendota Heights, Minn., assignor to Schoonscan, Inc., Mendota Heights, Minn.

Filed Aug. 17, 1990, Ser. No. 568,908

Int. Cl.[5] G02F *1/03, 1/05*; G02B *5/30*; G03G *15/00*

U.S. Cl. 359—254 **6 Claims**

1. An electro-optic cell array formed on a piezoelectric material, comprising an array of electrically conductive lines regularly arranged along a piezoelectric surface of said material, said lines intersecting a common axis of said material, and said lines further comprising:

(a) a first common line having regularly spaced parallel segments intersecting said common axis, and

(b) a plurality of further lines in parallel alignment with each other and with said common line spaced parallel segments, each of said further lines having a segment intersecting said common axis intermediate common line segments,



(c) said common line spaced parallel segments and said plurality of further lines parallel segments all being aligned at an angle of 15° to 75° relative to said common axis.

5,054,894

LIGHT MODULATING PROCESS

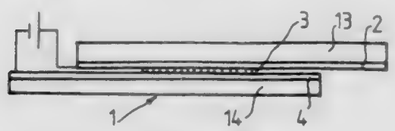
Bernard Warszawski, Paris, France, assignor to Alpine Polyvision, Inc., Hackensack, N.J.

Continuation of Ser. No. 221,539, Jul. 19, 1988, abandoned. This application Jan. 10, 1990, Ser. No. 464,672

Claims priority, application France, Jul. 24, 1987, 87 10560

Int. Cl.[5] G02F *1/01*

U.S. Cl. 359—270 **8 Claims**



1. A process of modulation of light, by reflection or transmission involving a light-modulating cell, the light-modulating cell comprising 1) a first electrode, which is transparent or substantially transparent and electronically conducting; 2) a second electronically conducting electrode, spaced transversely from the first electrode; 3) a layer of material having ionic electroconductivity, in contact with and interposed between the first and second electrodes, comprising a homogeneous mixture of solid consistency comprising 3*a*) a hydrosoluble salt or a hydrosoluble mixture of salts of at least one metal which can be cathodically deposited from an aqueous solution of one of its simple or complex ions; 3*b*) at least one initially hydrosoluble film-forming polymer resin; 3*c*) water; and 3*d*) an auxiliary redox couple; the constituents **3***a*, **3***b*, **3***c*, 3*d* being selected sop as to allow plastic or viscoelastic deformability; 4) means for ensuring mechanical and structural cohesion and integrity of the cell; 5) means for ensuring permanence of internal electrical contacts between the first electrode, the material and the second electrode; 6) spacer means to maintain the first and second electrodes spaced transversely from each other; and 7) electrical connection zones on the first and second electrodes, the process comprising:

1) during at least one write phase, applying to the first electrode an electrical voltage which is negative with respect to a voltage of the second electrode, so that there is written at least one picture element as an increase in optical density in an interface region between the electrodes and the layer of material; and

2) during at least one erase phase, subsequent to a write phase, conducting an electrical current between the electrodes, the current having a direction opposite to that of an electrical current flowing during the write phase, so that the previously written picture element is erased, the increase in optical density being diminished or disappearing;

wherein the process may be repetitive and able to comprise several pairs of one write phase and one erase phase.

5,054,895

ELECTROCHROMIC ELEMENT

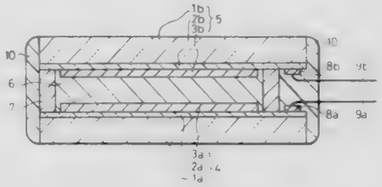
Jun Minoura, Anjo; Toshiya Uemura, Nagoya; Shigeyuki Takahashi, Inazawa; Toshiyasu Ito, Kasugai, and Katsuaki Okabayashi, Nagoya, all of Japan, assignors to Toyoda Gosei Co. Ltd., Nishikasugai and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, both of Japan

Filed Apr. 4, 1989, Ser. No. 332,967

Claims priority, application Japan, Apr. 8, 1988, 63-87668

Int. Cl.[5] G02F *1/01*

U.S. Cl. 359—265 **17 Claims**



11. An electrochromic element comprising:

first and second base members;

a pair of electrodes, each electrode being carried by an associated base member, at least one of the electrodes being transparent;

first and second color-forming layers provided between said electrodes, the first color-forming layer being oxidative and the second color forming layer being reductive;

an electrolyte provided between said color-forming layers; and

a light stabilizer contained in said first color-forming layer for improving the resistance of said color-forming layer to light, the concentration of the light stabilizer in the color-forming layer being in the range of 0.1 to 1.0 percent by weight; and

wherein the light stabilizer includes at least one selected from the group consisting of a benzotriazole-type ultraviolet ray absorbent, a benzophenone-type ultraviolet ray absorbent, a phenol-type antioxidant, a nickel-complex type stabilizer, and an amine-type stabilizer

5,054,896

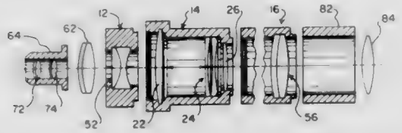
CONTINUOUSLY FOCUSABLE MICROSCOPE INCORPORATING AN AFOCAL VARIATOR OPTICAL SYSTEM

H. Jay Margolis, Boulder, Colo., assignor to Infinity Photo-Optical Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 286,307, Dec. 19, 1988, Pat. No. 4,988,173, which is a continuation-in-part of Ser. No. 169,271, May 17, 1988, abandoned. This application Apr. 24, 1989, Ser. No. 342,179

Int. Cl.[5] **G02B** *15/00, 7/04, 21/00*

U.S. Cl. 359—379 **7 Claims**



1. A microscope system which includes an afocal variator, comprising, in optical series:

means for providing a microscope objective lens system;

means for providing a positive lens system for use as a microscope objective; and

a focusing module, wherein said focusing module includes, in optical series, a front negative lens system, an afocal variator, and a rear portion lens system, wherein said afocal variator carried by said focusing module includes in optical series a first positive lens, a negative lens, and a second positive lens, and wherein further said negative lens within said afocal variator is so positioned and so controlled that it is capable of being moved continuously towards and away from said first positive lens, and towards and away from said second positive lens, all while the distance between said first positive lens and said second positive lens of said afocal variator remains substantially constant.

5,054,897

PLASTIC ZOOM LENS

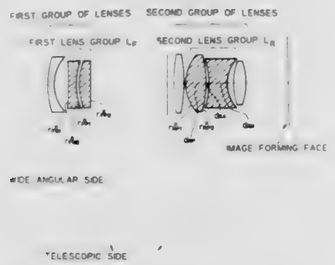
Toshiro Ozawa, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1990, Ser. No. 560,835

Claims priority, application Japan, Aug. 3, 1989, 1-201764; Dec. 22, 1989, 1-333654

Int. Cl.[5] **G02B** *15/00*

U.S. Cl. 350—426 **8 Claims**



1. A plastic zoom lens comprising:

a first group of lenses having negative refracting power and arranged on an object side of the zoom lens;

a second group of lenses having positive refracting power and arranged on an image side of the zoom lens; and

means for changing a focal length of the plastic zoom lens by changing a distance between the first and second group of lenses;

said second group of lenses having a second lens group which comprises a positive plastic lens having a large curvature face on the object side thereof and a negative plastic lens having a large curvature face on the image side thereof, said positive and negative plastic lenses being sequentially arranged from the object side of the zoom lens, said second group of lenses further having at least one positive lens arranged on each of the object and image sides of the second lens group;

a focal length f_I of said first group of lenses, a focal length f_{II} of said second group of lenses, a combined focal length F_W of an entire lens system at a wide angular terminal thereof, and Abbe numbers ν_{RP} and ν_{RN} of the positive and negative lenses in said second lens group satisfying the following conditions,

$$1.7 < |f_I|/F_W < 2.5 \quad \text{(a)}$$

$$0.7 < f_{II}/|f_I| < 1.0 \quad \text{(b)}$$

$$\nu_{RP} > 50 \quad \text{(c)}$$

$$\nu_{RN} < 37 \quad \text{(d)}.$$

5,054,898

COMPACT HIGH-RANGE VARIFOCAL OBJECTIVES

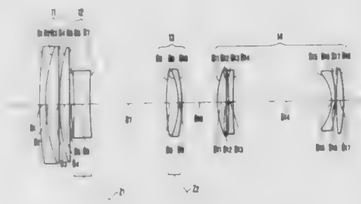
Nozomu Kitagishi, Tokyo; Hiroki Nakayama; Jun Hattori, both of Kanagawa; Shigeyuki Suda, and Akihisa Horiuchi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1985, Ser. No. 800,553

Claims priority, application Japan, Nov. 26, 1984, 59-249074; Dec. 12, 1984, 59-262250; Jan. 23, 1985, 60-010501; Jan. 25, 1985, 60-013178; Jan. 31, 1985, 60-017061; Apr. 26, 1985, 60-090426

Int. Cl.[5] **G02B** *15/14*

U.S. Cl. 359—654 **31 Claims**



1. A varifocal objective comprising a plurality of lens units and a lens unit variable in its front and rear side spacing for variation of the focal length, whereby

said lens unit has at least one refractive index distribution type lens having only one optical axis common to other lenses.

5,054,899

MEDIUM TELEPHOTO LENS SYSTEM

Shuhji Yoneyama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Nov. 1, 1989, Ser. No. 430,549

Claims priority, application Japan, Nov. 2, 1988, 63-278401

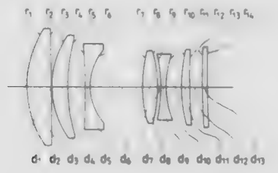
Int. Cl.[5] **G02B** *13/02*

U.S. Cl. 359—745 **6 Claims**

1. A telephoto lens system comprising:

a front group having, in order from the object side, a positive first lens having a convex surface of large curvature directed toward the object, a positive meniscus second lens having a convex surface of large curvature directed toward the object, and a negative third lens having a concave surface of large curvature directed toward the image; and

a rear group comprising, in order from the object side, a biconvex fourth lens, a biconcave fifth lens, a positive sixth lens and a seventh lens having a weak positive refractive power, said biconvex fourth lens not being cemented to any subsequent lenses.



5,054,900

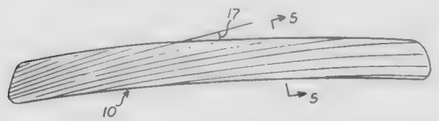
PANORAMIC REARVIEW MIRROR WITH NARROW ELONGATED REFLECTIVE PANELS

Anton K. Simson, 13227 Aubrey St., Poway, Calif. 92064

Continuation of Ser. No. 380,374, Jul. 17, 1989, abandoned. This application Jul. 17, 1990, Ser. No. 553,983

Int. Cl.[5] **G02B** *5/08, 7/18;* **G02F** *1/13*

U.S. Cl. 359—851 **10 Claims**



1. In combination with a vehicle windshield having generally parallel front and back faces, a reflective device designed to provide a wide scope rearview to an operator of the vehicle, said device comprising:

a thin grated substrate having an outer face in contact and congruent with a section of the windshield, and an inner face defining a succession of narrow, elongated reflective panels wherein

said panels are oriented to present a composite but linearly reflective surface to light rays emanating from a point in space located inwardly from said windshield;

the inner faces of each of said panels being flat, reflective and forming varying angles with the outer face of the substrate.

5,054,901

ADJUSTABLE BINOCULAR SPECTACLES FOR IMAGE MAGNIFICATION

Bernard Kaye, 36 The Avenue, Radlett, Hertfordshire, WD7 7DW, England

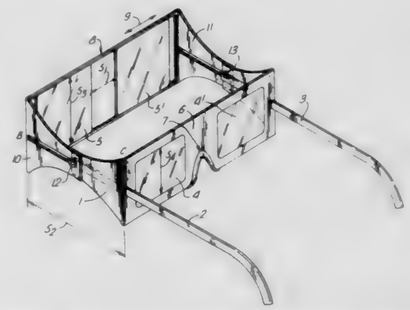
Filed Feb. 5, 1990, Ser. No. 475,118

Claims priority, application United Kingdom, Feb. 6, 1989, 8902589

Int. Cl.[5] **G02C** *7/08*

U.S. Cl. 351—41 **17 Claims**

1. A device for aiding vision of images in the mid-range, typically but not exclusively for magnifying a television picture, which device comprises a pair of spectacles comprising binocular eyepiece lenses mounted in a frame and further comprising binocular objective lenses disposed in front of each eyepiece lens and supported by an extension to the frame of the spectacles; the objective lenses being larger than the eyepiece lens or lenses; the objective lens or lenses being mounted so as to be movable backward and forward along the optical axis; said device including means for tilting said objective lenses with respect to said eyepiece lenses by pivotal motion about a generally horizontal axis; and said binocular lenses being movable laterally.



5,054,902

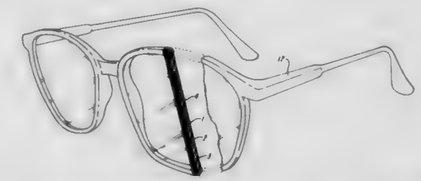
LIGHT CONTROL WITH COLOR ENHANCEMENT

William J. King, 9 Putnam Rd., Reading, Mass. 01867

Continuation of Ser. No. 921,312, Oct. 21, 1986, abandoned, which is a continuation of Ser. No. 223,840, Jan. 9, 1981, abandoned, which is a continuation of Ser. No. 645,262, Dec. 29, 1975, abandoned. This application Nov. 1, 1989, Ser. No. 430,080

Int. Cl.[5] **G02C** *7/10;* **G02B** *5/28, 1/10*

U.S. Cl. 351—44 **8 Claims**



1. A lens for sunglasses to be worn by a wearer, comprising

a light transmissive substrate constituting the lens body, and having a first side for facing the wearer and a second side of facing outwardly from the wearer,

a semireflective layer intimately bonded to the second side, and

a dielectric layer over said semireflective layer, said dielectric layer being of substantially uniform thickness,

the reflectance of said semireflective layer and the thickness of said dielectric layer producing, at one or more wavelengths, a differential effect in intensity, of reflected light incident upon said lens from the direction faced by said second side, by interference between incident light reflected from said dielectric layer and light transmitted through said dielectric layer and reflected from said smireflecting layer, said differential effect altering the spectral distribution of light in an amount for producing a vivid colored appearance formed by said two layers when viewing toward the wearer from the direction faced by said second side.

5,054,903

EYEWEAR TRACTION DEVICE

James H. Jannard, San Juan Capistrano, and Gregory F. Arnette, South Laguna Beach, both of Calif., assignors to Oakley, Inc., Irvine, Calif.

Filed Nov. 20, 1989, Ser. No. 436,474

Int. Cl.[5] **G02C** *5/14*

U.S. Cl. 351—123 **9 Claims**

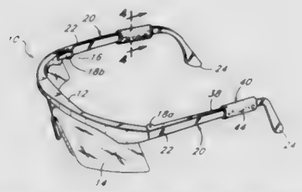
1. An improved eyewear temple for retaining eyeglasses on

the head of the wearer and reducing abrasion caused by movement of said eyewear, comprising:

an elongate eyewear temple body;

a first end on the temple for attaching the temple to the frame of the eyeglasses;

a second end on the temple, distal said first end, for engaging the head of the wearer;



a recessed seat interposed between said first and second ends having a smaller cross-sectional area than that of said temple portion adjacent said seat, said seat being separated from the remainder of said temple by first and second shoulders; and

at least one tubular traction member disposed within the recessed seat.

5,054,904

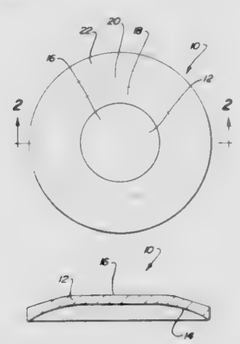
ASPHERIC LENS BLANK

Alexander C. Bristol, 14317 SW. 142 Ave., Miami, Fla. 33186

Filed May 22, 1989, Ser. No. 354,713

Int. Cl.[5] G02C *7/02;* **G02B** *3/04*

U.S. Cl. 351—159 **4 Claims**



1. A lens blank comprising:

a generally circular lens blank having a posterior surface and an aspherical anterior surface with an optical center, said anterior surface having a circular central zone encircled by three concentric zones formed in accordance with the following table:

Zone	Diameter (mm)	Power (Diopters)
Central Zone	45 ± 10	C
First Concentric Zone	55 ± 7	C - .75
Second Concentric Zone	65 ± 7	C - 1.25
Third Concentric Zone	75 ± 05	C - 2.0

where C equals the lens power at said optical center.

5,054,905

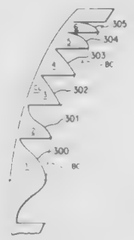
PROGRESSIVE INTENSITY PHASE BIFOCAL

Allen L. Cohen, 10010 Walsham Ct., Richmond, Va. 23233

Continuation-in-part of Ser. No. 120,262, Nov. 12, 1987, Pat. No. 4,881,805. This application Nov. 20, 1989, Ser. No. 438,320

Int. Cl.[5] G02C *7/04;* **G02B** *27/44, 5/18;* **A61F** *2/16*

U.S. Cl. 351—161 **26 Claims**



1. An ophthalmic lens comprising:

a. a carrier lens having an anterior surface and a posterior surface; and

b. a zone plate disposed about an optical axis of the carrier lens on at least one of the anterior and posterior surfaces, said zone plate having a plurality of annular zones, each of which is spaced from the optical axis by a distance proportional to the square root of n, where n is the number of the zone starting from the optical axis, each of said zones having at least one echelette and each of said echelettes having a surface through which light propagating parallel to said optical axis and incident upon said zone plate is diffracted to at least two focal points, the surfaces of said echelettes having nonuniform profiles to cause the relative intensities of light diffracted to said at least two focal points to vary as the size of an aperture disposed along said optical axis adjacent to the carrier lens is varied within the diameter of the zone plate.

5,054,906

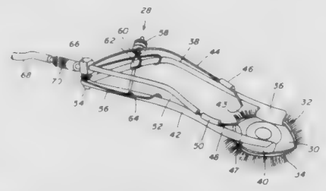
INDIRECTLY ILLUMINATING OPHTHALMOLOGICAL SPECULUM

William G. Lyons, Jr., West Brookfield, Mass., assignor to Brimfield Precision, Inc., Brimfield, Mass.

Filed Jan. 17, 1986, Ser. No. 819,675

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—205 **8 Claims**



1. Ophthalmological apparatus comprising:

means for urging a pair of eyelids open without obstructing access to the eye so that a surgical procedure may be performed thereon; and

eye illuminating means mounted to said eyelid opening means positioned to direct light substantially tangential to the surface of an eye.

5,054,907

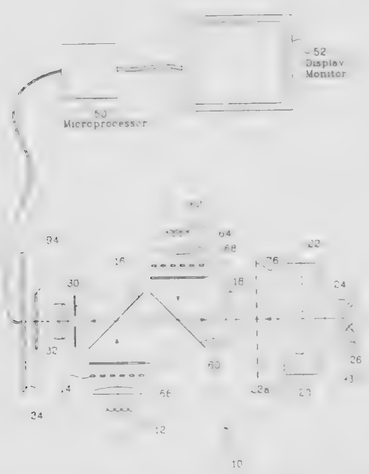
OPHTHALMIC DIAGNOSTIC APPARATUS AND METHOD

H. Alfred Sklar, San Francisco; Alan M. Frank; Charles McMillan, both of Livermore, all of Calif., and Olga M. Ferrer, Miami, Fla., assignors to Phoenix Laser Systems, Inc., San Francisco, Calif.

Filed Dec. 22, 1989, Ser. No. 456,109

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—212 **30 Claims**



1. An ophthalmic diagnostic instrument for determining the shape of the cornea of a patient's eye, comprising,

an objective lens as an optical element of the instrument, on an optical axis of the instrument,

means for projecting a pattern of discrete separated point light sources and forming a real image of the pattern of point light sources at a position located between the interior of the objective lens and the patient's eye, the real image including point light sources in positions which traverse substantially directly across the optical axis,

means for expanding the region of coverage on the cornea by using the objective lens as a field lens for the pattern image,

means for selecting and collecting a reflected image of the pattern as reflected paraxially off the cornea, and for detecting a reflected position of substantially each point light source, as reflected from the cornea, including means for relaying the Fourier plane of the objective lens to a relayed position in the instrument, with aperture means positioned at said relayed position for limiting the collected light to that which is reflected paraxially off the cornea, whereby the aperture means is a spaced distance from the objective lens,

means for analyzing the returned, collected pattern image and for comparing it to the undistorted pattern as projected, including analyzing the relative location and spatial orientation of the reflected point light sources as compared to the pattern as projected, and

means for deriving mathematically a close approximation of a corneal surface shape that would give rise to such a collected pattern image,

whereby the real image point sources, extending substantially across the optical axis, enable enhanced measurement of the central optical zone about the visual axis of the cornea.

5,054,908

METHOD AND APPARATUS FOR EVALUATING HUMAN VISUAL FUNCTION

Osamu Katsumi, Winchester, Mass., and Yoshitaka Miyanaga, Kawasaki, Japan, assignors to Eye Research Institute of Retina Foundation, Boston, Mass.

Filed Sep. 30, 1988, Ser. No. 251,699

Claims priority, application Japan, Oct. 1, 1987, 62-150812[U]

Int. Cl.[5] A61B *3/02*

U.S. Cl. 351—239 **3 Claims**



1. A method for evaluating a human visual acuity comprising the steps of

A. displaying concurrently to a subject a pair of first and second viewing surfaces, a first of which is free of visually perceptible pattern and the other of which has a pattern corresponding to a selected visual acuity,

B. moving said first and second viewing surfaces relative to one another at substantially uniform distance from the subject; and

C. repeating said steps of concurrently displaying and relatively moving with pairs of viewing surfaces, each including said first viewing surface and successively including different visually perceptible patterns corresponding to different visual acuities.

5,054,909

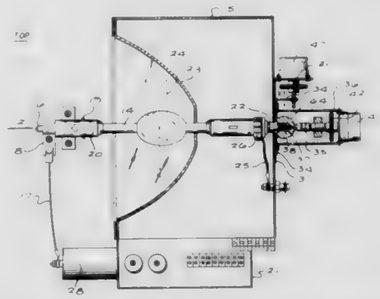
LAMP HOUSING FOR MOTION PICTURE FILM PROJECTOR

Steinar A. Larsen, Los Angeles, Calif., assignor to Christie Electric Corp., Torrance, Calif.

Filed Nov. 26, 1990, Ser. No. 619,932

Int. Cl.[5] G03B *21/00*

U.S. Cl. 352—198 **10 Claims**



1. In a lamp housing for a motion picture projector, said lamp having a longitudinal axis with a forward end and a rear end, the combination of:

forward means for supporting said lamp adjacent said forward end;

rear means for supporting said lamp adjacent said rear end for motion along said longitudinal axis and for motion in first and second lateral directions, said rear means including

a first carrier mounted on said housing for movement in said first lateral direction,

a second carrier mounted on said first carrier for movement in said second lateral direction, and

a third carrier mounted on said second carrier and including means for connection to said lamp,

said third carrier including a motor for moving said lamp along said longitudinal axis; and

a motor control circuit connected to said third carrier motor and having relay means for selectively powering said third motor to move said lamp in forward and reverse directions in response to a control signal.

5,054,910

PROJECTION APPARATUS

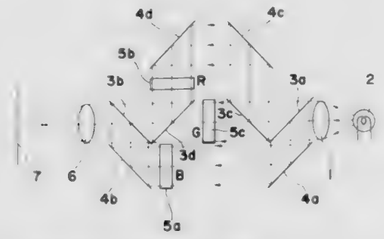
Shyuichi Kozaki, Nara, and Fumiaki Funada, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1989, Ser. No. 415,711

Claims priority, application Japan, Oct. 4, 1988, 63-251196

Int. Cl.[5] G03B *21/00*; G02F *1/13*

U.S. Cl. 353—31 **12 Claims**



1. A projection apparatus comprising:

three nematic simple matrix type liquid crystal panels for independently controlling red, green and blue color light components for a color image to be reproduced, the twist angle ϕ of the liquid crystal molecules of said panels being within the range of $210° \leqq \phi \leqq 300°$;

means for subjecting said respective color light components to an additive mixture so as to reproduce the color image;

wherein display contrast for each of said simple matrix liquid crystal panels is set to be maximum by adjusting a value C as represented by

$$\begin{aligned} \Delta n_R \cdot d_R/\lambda_R &= \Delta n_G \cdot d_G/\lambda_G \\ &= \Delta n_B \cdot d_B/\lambda_B \\ &= C \end{aligned}$$

wherein

Δn_R is the refractive index anisotropy for the liquid crystal in the liquid crystal panel;

Δn_G is the refractive index anisotropy for the liquid crystal in the crystal panel;

Δn_B is the refractive index crystal in the crystal panel;

d_R is the liquid crystal layer thickness for the liquid crystal in the liquid crystal panel;

d_G is the liquid crystal thickness for the liquid crystal in the liquid crystal panel; and

d_B is the liquid crystal thickness for the liquid crystal in the liquid panel of the respective liquid crystals; and

wherein when a white light is employed for a light source, wavelength regions of the respective color light components for the red, green and blue controlled by the respective simple matrix liquid crystal panels are represented as:

for red: $600 \text{ nm} \leqq \lambda_R \leqq 650 \text{ nm}$, with a half width being less than 50 nm,

for green: $520 \text{ nm} \leqq \lambda_G \leqq 570 \text{ nm}$, with a half width being less than 50 nm,

for blue: $420 \text{ nm} \leqq \lambda_B \leqq 470 \text{ nm}$, with a half width being less than 50 nm,

wherein a peak wavelength for red is represented by λ_R, a peak wavelength for green is shown by λ_G, and a peak wavelength for blue is denoted by λ_B.

5,054,911

LIGHT WAVE DISTANCE MEASURING INSTRUMENT OF THE PULSE TYPE

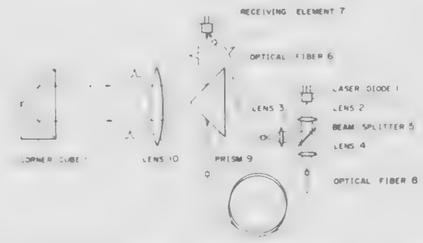
Masahiro Ohishi, and Fumio Ohtomo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Japan

Filed Dec. 20, 1989, Ser. No. 453,904

Claims priority, application Japan, Dec. 30, 1988, 63-335282

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 **6 Claims**



1. A light wave distance measuring instrument of the pulse type comprising:

signal generating means for providing a reference signal of a reference frequency and an output driver signal of a frequency different from said reference frequency;

light source means, coupled to said signal generating means, for periodically emitting pulses of light in response to said output driver signal;

beam splitter means, optically coupled to said light source means, for optically separating said pulses of light into internal reference light pulses and external measurement light pulses;

external passage light coupling means, optically coupled to said beam splitter means, for coupling said external measurement light pulses toward an external object at distance to be measured and for receiving reflected light pulses from said external object;

internal passage light coupling means, optically coupled to said beam splitter means, for coupling said internal reference light pulses without reflection from said external object;

light pulse receiving means, responsive to said internal reference light pulses and said reflected light pulses, for converting said light pulses into internal pulse timing signals and reflected pulse timing signals, respectively;

sampling means, coupled to said light pulse receiving means and said signal generating means, for providing a first signal representing sampling of said reference signal at the timing of said internal pulse timing signals and a second signal representing sampling of said reference signal at the timing of said reflected pulse timing signal; and

calculating means, coupled to said sampling means, for determining the distance to said external object based on phase difference between said first and second signals representing sampling of said reference signal.

5,054,912

OPTICAL DISTANCE-MEASURING DEVICE

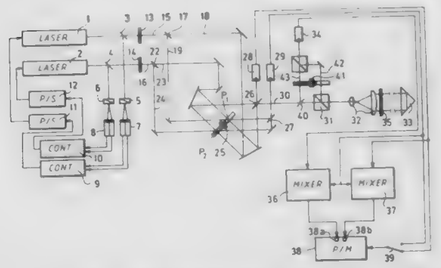
Michael Kuchel, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Nov. 6, 1990, Ser. No. 609,584

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1989, 3937268

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 **13 Claims**



1. In an optical distance-measuring device having a light source for emitting a light beam which is directed at a distant target, means for receiving reflections of said light beam from said target, and means for detecting phase shifts between said emitted and reflected beams, the improvement wherein:

said light source comprises two multi-mode lasers and said device further comprises

means for superimposing at least two modes of each said laser to produce a pair of amplitude-modulated laser beams, each of said modulated beams being directed at said target.

5,054,913

METHOD AND APPARATUS FOR MEASURING THE VELOCITY OF A FLUID USING ANALYSIS OF YOUNG'S FRINGES IN SPECKLE PHOTOGRAPHY

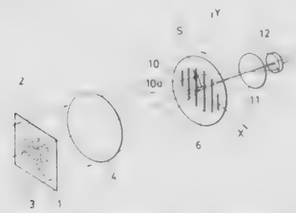
Muneharu Ishikawa, Ryuugasaki, and Ayafumi Taniji, Tsukuba, both of Japan, assignors to Kowa Company Ltd., Japan

Filed Apr. 16, 1990, Ser. No. 510,292

Claims priority, application Japan, Apr. 21, 1989, 1-100115

Int. Cl.[5] G01P *3/36*; G06E *1/04*; G06G *7/19*

U.S. Cl. 356—28.5 **17 Claims**



12. An apparatus for measuring the velocity of a fluid, in which a double-exposure image of the speckle pattern or particle images of tracer particles in a fluid is irradiated with a collimated beam of coherent light, and is subjected to Fourier transformation through a lens to produce at the focal plan Young's fringes which are analyzed to determine the spacing and direction of the fringes in order to measure the velocity of the fluid, comprising:

a transparent medium for recording a double-exposure image;

a lens positioned to receive a collimated lens of laser light transmitted through the double-exposure image for effecting Fourier transformation of the double-exposure image;

means disposed at the focal plane of the lens for measuring the direction of the fringes corresponding to the double-exposure image; and

means disposed at the focal plan of the lens for measuring the spacing of the Young's fringes corresponding to the double-exposure image;

whereby the velocity of the fluid can be determined using the measured direction and spacing of the fringes.

5,054,914

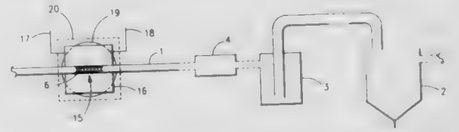
APPARATUS FOR ANALYSIS OF VOLATILE SAMPLES BY ATOMIC SPECTROSCOPY

Bernhard Huber, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin Elmer GmbH, Uberlingen, Fed. Rep. of Germany

Filed Aug. 3, 1990, Ser. No. 562,178

Int. Cl.[5] G01N *21/01*

U.S. Cl. 356—36 **5 Claims**



1. An apparatus for passing a volatile sample into the measuring arrangement of an atomic spectrometer by means of a carrier gas, comprising:

a carrier gas conduit for connection to a carrier gas source;

said carrier gas conduit serving for connection to the measuring arrangement and for conducting therethrough to said measuring arrangement, a carrier gas flow containing the volatile sample;

a tube section made of fused silica which is transparent for infrared radiation;

said tube section constituting part of said carrier gas conduit;

a cooling jacket associated with said tube section;

said cooling jacket being adapted for connection to a cold source and for passing therethrough a coolant for cooling said tube section;

said cooling jacket being made of fused silica which is transparent for infrared radiation;

a gas permeable filling present in said tube section for depositing the volatile sample at said gas permeable filling during a cooling phase of the operation of the apparatus;

heating means associated with said tube section for vaporizing the volatile sample from said gas permeable filling during a heating phase of the operation of the apparatus; and

said heating means containing at least one infrared radiator disposed outside said cooling jacket.

5,054,915

LIVER FUNCTION TESTING APPARATUS

Masahiko Kanda, and Kunio Awazu, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 14, 1988, Ser. No. 270,223

Claims priority, application Japan, Nov. 13, 1987, 62-287677; Nov. 13, 1987, 62-287679

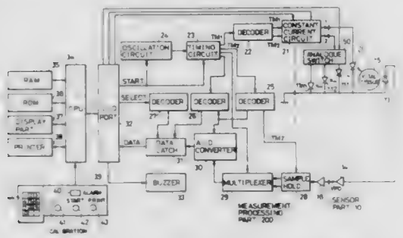
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] G01N *33/48*

U.S. Cl. 356—39 **15 Claims**

1. A liver function testing apparatus for testing a liver function, comprising: light source means (**11**, **12**) for exposing vital tissue (**15**) to a first light signal capable of being absorbed by a specific dye injected into the blood of said vital tissue, said dye to be taken in and removed by the liver, and to a second light signal capable of not being absorbed by said specific dye; photoelectric conversion means (**13**) for outputting first and second photoelectric conversion signals based on light from

said vital tissue and corresponding to said first light signal and to said second light signal applied to said vital tissue by said light source means; sampling means (**28**) for sampling said photoelectric conversion outputs from said photoelectric conversion means; decision means (**34**, **PS28**) for determining a coefficient of a regression line expression between said first and second photoelectric conversion signals on the basis of variable components in said vital tissue included in said first and second photoelectric conversion signals sampled by said sampling means; arithmetic means (**34**, **SP28**) for processing a



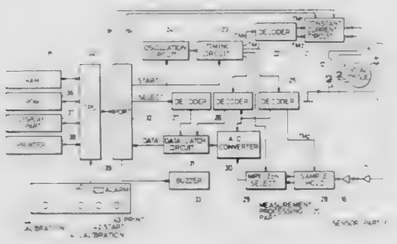
value correlated with a specific dye concentration in said blood on the basis of a sampling signal output from said sampling means during a prescribed period of time following said injection of said specific dye and said coefficient of said regression line expression determined by said decision means to obtain a coefficient of a simulation function as a function of time by using the method of least squares for processing said correlated value; and wherein said arithmetic means comprise means for obtaining an index expressing the total amount of hepatic cell function on the basis of said coefficient of said simulation function obtained by said arithmetic means.

5,054,916

LIVER FUNCTION TESTING APPARATUS

Masahiko Kanda, and Kunio Awazu, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 8, 1988, Ser. No. 268,735
Claims priority, application Japan, Nov. 13, 1987, 62-287678
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] G02N *33/48*
U.S. Cl. 356—39 **14 Claims**



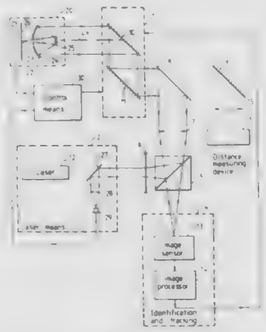
1. A liver function testing apparatus for testing a liver function, comprising: light source means (**11**, **12**) for exposing vital tissue to a first light signal capable of being absorbed by a specific dye injected into blood of said vital tissue, said dye to be taken in and removed by the liver, and to a second light signal capable of not being absorbed by said specific dye; photoelectric conversion means (**13**) for outputting first and second photoelectric conversion signals obtained from said vital tissue and corresponding to said first light signal and to said second light signal applied to said vital tissue by said light source means; sampling means (**28**) for sampling said first and second photoelectric conversion signals a plurality of times; first decision means (**34**, **SP28**) for determining a first coefficient of a first regression line expression between said first and second photoelectric conversion signals on the basis of variable components in said blood included in said first and second photoelectric conversion signals sampled by said sampling means a plurality of times before injection of said specific dye; second decision means (**34**, **SP28**) for determining a second coefficient of a second regression line expression between said first and second photoelectric conversion signals on the basis of variable components in said blood included in said first and second photoelectric conversion signals sampled by said sampling means a plurality of times after a lapse of a prescribed period; and arithmetic means (**34**) for storing a plurality of sampling signal outputs of said sampling means during a prescribed period of time following said injection of said specific dye for processing a value correlated with a specific dye concentration in said blood on the basis of said first and second coefficients of said first and second regression line expressions determined by first and second decision means for obtaining a coefficient of a simulation function as a function of time by using the method of least squares on the basis of said processed value correlated with said specific dye concentration, for obtaining a blood plasma disappearance rate of said specific dye and a retention rate of said specific dye in said prescribed period of time on the basis of said simulation function coefficient.

5,054,917

AUTOMATIC BORESIGHTING DEVICE FOR AN OPTRONIC SYSTEM

Christian Pepin, Gif/S/Yvette; Vincent Vilbois, Montigny Le Bretonneux, and Marc Audion, Massy, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 13, 1990, Ser. No. 581,796
Claims priority, application France, Sep. 19, 1989, 89 12257
Int. Cl.[5] G01B *11/26;* **G02B** *23/10*
U.S. Cl. 356—152 **7 Claims**



1. An automatic boresighting device for an optronic system including a single pupil for a laser, a first and a second image sensor, working respectively in two different ranges of spectral sensitivity;

said device including:

a collimated radiation source, associated with the laser, emitting in the optical axis of the laser, with a wavelength belonging to the range of spectral sensitivity of the first sensor;

optical means reflecting the radiation from the source associated with the laser, to form a light spot on the first sensor;

a wide-band collimator including, in its focal plane, a screen with holes cut out in it, constituting a reticle illuminated by a source emitting in both ranges of spectral sensitivity, said collimator being placed so that it is visible simultaneously to the first image sensor and to the second image sensor, to form two images of the reticle on these sensors respectively;

means to measure the distance, on the first sensor, between the position of the image of the reticle and the position of the spot formed by the source, and to deduce a first boresighting correction therefrom;

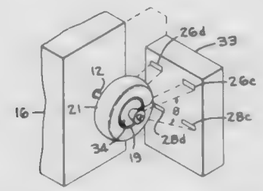
means to measure the distance, on the second sensor, between the position of the image of the reticle and a reference point, and to deduce a second boresighting correction therefrom.

5,054,918

LIGHT SCANNING SYSTEM FOR MEASUREMENT OF ORIENTATION AND PHYSICAL FEATURES OF A WORKPIECE

Elizabeth A. Downing, Sunnyvale, Calif.; Steven W. Rogers, Conway, Ark.; Raymond Titsworth, Conway, Ark.; Donald J. Christian, Fremont, and Michael L. Baird, Los Altos, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 2, 1990, Ser. No. 473,754
Int. Cl.[5] G01B *11/26*
U.S. Cl. 356—152 **45 Claims**



14. Runout measurement apparatus for detecting runout in a rotatable member relative to a spin axis for the rotating member, comprising

light beam projection means for projecting a light beam along a path toward the rotatable member,

optical means for converting said light beam into a substantially planar beam,

light sensing means disposed to receive light from said substantially planar beam which is reflected from the rotatable member, said light sensing means providing an output signal indicative of said planar beam reflection, and

signal processing means coupled to said output signal for producing data representing a measurement of change in peripheral position of the rotatable member as it is rotated about the spin axis.

5,054,919

SEAL FOR HIGH PRESSURE AND SMALL VOLUME SAMPLE CELLS

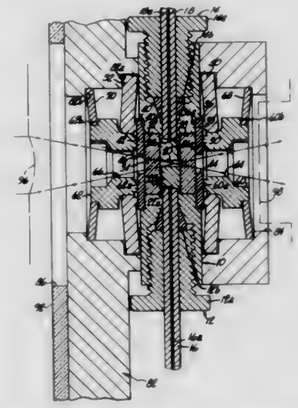
Raymond G. Bryan, Reno, Nev., assignor to Linear Instruments Corporation, Reno, Nev.

Filed Feb. 7, 1989, Ser. No. 307,766
Int. Cl.[5] G01N *1/10*
U.S. Cl. 356—246 **12 Claims**

1. A cell assembly including a cell body and a cell window for containing a sample volume to be analyzed, the improvement comprising means for providing a seal across the interface of the cell window and cell body comprising

sealing means disposed adjacent and overlying the interface of the cell window and cell body, and

loading means for applying a load to said sealing means with a first force being applied between the sealing means and the cell window and a second force being applied between the sealing means and the cell body, said loading means



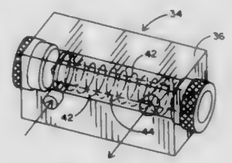
comprising two independent loading elements for providing said two forces.

5,054,920

INTERNAL REFLECTANCE CELL HAVING IMPROVED SAMPLE FLOW GEOMETRY

Walter M. Doyle, Laguna Beach, Calif., assignor to Axiom Analytical, Inc., Laguna Beach, Calif.

Filed Oct. 10, 1989, Ser. No. 424,150
Int. Cl.[5] G01N *21/09, 21/41*
U.S. Cl. 356—246 **9 Claims**



1. A sample cell structure in which a liquid sample is analyzed by means of radiation moving inside an internal reflecting element (IRE), comprising:

a housing having a cylindrical chamber extending longitudinally therethrough;

an IRE extending longitudinally through the chamber in the housing, said IRE having a circular cross-section;

the annular space between the IRE and the cylindrical wall of the chamber constituting a sample chamber through which the liquid sample is caused to travel;

an inlet port through which the liquid sample enters the chamber, said inlet port being located near one end of the IRE and being radially offset from the IRE in order to cause the incoming liquid stream to impact the chamber wall rather than the IRE;

means for sealing the IRE at both ends to prevent sample leakage;

an outlet port through which the liquid sample exits the chamber, said outlet port being located near the other end of the IRE; and

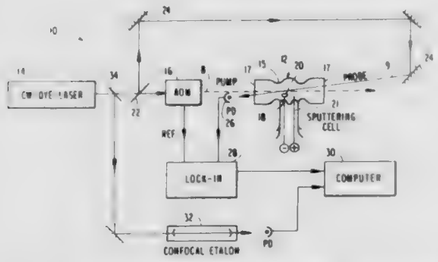
a helical groove formed in the wall of the chamber having sufficient depth to cause a significant portion of the sample flow to move in the helical path provided by the groove.

5,054,921

DOPPLER-FREE SPECTROSCOPY

Peter Hannaford, Mount Waverley, and David S. Gough, Blackburn, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

Filed Jun. 30, 1989, Ser. No. 374,015
Int. Cl.[5] G01J *3/42*; G01N *21/62*
U.S. Cl. 356—311 **18 Claims**



17. Apparatus for obtaining a substantially Doppler-free spectrum of a sample, comprising:

a sputtering cell having a sputtering cathode of the sample for generating in a vacuum in the cell a sputtered vapour of the sample;

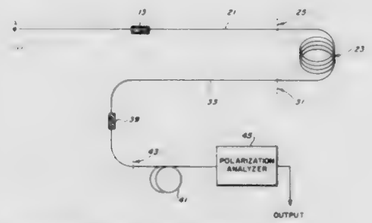
a spectroscopic arrangement to obtain a saturated absorption spectrum of the vapour in the cell, said arrangement including means to chop an incident light beam for said cell, and means for controlling, in use, the pressure in said sputtering cell and the chopping frequency of an incident beam employed to obtain said spectrum to reduce the number of detected velocity-changing collisions in said cell to substantially eliminate any background Doppler-broadened component from said saturated absorption spectrum, which is thereby a substantially Doppler-free spectrum.

5,054,922

DIFFERENTIAL POLARIMETRIC FIBER OPTIC SENSOR

Alan D. Kersey, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 16, 1990, Ser. No. 465,677
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **16 Claims**



1. A polarimetric fiber sensor comprising:

a first polarization-maintaining fiber;

means for propagating polarized light into a first polarization mode of said first polarization-maintaining fiber;

a sensing fiber of the kind exhibiting birefringence when stressed by a measurand, said sensing fiber having a birefringence B_s, a length L_s and an input end coupled to said first polarization-maintaining fiber to enable said polarized light from said first polarization mode of said first polarization-maintaining fiber to be divided between fast and slow axes of said sensing fiber;

a second polarization-maintaining fiber having a first end coupled to an output end of said sensing fiber to enable fast and slow components of light from the respective said fast and slow axes of said sensing fiber to be resolved along a first polarization mode of said second polarization-maintaining fiber;

a compensating fiber having a birefringence B_c and a length L_c whose product B_cL_c is substantially equal to the product B_sL_s of said sensing fiber, said compensating fiber having a first end coupled to a second end of said second polarization-maintaining fiber to enable said fast and slow components of light from said first polarization mode of said second polarization-maintaining fiber to be resolved into each of fast and slow axes of said compensating fiber; and

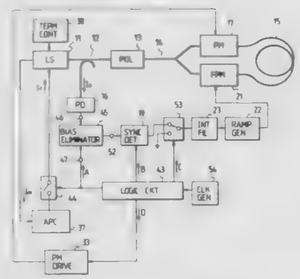
polarization analyzer means being responsive to light from said fast and slow axes of said compensating fiber for developing an interference pattern signal representative of the change in the measurand acting on said sensing fiber.

5,054,923

FIBER OPTIC GYRO USING A PULSED LIGHT SOURCE

Kenichi Okada, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed May 8, 1990, Ser. No. 520,410
Claims priority, application Japan, May 15, 1989, 1-121862
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **7 Claims**



1. A fiber optic gyro comprising:

a light source;

an optical fiber coil which makes at least one turn;

means for applying right-handed light and left-handed light from said light source to said optical fiber coil;

interference means whereby said right-handed light and left-handed light having propagated through said optical fiber coil are caused to interfere with each other;

phase modulating means connected in cascade between one end of said optical fiber coil and said interference means, for phase modulating said right-handed light and said left-handed light;

photoelectric conversion means for detecting the intensity of said interference light as an electrical signal;

synchronous detecting means for synchronously detecting a phase modulated frequency component of said electrical signal from said photoelectric conversion means;

light source drive means for repeatedly turning ON and OFF the emission of light by said light source means;

said light source drive means including logic circuit means for generating a first pulse of a fixed width with a predetermined constant period, said light source means being controlled by said first pulse to emit light of said fixed width which repeats with said constant period;

DC component eliminating means which responds to said first pulse to eliminate a DC component from the output signal of said photoelectric conversion means provided in response to the emission of light from said light source means, the resulting signal being provided to said synchronous detecting means;

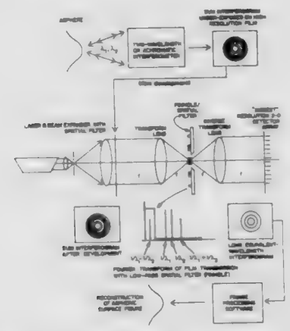
said DC component eliminating means including a low frequency cutoff filter, switching means for connecting the output of said photoelectric conversion means to said low frequency cutoff filter upon each application of said first pulse, level holding means connected to the input of said low frequency cutoff filter for detecting and holding an average level of said signal provided from said photoelectric conversion means via said switching means upon each application of said first pulse, said switching means being operative to supply said low frequency cutoff filter with said average level output from said level holding means when said first pulse is not applied.

5,054,924

METHOD FOR EXTRACTING LONG-EQUIVALENT WAVELENGTH INTERFEROMETRIC INFORMATION

Eric B. Hochberg, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 364,165, Jun. 12, 1989. This application Feb. 26, 1990, Ser. No. 484,247
Int. Cl.[5] G01B *4/02*
U.S. Cl. 356—359 **10 Claims**



1. A method for extracting long-equivalent wavelength interferometric information from a wavelength-independent sum interferometer; the method comprising the steps of:

a) preparing a non-linear sum two-wavelength interferogram;

b) placing the interferogram prepared in step a) in a Fourier transform, spatial filter, inverse Fourier transform optical train; and

c) detecting the output image of said optical train.

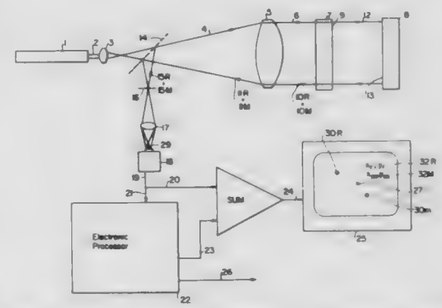
5,054,925

METHOD FOR ALIGNING AN INTERFEROMETER

George C. Hunter, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Continuation of Ser. No. 294,479, Jan. 6, 1989, abandoned. This application Jan. 8, 1991, Ser. No. 637,930
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—363 **34 Claims**

1. In an interferometer alignment system comprising an interferometer having a plurality of movable elements alignable with respect to an optical axis, a source of radiant energy for said interferometer, means for providing a measurement wavefront and a reference wavefront from said radiant energy, and means for collecting said measurement and reference wavefronts and focusing them as spots; the improvement comprising a camera having a photosensitive surface; means for imaging said focused spots onto said photosensitive surface of said camera, said camera providing an output signal based on said imaged spots; means for providing said output signal to a video type monitor for enabling a display of said imaged spots on said monitor; means for processing said output signal for providing a set of corresponding coordinates for said displayed imaged spots; means for predetermining a camera pixel location corresponding to a predetermined location of said interferometer optical axis; means for providing a display of said corresponding coordinate relative with respect to said predetermined location of said optical axis corresponding to said



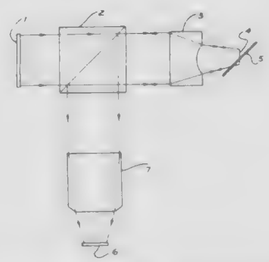
predetermined camera pixel location on said monitor; means responsive to said provided corresponding coordinate for providing a control signal proportional to said coordinates; and means responsive to said control signal for enabling movement of said elements until said coordinates correspond to said predetermined camera pixel location; whereby the location of said optical axis is predetermined prior to the alignment of said elements.

5,054,926

DISTANCE MEASURING DEVICE

Timothy P. Dabbs; Zoltan S. Hegedus, and Graham J. Higgerson, all of New South Wales, Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU88/00084, § 371 Date Dec. 13, 1988, § 102(e) Date Dec. 13, 1988, PCT Pub. No. WO88/07657, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 24, 1988, Ser. No. 327,915
Claims priority, application Australia, Mar. 24, 1987, PI1044; Oct. 7, 1987, PI4749
Int. Cl.[5] G01B *11/14, 11/24*
U.S. Cl. 356—345 **18 Claims**



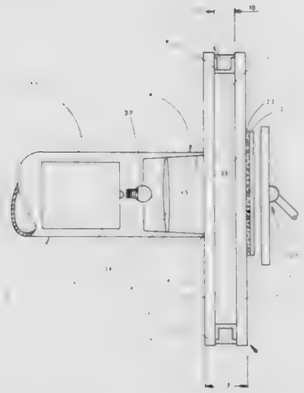
1. An apparatus for non-contact distance measurement comprising:

a source of energy;

means for focusing said energy into a single common focal line which, in operation, is at a non-zero angle to the average surface under examination and intersects said surface at at least one point;

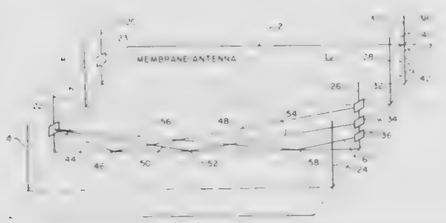
means for imaging said common focal line onto an image plane in space;
means for detecting features of the image on said image plane; and
means for analyzing a signal from said detecting means to provide a measurement of the distance from a reference point to the surface.

5,054,927
APPARATUS AND METHOD FOR DETERMINING THE THICKNESS OF INSULATED GLASS
John C. Garves, 15601 Bondy La., Darnestown, Md. 20878
Filed Jul. 17, 1990, Ser. No. 553,423
Int. Cl.[5] G01B *11/06*
U.S. Cl. 356—382 18 Claims



1. Glass thickness measurement apparatus, comprising a target having plural parallel lines representing thickness for mounting on an outer glass surface of an insulated glass unit, a light source having a hood for positioning on a second outer surface of the insulated glass unit opposite the target, and a scale on the target comprising the parallel lines for indicating the thickness between the first and second outer glass surfaces of the insulated unit.

5,054,928
SYSTEM FOR COMPENSATING ANTENNA MEMBRANE DEFLECTION
Walter G. Egan, Woodhaven; Robert E. Ryan, Levittown, both of N.Y., and George P. Gayes, Port St. Lucie, Fla., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Mar. 15, 1990, Ser. No. 493,815
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—400 7 Claims



1. A system for monitoring deflections of a structure surface comprising:
at least one source of polarized light directed toward the surface;
at least one detector array located above the surface and opposite the source for detecting displacement of the polarized reflections as the surface deflects;
means for converting analog data derived from the array to digital data; and
means for performing a Fourier transformation of the digital data to transform the time domain displacement data from the array to two-dimensional spatial format.

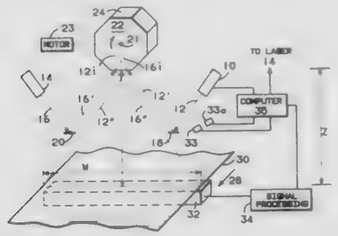
5,054,929
OPTICAL ALIGNMENT METHOD USING ARBITRARY GEOMETRIC FIGURES
Thomas W. Dey, Springwater, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 26, 1990, Ser. No. 516,006
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—401 7 Claims



1. A method which is suitable for uniquely aligning first and second objects, the method comprising a pre-alignment stage comprising the steps of
(1) generating on a first object a first geometric configuration comprising dark and clear regions and having at least one portion characterized by a first random geometric configuration; and
(2) generating, on a second object, a geometric configuration which is a geometric complement of the first random geometric configuration;
and
an alignment stage, comprising the steps of
(3) juxtaposing the first and second objects so that the first geometric configuration and its complement generate a unique dark spot; and,
(4) rotating the first and second objects about an axis normal to the first object and centered at the dark spot, until a transmissivity of the juxtaposed objects is at a minimum.

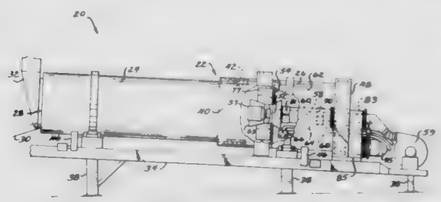
5,054,930
SCANNING APPARATUS
Alexander Adelson, Peekskill, N.Y., assignor to Intec, Corp., Trumbull, Conn.
Filed Mar. 2, 1990, Ser. No. 487,572
Int. Cl.[5] G01N *21/89*
U.S. Cl. 356—429 40 Claims

1. A high speed scanning apparatus for scanning a moving target, comprising:
a polygonal mirror with a plurality of sides and a center and having an axis of rotation at the center thereof and a mirror face at each side thereof;
means for rotating the mirror about the axis of rotation;
means for forming a first laser beam and for directing the first laser beam at the polygonal mirror along a first path which intersects one mirror face at a time during rotation for reflection at a given angle to effect a first scan by each mirror face in one scan direction of a target moving in at least one direction, wherein a first imaginary line extending the first path beyond the intersected mirror face is offset from the axis of rotation on one side thereof;
means for forming a second laser beam and for directing the second laser beam at the polygonal mirror along a second path which intersects the same one mirror face at a time as the first beam for reflection at said given angle to effect a second scan in the one scan direction of the moving target delayed in time from the first scan by each mirror face,



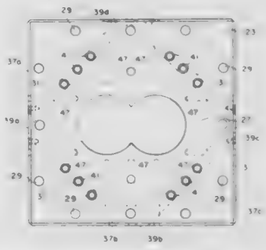
wherein a second imaginary line extending the second path beyond the intersected mirror face is offset from the axis of rotation on another side thereof and intersects the firs imaginary line behind the intersected mirror face and wherein the second path forms an angle with respect to the first path which is greater than said given angle, whereby two scans are effected for each mirror face; and
means for detecting the laser beam light directed at the moving target.

5,054,931
COUNTERFLOW ASPHALT DRUM MIXER PRODUCING LESS HYDROCARBON EMISSIONS AND A METHOD USED THEREIN
Robert E. Farnham, Naperville, and Fredric W. Prill, North Aurora, both of Ill., assignors to Barber-Greene Co., DeKalb, Ill.
Filed Apr. 6, 1987, Ser. No. 35,076
Int. Cl.[5] B01F *9/06*; E01C *19/10*
U.S. Cl. 366—25 2 Claims



1. A counterflow drum mixer comprising:
a cylindrical, rotatable drum having opposed inlet and outlet ends, the inlet end capable of receiving virgin aggregate;
a burner having burner head projecting into the drum from the outlet end of the drum, the burner capable of directing hot gases toward the inlet drum end;
means for moving paving material through the drum from the inlet end to the outlet end of the drum;
a burner shield annularly surrounding the burner to define a mixing area near the outlet end of the drum isolated from radiation and hot gases produced by the burner, the burner shield having means to allow virgin aggregate to pass toward the outlet end of the drum;
a venturi tube surrounding the burner head and communicating through the burner shield;
means for introducing reclaimed asphaltic pavement into the mixing area of the drum; and
means for introducing liquid asphalt into the mixing area of the drum;
whereby, when the drum mixer is operating, the virgin aggregate moves from the inlet end of the drum toward the burner and the mixing of the liquid asphalt and reclaimed asphaltic pavement occurs in the isolated mixing area;
wherein the burner shield supports the venturi tube to surround the burner head; and
wherein the venturi tube is hour-glass shaped, and has cylindrical mid-section attached to the burner shield at a central aperature in the burner shield.

5,054,932
SEGMENTED BARREL EXTRUDER DEVICE
Waino J. Kangas, P.O. Box 502, Milford, Del. 19963
Filed Dec. 17, 1990, Ser. No. 627,974
Int. Cl.[5] B29C *47/82*
U.S. Cl. 366—84 5 Claims



1. A segmented barrel extrude device for extrusion along a longitudinal axis, said device having a plurality of segments enclosing an extrude barrel aligned on said longitudinal axis, said segments comprising:
a pair of axially perpendicular rectangular end flanges for each segment, each said pair of end flanges having exposed sides and a central portion for housing said extrude barrel, each said pair of end flanges having a plurality of aligned straight line paths for fluid flow into and out of said flanges in a plane perpendicular to said longitudinal axis, wherein said straight line paths each intersect two of said exposed sides without intersecting said central portion, and port means for providing access for fluid flow to each straight line path from at least one of said sides of said flange;
a housing portion between each of said pair of flanges for housing said extrude barrel, said housing having a plurality of straight axial channels radially outside said extrude barrel and is connected perpendicular to said straight line paths in said end flanges to conduct fluid along the outside of said barrel from a plurality of points along one path in each of said straight line paths in one of said pair of end flanges to a plurality of points along a corresponding straight line path in the other of said pair of end flanges; and
an inlet means and an outlet means for introducing fluid into and removing fluid from selective straight line paths and straight axial channels though said port means.

5,054,933

MIXING DEVICE WITH MEANS TO INTRODUCE AND EXTRACT GASEOUS MATERIAL

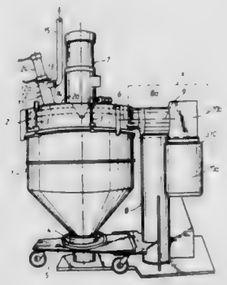
Michael Derksen, Lüdenscheid, and Joachim Domke, Menden, both of Fed. Rep. of Germany, assignors to Dr. Herfeld GmbH & Co., KG, Fed. Rep. of Germany

Filed Sep. 18, 1989, Ser. No. 408,725

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1988, 3837673

Int. Cl.[5] B01F *9/08, 15/02*

U.S. Cl. 366—138 **7 Claims**



1. A mixing device for mixing dust-producing bulk material in powdered and granular form, said device comprising stationary mounting means having a pivot shaft; a mixing vessel having first and second bowl-shaped vessel parts removably coupled together to form a mixing chamber, said first vessel part having mixed material outlet means, said second vessel part having rotatable mixing tools therein, said second vessel part having an extraction opening therein through which dust-laden gas may be extracted from said chamber, said second vessel part being mounted on said stationary mounting means via said pivot shaft for pivoting of said mixing vessel between a first position in which said second vessel part defines a top cover for said chamber and an inverted mixing position in which said second vessel part defines a base for said chamber; extraction valve means movable between first and second positions in which said valve means respectively closes and opens said extraction opening; means for moving said valve means between said positions; extracting means operable when said valve means is in its second position and said mixing vessel is in said first position to extract dust-laden gas from said chamber via said extraction opening; and means separate from said extraction means for introducing a protective, anti-explosion gas into said chamber via said second vessel part while said extraction opening is opened and said gas-laden dust is extracted from said chamber.

5,054,934

SANITARY DISPENSER

Clyde L. Kintz, 124 Smart Ct., Encinitas, Calif. 92024-2934

Filed Jul. 28, 1989, Ser. No. 386,145

Int. Cl.[5] B01F *5/26*

U.S. Cl. 366—196 **8 Claims**

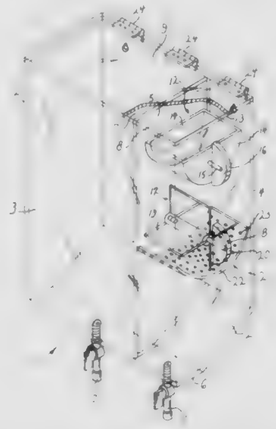
8. A dispenser for granulated or powdered materials comprising:

a. a plurality of containers having an opening at the top thereof,

b. a bottom for each container having a means for removing the contents of said container through said bottom,

c. at least one of said containers having a means for receiving a predetermined amount of said material within said container said receiving means further comprising: a receptacle rotatably attached to said container and positioned above said wheel adapted for receiving and holding material and having a first know fixedly attached to the axis of said receptacle accessible from outside of said dispenser,

d. means for mixing said material within said container, adapted for receiving said predetermined amount of said material, said mixing means further comprising a wheel



having an axle rotatably attached to said container having a plurality of vanes thereon and a sieve in juxtaposition with said wheel, and having a second knob fixedly attached to the axis of said wheel accessible from outside of said dispenser and

e. a cover for said container.

5,054,935

TEMPERATURE-MEASURING METHOD AND DISTRIBUTED OPTICAL FIBER TEMPERATURE SENSOR

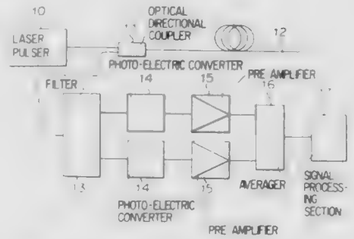
Yuzuru Tanabe, Yokohama, and Koji Ikawa, Tokyo, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 7, 1990, Ser. No. 534,233

Claims priority, application Japan, Jun. 8, 1989, 1-143996

Int. Cl.[5] G01K *11/00;* **G01J** *5/08, 5/10*

U.S. Cl. 374—131 **4 Claims**



1. A temperature-measuring method which comprises the steps of:

maintaining a reference point of an optical fiber at a known reference temperature;

inputting laser pulses into an incident end of the optical fiber to be measured;

detecting the amplitudes and delay time of the Stokes and anti-Stokes light contained in a return beam from the optical fiber; and

measuring the temperature distribution in the fiber from a ratio of respective amplitudes of said Stokes and anti-Stokes light and said delay time of the Stokes light and the anti-Stokes light contained in said return beam from the optical fiber, wherein the temperature distribution is measured by using an equation:

$$\frac{1}{T(x)} = \frac{1}{\Theta} - \frac{k}{hc\nu} \ln\left[\frac{R'(T)}{R'(\Theta)} \exp\left[\int_0^x \alpha\{T(\tau)\}d\tau\right]\right]$$

where T(x) is the temperature to be measured at a measuring point, Θ is the reference temperature at a reference measuring point, R'(T) is the relative ratio of the amplitudes of the Stoke and anti-Stoke light of the return beam at the measuring point, R'(Θ) is the relative ratio of amplitudes of the Stoke and anti-Stoke light of the return beam at the reference temperature point, k is the Boltzmann's constant, h is the Planck's constant, c is the velocity of light, ν is the Raman shift, α is an attenuation difference in the optical fiber between the Stokes light and the anti-Stokes light, and x is a distance of the measuring point from the incident end of the optical fiber, wherein the attenuation difference α is represented by a function $\alpha\{T(\tau)\}$ which is dependent on the temperature $T(\tau)$ at the measuring point τ, and the exponential function in which the exponential part is represented by a value obtained by integrating the function $\alpha\{T(\tau)\}$ with the variation $d\tau$ in distance, is employed as a correction factor.

3. A distributed optical fiber temperature sensor which comprises: means for maintaining a temperature reference point of an optical fiber at a known reference temperature, a light source which inputs laser pulses into an incident end of the optical fiber to be measured, an optical directional coupler which introduces a return beam from the optical fiber to a signal processing unit, and the signal processing unit, the signal processing unit including means for detecting the Stokes light and the anti-Stokes light contained in the return beam and means for measuring the temperature distribution in the optical fiber from the ratio of the amplitudes and the delay time of the Stokes light and the anti-Stokes light, wherein said temperature distribution is obtained by using an equation:

$$\frac{1}{T(x)} = \frac{1}{\Theta} - \frac{k}{hc\nu} \ln\left[\frac{R'(T)}{R'(\Theta)} \exp\left[\int_0^x \alpha\{T(\tau)\}d\tau\right]\right]$$

where T(x) is the temperature to be measured at a measuring point, Θ is the reference temperature at the reference temperature point, R'(T) is the relative ratio of amplitudes of the Stokes and anti-Stokes light at the measuring point, R'Θ is the relative ratio of amplitudes of the Stokes and anti-Stokes light at the reference temperature point, k is the Boltzmann's constant, h is the Planck's constant, c is the velocity of light, ν is the Raman shift, α is an attenuation difference in the optical fiber between the Stokes light and the anti-Stokes light, and x is a distance to the measuring point from the incident end of the optical fiber.

5,054,936

SENSOR FOR ACTIVE THERMAL DETECTION

Jacob Fraden, 72 Hampton Rd., Hamden, Conn. 06518

Filed Nov. 16, 1989, Ser. No. 437,093

The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.

Int. Cl.[5] G01K *7/00, 7/16*

U.S. Cl. 374—164 **9 Claims**

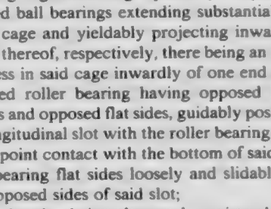
1. An apparatus for thermal sensing of an object by emitting thermal radiation toward said object, said apparatus comprising:

an active thermal radiation sensor capable of emitting thermal radiation, said sensor including:

a first temperature sensitive means,

a first means for heating by receiving electrical energy, attached to said temperature sensitive means for heating said first temperature sensitive means, and

means for providing a first signal indicative of electrical heating energy received by said means for heating, required to maintain said temperature sensitive means at a predetermined temperature upon radiation of thermal energy from said active radiation sensor toward said object.



5,054,937

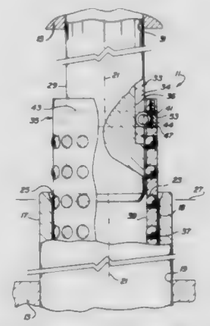
GUIDE SLEEVE, GUIDE POST AND BALL BEARING ASSEMBLY WITH ROLLER PLUG

Ronald L. Hanaway, 30210 E. Eight Mile Rd., Farmington Hills, Mich. 48236

Filed Jan. 28, 1991, Ser. No. 646,215

Int. Cl.[5] F16C *29/04, 43/06*

U.S. Cl. 384—49 **14 Claims**



1. In combination, a guide post having a longitudinal axis and a longitudinal slot with opposed sides and a bottom substantially throughout its length;

a cylindrical ball bearing cage having a co-axial longitudinal axis adjustably receiving said post, and adapted for relative longitudinal and rotary movements thereon;

said bearing cage mounting a plurality of spaced circularly arranged ball bearings extending substantially the length of said cage and yieldably projecting inwardly and outwardly thereof, respectively, there being an internal annular recess in said cage inwardly of one end thereof;

a truncated roller bearing having opposed hemispherical surfaces and opposed flat sides, guidably positioned within said longitudinal slot with the roller bearing maintaining a rolling point contact with the bottom of said slot with the roller bearing flat sides loosely and slidably registerable with opposed sides of said slot;

said roller bearing being alternately registerable with opposite ends of said longitudinal slot, limiting rectilinear movements of the ball cage relative to said guide post;

one of the hemispherical portions of said roller bearing being positioned within the cage recess;

said cage including its recess being adapted for rotary sliding

movement relative to said roller bearing in a direction at right angles to said axis; and

there being a transverse arcuate slot through said cage in registry with said annular recess, and an arcuate pull plug nested within said arcuate slot, and having an internal arcuate recess of the same shape as said cage annular recess forming a continuation thereof for trapping the roller bearing therein and within said ball cage.

5,054,938

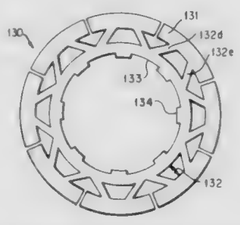
HYDRODYNAMIC BEARINGS HAVING BEAM MOUNTED BEARING PADS AND SEALED BEARING ASSEMBLIES INCLUDING THE SAME

Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Continuation-in-part of Ser. No. 309,081, Feb. 8, 1989, which is a continuation-in-part of Ser. No. 283,529, May 27, 1988, which is a continuation-in-part of Ser. No. 55,340, May 29, 1987, abandoned. This application Apr. 30, 1990, Ser. No. 516,781

Int. Cl.[5] F16C *17/03*

U.S. Cl. 384—117 **13 Claims**



1. A hydrodynamic bearing adapted to be rotatably secured to a rotating shaft for supporting the shaft for rotation relative to a housing, the bearing comprising:

a plurality of circumferentially spaced bearing pads, each bearing having a pad surface with a convex cross section and two axially extending edges;

a support structure located inward of the bearing pads for supporting the bearing pads, the support structure comprising a plurality of beams arranged so as to support the bearing pads for movement with six degrees of freedom such that as the bearing rotates relative to the housing, the pads deflect to a position in which one axially extending edge of the pad is closer to the housing than the other axially extending edge of the pad thereby forming a hydronamic wedge.

5,054,939

MAGNETIC SLIDING BEARING

Rune Adolfsson, Varberg, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

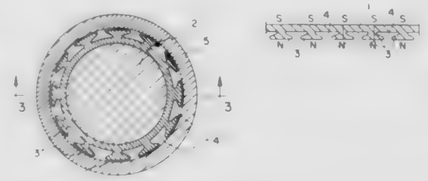
Filed Jun. 4, 1990, Ser. No. 532,949

Claims priority, application Sweden, Jun. 5, 1989, 8902032

Int. Cl.[5] F16C *33/82, 32/06*

U.S. Cl. 384—133 **5 Claims**

1. A sliding bearing which is mounted on a shaft (2) and comprises a magnetized material, whereby between the sliding bearing (1) and a surrounding bearing housing (5) is provided a magnetic fluid as lubricating and sealing agent, characterized therein, that the sliding bearing (1) has sliding shoes (3) adapted at rotation of the shaft (2) to cause a compression of the fluid volume and to urge fluid to pass out under the sliding



shoes at the same time as the hydrostatic pressure increases in the spaces (4) between the sliding shoes (3).

5,054,940

CERAMIC BEARING

Terunobu Momose, and Tetsuo Shibata, both of Gifu, Japan, assignors to Wing Highcera Co., Ltd., Japan

Continuation of Ser. No. 456,311, Dec. 26, 1989, abandoned. This application Feb. 26, 1991, Ser. No. 662,379

Claims priority, application Japan, Dec. 26, 1988, 63-325933; Dec. 26, 1988, 63-325934

Int. Cl.[5] F16C *17/10*

U.S. Cl. 384—193 **6 Claims**



1. A ceramic bearing comprising a ceramic outer ring having a non-spherical curve-shape sliding face formed on the inner circumference of the outer ring and a ceramic inner ring provided with on its outer circumference a sliding face made from a non-spherical curved face corresponding to the sliding face formed on the inner circumference of said ceramic outer ring and a shaft hole through which a shaft is disposed, wherein said shaft hole being coincident with an axis of the sliding face,

whereby said shaft is disposed to coincide with the axis of the sliding face.

5,054,941

PRINT HEAD DRIVING CIRCUIT FOR A WIRE DOT PRINTER

Kiyofumi Koike, and Minoru Tanaka, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 9, 1990, Ser. No. 477,380

Claims priority, application Japan, Feb. 10, 1989, 1-31602; Feb. 13, 1989, 1-33111; Nov. 6, 1989, 1-289720

Int. Cl.[5] B41J *3/02*

U.S. Cl. 400—124 **16 Claims**

1. A drive circuit for driving a wire dot print head having a plurality of driving coils, each driving coil having a first end and a second end, a print lever movably mounted within said print head to move in a first direction and a second direction, the driving coil selectively applying an attractive force on the print lever to move the print lever in the first direction, in

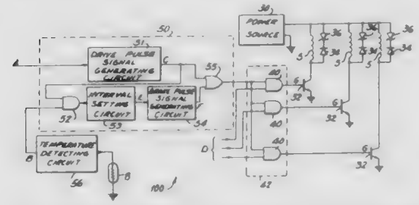
response to a print data signal and a print timing pulse signal, a biasing device for biasing the print lever to a stand-by position in a second direction opposed to said first direction, and a damper for absorbing the kinetic energy of the print lever when said print lever moves in said second direction to the stand-by position, comprising:

DC power source means connected to the first end of the driving coil;

at least one switching means connected to the second end of each driving coil;

reference timing signal generating means for producing a first output signal;

output gate means for providing a second output signal to



the switching means in response to the print data signal and first output signal from the reference timing signal generating means, the second output signal causing a selected driving coil to apply a force to said print lever in the first direction; and

reference timing signal generating means including a drive pulse signal generating means which outputs a drive pulse signal in response to the print timing pulse signal and a brake pulse generating means which outputs a brake signal to said output gate means causing the selected driving coil to apply a force to said print lever in the first direction when the temperature of the print head falls outside of a predetermined temperature range and said print lever is moving in said second direction.

5,054,942

WIRE PRINTING HEAD WITH UNITARY RETURN GROUP

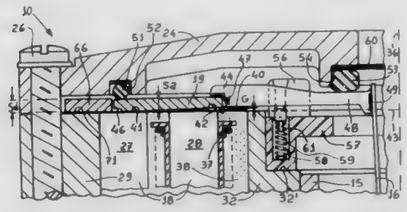
Francesco Bernardis, Chiaverano; Elio Fenoglio Gaddo, Prascorsano, and Rinaldo Ferrarotti, Ivrea, all of Italy, assignors to Ing.C. Olivetti & C., S.p.A. Ivrea, Turin, Italy

Filed Jun. 26, 1989, Ser. No. 371,280

Claims priority, application Italy, Jun. 27, 1988, 67604 A/88

Int. Cl.[5] B41J *2/24*

U.S. Cl. 400—124 **7 Claims**



1. In a needle printing head comprising a plurality of needles and a corresponding plurality of electromagnets, wherein each electromagnet comprises a fixed core with two terminal surfaces which can be excited to generate a magnetic flux through said surfaces and a movable armature of generally elongated shape, wherein each said movable armature has a portion which is normally held in a position of maximum distance of said air gap by the action of a corresponding spring return element, the improvement wherein;

each needle is actuatable by a corresponding actuating elongated member which is fixed to an end of the corresponding said movable armature;

each spring return element acts on a portion of the actuating elongated member in such a way to make said elongated member bear against a stop element of yielding material, and

each said spring return element is accommodated in a unitary return group in a prestressed state, independently of engagement with said needles;

wherein said spring return elements comprise coil springs individually associated with said elongated members and the unitary return group comprising a guide body and retaining means;

wherein said guide body is provided with recesses for accommodating said coil springs in alignment with said portions of the elongated members, cooperating surfaces for retaining said coil springs in said recesses and openings for permitting the passage and the movement of said portions of the elongated members, and

wherein said retaining means is coupled with the guide body and acts against said coil springs to compress the coil springs against said cooperating surfaces in said prestressed status.

5,054,943

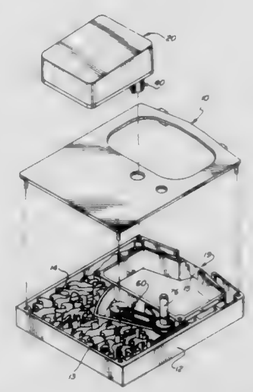
RIBBON INKING APPARATUS AND PRINTER CARTRIDGE

Wei T. Cheng, 1540 New Haven Rd., Naugatuck, Conn. 06770

Filed Apr. 19, 1990, Ser. No. 511,067

Int. Cl.[5] B41J *27/12*

U.S. Cl. 400—202.3 **26 Claims**



1. An inking apparatus for applying a film of liquid received from an applicator operably connected to a source of liquid, to a ribbon material, comprising:

at least one endless belt, said belt being movable to pass said belt against the applicator to receive a film of said liquid and thence to pass said belt against the ribbon material to transfer said liquid film to the ribbon material;

means for supporting and driving said belt;

means for pivoting said belt to intermittently bear against the applicator; and

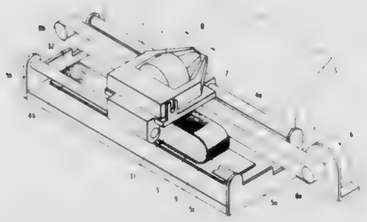
means for engagement with a source of torque, wherein said torque is thereby transmitted to said means for supporting and driving said belt to cause it to move and thereby apply liquid to and advance said ribbon, and to pivot said belt to bear against said applicator.

5,054,944

SERIAL PRINTER HAVING A CARRIER CABLE CONNECTED TO A MOVABLE PRINT HEAD

Yukio Matsuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 543,511
Claims priority, application Japan, Jun. 26, 1989, 1-747799[U]
Int. Cl.[5] B41J *29/00*
U.S. Cl. 400—679 **5 Claims**



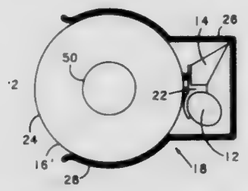
1. A serial printer comprising,
a print head movably supported in a head moving direction;
a flexible cable, having first and second ends and an intermediate portion between said first and second ends, for supplying a signal to said print head, said first end being connected to said print head, said flexible cable being suspended from said first end to form a C-shaped configuration including a bend in its non-fixed intermediate portion between said first and second ends, and elongated substantially parallel to said head moving direction to follow the movement of said print head, said flexible cable including a magnetic material extending in the longitudinal direction of said flexible cable; and
a magnetic plate provided at a position opposing said flexible cable to magnetically attract the portion of said flexible cable between said bend and said second end.

5,054,945

COMPACT WINDOW-WASHING BOTTLE WITH PROTECTED SPONGE AND SQUEEGEE

Jerry R. Iggulden, 21600 Cleardale St., Santa Clarita, Calif. 91321, and Donald A. Streck, 832 Country Dr., Ojai, Calif. 93023

Filed Feb. 7, 1991, Ser. No. 651,772
Int. Cl.[5] A47L *1/08*
U.S. Cl. 401—23 **17 Claims**



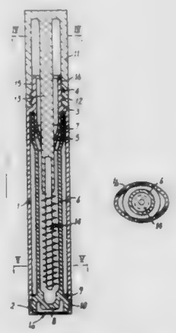
1. Glass cleaning apparatus comprising:
a) a bottle of a resiliently squeezable material, said bottle having a first opening therein in a wall thereof through which liquid cleaning solution can be poured into said bottle and a second opening therein in a wall thereof through which liquid cleaning solution contained therein can be forced out by squeezing said bottle;
b) sealing means for removably sealing said first opening;
c) valve means disposed in said second opening for allowing liquid cleaning solution contained in said bottle to exit said bottle through said second opening only under pressure created by squeezing said bottle;
d) an elongated plastic member having a sponge disposed along one edge thereof and a squeegee blade disposed along another edge thereof, said plastic member having at least one bore therein communicating between a place of attachment and said sponge; and,
e) attaching means for attaching said plastic member to said bottle with said place of attachment disposed adjacent said valve means to received liquid cleaning solution emerging therefrom and with said plastic member and said sponge and squeegee blade thereof aligned with a longitudinal axis of said bottle.

5,054,946

APPLICATOR DEVICE FOR COSMETICS

Simone Morel, Montmirail, France, assignor to Societe De Conseils Et D'Etudes Des Emballages Scee, Seine et Marne, France

Filed Dec. 12, 1988, Ser. No. 288,610
Claims priority, application France, Dec. 11, 1987, 87 17319
Int. Cl.[5] A45D *2/48;* **A46B** *11/00*
U.S. Cl. 401—122 **9 Claims**



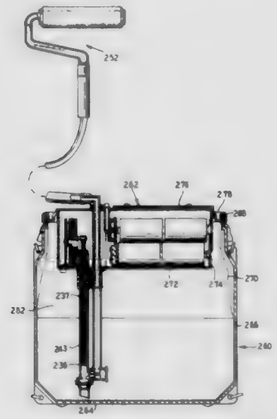
1. An applicator device for containing liquid cosmetics, comprising:
an outer envelope (1) having an elongated exterior wall defining an interior space, a top end and a bottom end, said bottom end being open and having first mating means (2) for lockingly cooperating with a second element, said top end being open and having an integral downwardly extending squeezing member (5) of a frustoconical shape within the interior space of said envelope (1) and an upwardly extending exterior neck (4) for cooperative engagement with a third element, said downwardly extending squeezing member (5) and said elongated exterior wall defining therebetween a narrow annular space;
a said second element comprising an elongated container (6) within said envelope (1), said elongated container (6) having a closed bottom and an open top, said closed bottom having a size and shape for tightly fitting against an interior surface of said outer envelope and comprising second mating means (10) for mating with said first mating means (2) of said envelope (1) whereby said elongated container (6) is frictionally retained against rotation and entirely recessed and axially fixed within said envelope (1), the open top of said elongated container (6) fitting within said annular space and comprising means (7) for surroundingly gripping said squeezing member (5), said elongated container (6) having a circular cross-section of a first outer diameter and said outer envelope (1) having a cross-sectional configuration with a minimum internal dimension greater than said first outer diameter of said elongated container (6) so as to define an open annular space between said outer envelope (1) and said inner container (6) thereby permitting said outer container to have a cross-sectional configuration different from said circular cross-sectional configuration of said elongated container; and
a said third element comprising a cap (11) forming a stem (13) prolongated by an applicator (14), said cap comprising third mating means (12) for cooperating with said neck (4).

5,054,947

SELF-CONTAINED POWER PAINTING SYSTEMS

Peter L. Frank, Corcoran, and Terry R. Reents, Burnsville, both of Minn., assignors to Wagner Spray Tech Corp., Minneapolis, Minn.

Continuation-in-part of Ser. No. 260,523, Oct. 21, 1988, abandoned. This application Aug. 11, 1989, Ser. No. 393,698
Int. Cl.[5] B05C *17/03;* **A46B** *11/02*
U.S. Cl. 401—146 **20 Claims**



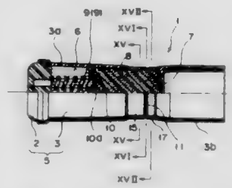
14. A self-contained, power painting system comprising the following:
a pain reservoir including a bottom, at least one retaining wall extending upwardly from said bottom, and a top edge distal from said bottom;
a paint supply means comprising at least one battery, a motor energized by said battery, a manually operable electrical switch means for selectively energizing said motor, said switch means comprising a manually operable vented bulb at an applicator means, said bulb connected by a second, air filled conduit to said paint supply means, and an electrical switch at said paint supply means having a movable contact engageable by a flexible diaphragm, which diaphragm communicates at one side with said second conduit, such that manual depression of said bulb results in deflection of said movable contact to close a circuit normally opened by said switch, and a pump means driven by said motor for pumping paint from said reservoir;
housing means for enclosing said paint supply means, said housing means including a top wall, at least one side wall, and a bottom wall;
applicator means for receiving paint from said reservoir and for applying paint to a surface;
delivery conduit means for carrying said paint from said paint supply means to said applicator means;
seal means for operatively joining said housing means to said reservoir so that said bottom wall and a major portion of said at least one side wall of said housing extend downwardly into said reservoir.

5,054,948

LIQUID APPLICATOR

Shinzo Honda, Tokyo; Kazunori Hirose, and Zensho Kanda, both of Yamanashi, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1990, Ser. No. 559,643
Claims priority, application Japan, Aug. 1, 1989, 1-199591; Aug. 1, 1989, 1-199592
Int. Cl.[5] A47L *13/17*
U.S. Cl. 401—196 **21 Claims**



1. A liquid applicator comprising:
a case comprising a main body, a detachable portion, and separable connecting means formed therebetween, said connecting means including a reduced thickness portion of said case, and said connecting means having outer and inner surfaces having elliptical cross sections;
a first handle grip having a polygonal cross section, formed as a part of said main body;
defining means for defining a space for containing liquid in said main body;
liquid contained in said space;
a column liquid applying member in said case, and being arranged substantially close to an inner side surface of said main body so that said liquid applying member is secured by said main body, said liquid applying member extending into said detachable portion, and wherein said liquid applying member is made of liquid-holding material and is supplied with said liquid from said space; and
a distal end surface on said liquid applying member, on which said liquid is applied, said distal end surface being longer in one direction than in another direction which is perpendicular to said one direction.

5,054,949

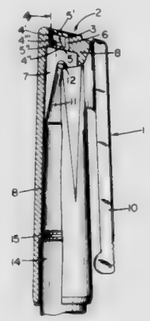
CAP FOR WRITING IMPLEMENT WITH AIR VENT

Friedrich Heger, Feucht, Fed. Rep. of Germany, assignor to J.S. Staedtler GmbH & Co.

PCT No. PCT/DE89/00329, § 371 Date Jan. 26, 1990, § 102(e) Date Jan. 26, 1990, PCT Pub. No. WO89/11978, PCT Pub. Date Dec. 14, 1989
PCT Filed May 25, 1989, Ser. No. 459,774
Claims priority, application Fed. Rep. of Germany, May 31, 1988, 3818473
Int. Cl.[5] B43K *9/00*
U.S. Cl. 401—202 **6 Claims**

1. A cap for writing implements, especially ball point pens, with at least one air channel penetrating through a front end thereof, the air channel (4) being shaped to extend axially and radially and being located exclusively in the region of the otherwise closed front end (2), the air channel (4) having axially extending segments (4') which are bounded by at least one baffle wall (5) extending transversely to the longitudinal axis and are one of connected by at least one radial aperture (4'') with the inside space (7) of the cap (1, 1', 1''), and arranged to be offset with additional axial segments (4''), to form

at least one continuous through air channel (**4**), the at least one baffle wall (**5**) being formed by a disk (**5'**) and a step (**5''**) as a



part of a cap front wall, the cap wall (**8**), the front wall (**3**) and the baffle wall (**5**) in one piece and rigidly connected together.

5,054,950

FASTENER FOR CONSTRUCTION SYSTEMS COMPRISING TUBES AND NODES

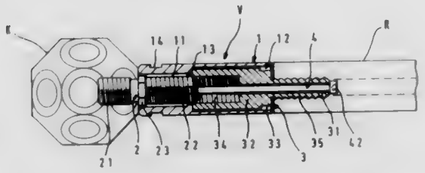
Joachim Zillgen, Karl-Theodor-Str. 3, 5000 Cologne, and Uwe W. Renken, Aachener Str. 40, 5047 Wesseling, both of Fed. Rep. of Germany

Filed Nov. 15, 1990, Ser. No. 614,317

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1989, 8913643[U]

Int. Cl.[5] **F16B** *7/00*

U.S. Cl. 403—171 **6 Claims**



1. A fastener for construction systems having tubes and nodes, the fastener comprising one screw for attaching to a tube and having a threaded shaft and a head, another screw for attaching to a node and having a threaded screw shaft, an elongated sleeve having an axis, means mounting the tube-attaching screw in the sleeve with the shaft aligned with the axis, the head surrounded by the sleeve and the shaft extending outwardly thereof for sliding movement along the axis and for rotation around the axis, means mounting the node-attaching screw in the sleeve for sliding movement along the axis and without rotation around said axis, means securing the node-attaching screw to the tube-attaching screw comprising a threaded bore in the head of the tube-attaching screw and a threaded bolt extending from the node-attaching screw and with the same thread direction and threadably engageable with the threaded bore, and wherein the bore, the sleeve and the node-attaching screw are configured to permit the bolt to be screwed into the bore to such an extent to dispose the node-attaching screw entirely in the sleeve.

5,054,951

ARRANGEMENT FOR THE CONNECTION OF TUBES

Alvar Lundgren, Nedre Fagelbergsgatan, 4A Goteborg, Sweden S-411 28 , and Anders Lundgren, Hinnebacksgatan 11, Goteborg, Sweden S-417 47

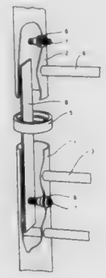
PCT No. PCT/SE88/00424, § 371 Date Jan. 10, 1990, § 102(e) Date Jan. 10, 1990, PCT Pub. No. WO89/02034, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 19, 1988, Ser. No. 457,685

Claims priority, application Sweden, Sep. 4, 1987, 8703450

Int. Cl.[5] **F16B** *7/00*

U.S. Cl. 403—293 **10 Claims**



1. A coupling mechanism for joining at least first and second tubes in end to end assembled relationship along an axis comprising, a coupling guide means having an inwardly extending support flange which defines recesses on opposite sides thereof within said guide means, said recesses being of a size and configuration to cooperatively seat the ends of the tubes therein and against said flange so as to be in opposing relationship, an adjustable attachment means extending through the walls of each of said tubes and spaced from the ends thereof, a rod means extending through said guide means and into each of the first and second tubes, said rod means being of a generally uniform cross section along its length and extending beyond each of said attachment means, said rod means being compressed against the tubes by said attachment means so as to engage the tubes along two longitudinal lines of contact which are generally parallel with the axis of the tube.

5,054,952

DEVICE FOR DETACHABLY FASTENING AND SECURING AN INSERT IN A SLEEVE

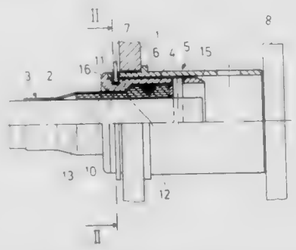
Alexander Chara, Neuhausen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed Jul. 24, 1990, Ser. No. 556,447

Claims priority, application Switzerland, Aug. 24, 1989, 3072/89

Int. Cl.[5] **B25G** *3/18*

U.S. Cl. 403—326 **8 Claims**



1. Device for detachably fastening and securing an insert in a sleeve, in particular a drainage element in the pressing plate

of a fruit press, with a retaining ring that is placed on the sleeve and which engages in a recess of the insert, said retaining ring (**7**, **19**) comprises a resilient spring material and has an inner periphery, there being one or more cams (**9**, **10**) on said inner periphery that extend through corresponding slots (**11**) in sleeve wall (**12**), said insert (**4**) being received within said sleeve and having a recess (**13**) on the outer periphery thereof, said recess having a length corresponding to the width of a said cam, at least one cam (**10**) is guided through a said slot (**11**) in said sleeve wall (**12**) and engages in a said corresponding recess (**13**) so that the insert is secured within said sleeve against axial movement.

5,054,953

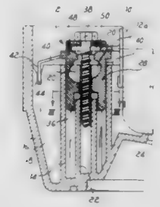
SELF-ADJUSTING DEVICE FOR MUTUAL LOCKING OF TWO BODIES, HAVING A VARIABLE DISTANCE BETWEEN FASTENING POINTS

Silvio Mattiolo, Trescore, Italy, assignor to Videoplastic S.p.A., Gorlago, Italy

Filed Jan. 24, 1990, Ser. No. 469,103

Int. Cl.[5] **F16B** *39/28*

U.S. Cl. 403—406.1 **7 Claims**



1. Self-adjusting locking device for mutually locking of first and second bodies a variable distance between their fastening points, characterized in that said locking device includes a first and a second member (**14**, **26**), said first member (**14**) being integral with one of the bodies to be connected, while said second member (**26**) is slideable and non-rotatable within said first member (**14**) and is adapted to partially project out of the latter under the action of resilient means (**40**, **52**) intermediate between said first member (**14**) and second member (**26**), said resilient means (**40**, **52**) keeping said second member (**26**) engaged with a fastening portion (**12**) of said second body (**10**) to be connected to said first body (**16**), the locking device finally including means (**38**) for mutual fastening of said first member (**14**) to said second member (**26**) and to said fastening portion (**12**),

wherein the first member is a substantially tubular body (**14**) integral at one end thereof with one of the bodies to be fastened, and open at the opposite end, in order to allow said second member (**26**) to be partially inserted,

wherein inner ribs (**20**) of said substantially tubular body (**14**) have a smaller width over a portion of their height, at said portion there being provided a second substantially tubular body (**22**), and

wherein said second member includes sectors (**28**) dividing a cylindrical body (**26**) and having first reduced thickness portions (**36**) at one end, adapted to arrange coaxially with said second substantially tubular member (**22**) and, at the opposite end, second reduced thickness portions (**32**) adapted to allow a locking screw (**38**) to be initially inserted, without coming into engagement with said second reduced thickness portions (**32**), between said first and second reduced thickness portions (**36**, **32**) there being provided larger thickness portions (**34**) wherein locking screw (**38**) threadedly engages.

5,054,954

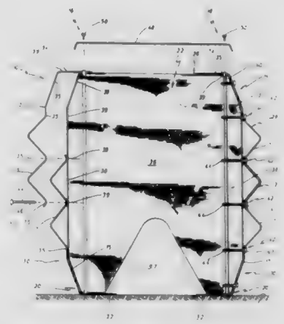
ROADWAY BARRIER

Lincoln C. Cobb, Scarborough, Canada, and Teddy J. Hirsch, College Station, Tex., assignors to International Barrier Corporation, Toronto, Canada

Continuation-in-part of Ser. No. 325,315, Mar. 16, 1989. This application Feb. 5, 1990, Ser. No. 475,019

Int. Cl.[5] **E01F** *13/00*

U.S. Cl. 404—6 **39 Claims**



1. An elongated roadway barier, positioned on a supporting surface of flank a roadway, the barrier being deformable under impact to redirect a straying vehicle striking the barrier, the barrier comprising:

(a) a plurality of panels arranged in two generally parallel spaced rows along lower edges of the panels to define a filler cavity between them;

(b) connection means engaged with the panels thereby locating the rows in their laterally spaced relationship, and connecting the panels in each row in end-to-end relationship in an elongated linked row with the barrier presenting an outer surface along at least a first side of the barrier which surface is generally smooth in a direction parallel to the length of the barrier to allow a vehicle striking the barrier to be deflected along the barrier;

(c) a filler material housed in the filler cavity to support the barrier and provide a medium for dissipating impact energy;

(d) the filler material being at least one layer of non-stabilized filler material and at least one layer of a stabilized filler material, said stabilized filler material is stabilized by means of a bonding agent;

(e) the stabilized filler material providing a shear strength for the stabilized filler material of at least about 10 to 15 psi to provide beam strength for the barrier to distribute an impact force along the length of the barrier; and

(f) the stabilized filler material having a compressive strength of less than about 1200 psi to permit deformation of the barrier under impact to absorb impact energy.

5,054,955

GATE POLE FOR SKI SPORT

Reinhold Habernig, Moritschstrasse 5, A-9500 Villach (Karnten), Austria

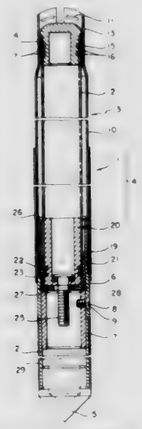
Filed Jul. 9, 1990, Ser. No. 549,939

Int. Cl.[5] **E01F** *09/00;* **E04H** *17/14*

U.S. Cl. 404—10 **11 Claims**

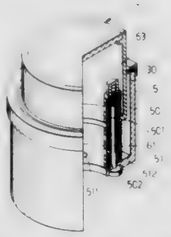
1. A pole (**1**), for use as a gate pole for ski sports comprising, a rigid ground tube (**2**), a stand tube (**3**) extending upwardly from the ground tube (**2**) and having an elastic, tubular, hollow member (**12**) equipped with a valve (**25**) at its lower end (**19**) for the injection of compressed air, said lower end (**19**) fabricated from an elastic sheet material, and a rigid sleeve that is joined to the ground tube and is accommodating said hollow

tubular member (**12**) within itself, and a braided hose (**10**) surrounding the tubular hollow member (**12**) on the outside



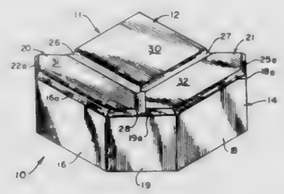
and closed (**11**) at the upper end of said tubular hollow member (**12**).

5,054,956
CONDUIT HOLE COVER
Cheng-Chih Huang, No. 4, Lane 17, Fu-Kuei Rd., Tai-Shang Li, Kang-Shan Chen, Kaohsiung Hsien, Taiwan
Filed May 1, 1990, Ser. No. 517,369
Int. Cl.[5] **E02D** *29/14;* **H02G** *3/08*
U.S. Cl. 404—26 **4 Claims**



1. A covering device for detachably shielding an access hole which is provided on the top portion of a conduit box, comprising:
a fixing member having a peripheral wall with a top opening and a bottom opening, and a bottom seat protruding inwardly from said peripheral wall and surrounding said bottom opening, said bottom seat being adapted properly to fix on the top portion of said conduit box, aligning said bottom opening of said fixing member with the access hole of said conduit box;
a plurality of bolts upwardly fixed on and allocated around said bottom seat;
a plurality of supporting members respectively surrounding said plurality of bolts and piled up along each of said bolts, each of said supporting members being in shape of open annulus;
a suspension member having a peripheral wall with an upper opening and lower opening, and a bottom plate protruding inwardly from said peripheral wall of said suspension member and surrounding said lower opening, said bottom plate having a plurality of holes formed therealong and passed through by said bolts, whereby said suspension member is supported by said piled up supporting members and mounted within the fixing member; and
a covering plate disposed on said suspension member, shielding said upper opening of said suspension member.

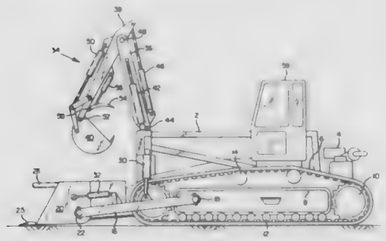
5,054,957
PAVING BLOCK
John V. Johnson, II, 3772 Pineridge, Galena, Ohio 43021
Filed Jan. 25, 1990, Ser. No. 470,078
Int. Cl.[5] **E01C** *5/00*
U.S. Cl. 404—41 **12 Claims**



1. A paving block adapted for disposition in adjacent relationship to a plurality of the same blocks to form a paved surface overlying a supporting surface, said paving block comprising
a body section of planar configuration formed with top and bottom surfaces and a peripheral side wall extending between said top and bottom surfaces, said peripheral side wall being formed with interlock means and cooperative interlock means that are each adapted to mechanically interengage with respective opposite ones of said interlock and cooperative interlock means of adjacently disposed paving blocks to resist displacing forces directed laterally with respect to said peripheral side wall, said interlock means including at least one tongue element projecting a distance laterally outward in the plane of the paving block with respect to said peripheral side wall and said cooperative interlock means including an abutment surface relatively positioned with respect to said tongue element to interfit and mechanically interengage with a tongue element of at least one adjacently disposed paving block, said interlock means and said cooperative interlock means being of a predetermined configuration and relatively disposed to each other whereby the paving block can be oriented in only one position to interfit with other same paving blocks disposed in adjacent, mechanically interengaging relationship thereto and to form only a single surface pattern from a plurality of the same paving blocks.

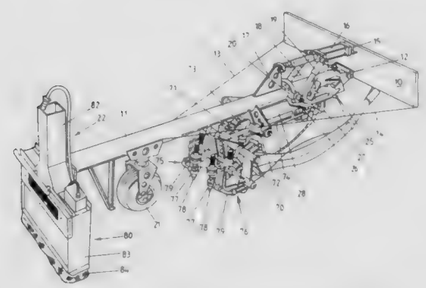
5,054,958
APPARATUS TO PREPARE A ROAD SURFACE
Wayne D. Strunk, 53570 Kocanee Way, La Pine, Oreg. 97739
Filed Oct. 26, 1989, Ser. No. 427,294
Int. Cl.[5] **E01C** *23/12*
U.S. Cl. 404—75 **22 Claims**

1. An apparatus to prepare a road surface comprising:
a frame having a longitudinal axis;
a propelling means to propel said frame;
a collecting means to collect material;
a pair of push arms pivotally attaching the collecting means to the frame, each push arm being individually pivotable on both the frame and the collecting means to permit the collecting means to rotate substantially with respect to the longitudinal axis of the frame; an excavating means to excavate material including an articulated bucket assembly having a boom, an arm and a bucket;
a crushing means to crush the material; and



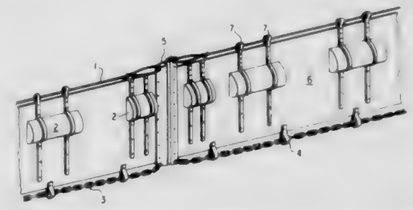
a conveying means to convey material from said collecting means to said crushing means.

5,054,959
LINE MARKING APPARATUS
James B. S. Wilson, Vermont; Robert J. Milligan, Montmorency, and Alan J. Loughron, Murrumbeena, all of Australia, assignors to Road Construction Authority, Victoria, Australia
PCT No. PCT/AU83/00175, § 371 Date Nov. 30, 1984, § 102(e) Date Nov. 30, 1984, PCT Pub. No. WO84/02150, PCT Pub. Date Jun. 7, 1984
PCT Filed Nov. 30, 1983, Ser. No. 638,839
Claims priority, application Australia, Nov. 30, 1982, 7043/82
Int. Cl.[5] **E01C** *23/16*
U.S. Cl. 404—94 **2 Claims**



1. A pavement line marking apparatus comprising support means arranged to travel along said pavement in a desired direction generally corresponding to markings on the pavement, said support means carrying marking detection means adapted to maintain surveillance of a predetermined width of pavement traversed by said detection means, paint applicator means carried by said support means rearwardly of said marking detection means with respect to said desired direction of travel of the apparatus, said paint applicator means being mounted for lateral movement relative to said support means whereby said paint applicator mans are movable in a transverse direction relative to said desired direction of travel, means for moving said paint applicator means laterally relative to said support means, and control means interconnecting said detection means and said means for moving the paint applicator means, said marking detection means being adapted to sense a marking on the pavement traversed and to provide signal means in response thereto, said signal means, via said control means, controlling the movement and positioning of said paint applicator means relative to the marking sensed by said detection means, an independent light source arranged to provide a substantially constant light source to at least the predetermined width of pavement traversed by said detection means, said support means comprising a boom extending forwardly of a vehicle adapted to move said boom along said pavement, said marking detection means being located at a free end of said boom and said paint applicator means being located at an intermediate position along said boom, and wherein a support element is pivoted at a first end to said boom for movement about a generally vertical axis, with said support element extending in a plane generally parallel to and beneath said boom, said paint applicator means being positioned adjacent to the second end of said support element at a distance from said pivot connection and arranged for movement with said support element.

5,054,960
FLOATING BARRIERS FOR CONTAINING OIL SPILLS
Rafael Manzano, and Anderson Chaviel, both of Caracas, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela
Filed Aug. 15, 1989, Ser. No. 393,931
Int. Cl.[5] **E02B** *15/04*
U.S. Cl. 405—72 **19 Claims**



1. A floating barrier for containing oil spills and consisting essentially of:
a) containment means,
b) floating means,
c) fixing means and
d) ballast means;
the containment means, when floated in water, having an upper edge and a lower edge, and comprising an above-water zone or freeboard and a submerged zone or skirt or flap; said containment means consisting of a screen or curtain of woven twisted nylon thread coated on both sides with water-resistant polymer;
the floating means being remote from the upper edge and from the lower edge of the containment means and comprising means to keep the containment means afloat when said containment means is placed in water;
the fixing means comprising a plurality of integral and unitary means to secure the floating means to the screen or curtain and concurrently to impart stability to the containment means; said fixing means extending toward, but terminating at a position remote from, the lower edge of the containment means;
the ballast means comprising means attached to the skirt or flap for maintaining the screen or curtain substantially vertically disposed when the containment means are floating in water.

5,054,961
ONSITE SOIL TREATMENT PROCESS
Lynn D. Sherman, Canton, Ohio, assignor to Ocean Todd Enterprises Inc., Perrysburg, Ohio
Filed Jul. 12, 1990, Ser. No. 551,906
Int. Cl.[5] **E02D** *31/02;* **C02F** *1/00*
U.S. Cl. 405—128 **18 Claims**

1. The method of 'in situ' collection and treatment of floating, sinking and dissolved contaminants existent up to considerable depths in a soil environment comprising the steps of forming an in-ground diversionary water barrier as a boom around at least the downstream area of said soil environment and to a depth at least as great as the presence of contaminants affecting in-ground water flow, and providing collection and

treatment means at a substantial depth to create an in-ground containment reservoir to collect said contaminants within said



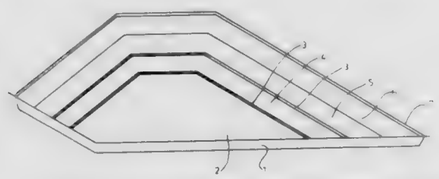
in-ground reservoir primarily for 'in situ' treatment of said contaminants into non-contaminating condition.

5,054,962

PROCESS FOR SEALING THE SURFACE OF DUMPS

Heinz Bahnmüller, Kuerten; Hans-Otto Fricke, Lohmar; Bernd Koglin, Bergisch-Gladbach; Rolf Rink, Cologne, and Wolfgang Vogel, Siegburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 441,810, Nov. 27, 1989, abandoned.
This application Jan. 31, 1991, Ser. No. 649,244
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 3842213
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—129 **14 Claims**



1. A method for the disposal of wastes of different hazard levels, comprising the steps of: disposing wastes of different hazard levels selected from the group consisting of Classes 1–5 in a dump in successive layers with graded hazard levels such that each layer of waste is covered by a layer of waste having a lower hazard level, by disposing a layer of special waste having a hazard level of Class 5 or industrial waste having a hazard level of Class 4 as a bottom layer, covering the bottom layer with a mineral seal, encapsulating the bottom layer with at least one of a layer of drainable building rubble, minerals resembling building rubble and excavated soil of Classes 1 and 2 to form a top layer and surface sealing the top layer with a mineral seal, a drainage layer and cultivatible soil.

5,054,963

TETHER SYSTEM FOR AN OFFSHORE BASED WORK PLATFORM

Robert Williamsson, Västra Frölunda, Sweden, assignor to Götaverken Arendal AB, Göteborg, Sweden

Filed Sep. 26, 1989, Ser. No. 412,440
Claims priority, application Sweden, Sep. 29, 1988, 8803451
Int. Cl.[5] B63B *21/50, 35/44*
U.S. Cl. 405—224 **14 Claims**

1. A tether system for a semi-submersible work platform which comprises pontoon elements mounted in a frame configuration, upright columns extending from said pontoon elements, and a work deck supported by said upright columns, said system comprising:

a circular sea bed anchor template;

tendons for connecting said work platform to said anchor template, wherein each of said tendons comprises a collar movable along a longitudinal direction of the tendon;

tendon connection means for connecting upper ends of said tendons to said work platform, wherein said tendon connection means comprises lower connector means for absorbing forces exerted on the tendons along a direction deviating from a longitudinal direction of the tendons, said lower connector means located at lower ends of said



upright columns, and upper connector means for absorbing vertical forces on the tendons, said upper connector means located along said upright columns above an operational water line of the work platform;

lower tendon receptacle means for receiving lower ends of said tendons, said lower tendon receptacle means attached to the anchor template;

means for inserting the lower ends of the tendons into said lower tendon receptacle means; and

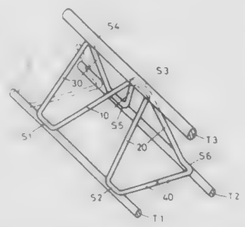
means for guiding a tendon handling line connectable to said collar, said means for guiding connected to said means for inserting the lower ends of the tendons.

5,054,964

STIFFENING ELEMENT FOR A LATTICE GIRDER

Peter Salzmann, Triengen, and Hans Hügi, Schötz, both of Switzerland, assignors to Pantex-Stahl AG, Buron, Switzerland

Filed Dec. 12, 1989, Ser. No. 449,268
Claims priority, application Switzerland, Feb. 1, 1989, 342/89
Int. Cl.[5] F04C *3/04*
U.S. Cl. 405—288 **2 Claims**



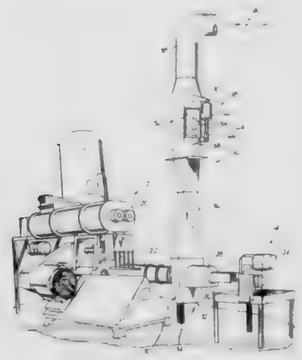
1. Stiffening element for three-rod girder for underground shaft construction, said three-rod girder comprising two base rods (**T1**, **T2**) and a top rod (**T3**), each of said rods forming an edge of a triangular prism, said stiffening element being constituted by three portions each forming a triangular wire polygon (**10**, **20**, **30**), said portions being formed from one piece, two of said wire polygons (**10**, **20**) forming the side edges of a four-sided wire pyramid having a tip which is welded to said top rod (**T3**) and lower points welded to said two base rods (**T1**, **T2**), a third, one (**30**) of said wire polygons being straight and defining a plane which is perpendicular to the three rods (**T1**, **T2**, **T3**), and only the wire polygon (**20**) which is most remote from said straight polygon (**30**) comprising a strut (**40**) connecting said two base rods (**T1**, **T2**).

5,054,965

DIVERTER APPARATUS FOR PNEUMATIC CONVEYING SYSTEM

Douglas S. Clark, Sabetha, and Elmer Osterhaus, Seneca, both of Kans., assignors to Wenger Manufacturing, Inc., Sabetha, Kans.

Filed Sep. 10, 1990, Ser. No. 580,316
Int. Cl.[5] B65G *53/24, 53/34, 53/52*
U.S. Cl. 406—151 **3 Claims**



1. In combination:

apparatus including a cooking extruder having an outlet for creating product pieces;

a pneumatic conveying system operably coupled with said cooking extruder for conveying said product pieces, said conveying system comprising

an elongated, upright conduit for receiving said pieces and presenting first and second spaced apart open ends, said extruder outlet passing through said conduit between said first and second ends for depositing said product pieces into the conduit between said ends;

fan means downstream of said extruder outlet for inducing product-conveying air currents within said conduit by passage of air into and through the one of said open ends upstream of said extruder outlet;

means defining at least one opening in said conduit between said extruder outlet and said fan means;

substantially planar, plate-like gate means configured for covering said at least one opening and presenting lowermost margins adjoining corresponding lowermost margins of said opening-defining means;

means pivotally mounting said gate means adjacent said at least one opening for pivoting movement of the gate means about an axis transverse to the longitudinal axis of said conduit and located where said lowermost margins of said gate means and said opening-defining means adjoin; and

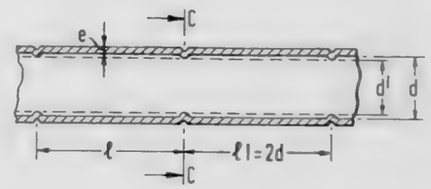
means for selectively pivoting said gate means between a first position covering said opening and a second position within the confines of said conduit, said gate means, in the second position thereof, permitting entrance of air through said opening and along the length of said conduit downstream of the opening while preventing passage of said pieces past the gate means.

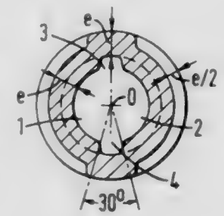
5,054,966

PIPE FOR PNEUMATIC TRANSPORT OF POLYMER PARTICLES

Michel C. H. Filippelli, London, England, assignor to BP Chemicals Limited, London, England

Division of Ser. No. 450,869, Dec. 18, 1989, Pat. No. 5,020,943.
This application Mar. 11, 1991, Ser. No. 667,329
Claims priority, application France, Dec. 30, 1988, 88 17593
Int. Cl.[5] B65G *51/18*
U.S. Cl. 406—191 **8 Claims**





1. A process for the pneumatic transport of solid polymer particles in a cylindrical pipe having an internal diameter d and cross-sectional area S said pipe comprising constrictions located over its length in such a way that the distance l between two consecutive constrictions is between d and 10×d, each constriction consisting of a non-uniform restriction of the cross-sectional area S of the pipe, said non-uniform restriction defining a new internal cross-sectional area S' of between 0.900×S and 0.9995×S and having at least one unrestricted free passage defined by a circular sector of the area S with a vertex situated on the axis of the pipe and an angle at the vertex ranging from 5° to 60°,

said process comprising the step of transporting the polymer particles with the aid of a carrier gas at a relative pressure between 10 and 100 kPa, a temperature which is at least 5° C. below the melting point of the polymer and a sufficient velocity to ensure turbulent flow of the mixture of the carrier gas and the particles.

5,054,967

THROW AWAY CUTTING TOOL

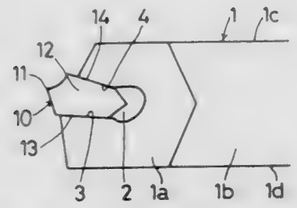
Kazuo Noguchi; Nobuhiro Takahashi; Masafumi Hideshima, and Tsuyoshi Asai, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 195,330, May 18, 1988, Pat. No. 4,909,677. This application Nov. 29, 1989, Ser. No. 442,813

Claims priority, application Japan, May 20, 1987, 62-77599; May 20, 1987, 62-77600; May 20, 1987, 62-77601; Dec. 8, 1987, 62-136912; Dec. 8, 1987, 62-186913; Apr. 5, 1988, 63-46367

Int. Cl.[5] B23P *15/28*

U.S. Cl. 407—110 **1 Claim**



1. A throw away cutting tool, comprising:

a holder body formed with a wedge slot having at least two substantially opposing wedge surfaces; and

a throw away insert having a cutting edge at one end thereof and a wedge portion at an end opposite to said cutting edge, wherein said wedge portion is clamped in said wedge slot by elasticity of the material of said holder body so that a principal component of the cutting force will be received on a first one of said at least two substantially opposing wedge surfaces of said wedge slot and a backside component of said cutting force will be received on a second one of said wedge surfaces, and wherein said holder body is at least partly made of cemented carbide, wherein said wedge slot has a back end face which is free from contact with said throw away insert received within said wedge slot, wherein said back end face has a first portion which is curved with a radius **R1** at a portion connecting with said second one of said substantially opposing wedge surfaces of said wedge slot, and a second portion which is curved with a radius **R2** at a portion connecting with said first one of said wedge surfaces, said radii **R1** and **R2** being in the following relationship:

$R_2 > R_1$,

$0.2R \leqq R_1 \leqq 5R$,

$1R \leqq R_2 \leqq 10R$,

wherein R is a predetermiend value with a unit, wherein said first portion receives said backside component of said cutting force, and wherein said second portion receives said principal component of said cutting force.

5,054,968

MECHANICAL POSITIVE FEED DRILL WITH SUPPORTED SPINDLE

Richard E. Eckman, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 18, 1990, Ser. No. 599,845

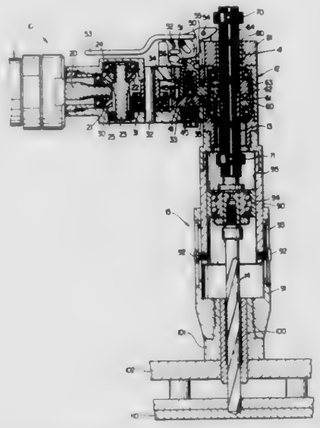
Int. Cl.[5] B23B *45/14*

U.S. Cl. 408—97 **19 Claims**

1. In an automatic feed drill including a housing, a rotatable tool spindle mounted for reciprocating movement in the housing, and driving means including spindle rotation and feed gears located in the housing operably connected with the spindle for rotating and reciprocating the spindle in feeding and retraction movements, the improvement comprising:

a closely fitting bushing in the housing around the spindle on the opposite side of the spindle rotation and feed gears from the bit driving end of the spindle;

hollow nose means open at opposite ends and secured at a first end with the housing extending around the bit driving end portion of the spindle, the nose means having a bore defined by an inner surface concentric with the spindle; and



a bearing secured along the driving end of the spindle in the nose means bore, the bearing including an outer member having an outer surface in sliding relation in the nose means bore whereby the nose means bore surface pilots the bearing for maintaining axial alignment of the spindle and a drill supported from the spindle during the reciprocating of the spindle in the feeding and retraction movements.

5,054,969

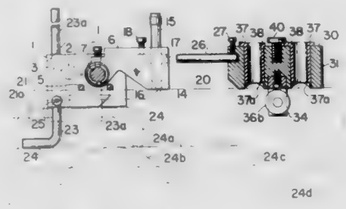
MARKING, GAUGING AND DOWEL DRILLING DEVICE

Jeremy H. Gibson, Eastlake; Lawrence E. Buehner, Chardon, and Paul J. Collander, Hudson, all of Ohio, assignors to Leichtung, Inc., Cleveland, Ohio

Filed Mar. 16, 1990, Ser. No. 495,116

Int. Cl.[5] B23B *47/28*

U.S. Cl. 408—115 R **10 Claims**



1. A marking, gauging, and dowel drilling device, comprising first clamping guiding means comprising a pair of clamping elements, one of which is movable, means to move said movable element toward and from the other element, said means consisting of an operating screw engaging both elements, means to guide said elements during said movement, a swing block arranged for pivotal movement between said elements, means normally to maintain said swing block in uniform spaced relation intermediate the clamping elements and upon move-

ment thereof, indicating means carried by said swing block for center determination indication on a workpiece, and other means connected to said swing block for alignment therewith and cooperating instrumentalities to use the indicating means aforesaid.

5,054,970

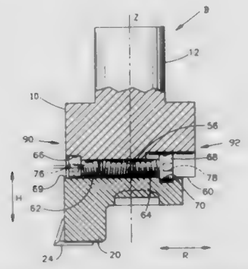
BORING HEAD WITH A PAIR OF AXIALLY AND RADIALLY INDIVIDUALLY ADJUSTABLE CUTTING ELEMENTS

Rudolph Steiner, Fairport, N.Y., assignor to Parlec, Inc., Fairport, N.Y.

Filed Feb. 25, 1991, Ser. No. 660,394

Int. Cl.[5] B23B *29/03*

U.S. Cl. 408—146 **15 Claims**



1. A boring head device for boring or finishing a hole or the like in a workpiece, comprising:

a) a boring head having a leading cutting portion and a trailing portion;

b) said boring head having a longitudinal axis;

c) first and second adjustable work engagement means releasably secured to said leading portion by individual fastening means;

d) means for individually adjusting the position of each of said pair of work engagement means in a first direction generally parallel to said longitudinal axis of said boring head;

e) means for individually adjusting the position of each of said pair of work engagement means in a second direction generally transverse to said first direction; and

f) said first and second direction adjusting means being positioned coaxially of each other in said boring head;

g) whereby each of said pair of work engagement means is adjustable in said first and second directions, independently of the other of said pair of work engagement means.

5,054,971

APPARATUS FOR REMOVING DAMAGED PORTIONS OF RUBBER COMPONENTS

Walter Kieninger, Lahr; Ernst Füner, Friesenheim, and Herbert Hetzinger, Lahr, all of Fed. Rep. of Germany, assignors to Entwicklungszentrum fur Zerspanungstechnik, Fed. Rep. of Germany

Filed Feb. 15, 1990, Ser. No. 480,289

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 8901906[U]

Int. Cl.[5] B23B *51/04*

U.S. Cl. 408—205 **16 Claims**

1. An apparatus for removing damaged portions of rubber components from products such as steel braced radial ply tires including a driven and rotating tool, said tool comprising:

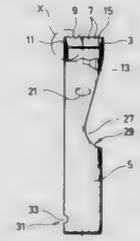
a sleeve (**3, 5**) having a wall, an axis (**13**), a front edge (**9**) and an end portion (**31**) opposite said front edge;

said wall including

an outer circumferential surface (**11**) extending essentially parallel to said axis,

an inner circumferential surface (**15**) that extends toward said outer circumferential surface adjacent said front edge, at an oblique angle relative to said axis, to form a cutting edge on said front edge, and

a plurality of notches (**7**) formed in said front edge of said tool to interrupt said cutting edge, said notches each having an axial depth and a circumferential length



sufficient to leave a plurality of circumferentially extending cutting edge segments that will, during use, prevent the cut rubber portions from making contact with each other after being cut to leave a smooth surface in the rubber component where the damaged portion is removed.

5,054,972

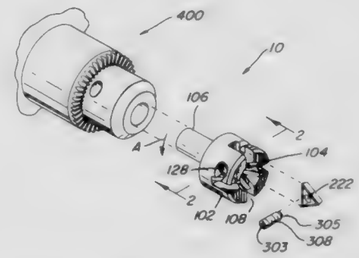
ROTARY TOOL FOR SHARPENING STUDS IN SNOWMOBILE TREADS

Kevin G. Cooney, R.D. 1, Box 1329, East Stroudsburg, Pa. 18301

Filed May 15, 1990, Ser. No. 523,767

Int. Cl.[5] B23B *51/00;* **B23C** *5/02*

U.S. Cl. 408—211 **12 Claims**



1. A rotatable cutting device for forming a tapered external surface on an elongated work piece, said device comprising:

a cylindrical cutting head having a circumference, a first end and a second end, a longitudinal axis therethrough, and a conically tapered orifice extending thereinto from said first end toward said second end coaxial with the longitudinal axis of said cutting head for receiving said work piece, said cutting head also having a plurality of radial slots therein extending from said circumference into said tapered orifice, said slots having a pair of opposing wall surfaces spaced from each other;

cutting means in at least one of said slots extending into said tapered orifice for cutting said work piece, said cutting means having a thickness less than the distance between said opposing walls of said slot; and

engagement means urging against said cutting means for holding said cutting means against one wall of said slot in a spaced relationship from the opposing wall of said slot.

5,054,973

TOOL BIT WITH AXIALLY EXTENDING GROOVES IN INSERTION END

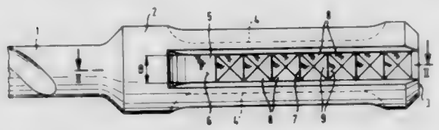
Anton Knoller, Landsberg am Lech; Peter Kunert, and Dieter Soehnlein, both of Kaufering, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 25, 1989, Ser. No. 357,089

Claims priority, application Fed. Rep. of Germany, May 25, 1988, 3817644

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—226 8 Claims



1. Drill bit or chisel bit comprising an axially elongated body (1) having an axially extending insertion end (2) at one end thereof for insertion into a chuck in a drive unit, said insertion end (2) having axially extending grooves (4, 5) for rotationally locked connection to and axial retention within the chuck, wherein the improvement comprises that said axially extending grooves comprises at least a first said groove and at least a second said groove, at least the second said groove (5) has an axially extending base (6), and said base (6) being shaped with a plurality of recesses (8) arranged one after the other in the axial direction and said recesses forming stop faces (9) extending transversely of the axial direction and affording a stop action acting assentially in the axial direction.

5,054,974

TOOL HOLDING DEVICE

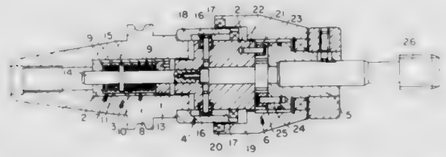
Adolf Wellach, 8, Ilexweg, D-4630 Bochum 7, Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,576

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1988, 3829800

Int. Cl.[5] B23B *31/00*

U.S. Cl. 408—239 A 18 Claims



1. A tool handling device for machine tools having a machine side and a tool side including:

a holding element on the machine side, rotatably mounted about an axis of rotation;

a holding element on the tool side, a tool receiver;

carrier means or rotationally coupling said two holding elements for rotary movement about the axis of rotation, said carrier means permitting relative movements of the two holding elements in the direction of the axis of rotation;

coupling means for transmitting torque between the tool receiver and said holding element on the tool side, said coupling means being connected to the tool receiver in such a manner that movements of the tool receiver radially of the axis of rotation with respect to said holding element on the tool side are permitted;

a spring system for maintaining a neutral position of the two holding elements relative to the one another and having first spring means to counteract such a deflection in which the two holding elements are moved axially apart; and

second spring means acting as a compression spring to counteract such a deflection in which the two holding elements are moved axially together, said second spring means acting as a compression spring comprising at least one substantially massive element of elastic plastics material.

5,054,975

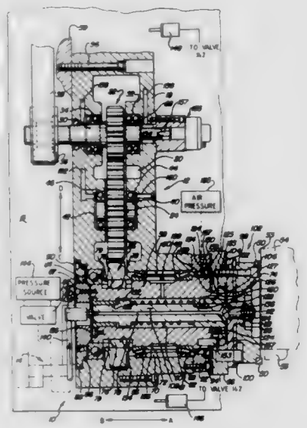
MILLING MACHINE WITH MILL HEAD HAVING RETRACTIBLE RETURN

Walter W. Wawrzyniak, Mt. Clemens, and Richard A. Habarth, Allen Park, both of Mich., assignors to Practical Engineering, Inc., Roseville, Mich.

Filed Nov. 9, 1990, Ser. No. 612,074

Int. Cl.[5] B23C *1/00;* B23Q *5/20*

U.S. Cl. 409—131 19 Claims



1. A milling machine for cutting a surface on a workpiece and including:

a milling head assembly having a cutting stroke for cutting the surface of the workpiece and a return stroke to prepare for the next cutting stroke, said milling head assembly including:

a spindle structure,

spindle support means for supporting sand spindle structure for rotation about a preselected axis,

power means connected to said spindle structure for rotating said spindle structure about said preselected axis,

cutter means including at least one cutter member actuable to provide a desired cut on the workpiece surface,

rod positioning means operatively connected with said cutter means to axially position said cutter means between an advanced position and a retracted position relative to the workpiece surface as said cutter member is moved in opposite directions traversing the workpiece surface,

said cutter means being operable in said advanced position to axially locate said cutter member to provide a desired cut on the workpiece surface on said cutting stroke and operable to a retracted position to axially locate said cutter member to preclude cutting engagement with the workpiece surface on said return stroke,

connecting means connecting said rod positioning means and said cutter means to said spindle structure for rotation with said spindle structure and for axial movement relative to said spindle structure,

actuating means operably connected with said rod positioning means to actuate said rod positioning means and hence said cutter means to said advanced position for said cutting stroke and to said retracted position for said return stroke.

5,054,976

INSIDE PROCESSING APPARATUS

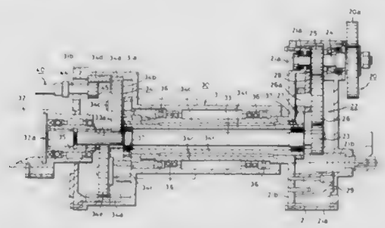
Toshio Akesaka, Yokohama, and Takashi Ogawara, Funabashi, both of Japan, assignors to Kabushiki Kaisha Isekikaihatsu Koki, Japan

Filed May 9, 1990, Ser. No. 521,344

Claims priority, application Japan, May 9, 1989, 1-114282; Jul. 10, 1989, 1-175507

Int. Cl.[5] B23C *3/16;* B24B *5/40*

U.S. Cl. 409—143 10 Claims



1. An inside processing apparatus which defines an axial center, comprising:

a working head having a working member for performing operations on an inner wall of a pipe;

a driving mechanism for moving said working member in a circumferential direction with respect to the inner wall; and

a cutting controlling mechanism for adjustably moving said working head in a radial direction with respect to the inner wall;

wherein said working head comprises a circular cam having a center at a fixed distance from the axial center of the inside processing apparatus, said circular cam being rotatable around the axial center, and a head cover having a link mechanism, said head cover engaging with a cam surface of said circular cam and being rotatable about the center of said circular cam, said head cover rotatably supporting a shaft on which the working member is attached, and wherein said driving mechanism comprises a sun gear, a first planet gear connected with the circular cam, said first planet gear engaging with said sun gear in the working head, and a second planet gear which engages with said sun gear and is connected with the head cover in the working head through the link mechanism.

5,054,977

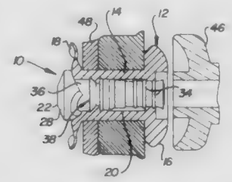
SELF PLUGGING BLIND RIVET

Max Schultz, Killingworth, Conn., assignor to Automatic Fastener Corporation, Branford, Conn.

Filed Sep. 18, 1990, Ser. No. 584,117

Int. Cl.[5] F16B *13/04, 13/06*

U.S. Cl. 411—43 10 Claims



1. A structural self plugging pull mandrel blind rivet comprising:

a tubular rivet body including an elongate shank, a rivet head provided at one longitudinal end of said elongate shank opposite a tail end of said elongate shank and a straight internal bore provided through said elongate shank and said rivet head; and

a T-mandrel including a mandrel head at one end, a pull tail at an end opposite said mandrel head which is received in said bore and which extends out beyond said rivet head, a breakneck groove adjacent said pull gail, and a locking plug provided between said mandrel head and said breakneck groove which is retained in said rivet body when set, said locking plug having (a) a locking section adjacent said breakneck groove and including a plurality of locking rings thereabout and (b) a shoulder adjacent said mandrel head having a diameter greater than said locking rings and including discrete secondary locking means protruding beyond a remainder of said shoulder for engaging and locking with said elongate shank when said rivet body is set.

5,054,978

CHANNEL NUT

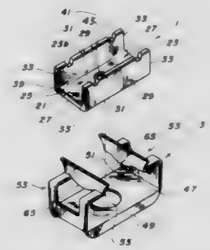
Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.

Continuation of Ser. No. 479,341, Feb. 13, 1990, abandoned.

This application Jan. 24, 1991, Ser. No. 645,150

Int. Cl.[5] F16B *27/00, 37/08*

U.S. Cl. 411—85 32 Claims

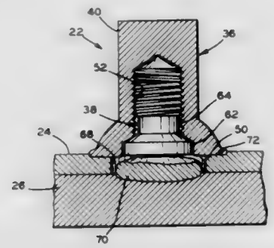


1. For securement to metal framing having a slot and inside and outside faces on opposite sides of the slot for attachment of parts to the framing through the slot from the outside of the slot, a channel nut comprising an elongate body having a rhomboid bottom with an inside face and an outside face, opposite sides and opposite ends, said opposite sides having outwardly turned flanges each with a top edge and opposite ends, said flanges having notches in the top edges thereof adjacent the ends of the flanges, said notches opening outwardly from the bottom for better bite with the inside faces of the metal framing, said bottom having a tapped hole punched therethrough, the width of said body between said sides being less than the width of the slot in the framing whereby the body may be generally aligned with the slot, entered into the slot and passed through the slot from the outside to the inside of the framing and then turned to extend in generally crosswise position relative to the slot for engagement of portions of the top edges of the flanges adjacent the ends thereof with the inside faces of the framing at opposite sides of the slot.

5,054,979

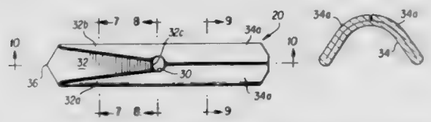
Patent Not Issued For This Number

5,054,980
COMPOSITE WELDABLE STUD AND METHOD OF USING SAME
Branko Bidefeld, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Sep. 28, 1990, Ser. No. 590,025
Int. Cl.[5] F16B *37/06*; B23K *20/12, 37/00*
U.S. Cl. 411—171 18 Claims



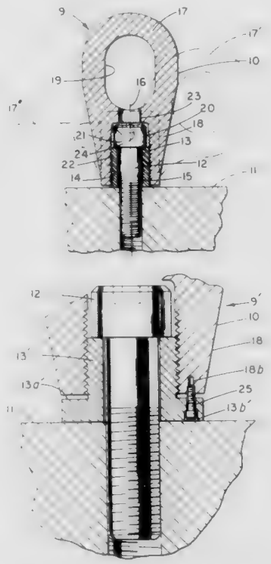
1. A friction-weldable composite stud for welding a first workpiece of one material to a second workpiece of another material, said stud comprising a first body of a first material which is compatible with said first workpiece, said first body having a collar extending outwardly therefrom, said collar having a first surface facing in one direction, said first surface being positioned transversely to the axis of the body for engagement by a chuck of a welding tool, said stud having engagable means for engagement by cooperating means of the chuck of the welding tool, whereby the tool can move said stud relative to a workpiece and apply an axial force to the stud through the chuck and the collar, said collar having a second surface facing away from said first surface and being annular, and said stud further comprising a second body made of a second material which is different than said first material and which is compatible with said second workpiece, said second body having a friction-weldable nose extending outwardly from said second surface of said collar, said second body being affixed to said first body for movement therewith.

5,054,981
SCREW AND TOGGLE FASTENING MEANS
Edwin F. Schnedl, 614 South View Ter., Alexandria, Va. 22314
Continuation-in-part of Ser. No. 549,144, Jul. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 369,117, Jun. 21, 1989, abandoned. This application Oct. 30, 1990, Ser. No. 605,383
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—340 8 Claims



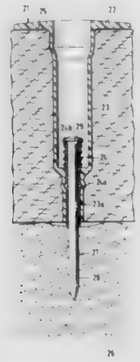
1. A fastening means for joining two or more members together which comprises:
a. a flexible, non-expandable toggle member formed from sheet material lying in a plane,
1) said toggle member having a centrally located aperture to permit the threaded insertion of a screw member,
b. a screw member threaded through said aperture,
c. said toggle member having a leading portion thereof formed in said plane on one side of said aperture in said toggle member and a trailing portion on the other side of said aperture,
d. said trailing portion being arcuately deformed out of the plane of said leading portion by a maximum amount slightly less than the outer diameter of the thread on said screw member,
e. said aperture in said toggle member being sufficiently small to provide a bearing surface in engagement with a thread on said screw member by an amount substantially in excess of 180 degrees in order to resist retrograde movement of said screw member,
f. said toggle member being pivoted on said screw member after passing through the members being fastened to a position at right angles to said screw member and against a far side of an innermost member being fastened.

5,054,982
LIFTING EYEBOLT ASSEMBLY
Lewis G. Freeman, 1509 Pontiac Dr., Kokomo, Ind. 46901
Filed Aug. 20, 1990, Ser. No. 569,922
Int. Cl.[5] F16B *23/00, 45/00*; B66C *1/34*
U.S. Cl. 411—400 13 Claims



1. A lifting eyebolt assembly for engagement between a workpiece to be lifted and a lifting device, the assembly comprising:
a fastener having a head portion, a shaft portion and means for fastening to the workpiece;
a collar having a bore adapted to receive said shaft portion of said fastener therethrough;
a load-bearing ring having an eye portion and a base portion, said eye portion having an opening for connection to the lifting device, said base portion defining a cavity for receiving and containing said collar and said head portion of said fastener therein with said shaft portion of said fastener extending through said collar;
means for engaging said base portion of said load-bearing ring to said collar with said shaft portion of said fastener extending through said collar
means for accessing said head portion of said fastener when said fastener and said collar are contained within said cavity of said base portion.

5,054,983
ATTACHMENT MEMBER WITH A COLLAPSIBLE SECTION FOR SECURING INSULATION PANELS
Markus Froewis, Frastanz, and Josef Schmidle, Göfis, both of Austria, assignors to Hilti Aktiengesellschaft
Filed Sep. 24, 1990, Ser. No. 587,224
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1989, 3931833
Int. Cl.[5] F16B *15/02, 43/00*
U.S. Cl. 411—480 3 Claims

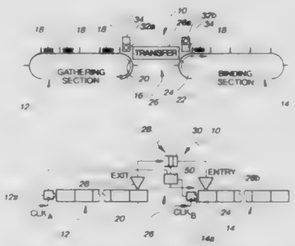


1. A member for securing insulation panels (7, 25) to a structural component (8,26) comprising a large area annular head having an opening therethrough, a hollow shaft of smaller transverse area than said head secured to and extending axially from said head in alignment with the opening therein, an axially extending section positioned within said hollow shaft and having a first end closer to said head and a second end more remote from said head, said first end forming an abutment, said hollow shaft arranged to receive a nail and said abutment arranged to form a stop for the nail, at least an axially extending part of said section being collapsible between said abutment and the second end of said section, said axially extending part is spaced inwardly from said hollow shaft, said axially extending part is formed as a sleeve.

5,054,984
BINDING LINE BOOK TRACKING SYSTEM AND METHOD
Wai-Kwong Chan, Chicago; Mary F. Allsopp, Glen Ellyn, both of Ill.; Peter A. Brandt; Robert R. Butler, both of Glasgow, Ky.; Kevin T. McGuire, Aurora, Ill.; Thomas R. Miller, Chicago, Ill.; Robert W. Nonnemann, Batavia, Ill.; Gordon A. Obrecht, Lisle, Ill.; Ronald B. Saluski, Bolingbrook, Ill.; Michael W. Shircliff, and Samuel A. Walker, both of Glasgow, Ky., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.
Continuation of Ser. No. 321,012, Mar. 9, 1989, abandoned. This application Oct. 2, 1990, Ser. No. 593,475
Int. Cl.[5] B42C *1/12*
U.S. Cl. 412—001 103 Claims

1. A binding line, comprising:
a first binding line section including means for transporting books therealong to a book exit station;
a second binding line section including means for transporting books therealong from a book entry station;
means for transporting books from said book exit station of said first binding line section to said book entry station of said second binding line section;
said first binding line section being asynchronously related to said second binding line section;
said means for transporting books along said second binding line section being independently operable relative to said means for transporting books along said first binding line section; and
means associated with books leaving said book exit station and books entering said book entry station for tracking books through time and space between said first and second binding line sections.

16. A method of tracking books in a binding line, comprising the steps of:
transporting books along a first binding line section to a book exit station in an independently operable manner relative to a second binding line section;



transferring books from said book exit station of said first binding line section to a book entry station of said second binding line section;
tracking books leaving said book exit station and entering said book entry station through time and space between said first and second binding line sections; and
transporting books along said second binding line section from said book entry station in an independently operable manner relative to said first binding line section;
said books being transported along said first binding line section in asynchronous relation to said books being transported along said second binding line section.

5,054,985
METHOD FOR MOUNTING WALL CONSTITUENT MEMBERS AND A GUIDE JIG TO BE USED IN THE SAME METHOD
Michio Wagatsuma, and Yukio Sado, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Sep. 6, 1989, Ser. No. 403,478
Claims priority, application Japan, Sep. 7, 1988, 63-222276
Int. Cl.[5] E04G *21/16*
U.S. Cl. 414—11 4 Claims



2. A guide jig for lifting a new wall constituent member

comprising an upper guide member composed of a support section that is nearly U-shaped in the horizontal cross-section and provided with a plurality of inwardly facing guide rollers adapted to engage and roll along a guide column, said upper guide member having a mount section that is mounted to the support section and adapted to be connected with a lifting wire to an upper end of the new wall constituent member, a lower guide member composed of a support section that is nearly U-shaped in the horizontal cross-section and is provided with a plurality of inwardly facing guide rollers adapted to engage and roll along said guide column, and a mount section that is mounted to the support section and provided with a fitting piece which can fit to a lower portion of a new wall constituent member in a vertically slidable manner, a length adjusting mechanism connected to the support section of said upper guide member for adjusting the spacing between said upper and said lower guide members, and a suspended wire having one end connected to the support section of said upper guide member via said length adjusting mechanism and the other end connected to the mount section of said lower guide member.

5,054,986

STORAGE AND CONVEYANCE OF HEAVY ARTICLES

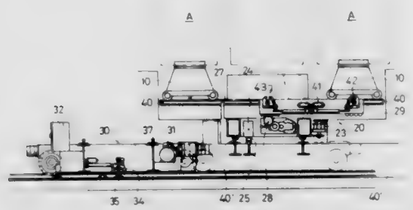
Tadao Hirano, Tokorozawa, and Hiroshi Yanagase, Tokyo, both of Japan, assignors to Tsubakimoto Chain Co., Japan

Continuation of Ser. No. 241,579, Sep. 8, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 511,980

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] B65G *65/02*

U.S. Cl. 414—282 **8 Claims**



1. A storage and conveyance system for heavy articles comprising a plurality of elongated fixed, stationary tracks, a plurality of fixed, stationary storage tracks on both sides of each elongated track, the fixed, stationary storage tracks meeting the elongated tracks and extending perpendicularly therefrom, a first group of self-propelled, rail-carrying carriages movable along said elongated tracks, each of said self-propelled, rail-carrying carriages having a short track thereon selectably alignable with each of said storage tracks, a plurality of non-powered, article-carrying carriages situated on the tracks of said storage tracks, each of said article-carrying carriages having a heavy article carried thereon whereby each of the heavy articles stored in the system is held by an article-carrying carriage, each of said article-carrying carriages being arranged to be carried by said short track and movable from the storage track on which it is situated to said short track, and from said short track to any one of said storage tracks having space for an article-carrying carriage, when the short track is aligned therewith, and all of the article-carrying carriages in the system being situated at substantially the same level, feeder means for transferring said article-carrying carriages from said short track to said storage tracks and from said storage tracks to said short track, a third track met perpendicularly by said elongated, fixed stationary tracks, and an additional rail-carrying carriage situated on said third track and movable thereon, said additional carriage having rail means alignable with each of said elongated fixed, stationary tracks and adapted to receive and carry the self-propelled, rail-carrying carriages of said first group, whereby said third carriage is able to transfer carriages of the first group from each of the elongated, fixed, stationary tracks to another elongated, fixed, stationary track.

5,054,987

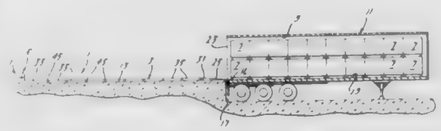
LOAD TRANSFER DEVICE

George Thornton, Windsor, Canada, assignor to Valcomatic Systems, Inc., Windsor, Canada

Continuation of Ser. No. 738,972, May 29, 1985, abandoned. This application Mar. 28, 1990, Ser. No. 500,699

Int. Cl.[5] B65G *67/04*

U.S. Cl. 414—390 **39 Claims**



1. In a mobile load transfer device for rapidly moving a large load of articles such as a truckload of freight from one place to another comprising a long, thin vertically flexible load transfer member having mobile means to engage and roll on a floor and upper anti-friction means to engage and support a load of freight elements, said transfer member including a front end section tapered down to a thin leading edge adapted to slip under the freight element that is resting on a floor, said transfer member further including at least one support section extending outwardly thereof and power means mounted on and supported by said support section and movable with said transfer member, said power means further being mounted and operable to provide power for enabling said transfer member to be driven across a floor on said mobile means at a slow, steady, smooth, continuous rate of motion, said mounting of said power means on said outwardly extending support section further enabling said transfer member to be slipped underneath a load on a floor or from underneath a load for at least a major part of the length of the member.

5,054,988

APPARATUS FOR TRANSFERRING SEMICONDUCTOR WAFERS

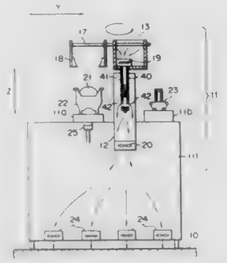
Hirotsugu Shiraiwa, Hino, Japan, assignor to Tel Sagami Limited, Kanagawa, Japan

Filed Jul. 11, 1989, Ser. No. 377,949

Claims priority, application Japan, Jul. 13, 1988, 63-174070

Int. Cl.[5] B65G *65/04;* **H01L** *21/60*

U.S. Cl. 414—404 **9 Claims**



1. An apparatus for transferring semiconductor wafers comprising:

a hollow support body;

first and second wafer seating members mounted on said hollow support body;

a take-out means for lifting wafers out of the first wafer seating member;

a handling means for transferring wafers from the take-out means to the second wafer seating member, said handling means including a swing means of swinging the wafers about a first vertical axis;

dust-removing means for introducing dust created by the handling means into the hollow support body and for removing said dust from the hollow support body;

a swing shaft included in said swing means and a passage formed in said swing shaft, said passage joining the handling means with the hollow support body in fluidic communication; and

an exhaust hole formed in a lower portion of the swing shaft allowing fluid to pass from the handling means to the hollow support body.

5,054,989

SKID-STEER LOADER MINI-CRANE ATTACHMENT

Donald M. Fell, RD #3, Box 23 E, Howard, Pa. 16841

Filed Aug. 24, 1989, Ser. No. 397,849

Int. Cl.[5] B66F *9/06*

U.S. Cl. 414—607 **14 Claims**



1. A skid-steer mini-crane attachment comprising a generally vertical mounting plate having a vertical face for positioning against a lift frame, mounting brackets extending rearward from and directly connected to the vertical face of the mounting plate for connecting to a mounting attachment on the lift frame, a boom support having upper and lower ends, a lower end of the boom support directly connected to the mounting plate vertical face, a boom-holding outer tube connected to an upper end of the boom support, the outer tube having closed sides and open upper and lower ends, a boom positioned in the outer tube and slidable within the outer tube, boom positioning means connected to the outer tube and to the boom for selectively positioning the boom within the outer tube in raised, lowered and intermediate positions, a winch support connected to the outer tube, a winch mounted on the winch support, a sheave connected to an upper end of the boom, a cable wound around the winch and passing over the sheave and having a free end spaced horizontally outward from the boom, and a hook connected to the free end of the cable for raising and lowering objects connected to the hook as the cable is wound and unwound with the winch.

5,054,990

EXCAVATOR ARM

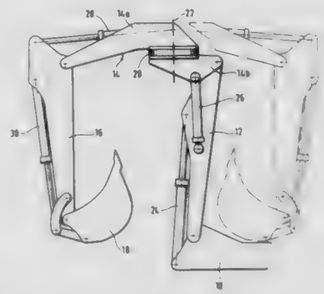
Hans Schaeff, Langenburg, Fed. Rep. of Germany, assignor to Karl Schaeff GmbH & Co., Langenburg, Fed. Rep. of Germany

Filed Dec. 18, 1989, Ser. No. 450,307

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843753

Int. Cl.[5] E02F *3/32*

U.S. Cl. 414—694 **11 Claims**



1. A three-part excavator arm, comprising.

a) a basic boom, an intermediate boom, and a shovel stem pivotally connected to each other about horizontal pivot axes and pivotally connected by said basic boom to an excavator base, which is rotatable about a vertical axis;

b) said intermediate boom having a front part, a rear part, and a common rotary joint having an axis of rotation;

c) actuating means for operating and adjusting said axis of rotation into vertical orientation;

d) said common rotary joint allows mutual endless rotation between the front part and the rear part of said intermediate boom;

e) said front part and said rear part being axially offset along the axis of rotation of said rotary joint to afford unrestricted relative rotational movement between both of said parts; and,

f) locking means for locking said front part and said rear part at mutually straightened positions, at a position pointing in the same direction from the rotary joint and at intermediate positions.

5,054,991

WAFER POSITIONING APPARATUS

Katsuhiko Kato, Ichinomiya, Japan, assignor to MECS Corporation, Bisai, Japan

Filed Feb. 23, 1990, Ser. No. 483,850

Claims priority, application Japan, Oct. 24, 1989, 1-276438

Int. Cl.[5] B25J *15/00*

U.S. Cl. 414—783 **3 Claims**

1. A wafer positioning apparatus comprising:

a) a mounting stock;

b) X and Y axis drive mechanisms for moving said mounting stock in the X-axis direction and the Y-axis direction in X and Y coordinates, respectively, on a horizontal plane;

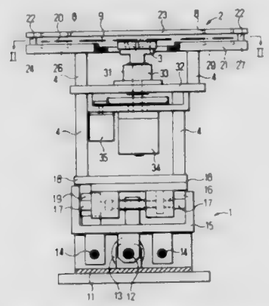
c) a wafer inserting section fixed on said mounting stock, said wafer inserting section having a space for receiving a wafer inserted horizontally;

d) at least six photosensor means installed at said wafer inserting section and arranged at regular intervals at positions corresponding to peripheral portions of a wafer so as to detect at least two edge portions of an inserted wafer;

e) a rotary section arranged at the center of said wafer inserting section, said rotary section rotating about a vertical axis, said rotary section comprising means for attaching by suction to the center of a rear surface of an inserted wafer; and

f) control means for operating said X and Y drive mecha-

nisms to center said mounting stock with respect to said inserted wafer prior to placement of the wafer on said rotary section and, after placement of the wafer, for then



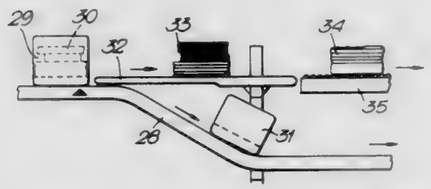
rotating said rotary section with said wafer held centered thereon by said suction means, and for angularly positioning said wafer in response to detection of edge portions by said photosensors means.

5,054,992

METHOD OF TRANSPORTING THIN, PLANAR PRODUCTS, AND A LOAD CARRIER FOR SUCH TRANSPORT

Jon Hognestad, and Einar K. Selvig, both of Kongsberg, Norway, assignors to Media Craft a.s., Kongsberg, Norway

Filed Jun. 29, 1989, Ser. No. 372,965
Claims priority, application Norway, Jul. 8, 1988, 883061
Int. Cl.[5] B65G *35/00*
U.S. Cl. 414—786 **3 Claims**



1. A method of transporting stacks of thin, planar products, such as periodicals, books, or newspaper, along a transport path, said method comprising the steps of:

providing a plurality of basket-like load carriers each having a bottom and four sides;

placing said products in stacks in respective ones of said basket-like load carriers,

providing each load carrier with upstanding wall members defining vertically extending upwardly open slots in at least one pair of mutually opposed sides, and a bottom member having a corresponding opening pattern formed by through-going, upwardly opening channels which open towards and communicate with associated slots,

transporting said load carriers on at least one conveyor means forming a continuous closed path and on which said load carriers are slidably retained to allow queuing at work stations along said continuous closed path,

introducing a supporting means into bottom channels of a load carrier beneath a stack contained therein, and

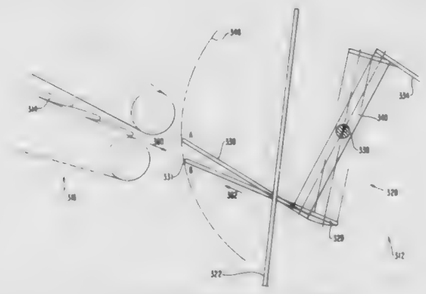
removing said stack from said load carrier by vertically separating relative movement between said supporting means and said load carrier.

5,054,993

ROTARY INTERCEPT STACKING APPARATUS AND METHOD

Leonard A. Watts, Hallandale, and Medardo Espinosa, Hialeah, both of Fla., assignors to IDAB Incorporated, Hialeah, Fla.

Continuation-in-part of Ser. No. 876,490, Jun. 20, 1986. This application Jun. 9, 1989, Ser. No. 363,965
Int. Cl.[5] B65G *57/11;* **B65H** *29/38*
U.S. Cl. 414—790.5 **27 Claims**



1. A method of stacking signatures comprising:

conveying signatures on an infeed conveyor to an intercept position;

monitoring the location of a rotatable signature support of an intercept assembly by repetitively receiving information regarding the actual location of the signature support and comparing that information with information regarding the correct location of the signature support;

rotatably driving the signature support from an intercept ready position to the intercept position with a servomotor for selectively intercepting signatures conveyed from the infeed conveyor;

controlling the servomotor responsive to the monitored location of the signature support by taking corrective action when necessary to move the signature support from its actual location to the correct location;

transferring signatures from the infeed conveyor to the signature support at the intercept position to collect signatures on the signature support; and

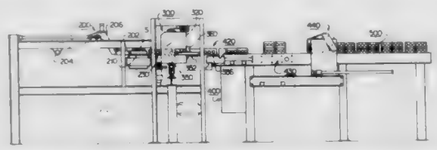
subsequently rotating the signature support for discharging the signatures collected on the signature support.

5,054,994

APPARATUS FOR STACKING UNFIRED BRICK

Harry D. Leeds, and Raymond F. Thompson, both of Clarksville, Ark., assignors to Arkansas Technologies, Inc., Clarksville, Ark.

Filed Oct. 17, 1988, Ser. No. 258,795
Int. Cl.[5] B65G *57/10*
U.S. Cl. 414—793.4 **26 Claims**



1. An apparatus for stacking single layer rows of slugs from a grouping area into multi-layer rows, comprising:

(a) pusher means adjacent to said grouping area for sequentially moving the slugs transversely to their longitudinal axis;

(b) elevator means downstream of said pusher means for receiving the slugs from said pusher means, said elevator means including a platform and means for vertically moving said platform whereby succeeding slugs are delivered to said platform to form two layers;

(c) shuttle means located between said pusher means and said elevator means, said shuttle means including a shuttle plate and means for selectively moving said shuttle plate between an operable position and an inoperable position with respect to said elevator means, wherein said shuttle means further includes a push-off table adjacent to said pusher means for receiving the slugs from said pusher means, a frame for supporting said push-off table, hydraulic cylinder means connected between said frame and said shuttle plate for moving said shuttle plate in a horizontal plane below said push-off table, and guide means engaged with said shuttle plate and supported by said frame for guiding said shuttle plate as it is moved in a horizontal plane below said push-off table;

(d) a marshalling table located downstream of said elevator means for receiving the slugs from said elevator means; and

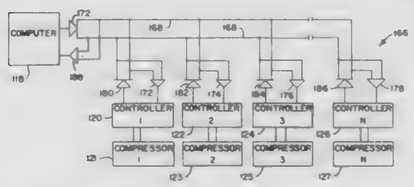
(e) control means connected to said pusher means, shuttle means, and said elevator means whereby said pusher means, shuttle means, and said elevator means are operated in a cooperative relationship such that succeeding slugs are delivered to said shuttle plate by said pusher means and displaced from said shuttle plate to form two layers upon said platform.

5,054,995

APPARATUS FOR CONTROLLING A FLUID COMPRESSION SYSTEM

Robert K. Haseley, Mooresville, and Paul A. Kirkpatrick, Charlotte, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 6, 1989, Ser. No. 432,115
Int. Cl.[5] F01D *17/00, 19/00, 21/00*
U.S. Cl. 415—17 **27 Claims**



1. An apparatus comprising:

compression means for compressing a fluid which includes a compressor inlet, a compressor element, a compressor sump and a compressor discharge;

a sensor capable of sensing at least one function which relates to the pressure of said compressor discharge;

control means, responsive to said sensor, capable of independently controlling said compression means to maintain said discharge pressure within a predetermined range, wherein provided a constant speed of the compressor element, the control means controls the discharge pressure by regulating flow of the fluid between the compressor inlet and the compressor sump; and

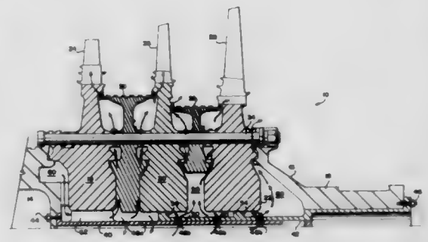
computer means for overriding said independent control of said compression means by said control means.

5,054,996

THERMAL LINEAR ACTUATOR FOR ROTOR AIR FLOW CONTROL IN A GAS TURBINE

Diether Carreno, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 27, 1990, Ser. No. 558,450
Int. Cl.[5] F01D *5/14*
U.S. Cl. 415—115 **21 Claims**



1. A gas turbine rotor assembly, comprising:

a rotatable shaft;

a plurality of turbine rotors each including a disc mounted on said shaft;

turbine buckets on said discs along their outer rims;

a pair of cylindrical actuators having opposite ends thereof secured respectively to said shaft and adjoining ends free and overlapping concentrically one within the other radially inwardly of said discs, at least one of said actuators being responsive to a change in temperature to expand in one axial direction relative to the other of said actuators, said actuators having at least one opening each therethrough and in said overlapping portions; and

means for supplying compressor extraction air within the cylindrical actuators for communication through said openings, said one actuator being movable in said one axial direction in response to a change in temperature during transient turbine operation to register at least in part its opening with the opening of said other actuator to enable air to flow from within said actuators through the registered openings to opposite sides of at least one of said rotor discs.

13. A method of operating a gas turbine rotor assembly having a rotatable shaft, a plurality of turbine rotors mounted on said shaft, each including a disc with buckets along its outer rim, and a pair of cylindrical actuators defining an air channel and overlapping portions with openings therethrough for supplying air to said rotors, comprising the steps of:

(a) thermally expanding one of said actuators in one axial direction to register at least part of the openings through said one actuator with the openings through the other actuator to enable flow of air from said channel to at least one rotor; and

(b) thermally expanding the other of said actuators in an axial direction to change the extent of registration of said openings and alter the flow of air from said channel through said registering openings to said rotor.

5,054,997

BLADE TIP CLEARANCE CONTROL APPARATUS USING BELLCRANK MECHANISM

Robert J. Corsmeier, and Joseph Petsche, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 22, 1989, Ser. No. 440,633
Int. Cl.[5] F01D *11/08*
U.S. Cl. 415—173.2 **22 Claims**

1. In a gas turbine engine including a rotatable rotor having a central axis and a row of blades with outer tips and a stationary casing with a shroud disposed in concentric relation with

said rotor, an apparatus for controlling the clearance between said rotor blade tips and casing shroud, said apparatus comprising:

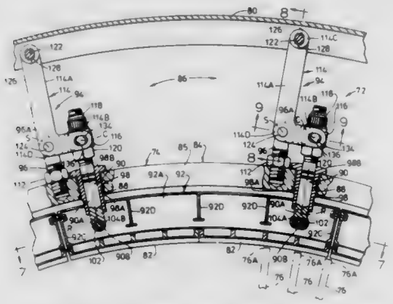
(a) a shroud segment defining a circumferential portion of said casing shroud and being separate from and spaced radially inwardly of said casing;

(b) at least one mounting structure on said stationary casing defining a passage extending between exterior and interior sides of said casing, said mounting structure being spaced radially outwardly from said shroud segment; and

(c) a shroud segment positioning mechanism supported by said casing, coupled to said shroud segment, and being actuatable for radially moving said shroud segment toward and away from said rotor blade tips to reach a position relative thereto at which a desired clearance is established between said shroud segment and rotor blade tips;

(d) said positioning mechanism including

(i) a support member including an elongated shaft mounted through said passage defined by said mounting structure for radial movement relative to said casing



and toward and away from said rotor axis, said elongated shaft of said support member having a longitudinal axis and opposite inner and outer ends, said shroud segment being coupled to said inner end of said shaft of said support member at said interior side of said casing and movable radially with radial movement of said shaft,

(ii) an actuating assembly coupled to said outer end of said elongated shaft of said support member and located at said exterior side of said casing, and

(iii) a support structure on said stationary casing mounting said actuating assembly adjacent to said mounting structure for pivotal movement about an axis spaced from and extending transverse to said longitudinal axis of said elongated shaft of said support member such that pivotal movement of said actuating assembly about said transverse axis produces radial movement of said elongated shaft of said support member and said shroud segment therewith relative to said casing and along said longitudinal axis toward and away from said rotor blade tips.

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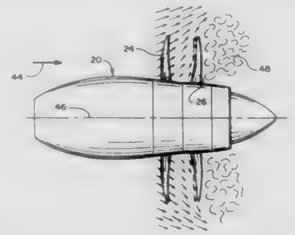
THRUST REVERSING SYSTEM FOR COUNTER ROTATING PROPELLERS

Franklyn J. Davenport, Bellevue, Wash., assignor to The Boeing Company, Inc., Seattle, Wash.

Filed Sep. 30, 1988, Ser. No. 251,902
Int. Cl.[5] B64C *11/48*
U.S. Cl. 416—1 **24 Claims**

1. A method of operating an airplane engine to create reverse thrust where the engine has a counter rotating propeller assembly where there is a forward first set of first variable pitch propeller blades mounted for rotation on a first longitudinally aligned propeller axis, and a rear second set of second variable pitch propeller blades positioned behind, and adjacent to, said first set of propeller blades, and mounted for rotation about a second longitudinally aligned center propeller axis, under circumstances where said assembly is traveling in a forward direction at a forward velocity relative to ambient air, said method comprising:

a. rotating said first set of first propeller blades about said first propeller axis in a first rotational direction with a first rotational velocity, and with pitch of the first propeller blades being set at a first pitch setting, a relative to said first rotational velocity and said forward velocity, so that



said first blades have a positive angle of attack to produce a forward thrust;

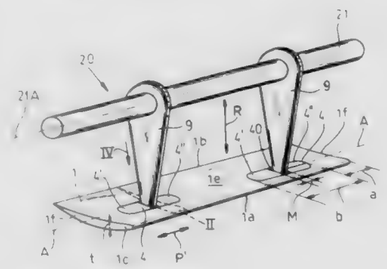
b. rotating said second set of second propeller blades about said second propeller axis in a second opposite rotational direction with a second rotational velocity, with pitch of the second propeller blades being set at a second pitch setting, relative to said second rotational velocity, said first rotational velocity, and said forward velocity so that said second blades have a negative angle of attack to produce a reverse thrust, with said reverse thrust countering said forward thrust so as to produce a net reverse thrust component.

5,054,999

FLOW MACHINE

Arne F. Jonsson, Hagfors, Sweden, assignor to Jonsson Pumpkonsult, Hagfors, Sweden

PCT No. PCT/SE88/00489, § 371 Date Mar. 23, 1990, § 102(e) Date Mar. 23, 1990, PCT Pub. No. WO89/02974, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 21, 1988, Ser. No. 469,552
Claims priority, application Sweden, Sep. 25, 1987, 8703294.2
Int. Cl.[5] F03D *11/04*
U.S. Cl. 416—204 R **10 Claims**



1. A flow machine comprising:

a shaft rotatable about an axis of rotation;

at least one support arm mounted nonrotatably on said shaft and extending form said axis, said arm being formed with a free end spaced from said shaft;

at least one pin operatively connected with said free end and having a pivot axis rotatable about said axis of rotation;

a surface formed by a straight line generatrix moved about an airfoil shape closed path around said pivot axis;

a body formed with said surface and having a longitudinal axis coplanar with said pivot axis, said body being pivotal about said pivot axis, said surface forming an envelope of said body defining a leading and trailing edge and an inner envelope face facing said shaft and an outer envelope face opposite said inner envelope face, said envelope faces extending between said leading and trailing edges, said body being formed with an elongated recess opening at said inner envelope face and receiving said pin, said recess being spaced between said edges and being formed with:

first and second side walls spaced from one another and extending from said inner envelope face toward said outer envelope face, at least one of said side walls being recessed and having nadir located at a distance from a respective one of said trailing and leading edges of the body;

an insert member mounted on said pin in said recess and being formed with:

a first side face and a second side face confronting said first and second side walls of said recess, and

an outer limiting face bridging said side faces, at least one of said side faces of said insert member being complementary with said side wall formed with the nadir and said outer limiting face lying in said envelope of the body upon engaging said member in said recess.

5,055,000

ENCLOSED PUMP MOTOR AND HOUSING THEREOF

Pervez Akhter, Fort Wayne, Ind., assignor to Wayne/Scott Fetzer Company, Fort Wayne, Ind.

Filed Aug. 11, 1989, Ser. No. 392,345
Int. Cl.[5] F04B *49/04, 35/04;* **B21C** *23/18*
U.S. Cl. 417—40 **24 Claims**

1. A pump motor housing comprising:

an impact extruded cylinder having a motor receiving end and a motor shaft end;

said receiving end being open for receiving a motor in said cylinder;

a disk portion integrally connected to said motor shaft end;

a motor shaft hole in said disk portion;

a boss integrally connected to said disk portion for attaching a pump thereto; and,

wherein said cylinder, disk portion and boss are formed together in the same piece.

5,055,001

VOLUMETRIC PUMP WITH SPRING-BIASED CRACKING VALVES

Vernon R. Natwick, Los Altos, and Michael W. Lawless, Boulder Creek, both of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 15, 1990, Ser. No. 494,210
Int. Cl.[5] F04B *43/08*
U.S. Cl. 417—63 **31 Claims**

18. A volumetric pump operating in a pumping cycle for pumping fluid from a source through a passage defined by a flexible member, comprising:

a. inlet valve means, operable at different times during the pumping cycle, for:

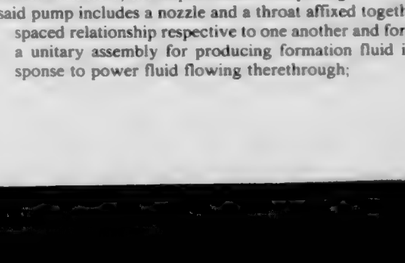
(i) compressing an inlet portion of the flexible member with a first sealing force to resist a backward fluid flow therethrough toward the source, until fluid pressure acting on the inlet valve means exceeds a first predefined limit;

(ii) compressing the inlet portion of the flexible member with a second sealing force that is substantially greater than the first sealing force, to interrupt the backward fluid flow therethrough; and

(iii) opening so as to allow substantially unrestricted forward fluid flow from the source through the inlet portion of the flexible member;

b. pumping means for compressing a pumping portion of the flexible member that is disposed downstream of the inlet valve means, to displace fluid contained within a part of the passage defined by the pumping portion of the flexible member;

c. outlet valve means, disposed downstream of the pumping means and operative at different times during the pumping cycle, for:



(i) compressing an outlet portion of the flexible member with a cracking sealing force to resist fluid flow therethrough, away from the part of the passage defined by the pumping portion of the flexible member until fluid pressure within said part of the passage exceeds a second predefined limit; and

(ii) compressing the outlet portion of the flexible member with a backward sealing force that is substantially greater than the forward sealing force, to interrupt fluid flow therethrough, away from said part of the passage; and

d. actuator means, for drivingly actuating the inlet valve means, the outlet valve means, and the pumping means in the pumping cycle.

27. The volumetric pump of claim **18**, further comprising means disposed on the outlet valve means, for producing an alarm condition if fluid flow through the volumetric pump is less than a predetermined minimum.

5,055,002

DOWNHOLE PUMP WITH RETRIEVABLE NOZZLE ASSEMBLY

George K. Roeder, P.O. Box 807, Big Sandy, Tex. 75755

Continuation of Ser. No. 351,109, May 12, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 614,052
Int. Cl.[5] F04F *5/02*
U.S. Cl. 417—172 **22 Claims**

17. In a system for producing fluid from a wellbore wherein a downhole jet pump has a main body with there being a passageway extending therethrough and the passageway having an upper end opposed to a lower end; there being power fluid inlet means at the upper end of said passageway for connecting the pump to a source of power fluid, formation fluid inlet means at the lower end of the passageway for connecting the pump to a source of formation fluid; and a produced fluid outlet through which spent power fluid admixed with formation fluid can flow; the improvement comprising:

said pump includes a nozzle and a throat affixed together in spaced relationship respective to one another and forming a unitary assembly for producing formation fluid in response to power fluid flowing therethrough;

a seating cavity formed between the upper end and the lower end of said passageway; said seating cavity is axially aligned with said upper end of said passageway; said seating cavity having an upper cylindrical part spaced from a lower cylindrical part with there being a formation fluid working chamber formed therebetween and connected to the formation fluid inlet;

said nozzle and throat assembly being removably and telescopingly received in a slidable and sealed manner within said seating cavity; said nozzle and throat assembly has a



longitudinal central axis that is aligned with said seating cavity and with the upper end of said passageway; said nozzle and throat assembly being of a size to move axially into and out of said seating cavity, through the upper end of said passageway, and up through the power fluid inlet means by which the upper end of the passageway is connected to a source of fluid; whereby, the nozzle and throat assembly can be circulated into and out of the pump main body and uphole to the surface of the ground leaving the pump main body located downhole within the borehole.

5,055,003

LIQUID DRIVEN JET PUMP

Gösta Svensson, Stockholm, Sweden, assignor to Teknovia AB, Stockholm, Sweden

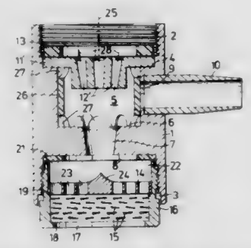
PCT No. PCT/SE89/00040, § 371 Date Aug. 6, 1990, § 102(e) Date Aug. 6, 1990, PCT Pub. No. WO89/07203, PCT Pub. Date Aug. 10, 1989

PCT Filed Feb. 3, 1989, Ser. No. 548,967

Claims priority, application Sweden, Feb. 5, 1988, 8800385

Int. Cl.[5] F04F *5/48*

U.S. Cl. 417—191 **8 Claims**



1. A liquid-driven jet pump, comprising a drive-liquid accelerating nozzle having a nozzle orifice which opens into a pump chamber having an outlet part which is substantially coaxial with the accelerating nozzle, the area of the nozzle orifice being smaller than the smallest cross-sectional area of the outlet part, an evacuation line which is intended to be connected to a space to be evacuated, said pump outlet part discharging into a substantially coaxially arranged drainage chamber whose cross-sectional area increases abruptly in relation to the outlet part and which cross-sectional area is at least 3½times greater than said outlet area when seen perpendicularly to the axial direction of the outlet part, and a drainage orifice which determines the shape of the exiting jet, characterized by the combination that the relationship between the respective smallest cross-sectional areas of the nozzle orifice and the outlet part is between 1:1.4 and 1:4.8 and the distance between the nozzle orifice and the drainage orifice is less than six times the square root of the drainage orifice area so that the whole of the diffusion process, or at least the full predominant part of said process, will take place through the agency of a multiple of net-like elements located in the drainage chamber and through-passed by the liquid; and further characterized in that the orifice area of the drainage orifice is 15 to 45 times larger than the area of the nozzle orifice.

5,055,004

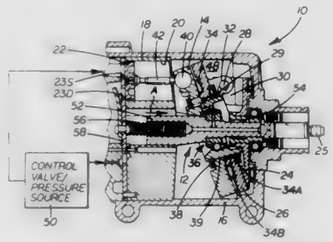
STROKE CONTROL ASSEMBLY FOR A VARIABLE DISPLACEMENT COMPRESSOR

David M. Ebbing, Clarence Center; Robert L. Swadner, E. Amherst, and Jerome E. Puterbaugh, Getzville, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 23, 1990, Ser. No. 527,628

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—222 R **3 Claims**



1. An assembly for providing piston stroke control for a variable displacement compressor having a housing, a non-rotary shaft and socket plate mounted thereon, and a rotatable drive hub/journal assembly for driving said socket plate to nutate and drive pistons within cylinders mounted in the housing, comprising:

means for mounting said shaft to provide for translational motion in said housing, the relative axial position of said shaft being associated with the extent of compressor displacement;

spring means for axially biasing said shaft so as to urge said socket plate towards full stroke operation along the full range of movement; and

means for pivotally mounting said journal on said drive hub to allow controlled pivoting movement of said journal relative to said drive hub,

said mounting means including spaced drive shafts on said drive hub/journal assembly extending along a single axis perpendicular to the direction of piston movement;

spaced kidney slots on said drive hub/journal assembly for receiving and guiding said shafts so as to be radially centered during pivoting movement of said journal;

whereby enhanced piston stroke control is effected.

5,055,005

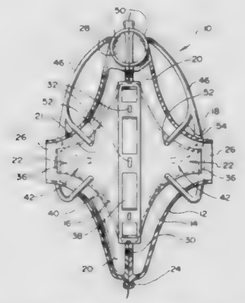
FLUID PUMP WITH LEVITATED IMPELLER

Harold D. Kletschka, 1925 Noble Dr., Minneapolis, Minn. 55422

Filed Oct. 5, 1990, Ser. No. 593,695

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—356 **19 Claims**



1. A method for stabilizing the position of a rotatable impeller suspended in fluid in a pumping chamber, the impeller having an axis of rotation, the pumping chamber having a pumping chamber inlet port and a pumping chamber outlet port, which comprises: the step of conducting fluid from the periphery of the impeller and discharging the fluid in the pumping chamber in general proximity to the axis of the impeller in opposed directions to thereby stabilize the position of the impeller in the pumping chamber by levitating fluid forces.

5,055,006

SUBMERGED MOTOR PUMP HAVING AN OUTER CASING WHICH IS RADIALLY DEFORMABLE

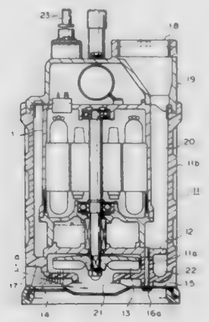
Makoto Kobayashi, Kawasaki; Kiyoshi Ouchi, Fujisawa; Shinji Nishimori, Yokohama; Tsuyoshi Maeda, Fujisawa, and Yoshio Miyake, Yokohama, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Feb. 7, 1989, Ser. No. 306,901

Claims priority, application Japan, Feb. 8, 1988, 63-25599; Nov. 15, 1988, 63-286923

Int. Cl.[5] F04B *39/06*

U.S. Cl. 417—366 **6 Claims**



1. A submerged motor pump of the type in which a motor is installed inside an outer casing so as to define an annular passage therebetween and a pumped liquid is discharged to the outside through the annular passage while cooling the entire periphery of the motor, wherein;

said outer casing is formed integral with a pump casing using a rubber material, and said integral structure is retained only at its axial upper and lower ends by rigid members which are located outside of said annular passage for allowing said outer casing to be deformable in the radial direction.

5,055,007

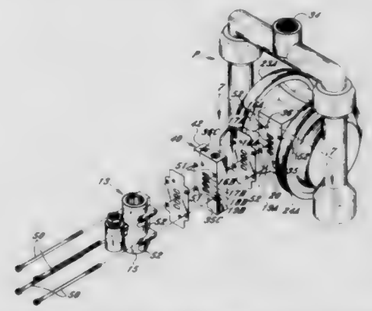
OVER-RIDE VALVE ASSEMBLY FOR AIR OPERATED DOUBLE DIAPHRAGM PUMPS

Warren E. Geddings, P.O. Box 1474, Monroe, N.C. 28110

Filed Mar. 13, 1990, Ser. No. 492,962

Int. Cl.[5] F04B *43/06*

U.S. Cl. 417—393 **4 Claims**



1. An air actuated double diaphragm pump having opposed diaphragm housings, each housing having a diaphragm and each diaphragm having an air side proximal to the opposed diaphragm, an actuator valve with a reciprocable valve spool connected to a source of pressurized air and pressurized air passageways extending from the actuator valve to the air sides of opposed diaphragms, the improvement which comprises means for selectively diverting pressurized air from the air side of one diaphragm and directing the diverted pressurized air against one end of the valve spool to restart the pump after the valve spool has stalled.

5,055,008

PROPORTIONATING PUMP FOR LIQUID ADDITIVE METERING

Raymond R. Daniels, Belleair; Norman W. Scheid, Tarpon Springs, and Donald C. Bryant, Palm Harbor, all of Fla., assignors to Chemilizer Products, Inc., Clearwater, Fla.

Filed Jan. 29, 1990, Ser. No. 471,496

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—403 **2 Claims**

1. A proportioning pump for liquid additive metering comprising,

a) a pump body,

b) a diaphragm piston in said body and sealed about the periphery thereof,

c) a first liquid for passing through said pump body,

d) inlet and outlet valves and lines for passing said first liquid through said pump body,

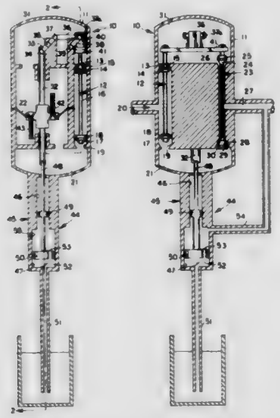
e) a piston rod movable with said piston and having an extension thereon,

f) an additive liquid,

g) a pair of additive pistons secured to the lower end of said extension for pumping said additive liquid to said first liquid external of said pump body,

(h) by pass valves in said diaphragm piston to allow the by

pass of said first liquid therethrough in the event said diaphragm piston travels beyond its normal position,



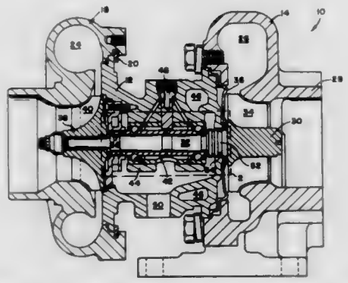
(i) and indentation means in said pump body adjacent one piston of said pair of additive piston for allowing a leaking of priming fluid to said additive pistons.

5,055,009

TURBOCHARGER WITH IMPROVED ROLLER BEARING SHAFT SUPPORT

Daniel A. Gutknecht, Torrance, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 12, 1989, Ser. No. 449,280
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—407 **9 Claims**



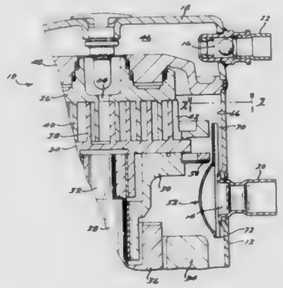
1. Exhaust gas driven turbocharger comprising a housing, a shaft within said housing having a pair of ends, a compressor wheel mounted within said housing on one end of the shaft for rotation therewith, a turbine wheel mounted within said housing on the other end of the shaft for rotation therewith, means for communicating air through said compressor wheel, means for communicating exhaust gas through the turbine wheel to cause the latter to rotate the shaft and the compressor wheel mounted thereon to compress the air communicated through the compressor wheel, and bearing means mounting said shaft for rotation relative to the housing, said bearing means including a bearing outer ring, a bearing inner ring, and ball bearing elements supporting the bearing outer ring on the bearing inner ring, said ball bearing elements includes a first set of said elements and a second set of said elements spaced axially from said first set, said bearing outer ring being a rigid, uninterrupted member providing an uninterrupted structural link between said first and second sets to establish the axial spacing between said sets, a pair of axially spaced faying surfaces on said inner ring engaging corresponding faying surfaces on said shaft to support said inner ring on said shaft, said shaft defining a circumferentially extending surface between the faying surfaces on said inner ring cooperating with said shaft to define an air gap therebetween, one of the faying surfaces on said inner ring having a diameter greater than the diameter of the other of said faying surfaces on said inner ring.

5,055,010

SUCTION BAFFLE FOR REFRIGERATION COMPRESSOR

Kent E. Logan, Englewood, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Oct. 1, 1990, Ser. No. 591,441
Int. Cl.[5] F04B *17/00, 21/00;* **F03C** *2/00;* **B01D** *45/00*
U.S. Cl. 417—410 **12 Claims**



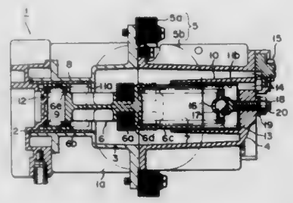
1. A hermetic fluid compressor comprising:
a hermetic shell having a fluid inlet port opening through a sidewall thereof;
a motor compressor disposed within said shell and having a fluid inlet spaced from said inlet port;
a baffle member affixed to said shell and including a dome shaped portion centrally disposed with respect to the axis of said inlet port and means defining openings communicating with the interior of said shell above and below said dome shaped portion.

5,055,011

ELECTROMAGNETIC TYPE RECIPROCATING PUMP

Tamotsu Mori, Tokyo, Japan, assignor to Man Design Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 332,043, Apr. 3, 1989, abandoned. This application May 31, 1990, Ser. No. 530,425
Claims priority, application Japan, Apr. 6, 1988, 63-45750
Int. Cl.[5] F04B *35/04*
U.S. Cl. 417—417 **1 Claim**



1. An electromagnetic reciprocating gas pump comprising:
an electromagnet whose magnetization and demagnetization are repeated by a half wave-rectified version of alternating current or direct current in the form of pulses;
a piston having a magnetic member which is attracted by magnetization of the electromagnet;
a cylinder in which the piston is inserted and guided along it;

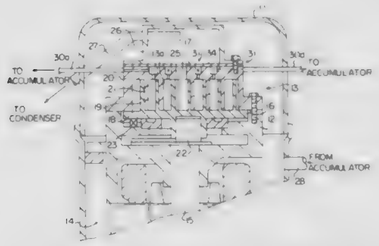
first urging means for imparting a reaction force in backward direction to the piston which is reciprocated by a magnetic force of the electromagnet; and
second urging means for imparting to the piston in a forward direction a reaction force which is weaker than that of the first urging means, wherein
the piston has a hollow front portion and a hollow rear portion,
the cylinder comprises a front cylinder and a rear cylinder,
the front cylinder has a variable volume closed air-operating chamber formed therein,
the hollow front portion of the piston has an opening to the air-operating chamber,
the rear cylinder has an air passage communicating with the atmosphere,
the hollow rear portion of the piston has an opening to the air passage,
the magnetic member comprises a magnetic armature interposed between the hollow front and rear portions of the piston,
the first urging means comprises a first compression spring for moving the piston in the backward direction when the magnetic force of the electromagnet for attracting the magnetic armature is reduced, and support means having a screw projecting to the rear cylinder for supporting the first compression spring and adapted to be moved by the screw in the forward and backward directions, said first compression spring having a spring constant thereof adjusted by the support means, and
the second urging means comprises a second compression spring fitting in the hollow front portion of the piston and having a spring constant thereof smaller than that of the first compression spring, said second compression spring having an outer diameter substantially equal to the inner diameter of said hollow front portion,
the second compression spring having a length such that both ends of the spring are continuously supported between and by a bottom surface of said front cylinder and a bottom surface of said hollow front portion of said piston, respectively, to thereby form an air damper in said air operating chamber to prevent said hollow front portion of said piston from impacting against said front cylinder.

5,055,012

SCROLL COMPRESSOR WITH BYPASS RELEASE PASSAGE IN STATIONARY SCROLL MEMBER

Wataru Sakashita, and Tsutomu Ichikawa, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 15, 1989, Ser. No. 394,134
Claims priority, application Japan, Aug. 31, 1988, 63-216816; Sep. 2, 1988, 63-220225
Int. Cl.[5] F04B *49/02;* **F04C** *18/04, 29/08*
U.S. Cl. 417—440 **7 Claims**



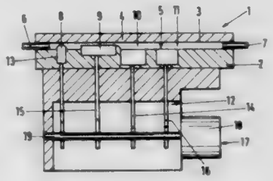
1. A scroll compressor for use in compressing gases, comprising;
a stationary scroll member having a top surface;
a movable scroll member orbiting about the stationary scroll member for compressing gases together with the stationary scroll member as it orbits about the stationary scroll member;
a discharge port formed in the center of the stationary scroll member for discharging the compressed gases;
a plurality of release ports which are offset different distances from the center of the stationary scroll member;
a release cavity formed in the stationary scroll member and in communication with one of the plurality of release ports;
a release guide passage passing through the stationary scroll member in parallel with the top surface of the stationary scroll member in communication with the release cavity;
a sealed case for housing the stationary scroll member and the movable scroll member; and
a release pipe connected to the release guide passage through the sealed case.

5,055,013

APPARATUS FOR INJECTING FLUIDS

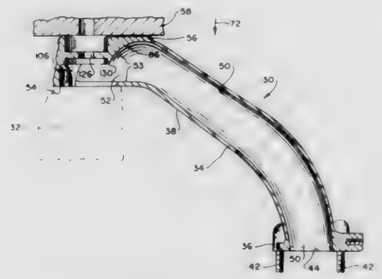
Ulrich Faeser, Bad Homburg, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Jul. 10, 1990, Ser. No. 551,215
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1989, 3923457
Int. Cl.[5] F04B *43/12*
U.S. Cl. 417—474 **7 Claims**



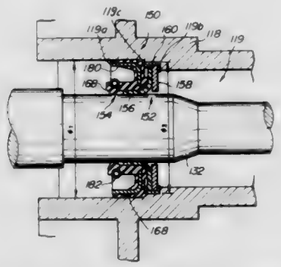
1. Apparatus for injecting fluid comprising:
a housing having an accommodation space and a pressure plate;
an elastic delivery conduit portion which is arranged in the accommodation space, said elastic delivery conduit portion having an inlet connectable to a feed conduit and an outlet connectable to a discharge conduit, said conduit portion having formed therein a first conveying chamber, a second conveying chamber and a third conveying chamber;
delivery means, said delivery means having an inlet valve downstream of said inlet seen in the conveying direction, an outlet valve upstream of the outlet, and at least a first pump ram and a second pump ram for cyclically enlarging and diminishing the size of the conveying chambers, the first pump ram being disposed between the inlet valve and the outlet valve and the second pump ram being disposed between the outlet valve and the outlet;
wherein said elastic delivery conduit portion is formed as hose segment which in an uninfluenced state has a substantially constant diameter throughout;
wherein the conveying chambers are formed by compression of the elastic delivery conduit portion by means of the pump rams and the outlet valve and by subsequent expansion due to the restoring forces inherent in the elastic delivery conduit portion up to the original cross-section; and
wherein the outlet valve is a further pump ram which has a delivery function up to complete closure of the cross-section of the corresponding elastic delivery conduit portion wherein the pump rams have only two different allowable movement velocities V1 and V2.

5,055,014
FLUID SUPPLY CONDUIT
Robert L. Bracken, Rockford, and Anita I. Jacobs, Roscoe, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Jun. 27, 1990, Ser. No. 544,410
Int. Cl.[5] F04B *39/00*
U.S. Cl. 417—572 20 Claims



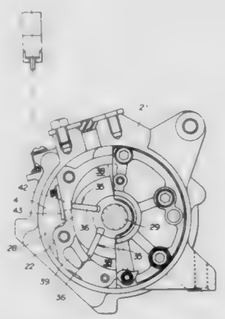
1. An improvement in a fluid supply chamber for a fluid utilization device wherein fluid is to be delivered to the device generally in a first direction, and wherein the chamber includes an inlet port at which fluid flow is established in a second direction transverse to the first direction and an outlet port, the flow of fluid being divided into a through-flow stream and a non-through-flow stream adjacent the outlet port, the improvement comprising:
inner walls defining a converging flow passage disposed between the inlet port and the outlet port of the chamber, the flow passage having a transition portion at which a component of flow in the first direction is imparted to the fluid; and
a vane adjacent the outlet port of the chamber that directs fluid from the non-through-flow stream into the through-flow stream.

5,055,015
SEAL STRUCTURE FOR ROTARY BODY AND VANE-TYPE ROTARY COMPRESSOR EMPLOYING THE SAME
Naoto Furukawa, Kanagawa, Japan, assignor to Atsugi Motor Parts Company, Limited, Kanagawa, Japan
Filed May 23, 1989, Ser. No. 356,057
Claims priority, application Japan, May 23, 1988, 63-67744[U]
Int. Cl.[5] F16J *15/32*; F04C *27/00*
U.S. Cl. 418—104 32 Claims



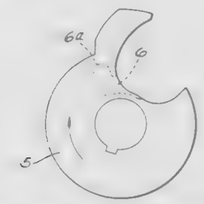
1. A seal structure for a rotary body for establishing a seal between an external periphery of said rotary body and an internal periphery of a rotary body receptacle bore defined within a stationary structure, comprising:
means for defining a first smaller bore section having a first diameter and a second larger bore section having a second diameter greater than said first diameter in said rotary body receptacle bore, said first and second bore sections being located adjacent to each other;
a first seal assembly disposed within said first bore section and including a first seal member formed from an elastomeric material and a metallic holder member holding said first seal member, said metallic holder member having an outer diameter substantially equal to said first diameter and an outer surface contacting the inner periphery of said first bore section; and
a second seal assembly disposed within said second bore section and including a second seal member formed of an elastic material, said second seal member having an outer surface contacting an inner periphery of said second bore section,
whereby said metallic holder member is sized to be inserted within said first bore section without scratching the inner periphery of said second bore section.

5,055,016
ALLOY MATERIAL TO REDUCE WEAR USED IN A VANE TYPE ROTARY COMPRESSOR
Tsuneshige Kawade, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Tokyo, Japan
Filed May 21, 1990, Ser. No. 525,717
Claims priority, application Japan, May 19, 1989, 1-57056[U]
Int. Cl.[5] F04C *18/344, 29/00*
U.S. Cl. 418—179 3 Claims



1. A vane-type rotary compressor having wear and seizure resistance, comprising:
a cam ring having a cylindrical interior;
a rotor rotatably installed in said cam ring;
a vane arranged on the circumference of said rotor for radial movement toward and away from the inner periphery of said cylindrical interior of said cam ring;
a pair of plates secured to corresponding front and rear portions of said cam ring to cover it;
said cam ring and said rotor being formed of silicon rich aluminum alloy containing 12 to 20 wt % silicon;
said pair of plates being formed of aluminum or aluminum alloy;
said vane being formed of ferric sintered materials containing 3 to 8 wt % carbon; and
wherein the silicon content included in said cam ring and said rotor is determined in relation with the carbon content included in said vane for establishing effective wear and seizure resistance.

5,055,017
MECHANICAL PUMPS
Henryk Wycliffe, Crawley, United Kingdom, assignor to The BOC Group plc, Windlesham, England
Filed Oct. 23, 1989, Ser. No. 425,650
Claims priority, application United Kingdom, Oct. 28, 1988, 8825284
Int. Cl.[5] F04C *18/18, 29/08*
U.S. Cl. 418—183 4 Claims



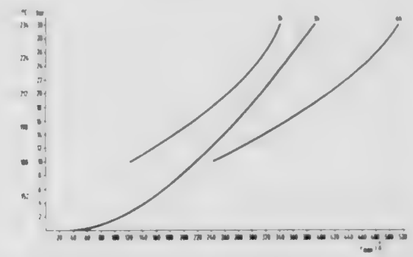
1. A mechanical pump suitable for pumping a volume containing a vapor and a liquid, the mechanical pump comprising: at least one pumping chamber having an inlet for receiving the volume within the pumping chamber and an outlet for discharging the volume from the pumping chamber; and a pair of intermeshing claw-type, first and second rotors mounted on respective shafts for rotation within the pumping chamber and having leading surfaces at which the volume is swept by the first and second rotors from the inlet to the outlet; the first rotor alternately opening and closing the inlet; and the second rotor alternately opening and closing the outlet and including an open-ended cavity, communicating, at one end, with the leading surface of the second rotor so that the liquid is urged into the cavity during the rotation of the second rotor and positioned so that the liquid is ejected from the cavity as the second rotor transverses the outlet, the open-ended cavity having a cup-shaped portion essentially radially oriented to retain the liquid prior to the ejection of the liquid from the open-ended cavity.

5,055,018
CLEAN STEEL
Tohei Ototani, Tokyo, Japan, assignor to Metal Research Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 363,570, Jun. 7, 1989, Pat. No. 4,944,798. This application Mar. 23, 1990, Ser. No. 498,069
Int. Cl.[5] C21C *7/02*
U.S. Cl. 420—8 7 Claims

1. A clean steel consisting essentially of by weight 0.0001%–0.5% of aluminum, 0.0001%–0.05% of silicon, 0.00001%–0.0005% of magnesium, 0.00001–0.0025% of calcium, 0.00001%–0.003% of oxygen, 0.0001%–0.003% of sulfur, and 0.0001%–0.015% of nitrogen, less than 2% of carbon, 0.0001%–0.5% of at least one element selected from the group consisting of titanium, niobium, tantalum, boron and the remainder iron.

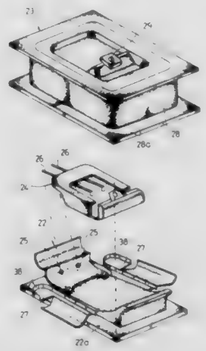
5,055,019
PROCESS FOR THE PRODUCTION OF BOEHMITIC ALUMINAS
Arnold Meyer, Michaelisdonn; Klaus Noweck, Brunsbuttel, and Ansgar Reichenauer, Marne, all of Fed. Rep. of Germany, assignors to Condea Chemie GmbH, Brunsbuttel, Fed. Rep. of Germany
Filed Jun. 2, 1989, Ser. No. 360,311
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1988, 3823895
Int. Cl.[5] C01F *7/02*
U.S. Cl. 423—625 8 Claims

1. A process for the preparation of a boehmitic alumina compound, comprising the steps of:
hydrolysizing a mixture consisting essentially of neutral aluminum alkoxide and alcohol and water to obtain an alumina suspension; and
aging the alumina suspension obtained from the neutral aluminum alkoxide hydrolysis in an autoclave having a steam pressure of 1 to 30 bar, at a temperature of 100°–235° C., for between 0.5–20 hours;
said aging step being carried out with stirring at a peripheral speed of 1–6 m/s;



controlling the stirrer speed until the surface area of said boehmitic alumina compound is between 170 m^2/g and 78 m^2/g, as determined on the dried alumina suspension; and
said alumina compound having a purity of at least 99.95% Al_2O_3 and a generally increasing pore volume at pore radii measured in a range of 2 to 300 nm.

5,055,020
MOLD FOR MANUFACTURING A SKIN COVERED FOAMED PLASTIC ARTICLE
Hiroyuki Katagiri, Ayase, Japan, assignor to Ikeda Bussan Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 412,943, Sep. 26, 1989, abandoned. This application Nov. 27, 1990, Ser. No. 619,652
Claims priority, application Japan, Oct. 31, 1988, 63-142208[U]
Int. Cl.[5] B29C *39/10, 39/40*
U.S. Cl. 425—111 2 Claims



1. A mold for manufacturing a skin covered foamed plastic article having smoothly curved sections and comprised of a pad member covered by a skin cover, the skin cover including sewn portions formed along the smoothly curved sections, and the mold comprising:
an upper mold; and
a lower mold including a base member defining a mold surface for receiving the skin cover, for assembly with the upper mold to define a cavity for receiving a liquid foam

resin which is poured onto the skin cover to form the pad member;

first wall portions extending upwardly from the base member; and

second wall portions pivotally mounted to and extending upwardly from the base member, the second wall portions being spaced apart from the first wall portions to define window regions corresponding to the smoothly curved sections of the skin covered foamed plastic article so that the skin cover can be pushed outwardly by pressure of the liquid foam resin;

wherein the second wall portions include plate members provided along edges of the window regions, for securing the sewn portions of the skin cover in position at the edges of the window regions during foaming of the liquid foam resin.

5,055,021

INTERMEDIATE ANCHOR FOR CENTRIFUGAL CONCRETE MOLD FOR PRODUCING RING-SHAPED PRESTRESSED CONCRETE BODIES

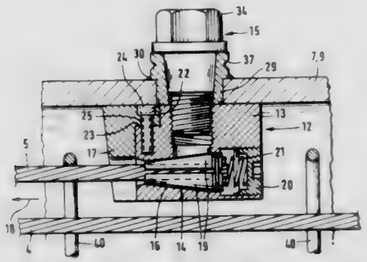
Emil Bonato, Grenzweg 8, 5330 Königswinter 41, Fed. Rep. of Germany

Filed Jul. 27, 1990, Ser. No. 558,830

Claims priority, application Fed. Rep. of Germany, May 11, 1990, 4015093

Int. Cl.[5] B28B *21/60, 23/08*

U.S. Cl. 425—111 **13 Claims**



1. An intermediate anchor for a centrifugal concrete mold composed of tubular semi-shells with end tensioning heads for producing conically extending tubular pretensioned concrete bodies with some pretensioning elements extending over a whole length of the pretensioned concrete body between the heads and other pretensioning elements extending from a footside clamping head to at least one intermediate location between opposite ends of said mold corresponding to locations of intermediate anchors extending over an inner periphery of the centrifugal concrete mold, the intermediate anchor comprising an abutment body for an end of an anchoring element mounted on an end of a pretensioning element, said abutment body being supportable on an inner side of a wall of the centrifugal concrete mold and mountable on the inner side of said wall; means for mounting said abutment body on the inner side of the wall of the centrifugal concrete mold and including at least one anchor bolt extendable through the wall of the centrifugal concrete mold in a sealed manner, said abutment body having a conical recess extending transversely to said anchor bolt for receiving the anchoring element of the pretensioning element; a fork-shaped projecting wedge piece releasably mounted on the abutment body and engaging the pretensioning element in a fork-shaped manner near the anchoring element, said projecting piece being releasable of the pretensioned concrete body after removal of the concrete body from the centrifugal concrete mold and before removal of the abutment body from the concrete body so as to release a portion of the pretensioning element near the anchoring element for separating by a separating device to release the abutment body from the concrete body.

5,055,022

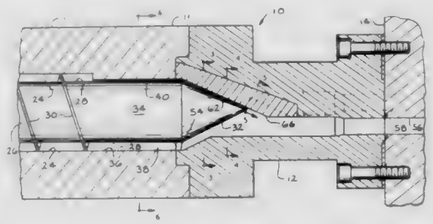
MULTIPLE PARISON EXTRUSION DEVICE FOR PRODUCING LAMINAR ARTICLES

Michael Hirschberger, Sylvania, Ohio, assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Mar. 22, 1990, Ser. No. 497,513

Int. Cl.[5] B29C *49/04*

U.S. Cl. 425—131.1 **4 Claims**



1. An extrusion device for supplying plastic resin to a multiple parison die head comprising:

a barrel having a longitudinaly extending bore therethrough;

an extrusion screw longitudinally disposed within said bore, said screw having a flighted upstream portion having a spiral flight radially extending from a screw shaft, a non-flighted downstream portion formed by said shaft and a tip portion at a downstream end, said bore being radially spaced from said non-flighted downstream portion of said shaft forming an annular flow path for resin,; and

means within said bore surrounding said non-flighted downstream portion of said shaft for dividing said annular flow path into a plurality of substantially separated flow passages extending longitudinally over said non-flighted downstream portion of said shaft whereby resin is divided into separated resin streams flowing through said separated flow passages.

5,055,023

APPARATUS FOR MANUFACTURING LARGE-VOLUME HOLLOW BODIES OF PLASTICS MATERIAL HAVING MULTIPLE-LAYER WALLS

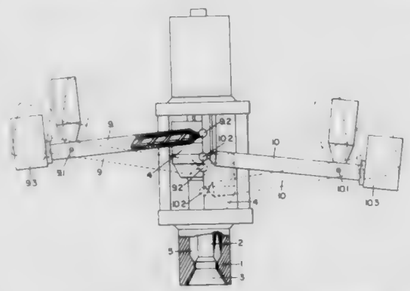
Günter Richter, Johannistal 12, D-5230, Altenkirchen, Fed. Rep. of Germany

Division of Ser. No. 109,728, Oct. 16, 1987, Pat. No. 4,937,035. This application Apr. 17, 1990, Ser. No. 510,060

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1986, 3635334

Int. Cl.[5] B29C *47/06*

U.S. Cl. 425—133.100 **4 Claims**



1. In an apparatus for discontinuously manufacturing multiple-layer, tubular preforms of thermoplastic material for making large-volume hollow bodes having multiple-layer walls, the apparatus including a divided blow molding apparatus defining an annular accumulation chamber, the annular accumulation chamber having an axis, a mandrel coaxially disposed in the annular accumulation chamber, a tubular plunger projecting into the annular accumulation chamber, the annular accumulation chamber being in communication with at least two extruders which provide at least two individual material melts through an annular flow duct and a flow duct bore in communication with the annular flow duct, the tubular plunger defining a funnel-shaped flow duct, the funnel-shaped flow duct widening toward the annular accumulation chamber to the same width as the annular accumulation chamber, the annular accumulation chamber having a length which is increased when an extrusion pressure is applied, and a drive for decreasing the length of the annular accumulation chamber and ejecting the material metal as a multiple-layer extruded material, the improvement comprising the tubular plunger being an axially displaceable coextrusion means for joining the at least two individual material melts, the annular flow ducts and the flow duct bores being arranged in the tubular plunger, wherein the annular flow ducts in the tubular plunger open into the funnel-shaped flow duct.

5,055,024

APPARATUS FOR MANUFACTURING BALLOONS FOR MEDICAL DEVICES

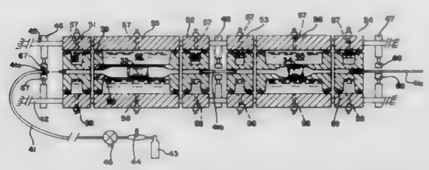
Stefan Jackowski, Hollywood, and Leonard Pinchuk, Miami, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 452,715, Dec. 19, 1989, Pat. No. 5,017,325, which is a division of Ser. No. 384,418, Jul. 24, 1989, Pat. No. 4,938,676, which is a continuation-in-part of Ser. No. 253,070, Oct. 19, 1988, abandoned. This application Aug. 2, 1990, Ser. No. 561,840

The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.

Int. Cl.[5] B29C *49/08, 49/18*

U.S. Cl. 425—140 **12 Claims**



1. A molding apparatus for fabricating medical device balloons, comprising:

a free-blow molding chamber having an infeed opening and an outfeed opening;

a blow molding chamber downstream of said free-blow molding chamber, said downstream blow molding chamber having an infeed opening and an outfeed opening;

means for thermally isolating said free-blow molding chamber from other components of the apparatus including said downstream blow molding chamber;

means for feeding a parison through the infeed opening and outfeed opening of the free-blow molding chamber and through said infeed opening and outfeed opening of the downstream blow molding chamber;

means for supplying pressurized fluid into said parison at a location upstream of said infeed opening of the free-blow molding chamber;

means for axially elongating said parison while a portion of the parison is within said free-blow molding chamber and while another portion of the parison is within said downstream blow molding chamber;

said free-blow molding chamber having means for permitting radial enlargement of the portion of the parison therewithin upon passage thereinto of pressurized fluid from said supplying means; and

said downstream blow molding chamber having means for permitting radial enlargement of the another portion of the parison therewithin upon passage thereinto of pressurized fluid from said supplying means.

5,055,025

INJECTION MOLD APPARATUS WITH IMPROVED HEATING AND COOLING SYSTEM

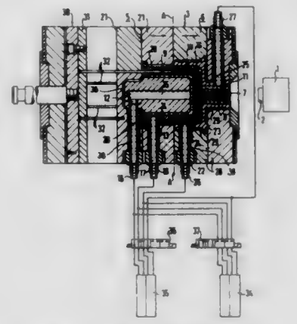
Fritz Müller, Neuer Wasen 6, 7118, Ingelfingen-Criesbach, Fed. Rep. of Germany

Division of Ser. No. 328,476, Mar. 24, 1989, Pat. No. 4,963,312. This application Jul. 17, 1990, Ser. No. 554,027

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811112

Int. Cl.[5] B29C *45/78*

U.S. Cl. 425—144 **19 Claims**



1. Injection mold apparatus, comprising:

an injection mold including a cavity of suitable configuration and an ingate area through which plastic material is introduced into said cavity;

fluid-carrying passageway means for circulating a heat carrier through said injection mold, said passageway means including passageways defining an internal heat carrier circulation system essentially following the configuration of said cavity, and passageways defining an external heat carrier circulation system which is separated from said internal heat carrier circulation system and additionally surrounds said ingate area so that said cavity and said ingate area are gradually and separately heatable and coolable in a time-controllable manner; and

control means regulating the flow of heat carrier through said internal and external circulation systems so as to control heating of said injection mold to a desired temperature and to control cooling of said injection mold by starting the cooling at a distant area to said ingate area and progressing the cooling to said ingate area in a time-controlled manner.

5,055,026

POSITION DETECTOR FOR A MULTI-GATE VALVE ASSEMBLY

Edward A. Gordon, Dothan, Ala., assignor to Sony Corporation of America, Park Ridge, N.J.

Filed Jun. 14, 1990, Ser. No. 537,826

Int. Cl.[5] B29C *45/23*

U.S. Cl. 425—146 **8 Claims**

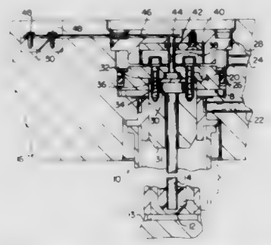
1. A multi-gate valve assembly for use in an injection molding apparatus, said assembly comprising:

a plurality of valve gates, each valve gate including a respective outlet orifice to direct a flow of molten plastic material to a respective mold cavity,

each of said valve gates having a respective gate pin reciprocable relative to said valve gate between a closed position which precludes the flow of molten plastic material out of said respective outlet orifice and an open position permit-

ting the flow of molten plastic material out of said respective outlet orifice into said respective mold cavity,

detection means associated with each of said valve gates for detecting when the gate pin of the gate pin of the respective gate is in said open position, and



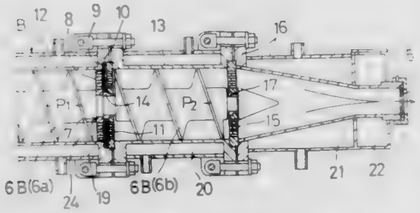
control means responsive to said detection means to permit a flow of molten plastic material to said valve gates only when said detection means associated with all of said valve gates detect that the respective gate pins are in said open position.

5,055,027

SCREW TYPE EXTRUDING APPARATUS

Takuya Sato, Suita, Japan, assignor to Sato Iron Works Co., Ltd., Higashiosaka, Japan

Filed Sep. 6, 1989, Ser. No. 403,616
Claims priority, application Japan, Jul. 12, 1989, 1-180064
Int. Cl.[5] B29C *47/38*
U.S. Cl. 425—197 **6 Claims**



1. A screw type extruding apparatus comprising:

a reservoir for reserving a treatment-object material including a main raw material, additives or auxiliary materials;

screw means disposed within a material-conveying passage and for conveying the material to a terminal end; and

an extruding die disposed at the terminal end and for extruding the material into a predetermined shape;

wherein said material-conveying passage includes a pair of discs disposed at intermediate positions in the conveying direction of said screw means and opposed to each other transverse relative to said passage,

each of said discs defining a plurality of slit pores extending in the material conveying direction,

one disc being operatively coupled with said screw means to be rotatable relative to the other disc,

said disc pair defining milling-kneading mechanisms for milling and kneading the material by causing the material to pass through said slit pores formed by the disc pair, and

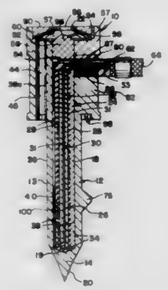
a mesh disc and a punching plate having a plurality of pores and for reinforcing said mesh disc being interposed between said disc pair of the milling-kneading mechanisms.

5,055,028

INTERNALLY HEATED TORPEDO WITH INTERNAL MELT DISTRIBUTION CHAMBER

Panos Trakas, 21 W. Wrightwood, Glendale Heights, Ill. 60139

Continuation of Ser. No. 335,113, Apr. 7, 1989, abandoned. This application Aug. 22, 1990, Ser. No. 561,267
Int. Cl.[5] B29C *45/20*
U.S. Cl. 425—549 **16 Claims**



1. An integral heated torpedo for use in injection molding and for maintaining liquid melt at a temperature conducive to melt flow while the melt is passing over an exterior surface thereof, the torpedo comprising: an elongated heated member having a melt inlet end and a melt outlet end, said elongated heated member having a torpedo body portion extending axially outwardly from a torpedo enlarged and portion thereof, the torpedo body portion having a first diameter and the torpedo enlarged end portion having a second diameter which is greater than the torpedo body portion first diameter, said torpedo enlarged end portion being disposed at the melt inlet end of said elongated heated member, said torpedo body portion being disposed proximate to the melt outlet end of said elongated heated member, said torpedo body portion having an integral sidewall, end tip portion and an inner cavity, the integral sidewall of said torpedo body portion having an exterior surface heated by a heating element, said enlarged end portion being integrally joined to said torpedo body portion, said torpedo body portion further extending within said enlarged end portion, said enlarged end portion including a plurality of melt flow axial passages passing through said torpedo enlarged end portion and opening onto said torpedo body portion, each of the melt flow axial passages being in a heat transfer relationship to the exterior heated surface of said torpedo body portion integral sidewall, said melt flow axial passages further defining an extent of said torpedo body portion integral sidewall exterior heated surface within said enlarged end portion, said torpedo body portion further including an inner axial cavity extending through a central portion of said torpedo body portion and enlarged end portion, the inner axial cavity extending from a first end of the torpedo body portion to a second end of said torpedo body portion and terminating within said torpedo body portion inwardly of the second end of said torpedo body portion, said axial cavity having the heating element disposed therein in a heat transfer relationship with the exterior surface of said torpedo body portion integral sidewall, whereby heat is transferred from said heating element to said torpedo body portion integral sidewall exterior surface to maintain the melt passing over said torpedo body portion integral sidewall exterior surface in a liquid melt flow condition, said plurality of melt flow axial passages defining a flowpath for injected melt through said melt inlet end and said torpedo enlarged end portion over said integral sidewall exterior surface of said torpedo body portion, said elongated heated member further including means disposed within said torpedo enlarged end portion for distributing melt injected into said melt inlet end of said elongated heated member over said torpedo body portion integral sidewall exterior surface, the melt distribution means including a generally annular melt distribution chamber, said melt distribution chamber having

means for directing liquid melt entering said torpedo melt flow inlet end into said plurality of melt flow axial passages, the melt distribution chamber having a general inner annular diameter which is equal or less than said torpedo body portion first diameter and a general outer annular diameter which is greater than said torpedo body portion first diameter.

5,055,029

REDUCING NO_x EMISSIONS FROM A CIRCULATING FLUID BED COMBUSTOR

Amos A. Avidan, Yardley, Pa.; Arthur A. Chin, Cherry Hill, N.J., and Gary J. Green, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 468,294, Jan. 22, 1990, abandoned. This application Feb. 27, 1991, Ser. No. 660,913
Int. Cl.[5] F23D *3/40*
U.S. Cl. 431—7 **21 Claims**

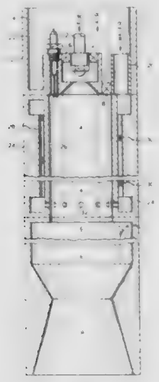
1. In a circulating fluidized bed combustion zone wherein a carbon and nitrogen-containing fuel is burned at an elevated temperature by contact with oxygen-containing gas in a generally vertical combustor comprising a fast fluidized bed of particulates wherein at least a majority of the particulate matter in the fast fluidized bed has a particle diameter in excess of 100 microns, to generate a flue gas/particulate stream which is discharged from the top of the combustor, said flue gas comprising excess oxygen, nitrogen oxides (NO_x), fines having a particle diameter less than about 100 microns, and circulating particles having an average particle size of about 100–500 microns, which flue gas passes through a separation means to recover from the flue gas at least a majority of the 100–500 micron particles which are recycled to the circulating fluidized bed combustion zone, the improvement comprising burning said fuel in the presence of a catalytically effective amount of a $DeNO_x$ catalyst which reduces the amount of NO_x present in the flue gas relative to operation without addition of a $DeNO_x$ catalyst.

5,055,030

METHOD FOR THE RECOVERY OF HYDROCARBONS

Robert M. Schirmer, Sun City West, Ariz., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 354,858, Mar. 4, 1982, Pat. No. 4,861,263. This application Jun. 23, 1989, Ser. No. 370,957
Int. Cl.[5] F23R *3/44*
U.S. Cl. 431—10 **32 Claims**



1. A method of generating steam comprising:

(a) introducing a fuel and at least a first volume of a combustion supporting gas into a mixing chamber having its downstream end in open communication with an elongated combustion chamber;

(b) creating a first toroidal vortex of said fuel and at least said first volume of said combustion supporting gas, in a volume at least equal to the stoichiometric volume necessary for combustion of all said fuel, said first vortex having its center adjacent the center of said elongated combustion chamber and rotating in one of a clockwise or counterclockwise direction to produce a body of said fuel and said combustion supporting gas moving from the inlet end of said combustion chamber toward the outlet end of said combustion chamber;

(c) creating a second toroidal vortex of a second volume of combustion supporting gas between said first toroidal vortex and the inner wall of said combustion chamber and rotating in the other of the clockwise or counterclockwise direction to produce an annular body of said second volume of combustion supporting gas moving from the inlet end of said combustion chamber toward the outlet end of said combustion chamber;

(d) burning said fuel in the presence of said combustion supporting gas to produce a flame moving from said inlet end of said combustion chamber toward said outlet end of said combustion chamber and a flue gas substantially free of unburned fuel at said outlet end of said combustion chamber;

(e) maintaining said first and second toroidal vortices in said combustion chamber for a residence time sufficient for said first and second toroidal vortices to naturally collapse and the flow of fluids in said combustion chamber to assume a uniform flow velocity across said combustion chamber and moving toward the outlet end of said combustion chamber; and

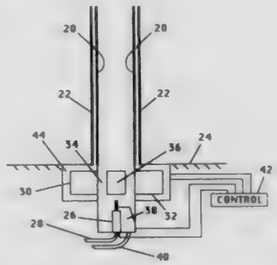
(f) introducing water into said flue gas adjacent the outlet end of said combustion chamber to produce a mixture of said flue gas and said water and vaporize a major portion of said water to produce a mixture of said flue gas and steam.

5,055,031

FIRE VORTEX DISPLAY

John Werner, 11036 Langmuir Ave., Sunland, Calif. 91040

Filed May 7, 1990, Ser. No. 519,913
Int. Cl.[5] F23Q *2/32;* **F23N** *3/00*
U.S. Cl. 431—726 **5 Claims**



1. A fire display comprising:

a burner for coupling to a source of combustible gas or liquid for burning the same and emitting a flame in response thereto;

a first transparent tube disposed with one end thereof adjacent said burner;

a second transparent tube larger than and substantially concentric with said first transparent tube so as to define an annular space therebetween;

a first blower having a blower inlet and a blower outlet, said blower inlet being coupled to said annular space between said first and second transparent tubes adjacent one end thereof and said blower outlet being coupled to inject air adjacent to said burner with a substantial circumferential flow so as to cause a swirling motion of a flame emitted

from the burner in a first direction of rotation as the same proceeds along said first transparent tube;

the airflow between said first and second transparent tubes caused by said blower cooling said second transparent tube.

5,055,032

A BURNER WITH A FLAME RETENTION DEVICE

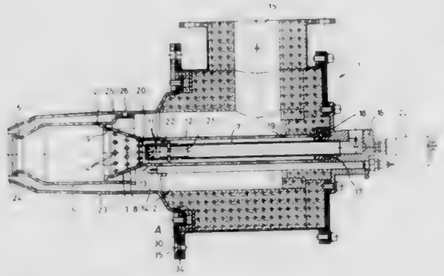
Detlef Altemark, Dorsten; Gerhard Stenzel, Meerbusch, and Manfred Weid, Haltern, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Oct. 12, 1989, Ser. No. 420,563

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834762; Oct. 18, 1988, 3835381

Int. Cl.[5] F23R *3/06*

U.S. Cl. 431—158 **29 Claims**



1. A burner comprising:

a body containing an oxygen-carrier gas duct;

an outer tube having an open upstream end and an open downstream end, said upstream end mounted on said body so that said outer tube is a continuation of said oxygen-carrier gas duct;

a combustion chamber having an open upstream end and an open downstream end, said combustion chamber inserted in said outer tube so that said combustion chamber downstream end is substantially in alignment with said outer tube downstream end and said combustion chamber and outer tube downstream ends enclose exit openings spaced relative to each other in the circumferential direction allowing the exit of a secondary part of said oxygen-carrier gas through said openings in the form of jets with the jets substantially reaching the outer part of a flame discharged from said combustion chamber wherein said exit openings are formed by concave cavities in the downstream end of said combustion chamber and convex cavities in the downstream end of said outer tube; and

a flame retention device inserted in the upstream part of said combustion chamber and having a substantially conical jacket diverging from a central inlet towards said combustion chamber, said jacket having orifices for the passage of a primary part of said oxygen-carrier gas; and

means to take a fuel to the inlet of said flame retention device.

5,055,033

LIGHTER DEVICE

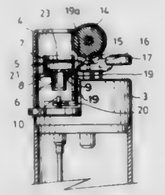
Shan Lee, No. 53, Luen Teng St., Shih Lin Area, Taipei, Taiwan

Filed Oct. 19, 1990, Ser. No. 599,921

Int. Cl.[5] F23Q *7/12*

U.S. Cl. 431—255 **9 Claims**

1. A lighter device comprising a lower housing portion housing a fuel tank containing pressurized butane liquid gas fuel under pressure, an upper portion of the lighter including a burning space, a nozzle and valve unit connected with said fuel tank and projecting from said lower housing portion toward said burning space, said nozzle having a diameter, a burning system including a tube-like burner means supported above said nozzle and valve unit, an ignition system mounted on the upper portion of the lighter to provide ignition sparks to said burning space, actuating means for switching the valve from a normally closed condition to an open condition allowing fuel to flow therefrom said tube-like burner means comprising a



unitary structure having upper and lower short-tube sections of different diameters axially aligned with one another and being axially aligned with said nozzle and valve unit, said tube-like burner means having a lower end spaced a predetermined distance above said nozzle and valve unit, and said lower section having a diameter larger than the diameter of said nozzle.

5,055,034

WINDPROOF CIGARETTE LIGHTER WITH DOUBLE FLAMES

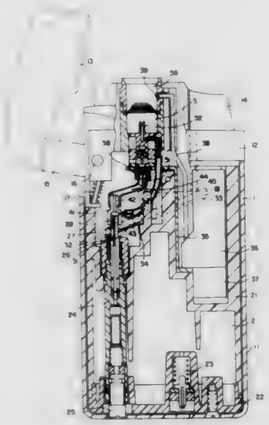
Zhi-Lin Wang, Third Group of East District, Xinhe Town, Wenling County, Zhejiang Province, China

Filed Jul. 25, 1990, Ser. No. 557,341

Claims priority, application China, Jul. 26, 1989, 89214319.3; Apr. 14, 1990, 90204107.X

Int. Cl.[5] F23Q *7/12*

U.S. Cl. 431—255 **19 Claims**



1. A windproof cigarette lighter with double flames comprising:

a housing; a reservoir to store the gaseous fuel; a gas charging valve mounted on said reservoir; a gas discharging valve whose gas discharging amount is adjustable and a valve opening member; a nozzle of said gas discharging valve being connected to the inlet of a burner through a gaseous fuel conduit; a piezoelectric igniting device which is activated upon the opening of said gas discharging valve; said burner including a jet pump, a flame stabilizer and a combustion chamber; said jet pump having a fuel ejecting orifice at its inlet portion and a plurality of air

intake holes on the wall of a downstream passage extending from said fuel ejecting orifice; said combustion chamber coaxial with said jet pump unit being on the other end of said burner; said flame stabilizer forming a channel with the wall of the lower part of the combustion chamber; an igniting element being arranged on the downstream portion of said combustion chamber for reigniting the gaseous air/fuel mixture; wherein the improvement comprises:

a second gas conduit being connected to a gaseous fuel nozzle which is located on the top center of said flame stabilizer and has an opening directed vertically upward for producing visible flame; and

said igniting element being arranged in the vicinity of the wall of said combustion chamber, the central region of cross section of said combustion chamber being empty, so that the combustible gas can be ejected upwardly without interruption.

5,055,035

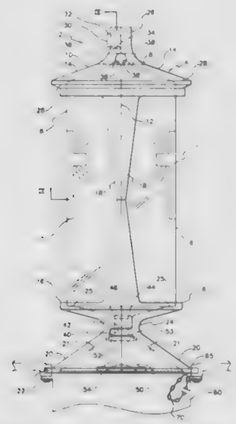
MEMORIAL CANDLE FIXTURE

John P. Hancovsky, McMurray, Pa., assignor to Matthews International Corporation, Pittsburgh, Pa.

Filed Jun. 11, 1990, Ser. No. 536,207

Int. Cl.[5] F23D *3/16*

U.S. Cl. 431—291 **13 Claims**



1. A memorial candle fixture comprising frame means including two mating frame halves, each frame half having a top and a base joined by rib means and defining an open region therebetween for placement of a candle means therein; and means for detachably locking the frame halves together whereby the candle means is confined within the open region and wherein the candle means is confined within the open region and wherein the candle means comprises a cylindrically-shaped candle cover member of a light-transmitting plastic material, a metal shield having light-transmitting perforations formed therethrough positioned around an inside surface of said candle cover member and a candle positioned within the candle cover member wherein the metal shield is positioned between the candle and the candle cover member.

5,055,036

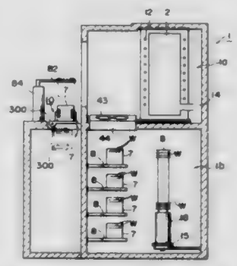
METHOD OF LOADING AND UNLOADING WAFER BOAT

Takanobu Asano, Yokohama; Hiroyuki Iwai, and Yuji Ono, both of Sagamihara, all of Japan, assignors to Tokyo Electron Sagami Limited, Kanagawa, Japan

Filed Feb. 26, 1991, Ser. No. 661,103

Int. Cl.[5] F27D *3/00*

U.S. Cl. 432—5 **7 Claims**



1. A method of loading a wafer boat supporting wafers into and unloading the same from a reaction tube with a lid therebelow in a vertical heat treatment apparatus, while holding the wafer boat vertical with respect to the lid, said method comprising the steps of:

providing boat transfer means in a space below the reaction tube, said boat transfer means being designed to transfer wafer boats along a path, while holding the wafer boats vertical and in a substantially horizontal plane;

forming, along the path, a first station where wafers are to be placed onto and removed from the wafer boats held vertical, a second station where wafer boats are to be placed onto and removed from the lid, and a third station where wafer boats are to held;

mounting unprocessed wafers on a first wafer boat located at the first station, while wafers mounted on a second wafer boat is being heat-treated in said reaction tube;

transferring the first wafer boat from the first station to the third station by means of the boat transfer means, and then holding the first wafer boat at the third station;

lowering the second wafer boat to the second station to unload the second wafer boat from the reaction tube, while the first wafer boat is held at the third station, and then transferring the second wafer boat to the first station by means of the boat transfer means;

removing the heat-treated wafers from the second wafer boat located at the first station; and

transferring the first wafer boat from the third station to the second station by means of the boat transfer means, while the second wafer boat is located at the first station, and then mounting the first wafer boat onto the lid, thereby to load the first wafer boat into the reaction tube.

5,055,037

HEAT PROCESSING APPARATUS

Ophneil H. Perry, Kingswinford, England, assignor to Stein Atkinson Stordy Limited, England

Filed Mar. 28, 1990, Ser. No. 500,681

Claims priority, application United Kingdom, Mar. 28, 1989, 8906935

Int. Cl.[5] F27B *7/02*; **F27D** *7/00*

U.S. Cl. 432—72 **9 Claims**

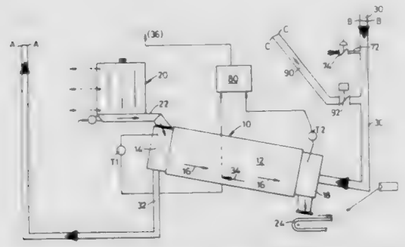
1. Apparatus for heat processing of scrap material to separate contaminants therefrom comprising:

a) a kiln defining an enclosed furnace chamber having a feed path extending therethrough between a material input and a material output along which a continuous flow of the material is passed in use; and

b) gas circulation means including a heater for providing a

supply of heated gases, an inlet duct for passing said gases into the chamber, an outlet flue for removal of exhaust gases from the chamber, a recirculation connection between the outlet flue and the inlet duct for operative recirculation of at least part of said exhaust gases through the furnace, flow inducing means for forced movement of gases through the furnace, and control means for regulating the operating temperature of said gases: characterised in that

i) said feed path is disposed in relation to the flow of gases in the furnace so that the material passes therethrough in the opposite direction of travel to the gas flow;



ii) said control means includes sensor means providing a read out of temperature within the furnace chamber at least at or adjacent to the material input;

iii) said control means operates to govern the throughput rate of the flow inducing means in response to said read-out of said temperature or temperatures to provide feed-back regulation of said operating temperature effective within the furnace chamber; and

iv) said flow inducing means being in communication with said outlet flue for inducing in use a drop in pressure within said chamber to a level below that of ambient atmospheric pressure.

5,055,038

METHOD AND APPARATUS FOR MAKING AN ORTHODONTIC APPLIANCE

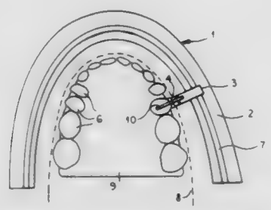
Franz Ronay, Rudolfsplatz 14, A-1010 Wien, and Georg Ronay, Vienna, both of Austria, assignors to Ronay Franz, Vienna

Filed May 31, 1989, Ser. No. 359,480

Claims priority, application Austria, May 31, 1988, 1419/88

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—24 **24 Claims**



7. In an apparatus for making an orthodontic appliance from a plurality of brackets and an orthodontic arch wire, the apparatus comprising

a guide device and

a plurality of bracket supports mounted movable on said guide device, the improvement wherein

said guide device has a guide for said bracket supports formed with a pair of parallel edges running substantially parallel to an ideal course of said orthodontic arch wire, said guide being formed to slidably receive said bracket supports,

each bracket support is unitarily formed with a pair of parts respectively engaging the edges and maintaining the respective support substantially perpendicular to the edges at the location where they engage the parts, and

said bracket supports are each provided with a reference element and are each combinable with a respective one of the brackets, each reference element being L-shaped with a protruding portion vertical to a plane of said bracket support and a leg portion above and perpendicular to said protruding portion and pointed toward said arch wire and parallel to said plane.

5,055,039

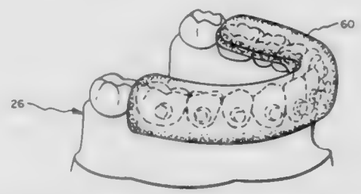
ORTHODONTIC POSITIONER AND METHODS OF MAKING AND USING SAME

Gerard P. Abbatte, Buffalo; Peter R. Breads, Grand Island; Stephen P. Warunek, West Seneca, and Brian D. Willison, Buffalo, all of N.Y., assignors to Great Lakes Orthodontics, Ltd., Tonawanda, N.Y.

Filed Oct. 6, 1988, Ser. No. 254,216

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—24 **30 Claims**



1. A method of making an orthodontic elastic positioner for maloccluded or malaligned teeth located in a dental arch of a patient for coaction with teeth-mounted coupling members including portions protruding from the surfaces of the teeth including the steps of:

a) providing a construction model of the patient's teeth and a portion of the gum tissue in the dental arch wherein the teeth therein are positioned in a desired orientation;

b) attaching coupling members to the surfaces of the teeth in said construction model; and

c) forming an elastic positioner by applying positioner material to said construction model and directly to said coupling members thereby providing an exact adaptation of said positioner material to said construction model including said coupling members and providing an exact fit between said positioner material and said coupling members so as to eliminate any void or space between said coupling members and said positioner material and to provide an accurate snap-on coupling and peel-off effect for said positioner with respect to the coupling members on the patient's teeth.

5,055,040

TOOTH SHADE SELECTION USING A NEW COMPARATOR

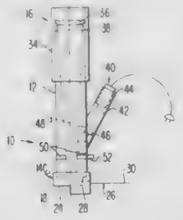
Milton Clar, 11801 Rockville Pike, Apt. #705, Rockville, Md. 20852

Filed Dec. 6, 1989, Ser. No. 446,727

Int. Cl.[5] A61C *19/10, 1/00, 3/00, 5/00*

U.S. Cl. 433—26 **19 Claims**

1. A tooth shade comparator comprising a viewing tube with a base at one end of the tube shaped for placement in the mouth of a patient over the patient's tooth, said base having an opening for exposing the patient's tooth to the interior of the tube and having means for receiving a shade guide element therein adjacent to the patient's tooth, said base and said tube being constructed substantially to isolate said tooth and said shade guide element from ambient light, and a light source mounted on said tube and constructed to illuminate the patient's tooth



and the adjacent shade guide element for viewing through the tube from a opposite end of the tube.

5,055,041

ALVEOLAR PRESSURE INDICATOR DEVICE

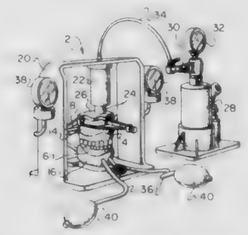
Gerald Eckland, P.O. Box 3339, Smithers, British Columbia, V0J 2N0, Canada

Filed Jan. 12, 1990, Ser. No. 464,325

Claims priority, application Canada, Nov. 25, 1989, 2,003,855

Int. Cl.[5] A62C *11/00, 19/04*

U.S. Cl. 433—56 **10 Claims**



1. A device for measuring pressure transmitted to the mandibular alveolar ridge and for indicating the amount of applied pressure necessary to shear off various types of food, in full upper and lower dentures, the device comprising:

(a) an articulator having upper and lower frames pivoting between open and closed positions to simulate opening and closing jaw movements;

(b) means associated with said upper and lower frames to releasably secure thereto conventional upper and lower support bases corresponding respectively to denture-receiving upper and lower dental arches;

(c) means to releasably secure upper and lower dentures respectively to the upper and lower support bases;

(d) pressure responsive means associated with the lower support base to response to pressure applied on the support base from lower dentures positioned thereon, the pressure responsive means comprising a sphygmomanometer tube positioned under the lower support base;

(e) means to apply a predetermined pressure to the upper frame when in closed position with upper and lower dentures secured in the device; and

(f) pressure gauge means mechanically associated with said pressure responsive means of the lower support base to measure pressure exerted thereon as transmitted through the upper and lower dentures during the acts of shearing and occluding, the pressure gauge means comprising a sphygmomanometer gauge means associated with the sphygmomanometer tube for measuring the pressure within the tube.

5,055,042

DENTAL DRILL AND DRILLING TEMPLATE

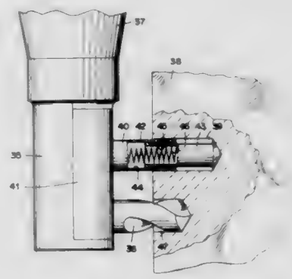
Jozef Jansen, Rotterdam, Netherlands, assignor to Elgarden Aktiengesellschaft, Vaduz, Liechtenstein

Continuation of Ser. No. 262,691, Oct. 26, 1988, abandoned, which is a division of Ser. No. 8,769, Jan. 30, 1987, Pat. No. 4,815,973. This application Aug. 23, 1990, Ser. No. 571,850

Claims priority, application Switzerland, Feb. 6, 1986, 464/86

Int. Cl.[5] A61C *3/02*

U.S. Cl. 433—76 **6 Claims**



1. A drilling template for use with a drill including a handle, said drilling template for drilling holes in a tooth or a support for receiving pins of an apparatus for connecting dental prostheses, said drilling template comprising at least one telescopic template pin to be introduced into a previously drilled hole in said tooth or support in which another hole is to be drilled, said template pin being adapted to be oriented substantially normal to a longitudinal axis of an end portion of said handle, said template pin comprising a first element which contains a central recess, a second element which contains a central recess in which said first element is slidably engaged, and a compression spring means disposed within both the central recess of the first element and the second element, for biasing the first element away from the second element and toward a lower region of the previously drilled hole in the tooth or support

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5,055,043

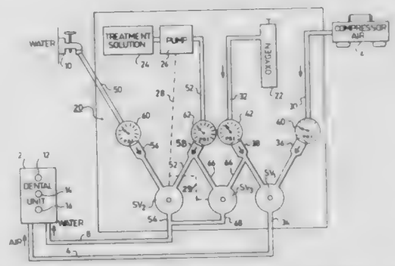
DENTAL FLUID CONTROL APPARATUS

Ervin Weiss, Lipsky 9, Tel Aviv, and Zeev Ram, Yaacov 9, Rehovoth, both of Israel

Filed Jul. 19, 1990, Ser. No. 554,489

Int. Cl.[5] A61G *17/02;* **A61C** *1/07, 1/10, 1/12*

U.S. Cl. 433—86 **12 Claims**



1. Dental apparatus for use with a dental unit having a water inlet to be coupled to a source of pressurized water for driving and/or cooling dental appliances to be coupled to the dental unit, or for flushing the treatment site, and a air inlet connectible to a source of compressed air; said dental apparatus comprising;

a tank of compressed oxygen;

a source of pressurized liquid; and

valve means for coupling said tank of compressed oxygen and said source of pressurized liquid to the water inlet of the dental unit, said valve means including:

means for selectively coupling said air inlet of the dental unit to said source of compressed air or to said tank of compressed oxygen;

and means for selectively coupling said water inlet of the dental unit to said source of pressurized water, to said container for a treatment solution, or to both said container for a treatment solution and said tank of compressed oxygen.

5,055,044

DENTAL HANDPIECE WITH REMOVABLE HANDPIECE SLEEVE

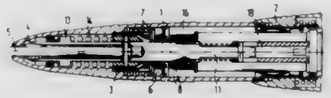
Bernhard Kuhn, Schemmerhofen, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Fed. Rep. of Germany

Filed Jul. 26, 1990, Ser. No. 558,785

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928211

Int. Cl.[5] A61C *1/08*

U.S. Cl. 433—126 **4 Claims**



1. A dental handpiece including a removable handpiece sleeve of unitary construction for dental implements which are releasably insertable therein through the intermediary of a collet which is rotatable by a drive shaft; a spring for maintaining said collet in a clamped position, said collet having an external conically-tapered end towards a retained dental implement and contacting a correspondingly conically-tapered end of a spindle sleeve extending towards the dental implement, said spindle sleeve being arranged within the handpiece cooperating with said first-mentioned tapered end and including a latching arrangement between said sleeves, said handpiece sleeve being insertable in an axial direction into and retained in an actuating sleeve, in the inserted axial position said handpiece sleeve through a limited rotational movement being movable into a position secured against axial movement; and latching means for arresting said handpiece sleeve in said actuating sleeve in this position; said latching means comprises strip-shaped latching elements including projections engaging into, respectively, an internal annular groove formed in the handpiece sleeve and in the actuating sleeve; and spring means comprising a leaf spring, imparting an outwardly directed pressure to said latching elements to provide said engaging action, said spring means being inserted into an external annular groove formed in an inner sleeve which is arranged within the handpiece sleeve.

5,055,045

DISPOSABLE DENTAL MATRIX RETAINER CLAMP

Robert G. Dickie, 15 Valley Trail, R.R. #1, Newmarket, Ontario L3Y 4V8, and Volker W. Stein, 235 Eagle Street, Newmarket, Ontario L3Y 1J8, both of Canada

Filed Mar. 18, 1991, Ser. No. 670,621

Int. Cl.[5] A61C *5/04*

U.S. Cl. 433—155 **21 Claims**

1. A dental matrix retainer clamp for holding a matrix band, said matrix band having a hole at each end and comprising, when formed, a central loop and flat aligned end sections each containing one of said holes, said matrix retainer clamp comprising:

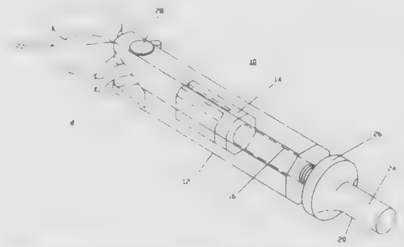
a hollow tube with threads extending longitudinally along at least a portion of its interior;

a block extending longitudinally inside said tube and having a threaded shaft at one end mating with the threads of said tube;

a head element at the end of said tube containing the end of said block opposite said shaft, said head element containing a slot for receiving the flat end sections of a matrix band with its holes extending beyond said head element into the interior of said tube;

a pin spring mounted on the end of said block nearest said head element for engaging the holes of a matrix band having its end sections extending through said head element slot;

at least one wedge mounted longitudinally within said tube



with its narrow end extending in the direction toward said block to engage said pin spring and lift said pin clear of the holes of a matrix band having its end sections extending through said head element slot when said matrix band is moved into its extreme extended position with respect to said head element; and

an adjusting knob attached to the threaded shaft of said block at the end of said tube opposite to said head element;

said block moving in one direction under the control of said knob to tighten the loop of a matrix band mounted with its end sections extending through said head element slot and in the opposite direction to loosen said loop and cause said wedge to release said pin from the matrix band holes.

5,055,046

BIOADHESIVE COMPOSITION

Ratan K. Chaudhuri, Butler; Rama K. Haldar, Randolph, and Balgopal Gangadharan, Caldwell, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

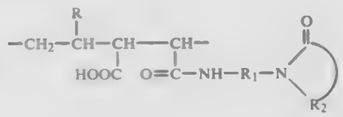
Division of Ser. No. 585,326, Sep. 20, 1990. This application Apr. 8, 1991, Ser. No. 681,590

Int. Cl.[5] A61C *13/23*

U.S. Cl. 433—180 **4 Claims**

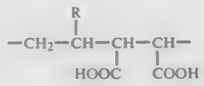
1. The process of applying to a device adapted for affixation to a mucous membrane, an effective adhesive amount of the composition comprising a non-toxic carrier and a polymer comprising between about 45 and about 70 weight % of units having the structure

A.



between about 50 and about 30 weight % of units having the structure

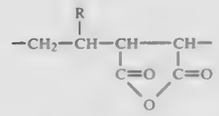
B.



-continued

and/or

C.



and 2 to 7 weight % of an amine salt containing a lactam functionality derived from A and/or B, wherein R is hydrogen, alkoxy, phenyl, carboxyl or —N lactam having from 3 to 6 carbon atoms; R_1 is C_1 to C_6 alkylene and R_2 is C_2 to C_4 alkylene; said copolymer having a number average molecular weight of about 40,000 to about 500,000 and a relatively small particle size.

5,055,047

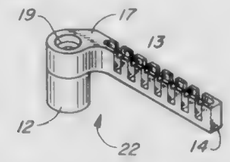
METAL IMPRESSION CONFIRMATION SYSTEM FOR DENTAL IMPLANTS

Curtis D. Names, 305 Saratoga Ave., Los Gatos, Calif. 95030

Filed Oct. 17, 1990, Ser. No. 599,294

Int. Cl.[5] A61C *9/00, 11/00, 8/00*

U.S. Cl. 433—214 **3 Claims**



1. A foundation element for reinforcing an impression of a dental process including at least one implant with a threaded hole, said element comprising:

a base member having a neck section contiguous with a support section and a straight bore through both sections;

an elongated wing having a long dimension with a first end and a second end;

a sleeve attached to said first end with a bore perpendicular to said long dimension of said wing;

said sleeve bore dimensioned to be pressed onto said neck section thereby providing that a screw may be inserted through said bore in said base from said neck section to said support section and screwed into said threaded hole of said implant;

said second end of said wing touching a neighboring foundation permitting said second end to be bound to said neighboring element with bonding resin; and,

said wing having a surface with grooves thereby providing a reservoir for anchoring said bonding resin.

5,055,048

DENTAL LASER ASSEMBLY

Arthur Vassiliadis; Joseph W. Shaffer, both of Mountain View; David J. Fullmer, Foster City; Michael H. Brewer, Felton; David R. Hennings, Newcastle, all of Calif., and Terry D. Myers, Farmington Hills, Mich., assignors to American Dental Laser, Inc., Birmingham, Mich.

Continuation-in-part of Ser. No. 342,190, Apr. 24, 1989, Pat. No. 4,940,411, which is a continuation-in-part of Ser. No. 236,450, Aug. 25, 1988, abandoned. This application Mar. 15, 1990, Ser. No. 493,965

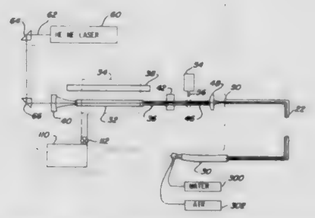
Int. Cl.[5] A61C *5/00*

U.S. Cl. 433—215 **25 Claims**

1. A method for desensitizing teeth contained in a mouth, comprising the steps of:

aiming a pulsed laser so that the output from the laser impinges upon the teeth,

repeatedly activating the laser,



wherein said laser has an energy output per pulse sufficient to desensitize the tooth,

wherein said laser has an energy output of between 0.1 millijoules per pulse and 5 joules per pulse.

5,055,049

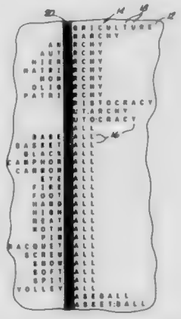
WORD LISTING SYSTEM

Peter B. Kasravi, 429 Hot Spring Rd., Santa Barbara, Calif. 93108

Filed Jan. 25, 1990, Ser. No. 472,430

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—156 **8 Claims**

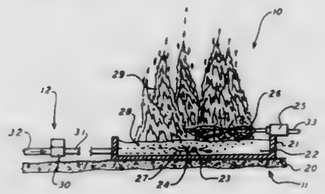


1. A word listing system wherein each word therein is located in more than one place in said listing, said system including:

a plurality of vertical columns of words, wherein each word is arranged on a horizontal plane and each letter of each word is arranged in vertical character rows and each row is vertically arranged whereby one character may be above another;

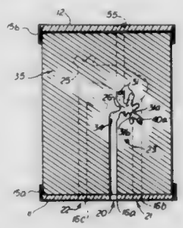
a vertical aligned guide column for each plurality of vertical columns of words, said guide column includes the same letter of each word successively displayed in said column no matter where in the horizontal word listed that particular letter appears, wherein said letters appearing in said guide column are alphabetically arranged and additional letters of said horizontal word may appear on either side of said guide column.

5,055,050
FIRE FIGHTING TRAINER
William Rogers, Hopatcong; James J. Ernst, Livingston; Steven Williamson, Haledon, and Dominick J. Musto, Middlesex, all of N.J., assignors to Symtron Systems, Inc., Fair Lawn, N.J.
Filed Jun. 26, 1990, Ser. No. 545,300
Int. Cl.[5] G09B *19/00, 9/00;* F23D *11/00*
U.S. Cl. 434—226 12 Claims



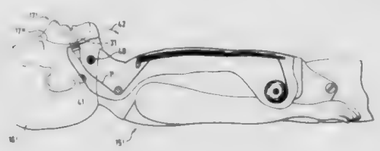
1. In a firefighting trainer comprising a supply means for supplying a pressurized liquid fuel and distribution means connected to the supply means for distributing the liquid fuel into liquid fuel jets for simulating a fire of combustible materials, the improvement which comprises diffusing means cooperating with the distribution means comprising a volume of medium in which the distributing means is disposed, the medium contained in a tank having a surface open to the atmosphere on which vapor of the liquid fuel is collected; and ignition means for igniting the liquid fuel vapor on the medium surface to simulate a gasoline or similar fire.

5,055,051
SEMI-ANTHROPOMORPHIC BILIARY/RENAL TRAINING PHANTOM FOR MEDICAL IMAGING AND LITHOTRIPSY TRAINING
William J. Duncan, Roswell, Ga., assignor to Dornier Medical Systems, Inc., Marietta, Ga.
Filed Aug. 3, 1990, Ser. No. 561,885
Int. Cl.[5] G09B *23/30, 23/28, 23/00;* A61B *5/06*
U.S. Cl. 434—262 30 Claims



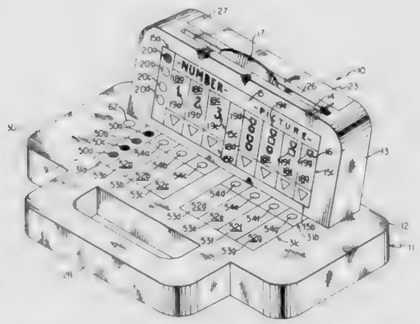
16. A semi-anthropomorphic medical imaging and ESWL training phantom, comprising:
an opaque mass formed of an elastomeric tissue equivalent material;
a plurality of cavities formed within said mass, said cavities positioned, sized and shaped in such a manner as to simulate the position, size and shape of at least a gallbladder and a human kidney found in the abdominal area of a human body;
a plurality of channels formed within said mass at predetermined locations, one of said channels leading from said simulated kidney to the exterior of said phantom and the other said channel leading from said simulated gallbladder to the exterior of said phantom,
whereby a technician can place at least one concrement into at least one of said cavities, locate, destroy and subsequently remove said concrement;
a fluid-like substance filling said cavities; and
means for sealing said channels, whereby said fluid-like substance is retained within said phantom during imaging and ESWL treatment of the phantom.

5,055,052
MODEL FOR PRACTICING ARTIFICIAL RESPIRATION AND A SIMULATED RESPIRATORY TRACT
Malvin Johnsen, Stavanger, Norway, assignor to Laerdal Medical, Stavanger, Norway
Filed May 7, 1990, Ser. No. 519,881
Claims priority, application European Pat. Off., May 11, 1989, 89-108.471.7
Int. Cl.[5] G09B *9/00*
U.S. Cl. 434—265 19 Claims



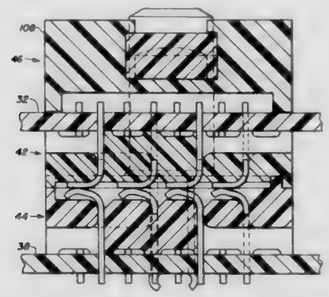
1. A model for practising artificial respiration by means of a mouth-type resuscitation procedure, comprising portions respectively simulating the head having a breathing opening, and the thorax of a human being, a plurality of inflatable balloons each adapted to constitute at least a part of the respiratory tract of the model and each having a first end providing an inflation connection for inflating the balloon through said breathing opening of the head, and a second closed end, the balloons being disposed in succession and each separably connected by way of their respective inflation connection to the second end of the preceding balloon in the succession thereby to form a continuous flat strip which is wound to form a coil, and means for rotatably mounting the coil in the model.

5,055,053
COMPUTER TOY
Greg Hyman, 377 Cross Pond Rd., Rte. 2, Pound Ridge, N.Y. 10576
Filed Sep. 13, 1989, Ser. No. 406,729
Int. Cl.[5] G09B *7/00*
U.S. Cl. 434—343 14 Claims



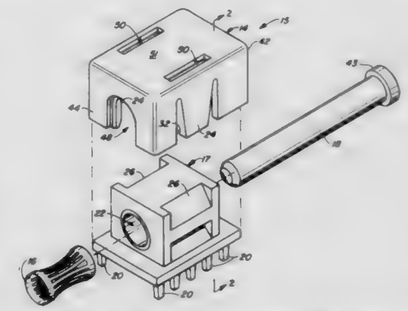
1. Computer toy for demonstrating logical relationships to a child, comprising:
a housing shaped to resemble a personal computer and having a keyboard base portion and a viewing portion simulating a computer screen arranged to extend upwardly from the base portion,
display means including an interchangeable panel removably arranged on the simulated computer screen viewing portion of the housing, having a plurality of first type symbols and a plurality of second type symbols in an array to be displayed on the viewing portion, each first type symbol being logically related to one among the second type symbols to form a related pair, and indicator means having code means to indicate a program mode correlating a logic circuit and display means for forming such related pairs,
a plurality housing positions in an array on the housing corresponding to the array of the plurality of first and second symbols such that each housing position is adjacent a respective one of the plurality of the first and second symbols,
input means including a plurality of position switches on the keyboard base portion of the housing cooperating with the plurality of housing positions, the plurality of position switches being are actuatable to select particular housing positions, and a light emitting means corresponding to and associated with each of the housing positions,
the logic circuit detects whether a first type symbol has been properly paired with a second type symbol to form a related pair upon input selection of a housing position adjacent a first type symbol and a housing position adjacent a second type symbol,
output means coupled to the circuit to issue a first signal if a properly related pair has been formed and a different second signal if not so formed, and
control means including a plurality of mode switches on the keyboard base portion connected to program the circuit to different program modes corresponding to the indicated program mode on the panel,
wherein the input means is connected to the circuit so that the particular light emitting means associated with a particular housing position is energized upon position switch actuation to select that housing position.

5,055,054
HIGH DENSITY CONNECTOR
Ray C. Doutrich, Lebanon, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jun. 5, 1990, Ser. No. 533,335
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 40 Claims



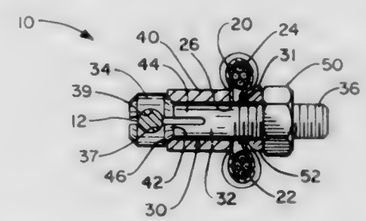
1. A connector assembly for electrically and mechanically interconnecting a first circuit board having a first pattern of conductive regions with a second circuit board having a second pattern of conductive regions, the first circuit board being substantially parallel to and spaced apart from the second circuit board, the assembly comprising:
a male connector having a male connector terminal corresponding to each first pattern conductive region, each male connector terminal having a first end portion for connecting to one of the first pattern conductive regions and a second end portion, the second end portions of the male connector terminals arranged in columns with the second end portions of the male connector terminals in adjacent columns extending in opposite directions; and
a female connector having a female connector terminal corresponding to each second pattern conductive region, each female connector terminal having a first end portion for connecting to one of the second pattern conductive regions and a second end portion for electrically contacting the second end portions of the male connector terminals, the second end portions of the female connector terminals arranged in columns with the second end portions of the female connector terminals in adjacent columns extending in opposite directions.

5,055,055
CIRCUIT BOARD CONNECTOR SYSTEM
Roel J. Bakker, Livermore, Calif., assignor to Elcon Products International Company, Fremont, Calif.
Filed Oct. 12, 1990, Ser. No. 596,515
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—78 51 Claims



1. In an electrical connector for a power distribution system including an electrically conductive connector body, at least one contact terminal electrically connected to said body, and an electrically insulating housing mounted on and substantially surrounding said body, the improvement in said electrical connector comprising:
said housing being hollow and formed with latching means thereon, said housing having an opening in one side thereof for receipt of said body into said housing, said latching means including latching shoulder means facing away from said opening, said housing being mounted on said body with said latching shoulder means of said housing interengaged with a portion of said body facing toward said opening to latch said housing to said body.

5,055,056
GROUND WIRE CONNECTOR
William T. Auclair, Winsted, and Randolph L. Auclair, New Hartford, both of Conn., assignors to Electric Motion Company, Inc., Winsted, Conn.
Filed Nov. 16, 1990, Ser. No. 614,207
Int. Cl.[5] H01R *4/66*
U.S. Cl. 439—98 19 Claims



1. A ground wire connector comprising:

clamp arm means for clamping against a ground wire, said clamp arm means comprising an axially bifurcated head and a threaded shaft, said head being dimensioned to receive said ground wire, said clamp arm means having a tapered outer surface adjacent said head;

sleeve means defining an axial opening and mountable on said shaft for slidable axial displacement thereon, said sleeve being dimensioned to engage said tapered surface; and

locking means threadably mountable to said shaft and axially displaceable to secure a second wire disposed between said sleeve means and said locking means in a force-fit and to force said sleeve means and tapered outer surface into engagement wherein said sleeve means cams said tapered surface to force said head into clamped engagement with said ground wire.

5,055,057

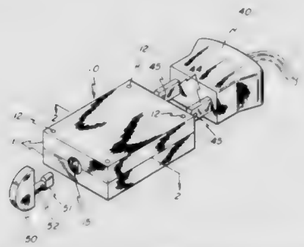
ELECTRIC PLUG LOCK

Paul L. Boyer, 226 Southerly Hills Dr., Englewood, Ohio 45322

Continuation of Ser. No. 390,046, Aug. 7, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 593,608

Int. Cl.[5] H01R *13/422*

U.S. Cl. 439—134 **9 Claims**



1. A locking device for preventing use of an electric appliance plug having two prongs, each of which prongs has an aperture therethrough adjacnet the outer end thereof, comprising:

(a) a housing having therein a main cavity and also a pair of spaced slaots in one end thereof for receiving the plug prongs and extending into said cavity,

(b) a unitary spring member of generally W-shape within said cavity,

(c) said spring member including a pair of arms on opposite sides thereof integrally connected by a generally arched resilient middle portion biasing said arms to normal positions wherein the ends of said arms adjacent said slots lie in the space between said slots,

(d) the opposed sides of said cavity including boss portions extending inwardly of said cavity and defining bearing surfaces engaging and supporting the outer sides of said spring member arms for rocking movement thereon with respect to each other,

(e) each of said arms having on the outer side thereof a lateral projection positioned to be received in said aperture in one of said prongs,

(f) whereby upon insertion of said prongs in said slots, said prongs will enclose and compress the adjacent ends of said arms will said prong apertures are aligned with said projections and said spring member will cause said arms to move in the opposite direction to engage said projections in said apertures,

(g) said cavity having an access hole in the opposite end thereof from said slots, and

(h) means insertable through said access holes for effecting rocking movement of said arms in the directions to release said projections from said prongs for separation of said plug from said locking device.

5,055,058

DEVICE FOR CHECKING FOR INCOMPLETE LOCKING OF CONNECTOR HOUSINGS

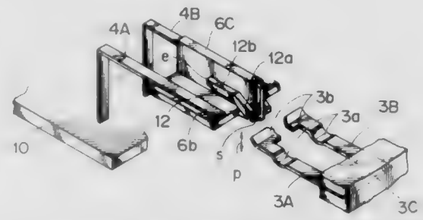
Yasuhiro Nagasaka; Hiromichi Shigenobu; Kazuyuki Shiraki; Motomi Iyoda, all of Aichi, and Akira Maeda, Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 14, 1990, Ser. No. 523,492

Claims priority, application Japan, May 30, 1989, 1-61907[U]

Int. Cl.[5] H01R *29/00, 31/08*

U.S. Cl. 439—188 **1 Claim**



1. An automatic lock checking device for a wire harness connector having first and second connector bodies, the lock checking device comprising:

a connector lock sensor circuit including a diagnostic resistance-containing circuit connected parallel with a circuit containing a sensor and having positive and negative sides connected through terminals to a load and an electronic control unit adapted to process input signals from said sensor;

a first pair of terminals mounted in the first connector body and short-circuited internally of said first connector body for providing electrical connection between each of said first pair of terminals; and

a second pair of terminals mounted in the second connector body, said second pair of terminals being connected with said lock sensor circuit and formed for electrical connection with said first pair of terminals upon complete insertion of one of said connector bodies into the other connector body to automatically actuate said lock sensor circuit upon electrical connection with said first pair of terminals and thereby automatically indicate that said first and second connector bodies are connected.

5,055,059

CURRENT CONNECTION MEMBER FOR LARGE AMPERAGES, ESPECIALLY TO BE USED IN METAL-ENCLOSED ELECTRIC SYSTEMS

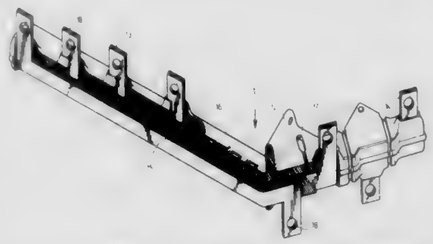
Jørgen Løgstrup, Helsingør, Denmark, assignor to A/S Logstrup-Steel, Helsingor, Denmark

Filed Apr. 27, 1990, Ser. No. 469,502

Claims priority, application Denmark, Sep. 4, 1987, 4634/87

Int. Cl.[5] H01R *25/16*

U.S. Cl. 439—214 **4 Claims**



1. A power connector element for high current intensities to establish an electrical connection between a busway of a metal-enclosed electrical system containing a plurality of adjacent cabinets and an out-going or incoming electrical cable, comprising:

a power connector element of substantially one piece, comprising a plurality of busbar pieces positioned in a parallel manner, but at a distance from one another;

a plurality of connection parts with mounting holes, said connection parts being configured as one piece with said busbar pieces, said connection parts located substantially at the first and second ends of said busbar pieces and attached at substantially right angles to said busbar pieces whereby all the connection parts in at least one of said cabinets extend out in the same direction;

a common, electrically-insulating body molded around said busbar pieces so that only said connection parts are outside said electrically-insulating body;

a first adjacent cabinet wherein said electrical cable is coupled to said power connector element so that all of said connection parts on said first end of said busbar pieces are disposed in said first adjacent cabinet;

a second adjacent cabinet separated from said first adjacent cabinet, wherein the coupling of said power connector element to said busway is established so that all of said connection parts on said second end of said busbar pieces are disposed in said second adjacent cabinet;

a flange molded in said electrically-insulating body on said power connectior element such that said flange is substantially planar and extends around said busbar pieces at substantially right angles to said busbar pieces at a location between said connection parts such that said flange is disposed between said first and second adjacent cabinets, thus separating said cabinets.

5,055,060

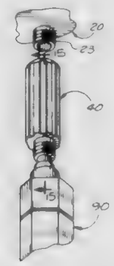
TAMPER-RESISTANT CABLE TERMINATOR SYSTEM

William J. Down, Phoenix, and Robert D. Hayward, Glendale, both of Ariz., assignors to Gilbert Engineering Company, Inc., Glendale, Ariz.

Continuation-in-part of Ser. No. 360,777, Jun. 2, 1989. This application Sep. 5, 1989, Ser. No. 402,895

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—304 **8 Claims**



1. A tamper-resistant terminator system especially adapted for use in combination with a cable transmission system,

said cable transmission system including a device for transmitting a signal and including an attachment element for rotatably cooperating with a mating element carried by a connector associated with a cable for receiving a signal,

and for preventing unauthorized engagement of said connector with said device, said terminator system comprising:

a) a terminator including

(i) a body having two ends, and including a second mating element formed at one end for cooperating with said attachment element, and a socket formed at the other end, said second mating element and said socket being coaxial along a first axis of rotation, and

(ii) a shield encapsulating said body for relative rotation about said first axis of rotation and having a first open end surrounding said second mating element, and a second open end surrounding said socket; and

b) a tool including

(i) a shaft assembly, and

(ii) actuating means for selectively moving said shaft assembly between

a retracted position in which said shaft assembly is movable in a longitudinal direction along said first axis of rotation within said second access port and said socket, and

an extended position in which a portion of said shaft assembly frictionally and drivingly engages said body,

wherein said actuating means includes means for moving said portion laterally with respect to said first axis of rotation.

5,055,061

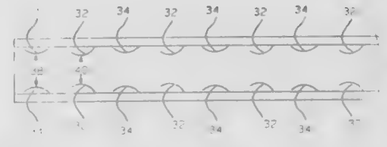
CIRCUIT CARD GUIDE

Guy Lichtenwalter, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 27, 1990, Ser. No. 573,638

Int. Cl.[5] H01R *13/635*

U.S. Cl. 439—377 **4 Claims**



1. A card guide for positioning a circuit card, said circuit card engaging said card guide along an edge thereof, said edge having a predetermined thickness, said card guide comprising:

means for defining a first channel having left and right walls and a width greater than said predetermined thickness;

a plurality of first resilient protuberances positioned along at least one of said left and right walls, said first protuberances defining a second channel having a width substantially equal to said predetermined thickness; and

a second resilient electrically conducting protuberance positioned along one of said left and right walls, said second protuberance being positioned such that said protuberance is forced toward said wall on which said protuberance is positioned when said circuit card is inserted into said card guide.

5,055,062

MULTICONDUCTOR CABLE CONNECTOR AND METHOD OF LOADING SAME

Kensaku Sato, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1990, Ser. No. 611,422

Claims priority, application Japan, Nov. 17, 1989, 1-297713

Int. Cl.[5] H01R *4/24*

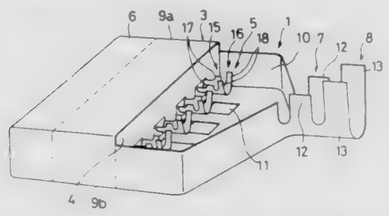
U.S. Cl. 439—395 **3 Claims**

1. An electrical connector for a shielded multiconductor cable, comprising:

a shielding case including a contact retention portion with at lease a pair of jig inlets formed on a top and a bottom face thereof, a shield wires crimping portion with crimping tabs for crimping shield wires of said multiconductor cable, and an outer sheath crimping portion with crimping tabs for crimping an outer sheath of said multiconductor cable;

an insulator body provided within said contact retention portion; and

at least one signal contact having a contact body, a signal line crimping portion with crimping tabs for crimping a signal line of said multiconductor cable, and an insulator crimping portion with crimping tabs for crimping an



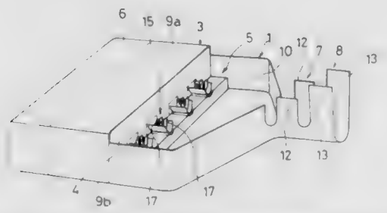
intermediate insulator of said multiconductor cable and supported by said insulation body such that said signal line and intermediate insulator crimping portions are positioned between said jig inlets.

5,055,063

MULTICONDUCTOR CABLE CONNECTOR AND METHOD OF LOADING SAME

Kensaku Sato, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1990, Ser. No. 610,980
Claims priority, application Japan, Nov. 17, 1989, 1-297714
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—395 **2 Claims**



1. An electrical connector for a multiconductor cable, comprising:

a shielding case including a contact retention portion with a jig inlet extending rearwardly from a rear edge of a top face thereof, a shield wires crimping portion with a pair of U-shaped crimping tabs for crimping shield wires of said multiconductor cable, and an outer sheath crimping portion with a pair of U-shaped crimping tabs for crimping an outer sheath of said multiconductor cable;

an insulator body provided within said contact retention portion; and

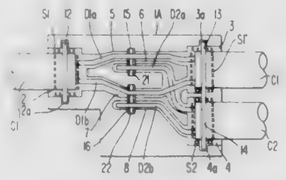
at least one signal line contact having a contact body and an insulated conductor insulation displacing portion with at least one insulation displacing contact to which an insulated conductor of said multiconductor cable is connected by insulation displacement and supported by said insulation body such that said insulated conductor insulation displacing portion is positioned in said jig inlet.

5,055,064

BRANCHING CONNECTOR FOR A SHIELDED CABLE

Haruo Imaizumi, Pulaza; Toshihiko Nishizawa, Yashirogaoka, and Masatoshi Kato, Kagiyama, all of Japan, assignors to Junkosha Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1991, Ser. No. 650,334
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—402 **3 Claims**



1. A branching connector for shielded cables comprising:

(a) a shielded bus cable consisting essentially of a multiplicity of insulated wires wherein each of said wires has a portion of said insulation removed to expose said wire;

(b) one or more shielded branching cables consisting essentially of a multiplicity of insulated wires wherein each of said wires in each of said cables has a portion of said insulation removed to expose said wire; and

(c) a casing having a main body, a top cap and a bottom cap to accommodate said bus cable and said branching cables, said casing containing:

(i) positioning means for positioning said ends of said bus and branching cables on said casing;

(ii) a conductive binder bound to the shield material of each said bus and said branching cables;

(iii) insulation displacement contact terminals affixed to said casing whereon said insulation of said bus and said branching cables is severed to effect electrical contact between said wires of said cables and said contact terminals;

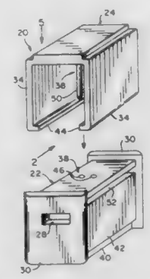
(iv) wherein said binders are interconnected and further are connected with the associated insulation displacement contact terminals which bear the wires to be interconnected.

5,055,065

SNAP

Marcella Pearl, Daniel Stalpert Straat 58 Huis, 1072 XJ Amsterdam, Netherlands

Filed Nov. 29, 1989, Ser. No. 442,842
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—425 **2 Claims**



1. Electric cord connector for connecting together corresponding elongate multi-strand conductors of respective electrical cords of the ribbon type each comprising a pair of multi-strand conductors embedded to extend side-by-side in adjacent, spaced-apart relation within insulating sheaths integrally joined together by longitudinally extending web portions and comprising:

a) an insulated base member having a groove formed in each outer side wall thereof and a chamber with at least one aperture formed off-set in each end or thereof for receiving and locating end portions of respective electric cords to be coupled in overlapping face-to-face relation with the stranded conductors of one cord longitudinally aligned over respective corresponding stranded conductors of the other cord;

b) an insulted C-shaped cap member having a pair of flexible side legs adapted to be received by said base member, said cap member having a lip formed on each inner distal end of each said side leg so that side legs flex outwardly to a skewed position to allow said lips to snap under said grooves in said side walls of said base member for a locked connection when assembled together;

c) means for assembling said base member and said cap member together in a locked position;

d) said base member having a pair of spaced-apart parallel holes extending into said chamber transversely through axes of said apertures; and,

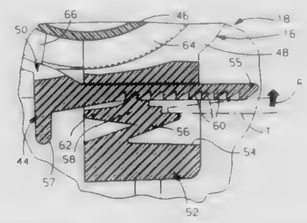
e) a pair of pointed tip pins carried in spaced apart parallel relationship in said cap member, extending inwardly between said side legs and adapted to be received into said respective holes and to pierce the respective corresponding conductors of both electric cords so as to electrically connect the corresponding conductors of both electric cords together when said base member and said cap member are assembled together.

5,055,066

ELECTRICAL CONNECTOR COVER HAVING INTEGRAL CABLE STRAP

Jay H. Garretson, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1990, Ser. No. 490,225
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—464 **9 Claims**



1. A thermoplastic cover for an electrical connector having a plurality of electric wires extending out of an end of an insulator body, comprising,

a dome having a rim which is adapted to be secured to the end of the insulator body so that an interior space of the dome forms a chamber for receiving the electric wires extending out of the end of the insulator body,

a transition channel which is integrally attached to the dome at one end to form a transverse passage leading out of the interior space of the dome for the electric wires to exit the chamber, and

a cable strap which is integrally attached to an opposite end of the transition channel for bundling the electric wires exiting the passage,

the cable strap comprising an stiff upper shell which is integrally attached to the end of the transition channel and a flexible lower strap which is integrally attached to the shell at one end,

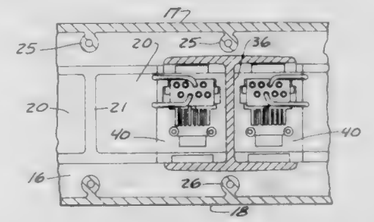
the stiff upper shell having a buckle at the opposite end for fastening a free end of the flexible lower strap, the buckle includes a slot which extends therethrough for receiving the free end of the flexible lower strap when it is fastened by the buckle and a depending, V-shaped pawl disposed in the slot 23 the slot having an entrance opening at one end through which the free end of the flexible strap is inserted and an exit opening at the opposite end, the V-shaped pawl being oriented in the slot so that the pawl opens toward the entrance slot opening of the slot and the pawl may be disengaged by a tool inserted into the exit opening of the slot.

5,055,067

MODULAR PATCH PANEL FOR TELECOMMUNICATION SYSTEM

Michael D. Field, Hutchinson, Minn., assignor to Communications Systems, Inc., Hector, Minn.

Filed Feb. 23, 1990, Ser. No. 484,373
Int. Cl.[5] H01R *13/514*
U.S. Cl. 439—540 **5 Claims**



1. A module for mounting telecommunication connection devices into a panel for holding a plurality of such modules, said modules each comprising a mounting wall, said mounting wall having a first plane and extending in front to rear directions, first means on said mounting wall at a front end thereof for retaining first line connection device blocks in positions on each of opposite sides of said mounting wall, a rear wall at a rear end of said mounting wall spaced from said first means for mounting said connection device blocks, said rear wall defining a plane perpendicular to the plane of the mounting wall, second means on said read wall for mounting second line connection devices on the rear wall, and positioned to align with opposite sides of said mounting wall whereby the first line connection device blocks retained on the first means are connectable to the second line connection devices on the respective opposite sides of said mounting wall, said module further having upper and lower walls having planes perpendicular to the mounting wall and joined to and extending laterally from the mounting wall to define a module housing for supporting and at least partially enclosing the first line connection devices.

5,055,068

STAMPED AND FORMED COAXIAL CONNECTORS HAVING INSERT-MOLDED CENTER CONDUCTORS

Bernard C. Machura, Oak Brook, and Eugene J. Mysiak, Lisle, both of Ill., assignors to Phoenix Company of Chicago, Inc., Wooddale, Ill.

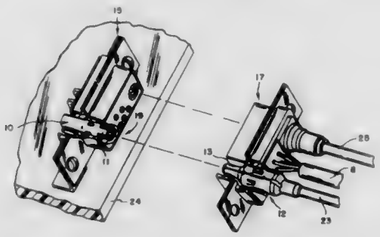
Continuation-in-part of Ser. No. 396,991, Aug. 22, 1989, abandoned. This application Dec. 19, 1990, Ser. No. 630,020
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—581 **63 Claims**

21. A coaxial connector having a desired characteristic impedance Z, said coaxial connector comprising:

an inner subassembly including a center conductor having at least one major longitudinal axis, two ends, and a middle body portion, said middle body portion having a substantially uniform outer cross-sectional dimension Y taken perpendicular to said major longitudinal axis, said outer cross-sectional dimension Y being selected as a function of the desired characteristic impedance Z of said coaxial

connector, said middle body portion being molded within a dielectric member such that said two ends are accessible for electrical connection, said dielectric member having a predetermined external form; and

an outer shell being stamped and formed from a metallic sheet to have at least a portion having a mating shape with said predetermined external form of said dielectric member, said outer shell disposed over said dielectric member and substantially around said major longitudinal axis of



said center conductor but not electrically connected to said center conductor, said mating portion of outer shell having a predetermined inner cross-sectional dimension X taken perpendicular to said major longitudinal axis,

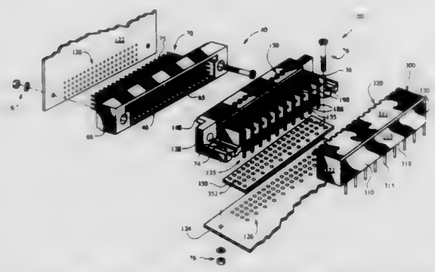
whereby the characteristic impedance Z of said coaxial connector can be altered by selecting a different outer cross-sectional dimension Y for said middle body portion of said center conductor without altering said predetermined external form of said molded dielectric member.

5,055,069

CONNECTORS WITH GROUND STRUCTURE

Peter K. Townsend, Camp Hill, and David F. Fusselman, Middletown, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 8, 1990, Ser. No. 535,432
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—608 **33 Claims**



8. An angled or right angle electrical connector for electrically and mechanically interconnecting a circuit assembly and a second connector having a plurality of terminals, each terminal having a first contact, the first contacts arranged in rows and columns, the right angle or angled connector comprising:

an insulative housing;

a plurality of electrical contact elements in the housing wherein:

each one of the contact elements has a second contact and a third contact,

the second contacts are arranged in rows and columns for contacting the first contacts,

each one of the contact elements, except the contact elements with their second contacts in the nth row, includes a middle portion configured such that their third contacts extend at an angle with respect to the second contacts,

a first set of the contact elements with their second contacts in the nth row having a middle portion configured such that their third contacts extend at an angle with respect to the second contacts; and

a second set of the contact elements with their second contacts in the nth row; and

a conductive shield including:

a baffle positioned between and spaced from columns of the middle portions of the contact elements,

a fourth contact for contacting each of the third contacts of the second set of the contact elements;

a plurality of fifth contacts positioned such that the third contacts, excluding the third contacts of the second set of contact elements in the nth row, and the fifth contacts are arranged in rows and columns for connection to the circuit assembly;

an elongated outer side wall connected to each of the baffles, the side wall having a first edge, a second edge, a third edge and a fourth edge, the first edge contacting the housing;

a first end wall having a first edge, a second edge and a third edge, the first edge of the first end wall contacting the housing, the second edge of the first end wall connected to the second edge of the side wall; and

a second end wall having a first edge, a second edge and a third edge, the first edge of the second end wall contacting the housing, the second edge of the second end wall connected to the third edge of the side wall,

such that the middle portions of the contact elements are within the confines of the outer side wall, the first end wall and the second end wall.

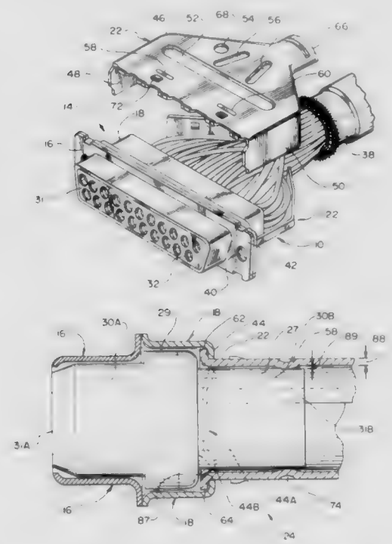
5,055,070

OVERMOLDED SHIELDED CONNECTOR

Richard W. Plegge, Palatine; Charles T. Walsh, Elgin; Rocco J. Peters, Lincolnwood, and Gregory J. Sellers, Naperville, all of Ill., assignors to Labinal Components and Systems, Inc., Elk Grove Village, Ill.

Filed Aug. 29, 1990, Ser. No. 574,458
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—609 **32 Claims**

1. A shielded electrical connector comprising an insulative housing, a conductive shell surrounding at least a portion of said housing, said insulative housing including a portion projecting from said conductive shell, a portion of said conductive shell overlying a proximal portion of said projecting portion of said insulative housing, and shield means including a contact portion to be positioned beneath said overlying portion of said shell and a body portion for encompassing said projecting portion of said insulative housing, said shield means designed to be assembled with said conductive shell and said insulative housing by engagement of said contact portion beneath a portion of said conductive shell and rotation of said body portion downward toward said projecting portion of said insulative housing, and said insulative housing and said shield means including portions which engage one another outboard of said contact portion of said shield means and thereby form a fulcrum whereby said contact portion of said shield means is rotated upward into contact with said overlying portion of said



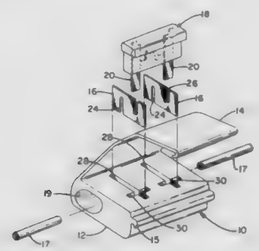
shell as said shield is assembled thereover by such rotational assembly motion.

5,055,071

IN-LINE FUSE HOLDER

Russell L. Carlson, deceased, late of Tallmadge, Ohio, and by Irene L. Carlson, executrix, 68 Minwood Dr., Tallmadge, Ohio 44278

Division of Ser. No. 222,059, Jul. 8, 1988, Pat. No. 4,921,451.
This application Feb. 5, 1990, Ser. No. 475,349
Int. Cl.[5] H01R *33/95*
U.S. Cl. 439—621 **4 Claims**



1. An in-line fuse holder comprising:

a body member having two holes therein capable of receiving inserted electric wires;

mechanical and electrical connection means associated with said body member for fastening and making electrical contact with electric wires inserted in said holes while maintaining said wires apart from each other,

said connection means comprising two movable metallic guillotine blades adapted to slide in slots provided in said body member, said slots being spaced from one another in substantially parallel relationship, said blades being positioned at right angles to the longitudinal axis of said wires and extending from the outside of said body member to said holes interior of said body member, wherein each of said guillotine blades has a first slit adapted to receive and thereby connect an electrical wire against which said first slit is forced,

two blade slots extending from the outside of said body to a location within said body member and being adapted to receive the blades of a double-bladed fuse,

said guillotine blades each including a second slit being adapted to receive a blade of said double-bladed fuse inserted into a respective one of said blade slots to enable electrical connection to said blades of a double-bladed fuse and which permit each of said blades to effect electrical contact with one of the wires inserted in said holes, thereby completing the electrical connection between said wires and,

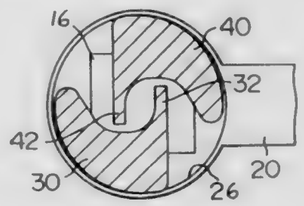
means associated with said body member to retain said double-bladed fuse within said blade slots.

5,055,072

PRESS-FIT CONTACT PIN

Kei-ichi Shinoda, Tokyo, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 17, 1990, Ser. No. 583,650
Claims priority, application Japan, Oct. 13, 1989, 1-267982
Int. Cl.[5] H01R *13/42*
U.S. Cl. 439—751 **4 Claims**



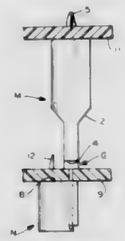
1. A press-fit contact pin comprising a mounting portion which is inserted into a through hole having an inner wall, mounted on a printed circuit board substrate, said mounting portion having end portions connected on respective opposite sides of said mounting portion in a longitudinal direction thereof, and said pin being formed of an electrically conductive material, said mounting portion having two body portions extending longitudinally therefrom, each of said body portions having an arm, said body portions forming said mounting portion being disposed to form a symmetrical shape in cross section about a line normal to a longitudinal axis thereof, a press force exerted on said body portions by a said inner wall compels a displacement to occur between said body portions, to make an end of said arm of one of said body portions become intimate with an inner periphery of the other of said body portions, when said mounting portion is inserted into a said through hole and said body portions come into contact with an inner wall of a said through hole, and said end of said arm comes into contact with said inner periphery and presses elastically against said inner periphery when said press force compels a further displacement to occur between said body portions.

5,055,073

PIN SPACER IN A MULTI-PIN CONNECTOR AND METHOD OF FABRICATING SAME

Yuuji Yamada, Yokohama; Shinsuke Kunishi, Osaka, and Yoshiyuki Mizuno, Sagamihara, all of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 8, 1990, Ser. No. 491,392
Claims priority, application Japan, Mar. 9, 1989, 1-27207[U]
Int. Cl.[5] H01R *13/46*
U.S. Cl. 439—892 **9 Claims**



3. A multi-pin connector, comprising:

a male plug including a housing having a plurality of pin terminals for inserting into a plurality of complementary openings in a surface, the housing comprising a molded part fixedly embedding lengths of the pin terminals therein; and

a pin spacer embracing the pin terminals in the vicinity of free ends thereof spaced from the plug housing, the pin spacer also comprising a part molded about the pin terminals and simultaneously molded with molding said housing and embedding the pin terminals therein with the pin spacer slidable along the pin terminals,

whereby the free ends of the pin terminals can be inserted into the plurality of openings in the surface, and the surface can push the pin spacer slidably along the pin terminals towards the male plug and eventually sandwich the pin spacer between the plug housing and the surface.

5,055,074

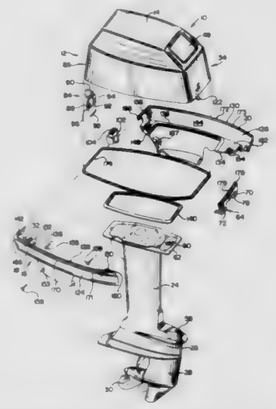
MOLDED CONTROL PANEL FOR OUTBOARD MOTOR

Tom Westberg, Waukegan, Ill., and Joseph A. Mattiazzi, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 18, 1990, Ser. No. 525,594
Int. Cl.[5] B63H *21/24*
U.S. Cl. 440—77 **19 Claims**

1. A molded control panel for an outboard motor equipped with a lower motor cover having at least one front edge, comprising:

a body having an outer surface, an inner surface, an upper edge and at least one motor control access opening, said motor control access opening being constructed and arranged for the passage of a steering bracket therethrough; said body being configured to engage the front edges of the lower motor cover for attachment of said panel thereto; and



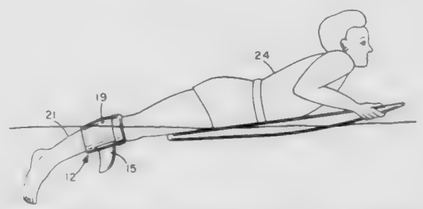
an upwardly projecting seal retaining formation integral with said upper edge.

5,055,075

DIRECTIONAL FINS FOR BODY AND BODY BOARD SURFING

Harold E. Waller, Jr., San Diego, Calif., assignor to WXW, Inc., San Diego, Calif.

Filed Jun. 25, 1990, Ser. No. 542,770
Int. Cl.[5] A63B *31/12*
U.S. Cl. 441—59 **36 Claims**



1. A fin assembly for securing to the lower part of a limb of a body or body board surfer for aiding in steering the body through turns, comprising:

a fin member having an elongate, stream-lined cross section, a leading edge, a trailing edge, a base and a tip; and

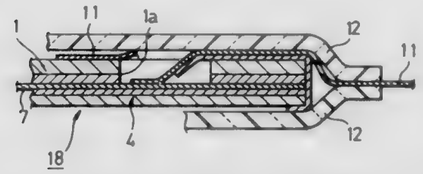
securing means for releasably securing the fin member at a predetermined location and fixed orientation to a limb of a surferat a location remote from any limb joint with the leading edge facing generally in the direction of travel through the water, the securing means including positioning means for directing the fin member with its tip projecting generally downwardly into the water from the undersurface of the surfer's body when positioned for surfing.

5,055,076

ELECTROLUMINESCENT PANEL AND METHOD OF MANUFACTURING THE SAME

Kiji Mori, Machida; Nobuhisa Kanemitsu, Ebina; Junichi Watanabe, Yokohama; Mitsuru Kagawa, Tokyo; Kazuhiro Hasegawa, Yokohama; Shigehiro Mochizuki, and Fumio Kondo, both of Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,571
Claims priority, application Japan, Mar. 9, 1989, 1-57070; Aug. 3, 1989, 1-201608
The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.
Int. Cl.[5] H01J *9/26*
U.S. Cl. 445—25 **12 Claims**



1. A method of manufacturing an electroluminescent panel comprising the steps of:

forming a roll of a luminous base film, said luminous base film comprising a luminous layer made of phosphors embedded in an insulating material, and an electrically conductive film laminated on said luminous layer;

forming a roll of a transparent electrically conductive film;

feeding said luminous base film and said transparent conductive film from their respective rolls, and passing said fed luminous base film and said fed transparent conductive film between a pair of rollers while sandwiching a power supply bus bar made of a metal layer therebetween to thereby form said luminous base film, said transparent conductive film and said power supply bus bar which are passed between said rollers into an integrated body by means of pressurized heating;

cutting said integrated body into at least one piece having a predetermined length; and

mounting an electrically conductive terminal to said at least one piece in direct contact with said power supply bus bar and leading to the outside of said integrated body, without any intermediary conducting material between said conductive terminal and said power supply bus bar, and then packaging said at least one piece within a moisture proof film with said conductive terminal extending through said moisture proof film and leading to the outside of the moisture proof package.

5,055,077

COLD CATHODE FIELD EMISSION DEVICE HAVING AN ELECTRODE IN AN ENCAPSULATING LAYER

Robert C. Kane, Woodstock, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

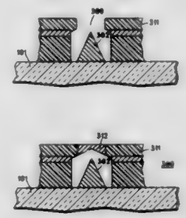
Filed Nov. 22, 1989, Ser. No. 441,027
Int. Cl.[5] H01J *19/24*
U.S. Cl. 445—50 **4 Claims**

1. A method of providing a cold cathode field emission device, comprising the steps of:

A) providing a cathode structure;

B) providing a first portion of an encapsulating layer through low angle vapor deposition of insulating material;

C) providing a second portion of the encapsulating layer through low angle vapor depostion of conductive material; such that the cathode structure is encapsulated within



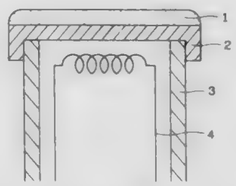
a substantially evacuated chamber, wherein the encapsulating layer includes an electrode formed therein.

5,055,078

MANUFACTURING METHOD OF OXIDE CATHODE

Anseob Lee, and Kyungcheon Son, both of Suwon, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Rep. of Korea

Filed Dec. 18, 1989, Ser. No. 452,515
Int. Cl.[5] H01J *9/04*
U.S. Cl. 445—51 **2 Claims**



1. In manufacturing oxide cathode for an electron tube, a method of manufacturing oxide cathode the steps comprising: obtaining quinary (Ba, Sr, Ca, Sc, Y) carbonate solid solution for improving a duration and an electron emitting characteristic of carbonate solid solution, and painting said quinary carbonate solid solution on a cap of a cathode, so that an electron emitting substance layer is manufactured.

5,055,079

COIN BANK WITH SEPARATIONS AND TURNABLE TOP

Philip H. Hobson, 800 Clark Blvd., Suite 331, Bramalea, Ontario, Canada L6T 2E8, and Charles E. Goodwin, Apt. 212, 2611 - 1st Avenue N.W., Calgary, Alberta, Canada T2N 0C5

Continuation of Ser. No. 377,793, Jul. 11, 1989, abandoned, which is a continuation of Ser. No. 237,707, Aug. 29, 1988, abandoned. This application Mar. 14, 1990, Ser. No. 494,934
Int. Cl.[5] A45C *1/12;* **A63H** *29/08;* **B65D** *1/24, 91/00*
U.S. Cl. 446—8 **10 Claims**

1. A bank for coins, comprising:

container means having an open top and interior;

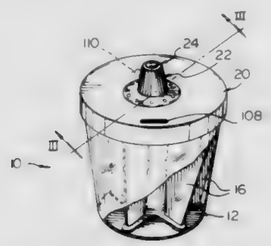
cover means for rotatable association with the top of the container means, said cover means having at least one coin receivable aperture;

at least one divider means for dividing the container interior into chambers;

securement means for securing the cover to the container for rotatable movement relative thereto and for securing each said divider means in position within said container;

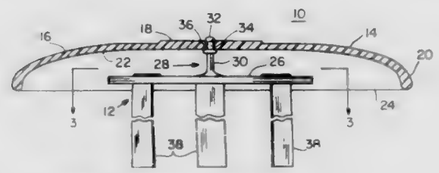
said securement means including a support column within said container for supporting each divider means in an appropriate angular position, and first means cooperating between said container interior and said column securing each said divider means in said angular position;

said securement means further including pin means, said cover being rotatable about said pin means; and second means cooperating between said pin means and said support column rotatably securing said cover to said container;



said support column having a lower end and said first cooperating means including collar means extending upwardly and centrally from the container interior, a bore in the lower end of said support column; and said collar and lower end bore being respectively dimensioned for an interference fit.

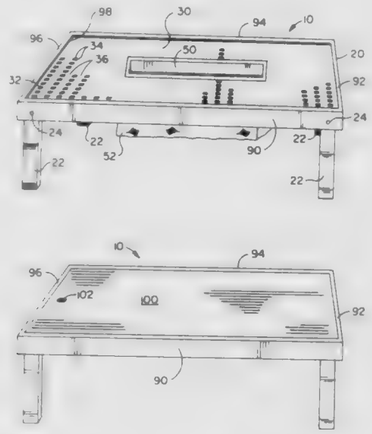
5,055,080
FLYING DISC WITH DEPENDING FLEXIBLE STRIPS
Alexander J. Cwalinski, 71 Rutland St., Boston, Mass. 02118, and Brian M. Walsh, 56 Pleasant St., Milton, Mass. 02186
Filed Apr. 3, 1991, Ser. No. 679,759
Int. Cl.[5] A63H *27/00*
U.S. Cl. 446—46 **13 Claims**



1. A stabilized flying disc comprising:
a disc, having a convex upper surface, with a substantially flat central portion, a downwardly-curving rim, and a concave inner surface;
an attachment member, rotatably connected to said disc proximate the center of the concave inner surface; and
a plurality of flexible strips secured to said attachment member.

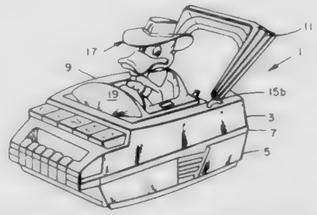
5,055,081
PLAY TABLE AND ACTIVITY CENTER
Devdas U. Nayak, Calgary, Canada, assignor to Lasy of North America Ltd., Canada
Filed Oct. 31, 1989, Ser. No. 429,390
Int. Cl.[5] A63H *33/08;* **A47B** *85/00*
U.S. Cl. 446—75 **18 Claims**

1. A table for use with a modular building system having a plurality of interlocking elements comprising,
a generally planar member having a first region and a second region, said first region defining an opening through said planar member and said second region defining a support surface,
at least one grid member removably disposed on said support surface, said grid member including a plurality of recesses sized and shaped to matingly receive said interlocking elements of said modular building system,
a storage compartment associated with said first region for retaining said interlocking elements, and



connecting means for removably connecting said storage compartment to said planar member in communication with said opening.

5,055,082
CONVERTIBLE TOY
Steven R. Varner, Torrance, Calif., assignor to Varner Incorporated, Gardena, Calif.
Filed Sep. 10, 1990, Ser. No. 580,660
Int. Cl.[5] A63H *13/10*
U.S. Cl. 446—308 **5 Claims**

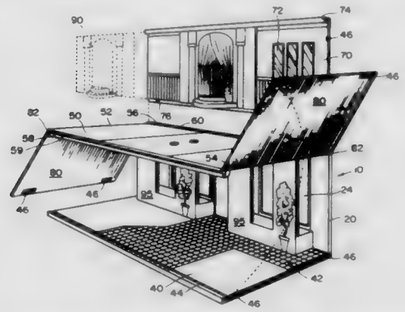


1. A toy comprising a container having a door on its upper surface and a flap with attached figurine under the door, said door and said flap being separately hinged on a pin traversing an opening created when the door is opened, said door being hinged off-center so that there is a short section and a long section of said door and, by depressing the short section, the door opens upwardly and to the rear so that the short section of the door engages the flap and forces it, with attached figurine, up into the opening left by the door in the upper surface.

5,055,083
TOY STORE
Robert Walker, and Betty R. Walker, both of 2400 Rock Hill Rd., Castle Hayne, N.C. 28429
Filed Nov. 29, 1990, Ser. No. 619,471
Int. Cl.[5] A63H *33/04*
U.S. Cl. 446—478 **8 Claims**

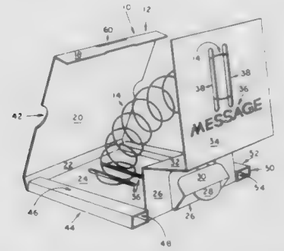
1. A toy store comprising:
a vertical front wall;

a floor member connected to said front wall along its bottom portion;
a ceiling member connected to said front wall along its top portion and substantially overlying said floor member;
a movable facade wall including a bottom edge and a connecting means, said facade wall being movable between an in use position wherein said lower edge is connected to said ceiling member and a storage position wherein said



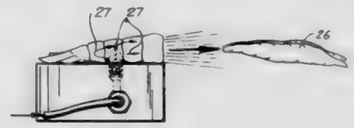
connecting means connects said facade wall between said floor member and said ceiling member; and
a side wall hingedly connected to each of the respective sides of said ceiling member, each side wall being movable from a closed position wherein the free end of the side wall is detachably connected to the floor member and is movable to a vertical position to define second story side walls.

5,055,084
CARD BOX WITH SPRING SURPRISE FLAP
Zoran Jokic, 541 Cumberland Ave., Teaneck, N.J. 07666
Filed Feb. 19, 1991, Ser. No. 656,454
Int. Cl.[5] A63H *33/00, 33/38;* **A63J** *23/00;* **G09F** *1/08*
U.S. Cl. 446—486 **7 Claims**



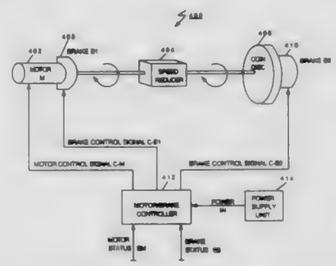
1. A spring box comprising a box body having a plurality of panels joined by parallel fold lines, said panels including a bottom panel, a message panel bearing a message and a cover panel that covers said message panel when said box body is closed with said cover panel overlapping said message panel and hiding said message, and a spring having a first end engaging said bottom panel and a second end engaging said message panel and compressed therebetween when said box body is closed, said box body further having a tab for releasably holding said box body closed, and so that when said tab is released, said spring suddenly opens said box body pushing said message panel away from said bottom panel, in turn causing said cover panel to move away from said message panel thus to expose said message to view, and wherein said message panel is joined indirectly to said bottom panel by first and second additional panels and said cover panel is joined indirectly to said bottom panel by a third additional panel, said first additional panel being joined to said message panel along a first fold line and to said second panel along a second fold line and said second panel being joined to said bottom panel along a third fold line, said cover panel being joined to said third additional panel along a fourth fold line and said third additional panel being joined to said bottom panel along a fifth fold line, and said tab being a portion of said second additional panel.

5,055,085
CRAWFISH PEELING APPARATUS
Glenn Thibodeaux, Rt. 3 Box 75A, Church Point, La. 70525
Filed Jul. 31, 1990, Ser. No. 560,135
Int. Cl.[5] A22C *29/02*
U.S. Cl. 452—5 **20 Claims**



1. A crawfish peeling apparatus for separating tail meat from the crawfish exoskeleton comprising:
a) a tool body having a fluid conveying bore;
b) fluid inlet means for communicating with the bore for connecting a source of fluid under pressure to the tool body;
c) fluid outlet means bore communicating with the bore for discharging fluid under pressure from the tool body;
d) lance means, positioned at the fluid outlet means in fluid communication therewith for penetrating the crawfish exoskeleton to form an aperture in said exoskeleton;
e) the lance means having conduit means for channelling fluid under pressure from the tool body to the interior of the crawfish exoskeleton while the lance means occupies a position at the aperture formed in the exoskeleton; and
f) switch means, for controlling flow of fluid to the lance, comprising means for depressing the switch means with a crawfish body when a crawfish body is placed on the tool body.

5,055,086
COIN SORTER WITH COUNTER AND BRAKE MECHANISM
Donald E. Raterman, Deerfield; Richard D. Primdahl, Hoffman Estates, and Richard A. Mazur, Naperville, all of Ill., assignors to Cummins-Allison Corporation, Mt. Prospect, Ill.
Continuation-in-part of Ser. No. 113,869, Oct. 27, 1987, Pat. No. 4,921,463. This application Feb. 5, 1990, Ser. No. 475,127
Int. Cl.[5] G07D *3/16*
U.S. Cl. 453—10 **22 Claims**



17. An improved braking method for quickly and accurately halting the rotation of a coin disc in a coin sorting and counting system wherein an electrical motor is rotatably coupled to the

coin disc through speed reducer means, said method comprising the steps of:

(i) providing a first brake means disposed on one side of said speed reducer means and operable to halt the rotation of said motor;

(ii) providing a second brake means disposed on the other side of said speed reducer means and operable to halt the rotation of said coin disc; and

(iii) operating said first and second brake means so that the time taken by said first braking means to halt the rotation of said motor is substantially equal to the time taken by said second brake means to halt the rotation of said coin disc.

20. A braking system for quickly and accurately stopping the rotation of a coin disc in a coin sorting and counting system comprising an electric motor rotatably driving a coin disc through a mechanical coupling means, said system comprising:

first brake means coupled to said motor for stopping the rotation thereof;

second brake means coupled to said coin disc for stopping the rotation thereof; and

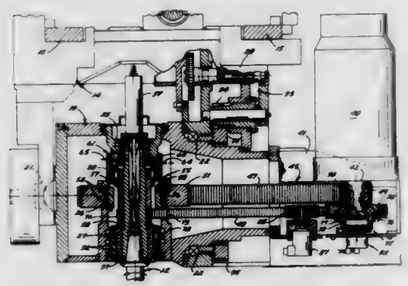
control means for operating said first and second brake means in synchronism so as to stop the rotation of said coin disc without exerting shock loads on said mechanical coupling means.

5,055,087

TRANSMISSION FOR DRIVING A MACHINE TOOL SPINDLE

Loyd L. Koch, Rockford, Ill., assignor to Bourn & Koch Machine Tool Co., Rockford, Ill.

Filed Nov. 29, 1990, Ser. No. 619,480
Int. Cl.[5] F16H *9/00*
U.S. Cl. 474—73 14 Claims



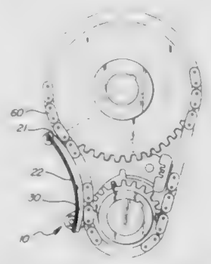
1. A machine tool head having a support, a spindle rotatably mounted on said support and adapted to hold and rotate a tool, and means for selectively rotating said spindle at either a low speed ratio or a higher speed ratio, said means comprising a motor mounted on said support and having a rotatable output shaft, a small diameter drive wheel fixed to rotate with said output shaft about an axis thereof, a larger diameter driven wheel rotatable on said spindle about an axis thereof, first endless drive means drivingly coupling said drive wheel to said driven wheel, a large diameter drive wheel rotatable on said drive shaft about an axis thereof, a smaller diameter driven wheel fixed to rotate with said spindle about an axis thereof, second endless drive means drivingly coupling said large diameter drive wheel to said smaller diameter driven wheel, a first selectively engageable clutch coaxial with said spindle and operable when engaged to couple said larger diameter driven wheel for rotation with said spindle, and a second selectively engageable clutch coaxial with said shaft and operable when engaged to drivingly couple said large diameter drive wheel for rotation with said shaft.

5,055,088

SPRING BLADE CHAIN TENSIONER

Kevin M. Cradduck, Dryden, and Nicholas A. Iacchetta, Cortland, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jun. 8, 1990, Ser. No. 535,446
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—111 14 Claims



1. An apparatus for applying a continuous tension to a chain, the apparatus comprising:

(a) a first blade spring and a second blade spring; and

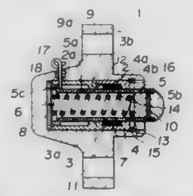
(b) a shoe adapted to contact the chain, the shoe being made of a material that will creep under continuous load applied thereto by the first and second blade springs, the shoe having means for retaining the first and second blade springs therewithin, the first and second blade springs causing the shoe to bend.

5,055,089

BELT TENSIONER FOR POWER TRANSMITTING SYSTEM

Juji Ojima, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 17, 1990, Ser. No. 524,447
Claims priority, application Japan, May 22, 1989, 1-128539
Int. Cl.[5] F16H *7/12*
U.S. Cl. 474—138 6 Claims



1. A belt or chain tensioner for keeping adequate tension on a belt or chain comprising:

a tension rod having a longitudinally extending central axis;

a casing having a bore formed therein and including a bottom closing one end of said bore;

a compression spring mounted between said tension rod and said casing, said compression spring urging said tension rod in an advancing direction;

a cup shaped rear locking seat with a through hole formed in a bottom thereof through which said tension rod extends, said rear locking seat fixed in position relative to the bottom of said casing, the rear locking seat including a first radially inwardly extending bottom flange formed thereon, said first bottom flange having diametrically opposite portions having a difference in thickness in relation to said central axis;

a cup shaped front locking seat with a through hole formed in a bottom thereof through which said tension rod extends, said front locking seat fixed in position relative to said casing in front of said rear locking seat, said front locking seat including a second radially inwardly extending bottom flange formed thereon;

a locking component inserted between said first and second radially inwardly extending bottom flanges and externally on said tension rod, said locking component moving with said tension rod between a free state, in which said locking component engages said second bottom flange and grips said tension rod with a minimum frictional force, and a diagonally compressed state, in which said locking component engages said first bottom flange and grips said tension rod with a maximum frictional force, said compression spring moving said tension rod in said advancing direction when said locking component is in said free state and counterforce from said belt or chain is less than a force applied by said compression spring on said tension rod, and being prevented from moving said tension rod in said advancing direction when said locking component is in said diagonally compressed state and counterforce from said belt or chain is greater than the force applied by said compression spring on said tension rod;

a skirt portion provided on said tension rod, said skirt portion inserted in said rear locking seat; and

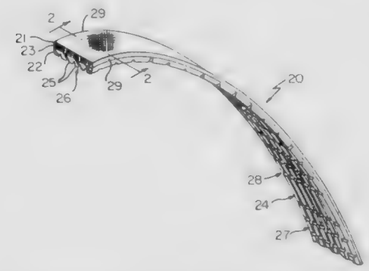
a pin inserted through a hole in said casing for engaging said skirt portion to selectively lock said tension rod against movement.

5,055,090

ENDLESS POWER TRANSMISSION BELT CONSTRUCTION AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Nixa, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 513,694, Apr. 24, 1990, Pat. No. 4,976,662, which is a division of Ser. No. 410,165, Sep. 20, 1989, Pat. No. 4,938,736, which is a division of Ser. No. 324,852, Mar. 17, 1989, Pat. No. 4,884,998, which is a division of Ser. No. 152,693, Feb. 5, 1988, Pat. No. 4,832,670. This application Oct. 15, 1990, Ser. No. 597,990
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.[5] F16H *1/00*
U.S. Cl. 474—249 13 Claims



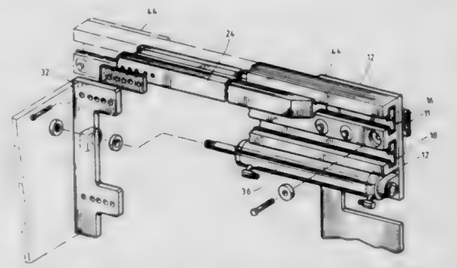
1. In an endless power transmission belt construction having opposed side edge means and having an inner surface means defining a plurality of longitudinally disposed and alternately spaced apart projections and grooves for meshing with a ribbed surface means of a rotatable pulley means or the like and defining a plurality of transversely disposed and alternately spaced apart projections and grooves that respectively extend between and to said opposed side edge means, the improvement wherein the longitudinal spacings between said transverse grooves are staggered so as to tend to reduce noise during normal operation of said belt construction with said pulley means or the like, said longitudinal spacings comprising different lengths that are staggered in a random sequence of a certain member of said lengths with that sequence being utilized again in the longitudinal length of said belt construction.

5,055,091

WEAR STRIP FOR A CLAMP ATTACHMENT ON A LIFT TRUCK

Carl A. Morris, Jr., Sugarland, and Kenneth R. Lane, Houston, both of Tex., assignors to Long Reach Holdings, Inc., Houston, Tex.

Filed Feb. 5, 1990, Ser. No. 474,615
Int. Cl.[5] B66F *9/18*
U.S. Cl. 414—621 3 Claims



1. In a load carrying clamp attachment for use on a lift truck having a body adapted to be mounted on a lift truck, said body having a plurality of elongate vertically spaced parallel guides, each guide supporting a longitudinally movable slide, first and second load clamps connected to said slides for movement toward and away from each other for supporting and releasing a load, and first and second piston and cylinder assemblies connected to one of the load clamps for moving said clamps, the improvement in wear strips between each of the guides and its coacting slides comprising,

a plastic wear strip, C-shaped in cross section, positioned in and matching the internal surface of each guide and extending substantially the entire length of the guide, a vertical extension at each outer edge of the C-shape for fully enclosing the coacting contacting areas between the slides and guides, said strip being telescopically movable in and out of the slide,

a releasable retainer connected between the wear strip and the guide for holding the wear strip in the guide, but allowing the wear strip to be replaced without removing the slide,

said retainer is a threaded plug positioned adjacent an end of the guide, and

the plug is inserted into a front of the C-shaped cross section and threadably connected to the guide.

5,055,092

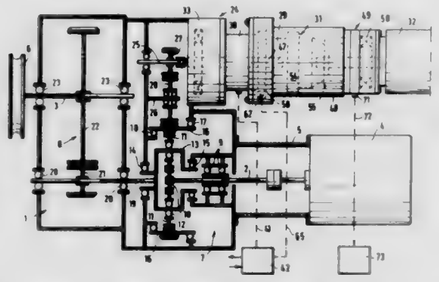
DRIVING SYSTEMS FOR DRIVING ENDLESS CHAINS OR THE LIKE IN MINING APPARATUS

Werner Langenberg, Werne, and Werner Bohle, Ludinghausen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia GmbH, Fed. Rep. of Germany

Filed Jan. 24, 1991, Ser. No. 645,547
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 4002303
Int. Cl.[5] F16H *37/06*
U.S. Cl. 475—2 17 Claims

1. In a drive system for propelling an endless traction member of a mineral mining installation and comprising an electric drive motor, gearing connecting the motor to an output for propelling the traction member, said gearing including at least one planetary gearing stage with a rotatable control component drivable to effect load balancing, overload protection and load balancing means composed of a clutch drivably connected to the component of the planetary gearing stage, a

second electric motor for driving the component at controlled speed via the clutch and a control unit for disengaging the clutch in the event of overloading; the improvement comprising reduction gearing interconnecting the second motor and the clutch and a braking device in a drive connection between the second motor and the component for selectively locking the component.

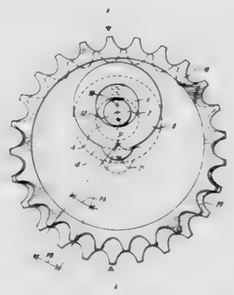


5,055,093

ORBITAL SPROCKET DRIVE

James M. Denker, 711 First Parish Rd., Scituate, Mass. 02066

Filed Jan. 25, 1990, Ser. No. 470,132
Int. Cl.[5] F16H *7/06*
U.S. Cl. 475—167 14 Claims



1. A drive for transducing rotation of a motor shaft comprising:

a. a multiple eccentric journal unit having a hollow sized to fit over the motor shaft and at least one pair of journals, each member of a pair concentric with an axis parallel to the axis of the hollow and spaced apart from its mate an equal distance on opposite sides of and coplanar with the hollow axis;

b. means for securing the eccentric journal unit to the motor shaft;

c. a rotational bearing attached to each journal;

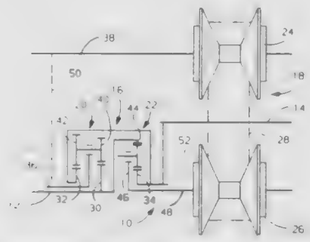
d. associated with each bearing, a transmission wheel having means for mounting said wheel to said bearing eccentrically from the axis of rotational symmetry of said transmission wheel an equal radial amount as compared to the transmission wheel associated with the other journal of the dual journal pair.

5,055,094

CONTINUOUSLY VARIABLE TRANSMISSION

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1990, Ser. No. 496,842
Int. Cl.[5] F16H *9/26, 37/00, 37/06*
U.S. Cl. 475—211 3 Claims



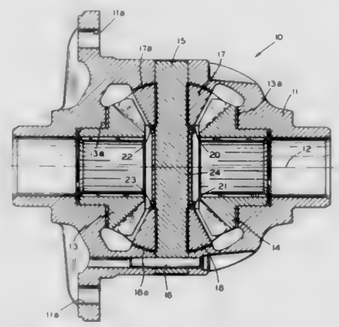
1. A continuously variable transmission comprising: input shaft means; output shaft means; first planetary gear means having a first member continuously driven by said input shaft means, a second member continuously drivingly connected to said output shaft means, a third member having a first gearing means drivingly interconnecting the members; second planetary gear means having a first member continuously drivingly connected with said input shaft means, a second member continuously drivingly connected with said output shaft means, a third member having a second gearing means for drivingly interconnecting the members; and continuously variable drive means having input means continuously drivingly connected with said third member of said first planetary gear means, output means continuously drivingly connected to said third member of said second planetary gear means and continuously variable ratio means drivingly connected between said input means of said continuously variable drive and said output means of said continuously variable drive means and being operable through a range of ratios to provide a reverse range, a neutral condition and a forward range of drive ratios from said input shaft means and said output shaft means.

5,055,095

SPRING LOADED PINION GEARS FOR DIFFERENTIAL

Carl D. Osenbaugh, Ft. Wayne, and Howard Reaser, Columbia City, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 26, 1990, Ser. No. 634,002
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—233 10 Claims



1. A limited slip differential comprising:
a case;

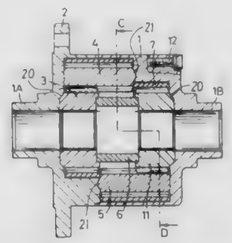
a cross shaft mounted within said case for rotation therewith;
a pair of side gears mounted within said case for relative rotation;
a pair of pinion gears mounted on said cross shaft for relative rotation, said pinion gears meshing with said side gears; and
means for urging one of said pinion gears into frictional engagement with said case, said means for urging including a Belleville spring mounted on said cross shaft and engaged with said pinion gear.

5,055,096

DIFFERENTIAL GEARING

Helmut Riemscheid; Herbert Frielingsdorf, both of Lohmer; Klaus Greulich, Swistal-Heimerzheim, and Peter Amborn, Neunkirchen-Seelscheid, all of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Jun. 25, 1990, Ser. No. 543,149
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920794
Int. Cl.[5] F16H *37/08*
U.S. Cl. 475—249 17 Claims



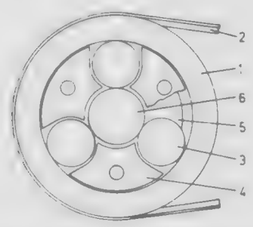
1. A self-inhibiting differential gearing comprising a carrier; two output gears disposed substantially co-axially in the carrier; a first set of differential gears engaging one of the output gears; and a second set of differential gears engaging the other output gear, the two sets of differential gears engaging one another at least indirectly; wherein the differential gears are circumferentially disposed asymmetrically around the carrier, and the output gears are disposed in recesses in the carrier such that relative radial displacement is possible between the output gears and recesses to produce frictional forces therebetween.

5,055,097

ROTARY DIFFERENTIAL DRIVE

Samuel R. Wood, 3 Raymond Avenue, Warrawee, New South Wales, Australia 2074

Filed Sep. 28, 1989, Ser. No. 413,879
Int. Cl.[5] F16H *57/10*
U.S. Cl. 475—271 12 Claims



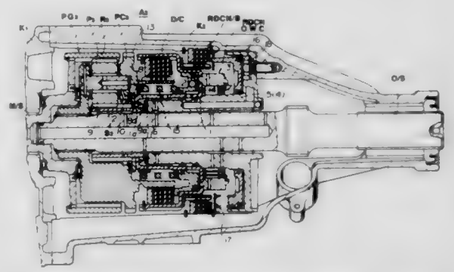
1. A rotary drive employing at least one epicyclic differential assembly to which another or others may be coupled directly or indirectly, functioning as a transmission having a plurality of externally connectible transmitting members two greater in number than the number of differential assemblies, the totality less one of said members each being constrainable at zero or substantially zero speed by braking, and at least at one rotational speed by coupling to reversible and regenerative rotative electric means capable of maintaining constant or substantially constant speed, the speed of the one transmitting member not so constrainable being dependent on the speed or speeds of the said constrainable members, operable singly or severally, the speed or speeds at which each said member is constrainable and the speed ratio between the said member and the dependent member together determining a base speed of the dependent member for each and every rotational speed of each said constrainable member with all other constrainable members at zero speed, the base speeds of the dependent member being at least three in number and of value such that the available combinations of the base speeds provide a series of speeds each at a substantially equal interval from the next, obtainable by selectively applied constraint of the said constrainable members.

5,055,098

AUTOMATIC POWER TRANSMISSION WITH MECHANISM FOR ESTABLISHING UNDER-DRIVE SPEED RATIO AND BEARING STRUCTURE THEREFOR

Shigeto Umebayashi, Shizuoka; Kazuyoshi Iwanaga, and Noboru Hattori, both of Kanagawa, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa and Jatco Corporation, Shizuoka, both of, Japan

Filed Dec. 22, 1989, Ser. No. 454,960
Claims priority, application Japan, Dec. 26, 1988, 63-330496
Int. Cl.[5] F16H *47/08, 1/28*
U.S. Cl. 475—312 4 Claims



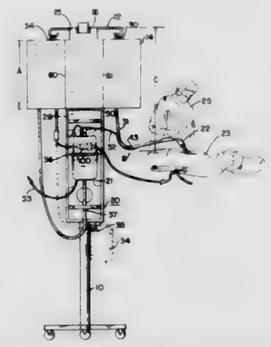
1. An automatic power transmission including a plurality of planetary gear sets for establishing predetermined speed ratios, each planetary gear set including a ring gear, a pinion carrier, and a sun gear interposed between said ring gear and said pinion carrier, said ring gear being driven by input torque and said pinion carrier forming output of driving torque, each of said planetary gear sets being associated with a clutch drum which is, in turn, associated with a one-way clutch for locking said sun gear onto a transmission casing, a support structure for at least one planetary gear set comprising:

a first bearing supporting said sun gear on an output shaft;
said one-way clutch being provided with an outer race fixed to said clutch drum and an inner race integrated with a support member of the transmission casing, said inner race thus supporting an assembly of said one way clutch and said clutch drum with respect to said support member;
a second bearing supporting said clutch drum at an orientation in the vicinity of said sun gear and remote from said inner race; and
a third bearing supporting said outer race of said one-way clutch, said third bearing cooperating with said second bearing for centering said outer race.

5,055,099
APPARATUS AND METHOD FOR UTILIZING AUTOTRANSFUSION SYSTEMS AND RELATED EQUIPMENT

Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corporation, Edison, N.J.

Continuation of Ser. No. 93,050, Sep. 14, 1989, Pat. No. 4,867,738. This application Apr. 20, 1989, Ser. No. 340,773
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **20 Claims**



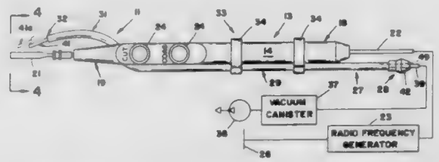
1. In a system of the type employed for body fluid processing for the selective transfer of body fluid to a patient using gravity or external pressure which fluid transfer system is positioned on a conventional intravenous pole (IV) with said system associated with a body fluid reservoir having inlet and outlet ports for implementing said transfer and adapted to operate with additional fluid containing reservoirs positioned on said pole, coupled to the cross arm of said pole, the combination therewith of apparatus for maintaining and orienting said fluid system in an operative configuration on said pole, comprising:
- a housing having an opened top surface and a closed bottom surface and having contiguous sidewalls for forming a component cavity;
- with said body fluid reservoir permanently affixed to said housing and positioned in said cavity and coupled to at least one of said additional fluid containing reservoirs;
- means coupled to said housing for securing said housing to said pole
- a foldable planar sheet member for containing indicia on the surface having a given length when unfolded with one end secured to said housing and adapted when unfolded for an opposite end to coact with the cross arm of said pole to thereby position said body fluid reservoir as secured to said housing at a location on said pole where the distance between the center of said body fluid reservoir and said at least one additional reservoir is always at a specified distance determined by said given length of said foldable planar sheet member whereby when said body fluid reservoir is positioned at said patient level said additional reservoirs are always at the proper distance therefrom to assure proper fluid transfer by maintaining proper fluid measure.

5,055,100
SUCTION ATTACHMENT FOR ELECTROSURGICAL INSTRUMENTS OR THE LIKE

Eugene Olsen, 2100 Meredian Park Blvd., Concord, Calif. 94520

Filed Jun. 19, 1989, Ser. No. 367,841
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **8 Claims**

1. A suction attachment for use with a handheld electrosurgical instrument or the like and for use with a source of low fluid pressure that has flexible vacuum tubing extending therefrom which instrument has a tubular handle with front and back ends and an electrode extending from the front end of said handle, said suction attachment for use with said instrument and low fluid pressure source being comprised of:
- a tube adapted to be clamped on to said instrument handle in an orientation at which said tube extends along at least a portion of said instrument handle between said front and back ends thereof, said tube having a back end adapted for receiving said flexible vacuum tubing, an intermediate section proportioned to extend along the exterior surface of said instrument handle and a front end shaped to extend apart relationship therewith when said suction attachment is clamped on to said instrument handle with said intermediate section of said tube being directed along said handle surface, and

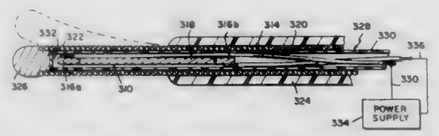


- clamping means for selectively clamping said intermediate section of said tube to said instrument handle wherein said clamping means is adapted to frictionally grip said surface of said instrument handle while enabling turning of said suction attachment about the axis of said handle by application of sufficient torsional force to change the angular position of said front end of said tube relative to said axis and said electrode, and wherein said clamping means further enables sliding movement of said tube along said handle by application of sufficient axial force to change the longitudinal position of said front end of said tube relative to said electrode.

5,055,101
VARIABLE SHAPE GUIDE APPARATUS

William C. McCoy, Zionsville, Ind., assignor to Catheter Research, Inc., Indianapolis, Ind.

Continuation of Ser. No. 103,926, Oct. 2, 1987, Pat. No. 4,944,727, which is a continuation-in-part of Ser. No. 870,926, Jun. 5, 1986, Pat. No. 4,758,222, which is a continuation-in-part of Ser. No. 728,634, May 3, 1985, Pat. No. 4,601,705, which is a continuation-in-part of Ser. No. 547,402, Oct. 31, 1983, Pat. No. 4,543,090. This application Dec. 8, 1989, Ser. No. 447,927
The portion of the term of this patent subsequent to Jul. 19, 2005, has been disclaimed.
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **6 Claims**

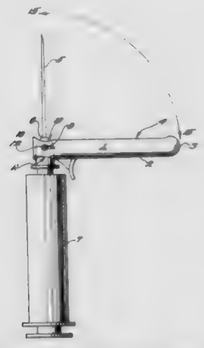


1. A variable shape guide apparatus comprising
- a temperature-activated memory element moving in a first direction to assume a predetermined shape when heated to a predetermined temperature,
- spring means housing the memory element for yieldably urging the memory element in a second direction away from the first direction upon cooling of the memory element to a temperature less than the predetermined temperature so that the memory element is moved to assume a shape other than the predetermined shape, the spring means having an original shape alterable by movement of the memory element in its first direction toward its predetermined shape,
- insulation means for preventing electrically conductive contact between the memory element and the spring means, and
- control means for selectively heating the memory element so that the memory element is moved in the first direction against the urging of the spring means to permit an operator to alter the shape of the spring means automatically by heating the memory element, whereby the spring means is allowed to resume its original shape upon cooling of the memory element housed in the spring means.

5,055,102
SWING-AWAY DISPOSABLE SYRINGE NEEDLE COVER

Lee Sitnik, 209 Glenridge Ct., Columbia, S.C. 29212

Filed Jun. 4, 1990, Ser. No. 534,506
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **4 Claims**

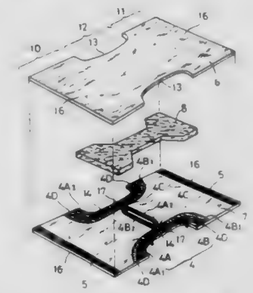


1. A needle cover for a needle on a syringe where said needle cover, which hingedly pivots on axial elements radial to a needle hub, can be removed through the application of a single finger force against a lever arm that is integral with the needle cover, where said force causes the needle cover to rotate laterally away from the needle sheathed within, wherein the continued application of finger force deflects the needle cover from a coaxial position, therein exposing the sheathed needle, to a perpendicular position where the needle cover is well out of the way of subsequent activity, where said needle cover prior to disposal can be locked into a non-rotatable position, by returning the needle cover to the coaxial position and shoving the needle cover down onto the axial elements radial to the needle hub, where said needle cover is comprised of:
- a tube of sufficient length and diameter to sheath the needle and the needle hub, wherein the tube is closed on one end, and has, extending lengthwise from the closed end, a longitudinal slit, which is sufficiently long and wide to permit the needle to traverse through the slit laterally, wherein said longitudinal slit, in an area adjacent to the needle hub, expands to an elongated hole, where the elongated hole is of sufficient size as to accommodate the needle hub when the needle cover is rotated to the perpendicular position, and in an opposing arc of the tube, essentially opposite to the elongated hole is a partially open hole that opens toward the syringe, wherein the partially open hole is of sufficient size as to accommodate the needle hub when the needle cover is rotated to the perpendicular position, and where said tube has a lever arm, which projects outward from the tube, wherein said lever arm is constructed so as to be of sufficient length and strength as to enable a user of the syringe to move the tube out of the coaxial position and into the perpendicular position, and the tube has bearings that are axially perpendicular to the longitudinal slit and positioned such that the bearings are aligned with said axial elements radial to the needle hub, and wherein said bearings have a longitudinal groove, such that when the tube is forced down, the bearings distort against the pressure of the axial elements and the tube is displaced past the axial elements into to the longitudinal groove therein locking the needle cover in the coaxial position.

5,055,103
DISPOSABLE GARMENTS

Hironori Nomura; Hirofumi Ohnishi, both of Iyomishima; Yoshinori Matsura, Kanonji, and Tohru Sasaki, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Dec. 13, 1990, Ser. No. 626,783
Claims priority, application Japan, Dec. 18, 1989, 1-328022
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **4 Claims**



1. Disposable garments having a topsheet, a backsheet and elastic means provided along leg-openings defined at opposite sides of a crotch area connecting front and rear sections of the top- and backsheets, characterized by that:
- the elastic means surrounding each of the leg-openings comprises first and second elastic members;
- the first elastic member is positioned substantially along a front half of both leg-openings and traversing the approximate middle of the crotch area while the second elastic member is positioned substantially along a rear half of both leg-openings and traversing the approximate middle of the crotch area so that the first and second elastic members intersect each other the middle area of the crotch area of each leg-opening; and
- the first and second elastic members have their tensile stress gradually decreasing from locations adjacent the middle of each leg opening toward locations adjacent end of each leg opening.

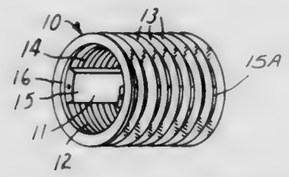
5,055,104
SURGICALLY IMPLANTING THREADED FUSION CAGES BETWEEN ADJACENT LOW-BACK VERTEBRAE BY AN ANTERIOR APPROACH

Charles D. Ray, Deephaven, Minn., assignor to Surgicel Dynamics, Inc., Alameda, Calif.

Continuation-in-part of Ser. No. 259,031, Oct. 17, 1988, Pat. No. 4,961,740. This application Nov. 6, 1989, Ser. No. 432,087
Int. Cl.[5] A61F *5/04, 2/44*
U.S. Cl. 606—61 **20 Claims**

1. A fusion cage system for being implanted in and promoting fusion with respect to one of more bone structures, said fusion cage system for containing bone-growth-inducing substance packed therein for accelerating bone fusion, said fusion cage system comprising:
- a first fusion cage which has a first outside dimension and a first internal cavity means for being packed with the bone-growth-induction substance;
- a second fusion cage which has a second outside dimension

and a second internal cavity means for being packed with the bone-growth-inducing substance;
at least one of the first fusion cage and the second fusion cage including means for allowing said first and second



fusion cages to be positioned adjacent each other such that an outside dimension of the combination of the first fusion cage positioned adjacent the second fusion cage is less than the sum of the first outside dimension and the second outside dimension.

5,055,105
BONE DRILL BIT
Arthur H. Hamlin, Mendham, N.J., and Craig D. Morgan, Greenville, Del., assignors to Bowen & Company, Ltd., Rockville, Md.
Filed Oct. 11, 1989, Ser. No. 419,776
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—80 **10 Claims**



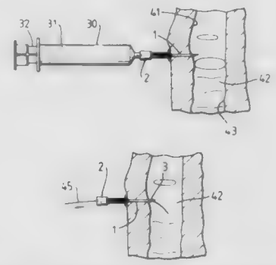
1. A bone drill bit for use with a drilling apparatus for drilling a hole through a bone comprising:
an elongate cylindrical shaft having opposed end portions, one said end portion forming a shank which is adapted to be received in the drilling apparatus;
a pointed tip at the other said end portion; and
a plurality of small protuberances provided around and projecting beyond a diameter of said cylindrical shaft beginning at said tip and extending for a short distance along said shaft such that as said protuberances pass through the drilled bone a hole slightly larger than the diameter of said shank is produced and thus a remainder of said shank passes freely through the drilled hole.

5,055,106
SCALPEL
Dan Lundgren, Askims Kyrkväg 5, S-430 80 HovÅs, Sweden
PCT No. PCT/SE89/00084, § 371 Date Sep. 7, 1990, § 102(e) Date Sep. 7, 1990, PCT Pub. No. WO89/08429, PCT Pub. Date Sep. 21, 1989
PCT Filed Feb. 27, 1989, Ser. No. 571,620
Claims priority, application Sweden, Mar. 9, 1988, 8800833
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 **9 Claims**



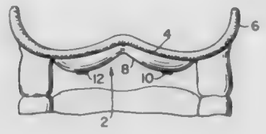
1. A scalpel comprising a shank having a holder for releasably mounting a surgical blade, the surgical blade, said holder including a sleeve threadedly engaged with the shank at one end thereof adapted to be screwed axially along the shank and forming a ball socket, a ball of plastic material on said blade adapted to be received in said ball socket, and a clamping rod extending axially within the socket between the shank and the ball adapted to engage and disengage said ball by the sleeve being screwed on the shank, characterized in that the end of the clamping rod, which is adjacent the ball, forms a circular sharp edge which faces the ball axially and has a diameter substantially smaller than the diameter of the ball, thus being adapted to cut into the plastic material of the ball at said edge when the sleeve is screwed to engage the clamping rod with said ball.

5,055,107
SURGICAL INSTRUMENTS AND ASSEMBLIES
Graham G. Lester, Hythe, Kent, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Nov. 3, 1989, Ser. No. 431,102
Claims priority, application United Kingdom, Nov. 3, 1988, 8825749
Int. Cl.[5] A61M *16/00*
U.S. Cl. 604—51 **1 Claim**



1. A method of forming a tracheostomy comprising the steps of: providing a surgical instrument comprising a hollow needle and a hub, the needle having a rear end mounted in the hub and a sharply pointed forward end that projects from a forward end of the hub, the length of needle projecting from the forward end of the hub being greater than the thickness of neck tissue between the skin surface and the anterior wall of the trachea but less than the distance between the skin surface and the posterior wall of the trachea, the hub having at its forward end a laterally extending face the area of said face being at least fifty times the cross sectional area of the needle, and the hub having at its rear end a coupling, said coupling communicating with the bore of the needle; providing a loss of resistance device, said loss of resistance device containing a fluid; coupling the loss of resistance device to the said coupling of the hub; pushing the forward end of the needle through the neck tissue of the patient; detecting flow of fluid from the loss of resistance device through the needle when the forward end of the needle lies within the trachea, insertion of the needle being limited by engagement of the face of the hub with the skin surface of the neck so that the forward end of the needle is prevented from contacting the posterior wall of the trachea; uncoupling the loss of resistance device from the instrument; inserting a flexible guide into the trachea directly through the needle; removing the needle to leave the guide in position; inserting a tracheostomy tube into the trachea along the guide; and subsequently removing the guide to leave the tracheostomy tube in position.

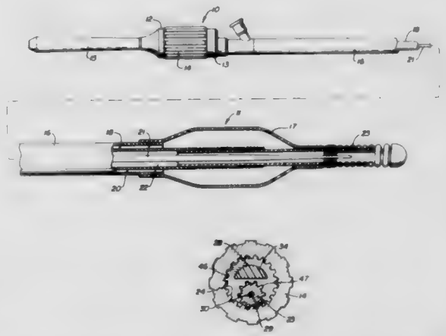
5,055,108
APPLIANCE FOR MAINTAINING MOISTURE IN THE MOUTH
E. Preston Jenkins, 9533 Clement Rd., Silver Spring, Md. 20910
Filed May 25, 1990, Ser. No. 528,875
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—54 **7 Claims**



1. A flexible, hollow pouch inflatable with liquid for selectively suppling liquid to the mouth of the user comprising
means for filling said pouch with liquid,
means for securing the pouch immediately adjacent the hard pallet, and
means responsive to movement of the tongue for dispensing liquid from the pouch.

5,055,109
TORQUE TRANSMITTING ASSEMBLY FOR INTRAVASCULAR DEVICES
Ross Gould, Aptos, and Isidro Gandionco, Fremont, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Filed Oct. 5, 1989, Ser. No. 417,733
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **22 Claims**

1. A torque transmitting assembly for intravascular devices having elongated catheter bodies with flexible members on the distal end thereof, comprising:
a) a support structure including proximal and distal end pieces and a connecting arm having proximal and distal ends secured to the proximal and distal end pieces respectively;
b) a cylindrically shaped housing rotatably mounted on the support structure about the connecting arm between the end pieces thereof;
c) a first rotatable drive means disposed within the interior of the housing and fixed thereto;
d) a second rotatable drive means which is rotatably



mounted within the housing in a torque transmitting relationship with the first drive means, which has a smaller diameter than the first drive means and which has proximal and distal shafts, with at least one of the proximal or distal shafts being rotatably mounted within one of the end pieces of the support structure; and
e) a rotatable shaft secured to the second drive member so that the rotational output thereof is greater than the rotational input imparted to the first drive member.

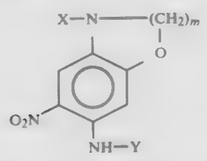
5,055,110

BENZOXAZINE DYES

Mu-Il Lim, Trumbull, and Nancy A. Botta, Darien, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Nov. 22, 1989, Ser. No. 440,567
Int. Cl.[5] C07D *265/36;* A61K *7/13*
U.S. Cl. 8—405 13 Claims

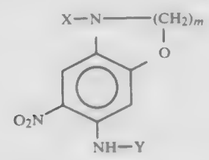
1. Compounds of formula I



(I)

wherein: X and Y are independently selected from the group consisting of: hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy C_{1-6} alkyl, C_{1-6} aminoalkyl, C_{1-6} hydroxyalkyl, and C_{1-6} hydroxyaminonalkyl; and m=2.

11. A method of dyeing a keratinaceous substrate comprising the step of contacting the substrate with at least one dye of Formula I



(I)

wherein: X and Y are independently selected from the group consisting of: hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkyl, C_{1-6} aminoalkyl, C_{1-6} hydroxyalkyl, and C_{1-6} hydroxyaminoalkyl; and m=2.

5,055,111

OXIDIZED POLYGALACTOMANNAN FOR IMPROVED TEXTILE WASHING OF PAD-DYED CARPET

Bruce W. Bomba, Karnes City, Tex., assignor to Aqualon Company, Wilmington, Del.

Filed Mar. 19, 1990, Ser. No. 497,521
Int. Cl.[5] C09B *67/00*
U.S. Cl. 8—561 13 Claims

1. A process for dyeing carpet textile fibers and subsequently treating the textile fibers with a stain-resistant chemical and washing comprises the steps:

(1) adding dye and a polygalactomannan with a molecular weight above 500,000 in combination with from 0.1 to 1.0 percent by weight based on the weight of the polygalactomannan of an oxidizing agent to a textile fiber material in the presence of water wherein the polygalactomannan provides high viscosity for the dyeing of the textile fiber;

(2) heating the dyed textile fiber material in the presence of water, polygalactomannan and oxidizing agent at a temperature of at least 95° C. wherein the dye is set in the textile fiber material and the polygalactomannan is depolymerized;

(3) washing to remove depolymerized polygalactomannan and oxidation by-product;

(4) applying a stain-resist chemical to the textile fiber material; and

(5) washing the textile fiber material with water.

5,055,112

DIESEL PARTICULATE REDUCING 1,2-ALKANEDIOL ADDITIVES

Michael P. Duncan, Lockport, Ill., and Alexander M. Kulinowski, St. Louis, Mo., assignors to Ethyl Petroleum Additives, Inc., St. Louis, Mo.

Filed Oct. 30, 1989, Ser. No. 428,997
Int. Cl.[5] C10L *1/18, 10/00*
U.S. Cl. 44—445 5 Claims

1. A method of claim 5 wherein said particulate-reducing amount is in the range of from about 500 to about 5,000 parts of 1,2-alkanediol per million parts of said fuel composition.

5,055,113

ABRASIVE PRODUCT HAVING BINDER COMPRISING AN AMINOPLAST RESIN

Eric G. Larson, and Alan R. Kirk, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 276,140, Nov. 23, 1988, Pat. No. 4,903,440. This application Oct. 13, 1989, Ser. No. 418,811
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—298 2 Claims

1. An abrasive article comprising abrasive grains, and at least one binder formed from a precursor comprising an aminoplast resin having an average at least 1.1 pendant α,β-unsaturated carbonyl group per molecule, wherein said aminoplast resin is a glycoluril aldehyde.

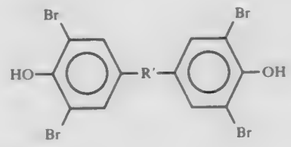
5,055,114

SEMIPERMEABLE MEMBRANES BASED ON SPECIFIED TETRABROMOBISPHENOL TYPE POLYESTERS

James H. Kawakami, Piscataway; Natarajan Muruganandam, Somerville, and George L. Brode, Bridgewater, all of N.J., assignors to Union Carbide Industrial Gases Technology Corporation, Danbury, Conn.

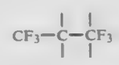
Continuation-in-part of Ser. No. 358,631, May 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,668, Dec. 27, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 443,207
Int. Cl.[5] B01D *69/00*
U.S. Cl. 55—16 34 Claims

24. A process for separating a component from an O_2/N or CO_2/CH_4 gas mixture containing said component which comprises contacting said gas mixture with one side of a gas separation membrane comprising a thin layer consisting predominantly of a polyester or copolyester derived from the reaction of an aromatic dicarboxylic acid or derivative thereof and greater than 50 mole percent of a tetrabromobisphenol of the general formula:



(I)

wherein R′ is



or divalent cyclododecyl and wherein said aromatic dicarboxylic acid or derivative thereof comprises (1) (a) 80 mole percent or more of isophthalic acid or its dichloride and/or 4-bromoisophthalic acid or its dichloride and (b) 20 mole percent

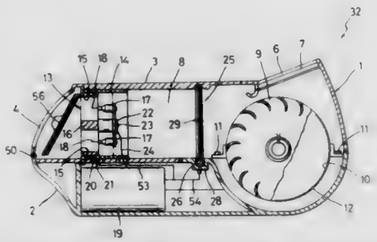
or less of terephthalic acid or its dichloride and/or 2-bromoterephthalic acid or its dichloride as the dicarboxylic acid compound, or (2) (a) 30 mole percent or less of isophthaloyl dichloride and/or 4-homoisophthalic acid or its dichloride and (b) 70 mole percent or more of terephthalic acid or its dichloride and/or 2-bromoterephthalic acid or is dichloride; said membrane having a combination of high selectivity and high permeation rate values, while maintaining a pressure differential across the two sides of the membrane and removing the permeated component from the other side of the membrane.

5,055,115

AIR CLEANER INCLUDING AN ELECTROSTATIC PRECIPITATOR

Kunio Yikai, and Hiroaki Kanazawa, both of Tokyo, Japan, assignors to Hiroaki Kanazawa and Katsumune Shiraishi, both of Tokyo, Japan

Filed Jun. 5, 1989, Ser. No. 361,537
Claims priority, application Japan, Dec. 23, 1988, 63-325439
Int. Cl.[5] B03C *3/00*
U.S. Cl. 55—124 **3 Claims**



1. An air cleaner comprising a case body, an air inlet formed in said case body, an air outlet formed in said case body, an air path formed in said case body for communication of said air outlet with said air inlet, one or more fans mounted within said air path in order to suck air from said air inlet and exhaust it from said air outlet, an electric precipitating apparatus using corona discharge mounted in said air path and comprising a number of discharge electrodes to which a predetermined negative high voltage is impressed, and a dust collecting electrode to which a predetermined positive low voltage is impressed, an ozone removing apparatus comprising a carbon filter mounted in said air path downstream from said electric precipitating apparatus in the air flow, and a voltage impressing apparatus mounted in said case body for applying a predetermined positive low voltage to said carbon filter, whereby said carbon filter adsorbs negatively charged ozone generated in said electric precipitating apparatus and contained in air passing through said carbon filter.

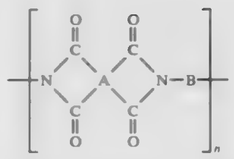
5,055,116

GAS SEPARATION MEMBRANES COMPRISING MISCIBLE BLENDS OF POLYIMIDE POLYMERS

Rachel S. Kohn, Springfield, N.J.; Maria R. Coleman, Austin, Tex., and Tai-Shung Chung, Randolph, N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 355,711, May 22, 1989, Pat. No. 4,929,405. This application Apr. 3, 1990, Ser. No. 505,099
Int. Cl.[5] B01D *53/22, 71/64*
U.S. Cl. 55—16 **22 Claims**

1. A membranous structure for gas separation comprising a miscible blend of at least two polyimide polymers having different molecular structures and different gas transport properties, each of said polyimide polymers having recurring groups of the structure:

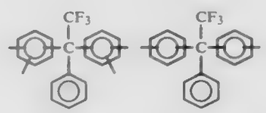


wherein the moiety A is a tetravalent aromatic radical containing at least one benzene, naphthalene or polyphenyl nucleus, the moiety B is a divalent aromatic group, and n is an integer ranging from about 15 to 300, and wherein at least one of the moieties A or B, or both, is selected respectively from a tetravalent or divalent moiety of the formula:



(2) (4)

or or



(3) (5)

wherein any position on any of the aromatic rings of formula (2), formula (3), formula (4), or formula (5) is substituted with a substituent independently selected from the group consisting of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halogen, hydroxy, NO_2, and $HC{=}CH_2$.

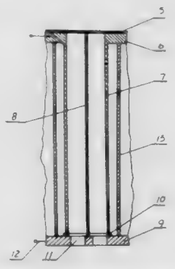
15. In a process for separating gasses comprising bringing two or more gasses under pressure into contact with a molecularly permeable membrane formed of an aromatic polyimide wherein said pressure causes the selective permeation of at least one of said gasses through said membrane, the improvement comprising utilizing as a polymeric membranous structure the structure of claim **1**.

5,055,117

AIR FILTERING APPARATUS

Zhixia Cai, Beijing, China, assignor to Tsinghua University, Beijing, China

Filed May 15, 1990, Ser. No. 524,292
Claims priority, application China, May 23, 1989, 89208018.3
Int. Cl.[5] B03C *3/14*
U.S. Cl. 55—126 **11 Claims**



9. An air purification means with a cylindrical electric field,

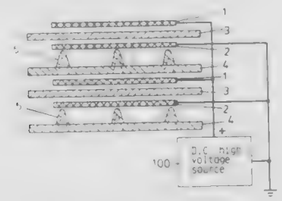
comprising a fibre filter, at least a pair of apertured electrodes, and upper porous plate, a lower porous plate, and a membrane tube, said upper porous plate being adjoined to said fibre filter, a top end of said electrode being fixed between said fibre filter and said upper porous plate, said electrodes being cased inside said membrane tube, and the top end and bottom end of said membrane tube being fixed on said upper porous plate and said lower porous plate respectively.

5,055,118

DUST-COLLECTING ELECTRODE UNIT

Hitoshi Nagoshi, Tonami; Taizou Kimura, and Kazushige Takashima, both of Takaoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP88/00474, § 371 Date Mar. 21, 1989, § 102(e) Date Mar. 21, 1989, PCT Pub. No. WO88/09213, PCT Pub. Date Dec. 1, 1988
PCT Filed May 19, 1988, Ser. No. 304,849
Claims priority, application Japan, May 21, 1987, 62-124227; May 21, 1987, 62-124228; May 21, 1987, 62-124229; May 21, 1987, 62-124230; May 29, 1987, 62-135153; May 29, 1987, 62-135154; May 29, 1987, 62-135155; May 29, 1987, 62-135156; Feb. 16, 1988, 63-33158; Feb. 16, 1988, 63-33159; Feb. 16, 1988, 63-33160
Int. Cl.[5] B03C *3/04*
U.S. Cl. 55—146 **5 Claims**



1. A dust-collecting electrode unit having a plurality of lamination units each comprising:

a first conductive layer,

a first insulation layer which is stacked on one surface of said first conductive layer without a substantial gap to pass dusts,

a second insulation layer, one surface of which is put on the other surface of said first conductive layer without a substantial gap to pass dusts and the other surface of which has plural projections formed thereon, and

a second conductive layer which is stacked on said first insulation layer, wherein

said lamination units are stacked up with said projections supporting a second conductive layer of a next adjacent lamination unit to thereby form a spacial gap between said second insulation layer and said second conductive layer, said spacial gap being large enough to pass said dusts, and

said first conductive layer and said second conductive layer are impressed with a high voltage potential relative to each other from a high voltage source to thereby give said second conductive layer a potential for collecting said dusts.

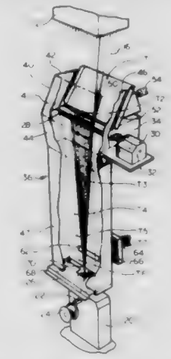
5,055,119

METHOD AND APPARATUS FOR FORMING MIGRATION FREE GLASS FIBER PACKAGES

Martin C. Flautt, Granville, and Leonard J. Adzima, Pickerington, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 13, 1990, Ser. No. 581,942
Int. Cl.[5] C03B *37/02;* **C03C** *25/02*
U.S. Cl. 65—3.1 **20 Claims**

1. In a glass manufacturing process comprising discharging a plurality of molten glass streams from a heated bushing, attenuating said plurality of glass streams into a plurality of fibers, passing said fibers to an applicator which applies an aqueous based size to said fibers, gathering said sized fibers into a strand at a gathering shoe and winding said strand on a collet to form a package, the improvement comprising substantially completely adiabatically evaporating the water from the size applied to said fibers using a chamber having its uppermost portion disposed beneath said bushing to cause adiabatic drying of said fibers using bushing heat so that the fibers of said package are dry and said package is free of migration.

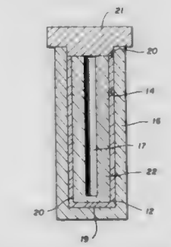


5,055,120

FLUORIDE GLASS FIBERS WITH REDUCED DEFECTS

Danh C. Tran, Bethesda; Reza Mossadegh, Silver Spring, both of Md.; Nicholas Garito, Fairfax, Va., and Mohamad Farid, Silver Spring, Md., assignors to Infrared Fiber Systems, Inc., Silver Spring, Md.

Continuation of Ser. No. 133,723, Dec. 15, 1987, abandoned. This application Mar. 20, 1990, Ser. No. 498,453
Int. Cl.[5] C03B *37/027, 37/012*
U.S. Cl. 65—3.11 **6 Claims**



1. A method of producing an optical fiber having a core and a clad with different indices of refraction, comprising the steps of:

producing a hollow clad tube by spinning a fluoride glass clad metal within a mold until said clad melt solidifies;

initiating pouring of fluoride glass core melt into said clad tube with said clad tube oriented at about 10°–30° from the horizontal, the angle of inclination of said clad tube from the horizontal being sufficiently shallow to provide for the release of bubbles from said core melt; and

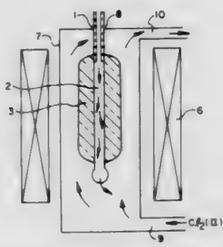
slowly raising said clad tube to a vertical orientation while continuing to pour said fluoride glass core melt to fill the clad tube hollow and while continuing the release of bubbles from the core melt, and then solidifying the core melt to thereby provide a solid optical fiber preform, said slowly raising of said tube being sufficiently slow such that said preform is provided with no trapped gas bubbles;

removing said solid preform from said mold; and elongating and drawing said solid preform into said optical fiber.

5,055,121
METHOD FOR PRODUCING GLASS PREFORM FOR OPTICAL FIBER

Hiroo Kanamori; Yoichi Ishiguro, and Gotaro Tanaka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 251,845, Oct. 3, 1988, abandoned. This application Jul. 27, 1990, Ser. No. 560,024
Claims priority, application Japan, Oct. 7, 1987, 62-251573
Int. Cl.[5] C03B *37/018, 37/014*
U.S. Cl. 65—3.12 **2 Claims**



1. A method for producing a glass preform for an optical fiber, said method comprising the steps of:

depositing soot of quartz glass by a vapor phase axial deposition method on a pipe starting member having an axial bore which pipe extends lengthwise in the same direction as a growth direction of the glass soot to be deposited by the vapor phase axial deposition method, the axial deposition being effected by using a plurality of burners for synthesizing glass soot so as (a) to axially deposit a core porous glass body on one end of the pipe starting member using a burner and (b) to axially deposit a cladding porous glass body around the core porous glass body using a different burner to thereby form a porous glass preform consisting of the cladding porous glass body and the core porous glass body, where burners are arranged and sufficient amounts of reactants are fed to the burners so that the entire periphery of the core porous glass body has a larger bulk density than the core internal portion;

said depositing step resulting in the core extending axially from said one end of the pipe starling member such that gas can flow from the exit of the axial bore at said one end of said pipe into and through said core;

heating said porous glass preform in a dehydration gas atomsphere while also supplying a dehydration gas through said axial bore of said pipe, from the exit of said axial bore of the pipe directly into the core internal portion and through the internal portion of the core porous glass body;

heating the resulting dehydrated porous glass preform in an atmospher containing a fluorine-containing gaseous compound to selectively add fluorine to the cladding porous glass body; and

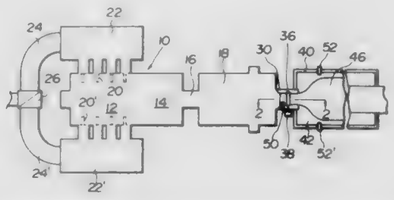
vitrifying the resulting fluorine-added porous glass preform to obtain a transparent preform for an optical fiber.

5,055,122
METHOD OF CONTROLLING FEED OF MOLTEN GLASS ONTO MOLTEN METAL BATH

Yuji Okumura, Ise, and Shoji Saeki, Matsusaka, both of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Feb. 25, 1991, Ser. No. 660,011
Claims priority, application Japan, Feb. 23, 1990, 2-43415
Int. Cl.[5] C03B *18/18*
U.S. Cl. 65—29 **7 Claims**

1. In a method of controlling the volumetric rate of flow of molten glass from a glass melting and refining tank furnace onto a molten metal bath through an opening defined in a canal by an upwardly and downwardly movable tweel by controlling the vertical position of the tweel, the tank furnace being a regenerative furnace having two oppositely arranged sets of burners which are operated periodically alternately with a temporary interruption of firing at each shift of the operation of one set of burners to the operation of the other set of burners,

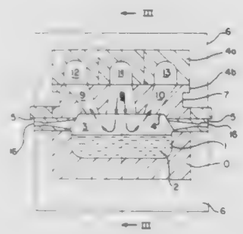


the improvement comprising the step of temporarily lifting the tweel at each shift of the operation of one set of burners in the furnace to the operation of the other set of burners so as to compensate for a decrease in the volumetric rate of flow of the molten glass caused by the temporary interruption of firing in the furnace.

5,055,123
METHOD AND APPARATUS FOR EQUALIZATION OF TEMPERATURE IN A FOREHEARTH IN GLASS MANUFACTURE

Thomas Meacle, Dun Laoghaire, Ireland, assignor to Ardagh Glass Limited, Dublin, Ireland

Filed Jun. 14, 1990, Ser. No. 538,388
Claims priority, application Ireland, Jun. 16, 1989, 1955/89
Int. Cl.[5] C03B *5/23*
U.S. Cl. 65—137 **10 Claims**



1. In a parallel-sided stream of molten glass having a free surface and advancing along and in a tunnel, a method of equalizing the temperature of the glass over the cross-section of the stream by local cooling, wherein the improvement comprises directing at least one current of cooling air downwardly to strike the mid-line of the stream, and at the same time evacuating air upwardly from two locations one on either side of the current of cooling air, the airflow conditions being adapted to preserve substantial side regions of the stream surface from cooling contact with the current of cooling air.

5,055,124
PRODUCTION OF LOW-CHLORIDE FERTILIZERS

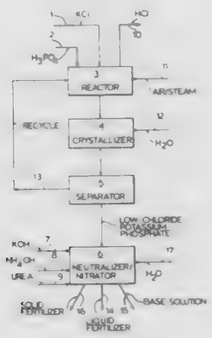
Kim D. Nguyen, and Donald R. Spink, both of Waterloo, Ontario, Canada, assignors to Alpine Plant Foods Limited, New Hamburg, Canada

Filed Oct. 31, 1989, Ser. No. 429,766
Claims priority, application United Kingdom, Oct. 31, 1989, 8825390
Int. Cl.[5] C01B *25/30;* **C05B** *7/00*
U.S. Cl. 71—34 **16 Claims**

1. A process for the production of potassium phosphate, which comprises:

reacting potassium chloride with phosphoric acid in a molar feed ratio of phosphorus to potassium in the range of at least about 1.3:1 at a temperature of about 130° C. to about 200° C. to produce potassium phosphate and by-product hydrogen chloride,

removing said hydrogen chloride from the reaction mixture by passing air through the reaction mixture during a first portion of the period of reaction of the potassium chloride



and by passing steam through the reaction mixture during the remainder of the period of reaction of the potassium chloride to result in a potassium phosphate product having a residual chloride content of less than about 2 wt. %, and

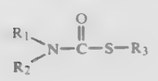
recovering the removed hydrogen chloride in the form of hydrochloric acid having a concentration of at least about 20 wt. % HCl.

5,055,125
ANTIDOTED HERBICIDE COMPOSITIONS AND ANTIDOTE COMPOSITIONS

György Matolcsy; Antal Gimesi; Antalné Tombor; Barna Bordás, all of Budapest; Jánosné Benczik; Zoltán Kolonics, both of Balatonalmádi; Csaba Söptei, Veszprém; Sándor Boros, Balatonalmádi; Ágota Kéner, Füzfogyártelep; Denzso Sebok; Géza Szabó, both of Veszprém, and Imre Varga, Balatonalmádi, all of Hungary, assignors to Nitrokémia Ipartelepek, Budapest, Hungary

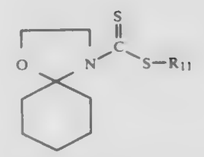
Filed Apr. 10, 1990, Ser. No. 507,314
Claims priority, application Hungary, Apr. 11, 1989, 2251-1720/89
Int. Cl.[5] A01N *43/76*
U.S. Cl. 71—88 **7 Claims**

1. A herbicide composition comprising a herbicidally effective amount of a thiolcarbamate derivative of the formula



(I)

wherein R_1, R_2, and R_3 are independently of one another C_{1-4} alkyl, or R_1 or R_2 is a C_{4-6} cycloalkyl group and as a safener (antidote) an antidotally effective amount of a dithiocarbamic acid derivative of the formula



(III)

wherein R_{11} is a C_{1-3} alkyl or C_{2-3} alkenyl group, the weight ratio of the herbicide of formula (I) to the safener of formula (III) being from 50:1 to 5:1.

5,055,126
COMPOSITION FOR INCREASING THE YIELD OF SOYBEANS

Wilfried Dathe, Halle/Saale, German Democratic Rep.; Sarah A. Castro Lara, Havanna, Cuba; Reynaldo L. Gutierrez, Havanna, Cuba; Miguel A. Cueto Rodriguez, Havanna, Cuba, and Guenther Sembdner, Halle/Saale, German Democratic Rep., assignors to Akademie der Wissenschaften der DDR, Berlin, Fed. Rep. of Germany and Akademie der Wissenschaften Kubas, Institut Fuer Grundlagen der Tropischen Landwirtschaft "Alexander von Humboldt", Havanna, Cuba

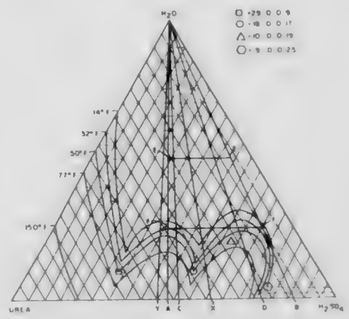
Continuation of Ser. No. 51,956, May 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 543,013, Oct. 11, 1983, abandoned. This application Feb. 21, 1989, Ser. No. 315,171
Claims priority, application Cuba, Oct. 11, 1982, 35729
Int. Cl.[5] A01N *43/08*
U.S. Cl. 71—89 **10 Claims**

1. Composition for increasing the yield of soybeans, comprising as active substance gibberellic acid and salicylic acid in an agriculturally acceptable carrier, said gibberellic acid and said salicylic acid in a ratio from 1:10 to 1:20.

5,055,127
VEGETATION CONTROL WITH MONOUREA SULFURIC ACID

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 444,667, Nov. 26, 1982, abandoned. This application Aug. 22, 1988, Ser. No. 235,005
The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.
Int. Cl.[5] A01N *47/28, 59/02*
U.S. Cl. 71—83 **35 Claims**



1. A method for controlling the growth of vegetation which comprises contacting the foliage of said vegetation with a herbicidally effective amount of a composition comprising the monourea adduct of sulfuric acid.

5,055,128

SINTERED FE-CO TYPE MAGNETIC MATERIALS

Yoshisato Kiyota, and Osamu Furukimi, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

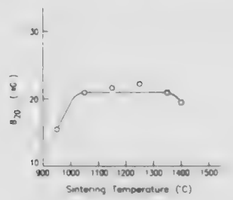
PCT No. PCT/JP89/00537, § 371 Date Jan. 24, 1990, § 102(e) Date Jan. 24, 1990, PCT Pub. No. WO89/12112, PCT Pub. Date Dec. 14, 1989

PCT Filed May 30, 1989, Ser. No. 460,097

Claims priority, application Japan, May 30, 1988, 63-130088; Aug. 20, 1988, 63-206707; Aug. 20, 1988, 63-206710

Int. Cl.[5] B22F *9/00*

U.S. Cl. 75—246 **3 Claims**



1. A sintered Fe-Co type magnetic material comprising 15–60 wt. % of Co, not greater than 0.04 wt. % of O, not greater than 0.02 wt. % of C and the remainder of Fe and imperative impurities, having a sintered density ratio of at least 95% and an average crystal grain size of at least 50 μm.

5,055,129

RARE EARTH-IRON-BORON SINTERED MAGNETS

Mohammad H. Ghandehari, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 48,321, May 11, 1987, Pat. No. 4,981,513. This application Jun. 18, 1990, Ser. No. 537,888

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—255 **13 Claims**

1. A composition for preparing permanent magnets comprising:

(a) a particulate alloy containing iron, boron, and at least one light rare earth metal, said particulate alloy comprising a main magnetic phase having an empirical formula of about $RE_2(Fe+Co)_{14}B$, and

(b) at least one particulate metal additive consisting essentially of a heavy lanthanide metal.

5,055,130

METHOD FOR RECOVERING SILVER FROM REFRACTORY MANGANESE ORES

Robert G. Arnold; Norval A. Sinclair, and James E. Sharp, all of Tucson, Ariz., assignors to The Arizona Board of Regents/University of Arizona, Tucson, Ariz.

Filed May 1, 1990, Ser. No. 515,486

Int. Cl.[5] C22B *3/00*

U.S. Cl. 75—744 **12 Claims**

1. A method for recovering silver complexed in a manganese dioxide crystal lattice in manganiferous ore, the method comprising the steps of:

(a) contacting the ore with an effective amount of a direct manganese-reducing *Bacillus polymyxa* bacteria;

(b) maintaining the ore-bacteria mixture at an approximately neutral pH until a sufficient amount of the manganese in the ore is reduced from Mn(IV) to Mn(II), thereby solubilizing the manganese and disrupting the manganese crystal lattice so as to release the complexed silver; and

(c) recovering the released silver.

5,055,131

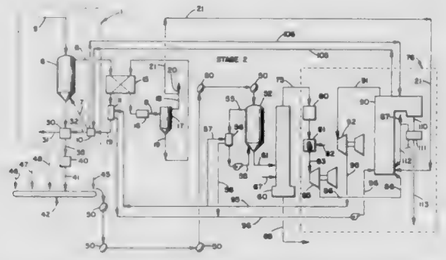
COGENERATION PROCESS FOR PRODUCTION OF ENERGY AND IRON MATERIALS

John M. Lehto, Cokato, Minn., assignor to Northern States Power Company, Minneapolis, Minn.

Continuation of Ser. No. 91,427, Aug. 31, 1987, abandoned. This application Oct. 16, 1989, Ser. No. 423,615

Int. Cl.[5] C21B *11/02*

U.S. Cl. 75—499 **6 Claims**



1. A process for the production of electricity; said process including the steps of:

(a) providing a low grade coal fuel;

(b) performing a pyrolysis procedure on the coal fuel at a temperature of about 600° C. to remove oil and volatiles therefrom, and to generate a resultant coal char product;

(c) pelletizing the coal char product to form coal char product pellets, said step of pelletizing comprising pelletizing at least a portion of the coal char product in combination with reducible solid iron material to form coal char pellets containing reducible solid iron material;

(d) charging a cupola with the coal char product and the reducible solid iron material, said step of charging a cupola being characterized by charging substantially all the coal char product in the form of coal char product pellets and substantially all the reducible solid iron material in the form of pellets containing the coal char product in combination with the reducible solid iron material;

(e) reducing and melting all the reducible solid iron material in the coal char pellets by heating the pellets in the cupola at a suitable temperature under a pressure of at least about 100 psi in the presence of a sufficient upward flow of process gases, with the resultant formation of hot product gases;

(f) tapping the hot product gases from an upper portion of the cupola;

(g) directing the hot product gases downstream to electrical production equipment; and

(h) producing electricity from the hot product gases.

5,055,132

FLOOR POLISH COMPOSITION WITH IMPROVED GLOSS

William J. Fernandez, East Brunswick, and Francis L. McCarthy, Bompton Plains, both of N.J., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1990, Ser. No. 501,641

Int. Cl.[5] C09D *101/00, 4/00;* **C09G** *1/08, 1/10*

U.S. Cl. 106—11 **11 Claims**

1. An aqueous coating composition having a pH of 7 to 9.6 comprising on a weight percent basis:

(a) From about 1 to 20% of an alkali soluble addition polymer comprising:

i) from about 10 to 25% of recurring units of at least one hydrophilic monomer selected from the group consisting of acrylic acid and methacrylic acid;

ii) from about 60 to 75% of at least one hydrophobic monomer selected from the group consisting of alkyl acrylate and alkyl methacrylate wherein alkyl has from 1 to 8 carbon atoms; and

iii) 15 to 25% of recurring units of at least one hydrophobic monomer selected from the group consisting of styrene and monoalkylstyrene wherein alkyl has from 1 to 6 carbon atoms;

the addition polymer has an intrinsic viscosity at 30° C. in tetrahydrofuran of about 0.12 to 0.14 dl/g: an average number molecular weight of from about 15,000 to about 20,000, an acid number between about 110 to 130 and a minimum film forming temperature below about 40° C. at pH 9 and below about 55° C. at pH 6;

(b) from about 1 to 13% of an alkali soluble copolymer of styrene and acrylic acid having a styrene-acrylic acid ratio of about 2:1 to about 3:1, a weight average molecular weight of about 8000 and an acid number of about 210;

(c) from about 5 to 15% of a fugitive plasticizer;

(d) from about 1 to 3% of a permanent plasticizer;

(e) from about 0.5 to 2.0% by weight of 2-pyrrolidone;

(f) from about 0.5 to 2.0% by weight of surfactant having An HLB range of about 13 to 15 and the formula $C_9H_{19}C_6H_4(OCH_2CH_2)_nOH$ wherein N has an average value of about 15;

(g) from 0.01 to 0.05% by weight of a nonionic or anionic fluorocarbon surfactant;

(h) from about 0.0003 to 0.003% by weight of an antifoaming agent; and

(i) sufficient water to make a composition have a total content of non-volatile solids of from about 10 to 25% by weight.

5,055,133

Patent Not Issued For This Number

5,055,134

INTERNAL MOULD RELEASE COMPOSITIONS

Edward F. Cassidy, Brussels, Belgium; Herbert R. Gillis, Sterling Heights, Mich.; Malcolm Hannaby, Leuven, and Alain Parfondry, Evere, both of Belgium, assignors to Imperial Chemical Industries PLC, Millbank, England

Filed Mar. 30, 1989, Ser. No. 331,402

Claims priority, application United Kingdom, Mar. 31, 1988, 8807684

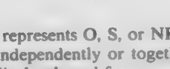
Int. Cl.[5] B29C *33/56, 33/60*

U.S. Cl. 106—38.22 **5 Claims**

1. An internal mould release composition comprising:

(a) a metal salt of an organic acid, said metal salt having mould release properties, and

(b) a compatibilising amount of an amidine or imidate compound or mixture thereof of formula (1)



(1)

wherein X represents O, S, or NR^1 and wherein each of R^1 to R^4, independently or together represents H or an organic radical, selected from:

a) alkyl radicals

b) cyclo alkyl radicals

c) aralkyl radicals and aryl radicals and

d) polymeric chains containing hereto atoms.

5,055,135

FLAME RETARDANT BITUMEN

Louis L. Grube, Bound Brook, and Stanley P. Frankoski, West Milford, both of N.J., assignors to GAF Building Materials Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 394,892, Aug. 17, 1989, abandoned. This application Dec. 21, 1990, Ser. No. 632,219

Int. Cl.[5] C08L *95/00,* **C09K** *21/00*

U.S. Cl. 106—281.1 **12 Claims**

1. A flame retarding roofing or siding membrane composition which comprises:

(a) between about 35 and about 60 wt. % of a petroleum asphalt or asphaltic blend having a Brookfield viscosity of from about 500 to 4,000 cps, a penetration of from about 20 to 350 dmm and a softening point of from about 80° to 200° F.;

(b) between about 2 and about 30 wt. % of a thermoplastic copolymeric styrene modifier and

(c) between 35 and about 50 wt. % of colemanite, combined to provide 100% composition.

5,055,136

HEAT-STABLE IRON OXIDE BLACK PIGMENTS, PROCESSES FOR THEIR PRODUCTION AND THEIR USE

Jürgen Wiese; Gunter Buxbaum, and Peter Kresse, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 14, 1989, Ser. No. 365,839

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1988, 3821341

Int. Cl.[5] C09C *1/22*

U.S. Cl. 106—456 **10 Claims**

1. A heat-stable iron oxide black pigment resistant to hydrothermal treatment in air at temperatures above 180° C. and which has a specific BET surface of 0.5 to 5 m^2/g.

5,055,137

WATER-INSOLUBLE HIGH TEMPERATURE INK

Cressie E. Holcombe, Jr., Farragut, and Lloyd R. Chapman, Knoxville, both of Tenn., assignors to ZYP Coatings, Inc., Oak Ridge, Tenn.

Filed Dec. 11, 1989, Ser. No. 448,510

Int. Cl.[5] C04B *12/04;* **C09D** *1/02, 11/00*

U.S. Cl. 106—600 **16 Claims**

1. A composition which comprises about 69 to about 79 wt. % water and about 21 to about 31 wt. % R_2O and SiO_2, where R_2O is selected from the group consisting of a mixture of Li_2O and K_2O and a mixture of Li_2O, K_2O and Na_2O, said R_2O and said SiO_2 having a molar ratio of about 0.24 to about 0.29, and said K_2O being about 35 to about 85% of the total molar amount of said R_2O.

5,055,138

CLEANING AND DRYING OF ELECTRONIC ASSEMBLIES

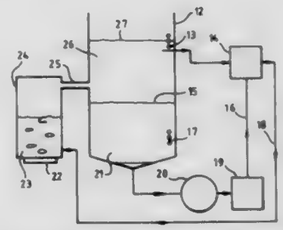
David S. L. Slinn, Bristol, Great Britain, assignor to ISC Chemicals Limited, London, Great Britain

Filed Jul. 7, 1989, Ser. No. 376,651

Claims priority, application United Kingdom, Jul. 8, 1988, 8816343; Feb. 2, 1989, 8902280

Int. Cl.[5] B08B *5/00*

U.S. Cl. 134—11 **6 Claims**



1. A method of cleaning and drying components by contact with a hydrogen-containing flammable, liquid organic solvent in a container, wherein the solvent surface is covered by a vapour layer rich in a highly fluorinated organic compound, which transfers heat to the organic solvent, and wherein the component to be cleaned is contacted with the liquid organic solvent, removed therefrom, vapour-rinsed or dried in the

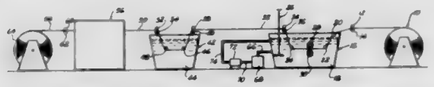
highly fluorinated compound-rich vapour layer and then removed from the cleaning environment.

5,055,139

REMOVAL OF A POLYMERIC COATING FROM A POLYESTER SUBSTRATE

David L. Personette, Slaughterville, Okla., assignor to Morris Resources, Inc., Noble, Okla.

Filed Jul. 11, 1990, Ser. No. 551,763
Int. Cl.[5] B08B *3/08, 3/10, 7/02*
U.S. Cl. 134—22.17 **21 Claims**



1. A method for reclaiming a polyester substrate from a polymeric-coated polyester substrate by removal of the polymeric coating therefrom wherein the polymeric constituents of the polymeric coating consist essentially of polyvinyl dichloride latex, synthetic latex and mixture thereof, the method comprising:

contacting the polymeric-coated polyester substrate with an aqueous solution containing from about 0.75 to about 11.25 weight percent trisodium phosphate and from about 0.75 to about 11.25 weight percent of an alkali metal hydroxide for a period of time effective to remove the polymeric coating and produce a coating-free polyester substrate; and

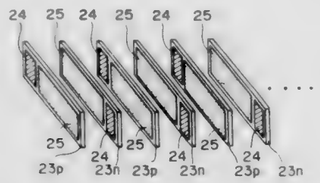
recovering the coating-free polyester substrate.

5,055,140

THERMOELECTRIC ELEMENT USING SEMICONDUCTIVE CERAMIC MATERIAL

Akira Kumada, and Norimitsu Kitoh, both of Kyoto, Japan, assignors to Murata Mfg. Co., Ltd., Japan

Filed Oct. 5, 1988, Ser. No. 253,718
Claims priority, application Japan, Oct. 5, 1987, 62-251351; Oct. 5, 1987, 62-251352
Int. Cl.[5] H01L *35/28*
U.S. Cl. 136—212 **12 Claims**



1. A compact, miniaturizable thermoelectric element comprising:

a stack comprising a plurality of closely stacked plate members made of semiconductive ceramic materials exhibiting Seebeck effects, each plate member having first and second opposite surfaces which extend in a longitudinal direction of said plate member and in a width direction, a width dimension of said plate member being smaller than a longitudinal dimension, said plurality of plate members also having a thickness dimension which is smaller than said width dimension and being so stacked in a thickness direction that said first and second surfaces of the plate members are arranged alternately within said stack so as to face each other; and

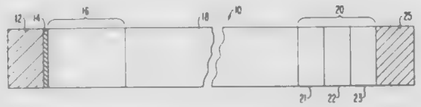
an insulating layer and a conductor layer provided adjacent to one another between each facing pair of said first and second surfaces in the stacked arrangement of said plurality of plate members, both said insulating layer and conductor layer being in contact with both of said facing pair of first and second surfaces.

5,055,141

ENHANCEMENT OF SHORT-CIRCUIT CURRENT BY USE OF WIDE BANDGAP N-LAYERS IN P-I-N AMORPHOUS SILICON PHOTOVOLTAIC CELLS

Rajeewa R. Arya, Jamison, and Anthony W. Catalano, Rushland, both of Pa., assignors to Solarex Corporation, Rockville, Md.

Filed Jan. 19, 1990, Ser. No. 467,367
Int. Cl.[5] H01L *31/075, 31/18*
U.S. Cl. 136—258 **13 Claims**



1. A photovoltaic cell, comprising:

a transparent substrate;

a transparent front conductive layer formed on said substrate;

a p-type layer formed on said front conductive layer;

an i-layer of amorphous silicon formed on said p-layer;

an n-type sandwich structure of amorphous silicon formed on said i-layer, said n-type sandwich structure including first, second, and third n-layers successively formed on one another, said first n-layer being formed on said i-layer to form a rectifying junction therewith, said second n-layer being formed on said first n-layer, and said third n-layer being formed on said second n-layer, said second n-layer having an optical bandgap wider than respective optical bandgaps of said first and third n-type layers and said i-layer;

said second n-layer having a thickness at least two times the thickness of each of said first and third n-layers; and

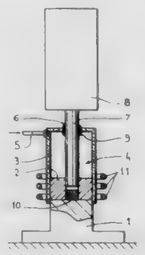
a back contact layer of conductive material formed on said third n-layer to form an ohmic contact therewith.

5,055,142

PROCESS FOR PREPARING PERMANENT MAGNETS BY DIVISION OF CRYSTALS

René Perrier de la Bathie, Saint Pierre d'Albigny, and Joël Chavanne, Grenoble, both of France, assignors to Centre National de la Recherche Scientifique, France

PCT No. PCT/FR87/00175, § 371 Date Dec. 26, 1990, § 102(e) Date Dec. 26, 1990, PCT Pub. No. WO87/07425, PCT Pub. Date Dec. 3, 1987
PCT Filed May 21, 1987, Ser. No. 143,616
Int. Cl.[5] H01F *41/02*
U.S. Cl. 148—101 **4 Claims**



1. A process for preparing a magnet that is permanent at ambient temperatures, comprising the steps of

selecting a bulk-state alloy having magnetic crystals, said alloy containing a mixture of a ferromagnetic transition element, boron, and at least one element chosen from the group consisting of the rare earth elements and yttrium;

heating and maintaing the bulk-state alloy in a controlled atmosphere to a temperature within a range of 400 degrees C. to 1050 degrees C. wherein the bulk-state allow is a two-phase mixture, one phase being solid and the other liquid;

mechanically welding the two-phase bulk-state alloy with a deformation ratio of at least ten, sufficient to fracture magnetic crystals of said solid phase into smaller particle sizes;

permitting the bulk-state alloy to cool; and annealing or tempering the bulk-state alloy at a temperature between about 600 degrees C. and 1000 degrees C.

5,055,143

RE-ENTRANT ANGLE CLOSURE ON SUPERPLASTICALLY FORMED STRUCTURE

Max R. Runyan, Huntington Beach; Carolyn Salmon, Long Beach, and Scott D. Silliman, Huntington Beach, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 26, 1990, Ser. No. 498,557
Int. Cl.[5] C22F *1/18;* **B21D** *22/26*
U.S. Cl. 148—11.5 R **13 Claims**

5. A method of superplastic forming and diffusion bonding a metallic structure in a limiting fixture having opposing upper and lower surfaces and defining a cavity therebetween, comprising;

stacking at least two worksheets in facing contact with each other;

inserting at least one doubler between any of said at least two worksheets, said doubler having an outside and inside perimeter similar to the outside and inside perimeter of said upper and lower surfaces of said limiting fixture;

sealing said worksheets and said doubler near said outside perimeter while providing means for the admission of pressurized gas between said sealed worksheets producing at least one inflatable pair of worksheets;

positioning said at least one pair of worksheets and said at least one doubler over said cavity and between said upper and lower surfaces of said limiting fixture;

heating said worksheets to a temperature suitable for superplastic forming and applying gas pressure at said means for the admission of pressurized gas, producing a differential pressure between the inside and outside of said at least one inflatable pair of worksheets with said at least one doubler, causing said worksheets to expand, forming a cavity; and

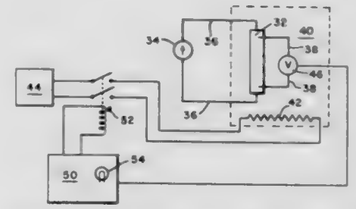
applying force at said opposing upper and lower surfaces of said limiting fixture to forge the portions of said at least two sheets and said at least one doubler located between said opposing upper and lower surfaces of said limiting fixture so as to extrude into said expanded worksheet cavity at the juncture of said innermost worksheets to substantially fill the reentrant angle that would otherwise occur at the juncture.

5,055,144

METHODS OF MONITORING PRECIPITATES IN METALLIC MATERIALS

Gordon E. Fish, Verona; Ryusuke Hasegawa, Morristown, and Ernest D. Buff, Far Hills, all of N.J., assignors to Allied-Signal Inc., Morris Township, Moris County, N.J.

Continuation-in-part of Ser. No. 415,468, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 323,031, Mar. 10, 1989, abandoned, which is a continuation of Ser. No. 195,431, May 16, 1988, abandoned, which is a continuation of Ser. No. 81,620, Aug. 3, 1987, abandoned, which is a continuation of Ser. No. 913,556, Sep. 29, 1986, abandoned, which is a continuation of Ser. No. 689,215, Jan. 7, 1985, abandoned. This application Jun. 26, 1990, Ser. No. 543,632
Int. Cl.[5] C21D *1/54*
U.S. Cl. 148—129 **12 Claims**



1. A method for annealing a starting material composed of an amorphous metal alloy wherein at least a portion of said starting material is transformed into a transformed material having a resistivity different from that of said starting material, comprising the steps of:

a. heating said starting material to a preselected temperature;

b. measuring the resistivity of said material while at said temperature;

c. maintaining said starting material at said preselected temperature until a preselected change in resistivity thereof is detected, said preselected change in resistivity being a fractional change in resistivity ranging from about 0.01 to 0.2; and

d. cooling said material when said preselected change in resistivity has been detected.

5,055,145

PRODUCTION PROCESS OF FERRITE STAINLESS STEEL COVERED WITH OXIDE WHISKER

Yuji Ikegami; Shinichi Sasayama; Noboru Tachino, and Takeshi Kamiya, all of Kawasaki, Japan, assignors to Nippon Yakin Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 277,649, Nov. 29, 1988. This application Aug. 15, 1989, Ser. No. 393,946
Claims priority, application Japan, Nov. 30, 1987, 62-299711; Jul. 6, 1988, 63-166958; Jul. 6, 1988, 63-166959; Sep. 6, 1988, 63-221279
Int. Cl.[5] F01N *3/10*
U.S. Cl. 148—285 **3 Claims**



1. A process for controlling the continued growth of alumina whisker on ferrite stainless steel, comprising:

heating ferrite stainless steel covered with alumina whisker at a temperature between 1000° C. and 1200° C. for about 1 minute to 1 hour.

5,055,146

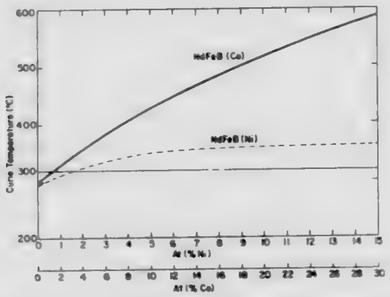
PERMANENT MAGNET ALLOY

Kalathur S. V. L. Narasimhan, Monroeville, and Bao-Min Ma, Pittsburgh, both of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 629,389, Jul. 10, 1984, abandoned. This application Jun. 9, 1989, Ser. No. 364,519

Int. Cl.[5] C22C *38/40*

U.S. Cl. 148—302 **1 Claim**



1. A permanent magnet alloy consisting essentially of, in atomic percent, a rare earth element selected from the group consisting of neodymium and mischmetal 10 to 20, nickel 2 to 15, boron 2 to 14 and balance iron.

5,055,147

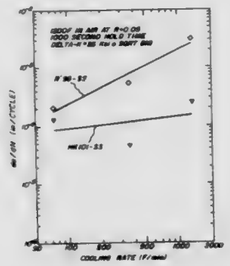
FATIGUE CRACK RESISTANT RENE' 95 TYPE SUPERALLOY

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1988, Ser. No. 290,400

Int. Cl.[5] C22C *19/005*

U.S. Cl. 148—428 **4 Claims**



1. As a composition of matter an alloy consisting essentially of the following ingredient in the following proportions:

Ingredient	Concentration in Weight % Claimed Composition From	To
Ni	balance	
Co	4	12
Cr	10	16
Mo	2	6
Al	2.5	4.5

-continued

Ingredient	Concentration in Weight % Claimed Composition From	To
Ti	1.5	3.2
Ta	5.0	6.0
Nb	1.0	3.0
Re	0.0	3.0
Hf	0.0	0.75
Zr	0.00	0.10
V	0.0	0.5
C	0.0	0.20
B	0.01	0.10
W	0.0	1.0
Y	0.0	0.1

said composition having been cooled at a rate of approximately 600° F. per minute or less.

5,055,148

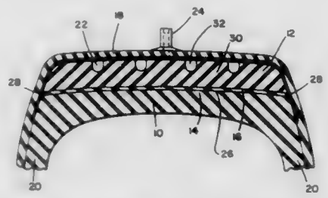
METHOD FOR RETREADING TIRES

Robert B. Lindsay, Akron, and Gary C. Parrish, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 26, 1989, Ser. No. 357,148

Int. Cl.[5] B29C *35/02*

U.S. Cl. 156—96 **7 Claims**



7. A method of retreading a tire comprising the sequential steps of:

a) placing an assembly comprising a tire casing having a precured tread having a pair of axially opposed tread edges, said tread being disposed over a crown region of said tire casing, and a vulcanizable material disposed between said tread and tire casing, and an envelope means disposed over said tread and at least a portion of both sidewalls of said tire casing, into a pressure chamber;

b) supplying both fluid pressure and heat to said chamber while maintaining a pressure under said envelope means considerably less than an operating pressure of said chamber until the vulcanizable material located along said tread edges begins to soften and flow;

c) supplying fluid pressure to said envelope means at a predetermined pressure to stabilize said flow of vulcanizable material along the tread edges;

d) curing the vulcanizable material along the tread edges;

e) supplying additional fluid pressure to said envelope means at another predetermined pressure; and

f) curing the remainder of vulcanizable material.

5,055,149

METHOD FOR CENTERING AND JOINING TWO BELT COMPONENTS

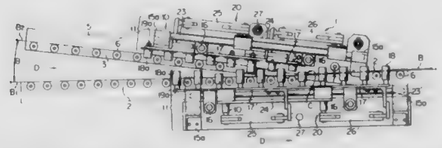
Yuichiro Ogawa, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 214,925, Jun. 30, 1988, Pat. No. 4,917,755, which is a continuation of Ser. No. 839,625, Mar. 14, 1986, abandoned. This application Jan. 23, 1990, Ser. No. 469,083

Claims priority, application Japan, Mar. 19, 1985, 60-57385

Int. Cl.[5] B60C *9/14, 9/16;* **B29D** *30/08, 30/16*

U.S. Cl. 156—124 **2 Claims**



1. A belt joining method for tire building drums, comprising the steps of;

conveying a first belt component having a plurality of steel cords and a second belt component having a plurality of steel cords so that the steel cords of said first and second belt components become substantially equal in cord direction and cord angle in relation to one another;

centering said first and second belt components so that center axes of said first and second belt components are vertically aligned with each other;

pressing and joining one upon the other said centered first and second belt components with said steel cords of said first and second belt components disposed in the same cord direction and same cord angle;

feeding the joined belt components, wherein the steel cords of said first and second belt components are equal in cord direction and cord angle in relation to one another, as a unit to a tire building drum;

wrapping the fed first and second belt components simultaneously in one step around said tire building drum and then cutting said components simultaneously to a predetermined length along the same cord directions of said first and second belt components.

5,055,150

PROCESS AND APPARATUS FOR PRODUCING COATED POLYMER SHEETS HAVING OXYGEN AND MOISTURE BARRIER PROPERTIES AND COATED POLYMER SHEETS THUS PRODUCED

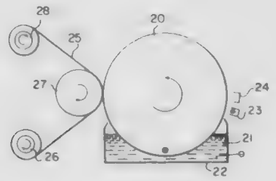
Aron M. Rosenfeld; Paul Smits, both of Kingston, Canada, and Howard F. DeFerrari, Louisville, Ky., assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 306,515, Feb. 3, 1989. This application Feb. 8, 1990, Ser. No. 476,793

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

Int. Cl.[5] B44C *1/00*

U.S. Cl. 156—150 **20 Claims**



1. A process for providing a polymer sheet other than a packaging film with a coating having moisture and oxygen barrier properties, which process comprises:

providing a metal substrate comprising a valve metal or an anodizable valve metal alloy, at least at an exposed surface of said substrate;

anodizing said metal substrate at said exposed surface to form an anodic film of valve metal oxide on said metal substrate, said anodization being carried out in the presence of an adhesion-reducing agent capable of making said anodic film readily detachable from said metal substrate;

attaching a polymer sheet other than a packaging film to said anodic film; and

detaching said anodic film and attached polymer sheet from said metal substrate to form a coated polymer sheet.

5,055,151

POROUS FILAMENTARY MATS AND METHOD OF MAKING SAME

Thomas P. Duffy, Des Peres, Mo., assignor to Greenstreak Plastic Products Company, St. Louis, Mo.

Continuation of Ser. No. 146,731, Jan. 21, 1988, abandoned. This application Aug. 9, 1989, Ser. No. 393,085

Int. Cl.[5] B32B *31/20, 31/26*

U.S. Cl. 156—167 **9 Claims**

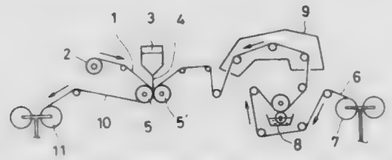


1. A method of making a plural-layer, porous, filamentary mat which consists essentially of forming a plurality of rows of fluid thermoplastic filaments and causing the filaments of said plurality of rows of filaments to approach and to be underlain and to be temporarily supported by a support which carries said filaments with it to cause the filaments of one of said plurality of rows of filaments to form a filamentary layer that overlies and engages said support and to cause the filaments of a further of said plurality of rows of filaments to form a further filamentary layer which overlies and engages the first said filamentary layer, moving said support at a rate of speed which is less than the rate at which said filaments of said plurality of rows of filaments approach said support so said filaments of said plurality of rows of filaments form bends as said filaments form said first said and said further filamentary layers, causing said bends to create crossing between portions of each said filament and also to create crossings between portions of each said filament and portions of adjacent filaments, supplying sufficient heat to said filaments of said plurality of rows of filaments to cause said filaments to be at bonding temperature as they form said crossings so initial thermal bonds automatically form at each of said crossings, and subsequently enhancing the initial thermal bonds of the crossings of said filaments of said plurality of rows of filaments by producing deeper and longer bonds of said crossings requiring a substantially greater force to separate said filaments than said initial thermal bonds throughout said filament mat, the enhancing of said initial thermal bonds to produce said deeper and longer bonds being accomplished by remolding the bonds of said crossings into said deeper and longer bonds while said crossings are at bonding temperature

5,055,152
EASILY SEPARABLE LAMINATED/PERFORATED FILM FOR PACKINGS, AND ITS MANUFACTURING METHOD

Hiromichi Inagaki, Inuyama, Japan, assignor to Mitsubishi Monsanto Chemical Company and Nihon Tokkyo Kanri Company Limited, both of Tokyo, Japan

Filed Nov. 29, 1989, Ser. No. 443,706
Claims priority, application Japan, Nov. 30, 1988, 63-304624; Dec. 10, 1988, 63-312361
Int. Cl.[5] B29C *47/00*; B32B *31/18*
U.S. Cl. 156—244.11 4 Claims

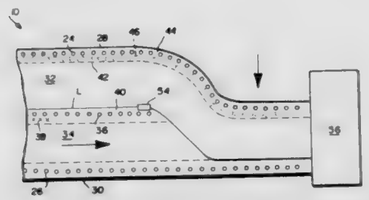


1. A method for forming an easily separable laminated/perforated film, comprising the steps of:
providing a plastic film in a fused state;
providing a plastic perforated film said perforated film including brim portions protruding to form crater profiles with a protrusive mouth brim on one side of said perforated film, pressing said fused state plastic film against said perforated film on the protrusive mouth brim side and deforming the mouth brims within the fused state plastic film.

5,055,153
PROCESS FOR PROVIDING A MULTIPLE PART FORM FOR NON-IMPACT PRINTER

Michael W. Anderson, Erie, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 331,302, Mar. 31, 1989, Pat. No. 4,925,243. This application Mar. 9, 1990, Ser. No. 491,057
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—252 15 Claims

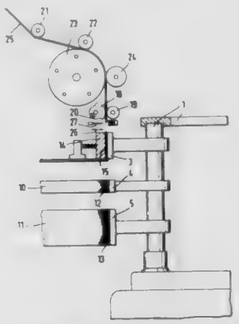


1. A process for providing a multi-part business form wherein a first upper part overlies a second lower part, said first upper and said second lower parts constructed so that information applied to a face of said first upper part will transfer onto a face of said second lower part, and wherein at least one of said first upper and said second lower parts is preprinted with variable information which is not transferred onto the other of said first upper and second lower parts, the process comprising:
(a) providing a web having longitudinal marginal edges, and divided longitudinally into first and second form parts;
(b) applying a first image transfer means to one side of said first form part;
(c) applying a second cooperating image transfer means to an opposite side of said second form part;
(d) printing variable information on one or both of said first and second form parts;
(e) longitudinally slitting the web to separate the first and second form parts; and
(f) interstacking said first and second form parts to form said first upper and said second lower form parts, with said first and second image transfer means being in full surface engagement.

5,055,154
METHOD AND APPARATUS FOR AFFIXING LABELS AND/OR FOILS TO BOTTLES

Rudolf Zodrow, Lichtstr. 37, 4000 Dusseldorf, Konstrukteur, and Hans-Werner Mohn, Hardenbergstr. 12, 4044 Kaarst 2, Konstrukteur, both of Fed. Rep. of Germany

Filed Mar. 12, 1980, Ser. No. 129,763
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913538
The portion of the term of this patent subsequent to Dec. 8, 1999, has been disclaimed.
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—256 15 Claims



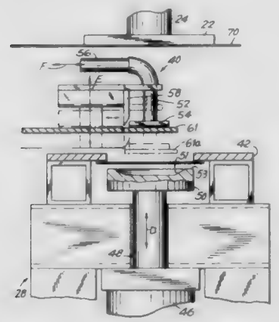
1. In a method for affixing member such as labels and foils to bottles wherein cut-to-size members are picked up by pick-up elements at a station, glue-coated as they are picked up, turned over, and pressed onto a bottle by their glue-coated side, the improvement wherein the pick-up station is rotationally stationary and and presents a planar pick-up surface and further comprising severing the members from a continuous roll of web material and individually and successively feeding the severed members, before coating, to the planar surface of the stationary pick-up station in unison with and at the rate at which the pick-up elements pass the pick-up station to pick up the severed members.

5,055,155
METHOD AND APPARATUS FOR LAMINATING FLEXIBLE MAGNETIC STRIPS ONTO FLEXIBLE PLASTIC SUBSTRATES

Wayne E. Crotty, Cincinnati, and Harold J. Phelps, Milford, both of Ohio, assignors to Texstyle, Inc., Cincinnati, Ohio

Filed Oct. 12, 1989, Ser. No. 420,447
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—256 44 Claims

1. An apparatus for laminating segments of a flexible magnetic material to a flexible plastic substrate, said apparatus comprising:
a. means for supplying an adjustable length segment of a flexible plastic substrate to a support frame configured with a substantially planar upper work surface adapted to facilitate passage of said flexible substrate thereacross from a first edge to a second edge thereof, said substrate having a front surface and an opposed rear surface;
b. a support frame comprising
1. a plurality of interconnected leg members adapted to support a substantially flat, smooth upper work surface, said upper work surface defining at least one aperture therethrough to permit access by at least one corresponding laminating means, positioned below said work surface, to said rear surface of said plastic substrate as said substrate moves across said work surface;
2. an adjustably positioned upper mounting member located transversely above said upper work surface and configured and adapted to support at least one anvil means providing backing support for said front surface of said substrate during lamination of said flexible magnetic segments to said rear surface thereof;
3. an adjustably positioned lower mounting member extending substantially parallel to said upper mounting member and below said upper work surface, said lower mounting member configured and adapted for supporting at least one laminating means;

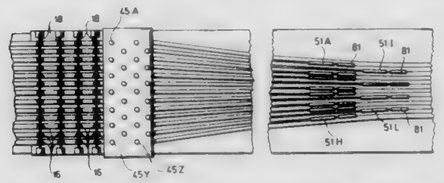


4. at least one laminating means adjustably positioned upon said lower mounting member, each said laminating means being mounted in substantial alignment with one of said anvil means and adapted to laminate to a rear surface of said substrate, a segment of said flexible magnetic material together with a correspondingly positioned segment of a cover patch material placed thereover to maintain said magnetic material in contact with said substrate; and
c. motor drive means, connected to said at least one laminating means and capable of providing sufficient power to operate said laminating means.

5,055,156
FLOORING PANEL MANUFACTURE

Vincent J. Marino, Cooper City, Fla., and John V. Marino, II., Beverly Farms, Mass., assignors to Flex Par K Corp., Essex, Mass.

Filed Jul. 21, 1989, Ser. No. 383,864
Int. Cl.[5] B32B *31/00*; B65H *29/00*
U.S. Cl. 156—499 5 Claims

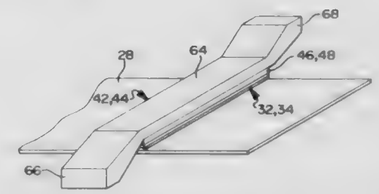


1. Apparatus for assembling rows of wood fillets into panels, said apparatus comprising:
feeder means for periodically advancing said rows step-wise, the fillets in adjacent rows being staggered lengthwise;
a first stage of wedge-shaped heater and gluing blocks, the blocks being transversally tapered along the direction of feed, the blocks being interposed between selected rows of said fillets with the fillets pressing laterally against the blocks, the length of each said heater being at least the length of a fillet thereby to pre-heat the edges of fillets pressing against the block, said blocks having a glue port adjacent the trailing end of each side through which hot melt adhesive is applied to heated edges of fillets being driven past the block;
means for introducing a foam strip between the respective rows of fillets at a point closely following the trailing end of each of said blocks whereby, as the rows converge, they are glued together with a foam strip between them; and
a second stage of heater and gluing blocks similar to those in said first stage, the blocks in said second stage being interposed between all rows which were not glued by said first stage, thee being further means for introducing foam strips at points closely following the trailing ends of the blocks in said second stage
whereby, upon leaving said second stage, said fillets are assembled into panels.

5,055,157
METHOD OF CRYSTAL RIBBON GROWTH

Carl E. Bleil, 132 Chalmers Dr., Rochester, Mich. 48063

Filed Feb. 5, 1990, Ser. No. 475,395
Int. Cl.[5] C30B *13/18*
U.S. Cl. 156—620.7 3 Claims



1. A method of growing a crystal ribbon from source material comprising the steps of:
electrically heating a body of source material to form and maintain a molten film having surfaces coplanar with the desired ribbon via electrodes in contact with one surface of the film,
alternatively supplying heat to the electrodes and removing heat from the electrodes for respectively heating the source material through the electrodes and cooling the electrodes,
cooling the other surface of the film to effect ribbon growth, wherein the combined heating and cooling steps control the temperature gradient in the film normal to the film surface, and
moving the ribbon parallel to the surface in an axial direction away from the molten film.

5,055,158
PLANARIZATION OF JOSEPHSON INTEGRATED CIRCUIT

William J. Gallagher, Ardsley; Chao-Kun Hu, Somers; Mark A. Jaso, Yorktown Heights, all of N.Y.; Mark B. Ketchen, Hadley, Mass.; Alan W. Kleinsasser, Putnam Valley, and Dale J. Pearson, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

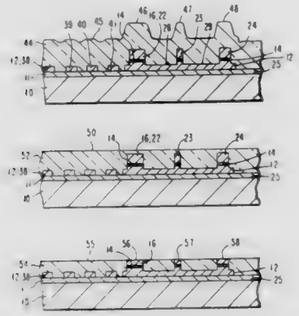
Division of Ser. No. 587,388, Sep. 25, 1990. This application Apr. 4, 1991, Ser. No. 680,441
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C23F *1/02*; C03C *15/00*
U.S. Cl. 156—643 14 Claims

1. A method for making a Josephson integrated circuit comprising the steps of:
first depositing a first layer of superconductor material on the upper surface of a substrate,
second depositing a second layer of insulating material on said first layer,

third depositing a third layer of superconductor material on said second layer to form a trilayer Josephson junction,

fourth etching through said third and second layers into said first layer in selected areas to form spaced apart trilayer areas each having a selected cross-section area parallel to said upper surface and thinned areas of said first layer between said spaced apart trilayer areas,

fifth etching selectively said thinned areas of said first layer to form a conductor for interconnecting selected first layers of said trilayer areas,



sixth depositing a fourth layer of insulating material over said trilayer areas, said conductor and said substrate,

seventh polishing the upper surface of said fourth layer of insulating material to provide a substantially planar surface, and

eighth over polishing said third and fourth layers to expose all of said third layers of said trilayer areas to provide a substantially coplanar surface of said third layer of said trilayer areas and said fourth layer whereby quality Josephson junctions are produced and interconnections to the counter electrodes can be made on a coplanar surface.

5,055,159

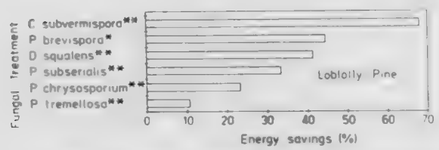
BIOMECHANICAL PULPING WITH *C. SUBVERMISPORA*

Robert A. Blanchette, Shoreview, Minn.; Gary F. Leatham, Madison; Michael Attridge, McFarland; Masood Akhtar, and Gary C. Myers, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 16, 1990, Ser. No. 523,956

Int. Cl.[5] D21C *3/00, 3/20;* C12R *1/645*

U.S. Cl. 162—72 **31 Claims**



1. A method of making a wood pulp comprising the steps of:

(a) chipping wood into wood chips;

(b) introducing the wood chips into a bioreactor;

(c) inoculating the wood chips with an inoculum including a viable culture of the fungus *Ceriporiopsis subvermispora;*

(d) incubating the wood chips under conditions favoring the propagation of the fungus through the wood chips for a sufficient amount of time for the fungus to modify a significant amount of the lignin naturally present in the wood chips; and

(e) mechanically pulping the wood chips degraded by the fungus into a paper pulp.

5,055,160

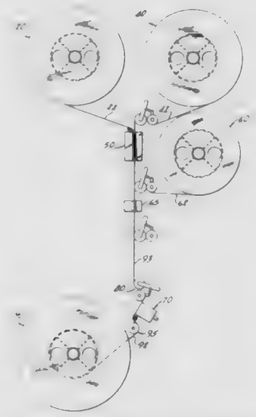
SECURITY PAPER WITH RIGID SEGMENTS

Felipe Gutierrez, Madrid, Spain, assignor to Fabrica Nacional de Moneda Y Timbre, Madrid, Spain

Filed Nov. 19, 1990, Ser. No. 615,559

Int. Cl.[5] D21H *21/42*

U.S. Cl. 162—103 **7 Claims**



1. A hybrid band inserted into water laid paper webs during fabrication, comprising:

A. elastic band carrier means including an adhesive surface;

B. a plurality of rigid segments continuously mounted on said adhesive surface at a predetermined spaced apart relationship between each other;

C. a corresponding plurality of elastic filler means for separating said rigid segments are mounted to said band carrier means and in between said rigid segments thereby keeping said rigid members in a paced apart relationship to each other;

D. elastic jacket means for covering said band carrier means, rigid segments and filler members and said resulting hybrid band having suitable combined elastic properties to stretch with the expansion of said paper webs.

5,055,161

MULTIPLE PLY PAPER PRODUCT CONTAINING AN OUTER PLY OF RECLAIMED WHITE OFFICE WASTE

Roger P. Hoffman, Green Bay, Wis., assignor to Green Bay Packaging Inc., Green Bay, Wis.

Filed Feb. 21, 1991, Ser. No. 658,995

Int. Cl.[5] D21H *11/14*

U.S. Cl. 162—125 **10 Claims**

1. A multiple ply paperboard product, comprising a base ply of cellulosic fibers, an outer ply bonded to the base ply and composed of reclaimed white office waste paper and containing inorganic fillers and toners, and a dry strength additive impregnated in the outer ply, said product having a pH in the range of 6.0 to 8.0, said toners being dispersed as visible dark colored particles in said outer ply and having an average article size less than 300 microns.

5,055,162

EXTRACTIVE DISTILLATION OF CYCLOALKANE/ALKANE FEEDS

Ronald E. Brown; Fu M. Lee, and Michael S. Matson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 21, 1990, Ser. No. 526,364

The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.

Int. Cl.[5] B01D *3/34*

U.S. Cl. 203—56 **18 Claims**



1. In a process for separating at least one cycloalkane containing 5–10 atoms per molecule from at least one close-boiling alkane by extractive distillation of a feed consisting essentially of said at least one cycloalkane and said at least one alkane,

the improvement comprises employing a solvent consisting essentially of a mixture of (a) at least one N-hydroxyalkyl-2-pyrrolidone, wherein the hydroxyalkyl group contains 1–5 carbon atoms, and (b) at least one saturated alcohol selected from the group consisting alkanols and cycloalkanols containing 5–9 carbon atoms and 1 OH group per molecule;

wherein said extractive distillation process produces (i) an overhead distillate product which contains a smaller volume percentage of said at least one cycloalkane and a larger volume percentage of said at least one alkane than said feed, and (ii) a bottoms product which contains said solvent and a larger volume percentage of said at least one cycloalkane and a smaller volume percentage of said at least one alkane than said feed; and wherein said at least one cycloalkane is separated from said solvent and recovered from said bottoms product.

5,055,163

PROCESS FOR PRODUCING A TWO-DIMENSIONALLY EXTENDING METALLIC MICROSTRUCTURE BODY WITH A MULTITUDE OF MINUTE OPENINGS AND A TOOL SUITABLE FOR THIS PURPOSE

Wilhelm Bier, Egg-Leopoldshafen; Asim Maner, Linkenheim, and Klaus Schubert, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Fed. Rep. of Germany

Filed Dec. 18, 1989, Ser. No. 452,456

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1988, 3842610

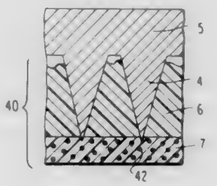
Int. Cl.[5] C25D *1/08*

U.S. Cl. 204—11 **6 Claims**

1. A process for producing a two-dimensionally extending metallic microstructures body having a multitude of minute openings the dimensions and distribution of which are predetermined, comprising the steps of:

a) pressing a tool having microstructures on the surface thereof, wherein the microstructure of the tool taper outwardly, into the electrically insulating layer of a molding material comprising an electrically insulating layer and an electrically conducting layer, so that the microstructures project at least through the insulating layer,

b) withdrawing the tool from the molding material to form an impression in the molding material comprised of openings which taper in the direction of the electrically conductive layer,



c) electroplating the impressions of the molding material with a metal to fill the openings with metal, to form a two-dimensionally extending metallic microstructure having adjacent metal fillings and minute openings by filling the openings in the impression to a height at which the distance between adjacent fillings corresponds at the surface of the fillings to the predetermined dimensions of the openings of the two-dimensionally extending metallic microstructure, and

d) removing the molding material from the two-dimensionally extending metallic microstructure.

5,055,164

ELECTRODEPOSITABLE PHOTORESISTS FOR MANUFACTURE OF HYBRID CIRCUIT BOARDS

Robert E. Hawkins, Upton; Richard Small, Marlborough, and Alaric Naiman, Cambridge, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Mar. 26, 1990, Ser. No. 498,418

Int. Cl.[5] C23C *26/00*

U.S. Cl. 204—15 **16 Claims**

1. A method for forming a hybrid circuit board comprising:

a. providing a three-dimensional featured ceramic substrate having sequentially applied thereon, a resistive layer, a diffusion barrier layer and a metallic conductive layer thereby forming a conductive coating;

b. electrodepositing a photoresist on said conductive coating;

c. imaging said photoresist whereby portions of said conductive coating are exposed;

d. plating said exposed portions of the conductive coating with a conductive metal;

e. stripping said imaged photoresist whereby a stripped surface of said metallic conductive layer is exposed; and

f. etching said stripped surface thereby exposing said three-dimensional featured ceramic substrate.

5,055,165

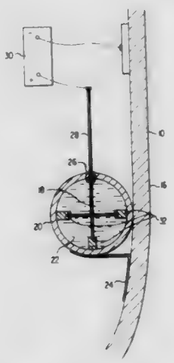
METHOD AND APPARATUS FOR THE PREVENTION OF FOULING AND/OR CORROSION OF STRUCTURES IN SEAWATER, BRACKISH WATER AND FRESH WATER

William J. Riffe, Morehead City, N.C. and Jack D. Carter, Austin, Tex., assignors to Marine Environmental Research, Inc., Morehead City, N.C.

Continuation-in-part of Ser. No. 145,275, Jan. 19, 1988. This application May 15, 1990, Ser. No. 523,418

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—147 **15 Claims**



1. A system comprising:

(a) a conductive structure suitable for being contacted by seawater, brackish water, or fresh water;

(b) a conductive zinc-containing coating applied to and conductively coupled with at least the portion of said structure suitable for being contacted by water, said zinc-containing coating forming an interfacial layer between said structure and said water when said structure is contacted by said water; and

(c) means for (c1) inducing and maintaining a net negative capacitive charge on said zinc-containing coating or (c2) inducing and maintaining an asymmetric alternating electrostatic potential on said zinc-containing coating, sufficient to prevent corrosion or fouling of said structure,

said means comprising at least one condenser bank attached to said structure, wherein, when said structure is contacted by said water, said at least one condenser bank is protected from contact by said water.

5,055,166

SURFACE MOUNTED CATHODIC PROTECTION ANODE AND METHOD OF USE

William R. Schutt, Doylestown, Pa., assignor to Matcor, Inc., Doylestown, Pa.

Filed Dec. 29, 1986, Ser. No. 947,010

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—147 **6 Claims**

1. A method of cathodically protecting a structure including a layer of concrete, said layer including an exposed surface and metal reinforcing members therein, said method comprising the steps of: connecting the metal reinforcing members to a power source for forming cathodes, providing at least one elongated, preformed anode assembly to be secured to said exposed surface, said assembly comprising a strip of mesh material disposed over an elongated electrically conductive wire anode, said mesh material and said anode being embedded within the interior of an elongated strip of electrically conductive concrete, placing said anode assembly on said exposed surface with an adhesive material interposed between the conductive concrete of the anode assembly and the exposed surface to fixedly secure said anode assembly to said layer of concrete with good electrical continuity therebetween, and thereafter connecting said anode assembly to an electrical power source.

5,055,167

METHOD FOR THE COMPLETE UTILIZATION OF HIGH POLYMER WASTE PRODUCTS

Hans-Ulrich Dummersdorf; Wolfgang Jahn; Werner Noack, all of Grimma, and Wolfgang Heidel, Naunhof, all of German Democratic Rep., assignors to Chemieanlagenbau GmbH, Grimma, German Democratic Rep.

Filed Aug. 1, 1990, Ser. No. 561,545

Int. Cl.[5] H05F *3/00*

U.S. Cl. 204—165 **15 Claims**

1. A method for the complete utilization of high polymer waste products or waste product mixtures, comprising converting the polymer waste products by plasma-chemical means into chemical raw materials from which they were originally synthesized.

5,055,168

BINDER FOR CATHODIC ELECTROCOATING

Dirk Lawrenz, Neumuehle, 6733 Hassloch; Eberhard Schupp, 29 Theodor-Storm-Strasse, 6718 Gruenstadt, and Thomas Schwerzel, 51 Budapester Strasse, 6700 Ludwigshafen, all of Fed. Rep. of Germany

Filed Aug. 24, 1988, Ser. No. 235,611

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1987, 3728762

Int. Cl.[5] C25D *13/00*

U.S. Cl. 204—181.7 **6 Claims**

1. A binder for cathodic electrocoating which is water-dilutable on protonation with an acid, containing

(A) from 50 to 95% by weight of a polymerization, polycondensation or polyaddition product having an average molecular weight of from 200 to 20,000, having primary or second hydroxyl groups or a mixture thereof having primary, secondary or tertiary amino groups or a mixture thereof and having an amine number of from 30 to 150 and

(B) from 5 to 50% by weight of a mixture of

(a) blocked polyisocyanates and

(b) one or more phenolic Mannich bases obtainable from

(b_1) one or more polycyclic polyphenols,

(b_2) formaldehyde or a formaldehyde-donating compound and

(b_3) one or more secondary aliphatic amines.

5,055,169

METHOD OF MAKING MIXED METAL OXIDE COATED SUBSTRATES

Vincent F. Hock, Jr.; John H. Givens, both of Champaign, Ill.; Joseph E. Suarez, South Burlington, Vt., and James M. Rigsbee, Champaign, Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 17, 1989, Ser. No. 325,172

Int. Cl.[5] C23C *14/08*

U.S. Cl. 204—192.31 **10 Claims**

1. A process of preparing a mixed metal oxide coated substrate which comprises:

providing in a reactive ion plating chamber a source of a first noble metal;

providing in said reactive ion plating chamber a source of a first valve metal;

positioning in said reactive ion plating chamber a substrate having a surface to be coated, said surface being formed of a valve

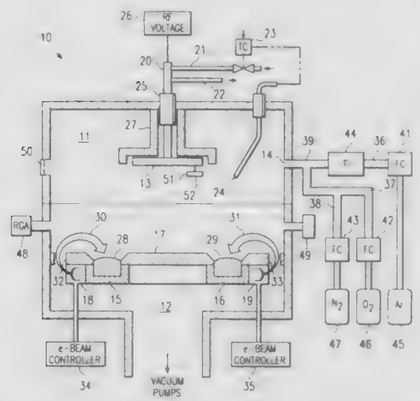
utilizing a first evaporating means to evaporate first noble metal from said source of a first noble metal, thereby forming vaporized first metal atoms in said reactive ion plating chamber;

utilizing a second evaporative means to evaporate metal from said source of a first valve metal, thereby forming vaporized second metal atoms in said reactive ion plating chamber;

controlling said first evaporation means to achieve a rate of evaporation of said noble metal and said second evaporation means to achieve a rate of evaporation of said first valve metal such that the ratio of said vaporized first metal atoms in said reactive ion plating chamber to said vaporized second metal atoms in said reactive ion plating chamber is at a value suitable to form a coating on said substrate surface with the ratio of first noble metal atoms in said coating to first value metal atoms in said coating being at a desired value;

supplying oxygen to said reactive ion plating chamber at a flow rate suitable to provide an amount of oxygen in said reactive ion plating chamber sufficient to react with said first metal atoms and said second metal atoms;

supplying alternating voltage to said substrate in said reactive ion plating chamber during evaporation of said first noble metal and evaporation of said first valve metal, thereby depositing on said surface of said substrate a coating of valve metal oxide and noble metal oxide;



wherein said alternating voltage to said substrate in said reactive ion plating chamber during evaporation of said first noble metal and evaporation of said first valve metal, thereby depositing on said surface of said substrate a coating of valve metal oxide and noble metal oxide;

wherein said alternating voltage is a radio frequency voltage;

wherein said amount of said oxygen is below the value at which there would be a level of reaction between the oxygen in the reactive ion plating chamber and at least one of said source of a first valve metal and said source of a first noble metal sufficient to substantially poison the thus reacted source;

wherein the value of the flow rate of oxygen is above the knee in the plot of oxygen ion current as a function of the oxygen flow rate at constant evaporation rates of said first noble metal and said first valve metal;

wherein said first noble metal is ruthenium and said first valve metal is titanium;

wherein the titanium oxide in said coating is substantially in the rutile form and at least substantially free of the anatase form; and

wherein the ratio of ruthenium atoms in said coating to titanium atoms in said coating is in the range of about 10:90 to about 20:80.

5,055,170

ION CONCENTRATION SETTING APPARATUS FOR IONIC WATER GENERATOR

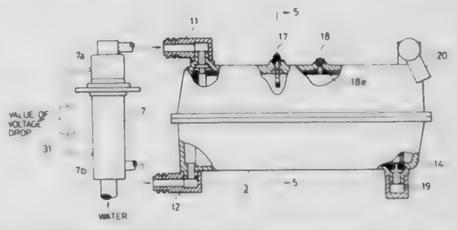
Shiro Saito, Aichi, Japan, assignor to Inax Corporation, Tokoname, Japan

Filed Apr. 9, 1990, Ser. No. 506,067

Claims priority, application Japan, May 2, 1989, 1-113382

Int. Cl.[5] C25B *15/00*; **C25D** *21/00*

U.S. Cl. 204—228 **6 Claims**



1. An apparatus for setting ion concentration in an ionic water generator including a water conduit and an electrolytic cell communicating with the water conduit, said electrolytic cell having at least one set of positive and negative electrodes and an ion-exchange membrane situated between the positive and negative electrodes to separate the same, said apparatus comprising,

means for measuring voltage drop of water in the water conduit,

a memory connected to the measuring means, said memory memorizing voltage drop measured by the measuring means when reference water is supplied to the water conduit,

a calculator for calculating a voltage Vx to be applied to the electrodes in the electrolytic cell to adjust ion concentration based on a set voltage Vn which corresponds to a desired ion concentration in reference water and a proportion k on the basis of the following equation:

$$Vx = k \times Vn,$$

said proportion k being a proportion of voltage drop measured by means of the measuring means when applying reference voltage and using water to be measured relative to voltage drop measured by means of the measuring means when applying reference voltage and using reference water, and

means for applying said voltage Vx calculated by the calculator to said electrodes in the electrolytic cell so that ionic water with a desired concentration is supplied regardless of quality of water.

5,055,171

IONIC SEMICONDUCTOR MATERIALS AND APPLICATIONS THEREOF

Robert L. Peck, Lebanon, Conn., assignor to T and G Corporation, Lebanon, Conn.

Continuation-in-part of Ser. No. 275,977, Nov. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 915,994, Oct. 6, 1986, Pat. No. 4,797,190. This application Jun. 22, 1990, Ser. No. 542,304

Int. Cl.[5] C25B *11/04*

U.S. Cl. 204—290 R **10 Claims**

1. An electrode comprising:

metallic electrode material; and

a nonporous solid composite material encapsulating said electrode material, said composite material comprising an inert matrix material having hydrogel substantially uniformly dispersed therein, the hydrogel comprising 10% to approximately 50% by weight of the dry composite material, there being sufficient bonding between molecules of

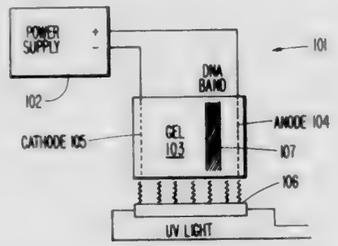
the hydrogel and the matrix material to prevent substantial leach-out of hydrogel molecules from the composite.

5,055,172

ELECTROPHORESIS CONTROL SYSTEM WITH WIDE DYNAMIC RANGE

Frank Cathel, Descanso, and Robert Leshofs, San Diego, both of Calif., assignors to Stratagene Cloning Systems, La Jolla, Calif.

Filed Mar. 23, 1990, Ser. No. 498,201
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—299 R **8 Claims**



1. An electrophoresis system for separating charged chemical substances, comprising

means for applying an electrical potential to a mixture of said charged chemical substances;

first means for generating a first control signal indicating constant voltage, constant current, or constant power supply;

second means for generating a second control signal indicating a choice of level of supply;

third means for generating a constant level of supply of said electrical potential as indicated by said first control signal and second control signal, comprising a flyback transformer having a characteristic frequency exceeding about 20 kilohertz and having at least one primary winding and at least one secondary winding with opposite polarity and having a ferrite core with an air gap.

5,055,173

BATH FOR THE ELECTROLYTIC DEPOSITION OF FINE GOLD COATINGS

Klaus Bronder, Swäbisch Gmünd, and Joachim Dietrich, Gelnhausen, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 22, 1990, Ser. No. 483,220
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 3905705
Int. Cl.[5] C25D *3/48*
U.S. Cl. 204—47.5 **4 Claims**

1. A bath for the electrolytic deposition of bondable fine gold coatings having a gold content above 99.99% by weight, containing

a) gold as alkali or ammonium gold-(I)-cyanide

b) phosphonic acid compounds selected from the class consisting of phosphonic acids and their salts and derivatives,

c) a water-soluble bismuth compound,

said bath containing 2 to 100 g/l gold, 0.1 mg to 5 g/l bismuth, 5 to 250 g/l phosphonic acid compound and having a pH of 6 to 10.

5,055,174

HYDROVISBREAKING PROCESS FOR HYDROCARBON CONTAINING FEED STREAMS

Jerald A. Howell; Donald C. Tabler; Thomas Davis, and Simon G. Kukes, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 27, 1984, Ser. No. 625,348
The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.
Int. Cl.[5] C10G *47/02, 47/04*
U.S. Cl. 208—112 **9 Claims**

1. A process for hydrovisbreaking a hydrocarbon-containing feed stream consisting essentially of the steps of:

introducing a suitable decomposable molybdenum dithiophosphate compound into said hydrocarbon-containing feed stream; and

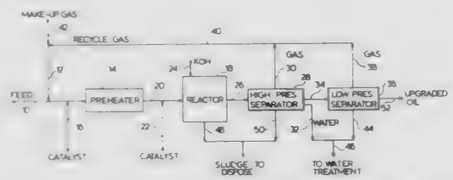
contacting said hydrocarbon-containing feed stream containing said decomposable molybdenum dithiophosphate compound under hydrovisbreaking conditions with hydrogen.

5,055,175

UPGRADING CRUDE OIL EMULSIONS

Flora T. T. Ng, Waterloo, and Sophia K. Tsakiri, Kitchener, both of Canada, assignors to University of Waterloo, Waterloo, Canada

Filed Jul. 14, 1989, Ser. No. 379,976
Claims priority, application United Kingdom, Jul. 14, 1988, 8816740
Int. Cl.[5] C10G *47/02*
U.S. Cl. 208—112 **31 Claims**



13. A single stage process for the simultaneous breaking and upgrading of hydrocarbonaceous oil emulsions wherein the oil comprises a heavy crude oil containing up to about 8 wt. % sulphur and up to about 5 wt. % nitrogen, which comprises:

(a) introducing to the hydrocarbonaceous oil emulsion at least one compound or complex of a metal of Group VI B or Group VIII B of the Period Table of Elements in an amount of from about 50 to about 22,500 wppm, calculated as elemental metal, based on the emulsion, to form a mixture;

(b) pressurizing said mixture of emulsion and metal compound or complex with a gas comprising carbon monoxide to an initial CO loading of about 200 to about 1000 psig and heating the mixture to a reaction temperature of about 300° to about 450° C.;

(c) producing hydrogen in situ by the water-gas-shift reaction between the carbon monoxide and the aqueous phase of the emulsion and reacting the emulsion with the in situ-produced hydrogen in the presence of catalytically-active species derived from said metal compound or complex at a total reaction pressure of about 1500 to about 5000 psig and a hydrogen partial pressure of about 750 to about 2500 psig; and

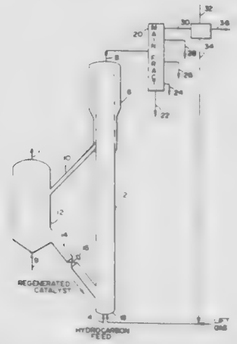
(d) recovering an aqueous phase and an oil phase wherein the oil phase contains hydrocarbonaceous oil of lower boiling point than said heavy crude oil and essentially sulphur- and nitrogen-free, whereby breaking of the emulsion is effected without the necessity for prior treatment and/or chemicals.

5,055,176

MULTI COMPONENT CATALYST AND A PROCESS FOR CATALYTIC CRACKING OF HEAVY HYDROCARBON FEED TO LIGHTER PRODUCTS

Joseph A. Herbst, Turnersville; Hartley Owen, Belle Mead, both of N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 292,287, Dec. 30, 1988, Pat. No. 5,006,497. This application Dec. 18, 1990, Ser. No. 629,494
Int. Cl.[5] C10G *11/05*
U.S. Cl. 208—120 **19 Claims**



1. A process for catalytic cracking a feed of hydrocarbons boiling in the gas oil range and heavier to lighter products by contacting the feed at catalytic cracking conditions with a cracking catalyst comprising catalytically effective amounts of:

(i) a large pore molecular sieve;

(ii) a shape selective zeolite having a constraint index of 1–12, being substantially free of hydrogenation/dehydrogenation components and having paraffin cracking-/isomerization activity;

(iii) a shape selective zeolite having a constraint index of 1–12 and paraffin aromatization activity; and

(iv) a matrix.

5,055,177

CLOSED CYCLONE FCC CATALYST SEPARATION METHOD AND APPARATUS

James H. Haddad, Princeton; Hartley Owen, Belle Mead, and Klaus W. Schatz, Skillman, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 472,550, Jan. 30, 1990, which is a division of Ser. No. 262,200, Oct. 9, 1988, Pat. No. 4,909,993, which is a continuation of Ser. No. 5,729, Jan. 21, 1987, abandoned, which is a continuation of Ser. No. 670,856, Nov. 19, 1984, Pat. No. 4,654,060, which is a division of Ser. No. 612,177, May 21, 1984, Pat. No. 4,502,947. This application Jul. 5, 1990, Ser. No. 548,358
The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.
Int. Cl.[5] C10G *35/00*
U.S. Cl. 208—161 **11 Claims**

1. A method of fluid catalytic cracking of a hydrocarbon feed comprising:

passing a mixture of the hydrocarboin feed and a catalyst as a suspension, through a riser conversion zone and cracking the hydrocarbon feed inthe riser conversion zone; passing the mixture form the riser through a first enclosed conduit to a catalyst separator in a reactor vessel;

separating catalyst from the mixture in the separator;

passing gaseous effluent from the separator through a second conduit to a downstream fractionation apparatus;

contacting the separated catalyst in a stripping zone with a stripping gas to strip hydrocarbons from the separated catalyst and

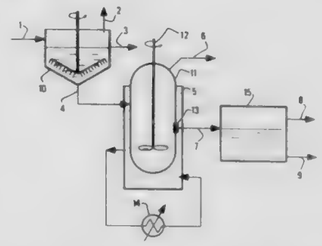
removing stripping gas and stripped hydrocarbons, and passing the separated catalyst from the stripping zone to a regeneration vessel.

5,055,178

PROCESS FOR EXTRACTION OF WATER MIXED WITH A LIQUID FLUID

Andre Sugier; Paul Bourgmayer, both of Rueil Malmaison, and Alexandre Rojey, Garches, all of France, assignors to Institut Francais du Petrole, France

PCT No. PCT/FR89/00185, § 371 Date Feb. 16, 1990, § 102(e) Date Feb. 16, 1990, PCT Pub. No. WO89/10392, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 20, 1989, Ser. No. 460,322
Claims priority, application France, Apr. 22, 1988, 88 05491
Int. Cl.[5] C10G *33/04*
U.S. Cl. 208—188 **13 Claims**



1. A process for extracting water mixed with a liquid fluid substantially insoluble in said water, characterized by carrying out the following steps:

forming a dispersion of hydrates of a gas within said fluid in the presence of an additive, said hydrates being formed from said water and said gas in a sufficient quantity, said gas being suitable for forming hydrates and said additive being suitable for causing the hydrates to be in a dispersed state;

separating the dispersed hydrates from at least most of the fluid, the hydrates being concentrated possibly with a remaining part of the fluid; and

breaking down said concentrated hydrates in order to obtain said gas and said water.

5,055,179

UPGRADING HEAVY OIL

J. David Tyrer, Oakville, Canada, assignor to Ortech Corporation, Mississauga, Canada

Filed Jun. 13, 1989, Ser. No. 365,314
Claims priority, application United Kingdom, Jun. 13, 1988, 8813937
Int. Cl.[5] C10G *45/00*
U.S. Cl. 208—254 R **6 Claims**

1. A process for upgrading a heavy crude oil by hydrolysis to form a refinery feed stock characterized by heteroatom removal, a decrease in asphaltene and resin components, improved light and medium oil yields and an increase in hydrogen-to-carbon ratio (when compared to the heavy crude oil), which comprises heating said heavy crude oil in the presence of water and a polyhydroxy metal bentonite to a temperature of about 200° C. to about 300° C. so as to effect hydrolysis of bonds of heteroatoms in said heavy crude oil and to effect hydrogenation of unsaturated bonds in said heavy crude oil.

5,055,180

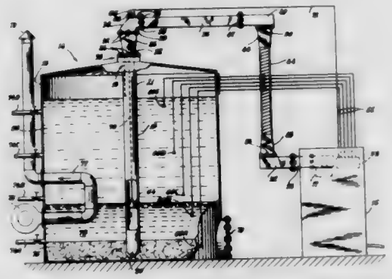
METHOD AND APPARATUS FOR RECOVERING FRACTIONS FROM HYDROCARBON MATERIALS, FACILITATING THE REMOVAL AND CLEANSING OF HYDROCARBON FLUIDS, INSULATING STORAGE VESSELS, AND CLEANSING STORAGE VESSELS AND PIPELINES

William J. Klaila, Tulsa, Okla., assignor to Electromagnetic Energy Corporation, Middleboro, Mass.

Continuation of Ser. No. 511,860, Apr. 12, 1990, abandoned, which is a continuation of Ser. No. 320,887, Mar. 9, 1989, abandoned, which is a continuation of Ser. No. 602,399, Apr. 20, 1984, abandoned. This application Jan. 9, 1991, Ser. No. 637,975

Int. Cl.[5] C10G *1/00*

U.S. Cl. 208—402 **22 Claims**



1. A method for sequentially recovering fractions from hydrocarbon material, comprising the steps of:

generating electromagnetic energy in the frequency range of from about 300 megahertz to about 300 gigahertz;

broadcasting the generated electromagnetic energy to a deflector, the deflector deflecting the electromagnetic energy towards a plurality of locations in the hydrocarbon material for exposure thereto;

exposing the hydrocarbon material at the plurality of locations to the electromagnetic energy;

sensing the temperature of the hydrocarbon material by means of sensors that are positioned at the plurality of locations;

moving the deflector and deflecting the electromagnetic energy towards the hydrocarbon material as a function of the temperature sensed at the plurality of locations to control the temperature of the hydrocarbon material at said plurality of locations;

continuously generating the electromagnetic energy while selectively changing the locations of the deflector relative to the hydrocarbon material in response to the temperature sensed by the sensors to concentrate the electromagnetic energy in different locations of the hydrocarbon material as a function of the temperature sensed at the plurality of locations;

sequentially separating the hydrocarbon and other material into fractions; and

removing the fractions resulting from exposure of the hydrocarbon material to the electromagnetic energy.

5,055,181

HYDROPYROLYSIS-GASIFICATION OF CARBONACEOUS MATERIAL

Peter S. Maa, Baton Rouge, La., and Martin L. Gorbaty, Westfield, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 102,885, Sep. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 844,899, Mar. 27, 1986, abandoned. This application Dec. 14, 1988, Ser. No. 284,202

Int. Cl.[5] C10G *1/06*

U.S. Cl. 208—421 **10 Claims**

1. A hydropyrolysis-gasification process for obtaining liquids and gases from carbonaceous material, which process consists of:

(a) treating the carbonaceous material with an amount of (i) one or more gasification catalysts selected from the alkali and alkaline-earth metals, and optionally (ii) one or more hydrogenation-catalyst selected from the group consisting of oil-soluble and water-soluble salts of a metal selected from Groups VIB, VIIB, and VIII of the Periodic Table of the Elements;

(b) contacting the treated carbonaceous material, in the absence of liquid solvent or donor solvent, with an effective amount of hydrogen, for an effective time, below 500° C., and obtaining a mixture of liquids, hydrocarbon gases and char;

(c) recovering the liquids and hydrocarbon gases, wherein said gases contains less than 2 wt. % methane based on the weight of said carbonaceous material; and

(d) gasifying the char in the presence of steam at a temperature from about 500° C. to about 900° C., said char being at least 50 wt. % of the carbonaceous material.

5,055,182

SEPARATOR

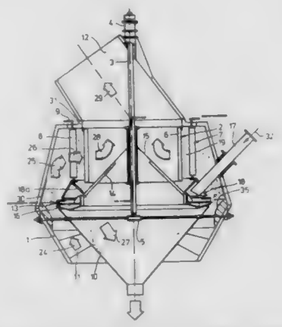
Ludger Lohnherr, Oelde, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany

Filed Dec. 26, 1989, Ser. No. 456,727

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1989, 3900779

Int. Cl.[5] B07B *9/02*

U.S. Cl. 209—148 **12 Claims**



1. A pneumatic separator for separating relatively coarse and relatively fine particles, said separator comprising a housing; a rotor mounted in said housing for rotation about a vertical axis; distributor means carried by said rotor for rotation therewith; feed means for delivering to said distributor means material to be separated; guide means encircling and outwardly spaced from said rotor to provide a clearance between said guide means and said rotor through which an upwardly flowing separating air stream may flow; exhaust means communicating with the interior of said housing at its upper end and through which said air stream and particles entrained therein may flow outwardly of said housing, said distributor means being at a level below that of said rotor and said guide means so that material thrown off said distributor means enters the air stream at a zone below the level of said rotor and said guide means; and means for accelerating the rate of flow of said air stream at said zone.

5,055,183

WATER TREATMENT DEVICE

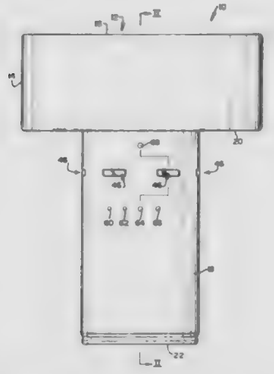
Leon Buchan, Johannesburg, South Africa, assignor to Control Chemicals (Proprietary) Limited

Filed Apr. 30, 1990, Ser. No. 517,676

Claims priority, application South Africa, Apr. 28, 1989, 89/3198

Int. Cl.[5] B01D *11/02*

U.S. Cl. 210—085 **20 Claims**



1. A water treatment device which includes:

a buoyant body having a hollow bulbous portion, a chamber-defining portion defining an enclosed chamber and protruding down from the bulbous portion such that the inside of the bulbous portion is in communication with the chamber, as well as at least one primary aperture in the chamber-defining portion and arranged such that, when the body floats in water, water can pass through the primary aperture into the chamber, and vice versa;

a holder within the chamber, the holder defining a water treatment substance holding zone for holding a water soluble water treatment substance, and being spaced from the chamber-defining portion of the body such that water can pass along the space between the chamber-defining portion of the body and the holder; and

at least one secondary aperture in the holder such that water can pass from the space between the chamber-defining portion of the body and the holder, into the holder via the secondary aperture, and vice versa.

5,055,184

GAS ASSISTED FLOTATION APPARATUS

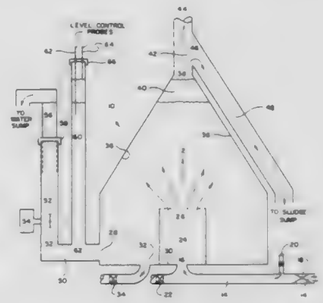
Robert K. Carpenter, Herculaneum, and Harrison F. Lyman, Jr., Clayton, both of Mo., assignors to Redux Corporation, Fenton, Mo.

Division of Ser. No. 209,173, Jun. 20, 1988, Pat. No. 4,902,429. This application Nov. 22, 1989, Ser. No. 440,668

Int. Cl.[5] C02F *1/24*

U.S. Cl. 210—109 **4 Claims**

1. Gas assisted flotation apparatus adapted for separating solids from liquids in a slurry comprising a main chamber, said main chamber having a lower entry channel through which said slurry may enter said main chamber and having an upper portion tapered at an inside angle of about 45°–75° from the horizontal plane to an apex opening adapted to consolidate solids particles floated to the top portion of said apex opening by gas bubbles attached to said solids particles, said gas assisted flotation apparatus having a fluid discharge line extending outward from said main chamber whereby separated fluids may be removed from said main chamber, said fluid discharge line having a valve included in said fluid discharge line adapted to open and close said fluid discharge line in order to control the level of slurry in said main chamber, wherein said fluid discharge line is in fluid communication with a level control pipe wherein the levels of slurry, fluid and solids will be the same as in said main chamber in order to facilitate the control of said valve in said fluid discharge line and wherein said lower entry channel includes means for injecting a gas into said slurry



under sufficient pressure to induce the formation of gas bubbles which tend to attach to said solids particles and a pressure relief valve whereby the pressure on the gas-containing slurry is reduced to a lower pressure sufficient only to keep said slurry moving.

5,055,185

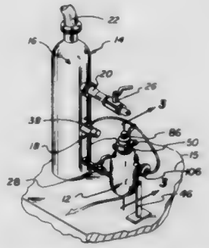
ANTI-FREEZE SEPARATOR ASSEMBLY

Luther M. McMurphy, 200 S. Parkway, Liberal, Kans. 67901

Filed Jun. 20, 1990, Ser. No. 541,027

Int. Cl.[5] B01F *3/12*

U.S. Cl. 210—123 **14 Claims**



1. An anti-freeze separator assembly connected to processing equipment to receive and treat a fluid therefrom tp prevent freezing thereof comprising:

a) a main container housing;

b) a material retainer member mounted within said main container housing operable to receive and retain a treatment chemical therein;

c) a fluid inlet assembly connected to a fluid inlet source and extended within said main container housing said inlet source connected to an upright discharge pipe member to convey fluid directly into said material retainer member the fluid being treated therein by the treatment chemical said upright discharge pipe member being mounted in an enclosed by said material retainer member;

d) a main discharge assembly including a discharge pipe member connected to said main container housing to convey the fluid therefrom after treatment in said material retainer member; and

e) a main enclosure cap assembly mounted on an inlet opening into said material retainer member having an enclosure cap mounted on said inlet opening.

whereby said fluid is transferred from the fluid inlet source

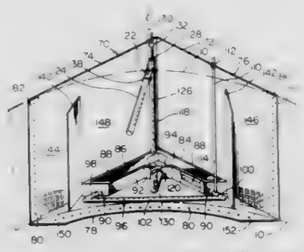
into said material retainer member into contact with the treatment chemical to form a freeze resistant fluid solution, and the fluid solution is subsequently transferred laterally of said material retainer member for discharge through said main discharge assemble.

5,055,186

PELLET MEDIA TO SUPPORT GROWTH OF MICROORGANISMS AND SYSTEMS FOR THE UTILIZATION OF SAME

James W. Van Toever, R.R. #2, North Wiltshire, P.E.I., C0A 1Y0, Canada

Filed Jan. 23, 1989, Ser. No. 299,619
Claims priority, application Canada, Jan. 21, 1988, 557035
Int. Cl.[5] C02F *3/08*
U.S. Cl. 210—150 **26 Claims**



23. Apparatus for use in association with a system involved in the processing of liquid having dissolved elements with microorganism culture and utilizing the fluidization of pellets, comprising:

wall means defining a processing chamber adapted for processing a liquid with dissolved wastes by the fluidization of pellets with microorganism growth thereon, said wall means including bottom and side wall means;

means for permitting introduction of liquid to be treated to said chamber;

annular baffle means having a bottom and top and supported within said chamber spaced from said bottom and side walls such that said baffle means defines in cooperation with said bottom and side wall means a vertical, circulatory flow path;

means adjacent the bottom of said baffle means for providing fluidizing movement of the liquid within the chamber sufficient to cause fluidization of said pellets in said flow path;

outlet manifold means having a screened portion adjacent the top of said baffle means, said screened portion sized and configured such that fluidized pellets continuously scour said screen by momentary impact therewith;

said outlet manifold means further including means for removing processed liquid that has passed through said screened portion.

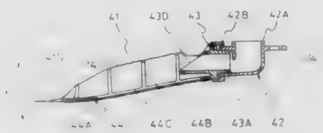
5,055,187

FUEL FILTER INCORPORATED IN A FUEL TANK

Koichi Ito, and Kitio Ogaki, both of Ibaraki, Japan, assignors to Kyosan Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1989, Ser. No. 416,367
Int. Cl.[5] B01D *35/02*
U.S. Cl. 210—172 **11 Claims**

1. In a fuel filter arrangement adapted to be incorporated in a fuel tank and having a fluid passage means which penetrates a bag-shaped mesh body, and a supporter provided inside the mesh body for maintaining a swollen state of the mesh body, the improvement wherein: the fluid passage means includes an outer flange and an inner flange; the mesh body being formed by folding a mesh sheet over onto itself, a central portion of the mesh sheet being clamped by the outer flange and the inner flange from outer and inner sides thereof, said central portion having an opening therein through which said fluid passage means passes; the supporter being provided at the inner flange; the supporter having a flat plate body extending from the inner



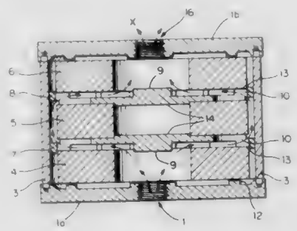
flange and a projecting wall body projecting from the flat plate body, the flat plate body having a trimming hole at a central portion thereof; and three peripheries of the mesh body being welded.

5,055,188

MAGNETIC APPARATUS FOR CONTROLLING PROTISTA IN DISTILLATES

John A. Johnston, Lower Hutt; Lindsay W. Forrest, Upper Hutt, and Colin P. Wickham, Auckland, all of New Zealand, assignors to Debug Filters Limited, Lower Hutt, New Zealand

Continuation of Ser. No. 122,873, Nov. 19, 1987, abandoned.
This application Nov. 1, 1989, Ser. No. 430,960
Claims priority, application New Zealand, Nov. 19, 1986, 218331
Int. Cl.[5] B01D *35/06;* **C02F** *1/48*
U.S. Cl. 210—222 **6 Claims**



1. Apparatus for controlling Prodistal growth in distillates comprising:

a housing;

a hollow chamber defined in said housing;

inlet and outlet means in said housing for said chamber;

a plurality of magnets arranged in adjacent spaced relationship in said chamber between said inlet and outlet means for producing magnetic fields in said chamber;

apertures in said magnets for the flow of fluid therethrough; and

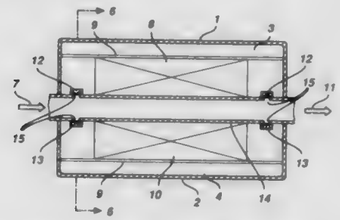
spacer means between said magnets for spacing said magnets with respect to each other and with respect to said chamber, and for controlling the flow of fluid from said inlet to said outlet means so as to flow through the apertures in at least one of said magnets and flow around at least one other of said magnets adjacent to said at least one magnet so that said fluid flows circuitously through said chamber and cuts across the magnetic flux of said magnetic fields.

5,055,189

APPARATUS FOR WATER TREATMENT USING A MAGNETIC FIELD AND FAR INFRARED RAYS

Masashi Ito, 4-5-51, Hoshigauraodori, Kushiro, Hokkaido, Japan

Continuation-in-part of Ser. No. 314,184, Feb. 22, 1989, abandoned. This application Sep. 4, 1990, Ser. No. 578,543
Claims priority, application Japan, Nov. 10, 1988, 63-282396
Int. Cl.[5] B01D *1/30, 1/48*
U.S. Cl. 210—222 **6 Claims**



1. An apparatus for treating water comprising:

a pair of halved cases diametrically positioned about an outer surface of a pipe;

N-polar permanent magnets disposed in one of said cases having N-poles inwardly facing the pipe;

S-polar permanent magnets disposed in the other of said cases having S-poles inwardly facing the pipe; and

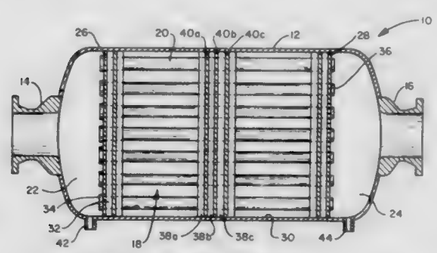
ceramics for far infrared radiation disposed in at least one of said cases.

5,055,190

HIGH VOLUME PERMANENT MAGNET FILTER

James K. Hayes, Chattanoga, Tenn., and James W. Larsen, Douglasville, Ga., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 13, 1989, Ser. No. 337,355
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—222 **23 Claims**



1. A permanent magnet filter comprising:

a closed vessel having a fluid inlet at one end and a fluid outlet at the other end;

a plurality of nonmagnetic metal tubes of substantially the same length located within the vessel and extending in spaced apart, parallel relation from adjacent the inlet to adjacent the outlet;

means for supporting the tubes in a stationary position within the vessel;

means associated with the tubes for directing fluid from the inlet into the tubes;

a plurality of magnet plates and pole plates oriented transversely to the tubes such that all the tubes pass through all the plates, the plates being alternated over substantially the full lengths of the tubes;

each pole plate being formed from a material having a high susceptibility to magnetization;

each magnet plate having a north pole side and a south pole side, the magnet plates being oriented so that substantially each pole plate is sandwiched between two magnet plate sides of the same polarity;

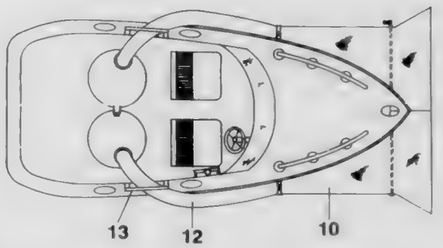
whereby an intense magnetic field is produced within each tube such that magnetizable particulates in the fluid adhere to the inside surface of each tube.

5,055,191

SUBSTANCE SPILL PICK-UP DEVICE

James E. Treadaway, Sr., 2021 Emeralda Dr., Orlando, Fla. 32808

Filed Jul. 24, 1989, Ser. No. 384,168
Int. Cl.[5] B01D *17/02*
U.S. Cl. 210—242.3 **1 Claim**



1. A scoop device for attachment to any size boat or other water vessel for skimming oil or other substances which float on or near the surface of a body of water comprising:

(a) a scoop device being built in two scoop sections with each of said sections having respective rear and front portions and having chambers, the scoop device also having an aperture plate adjacent said front portions;

(b) attachment bracket means including a connecting pin and straps to secure said sections to a rear portion of a vessel;

(c) said sections being assembled onto the attachment bracket and being bolted together at adjacent locations of said front portions;

(d) means including hoses or tubes for attachment from a sections to said vessel and for delivery of skimmed substance from a body of water to containers located within said vessels;

(e) means for lifting said sections from a position in said body of water to a position out of said body of water;

(f) means for opening and closing said apertured plate so as to control an amount of substance skimmed from said body of water and entering said chambers;

(g) said scoop sections each including perforated section means for allowing water to escape from said skimmed substance prior to delivery of said substance to said vessel and

(h) an air turbine fluidly connected with said means for delivery.

5,055,192

CELL-TYPE FILTER CARTRIDGE RETAINING RING

Arto Artinyan, Southington, and John Krzyston, Guilford, both of Conn., assignors to Cuno Incorporated, Meriden, Conn.

Continuation of Ser. No. 151,853, Feb. 3, 1988, Pat. No. 4,881,313. This application Sep. 21, 1989, Ser. No. 410,721
Int. Cl.[5] B01D *29/58*
U.S. Cl. 210—346 **5 Claims**

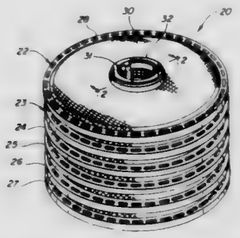
1. A sealing disk for a filter cell having a fibrous filter media and netting disposed on the unfiltered fluid surface thereof, comprising:

a disk having at least one radial surface;

an aperture axially disposed in the disk;

a plurality of concentric sealing rings extending from the radial surface, the concentric rings constructed and ar-

ranged to sealingly engage the surface of abutting fibrous filter media; and



a fastening ring concentrically disposed about the plurality of sealing rings, constructed and arranged to engage the reinforcing netting disposed on the fibrous filter media.

5,055,193

BIODEGRADATION OF HALOGENATED HYDROCARBONS UTILIZING AMMONIA-OXIDIZING BACTERIUM

Alan Hooper, St. Paul, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Mar. 9, 1989, Ser. No. 321,498
Int. Cl.[5] C02F *3/00*

U.S. Cl. 210—601 **23 Claims**

1. A method for microbial degradation of a halogenated hydrocarbon compound comprising:

contacting an aqueous solution containing a concentration of ammonia effective to sustain growth and said halogenated hydrocarbon with an amount of an autotrophic ammonia-oxidizing bacterium effective to degrade essentially all of said halogenated hydrocarbon compound.

5,055,194

SUPPORT FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY IN A MAGNETICALLY STABILIZED FLUIDIZED BED

Victor Goetz, Philadelphia, and David J. Graves, Devon, both of Pa., assignors to University of Pennsylvania, Philadelphia, Pa.

Filed Jul. 28, 1989, Ser. No. 387,073
Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **28 Claims**

28. A method of conducting chromatographic separations of multi-component systems comprising:

contacting a multi-component system with a solid support wherein the solid support is continuously fed to the top of a magnetically stabilized fluidized bed and continuously removed from the bottom of the bed, the solid support comprising a plurality of generally spherical beads having a generally central magnetic core that is 10–250 μm in diameter,

an intermediate, non-porous coating comprised essentially of silica, gold, or other protective material, and

a surrounding exterior coating that is less than 10 μm thick comprising a porous silica or silica derivative

having a binding ligand capable of binding with one or more of the components of the multi-component system wherein the magnetic core is comprised of a material having a coefficient of expansion similar to or less than the coefficient of expansion of said porous silica or silica derivative.

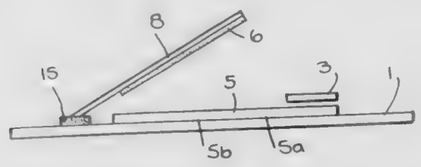
5,055,195

ERYTHROCYTE-RETENTION SUBSTRATES

Heinz-Friedrich Trasch; Erwin Endres, both of Ludwigshafen; Andreas Trost, Hockenheim, and Walter Rittersdorf, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GMBH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 619,940, Jun. 12, 1984, abandoned. This application Jul. 20, 1987, Ser. No. 77,003
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323973
Int. Cl.[5] B01D *15/00*; **G01N** *33/49, 33/51*

U.S. Cl. 210—638 **18 Claims**



6. Process for separating erythrocytes from whole blood comprising contacting whole blood with a separation means containing an erythrocyte retention substrate of formula $R_1—S_p—R_2$, where S_p is a bridge serving as a spacer and is an aromatic or hetero aromatic ring system comprising at least two rings which are either annelated or connected together directly or through a link selected from the group consisting of —CH=CH—, —N=N, —CR_3=N—, —NR_3—CO—NR_4, and —CR_3R_4— wherein R_3 and R_4 are hydrogen or alkyl;

R_1 is SO_3H, COOH, NH_2 or OH; and

R_2 is SO_3H, COOH, NH_2, OH, NO_2, SO_2NH, CONH, halogen or a straight, branched, or cyclic alkyl with 1–10 carbon atoms, or both R_1 and R_2 are animo groups or animo groups in salt from and Sp is an alkylene radical with 2 to 10 carbon atoms so as to separate erythrocytes from whole blood.

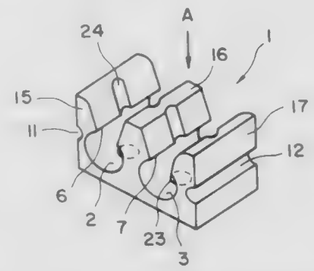
5,055,196

EXTRACTION PROCESS TO REMOVE PCBS FROM SOIL AND SLUDGE

Saeed T. Darian, and Stephen P. Weinberg, both of Houston, Tex., assignors to ENSR Corporation, Houston, Tex.

Filed Dec. 22, 1988, Ser. No. 289,219
Int. Cl.[5] B01D *11/02*

U.S. Cl. 210—638 **134 Claims**



1. A process for treating a solids-mixture comprising water, solids and a contaminant, said process comprising:

(1) contacting said solids-mixture with a solvent for said contaminant, said solvent being sparingly soluble in water, in the presence of a comminuting and dispersing surfactant to produce a solids/liquids mixture comprising a liquids phase and a solids phase, whereby a significant portion of contaminant in said solids-mixture is extracted into the liquids phase of said solids/liquids mixture and the solids phase and the liquids phase of said solids/liquids mixture are readily separable.

5,055,197

PROCESS FOR REMOVING RESIDUAL MONOMERS AND OLIGEMERS FROM AMINE-CONTAINING POLYMERS

Robert L. Albright, Churchville; Jon R. Fisher, Hatfield; Eric G. Isacoff, Richboro, and Eric C. Peters, Philadelphia, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 5, 1991, Ser. No. 681,038
Int. Cl.[5] B01D *61/16*

U.S. Cl. 210—638 **11 Claims**

1. A process for removing residual monomers and oligomers with molecular weights smaller than about 500 daltons from a polymer composition, which process comprises the sequential steps of first treating the composition with a strong-acid, aromatic cation exchange resin with a crosslinker level from about 2% to about 25%, and subsequently subjecting the composition to ultrafiltration with an ultrafiltration membrane to remove the remaining monomers and oligomers from the ultrafiltration retentate, wherein the polymer composition comprises linear, amine-containing polymers having a molecular weight within the range of from about 2000 to about 10 million daltons, or solutions thereof in water or a lower alcohol, and wherein the membrane has a molecular weight cutoff, measured against the polymers from which the monomers and oligomers are to be removed, of from about 10,000 to about 15,000 daltons.

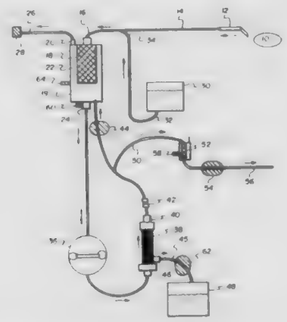
5,055,198

AUTOLOGOUS BLOOD RECOVERY MEMBRANE SYSTEM AND METHOD

U. Ramakrishna Shettigar, 1324 Medical Plz., Salt Lake City, Utah 84112

Continuation-in-part of Ser. No. 491,183, Mar. 7, 1990, abandoned. This application May 18, 1990, Ser. No. 525,536
Int. Cl.[5] A61M *1/03*

U.S. Cl. 210—650 **64 Claims**



1. An apparatus for filtering autologous blood taken from a patient for reinfusion to the patient comprising:

suction means for aspirating blood from a wound site;

first conduit means for conducting said aspirated blood from said suction means;

washing fluid retainer means for retaining washing fluid for admixing with said aspirated blood;

second conduit means interconnected between said washing fluid retainer means and said first conduit for conducting washing fluid therebetween;

first filter means for removing emboli and large particulates from said aspirated blood, said first filter means being connected to said first conduit means;

filter casing means for enclosing said first filter means therein, said filter casing having vacuum connector means associated therewith for attaching a source of vacuum;

reservoir means associated with said filter casing means for collecting filtered blood from said first filter means;

second filter means for filtering excess fluids and impurities from said blood;

third conduit means interconnected between said reservoir means and said second filter means for conducting blood therebetween;

blood collection means for collecting filtered blood;

fourth conduit means interconnected between said second filter and said blood collection means for conducting filtered blood therebetween;

filtrate container means for containing said excess fluids and impurities filtered from said blood by said second filter means;

fifth conduit means interconnected between said second filter means and said filtrate container means for conducting filtrate therethrough; and

reinfusion means associated with said blood collection means for reinfusing purified blood to the patient.

61. A method of recycling autologous blood for reinfusion into a patient comprising:

aspirating an amount of blood from a wound site under vacuum pressure;

admixing said blood with an amount of washing fluid approximately proportional to that of said blood;

introducing said admixture of approximately proportional amounts of blood and washing fluid into a first emboli filter under vacuum pressure;

filtering said admixture of blood and washing fluid through said emboli filter to remove air and large particles;

filtering said admixture through a membrane filter to remove impurities and excess fluid; and

reinfusing said filtered blood into said patient.

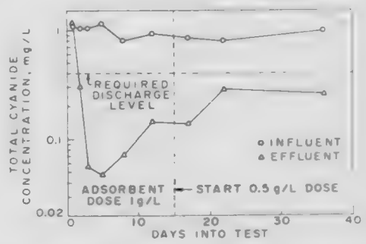
5,055,199

METHOD FOR REDUCING THE AMOUNT OF ANIONIC METAL-LIGAND COMPLEX IN A SOLUTION

Gary A. O'Neill; Chanakya Misra, both of Plum Borough, and Abraham S. C. Chen, Franklin Park Township, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 118,711, Nov. 9, 1987, Pat. No. 4,867,882. This application Sep. 28, 1989, Ser. No. 413,627
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—684 **22 Claims**



1. A method for reducing the amount of an anionic metal-ligand complex in a solution, the ligand of said complex comprising a molecule, ion or atom capable of independent existence as a stable, chemical species and which ligand attaches to the central atom of a coordination compound, chelate or other complex, and the metal of said complex being selected from: Ag, Au, Ba, Ca, Cd, Cu, Fe, Mg, Mn, Ni, Pb, Pd, Pt, Ra, Rh, Sn, Sr, V and Zn, said method comprising:

(a) contacting the solution with a substance selected from: a compound having the formula $A_wB_x(OH)_yC_z{\cdot}nH_2O$, wherein A represents a divalent metal cation, B represents

a trivalent metal cation, C represents a mono- to tetravalent anion, and w, x, y, z and n satisfy the following: $0 \leqq z \leqq x \leqq 4 \leqq w \leqq \frac{1}{2}y$ and $12 \geqq n \geqq \frac{1}{2}(w-x)$; a calcined product of said compound and mixtures thereof; and

(b) separating the substance from the solution.

5,055,200

METHOD OF TREATING LOW-CONCENTRATION TURBID WATER

Toshiyuki Miki, Kanagawa; Show Tono; Kazunori Kozu, both of Tokyo, and Shintaro Hayashi, Saitama, all of Japan, assignors to Aoki Corporation, Osaka, Japan

Filed Mar. 7, 1990, Ser. No. 490,702
Claims priority, application Japan, Jul. 3, 1989, 1-172711
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—726 **1 Claim**

1. A method of treating low-concentration turbid water having a concentration of suspended solids in the range of from about 50 to 200 ppm to reduce the concentration of the suspended solids to below 10 ppm, which comprises sequentially adding first an anionic polymer coagulant and then a cationic polymer coagulant to the water, forcibly stirring the thus treated water at a stirring speed of about 400 rpm for about 5–30 seconds, and removing flock formed as a result of treating the turbid water with said coagulants.

5,055,201

PROCESS FOR REMOVING DISSOLVED CONTAMINANTS FROM AQUEOUS SOLUTIONS USING REVERSIBLY DISPERSIBLE GETTERS

Paul C. Wegner, San Carlos, Calif., assignor to Tiegel Manufacturing Company, Belmont, Calif.

Filed Aug. 4, 1989, Ser. No. 389,375
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—727 **10 Claims**

1. A process for removing a dissolved contaminant from an aqueous solution comprising:

contacting said aqueous solution with a non-polymeric, substantially water-insoluble, reversibly dispersible getter compound having at least one covalently bonded pendant n-alkyl radical of 18 to 32 carbon atoms and at least one hydrophilic, ion complexing moiety in a dispersed state to form a getter-contaminant material;

adding an effective amount of an activator selected from the group consisting of sulfuric acid, magnesium sulfate, sodium sulfate, potassium sulfate, nitric acid, sodium hydroxide, silver nitrate and sodium phosphate to said aqueous solution to reduce the dispersibility of said getter-contaminant material;

separating said getter-contaminant material from said aqueous solution by filtering or settling.

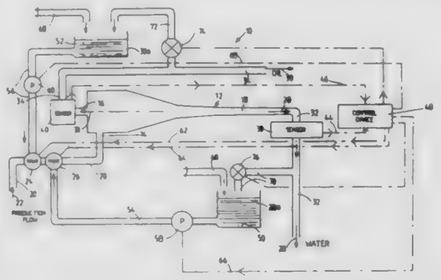
5,055,202

METHOD AND APPARATUS FOR MAINTAINING PREDETERMINED CYCLONE SEPARATION EFFICIENCY

Noel Carroll, Sassafras, Australia; Robert W. Carroll, Bradbury, Calif., and Charles M. Kalnins, Malvern, Australia, assignors to Conoco Specialty Products Inc., Houston, Tex.

PCT No. PCT/AU88/00443, § 371 Date Sep. 15, 1989, § 102(e) Date Sep. 15, 1989, PCT Pub. No. WO89/04725, PCT Pub. Date Jun. 1, 1989
PCT Filed Nov. 16, 1988, Ser. No. 381,686
Claims priority, application Australia, Nov. 19, 1987, PI5522/87
Int. Cl.[5] B01D *17/038*
U.S. Cl. 210—739 **24 Claims**

1. A method of separating components from a liquid mixture by use of a cyclone separator, comprising maintaining at least one of the components of the mixture in a reservoir for adding to the mixture, determining the efficiency of cyclone separation of at least a first of the components from the mixture and upon determination that the efficiency has departed from a predetermined value adding to the incoming mixture to the separator a quantity of said at least one of the components from



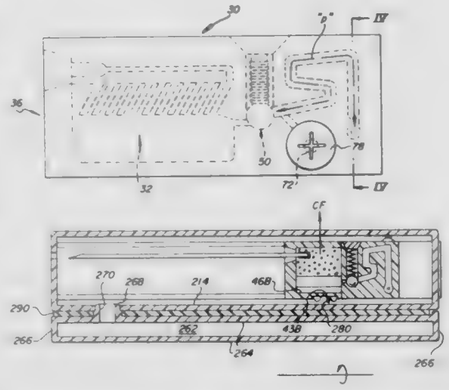
the reservoir to tend to cause the efficiency to be reverted to the predetermined value.

5,055,203

BLOOD COLLECTION DEVICE WITH REDUCED SERUM DISPENSING VOLUME AND INTEGRAL NEEDLE

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1990, Ser. No. 527,239
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—741 **14 Claims**



1. In an integral multi-phase liquid collection and separation device, comprising a first chamber containing a partial vacuum for drawing in the liquid and allowing the liquid to separate into at least two phases by spinning the chamber about an axis, and a second chamber and flow means allowing selective liquid flow of the lighter phase from said first chamber to said second chamber, said second chamber including a dispensing aperture, said flow means including a valve means for controlling flow between said chambers and having a predetermined bias to close off flow out of said first chamber at all times;

the improvement wherein said second chamber has a volume no larger than about 150 μl, and is constructed to form a path extending in three dimensions from said flow means to said dispensing aperture, the sidewalls of said second chamber being spaced apart a distance no greater than that which provides a weak capillary effect, to insure that liquid flow into said second chamber occurs when said valve means bias is overcome, without air entrapment.

4. In an integral multi-phase liquid collection, separation and dispensing device comprising means defining a first chamber for collecting the liquid and for allowing the phases to be separated under the influence of centrifugal force, said means additionally defining a second chamber connected to said first chamber for receiving the lighter phase from said first chamber after phase separation, and means for fluidly connecting said chambers and including a valve operative to allow transfer of said lighter phase, said second chamber including an aperture constructed to permit transferred lighter phase to be removed;

the improvement wherein said device further includes a needle permanently and integrally connected to said first chamber means, and permanently associated housing means mounting said needle for alternately exposing said needle and for surrounding said needle so as to protect a user from being stuck by said needle when the needle is not being used to collect liquid,

so that the device completely integrates the collecting function into one device.

13. A method for collecting whole blood, separating serum from the whole blood, and dispensing the separated serum, the method comprising the steps of

a) exposing a needle permanently connected to a first, blood-collecting chamber that is fluidly connected by a valve to a second, serum-collecting chamber having a dispensing aperture;

b) inserting the exposed needle into a mammal so as to withdraw whole blood into said first chamber;

c) removing said needle from the mammal and withdrawing said needle into a protective housing in which said needle and said chamber are permanently mounted;

d) transferring said housing and chambers to a centrifuge;

e) spinning the centrifuge and its contents for a time and at a force sufficient to separate serum from cells in said blood-collecting chamber;

f) increasing said force after serum separation has occurred, to a value sufficient to open said valve by hydrostatic pressure of the serum so that serum is transferred to said second chamber;

g) ceasing the spinning of step e) and removing said housing and said chambers from the centrifuge, and

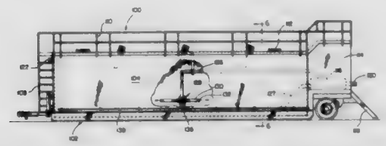
h) pressurizing said second chamber while maintaining said valve closed so as to dispense serum from said aperture.

5,055,204

SOIL AND SLUDGE TREATMENT APPARATUS AND METHOD INCLUDING AGITATION, AERATION AND RECIRCULATION

John D. Bogart, P.O. Box 717, Mt. Juliet, Tenn. 37122

Filed Aug. 29, 1989, Ser. No. 399,989
Int. Cl.[5] C02F *11/00*; B01F *13/02*
U.S. Cl. 210—758 **9 Claims**



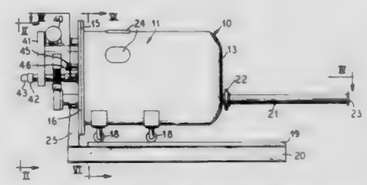
8. The method of treating and decontaminating a slurry comprising the steps of introducing a quantity of slurry having an upper portion into a tank means, agitating, aerating and mixing the slurry in the tank means by motor driven propeller mixing means and an aspirating aerator adjacent the upper portion of the slurry and agitating, aerating and mixing the slurry by air injection nozzles located tangentially near the bottom of the tank means and circulating and mixing the slurry in the tank means by removing slurry from the bottom of the tank means and reintroducing the slurry in the tank means at an elevated position.

5,055,205

PRESSURIZED CONTINUOUS OPERATING ROTARY DRUM FILTER AND METHOD

Harold R. White, New Lenox, Ill., assignor to Alar Engineering Corporation, Mokena, Ill.

Filed May 24, 1989, Ser. No. 356,124
Int. Cl.[5] B01D *33/06*
U.S. Cl. 210—784 **12 Claims**



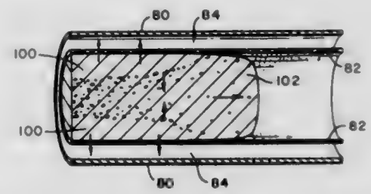
10. The method of rotary drum filtering which comprises enclosing a rotary drum filter unit with a filtering periphery in an airtight chamber, maintaining a super atmospheric pressure in the chamber to develop a high pressure differential across the periphery of the drum to facilitate filtration, rotating the drum, feeding a slurry to the drum, filtering liquid from the slurry into the drum, depositing solids from the slurry on the drum, removing the solids from the drum, collecting the removed solids in the chamber, trapping the collected solids in an elongated passageway having an open discharge end, a gate opening and closing said end, and a plunger slidable therein, sequentially compacting the trapped solids in the chamber between the plunger an gate to form the solids into plugs, opening the gate after each plug is formed, advancing the plunger to successively discharge the plugs from the passageway through the open gate, and sealing the tank with the plunger when the gate is opened.

5,055,207

FILTRATION OF CELLULOSE ESTER DOPE

Albert E. Spaller, Jr., Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1990, Ser. No. 590,839
Int. Cl.[5] B01D *61/00*
U.S. Cl. 210—805 **9 Claims**



1. Method of filtering solids or gels from cellulose ester dope comprising the steps of

A) causing said dope to flow through an elongated tubular filter under sufficient velocity to cause plug flow whereby high shear along the filter wall causes (a) solids or gels in said dope to migrate away from the filter wall towards the center of the flow and (b) the layer of said dope at the filter wall to have a reduction in viscosity sufficient to exude therethrough at a pressure difference across the wall of the filter of less than 200 psi to thereby form a filtrate and a concentrate, and

B) capturing said filtrate and concentrate in separate liquid-containing means.

5,055,208

FIRE EXTINGUISHING COMPOSITIONS

Harry E. Stewart, Malvern, and Donald B. MacElwee, Wayne, both of Pa., assignors to Powsus, Inc., Malvern, Pa.

Filed Jan. 2, 1991, Ser. No. 636,773
Int. Cl.[5] A62D *1/00*
U.S. Cl. 252—8 **9 Claims**

1. In a non-aqueous fire-extinguishing composition which consists essentially of;

a dry powder fire-extinguishing agent dispersed in an organic liquid fire-extinguishing agent, the improvement which comprises;

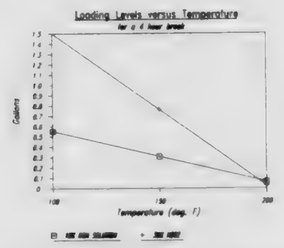
employing a liquid agent, selected from the group consisting of bromodichloromethane and dichlorotrifluoroethane.

5,055,209

REDUCTION OF THE VISCOSITY OF SOLUTIONS VISCOSIFIED WITH XANTHAN GUM POLYMERS

Kenneth L. Bridges, Breaux Bridge, and Kerry L. Kalinski, Lafayette, both of La., assignors to Osca, Inc., Lafayette, La.

Filed May 1, 1989, Ser. No. 345,494
Int. Cl.[5] E21B *43/16*
U.S. Cl. 252—8.51 **18 Claims**



1. A process for reducing the viscosity of a drilling fluid containing Xanthan gum polymer solution comprising contacting the drilling fluid with hydrogen peroxide and adjusting the pH of the solution to a level of at least about between 8 and 10.

5,055,210

CLEANING AND LUBRICATING COMPOSITION FOR MECHANICAL SEALS

Charles E. Miller, Tennessee Ridge, Tenn., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Division of Ser. No. 303,379, Jan. 30, 1989. This application Jul. 23, 1990, Ser. No. 556,141
Int. Cl.[5] C10M *105/22, 115/04, 117/00, 141/00*
U.S. Cl. 252—32 **4 Claims**

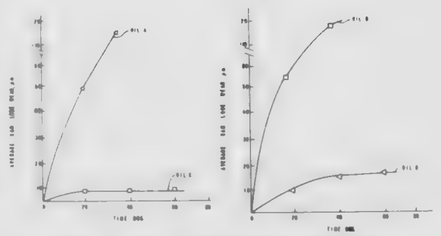
1. A mechanical seal life prolonger (SLP) product eminently suitable for the in situ repair or correction of disruptions occurring on or between the seal faces of mechanical seals comprising a mixture of a cleaner, a complexing agent, a lubricant, a penetrant, and a water repellent; wherein said cleaner comprises an aqueous solution containing from about 5 percent to about 75 percent by weight of a soap or detergent, or mixtures thereof and said cleaner being characterized by its being able to at least rapidly dissolve oil or grease juxtaposed said seal faces or said ingested debris or both, said complexing agent selected from the group consisting of phosphoric acid, acetic acid, and mixtures thereof, said acetic acid having a concentration ranging from about 4 percent to about 99.8 percent by weight, said phosphoric acid having a concentration from about 14 percent to about 83 percent P_2O_5 by weight, and said complexing agent being characterized by its being able to remove or dislodge Ca^{+2} cations chemically associated with said precipitated salts, said lubricant comprising silicone oil characterized as having a relatively low-viscosity ranging from about 10 to about 60 SUS at 210° F., said penetrant comprising an admixture of naphthenic distillates and high volatile carriers, said carriers ranging from about 20 to about 80 percent by volume of said admixture and said penetrant being characterized by its being able to provide egress of said SLP to substantial portions of said relative movement interface, and said water repellent selected from the group consisting of citrus peel oils, citrus seed oils, or mixtures thereof.

5,055,211

LUBRICATING OIL CONTAINING A MIXED LIGAND METAL COMPLEX AND A METAL THIOPHOSPHATE

Jacob J. Habeeb, Westfield, N.J., and Gopal H. Singhal, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 7, 1989, Ser. No. 404,132
Int. Cl.[5] C10M *135/18, 137/10*
U.S. Cl. 252—42.7 **31 Claims**

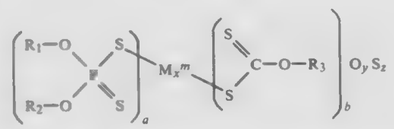


1. A lubricating oil composition which comprises

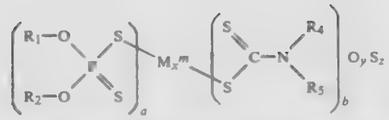
(a) a major amount of a lubricating oil basestock;

(b) from about 0.05 to about 5 wt. % of at least one mixed ligand metal complex selected from the group consisting of

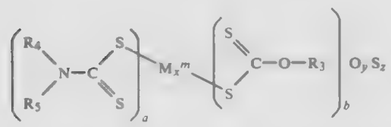
(i) a metal dithiophosphate-alkylxanthate complex having the formula



(ii) a metal dithiophosphate-dithiocarbamate complex having the formula



(iii) a metal dithiocarbamate-alkylxanthate complex having the formula



where

R_1, R_2, R_3, R_4, and R_5 are each an alkyl group; an alkoxy substituted alkyl group; a polyalkoxy substituted alkyl group; an aryl group; or a substituted aryl group; having from 1 to 24 carbon atoms,

M is a metal selected from the group consisting of antimony, bismuth, copper, iron, indium, molybdenum, tin, titanium, and zinc,

a is an integer from 1 to 5,

b is an integer from 1 to 5,

m is an integer from 2 to 6,

x is 1,

y+z is an integer from 0 to 4; and

(c) from about 0.1 to about 2 wt. % of a metal thiophosphate wherein the metal is selected from the group consisting of Group IB, IIB, VIB, VIII of the Periodic Table, and mixtures thereof.

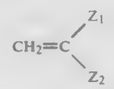
5,055,212

OIL COMPOSITIONS CONTAINING ALKYL MERCAPTAN DERIVATIVES OF COPOLYMERS OF AN ALPHA OLEFIN OR AN ALKYL VINYL ETHER AND AN UNSATURATED ALPHA, BETA-DICARBOXYLIC COMPOUND

Hanh T. Le, Wilmington, Del., assignor to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 265,614, Oct. 31, 1988, Pat. No. 4,900,331. This application Nov. 16, 1989, Ser. No. 438,659
Int. Cl.[5] C10M *151/02*
U.S. Cl. 252—48.6 **17 Claims**

1. An oil composition which comprises a major amount of an oil selected from a mineral oil or synthetic oil and a manor amount of an alkyl mercaptan derivative of an alpha olefin or alkyl vinyl ether and an unsaturated alpha, beta-dicarboxylic compound copolymer having pour point depressant properties, said copolymer comprising the reaction product of (a) an alpha a olefin having from about 2 to about b **30** carbon atoms or mixtures of alpha olefins having from about 2 to about 30 carbonates or an alkyl vinyl ether or mixture of alkyl vinyl ethers having the formula:



wherein Z_1 and Z_2 are the same or different, H, R_1or OR_1 and R_1 is an alkyl group having 1 to 30 carbon atoms, (b) maleic anhydride; and (c) an alkyl sulfide having the formula:

$$X(R_2)_y$$

wherein X is S and R_2 is an alkyl group having from about 3 to about 30 carbon atoms and y is either 1 or 2.

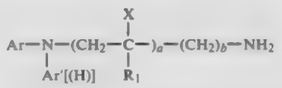
5,055,213

ADDITIVES TO LUBRICANTS RESULTING FROM THE CONDENSATION OF AN ALKYLENE POLYAMINE WITH A COPOLYMER CONTAINING VICINAL CARBOXYLIC GROUPS

Laurent Germanaud, Heyrieux; Nguyen Truong-Dinh, Vallauris; Gilbert Marie, Pau, and Patrick Turello, Francheville, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Dec. 7, 1989, Ser. No. 447,171
Claims priority, application France, Dec. 12, 1988, 88 16336
Int. Cl.[5] C10M *105/08*
U.S. Cl. 252—51.5 A **36 Claims**

1. Lubricating compositions containing a major proportion of at least one additive resulting from the condensation of at least one primary amine, secondary amine or of an alkylene polyamine of general formula



(I)

wherein

wherein Ar and Ar' are linked together to form a heterocyclic structure with the nitrogen to which they are attached

R_1 is a hydrogen atom, a C_1–C_{18} linear or branched alkyl radical, or an aromatic radical

X is a hydrogen atom, halogen, OH or NH_2 group

a and b are integers,

a is between 0 and 5

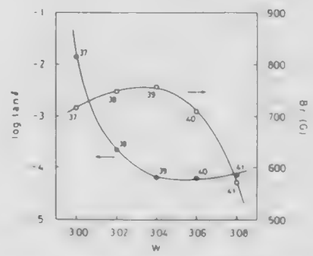
b is between 0 and 6, and the sum a+b≧1, with a copolymer containing maleic anhydride groups and whose weight-average molecular mass is ≧20,000 and wherein said condensation is effected through an amine group.

5,055,214

MAGNETIC MATERIAL FOR MICROWAVE AND MILLIMETER WAVE FREQUENCIES

Takehiro Kounoike, Asiya, and Kunisaburo Tomono, Kyoto, both of Japan, assignors to Murata Mfg. Co., Ltd., Japan

Filed Jun. 14, 1990, Ser. No. 538,210
Claims priority, application Japan, Jun. 15, 1989, 1-153127
Int. Cl.[5] C04B *35/40*; H01F *1/00*
U.S. Cl. 252—62.57 **1 Claim**



1. A magnetic material for microwave and millimeter wave frequencies consisting essentially of a composition represented by the general formula:

$$(Y_{1-x}Gd_x)_w(Fe_{1-y-z}Al_yMn_z)_{8-w}O_{12}$$

where x, y, z and w take a value within the following respec-

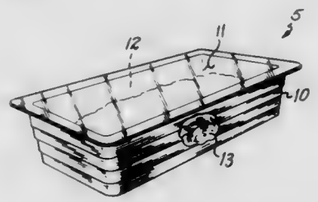
tive ranges: $0 \leq x \leq 0.35$, $0 \leq y \leq 0.16$, $0.01 \leq z \leq 0.04$, and $3.02 \leq w \leq 3.06$.

5,055,215

UNIT-DOSE DRYCLEANING PRODUCT AND METHOD

Harold E. Mains, and Joseph A. Piepmeyer, both of Montgomery, Ohio, assignors to Fabritec International Corporation

Filed Mar. 3, 1989, Ser. No. 318,595
Int. Cl.[5] C11D *17/08, 17/04*
U.S. Cl. 252—90 **39 Claims**



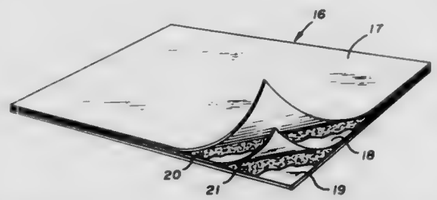
1. A unit-dose drycleaning product comprising a drycleaning detergent in the form of a liquid or semi-solid at room temperature contained within a sealed water insoluble article wherein at least a portion of said sealed water insoluble article is comprised of a material which dissolves in a drycleaning solvent during the drycleaning cycle for releasing said drycleaning detergent.

5,055,216

MULTILAYER CLEANSING TISSUE CONTAINING A PERFUME AND/OR AN EMOLLIENT SUITABLE FOR HUMAN SKIN

Aslaug R. Johnson, 3276 N. Lakeshore Dr. #14A, Chicago, Ill. 60657

Filed May 12, 1989, Ser. No. 351,068
Int. Cl.[5] C11D *17/06, 3/50, 9/44*
U.S. Cl. 252—91 **9 Claims**



1. A multilayer cleansing tissue formed of three layers of a fibrous material laminated together, a face of one of said outer layers being affixed to a face of said inner layer over the entire surface thereof, and a face of the other of said outer layers being affixed to the other face of said inner layer over the entire surface thereof, the inner one of said layers having a fragrance bearing material provided therein in an amount effective to provide a fragrant scent and being free of any cleansing agent, and each of the two outer layers having a cleansing agent provided therein in an amount effective to provide a cleansing action when said cleansing tissue is rubbed on a surface, both of said outer layers being free of a fragrance bearing material.

5,055,217

POLYMER PROTECTED BLEACH PRECURSORS

Rigoberto F. Garcia, Nutley; Elizabeth M. Coppinger, Rutherford; Charles F. Irwin, Randolph, and Angela M. Sangirardi, Saddle Brook, all of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 20, 1990, Ser. No. 543,840
Int. Cl.[5] C11D *3/395, 3/60*
U.S. Cl. 252—94 **13 Claims**

1. A particulate detergent composition additive is provided wherein each particle is an intimately blended mixture comprising:

(i) from about 1 to 98% of a bleach precursor compound capable of generating a peroxyacid in the presence of a hydroperoxide source;

(ii) from about 1 to 50% of a binder which is a non-cross-linked polymer having in an unplasticized form a T_g of at least 40° C., said polymer being a polycarboxylic homo or copolymer formed from monomers selected from the group consisting of acrylic acid, its salt and C_1–C_{20} alkyl ester derivatives; methacrylic acid, its salt and C_1–C_{20} alkyl ester derivatives; maleic anhydride, its salt, its acid and C_1–C_{20} alkyl ester derivatives; styrene; ethylene; vinyl pyrollidone; vinyl acetate and mixtures thereof; and

(iii) from about 0.5 to 20% of a plasticizer which is a sugar.

5,055,218

BLEACH GRANULES CONTAINING AN AMIDOPEROXYACID

Edward E. Getty, Cincinnati, Ohio; Kathleen B. Hunter, Villa Hills, Ky., and Eugene S. Sadlowski, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 13, 1990, Ser. No. 508,994
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] C11D *3/395, 7/54, 9/42;* **A62D** *9/00*
U.S. Cl. 252—94 **16 Claims**

1. A bleach granule for hard or soft water laundering, comprising:

(a) from about 5 to 70 weight % nonylamide of peroxyadipic acid ("NAPAA") with an average particle size of from about 0.1 to 260 microns;

(b) from about 1 to 40 weight % bleach-stable surfactant selected from the group consisting of anionics, nonionics, ampholytics, zwitterionics and combinations thereof; and

(c) from about 10 to 95 weight % hydratable, NAPAA-compatible material;

wherein additional chelants are not added to the NAPAA or the bleach granule, and wherein neither NAPAA nor the bleach granule contain boric acid.

5,055,219

VISCOELASTIC CLEANING COMPOSITIONS AND METHODS OF USE THEREFOR

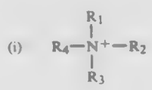
William L. Smith, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Nov. 17, 1987, Ser. No. 121,549
Int. Cl.[5] C11D *17/08, 7/54*
U.S. Cl. 252—102 **14 Claims**

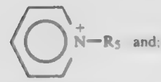
1. A thickened cleaning composition having a viscoelastic rheology comprising, in aqueous solution

(a) an active cleaning compound, present in a cleaning effective amount; and

(b) a viscoelastic thickening system present in a thickening-effective amount, consisting essentially of a quaternary ammonium compound selected from the group consisting of those having the following structures:

(i) 

-continued

(ii) 

(iii) mixtures thereof;

wherein R_1, R_2 and R_3, are the same or different and are methyl, ethyl, propyl, isopropyl or benzyl, R_4 is C_{14-18} alkyl, and R_5 is C_{14-18} alkyl; and an organic counterion mixture, comprising at least one sulfonate and one carboxylate selected from the group consisting of C_{2-10} alkyl carboxylates, aryl carboxylates, C_{2-10} alkyl sulfonates, aryl sulfonates, sulfated C_{2-10} alcohols, sulfated aryl alcohols, and mixtures thereof, the sulfonate and carboxylate being present in a ratio of about 1:6 to 6:1 and wherein the resulting composition is phase stable and has an ionic strength of at least about 0.09 g-ions/kg.

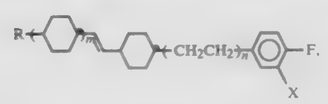
5,055,220

DICYCLOHEXYLETHYLENE DERIVATIVES

Manabu Uchida; Yasuyuki Goto, both of Ichihara, and Tetsuya Ogawa, Futtsu, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sep. 10, 1990, Ser. No. 579,327
Claims priority, application Japan, Oct. 13, 1989, 1-265131
Int. Cl.[5] C09K *19/52, 19/30;* **G02F** *1/13;* **C07C** *25/13*
U.S. Cl. 252—299.01 **10 Claims**

10. A liquid crystal composition which comprises at least one dicyclohexylethylene derivative of the formula,


[1]

where R is a straight chain alkyl group of 1 to 8 carbon atoms, X is a hydrogen or fluorine atom, m is 1 or 2, n is 0 or 1, and indicates that a substituent at the 1-position of the cyclohexane ring and a substituent at the 4-position thereof are at a trans configuration.

5,055,221

SMECTIC LIQUID-CRYSTALLINE PHASES

Bernhard Scheuble, Yokohama; Klaus Bofinger, Mühltal; Reinhard Hopf, Heringen; Axel Pausch, Seeheim; Rudolf Eidenschink, Münster; Joachim Krause, Dieburg, and Andreas Wächtler, Griesheim, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP86/00294, § 371 Date Jan. 23, 1987, § 102(e) Date Jan. 23, 1987, PCT Pub. No. WO86/07085, PCT Pub. Date Dec. 4, 1986
Continuation of Ser. No. 10,094, Jan. 23, 1987, abandoned. This PCT application May 16, 1986, Ser. No. 361,068
Claims priority, application Fed. Rep. of Germany, May 24, 1985, 3518734
The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.
Int. Cl.[5] C09K *19/34*
U.S. Cl. 252—299.61 **11 Claims**

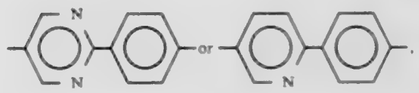
1. In a ferroelectric liquid-crystalline phase comprising an achiral basic mixture and at least one optically active compound, the improvement wherein the achiral basic mixture contains at least one compound of the formula I

$R^1—A^1—Z^1—A^2—R^2$ I

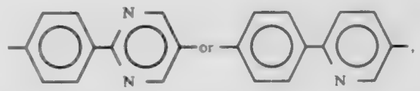
wherein

R^1 and R^2 are each independently alkyl of 3 to 12 C atoms, alkyl of 3 to 12 C atoms in which one CH_2 group is replaced by —CO—, —O—CO—, O—COO—, —CO—O— or —CH=CH—, or alkyl in which one or two CH_2 groups are replaced by 0 atoms, the resulting groups having 3 to 12 C atoms,

A^1 is —Pyr—Phe— or —Phe—Pyr—, —Pyr—Phe— being



—Phe—Pyr— being



A^2 is trans-1,4-cyclohexylene (cy) or 1,4-phenylene (phe), and

Z^1 is $—CH_2CH_2—$, $—CH_2O—$ or $—OCH_2—$, or—if A^2 is trans-1,4-cyclohexylene—also —O—CO—.

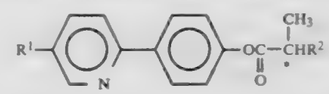
5,055,222

α-SUBSTITUTED-PROPIONIC ACID ESTERS

Kouji Ohno; Shinichi Saito; Takashi Inukai; Hiromichi Inoue, and Kazutoshi Miyazawa, all of Kanagawa, Japan, assignors to Chisso Corporation, Osaka, Japan

Division of Ser. No. 119,067, Nov. 10, 1987, abandoned. This application Sep. 18, 1989, Ser. No. 408,950
Claims priority, application Japan, Nov. 10, 1986, 61-267206; Dec. 26, 1986, 61-313310
The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.
Int. Cl.[5] C09K *19/34*
U.S. Cl. 252—299.61 **5 Claims**

1. An optically active compound expressed by the formula


(I)

wherein R^1 represents an alkyl group 2–12 carbon atoms, R^2 represents an alkyl group of 3–8 carbon atoms, and * represents an unsymmetric carbon atom.

5,055,223

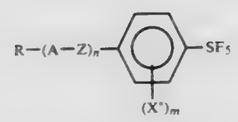
ARYL-SULFUR PENTAFLUORIDES

Volker Reiffenrath, Rossforf; Rudolf Eidenschink, Bodenheim, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

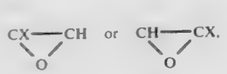
PCT No. PCT/EP88/00530, § 371 Date Dec. 27, 1989, § 102(e) Date Dec. 27, 1989, PCT Pub. No. WO88/10251, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 14, 1988, Ser. No. 455,357
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, 3721268
Int. Cl.[5] C09K *19/32, 19/34, 19/20;* **G02F** *1/13*
U.S. Cl. 252—299.62 **4 Claims**

1. Aryl-sulfur pentafluorides of the formula I wherein

I



R is H, Y or an alkyl or alkenyl radical each of which has 1–15 C atoms and is unsubstituted or substituted by at least one group Y and in which one or more non-adjacent CH_2 groups can also be replaced by O and/or S atoms and/or by —E—, —CO—, —O—CO—, —CO—O—, —O—CO—O—, —S—CO— and/or —CO—S— groups,
E is C≡C,



the X^os independently of one another are each Y or CH_3,
the Xs independently of one another are each X^o or H,
Y is CN, N_3, NCO, NCS, fluorine or chlorine,
the As independently of one another are each
a) a 1,4-cyclohexylene radical, wherein one or two non-adjacent CH_2 groups can be replaced by 0 atoms,
b) a 1,4-phenylene radical, wherein one or more CH groups can be replaced by N, or
c) a radical belonging to the group comprising 1,4-cyclohexenylene, piperidine-1,4-diyl, bicyclo-(2.2.2)octylene, naphthalene-2,6-diyl, decahydro-naphthalene-2,6-diyl or 1,2,3,4-tetrahydronaphthalene, it being possible for the radicals a) and b) to be monosubstituted or disubstituted by X^o, the Zs independently of one another are each —CO—O—, —O—CO—, —CH_2C-H_2—, —CHCN—CH_2—, —CH_2—CHCN—, —CH=CH—, —C≡C—, —OCH_2—, —CH_2O—, —CH-=N—, —N=CH—, —NO=N—, —N=NO— or a single bond,
m is 0,1 or 2 and
n is 1, 2 or 3.

5,055,224

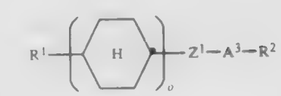
LIQUID CRYSTAL PHASE

Ian C. Sage, Broadstone, and Michael K. Chambers, Poole, both of Great Britain, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

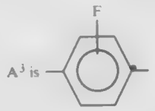
PCT No. PCT/EP88/00426, § 371 Date Jan. 27, 1989, § 102(e) Date Jan. 27, 1989, PCT Pub. No. WO88/09360, PCT Pub. Date Dec. 1, 1988
PCT Filed May 18, 1988, Ser. No. 328,191
Claims priority, application United Kingdom, May 27, 1987, 8712464
Int. Cl.[5] C09K *19/30;* **G02F** *1/13*
U.S. Cl. 252—299.63 **9 Claims**

1. In a supertwisted nematic cell comprising a liquid crystal phase, the improvement wherein said phase comprises at least three components A, B and C, each of which contains one or more compounds, wherein component A is present in an amount of 10–70% by weight and has a viscosity of at most about 25 mPa.s at 20°, a clearing point of at most 130° and a dielectric anisotropy between about −2 and +2, component B is present in an amount of 15 to 50% by weight and has a dielectric anisotropy above about +8, component C is present in an amount of 5 to 30% by weight and has a clearing point of more than 130° and a dielectric anisotropy between about −2 and about +2, and wherein component A contains at least one compound of the formula III

III



in which
R^1 is alkyl of 1 to 12 C atoms, in which in addition one or two non-adjacent CH_2 groups can be replaced by 0 atoms, —CO—, —O—CO—, —CO—O— and/or —CH=CH— groups,
R^2 has one of the meanings of R^1,



A^3 is

o is 1 or 2.

5,055,225

ALKYL THIOBENZOATE DERIVATIVE, PRODUCTION OF SAME AND LIQUID CRYSTAL DISPLAY ELEMENT

Shuichi Naijoh; Chozo Inoue; Ayako Kurotaki, and Kimie Nagai, all of Tokyo, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Nov. 14, 1989, Ser. No. 435,872
Claims priority, application Japan, Nov. 14, 1988, 63-288459
Int. Cl.[5] C09K *19/12, 19/20;* **C07C** *321/00*
U.S. Cl. 252—299.65 **4 Claims**

3. A liquid crystal device element comprising at least one optically active benzoic acid derivative represented by the formula (I)

(I)



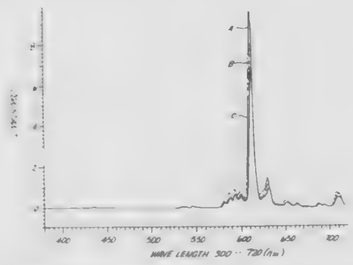
wherein R represents a straight chain alkyl group having 6 to 14 carbon atoms; Q^* represents an optically active branched chain alkyl group having 4 to 8 carbon atoms and having an asymmetric carbon atom; and m and n each represents an integer of 0 or 1, provided that m is not 0 when n is 1.

5,055,226

MANUFACTURING METHOD FOR RED PHOSPHOR

Junmo Yang, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Hwasung, Rep. of Korea

Filed Dec. 15, 1989, Ser. No. 451,224
Int. Cl.[5] C09K *11/78*
U.S. Cl. 252—301.4 R **1 Claim**



1. A method for manufacturing a Y_2O_3: Eu red phosphor from yttrium oxide (Y_2O_3) and europium oxide (Eu_2O_3) comprising the step of baking at a temperature of about 1300° to 1400° C. the yttrium oxides and europium oxides in a flux consisting essentially of a mixture of from 2 to 6 parts by weight of Na_2CO_3, from 2 to 6 parts by weight of NaF and from 0.5 to 1.0 parts by weight of B_2O_3 per 100 parts by weight of yttrium oxide.

5,055,227

FLUORESCENT COMPOSITION FOR LOW VELOCITY ELECTRON BEAM EXCITATION

Kunihiko Yoneshima, Hiratsuka, and Fumio Takahashi, Odawara, both of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed May 15, 1990, Ser. No. 523,560
Claims priority, application Japan, May 16, 1989, 1-122640
Int. Cl.[5] C09K *11/62*
U.S. Cl. 252—301.6 S **6 Claims**

1. A fluorescent composition for low velocity electron beam excitation at an acceleration voltage of not higher than about 1 kV, comprising a phosphor capable of emitting light under excitation by a high velocity electron beam above 1 kV acceleration voltage and inidium oxide (In_2O_3) mixed or mutually adhered to each other, wherein the half value width of the strongest diffraction line in the diffraction X-ray spectrum of said indium oxide (In_2O_3) is within a range of from 0.10° to 0.25°, and wherein the weight ratio of In_2O_3 to the phosphor is 1/99 to 7/13 for the case of a mixture of the phsophor and In_2O_3 and is 1/199 to 3/7 for the case that the In_2O_3 is adhered to the phosphor, said fluorescent composition exhibiting a higher luminance than the fluorescent composition, as defined above but where the half value width of the strongest diffraction line in the diffraction X-ray spectrum of the indium oxide is outside of said range.

5,055,228

PROCESS FOR THE PREPARATION OF STABLE DISPERSIONS OF AT LEAST ONE WATER-IMMISCIBLE LIQUID PHASE IN AN AQUEOUS PHASE

Arlette Zabotto, Paris; Jacqueline Griat, Ablon; Rose-Marie J. Handjani, Paris; Guy G. Vanlerberghe, Villevaude, and Alain J. Ribier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 900,772, Aug. 26, 1986, abandoned, which is a continuation of Ser. No. 279,518, Jul. 1, 1981, abandoned. This application Mar. 14, 1988, Ser. No. 167,994
Claims priority, application France, Jul. 1, 1980, 80 14657; Sep. 24, 1980, 80 20499
Int. Cl.[5] B01J *13/00*
U.S. Cl. 252—312 **20 Claims**

1. A process for the preparation of a stable dispersion comprising droplets of at least one water-immiscible liquid phase dispersed in a continuous aqueous phase, said aqueous phase having spheres dispersed therein whereby said droplets are stabilized in said dispersion by the presence therein of said spheres, said process comprising
mixing by mechanical agitation said water-immiscible liquid phase with a dispersion of spheres in said continuous aqueous phase,
said water-immiscible liquid phase consisting of a hydrocarbon, a halocarbon or polysiloxane,
said spheres having an average diameter of 0.025 to 5 microns and consisting substantially of concentric lipid laminae encapsulating an aqueous phase between them, said lipid constituting said laminae consisting of an ionic or nonionic amphiphilic substance capable of forming a lamellar phase in water and said continuous aqueous phase contains, as the only amphiphilic substance, the said ionic or nonionic amphiphilic substance constituting the laminae of said spheres, all said ionic or nonionic amphiphilic substances being enclosed in the laminae of said spheres.

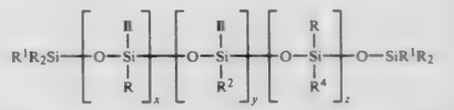
5,055,229

SILICONE ANTIFOAMS

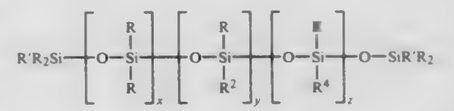
Robert H. Pelton, Mahopac, N.Y., and Errol D. Goddard, Haworth, N.J., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 947,876, Dec. 30, 1986, abandoned. This application Jan. 3, 1989, Ser. No. 293,545
Int. Cl.[5] B01D *17/00*
U.S. Cl. 252—321 **36 Claims**

1. A process for the production of a foam suppressant composition comprising
1) reacting a mixture of
a) from about 80 to about 98 wt.%, based upon the total weight of reactants a, b and c, of at least one polyorganosiloxane having the formula



wherein R represents an alkyl group having from 1 to about 6 carbon atoms; R^1 represents a hydrogen atom, a hydroxyl group, an alkyl group having from 1 to about 16 carbon atoms, an epoxy group having from 2 to about 16 carbon atoms or the group —OR^3 wherein R^3 represents an alkyl group having from 1 to about 16 carbon atoms, an arylalkyl group having from about 7 to about 23 carbon atoms or —OR^3 may be a polyoxyalkylene group having a molecular weight of from about 50 to 5000; R^2 represents an alkyl group having from 1 to about 16 carbon atoms, a phenyl group, a hydrogen atom, an alkyl-substituted phenyl group wherein the alkyl group contains from 1 to about 6 carbon atoms, an epoxy group having from about 2 to about 16 carbon atoms, or a polysiloxane group having a molecular weight of from about 100 to about 10,000; y is an integer ranging from 5 to about 10,000; and the sum of x, and y ranges from about 500 to about 10,000,
b) from about 0.1 to about 30 wt. %, of amphorous silica based upon the total weight of reactants a, b and c; and
c) from about 0.0001 to about 2 wt. %, based upon the total weight of reactants a, b and c of at least on free radical initiator catalyst,
d) optionally, from about 0 to about 20 wt. %, based upon the total weight of reactants a, b and c of at least one vinyl monomer,
e) optionally, from about 0 to about 20 wt.,% based upon the total weight of reactants a, b, and c of a vinyl-modified polyorganosiloxane of the formula



wherein R represents an alkyl group having from 1 to about 6 carbon atoms; R^1 represents a hydrogen atom, a hydroxyl group, an alkyl group having from 1 to about 16 carbon atoms, an epoxy group having from 2 to about 16 carbon atoms or the group —OR^3 wherein R^3 represents an alkyl group having from 1 to about 16 carbon atoms, an arylalkyl group having from about 7 to about 23 carbon atoms or —OR^3 may be a polyoxyalkylene group having a molecular weight of from about 50 to about 5000; R^2 represents an alkyl group having from 1 to about 16 carbon atoms, a phenyl group, a hydrogen atom, an alkyl-substituted phenyl group wherein the alkyl group contains from 1 to about 6 carbon atoms, an epoxy group having from about 2 to about 16 carbon atoms, or a polysiloxane group having a molecular weight of from about 100 to about 10,000; R^4 represents a vinyl group containing

from 2 to about 24 carbon atoms; y is an integer ranging from 0 to about 10,000; z is an integer ranging from 0 to about 400; and the sum of x, y and z ranges from about 500 to about 10,000;

under conditions and for a time sufficient such that free radical polymerization occurs and a polymerization product forms; and

2) diluting the polymerization product formed through the reaction of the above described materials with sufficient quantities of a polydiorganosiloxane having a viscosity of about 10 to about 300 cst. such that a final composition having a viscosity of about 100 to about 10,000 cst. is produced.

5,055,230

CORROSION INHIBITING COMPOSITIONS

Brian G. Clubley, Wilmslow, and David C. Parker, Macclesfield, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 215,846, Jul. 6, 1988, abandoned. This application May 15, 1990, Ser. No. 524,675

Claims priority, application United Kingdom, Jul. 14, 1987, 8716586; Dec. 4, 1987, 8728482

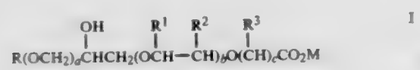
Int. Cl.[5] C23F *11/10*

U.S. Cl. 252—389.62 **19 Claims**

1. A process for inhibiting the corrosion of a metal surface comprising: contacting the metal surface with a composition comprising:

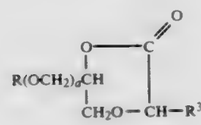
a) an aqueous-based system; and

b) as an inhibitor for protecting the metal surface against corrosion, at least one compound having the formula I or II:



I

or



II

in which

R is C_4–C_{20}alkyl, C_4–C_{20}alkyl interrupted by one or more oxygen atoms, C_4–C_{20}alkenyl, C_6–C_{10}aryl, C_7–C_{15}alkaryl, C_7–C_{15}aralkyl or C_5–C_{12}cycloalkyl;

R^1, R^2 and R^3 are the same or different and each is methyl or hydrogen;

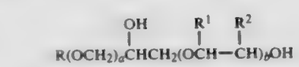
M is hydrogen, a metal ion, ammonium or substituted ammonium ion;

a is 0 or 1;

b is 0 or an integer from 1 to 6; and

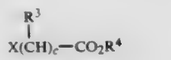
c is an integer from 1 to 6.

16. A process according to claim **1** wherein the compound of formula I or II has been produced by reacting a diol of the formula VI:



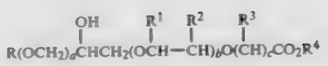
VI

with an ω-halocarboxylic ester of the formula VII:



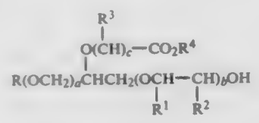
VII

to obtain a compound of formula VIII:



VIII

and/or a compound of formula X



X

wherein

R is C_4–C_{20}alkyl, C_4–C_{20}alkyl interrupted by one or more oxygen atoms, C_4–C_{20}alkenyl, C_6–C_{10}aryl, C_7–C_{15}alkaryl, C_7–C_{15}aralkyl or C_5–C_{12}cycloalkyl;

R^1, R^2 and R^3 are the same or different and each is methyl or hydrogen;

M is hydrogen, metal ion, ammonium or substituted ammonium ion;

a is 0 or 1;

b is 0 or an integer from 1 to 6; and

c is an integer from 1 to 6

X is a halogen and R^4 is a hydrocarbon residue

and hydrolyzing the compound of formula VIII and/or X, to produce the corresponding compound of the formula I or II.

5,055,231

REACTION PRODUCTS OF BORIC ACID AND ALKANOLETHERAMINES AND THEIR USE AS CORROSION INHIBITORS

Franz-Josef Hadamik, Bad Soden; Wilfried Kappa, Steinau an der Strasse, and George F. Urban, Bensheim, all of Fed. Rep. of Germany, assignors to REWO Chemische Werke GmbH, Fed. Rep. of Germany

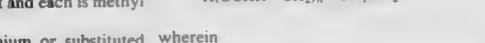
Filed Mar. 10, 1989, Ser. No. 321,981

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808372

Int. Cl.[5] C23F *11/10*; **C07F** *5/02*

U.S. Cl. 252—391 **17 Claims**

1. A product formed by reacting under condensation conditions, orthoboric acid and an alkanoletherammine in the molar ratios of from about 1:1 to about 1:6, said alkanoletheramine having the formula:



wherein

R is hydrogen or lower alkyl, R_1 is lower alkylene and

n is 1–5.

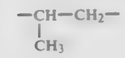
7. A product formed by reacting under condensation conditions, orthoboric acid and an alkanoletherammine in which the molar ratios are from about 1:1 to about 1:6, said alkanoletheramine having the formula:



wherein

R is hydrogen or methyl;

R_1 is $-(CH_2)_2-$, $-(CH_2)_3-$or



and

n is 1 to 5.

5,055,232

POURABLE LIQUID BLEND OF AMINE OXIDE AND NONIONIC SURFACTANT

Joe D. Sauer; Kim R. Smith, and James E. Borland, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 18, 1990, Ser. No. 525,070

Int. Cl.[5] C11D *1/00*

U.S. Cl. 252—547 **10 Claims**

1. A pourable liquid blend of a tert-amine oxide and a solvent consisting essentially of a nonionic surfactant and 0–30% of water, based on the weight of the blend; at least a portion of the nonionic surfactant being a compound corresponding to the formula ZC(0)NZ'Z'' in which Z is an alkyl group containing 4–30 carbons, Z' is hydrogen or an alkyl or hydroxyalkyl group containing 1–3 carbons, and Z' is a hydroxyalkyl group containing 1–3

5,055,233

DETERGENT BAR PROCESS USING TRIALKYLAMINE OXIDE DIHYDRATE

James E. Borland, and Kim R. Smith, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 344,275, Apr. 26, 1989, abandoned. This application Oct. 2, 1989, Ser. No. 415,886

Int. Cl.[5] C11D *1/75, 17/00*

U.S. Cl. 252—547 **9 Claims**

1. In a process for preparing a detergent bar suitable for use as toilet soap from a detergent bar formulation comprising a trialkylamine oxide, the improvement which comprises using as the trialkylamine oxide, in an amount such as to provide about 5–80% by weight of the detergent bar, a trialkylamine oxide dihydrate corresponding to the formula R'R''R'''NO.2-H_2O wherein R' is a primary alkyl group containing 8–24 carbons, R'' is methyl, ethyl, or a primary alkyl group containing 8–24 carbons, and R''' is methyl or ethyl.

5,055,234

Patent Not Issued For This Number

5,055,235

BROMINATION PROCESS

David R. Brackenridge, and William T. Murray, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

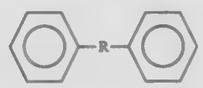
Filed Dec. 12, 1990, Ser. No. 628,331

Int. Cl.[5] C09K *21/00*

U.S. Cl. 252—609 **22 Claims**

1. A process for preparing a mixture of brominated non-condensed ring polyaromatics having an average of from about 6 to about 8 bromine atoms per molecule, a low melting point range, and a low amount of light end impurities, which process comprises:

a) adding a first amount of bromine to a reactor initially containing a reaction mass comprising a solvent, a catalytic amount of a first bromination catalyst, and a non-condensed ring polyaromatic of the formula



wherein R is an alkylene group of 1 to 10 carbon atoms, an oxygen atoms, a sulfur atom, an oxyalkylene group of up to 6 carbon atoms, an oxyalkyleneoxy group of up to 6 carbon atoms or a carbon single bond;

b) maintaining the reaction mass during the addition of the first amount of bromine at a first bromination temperature;

c) terminating the addition of the first amount of bromine when sufficient bromine has been added to obtain the mixture of polyaromatics having an average of about 4 bromine atoms per molecule of polyaromatic;

d) adding a second bromination catalyst to the mixture;

e) adding a second amount of bromine to the reaction mass while heating the reaction mass to a second bromination temperature; and,

f) after at least substantially all of the bromine has reacted, recovering the brominated non-condensed ring polyaromatic mixture from the reaction mass, the recovered mixture containing more than about 35%, based on gas chromatographic area percent, of a brominated polyaromatic having about 7 bromine atoms per molecule.

5,055,236

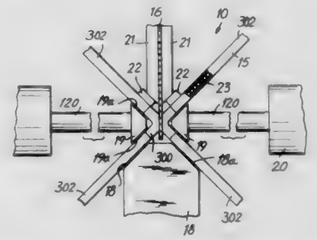
METHOD AND APPARATUS FOR UNDERWATER REMOTE CONTROLLED RADIOACTIVE WASTE REDUCTION OF BOILING WATER NUCLEAR REACTOR CONTROL RODS

Adrian H. Krieg, 119 Maplevale Dr., Woodbridge, Conn. 06525

Continuation-in-part of Ser. No. 776,375, Sep. 16, 1985, abandoned. This application Jun. 4, 1987, Ser. No. 58,171

Int. Cl.[5] G21F *9/00*; **G21C** *19/00*; **B23K** *7/00*; **B26D** *7/06*

U.S. Cl. 252—626 **7 Claims**



1. Apparatus for cutting a cruciform shaped radioactive control rod into three separate cut sections, said cruciform shaped radioactive control rod being of the type having four substantially equidistantly spaced sheaths extending from a central spline along a large portion of the length thereof, each sheath containing at least one radioactive modulator rod, and a velocity limiter at one end thereof, said apparatus comprising:

first cutting means for cutting said velocity limiter away from the remainder of said control rod to form a first one of said cut sections; and

second cutting means for cutting, simultaneously with said cutting by said first cutting means, the central spline into two equal sections along the lengthwise direction thereof and substantially transverse to said first cutting means, to form two chevron shaped sections as the remaining two of said cut sections.

6. A method of cutting a cruciform shaped radioactive control rod into three separate cut sections, said cruciform shaped radioactive control rod being of the type having four substantially equidistantly spaced sheaths extending from and along a large portion of the length thereof, each sheath containing at least one radioactive rod, and a velocity limiter at one end thereof, said method comprising the steps of:

cutting said velocity limiter away from the remainder of said control rod by first cutting means, to form a first one of said cut sections; and

cutting the remainder of the control rod, simultaneous with said step of cutting said velocity limiter, along the lengthwise direction thereof and substantially transverse to said first cutting means, by second cutting means, to form two chevron shaped sections as the remaining two of said cut sections.

5,055,237

METHOD OF COMPACTING LOW-LEVEL RADIOACTIVE WASTE UTILIZING FREEZING AND ELECTRODIALYZING CONCENTRATION PROCESSES

Abdo A. Husseiny, LaPlace, La., assignor to Technology International Incorporated, LaPlace, La.

Filed Aug. 14, 1990, Ser. No. 566,880
Int. Cl.[5] G21F *9/08*
U.S. Cl. 252—631 **19 Claims**

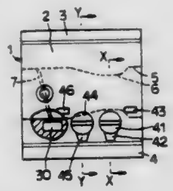
1. A nuclear plant low level liquid radioactive waste treatment and volume reduction process comprising the steps of:
collecting the low-level liquid radioactive wastes influent within the plant into a holding tank for processing;
directing a first waste-containing stream containing the low-level liquid radioactive wastes at a regulated flow rate from the holding tank to a plate precooler wherein the first waste-containing stream is chilled to near its freezing point;
introducing the chilled waste-containing stream into a freezing crystallizer to form ice crystals from the water in the stream and to obtain a waste stream containing residual salts and having a reduced volume relative to the first waste-containing stream;
recirculating the reduced volume stream into a recirculation loop around the crystallizer to maintain proper velocity and uniformity of ice fraction in the crystallizer;
increasing the formation rate of ice until the concentration of the residual salts in the recirculating waste-containing stream becomes high enough to precipitate some of the salts as wet salts;
directing the wet salts and any other solid contaminants to a disposal tank for eventual packaging in standard radioactive waste forms for shipment to disposal sites;
separating the ice crystals and washing the ice to remove adhering waste liquid, melting the ice, and then recycling or disposing the melted ice as a purified liquid;
collecting the reduced volume stream after separating the wet salts of ice to form a second waste-containing stream which includes the waste liquid removed from the ice;
electrodialyzing the second waste containing stream to further reduce the volume of the second waste-containing stream and thereby produce a third stream concentrated with inactive ions and other waste ions; and then recycling the third waste stream through the precooling and crystallizing freezing steps.

5,055,238

DIAPHRAGM CARBURETOR

Satoru Araki, Ebina, Japan, assignor to Shinagawa Diecast Industrial Corp., Zama, Japan

Filed Jun. 18, 1990, Ser. No. 539,795
Claims priority, application Japan, Jun. 30, 1989, 1-169204
Int. Cl.[5] H02M *3/08*
U.S. Cl. 261—35 **5 Claims**



1. A diaphragm carburetor comprising an idle fuel path and a main fuel path for transmitting to an intake path fuel adjusted to a given pressure, and manual adjustment valves for independently regulating the effective areas of the said two fuel paths, the manual adjustment valves including caps that restrict within a fixed range of one hundred eighty degrees or less the rotation of said adjustment valves,

said adjustment valves comprising screws which extend into said two fuel paths and said screws have heads, and said caps comprise cap members locked to the respective screw heads and projecting from the diaphragm carburetor to act as stoppers to engage one another to thereby limit rotation in one rotation direction for each valve, and

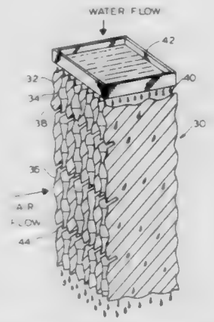
the carburetor has a carburetor body from which the caps of said adjustment valves extend, and said body comprises a pair of stoppers located adjacent said caps to thereby limit rotation in a second rotation direction for each valve.

5,055,239

LIQUID AND GAS CONTACT APPARATUS

Patricia T. Thomas, North Fort Myers, Fla., assignor to Munters Corporation, Fort Myers, Fla.

Filed Nov. 15, 1990, Ser. No. 614,277
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—112.2 **22 Claims**



1. In a gas and liquid contact apparatus in which gas and liquid flow in cross flow relationship to one another, a gas and liquid contact body comprising, first and second sets of corrugated sheets having corrugations formed therein disposed in a direction transversely of the horizontal plane of the contact body, the sheets of the first set being disposed alternatively with the sheets of the second set with the corrugations of the first set crossing the corrugations of the second set, said body having a gas inlet edge and a gas outlet edge defined by the opposite edges of the sheets and said crossed corrugations defining passageways penetrating from said gas inlet edge to said gas outlet edge of said body; at least one of said gas inlet edges and said gas outlet edge having a plurality of generally channel shaped notches formed therein whereby liquid flowing through the contact body will agglomerate at said notches.

5,055,240

METHOD AND APPARATUS FOR PRODUCING MICROSHELLS

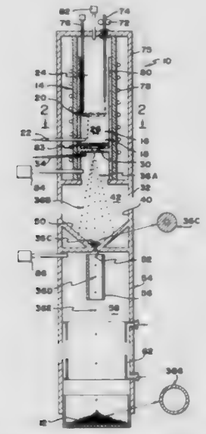
Mark C. Lee, La Canada, Calif.; Christopher H. Schilling, Richland, Wash., and Taylor G. Wang, Glendale, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1986, Ser. No. 858,054
Int. Cl.[5] B29B *9/10*
U.S. Cl. 264—5 **14 Claims**

1. A method for forming gas-filled shells comprising:
establishing a quantity of solidifiable melt material in a molten state in the presence of a gas that is at least moderately soluble in the melt material, to form a quantity of a solution of the molten melt material and gas wherein the proportion of said gas is greater than the proportion of said gas which can remain dissolved in the solid state of said melt material;

atomizing said quantity of solution of molten melt material and gas, into a multiplicity of separate droplets;
cooling said separate droplets from the outside, until the melt material therein solidifies, whereby to form hollow shells with a bubble of said gas in the hollow of each shell.

14. Apparatus for processing gas-filled shells comprising:



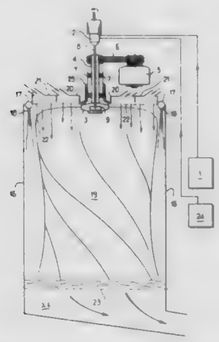
means for establishing a hollow shell in free fall in an environment containing a gas which is at least moderately soluable in the shell material;
means for applying heat to the outside of said shell while it is in free fall in said environment, in an amount that melts the shell through its entire thickness; and
means for withdrawing heat from the outside of the shell in an amount to solidify the shell.

5,055,241

PROCESS FOR THE PRODUCTION OF PHENOPLAST FIBERS

Jacques Seignan, Paris, and Bernard Kafka, Rantigny, both of France, assignors to Isover Saint-Gobain, Aubervilliers, France

Continuation of Ser. No. 590,648, Mar. 19, 1984, abandoned.
This application Apr. 1, 1986, Ser. No. 846,488
Claims priority, application France, Mar. 23, 1983, 83 04737
Int. Cl.[5] B29B *9/00*
U.S. Cl. 264—8 **18 Claims**



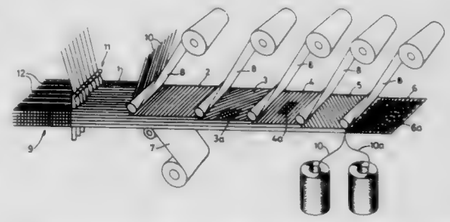
1. A process for the formation of resole type phenoplast fibers, said process comprising the steps of:
combining formaldehyde and phenol with a mole ratio of formaldehyde to phenol which is greater than one so as to form a liquid composition;
continuously treating small quantities of said composition by adjusting a viscosity of said composition and by conditioning said composition to be chemically cross-linked, including the addition of a cross-linking catalyst, said continuous treatment being applied to said composition at the rate at which it is being used;
immediately after said continuous treatment step, feeding said treated composition into a centrifuge bushing having a plurality of orifices;
continuously extruding said composition through said orifices to form fibers and projecting said fibers into a surrounding atmosphere wherein said composition extruded from each said orifice forms one said fiber whose dimensions are determined by those of said orifices and each said projected fiber is attenuated;
selecting said constitutents and a degree of conditioning of said composition, and selecting characteristics of said surrounding atmosphere, such that cross-linking and drying of said projected fibers by said atmosphers begins as soon as said fibers are projected out of said centrifuge and is operated;
treating said projected fibers in said atmosphere by a degree sufficient such that said fibers are stabilized to the extent that they are solid and will not stick together and are at least partially cross-linked, and collecting said projected fibers.

5,055,242

PROCESS FOR CONTINUOUSLY FORMING REINFORCED ARTICLES

Jeffrey A. Vane, Newbury, England, assignor to Tech Textiles Limited, Andover, England

Filed Sep. 25, 1989, Ser. No. 411,382
Claims priority, application United Kingdom, Sep. 26, 1988, 8822520
Int. Cl.[5] B29C *63/06, 63/24*
U.S. Cl. 264—22 **30 Claims**



1. A process for forming a reinforced article, comprising the steps of:
(a) continuously supplying yarns or threads to a first station,
(b) continuously producing at said first station a reinforcing material having a plurality of superimposed layers, each layer consisting of a plurality of unidirectional non-woven yarns or threads laid side-by-side, the yarns or threads in at least two of the different layers extending in different directions,
(c) stitching together said layers,
(d) continuously passing the reinforcing material to a wetting station,
(e) wetting said reinforcing material at said wetting station with a matrix material,
(f) continuously passing the wetted reinforcing material to a forming station,
(g) at said forming station forming the wetted reinforcing material to the shape of an article, and
(h) curing or consolidating the matrix material to produce said article.

5,055,243

METHOD OF PREPARING CARBON FIBER-REINFORCED CARBON MODULES

Susumu Takahashi, Yokohama, Japan, assignor to KantoYaking Kogyo K.K., Kanagawa, Japan

Filed Feb. 27, 1990, Ser. No. 485,604

Int. Cl.[5] B29C *71/02*; C01B *31/02*

U.S. Cl. 264—29.1 **2 Claims**

1. A method of preparing high temperature resistant carbon fiber-reinforced carbon modules, which comprises:

packing modules of carbon fibers in plastic bags,

impregnating said fibers with resinous binders,

hermetically sealing said bags and the contents thereof under a vacuum;

confining said bagged carbon fiber modules in a predetermined space having the dimensions to which the carbon fiber modules are to be shaped,

releasing the contents of said bags from said vacuum whereby the modules of carbon fibers are permitted to expand and to fill said space, and

subjecting said modules to a first heat-treatment by which said resinous binders are made infusible, and to a second heat-treatment by which said modules are carbonized to obtain high temperature resistant carbon fiber-reinforced carbon modules.

5,055,244

PROCESS AND APPARATUS FOR THE PRODUCTION OF THIN WALL TUBES FROM RUBBER - AND/OR PLASTIC MIXTURES

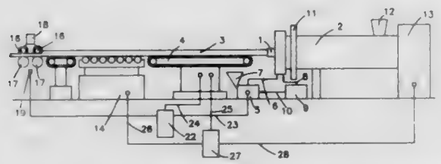
Hans-Joachim Gohlisch, Hanover, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Filed Jan. 26, 1990, Ser. No. 470,937

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902405

Int. Cl.[5] B29C *47/92*

U.S. Cl. 264—40.3 **10 Claims**



1. Apparatus for producing thin wall tubes of rubber and/or plastic mixture comprising,

an extruder having a rotatable screw, means for driving said screw and an extruder head for extruding a thin wall tube blank,

means for drawing the tube blank from the extruder head,

means for introducing powder-loaded air under pressure into the extruded tube blank and for withdrawing air from said tube blank after at least a portion of the powder has been deposited on the inner wall surface of the tube blank,

means for controlling air pressure in said tube blank,

means downstream of said drawing means for weighing a predetermined length of said tube blank and producing a weight-per-unit-length signal,

means located downstream of said weighing means for forming the tube blank into a predetermined cross sectional shape, other than a flattened shape in which opposite sides of the tube blank are pressed together,

means adjacent said shape forming means for measuring a transverse dimension of said formed tube blank and for producing a signal indicative of the measured transverse dimension of said tube blank, and

control means connected with said measuring means to receive said transverse dimension indicative signal, connected with said weighing means to receive said weight-per-unit-length signal and connected with at least one of said drawing means, said air pressure controlling means and said extruder screw driving means to control at least one of the rate of drawing of said tube blank, the air pressure in said tube blank and the rate of driving said extruder screw to maintain the cross sectional dimensions of said tube blank and the weight-per-unit-length of said tube blank constant over a long operating period.

4. A process for the production of thin wall tube from a rubber and/or plastic mixture through extrusion and drawing which comprises,

extruding a thin wall tube blank from the extruder head of an extruder having a rotatable screw and means for driving said screw,

drawing said extruded thin wall tube blank from said extruder head,

introducing powder loaded air under pressure into said extruded tube blank and withdrawing said air after at least a portion of the powder has been deposited on the inner wall of said tube blank,

weighing a predetermined length of said tube blank, subsequent to the drawing of said tube blank to obtain a weight-per-unit-length signal,

imparting a predetermined cross sectional shape other than a flattened shape to said tube blank subsequent to said weighing of a predetermined length of said tube blank,

measuring at least one of the width and height of said tube blank to which said predetermined cross sectional shape has been imparted to obtain a width and/or height signal and

using said weight-per-unit-length signal and said width and/or height signal for controlling at least one of the air pressure in said tube blank, the rate of drawing said tube blank from said extruder head and the rate of driving said extruder screw to maintain the cross section of said tube blank and the weight-per-unit-length of the tube blank constant over a long period of operation.

5,055,245

METHOD OF MEASURING TEMPERATURE WITHIN CURED ARTICLE AND METHOD OF CONTROLLING TIRE VULCANIZATION

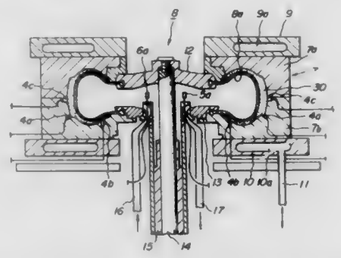
Hideo Hisatomi, Kodaira; Toshiro Iwata, Musashimurayama; Toshihide Kosoegawa, Shiki; Kikuo Oka, Higashimurayama; Seizo Ichikawa, and Kuninori Mitarai, both of Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 69,799, Jul. 6, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 330,948

Claims priority, application Japan, Jul. 7, 1986, 61-160580; Jul. 8, 1986, 61-161559; Oct. 28, 1986, 61-257740; Dec. 2, 1986, 61-288525

Int. Cl.[5] B29C *35/04*

U.S. Cl. 264—40.6 **18 Claims**



1. A method of controlling a tire vulcanization by controlling a heat supply to a vulcanizing machine which includes a mold unit and a bladder unit having a bladder and center post assembly comprising the steps of:

measuring a first temperature at at least one point at a boundary between the mold unit heated by steam and the tire during the tire vulcanization with a first temperature sensing means;

providing a second temperature sensing means at the center post assembly of the bladder unit heated by steam and gas during the tire vulcanization and measuring a second temperature with the second temperature sensing means;

introducing a first boundary layer between the first temperature sensing means and the tire;

introducing a second boundary layer between the second temperature sensing means and the bladder;

calculating temperatures at predetermined points within the tire from the first and second temperatures;

calculating vulcanizations at said predetermined points from said temperatures at said predetermined points;

estimating a vulcanization profile within the tire from said vulcanizations at said predetermined points;

detecting a least vulcanization of said vulcanization profile within the tire; and

determining a timing at which the heat supply to the vulcanizing machine is stopped and producing a stop signal for the heat supply in accordance with said least vulcanization within the tire.

5,055,246

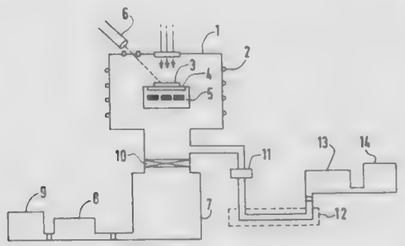
METHOD OF FORMING HIGH PURITY METAL SILICIDES TARGETS FOR SPUTTERING

Pierre Jalby, La Marne, France; Pierre Claverie, Boulogne, France; Frédéric Rotman, Paris, France; Masao Kimura, Tsuchiura, Japan; Jean-Marie Friedt, Shinjuku, Japan, and Juichi Arai, Ibaraki Pref., Japan, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Jan. 22, 1991, Ser. No. 643,490

Int. Cl.[5] C23C *16/42, 14/40, 14/16*

U.S. Cl. 264—81 **12 Claims**



1. A method to manufacture a high purity silicide target comprising the steps of providing a substrate in a CVD enclosure, evacuating said enclosure up to a pressure P1 which is at least equal to or smaller than 5×10^{-5} Torr, heating the substrate at a temperature T1, which is at least equal to or greater than 20° C., injecting in said enclosure a refractory metal halide MXm having a purity, as far as metallic impurities are concerned, greater than 5N (99,999%) and a silicon hydride having a purity, as far as metallic impurities are concerned, greater than 6N (99,9999%) setting the pressure in the enclosure between about 0.01 Torr and the atmospheric pressure while maintaining the temperature in the CVD enclosure between about 20° C. and about 800° C., growing a refractory metal silicide layer on the substrate to make a target having a purity, as far as metallic impurities are concerned, greater than 5N (99,999%), maintaining the temperature in the enclosure during said growing step at a value T2 which is not greater than T1, then withdrawing the target from said CVD enclosure.

5,055,247

PROCESS FOR PRODUCING WOODY MOLDINGS

Minoru Ueda; Hideaki Matsuda; Masanori Hara, and Koichi Murakami, all of Kagawa, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 551,043, Nov. 14, 1983, abandoned. This application Mar. 5, 1987, Ser. No. 21,984

Claims priority, application Japan, Feb. 22, 1983, 58-26981

Int. Cl.[5] C08G *63/48*; C08H *5/04*; C08J *5/06*

U.S. Cl. 264—109 **12 Claims**

1. A two-step process for producing a hard woody molding, which comprises as step one, adding a dibasic acid anhydride to hydroxy groups of a woody material selected from the group consisting of wood chip, wood metal and the digested product thereof to form a half ester of the woody material, said half ester containing carboxyl groups, and, as step two, adding a compound having at least two epoxy groups in the molecule thereof to the half ester of the woody material obtained from step one, and after sufficiently kneading the mixture, heating and press molding the kneaded mixture at a temperature higher than 120° C. and a pressure greater than 60 kg/cm^2, whereby said woody molding is cross-linked by reaction between the epoxy groups of said epoxy compound and the carboxy groups of said half ester.

5,055,248

PROCESS FOR PRODUCING STRETCHED ARTICLE OF ULTRAHIGH-MOLECULAR WEIGHT POLYETHYLENE

Masanori Motooka; Hotishi Mantoku, both of Iwakuni; Kazuo Yagi, Obtake; Hiroyuki Takeda, Ohno, and Kazuyuki Takimoto, Mikawa, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 053,534, May 22, 1987, abandoned, which is a continuation of Ser. No. 734,915, May 16, 1985, abandoned. This application Oct. 16, 1989, Ser. No. 423,592

Claims priority, application Japan, May 16, 1984, 59-96587; Jun. 22, 1984, 59-127469

Int. Cl.[5] D01F *6/04*; D01D *5/12*

U.S. Cl. 264—210.3 **15 Claims**

1. A process for producing a stretched filament of ultrahigh-molecular-weight polyethylene, which comprises

(1) melt-kneading a mixture composed of

(A) 15 to 50 parts by weight, per 100 parts by weight of components (A) and (B) combined, of ultrahigh-molecular-weight polyethylene having an inherent viscosity (72), determined at 135° C. in decalin, of at least 5 dl/g, and

(B) 85 to 50 parts by weight, per 100 parts, by weight of components (A) and (B) combined, of a mixture of 95 to 20% by weight, per 100 parts by weight of components (b_1) and (b_2) combined, of a fatty acid (b_1) selected from the group consisting of capric acid, lauric acid, myristic acid, palmitic acid, stearic acid and oleic acid, and from 5 to 80% by weight, per 100 parts by weight of the fatty acid(b_1) and component (b_2) combined, of a low softening point hydrocarbon polymer (b_2) having a softening point, determined by the method of JIS K-2531, of from 50° to 130° C. and a weight average molecular weight ($\overline{M}w$), determined by the GPC method, of from 50 to 2,000, and selected from the group consisting of aliphatic hydrocarbon resins produced from, as main raw materials, a C_4 fraction, a C_5 fraction or a mixture of these fractions obtained by cracking of petroleum or naphtha, and aromatic hydrocarbon resins produced from, as main raw materials, a C_9 fraction or a mixture of these fractions obtained by cracking of petroleum or naphtha, in a screw extruder while maintaining the mixture at a temperature ranging from the melting point, determined by the DSC method, of the mixture to 300° C.,

(2) melt-extruding the molten mixture through a die kept at a temperature ranging from the melting point, determined by the DSC method, of the mixture to 300° C.,

(3) cooling the resulting unstretched extrudate to solidify it, and

(4) subjecting the unstretched solidified extrudate to a stretching treatment at a temperature ranging from the melting point, determined by the DSC method, of component (B) to a point 20° C. above the melting point of the mixture at a stretch ratio of either at least about 3:1 when step (2) is carried out while a draft is applied to the unstretched extrudate or at least about 10:1 when step (2) is carried out in the absence of a draft, and dissolving the component (B) with a solvent to remove the component (B) before, during or after the stretching treatment, whereby the amount of the component (B) remaining in the stretched filament is not more than about 10% by weight.

5,055,249

METHOD FOR THE MANUFACTURE OF CROSSLINKED POLYAMIDE ARTICLES

Eduard Schmid, Bonaduz, Switzerland, assignor to EMS-Inventa AG, Switzerland

Filed Jun. 5, 1989, Ser. No. 361,262

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1988, 3819428

Int. Cl.[5] **B29C** *35/04, 35/06;* **C08G** *69/48;* **C08L** *77/00*

U.S. Cl. 264—236 **47 Claims**

1. A process for the preparation of crosslinked shapes from a polymer, said process comprising reacting at least one starting polyamide containing at least 30% by weight of branched polymer chains having chain ends with a silane of the formula

$$Y-Si-A_{(3-n)} \quad I$$
$$|$$
$$(Z)n$$

wherein n is 0, 1, or 2, Z is an inert organic radical, A is a radical capable of hydrolyzation in the presence of moisture, and Y is a divalent organic radical having at least one functional group capable of reacting with amino groups, carboxyl groups, or amide groups to form a body in the substantial absence of water, forming said body into desired shapes, and contacting said shapes with water.

5,055,250

INJECTION MOLDING PROCESS

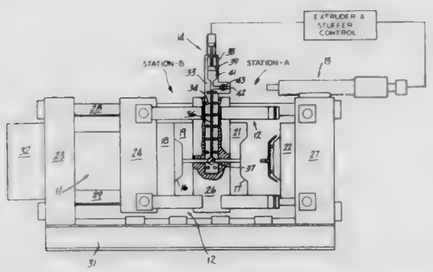
Robert D. Schad, Toronto, Canada, and Paul Brown, Sunny Isle, V.I., assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation-in-part of Ser. No. 150,157, Jan. 29, 1988, Pat. No. 4,367,938. This application Aug. 24, 1989, Ser. No. 398,258

The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.

Int. Cl.[5] **B29C** *45/12*

U.S. Cl. 264—297.2 **3 Claims**



1. A process for molding plastic parts utilizing an injection molding machine operating at primary and secondary injection pressures and including at least one first mold located at a first molding station and at least one second mold located at a second molding station, said molds comprising cooperating mold halves supported by fixed and movable platens, said platens being arranged in tandem, comprising the steps of:

providing molten plastic distributor means in a movable platen operable to communicate selectively with one of said first and second molds;

providing primary injection means operating at primary injection pressures and secondary injection means operating at secondary injection pressures, wherein said secondary injection means is supported by the movable platen;

closing and clamping said molds;

injecting molten plastic at said primary injection pressure through said distributor means into said first clamped mold to fill said first clamped mold;

injecting molten plastic at said primary injection pressure through said distributor means into the second clamped mold to fill the second clamped mold;

injecting molten plastic at said secondary injection pressure through said distributor means in the movable platen into said first clamped mold from the secondary injection means for sufficient interval after filling to compensate for shrinkage;

injecting molten plastic into said second clamped mold through said distributor means for a sufficient interval after filling to compensate for shrinkage; and

sequentially opening and closing the molds so that one of the molds is open while a second of said molds is closed.

5,055,251

PROCES AND APPARATUS FOR FORMING EXTREMITIES OF TUBES

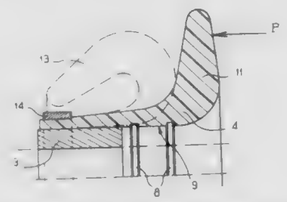
Armand Lebarbier, Varennes-Vauzelles, and Michel Deschamps, Nevers, both of France, assignors to Caoutchouc Manufacture et Plastiques S.A., Versailles Cedex, France

Filed Feb. 28, 1990, Ser. No. 486,014

Claims priority, application France, Mar. 2, 1989, 89 02879

Int. Cl.[5] **B29C** *33/50, 35/02*

U.S. Cl. 264—313 **24 Claims**



1. A forming apparatus for forming at least partially unvulcanized tubing during vulcanization, said apparatus comprising:

means for supporting and shaping in place during vulcanization at least a portion of the at least partially unvulcanized tubing;

flexible and deformable means having a portion for surrounding an outer surface portion of the partially unvulcanized tubing and for forming at least the outer surface of said partially unvulcanized tubing during vulcanization;

said flexible means having a substantial portion extending away from said portion for surrounding the outer surface portion of the partially unvulcanized tubing;

said extending portion being configured for lifting said surrounding portion of said flexible means surrounding the outer surface portion away from the outer surface of the tubing upon application of a force to said extending portion for lifting said surrounding portion;

means for deforming said flexible means from a first position surrounding the outer surface portion to a second position,

said second position being substantially deformed from said first position upon lifting of said flexible means away from the outer surface portion of the tubing.

5,055,252

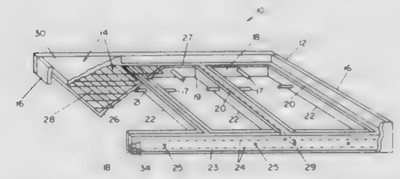
METHOD OF CONSTRUCTING AN INTEGRATED CONCRETE WALL STRUCTURE

Melvin M. Zimmerman, Blue Ball, Pa., assignor to Superior Walls of America, Ltd., Ephrata, Pa.

Division of Ser. No. 297,871, Jan. 12, 1989, Pat. No. 4,934,121. This application Apr. 23, 1990, Ser. No. 512,968

Int. Cl.[5] **B28B** *1/16;* **B29C** *39/12;* **B32B** *31/06;* **E04C** *2/04*

U.S. Cl. 264—263 **3 Claims**



1. A method of constructing a prefabricated wall structure comprising:

orienting interspaced stud molds, with channel shape cross section configurations and edges defining an open portion of the channel shape, in a horizontal configuration within a framing means such that the edges of the stud molds form uppermost parts of the stud molds and are located within an essentially horizontal plane within the framing means;

orienting two parallel support members, with channel shape cross section configurations, edges defining an open portion of the channel shape, and channel shape cutouts in one wall of the channel configuration, at opposite ends of the stud molds so that the stud molds adjoin the support members at the channel shaped cutouts and the edges of the support members form uppermost parts of the support members and are located in the horizontal plane of the edges of the stud molds;

laying rigid insulation panels within the framing means, on top of the edges of the stud molds and the support members, but not covering the open portions of the channel shapes of the stud molds and the support members, to form a continuous surface within the framing means;

pouring concrete into an enclosure formed by the framing means, stud molds, support members and rigid insulation panels so as to cover the rigid insulation panels and to fill the stud molds and the support members thereby forming the prefabricated wall structure.

permitting the poured concrete to set; and

removing the wall structure from the framing means, stud molds and support members.

5,055,253

METALLIC COMPOSITION

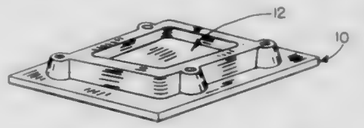
Jerry L. Nelson, Mt. Clemens, Mich., assignor to Nelson & Associates Research, Inc., Mt. Clemens, Mich.

Filed Jul. 17, 1990, Ser. No. 553,797

Int. Cl.[5] **C22C** *38/42*

U.S. Cl. 420—87 **11 Claims**

1. A metallic composition comprising from about 0.50 to about 0.65 percent by weight carbon (C), from about 0.090 to about 1.45 percent by weight manganese (Mn), up to about 0.030 percent by weight phosphorus (P), from about 0.030 to about 0.080 percent by weight sulfur (S), from about 0.50 to about 0.80 percent by weight silicon (Si), from about 1.30 to about 1.70 percent by weight chromium (Cr), up to about 0.010 percent by weight vanadium (V), up to about 0.20 percent by weight molybdenum (Mo), from about 0.15 to about 0.40 percent by weight nickel (Ni), from about 0.20 to about 0.40



percent by weight copper (Cu) and the balance percent by weight iron (Fe) and impurities.

5,055,254

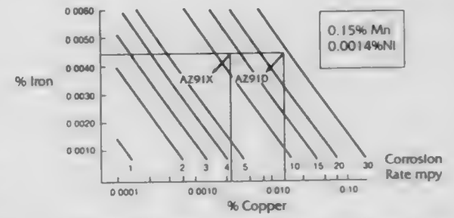
MAGNESIUM-ALUMINUM-ZINC ALLOY

Douglas J. Zuliani, Stitsville, Canada, assignor to Timminco Limited, Ontario, Canada

Filed Oct. 5, 1989, Ser. No. 417,563

Int. Cl.[5] **C22C** *23/02*

U.S. Cl. 420—409 **3 Claims**



1. A magnesium base alloy having improved corrosion resistance, consisting of about 8.5 to 9.5% aluminum, about 0.45 to 0.9% zinc, up to about 0.0024% iron, 0.0010% nickel and 0.0024% copper, and not less than about 0.15% manganese.

5,055,255

ALUMINUM ALLOY SUITABLE FOR PISTONS

Gerald D. Scott, Massena, N.Y.; Barrie S. Shabel, Murrysville, Pa., and Anthony Morales, Bettendorf, Iowa, assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 309,112, Feb. 13, 1989, Pat. No. 4,975,243. This application Apr. 19, 1990, Ser. No. 510,968

The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.

Int. Cl.[5] **C22C** *21/00*

U.S. Cl. 420—534 **24 Claims**

1. An aluminum alloy suitable for high temperature applications consisting essentially of at least 9 wt.% Si, 3.1 to 7 wt.% Ni, 1.5 to 6 wt.% Cu, 0.005 to 0.3 wt.% Sr, at least one of the elements selected from Mg, Mn, V, Sc, Fe, Ti, Zn, B and Cr, said elements having the ranges: 1.2 wt.% Mg max., 1 wt.% Mn max., 0.3 wt.% V max., 0.3 wt.% Sc max., 0.25 wt.% Ti max., up to 0.2 wt.% B, up to 0.2 wt.% Cr, 0.5 wt.% Zn max. and 0.8 wt.% Fe max., the remainder aluminum and impurities.

5,055,256

GRAIN REFINER FOR ALUMINUM CONTAINING SILICON

Geoffrey Sigworth, Green Lane, Pa. and Matthew Guzowski, Bowling Green, Ohio, assignors to KB Alloys, Inc., Sinking Spring, Pa.

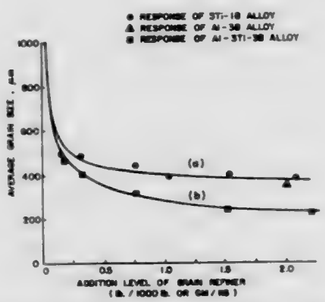
Continuation of Ser. No. 715,328, Mar. 25, 1985, abandoned. This application Oct. 24, 1988, Ser. No. 262,124

Int. Cl.[5] **C22C** *1/03*

U.S. Cl. 420—548 **7 Claims**

3. A master alloy characterized by being capable of grain refining commercial aluminum alloys containing over 1%

silicon consisting essentially of, in weight percent, 2.5 to 3.5 titanium, 2.5 to 3.5 boron, and the balance aluminum plus impurities wherein the Ti:B ratio is between 0.7 to 1.4 and over 75% of the borides in said master alloy are in the form of mixed borides.



4. The master alloy of claim 3, wherein said weight percent of titanium is 3 and said weight percent of boron is 3.

7. A method of grain refining an aluminum alloy containing over 1% silicon comprising the addition of the master alloy of claim 4 to a molten mass of said aluminum alloy.

5,055,257

SUPERPLASTIC ALUMINUM PRODUCTS AND ALLOYS

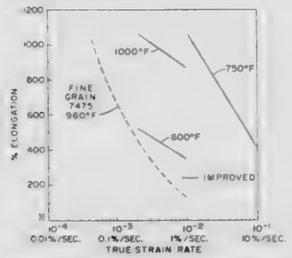
Dhruba J. Chakrabarti; James T. Staley, both of Murrysville; Stephen F. Baumann, Penn Hills; Ralph R. Sawtell, Monroeville; Philip E. Bretz, Murrysville, and Craig L. Jensen, Pittsburgh, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 85,851, Aug. 14, 1987, which is a continuation-in-part of Ser. No. 841,648, Mar. 20, 1986, Pat. No. 4,689,090. This application Sep. 29, 1989, Ser. No. 414,872

The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.

Int. Cl.[5] C22C *21/16, 21/06*

U.S. Cl. 420—902 **30 Claims**



1. In a method of superplastic forming wherein aluminum alloy metal is superplastically formed at superplastic forming temperature, the improvement comprising providing said aluminum alloy metal comprising aluminum and including some amount up to 10% of one or more of the elements from the group of scandium, yttrium, gadolinium, holmium, dysprosium, erbium, ytterbium, lutetium, and terbium, the grand total of said elements in said group not exceeding 20%, the amount, if any, of zirconium in said alloy being 0.25% or less.

5,055,258

DEVICE FOR ASCERTAINING THE PRESENCE OF AN ANTIGEN OR OF AN ANTIBODY IN A LIQUID SAMPLE

Rainer Brodt, Heidenrod-Kemel; Günther Gorka, Idstein; Peter Fehse, Dietzenbach, all of Fed. Rep. of Germany; John Reid, and Steve Holmes, both of Clare, Ireland, assignors to Flemming GmbH, Taunusstein, Fed. Rep. of Germany

PCT No. PCT/DE88/00495, § 371 Date Jun. 16, 1989, § 102(e) Date Jun. 16, 1989, PCT Pub. No. WO89/01626, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 13, 1988, Ser. No. 345,546

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1987, 3727590; Aug. 5, 1988, 8810037[U]

Int. Cl.[5] G01N *30/00, 21/03*

U.S. Cl. 422—61 **7 Claims**



1. A device for determining the presence of an antigen or antibody in a liquid sample, which comprises external container means; liquid sample container means dimensioned for insertion into said external container means; reagent means disposed in said liquid sample container means; material container means and a porous absorbent material disposed therein, said material container means dimensioned for insertion into said liquid sample container means, said material container means having a porous membrane mounted on a lower end thereof, said porous membrane comprising bound antibody or antigen; holding means for said material container means, said holding means being constructed so as to be mounted on said external container means; spacer means for connecting said liquid sample container means to said holding means, the dimensions of said external container means, spacer means and material container means being such that when said spacer means is mounted between said holding means and said liquid sample container means said porous membrane is at a higher level relative to a liquid sample in said liquid sample container means and when said spacer means is removed the membrane is disposed at a lower level such that a liquid sample in the liquid sample container means is drawn through said membrane into said absorbent material.

5,055,259

BLOODLESS BLOOD TYPING TRAINING KIT

Tsutomu Inoue, Fuchu; Kazuhiko Okamura, Fujisawa; Naoto Kawamura, Yamato; Hiroshi Tone, Yokohama, and Rokuro Okamoto, Fujisawa, all of Japan, assignors to Sanraku Incorporated, Tokyo, Japan

Filed Jul. 24, 1989, Ser. No. 384,357

Claims priority, application Japan, Jul. 29, 1988, 63-191174; May 30, 1989, 1-138585

Int. Cl.[5] G01N *31/00;* **G09B** *23/00*

U.S. Cl. 422—61 **5 Claims**

1. A blood typing training kit including red blood cell models and anti-serum models comprising:

a support means having an A red blood cell model with an anti-A serum model counterpart and a B red blood cell model with an anti-B serum model counterpart wherein each of said A/anti-A and B/anti-B combinations are selected from the group consisting of:

a) the red blood cell model of a natural or synthetic water-insoluble polymer bound with a saccharide selected from the group consisting of mannose, glucose, maltose, isomaltose, gentiobiose, maltotriose and the antiserum model comprising one or two or more phytohemagglutinins in the third group of Mäkelä's classification;

b) the red blood cell model of a natural or synthetic water-insoluble polymer bound with galactose or lactose and the antiserum model comprising one or two or more phytohemagglutininins in the second group of Mäkelä's classification;

c) the red blood cell model of a water-insoluble saccharide in alkaline suspension and the antiserum model of boric acid containing liquid; and

d) the red blood cell model of a natural or synthetic water-insoluble polymer bound with protein A or G and the antiserum model of immunoglobulin G.

5,055,260

REACTOR ANALYSIS SYSTEM

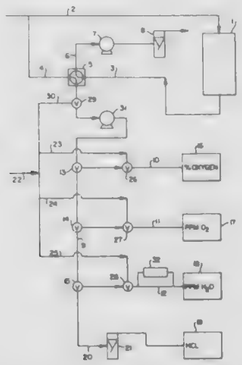
Raymond P. Roberge, Chappaqua; Arthur W. Francis, Jr., Monroe, both of N.Y., and Thomas G. Wolfe, Westport, Conn., assignors to Union Carbide Industrial Gases Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 193,196, May 9, 1988, Pat. No. 4,891,186, which is a continuation of Ser. No. 865,005, May 20, 1986, abandoned. This application Jul. 22, 1988, Ser. No. 223,285

The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.

Int. Cl.[5] G01N *31/22, 35/00*

U.S. Cl. 422—62 **14 Claims**



1. An analysis system for monitoring at least two gas samples from a process system intermittently, said analysis system comprising:

(a) at least two conduit means, each for continually and individually receiving a sample from the process system;

(b) at least one first valve means connected to said at least two conduit means for continually receiving gas samples from said conduit means, wherein each said first valve means in one position passes a first gas sample downstream for analysis while discharging a second gas sample, and wherein each said first valve means in a second position passes the second gas sample downstream for analysis while discharging the first gas sample;

(c) a main sample gas supply line for each first valve means, whereby the gas sample to be analyzed is passed from said first valve means to individual gas analyzer feed lines;

(d) at least one individual gas analyzer feed line in communication with each main sample gas supply line;

(e) at least one gas analyzer means in communication with each individual gas analyzer feed line;

(f) at least one second valve means corresponding to each first valve means, wherein each said second valve means is located on an individual gas analyzer feed line, and wherein each second valve means in a first position passes the gas sample to be analyzed to an individual gas analyzer means while discharging a purge gas from said analyzer system and wherein said second valve means in a second deposition passes the purge gas to said individual gas analyzer means while discharging the gas sample from said analysis system;

(g) purge gas supply means adapted to pass purge gas to each second valve means; and,

(h) in-line, hot-wire catalyst means which operates at more than one temperature to enable the determination, using said gas analyzer means, of more than one impurity present in the sample gas;

whereby said analysis system enables gas samples from the process system to be accurately monitored with rapid response time, by virtue of the purge gas being available to rapidly and essentially completely purge said gas analyzer feed lines and said gas analyzer means between analyses, and the use of said second valve means producing no dead volume in said analysis system on switching between purging and analyzing modes.

5,055,261

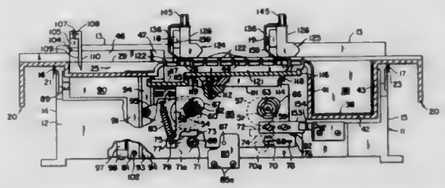
REAGENT TEST STRIP READING INSTRUMENT

Mirza A. Khoja, Elkhart, and Frank W. Wogoman, South Bend, both of Ind., assignors to Miles Inc., Elkhart, Ind.

Division of Ser. No. 32,607, Apr. 1, 1987, Pat. No. 4,820,491, which is a division of Ser. No. 649,363, Sep. 11, 1984, Pat. No. 4,689,202. This application Nov. 14, 1988, Ser. No. 270,849

Int. Cl.[5] G01N *35/02*

U.S. Cl. 422—64 **21 Claims**



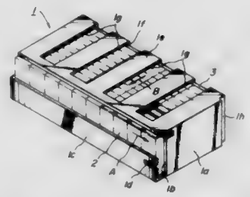
1. In combination, at least two spaced generally parallel and horizontal, stationary rails extending to a reading station platform where a test strip is read by reflectance photometry and adapted to support a test strip disposed transversely thereon; a movable test strip advancing member in the form of a removably mounted tray having spaced generally vertically extending pegs, means for guiding movement of said strip advancing member along an orbital path in a generally vertical plane aligned with said rails, said orbital path including a rectilinear generally horizontal advancing extent parallel with said rails wherein said pegs intersect the plane of a test strip on said rails and are adapted to engage and to advance such test strip along said rails, said orbital path also having a generally circular return extent wherein said pegs are withdrawn from said plane; and drive means for moving said strip advancing member along said orbital path.

5,055,262

AUTOMATIC CUVETTE LOADING APPARATUS

Toshio Sakagami, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1989, Ser. No. 311,042
Claims priority, application Japan, Feb. 22, 1988, 63-21107[U]
Int. Cl.[5] G01N *21/13*
U.S. Cl. 422—64 **15 Claims**



1. An automatic cuvette loading apparatus for use in an automatic chemical analyzer having a reaction line comprising:

a container containing a plurality of magazines, each magazine containing a plurality of cuvettes in a matrix manner and plate means for feeding cuvette rows in a first direction, said container having a base plate and first and second openings through which each magazine can pass;

means for feeding a magazine situated above said first opening in said first direction into a cuvette loading position above said second opening;

means for supporting cuvettes situated at said cuvette loading position in said magazine, said cuvette supporting means having a front plate movable in a second direction, substantially opposite to said first direction, to a first position at which said front plate is aligned with or spaced inside of a front inner side wall of said magazine and movable in said first direction to a second position at which said front plate is spaced outside of said front inner side wall of said magazine;

means movably arranged in a second direction perpendicular to said first direction for successively loading cuvettes situated at said cuvette loading position in said magazine into the reaction line of the chemical analyzer; and

means for removing an empty magazine from the cuvette loading position through said second opening;

wherein said cuvette supporting means is arranged in said first position when cuvette rows are urged toward said cuvette loading position by said plate, and is arranged in said second position when cuvettes are loaded into the reaction line by said cuvette loading means.

5,055,263

AUTOMATED PIPETTING SYSTEM

Walter Meltzer, New Milford, Conn., assignor to Cyberlab, Inc., Stamford, Conn.

Filed Jan. 14, 1988, Ser. No. 144,576
Int. Cl.[5] G01N *3/02*; B01L *1/14*
U.S. Cl. 422—65 **8 Claims**

1. An automated pipetting system for performing programmed pipetting procedures on an array of fluid containing test tubes, vials, or wells, comprising:

a rigid overhead frame defining a horizontal X-Y pipetting area, which is supported and spaced vertically above a horizontal table for holding test tube arrays;

a pair of X-axis guide shafts fixedly mounted and spaced apart in parallel on two opposite sides of the frame;

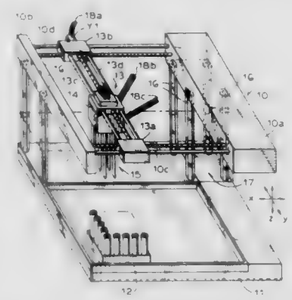
a pair of X-axis helical screw shafts rotatably mounted in the frame, each disposed adjacent and parallel to a respective one of said X-axis guide shafts, and X-axis drive means for driving said screw shafts synchronously in rotation;

a subframe having roller sections extending at opposite ends thereof rolling on the X-axis guide shafts, said roller sections each having a support wall provided with a helix engagement portion engaging said X-axis helical screw shafts for moving said subframe in the X-axis directions in response to rotation thereof;

a pair of Y-axis guide shafts supported on the subframe spaced apart parallel to each other;

a Y-axis helical screw shaft rotatably mounted in the subframe between and parallel to the two Y-axis guide shafts, and Y-axis means for driving said screw shaft in rotation;

a carriage having a pair of roller sections rolling on the Y-axis guide shafts, and a support wall provided with a



helix engagement portion engaging said Y-axis helical screw shaft for moving said carriage in the Y-axis directions in response to rotation thereof; and

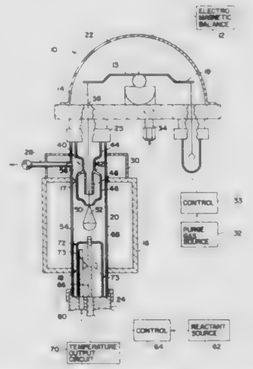
at least one row of probes mounted on said carriage for movement in the Z-axis directions, and Z-axis drive means for independently driving respective ones of said probes in the Z-axis directions relative to the test tube array on said table wherein said X, Y and Z axes respectively define mutually perpendicular planes.

5,055,264

APPARATUS FOR DIRECTING THE FLOW OF CONDENSABLE MATTER

Jerzy P. Czarnecki, La Habra, Calif., assignor to Cahn Instruments, Inc., Cerritos, Calif.

Filed Nov. 8, 1988, Ser. No. 268,784
Int. Cl.[5] G01N *31/12, 25/00*
U.S. Cl. 422—80 **11 Claims**



1. An apparatus for measurement of changes in mass of a decomposing sample and an outlet outside the hot zone comprising:

a sample holder in a thermogravimetric chamber having a hot zone and an outlet outside the hot zone, wherein the sample holder supports a decomposing sample

a mass measuring system adjacent one side of the chamber and including sample support means within the hot zone of the thermogravimetric chamber and including coupling means between the sample support means and the mass measuring system;

means for feeding a reactant gas into the thermogravimetric chamber toward the sample from a side opposite the sample from the mass measuring system;

mixing chamber means encompassing at least a portion of the coupling means and disposed to extend into the hot zone of the thermogravimetric chamber adjacent the sample, the mixing chamber means including aperture means open to the sample and aperture means in communication with the thermogravimetric chamber outlet; and

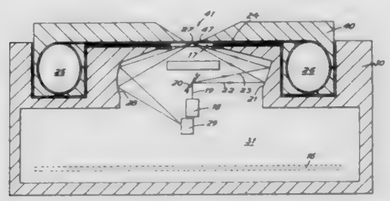
means for feeding purge gas into the mixing chamber means from the mass measuring system side into the hot zone at a rate selected relative to the flow of the reactant gas to maintain hot reactant gas in the region of the sample.

5,055,265

BIOLOGICAL SENSORS

Martin F. Finlan, Aylesbury, England, assignor to Amersham International Plc, Buckinghamshire, England

Filed May 30, 1989, Ser. No. 358,612
Claims priority, application United Kingdom, Jun. 6, 1988, 8813307
Int. Cl.[5] G01N *21/00, 21/55*
U.S. Cl. 422—82.05 **23 Claims**



1. A sensor for use in biological, biochemical or chemical testing, said sensor comprising: a structure comprising a block of material, a membrane of dielectric material disposed over a surface of said block, a layer of metallic material disposed over that surface of said membrane opposite said block, and a layer of sensitive material disposed over said metallic layer; means for introducing onto the sensitive layer so as to react therewith a sample to be analyzed in which the index of refraction of the sample and/or said sensitive layer is equal or nearly equal to that of said membrane, and the index of refraction of the material of said block is higher than that of said membrane and the sample; means for generating electromagnetic radiation that is transmittable through said block of material and for directing the radiation through said block at a location within said structure in a manner which causes long range surface plasmon resonance to occur and which causes the radiation to be internally reflected by said structure from said location; and detecting means for monitoring radiation from said source which has been internally reflected within the structure and for detecting the characteristics of the resonance that are dependent upon the reaction between the sample and the sensitive layer.

5,055,266

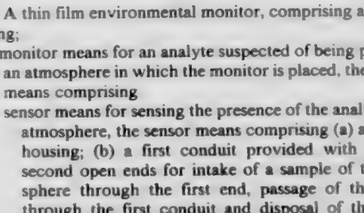
METHOD FOR DETECTING TOXIC GASES

Joseph R. Stetter, Naperville; Solomon Zaromb, Hinsdale, and Melvin W. Findlay, Jr., Bolingbrook, all of Ill., assignors to ARCH Development Corporation, Argonne, Ill.

Continuation of Ser. No. 585,721, Mar. 2, 1984, abandoned. This application Mar. 23, 1990, Ser. No. 499,202
Int. Cl.[5] G01N *27/00, 31/12, 27/16, 25/22*
U.S. Cl. 422—83 **14 Claims**

1. A method for detecting a gas, vapor, chemical pollutant or other component of interest in a gaseous medium said method comprising:

exposing a noble metal-containing catalytic surface of an electrical heating element to a sample gaseous medium including a component of interest so as to heat the component and catalytically produce a product which is not heat and which is a derivative chemical product of said component not present in said sample gaseous medium, the derivative chemical product having a characteristic electrochemical activity capable of causing an electrochemical



sensor to produce a corresponding electrical output signal, and

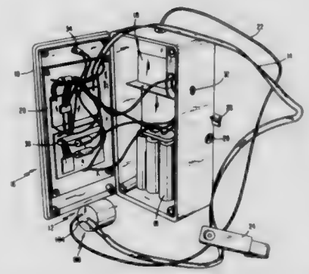
determining the amount of the component of interest in the original sample gaseous medium by determining electrochemically, using an electrochemical sensor and based on the electrochemical activity of the derivative chemical product sensed by said electrochemical sensor, the amount of the derivative chemical product produced as the derivative chemical product leaves said heating element.

5,055,267

THIN FILM ENVIRONMENTAL MONITOR

G. Edward Burroughs, Lebanon, and David J. Huebener, Rose, both of Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Aug. 19, 1988, Ser. No. 234,092
Int. Cl.[5] G01N *21/25*
U.S. Cl. 422—83 **14 Claims**



1. A thin film environmental monitor, comprising a portable casing;

a monitor means for an analyte suspected of being present in an atmosphere in which the monitor is placed, the monitor means comprising

sensor means for sensing the presence of the analyte in the atmosphere, the sensor means comprising (a) a portable housing; (b) a first conduit provided with first and second open ends for intake of a sample of the atmosphere through the first end, passage of the sample through the first conduit and disposal of the sample therefrom through the second end, wherein the first end of the first conduit is in communication with the atmo-

sphere and he second end is positioned near first and second thin film means located in said housing, (c) said first and second thin film means for transmitting at least a fraction of any light incident thereon in the presence of the analyte in the sample and independent of its concentration therein, the first thin film means being coated with a dry composition for reacting with any analyte in the sample to thus interfere with the transmission of incident light by the first thin film means in a manner proportional to the concentration of analyte in the sample, (d) first and second photocell means spaced from the first and second thin film means in said housing and placed in a path of the transmitted light beam to generate first and second electric signals that are proportional to the light transmitted by the first and second thin film means in response to the incident light;

electric pump means in said casing for continuously providing the sample to the sensor means at a predetermine flow rate, the pump means being operatively connected to the sensor means by a second conduit provided with first and second ends, the first end of the second conduit being placed in the sensor means and the second end of the second conduit connected to the pump means;

control means in said casing for processing the first and second electric signals, for generating an output signal that is proportional to the concentration of anlyte in the sample, and for controlling with the pup means the flow rate of the sample flowing through the sensor means, the control means being electrically connected to the sensor means, the pump means, an indicator means, an on-off switch means, and a source of power, said source of power located in said casing;

said indicator means for continuously indicating the output signal and the concentration of analyte present in the atmosphere, the indicator means being connected to the casing;

light source means for providing a beam of incident light the first and second film means; and

said on-off switch means for the pump means; wherein when the control means is electrically connected to the power source and the switch mean is in the "on" position, the sample is pumped into the sensor means and reacts with said dry composition coated on said first film means, the first and second electric signals and the output signal are generated, and the concentration of analyte in the sample is indicated by the indicator means.

5,055,268

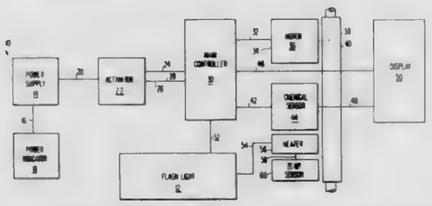
AIR-BORNE ALCOHOL SENSOR

Peter G. Martin, Mercer Island, Wash., assignor to Easterm Electronics Manufacturing Corp., East Harford, Conn.

Continuation of Ser. No. 463,930, Jan. 8, 1990, abandoned, which is a continuation of Ser. No. 244,580, Sep. 13, 1988, abandoned, which is a continuation of Ser. No. 939,926, Dec. 9, 1986, abandoned. This application Aug. 8, 1990, Ser. No. 565,871

Int. Cl.[5] G01N *1/22*

U.S. Cl. 422—84 **4 Claims**



1. A combined airborne alcohol sensor and independently activatable flashlight system comprising:

a housing containing a flashlight, and air impeller for passing sample air through the housing, a motor coupled to the impeller and connected to a first RC circuit, an alcohol specific electrochemical fuel cell for analyzing the alcohol content of the sample air, a control means, and a power supply for supplying electrical power to the system, disposed in the housing;

a visual display means connected to the fuel cell wherein the display means provides an indication proportional to the concentration of alcohol as determined by the fuel cell;

an activator comprising a switch and a second RC time delay circuit connected to the power supply and the control means;

the control means being connected to the flashlight, motor, fuel cell and display means and comprising at least two flip flops, the flip flops being connected to a clock input which in turn is connected to the second RC time delay circuit so that the system may be in a quiescent state, alcohol sensing function or secondary flashlight function depending on the period of actuation of the activator switch;

wherein a momentary actuation of the activator switch while the system is in the quiescent state or secondary function causes the system to start the chemical sensing function by turning on the motor which will operate for a predetermined period of time as provided by the first RC circuit and causing the impeller to pass sample air by the fuel cell; whereby the fuel cell provides an output on the display means proportional to the alcohol in the air passing by the fuel cell;

wherein a momentary actuation, after the predetermined period of time provided by the first RC circuit, of the activator while the system is in the sensing function turns the sensing function off;

wherein an actuation of the activator switch for a period longer than a period of time imposed by the second RC time delay circuit while the system is in the quiescent state or sensing function starts the secondary flashlight function; and

wherein an actuation of the activator switch for a period longer than a period of time imposed by the second RC time delay circuit turns off the secondary function.

5,055,269

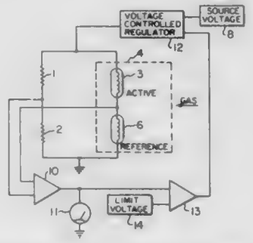
TEMPERATURE LIMITED CATALYTIC GAS DETECTOR APPARATUS

Perry A. Palumbo, New Kensington; Oscar Singleton, Pittsburgh, and Louis G. Gaetano, New Kensington, all of Pa., assignors to Bacharach, Inc, Pittsburgh, Pa.

Filed Mar. 6, 1989, Ser. No. 319,745

Int. Cl.[5] G01N *27/16*

U.S. Cl. 422—96 **20 Claims**



1. A temperature limited catalytic gas detector comprising:

a catalytic gas sensor containing an active element contained in a Wheatstone bridge network;

a power supply connected through a control means to said bridge network;

measurement means connected to said bridge network for measuring electrical imbalances across said bridge network which are developed as a particular gas contacts said gas sensor;

display means connected to said measurement means for displaying the concentration of gas at said gas sensor;

limit signal means for producing a fixed, predetermined limit signal; and

comparison means connected to said measurement means and to said limit signal means for comparing an output of said measurement means with the fixed, predetermined limit signal and producing an output signal when the output of said measurement means exceeds said limit signal, and said control means is connected to the comparison means and responsive to the output of said comparison means to thereby reduce the power supplied to said bridge network, and cause said limit signal to be equivalent to the output of said measurement means when said gas sensor is at a particular temperature.

5,055,270

GAS SENSOR

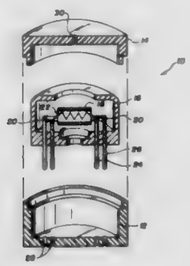
Franco Consadori; Richard Slamka, both of Vancouver, and Konrad Colbow, West Vancouver, all of Canada, assignors to Halitec Industries Corp., Vancouver, Canada

Filed Nov. 21, 1989, Ser. No. 439,982

Claims priority, application Canada, Nov. 23, 1988, 583969

Int. Cl.[5] G01N *27/16;* **G05D** *7/06*

U.S. Cl. 422—98 **7 Claims**



1. A gas sensing device comprising:

means defining a sampling chamber for containing a gas to be sensed by said sensing device;

a gas sensing element within said chamber for providing an output signal which varies in response to the presence of said gas in said chamber;

means for permitting restricted gas flow between the interior and the exterior of said chamber;

means for displacing a sample of the gas through said gas flow permitting means into the interior of said chamber for sensing by said sensing element and for subsequently displacing gas from the interior to the exterior of said chamber; and

means for cyclically operating said displacing means to thereby repeatedly draw the gas into said chamber and expel gas from said chamber in succession.

5,055,271

PUMP INSERTER FOR TEST TUBES

Tipton L. Golias; Ovay H. Mayes, and Robert J. Sarrine, all of Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Filed Jul. 24, 1989, Ser. No. 383,339

Int. Cl.[5] B01L *9/00*

U.S. Cl. 422—99 **8 Claims**

1. Apparatus for attaching pump mechanisms to sealed test tubes, each test tube sealed by a resilient, puncturable closure, comprising:

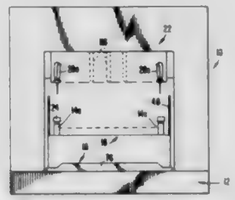
means for releasably supporting a plurality of pump mechanisms;

a support frame;

means for holding the plurality of pump mechanisms while supported by said supporting means at a first station, said holding means secured to said support frame;

removing means connected with said frame for removing said supporting means from the plurality of pump mechanisms;

means for positioning a plurality of test tubes at a second



station, said positioning means engaging said support frame; and

means for moving said holding means from said first station toward said second station after removal of said supporting means, which causes said moving means to move plurality of pump mechanisms to a position for attachment to respective ones of the test tubes.

5,055,272

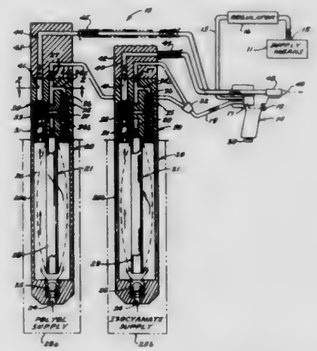
METHOD FOR PRODUCING POLYURETHANE FOAM AND APPARATUS THEREFOR

Robert D. Wheeler, Fairfield; Ronald J. Wierzbicki, New Milford; Edward H. Schulman, Trumbull, and George T. Bertram, Newtown, all of Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Jan. 13, 1989, Ser. No. 297,497

Int. Cl.[5] C08F *299/00*

U.S. Cl. 422—133 **8 Claims**



1. An apparatus for producing polyurethane foam having a fine cell structure from a mixture of a liquid isocyante component and a liquid polyol component, said apparatus comprising:

means for supplying a flow of non-condensible non-reactive gas for nucleating the liquid components,

means for supplying both the liquid isocyanate and polyol components,

a vessel for receiving one of the liquid isocyanate and polyol components from said component supply means,

means for receiving one of the liquid components from said vessel and for receiving the non-condensible non-reactive gas from said means for supplying a flow of non-condensible non-reactive gas, said means for receiving one of the liquid components and a non-condensible non-reactive gas including means for converting the non-reactive gas to microbubbles which are substatnailly completely dis-

solved in the liquid isocyanate or polyol component and means for maintaining the gas dissolved in the liquid component,

means for controlling the flow of the gas to maintain a predetermined dissolved gas to liquid ratio and for producing a pressure sufficient to maintain the gas dissolved in the liquid component, and

means operably associated with said means for receiving one of the liquid components and a non-condensible non-reactive gas for mixing a stream of liquid isocyanate and polyol components while rapidly reducing their pressure by impinging them together to enhance mixing and to form the fine celled polyurethane foam.

5,055,273

APPARATUS FOR PROCESSING HIGH VISCOSITY MATERIALS

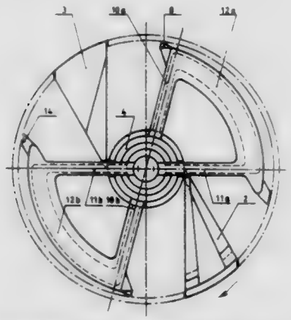
Fritz Wilhelm, Karben; Heinz-Günter Witt, Offenbach am Main, and Ludwig Hölting, Bruchköbel, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 1, 1988, Ser. No. 278,567

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3743051

Int. Cl.[5] B01F *7/04*

U.S. Cl. 422—135 **22 Claims**



1. In an apparatus for processing of high viscosity materials, comprising a heatable, substantially horizontal elongated vessel with circular cross section and a product inlet at one end and a product outlet on the other end, and parallel to the axis of the vessel a heatable, rotating hollow shaft with a plurality of stirrer elements axially-spaced on the shaft, and stationary baffle and scraping elements projecting inwards from the vessel wall, between said stirrer elements, the improvement comprising

a) each of said stirrer elements consisting of one to four stirrer wings, each with two hollow spokes and a peripheral hollow ring-segment connecting the outer ends of these two spokes, said ring segment having a trailing end, a product dragging blade at the trailing end of each of said ring-segments, and with means for circulating a heat transfer medium through the shaft, the hollow spokes and the hollow ring-segment connections,

b) the stirrer element at said inlet end and the last stirrer element at said outlet end having a shape matching these vessel ends,

c) each of said scraping elements consisting of a frame, adjacent said stirrer elements, having a support bracket projecting from the inner wall of the vessel, two side pieces angularly offset from the radial direction with respect to the axis of the vessel, said scraping elements having a substantially triangular shape when viewed along the axis of the vessel, and a transverse connector joining said two side pieces adjacent the shaft, said scraper elements being disposed between adjacent stirrer elements, except between the two stirrer elements nearest said outlet end,

d) each of said baffle elements having, in side view, the shape of a truncated cone, having an enlarged surface adjacent the shaft, and being angularly offset from the radial direction with respect to the axis of the vessel, said enlarged cone surface being adjacent said shaft, said baffle elements being disposed between adjacent stirrer elements, except between the two stirrer elements nearest said outlet end.

5,055,274

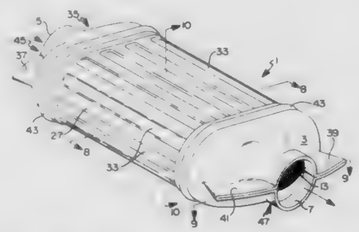
CATALYTIC CONVERTER AND SUBSTRATE SUPPORT WITH ONE PIECE HOUSING

James R. Abbott, Jackson, Mich., assignor to Tennessee Gas Pipeline Company, Lincolnshire, Ill.

Continuation-in-part of Ser. No. 306,915, Feb. 6, 1989. This application Feb. 22, 1990, Ser. No. 483,399

Int. Cl.[5] F01N *3/10*

U.S. Cl. 422—171 **26 Claims**



1. In a catalyst converter for use in a motor vehicle exhaust system, said converter including a tubular body having an inlet and outlet means for the gas flow inside the tube, a catalyst substrate having a tubular central portion positioned inside the body, and a support mat surrounding the central portion of the substrate, the improvement wherein said tubular body is one-piece and has a central, generally cylindrical, reduced diameter portion radially compressed against the mat and the mat radially compressed against the substrate to hold and locate the substrate in a substantially fixed longitudinal position in the body, said reduced diameter portion comprising first portions compressed radially inwardly by a first predetermined amount, and longitudinal second portions compressed radially inwardly from said first portions by a second predetermined amount and making line contact with the outer periphery of the mat.

5,055,275

REINFORCED CATALYTIC UNIT INTENDED FOR PURIFYING EXHAUST GASES

Kauko Kanniainen, and Veikko Loukeinen, both of Vihtavuori, Finland, assignors to Kemira Oy, Helsinski, Finland

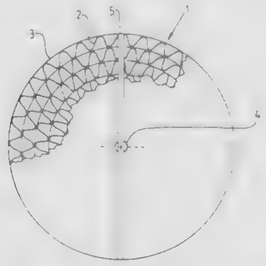
Division of Ser. No. 42,310, Apr. 24, 1987, Pat. No. 4,741,082. This application Feb. 22, 1988, Ser. No. 159,548

Claims priority, application Finland, Apr. 29, 1986, 861801

Int. Cl.[5] B01D *53/36*

U.S. Cl. 422—180 **6 Claims**

1. A reinforced catalytic unit used for the purification of exhaust gases, said unit being a reinforced helical catalytic unit comprising a central shaft core element having opposite ends, a corrugated foil band and a straight foil band placed one on top of the other, said corrugated foil band and straight foil band both comprising a support material layer and a catalytst layer wherein the support material layer and the catalyst layer are arranged to be one on top of the other on each of said corrugated foil band and said straight foil band, and are secured to the central shaft element, and said catalytic unit having rigid end support means at each of said opposite ends, said end support means being inserted inwardly into one of said ends of said shaft element and secured to the ends of the shaft



element so that said end support means prevent movement of the foil bands in relation to each other.

5,055,276

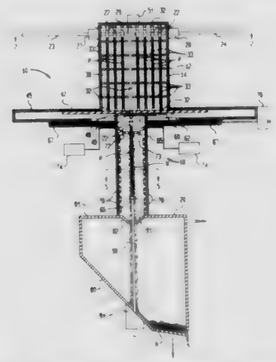
CERAMIC WHISKER GROWING SYSTEM

Harold A. Huckins, 51 Finley Rd., Princeton, N.J. 08540

Filed Nov. 15, 1989, Ser. No. 437,020

Int. Cl.[5] B01J *8/00*

U.S. Cl. 422—191 **17 Claims**



1. A ceramic whisker growing furnace comprising:

a furnace chamber;

a plurality of carbon plates having surfaces, said plates mounted in said chamber and having catalyst particles deposited thereon;

means for distributing a reactant gas over the surfaces of said plates for causing components in said gas to react with said catalyst particles for growing ceramic whiskers on said plates; and

means for selectively removing any one of said plates from said chamber while maintaining all of the other of said plates in said chamber.

5,055,277

FUMIGATING APPARATUS FOR SHIPPING CONTAINERS

Lawrence H. Gunn, 2283 Waltonia Dr., Montrose, Calif. 91020

Filed Jun. 16, 1988, Ser. No. 207,459

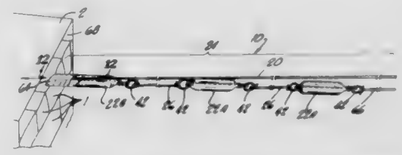
Int. Cl.[5] A61L *2/20*

U.S. Cl. 422—294 **25 Claims**

1. An apparatus for use in the fumigation of hay or other bulk-packaged commodities held in a large container, using a solid fumigant which, when exposed to ambient moisture, reacts therewith to release a fumigating gas and produce an exhausted, powdered residue, comprising:

a long pole having proximal and distal ends;

an elongated, gas-permeable, solid-impermeable holder for holding said fumigant in a gas-exchanging relationship with ambient air, said holder having a closed end, an open end defining a throat, means at said open end for closing it,



and means at at least one of said ends for joining said holder into a flexible string of similar holders at spaced intervals in said string; and

means for releasably attaching said holder to the distal end of said pole for insertion of the holder into the container.

5,055,278

METHOD FOR DECREASING NITROGEN OXIDES (NOX) IN WASTE FURNACE GASES

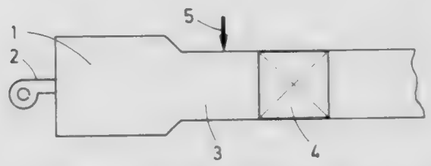
Heinz Reidick, Oberhausen, Fed. Rep. of Germany, assignor to Apparatebau Rothemühle Brandt and Kritzler Gesellschaft mit beschränkter Haftung, Wenden, Fed. Rep. of Germany

Filed Jul. 10, 1989, Ser. No. 377,488

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1988, 3823575

Int. Cl.[5] C01B *21/00;* **B01J** *8/00;* **C10H** *23/00*

U.S. Cl. 423—235 **3 Claims**



1. A method for substantially reducing the amount of nitrogen oxides (NO_x) in waste furnace gas produced in an industrial plant during the generation of steam or heat by the combustion of fossilized fuel comprising,

a) passing the fossilized fuel through gradual pyrolyzing combustion under conditions of low combustion temperature, available oxygen in the reaction zone decreased below the stoichiometric amount, and prolonged residence time of the fuel in the combustion space, such that said conditions are effective to substantially reduce the amount of nitrogen oxides formed from said fossilized fuel and to increase the amount of reactive waste gas components formed including carbon monoxide and hydrocarbons, then

b) passing the increased amount of reactive waste gas components including carbon monoxide and hydrocarbons through catalytic oxidation at a temperature of 200° C. to 800° C., optionally with admixture of additional air, while subjecting the nitrogen oxides to catalytic reduction without addition of an external reducing agent, and

c) after the nitrogen oxides have been eliminated, discharging the waste gas into the atmosphere.

5,055,279

PROCESS FOR THE REDUCTION OF EMISSIONS OF SULPHUR DIOXIDE AND/OR OXIDES OF NITROGEN IN THE CASE OF COMBUSTION PROCESSES

Hans-Dieter Hirt, Oyten, and Peter Reinemann, Syke/Ristedt, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Apr. 3, 1990, Ser. No. 503,710

Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916522

Int. Cl.[5] C01B *17/00, 21/00;* **B01J** *8/00*

U.S. Cl. 423—239 **10 Claims**

1. The method of reducing emissions of sulphur dioxide, oxides of nitrogen or mixtures thereof from combustion processes by the addition of hydrated calcium cyanamide as the sole reagent, which comprises blowing hydrated particles of calcium cyanamide enveloped with a hydrate mantle from a mixing nozzle into the combustion chamber, with the aid of a carrier medium comprising air, water and water vapor, in the form of a droplet-powder fluidized bed.

5,055,280

PROCESS FOR PRODUCING TRANSITION METAL BORIDE FIBERS

Isao Nakatani, Funabashi, and Kiyoshi Ozawa, Tokyo, both of Japan, assignors to National Research Institute For Metals, Tokyo, Japan

Filed Sep. 16, 1988, Ser. No. 245,298

Claims priority, application Japan, Sep. 18, 1987, 62-232368

Int. Cl.[5] C01B *35/00*

U.S. Cl. 423—276 **8 Claims**

1. A process for producing fibers of a transition metal boride, which comprises reacting a mixture of a vapor of an evaporable boron compound and a vapor of an evaporable transition metal compound in the presence of fine particles, having a diameter of 10 Å to 100 μm, of a metal member selected from the group consisting of Pt, Pd, Cu, Au and Ni or a binary or ternary metal alloy containing at least one metal member selected from the group consisting of Pt, Pd, Cu, Au and Ni, without applying any electric current, and wherein the transition metal boride fibers grow on the fine particles.

5,055,281

PROCESS FOR THE PREPARATION OF CALCIUM FLUOSILICATE AS A RAW MATERIAL FOR OBTAINING CALCIUM FLUORIDE AND PURE FLUOSILICIC ACID

Laurent Seigneurin, Salindres, France, assignor to Aluminum Pechiney, France

Continuation of Ser. No. 888,800, Jul. 23, 1986, abandoned. This application Jul. 27, 1987, Ser. No. 80,228

Claims priority, application France, Jul. 26, 1985, 85 11919

The portion of the term of this patent subsequent to Nov. 8, 2006, has been disclaimed.

Int. Cl.[5] C01B *33/24, 33/08;* **C01F** *1/00, 5/06*

U.S. Cl. 423—331 **8 Claims**

1. A process for the production of anhydrous calcium fluosilicate from fluosilicic acid solution, a by-product of the acid treatment of phosphorous ores containing fluorine, comprising the steps of:

(a) forming a suspension comprising a liquid phase and a precipitate of calcium fluosilicate dihydrate by mixing, at a temperature of less than 50° C., (1) an aqueous solution of fluosilicic acid having a gravimetric concentration of H_2SiF_6 greater than 10% with (2) anhydrous calcium chloride in a molar ratio $CaCl_2/H_2SiF_6$ of between 1.5 and 5, and with (3) a dilution water having a gravimetric concentration of H_2SiF_6 of between 0 and 10%, said dilution water not exceeding 60% by volume of said aqueous solution of fluosilicic acid;

(b) filtering and draining the suspension to separate the calcium fluosilicate dihydrate precipitate from the liquid phase;

(c) washing the calcium fluosilicate dihydrate precipitate by mixing the precipitate with an aqueous solution of fluosilicic acid having a gravimetric concentration of H_2SiF_6 of between 2 and 4%;



(d) filtering the resulting medium comprising the calcium fluosilicate dihydrate precipitate and the washing solution to separate the precipitate;

(e) drying the dehydrating the calcium fluosilicate between 120° C. and 140° C. to constant weight to obtain an anhydrous calcium fluosilicate having a gravimetric phosphorous content of less than 100 ppm.

5,055,282

METHOD OF DECOMPOSING AMMONIA USING A RUTHENIUM CATALYST

Tsutomu Shikada; Minoru Asanuma, and Takao Ikariya, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 546,679, Jun. 29, 1990, Pat. No. 5,002,921, which is a continuation of Ser. No. 329,783, Feb. 9, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 594,450

Claims priority, application Japan, Oct. 30, 1987, 62-277156

Int. Cl.[5] C01B *3/04;* **C01C** *1/12*

U.S. Cl. 423—351 **6 Claims**

1. A process for decomposing ammonia wherein a catalyzer is utilized, said catalyzer consisting essentially of a mixture of a basic compound in an amount of 1 to 20 weight percent and ruthenium in an amount of 0.1 to 2.0 weight percent which is impregnated into an alumina carrier and then calcinated and reduced, wherein the ammonia is decomposed at a temperature of not more than 500° C., said basic compound being an oxide, a carbonate, a hydroxide, a nitrate or an acetate of an alkali metal or an alkaline earth metal.

5,055,283

METHOD OF REMOVING SODIUM POLYSULFIDE FROM USED SODIUM/SULFUR BATTERIES

Edgar Bilger, Hasselroth, and Urban Gubisch, Gelnhausen, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 14, 1990, Ser. No. 627,820

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942516

Int. Cl.[5] C01B *21/093;* **C01C** *3/20;* **C01D** *1/32;* **C22B** *26/10*

U.S. Cl. 423—366 **12 Claims**

1. A method for removing sodium polysulfide from used sodium/sulfur batteries with the recovery of sodium thiocyanate solution, comprising mechanically comminuting a used sodium/sulfur battery or cell removed from a battery housing and containing sodium polysulfide and, sodium remnants to produce a finely divided scrap of up to 30 mm particle diameter, treating said scrap with an aqueous sodium cyanide solution to form a mixture, treating said mixture with 0.1 to 20 % by weight, relative to the total sulfur, of manganese dioxide as a catalyst and selectively oxidizing sulfidic sulfur present in said mixture by passing air though at temperatures in a range from room temperature to 110° C. for the intermediate formation of elementary sulfur, and reacting with residual sodium cyanide present in said mixture to form sodium thiocyanate product.

5,055,284

METHOD FOR PRODUCING AMORPHOUS ALUMINOCARBONATE COMPOUNDS

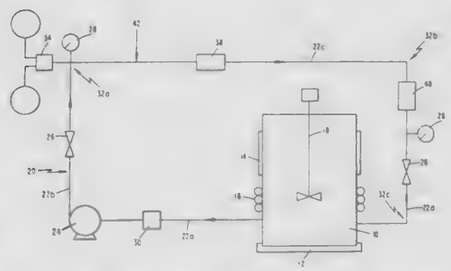
Claude R. Andrews, Pasadena; John A. Kosin, Bel Air, and Michael E. Tarquini, Havre de Grace, all of Md., assignors to J. M. Huber Corporation, Rumson, N.J.

Continuation-in-part of Ser. No. 811,230, Dec. 20, 1985, abandoned. This application Sep. 11, 1987, Ser. No. 95,456

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] C01B *31/24, 7/02;* **B01J** *8/00*

U.S. Cl. 423—419 P **18 Claims**



1. A method for producing aluminocarbonate compounds, comprising the steps of:

(a) providing a first aqueous sodium carbonate solution in a reaction vessel;

(b) continuously recirculating the aqueous sodium carbonate solution through a recycle piping system in communication with the reaction vessel;

(c) injecting a gas comprising carbon dioxide into the recirculating sodium carbonate solution at a turbulent area located in the recycle ping system until the pH of the resulting aqueous carbonated sodium carbonate solution is in the approximate range of from 8 to 10;

(d) adding a second aqueous solution comprising sodium aluminate to the aqueous carbonated sodium carbonate solution while continuing the injection of the gas into the recirculating solution, the addition rate of the second aqueous solution and the injection rate of the gas being adjusted to maintain the pH of the resulting mixture in the approximate range of from 8 to 10; and

(e) discontinuing the gas injection when the entire amount of the second aqueous carbonated solution has been added to the aqueous sodium carbonate solution to allow precipitation of the aluminocarbonate compound.

5,055,285

PROCESS FOR THE PRODUCTION OF HIGHLY PURE CONCENTRATED SOLUTIONS OF POTASSIUM HYPOCHLORITE

Budd L. Duncan, Athens, and William O. Flowers, Englewood, both of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Feb. 1, 1990, Ser. No. 473,804

Int. Cl.[5] C01B *11/06*

U.S. Cl. 423—473 **13 Claims**

1. A process for producing potassium hypochlorite solutions which comprises admixing at a temperature below about 45° C. a hypochlorous acid solution having a concentration of 35 percent or greater by weight of HOCl with an aqueous slurry of potassium hydroxide containing 35 percent by weight or greater of KOH selected to produce a potassium hypochlorite solution containing 30 percent or greater by weight of KOCl.

5,055,286

PROCESS FOR PREPARING HIGH PURITY HYDROGEN PEROXIDE

Satoru Watanabe, and Osami Ohura, both of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1988, Ser. No. 207,176

Claims priority, application Japan, Dec. 11, 1987, 62-311838

Int. Cl.[5] C01B *15/01*

U.S. Cl. 423—584 **4 Claims**

1. A process for purifying hydrogen perioxide, characterized by contacting hydrogenperoxide with an anion exchange resin; said resin having a chelating agent absorbed therein, wherein said contacting comprises passing said hydrogen peroxide through said resin having said chelating agent adsorbed therein; wherein said chelating agent contains in the molecule thereof at least three acid groups and wherein said acid groups are carboxyl groups or phosphonic acid groups.

5,055,287

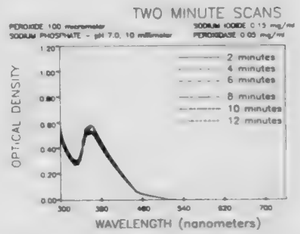
METHODS TO CONTROL COLOR DURING DISINFECTING PEROXIDASE REACTIONS

Jack H. Kessler, 23 Carriage House Path, Ashland, Mass. 01721

Continuation-in-part of Ser. No. 946,907, Dec. 29, 1986, abandoned. This application Feb. 3, 1988, Ser. No. 151,909

Int. Cl.[5] A61K *37/48, 7/20;* **A01N** *59/12, 59/00*

U.S. Cl. 424—7.1 **11 Claims**



1. A method for controlling the formation of color in a peroxide disinfecting system including, in combination, a peroxidase, peroxide and an iodide salt formulated in a desired ratio to cause disinfection within an aqueous medium comprising the steps of adding to said combination a decolorizer selected from the group consisting of: sorbic acid, malonic acid, boronic acid, sodium chloride and peroxide where said peroxide is in an amount above the peroxide level needed for said disinfection.

5,055,288

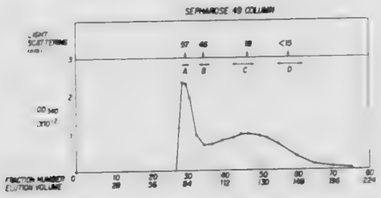
VASCULAR MAGNETIC IMAGING METHOD AND AGENT COMPRISING BIODEGRADEABLE SUPERPARAMAGNETIC METAL OXIDES

Jerome M. Lewis, Newton; Edward T. Menz, Quincy; Francis E. Kenny, Watertown; Ernest V. Groman, Brookline, and Lee Josephson, Arlington, all of Mass., assignors to Advanced Magnetics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 67,586, Jun. 26, 1987, Pat. No. 4,827,945, which is a continuation-in-part of Ser. No. 882,044, Jul. 3, 1986, Pat. No. 4,770,183. This application Aug. 16, 1988, Ser. No. 233,177

Int. Cl.[5] **G01N** *31/00, 24/00;* **A61K** *33/26;* **C08B** *37/02*

U.S. Cl. 424—9 **43 Claims**



1. A biodegradable superparamagnetic metal oxide comprising aggregates of individual biodegradable superparamagnetic hydrated metal oxide crystals, said metal oxide (i) having an individual crystal diameter of about 500 angstroms or less and aggregates with an overall mean diameter of about 4000 angstroms or less, as measured by light scattering methods; (ii) having a magnetic saturation between about 5 and about 90 EMU/g of metal oxide at approximately 300° K. and a magnetic squareness of less than 0.1, characteristic of a superparamagnetic metal oxide crystal; (iii) being capable of retaining anions in solution, characteristic of paramagnetic metal oxyhydroxides; (iv) being capable of producing proton relaxivity values, R_1 and R_2, greater than or equal to about 10^4 and $10^5 M^{-1} sec^{-1}$, respectively, characteristic of sonicated superparamagnetic metal oxide crystal aggregates; and (v) capable of being biodegraded in a subject within about two weeks or less after administration, as evidenced by a return of the proton relaxation rates of affected tissue of such subject to preadministration levels.

21. A magnetic resonance imaging contrast agent in a physiologically acceptable medium, which contrast agent (i) comprises a biodegradable superparamagnetic metal oxide, characterized as being metabolized or excreted by a subject within 30 days or less after administration, and (ii) has a blood half-life in the rat of at least about 17 minutes at a dose of about 2 mg per kg of rat.

5,055,289

INTERFERON ANTIBODY THERAPEUTIC COMPOSITIONS HAVING AN EXTENDED SERUM HALF-LIFE

James M. Frincke, Solana Beach; Barbara W. Unger; Karen G. Burnett, both of San Diego, all of Calif.; Evan M. Hersh, Houston, Tex.; Michael G. Rosenblum, Houston, Tex., and Jordan U. Gutterman, Houston, Tex., assignors to Hybritech Incorporated, San Diego, Calif.

Continuation of Ser. No. 732,154, Apr. 23, 1985, abandoned. This application Aug. 19, 1988, Ser. No. 234,224

Claims priority, application United Kingdom, Sep. 1, 1983, 8323428

Int. Cl.[5] **A61K** *37/66, 37/00*

U.S. Cl. 424—85.4 **19 Claims**

1. A composition comprising a non-covalent complex of a therapeutically active agent and an antibody selected to bind said agent at a site which does not substantially impair its therapeutic activity and which extends the serum half-life of the therapeutically active agent, wherein said therapeutically active agent is an interferon.

5,055,290

CIAMEXONE AS A SELECTIVE IMMUNOSUPPRESSANT

Uwe Bicker, Bensheim, and Wulf Pahlke, Mannheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannehim GmbH, Mannheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 810,513, Dec. 18, 1985, abandoned. This application May 25, 1988, Ser. No. 198,790

Int. Cl.[5] **A61K** *39/00*

U.S. Cl. 424—85.8 **11 Claims**

1. Method for selective immunosuppression of a disease selected from the group consisting of graft versus host disease, host versus graft disease, rheumatoid arthritis, diabetes, and systemic lupus erythrematosis, comprising administering to a subject with one of said diseases an amount of ciamexone sufficient to suppress excess B-cell proliferation associated with said disease in said patient without affecting other immune processes.

5,055,291

COMPOSITIONS FOR PREVENTING SECONDARY CATARACTS

Dominic M-K Lam, and Peter J. Kelleher, both of The Woodlands, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Division of Ser. No. 204,168, Jun. 8, 1988, Pat. No. 4,871,350, which is a continuation-in-part of Ser. No. 927,318, Nov. 4, 1986, abandoned. This application Jul. 26, 1989, Ser. No. 385,557

Int. Cl.[5] **A61K** *39/00*

U.S. Cl. 424—85.91 **9 Claims**

1. A composition comprising a macromolecular protein capable of binding substantially specifically to lens epithelial cells conjugated in vitro to a cytotoxic agent.

5,055,292

VACCINES FOR COCCIDIOSIS COMPRISING LIVE SPORULATED OOCYSTS FROM STRAINS OF EIMERIA SPECIES

Vincent McDonald, Cambridge, and Martin W. Shirley, Buckden, both of United Kingdom, assignors to National Research Development Corporation, London, United Kingdom

Continuation of Ser. No. 85,869, Aug. 17, 1987, abandoned. This application Apr. 9, 1990, Ser. No. 506,538

Claims priority, application United Kingdom, Aug. 18, 1986, 8620059; Dec. 10, 1986, 8629475

Int. Cl.[5] **A61K** *39/012*

U.S. Cl. 424—88 **18 Claims**

1. A live vaccine for use in combating coccidiosis in chickens comprising an effective concentration of live sporulated oocysts of a strain of *Eimeria acervulina* having a prepatent time in chickens between 60 and 84 hours, of a strain of *Eimeria maxima* having a prepatent time in chickens of between 80 and 120 hours, of a strain of *Eimeria tenella* having a prepatent time in chickens between 90 and 125 hours, of a strain of *Eimeria necatrix* having a prepatent time in chickens between 90 and 126 hours, of a strain of *Eimeria mitis* having a prepatent time in chickens between 60 and 84 hours, of a strain of *Eimeria brunetti* having a prepatent time in chickens between 70 and 110 hours, and of live sporulated oocysts of a strain of *Eimeria praecox* having a prepatent time in chickens between 44 and 75 hours and an effective carrier.

5,055,293

BIOLOGICAL PESTICIDE

Arthur I. Aronson, and Peter E. Dunn, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Mar. 9, 1988, Ser. No. 165,754

Int. Cl.[5] **A61K** *39/07*

U.S. Cl. 424—93 **11 Claims**

1. A method for reducing corn crop damage caused by corn root worm infestation, which method comprises treating the soil used for growing said crop to initiate growth of an effective population of a parasporal-inclusion-forming bacterium *Bacillus laterosporus* in said soil.

5,055,294

CHIMERIC *BACILLUS THURINGIENSIS* CRYSTAL PROTEIN GENE COMPRISING HD-73 AND BERLINER 1715 TOXIN GENES, TRANSFORMED AND EXPRESSED IN *PSEUDOMONAS FLUORESCENS*

Thomas E. Gilroy, San Diego, Calif., assignor to Mycogen Corporation, San Diego, Calif.

Filed Mar. 3, 1988, Ser. No. 164,162

Int. Cl.[5] **C12P** *21/00;* **C07H** *15/12;* **C12N** *1/20, 15/00*

U.S. Cl. 424—93 **28 Claims**

1. DNA encoding a B.t. toxin having the amino acid sequence shown in FIG. 2.

5,055,295

LYSIS OF FIBRIN BLOOD CLOTS WITH UROKINASE AND PRO-UROKINASE

Dieter Welzel, and Helmut Wolf, both of Nuremberg, Fed. Rep. of Germany, assignors to Vascular Laboratory, Inc., Boston, Mass.

Continuation of Ser. No. 103,989, Oct. 1, 1987, abandoned. This application May 2, 1989, Ser. No. 346,188

Claims priority, application United Kingdom, Oct. 3, 1986, 8623823

Int. Cl.[5] **A61K** *37/54*

U.S. Cl. 424—94.2 **9 Claims**

1. A method of lysing fibrin blood clots in patients in need of such treatment, comprising intravenous administration of an effective amount of a combination of UK and pro-UK, either simultaneously or sequentially such that the administration of the second component begins within 15 minutes from the end of the administration of the first component, each of UK and pro-UK being administered in effective or less than effective amounts.

5,055,296

METHOD OF TREATING CHRONIC FATIGUE SYNDROME

Sudhakar S. Wagle, 11505 N. River Rd., Mequon, Wis. 53092; S. Ken Tanaka, 3033 W. Renee Court, Mequon, Wis. 53092; Thomas Steinbach, No. 4 Bayou Shadows, Houston, Tex. 77024; Carl H. Lawyer, 10320 N. Fontainebleau Court, Mequon, Wis. 53092, and William J. Hermann, Jr., 103 River Ridge Rd., Sealy, Tex. 77474

Filed Aug. 4, 1988, Ser. No. 228,364

Int. Cl.[5] **A61K** *35/407*

U.S. Cl. 424—553 **4 Claims**

1. A method of treating chronic fatigue syndrome which comprises administering to a person suffering from this syndrome a therapeutically-effective amount of a mammalian liver extract which is referred to herein as KU 10,001, the extract being characterized by being heat stable, insoluble in acetone and soluble in water.

5,055,297

IMMUNOPOTENTIATOR

Michio Fujimaki; Shojiro Ikematsu; Masao Hada; Hidetaka Fukue, all of Tokyo, and Katsuhiro Fukutake, Fujisawa, all of Japan, assignors to Tsumura Juntendo, Tokyo, Japan

PCT No. PCT/JP88/00199, § 371 Date Sep. 21, 1988, § 102(e) Date Sep. 21, 1988

PCT Filed Feb. 25, 1988, Ser. No. 254,772

Claims priority, application Japan, Mar. 27, 1987, 62-73705; Mar. 27, 1987, 62-73706

Int. Cl.[5] **A61K** *35/78*

U.S. Cl. 424—195.1 **5 Claims**

1. A method for treating a patient infected with a virus causing acquired immune deficiency syndrome, said method comprising administering a therapeutically effective amount of an immunopotentiator to treat said acquired immune deficiency syndrome, said immunopotentiator comprising Shosaiko-to (Xiao-Chai-Hu-Tang) or Ninzin-to (Ren-Shen-Tang).

5,055,298

COSMETIC COMPOSITION COMPRISING AN EXTRACELLULAR CONNECTIVE TISSUE MATRIX

Martin Kludas, West Berlin, Fed. Rep. of Germany, assignor to Chemisches Laboratorium Dr. Kurt Richter GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 10, 1986, Ser. No. 917,468

Int. Cl.[5] **A61K** *7/00, 37/00*

U.S. Cl. 424—401 **18 Claims**

1. A cosmetic composition comprising:

(a) an extracellular connective tissue matrix composition comprising collagens, proteoglycans, glycosaminoglycans and non-collagen glycoproteins wherein said collagens, said proteoglycans, said glycosaminoglycans and said non-collagen glycoproteins have each been extracted from an extracellular connective tissue matrix in solubilized form and are in their native structural form, and

(b) a cosmetic carrier.

5,055,299

INSECTICIDAL AEROSOL

Kazunobu Dohara, Sakai; Tadahiro Matsunaga, Kobe; Motomitsu Shiraishi, Amagasaki, and Goro Shinjo, Toyanaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 8, 1988, Ser. No. 281,407

Claims priority, application Japan, Dec. 15, 1987, 62-318183

Int. Cl.[5] **A01N** *25/00*

U.S. Cl. 424—405 **5 Claims**

1. A mono-layer liquid phase type water-based insecticidal aerosol which comprises

(A) a base liquid for aerosol containing as an insecticidally active ingredient at least one pyrethroidal compound selected from the following group I or a mixture of at least one pyrethroidal compound of the group I and at least one pyrethroidal compound selected from the following group II, an organic solvent selected from the following group III and a buffer solution for conditioning the pH of the base liquid from 7.0 to 9.0, and

(B) dimethyl ether as a propellant. Group I:

3-allyl-2-methyl-4-oxocyclopent-2-enyl chrysanthemate (allethrin),

2-methyl-4-oxo-3-propargylcyclopent-2-enyl chrysanthemate,

5-propargylfurfuryl chrysanthemate (furamethrin),

α-cyano-3-phenoxybenzyl chrysanthemate,

α-cyano-3-phenoxybenzyl 2,2,3,3-tetramethylcyclopropanecarboxylate (fenpropathrin) and

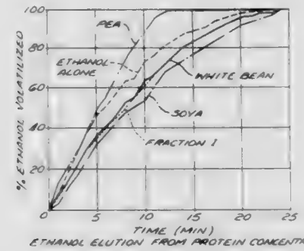
2-(4-ethoxyphenyl)-2-methylpropyl 3-phenoxybenzyl ether (ethofenprox); Group II:

3-phenoxybenzyl 2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylate (permethrin),

3-phenoxybenzyl chrysanthemate (phenothrin),

5-benzyl-3-furylmethyl chrysanthemate (resmethrin),
1-ethynyl-2-methyl-2-pentenyl chrysanthemate,
2-(4-ethoxyphenyl)-5-(4-fluoro-3-phenoxy)-phenyl-2-methylpentane and
2-[1-methyl-2-(4-phenoxyphenoxy)ethoxy]-pyridine (pyriproxyfen);
Group III:
isopropyl alcohol,
n-propyl alcohol,
ethyl alcohol,
propylene glycol,
propylene glycol methyl ether,
dipropylene glycol methyl ether,
tripropylene glycol methyl ether and acetone.

5,055,300
TIME RELEASE PROTEIN
Kashmiri L. Gupta, San Clemente, Calif., assignor to Basic Bio Systems, Inc., Missoula, Mont.
Division of Ser. No. 208,731, Jun. 17, 1988. This application Jun. 5, 1989, Ser. No. 362,034
Int. Cl.[5] A01N *25/08;* **A23J** *1/00*
U.S. Cl. 424—409 **11 Claims**



ETHANOL ELUTION FROM PROTEIN CONCENTRATES

1. A time release delivery vehicle for delivering an active ingredient, comprising a multiplicity of discrete natural, unhydrolyzed seed protein particles in powder form from which lipids naturally found in said seeds have been separated, each said particle having a network of pores with the active ingredient impregnated into the pores of said particles in such a manner that the active ingredient can migrate out of said pores in a controlled manner to release active ingredient over a period of at least 20 minutes.

5,055,301
USE OF DEXTRAN SULPHATE FOR THE TREATMENT OF HUMAN PROSTATIC CARCINOMA
Klaus-Dieter Voigt, and Cornelius Knabbe, both of Hamburg, Fed. Rep. of Germany, assignors to Entec Gesellschaft fur Endokrinologische Technologie m.b.h., Hamburg, Fed. Rep. of Germany
Filed Jan. 17, 1990, Ser. No. 466,617
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1989, 3902021; Sep. 20, 1989, 3935855
Int. Cl.[5] A61F *13/00;* **A61K** *31/715*
U.S. Cl. 424—422 **10 Claims**

1. A method of treating human prostatic carcinoma comprising administering to a patient having a human prostatic carcinoma susceptible to treatment a pharmaceutical composition consisting essentially of dextran sulfate in an amount effective to inhibit the proliferation of human prostatic carcinoma cells.

5,055,302
NEUROPEPTIDE CONTROL OF OCULAR GROWTH
Alan M. Laties, Philadelphia, and Richard A. Stone, Havertown, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.
Filed Feb. 22, 1990, Ser. No. 483,447
Int. Cl.[5] A61F *2/00;* **A61K** *37/00, 37/02*
U.S. Cl. 424—427 **8 Claims**

1. A method of controlling the postnatal growth tending to lead to myopia of the eye of a maturing animal in whom eye growth is not yet complete, which comprises ocular administration of an amount of a compound selected from the group consisting of vasoactive intestinal peptide, PHI and ocular growth inhibiting analogues of vasoactive intestinal peptide and PHI effective to inhibit postnatal axial growth of the eye tending to lead to myopia.

5,055,303
SOLID CONTROLLED RELEASE BIOADHERENT EMULSIONS
Thomas C. Riley, Jr., St. Louis, Mo., assignor to KV Pharmaceutical Company, St. Louis, Mo.
Filed Jan. 31, 1989, Ser. No. 304,124
Int. Cl.[5] A61K *9/02*
U.S. Cl. 424—436 **10 Claims**

1. A bioadherent controlled release drug delivery system which is a solid at room temperature and a cream at body temperature, which comprises: a solid emulsion system containing a continuous lipoidal external phase, an active agent, and a nonlipoidal internal phase that is at least 60% by volume of the emulsion, wherein said internal phase is selected from the group consisting of water, glycerine, and mixtures thereof.

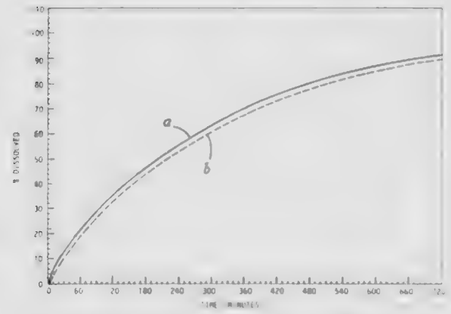
5,055,304
STABILIZED PHARMACEUTICAL COMPOSITION AND METHOD OF PRODUCING SAME
Tadashi Makino, Ibaraki, and Koji Doi, Suita, both of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan
Filed Jun. 2, 1989, Ser. No. 360,867
Claims priority, application Japan, Jun. 3, 1988, 63-137924
Int. Cl.[5] A61K *9/20, 9/50, 31/70*
U.S. Cl. 424—465 **7 Claims**

1. A stabilized pharmaceutical composition which comprises a pharmaceutically effective amount of disodium adenosine triphosphate and an amount effective to stabilize disodium adenosine triphosphate against decomposition of a low-melting fat- or oil-like substance having a melting point of about 20° to 90° C.

5,055,305
CLEANSING COMPOSITIONS
Kenneth Young, Surrey, England, assignor to Richardson-Vicks, Inc., Shelton, Conn.
Filed Dec. 2, 1988, Ser. No. 279,588
Int. Cl.[5] A61K *9/46*
U.S. Cl. 424—466 **9 Claims**

1. Denture cleansing tablet comprising:
(a) an inorganic persalt bleaching agent wherein said agent comprises a mixture of alkali metal persulfate and alkali metal perborate bleaching agents;
(b) an organic peroxyacid bleach precursor; and
(c) a solid base material having incorporated therein an effervescence producing composition which in the presence of water releases carbon dioxide, and wherein the solid base material comprises two or more component phases having different pH in aqueous medium, at least one phase having an acidic pH and having incorporated therein the organic peroxyacid bleach precursor and at least a portion of the alkali metal persulfate, and at least one other phase having an alkaline pH and having incorporated therein the alkali metal perborate.

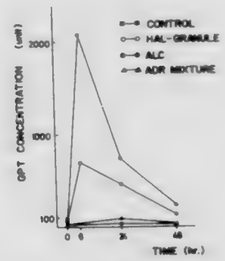
5,055,306
SUSTAINED-RELEASE FORMULATIONS
Brian W. Barry, Leeds; Bryan A. Mulley, Bradford, and Peter York, Ilkley, all of United Kingdom, assignors to APS Research Limited, Cleckheaton, United Kingdom
Filed Oct. 20, 1988, Ser. No. 260,415
Claims priority, application United Kingdom, Oct. 22, 1987, 8724763
Int. Cl.[5] A61K *9/32, 9/46, 7/36*
U.S. Cl. 424—482 **9 Claims**



1. A sustained-release formulation of a pharmacologically active substance presented in the form of a tablet of sufficient granules to provide at least one predetermined dose of the pharmacologically active substance and effervescent or water-dispersible ingredients, each of said granules having a diameter of between about 0.5 and 2.5 mm and comprising:
a) a core comprising at least one pharmacologically active substance and at least one excipient;
b) a coating covering substantially the whole surface of the core and comprising about 100 parts of a water insoluble but water swellable neutral copolymer of ethyl acrylate and methyl methacrylate and from about 20 to 70 parts of a water soluble hydroxylated cellulose derivative, the weight of the coating being from about 2 to 25% of the weight of the core, and
c) said tablet being adapted to substantially disintegrate into said granules upon being brought into contact with an aqueous liquid prior to being swallowed.

5,055,307
SLOW RELEASE DRUG DELIVERY GRANULES AND PROCESS FOR PRODUCTION THEREOF
Sumiaki Tsuru, Tokyo; Masashi Tsugita, Tokorozawa; Ken Takasaki, Tokyo; Akihiko Yokoo, Tokyo, and Takeshi Ichitsuka, Tokyo, all of Japan, assignors to Asahi Kagaku Kogyo Kabushiki Kaisha, Japan
Filed Dec. 28, 1989, Ser. No. 458,310
Claims priority, application Japan, Dec. 29, 1988, 63-335355
Int. Cl.[5] A61K *9/16*
U.S. Cl. 424—493 **16 Claims**

1. Slow release drug delivery granules comprising porous granules of a calcium phosphate compound having an atomic ratio of Ca to P of 1.3 to 1.8, porosity of 0.1 to 70%, specific surface area of 0.1 to 50 m^2/g and pore size of 1 nm to 10 μm,



calcined at a temperature of 200° to 1400° C., and a drug component impregnated in pores of the granules.

5,055,308
ACID UREASE PREPARATIONS FOR ALCOHOLIC BEVERAGES
Shohei Fujinawa, Himeji; Harumasa Iizuka, Kakogawa; Seiichi Kodama, Nagaokakyo, and Hideo Yada, Settsu, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Nov. 13, 1989, Ser. No. 435,814
Claims priority, application Japan, Nov. 10, 1988, 63-285561
Int. Cl.[5] C12C *11/00;* **C12H** *1/00;* **C12G** *1/00, 3/00*
U.S. Cl. 426—11 **10 Claims**

1. A preparation containing acid urease and dextrin whose dextrose equivalent is not less than 20.

5,055,309
PRODUCTION PROCESS FOR KEFIR-LIKE FERMENTED MILK
Taketsugu Saito; Yoshiharu Kuma; Norio Bukawa, and Tomoko Saga, all of Tokyo, Japan, assignors to Yakult Honsha Co., Ltd., Tokyo, Japan
Filed Jun. 15, 1989, Ser. No. 366,520
Claims priority, application Japan, Jun. 16, 1988, 63-146807
Int. Cl.[5] A23C *9/127, 9/137*
U.S. Cl. 426—34 **22 Claims**

1. A process for controlling alcoholic fermentation during the production of a kefir-like fermented milk from a raw material containing lactose and at least one other sugar, which comprises:
a) subjecting the lactose to lactic acid fermentation with a lactic acid bacterium, and
b) subjecting the sugar to alcoholic fermentation with a yeast,
wherein the alcoholic fermentation is controlled by:
1) conducting the fermentation with a lactose non-fermenting and galactose non-fermenting yeast until all assimilable sugar sources are substantially eliminated, or
2) conducting the fermentation with a combination of a lactic-acid bacterium, which does not cause accumulation of galactose in the resulting fermentation mixture, and a lactose non-fermenting yeast until all assimilable sugar sources are substantially eliminated.

5,055,310
PROCESS OF PREPARING SHELF-STABLE "TOFU" AT NORMAL TEMPERATURE FOR LONG TERM

Masahiko Nonaka; Takahiko Soeda; Keiko Yamagiwa; Hiroko Kowata; Masao Motogi, and Seiichiro Toiguchi, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 1, 1989, Ser. No. 401,831
Claims priority, application Japan, Sep. 2, 1988, 63-219703
Int. Cl.[5] A23L *1/20*
U.S. Cl. 426—46 **7 Claims**

1. A process for preparing shelf stable soybean curd that is stable for extended periods of time, comprising:
reacting soy milk with effective amounts of a solidifying agent and a transglutaminase that is not dependent on Ca^{+2} ions and which catalyzes the acyl rearrangement of γ-carboxyamide in the glutamine residue of a peptide chain at a temperature not higher than 80° C. to prepare a soybean curd;
packing the thus prepared soybean curd in a heat-resistant container; and
retorting the packaged soybean curd.

5,055,311
DISPOSABLE COFFEE-BREWING APPARATUS

Walter, H. Brauer, Jr., 160 Beech Street, Roslindale, Mass. 02131; Martha A. Seely, Somerville, bothof, Mass., and Ramie L. Friedman, Randolph, all of Mass., assignors to Walter H. Braier, Jr., Roslindale, Mass.

Continuation-in-part of Ser. No. 159,839, Feb. 24, 1988, abandoned. This application Nov. 14, 1989, Ser. No. 436,478
Int. Cl.[5] A47J *31/00;* **B65B** *29/02*
U.S. Cl. 426—82 **12 Claims**

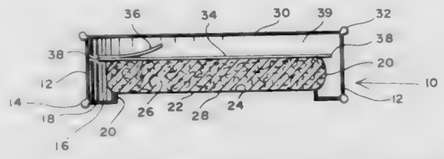


1. A disposable coffee-brewing apparatus for placement over a drinking receptacle, comprising:
an expandable and collapsible housing and a filter element for support thereon, said housing including:
a plurality of interspaced longitudinal creases for collapsing and expanding said housing thereabout, forming a flat parcel in its collapsed configuration and an open-ended tubular structure having a base end and a top end in its expanded configuration; and
a plurality of lateral creases, each lateral crease extending between each adjacent longitudinal crease and forming at least two flaps adjacent to said top end of said housing, wherein each said flap is folded inwardly toward one another to form a filter basket for receiving said filter element;
said housing being configured and dimensioned such that said apparatus surrounds or substantially surrounds said drinking receptacle when said drinking receptacle and said housing are both positioned on a surface supporting both said drinking receptacle and said housing;
said inwardly folded flaps and said remainder of said top end being configured and dimensioned to both support said filter element and an associated measure of coffee and hot water above said drinking receptacle and also define an opening in said top end such that said filter basket provides a spout through which said water can drain when said filter element is supported thereon;
said housing further including an opening for placing and removing said drinking receptacle positioned therein.

5,055,312
ELECTRIC CONDUCTION COOKING PACKAGE

Victor Hildebrand, Rte. 2, Box 314, Groveland, Fla. 32736

Filed Jan. 29, 1987, Ser. No. 8,006
Int. Cl.[5] B65D *81/34*
U.S. Cl. 426—107 **9 Claims**



1. A disposable package capable of electric conduction cooking a food product contained therein, said package comprising a container and a food product capable of being electrically conduction cooked contained therein, said container comprising:
sidewalls comprised of an electrically insulated material laterally surrounding and defining a food storage and cooking chamber;
a bottom wall comprised of an electrically conductive material, sealingly attached about its periphery to said sidewalls, said bottom wall comprising a substantially planar center portion raised above the remainder of said bottom wall and defining a bottom electrode and being attached to and circumscribed by the remainder of said bottom wall recessed from said raised center portion, said recessed peripheral bottom wall portion between the raised center portion and the sidewalls defining a peripheral reservoir sufficient to allow the drainage and accumulation of fat and other fluid products exuded from said food product during electrical conduction cooking away from said food product and said bottom electrode to prevent the contamination of said bottom electrode by said exuded products and their adverse effects on the electrical conductivity between said bottom electrode and said food product, said food product having an upper and lower surface and having its lower surface in conforming contact with and supported on said raised center portion above said reservoir;
said container further comprising a substantially planar, electrically conductive material defining a top electrode disposed in said container and in conforming contact with and supported on said upper surface of said food product, said top electrode being sized with lateral dimensions less than the corresponding lateral dimensions between opposing sidewalls sufficient to leave a gap between the perimeter of the top electrode and the sidewall proximal thereto;
a removable lid sealingly attached about its periphery to the sidewalls above and in substantially parallel relation to the top electrode to seal said food product in the container; and
said bottom electrode, food product and top electrode being in intimate electrical communication from one to the other to allow electrical current to be conducted therethrough and cook the food product.

5,055,313
FOOD PRESERVATIVE COMPOSITIONS

Beth Z. Warren, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 378,111, Jul. 3, 1989, Pat. No. 4,988,522, which is a continuation of Ser. No. 118,132, Nov. 9, 1987, abandoned. This application Oct. 24, 1990, Ser. No. 602,547
Int. Cl.[5] A23B *00/00*
U.S. Cl. 426—268 **11 Claims**

1. A process for treatment of freshly cut plant parts which comprises dipping the plant parts in an aqueous solution at ambient temperature, said solution consisting essentially of:
(a) from about 0.25% to about 1% of an antioxidant;
(b) from about 0.5% to about 2% of a metal sequestrant comprising an alkali metal acid polyphosphate salt;
(c) from about 0.25% to about 1% of an acidulant to provide a pH of below about 4.5; and
(d) from about 0.5% to about 2% of an inorganic chloride enzyme inhibitor whereby the storage life of the parts is substantially extended.

5,055,314
FILTER AIDE COATING FOR USE IN ALCOHOLIC BEVERAGES

Robert Fernyhough, Warrington, United Kingdom, assignor to Unilever Patent Holdings BV, Rotterdam, Netherlands

Filed Apr. 6, 1990, Ser. No. 505,267
Claims priority, application United Kingdom, Apr. 6, 1989, 8907813
Int. Cl.[5] C12H *1/04*
U.S. Cl. 426—423 **8 Claims**

1. A blend for precoating alcoholic beverage filters comprising silica hydrogel having a particle size distribution which provides a packed bed with a permeability from about 0.1, to about 0.3 Darcies blended with from about 25% to about 75%, by weight of alpha cellulose fiber having a packed porosity equivalent to a permeability from about 1.0 to 1.3 Darcies, the blended product having a permeability above 0.5 Darcies and a perspex abrasion value not above 10.

5,055,315
FROZEN PRODUCT AND METHOD OF MAKING IT

Rodney D. Bee, Eaton Ford, United Kingdom, assignor to Conopco, Inc., N.J.

Continuation of Ser. No. 365,929, Jun. 12, 1989, abandoned. This application Dec. 24, 1990, Ser. No. 632,600
Claims priority, application United Kingdom, Jun. 14, 1988, 8814075
Int. Cl.[5] A23G *9/06, 9/04*
U.S. Cl. 426—565 **6 Claims**

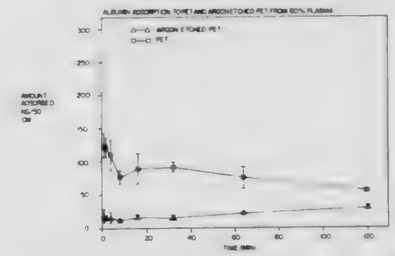
1. A frozen confectionery product comprising a mixture of water, sweetener, flavour, protein and an edible, protein-compatible gas-hydrate clathrate in ice particle form, wherein N_2O forms at least part of the gas in the clathrate.

5,055,316
TIGHT BINDING OF PROTEINS TO SURFACES

Allan S. Hoffman; Thomas A. Horbett; Janice Bohnert, all of Seattle; Bradford C. Fowler, Bothell, and David Kiaei, Seattle, all of Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Apr. 20, 1988, Ser. No. 183,794
Int. Cl.[5] A01N *1/02*
U.S. Cl. 427—2 **16 Claims**

1. A method to tightly bind a protein to a surface, comprising:
treating the surface with a plasma gas discharge in the presence of a plasma polymerizable halogenated hydrocarbon gas to make a plasma gas-treated surface having deposited on the surface a polymerized halogenated hydrocarbon coating; and
exposing the polymerized halogenated hydrocarbon coating to a protein solution, whereby the protein tightly binds to

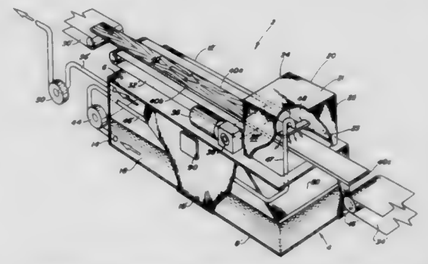


the coating, and wherein the coating is characterized by not having a net charge.

5,055,317
METHOD FOR COATING ELONGATED WORKPIECES

Harry O. Hoffman, Youngstown; James E. Kalbes, Mineral Ridge, and Mark A. Johnston, Youngstown, all of Ohio, assignors to Kathleen Hoffman and Harry O. Hoffman, both of Youngstown, Ohio

Filed Jun. 29, 1989, Ser. No. 372,767
Int. Cl.[5] B05D *3/00*
U.S. Cl. 427—8 **11 Claims**



1. A method for coating a workpiece in a vacuum applicator coating device of the type having a coating material receiving reservoir and a fluid coating application vacuum chamber through which a workpiece advances in a generally horizontal direction therethrough, said chamber being mounted above and in fluid communication with said reservoir, said coating device further including means for delivering the coating material from said reservoir to said chamber, means for introducing the coating material in an atomized state into said chamber, and means for maintaining a vacuum in said chamber, said method comprising:
passing a workpiece in said horizontal direction through said chamber;
coating a workpiece within said chamber by introducing atomized coating material into an upper region of said chamber and above an advancing workpiece such that the introduction of said atomized coating material into the upper region of said chamber and above a workpiece permits a substantially uniform and consistent coating vapor environment to be created in substantially all regions of the chamber so that a workpiece advancing through said chamber will be provided with a layer of coating which is substantially uniform in thickness and consistency, and
monitoring the viscosity of the coating material in said reservoir in response to temperature and humidity climatic factors affecting the coating material and adjusting the viscosity to maintain the viscosity in an optimum range.

5,055,318

DUAL ION BEAM BALLISTIC ALLOYING PROCESS

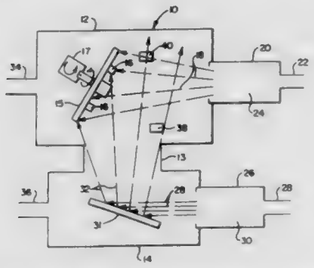
Arnold H. Deutchman, and Robert J. Partyka, both of Columbus, Ohio, assignors to BeamAlloy Corporation, Dublin, Ohio

Continuation-in-part of Ser. No. 255,573, Oct. 11, 1988, Pat. No. 4,992,298. This application Dec. 17, 1990, Ser. No. 627,989

The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

Int. Cl.[5] **B05D** *3/06*; **C23C** *14/00*

U.S. Cl. 427—38 **20 Claims**



1. A process for forming a film adhered to a substrate in an evacuated atmosphere comprising:

a) cleaning the surface of the substrate with a first energy beam of inert atoms having an energy level in the range from about 100 eV to 2000 eV,

b) after said cleaning, sputtering a desired non-hydrocarbon substance within said atmosphere by a second beam of inert atoms having an energy of about 1–50 eV/atom and at a rate and in a direction to cause such substance to deposit on said substrate,

c) simultaneously with said sputtering, exposing the substrate to said first energy beam of inert atoms at an energy level in the range from about 0.1 KeV to 500 KeV to grow a ballistically alloyed layer having a thickness of about 10–2000 Å in said substrate,

d) subsequently of exposing the substrate to the first beam and the sputtering, continuing the sputtering and exposing the substrate to a lower energy beam of inert atoms from the source of said first beam at an energy level in the range from about 50 eV to 500 eV that will cause the growth of a film of said substance on said substrate to a final desired thickness.

5,055,319

CONTROLLED HIGH RATE DEPOSITION OF METAL OXIDE FILMS

Rointan F. Bunshah, Playa del Rey; Chandra V. Deshpandey, Los Angeles; Hans J. Doerr, Westlake Village, and Jong S. Yoon, Northridge, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 2, 1990, Ser. No. 503,298

Int. Cl.[5] **B05D** *3/06*

U.S. Cl. 427—38 **20 Claims**

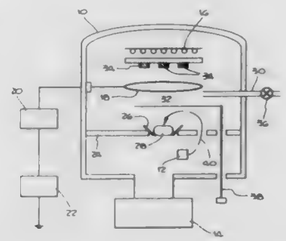
1. A process for depositing metal oxide films onto a substrate, said method comprising the step of:

supporting a substrate in a vacuum chamber having a given chamber pressure;

providing a metal target material in said vacuum chamber, said metal target having an exposed surface displaced away from said substrate, said exposed surface having a surface area;

exposing said metal target to a sufficient amount of energy to form a molten metal pool from which metal is evaporated to produce metal vapor in a zone located between said substrate and said metal target;

introducing an oxygen-containing gas into said zone wherein said gas mixes with said metal vapor to form a mixture of metal vapor and oxygen-containing gas and wherein oxygen from said oxygen-containing gas reacts with said metal target material to form one or more oxides of said metal on the surface of said metal target, said metal oxides forming a layer which covers a portion of said metal target surface area which defines a metal oxide surface area, and wherein said metal pool covers a portion of said metal target surface area which defines a metal surface area;



energizing the mixture of metal vapor and oxygen-containing gas in said zone with sufficient energy to form a plasma from which metal oxide is deposited onto said substrate; and

controlling the amount of oxygen introduced into said zone to achieve a preselected ratio of said metal surface area to said metal oxide surface area.

5,055,320

PROCESS FOR THE PREPARATION OF SUPPORT SHEET FOR PHOTOGRAPHIC PRINTING PAPER AND RESULTING ARTICLE

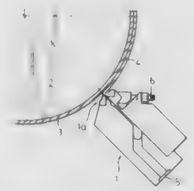
Takaharu Miura, Chiba; Tsunehisa Shigetani, Tokyo, and Minoru Moriki, Yokohama, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1989, Ser. No. 450,508

Claims priority, application Japan, Jan. 19, 1989, 1-8630

Int. Cl.[5] **B05D** *3/06*

U.S. Cl. 427—40 **16 Claims**



1. A process for the preparation of a support sheet for photographic printing sheet material, comprising the steps of:

a. coating each of front and back surfaces of a substrate sheet with a resinous material comprising, as a principal component, a polyolefin resin;

b. subjectng the polyolefin-coated front surface of the substrate to a surface-activation treatment; and

c. then forming a hydrophilic layer for binding to a photographic emulsion coating to be applied thereover, by coating the activated polyolefin-coated front surface of the substrate sheet with a coating liquid by extruding the coating liquid through a slit-shaped orifice, said coating liquid consisting of an aqueous solution of gelatin and an additive consisting of at least one member selected from the group consisting of hardeners, surface-activators, thickeners, white pigments, matting agents, antistatic agents, and anti-fogging agents; and

then drying the resultant coating liquid layer on the activated front coating resin layer, to form a dried gelatin-containing layer having a weight of 0.007 g/m^2 or more but less than 0.1 g/m^2.

5,055,321

ADHESIVE FOR ELECTROLESS PLATING, PRINTED CIRCUIT BOARDS AND METHOD OF PRODUCING THE SAME

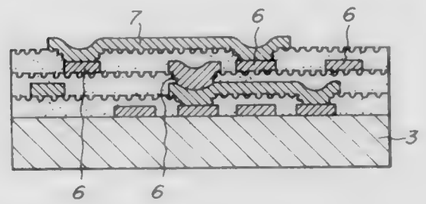
Ryo Enomoto, and Motoo Asai, both of Ogaki, Japan, assignors to Ibiden Co., Ltd., Gifu, Japan

Filed Apr. 28, 1989, Ser. No. 344,968

Claims priority, application Japan, Apr. 28, 1988, 63-104044; May 30, 1988, 63-130253; May 30, 1988, 63-130254

Int. Cl.[5] **C23C** *26/00*

U.S. Cl. 427—98 **8 Claims**



1. A method of producing a printed circuit board, which comprises:

(a) forming a cured adhesive layer on a substrate, with the forming including dispersing cured heat-resistant particles easily soluble in an oxidizing agent in a heat-resistant resin exhibiting a sparingly soluble property to said oxidizing agent, said cured heat-resistant particles being selected from the group consisting of a mixture of a heat-resistant resin particles having an average particle size of 2–10 μm and heat-resistant resin fine particles having an average particle size of not more than 2 μm, false particles obtained by adhering at least one of heat-resistant resin fine powder having an average particle size of not more than 2 μm and inorganic fine powder having an average particle size of not more than 2 μm to surfaces of heat-resistant particles having an average particle size of 2–10 μm, and agglomerated particles obtained by agglomerating heat-resistant resin fine powder having an average particle size of not more than 2 μm into an average particle size of 2–10 μm, and mixtures thereof;

(b) dissolving and removing heat-resistant particles existent on the surface portion of said adhesive layer with the use of an oxidizing agent whereby the surface portion is roughened; and

(c) forming a conductor layer through electroless plating.

5,055,322

METHOD OF PRODUCING MAGNETIC RECORDING MEDIA

Haruhisa Yamamoto, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1990, Ser. No. 603,341

Claims priority, application Japan, Nov. 2, 1989, 1-284917; Feb. 22, 1990, 2-39622

Int. Cl.[5] **H01F** *10/02*

U.S. Cl. 427—128 **7 Claims**

1. A method of producing a magnetic recording medium in which a magnetic coating formulation is prepared by dispersing and kneading a magnetic powder together with a dispersant, solvent, binder and one or more other additives, wherein said magnetic coating formulation containing a hexagonal ferrite magnetic powder is applied to the surface of a substrate and dried, characterized in that the hexagonal ferrite magnetic powder is represented by the following general composition formula (I) and has an average particle diameter of at most 0.1 μm, a ratio of the maximum diameter to the maximum thickness (a plate ratio) of at most 15, a particle size distribution (σgd) of at most 3.4 in terms of the geometric standard deviation based on the number and a coercive force of 200–3,000 Oe, and a solvent containing at least 25 wt % of at least one ketone compound having at most 10 carbon atoms is used in the magnetic coating formulation

$$(Fe)_a(Co)_b(M^1)_c(M^2)_d(M^3)_e(O)_f \quad [1]$$

wherein M^1 means at least one metal element selected from Ba, Sr, Ca and Pb, M^2 denotes at least one metal element selected from Ti, Zr, Hf, Si, Ge, Sn, Mn, Mo, W, V, Ce, Nd, Sm, B and Nb, M^3 stands for at least one metal element selected from Mg, Ni, Cr, Cu, Zn, Cd, In, Ga, Bi, La, Y, P, Sb and Al, a, b, c, d, e and f respectively represent the numbers of Fe, Co, M^1, M^2, M^3 and O atoms, a is a number of 8.0 to 12.0, b is a number of 0 to 0.5, a ratio of b to a is at most 0.055, c, is a number of 0.3 to 6.0, d and e are individually a number of 0 to 6.0 with the proviso that when b is a number other than 0 and M^2 is Ti alone, e is a number other than o, d+e is a number of 0.1 to 8.0, and f is the number of oxygen atoms satisfying the atomic valences of the other elements.

5,055,323

METHOD OF MAKING PREDECORATED GYPSUM BOARD FACE PAPER

Donald R. Kole, Elma; Arthur E. Kennedy, North Tonawanda, both of N.Y., and George J. Bean, Jr., Northampton, Mass., assignors to National Gypsum Company, Dallas, Tex.

Division of Ser. No. 812,516, Dec. 23, 1985, Pat. No. 4,725,477, which is a division of Ser. No. 680,798, Dec. 13, 1984, Pat. No. 4,579,610. This application Sep. 24, 1987, Ser. No. 100,803

Int. Cl.[5] **B05D** *5/00*

U.S. Cl. 427—265 **14 Claims**

1. The method of making predecorated gypsum wallboard face paper comprising the steps of applying a base coat of reactive, curable resin to the front surface of a gypsum wallboard porous face paper by a rotogravure printing process, said base coat being printed on said surface in a pattern consisting of small printed shapes spaced closely apart throughout said surface and printing a colored design over said base coat throughout any percentage desired of the total area of said paper front surface with high-binder inks, said high-binder inks comprising a mixture of pigment, thermoplastic resin and a solvent, all non-reactive with said base coat.

5,055,324

METHOD OF FORMING A SYNTHETIC SURFACE SIMULATING STONE, MARBLE OR THE LIKE

William M. Stecker, Rte. 2, Box 23, Grand Meadow, Minn. 55936

Filed Nov. 8, 1988, Ser. No. 268,555

Int. Cl.[5] **B05D** *5/00*

U.S. Cl. 427—281 **15 Claims**

1. A method of preparing a synthetic surface material having a pattern simulating stone, marble or the like comprising the steps of:

a. preparing a transparent or translucent resin matrix;

b. adding a veining pigment composition to said resin matrix in which said veining pigment composition includes a pigment component having a specific gravity greater than the specific gravity of said resin matrix and a blooming agent component having a specific gravity less than the specific gravity of said resin matrix;

c. applying the mixture of said resin matrix and veining pigment composition to a substrate and allowing said pigment to disperse under the influence of said blooming agent component to form said pattern; and

d. curing said mixture of resin matrix and veining pigment composition.

5,055,325

AQUEOUS BLANKING SOLUTION FOR SOLID FILM PRELUBE FORMING OPERATIONS

Robert L. Trivett, Aurora, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 20, 1990, Ser. No. 541,109
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—388.1 **6 Claims**

1. A method of preventing solid-film prelube and lubricant transfer from solid prelubricant films on metal surfaces to transfer rolls which comprises applying onto the solid prelubricant film on said metal surface an effective amount for the purpose of an aqueous solution containing:

	Ingredient	Amount
(1)	A surfactant which does not appreciably change the coefficient of friction between the prelube filmed metal surface and the stamping or drawing dies;	0.05–5.0%
(2)	Corrosion inhibitors	0.05–5.0%
(3)	Anti-foaming agent	0.0–1.0%
(4)	A biocidally active material	0.0–1.0%
(5)	Water deionized	Remainder

5,055,326

AUTOMOTIVE SUPPORTED POMPON

Clyde R. Whitington, Rte. 3, Box 58 #1, Longview, Tex. 75603

Filed Apr. 13, 1990, Ser. No. 508,828
Int. Cl.[5] D04D *7/08*
U.S. Cl. 428—4 **1 Claim**



1. An automotive supported pompon for securement to interface portions of an automobile, wherein the pompon comprises,

a flexible "U" shaped support defining elongate coextensive legs overlying one another, wherein a flexible spine is mounted between the legs and further includes a series of spaced, parallel flexible finger ribbons orthogonally mounted to the spine, and wherein the spine is secured between the legs with ribbons extending beyond the legs exteriorly thereof, and

an attachment means secured between the legs for securement of the pompon to the automobile, and

wherein the attachment means further includes an elongate, flexible line member, and wherein the line member extends exteriorly beyond each end of the "U" shaped support, and the line member further includes an enlarged loop end portion formed to each end of the line member, and

wherein the spine is stitched between the legs of the "U" shaped support to fixedly secure the spine thereto, and

wherein the ribbons further include an air activated whistle fixedly mounted adjacent a free terminal end of the ribbons to effect an audible whistling of each whistle upon traverse of the automobile with the pompon secured thereto, and

further including a matrix of fiber optic filaments directed exteriorly of the "U" shaped support, and wherein each fiber optic filament of a matrix of fiber optic filaments includes a terminal end extending through an aperture defined within a leg of the "U" shaped support to provide visual enhancement of the pompon upon directing of a light source through the matrix of fiber optic filaments to each respective end thereof, and

wherein the matrix of fiber optic filaments is spaced above the flexible spine within the "U" shaped member, and

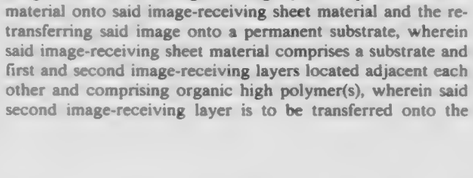
wherein each end of a respective fiber optic filament is positioned through a single leg of said legs of the "U" shaped support.

5,055,327

SIMULATED STONE

David Baskin, 161 Lake Shore Dr., Duxbury, Mass. 02332

Division of Ser. No. 59,546, Jun. 8, 1987, Pat. No. 4,908,257.
This application Jul. 31, 1989, Ser. No. 386,764
Int. Cl.[5] B44F *9/04*
U.S. Cl. 428—15 **20 Claims**



1. A method for making a cast simulated-stone comprising,

forming coated, separable, discrete globules of a first catalyzed, uncured resin,

combining said globules with a second liquid resin,

compressing said combination until said globules flatten, and allowing said combination to cure.

5,055,328

DIFFERENTIALLY CROSS-LINKED MULTILAYER FILM

Charles P. Evert, Centerville, Ia., and John Nelson, Anniston, Ala., assignors to Viskase Corporation, Chicago, Ill.

Filed Jun. 16, 1989, Ser. No. 367,832
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—34.9 **40 Claims**

1. A tubular article formed of biaxially oriented, differentially cross-linked, heat shrinkable multilayer film irradiated to at least about 2 MR comprising a thermoplastic inner layer and a thermoplastic outer layer, the irradiated inner layer containing an antioxidant in sufficient quantity to adjust its melt flow index to at least about 0.5 and the irradiated outer layer having a melt flow index of less than about 0.7, such that the ratio of said melt flow indices of the inner layer to the outer layer is at least about 1.5.

5,055,329

IMAGE-RECEIVING SHEET MATERIAL AND PROCESS FOR THE FORMATION OF A TRANSFERRED IMAGE

Tomizo Namiki; Tamotsu Suzuki, and Masashi Katayama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1990, Ser. No. 494,390
Claims priority, application Japan, Mar. 17, 1989, 1-65066
Int. Cl.[5] G03C *11/12;* **B32B** *9/04;* **A61F** *13/02*
U.S. Cl. 428—42 **1 Claim**

1. An image-receiving sheet material to be used for the formation of a transferred image by transferring a transferable image formed on an image-forming layer of a photo-sensitive material onto said image-receiving sheet material and the re-transferring said image onto a permanent substrate, wherein said image-receiving sheet material comprises a substrate and first and second image-receiving layers located adjacent each other and comprising organic high polymer(s), wherein said second image-receiving layer is to be transferred onto the permanent substrate and further comprises at least one of the following components (I) and (II):

(I) one or more compounds represented by general formula R_1—X, wherein X is —CHR_2OR_2, —COOH or —$CONH_2$; R_1 is a monovalent hydrocarbon group of C_nH_{2n+1} or C_nH_{2n-1}, wherein n is an integer of from 11 to 21; R_2 is a hydrogen atom or —CO—R_3—S—R_3—$COOCH_2$—R_1; and R_3 is a divalent hydrocarbon group having from 1 to 6 carbon atoms; and

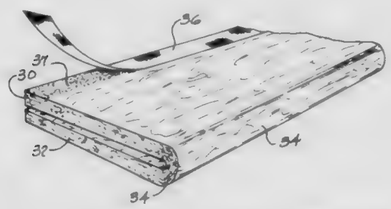
(II) a wax or a hardened oil comprising at least one selected from a saturated hydrocarbon mixture containing straight-chain hydrocarbons, said mixture having an average number of carbon atoms per each of said straight-chain hydrocarbons of 20 or above and each of said straight-chain hydrocarbons having a molecular weight of 300 or above and a saturated hydrocarbon mixture containing branched hydrocarbons or cyclic hydrocarbons, said mixture having an average number of carbon atoms per each of said branched or cyclic hydrocarbons of 35 or above and each of said branched or cyclic hydrocarbons having a molecular weight of 500 or more.

5,055,330

EDGE-REINFORCED FOLDED GLASS WOOL INSULATION LAYERS

Julia A. Stahl, Granville, and Richard F. Hayden, Zanesville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 198,702, May 17, 1988, Pat. No. 4,847,127, which is a continuation-in-part of Ser. No. 904,440, Sep. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 789,532, Oct. 21, 1985, abandoned. This application May 30, 1989, Ser. No. 357,833
The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—61 **10 Claims**



1. A thermal insulation unit comprising a blanket of unfaced glass wool insulation which is folded into two or more layers and is adapted to be unfolded into the full size of said blanket, each of said layers having a density of less than one pound per cubic foot and a width sufficient to render the layer subject to being torn apart when handled by a longitudinal edge portion thereof, and a strip of reinforcing material adhered to a longitudinal edge portion of one of the major surfaces of one of said layers, said strip of reinforcing material being spaced transversely of the layer from the fold in the blanket, the glass wool of said layers being exposed at all surface areas, when the layers of the unit are in the unfolded condition, except where covered by said strip of reinforcing material, and said reinforcing material preventing the layer to which it is attached from being torn apart when handled by the longitudinal edge portion thereof having said strip of reinforcing material thereon.

5,055,331

PHASE-CHANGE OPTICAL RECORDING MEDIA

Pranab K. Raychaudhuri, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1990, Ser. No. 546,979
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 **4 Claims**

1. A recording element comprising, as the optical recording layer, an amorphous thin film of an alloy having the formula:

$$(Ge_xTe_{1-x})_{1-z}Mn_z$$

wherein, on an atom-to-atom basis,

x is from 0.3 to 0.7, and

z is greater than zero up to 0.4.

5,055,332

ABSORBENT PAD AND METHOD FOR CONSTRUCTING SAME

John C. Rhodes, Washington, Mo.; Ronald R. Aljoe, Lewisville, Tex., and Berne F. Ellers, Orkeljunga, Sweden, assignors to Clean-Pak, Inc., St. Louis, Mo. and Dry Forming Processes AB, Orkelljunga, Switzerland

Continuation-in-part of Ser. No. 246,155, Sep. 18, 1988, Pat. No. 4,940,621. This application Sep. 18, 1989, Ser. No. 407,251
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] B32B *3/10, 31/20;* **B65D** *81/26, 85/00*
U.S. Cl. 428—74 **24 Claims**



1. An absorbent pad for meat and poultry products and the like including:

upper and lower perforated plastic film layers;

an intermediate absorbent layer disposed between said upper and lower layers and having a plurality of juxtaposed and overlapping absorbent material fibers which are operatively secured to adjacent absorbent material fibers in structural supporting relationship and are also constructed to provide a plurality of spaced interstices extending throughout said absorbent layer;

a plurality of superabsorbent granular particles dispersed throughout the absorbent layer and being supported at random and spaced locations by said absorbent material fibers within at least some of the spaced interstices, at least some of the absorbent material fibers throughout the layer also being constructed to grip and physically retain some of the super absorbent granular particles in place in the absorbent layer, said superabsorbent granular particles being capable of absorbing and suspending liquids therein while being supported and physically retained in place by the absorbent material fibers of said absorbent layer even after liquid is absorbed in said superabsorbent granular particles and absorbent material fibers; and

said upper and lower perforated plastic film layers being attached to one another at least partially along opposite marginal edge portions thereof to retain said absorbent layer between said upper and lower layers.

20. The method of constructing an absorbent pad for meat and poultry products and the like, comprising the steps of;

forming upper and lower plastic film layers at least one of which is perforated,

positioning said film layers in spaced relationship to one another;

forming a series of juxtaposed and overlapping absorbent

material fibers with spaced interstices therein to provide an absorbent material layer;
homogeneously dispersing superabsorbent granules throughout said absorbent layer for receipt within at least some of said spaced interstices thereof;
securing some of the superabsorbent granules to some of the absorbent material fibers throughout the absorbent layer;
positioning the thus formed absorbent layer between said upper and lower film layers;
moving said layers into assembled proximity to one another; and
attaching marginal edges of said upper and lower layers at least partially along circumferential portions thereof to retain said absorbent layer therebetween.

5,055,333
TUFTED CARPET

Richard F. Heine, and Gene E. Thorp, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

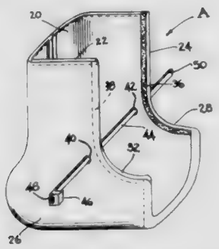
Filed Jan. 9, 1989, Ser. No. 294,881
The portion of the term of this patent subsequent to Apr. 11, 2006, has been disclaimed.
Int. Cl.[5] B32B *3/02;* **D03D** *27/00;* **D04H** *11/00*
U.S. Cl. 428—88 **14 Claims**

1. A tufted carpet comprising a backing having thereon a plurality of first areas of tufts of the fine denier fibers and a plurality of second areas of tufts of at least one looped, uncrimped, coarse denier fiber, said tufts of coarse fiber being grouped together to provide openness in said carpet, wherein said openness is capable of easily receiving and obscuring dirt therein.

5,055,334
HEAT PROTECTIVE COVER FOR HOT WATER PIPES

Gabriel V. Lechuga, 67365 Verona Rd., Cathedral City, Calif. 92234

Filed Oct. 26, 1989, Ser. No. 427,026
Int. Cl.[5] F16L *59/16;* **B32B** *3/06*
U.S. Cl. 428—99 **6 Claims**

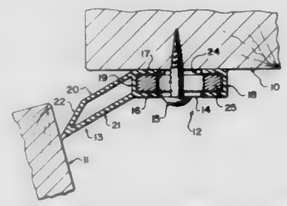


1. A heat protective cover for hot water pipes which can extend about and which can be releasably and also permanently secured to a hot water pipe, said protective cover comprising:
a) a jacket comprised of a pair of jacket sections which are capable of being disposed about and completely surround a section of a hot water line,
b) said jacket having a pair of marginal edges which are adapted to lie in marginal engagement when disposed about and enclosing a section of a hot water line,
c) a releasable self-gripping fastening means associated with the edges of said jacket in order to releasably fasten the edges of said jacket together about the enclosed section of the hot water line, and
d) a securement strip extending through openings in both sections of said jacket and adapted to be secured to itself to thereby and permanently secure the protective cover to the hot water line.

5,055,335
WEATHERSTRIP FOR A JAMB AND CLOSURE MEMBER

Sidney G. Wicks, 294 Wildwood Park, Winnipeg, Manitoba, Canada R3T 0E5

Filed Feb. 26, 1990, Ser. No. 484,266
Int. Cl.[5] E06B *7/098*
U.S. Cl. 428—99 **10 Claims**

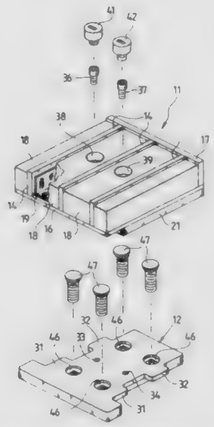


1. A jamb and closure element assembly comprising a jamb, a closure element movable relative to the jamb from an open to a closed position and a weather strip attached to the jamb so as to engage the closure element in the closed position against the jamb, the weatherstrip comprising an elongate body defining a relatively stiff strip portion attached to the jamb and a flexible portion carried by the strip portion so as to project outwardly therefrom into engagement with the element, the strip portion comprising wall means surrounding at least a majority of a hollow interior and a stiffener element separate from the wall means and inserted into the hollow interior, the wall means and the flexible portion being co-extruded as a common elongate extruded body, the stiffener element being formed of a material which is of greater rigidity than that of the flexible portion.

5,055,336
WEAR MEMBERS FOR THE INSIDE OF A CHUTE

Verlon L. Davis, 1736 Winewood Rd., Birmingham, Ala. 35215

Filed Feb. 26, 1990, Ser. No. 484,244
Int. Cl.[5] B65B *39/00;* **B02C** *23/00;* **B32B** *3/00*
U.S. Cl. 428—137 **19 Claims**



1. A wear member for a chute wherein heavy abrasive material such as quarry material is conveyed, comprising a mounting plate, a least one rigid wear-resistant member affixed to said mounting plate and extending longitudinally thereof in the direction of movement of material transported thereover wherein said member is a steel plate; a layer of resilient material affixed to said mounting plate and being coextensive therewith, said layer having a depth substantially equal to the height

of said rigid member, wherein said resilient material is selected from the group consisting of urethane and rubber, and wherein said rigid member extends normal to said mounting plate and through said layer of resilient material; and means affixed beneath said mounting plate for attaching said mounting plate to said chute such that said rigid member and said resilient material are fully exposed to said abrasive material.

5,055,337
POLYESTER FILM

Osami Shinonome; Minoru Kishida; Tomoyuki Izumi; Kunio Murakami, and Akira Menju, all of Uji, Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed May 3, 1990, Ser. No. 520,062
Claims priority, application Japan, May 15, 1989, 1-122027; Aug. 22, 1989, 1-216624
Int. Cl.[5] C08L *67/02*
U.S. Cl. 428—147 **7 Claims**

1. A polyester film made of a mixture comprising a thermoplastic polyester (A) as a matrix component and a thermoplastic polyamide (B) having a glass transition temperature higher than the thermoplastic polyester (A), as a dispersed component, or a laminated film having a surface layer made of said mixture, wherein the film surface has fine protuberances formed with said thermoplastic polyamide (B) as nuclei.

5,055,338
METALLIZED BREATHABLE FILMS PREPARED FROM MELT EMBOSSED POLYOLEFIN/FILLER PRECURSOR FILMS

Paresh J. Sheth, Sugarland, Tex., and Francis M. Thompson, Whitehouse Station, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

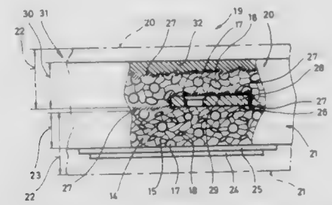
Continuation-in-part of Ser. No. 24,503, Mar. 11, 1987, Pat. No. 4,777,073. This application Sep. 29, 1988, Ser. No. 251,716
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—155 **34 Claims**

8. A metallized breathable film, comprising:
a polyolefin and a filler in a polyolefin/filler mixture containing between about 15 percent to about 35 percent filler by volume;
a pattern of different film thicknesses having greater permeability in the areas of reduced thickness thereof in comparison to the areas of greater thickness; and
a coating of a metal.

5,055,339
SHAPED ELEMENTS

Bernhard Eder, Linz/Donau; Hans Bürger, Traun, and Franz Reitinger, Rottenegg, all of Austria, assignors to Schaumstoffwerk Greiner Gesellschaft m.b.H., Kremsmünster, Austria

Filed Jul. 7, 1989, Ser. No. 377,247
Claims priority, application Austria, Jul. 14, 1988, 1811/88
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—157 **17 Claims**



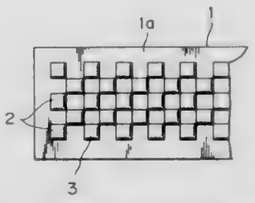
1. A shaped element comprising a panel of a soft foamed material having a cellular lattice comprised of webs defining open cells and granules of a soft foamed material having a cellular lattice comprised of webs defining cells and of at least one additional filler material, the granules having a grain size of 2 mm to 20 mm and being distributed throughout the panel of soft foamed material, and the webs of the cellular lattices being permanently deformed.

9. The shaped element of claim 1, wherein the panel is spatially deformed.

5,055,340
GRIP TAPE

Hiroshi Matsumura, Tokyo, and Koji Nii, Yamanashi, both of Japan, assignors to Asahi Kagaku Kogyo Co., Ltd., Japan

Filed Aug. 4, 1988, Ser. No. 228,865
Claims priority, application Japan, Aug. 6, 1987, 62-119803[U]; Aug. 6, 1987, 62-119804[U]
Int. Cl.[5] B32B *3/00;* **B62K** *21/26;* **A61B** *59/00*
U.S. Cl. 428—172 **7 Claims**



1. A grip tape comprising a porous polyurethane-coated flexible sheet having first and second surfaces and a elastic synthetic resin layer comprising a plurality of elastic synthetic resin projections arranged in a predetermined pattern on at least one of said first and second surfaces.

5. A grip tape comprising a porous polyurethane-coated flexible sheet having first and second surfaces and a elastic synthetic resin layer formed of a foam-expanded material comprising a plurality of elastic resin projections made of said foam-expanded material arranged in a predetermined pattern on at least one of said first and second surfaces.

5,055,341
COMPOSITE MOLDED ARTICLES AND PROCESS FOR PRODUCING SAME

Katsuhiko Yamaji, Kyoto; Masahiko Ishida, Yokohama, and Masahiro Tsukamoto, Takatsuki, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 233,282, Aug. 17, 1988, Pat. No. 4,923,547. This application Feb. 27, 1990, Ser. No. 485,631
Claims priority, application Japan, Aug. 20, 1987, 62-207674; Aug. 20, 1987, 62-207675; Sep. 16, 1987, 62-231742; Sep. 16, 1987, 62-231743; Dec. 15, 1987, 62-316728; Dec. 22, 1987, 62-326461; May 12, 1988, 63-115398
Int. Cl.[5] B32B *5/26, 5/32;* **E04B** *1/88*
U.S. Cl. 428—174 **4 Claims**

1. A composite molded article made of a nonwoven fibrous mat wherein inorganic monofilaments having a length of 10 to 200 mm and a diameter of 2 to 30 micrometers are partially bonded with a thermoplastic resin binder, many voids being provided throughout the mat and a large number of fine holes communicating with the voids in the inside being formed in at least one surface of the mat, the void ratio being 70 to 98%, the apparent density of the mat being 0.01 to 0.2 g/cm^3, the binder being distributed more densely on the surface portion than in the inside of the mat and the void ratio in the surface portion of the mat being thereby lower than that in the inside of the mat.

5,055,342
FLUORINATED POLYMERIC COMPOSITION, FABRICATION THEREOF AND USE THEREOF
Voya Markovich, Endwell; Ashit Mehta, Vestal; Jae M. Park, Somers; Eugene Skarvinko, Binghamton, and David W. Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 16, 1990, Ser. No. 484,173
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—137 **28 Claims**

1. A circuitized substrate free from fibrous fillers and containing

I. a substrate exhibiting a low dielectric constant and a low coefficient of thermal expansion, which contains:

A. fluorinated polymeric material; and

B. a filler having a mean particle size of no greater than about 7 μm and being selected from the group of silica, quartz, hollow microspheres and mixtures thereof; and wherein the amount of A is about 50 to 90 weight percent, and the amount of B is about 50 to about 10 weight percent; based upon the total of A and B in the substrate; and

II. metallic layer being disposed on at least a portion of at least one of the major surfaces of said substrate.

5,055,343
PATTERNED METALLIZED FILM AND METHOD FOR MAKING SAME
James J. Murphy, Medinah, Ill., assignor to American Decal & Manufacturing Company, Chicago, Ill.
Filed May 23, 1989, Ser. No. 355,914
Int. Cl.[5] B32B *15/04, 7/12;* **B05D** *5/06*
U.S. Cl. 428—209 **23 Claims**

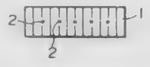


1. A patterned metallized film comprising a transparent or translucent polymeric film coated on one side with a thin coating of metal, said metal coating and said polymeric film being bonded to each other, and said metal coating having a multiplicity of fractures of different sizes distributed throughout the metal coating in a prescribed pattern so that the reflection of light by the fractured metal coating produces a three-dimensional illusion of said pattern when viewed through said polymeric film.

4. The patterned metallized film of claim 1 which includes a layer of adhesive on the opposite side of said metal coating from said polymeric film.

5. The patterned metallized film of claim 4 which includes a paper backing sheet on the opposite side of said adhesive layer from said metal coating.

5,055,344
MATERIAL FOR PACKAGING LIGHT-SENSITIVE MATERIALS
Naohito Naraoka; Masao Ishiwata, both of Odawara, and Akiji Thunoda, Tokyo, all of Japan, assignors to Konica Corporation and Hikari Chemical Industry Corporation Limited, both of Tokyo, Japan
Filed Nov. 28, 1989, Ser. No. 442,736
Claims priority, application Japan, Nov. 29, 1988, 63-301558
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—213 **6 Claims**



1. A light shielding film material having a thickness of 30–150 μm for packaging light-sensitive materials comprising a thermoplastic resin containing:

5–25 wt % of an ethylene-propylene based rubber having a Mooney viscosity of 10–100 (ML 1+4 (100° C.)) and an iodine value of not more than 20 (I_2 g/100 g EPDM);

40–60 wt % of a medium density polyethylene having a melt index of 0.01–2.0 g/10 min and a density of 0.931–0.950 g/cm^3;

a copolymer of ethylene and an α-olefin having at least 6 carbon atoms, a melt index of 0.1–10 g/10 min and a density of 0.870–0.930 g/cm^3; and

1.2–10 wt % of carbon black.

5,055,345
MULTILAYER COMPOSITE MATERIAL
Joachim Wank, Dormagen; Walter Uerdingen, Leverkusen; Lutz Schrader, Krefeld, and Werner Waldenrath, Colonge, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany
Filed Feb. 20, 1990, Ser. No. 482,425
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 3905790
Int. Cl.[5] B32B *27/10;* **B29C** *51/14;* **B29L** *7/00*
U.S. Cl. 428—215 **6 Claims**

1. A 0.3 to 2 mm thick multilayer composite material comprising the following layers:

1st layer: 0.01 to 0.3 mm thick transparent thermoplastic polymer layer,

2nd layer: 5 to 50 μm thick decorative ink layer and/or 5 to 50 μm thick adhesive layer,

3rd layer: 0.05 to 0.5 mm thick thermoplastic polymer layer containing 0.1 to 30% by weight pigment,

4th layer: 0.05 to 0.8 mm thick thermoplastic polyurethane layer having a Shore A hardness of 80 to 90 and a Shore D hardness of 50 to 70 and a shear modulus of 10 to 1000 MPa at −60° to +160° C. containing up to 30% by weight pigment,

5th layer: 0.05 to 0.5 mm thick thermoplastic polymer layer containing 0.1 to 30% by weight pigment,

6th layer: 5 to 50 μm decorative ink layer and/or 5 to 50 μm thick adhesive layer, and

7th layer: 0.01 to 0.3 mm thick transparent thermoplastic polymer layer, layers 3 and 5 being optional.

5,055,346
THERMOPLASTIC ACRYLIC POLYMER COATED COMPOSITE STRUCTURE
Frank Rohrbacher, 5 Neva Ct., Wilmington, Del. 19810
Division of Ser. No. 238,100, Aug. 30, 1988, Pat. No. 4,936,906.
This application Dec. 8, 1989, Ser. No. 450,910
The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—216 **23 Claims**



1. A composite useful as an exterior vehicle part comprising the following layers of components:

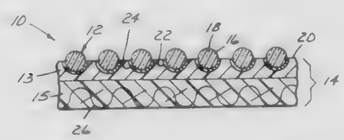
a. 10–125 micron thick layer of a glossy clear thermoplastic finish comprising an acrylic thermoplastic polymer having a glass transition temperature of about 75°–105° C. and comprises polymethyl methacrylate, copolymers of methyl methacrylate, or graft copolymers of methyl methacrylate or mixtures thereof bonded firmly to

b. 5–75 micron thick layer of a thermoplastic pigment containing paint layer comprising an acrylic thermoplastic polymer having a glass transition temperature of about 75°–105° C. of polymethyl methacrylate, copolymers of methyl methacrylate or graft copolymers of methyl methacrylate or mixtures thereof and pigment firmly bonded to

c. 250–1250 micron thick layer of a flexible thermoformable material that is bonded to

d. 500–25,000 micron thick layer of a rigid synthetic resinous material.

5,055,347
RETROREFLECTIVE SHEETING ADAPTED TO BE BONDED TO VULCANIZABLE OR CURABLE SUBSTRATE
Chester A. Bacon, Jr., Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 9, 1988, Ser. No. 282,210
Int. Cl.[5] B60C *13/00;* **G02B** *5/128;* **B32B** *25/02;* **D03D** *15/08*
U.S. Cl. 428—250 **23 Claims**



1. A retroreflective sheeting comprising a monolayer of retroreflective elements partially embedded in an elastomeric support layer and protruding from the front side of said support layer, and an omni-directionally elastic filamentary reinforcing web at least partially embedded in the rear portion of said support layer, wherein at least the back stratum of said support layer is a vulcanizable or curable elastomer which forms a strong bond to rubber when simultaneously cured with rubber.

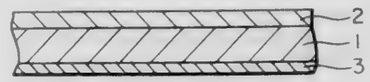
5,055,348
REFRACTORY FIBER SPACIAL STRUCTURE AND MANUFACTURING METHOD THEREOF
Keiichi Kataoka, Suita, and Shuji Tamura, Otsu, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaki, Japan
Continuation of Ser. No. 58,863, Jun. 5, 1987, abandoned. This application Jun. 20, 1989, Ser. No. 368,883
Claims priority, application Japan, Sep. 4, 1986, 61-206726; Dec. 11, 1986, 61-293506
Int. Cl.[5] B32B *3/06, 3/26, 9/00*
U.S. Cl. 428—307.3 **4 Claims**

1. A rigid form refractory fiber spatial structure having:

a) a porous core structure consisting of fiber-like materials having an elongated shape corresponding to the shape of a staple fiber or a filament and comprising a refractory crystalline compound B, the porosity of which is between 5% and 50%, said core structure being formed by applying a precursor of said refractory crystalline compound B to a fiber spatial structure containing organic material and burning said structure to decompose said organic material and form said refractory crystalline compound B; and

b) a skin portion comprising a refractory crystalline compound A; said skin portion being formed by applying a refractory crystalline compound A on the surface of said core structure and sintering said refractory crystalline compound A and said core structure so that a portion of said refractory crystalline compound A is impregnated into said porous core structure.

5,055,349
MAGNETIC RECORDING MEDIUM
Yoshitaka Yasufuku, and Yasuhisa Yamauchi, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Oct. 12, 1988, Ser. No. 256,714
Claims priority, application Japan, Oct. 16, 1987, 62-262469; Oct. 16, 1987, 62-262470
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—323 **14 Claims**



1. A magnetic recording medium comprising:

a support comprising one material selected from the group consisting of polyethylene naphthalate and polyethylene terephthalate;

provided on said support, a magnetic recording layer comprising a ferromagnetic metal powder, a carbon black, a lubricant, an abrasive and a binder;

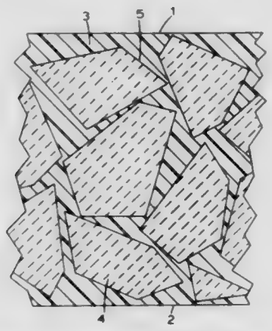
provided on an opposite side of said magnetic layer, a back coating layer comprising a carbon black, non-magnetic particles and a binder;

wherein the Young's modulus of said magnetic recording medium in a traveling direction is not less than 1100 kg/mm^2.

5,055,350
COMPOSITE RAILROAD CROSS-TIE
Charles W. Neefe, P.O. Box 429, 811 Scurry St., Big Spring, Tex. 79720
Continuation-in-part of Ser. No. 516,354, Apr. 30, 1990, Pat. No. 4,997,609. This application Aug. 6, 1990, Ser. No. 563,539
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—331 **7 Claims**

1. A member for maintaining a correct spacing between railroad rails and providing a weight bearing support surface,

said member being made from a mixture of caramelized sugar coated sand particles and recycled granulated thermoplastics



obtained by granulating containers discarded heated and compression molded to form a railroad cross-tie.

5,055,351

METAL THIN FILM TYPE MAGNETIC RECORDING MEDIUM

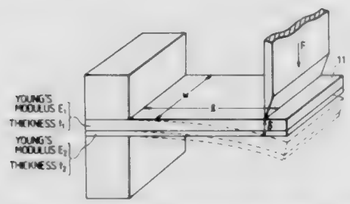
Ryo Fujimoto, Kawasaki; Katsumi Arisaka, Yokohama; Takao Sasakura, Yokohama; Hiroshi Takagi, Yokohama; Kenji Suzuki, Yokohama; Akira Shinmi, Yokohama; Rieko Kanome, Kawasaki; Morimi Hashimoto, Wako, and Nobuyuki Saito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1988, Ser. No. 257,086

Claims priority, application Japan, Oct. 15, 1987, 62-258206; Nov. 20, 1987, 62-291818; Sep. 30, 1988, 63-246628

Int. Cl.[5] G11B *7/24*

U.S. Cl. 428—336 **11 Claims**



1. A disc-shaped magnetic recording medium, comprising:

a magnetic recording layer of a vertically magnetized vapor deposited metal thin film on a substrate having a diameter of at most 50 mm, wherein the stiffness $1/k_0$ [kgfmm] of the recording medium is:

$$0.35 \times 10^{-11} \leqq 1/k_0 \leqq 1.15 \times 10^{-11}$$

$$\text{wherein } 1/k_0 = 3 \sum_{k=1}^{n} E_k I_k,$$

n is a number of layers constituting the magnetic recording medium;

E_k is Young's modulus (kgf/mm^2) of the k th layer and

I_k is moment of inertia (mm^3) of the k th layer.

5,055,352

FERROMAGNETIC THIN FILM MAGNETIC RECORDING MEDIUM HAVING AN INTERMEDIATE LAYER CONTAINING ULTRAFINE PARTICLES AND A POLAR GROUP CONTAINING BINDER RESIN HAVING A LOSS TANGENT PEAK TEMPERATURE IN A SPECIFIED RANGE

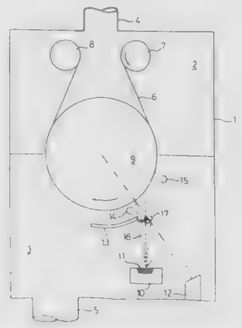
Yasuyuki Yamada, and Hiroshi Hashimoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 11, 1990, Ser. No. 522,021

Claims priority, application Japan, May 12, 1989, 1-119858; Jul. 4, 1989, 1-172414

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—336 **12 Claims**



1. A ferromagnetic thin film type magnetic recording medium comprising a nonmagnetic intermediate layer having a thickness in the range of from 1 to 100 nm formed between a nonmagnetic support and a magnetic layer, said intermediate layer containing a binder resin having a number average molecular weight of about 10,000 to 100,000 and ultrafine particles at a rate of 1 to 100 particles/μm^2, wherein said ultrafine particles have a diameter of from 5 to 250 nm and (a) said binder resin has as a polar group at least one group in a concentration of from 1×10^{-2} eg/g to 1×10^{-7} eg/g selected from the group consisting of —SO_3M,

—OH, —OSO_3M, —COOM,



—NR_2 and —$\oplus NR_3X\ominus$wherein M is H, li, na, K or a hydrocarbon group, R is H or an alkyl group, and X is a halogen atom, or (b) the peak temperature of the loss tangent (tanδ) of said binder resin is from 10 to 90° C.

5,055,353

MAGNETO-OPTICAL RECORDING MEDIUM

Ryoichi Yamamoto; Shizuo Umemura; Kiichi Kato, and Takashi Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 15, 1990, Ser. No. 523,410

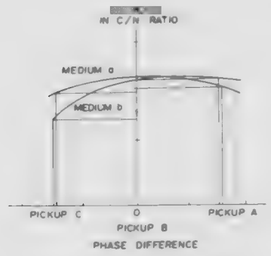
Claims priority, application Japan, May 16, 1989, 1-122348; Jun. 26, 1989, 1-163393

Int. Cl.[5] G11B *7/24*

U.S. Cl. 428—336 **10 Claims**

1. A magneto-optical recording medium comprising a substrate and a magneto-optical recording film overlaid on said substrate, said magneto-optical recording film being composed of a first protective dielectric layer, a recording layer, a second protective dielectric layer, and a reflection metal layer, which layers are overlaid in this order on said substrate,

wherein the thickness of said first protective dielectric layer falls within the range of 950Å to 1,300Å, the thickness of said recording layer falls within the range of 200Å to 400Å, the thickness of said second protective dielectric



layer falls within the range of 100Å to 600Å, and the thickness of said reflection metal layer falls within the range of 200Å to 800Å wherein said reflection metal layer is an Al alloy layer containing Ta and/or Ti.

5,055,354

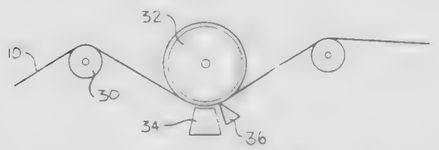
TRANSPARENTIZED PAPER AND METHOD FOR ITS MANUFACTURE

David R. Simcoke, Mt. Clemens, Mich., assignor to Phomat Reprographics, Inc., Madison Heights, Mich.

Filed Jul. 27, 1989, Ser. No. 386,409

Int. Cl.[5] B32B *9/06*

U.S. Cl. 428—342 **20 Claims**



18. A transparentized paper comprising:

a body of cellulosic material impregnated with between 0.0005 and 0.002 pounds of transparentizing medium per square foot, said transparentizing medium including an organic liquid having ar refractive index of approximately 1.4–1.5 and being substantially free of volatile organic compounds.

5,055,355

ORIENTED FILM LAMINATES OF POLYAMIDES AND ETHYLENE VINYL ALCOHOL COPOLYMERS

Ferdinand A. DeAntonis, Fogelsville; William H. Murrell, Orwigsburg, and Alfieri Degrassi, Pottsville, all of Pa., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 727,205, Apr. 29, 1985, abandoned, which is a continuation of Ser. No. 518,983, Aug. 1, 1983, abandoned. This application Oct. 7, 1988, Ser. No. 256,189

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—476.3 **8 Claims**

1. A film laminate consisting essentially of a polyamide layer and a layer of ethylene vinyl alcohol copolymer having 15 to 65 mol percent ethylene and a degree of hydrolysis of from 85 to 99.5%, wherein the ethylene vinyl alcohol copolymer layer is adjacent to the polyamide layer and the laminate is drawn to a draw ratio of from 1.5:1 to 4:1 in at least one direction.

5,055,356

ALUMINIUM AND ALUMINIUM ALLOY HAVING CORROSION-RESISTANT PROTECTIVE LAYER, AND METHODS OF MAKING SUCH A LAYER

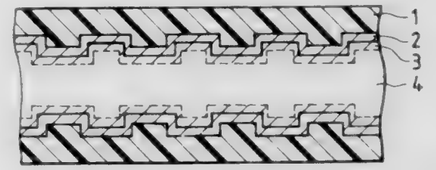
Emiko Minowa, Tohkai; Shiro Kobayashi, Hitachi, and Masahiko Itoh, Hitachiohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1989, Ser. No. 386,218

Claims priority, application Japan, Jul. 28, 1988, 63-188856

Int. Cl.[5] B37B *9/00*

U.S. Cl. 428—409 **29 Claims**



1. A body made of metal selected from aluminum and aluminum alloy having a corrosion-resistant bright dense protective layer at a surface thereof, which layer has a thickness in the range 50 to 500 nm and comprises aluminum oxide and a chelate complex of aluminum and at least one organic chelating compound selected from the group consisting of 8-hydroxyquinoline, derivatives of 8-hydroxyquinoline and N-nitrosophenyl-hydroxylamineammonium, and having a reflectance of at least 80%.

5,055,357

RADIATION CURABLE CROSS LINKABLE COMPOSITIONS

Jeffrey S. Plotkin, Monsey, N.Y.; James A. Dougherty, Pequannock, N.J.; Fulvio J. Vara, Chester, N.J., and Paul D. Taylor, West Milford, N.J., assignors to Isp Investments Inc., Wilmington, Del.

Division of Ser. No. 470,487, Jan. 26, 1990. This application Mar. 18, 1991, Ser. No. 670,649

Int. Cl.[5] B05D *3/06;* **C08F** *2/46;* **C08J** *3/28;* **B32B** *27/38*

U.S. Cl. 428—413 **12 Claims**

1. The process which comprises forming a radiation curable, cross linkable composition comprising (a) from about 0.1 to about 5 wt. % of an initiator containing at least 25% cationic initiator, (b) from about 0 to about 60 wt. % of a polymerizable vinyl ether, epoxy ether, epoxy acrylate and/or vinyloxy alkyl urethane and (c) from about 35 to about 99.9% wt. % of an aliphatic polyfunctional alkenyl ether having the formula

$$A[(CH_2O)_m(Z)_rCH{=}CHR]n$$

wherein A is a carbon atom, —OCH=CHR or $[C_1$ to C_{10} alkyl$]_{4-n}$; R is C_1 to C_6 alkyl; Z is C_2 to C_8 alkyleneoxy; r has a value of from 0 to 6; m has a value of from 0 to 1 and n has a value of from 1 to 4, with the proviso that m is 0 and n is one when A is —OCH=CHR, n has a value of 2 or 3 when A is $[C_1$ to C_{10} alkyl$]_{4-n}$ and n has a value of 4 when A is carbon, coating said composition on a substrate and curing said composition on said substrate by exposure to an effective polymerizing dosage of radition for a period sufficient to produce a tack-free film.

5,055,358

LOW REFLECTANCE FILMS FOR TRANSPARENT SUBSTRATES

Robert L. Livingston, Monclova, and Gary A. Smith, Maumee, both of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Sep. 29, 1989, Ser. No. 414,697
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—433 28 Claims

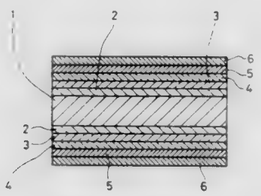
1. A coated, transparent article, comprising:
A) a transparent substrate, having a first, coated side and a non-coated side;
B) a coating of chromium deposited on and adhered to the first side of the transparent substrate;
C) a coating of chromium oxides deposited on and adhered to the coating of chromium; and
D) a coating of a metal oxide deposited on and adhered to the coating of chromium oxides;
wherein the visible light transmittance of the coated, transparent article is less than about 15%, and the coated side reflectance of the coated, transparent article less than about 30%.

5,055,359

MAGNETIC RECORDING MEDIUM WITH AN INTERMEDIATE PROTECTIVE LAYER OF SILICON DIOXIDE AND A PERFLUOROALKYLPOLYETHER LUBRICANT LAYER

Toshio Tsuno; Shinya Katayama, both of Tsukuba; Shinya Kawakita, Yotsukaichi, and Tomoyasu Shimizu, Tsukuba, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 450,893, Dec. 14, 1989, abandoned.
This application Feb. 20, 1991, Ser. No. 657,614
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—448 1 Claim



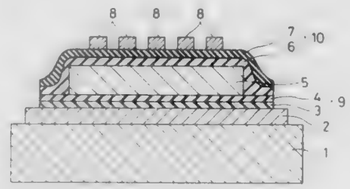
1. A magnetic recording medium comprising:
(a) a magnetic recording layer;
(b) a protective layer of silicon dioxide provided on the magnetic recording layer directly or with another protective layer interposed therebetween; and
(c) an uppermost layer of a perfluoroalkylpolyether-based liquid lubricant having an atomic group which contains an aromatic ring at a terminal end of a perfluoropolyether main chain, wherein said layer of lubricant is provided directly on the layer of silicon dioxide, and wherein adhesion between said layer of silicon dioxide and said layer of lubricant is strengthened by thermal treatment of the layer of lubricant coated on the layer of silicon dioxide at a temperature in the range of 60° C. to 250° C.

5,055,360

THIN FILM ELECTROLUMINESCENT DEVICE

Takashi Ogura, Nara; Takuo Yamashita; Hiroaki Nakaya, both of Tenri, and Masaru Yoshida, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 8, 1989, Ser. No. 363,069
Claims priority, application Japan, Jun. 10, 1988, 63-143878
Int. Cl.[5] H05B *33/22*
U.S. Cl. 428—473.5 27 Claims



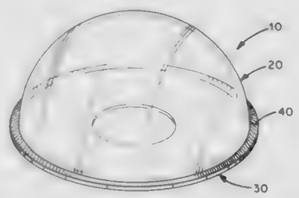
1. A thin film EL device, comprising:
translucent substrate;
first electrode layer disposed on the upper surface of said translucent substrate;
first insulating layer disposed on said first electrode layer;
light emitting layer disposed on said first insulating layer;
second insulating layer disposed on said light emitting layer; and
second electrode layer disposed on said second insulating layer and electrically connected to said first electrode layer through an applied power source for receiving voltage and applying an electric field to said light emitting layer;
said, second insulating layer being a composite layer including an inorganic film and an organic film, said inorganic film being interposed between said light emitting layer and said organic film to thereby maintain luminance of said light emitting layer and said organic film being interposed between said second electrode layer and said inorganic film to reduce voltage necessary to produce said electric field.

5,055,361

BONDED CERAMIC-METAL ARTICLE

Edmund M. Dunn, Lexington; Kang, Shinhoo, Wayland, and George C. Wei, Weston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 17, 1989, Ser. No. 324,844
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] B32B *15/04*; B23K *31/02*
U.S. Cl. 428—633 15 Claims



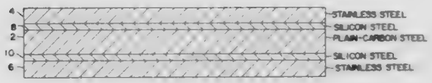
1. A ceramic-metal article comprising a ceramic article bonded to a metal article by a layer of brazing material, said ceramic-metal article having a service temperature, said ceramic article having a liquidus temperature, a solidus temperature, and a coefficient of thermal expansion, said ceramic article comprising approximately 3.2 mole percent to about 30 mole percent of lanthana added to yttria, said metal article having a liquidus temperature, a solidus temperature, and a coefficient of thermal expansion essentially equal to the coefficient of thermal expansion of said ceramic article, said brazing material comprising a ductile metal containing a group IVB metal, said brazing material having a liquidus temperature less than said solidus temperature of said ceramic article and said solidus temperature of said metal article, and said brazing material having a solidus temperature above said service temperature of said ceramic-metal article.

5,055,362

PRESSURIZE-BONDED COMPOSITE MATERIAL

Ronald J. McCormick, Pittsburgh, and G. Leonard Yeager, Sarver, both of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Division of Ser. No. 233,687, Aug. 18, 1988, Pat. No. 4,906,305.
This application Sep. 22, 1989, Ser. No. 411,988
Int. Cl.[5] B32B *15/18*
U.S. Cl. 428—683 5 Claims



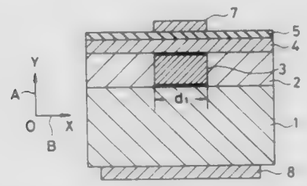
1. A pressure-bonded composite material comprising a central stratum of plain-carbon steel not modified by carbide-former elements, two exterior strata of stainless steel, and interleaving strata of silicon steel between said central stratum and said exterior strata, each of said strata of silicon steel containing more than 0.50 and up to 4.5 weight percent silicon, each of said stainless steel exterior strata having along its adjoining interface with a respective stratum of said interleaving strata of silicon steel a portion which is substantially free from being enriched with carbides;
said composite material having substantial formability by deep drawing after annealing at 1800° F. preceded by hot and cold rolling as evidenced by a yield strength at an offset of 0.2 percent of less than 50,000 pounds per square inch.

5,055,363

ELECTROLUMINESCENT DEVICE OF COMPOUND SEMICONDUCTOR

Yoshitaka Tomomura, Saidaiji-higashimachi, and Masahiko Kitagawa, Nara, Japan, assignors to Sarp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1989, Ser. No. 382,239
Claims priority, application Japan, Jul. 21, 1988, 63-182664; Sep. 26, 1988, 63-240556
Int. Cl.[5] H01L *33/00*
U.S. Cl. 428—690 16 Claims



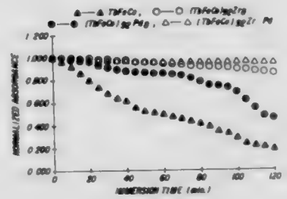
1. An electroluminescent device of compound semiconductor, comprising an electroluminescent device body formed on a substrate and including a light-emitting portion having an upper surface and a lower surface, a conductive portion joined to at least one of the lower surface and the upper surface of said light-emitting portion, and a pair of electrodes for applying an external voltage to the body through said light-emitting and conductive portions to cause electroluminescence, said conductive portion comprising a conductive layer formed of a Group II–II compound semiconductor fabricated so as to have a substantially low resistance by addition thereto of an impurity element at a first concentration, and a conductive layer part located in the conductive layer and formed of the Group II–VI compound semiconductor and having an impurity element added thereto at a second concentration higher than said first concentration of the conductive layer, said conductive layer part having a width selected so as to define a restricted current flow path through said light-emitting portion.

5,055,364

MAGNETOOPTICAL RECORDING ELEMENT

Tukaram K. Hatwar, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1989, Ser. No. 435,915
Int. Cl.[5] G11B *5/66*
U.S. Cl. 428—694 6 Claims



1. A magnetooptical recording element comprising a substrate and a magnetooptical recording film having a composition represented by the formula:

$$(TbFeCo)_{1-x-y}Zr_xPd_y$$

wherein x and y represent atomic percent,

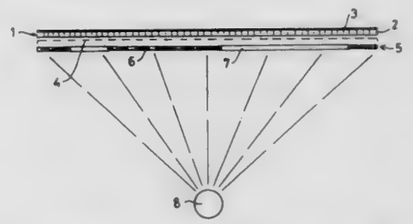
$1 \leqq x < 5$ and $1 \leqq y < 5$.

5,055,365

ELECTROSTATIC PROOFING OF NEGATIVE COLOR SEPARATIONS

Josef Matkan, Malvern, and John T. Alston, Myrtle Bank, both of Australia, assignors to Stork Colorproofing B.V., Boxmeer, Netherlands

Filed Nov. 28, 1988, Ser. No. 276,771
Claims priority, application Australia, Dec. 1, 1987, PI5694
Int. Cl.[5] G03G *13/01*
U.S. Cl. 430—42 28 Claims



1. An image reversal process for the production of positive color imagery from negative color separation films comprising the steps of:
a) uniformly charging a photoconductor to a first polarity;
b) exposing said photoconductor to light through a negative separation film of the first color;
c) toning said photoconductor with opposite polarity liquid

background toner to form in unexposed areas a background deposit thereon;
d) drying said background deposit;
e) uniformly charging said photoconductor and said background deposit to said first polarity;
f) uniformly applying charges of opposite polarity to said photoconductor and said background deposit, the magnitude of said opposite polarity charges being selected to substantially reduce the first polarity charges on said background deposit without substantially affecting the first polarity charges on said photoconductor;
g) toning said photoconductor with opposite polarity liquid toner of the first color to form color deposits thereon in image areas free of said background deposit;
h) transferring said color deposits onto a receptor;
i) removing said background deposit from said photoconductor; and
j) repeating steps a) to i) with negative separation films of subsequent colors and liquid toners of corresponding colors.

5,055,366

POLYMERIC PROTECTIVE OVERCOATINGS CONTAIN HOLE TRANSPORT MATERIAL FOR ELECTROPHOTOGRAPHIC IMAGING MEMBERS

Robert C. U. Yu, Webster, and Ronald P. Premo, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1989, Ser. No. 457,857
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—58 **17 Claims**

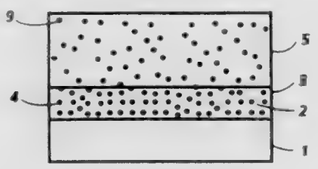
1. An electrophotographic imaging member, comprising a conductive layer and, in sequence, a charge generating layer, a charge transport layer and an overcoating layer thereon comprising a film forming polymer binder and a hole transport compound in an amount which prevents crystallization and leaching of charge transport material in said charge transport layer upon exposure to liquid xerographic inks and ink solvent carriers.

5,055,367

IMAGING MEMBERS WITH BICHROMOPHORIC BISAZO PERINONE PHOTOCONDUCTIVE MATERIALS

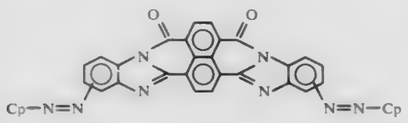
Kock-Yee Law, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 31, 1990, Ser. No. 531,484
Int. Cl.[5] G03G *15/02*
U.S. Cl. 430—59 **20 Claims**



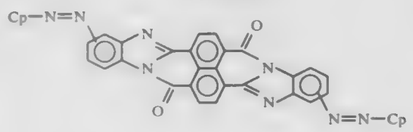
1. An imaging member which comprises a conductive substrate and a photogenerator layer containing a photogenerating compound selected from the group consisting of:

II

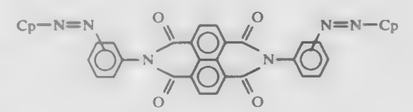


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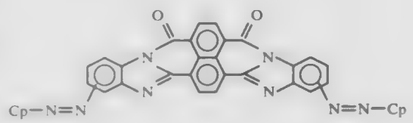
III



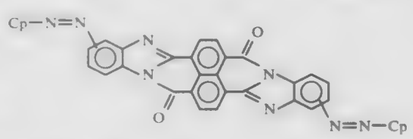
I



II



III



and mixtures thereof, wherein Cp represents a coupler group.

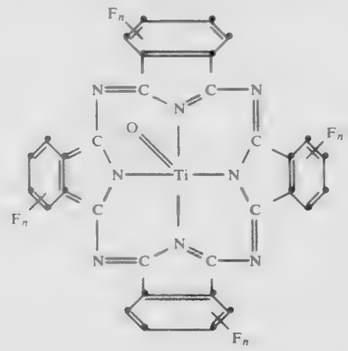
5,055,368

ELECTROPHOTOGRAPHIC RECORDING ELEMENTS CONTAINING TITANYL PHTHALOCYANINE PIGMENTS AND THEIR PREPARATION

Khe C. Nguyen, Pittsford, and Thomas R. Klose, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1990, Ser. No. 485,114
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—78 **16 Claims**

11. An electrophotographic recording element having a layer formed from a liquid composition comprising polymeric binder and dispersed photoconductive titanyl phthalocyanine particles having a particle size up to about 0.2 micrometer:
(a) said titanyl phthalocyanine having the formula:



where each n is 0 or each n is 1.
(b) said particles, where each n is 0, having peaks at diffraction angles (2θ) of 7.4°, 16.3°, 22.4° and 27.1° and, where each n is 1, having peaks at diffraction angles (2θ) of 6.8°, 15.89° and 25.27° in the x-ray diffraction pattern obtained with CuKα radiation, and
(c) said layer having a first spectral absorption peak within the range of about 630 to about 660 nm and a second spectral absorption peak within the range of about 830 to 870 nm.

5,055,369

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

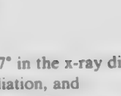
Eiichi Kato; Hiroshi Ishibashi, and Kazuo Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1989, Ser. No. 325,795
Claims priority, application Japan, Mar. 18, 1988, 63-64970
Int. Cl.[5] G03G *9/12*
U.S. Cl. 430—114 **8 Claims**

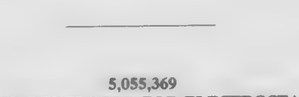
1. A liquid developer for electrostatic photography comprising a resin dispersed as grains in a non-aqueous solvent having an electrical resistance of 10^9 Ωcm or more and a dielectric constant of 3.5 or less, wherein the dispersed resin grains are copolymer resin grains obtained by polymerizing a solution containing at least one monofunctional monomer (A) which is soluble in the non-aqueous solvent but becomes insoluble therein after polymerization and at least one monofunctional macromonomer (B) which is composed of a polymer moiety having a repeating unit of the following formula (I) and a copolymerizable double bond-containing group of the following formula (II) bonded to only one terminal of the main chain of the polymer moiety and which has a number average molecular weight of 1×10^4 or less, in the presence of a resin which is soluble in the non-aqueous solvent and which contains no graft group capable of polymerizing with the monomers;

(I)

(II)



wherein in formula (I), X represents —COO—, —OCO—, —CH_2OCO—, —CH_2COO—, —O—, —SO_2—, —



R_1 represents a hydrogen atom or a hydrocarbon group having from 1 to 18 carbon atoms;
Y represents a hydrocarbon group having from 1 to 22 carbon atoms;
a_1 and a_2 each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group having from 1 to 8 carbon atoms, a group —COO—Z or a group —COO—Z as interrupted by a hydrocarbon group having from 1 to 8 carbon atoms; and
Z represents a hydrocarbon group having from 1 to 18 carbon atoms;
in formula (II), V has the same meaning as X in the formula (I); and
b_1 and b_2 each is selected from the same groups as a_1 or a_2 in formula (I).

5,055,370

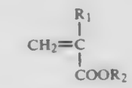
IMAGE FORMING RESIN PARTICLES FOR LIQUID DEVELOPER FOR PRINTING PLATE

Nobuo Suzuki, and Yutaka Sakassi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

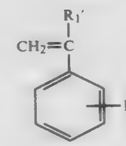
Filed Sep. 12, 1989, Ser. No. 406,019
Claims priority, application Japan, Sep. 12, 1988, 227832/88; Sep. 13, 1988, 229162/88
Int. Cl.[5] G03G *9/12*
U.S. Cl. 430—114 **16 Claims**

1. A positively chargeable liquid developer to be used in making a printing plate by developing an electrostatic image formed on the surface of a printing plate precursor with a liquid developer and then by decoating the non-image area, said plate comprising a conductive base plate having provided thereon an electrophotographic photoreceptive layer, said liquid developer containing image forming particles comprising a resin which is prepared by copolymerizing monomers of formulae (I), (II) and (III) in a copolymerizing ratio of 0.1–9.9:-90–99.8:0.1–10 by weight percent, said resin having a number average molecular weight ranging from 5×10^3 to 5×10^5 and a softening point ranging from 40° C. to 150° C.:

(I)



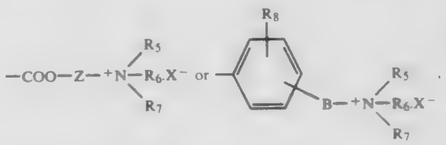
(II)



(III)



wherein R_1, R_1' and R_1'' each represents a hydrogen atom or a methyl group; R_2 represents an straight-chain or branched alkyl group containing 4 to 22 carbon atoms; R_3 represents a hydrogen atom, or a straight-chain or branched alkyl group containing 1 to 4 carbon atoms; R_4 represents



Z and B each represents —$(CH_2)_n$— (n=1–4), but B may be absent from the group represented by R_4; X^- represents an anion: R_5, R_6 and R_7 may be the same or different, each being a straight-chain or branched alkyl group containing 1 to 12 carbon atoms, or a hydrogen atom, and R_8 has the same definition as R_3.

5,055,371

RECEIVER SHEET FOR TONER IMAGES

Jong S. Lee, Pittsford; Larry K. Maier, Rochester, and Donald S. Rimai, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1990, Ser. No. 518,061
Int. Cl.[5] B32B *3/26*
U.S. Cl. 430—126 **19 Claims**

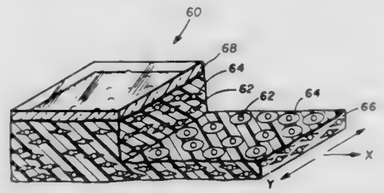
16. A method of forming on a light reflecting receiver sheet

a developed toner image having large, substantially continuous areas of toner which comprises

forming a latent electrostatic image on an element,

developing the image by applying a thermoplastic toner particles to the latent image on the element,

transferring the toner particles of the developed image including large continuous areas of toner, to a receiver sheet by contacting the sheet with the element, and



fusing and fixing the toner particles to the receiver sheet by pressing the transferred toner on the receiver sheet at a temperature above about 110° C.

said receiver sheet comprising a non-fibrous but paper-like, microvoided, polymeric sheet which is substantially opaque and is highly reflective to visible light and which comprises a continuous matrix of oriented thermoplastic polymer having dispersed therein microbeads of a different polymer each of which is surrounded by a void space.

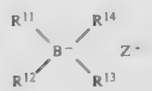
5,055,372

PHOTOHARDENABLE COMPOSITION CONTAINING BORATE SALTS AND KETONE INITIATORS

Michael S. Shanklin, Dayton; Peter Gottschalk, Centerville, and Paul C. Adair, Springboro, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 23, 1990, Ser. No. 512,700
Int. Cl.[5] G03C *1/68, 1/72*
U.S. Cl. 430—138 **17 Claims**

1. A photosensitive material comprising a support having a layer of a photohardenable composition on the surface thereof, said composition comprising a free radical addition polymerizable or crosslinkable compound, an aromatic ketone absorber, and a borate salt soluble in the polymerizable or crosslinkable compound in an amount sufficient to initiate polymerization, wherein said borate salt is represented by the formula:



where Z^+ is a trimethylcetyl ammonium or a cetylpyridinium cation and R^{11}, R^{12}, R^{13} and R^{14} are the same or different and selected from the group consisting of alkyl, aryl, aralkyl, alkaryl, alkenyl, alkynyl, alicyclic, heterocyclic, and allyl groups.

5,055,373

MULTICOLOR RECORDING MATERIAL

Keiso Saeki; Fumiaki Shinozaki, and Toshiaki Endo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 29, 1989, Ser. No. 414,342
Claims priority, application Japan, Sep. 29, 1988, 63-245819
Int. Cl.[5] G03C *1/68, 1/72*
U.S. Cl. 430—130 **19 Claims**

1. A multicolor recording material, which comprises a support having provided thereon a coating layer comprising two or more kinds of microcapsules each containing at least a leuco dye capable of being colored by oxidation and containing a photo oxidizing agent, and a reducing agent outside said microcapsules, as necessary components, wherein two or more leuco dyes capable of forming different colors from each other are retained in different kinds of said microcapsules respectively, said different kinds of microcapsules being composed of walls of high polymers having different glass transition points.

5,055,374

ELECTRODEPOSITION COATING COMPOSITION CONTAINING AN ACRYLIC RESIN AND A QUINNONE DIAZIDE GROUP BEARING RESIN

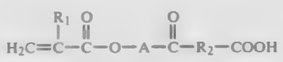
Mamoru Seio; Takeshi Ikeda; Kanji Nishijima, all of Osaka, and Katsukiyo Ishikawa, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 2, 1989, Ser. No. 388,471
Claims priority, application Japan, Aug. 2, 1988, 63-193248
Int. Cl.[5] G03C *1/52, 5/00*
U.S. Cl. 430—190 **4 Claims**

1. An aqueous electrodeposition coating composition for a positive working resist comprising

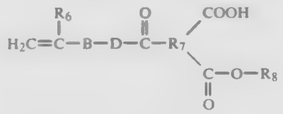
(A) an arcylic resin obtained by the copolymerization of

(a) 3 to 80 % by weight of an acid group bearing long-chain monomer represented by the formula:



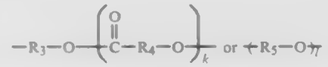
(I)

or the formula:



(II)

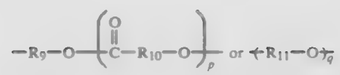
wherein R1 and R6 each represents hydrogen or methyl; R2 is a substituted or unsubstituted hydrocarbon residue selected from aliphatic hydrocarbons having 2 to 10 carbon atoms, alicyclic hydrocarbons having 6 to 7 carbon atoms and aromatic hydrocarbons having 6 carbon atoms; A is a repeating unit of the formula:



in which R3 is ethylene or propylene; R4 is a substituted or unsubstituted alkylene having 2 to 7 carbon atoms; R5 is a substituted or unsubstituted alkylene having 2 to 5 carbon atoms; k and l each represents an average repeating unit number and k is 1 to 10 and l is 2 to 50 ; R7 is a substituted or unsubstituted hydrocarbon residue selected from aliphatic hydrocarbons having 5 to 10 carbon atoms, alicyclic hydrocarbons having 6 to 7 carbon atoms and aromatic hydrocarbons having 6 to 13 carbon atoms; R8 is selected from aliphatic hydrocarbons having 1 to 30 carbon atoms and aromatic hydrocarbons having 6 to 13 carbon atoms whose main chain may include at least one of vinyl group, allyl group, ether group, ester group, carbonyl group, hydroxyl group and combination thereof and whose side chain may include substituents; B is



a group in which m and n each is 0 to 1 ; D is a repeating unit of the formula:



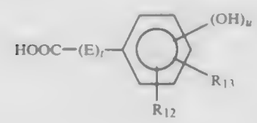
in which R9 is ethylene or propylene; R10 is a substituted or unsubstituted alkylene having 2 to 7 carbon atoms; R11 is a substituted or unsubstituted alkylene having 2 to 5 carbon atoms; p and q each is an average repeating unit number and p is 1 to 10 and q is 2 to 50 ,and

(b) 97 to 20 % by weight of another copolymerizable α,β-ethylenically unsaturated compound, the weight average molecular weight of the said copolymer being 1,000 to 200,000, and

(B) a photosensitive group bearing resin obtained by the reaction of

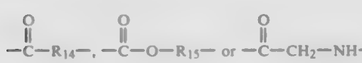
(c) at least one polyepoxide compound having an epoxy equivalent of 75 to 1,000,

(d) aromatic or heterocyclic carboxylic acid bearing phenolic hydroxyl groups represented by the formula:



(III)

in which E is a substituted or unsubstituted alkylene or arylene, or —CH=CH—,



R14 and R15 each represents a substituted or unsubstituted alkylene or arylene; t is 0 or 1; u is an integer of 1 to 3; R12 and R13 each represents hydrogen, halogen, alkyl, alkenyl, nitro or alkoxy group, and R12 and R13, taken together with carbon atoms of the benzene ring may form an aromatic, alicyclic or heterocyclic ring, and

(e) 1,2-quinonediazido sulfonic acid halide, in the ratio, in terms of equivalent ratio, of carboxyl group of said (d) : epoxy group of said (c) =1: 0.8～1.2, and phenolic hydroxyl group of said (d): sulfonyl halide group of said (e)=1 : 0.05～1.2, the weight ratio of said (A) resin to said (B) resin being 100:3～120.

5,055,375

METHOD OF IMAGE FORMATION USING HEATED ROLLERS

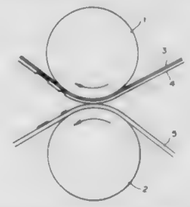
Masaaki Matsuo; Masujiro Sumita; Isao Hosoi; Hirohumi Aoki, and Masaru Ohta, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 370,743, Jun. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 140,236, Dec. 31, 1987, abandoned. This application Jan. 4, 1991, Ser. No. 636,011
Claims priority, application Japan, Sep. 17, 1987, 62-233194
Int. Cl.[5] G03C *5/54;* **G03F** *7/26;* **B65D** *88/34*
U.S. Cl. 430—254 **9 Claims**

1. A method of forming an image which comprises the steps of:

exposing imagewise an image-forming material comprised of a substrate and a photosensitive layer to actinic radiation, wherein said photosensitive layer contains a photopolymerizable compound and at least one member selected from the group consisting of a dye and a pigment and being disposed on the substrate, and wherein said exposure cures the exposed portion of the photosensitive layer so as to create a difference in adhesiveness between the exposed portion and the nonexposed or underexposed portion of the photosensitive layer,

directing the image-forming material and an image receptor into a nip portion between two rollers consisting of an elastic roller having a Shore hardness A of between 60 and 90 and a metallic roller having a surface temperature of between 50° C. and 150° C. so that the photosensitive layer of the image-forming material contacts the image receptor and so that the substrate of the image-forming material contacts the elastic roller, wherein the nip portion of the rollers is maintained under a nip pressure of between 5 to 20 kgf/cm, and



separating the image-forming material and the image receptor in a warm state after passage through the nip portion, wherein a partial thickness of the nonexposed or underexposed portion of the photosensitive layer is transferred to the image receptor as a result of the difference in adhesiveness while the exposed portion and the remaining thickness of the nonexposed or underexposed portion of the photosensitive layer is not transferred.

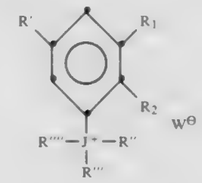
5,055,376

CURABLE COMPOSITIONS CONTAINING ONIUM SALT PHOTOINITIATORS WHICH HAVE A CHROMOPHORE LINKED TO THE ONIUM SALT MOIETY THROUGH THE 3-POSITION AND METHOD OF USE

Franklin D. Saeva, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1990, Ser. No. 611,632
Int. Cl.[5] G03C *1/492;* **C08F** *2/46;* **C08T** *3/28*
U.S. Cl. 430—270 **11 Claims**

1. A composition of matter comprising a material curable by a Bronsted acid, and a salt having the following formula:



wherein:

R′ represents an electron-donating chromophore group which absorbs visible radiation, and which exhibits a higher energy occupied molecular orbital than at least one of R″, R‴ and R⁗;

R″ represents the same substituent as R′ or R‴, an optionally substituted aryl group or an optionally substituted alkyl group having from 1 to 18 carbon atoms;

R‴ represents an electron-withdrawing alkyl, aryl or heterocyclic group;

R_1 and R_2 each, independently, represents hydrogen or an electron-donating group;

J represents an S, Se, As, N or P atom; and

when J represent As, N or P, R⁗ represents the same sub-

stituent as R', R'' or R''' and, when J represents a S or Se atom, R'''' represents O or an electron pair; and,

$W^{\ominus}$ represents an anion capable of forming a Bronsted acid having a pKa of less than 7,

said compound being capable, upon exposure to visible radiation of a wavelength absorbed by said chromophore, of forming a Bronsted acid.

5,055,377

LIGHT-SENSITIVE RECORDING ELEMENT AND PROCESS OF FORMING A RELIEF IMAGE WHEREIN THE RECORDING ELEMENT CONTAINS LECITHIN AS AN ADDITIVE

Dieter Littmann, Mannheim, and Horst Koch, Gruenstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 7, 1989, Ser. No. 404,280

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831680

Int. Cl.[5] **G03C** *1/77;* **G03F** *7/032, 7/028*

U.S. Cl. 430—271 **4 Claims**

1. A light-sensitive recording element for preparing relief printing plates, comprising a dimensionally stable base (B) and at least one photopolymerizable recording layer (A) having a thickness of from 0.1 to 7 mm consisting essentially of

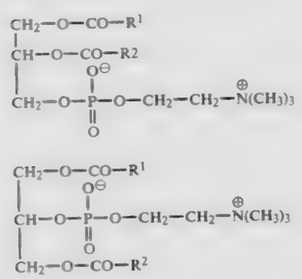
(a_1) at least one polymer as binder,

(a_2) at least one photopolymerization initiator,

(a_3) at least one photopolymerizable olefinically unsaturated compound (monomer) which is compatible with polymeric binder (a_1) and/or photopolymerizable olefinically unsaturated radicals linked internally and/or terminally to polymeric binder (a_1), and

(a_4) at least one additive, the said additive or at least one of the said additives being present in the amount of from 0.1 to 10% by weight, based on the complete weight of the photopolymerizable recording layer (A), and being selected from the group consisting of the

(a_{41}) lecithins of the general formulae I and II



I

II

where R^1 and R^2, which may be identical to or different from each other, are C_{11}–C_{18}-alkyl or C_{11}–C_{18}-alkenyl with the proviso that at least one of R^1 and R^2 is C_{11}–C_{18}-alkenyl.

5,055,378

SOLDER RESIST COMPOSITION

Masataka Miyamura, Kamakura; Yusuke Wada, Tokyo; Toshiharu Nakagawa, Ayase; Yuji Nakaizumi, Kawasaki, and Kazuhiro Takeda, Higashine, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 10, 1988, Ser. No. 269,682

Claims priority, application Japan, Nov. 13, 1987, 62-288103; Jun. 7, 1988, 63-139953

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] **G03C** *1/725, 1/73;* **C08F** *2/46;* **C08J** *3/28*

U.S. Cl. 430—280 **22 Claims**

11. A solder resist composition, comprising:

(a) a partially acrylated and/or methacrylated bisphenol A novolak epoxy resin in which 0.1 to 0.9 equivalents of acrylic acid and/or methacrylic acid are adducted to bisphenol A novolak epoxy resin per equivalent of the epoxy group of the epoxy resin;

(b) a partially acrylated and/or methacrylated cresol novolak and/or phenol novolak epoxy resin in which 0.1 to 0.9 equivalents of acrylic acid and/or methacrylic acid are adducted to cresol novolak and/or phenol novolak epoxy resin per equivalent of the epoxy group of the epoxy resin;

(c) a photopolymerization initiator;

(d) a thermosetting agent;

(e) an inorganic filler;

(f) an organic solvent; and

(g) a silane coupling agent or a titanate coupling agent.

5,055,379

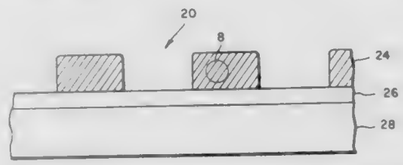
PHOTORESIST DICHROMATE COMPOSITION CONTAINING GELATIN COATED PARTICLES

Pranab Bagchi, Webster; Raymond F. Reithel, Rochester; Tsang J. Chen, Rochester, and Steven Evans, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,871

Int. Cl.[5] **G03C** *1/66*

U.S. Cl. 430—289 **16 Claims**



1. A negative-working photoresist composition comprising in admixture (a) dye-loaded or dye precursor-loaded polymeric particles individually covered with a layer of gelatin that is covalently bonded thereto and (b) a radiation-sensitive dichromate.

5,055,380

METHOD OF FORMING A COLOR-DIFFERENTIATED IMAGE UTILIZING A METASTABLE AGGREGATED GROUP IB METAL COLLOID MATERIAL

Sidney J. Bertucci, and Hugh S. A. Gilmour, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1989, Ser. No. 452,534

Int. Cl.[5] **G03C** *5/00, 1/494, 1/00*

U.S. Cl. 430—346 **14 Claims**

8. A method of preparing a stable color-differentiated image, comprising selectively applying thermal energy to portions of a layer of an element comprising a support having thereon a metastable aggregated-metal colloid comprised of discrete aggregations of particles of silver dispersed in a polymeric matrix, said aggregates having a color different from that of said particles in non-aggregated form thereby causing the portions of said layer exposed to thermal energy to change color.

5,055,381

METHOD FOR PROCESSING SILVER HALIDE PHOTOSENSITIVE MATERIALS INCLUDING THE REPLENISHING OF WASHING WATER HAVING A CONTROLLED AMOUNT OF CALCIUM AND MAGNESIUM COMPOUNDS

Akira Abe; Yoshihiro Fujita, and Toshio Koshimizu, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Jun. 3, 1987, Ser. No. 57,254

Claims priority, application Japan, Jun. 6, 1986, 61-131632; Sep. 12, 1986, 61-215143

The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.

Int. Cl.[5] **G03C** *5/395, 11/00*

U.S. Cl. 430—398 **18 Claims**

1. A method for processing silver halide photosensitive materials which comprises developing an exposed silver halide photosensitive material, fixing the developed photosensitive material and then washing the fixed material with washing water, wherein the washing water is replenished with a wash water replenisher wherein the volume of the replenisher is 1 to 50 times the volume of the liquid which is carried over by the photosensitive material from bath preceding the water washing bath per unit area of the photosensitive material and further wherein the amount of calcium and magnesium compounds present in the final bath in the water washing process is reduced to not more than 5 mg/l respectively, based on the weight of elemental calcium or magnesium, and the amount of calcium and magnesium compounds present in the washing water replenisher is not more than 5 mg/l, respectively, on the basis of elemental calcium and magnesium.

5,055,382

BLEACH-FIX REGENERATION KIT AND USE THEREOF IN PHOTOGRAPHIC PROCESSING

John J. Long, 140 Crossroads La., Rochester, N.Y. 14612; Susan R. Krauss, 181 Thornell Rd., Pittsford, N.Y. 14534, and Thomas P. Cribbs, III, 330 Judy Ann Dr., Rochester, N.Y. 14616

Filed Feb. 1, 1989, Ser. No. 305,252

Int. Cl.[5] **G03C** *5/395*

U.S. Cl. 430—400 **16 Claims**

1. A photographic bleach-fix regeneration kit for use in the regeneration of spent bleach-fixing solutions, said kit comprising first, second and third parts each of which is adapted to be added to a spent bleach-fixing solution to thereby restore its capability to function as a working bleach-fixing solution; said first part being an aqueous alkaline solution comprising a buffering agent and an aminopolycarboxylic acid, said second part being an aqueous acidic solution comprising an iron salt, and said third part being an aqueous acidic solution comprising a thiosulfate fixing agent.

5,055,383

PROCESS FOR MAKING MASKS WITH STRUCTURES IN THE SUBMICRON RANGE

Otto Koblinger, Korntal-Munchingen; Klaus Meissner, Ammerbuch-Altingen; Reinhold Mühl, Altdorf; Hans-Joachim Trumpp, Bernhausen, and Werner Zapka, Gartringen-Rohrau, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1989, Ser. No. 420,870

Claims priority, application European Pat. Off., Nov. 17, 1988, 88119094.6

Int. Cl.[5] **H01L** *21/76*

U.S. Cl. 430—312 **14 Claims**

1. A process for making a structure including features in the submicron dimension range comprising the steps of:

a) providing a substrate;

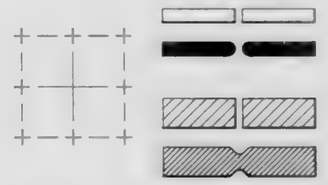
b) forming a first layer of material on said substrate;

c) forming a mesa including at least one vertical surface on a selected region of said first layer;

d) forming a second layer of material over said mesa and the uncovered portions of said first layer, said second layer forming a sidewall over each vertical surface of said mesa;

e) forming a planarizing layer on said second layer, said planarizing layer leaving uncovered the top of said second layer on said mesa;

f) forming a mask on said second and planarizing layers, said mask leaving uncovered the top of a sidewall;



g) removing the uncovered sidewall with an isotropic etchant to form a first pattern defining a submicron dimension;

h) transferring said first pattern to said first insulting layer;

i) removing said mask, planarizing layer, second layer, and mesa to leave said first layer defining said first pattern;

j) photolithographically defining a second pattern on said first layer;

k) transferring said second pattern to said first layer; and

transferring said first and second patterns from said first layer into said silicon substrate.

5,055,384

GRANULATED PHOTOGRAPHIC FIXATIVE AND ITS PREPARATION

Peter Kühnert, Leverkusen, Fed. Rep. of Germany, assignor to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 13, 1990, Ser. No. 537,893

Claims priority, application Fed. Rep. of Germany, May 10, 1989, 3933226; Jun. 27, 1989, 3920920

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] **G03C** *5/38, 5/44*

U.S. Cl. 430—450 **5 Claims**

1. Granulated photographic fixing or bleach fixing agent, the granulates having an average particle diameter of from 150 to 3000 μm and containing both a thiosulfate and a disulphite.

5. A process for the preparation of a photographic fixative or bleach fixative in granulated form containing a thiosulphate, characterised in that the thiosulphate is milled together with a disulphite and optionally other solid substances so that the particle diameter distribution curve has its maximum below 10 μm, the milled particles are subjected to a powder agglomeration, and the granulate is dried under vacuum, optionally mixed with the granulate of bleaching agent and packaged in a damp proof package.

5,055,385

PHOTOGRAPHIC ELEMENTS CONTAINING RELEASE COMPOUNDS-II

Wojciech Slusarek; John M. Buchanan, and Philip T. S. Lau, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 614,810, Nov. 16, 1990. This application Mar. 15, 1991, Ser. No. 670,082

Int. Cl.[5] **G03C** *7/32, 7/42*

U.S. Cl. 430—544 **12 Claims**

1. A photographic element comprising a support bearing a silver halide emulsion layer having associated therewith an

image dye forming coupler and a release compound represented by the formula:

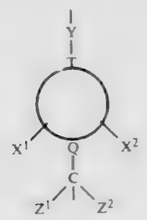


wherein

CAR is a carrier group from which the remainder of the molecule is released during photographic processing;

PUG is a photographically useful group; and

TIME is a timing group which is released from CAR during photographic processing and subsequently releases PUG, and contains a ring system represented by the structure:



wherein

T is



Y is —O—, —S— or



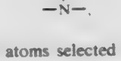
when T is



and Y is



or a covalent bond when T is



Q represents the atoms selected from carbon, nitrogen, oxygen, sulfur and phosphorus to complete a 5-, 6- or 7-membered carbocycle or heterocycle;

R^1 is COR^2 or SO_2R^2;

R^2 is alkyl or aryl;

each of Z^1 and Z^2 is individually hydrogen, alkyl, perfluoroalkyl, aryl, heterocyclyl, OR^2, SR^2, or $N(R^2)_2$;

each of X^1 and X^2 is individually a group as defined for Z^1 and Z^2 or represents the atoms selected from carbon, nitrogen, sulfur and phosphorus to complete a heterocyclic or non-aromatic carbocyclic ring system fused to the ring completed by Q;

with the proviso that each of X^1 and X^2 and each of Z^1 and Z^2 is not hydrogen at the same time.

5,055,386

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS WITH POLYMER PARTICLES

Tsumoru Hirano; Haruyoshi Gotou, and Osamu Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 12, 1989, Ser. No. 296,166

Claims priority, application Japan, Jan. 12, 1988, 63-3170

Int. Cl.[5] G03C *7/32*

U.S. Cl. 430—545 **19 Claims**

1. A silver halide color photographic material comprising a support and at least one silver halide photographic emulsion layer which contains a dispersion of fine lipophilic particles which were obtained by emulsifying and dispersing in hydrophilic phase a solution containing at least one type of oil soluble non-color forming polymer having a glass transition temperature of at least 60° C. and an oil soluble coupler which has been rendered fast to diffusion and which can form a dye by coupling with the oxidized form of a primary aromatic amine developing agent, wherein at least 30% but not more than 70% by weight of said oil soluble non-color forming polymer is comprised of units having a molecular weight not more than 40,000.

5,055,387

SENSITIZING DYE FOR PHOTOGRAPHIC MATERIALS

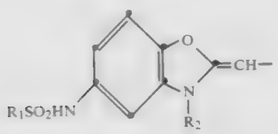
Donald R. Diehl, Rochester, and Michael C. Malec, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

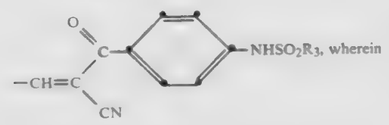
Filed Mar. 13, 1990, Ser. No. 492,147

Int. Cl.[5] G03C *1/10*

U.S. Cl. 430—591 **4 Claims**

1. A photographic element comprising a support having thereon at least one silver halide emulsion layer sensitized with a dye having the formula:





R_2 is substituted or unsubstituted alkyl or substituted or unsubstituted aryl, and

R_1 and R_3 are each independently substituted or unsubstituted alkyl, at least one of R_1 and R_3 having at least about 5 carbon atoms.

5,055,388

PROCESS AND REAGENT COMPOSITION FOR DETERMINATION OF FRUCTOSAMINE IN BODY FLUIDS

Bernd Vogt; Lieselotte Schellong, both of Tutzing; Joachim Siedel, Bernried, and Joachim Ziegenhorn, Starnberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed May 5, 1988, Ser. No. 190,600

Claims priority, application Fed. Rep. of Germany, May 14, 1987, 3716218; Dec. 21, 1987, 3743405

Int. Cl.[5] C12Q *1/00, 1/60, 1/26;* **G01N** *1/00*

U.S. Cl. 435—4 **25 Claims**

1. A process for the determination of fructosamine in body fluids by the reaction of a sample solution with a colour-forming reagent comprising simultaneously mixing a sample liquid with a (i) a buffer solution having a pH of from 9 to 12, (ii) a tetrazolium salt as the colour-forming reagent, (iii) uricase in an amount sufficient to eliminate uric acid interference and (iv) at least one detergent in an amount sufficient to reduce turbidity in said sample liquid, and measuring chronological change of extinction over a period of time no earlier than 5 minutes after mixing, at a temperature range of from 20°–40° C.

5,055,389

DETECTION OF APPENDICITIS BY MEASUREMENT OF UROERYTHRIN

David Bar-Or, Denver; Stewart L. Greisman, Littleton, and Jon G. Kastendieck, Denver, all of Colo., assignors to Appenditech, Inc., Littleton, Colo.

Continuation-in-part of Ser. No. 84,565, Aug. 12, 1987, abandoned. This application May 4, 1989, Ser. No. 351,190

Int. Cl.[5] C12Q *1/00*

U.S. Cl. 435—4 **8 Claims**

8. A method for diagnosing acute appendicitis comprising the steps of:

obtaining a urine sample, having a specific gravity greater than 1.010 from a human being suspected of having appendicitis by virtue of nausea, vomiting or anorexia in association with abdominal pain, which characteristically will be present in the periumbilical or right lower quadrant area;

mixing 10–20 cc of the urine sample with sufficient 1.0 HCl to bring the sample to a pH of about 2.0;

adding about 0.10 gm EDTA;

letting the acidified sample stand for about 5 minutes to form a pink to red colored sediment; and

testing the precipitated sediment to detect a concentration of uroerythrin equal to or greater than 2×10^{-4} mg/cc to confirm a diagnosis of appendicitis.

5,055,390

PROCESS FOR CHEMICAL MANIPULATION OF NON-AQUEOUS SURROUNDED MICRODROPLETS

James C. Weaver, Sudbury; Gregory B. Williams, Tewksbury, and Jonathan G. Bliss, Somerville, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 22, 1988, Ser. No. 185,156

Int. Cl.[5] C12Q *1/02, 1/18;* **C12N** *11/04*

U.S. Cl. 435—5 **11 Claims**

3. A method for detecting an interaction between a water-soluble compound and at least one biological entity, comprising the steps of:

a) disposing a biological entity in an aqueous medium, wherein the biological entity is selected from the group consisting of microorganisms, cells, protoplasts, small multicellular organisms, nucleic acid molecules, antibodies, antigens and viruses;

b) forming the aqueous medium into microdroplets which are suspended in a non-aqueous phase, wherein the biological entity is contained within at least one of the microdroplets;

c) combining the non-aqueous phase and the microdroplets with an emulsion having a continuous phase which is miscible with the non-aqueous phase and a discontinuous phase which is miscible with the microdroplets and which contains the water-soluble compound, whereby at least a portion of the discontinuous phase combines with the microdroplet containing the biological entity, permitting the water-soluble compound and the biological entity in the microdroplet to interact; and

d) detecting the interaction between the water-soluble compound and the biological entity.

5,055,391

METHOD AND KIT OR DETECTING ANTIBODIES TO ANTIGENS OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 2 (HIV-2)

Luc Montagnier, Le Plessis Robinson; Denise Guetard, Paris; Francoise Brun-Vezinet, Paris, and Francois Clavel, Paris, all of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 143,070, Jan. 12, 1988, abandoned, which is a division of Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,228. This application Jan. 3, 1990, Ser. No. 462,353

Claims priority, application France, Jan. 22, 1986, 86 00910; Jan. 22, 1986, 86 00911; Feb. 6, 1986, 86 01635; Feb. 13, 1986, 86 01985

Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—5 **74 Claims**

1. An in vitro diagnostic method for the detection of the presence or absence of human antibodies which bind to antigens of a human retrovirus, which is Human Immunodeficiency Virus Type 2 (HIV-2), indicative of Lymphadenopathy, wherein said antigens comprise protein antigen, glycoprotein antigen, peptide antigen, or a mixture thereof of HIV-2, and wherein said method comprises

contacting antigens of HIV-2 with a biological fluid for a time and under conditions sufficient for the antigens and antibodies in the biological fluid to form antigen-antibody complexes, and

detecting the formation of the complexes.

5,055,392

CLONING OF DNA ENCODING TRANSCRIPTION FACTOR S-11

Shunji Natori, Tone, Japan, assignor to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

Filed Sep. 19, 1988, Ser. No. 246,244

Claims priority, application Japan, Sep. 29, 1987, 62-242817

Int. Cl.[5] C12N *15/00, 15/12, 15/63*

U.S. Cl. 435—6 **5 Claims**

1. A method for the identification of a gene encoding transcription factor S-II comprising probing a cDNA library made from Ehrlich ascites cells with two sets of synthetic oligonucleotides, one set comprising all possible codon combinations for amino acid 3 to amino acid 7 of transcription factor S-II and one set comprising all possible codon combinations for amino acid 11 to amino acid 15 of transcription factor S-II.

5,055,393

PRENATAL SEX DETERMINATION OF BOVINE CELLS USING MALE-SPECIFIC OLIGONUCLEOTIDES

Deborah Y. Kwoh, Carlsbad, and Thomas R. Gingeras, Encinitas, both of Calif., assignors to Salk Institute Biotechnology/Industrial Associates, Inc., San Diego, Calif.

Filed Jun. 13, 1989, Ser. No. 366,153

Int. Cl.[5] C12P *19/34;* **C12Q** *7/68;* **C07H** *15/12, 17/00*

U.S. Cl. 435—6 **11 Claims**

5. A method for determining the sex of an embryo or fetus of a species of genus Bos, comprising:

(a) contacting chromosomal DNA extracted from at least 100 cells of said embryo or fetus under hybridization conditions with one or more hybridization probes labeled with a detectable market, at least one of said probes having or containing substantially the same sequence as that

of a male-specific DNA selected from the group consisting of

CCTTGCACAGTCGCTAGGGCACA,

ATCCAGGCTGGCTCCTGCCCTCGGT-CAAGA and

GTTCCGCCCTTCCTGAAGTGCCCGT-CTAAA.

and

(b) ascertaining whether hybridization above background occurs between said chromosomal DNA and said male-specific occurs between said chromosomal DNA and said male-specific hybridization probe or probes.

5,055,394

NUCLEIC ACID PROBE AND METHOD FOR THE RAPID DETECTION OF TYPHOID FEVER BACTERIA

Dennis J. Kopecko, Rockville; Louis S. Barson, Silver Spring, and Fran A. Rubin, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 541,760, Oct. 13, 1983, abandoned. This application Jun. 23, 1986, Ser. No. 877,077

Int. Cl.[5] C12Q *1/68, 1/04;* **C12N** *15/00*

U.S. Cl. 435—6 **21 Claims**

1. A method for detecting enteric bacteria containing a nucleic acid region designated viaB and capable of expressing Vi antigen, comprising:

(a) lysing bacteria in a clinical specimen and denaturing DNA contained therein;

(b) fixing the denatured DNA to a support material;

(c) contacting the denatured DNA of step b with a nucleic acid probe under conditions to permit hybridization of the probe with complementary sequences in the denatured DNA, wherein the nucleic acid probe is about 8,600 to about 18,000 nucleotide bases or base pairs inn size and contains a nucleotide sequence complementary to the EcoR1-A fragment of the viaB nucleic acid region which encodes the VVi antigen; and

(d) detecting the presence of enteric bacteria in the clinical specimen by detecting hybridized probe on the support material.

5,055,395

LATEX AGGLUTINATION METHOD FOR THE DETECTION OF ANTI-STREPTOCOCCAL DEOXYRIBONUCLEASE B

Tibor Toth, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 30, 1987, Ser. No. 114,868

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1986, 3637253

Int. Cl.[5] G01N *33/533*

U.S. Cl. 435—7.33 **11 Claims**

1. An indirect latex agglutination method for the detection of antibodies against streptococcal deoxyribonuclease B contained in a liquid, said method comprising:

(a) contacting a sample of said liquid to be analyzed and a suspension or dispersion of latex particles carrying antibodies directed against streptococcal deoxyribonuclease B,

(b) adding a stabilized streptococcal deoxyribonuclease B preparation comprising

(i) streptococcal deoxyribonuclease B, and

(ii) a protease inhibitor,

(c) mixing said solutions thoroughly; and

(d) observing any visible agglutination pattern, whereby the presence of anti-streptococcal deoxyribonuclease B in said sample is indicated by a non-agglutination of said particles.

5,055,396

DIAGNOSTIC METHODS AND SYSTEMS FOR QUANTIFYING APO AI

Linda K. Curtiss, San Diego, and Richard S. Smith, Del Mar, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Nov. 2, 1987, Ser. No. 116,248

Int. Cl.[5] G07N *33/53;* **C12N** *5/00;* **G01N** *33/543*

U.S. Cl. 435—7.93 **15 Claims**

1. An Apo AI polypeptide consisting essentially of no more than 25 amino acid residues and having as a part of its amino acid residue sequence a sequence represented by the formula:

—AKVQPYLDDFQ—

5,055,397

GEOMICROBIOLOGICAL METHODS OF ORE AND PETROLEUM EXPLORATION

Glenda B. Michaels, Gunnison, Colo., and Walter C. Riese, Richmond, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 17, 1987, Ser. No. 134,431

Int. Cl.[5] C12Q *1/64*

U.S. Cl. 435—9 **20 Claims**

1. Petroleum exploration method comprising in sequence, the steps of:

a) obtaining, at least one sample containing ambient microorganism population from an area of potential petroleum interest and recording the source location of said sample; said sample being selected from the group consisting of soil from a B-soil horizon, and subsea sediment obtained below a depth of about 0.5 meters below the surface of the seabed;

b) dividing said sample into at least two aliquots;

c) preparing the first of said aliquots as a control, and the second of said aliquots for testing of sensitivity of said microorganism to at least one toxic material selected form the group consisting of a metal, a hydrocarbon, or combinations thereof;

d) testing said microorganism in said second aliquot for relative sensitivity to at least one of said toxic materials by subjecting said aliquot to at least one concentration of said toxic material for a period of time sufficient to determine the microbial survival rate; and

e) assaying the remaining live microorganisms in said aliquots for the quantity of ATP or DNA, and correlating said ATP or DNA level determined in said samples to the quantities of microbes resistant to the reference concentration of heavy metal or hydrocarbon in said test sample; and

f) correlating the microorganism sensitivity to relative presence or absence of metals or hydrocarbon products, or their relative presence or absence as a pathfinder for petroleum.

5,055,398

PROCESS FOR MEASURING THE CONCENTRATION OF A COMPONENT IN BODY FLUID SUCH AS URINE OR BLOOD

Shinichi Fujie, Saitama; Nobuo Oshima, and Akira Matsuyuki, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed May 19, 1988, Ser. No. 195,787

Claims priority, application Japan, May 22, 1987, 62-123952; May 22, 1987, 62-123954; May 22, 1987, 62-123957; May 23, 1987, 62-125024; May 23, 1987, 62-125025; May 25, 1987, 62-125689; Sep. 4, 1987, 62-220399; Sep. 4, 1987, 62-220400

Int. Cl.[5] C12Q *1/26, 1/28;* **C12N** *9/99*

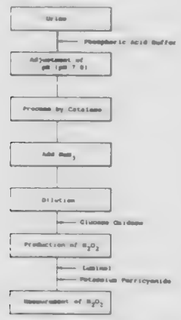
U.S. Cl. 435—10 **18 Claims**

1. A process for the determination of the concentration of a component, which selectively reacts with an oxidase to produce hydrogen peroxide, in a body fluid comprising the steps of:

providing a body fluid;

processing the body fluid with a strongly basic anion exchange resin to remove metabolites present in the body fluid;

mixing the processed body fluid with a catalase for decomposing the hydrogen peroxide in the body fluid;



adding an inhibitor, which inhibits a reaction between catalase and hydrogen peroxide, to the mixture of the catalase and the processed body fluid;

reacting said mixture with an oxidase for producing hydrogen peroxide;

measuring the concentration of the hydrogen peroxide produced by the reaction between said oxidase and said component; and

determining the concentration of said component from the measured concentration of said hydrogen peroxide.

5,055,399

ENZYMATIC SYNTHESIS OF ALPHA-L-ASPARTYL-L-PHENYALANINE LOWER ALKYL ESTERS

Bradley R. Snedecor, Brisbane, and Chung C. Hsu, Walnut Creek, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 691,689, Jan. 15, 1985, abandoned. This application May 4, 1989, Ser. No. 347,464

Int. Cl.[5] C12P *21/00;* **C07C** *229/00*

U.S. Cl. 435—68.1 **10 Claims**

1. A process of preparing a polypeptide comprising:

(a) contacting one or more reactants, selected from the group consisting of amino acids, amino acid esters or salts thereof with a protease to produce a composition comprising a mixture of said reactants and one or more polypeptides, provided that if all the reactants together bear substantially zero net ionic charge then all the products together bear a net ionic charge, or if all the products together bear substantially zero net ionic charge then all the reactants together bear a net ionic charge, and provided that the composition is not a fermentation broth;

(b) electrodialyzing the composition of step (a) whereby product is separated from reactant;

(c) recovering product; and

(d) recycling separated reactant into contact with the protease.

5,055,400

LEUKOTOXIN GENE OF PASTEURELLA HAEMOLYTICA

Reggie Y. C. Lo; Patricia E. Shewen, both of Guelph, and Craig A. Strathdee, Mississauga, all of Canada, assignors to University of Guelph, Ontario, Canada

Filed Nov. 26, 1986, Ser. No. 935,493

Int. Cl.[5] C12P *21/02, 19/34;* **C12N** *15/00, 1/21, 7/00, 15/12*

U.S. Cl. 435—69.1 **20 Claims**

1. A substantially pure DNA sequence encoding for leukotoxin which is a protein produced by metabolism of Pasteurella heamolytica, wherein said leukotoxin exhibits cytotoxic activity specific against leukocytes.

18. A process for producing a foreign proteinous leukotoxin comprising transforming a microorganism with said DNA sequence of claim 1, culturing the resulting transformed microorganism, obtaining the resulting leukotoxin produced from said cultured transformed microorganism.

5,055,401

CONSTRUCTION OF NEW α-GALACTOSIDASE PRODUCING YEAST STRAINS AND THE INDUSTRIAL APPLICATION OF THESE STRAINS

Pirkko L. Liljeström, Vantaa, Finland; Roy S. Tubb, Deal, England, and Matti P. Korhola, Helsinki, Finland, assignors to Alko Ltd., Helsinki, Finland

Filed Apr. 10, 1987, Ser. No. 36,649

Int. Cl.[5] C12N *15/00, 9/40;* **C12P** *19/39*

U.S. Cl. 435—172.3 **33 Claims**

1. A method for constructing an industrially used wild-type baker's, distiller's or brewer's yeast of the species *Saccharomyces cerevisiae* which expresses an α-galactosidase gene which has been transferred into said yeast by recombinant DNA techniques, wherein said method comprises the steps of:

(a) isolating a gene encoding α-galactosidase;

(b) operatively linking said gene into a plasmid;

(c) transforming an industrially used wild-type baker's, distiller's or brewer's yeast of the species *Saccharomyces cerevisiae* with said plasmid or that part of aid plasmid which comprises said operatively linked gene;

(d) selecting a transformed baker's, distiller's or brewer's yeast of step (c) which expresses said operatively linked gene wherein said selection is carried out by

(i) direct selection of Mel^+ transformants on a medium containing melibiose as the sole carbon source; or

(ii) production of a blue-green color on a medium containing the chromogenic substrate X-α-gal.

5,055,402

REMOVAL OF METAL IONS WITH IMMOBILIZED METAL ION-BINDING MICROORGANISMS

Benjamin Greene; Robert A. McPherson, both of Las Cruces; Dennis W. Darnall, Mesilla, and Jorge L. Gardea-Torresdey, Las Cruces, all of N. Mex., assignors to Bio-Recovery Systems, Inc., Las Cruces, N. Mex.

Filed Jan. 4, 1989, Ser. No. 293,389

Int. Cl.[5] C12N *11/00, 11/18, 1/12;* **C02F** *1/42*

U.S. Cl. 435—174 **139 Claims**

1. A method for removing metal ions from an aqueous medium containing gone or more metal ions in solution comprising:

contacting the aqueous medium with a composition having immobilized microorganisms capable of binding metal ions wherein the composition is prepared by heating an insoluble material having said immobilized microorganisms at an elevated temperature in the range of about 300° C. to about 500° C., and for a selected period of time

maintaining the contact for a period of time, sufficient to permit binding of at least one of the metal ions in the aqueous medium to the microorganisms immuobilized in the composition.

63. A method for immobilization of metal ion-binding algae comprising the steps of:
mixing a powdered metal ion-binding alga with an alkaline solution to form a slurry; and
contacting the slurry with an acid to form an insoluble composition containing said metal ion-binding alga.

5,055,403

THERMODURIC AND ACIDURIC PULLULANASE ENZYME AND METHOD FOR ITS PRODUCTION

Eijiro Tomimura, Higashikurume, Japan, assignor to Enzyme Bio-Systems, Ltd., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 371,360, Jun. 26, 1989, abandoned. This application Oct. 24, 1990, Ser. No. 602,969
Int. Cl.[5] C12N *9/44, 1/20;* C12P *19/16, 19/10*
U.S. Cl. 435—210 **9 Claims**

1. A thermoduric, aciduric pullulanase enzyme preparation derived from *Bacillus naganoensis*, said enzyme being capable of retaining at least about fifty percent of its pullulan-hydrolyzing activity when held at 60° C. in an aqueous solution at pH 4.5 in the presence of substrate for 232 hours.

5,055,404

MONOCLONAL ANTIBODY SPECIFICALLY REACTIVE TO SURFACE OF HUMAN PROSTATIC EPITHELIAL CELLS

Masamichi Ueda, 13-4, Toyosato 6-chome, Higashiyodogawa-ku, Osaka-shi, Osaka, and Tatsuhiro Yoshiki, 1-23, Takanohigashihiraki-cho, Sakyo-ku, Kyoto-shi, Kyoto, both of Japan

Filed Aug. 7, 1989, Ser. No. 390,985
Claims priority, application Japan, Aug. 9, 1988, 63-200866
Int. Cl.[5] C12N *5/20, 15/02;* C07K *15/28;* C12P *21/08*
U.S. Cl. 435—240.27 **4 Claims**

1. A monoclonal antibody Pes-1 which is produced by hybridoma hPro-1.10G having the Fermentation Research Institute accession number FERM BP-1986 and specifically binds to the surface of human prostatic epithelial cells.

5,055,405

HYBRIDOMA CELL LINE AND MONOCLONAL ANTIBODIES TO TREPONEMA SPECIES *T. DENTICOLA* JD-1 AND TREPONEMA 10A

Dou-Mei Wang, Randolph; Linda D. Sturdivant, East Orange; Thomas A. Biemer, Mine Hill, all of N.J., and Ronald Mink, Wilbraham, Mass., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 19, 1987, Ser. No. 123,015
Int. Cl.[5] C12N *5/20, 15/02;* C07K *15/28;* C12P *21/08*
U.S. Cl. 435—240.27 **5 Claims**

1. Hybridoma cell-line JD-1/18 that produces an IgG_3 antibody specific for *Treponema denticola* JD-1 and Treponema species 10A, wherein the cell line is formed by fusing a non-secreting mouse myeloma cell with a spleen cell from a mouse immunized with lysed cells of the Spirochete Treponema species *Treponema denticola* JD-1.

5,055,406

EXTREMELY HALOPHILIC METHANOGENIC ARCHAEBACTERIA

Naoki Nakatsugawa, River-side Tsumita 303, 18-1, Shirako 3-chome, Wako-shi, Saitama-ken, and Koki Horikoshi, 39-8, Sakuradai 4-chome, Nerima-ku, Tokyo, both of Japan, assignors to Research Development Corporation of Japan, Tokyo; Naoki Nakatsugawa, Wako and Koki Horikoshi, Tokyo, all of, Japan, a part interest to each

Filed Oct. 7, 1988, Ser. No. 255,015
Claims priority, application Japan, Oct. 9, 1987, 62-255995
Int. Cl.[5] C12N *1/20, 5/02;* C12R *1/01;* C12P *5/02*
U.S. Cl. 435—252.1 **8 Claims**

1. A biologically pure culture of *Methanohalococcus alcaliphilum* having an optimum growth sodium chloride concentration ranging from about 2.5 to about 3M and an optimum growth pH ranging from about 8.0 to about 8.5.

5,055,407

COMPOSITION AND METHOD OF ASSAYING AQUEOUS LIQUIDS FOR SPECIFIC GRAVITY

Arthur L. Y. Lau, Granger, and James H. Pendergrass, South Bend, both of Ind., assignors to Miles, Inc., Elkhart, Ind.

Filed Jul. 5, 1988, Ser. No. 215,358
Int. Cl.[5] G01N *33/52*
U.S. Cl. 436—2 **32 Claims**

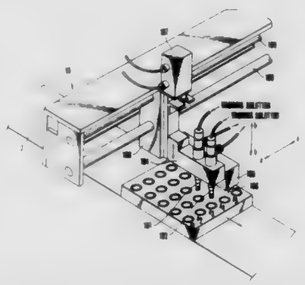
17. A composition for measuring the specific gravity of urine comprising
a water-soluble molybdate; a polyhydroxybenzenesulfonephthalein dye and/or a polyhydroxybenzenephthalein dye; a chelating agent; a sufficient amount of a protein to eliminate the color interference effects of any protein present in the urine; and a buffer to maintain the composition at an acidic pH.

5,055,408

AUTOMATED IMMUNOASSAY ANALYSER

Yuji Higo, Aichi; Hidechika Hayashi, Kanagawa, and Shuji Iwasaki, Tokyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Continuation of Ser. No. 394,150, Aug. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 901,300, Aug. 28, 1986, abandoned. This application Sep. 28, 1990, Ser. No. 590,530
Claims priority, application Japan, Aug. 30, 1985, 60-191126; Jul. 7, 1986, 61-159473
Int. Cl.[5] G01N *35/02*
U.S. Cl. 436—48 **6 Claims**



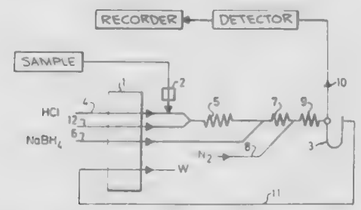
1. An automated enzyme-immunoassay analyzer comprising:
a measuring part having a transfer route on which test plates each having a plurality of upwardly opened immunological reaction chambers are transferred during a constant interval of time, and at least means A, B, C and D described below which are arranged on the transfer route from an upstream end to a downstream end of the transfer route in the direction of transfer and in the order referred to:
A: means for injecting a sample to be assayed into immunological reaction chambers,
B: means for Bound/Free separation for removing reaction residue in immunological reaction chambers,
C: means for injecting a substrate solution into the immunological reaction chambers, and
D: means for photometry with which to measure optically detectable changes caused in a substrate in the immunological reaction chambers,
in which the means for Bound/Free separation and the means for injecting a substrate solution comprise:
a horizontally driven support,
at least one vertically driven washing tube connected to a source of washing liquid and supported by the support,
a temperature controllable solution reservoir block fixed to the support and comprising thermostatic means for holding and maintaining the substrate solution at a controlled temperature,
at least one substrate injection tube extending downwardly from an underside of said solution reservoir block, whereby the substrate solution may be discharged from said reservoir block to said immunological reaction chambers at the controlled temperature,
said washing tube and said substrate solution injection tube being spaced from each other in a direction of pitch of the immunological reaction chambers;
said analyzer further comprising:
a test cup storage area located below said measuring part;
ascending and descending elevators respectively associated with the upstream and downstream ends of said transfer route and respectively connecting said upstream and downstream ends of said transfer route with said test cup storage area for respectively circulating test plates between said transfer route and said test cup storage area.

5,055,409

METHOD FOR REDUCING INTERFERENCES IN THE ANALYSIS OF SUBSTANCES WHICH FORM VOLATILE HYDRIDES

Ove Åström, Holmsund, Sweden, assignor to BIFOK AB, Sollentuna, Sweden

Continuation of Ser. No. 478,058, Feb. 7, 1990, abandoned, which is a continuation of Ser. No. 267,747, Nov. 2, 1988, abandoned, which is a continuation of Ser. No. 52,198, May 14, 1987, abandoned, which is a continuation of Ser. No. 376,006, May 7, 1982, abandoned. This application Aug. 29, 1990, Ser. No. 576,144
Claims priority, application Sweden, May 26, 1981, 8103321
Int. Cl.[5] G01N *35/08*
U.S. Cl. 436—52 **16 Claims**



1. A method for reducing interferences which are produced during the detection of substances in a sample which are capable of forming volatile hydrides, wherein said sample includes interfering ions which interfere with the detection of said substances, said method comprising the steps of:
flowing a non-gas segmented liquid through a tube at a given flow speed to form a carrier stream which entirely fills said tube during continuous flow of said liquid therethrough;
injecting a sample into said continuous, non-gas segmented liquid carrier stream to form a discrete sample slug which is controllably dispersed therein;
adding acid to said carrier stream at a first location in an amount sufficient to treat said sample to form a discrete and controllably dispersed acid treated sample slug within said carrier stream;
adding a sufficient amount of a reducing agent to said acid treated sample slug to react with any of said substances in said sample to form volatile hydrides and a discrete and controllably dispersed reduced sample slug in said carrier stream from which any volatile hydrides formed are emitted;
flowing said discrete and controllably dispersed reduced sample slug in said carrier stream to a second location spaced a given distance from said first location, wherein said carrier stream continues to entirely fill said tube during flow from said first location to said second location;
increasing said flow speed of the carrier stream and detecting the amount of separated volatile hydrides and interfering ions at said second location as said flow speed is increased; and
choosing a flow speed below 8 ml per minute wherein the amount of separated volatile hydrides is increased and the amount of interfering ions is simultaneously reduced.

9. A method for reducing interferences which are produced during the detection of substances in a sample which are capable of forming volatile hydrides, wherein said sample includes interfering ions which interfere with the detection of said substances, said method comprising the steps of:
flowing a non-gas segmented liquid through a tube at a given flow speed to form a carrier stream which entirely fills said tube during continuous flow of said liquid therethrough;
injecting a sample into said continuous, non-gas segmented liquid carrier stream to form a discrete sample slug which is controllably dispersed therein;
adding acid to said carrier stream at a first location in an amount sufficient to treat said sample to form a discrete and controllably dispersed acid treated sample slug within said carrier stream;
adding a sufficient amount of a reducing agent to said acid treated sample slug to react with any of said substances in said sample to form volatile hydrides and a discrete and controllably dispersed reduced sample slug in said carrier stream from which any volatile hydrides formed are emitted;
flowing said discrete and controllably dispersed reduced sample slug in said carrier stream to a second location spaced a given distance from said first location, wherein said carrier stream continues to entirely fill said tube during flow from said first location to said second location;
decreasing the amount of reducing agent and decreasing the distance between said first and second locations and detecting the amount of separated volatile hydrides and interfering ions at said second location as said reducing agent and distance are decreased; and
choosing an amount of reducing agent and selecting a distance wherein the amount of interfering ions is reduced.

5,055,410

METHOD AND APPARATUS FOR DETERMINING NON-TRIGLYCERIDES IN OILS

Michael M. Blumenthal, Metuchen, N.J.; Jerry R. Stockler, Wantagh, N.Y., and Harry M. Van Tassell, Watchung, N.J., assignors to Libra Laboratories, Inc., Piscataway, N.J.

Filed Mar. 2, 1989, Ser. No. 318,113
Int. Cl.[5] G01N *33/03*
U.S. Cl. 436—60 **59 Claims**

56. A method for the single phase assay of an oil, consisting essentially of the steps of:
(a) mixing a predetermined amount of an oil-miscible test solution with a predetermined amount of said oil, said test solution including an oil-miscible vehicle selected from the group consisting of monoglycerides, diglycerides and mixtures thereof, an enzyme specific to a fatty acid and an indicator deliverable in admixture with said vehicle for assaying said fatty acid, wherein said indicator in combination with said fatty acid forms a reaction product characteristic of the presence of said fatty acid, said indicator and vehicle are present in quantities and at a pH effective to provide detectable quantities of said reaction product, and said indicator is present relative to said vehicle in an amount effective to provide measurable quantities of said

reaction product in response to the presence of said fatty acid; and

(b) agitating said test solution and said oil so that a uniform, homogeneous mixture forms, and allowing said oil and said enzyme to react to produce said fatty acid, and for the development of said reaction product of said fatty acid and said indicator in said mixture; and

(c) determining the presence or absence of said fatty acid in said oil by comparing said reaction product development to a known standard.

5,055,411

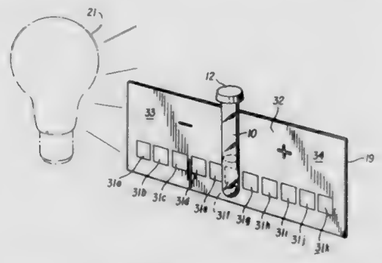
METHODS USED IN TESTING HUMAN MALES FOR FERTILITY

Ronald J. Ericeson, and Scott A. Ericeson, both of Alzada, Mont., assignors to Androscore Corporation, Alzada, Mont.

Continuation-in-part of Ser. No. 242,104, Sep. 9, 1988, abandoned. This application Sep. 8, 1989, Ser. No. 404,467

Int. Cl.[5] G01N *21/64*

U.S. Cl. 436—63 **49 Claims**



1. A method for assessing the potential fertility of a human male by categorizing a sample of his semen, which method comprises the steps of:

mixing a measured volume of a semen sample of a human male with a predetermined amount of a dye capable of being reduced in the presence of metabolizing sperm from an initial colored or uncolored state to a second uncolored or colored state, respectively, the amount of dye mixed with the semen sample being coordinated with the volume of the semen sample so that a maximum change in color state will be achieved in the dye-semen sample mixture if the semen sample is maximally fertile;

maintaining the dye-semen sample mixture at a predetermined initial temperature and for a predetermined period of time which effects a measurable color change in a corresponding mixture of the dye and a semen sample known to be fertile; and

thereafter comparing the color of the dye-semen sample mixture with a color chart comprising at least one color corresponding to a color change produced by a semen sample known to be fertile, when mixed with the same amount of dye under the same conditions.

5,055,412

FACTOR SENSITIVE REAGENT FOR TESTING OF BLOOD COAGULATION CONTAINING ELLAGIC ACID AND DIVALENT METAL IONS AND METHOD OF MAKING THE SAME

Gary J. Proksch, 7764 N. Hoover, Indianapolis, Ind. 46260

Filed Mar. 21, 1989, Ser. No. 326,381

Int. Cl.[5] G01N *33/86*

U.S. Cl. 436—69 **53 Claims**

1. A stable factor sensitive reagent for measuring partial thromboplastin time comprising:

ellagic acid or a ellagic acid salt present at a predetermined molar concentration;

a divalent metal ion, said divalent metal ion present at a molar ratio between 3 and 30 to said ellagic acid or ellagic acid salt; and,

a cephalin.

19. A stable reagent capable of forming a procoagulation reagent upon exposure to a source of cephalin consisting essentially of:

ellagic acid or an ellagic acid salt present at a predetermined molar concentration; and,

a divalent metal ion, said divalent metal ion present at a molar ratio of 3 or less, but greater than 0.1, to said ellagic acid or ellagic acid salt.

5,055,413

METHOD OF MEASURING IMPURITIES IN OXIDE FILMS USING A MELTABLE SAMPLE COLLECTION STICK

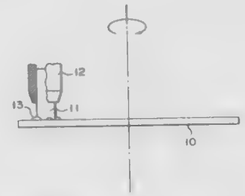
Mokuji Kageyama, Yokohama, and Ayako Maeda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 17, 1989, Ser. No. 338,797

Claims priority, application Japan, Apr. 25, 1988, 63-102198

Int. Cl.[5] G01N *1/00, 1/34*

U.S. Cl. 436—178 **2 Claims**



1. A method of measuring a surface impurity in an oxide film comprising the steps of:

contacting a stick comprising a material that will dissolve an oxide film and will melt with a surface comprising an oxide film;

moving said stick along said surface, wherein a portion of the stick that is in contact with the surface is melted and said melted portion dissolves an impurity from the oxide film and adheres to the stick during movement along the surface; and

recovering and analyzing said melted portion to measure the type and amount of said impurity.

5,055,414

PHENALENIMINE FLUORESCENT DYES AND THEIR USE IN ANALYTICAL METHODS

Bruce E. Babb, and Fred T. Oakes, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

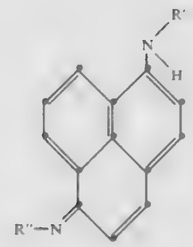
Filed Jul. 5, 1988, Ser. No. 215,478

Int. Cl.[5] C12Q *1/02*; G01N *33/53*

U.S. Cl. 436—501 **6 Claims**

1. A method for the determination of a specific binding ligand in an aqueous liquid, said method comprising the steps of:

A. in the presence of a receptor for said ligand, contacting a sample of said liquid with a fluorescent labeled specific binding ligand analog comprising a specific binding ligand bound to a fluorescent label comprising a fluorescent compound incorporated into polymeric particles which are derived from a loadable latex having a discontinuous phase and an aqueous phase, said compound represented by the structure



wherein R′ and R″ are independently hydrogen, alkyl, cycloalkyl, aryl or a heterocycle, or R′ comprises the carbon and heteroatoms which form a fused ring with the compound nucleus,

to form a complex between said receptor and said ligand analog,

B. separating said complex from uncomplexed materials, and

C. fluorimetrically detecting either said complex or said uncomplexed materials at a wavelength greater than or equal to about 600 nm.

5,055,415

METHOD FOR IMMUNOASSAY PROCEDURE FOR THE DETECTION OF ANTIGEN BY REACTING WITH ANTIBODY WHICH INCREASES ITS ELECTRICAL CHARGE AND ELECTROPHORETIC MOBILITY

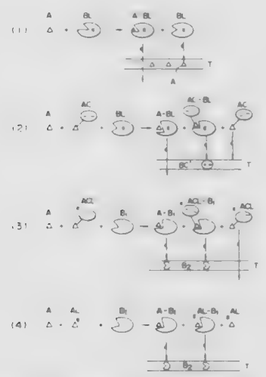
Kyoko Imai, Katsuta, and Yasushi Nomura, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1988, Ser. No. 177,347

Claims priority, application Japan, Apr. 1, 1987, 62-80038

Int. Cl.[5] G01N *33/561*

U.S. Cl. 436—516 **8 Claims**



1. A method for immunoassay for an antigen comprising:

reacting 1) a sample possibly containing an antigen to be determined, 2) a definite amount of a conjugate of the antigen and a charged substance, and 3) a definite amount of labeled antibody specific for antigen;

allowing the reaction products to electrophoretically migrate towards a carrier bearing an attached antibody specific for the charged substance, whereby when said reaction products contact said carrier 1) any reaction product of labeled antibody and antigen passes through said carrier, and 2) any reaction product of labeled antibody and conjugate binds to the carrier attached antibody specific for the charged substance;

determining the amount of labeled antibody thereby bound to the carrier;

relating the determined amount of labeled antibody to the amount of antigen in the sample.

5,055,416

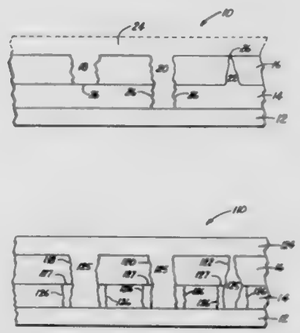
ELECTROLYTIC ETCH FOR PREVENTING ELECTRICAL SHORTS IN SOLAR CELLS ON POLYMER SURFACES

Michael F. Weber, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 7, 1988, Ser. No. 281,099

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—4 **20 Claims**



1. A method for preparing an amorphous silicon p-i-n solar cell which incorporates a conductive metal layer interposed between an insulating substrate layer and the p layer of the solar cell and a transparent conductive layer overlying the n layer of the solar cell, the method comprising:

anodically etching any exposed portions of the metal layer, after deposition of the amorphous silicon and prior to application of the transparent conductive layer, to substantially prevent shorts or shunts being formed in the solar cell.

5,055,417

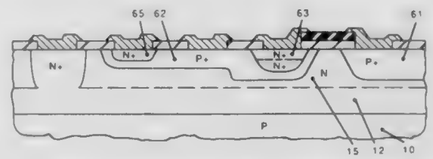
PROCESS FOR FABRICATING SELF-ALIGNED HIGH PERFORMANCE LATERAL ACTION SILICON-CONTROLLED RECTIFIER AND STATIC RANDOM ACCESS MEMORY CELLS

Osman E. Akcasu, Chippewa Falls, Wis., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 61,754, Jun. 11, 1987, abandoned. This application Dec. 15, 1988, Ser. No. 287,577

Int. Cl.[5] H01L *21/266*

U.S. Cl. 437—6 **17 Claims**



1. A method of fabricating a lateral silicon-controlled rectifier semiconductor structure comprising:

forming a first insulating layer of first thickness on a semiconductor substrate, the substrate including an upper region of first conductivity type disposed on a lower region of opposite conductivity type;

forming a first impurity mask on the first insulating layer over a first region of the substrate;

removing at least part of the first insulating layer disposed

over a second region of the substrate adjacent the first region;

introducing opposite conductivity type impurity into the substrate except where overlaid by the first insulating layer to thereby form a spaced apart third and fourth regions;

introducing first conductivity type impurity into the substrate into at least the second region; and

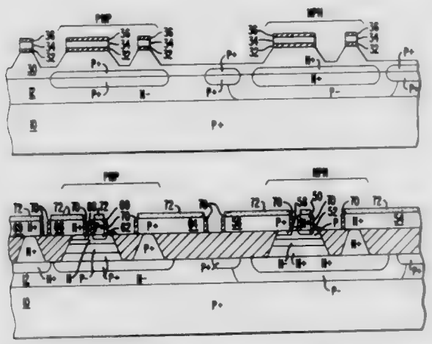
providing electrical connections to the second region, the third region, and the fourth region.

5,055,418

PROCESS FOR FABRICATING COMPLEMENTARY CONTACTLESS VERTICAL BIPOLAR TRANSISTORS

Madhukar B. Vora, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 401,523, Aug. 29, 1989, Pat. No. 5,014,107.
This application Nov. 13, 1990, Ser. No. 614,182
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **10 Claims**



1. A process for fabricating complementary vertical bipolar transistors on a semiconductor substrate of a first conductivity type, comprising the steps of:

forming a first epitaxial layer of an opposite conductivity type on said substrate;

introducing into a first region of said first epitaxial layer a fast diffusing dopant of the first conductivity type to form a well, and a slower diffusing dopant of the opposite conductivity type to form a buried layer in said well;

introducing into a second region of said first epitaxial layer a dopant of the first conductivity type to form a buried layer;

forming a second epitaxial layer on said first epitaxial layer;

forming respective epitaxial silicon islands in said second epitaxial layer over said first region and said second region;

forming a polysilicon emitter transistor of a first type in the epitaxial silicon island over said first region; and

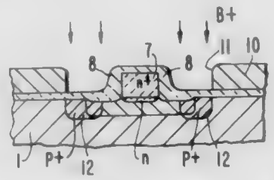
forming a polysilicon emitter transistor of a second type in the isolation island over said second region, said transistor of the second type being complementary to said transistor of the first type.

5,055,419

METHOD OF MANUFACTURING A BIPOLAR TRANSISTOR

Peter D. Scovell, Chelmsford; Peter F. Blomley, Bishops Stortford; Roger L. Baker, Chelmsford, and Gary J. Tomkins, Maidstone, all of Great Britain, assignors to STC, plc, London, England

Division of Ser. No. 71,474, Jul. 9, 1987, abandoned, which is a division of Ser. No. 831,257, Feb. 20, 1986, Pat. No. 4,745,080.
This application May 17, 1988, Ser. No. 194,912
Claims priority, application United Kingdom, Mar. 23, 1985, 8507602
Int. Cl.[5] H01L *21/26, 21/225*
U.S. Cl. 437—31 **5 Claims**



1. A method of manufacturing a bipolar transistor including the steps of defining a polycrystalline silicon mesa of one conductivity type on an unoxidised surface of a first monocrystalline region of the opposite conductivity type disposed in a monocrystalline silicon semiconductor substrate of the one conductivity type; performing an oxidation process to produce an oxide layer over the semiconductor substrate, part of which oxide layer extends over the mesa including the top and sidewalls thereof and part of which extends over adjoining portions of the semiconductor substrate; providing a photoresist layer over the oxide layer; patterning the photoresist layer to define one part of a two part contact region implementation mask, the other part of the mask being comprised by the part of the oxide layer on at least one sidewall of the mesa, and to remove the photoresist layer from said at least one sidewall, between which mask parts is defined a window for contact region implantation; subsequently implanting a contact region, of the opposite conductivity type, through the oxide layer exposed by said window and into the substrate in contact with the first region, the contact region being of monocrystalline silicon and being self-aligned with the mesa as a result of using the part of the oxide layer on the at least one sidewall of the mesa directly as part of the contact region implantation mask; and further including the step of removing the patterned photoresist layer.

5,055,420

PROCESS FOR FABRICATING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Shuji Ikeda, Koganei; Kouichi Nagasawa, Kunitachi; Makoto Motoyoshi, Fucyu; Kiyoshi Nagai, Koganei, and Satoshi Meguro, Hinode, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

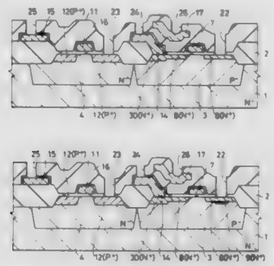
Division of Ser. No. 141,501, Jan. 7, 1988, abandoned, which is a division of Ser. No. 800,954, Nov. 22, 1985, Pat. No. 4,734,383.
This application May 9, 1989, Ser. No. 351,323
Claims priority, application Japan, Nov. 22, 1984, 59-246028; Feb. 8, 1985, 60-21673
The portion of the term of this patent subsequent to Mar. 29, 2005, has been disclaimed.
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **37 Claims**

1. A process for fabricating a semiconductor integrated circuit device, comprising the steps of:

(a) forming a first insulating film covering an N-channel MOSFET having n-type semiconductor regions and a P-channel MOSFET having p-type semiconductor regions, the MOSFETs being provided on a main surface of a semiconductor substrate;

(b) simultaneously forming at least two contact holes in said first insulating film, said at least two contact holes being formed to at least each of an n-type semiconductor region of the n-channel MOSFET and a p-type semiconductor region of the p-channel MOSFET;

(c) forming a mask covering at least one contact hole, of the



contact holes, on said p-type semiconductor region of the P-channel MOSFET;

(d) introducing a n-type impurity into at least said n-type semiconductor region through at least one contact hole, of the contact holes, and then annealing, said introducing and annealing being performed so as to provide a further n-type semiconductor region that extends deeper than said n-type semiconductor region; and

(e) forming a conductive film in the contact holes.

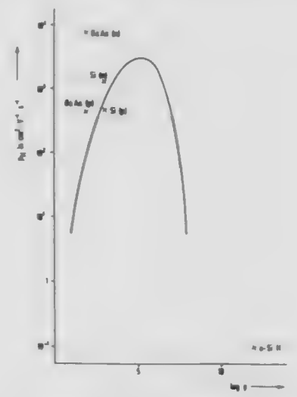
5,055,421

METHOD FOR THE PLASMA DEPOSITION OF HYDROGENATED, AMORPHOUS CARBON USING PREDETERMINED RETENTION TIMES OF GASEOUS HYDROCARBONS

Siegfried Birkle, Höchstadt; Johann Kammermaier, Unterhaching; Rolf Schulte, Erlangen; Albrecht Winnacker, Erlangen, and Gerhard Rittmayer, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/EP88/00526, § 371 Date Feb. 5, 1990, § 102(e) Date Feb. 5, 1990, PCT Pub. No. WO89/01237, PCT Pub. Date Feb. 9, 1989
PCT Filed Jun. 14, 1988, Ser. No. 458,716
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1987, 3725700
Int. Cl.[5] H01L *21/00, 21/02, 21/205, 21/314*
U.S. Cl. 437—101 **11 Claims**

1. A method for manufacturing a semiconductor base material with high semiconductor characteristic potential comprising the step of depositing a thin layer amorphous, hydrogenous carbon (a-C:H) onto a substrate by high-frequency plasma deposition of gaseous hydrocarbons, wherein the average retention time of the hydrocarbons in the plasma is at least 15 ms, the retention time being defined as the quotient of the product of the plasma volumes and gas pressure and of the mass flow rate, wherein the power density in the plasma is



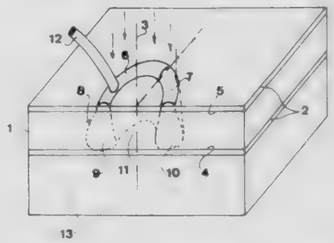
from 0.2 to 10 W·cm^{-3}, and wherein the substrate is not heated.

5,055,422

PROCESS FOR THE CONSTRUCTION OF SEMICONDUCTOR LASERS AND LASERS OBTAINED BY THE PROCESS

Claude Weisbuch, Paris; Baudouin De Cremoux, Orsay, and Jean P. Pocholle, Arpajon La Norville, all of France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR89/00062, § 371 Date Jul. 24, 1990, § 102(e) Date Jul. 24, 1990, PCT Pub. No. WO90/06608, PCT Pub. Date Jun. 14, 1990
PCT Filed Dec. 5, 1989, Ser. No. 543,787
Claims priority, application France, Dec. 9, 1988, 88 16215
Int. Cl.[5] H01L *21/20, 21/225*
U.S. Cl. 437—129 **13 Claims**



1. Process for the construction of semiconductor lasers, characterized in that it consists:

in forming a layer of a semiconductor laser active medium (**1**, **20**, **40**) having transverse dimensions greater than those of the active medium of the laser to be obtained,

in forming a resonant optical cavity (**2**) associated with the said layer, the said cavity being formed in such a manner that its optical axis (**3**) is substantially perpendicular to the plane in which the said transverse dimensions are defined,

in disposing, on at least a part (**5**, **23**) of the surface of the said layer, first (**6**, **24**, **41**) and second (**7**, **25**, **42**) zones of materials of impurities of opposite polarities,

in causing diffusion into a part of the said active medium, of at least a part of the two said materials of impurities, to form in the said layer substantially a cylinder (**8**) of axis substantially parallel to the said axis of the said optical

cavity and formed of two substantially semi-cylindrical half-shells (**9**, **10–24**, **25**) respectively of diffused impurities of opposite polarities, and

in connecting two conductors (**12**) of the electrical energy respectively to the two half-shells.

5,055,423

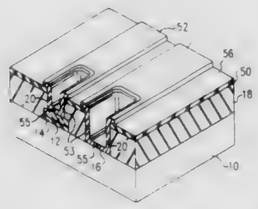
PLANARIZED SELECTIVE TUNGSTEN METALLIZATION SYSTEM

Gregory C. Smith, Garland, and Thomas D. Bonifield, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 138,239, Dec. 28, 1987, abandoned. This application Jul. 18, 1989, Ser. No. 383,304

Int. Cl.[5] **H01L** *21/00, 21/02, 21/90, 21/283*

U.S. Cl. 437—187 **12 Claims**



1. A process for forming a conductive interconnection in an integrated circuit structure, comprising the steps of:

providing a partially formed integrated circuit having a substrate structure;

forming a first thick insulating layer on said substrate; forming at least one contact hole through said insulating layer;

depositing a thin nucleation layer on said first insulating layer; patterning said thin nucleation layer;

forming a second thick insulating layer on said first insulating layer and said patterned thin nucleation layer;

forming an opening in said second insulating layer to expose said patterned thin nucleation layer; and

selectively depositing a conductor in said opening, said patterned thin nucleation layer serving as a nucleation site for said selective deposition.

5,055,424

METHOD FOR FABRICATING OHMIC CONTACTS ON SEMICONDUCTING DIAMOND

James R. Zeidler, and Khosrow L. Moazed, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1989, Ser. No. 374,498

Int. Cl.[5] **H01L** *31/13*

U.S. Cl. 437—188 **34 Claims**

1. A method of fabricating ohmic contacts on semiconducting diamond comprising the steps of:

depositing a carbide forming metal over an exposed surface of said semiconducting diamond;

depositing a corrosion resistant metal over said carbide forming metal; and

heating said semiconducting diamond, said carbide forming metal, and said corrosion resistant metal in an environment inert to said carbide forming and corrosion resistant metals at a temperature ranging from 350 to 1200 degrees Celsius.

5,055,425

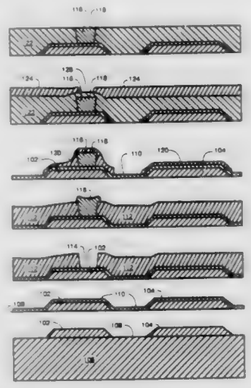
STACKED SOLID VIA FORMATION IN INTEGRATED CIRCUIT SYSTEMS

Jacques Leibovitz, San Jose; Maria L. Cobarruviaz, Cupertino; Kenneth D. Scholz, Palo Alto, and Clinton C. Chao, Redwood City, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 1, 1989, Ser. No. 360,828

Int. Cl.[5] **H01L** *21/283, 21/312*

U.S. Cl. 437—195 **8 Claims**



1. A method of forming an integrated circuit structure including solid vias, said method comprising the steps of:

a) forming a circuit pattern on a substrate;

b) depositing a photoresist layer on the circuit pattern, and forming apertures in said photoresist layer;

c) plating solid metal vias in the apertures and, then, removing said photoresist layer;

d) depositing a first dielectric layer over the circuit pattern and the solid metal vias;

e) defining apertures in the first dielectric layer over the solid metal vias; and

f) etching the apertures in the first dielectric layer to expose surfaces of the solid metal vias.

5,055,426

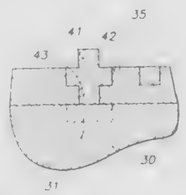
METHOD FOR FORMING A MULTILEVEL INTERCONNECT STRUCTURE ON A SEMICONDUCTOR WAFER

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 10, 1990, Ser. No. 580,212

Int. Cl.[5] **H01L** *21/90*

U.S. Cl. 437—195 **18 Claims**



1. A method for forming a multilevel interconnect structure on a semiconductor wafer, wherein the interconnect structure includes a Metal level having inwardly protruding contact vias leading to underlying electrically conductive areas and outwardly protruding pillars leading to an overlying conductive layer, the method comprising the following steps:

selectively fabricating a wafer by depositing and patterning different conductive and insulating layers, and by doping, to begin producing electronic devices and desired integrated circuits on the wafer; the wafer being fabricated to include exposed electrically conductive areas;

applying a first dielectric layer on the wafer;

etching the dielectric to form a poly-metal dielectric layer having grooves corresponding to a first layer of conduction strips, the grooves being intersected by contact holes in communication with underlying electrically conductive areas on the wafer;

depositing a layer of tungsten on the wafer to both fill the grooves and contact holes and cover the remaining surface areas of the poly-metal dielectric layer to a common substantially planar surface; and

etching back the tungsten to the poly-metal dielectric layer while forming protruding integral pillars at locations corresponding to about the filled grooves as required in a Metal level.

5,055,427

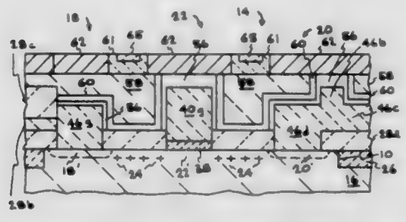
PROCESS OF FORMING SELF-ALIGNED INTERCONNECTS FOR SEMICONDUCTOR DEVICES

Jacob D. Haskell, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 128,002, Dec. 2, 1987, abandoned. This application May 1, 1989, Ser. No. 346,424

Int. Cl.[5] **H01L** *21/302*

U.S. Cl. 437—203 **14 Claims**



14. A process for forming a self-aligned planarized interconnect in a CMOS device wherein N-wells and P-wells are formed in a major surface of a semiconductor, and wherein source, gate and drain elements are to be formed, comprising:

(a) delineating an active area within which individual devices are made by forming an oxide region in said substrate;

(b) forming a multi-layer structure on said semiconductor surface, said multi-layer structure comprising

(1) a first layer consisting essentially of a field oxide,

(2) a second layer consisting essentially of an etch-stop material having a significantly different etch rate than said field oxide,

(3) a third layer consisting essentially of an oxide, and

(4) a fourth layer consisting essentially of polysilicon or silicon nitride;

(b) using a slot mask in conjunction with a resist layer formed on said multi-layer structure to lithographically define a plurality of slots corresponding to various elements of said devices, thereby self-aligning said elements with each other;

(c) etching portions of said fourth and third corresponding to said slots, stopping at said etch-stop layer;

(d) stripping said resist layer;

(e) using an active mask in conjunction with another resist layer formed on said multi-layer structure to define only said active area encompassing a group of said slot associated with an individual device;

(f) removing any remaining portions of said etch-stop layer in said slots, along with said field oxide therein;

(g) forming a thin oxide on the exposed portions of said semiconductor in said slots associated with said gates of said device;

(h) filling said slots with polysilicon to form polysilicon plugs and planarizing to the surface of said multi-layer structure;

(i) implanting dopant species into said polysilicon-filled slots associated with said sources and drains of said device;

(j) doping at least some of said polysilicon plugs to change the conductivity thereof.

5,055,428

GLASS FIBER COMPOSITIONS

Russell M. Porter, Castleton, Vt., assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Sep. 26, 1990, Ser. No. 588,398

Int. Cl.[5] **C03C** *13/00, 13/02, 3/091*

U.S. Cl. 501—35 **10 Claims**

1. Fiberizable glass compositions suitable for insulation consisting essentially of:

SiO_2	61.0 to 69.0
Al_2O_3	0.0 to 1.9
CaO + MgO	7.9 to 16.0
Na_2O	9.0 to 17.0
B_2O_3	8.7 to 15.0

the remainder being up to 3%, K_2O, up to 3% BaO, and less than 1% of any of all of Fe_2O_3, TiO_2, SrO or SO_2, the total being 100% by weight.

5,055,429

POROUS INORGANIC MATERIAL

Roger James, St. Austell, Cornwall, United Kingdom, and Alan J. Brown, Tennille, Ga., assignors to ECC International Limited, United Kingdom

Filed Nov. 22, 1988, Ser. No. 275,429

Claims priority, application United Kingdom, Nov. 27, 1987, 8727819; Dec. 10, 1987, 8728877

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[5] **C04B** *38/00*

U.S. Cl. 501— 80 **15 Claims**



1. A method of preparing a porous inorganic material, which method comprises:

a) preparing an aqueous suspension of a porous inorganic material comprising aggregates of platelets of an aluminosilicate material having an $SiO_2:Al_2O_3$ molar ratio of at least 0.75:1, said suspension containing from 20% to 40% on a dry weight basis of an inorganic material and up to 20% by weight, based on the weight of dry inorganic material, of a hydrophilic organic polymer;

b) spray-drying the suspension to form substantially spherical microspheres, any internal cavities in a microsphere occupying no more than 10% of the volume of the microsphere;

c) calcining the spray-dried microspheres at a temperature in

the range of from 1300° C. to 1800° C. for at least one hour;

d) treating the calcined microspheres with a concentrated aqueous solution of an alkali metal hydroxide at a temperature of at least 50° C. whereby the silica is removed to leave ceramic crystals which define between them interconnecting pores;

e) washing the alkali metal hydroxide treated microspheres until the washing medium is substantially free of silicate and alkali metal ions; and

f) dewatering and drying the washed product obtained in step e) to obtain substantially spherical microspheres, any internal cavities in a microsphere occupying no more than 10% of the volume of the microsphere.

5,055,430

CARBON COATED SILICON CARBIDE, SILICON NITRIDE OR SIALON FIBERS IN A CERAMIC MATRIX

Hiroshi Sakamoto, and Tadahiko Miyoshi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 60,335, Jul. 8, 1986, abandoned. This application Dec. 20, 1989, Ser. No. 453,928

Claims priority, application Japan, Jul. 10, 1985, 60-150248

Int. Cl.[5] C04B *35/52, 35/02;* **B32B** *9/00*

U.S. Cl. 501—90 **19 Claims**

1. Fiber-reinforced ceramics comprising at least one of fibers and whiskers distributed in a sintered ceramic matrix, the ceramic matrix being composed mainly of Si_3N_4 or $Si_{6-z}Al_zO_zN_{8-z}$ where $0<z\leqq 4$, the fibers and the whiskers consisting essentially of at least one of SiC, Si_3N_4, or $Si_{6-z}Al_zO_zN_{8-z}$ where $0<z\leqq 4$, and a coating film of C being provided on surfaces of the fibers and the whiskers; the coating film having a thickness of 0.1 to 5 μm, the diameter of the fibers being in the range of 10 to 200 μm and the diameter of the whiskers being in the range of 0.5 to 5 μm.

5,055,431

POLYSILAZANES AND RELATED COMPOSITIONS, PROCESSES AND USES

Vigal D. Blum, Menlo Park, Calif., and Edward J. Crawford, Danbury, Conn., assignors to SRI International, Menlo Park, Calif.

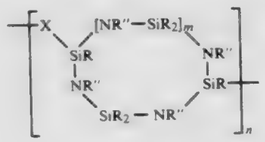
Division of Ser. No. 176,824, Apr. 4, 1988, Pat. No. 4,952,715, which is a continuation-in-part of Ser. No. 12,874, Dec. 1, 1986, which is a continuation-in-part of Ser. No. 908,685, Mar. 4, 1986, Pat. No. 4,788,309, which is a continuation-in-part of Ser. No. 727,415, Apr. 26, 1985, Pat. No. 4,612,383. This application Apr. 3, 1990, Ser. No. 503,824

Int. Cl.[5] C04B *35/58*

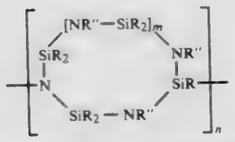
U.S. Cl. 501—97 **33 Claims**

1. A method of making a ceramic composition, comprising pyrolyzing at a temperature in the range of about 500° C. to about 1800° C. a polysilazane consisting essentially of n recurring units of the structures (I) or (II) or both

(I)



(II)



wherein m is an integer, the R substituents may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, silyl, aryl, and amino, unsubstituted or substituted with 1 or 2 lower alkyl groups, X is —NR′, —NR′—NR′—or —NR′—Y—NR′ where Y is lower alkyl or silyl, and the R′ and R″ may be the same or different and are independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, silyl and aryl.

5,055,432

PROCESS FOR PREPARING A NITRIDABLE SILICON-CONTAINING MATERIAL HAVING AT LEAST ONE DENSIFICATION AID INCLUDING ALUMINA, AND THE MATERIAL RESULTING THEREFROM

James P. Edler, and Bohdan Lisowsky, both of Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 24, 1990, Ser. No. 557,379

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—97 **46 Claims**

1. A process for preparing a silicon-containing material capable of being later nitrided into a silicon nitride material, comprising:

(a) comminuting a slurry including a mixture of

(i) silicon powder,

(ii) water,

(iii) alumina powder, and

(iv) at least one additional densification aid other than alumina,

wherein the slurry contains about 10 to about 60 volume percent solids and about 90 to 40 volume percent water, where the total volume percent equals 100 percent and wherein said alumina powder and the at least one additional densification aid are employed in amounts to achieve a total 4 to 16 volume percent based on the volume of the resulting dry mass; and

(b) said comminuting being performed to form fresh, non-oxidized surfaces on the silicon powder and to allow substantial chemical reaction between the silicon and the water.

5,055,433

REFRACTORY HAVING HIGH RESISTANCE TO CORROSION AND SPALLING AND MANUFACTURING METHOD THEREOF

Shigeki Niwa; Kazuhide Kawai; Takahumi Nishibe, and Toshio Kawamura, all of Aichi, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 359,553

Claims priority, application Japan, Jun. 6, 1988, 137432

Int. Cl.[5] C04B *35/10, 35/48*

U.S. Cl. 501—105 **8 Claims**

1. An alumina-carbon based refractory comprising between 50–95 wt % of a material consisting essentially of a sintered alumina/carbon powder mixture wherein:

said refractory also comprises about 5–50 wt % of an alumina-zirconia electrofusing material and carbon in an amount of not more than about 20 wt %; and

said electrofusing material consists essentially of about 30–75 wt % of Al_2O_3 and about 25–70 wt % of ZrO_2.

5,055,434

SINTERABLE PULVERULENT RAW MATERIAL BASED ON ALUMINUM TITANATE, A PROCESS FOR ITS PREPARATION AND THE SINTERED BODIES PRODUCED THEREFROM AND THEIR USE

Peter Thometzek, Krefeld, and Bernard Freudenberg, Coburg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1989, Ser. No. 388,930

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827646

Int. Cl.[5] C04B *35/10, 35/46*

U.S. Cl. 501—127 **12 Claims**

1. Sinterable raw material product for ceramics based on aluminum titanate, consisting essentially of particles having a core/shell structure with a core having a size between about 0.1 and 2 microns, the core composed of one of the modifications of $Al(OH)_3$, AlOOH, Al_2O_3 or mixtures thereof on which are precipitated, as a shell, sparingly soluble compounds of titanium, with the molar ratio of titanium to aluminum of from 1:0.1 to 1:30, which in addition to the precipitated compounds contains additional sparingly soluble oxides, oxide hydrates, hydroxides, or mixtures thereof, of elements in a quantity of from 0.1 to 65% by weight, calculated as oxide of the element and based on the total quantity by weight.

5,055,435

CERAMIC MATERIALS TO BE INSERT-CAST

Toshiyuki Hamanaka, Suzuka; Takashi Harada, Nagoya, and Fumio Hattori, Ichinomiya, all of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Continuation of Ser. No. 169,507, Mar. 17, 1988, abandoned. This application Apr. 12, 1990, Ser. No. 508,532

Claims priority, application Japan, Mar. 24, 1987, 62-70113; Apr. 27, 1987, 62-63765[U]; Apr. 27, 1987, 62-63766[U]; Apr. 27, 1987, 62-63767[U]; Apr. 27, 1987, 62-104055

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—134 **4 Claims**

1. A ceramic material to be insert-cast, consisting essentially of:

40–58 wt % Al_2O_3, 38.7–60 wt % TiO_2, and not greater than 8 wt % of at least one material selected from the group consisting of SiO_2, MgO, and Fe_2O_3; and

a primary crystalline phase consisting of at least 65 vol % of aluminum titanate and at least one secondary crystalline phase selected from the group consisting of rutile, covundum, and mullite, said crystalline phases having crystals with an average diameter of not less than 10 microns;

wherein said ceramic material is produced by sintering at a temperature of not less than 1,550° C. and has a Young's modulus of 50–1470 kgf/mm^2, a compression strength of 5–40 kgf/mm^2, an average coefficient of thermal expansion in a temperature range of 40°–800° C. of not greater than 2.0×10^{-6}° C., and a porosity of 5–35%.

5,055,436

METHOD FOR PREPARATION OF SUPERCONDUCTOR POWDERS

Lori J. Klemptner, Framingham; James D. Hodge, Medway, and John W. Halloran, Hopkinton, all of Mass., assignors to CPS Superconductor Corp., Milford, Mass.

Filed Aug. 19, 1988, Ser. No. 234,441

Int. Cl.[5] H01B *12/00;* **H01L** *39/12;* **B05B** *3/00;* **B29C** *35/02*

U.S. Cl. 501—152 **16 Claims**

1. A method for preparing ceramic superconducting powder, comprising the steps of:

(a) providing a pourable slurry having 15% to 50% by volume of solids and composed of

(i) superconducting precursors,

(ii) a binder,

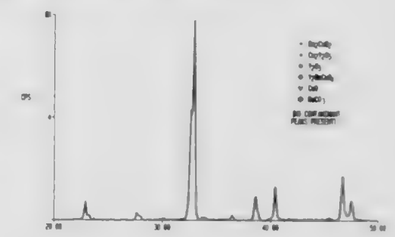
(iii) a dispersant, and

(iv) a solvent;

(b) granulating the slurry by freezing;

(c) drying the granules;

(d) providing a bed of the granules;



(e) calcining the granules while percolating through the bed an atmosphere composed of not more than 20% oxygen and the remainder being an inert gas; and

(f) grinding the calcined granules into a powder.

5,055,437

MULTI-COMPONENT CATALYST MIXTURE AND PROCESS FOR CATALYTIC CRACKING OF HEAVY HYDROCARBON FEED TO LIGHTER PRODUCTS

Joseph A. Herbst, Turnersville; Hartley Owen, Belle Mead, both of N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 292,205, Dec. 30, 1988, Pat. No. 4,929,337. This application May 24, 1990, Ser. No. 528,644

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] B01J *29/06, 29/08*

U.S. Cl. 502—67 **14 Claims**

1. A catalytic cracking catalyst comprising a physical mixture of separate particles of:

a) a bulk conversion cracking catalyst containing at least one component with an equivalent pore size of at least about 7 angstroms in a matrix, said bulk conversion cracking catalyst having physical properties which permit use in a fluidized or moving bed catalytic cracking reactor;

b) a light paraffin upgrading catalyst comprising at least one zeolite having a constraint index of 1–12 and paraffin cracking/isomerization activity; and,

c) a light paraffin upgrading catalyst comprising at least one zeolite having a constraint index of 1–12 and paraffin aromatization activity; and

wherein said upgrading catalysts have substantially the same physical properties as the bulk conversion cracking catalyst.

5,055,438

OLEFIN POLYMERIZATION CATALYSTS

Jo Ann M. Canich, Houston Tex. Assignee: Exxon Chemical Patents, Inc., Linden, N.J.

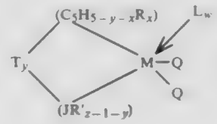
Continuation-in-part of Ser. No. 406,945, Sep. 13, 1989, abandoned. This application Jun. 4, 1990, Ser. No. 533,245

Int. Cl.[5] C08F *4/642*

U.S. Cl. 502—117 **7 Claims**

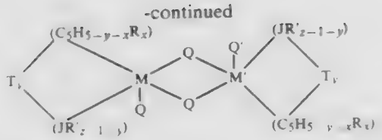
1. A catalyst system comprising:

(A) a Group IV B transition metal component of the formula:



or

-continued



wherein M is Zr, Hf or Ti;

$(C_5H_{5-y-x}R_x)$ is a cyclopentadienyl ring which is substituted wit from zero to five groups R, "x" is 0, 1, 2, 3, 4 or 5 denoting the degree of substitution, and each R is, independently, a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals, C_1–C_{20} substituted hydrocarbyl radicals wherein one or more hydrogen atoms are replaced by a halogen atom, C_1–C_{20} hydrocarbyl-substituted metalloid radicals wherein the metalloid is selected from the Group IV A of the Periodic Table of Elements and halogen radicals or $(C_5H_{5-y-x}R_x)$ is a cyclopentadienyl ring in which two adjacent R-groups are joined forming C_4–C_{20} ring to give a saturated or unsaturated polycyclic cyclopentadienyl ligand;

(JR'_{z-1-y}) is a heteroatom ligand in which J is an element with a coordination number of three from Group V A or an element with a coordination number of two from Group VI A of the Periodic Table of Elements, each R' is, independently a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals, substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atoms is replaced by a halogen atom, and "z" is the coordination number of the element J;

each Q is, independently any univalent anionic ligand or two Q's are a divalent anionic chelating agent;

'y" is 0 or 1 when w is greater than 0; y is 1 when w is 0, when "y" is 1, T is a covalent bridging group containing a Group IV A or V A element;

L is a Lewis base where "w" denotes a number from 0 to 3; and

(B) an alumoxane.

5,055,439

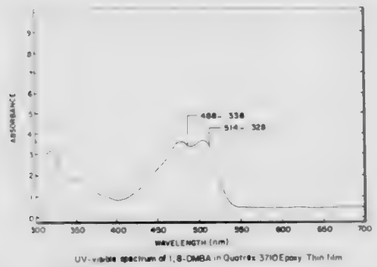
PHOTOACID GENERATING COMPOSITION AND SENSITIZER THEREFOR

Robert D. Allen, San Jose; William D. Hinsberg, III., Fremont, both of Calif.; Logan L. Simpson, Austin, Tex.; Robert J. Twieg, San Jose; Gregory M. Wallraff, San Jose, Calif., and Carlton G. Willson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1989, Ser. No. 458,048

Int. Cl.[5] B01J *31/02*

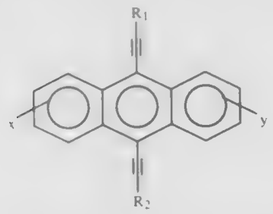
U.S. Cl. 502—158 **6 Claims**



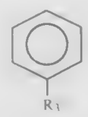
UV-visible spectrum of 1,8-DMBA in Quatrex 3710 Epoxy Thin film

1. A photoacid generating composition for use in laser direct photoimaging applications, the photoacid generating composition being combinable with a suitable acid sensitive polymer to provide a photoresist composition sensitive to visible wavelength radiation, the photoacid generating composition comprising:

(a) a sensitizer having the formula;



wherein R_1 and R_2 are non-basic substituents independently selected from the group consisting of alkyl, trialkylsilyl, phenyl and compounds of the formula:



where R_3 is alkoxy and alkyl;

where x and y are non-basic substituents independently selected from the group consisting of alkyl and alkoxy; and

(b) an initiator which generates an acid upon exposure to radiation in the presence of the above sensitizer.

5,055,440

CATALYST AND METHOD FOR ITS MANUFACTURE

Wing F. Chu, Leimen; Franz-Josef Rohr, Absteinach, and Andreas Reich, Heidelberg, all of Fed. Rep. of Germany, assignors to Asea Brown Boveri Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

PCT No. PCT/EP88/01126, § 371 Date Oct. 10, 1989, § 102(e) Date Oct. 10, 1989, PCT Pub. No. WO89/05187, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 8, 1988, Ser. No. 427,089

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1987, 3741887

Int. Cl.[5] B01J *23/10, 23/72, 23/78*

U.S. Cl. 502—303 **4 Claims**

1. A catalyst for the elimination of toxic substances in exhaust gases from combustion systems and internal combustion engines, the catalyst consisting essentially of at least one layer of catalytic material, wherein said catalytic material consists essentially of at least one mixed oxide system having unsaturated ions on its surface that effect charge transfer processes and having the following composition:

$La_{0.8}Sr_{0.2}Fe_{0.84}Cu_{0.16}O_3$.

5,055,441

PROCESS FOR PREPARATION OF METAL OXIDES OF MOLYBDENUM OR MLYBDENUM AND TUNGSTEN

Eugene M. McCarron, III, Greenville, Del., and John B. Parise, East Setauket, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 1, 1990, Ser. No. 473,543

Int. Cl.[5] B01J *23/28;* **C01G** *39/00*

U.S. Cl. 502—321 **2 Claims**

1. A method for preparing a composition of matter comprising beta-$Mo_{1-x}W_xO_3$, wherein $0 \leq x < 1.0$, comprising spray-freezing a solution of molybdic acid or molybdic and tungstic acids in appropriate concentrations to form a solidified material, freeze-drying the material to produce a powder, and heating the resulting powder to a temperature of about 275° C. to about 450° C.

5,055,442

CARRIER FOR CATALYST AND METHOD FOR PRODUCTION THEREOF

Shigemi Osaka; Kazuo Hata, and Tsukasa Takashashi, all of Himeji, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Feb. 16, 1990, Ser. No. 480,961

Claims priority, application Japan, Feb. 17, 1989, 1-36243

Int. Cl.[5] B01J *32/00*

U.S. Cl. 502—439 **33 Claims**

1. A carrier for catalyst comprising refractory inorganic particles as cores and having a refractory inorganic powder deposited on said cores, wherein the amount of said refractory inorganic powder is in the range of 1 to 500 g, based on 100 ml of said refractory inorganic particles, and said refractory inorganic particles possess particle diameters in the range of 0.3 to 12 mm and said refractory inorganic powder possesses an average particle diameter in the range of 0.05 to 1,200 μm.

5,055,443

ATTRITION RESISTANT AGGLOMERATES OF ACTIVE ALUMINA

Marc Mercier, Ales, and Marc Curcio, Salindres, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jan. 26, 1990, Ser. No. 470,600

Claims priority, application France, Feb. 1, 1989, 89 01264

Int. Cl.[5] B01J *32/00*

U.S. Cl. 502—439 **27 Claims**

1. A process for the production of attrition resistant agglomerates of active alumina, comprising establishing a batch of starting material active alumina agglomerates in a confining and protective treatment zone, said starting agglomerates having been impregnated with water or an aqueous acid solution and said confining treatment zone itself being enclosed within an autoclaving assembly as to provide an interspace between the internal wall surfaces of said autoclaving assembly and the exterior wall surfaces of said treatment zone, and hydrothermally treating said impregnated agglomerates at a temperature of at least 80° C. by directing a stream of a hot heat transfer fluid against said exterior wall surfaces of said treatment zone.

5,055,444

INTERMEDIATE RECEIVER SUBBING LAYER FOR THERMAL DYE TRANSFER

Linda A. Kaszczuk, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1990, Ser. No. 519,610

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 **20 Claims**

11. A process for formation of a dye image in an arbitrarily shaped object comprising:

(a) forming a dye transfer image by thermal dye transfer is a dye image-receiving layer of an intermediate dye-receiving element comprising a support having thereon a separable polyolefin layer, the dye image-receiving layer, and a subbing layer between the polyolefin layer and the dye image-receiving layer, wherein the subbing layer comprises a crosslinked poly(vinyl acetal-co-vinyl alcohol).

(b) separating the imaged dye image-receiving layer from the support,

(c) placing the separated, imaged, dye image-receiving layer in contact with an arbitrarily shaped final receiver,

(d) retransferring the dye image out of the dye image-receiving layer and into the final receiver by the action of heat, and

(e) removing the dye image-receiving layer from the imaged final receiver resulting from step (d).

5,055,445

METHOD OF FORMING OXIDIC HIGH T_c SUPERCONDUCTING MATERIALS ON SUBSTANTIALLY LATTICE MATCHED MONOCRYSTALLINE SUBSTRATES UTILIZING LIQUID PHASE EPITAXY

Roger F. Belt, Morristown, and John B. Ings, Boonton, both of N.J., assignors to Litton Systems, Inc., Lexington, Mass.

Filed Sep. 25, 1989, Ser. No. 411,779

Int. Cl.[5] C30B *19/02*

U.S. Cl. 505—1 **45 Claims**

1. In a method of forming an epitaxial layer of an oxidic high T_c superconductor on a substantially lattice matched monocrystalline substrate the improvement which comprises:

a) forming a melt wherein the primary phase to crystallize out on cooling of the melt to effect film growth is the phase of the high T_c oxidic superconductor, said melt comprising a nutriment composed of oxides of each element of said oxidic superconductor and a non-oxidic flux for said oxides;

b) introducing the substrate into the melt; and

c) cooling the melt to deposit an epitaxial layer of oxidic superconductor on said substrate.

5,055,446

METHOD TO IMPROVE SURVIVAL OF PATIENTS DURING SEPSIS BY DIET COMPOSITION

J. Wesley Alexander, and Michael D. Peck, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Filed Oct. 21, 1988, Ser. No. 260,880

Int. Cl.[5] A61K *37/00, 31/70, 31/23*

U.S. Cl. 514—2 **3 Claims**

1. A method of treating septic patients comprising:

administering to said patients a diet during sepsis condition, said diet having about 20–50 kilocalories per kilogram body weight and wherein less than about 10% of the calories in said diet are derived from protein; and

wherein said diet further comprises from about 30 to about 50% lipids based on total calories and from about 45 to about 54% carbohydrates based on total calories.

5,055,447

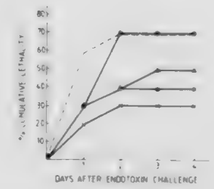
METHOD AND COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF SEPTIC SHOCK

Michael A. Palladino, Foster City, and Stephen A. Sherwin, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 225,502, Jul. 28, 1988, abandoned. This application Jun. 27, 1989, Ser. No. 371,484

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **9 Claims**



1. A method comprising administering to a patient suffering from or at risk of septic shock a pharmaceutically effective amount of transforming growth factor-beta.

5,055,448

LINEAR DERIVATIVES OF ARGININE VASOPRESSIN ANTAGONISTS

Maurice Manning, Toledo, Ohio, and Wilbur H. Sawyer, Scarsdale, N.Y., assignors to Medical College of Ohio, Toledo, Ohio and Trustees of Columbia University, New York, N.Y., a part interest

Filed Jun. 25, 1987, Ser. No. 66,949

Int. Cl.[5] A61K *37/34;* **C07K** *7/16*

U.S. Cl. 514—16 **15 Claims**

1. (1-Adamantyl)acetyl-D-(O-ethyl)tyrosyl-phenylalanyl-valyl-asparaginyl-(2-amino)butyryl-prolyl-argininamide.

5,055,449

VINCRISTINE-CONTAINING PRODUCT

Victor J. Nickolson, Oss, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Nov. 7, 1988, Ser. No. 268,117

Claims priority, application Netherlands, Oct. 11, 1987, 8702688

Int. Cl.[5] A61K *37/02, 31/48*

U.S. Cl. 514—17 **7 Claims**

1. Pharmaceutical product for treating a patient believed to be suffering from a cancer susceptible to treatment by vincristine with high doses of vincristine or a salt thereof while mitigating the neuropathic side effects associated with vincristine comprising:

(a) vincristine or a salt thereof, and

(b) a peptide having the general formula I:

H—L—Met(X)—L—Glu—L—His—L—
Phe—A—B—Y [I]

or a salt or N-acyl derivative thereof in which Met(X) represents the amino acid radical Met, Met(O) or Met-(O_2), A represents the amino acid radical L-Lys, D-Lys, L-Arg or D-Arg, B represents the amino acid radical L-Trp or L-Phe, Y represents the group Gly-Z or Z, and Z represents the hydroxyl group, an esterified hydroxyl group or an optionally substituted amino group whereby greater quantities of vincristine can be administered in combination with said peptide than without said peptide.

5,055,450

PEPTIDE DERIVATIVES

Philip D. Edwards, Claymont; John A. Schwartz; Mark M. Stein, both of Wilmington, all, Del.; Diane A. Trainor, Glen Mills, Pa., and Richard A. Wildonger, Elmwood, Del., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 5,538, Jan. 20, 1987, Pat. No. 4,910,190, which is a continuation-in-part of Ser. No. 821,150, Jan. 21, 1986, abandoned. This application Mar. 13, 1990, Ser. No. 493,025

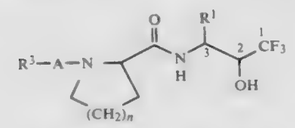
Claims priority, application United Kingdom, Jan. 22, 1985, 8501522; Jan. 22, 1985, 8501523; Jan. 22, 1985, 8505124

Int. Cl.[5] A61K *37/64*

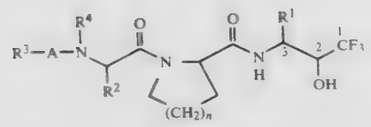
U.S. Cl. 514—019 **7 Claims**

1. A compound of formula VIIa, VIIb or VIIc

VIIa

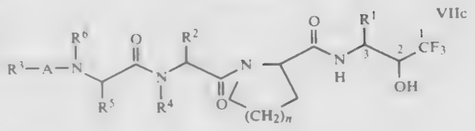


VIIb



-continued

VIIc



wherein

R^1 is an alkyl group containing from 1 to 5 carbon atoms, and more preferably from 2 to 5 carbons;

R^2 and R^5 are each selected independently from the group consisting of:

(I) an alkyl group containing from 1 to 10 carbons;

(II) an alkyl group containing from 1 to 6 carbon atoms substituted by at least one member selected from the group consisting of:

(a) hydroxy;

(b) amino;

(c) alkylamino containing from 1 to 6 carbons;

(d) dialkylamino wherein each alkyl group contains from 1 to 6 carbons;

(e) alkanoyl containing from 1 to 6 carbons;

(f) arylcarbonyl wherein the aryl contains 6, 10 or 12 carbons;

(g) aralkanoyl containing 8 to 13 carbons;

(h) amido which may be attached to the alkyl group via either a nitrogen or carbon of said amido;

(i) alkylcarbonylamino wherein the alkyl group contains from 1 to 6 carbons;

(j) alkylaminocarbonyl wherein the alkyl group contains from 1 to 6 carbons;

(k) arylcarbonylamino wherein the aryl group contains 6, 10 or 12 carbons;

(l) aralkylcarbonylamino wherein the aralkyl group contains from 7 to 13 carbons;

(m) arylaminocarbonyl wherein the aryl group contains 6, 10 or 12 carbons;

(n) aralkylaminocarbonyl wherein the aralkyl group contains from 7 to 13 carbons;

(o) carboxy;

(p) aryloxycarbonyl wherein the aryl group contains 6, 10 or 12 carbons;

(q) aralkoxycarbonyl wherein the aralkoxy group contains from 7 to 13 carbons;

(r) alkanoyloxy containing from 1 to 6 carbons;

(s) aroyloxy wherein the aryl portion contains 6, 10 or 12 carbons;

(t) aralkanoyloxy containing from 8 to 14 carbons;

(u) alkylsulfonamido wherein the alkyl group contains from 1 to 6 carbons;

(v) aralkylsulfonamido wherein the aralkyl group contains from 7 to 13 carbons;

(w) arylsulfonamido wherein the aryl group contains 6, 10 or 12 carbons;

(x) acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) including acylsulfonamido wherein the acyl group contains 1 to 7 carbons when it is the terminal portion of the acylsulfonamide and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(y) alkxoycarbonyl wherein the alkoxy group contains from 1 to 6 carbons;

(z) aralkoxycarbonylamino containing from 8 to 13 carbons (e.g., benzyloxycarbonyl amino);

(aa) aryloxycarbonylamino wherein the aryloxy group contains 6, 10 or 12 carbons;

(bb) alkoxycarbonylamino wherein the alkyloxy group contains from 1 to 6 carbons,

(cc) aryl containing 6, 10 or 12 carbons (e.g., phenyl, biphenyl, naphthyl);

(dd) aryl containing 6, 10 or 12 carbons and substituted by 1 to 3 members selected from the group consisting of chloro, bromo, iodo, fluoro, trifluoromethyl, hydroxy, alkyl (1 to 6 carbons), alkoxy (1 to 6 carbons), alkoxycarbonyl (1 to 6 carbons), carboxy, 5-tetrazolo, and acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) (1 to 15 carbons) and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(ee) cycloalkyl containing from 3 to 15 carbons (e.g., cyclohexyl, adamantyl, norbornyl);

(ff) alkylureido wherein the alkyl group contains from 1 to 6 carbons;

(gg) aralkylureido containing from 8 to 13 carbons;

(hh) arylureido wherein the aryl group contains 6, 10 or 12 carbons; and

(III) an aryl group of 6 carbons, e.g. phenyl;

R^3 is selected from the group consisting of:

(I) an alkyl group containing from 1 to 12 carbons;

(II) an alkyl group containing from 1 to 12 carbons and from 1 to 4 hetero atoms each of which is selected independently from the group consisting of nitrogen and oxygen;

(III) an alkyl group containing from 1 to 12 carbons and, optionally, 1 to 4 hetero atoms each of which is selected independently from the group consisting of nitrogen and oxygen, and substituted on at least one of carbon or nitrogen by 1 to 3 members selected independently from the group consisting of:

For carbon;

(a) hydroxy, provided that it may not be on a carbon directly bonded to A;

(b) amino, provided that it may not be on a carbon directly bonded to A;

(c) alkylamino containing from 1 to 6 carbons, provided that it may not be on a carbon directly bonded to A;

(d) dialkylamino wherein each alkyl group contains from 1 to 6 carbons, provided that it may not be on a carbon directly bonded to A;

(e) alkanoyl containing from 1 to 6 carbons;

(f) arylcarbonyl wherein the aryl contains 6, 10 or 12 carbons;

(g) aralkanoyl containing 8 to 13 carbons;

(h) amido which may be attached to the alkyl group via either a nitrogen or carbon of said amido;

(i) alkylcarbonylamino wherein the alkyl group contains from 1 to 6 carbons;

(j) alkylaminocarbonyl wherein the alkyl group contains from 1 to 6 carbons;

(k) arylcarbonylamino wherein the aryl group contains 6, 10 or 12 carbons;

(k)-(1) arylcarbonylamino wherein the aryl group contains 6, 10 or 12 carbons and is substituted by a member selected from carboxy, alkxoycarbonyl, where alkoxy is 1 to 3 carbons, 5-tetrazolo, and acylsulfonamido (i.e. acylaminosulfonyl and sulfonylaminocarbonyl) containing 1 to 15 carbons and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(l) aralkylcarbonylamino wherein the aralkyl group contains from 7 to 13 carbons;

(l)-(1) aralkylcarbonylamino wherein the aralkyl group contains 7 to 13 carbons and is substituted on the aryl portion by a member selected from carboxy, alkoxycarbonyl, where the alkoxy has 1 to 3 carbons, 5-tetrazolo, and acylsulfonamido (.e., acylaminosulfonyl and sulfonylaminocarbonyl) containing 1 to 15 carbons and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(m) arylaminocarbonyl wherein the aryl group contains 6, 10 or 12 carbons;

(n) aralkylaminocrabonyl wherein the aralkyl group contains from 7 to 13 carbons;

(o) carboxy;

(p) aryloxycarbonyl wherein the aryl group contains 6, 10 or 12 carbons;

(q) aralkoxycarbonyl wherein the aralkoxy group contains from 7 to 13 carbons;

(r) alkanoyloxy containing from 1 to 6 carbons;

(s) aroyloxy wherein the aryl portion contains 6, 10 or 12 carbons;

(t) aralkanoyloxy containing from 8 to 13 carbons;

(u) alkylsulfonamido wherein the alkyl group contains from 1 to 6 carbons;

(u)-(1) cycloalkylsulfonamido wherein the cycloalkyl portion contains 3 to 15 carbon (e.g., cyclohexyl, adamantyl, norbornyl);

(v) aralkylsulfonamido wherein the aralkyl group contains from 7 to 13 carbons;

(w) arylsulfonamido wherein the aryl group contains 6, 10 or 12 carbons;

(x) acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) (1 to 15 carbons) including acylsulfonamido wherein the acyl group contains 1 to 7 carbons when it is the terminal portion of the acylsulfonamide, and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(y) alkoxycarbonyl wherein the alkoxy group contains from 1 to 6 carbons;

(z) aralkoxycarbonylamino containing from 8 to 13 carbons (e.g., benzyloxycarbonylamino);

(z)-(1) aralkylaminocarbonyloxy containing 8 to 13 carbons;

(z)-(2) aryloxy wherein the aryl contains 6, 10 or 12 carbons;

(z)-(3) aryloxy wherein the aryl contains 6, 10 or 12 carbons and is substituted by a member selected from aminocarbonyl, aminocarbonylalkyl where the alkyl has 1 to 3 carbons, alkoxycarbonyl having 1 to 3 carbons, and carboxy;

(aa) aryloxycarbonylamino wherein the aryloxy group contains 6, 10 or 12 carbons;

(aa)-(1) arylaminocarbonyloxy wherein the aryl group contains 6, 10 or 12 carbons;

(bb) alkoxycarbonylamino wherein the alkyloxy group contains from 1 to 6 carbons;

(bb)-(1) alkoxycarbonylamino wherein the alkoxy group contains 1 to 6 carbons and is optionally bonded on carbon to a carbon of an aromatic heterocyclic group as described in (gg) under R^3;

(bb)-(2) alkoxycarbonylamino wherein the alkoxy group contains 1 to 6 carbons substituted by an aliphatic heterocyclic group as described in (ff) under R^3;

(bb)-(3) aryloxyalkylcarbonylamino wherein the aryl contains 6 to 10 carbons and the alkyl has 1 to 6 carbons;

(bb)-(4) alkylaminocarbonyloxy wherein the alkyl group contains 1 to 6 carbons;

(cc) aryl containing 6, 10 or 12 carbons (e.g., phenyl, naphthyl, biphenyl);

(cc)-(1) aryloxy containing 6, 10 or 12 carbons;

(dd) aryl containing 6, 10 or 12 carbons and substituted by 1 to 3 members independently selected from the group consisting of chloro, bromo, iodo, fluoro, hydroxy, trifluoromethyl, alkyl (1 to 6 carbons), alkoxy (1 to 6 carbons), alkoxycarbonyl (2 to 6 carbons), carboxy, aminocarbonylalkyl (2 to 6 carbons), aminocarbonyl, 5-tetrazol, and acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) (1 to 5 carbons), and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(dd)-(1) aryloxy containing 6, 10 or 12 carbons and substituted on carbon by 1 to 3 members independently se-

lected from the group consisting of chloro, bromo, iodo, fluoro, hydroxy, trifluoromethyl, alkyl (1 to 6 carbons), alkoxy (1 to 6 carbons), alkoxycarbonyl (2 to 6 carbons), carboxy, aminocarbonylalkyl (2 to 6 carbons), aminocarbonyl, 5-tetrazolo, acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) (1 to 15 carbons) and provided that when the acrylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(ee) cycloalkyl containing from 3 to 15 carbons (e.g., cyclohexyl, adamantyl, norbornyl);

(ee)-(1) cycloalkyloxy containing from 3 to 15 carbons;

(ff) an aliphatic heterocyclic group of at least 4 atoms containing from 1 to 5 carbons and from 1 to 4 hetero atoms each of which is selected independently from the group consisting of nitrogen and oxygen (e.g., morpholine, piperazine), wherein the aliphatic heterocyclic group may optionally contain 1 or 2 double bond(s), which aliphatic heterocyclic group may be substituted at any nitrogen with an alkyl group containing from 1 to 6 carbons, an alkyanoyl group containing from 1 to 6 carbons, and aryloxycarbonyl group wherein the aryl group contains 6, 10 or 12 carbon atoms, an aralkyloxycarbonyl group wherein the aralkyl group contains from 7 to 13 carbons or an alkoxycarbonyl group wherein the alkyl group contains from 1 to 6 carbons;

(ff)-(1) an aliphatic heterocyclic oxy group wherein the oxy link the is bonded directly to a carbon atom of the aliphatic heterocyclic group of at least 5 atoms containing from 1 to 5 carbons and from 1 to 4 hetero atoms each of which is selected independently from the group consisting of nitrogen and oxygen (e.g., norpholine, piperazine), wherein the aliphatic heterocyclic group may optionally contain 1 or 2 double bond(s), which aliphatic heterocyclic group may be substituted at any nitrogen with an alkyl group containing from 1 to 6carbons, an alkanoyl group containing from 1 to 6 carbons, an aryloxycarbonyl group wherein the aryl group contains 6, 10 or 12 carbons, an aralkyloxycarbonyl group wherein the aralkyl group contains from 7 to 13 carbons or an alkoxycarbonyl group wherein the alkyl group contains from 1 to 6 carbons;

(gg) an aromatic heterocyclic group of from 1 to 15 carbons and from 1 to 4 heteroatoms each of which is selected independently from the group group consisting of sulfur, nitrogen and oxygen and which form 1 to 3 five or six-membered rings at least one of which is aromatic, and optionally wherein up to 3 carbons of the aromatic ring(s) may be substituted with a member of the group consisting of fluoro, chloro, bromo, iodo, trifluoromethyl, alkyl containing from 1 to 6 carbons, alkoxy containing from 1 to 6 carbons, alkanoyl containing from 2 to 6 carbons, carboxy, aminocarbonylalkyl (2 to 6 carbons) and aminocarbonyl, and provided further that any nitrogen atom may be substituted by an alkyl group containing from 1 to 6 carbons;

(gg)-(1) an aromatic heterocyclic oxy group wherein the oxy link is bonded directly to a carbon of an aromatic heterocyclic group of from 1 to 15 carbons and from 1 to 4 heteroatoms each of which is selected independently from the group consisting of sulfur, nitrogen and oxygen and which form 1 to 3 five or six-membered rings at least one of which is aromatic, and optionally, wherein up to 3 carbons of the aromatic ring(s) may be substituted with a member of the group consisting of fluoro, chloro, bromo, iodo, trifluoromethyl, alkyl containing from 1 to 6 carbons, alkoxy containing from 1 to 6 carbons, alkanoyl containing from 2 to 6 carbons, carboxy, aminocarbonylalkyl (2 to 6 carbons) and aminocarbonyl, and provided further that any nitrogen atom may be substituted by an alkyl group containing from 1 to 6 carbons;

(hh) alkylureido wherein the alkyl group contains from 1 to 6 carbon atoms;

(hh)-(1) cycloalkylureido wherein the cycloalkyl group contains 3 to 15 carbons;

(ii) aralkylureido wherein the aralkyl group contains from 7 to 13 carbons;

(jj) aryulureido wherein the aryl group contains 6, 10 or 12 carbons;

(jj)-(1) arylureido wherein the aryl group contains 6, 10 or 12 carbons and is substituted by 1 to 3 members selected independently from the group consisting of chloro, bromo, iodo, fluoro, hydroxy, trifluoromethyl, alkyl (1 to 6 carbons), alkoxy (1 to 6 carbons), alkoxycarbonyl (2 to 6 carbons), carboxy, aminocarbonylalkyl (2 to 6 carbons), aminocarbonyl, 5-tetrazolo, and acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) (1 to 15 carbons) including acylsulfonamido wherein the acyl group contains 1 to 7 carbons when it is the terminal portion of the acylsulfonamide and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

For nitrogen:

(a) alkyl of 1 to 3 carbons;

(b) alkanoyl containing from 2 to 6 carbon atoms;

(c) arylcarbonyl wherein the aryl contains 6, 10 or 12 carbons;

(d) aralkanoyl containing 8 to 14 carbons;

(e) formyl;

(f) an aliphatic heterocyclic group wherein the amino link is bonded directly to a carbon of an aliphatic heterocyclic group defined in (ff) for the carbon substituents;

(g) an aromatic heterocyclic group wherein the amino link is bonded directly to a carbon of the aromatic heterocyclic group defined in (gg) for the carbon substituents;

(IV) an aryl group containing 6, 10 or 12 carbons;

(V) an aryl group containing 6, 10 or 12 carbons suitably substituted by 1 to 3 members selected independently from the group consisting of fluoro, chloro, bromo, iodo, trifluoromethyl, hydroxy, alkyl containing from 1 to 6 carbons, alkoxy containing from 1 to 6 carbons, alkoxycarbonyl containing from 2 to 6 carbons, carboxy, alkylcarbonylamino wherein the alkyl group contains 1 to 6 carbons, 5-tetrazolo, and acylsulfonamido (i.e., acylaminosulfonyl and sulfonylaminocarbonyl) containing from 1 to 15 carbons, and provided that when the acrylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro;

(IV) a cycloalkyl group containing from 3 to 15 carbons (e.g., cyclohexyl, adamantyl, norbornyl);

(VI)-(1) a cycloalkyl group containing from 3 to 15 carbons (e.g., cyclohexyl, adamantyl, norbornyl), substituted by a member selected from the group consisting of carboxy and alkoxycarbonyl wherein the alkoxy group contains 1 to 4 carbons;

(VII) an aliphatic heterocyclic group of at least 5 atoms containing from 1 to 5 carbons and from 1 to 4 hetero atoms each of which is selected independently from the group consisting of nitrogen and oxygen, (e.g., morpholine, piperazine) which may be substituted at any nitrogen with a member selected from the group consisting of an alkyl group containing from 1 to 6 carbon atoms, an alkanoyl group containing from 1 to 6 carbons, an aryloxycarbonyl group wherein the aryl group contains 6, 10 or 12 carbons, an aralkoxycarbonyl group wherein the aralkyl group contains from 7 to 13 carbons and an alkoxycarbonyl group containing from 2 to 7 carbons, provided that when A is OCO or NHCO then A must be bonded to a carbon atom of the aliphatic heterocyclic group;

(VIII) an aromatic heterocyclic group of from 1 to 15 carbons and from 1 to 4 heteroatoms each of which is selected independently from the group consisting of sulfur, nitrogen and oxygen, and which form 1 to 3 five or six-membered rings at least one of which is aromatic, and optionally, wherein up to 3 carbons of the aromatic ring(s) may be substituted at any carbon atom with a member of the group consisting of fluoro, chloro, bromo, iodo, trifluoromethyl, alkyl containing from 1 to 6 carbons, alkoxy containing from 1 to 6 carbons, carboxy, and provided further that any nitrogen may be substituted by an alkyl group containing from 1 to 6 carbons, provided that when A is OCO or NHCO then A must be bonded to a carbon of the aromatic heterocycle;

(IX) an alkenyl group of 2 to 10 carbons, having at least one double bond; and

(X) an alkenyl group of 2 to 10 carbons, having at least one double bond and substituted by a member selected from the group consisting of

(a) aryl of 6 or 10 carbons;

(b) aryl of 6 to 10 carbons substituted by 1 to 3 members selected independently from the group consisting of chloro, bromo, iodo, fluoro, hydroxy, trifluoromethyl, alkyl (1 to 6 carbons), alkoxy (1 to 6 carbons), alkoxycarbonyl (2 to 6 carbons), carboxy, 5-tetrazolo, and acylsulfonamido (i.e. acylaminosulfonyl and sulfonylaminocarbonyl) (1 to 15 carbons) and provided that when the acylsulfonamido contains an aryl the aryl may be further substituted by a member selected from fluoro, chloro, bromo, iodo and nitro; and

(c) ureidocarbonyl;

R^4 and R^6 are each independently selected from hydrogen or methyl;

n is 0, 1 or 2; and

A is selected from the group consisting of



where appropriate, the acid- and base-addition salts thereof and provided that:

(1) alkyls may be straight or branched chain;

(2) no carbon of an alkyl may be directly bonded to two heteroatoms;

(3) no heteroatoms may be directly bonded to a sulfur, nitrogen or oxygen; and

(4) alkenyls of IX and X for R^3 may not be 1,1-disubstituted, and a carbon of a double bond may not be directly bonded to an oxygen or nitrogen.

5,055,451

ARYLOXY AND ARYLACYLOXY METHYL KETONES AS THIOL PROTEASE INHIBITORS

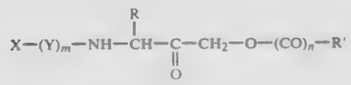
Alexander Krantz, Toronto; Heinz W. Pauls, Mississauga; Roger A. Smith, Milton, all of Canada, and Robin W. Spencer, East Lyme, Conn., assignors to Syntex Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 946,737, Dec. 22, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 127,282

Int. Cl.[5] A61K *31/02; C07K 5/06, 5/08, 5/10*

U.S. Cl. 514—19 **50 Claims**

1. A compound of the formula:



(I)

or an optical isomer thereof, or a pharmaceutically acceptable salt thereof, wherein:

n is 0 or 1;

m is 0, 1 or 2;

X is H or an N-protecting group;

each Y is independently an α-amino acid residue having a side chain optionally protected by an O-protecting group, an S-protecting group, or an N-protecting group;

R is hydrogen or a side chain of an α-amino acid wherein said side chain is optionally protected by an O-protecting group, an S-protecting group, or an N-protecting group; and

R' is selected from the group consisting of 2-naphthyl; 9-anthracyl; 2,3,5,6-tetra-methyl-4-carboxyphenyl ; 1-naphthyl optionally substituted at the 2-position by lower alkyl, lower alkoxy or trifluoromethyl; and phenyl optionally substituted by 1 to 5 fluoro substituents or by 1 to 3 substituents selected from the group consisting of lower alkyl, lower alkoxy, nitro, halo, acetyl, benzoyl, hydroxy, amino, methylamino, dimethylamino, diethylamino, methylthio, cyano, trifluoromethyl, phenylsulfonamidocarbonyl, —COOH, $—CONH_2$, $—COOR^2$, $NHCOR^2$ wherein R^2 is lower alkyl.

5,055,452

MEDICINAL AND COSMETIC COMPOSITIONS

Serge Forestier, Claye-Souilly; Alain Lagrange, Chatou; Gérard Lang, St. Gratien, and Braham Shroot, Antibes, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 217,852, Jul. 12, 1988, abandoned, which is a continuation of Ser. No. 91,941, Feb. 27, 1987, Pat. No. 4,775,663. This application Jul. 12, 1989, Ser. No. 378,792

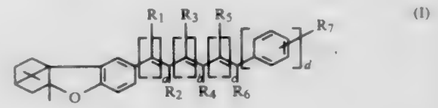
Claims priority, application Luxembourg, Mar. 6, 1986, 86345

The portion of the term of this patent subsequent to Oct. 4, 2005, has been disclaimed.

Int. Cl.[5] A61K *31/34*

U.S. Cl. 514—25 **3 Claims**

1. A cosmetic composition in a form suitable for the treatment of the skin which is liable or susceptible to be affected by acne, for the treatment of physiologically dry skin, seborrhoea, for the treatment and prevention of the deleterious effects of sunlight or for combatting the greasy appearance of the skin or hair, said composition comprising in a cosmetically acceptable vehicle at least one benzofuran derivative having the formula



(I)

wherein

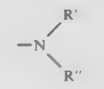
a, b, c and d are, independently, 0 or 1, with the condition that the sum a+b+c+d is greater than or equal to 2;

R_1, R_2, R_3, R_4, R_5, and R_6 are, independently, hydrogen or a C_1–C_6 alkyl group, and

R_7 is (1) is $—CH_2OR_8$ wherein R_8 is hydrogen, a C_1–C_6 alkyl group or a C_2–C_6 mono- or polyhydroxyalkyl or (2)



wherein R_9 is (i) hydrogen (ii) a C_1–C_6 alkyl, (iii)



wherein R' and R'', which may be identical or different, represent hydrogen, C_1–C_6 alkyl, C_2–C_6 mono- or polyhydroxyalkyl or C_3–C_6 alkenyl, or R' and R'' together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of piperidino, morpholino, piperazino, pyrrolidino or 4-(2-hydroxyethyl) piperazino, or



is an amino acid residue or an amino sugar residue, or (iv) $-OR_{10}$ wherein R_{10} is hydrogen, C_1–C_{20} alkyl or C_2–C_6 mono- or polyhydroxy alkyl, or OR_{10} is derived from a sugar; or a salt thereof.

5,055,453

BENANOMICINS A AND ANTIBIOTIC COMPOSITIONS

Tomio Takeuchi; Takeshi Hara; Masa Hamada, all of Tokyo; Shinichi Kondo, Yokohama; Masaji Sezaki, Tokyo; Haruo Yamamoto, Chigasaki, and Shuichi Gomi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

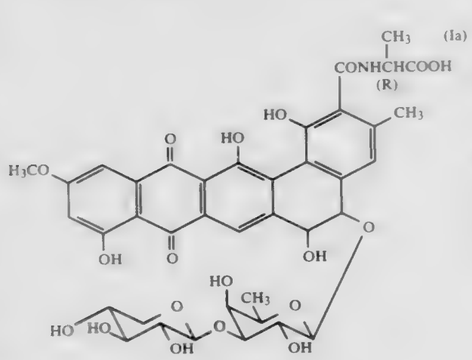
Filed Oct. 31, 1988, Ser. No. 264,888

Claims priority, application Japan, Nov. 2, 1987, 62-277692; Dec. 25, 1987, 62-327163

Int. Cl.[5] A61K *31/70;* **C12P** *19/56*

U.S. Cl. 514—27 **3 Claims**

1. A compound which is Benanomicin A of the formula (Ia)



(Ia)

or a salt or an ester of benanomicin A.

5,055,454

13-EPI-AVERMECTIN DERIVATIVES USEFUL AS ANTIPARASITIC AGENTS

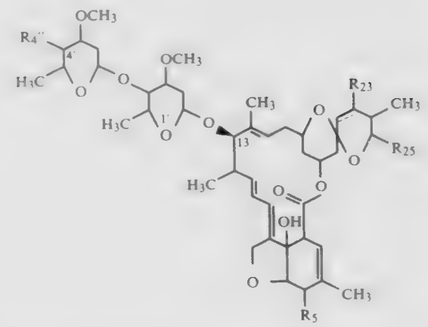
Timothy A. Blizzard, Rahway, and Helmut Mrozik, Matawan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 30, 1989, Ser. No. 429,920

Int. Cl.[5] A61K *31/70;* **C07D** *315/00*

U.S. Cl. 514—30 **20 Claims**

1. A compound having the formula:



wherein:

$R_{4''}$=OH, NH_2, NH-loweralkyl, NH-loweralkyanol;

R_5 =OH, oxime, OCH_3;

R_{23} =H, OH; (provided R_{23} is not OH if the broken line indicates a double bond);

R_{25} =loweralkyl; and

the broken line indicates a single or double bond at the 22,23 position, provided that the broken line is not a single bond if $R_{4''}$=OH and R_{23}=H.

5,055,455

CAPSULAR POLYSACCHARIDE ADHESIN ANTIGEN, PREPARATION, PURIFICATION AND USE

Gerald B. Pier, Brookline, Mass., assignor to Brigham and Women's Hospital, Boston, Mass.

Filed Sep. 28, 1988, Ser. No. 250,417

Int. Cl.[5] A61K *39/40;* **C07K** *15/00*

U.S. Cl. 514—54 **5 Claims**

1. A method of inhibiting adherence of coagulase-negative staphylococci to a polymeric material comprising contacting said polymeric material with a solution of substantially pure capsular polysaccharide adhesin.

5,055,456

ANTI-ALOPECIA COMPOSITION

Bruce J. Harris, Markham, Canada; James R. Lawter, Orange, and Lawrence Ritter, Rockland, both of N.Y., assignors to American Cyanamid Co., Stamford, Conn.

Filed Jan. 27, 1989, Ser. No. 302,813

Int. Cl.[5] A61K *31/20*

U.S. Cl. 514—57 **11 Claims**

1. A method for treating androgenetic alopecia in humans, said method comprising applying to the affected areas of the scalp a composition comprising:

a) an effective amount of a polysaccharide or mixtures thereof, a polysaccharide derivative or mixtures thereof, or any combination of the foregoing;

b) a minor amount of a fatty acid ester of sorbitol and its anhydrides or a mixture of said fatty acid esters;

c) a minor amount of a lower alkyl ester of p-hydroxy benzoic acid or mixture of said esters; and

d) water q.s to 100% by volume.

5,055,457

PHARMACEUTICAL COMBINATIONS PRODUCT AND THE PREPARATION AND USE THEREOF

Elmar Schrinner, Wiesbaden; Irvin Winkler, Liederbach; Christoph Meichsner, Hofheim am Taunus, and Matthias Helsberg, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 29, 1988, Ser. No. 226,250

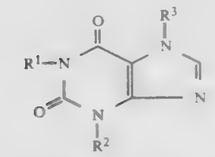
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1987, 3725554

Int. Cl.[5] A61K *31/715;* **C08B** *37/00*

U.S. Cl. 514—59 **14 Claims**

1. A pharmaceutical composition comprising at least one sulfated polysaccharide and at least one xanthine derivative selected from the group consisting of the following compounds:

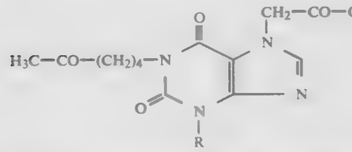
a) compounds of the formula I



(I)

in which one of the radicals R^1 and R^3 represents a straight-chain alkyl, (ω-1)-oxoalkyl or (ω-1)-hydroxyalkyl group having 3 to 8 carbon atoms, an the two other radicals R^2 and R^3, or R^1 and R^2, represent straight-chain or branched alkyl groups having 1 to 8 carbon atoms in the position of R^1 and R^3, and 1 and 4 carbon atoms in the position of R^2, with the total of carbon atoms in these two alkyl substituents being not more than 10;

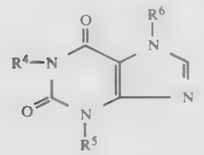
b) compounds of the formula II



(II)

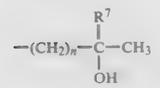
in which R represents an alkyl radical having 1 to 4 carbon atoms;

c) compounds of the formula III



(III)

in which at least one of the radicals R^4 and R^6 represents a tertiary hydroxyalkyl group of the formula



(IIIa)

where R^7 denotes an alkyl group having up to 3 carbon atoms, and n denotes an integer from 2 to 5 and, if only one of the radicals R^4 or R^6 denotes a tertiary hydroxyalkyl group of the formula IIIa, the other radical represents a hydrogen atom or an aliphatic hydrocarbon radical R^8 which has up to 6 carbon atoms and whose carbon chain can be interrupted by up to 2 oxygen atoms or substituted by an oxo group or up to two hydroxyl groups, and R^5 represents an alkyl group having 1 to 4 carbon atoms;

d) prodrug forms of the compounds of the formulae I to III; and

e) metabolites of the compounds of the formulae I to III.

2. A composition as claimed in claim 1, wherein said at least one sulfated polysaccharide is selected from the group consisting of dextran polysulfate, levan polysulfate and pentosan polysulfate.

5,055,458

PURINE DERIVATIVES HAVING ANTIVIRAL ACTIVITY

Stuart Bailey, and Michael R. Harnden, both of Epsom, England, assignors to Beecham Group P.l.c., Brentford, England

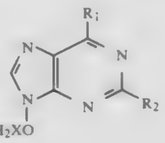
Filed Jul. 28, 1989, Ser. No. 387,068

Claims priority, application United Kingdom, Aug. 2, 1988, 8818375; Nov. 28, 1988, 8827724

Int. Cl.[5] A61K *31/675, 31/52;* **C07F** *9/6561*

U.S. Cl. 514—81 **10 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

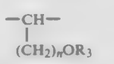
wherein

R_1 is hydroxy, amino, chloro or OR_7 wherein

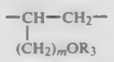
R_7 is C_{1-6} alkyl, phenyl C_{1-2} alkyl either of which phenyl moieties may be substituted by one or two substituents selected from halo, C_{1-4} alkyl or C_{1-4} alkoxy;

R_2 is amino or, when R_1 is hydroxy or amino, R_2 may also be hydrogen;

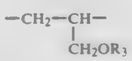
X is $-CH_2CH_2-$ or a moiety of structure (a), (b) or (c):



(a)



(b)



(c)

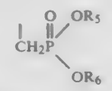
wherein

n is 1 or 2;

m is 0, 1 or 2; and

R_3 is hydrogen or C_{1-7} alkanoyl or benzoyl optionally substituted in the phenyl ring by one, two or three groups or atoms selected from halogen, C_{1-4} alkyl and C_{1-4} alkoxy;

R_4 is a group of formula:



wherein

R_5 and R_6 are independently selected from hydrogen, C_{1-6} alkyl and phenyl or phenyl substituted by one, two or three groups or atoms selected from halogen, C_{1-4} alkyl and C_{1-4} alkoxy.

7. A pharmaceutical composition for use in treating viral infections caused by viruses selected from the group consisting of lentiviruses, varicella-zoster virus, and cytomegalovirus comprising an effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

8. A method of treatment of viral infections caused by viruses selected from the group consisting of lentiviruses, varicella-zoster virus, and cytomegalovirus in mammals, which comprises the administration to the mammal in need of such treatment, an effective amount of a compound according to claim 1.

5,055,459

SELECTIVE ELIMINATION OF MALIGNANT CELLS FROM BONE MARROW BY BIS (ACYLOXY) PROPYLPHOSPHORAMIDATES

Borje S. Andersson, and David Farquhar, both of Houston, Tex., assignors to Board of Regents, The University of Texas, Austin, Tex.

Continuation-in-part of Ser. No. 879,910, Jun. 30, 1986, Pat. No. 4,841,085, and a continuation-in-part of Ser. No. 323,423, Mar. 14, 1989. This application Apr. 6, 1989, Ser. No. 335,016

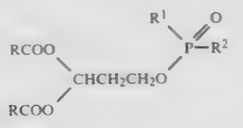
Int. Cl.[5] A01N *47/16, 41/02, 37/34*

U.S. Cl. 514—114 **12 Claims**

1. A method for purging leukemic tumor cells from bone marrow of a mammalian host, the method comprising

extracting bone marrow cells from the host;

treating extracted bone marrow cells, for a period of time and with a therapeutic level sufficient to kill leukemic cells, with a compound having the structure:



wherein:

R is $—Ch_3$;

R^1 is $—NH_2$, $—NHCH_3$, $—NHC_2H_5$, $—NHCH_2CH_2Cl$, $—N(CH_3)_2$, $—N(C_2H_5)_2$, $—OCH_3$, or $—OC_2H_5$;

R^2 is $—NHCH_2CH_2Cl$ or $—N(CH_2CH_2Cl)_2$; and

intravascularly infusing treated bone marrow cells into the host.

5,055,460

METHOD FOR WEIGHT LOSS

Mitchell Friedlander, 2460 Peachtree Rd., NW., Suite 1810, Atlanta, Ga. 30305

Filed Apr. 26, 1990, Ser. No. 514,744

Int. Cl.[5] A61K *31/62, 31/60, 31/52, 31/135*

U.S. Cl. 514—161 **28 Claims**

1. A method for producing weight loss in a human in need thereof, comprising administering thereto an effective amount of a composition comprising aspirin, caffeine and ephedrine or pharmaceutically acceptable salts thereof.

5,055,461

ANESTHETIC ORAL COMPOSITIONS AND METHODS OF USE

William J. Kelleher, Storrs, and William J. McClintock, Southbury, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

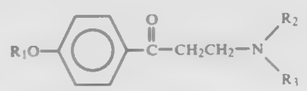
Division of Ser. No. 311,155, Feb. 15, 1989, Pat. No. 4,931,473. This application Mar. 21, 1990, Ser. No. 496,747

Int. Cl.[5] A61K *31/12, 31/615*

U.S. Cl. 514—162 **4 Claims**

1. An oral anesthetic pharmaceutical composition comprising:

(a) from about 0.02% to about 25% of a pharmaceutically acceptable acid salt of a β-amino propiophenone of the formula:



wherein R_1 is a C_2–C_8 alkyl, R_2 and R_3 are independently C_1–C_6 alkyl or R_1 and R_2 are $(CH_2)_n$ where n is an integer from 3 to 7;

(b) from about 0.2% to about 20% of an oral anesthetic drug selected from the group consisting of hexylresorcinol, menthol, benzoyl alcohol, phenol, phenolate sodium, salicyl alcohol, methyl salicylate and thymol and mixtures thereof;

(c) from about 0.02% to about 20% of saccharin; and

(d) from about 1% to about 99% of a pharmaceutically acceptable oral carrier.

5,055,462

CEPHALOSPORIN COMPOUNDS

Gareth M. Davies, Macclesfield; Colin J. Strawson, Congleton, both of England, and Jean J. Lohmann, Hermonville, France, assignors to Imperial Chemical Industries plc, London, England and ICI Pharma, Cergy Cedex, France

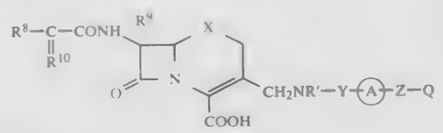
Filed May 10, 1989, Ser. No. 349,662

Claims priority, application United Kingdom, May 10, 1988, 8811055

Int. Cl.[5] C07D *501/38;* **A61K** *31/545*

U.S. Cl. 514—202 **6 Claims**

1. A compound of the formula (V):



(V)

wherein

Q is phenyl or naphthyl substituted by groups R^2 and R^3 which are ortho with respect to one another and wherein R^2 is hydroxy or an in vivo hydrolysable ester group thereof and R^3 is hydroxy or an in vivo hydrolysable ester group thereof, Q being optionally substituted by C_{1-6} alkyl, halo, hydroxy, hydroxy C_{1-6} alkyl, cyano, trifluoromethyl, nitro, amino, C_{16} alkylamino, di-C_{1-6} alkylamino, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di-C_{1-6} alkylamino C_{1-6} alkyl, C_{1-6} alkanoyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-6} alkanoyloxy, carbamoyl, C_{1-6} alkylcarbamoyl, di-C_{1-6} alkyl carbamoyl, carboxy, carboxy C_{1-6} alkyl, sulpho, sulpho C_{1-6} alkyl, C_{1-6} alkanesulphonamido, C_{1-6} alkoxycarbonyl, C_{1-6} alkanoylamino, nitroso, thioureido, amidino, ammonium, mono-, di- or tri-C_{1-6} alkylammonium or pyridinium, or a 5-membered heterocyclic ring consisting of 1 to 4 hetero ring atoms selected from oxygen, nitrogen and sulphur, the remaining ring atoms being carbon and said ring being optionally substituted by 1, 2 or 3 C_{1-6} alkyl or C_{1-6} alkoxy groups;

R^1 is hydrogen, C_{1-6} alkyl optionally substituted by any of halo, hydroxy, C_{1-6} alkoxy, carboxy, amino, cyano, C_{1-6} alkanoylamino, phenyl or heteroaryl, or R^1 is C_{2-6} alkenyl;

Y is —CO— or $—SO_2—$;

X is sulphur or sulphinyl;

Z is a direct bond, C_{1-4} alkylene, C_{2-4} alkenylene, C_{2-4} alkynylene, —CO—, $—(CH_2)_nNR^4CO—$ or $—CONR^4(CH_2)_n—$ wherein n is 0 to 4;

R^4 is hydrogen or C_{1-6} alkyl; R^9 is hydrogen, methoxy or formamido;

R^8 is 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each optionally substituted in the 5-position by fluorine, chlorine or bromine, or R^8 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl, 2-aminopyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-thiazol-3-yl;

R^{10} is of the formula $—N.O.R^{11}$ (having the syn configuration about the double bond) wherein R^{11} is hydrogen, (1–6Calkyl, (3–8C)cycloalkyl, (1–3C) alkyl(3–6C)cycloalkyl, (3–6 C) cycloalkyl (1–3C)alkyl, (3–6C)alkenyl, optionally substituted by carboxy, (5–8C)cycloalkenyl, (3–6C) alkynyl, (2–5C) alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, (1–4C)alkylcarbamoyl(1–4C)alkyl, di(-1–4C) alkylcarbamoyl(1–4C)alkyl, (1–4C)haloalkylcarbamoyl(1–4C)alkyl, (1–3C)haloalkyl, (2–6C)hydroxyalkyl, (1–4C)alkoxy(2–4C)alkyl, (1–4C)alkylthio(2–4C)alkyl, (1–4C)alkanesulphinyl(1–4C)alkyl, (1–4C)alkanesulphonyl(1–4C)alkyl, (2–6C)aminoalkyl, (1–4C)alkylamino(1–6C)alkyl, (2–8C)dialkylamino(2–6C)alkyl, (1–5C)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl, or R^{11} is of the formula (VI):

$$—(CH_2)_q—C(COOH)=CR^{12}R^{13} \quad (VI)$$

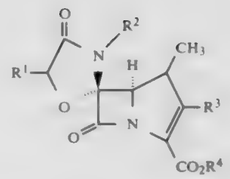
wherein q is one or two and R^{12} and R^{13} are independently hydrogen or C_{1-4}alkyl; or R^{11} is of the formula (VII):

$$—CR^{14}R^{15}—(CH_2)_r—COR^{16} \quad (VII)$$

wherein r is 0–3, R^{14} is hydrogen, (1–3C)alkyl or methylthio, R^{15} is hydrogen (1–3C)alkyl, (3–7C)cycloalkyl, cyano, carboxy, (2–5C)carboxylalkyl or methanesulphonylamino, or R^{14} and R^{15} are joined to form, together with the carbon to which they are attached, a (3–7C)carbocyclic ring, and R^{16} is hydroxy, amino, (1–4C)alkoxy, (1–4C)alkylamino or of the formula $NHOR^{17}$ in which R^{17} is hydrogen or (1–4C)alkyl;

or R^{10} may be of the formula $—CH.4^{18}$ wherein R^{18} is hydrogen, halogen, (1–6C)alkyl, (3–7C)cycloalkyl, (2–6C-)alkenyl, (3–7C)cycloalkenyl phenyl or benzyl; and

A is a phenylene ring or a 5- or 6-membered heterocyclic ring consisting of 1, 2, or 3 ring atoms selected from nitrogen, oxygen and sulphur with the remaining ring atoms being carbon atoms, either ring being unsubstituted or substituted by C_{1-6} alkyl, halo, hydroxy, hydroxy C_{1-6}alkyl, cyano, trifluoromethyl, nitro, amino, C_{1-6}alkylamino, di-C_{1-6}-alkylamino, C_{1-6}alkanoyl, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6}alkanoyloxy, carbamoyl, C_{1-6}alkylcarbamoyl, di-C_{1-6}alkyl carbamoyl, carboxy, carboxy C_{1-6}alkyl, C_{1-6}alkoxycarbonylC_{1-6}alkyl, sulpho, sulphoC_{1-6}alkyl, sulphonamido C_{1-6}alkyl, C_{1-6}alkoxycarbonyl, C_{1-6}alkanoylamino, thioureido or amidino, and the ring A being unfused or fused to a benzene ring.



wherein R^1 is hydrogen, C_{1-8} alkyl or C_{6-10} aryl; R^2 is hydrogen, C_{1-8} alkyl or C_{2-8} acyl; R^3 is hydrogen, —CN substituted or unsubstituted C_{1-8} alkylthio, C_{6-10} arylthio, or pyrid-2-ylthio; and R^4 is hydrogen, pharmaceutically acceptable alkali metal salt or biolabile ester.

9. An antibacterial composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier therefor.

5,055,464

BENZOLACTAM COMPOUNDS AND PHARMACEUTICAL USES THEREOF

Shu Murakami, Fukuoka; Tsuguo Ikebe, Oita; Ichiro Hakamada, Oita, and Koretake Anami, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Osaka, Japan

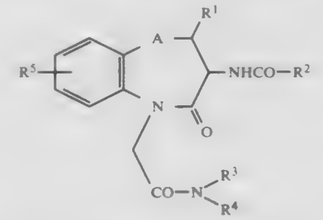
Continuation-in-part of Ser. No. 291,898, Dec. 29, 1988, abandoned. This application Jan. 25, 1990, Ser. No. 471,023

Claims priority, application Japan, Dec. 29, 1987, 62-336074

Int. Cl.[5] A61K *31/55;* **C07D** *281/10*

U.S. Cl. 514—211 **8 Claims**

1. A benzolactam compound of the formula



wherein A is sulfur atom, oxygen atom, methylene group, $—NR^6—$ group (wherein R^6 is hydrogen atom, an alkyl group having 1 to 6 carbon atoms which may have unsaturated bond, an alkyl group having 1 to 6 carbon atoms substituted by at least one of phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or benzyloxycarbonyl, tert-butoxycarbonyl or trifluoroacetyl) or carbonyl group; R^1 is hydrogen atom, an alkyl group having 1 to 6 carbon atoms which may have unsaturated bond, a cycloalkyl group having 5 to 7 carbon atoms which may contain double bond on the ring, an alkyl group having 1 to 6 carbon atoms substituted by at least one of phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms, and an alkoxy group having from 1 to 6 carbon atoms, a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazo-

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5,055,463

SPIROCYCLIC 6-AMIDO CARBAPENEMS

Mark L. Greenlee, Rahway; Frank P. DiNinno, Old Bridge, and Thomas N. Salzmann, No. Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

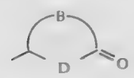
Continuation of Ser. No. 306,000, Feb. 2, 1989, abandoned. This application Aug. 30, 1990, Ser. No. 576,087

Int. Cl.[5] C07D *487/10, 205/085;* **A61K** *31/395*

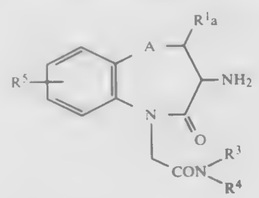
U.S. Cl. 514—210 **9 Claims**

1. A compound of the structural formula:

lyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and a alkoxy group having 1 to 6 carbon atoms or an alkyl group having 1 to 6 carbon atoms which is substituted by at least one a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, R^2 is an alkyl group having 1 to 6 carbon atoms which may have unsaturated bond, a cycloalkyl group having 5 to 7 carbon atoms which may contain double bond on the ring, an alkyl group having 1 to 6 carbon atoms substituted by at least one of phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, trifluoromethyl, chloromethyl or 2,2,2-trifluoroethyl, an alkoxy group having 1 to 6 carbon atoms which may be substituted by phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, an alkyl group having 1 to 6 carbon atoms which is substituted by at least one a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or a group representable by the formula



which may be fused by phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms wherein B is an alkylene having 1 to 6 carbon atoms which may further be substituted by an alkyl group having 1 to 4 carbon atoms, propylidene, butylidene, vinylene, propenylene, $—CH_2OCH_2—$, $—CH_2S(O)_nCH_2—$ (n represents an integer of 0 to 2), $—CH_2CON(R^8)—$ (wherein R^8 is hydrogen atom or an alkyl group having 1 to 6 carbon atoms) and D is oxygen atoms, methylene group or $—N(R^9)—$ (wherein R^9 is hydrogen atom or an alkyl group having 1 to 6 carbon atoms); R^3 and R^4 are the same or different and are independently hydrogen atom, an alkyl group having 1 to 6 carbon atoms which may have unsaturated bond, an alkyl group having 1 to 6 carbon atoms substituted by at least one of phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or a group which is combined with each other together with the adjacent nitrogen atom to form a heterocycle selected from 1-pyrrolidinyl, piperidino, morpholino and 1-piperazinyl, which may be substituted by an alkyl or aralkyl group and R^5 is hydrogen atom or one to three halogen atom(s), alkyl group(s) having 1 to 6 carbon atoms which may have unsaturated bond or alkyl group(s) having 1 to 6 carbon atoms which may be substituted by phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or an alkyl group having 1 to 6 carbon atoms which is substituted by at least one monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or a group represented by the formula



wherein A is sulfur atom, oxygen atom, methylene group, $—NR^6—$ group (wherein R^6 is hydrogen atom, an alkyl group having 1 to 6 carbon atoms which may have unsaturated bond, an alkyl group having 1 to 6 carbon atoms substituted by at least one of phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or benzyloxycarbonyl, tert-butoxycarbonyl or trifluoroacetyl) or carbonyl group; wherein R^1a is an alkyl group having 1 to 6 carbon atoms which may have unsaturated bond, a cycloalkyl group having 5 to 7 carbon atoms which may contain double bond on the ring, an alkyl group having 1 to 6 carbon atoms substituted by at least one of phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, phenyl, 1-naphthyl or 2-naphthyl which may have on the aromatic ring at least one substituent selected from among halogen, trifluoromethyl, hydroxy, amino, nitro, cyano, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms, a monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6 carbon atoms or an alkyl group having 1 to 6 carbon atoms which is substituted by at least one monocyclic or polycyclic aromatic ring containing 1 to 3 nitrogen atom(s), oxygen atom(s) and/or sulfur atom(s) selected from thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, oxazolyl, pyridyl, quinolyl, isoquinolyl, benzimidazolyl, benzothiazolyl or indolyl, which may have on the aromatic ring at least one substituent selected from among halogen, amino, an alkyl group having 1 to 6 carbon atoms and an alkoxy group having 1 to 6

carbon atoms, and each of the other symbols is as defined in claim **1**, an isomer thereof or a pharmaceutically acceptable acid addition salt thereof.

6. A diuretic composition which comprises a therapeutically effective amount of the benzolactam compound as claimed in claim **4** or **5** with a pharmaceutically acceptable additive.

5,055,465

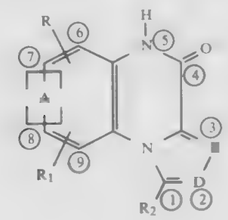
IMIDAZOQUINOXALINONES, THEIR AZA ANALOGS AND PROCESS FOR THEIR PREPARATION

David D. Davey, Succasunna, N.J., assignor to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Filed May 31, 1989, Ser. No. 359,182
Int. Cl.[5] **A61K** *31/54, 31/535;* **C07D** *417/14, 413/14*
U.S. Cl. 514—228.2 **25 Claims**

1. A compound of the following Formula I:

I



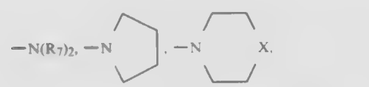
wherein

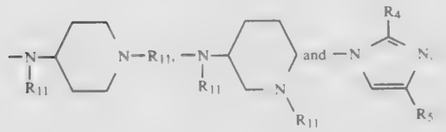
A is N or CH;

B is N or CR_3;

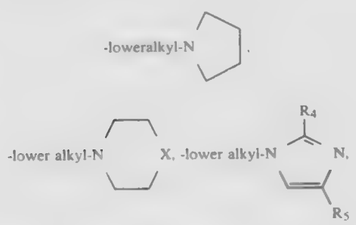
D is N or CR_2;

R, R_1, are the same or independently hydrogen, hydroxy, loweralkyl, lower alkoxy, phenyloxy, $R_6S(O)_n$-, W-ALK-Q-,





R_2 is hydrogen, lower alkyl, phenyl which may be substituted by up to three methoxy groups, lower alkyl substituted by phenyl which may be substituted by up to three methoxy groups, —lower alkyl $—N(R_8)_2$,



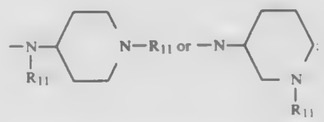
pyridinyl or loweralkyl pyridinyl;

R_3 is hydrogen, lower alkyl, phenyl, lower alkylphenyl, pyridinyl or loweralkyl pyridinyl;

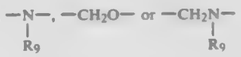
R_4, R_5 are the same or independently hydrogen or lower alkyl;

R_6 is lower alkyl, phenyl, lower alkylphenyl or pyridinyl;

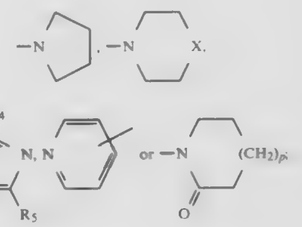
R_7 are the same or independently hydrogen, loweralkyl, phenyl, pyridinyl,



R_8 are the same or independently lower alkyl, phenyl or pyridinyl;

Q is —O—, 

W is hydroxy, loweralkoxy, phenoxy, $—N(R_{10})_2$.



ALK is a C_1–C_4 straight or branched chain alkyl;

R_9 is hydrogen, lower alkyl or phenyl;

R_{10} are the same or independently hydrogen, loweralkyl or phenyl;

R_{11} are the same or independently hydrogen or lower alkyl;

X is $—CH_2—$, —O—, $S(O)_n$, $—NR_{10}$;

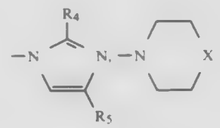
n is the integer 0, 1 or 2 and

p is the integer 0 or 1.

with the provisos that:

a) one and only one of B or D must be N;

b) when A is CH, when D is N, when B is CR_3 where R_3 is H, when R_2 is hydrogen, lower alkyl or phenyl then R and/or R_1 must be



or W—ALK—Q—;

and the pharmaceutically acceptable salts thereof.

5,055,466

N-MORPHOLINO DERIVATIVES AND THEIR USE AS ANTI-HYPERTENSIVE AGENTS

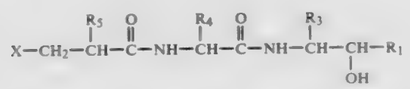
Harold N. Weller, III, Pennington, and Denis E. Ryono, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 124,309, Nov. 23, 1987, abandoned. This application Dec. 14, 1989, Ser. No. 450,885

Int. Cl.[5] **A61K** *31/38, 31/415, 31/44, 31/495;* **C07D** *415/00, 413/12, 417/12, 211/68*

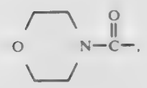
U.S. Cl. 514—235.8 **7 Claims**

1. A compound having the formula

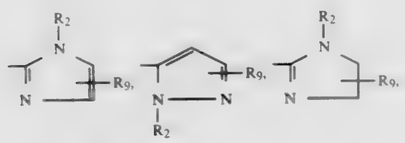


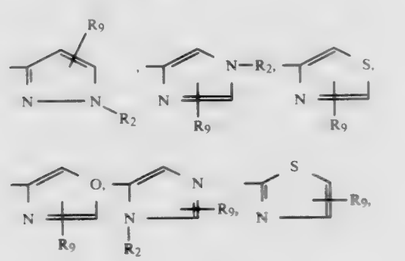
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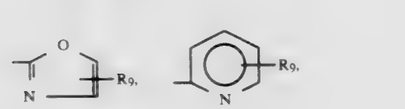
or pharmaceutically acceptable salts thereof, wherein X is selected from

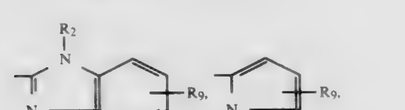


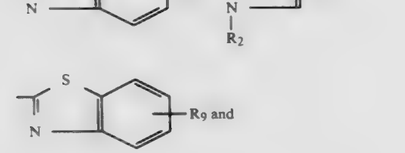
R_1 is selected from





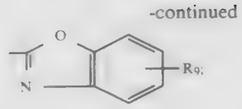




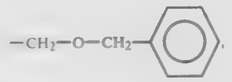


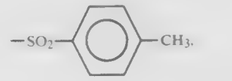
R_9 and

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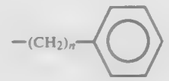


R_2 is



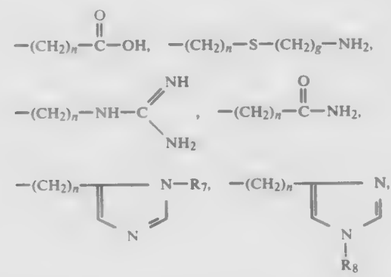


2,4-dinitrophenyl, hydrogen, lower alkyl,



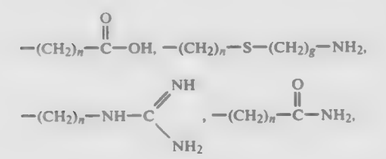
or $-(CH_2)_n$-cycloalkyl;

R_3 and R_5 are independently selected from hydrogen, lower alkyl, halo substituted lower alkyl, $-(CH_2)_n$-aryl, $-(CH_2)_n-OH$, $-(CH_2)_n-O-$lower alkyl, $-(CH_2)_n-NH_2$, $-(CH_2)_n-SH$, $-(CH_2)_n-S-$lower alkyl, $-(CH_2)_n-O-(CH_2)_g-OH$, $-(CH_2)_n-O-(CH_2)_g-NH_2$, $-(CH_2)_n-S-(CH_2)_g-OH$,

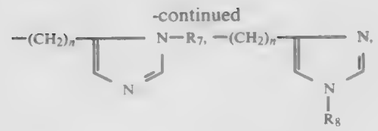


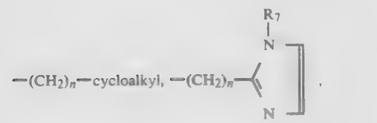
and $-(CH_2)_n-$cycloalkyl;

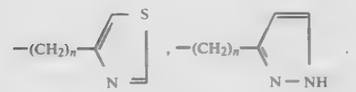
R_4 is selected from hydrogen, lower alkyl, halo substituted lower alkyl, $-(CH_2)_n-$aryl, $-(CH_2)_n-OH$, $-(CH_2)_n-O-$lower alkyl, $-(CH_2)_n-NH_2$, $-(CH_2)_n-SH$, $-(CH_2)_n-S-$lower alkyl, $-(CH_2)_n-O-(CH_2)_g-OH$, $-(CH_2)_n-O-(CH_2)_g-NH_2$, $-(CH_2)_n-S-(CH_2)_g-OH$,



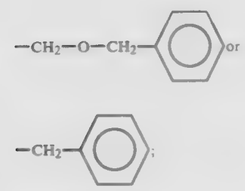
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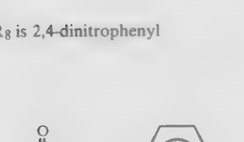




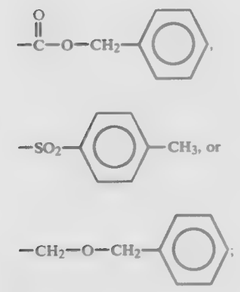


n is an integer from 1 to 5;
g is an integer from 2 to 5;
R_7 is

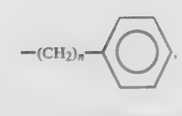




R_8 is 2,4-dinitrophenyl



and
R_9 is hydrogen, lower alkyl,



or $-(CH_2)_n$-cycloalkyl.

5,055,467

PHARMACEUTICAL EPINEPHRINE-PILOCARPINE COMPOUNDS

Pamela Albaugh, Clinton, Conn., assignor to Allergan, Inc., Irvine, Calif.

Filed Nov. 13, 1989, Ser. No. 434,914

Int. Cl.[5] **A61K** *31/415;* **C07D** *233/58*

U.S. Cl. 514—235.8 **19 Claims**

1. A racemic or optically active compound containing a first moiety derived from a pilocarpine compound in which the oxygen of the furanone ring of pilocarpine is replaced by a hetero-ring containing a nitrogen hetero-atom, and a second moiety derived from an epinephrine compound or a β-adrenergic blocking compound consisting of timolol, hetaxolol, or bunolol, linked at said nitrogen atom of the furanone-replacing hetero-ring of said pilocarpine compound and at the side-chain hydroxyl group of said epinephrine compound or of said β-adrenergic blocking compound, via a carbonyl linker, or a pharmaceutically acceptable acid addition salt thereof.

5,055,468

USE OF BRIDGED TRICYCLIC AMINE DERIVATIVES AS ANTI-ISCHEMIC AGENTS

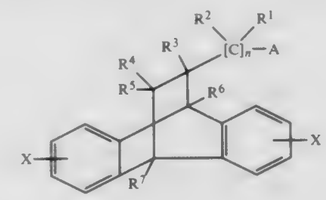
Nancy M. Gray, Buffalo Grove; Patricia C. Contreras, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 30, 1989, Ser. No. 428,531

Int. Cl.[5] **A61K** *31/495, 31/50, 31/135*

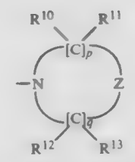
U.S. Cl. 514—249 **15 Claims**

1. A method for treating a patient afflicted by or susceptible to a neurodegenerative disorder or neurotoxic injury, said method comprising administering to the patient a therapeutically-effective amount of a compound of Formula I:



(I)

wherein A is



wherein each of R^1 and R^2 is independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, hydroxyalkyl, alkoxyalkyl and halo; wherein R^1 and R^2 may be taken together to form oxo; wherein each of R^3 through R^7 is independently selected from hydrido, alkyl, hydroxy, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxy, alkoxyalkyl, aryloxy, aralkoxy, hydroxyalkyl, halo and haloalkyl; wherein R^4 and R^5 may be taken together to form oxo; wherein n is a number selected from zero to five, inclusive; wherein each X is independently one or more groups selected from hydrido, hydroxy, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxy, aralkoxy, aryloxy, alkoxyalkyl, haloalkyl, hydroxyalkyl, halo, cyano, amino, monoalkylamino, dialkylamino, nitro, carboxy, carboxyalkyl and alkanoyl; wherein each of R^{10} through R^{13} is independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxyalkyl, hydroxyalkyl and halo; wherein R^{10} and R^{11} may be taken together to

form oxo; wherein R^{12} and R^{13} may be taken together to form oxo; wherein each of p and q is a number selected from one to four, inclusive; wherein Z is selected from O, S, and $>N—R^{18}$; wherein R^{18} may be selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aryl, aralkyl, heteroaryl, alkoxyalkyl, hydroxyalkyl, alkanoyl, aralkanoyl, aroyl, aminoalkyl, monoalkylaminoalkyl and dialkylaminoalkyl; wherein R^{18} together with one of R^{10} through R^{13} may form a fused heterocyclic ring containing five to about eight ring members; or a pharmaceutically-acceptable salt thereof.

5,055,469

QUATERNARY PYRIDINIUM SALTS USEFUL FOR ULCER TREATMENT

Naomichi Mitsumori, Kobe; Yasuhiro Nishimura, Fujiidera; Keiko Yokota, Nagoya; Shiro Okuno, Osaka, and Motoko Suzuki, Ibaraki, all of Japan, assignors to Hamari Chamicals, Ltd., Osaka, Japan

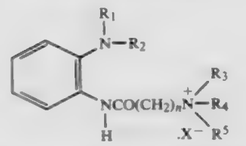
Filed Aug. 15, 1989, Ser. No. 394,080

Claims priority, application Japan, Aug. 18, 1988, 63-205465

Int. Cl.[5] A61K *31/495, 31/44;* **C07D** *401/10*

U.S. Cl. 514—252 **13 Claims**

1. A compound of the formula:



wherein (1) R_1 and R_2, each independently represents a hydrogen atom or a C_1 to C_8 alkyl group, or (2) one of R_1 and R_2 represents a hydrogen atom and the other represents a C_3 to C_6 cycloalkyl or cycloalkenyl group, a benzyl group which may be substituted with methyl, methoxy or ethoxy; or a phenyl group which may be substituted with a halogen atom, a C_1 to C_2 alkoxy group, a C_1 to C_4 alkyl group, trifluoromethyl, nitro, amino or hydroxy group; or (3) R_1 and R_2 combine with each other in combination with the adjacent N to represent a piperazine ring: R_3, R_4, R_5 and the adjacent N are incorporated together to represent a pyridine ring which may be substituted with a halogen atom, methyl, acetylamino or carbamoyl group: n is 1: and X^- represents an anion capable of forming a quaternary ammonium group.

5,055,470

METHOD OF TREATMENT OF ISCHEMIA IN BRAIN

Christopher G. Boissard, Northford; Duncan P. Taylor, Middletown, and Michael S. Eison, Avon, all of Conn., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Filed Jun. 1, 1989, Ser. No. 360,658

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—252 **11 Claims**

1. A process for protecting brain cells from ischemia which comprises administration to a mammal suffering from ischemia or of an effective ischemia-protectant dose of 4-(4(5 fluoro-2-pyrimidinyl)-1-piperazinyl)-1-(4-fluorophenyl)butanol or a pharmaceutically acceptable acid addition salt and/or hydrate thereof.

5,055,471

FUNGICIDES

Paul J. de Fraine, and Anne Martin, both of Wokingham, England, assignors to Imperial Chemical Industries PLC, London, England

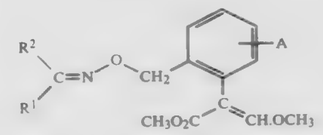
Filed Nov. 15, 1989, Ser. No. 436,752

Claims priority, application United Kingdom, Nov. 21, 1988, 8827149; Mar. 9, 1989, 8905383

Int. Cl.[5] A01N *43/08, 43/10, 43/16, 43/40, 43/42, 43/36, 43/54, 43/58, 43/60, 43/647, 43/707, 43/78;* **C07D** *309/04, 333/06, 307/52, 207/335, 249/04, 249/08, 277/28, 213/53, 239/26, 241/20, 237/08, 241/42, 215/12, 401/06, 401/12, 401/14, 403/06, 403/14, 403/12, 405/06, 407/06, 409/06, 417/06*

U.S. Cl. 514—255 **8 Claims**

1. A compound having the formula (I):



(I)

and stereoisomers thereof, wherein A is hydrogen, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy nitro or cyano; R^1 is heterocyclylalkyl, heteroaryloxyalkyl, heteroaryl or heteroaryloxy; R^2 is hydrogen, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl (C_{1-4})alkyl, aryl(C_{1-4})alkyl, aryloxy(C_{1-4})alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}alkoxy, aryl, aryloxy, nitro, halo, cyano, $—NR^3R^4$, $—CO_2R^3$, $—CONR^3R^4$, $—COR^3$, —S-(O)nR^3 or $(CH_2)_mPO(OR^3)_2$ wherein n is 0, 1 or 2, m is 0 or 1, and R^3 and R^4, which are the same or different, are hydrogen, C_{1-6} alkyl, aryl(C_{1-6})alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl or heteroaryl, or R^1 and R^2 join to form a tetrahydropyranyl ring system; any of the foregoing aryl moieties, which are phenyl or naphthyl, and any of the foregoing heterocyclyl or heteroaryl moieties which are selected from the group consisting of thienyl, furyl, pyrrolyl, triazolyl, thiazolyl, pyridyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazinyl, quinolinyl and quinoxalinyl and N-oxides thereof being optionally substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl, pyridyl, pyrimidinyl, phenoxy, pyridyloxy, pyrimidinyloxy, phenyl(C_{1-4})alkyl in which the alkyl moiety is optionally substituted with hydroxy, pyridyl- or pyrimidinyl (C_{1-4})alkyl, phenyl (C_{2-4})alkenyl, pyridyl- or pyrimidinyl (C_{2-4})alkenyl, phenyl (C_{1-4})alkoxy, pyridyl- or pyrimidinyl (C_{1-4})alkoxy, phenoxy(C_{1-4}alkyl, pyridyloxy- or pyrimidinyloxy(C_{1-4})alkyl, C_{1-4} alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR′R″, —NHCOR′, —NHCONR′R″, —CONR′R″, —COOR′, —OSO_2R′, —SO_2R′, —COR′, —CR′=NR″ or —N=CR′R″ in which R′ and R″ are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl or benzyl, the phenyl and benzyl groups optionally substituted with halogen, C_{1-4} alkyl or C_{1-4} alkoxy; and any of the foregoing phenyl, pyridyl or pyrimidinyl substituents themselves being optionally substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, alkanoyloxy, benzoyloxy, cyan, thiocyanato, nitro, —R′R″, —NRCOR′, —NHCONR′R″, —CONR′R″, —COOR′, —SO_2R′, —SO_2R′, —COR′, —CR′=NR″ or —N=CR′R″ in which R′ and R″ have the meanings given above.

8. A process for combating fungi which comprises applying to a plant, to a seed of a plant or to the locus thereof, a fungicidally effective amount of a compound as claimed in claim 1.

5,055,472

PYRAZOLOPYRIMIDINE TYPE MEVALONOLACTONES

Yoshihiro Fujikawa; Mikio Suzuki; Hiroshi Iwasaki, all of Funabashi; Mitsuaki Sakashita, and Masaki Kitahara, both of Shiraoka, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

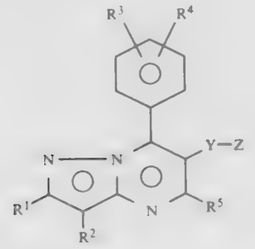
Filed Oct. 25, 1989, Ser. No. 426,156

Claims priority, application Japan, Nov. 14, 1988, 63-286989; Mar. 15, 1989, 1-62932; Sep. 8, 1989, 1-233127

Int. Cl.[5] C07D *487/04;* **A61K** *31/505*

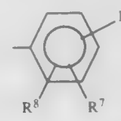
U.S. Cl. 514—258 **18 Claims**

1. A compound of the formula

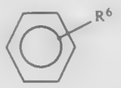


(I)

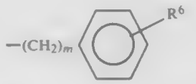
wherein R^1 and R^2 are independently hydrogen, C_{1-8} alkyl, C_{2-6} alkenyl, C_{3-7} cycloalkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, fluoro, chloro, bromo,



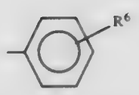
(wherein R^6, R^7 and R^8 are independently hydrogen, C_{1-4} alkyl, C_{1-3} alkoxy, C_{3-7} cycloalkyl, trifluoromethyl, fluoro, chloro or bromo), 2-, 3- or 4-pyridyl, 2- or 5-pyrimidyl, 2- or 3-thienyl, 2- or 3-furyl, α- or β-naphthyl,



(wherein R^6 is as defined above),
$—NR^9R^{10}$ (wherein R^9 and R^{10} are independently hydrogen, C_{1-4} alkyl,

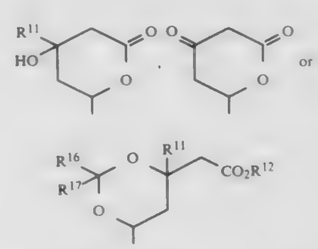


(wherein R^6 is as defined above, and m is 1, 2 or 3), or R^9 and R^{10} together form $—(CH_2)_j—$(wherein j is 3, 4 or 5)); or C_{1-3} alkyl substituted by



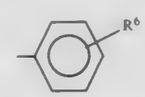
(wherein R^6 is as defined above) and by 0, 1 or 2 members selected from the group consisting of C_{1-8} alkyl;

R^3 and R^4 are independently hydrogen, C_{1-8} alkyl, C_{3-7} cycloalkyl, C_{1-3} alkoxy, n-butoxy, i-butoxy, sec-butoxy, t-butoxy, $R^{25}R^{26}N—$(wherein R^{25} and R^{26} are independently hydrogen or C_{1-3} alkyl), trifluoromethyl, trifluoromethoxy, difluoromethoxy, fluoro, chloro, bromo, phenyl, phenoxy, benzyloxy, hydroxy, trimethylsilyloxy, diphenyl-t-butylsilyloxy, hydroxymethyl or $—O(CH_2.)_jOR^{15}$ (wherein R^{15} is hydrogen or C_{1-3} alkyl, and l is 1, 2 or 3); or when located at the ortho position to each other, R^3 and R^4 may together form —CH=CH—CH=CH—or methylenedioxy; Y is $—CH_2—$, $—CH_2CH_2—$, —CH=CH—, $—CH_2—CH=CH—$, —CH=-CH—CH_2—, $—C(CH_3)=CH—$or —CH=C(CH_3)—; Z is —Q—CH_2WCH_2—CO_2R^{12},

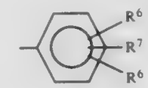


or

(wherein Q is —C(O)—, $—C(OR^{13})_2—$or —CH(OH)—; W is —C(O)—, $—C(OR^{13})_2—$or $—C(R^{11})(OH)—$; R^{11} is hydrogen or C_{1-3} alkyl; R^{12} is hydrogen or R^{14} (wherein R^{14} is C_{1-6} alkyl) or M (wherein M is $NHR^{27}R^{28}R^{29}$ (wherein R^{27}, R^{28} and R^{29} are independently hydrogen or C_{1-4} alkyl) sodium potassium or ½ calcium); each R^{13} are independently primary or secondary C_{1-6} alkyl; or both R^{13} s together form $—(CH_2.)_2—$or $—(CH_2)_3—$; R^{16} and R^{17} are independently hydrogen or C_{1-3} alkyl; or R^{16} and R^{17} together form $—(CH_2)_2—$or $—(CH_2)_3$); and R^5 is hydrogen, C_{1-8} alkyl, C_{2-6} alkenyl, C_{3-7} cycloalkyl, C_{5-7} cycloalkenyl, or



(wherein R^6 is as defined above), or N-C_{1-3} alkyl substituted by one member selected from the group consisting of



(wherein R^6, R^7 and R^8 are as defined above) and by 0, 1 or 2 members selected from the group consisting of C_{1-3} alkyl.

5,055,473

QUINOLINYL SULFONAMIDE ANTI-ARRHYTHMIC AGENTS AND USE THEREAS

John E. Arrowsmith, Deal; Peter E. Cross, Canterbury, and Geoffrey N. Thomas, Sandwich, all of England, assignors to Pfizer Inc., New York, N.Y.

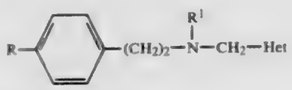
Division of Ser. No. 151,390, Feb. 2, 1988, Pat. No. 4,956,382. This application May 29, 1990, Ser. No. 529,984

Claims priority, application United Kingdom, Feb. 7, 1987, 8702789

Int. Cl.[5] C07D *215/16;* **A61K** *31/47*

U.S. Cl. 514—311 **8 Claims**

1. An organic compound of the formula:

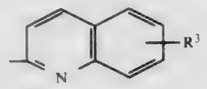


or a pharmaceutically acceptable salt thereof, wherein

R is $—NHSO_2$ (C_1–C_4) alkyl);

R^1 is C_1–C_4 alkyl; and

"Het" is a benzo-fused heterocyclic group of the formula:



wherein R^3 is $—NHSO_2$ (C_1–C_4 alkyl).

8. A method for preventing or reducing cardiac arrhythmias in the treatment of a mammaliar subject afflicted with an impaired cardiac pump function, which comprises administering to said subject an effective anti-arrhythmic amount of a compound as claimed in claim **1**.

5,055,474

2,3-DIHYDRO-1H-INDENE DERIVATIVES AND THEIR USE AS PHARMACEUTICAL AGENTS

Yasuo Oshiro; Hiraki Ueda, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

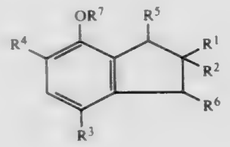
Division of Ser. No. 247,401, Sep. 21, 1988, Pat. No. 4,895,847, which is a division of Ser. No. 770,677, Aug. 29, 1985, Pat. No. 4,788,130. This application Nov. 14, 1989, Ser. No. 436,192

Claims priority, application Japan, Aug. 31, 1984, 59-183514; Aug. 14, 1985, 60-179191

Int. Cl.[5] A61K *31/40, 31/345;* **C07D** *295/04, 295/08*

U.S. Cl. 514—316 **8 Claims**

1. A 2,3-dihydro-1H-indene compound or a salt thereof represented by the formula (1),



(1)

wherein

R^1 and R^2 are each a hydrogen atom, a C_1–C_6 alkyl group, an unsubstituted phenyl group, a substituted phenyl group having 1 to 3 substituents selected from the group consisting of a halogen atom and a C_1–C_6 alkyl group on the phenyl ring, an unsubstituted C_3–C_8 cycloalkyl group, a substituted C_3–C_8 cycloalkyl group having 1 to 3 halogen atoms as the substituent on the cycloalkyl ring, a C_3–C_8 cycloalkyl-C_1–C_6 alkyl group, a hydroxy group, a phenyl-C_1–C_6 alkoxy group, an unsubstituted phenyl-C_1–C_6 alkyl group, a substituted phenyl-C_1–C_6 alkyl group having 1 to 3 substituents selected from the group consisting of a halogen atom and a C_1–C_6 alkoxy group on the phenyl ring or a substituted phenyl-C_1–C_6 alkyl group having a C_1–C_4 alkylenedioxy group on the phenyl ring;

R^3 is a halogen atom or a C_1–C_6 alkyl group;

R^4 is a hydrogen atom, a halogen atom, a phenyl-C_1–C_6 alkyl group, a C_3–C_8 cycloalkyl-C_1–C_6 alkyl group, a piperidinyl-C_1–C_6 alkanoylamino-C_1–C_6 alkyl group, a pyridinium-C_1–C_6 alkanoylamino-C_1–C_6 alkyl group, a C_1–C_6 alkyl group, a 1-phenyl-2-propenyl group, a 1-methyl-2-propenyl group, or a 2 chlorobenzoyl group;

R^5 is a group of the formula -NH-A-B, wherein A is a C_1–C_6 alkylene group which may have one or more hydroxy groups as a substituent, a group of the formula —CO—(D-)$_l$— or a group of the formula —D—CO—, wherein D is a C_1–C_6 alkylene group and l is an integer of 0 to 1 and B is a 1-piperidinyl group, which may have at least one substituent selected from the group consisting of a C_1–C_6 alkyl group, which may have one or more hydroxy groups as a substituent, an oxo group, a carboxy group, a C_1–C_6 alkoxycarbonyl group, a pyridyl group, a phthalimido group, a pyrrolidinylcarbonyl-C_1–C_6 alkyl group, an unsubstituted phenyl group, a substituted phenyl group having 1 to 3 substituents selected from the group consisting of a halogen atom, a C_1–C_6 alkyl group which may have 1 to 3 halogen atoms as a substituent, a C_1–C_6 alkoxy group and a nitro group on the phenyl ring, a phenyl-C_1–C_6 alkyl group, an unsubstituted benzoyl group and a substituted benzoyl group having 1 to 3 C_1–C_6 alkoxy groups as the substituents on the phenyl ring;

R^6 is a hydrogen atom or a phenyl group; and

R^7 is a hydrogen atom or a C_1–C_6 alkyl group.

5,055,475

P-HYDROXY PHENONE DERIVATIVES AND DRUGS CONTAINING THESE

Wilfried Lubisch, Mannheim, and Gerda Von Philipsborn, both of Weinheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

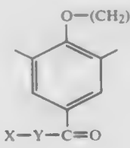
Division of Ser. No. 379,357, Jul. 13, 1989, Pat. No. 4,980,361. This application Jul. 6, 1990, Ser. No. 549,412

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825561

Int. Cl.[5] A61K *31/415, 31/445;* **C07D** *231/12, 401/12*

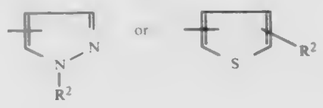
U.S. Cl. 514—326 **4 Claims**

1. A p-hydroxy phenone derivative of the Formula I



I

where X is Δ a heteroaryl of the structure:



with

R^2=C_1–C_4-alkyl,

Y is a bridging member of the formula —CH=CH—, $—CH_2CH_2—$ or $CH_2—$,

n is on of the number 2, 3 or 4 and

Z is an amino group of the formula $—NR^2R^3$ or N-prrolidyl or N-piperidyl, where R^2 and R^3 are, independently of one another, C_1–C_4-alkyl, as well as the physiologically tolerated salts thereof.

5,055,476

3-(1,2-BENZISOXAZOL-3-YL)-4-PYRIDINAMINES AND DERIVATIVES

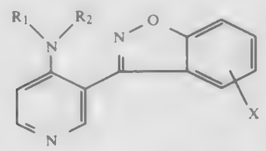
Richard C. Effland, and Joseph T. Klein, both of Bridgewater, N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Aug. 13, 1990, Ser. No. 566,932

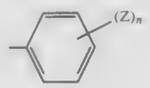
Int. Cl.[5] C07D *413/04;* **A61K** *31/44*

U.S. Cl. 514—338 **12 Claims**

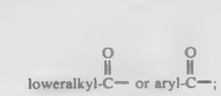
1. A compound of the formula



where R_1 is hydrogen, loweralkyl, arylalkyl or acyl; R_2 is hydrogen, loweralkyl or arylalkyl, the term aryl in each occurrence signifying a phenyl group optionally substituted as defined by the formula



where Z is hydrogen, halogen, loweralkyl, loweralkoxy, trifluoromethyl, nitro and amino, and n is an integer of 1 to 3; the term acyl in each occurrence signifying a substituent having the formula



loweralkyl-C— or aryl-C—;

or a pharmaceutically acceptable addition salt thereof, or where applicable a geometric or optical isomer or a racemic mixture thereof.

5,055,477

PYRAZOLYL ACRYLIC ACID DERIVATIVES, USEFUL AS SYSTEMIC FUNGICIDES FOR PLANT AND MATERIAL PROTECTION

Masatsugu Oda; Toshiro Sakaki, and Kazuhiko Kikutake, all of Yokohama, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

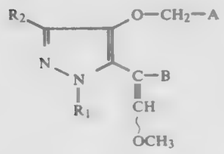
Filed Dec. 13, 1990, Ser. No. 625,762

Claims priority, application Japan, Dec. 13, 1989, 1-323035; Mar. 28, 1990, 2-79763; Oct. 12, 1990, 2-273724; Nov. 27, 1990, 2-324113

Int. Cl.[5] A01N *43/40, 43/56;* **C07D** *231/18, 401/12*

U.S. Cl. 514—341 **4 Claims**

1. A pyrazolyl acrylic acid derivative of formula (I):

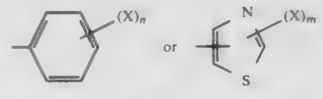


(I)

whrein:

R_1 and R_2 are independently hydrogen or C_1–C_5 alkyl;

A is a group of formula



wherein X is independently hydrogen; halogen; cyano; nitro; C_1–C_{10} alkyl, C_2–C_{11} alkenyl, C_1–C_{10} alkoxy, C_2–C_{11} alkenyloxy, C_2–C_{11} alkynyloxy, C_2–C_{11} alkylcarbonyl or C_2–C_{11} alkylcarbonyloxy optionally substituted with one or more substituents selected from halogen, nitro, cyano, trifluoromethyl and C_1–C_5 alkoxy; or C_7–C_{13} arylcarbonyl, C_4–C_9 cycloalkylcarbonyloxy, C7–C_{13} arylcarbonyloxy, C_6–C_{12} aryl, C_6–C_{12} aryloxy, C_5– C_{13} heteroaryl having 1–3 heteroatom(s) selected from oxygen, sulfur, and nitrogen, C_5–C_{13} heteroaryloxy having 1–3 heteroatom(s) selected from oxygen, sulfur, and nitrogen, C_7–C_{12} aralkyl or C_7–C_{12} aralkyloxy optionally substitutes with one or more substituents selected from halogen, nitro, cyano, trifluoromethyl, C_1–C_5 alkyl C_1–C_5 alkoxy; m is 1 or 2; and n is a integer of 1 - 5; or two Xs may form a fused ring together with the benzene ring or thiazole ring to which they are attached; and

B is methoxycarbonyl or cyano.

5,055,478

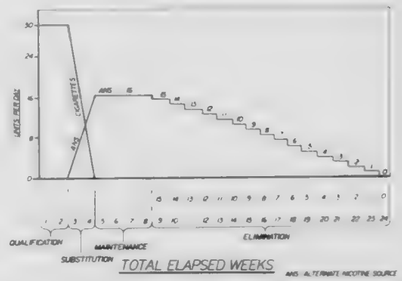
METHOD FOR STOPPING SMOKING

Thomas M. Cooper, 826 Glendover Cir., and Richard R. Clayton, 3414 Coldstream Ct., both of Lexington, Ky. 40502

Continuation-in-part of Ser. No. 876,240, Jun. 19, 1986. This application Jan. 21, 1988, Ser. No. 146,397

Int. Cl.[5] A61K *9/68, 31/465*

U.S. Cl. 514—343 **12 Claims**



1. A method of eliminating an individual's tobacco smoking habit and associated nicotine dependence in a structured pattern, comprising the steps of:

breaking a day down into consumption periods;

recording an individual's tobacco consumption for each consumption period during a first period of time;

replacing tobacco consumption by administering an alternative nicotine source at a first maintenance level during a second period of time;

gradually decreasing administration of said alternative nicotine source down to a second maintenance level during a third period of time;

administering said alternative nicotine source at said second maintenance level for a fourth period of time; and

progressively eliminating administration of said alternative nicotine source during a fifth period of time until no further alternative nicotine source is consumed.

5,055,479

METHOD OF TREATING CACHEXIA

Yo Takiguchi; Jun Ohsumi; Yasuo Shimoji, and Kazuhiko Sasagawa, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

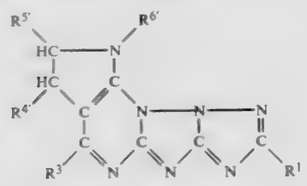
Filed Jun. 14, 1989, Ser. No. 365,851

Claims priority, application Japan, Jun. 16, 1988, 63-149137

Int. Cl.[5] **A01N** *43/38, 43/647;* **A61K** *31/505;* **C07D** *239/70*

U.S. Cl. 514—359 **17 Claims**

1. A method of treating or alleviating the effects of cachexia comprising administering to a mammal an effective amount of an active agent sufficient to alleviate at least one effect selected from the group consisting of weight loss, depression of emotion, depression of appetite, disorder of lipid metabolism, piloerection, decreased response to chemotherapy and decreased response to radiotherapy, wherein said active agent is at least one enhancer of the activity of lipoprotein lipase selected from the group consisting of compounds of formula (Ia):



(Ia)

in which

R^1 represents a hydrogen atom, a C_1–C_5 alkly group or a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (a), defined below;

R^3 represents a C_1–C_5 alkyl group or a C_3–C_7 cycloalkyl group;

R^4 represents a hydrogen atom, a hydroxy group or a C_1–C_5 alkyl group;

R^5 represents a hydrogen atom, a hydroxy group, an oxygen atom or a C_1–C_5 alkyl group; and

R^6 represents a hydrogen atom, C_1–C_{15} alkyl group, a C_1–C_5 alkyl group having at least one substituent selected from the group consisting of substituents (b), defined below, a C_3–C_7 alkenyl group, a C_3–C_{10} cycloalkyl group, a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (a), defined below, or an aralkyl group in which the alkyl part is C_1–C_3 and the aryl part is a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (c), defined below;

substituents (a):

C_1–C_5 alkyl groups, halogen atoms, C_1–C_5 alkoxy groups and sulfamoyl groups;

substituents (b):

halogen atoms, hydroxy groups, mercapto groups, dialkylamino groups in which each alkyl part is C_1–C_5 and is unsubstituted or has at least one hydroxy substituent, heterocyclic groups as defined below, phenoxy groups, C_1–C_5 alkoxy groups; C_1–C_5 hydroxyalkoxy groups, benzoyl groups, substituted benzoyl groups having at least one substituent selected from the group consisting of substituents (d), defined below, benzoyloxy groups, substituted benzoyloxy groups having at least one substituent selected from the group consisting of substituents (d), defined below, and heterocyclic-carbonyloxy groups in which the heterocyclic part has from 5 to 6 ring atoms of which 1 or 2 are nitrogen hetero-atoms;

substituents (c):

C_1–C_5 alkyl groups, halogen atoms and C_1–C_5 alkoxy groups;

substituents (d):

halogen atoms and C_1–C_5 alkoxy groups;

said heterocyclic groups have from 5 to 6 ring atoms of which 1 is a nitrogen atom through which the group is attached to the remainder of the molecule and 0, 1 or 2 are additional hetero-atoms selected from the group consisting of nitrogen and oxygen hetero-atoms, said group being unsubstituted or having at least one C_1–C_5 alkyl substituent;

and pharmaceutically acceptable salts thereof.

5,055,480

TOPICALLY ACTIVE OCULAR GEM-DIACYLTHIADIAZOLE SULFONAMIDE CARBONIC ANHYDRASE INHIBITORS

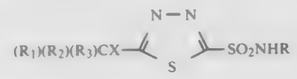
William M. Pierce, Jr., Louisville, Ky., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Mar. 19, 1990, Ser. No. 495,552

Int. Cl.[5] **C07D** *285/135;* **A61K** *31/41*

U.S. Cl. 514—363 **37 Claims**

1. A compound of the formula:

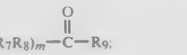


and pharmaceutically acceptable salts thereof wherein

X is NR_{12};

R_1 is

R_2 is



R_3 is hydrogen or lower alkyl;

R is hydrogen or lower alkyl;

each R_4 and R_5 are independently hydrogen or lower alkyl;

each R_7 and R_8 are independently hydrogen or lower alkyl;

R_6 is OR_{10} or $NR_{10}R_{11}$;

R_9 is OR_{13} or $NR_{13}R_{14}$;

R_{10}, R_{11}, R_{12}, R_{13} and R_{14} are independently hydrogen or lower alkyl; and

n and m are independently 0–6.

5,055,481

TETRAZOLE DERIVATIVES AND ALDOSE REDUCTASE INHIBITION THEREWITH

Sinji Inukai, Hatano; Mitsuzi Agata, Kanagawa; Kiyoshi Akiba, Hatano; Takeo Ohmura, Hatano; Yoshihiro Horio, Hatano; Yasuhiro Ootake, Minamiashigara; Shohei Sawaki, Kanagawa, and Masayoshi Goto, Isehara, all of Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

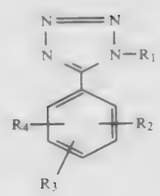
Filed Mar. 22, 1990, Ser. No. 497,500

Claims priority, application Japan, Mar. 24, 1989, 1-70520

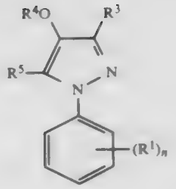
Int. Cl.[5] **C07D** *257/04;* **A61K** *31/41*

U.S. Cl. 514—381 **10 Claims**

1. A compound having the following formula (I):



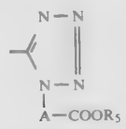
(I)



wherein

R_1 is —A—$COOR_5$, and where A is an alkylene group having 1 to 4 carbon atoms and R_5 is a hydrogen atom or a lower alkyl group; and

R_2, R_3 and R_4 are selected from the group consisting of a hydrogen atom, a hydroxy group, a halogen atom, a carboxyl group, an alkyl group, an amide group, an amino group, an alkoxy group, an aryl group, an aryloxy group, an alkylthio group, an alkylsulfinyl group, an alkylsulfonyl group, a nitro group, —$NHCOCOOR_6$ where R_6 is a hydrogen atom or a lower alkyl group, a mono- or dialkylaminosulfonyl group, and a residual group having the following formula (II):



(II)

and where A and R_5 are the same as above;

with the proviso that the compound of formula (I) does not include the following combination of substituents:

wherein A is an ethylidene group or isopropylidene group, R_5 is a hydrogen atom or an ethyl group, and R_2, R_3 and R_4 are hydrogen atoms;

wherein A is a methylene group, R_5 is a hydrogen atom, a methyl group or an ethyl group, and R_2, R_3 and R_4 are hydrogen atoms;

wherein A is a trimethylene group or a tetramethylene group, R_5 is a hydrogen atom or a methyl group, and R_2, R_3 and R_4 are hydrogen atoms; and

wherein A is a methylene group, R_5 is a hydrogen atom or an ethyl group, R_2 and R_3 are hydrogen atoms, and R_4 is a 3- or 4-bromine atom, a 3- or 4-chlorine atom, a 3- or 4-nitro group, a 3- or 4-methyl group or a 3-trifluoromethyl group.

wherein R^1 is a halogen atom, a straight- or branched-chain alkyl or alkoxy radical containing from 1 to 4 carbon atoms, a substituted such alkyl or alkoxy radical bearing at least one halogen, a straight- or branched-chain alkylthio or alkylsulphinyl group containing from 1 to 4 carbon atoms which is substituted by at least one halogen, a nitro or cyano group or a straight- or branched-chain alkylsulphonyl group containing from 1 to 4 carbon atoms, or a substituted such alkylsulphonyl group bearing at least one halogen, and n is an integer from 1 to 5 inclusive, R^3 is hydrogen, a halogen, a cyano or nitro group, a straight- or branched-chain alkyl group R^2 containing from 1 to 4 carbon atoms, or a substituted such alkyl group bearing at least one halogen, R^4 is a straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to 6 carbon atoms which is substituted by at least one halogen selected from flourine, chlorine, bromine and iodine, R^5 is hydrogen or an amino group NR^6R^7 wherein R^6 and R^7, which may be the same or different, are each hydrogen or a straight- or branched-chain alkyl group containing from 1 to 6 carbon atoms, the formyl group, a straight- or branched-chain alkanoyl group containing from 2 to 7 carbon atoms, or a substituted such alkanoyl group bearing at least one halogen, a straight- or branched-chain alkoxycarbonyl group containing from 2 to 7 carbon atoms, a substituted such alkoxycarbonyl group bearing at least one halogen, or R^6 and R^7 together form a 5 or 6 membered cyclic imide with the nitrogen atom to which they are attached, or R^5 represents a straight- or branched-chain alkoxymethyleneamino group containing from 2 to 5 carbon atoms, or a substituted such alkoxymethyleneamino bearing on the methylene carbon a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, or R^5 is halogen or a group Het selected from pyrrol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl or 1,2,4-triazol-4-yl, piperidino, pyrrolidino, morpholino and N-alkylpiperazino or a substituted such Het group bearing at least one C_1–C_4 alkyl or phenyl or when R^5 is a piperidino, pyrrolidino, morpholino or N-alkylpiperazino group, an acceptable acid addition salt thereof.

9. A method for controlling arthropod, plant nematode, helminth or protozoal pests at a locus, comprising treating the locus with an effective amount of an N-phenylpyrazol-4-yl ether derivative according to claim 1, or with an acceptable acid addition salt thereof.

5,055,482

N-PHENYLPYRAZOL-4-YL ETHER DERIVATIVES

Leslie R. Hatton, Chelmsford; David W. Hawkins, Upminster; Richard G. Pennicard, Chelmsford, and David A. Roberts, London, all of England, assignors to May & Baker Ltd., Dagenham, England

Filed Jul. 6, 1989, Ser. No. 375,959

Claims priority, application United Kingdom, Jul. 6, 1988, 8816096

Int. Cl.[5] **A61K** *31/415;* **A01N** *43/56;* **C07D** *401/04, 403/04*

U.S. Cl. 514—407 **9 Claims**

1. An N-phenylpyrazol-4-yl ether derivative having the formula:

5,055,483

NOVEL AMINO ACID GLYCERIDES, LEARNING MEDICAMENTS CONTAINING THEM AND THEIR USE

Wolfgang Rüger, Kelkheim; Hansjörg Urbach, Kronberg; Reinhard Becker, Wiesbaden, and Franz Hock, Dieburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

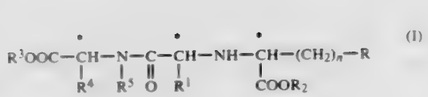
Filed Jan. 19, 1989, Ser. No. 299,186

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1988, 3801587

Int. Cl.[5] **C07D** *209/02, 207/12;* **A61K** *31/40*

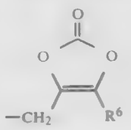
U.S. Cl. 514—412 **10 Claims**

1. A compound of the formula I

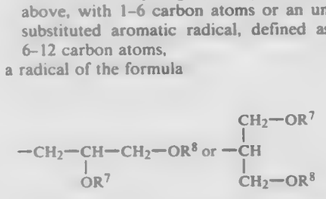


(I)

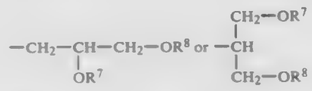
in which
n = 1 or 2,
R = hydrogen,
an unsubstituted or substituted aliphatic radical with 1–21 carbon atoms, wherein said aliphatic radical is an aliphatic acyclic radical having an open, straight or branched, saturated or unsaturated carbon chain, which, when substituted, is monosubstituted by amino, alkanoylamino, alkoxycarbonylamino, aroyloxycarbonylamino, arylalkoxycarbonylamino, arylakylamino, alkylamino, dialkylamino, alkylthio, aryloxy, arylthio, carboxy, carbamoyl, alkoxycarbonyl, alkanoyloxy, alkoxycarbonyloxy, aroyloxy, aryloxcarbonyloxy, aroylamino, guanidino, or aroyl, any of which may be further substituted in the aryl part as defined below for said aromatic radicals, or, wherein said radical is carboxy or carbamoyl,
an unsubstituted or substituted alicyclic radical with 3–20 carbon atoms, wherein said alicyclic radical is an isocyclic non-aromatic radical which may carry one or more open-chain aliphatic side-chains, which radical may contain one or more fused, spiro-linked or isolated rings, and which radical, when substituted, is mono-, di-, or trisubstituted by (C_1–C_8)-alkyl, (C_1–C_4)-alkoxy, hydroxyl, halogen, nitro, amino, aminomethyl, (C_1–C_4)-alkylamino, di-(C_1–C_4)-alkylamino, (C_1–C_4)-alkanoylamino, methylenedioxy, carboxyl, cyano and-/or sulfamoyl,
an unsubstituted or substituted aromatic radical with 6–12 c carbon atoms, which, when substituted, is mono-, di- or trisubstituted by (C_1–C_8)-alkyl, (C_1–C_4)-alkoxy hydroxy, halogen, nitro, amino, aminomethyl, (C_1–C_4)-alkylamino, di-(C_1–C_4)-alkylamino, (C_1–C_4)-alkanoylamino, methylenedioxy, carboxyl, cyano and-/or sulfamoyl,
an unsubstituted or substituted araliphatic radical with 7–32 carbon atoms, wherein said araliphatic radical is an aromatic-aliphatic radical in which said aromatic and aliphatic parts are unsubstituted or substituted as defined above, or wherein said radical is phthalidyl, indanyl or fluorenyl, any of which may be unsubstituted or substituted as defined above for said aromatic radicals,
an unsubstituted or substituted alicyclic-aliphatic radical with 7–14 carbon atoms, wherein said aliphatic and alicyclic parts are unsubstituted or substituted as defined above,
an unsubstituted or substituted heteroaromatic or heteroaromatic-(C_1–C_8)-aliphatic radial, wherein said aliphatic radical, when present, is unsubstituted or substituted as defined above and said heteroaromatic radical is a ring system which is thienyl, benzo[b]thienyl, furyl, benzofuryl, pyrrolyl, isoindolyl or indolyl, which ring system may be unhydrogenated, partly, or completely hydrogenated, and which, when substituted on the heteroaromatic part, is substituted as above for said aromatic radicals, or
a racial OR^a or SR^a, in which R^a denotes an unsubstituted or substituted aliphatic radical, defined as above, with 1–4 carbon atoms, or an unsubstituted or substituted aromatic radical, defined as above, with 6–12 carbon atoms or an unsubstituted or substituted heteroaromatic radical, defined as above, or an arylalkyl radical which may be substituted in the aryl part as defined above for said aromatic radicals;
R^1 denotes hydrogen,
an unsubstituted or substituted aliphatic radical, defined as above, with 1–21 carbon atoms,
an unsubstituted or substituted alicyclic radical, defined as above, with 3–20 carbon atoms,
an unsubstituted or substituted alicyclic-aliphatic radical, defined as above, with 4–20 carbon atoms,
an unsubstituted or substituted aromatic radical, defined as above, with 6–12 carbon atoms,
an unsubstituted or substituted araliphatic radical, defined as above, with 7–32 carbon atoms,
an unsubstituted or substituted heteroaromatic or heteroaromatic-(C_1–C_8)-aliphatic radical, defined as above, or,
if not already included in the above definitions, the side chain, which may be protected or unprotected, of a naturally occurring α-amino acid;
R^2 and R^3 are identical or different and denote hydrogen,
an unsubstituted or substituted aliphatic radical, defined as above, with 1–21 carbon atoms,
an unsubstituted or substituted alicyclic radical, defined as above, with 3–20 carbon atoms,
an unsubstituted or substituted aromatic radical, defined as above, with 6–12 carbon atoms,
an unsubstituted or substituted araliphatic radical, defined as above, with 7–32 carbon atoms,
a radical of the formula



in which R^6 is hydrogen, an aliphatic radical, defined as above, with 1–6 carbon atoms or an unsubstituted or substituted aromatic radical, defined as above, with 6–12 carbon atoms,
a radical of the formula



in which R^7 and R^8 are identical or different and independently of one another denote hydrogen, an unsubstituted or substituted, unbranched or branched, saturated or unsaturated, alkyl radical with 1–23 carbon atoms, which, when substituted, is substituted as defined above for said aliphatic radicals, or an unbranched or branched, saturated or unsaturated, acyl radical with 1–23 carbon atoms, where said acyl radical may be unsubstituted or substituted by keto, hydroxyl or, if not already included in the above definitions, those substituents which maybe present on natural triglycerides,
in which at least one of the radicals R^2 or R^3 denotes a radical of the formula



and
R^4 and R^5, together with the atoms carrying them, form a ring system which is an octahydroindole; octahydrocyclopenta[b]pyrrole; decahydrocyclohepta[b]pyrrole; hexahydrocyclopropa[b]pyrrole; octahydroisoindole; octahydrocyclopenta[c]pyrrole; 2,3,3a,4,5,7a-hexahydroindole; 1,2,3,3a,4,6a-hexahyrocyclopenta[b]pyrrole; pyrrolidine or indoline ring system; wherein said ring system is unsubstituted or monosubstituted by (C_6–C_{12})-aryl, (C_6–C_{12})-hydroxyaryl, (C_6–C_{12})-arylmercapto or (C_3–C_7)-cycloalkyl, and which may be, in the aryl portion of indoline, mono- or disubstituted by (C_1–C_6)-alkoxy;
or a physiologically tolerated salt thereof with an acid or base.

8. A method of treating at least one cognitive dysfunction, comprising the step of administering to a mammal in recognized need of and for the purpose of said treatment an amount of a compound of formula I or a physiologically acceptable salt thereof as claimed in claim **1**, effective for said treatment.

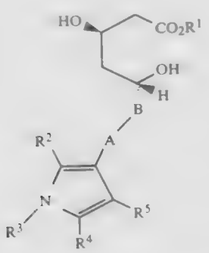
5,055,484

7(1H-PYRROL-3-YL)-SUBSTITUTED 3,5-DIHYDROXYHEPT-6-ENOIC ACIDS, 7-(1H-PYRROL-3-YL)-SUBSTITUTED 3,5-DIHYROXYHEPT-ANOIC ACIDS, THEIR CORRESPONDING DELTA-LACTONES AND SALTS, THEIR USE AS MEDICAMENTS AND PHARMACEUTICAL PRODUCTS AND INTERMEDIATES

Heiner Jendralla; Gerhard Beck, both of Frankfurt am Main; Ekkehard Baader, Königstein, and Bela Kerekjarto, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

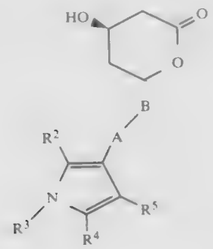
Filed Jul. 8, 1988, Ser. No. 216,423
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1987, 3722806
Int. Cl.[5] **A01N** *43/36;* **A61K** *31/40;* **C07D** *405/06, 207/30*
U.S. Cl. 514—422 **4 Claims**

1. 7-[1H-pyrrol-3-yl]-substituted 3,5-dihydroxyheptanoic acid derivatives of the formula I



I

and corresponding δ-lactones of the formula II



II

in which
A—B denotes —CH_2—CH_2—,
R^1 denotes a pharmacologically tolerated alkali or alkaline earth metal cation,
R^2 denotes isopropyl,
R^3 denotes phenyl or isopropyl,
R^4 denotes H, and
R^5 denotes p-fluorophenyl.

4. A method for treating hypercholesterolemia comprising administering a compound of claim **1** in a pharmaceutically effective amount.

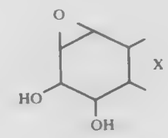
5,055,485

INACTIVATION OF VIRUSES IN CELL- AND PROTEIN-CONTAINING COMPOSITIONS USING ARYL DIOL EPOXIDES

Nicholas E. Geacintov; Jay E. Valinsky, both of New York; Bolanle Williams, Forest Hills, and Bernard Horowitz, New Rochelle, all of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Filed Dec. 2, 1988, Ser. No. 279,179
Int. Cl.[5] **A61K** *31/335*
U.S. Cl. 514—449 **15 Claims**

1. A process of inactivating infectious viruses in a cell-containing or a protein-containing composition containing such viruses, comprising contacting such composition with an effective amount of at least one aryl diol epoxide of the formula



in which
X is an aromatic ring system having from 3 to 6 fused rings, for a sufficient period of time substantially to inactivate said viruses without incurring substantial disruption or inactivation of cells or without incurring substantial protein denaturation.

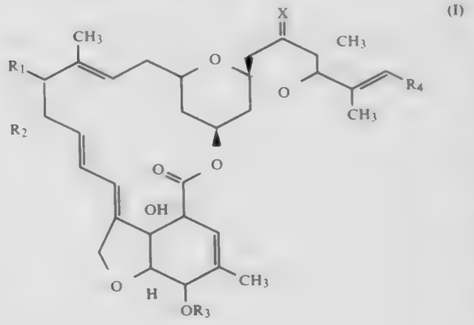
5,055,486

13-ALKYL-23-IMINO DERIVATIVE OF LL-F28249 COMPOUNDS AND THEIR USE AS ENDO- AND ECTOPARASITICIDAL, INSECTICIDAL, ACARICIDAL AND NEMATOCIDAL AGENTS

Timothy C. Barden, Cranbury, N.J., and Brian L. Buckwalter, Yardley, Pa., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 22, 1989, Ser. No. 455,686
Int. Cl.[5] **A61K** *31/335;* **C07D** *313/06*
U.S. Cl. 514—450 **9 Claims**

1. A compound having the structural formula:



(I)

wherein
R_1 is C_1–C_4 alkyl;
R_2 is hydrogen, methyl or ethyl;
R_3 is hydrogen, C_1–C_4 alkyl or



R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, phenoxy, C_1–C_4 alkoxymethyl, phenoxymethyl, or phenyl optionally substituted with 1 nitro, 1–3 halogens, 1–3 C_1–C_4 alkyl, or 1–3 C_1–C_4 alkoxy;
R_4 is methyl, ethyl or isopropyl;
X is oxygen, NOR_6 or N-NHR_7;
R_6 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxymethyl, C_1–C_4 alkanoyl, benzyl or phenyl; and
R_7 is C_1–C_4 acyl, C_1–C_4 alkyl or benzoyl.

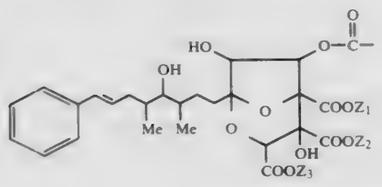
5,055,487

NOVEL ANTI-FUNGAL COMPOUNDS

Kenneth F. Bartizal, Somerset; James A. Milligan, Robbinsville; Walter Rozdilsky, Cliffwood Beach, and Janet C. Onishi, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 496,743, Mar. 21, 1990, abandoned. This application Dec. 11, 1990, Ser. No. 625,572
Int. Cl.[5] A01N *43/32;* **A61K** *31/335*
U.S. Cl. 514—452 **6 Claims**

1. A method for inhibiting fungal growth comprising applying to the area where growth is to be controlled an antifungally effective amount of a compound of formula I:.



(I)

$-(CH_2)_4-CH=CH-(CH_2)_4-CH=CH-CH_3$

wherein
Z_1 Z_2 and Z_3 are each independently selected from
a) H;
b) C_{1-5} alkyl;
c) C_{1-5} alkyl substituted with
a member of the group consisting of
i) phenyl,
ii) phenyl substituted with methyl, methoxy, halogen (Cl, Br, I, F) or hydroxy; or
a pharmaceutically acceptable salt of a compound of formula (I) in which at least one of Z_1, Z_2 and Z_3 is hydrogen.

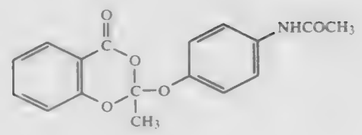
5,055,488

3-METHYL-3-(4-ACETYLAMINOPHENOXY)-2,4-DIOXABENZOCYCLOHEXANONE-1 AND A PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Giuseppe Quadro, Milan, Italy, assignor to Medea Research S.r.l., Milan, Italy

Continuation of Ser. No. 822,928, Jan. 27, 1986, abandoned, which is a continuation of Ser. No. 658,453, Oct. 9, 1984, abandoned, which is a continuation of Ser. No. 440,006, Nov. 8, 1982, abandoned. This application Jul. 31, 1987, Ser. No. 81,564
Claims priority, application Italy, Nov. 24, 1981, 25244/81[U]; Oct. 15, 1982, 23733/82[U]
Int. Cl.[5] A61K *31/365;* **C07D** *319/08*
U.S. Cl. 514—452 **3 Claims**

1. 3-methyl-3-(4-acetylaminophenoxy)-2,4-dioxa-benzocyclohexanone-1 having formula I



(I)

5,055,489

METHOD FOR THE PREVENTION AND CONTROL OF HYPOXIC DAMAGE RESULTING FROM CEREBRAL ISCHEMIC EVENTS

Robert D. Sofia, Willingboro, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed May 4, 1990, Ser. No. 518,892
Int. Cl.[5] A61K *31/27, 31/135, 31/13*
U.S. Cl. 514—483 **1 Claim**

1. A method for the prevention and treatment of hypoxic damage following a stroke or other cerebral ischemic events in human or other warm-blooded animal patient which comprises administering to said patient in need of such treatment 2-phenyl-1,3-propanediol dicarbamate.

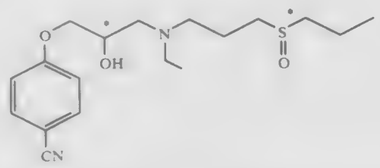
5,055,490

STEREOISOMERS OF BENZONITRILE DERIVATIVES, USEFUL AS CARDIAC ARRHYTHMIAC AGENTS

Olle K. S. Almgren, Göteborg; Kjell H. Andersson, Fjärås; Göran B. D. Duker, Frölunda; Bo R. Lamm, Göteborg, and Gert C. Strandlund, Mölndal, all of Sweden, assignors to Aktiebolaget Hassle, Mölndal, Sweden

Filed Jun. 18, 1990, Ser. No. 539,852
Claims priority, application Sweden, Jun. 20, 1989, 8902237
Int. Cl.[5] A61K *31/10, 31/045;* **C07C** *255/50*
U.S. Cl. 514—524 **10 Claims**

1. A compound having the formula I



(I)

in the form of one of the stereoisomers:
4-[3-[ethyl[3-((R*)-propylsulfinyl)propyl]amino]-2(R)-hydroxypropoxy]-benzonitrile,
4-[3-[ethyl[3-((S*)-propylsulfinyl)propyl]amino]-2(R)-hydroxypropoxy]-benzonitrile,
4-[3-[ethyl[3-((R*)-propylsulfinyl)propyl]amino]-2(S)-hydroxypropoxy]-benzonitrile, and
4-[3-[ethyl[3-((S*)-propylsulfinyl(propyl]amino]-2(S)-hydroxypropoxy]-benzonitrile, or a pharmaceutically acceptable salt thereof.

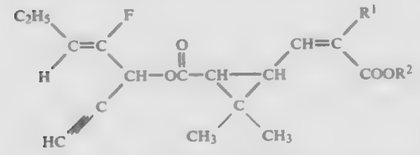
5,055,491

CARBOXYLIC ACID ESTERS, METHODS FOR PRODUCING THEM AND INSECTICIDES AND/OR ACARICIDES CONTAINING THEM AS AN ACTIVE INGREDIENT

Toshihiko Yano, Ashiya; Takao Ishiwatari, Minoo; Hiroko Sekihachi, Toyonaka; Noritada Matsuo, Itami; Tohei Takagaki, Takarazuka, and Akiko Kakimizu, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 2, 1990, Ser. No. 503,664
Claims priority, application Japan, Apr. 10, 1989, 1-91555
Int. Cl.[5] A01N *53/00*
U.S. Cl. 514—531 **14 Claims**

1. A compound represented by the formula,



wherein R^1 represents hydrogen or fluorine; and R^2 represents methyl, ethyl, n-propyl, isopropyl, tert-butyl or cyclopropyl.

5,055,492

METHOD FOR AFFECTING REPRODUCTIVE CYCLE OF INSECTS

Harold R. Massie, New Hartford, and Trevor R. Williams, Petersboro, both of N.Y., assignors to Masonic Medical Research Laboratory, Utica, N.Y.

Continuation-in-part of Ser. No. 744,683, Jun. 14, 1985, abandoned. This application Oct. 22, 1986, Ser. No. 921,390
Int. Cl.[5] A01N *37/00*
U.S. Cl. 514—553 **16 Claims**

1. A method for interrupting the reproductive cycle of insects comprising:
a. forming an aqueous solution of an aminosulfonic acid having the formula:

$$NX_2(CX_2)_mSO_3Z,$$

where each X is selected from the group consisting of H, OH, C_nH_{2n+1}, C_nH_{2n}, Cl, Br, and I; Z is selected from the group consisting of H, K, and Na, and n and m are integral numbers of from 2 to 10; the concentration of said aminosulfonic acid in said aqueous solution being at least 0.04M; and
b. applying said solution to a plant subject to insect attack.

5,055,493

ANTIMICROBIAL COMPOSITION AND METHOD OF USE IN OIL WELL FLOODING

Jonathan Leder, Flemington, N.J., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Sep. 30, 1988, Ser. No. 251,361
Int. Cl.[5] A01N *33/24*
U.S. Cl. 514—727 **9 Claims**

1. A method of killing or inhibiting the growth of bacteria in a liquid employed in an oil well flooding operation which comprises contacting said liquid with a bactericidally effective amount of a composition comprised of at least one biocide selected from the group consisting of:
(a) 2,2-dibromo-2-nitroethanol,
(b) 2,2-dibromo-2-nitroethanol and at least one other halonitroalkanol biocide, and
(c) 2,2-dibromo-2-nitroethanol and at least one other biocide which is a non-halonitroalkanol biocide,
with the proviso that when biocide (b) is present, 2,2-dibromo-2-nitroethanol comprises at least 10 weight percent of the total active biocide and the flooding said oil well with said liquid.

2. A method of inhibiting the growth of sulfate-reducing bacterial in oil and gas collection systems which comprises contacting said bacterial with an bactericidally effective amount of a composition comprised of at least one biocide selected from the group consisting of:
(a) 2,2-dibromo-2-nitroethanol,
(b) 2,2-dibromo-2-nitroethanol and at least one other halonitroalkanol biocide, and
(c) 2,2-dibromo-2-nitroethanol and at least one other biocide which is a non-halonitroalkanol biocide,
with the proviso that when biocide (b) is present, 2,2-dibromo-2-nitroethanol comprises at least 10 weight percent of the total active biocide.

5,055,494

METHOD OF IMPROVING THE RESISTANCE OF POLYPHENYLENE ETHER ARTICLES TO SUNLIGHT, AND ARTICLES IMPROVED BY THIS METHOD

Roelof van der Meer, Halsteren, Netherlands, assignor to General Electric Co., Selkirk, N.Y.

Continuation of Ser. No. 250,898, Sep. 29, 1988, abandoned. This application Jan. 24, 1991, Ser. No. 644,757
Claims priority, application Netherlands, Oct. 1, 1987, 8702343
Int. Cl.[5] C08J *9/26*
U.S. Cl. 521—61 **8 Claims**

1. A method of improving the resistance to sunlight of articles formed from polymer mixtures which comprise a polyphenylene ether and at least one second polymer selected from the group consisting of a polyamide, a polyolefin, a polyester, a polyetherimide, a polyacetal, a styrene-butadienestyrene block copolymer, and mixtures thereof;
wherein the surface of the formed article is treated with a solvent for a period of time sufficiently long to remove at least a portion of the polyphenylene ether, the solvent being chosen so that the second polymer does not dissolve therein.

5,055,495

STABILIZATION AND FOAMING OF POLYVINYLCHLORIDE RESINS

Michael R. Croce, Brooklyn, and Stuart D. Brilliant, Levittown, both of N.Y., assignors to Witco Corporation, New York, N.Y.

Division of Ser. No. 519,002, May 4, 1990, Pat. No. 4,977,193. This application Aug. 8, 1990, Ser. No. 564,792
Int. Cl.[5] C08V *9/10*
U.S. Cl. 521—85 **8 Claims**

1. A foamable polyvinylchloride material containing a chemical flowing agent and an effective foam activating amount of a mixture comprising (a) at least one organotin mercapto acid ester having the formula:

$$(CH_3)_2Sn[S—Z—(COOR)m]_2$$

wherein Z is an organic radical having from one to about thirty carbon atoms, and R is an organic group derived from an alcohol having from one to about four hydroxyl groups and from one to thirty carbon atoms, and m is an integer from one to four, and (b) a diorganotin oxide complex with an ester of an oxygen-containing acid, wherein the two organo groups are each attached to tin through carbon atoms and are hydrocarbon radicals having from one to about thirty carbon atoms, and said complex is derived from the reaction of the diorganotin oxide with an ester derived from an aliphatic or aromatic alcohol or phenol and an acid selected from the group consisting of hydrocarbyl carboxylic acids, sulfur-containing hydrocarbyl carboxylic acids, hydroxy-containing hydrocarbyl carboxylic acids, phosphoric acid, sulfuric acid, sulphurous acid, nitric acid, nitrous acid, boric acid, arsenic acid and silicic acid.

5,055,496

POLYMER PRODUCT CONTAINING ISOBUTYLENE OXIDE POLYOLS

Stephen D. Harper, West Chester, Pa., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Division of Ser. No. 310,187, Feb. 14, 1989, Pat. No. 5,003,111.
This application Dec. 27, 1990, Ser. No. 634,845
Int. Cl.[5] C08G *18/48, 59/62, 63/668, 63/672*
U.S. Cl. 521—174 **14 Claims**

1. A high molecular weight polymer product comprising the reaction product of

a) a chain extension agent selected from the group consisting of diisocyanates, polyisocyanates, dianhydrides, polyanhydrides, diepoxides, and polyepoxides; and

b) a polyester polyol comprised of

i) an internal block of isobutylene oxide and, optionally, a first less substituted alkylene oxide selected from the group consisting of ethylene oxide and mono-substituted alkylene oxides; and

ii) at least two end-caps of a second less substituted alkylene oxide selected from the group consisting of ethylene oxide and mono-substituted alkylene oxides, which may be the same as or different from the first less substituted alkylene oxide;

wherein the amount of isobutylene oxide in the polyether polyol as a whole is from about 10 to 90 mole percent and the total amount of first and second less substituted alkylene oxide is from about 10 to 90 mole percent, the polyether polyol has at least two hydroxyl end-groups, the hydroxyl end-groups are primary, secondary, or tertiary, and the ratio

$$\frac{\text{primary} + \text{secondary}}{\text{total hydroxyl}}$$

is greater than about 0.50.

5,055,497

CURABLE RESINOUS COMPOSITION

Koichi Okada, and Ikuo Omura, both of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Mar. 17, 1989, Ser. No. 324,620
Claims priority, application Japan, Mar. 17, 1988, 63-65288
Int. Cl.[5] C08K *5/49;* **A61K** *6/08*
U.S. Cl. 523—116 **19 Claims**

1. A curable resinous composition, which comprises:

(a) a metal element-containing inorganic filler which has been treated with an oxo acid of pentavalent phosphorus or a derivative thereof, which has the formula:



wherein A_1 is an organic group having at least one ethylenic double bond capable of radical polymerization and containing 5 to 60 carbon atoms; A_2 is a hydroxyl group, a mercapto group, a halogen atom, or an organic group containing 1 to 60 carbon atoms; at least one of A_1 and A_2 contains at least one hydrocarbyl group containing 4 to 60 carbon atoms, X_1 is an oxygen atom or a sulfur atom, and X_2 is a hydroxyl group, a mercapto group or a halogen atom; and

(b) at least one monomer capable of radical polymerization which is selected from the group consisting of methacrylates and acrylates.

5,055,498

PLASTIC CRAYON

Armand E. Brachman, Emmaus, Pa., assignor to Binney & Smith Inc., Easton, Pa.

Continuation-in-part of Ser. No. 341,164, Apr. 20, 1989. This application Jun. 19, 1990, Ser. No. 540,102
Int. Cl.[5] C09L *23/06;* **C08L** *23/06, 91/06, 5/09*
U.S. Cl. 523—164 **30 Claims**

1. A solid marking composition comprising:

(a) from about 15% up to about 50% by weight of a polyethylene resin component having a specific gravity in the range of from about 0.95 to about 0.96;

(b) from about 20% up too about 55% by weight of a compatible plasticizer; and,

(c) a pigment, said composition being substantially free of polyethylene resins having a specific gravity of less than about 0.95.

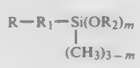
5,055,499

MOLDED POLYMER ARTICLE FILLED WITH INORGANIC MATERIAL AND PRODUCTION OF SAID ARTICLE

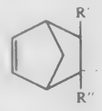
Zenichiro Endo; Shigeyoshi Hara, both of Iwakuni, Japan; Paul A. Silver, Wilmington, Del., and Hikoichiro Yamada, Iwakuni, Japan, assignors to Hercules Incorporated, Wilmington, Del.

Filed Jan. 5, 1990, Ser. No. 461,559
Claims priority, application Japan, Jan. 11, 1989, 1-2886
Int. Cl.[5] C08K *9/06*
U.S. Cl. 523—214 **18 Claims**

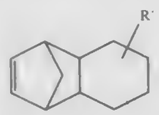
1. A method of preparing a reaction molded shaped article of a metathesis polymerized poly(cycloolefin) filled with an inorganic filler material which comprises polymerizing the poly(-cycloolefin) in contact with an inorganic filler material that has been surface-treated with a silane coupling agent having the general formula:



wherein R represents a) a norbornene structure unit expressed by the general formula:



wherein R′ and R″ are the same or different and represent hydrogen or lower alkyl groups and the dotted line represents an open valence or b) a condensed cyclopentene ring expressed by the general formula:



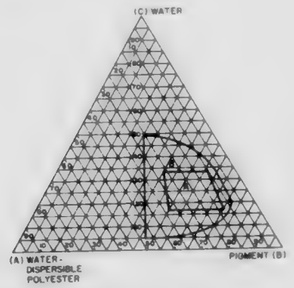
wherein R_1 is a bivalent organic group, a trivalent organic group that forms a cyclic structure together with the group R, or is nothing at all, in which case R is attached directly to the silicon atom, said organic radicals having six carbon atoms or less and being free from a group that inhibits metathesis polymerization; R_2 is a univalent alkyl or acyl group having six carbon atoms or less and m is an integer from 1 to 3.

5,055,500

PROCESS FOR TREATING PIGMENTS

Kimberly T. Peters, Johnson City, and Stephen H. W. Wu, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1989, Ser. No. 426,612
Int. Cl.[5] C08J *7/04*
U.S. Cl. 523—319 **18 Claims**



1. A process comprising the steps of:

(1) contacting together, in any order, the following:

(A) about 7 to about 48 weight % of a linear, water-dispersible polyester material having an inherent viscosity of at least about 0.1 deciliters/gram as measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of 0.5 gram of polyester in 100 ml of solvent, and said polyester material having incorporated therein at least one sulfomonomer,

(B) about 25 to about 73 weight % of a pigment material, and

(C) about 5 to about 50 weight % of water, under sufficient agitation to form a polymer/pigment/water blend, said contacting occurring at a temperature less than or equal to the Tg, as measured by DSC, of said polyester material, and wherein

said polymer/pigment/water blend comprises a continuous phase which comprises a major portion of said water and a dispersed phase which comprises a major portion of said pigment material and a major portion of said polyester material, and said polyester material of said polymer/pigment/water blend is in the form of particles having an average particle size of greater than 50 μm; followed by

(2) subjecting the polymer/pigment/water blend formed by step (1), at a temperature of 5° C. to 80° C., to an amount of shear effective to form a treated pigment blend which comprises a continuous phase which comprises a major portion of said water and a major portion of said polyester material and a dispersed phase which comprises a major portion of said pigment material, and wherein said polyester material of said treated blend has an average particle size of less than 1 μm; and wherein said treated pigment blend has a zero shear rate viscosity of greater than or equal to 500,000 poise.

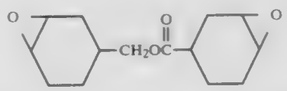
5,055,501

PROCESS FOR PRODUCING HIGHLY WATER-ABSORBING RESINS FROM DIEPOXIDES AND ACRYLIC POLYMERS

Tetsuo Moriya, Hirakata, and Susumu Kondo, Kyoto, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 3, 1989, Ser. No. 331,789
Claims priority, application Japan, Nov. 6, 1986, 61-264831
Int. Cl.[5] C08F *20/04, 2/16*
U.S. Cl. 523—409 **1 Claim**

1. A resin product having a high water absorbing capability prepared by the process comprising reacting 0.001–0.1 part by weight of an oil soluble polyfunctional alicyclic epoxy compound having the structural formula



at 50–200° C. with 100 parts by weight of a polymer obtained by reverse-phase suspension polymerization of a monomer composition consisting essentially of an ethylenically unsaturated monocarboxylic acid and/or an alkali metal salt thereof.

5,055,502

PREPARATION OF END-ALKOXYLATED DIORGANOPOLYSILOXANES

Jean-Marc Frances, Villeurbanne, and Pierre-Michel Peccoux, Lyons, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jul. 26, 1989, Ser. No. 385,143
Claims priority, application France, Jul. 29, 1988, 88 10538
Int. Cl.[5] C08K *3/08*
U.S. Cl. 524—780 **10 Claims**

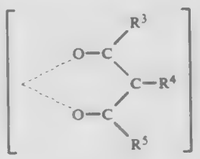
1. A process for the preparation of a linear diorganopolysiloxane having at least two alkoxy groups at each end of the polymer chain, comprising reacting at least one linear diorganopolysiloxane having a hydroxyl group at each end of the polymer chain with at least one polyalkoxysilane of the formula:

$$(R^1)_a(OR^6)_bSi(OR^2)_{4-a-b} \quad (3)$$

in the presence of a catalytically effective amount of a zinc complex of the formula:

$$ZnQ_2 \quad (4)$$

wherein said formulae (3) and (4), a is 0 or 1; b is 0, 1 or 2; R^1 is a substituted or unsubstituted, saturated or unsaturated C_1–C_{13} monovalent hydrocarbon radical; R^2 is an organohydrocarbon radical having up to 13 carbon atoms; R^6 is a radical R^2 or an organohydrocarbon radical having fewer carbon atoms than R^2; and Q is a monovalent anion of the formula


(5)

in which R^3 and R^5, which may be identical or different, are each a hydrogen atom, a C_1–C_{12} alkyl radical or halogenated such radical, a C_2–C_8 alkenyl radical or halogenated such radical, a C_4–C_8 cycloalkyl radical or halogenated such radical, a C_6–C_{10} mononuclear aryl radical or halogenated such radical, a C_7–C_{12} mononuclear arylalkly radical or halogenated such radical, a C_1–C_5 alkoxy radical or halogenated such radical, a C_1–C_6 acyloxy radical, a cyanoalkyl radical having a C_1–C_4 alkyl moiety, or a cyanoalkoxy radical having a C_1–5 alkoxy moiety; and R^4 is a hydrogen atom, a C_1–C_8 hydrocarbon radical or halogenated such radical, with the proviso that R^4 and R^5 may together form a C_5–C_{12} cyclic hydrocarbon radical or a substituted such radical bearing one or more chloro, nitro and/or cyano substituents.

5,055,503

WATER RESISTANT ALKALINE CORRUGATING ADHESIVE COMPOSITION AND PAPERBOARD PRODUCT PRODUCED THEREWITH

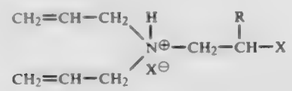
Craig H. Leake, Edison; John J. Tsai, Belle Mead, and Eric A. Meier, Hamilton Sq., all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 26, 1989, Ser. No. 371,889
Int. Cl.[5] C08J *3/10;* **C08L** *3/04, 51/02*
U.S. Cl. 524—30 **21 Claims**

1. A water-resistant alkaline curing corrugating adhesive composition comprising:

(A) from about 10 to 50% by weight, based on the total weight of the adhesive, of starch, this comprising ungelatinized starch or a mixture of ungelatinized and gelatinized starch;

(B) from about 0.5 to 20% by weight of a graft copolymer, solids basis, based on the total weight of adhesive, the graft copolymer containing a reactive aminoethyl halide group and comprising the graft of a polysaccharide substrate and a diallylaminoethyl halide monomer of the formula:



where X is a halogen and R is hydrogen or an alkyl group of 1 to 2 carbons;

(C) from about 40 to 90% by weight, based on the total weight of the adhesive, of water; and

(D) sufficient alkali to provide the adhesive with a pH of greater than 7.

5,055,504

SURFACE COATING COMPOSITIONS

Mahinder S. Mahil, Thorley, and John M. Cruden, Harlow, both of England, assignors to Harlow Chemical Company Limited, Harlow, England

Filed Jul. 11, 1989, Ser. No. 378,135
Int. Cl.[5] C08L *3/02, 1/00;* **B32B** *7/00*
U.S. Cl. 524—48 **14 Claims**

1. A composition comprising dextrin, a surfactant, a polymer, at least 50% by weight of the repeating units of which are derivable from an acrylate of at least one saturated aliphatic alcohol having from two to twelve carbon atoms, and, optionally, a tackifier, the dextrin level being at most 7%, based on the total weight of dextrin, surfactant, and acrylate polymer if a tackifier is present, the maximum dextrin level being 3.5% in the absence of a tackifier.

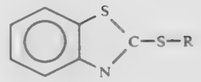
5,055,505

HEAT STABILIZED ABS-POLYCARBONATE POLYMER BLEND COMPOSITIONS

Hsin-Ching Kao; Mao-Mong Lee, both of Hsin-Chu; Chih-Cheng Chiang, Tau-Yuan; Jen-Lien Lin, Hsin-Chu, and Ting-Kai Wu, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 25, 1990, Ser. No. 514,221
Int. Cl.[5] C08K *5/46, 5/48, 3/34*
U.S. Cl. 524—83 **8 Claims**

1. A polycarbonate polymer blend composition comprising 95–5 weight percent polycarbonate resin, 5–95 weight percent ABS resin, and 0.01–5 phr of heat stabilizer, based on the total weight of polycarbonate and ABS resin; wherein the heat stabilizer is selected from the group consisting of a benzothiazole compound of formula



wherein R is selected from hydrogen, alkyl, aryl and benzothiazolyl, wherein the aryl group is not phenol or substituted phenol; a benzimidazole compound; a hydrazine compound; of formula,



wherein R^1 and R^2 are independently, selected from alkyl, and cation exchange materials.

5,055,506

POLYMER SYSTEMS AND METHODS FOR THEIR PRODUCTION

Gaylen M. Knutson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 30, 1988, Ser. No. 292,448
Int. Cl.[5] C08K *5/34*
U.S. Cl. 524—100 **76 Claims**

1. An emulsion comprising:

(a) an alkenyl aromatic/alkadiene copolymer having at least one anionic pendant group;

(b) a tackifier resin;

(c) an anionic surfactant capable of emulsifying the alkenyl aromatic/alkadiene or the tackifier or both; and

(d) a polyamine having at least two amine groups,

whereupon driving, the emulsion yields a pressure-sensitive adhesive.

5,055,507

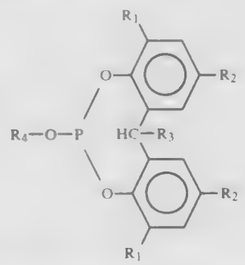
SYNTHETIC RESINS AND STABILIZER COMPOSITIONS FOR SYNTHETIC RESIN COMPOSITIONS CONTAINING THE SAME

Tohru Haruna, Okegawa, and Kazunori Nishikawa, Matsudo, both of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Filed Mar. 1, 1990, Ser. No. 487,699
Claims priority, application Japan, Mar. 7, 1989, 1-54130
Int. Cl.[5] C08K *5/52, 5/13*
U.S. Cl. 524—117 **26 Claims**

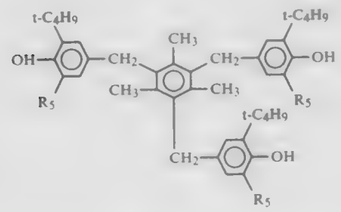
1. A stabilizer composition for enhancing the resistance of synthetic resins to deterioration when exposed to elevated temperatures and/or ultraviolet light, comprising a bisphenol phosphite having the formula

(I)



wherein R_1 is tertiary-butyl or tertiary-amyl, R_2 is alkyl having from one to about nine carbon atoms, R_3 is hydrogen or alkyl having from one to about four carbon atoms, and R_4 is alkyl having from one to about thirty carbon atoms; and a phenol having the formula

(II)



wherein R_5 is alkyl having from one to about four carbon atoms.

5,055,508

POLYCARBONATE RESIN COMPOSITION

Kazunari Ohtsubo, Ichihara, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1989, Ser. No. 321,956
Claims priority, application Japan, Mar. 31, 1988, 63-75988; Mar. 31, 1988, 63-75989
Int. Cl.[5] C08K *5/51, 5/10, 5/05, 69/00*
U.S. Cl. 524—128 **24 Claims**

1. A polycarbonate resin composition comprising:

100 parts by weight of a polycarbonate resin;

(A) 0.05 to 1 part by weight of an ester of saturated fatty acid having 10 to 30 carbon atoms and a monohydric or polyhydric alcohol having 2 to 30 carbon atoms;

(B) 0.05 to 1 part by weight of paraffin wax; and

(C) 0 to 0.001 part by weight as phosphorus atom of at least one phosphorus compound selected from the group consisting of phosphorous acid and phosphorous acid esters, wherein the total amount of the components (A) and (B) is 0.1 to 1 part by weight.

12. A polycarbonate resin composition comprising:

100 parts by weight of a polycarbonate resin;

(D) 0.05 to 1 part by weight of β-long side chain alcohol/behenic acid ester or long chain aliphatic alcohol;

(E) 0 to 0.001 part by weight as phosphorus atom of at least one phosphorus compound selected from the group consisting of phosphorous acid and phosphorous acid esters; and

(F) 0.05 to 1 part by weight of paraffin wax per 100 parts by weight of the polycarbonate resin.

5,055,509

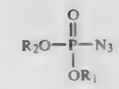
PROCESS FOR ENHANCING THE COMPATIBILITY OF POLYAMIDE AND POLYESTER IN BLENDS

H. R. Bhattacharjee, Randolph; Y. P. Khanna, Cedar Knolls; R. Kumar, Budd Lake, and J. J. Belles, Jr., Morristown, all of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Apr. 17, 1989, Ser. No. 339,572
Int. Cl.[5] C08K *5/51;* **C08L** *67/02*
U.S. Cl. 524—136 **23 Claims**

1. A process for improving the properties of a polyester/polyamide blend which comprises the steps of:

(a) forming an intimate mixture of at least one polyester homopolymer at least one polyamide and an amount of one or more aryl phosphoryl azide compounds sufficient to enhance the compatibility of said polyester and said polyamide in a polyester polyamide blend, said compounds of the formula:



wherein:

R_1 is selected form the group consisting of phenyl and phenyl substituted with one or more substitutents which are inert under process conditions; and

R_2 is selected from the group consisting of haloalkyl, alkyl, phenyl, phenyl substituted with one or more substituents which are inert under process conditions, a metal or non-metal cation and hydrogen; and

(b) heating said mixture for a period of time and at a temperature sufficient to decrease the melting points of said polyester and polyamide in said mixture.

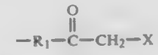
5,055,510

EXTENDED POLYMER COMPOSITIONS AND TEXTILE MATERIALS MANUFACTURED THEREWITH

Charles L. Kissel, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 31, 1988, Ser. No. 238,778
Int. Cl.[5] C08K *5/21*
U.S. Cl. 524—211 **13 Claims**

1. A composition comprising (I) a polymer having pendant functional groups attached to the polymer backbone having the formula:



and (II) at least about 10 weight percent urea based on the combined weight of polymer and urea wherein R_1 is a divalent organic radical at least three atoms in length, X is —CO—R_4, and R_4 is hydrogen or a monovalent organic radical, wherein, in addition to said pendant functional groups, said polymer consists essentially of (A) at least about 10 weight percent polymerized ester monomers selected from the group consisting of acrylic and methacrylic acid esters of hydroxy-substituted and unsubstituted alcohols, in which the alcohol moiety has up to about 10 carbon atoms, and combinations thereof, in the presence or absence of (B) polymerized monomers selected from the group consisting of vinyl esters of carboxylic acids, the acid moiety of which contains from 1 to about 20 carbon atoms, ethylene, propylene, styrene, vinyl toluene, vinyl halides, olefinically unsaturated nitriles, olefinically unsaturated carboxylic acids having up to about 10 carbon atoms, and combinations thereof.

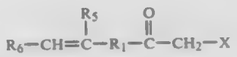
5,055,511

MASTIC AND CAULKING COMPOSITIONS

David M. Ingle, Temple City, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 903,779, Sep. 4, 1986, Pat. No. 4,855,349. This application Apr. 29, 1988, Ser. No. 187,859
Int. Cl.[5] C08K *3/10*
U.S. Cl. 524—406 **40 Claims**

1. A coating mastic or caulking composition, which comprises (a) a polymer having a T_g of about −50° C. to about −10° C. and comprising at least one polymerized functional monomer of the formula:



in which R_1 is a divalent organic radical of at least 3 atoms in length, R_5 and R_6 are independently selected from hydrogen,

hydroxy, halo, thio, amino or monovalent organic radicals, and X is —CO—R_4 or —CN wherein R_4 is hydrogen or a monovalent organic radical, (b) a zinc-containing pigment; and (c) a polyphosphate anion, wherein the polyphosphate anion is present in a concentration corresponding to a PO_3: Zn ratio of at least 0.05:1 gram-equivalent of PO_3 per gram-atom of zinc.

5,055,512

ULTRAVIOLET LIGHT STABLE POLYMERIC COMPOSITIONS

James W. Kauffman, and Bruce R. Palmer, both of Edmond, Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Division of Ser. No. 347,191, May 4, 1989, Pat. No. 4,987,164. This application Jun. 1, 1990, Ser. No. 531,659

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] C08K *3/22*

U.S. Cl. 524—413 **17 Claims**

1. Ultraviolet light stable polymeric resin compositions comprising:

at least one ultraviolet light degradable polymeric resin component; and

an effective ultraviolet light absorbing amount of at least one particulate metal titanate component corresponding to the general formula

$$M_aM'_bTi_cO_d$$

in which M and M' represent different metal selected from Groups Ia, Ib, IIa, IIb, IIIa, IIIb, IVa, Va, VIIb and VIII of the Periodic Table of the Elements, in which a is a number ranging from about 0.1 to about 15, b is a number ranging from 0 to about 15, c is a number ranging from about 1 to about 25 and d is a number ranging from about 2.1 to about 55, in which M, M' and Ti are present in said titanate in their most stable oxidation state and O is in stoichiometric balance with M, M' and Ti such that the metal titanate possesses a zero charge and in which said particulate metal titanate ranges in size from about 0.1 to about 1.0 micron in diameter and absorbs ultraviolet light of wavelengths of about 400 nm and below.

5,055,513

POLYMER GRANULES AND COMPOSITIONS CONTAINING THEM

Jonathan Banford, Hartburn, and Paul F. Dietz, Hartlepool, both of England, assignors to Tioxide Group PLC, London, England

Filed Feb. 16, 1990, Ser. No. 480,930

Claims priority, application United Kingdom, Mar. 4, 1989, 8905021

Int. Cl.[5] C08K *3/18, 3/22*

U.S. Cl. 524—433 **16 Claims**

1. A composition suitable for use as a camouflage material comprises vesiculated granules of a polymer material said composition being substantially free of titanium dioxide and containing a light reflecting agent being an oxide, hydroxide or insoluble salt of magnesium or an insoluble mixed salt of calcium and magnesium and said light reflecting agent being present in the composition in an amount of at least 10 percent by weight of the polymeric material.

5,055,514

PAINT RESIN COMPOSITION

Hajime Kumada, and Akio Shoji, both of Kishiwada, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 492,416, Mar. 6, 1990, abandoned, which is a continuation of Ser. No. 243,127, Sep. 7, 1988, abandoned, which is a continuation of Ser. No. 26,894, Mar. 17, 1987, abandoned. This application Sep. 10, 1990, Ser. No. 581,129

Claims priority, application Japan, Mar. 17, 1986, 61-57108

Int. Cl.[5] C08K *5/01*

U.S. Cl. 524—484 **4 Claims**

1. A paint resin composition which does not appreciably attack an old coated film or a substrate to be coated, said composition consisting essentially of

(A) a copolymer having a glass transition point of from −30° C. to +50° C., a number average molecular weight of from 4,000 to 20,000 and a weight average molecular weight/number average molecular weight ratio of from 1.8 to 10 and obtained by copolymerizing (a-1) to 50% by weight of a vinyl monomer having a hydroxyl group, (a-2) 0 to 5% by weight of a vinyl monomer having a carboxyl group, (a-3) 0 to 80% by weight of a polyester resin having a copolymerizable unsaturated bond, (a-4) 10 to 80% by weight of a vinyl monomer having a side-chain alkyl group with 4 to 8 carbon atoms, and (a-5) 4 to 49% by weight of another vinyl monomer other than the monomers (a-1), (a-2), (a-3) and (a-4) and being copolymerizable with the monomers (a-1) to (a-4), the total proportion of these monomers being 100% by weight, in the presence of a radical initiator in a nonpolar petroleum hydrocarbon organic solvent having an aniline point of 7° to 70° C.,

(B) a polyisocyanate containing an isocyanurate ring and being soluble in a nonpolar petroleum hydrocarbon organic solvent having an aniline point of from 7° to 70° C., said polyisocyanate being obtained by reacting at least one diisocyanate compound selected from alkylene diisocyanates having 2 to 8 carbon atoms in the alkylene moiety, cycloalkylene diisocyanates having 6 to 8 carbon atoms in the cycloalkylene moiety and aralkylene diisocyanates having 7 to 8 carbon atoms in the aralkylene moiety with a diol having 10 to 40 carbon atoms, and

(C) a nonpolar petroleum hydrocarbon organic solvent having an aniline point of from 7° to 70° C., the OH/NCO equivalent ratio of the copolymer (A) to the polyisocyanate (B) being from 1:0.2 to 1:1.5.

5,055,515

FLEXIBLE OVERPOLYMERS OF VINYL CHLORIDE POLYMERS ON ETHYLENE COPOLYMERS

Richard H. Backderf, Richfield, Ohio, assignor to The BFGoodrich Company, Akron, Ohio

Continuation of Ser. No. 332,083, Apr. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 242,395, Sep. 9, 1988, abandoned. This application May 18, 1990, Ser. No. 526,369

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

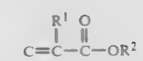
Int. Cl.[5] C08L *31/00*

U.S. Cl. 524—533 **22 Claims**

1. A flexible elastomer, which is an overpolymer, comprised of an elastomeric composition, consisting essentially of:

(1) from about 10 to about 90 percent by weight of the overpolymer of an ethylene copolymer substrate selected from the group consisting of polyethylene or copolymers of ethylene with acrylic esters, methacrylic esters, or vinyl esters wherein said ester substituent has from 16 to about 18 carbon atoms, or monoolefins having from 2 to about 18 carbon atoms, overpolymerized in the sorbed state with

(2) a vinyl chloride monomer and optionally one or more vinyl component comonomers to produce a homopolymer or copolymer in an amount of from about 10 percent to about 90 percent by weight of the overpolymer,



and

(3) stabilizers, lubricants, antioxidants, ultraviolet inhibitors, pigments and fillers, whereby said elastomer is a two-phase system having a Shore A hardness of less than about 95 and a haze value of less than about 50 percent as measured by ASTM D1003.

5,055,516

PREPARATION OF EMULSIFIER-FREE AQUEOUS POLYURETHANE DISPERSIONS

Herbert Fisch, Wachenheim; Lothar Maempel, Bruehl, and Otto Volkert, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 8, 1990, Ser. No. 462,039

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1989, 3903538

Int. Cl.[5] C08L *63/00;* **C08J** *00/00*

U.S. Cl. 524—541 **8 Claims**

1. A process for the preparation of an emulsifier-free aqueous polyurethane dispersion by reacting (a) dihydroxy compounds having a molecular weight of from 500 to 5,000, (b) diisocyanates and (c) chain extenders having two or more hydrogen atoms reactive to isocyanate groups and having a molecular weight of less than 300, in the melt or in the presence of a water-miscible inert organic solvent (S) boiling below 100° C., to give a prepolymer having terminal isocyanate groups, then reacting the prepolymer, which may be dissolved in a water-miscible inert organic solvent (S), with (d) salts of aliphatic aminocarboxylic or -sulfonic acids or amino-containing or hydroxyl-containing tertiary ammonium salts, which salts may be dissolved in water, dispersing the resulting polyurethane in water, wherein from 5 to 60 parts by weight, based on 100 parts by weight of the polyurethane, of a phenol/formaldehyde or epoxy organic condensation resin which is dissolved in a solvent boiling below 100° C. is admixed before the polyurethane obtained is dispersed in water.

5,055,517

ELECTROPHORETIC MEDIA

Robert Shorr, Overbrook Hills, and Tikam Jain, King of Prussia, both of Pa., assignors to AT Biochem, Malvern, Pa.

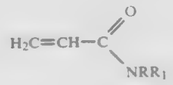
Continuation-in-part of Ser. No. 188,467, Apr. 29, 1988, abandoned. This application Mar. 31, 1989, Ser. No. 331,222

Int. Cl.[5] C08K *33/00*

U.S. Cl. 524—813 **15 Claims**

1. An electrophoretic medium comprising an aqueous gel consisting essentially of the product formed by crosslinking polymerization in the presence of aqueous medium and in the absence of oxygen of

one or more monomers selected from compounds of the formula



(I)

where

R=alkyl, optionally mono-substituted with —OH or with —$C(O)CH_2C(O)CH_3$;

R_1=H or alkyl, optionally mono-substituted with—OH or with —$C(O)CH_2C(O)CH_3$; and

one or more cross-linking agents selected from compounds of the formula



where

m=an integer of 1 or more;

R_2=methyl; and

X is selected from O and S.

5,055,518

ETHYLENICALLY UNSATURATED CARBAMATES AND COATING COMPOSITIONS

William A. Dupont, Wilbraham, and George E. Sheldrick, North Oxford, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 3, 1989, Ser. No. 389,078

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—59 **15 Claims**

1. An ethylenically unsaturated carbamate derived from a poly(vinyl acetal) and an ethylenically unsaturated isocyanate selected from the group consisting of 1-(1-isocyanatoethyl)-3-vinyl-benzene, 1-(1-isocyanatoethyl)-4-vinylbenzene, 1-(1-isocyanato-1-methylethyl)-3-(1-methylethenyl)benzene and 1-(1-isocyanato-1-methylethyl)-4-(1-methylethenyl)benzene.

5,055,519

THERMOPLASTIC ELASTOMER COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Hisao Ono; Masanobu Nagano; Yasuo Ieki, and Takumi Miyachi, all of Tokyo, Japan, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

PCT No. PCT/EP87/00821, § 371 Date Aug. 18, 1989, § 102(e) Date Aug. 18, 1989, PCT Pub. No. WO89/05837, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 18, 1987, Ser. No. 382,688

Int. Cl.[5] C08G *63/91;* **C08L** *53/00, 53/02, 9/06*

U.S. Cl. 525—71 **10 Claims**

1. Thermoplastic elastomer compositions characterized in that they have been prepared from the following components:

Component A—a block copolymer of an aromatic vinyl compound and a conjugated diene compound and/or a selectively hydrogenated product thereof, in the range of from 9 to 90% by weight;

Component B—an aromatic vinyl polymer having a functional group which is reactive with the functional group of component C, in the range of from 1 to 50% by weight; and

Component C—an acryl-type rubber and/or an acrylonitrile-conjugated diene rubber polymer having at least one functional group chosen from carboxyl, amino, epoxy and hydroxyl groups, in the range of from 9% to 90% by weight;

said percentages being calculated on the total of components A, B and C.

5,055,520

BLENDS OF HIGH NITRILE COPLOYMERS AND THERMOPLASTIC POLYMERS

Elena S. Percec, Pepper Pike, Ohio, and Doreen Y. Takigawa, Los Alamos, N. Mex., assignors to The Standard Oil Company, Cleveland, Ohio

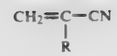
Division of Ser. No. 235,015, Aug. 22, 1988, Pat. No. 5,004,783. This application Feb. 26, 1991, Ser. No. 661,409

Int. Cl.[5] C08L *51/04, 33/08, 35/06*

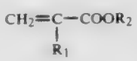
U.S. Cl. 525—74 **3 Claims**

1. A polymer blend comprising:

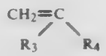
a copolymer prepared by the polymerization of 100 parts by weight of (A) from 60 percent to 90 percent by weight of at least one nitrile having the structure



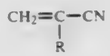
wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and (B) from 10 percent to 40 percent by weight based on the combined weights of (A) and (B) of at least one member selected from the group consisting of (1) an ester having the structure



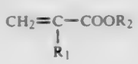
wherein R_1 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 30 carbon atoms, (2) an alpha-olefin having the structure



wherein R_3 and R_4 are alkyl groups having from 1 to 7 carbon atoms, (3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, (4) vinyl acetate, (5) styrene, and (6) indene, in the presence of from 0 to 40 parts by weight of (C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and a comonomer selected from the group consisting of styrene, a monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing respective designations, said rubbery polymer containing from 50 percent to 100 percent by weight of polymerized conjugated diene and from 0 percent to 40 percent by weight of comonomer, and

a compatible thermoplastic polymer methacrylates and copolymers of unsaturated carboxylic acid anhydrides with monovinyl aromatics.

5,055,521

AGENT FOR RENDERING COMPATIBLE AT LEAST TWO INCOMPATIBLE THERMOPLASTIC POLYMERS, PROCESS FOR THE PREPARATION AND THERMOPLASTIC ALLOYS OBTAINED THEREFROM

Roland Parsy, Beaumont Le Roger, and Nadine Rivas, St Ouen du Tilleul, both of France, assignors to Atochem, Puteaux, France

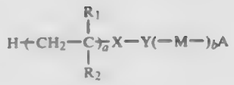
Filed Jun. 2, 1988, Ser. No. 201,778

Claims priority, application France, Jun. 4, 1987, 87 07800

Int. Cl.[5] C08L *39/06, 41/00*

U.S. Cl. 525—182 **10 Claims**

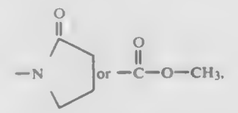
1. An agent for rendering compatible at least two incompatible thermoplastic polymers, said agent having the formula:



wherein

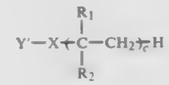
R_1 is hydrogen or methyl,

R_2 is



M is a monomeric unit derived from a member selected from the group consisting of an ethylenically unsaturated monomer, a polycondensable monomer and a lactam,

a and b independently are numbers between about 2 and 1000, with A which is selected from the group consisting of:



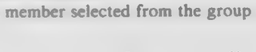
(1)

wherein

c is a number between about 2 and 1000, with the proviso that only Y of Y′ exists and represents the functional residue of a limitor of a difunctional chain if M is derived from a polycondensable monomer or from a lactam, or

Y and Y′ represent the functional residue of a difunctional polymerization agent if M is derived from an ethylenically unsaturated monomer,

—X— is a member selected from the group consisting of:



wherein the X and Y groups or X and Y′ groups, of X and $(M)_b$ are interbonded by an ester or amide function, R being the residue of a monofunctional transfer agent; and

(2) the non-functional residue of a monofunctional polymerization agent if M is derived from an ethylenically unsaturated monomer, with the proviso that Y is the residue of the functional portion of the monofunctional agent, the function of which is a member selected from the group consisting of:



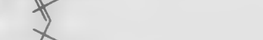
—X— is a member selected from the group consisting of:



wherein the X and Y groups are interbonded by an ester or amide function and R is the residue of a monofunctional transfer agent, or

when M is derived from a polycondensable monomer or from a lactam, the residue of a monofunctional chain limitator, the proton of which is excluded if the active function is an amine or an alcohol, or the hydroxyl group is excluded if the active function is a carboxylic acid, with the proviso that Y is zero,

—X— is a member selected from the group consisting of:



wherein the X and $(M)_b$ groups are interbonded by an ester or amide function, and R is the residue of a monofunctional transfer agent.

5,055,522

POLYVINYL CHLORIDE RESIN COMPOSITION

Takenori Ikeda, Ichihara; Mitsuru Ohtsubo, Kisarazu; Shunji Arimoto, Narashino, and Noboru Okoshi, Sodegaura, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 451,858

Claims priority, application Japan, Dec. 16, 1988, 63-316349

Int. Cl.[5] C08L *27/06*

U.S. Cl. 525—124 **13 Claims**

1. A polyvinyl chloride resin composition comprising (A) a vinyl chloride homo- or copolymer, (B) a plasticizer and (C) a blocked isocyanate prepolymer, wherein the isocyanate prepolymer is an isocyanurate polyisocyanate prepared from an alkylene or aralkylene diisocyanate and reacted with an active hydrogen-containing compound selected from the group consisting of a mercaptan, an alcohol, a thiophenol and an amine.

5,055,523

AROMATIC POLYCARBONATE RESIN COMPOSITION

Kazushige Inoue; Akhiro Saito, both of Utsunomiya; Takorou Kitamura, Mohka; Takashi Ohtomo, Utsonomiya; Hidenori Tazaki, Utsonomiya; Tetsuji Kodaira, Utsonomiya; Yumiko Yoshida; Hiromi Ishida, both of Mohka; Takahiro Yokoshima, Oyama, and Hideyuki Itoi, Utsonomiya, all of Japan, assignors to CE Plastics Japan Limited, Tokyo, Japan

Filed Mar. 15, 1990, Ser. No. 493,973

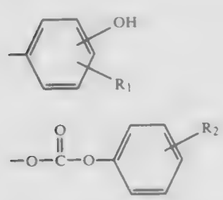
Claims priority, application Japan, Mar. 20, 1989, 1-66287; Mar. 31, 1989, 1-82518; Mar. 31, 1989, 1-82519; Mar. 31, 1989, 1-82520; Dec. 25, 1989, 1-332953

Int. Cl.[5] C08F *8/00;* **C08L** *31/00*

U.S. Cl. 525—148 **17 Claims**

1. A composition, which comprises;

1. an aromatic polycarbonate resin having a ratio of non-phenolic end groups represented by the following formula (II) to phenolic end groups represented by the following formula (I) being not more than 19:1;



(I)

(II)

wherein R_1 and R_2 may be the same or different and independently represent a hydrogen atom, a C_1 to C_{20} alkyl group or a halogen-substituted C_1 to C_{20} alkyl group;

2. a second resin selected from the group consisting of

(a) copolymers derived from at least one ethylenically-unsaturated monomer having an epoxy group or oxazolinyl group and at least one other ethylenically-unsaturated monomer;

(b) aromatic vinyl-diene-vinyl cyanide copolymers; and

(c) an aromatic polyester.

5,055,524

POLYOL-MODIFIED POLYANHYDRIDE CURING AGENT FOR POLYEPOXIDE POWDER COATINGS

Paul H. Pettit, Jr., Allison Park; Debra L. Singer, Pittsburgh, and William S. Ewing, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 16, 1987, Ser. No. 74,105

Int. Cl.[5] C08L *37/00, 63/02*

U.S. Cl. 525—172 **15 Claims**

1. In an improved thermosetting powder coating composition comprising an epoxy resin and a curing agent, the improvement comprising the curing agent which is a polyol-modified polymeric polyanhydride containing anhydride linkages in the polymeric backbone, and also containing a plurality of acid functionalities; said powder coatings are prepared by melt blending at a temperature of about 80° C. to 130° C. followed by cooling and grinding to a powder form.

5,055,525

LOW TEMPERATURE TOUGHENED THERMOPLASTIC POLYMER BLEND COMPOSITIONS

David E. Henton; F. Michael Plaver; Duane M. Naeger, all of Midland, Mich., and Robert S. Drzal, Naugatuck, Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1990, Ser. No. 484,156

Int. Cl.[5] C08L *55/02, 75/06*

U.S. Cl. 525—66 **20 Claims**

1. A polymer blend composition comprising from about 19 to about 64 weight percent of one or more rubber modified mass, solution, mass/suspension or mass/solution polymerized monovinylidene aromatic/ethylenically unsaturated nitrile graft copolymers which contain from about 1 to about 35 weight percent, on a mass, solution mass/suspension or mass/-solution graft copolymer weight basis, of dispersed rubbery polymer particles; from about 35 to about 80 weight percent of one or more polyester-based elastomeric thermoplastic polyurethanes having a polyester-based soft segment content of at least about 50 weight percent on an elastomeric thermoplastic polyurethane weight basis and having a Shore Hardness rating of less than 90 on the A scale; and from 1 to about 30 weight percent of one or more emulsion polymerized grafted rubber concentrate ingredients.

5,055,526

ADHESIVE RESIN COMPOSITIONS AND LAMINATES UTILIZING SAME

Koichiro Sato; Mineo Kubo, both of Yamaguchi, and Mikio Nakagawa, Hiroshima, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 28, 1988, Ser. No. 263,923

Claims priority, application Japan, Nov. 4, 1987, 62-278731

Int. Cl.[5] C08L *51/06, 31/04, 33/02, 33/04, 23/16*

U.S. Cl. 525—74 **7 Claims**

1. An adhesive resin composition comprising

(A) 95–50% by weight of an ethylne/α-olefin copolymer having a density of 0.850–0.900 g/cm^3, and the ethylene content of 75–95 mol %,

(B) 5–50% by weight of a copolymer of ethylene and a radical polymerizable polar unsaturated monomer, said copolymer having the content of the radical polymerizable polar unsaturated monomer of 5–40% by weight, and

(C) 1.0–30 parts by weight, based on 100 parts by weight of the sum of the above-mentioned (A)+(B), of a graft-modified polyethylene, a part or whole of said polyethylene has been graft-modified with an unsaturated carboxylic acid or its derivative.

5,055,527

THERMOPLASTICS IMPACT MODIFIED WITH FUNCTIONALIZED POLYMERS AND USE THEREOF FOR PRODUCING MOLDINGS

Klaus Bronstert, Carlsberg; Hans-Dieter Schwaben, Freisbach, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 414,575, Sep. 29, 1989, abandoned, which is a continuation of Ser. No. 152,874, Feb. 5, 1988, abandoned. This application Jun. 20, 1990, Ser. No. 541,078

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1987, 3706016

Int. Cl.[5] C08L *35/00, 9/00, 25/02*

U.S. Cl. 525—207 **1 Claim**

1. An impact modified thermoplastic blend of components A, B and optionally C, consisting of:

A) from 99 to 60 percent by weight, based on the sum of A and B, of a polymeric rigid matrix consisting of

a1) 60–99.5 percent by weight of an aromatic vinyl compound present as copolymerized units,

a2) 0.5–20 percent by weight of an unsaturated carboxylic anhydride present as copolymerized units and

a3) 0–35 percent by weight of an alkenylnitrile present as copolymerized units, the weight percentages in each case being based on the sum of a1, a2 and a3,

B) from 1 to 40 percent by weight, based on the sum of A and B, of a polymeric flexibilizing component consisting of a modified block copolymer of

b1) 91–60 percent by weight of the monomer 1,4-butadiene which is present as copolymerized units and

b2) 9–40 percent by weight of styrene present as copolymerized units, the weight percentages in each case being based on the sum of b1 and b2 and also

C) from 0 to 30 percent by weight, based on 100 parts by weight of the sum of components A and B, of customary additives,

wherein the polymers of flexibilizing component B have been modified by substitution with amino groups only at the chain ends and have only one amino end group per chain end at the chain end.

5,055,528

PROCESS FOR PRODUCING PROPYLENE COPOLYMERS

Mamoru Kioka; Akinori Toyota, and Norio Kashiwa, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP87/00529, § 371 Date Mar. 17, 1988, § 102(e) Date Mar. 17, 1988, PCT Pub. No. WO88/00599, PCT Pub. Date Jan. 28, 1988

Continuation of Ser. No. 188,394, Mar. 17, 1988, abandoned. This PCT application Jul. 20, 1987, Ser. No. 465,648

Claims priority, application Japan, Jul. 21, 1986, 61-169698

Int. Cl.[5] C08F *297/08;* **C08L** *53/00*

U.S. Cl. 525—270 **9 Claims**

1. A process for producing a propylene block copolymer having an MFR value of at least 10 g/10 minutes in the presence of a catalyst system formed from

(A) a solid titanium catalyst component containing magnesium, titanium, halogen and a polycarboxylic acid ester as essential ingredients formed by contacting a magnesium compound, a titanium compound and the polycarboxylic acid ester,

(B) an organoaluminum compound, and

(C) an organic silicon compound represented by the following formula (I)

$$SiR^{11}{}_m(OR^{12})_{4-m} \quad (I)$$

wherein R^{11} represents an alkyl or alkenyl or alkenyl group, R^{12} represents a hydrocarbon group, and m is $1 \leqq m \leqq 2$,

which comprises

(I) polymerizing or copolymerizing propylene in a first polymerization stage consisting of at least two steps wherein a crystalline propylene polymer having an intrinsic viscosity $[\mu]_{FC}$, measured in decalin at 135° C., of less than 1.8 dl/g is produced in the first step, the polyermization or copolymerization is carried out further in the subsequent steps, and from the final step, a crystalline propylene polymer from the first stage is obtained having an intrinsic viscosity $[\mu]_{XC}$, measured in decalin at 135° C., of 0.7 to 2.0 dl/g, the $[\mu]_{FC}/[\mu]_{XC}$ ratio being adjusted to not more than 0.9, and

(II) random-copolymerizing propylene and other alpha-olefin in a mole ratio of from 20/80 to 80/20 in a second polymerization stage in the presence of said crystalline polypropylene.

5,055,529

PROCESSING AID FOR THERMOPLASTIC RESIN, AND THERMOPLASTIC RESIN COMPOSITION COMPRISING SAME

Kazuo Kishida, Hiroshima; Kiyokazu Kitai, Tokyo; Masahiro Kaneda, Ohtake, and Kenji Okano, Yokohama, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 28, 1989, Ser. No. 329,872

Claims priority, application Japan, Mar. 29, 1988, 63-75554

Int. Cl.[5] C08F *265/06;* **C08L** *25/04, 27/06, 55/02*

U.S. Cl. 525—309 **9 Claims**

1. A processing aid for a thermoplastic resin, which comprises a two-stage polymer obtained by polymerizing (B) 5 to 50 parts by weight of a monomer or monomer mixture composed of more than 50% by weight of methyl methacrylate in the presence of (A) 50 to 95 parts by weight of a polymer comprising 100 to 50% by weight of units of a methacrylic acid ester other than methyl methacrylate and 0 to 50% by weight of units of other monomer copolymerizable with the methacrylic acid ester and having a reduced viscosity ηsp/C not larger than 2.0 (as measured at 25° C. with respect to a solution of 0.1 g of the polymer in 100 ml of chloroform; the unit being dl/g), so that the total amount of the components (A) and (B) is 100 parts by weight and the reduced viscosity ηsp of the final polymer is not larger than 2.0.

5,055,530

EPOXY RESIN-MODIFIED POLYAMIDE RESIN

Hiroshi Inoue, Hiratsuka, Japan, assignor to Kansai Paint Company Limited, Amagasaki, Japan

Filed Jul. 12, 1989, Ser. No. 378,742

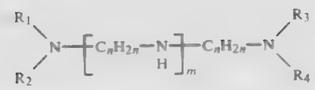
Claims priority, application Japan, Jul. 13, 1988, 63-174333; Sep. 12, 1988, 63-228112

Int. Cl.[5] C08L *77/06, 77/08*

U.S. Cl. 525—423 **8 Claims**

1. A curable coating composition characterized in that the composition comprises as a vehicle component a nitrogen-containing resin modified with an epoxy resin and having curable hydroxyl groups which is obtained by subjecting to a condensation reaction a polybasic acid compound and an amine compound having at least two active hydrogen atoms in the molecule on the average which atoms are reactive with the carboxyl group of the polybasic acid compound, without or along with a polyhydric alcohol and/or a fatty acid, and reacting 100 parts by weight of the resulting nitrogen-containing resin about 1 to about 50 parts by weight of with the epoxy resin, said amine compound being at least one compound selected from the group consisting of

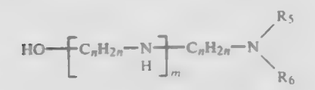
1) an amine compound having primary amino and/or secondary amino and represented by the formula (I)



(I)

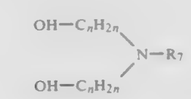
wherein R_1, R_2, R_3 and R_4 are the same or different and are each a hydrogen atom, alkyl, aryl or cycloalkyl, n is an integer of 1 to 4, and m is an integer of 0 to 4, provided that when m is 0, at least two of R_1, R_2, R_3 and R_4 is a hydrogen atom,

2) an alkanol amine compound having one hydroxyl group, and primary amino or secondary amino in the molecule and represented by the formula (II)



(II)

wherein R_5 and R_6 are the same or different and are each a hydrogen atom, alkyl, aryl or cycloalkyll, and n and m are as defined above, provided that when m is 0, at least one of R_5 and R_6 is a hydrogen atom and 3) a polyvalent alkanol amine compound having at least two hydroxyl groups in the molecule and represented by the formula (III)



(III)

wherein R_7 is a hydrogen atom, alkyl, aryl, cycloalkyl or $-CK_nH_{2n}-OH$ group, and n is as defined above.

5,055,531

PROCESS FOR THE PREPARATION OF POLYESTER/POLYCARBONATE COPOLYMERS

Daniel W. Fox, Pittsfield; Edward N. Peters, Lenox; Gary F. Smith, and Paul D. Sybert, both of Pittsfield, all of Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 30, 1986, Ser. No. 947,660

Int. Cl.[5] C08G *63/64*

U.S. Cl. 525—439 **13 Claims**

1. A process for the preparation of a high molecular weight copolymer which comprises reacting together in the molten state, at a temperature between 245° C. and 315° C. at a time interval between 0.1 minute and 40 minutes, and in the presence of a basic catalyst, a mixture of a high molecular weight polycarbonate selected from poly(dihydric phenol carbonate) or poly(hydric phenol arylate/carbonate) in the proportion of 1 percent to 40 percent of the former to 99 percent to 60 percent of the latter, the resulting copolymer possessing a single glass transition temperature, having substantially no content of poly(alkylene arylate homopolymer and having a ratio of alkylene arylate linkages to dihydric phenol arylate linkages of not substantially less than about 20:1, and then adding to the molten mixture an effective amount of an acidic stabilizing additive selected from phosphorus compounds and carboxylic acids.

5,055,532

POLYMER-MODIFIED VINYLIZED EPOXY RESINS

Dwight K. Hoffman, Midland, Mich.; Virginia B. Messick, Lake Jackson, Tex., and Michael G. Stevens, Worthington, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 693,411, Jan. 22, 1985, Pat. No. 4,690,988. This application Jul. 6, 1987, Ser. No. 69,997

Int. Cl.[5] C08L *63/10*

U.S. Cl. 525—528 **3 Claims**

1. A dispersion which comprises an uncured vinylized epoxy resin prepared from an uncured epoxy resin as a continuous phase having disperse therein (i) an insoluble polymer and (ii) a dispersion stabilizer which is the polymerizate of at least one vinyl monomer and a vinylized epoxy resin adduct derived from the reaction product of an unsaturated isocyanate or an alkenyl substituted phenol and a polyepoxide, said insoluble polymer having been polymerized in situ in the uncured epoxy resin and in the presence of the dispersion stabilizer, and the uncured epoxy resin subsequently vinylized by reacting the uncured epoxy resin with an ethylenically unsaturated acid; the insoluble polymer dispersed phase further characterized in that it forms an insoluble stable dispersion in the uncured epoxy and remains a stable dispersion in the vinylized epoxy resin at a temperature above 60° C.

5,055,533

PROCESS FOR POLYMERIZING ALPHA-OLEFINS WITH TRIMETHYLALUMINUM-ACTIVATED CATALYST

Luanne M. Allen, Port Arthur, Tex.; Robert O. Hagerty, Edison, and Richard O. Mohring, Bridgewater, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 37,680, Apr. 13, 1987, abandoned, which is a division of Ser. No. 822,359, Jan. 24, 1986, Pat. No. 4,732,882. This application Jul. 24, 1989, Ser. No. 384,045

Int. Cl.[5] C08F *4/651, 210/02*

U.S. Cl. 526—125 **14 Claims**

1. A process of preparing a linear low density polymer, which is a copolymer of ethylene and at least one C_3–C_{10} alpha-olefin, having a density of about 0.940 gm/cc or less prepared by polymerizing ethylene and at least one C_3–C_{10} alpha olefin in the presence of a catalyst composition comprising a precursor composition containing a transition metal compound and a magnesium compound, which precursor composition is supported on a solid porous carrier, and a metal alkyl activator, the improvement comprising using trimethylaluminum as said metal alkyl and forming the precursor by a method comprising

(i) contacting silica as a solid, porous carrier having reactive OH groups with a liquid containing at least one organomagnesium composition having the empirical formula:

$$R_nMgR'_{(2-n)}$$

where R is a C_1–C_{12} hydrocarbyl group, and R' is a halogen, and n is 1, the number of moles of said organomagnesium composition being in excess of the number of moles of said OH groups on said carrier, wherein said contacting comprises

(a) slurrying said carrier in a non-Lewis base liquid to form a slurry;

(b) adding said organomagnesium to said slurry in the form of an ether solution of said organomagnesium compound;

(ii) evaporating said liquid from step (i) to produce a supported magnesium composition in the form of a dry, free-flowing powder; and

(iii) reacting said powder of step (ii) with $TiCl_4$ in a liquid medium, the number of moles of said $TiCl_4$ being in excess of the number of the OH groups on said carrier prior to the reaction of the carrier with said organomagnesium composition in step (i), said $TiCl_4$ being soluble in said

liquid medium, and said supported magnesium composition being substantially insoluble in said liquid medium.

5,055,534

PREPARATION OF VERY LOW MOLECULAR WEIGHT POLYETHYLENE IN A FLUIDIZED BED

Eugene H. Theobald, Poca, W. Va., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 28, 1989, Ser. No. 458,357
Int. Cl.[5] C08F *2/34, 2/36*
U.S. Cl. 526—133 20 Claims

1. A continuous process for producing ethylene polymers having a melt index of from 500 g/10 minutes to 2500 g/10 minutes which comprises polymerizing ethylene, or copolymerizing ethylene and at least one higher alpha-olefin, by continuously contacting, in a fluidized bed, at a temperature of from 10° C. up to 75° C. and a pressure no greater than 7,000 kPa, a gaseous mixture containing:

(i) ethylene, or ethylene and at least one higher alpha-olefin containing from 3 to 8 carbon atoms in a molar ratio of such higher alpha-olefin to ethylene of from 0.1:1 to 0.70:1

(ii) from 5 mol percent to 20 mol percent hydrogen, and

(iii) from 15 mol percent to 40 mol percent of an inert gas selected from the group consisting of nitrogen, argon, helium, methane and ethane,

with a catalyst system comprising:

(A) a solid catalyst component consisting essentially of

(1) a solid, particulate, porous inorganic carrier, as support for

(2) the reaction product of (a) a vanadium trihalide and (b) an electron donor, and

(3) a modifier having the formula:

$$MX_a$$

wherein:

M is boron or $AlR_{(3-a)}$ wherein each R is an alkyl radical containing from 1 to 14 carbon atoms,

X is selected from the group consisting of fluorine, chlorine, bromine and iodine, and mixtures thereof, and

a is an integer having a value of 0, 1 or 2, provided that a is 3 when M is boron,

(B) an alkylaluminum cocatalyst having the formula

$$Al(R')_3$$

wherein: R' is a saturated hydrocarbon radical containing from 1 to 14 carbon atoms, and

(C) a halohydrocarbon polymerization promoter having the formula

$$(R'')_bCX'_{(4-b)}$$

wherein:

R'' is hydrogen or an unsubstituted or halosubstituted alkyl radical containing from 1 to 6 carbon atoms,

X' is halogen, and

b is 0, 1 or 2.

5,055,535

PROCEDURE FOR GAS-PHASE POLYMERICATION OF ETHYLENE ALLOWING THE FABRICATION OF LINEAR POLYETHYLENE WITH A NARROW MOLECULAR-WEIGHT DISTRIBUTION

Roger Spitz, St. Symphorien D'Ozon; Claude Brun, Idron, and Jean-Francois Joly, Chatillon Sous Bagneux, all of France, assignors to Atochem, Pateaux, France

Filed Dec. 8, 1989, Ser. No. 447,670
Claims priority, application France, Dec. 14, 1988, 88 16470
Int. Cl.[5] C08F *2/34, 4/32*
U.S. Cl. 526—142 4 Claims

1. A process for the manufacture of a linear polyethylene with narrow molecular-weight distribution comprising polymerizing ethylene alone or a mixture of ethylene and an alpha-olefin in which ethylene represents at least about 70% by weight of the total monomers involved, in a gas-phase polymerization medium in the presence of a catalytic component containing at least one transition metal, magnesium, and a halogen, a co-catalyst comprising an alkylaluminum compound, and a monoether, the monoether being brought into contact with the catalytic component only in the presence of the alkylaluminum compound in the medium and having the general formula R'OR'', wherein R' and R'' are the same or different and each if a C_1 to C_8 linear or branched hydrocarbon radical or being a cyclic monoether with the oxygen forming a ring having 4 to 12 carbon atoms.

5,055,536

PROCESS TO PREPARE VINYL ETHER POLYMERS

Donn A. Dubois, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 9, 1990, Ser. No. 564,523
Int. Cl.[5] C08F *4/16, 12/24, 16/16*
U.S. Cl. 526—194 15 Claims

1. A process comprising the step of contacting vinyl ether monomers with an initiator system consisting of an acidic zeolite selected from the group consisting of zeolite X, zeolite Y, and faujacite, and trimethylsilyliodide under conditions which result in polymerizing the vinyl ether.

5,055,537

METAL-CONTAINING ORGANIC POLYMER

Ken Kawata; Kozo Sato, and Masayoshi Tsuboi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 214,062, Jul. 1, 1988, Pat. No. 4,927,897.
This application Mar. 12, 1990, Ser. No. 491,907
Claims priority, application Japan, Jul. 2, 1987, 62-166116
Int. Cl.[5] C08F *38/00*
U.S. Cl. 526—240 7 Claims

1. A metal-containing organic polymer produced by the step of polymerizing a compound represented by formula (I):

$$(R\text{-}C{\equiv}C\text{-})_l\ \text{-}_k(\text{-}L\text{-})(\text{-}S)_m \qquad (I)$$

wherein

S represents a polyoxyether group, a polyaminoether group or a polythioether group;

R represents a metallic atom, a hydrogen atom, or a group COOM wherein M represents a hydrogen atom or a metallic atom;

provided that when R represents a carboxyl group or a hydrogen atom, said compound represented by formula (I) is polymerized in the presence of a metallic salt;

L represents a chemical bond or a group having a valency of (k+m); and

l, k and m each represent an integer of 1 or more.

5,055,538

NOVEL COPOLYMER AND WATER- AND OIL-REPELLENT COMPRISING THE SAME

Yoshio Amimoto; Masayoshi Shinjo; Takashi Enomoto, and Kazunori Hayashi, all of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Continuation of Ser. No. 197,917, May 24, 1988, abandoned.
This application Jun. 11, 1990, Ser. No. 536,073
Claims priority, application Japan, May 25, 1987, 62-128968
Int. Cl.[5] C08F *120/24*
U.S. Cl. 526—245 18 Claims

1. A fluorine-containing copolymer comprising

(a) 40 to 90 % by weight of repeating units of a polymerizable compound having a C_4–C_{20} perfluoroalkyl group,

(b) 5 to 50 % by weight of repeating units of at least one unsaturated ester selected from the group consisting of stearyl acrylate and stearyl methacrylate,

(c) 5 to 50 % by weight of repeating units of at least one monomer selected from the group consisting of alkyl acrylate or methyacrylate having 2 to 8 carbon atoms in the alkyl group, cyclohexyl acrylate and cyclohexyl methacrylate.

5,055,539

MOLDING MADE FROM A VINYLIDENE FLUORIDE COPOLYMER AND PROCESS FOR ITS PRODUCTION

Rolf Hengel, Burgkirchen, and Heinz Notzon, Altötting, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 11, 1989, Ser. No. 350,248
Claims priority, application Fed. Rep. of Germany, May 13, 1988, 3816327
Int. Cl.[5] C08F *14/22*
U.S. Cl. 526—254 2 Claims

1. A molding produced by:

(A) thermoplastic shaping of a fluorine-containing polymer comprising polymerized units of the following monomers containing only one C=C double bond

(a) 20% to 50% by weight of vinylidene fluoride,

(b) 35% to 70% by weight of tetrafluoroethane,

(c) 10% to 30% by weight of hexafluoropropene,

with the proviso that the quantities a+b+c make up 100% by weight, the percent by weight data being based on the polymer component, said polymer having a crystalline melting point of 100° C. to 240° C. and a melt flow index of at least 1 g/10 min measured at 250° C. under a load of 11 kg, and

(B) subsequently treating with ionizing radiation yielding said molding with an elongation at break of at least 250% at room temperature and a torsional shear modulus at 250° C. of at least 0.5N/mm^2 and having no measurable melt flow index at 11 kg load.

5,055,540

PROCESS FOR EFFICIENT MOLECULAR WEIGHT CONTROL IN COPOLYMERIZATION

Kathleen A. Hughes, and Graham Swift, both of Blue Bell, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 6, 1990, Ser. No. 475,580
Int. Cl.[5] C08F *222/02*
U.S. Cl. 526—318.2 5 Claims

1. A water soluble low molecular weight copolymer formed by polymerizing monomer units consisting essentially of

a) at least one monoethylenically unsaturated dicarboxylic acid at a concentration of from 3 percent to 25 percent by weight on the total polymerizable monomer units,

b) at least one monoethylenically unsaturated monocarboxylic acid at a concentration of from 75 percent to 95 percent by weight on the total polymerizable monomer units and

c) optionally, one or more carboxyl-free monoethylenically unsaturated monomer,

such that the sum of the weight percentages of a, b and c equals 100 and, wherein the weight average molecular weight of the copolymer is less than 25,000.

5,055,541

STARCH POLYMER GRAFT COMPOSITION AND METHOD OF PREPARATION

William C. Floyd, Chester; Louis R. Dragner, Rock Hill; Blanche H. Black, York, and Bernard F. North, Rock Hill, all of S.C., assignors to Sequa Chemicals, Inc., Chester, S.C.

Filed Jun. 27, 1989, Ser. No. 371,988
Int. Cl.[5] C08G *89/00*
U.S. Cl. 527—300 46 Claims

1. A starch-polymer graft composition comprising a starch hydrolyzate having a water solubility in excess of 80% by weight at 25° C. and a viscosity equivalent to a dextrose equivalent of 1–20, a polymer based on a monomer containing a hdyrophobic olefinically unsaturated monomer, wherein said starch hydrolyzate includes at least one millimole of graft sites per mole of starch hydrolyzate where the polymer is bound to said starch hydrolyzate to form the starch-polymer graft, and wherein during or prior to a grafting reaching which forms the graft the anhydro-glucose ring of the starch hydrolyzate is cleaved between carbons 2 and 3.

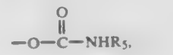
5,055,542

CARRIER RESIN FOR PIGMENT PASTES, PREPARATION AND USE THEREOF

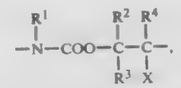
Michael Hönel; Peter Ziegler, both of Mainz; Walter Sprenger, Dieburg, and Wolfgang Wendt, Wuppertal, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengeselischaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 13, 1989, Ser. No. 365,527
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1988, 3820300
Int. Cl.[5] C08G *18/71, 18/80;* C09D *17/00, 169/00, 175/00, 175/12*
U.S. Cl. 528—45 15 Claims

1. Paste resins comprising (a) quaternary ammonium groups, (b) optionally hydroxyl groups, (c) optionally urethanes of the formula

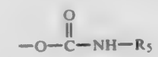


wherein R_5 is a hydrocarbon optionally interrupted with —O—, and (d) groups of the formula (I)



I

in which R^1 to R^4 independently of one another represent hydrogen or a hydrocarbon radical of 1 to 10 carbon atoms, and X denotes hydroxyl or an urethane of the formula



the average molecular weight (Mn) of these paste resins (Mn) of these paste resins being 500 to 10,000.

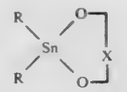
5,055,543

HIGH SPEED MOISTURE CURE POLYURETHANE SEALANT

Yoshinori Nakano, Osaka; Kyohisa Kotsuma, Sinmachi, and Masayoshi Ito, Higashi, all of Japan, assignors to Sunrise Meisei Corporation, Osaka, Japan

Filed May 23, 1989, Ser. No. 355,627
Claims priority, application Japan, Nov. 25, 1988, 63-298885
Int. Cl.[5] C08G *18/24*
U.S. Cl. 528—58 24 Claims

1. In a one part polyurethane sealant containing a cure accelerating catalyst, said accelerating catalyst comprising:



where R represents a univalent hydrocarbon radical and X represents an OH residual radical of dihydric alcohol.

5,055,544

AMINO-FUNCTIONAL POLYESTERS CONTAINING UREA, BIURET, THIOUREA, DITHIOBIURET, THIOAMIDE, AND/OR AMIDE MOIETIES IN THEIR BACKBONE AND URETHANE/UREA PREPOLYMERS AND POLYMERS MADE THEREFROM

Robert F. Harris, and Michael D. Joseph, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 247,460, Sep. 21, 1988, Pat. No. 4,916,201, which is a continuation-in-part of Ser. No. 99,027, Sep. 21, 1982, abandoned. This application Feb. 27, 1990, Ser. No. 485,678
Int. Cl.[5] C08G *18/00*
U.S. Cl. 528—59 11 Claims

1. A modified polyamine comprising a backbone portion containing at least one polyalkyleneoxy moiety and one or more internal biuret, thiourea, dithiobiuret, or thioamide moieties, and a plurality of primary amino groups wherein each amino group is separated from each biuret, thiourea, dithiobiuret, or thioamide moiety by at least one alkylene, cycloalkylene, aralkylene, arylene, or alkyleneoxy moiety with 4–20 carbon atoms, or at least one polyalkyleneoxy moiety containing from 2–50 alkyleneoxy units.

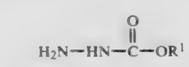
5,055,545

URETHANE-RUBBER ADHESIVES BASED ON AZOESTER PREPOLYMERS AND DERIVATIVES THEREOF

David F. Lawson, Uniontown, Ohio, assignor to Bridgestone/-Firestone, Inc., Akron, Ohio

Filed May 18, 1989, Ser. No. 353,831
Int. Cl.[5] C08G *18/32*
U.S. Cl. 528—61 18 Claims

1. A urethane to rubber adhesive, comprising:
an azoeneophile, said azoeneophile being
the oxidized reaction product of
(a) an isocyante terminated prepolymer made from a hydroxyl terminated polyether intermediate or a polyester intermediate and a polyisocyante having the formula $R(N{=}C{=}O)_n$ wherein n is 2 or 3 and wherein R is an aliphatic, a cycloaliphatic, an aromatic, or an aliphatic substituted aromatic having a total of from 2 to 20 carbon atoms, and
(b) a carbazate having the formula



(Formula I)

wherein R^1 is an alkyl, a cycloalkyl, an aromatic, or an alkyl substituted aromatic having 1 to 20 carbon atoms which is an azoestereneophile prepolymer or an alkyl azoester.

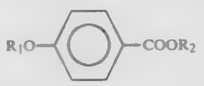
5,055,546

PROCESS FOR PRODUCING AROMATIC POLYESTERS

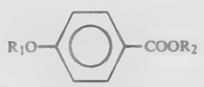
Hiroaki Sugimoto; Yoshitaka Ohbe, both of Tsukuba, and Kazuo Hayatsu, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Oct. 30, 1989, Ser. No. 429,041
Claims priority, application Japan, Nov. 4, 1988, 63-279937
Int. Cl.[5] C08G *63/02, 63/18*
U.S. Cl. 528—193 7 Claims

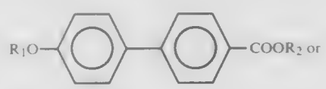
1. A process for producing an aromatic polyester which comprises
(1) charging the following components to a vessel,
(A) 30 to 80% by mole of component A consisting of at least one compound having the formula,

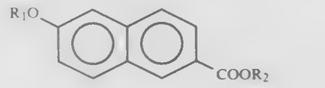


wherein R_1 is hydrogen, formyl, acetyl, propionyl or benzoyl, and R_2 is hydrogen, a C_1–C_6 alkyl or a C_6–C_{18} aryl, or a mixture of not less than 50% by mole of at least one compound having the formula,



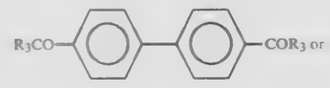
wherein R_1 and R_2 have the same meanings as defined above, and less than 50% by mole of at least one compound having any one of the formulas,



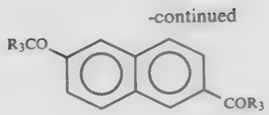


wherein R_1 and R_2 have the same meaning as defined above,
(B) 10 to 35% by mole of component B consisting of at least one compound having any one of the formulas,

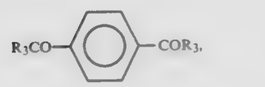


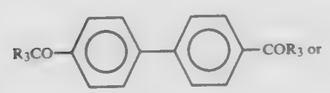


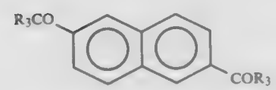
-continued



wherein R_3 is hydroxyl, a C_1–C_6 alkyloxy, a C_6–C_{18} aryloxy or halogen, or a mixture of not less than 50% by mole of at least one compound having any one of the formulas,







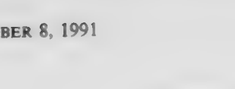
wherein R_3 has the same meaning as defined above, and less than 50% by mole of at least one compound having the formula,

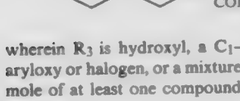
$R_3CO—Ar—COR_3$

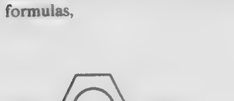
wherein Ar is a divalent aromatic residue, and R_3 has the same meaning as defined above, and
(C) component C consisting of at least one compound having the formula,

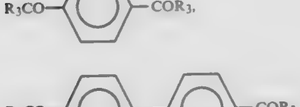
$R_4O—A_1—OR_4$

wherein A_1 is

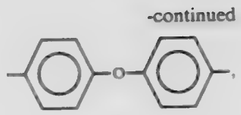


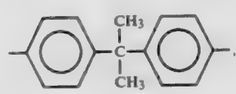


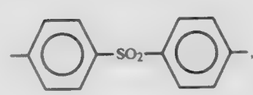


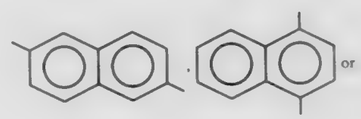


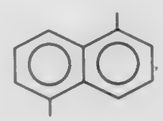
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and R_4 is hydrogen, formyl, acetyl, propionyl or benzoyl, the molar ratio of component B to component C being 102–108:100, and
(2) polycondensing components in the vessel at a temperature of 270° to 380° C. until the flow temperature of the produced aromatic polyester reaches a temperature of 240° C. or higher.

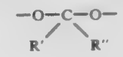
5,055,547

LIQUID-CRYSTAL COPOLYETHERS BASED ON 7-OXA-BICYCLO(2,2,1)HEPTANE

Leonardo Fiore, Milan; Giuseppe Motroni, Galliate, and Mauro Maritano, Rovellasca, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 95,609, Sep. 11, 1987, abandoned. This application May 10, 1989, Ser. No. 352,678
Claims priority, application Italy, Sep. 15, 1986, 21698 A/86
Int. Cl.[5] C08G *59/00, 65/00, 12/26, 65/02*
U.S. Cl. 528—249 11 Claims

1. Copolyethers displaying anisotropic, liquid crystal properties in the molten state, consisting of copolymers of 7,oxabicyclo(2,2,1)heptane unsubstituted or substituted in the 2-, 3-, 5- and/or 6-positions with alkyl radicals having 1 or 2 carbon atoms, with one or more single-ring or condensed-ring cycloaliphatic ethers comprising the characteristic group:



wherein R' is hydrogen and R''is H, a halogen, or an alkyl radical containing 1 or 2 carbon atoms in which one or more hydrogen atoms may be replaced by a halogen, wherein if said ether contains one ring only, from 5 to 12 atoms are contained in the ring, and if a condensed-ring system is present, a total of from 10 to 18 atoms are contained in the rings, and wherein the 7,oxabicyclo(2,2,1)heptane is present in a molar amount from 50 to 99.9% in said copolyethers.

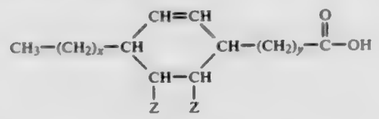
5,055,548

SOLVENT-BORNE ALKYD RESIN COMPOSITIONS

John P. Cosgrove, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 11, 1990, Ser. No. 597,333
Int. Cl.[5] C08G *63/52*
U.S. Cl. 528—272 13 Claims

1. A process for the production of a solvent-borne alkyd resin which comprises reacting:
(a) 20 to 70% by weight of an unsaturated fatty acid;
(b) 10 to 50% by weight of a polyol;
(c) 10 to 50% by weight of a dibasic carboxylic acid; and
(d) 10 to 50% by weight of a 21-carbon dicarboxylic acid having the formula



wherein X and Y are integers which when added together equal 12, and Z is a hydrogen (H) while the other Z is a carboxylic acid group (COOH).

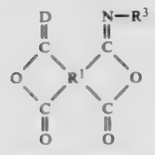
5,055,549

PROCESS FOR PREPARING PHOTOSENSITIVE HEAT-RESISTANT POLYMER

Hirotoshi Maeda, Yokohama, and Kouichi Kunimune, Ichihara, both of Japan, assignors to Chisso Corporation, Osaka, Japan

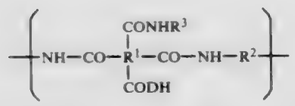
Filed Jan. 8, 1990, Ser. No. 461,985
Claims priority, application Japan, Jan. 18, 1989, 1-8931; Apr. 18, 1989, 1-98124
Int. Cl.[5] C08G *69/08*
U.S. Cl. 528—310 8 Claims

1. A process for preparing a photosensitive heat-resistant polymer containing a repeating unit represented by the formula (III) which comprises the step of reacting a photosensitive group-containing isoimide represented by the formula (I) with a diamine represented by the formula (II) at a temperature of 0° to 100° C. in the presence of a solvent:



(I)

$H_2N-R^2-NH_2$ (II)



(III)

wherein R^1 is independently a tetravalent carbon cyclic aromatic group or heterocyclic group; R^2 is independently an aliphatic group having at least 2 carbon atoms, an alicyclic group, an aromatic aliphatic group, a carbon cyclic aromatic group, a heterocyclic group or a polysiloxane group; R^3 is a monovalent organic group having a photosensitive unsaturated group; and D is an oxygen atom or $=N-R^3$.

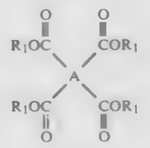
5,055,550

POLYMERS PREPARED FROM 4,4'-BIS(2-[3,4(DICARBOXYPHENYL)HEXAFLUOROISOPROPYL] DIPHENYL ETHER DIANHYDRIDE

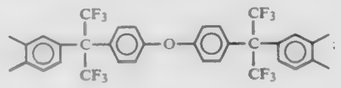
Werner H. Mueller, Greenwich; Dinesh N. Khanna; Rohitkumar H. Vora, both of Warwick, all of R.I., and Ruediger J. Erckel, Warren, N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 124,720, Nov. 24, 1987, Pat. No. 4,931,540.
This application Mar. 21, 1990, Ser. No. 497,081
Int. Cl.[5] C08G *69/26, 8/02, 14/00*
U.S. Cl. 528—353 13 Claims

1. A composition comprising:
a tetracarboxylic acid, or derivative thereof, having the formula:



wherein R_1 is hydrogen or a monovalent organic radical, and A is



a diamine having the formula:

$H_2N-R-NH_2$

wherein R is a divalent organic radical;
and a solvent.

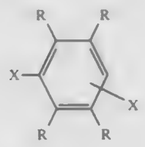
5,055,551

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT, OPTIONALLY BRANCHED POLYARYLENE SULFIDES HAVING REDUCED CONTENT OF EXTRACTABLE OLIGOMERS

Manfred Schmidt; Wolfgang Arlt; Erhard Tresper, and Wolfgang Rüsseler, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

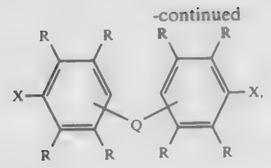
Filed Nov. 13, 1989, Ser. No. 434,317
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1988, 3839441
Int. Cl.[5] C08G *2/00, 4/00, 75/14*
U.S. Cl. 528—388 12 Claims

1. A process for the production of polyarylene sulfide from
a) one or more (hetero)aromatic dihalogen compounds corresponding to formulae (i) or (II)



(I)

-continued



(II)

in which
X is halogen,
the R's are the same or different and represent hydrogen, C_{1-20} alkyl, C_{4-20} cycloalkyl, C_{6-24} aryl, C_{7-24} alkylaryl and C_{7-24} arylalkyl or two substituents R in the ortho position to one another are attached to form an aromatic or heterocyclic ring containing up to 3 hetero atoms, and
Q represents a chemical bond, or O represents —Ar—, —O—, —S—, —SO—, —SO_2—, —$(CR)_m$—, —CO—, —CO—, —Ar—CO—, —CO—NH—, —CO—NH—Ar—NH—CO, where R is as defined above, Ar is a C_{6-24} aromatic radical with two bonds and m is an integer of 1 to 24,
and
b) zero to 5 mol-%, based on the sum of the aromatic dihalogen compounds of formula (I) and (II), of an aromatic trihalogen or tetrahalogen compound corresponding to formula (III)

ArX_n (III)

in which
Ar is an aromatic or heterocyclic radical containing 6 to 24 ring atoms, up to 3 ring C atoms being replaceable by heteroatoms,
X represents halogen, and
n is the number 3 or 4,
and
c) 50 to 100 mol-% alkali sulfide, and 0 to 50 mol-% alkali hydrogen sulfide, the molar ratio of (a+b):c being from 0.75:1 to 1.15:1,
d) in an organic solvent, optionally in the presence of catalysts or other solvents,
wherein the molar ratio of c) to the organic solvent d) is in the range from 1:1.9 to 1:1.0 and the reaction is carried out by mixing of aqueous alkali sulfide or alkali hydrogen sulfide solutions with solutions of the aromatic dihalogen compounds in an organic solvent at temperatures above 212° C., the water content of the reaction solutions does not exceed 0.02% by weight and unreacted aromatic halogen compounds corresponding to formulae (I), (II) and (III) are removed from the reaction mixture either continuously or at the end of the reaction.

5,055,552

POLYMERIZATION OF CO/OLEFIN WITH PHOSPHORUS BIDENTATE LIGAND-SOLID SUPPORT REACTION PRODUCT

Pui K. Wong, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 14, 1990, Ser. No. 479,923
Claims priority, application Netherlands, Jun. 14, 1989, 8901508
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 12 Claims

1. In the process of producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and hydrocarbon under polymerization conditions in a liquid reaction diluent in the presence of a catalyst composition formed from a compound of palladium, an anion of a strong non-hydrohalogenic acid and a bidentate ligand of phosphorus, the improvement wherein the bidentate ligand is a solid, supported bidentate ligand which is a reaction product of a bidentate ligand of phosphorus and a solid support containing a reactive group on the surface of the support which will react with a group other than the phosphorus atoms of the bidentate ligand.

5,055,553

LOW MOLECULAR WEIGHT PULMONARY SURFACTANT PROTEINS

Kenneth A. Jacobs, Newton, Mass.; D. Randall Steinbrink, Phoenixville, Pa.; Joanna Floros; David S. Phelps, both of West Roxbury, Mass., and H. William Taeusch, Redondo Beach, Calif., assignors to Genetics Institute Inc., Cambridge and The Brigham & Womens Hospital, Inc., Boston, both of Mass.

Division of Ser. No. 190,287, May 4, 1988, Pat. No. 4,918,161, which is a continuation-in-part of Ser. No. 100,372, Sep. 24, 1987, Pat. No. 4,882,422, which is a continuation-in-part of Ser. No. 897,183, Aug. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 781,130, Sep. 26, 1985, abandoned. This application Apr. 9, 1990, Ser. No. 507,331
Int. Cl.[5] A61K *37/02;* C07H *19/00;* C12P *19/28;* C12N *5/00*
U.S. Cl. 530—300 6 Claims

1. A recombinant DNA sequence containing a heterologous nucleotide sequence encoding a pulmonary surfactant protein comprising the peptide sequence FPIPLPY.

5,055,554

RENAL GROWTH PROMOTER AND PROCESS FOR THE PRODUCTION OF THE SAME

Kaoru Nomura, Musasino; Kazutaka Ohmura, Kashiwa; Yuri Shirakura, Koufu; Yasunori Nakamura, Yokohama; Makoto Ujihara, Tokyo; Satoshi Toyoshima, Chiba; Kazuo Yamamoto, Tokyo; Toshiaki Osawa, Tokyo, and Kazuo Shizume, Tokyo, all of Japan, assignors to The Calpis Food Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 269,150, Oct. 27, 1988, abandoned. This application Dec. 1, 1988, Ser. No. 299,928
Claims priority, application Japan, Apr. 20, 1987, 62-95277; Dec. 3, 1987, 62-304422; Oct. 5, 1988, 63-249970
Int. Cl.[5] C07K *7/20;* A61K *37/24*
U.S. Cl. 530—313 11 Claims

1. A method for promoting renal growth, comprising administering to a patient in need thereof an effective amount of a renal growth promoter comprising, as active component, a purified isoform of luteinizing hormone having renal growth promoting activity or a purified mixture of isoforms of luteinizing hormone which mixture has renal growth promoting activity.

5,055,555

PURIFICATION OF G-CSF

Helmut Sassenfeld, 4098 Mattson Pl. NE., Bainbridge Island, Wash. 98110

Filed Jan. 5, 1989, Ser. No. 293,907
Int. Cl.[5] C07K *3/24, 3/28*
U.S. Cl. 530—351 20 Claims

1. A method of purifying human G-CSF (hG-CSF) from an aqueous solution containing hG-CSF comprising the steps of
(a) adding NaCl to said an aqueous solution containing greater than about 1 mg/ml hG-CSF to selectively precipitate hG-CSF; and
(b) isolating the precipitate from the solution.

5,055,556

FLUORESCENT CONJUGATES FOR ANALYSIS OF MOLECULES AND CELLS

Lubert Stryer, Stanford; Alexander N. Glazer, Orinda, and Vernon T. Oi, Menlo Park, all of Calif., assignors to The Board of Trustees of the Leland Stanford Jr. Univ., Stanford, Calif.

Continuation of Ser. No. 701,324, Feb. 13, 1985, which is a continuation-in-part of Ser. No. 454,768, Dec. 30, 1982, Pat. No. 4,520,110, which is a continuation-in-part of Ser. No. 309,169, Oct. 6, 1981, abandoned. This application Oct. 25, 1985, Ser. No. 791,248

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[5] **C07K** *15/04, 17/00;* **G01N** *33/566, 33/53*

U.S. Cl. 530—370 **4 Claims**

1. A receptor covalently bound to a phycobiliprotein.

5,055,557

ULTRAPURIFICATION OF FACTOR IX AND OTHER VITAMIN K-DEPENDENT PROTEINS

Theodore S. Zimmerman, La Jolla, Calif., assignor to Scripps Clinic & Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 910,315, Sep. 2, 1986, which is a continuation of Ser. No. 800,902, Nov. 22, 1985, abandoned, which is a continuation of Ser. No. 707,179, Mar. 1, 1985, abandoned, which is a continuation of Ser. No. 472,413, Mar. 4, 1983, abandoned. This application Nov. 23, 1988, Ser. No. 275,466

Int. Cl.[5] **C07K** *3/20, 3/28*

U.S. Cl. 530—381 **13 Claims**

1. A method of recovering an active, highly purified and concentrated vitamin K-dependent protein, from a source comprising a mixture of said vitamin K-dependent protein with one or more other proteins, comprising:

(a) adsorbing said vitamin K-dependent protein from said source onto particles bound to a monoclonal antibody specific to said vitamin K-dependent protein,

(b) removing the source depleted in said vitamin K-dependent protein from the particles with an aqueous buffered solution containing lithium chloride, and then

(c) eluting the adsorbed vitamin K-dependent protein from particles with a buffered eluant.

5,055,558

METHOD FOR THE SELECTIVE DEPROTEINIZATION OF WHEY

Emilia Chiancone, and Maurizio Gattoni, both of Rome, Italy, assignors to Consiglio Nazionale Della Ricerche, Rome, Italy

Filed Mar. 25, 1988, Ser. No. 173,384

Claims priority, application Italy, Mar. 27, 1987, 47785 A/87

Int. Cl.[5] **C07K** *17/08, 17/10*

U.S. Cl. 530—386 **12 Claims**

1. A method for the selective extraction of β-lactoglobulin from whey or milk, which comprises:

providing a polymeric matrix selected from the group consisting of acrylic resins and polysaccharides;

treating the matrix with a chemically activating agent;

immobilizing β-lactoglobulin onto the chemically activated matrix through covalent bonds; and

percolating the whey or milk through the chemically activated matrix having covalently bound β-lactoglobulin under conditions of pH and temperature whereby the β-lactoglobulin in the whey or milk is in a reversible association-dissociation equilibrium and wherein the conditions promote association between the β-lactoglobulin in the whey or milk and the covalently bound β-lactoglobulin.

5,055,559

ANTI-MELANOMA ANTIBODY MG-21 FOR DIAGNOSIS AND THERAPY OF HUMAN TUMORS

Karl E. Hellstrom, and Ingegerd Hellstrom, both of Seattle, Wash., assignors to Oncogen, Seattle, Wash.

Filed Feb. 20, 1986, Ser. No. 834,162

Int. Cl.[5] **A61K** *35/16;* **C12N** *15/06*

U.S. Cl. 530—387 **4 Claims**

1. A monoclonal antibody that immunospecifically binds to a GD3 ganglioside antigen expressed by human melanoma cells and which, upon complexing with the GD3 ganglioside antigen, activates serum complement or mediates antibody dependent cellular cytotoxicity in which the monoclonal antibody has the affinity and antigen binding specicity of the monoclonal antibody MG21.

5,055,560

I.60: A NOVEL MONOCLONAL ANTIBODY

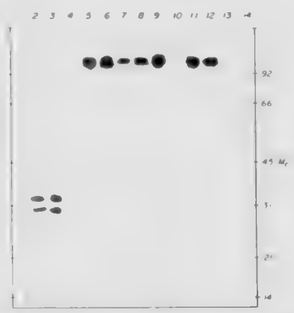
David W. Buck, El Granada, and Jane M. Bindl, Los Altos, both of Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 139,491, Dec. 30, 1987, Pat. No. 4,945,056. This application Feb. 16, 1990, Ser. No. 481,030

The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.

Int. Cl.[5] **C12P** *21/08;* **G01N** *33/53, 33/577*

U.S. Cl. 530—387 **1 Claim**



1. A monoclonal antibody capable of reacting with the same antigen as that recognized by an antibody produced by the hybridoma deposited as ATCC HB-9575.

5,055,561

PROTEIN LABEL AND DRUG DELIVERY SYSTEM

Beverly Packard; Michael Edidin, both of Baltimore, and Akira Komoriya, Rockville, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 151,186, Feb. 1, 1988, Pat. No. 4,889,916, which is a division of Ser. No. 799,637, Nov. 19, 1985, Pat. No. 4,751,286. This application Nov. 1, 1989, Ser. No. 430,150

Int. Cl.[5] **A61K** *35/14;* **C07K** *3/00*

U.S. Cl. 530—390 **6 Claims**

1. A conjugated protein obtained by reacting reduced disulfide bonds of a protein with a compound of the formula:



wherein

X and Y comprise functional groups reactive with sulfhydryl groups;

A comprises a third group selected from the group comprising drugs, dyes and labels whereby said compound bridges the reduced disulfide bonds of said protein.

5,055,562

FLUOROCARBON CHAIN-CONTAINING ANTIGENIC CONJUGATES

R. Rao Koganty, Edmonton, Canada, assignor to Biomira, Inc., Alberta, Canada

Filed Feb. 1, 1988, Ser. No. 151,145

Int. Cl.[5] **C07K** *17/02*

U.S. Cl. 530—403 **24 Claims**

13. An antigenic conjugate comprises a hapten, an immunogenic carrier, and a covalent linker comprising at least one fluorocarbon chain.

5,055,563

CONTINUOUS PREPARATION OF AROMATIC DIAZONIUM FLUORIDE SALTS FROM CORRESPONDING AROMATIC AMINES

Bruce J. Lamb, St. Charles, and Nickolas J. Stepaniuk, Chesterfield, both of Mo., assignors to Mallinckrodt Specialty Chemicals Company, St. Louis, Mo.

Filed Jun. 13, 1990, Ser. No. 538,056

Int. Cl.[5] **C07C** *245/20*

U.S. Cl. 534—565 **18 Claims**

1. A process for the continuous production of an aromatic diazonium fluoride compound from a corresponding aromatic amine which comprises:

(a) pre-mixing a diazotizing agent and hydrogen fluoride such that a diazotization solution is made;

(b) removing heat from said diazotization solution so as to form a cooled diazotization solution;

(c) continuously introducing through a parallel series of inputs a flow of said cooled diazotization solution into each of a series of sequentially linked continuous-stirred tank reactor;

(d) continuously introducing into the first of said reactors in said series of reactors a flow of an amine solution comprising an aromatic amine-hydrogen fluoride solution, said aromatic amine-hydrogen fluoride solution overflowing from said first reactor into each subsequent reactor in a serial flow;

(e) mixing said aromatic amine-hydrogen fluoride solution with said diazotization solution in each reactor in said series of reactors, to form a reaction mixture, thereby reacting said amine and said diazotizing agent to form an aromatic diazonium fluoride; and

(f) removing heat from each of said reactors in said series of reactors, such that each reactor is at a temperature less than a temperature at which autothermal decomposition of said diazonium fluoride takes place.

5,055,564

MODIFIED CRYSTALLINE MONOAZO LAKE PIGMENT

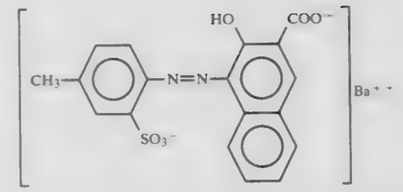
Nagatoshi Koyayashi, and Hirohito Ando, both of Ibaraki, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Sep. 15, 1988, Ser. No. 245,187

Int. Cl.[5] **C09B** *67/24, 67/48, 11/02;* **D06P** *1/44*

U.S. Cl. 534—575 **4 Claims**

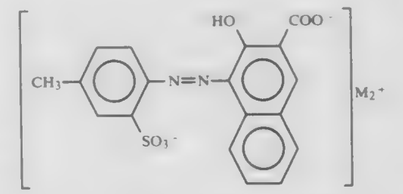
1. A monoazo lake pigment of the formula (I):



(I)

whose X-ray diffraction pattern shows a high diffraction intensity at a diffraction angle ($2\theta \pm 0.2°$; Cu-K_α) of 5.0°, moderate diffraction intensity at 25.0°, and relatively low diffraction intensities at 14.8°, 19.5°.

2. A monoazo lake pigment according to claim 1 which is obtained by heating a monoazo dye of formula (IV):



(IV)

wherein M_2^+ represents a sodium, potassium or lithium ion; and adding an aqueous solution of a barium salt thereto, and allowing the resulting mixture to react thus laking the same.

5,055,565

WATER-SOLUBLE DISAZO COMPOUNDS, CONTAINING A VINYLSULFONYL OR β-CHLOROETHYLSULFONYL GROUPING BONDED DIRECTLY OR VIA A METHYLENE GROUP OR A LOWER ALKYL AMINO GROUP TO A BENZOYLAMINO GROUP, SUITABLE AS DYESTUFFS

Hartmut Springer, Königstein; Manfred Kühn, Frankfurt am Main; Werner H. Russ, Hofheim am Taunus, and Ludwig Schläfer, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

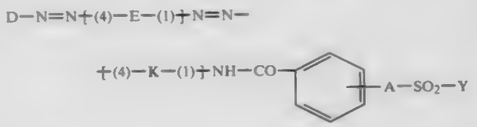
Continuation of Ser. No. 224,497, Jul. 26, 1988, abandoned. This application Aug. 20, 1990, Ser. No. 570,033

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1987, 3724931

Int. Cl.[5] **C09B** *62/513;* **D06P** *1/384*

U.S. Cl. 534—642 **16 Claims**

1. A compound conforming to the formula



in which:

D is phenyl unsubstituted or substituted by 1, 2 or 3 substituents selected from the set of substituents: 2 sulfo, 2 alkyl having 1 to 4 carbons and 2 alkoxy having 1 to 4 carbons, at least one of these substituents being sulfo, or

D is 1-naphthyl substituted by 2 to 3 sulfo, or is 2-naphthyl substituted by 2 or 3 sulfo;

E is 1,4-naphthylene unsubstituted or substituted by 1 or 2 sulfo, the azo group which is linked to D being bonded to

E in the 4-position and the azo group which is linked to K being bonded to E in the 1-position;
K is 1,4-phenylene substituted by 1 or 2 substituents being selected from the set of substituents: 2 alkyl having 1 to 4 carbons, 2 alkoxy having 1 to 4 carbons, 1 alkanoylamino having 2 to 4 carbons and 1 ureido, and the azo group which is linked to E being bonded to K in the 4-position and the benzoylamido group being bonded to K in the 1-position, or
K is 1,4-naphthylene, unsubstituted or substituted by 1 or 2 sulfo, the azo group which is linked to E being bonded to K in the 4-position and the benzoylamido group being bonded to K int he 1-position;
A is a direct covalent bond or is methylene, and
Y is vinyl or β-chloroethyl.

5,055,566

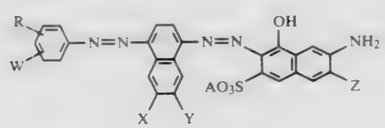
AMINE SALTS OF DISAZO BLACK DYES HAVING GOOD SOLUBILITY IN POLAR ORGANIC SOLVENTS

Peter Gregory, Bolton, United Kingdom, and Ronald W. Kenyon, Failsworth, England, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Filed Jun. 19, 1990, Ser. No. 540,171
Claims priority, application United Kingdom, Jul. 12, 1989, 8915958
Int. Cl.[5] C09B *31/08;* **C09D** *11/02*
U.S. Cl. 534—228 **8 Claims**

1. A compound of the Formula (1):

Formula (1)



wherein
R is H, SO_3A, C_{1-4}-alkyl, C_{1-4}-alkoxy, NO_2, OH or halogen;
W, X, Y and Z are independently H or SO_3A; and
A is NQ_4 wherein at least one Q is a branched chain fatty C_{6-20}-alkyl group.

5,055,567

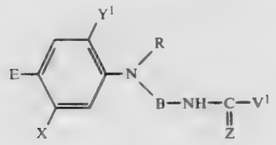
DISPERSE DYES WHICH ARE CONVERTIBLE INTO A THERMO-MIGRATION FAST FORM

Peter Liechti, Arisdorf; Karl Emmenegger, Pratteln, and Martin Trottmann, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 10, 1989, Ser. No. 335,641
Claims priority, application Switzerland, Apr. 14, 1988, 1381/88
Int. Cl.[5] C09B *29/36, 29/08, 57/00;* **D06P** *1/16*
U.S. Cl. 534—753 **11 Claims**

1. A disperse dye of the formula

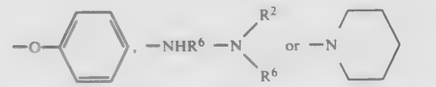
(3)



where
E is D—N=N— or

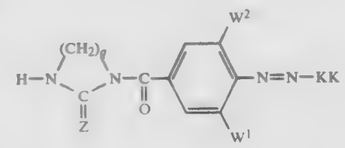


where D is a carbocyclic or heterocyclic diazo component other than ·minobenzisothiazole,
X is hydrogen, C_1-C_4alkyl, C_1-C_4alkoxy, halogen, C_1-C_4alkylsulfonylamino, a group of the formula —N-H—U—R^3 where U is —CO— or —SO_2— and R^3 is C_1-C_4-alkyl which is unsubstituted or substituted by hydroxy, C_1-C_4-alkoxy, C_1-C_4-alkoxycarbonyl, halogen or phenyl or R^3 is phenyl which is unsubstituted or substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy, halogen, nitro or C_1-C_4-alkylcarbonylamino or
X is a group of the formula —NH—CO—NHQ where Q is hydrogen, C_1-C_4alkyl or phenyl,
Y is hydrogen, halogen, C_1-C_4alkyl, C_1-C_4alkoxy, C_1-C_4alkoxy-C_1-C_4alkyl or C_1-C_4alkoxy-C_2-C_4alkoxy,
R^1 is C_1-C_{12}alkyl, C_2-C_6alkenyl or phenyl, or Y and R^1, together with the nitrogen atom and the two C atoms joining them, form a 6-membered ring which is unsubstituted or substituted by 1 to 4 methyl groups,
B is a straight-chain or branched C_2-C_6alkylene,
Z is O or S and
V^1 is a group which eliminates a radical HV^1 at temperatures between 180° and 240° C. selected from the group consisting of



which are unsubstituted or substituted in the phenyl ring by C_1-C_4alkyl, C_1-C_4alkoxy, C_1-C_4alkoxycarbonyl or halogen, where
R^2 is C_1-C_6alkyl and
R^6 is C_1-C_6alkyl or C_3-C_7cycloalkyl.
9. A disperse dye of the formula

(4)



where
Z is O or S,
W^1 and W^2 are each independently of the other hydrogen, C_1-C_4alkyl, CN, CF_3, C_1-C_4alkylsulfonyl, halogen, or nitro,
q is an integer from 2 to 6 and
KK is a coupling component, wherein the bond between the H—N< group and the >C=Z group is cleaved at temperatures between 180° and 240° C.

5,055,568

PROCESS FOR PREPARATION OF CELLULOSE NITRATE FILMS

Hiroaki Nakagawa; Masahiro Kondo, and Noriake Ohishi, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 60,799, Jun. 12, 1987, Pat. No. 4,812,279. This application Sep. 21, 1988, Ser. No. 247,013
Claims priority, application Japan, Jun. 12, 1986, 61-137212
Int. Cl.[5] C08B *5/02;* **C08L** *1/18;* **C09J** *4/00;* **B32B** *7/02*
U.S. Cl. 536—35 **13 Claims**

1. A photomask-protecting optical film formed from a nitrocellulose solution by the rotational film-forming method, wherein the nitrocellulose has a nitration degree of 11 to 12.5% and a weight average molecular weight ($\overline{M}W$) of 170,000 to 320,000, the film thickness unevenness ratio, defined by the following formula, of the film is less than 0.7%:

$$\frac{\text{maximum thickness} - \text{minimum thickness}}{\text{average thickness}} \times 100$$

and the film is transparent and free of color nonuniformity over the entire surface.

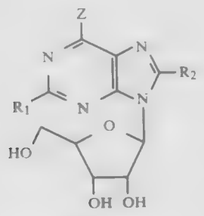
5,055,569

N-(6)-SUBSTITUTED ADENOSINE COMPOUNDS

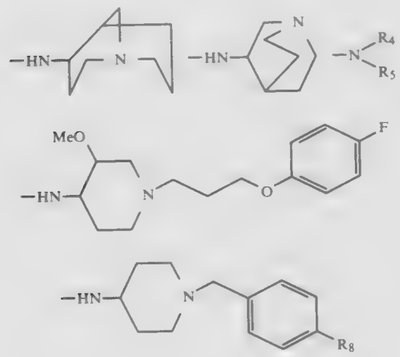
Daniel P. Becker, Glenview; Paul W. Collins, Deerfield, and Daniel L. Flynn, Mundelein, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 19, 1989, Ser. No. 423,923
Int. Cl.[5] C07H *19/06;* **A61K** *31/70*
U.S. Cl. 536—26 **45 Claims**

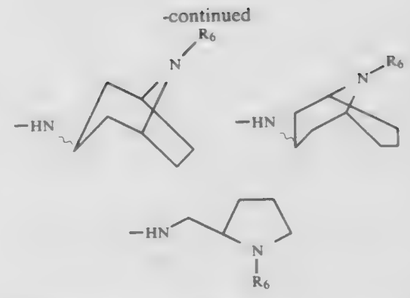
1. A compound of the formula

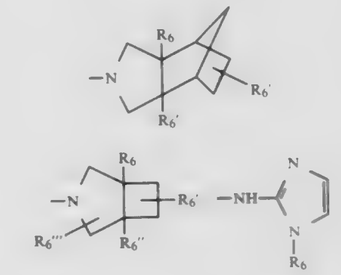


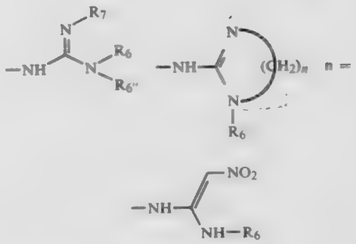
or a pharmaceutically acceptable salt thereof, wherein Z can be:



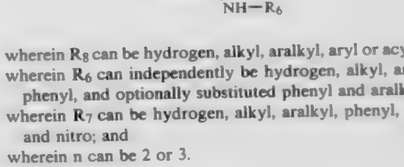
-continued







wherein R_1 and R_2 are independently hydrogen, hydroxyl, halogen, alkyl, phenyl, alkoxy, morpholino, piperidino, piperazino, phenoxy, thiophenoxy or amino optionally substituted by alkyl, aralkyl or phenyl;
wherein R_4 can be hydrogen or alkyl
wherein $R_5$is —X—Y
wherein X can be a straight chain, branched chain or cyclic alkylene from 1 to 10 carbon atoms, and
wherein Y can be optionally substittued imidazol-1-yl, imidazol-2-yl, pyrrolinyl, pyrrolidinyl, piperidinyl, triazolyl,



wherein R_8 can be hydrogen, alkyl, aralkyl, aryl or acyl; and
wherein R_6 can independently be hydrogen, alkyl, aralkyl, phenyl, and optionally substituted phenyl and aralkyl;
wherein R_7 can be hydrogen, alkyl, aralkyl, phenyl, cyano and nitro; and
wherein n can be 2 or 3.

5,055,570

CUPRAMMONIUM-STABLE CELLULOSE ESTERS AND CARBAMATES FOR DIALYSIS MEMBRANES

Michael Diamantoglou, Erlenbach, Fed. Rep. of Germany, assignor to Akzo N.V., Netherlands

Filed Aug. 4, 1989, Ser. No. 389,767

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1988, 3826468

Int. Cl.[5] C08B *11/00, 11/187, 11/08, 11/12*

U.S. Cl. 536—84 **15 Claims**

1. A substitution-modified cellulose regenerated from a cuprammonium solution and wherein the substituent is selected from the group consisting of a substituted or unsubstituted acyl group having a carbon chain of from 10 to 36 carbon atoms, a substituted or unsubstituted acyl group containing at least one heterocyclic ring, a substituted or unsubstituted acyl group containing at least one aromatic ring, a substituted or unsubstituted carbamoyl group having a carbon chain of from 2 to 36 carbon atoms, a substituted or unsubstituted carbamoyl group containing at least one heterocyclic ring, and a substituted or unsubstituted carbamoyl group containing at least one aromatic ring.

5,055,571

METHOD OF PURIFYING CRUDE POLYOL FATTY ACID POLYESTERS

Gerard J. Van Lookeren, Sonderborg, Denmark, assignor to Van den Bergh Foods Co., Division of Conopco Inc., Lisle, Ill.

Filed Dec. 5, 1988, Ser. No. 279,688

Claims priority, application United Kingdom, Dec. 4, 1987, 8728385

Int. Cl.[5] C07H *1/00;* **C08B** *37/00*

U.S. Cl. 536—124 **18 Claims**

1. A process of purifying crude polyol fatty acid polyesters comprising conducting an alkaline washing step by submiting said polyesters to a treatment with a suitable amount of an aqueous alkaline solution having a pH of at least 13.

5,055,572

CEPHALOSPORIN DERIVATIVES

André Furlenmeier, Basle; Erwin Götschi; Paul Hebeisen, both of Reinach; Werner Hofheinz, Bottmingen, and Helmut Link, Basle, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

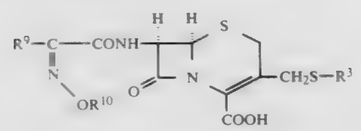
Filed Apr. 8, 1988, Ser. No. 179,199

Claims priority, application Switzerland, Apr. 10, 1987, 1407/87; Apr. 30, 1987, 1657/87; Jun. 26, 1987, 2414/87

Int. Cl.[5] C07D *501/36;* **A61K** *31/545*

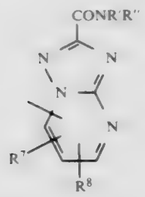
U.S. Cl. 514—206 **19 Claims**

1. A compound of formula



Ia

wherein R^3 is a substituted bicyclic group of formula:



(b)

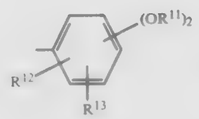
wherein R^7 and R^8 are independently hydrogen, lower alkyl having 1–7 carbon atoms or trifluoromethyl, or together represent alkylene with 3 or 4 carbon atoms, and R′ and R″ are independently hydrogen, lower alkyl having 1–7 carbon atoms or lower cycloalkyl having 3–7 carbon atoms, R^9 is an unsubstituted or substituted 5- or 6-membered heterocyclic group having 1–4 heteroatoms selected from nitrogen, oxygen and sulfur with the substituents selected from the group consisting of halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, C_1–C_7 lower alkyl and C_1–C_7 lower alkoxy, and R^{10} is hydrogen, lower alkanoyl having 1–7 carbon atoms, lower alkyl having 1–7 carbon atoms, lower alkenyl having 1–7 carbon atoms, lower cycloalkyl having 3–7 carbon atoms, lower cycloalkenyl having 3–7 carbon atoms or C_1–C_7 lower alkyl substituted by carboxy, carbamoyl, lower alkoxycarbonyl having 1–7 carbon atoms, or lower alkanoyl having 1–7 carbon atoms, or R^{10} is a group of formulas

—P—Q

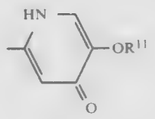
—P—CO—Q

—P—CO—NH—NH—CO—Q^1

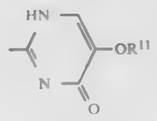
wherein P is lower alkylene having 1–7 carbon atoms or lower cycloalkylene having 3–7 carbon atoms, Q is one of the groups



(i)



(k)



(l)

wherein R^{11} is hydrogen, lower alkanoyl having 1–7 carbon atoms or tri(C_1–C_7 lower alkyl)-silyl, R^{12} is hydrogen, —OR^{11}, lower alkoxy having 1–7 carbon toms, halogen, —$OCOR^{14}$, —$OCOOR^{14}$, —$N(R^{14})_2$, —NH—COR^{14}, —$NHCOOR^{14}$, —COR^{14}, —SR^{14}, —SOR^{14}, —SO_2R^{14}, —SO_3H, —$COOR^{14}$, —$CON(R^{14})_2$ or nitro, R^{13} is hydrogen or halogen and R^{14} is hydrogen or lower alkyl having 1–7 carbon toms, wherein in (i) the two —OR^{11} groups are present in the 2,3- or 3,4-position; and Q^1 is one of the groups (k) and (l), wherein the compounds of formula Ia are present in the syn-isomeric form or as a mixture with the anti-isomeric form in which the syn-isomeric form predominates, or a readily hydrolyzable ester or pharmaceutically acceptable salt of the compound, or a hydrate of the compound or of its ester or salt.

5,055,573

PROCESS FOR PREPARING 1-CARBA-2-PENEM-3-CARBOXYLIC ACID

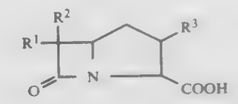
Lovji D. Cama, Edison, and Burton G. Christensen, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 500,258, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 215,832, Sep. 9, 1988, abandoned, Division of Ser. No. 83,938, Jul. 31, 1987, Pat. No. 4,775,669, which is a continuation of Ser. No. 736,885, Jul. 12, 1985, abandoned, which is a division of Ser. No. 109,737, Jan. 4, 1980, Pat. No. 4,543,257, which is a continuation of Ser. No. 843,171, Oct. 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 743,363, Nov. 19, 1976, abandoned. This application Aug. 24, 1990, Ser. No. 573,289

Int. Cl.[5] C07D *487/04*

U.S. Cl. 540—302 **2 Claims**

1. A process for preparing a compound of the Structural Formula I:



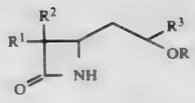
I

and the pharmaceutically acceptable salts thereof, wherein R^1, R^2 and R^3 are independently:

hydrogen,
1–10 carbon alkyl,
2–10 carbon alkenyl,
2–10 carbon alkynyl,
3–6 carbon cycloalkyl,
3–6 carbon cycloalkylalkyl,
3–6 carbon cycloalkylalkenyl,
3–6 carbon cycloalkenyl,
wherein said alkyl or alkenyl moieties on said cyclic groups consists of 1–6 carbons,
6–10 ring carbon aryl,
6–10 ring carbob aralkyl,
6–10 ring carbon aralkenyl,
6–10 ring carbon aralkynyl,
wherein said alkyl, alkenyl and alkynyl substituents on said aryl moieties consists of 1–6 carbons,
4–10 atom heteroaryl,
4–10 atom heteroarylkyl,
4–10 atom heterocyclyl,
4–10 atom heterocyclylalkyl,
wherein said heterocyclic moiety is mono- or bicyclic, and wherein 1 or more of said 4–10 atoms is selected from the group consisting of oxygen, sulfur and nitrogen, and wherein said alkyl moiety of said heterocyclic groups consists of 1–3 carbons,

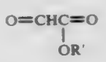
and wherein all of said R^1, R^2 and R^3 are unsubstituted or substituted by substituents selected from the group consisting of;
amino,
hydroxyl,
1–6 carbon alkoxyl,
mercapto,
1–6 carbon alkylthio,
sulfamoyl,
amidino,
guanidino,
nitro,
chloro,
bromo,
fluoro,
cyano, and
carboxyl;

with the proviso that when one of R^1 or R^2 is hydrogen and the other is 1-hydroxyethyl, then R^3 is not hydrogen;
wherein said process comprises the steps of:
(a) reacting a compound of the Formula II:



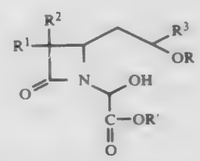
II

with a glyoxylate ester of the Formula III:



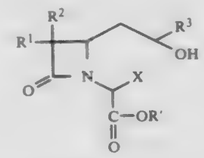
III

wherein
R^1, R^2 and R^3 are as defined above, and
R is a readily removable protecting group, and
R′ is selected from the group consisting of readily removable blocking groups and pharmaceutically acceptable ester moieties, to produce a compound of the Structural Formula IV:



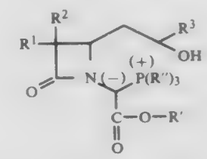
IV

(b) halogenating the product of Step (a) to produce a compound of the Formula V:



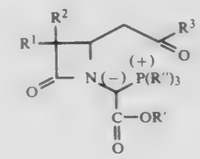
V

wherein X is halogen;
(c) reacting the product of Step (b) with a suitable phosphine to produce a compound of the Formula VI:



VI

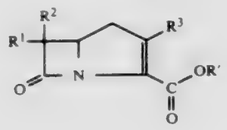
wherein R″ is selected from the group consisting of phenyl and unsubstituted or substituted 1–10 carbon alkyl wherein said substituent is cyano;
(d) oxidizing the product of Step (c) to produce a compound of the Formula VII:



VII

and,

(e) subjecting the product of Step (d) to elevated temperature of 0°–160° C. to produce a compound of Formula VIII:



VIII

5,055,574

Patent Not Issued For This Number

5,055,575

PROCESS FOR PREPARING 1,5-BENZOTHIAZEPINE DERIVATIVES

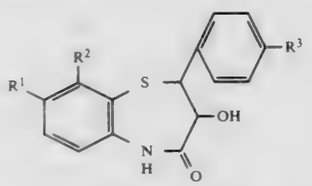
Shigeru Nishimoto, Minoo; Akio Nakao, Osaka; Yasuji Ikeda, Kyoto, and Hiroyuki Nate, Higashiosaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 507,929, Apr. 12, 1990, abandoned. This application Apr. 30, 1990, Ser. No. 516,940

Int. Cl.[5] **C07D** *281/04*

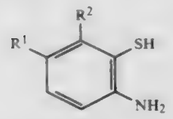
U.S. Cl. 540—491 **7 Claims**

1. A process for preparing optically active cis-1,5-benzothiazephine derivatives represented by the formula:



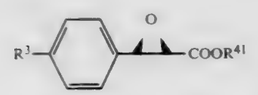
(I)

wherein one of R^1 and R^2 is a lower alkyl group or halogen atom, and the other is hydrogen atom, R^3 is a lower alkyl group or a lower alkoxy group, and * represents said carbon atom is an asymmetric carbon atom,
which comprises reacting a thiophenol compound represented by the formula (IV):



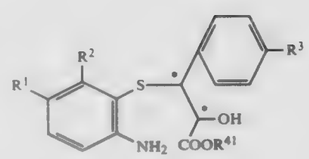
(IV)

wherein R^1 and R^2 have the seam meanings as defined above, with an optically active trans-glycidic acid ester represented by the formula:



(V)

wherein R^3 has the same meaning as defined above, and R^{41} represents an ester residue, to form an optically active threo-propionic acid ester compound represented by the formula:



(II-a)

wherein R^1, R^2, R^3, R^{41} and * have the same meanings as defined above,
and then subjecting the above compound (II - a) to intramolecular ring closing reaction in the presence of a sulfonic acid compound represented by the formula (III):

$$R^5SO_3H \qquad \text{(III)}$$

wherein R^5 represents a lower alkyl group or a substituted or unsubstituted phenyl group.

5,055,576

PHOTOCHROMATIC AND THERMOCHROMATIC SPIRO-OXAZEPIN-OXAZINE COMPOUNDS AND THE PROCESS FOR THEIR PREPARATION

Graziano Castaldi, Briona, and Pietro Allegrini, San Donato Milanese, both of Italy, assignors to Enichem Synthesis, S.p.A., Palermo, Italy

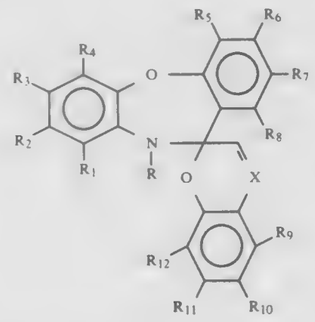
Filed Dec. 6, 1990, Ser. No. 622,710

Claims priority, application Italy, Dec. 12, 1989, 22659 A/89

Int. Cl.[5] **G02F** *1/00;* **G02B** *5/23;* **F21V** *9/04;* **C07D** *223/14*

U.S. Cl. 540—543 **3 Claims**

1. A photochromatic and/or thermochromatic compound of the spirooxazepin-oxazine class definable by the general formula (I):



(I)

where:
X represents a nitrogen atom or a CH group;
R represents a hydrogen atom; a linear or branched C_1–C_5 alkyl group; a said C_1–C_5 alkyl group substituted with 1 to 5 atoms of halogen chosen from fluorine, chlorine, bromine and iodine; a C_1–C_5 alkoxy group; a C_1–C_5 carboxyalkyl group; a cyano group; a C_2–C_5 alkenyl group; a phenyl group; or a benzyl group;
R_1 to R_{12}, which can be identical or different, each independently represent a hydrogen atom; a linear or branched C_1–C_5 alkyl group; a C_2–C_5 alkenyl group; a benzyl group; a halogen atom chosen from fluorine, chlorine, bromine and iodine; a hydroxy group; a C_1–C_5 alkoxy group; an amino group; a C_1–C_5 monoalkyl amino group; a C_1–C_5 dialkyl amino group; a C_3–C_7 cycloalkyl amino group; a carboxyl group; a C_1–C_5 carboxyalkyl group; a carboxyamide group; a C_1–C_5 N-alkyl substituted or C_1–C_5 N,N-dialkyl substituted carboxyamide group; a cyano or nitro group; or any adjacent two taken from R_9, R_{10}, R_{11} and R_{12} jointly represent a condensed benzene nucleus without substituents or carrying from 1 to 3 substituents chosen from those described for R_1–R_{12}.

5,055,577

PREPARATION OF URETHANE PRODUCTS

Dennis P. Riley, Ballwin, and William D. McGhee, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 18, 1990, Ser. No. 539,496

Int. Cl.[5] **C07D** *265/30, 211/06, 207/10;* **C07C** *269/04*

U.S. Cl. 544—172 **9 Claims**

1. A process of preparing a urethane of the following formula:



wherein R_1 and R_2 are independently hydrogen or alkyl, cycloalkyl, aryl, aralkyl or alkaryl radicals having 1 to 22 carbon atoms, provided that both R_1 and R_2 are not hydrogen, or wherein R_1 and R_2 together with the nitrogen may be bound to form a heterocyclic 5 to 9 membered ring radical, and R_3 is a monoolefin comprising the steps of:

(a) bringing CO_2 and a primary amine or secondary amine into reactive contact, optionally in the presence of a strongly basic nitrogenous compound, in a solvent to form the corresponding ammonium carbamate salt,

(b) reacting said carbamate salt with a diolefin complex of palladium(II), and

(c) reducing the produce of Step (b) with a reducing agent to cleave the palladium from the complex to produce said urethane and palladium metal.

5,055,578

FLUORESCENT POLY(ARYLPYRIDINE) RARE EARTH CHELATES

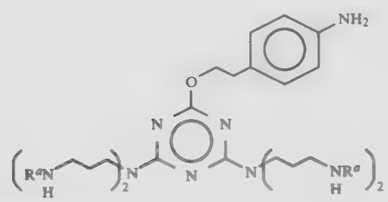
Ron L. Hale, Woodside, and Dennis W. Solas, San Francisco, both of Calif., assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Division of Ser. No. 339,287, May 30, 1989, which is a division of Ser. No. 118,292, Nov. 6, 1987. This application Nov. 5, 1990, Ser. No. 609,299

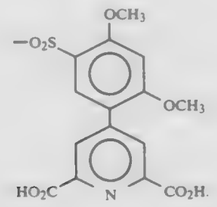
Int. Cl.[5] **C07D** *403/00*

U.S. Cl. 544—209 **2 Claims**

1. A poly(arylpyridine) ligand having the structural formula



wherein R^a is



5,055,579

HETEROCYCLIC COMPOUNDS CONTAINING 4,6-BIS-TRICHLOROMETHYL-S-TRIAZIN-2-LY GROUPS

Georg Pawlowski, Wiesbaden, and Heidrun Lutz, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

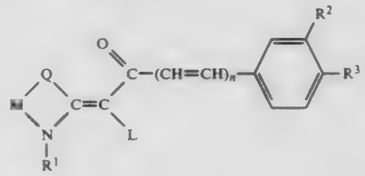
Filed Mar. 1, 1989, Ser. No. 317,595

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1988, 3807381

Int. Cl.[5] **C07D** *401/10, 403/10, 413/10, 417/10*

U.S. Cl. 544—216 **8 Claims**

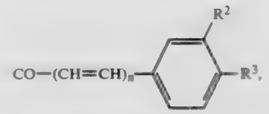
1. A compound of formula I



(I)

wherein

L is a hydrogen atom, a phenyl radical or a substituent of the formula



M is an alkylene radical or alkenylene radical or a 1,2-arylene radical comprising one, two or three benzene nuclei, M being unsubstituted or substituted by a member selected from the group consisting of a halogen atom, a carboxyl group, a sulfonic acid group, a nitro group, a cyano group, a carbonyl group, an alkyl group, an aryl group, an alkoxy group, a trifluoromethyl group, and an alkoxycarbonylalkyl group,

Q is a sulfur, selenium or oxygen atom, a dialkylmethylene group, an alken-1,2-ylene radical, a 1,2-phenylene radical or an N-R^1 group,

with M+Q together forming 3 or 4 ring members,

R^1 is an alkyl, aralkyl, aryloxyalkyl or alkoxyalkyl radical,

R^2 and R^3 differ from one another and are either a hydrogen atom or a 4,6-bis-trichloromethyl-s-triazin-2-yl group, and

n is 0 or 1.

5,055,580

SUBSTITUTED POLYCYLIC DERIVATIVES OF THE 9-OXO-1,9A,10-TRIAZA-9-HYDROANTHRACENE AND METHOD FOR COLORING OF NATIVE OR SYNTHETIC MATERIALS

Erwin Dietz, Kelkheim, and Frank Prokschy, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

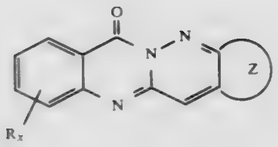
Filed Apr. 27, 1989, Ser. No. 344,218

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814552

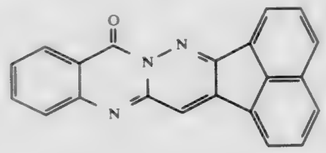
Int. Cl.[5] **C09B** *57/00, 67/22, 67/48;* **D06P** *1/44*

U.S. Cl. 544—233 **3 Claims**

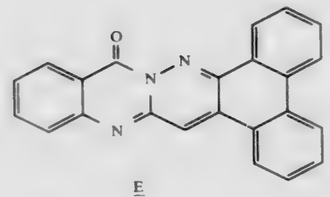
1. A derivative of 9-oxo-1, 9a,10-triaza-9-hydroanthracene of the formula I



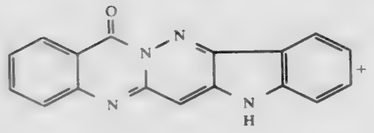
with the exception of the three compounds of the formulae



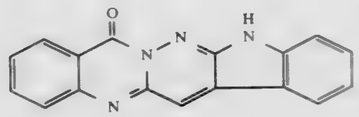
D



E



F



(isomeric with F)

in which (formula I) R denotes hydrogen, halogen, alkyl-C_1–C_4, alkoxy-C_1–C_4 or denotes trihalogenomethyl, —CO—NH_2—, —CO—NH—(alkyl-C_1–C_4) or —CO—N(alkyl-C_1–C_4)$_2$ or phenyl, alkyl-C_1–C_4, —NH_2, —NH(alkyl-C_1–C_4), —N(alkyl-C_1–C_4)$_2$ or alkylene-C_1–C_4—OSO_3H bound via the bridge member —S—, —SO— or —SO_2—, or a fused-on 4- to 7-membered isocyclic or heterocyclic aliphatic or aromatic, x denotes an integer from 1 to 4, where from $x>1$ R is identical or different, and Z denotes a fused-on 4- to 7-membered isocyclic or heterocyclic aliphatic or aromatic, wherein the cyclic moieties are unsubstituted or substituted by halogen, alkoxy-C_1–C_4, trihalogenomethyl, —CO—NH_2—, —CO—NH(alkyl-C_1–C_4) or —CO—N(alkyl-C_1–C_4)$_2$ or by phenyl, alkyl-C_1–C_4, —NH_2, NH(alkyl-C_1–C_4), —N(alkyl-C_1–C_4)$_2$ or alkylene-C_1–C_4—OSO_3H which are bound via the bridge member —S—, —SO— or —SO_2—, with the proviso that if R is hydrogen, then Z is substituted by one or more of said substituents.

3. A mixed crystal consisting of at least two compounds of the formula I mentioned in claim 1, wherein at least one of these compounds is present in the crystal lattice of one of the other compounds.

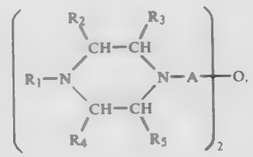
5,055,581

BIS(PIPERAZINYLALKYL) ETHER COMPOUND AND METHOD FOR THE PREPARATION THEREOF

Keiichi Nakatani, and Nobuyasu Nakasugi, both of Kyoto, Japan, assignors to San-Apro Limited, Kyoto, Japan

Filed May 2, 1990, Ser. No. 518,015
Claims priority, application Japan, May 19, 1989, 1-127400
Int. Cl.[5] C07D *241/04*
U.S. Cl. 544—235 **6 Claims**

1. A bis[(4-alkylpiperazinyl)alkyl] ether compound represented by the general formula



in which R_1 is a methyl group or ethyl group, R_2, R_3, R_4 and R_5 are, each independently from the others, a hydrogen atom, methyl group or ethyl group and A is a divalent hydrocarbon group selected from the class consisting of ethylene —CH_2—CH_2—, n-propylene —CH_2—CH_2—CH_2— and isopropylene —CH_2—$CH(CH_3)$— groups.

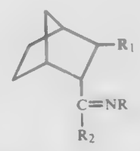
5,055,582

PROCESS FOR PREPARING THROMBOXANE A_2 ANTAGONISTS

Robert B. Garland, and Masateru Miyano, both of Northbrook, Ill., assignors to National Research Development Corporation, London, England

Filed Dec. 13, 1988, Ser. No. 283,639
Int. Cl.[5] C07D *413/02, 413/14, 211/68, 211/80, 277/62, 277/68, 277/82, 263/60;* **C07C** *321/02, 323/02, 325/02, 323/10, 273/00, 273/02, 275/02, 275/06*
U.S. Cl. 546—256 **27 Claims**

1. A method for producing compounds of the formula



I

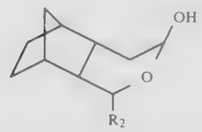
wherein

R_1 is a group of the formula R'—COQ where R' is —$(CH_2)_j$— where j is an integer from 4 to 8 and COQ is carboxy, a physiologically acceptable carboxylate salt, a C_1–C_5 alkyl ester or $CONHSO_2CH_3$;

R_2 is selected from the group consisting of hydrogen, C_{1-10} aliphatic hydrocarbon groups, and C_{1-10} aliphatic hydrocarbon groups substituted by Ar, OAr or SAr, where Ar represents a phenyl, naphthyl, fluorenyl, dibenzocyclohexyl, dibenzocycloheptyl, pyridyl, benzthiazolyl, dihydrobenzthiazolyl, N-methyldihydrobenzthiazolyl, benzoxazolyl, dihydrobenzoxazolyl or N-methyldihydrobenzoxazolyl group or such a group substituted by one or more substituents selected from C_{1-10} alkoxy, halogen, C_{1-10} halogen-substituted alkyl, sulphamoyl, amino, hydroxyl, nitro and C_{1-10} alkyl groups;

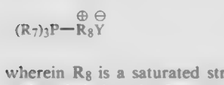
and R is a group —OR_3, —A—R_3 or —N=R_5 in which A is —NH—, —NHCO—, —NHCONH—, —NH-$COCH_2N(R_6)$—, —$NHSO_2$—, or —NHCSNH— and wherein R_3 is a C_{1-10} aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups selected from Ar, OAr and SAr; R_5 is a C_{1-10} aliphatic hydrocarbon group, a group Ar', where Ar' represents a fluorenylidene, dibenzocyclohexylidene, dibenzocycloheptylidene, dihydrobenzthiazolylidene, N-methyldihydrobenzthiazolylidene, dihydrobenzoxazolylidene or N-methyldihydrobenzoxazolylidene group or such a group substituted on a benzene ring or rings thereof by one or more substituents selected from C_{1-10} alkoxyl, halogen, C_{1-10} halogen-substituted alkyl, sulphamoyl, amino, hydroxyl, nitro and C_{1-10} alkyl groups, or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups selected from Ar, OAr and SAr; and R_6 is hydrogen, a C_1-aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups selected from Ar, OAr and SAr, which method comprises the steps of:

(a) reacting a compound of the formula



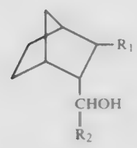
II

wherein R_2 is a defined above, in the presence of a base with a compound of the formula



III

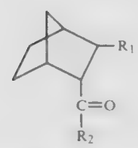
wherein R_8 is a saturated straight chain alkylene group with a chain length of two carbon atoms less than that of R_1, R_7 is aryl and Y is halogen, to yield a compound of the formula



IV

wherein R_1 is a group of the formula R'COQ in which R' is —CH_2—CH=CH—$(CH_2)_m$— where m is an integer from 1 to 5; and COQ and R_2 are as defined above; the group R' in the compound of formula IV then being reduced to the group —$(CH_2)_j$— present in the compound of formula I;

(b) oxidizing the product of (a) to yield a compound of the formula



V

wherein R_1 and R_2 are as defined above for the compound of formula I; and

(c) reacting the product of (b) with an amine of the formula

wherein R is as defined above.

5,055,583

PROCESS FOR PREPARATION OF FLUOROMETHYL-SUBSTITUTED PIPERIDINE CARBODITHIOATES

Sherrol L. Baysdon, Chesterfield, and Mitchell J. Pulwer, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 19, 1990, Ser. No. 495,171
Int. Cl.[5] C07D *213/32*
U.S. Cl. 546—315 **1 Claim**

1. A process for dehydrohalogenation of the compound 3,5-pyridinedicarbothioic acid, 2-chloro-1,2,3,4-tetrahydro-4-(2-methylpropyl)-2,6-bis(trifluoromethyl)-, S,S,-deimethyl ester, comprising the step of bringing said compound dissolved in an inert organic solvent into reactive contact with a catalytic amount of 1,4-diazabicyclo-[2.2.2]-octane and with a sufficient amount of a water-soluble inorganic base dissolved in aqueous solution to insure complete dehydrochlorination and dehydrofluorination so as to produce the compound, 3,5-pyridinedicarbothioic acid, 2-difluoromethyl-4-(2-methylpropyl)-6-(trifluoromethyl), S,S-dimethyl ester, with the result that the produced compound is dissolved in the inert organic solvent and the resulting fluoride salts of the catalyst and inorganic base are dissolved in the aqueous solution.

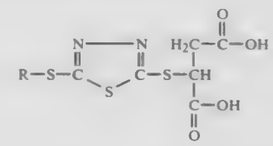
5,055,584

MALEIC DERIVATIVES OF 2,5-DIMERCAPTO-1,3,4-THIADIAZOLES AND LUBRICATING COMPOSITIONS CONTAINING SAME

Thomas J. Karol, 33 Harbor View Ave., Norwalk, Conn. 06854

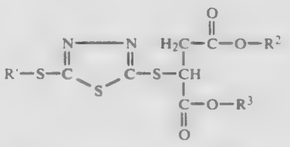
Filed May 4, 1987, Ser. No. 45,652
Int. Cl.[5] C07D *285/125;* **C10M** *135/36*
U.S. Cl. 548—142 **4 Claims**

1. A reaction product of a maleic compound and 2,5-dimercapto-1,3,4-thiadiazole selected from the group of compounds having the structural formulae



(I)

wherein R represents alkyl, hydroxyalkyl, cycloalkyl, alkyl-substituted cycloalkyl, aryl, alkylthio groups and terpene residues; and



(II)

wherein R' represents alkyl, hydroxyalkyl, cycloalkyl, alkyl-substituted cycloalkyl, aryl, alkylthio groups and terpene residues, R^2 and R^3 represent alkyl and cycloalkyl groups and either R^2 and R^3 may be hydrogen; neutralization salts of said compounds and mixtures thereof.

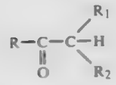
5,055,585

PREPARATION PROCESS OF AMINOKETONES

Akira Matsubara, Yokohama; Kazuya Sakai, Mobara; Hideki Tanaka, Mobara, and Hironori Komatsu, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

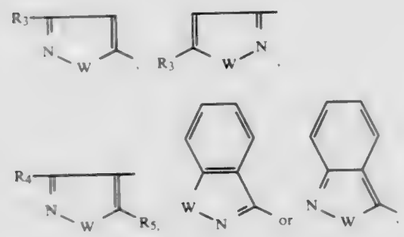
Filed Jan. 31, 1991, Ser. No. 647,633
Claims priority, application Japan, Feb. 8, 1990, 2-27119
Int. Cl.[5] C07D *275/04, 261/20, 275/02, 61/29*
U.S. Cl. 548—248 **8 Claims**

1. A process for the preparation of a ketone represented by the following formula [IV]:



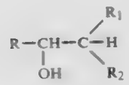
[IV]

wherein R means



R_3 being a halogen atom, a lower alkyl group, a benzyl group, a benzoyl group, a pyridyl group, a furyl group which may be substituted by one or more lower alkyl groups, a thienyl group which may be substituted by one or more lower alkyl groups, a phenyl group which may be substituted by one or more halogen atoms or lower alkoxy, lower alkyl, trifluoromethyl, cyano, nitro, amino, dimethylamino, acetamido, methanesulfonylamido, acetyl or lower alkoxycarbonyl groups, or a naphthyl group, R_4 and R_5 independently representing a phenyl or lower alkyl group, and W standing for an oxygen or sulfur atom, R_1 denotes a hydrogen atom, a lower alkyl group, a benzyl group, a methoxy group, a phenyl group, an allyl group, a lower alkyl group substituted by one or more trifluoromethyl or lower alkoxy groups, or a cyclopropylmethyl group, and R_2 means a halogen atom or a lower alkyl group, or R_1 and R_2 being coupled together to form an alicyclic five- or six-membered ring, which comprises:

reacting an alcohol represented by the following formula [I]:

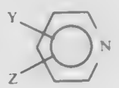


[I]

wherein R, R_1 and R_2 have the same meanings as defined above, in the presence of (i) a hypohalite represented by the following formula [II]:

$$M(O—X)_n \qquad [II]$$

wherein M means an alkali metal or alkaline earth metal, X denotes a halogen atom, and n stands for 1 when M is an alkali metal or 2 when M is an alkaline earth metal and (ii) a pyridine represented by the following formula [III]:



[III]

wherein Y and Z individually mean a hydrogen atom or a lower alkyl group, or an acid addition salt thereof.

5,055,586

DESULFURIZATION OF TRIAZOLOTHIADIAZINES

Chang K. Kim, Pittsford; Wayne N. Lamicela, Rush, and David L. Allen, Holcomb, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1990, Ser. No. 527,982
Int. Cl.[5] C07D *487/04*
U.S. Cl. 548—262.4 **7 Claims**

1. In a process for the preparation of a 3,6-disubstituted-1-H-pyrazolo[5,1-C]-1,2,4-triazole from the corresponding 1-acyl-7-acylthio-3,6-disubstituted-1-H-pyrazolo[5,1-C]-1,2,4-triazole by hydrolysis of acyl groups and desulfurization; the improvement which comprises conducting the hydrolysis and desulfurization in the presence of hypophosphorous acid, whereby less elemental sulfur and sulfur-containing impurities are formed.

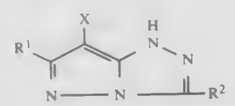
5,055,587

PROCESS FOR PREPARING 1H-PYRAZOLO-[5,1-C]-1,2,4-TRIAZOLE COMPOUNDS

Yuki Mizukawa, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 15, 1989, Ser. No. 323,963
Claims priority, application Japan, Mar. 15, 1988, 63-61183
Int. Cl.[5] C07D *487/04*
U.S. Cl. 548—262.4 **19 Claims**

1. A process for preparing a [1H-pyrazolo[5,1-c]-1,2,4-triazole] 1H-pyrazolo(5,1-c)-1,2,4-triazole compound represented by formula (I):



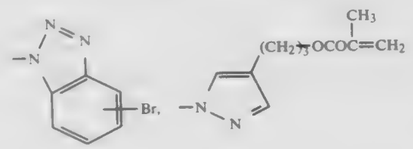
(I)

wherein

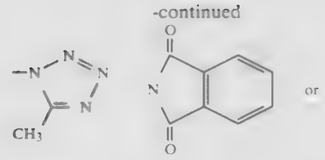
R^1 represents a hydrogen atom, an alkyl group, a phenyl group, a cyano group, an alkoxy group, a phenoxy group, 4-methoxyphenoxy, 2-methoxyphenoxy, 2,4-dimethylphenoxy, an acylamino group, an anilino group, a ureido group, a urethane group, a sulfamoylamino group, an alkylthio group, a phenylthio group, an alkoxycarbonylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a sulfonyl group or an alkoxycarbonyl group,

R^2 represents an alkyl group, an aryl group having 6 to 30 carbon atoms, a 4-pyridyl group, or a 3-pyridyl group, and

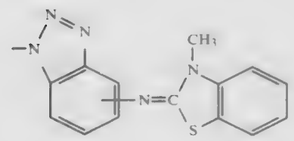
X represents a hydrogen atom, a halogen atom, a cyano group, a nitro group, an alkoxy group, a phenoxy group, 4-methoxyphenoxy, 2-methoxyphenoxy, 2,4-dimethylphenoxy, 2-benzimidazolyloxy group, an alkylthio group, a phenylthio group, an alkoxycarbonyl group,



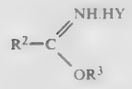
-continued



or

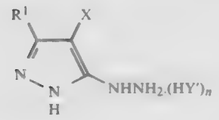


which process comprises reacting an imidic acid ester represented by formula (II):



(II)

wherein R^2 is as defined above, R^3 represents an alkyl group, and Y represents an acid radical of hydrochloric acid, sulfuric acid, methanesulfonic acid or p-toluenesulfonic acid, with a 5-hydrazino-1H-pyrazole compound represented by formula (IV):



(IV)

wherein R^1 and X are as defined above, Y′ represents an acid radical of hydrochloric acid, sulfuric acid, methanesulfonic acid or p-toluenesulfonic acid, and n represents 0, 1 or 2.

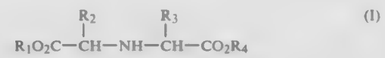
5,055,588

PROCESS FOR PREPARING N-SUBSTITUTED AMINO ACID ESTERS

Ichirou Takase; Kazuo Sato; Noritsugu Yamasaki, and Yukihisa Goto, all of Himeji, Japan, assignors to Daicel Chemical Industries Ltd., Japan

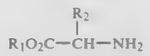
Continuation of Ser. No. 215,609, Jul. 6, 1988, abandoned. This application May 9, 1990, Ser. No. 520,961
Int. Cl.[5] C07D *233/64*
U.S. Cl. 548—344 **10 Claims**

1. A process for preparing an optically active N-substituted amino acid ester having the formula (I);



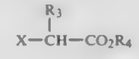
(I)

wherein R_1 and R_4 may be the same or different and are an alkyl, aralkyl, cycloalkyl or aryl group; and R_2 and R_3 may be the same or different and are an alkyl, aralkyl, aryl, heterocyclicalkyl, aminoalkyl or guanidylalkyl group, which comprises reacting at an elevated termperature an optically active alpha-amino acid ester of the formula (II);



(II)

wherein R_1 and R_2 have the same meaning as defined in formula (I), with an optically active alpha-substituted carboxylic acid ester of the formula (III);



(III)

wherein X is an aliphatic or aromatic sulfonyloxy group and R_3 and R_4 have the same meaning as defined in formula (I), in the presence or absence of a base and in the presence of 5% or less, based on the starting materials, of a solvent, to invert the optical configuration at the alpha position of substantially all of the carboxylic acid ester of the formula (III) and subsequently isolating the resultant optically active produce (I).

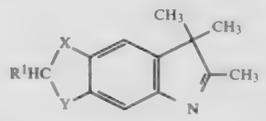
5,055,589

INDOLENINE DERIVATIVE

Osamu Manabe; Shigeo Fujita; Shizuo Iwata, and Morihiro Kamiyama, all of Osaka, Japan, assignors to Asahi Chemical Co., Ltd., Osaka, Japan

PCT No. PCT/JP89/00944, § 371 Date May 14, 1990, § 102(e) Date May 14, 1990, PCT Pub. No. WO90/02735, PCT Pub. Date Mar. 22, 1990
PCT Filed Sep. 14, 1989, Ser. No. 490,591
Claims priority, application Japan, Sep. 16, 1988, 63-233275
Int. Cl.[5] A61K *31/40;* **C07D** *209/56, 209/04, 491/00*
U.S. Cl. 548—427 **5 Claims**

1. An indolenine derivative represented by the formula



wherein R^1 is a hydrogen atom or a lower alkyl group, X and Y are the same or different and each represent a methylene group or an oxygen atom.

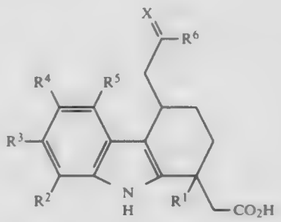
5,055,590

PREPARATION OF 2,3,4,9-TETRAHYDRO-1H-CARBAZOLE ACETIC ACID DERIVATIVES

Dominick Mobilio, Franklin Park, N.J., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 415,159, Sep. 29, 1989, Pat. No. 4,927,842. This application Mar. 9, 1990, Ser. No. 491,369
Int. Cl.[5] C07D *209/82*
U.S. Cl. 548—439 **2 Claims**

1. The method for the production of a compound of formula (I)

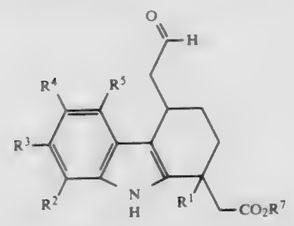


(I)

wherein R^1 is lower alkyl containing one to six carbon atoms; R^2 to R^5 are independently selected from the group consisting of H, lower alkyl containing one to six carbon atoms, halogen and haloalkyl containing one to six carbon atoms; R^6 is H; X is NOH or NO-alkyl wherein alkyl contains one to six carbon atoms consisting essentially of

a) treating a compound of formula (VII)

(VII)



wherein R^1 to R^5 are as defined above; and R^7 is lower alkyl containing one to six carbon atoms, with hydroxylamine hydrochloride to form the ester of a compound of formula (I) wherein R^1 to R^5 are as defined above; R^6 is H and X is NOH or treating said compound of formula (VII) with alkyl-ONH_2.HCl to form the ester of a compound of formula (I) wherein R^1 to R^5 are as defined above; R^6 is H and X is NO-alkyl and

b) hydrolyzing said ester to obtain a compound of formula (I) wherein R^1 to R^6 are defined above.

5,055,591

PROCESS FOR THE PREPARATION OF OCTAHYDROPENTA(B)PYRROLE CARBOXYLATES

Hansjörg Urbach, Kronberg/Taunus; Rainer Henning, Hattersheim am Main; Hans Wissmann, Bad Soden am Taunus, and Volker Teetz, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 943,881, Dec. 19, 1986, abandoned, which is a continuation of Ser. No. 650,714, Sep. 14, 1984, abandoned. This application Mar. 23, 1988, Ser. No. 173,024

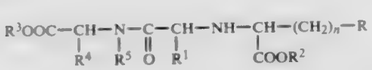
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333455

Int. Cl.[5] C07D *207/00, 209/52*

U.S. Cl. 548—452 **20 Claims**

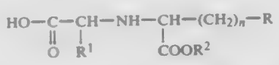
1. A process for the preparation of a compound of the formula I

(I)



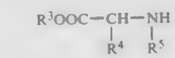
in which n is 1 or 2, R denotes hydrogen, an optionally substituted aliphatic radical having 1 to 8 carbon atoms, an optionally substituted alicyclic radical having 3–9 carbon atoms, an optionally substituted aromatic radical having 6–12 carbon atoms, an optionally substituted araliphatic radical having 7–14 carbon atoms, an optionally substituted alicyclic-aliphatic radical having 7–14 carbon atoms, or a radical OR^a or SR^a, in which R^a represents an optionally substituted aliphatic radical having 1–4 carbon atoms, an optionally substituted aromatic radical having 6–12 carbon atoms or an optionally substituted heteroaromatic radical having 5–12 ring atoms, R^1 denotes hydrogen, an optionally substituted aliphatic radical having 1 to 6 carbon atoms, an optionally substituted alicyclic radical having 3–9 carbon atoms, an optionally substituted alicyclic-aliphatic radical having 4–13 carbon atoms, an optionally substituted aromatic radical having 6–12 carbon atoms, an optionally substituted araliphatic radical having 7–16 carbon atoms, or an optionally substituted heteroaromatic radical having 5–12 ring atoms, R^2 and R^3 are identical or different and denote hydrogen, an optionally substituted aliphatic radical having 1–6 carbon atoms, an optionally substituted alicyclic radical having 3–9 carbon atoms, an optionally substituted aromatic radical having 6–12 carbon atoms, or an optionally substituted araliphatic radical having 7–16 carbon atoms, and R^4 and R^5, together with the atoms bearing them, form an optionally substituted octahydrocyclopenta[b]pyrrole ring system, which process comprises reacting a compound of the formula II

(II)



in which n, R, R^1 and R^2 have the meanings defined above, and where the amine group —NH— shown in the structure of the compound of formula II is unprotected, in the presence of at least one alkanephosphonic anhydride, with a compound of the formula III

(III)



in which R^3, R^4 and R^5 have the meanings defined above.

5,055,592

NOVEL PROCESS AND INTERMEDIATES

Michael Kolb, Truchtersheim, and Luc Van Hijfte, Marlenheim, both of France, assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

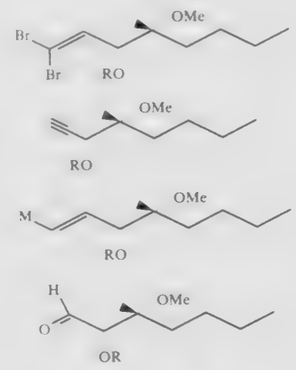
Division of Ser. No. 302,508, Nov. 26, 1989, abandoned. This application Jan. 30, 1990, Ser. No. 474,317

Claims priority, application European Pat. Off., Jan. 28, 1988, 88400199.1

Int. Cl.[5] C07C *177/00*

U.S. Cl. 549—206 **5 Claims**

1. Compound of the formulae:



wherein M is $(Bu)_3Sn$-, Li, a cupric complex or an organocuprate complex, and R is THP or TBS.

5,055,593

1,3-BIS(DICARBOXYPHENYL)-1,1,3,3-TETRAPHENYLDISILOXANE DERIVATIVE, PROCESS FOR PRODUCING THE SAME, AND PROCESS FOR PRODUCING POLYIMIDE FROM THE SAME

Akihiro Sasaki, and Tohru Kikuchi, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1989, Ser. No. 429,082

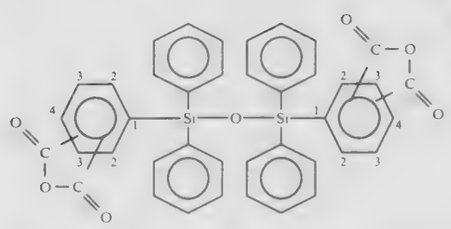
Claims priority, application Japan, Nov. 1, 1988, 63-276903

Int. Cl.[5] C07F *7/08*

U.S. Cl. 549—214 **4 Claims**

1. A 1,3-bis(dicarboxyphenyl)-1,1,3,3-tetraphenyldisiloxane dianhydride represented by the general formula [I]:

[I]



wherein two acid anhydride residues independently of each other are attached to the adjacent phenyl rings at 2,3-positions or 3,4-positions.

5,055,594

FLUOROGENIC TRYPTOPHANASE SUBSTRATES

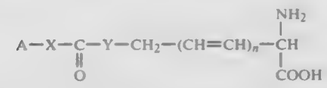
Patrick D. Mize, Durham, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 19, 1990, Ser. No. 554,506

Int. Cl.[5] C07D *311/90, 311/16*

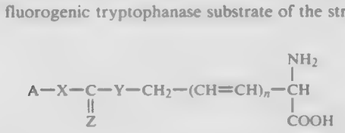
U.S. Cl. 549—223 **6 Claims**

1. A fluorogenic tryptophanase substrate of the structure



wherein A is a fluorescent dye moiety selected from the group consisting of a coumarin, fluorescein, rhodamine and β-naphthylamine, Y is selected from the group consisting of O and S, X is selected from the group consisting of O and NH and n is 0 to 1.

5. A fluorogenic tryptophanase substrate of the structure



wherein A is a fluorescent dye moiety selected from the group consisting of a coumarin, fluorescein, rhodamine and for naphthylamine, X,Y and Z are independently selected from the group consisting of O,S and NH, and n is 0 to 3.

5,055,595

ETHERIFIED FLUORESCEIN COMPOUNDS

Bernhard Wietfeld, Efringen-Kirchen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 14, 1989, Ser. No. 435,876

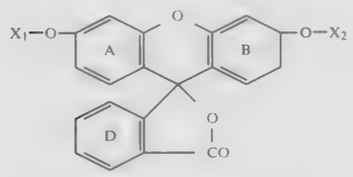
Claims priority, application Switzerland, Nov. 17, 1988, 4259/88

Int. Cl.[5] C07D *493/10*

U.S. Cl. 549—224 **15 Claims**

1. An etherified fluorescein compound of the formula

(I)



in which X_1 is alkyl having 4 to 12 carbon atoms or C_5–C_6cycloalkyl and X_2 is alkyl having 1 to 12 carbon atoms, which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or C_5–C_6cycloalkyl, the rings A and B, independently of one another, are unsubstituted or substituted by 1 or 2 halogen atoms and the ring D is unsubstituted or substituted by halogen, nitro, lower alkyl, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, amino, mono-lower alkylamino or di-lower alkylamino, with the proviso that if one of X_1 or X_2 is n-butyl, the other cannot be C_4-alkyl.

5,055,596

DERIVATIVES OF AVERMECTIN AND MILBEMYCIN

Geoffrey H. Baker, Epsom; Roderick J. Dorgan, Epsom; David O. Morgan, Epsom; Rhona M. Banks, Tadworth; Simon E. Blanchflower, Tadworth; Mark E. Poulton, Tadworth, and Peter R. Shelley, Betchworth, all of England, assignors to Beecham Group p.l.c., Brentford, England

Continuation of Ser. No. 265,509, Nov. 1, 1988, abandoned. This application Jul. 30, 1990, Ser. No. 559,989

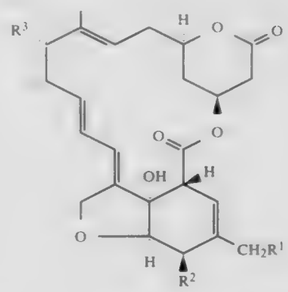
Claims priority, application United Kingdom, Nov. 3, 1987, 8725679; Aug. 2, 1988, 8818374; Oct. 21, 1988, 8824763

Int. Cl.[5] C07D *493/22*

U.S. Cl. 549—268 **2 Claims**

1. A compound of formula III:

(III)



wherein R^1 is hydrogen or optionally protected hydroxy; R^2 is alkoxy, optionally protected hydroxy, oxo or C_{1-6} alkyl or C_{2-6} alkenyl O-substituted oximino; R^3 is hydrogen, optionally protected hydroxy, or a group 4'-(a-L-oleondrosyl)-a-L-oleandroxylloxy or a-L-oleandrosyloxy wherein the terminal hydroxy group is optionally protected.

5,055,597

SYNTHESIS OF INOSITOL PHOSPHATES

David C. Billington, Hockerill, United Kingdom, assignor to Merck Sharp & Dohme Ltd., Hertfordshire, England

Filed Jan. 8, 1990, Ser. No. 461,906

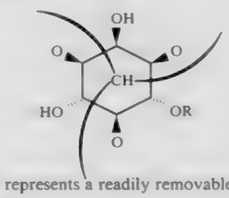
Claims priority, application United Kingdom, Jul. 3, 1987, 8715635

Int. Cl.[5] C07D *319/08*

U.S. Cl. 549—358 **2 Claims**

1. A compound of formula V:

V



wherein R represents a readily removable hydroxy-protecting group.

5,055,598

BENZOPYRAN DERIVATIVES

Shuichi Ohuchida; Masaaki Toda, and Tsumoru Miyamoto, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

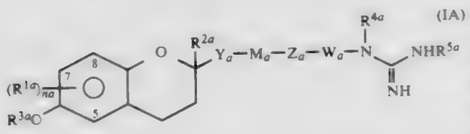
Filed Mar. 12, 1990, Ser. No. 491,876

Claims priority, application Japan, Mar. 13, 1989, 1-60317; Oct. 30, 1989, 1-282805

Int. Cl.[5] C07D *311/04, 311/92*

U.S. Cl. 549—407 **4 Claims**

1. A benzopyran derivative of the formula:



(IA)

wherein

R^{1a} is hydrogen, C1–4 alkyl or C1–4 alkoxy; or two R^{1a} taken together with 7th- and 8th-carbon to which they are attached form C6 carbocyclic ring;

R^{2a} is hydrogen or C1–4 alkyl;

R^{3a} is hydrogen, C2–4 acyl or benzoyl;

na is 1–3;

Ya is C1–7 alkylene, C2–7 alkenylene or C2–7 alkynylene;

Ma is

i) bond; or

ii) a group of the formula: —Da—Ba—;

Da is

i) —O—; or

ii) —S—;

Ba is i) C1–4 alkylene;

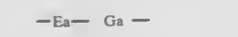
Za is

i) —OCO—; or

ii) —COO—;

Wa is a group of the formula: —W1a—Aa—W2a—;

Aa is i) a group of the formula:



Ea is:

i) bond;

ii) —O—; or

iii) —S—;

Ga is C4–10 carbocyclic ring; or C4–10 carbocyclic ring substituted by one to three C1–4 alkyl, C1–4 alkoxy, halogen, a group of the formula: $—COOR^{7a}$, trihalomethyl or acetamido;

W1a and W2a each, independently, is

i) bond;

ii) C1–4 alkylene;

iii) C2–4 alkenylene; or

iv) C2–4 alkynylene;

R^{4a} is hydrogen or C1–4 alkyl;

R^{5a} is hydrogen, C1–4 alkyl or amino;

R^{7a} is hydrogen or C1–4 alkyl;

with the proviso that:

i) Da is bonded to Ya and Ba is bonded to Za;

ii) Ea is bonded to W1a and Ga is bonded to W2a;

iii) a double or triple bond in alkenylene or alkynylene is not directly bonded to oxygen;

iv) when Aa represents



W1a does not represent a bond;

or the pharmaceutically acceptable acid addition salts thereof.

5,055,599

PROCESS FOR THE HYDROGENATION OF MALEIC ANHYDRIDE TO TETRAHYDROFURAN AND GAMMA-BUTYROLACTONE

John R. Budge, Cuyahoga, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 23, 1989, Ser. No. 370,492

Int. Cl.[5] C07D *307/08, 307/56*

U.S. Cl. 549—429 **14 Claims**

1. A continuous process for the preparation of gamma-butyrolactone and tetrahydrofuran comprising catalytically hydrogenating a vaporous mixture of a hydrogen containing gas and at least one of maleic anhydride or succinic anhydride in contact with a catalyst comprising an essentially inert, at least partially porous support, said support having an outer surface, and a catalytically active oxide material coating on said outer surface of said support which strongly adheres to said outer surface of said support, wherein the catalytically active oxide material comprises a mixed oxide catalyst of the formula

$$Cu_1Zn_bAl_cM_dO_x$$

wherein

M is at least one element selected from the group consisting of Groups IIA thru VA, Group VIII, Ag, Au, Groups IIIB thru VIIB, the Lanthanum Series, and the Actinium Series;

$0.001 < b < 500$;

$0.001 < c < 500$;

$0 \leqq d < 200$; and

x is the number of oxygen atoms necessary to satisfy the valency requirements of the other elements.

5,055,600

GLYCIDYL AZIDE POLYMER (GAP) SYNTHESIS BY MOLTEN SALT METHOD

Ross I. Wagner, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

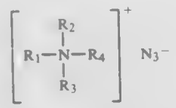
Filed Apr. 24, 1990, Ser. No. 514,629

Int. Cl.[5] C07C *247/04*

U.S. Cl. 552—11 **3 Claims**

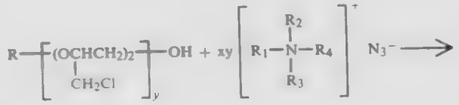
1. A molten salt method for the manufacture of glydicyl azide polymer comprising:

(1) in a suitable reaction vessel, providing azide ions from molten state quaternary ammonium azide salt compounds having the general formula:

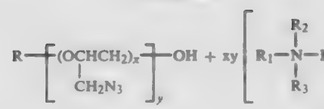


(2) combining the azide ions of step (1) with epichlorohydrin monomer units of polyepichlorohydrin;

(3) reacting the azide ions and epichlorohydrin monomer unit in a solvent-free system according to the equation:

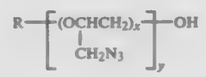


-continued



and;

(4) producing glycidyl azide polymer of the general formula:



wherein x is an integer having a value of from about 10 to about 60, y is an integer having a value from 1 to 4, and R is the hydroxy-free residue of a monohydric alcohol, diol, triol, or tetraol initiator, R_1, R_2, R_3, and R_4 are selected from the group consisting of C_1 to C_{18} alkyls such that the quaternary ammonium azides have a melting point of from about 80° C. to about 120° C., with the proviso that as depicted in the reaction of step 3, xy means x times y and that one of mol of the polymer in which $x=60$ and $y=4$ would require 240 moles of the quaternary ammonium salt compound to effect substitution of azide for chloride as defined by the equation of Step (3).

5,055,601

FLUOROEPOXIDES AND A PROCESS FOR PRODUCTION THEREOF

Masanori Ikeda, Shizuoka; Morikazu Miura, and Atsushi Aoshima, both of Kanagawa, all of Japan, assignors to Asahi Kasei Kogyo K.K., Tokyo, Japan

Division of Ser. No. 69,745, Jul. 6, 1987, Pat. No. 4,965,379, which is a continuation of Ser. No. 517,534, Jul. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 375,632, May 6, 1982, abandoned. This application Nov. 28, 1989, Ser. No. 442,373

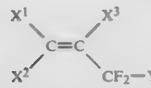
Claims priority, application Japan, Jul. 26, 1982, 57-129879; Dec. 15, 1982, 57-219469

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] C07D *301/29*

U.S. Cl. 549—521 **34 Claims**

1. A process for producing a fluoroepoxide from a fluoroolefin represented by the general formula (I):



(I)

wherein X^1, X^2, and X^3 each is a substituent selected from the group consisting of (a) —F, (b) a perfluoroalkyl group having 2 to 20 carbon atoms and (c) $—CF_2Y^1$; Y^1 may be the same or different and is a substituent selected from the group consisting of (d) a halogen atom selected from the group consisting of F, Cl, Br and I, (e) $—OZ^1$ and (f) $—Z^1$, wherein Z^1 may be the same or different and is a substituted or unsubstituted hydrocarbon group having 20 or less carbon atoms; and X^1, X^2, X^3 and Y^1 may combine with one another to form a cyclic compound; provided that all of X^1, X^2, X^3 and Y_1 do not represent —F, by using hypochlorite as an oxidizing agent comprising:

epoxidizing the fluoro-olefin in a two-phase system of an aqueous phase and an organic phase which is immiscible in the aqueous phase, said hypochlorite being present in the aqueous phase, in the presence of an inorganic base, at a temperature of between −20° C. and 60° C., in the presence of at least one lipophilic catalyst selected from the group consisting of (i) quarternary phosphonium salts, the total number of carbon atoms in quaternary phosphonium ion being not less than 10 per quaternary phosphonium ion, (ii) quanternary arsonium salts, (iii) sulfonium salts, the total number of carbon atoms in sulfonium ion being between 8 to 90 per sulfonium ion, and (iv) lipophilic complexing agents for cations contained in the hypochlorite, to produce a fluoroepoxide in the organic phase.

5,055,602

POLYMERIZABLE DYE

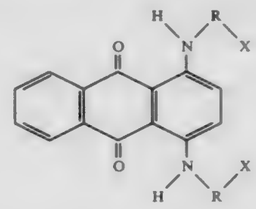
John B. Meipolder, Hilton, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 348,543, May 2, 1989. This application Apr. 3, 1990, Ser. No. 504,447

Int. Cl.[5] C07C *225/34*

U.S. Cl. 552—238 **4 Claims**

1. Compounds having the general chemical formula



wherein:

R denotes a divalent radical with 1 to 12 carbon atoms; and

X denotes a polymerizable unsaturated organic radical.

5,055,603

METHOD FOR THE PREPARATION OF DIALKYL-TIN-DICHLORIDES

Erich Ruf, Essen-Haarzopf, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jan. 31, 1991, Ser. No. 648,574

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1990, 4007745

Int. Cl.[5] C07F *7/22*

U.S. Cl. 556—102 **3 Claims**

1. A method for the production of dialkyl-tin-dichloride, wherein each alkyl group has 1 to 22 carbon atoms, comprising:

(a) adding trialkyl-aluminum slowly to a solution of tin-diacetate-dichloride in tetrahydrofuran in a mole ratio of about between 2:3, whereby aluminum-triacetate precipitates;

(b) removing the precipitated aluminum-triacetate formed in the reaction by filtration; and

(c) removing the tetrahydrofuran by distillation.

5,055,604

PROCESS FOR PREPARING PROSTAGLANDIN ANALOGS USING ORGANOZIRCONIUM COMPOUNDS

Kevin A. Babiak, Evanston; James R. Behling, Lindenhurst; John H. Dygos, Northbrook, and John S. Ng, Chicago, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 17, 1990, Ser. No. 510,349

Int. Cl.[5] C07F *7/18;* **C07C** *69/74, 61/06, 61/20*

U.S. Cl. 556—437 **17 Claims**

1. A process for preparing a prostaglandin derivative comprising the steps of:

bringing into reactive contact an alkyne and zirconocene chloride hydride to produce an E-alkenyl zirconium intermediate;

reacting the E alkenyl zirconium intermediate with an alkyllithium and a copper reagent selected from $R^2Cu(CN)Li$

or CuCN and R^2Li to produce a higher order cuprate complex intermediate, wherein R^2 can be alkyl, substituted alkyl, alkenyl, alkynyl, aryl or heteroaromatic group;
and reacting the higher order cuprate intermediate with a cyclopentenone to produce the prostaglandin derivative.

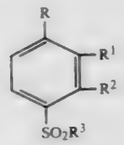
5,055,605

PREPARATION OF TRISUBSTITUTED BENZOIC ACID PRECURSORS

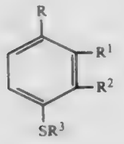
Charles N. Ludvik, Moraga, Calif., assignor to Imperial Chemical Industries plc, London, England

Filed Oct. 15, 1990, Ser. No. 599,203
Int. Cl.[5] C07C *315/02*
U.S. Cl. 560—11 **10 Claims**

1. An improved process for the preparation of a compound having the structural formula



wherein
R is $—COOR^a$ wherein R^a is C_1–C_6 alkyl; C_1–C_4 alkyl; formyl or $C(O)R^b$ wherein R^b is C_1–C_4 alkyl;
R^1 is hydrogen, halogen, nitro, C_1–C_2 alkyl, C_1–C_2 alkoxy or trifluoromethyl;
R^2 is hydrogen, halogen, C_1–C_4 alkoxy, C_1–C_4 alkyl, $—OCH_2CH_2OCH_3$, $—OCH_2CH_2OC_2H_5$ or a substituted methyl group and
R^3 is C_1–C_4 alkyl or C_1–C_4 haloalkyl
comprising a step of reacting a compound having the structural formula



wherein R, R^1, R^2 and R^3 are as defined with hydrogen peroxide and water wherein the improvement comprises a) running the reacting step in a solvent that is immisicible with water and has an azeotroping temperature with the water of less than 100° C., and b) maintaining during the reacting step the concentration of the hydrogen peroxide at above 70 percent by weight based upon the combined weight of the hydrogen peroxide and water in the reaction mixture.

5,055,606

ALKYLTHIOPROPIONIC PENTAERYTHRITOL ESTERS AND SOLVENT REFINING THEREOF

Michael H. Fisch, Wayne, N.J.; Mark E. Flanagan, Ft. Collins, Colo., and Richard D. Peveler, Woodcliff Lake, N.J., assignors to Witco Corporation, New York, N.Y.

Continuation of Ser. No. 394,633, Aug. 16, 1989, abandoned. This application Sep. 25, 1990, Ser. No. 588,476
Int. Cl.[5] C07C *323/52*
U.S. Cl. 560—152 **15 Claims**

1. A process for solvent refining a crystalline pentaerythritol tetraester of a 3-alkylthiopropionic acid wherein the alkyl group of the acid component is an aliphatic hydrocarbon having between about 4 and about 20 carbon atoms, comprising:
(a) providing a supply of a product including the crystalline tetraester of pentaerythritol and a 3-alkylthiopropionic acid having the formula $RSCH_2CH_2COOH$, wherein R is an aliphatic hydrocarbon having a carbon chain length of between about 4 and about 20, which product includes impurities that are residue reactants or byproducts;
(b) dissolving said crystalline pentaerythritol tetraester 3-alkylthiopropionic acid product within a blend of a lower aliphatic alcohol and a lower aliphatic acid ester; and
(c) thereafter recrystallizing said crystalline tetraester by separating said alcohol and ester blend and substantially all of said impurities from said crystalline tetraester, whereby said product is solvent refined to recover a high yield of a highly purified crystalline tetraester.

5,055,607

LONG CHAIN ALIPHATIC HYDROCARBYL AMINE ADDITIVES HAVING AN OXY-CARBONYL CONNECTING GROUP

Thomas F. Buckley, III, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 9, 1988, Ser. No. 243,362
Int. Cl.[5] C07C *261/00*
U.S. Cl. 560—158 **27 Claims**

1. A long-chain aliphatic hydrocarbyl amine additive comprising a long-chain aliphatic hydrocarbyl component, an amine component and an oxy-carbonyl connecting group which joins said aliphatic hydrocarbyl component and said amine component, the connecting group having at least two oxygen atoms, a linking oxygen and a carbonyl oxygen and at least one carbon atom wherein the linking oxygen of the connecting group is covalently bonded to a carbon atom of said long-chain aliphatic hydrocarbyl component and to a carbon atom of the connecting group and said long-chain aliphatic hydrocarbyl component has at least about 50 carbon atoms, and wherein said amine component has at least one basic nitrogen atom titratable by strong acid.

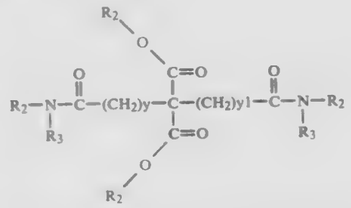
5,055,608

POTENT INDUCERS OF THERMAL DIFFERENTIATION AND METHOD OF USE THEREOF

Paul A. Marks, Bridgewater, Conn.; Richard A. Rifkind, New York, N.Y., and Ronald Breslow, Englewood, N.J., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 270,963, Nov. 14, 1988. This application Jun. 30, 1989, Ser. No. 374,343
Int. Cl.[5] C07C *229/24, 229/26*
U.S. Cl. 560—169 **12 Claims**

6. A method of selectively inducing terminal differentiation of neoplastic cells and thereby inhibiting proliferation of such cells which comprises contacting the cells under suitable conditions with an amount of a compound effective to selectively induce terminal differentiation, the compound having the structure:



wherein each of R_2 and R_3 being a hydrogen atom or a lower alkyl, alkenyl, or alkynyl group; and wherein each of R_2 and R_3 may independently be the same as or different from, each other; and
wherein each of Y and Y1 is independently 4, 5, 6 or 7.

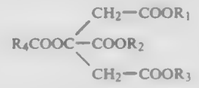
5,055,609

METHOD FOR PRODUCING CITRATES BY ESTERIFICATION IN THE PRESENCE OF ORGANIC TITANATES

Ezekiel H. Hull, Greensboro, and Edward P. Frappier, Kernersville, both of N.C., assignors to Morflex, Inc., Greensboro, N.C.

Continuation of Ser. No. 369,127, Jun. 21, 1989, Pat. No. 4,954,649, which is a continuation of Ser. No. 97,801, Sep. 17, 1987, Pat. No. 4,883,905, which is a continuation of Ser. No. 866,463, May 22, 1986, Pat. No. 4,710,532, which is a continuation of Ser. No. 711,284, Mar. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 619,583, Jun. 11, 1984, abandoned. This application Apr. 6, 1990, Ser. No. 505,502
The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.
Int. Cl.[5] C07C *67/08*
U.S. Cl. 560—180 **5 Claims**

1. A method of producing a citrate ester of the formula:



where
R_1, R_2, and R_3 = CH_3 to $C_{18}H_{37}$
R_4 = CH_3 to C_7H_{15},
comprising the steps of:
heating an appropriate alcohol and citric acid in the presence of an organic titanate at a temperature of approximately 140° C. to effect esterification, removing the excess alcohol, and alkoxylating the ester by adding sulfuric acid and an appropriate anhydride while maintaining the temperature below approximately 110° C. until the alkoxylation reaction is complete to obtain said citrate ester.

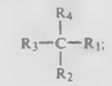
5,055,610

PROCESS FOR THE SEPARATION OF SULPHURIC ACID FROM AQUEOUS MIXTURES THEREOF WITH PARAFFIN-SULPHONIC ACIDS

Enrico Borgarello, Turin; Lucio Faggian; Edoardo Platone, both of Milan, and Cosimo Franco, Locri, all of Italy, assignors to Eniricerche S.p.A., Milan and Enichem Augusta S.p.A., Palermo, both of Italy

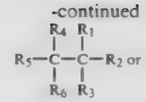
Continuation of Ser. No. 136,852, Dec. 12, 1987, abandoned. This application Jun. 28, 1990, Ser. No. 546,015
Claims priority, application Italy, Dec. 23, 1986, 22816 A/86
Int. Cl.[5] C07C *143/02*
U.S. Cl. 562—124 **14 Claims**

1. A process for the separation of sulfuric acid from aqueous mixtures thereof with (C_{12}–C_{18})-paraffin-sulfonic acids, wherein said aqueous mixtures comprise:
(a) from 3 to 83% by weight of (C_{12}–C_{18})-paraffin-sulfonic acids;
(b) from 8.5 to 79% by weight of water;
(c) from 8.5 to 18% by weight of H_2SO_4; and
(d) less than 1% by weight, relative to (C_{12}–C_{18})-paraffin-sulfonic acids, of (C_{12}–C_{18})-paraffins, said process consisting essentially of the steps of:
(a) mixing the aqueous mixture, at a temperature within the range of 10° to 80° C., with one or more halogenated solvent(s), selected from the group consisting halogenated derivatives of methane, ethane and ethylene of the formula (1), (2) or (3):



(1)

-continued



(2)



(3)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 each independently is hydrogen or halogen, at least one of R_1, R_2, R_3, or R_4 in formula (1) or (3) is halogen or at least one R_1, R_2, R_3, R_4, R_5 or R_6 in formula (2) is halogen so as to form a two phase mixture of an aqueous phase containing sulfuric acid and an organic phase;
(b) adding a co-solvent to the two phase mixture of step (a), the co-solvent being selected from the group consisting of straight or branched, saturated, (C_1–C_6) alcohols, straight, branched or cyclic aliphatic ethers with from 2 to 10 carbon atoms and mixtures thereof so as to form an aqueous phase and an organic phase;
(c) separating the aqueous phase of step (b) from the organic phase of step (b); and
(d) submitting the separated organic phase of step (c) to a treatment of separation so as to remove therefrom the co-solvent and halogenated solvents and to obtain (C_{12}–C_{18})-paraffin sulfonic acids practically free of sulfuric acid.

5,055,611

PROCESS FOR RECYCLING AND REGENERATING CARBONYLATION CATALYST USED IN SYNTHESIS OF IBUPROFEN

Ronny W. Lin, Baton Rouge; R. Carl Herndon, Jr., Baton Rouge, and E. E. Atkinson, Jr., Greenwell Springs, all of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 4, 1990, Ser. No. 621,815
Int. Cl.[5] C07C *51/10*
U.S. Cl. 562—406 **10 Claims**

1. In a process for preparing ibuprofen which process comprises carbonylating a 1-halo-1-(4-isobutylphenyl)ethane, 1-hydroxyl-1-(4-isobutylphenyl)ethane, or 4-isobutyl(styrene) with carbon monoxide in water or in an acidic aqueous medium at a temperature of at least about 10° C. and a carbon monoxide pressure of at least about 3.5 MPa in the presence of palladium catalyst, the improvement comprising forming said palladium catalyst by a process comprising:
i) treating a spent palladium carbonylation catalyst with oxygen at about 300° C. to about 850° C.; and
ii) mixing said treated carbonylation catalyst with a solution of at least one acid stable monodentate phosphine ligand.

5,055,612

PROCESS FOR THE PREPARATION OF NAPHTHALENE CARBOXYLIC ACIDS

Yakudo Tachibana, Kasukabe; Kazuhiko Tate, Yokohama; Masami Ono, Yokohama; Nobuhiro Takei, Yokohama; Jun Miki, Yokohama; Hiroaki Taniguchi, Kuki; Yoshimi Shiroto, Yokohama; Misunori Shimura, Yokohama, and Yoshio Fukui, Tokyo, all of Japan, assignors to NKK Corporation and Chiyoda Corporation, both of Japan

Filed Dec. 19, 1989, Ser. No. 451,952
Claims priority, application Japan, Dec. 19, 1988, 63-320207; Dec. 19, 1988, 63-320208; Dec. 19, 1988, 63-320209; Dec. 19, 1988, 63-320210
Int. Cl.[5] C07C *51/265*
U.S. Cl. 562—416 **8 Claims**

1. A process for the preparation of 2,6-naphthalene dicarboxylic acid which comprises oxidizing 2,6-diisopropyl-

naphthalene in a solvent containing an aliphatic monocarboxylic acid with molecular oxygen in the presence of a catalyst comprising a heavy metal compound and a bromine compound at a temperature of 160–200° C. and with an oxygen partial pressure of 0.2–8 kg/cm² absolute, and wherein the oxidation is carried out by continuously and/or semi-continuously supplying the 2,6-diisopropylnaphthalene to a reactor in such manner that the relation between the total catalytic heavy metal amount M (mol) and the feed rate F (mol/hour) of the 2,6-diisopropylnaphthalene satisfies the equation $M/F \geqq 2$.

5,055,613

METABOLITES OF PENTANEDIOIC ACID DERIVATIVES

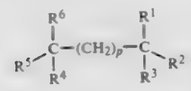
John S. Baran, Winnetka, and Harman S. Lowrie, Northbrook, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 18, 1988, Ser. No. 157,767

Int. Cl.[5] C07C *59/245*

U.S. Cl. 562—582 **33 Claims**

1. A compound of the general formula



and the pharmaceutically acceptable salts thereof, wherein R^1 is hydroxy; R^2 and R^3 are both carboxymethyl; R^4 and R^5 are independently alkyl of from 1 to 10 carbon atoms; R^6 is carboxy, carboxyalkyl, hydroxy, hydroxyalkyl, alkoxycarbonyl or alkoxycarbonylalkyl; and p is an independent integer of from 9 to 13 carbon atoms.

5,055,614

AMINE OXIDE COMPOSITION AND PROCESS

Joe D. Sauer; Kim R. Smith, and James E. Borland, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 525,070, May 18, 1990. This application Oct. 15, 1990, Ser. No. 597,067

Int. Cl.[5] C07C *291/00*

U.S. Cl. 564—298 **10 Claims**

1. In a process for preparing a tert-amine oxide by reacting a tert-amine with aqueous hydrogen peroxide, the improvement which comprises conducting at least the latter part of the reaction in the presence of a nonionic surfactant as the sole organic solvent; at least a portion of the nonionic surfactant being a compound corresponding to the formula ZC(O)NZ′Z″ in which Z is an alkyl group containing 4–30 carbons, Z′ is hydrogen or an alkyl or hydroxyalkyl group containing 1–3 carbons, and Z″ is a hydroxyalkyl group containing 1–3 carbons.

5,055,615

SQUARIUM COMPOUNDS, A PROCESS FOR PREPARING THEM AND ELECTROPHOTOGRAPHIC PHOTORECEPTORS CONTAINING THEM

Seki Kin; Hiroyuki Tanaka; Satoshi Saeki; Kaoru Torikoshi, and Lyong S. Pu, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 26,598, Mar. 17, 1987, abandoned, which is a continuation of Ser. No. 733,166, May 13, 1985, abandoned. This application Aug. 17, 1988, Ser. No. 233,101

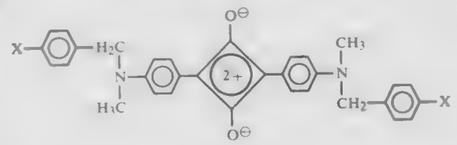
Claims priority, application Japan, May 11, 1984, 59-92765; May 11, 1984, 59-92770

Int. Cl.[5] C07C *85/00*

U.S. Cl. 564—307 **1 Claim**



1. A squarium compound represented by formula (I):



(I)

wherein X represents a nitro group, a cyano group, a carboxyl group or an ethoxycarbonyl group.

5,055,616

ORTHO-ALKYLATED BISANILINES HAVING FLUORENYLIDENE BRIDGING GROUPS

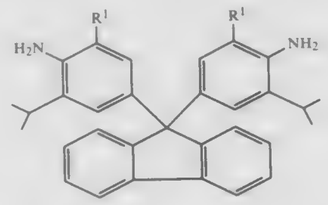
William F. Burgoyne, Jr., Emmaus, and Michael Langsam, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 29, 1990, Ser. No. 472,001

Int. Cl.[5] C09B *11/02*; B01D *53/22*

U.S. Cl. 564—322 **3 Claims**

1. A diamine having the structural formula:



wherein R_1 is a methyl or ethyl group.

5,055,617

PROCESS FOR THE PREPARATION OF N-ALKYLATED ANILINES

Peter Wimmer; Hans-Josef Buysch, both of Krefeld; Lothar Puppe, Burscheid, and Christian Froehlich, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 552,277

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3924999

Int. Cl.[5] C07C *209/18, 253/30*

U.S. Cl. 564—401 **13 Claims**

1. A process for the N-alkylation of anilines or N-alkyl-anilines with lower alcohols or the associated dialkyl ethers at an elevated temperature of from about 200° C. to about 400° C. and at a pressure of 0.7 to 2 bars, in the gas phase on Al_2O_3 catalysts, wherein the catalyst used is a γ-Al_2O_3 that is prepared by dehydration of an aluminum oxide/hydroxide hydrate and has a BET surface area of from 50 to 400 m^2/g and a surface acidity of 5 to 600 mmol H^+/kg wherein a C_1–C_4-alcohol or the associated di-C_1–C_4-alkyl ether is used in an amount of from 0.2 to 10 moles of alcohol or 0.1 to 5 moles of ether per mole of aniline or N-alkyl-aniline, which process is carried out at a catalyst loading (Liquid Hourly Space Velocity = LHSV) of 0.1 to 4.0 l/l/h, understood as the volume of the aniline/alcohol or aniline/ether mixture per catalyst volume per hour.

5,055,618

PROCESS FOR THE PREPARATION OF α,ω-DIAMINES

Detlef Kampmann, Bochum; Jürgen Weber, and Claus Kniep, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 21, 1990, Ser. No. 527,112

Claims priority, application Fed. Rep. of Germany, May 30, 1989, 3917444

Int. Cl.[5] C07C *209/26*

U.S. Cl. 564—473 **76 Claims**

1. A method for the preparation of α,ω-diamines from α,ω-dialdehydes comprising reaction of a starting mixture comprising said dialdehyde, a primary amine, and water to form a reaction mixture, followed by treatment of said reaction mixture with excess ammonia and hydrogen in the presence of a hydrogenation catalyst to produce a final mixture.

5,055,619

PHOSPHONIUM COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Jörg Gitzel, Hattersheim am Main; Hans-Tobias Macholdt, Darmstadt, and Wolfgang Knaup, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

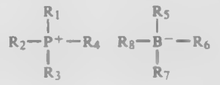
Filed Apr. 12, 1990, Ser. No. 508,858

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1989, 3912395

Int. Cl.[5] C07F *9/02, 5/02*

U.S. Cl. 568—2 **5 Claims**

1. A phosphonium compound of general formula (I):



(I)

in which at least one of the radicals R_1 to R_4 is a linear or branched, fluorine-substituted, saturated alkyl radical having 1 to 30 carbon atoms and 3 to 50 fluorine atoms, which optional contains at least one further halogen atom and hydroxyl, chloromethyl, carboxamide, optionally at least one sulfonamide, urethane, keto, amino or R_9—O—R_{10} group, wherein R_9 and R_{10} are C_1–C_{30} alkyl radicals, or at least one of the radicals R_1 to R_4 is a fluorine-substituted aryl radical or an aralkyl radical substituted by fluorine on the aromatic ring, the aryl or aralkyl radical optionally being further substituted on the aromatic ring by saturated or unsaturated, linear or branched C_1–C_{30} alkyl, C_1–C_{30} alkoxy, C_1–C_{30} halogenoalkyl, C_1–C_{30} halogenoalkoxy or hydroxyl groups or further halogen atoms, and the alkyl bridge between the phosphorus atom and the aromatic ring, in the case of an aralkyl radical, containing 1 to 30 carbon atoms, and at most three of the radicals R_1 to R_4 independently of the others are hydrogen atoms, linear or branched, unsaturated or saturated, substituted or unsubstituted alkyl radicals having 1 to 30 carbon atoms, or aryl or aralkyl radicals which are optionally substituted on the aromatic ring by C_1–C_{30} alkyl, C_1–C_{30} alkoxy, C_1–C_{30} halogenoalkyl, C_1–C_{30} halogenoalkoxy or hydroxyl groups or halogen atoms, and R_5 to R_8 are aryl radicals, aralkyl radicals or halogenoaryl radicals.

5,055,620

PROCESS FOR ALDOL CONDENSATION

Alain A. Schutz, Plum Borough, Pa., assignor to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 339,745, Apr. 18, 1989, Pat. No. 4,970,191. This application Sep. 4, 1990, Ser. No. 576,909

Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—353 **10 Claims**

1. The aldol condensation of a ketone conducted at temperature between about 200° C. and about 400° C. in the presence of a catalyst made by a method comprising mixing a water-soluble acid with pseudoboehmite to form a dispersion of pseudoboehmite crystallites, adding MgO or $Mg(OH)_2$ in a ratio of Mg to aluminum in the gel of about 1:1 to about 10:1, agitating the mixture until the MgO or $Mg(OH)_2$ has substantially disappeared, drying the mixture, and calcining it at about 300° to about 500° C. for about 1 to about 24 hours.

5,055,621

RELATING TO ALDOL CONDENSATION

Laurence S. Payne, South Wilesborough, Great Britain, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed Apr. 11, 1990, Ser. No. 507,223

Claims priority, application United Kingdom, Apr. 11, 1989, 8908104

Int. Cl.[5] C07C *45/00, 45/45*

U.S. Cl. 568—433 **15 Claims**

1. In a process for preparing an α-substituted cinnamic aldehyde by aldol condensation of an aldehyde in a solvent and in the presence of alkali as condensation catalyst, the improvement which comprises using, as the solvent, a glycol in which the alkali catalyst is soluble.

5,055,622

NOVEL TETRAHYDRONAPHTHALENE AND INDANE DERIVATIVES

Michael Klaus, Weil am Rhein, Fed. Rep. of Germany; Peter Loeliger, Muttenz; Peter Mohr, Basel, both of Switzerland, and Ekkehard Weiss, Inzlingen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

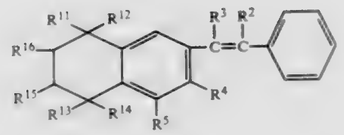
Division of Ser. No. 350,416, May 11, 1989, Pat. No. 5,001,276, which is a division of Ser. No. 49,916, May 15, 1987, Pat. No. 4,870,219. This application Sep. 12, 1990, Ser. No. 581,352

Claims priority, application Switzerland, May 23, 1986, 2091/86; Mar. 17, 1987, 984/87

Int. Cl.[5] C07C *43/11, 15/12, 21/18*

U.S. Cl. 568—609 **5 Claims**

1. A compound of the formula:



wherein R^2 and R^3 are hydrogen, lower alkyl, trifluoromethyl or halogen, with one of R^2 and R^3 being hydrogen, lower alkyl or trifluoromethyl, R^5 is hydrogen, alkyl, alkoxy or halogen; R^4 is hydrogen; R^{11}, R^{12}, R^{13} and R^{14} are hydrogen or methyl; and one of R^{15} and R^{16} is hydrogen and the other of R^{15} and R^{16} is lower alkoxy, oxo, lower alkyl, acyloxy, or hydroxy; with the proviso that when R^3 is methyl and when R^4 is hydrogen, at least one of R^{11}, R^{12}, R^{13} or R^{14} is hydrogen.

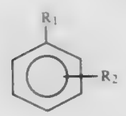
5,055,623

PREPARATION OF PHENOLS BY DIRECT N_2O HYDROXYLATION OF AROMATIC SUBSTRATES

Michel Gubelmann, Lyon; Jean-Michel Popa, Drancy, and Philipe-Jean Tirel, Oullins, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jun. 22, 1990, Ser. No. 541,956
Claims priority, application France, Jun. 22, 1989, 89 08582
Int. Cl.[5] C07C *37/60*
U.S. Cl. 568—800.00 **13 Claims**

1. A process for the preparation of a phenol, comprising directly reacting an aromatic compound of the formula (I):



(I)

in which R_1 is an OH group, a bromine atom, a chlorine atom, a fluorine atom, a hydrogen atom, a straight or branched chain alkyl radical having from 1 to 6 carbon atoms, or a straight or branched chain alkoxy radical having from 1 to 6 carbon atoms, and R_2 is a hydrogen atom, a straight or branched chain alkyl radical having from 1 to 6 carbon atoms, or a straight or branched chain alkoxy radical having 1 to 6 carbon atoms, at a temperature of 250° C. to 500° C., with nitrous oxide, in the presence of a modified zeolite which comprises:

(a) a modified zeolite of ZSM-5 type of formula (II), expressed in terms of the oxide ratios thereof:

$$M_2O,\ X_2O_n,\ mSiO_2,\ pH_2O \qquad (II)$$

in which M is a cation selected from among hydrogen and the alkali metals, at least some of the cations M being a hydrogen atom; X is Ga, Fe, B, In, Cr, Sc, Co, Ni, Be, Zn, Cu, Sb, As or V; D is 2, 3 or 5, depending on the valency of the element X; m is a number greater than or equal to 20; and p is a number ranging from 0 to 40, or

(b) a modified zeolite of ZSM-11 type of general formula (III), expressed in terms of the oxide ratios thereof:

$$M_2O,\ Z_2O_n,\ mSiO_2,\ xH_2O \qquad (III)$$

in which M is a cation selected from among hydrogen and the alkali metals, at least some of the cations M being a hydrogen atom; Z is Al, Ga, Fe, B, In, Cr, Sc, Co, Ni, Be, Zn, Cu, Sb, As or V; D is 2, 3 or 5, depending on the valency of the element Z; m is a number greater than or equal to 20; and x is a number ranging from 6 to 12.

5,055,624

SYNTHESIS OF 1,1-DICHLORO-1,2,2,2-TETRAFLUOROETHANE

Andre Lantz, Vernaison, and Bernard Cheminal, Brignais, both of France, assignors to Atochem, Puteaux, France

Filed Dec. 18, 1989, Ser. No. 451,861
Claims priority, application France, Mar. 8, 1989, 8903037
Int. Cl.[5] C07C *17/08*
U.S. Cl. 570—167 **11 Claims**

1. Process for the selective preparation of 1,1-dichloro-1,2,2,2-tetrafluoroethane by fluorination of pure 1,1,1-trichloro-2,2,2-trifluoroethane or a mixture of it with 1,1,2-trichloro-1,2,2-trifluoroethane with anhydrous hydrofluoric acid, comprising carrying out the fluorination in the liquid phase at a temperature of between 70° and 170° C. and under a pressure of between 10 and 80 bars absolute, in the presence of a catalyst comprising an antimony compound of formula SbF_xCl_{5-x}, x being a number ranging from 1 to 5.

5,055,625

GASOLINE ADDITIVE COMPOSITION AND METHOD FOR USING SAME

Fred Neidiffer, P.O. Box 2497, Capistrano Beach, Calif. 92624, and Charles E. Fox, Durant, Iowa, assignors to Fred Neidiffer, Capistrano Beach, Calif.

Filed Feb. 6, 1990, Ser. No. 475,829
Int. Cl.[5] C10L *1/16*
U.S. Cl. 585—14 **25 Claims**

17. A composition comprising a major amount of gasoline fuel and about 0.3% to about 10% by volume of an additional material comprising about 45% to about 55% by weight of toluene and about 45% to about 55% by weight of C_8 alkyl aromatic component selected from the group consisting of ethylbenzene, parazylene, metaxylene, orthoxylene and mixtures thereof, said additional material being included in said composition separately from said gasoline fuel.

5,055,626

NOVEL LUBRICANTS

Suzzy C. Ho, Plainsboro, and Margaret M. Wu, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 29, 1990, Ser. No. 471,454
Int. Cl.[5] C07C *15/00, 2/52*
U.S. Cl. 585—416 **21 Claims**

1. A process for producing a lubricant base stock composition comprising contacting a long chain 1-alkyne comprising an alkyne portion and an alkyl portion with a solid refractory catalyst comprising a reduced Group VI B metal under aromatization conditions sufficient to effect cyclization and oligomerization of said alkyne, and recovering from the reaction a product comprising a major proportion of a multiple long chain alkyl substituted benzene, the alkyl portions of which correspond substantially to said alkyl portions of said 1-alkyne, having lubricant base stock properties.

5,055,627

PROCESS FOR THE PREPARATION OF CUMENE

Lawrence A. Smith, Jr., Bellaire; Robert P. Arganbright, and Dennis Hearn, both of Houston, all of Tex., assignors to Chemical Research & Licensing Company, Houston, Tex.

Continuation-in-part of Ser. No. 122,485, Nov. 16, 1987, which is a continuation of Ser. No. 846,357, Mar. 31, 1986, abandoned, which is a continuation of Ser. No. 689,445, Jan. 7, 1985, abandoned. This application Sep. 11, 1989, Ser. No. 405,130
Int. Cl.[5] C07C *2/68*
U.S. Cl. 585—467 **8 Claims**

1. A process for producing cumene comprising:

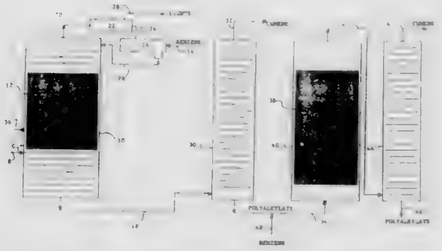
(A) contacting a molar excess of benzene with propylene in a distillation column reactor containing a fixed bed molecular sieve characterized as acidic catalytic distillation structure in a distillation reaction zone, at a pressure in the range of 0.25 to 40 atmospheres and temperatures in the range of 50° C. to 500° C., thereby concurrently:

(i) catalytically reacting said benzene and propylene to form alkylation product comprising cumene and polyalkylated benzene,

(ii) concurrently separating said alkylation product and unreacted benzene by fractional distillation whereby there is a liquid phase and a vapor phase in said distillation reaction zone,

(iii) withdrawing said alkylation product at a point below said fixed bed, and

(iv) withdrawing unreacted benzene at a point above said fixed bed;



(B) fractionating said withdrawn alkylation product;

(C) recovering cumene as a product from said fractionation;

(D) retuning a portion of said withdrawn benzene to said distillation column reactor as reflux,

(E) recovering polyalkylated benzenes as bottoms from said fractionation,

(F) contacting said polyalkylated benzenes and benzene in liquid phase with a fixed bed molecular sieve catalyst in a linear flow,

(G) recovering a transalkylated product comprising cumene, and

(H) fractionating said transalkylated product to separate cumene therefrom.

5,055,628

PREPARATION OF ALPHA-OLEFIN BY ETHENOLYSIS

Ronny W. Lin; Marshall B. Nelson, and Bruce C. Peters, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 11, 1990, Ser. No. 580,098
Int. Cl.[5] C07C *6/00, 2/02*
U.S. Cl. 585— 647 **18 Claims**

1. A process for preparing alpha-olefin from an internal or vinylidene olefin or mixtures thereof comprising reacting said internal or vinylidene olefin or mixtures thereof with ethylene in the presence of a catalyst consisting 5 essentially of Re_2O_7 and B_2O_3 on Al_2O_3.

5,055,629

PROCESS FOR ISOMERIZING HYDROCARBONS

Jean-Pierre Gilson; Johannes M. Nanne, and Gerrit J. den Otter, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 8, 1990, Ser. No. 520,429
Claims priority, application United Kingdom, May 15, 1989, 8911077
Int. Cl.[5] C07C *5/13*
U.S. Cl. 585—739 **12 Claims**

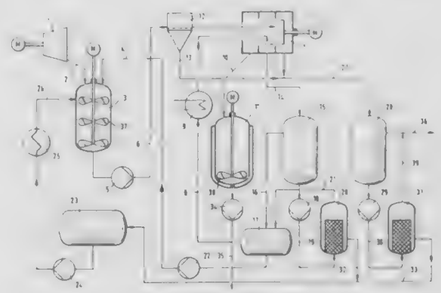
1. A process for isomerizing paraffinic hydrocarbons at elevated temperature and pressure in the presence of hydrogen by contacting said hydrocarbons with a catalyst comprising zeolite beta in combination with a metal selected from the group consisting of a hydrogenating-dehydrogenating metal, a compound of a hydrogenating-dehydrogenating metal, and mixtures theeof, wherein said zeolite beta has been treated with a solution having a pH of at least about 9 and said catalyst has been calcined.

5,055,630

PROCESS FOR MAKING P-XYLENE WITH A PURITY OF MORE THAN 99.8% BY WEIGHT

Günter Puppel, Wulfen, Fed. Rep. of Germany, assignor to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 20, 1989, Ser. No. 425,044
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1988, 3839229
Int. Cl.[5] C07C *7/14*
U.S. Cl. 585—814 **9 Claims**



1. A process for obtaining a p-xylene final product with a purity of more than 99.8% by weight from a crystalline p-xylene-containing starting material, said starting material being obtained by a crystallization method with a purity of about 98% by weight, comprising the steps of:

a) intermixing the crystalline p-xylene-containing starting material with precooled water and p-xylene fed back from step e) whose purity is about 96% by weight in a mixer at a temperature of 0° to 13° C. to form a p-xylene-crystal-water mixture containing p-xylene crystals and water;

b) continuously transferring the p-xylene-crystal-water mixture produced in the mixer as soon as the mixture contains about 30% by weight of said p-xylene crystals into a purifying centrifuge via a dewatering filter, said dewatering filter forming a fluid phase and a p-xylene crystal slurry containing up to 70 to 80% by weight p-xylene crystals;

c) separating the fluid phase further from the p-xylene crystals in a first stage of said purifying centrifuge, mixing the p-xylene crystal slurry in a second stage with a partial flow of said final product, heating at about 13° C. and subsequently liberating from the fluid phase still adhering, whereby the p-xylene crystals are drawn off into a heated vessel;

d) drawing off the p-xylene crystals melted in the heated vessel as said final product with said purity and also drawing off said partial flow of said final product, which is fed back to the second stage of the purifying centrifuge, said partial flow being heated previously to a temperature of from 60° to 80° C., and

e) feeding the fluid phase separated from the p-xylene crystals in the second stage of the purifying centrifuge into a separating vessel to form a p-xylene phase and an aqueous phase consisting of a water-xylene emulsion, separating said p-xylene phase from said water-xylene emulsion and feeding back said p-xylene phase to step a), feeding the aqueous phase into a subsequently connected coalescing unit and breaking up said aqueous phase therein into its components, said components being fed back separately from each other similarly into step a).

5,055,631

SULFONATED POLYSULFONE MEMBRANES FOR AROMATICS/SATURATES SEPARATION

Guido Sartori; W. S. Winston Ho, both of Annandale; Robert E. Noone, Neshanic Station, all of N.J., and Abraham D. Cohen, Sarnia, Canada, assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jul. 11, 1990, Ser. No. 550,931

Int. Cl.[5] C07C *7/144*

U.S. Cl. 585—819 **10 Claims**

1. A method for separating mixtures of aromatics and non-aromatics into aromatic-enriched and non-aromatic-enriched streams comprising:

a) Contacting said aromatics/non-aromatics mixture with one side of a sulfonated polysulfone membrane, and

b) selectively permeating the aromatic components of the mixture through the membrane.

5,055,632

HIGHLY AROMATIC POLYUREA/URETHANE MEMBRANES AND THEIR USE FOR THE SEPARATION OF AROMATICS FROM NON-AROMATICS

Robert C. Schucker, Baton Rouge, La., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 108,822, Oct. 14, 1987, Pat. No. 4,914,064. This application Dec. 29, 1989, Ser. No. 459,001

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Int. Cl.[5] C07C *7/144*

U.S. Cl. 585—819 **8 Claims**

1. A method for separating mixtures of aromatics and non-aromatics into aromatic enriched streams and non-aromatics enriched streams comprising contacting said aromatic-non-aromatics mixture with one side of a polyurea/urethane membrane which membrane is characterized by possessing a urea index of at least about 20% but less than 100%, an aromatic carbon content of at least about 15 mole percent, a functional group density of at least about 10 per 1000 grams of polymer and a C═O/NH ratio of less than about 8.

5,055,633

ADSORPTION AND ISOMERIZATION OF NORMAL AND MONO-METHYL PARAFFINS

Warren K. Volles, Arlington Heights, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 254,156, Oct. 6, 1988, Pat. No. 4,956,521. This application Sep. 11, 1990, Ser. No. 580,698

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] C07C *7/13, 7/135*

U.S. Cl. 585—826 **15 Claims**

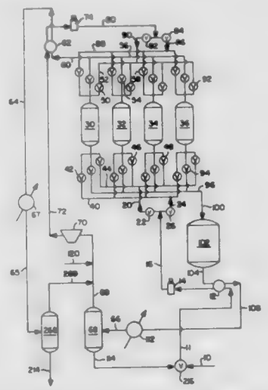
1. A process for separating isopentane and dimethyl branched hexane paraffins from a hydrocarbon feed comprising mono-methyl branched hexane paraffins, dimethyl branched hexane paraffins, and at least 10 mol. % isopentane which comprises the steps of:

(a) passing said hydrocarbon feed through an adsorber bed containing an adsorbent having pore dimensions sufficient to allow adsorption of isopentane and mono-methyl branched hexane paraffins while essentially excluding dimethyl branched hexane paraffins, wherein isopentane and mono-methyl branched hexane paraffins are adsorbed and isopentane is preferentially desorbed during continued adsorption to provide a mass transfer zone having isopentane concentrated at the leading edge thereof;

(b) removing an essentially non-adsorbed fraction comprising dimethyl branched hexane paraffins from said adsorber bed as a portion of an adsorption effluent;

(c) eluting at least a portion of the mass transfer zone which comprises isopentane from said adsorber bed as another portion of the adsorption effluent; and

(d) desorbing mono-methyl branched hexane paraffins from said adsorber bed to regenerate the adsorber bed and



produce a desorption effluent comprising mono-methyl branched hexane paraffins.

5,055,634

ADSORPTION AND ISOMERIZATION OF NORMAL AND MONO-METHYL PARAFFINS

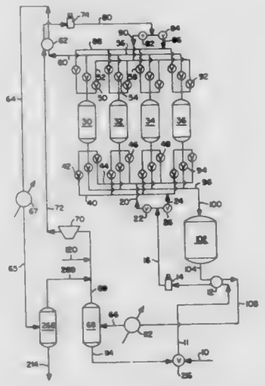
Warren K. Volles, Arlington Heights, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 254,156, Oct. 6, 1988, Pat. No. 4,956,521. This application Sep. 11, 1990, Ser. No. 580,700

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] C07C *7/13, 7/135*

U.S. Cl. 585—826 **13 Claims**



1. A process for separating isopentane and di-methyl branched hexane paraffins from a hydrocarbon feed comprising isopentane, normal pentane, normal hexane, mono-methyl branched hexane paraffins and di-methyl branched hexane paraffins which comprises the steps of:

(a) passing said hydrocarbon feed to a first adsorber bed containing adsorbent having pore dimensions sufficient to allow adsorption of normal paraffins while essentially excluding mono-methyl and di-methyl branched paraffins, wherein normal pentane and normal hexane are adsorbed to provide a de-normalized feed at least partially depleted in normal paraffins and comprising isopentane, mono-methyl branched hexane paraffins and di-methyl branched hexane paraffins;

(b) passing said de-normalized feed through a second adsorber bed containing a microporous molecular sieve adsorbent having pores of an elliptical cross-section with pore dimensions between about 5.0 and 5.5 Å along the minor axis and between about 5.5 and 6.0 Å along the major axis, wherein mono-methyl branched hexane paraffins and isopentane are adsorbed and isopentane is preferentially desorbed during continued adsorption to provide a mass transfer zone having isopentane concentrated at the leading edge thereof;

(c) removing an essentially non-adsorbed fraction comprising di-methyl branched hexane paraffins from said second adsorber bed as a portion of an adsorption effluent;

(d) eluting at least a portion of the mass transfer zone which comprises isopentane from said second adsorber bed as another portion of the adsorption effluent;

(e) passing a non-adsorbable purge gas through said second adsorber bed to desorb mono-methyl branched hexane paraffins and provide a first desorption effluent stream comprising the purge gas and mono-methyl branched hexane paraffins; and

(f) passing at least a portion of the first desorption effluent stream through said first adsorber bed to desorb normal pentane and hexane and provide a second desorption effluent stream comprising the purge gas, mono-methyl branched hexane paraffins, normal pentane and normal hexane.

5,055,635

ARRANGEMENT FOR IMPROVING ELECTROMAGNETIC COMPATABILITY OF ELECTRICAL DEVICE

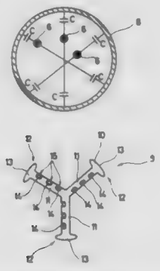
Gerhard Landsmann, Eberdingen, and Gerhard Soehner, Geradstetten, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 17, 1990, Ser. No. 525,873

Claims priority, application Fed. Rep. of Germany, May 24, 1989, 3916898

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—36 18 Claims



1. An arrangement for improving the electromagnetic compatibility foam electrical device provided with an interference irradiation susceptible conduit, especially an electronic control device of an internal combustion engine of a power vehicle, comprising at least one screen; at least one conductor arranged inside said screen; and means for improving the electromagnetic compatibility by adjusting a capacity distributed between said at least one conductor and said screen, said improving means including holding means for holding said conductor at a predetermined, selectable distance from said screen in a mounted position, and a dielectric comprising a mass and stationary surrounding said conductor in said mounted position.

5,055,636

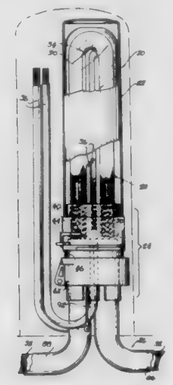
SEALED REENTERABLE SPLICE ENCLOSURE

Donald F. Jaycox, Riverwoods, Ill., assignor to Reliance Comm/Tec Corporation, Chicago, Ill.

Filed May 31, 1990, Ser. No. 531,879

Int. Cl.[5] H02G *15/06;* H01R *43/00*

U.S. Cl. 174—87 20 Claims



1. A reenterable splice enclosure for isolating a portion of a cable positioned therein and splice connections made thereto from detrimental environmental effects, said enclosure comprising: a housing for covering said splice connections, said housing having at least one opening for receiving said splice connections; and resealable sealing means for sealing said opening to protect said splice connections from detrimental environmental effects; said sealing means including a reusable sealing member and longitudinal compression means, said sealing member defining at least one through aperture therethrough for passage of at least one cable portion therethrough, and said longitudinal compression means releasably engaging and longitudinally compressing said sealing member, said sealing member being responsive to said engagement and longitudinal compression for sealing about its outer periphery and about said at least one cable portion projecting therethrough.

11. A method of sealing a splice enclosure for isolating a portion of at least one cable positioned therein and splice connections made thereto from detrimental environmental effects, said method comprising the steps of: providing a housing with an opening for enclosing said splice connections; providing resealable sealing means including a reusable resiliently compressible sealing member formed with at least one aperture through which a cable may project and longitudinal compression means for retaining and longitudinally compressing said sealing member; positioning at least one cable in said housing and through said aperture formed in said sealing member; engaging said sealing member in said longitudinal compression means; attaching said housing to said longitudinal compression means; applying longitudinal compressive forces to said longitudinal compression means to thereby compress and deform said sealing member generally radially outwardly to seal against said opening and generally radially inwardly to seal said aperture against said at least one cable projecting therethrough.

5,055,637

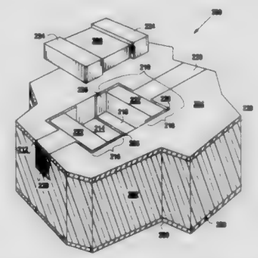
CIRCUIT BOARDS WITH RECESSED TRACES

George R. Hagner, c/o M. Allison, 240 Orange Ave., Coronado, Calif. 92118

Continuation-in-part of Ser. No. 346,220, May 2, 1989, Pat. No. 4,985,601. This application Nov. 13, 1989, Ser. No. 434,427

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—260 19 Claims



1. A circuit board for receiving electronic components comprising:

an insulative substrate having at least one mounting surface; and

a conductive material pattern positioned over the surface of the insulative substrate and at least partially within the mounting surface, the pattern comprising:

a groove within the mounting surface; and

a first conductive material at least partially filling the groove; and

a component lead contact region in communication with the groove comprising

a component lead receiving cavity; and

a second conductive material at least partially filling the cavity; where the second conductive material is more readily reflowable than the first conductive material.

5,055,638

PLASTIC CONTRACTING SYSTEM FOR TRANSMISSION TO VEHICLES

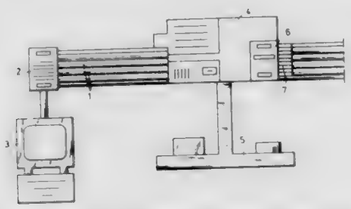
Martin Geschka, and Michael ten Hompel, both of Dortmund, Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Jul. 5, 1989, Ser. No. 375,816

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1988, 3822535

Int. Cl.[5] B60M *1/02*

U.S. Cl. 191—22 DM 8 Claims



1. A contact line for conveying electrical data or energy over a distance, comprising:

(a) an elongated contact member having a length much greater than its width and having an exposed contact surface extending along its length direction for receiving a sliding member, said contact member at least at the contact surface being constituted of an elecrrically conductive plastic material made of an extruded copolymer, highly filled with carbon black.

5,055,639

CONTACT ARRANGEMENT FOR A VACUUM SWITCH

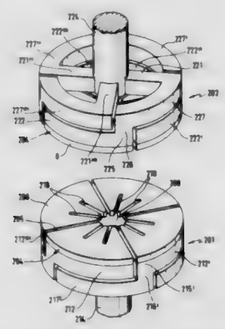
Wilhelm Schels, Laaber; Manfred Niegl, and Rainer Behrend, both of Regensburg, all of Fed. Rep. of Germany, assignors to Sachsenwerk Aktiengesellschaft, Regensburg, Fed. Rep. of Germany

Filed Apr. 20, 1990, Ser. No. 511,730

Claims priority, application Fed. Rep. of Germany, May 10, 1989, 3915287

Int. Cl.[5] H01H *33/66*

U.S. Cl. 200—144 B 25 Claims



1. A contact arrangement for a vacuum switch having a switch axis along which switch contacts move, comprising:

two identically configured switch contacts which are relatively movable opposite to one another along the switch axis, each switch contact including:

a contact pin for connecting the switch contact with a switch terminal;

a contact plate having a central circular recess, said contact plate being divided into at least two separate sectors by at least two radially oriented slots emanating from said recess, with each said sector being subdivided by additional slots emanating from said recess; and

a coil body for generating an axial magnetic field, said coil body having at least two winding sections extending in a circumferential direction of said switch contact, each of said at least two winding sections having a first end connected with said contact plate, at least one approximately radial conductor section and a second end connected by said at least one approximately radial conductor section with said contact pin, each of said at least two winding sections having a side facing and lying against a respective one of said at least two separate sectors of said contact plate, and being connected with that sector in a conductive manner over the entire length of said side; and

wherein

mutually adjacent winding sections of said two switch contacts lie on top of one another with respect to the switch axis so that said at least two separate sectors of the contact plate of one of said switch contacts are arranged congruently to said at least two separate sectors of the contact plate of the other of said switch contacts.

5,055,640

MULTI-PIN VACUUM SWITCH ARRANGEMENT

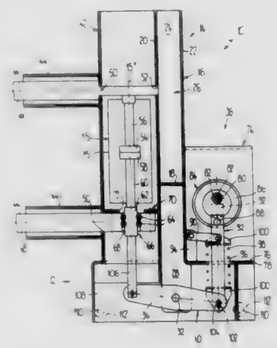
Bruno Lippi, Aarau; Ernst Suter, Kolliken; Hans-Rudolf Wüthrich, Oberentfelden, and Thomas Meier, Niedergösgen, all of Switzerland, assignors to Sprecher Energie AG, Oberentfelden, Switzerland

Filed Mar. 9, 1990, Ser. No. 493,834

Claims priority, application Switzerland, Mar. 16, 1989, 00984/89

Int. Cl.[5] H01H *33/66*

U.S. Cl. 200—144 B 10 Claims



1. A multi-pole vacuum switch arrangement, in particular for medium-high voltage, said multi-pole vacuum switch arrangement comprising:

a box-shaped base part,

an insulating supporting part arranged on the box-shaped base part, the insulating supporting part being substantially hollow and open downwardly towards the box-shaped base part,

vacuum switch tubes of the switch arrangement at least partially enclosed by said insulating support part,

a spring-force drive arranged on the box-shaped base part, said spring-force drive including drive means having a spring force for opening and closing movable contacts of the vacuum switch tubes, said drive means being connected via linkages to the movable contacts of the vacuum switch tubes,

at least one bearing part for mounting of the spring force drive,

the insulating supporting part, the at least one bearing part for mounting parts of the spring-force drive and the box-shaped base part forming a one-piece insulating supporting frame and at least said drive means being mounted on the at least one bearing part of the insulating supporting frame,

said insulating supporting part having a substantially flat, upright wall part at least partially enclosing with insulating housings, formed on one side of said substantially flat, upright wall part, the vacuum switch tubes.

5,055,641

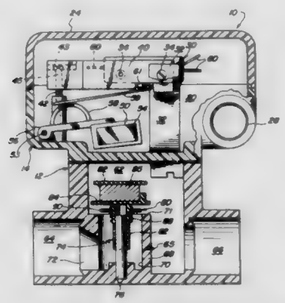
FLUID-FLOW-CONTROL-SWITCH VALVE

Gary H. Richards, 3204 Palm Ave., Manhattan Beach, Calif. 90266

Filed Dec. 10, 1990, Ser. No. 625,157

Int. Cl.[5] H01H *35/40*

U.S. Cl. 200—81.9 M 6 Claims



1. A magnetically controlled fluid-flow-switch valve device, comprising:

a housing having an independent upper section and an independent lower section, said upper section defining a switch compartment and said lower section defining a fluid-flow chamber having an inlet port and an outlet port;

a switch means positioned in said compartment of said upper section, wherein said switch means includes a first magnet;

a one-way valve means located in said fluid-flow chamber of said lower section;

a second magnet mounted to said one-way valve means and located within said chamber of said lower section and positioned so as to be juxtaposed with said first magnet disposed in said compartment of said upper section, wherein the movement of said second magnet moves said first magnet to activate said switch means;

calibration means adjustably attached to said one-way valve means, whereby the rate of fluid flow passing through said valve means and said chamber is adjustably selected for a given operation therewith;

wherein said one-way valve means comprises;

a poppet valve having a valve body member defining a valve seat;

a valve stem having a valve plate for engagement with said valve seat; and

wherein said calibration means is mounted to said valve stem below said valve plate thereof and said second magnet is attached to said valve plate.

5,055,642

PUSH BUTTON SWITCH

Muneyoshi Miyata, Tokyo, Japan, assignor to Mitsuku Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 368,809, Jun. 20, 1989. This application Aug. 20, 1990, Ser. No. 569,712

Int. Cl.[5] H01H *13/70, 9/02*

U.S. Cl. 200—293 5 Claims

1. A push button switch comprising:

a casing including a casing body and a cover having an aperture formed therein;

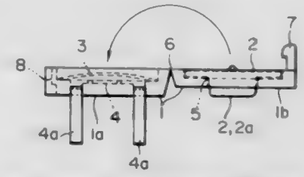
a push button movably positioned in said aperture of said cover and made of a plastic material;

a diaphragm type movable metal contact and fixed contacts located in said casing; and

a plurality of terminals connected to said fixed contacts;

said casing body and cover being integrally connected to each other through a thin-wall hinge section by a concurrently formed casing body and cover from a plastic material by monolithic molding wherein said hinge section comprises adjacent edge portions of said casing body and said cover which are interconnected along a substantially entire length portion of said adjacent edge portions;

said cover being pivotally movable about said hinge section and fixed to said body at an edge opposite said hinge section.



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TRIPPING EMERGENCY PUSH-BUTTON

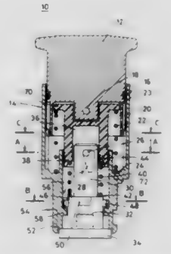
Franco Pardini, Milan, and Falchi Fiorino, Sangano, both of Italy, assignors to CGE Compagnia Generale Elettromeccanica SPA, Milan, Italy

Filed Mar. 5, 1990, Ser. No. 488,642

Claims priority, application Italy, Mar. 9, 1989, 19707 A/89

Int. Cl.[5] H01H *3/20*

U.S. Cl. 200—318.2 13 Claims



1. An emergency push-button with a safe actuation, comprising a fixed housing; a knob movable along an axis thereof upon actuation of the knob; retaining and releasing means positioned in said housing for said axially movable knob; a slider support rigidly connected to said knob and being spring-biased in said housing, said retaining and releasing means including a member movable in an axial direction of said knob by axial sliding of said slider support as said knob is actuated and being adapted to rotate about an axis parallel to a direction of actuation of said knob, said retaining and releasing means further including a plurality of retaining members provided on said movable member, and a plurality of protrusions provided on said housing, said retaining members cooperating with said protrusions as said movable member rotates such that said retaining members move in a direction of rotation of said movable member and subsequently abut under respective protrusions, said retaining members being unlatcheable from said protrusions through a subsequent rotation of said movable member and a movement of said retaining members around said protrusions; and means effecting a rotational movement of said movable

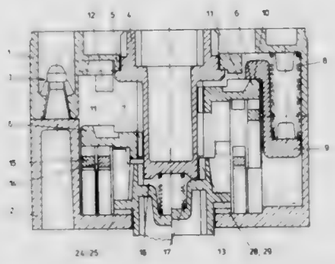
member as said movable member is axially moved, said movable member including a stem extending into said slider support; said rotational movement effecting means including cam means formed within said stem, and a pin provided in said slider support and movable therealong and extending transversely of said axis, said pin being engaged in and cooperating with said cam means to cause rotation and a tripping action of said movable member resulting in engagement of said retaining members with or disengagement of said retaining members from said protrusions, respectively.

5,055,644

SNAP LOCKING MECHANISM FOR ROTARY ELECTRICAL SWITCHES

Gottfried Alsch, Vienna, Austria, assignor to Hubert L. Naimer, Ascona, Switzerland

Filed Apr. 3, 1990, Ser. No. 503,447
Claims priority, application Austria, May 24, 1989, 1268/89
Int. Cl.[5] H01H *3/20*
U.S. Cl. 200—325 **17 Claims**



10. A snap locking mechanism for rotary switches having more than two lock-in positions, comprising:

a stationary housing;

a rotatable operating shaft, rotatable about an axis of rotation;

at least one axially acting compression spring;

a first driver ring, having a first portion with peaks and valleys around a periphery thereof, said first driver ring operatively connected to said shaft;

a stationary element, mounted to said housing and stationary with respect to said housing, having peaks and valleys for cooperation with the peaks and valleys of said first driver ring first portion;

said peaks and valleys of said driver ring and stationary element cooperating to define said more than two lock-in positions, the peaks of said ring are received by the valleys of said stationary element in each lock-in position;

said at least one compression spring biasing said first ring into contact with said stationary element; and

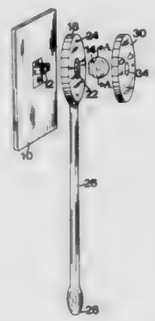
means for effecting momentary arrest of said first driver ring in each lock-in position so that quick rotation of said shaft does not result in overtravel of said first driver ring with respect to said stationary element and thereby skipping of a lock-in position is avoided; said means comprising a series of stop projections on said first driver ring opposite said peaks and valleys of said first portion thereof, and stops mounted on said on said housing for momentary cooperation with said stop projections when said first driver ring moves axially to compress said at least one compression spring.

5,055,645

LIGHT SWITCH EXTENSION

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434; Clive R. Belvoir, 2800 S. Curry St., Carson City, Nev. 89701, and Erle B. Shucker, 890 Jamaica #3, Reno, Nev. 89502

Filed Mar. 21, 1990, Ser. No. 496,591
Int. Cl.[5] H01H *3/02*
U.S. Cl. 200—331 **13 Claims**



1. A light switch extension detachably connected to an on/off lever of a wall light switch, said extension comprising; a ball having a cavity cooperating with the lever, a first member comprising a mounting member and an elongated handle, and a second member; said ball being frictionally engaged with said lever, said mounting member and said second member each having a cavity in a substantially center portion thereof, said ball being captured and substantially surrounded by the cavities of the mounting member and the second member, said first and second member having means to be affixed together.

5,055,646

SLOW POSITIVE ACTION LOW AMPERAGE SWITCH

Barney L. Byrum, Box 18117, Baltimore, Md. 21220

Filed Aug. 5, 1988, Ser. No. 228,478
Int. Cl.[5] H01H *3/40*
U.S. Cl. 200—507 **14 Claims**



7. A single pole, single throw switch for selectively opening and closing a circuit containing a power supply and load, said switch comprising:

a first electrode having an externally threaded right circular electrically conductive cylindrical portion;

a second electrode having a hollow internally threaded right circular electrically conductive cylindrical portion configured to receive and threadedly engage the externally threaded first electrode;

a housing of dielectric material entirely enclosing said first and second electrodes;

mounting means for mounting said first and second electrodes inside said housing with said cylindrical portions of said first and second electrodes coaxially aligned; and

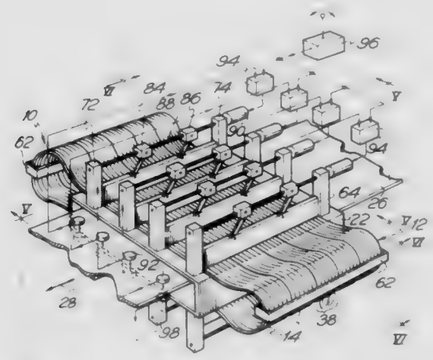
positional adjustment means said housing for selectively rotating and longitudinally displacing said cylindrical portions of said first and second electrodes to selectively threadedly engage and disengage said cylindrical portions.

5,055,647

ELECTRO-MAGNETIC INDUCTION HEATING OF STRIP MATERIAL

Peter J. Heyes, Wantage, and Mark J. Rowland, Abingdon, both of United Kingdom, assignors to CMB Packaging (UK) Limited, United Kingdom

Filed Jan. 30, 1990, Ser. No. 472,027
Claims priority, application United Kingdom, Jan. 31, 1989, 8902090
Int. Cl.[5] H05B *6/08*
U.S. Cl. 219—10.43 **19 Claims**



1. A method of induction heating an elongate metal strip, which method comprises the steps of:

(a) providing an induction heating coil comprising a plurality of flexible coil turns which together define a coil throat through which a magnetic axis of the coil extends, said coil turns being adjustable in shape in a plane transverse to said magnetic axis thereby to vary the shape of said coil throat;

(b) energising said coil with an electro-magnetic induction heating current thereby to produce a varying magnetic flux extending through said coil throat in the direction of said magnetic axis;

(c) moving said metal strip lengthwise progressively through said coil throat in said direction of said magnetic axis thereby to cause said magnetic flux to extend in said metal strip lengthwise in said direction of said magnetic axis and said metal strip to be heated by said varying magnetic flux;

(d) at each one of a plurality of temperature monitoring positions situated downstream of said coil throat and spaced apart across said metal strip in a direction transverse to that of said magnetic axis, monitoring the temperature of the heated metal strip as it emerges from said coil throat, thereby to produce respective control signals dependent respectively upon respective deviations of the respective monitored temperatures from respective reference values;

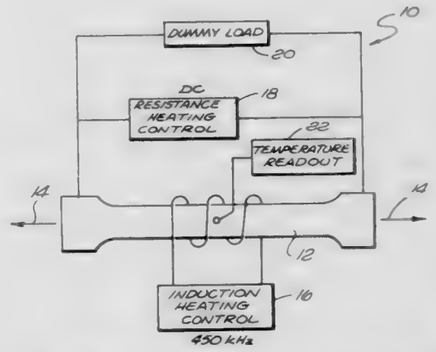
(e) continuously adjusting the positions of respective circumferentially-extending portions of said heating coil relative to said metal strip in accordance with the respective control signals and in directions to reduce said control signals, said circumferentially-extending portions of said coil being disposed in line in said direction of said magnetic axis with respective corresponding temperature monitoring positions, and said method being adapted to produce in said heated metal strip emerging from said coil throat a predetermined temperature profile across said metal strip in said transverse direction.

5,055,648

APPARATUS AND METHOD FOR MECHANICAL PROPERTIES TESTING

William F. Iceland, Los Alamitos; Robert J. Demonet, Westminster; Richard M. Jimenez, Chino, and Donald W. Houston, Huntington Beach, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 27, 1989, Ser. No. 457,591
Int. Cl.[5] H05B *6/06, 6/10;* **G01N** *3/18*
U.S. Cl. 219—10.77 **13 Claims**



1. An apparatus for maintaining a constant temperature across an electrically conductive specimen required to be mechanically tested, including:

(a) resistance heating means, in electrical contact with an electrically conductive specimen, for providing resistance heating of said specimen to a desired level during mechanical testing;

(b) induction heating means for providing substantially simultaneous induction heating of said specimen to a desired level; and,

(c) controller means, including a closed loop control system, for automatically providing cooperation between the resistance heating and inductive heating so as to heat the specimen to a desired substantially constant temperature during mechanical testing.

5,055,649

WIRE ELECTRODE SUPPLYING DEVICE IN WIRE CUT ELECTRIC DISCHARGE MACHINE

Takeshi Iwasaki, and Hiroshi Takeuchi, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

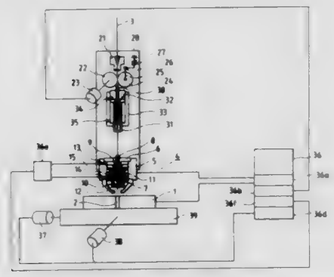
Filed Mar. 16, 1990, Ser. No. 494,331
Claims priority, application Japan, May 24, 1989, 1-131036
Int. Cl.[5] B23H *7/02*
U.S. Cl. 219—69.12 **6 Claims**

1. A wire electrode supplying device in a wire cut electric discharge machine, which comprises:

contact detecting means for detecting when a wire electrode supplied through a wire guide section provided on a wire electrode supplying side is brought into contact with a workpiece, and for outputting a contact detection signal when said contact is detected, and

control means to suspend the supplying of said wire electrode, and to reposition said workpiece so that said wire

electrode is properly aligned for insertion into a machining start hole formed in said workpiece by allowing a jet



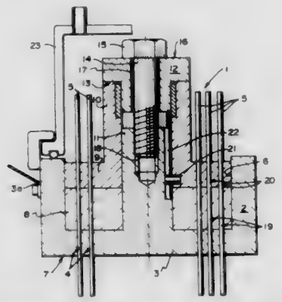
stream to bind said wire electrode while said workpiece is being repositioned.

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ELECTRODE CARRIER FOR ELECTRODE-EROSION MACHINING DEVICE

Claude P. Barthes, Mennecy; André R. Callet, Paris, and Johan D. Ptchelinseff, Chevilly Larue, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Mar. 14, 1991, Ser. No. 669,609
Claims priority, application France, Mar. 20, 1990, 90 03510
Int. Cl.[5] B23H *7/26*
U.S. Cl. 219—69.15 **12 Claims**



1. An electrode carrier for electrodes of an electro-erosion machining device comprising:

a) a mounting body defining a plurality of passageways, each adapted to receive an electrode therethrough, the mounting body also defining a cavity;

b) an electrode disposed in the passageways of the mounting body such that at least a portion of the electrodes extend into the cavity;

c) a deformable elastic material disposed in the cavity in contact with the portions of the electrodes in the cavity;

d) a clamping piston having a portion extending into the cavity in contact with the deformable elastic material; and,

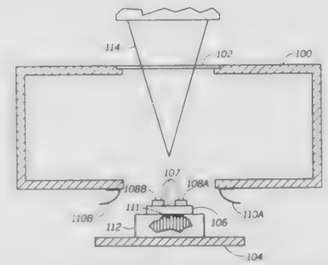
e) means to move the clamping piston into the cavity to apply a compression force on the deformable elastic material such that the elastic material deforms so as to exert a clamping force on the electrodes in the mounting body.

5,055,651

INTERFERENCE SHIELD SUITABLE FOR USE IN AUTOMATED MANUFACTURING ENVIRONMENT

Robert B. Schneider, Hypoluxo; Nadim Halabi, Sunrise, and Daniel Peana, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1990, Ser. No. 561,388
Int. Cl.[5] B23K *26/00, 26/02;* **H01P** *1/00;* **H05K** *9/00*
U.S. Cl. 219—121.68 **10 Claims**



1. An apparatus suitable for use in an automated manufacturing and/or testing environment, comprising:

a housing constructed and arranged to substantially enclose and shield a trimmable electrical circuit from radio frequency interference external to the housing, the housing including at least one portion thereof being constructed and arranged to shield while contemporaneously allowing a laser beam to pass therethrough so as to focus on at least a portion of the trimmable electrical circuit and thereby laser trim the trimmable electrical circuit; and

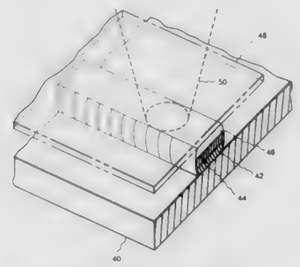
sensing means substantially enclosed within the housing for sensing a radio frequency signal emitted from the trimmable electrical circuit, thereby capable of measuring the frequency characteristics of the trimmable electrical circuit while contemporaneously performing a laser trimming operation.

5,055,652

LASER SOLDERING OF FLEXIBLE LEADS

Marshall G. Jones, Scotia, and Allen W. Case, Jr., Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1990, Ser. No. 591,327
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 **18 Claims**



1. A method comprising the steps of:

aligning a lead with a solder plated pad; and

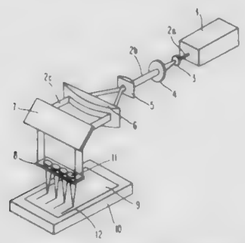
transmitting a beam through a tape bonded to the lead, the tape being disposed between the lead and a laser source emitting the beam, the beam being directed to a location where a solder joint is to be formed and heating the solder plated pad thereby causing reflow of solder plate disposed on the pad.

5,055,653

LASER BEAM MACHINING DEVICE

Koji Funami, Moriguchi; Yuji Uesugi, Osaka, and Yukio Nishikawa, Ikeda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 30, 1990, Ser. No. 515,492
Claims priority, application Japan, May 8, 1989, 1-114706
Int. Cl.[5] B23K *26/06*
U.S. Cl. 219—121.75 **7 Claims**



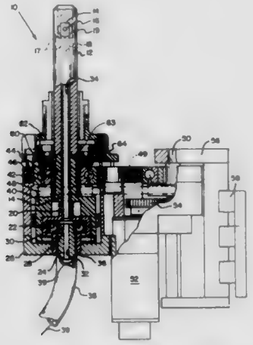
1. A laser beam machining device comprising a laser oscillator, aspherical lenses for uniforming the cross section intensity of a laser beam emitted from said laser oscillator, and a converging optical unit that comprises converging lenses disposed to be aligned in single or plural rows on a plane in the optical path of the uniform laser beam.

5,055,654

MAST ASSEMBLY FOR ROTARY TOOL

Mark A. Overbay, East Ridge, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 28,997, Mar. 23, 1987. This application May 29, 1987, Ser. No. 55,280
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—136 **9 Claims**



1. In an air-cooled tool having a rotating elongated mast assembly, at least part of which is a rotating elongated conducting member;

a non-hygroscopic ceramic tube coaxially and concentrically surrounding said elongated electrically conductive member;

an opening in said non-hygroscopic ceramic tube;

means for securing said non-hygroscopic ceramic tube for rotation with said elongated electrically conductive member about their common axis;

means for conducting gas from a gas supply means to a space between said conductive member and said non-hygroscopic ceramic tube; and

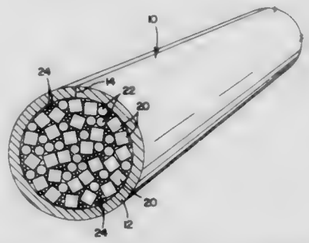
welding tungsten secured to said elongated electrically conductive member and extending from said space through the opening in said non-hygroscopic ceramic tube such that gas from said space flows along said welding tungsten.

5,055,655

LOW HYDROGEN BASIC METAL CORED ELECTRODE

Chang-Shung Chai, Highland Heights; David A. Fink, University Heights, and John Gonzalez, Willoughby, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 405,727, Sep. 11, 1989, Pat. No. 5,003,155. This application Mar. 19, 1990, Ser. No. 495,696
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] B23K *35/22*
U.S. Cl. 219—145.22 **8 Claims**



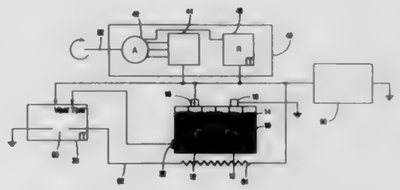
1. A consumable welding element for arc welding comprising a steel sheath surrounding a compacted core containing an essentially single ingredient flux system formed from powdered calcium fluoride to provide fluxing for said welding element and making up less than 1.60% by total weight of said element, said core having up to about 0.4% of an agent for reducing the amount of diffusible hydrogen in the weld metal, said agent comprising a polymer containing fluorine.

5,055,656

BATTERY HEATING SYSTEM USING INSTANTANEOUS EXCESS CAPACITY OF A VEHICLE ELECTRICAL POWER GENERATING SUBSYSTEM

Andrew J. Farah, Bayside, and William J. Wruck, Shorewood, both of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Dec. 21, 1989, Ser. No. 454,076
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—209 **41 Claims**



1. A control apparatus for heating one or more cells of a battery comprising:

(a) a heater positioned near the battery;

(b) control means, including switching means for electrically and selectively connecting said heater to an energy source, for continuously comparing at discrete intervals of time the instant battery temperature to a switching temperature and comparing instant voltage of said battery to a switching voltage; and

(c) said switching means being arranged for connecting said heater to said energy source in response to said instant voltage exceeding said switching voltage and said instant

battery temperature being less than said switching temperature, and for not connecting said heater to said energy source in response to said instant voltage being less than said switching voltage or said instant battery temperature being greater than said switching temperature.

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VENDING TYPE MACHINE DISPENSING A REDEEMABLE CREDIT VOUCHER UPON PAYMENT INTERRUPT

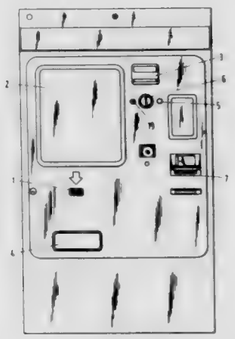
Gert Miller, Mönchen-Gladbach; Heinz-Gerd Jendges, Kempken St. Hubert, and Norbert Crynen, Iönchen-Gladbach, all of Fed. Rep. of Germany, assignors to Scheidt & Bachmann Gesellschaft Mit Beschränkter Haftung, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 28, 1989, Ser. No. 387,018

Claims priority, application European Pat. Off., Dec. 5, 1988, 88120253

Int. Cl.[5] G06F *7/08*

U.S. Cl. 235—381 6 Claims



1. In a method of operating a vending-type machine for goods and/or services, with said machine having a computer that is connected via a data communication line with a central computer located in a central office, with said machine further including a bill-checking mechanism, bill-conveying mechanism for conveying a bill or bank note to a cash box, as well as a printer, which, upon interruption of a payment procedure after the transfer of at least one bill into said cash box, prints out a voucher for the equivalent value of the received bills as proof of entitlement for receiving a refund in said central office, the improvement including the steps of:

printing on said voucher a plain language as well as machine-readable coded data entry that in addition to the value of said bill, also includes the location indication of said machine, and the actual machine operation date and time in seconds;

entering said data entry in a data-protected memory of said machine and also entering said data entry, via said data communication line, in a data-protected memory of said central computer; and

upon presentation of said voucher for redemption at said central office, reading said coded data entry on said voucher in a data reader and comparing this read data with said data stored in said memory of said central computer, and paying out said equivalent value when said comparison has determined that the data entry on said voucher is the same as the data stored in said memory.

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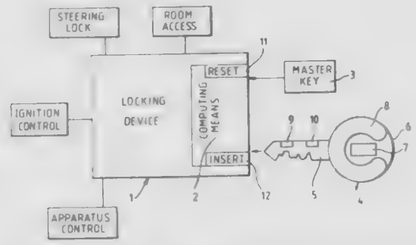
SECURITY SYSTEM EMPLOYING DIGITIZED PERSONAL PHYSICAL CHARACTERISTICS

John B. Cockburn, 16A Bywater Street, London, SW3, Great Britain

Continuation of Ser. No. 223,611, Jul. 25, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 513,035

Int. Cl.[5] G06K *5/00, 7/01*

U.S. Cl. 235—382 5 Claims



1. A security system comprising a locking device having computing means, a master key containing recorded information, a slot in said locking device for receiving the master key, said slot connected to said computing means and said master key carrying means for passing said recorded information through said connection from the slot to the computing means, a slave key, a keyhole in said locking device for receiving the slave key, said keyhole connected to said computing means, said computing means responsive to said recorded information carried by said master key to program said computing means to respond to, and only to, a digitized representation of a personal characteristic of an individual received from said slave key for actuating said locking device, said digitized personal characteristic being carried by said slave key, said slave key carrying means for digitizing and storing said personal characteristic and also carrying electrical contacts for passing said personal characteristic digital data through said connection from the keyhole to the computing means, said computing means responding to the identity of said digitized personal characteristic data received from said slave key with said information received from said master key to actuate the locking device.

5,055,659

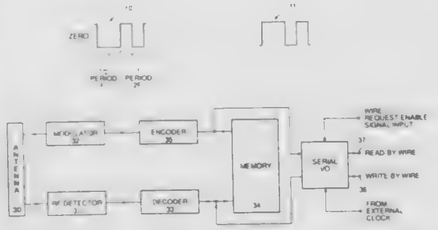
HIGH SPEED SYSTEM FOR READING AND WRITING DATA FROM AND INTO REMOTE TAGS

Peter L. Hendrick, Los Alamos; Donald F. Speirs, San Juan, and Michael A. Wolf, Los Alamos, all of N. Mex., assignors to Amtech Technology Corp., Santa Fe, N. Mex.

Filed Feb. 6, 1990, Ser. No. 475,729

Int. Cl.[5] G01S *13/76;* G06K *7/10*

U.S. Cl. 235—439 25 Claims



1. A system for reading data from and for writing data into a tag associated with an object which is moveable relative to an interrogator, comprising:

an interrogator means for sending a modulated RF signal to said tag, said signal including data intended to be received and stored by said tag;

at least one tag means which, upon receipt of a continuous RF signal, backscatter-modulates said RF signal and returns a backscatter-modulated signal to said interrogator, said backscatter-modulated signal being modulated with data relating to said remote object and being made up of signals of first and second frequencies F_1 and $2f_1$, respectively, where the second frequency $2f_1$ is twice the first frequency f_1, and where one of the two binary bits ONE and ZERO is represented by one-half period of a signal of said first frequency followed by one period of said second frequency, and the other of said two binary bits is represented by one period of a signal of said second frequency followed by one-half period of a signal of said first frequency;

said interrogator means (1) obtaining information from said tag means from said returned backscatter-modulated signal made up of the said signals of first and second frequencies and (2) transmitting data to said tag means, whereby data may be READ from, transmitted to and stored by said tag means very rapidly while said tag means or said interrogator means is moving.

5,055,660

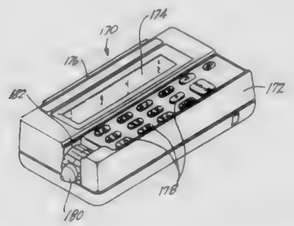
PORTABLE TRANSACTION MONITORING UNIT FOR TRANSACTION MONITORING AND SECURITY CONTROL SYSTEMS

Richard A. Bertagna, San Dimas, and Dickey J. Berry, LaVerne, both of Calif., assignors to Avicom International, Inc., Pasadena, Calif.

Continuation of Ser. No. 207,663, Jun. 16, 1988, abandoned, Continuation-in-part of Ser. No. 318,592, Jun. 16, 1988. This application May 15, 1990, Ser. No. 524,673

Int. Cl.[5] G06K *7/01, 7/10*

U.S. Cl. 235—472 4 Claims



1. A potable transaction monitoring unit comprising a generally rectangularly shaped housing having a planar face, a longitudinal axis, a plurality of openings formed therethrough, a read head, a generally cylindrically shaped turret recessed within said housing within one of said plurality of openings for limited rotational movement relative to the housing about an axis generally transverse to the longitudinal axis of said housing, said read head being fixedly mounted on said turret for movement therewith between two extreme positions, one generally normal and one generally parallel to the planar face of said housing, said read head projecting from said turret through said one opening in said housing and including a photo diode and lens means for optically reading bar codes on articles to be identified, and for converting the bar codes into electrical signals for processing by the portable transaction monitoring unit, a microprocessor with memory enclosed within said housing adjacent said turret, and amplifier means mounted within said turret for amplifying the electrical signals generated by said read head to a level sufficient to drive said microprocessor, said amplifier means electrically coupling said read head to said microprocessor whereby the electrical signals generated by said read head are formatted and stored in said microprocessor for later retrieval.

5,055,661

IC CARD WITH SWITCHABLE BUS STRUCTURE

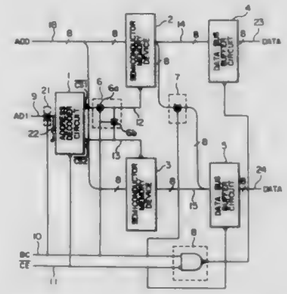
Hidenobu Gochi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1989, Ser. No. 398,957

Claims priority, application Japan, Aug. 29, 1988, 63-212547

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—492 9 Claims



1. In an IC card having an address bus and a data bus for exchanging information with an external terminal, an improved memory structure on the IC card switchable between a narrow bus mode having a narrow data bus of N bits and a wide bus mode having a wide data bus of xN bits (where x is an integer), the improvement comprising the combination of:

a plurality of N bit memories each having address lines and data lines;

address decoder means connected to select inputs of the semiconductor memories for selectively causing the memories to respond to sequential address signals on their address lines together in the wide bus mode or separately in the narrow bus mode;

data bus switching means for controlling the coupling of data signals between the data lines and the narrow or wide bits of the data bus depending on the bus mode; and

mode control means in the IC card for determining the bus structure for use with a particular external terminal and enabling the narrow bus mode or wide bus mode in dependence upon the bus structure required for the particular external terminal.

5,055,662

PORTABLE INFORMATION RECORD MEDIUM HAVING LIQUID CRYSTAL AND PHOTOCONDUCTIVE LAYERS

Haruyoshi Hasegawa, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 28, 1989, Ser. No. 386,263

Claims priority, application Japan, Aug. 31, 1988, 63-214911

Int. Cl.[5] G06K *19/06;* G11C *13/01*

U.S. Cl. 235—492 12 Claims

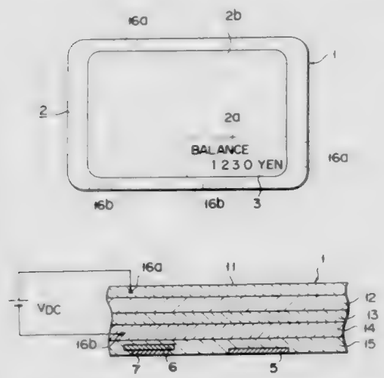
1. A portable information record medium for displaying a visible image in accordance with an optical image radiated on the medium from outside, the medium comprising:

a portable substrate;

image holding means, provided on the substrate, for holding information in the form of a visible image, said image holding means including a liquid crystal layer having liquid crystal molecules whose orientation change in response to an applied voltage; and

image forming means, provided between the image holding means and the substrate, for forming a visible image, corresponding to a radiated optical image, in the image

holding means, the image forming means including a photoconductive layer having an electrical resistance variable in accordance with the radiated optical image, a part of the photoconductive layer, which has been exposed to light, having an electrical resistance different



from that of other parts of the photoconductive layer such that an exposed part of the liquid crystal layer, which is opposite the light-exposed part of the photoconductive layer, is subject to a voltage different from a voltage applied to other parts of the liquid crystal layer.

5,055,663

OPTICAL SCANNING SYSTEM AND METHOD FOR ADJUSTING THEREOF

Akira Morimoto, and Akira Ohwaki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 372,536
Claims priority, application Japan, Jun. 28, 1988, 63-159742; Sep. 30, 1988, 63-246500
Int. Cl.[5] H01J *40/00*
U.S. Cl. 250—201.4 **15 Claims**



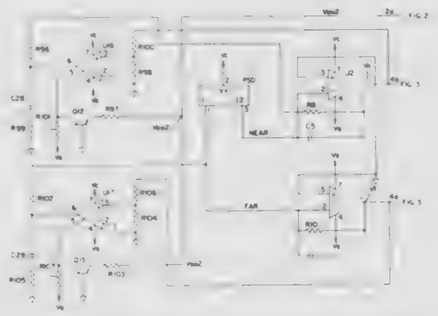
1. An optical scanning system, comprising:
a light source portion for emitting a beam of light;
a deflector for deflecting said beam of light emitted from said light source portion;
a telecentric scanning lens for focusing said deflected beam of light onto a scanning surface;
a beam splitter for splitting a beam of light reflected by said scanning surface, said beam splitter being disposed along an optical path between said deflector and said light source portion; and
focus point detecting means for receiving a beam of light reflected by said scanning surface and split by said beam splitter, said detecting means detecting a focusing state of said deflected beam of light on said scanning surface.

5,055,664

OPTICAL DISTANCE MEASURING SYSTEM USING A POSITION SENSITIVE DEVICE AND A RAMP GENERATOR DRIVEN LIGHT SOURCE

Lawrence J. Ryczek, Oconomowoc, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 6, 1990, Ser. No. 563,419
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.4 **20 Claims**



1. An optical displacement measuring system comprising:
a position sensitive device, PSD, having a pair of outputs providing electrical currents I1 and I2 satisfying the equation

$$x = \frac{I1 - I2}{I1 + I2}$$

where x is the position of a spot of light along a surface of the PSD reflected by a target from a light source, which in turn gives the target distance by triangulation;
ramp generator means periodically generating an increasing ramp voltage periodically energizing said light source to pulse said light source between on and off states;
comparator means comparing the sum I1+I2 against a given threshold as the sum I1+I2 increases with said increasing ramp voltage;
subtraction means sampling I1 and sampling I2 when said sum reaches said given threshold and outputting the difference I1−I2 to provide a measure of x.

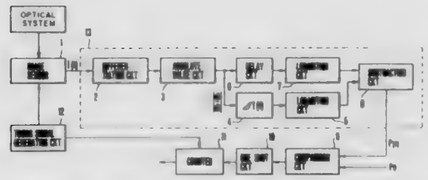
5,055,665

FOCUS DETECTING APPARATUS JOINTLY EMPLOYING OUTPUTS OF PLURAL DIVERSE DETECTORS

Takashi Baba; Yukichi Niwa, both of Atsugi; Minoru Yoshii, Tokyo, and Takako Watanabe, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 391,122, Aug. 8, 1989, abandoned, which is a continuation of Ser. No. 922,740, Oct. 24, 1986, Pat. No. 4,804,831. This application Mar. 21, 1990, Ser. No. 497,075
Claims priority, application Japan, Oct. 30, 1985, 60-245239; Jul. 9, 1986, 61-161053
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.7 **38 Claims**

1. A focus control apparatus, comprising:
(a) image sensing means for converting an incident radiation into a time serial image signal;
(b) first detecting means for detecting a first signal varying according to the focus condition;
(c) second detecting means for detecting a second signal varying according to the focus condition, said second signal being different from said first signal in a characteristic relative to the focus condition;
(d) focus adjusting means for adjusting the focus condition; and
(e) control means for controlling said focus adjusting means on the basis of said first and second signals, said control means substantially controlling said adjusting means on the basis of said first signal of said first detecting means until the level of said second signal becomes a predetermined level, and after the level of said second signal becomes a predetermined level, substantially controlling said focus adjusting means to position at an in-focus position on the basis of said second signal of said second detecting means.

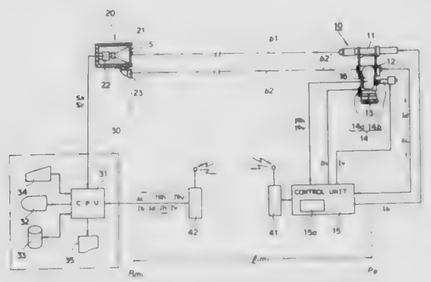


5,055,666

SURVEYING APPARATUS DETECTING RELATIVE ANGULAR POSITION OF PROJECTOR AND RANGE FINDER

Kenji Miyahara, 16-3, Soya 8-chome, Ichikawa-shi, Chiba-Ken, Japan 272

Filed May 30, 1990, Ser. No. 530,391
Claims priority, application Japan, May 5, 1989, 1-134498
Int. Cl.[5] G01J *40/14*
U.S. Cl. 250—206.1 **5 Claims**



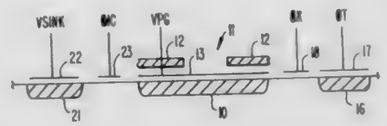
1. An automatic surveying apparatus comprising:
a base unit including a laser projector for irradiating a first laser beam, a laser range finder for irradiating a second laser beam in a direction parallel to the direction in which said first laser beam is irradiated, for receiving a reflected beam of the second laser beam and for outputting distance data based on the reflected beam, universal slewing means for rotating said laser projector and said laser range finder in horizontal and vertical planes, and angle measuring means for detecting relative angular positions of said laser projector and range finder in the horizontal and vertical planes and for outputting angle data representative of the relative angular positions;
a target unit including a target screen for receiving said first laser beam irradiated by said laser projector such that a laser spot is formed thereon, an image pickup means for determining coordinates of the laser spot on the screen and for outputting positional data representative of the coordinates of the laser spot on said screen, and a reflecting target for reflecting the second laser beam back to said laser range finder;
a data processing unit operatively connected to said target unit and to said base unit for formulating survey results from the data outputted from said laser range finder, said angle measuring means and said image pickup means, and for issuing command signals for controlling said laser projector, said laser range finder and said universal slewing means; and
a pair of first and second wireless transmit-receive means operatively connecting said data processing unit between said base unit and said target unit in the apparatus and each for transmitting and receiving signals, said first transmit-receive means being operatively connected to the base unit and said second transmit-receive means being operatively connected to said data processing unit for transmitting by wireless transmission the data outputted from said laser range finder and said angle measuring means from the first transmit-receive means to the second transmit-receive means and the command signals from the second transmit-receive means to the first transmit-receive means and for sending signals received thereby to said base unit and to said data processing unit, respectively.

5,055,667

NON-LINEAR PHOTOSITE RESPONSE IN CCD IMAGERS

Michel Sayag, Mountain View, Calif., assignor to Loral Fairchild Corporation, Syosset, N.Y.

Filed Jun. 21, 1990, Ser. No. 541,579
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **7 Claims**



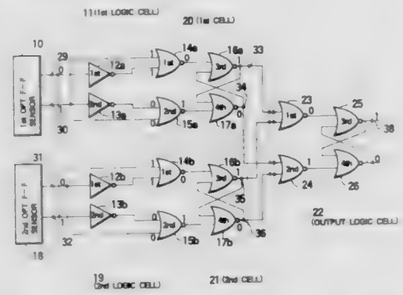
1. A method of controlling the response of a charge-coupled device to incident electromagnetic radiation, said device having a first gated region for accumulating charge in response to incident electromagnetic radiation wherein said first gated region is structured and arranged to accumulate charge during a predetermined exposure period, a sink region disposed for receiving excess charge from said first gated region, a control gate for permitting passage of charge from said first gated region to said sink region, and a second gated region receiving charge from said first gated region for transporting charge therefrom, said method comprising the steps of:
applying a potential to said control gate having a magnitude causing all charge above a charge clipping level in said first gated region to pass to said sink;
causing the magnitude of said potential to vary during said exposure period according to a predetermined function whereby said clipping level varies correspondingly during said exposure period; and
causing the total charge accumulated in said first gated region to be transferred to said second gated region at the end of said predetermined exposure period.

5,055,668

PHOTO-SENSOR CELL SUITABLE FOR IC CHIP

Patrick J. French, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 22, 1990, Ser. No. 497,314
Claims priority, application Japan, May 24, 1989, 1-128640
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.2 **11 Claims**



1. A photo-sensor cell, comprising:

(a) first light sensing means for generating two different switched digital level signals when incident light rises beyond or drops below a first threshold;

(b) second light sensing means for generating two different switched digital level signals when said incident light rises beyond or drops below a second threshold higher than said first threshold;

(c) first latching means responsive to said first light sensing means, for latching only two different switched digital level signals without latching two of the same digital level signals;

(d) second latching means responsive to said second light sensing means, for latching only two different switched digital level signals without latching two of the same digital level signals; and

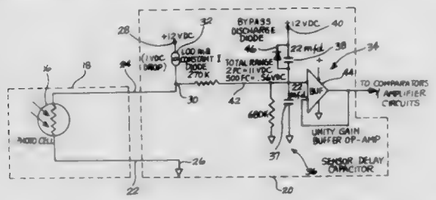
(e) output logic means responsive to said first and second latching means, for generating a digital output signal from a time when said incident light rises beyond said second threshold to a time when said incident light drops below said first threshold, and having a hysteresis loop for said digital output signal with respect to said incident light.

5,055,669

CONSTANT-CURRENT LIGHT-SENSING SYSTEM

Frederick H. Blake, Mill Creek, and C. David Long, Redmond, both of Wash., assignors to Multipoint Control Systems, Everett, Wash.

Continuation-in-part of Ser. No. 375,932, Jun. 29, 1989, abandoned. This application Jul. 16, 1990, Ser. No. 554,176
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 AL **11 Claims**



1 An improved photoconductive light sensor circuit, comprising:

a photoconductive cell interconnecting a circuit junction and a ground, said photoconductive cell being characterized in that said cell normally has a generally nonlinear electrical resistance that decreases in accordance with exposure of said cell to increasing light levels, and vice versa;

a constant-current, fixed-voltage power source connected to said circuit junction, and operative to continuously transmit a substantially constant current through said photoconductive cell at all times while said light sensor circuit is both operative and said cell has a resistance substantially at or below a certain selected resistance, said constant current source being further operative to transmit a variable current that is less than the magnitude of said constant current when said cell's resistance is higher than said selected resistance; and

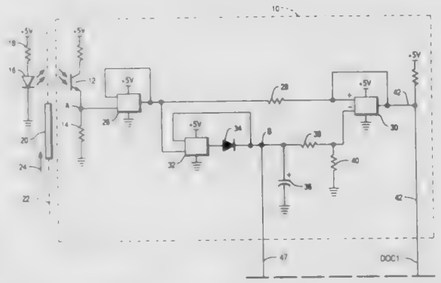
a voltage-sensing circuit operatively connected to said circuit junction, for sensing the change in voltage at said junction in response to variations of the resistance of said photoconductive cell in response to changes in said cell's light exposure.

5,055,670

DOCUMENT SENSING APPARATUS WHICH DETECTS VOLTAGE DROPAGE AND GENERATES A FIRST AND SECOND SIGNAL

Douglas L. Milne, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 17, 1990, Ser. No. 583,925
Claims priority, application United Kingdom, Jun. 28, 1990, 9014407
Int. Cl.[5] G01N *9/04*
U.S. Cl. 250—223 R **21 Claims**



1. Apparatus for sensing the passage of documents past a sensing location and for providing a first or a second output signal indicative of whether or not, respectively, a said document is present at said sensing location, the apparatus comprising:

voltage generating means for generating a first voltage which has a first, lower, value or a second, higher, value depending on whether or not, respectively, a said document is present at said sensing location;

capacitive voltage storage means coupled to the output of said voltage generating means for providing a second voltage whose peak value is determined by said second value and whose value progressively decreases while a document is present at said sensing location;

voltage comparison means for comparing said first voltage with said second voltage and for providing said first output signal or said second output signal depending on whether said first voltage is less than or is greater than, respectively, a predetermined fraction of said second voltage;

switch means;

circuit means coupled to said switch means and arranged to provide a charging current to said capacitive voltage storage means when said switch means is set to an operated condition; and

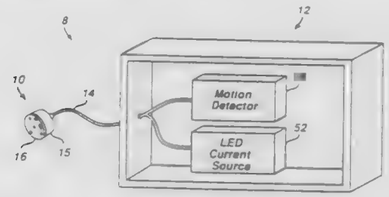
data processing means coupled to said voltage storage means and arranged to control the operation of said switch means so that, while a said document is present at said sensing location, said second voltage is maintained at a magnitude such that said predetermined fraction of said second voltage is greater than said first voltage.

5,055,671

APPARATUS FOR DETECTING TRANSDUCER MOVEMENT USING A FIRST AND SECOND LIGHT DETECTOR

Paul H. Jones, Mercer Island, Wash., assignor to SpaceLabs, Inc., Redmond, Wash.

Filed Oct. 3, 1990, Ser. No. 592,230
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.21 **16 Claims**



1. A motion-sensing transducer, comprising:

a light emitter;

a first light detector optically coupled to said light emitter;

means for resiliently mounting said first light detector in said transducer so that said first light detector is displaced by acceleration imparted to said transducer thereby modulating the light optically coupled from said light emitter to said first light detector;

a second light detector optically coupled to said light emitter; and

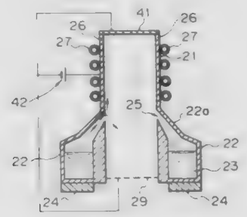
means for comparing the light coupled from said light emitter to said first light detector with the light coupled from said light emitter to said second light detector whereby movement of said transducer is detected by variations in the light coupled to said first light detector relative to the light coupled to said second light detector.

5,055,672

FAST ATOM BEAM SOURCE

Kazutoshi Nagai, Kanagawa, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Nov. 20, 1990, Ser. No. 615,858
Claims priority, application Japan, Nov. 22, 1989, 1-301832
Int. Cl.[5] H05H *3/02*
U.S. Cl. 250—251 **12 Claims**



1. A fast atom beam source comprising:

an evacuated cylinder on the inside wall of which a slit is opened;

a reservoir for oil or low-melting point metal connected to said slit;

a heater arranged on said reservoir for vapourizing said oil or low-melting point metal;

a cooling member arranged outside said cylinder for returning the vapor of the oil or the low-melting point metal to liquid; and

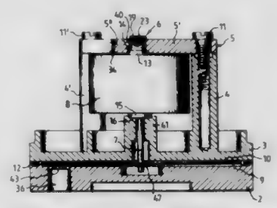
a DC high voltage power supply generating gas discharge by applying a high voltage between an anode set at one end or an intermediate portion of said cylinder and a cathode with fast atom emission orifices on it and set at the other end of said cylinder.

5,055,673

RADIATION CHOPPER HAVING A CHOPPER DISK DRIVEN BY AN ELECTROMOTOR

Rudolf Schneider, Hanau, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau I, Fed. Rep. of Germany

Filed Mar. 6, 1990, Ser. No. 489,428
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942821
Int. Cl.[5] G01D *5/36*
U.S. Cl. 250—233 **11 Claims**



1. Radiation chopper for use in photo-optical measurement of the absorption behavior of a solid, liquid, or gaseous substance, comprising

a chopper disc,

an electric motor having a front bearing collar and an opposed rear bearing collar for mounting said motor, and a shaft for driving said disc, said shaft having a front end passing through said front collar and a rear end passing through said rear collar,

a rear housing part having mounting means for at least one radiation source, bearing block means having a borehole for receiving said front bearing collar therein, and integral elongate support elements extending therefrom,

a multi-armed yoke fixed to said support elements and having a borehole for receiving said rear bearing collar therein,

a front housing part fixed to said rear housing part to form a chopper chamber containing said chopper disc, said front housing part having support means for at least one cell containing a substance whose absorption capacity is to be measured by radiation passing from said at least one radiation source and through the chopper chamber to said at least one cell.

5,055,674

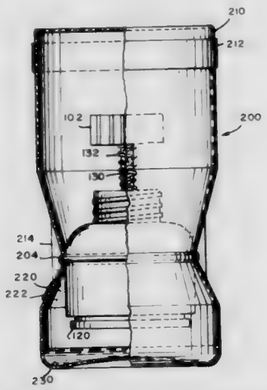
ELECTRET IONIZATION CHAMBER FOR MONITORING RADIUM AND DISSOLVED RADON IN WATER

Payasada Kotrappa, Frederick, Md., assignor to Rad Elec, Inc., Frederick, Md.

Continuation-in-part of Ser. No. 936,240, Dec. 1, 1986, Pat. No. 4,853,536. This application Jul. 31, 1989, Ser. No. 386,778
Int. Cl.[5] G01T *1/185*
U.S. Cl. 250—255 **24 Claims**

1. A method of monitoring radium or radioactive gases dissolved in a liquid, said method comprising using an ion chamber having electrically conductive surfaces such that an enclosed electric field attracts charged ions formed in the ion chamber by decay radiations of the radioactive gas within the chamber to a surface of a positively or negatively charged electret mounted within the chamber and neutralizing the electret such that the electret surface charge changes in pro-

portion to the number of radioactive decays occurring within the ion chamber, a radioactive gas tight container holding a sample of the liquid to be tested, placing the electret containing chamber within the radioactive gas tight container, the radioactive gas dissolved in the liquid partitioning with the gas in



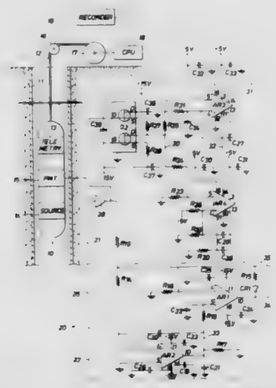
the container, the electret ion chamber measuring the concentration of radioactive gas within the gas volume of the container, calculating from the known volumes of the sample and the container and the gas partitioning ratio for the length of time of exposure the starting concentration of radium or dissolved radioactive gas in the liquid sample.

5,055,675

PULSE HEIGHT ANALYZER FOR SPECTROSCOPY THERMAL MULTIGATE DECAY WELL LOGGING SYSTEM

James R. Bridges, Houston, Tex., assignor to Halliburton Logging Services, Inc., Houston, Tex.

Continuation of Ser. No. 213,752, Jun. 13, 1988, abandoned.
This application Jun. 8, 1990, Ser. No. 535,614
Int. Cl.[5] G01V *5/04, 5/08*
U.S. Cl. 250—262 **22 Claims**



1. In a downhole logging tool in a sonde for making measurements of nuclear events occasioned by logging formations adjacent the well borehole wherein the nuclear events have variable frequency and amplitude and such nuclear events are measured by a measuring means which forms a measured signal, data conversion circuit which comprises:

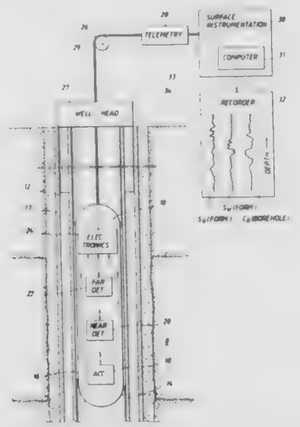
(a) an input circuit for receiving the measured signal which represents the nuclear events, said input circuit including:
(1) threshold voltage determining means selecting a threshold voltage for the measured signal below which value the input circuit forms no response;
(2) peak time determining means responsive to dynamic reversal and subsequent reduction in the measured signal from a larger value to a smaller value, said peak time determining means forming a peak occurrence timing signal indicative of such dynamic reversal above the threshold value by said threshold value determining means;
(b) amplifier means connected to the measured signal for forming an amplified output signal;
(c) base line restoring circuit means connected to said amplifier means for obtaining a regulated baseline value above which amplification by said amplifier means occurs;
(d) an A/D converter having an analog input connected to said amplifier means for receiving the amplified signal therefrom;
(e) output buffer register means connected to said A/D converter for providing a multi-bit representation of the measured signal through said amplifier means; and
(f) control means responsive to said peak occurrence timing signal for forming a control signal supplied to said A/D converter to initiate operation thereof wherein operation continues to thereby provide conversion and outputting of digital representation to said buffer means, and further wherein said A/D converter forms an end of conversion signal output therefrom to said control means to enable said control means to initiate the next conversion.

5,055,676

METHOD FOR DETERMINING OIL AND WATER SATURATION IN EARTH FORMATION SURROUNDING A BOREHOLE

Bradley A. Roscoe, Pasadena, and Christian Stoller, Kingwood, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed May 9, 1990, Ser. No. 521,804
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[5] G01V *5/00*
U.S. Cl. 250—270 **38 Claims**



1. A method for determining the hydrocarbon saturation S_o in an earth formation surrounding a borehole, comprising:
irradiating the formation with a source of neutrons of sufficient energy to interact with atoms of the formation and the borehole, according to inelastic neutron reactions;

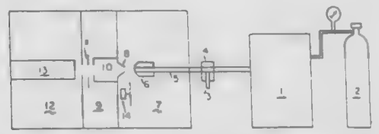
detecting and counting the gamma rays resulting from said reactions at at least one location longitudinally spaced from said source;
forming gamma ray spectrum signals from said gamma rays and deriving from said signals the carbon and oxygen yields;
expressing the measured carbon (C) and oxygen (O) yields respectively as a first and second linear function of S_o, S_w the water saturation in the formation, C_b the hydrocarbon saturation in the borehole, and/or C_o the water saturation in the borehole;
combining the respective measured carbon and oxygen yields (C, O) so as to form the difference C—O; and
solving for the unknown S_o from the difference C—O.

5,055,677

MASS SPECTROMETER METHOD AND APPARATUS FOR ANALYZING MATERIALS

Aviv Amirav, Sderot Bialik 58, Ramat Hasharon, and Albert Danon, Petach Tikva, both of Israel, assignors to Aviv Amirav, Ramat Hasharon, Israel

Filed Jun. 22, 1990, Ser. No. 542,142
Claims priority, application Israel, Jul. 13, 1989, 90970
Int. Cl.[5] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—282 **16 Claims**



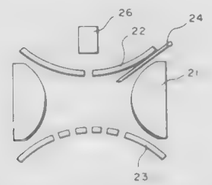
1. A method of analyzing a material comprising the steps:
forming and injecting into a vacuum chamber of a mass spectrometer a supersonic molecular beam of a carrier gas mixed with a vapor sample of the material to be analyzed;
ionizing said material in the supersonic molecular beam;
mass-separating the ions according to their mass;
detecting said mass-separated ions of the material to be analyzed;
and utilizing said detected ions for identifying the material thereof.

5,055,678

METAL SURFACES FOR SAMPLE ANALYZING AND IONIZING APPARATUS

Dennis M. Taylor, Santa Clara County, Calif.; Jonathan W. Amy, Tippecanoe County, Ind., and George C. Stafford, Jr., Santa Clara County, Calif., assignors to Finnigan Corporation, San Jose, Calif.

Filed Mar. 2, 1990, Ser. No. 487,592
Int. Cl.[5] H01J *49/26*
U.S. Cl. 250—291 **11 Claims**



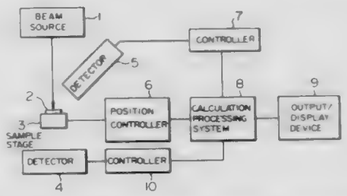
1. In a sample handling apparatus of the type which includes an ion trap which holds a sample, the improvement comprises providing chromium metal surfaces at the interface between the sample and the ion trap to minimize decomposition or degradation of the sample.

5,055,679

SURFACE ANALYSIS METHOD AND APPARATUS

Ken Ninomiya, Hachioji, and Keizo Suzuki, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 3, 1990, Ser. No. 460,373
Claims priority, application Japan, Jan. 6, 1989, 64-303
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—306 **34 Claims**



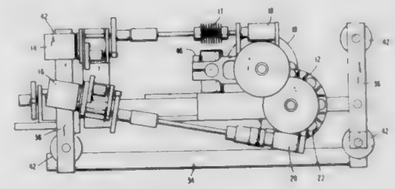
18. An apparatus for analyzing a surface, comprising:
means for generating a probe beam;
means for irradiating the surface of a sample with the probe beam;
means for measuring the intensity profile of the probe beam at the surface of the sample;
means for scanning the surface of the sample with the probe beam;
means for detecting a signal caused by irradiating the surface of the sample with the probe beam, and for measuring the distribution of the signal along the surface of the sample; and
means for carrying out mathematical transformation for each of the measured intensity profile and the measured signal distribution.

5,055,680

SCANNING TUNNELING MICROSCOPE

Larry Kesmodel, and Michael W. Kiser, both of Bloomington, Ind., assignors to LK Technologies, Inc., Bloomington, Ind.

Filed Apr. 3, 1990, Ser. No. 503,582
Int. Cl.[5] G01N *23/00;* **H01J** *37/00*
U.S. Cl. 250—306 **18 Claims**



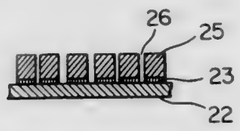
1. An apparatus comprising;
a frame assembly including upper frame members coupled to lower frame members by an external vibration isolation structure;
a sample carousel constructed to receive at least one sample to be scanned and a probe carousel constructed to receive at least one probe module including a probe tip, said sample and probe carousels being coupled to said upper frame members;
a sample actuator and a probe actuator respectively coupled to said sample carousel and said probe carousel;
positioning means for maintaining a scanning distance between said probe tip and said sample carousel; and
control means for controlling the operation of said sample actuator and said probe actuator to rotate said sample and probe carousels and for controlling the operation of said positioning means to maintain said scanning distance.

5,055,681

RADIOGRAPHIC IMAGE STORAGE PANEL AND PROCESS FOR READING OUT A RADIOGRAPHIC IMAGE

Hisanori Tsuchino; Akiko Kano; Koji Amitani, and Fumio Shimada, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 839,059, Mar. 13, 1986, abandoned, and a continuation-in-part of Ser. No. 774,321, Sep. 10, 1985, abandoned. This application Apr. 23, 1990, Ser. No. 513,021
Claims priority, application Japan, Sep. 18, 1984, 59-196365; Mar. 15, 1985, 60-53168
The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.
Int. Cl.[5] G01N *23/04*
U.S. Cl. 250—327.2 **5 Claims**



1. A process for reading out a radiographic image of remarkable sharpness comprising

1) irradiating a radiographic image storage panel having a layer, formed by vacuum evaporation and containing a stimulable alkali halide binderless phosphor, with an excitation ray at an oblique incident angle to a line normal to said panel, said phosphor comprising a pile-like structure, said alkali halide being of the formula

$$M^{I}X.aM^{II}X_2^{I}.bM^{III}X_3^{II}.cA$$

wherein M^{I} is at least one alkali metal selected from the group consisting of Li, Na, K, Rb and Cs; M^{II} is at least one divalent metal selected from the group consisting of Be, Mg, Ca, Sr, Ba, Zn, Cd, Cu and Ni; M^{III} is at least one trivalent metal selected from the group consisting of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Al, Ga and In; each X, X^{I} and X^{II} is at least one halogen selected from the group consisting of F, Cl, Br and I; A is at least one metal selected from the group consisting of Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nb, Yb, Er, Gd, Lu, Sm, Y, Tl, Na, Ag, Cu and Mg; and a and b are each 0 to 0.5 and c is 0 to 0.2, and

2) placing a condensing plane of stimulable fluorescence from said panel perpendicular to said normal line.

5,055,682

METHOD FOR JUDGING AN IRRADIATION FIELD

Hideya Takeo, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1989, Ser. No. 397,818
Claims priority, application Japan, Sep. 1, 1988, 63-218851; Sep. 6, 1988, 63-223318
Int. Cl.[5] H01N *23/04*
U.S. Cl. 250—327.2 **13 Claims**

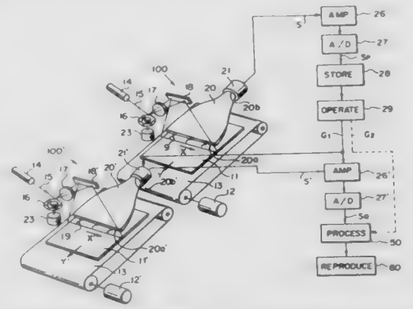
1. A method for judging an irradiation field, the steps comprising:

i) obtaining an image signal, which comprises a plurality of image signal components corresponding to picture elements located on a recording medium from an image readout from the recording medium on which a radiation image of an object has been recorded,

ii) determining the shape and location of a region, which is considered to be an irradiation field formed on the recording medium on the basis of said image signal components,

iii) calculating the ratio of the number of picture elements located in said region to the total number of the picture elements located on said recording medium,

iv) comparing said ratio with a predetermined value, and



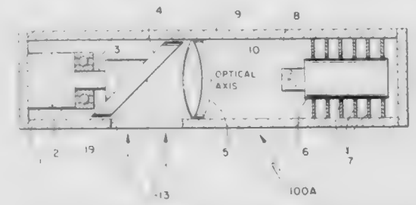
v) judging that said region is not the whole area of the irradiation field in cases where said ratio is not larger than the predetermined value.

5,055,683

LINE SCANNER

William L. McCracken, 113 Woodridge Rd., Wayland, Mass. 01778

Filed Dec. 15, 1989, Ser. No. 451,105
Int. Cl.[5] H01L *25/00*
U.S. Cl. 250—334 **20 Claims**



1. An improved line scanner for airborne radiation sensitive systems comprising:

(a) means for focusing radiation having an optical axis;

(b) a spin mirror included at about 45° to the optical axis;

(c) a detector array comprising a plurality of radiation detector cells which provide a plurality of synchronously sampled signals representing the radiation impinging on the detector at any given time;

(d) a multiplexer assembly having a plurality of multiplexer channels wherein each multiplexer channel is connected to one of the detector cells so as to receive the synchronously sampled signals;

(e) means for converting the sampled signals into digital radiation signals;

(f) a shaft encoder for providing positional data representing the spin mirror orientation at any given time;

(g) means for providing velocity-to-height data;

(h) memory means for storing the digital radiation signals together with synchronous positional data including array displacement coordinate information corresponding in time to each portion of the digital radiation signal and for storing the velocity-to-height data;

(i) a frame buffer; and

(j) address control means arranged to load data into the frame buffer for correction of time delays resulting from the apparent array rotation by compensating for the time delays through applying the displacement information to the corresponding sampled signal in accordance with the following equations

$$\sin\theta = \delta x/(\phi_{ALT}/2),\ \delta x = (\phi_{ALT}/2)\sin\theta$$

$$\cos\theta = y/(\phi_{ALT}/2),\ y = (\phi_{ALT}/2)\cos\theta$$

$$\delta y = (\phi_{ALT}/2) - y = (\phi_{ALT}/2)(1-\cos\theta)$$

where

θ is the scan angle from nadir,

ϕ_{ALT} is the along track angular coverage per scan,

y is the detector position referenced to the center of the array,

δy is the along track displacement coordinate, and

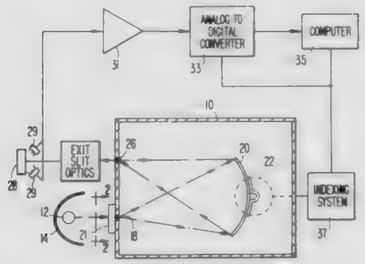
δx is the across track displacement coordinate.

5,055,684

SYSTEM TO REDUCE WAVE SHIFT ERROR IN SPECTROPHOTOMETER CAUSED BY HOT SPOTS IN THE LIGHT SOURCE

David E. Honigs, Laurel, Md., assignor to NIRSystems Incorporated, Silver Spring, Md.

Filed Dec. 6, 1989, Ser. No. 446,595
Int. Cl.[5] G01J *3/42*
U.S. Cl. 250—339 **14 Claims**



1. A spectrophotometric instrument comprising a housing defining an entrance slit, an optical grating within said housing positioned to be irradiated with light transmitted through said entrance slit and to disperse the received light into a spectrum, a broad spectrum light source positioned external to said housing so as to direct broad spectrum light toward said entrance slit, and light diffusion means to uniformly illuminate said entrance slit with light radiated from said light source, said light diffusion means comprising a plate transmissive to said broad spectrum light positioned between said light source and said entrance slit, said plate having a light diffusing interface between said light source and said entrance slit to diffuse the light transmitted from said source toward said entrance slit.

5,055,685

INFRARED DETECTING APPARATUS

Tadashi Sugimoto, Ibaraki; Masashi Iwasawa, and Yasuo Shoji, both of Otsu, all of Japan, assignors to Optex Co., Ltd., Otsu, Japan

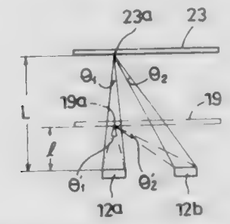
Filed Dec. 1, 1989, Ser. No. 444,755
Int. Cl.[5] G01J *5/10*
U.S. Cl. 250—342 **5 Claims**

1. An infrared detecting apparatus comprising:

at least two infrared detecting elements for converting infrared rays into electric signals;

an electronic circuit for amplifying a difference signal due to a difference between output signals from two of said at least two infrared detecting elements;

an infrared filter for transmitting only infrared rays to said at least two infrared detecting elements, said infrared filter being positioned so that solid angles extending from an arbitrary point on the infrared filter to the peripheral edges of the at least two detecting elements are not larger than $1/(8\pi)$ steradian, said solid angles extending from an arbitrary point on the infrared filter to the peripheral edges of the at least two detecting elements for keeping said difference signal lower than a predetermined level



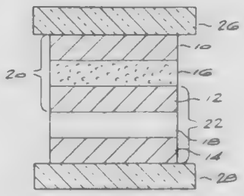
when said at least two infrared detecting elements are irradiated by secondary infrared rays generated when said infrared filter is locally heated by being irradiated by a beam of visible light.

5,055,686

RADIATION DETECTOR

Barbara L. Jones, 80 Chisbury Place, Forest Park, Bracknell, RG12 3TX, England

Filed Feb. 2, 1990, Ser. No. 474,345
Claims priority, application United Kingdom, Feb. 3, 1989, 89024434
Int. Cl.[5] G01T *1/24, 1/00*
U.S. Cl. 250—370.01 **11 Claims**



1. A composite radiation detection and indicating device comprising first, third and fifth layers of a transparent conductive material, a second layer of transparent semiconductive radiation-sensitive material between the first and third layers, and a fourth layer of liquid crystal material between the third and fifth layers, and layers being sandwiched together so that a diodic structure having a radiation-dependent charge storage characteristic is defined by the first, second and third layers, and a liquid crystal display element is defined by the third, fourth and fifth layers, said first, second, third, fourth and fifth layers providing a substantially transparent device.

5,055,687

SINGLE PHOTON EMISSION CT APPARATUS

Takashi Ichihara, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 3, 1990, Ser. No. 562,276
Claims priority, application Japan, Aug. 4, 1989, 1-202324
Int. Cl.[5] G01T *1/161*
U.S. Cl. 250—363.09 **8 Claims**

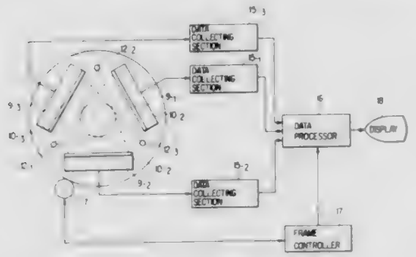
1. A single-photon emission computed tomography (SPECT) apparatus for detecting gamma rays emitted from a radioisotope given to a body to be examined, comprising:

at least one focus collimator and a corresponding detector capable of rotating around at least a portion of said body for providing detection data;

means for processing said detection data to produce reconstruction data corresponding to a density distribution tomographic image of said radioisotope in said body; and

holding means for positioning a compensation radioisotope

at a focus point of said focus collimator on a structure which rotates together with said focus collimator and said



detector upon rotation of said focus collimator and said detector around said body.

5,055,688

MULTICOMPONENT INFRARED GAS ANALYZER

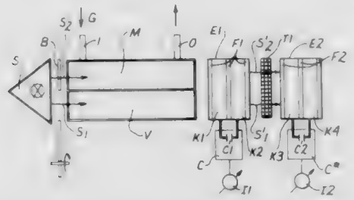
Walter Fabinski, Kriftel, Fed. Rep. of Germany, assignor to Hartmann und Braun A.G., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 30, 1990, Ser. No. 605,512

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1989, 3937141

Int. Cl.[5] G01N *21/61*

U.S. Cl. 250—344 **4 Claims**



1. Nondispersive infrared gas analyzer for the concurrent measurement in the concentration of several components contained in a gas sample, the analyzer including a source of infrared radiation with two output beams in two respective beam paths;

a modulator for modulating the two output beams;

a measuring and sample chamber, and a reference chamber respectively included in the beam paths and being respectively traversed by said beams;

a first pneumatic radiation detector having a front and a rear chamber both filled with one of the components and with a transparent window in between, also having a front transparent window facing both oncoming radiation beams that respectively have traversed the measuring and sample chambers, further having means connected to the two chambers for measuring the pressure differential between them, the improvement comprising:

a second pneumatic radiation detector essentially similar to the first radiation detector having a front and a rear chamber, the front chamber having a transparent window facing radiation that has traversed the first radiation detector, there being a transparent partition between the two chambers of the second radiation detector, there further being pressure differential measuring means connected to the two chambers of the second radiation detector;

a particular gas filling in said chambers of the second radiation detector for being the same or optically similar to a second component in the sample gas to be measured; and

a filter disposed downstream from the first detector but upstream from the second detector and having an opaque range which covers at least a major absorption band of said second component but having a region of transparency which includes at least one secondary absorption band of said second component.

5,055,689

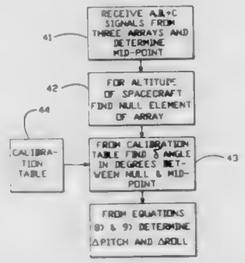
HORIZON SENSOR APPARATUS AND METHOD THEREFOR

Robert L. Proffit, Foster City, and Edward A. Rose, San Jose, both of Calif., assignors to Quantic Industries, Inc., San Carlos, Calif.

Filed Jan. 26, 1990, Ser. No. 471,218

Int. Cl.[5] G01J *5/08*

U.S. Cl. 250—349 **5 Claims**



1. Horizon sensor apparatus for a space craft for determining at least the attitude (namely, pitch and roll) of the spacecraft relative to the edge of the earth's horizon, where at least two telescopes are mounted on the spacecraft (one relating to pitch and the other to roll) with their optical axes normally pointed at such edge for a given altitude of the spacecraft above earth, the apparatus comprising:

at least two linear arrays of a plurality of elements responsive to infra-red radiation from the earth's atmosphere as projected on said arrays through said telescopes, each element of a said array being responsive to the relative presence or lack of said infra-red radiation to indicate a unique attitude, one of said elements of an array being indicative of a null condition where said optical axis of a respective telescope is pointed directly at said edge, and adjacent elements on opposite sides in said linear array of said one element being indicative of positive or negative pitch/roll displacements.

5,055,690

METHOD OF ELIMINATING WATER VAPOR INTERFERENCE IN DETECTING GASES

Ulrich Bonne, Hopkins, Minn., assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 308,469, Feb. 10, 1989, Pat. No. 4,958,076. This application Dec. 28, 1989, Ser. No. 458,244

Int. Cl.[5] G01N *21/61*

U.S. Cl. 250—343 **15 Claims**

1. A method of eliminating water vapor absorption in detecting gases, the method comprising the steps of:

emitting infrared light from a light source into an optical cell;

admitting a sample gas into said optical cell;

positioning at least one reference channel band pass filter and at least one measurement channel band pass filter between said optical cell and infrared radiation detector;

passing said infrared light through said optical cell and through each said reference channel band pass filter and each said measurement channel band pass filter;

detecting filtered light emitted through each said reference channel band pass filter and each said measurement channel band pass filter;

detecting a water vapor absorption signal of the water vapor interference using a reference channel;

measuring first lower absorption signals of a plurality of first lower reference channels;

measuring first upper absorption signals of a plurality of first upper reference channels;

determining first lower interference absorption signals from the measured first lower absorption signals and corresponding stored first lower absorption signals;

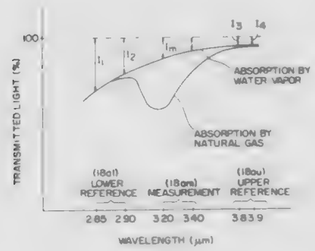
determining first upper interference absorption signals from the measured first upper absorption signals and corresponding stored first upper absorption signals;

measuring second lower absorption signals of a plurality of second lower reference channels;

measuring second upper absorption signals of a plurality of second upper reference channels;

determining second lower interference absorption signals from the measured second lower absorption signals and corresponding stored second lower absorption signals;

determining second upper interference absorption signals from the measured second upper absorption signals and corresponding stored second upper absorption signals;



measuring a first measurement absorption signal of a first measurement channel;

measuring a second measurement absorption signal of a second measurement channel;

extrapolating a first measurement interference absorption signal from a first linear function between said first lower interference absorption signals and said first upper interference absorption signals;

extrapolating a second measurement interference absorption signal from a second linear function between said second lower interference absorption signals and said second upper interference absorption signals;

determining a first true measurement channel by subtracting said first measurement interference absorption signal from said first measurement absorption signal; and

determining a second true measurement channel by subtracting said second measurement interference absorption signal from said second measurement absorption signal.

5,055,691

RADIATION METER

Peter H. Burgess, 73 Charlton Road, Wantage Oxfordshire, OX12 8HJ, Great Britain

Filed May 31, 1990, Ser. No. 531,042

Claims priority, application United Kingdom, Jun. 3, 1989, 8912812.8

Int. Cl.[5] G01T *1/02*

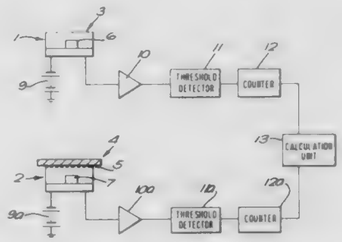
U.S. Cl. 250—370.07 **15 Claims**

1. A radiation meter comprising:

first and second radiation detectors and a shield for each detector;

the shield for the first detector being constituted by a thin layer of electrically conductive material shielding said first detector against electromagnetic interference;

the shield for the said second detector shielding said second detector against electromagnetic interference and providing a predetermined partial attenuation of beta radiation;



such that beta radiation dose rate can be measured in the presence of X and gamma radiation.

5,055,692

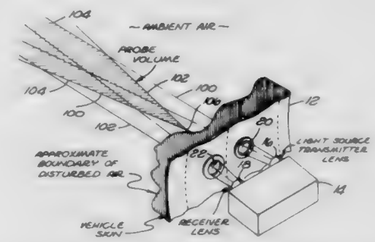
SYSTEM FOR MEASURING AMBIENT PRESSURE AND TEMPERATURE

John B. Abbiss, Irvine; Medhat Azzazy, Laguna Niguel, both of Calif.; Robert W. McCullough, Princeton Junction, N.J., and Anthony E. Smart, Costa Mesa, Calif., assignors to The Titan Corporation, San Diego, Calif.

Filed Sep. 1, 1989, Ser. No. 402,124

Int. Cl.[5] G01J *1/42;* **G01N** *21/64*

U.S. Cl. 250—372 **26 Claims**



1. In combination for measuring the temperature and pressure of the atmosphere,

means for directing ultraviolet light in a particular frequency range into the atmosphere for the scattering of the ultraviolet light by free molecules in the atmosphere and for the production of fluorescent light by the impingement of the light on particular molecules in the atmosphere,

means responsive to the ultraviolet light scattered by the free molecules in the atmosphere for detecting such ultraviolet light to provide an indication of the pressure of the atmosphere, and

means responsive to the fluorescent light produced by the impingement of the light on the particular molecules in the atmosphere for detecting such fluorescent light to provide an indication of the temperature of the atmosphere.

5,055,693

NESTED REACTOR CHAMBER AND OPERATION FOR HG-196 ISOTOPE SEPARATION PROCESS

Mark W. Grossman, Belmont, Mass., assignor to GTE Products Corporation, Danvers, Mass.

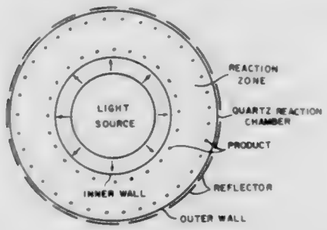
Filed Mar. 15, 1989, Ser. No. 323,739

Int. Cl.[5] G01N *21/17*

U.S. Cl. 250—436 **6 Claims**

1. In a photochemical reactor used for the enrichment of ^{196}Hg in which reactor includes a source of light producing mercury excitation radiation of about 2537Å, a glass reactor chamber wherein photochemical reactions take place between mercury and other reactants; the improvement comprising:

providing a nested reaction chamber arrangement of at least two separate reaction chambers such that as the outermost



chamber experiences photon starvation, the innermost chamber can be used to prolong the enrichment process.

5,055,694

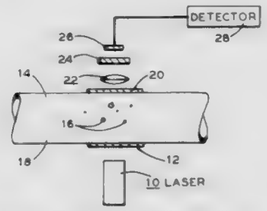
METHOD AND APPARATUS FOR MONITORING AND MEASURING THE CONCENTRATION OF ION EXCHANGE RESIN PARTICLES IN WATER

Larry A. Jeffers; Jack K. Schmotzer, both of Alliance, and Charles C. Stauffer, Beloit, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 666,718, Oct. 31, 1984, abandoned. This application Nov. 24, 1986, Ser. No. 931,972

Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—458.1 **1 Claim**



1. An apparatus for detecting the actual temporal concentration of a known type of ion exchange resin in very pure water from a location external to the water, comprising:

(a) a sampling cell for receiving a stream of continuously flowing water to be tested, said cell having two monitoring windows therein positioned so that the stream passes across said windows;

(b) a laser adjacent said sampling cell and positioned for transmitting a laser light beam of known diameter from outside said cell directly into said sampling cell through one of said monitoring windows, said laser light beam being at a wavelength predetermined to cause the resin to fluoresce at a characteristic wavelength and for illuminating a well defined actual volume of water in the sampling cell which can be precisely calculated, the laser being selected to transmit a laser light beam having a diameter of 30 microns and an incident power of 10 mW, so that particle sizes of the ion exchange resin of about 0.08 micrometers are detected;

(c) a lens adjacent and outside of said sampling cell and positioned adjacent the other one of said monitoring windows for focusing incident light from said sampling cell, which incident light includes scattered laser light and light produced by fluorescence of the resin which leaves said sampling cell through the other one of said monitoring windows;

(d) a light filter adjacent said lens for passing only wavelengths of fluoresced light characteristic of the resin to be detected;

(e) a photomultiplier detector positioned to receive light of said characteristic wavelengths that passes through said filter and to convert the light into an electric signal; and

(f) means for using the electric signal to produce a desired output which is usable with the precisely calculated actual volume of the water illuminated by the laser light beam to determine an actual temporal concentration of the ion exchange resin in water passing across said windows.

5,055,695

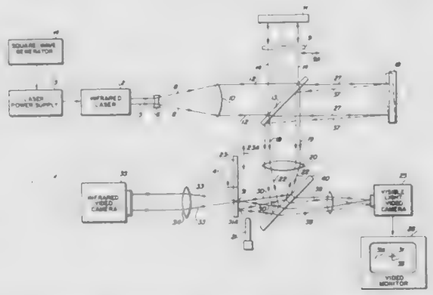
ALIGNMENT SYSTEM AND METHOD FOR INFRARED INTERFEROMETER

Steven R. Lange, Tucson, Ariz., assignor to Wyko Corporation, Tucson, Ariz.

Filed Jun. 28, 1990, Ser. No. 545,404

Int. Cl.[5] G01B *9/02*

U.S. Cl. 250—459.1 **10 Claims**



1. A method of aligning a test beam of an infrared interferometer with a reference beam thereof, the method comprising the steps of:

(a) positioning a phosphor screen in a common path of the interferometer at a focal point of a lens in the common path;

(b) illuminating the phosphor screen with ultraviolet light to stimulate an area of the phosphor screen to emit visible light;

(c) focusing infrared laser light of the test beam to a spot on the phosphor screen, the infrared laser light acting on the phosphor screen at the spot to reduce an amount of visible light emitted from the spot by the phosphor screen;

(d) focusing visible light emitted by the phosphor screen into a visible light camera, and producing an image of visible light emitted by the phosphor screen on a video monitor coupled to the visible light camera, the spot on the phosphor screen appearing as an image spot on the video monitor; and

(e) adjusting the test beam to move the image spot to a predetermined location of the video monitor representing an aligned condition.

5,055,696

MULTILAYERED DEVICE MICRO ETCHING METHOD AND SYSTEM

Satoshi Haraichi, Yokohama; Fumikazu Itoh, Fujisawa; Akira Shimase, Yokohama, and Takahiko Takahashi, Iruma, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 8, 1989, Ser. No. 391,304

Claims priority, application Japan, Aug. 29, 1988, 63-212453

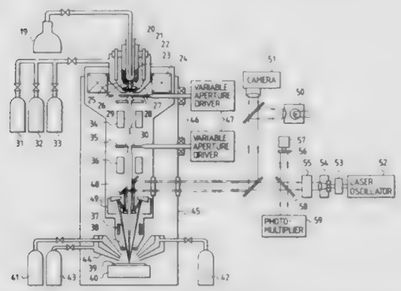
Int. Cl.[5] H01J *37/305*

U.S. Cl. 250—492.2 **19 Claims**

1. In a micro etching method of irradiating an energy beam to a workpiece in an atmosphere of reactant gas to apply reactive etching locally on an irradiation portion of said workpiece; a multilayered device micro etching method comprising steps of:

detecting a material change of layer currently being etched;

switching said reactant gas after detecting said material change; and



locally reactive etching a second layer by supplying a gas complying with a material of the second layer being etched, as said reactant gas.

5,055,697

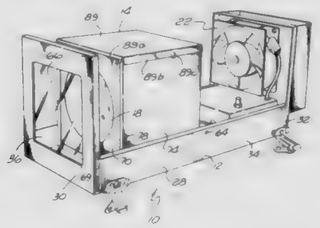
INFRARED RADIATOR

Ara K. Manoogian, Los Angeles, and J. Gary Rutberg, Glendale, both of Calif., assignors to Electro-Mechanical Imagineering, Inc., Pacoima, Calif.

Filed Aug. 24, 1990, Ser. No. 573,088

Int. Cl.[5] H01J *61/52*

U.S. Cl. 250—504 R **18 Claims**



1. A source of infrared radiation, comprising:

a light source providing a beam containing infrared radiation;

radiation filter means disposed in the path of said beam to selectively pass infrared radiation;

an inner housing defining a chamber therein, said light source and said radiation filter means disposed within said inner housing in heat transfer proximity thereto, said inner housing permitting radiation to exit only through said radiation filter means; and

an outer housing having first and second openings, said outer housing disposed about said inner housing and having a portion spaced therefrom to define a path for air between said first and second openings.

5,055,698

REAL-TIME PARTICLE SENSOR FOR DISK DRIVES

Peter Borden, Palo Alto, Calif., assignor to High Yield Technology, Inc., Sunnyvale, Calif.

Filed Apr. 3, 1990, Ser. No. 504,155

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

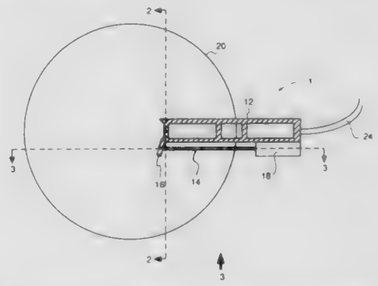
Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—574 **12 Claims**

1. A particle sensor for a computer disk drive comprising:

an arm;

means, mounted on said arm, for providing a high intensity light beam; and



photosensor means mounted on said arm for sensing light scattered when particles pass through said beam.

5,055,699

DEVICE FOR MEASURING THE REFRACTIVE INDEX OF A FLUID, IN PARTICULAR INTENDED FOR MEASURING THE DENSITY OF THAT FLUID OR THE CONCENTRATION OF A SUBSTANCE DISSOLVED IN THAT FLUID

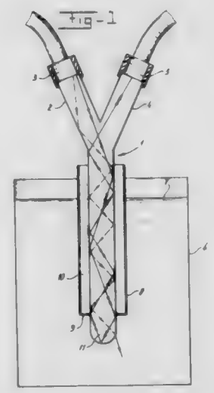
Johan W. König, Noordwijk, and Pieter M. Houpt, The Hague, both of Netherlands, assignors to Nederlandse Organisatie Voor Toegepastnatuurwetenschappelijk Onderzoek Tno, The Hague, Netherlands

Filed Apr. 24, 1990, Ser. No. 513,781

Claims priority, application Netherlands, Apr. 25, 1989, 8901039

Int. Cl.[5] G01N *21/49, 21/41*

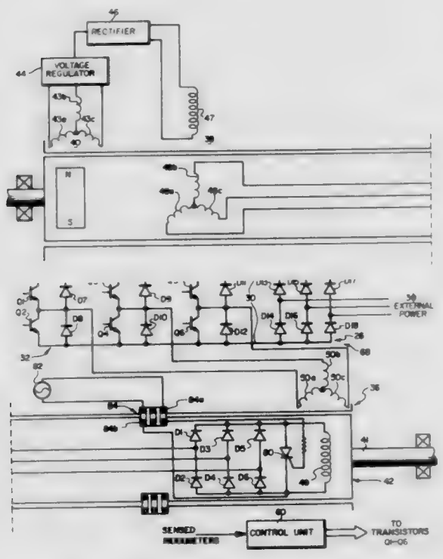
U.S. Cl. 250—577 **8 Claims**



1. Device for measuring the refractive index of a fluid, in particular intended for measuring the density of said fluid or the concentration of a substance dissolved in the fluid, comprising a rod having an end which projects into the fluid and has a refractive index which is slightly larger than that of the fluid, said rod being provided at the end not immersed in the fluid with a light source which radiates into the rod and with a light detector, wherein the part of the rod which is to be immersed in the fluid is partially surrounded by a casing which permits only total reflection of the light, while at the site of the rod to be immersed in the fluid and not surrounded by the casing refracted light can leak into the fluid depending on the refractive index of the fluid, and wherein the said casing con-

sists of a layer trapped in a transparent tube, said layer being of a medium which has a lower refractive index than said rod.

5,055,700
BRUSHLESS GENERATOR HAVING PRIME MOVER START CAPABILITY
P. John Dhyanchand, 2721 Pelham Rd., Rockford, Ill. 61107
Filed Oct. 16, 1989, Ser. No. 421,640
Int. Cl.[5] F02N *11/04*
U.S. Cl. 290—31 **10 Claims**



1. A brushless generator operable in a generating mode to convert motive power into electrical power and in a starting mode to convert electrical power into motive power wherein the generator includes an exciter portion having an armature winding disposed on a rotor of the generator and a field winding disposed in a stator of the generator and further including a main generator portion having a main field winding disposed on the rotor and an armature winding disposed in the stator, comprising:

a set of electrically conductive bars disposed on the rotor and interconnected to form a squirrel cage winding whereby AC power is provided to the armature winding of the main generator portion which induces currents in the bars and causes the generator to operate as an induction motor; and

means for periodically shorting the main field winding during operation of the generator in the starting mode.

5,055,701
OPERATOR RESPONSIVE KEYLESS ENTRY SYSTEM WITH VARIABLE RANDOM CODES
Mikio Takeuchi, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Japan
Filed Aug. 15, 1989, Ser. No. 394,086
Claims priority, application Japan, Aug. 16, 1988, 63-202687
Int. Cl.[5] B60R *25/00*; **G08C** *19/00*
U.S. Cl. 307—10.2 **15 Claims**

1. A keyless entry system comprising:

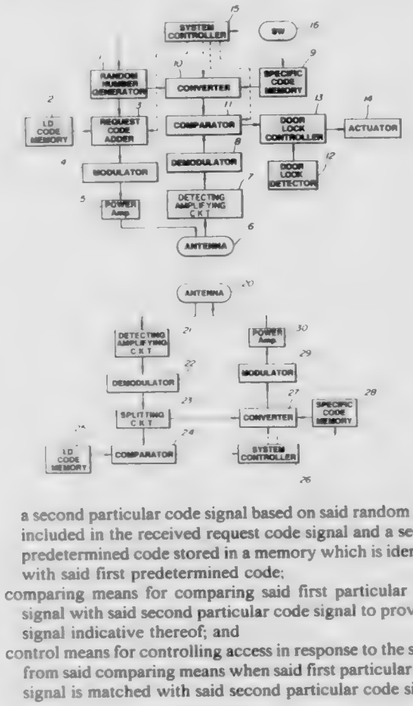
first means responsive to a system operation starting signal provided by an operator for providing a random code variable at every operation;

second means for providing a request code signal including said random code;

third means for providing a first particular code signal based on said random code and a first predetermined code stored in a memory;

fourth means for outputting said request code signal;

fifth means for receiving said request code signal to provide



a second particular code signal based on said random code included in the received request code signal and a second predetermined code stored in a memory which is identical with said first predetermined code;

comparing means for comparing said first particular code signal with said second particular code signal to provide a signal indicative thereof; and

control means for controlling access in response to the signal from said comparing means when said first particular code signal is matched with said second particular code signal.

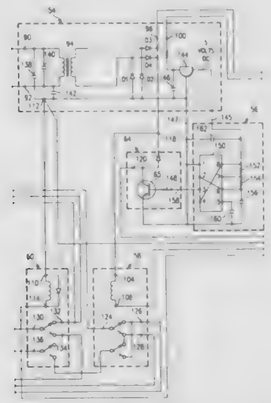
5,055,702
METHOD AND APPARATUS FOR CONTROLLING APPLICATION OF ELECTRICAL POWER
Amor Bhattacharya, 3205 Deep Valley Trail, Plano, Tex. 75075
Filed Aug. 24, 1989, Ser. No. 397,992
Int. Cl.[5] H02J *3/00*
U.S. Cl. 307—29 **33 Claims**

1. Apparatus for controlling the application of electrical power from a selected one of a first and a second source of electrical power to a first and a second energy consuming device, said apparatus comprising:

first and second switch means structured to be positioned in either a first position or a second position and operatively connected between the first and second sources of electrical power and the first and second energy consuming devices such that when said first switch means is in a first position and said second switch means is in a first position said first source of electrical power will be connected to said first energy consuming device when said first source of electrical power is selected and said second source of electrical power will be connected to said first and second energy consuming devices when said second source of electrical power is selected, when said first switch means is in a second position and said second switch means is in a second position said first source of electrical power will

be connected to said second energy consuming device when said first source of electrical power is selected and said second source of electrical power will be connected to said second energy consuming device when said second source of electrical power is selected, when said first switch means is in a first position and said second switch means is in a second position said first source of electrical power will be connected to said first energy consuming device when said first source of electrical power is selected and said second source of electrical power will be connected to said first energy consuming device when said second source of electrical power is selected; and

third switch means structured to be positioned in either a



first position, a second position or a third position and operatively connected to said first and second switch means to control the position of said first and second switch means such that when said third switch means is positioned in said first position, said first switch means is positioned to said first position and said second switch means is positioned to said first position, when said third switch means is positioned in said second position, said first switch means is positioned to said second position and said second switch means is positioned to said second position, when said third switch means is positioned in said third position, said first switch means is positioned to said second position and said second switch means is positioned to said second position.

5,055,703
LOAD PROTECTION CIRCUIT
Louis W. Schornack, Park Ridge, Ill., assignor to Perma Power Electronics, Inc., Chicago, Ill.
Division of Ser. No. 118,789, Nov. 9, 1987, Pat. No. 4,956,563, which is a continuation-in-part of Ser. No. 118,257, Nov. 9, 1987, Pat. No. 4,890,005. This application Feb. 13, 1990, Ser. No. 479,261
Int. Cl.[5] H02J *9/00*
U.S. Cl. 307—64 **10 Claims**

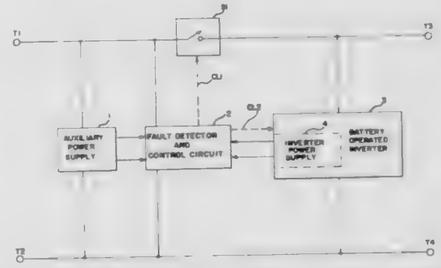
1. A load protector for disconnecting an electrical load from electrical power lines in the event of power line voltage abnormality comprising:

input terminal means adapted for connection to electrical power lines;

load terminal means adapted for connection to said load;

fault detector means coupled to said input terminal means for producing a voltage-abnormality-indicating condition responsively to the presence of a power line voltage having an amplitude beyond a given value and for producing a normal-voltage-indicating condition responsively to the presence of a power line voltage having an amplitude not beyond said given value;

control switching means operable to a first state supplying electrical power from said input terminal means to said load terminal means and operable to a second state interrupting said supplying of electrical power from said input terminal means to said load terminal means, said control switching means further including means responsive to said fault detector means for actuating said control switching means to said second state responsively to the presence of said voltage-abnormality-indicating condition and to said first state responsively to the presence of said normal-voltage-indicating condition;



power supply means for supplying electrical operating power to said control switching means and said fault detector means, said power supply means including means for continuously providing said operating power from electrical power delivered to said load terminal means in said first state and a timing secondary power supply means powered from electrical power delivered to said input terminal means for providing said operating power from electrical power delivered to said input terminals in said second state and at periodic intervals only and including means for preventing actuation of said control switching means to said first state thereof except during said periodic intervals.

5,055,704
INTEGRATED CIRCUIT PACKAGE WITH BATTERY HOUSING
Joseph Link, Carrollton; Michael L. Bolan, Dallas; Allen H. Brunk, Jr., Carrollton, and Paul E. Schneikart, Lewisville, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Continuation of Ser. No. 846,510, Mar. 28, 1986, Pat. No. 4,998,888, which is a continuation of Ser. No. 633,374, Jul. 23, 1984, abandoned, which is a continuation of Ser. No. 282,183, May 27, 1981, abandoned. This application Aug. 4, 1989, Ser. No. 389,538
Int. Cl.[5] H02J *9/00*; **H01L** *23/495*
U.S. Cl. 307—66 **16 Claims**

1. A nonvolatile memory, comprising:

a volatile integrated circuit memory;

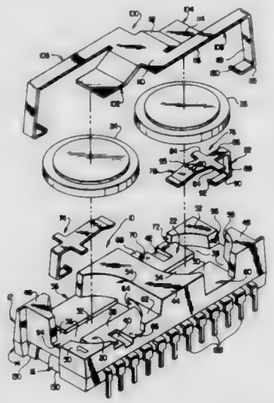
a battery;

a housing encapsulating and in contact with said volatile integrated circuit memory, said housing providing at least partial containment for said battery;

a leadframe having a portion thereof enclosed within said housing, said leadframe having leads thereof extending from said housing for forming a set of dual in-line pins which receive primary power for supply to said volatile integrated circuit memory; and

a switchover circuit positioned within said housing, said switchover circuit electrically connected to said battery and said volatile integrated circuit memory to provide

power from said battery to said volatile integrated circuit memory when said primary power is not provided



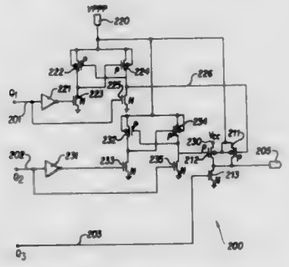
through said dual in-line pins to said volatile integrated circuit memory.

5,055,705

SELECTING ONE OF A PLURALITY OF VOLTAGES WITHOUT OVERLAP

Christopher M. Hall, Redwood City, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Feb. 15, 1990, Ser. No. 481,355
Int. Cl.[5] H03K *5/00, 17/56, 5/22, 19/007*
U.S. Cl. 307—296.4 **5 Claims**



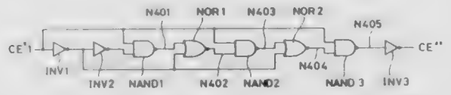
1. A voltage selection circuit comprising:
a plurality of N voltage terminals, where N is greater than two, each receiving an associated one of a plurality of N voltages, of which there are at least three different voltage levels, said voltage levels comprising a first voltage corresponding to a logical zero, a second voltage corresponding to a logical one, and at least one voltage greater than said second voltage;
an output terminal for providing an output voltage selected from one of said plurality of N voltages;
a plurality of N switch means, each switch means being associated with one of said N voltages, each switch means comprising:
a first terminal coupled to an associated one of said N voltage terminals;
a second terminal coupled to said output terminal; and
a control terminal for receiving a voltage selection signal associated with said associated one of said N voltages, said voltage selection signal capable of having a level equal to either said first voltage or said second voltage; and
a plurality of N control means for providing a plurality of N sets of voltage levels, each being associated with one of said switch means, each control means comprising:
an input lead for receiving an associated one of said N voltage selection signals;
an output lead coupled to said control terminal of said associated switch means; and
means for providing an output signal on said output terminal in response to said associated one of said N voltage selection signals, said output signal being non-overlapping with the output signals of all other of said plurality of N control means, said output signal having a first state of a sufficient magnitude to cause said associated one of said switch means to turn on, and having a second state of sufficient magnitude to cause said associated one of said switch means to turn off.

5,055,706

DELAY CIRCUIT THAT RESETS AFTER PULSE-LIKE NOISE

Hiroto Nakai, Kawasaki; Hiroshi Iwahashi, Yokohama; Masamichi Asano, Tokyo, and Shigeru Kumagai, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 102,647, Sep. 30, 1987, abandoned. This application Feb. 17, 1989, Ser. No. 311,798
Claims priority, application Japan, Oct. 1, 1986, 61-233446
Int. Cl.[5] H03K *17/28*
U.S. Cl. 307—265 **1 Claim**



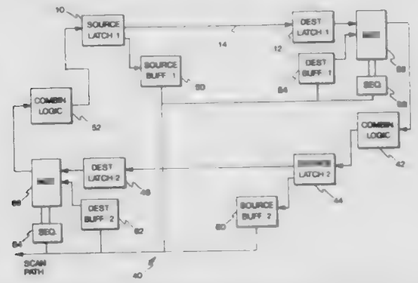
1. A semiconductor integrated circuit for transmitting a signal from an input terminal to an output terminal providing a predetermined stable delay for one level transition of said input signal and no delay for the other level transition of said input signal, comprising:
said input terminal for receiving said input signal and said output terminal for generating an output signal;
a first inverter having an input terminal connected to said input terminal of said integrated circuit and having an output terminal;
a second inverter having an input terminal connected to said output terminal of said first inverter means and having an output terminal;
a first NAND gate having a first input terminal connected to said output terminal of said second inverter, a second input terminal connected to said input terminal of said integrated circuit, and an output terminal;
a NOR gate having a first input terminal connected to said output terminal of said inverter, a second input terminal connected to said output terminal of said first NAND gate, and an output terminal; and
a second NAND gate having a first input terminal connected to said input terminal of said integrated circuit, a second input terminal connected to said output terminal of said NOR gate, and an output terminal connected to said output terminal of said integrated circuit.

5,055,707

METHOD AND APPARATUS FOR SINGLE STEP CLOCKING ON SIGNAL PATHS LONGER THAN A CLOCK CYCLE

Douglas R. Beard, Eleva, Wis., assignor to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

Filed Aug. 16, 1990, Ser. No. 568,169
Int. Cl.[5] G06F *11/30*
U.S. Cl. 307—269 **4 Claims**



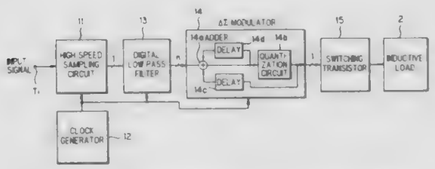
1. In a circuit with synchronous system clock cycles and a signal path having a source end, a destination end, and a propagation time between the source end and the destination end greater than a single clock cycle time, an apparatus for restarting signal transmission between the source end and destination end, comprising:
means for presenting signals at said source end of said signal path;
means for receiving signals at said destination end of said signal path;
means for storing signals operably connected to said source end of said signal path; and
means for presenting to said destination end of said signal path a predetermined number of signals stored in said means for storing, and wherein said signals are presented during a restart of an interrupted transmission.

5,055,708

CIRCUIT FOR DRIVING AN INDUCTIVE LOAD

Mitsutoshi Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1989, Ser. No. 456,675
Claims priority, application Japan, Dec. 28, 1988, 63-334539
Int. Cl.[5] H03K *3/01, 5/26;* **H03B** *1/00, 19/00*
U.S. Cl. 307—270 **5 Claims**



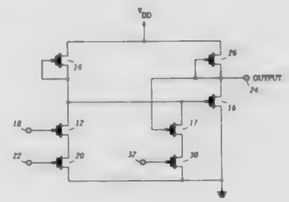
1. A circuit for driving an inductive load, comprising:
means for supplying an input signal to an input terminal, said input signal being an instruction signal for driving said inductive load;
means for generating a high speed clock signal having a predetermined sampling rate;
switching signal generating means including a means for generating a pulse width modulation signal and a signal equivalent to said pulse with modulation signal and being connected to said supplying means and to said clock signal generating means, respectively, said switching signal generating means receiving said input signal and generating in accordance with said clock signal a switching signal selected from said pulse width modulation signal and said signal equivalent to said pulse width modulation signal each time when said input signal rises from a low value to a high value or falls from a high value to a low value; and
a switching transistor connected to said switching signal generating means and which is turned on and off in response to said switching signal to drive said inductive load.

5,055,709

DCFL LATCH HAVING A SHARED LOAD

Robert T. Smith, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1990, Ser. No. 516,632
Int. Cl.[5] H03K *3/26*
U.S. Cl. 307—279 **7 Claims**



1. A direct-coupled field-effect transistor logic latch circuit, comprising:
a first field-effect transistor having a drain, a gate coupled to a first input at which a first input signal is supplied, and a source;
a second field-effect transistor having a drain coupled to the source of said first field-effect transistor, a gate coupled to a second input at which a second input signal is supplied, and a source coupled to a first supply voltage terminal;
a third field-effect transistor having a drain coupled to an output of the latch circuit, a gate coupled to said drain of said first field-effect transistor, and a source coupled to said first supply voltage terminal;
a fourth field-effect transistor having a drain coupled to said drain of said first field-effect transistor, a gate coupled to said output, and a source;
a fifth field-effect transistor having a drain coupled to said source of said fourth field-effect transistor, a gate coupled to a third input to which the inversion of said second input signal is supplied, and a source coupled to said first supply voltage terminal;
load means coupled to said drain of said third field-effect transistor for providing current thereto; and
shared load means coupled to said drains of said first and fourth field-effect transistors for providing current to said first field-effect transistor when said second signal is in a first logic state and for providing current to said fourth field-effect transistor when said second signal is in a second logic state.

5,055,710

INTEGRATED LOGIC CIRCUIT HAVING PLURAL INPUT CELLS AND FLIP-FLOP AND OUTPUT CELLS ARRANGED IN A CELL BLOCK

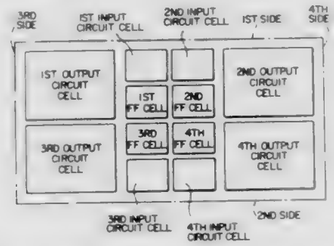
Kazuo Tanaka; Masato Hamamoto; Toshio Yamada, all of Tokyo; Tohru Kobayashi, Iruma, and Hiromasa Katoh, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 133,915, Dec. 16, 1987. This application May 9, 1990, Ser. No. 520,875

Claims priority, application Japan, Dec. 26, 1986, 61-308441; Jan. 16, 1987, 62-5973

Int. Cl.[5] **H01L** *25/00;* **H01K** *3/284;* **G06F** *7/38*

U.S. Cl. 307—303.1 **4 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor chip having a main surface and a closed peripheral edge;

an internal circuit region formed at a predetermined portion of the main surface; and

a cell block region formed at the main surface between the internal region and the closed peripheral edge wherein said cell block region includes a plurality of cell blocks, each being of a rectangular-shape, and having a first side, a second side opposite to the first side, a third side disposed between the first and second sides and a fourth side opposite to the third side, each cell block including:

first to fourth flip-flop cells which are disposed at a substantially central portion of the cell block,

first to fourth input circuit cells, the first input circuit cell being disposed between the first flip-flop cell and the first side, the second input circuit cell being disposed between the second flip-flop cell and the first side, the third input circuit cell being disposed between the third flip-flop cell and the second side, and the fourth input circuit cell being disposed between the fourth flip-flop cell and the second side, and

first to fourth output circuit cells, the first output circuit cell having one side adjacent to the third side of the cell block and having an opposite side adjacent to the first flip-flop and input circuit cells, the second output circuit cell having one side adjacent to the fourth side of the cell block and having an opposite side adjacent to the second flip-flop and input circuit cells, the third output circuit cell having one side adjacent to the third side of the cell block and having an opposite side adjacent to the third flip-flop and input circuit cells, and the fourth output circuit cell having one side adjacent to the fourth side of the cell block and having an opposite side adjacent to the fourth flip-flop and input circuit cells.

5,055,711

IMPEDANCE CONTROL CIRCUIT FOR AN INTEGRATED CIRCUIT NODE

Robert C. Dobkin, Montesereo, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.

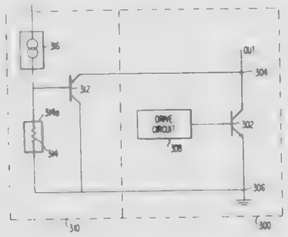
Filed Feb. 21, 1989, Ser. No. 312,218

Int. Cl.[5] **H03K** *17/16*

U.S. Cl. 307—362 **18 Claims**

1. In an integrated circuit including a first transistor having a collector-emitter circuit connected for conducting a current between a first node and a second node when the integrated circuit is in a power-on condition, a circuit for directly controlling impedance between the first and second nodes when the integrated circuit is in a power-off or transient power condition, the circuit comprising:

first means connected between the first and second nodes, and to a third node, for conducting a current between the first and second nodes which bypasses the collector-emitter circuit of the first transistor when a voltage differential above a predetermined value is developed between the first and third nodes; and



second means connected to the third node for generating a voltage at the third node when the integrated circuit is in a power-on condition to prevent the first means from conducting current between the first and second nodes.

5,055,712

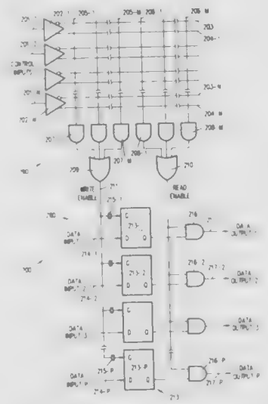
REGISTER FILE WITH PROGRAMMABLE CONTROL, DECODE AND/OR DATA MANIPULATION

David W. Hawley, Belmont; Scott K. Pickett, San Jose, and Frederick K. Y. Leung, Cupertino, all of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Filed Apr. 5, 1990, Ser. No. 504,967

Int. Cl.[5] **G06F** *9/00*

U.S. Cl. 307—465 **19 Claims**



1. A logic device comprising:

a plurality of N control input leads for receiving a plurality of N control input signals, where N is a first positive integer;

a logic array including means for receiving said plurality of control input signals and providing a plurality of J control output signals as a function of said plurality of input signals, where J is a second positive integer greater than or equal to one;

a plurality of P data input leads for receiving a plurality of P input data signal, where P is an integer greater than or equal to one;

a plurality of P data output leads for providing a plurality of P data output signals; and

data means for providing said plurality of P data output signals as a function of said P data input signals and as controlled by said J control output signals, said data means comprising:

a plurality of P storage devices, each storage device having a data input lead coupled to an associated one of said data input leads, a data output lead, and a write enable terminal; and

a plurality of P output control means, each output control means having an input lead coupled to said data output lead of an associated one of said storage devices, an output lead coupled to an associated one of said data output leads, and a read enable lead.

5,055,713

OUTPUT CIRCUIT OF SEMICONDUCTOR INTEGRATED CIRCUIT

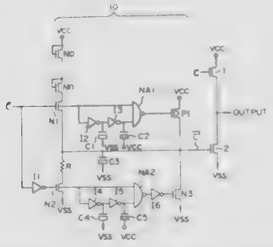
Yuji Watanabe, Kawasaki, and Hiroshi Sahara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1989, Ser. No. 438,258

Claims priority, application Japan, Nov. 21, 1988, 63-293882

Int. Cl.[5] **H03K** *5/00, 19/003, 19/017, 19/094*

U.S. Cl. 307—443 **13 Claims**



1. An output circuit for a semiconductor integrated circuit comprising:

first and second power source nodes;

first and second output MOS transistors coupled in series between said first and second power source nodes and controlled by respective first and second gate potentials applied thereto in accordance with first and second control signals;

an output node coupled to a point between said series connected first and second output MOS transistors;

control means for controlling the first and second gate potentials, said control means including means responsive to a transition of the second control signal from a high level to a low level for decreasing the gate potential of said second output transistor until a transconductance of said second output transistor is decreased to a predetermined first level, and for subsequently decreasing the gate potential of said second output transistor until the transconductance of said second transistor is decreased to a second level lower than said first level.

5,055,714

UNDERSHOOT REDUCTION CIRCUIT

Carlos D. Obregon, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 29, 1990, Ser. No. 605,203

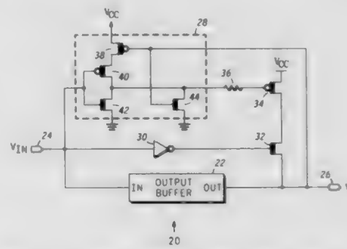
Int. Cl.[5] **H03K** *17/16, 5/12*

U.S. Cl. 307—443 **14 Claims**

10. A circuit for reducing negative ground bounce having an input signal applied at an input terminal thereof and an output signal supplied at an output terminal thereof, comprising:

an output buffer having an input and an output, said input being responsive to the input signal, and said output being coupled to the output terminal of the circuit for providing the output signal;

gate means having first and second inputs responsive to the input signal and the output signal for providing a control signal at an output thereof, said control signal being in a first logic state when the input signal and the output signal are in predetermined logic states; and



injector means responsive to said control signal and to the input signal for providing a predetermined current to the output terminal of the circuit wherein said injector current decreases the negative peak undershoot voltage occurring in a ground reference of the circuit.

5,055,715

SEMICONDUCTOR INTEGRATED CIRCUIT PROVIDED WITH MONITOR-ELEMENTS FOR CHECKING AFFECTION OF PROCESS DEVIATION ON OTHER ELEMENTS

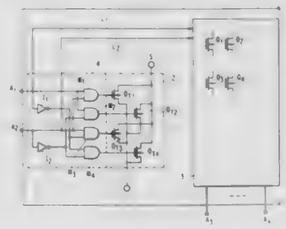
Hideo Inaba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 3, 1990, Ser. No. 503,642

Claims priority, application Japan, Apr. 3, 1989, 1-85226

Int. Cl.[5] **G06F** *11/22*

U.S. Cl. 307—443 **5 Claims**



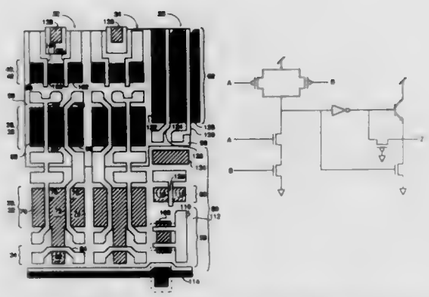
1. A semicondutor intergrated circuit comprising a semiconductor substrate, a functional circuit having a plurality of functional transistors formed on said substrate, a first pad formed on said substrate, a second pad formed on said substrate, a plurality of monitor transistors formed on said substrate, each of said monitor transistors having a current path and a control electrode for controlling a conductance of the current path thereof, a circuit connection for connecting the current path of each of said monitor transistors between said first and second pads in parallel, external terminal means receiving a control signal, and a selection circuit responsive to said control signal for selectively rendering one of said monitor transistors conductive, wherein the conductance of one of said monitor transistors selected by said selection circuit is checked by a current flowing through said first and second pads.

5,055,716

BASIC CELL FOR BICMOS GATE ARRAY

Abbas El Gamel, Palo Alto, Calif., assignor to SiArc, Palo Alto, Calif.

Filed May 15, 1990, Ser. No. 524,183
Int. Cl.[5] H03K *19/01, 19/003, 19/082, 19/094*
U.S. Cl. 307—446 30 Claims



1. A BiCMOS cell for use in a programmable gate array, said BiCMOS cell comprising:

a plurality of P-channel transistors;

a plurality of N-channel transistors; and

one or more bipolar transistors, each of said one or more bipolar transistors sharing an N-well with one or more of said P-channel transistors so that said bipolar transistors may only be used as pull-up devices.

5,055,717

DATA SELECTOR CIRCUIT AND METHOD OF SELECTING FORMAT OF DATA OUTPUT FROM PLURAL REGISTERS

Atsushi Naito; Kiyoshi Nakatsuka; Seiichi Yamamoto; Takashi Inui, and Tomohiro Suzuki, all of Miho, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 53,287, May 22, 1987, abandoned. This application Aug. 24, 1989, Ser. No. 398,339
Claims priority, application Japan, May 30, 1986, 61-125454
Int. Cl.[5] H03M *9/00*
U.S. Cl. 307—463 12 Claims

1. A data selector circuit for selecting the data format for the outputting of data comprising:

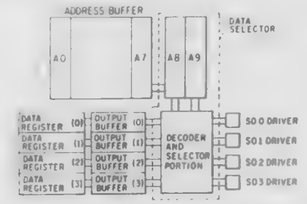
a plurality of registers for storing data to be output;

first address buffer means operatively connected to said plurality of registers for addressing the plurality of registers to provide the address location of data within each of the plurality of registers;

a plurality of output terminals for receiving data to be output from said plurality of registers;

second address buffer means for storing selection data therein determinative of respective connections between the outputs of each of said plurality of registers and each of said plurality of output terminals; and

selector means coupled to said second address buffer means for identifying specific selection data as stored therein and operatively arranged for connecting predetermined respective registers of said plurality of registers to predetermined respective output terminals of said plurality of output terminals, The predetermined connections being controlled by the specific selection data stored in said second address buffer means as identified by selector means.

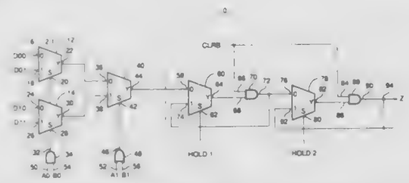


5,055,718

LOGIC MODULE WITH CONFIGURABLE COMBINATIONAL AND SEQUENTIAL BLOCKS

Douglas C. Galbraith, Fremont; Abbas El Gamal, and Jonathan W. Greene, both of Palo Alto, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed May 11, 1990, Ser. No. 522,232
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 22 Claims



1. A universal combination logic module including:

a first multiplexer having a first data input connected to a first data node, a second data input connected to a second data node, a select input, and an output,

a second multiplexer having a first data input connected to a third data node, a second data input connected to a fourth data node, a select input, and an output,

a third multiplexer having a first data input connected to the output of said first multiplexer, a second data input connected to the output of said second multiplexer, a select input, and an output,

a first single logic level gate having a first input connected to a fifth data node and a second input connected to a sixth data node, and an output connected to the select input of said first multiplexer,

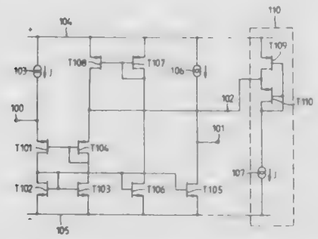
a second single logic level gate having a first input connected to a seventh data node, a second input connected to an eighth data node and an output connected to the select input of said third multiplexer.

5,055,719

CURRENT CONVEYOR CIRCUIT

John B. Hughes, Hove, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1990, Ser. No. 479,304
Claims priority, application United Kingdom, Feb. 17, 1989, 8903705
Int. Cl.[5] H03K *3/013, 5/00*
U.S. Cl. 307—491 10 Claims



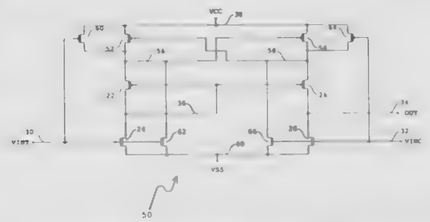
1. A current conveyor circuit for accepting a current at an input at low impedance and for providing an output current of the same or a related value at an output at high impedance comprising; a first transistor whose main current conducting path is connected between the input and a second diode-connected transistor whose other end is connected to a voltage supply, a third transistor whose main current carrying path is connected between the voltage supply and a fourth diode-connected transistor whose other end is connected to an input terminal for the application of a reference potential, and a fifth transistor whose control electrode is connected to control electrodes of the second and third transistors and whose main current conducting path is connected between the voltage supply and the output, wherein the control electrodes of the first and fourth transistors are commoned, and means coupled to the voltage supply for internally generating a current and for supplying the current to the fourth transistor so that substantially no current is drawn through the input terminal.

5,055,720

CURRENT MIRROR SENSE AMPLIFIER WITH REDUCED CURRENT CONSUMPTION AND ENHANCED OUTPUT SIGNAL

John W. Tiede, Colorado Springs, Colo., assignor to Simtek Corporation, Colorado Springs, Colo.

Filed Aug. 31, 1990, Ser. No. 575,978
Int. Cl.[5] H03K *19/12, 17/16*
U.S. Cl. 307—530 31 Claims



1. A current mirror sense amplifier receptive of a differential input signal and operative for supplying a single ended output signal related to the differential input signal, said amplifier including field effect transistors (FETs) each of which has a channel through which current flows and a gate which controls the flow of current through the channel in relation to a signal applied to the gate, said amplifier comprising:

first and second input terminals upon which separate first and second input signals defining the differential input signal;

an output terminal from which the output signal is supplied;

a reference branch including first and second complementary reference branch FETs having their channels connected in series at a junction defining a reference node and having the gate of the second reference branch FET connected to the reference node and having the gate of the first reference branch FET connected to the first input terminal;

an amplifying branch including first and second complementary amplifying branch FETs, having their channels connected in series at a junction defining the output terminal and having the gate of the second amplifying branch FET connected to the reference node and having the gate of the first amplifying branch FET connected to the second input terminal;

the reference branch FETs establishing a reference signal at the reference node having a magnitude related to the magnitude of the first input signal;

the reference signal biasing the second amplifying branch FET to control the current flowing through the amplifying branch in a mirrored relationship to the current flowing through the reference branch;

the second input signal biasing the first amplifying branch FET to control the current flowing through the first amplifying branch FET in an opposite relation to the current flowing through the second amplifying branch FET;

the oppositely varying current conductivity characteristics of the amplifying branch FETs creating an output signal of a magnitude which is related to the difference between the first and second input signals;

power source means for supplying power to said sense amplifier;

reference control means connected to the power source means and also connected to the reference branch at a first bias node for supplying current form the power source means to the reference branch to flow through the channels of the reference branch FETs;

amplifying control means connected to the power source means and also connected to the amplifying branch at a second bias node for supplying current from the power source means to the amplifying branch to flow through the channels of the amplifying branch FETs;

the reference control means also connected to the second bias node and operative for controlling the current supplied from the power source means to the channels of the reference branch FETs in relation to the magnitude of a second bias signal at the second bias node;

the amplifying control means also connected to the first bias node and operative for controlling the current supplied from the power source means to the channels of the amplifying branch FETs in relation to the magnitude of a first bias signal at the first bias node;

the conductivity characteristics of the reference and amplifying branch FETs creating a mutually opposite and differential change in the magnitudes of the first and second bias signals in response to the first and second input signals;

the reference control means responding to the change in the magnitude of the second bias signal to change the magnitude of current supplied at the first bias node to the reference branch FETs;

the amplifying control means responding to the change in the magnitude of the first bias signal to change the magnitude of the current supplied at the second bias node to the amplifying branch FETs;

the amplifying control means and the reference control means responding to the mutually opposite and differential changes in the first and second bias signals by regeneratively amplifying the magnitude of the differential of the first and second bias signals until one of either the amplifying control means or the reference control means substan-

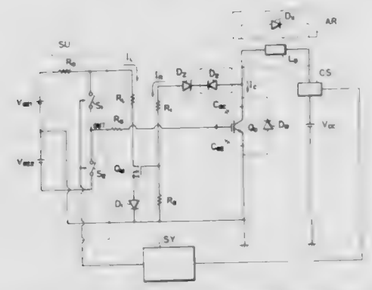
tially terminates the current flow through the corresponding one of the branches and the second branch FET of the other branch substantially terminates the current flow through the other branch.

5,055,721

DRIVE CIRCUIT FOR IGBT DEVICE

Gourab Majumdar, and Shigekazu Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1989, Ser. No. 422,685
Claims priority, application Japan, Apr. 13, 1989, 1-93711
Int. Cl.[5] H03K *17/08, 17/28*
U.S. Cl. 307—570 13 Claims



1. A drive circuit for driving an insulated gate bipolar transistor disposed in a load current path in series with a load to selectively supply a load current to said load in response to ON/OFF switching of said insulated gate bipolar transistor, comprising:

a forward gate bias power source for applying a forward gate bias voltage to a gate of said insulated gate bipolar transistor to drive said insulated gate bipolar transistor;

a voltage lowering means connected to a collector of said insulated gate bipolar transistor, for lowering a voltage of the collector by a predetermined potential;

a voltage divider connected between said voltage lowering means and an emitter of said insulated gate bipolar transistor, which has an intermediate point for providing a divided voltage;

a current path disposed between the gate of said insulated gate bipolar transistor and a terminal having a predetermined voltage;

a MOS transistor having a gate connected with said intermediate point of said divider and a source and drain serially disposed in said current path;

an output resistor connected between the gate of said insulated gate bipolar transistor and said forward gate bias power source;

a reverse gate bias power source for applying a reverse gate bias voltage to the gate of said insulated gate bipolar transistor to make said insulated gate bipolar transistor nonconductive; and

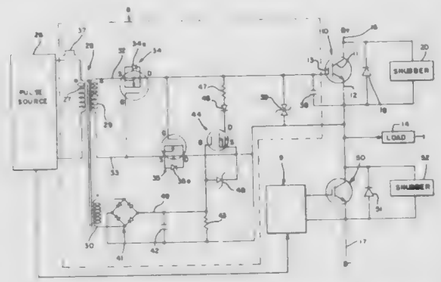
a control system for detecting said load current flowing in said load to activate said reverse gate bias power source to apply said reverse gate bias voltage to the gate of said insulated gate bipolar transistor with a delay time when said load current exceeds a predetermined level.

5,055,722

GATE DRIVE FOR INSULATED GATE DEVICE

Thomas S. Latos, Huntley, and Kevin L. Wingate, Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 20, 1989, Ser. No. 453,756
Int. Cl.[5] H03K *17/16, 3/013, 19/003, 17/687*
U.S. Cl. 307—570 14 Claims



1. A circuit for improving the noise immunity of an insulated gate transistor having a base, collector and emitter terminals, the base being connected during operation to a source of control pulses, said pulses having spaces therebetween, comprising:

a) depletion mode transistor means having a gate, source and drain terminals said drain and source terminals being connected across said gate and said emitter terminals of said insulated gate transistor; and

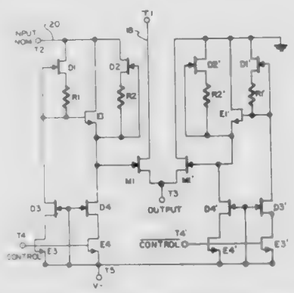
b) varying voltage means connected to said gate of said depletion mode transistor means and during operation receiving said control pulses from said source, said control pulses charging said varying voltage means during each of said pulses and during the spacings between said pulses.

5,055,723

JFET ANALOG SWITCH WITH GATE CURRENT CONTROL

Derek F. Bowers, and Douglas S. Smith, both of Sunnyvale, Calif., assignors to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 28, 1989, Ser. No. 316,874
Int. Cl.[5] H03K *19/94, 17/684*
U.S. Cl. 307—581 27 Claims



1. A junction field effect transistor (JFET) switching circuit, comprising:

a first depletion-mode switch JFET having a gate, source and drain,

a switch control circuit connected to switch said JFET in response to a control signal,

an output line,

a true input voltage line for carrying a true input voltage level, said true input voltage line being interconnected with the output line by the JFET source-drain circuit to apply said true input voltage to said output line in response to a control signal,

a nominal input voltage line connected by the switch control circuit to supply switching currents to the JFET gate, and

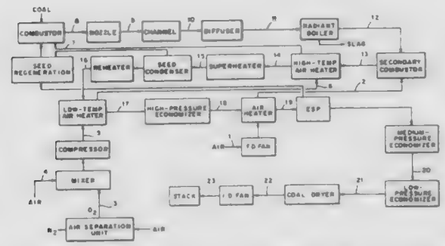
an input voltage supply means connected with said true and nominal input voltage lines to maintain the true input voltage line at a true input voltage level, and the nominal input voltage line at a nominal input voltage level which tracks the true input voltage level but is subject to fluctuations due to said switching currents.

5,055,724

OPEN-CYCLE MAGNETOHYDRODYNAMIC POWER PLANT WITH CO_2 RECYCLING

Gregory F. Berry, Naperville, Ill., assignor to United States Department of Energy, Washington, D.C.

Filed Oct. 30, 1989, Ser. No. 428,676
Int. Cl.[5] H02K *44/08*
U.S. Cl. 310—11 6 Claims



1. A method of converting the chemical energy of fossil fuel to electrical and mechanical energy comprising: mixing the fossil fuel with preheated oxygen and carbon dioxide and a conducting seed of potassium carbonate to form a combustive and electrically conductive mixture, burning the combustive and electrically conducting mixture in a combustion chamber; passing the burned combustion mixture through a MHD generator to generate electrical energy; passing the burned combustion mixture through a diffuser to restore the mixture approximately to atmospheric pressure, leaving a spent combustion mixture; exchanging heat from the spent combustion mixture with oxygen from an air separation plant and recycled carbon dioxide for combustion in a high temperature oxygen preheater; removing relatively pure carbon dioxide from the spent combustion mixture for further purification or for exhaust; recycling the remainder of the carbon dioxide from the spent combustion mixture to a carbon dioxide purification plant for removal of water and any nitrous oxides present, leaving a greater than 98% pure carbon dioxide; recovering a portion of the greater than 98% pure carbon dioxide stream and recycling the remainder to combine with the oxygen for preheating and combination with the fossil fuel, recycling the preheated oxygen and the carbon dioxide and the fossil fuel to form a combustion mixture.

5,055,725

LINEAR MOTOR

Laurence LaSota, 15745 N. Park, East Detroit, Mich. 48021

Filed Nov. 13, 1989, Ser. No. 435,564
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—14 16 Claims

1. A linear motor comprising:

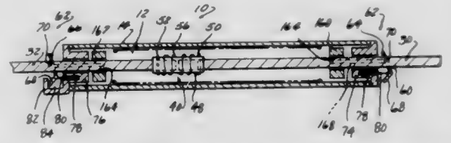
a coil formed of a plurality of windings;

a magnetic core surrounding the coil;

a magnetic pole member movably disposed within and extending partially outward from one end of the coil and the core;

a magnetic plunger movably disposed within and extending partially outward from another end of the coil and the core, the plunger being co-axially aligned with the pole member and normally spaced from one end of the pole member by an air gap;

the core, the pole member and the plunger forming a magnetic flux path when current is applied to the coil to urge the plunger into contact with the pole member to close the air gap therebetween;



biasing means, connected between the pole member and the plunger, for biasing the pole member and the plunger apart to re-establish the air gap therebetween and to advance the pole member an incremental distance equal to the length of the air gap; and

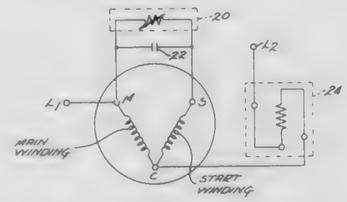
unidirectional latch means for allowing successive one direction movements of the pole member and the plunger with respect to the core and the coil upon each successive energization and de-energization of the coil.

5,055,726

PLUG-ON PROTECTOR FOR COMPRESSOR MOTOR

John R. D'Entremont, Foxboro, Mass., and Joseph G. Nield, Jr., Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 1, 1990, Ser. No. 608,127
Int. Cl.[5] H02H *5/04, 7/085;* H01H *37/02;* H02K *11/00*
U.S. Cl. 310—71 9 Claims



1. A single phase motor hermetically sealed within a compressor housing, a header mounted in a wall of the housing, first, second and third terminal pins for providing electrical connection to the motor mounted in the header equidistant from one another and forming an imaginary triangle, the pins extending from within to without the housing, within the housing the first pin being connected to the start winding of the motor, the second pin being connected to the main winding of the motor and the third pin being connected to common, a spade terminal welded to each pin without the housing, a motor protector having a housing and having a spade receiving terminal, the motor protector mounted on the header with the spade terminal connected to the third pin received in the spade receiving terminal, the housing extending from the third pin toward the first and second pins and occupying a majority of the space defined by the imaginary triangle.

5,055,727

ROTARY DRIVE MECHANISM

Eugene W. Kenderdine, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1990, Ser. No. 484,302
Int. Cl.[5] H02K 7/10
U.S. Cl. 310—78 10 Claims



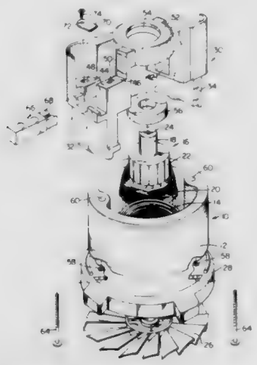
1. A rotary drive mechanism comprising:
a rotary solenoid including a stator and multi-poled rotor:
a moving member which rotates with said rotor; and
a biasing means for biasing said member for a further rotational movement after rotation by said rotary solenoid whereby energization of said rotary solenoid moves said member in one direction to one position and biases said biasing means against said member and de-energization of said rotary solenoid causes said biasing means to move said member in the same direction to another position from where said moving member is again movable by energization and de-energization of said rotary solenoid.

5,055,728

MOTOR ASSEMBLY WITH COMBINED ARMATURE SHAFT BEARING SUPPORT AND BRUSH TUBE HOLDER

Timothy J. Looper, and James R. Sistare, both of Pickens, S.C., assignors to Ryobi Motor Products Corp., Pickens, S.C.

Filed Aug. 9, 1990, Ser. No. 565,252
Int. Cl.[5] H02K 5/00
U.S. Cl. 310—91 3 Claims



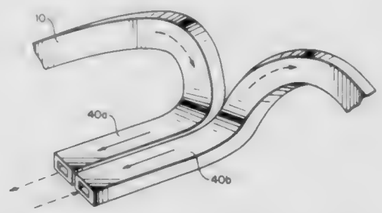
1. A motor assembly comprising:
a field including a laminated stack and a field winding supported on said stack;
an armature including an armature shaft having an axis, an armature winding supported on said armature shaft, a commutator electrically coupled to said armature winding and supported on said armature shaft adjacent a first end thereof, and a fan supported on said armature shaft adjacent the other end thereof;
a pair of tubes each containing a commutator brush;
a fan shroud;
a member acting as a unitary bearing support and brush tube holder, said member having a pair of legs adapted to traddle said first end of said armature shaft with said legs being diametrically symmetrical to each other with respect to axis of the armature shaft, each of said legs being formed with a brush tube support ledge in line with the commutator, each of said ledges being generally planar and orthogonal to the armature shaft axis, said ledges being substantially coplanar with respect to each other, each of said legs being open to the commutator in a region above its support ledge, each of said legs being formed with a first shoulder on one side of said support ledge and a second shoulder on the other side of said support ledge opposite said first shoulder, said first shoulder of each of said legs extending above said support ledge a distance corresponding to the height of a first size brush tube and said second shoulder of each of said legs extending above said support ledge a distance corresponding to the height of a second size brush tube, and means on each of said shoulders for engaging a brush tube clamp; and
means for securing said fan shroud to one side of said stack and said member to the other side of said stack.

5,055,729

INTEGRAL WATER-COOLED CIRCUIT RING/BUS BAR ASSEMBLY FOR HIGH FREQUENCY GENERATORS

James M. Fogarty, Schenectady, and James M. Anderson, Cohoes, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 9, 1990, Ser. No. 564,638
Int. Cl.[5] H02K 3/48
U.S. Cl. 310—214 17 Claims



13. Improved rotating electrical machinery including a cylindrical rotor rotatable about a central axis and a stator having windings with plural circuit leads connected thereto, the opposite end of said circuit leads being connected to plural circuit rings, said machinery further including electrical current conducting terminals and plural bus bars each connecting a circuit ring to a single terminal, the improvement comprising:
hollow electrically conducting tubing fabricated into substantially complete circular rings each with elongated integral tubing ends forming substantially parallel portions, each fabricated ring forming one of said circuit rings and said elongated tubing end portions forming one of said bus bars; and
a plurality of connector joints comprising brazed joints located about the periphery of each said circuit ring, each said connector joint connecting one of said circuit leads to one of said rings, and wherein each said connector joint includes an electrically conductive adaptor joined to said ring periphery, and electrically conductive lead clip joined to said adaptor and a conductive circuit lead joined to said clip.

5,055,730

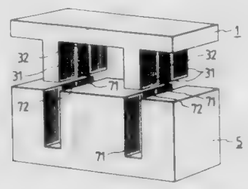
Patent Not Issued For This Number

5,055,731

HIGH-SPEED TWO-DIMENSIONAL ELECTROSTATIC ACTUATOR

Hideki Nihei, Hitachi; Nobuyoshi Tsuboi, Tokai; Hiroyuki Minemura, Hitachi; Hiroshi Kimura, Hitachi, and Shigeki Morinaga, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1990, Ser. No. 558,304
Claims priority, application Japan, Aug. 2, 1989, 1-199407
Int. Cl.[5] H02N 1/00; H02K 41/02
U.S. Cl. 310—309 10 Claims



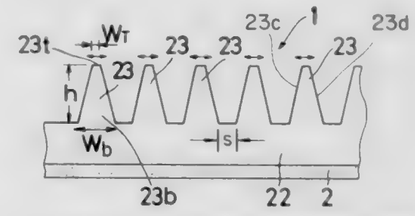
1. An electrostatic two-dimensional actuator comprising:
a stationary element having at least one surface, a plurality of first electrode lines disposed in parallel to each other on said at least one surface of said stationary element, each of said first electrode lines extending in a first direction, and a plurality of second electrode lines disposed in parallel to each other on said at least one surface of said stationary element, each of said second electrode lines extending in a second direction substantially perpendicular to the first direction;
a movable element having at least one surface disposed in spaced juxtaposition with respect to said at least one surface of said stationary element and being movable with respect to said stationary element in both the first direction and the second direction, a plurality of third electrode lines disposed in parallel to each other on said at least one surface of said movable element, each of said third electrode lines extending in the first direction in opposite relation with respect to said first electrode lines of said stationary element and being arranged symmetrically with respect to a first center line bisecting said at least one surface of said movable element in the first direction and a second center line bisecting said at least one surface of said movable element in the second direction, and a plurality of fourth electrode lines disposed in parallel to each other on said at least one surface of said movable element, each of said fourth electrode lines extending in the second direction and being arranged symmetrically with respect to the first center line and the second center line; and
means for applying voltage between at least one line from among said first electrode lines and at least one line from among said third electrode lines and for applying voltage between at least one line from among said second electrode lines and at least one line from among said fourth electrode lines in order to move said movable element in the first and second directions.

5,055,732

ULTRASONIC MOTOR

Chiaki Umemura, Toyohashi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 333,532, Apr. 5, 1989. This application Dec. 21, 1990, Ser. No. 631,877
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—323 7 Claims



1. An ultrasonic motor comprising a piezoelectric vibrator, a rotor, and an elastic member interposed between said piezoelectric vibrator and said rotor for transmitting vibration, said elastic member including a base portion and a plurality of projecting portions, each of said projecting portions tapering towards a free end thereof, the ratio of height to maximum width of each of said tapering projecting portions being at least 1.0, said elastic member having a natural frequency substantially corresponding to a drive frequency of said vibrator.

5,055,733

METHOD FOR CONVERTING MICROMOTIONS INTO MACROMOTIONS AND APPARATUS FOR CARRYING OUT THE METHOD

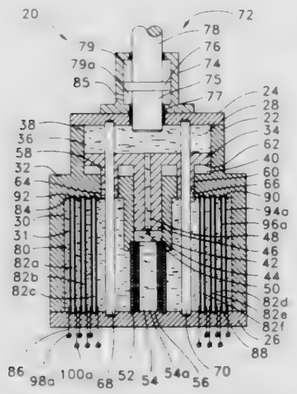
Leonid Eylman, P.O. Box 591013, San Francisco, Calif. 94159-1013

Filed Sep. 17, 1990, Ser. No. 583,607
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—328 11 Claims

1. A method for converting micromotions into macromotions comprising the steps of:
providing at least one member having a surface area sufficient to change the volume of said member macroscopically when the length of said member is changed microscopically;
connecting said at least one member with a source of energy, which when supplied to said at least one member changes its volume;

placing said at least one member into a sealed chamber filled with an incompressible liquid so that when said at least one member changes its volume, it displaces said incompressible liquid from said sealed chamber;

connecting said sealed chamber with a hydraulic multiplicator means with a hydraulic chamber for multiplying said changes in the volume of said hydraulic chamber into 10 to 100 times greater changes in the volume of said multiplicator means;



connecting said multiplicator with means for converting said greater volume changes of said multiplicator into movements of a working element capable of performing useful work;

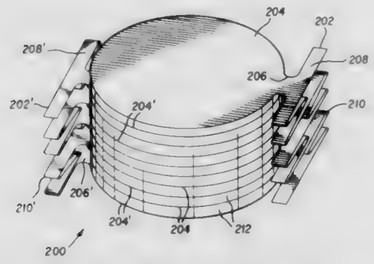
said at least one member is protected from external load from the side of said working element by an unloading means which operates when said member is expanded and is maintained in said expanded state, said at least one member being telescopically expandable and comprising a self-contained unit with a sealed interior.

5,055,734

SINGLE-PIECE MULTIPLE ELECTRODE CONDUCTOR

Charles E. Grawey; L. Ted Johnson, both of Peoria; John M. Sloma, Lacon, and John F. Szentes, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 28, 1990, Ser. No. 590,110
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—366 **10 Claims**



1. A single-piece multiple electrode conductor for a piezoelectric solid state motor stack with piezoelectric disks arranged with a plurality of electrodes, comprising:

a spine member for conducting electrical potential; and

a plurality of ribs integral with and extending from only one side of said spine member, and adapted to be interleaved with the piezoelectric disks in the stack;

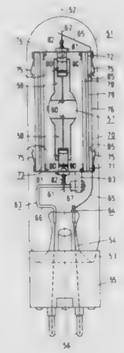
wherein when the electrodes are interleaved with the piezoelectric disks in the stack and are connected to and biased by a source of electrical potential, an axial displacement is produced between opposite end surfaces of the stack.

5,055,735

HIGH PRESSURE DISCHARGE LAMP HAVING IMPROVED CONTAINMENT STRUCTURE

Tjitte De Jong, Eindhoven, Netherlands; Florentinus L. M. Bens, and Danny L. V. Hermans, both of Turnhout, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1989, Ser. No. 458,112
Claims priority, application Netherlands, Jan. 30, 1989, 8900216
Int. Cl.[5] H01J *17/16, 61/34, 61/52*
U.S. Cl. 313—25 **19 Claims**



1. An electrical lamp comprising

a tubular outer envelope defining a lamp axis, said envelope having a reentrant stem sealing said envelope in a gas-tight manner,

a discharge vessel energizable for emitting light and axially arranged in said outer envelope, said discharge vessel having a pair of sealed ends and a pair of lead-throughs each extending through a respective sealed end, a first of said lead-throughs extending towards said stem,

a cylindrical glass sleeve surrounding said discharge vesel and having a pair of ends, a first said sleeve end being closer to said stem than other sleeve end,

first and second current conductors extending from said reentrant stem, each connected to a respective discharge vessel lead-through, and means for supporting said discharge vessel and said sleeve in said outer envelope, the improvement comprising:

a pair of metal plates each closing a respective end of said sleeve, each metal plate having a first plurality of tongues bearing on said sleeve for supporting said sleeve with respect to said metal plates and a second plurality of tongues bearing on said outer envelope for supporting said metal plates against said outer envelope, said metal plates being rigidly connected to said discharge vessel and forming a subassembly with said sleeve and said discharge vessel,

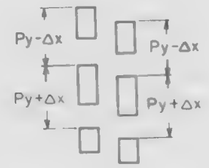
said first current conductor being secured to said first discharge vessel lead-through and supporting said subassembly, and said other current conductor being flexible and extending from said reentrant stem past said subassembly along said outer and envelope and being connected to said second lead-through.

5,055,736

SHADOW MASK FOR USE IN A THREE-GUN COLOR PICTURE TUBE

Joyung Yun, and Hojin Cho, both of Busan, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Rep. of Korea

Filed Mar. 30, 1990, Ser. No. 502,127
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—402 **7 Claims**



1. A shadow mask for use in a three-gun color picture tube comprising a number of electron beam transmission holes, the length of the bridge portion between two vertically adjacent ones of said electron beam transmission holes being constant, the vertical pitch of said electron beam transmission holes being varied between $Py+\Delta x$ and $Py-\Delta x$ so as to reduce moire effect, Δx being obtained from the relationship between the moire wavelength and vertical hole pitch of said shadow mask according to the following formula:

$$\lambda(\text{moire wavelength}) = \frac{1}{\left|\frac{2}{Py} - \frac{n}{2Ps}\right|} \cdot \frac{1}{|fa - fs|}$$

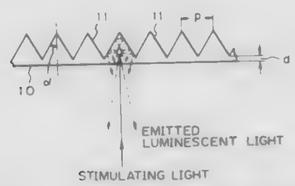
wherein Py is the vertical pitch of the electron beam transmission holes of said shadow mask, Ps is the pitch of scanning lines of the electron beams, fa is the pitch frequency of the shadow mask, fs is the scanning frequency, and wherein Δx is selected as the range of variation of pitch Py about a midpoint located between successive intersecting nth order moire wavelength envelopes below a predetermined level related to the visibility of moire effects.

5,055,737

LUMINESCENT SCREEN

Yasushi Murata, and Fumio Matsui, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,449
Claims priority, application Japan, Jan. 17, 1989, 1-8389
The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.
Int. Cl.[5] H01J *29/20*
U.S. Cl. 313—524 **5 Claims**



1. A luminescent screen comprising a screen plate made of a mixture of a transparent resin and a luminescent substance, said luminescent substance being capable of emitting luminescent light when stimulating light is applied thereto, wherein said screen plate is provided with a regular array of convexes on one surface thereof, each of said convexes having an equilateral triangle profile on the normal plane to said screen plate, said triangle having an apical angle 2α determined so as to meet the following equation:

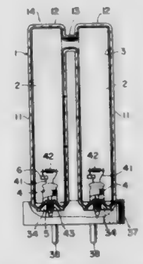
$\sin\alpha = 1/$the refractive index of said screen plate.

5,055,738

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP HAVING A FOLDED TUBE

Takashi Yorifuji, Zushi, and Masashi Saigo, Kamiya, both of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Dec. 12, 1989, Ser. No. 448,839
Claims priority, application Japan, Dec. 12, 1988, 63-313157
Int. Cl.[5] H01J *1/62*
U.S. Cl. 313—490 **5 Claims**



1. A low-pressure mercury vapor discharge lamp having a glass tube in which a successive discharge passage is formed as having two end portions arranged in the same direction and a folded portion in the direction opposite said end portions, a pair of electrodes provided at said end portions and amalgam provided in an end portion of said glass tube in the same direction as said portions and for controlling the mercury vapor pressure, wherein:

said tube has such a configuration that a low temperature region is formed in a portion of said tube around a folded portion when said lamp is turned on in the state where said folded portion is oriented in a downward direction, whereas, said low temperature region is formed elsewhere than said folded portion when said lamp is turned on in the state where said folded portion is oriented in an upward direction, at a normal temperature; and

the mercury vapor pressure at a solid and liquid phase coexisting critical temperature of said amalgam is in the range of 0.01 to 0.2 Torr.

5,055,739

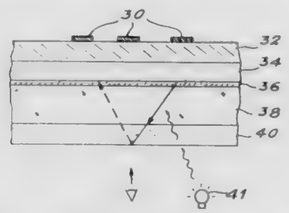
MEMORY-EQUIPPED MONOCHROME DISPLAY OF THE PHOTOCONDUCTOR-ELECTROLUMINESCENT TYPE

Pascal Thioulouse, Paris, France, assignor to L'Etat Francais represente par le Ministre des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications), Paris, France

Filed Feb. 8, 1990, Ser. No. 477,300
Claims priority, application France, Feb. 10, 1989, 89 01747
Int. Cl.[5] H01J *1/54*
U.S. Cl. 313—507 **10 Claims**

1. Electroluminescent monochrome display with a memory effect comprising on an insulating substrate an assembly having a single electroluminescent layer (**16**, **34**) in contact with a photoconductor layer (**20**, **32**) or separated from said photoconductor layer by a first transparent dielectric layer (**18**), said assembly of said two layers being inserted between a first (**36**) and a second (**30**) systems of electrodes connected to a power supply (**24**) for exciting certain zones of the electroluminescent layer, said photoconductor layer (**32**) being such that the over-

lap zone of the light sensitivity spectrum of said photoconductor layer and the emission spectrum of the ambient illumination is at a minimum and said electroluminescent layer (**34**) being such that the overlap zone of said sensitivity spectrum and the emission spectrum of the electroluminescent layer is at a maximum, the emission spectrum of the electroluminescent layer overlapping also the visible spectrums and an optical filter (**40**)



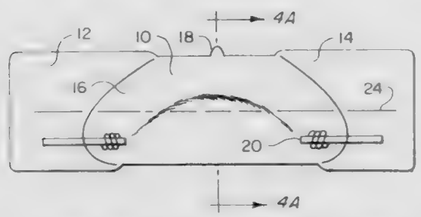
located between the electroluminescent layer (**34**) and the display observer and permitting the passage of that part of the emission spectrum of the electroluminescent layer most useful for display purposes, while blocking a region of the emission spectrum of the ambient illumination, the sensitivity spectrum of the photoconductor layer (**32**) being essentially contained in said region.

5,055,740

HORIZONTAL BURNING METAL HALIDE LAMP

Juris Sulcs, Chagrin Falls, Ohio, assignor to Venture Lighting Interntional, Inc., Solon, Ohio

Filed Feb. 25, 1987, Ser. No. 18,468
Int. Cl.[5] H01J *61/30*
U.S. Cl. 313—634 **29 Claims**



1. In a metal halide arc discharge lamp for operation in a generally horizontal position including an arc tube comprising a generally cylindrical tube with closed end chambers of continuously reducing cross-sectional area and electrodes in the end chambers below the cylindrical axis of the arc tube, the improvement wherein the greatest length of said arc tube is at the elevation of said electrodes.

5,055,741

LIQUID COOLANT FOR HIGH POWER MICROWAVE EXCITED PLASMA TUBES

LaVerne A. Schlie, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

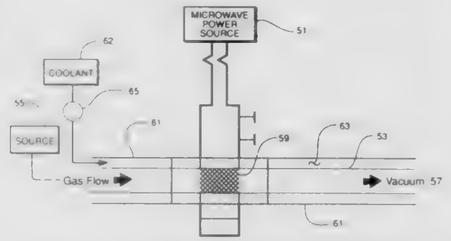
Filed Jul. 13, 1990, Ser. No. 553,928
Int. Cl.[5] H01J *7/46*
U.S. Cl. 315—39 **3 Claims**

1. A coolant system for a high power microwave excited plasma tube which comprises:

(a) a source of clean liquid dimethyl polysiloxane, said clean liquid dimethyl polysiloxane being dopted with an infrared absorbing material selected from the group consisting of organic and inorganic solvents;

(b) means for circulating said clean liquid dimethyl polysiloxane into heat exchange relationship with said plasma tube; and

(c) wherein the containment materials comprising said



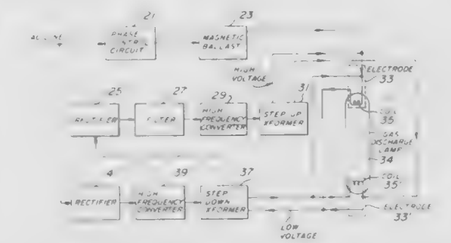
source of said clean liquid dimethyl polysiloxane and comprising said circulating means is selected from the group consisting of a metallic material, a hard plastic, glass, pyrex and quartz.

5,055,742

GAS DISCHARGE LAMP DIMMING SYSTEM

Scott R. Jurell, Hellertown; Eric R. Motto, Center Valley; Gordon E. Windows, Jr., East Texas; David G. Luchaco, Macungie; Dennis M. Capewell, Penllyn; Donald F. Hausman, Emmaus, and Joel S. Spira, Coppersburg, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed May 18, 1989, Ser. No. 353,984
Int. Cl.[5] H05B *41/00*
U.S. Cl. 315—94 **78 Claims**



1. A control system for a gas discharge lamp that has electrodes for providing power from a source to said lamp, comprising, in combination:

a. means for providing a time-varying first current between said electrodes to produce an electric discharge in said lamp and

b. means for simultaneously providing between said electrodes a second current to sustain an electric discharge in said lamp when said first current alone is insufficient.

5,055,743

INDUCTION HEATED CATHODE

John P. Ekstrand, Palo Alto, Calif., assignor to Spectra Physics, Inc., Mountain View, Calif.

Filed May 2, 1989, Ser. No. 346,469
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.51 **17 Claims**

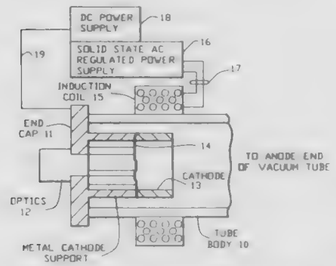
1. For a tube with a first end and a second end, a cathode mounted adjacent the first end and an anode mounted adjacent the second end, an improvement comprising:

the cathode comprising a cathode loop of a first material suitable for induction heating;

means, mounted inside the tube, for supporting the cathode loop inside the tube at a cathode position adjacent the first end;

means, mounted outside the tube near the cathode position,

for generating an alternating electromagnetic field at the cathode position to induce current, producing heat in the cathode loop so that electrons are released into the tube; and



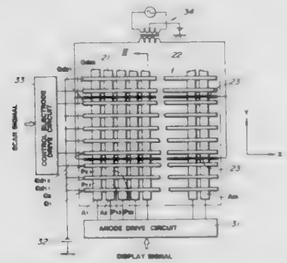
means, mounted with the means for supporting, for providing DC bias relative to the anode on the cathode loop.

5,055,744

DISPLAY DEVICE

Yoshihisa Tsuruoka, Mobara, Japan, assignor to Futuba Denshi Kogyo K.K., Mobara, Japan

Filed Nov. 30, 1988, Ser. No. 278,242
Claims priority, application Japan, Dec. 1, 1987, 62-301590
Int. Cl.[5] G09G *3/04*
U.S. Cl. 315—169.1 **5 Claims**



1. A display device comprising:

an anode group including phosphor-deposited anodes;

filamentary cathodes for emitting electrons;

a control electrode group including control electrodes connected in common an applied a negative voltage with respect to said filamentary cathodes and a pair of deflecting control electrodes adjacent each said filamentary cathode, said control electrode group being arranged above said anode group in a direction across said anode group;

said anode group and control electrode group being selectively driven to cause electrons emitted from said cathodes to impinge on regions of said anodes positioned at intersections between said anode group and said control electrode group and in proximity thereto, resulting in a luminous display;

said filamentary cathodes being stretchedly arranged above said control electrode group in a manner to be in parallel with said control electrode group and are interposed between said pair of deflecting control electrodes with at least two of said electrodes of said control electrode group being between any two adjacent filamentary cathodes;

deflecting means arranged below said filamentary cathodes for varying a potential between said pair of deflecting control electrodes adjacent each said filament cathode to deflect the electron beam emitted from said filamentary cathodes; and

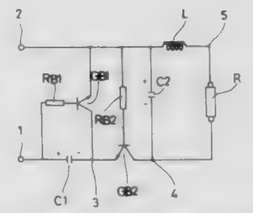
means for applying a predetermined potential to the control electrodes other than the deflecting control electrodes to which said deflection potential is applied.

5,055,745

FLUORESCENT LAMP STABILIZER CIRCUIT DEVICE

Ho T. Tien, and Shih-Li Tao, both of 5F, No. 1, Alley 61, Lane 114, Sec. 7, Chuang San N. Rd., Taipei, Taiwan

Filed Oct. 11, 1990, Ser. No. 598,054
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—226 **1 Claim**



1. A fluorescent lamp stabilizer circuit device coupled to an A.C. voltage source for energizing a fluorescent lamp, comprising:

a first charging circuit coupled to said A.C. voltage source, said first charging circuit including (1) a first capacitor having a first end coupled to a first voltage source terminal, and (2) a first transistor having a collector coupled to a second end of said first capacitor and an emitter coupled to a second voltage source terminal, said first transistor having a base coupled to said first voltage source terminal for turning said first transistor on responsive to said first voltage source terminal being positive with respect to said second voltage source terminal to thereby charge said first capacitor to a first voltage thereacross, said base of said first transistor being coupled to said first voltage source terminal by a resistor coupled in series relation therebetween;

a second charging circuit coupled to said A.C. voltage source, said second charging circuit including (1) a second capacitor having one end coupled to said second voltage source terminal, and (2) a second transistor having a collector coupled to an opposing end of said second capacitor and an emitter coupled to said second end of said first capacitor, said second transistor having a base coupled to said second voltage source terminal for turning on said second transistor responsive to said second voltage source terminal being positive with respect to said first voltage source terminal to thereby charge said second capacitor to a second voltage, said second voltage being a summation of said first voltage across said first capacitor and a voltage across said first and second voltage source terminals, said base of said second transistor being coupled to said second voltage source terminal by a resistor coupled in series relation therebetween; and,

an inductor coupled in series relation with said fluorescent lamp, said series coupled inductor and fluorescent lamp being coupled in parallel relation with said second capacitor to form a resonant circuit, whereby said first and second charging circuits operate alternately to provide a voltage sufficient for turning on said fluorescent lamp, said inductor providing means to substantially maintain said fluorescent lamp at a predetermined voltage subsequent to said fluorescent lamp being turned on.

5,055,746

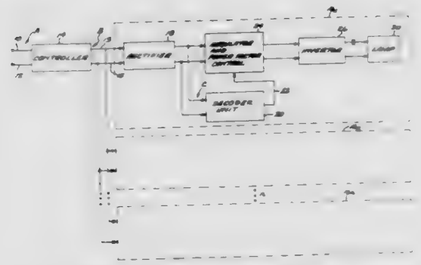
REMOTE CONTROL OF FLUORESCENT LAMP BALLAST USING POWER FLOW INTERRUPTION CODING WITH MEANS TO MAINTAIN FILAMENT VOLTAGE SUBSTANTIALLY CONSTANT AS THE LAMP VOLTAGE DECREASES

Feng-Kang Hu; Chung M. Lau; Kevin Yang; Joshua S. Zhu, all of Torrance; Peter S. Shen, Rancho Palos Verdes, all of Calif., and Thomas C. Jednacz, Gastonia, N.C., assignors to Electronic Ballast Technology, Incorporated, Torrance, Calif.

Filed Aug. 13, 1990, Ser. No. 565,689

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—291 **7 Claims**



1. A dimmable fluorescent lamp ballast system comprising:

means for providing a first AC voltage signal;

means responsive to said first AC voltage signal for providing a DC voltage signal having a magnitude which is adjustable between first and second levels, said first level being higher than said second level;

a fluorescent lamp having filament means associated therewith;

first circuit means responsive to said first level DC voltage signal for generating a second AC voltage signal having a magnitude proportional to the magnitude of said first level DC voltage signal, said second AC voltage signal being coupled to said fluorescent lamp; and

second circuit means responsive to said first level DC voltage signal for generating a third AC voltage signal having a magnitude proportional to the resonant frequency of said second circuit means, said third AC voltage signal being applied to said lamp filament means, the magnitude of said second AC voltage signal decreasing as said DC voltage signal is adjusted to said second level from said first level, the magnitude of said third AC voltage signal when said DC voltage signal attains said second level remaining at a value at least equal to its value when said DC voltage signal is at said first level.

5,055,747

SELF-REGULATING, NO LOAD PROTECTED ELECTRONIC BALLAST SYSTEM

Douglas A. Johns, West Palm Beach, Fla., assignor to Intent Patents A.G., Yaduz, Liechtenstein

Filed Jul. 20, 1990, Ser. No. 554,909

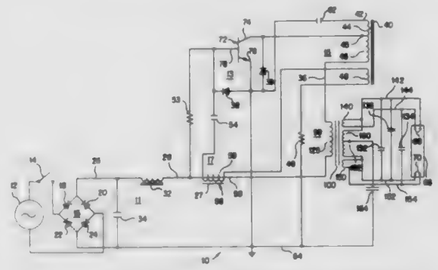
Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—307 **20 Claims**

7. A self-regulating, no load protected electronic ballast system having a power source for actuating at least one gas discharge tube with a regulated current and limited voltage to maintain said gas discharge tube input and output power at predetermined values, comprising:

(a) filter means connected to said power source for maintaining at an output a substantially smooth direct current voltage signal relative to a power supply reference;

(b) induction means coupled to said filter means and having a tapped primary winding providing an auto-transformer configuration for establishing the magnitude of said regulated current, said induction means having a trigger control winding for generating a switching signal, said induction means further including no-load protection means for generating a voltage across said gas discharge tube responsive to said regulated current and for maintaining said output voltage at a predetermined value when said gas discharge tube is decoupled from said electronic ballast system, said no-load protection means having a transformer with a primary winding coupled in series relation with said filter means and said tapped primary winding of said induction means, said transformer including a multiplicity of secondary windings, said multiplicity of secondary windings includes a center tapped tuned high voltage secondary winding wherein said center tap is capacitively coupled to said power supply reference for providing direct current isolation between said high voltage secondary and said primary winding, said primary winding forming a variable inductance for reducing said regulated



current when said gas discharge tube is decoupled from said ballast system;

(c) switching means being feedback coupled to said induction means for establishing said regulated current, said switching means including regulation means for maintaining said power output of said gas discharge tube at a predetermined and substantially constant value, said regulation means including a toroidal transformer having (1) a first winding having one end coupled to said primary winding of said no-load protection means and an opposing end coupled to said output of said filter means for generating a feedback signal responsive to said regulated current, and (2) a second winding coupled in series relation with said trigger control winding and said switching means for generating a control signal additive with said switching signal responsive to said feedback signal.

5,055,748

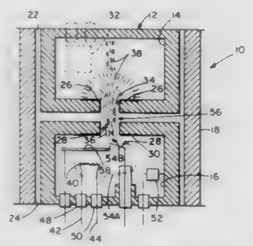
TRIGGER FOR PSEUDOSPARK THYRATRON SWITCH

Nicholas Reinhardt, Lexington, Mass., assignor to Integrated Applied Physics Inc., Pasadena, Calif.

Filed May 30, 1990, Ser. No. 530,205

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—335 **17 Claims**



1. A trigger for a high power electronic pseudospark thyratron switch, comprising:

an evacuated envelope back filled with a selected elemental gas at a predetermined pressure;

an anode having a first aperture located within the envelope;

a cathode having a second aperture located within the envelope at a predetermined distance from the anode, said anode and cathode being disposed opposite each other, with said first and second apertures in alignment;

an elongated trigger electrode located within the envelope such that electrical discharges therefrom will inject electrons through one of said apertures into the space between the anode and cathode;

insulating means disposed about and enclosing the trigger electrode from a point a predetermined distance below the tip of said electrode to the point where the trigger electrode electrical connection passes through the envelope;

auxiliary discharge electrode means including a filament for providing surface flashover across said insulating means when a trigger pulse is applied to the trigger electrode; and

means for supplying electrical power to said filament.

5,055,749

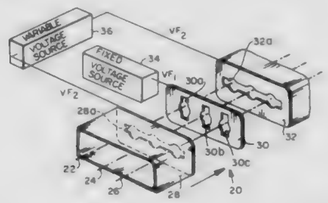
SELF-CONVERGENT ELECTRON GUN SYSTEM

Hsing-Yao Chen, Barrington, and Richard M. Gorski, Arlington Heights, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 392,630, Aug. 11, 1989. This application Sep. 6, 1990, Ser. No. 579,128

Int. Cl.[5] H01J *29/70, 29/76*

U.S. Cl. 315—368 R **24 Claims**



1. In a three-beam inline electron gun system for a color cathode ray tube having a screen and a partially self-converging yoke which partially but incompletely converges the three beams and undesirably imparts astigmatism to the beams in off-center regions of the screen, apparatus comprising:

an electron beam source for developing three electron beams;

focusing means for focusing said three electron beams at the screen of the tube, said focusing means being constructed and arranged such that changes in focusing field strength alter beam convergence;

astigmatism correcting lens means for developing an astigmatic field component in the path of each of said beams when said lens means is appropriately excited; and

means for modulating the strength of said astigmatic field component as a function of beam deflection angle to at least partially compensate for said yoke-induced astigmatism, said modulating of said astigmatic field component also modulating said focus field strength and thereby creating partial dynamic convergence effects;

said correcting lens means including electrode means having outer beam apertures shaped to create field-strength-dependent asymmetrical outer beam fields effective also to produce partial dynamic convergence, the dynamic convergence effects of said yoke, said focusing means and said correcting lens means combining additively.

5,055,750

AIR DAMPER OPERATING SYSTEM OF VEHICLE AIR CONDITIONERS

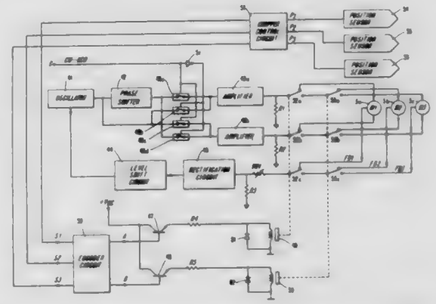
Takashi Fukui, and Hironobu Kawai, both of Aichi, Japan, assignors to Asmo Co., Ltd., Kosai, Japan

Filed Sep. 25, 1990, Ser. No. 587,849

Claims priority, application Japan, Sep. 28, 1989, 1-114087[U]; Oct. 3, 1989, 1-258520

Int. Cl.[5] H02P *1/00*

U.S. Cl. 318—254 **1 Claim**



1. An air damper operating system of vehicle air conditioners comprising:

a single operating circuit operating a plurality of ultrasonic motors;

said operating circuit containing an oscillator generating an alternating current signal, a phase shifter shifting said alternating current signal and a feedback means controlling a frequency of an alternating current signal of an oscillator by a feedback signal of an ultrasonic motor;

a revolving direction transfer switch means capable of transferring an output signal from said oscillator and phase shifter in both normal and reverse directions in response to an input signal;

a switching supply means containing a motor transfer switch and an amplifier capable of switching output signals of said oscillator and phase shifter via said revolving direction transfer switch means to a plurality of ultrasonic motors so as to supply with;

a feedback signal transfer switch means capable of switching feedback signals from said ultrasonic motors to said feedback means so as to supply with;

position sensors provided for said ultrasonic motors respectively and generating position signals when said ultrasonic motors are rotated to the predetermined positions; and

a time-division switching means generating a time-division pulse signal from which said ultrasonic motor starts revolving until said position sensor generates a position signal and working to switch said switching supply means and feedback signal transfer switch means.

5,055,751

BRUSHLESS MOTOR CONTROL SYSTEM

John S. MacKelvie, R.R. #3, Keene, Ontario, Canada K0L 2G0

Filed Jan. 24, 1990, Ser. No. 469,790

Claims priority, application United Kingdom, Jan. 24, 1989, 8901475; Mar. 30, 1989, 8907215

Int. Cl.[5] H02P *6/02*

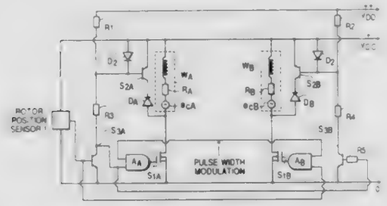
U.S. Cl. 318—254 **24 Claims**

1. In a brushless DC motor having a stator coil connected between a source of DC power voltage and circuit common and in which an alternating counter-emf exists, a circuit for converting stored inductive energy in said stator coil into useful motor mechanical energy, said circuit comprising:

a) first switch means connected in series between said stator

coil and said circuit common for selectively switching current through said stator coil to circuit common during a positive torque producing half-cycle of said alternating counter-emf, thereby maintaining a predetermined average value of said current,

b) second switch means connected in series with a free-wheeling diode means across said stator coil for re-circulating said current through said stator coil when said first switch means is open and back-emf generated by said coil exceeds said counter-emf by an amount sufficient to forward-bias said diode means, whereby said current re-circulating through said stator coil results in positive torque while said first switch means is open,



c) rotor position sensor means for generating a first plurality of control pulses for controlling operation of said second switch means responsive to positioning of a rotor of said DC motor, said control pulses being in synchronism with said alternating counter-emf,

d) a pulse modulation circuit for generating a second plurality of control pulses, and

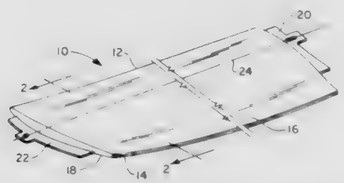
e) a logic circuit for receiving said first and second plurality of control pulses and in response controlling operation of said first switch means in synchronism with said counter-emf.

5,055,752

METHOD FOR MACHINING AIRFOILS

George W. Leistensnider, South Windsor; Alfred J. Albetski, Enfield; Russell S. Welz, Tolland, and Carl E. Petersen, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 20, 1990, Ser. No. 513,320
Int. Cl.[5] G05B *19/42;* **G01B** *5/20;* **B21D** *5/14*
U.S. Cl. 318—570 **2 Claims**



1. A method for machining an elongated edge of a workpiece utilizing a numerically controlled machining system, comprising the steps of:

(a) positioning the workpiece in fixture means of the system;

(b) positioning a probe in a holder which is part of the system and moveable relative to the fixture means;

(c) moving, under the direction of a machine program, the holder and fixture means relative to each other to cause the probe to contact a plurality of points on the workpiece along the length of and adjacent to the edge to be machined, and generating by such contacts data indicative of the position of such contacted points relative to the fixture means;

(d) storing in a memory of the system such contacted point position data;

(e) storing in the memory of the system preselected data indicative of desired after machining dimensions of the workpiece;

(f) removing the probe from and positioning a cutting tool in the holder; and

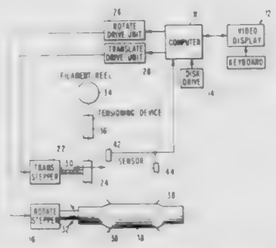
(g) machining the elongated edge of the workpiece under the direction of a machine program which accesses the stored data and causes the cutting tool to follow the elongated edge of the workpiece, cutting the edge to preselected dimensions as the tool travels relative thereto, the fixture means and holder being reoriented relative to each other as the tool moves along the edge to maintain the tool in appropriate angular and positioned relation to the workpiece over the length of the edge.

5,055,753

PROGRAMMABLE SERVOMOTOR COIL WINDER

Donald R. Hermanson, New Hope; Steven A. Prokosch, North St. Paul, and Daniel M. Jenson, Robbinsdale, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 9, 1990, Ser. No. 506,727
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—571 **3 Claims**



1. A method of computer control and operator interface for winding coils on a rotatable arbor with a translatable head, comprising the steps of:

moving said arbor and said head alternatively in a series of discrete steps;

controlling movement of said arbor and said head in each of said steps by commands from said computer, said commands specifying arbor and head acceleration and velocity; and

interrupting said computer commands periodically and displaying a computer-generated message prompting operation action.

5,055,754

APPARATUS FOR DETECTING AN EXCESSIVE POSITION ERROR IN A SERVO SYSTEM

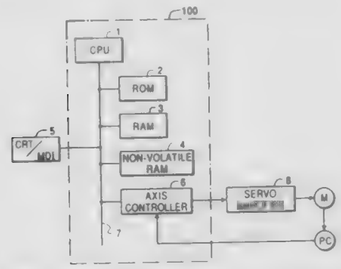
Hajimu Kishi, Hino; Naoki Fujita, Minamitsuru, and Haruyuki Ishikawa, Shinjuku, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP89/00540, § 371 Date Jan. 10, 1990, § 102(e) Date Jan. 10, 1990, PCT Pub. No. WO89/12266, PCT Pub. Date Dec. 14, 1989
PCT Filed May 30, 1989, Ser. No. 455,311
Claims priority, application Japan, Jun. 1, 1988, 63-132553
Int. Cl.[5] G05B *23/02*
U.S. Cl. 318—565 **8 Claims**

1. An apparatus for determining if an actual position error is an excessive position error in a servo system in which a pulse distribution amount of movement command pulses is periodically distributed in response to movement commands, the servo system having a position loop gain, comprising:

storing means for storing the pulse distribution amount periodically distributed;

calculating means for calculating a permissible value of a position error for the servo system on the basis of the pulse distribution amount stored in said storing means; and



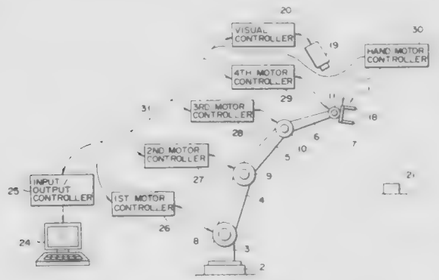
determining means for receiving the actual position error and determining whether the actual position error exceeds the permissible value.

5,055,755

DISTRIBUTION CONTROL APPARATUS

Katsuko Ozawa, Tokyo; Kazuhisa Gotoh, Yokohama; Tomohiro Murayama, Yokohama; Momoyo Tokuda, Yokohama; Satoshi Sumida, Yokohama, and Tetsuo Suzuki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 29, 1990, Ser. No. 529,571
Claims priority, application Japan, May 31, 1989, 1-138856; May 21, 1990, 2-130898
Int. Cl.[5] G05B *19/42*
U.S. Cl. 318—568.11 **21 Claims**



1. A distribution control apparatus comprising:

a plurality of distribution controllers provided for each of a plurality of portions of an object to be controlled, wherein each of said distribution controllers executes a program controlling each of said plurality of portions and wherein one of said distributions controllers serves as a main controller and each of said distribution controllers comprises:

control means for performing control operations with respect to said portions;

detecting means for detecting one of said distribution controllers whose program execution time is shortest;

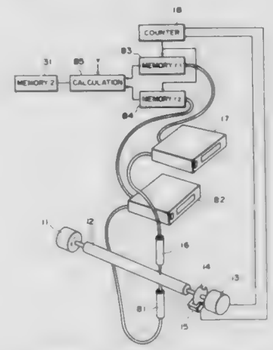
means for causing said one distribution controller detected by said detecting means to serve as the main controller.

5,055,756

TRAVERSE APPARATUS AND IMAGE RECORDING APPARATUS

Keiji Ohkoda, and Hitoshi Inoue, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1989, Ser. No. 392,414
Claims priority, application Japan, Aug. 25, 1988, 63-211508; Aug. 25, 1988, 63-211509
Int. Cl.[5] G05B *6/02*
U.S. Cl. 318—618 **14 Claims**



8. A traverse method comprising the steps of:

measuring diameter data throughout one rotation of a rotary member corresponding to a rotation angle of the rotary member, for pinching and traversing a material to be traversed, from a reference position in a circumferential direction of said rotary member while rotating said rotary member at a constant angular velocity;

calculating and storing rotation speed control data on the basis of the diameter data;

detecting the rotation angle of said rotary member during traversing of the material to be traversed; and

controlling the rotation speed of said rotary member at the pinching portion on the basis of the detected rotation angle and the stored content so as to make a peripheral velocity of said rotary member constant.

10. A traverse apparatus comprising:

a rotary member for pinching and traversing a material to be traversed;

storage means for prestoring rotation speed control data throughout one rotation of said rotary member based on diameter data corresponding to a rotation angle of said rotary member;

detection means for detecting the rotation angle of said rotary member; and

control means for controlling an angular velocity of said rotary member based on an output from said detection means and a content of said storage means so as to make a traverse velocity of the material to be traversed constant.

5,055,757

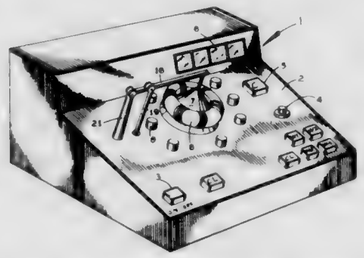
AUTOMATIC TORIOD TURNS COUNTER

Edward Cammarata, 1441 SW. 30th Ave., Pompano Beach, Fla. 33069

Filed Sep. 27, 1990, Ser. No. 589,186
Int. Cl.[5] G01R *31/02*
U.S. Cl. 318—640 **10 Claims**

1. A toroid turns counter for a toroid with at least one winding with turns to be counted by electric counting means connected to said winding, comprising a test winding with an opening for receiving said toroid, a movable contact arm for

electrically closing said opening after the toroid has been received in said opening, activating means coupled to said



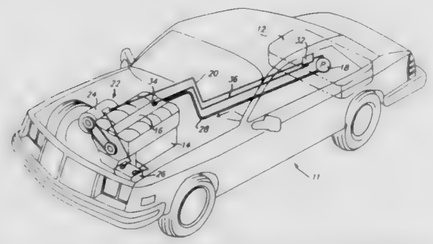
contact arm, and automatic control means coupled to said activating means for controlling closure of said contact arm.

5,055,758

SMART FUEL PUMP CONTROLLER

Darryl A. Hock, Harper Woods, Mich., assignor to Jabil Circuit Company, Madison Heights, Mich.

Filed Mar. 30, 1990, Ser. No. 502,235
Int. Cl.[5] G05D *16/00*
U.S. Cl. 318—645 **21 Claims**



1. A pressure responsive motor drive circuit for fluid delivery systems comprising:
- a pressure transducer which provides an electrical signal in response to a sensed pressure condition;
- an amplifier circuit coupled to said pressure transducer for amplifying said electrical signal to produce an amplified signal;
- an oscillator circuit producing an alternating signal of predetermined frequency;
- a comparator circuit coupled to said oscillator circuit and to said amplifier circuit for producing a pulse train which changes state each time said alternating signal rises above and falls below the level of said amplified signal;

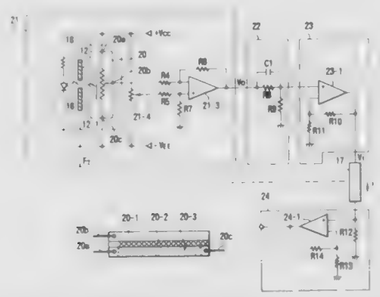
a power transistor circuit coupled to said comparator circuit for providing a pulsed current to drive a motor such that the motion of said motor is controlled by said sensed pressure condition;
- wherein said amplifier circuit includes programmable bias means for the programmable controlling the gain of said amplifier.

5,055,759

SERVO ACCELEROMETER

Norio Miyahara, Saitama, Japan, assignor to Jeco Co., Ltd., Gyoda, Japan

Filed Aug. 9, 1990, Ser. No. 565,230
Claims priority, application Japan, Aug. 10, 1989, 1-205609
Int. Cl.[5] G01P *15/08*
U.S. Cl. 318—651 **5 Claims**



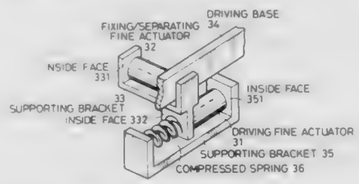
1. A servo accelerometer comprising:
- a pendulum which is swingably supported and has a slit;
- a coil mounted on said pendulum;
- detection means for detecting a displacement amount of said pendulum; and
- servo means for generating a force balanced with a force applied to said pendulum by supplying a current to said coil on the basis of a detection output from said detection means,
- wherein said detection means includes a photopotentiometer for receiving light passing through said slit of said pendulum, and outputting said detection output on the basis of a change in resistance corresponding to a change of light in irradiation position on said potentiometer; and
- said servo means includes a displacement detection circuit for outputting a difference between said detection output from said photopotentiometer and a set value as a detection displacement amount.

5,055,760

LINEAR ACTUATOR DRIVE CONTROL APPARATUS

Masayuki Nashiki, and Motozumi Yura, both of Ooguchi, Japan, assignors to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Feb. 22, 1990, Ser. No. 483,465
Claims priority, application Japan, Feb. 28, 1989, 1-48344
Int. Cl.[5] G05B *11/00*
U.S. Cl. 318—687 **8 Claims**



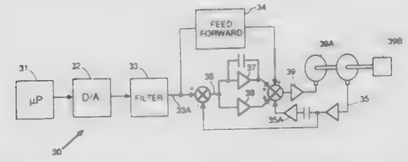
1. A linear actuator drive control apparatus for moving a driving base, said apparatus comprising: at least one driving part provided with a fixing and separating fine actuating means for alternatively affix the driving base and to separate the driving base from said at least one driving part, said at least one driving part driving said driving base by said fixing and separating fine actuating means repeating sequentially affixing and separating of the driving base and said at least one driving part, and a driving control means comprising a speed detecting means for detecting the speed of the driving base and a speed controlling means for controlling a speed of said fine actuating means in accordance with the detected speed of the driving base.

5,055,761

SMOOTH ROTATION BY A GALVANOMETER

James L. Mills, Reno, Nev., assignor to Linear Instruments, Reno, Nev.

Filed Feb. 21, 1989, Ser. No. 313,647
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **15 Claims**



1. A method for smoothly rotating an object to a desired position by use of an electric motor, comprising the steps of:
- calculating a series of discrete step signals simulating a smooth rotation of the object to the desired position by the electric motor, wherein an angular acceleration of the object is equal to a constant times a sine function of time; and

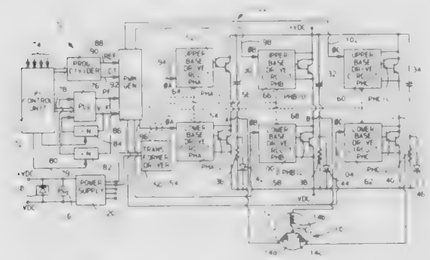
providing the step signals to drive the electric motor.

5,055,762

CURRENT CONTROLLED FULL WAVE TRANSITOR BRIDGE INVERTER FOR A MULTIPLE PHASE AC MACHINE

Robert J. Disser, Dayton, and Richard N. Lehnhoff, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1989, Ser. No. 338,821
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—811 **1 Claim**



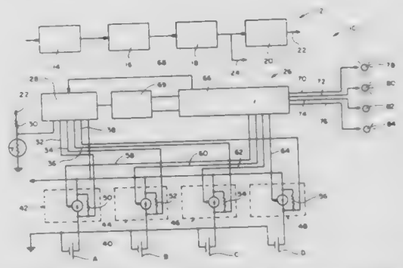
1. Drive apparatus for a multi-phase AC motor comprising in combination:
- bridge inverter means including pairs of bridge transistors linking each motor phase to positive and negative DC supply voltages, each bridge transistor being effective when supplied with bias current for electrically connecting such motor phase to the respective supply voltage;
- a source of regulated alternating current;
- transformer means including a transformer for each motor phase, each such transformer having a primary winding energized by said source of regulated alternating current and a pair of secondary circuits connected to supply bias current to the pair of bridge transistors for the same motor phase, the primary windings being serially connected to form a load for said source of regulated alternating current so that the bias current supplied to all of said bridge transistors by said secondary circuits is controlled by said source of regulated alternating current; and
- logic means for biasing the bridge transistors for each motor phase conductive and non conductive in substantial complementary fashion, thereby to substantially equalize the loading of each respective transformer.

5,055,763

ELECTRONIC BATTERY CHARGER DEVICE AND METHOD

William A. Johnson, Holliston; W. James Budzyna, Whitinsville, both of Mass.; Nicholas J. Smilanich, Rocky River, and Chi-Thien Doan, Olmstead Falls, both of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Sep. 26, 1988, Ser. No. 248,962
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—15 **50 Claims**



1. A device for charging one or more batteries comprising a circuit having terminal means for connecting to the terminal means on one or more batteries to be charged, said circuit including a source of electric energy, controllable switching means connected respectively between the energy source and each battery to be charged, a microprocessor having a control connection to each of the controllable switching means for controlling communication between the energy source and the respective batteries to be charged, said microprocessor including means to sequentially control the switch means to supply charging current to the batteries one at a time in repeating periods, means responsive to the voltage across the terminals of each battery prior to and during each charging period thereof operatively connected to the microprocessor, said microprocessor being programmed to calculate the difference between the battery terminal voltage of each battery prior to and when it is being charged, means to store for each battery the minimum value of said voltage difference during each charging period, and means to terminate a charging operation for a battery when the battery terminal voltage difference being calculated exceeds the minimum stored value of the battery terminal voltage difference by a predetermined amount.

5,055,764

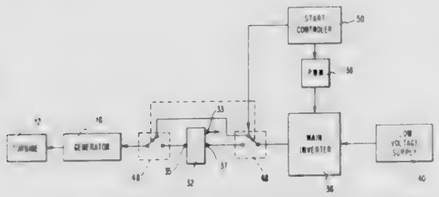
LOW VOLTAGE AIRCRAFT ENGINE STARTING SYSTEM

Gregory I. Rozman; Timothy F. Glennon, and Alexander Cook, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 11, 1989, Ser. No. 448,669
Int. Cl.[5] F02N *11/00*
U.S. Cl. 322—10 **4 Claims**

2. A system for starting an aircraft turbine from a low voltage power supply by energizing a generator coupled to said turbine to operate said generator as a motor during starting, comprising in combination:
- an invertor having a direct current input coupled to said low voltage supply and an alternating current output;
- an autotransformer having a starting mode input tap and a

starting mode output tap, said transformer coupling a stepped up voltage between said input and output taps; means for coupling said output tap to said generator; and



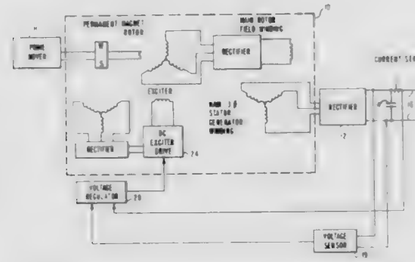
control means for coupling said invertor output initially to said generator during starting and to said input tap after the speed of said generator increases.

5,055,765

VOLTAGE REGULATOR FOR DIRECT CURRENT AIRCRAFT POWER BUS

Gregory I. Rozman, Rockford, Ill., and William R. Owens, Waukesha, Wis., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 4, 1990, Ser. No. 577,307
Int. Cl.[5] H02H *7/06;* **H02P** *9/02*
U.S. Cl. 322—22 **20 Claims**



1. In an aircraft direct current power supply system in which an exciter controls the output of an a.c. generator driven by a variable speed aircraft turbine and the output of the a.c. generator is coupled to a load via a rectifier and a filter capacitor, a variable gain voltage regulator for controlling the d.c. load voltage comprising in combination:

means to compare said d.c. load voltage with a voltage reference, said comparing means generating a signal whose magnitude is a function of the difference between said d.c. load voltage and said d.c. voltage reference; and

means to modify said signal including means to increase the gain of said voltage regulator at relatively high-load currents and decrease said gain at relatively low-load currents.

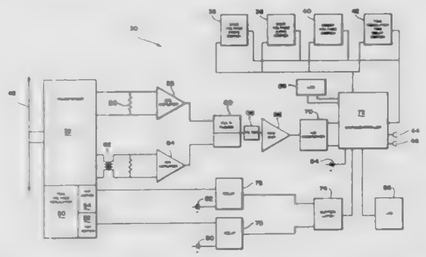
5,055,766

VOLTAGE REGULATOR COMPENSATION IN POWER DISTRIBUTION CIRCUITS

Brian McDermott, Mt Holly, and Robert L. Morgan, Huntersville, both of N.C., assignors to Duke Power Company, Charlotte, N.C.

Filed Jun. 4, 1990, Ser. No. 532,599
Int. Cl.[5] G05F *1/14*
U.S. Cl. 323—255 **12 Claims**

7. In an electrical power distribution circuit including a transformer having a voltage regulator of the tap change under load type for adjusting the output voltage of the transformer, the improvement comprising an apparatus for automatically controlling operation of the voltage regulator to compensate for increases in the electrical current in the distribution circuit, the apparatus comprising means for establishing a peak value for the current in the distribution circuit, means for determining changeable maximum and minimum values for the voltage output of the transformer in relation to the established peak current value, means for monitoring the actual voltage output of the transformer, means for actuating adjusting operation of the voltage regulator to maintain the actual voltage output of



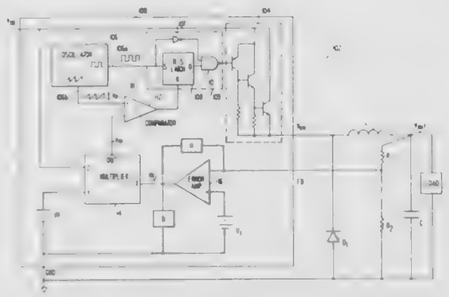
the transformer between the changeable maximum and minimum voltage values, means for monitoring the actual current in the distribution circuit, means for comparing the actual current with the established peak current value, and means for re-establishing the peak current value at the actual current when the actual current has exceeded the peak current value for a predetermined period of time.

5,055,767

ANALOG MULTIPLIER IN THE FEEDBACK LOOP OF A SWITCHING REGULATOR

Carl T. Nelson, San Jose, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.

Filed Jun. 29, 1990, Ser. No. 546,103
Int. Cl.[5] G05F *1/575*
U.S. Cl. 323—285 **10 Claims**



1. In an integrated circuit for use in implementing a feed back loop in a switching voltage regulator circuit, the switching voltage regulator circuit including an input for connection to a source of input voltage for the switching voltage regulator circuit, a current switching means, oscillator means for controlling the one and off switching frequency of the current switching means, and further including error amplifier means in the feedback loop, the integrated circuit comprising:

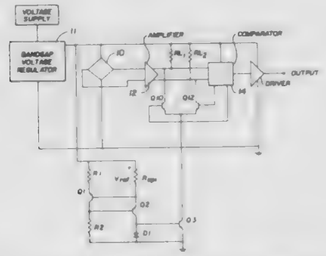
analog multiplier means for providing a signal to control the on and off switching duty cycle of the current switching means, the signal having a magnitude which varies immediately with and substantially in proportion to changes in a value equal to the magnitude of an error signal from the error amplifier means divided by the magnitude of the input voltage of the switching voltage regulator circuit.

5,055,768

TEMPERATURE COMPENSATOR FOR HALL EFFECT CIRCUIT

Mark R. Plagens, Richardson, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 5, 1990, Ser. No. 505,710
Int. Cl.[5] G05F *1/567*
U.S. Cl. 323—368 **5 Claims**



1. In a circuit for sensing the effect of a magnetic field on a Hall effect element formed in a layer of semiconductor material:

(a) a temperature sensitive load resistor connected across the Hall element output;

(b) means for providing a temperature sensitive voltage across a temperature sensitive reference resistor which is inversely proportional to a resistance of the temperature sensitive load resistor; and

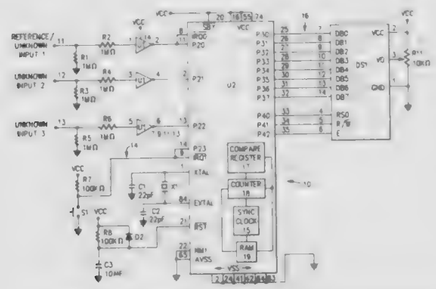
(c) current mirror circuit means for providing a current proportional to the current through the reference resistor to the temperature sensitive load resistor so that voltage across the load resistor varies with temperature in direct relationship with the sensitivity of the Hall effect element.

5,055,769

METHOD AND APPARATUS FOR IDENTIFYING AC SERVICE CONFIGURATION

Philip J. Gentile, East Syracuse, N.Y., assignor to The Fleming Group, Syracuse, N.Y.

Filed Nov. 6, 1989, Ser. No. 432,118
Int. Cl.[5] G01R *25/00*
U.S. Cl. 324—86 **14 Claims**



1. A method for identifying at a remote location the configuration and the phase relationship of a plurality of low frequency alternating current input signals having a preset line period, relative to the configuration and the phase relationship of a plurality of low frequency alternating current signals at a main location, the steps comprising:

a) at said main location, selecting one of said alternating current input signals for designation as a reference signal;

b) deriving the period of said reference signal;

c) determining the phase relationship of the other of said plurality of alternating current input signals relative to said reference signal at said main location;

d) loading a counting means with a value representative of said derived period of said reference signal; and

e) subsequently comparing each of said plurality of low frequency alternating current input signals at a remote location with said derived period for identifying the reference signal for said plurality of alternating current input signals at said remote location,

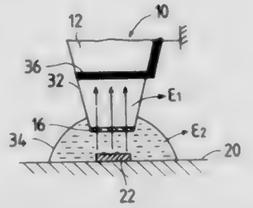
whereby said configuration and said phase relationship at said remote location are determined.

5,055,770

METHOD AND APPARATUS FOR DETECTING VOLTAGE

Hironori Takahashi; Shinichiro Aoshima, and Yutaka Tsuchiya, all of Shizuoka, Japan, assignors to Hamamatsu Photonics K. K., Shizuoka, Japan

Filed Apr. 11, 1990, Ser. No. 507,514
Claims priority, application Japan, Apr. 12, 1989, 1-92153
Int. Cl.[5] G01R *23/16*
U.S. Cl. 324—96 **12 Claims**



1. In a method for measuring a voltage in a selected area of an object to be measured by launching an input light beam into an electrooptic material having a surface of a selected shape and whose refractive index is changed in accordance with an electric field created by the voltage to be measured, and detecting an output light beam from the electrooptic material, the improvement comprising the step of:

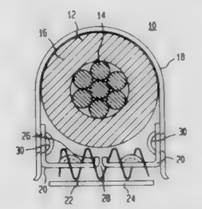
placing an electrically non-conductive medium having a dielectric constant greater than the air between the area to be measured and the electrooptic material such that said medium flexibly conforms to the shape of said surface of the electrooptic material and flexibly conforms to the surface of the area to be measured.

5,055,771

FAULTED CURRENT INDICATORS WITH IMPROVED SIGNAL TO NOISE RATIOS

John G. Gamble, Hull, and Matthew G. Dillon, Hingham, both of Mass., assignors to Sigma Instruments, Inc., Weymouth, Mass.

Filed Aug. 21, 1989, Ser. No. 396,595
Int. Cl.[5] G01R *33/02, 19/00*
U.S. Cl. 324—117 R **16 Claims**



1. A sensor for sensing current in a conductor, comprising:

sensing means for producing an output corresponding to

current flowing through the conductor, said sensing means including a coil;

magnetic means passing through said coil for coupling said coil to said conductor said magnetic means forming a substantially closed loop surrounding the conductor so that the conductor passes through the loop of said magnetic means;

said magnetic means including noise reduction means for reducing the sensitivity of said magnetic means to flux fields emanating from outside the loop of said magnetic means and for diverting flux fields emanating from outside the loop of the magnetic means in opposite directions along the loop;

said magnetic means having given magnetic reluctance and said noise reduction means forming a section within said coil with a higher reluctance than the given reluctance;

said section of said noise reduction means being substantially uniform and free of magnetically distorting materials, and said sensing means being substantially responsive to fields in said magnetic means and free of current inputs from other sources.

5,055,772

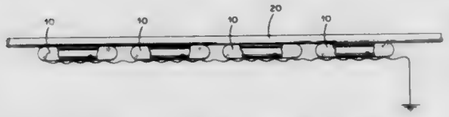
HIGH VOLTAGE IGNITION SYSTEM MONITOR FOR SPARK INITIATED INTERNAL COMBUSTION ENGINES

Robert B. Piejak, Wayland, and Walter P. Lapatovich, Marlborough, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 15, 1989, Ser. No. 407,990

Int. Cl.[5] G01R *31/024, 31/22*

U.S. Cl. 324—122 **11 Claims**



10. A method of approximating the voltage within an insulated high voltage wire of an ignition system comprising:

placing adjacent to the insulated high voltage wire a plurality of enclosures having an inner surface coated with phosphor, each enclosure having a successively increasing amount of noble gas sealed therein and an amount of mercury sufficient to produce mercury vapor within each enclosure, each enclosure being capacitively coupled to the insulated high voltage wire;

determining upon application of a high voltage pulse to the insulated high voltage wire which enclosures emit light indicating the presence of a high voltage pulse within the insulated high voltage wire and non-emission of light indicating the lack of sufficient high voltage pulses with the insulated high voltage wire, the voltage of the pulse being between the breakdown voltage of one of the plurality of enclosures which does not emit light and one of the plurality of enclosures which emits light.

5,055,773

DETECTION AND MEASUREMENT OF A DC COMPONENT IN AN AC WAVEFORM

Lloyd S. Thomas, Gordon, and Evan J. Stanbury, Lakemba, both of Australia, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Apr. 17, 1990, Ser. No. 511,352

Claims priority, application Australia, Apr. 18, 1989, PJ3736

Int. Cl.[5] G01R *29/00;* **H03K** *3/29*

U.S. Cl. 324—132 **3 Claims**

1. A method of detecting a DC component in an AC waveform, comprising the steps of:

separating the AC waveform into positive and negative half-cycle pulses,

squaring each of the half-cycle pulses, accumulating the

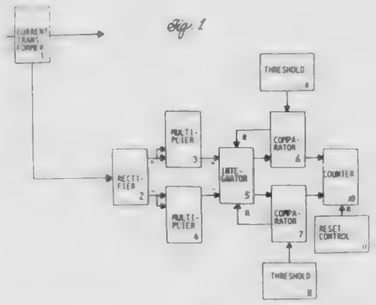


Fig. 1

difference of the squared negative pulses and the squared positive pulses to form an accumulated difference, and

detecting when the accumulated difference exceeds an upper or a lower threshold.

5,055,774

INTEGRATED CIRCUIT INTEGRITY TESTING APPARATUS

Ivor Catt, 15 King Harry Lane, St. Albans, Herts AL3 3AS, United Kingdom

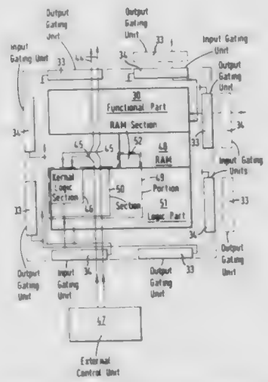
PCT No. PCT/GB88/00570, § 371 Date Jan. 16, 1990, § 102(e) Date Jan. 16, 1990, PCT Pub. No. WO89/00728, PCT Pub. Date Jan. 26, 1989

PCT Filed Jul. 15, 1988, Ser. No. 458,612

Claims priority, application United Kingdom, Jul. 17, 1987, 8716849; Jan. 7, 1988, 8800253

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158 R **17 Claims**



1. In an integrated circuit in which a multiplicity of semiconductor regions of a unitary substrate each contain a component circuit that is adapted to carry out a data function and to transfer signals to, and to receive signals from, others of the circuits, each component circuit includes means to derive a control condition in dependence upon signal responses that occur within the individual circuit according to the integrity of circuitry therein, and means to enable interconnections of the component circuit with others of said component circuits for the purposes of the transfer and reception of signals between them, in dependence upon the derived control condition, the improvement wherein each said region includes logic circuitry

individual to the respective region and operable for determining circuit integrity within that region to derive said control condition in accordance therewith, and said logic circuitry in each region includes means for checking circuit integrity within the respective region by a process which comprises a plurality of successive testing steps that involve progressively extended portions of the region, said checking means comprising a kernel logic section and said process beginning from said kernel logic section without test of its integrity.

5,055,775

TRANSMISSION DEVICE

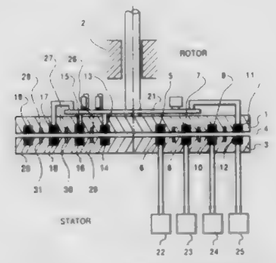
Michael Scherz, Dreikönigstr. 1-3, 8520 Erlangen 1; Wilhelm Jahn, Schwazenbruck, and Wernor Röschlau, Nuremberg, all of Fed. Rep. of Germany, assignors to Michael Scherz, Erlangen, Fed. Rep. of Germany

Filed Mar. 19, 1990, Ser. No. 496,198

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3908982

Int. Cl.[5] G01R *31/00*

U.S. Cl. 324—158 MG **5 Claims**



1. An apparatus for transmitting signals that can be broken down into at least one AC-voltage component from a sender to a receiver unit, comprising:

a rotor including a disc-shaped rotor core element rotatable about an axis and having a plurality of annular rotor grooves formed in one face thereof concentrically about said axis;

a plurality of annular rotor coil windings mounted in said plurality of rotor grooves, respectively, said plurality of rotor coil windings being adapted to connect to one of the sender unit and the receiver unit;

a stator including a disc-shaped stator core element mounted adjacent said rotor core element so as to form a gap therebetween, said stator core element having a plurality of annular stator grooves formed concentrically about said axis in one face of said stator core element which is opposed to said one face of said rotor core element;

a plurality of annular stator coil windings mounted in said plurality of stator grooves, respectively, said plurality of stator coil windings being inductively coupled with said plurality of rotor coil windings, respectively, and being adapted to connect to the other of the sender unit and the receiver unit;

a measurement apparatus mounted on said rotor;

a first means, comprising a first pair of coil windings including a first of said rotor coil windings and a first of said stator coil windings which is aligned with said first rotor coil winding, for transmitting supply voltage from said stator to said measurement apparatus;

digitizing means for digitizing signals outputted from said measurement apparatus;

a second means, comprising a second pair of coil windings including a second of said rotor coil windings and a second of said stator coil windings which is aligned with said second rotor coil winding, for transmitting digitized signals from said digitizing means to said stator;

sensor means for sensing a speed of rotation of said rotor and outputting a speed signal; and

processing means, operatively connected to said speed sensor and said stator, for further processing or displaying said digitizing signals and said speed signal.

5,055,776

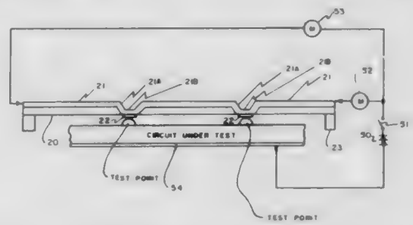
FLEXIBLE MEMBRANE CIRCUIT TESTER

Brian S. Miller, Stafford, and David R. Kaplan, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1990, Ser. No. 551,370

Int. Cl.[5] G01R *1/02, 1/04*

U.S. Cl. 324—158 P **1 Claim**



1. A device for testing a planar electrical circuit having a plurality of test points thereon, said device including:

a relatively rigid frame having an open portion;

a dielectric thin membrane attached to said frame and spanning said open portion;

a plurality of electrodes carried by said membrane;

a respective electrical lead line from each of said electrodes to an edge of said frame, whereby said frame may be juxtaposed with respect to said planar electrical circuit such that the electrodes of said membrane are in close proximity to respective test points on said circuit whereby capacitive coupling is established between each of said test points and a respective electrode when a test voltage is applied to a respective lead line; wherein one side of each of said electrodes is coplanar with one side of said membrane, and said lead lines are mainly on the opposite side from the coplanar side, but each lead line includes a portion extending at least partially through said membrane with a respective electrode, further wherein a high-dielectric layer covers the coplanar side of each electrode.

5,055,777

APPARATUS FOR TESTING OF INTEGRATED CIRCUITS

Riccardo Bonelli, Hamburg, and Gunter Plohn, Bad Schwartau, both of Fed. Rep. of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1990, Ser. No. 472,896

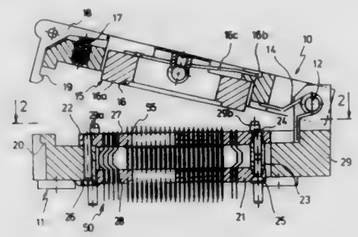
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3903060

Int. Cl.[5] G01R *31/02, 15/12*

U.S. Cl. 324—158 F **12 Claims**

1. An apparatus for testing of integrated circuits (ICs), comprising parallel plates arranged at a fixed distance from each other and including a plurality of aligning bores, comprising further a plurality of equally oriented contact elements made of resilient sheet material, a first straight end portion of said contact elements sitting in a bore of one of said plates and a second straight end portion sitting in an aligning bore of the other of said plates, pressure member means for an IC positioned in relationship to said plates for moving said IC toward the outer side of one of said plates in a predetermined positional relation to contact the contact elements, said first end portions of said contact elements facing said pressure member means and extending slightly beyond said outer side of said one

of said plates and forming a pattern which corresponds to the pattern of contact points of the IC to be tested, while said second end portions of said contact elements are adapted to be connected to a testing device, and the portion of said contact elements between said first and second end portions, lying



between said plates, being offset relative to said end portions and experiencing a deflection if an axial pressure is exerted on said first end portion, said contact element being formed out of a flat strip which is bent at four points to place a center portion offset from the plane defined by said end portions of said strip.

5,055,778

PROBE CARD IN WHICH CONTACT PRESSURE AND RELATIVE POSITION OF EACH PROBE END ARE CORRECTLY MAINTAINED

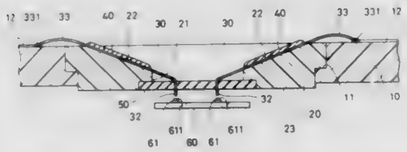
Kazumasa Okubo, Kanagawa; Masao Okubo, Nishinomiya; Yasuro Yoshimitsu, Takatsuki, and Kiyoshi Sugaya, Amagasaki, all of Japan, assignors to Nihon Denshizairyo Kabushiki Kaisha, Amagasaki, Japan

Filed Jul. 5, 1990, Ser. No. 548,401

Claims priority, application Japan, Oct. 2, 1989, 1-258113; Dec. 6, 1989, 1-141180[U]; Dec. 27, 1989, 1-152350[U]

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 P **1 Claim**



1. A probe card for measuring electrical characteristics of an IC chip by contacting a probe to an electrical end on the IC chip, said probe card comprising:

a board provided with printed circuits and an opening at a central portion;

a supporter, in a generally ring shape, having a size which engages inside the opening of the board, said ring supporter having an internal open area;

a plurality of probes having rear ends connected with the circuits and having front ends projected downwardly into said internal open area of the ring supporter; and

an elastic deformable insulative resin layer filling the internal open area of the ring supporter and embedding a portion of the front ends of each probe therein to hold respective positions more accurately.

5,055,779

INTEGRATED BOARD TESTING SYSTEM

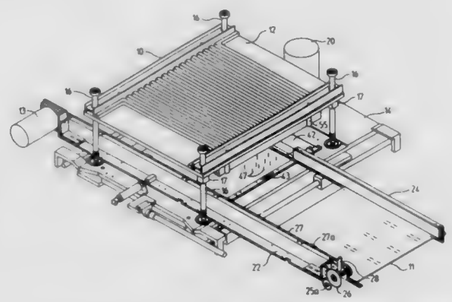
Ronald K. Kerschner; Michael L. Bullock, and James M. Hayes, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 368,732, Jun. 19, 1989, Pat. No. 4,993,136. This application Jul. 9, 1990, Ser. No. 549,866

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 F **9 Claims**



1. Convertible, integrated board handling and tester system for handling and testing a card having electronic devices at fixed predetermined locations, said system comprising:

(a) board handling means for advancing said card from a remote position to a testing position;

(b) convertible fixture means for supporting said card for electronic testing at said testing position; wherein said fixture means comprises a lower probe plate having an elongated latch member secured to each of first and second opposite sides thereof; wherein each said latch member comprises spaced-apart cantilever strips; wherein said strips are separated by a first distance; wherein at a predetermined location in each said latch member said strips are spaced from each other a second distance which is greater than said first distance to form a keyhole opening;

(c) testing means having connector contacts at fixed predetermined locations, said testing means being adapted to temporarily connect to said electronic devices on said card by means of said connector contacts for conducting electronic signals to and from said electronic devices;

wherein said board handling means and said fixture means are detachably secured to said testing means.

5,055,780

PROBE PLATE USED FOR TESTING A SEMICONDUCTOR DEVICE, AND A TEST APPARATUS THEREFOR

Ryouichi Takagi; Tetsuo Tada, and Masanobu Kohara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 474,609

Claims priority, application Japan, Mar. 9, 1989, 1-56718

Int. Cl.[5] G01R *1/02*

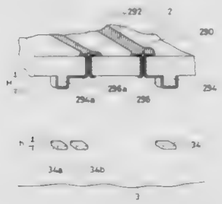
U.S. Cl. 324—158 F **7 Claims**

1. A test apparatus for a semiconductor device for testing a semiconductor device having electrode pads formed on a semiconductor wafer, the test apparatus comprising:

a tester for testing said semiconductor device;

a prober plate, comprising a base plate having a main surface and having portions homogenous with the base plate protruding from said main surface in a disposition corresponding to said electrode pads of said semiconductor wafer in said main surface and conductive probers formed

on the surface of said protruding portions to serve as contact parts with said electrode pads; and



switching means, connected to said tester and to each of said probers for switching said probers electrically to select one of said probers to be connected to said tester.

5,055,781

ROTATIONAL ANGLE DETECTING SENSOR HAVING A PLURALITY OF MAGNETORESISTIVE ELEMENTS LOCATED IN A UNIFORM MAGNETIC FIELD

Shinichi Sakakibara, Handa, and Mamoru Matsubara, Toyoake, both of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed May 10, 1990, Ser. No. 521,847

Claims priority, application Japan, May 13, 1989, 1-120115; May 13, 1989, 1-120116; Aug. 21, 1989, 1-214675

Int. Cl.[5] H01L *43/08;* **G01R** *33/06;* **G01B** *7/30;* **G01P** *3/44*

U.S. Cl. 324—207.21 **8 Claims**

1. A sensor for detecting a rotational angle of a rotating shaft comprising:

a substrate having a planar surface, said substrate being mounted on a base plate with the planar surface of said substrate facing a magneto member, a clearance provided between said base plate and tip ends of opposite facing sides of said magneto member, said clearance being smaller than a thickness of said substrate;

a detecting element including a plurality of blocks of magnetoresistance element deposited on the planar surface of said substrate; and

said magneto member having a pair of magneto poles facing each side end of said substrate respectively and providing a magnetic field covering at least the planar surface of said substrate, said magneto member being substantially C-shaped so as to provide said opposite facing sides, said magnetic field provided between said opposite facing sides in which said substrate is positioned, the planar surface of said substrate positioned in parallel with the direction of magnetic flux of said magnetic field, the opposite facing sides of said magneto member for providing said magnetic field therebetween being greater than said substrate;

wherein one of said detecting element and said magneto member is mounted on said rotating shaft, and the other thereof is disposed at a certain position relative to said rotating shaft.

5,055,782

METHOD FOR DETERMINING THE ABSOLUTE POSITION OF A POINTER IN AN INDICATING DEVICE, AND INDICATING DEVICE

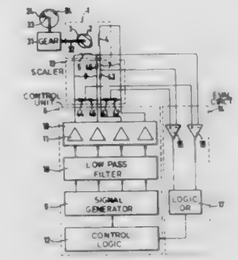
Klaus Kronenberg, Schwalbach/Ts, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed May 31, 1990, Ser. No. 531,034

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919926

Int. Cl.[5] G01B *7/30*

U.S. Cl. 324—207.25 **5 Claims**



1. A method of determining the position of a pointer in an indicating device, the device having a rotating-field motor with a rotor, there being a gearing interconnecting the rotor and the pointer, the pointer being moved by the rotor of the rotating-field motor via the gearing, the method comprising the steps of

moving the pointer by rotation of a field in the motor in a predetermined direction of rotation against a stop, the field being rotated further in the predetermined direction of rotation;

detecting a signal induced in the field-producing part of the motor by a movement of the rotor opposite to the direction of the rotating field; and

determining the angular position of the rotor at which the pointer rests against the stop from the angular position of the rotating field upon the occurrence of the induced signal.

5,055,783

MAGNETIC FIELD STRENGTH INDICATOR FOR USE PRIOR TO A MAGNETIC PARTICLE INSPECTION PROCEDURE

William F. Jones; Alfred E. Hinton, both of Charlotte; Frederick M. Hibbert, Mooresville, all of N.C., and Ernest E. Jackson, York, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 5, 1989, Ser. No. 402,575

Int. Cl.[5] G01N *27/84;* **G01R** *33/12, 35/00*

U.S. Cl. 324—216 **12 Claims**



1. A field strength indicator for use prior to a magnetic

particle inspection procedure employing a liquid, non-curable spray-on solution containing magnetic particles and a magnetized test piece, the indicator comprising:

a shim having first and second flat opposite parallel surfaces; and

at least one series of standard indications disposed in the same direction, formed in the first flat surface of the shim and corresponding in size to expected size flaws of a part to be tested, the shim being held in contact with the magnetized test piece at the second flat surface, to thereby impart an applied magnetic field from the test piece into the shim, each indication of the at least one series being an artificial flaw, said magnetic particles being trapped by the artificial flaws when a magnetic field of sufficient strength is applied to the test piece.

5,055,784

BRIDGELESS SYSTEM FOR DIRECTLY MEASURING COMPLEX IMPEDANCE OF AN EDDY CURRENT PROBE

Douglas J. Jaeger, and Howard P. Groger, both of Radford, Va., assignors to American Research Corporation of Virginia, Radford, Va.

Continuation of Ser. No. 129,144, Dec. 7, 1987, abandoned. This application Apr. 5, 1990, Ser. No. 504,698

Int. Cl.[5] G01R *33/12, 27/02;* **G01N** *27/90*

U.S. Cl. 324—233 **24 Claims**



1. An eddy current measuring system comprising:

an eddy current measuring probe having an electromagnetic coil;

a reference resistor connected in series with said electromagnetic coil for producing a reference resistor value;

means for applying a first driving signal to said coil;

means for producing second and third voltage signals respectively representing a probe current in said coil and a probe voltage across said coil, said second and third signals being produced during the time said driving signal is applied to said coil;

means for analog-to-digital converting said second and third signals;

means for determining a plurality of magnitude and phase angle values representing the complex impedance of said probe from said converted second and third signals; and

storing means connected to said determining means for receiving and storing said plurality of magnitude and phase angle values from said determining means wherein said converted values from said second signals represent probe current values and said converted values from said third signals represent probe voltage values and for storing said reference resistance value received from said reference resistor and for providing said reference resistance value to said determining means;

wherein said means for determining produces a plurality of digital signal values representing probe current by dividing sample values of said second voltage signal by said reference resistance value wherein each said second voltage sample is represented by a voltage V_2 across said reference resistance R as $I=V_{2/R}$ and for producing a plurality of digital values representing said third voltage signal where each said third voltage value is represented by a voltage (V_1-V_2), wherein V_1 is the voltage across a serial interconnection of said coil and said reference resistance, said voltages V_1 and V_2 being said voltage signals representative of the instantaneous current (I) through said coil and the instantaneous voltage (V_1-V_2) across said coil.

5,055,785

SUPERCONDUCTIVE MAGNETO RESISTIVE APPARATUS FOR MEASURING WEAK MAGNETIC FIELD USING SUPERCONDUCTIVE MAGNETO-RESISTIVE ELEMENT

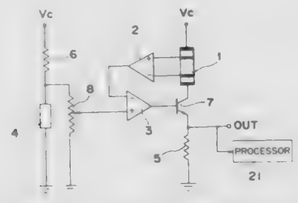
Hidetaka Shintaku; Shuhei Tsuchimoto; Nobuo Hashizume, all of Nara, and Shoei Kataoka, Tanashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 3, 1989, Ser. No. 374,880

Claims priority, application Japan, Jul. 4, 1988, 63-167593

Int. Cl.[5] G01R *33/035, 33/06*

U.S. Cl. 324—248 **4 Claims**



1. An apparatus for measuring magnetic field using a magneto-resistive element comprising:

a superconductive magneto-resistive element which changes electric resistance in response to the magnetic field coupled to a reference current source of a first voltage;

at least one pair of current electrodes provided on a surface of said element for supplying current said at least one pair of current electrodes including a first and second electrode;

at least one pair of voltage electrodes provided on said element for deriving a voltage generated on the surface of the element said at least one pair of voltage electrodes including a first and second voltage electrode;

means for setting a second reference voltage operatively connected to said reference current source;

means for comparing the output voltage, of the element with the second voltage, the output voltage of the element being output from the second voltage electrode and the first voltage output from the first voltage electrode; and

control means for controlling current to equalize the output voltage of the element when there is a difference between the output and second voltages so that the strength of the magnetic field can be measured dependent on a current value when both the output and reference voltages are equal.

5,055,786

BARBER-POLE MAGNETORESISTIVE MAGNETIC FIELD SENSOR

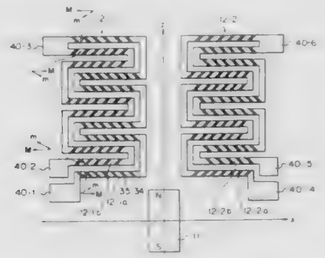
Noboru Wakatsuki; Shigemi Kurashima, both of Kawasaki; Nobuyoshi Shimizu; Michiko Endoh, both of Yokohama, and Akira Tanaka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 233,428, Aug. 18, 1988, Pat. No. 4,967,598. This application Mar. 16, 1990, Ser. No. 494,669

Claims priority, application Japan, Aug. 18, 1987, 62-204381; May 7, 1988, 63-110882

Int. Cl.[5] G01R *33/06*

U.S. Cl. 324—252 **4 Claims**



1. A barber-pole type magnetoresistive sensing element, comprising:

first and second zig-zag patterns of magnetic thin film lying substantially in a common plane, each film pattern comprising a first plurality of spaced, parallel segments extending in a first direction and a second plurality of spaced, parallel segments extending in a second direction transverse to the first direction and respectively, integrally interconnecting the adjacent first segments at the opposite ends thereof in an alternating sequence in accordance with the zig-zag pattern;

the respective first segments of the first and second zig-zag patterns being interdigitized and parallel, spaced relationship and with the respective, second segments thereof being in spaced and parallel, aligned relationship;

the first and second zig-zag patterns of magnetic thin films having respective, first ends defined corresponding input terminal pads and respective, second ends connected together to form a common output terminal pad; and

first and second patterns parallel, spaced line segments conductive material having a higher conductivity than that of the magnetic thin film, formed on the respective first and second zig-zag patterns of magnetic thin film, the first conductive pattern line segments being angularly inclined, relatively to the first plurality of parallel segments of the first zig-zag pattern, in a first sense, and the second conductive line segments being angularly inclined, relatively to the first plurality of parallel segments of the second, zig-zag pattern in a second, opposite sense, the first and second conductive material line segment patterns producing respective, first and second net bias current flow paths in the corresponding first and second magnetic thin film patterns which are angularly inclined with respect to each other.

5,055,787

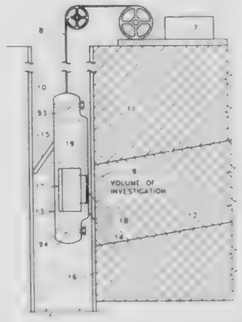
BOREHOLE MEASUREMENT OF NMR CHARACTERISTICS OF EARTH FORMATIONS

Robert L. Kleinberg, Ridgefield; Douglas D. Griffin, Bethel; Masafumi Fukuhara; Abdurrahman Sezginer, both of Ridgefield, all of Conn., and Weng C. Chew, Champaign, Ill., assignors to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 368,916, Jun. 19, 1989, Pat. No. 4,933,638, which is a continuation of Ser. No. 901,084, Aug. 27, 1986, abandoned. This application Dec. 5, 1989, Ser. No. 431,368

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—303 **60 Claims**



1. An apparatus for investigating a characteristic of earth formations traversed by a borehole, comprising a body adapted for longitudinal movement in the borehole, said body comprising:

first means for producing a static and substantially homogeneous magnetic field in volume of said formation directed to one side of the body, said volume being elongated in the longitudinal direction of the borehole axis and having a substantial cross-sectional extent in a plane perpendicular to the direction of thhe borehole axis; and

second means for radiating said volume of formation with oscillating magnetic fields and for detecting a signal representative of nuclear magnetic precession of a population of particles in said formation.

5,055,788

BOREHOLE MEASUREMENT OF NMR CHARACTERISTICS OF EARTH FORMATIONS

Robert L. Kleinberg, Ridgefield; Douglas D. Griffin, Bethel; Masafumi Fukuhara, and Abdurrahman Sezginer, both of Ridgefield, all of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 368,916, Jun. 19, 1989, Pat. No. 4,933,638, which is a continuation of Ser. No. 901,084, Aug. 19, 1986, abandoned. This application Dec. 5, 1989, Ser. No. 431,256

Int. Cl.[5] G01R *33/20*

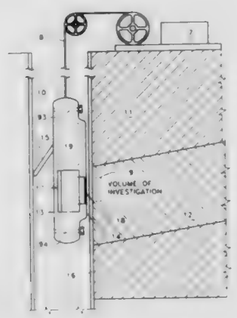
U.S. Cl. 324—303 **13 Claims**

1. An apparatus for investigating a characteristic of earth formations traversed by a borehole, comprising a body adapted for longitudinal movement in the borehole, said body comprising:

first means for producing a static and substantially homogeneous magnetic field in a volume of said formation directed to one side of the body;

second means for radiating said volume of formation with oscillating magnetic fields and for detecting signals representative of nuclear magnetic precession of a population of particles in said formation, said second means including: antenna means; circuit means for driving said antenna means to produce oscillating magnetic fields at a frequency in the neighborhood of the NMR precession fre-

quency of said population of particles in said volume of the formation; and Q-switching means for rapidly switching the Q value of said antenna means form a very high



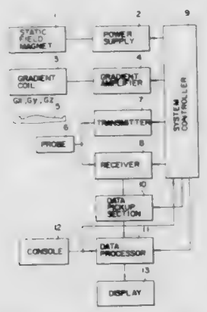
value to a low value, said Q-switching means comprising a field effect transistor, and optical-electronic means for switching said transistor on and off.

5,055,789

MAGNETIC RESONANCE IMAGING SYSTEM

Masafumi Kondo, and Kozo Satoh, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 16, 1990, Ser. No. 480,767
Claims priority, application Japan, Feb. 17, 1989, 1-37640
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **8 Claims**



1. An MRI system for applying a phase encoding gradient field, a read-out gradient field, and an RF field to an object to be examined which is placed in a homogeneous static field in accordance with a predetermined pulse sequence so as to excite MR at a specific slice plane of the object, thereby detecting an MR signal from the object and visualizing the slice plane, comprising:

data acquiring means for acquiring all the data required for image reconstruction of the slice plane excited by the RF field within a time in which magnetization in the slice plane is relaxed due to a transverse magnetization relaxation phenomenon by switching the read-out gradient field to positive and negative phases by applying the phase encoding gradient field as a plurality of pulses during the read-out gradient field switching;

image reconstructing means, for obtaining positive and negative time phase images, comprising means for separating all acquired data into separated data including data which is acquired when the read-out gradient field is at positive time phases and data which is acquired when the read gradient field is at negative time phases, for rearranging the separated data in a Fourier space of an MR density distribution at the slice plane of the object, and for subsequently performing Fourier transform of the respective data;

correcting means comprising means for independently correcting image degradation factors with respect to the positive and negative time phase images obtained from said correcting means; and

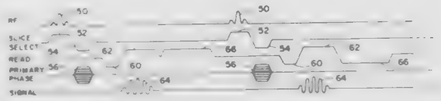
image synthesizing means for obtaining an MR image of the slice portion by synthesizing both time phase images corrected by said correcting means.

5,055,790

SSFP IMAGING TECHNIQUE WITH IMPROVED T1 CONTRAST

Alan M. Siuciak, Willoughby; Chandralekha Chatterjee, Richmond Heights, and Neil D. Palmer, Euclid, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Jul. 13, 1989, Ser. No. 379,075
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **18 Claims**



1. A method of steady state free precession magnetic resonance imaging of a selected region of a subject, the method comprising:

a) creating a static magnetic field through the selected region;

b) applying an RF excitation pulse in the presence of a slab selection magnetic field gradient to excite nuclear magnetic spins in the selected region;

c) after the slab selection magnetic field gradient, applying at least one rephasing magnetic field gradient pulse which compensates for dephasing of spins due to the slab selection magnetic field gradient;

d) applying at least one magnetic field gradient pulse to encode the excited spins;

e) detecting the encoded spins to generate a magnetic resonance view;

f) applying a residual magnetic resonance dephasing gradient pulse to prevent (i) residual magnetization from preceding cycles and (ii) residual magnetization from a present cycle from refocusing during the detecting step of the next cycle;

g) cyclically repeating steps (b) through (f) to generate a plurality of views with a plurality of encodings;

h) reconstructing an image representation from the views.

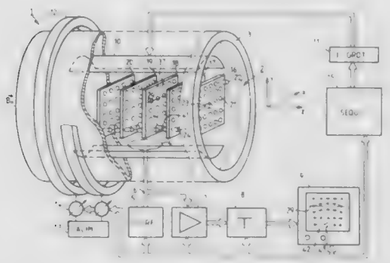
5,055,791

NMR MACHINE PHANTOM AND A METHOD OF MEASURING THE CHARACTERISTICS OF A MAGNETIC FIELD USING SUCH A PHANTOM

Patrick LeRoux, Paris; Agnés Malgouyres, Palaiseau, and Jean Bossaert, Ablis, all of France, assignors to General Electric CGR S.A., Paris, France

PCT No. PCT/FR87/00259, § 371 Date Jan. 5, 1989, § 102(e) Date Jan. 5, 1989, PCT Pub. No. WO88/00340, PCT Pub. Date Jan. 14, 1988
PCT Filed Jul. 2, 1987, Ser. No. 310,723
Claims priority, application France, Jul. 8, 1986, 86 09894
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **11 Claims**

1. A NMR imaging machine including a phantom provided by a means for confining a resonating material in discreet locations, said locations being distributed in the form of a matrix along directions orthogonal to each other and said locations being evenly spaced from each other in a meshed network, said machine further including a main image forming



axes defined by gradients of said machine wherein said orthogonal directions of said phantom are parallel to the main image forming axes of said machine.

5,055,792

MINIATURIZED SURFACE PROBES

Hanan Keren, Kfar Saba, Israel, assignor to Elscint, Limited, Haifa, Israel

Filed Jan. 9, 1990, Ser. No. 462,469
Claims priority, application Israel, Jan. 27, 1989, 089107
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **8 Claims**

1. A miniturized surface probe for use in magnetic resonance (MR) data acquisition comprising:

a tuning and matching section,

a probe section for use juxtaposed to the patient,

said probe section being spaced apart from said tuning and matching section,

a coupling section for coupling said tuning and matching section to said probe section, said coupling section comprising a shielded cable coupled at one end thereof to said tuning and matching section,

said shielded cable having a length that is an integral multiple of a half-wave length at the Larmor frequency being used for data acquisition,

said tuning and matching section comprising four separate conductors serially connected to form a closed circuit coil with a serially connected tuning capacitor between at least two of said conductors, each quarter of the closed circuit coil comprising one of each of the four separate conductors,

said tuning capacitor tuning said closed circuit coil to at least one Larmor frequency used for data acquisition, and

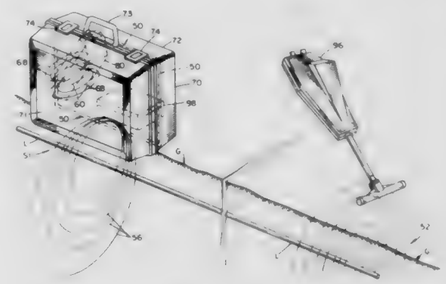
said probe section consisting of the central conductor of said shielded cable arranged to form a probe loop.

5,055,793

PORTABLE TRANSMITTER APPARATUS FOR INDUCING ALTERNATING CURRENT IN A BURIED METALLIC LINE

Donald M. Mulcahey, San Dimas, Calif., assignor to Thomas W. Mulcahey, Glendale, Calif.

Filed May 8, 1990, Ser. No. 520,528
Int. Cl.[5] G01V *3/11, 3/165*
U.S. Cl. 324—326 **16 Claims**



1. In a system of apparatus for locating an underground metallic line, an improved transmitter apparatus for use at a first station above ground to inductively create an alternating current in the line and to thereby generate an alternating electromagnetic field about an extended length of the line, while a retriever at a second station above ground makes measurements within that alternating electromagnetic field which are determinative of both the horizontal location and the depth of the line at that station, said transmitter apparatus comprising:

a portable transmitter circuit for providing an alternating current at a predetermined operating frequency;

a tank circuit including a loop antenna and a capacitor tuned to substantially the same operating frequency as said transmitter circuit;

a ferrite core antenna incorporated into said transmitter circuit and driven by said alternating current and electrically isolated from said tank circuit for producing magnetic flux coupled to said tank circuit; and

means for supporting said loop antenna and said ferrite core antenna in such positions relative to each other and to the ground that the axis of the loop is substantially horizontal and also perpendicular to the direction of the underground metallic line, the longitudinal axis of said core extends within and through the loop of said loop antenna, and a magnetic field generated from said loop antenna by current induced therein by the magnetic flux produced by said ferrite core drives lines of flux substantially perpendicular to and underneath the underground line.

5,055,794

STATIC INDUCTION ELECTRIC APPARATUS

Takeshi Kawashima, Ako, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1989, Ser. No. 300,847
Claims priority, application Japan, Jan. 27, 1988, 63-14691
Int. Cl.[5] G01N *27/60*
U.S. Cl. 324—453 **1 Claim**

1. a static induction electric apparatus comprising:

an electrical winding assembly including a winding and an electrical insulation for electrically insulating said winding;

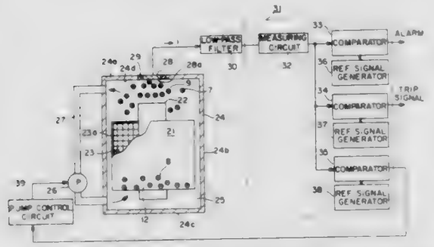
an insulating oil for cooling and insulating said winding;

an oil tank having an inner surface and containing therein said winding assembly and said insulating oil;

means for circulating said insulating oil through said tank for cooling said winding assembly;

a sensor electrode having a measurement surface for detecting electric charge in said insulating oil and providing an electrical signal indicative of the amount of the electric charge in said insulating oil; and

insulating support means for electrically insulatingly supporting said electrode from said oil tank in such a relationship that said measurement surface of said sensor electrode is electrically insulated from a substantially flush with said inner surface of said oil tank, and that the distance between said sensing surface of said electrode and said inner surface of said oil tank is large enough for



electrically insulating therebetween but small enough for maintaining an electric field around said sensor electrode to be free of a substantial disturbance;

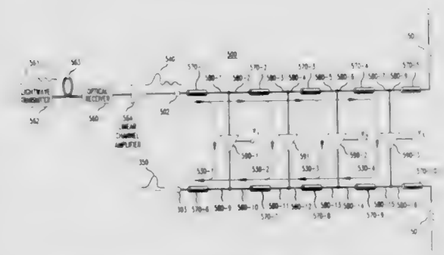
said insulating support means comprising a flange extending from said sensor electrode in an overlapping relationship with respect to said tank wall, electrically insulating fastening means for connecting said flange of said sensor electrode and said tank wall, and an electrically insulating annular seal member disposed between said tank wall and said flange of said sensor electrode for electrically insulating and liquid-tightly sealing therebetween.

5,055,795

TRAVELING WAVE TYPE TRANSVERSAL EQUALIZER

Bryon L. Kasper, Allentown, Pa., and Osamu Mizuhara, Lakewood, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 29, 1990, Ser. No. 529,834
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—54 **12 Claims**



12. A lightwave communication system comprising a lightwave transmitter, a lightwave receiver, a linear channel amplifier, a transversal equalizer and a transmission medium optically coupled jointly to said lightwave transmitter and said lightwave receiver for supporting a lightwave signal therebetween, said lightwave receiver responsive to said lightwave signal for generating an electrical signal, and said linear channel amplifier responsive to said electrical signal for amplifying said electrical signal into an input electrical signal, wherein said input electrical signal includes amplitude and phase distortion components introduced by said linear channel amplifier, said transversal equalizer comprising:

an input port for receiving said input electrical signal;

an output port for combining first and second amplified electrical signals, each of said first and second electrical signals being an amplified replica of said input electrical signal;

first and second amplification branches coupled in parallel between said input and output ports for generating said first and second amplified electrical signals, respectively, each of said first and second amplification branches including an input artificial transmission line and an output artificial transmission line coupled to said input port and said output port, respectively,

said first and second amplification branches having an associated first and second gain, respectively; and

delay means coupled to said first amplification branch for delaying said first amplified electrical signal by a delay time,

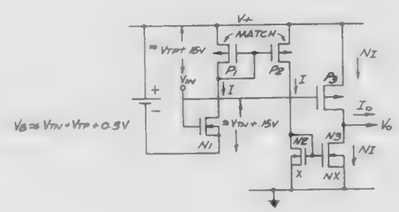
said first and second gain related to said delay time such that the frequency response characteristics of said transversal equalizer substantially compensate said amplitude and phase distortion components for equalization of said input electrical signal.

5,055,796

CMOS OUTPUT STAGE

Gregory L. Schaffer, Cupertino, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Filed May 25, 1990, Ser. No. 529,961
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—263 **21 Claims**



1. A CMOS output stage comprising:

first and second field effect devices of complementary types, each having a source, drain and gate, said drains of said first and second field effect devices being coupled together and to an output terminal and said sources of said first and second field effect devices each being coupled to a respective one of said first and second power supply terminals;

input means coupled to said gate of said first field effect device for coupling an output stage input thereto;

a third field effect device also having a source, drain and gate, said gate of said third field effect device being coupled to said input means and said drain thereof being coupled to one of said power supply terminals;

means coupled to said source of said third field effect device for maintaining the voltage thereof substantially constant relative to and differing from the voltage of said first and second power supply terminals; and,

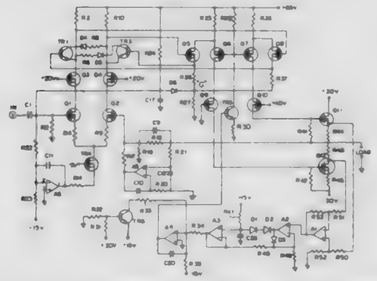
means coupled to the drain of said third field effect device and the gate of said second field effect device for varying the gate source voltage of said second field effect device responsive to the variation of the gate source voltage of said third field effect device.

5,055,797

BIAS CONTROL FOR POWER AMPLIFIERS

William T. Chater, 29421 Quailwood Dr., Rancho Palos Verdes, Calif. 90274

Continuation of Ser. No. 332,957, Apr. 3, 1989, abandoned. This application Jan. 25, 1990, Ser. No. 478,041
Int. Cl.[5] H03F *3/30*
U.S. Cl. 330—268 **8 Claims**



1. An improved push-pull power amplier for operation in class AB mode having a feedback loop from the output stage to the input stage for automatic control of idling bias current in the output stage, said feedback loop comprising:

means for sensing the output currents in a first and second member of the output stage to obtain sensing signals proportional to said currents,

means for adding said sensing signals to obtain a sum signal proportional to the sum of said currents,

means for measuring the peak minimum value of said sum signal,

means for mixing the peak minimum value of said sum signal with a dc reference into a combined signal, and

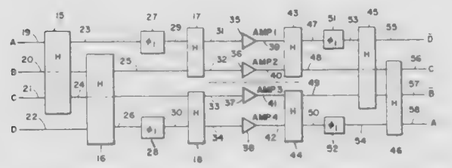
means for feeding the combined signal back into the input stage of said push-pull amplifier so as to control the bias level of said output stage based on the value of said peak minimum value of the sum of the output currents, thereby substantially eliminating crossover distortion in the output signal.

5,055,798

HYBRID MATRIX AMPLIFIER SYSTEMS, AND METHODS FOR MAKING THERMALLY-BALANCED HYBRID MATRIX AMPLIFIER SYSTEMS

Christine Heinzelmann, El Segundo, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 9, 1990, Ser. No. 594,472
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—295 **21 Claims**



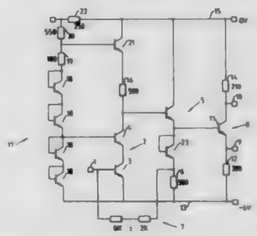
1. A hybrid matrix amplifier system for processing N input signals, including an input multiport hybrid coupler system comprising $N \times 2^{n-1}$ hybrid couplers divided into n stages where n is an integer equal to or greater than 2 and where each stage includes 2^{n-1} hybrid couplers; said input multiport coupler system having N input terminals for receiving the N input signals and N output terminals where N is equal to 2^n, said N output terminals being connected to N amplifiers, said N amplifiers having outputs connected to an output multiport hybrid system including n stages, each stage including 2^{n-1} hybrid couplers, wherein the N input signals may be of arbitrary amplitude.

5,055,799

AMPLIFIER CIRCUIT WITH NON-LINEAR LOAD RESISTANCE WHICH INCREASES AMPLIFIER FORWARD GAIN AT HIGH FREQUENCY

Richard L. Calton, Ipswich, England, assignor to British Telecommunications public limited company, London, England

Continuation of Ser. No. 199,255, Jun. 1, 1988, abandoned. This application Aug. 23, 1989, Ser. No. 398,286
Claims priority, application United Kingdom, Oct. 3, 1986, 8623838
Int. Cl.[5] H03F *1/26, 3/04*
U.S. Cl. 330—297 **14 Claims**



12. A transimpedance amplifier for amplifying an input signal, said amplifier comprising:

an input bipolar junction transistor stage having an input terminal connected to receive said input signal and having an output terminal, said input stage having an effective emitter impedance which increases with the frequency of said input signal and thereby causes the open loop gain of said input stage to fall off with increasing input signal frequency; and

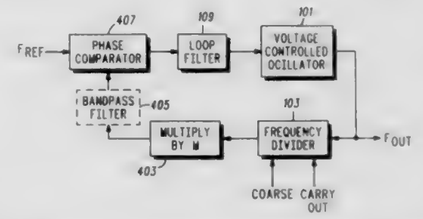
active load means connected to said input stage output terminal for providing a load impedance at said input stage output terminal, said active load means including component means for compensating for said effective emitter impedance increase and for increasing said load impedance with the frequency of said input signal.

5,055,800

FRACTIONAL N/M SYNTHESIS

Gregory Black, and Alexander W. Hietala, both of Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1990, Ser. No. 516,897
Int. Cl.[5] H03L *7/18*
U.S. Cl. 331—1 A **31 Claims**



1. A frequency synthesizer which phase locks an output signal of a variable frequency oscillator to a reference signal, the frequency synthesizer comprising:

means, coupled to the variable frequency oscillator, for dividing the frequency of the output signal to produce a frequency divided signal;

means, coupled to said means for dividing, for frequency multiplying said frequency divided signal to produce a frequency divided and multiplied signal; and

means, coupled to said means for frequency multiplying, for comparing the phase of said frequency divided and multiplied signal to the phase of the reference signal to produce a control signal which is coupled to the variable frequency oscillator.

5,055,801

DIGITAL PHASE LOCKED LOOP FOR CORRECTING A PHASE OF AN OUTPUT SIGNAL WITH RESPECT TO AN INPUT SIGNAL

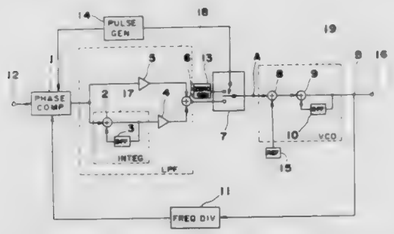
Fumiaki Koga, Neyagawa, and Tokikazu Matsumoto, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1990, Ser. No. 464,002

Claims priority, application Japan, Jan. 12, 1989, 1-5209

Int. Cl.[5] H03L *7/093*

U.S. Cl. 331—14 **20 Claims**



1. A digital phase locked loop for correcting a phase of an output signal with respect to an input signal comprising:

a variable frequency oscillating means;

a phase comparator for comparing the phase of said input signal with the phase of an output signal from said variable frequency oscillating means after every predetermined period;

an integrator for integrating the output of said phase comparator;

a first coefficient circuit for amplifying the output of said integrator;

a second coefficient circuit for amplifying the output of said phase comparator;

a first adder for adding the output of the first coefficient circuit and the output of the second coefficient circuit;

a predetermined level generator; and

a switch for selecting between the output of said first adder and the output of said predetermined level generator and for supplying the selected output to said variable frequency oscillating means, whereby said variable frequency oscillating means oscillates at a frequency proportional to the output of said switch.

5,055,802

MULTIACCUMULATOR SIGMA-DELTA FRACTIONAL-N SYNTHESIS

Alexander W. Hietala, Palatine, and Duane C. Rabe, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1990, Ser. No. 516,993

Int. Cl.[5] H03L *7/18*

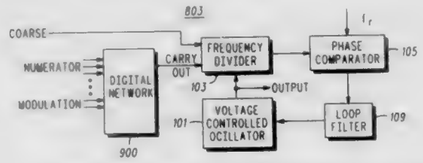
U.S. Cl. 331—16 **41 Claims**

13. A fractional-N synthesizer which divides a voltage controlled oscillator output signal frequency by a loop divider, the loop divider having a variable divisor controlled by a control input to create a feedback signal to be compared to a reference signal for frequency control of the voltage controlled oscillator, the fractional-N synthesizer comprising:

means for accepting a first digital number presented as a first plurality of bits;

means for calculating a first integration of an addition of said first digital number and a predetermined number of most significant bits of a second digital number having a second plurality of bits, to create a third digital number comprising a third plurality of bits;

means for calculating a second integration of an addition of



a predetermined number of least significant bits of said third digital number and a summation of a predetermined number of most significant bits of said third digital number and said predetermined number of most significant bits of said second digital number, to create said second digital number; and

means for selecting said predetermined number of most significant bits of said second digital number for coupling at least to the divisor control input of the loop divider.

5,055,803

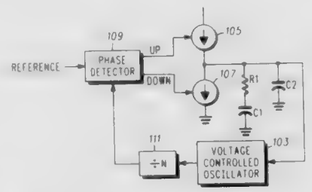
PARAMETER TOLERANT PLL SYNTHESIZER

Alexander W. Hietala, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1990, Ser. No. 628,533

Int. Cl.[5] H03L *7/093*

U.S. Cl. 331—17 **16 Claims**



1. A phase locked loop synthesizer having an open loop unity gain frequency and tolerance to component parameter variation, comprising:

means for generating an output signal;

means for producing a first signal related to a difference between said output signal and a predetermined reference signal; and

means for modifying said first signal to produce a second signal coupled to said means for generating, said means for modifying including:

(a) at least one filter transmission pole having a first break frequency related to the unity gain frequency by a first magnitude,

(b) at least one filter transmission zero having a second break frequency related to the unity gain frequency by a second magnitude, and

(c) a numeric value of one of said first magnitude and said second magnitude of 2.5 or less.

5,055,804

OSCILLATOR

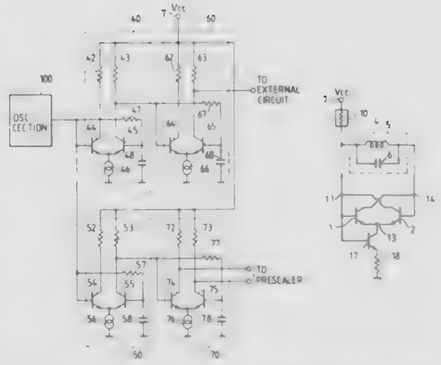
Hiroyuki Yabuki, Kawasaki, and Morikazu Sagawa, Tokyo, both of, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1990, Ser. No. 534,866

Claims priority, application Japan, Jun. 21, 1989, 1-158673; Feb. 5, 1990, 2-25403

Int. Cl.[5] H03B *5/12*

U.S. Cl. 331—117 R **3 Claims**



1. An arrangement for supplying an oscillation signal to an external circuit and a prescaler, comprising:

an oscillator;

a first buffer connected between the oscillator and the external circuit and including at least one differential amplifier of a single-phase drive type; and

a second buffer connected between the oscillator and the prescaler and including at least one differential amplifier of a single-phase drive type;

wherein the differential amplifier of each of the first and second buffers comprises first and second transistors, a resistor, and a bypass capacitor, wherein a base of the first transistor is directly connected to the oscillator and a base of the second transistor is connected to the oscillator via the resistor, and the base of the second transistor is grounded via the capacitor; and wherein a collector of each second transistor is connected to the external circuit and the prescaler, respectively.

5,055,805

HIGH SPEED POLARIZATION SWITCH ARRAY FOR SELECTING A PARTICULAR ORTHOGONAL POLARIZATION

Philip T. Kan, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 2, 1989, Ser. No. 416,192

Int. Cl.[5] H01P *1/161*

U.S. Cl. 333—21 A **12 Claims**

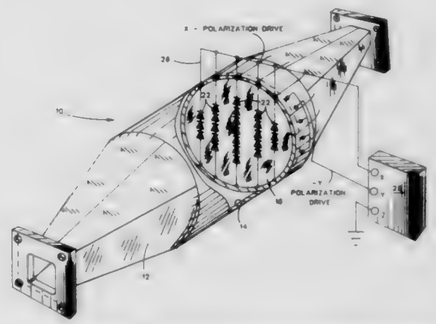
7. A polarization mode selection switch for selecting between two or more polarization modes in received electromagnetic radiation of a preselected wavelength, comprising:

a waveguide for transferring said electromagnetic radiation along a predetermined longitudinal waveguide axis, said waveguide having a portion with a circular cross-section.

a planar, circular, substrate mounted within said waveguide circular portion positioned transverse to said longitudinal axis and being substantially transmissive of said electromagnetic radiation;

a first plurality of PIN type diodes mounted on a first side of said substrate along a first series of parallel lines with said first series of parallel lines being spaced apart at intervals of about one-half of said wavelength, said diodes being spaced apart at about one-quarter wavelength intervals along each of said lines;

a second plurality of PIN type diodes mounted on a second side of said substrate, which is parallel to said first side, along a second series of parallel lines with said second



series of parallel lines being spaced apart about one-half of said wavelength, said diodes being spaced apart at about one-quarter of said wavelength intervals along each of said lines, said second lines being oriented substantially perpendicular to said first lines;

interconnection means for electrically connecting adjacent diodes to each other along each one of said parallel lines; and

selection means for selectively forward biasing, at any one time, didoes in only one of said plurality of diodes, said diodes being forward biased on said first side to effect conduction along said first parallel lines to select a first polarization mode, and on said second side to effect conduction along said second parallel lines to select a second polarization mode.

5,055,806

REFLECTION-FREE TERMINATION OF A TEM WAVEGUIDE

Diethard Hansen, Berikon, and Dietrich Königstein, Gebenstorf, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 20, 1989, Ser. No. 409,789

Claims priority, application Switzerland, Oct. 14, 1988, 3853/88

Int. Cl.[5] H01P *1/26*

U.S. Cl. 333—22 R **10 Claims**

1. A reflection free TEM waveguide, through which a TEM wave is conducted, comprising:

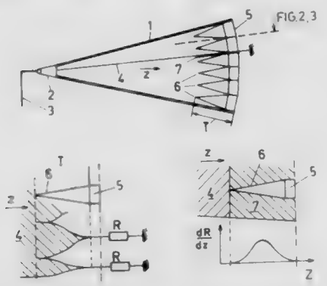
an inner conductor;

an outer conductor;

an RF absorber disposed at one end of the TEM waveguide for absorbing an electromagnetic field energy of said TEM wave; and

line termination means for producing a gradual damping on the inner conductor in a direction of propagation of said TEM wave and for locally compensating for a capacitance loading additionally produced at the line termination by the RF absorber, said means being located in a

planar extension of the inner conductor in the propagation direction, covering an entire region of intersection of said



extension with the RF absorber, exhibiting an ohmic resistance, and absorbing the conductor-guided energy of the TEM wave.

5,055,807

METHOD AND APPARATUS FOR MULTIPLEXING BROAD BAND HIGH FREQUENCY SIGNALS FOR USE IN NETWORK ANALYZERS

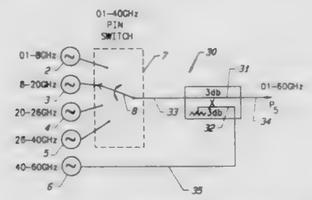
William W. Oldfield, Redwood City, Calif., assignor to Wiltron Company, Morgan Hill, Calif.

Filed Jan. 9, 1989, Ser. No. 294,882

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] H03H *7/46*

U.S. Cl. 333—110 **13 Claims**



1. An apparatus for multiplexing a plurality of high frequency signals consisting of a plurality of substantially non-overlapping ranges of frequencies, comprising:

a single section contra-directional coupler, said coupler having a through-arm and a coupling arm, said through-arm having an input and an output and being operative over a frequency band which substantially extends over said plurality of ranges of frequencies, and said coupling arm having an input;

first means for selectively coupling said signals consisting of a first one of said plurality of ranges of frequencies to said input of said through-arm, said first one of said plurality of ranges of frequencies comprising frequencies generally below a predetermined frequency which extend over multiple decades relative to a lowest frequency therein; and

second means for selectively coupling said signals consisting of a second one of said plurality of ranges of frequencies to said input of said coupling arm, said second one of said plurality of ranges of frequencies comprising frequencies generally above said predetermined frequency within an octave relative to a lowest frequency therein, said output of said through-arm providing an output signal having a frequency within said first one of said plurality of ranges of frequencies when said first one of said plurality of ranges of frequencies is selectively coupled to said input of said through-arm and an output signal having a frequency within said second one of said plurality of ranges of frequencies when said second one of said plurality of ranges of frequencies is selectively coupled to said input of said coupling arm.

5,055,808

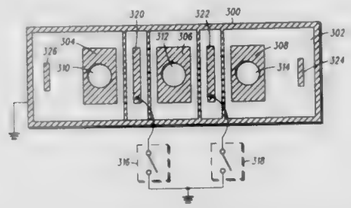
BANDWIDTH AGILE, DIELECTRICALLY LOADED RESONATOR FILTER

Brian C. Walker, and Robert J. Munn, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 21, 1990, Ser. No. 586,471

Int. Cl.[5] H01P *1/202*

U.S. Cl. 333—207 **15 Claims**



1. A bandwidth agile dielectrically loaded resonator filter having at least three external surfaces, at least two holes extending from a first of the at least three external surfaces toward a second of the at least three external surfaces, and a conductive coating disposed on the second and a third external surface and an interior surface of each of the holes, the resonator filter having a response which is at least partially a band-pass type and having bandwidth characteristics which may be changed, comprising:

a first conductive layer disposed on the first external surface and coupled to the conductive coating disposed on the interior surface of a first of the holes;

a second conductive layer disposed on the first external surface and coupled to the conductive coating disposed on the interior surface of a second of the holes;

a first conductive strip disposed on the first external surface between said first and second holes; and

first means for switching, disposed between said first conductive strip and the conductive coating disposed on the third external surface.

5,055,809

RESONATOR AND A FILTER INCLUDING THE SAME

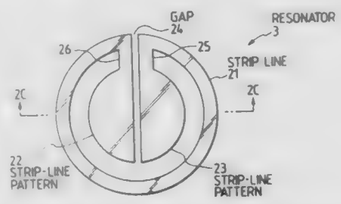
Morikazu Sagawa, Tokyo; Haruyoshi Endo, Zama; Mitsuo Makimoto, Yokohama, and Fumio Fukushima, Miyazaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodoma, Japan

Continuation of Ser. No. 388,874, Aug. 3, 1989. This application May 31, 1990, Ser. No. 529,700

Claims priority, application Japan, Aug. 4, 1988, 63-195000; Mar. 20, 1989, 1-68229; Mar. 23, 1989, 1-70852

Int. Cl.[5] H01P *7/08, 1/203*

U.S. Cl. 333—219 **18 Claims**



1. A resonator having a strip line, said strip line comprising:

(a) a first portion so curved to form an open loop; and

(b) two second portions, each provided to each end of said first portion, said two second portions facing each other with a given distance therebetween, said distance and length of said second portion being determined such that necessary capacitance is provided, each of said two second portions having a large area than said first portion such that an additional capacitance is provided between each of said second portions and a grounded plane supporting said strip line through a dielectric substance.

5,055,810

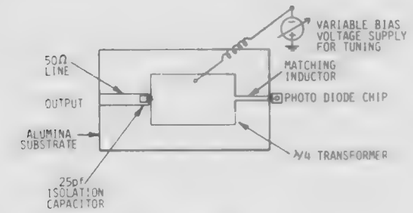
ULTRA-HIGH SPEED LIGHT ACTIVATED MICROWAVE SWITCH/MODULATION USING PHOTOREACTIVE EFFECT

Michael de La Chapelle, and Hui-Pin Hsu, both of Canoga Park, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 306,004, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 948,338, Dec. 31, 1986, abandoned. This application Aug. 29, 1990, Ser. No. 576,140

Int. Cl.[5] H01P *1/15*

U.S. Cl. 333—262 **23 Claims**



1. A high speed switch comprising:

a body of semiconductor material having a diode junction therein and contacts on opposing surfaces thereof, said contacts and diode junction defining a microwave shunt reactance device having an operating frequency;

a photoactive area at one of said surfaces such that said microwave shunt reactance device is switched between a signal matching state and a signal reflecting state in response to a change in illumination intensity upon said photoactive area;

a source of optical illumination for illuminating said photoactive area; and

a variable voltage supply coupled to said contacts for changing the voltage supplied by said voltage supply to cause a change in said operating frequency.

5,055,811

ELECTROMAGNETIC APPARATUS

Masahiro Kakizoe, and Shigeharu Ootsuka, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda, Japan

Filed May 3, 1990, Ser. No. 518,470

Claims priority, application Japan, Nov. 7, 1989, 1-289578

Int. Cl.[5] H01H *7/00*

U.S. Cl. 335—59 **4 Claims**

1. An electromagnetic apparatus comprising:

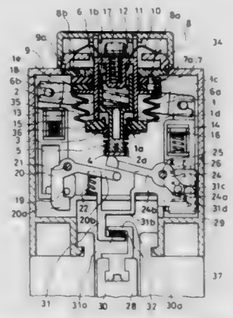
a main body having an actuator which is magnetically operated; and

a contact unit which is detachably mounted to said main body, and which includes

(a) contact means,

(b) a movable body which is moved by said actuator and which operates said contact means in a predetermined opening or closing operation, and

(c) a connecting member for connection between said actuator and said movable body, one end of said connecting member being detachably engaged with said actuator and an other end of said connecting member being connected to said movable body through stroke adapting means, said



stroke adapting means adapting a stroke of said actuator to thereby move said movable body a proper amount.

5,055,812

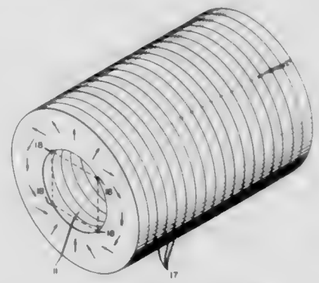
COMPENSATION FOR MAGNETIC NONUNIFORMITIES OF PERMANENT MAGNET STRUCTURES

Manlio G. Abele, New York; Ramesh Chandra, Ardsley; Henry Rusinek, Great Neck, all of N.Y.; Ernest Potenziani, II, Ocean, and Herbert A. Leupold, Eatontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 24, 1990, Ser. No. 587,285

Int. Cl.[5] H01F *7/00;* **H01J** *23/08*

U.S. Cl. 335—210 **5 Claims**



1. A permanent magnet structure comprising:

a longitudinally extending magnetic flux source which has a central cavity and which is fabricated of magnetically rigid material, the magnetic flux source producing a magnetic field which is perpendicular to a longitudinal axis of the magnetic flux source and which is within the central cavity wherein the longitudinally extending magnetic flux source is comprised of a plurality of slices of magnetically rigid material cut perpendicularly to the longitudinal axis of the magnetic flux source; and

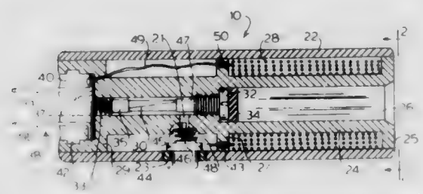
means for compensating non-uniformities in the magnetic field produced by the magnetic flux source, wherein the means for compensating for non-uniformities in the magnetic field comprises a plurality of magnetic dipoles, each magnetic dipole being positioned at a predetermined location in each slice of magnetically rigid material and each magnetic dipole having a predetermined magnitude and orientation.

5,055,813

MAGNETIZATION/DEMAGNETIZATION DEVICE

Terry R. Johnson, 4 Huguenot Rd., Newport News, Va. 23606

Filed Jun. 28, 1990, Ser. No. 544,987
Int. Cl.[5] H01F 7/20, 13/00; H01H 47/00
U.S. Cl. 335—284 7 Claims



5. A portable, compact magnetizing/demagnetizing device, comprising:

(a) an outer tubular open ended elongated housing formed of an electrically insulating material;

(b) an inner elongated tubular member formed of an electrically insulating material and supported coaxially within said outer housing and extending for at least a major portion of the length of said outer housing, said inner tubular member defining at one end a first cylindrical cavity coaxial with said inner tubular member and of sufficient depth and internal diameter to loosely receive through an open outer end of said first cavity a magnetizable elongated tool-like member of comparable length and size to said first cavity, an opposite inner end of said cavity being closed by means providing a stop for limiting the depth of entry of said tool member like;

(c) an electrical coil wound around said inner tubular member and surrounding only said first cavity and terminating with first and second leads at the ends of said coil;

(d) a pair of prongs suited for insertion into an AC outlet and fixedly mounted on said inner tubular member at the opposite end thereof and when so inserted being adapted to provide support for said device; and

(e) a closure switch mounted on said housing and connected to said coil and prongs in a manner enabling said coil to be energized when said switch is closed and said prongs are energized.

5,055,814

DISPLACEMENT DETECTOR

Toshiaki Morimura; Norio Daimaru, and Akira Wachi, all of Tokyo, Japan, assignors to Ohkura Electric Co., Ltd., Tokyo, Japan

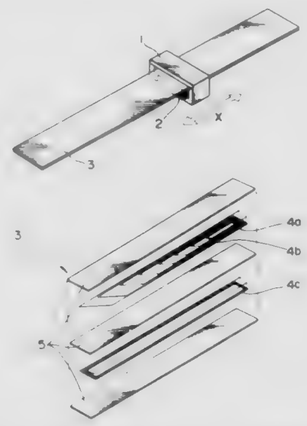
Filed Apr. 21, 1989, Ser. No. 342,349
Claims priority, application Japan, May 19, 1988, 63-65149[U]; Nov. 12, 1988, 63-147049[U]
Int. Cl.[5] H01F 21/06
U.S. Cl. 336—119 3 Claims

1. A displacement detector comprising:

a core formed of a first magnetic member having a central leg and two side legs, each of said legs including a first end and a second, extended end, said legs being connected together at the first ends so that said core has an E-shaped cross section, the central leg being shorter than the two side legs, and a second magnetic member extending across said extended ends of the two side legs and defining a gap between said extended end of the central leg and the second magnetic member;

a first coil wound around the central leg of the core; and

a second coil extending through said gap at right angles to the E-shaped cross section of the first magnetic member, the second coil being movable relative to the core and having turns, each turn having a slant portion inclined with respect to the direction of the relative movement between the core and the second coil, so that when the first coil is energized by an AC current, the magnetic flux linkage between the gap of the core and the second coil varies, depending on the position of the



second coil relative to the core, so as to induce a voltage in the second coil which varies so as to indicate the position of the second coil relative to the

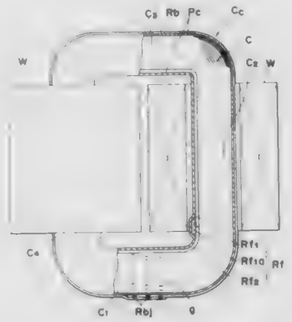
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5,055,815

STATIONARY INDUCTION ELECTRIC APPARATUS

Yasuo Yamamoto; Katsumi Hanaoka; Masatake Hirai, and Toshiko Yamada, all of Osaka, Japan, assignors to Daihen Corporation, Osaka, Japan

Filed Sep. 6, 1989, Ser. No. 403,668
Claims priority, application Japan, Apr. 6, 1989, 1-87816
Int. Cl.[5] H01F 27/26, 27/30
U.S. Cl. 336—196 3 Claims



1. A stationary induction electric apparatus, wherein plural lamination blocks are formed respectively by laminating plural lamination units, each of which is formed by laminating a predetermined number of cut strips of an amorphous magnetic alloy, said plural lamination blocks are built up into a substantially rectangular wound core by piling them up and by jointing respective ends of individual lamination units of each lamination block in an overlapped state so as to position the joint portion thereof on one side of the rectangular wound core, one side having the joint portion and another opposing side are made as yoke portions respectively, and both two sides positioned between the yoke portions are made as leg portions respectively, said apparatus comprising:

a protective sheet of a thermal-proof insulating material mounted inside of the innermost lamination block of said rectangular core, said protective sheet having substantially the same width as that of said strips;

a reinforcement frame mounted on the surface of said protective sheet;

a protective cover covering both said rectangular core and said reinforcement frame with substantially no space between said protective cover and said rectangular core, said protective cover being made of an electrically insulating paper;

a reinforcement band wound with substantially no space between said reinforcement band and said protective cover around the outer peripheral surface of said rectangular core on which said protective cover is fixedly mounted; and

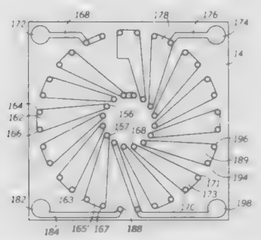
windings fitted around the leg portions of said rectangular core on which said reinforcement frame, said protective cover and said reinforcement band are mounted.

5,055,816

METHOD FOR FABRICATING AN ELECTRONIC DEVICE

Leonard F. Altman, Daytona Beach, and Robert E. Stengel, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 370,979, Jun. 26, 1989, abandoned.
This application Jun. 11, 1990, Ser. No. 536,048
Int. Cl.[5] H01F 5/00, 7/06
U.S. Cl. 336—200 4 Claims



3. An electronic device for use as a transformer on a ceramic carrier, comprising:

said ceramic carrier having a double circular pattern of metallized through-holes uniformly spaced therein;

a first set of substantially triangular metallized areas on a first side of said carrier each component of said first set of substantially triangular metallized areas formed by connecting at least a triplet of said metallized through-holes; and

a second set of substantially triangular metallized areas on a second side of said carrier each component of said second set of substantially triangular metallized areas formed by connecting at least a triplet of said metallized through-holes, said first and second sets skewed radially disposed forming a pair of primary and secondary coils intermixed a selective number of times through said carrier and being inductively coupled with one another.

5,055,817

FUSE WITH IMPROVED FUSIBLE ELEMENT

Larry D. O'Shields, York Harbor, Me., and Richard J. Perreault, Amesbury, Mass., assignors to Gould Inc., Eastlake, Ohio

Filed Oct. 3, 1990, Ser. No. 592,262
Int. Cl.[5] H01H 85/04
U.S. Cl. 337—161 17 Claims

1. A fuse comprising

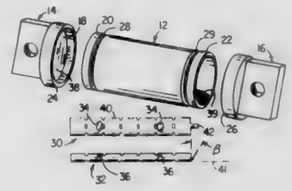
a fuse casing having a chamber therein and an opening to said chamber,

a terminal at said opening, and

a plurality of elongated fusible elements that are located within said chamber, each said element being electrically connected at an end thereof to said terminal,

each said element being made of sheet metal and having an elongated straight body portion that extends along a longitudinal axis that passes through said opening and is parallel to axes of other said elements, each said element having a bent tab at said end thereof, said bent tab having a smaller cross sectional area at the bend than said body portion,

said bent tab being soldered to a contact surface of a said terminal that is transverse to said axis, said bent tab making an acute angle with said contact surface and with said axis.

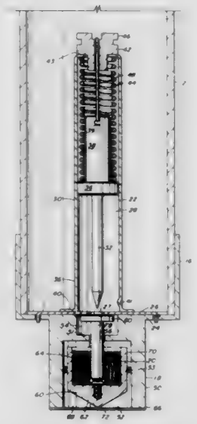


5,055,818

FLAGGED BLOWN FUSE INDICATOR

David M. Bueschel, Menomonee Falls, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 30, 1989, Ser. No. 444,010
Int. Cl.[5] H01H 85/30
U.S. Cl. 337—267 28 Claims



1. An indicator for indicating an opened condition in a fuse having a fuse body, comprising:

a housing adapted for attachment to the fuse body and having a cavity therein;

a weight having a solitary connection means;

a non-rigid streamer packed within said housing cavity and having opposed ends, one of said ends affixed to said housing and the other of said ends affixed to said weight solitary connection means;

retainer means releasably retaining said streamer within said cavity;

actuator means actuated upon the opening of the fuse and releasing said streamer from said retainer means and ejecting said streamer from said cavity;

whereby upon opening of the fuse, said weight is totally ejected from said housing and is supported adjacent said housing only by said streamer.

5,055,819

TEMPERATURE SWITCH

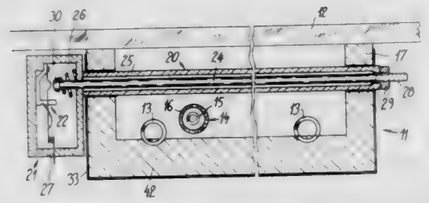
Gerhard Goessler, Oberderdingen, and Eugen Wilde, Knittlingen, both of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Continuation of Ser. No. 365,376, Jun. 13, 1989, abandoned. This application Dec. 12, 1990, Ser. No. 626,237

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1988, 3821495; Jun. 25, 1988, 3821496

Int. Cl.[5] H01H *37/48*; H05B *3/72*

U.S. Cl. 337—394 **15 Claims**



1. A temperature switch to be subjected to radiation heating from a radiant heating element, the temperature switch having a least on switch contact and a temperature sensor, and comprising:

an expansion rod made of a material having a relatively high coefficient of thermal expansion, and a tube which encloses the expansion rod made of a material having a relatively lower coefficient of thermal expansion;

the tube being made of a radiation-absorbing material which mainly absorbs radiation only in a wavelength range arriving directly from the radiant heating element for temporarily delaying response of the expansion rod.

5,055,820

HALL ELEMENT AND MAGNETIC SENSOR SYSTEM EMPLOYING THE SAME

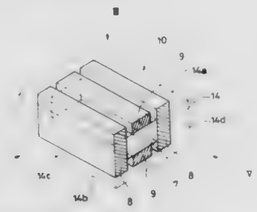
Masatoshi Kimura, and Toshio Kumamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1990, Ser. No. 461,145

Claims priority, application Japan, Jan. 20, 1989, 1-12916

Int. Cl.[5] H01L *43/00*

U.S. Cl. 338—32 H **7 Claims**



1. A Hall device comprising:

a semiconductor substrate having a main surface, a back surface opposite said main surface and a pair of opposing side surfaces connected to said main and back surfaces, said Hall device comprising:

a semiconductor region embedded in said substrate, said semiconductor region having opposite main and back surfaces and a pair of side surfaces parallel to and spaced apart from respective ones of said main, back and side surfaces of said substrate;

a pair of current electrodes constituted by first highly doped regions embedded in said substrate respectively between said main surfaces of said substrate and said semiconductor region and between said back surfaces of said substrate and semiconductor region so as to sandwich said semiconductor region between said main and back surfaces of said substrate; and

a pair of Hall voltage detecting electrodes constituted by second highly doped regions embedded in said substrate respectively between side surfaces of said substrate and semiconductor region.

5,055,821

SYSTEM FOR TRANSMITTING DATA BETWEEN A ROTATING PART AND A STATIONARY PART

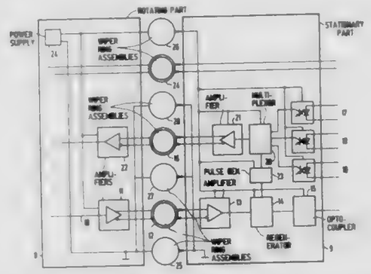
Walter Keller, Erlangen, and Fritz Peter, Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 9, 1990, Ser. No. 462,236

Claims priority, application European Pat. Off., Feb. 6, 1989, 89102031.5

Int. Cl.[5] G08B *1/08*

U.S. Cl. 340—286.01 **1 Claim**



1. In an apparatus having a rotating part and a stationary part, a data transmission system for transmitting data between said stationary part and said rotating part comprising:

a first plurality of electronic components on said rotating part, said first plurality of electronic components requiring power to operate and generating a data stream;

a second plurality of electronic components on said stationary part, said second plurality of electronic components requiring power to operate and processing said data stream from said first plurality of electronic components;

a common power supply means for supplying power to all of said components on said stationary part and said rotating part, said common power supply means being disposed on said rotating part and being directly connected to the electronic components on said rotating part and connected to the electronic components on the stationary part via a first wiper ring assembly; and

a second wiper ring assembly electrically connected between said first and said second pluralities of electronic components for transmitting said data stream from said first plurality of electronic components to said second plurality of electronic components.

5,055,822

SCENT ALARM DEVICE

Gordon Campbell, 128 Albany Rd., Oak Ridge, Tenn. 37830, and Dewey Feezell, Box 408-A, Rte. 5, Athens, Tenn. 37303

Filed Jul. 6, 1990, Ser. No. 549,353

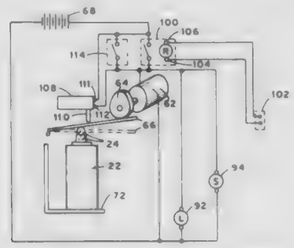
Int. Cl.[5] G08R *1/00*

U.S. Cl. 340—407 **9 Claims**

1. A scent alarm device comprising:

a spray canister of an odorant having a container containing an odorant under pressure and a depressible release valve having a nozzle which is movable relative to the container between depressed and extended positions for release of canister contents upon the depression of the release valve nozzle to its depressed position and which is biased by the pressurized contents toward its extended position;

means for intermittently depressing the release valve nozzle upon the occurrence of a predetermined event to intermittently release canister contents into the surrounding atmosphere, said means for intermittently depressing including a rotatable cam associated with the release valve for depressing the release valve nozzle in a cyclic fashion as the



cam is rotated and a motor which is connected to the cam for rotating the cam as the motor is energized so that upon energizing of the motor, the release valve nozzle is moved relative to the container between its depressed and extended positions; and

means interposed between the release valve nozzle and the motor for preventing the motor from being de-energized as long as the release valve nozzle is in its depressed position so that upon de-energization of the motor, the nozzle is not required to overcome rotational resistance of the motor in order to return to its extended positions.

5,055,823

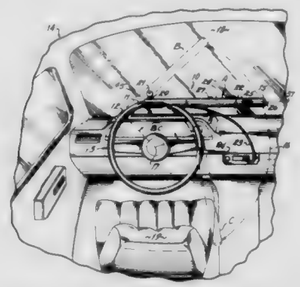
PORTABLE ANTI-THEFT ALARM AND LOCKING DEVICE FOR VEHICLES

Kip L. Fuller, Littleton, Colo., assignor to Innovision Technologies Group, Inc., Lakewood, Colo.

Filed May 18, 1990, Ser. No. 525,759

Int. Cl.[5] B60R *25/10*; G08B *1/00*

U.S. Cl. 340—426 **25 Claims**



3. A portable anti-theft device for vehicles having a steering wheel which includes a rim to which the device can be locked with a part thereof projecting therefrom to limit the free angle of rotatability of the steering wheel relative to the internal structures of the vehicle to thereby limit the drivability of the vehicle, the device comprising:

a bar having first and second opposite ends and formed at least in part of a wall open along one side of a portion of the bar to define an interior thereof, said portion having an inside dimension greater than the diameter of the steering wheel rim whereby the bar is positionable against the steering wheel rim such that the inside of the wall is against the outside of the rim and the bar is tangent to the rim with at least one end of the bar displaced from the steering wheel a distance sufficient to contact the internal fixed structures of the vehicle when the steering wheel is rotated;

a clamping member movably connected to said portion of the bar, the member being moveable to a closed position in which the member and the wall surround and clamp the bar to the rim of the steering wheel to thereby rigidly support the device thereon and to an open position in which the bar may be positioned on and removed from the rim; and

means at least in part on said portion of the bar for locking the member in its closed position to lock the device to the steering wheel to thereby limit the rotatability of the steering wheel and the drivability of the vehicle.

5,055,824

SYSTEM FOR WARNING AN EFFECTIVE RESTRAINT LIMIT OF A SEAT BELT

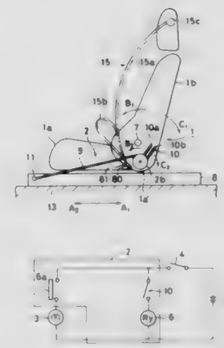
Tetsuya Hamaue, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,735

Claims priority, application Japan, Oct. 20, 1989, 1-273233

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—438 **4 Claims**



1. A system for warning an effective restraint limit of a seat belt, comprising a seat slidably adjustable on a support in a to-and-fro direction a backrest that is and tiltably adjustable, a seat belt lap and shoulder assembly for restraining an occupant seated on said seat, sensor means for detecting an effective restraint limit of said seat belt, and notice means for notifying the occupant of a result as detected by said sensor means, wherein that the effective restraint limit of said seat belt assembly as detected by said sensor means is an angle of said backrest corresponding to a position of said seat as slidably adjusted.

5,055,825

METHOD AND CIRCUIT FOR SELF-CHECKING TROUBLES OF A HEATING SYSTEM

Kap-Soo Yang, Seoul, Rep. of Korea, assignor to Hanil Industrial Co., Ltd., Rep. of Korea

Filed Jan. 8, 1990, Ser. No. 461,670

Claims priority, application Rep. of Korea, Sep. 6, 1989, 89-12887

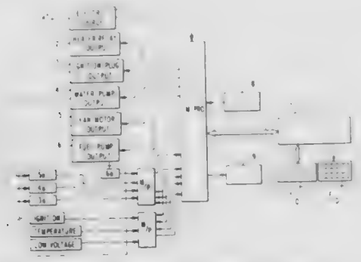
Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—439 **18 Claims**

1. A method for self-checking and controlling a heating system, comprising:

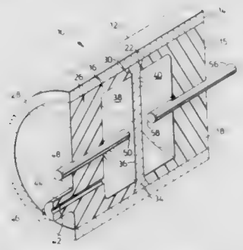
performing first heating system checking steps during a first preheating period, prior to ignition of the fuel for the heating system;

turning on a water pump and an ignition plug during said first preheating period;
turning on a fan motor and a fuel pump during an ignition period;
during said ignition period, performing second heating system checking steps in order to detect error conditions in said heating system;
if an error condition is detected as a result of said second checking steps, performing an extinguishing step during said ignition period and indicating said detected error condition;
otherwise if no error condition is detected during said ignition period, performing a first igniting step for the heating system fuel;



entering a second preheating period if ignition does not occur in said first igniting step, wherein said fuel pump is shut off during said second preheating period;
performing third heating system checking steps during said second preheating period;
if an error condition is detected as a result of said third checking steps, indicating an error detected during said second preheating period;
otherwise if no error condition is detected during said second preheating period, performing a second igniting step for the heating system fuel; and
performing an extinguishing step if ignition does not take place during said second igniting step.

5,055,826
PRESSURE SENSOR SYSTEM
Jan Ballyns, 1125 Meadowlane Crescent, Pickering, Ontario, Canada L1X 1E5
Continuation-in-part of Ser. No. 447,807, Dec. 8, 1989, Pat. No. 4,975,679, which is a continuation-in-part of Ser. No. 202,262, Jun. 6, 1988, Pat. No. 4,890,090. This application Apr. 16, 1990, Ser. No. 509,631
Int. Cl.[5] B60C *23/00*
U.S. Cl. 340—442 **13 Claims**



1. A pressure sensor switch comprising:
(a) a stem having a side wall surrounding a vent chamber that opens into one end of the stem, a vent passage opening from the vent chamber through the side wall of the stem,
(b) a tubular sleeve mounted on said stem and overlying said vent passage, said tubular sleeve being flexible so as to be movable to and fro between a first position in which it extends in close proximity to said vent passage and a second position which is spaced outwardly from the first position with respect to the step in response to a variation in pressure in the vent chamber, said sleeve being electrically conductive and forming a first terminal of said switch,
(c) a second terminal of said switch bieng located opposite said tubular sleeve so as to be spaced therefrom when the sleeve is in the said first position and to contact the sleeve when the sleeve is in said second position to open and close said switch in response to movement of said sleeve.

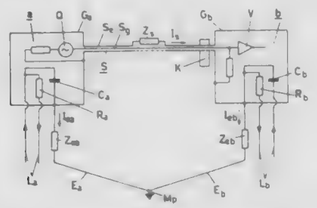
5,055,827
FIBER OPTIC SECURITY SYSTEM
Harald Philipp, 4885A McKnight Rd. #283, Pittsburgh, Pa. 15237
Filed Feb. 20, 1990, Ser. No. 482,089
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—568 **15 Claims**



1. An optical security system for protecting an appliance comprising:
a conduit for transmitting light therethrough;
an attachment device for holding said conduit, said device comprising means for attaching said conduit to the appliance;
means for preventing removal of said conduit from said device without first bending said conduit, said preventing means not necessitating the breaking or feeding through of the conduit to facilitate removal of said conduit;
means for controlling said system, said controlling means comprising a means for sensing a disturbance of the light within said conduit, and a means for generating an alert signal in response to said sensing means;
wherein, said optical security system sends an alert signal in response to an attempt to remove said conduit from the appliance which results in a bending or breaking of said conduit and a subsequent disturbance of the light within said conduit.

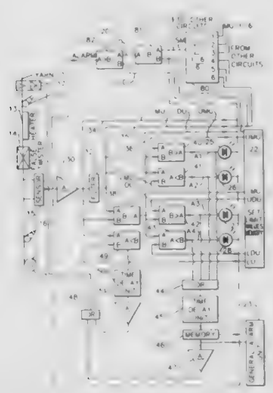
5,055,828
PARASITIC-GROUND CURRENT INDICATOR FOR ELECTRICAL SYSTEM
Dietrich Königstein, Gebenstorf, and Dieter Köster, Turgi, both of Switzerland, assignors to Asea Brown Boveri Ltd., Switzerland
Filed Oct. 5, 1989, Ser. No. 417,300
Claims priority, application Switzerland, Oct. 14, 1988, 3854/88
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—664 **12 Claims**

1. An electrical system having at least two current fed assemblies, each of which assemblies has a pair of leads extending externally thereof and each of which assemblies is connected over at least one ground conductor to a common ground point and at least one signal-transmitting galvanic conductor connecting the at least two electric assemblies together, characterized by at least one parasitic-current indicator (K) which is fixed to at least one portion of said signal-transmitting galvanic



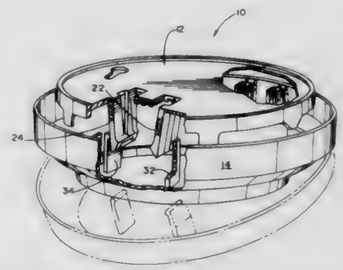
conductor for continuously detecting parasitic current in the at-least one signal-transmitting galvanic conductor.

5,055,829
METHOD AND APPARATUS FOR MONITORING YARN TENSION
Manfred Stuttem, Kurten, and Ludger A. Deters, Remscheid, both of Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany
Filed Jun. 4, 1990, Ser. No. 532,379
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 4002212; Apr. 9, 1990, 4011436
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—677 **17 Claims**



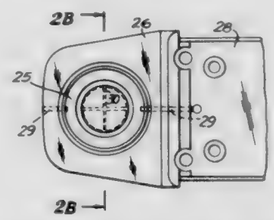
1. A method of monitoring the tension of an advancing yarn at each of a plurality of monitored yarn processing stations of a yarn processing machine comprising the steps of
continuously monitoring the value (U) of the tension of the advancing yarn at each of the yarn processing stations, while continuously determining the mean value (MU) of the monitored tension of each of the yarns,
generating a group mean value signal (SM) representative of an average of the mean value signals (MU) of a group of said stations, and
at each of said yarn processing stations on the machine, comparing the group mean value signal (SM) with the actual mean value signal (MU) of the position to generate a difference signal (D), and generating an alarm signal whenever the difference signal (D) exceeds a predetermined tolerance limit (LD).

5,055,830
BATTERY SENSING MECHANISM
Otto J. Cousins, Burbank; Thomas E. Paulick, Aurora; James H. Woodburn, Batavia, and Ronald Sisselman, Aurora, all of Ill., assignors to Pittway Corporation, Northbrook, Ill.
Filed Jun. 12, 1989, Ser. No. 365,085
Int. Cl.[5] G08B *23/00;* **H01M** *2/10*
U.S. Cl. 340—693 **24 Claims**



1. An electrical unit with an openable cover, the unit powered at least in part by a battery receivable within a non-movable region thereof and with a battery missing indicator comprising:
a structure for locking said cover to the unit with said structure including at least one elongated, battery retaining locking member having first and second ends with said first end affixed to the unit and with said second end carrying cover engaging means said second end being deflectable from a cover non-engaging position to a cover engaging position in response to the presence of the battery.

5,055,831
CURSOR FOR DIGITIZER TABLET
Michael J. Padula, Sandy Hook, Conn., assignor to Summagraphics Corporation, Seymour, Conn.
Filed Oct. 6, 1989, Ser. No. 418,088
Int. Cl.[5] G09G *3/02*
U.S. Cl. 340—706 **9 Claims**



1. A cursor construction for use with a digitizer tablet, comprising:
(a) a base member having a continuous transparent bottom surface,
(b) said base member having a top opening with a portion of the transparent surface extending underneath the opening,
(c) a separate bobbin having a flange on one side,
(d) a coil wound on said bobbin,
(e) said coil-mounted bobbin seated in said opening such that the bobbin flange is adjacent the top opening spaced from the transparent bottom surface,
(f) a crosshair in said transparent bottom surface and aligned with the coil.

5,055,832

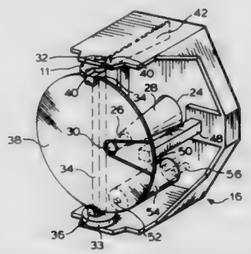
DISPLAY ELEMENT WITH NOTCHED DISK

John Browne, Oakville, Canada, assignor to Dayco Products Canada Inc., Weston, Canada

Continuation-in-part of Ser. No. 363,698, Jun. 9, 1989, abandoned. This application Jul. 27, 1989, Ser. No. 385,453

Int. Cl.[5] **G09G** *3/14, 3/34;* **G08B** *5/00;* **G09F** *9/00*

U.S. Cl. 340—764 **10 Claims**



1. Display device adapted to provide a pattern area of selectively brighter or darker appearance in an ON and OFF state respectively to viewers within a cone of viewing locations,

a stator,

a generally flat rotor defining a median plane

said rotor rotatable on the stator between ON and OFF limiting positions about a axis parallel to said median plane and being coloured to display a brighter and a darker side to said viewing locations respectively in said ON and OFF limiting position,

the rotor comprising two portions on each side of the rotary axis,

a panel on said stator providing a brighter surface designed to match said rotor brighter side and located on one side of said axis and spaced therefrom,

said panel surface and said rotor brighter side being designed in the ON position of said rotor to collectively occupy the pattern area to said locations,

said rotor, panel and stator being shaped to allow said rotor to rotate between limiting positions with the portion of said rotor on the side of said axis nearer adjacent said panel in the ON position, moving on the side of said axis remote from the viewing locations

said rotor being designed to occlude said panel to viewing locations in said OFF position and to present its darker side to said locations

electromagnetic drive means for selectively causing rotation of said rotor between ON and OFF positions and selectively maintaining said rotor in either of said positions.

5,055,833

METHOD FOR THE CONTROL OF AN ELECTRO-OPTICAL MATRIX SCREEN AND CONTROL CIRCUIT

Robert Hehlen, deceased, late of Rabastens by Laurent Hehlen, legal representative ; by Philippe Hehlen, legal representative; by Bernard Hehlen, legal representative, both of Morgangis; Maurice Le Galguen, Palaiseau, and Bruno Mourey, Boulogne Billancourt, all of France, assignors to Thomson Grand Public, Paris, France

Filed Aug. 15, 1988, Ser. No. 232,644

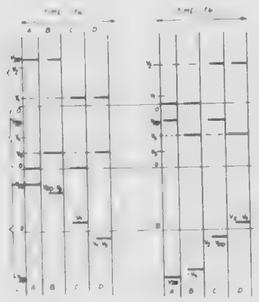
Claims priority, application France, Oct. 17, 1986, 86 14413

Int. Cl.[5] **G09G** *3/00, 3/36*

U.S. Cl. 340—784 **6 Claims**

1. A control circuit of an electro-optical screen implementing a method for the control of an electro-optical matrix screen comprising several cells arranged in lines and columns, each cell being provided with a line control electrode and a column control electrode providing for the application, to the control electrodes of each cell, of at least one first control voltage with a first determined sign and at least one second control voltage with a second sign opposite the first one, said method having frame time periods with line time intervals, characterized in that: first and second lines of the cells being controlled during the line time intervals, during a determined frame period and during the first line time intervals the lines of cells are controlled by said first control voltage and, during the second line time intervals the lines of the cells are controlled by said second control voltage; during the following frame period and during the first line time intervals the lines of cells are controlled by the second control voltage while, during the second line time intervals the lines are controlled by said first control voltage comprising:

a liquid crystal display panel comprising said screen and having said cells arranged in lines and columns, each cell being controlled by said line control electrode and column control electrode, with the screen comprising a determined number N of said lines; said circuit further comprising, power supply circuits for giving said first control voltage of said first determined sign and said second control voltage of said second sign opposite to that of the first



sign; an inverter circuit for applying to said line and column electrodes, either the first control voltage or the second control voltage; a line period clock determining a control period of each line; and providing a line period clock signal to the inverter; a frame frequency signal generator determining a display period of a frame and providing a frame frequency signal; characterized in that said control circuit further comprises: a generator of random codes, which are all different and equal in number to the number N of lines, connected to the inverter circuit and enabling, depending on the value of each code, the control of the inverter circuit so that it applies, at each line to be controlled, during each line period, and controlled by the line period clock signal, either the first control voltage or the second control voltage; a first frequency divider-by-two circuit for receiving the frame frequency signal and giving a control signal, during one frame time period in two, to the inverter circuit for inverting the functioning of the inverter circuit.

5,055,834

ADJUSTABLE BILL-DAMAGE DISCRIMINATION SYSTEM

Teruhisa Chiba, Urawa, Japan, assignor to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1988, Ser. No. 180,832

Claims priority, application Japan, Apr. 13, 1987, 62-90135

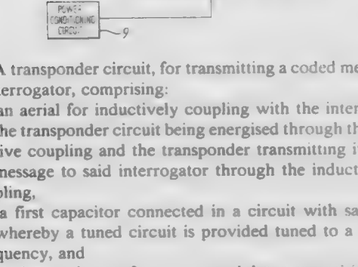
Int. Cl.[5] **G07D** *7/00*

U.S. Cl. 340—825.340 **3 Claims**

1. An adjustable bill-damage discrimination system which detects at least one physical quality of a bill and compares detected data of the bill with a predetermined discrimination level to determine whether or not the bill is damaged, said system comprising:

detection means for detecting at least one physical quality of a sample bill selected by an operator and for generating data representing a degree of detected bill damage,

memory means for storing said data detected by said detection means of a degree of bill damage as said predetermined discrimination level, said memory means being a reloadable memory which can be rewritten with fresh detected data by said detection means of a degree of bill damage obtained from a new sample bill selected by an operator,



said reloadable memory having areas for storing a plurality of said detected data,

input means for inputting damage level numbers,

said reloadable memory having areas for storing said damage level numbers as well as said detected data, and

level selecting means for selecting one of said level numbers to thereby select the corresponding detected data for a damage discrimination level.

5,055,835

TRACK TO TRAIN COMMUNICATION SYSTEMS

Malcolm S. Sutton, Borrowash, United Kingdom, assignor to British Railways Board, London, England

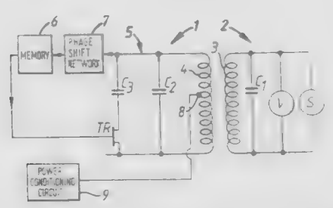
PCT No. PCT/GB88/00611, § 371 Date Feb. 15, 1989, § 102(e) Date Feb. 15, 1989, PCT Pub. No. WO89/00940, PCT Pub. Date Feb. 9, 1989

PCT Filed Jul. 27, 1988, Ser. No. 460,184

Claims priority, application United Kingdom, Aug. 5, 1987, 8718552

Int. Cl.[5] **H04B** *7/00*

U.S. Cl. 340—825.54 **3 Claims**



1. A transponder circuit, for transmitting a coded message to an interrogator, comprising:

a) an aerial for inductively coupling with the interrogator, the transponder circuit being energised through the inductive coupling and the transponder transmitting its coded message to said interrogator through the inductive coupling,

b) a first capacitor connected in a circuit with said aerial whereby a tuned circuit is provided tuned to a first frequency, and

c) a phase coherent frequency modulator comprising:

(i) a second capacitor connectable into said tuned circuit whereby to retune said tuned circuit to a second lower frequency, the relative values of said first and second capacitors being such that said first frequency is an integer multiple of said second frequency,

(ii) switching means arranged to connect the second capacitor periodically into and out of the tuned circuit,

(iii) a data memory whose stored data is output in a predetermined timed sequence, when said transponder circuit is energised, to provide a sequence, of control signals to said switching means whereby to switch said second capacitor into and out of said tuned circuit according to a predetermined sequence whereby a coded message is output from said transponder circuit, each bit of which is made of a predetermined combination of cycles of said first and second frequencies, and

(iv) a clock energised through said inductive coupling and whose clock pulses control the timing of the control signals output from said memory, whereby the switching between said first and second frequencies occurs with phase coherence and whereby the switching of the second capacitor into and out of said tuned circuit occurs at voltage maximum whereby energy is stored in said second capacitor when it is disconnected from the tuned circuit and is released when said second capacitor is reconnected to the tuned circuit.

5,055,836

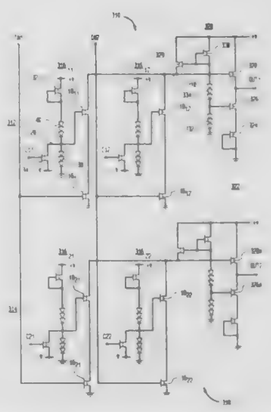
WIDEBAND SOLID-STATE ANALOG SWITCH

Michael G. Kane, Rocky Hill, N.J., assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 7, 1988, Ser. No. 281,116

Int. Cl.[5] **H04Q** *1/00*

U.S. Cl. 340—825.85 **22 Claims**



15. A crosspoint matrix switch having N inputs and M outputs coupled to a source of operating potential, for broadcasting of one of N inputs over at least one of M outputs, comprising:

at least M load means each coupled to a supply of operating potential and having a resistive value such that current flowing through said load means causes a voltage drop, an output terminal being connected to each of the load means such that the voltage at each output terminal is the difference between the operating potential and the voltage drop caused by current flowing through its respective load means; and

at least M times N crosspoints, each of the M outputs having at least N parallel connected crosspoints, in which each crosspoint is for switching one of the at least N inputs to one of the at least M outputs, each of said crosspoints comprising:

a switching means for providing a conducting path for the flow of current in a first state (ON), and for preventing the

flow of current in a second state (OFF), said load means and switching means being coupled in series;

a modulating means coupled between said switching means and a point of reference potential for receiving an input signal at one of the input terminals, the modulating means being controlled by an input signal on said input terminal; and

a control means for simultaneously actuating said load means and said switching means, whereby when said switching means switch is turned OFF, said switching means prevents current from flowing to its respective output terminal, thereby isolating its respective input terminal from its respective output terminal, and whereby when said switching means is ON, said input signal modulates the current flowing through said load means, switching means, and modulating means, thereby causing a voltage drop across said load means,

wherein said switching means, modulating means and load means each include identical transistors having non-linear input/output transfer characteristics, and wherein said control means applies the correct operating voltages to said transistors, whereby said crosspoint matrix switch outputs a replica of the input signal,

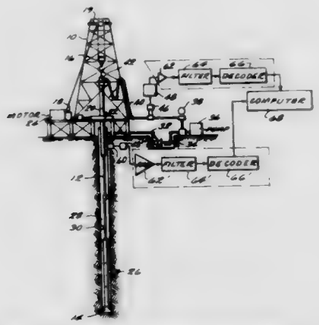
each crosspoint providing a voltage across said transistor of said modulating means which is not identical to said voltage across said transistor of said load means, thus increasing the distortion and attenuation of said associated input signal, said matrix switch further comprising a first matching means coupled to an output terminal for improving the match of the DC voltage across said transistor of said load means with a selected modulating means transistor, thereby increasing linearity of said load means and selected crosspoint.

5,055,837

ANALYSIS AND IDENTIFICATION OF A DRILLING FLUID COLUMN BASED ON DECODING OF MEASUREMENT-WHILE-DRILLING SIGNALS

Ali H. Abdallah, Rocky Hill, and Donald S. Grosso, West Hartford, both of Conn., assignors to Teleco Oilfield Services Inc., Meriden, Conn.

Filed Sep. 10, 1990, Ser. No. 579,706
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—853 **15 Claims**



1. A method of estimating the transfer function of a communications channel wherein the communications channel is defined by drilling fluid within the interior of a length of drill pipe or drilling fluid within the annulus between a borehole wall and a drillstring in the borehole, including the steps of:

(1) transmitting an encoded downhole pressure pulse in response to a downhole signal through the communications channel, the downhole signal having a first waveform associated therewith, said first waveform defining an original waveform;

(2) receiving the transmitted pressure pulse and converting the pressure pulse to a surface signal;

(3) decoding the surface signal to define a decoded signal;

(4) reconstructing the original waveform of the downhole signal by passing the decoded signal through waveform generator means so as to define a reconstructed waveform r(t); and

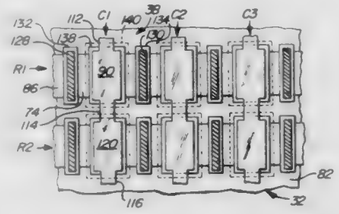
(5) determining the transfer function q(t) of the communications channel by a comparative or iterative analysis of the reconstructed waveform r(t).

5,055,838

SILICON TACTILE IMAGING ARRAY AND METHOD OF MAKING SAME

Kensall D. Wise, Ann Arbor, Mich., and Kenichiro Suzuki, Kanagawa, Japan, assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 9, 1988, Ser. No. 282,052
Int. Cl.[5] G08C *19/10;* **H03K** *17/94*
U.S. Cl. 340—870.370 **14 Claims**



1. A miniature tactile imaging array having a plurality of adjustable parallel plate capacitors each of which is responsive to force applied to one plate thereof, the array comprising:

a support substrate having an insulating surface;

at least first and second electrically conductive stripes spaced from one another and disposed on the insulating surface and constituting a set of address lines;

a first plurality of electrically conductive plates spaced from one another and electrically connected to the first stripe, each such plate forming one plate of a distinct one of the adjustable capacitors;

a second plurality of electrically conductive plates spaced from one another and electrically connected to the second stripe, each such plate forming one plate of a distinct one of the adjustable capacitors; and

first and second pluralities of force-sensitive bridge structures made from a common wafer of single-crystal semiconductor material, with the first and second pluralities of bridge structures being electrically isolated from one another and with the bridge structures within each such plurality of bridge structures being electrically interconnected to one another and constituting at least part of one line of a set of output lines, said output lines being formed so as to cross the set of first address lines at an angle,

each such bridge structure including a central plate portion, a pair of flexible beam portions thinner than the central plate portion and connected to, supporting and extending outwardly from opposite sides of the central plate portion, and a pair of side support portions each permanently attached to the support substrate and connected to and supporting a distinct one of the beam support portions on a side thereof opposite the central plate portion, the central plate portion and beam portions being positioned and patterned such that the central plate portion is nominally suspended and directly supported a predetermined distance above the insulating surface of the support substrate only by the pair of flexible beam portions, and

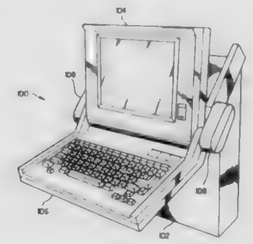
each such bridge structure being positioned with its central plate portion located above a distinct one of the electrically conductive plates, whereby each such central portion constitutes a second plate of a distinct one of the adjustable capacitors.

5,055,839

BREAKAWAY KEYBOARD

John C. Davis, Lake Worth, and John C. Irwin, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1989, Ser. No. 451,479
Int. Cl.[5] H03K *17/94*
U.S. Cl. 341—22 **7 Claims**



1. A system, said system comprising:

a system unit, said system unit oriented in a vertical plane;

a keyboard;

a hinge movably attaching said keyboard to said system unit, said hinge including means for holding said keyboard in at least three distinct positions including a closed position, an operating position, and a substantially vertical downward breakaway position, said holding means having means for detecting when an excessive downward force is applied to said keyboard and further having means for enabling said keyboard, without damaging said hinge, to drop to said breakaway position when said excessive downward force is detected and to be returned to said operating position directly from said breakaway position.

5,055,840

INFRARED TOUCH INPUT DEVICE AND LIGHT EMITTED ACTIVATION CIRCUIT

Alan L. Bartlett, New Braunfelf, Tex., assignor to Carroll Touch Incorporated, Round Rock, Tex.

Continuation of Ser. No. 465,837, Jan. 16, 1990, abandoned. This application Nov. 1, 1990, Ser. No. 609,128
Int. Cl.[5] H03K *17/94*
U.S. Cl. 341—31 **26 Claims**



1. A touch input device for detecting the presence of an opaque element within an irradiated display area, comprising:

a plurality of light emitting elements individually aligned with a plurality of light detecting elements located on an opposite side of the display area so that a beam of light emitted by a respective one of said light emitting elements is detected by a respective one of said light detecting elements aligned therewith unless an opaque element is positioned between said light emitting element and said light detecting element aligned therewith thereby interrupting said emitted light beam;

means for processing the detection of light or absence of light by said light detecting elements to determine and indicate the absence of or at least the presence and location of a said opaque element, respectively;

a common voltage source generating a supply voltage;

means for sequentially activating individual ones of said light emitting elements to generate light beams traversing said display area and incident upon respective aligned ones of said light detecting elements; and

a common voltage enhancement means between said voltage source and said sequential activation means, said voltage source upon activation of a respective one of said light emitting elements being electrically connected in series with the negative side of a capacitor of said voltage enhancement means, and the positive side of said capacitor being connected in series with a respective one of said light emitting elements, upon said activation power thereby being transmitted to said one of said light emitting elements from both said voltage source and said voltage enhancement means simultaneously,

said voltage enhancement means establishing a voltage at the positive side of said capacitor during a time interval between activation of sequentially activated ones of said light emitting elements and establishing the supply voltage as a series additive pedestal voltage at the negative side of said capacitor upon activation of each said light emitting element so that the voltage on the positive side of said capacitor is greater than the supply voltage of said voltage source during activation of each said light emitting element, thereby being synchronous with said sequential activation,

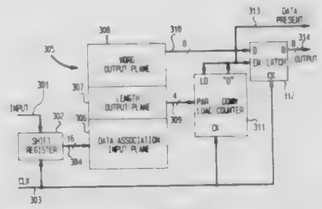
whereby the common voltage enhancement means and common voltage source insure that the light emitted by each said light emitting element exceeds a minimum threshold, while synchronous operation of the voltage enhancement means results in generating minimal electrical noise and thereby maintaining the integrity of the functioning of the touch input device.

5,055,841

HIGH-SPEED FEEDFORWARD VARIABLE WORD LENGTH DECODER

Robert R. Cordell, Middletown, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Feb. 1, 1991, Ser. No. 649,655
Int. Cl.[5] H03M *7/40*
U.S. Cl. 341—67 **9 Claims**



1. A variable word length (VWL) decoder for decoding an input bit stream of VWL codewords comprising:

shift register means having a plurality of bit storage locations for storing a fixed number of consecutive bits from said input bit stream, the bit in the bottom bit storage location being the earliest-in-time of the consecutive bits from said input stream stored in said bit storage locations, the bits in said storage means being shifted downward in response to the pulses in a clocking signal;

table-lookup memory means connected to the bit storage

locations of said shift register means, said memory means having a stored input entry for each VWL codeword, and stored corresponding output entries for a representation of the length of each VWL codeword and for the fixed-length codeword associated with each VWL codeword, said memory means decoding a VWL codeword by comparing the bits in said bottom and higher bit storage locations with a VWL codeword input entry and for producing a first output equal to the corresponding representation of the codeword length and a second output equal to the corresponding fixed-length codeword;

counting means connected to receive the representation of the codeword length at said first output of said memory means, said counting means counting clock pulses after each VWL word in the input bit stream is decoded by said memory means; and

latching means connected to receive the fixed-length codeword at the second output of said memory means, said latching means controlled by said counting means to produce a decoded output equal to the fixed-length codeword at the second output of said memory means only when the number of clock pulses counted by said counting means indicates that all the bits in the previous VWL word have been shifted out of said shift register means and the second output of said memory device represents the fixed-length codeword associated with a VWL codeword whose first bit is located in the bottom bit storage location of the register means.

5,055,842

MULTI-STAGE SERIAL-TO-PARALLEL/PARALLEL-TO-SERIAL CONVERTER PROCESSING DATA WORDS BY SEGMENTS

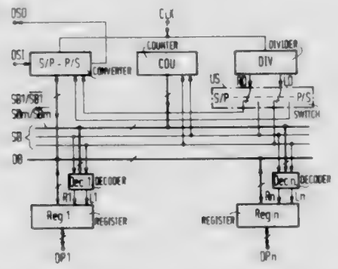
Rudi Mueller, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 22, 1990, Ser. No. 600,855

Claims priority, application European Pat. Off., Oct. 23, 1989, 89119646.1

Int. Cl.[5] H03M *9/00*

U.S. Cl. 341—100 **10 Claims**



1. Circuit arrangement for at least one of converting data words having a parallel structure into data words having a serial structure or converting data words having a serial structure into data words having a parallel structure, comprising: a shift register converter having at least serial terminals and having a length less than a length of a data word to be converted, a data bus that connects parallel terminals via a plurality of registers to the serial terminals via the shift register converter, a plurality of control lines connecting an executive sequencer to the shift register converter and to the plurality of registers, the data word to be converted being divided into sections by the executive sequencer, these sections being, first, smaller than the data word length, and, second, corresponding to the length of the shift register converter, whereby these data word sections are successively converted in the shift register converter.

5,055,843

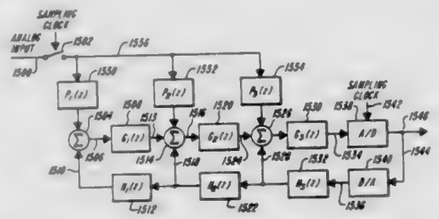
SIGMA DELTA MODULATOR WITH DISTRIBUTED PREFILTERING AND FEEDBACK

Paul F. Ferguson, Jr., Tewksbury, Mass.; Apparajan Ganesan, Salem, N.H., and Robert W. Adams, Acton, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jan. 31, 1990, Ser. No. 472,706

Int. Cl.[5] H03M *3/02*

U.S. Cl. 341—143 **27 Claims**



1. A sigma delta modulator for generating an output digital data stream from an analog signal, said modulator comprising:

a plurality of filter modules for receiving and processing an error signal;

means connecting said filter modules in series;

means for injecting a signal between each pair of filter modules;

an analog-to-digital converter responsive to an output of said plurality of filter modules for generating said output data stream;

a digital-to-analog converter responsive to said output stream for generating a feedback signal;

means for summing said analog signal and said feedback signal to generate said error signal;

means responsive to said feedback signal for applying a partial feedback signal to each of said injecting means and to said summing means;

a plurality of prefilters connected in parallel to said analog input, each of said prefilters generating a partial prefilter signal; and

means for applying a partial prefilter signal to each of said injecting means and to said summing means.

5,055,844

DIGITAL TO ANALOG CONVERTER

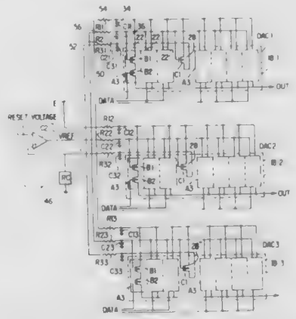
Kazuhiko Kasai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 27, 1989, Ser. No. 343,639

Claims priority, application Japan, Apr. 28, 1988, 63-106534

Int. Cl.[5] H03M *1/66, 1/06, 1/76*

U.S. Cl. 341—144 **5 Claims**



1. A digital-to-analog converter having input terminals for receiving digital data signals and output terminals for providing analog output signals, comprising:

means including a reference voltage source and a reference voltage transistor having a control terminal for providing a reference voltage in correspondence with a current through said reference voltage transistor,

first circuit means including a first current source transistor and first switching means, wherein said first current source transistor has a conduction path and a control terminal connected to said control terminal of said reference voltage transistor and wherein said first switching means is connected in said conduction path of said first current source transistor, for selectively switching a current of said first current source transistor to said output terminals in correspondence with a first digital data signal; and

second circuit means including a second current source transistor and second switching means, wherein said second current source transistor has a conduction path and a control terminal connected to said control terminal of said reference voltage transistor and wherein said second switching means is connected in said conduction path of said second current source transistor for selectively switching a current of said second current source transistor to said output terminals in correspondence with a second digital data signal;

wherein said reference voltage transistor is disposed a distance from said first circuit which is less than or equal to the distance between said first and second circuit means to reduce stray line effects and substantially equalize voltage condition for said first and second current source transistors and said reference voltage transistor.

5,055,846

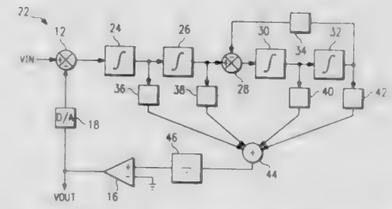
METHOD FOR TONE AVOIDANCE IN DELTA-SIGMA CONVERTERS

David R. Welland, Austin, Tex., assignor to Crystal Semiconductor Corporation, Austin, Tex.

Continuation of Ser. No. 257,057, Oct. 13, 1988, abandoned. This application Dec. 5, 1990, Ser. No. 622,369

Int. Cl.[5] H03M *1/06*

U.S. Cl. 341—155 **12 Claims**



1. In a delta-sigma converter, the improvement comprising: limiting the maximum signal-to-noise ratio at a node in said delta-sigma converter by, at least in part, attenuating the signal level at said node such that during normal operation the noise level is sufficient to significantly reduce tones in the frequency band of interest which result from the correlation of the quantization noise in said delta-sigma converter.

5,055,847

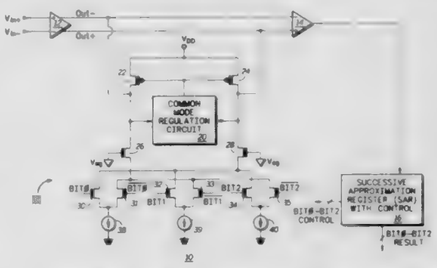
DIFFERENTIAL SENSING CURRENT-STEERING ANALOG-TO-DIGITAL CONVERTER

Mathew A. Rybicki, Austin; Roger A. Whatley, Georgetown, both of Tex., and Katsufumi Nakamura, Pittsburgh, Pa., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 19, 1991, Ser. No. 656,334

Int. Cl.[5] H03M *1/38*

U.S. Cl. 341—162 **13 Claims**



5,055,845

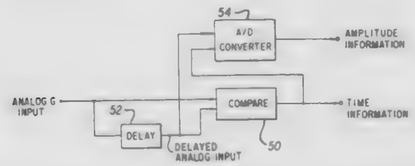
SIGNAL DIGITIZING METHOD AND SYSTEM UTILIZING TIME DELAY OF THE INPUT SIGNAL

Frank Ridkosil, Hackensack, N.J., assignor to Datajet, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 274,605, Nov. 18, 1988, which is a continuation of Ser. No. 595,255, Mar. 30, 1984, abandoned. This application Sep. 13, 1989, Ser. No. 406,585

Int. Cl.[5] H03M *1/12*

U.S. Cl. 341—155 **27 Claims**



1. A converter circuit for converting into binary information an input analog signal having a time-varying amplitude producing amplitude peaks and valleys, the converter circuit comprising digitizer means having an input for receiving the input analog signal and an output for providing a binary signal in the form of a sequence of binary states having durations responsive to the time between peaks and valleys of the input analog signal, the digitizer means including means for producing a delayed version of the input analog signal, and means for comparing the input analog signal with the delayed version and changing the state of said binary signal in response to a predetermined relationship between said input analog signal and said delayed version.

1. A differential sensing current-steering analog-to-digital converter, comprising:

means for receiving first and second differential currents representing an analog input signal at first and second output terminals, respectively;

a digital-to-analog converter means having first and second terminals respectively coupled to the first and second output terminals and a predetermined plurality of current sources, the digital-to-analog converter means concurrently conducting current either to or from each of the first and second output terminals by using the plurality of current sources;

a comparator means having first and second inputs respectively coupled to the first and second terminals of the digital-to-analog converter means, and having an output which indicates whether a difference in signal at the first and second terminals is within a predetermined range; and

a successive approximation register means having an input

coupled to the output of the comparator means, said successive approximation register means selentively providing a control signal as a converted digital signal of the analog input signal, the control signal controlling conduction of predetermined current sources of the digital-to-analog converter means.

5,055,848

RADAR APPARATUS FOR THE DETECTION OF HELICOPTERS

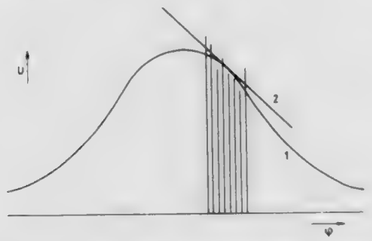
Petrus J. Rotgans, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 19, 1991, Ser. No. 657,571

Claims priority, application Netherlands, Feb. 23, 1990, 9000437

Int. Cl.[5] G01S *7/30*

U.S. Cl. 342—90 **5 Claims**



1. Radar apparatus, provided with an antenna, a transmitting unit, a receiving unit and a detection unit which, for objects incorporating fast moving parts, such as helicopters, determines the positions of these objects on the basis of a number of successive measurements, whereby the measuring values, via a first range-azimuth memory, are applied in groups to the detection unit which, per group, can generate a detection, which detections are applied to a second range-azimuth memory; further provided with a clusterer which determines the position of individual detections or clusters of detections in the second range-azimuth memory and delivers these positions for further processing, characterised in that the dectection unit is also provided with:

i. a trend estimation unit which, for the measuring values in a group, estimates the effect of the possible movement of the antenna, in this way generating a best fitting trend line;

ii. a standard deviation calculation unit which, for the measuring values in a group, calculates the standard deviation of the measuring values relative to the trend line of this group, in this way generating a standard deviation value;

iii. a threshold unit which, for each group, compares the standard deviation value with a threshold value, which is at least dependent on an average noise level in the receiving unit and which generates a detection when exceeded.

5,055,849

METHOD AND DEVICE FOR MEASURING VELOCITY OF TARGET BY UTILIZING DOPPLER SHIFT OF ELECTROMAGNETIC RADIATION

Henry Andersson, Espoo, and Eero Salasmaa, Helsinki, both of Finland, assignors to Vaisala Oy, Finland

Filed Oct. 9, 1990, Ser. No. 594,326

Claims priority, application Finland, Oct. 26, 1989, 895094

Int. Cl.[5] G01S *13/58;* **G01W** *1/08*

U.S. Cl. 342—104 **9 Claims**

1. A method for measuring the velocity (v) of a moving target (A) by utilizing electromagnetic radiation, most preferably within the radio frequency range, in which method a radio transmitter-receiver arrangement is used both at the measuring station (B) and in the target (A) to be measured, by means of which radio signals are transmitted and correspondingly received at the opposite stations (A, B), the frequencies of which signals include Doppler shifts (fd) to be observed both at the measuring station (B) and in the measuring target (A), and on the basis of said Doppler shifts (fd), the escape and/or approach velocity (v) of the target to be measured is determined relative to the measuring station (B), characterized in that the method comprises in combination the following phases:

(a) radio signals are transmitted from the measuring station (B) and the target station (A), the frequencies of which signals deviate from each other by a relatively small certain frequency difference (fk) or by a Doppler frequency shift (fd), the absolute value of said small frequency difference being at least as high as the absolute value of the largest expectable Doppler frequency shift (fd_{max});

(b) said radio signals are received at stations (B, A) located opposite relative to their transmission stations (A, B);

(c) a difference frequency or difference frequencies (fb, fa) of the frequency including the Doppler shift (fd) and received at the measuring station (B) and the target station



(A) and of a reference frequency of substantially a signal frequency range developed locally and transmitted to the opposite station are formed in such a way that a low-frequency or possibly a zero-frequency signal at the target station is obtained as the difference frequency or frequencies (fb, fa);

(d) on the basis of said difference frequencies (fb, fa), the Doppler frequency shift (fd) is determined, by means of which the velocity (v) of the target (A) is obtained;

the transmission frequency (f1+fk; f1) of each station is used as a local oscillator frequency both at the measuring station (B) and the target station (A); and

the difference frequencies (fb, fa) of said local oscillator frequency and of the frequency of the Doppler shifts (f1+fk+fd;f1+fd) are formed by a heterodyne (**12**, **22**) and said difference frequencies are amplified in beat amplifiers (**13**, **23**) whose output signals are led to a frequency measuring device.

5,055,850

WAVEFORM GENERATOR

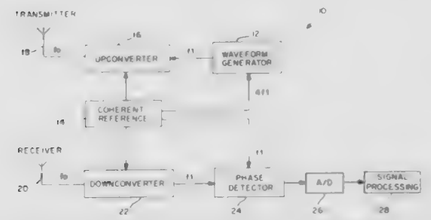
David Lamper, St. Charles, and Thomas L. Grettenberg, St. Louis, both of Mo., assignors to Electronics & Space Corporation, St. Louis, Mo.

Filed Sep. 4, 1990, Ser. No. 576,996

Int. Cl.[5] G01S *13/89*

U.S. Cl. 342—201 **20 Claims**

1. In a radar system in which a coherent clock reference signal is used to generate a linear FM signal which is radiated from a transmitter located on a radar system platform, strikes an object, and has a portion thereof reflected back toward the platform, received by the system and thereafter processed to obtain information about the object, this processing including periodically sampling the received signal, a waveform generator whose output signal automatically compensates the received signal both with respect to any difference between the leading edge of the sampled portion of the signal and the leading edge of a sampling window (i.e., range walk) and any change in the received pulse-to-pulse phase and frequency due to motion of the platform occurring between transmission of one pulse and the next (i.e. "focusing"), the generator having means for generating a linear FM reference signal whose signal characteristics account for both any time difference between



the leading edge of a sampling window and the leading edge of the sampled portion of the signal and any change in the received pulse-to-pulse phase and frequency due to motion of the platform occurring between the transmission of one pulse and the next.

5,055,851

VEHICLE LOCATION SYSTEM

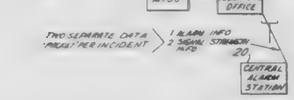
Eliezer A. Sheffer, Plainview, N.Y., assignor to TrackMobile, Inc., San Diego, Calif.

Continuation of Ser. No. 194,479, May 16, 1988, Pat. No. 4,891,650. This application Nov. 29, 1989, Ser. No. 443,465

The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—457 **20 Claims**



1. A system for determining a location of a selected vehicle from which an alarm signal is generated:

a fixed array of a plurality of individual wireless signal detecting means, each of said individual wireless signal detecting means for receiving an input alarm signal having a strength which is a function of the distance between the position of the selected vehicle generating said alarm signal and the position of each of said individual one of said plurality of wireless signal detecting means;

each of said individual wireless signal detecting means of said array including a wireless signal generating means for transmitting an output signal which is a function of the strength of said input alarm signal;

a main wireless signal detecting means for receiving an output signal from each of said individual wireless signal generating means; and

a control monitoring means, coupled to said main wireless signal detecting means, for receiving output signal there from, each of said output signals which is a function of the strength of said received input alarm signal, for determining the approximate location of said selected vehicle from which an alarm signal is generated.

5,055,852

DIPLEXING RADIATING ELEMENT

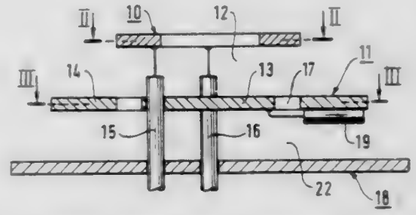
Thierry Dusseux, Tournefeuille, and Michel Gomez-Henry, Toulouse, both of France, assignors to Alcatel Espace, Courbevoie, France

Filed Jun. 20, 1990, Ser. No. 540,737

Claims priority, application France, Jun. 20, 1989, 89 08190

Int. Cl.[5] H01Q *1/38, 13/00*

U.S. Cl. 343—725 **9 Claims**



1. A diplexing radiating device comprising: a first resonant radiating element and a second resonant radiating element, said resonant radiating elements operating in different frequency bands; said first radiating element including only one conductor; said second radiating element including a first conductor surrounding a second conductor and defining a slot therebetween; a microwave source being connected to at least one access feeding the first radiating element; said slot being fed by at least one line; said first conductor of the second radiating element constituting a ground plane; a reflector-plane causing the radiation from the slot to be unidirectional; and said diplexing radiating device being a stack consisting of:

said first resonant radiating element;

a first spacer;

said first and second conductors of the second resonant radiating element;

a second spacer; and

said reflector-plane; whereby the coupling between said two resonant radiating elements is minimal.

5,055,853

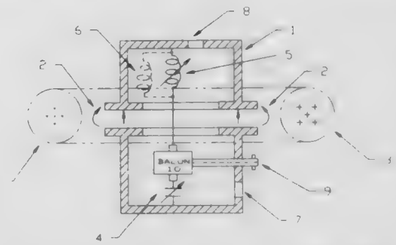
MAGNETIC FRILL GENERATOR

Robert C. Garnier, S65 W24940 Robyn Rd., Waukesha, Wis. 53186

Filed Oct. 3, 1988, Ser. No. 252,566

Int. Cl.[5] H01Q *13/18*

U.S. Cl. 343—769 **9 Claims**



1. A structure for generating an external continuously encircling transverse electromagnetic field, comprising a tubular cavity wall structure defining a cavity, said wall structure being electrically conductive, an energizing device mounted in the cavity for supplying an internal electromagnetic field to said cavity, a continuous uninterrupted annular gap in the cavity wall structure and constituting the only opening into said cavity, said wall structure creating a self inductance, said energizing device including a separate inductor connected

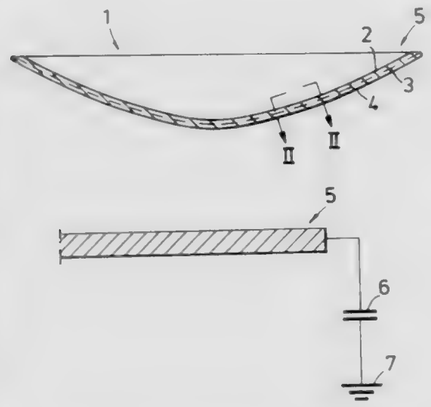
between said cavity wall structure and a feed input, said continuous uninterrupted gap located to function with said inductor and defining a single capacitor functioning conjointly with said inductor and said self inductance of said cavity wall structure to establish a single resonating assembly having a resonant frequency controlled by the self inductance of said wall structure and said separate inductor and uninterrupted gap capacitance and whereby the field in said gap resulting from the internal electromagnetic field creates an external oscillating magnetic frill.

5,055,854

REFLECTOR FOR PARABOLIC ANTENNAE

Regis Gustafsson, Brosarp, Sweden, assignor to Sparbanken Syd, Ystad, Sweden

Filed Jun. 9, 1988, Ser. No. 204,320
Claims priority, application Sweden, Jun. 30, 1987, 8702699
Int. Cl.[5] H01Q *15/16*
U.S. Cl. 343—912 3 Claims



1. A parabolic antenna reflector (**1**) which comprises a laminate formed from two layers (**2, 4**) of electrically well-conducting metal and an intermediate layer of plastics material of essentially uniform thickness end of low electrical conductivity, characterized in that the thickness and dielectric constant of the plastic layer are such that, at the operational frequency of the antenna, said reflector (**1**) forms a decoupling or by-pass capacitor (**6**) with a low impedance to earth (**7**) to attendantly reduce undesirable radiation side lobes.

5,055,855

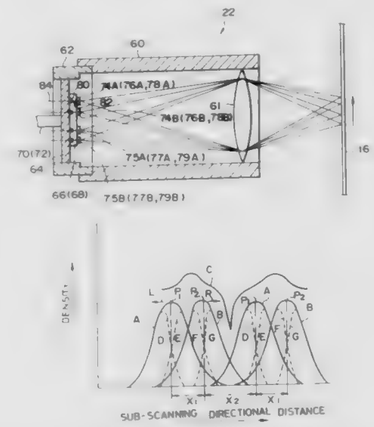
PIXEL INTERVAL COMPENSATING METHOD

Tomonori Nishio, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 13, 1990, Ser. No. 508,674
Claims priority, application Japan, Apr. 17, 1989, 1-96631
Int. Cl.[5] H04N *1/21;* G01D *9/42*
U.S. Cl. 346—1.1 19 Claims

1. A pixel interval compensating method for compensating the intervals of a plurality of pixels which are simultaneously recorded on a recording surface, said pixel interval compensating method comprising the steps of:

emitting a plurality of beams of which light intensity distributions partially overlap with one another so as to record said plurality of pixels; and



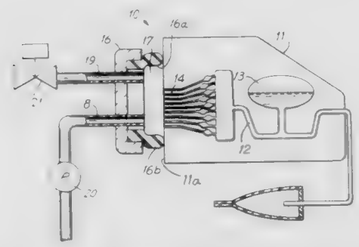
making said intervals between adjacent two of said pixels to be recorded to be predetermined value by changing the light quantity ratio of said plurality of beams.

5,055,856

CAPPING DEVICE FOR INK JET PRINTERS

Tsuyoshi Tomii, and Katsuhiko Iida, Nagano, both of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 6, 1989, Ser. No. 403,435
Claims priority, application Japan, Sep. 7, 1988, 63-224078; Nov. 2, 1988, 63-277909; Nov. 5, 1988, 63-279676
Int. Cl.[5] B41J *2/165*
U.S. Cl. 346—1.1 19 Claims



13. A method of capping a print head in an ink jet printer having a damper in fluid communication with an ink nozzle exposed to the atmosphere, comprising:

sealing the ink nozzle;

applying suction to the outer side of the nozzle for a first period of time t to establish a first low pressure level at the nozzle and a first low pressure in the damper;

exposing the nozzle to atmospheric pressure for a second time interval tz to place the damper at substantially atmospheric pressure;

resealing the nozzle and continuing to apply suction for a third time interval t_3 than the first time interval t_1, to reduce the pressure at the nozzle to a level higher than the first pressure level and the pressure in damper higher than the first damper pressure level and of high enough pressure to prevent the meniscus at the nozzle from being siphoned back to the damper below the first ink level; and

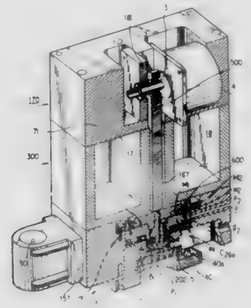
returning the nozzle to atmospheric pressure after the third time interval t_3 and resealing the nozzle and ceasing to apply suction to the nozzle.

5,055,857

DEVICE FOR RECEIVING A COMBINATION OF TWO VARIABLE VOLUME CHAMBERS AND A PLURALITY OF VALVES FOR A SUPPLY CIRCUIT OF AN INK JET PRINTING HEAD

Luc Regnault, Monteleger, France, assignor to Imaje SA, Bourg les Valence, France

PCT No. PCT/FR88/00522, § 371 Date Jun. 20, 1989, § 102(e) Date Jun. 20, 1989, PCT Pub. No. WO89/05728, PCT Pub. Date Jun. 29, 1989
PCT Filed Oct. 25, 1988, Ser. No. 372,368
Claims priority, application France, Dec. 21, 1987, 87 18127
Int. Cl.[5] G01D *15/18;* F04B *17/00*
U.S. Cl. 346—75 12 Claims



1. A device for receiving two variable volume chambers and a pressure sensor cooperating with a plurality of valves and valve-restriction pairs, said device providing for a correct operation of an ink supply circuit for an ink jet printing head and a recovery of unused ink at a level of a recovery gutter, wherein said device comprises:

a one piece solid block made from a material which resists chemical aggressions, said one piece solid block comprising a central cylindrical housing having a first zone of diameter ϕ_1 and a second zone of diameter ϕ_2 in which a piston may move, said piston comprising two stacked parts, the first of said two stacked parts having a diameter O_1 and the second of said two stacked parts having a diameter O_2, said two stacked parts of said piston defining, within said two zones, by means of two sealing membranes, said two variable volume chambers;

said one piece solid block further comprising:

a plurality of cavities for receiving said valves; and

a housing for receiving said pressure sensor.

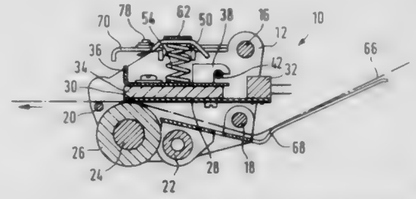
5,055,858

THERMAL PRINTING HEAD

Ulf Koch, Eberbach, Fed. Rep. of Germany, assignor to Esselte Meto International Produktions GmbH, Hirschhorn, Fed. Rep. of Germany

Filed Mar. 20, 1990, Ser. No. 495,971
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1989, 3909286
Int. Cl.[5] G01D *15/10;* B41J *2/335*
U.S. Cl. 346—76 PH 3 Claims

1. A thermal printing head having a supporting frame, a thermal printing plate comprising on a front side several individually triggerable heating elements being arranged along a line, and a counter-pressure roll rotatably mounted in said supporting frame, the thermal printing plate being held in frictional contact with said roll so that the line of heating elements contacts a circumferential surface of the counter-pressure roll along a paraxial generating line, wherein at least one locking hook is in engagement with a pin fixed on the supporting frame said at least one locking hook is provided on the thermal printing plate, on a location being situated to be spaced apart from the line of heating elements, and wherein at least one pressure spring is provided in the region between the at least one locking hook and the line of heating elements between a stop in fixed connection with said supporting frame, and the rear side of the thermal printing plate facing away from the front side of the thermal printing plate, and that the at least one pressure spring has allocated therewith a retaining means for securing a pressure spring on the thermal printing plate, wherein the retaining means is formed by a plate being shiftable by a predetermined distance on at least one pin extending perpendicularly with respect to the rear side of the thermal printing plate and embracing an end of the pressure spring



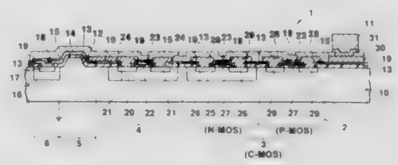
facing away from the rear side of thermal printing plate, that the stop is held in engagement with the plate forming the retaining means and that the predetermined distance is larger than the distance of the stop from the rear side of the thermal printing plate and where two pressure springs are provided to be symmetrical with respect to a line bisecting the line of the heating elements and extending perpendicularly with respect to this line and that the retaining means comprises a plate for each of the pressure springs, the two plates being connected to each other by a web, locking hook release means for releasing said at least one locking hook from said pin, said locking hook release means including means for exerting a force in opposition to the pressure springs in response to a force applied to said locking hook release means such that said at least one locking hook passes over the pin and said thermal printing plate is thereby released from said supporting frame.

5,055,859

INTEGRATED THERMAL PRINTHEAD AND DRIVING CIRCUIT

Takeshi Wakabayashi, Hidaka, and Tsuneo Ochi, Fuchu, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1989, Ser. No. 430,885
Claims priority, application Japan, Nov. 16, 1988, 63-287549; Nov. 18, 1988, 63-290287; Mar. 28, 1989, 1-76237
Int. Cl.[5] B41J *2/34*
U.S. Cl. 346—76 PH 13 Claims



1. A thermal print head, comprising:

a single-crystal semiconductor substrate;

a print driver circuit element formed by implanting an impurity into a predetermined region of said semiconductor substrate;

a polycrystalline silicon layer formed on said semiconductor substrate and including a low resistance region for heating;

a thin film conductor for wiring, said conductor connecting said print driver circuit element and said polycrystalline silicon layer;

an external connecting terminal connected to said thin film conductor; and

an insulating protective film covering said print driver circuit element and said polycrystalline silicon layer;

wherein said print driver circuit element includes a shift register element for successively shifting print data inputted from said external connecting terminal, a latch circuit element for latching the data in said shift register element, and a current supply element for supplying electric current for heating to said low resistance region in accordance with the data held in said latch circuit element.

5,055,860

IMAGE FORMING APPARATUS

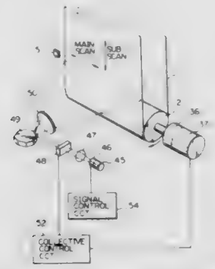
Kazunori Bannai, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 18, 1990, Ser. No. 525,107

Claims priority, application Japan, May 19, 1989, 1-124425; Feb. 28, 1990, 2-45826

Int. Cl.[5] G01D *9/42*

U.S. Cl. 346—108 **4 Claims**



1. An image forming apparatus for forming an image by modulating a light beam signal by an image signal, deflecting said modulated light beam signal onto a photoconductive element by a polygonal mirror to electrostatically form a latent image, and developing said latent image, said apparatus comprising:

main scanning synchronization detecting means for detecting synchronization of main scanning;

driving means for driving the photoconductive element in response to an output of said main scanning synchronization detecting means representative of synchronization;

detecting means for detecting a distance which the photoconductive element driven by said driving means moves;

comparing means for comparing an output of said detecting means with a predetermined value to output an error signal; and

deflecting means for deflecting the light beam signal in a subscanning direction in response to said error signal produced by said comparing means.

5,055,861

INK JET RECORDING APPARATUS

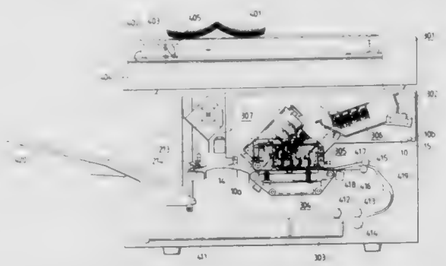
Yasushi Murayama, Tokyo; Tomohiro Aoki, Yokohama; Takashi Uchida, Yokohama; Tatsuo Mitomi, Yokohama, and Masaharu Nemura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,566

Claims priority, application Japan, Dec. 30, 1988, 63-331039; Dec. 30, 1988, 63-331040; Dec. 30, 1988, 63-334747; Dec. 30, 1988, 63-334753; Dec. 30, 1988, 63-334754; Dec. 30, 1988, 63-334755

Int. Cl.[5] B41J *2/165*

U.S. Cl. 346—140 R **28 Claims**



1. An ink jet recording apparatus comprising:

an endless belt for transporting a recording material by electrostatic attraction;

a charger for charging said endless belt;

cleaning means for cleaning said endless belt;

a recording head unit containing a plurality of full-line recording heads for discharging ink by forming bubbles therein by thermal energy;

a recovery unit containing a cleaning blade member, an ink absorbing member and a linking mechanism therefor for each of said recording heads, and being movable between a recovery position and a stand-by position with respect to said recording head unit;

a moving mechanism for moving said recording head unit in a recording position opposed to said endless belt, a recovery position separate from said recording position or a recovery unit introducing position separate from said recovery position, and for moving said recovery unit in relation to the movement of said recording head unit; and

a detachable unit integrally supporting said recording head unit, recovery unit and moving mechanisms and detachably mounted on a main body of the apparatus.

5,055,862

FILM GHOST REMOVAL IN ELECTROGRAPHIC PLOTTERS BY VOLTAGE BIAS OF THE PLOTTER FOUNTAIN OR FILM EDGE-STRIP

Lorin K. Hansen, Fremont; Richard J. Gable, Mountain View; Edwardo D. Lara, Sacramento; William A. Lloyd, Los Altos; Keith E. McFarland, Woodside; Jack H. Sayre, San Jose, and Stephen D. White, Santa Clara, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1989, Ser. No. 454,086

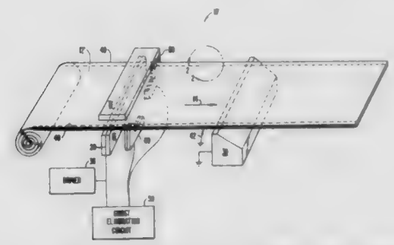
Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—154 **21 Claims**

20. An apparatus for reducing a ghosting potential in an electrographic plotter, comprising:

means, responsive to a data flow rate to a recording head of the plotter, for determining a magnitude for a ghosting potential developed in a conductive layer overlying a developing station of the plotter during deposition of a plurality of charges at said recording head; and

means, coupled to said determining means and responsive to said ghosting potential magnitude, for generating a potential in said conductive layer overlying said developing station to oppose said ghosting potential.



5,055,863

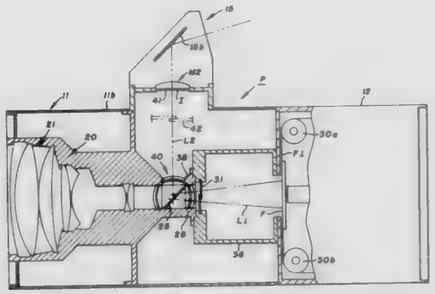
MULTIPLE IMAGE TRANSFER CAMERA SYSTEM

Jerome W. Lindenfelser, Brooklyn Park, Minn., and John A. Lawson, Spring Valley, Ohio, assignors to Photo Control Corporation, Minneapolis, Minn.

Filed Jun. 29, 1990, Ser. No. 546,099

Int. Cl.[5] G03B *29/00*

U.S. Cl. 354—75 **6 Claims**



1. A camera system for simultaneous and substantially total transfer of light rays from an object to separate, discrete mediums providing identical image reproduction at the mediums, said system including:

a. a front lens structure arranged and constructed to receive light rays from the object and to direct the same axially thereof;

b. a first light receiving medium aligned with said axis of said first lens structure to receive transmitted light rays for formation of an image thereon;

c. a second light receiving medium angularly offset with respect to said axis of said first lens structure to receive transmitted light rays for formation of an image thereon;

d. an apertured mirror arranged and positioned with respect to said front lens structure and said first and second light receiving mediums to pass light therethrough to said first medium to reflect light to said second medium, transmitting intensities of light to each of said mediums, for the intended purpose, without degradation or decrease of depth of field qualities for the respective images formed thereon;

e. first and second rear lens structures arranged and positioned respectively between said apertured mirror and said light receiving mediums; and,

f. light ray control means positioned between a selected one of said mediums and said apertured mirror to control light ray transmission to said medium.

5,055,864

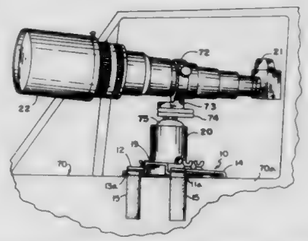
PORTABLE CAMERA BRACKET

David A. Slikkers, 13 Carousel La., Holland, Mich. 49423

Filed Nov. 5, 1990, Ser. No. 609,413

Int. Cl.[5] G03B *17/56*

U.S. Cl. 354—81 **19 Claims**



1. A support bracket for supporting camera apparatus in the window opening of a door of a vehicle and providing a stable platform for such camera apparatus comprising:

a plurality of generally L-shaped elements each having a horizontal leg and a downwardly extending leg; at least two of said elements having their downwardly extending legs extending generally in the same direction in spaced relationship to each other; said horizontal leg of said two L-shaped elements having means adapted to provide a sliding motion relative to each other for adjusting the distance between said downwardly extending legs for accommodating different thicknesses and shapes of the perimeter of an opening in which the camera apparatus is to be mounted; and

a platform carried by said L-shaped elements and adapted to be coupled to said camera apparatus for supporting the same.

5,055,865

FLASHLIGHT PHOTOGRAPHING DEVICE

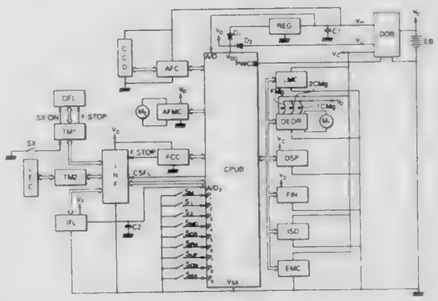
Akihiko Fujino; Tsutomu Ichikawa; Katsuyuki Nanba, and Nobuyuki Taniguchi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 27, 1990, Ser. No. 515,726

Claims priority, application Japan, Apr. 27, 1989, 1-108920; Apr. 27, 1989, 1-108921; Apr. 27, 1989, 1-108922

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—127.11 **2 Claims**



1. A flashlight photographing device including first and second flash devices which are selectively rendered operative to emit flashlight, comprising:

first judging means for judging whether or not said first flash device is in an operable condition in which said first flash device is capable of emitting flashlight and for outputting

a first light emission enabled signal when said first flash device enters the operable condition;

second judging means for judging whether or not said second flash device is in an operable condition in which said second flash device is capable of emitting flashlight and for outputting a second light emission enabled signal when said second flash device enters the operable condition;

third judging means for judging from which one of said first and second judging means a light emission enabled signal is outputted precedently to the other; and

selecting means for selectively enabling, in accordance with a result of judgment of said third judging means, a corresponding one of said first and second flash devices to that one of said first and second judging means which outputs a light emission enabled signal precedently to other.

5,055,866

RETRACTABLE ZOOM-STROBE DEVICE

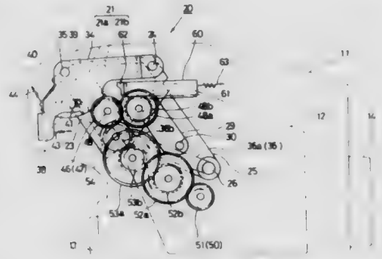
Tatsuhide Takebayashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1990, Ser. No. 550,022

Claims priority, application Japan, Jul. 11, 1989, 1-178270

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—149.1 **21 Claims**



1 A retractable zoom-strobe device comprising:

a strobe housing which is movable between a retracted position and a projected position;

a movable illuminating angle varying member which is movably supported by said strobe housing;

a powered strobe light emitter moving mechanism which moves said strobe housing between the retracted position and the projected position, wherein said powered light emitter moving mechanism comprises a strobe gear train for rotating said strobe housing, wherein at least two gears of said strobe gear train nearest said strobe light emitter are mounted to rotate about axes which are fixed with respect to said gear train; and

a powered illuminating angle varying member moving mechanism which moves said illuminating angle varying member.

5,055,867

STILL CAMERA WITH ENHANCED MULTIPLE FRAME BURST CAPABILITY

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1990, Ser. No. 562,363

Int. Cl.[5] G03B *1/12, 1/24*

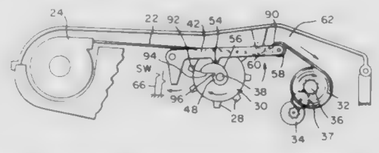
U.S. Cl. 354—173.11 **23 Claims**

1. A still camera comprising:

means for exposing successive frames of a filmstrip dispensed from a film supply and wound upon a take-up spool, the exposing means including a lens and shutter disposed to expose the successive frames between the film supply and the take-up spool;

means for rotating the take-up spool continuously for a selected time period sufficient to expose a plurality of frames;

a film metering sprocket disposed between the film supply and the take-up spool, the film metering sprocket being positively engaged with the filmstrip and being mounted for free rotation in order to be rotated as the take-up spool winds the filmstrip; and



indexing means for periodically stopping rotation of the film metering sprocket for a time interval of sufficient length to expose a frame of the film, said indexing means including means for accumulating filmstrip of sufficient length to permit the take-up spool to continue winding while the frame is being exposed whereby multiple frames of the filmstrip are exposed during the selected time period.

5,055,868

VARIABLE MAGNIFICATION FINDER OF REAL IMAGE TYPE

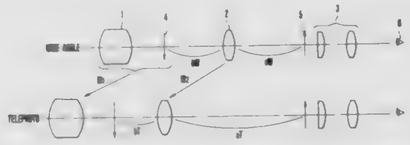
Yoshinori Itoh, and Kouji Oizumi, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1989, Ser. No. 391,319

Claims priority, application Japan, Aug. 26, 1988, 63-211913; Dec. 13, 1988, 63-315339; Jul. 4, 1989, 1-172788; Jul. 4, 1989, 1-172789

Int. Cl.[5] G03B *13/10*

U.S. Cl. 354—222 **14 Claims**



1. A finder device of the real image type that is capable of zooming comprising:

a first lens group having a positive refractive power to form a first image;

a second lens group having a positive refractive power to re-form said first image; and

an eyepiece lens group having a positive refractive power for observing an image formed by said second lens group, wherein zooming is performed by moving said first and second lens groups according to different loci of motion to each other.

5,055,869

FILM SUPPLY MAGAZINE

Matthew DiPietro, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

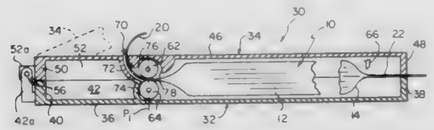
Filed Jul. 25, 1990, Ser. No. 558,263

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—276 **4 Claims**

1. In a magazine for receiving a package having a stack of film sheets enclosed within a light-tight, flexible bag, the magazine having a front end and a rear end, and the magazine having upper and lower portions and a hinge connecting the portions together at the rear end with the upper portion being swingable about the hinge between a closed position in engagement with the lower portion to enclose a package within the magazine and an open position wherein a package can be loaded into the magazine, the improvement comprising:

drive means adjacent the rear end of the magazine engageable with a package in the magazine for removing the bag from the stack of sheets therein, the upper portion of the magazine having an elongate opening between the drive



means and the rear end of the magazine through which the bag can be driven by the drive means, and means for deflecting the bag toward the front end of the magazine as it is driven through the opening.

5,055,870

WATERLESS PRESENSITIZED LITHOGRAPHIC PRINTING PLATE DEVELOPING APPARATUS

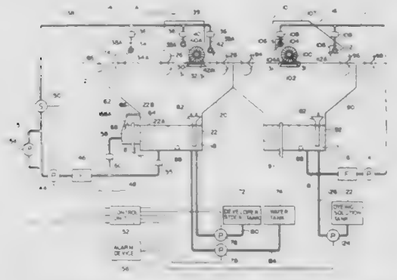
Hisao Ohba; Susumu Yoshida, and Toru Miura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 13, 1990, Ser. No. 479,134

Claims priority, application Japan, Feb. 17, 1989, 1-37971; Feb. 21, 1989, 1-41160

Int. Cl.[5] G03D *5/04*

U.S. Cl. 354—317 **19 Claims**



1. A waterless presensitized lithographic printing plate processing apparatus for processing a waterless presensitized lithographic printing plate on which an image has been exposed, while transporting the plate, comprising

a developing device for developing said waterless presensitized lithographic printing plate using an aqueous developing solution containing an organic solvent,

a developing solution recovery tank for recovering excessive aqueous developing solution,

said developing solution recovery tank being arranged to recover said excessive aqueous developing solution along with tailings in said developing solution, and

means for removing said tailings from the developing solution recovery tank.

5,055,871

METHOD AND APPARATUS FOR ENHANCING ILLUMINATION UNIFORMITY IN WAFER STEPPERS USING PHOTOCHROMIC GLASS IN THE OPTICAL PATH

Nicholas F. Pasch, Redwood City, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 5, 1989, Ser. No. 418,548

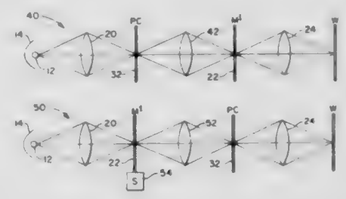
Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **30 Claims**

1. Photolithographic apparatus comprising:

a light source disposed at the upstream end of an optical path;

means for locating a mask downstream from the light source in the optical path; and



means for locating a semiconductor wafer downstream from the means for locating the mask in the optical path; and

a photochromic glass interposed in the optical path upstream of the means for locating a mask between the light source and the means for locating the mask.

5,055,872

IMAGE RECORDING APPARATUS HAVING IMAGE MAGNIFICATION CONTROL MEANS

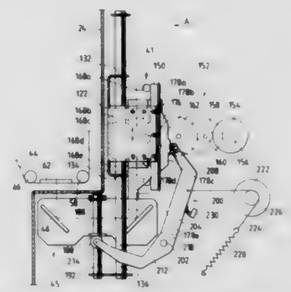
Kazuichi Sakaida; Katsuyoshi Sonobe; Nobuo Aoki, all of Nagoya; Satoshi Uchiyama, Kasugai, and Makoto Yamada, Gifu, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 18, 1990, Ser. No. 466,752

Claims priority, application Japan, Jan. 20, 1989, 1-12150[U]; Jan. 31, 1989, 1-21770; Feb. 3, 1989, 1-25993; Feb. 20, 1989, 1-18716[U]; Feb. 20, 1989, 1-39962; Feb. 20, 1989, 1-39963

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—55 **26 Claims**



1. An image recording apparatus including a stationary frame, a light source for irradiating light onto an original, the light from the original containing an imaging information corresponding to an image of the original, and an exposure zone on which an image recording medium is disposable for forming an image thereon; the image recording apparatus comprising:

a lens unit having a lens through which the light from the original passes, the lens unit being movably guided by the stationary frame;

a mirror unit for reflecting the light from the lens unit and directing the light toward the image recording medium, the mirror unit being movably guided by the stationary frame;

a first movable means movable together with one of the lens unit and the mirror unit, the first movable means defining a plurality of copying magnifications;

a second movable means movable in response to a movement of the first movable means, the second movable means being abuttable on the first movable means and on a remaining one of the mirror unit and the lens unit;

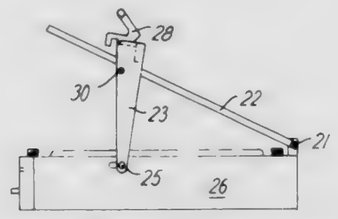
a first moving unit for moving one of the lens unit and the mirror unit in order to provide a copying magnification among the plurality of copying magnifications, the movement of the second movable means responsive to the movement of the first movable means moving the remaining one of the mirror unit and the lens unit to one of positions corresponding to the copying magnification; and a second moving unit for selectively moving the second movable means.

5,055,873

REPROGRAPHIC APPARATUS

Jens Hagedorn-Olsen, Hornbaek, Denmark, assignor to Helioprint A/S, Denmark

PCT No. PCT/DK88/00065, § 371 Date Oct. 5, 1989, § 102(e) Date Oct. 5, 1989, PCT Pub. No. WO88/08153, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 11, 1988, Ser. No. 411,502
Claims priority, application Denmark, Apr. 10, 1987, 1865/87
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 **3 Claims**



1. A reprographic apparatus comprising; a housing having a copyboard for holding a document to be exposed in a flat position in an exposure plane, said copyboard having a support plate defining said exposure plane, a transparent plate positioned above said support plate and pivotally connected therewith along one side edge, a releasable hold-down mechanism to lock the glass plate in an operative position holding the document in pressurized contact with the support plate hold-down mechanism comprising a movable pressure bar (**20**) extending parallel to the pivotally connected side edge of the glass plate (**22'**), the pressure bar (**20**) connected at its ends with side plates (**23**, **24**) displaceably and pivotally connected to said housing (**26'**) of the copyboard, wherein the pressure bar (**20**) in a first operative position engages the front edge of the glass plate (**22'**) to hold-down the document against the support plate (**19'**) and said hold-down mechanism displaceably and pivotally connected to said housing (**26'**) whereby the pressure bar (**20**) in a second operative position is moved away from the front edge of the glass plate (**22'**) so that the mechanism is completely below the exposure plane.

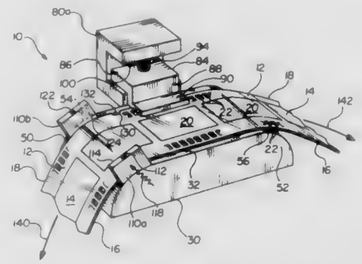
5,055,874

FILM FLATTENING APPARATUS AND METHOD

Christopher J. Kralles, and Michael T. Wolf, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1990, Ser. No. 592,208
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—76 **36 Claims**

1. Film flattening apparatus comprising:
a) a base having a flat surface adapted to contact film as it moves therealong in a given direction;
b) an aperture defined in said base open to said flat surface and having spaced apart lateral edges disposed substantially perpendicular to said direction and spaced apart longitudinal edges joining said lateral edges and disposed substantially parallel to said direction to allow respective opposite edges of said film to lie outwardly of said aperture longitudinal edges;
c) respective means in the vicinity of said aperture lateral edges for defining film contacting surfaces each having curvature sufficient to provide lateral column strength in the film as it is moved thereover in said direction; and



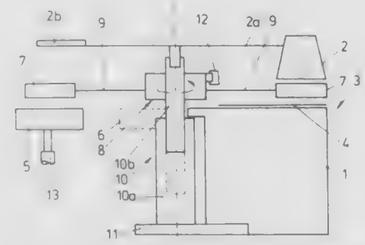
d) means substantially near said aperture longitudinal edges for applying edge flattening force to the edges of the film outwardly of said aperture longitudinal edges.

5,055,875

DEVICE FOR PRODUCING PRINTING PLATES

Hermann Fischer, Augsburg, and Jan Nemcik, Bad Salzuflen, both of Fed. Rep. of Germany, assignors to Krause-Biagosch GmbH, Bielefeld, Fed. Rep. of Germany

Filed Oct. 26, 1990, Ser. No. 604,062
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1989, 3937557
Int. Cl.[5] G03B *27/04*
U.S. Cl. 355—89 **23 Claims**



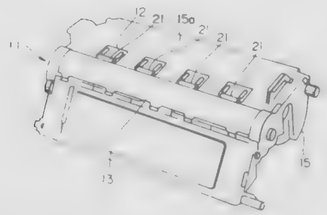
1. A device for producing printing plates comprising a printing down station with a plate table and an associated illuminating means, which station has associated with it a foil receiving means formed preferably constituted by a foil cassette for unprinted foil and preferably at least one receiving cassette for unprinted foil, in the case of which the foil to be printed onto an unexposed or blank printing plate is able to be taken from a foil receiving means by means of a moving vacuum frame, is able to be moved onto the blank plate on the plate table and after exposure is able to be discharged, preferably into a receiving cassette, said device comprising a plurality of vacuum frames, of which at least two are respectively attached to the periphery of at least one frame carrier, which is able to be turned through the angle between the vacuum frames, such attachment being at points which are offset from each other by the length of the path between the at least one foil receiving means and the plate table.

5,055,876

IMAGE FORMATION APPARATUS HAVING A PROCESS CARTRIDGE ACTING AS GUIDANCE FOR A MEDIUM

Makoto Matsuoka, Kawasaki, and Shigeki Sakakura, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 2, 1989, Ser. No. 360,792
Claims priority, application Japan, Jun. 3, 1988, 63-135445
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—211 **10 Claims**



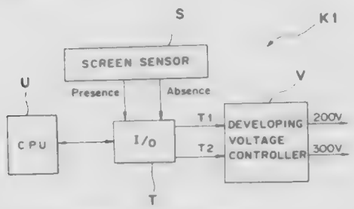
1. An image formation apparatus comprising:
at least one guide member means for guiding a medium on which an image is to be formed; and
a detachable process cartridge means mounted within said image formation apparatus for guiding said medium, said process cartridge means having an image carrier and at least one pinch roller incorporated therein, wherein said pinch roller is provided in the process cartridge means to come into elastic contact with a corresponding guide member means, and wherein said pinch roller and a surface of said detachable process cartridge means guide said medium.

5,055,877

COPYING APPARATUS WITH MOVEABLE SCREEN AND METHOD

Yasutaka Maeda, Ikoma; Natsuko Tanaka, Nara; Katsuhiro Nagayama, and Hideyuki Nishimura, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 3, 1990, Ser. No. 460,586
Claims priority, application Japan, Jan. 9, 1989, 1-2603; Feb. 14, 1989, 1-34508
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—214 **20 Claims**



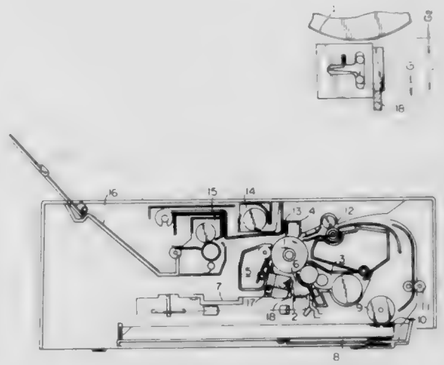
1. A copying apparatus comprising:
a screen for improving gradation characteristics of a copied image, the screen being moveable so as to be projected into and out of an optical path; and
means, responsive to placement of said screen into the optical path and out of the optical path, for setting a developing voltage to a first value and a second value, respectively, such that the first value is lower than the second value.

5,055,878

IMAGE FORMING APPARATUS

Keiji Okamoto, and Takeshi Komurasaki, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,213
Claims priority, application Japan, Jan. 31, 1989, 1-19582
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **3 Claims**



1. An image forming apparatus comprising:
a main body;
a photosensitive element mounted to said main body;
a charging means for forming an electrostatic latent image on the photosensitive element;
a support means removably mountable in said main body and movably supporting the charging means by means permitting the size of a gap between the surface of the photosensitive element and the charging means to vary; and
a positioning means which contacts the charging means and positions the charging means at a constant distance from the surface of the photosensitive element when the support means is mounted on said image forming apparatus,
wherein said means permitting the size of the gap to vary comprises a slot in said suport means and a projection of said charging means which slidably fits in said slot, said slot extending toward said photosensitive drum.

5,055,879

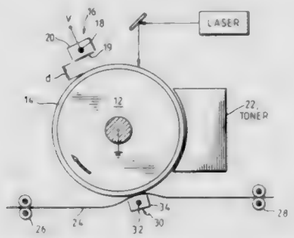
APPARATUS FOR OZONELESS EFFICIENT CHARGING OF A PHOTORECEPTIVE DRUM IN AN ELECTROPHOTOGRAPHIC PRINTER

Gopal C. Bhagat, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 2, 1989, Ser. No. 360,371
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **6 Claims**

1. A duplicator having an apparatus for uniformly distributing a charge on an outer circumferential surface of a photoreceptive drum used in an electrophotographic printer, said photoreceptive drum having a longitudinal axis and being rotated about said longitudinal axis, the apparatus comprising:
an electrically conductive shaft having a longitudinal axis extending substantially parallel and adjacent said photoreceptive drum, said electrically conductive shaft being adapted for connection to a source of electric voltage;
a tube of semiconductive material extending about and connected to said electrically conductive shaft, said semiconductive material having a preselected durometer; and
means for rotatably mounting said shaft and tube immediately adjacent said photoreceptive drum and urging said shaft and tube in a direction toward said photoreceptive

drum with a preselected force so that an outer circumferential surface of said tube of semiconductive material contacts said outer circumferential surface of said photoreceptive drum and is rotated by rotation of said photoreceptive drum, said preselected force and the durometer of said semiconductive material interacting to form a definite elemental nip area in said tube of semiconductive material, said nip area having a width in the range of 0.001 to 0.0015 inches.

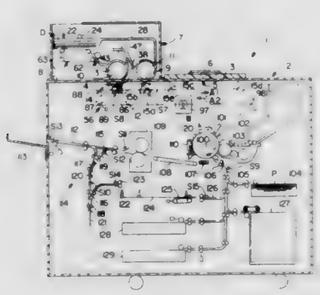


5,055,880

COPYING APPARATUS

Katsuyoshi Fujiwara, Sennan, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1990, Ser. No. 469,319
Claims priority, application Japan, Jan. 28, 1989, 1-17874
Int. Cl.[5] G03G *15/28*
U.S. Cl. 355—235 **7 Claims**



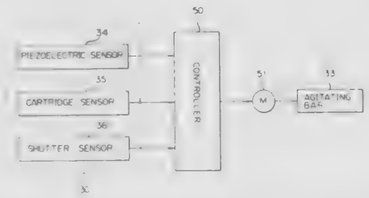
1. A copying apparatus comprising:
a transparent plate on which a document to be copied is placed, for forming a first reading region,
a document feeding means, which is disposed adjacently to the transparent plate deviated in the horizontal direction, for moving the document to a predetermined second reading region,
an optical reading means for running reciprocally in the first reading region, stopping at a predetermined stopping position in the second reading region, and possessing a moving portion for moving so as to read the document optically,
a driving means for moving the moving portion, which stops and holds at the stopping position when reading in the second reading region, moves from the stopping position when reading in the first reading region, reciprocates in the first reading region when reading once in the first reading region and returns to the stopping position after scanning, reciprocates in the first reading region when reading plural times in the first reading region and, after scanning, moves to a turning position for continuous copying predetermined between the first reading region and the stopping position, and repeatedly reciprocates in the first reading region from the turning position for continuous copying, and returns to the stopping position after reading plural times, and
a copying means for copying the original image on a copying paper in response to the output from the optical reading means.

5,055,881

DEVICE FOR SUPPLYING A TONER TO A DEVELOPING UNIT

Yutaka Fukuchi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 10, 1990, Ser. No. 565,064
Claims priority, application Japan, Aug. 19, 1989, 1-96967[U]
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—260 **3 Claims**



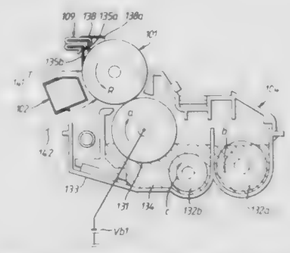
1. A toner supply device adapted to be loaded with a removable toner cartridge for supplying a toner to a developing unit of an electrophotographic image forming apparatus, comprising:
casing for storing toner;
agitating means for agitating the toner in said casing;
sensing means for sensing loading of the toner cartridge for providing toner to the casing through a shutter of said toner cartridge when held in an open position; and
control means for controlling said agitating means such that said agitating means operates for a predetermined period of time sufficient to eliminate concentrated masses of toner when said sensing means has sensed that the toner has been fed from the toner cartridge.

5,055,882

DEVELOPING AGENT DISPERSING UNIT FOR AN IMAGE FORMING APPARATUS

Seiichiro Fushimi, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 2, 1990, Ser. No. 473,725
Claims priority, application Japan, Feb. 13, 1989, 1-031015
Int. Cl.[5] G03G *15/24*
U.S. Cl. 355—269 **2 Claims**



1. An image forming apparatus utilizing a developing agent for forming an image on a recording medium, comprising
a rotatable image carrier;
charging means for charging the image carrier;
exposure means for exposing the rotatable image carrier to form a latent image corresponding to the image on the image carrier;

developing/removing means for simultaneously developing the latent image with developing agent into a developed image on the image carrier and removing developing agent remaining on the image carrier from a previous image forming operation from portions of the image carrier other than the developed image;
transfer means for transferring the developed image from the image carrier to the recording medium; and
disperse means for dispersing any developing agent remaining on the image carrier after transfer of the developed image, the disperse means including at least two electrically conductive brush members spaced apart from each other in sliding contact with the image carrier and a voltage source connected to one of the brush members for attracting the developing agent remaining on the image carrier;
the charging means, exposure means, developing/removing means, transfer means and disperse means being arranged in sequence along the direction of rotation of the image carrier.

5,055,883

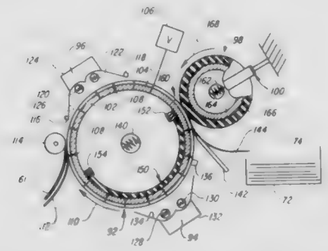
Patent Not Issued For This Number

5,055,884

ELECTROSTATOGRAPHIC EQUIPMENT WITH MULTIPLEX FUSER

Sylvain L. Ndebi, and Robert D. Bobo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1989, Ser. No. 453,740
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 **17 Claims**



1. An electrostatographic reproduction equipment for producing fused toner images on a variety of substrates, the reproduction equipment including:
(a) means for electrostatically forming image patterns of an original image on an image bearing member;
(b) means for developing such image patterns with fusible toner particles to form a toner image;
(c) means for transferring the toner image to a substrate; and
(d) a single multiplex or multiple mode fusing apparatus comprising:
(i) non-contact fusing means for completely fusing toner images onto such a substrate without contacting such image;
(ii) contact fusing means for completely fusing and fixing toner images by contacting and pressing the images onto such a substrate; and
(iii) control means for selectively operating said multiplex or multiple mode fusing apparatus in a non-contact mode such that toner images on such a substrate are fused only by said non-contact fusing means, or in a contact mode such that toner images on such a substrate are fused and fixed by said contact fusing means.

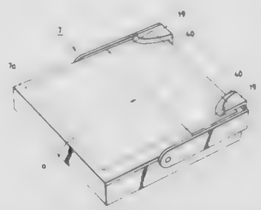
5,055,885

PICTURE IMAGE FORMING EQUIPMENT

Shouji Yoshikado; Masami Kawada; Hidekazu Amamoto; Atsuna Saiki; Kiyoyuki Endo, and Yutaka Inasaki, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

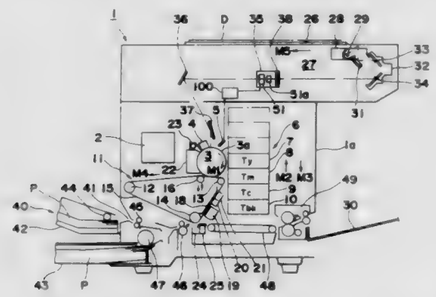
Filed Oct. 17, 1990, Ser. No. 599,150
Claims priority, application Japan, Nov. 9, 1989, 1-291568
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—318 **16 Claims**

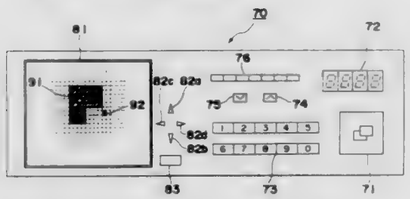




1. A paper path for guiding and transporting a sheet of paper in an image former which forms an image on both sides of the sheet of paper, the paper path comprising:
an image forming channel having a first paper roller for transporting a sheet of paper past the image former;
a paper discharging channel connected at a first connecting point to the image forming channel and having a second paper roller arranged to rotate in a forward direction and a reverse direction for transporting a sheet of paper between the first connecting point and a discharge tray;
a paper reversing channel connected to the first connecting point and connected at a second connecting point to the image forming channel having a third roller for transporting a sheet of paper from the first connecting point to the second connecting point; and
paper gate means at the first connecting point for guiding a sheet of paper at the first connecting point and for signaling the presence of the sheet of paper at the first connecting point.

5,055,886
IMAGE FORMING APPARATUS CAPABLE OF FORMING COPIED IMAGES EDITED FROM AN ORIGINAL IMAGE
Munehiro Nakatani; Hiroya Sugawa, and Masamichi Kishi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 2, 1990, Ser. No. 505,666
Claims priority, application Japan, Apr. 3, 1989, 1-85075
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **22 Claims**

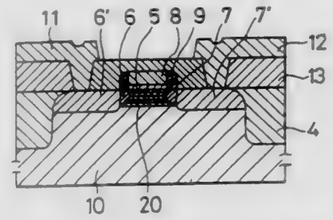




9. An image forming apparatus which comprises:
an electrostatic latent image forming means for forming an electrostatic static latent image corresponding to an original image on a photosensitive member;
a designating means for designating desired region in the original image;
an erasing means for erasing the electrostatic latent image on the photosensitive member by erasing picture element unit;
a display means for displaying the designated region in the original by the erasing picture element unit; and
a control means for controlling the erasing means so as to erase the region designated by said designating means.

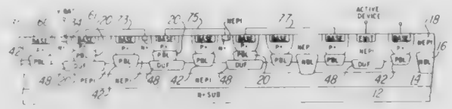
5,055,887
FET WITH A SUPER LATTICE CHANNEL
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan
Continuation-in-part of Ser. No. 102,841, Sep. 30, 1987, Pat. No. 4,908,678. This application Jan. 18, 1990, Ser. No. 466,955
Claims priority, application Japan, Oct. 8, 1986, 61-240544; Oct. 8, 1986, 61-240545; Oct. 8, 1986, 61-240546
The portion of the term of this patent subsequent to Mar. 13, 2007, has been disclaimed.
Int. Cl.[5] H01L *27/12, 45/00, 29/78*
U.S. Cl. 357—4 **6 Claims**

1. A gate insulated field effect transistor comprising:
a source region formed within a semiconductor substrate;
a drain region formed within said semiconductor substrate apart from said source region;
a channel region located between said source and drain regions and formed in superlattice structure comprising insulator and semiconductor films which are stacked in turn;
a gate insulating film formed on said channel region; and
gate, source and drain electrodes making electrical contact with said channel, source and drain regions respectively,



wherein the energy band width of the said insulator film near to said gate insulating film is larger than that of the said insulator film located more apart from said gate insulating film.

5,055,888
ZENER DIODES IN A LINEAR SEMICONDUCTOR DEVICE
Dan Agiman, Lewisville, Tex., assignor to Texas Instrumenets Incorporated, Dallas, Tex.
Filed Jun. 21, 1989, Ser. No. 370,207
Int. Cl.[5] H01L *29/90*
U.S. Cl. 357—13 **7 Claims**

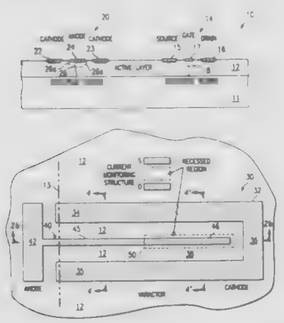


1. A Zener diode structure comprising:
(a) a semiconductor substrate layer of a first conductivity type;
(b) a first epitaxial semiconductor layer of said first conductivity type disposed on said substrate layer;
(c) a second epitaxial semiconductor layer of a second conductivity type different from said first conductivity type disposed on said first semiconductor layer;
(d) a third epitaxial semiconductor layer of said first conductivity type disposed over said second semiconductor layer;
(e) a buried layer of said first conductivity type disposed between and contacting said second and third semiconductor layers; and
(f) a semiconductor contact region of said second conductivity type extending between and contacting a surface of said third semiconductor layer and said buried layer to provide a Zener diode therewith, said semiconductor contact region being an anode of said Zener diode and said buried layer being a cathode of said Zener diode.

5,055,889
LATERAL VARACTOR WITH STAGGERED PUNCH-THROUGH AND METHOD OF FABRICATION
John M. Beall, Dallas, Tex., assignor to Knauf Fiber Glass, GmbH, Shelbeyville, Ind.
Filed Oct. 31, 1989, Ser. No. 429,924
Int. Cl.[5] H01L *29/92*
U.S. Cl. 357—14 **13 Claims**

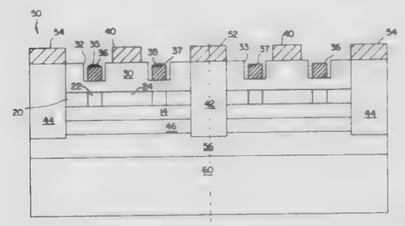
1. A lateral varactor with staggered punch-through levels, comprising:
an active layer disposed over a substrate; and
an anode and a cathode disposed on said active layer;

said anode having at least first and second sections, with the punch-through between said first section and said sub-



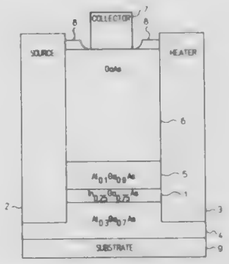
strate occurring at a greater voltage than the punch-through between said second section and said substrate.

5,055,890
NONVOLATILE SEMICONDUCTOR MEMORY HAVING THREE DIMENSION CHARGE CONFINEMENT
L. Ralph Dawson; Gordon C. Osbourn; Paul S. Peercy; Harry T. Weaver, and Thomas E. Zipperian, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 25, 1990, Ser. No. 469,995
Int. Cl.[5] H01L *29/161, 29/80, 29/34*
U.S. Cl. 357—16 **12 Claims**



1. A nonvolatile memory semiconductor device comprising:
(a) a substrate;
(b) a first barrier layer covering said substrate;
(c) a sense channel covering said first barrier layer;
(d) a second barrier layer covering said sense channel;
(e) a storage channel covering said second barrier layer;
(f) a third barrier layer covering said storage channel;
(g) a storage contact means for allowing charge to laterally flow through said storage channel, said contact means defining a horizontal boundary of said storage channel;
(h) a storage portion, within said storage channel, whose inner and outer horizontal boundaries are defined by a confining means, and whose upper and lower vertical boundaries are defined by said second and third barrier layers; and
(i) a confining means situated in said third barrier layer for retaining charge in said storage portion, where said retained charge is sensed by said sense channel.

5,055,891
HETEROSTRUCTURE TRANSISTOR USING REAL-SPACE ELECTRON TRANSFER
Nicolas J. Moll, La Honda; Mark R. Hueschen, Los Altos, and Marek E. Mierzwinski, Stanford, all of Calif., assignors to Hewlett-Packard Company, Palo, Calif.
Filed May 31, 1990, Ser. No. 532,485
Int. Cl.[5] H01L *29/161*
U.S. Cl. 357—16 **10 Claims**



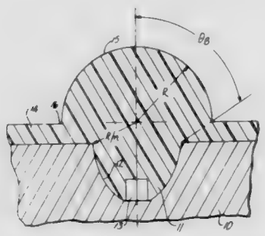
1. A heterostructure semiconductor device comprising:
(a) a channel layer of semiconducting material, said channel layer containing charge carriers having substantial mobility in said material;
(b) a substrate supporting said channel layer;
(c) means for inhibiting migration of said charge carriers into said substrate;
(d) a barrier layer of semiconductor material formed on and contacting said channel layer to define an interface therebetween, said barrier layer material having a band structure such that at room temperature said charge carriers are inhibited from flowing in said barrier layer material, and further such that when said charge carriers are heated in said channel layer a substantial number of said charge carriers attain sufficient energy to flow through said barrier layer material;
(e) said channel layer having a predetermined length in a predetermined direction substantially parallel to said interface between said channel layer and said barrier layer;
(f) a drift layer of semiconductor material formed on and contacting said barrier layer on the side opposite to said channel layer, said drift layer material having a band structure and composition such that charge carriers of sufficient energy to traverse such barrier layer can migrate through said drift layer material with substantial velocity;
(g) means for heating said charge carriers in said channel layer to allow a substantial number to traverse said barrier layer;
(h) a collector electrode in contact with the surface of said drift layer opposite to the surface contacting said barrier layer, said collector electrode having a length in said predetermined direction smaller than said predetermined channel layer length; and
(i) means for biasing said collector electrode to cause said charge carriers migrating through said drift layer to flow into said collector electrode.

5,055,892
HIGH EFFICIENCY LAMP OR LIGHT ACCEPTER
Robert C. Gardner; George E. Smith, both of San Jose, and Cheryl L. McLeod, Mountain View, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 29, 1989, Ser. No. 399,832
Int. Cl.[5] H01L *33/00, 23/28*
U.S. Cl. 357—17 **24 Claims**

1. An optical device comprising:
an axisymmetric cup having a closed end, reflective walls and a circular opening defined by a peripheral rim;

a light energy transducer mounted in the closed end of the cup away from its opening; and

a transparent medium having an index of refraction n filling the cup and extending beyond the opening of the cup, the



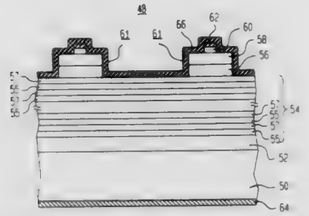
medium forming a lens in the form of a spherical surface having a radius R, the center of curvature of the lens being located at a distance R/n from the rim of the cup opening, and the principal optical axis of the lens being coaxial with the cup.

5,055,893

LIGHT-EMITTING DIODE ARRAY WITH REFLECTIVE LAYER

Teruo Sasagawa, Kanagawa, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1991, Ser. No. 647,969
Claims priority, application Japan, Apr. 23, 1990, 2-108489
Int. Cl.[5] G01L *33/00*
U.S. Cl. 357—17 **17 Claims**



1. A light-emitting diode array comprised of a multiplicity of light-emitting diodes arranged on a single substrate, said light emitting diodes comprising:

an active layer of a semiconductor material which emits light when subjected to carrier injection; and

a reflective layer adjacent the active layer which confines the injected carriers in the active layer, reflects light from the active layer and confines and absorbs light moving between adjacent light-emitting diodes.

5,055,894

MONOLITHIC INTERLEAVED LED/PIN PHOTODETECTOR ARRAY

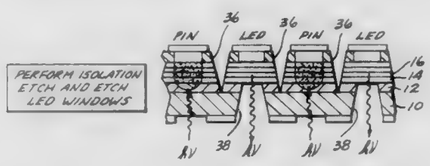
Eric Y. Chan, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 380,152, Jul. 14, 1989, abandoned, which is a division of Ser. No. 251,134, Sep. 29, 1988, Pat. No. 4,879,250. This application Jun. 12, 1990, Ser. No. 537,004
Int. Cl.[5] H01L *31/12, 31/16, 27/14, 31/00*
U.S. Cl. 357—19 **16 Claims**

1. An integrated optical device, comprising:

a substrate having opposed front and back surfaces;

a linear array of light emitting diodes and photodiodes integrally formed from a plurality of layers grown upon the first surface of such substrate, said light emitting diodes and photodiodes being spaced apart and interspersed in alternating manner so that no photodiode is next to another photodiode and no light emitting diode is next to another light emitting diode, said light emitting diodes having separate, parallel light output paths for emitting light in a direction outward from the back surface of said substrate, said photodiodes having separate light input paths for light incident on the back surface of said substrate, said light input paths being parallel to one another and to the light output paths of said light emitting diodes, said light emitting diodes and said photodiodes being operable at the same wavelength, each of said light emitting diodes having an active region formed in one of said plurality of layers, each of said photodiodes having an



active region formed in a different, nonadjacent one of said plurality of layers, the active regions of said photodiodes being closer to said substrate than the active regions of said light emitting diodes; and

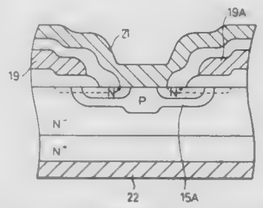
metal contacts disposed on one of said plurality of layers and on the back surface of said substrate for applying current to drive said light emitting diodes in the linear array of light emitting diodes, the metal contacts on the back surface being arranged to define openings therebetween, one of said openings being provided for each of the light input paths of said photodiodes and one of said openings being provided for each of the light output paths of said light emitting diodes.

5,055,895

DOUBLE-DIFFUSED METAL-OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR DEVICE

Sigeo Akiyama, Neyagawa; Masahiko Suzumura, Ibaragi, and Takeshi Nobe, Hirakata, all of Japan, assignors to Matsushuta Electric Works, Ltd., Osaka, Japan

Division of Ser. No. 294,787, Jan. 9, 1989, Pat. No. 4,902,630. This application Nov. 9, 1989, Ser. No. 433,976
Claims priority, application Japan, Jan. 18, 1988, 63-8993
Int. Cl.[5] H01L *29/10, 29/78, 27/02*
U.S. Cl. 357—23.4 **2 Claims**



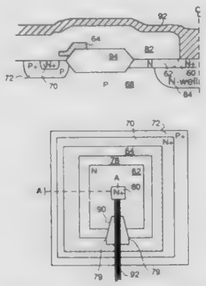
1. A depletion type DMOSFET device comprising a silicon wafer including a reverse size zone having a high impurity concentration and a top side zone having a low impurity concentration, a diffusion region in a surface area of said top side zone of said wager including well regions of a different conductivity type from the wager and source regions of the same conductivity type as the wafer, an insulating layer on said top size zone except for central area of said diffusion regions, said insulating layer outside said well regions on the wafer being thicker than that on the well regions, channel regions in a top surface area of said well regions and between said source regions and said top side zone, said channel regions being relatively lower in the carrier concentration than other parts in the well regions, gate electrodes above said channel regions with gate oxide layers interposed between said gate electrodes and said channel regions, source electrodes on said well regions and source regions, and a drain electrode on said reverse side high impurity concentration zone of the wafer.

5,055,896

SELF-ALIGNED LDD LATERAL DMOS TRANSISTOR WITH HIGH-VOLTAGE INTERCONNECT CAPABILITY

Richard K. Williams, Cupertino, and Steven H. Bolger, San Jose, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Filed Dec. 15, 1988, Ser. No. 285,842
Int. Cl.[5] H01L *29/784*
U.S. Cl. 357—23.8 **5 Claims**



1. An annular-shaped or rectangular-shaped DMOS transistor comprising:

a substrate of a first conductivity type having a top surface;

a drain region of a second conductivity type formed on and below said top surface of said substrate;

a drift region of a second conductivity type formed on and below said top surface of said substrate, said drift region contacting and substantially surrounding said drain region;

a body region of a first conductivity type formed on and below said top surface of said substrate, said body region surrounding said drift region and being separated from said drift region by a portion of said substrate;

a source region of a second conductivity type formed within said body region;

a gate oxide layer formed on said top surface of said substrate over a channel region between said source region and a termination point of said drift region;

a control gate formed over said gate oxide layer;

a first electrode contacting and shorting together said body region and said source region;

a second electrode contacting said drain region and forming an interconnect line extending over a portion of said control gate, said body region, and said source region; and

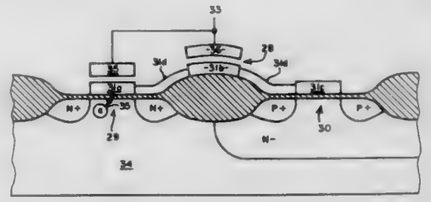
an inactive region located in an area under said interconnect line and extending out from under said interconnect line, said inactive region being an area where said drift region terminates at a distance from said channel region to reduce field crowding under said interconnect line.

5,055,897

SEMICONDUCTOR CELL FOR NEURAL NETWORK AND THE LIKE

George R. Canepa, Folsom; Mark A. Holler, Palo Alto, and Simon M. Tam, San Mateo, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 27, 1988, Ser. No. 225,035
Int. Cl.[5] H01L *29/68, 27/02, 27/10;* **H03K** *19/08*
U.S. Cl. 357—23.5 **16 Claims**



1. A semiconductor cell formed on a substrate comprising:

a first device having a pair of first spaced-apart regions disposed in said substrate, said first spaced-apart regions being of a first conductivity type said first spaced-apart regions defining a first channel between them, a floating gate disposed above said first channel and insulated from said first channel, and a first control gate disposed above and insulated from said floating gate, electric charge being transferable to said floating gate;

a second device having a pair of second spaced-apart regions disposed in said substrate, said second spaced-apart regions being of a second conductivity type, said second spaced-part regions defining a second channel between them, said floating gate extending over and being insulated from said second channel;

means for charging said floating gate to a predetermined level of charge said predetermined level of charge on said floating gate affecting the conductivity of said second device so as to provide a weighting factor of a desired strength in a network, such that an input to said cell in said network is multiplied by said weighting factor.

5,055,898

DRAM MEMORY CELL HAVING A HORIZONTAL SOI TRANSFER DEVICE DISPOSED OVER A BURIED STORAGE NODE AND FABRICATION METHODS THEREFOR

Kenneth E. Beilstein, Jr., Essex; Claude L. Bertin, South Burlington, both of Vt.; John R. Pessetto, Fort Collins, Colo., and Francis R. White, Essex, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1991, Ser. No. 693,880
Int. Cl.[5] H01L *29/78, 21/265*
U.S. Cl. 357—23.6 **28 Claims**

1. A semiconductor memory cell, comprising:

a substrate;

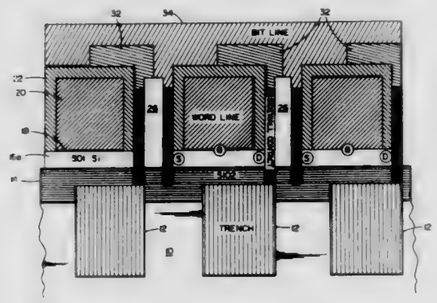
an electrically conductive region formed at least partially within the substrate and dielectrically isolated therefrom;

a first layer comprised of electrically insulating material formed over the substrate and over the electrically conductive region; and

a second layer comprised of a semiconductor material overlying the first layer, the second layer being differentiated into a plurality of active device regions each of which is disposed above one of the electrically conductive regions; wherein

each of the active device regions is coupled to an overlying first electrode means for forming a first node of an access transistor, each of the active device regions is coupled to a second electrode means for forming a second node of the access transistor; and each of the active device regions is coupled to the underlying electrically conductive region

for forming a third node of the access transistor, wherein the first electrode means includes a pair of opposed, electrically insulating vertical sidewalls, and wherein the

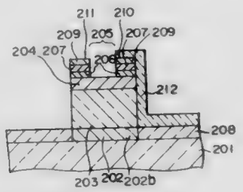


second node and the third node of each of the access transistors are each comprised of an electrical conductor disposed upon opposite ones of the vertical sidewalls.

5,055,899
THIN FILM TRANSISTOR

Haruo Wakai, Fussa; Nobuyuki Yamamura, Hachioji; Syunichi Sato, Kawagoe, and Minoru Kanbara, Hachioji, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 241,304, Sep. 7, 1988, abandoned. This application Apr. 2, 1990, Ser. No. 503,270
Claims priority, application Japan, Sep. 9, 1987, 62-225819; Sep. 25, 1987, 62-241607; Oct. 1, 1987, 62-248878
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.7 9 Claims

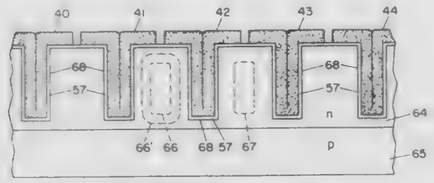


1. A thin film transistor comprising:
a substrate;
a gate electrode formed on said substrate and having a peripheral portion which is electrically insulative;
a gate insulating film and a first semiconductor layer, sequentially stacked on said gate electrode, with side edge surfaces of said gate electrode, gate insulating film and first semiconductor layer all being aligned with each other to constitute two vertically-extending side edge surfaces of said gate electrode, gate insulating film and first semiconductor layer;
two second semiconductor layers, formed on said first semiconductor layer so as to be separate from each other, with one edge surface of each of said second semiconductor layers being coplanar with one of said vertically-extending side edge surfaces;
a source electrode formed over one of said second semiconductor layers;
a drain electrode formed over the other of said second semiconductor layers;
a transparent electrode electrically connected to said source electrode; and
an insulating film electrically insulating said gate electrode and said transparent electrode from each other.

5,055,900
TRENCH-DEFINED CHARGE-COUPLED DEVICE

Eric R. Fossum, and Sabrina E. Kemeny, both of New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Oct. 11, 1989, Ser. No. 419,904
Int. Cl.[5] H01L *29/78, 29/06;* G11C *19/28*
U.S. Cl. 357—24 9 Claims



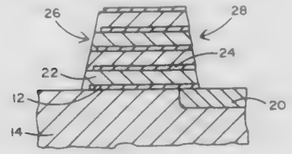
1. A charge-coupled device comprising:
a semiconductor layer region of one conductivity type formed on a semiconductive body region of an opposite conductivity type, the semiconductive layer region having an exposed major surface;
a plurality of spaced-apart trenches of predefined cross-section formed in the major surface of the layer region, each extending from the major surface into the layer region to a predetermined depth;
a relatively thin insulating layer formed over the major surface and extending into each of the trenches therein so as to cover inner surface of each of the trenches;
a plurality of electrode layers formed on the insulating layer, covering each of the trenches and extending into the trench covered thereby so as to overlay the insulating layer therein;
means for applying respective voltage signals to the electrode layers;
one or more charge detectors, each having a surrounding isolation trench, first and second adjacent trenches formed in the major surface of the layer region to the predetermined depth and being enclosed by the surrounding isolation trench, the insulating layer being formed over the surrounding isolation trench, the first trench and the second trench and extending therein to cover inner surfaces thereof, and respective electrode layers formed on the insulating layer covering the surrounding isolation trench, the first trench and the second trench, the respective electrode layers extending into the isolation trench, the first trench and the second trench so as to overlay the insulating layer therein;
a relatively highly doped diffusion region of the first conductivity type formed in the major surface of the layer region surrounded by the surrounding isolation trench and being adjacent to the first trench;
means for coupling the diffusion region to amplifying means and biasing means; and
means for applying respective gating signal voltages to the electrode layers covering the first and the second trench.

5,055,901
MULTI-LAYER METAL SILICIDE INFRARED DETECTOR

Anton G. Moldovan, Irvine, Calif., assignor to Ford Aerospace Corporation, Newport Beach, Calif.

Filed Aug. 8, 1989, Ser. No. 390,800
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 357—30 5 Claims

1. A metal silicide infrared detector, comprising:
a) a silicon substrate;
b) a contact pad formed in said silicon substrate;
c) a metal silicide layer formed on said silicon substrate in contact with said substrate and said contact pad; and
d) a stack including at least one pair of silicon and metal silicide layers alternatingly formed on said metal silicide layer;

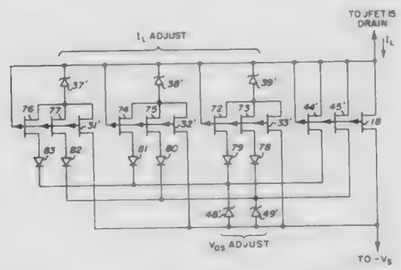


e) said metal silicide layers of said stack being connected to said contact pad, and said silicon layers of said stack being connected to said substrate.

5,055,902
V_P-CORRECTED OFFSET VOLTAGE TRIM

Craig N. Lambert, 1658 Magnolia Blossom Ln., San Jose, Calif. 95124

Filed Dec. 14, 1990, Ser. No. 627,469
Int. Cl.[5] H01L *27/02, 29/80, 29/90*
U.S. Cl. 357—41 7 Claims

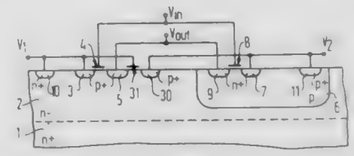


1. In a trimmable junction field effect transistor differential input stage wherein a pair of transistor load elements are each provided with a first plurality of parallel connected digitally ratioed trim elements, in the form of transistors, each one of which is isolated by a zener diode that can be zapped or shorted, thereby to invoke the associated trim element and wherein sufficient ones of the zener diodes are zapped to invoke a sufficient number of trim elements to bring the load element conductivity into specifications and further wherein a second plurality of parallel connected digitally ratioed trim elements in the form of small-area transistors which are zener-diode isolated, thus, rendering said second plurality of trim elements connectable to said load elements so that said pair of load elements can be trimmed differently thereby to balance or equalize said differential input stage, the improvement comprising:
providing each transistor in said first plurality of trim elements with additional zener-diode-isolated, size-related, trim transistors which can be connected in parallel with the elements of said second plurality of trim elements by zener diode zapping whereby said second plurality of trim elements can be compensated to have a normalized effect, independent of said load element conductivity, following the trimming of its conductivity.

5,055,903
CIRCUIT FOR REDUCING THE LATCH-UP SENSITIVITY OF A CMOS CIRCUIT

Bernhard Wichmann, Pöring, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1990, Ser. No. 538,822
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1989, 3920531
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—42 8 Claims

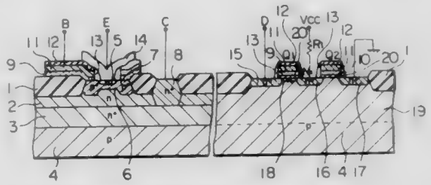


1. Circuit for reducing the latch-up sensitivity in complementary MOS technology, comprising:
a semiconductor substrate of a second conductivity type;
a first MOS transistor of a first complementary conductivity type being disposed in said semiconductor substrate and having a source structure, a gate and a drain;
a well of the first conductivity type being disposed in said semiconductor substrate;
a second MOS transistor of the second conductivity type being disposed in said well and having a source structure, a gate and a drain;
said semiconductor substrate and said source structure of said first transistor being connected to a first supply potential;
said well and said source structure of said second transistor being connected to a second supply potential;
said gates of said first and second transistors being connected to an input, an said drains of said first and second transistors being connected to an output;
a third transistor of the first conductivity type being disposed in said semiconductor substrate between said first and second transistors; and
said third transistor having a gate connected to the first supply potential, a drain structure connected to the second supply potential, and a source structure connected to an output.

5,055,904
SEMICONDUCTOR DEVICE

Masataka Minami; Kazushige Sato, both of Hitachi; Atsuo Watanabe, Hitachiota; Shoji Shukuri, Koganei; Takashi Nishida, Tokyo, and Takahiro Nagano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1990, Ser. No. 495,762
Claims priority, application Japan, Mar. 20, 1989, 1-67985
Int. Cl.[5] H01L *27/02, 29/10*
U.S. Cl. 357—43 7 Claims



1. A semiconductor device comprising:
at least two MOS transistors having channels of the same conductivity type, the gate electrodes of which are com-

prised of polycrystal silicon layers containing an impurity; and

a bipolar transistor, the base electrode of which is comprised of a polycrystal silicon layer containing an impurity,

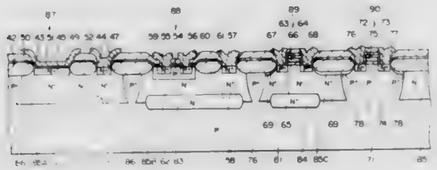
wherein one of said MOS transistors has a gate electrode including a first conductivity type polycrystal silicon layer, wherein said gate electrode has a side surface which is covered with an insulating film, and wherein the other of said MOS transistors has a gate electrode which includes a second conductivity type polycrystal silicon layer different from said first conductivity type polycrystal silicon layer.

5,055,905

SEMICONDUCTOR DEVICE

Hiroaki Anmo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 19, 1990, Ser. No. 599,869
Claims priority, application Japan, Oct. 19, 1989, 1-272341
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—51 **10 Claims**



1. A MIS capacitor comprising:

a semiconductor substrate of a first conductivity type:

a low-concentration impurity region of opposite conductivity type formed in said substrate;

first and second high-concentration impurity regions of opposite conductivity type formed in said low-concentration impurity region, wherein said first and second high-concentration impurity region are laterally spaced from each other;

a third high-concentration impurity regions of opposite conductivity type, which extends between the closes adjacent edges of said first and second high-concentration regions and is buried in the bottom of said low-concentration impurity region;

a field insulator film having first and second apertures over said first and second high-concentration impurity regions respectively;

a dielectric layer formed in said first aperture;

a first electrode formed on said dielectric layer over said first aperture; and

a second electrode formed on said second high-concentration impurity region over said second aperture.

5,055,906

SEMICONDUCTOR DEVICE HAVING A COMPOSITE INSULATING INTERLAYER

Yasukazu Mase, Tokyo; Masahiro Abe, and Tomie Yamamoto, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

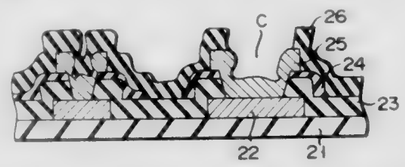
Continuation of Ser. No. 559,496, Jul. 26, 1990, abandoned, which is a continuation of Ser. No. 277,111, Nov. 29, 1988, abandoned. This application Feb. 12, 1991, Ser. No. 653,481
Claims priority, application Japan, Nov. 30, 1987, 62-302604
Int. Cl.[5] H01L *29/34*
U.S. Cl. 357—54 **19 Claims**

1. A semiconductor device of multi-layered structure, comprising:

a plurality of interconnection layers formed on a semi-conductor substrate;

a composite insulating film structure formed on an insulating film overlying said semiconductor substrate and having a first inorganic insulating film formed over said semiconductor substrate;

an organic insulating film formed on said first inorganic insulating film and having an eliminated portion and having a portion terminating on a surface of said first inorganic insulating film to form a step structure therewith at



a location separated from said interconnection layers, said organic insulating film having protruding portions which are not covered by said interconnection layers; and

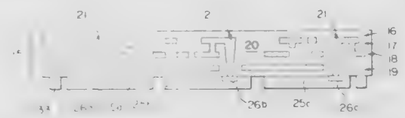
a second inorganic insulating film formed on said organic insulating film and formed directly on said first inorganic insulating film through said eliminated portion.

5,055,907

EXTENDED INTEGRATION SEMICONDUCTOR STRUCTURE WITH WIRING LAYERS

Scott L. Jacobs, Apex, N.C., assignor to Mosaic, Inc., San Diego, Calif.

Filed Jan. 25, 1989, Ser. No. 301,972
Int. Cl.[5] H01L *23/48*
U.S. Cl. 357—71 **44 Claims**



1. An extended integration structure comprising:

a thin film decal having at least one wiring layer therein;

a support ring attached to said decal, for maintaining said decal under tension inside said support ring;

at least one integrated circuit chip attached to said decal inside said support ring, said at least one integrated circuit chip being aligned with said decal; and

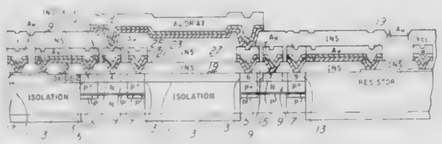
a plurality of electrical connections between said at least one wiring layer and said at least one integrated circuit chip.

5,055,908

SEMICONDUCTOR CIRCUIT HAVING METALLIZATION WITH TIW

Clyde R. Fuller, Plano; Joseph B. Delaney, Dallas, and Robbie W. Skinner, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 27, 1987, Ser. No. 78,332
Int. Cl.[5] H01L *23/48, 29/34, 29/46*
U.S. Cl. 357—71 **20 Claims**



13. A semiconductor circuit which comprises:

(a) a semiconductor substrate; and

(b) metallization over said substrate, said metallization comprising:

(c) a layer of compressive stressed TiW disposed over and coupled to said substrate; and

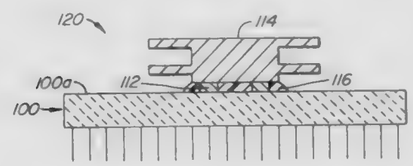
(d) a layer of metal taken from the group consisting of gold and aluminum disposed over and contacting said layer of compressive stressed TiW.

5,055,909

SYSTEM FOR ACHIEVING DESIRED BONDLENGTH OF ADHESIVE BETWEEN A SEMICONDUCTOR CHIP PACKAGE AND A HEATSINK

Robbyn, Marie Culver, San Jose, Calif., assignor to VLSI Technology, Inc, San Jose, Calif.

Filed May 14, 1990, Ser. No. 523,443
Int. Cl.[5] H01L *23/28*
U.S. Cl. 357—81 **9 Claims**



1. A semiconductor package comprising:

a housing for holding a semiconductor chip;

a heatsink to dissipate heat generated by the chip;

adhesive attaching said heatsink to said housing; and

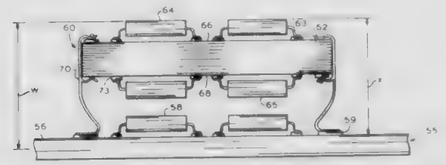
spacer means for achieving a substantially uniform spacing between the housing and the attached heatsink; said spacer means having a plurality of protrusions attached to or integral with the surface of said housing; said plurality of protrusions not having been attached by said adhesive; and said spacing being of a predetermined value.

5,055,910

HIGH-DENSITY MEMORY ARRAY PACKAGING

Andrew L. Wu, Shrewsbury; Donald W. Smelser, Bolton; E. William Bruce, II, Lunenburg, all of Mass., and John O'Dea, Galway, Iran, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 20, 1989, Ser. No. 453,518
Int. Cl.[5] H01L *25/12, 25/16, 23/12*
U.S. Cl. 357—74 **8 Claims**



1. Apparatus for providing a low-profile high-density package for integrated circuit chips, said apparatus configured for insertion into a computer backplane having a plurality of equally spaced connectors with a predetermined distance between adjacent ones thereof, said connectors being configured for receiving a plurality of adjacent boards, said apparatus comprising:

a circuit board having electrically conductive portions on a first surface and a second surface, said circuit board being further configured for insertion into a connector of said backplane;

at least two generally planar multichip modules, each having a first side and a second side, each of said multichip modules having low-profile, integrated circuit chips mounted to said first and second sides thereof in conductive relation with electrically conductive portions on said first and second sides, said low profile chips being arranged so as to be activated and deactivated in a pattern that avoids undue concentration of thermal dissipation, thereby distributing the thermal loads created by said chips;

edge connection means for mechanically connecting one of said at least two multichip modules to selected points of said conductive portions of said first surface of said circuit board and another of said at least two multichip modules to selected points of said conductive portions of said second surface of said circuit board, with said connection means being configured, dimensioned and arranged for providing electrical connections from said selected points of said conductive portions of said circuit board to selected points of said conductive portions of said first and second sides of said multichip modules,

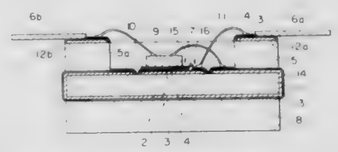
such that said thus-assembled, low-profile package is capable of insertion into said backplane connector without the need of redesign to change said predetermined distance to accommodate adjacent boards in adjacent connectors of said backplane.

5,055,911

SEMICONDUCTOR DEVICE PACKAGE UTILIZING A SOLDER FLOW PREVENTION WALL

Toshikazu Ogata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 27, 1990, Ser. No. 558,467
Claims priority, application Japan, Feb. 27, 1990, 2-44424
Int. Cl.[5] H01L *23/02, 23/12, 39/02*
U.S. Cl. 357—74 **10 Claims**



1. A semiconductor package comprising:

a base body;

a metallized layer disposed on said base body and including a die-pad area for mounting a semiconductor chip by soldering and a wire bonding area for bonding wires;

a solder flow prevention wall disposed on said metallized layer separating said die-pad area from said wire bonding area; and

metal layers respectively disposed on said die-pad area and said wire bonding area separated by said solder flow prevention wall wherein said solder flow prevention wall protrudes from said metallized layer and beyond said metal layers to form a barrier stopping molten solder from flowing to said wire bonding area from said die bonding area when a semiconductor chip is being soldered to said die-pad area.

5,055,912

SEMICONDUCTOR DEVICE

Yasuhiro Murasawa; Hitoshi Toda; Hiroshi Sawano, and Hideya Yagoura, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

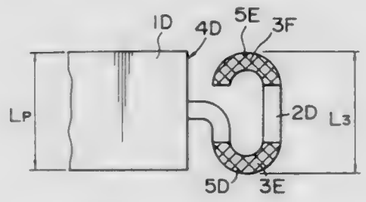
Filed Sep. 4, 1990, Ser. No. 577,111
Claims priority, application Japan, May 18, 1990, 2-126981
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 357—74 **3 Claims**

1. A surface mount semiconductor device comprising:

a semiconductor element molded in a resin to form a surface mount semiconductor device, the resin including opposed first and second surfaces, the first surface being a substan-

tially planar mounting surface of disposition adjacent to a substrate on which the surface mount semiconductor device is mounted; and

leads electrically connected to said semiconductor element, partially disposed within the resin and partially projecting outwardly from the resin, the projecting part of each lead having a portion adjacent to the resin and a portion spaced from the resin, each lead including an end for soldering to a substrate on which the surface mount semiconductor



device is mounted, wherein the projecting part of each lead has a bent portion convex relative to the mounting surface of the surface mount semiconductor device, the length of each lead beyond the bent portion is greater than the distance from the portion of each lead adjacent to eh resin to the plane including the mounting surface of the surface mount semiconductor device, and each end lies substantially within the plane including the mounting surface of the surface mount semiconductor device.

5,055,913

TERMINAL ARRANGEMENT FOR INTEGRATED CIRCUIT DEVICE

Yahya Haghiri-Tehrani, Munich, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

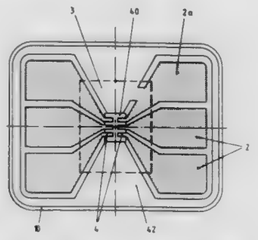
Division of Ser. No. 117,541, Nov. 6, 1987, Pat. No. 4,897,534. This application Oct. 26, 1989, Ser. No. 426,854

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1986, 3639630

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] H01L *23/02, 23/12*

U.S. Cl. 357—74 **2 Claims**



1. In an integrated circuit semiconductor chip device including integrated ccircuitry and electrically conductive terminals on the chip surface, said surface limited by chip edge boundaries, said terminals connected to said integrated circuitry and adapted to be connected to external leads for communication between the external leads and the integrated circuitry, the improvement comprising:

said terminals being disposed as a group array located over a predetermined area of the chip surface spaced inwardly from the chip edge boundaries, said area terminating at area boundaries, at least one area boundary and the geometric center of said area being closer to the center of the chip surface than the closest directly opposite chip edge boundary.

5,055,914

CERAMIC PACKAGE TYPE SEMICONDUCTOR DEVICE AND METHOD OF ASSEMBLING THE SAME

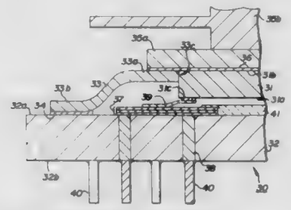
Nobutaka Shimizu; Takehisa Tsujimura, both of Kawasaki; Masahiro Sugimoto, Yokosuka, and Shigeki Harada, Musashino, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 9, 1990, Ser. No. 477,404

Claims priority, application Japan, Feb. 10, 1989, 1-032339; Mar. 17, 1989, 1-066771

Int. Cl.[5] H01L *23/02, 23/12*

U.S. Cl. 357—81 **19 Claims**



1. A semiconductor device comprising:

a ceramic substrate having a wiring pattern layer formed on a top surface thereof;

at least one semiconductor element mounted on said ceramic substrate with a top face thereof facing downward and electrically connected to said wiring pattern layer;

a metal cap having at least one through-hole corresponding to an external size of said semiconductor element and an end portion thereof soldered to the top surface of said ceramic substrate, so that a top surface of said metal cap and a bottom surface of said semiconductor element fitted into said through-hole form a flat plane, said metal cap through-hole having a peripheral edge being in contact with at least a portion of a periphery of said semiconductor element; and

a heatsink member including a plate portion soldered to said flat plane of said metal cap and said semiconductor element by using a solder plate having a size corresponding to that of said plate portion and set between said flat plane and said plate portion to complete a hermetic sealing of said semiconductor element.

5,055,915

METHOD AND APPARATUS FOR THE TRANSMISSION AND RECEPTION OF TWO CONVENTIONAL TELEVISION SIGNALS USING A TWO-LINE MAC FORMAT

Mikhail Tsinberg, Riverdale, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 77,557, Jul. 24, 1987, Pat. No. 4,908,697. This application May 17, 1989, Ser. No. 353,353

Int. Cl.[5] H04N *11/06*

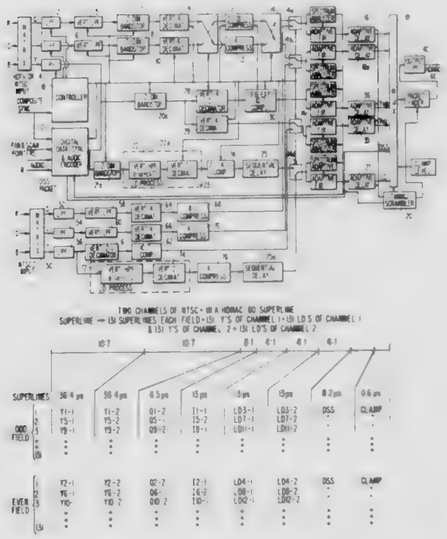
U.S. Cl. 358—12 **4 Claims**

1. A method for encoding as a time multiplexed signal, a plurality of television signals each comprising a plurality of lines, each of said lines having a first line period, said method comprising the steps of:

a) processing a first group of lines from a first television signal so as to derive from one line of said first group a first luminance component and a first chrominance component, and from at least two line of said first group a first line differential component;

b) processing a second group of lines from a second television signal so as to derive from one line of said second group a second luminance component and a second chrominance component, and from at least two lines of said second group a second line differential component; and

c) time multiplexing said first and second luminance compo-



nents, said first and second chrominance components and said first and second line differential components so as to form a time multiplexed signal having a second line period greater than said first line period.

5,055,916

CHROMINANCE ENCODING FOR A WIDESCREEN TELEVISION SYSTEM

Charles B. Dieterich, Kingston, N.J., assignor to General Electric Company, Princeton, N.J.

Filed Dec. 11, 1989, Ser. No. 448,435

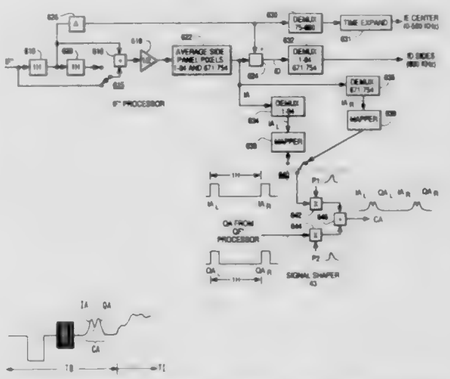
Int. Cl.[5] H04N *11/06, 11/14*

U.S. Cl. 358—12 **29 Claims**

1. In a system for processing a television type video signal including first and second sampled data components, apparatus comprising:

means for providing an auxiliary signal;

means for providing a difference signal representing the difference between (a) a single numerical value representation of a predetermined weighted average of said first component information and (b) original first component information; and



means for modulating said auxiliary signal with said difference signal.

5,055,917

OUTPUT APPARATUS FOR IMAGE SIGNALS

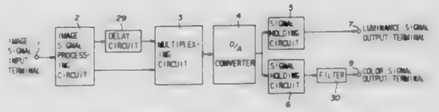
Hidemitsu Nikoh, and Hiroshi Morito, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 11, 1989, Ser. No. 350,493

Claims priority, application Japan, May 11, 1988, 63-115877; May 23, 1988, 63-126561

Int. Cl.[5] H04N *9/74*

U.S. Cl. 358—22 **2 Claims**



1. An output apparatus for image signals, comprising:

an image signal processing circuit for providing a digital luminance signal, and at least one signal selected from a digital color signal and a digital composite video signal in accordance with a digital processing of image signals supplied from a signal input terminal;

a multiplexing circuit for multiplexing said digital luminance signal and at least one signal to be positioned alternately on a time axis;

a delay circuit connected between one of outputs of said image signal processing circuit and one of inputs of said multiplexing circuit, said delay circuit delaying a digital signal supplied from said one of outputs to said one of inputs by a predetermined time;

a D/A converter for converting a digital output signal of said multiplexing circuit into an analog multiplexed signal;

at least two signal holding circuits for holding said analog multiplexed signal which is separated into an analog luminance signal and an analog signal corresponding to said at least one signal, one of said at least two signal holding circuits being connected to a signal output terminal and holding said analog luminance signal, and the other of said at least two signal holding circuits being connected to

another signal output terminal and holding said analog signal; and

a filter provided between an output of a signal holding circuit selected from said at least two signal holding circuits and a signal output terminal corresponding to said output of said signal holding circuit, said filter performing a band limitation of an analog signal supplied from said output of said signal holding circuit to said signal output terminal corresponding thereto, and delaying said analog signal by a predetermined time,

wherein the filter is connected to the output of the selected signal holding circuit for holding a D/A conversion signal of a signal which is different from the digital signal delayed by the delay circuit.

5,055,918

PIXEL IMAGE ENHANCER

Robert A. Berman, 27237 Paula La., Conroe, Tex. 77385

Filed Apr. 30, 1990, Ser. No. 516,471

Int. Cl.[5] H04N *9/74*

U.S. Cl. 358—22 **9 Claims**



1. In a video display system, a method for simulating a depth of field in a two-dimensional video image, comprising:

receiving video output signal components from a source of video signals and encoding said video output signal components as corresponding chroma and luma signals which define a two dimensional video image, said luma signal being characterized by a leading and a trailing edge;

modulating the signal level, relative to a black-reference signal level, of the leading edge of said luma signal as a function of time over a preselected time interval;

combining the chroma and modulated luma signals to form composite signals; and

transmitting the composite signals to a video display device to provide a shaded two dimensional video image.

5,055,919

APPARATUS FOR IMAGE DATA TRANSPOSITION AND COMPRESSION/DECOMPRESSION

Robert Klein, Farmington, and Debora Y. Grosse, Ann Arbor, both of Mich., assignors to Unisys Corporation, Bluebell, Pa.

Filed Oct. 10, 1989, Ser. No. 419,253

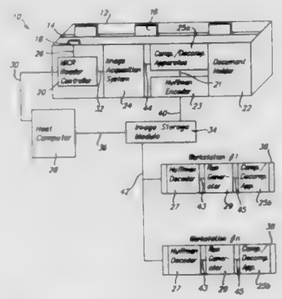
Int. Cl.[5] H04N *1/417*

U.S. Cl. 358—261.1 **13 Claims**

1. A data compressor which compresses image data having a plurality of pixels associated therewith which are arranged in a plurality of columns, each of said columns being uniquely associated with a single vertical scan of said image and having a plurality of rows associated therewith, each of said rows within said columns having a unique pixel of said image data therein, each of said unique pixels having a gray-scale value associated therewith, said data compressor comprising:

transposer means, coupled to said image data, for storing said plurality of columns of said image data and for outputting, a single row at a time, said unique pixel associated with the same row of each of said stored columns of data; and

means, coupled to said transposer means, for generating a



plurality of run length counts associated with said image data wherein a run length count is equal to the number of consecutive binary zeros following each binary one in the transposed image data.

5,055,920

STILL PICTURE DECODER FOR COLOR TELEVISION SIGNALS HAVING A PHASE CHANGING COLOR CARRIER

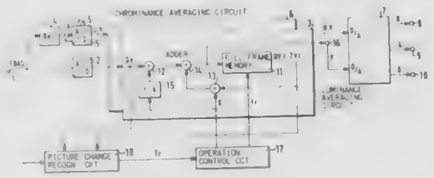
Gerhard Illetschko, Darmstadt; Hans-Peter Richter, Gross-Bieberau, and Reiner Noske, Darmstadt, all of Fed. Rep. of Germany, assignors to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 9, 1990, Ser. No. 462,541

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1989, 3900490

Int. Cl.[5] H04N *5/213*

U.S. Cl. 358—36 **10 Claims**



1. A system for decoding color television picture signals subject to noise from still or unvarying pictures, wherein a color television signal includes a color carrier signal, or chrominance signal, portion and a luminance signal portion (Y), and synchronizing signals for synchronizing said chrominance signal portion (UV) and said luminance signal portion (Y), having

means (**2**, **4**, **5**, **42**) for converting aid color TV signal portions into a digital chrominance signal and a digital luminance signal;

memory means (**11**, **43**) for storing at least one (Y) of said digital video signals while the picture is still;

means (**11**, **44**) for obtaining from said memory means (**11**, **43**) a digital video luminance signal which is delayed by an integral number, which is at least one and less than three, of video frames and thereby producing a delayed digital luminance signal;

adding means (**14**) for adding said delayed digital luminance signal to a digital video luminance signal which was not delayed, to thereby provide a sum digital video luminance signal; and the improvement comprising,

an arrangement for clarifying the luminance signal portion (Y), said arrangement including

a control signal generating means (**17**) furnishing a control coefficient (k) signal which varies in signal value or level between 0 and 1, or 100%;

means (**18**, **21**) for generating a start signal (Tr) upon scanning of a picture, and

means (**13**, **15**, **12**) for modifying said undelayed digital video luminance signal and said delayed digital luminance signal prior to their addition in said adding means for determining the relative contribution of said respective signals to said sum digital video luminance signal under control of said control coefficient signal;

and wherein said control signal generating means (**17**) includes means for varying the signal level or value of said control coefficient signal beginning at the time of occurrence of said start signal (Tr) over a multiplicity of video frame periods from a minimum value to a predetermined larger value.

5,055,921

COLOR READING LINE SENSOR

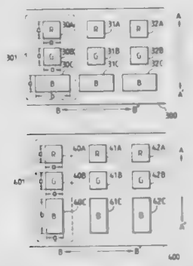
Yoshiko Usui, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1988, Ser. No. 223,399

Claims priority, application Japan, Jul. 29, 1987, 62-191144

Int. Cl.[5] H04N *09/04*

U.S. Cl. 358—44 **25 Claims**



1. A line sensor for reading a color original by executing relative movement between the line sensor and the original, comprising:

a plurality of sensor arrays each having a plurality of sensor elements and a corresponding plurality of color filter elements, said sensor arrays being aligned in a direction substantially perpendicular to a sensor array direction which is a direction substantially perpendicular to the direction of relative movement between the sensor arrays and the original, said sensor arrays extending in a direction substantially perpendicular to the direction of relative movement between the sensor arrays and the original,

wherein a size of the sensor elements of a given one of said sensor arrays in the direction substantially perpendicular to the sensor array direction is larger than a size of the sensor elements of another one of said sensor arrays in the direction substantially perpendicular to the sensor array direction, and wherein a size of each sensor element of the given one sensor array in the sensor array direction is equal to a size of each sensor element of said another sensor array in the sensor array direction.

5,055,922

COLOR TV PROJECTION LENS SYSTEM

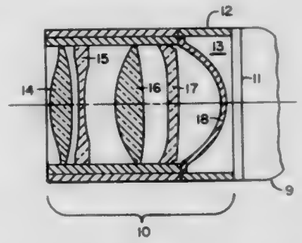
Richard J. Wessling, Milford, Ohio, assignor to U.S. Precision Lens Incorporated, Cincinnati, Ohio

Filed Mar. 7, 1990, Ser. No. 490,050

Int. Cl.[5] H04N *9/16, 9/18, 5/740*

U.S. Cl. 358—60 **13 Claims**

1. A projection television lens system which, when used, provides reduced chromatic aberration and improved chromaticity and which comprises a plurality of solid lenses wherein at least one of said lenses has a substantially uniform thickness and said lens includes, as an integral part thereof, an absorptive color filter material which is dispersed substantially throughout said lens and substantially absorbs at least certain wavelengths of light other than the wavelength of light desired from a CRT with which said lens is or will be associated.



5,055,923

METHOD OF AND APPARATUS FOR RECORDING HALFTONE IMAGES AND HALFTONE IMAGES PRODUCED THEREBY

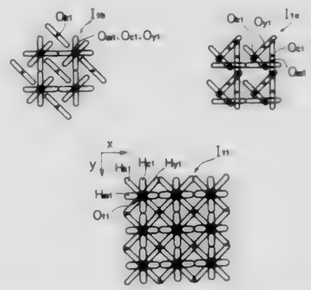
Osamu Kitagawa, and Takashi Sakamoto, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Oct. 25, 1989, Ser. No. 426,627

Claims priority, application Japan, Nov. 24, 1988, 63-296569; Aug. 8, 1989, 1-205127

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—75 **46 Claims**



1. A method of recording halftone images to be employed in reproducing a color image, comprising the steps of:

(a) preparing at least two sets of image data representing color separation images of said color image, respectively, and

(b) producing at least two halftone images as a function of said at least two sets of image data, respectively, by

(i) setting a common screen pitch and a common screen angle to said at least two halftone images, and

(ii) forming halftone dot elements in each of said at least two halftone images in a linear shape extending in a prescribed extensional direction different from extensional directions in the rest of said at least two halftone images.

5,055,924

REMOTE-CONTROLLED SUBSTITUTION OF A DEFINED PROGRAM PART OF A TV PROGRAM BY A SEPARATELY TRANSMITTED PROGRAM PART FOR DEFINED, SELECTED RECEIVERS, HOUSEHOLD TERMINAL FOR EXECUTING THE METHOD AND METHOD FOR OPERATING A HOUSEHOLD TERMINAL

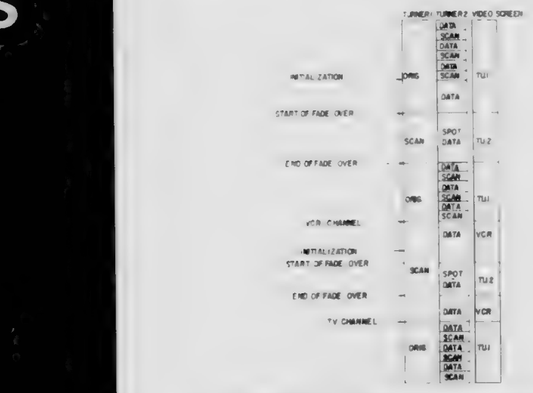
Hans Skutta, Postbauer-Heng, Fed. Rep. of Germany, assignor to GFK GmbH, Fed. Rep. of Germany

Filed Jan. 19, 1990, Ser. No. 467,460

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1989, 3901790

Int. Cl.[5] H04N *7/08*

U.S. Cl. 358—84 **6 Claims**



1. A method for the remote-controlled replacement of a defined program part of a TV program by a separately transmitted program part for defined, selected TV receivers, in particular of a TV advertising spot by another advertising spot of a new product to be tested, wherein said TV receivers comprise at least one antenna input and at least one output for the antenna input, comprising the steps of:

transmitting bi-phase-modulated start codes in the picture lines outside of the TV picture visible on the video screen for the control of the address-distributed TV signals for the program part to be substituted and

connecting the outputs of at least two tuners (**24**, **25**), with a fade-over component (**30**), and with a decoding circuit arrangement (**28**) for decoding the switching data telegrams and for contact with the fade-over component (**30**).

5,055,925

ARRANGEMENT FOR ESTIMATING MOTION IN TELEVISION PICTURES

Moustanir Lamnabhi, Gif sur Yvette, France, assignor to U.S. Philips Corporation, New York, N.Y.

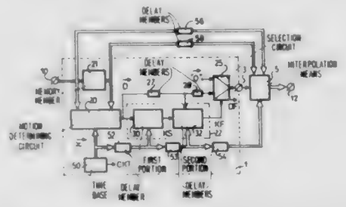
Filed Mar. 9, 1990, Ser. No. 491,149

Claims priority, application France, Mar. 24, 1989, 89 03932

Int. Cl.[5] H04N *7/18, 7/12, 7/01, 11/20*

U.S. Cl. 358—105 **18 Claims**

1. An arrangement for estimating motion of picture elements of a picture forming part of a sequence of pictures to be processed, the arrangement having an input for receiving a sequence of source pictures, a motion determining circuit for supplying a first motion vector for all the picture elements of the pictures of the sequence to be processed, a coherence circuit for supplying a validation signal of the first motior vector and a selection circuit, controlled by the coherence circuit, for supplying a definitive motion vector on the basis of said first motion vector and at least one alternative motion vector, wherein said coherence circuit comprises a first portion for supplying a first coherence signal relating to a first picture element on the basis of said first and at least one alternative motion vectors assigned to picture elements surrounding said first picture element, and a second portion for supplying a



second coherence signal on the basis of a plurality of first coherence signals assigned respectively to picture elements corresponding to said first picture element in each of a number of pictures of the sequence to be processed.

5,055,926

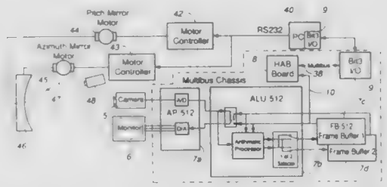
VIDEO IMAGE POSITION DETERMINATION

Wynn Christensen, Los Alamos; Forrest L. Anderson, Bernalillo, and Birchard L. Kortegaard, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 2, 1990, Ser. No. 502,959

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—125 **12 Claims**



1. An optical beam position determinator wherein a video camera captures an image of said beam in video frames comprising:

interface means connected to said video camera for outputting said video image as pixels having determinable coordinates and magnitudes;

magnitude determining means connected to said interface means for determining maximum, minimum, and average pixel magnitudes for said pixels within said video frames;

threshold calculating means connected to said magnitude determining means for determining a threshold pixel magnitude from said maximum, minimum, and average pixel magnitudes;

comparison means connected to said interface means and to said threshold calculating means for comparing each of said pixel magnitudes with said threshold pixel magnitude, and outputting coordinates of beam pixels whose magnitudes exceed said threshold pixel magnitude;

pixel coordinate summing means receiving said coordinates of beam pixels for summing said coordinates of beam pixels;

pixel area summing means receiving said beam pixels for counting said beam pixels to determine a total area covered by said beam pixels;

calculating means receiving said total area and said sum of beam pixels whose magnitudes exceed said threshold pixel magnitude for calculating centroid coordinates for said total area and subtracting said calculated centroid from predetermined centroid coordinates.

5,055,927

DUAL CHANNEL VIDEO SIGNAL TRANSMISSION SYSTEM

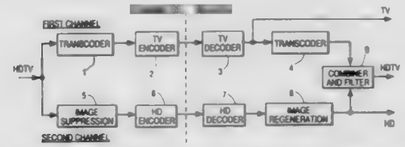
Heinz-Werner Keesen; Dietmar Hepper, and Hartmut Peters, all of Hanover, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,701

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1988, 3831103; Sep. 13, 1988, 3831104

Int. Cl.[5] H04N *7/00, 7/13*

U.S. Cl. 358—133 **32 Claims**



1. A system for processing television-type video signals, comprising

a source of wide bandwidth high definition video signal containing temporally and spatially high resolution image information;

means responsive to said high definition signal for providing a first video signal having a given temporal resolution and standard spatial resolution less than that of said high definition video signal;

means responsive to said high definition signal for providing a second video signal having temporal resolution less than that of said first video signal and spatial resolution greater than that of said first video signal;

a first channel for conveying said first video signal;

a second channel for conveying said second video signal; and

means for encoding at least one of said video signals conveyed by said first and second channels with information concerning the mode of video signal encoding and with motion vector information.

5,055,928

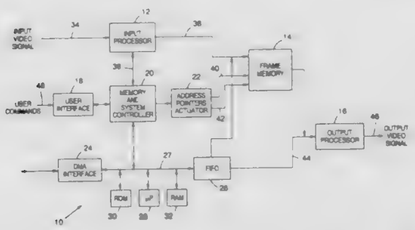
DIGITAL VIDEO FRAME RECORDER WITH VIDEO DISPLAY TEST PATTERN SIGNAL GENERATOR

Marc Klingelhofer, Fremont, Calif., assignor to Sony Corporation of America, Park Ridge, N.J.

Filed Apr. 10, 1990, Ser. No. 507,367

Int. Cl.[5] H04N *17/00*

U.S. Cl. 358—139 **15 Claims**



12. A digital video signal recorder for recording digital video signal data, the digital video signal recorder comprising:

an input video signal data port coupled to receive externally sourced digital input video signal data;

a memory containing preprogrammed digital video signal data representing a predetermined video display test pattern;

memory means for storing digital video signal data; and

memory addressing means for addressing the memory means for writing and reading into and out from the memory means, respectively, the digital input video signal data and the digital video display test pattern signal data.

5,055,929

GHOST CANCELER FOR TELEVISION AND VIDEO TAPE RECORDER

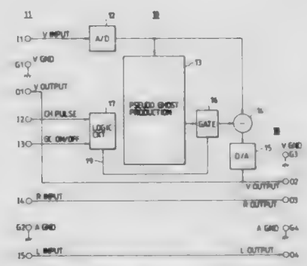
Toshihisa Sakai, Osaka, Japan, assignor to NEC Home Electronics Ltd., Osaka, Japan

Filed Dec. 28, 1989, Ser. No. 458,360

Claims priority, application Japan, Dec. 28, 1988, 63-332083

Int. Cl.[5] H04N *5/21*

U.S. Cl. 358—166 **2 Claims**



1. A ghost canceler, comprising:

a first terminal group including

a first terminal for receiving an original video signal to be ghost canceled,

a second terminal for receiving commands for causing ghost canceling processing to occur,

a third terminal for receiving information indicative of a television channel change,

fourth terminals for receiving sound signals from a television receiver, and

a fifth terminal for transmitting to the television receiver a video signal, the video signal transmitted to the television receiver being a) the original video signal within a period of time during which there is not received a command indicating that said ghost canceling processing is to take place, or during a predetermined period immediately after the reception of said information indicating a television channel change, and b) a ghost cancelled video signal cancelled video signal during other times;

a ghost canceling means, coupled so as to receive said original video signals from said first terminal, for ghost canceling said original video signals; and

a second terminal group including

a sixth terminal for providing an output video signal for coupling to an external device, and

seventh terminals for providing said sound signals from the television receiver for coupling to an external device.

5,055,930

IMAGE SENSING AND RECORDING DEVICE HAVING A MULTILAYER ANALOG MEMORY STACKED ON AN IMAGE SENSING ARRAY

Tatsuo Nagasaki, Yokohama, and Hidetoshi Yamada, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1990, Ser. No. 579,784

Claims priority, application Japan, Sep. 13, 1989, 1-237472

Int. Cl.[5] H04N *5/30, 3/14, 5/335*

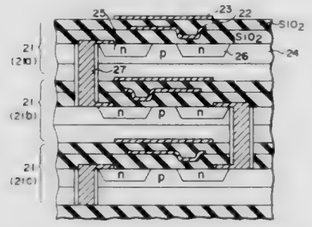
U.S. Cl. 358—213.11 **24 Claims**

1. An image sensing and recording device comprising:

a light-receiving element array section, having an image sensing surface on which a plurality of light-receiving

elements are two-dimensionally arranged, for generating signal charges by photoelectrically arranged, for generating signal charges by photoelectrically converting light images incident on said image sensing surface in units of said plurality of light-receiving elements;

an analog memory section having a plurality of storage regions staked vertically in a multilayer structure on said light-receiving element array section, said plurality of storage regions including means for transferring the signal



charges generated by said plurality of light-receiving element of said light-receiving element array section in a stacked direction thereof and sequentially storing the signal charges; and

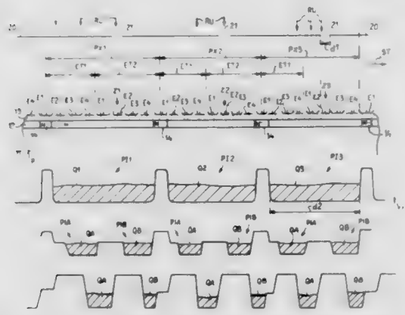
a transfer section, stacked to sandwich said analog memory section between said transfer section and said light-receiving element array section, for reading out the signal charges, which are sequentially stored in said analog memory section, as time-serial image signals.

5,055,931

IMAGE SENSOR WITH HIGH STORAGE CAPACITY PER PIXEL

Yvon Cazaux, and Gilles Boucharlat, both of Grenoble, France, assignors to Thomson Composants Militaires et Spatiaux, Courbevoie, France

Filed Oct. 19, 1990, Ser. No. 599,971
Claims priority, application France, Oct. 20, 1989, 89 13748
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.11 **5 Claims**



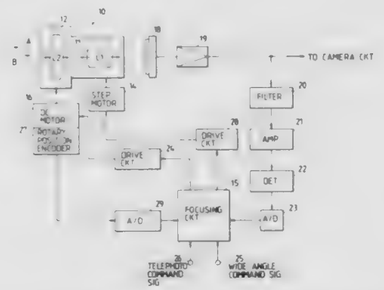
1. A charge-coupled photosensitive device including a plurality of photosensitive cells or pixels, each pixel including an elementary photosensitive zone beneath which there is formed a storage potential well designed for the storage of charges generated by the exposure of the elementary photosensitive zone to a useful radiation during an integration period, the area of the surface of the storage potential well being greater than the area of the surface of the elementary photosensitive zone, each pixel including several electrodes, the electrodes succeeding one another in a direction of transfer of the charges so as to form a succession of transfer stages, wherein each pixel includes at least two transfer stages in which said storage potential well is formed.

5,055,932

ZOOM LENS APPARATUS WITH AUTO-FOCUSING

Isao Hijikata, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 18, 1989, Ser. No. 408,352
Claims priority, application Japan, Sep. 19, 1988, 63-234213
Int. Cl.[5] H04N *5/232*; **G03B** *3/00*
U.S. Cl. 358—227 **2 Claims**



2. A zoom lens apparatus with auto-focusing comprising a zoom lens, a focus lens, an imaging device, signal generation means responsive to an output of said imaging device for generating a focus signal indicative of in-focus degree of an optical image on said imaging device and control means responsive to said focus signal and an external command signal for zooming said zoom lens for positioning said zoom and focus lenses such that said focus lens position is controlled in accordance with said focus signal in the absence of said external signal, the improvement comprising:

second control means responsive to said focus signal and said command signal for zooming said zoom lens for positioning said zoom and focus lenses such that said zoom and focus lenses are moved along one of preset characteristic curves showing positional relationship between said zoom and focus lenses for plural distances between an object and said imaging device and said focus lens is intermittently stopped for a given interval to detect a change in a magnitude of said focus signal between said focus signal before and after stopping said focus lens when said external command signal is for zooming from wide-angle to telephoto position, one of said characteristic curves being selected according to the focus signal; and

means for selecting another characteristic curve from said plural characteristic curves in accordance with said change when said external command signal is for zooming from wide-angle to telephoto position, and for causing said control means to use said another characteristic curve in place of a former one.

5,055,933

AUTOMATIC FOCUSING APPARATUS AND AUTOMATIC FOCUSING METHOD FOR AUTOMATICALLY MATCHING FOCUS IN RESPONSE TO VIDEO SIGNAL

Masaru Hidaka, Nara, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Nov. 20, 1990, Ser. No. 616,082
Claims priority, application Japan, Nov. 22, 1989, 1-303857
Int. Cl.[5] H04N *5/232, 5/275, 5/238*
U.S. Cl. 358—227 **20 Claims**

1. An automatic focusing apparatus for automatically matching a focus relative to an object in response to a video signal obtained from image sensing means including a focusing lens (1) and an image sensing device, comprising:

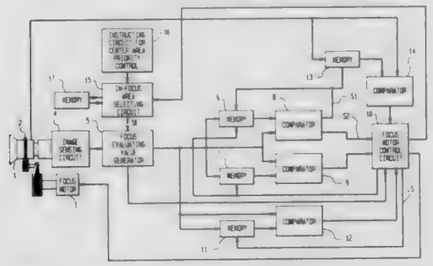
relative position altering means (2, 3) for altering a relative position of said focusing lens with respect to said image sensing device along an optical axis;

area setting means for setting by time-division of said video signal a first area located in a midmost area of an image-sensed picture, a second area including said first area and having a larger areal size than that of said first area, and a third area including said second area and having a larger areal size than that of said second area;

in-focus target area selecting means for selecting any of said first, second and third areas as an in-focus target area to be a target of a focusing operation;

means for manually setting said first area as the in-focus target area;

first focus evaluating value detecting means for detecting a high frequency level in a video signal in the in-focus target area selected by said in-focus target area selecting means for each constant time period, to supply the detected high frequency level as a focus evaluating value taking a peak value at an in-focus position;



control means (6, 7, 8, 9, 10, 13, 14) responsive to said focus evaluating value for controlling said relative position altering means so as to shift the relative position of said focusing lens to a position where said focus evaluating value becomes a peak value;

second focus evaluating value detecting means for detecting a focus evaluating value in said second area, to supply the detected focus evaluating value when said third area is selected as the in-focus target area;

means (10) for controlling said in-focus target area selecting means so as to select said third area as the in-focus target area when the focusing operation starts, and to switch the in-focus target area from said third area to said second area when said focus evaluating value supplied from said second focus evaluating value detecting means becomes equal to or higher than a predetermined value; and

means for controlling said in-focus target area selecting means so as to select with priority said first area as the in-focus target area when said first area is manually set as the in-focus target area.

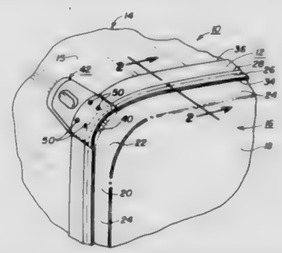
5,055,934

IMPLOSION PROTECTION MEANS HAVING MOUNTING LUG BASE-ACCOMMODATING CONCAVITIES THEREIN

Harry R. Swank, Lancaster, Pa., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 5, 1990, Ser. No. 533,650
Int. Cl.[5] H04N *5/65*
U.S. Cl. 358—246 **23 Claims**

1. In an implosion-resistant cathode-ray tube having an evacuated envelope with a faceplate panel, said faceplate panel including a substantially rectangularly-shaped viewing portion extending to a peripheral sidewall, said sidewall having corners with a given radius of curvature extending into flattened portions, implosion protection means extending around said sidewall, at least one mounting lug having a base portion and an attachment portion cooperating with said implosion protection means, the base portion of said mounting lug being disposed between said implosion protection means and said sidewall, the improvement comprising at least one concavity formed in said implosion protection means to accommodate



said base portion to prevent lateral displacement thereof and to maximize the contact between said implosion protection means and said sidewall of said faceplate panel.

5,055,935

CONTROL DEVICE FOR A DIGITAL COPIER WITH SIMULTANEOUS OPERATIONS FOR READING A SUCCEEDING IMAGE WHILE REPRODUCING A PRECEDING IMAGE WITHOUT INTERRUPTION OF EITHER OPERATION UPON DETECTING AN ERROR WITH THE OPERATION

Katsuyuki Ohno, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 18, 1990, Ser. No. 629,680
Claims priority, application Japan, Feb. 21, 1990, 2-38446
Int. Cl.[5] H04N *1/21, 1/23*
U.S. Cl. 358—296 **3 Claims**

1. A control device for a digital copier which writes digital image data and reads out said digital image data for reproduction, comprising:

image reading means for reading a document to produce a corresponding image density signal;

converting means for converting said image density signal into corresponding digital image data;

storing means for storing said digital image data representative of a plurality of documents;

reproducing means for reproducing said digital image data;

error detecting means for detecting an error occuring in said image reading means or in said reproducing means; and

control means for controlling said image reading means, said converting means, said storing means, said reproducing means and said error detecting means such that said converting means converts the document read by said image reading means into digital image data, said digital image data is written to said storing means, and then said digital

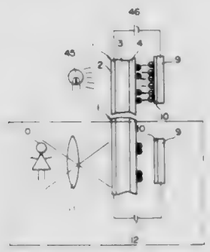
image data is read out of said storing means and reproduced by said reproducing means, and such that when an operation for reading a succeeding document begins while an operation for reading digital image data representative of a preceding document and causing said reproducing means to reproduce said image data is under way, said operation for reproducing said preceding document and said operation for reading said succeeding document each is completed with no regard to an error which may occur in the other operation.

5,055,936

CHARGE LATENT IMAGE RECORDING MEDIUM AND RECORDING/REPRODUCING APPARATUS THEREOF

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Fujisawa; Hirohiko Shinonaga; Tsutou Asakura, both of Yokohama; Masato Furuya, and Tetsuji Suzuki, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 301,324, Jan. 24, 1989, Pat. No. 4,831,452. This application Mar. 23, 1990, Ser. No. 498,805
Claims priority, application Japan, Mar. 23, 1989, 1-71173
Int. Cl.[5] G02B *26/00;* **H04N** *1/028, 1/40*
U.S. Cl. 358—296 **22 Claims**



1. A recording medium for recording information in form of a charge latent image, comprising:

electrode means composed of a material which allows an electro-magnetic radiation beam to pass therethrough;

a photo-conductive layer member whose electric resistance varies when the electro-magnetic radiation beam corresponding to a charge latent image intended to be recorded is applied thereto; and

an insulation layer member composed of dielectric material,

a laminated body composed of at least said means and members being laminated to each other in order, whereby

the electro-magnetic radiation beam corresponding to an image intended to be recorded as said information is applied to said laminated body through said electrode means under a state that an electric field is applied across said electrode means and an auxiliary electrode means provided to generate charges of the charge latent image on a surface of said laminated body facing said auxiliary electrode means.

5,055,937

REMOTE CONTROLLER FOR TWO VTR'S

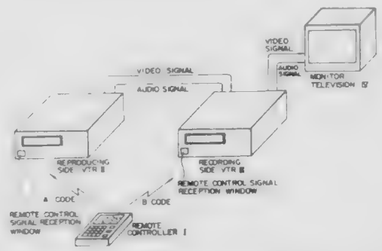
Yasuyuki Yamada, Kawasaki, and Tadashi Ueki, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 26, 1989, Ser. No. 426,719
Claims priority, application Japan, Oct. 26, 1988, 63-270047
Int. Cl.[5] H04N *5/782*
U.S. Cl. 358—335 **5 Claims**

1. A single unit remote controller adapted to control predetermined functions of first and second video tape recorders (VTR) connected each other for performing a signal transfer between the first and second VTRs, said first VTR being preconditioned to be responsive exclusively to a first remote control code signal (code A) and said second VTR being preconditioned to be responsive exclusively to a second remote control code signal (code B) to perform said predetermined functions.

said single unit remote controller comprising:

function keys corresponding to said predetermined functions of the first and second VTRs for commanding remotely said predetermined functions,



code generation means for generating said code A and code B combined in sequence with an interruption of a predetermined time period therebetween in response to a depression of a specific key of the function keys, and,

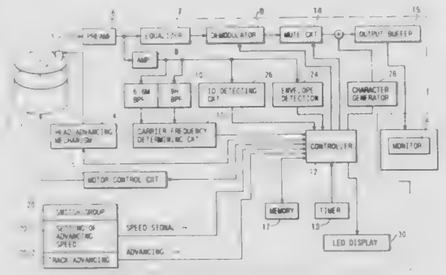
transmission means for transmitting said code A and code B generated by said code generation means to said first and second VTRs.

5,055,938

REPRODUCTION APPARATUS FOR REPRODUCING SUCCESSIVE IMAGE SIGNALS OF DIFFERENT FREQUENCY BANDS

Hiroyoshi Misumi, Yokohama, and Kunio Tsuruno, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1989, Ser. No. 369,198
Claims priority, application Japan, Jun. 29, 1988, 63-163104; Jun. 29, 1988, 63-163105; Jun. 29, 1988, 63-163113
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—340 **24 Claims**



1. A reproduction apparatus comprising:

(a) reproduction means for reproducing information recorded in recording blocks on a medium, the recording blocks containing information recorded in different frequency bands, respectively;

(b) process means for processing the output of said reproduction means with a reproduction characteristic corresponding to the frequency band, the reproduction characteristic being different for information from different frequency bands;

(c) changing means for sequentially changing the recording block being reproduced by said reproduction means; and

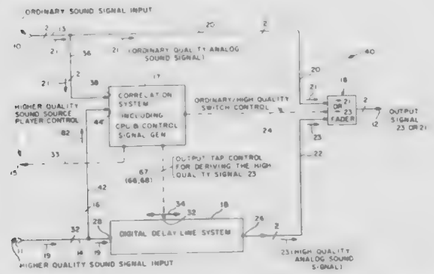
(d) control means for controlling said process means so as not to change the reproduction characteristic of said process means during the changing operation performed by said changing means in order to reduce distortions during the changing operation.

5,055,939

METHOD SYSTEM & APPARATUS FOR SYNCHRONIZING AN AUXILIARY SOUND SOURCE CONTAINING MULTIPLE LANGUAGE CHANNELS WITH MOTION PICTURE FILM VIDEO TAPE OR OTHER PICTURE SOURCE CONTAINING A SOUND TRACK

John J. Karamon, 19 Berkeley St., Stamford, Conn. 06902, and Daniel W. Gravereaux, 602 Carter St., New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 132,295, Dec. 15, 1987, Pat. No. 4,839,733. This application Dec. 9, 1988, Ser. No. 282,305
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—341 **37 Claims**



37. A method for presenting an audience with viewable images accompanied by sound, wherein said viewable images show people talking and wherein a source of said viewable images includes at least one sound signal track for providing a first audio message including a first spoken language having articulation synchronized with lip motions of people shown talking and wherein an audio message of an auxiliary source is correlatable with said first audio message for synchronizing said audio message of said auxiliary source with said first audio message, said audio message of said auxiliary source being

derived from a master recording or high quality duplicate thereof from which was derived said sound signal track, said method presenting an audience with a second spoken language different from said first spoken language, said method comprising the steps of:

recording in a translation language channel said second audio message including said second spoken language;

said second spoken language in said second audio message being arranged and timed during recording for lip motions of people shown talking by said viewable images generally to appear to correspond with articulation of said second spoken language;

synchronizing said second audio message with said audio message of said auxiliary source during presenting of said viewable images; and

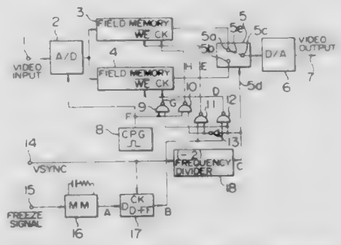
providing an audience with said second audio message for an audience to see said viewable images while hearing said second audio message including said second spoken language with lip motions of people shown talking by said viewable images generally appearing to correspond with articulation of said second spoken language in said second audio message.

5,055,940

VIDEO MEMORY CONTROL APPARATUS

Koichi Tomatsuri, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 11, 1989, Ser. No. 419,955
Claims priority, application Japan, Oct. 14, 1988, 63-257125
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—444 **6 Claims**



1. A video memory control apparatus comprising:

a plurality of memories;

a selection circuit for selectively outputting respective outputs of said plurality of memories;

a clock pulse generation circuit for generating a clock pulse signal to be supplied to said plurality of memories for performing at least one of writing a video signal into said plurality of memories and reading said video signal from said plurality of memories;

supply means for supplying said plurality of memories with said clock pulse signal generated by said clock pulse generation circuit to thereby perform at least one of said writing and reading of said video signal;

selection means for controlling said selection circuit based on a signal relating to a vertical synchronizing signal of said video signal to thereby select one of said plurality of memories so as to derive a video signal output of said selected one memory as an output of said selection circuit; and

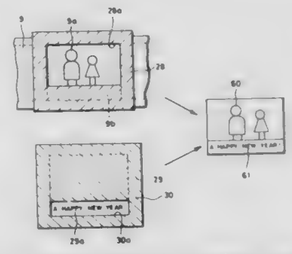
stop means for stopping supply of said clock pulse signal to said plurality of memories except for said one memory selected by said selection means.

5,055,941

PHOTOGRAPHIC PRINTER WITH MONITOR

Kenji Suzuki, Kanagawa, and Fumio Matsumoto, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1989, Ser. No. 324,060
Claims priority, application Japan, Mar. 16, 1988, 63-62852
Int. Cl.[5] G03B *27/52*
U.S. Cl. 358—450 **8 Claims**

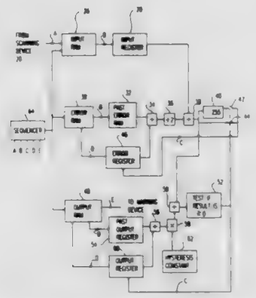


1. A photographic printer with a monitor comprising:

a printing optical system including a light source and a printing lens between which a printing stage is defined in a printing optical path;

a unitary holder for separately holding both a film and a phrase bearing sheet bearing a phrase, said unitary holder being slidable in said printing stage to selectively place said film or said sheet in said printing optical path;
image pickup means for providing an image of said film or said phrase bearing sheet, which is placed in said printing optical path;
composing means for combining said images of said film and said phrase bearing sheet and providing composed image data; and
display means for displaying said composed image data as a composite image.

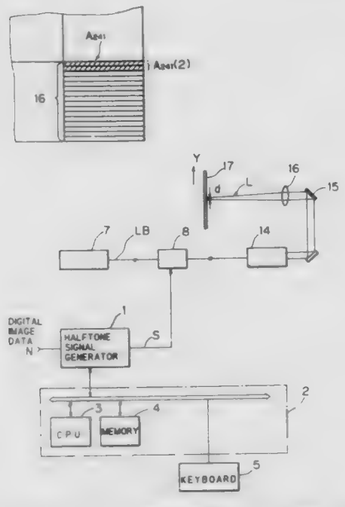
5,055,942
PHOTOGRAPHIC IMAGE REPRODUCTION DEVICE USING DIGITAL HALFTONING TO SCREEN IMAGES ALLOWING ADJUSTABLE COARSENESS
Raphael L. Levien, Rte. 1, Box 18, McDowell, Va. 24458
Filed Feb. 6, 1990, Ser. No. 476,060
Int. Cl.[5] H04N *1/23, 1/40*
U.S. Cl. 358—456 **26 Claims**



1. An image reproducing system, comprising:
a) a scanning means for reading input image data corresponding to the image to be reproduced;
b) a screening device comprising:
memory means for storing the input image data as gray scale values for sequences of pluralities of input points, and for storing a plurality of binary output signals which direct a marking device to mark and not mark indicia on a medium;
means for generating signals allocating the marking and not marking of the indicia on the medium based on a value of a current input point in a sequence of input points, a previous output signal corresponding to a previous input point in the sequence and an error representing a difference between the previous input point and the corresponding output signals scaled relative to a maximum gray scale, the error influencing output signals for subsequent input points in the sequence; and
c) a marking device to receive the output signals from the screening device, whereby the marking device marks variable size dots comprising indicia corresponding to said output signals.

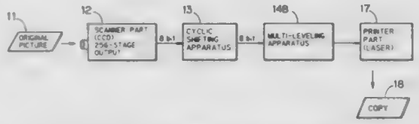
5,055,943
METHOD OF AND APPARATUS FOR RECORDING HALFTONE IMAGE
Yoshihiro Kishida, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co. Ltd., Japan
Filed Apr. 14, 1989, Ser. No. 339,078
Claims priority, application Japan, Apr. 14, 1988, 63-92499
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—459 **17 Claims**

1. A method of producing a halftone image formed by a plurality of halftone dots on a photosensitive material in which each full region of one halftone dot is divided into a plurality of unit areas, the method comprising the steps of:
(a) providing a respective image datum which defines a density for each unit area on an image plane,
(b) providing a respective threshold datum for each unit area on said image plane,
(c) carrying out a single comparison of said image datum against said threshold datum for each unit area ón said image plane, and designating, on the basis of said comparison, each unit area as either a full-exposure area to be fully exposed, as a semi-exposure area to be partially exposed or as a non-exposed area not to be exposed, and



(d) exposing unit areas on said photosensitive material corresponding to said full-exposure area and said semi-exposure area on said image plane to produce said halftone image, where a ratio of an exposed portion in said semi-exposure area to the entirety of one unit area is determined on the basis of a magnitude difference between said image datum and said threshold datum for said semi-exposure area.

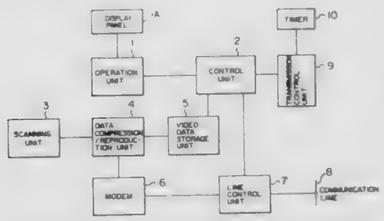
5,055,944
IMAGE SIGNAL PROCESSING APPARATUS
Kenji Shibahara, Akashi, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Nov. 15, 1989, Ser. No. 436,773
Claims priority, application Japan, Nov. 15, 1988, 63-289491; Nov. 15, 1988, 63-289493
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—465 **8 Claims**



1. An image signal processing apparatus comprising:
converting means for converting an analog image signal to a digital image signal;
cyclic shifting means for cyclicly shifting the digital image signal converted by said converting means by a predetermined amount; and

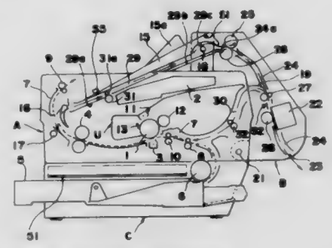
multi-leveling means for dividing said cyclicly shifted digital image signal into multiple levels;
said image signal including a character component changing from a first level side to a second level side through intermediate levels, and an intermediate tone component;
said amount shifted by said cyclic shifting means being determined in such a manner that a signal component on the second level side of the character component moves to the first level side, or a signal component on the first level side of the character component moves to the second level side, whereby the signal components on the first and second level sides can be moved to either the first level side or the second level side and the signal component in an intermediate region can be moved to the opposite level side; and
said multi-leveling means extracting contours from the cyclicly shifted character component and multi-leveling the intermediate tone component as it is and then outputting them.

5,055,945
BROADCASTING COMMUNICATION APPARATUS
Shingo Oguma, Yokohama; Hideki Muroya, Ebina, and Yoshitaka Iwata, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 7, 1990, Ser. No. 476,345
Claims priority, application Japan, Feb. 10, 1989, 1-29780
Int. Cl.[5] H04N *1/00, 1/40*
U.S. Cl. 358—468 **24 Claims**



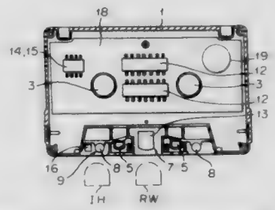
1. A broadcasting communication apparatus comprising:
a scanning unit for reading a document and delivering video data;
a data compression unit for compressing the video data;
a memory unit for storing compressed video data from said data compression unit;
a reproduction unit for reading the compressed video data stored in said memory unit;
a MODEM for transmitting the video data to a communication line; and
control means for controlling said apparatus wherein when reading the document, the video data read out of said scanning unit is stored in said memory unit through said data compression unit and in a broadcasting communication mode, the video data from said reproduction unit is transmitted to said communication line through said MODEM and during a predetermined interval of time between termination of transmission to a first destination and commencement of transmission to a second destination, transmission of video data is inhibited to establish a reception wait state during said predetermined interval of time.

5,055,946
IMAGE PROCESSING APPARATUS
Yoshiyuki Kurahashi, and Masanori Yamamoto, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jun. 8, 1990, Ser. No. 535,178
Claims priority, application Japan, Jun. 9, 1989, 1-147206; Jun. 9, 1989, 1-147207; Jan. 12, 1990, 2-4831
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—498 **24 Claims**



1. A facsimile apparatus comprising:
first transport means having a first path for transporting a recording paper;
recording means disposed at an intermediate portion of the first path for recording an image on the recording paper transported;
second transport means having a second path for transporting an original;
reading means disposed at an intermediate portion of the second path for reading an image from the original transported;
transmitting means for transmitting an original image information output by the reading means through a telephone network;
third transport means having a third path connecting the first path to the second path for sending into the second path the recording paper having an image recorded thereon; and
fourth transport means having a fourth path connecting the second path to the first path for transporting the recording paper as turned upside down from the second path to the first path.

5,055,947
CASSETTE FOR STORING DATA IN A SOLID STATE MEMORY IN LIEU OF TAPE
Takateru Satoh, Saku, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Jun. 21, 1989, Ser. No. 369,019
Claims priority, application Japan, Jul. 6, 1988, 63-89686[U]
Int. Cl.[5] G11B *15/12, 5/03, 23/02*
U.S. Cl. 360—62 **5 Claims**



1. A cassette for use with a conventional magnetic tape cassette type, magnetic tape recording apparatus having a recording/reproducing head and an erasing head which provides a magnetic flux during a recording operation of the magnetic tape recording apparatus, the cassette comprising:

a casing for attachment to the magnetic tape recording apparatus,

a solid state memory, within the casing, for storing data,

an electro-magnetic transducing element for magnetic coupling to the recording/reproducing head of the magnetic tape recording apparatus to sense data signals generated by the recording/reproducing head during the recording operation and for providing data signals for sensing by the recording/reproducing head during a reproducing operation,

a recording system for converting the data signals sensed by the transducing element into data for storage by the memory and a reproducing system for converting data read from the memory into data signals to be provided to the transducing element during the reproducing operation, the recording and reproducing systems respectively being connected between the electro-magnetic transducing element and the solid state memory,

magnetism detecting element for detecting the magnetic flux of the erasing head of the magnetic tape recording apparatus, and

a switching circuit for switching between the recording system and the reproducing system on the basis of a signal from the magnetism detecting element,

wherein the switching circuit connects the recording system between the electro-magnetic transducing element and the memory when the magnetism detecting element detects the magnetic flux of the erasing head and connects the reproducing system between the transducing element and the memory when the magnetism detecting element fails to detect the magnetic flux of the erasing head.

5,055,948

MAGNETIC TAPE USING TWO END POSITION IDENTIFYING PARTS AND A DATA RECORDING METHOD AND APPARATUS USING THE MAGNETIC TAPE

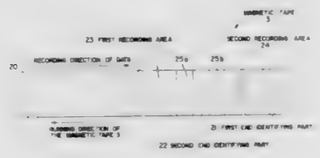
Chitoku Kiyonaga, Higashi-Hiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 1, 1989, Ser. No. 430,154

Claims priority, application Japan, Nov. 2, 1988, 63-278188

Int. Cl.[5] G11B *15/02*

U.S. Cl. 360—69 **2 Claims**



1. A data recording method comprising the steps of:

(a) preparing a magnetic tape with a first end identifying part at an end position of the magnetic tape and a second end identifying part at a predefined distance from the first end identifying part, the second end identifying part being closer to a beginning of the magnetic tape;

(b) recording data on the magnetic tape;

(c) detecting the first end identifying part and the second end identifying part;

(d) storing data in a memory to be recorded on the magnetic tape;

(e) recording end identifying data in a recording area positioned just before the second end identifying part when said step (c) detects the second end identifying part; and

(f) recording residual data stored in the memory before detecting the second end identifying part in a recording area between the second end identifying part and the first end identifying part.

5,055,949

DISK DRIVE AND METHOD FOR CONTROLLING THE CLEANING OF THE FLOPPY DISK

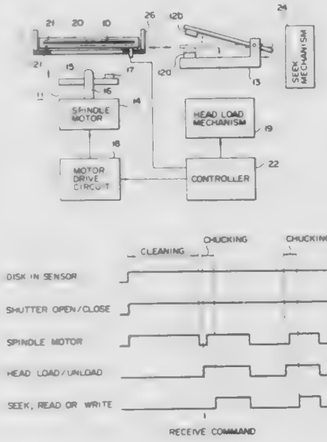
Chikahisa Kawakami, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 25, 1990, Ser. No. 469,766

Claims priority, application Japan, Jan. 25, 1989, 1-15505

Int. Cl.[5] G11B *15/18, 17/00, 19/02*

U.S. Cl. 360—71 **5 Claims**



1. A disk drive for rotationally driving a data storage disk which has a center hole and a drive hole for driving and for aligning the disk, the disk being housed in a case provided with an internal cleaning liner, comprising:

a magnetic head for reading data from and writing data on said disk when the head is brought into contact with said disk;

means for moving the magnetic head;

disk driving means for rotating said disk, said disk driving means having a center pin and drive pin which are respectively inserted into said center hole and drive hole of said disk;

cleaning control means for driving said disk driving means for a predetermined time in order to remove dust adhering to said disk with said cleaning liner immediately after said disk housed in said case has been loaded into said disk drive, said cleaning control means stopping the drive of said disk by said disk driving means after said predetermined time has lapsed, the means for moving the magnetic head preventing the magnetic head from contacting said disk during said predetermined time; and

control means for controlling said disk driving means to rotate said disk after said magnetic head has been brought into contact with said disk by said means for moving the magnetic head.

5,055,950

FLOPPY DISK DRIVER WITH PROTECTIVE ROTATION CONTROL APPARATUS

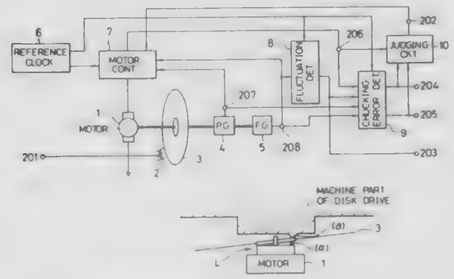
Keita Kimura, Kawasaki, and Koichiro Kawamura, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 17, 1989, Ser. No. 395,077

Claims priority, application Japan, Aug. 24, 1988, 63-210073

Int. Cl.[5] G11B *19/12, 19/20*

U.S. Cl. 360—74.5 **15 Claims**



1. A floppy disk driver comprising:

loading means for loading a floppy disk capable of recording an analog signal,

rotation means for rotating said floppy disk at a constant predetermined rotational speed,

speed detecting means for detecting that said floppy disk reaches said predetermined rotational speed and for producing a speed detection signal,

fluctuation detecting means for detecting fluctuation in the rotational speed of said floppy disk and for producing a fluctuation detection signal, and

defect determining means responsive to said speed detection signal and to said fluctuation detection signal for determining the presence of a defect condition which causes fluctuation in the rotational speed of said floppy disk, based on production of said fluctuation detection signal during a predetermined period after production of said speed detection signal, and for causing said rotation means to stop rotating said floppy disk when said defect condition is determined to be present.

5,055,951

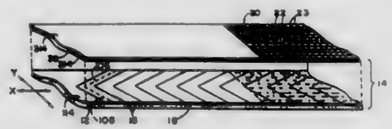
METHOD AND APPARATUS FOR SERVO-POSITIONING MOVABLE TRANSDUCER HEADS

Michael I. Behr, Pasadena, Calif., assignor to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Filed Mar. 10, 1989, Ser. No. 321,915

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.120 **62 Claims**



1. A servo-tracking data storage member, comprising:

a movable record member having a recordable field area with the capacity to record and retain signal transitions recorded thereon, said recordable field having first and second edges;

a plurality of mutually-spaced first servo segments recorded on a first portion of said recordable field, said first servo segments being non-intersecting with each other, each of said servo segments originating proximate to said first edge and extending generally toward the second edge;

a plurality of mutually-spaced second servo segments recorded on a second portion of said recordable field, said second servo segments being non-intersecting with each other, each of said second servo segments originating proximate to said second edge and extending generally toward said first edge;

each of said first servo segments being paired with a particular one second servo segment and disposed along a line which converges with that of said particular one of said second servo segments at a fixed angle to thereby form a continuing sequence of said angles which is aligned along an axis disposed generally parallel to the direction of motion of said record member, and said first and second servo segments together transversing substantially all of said recordable field.

5,055,952

AUTOMATIC TRACK FINDING (ATF) CONTROLLER FOR DIGITAL AUDIO TAPE RECORDER

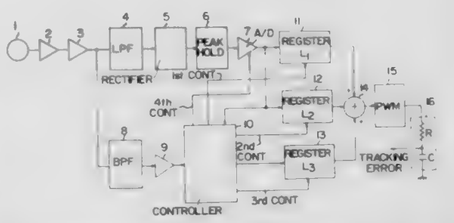
Il-Young Noh, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 20, 1989, Ser. No. 424,828

Claims priority, application Rep. of Korea, Dec. 31, 1988, 18130/1988

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.14 **12 Claims**



1. An automatic track finding (ATF) controller for a digital audio tape recorder, wherein an automatic track finding function is performed by using pilot signals reproduced through two heads, comprising:

a low-pass filter means for passing only the pilot signals by filtering a reproduced signal from a digital tape;

a band-pass filter means for detecting synchronous signals of two adjacent tracks A and B from said reproduced signal;

analog/digital converter means for converting said pilot signals passed by said low-pass filter means into digital pilot signals;

controller means for detecting a level difference between said digital pilot signals and for generating first to third control signals to control storage of pilot crosstalk components of the digital pilot signals in response to said synchronous signals;

first register means for storing a pilot crosstalk component of an adjacent track in response to the first control signal;

second register means for storing a pilot crosstalk component of another adjacent track in response to the second control signal;

third register means for storing an offset value in response to said third control signal, said offset value being generated in response to said level difference detected by the controller;

adding means for combining the stored offset value and the stored pilot crosstalk components by controlling outputs of said first to third registers to generate an error voltage; and

tracking error signal generator means for controlling track-

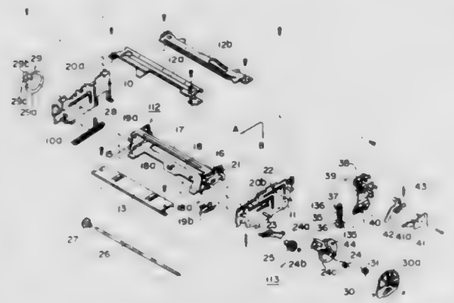
ing by generating a pulse width modulated signal according to the error voltage.

5,055,953

CASSETTE LOADING APPARATUS HAVING A GUIDE MEMBER WITH WORM UNIT FOR REDUCTION OF DRIVE TORQUE

Yuzo Tsuchiya, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1989, Ser. No. 457,976
Claims priority, application Japan, Dec. 28, 1988, 63-333590
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.5 **3 Claims**



1. An apparatus for performing a loading and unloading operation of a cassette, comprising:
- a cassette holder, disposed to be substantially horizontally movable, for holding the cassette;
- loading means, including a guide member, for guiding said cassette holder during the loading or unloading of said cassette, and a worm wheel, for driving said guide member;
- a worm unit, including:
  - a worm meshed with said worm wheel,
  - a rotating member coaxially mounted at one end of said worm, and
  - thrust said radial bearings coaxially mounted between said worm and said rotating member, said worm being driven according to a transmission of rotation from a driven source to said rotating member;
- means for mounting said worm unit, including:
  - a first support member for detachably supporting another end of said worm,
  - a second support member for detachably supporting said radial bearing, and
  - a mounting member in which said first and second support members are integrally formed, and wherein said thrust bearing has a friction coefficient that is less than a friction coefficient by which the first and second support members hold said worm and said radial bearing.

5,055,954

CASSETTE LOADING APPARATUS IN WHICH CASSETTE IS LOADED SHORT SIDE FIRST

Takahiro Kato, Kawagoe, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed Jun. 9, 1989, Ser. No. 363,806
Claims priority, application Japan, Nov. 30, 1988, 63-300640
Int. Cl.[5] G11B *15/675, 15/66*
U.S. Cl. 360—96.5 **4 Claims**

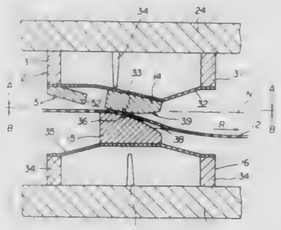
1. A cassette loading apparatus for a cassette tape of the type having a lid on an elongated side edge thereof, a slider movable between a locking and unlocking position for said lid, and a locking claw for locking said slider and lid in the locking position; said cassette having short sides transverse to said elongated side; said apparatus comprising:
- a housing having a cassette insertion opening sized to receive said cassette, short side first;
- a holder movably attached to said housing to receive said cassette upon insertion, said holder including means for press holding said cassette in place upon complete insertion of said cassette in said housing;
- a slider opening-closing plate having slider and locking claw engagement means for engaging said slider and locking claw of said cassette and moving them to an unlocked position; said slider opening-closing plate being movably positioned between a pre-insertion position whereby said engagement means are out of the way of said cassette insertion and a position of engagement with and movement of said slider and locking claw, and
- means for moving said holder, with cassette therein, to a fully inserted position in said housing, for moving said slider opening-closing plate from said first position to said second position to unlock said lid, and for moving said housing vertically between a tape loading position and a tape playing position.

5,055,955

DUAL MAGNETIC RECORDING AND REPRODUCTION HEADS WITH ELASTIC MOUNTING

Daisuke Mitsuhashi, and Noboru Kawasaki, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1990, Ser. No. 489,396
Claims priority, application Japan, Mar. 16, 1989, 1-62285; Jun. 9, 1989, 1-145444
Int. Cl.[5] G11B *5/54, 21/16*
U.S. Cl. 360—104 **11 Claims**



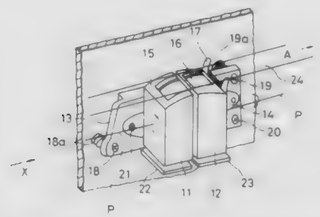
1. A device for recording and reproducing information on both sides of a rotatable magnetic disk which defines a free rotary surface plane, comprising:
- a pair of magnetic heads disposed facing each other on opposite sides of said magnetic disk, and adapted to individually contact recording surfaces on respective opposite sides of said magnetic disk,
- head supporting means for individually supporting said magnetic heads,
- at least one elastic member disposed between one of said magnetic heads and said supporting means and operative to provide fine controlled movement of said magnetic head in a direction substantially perpendicular to said magnetic disk, and
- a control portion formed on said one magnetic head and operative to generate a negative pressure between said magnetic disk and said one magnetic head in response to rotation of said magnetic disk, said negative pressure acting to deform said at least one elastic member to attendantly cause said one magnetic head to come in sliding contact with an adjacent side of said magnetic disk.

5,055,956

COMPOSITE MAGNETIC HEAD ASSEMBLY FOR GUIDING A MAGNETIC TAPE WITH IMPROVED STABILITY

Akimasa Kaya, and Takashi Niinuma, both of Tokyo, Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Apr. 18, 1989, Ser. No. 339,807
Claims priority, application Japan, Apr. 18, 1988, 63-95080
Int. Cl.[5] G11B *5/56*
U.S. Cl. 360—109 **5 Claims**



1. A composite magnetic head assembly for use in a magnetic recording/reproducing apparatus for recording and/or reproducing an information signal on and from a magnetic tape passing through the magnetic head assembly in a predetermined tape transport direction, comprising:
- a first base adapted to be mounted on a body of the magnetic recording and reproducing apparatus
- a first magnetic head provided on said first base, said first magnetic head having a first tape guide surface for guiding said magnetic tape in said tape transport direction;
- a second base provided on said first base; and
- a second magnetic head provided on said second base in a upstream side of said tape transport direction relative to said first magnetic head and having a second tape guide surface for guiding said magnetic tape in said tape transport direction, said second magnetic head being provided adjacent said first magnetic head such that said first tape guide surface and said second tape guide surface form a substantially continuous tape guide surface;
- wherein said first and second magnetic heads are held in a state such that said first and second magnetic heads are tilted in mutually opposing directions with respect to a center line passing between said magnetic heads so that said magnetic tape transported along said first and second guide surfaces is deformed to have a curved cross-section when taken perpendicularly to the tape transport direction so that said magnetic tape has a convex surface at a side thereof that makes contact with said first and second guide surfaces of the magnetic heads.

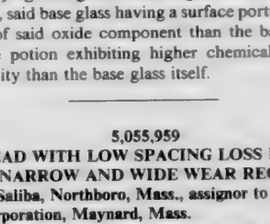
5,055,957

METHOD OF MAKING LOW WEAR GLASS FOR MAGNETIC HEADS

Gerald A. Daughenbaugh, and Eugene B. Rigby, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 367,733, Jun. 19, 1989, abandoned. This application Nov. 2, 1990, Ser. No. 608,584
Int. Cl.[5] G11B *5/265*
U.S. Cl. 360—121 **10 Claims**

1. A multitrack head including blocks of a magnetic ferrite and having a magnetic isolation glass filling slots separating said blocks for magnetic isolation between said blocks, said glass produced by the process comprising:
- mixing LT lead borosilicate glass at a weight percent ranging from 65 to 55 percent with the remainder being HT borosilicate glass, said mixing step producing a glass mixture;
- applying said glass mixture to the slots separating said blocks;
- glassing the slots with said glass mixture by heating said blocks and said glass mixture to a temperature sufficient to melt said glass mixture, said melted glass mixture filling the slots;
- hot isostatic pressing said glassed slots by subjecting said



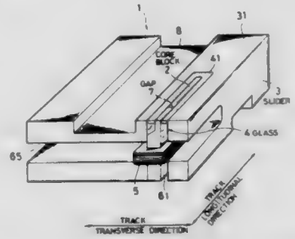
glassed slots and said blocks to sufficient temperature and pressure conditions to remove any bubbles present in said glass; and
- annealing said blocks with the glassed slots at a selected temperature which toughens the glass present in said slots.

5,055,958

SURFACE-REINFORCED GLASS AND MAGNETIC HEAD HAVING SURFACE-REINFORCED GLASS

Kojiro Yagami; Chitatsu Sano, and Toshiya Tamura, all of Yamanashi, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 1, 1990, Ser. No. 473,472
Claims priority, application Japan, Mar. 31, 1989, 1-82754; Mar. 31, 1989, 1-82755; Oct. 27, 1989, 1-280811; Oct. 27, 1989, 1-280812
Int. Cl.[5] G11B *5/187*
U.S. Cl. 360—122 **15 Claims**



1. A surface-reinforced glass, consisting essentially of:
- an underlying base glass containing at least one oxide component, said base glass having a surface portion containing more of said oxide component than the base glass, said surface potion exhibiting higher chemical or technical durability than the base glass itself.

5,055,959

TAPE HEAD WITH LOW SPACING LOSS PRODUCED BY NARROW AND WIDE WEAR REGIONS

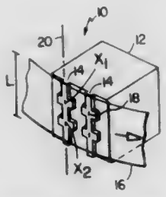
George A. Saliba, Northboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 9, 1990, Ser. No. 462,562
Int. Cl.[5] G11B *5/187*
U.S. Cl. 360—122 **15 Claims**

1. A tape head assembly, having a tape facing surface, for use in encoding or decoding a magnetic recording tape passing thereover comprising,
- a transducer support have a raised surface, and against which said tape exerts pressure, said raised surface being constructed to be sufficiently close to said tape to constitute a wear surface,

a transducer mounted in said support to encode or decode said tape passing over said surface,

said wear surface being divided along an axis into a first region and a second region, said first region being in proximity to said transducer,



said first region having a greater extent transverse to said axis than said second region, so as to present to said tape a wear surface portion that is wider than that presented by said second region, thereby permitting the maintenance of said wear surface closer to said tape in said first region than in said second region.

5,055,960

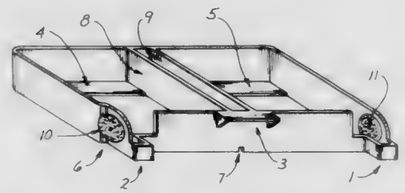
CASSETTE TRANSPORT DIAGNOSTIC TOOL

Howard J. Pepsnik, 40994 Gibbel Rd., Hemet, Calif. 92343

Filed Apr. 21, 1989, Ser. No. 342,072

Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—132 **16 Claims**



1. A device for use in diagnosing a cassette transport, the device comprising:

a shell having a size and shape enabling it to be inserted into a cassette transport in place of a tape cassette that is configured for use with the cassette transport;

the shell being without the tape, reels, and other moving parts of a conventional tape cassette; and

the shell being so configured that when it is inserted into the cassette transport it actuates switches that are part of the cassette transport which the tape cassette actuates when the tape cassette is inserted into the cassette transport, in order thereby to enable the cassette transport to function while still leaving components of the cassette transport accessible to a technician;

wherein the shell has a size and shape enabling it to be inserted into the cassette transport of a video cassette recorder in place of a video tape cassette.

5,055,961

FLYBACK CURRENT DAMPENING APPARATUS

Wayne T. Wiblin, Ashtabula, and Arthur Wild, Thompson, both of Ohio, assignors to Caterpillar Industrial Inc., Mentor, Ohio

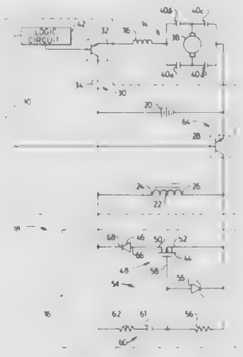
Filed Nov. 6, 1989, Ser. No. 431,810

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—154 **15 Claims**

1. An apparatus for dampening current in a coil, said coil having first and second terminals and being connectable to a flyback circuit an a source circuit, said source circuit having a current source and a coil switching element having "ON" and "OFF" states, and said coil being adapted to pass current, comprising:

means for producing a voltage signal as a function of the magnitude of the current passing through said flyback circuit; and



means for receiving said voltage signal and varying the resistance of said flyback circuit as a function of the received voltage signal.

5,055,962

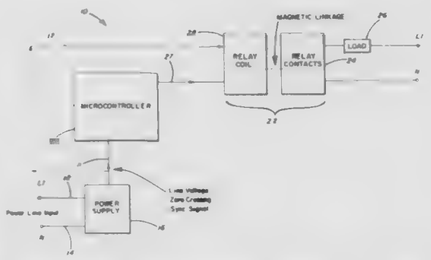
RELAY ACTUATION CIRCUITRY

Gregory A. Peterson, South Barrington, and Timothy Graff, Palatine, both of Ill., assignors to Digital Appliance Controls, Inc., Elgin, Ill.

Filed Feb. 21, 1989, Ser. No. 313,637

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—187 **18 Claims**



1. Apparatus for synchronizing the operation of an electromechanical relay from a power line characterized by a known waveform comprising,

an electrical load receiving voltage and current from the power line,

a relay positioned in series with said electrical load and the power line, said relay including a coil and a pair of contacts being movable upon actuation between an open position and a closed position to interrupt and supply power to said electrical load,

control means for selecting the point on the power line waveform when said relay is selectively actuated to open and close said contacts to said electrical load, and

said control means positioned between the power line and said relay for supplying power to said relay in a pulsed signal where the initial effective voltage potential applied across said relay coil is much greater than the rated operating voltage of said coil, thereby inducing a rapid current increase through said coil and causing rapid acceleration and subsequent closure of said relay contacts.

5,055,963

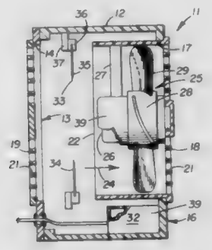
SELF-BALANCING BIPOLAR AIR IONIZER

Leslie W. Partridge, Emeryville, Calif., assignor to Ion Systems, Inc., Berkeley, Calif.

Filed Aug. 15, 1990, Ser. No. 567,595

Int. Cl.[5] H01T *23/00;* **H01J** *27/00*

U.S. Cl. 361—231 **16 Claims**



1. Air ionizing apparatus having at least a pair of air ionizing electrodes which are spaced apart and exposed to ambient air, said apparatus further having a high voltage supply that produces both positive and negative high voltages and which has a high voltage region that includes a circuit junction, a first high voltage producing circuit connected between said junction and a first of said electrodes and a second high voltage producing circuit connected between said junction and a second of said electrodes and wherein said first and second high voltage producing circuits apply voltages of opposite polarities to said first and second electrodes, wherein the improvement comprises:

said high voltage region of said high voltage supply including said electrodes and said circuit junction and said first and second high voltage producing circuits being electrically isolated from any connection to ground that is capable of conducting direct current away from said electrodes except insofar as the ions and charge leakage within insulative material may transmit charge to ground, thereby enabling acquisition of a D.C. bias voltage at said high voltage region including at said electrodes that maintains a balanced output of positive and negative ions if an imbalance begins to occur.

5,055,964

ELECTROSTATIC CHUCK HAVING TAPERED ELECTRODES

Joseph S. Logan, Poughkeepsie; Raymond R. Ruckel, Garrison; Robert E. Tompkins, Pleasant Valley, and Robert P. Westerfield, Jr., Montgomery, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1990, Ser. No. 579,439

Int. Cl.[5] H02N *13/00*

U.S. Cl. 361—234 **17 Claims**

1. A split-ring electrostatic chuck for holding a semiconductor wafer, said chuck comprising:

a substantially disc-shaped first electrode having a raised central hub portion and a raised outer rim portion forming a depression between said raised hub and said raised rim, said depression having a taper;

a second electrode having a donut shape with a substantially circular wall defining a central opening and an outer edge to form a band between said circular wall and said outer edge, wherein:

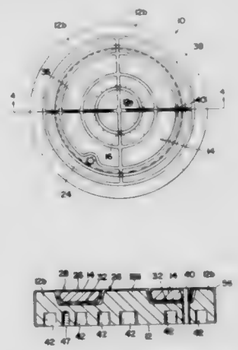
(a) said hub of said first electrode engages said central opening of said second electrode,

(b) said rim of said first electrode surrounds said outer edge of said second electrode, and

(c) said band is adapted to engage said depression of said first electrode and is tapered to correspond to said taper of said depression;

an insulator electrically separating said first electrode from said second electrode and covering the tops of said first electrode and said second electrode to form a clamping surface;

a first electrical contact connected to said first electrode; and



a second electrical contact connected to said second electrode, wherein a voltage is applied between said first electrode and said second electrode generating an attractive force for clamping said wafer to said clamping surface.

5,055,965

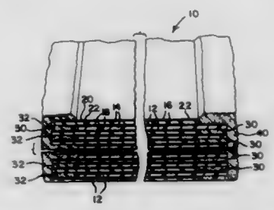
METHOD AND APPARATUS FOR MAKING CAPACITIVE STRUCTURE AND LAMINATE USEFUL IN MAKING SAME

Charles C. Rayburn, Forest, Va., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 26, 1990, Ser. No. 633,946

Int. Cl.[5] H01G *4/08, 4/30, 1/14*

U.S. Cl. 361—303 **58 Claims**



58. A laminate useful in making capacitive structures comprising webs of metallized, dielectric film, the laminate comprising two webs of said film, wherein each web has a like number of narrow, longitudinal demetallized lanes, each of said lanes of each web being located along an outer surface of said web in opposed relation to one of said lanes of the other web.

5,055,966

VIA CAPACITORS WITHIN MULTI-LAYER, 3 DIMENSIONAL STRUCTURES/SUBSTRATES

Hal D. Smith, Rancho Palos Verdes; Robert F. McClanahan, Valencia; Andrew A. Shapiro, Orange, and George Pelzman, Segundo, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

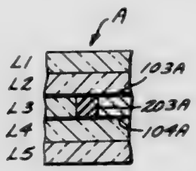
Filed Dec. 17, 1990, Ser. No. 628,784

Int. Cl.[5] H01L *39/02;* **H05K** *5/00;* **H01G** *4/10*

U.S. Cl. 361—321 **9 Claims**

1. A capacitor structure in a hybrid multilayer, circuit having a plurality of insulating layers, comprising:

a dielectric via fill in a via formed in one of the insulating layers;



first conductive means overlying said dielectric via fill; and second conductive means underlying said dielectric via fill.

5,055,967

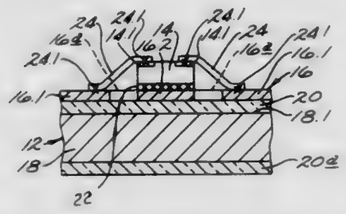
SUBSTRATE FOR AN ELECTRICAL CIRCUIT SYSTEM AND A CIRCUIT SYSTEM USING THAT SUBSTRATE

Israil M. Sukonnik, Plainville, Mass.; James A. Forster, Barrington, R.I.; Henry F. Breit, Attleboro, and Gary A. Raphanella, South Easton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 262,863, Oct. 26, 1988, abandoned. This application Jul. 11, 1990, Ser. No. 551,695

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—387 **34 Claims**



1. A substrate for mounting electrical components including semiconductor devices comprising an electrically conductive circuit layer, a base layer comprising an aluminum material, and an electrically insulating hard coating dielectric layer of amorphous aluminum oxide having a dielectric strength on the order of at least 1000 volts/mil directly adherent to the aluminum material of the base layer mounting the electrically conductive circuit layer thereon in selected electrically insulated relation to the base layer in heat-transfer relation to the base layer.

5,055,968

THIN ELECTRONIC DEVICE HAVING AN INTEGRATED CIRCUIT CHIP AND A POWER BATTERY AND A METHOD FOR PRODUCING SAME

Yoshio Nishi, Kanagawa; Akio Yasuda; Tsunehiro Kashima, both of Tokyo; Takeshi Hori, Kanagawa; Shigetaka Higuchi, Tochigi, and Hidetoshi Shimizu, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 3, 1989, Ser. No. 374,744

Claims priority, application Japan, Jul. 4, 1988, 63-164895; Jul. 15, 1988, 63-175061

Int. Cl.[5] H05K *7/16;* **G06K** *5/00;* **H01M** *4/02, 6/00*

U.S. Cl. 361—395 **14 Claims**

8. A thin electronic device including:

a first cover sheet with a first electrode surface of a battery formed thereon;

a second cover sheet with a second electrode surface of the battery formed thereon;

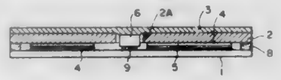
an anodic active material applied onto said first electrode surface;

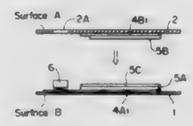
a cathodic active material applied onto said second electrode surface;

a separator impregnated with electrolyte;

a circuit member positioned between said first and said second cover sheets and operated by said battery; and

a connecting conductor formed on said first and said second





cover sheets to connect said first and second electrode surfaces with said circuit member,

said anodic active material and said cathodic active material being opposed to each other through the separator, said first and said second cover sheets being integrally laminated together without an intermediate layer to hold said circuit member.

5,055,969

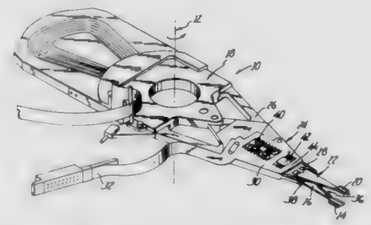
SERVO/DATA ACTUATOR ARM FLEXIBLE CIRCUIT

John S. Putnam, Excelsior, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Sep. 28, 1990, Ser. No. 590,233

Int. Cl.[5] H05K *1/11*

U.S. Cl. 361—398 **17 Claims**



1. A flexible circuit for use in an actuator arm of a disk storage device which carries a data head and a servo head, the flexible circuit comprising:

a multilayer flexible substrate having electrically insulating layers and first and second conducting layers, the flexible substrate including a tail portion and a main body portion;

a plurality of conductive data lines formed in the first conducting layer;

a plurality of conductive servo lines formed in the first conducting layer;

a first ground plane formed in the first conducting layer;

a data preamplifier mounted on the flexible substrate, having data input, data output and control terminals connected to the data lines, and having data head terminals connected to the data head;

a servo preamplifier mounted on the flexible substrate, having servo input terminals connected to the servo head, and having servo output terminals connected to the servo lines; and

an electrically conductive second ground plane formed in the second conducting layer and positioned below and extending between the servo output terminals of the servo preamplifier and the data head terminals of the data preamplifier, said second ground plane being electrically isolated from said first conducting layer.

5,055,970

SCANNING APPARATUS FOR CHIP CARD

Hans Weihs, Purkersdorf, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1989, Ser. No. 407,395

Claims priority, application Austria, Sep. 23, 1988, 2364/88

Int. Cl.[5] H05K *5/00*

U.S. Cl. 361—399 **21 Claims**



1. A scanning apparatus for a chip card, said apparatus having a first set of fixedly arranged contacts for engaging a second set of contacts on the card, said apparatus including a displaceable chip card accommodation device, said apparatus comprising:

a drawer having a card accommodation space for releasably receiving said card at a reference location therein;

housing means including said first set of contacts fixedly secured thereto at a given level and drawer guide means for releasably securing said drawer thereto at different step levels relative to the given level at the region of said first set of contacts as said drawer is displaced in an insertion direction transverse said different step levels so as to cause said received card to stepwise displace toward said first set of contacts during displacement of said drawer in said insertion direction; and

guide ribs secured to the drawer and forming two spaced abutment stops for laterally limiting the accommodation space in the direction of insertion of the chip card into the accommodation space within the drawer, said guide ribs originating from the region of the drawer facing the first set of contacts and extending along at least one section of the accommodation space, said guide ribs in the region of the drawer facing the first set of contacts including rims overlapping the accommodation space, at least the boundary surfaces of the rims facing the accommodation space viewed in the direction opposite to the direction of insertion, extending obliquely upwards away from the accommodation space.

5,055,971

MAGNETIC COMPONENT USING CORE CLIP ARRANGEMENT OPERATIVE FOR FACILITATING PICK AND PLACE SURFACE MOUNT

John J. Fudala, Pequannock, N.J., and Magda H. Samaha, Dallas, Tex., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 21, 1989, Ser. No. 454,563

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—400 **4 Claims**

1. In combination:

a circuit substrate;

a magnetic component mounted on the circuit substrate;

the magnetic component comprising, a magnetic core having a first and second core member;

a spring clip formed out of a resilient metal and mounted for securing the first and second core members together;

the spring clip comprising:

a flat planar surface substantially covering a top area of the magnetic component;

first and second pairs of pressure bearing members, positioned on opposing sides of the flat planar surface, each pressure bearing member having a substantially oblique V-shaped bend at its core engaging end with each pressure bearing member engaging a side of one of the first and second core members with spring produced pressure of the resilient metal in which a free end of each oblique V-shaped bend engages a side of the core member and is operative for securing the first and second core members together; and



first and second securing members positioned on opposite sides between the opposing sides of the planar surface; said securing members having a sufficiently longitudinal member dimension extending downwardly therefrom with a substantially oblique V-shaped bend at the end so that a free end of each oblique V-shaped bend engages an underside of the mangetic core component.

5,055,972

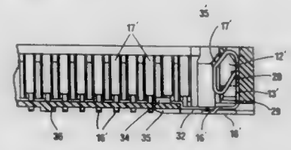
CHIP CARRIER SOCKET

Kiyoshi Atoh, Tama, Japan, assignor to Kel Corporation, Tokyo, Japan

Filed Jan. 23, 1990, Ser. No. 468,718

Int. Cl.[5] H01R *9/09*

U.S. Cl. 361—400 **21 Claims**



1. A chip carrier socket comprising:

an insulating housing molded in one piece of plastic material and including a rectangular frame-like body portion surrounding a centrally located rectangular base-plate, the frame-like body portion having sides formed with respective rows of contact receiving cavities opening both inwardly to a chip carrier receiving recess defined by the profile of the frame-like body above the base-plate, and downwardly to a lowermost circuit board engaging face;

contacts each comprising a contact spring portion and a solder tab portion extending from opposite sides of a strip-form body portion and being anchored in respective cavities with the contact spring portions extending through the inward openings for establishing electrical connection to respective leads of rows of leads on respective sides of a rectangular chip carrier received in the chip carrier socket recesses and with soldering tabs of the contacts extending inwardly of the frame and located closely adjacent in rows at the circuit board engaging face for soldered connection to respective soldering pads of the circuit board by reflow soldering;

bridge portions extending between respective corners of the base-plate and adjacent respective corners of the frame-like body portion supporting the base-plate with respective perimetrical edges thereof located spaced apart from the respective adjacent sides of the frame body and defin-

ing therewith apertures aligned over the respective rows of solder tabs; and,

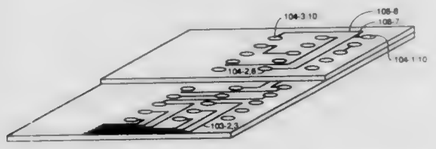
circuit board engaging feet depending from a lower surface of the base-plate at the circuit board engaging face for supporting the base-plate at a predetermined spacing above the surface of a circuit board, the bridge portions being located at the circuit board engaging face and the circuit board engaging feed being formed by continuations of respective bridge portions where the bridges join the base plate, whereby the base-plate is supportively joined to the frame-like body portion without obstruction of the field of view along the aperture.

5,055,973

CUSTOM TOOLED PRINTED CIRCUIT BOARD

Amr M. Mohsen, Saratoga, Calif., assignor to Aptix Corporation, San Jose, Calif.

Filed Jan. 17, 1990, Ser. No. 466,153
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—414 **6 Claims**



1. A printed circuit board containing a first region and a second region, said board comprising:

a multiplicity of first electrical contacts formed in said first region of said printed circuit board for receipt of the leads of electronic components to be mounted on said printed circuit board;

a plurality of second electrical contacts formed in said second region of said printed circuit board,

a first set of conductive traces formed on said printed circuit board in said first region, each of said first set of conductive traces uniquely interconnecting at least two of said multiplicity of first electrical contacts;

a second set of conductive traces formed on said printed circuit board, each of said second set of conductive traces interconnecting at least one of said multiplicity of first electrical contacts to at least one of said plurality of second electrical contacts; and

a third set of conductive traces formed on said printed circuit board in said second region to interconnect selected ones of said corresponding plurality of second electrical contacts thereby to allow a user to form conductive paths on said printed circuit board to achieve a desired electrical function from the electronic components to be connected to said first region of said printed circuit board.

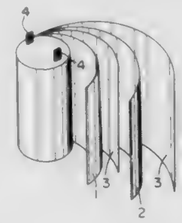
5,055,974

ELECTROLYTE FOR USE IN ELECTROLYTIC CAPACITORS

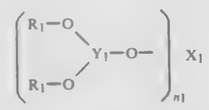
Yukari Washio, Kyoto; Nobuhiro Takeishi, Hirakata; Hideki Shimamoto, Tsuzuki; Keiji Mori, Joyo; Noriki Ushio, Joyo; Katsuji Shiono, Ohtsu; Takaaki Kishi, Uji, and Hideo Samura, Ohta, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 462,255, Jan. 9, 1990, abandoned. This application Oct. 9, 1990, Ser. No. 595,727
Claims priority, application Japan, Jan. 11, 1989, 1-4327; Mar. 22, 1989, 1-69454; Nov. 28, 1989, 1-308131
Int. Cl.[5] H01G *9/02*
U.S. Cl. 361—527 **14 Claims**

1. An electrolyte for use in electrolytic capacitors, comprising as a solute at least one kind of quaternary ammonium salt of a boric acid complex with an alcoholic-hydroxy containing compound, said quaternary ammonium salt being of the formula I:



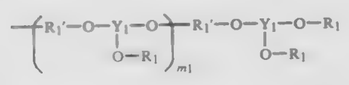
(I)



where n_1 is an integer of 1 or more;

X_1 is a moiety selected from the group consisting of (i) a residue obtained by removing n_1 hydroxyl group or groups from a compound containing at least n_1 alcoholic hydroxyl groups, (ii) a group of the formula $—Y_1—(O—R_1)_2$ or $Y_1—O—R_1$, and (iii) a group of the formula I-A:

(I)-A



wherein m_1 is an integer of zero or more, R_1' is a residue obtained by removing two hydroxyl groups from a compound containing at least two alcoholic hydroxyl groups;

Y_1 is a group selected from the group consisting of $(B—O—R_1)^-.Q_1^+$ and B—, the Q_1^+ being a quaternary ammonium ion, with the proviso that at least one of the Y_1 groups in the general formula I is $(B—O—R_1)^-.Q_1^+$;

R_1s are independently hydrogen, alkyl, aralkyl, or derivatives thereof, said derivatives of alkyl and aralkyl containing at least one selected from the group consisting of hydroxy groups, ether linkages, ketone groups and S-containing groups, and

said two R_1 groups or an R_1 and X_1 group may be joined together through a —O—B—O— group to form a ring structure containing boron; and

said alcoholic-hydroxy containing compound being selected from the group consisting of:

(a) compounds possessing one alcoholic hydroxyl group;

(b) compounds having at least two vicinal alcoholic hydroxyl groups;

(c) saturated linear aliphatic compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups;

(d) unsaturated aliphatic compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups;

(e) alicyclic compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups;

(f) ether-group containing compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups;

(g) sulfur-containing compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups;

(h) nitrogen-containing compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups;

(i) phosphorus-containing compounds having two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups; and

(j) compounds having more than two alcoholic hydroxyl groups, and having no vicinal alcoholic hydroxyl groups.

5,055,975

ELECTROLYTE CAPACITOR

Guenter Behrend, Anhausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1990, Ser. No. 539,349
Claims priority, application European Pat. Off., Jun. 29, 1989, 89111872.1
Int. Cl.[5] H01G *9/02*
U.S. Cl. 361—527 **3 Claims**

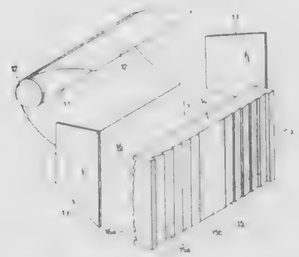
3. Electrolyte capacitor comprising at least two foils, an anode foil and a cathode foil, of a valve metal wound about one another, the anode foil serving as an anode being provided with an oxide layer acting as a dielectric, and spacers, that are saturated with an operating electrolyte, arranged between the anode and cathode foils, said operating electrolyte being composed of a quaternary ammonium salt of a carboxyl acid, of an additive of the salt-forming carboxyl acid and of butyrolactone as a solvent; the foils being composed of aluminum and the operating electrolyte having a pH value of 5 through 7 and being composed of 0.25 through 0.8 mol/kg tetraethyl ammonium hydrogen maleate, of 0.05 through 0.16 mol/kg maleic acid and of γ-butyrolactone.

5,055,976

STROBE FLASHING DEVICE

Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1990, Ser. No. 585,517
Claims priority, application Japan, Sep. 21, 1989, 1-110726[U]
Int. Cl.[5] G03B *15/02*
U.S. Cl. 362—17 **13 Claims**



1. A strobe flashing device, comprising a cylindrical strobe light emitting tube and a condenser lens for gathering light beams emitted from said strobe light emitting tube, wherein,

said condenser lens is provided on one side face with a first cylindrical lens which gathers said light beams only in a direction that is parallel with a longitudinal axis of said strobe light emitting tube, and on a second side face with a second cylindrical lens which gathers light beams that are only in a direction that is perpendicular to said longitudinal axis of said strobe light emitting tube,

at least one of said cylindrical lenses on opposite side faces of said condensed lens being planar at a center portion thereof.

5,055,977

REMOTE CONTROL ILLUMINATOR

Acquanetta, 4415 N. Arcadia La., Phoenix, Ariz. 85018

Filed Dec. 3, 1990, Ser. No. 620,771
Int. Cl.[5] G01D *11/28*
U.S. Cl. 362—23 **18 Claims**



1. An illumination apparatus for illuminating markings on a remote control device having a plurality of push buttons, each of which is located near its own corresponding marking, said push buttons being located substantially on an upper surface of said remote control, said apparatus comprising:

a light-positioning wing physically coupled to said remote control, said wing extending upward and outward, with respect to said remote control, and said wing having an arcuate cross-sectional shape with a concave side facing toward said remote control and a convex side facing away from said remote control;

means for generating light, said light-generating means being physically coupled to said wing at a location thereon which is upward and outward from said remote control, and said light-generating means being oriented to shine at least a portion of light generated thereby toward said upper surface;

means for energizing said light-generating means, said energizing means being electrically coupled to said light-generating means; and

switching means, electrically coupled to said light-generating means and said energizing means, said switching means being for selectably energizing and de-energizing said light-generating means.

5,055,978

UNIFORM LIGHT SOURCE

Gerald L. Rogoff, Framingham, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Dec. 29, 1989, Ser. No. 459,045
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—31 **17 Claims**



1. A light source comprising:

a lamp having an aperture for emission of light;

a transition member for receiving light that is emitted

through the aperture of said lamp and for transmitting the light through an output thereof; and

a panel light emitter for receiving light from the output of said transition member, said panel light emitter including a light-emitting surface, scattering means for redirecting light through said light-emitting surface, and total internal reflection means for containing light within said panel light emitter except when said light is incident on said scattering means and is redirected by said scattering means through said light-emitting surface, said panel light emitter comprising a substantially transparent panel, the output of said transition member being optically coupled to an edge of said transparent panel, the aperture in said lamp having a width that is less than the thickness of said transparent panel, said transition member being tapered from the width of said aperture to the thickness of said panel.

5,055,979

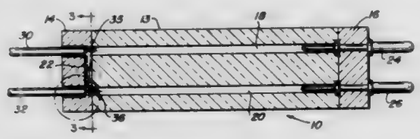
GAS DISCHARGE LIGHT SOURCE

Steven H. Boland, Glendora; John S. Goldner, Azusa, and James F. Weaver, Monrovia, all of Calif., assignors to BHK, Inc., Pomona, Calif.

Filed Jan. 8, 1990, Ser. No. 462,079

Int. Cl.[5] F21V *7/04*

U.S. Cl. 362—32 **7 Claims**



1. A light source comprising:

a dielectric housing,

at least one elongated constant cross-section straight passage extending within said housing, said passage having a longitudinal axis defining a passage length several times the passage transverse dimension,

a radiation-producing gas disposed in said passage,

means for producing an electron flow along the passage parallel to said longitudinal axis, whereby the flowing electrons collide with the gas atoms to excite the atoms into the radiative state, and

a single external flexible optical fiber having a straight attachment end section telescoped into said straight passage so that the side surface of the fiber has a sealed connection with the side surface of the passage, said optical fiber having an end surface in direct contact with the radiation-producing gas, whereby light emitted by the gas flows directly into the optical fiber, the axis of the fiber attachment end section being optically aligned with the passage axis,

the attachment end section of the optical fiber having an axial length appreciably greater than the transverse dimension of the fiber measured normal to the fiber axis to provide a secure connection between the fiber and the housing.

5,055,980

AUTOMOBILE HEADLAMP

Hideharu Mochizuki, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1991, Ser. No. 666,936

Claims priority, application Japan, Mar. 27, 1990, 2-75766

Int. Cl.[5] B60Q *1/04*

U.S. Cl. 362—61 **13 Claims**

1. An automobile headlamp in which an illumination angle of said headlamp can be adjusted by tilting a tilting member in which a bulb is mounted in the up/down direction and in the left/right direction with respect to a reference member, comprising: a bulb socket assembly; a socket fixture for removably holding said bulb socket assembly, said socket fixture being attached to a bulb insertion member of said tilting member; a

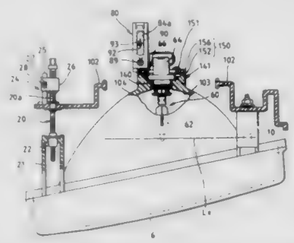


plate-like rearwardly projecting horizontally extending portion formed on said socket fixture; and a level for measuring an amount of tilt of said tilting member in the up/down direction attached to said horizontally extending portion.

5,055,981

AUTOMOTIVE PROJECTOR TYPE HEADLIGHT

Naohi Nino, Shimizu, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

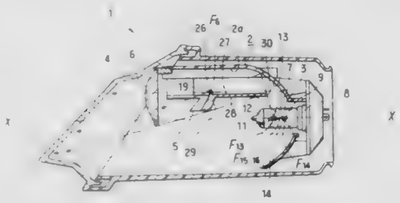
Filed Feb. 16, 1990, Ser. No. 481,100

Claims priority, application Japan, Feb. 17, 1989, 1-37731; Feb. 17, 1989, 1-37732; Feb. 20, 1989, 1-39525

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] F21M *3/08, 3/14;* **F21V** *7/09*

U.S. Cl. 362—61 **11 Claims**



1. An automotive projector type headlight including a light source, a reflector for reflecting light from said light source and converging it to a converging position, a shade for partially shading and contouring the reflected light, and a projecting lens for projecting the contoured light forward, wherein the shade is a generally horizontally disposed plate with a lower surface thereof being formed as a reflective surface, and which reflective surface acts to reflect light rays from the light source and to project them forward and downward.

5,055,982

EXTERNAL LIGHT VISOR'S VISUAL AND APPLICATION DESIGNS

Michael B. Johnson, 40 Jerome Ave., Bloomfield, Conn. 06002

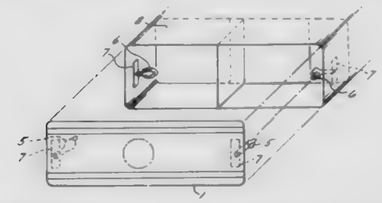
Filed Mar. 26, 1990, Ser. No. 499,080

Int. Cl.[5] F21V *1/00*

U.S. Cl. 362—61 **16 Claims**

1. A cover for a headlight of an automobile, comprising:

photochromic sheet means for covering the headlight, said photochromic sheet means being optically transparent in the absence of sunlight and said photochromic sheet means exhibiting a darkened appearance if exposed too sunlight; and



attachment means for securing the photochromic sheet means to the automobile.

5,055,983

REAR-LIGHT ASSEMBLY FOR MOTOR VEHICLE

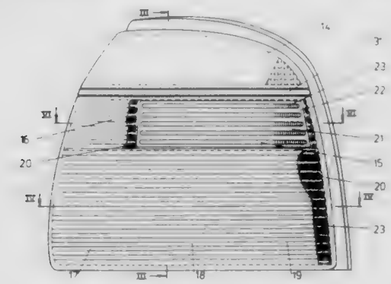
Franz-Josef Hunold, Lippstadt; Heinrich Schafer, Geseke; Michael Dreger, Lippstadt, all of Fed. Rep. of Germany, assignors to Hella KG Hueck & Co., Fed. Rep. of Germany

Filed Jan. 16, 1991, Ser. No. 642,037

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1990, G9001659.9

Int. Cl.[5] B60Q *1/26*

U.S. Cl. 362—80 **8 Claims**



1. In a built-in type rear-light assembly at a transition from a rear surface to a side surface, said rear-light assembly being of a type having:

a light-diffuser, which in a built-in position when viewed in a driving direction from the rear of a motor vehicle, projects substantially a trapezoidal shape and when viewed from a side of the motor vehicle projects substantially a rectangular shape, with the light-diffuser extending in a curve at the transition from the rear surface into the side surface;

a light-assembly housing including respectively a reflector for each of a blink light, brake light, taillight, fog taillight, and reverse-drive light with light from the blink light exiting through an upper light-diffuser portion and light from the brake light, taillight and fog taillight exiting through adjacent light-diffuser portions at a common lower height level, with taillight and a fog taillight light-diffuser portions extending in a substantially planar surface while the brake-light light-diffuser portion at least partially lies in the curve at the transition from the rear surface to the side surface, with the taillight light-diffuser portion having a rearward beamer comprised of foreign-light-reflecting rear-beam prisms arranged in lines which alternate with lines which are occupied by vertically extending cylindrical lenses;

with areas of the light diffuser extending to the sidewall of the motor vehicle being covered by an approximately uniformly-spaced edge portion of the housing bowed back at a substantially obtuse angle which is light reflective;

the improvement wherein:

a) the blink-light extends over an entire width of the rear-light assembly;

b) the reflector for the blink light extends over the entire width of the rear surface of the light diffuser portion for the blink light and substantially into a side surface area of this light-diffuser portion;

c) the linear rear-beam prisms and the cylinder lenses therebetween in the lower region of the light-diffuser extend from edge to edge substantially over the entire width of the light-diffuser;

d) the linear rear-beam prisms in those portions of the light diffuser extending sidewardly from the reflectors for the taillight and rear fog light being made to be optically ineffective;

e) a rear-light assembly includes a middle portion for creating a backing light creating portion located between an upper blink-light creating portion and lower brake-, tail-, and fog-light creating portion;

f) a reflector for creating the backing light extends from an inner side edge of the rear-light assembly to a beginning of the curved shaped transition of the light diffuser from its rear surface to its side surface;

g) a portion of the light diffuser covering a reflector for backing light, and being of a size corresponding to light exiting from this reflector, is provided with linear opaque strips;

h) lines lying between the opaque strips are occupied by vertically-extending cylindrical lenses;

i) the opaque strips have approximately the same color as the diffuser portions for the brakelight, taillight, and fog taillight;

j) the light-diffuser portion lying to the side of, but near, the backing light creating portion has an optical structure corresponding to the brake-light light-diffuser portion positioned thereunder; and

k) a portion of the light diffuser lying to a side of the backing light-diffuser portion and above the brake-light light-diffuser portion is backed up by a sidewardly enclosed reflector.

5,055,984

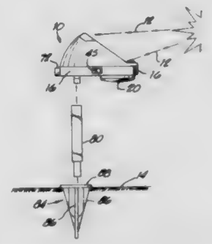
SOLAR RECHARGEABLE LIGHT

Kung C. Hung, Tsian Lung Tau, Hong Kong; Leo Milewicz, Jr., Irving, Tex., and Donald L. Rohrs, Overland Park, Kans., assignors to The Brinkmann Corporation, Dallas, Tex.

Filed Aug. 11, 1989, Ser. No. 392,722

Int. Cl.[5] F21L *7/00*

U.S. Cl. 362—183 **1 Claim**



1. A solar rechargable light assembly comprising:

a substantially planar base;

a lamp mounted in the planar base in a fixed position for illuminating a selected area such as the ground or a wall in a direction away from the base;

a mount releasably fixed on the base for mounting the light assembly to a support such as the ground or a wall;

an electrical storage device and power supply for supplying electric current to the lamp;

a cover mounted to a side of the base opposite the lamp and

rotatable relative to the base through an angle less than 360°; and

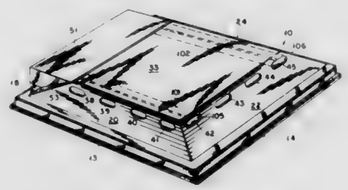
a solar panel fixed to the cover at an angle slanted relative to the planar base to face away form the base and electrically coupled to the electrical storage device for charging the storage device when the solar panel is exposed to light, and wherein current from the storage device illuminates the lamp.

5,055,985

FLUORESCENT FIXTURE HOUSING

William Fabbri, Billerica, Mass., assignor to Keene Corporation, Union, N.J.

Filed Jan. 25, 1991, Ser. No. 645,577
Int. Cl.[5] F21V *23/02*
U.S. Cl. 362—221 **11 Claims**



1. A fluorescent fixture housing including:

a truncated pyramid shaped body including a downwardly opening bottom, walls upwardly and inwardly sloping from said bottom, and a top parallel to said bottom, a periphery of said top engaging an upward and inward portion of said walls;

ceiling-mounting means engaging said body; and

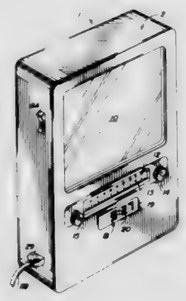
a plurality of apertures on said walls, said apertures designed to engage ends of fluorescent bulbs.

5,055,986

COMBINATION LIGHT, RADIO AND CLOCK

Mary B. Johnson, 813 Roselawn, Shreveport, La. 71106

Filed Oct. 22, 1990, Ser. No. 600,676
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—253 **18 Claims**



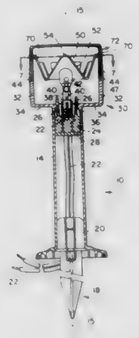
1. A combination light, radio and clock comprising a housing; at least one battery provided in said housing; transformer means provided in said housing, said transformer means connected to said battery and to a source of alternating current for converting said alternating current to direct current delivered to said battery; an electric circuit provided in said housing, said electric circuit connected to said battery and adapted to carry the direct current; and a light, a radio and a clock provided in said housing, said light, said radio and said clock connected to said electric circuit for receiving the direct current and energizing said light, said radio and said clock.

5,055,987

ADJUSTABLE LIGHT FIXTURE

Bart T. Ellson, Chanhassen; Jay J. Kakuk, Plymouth, and Robert W. Beachy, Saint Paul, all of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Apr. 28, 1989, Ser. No. 345,053
Int. Cl.[5] F21V *17/02*
U.S. Cl. 362—277 **10 Claims**



1. A downlighting light fixture comprising:

(a) means for producing a substantially downwardly directed light beam;

(b) means for supporting the light beam producing means relative to a substantially horizontal surface, wherein the light beam is projected onto the surface; and

(c) optical means operatively disposed relative to the light beam producing means for adjusting the location of the light beam on the surface, wherein relative movement between the optical means and the light beam producing means effects the adjustment of the location of the light beam on the horizontal surface, wherein the light beam producing means comprises a bulb/lens assembly operatively connected to the supporting means, the bulb/lens assembly comprising a bulb enclosed at least partially by a lens, wherein the optical means comprises a reflector and means for manipulating the reflector to change its orientation relative to the bulb to adjust the location of the light beam, and wherein the location of the light beam can be adjusted without moving the light beam producing means relative to the supporting means.

5,055,988

SURGERY LAMP WITH VENTILATION FOR COOLING

Richard N. Cartwright, Independence, Mo., assignor to Schroer Manufacturing Company, Kansas City, Mo.

Filed Mar. 2, 1990, Ser. No. 487,664
Int. Cl.[5] F21V *29/00*
U.S. Cl. 362—294 **24 Claims**

1. A lamp comprising:

(a) a base;

(b) a stand attached to said base;

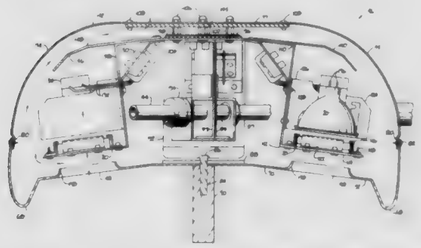
(c) a lighthead, including a plurality of individual light bulbs;

(d) means for conducting electricity to said light bulbs;

(e) means for adjustably attaching said lighthead to said stand;

(f) means for cooling said lighthead, including a plurality of openings through a top of said lighthead and an array of baffles providing air passgeways for entry of ambient air from below said lighthead, flow through said passageways and exit through said openings; and

(g) a support bar for attaching said lighthead to said stand and for supporting said lighthead, said support bar at-



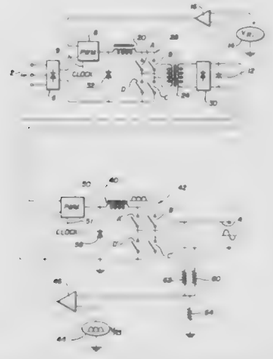
tached to a frame, a plurality of baffles attached to said frame and extending outwardly therefrom and each said baffle positioned above a bracket for retaining a light bulb fixed to said frame.

5,055,989

THREE PHASE TO SINGLE PHASE CONVERTER

Lawrence B. Carroll, Endwell; Kenneth H. Kidder, Jr., Endicott, and Thomas Visentin, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 575,577
Int. Cl.[5] H02M *5/458*
U.S. Cl. 363—36 **7 Claims**



1. Apparatus for converting a three phase input to a single phase output wherein loss of one of the three phase input lines will not adversely affect the single phase output, comprising,

means for rectifying the three phase input for providing a D.C. current,

means for deriving a D.C. voltage across a storage capacitor from said D.C. current,

means for regulating the D.C. voltage across said capacitor, which comprises first voltage regulating means which is responsive to the magnitude of said D.C. voltage for modulating said D.C. current to tend to keep said D.C. voltage constant,

means for generating a single phase A.C. output voltage from said regulated D.C. voltage, which comprises means for providing a rectified sine wave voltage, and means for feeding said rectified sine wave voltage to an unrectifier means for providing said A.C. output voltage, and

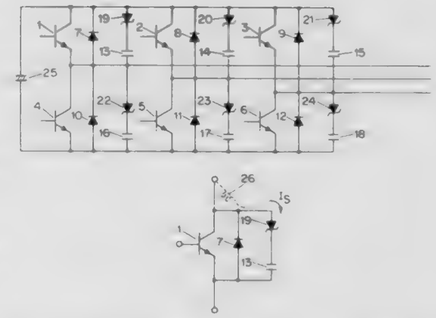
second voltage regulating means for regulating said single phase A.C. output voltage.

5,055,990

SNUBBER CIRCUIT FOR POWER CONVERSION SEMICONDUCTOR ELEMENTS AND ASSEMBLY THEREOF

Hiroshi Miki, Tokyo; Yoshitaka Fujiwara, Koube; Kiybshi Iida, Matumoto; Hiromu Takubo, Tokyo; Kunio Shibayama, Koube, and Shinichi Kobayashi, Matumoto, all of Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Jan. 17, 1990, Ser. No. 466,515
Claims priority, application Japan, Jan. 17, 1989, 1-8311; Jul. 19, 1989, 1-186969; Oct. 2, 1989, 1-257294
Int. Cl.[5] H02M *7/538*
U.S. Cl. 363—56 **19 Claims**



11. A power conversion section for use in a DC to AC power conversion assembly having a snubber network for use with self turn off semiconductor elements, comprising:

a semiconductor element arranged to alternatively turn on and self turn off in respond to control signals;

a snubber circuit, coupled in parallel with said semiconductor element, comprising a constant voltage drop semiconductor means, providing a predetermined voltage drop during forward conduction and a larger voltage drop during backward conduction, for asymmetrically dissipating energy applied therethrough, coupled in series with a means for storing an electrical charge;

whereby, interaction of the constant voltage drop semiconductor means and the charge storage means resulting from said constant voltage drop characteristic permits effective surge reduction with limited energy loss as a result of asymmetrical energy dissipation.

5,055,991

LOSSLESS SNUBBER

Barry N. Carroll, and Jean H. Ho, both of The Woodlands, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 12, 1990, Ser. No. 596,233
Int. Cl.[5] H02H *7/122*
U.S. Cl. 363—56 **2 Claims**

1. A switched mode power supply, comprising:

means for providing a dc source voltage having a positive output terminal and a negative output terminal;

a transformer having a primary inductance having a first terminal and a second terminal and having a secondary inductance having a first terminal and a second terminal;

means connected to said first terminal and said second terminal of said secondary inductance for providing a regulated output voltage;

a capacitor connected between said first terminal and said second terminal of said primary inductance;

a metal-oxide-semiconductor field-effect transistor having a drain terminal, a source terminal, and a gate terminal;

an inductor connected in series between said second terminal of said primary inductance and said drain terminal of said transistor;

means for monitoring current through said primary inductance connected between said source of said transistor and said negative terminal of said dc source voltage; and

means connected to said regulated output voltage, said means for monitoring current through said primary inductance, and said gate terminal of said transistor for providing a control signal to said gate of said transistor to turn on and off said transistor to cause switching action.

5,055,992

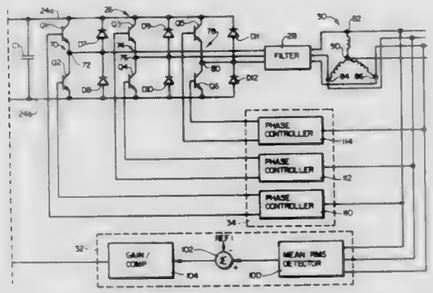
CONTROL FOR FULL-BRIDGE INVERTER

Alexander Cook, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 29, 1990, Ser. No. 471,621

Int. Cl.[5] H02M *7/5387*

U.S. Cl. 363—98 **5 Claims**



1. In a method of operating a full-bridge inverter having a plurality of phases each of which includes a switch which is operated to produce one of a set of phase output voltages an wherein a neutral voltage is derived solely from the phase output voltages and the output voltages have a fundamental component and harmonics thereof each having an amplitude, the improvement comprising the steps of:

(a) comparing each phase output voltage to a reference;

(b) selecting a switching pattern for each inverter switch in dependence upon the comparison of step (a) wherein the selected switching patterns for two of the phases are different; and

(c) controlling each phase in accordance with the switching pattern selected for the switch therein whereby the amplitudes of particular harmonics present in the inverter output voltages relative to the neutral voltage are controlled to in turn limit the amplitude of other harmonics present in the inverter output voltages relative to the neutral voltage such that total harmonic distortion is held below a specified limit.

5,055,993

INVERTOR APPARATUS

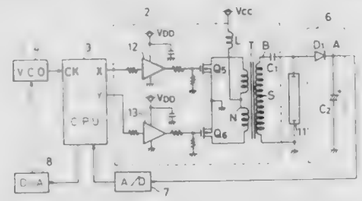
Osamu Miyata, Yokohama; Katsunori Kawano, Tokyo, and Youji Oki, Fuchu, all of Japan, assignors to Stanley Electric Company, Ltd., Japan

Filed Dec. 8, 1989, Ser. No. 447,638

Claims priority, application Japan, Jun. 29, 1989, 1-165429

Int. Cl.[5] H02M *7/521*

U.S. Cl. 363—98 **10 Claims**



1. An inverter apparatus for converting a direct current into an alternating current, comprising:

an output transformer having a primary side coupled to a source of direct current and a secondary side coupled to a load, said secondary side and said load forming an output circuit,

switching elements coupled to said primary side of said transformer for interrupting the flow of direct current through the primary side of said output transformer,

frequency control means coupled to said switching elements for generating a signal for driving said switching elements at a frequency which causes said output circuit to oscillate at its resonant frequency,

pulse width modulation means coupled to said frequency control means for controlling the pulse width of said signal generated by said frequency control means.

5,055,994

A.C. TO D.C. CONVERTER

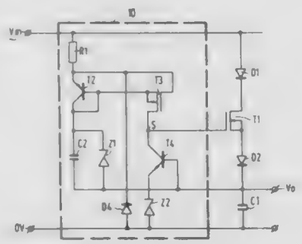
Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed May 21, 1990, Ser. No. 526,854

Claims priority, application United Kingdom, May 22, 1989, 8911755; Jun. 16, 1989, 8913902

Int. Cl.[5] H02M *7/217*

U.S. Cl. 363—127 **13 Claims**



1. An a.c. voltage to low voltage d.c. converter comprising: a pair of input AC voltage supply lines, a semiconductor switch element and a capacitor connected in a substantially resistance free series circuit between the supply lines, first and second output terminals for d.c. output voltage coupled across the capacitor, and a sensing circuit responsive to the input voltage and to the output voltage for triggering the switch element to conduct only during a portion of the a.c. voltage below a predetermined voltage.

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Patent Not Issued For This Number

5,055,996

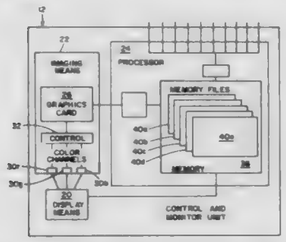
CENTRAL CONTROL AND MONITOR UNIT

Saul L. Keslowitz, Bayside, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 6, 1988, Ser. No. 254,213

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—188 **13 Claims**



1. A central control and monitor unit for use in a multi-unit work system of the type including a multitude of peripheral work units having at least a plurality of common states, the central control and monitor unit comprising:

display means to show a multitude of sets of transient control switches, each shown control switch being associated with one of the peripheral work units, and wherein each switch is contacted to change the state of the work unit associated therewith;

image control means to display each shown control switch in a first common format when the work unit associated with the control switch is in a first of the common states, and to display each shown control switch in a second common format when the work unit associated with the control switch is in a second of the common states,

the image control means including processing means including a multitude of memory files, each of the memory files identifying the switches of one of said sets of control switches; and

means to select one of the memory files to show on the display means the switches identified in the selected one memory file; and

wherein for each switch in the set of switches identified in each of the memory files, the memory file identifies a location of the switch on the display means, the work unit associated with the switch, a current format for showing the switch, and a format for showing the switch after the switch is contacted.

5,055,997

SYSTEM WITH PLURALITY OF PROCESSING ELEMEMTS EACH GENERATES RESPECTIVE INSTRUCTION BASED UPON PORTIONS OF INDIVIDUAL WORD RECEIVED FROM A CROSSBAR SWITCH

Robert J. Sluijter; Cornelis M. Huizer, and Hendrik Dijkstra, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 285,187, Dec. 15, 1988, abandoned. This application Oct. 9, 1990, Ser. No. 595,720

Claims priority, application Netherlands, Jan. 13, 1988, 8800071

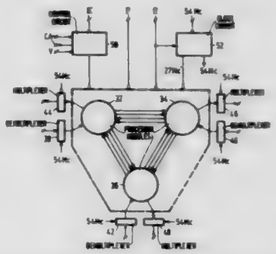
Int. Cl.[5] G06F *15/80*

U.S. Cl. 364—200 **16 Claims**

1. A data processing system for processing signals presented at an input as a stream of digital data, comprising at least one data processing unit comprising:

(a) at least one processor module comprising a plurality of processor elements disposed to function in parallel with one another, said processor elements including at least one processor element chosen from the group consisting of an arithmetic processor element, a logic processor element and a memory processor element;

(b) a crossbar switch to which input signals for a first processor module and output signals from processor elements belonging to additional processor modules are supplied and from which input signals for said processor elements belonging to said additional processor modules and output signals from said first processor module are obtained, and from which a plurality of data words are obtained.



said arithmetic and logic processor elements each further comprising:

(i) a program memory coupled to said crossbar switch;

(ii) constructing means coupled to said program memory and said crossbar switch, for obtaining from said crossbar switch, synchronously with said stream of digital data, said data words and for constructing a stream of instructions comprising portions of said data words and portions of words stored in said program memory, and

(iii) an arithmetic logic unit having an instruction input for receiving said stream of instructions.

5,055,998

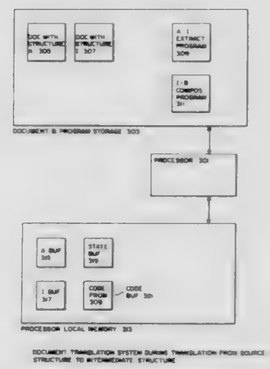
INTERMEDIATE SPREADSHEET STRUCTURE

Terrence Wright, Tyngsboro; Scott Mayo, Clinton, both of Mass., and Ray Lischner, Pittsburgh, Pa., assignors to Wang Laboratories, Inc., Lowell, Calif.

Continuation-in-part of Ser. No. 679,675, Dec. 10, 1984, Pat. No. 4,751,740. This application Jun. 14, 1988, Ser. No. 206,638

Int. Cl.[5] G06F *5/00*

U.S. Cl. 364—200 **16 Claims**



1. A data processing system comprising:

a) a memory having instructions and a data processing representation of a spreadsheet structure stored therein;

b) a processor responsive to the instructions stored in said

memory for converting the representation of a spreadsheet structure from a source form into a destination form, said representation of the spreadsheet structure having elements of at least one dimension, wherein the elements include a plurality of cells for holding information, said processor and instructions comprising:

a first converter for converting the source form of the representation of the spreadsheet structure into an intermediate form, said intermediate form of the representation of the spreadsheet structure comprising:

a cell segment for representing each non-empty cell in the spreadsheet structure;

a first-dimensional vector segment for representing a first-dimensional element of the spreadsheet structure and which contains cell segments for any non-empty cells belonging to that element; and

for each additional dimension, m, of the spreadsheet structure, a vector segment for non-empty element of that dimension which represents the non-empty element and which contains vector segments for non-empty elements of the (m-1)th dimension of the spreadsheet structure;

a second converter for converting the intermediate form of the representation of the spreadsheet structure into a destination form of the representation of the spreadsheet structure and for storing said destination form of the representation of the spreadsheet structure into said memory.

5,055,999

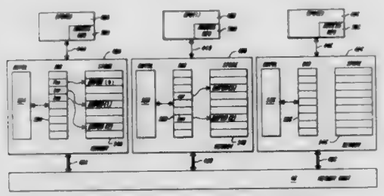
MULTIPROCESSOR DIGITAL DATA PROCESSING SYSTEM

Steven J. Frank, Hopkinton; Henry Burkhardt, III, Manchester; Linda O. Lee, Cambridge; Nathan Goodman, Brookline; Benson I. Margulies, Arlington, and Frederick D. Weber, Cambridge, all of Mass., assignors to Kendall Square Research Corporation, Waltham, Mass.

Filed Dec. 22, 1987, Ser. No. 136,930

Int. Cl.[5] G06F *12/00*

U.S. Cl. 364—200 **68 Claims**



1. A digital data processing apparatus comprising

A. plural memory elements for storing information-representative signals, each of at least one of which memory elements is respectively coupled to an associated central processing unit,

each said central processing unit and its respective associated memory element comprising at least part of a processing cell,

B. memory management means coupled to said plural memory elements for accessing one or more of said information-representative signals stored in said plural memory elements,

C. at least a requesting one of said central processing units including access request means for generating an access request signal representative of a request for access to an information-representative signal,

said access request means including means for generating an ownership-request signal representative of a request for priority access to an information-representative signal,

at least the memory element associated with the requesting central processing unit including control means for selectively transmitting said access-request signal to said memory management means, and

D. said memory management means including means responsive to selected ones of said ownership-request signals for

allocating, only within the memory element associated with the requesting central processing unit, physical storage space for the requested information-representative signal, wherein that space is the exclusive physical storage space for the requested information-representative signal with respect to all of said memory elements, and

storing the requested information-representative signal in that exclusive physical storage space.

5,056,000

SYNCHRONIZED PARALLEL PROCESSING WITH SHARED MEMORY

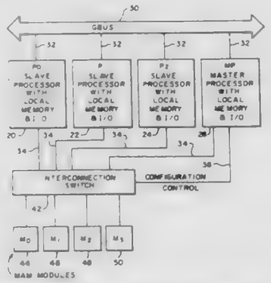
Robin Chang, Mattapoisett, Mass., assignor to International Parallel Machines, Inc., New Bedford, Mass.

Continuation of Ser. No. 209,515, Jun. 21, 1988, abandoned.

This application Nov. 7, 1989, Ser. No. 436,098

Int. Cl.[5] G06F *15/16*

U.S. Cl. 364—200 **8 Claims**



1. An apparatus for parallel data processing over a plurality of phases, comprising:

a plurality of processors, any one of said processors operative as a master processor, said master processor including means for generating interconnection switch configuration control signals;

a communication bus for interconnecting each of said processors, for exchange of at least control and synchronization information among each of said processors;

a plurality of multi-access memory modules;

an interconnection switch coupled to each of said processors and each of said multi-access memory modules, and responsive to said interconnection switch control signals from said master processor, for selectively interconnecting any one or more of said processors with one or more of said multi-access memory modules, and whereby any one of said multi-access memory modules is exclusively interconnected to only one of said processors during any given phase of processing;

each of said processors further including local memory, whereby one or more of said processors processes data in its local memory before, after, and during a phase of processing;

said master processor further including means for generating a processing phase commencement signal over said communication bus to the other of said processors, said commencement signal indicating the start of each of said plurality of phases of parallel data processing during which any one or more of said plurality of processors is exclusively interconnected to said one or more multi-access memory modules; and

each of said processors further including means for generating a completion signal over said communication bus to the other of said processors said completion signal indicating completion of each phase of processing.

5,056,001

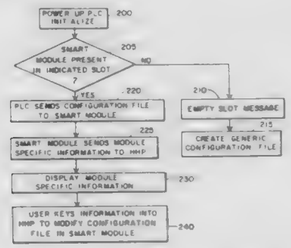
METHOD FOR CONFIGURING AN INPUT/OUTPUT MODULE COUPLED TO A PROGRAMMABLE LOGIC CONTROLLER

Daniel W. Sexton, Charlottesville, Va., assignor to GE Fanuc Automation North America, Inc., Charlottesville, Va.

Filed Dec. 20, 1989, Ser. No. 453,655

Int. Cl.[5] G06F *13/10, 3/147*

U.S. Cl. 364—200 **2 Claims**



2. A method for configuring a module which is coupled to a programmable logic controller, the controller including a memory and being capable of executing a control program to control a process, the controller having stored therein an initial configuration file which specifies an initial configuration for the module, a programming unit being connected to the controller and including a user input device for inputting manual commands to the controller and a display for displaying configuration data, said method comprising the steps of:

transmitting, by said controller, the initial configuration file from the controller to the module and designating the initial configuration file as a current configuration file;

transmitting, by the module, of module specific information stored in memory in the module to said programming unit;

displaying, by the programming unit display, the module specific information stored in memory in the module, the module specific information comprising data required for configuring the module; and

modifying, by user input to the programming unit, the current configuration file in the module in response to the module specific information displayed in said displaying step.

5,056,002

CACHE MEMORY FOR USE WITH MULTIPROCESSOR SYSTEMS

Takayuki Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 9, 1988, Ser. No. 153,890

Claims priority, application Japan, Feb. 9, 1987, 62-29293

Int. Cl.[5] G06F *15/16, 13/00*

U.S. Cl. 364—200 **2 Claims**

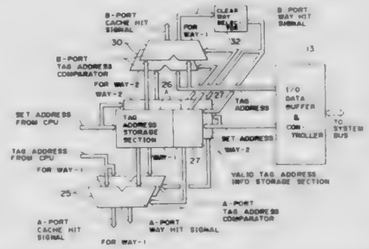
1. A multiprocessor system including a plurality of cache memories, wherein each cache memory is dedicated to a single processor and wherein a common main memory is shared by a plurality of processors via a system bus and wherein each cache memory includes a data storage section for saving data for quick reference by the processor allocated to the cache memory, the cache memory comprises:

first means for saving tag addresses each corresponding to one data stored in said data storage section, said first means being configured to have first and second ports so as to be independently accessible by the processor via said first port and by another cache memory via said second port;

second means for saving tag address valid information data each of which indicates whether or not the corresponding tag address is valid, said second means being configured to have third and fourth ports so as to be independently accessible by the processor via said third port and by another cache memory via said fourth port;

third means coupled to said first means via said first port and to said second means via said third port and to the processor, said third means comparing a tag address applied from said first means with a tag address from the processor and checking to see if the tag address applied from the processor is identical with the tag address from said first means and valid and outputting a first hit signal in the event that the tag address applied from the processor is identical with the tag address from said first means and valid;

fourth means arranged between said system bus and both of said first and second means, said fourth means being coupled to said first means via said second port and to said second means via said fourth port, said fourth means, in the event of a cache update in another cache memory,



allowing said another cache memory to access said first and second means via said second and fourth ports, respectively;

fifth means coupled to said first means via said second port and to said second means via said fourth port and to said fourth means, said fifth means comparing a tag address applied from said first means with a tag address applied from said another cache memory via said fourth means in the event of a cache update in another cache memory, said fifth means checking to see if the tag address applied via said fourth means is identical with the tag address from said first means and valid and outputting a second hit signal in the event that the tag address applied via said fourth means is identical with the tag address from said first means and valid; and

six means, arranged between said fifth means and said fourth port of said second means, invalidates the tag address valid information data within said second means in response to said second hit signal.

5,056,003

DISTRIBUTED DATA MANAGEMENT MECHANISM

William E. Hammer, Rochester; Walter H. Schwane, Kasson, and Frederick J. Ziecina, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 745,545, Jun. 17, 1985, abandoned.

This application Dec. 15, 1988, Ser. No. 285,369

Int. Cl.[5] G06F *13/38*

U.S. Cl. 364—200 **8 Claims**

1. A method of working with a fragmented data stream having multiple pieces of data in a multiprocess computer system which has a plurality of storage areas directly accessible by selected processes, the method comprising:

a) identifying a storage area containing a piece of data;

b) identifying a starting address in the storage area of the piece of data;

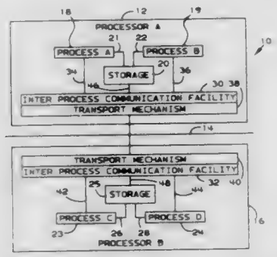
c) identifying a length of a piece of data;

d) performing the above three steps to form a descriptor

element for each piece of data in the fragmented data stream, wherein said pieces of data are stored in different storage areas;

e) using a first processor to combine the descriptor elements formed in steps a through d to form a logical representation of the fragmented data stream for use by processes for work on the data stream;

f) transferring said logical representation from said first



processor to a second processor independent of the pieces of data; and

g) using a descriptor element contained in said logical representation to transfer to said second processor a corresponding piece of data required by a process running on said second processor to perform said work, so that pieces of data need not be transferred unless required by a process running on said second processor to perform said work.

5,056,004

PROGRAM CONTROL SYSTEM WHICH SIMULTANEOUSLY EXECUTES A PROGRAM TO BE REPEATED AND DECREMENTS REPETITION NUMBERS

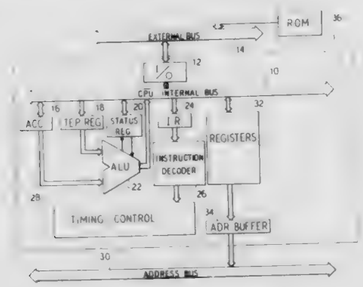
Yuko Ohde; Hideo Tanaka, and Ichiro Kuroda, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 10,499, Feb. 3, 1987, abandoned. This application Oct. 14, 1988, Ser. No. 258,082

Claims priority, application Japan, Feb. 3, 1986, 61-22267

Int. Cl.[5] G06F *9/06, 9/22, 9/306, 9/40*

U.S. Cl. 264—200 **7 Claims**



1. A program control circuit comprising:

a register for holding a repetition number of a program operation to be repeated,

means for modifying content of the register in accordance with each execution of the program operation to be repeated,

memory means for storing a sequence of instructions, and

means receiving an instruction read from the memory means for transferring the received instruction without modification in a normal condition and for converting the received instruction into a different instruction when the content of the first register is a predetermined content;

said modifying means including a counter receiving the content of the register and adapted to change said content in a predetermined counting direction in response to each execution of the operation to be repeatedly executed, the counter generating an output signal when the content of the counter reaches a predetermined value, the transferring and converting means operative in response to the output signal from the counter so as to modify the instruction read from the memory,

said memory including an instruction read only memory and the transferring and converting means including a gate array coupled to the read only memory, the gate array being placed in a signal blocking condition in response to the output signal of the counter, and wherein said gate array includes a plurality of two-input gates, each gate having a first input connected to a corresponding bit output of the read only memory, a second input of all the gates being connected to receive the output signal from the counter, and

each gate includes a two-input NAND gate and an invertor connected to an output of the NAND gate.

5,056,005

DATA BUFFER DEVICE USING FIRST-IN FIRST-OUT MEMORY AND DATA BUFFER ARRAY DEVICE

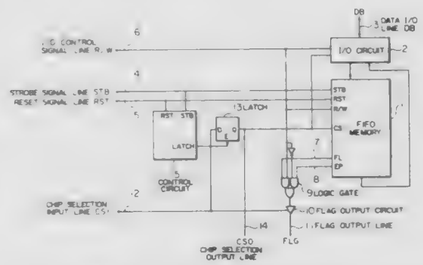
Katsuyuki Kaneko; Satoshi Gokita, both of Moriguchi, and Koji Zaiki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1989, Ser. No. 337,399

Claims priority, application Japan, Apr. 18, 1988, 63-94827; May 16, 1988, 63-118520

Int. Cl.[5] G11C *7/00, 5/02*

U.S. Cl. 364—200 **3 Claims**



1. A data buffer device provided with a data line, a read/write control signal line, a strobe signal line, a reset signal line, a chip selection input signal line, a chip selection output signal line and a flag output line, comprising:

a first-in first-out memory having an input line and an output line;

a latch circuit for latching a chip selection input signal from said chip selection input signal line and outputting the latched signal to said chip selection output signal line as a chip selection output signal;

a control circuit initialized by a reset signal from said reset signal line, for controlling said latch circuit at an n-th pulse of every N strobe signal pulses from said strobe signal line, where N and n are predetermined integers and $1>n>N$, such that said latch circuit holds said chip selection input signal, and for controlling said latch circuit at every N-th strobe signal pulse such that said latch circuit updates said chip selection output signal;

a bus interface circuit connected with said data line and said input line and said output line of said first-in first-out memory and responsive to said chip selection output signal and a read/write control signal from said read/write control signal line, for controlling data transfer between said data line and said first-in first-out memory; and

an output circuit, responsive to said read/write control signal, for selecting a lag signal from a plurality of flags outputted from said first-in first-out memory and, responsive to said chip selection input signal, for outputting said flag signal to said flag output line.

5,056,006

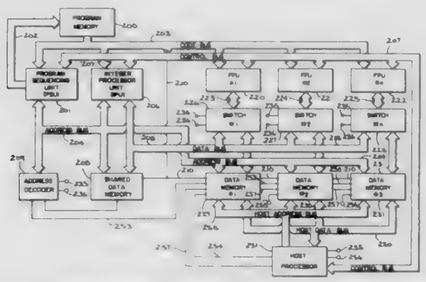
PARALLEL PROCESSOR WITH SINGLE PROGRAM STORAGE AND SEQUENCER AND SIMULTANEOUS INSTRUCTION PROCESSING

Kishore C. Acharya, Brookfield, and Paul C. Schanen, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Continuation of Ser. No. 243,378, Aug. 12, 1988, abandoned. This application Jul. 9, 1990, Ser. No. 551,682

Int. Cl.[5] G06F *13/00, 15/16*

U.S. Cl. 364—200 **4 Claims**



1. In a medical imaging system a digital processor for operating in a plurality of sets of acquired image data simultaneously, the combination comprising:

a program memory for storing a program which directs the operation to be performed on each set of acquired image data;

a program sequencing unit for reading the control program instructions from the program memory;

a set of data memories for storing the respective sets of acquired image data;

a shared data memory for storing data required in the processing of the acquire image data; and

a set of processor units, each coupled to a respective one of the data memories and to the program memory and the shared data memory, each processor unit being operable to receive the program instructions read from the program memory by the program sequencing unit and in response to selected ones of the program instructions perform simultaneous operations on the acquired image data in the respective data memories, and in response to other selected ones of the program instructions simultaneously operate on data stored in the shared memory.

5,056,007

CROSS-COUPLING OF SERVICE PROCESSOR DRIVEN SYSTEM CONTROL FACILITIES IN A MULTIPLE SERVICE PROCESSOR DATA PROCESSING SYSTEM

Eddie "B" Collins, Jr., San Jose; Arun Shah, Cupertino, and Louie M. Giambattista, San Francisco, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 136,906, Dec. 22, 1987, abandoned. This application Nov. 8, 1989, Ser. No. 434,553

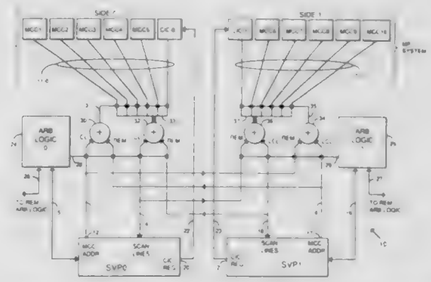
Int. Cl.[5] G06F *15/16*

U.S. Cl. 364—200 **16 Claims**

1. In a data processing system including a plurality of processing units performing host functions, with system control facilities in the plurality of processing units for monitoring and controlling the plurality of processing units independent of the host functions, an apparatus for controlling the system control facilities comprising:

first service processing means, under program control, for controlling the system control facilities;

second service processing means, under program control, for controlling the system control facilities;



arbitrating means, connected to the first service processing means and second service processing means and to the system control facilities, for arbitrating the transfer of data and control signals for the system control facilities by the first service processing means and second service processing means.

5,056,008

DATA PROCESSOR HAVING EXPANDED OPERATING FUNCTIONS

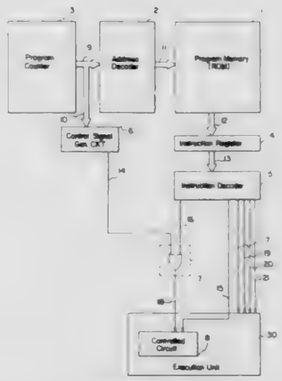
Kazuhiko Ono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 7, 1988, Ser. No. 241,442

Claims priority, application Japan, Sep. 7, 1987, 62-224655

Int. Cl.[5] G06F *9/22, 9/30*

U.S. Cl. 364—200 **8 Claims**



1. A data processor comprising:

a program memory for storing a string of instructions,

an address circuit for producing and supplying address data to said program memory to designate a memory location for storing an instruction to be executed,

decoder means for decoding an instruction read from said program memory, said decoder means producing at least one first control signal by decoding said instruction read out of said memory location of said program memory designated by first address data from said address circuit,

means for detecting said first address data from said address

circuit to generate a second control signal independently of said at least one first control signal, and

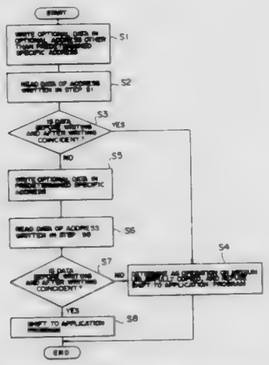
execution means responsive to said at least one first control signal and said second control signal for executing a first operation based upon said at least one first control signal and a second operation based upon said second control signal.

5,056,009

IC MEMORY CARD INCORPORATING SOFTWARE COPY PROTECTION

Masaharu Mizuta, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 7, 1989, Ser. No. 334,436
Claims priority, application Japan, Aug. 3, 1988, 63-192668
Int. Cl.[5] G06F *1/00, 12/00, 12/14*
U.S. Cl. 364—200 **5 Claims**



1. An IC memory card incorporating software copy protection comprising:

data storage means including (i) ROM (read only memory), having a plurality of addresses, for storing data including a distribution software program and from which the stored distribution software program is retrieved in response to a read signal and in which additional data cannot be stored in response to a write signal; and (ii) RAM (random access memory), having a plurality of addresses, for storing data in response to a write signal and from which stored data is retrieved in response to a read signal;

means for supplying read signals and write signals to said data storage means;

memory address trap means receiving write signals and read signals from said means for supplying, for storing data in and for retrieving stored data from said RAM, respectively, in response to write and read signals that include a predetermined, specific address of said data storage means and for supplying write signals and read signals including an address different from the predetermined, specific address directly to said ROM; and

a distribution software program and a software protection program stored in said ROM, the software protection program including:

means for generating a write signal including an address different from the predetermined, specific address for storing first data in a first memory at the predetermined, specific address, means for generating a read signal including the address different from the predetermined, specific address to retrieve the data stored in the first memory at the address different for the predetermined, specific address, means for comparing the data retrieved from the first memory at the address different from the predetermined, specific address with the first data, and means for preventing execution of the distribution software program when the data retrieved from the first memory at the address different from the predetermined, specific address is the same as the first data; and

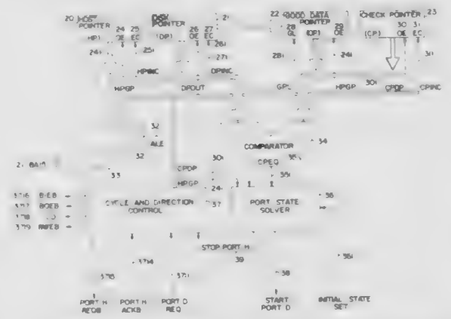
means for generating a write signal including the predetermined, specific address for storing second data in said RAM through said memory address trap means at the predetermined, specific address, means for generating a read signal including the predetermined, specific address to retrieve the data stored in said RAM at the predetermined, specific address, means for comparing the data retrieved from said RAM at the predetermined, specific address with the second data, and means for preventing execution of the distribution software program when the data retrieved from said RAM at the predetermined, specific address is not the same as the second data.

5,056,010

POINTER BASED DMA CONTROLLER

Po C. Huang, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 30, 1989, Ser. No. 429,284
Int. Cl.[5] G11C *7/00, 19/00;* **G06F** *7/00*
U.S. Cl. 364—200 **11 Claims**



1. A direct memory access controller for controlling access of a host and a disk device to a buffer memory, wherein data transfer through said buffer memory between said host and disk device is controlled by first and second signals, respectively, during separate disk read and write cycles, whenever data are transferred between the host and the disk device and processed by an error correction device, said first and second signals each being in a respective one of at least two states, said direct memory access controller comprising:

(A) pointer means for providing:

(1) an access address HP of the host to the buffer memory, said access address HP defining an address in said buffer memory at which a data transfer with said host is made,

(2) an access address DP of the disk device to the buffer memory, said access address DP defining an address in said buffer memory at which a data transfer with said disk device is made,

(3) an address CP offset by a predetermined amount from said address HP, said address CP being an address in said buffer memory which differs from said access address HP by said predetermined amount,

(4) an address GP in said buffer memory of a data block of a predetermined size processed by said error correction device, said address GP defining an address in said buffer memory at which said data block processed by said error correction device is stored;

(B) comparing means coupled to said pointer means for comparing HP with GP and for comparing DP with CP;

(C) port state solver means responsive to said comparing means for changing the states of said first and second signals whenever HP and GP are equal and whenever DP and CP are equal, respectively; and

(D) cycle and direction control means for:

(1) incrementing by said predetermined amount said address GP in said pointer means whenever said error correction device processes one data block of said predetermined size,

(2) incrementing said addresses HP and DP in said pointer means by a size corresponding to one data unit whenever a data unit is transferred between said buffer memory and one of said host and disk device, respectively, and

(3) starting data transfer if currently stopped or stopping data transfer if currently on-going between said buffer memory and one of said host and disk device in response to a change in the state of a respective one of said first and second signals.

5,056,011

DIRECT MEMORY ACCESS CONTROLLER WITH EXPEDITED ERROR CONTROL

Akihiro Yoshitake, Kawasaki; Hideyuki Iino, and Hidenori Hida, both of Yokohama, all of Japan, assignors to Fujitsu Limited and Fujitsu Microcomputer Systems Limited, both of Kawasaki, Japan

Filed Mar. 8, 1989, Ser. No. 320,446
Claims priority, application Japan, Mar. 9, 1988, 63-55899
Int. Cl.[5] G06F *13/14, 11/00, 13/00*
U.S. Cl. 364—200 **17 Claims**

1. A direct memory access controller to control a direct memory access in a plurality of channels of a data processing apparatus which includes at least a system bus, and a) a central processing unit, b) an input/output interface and c) a memory, which are coupled to said system bus, said plurality of channels having predetermined priority sequences, said direct memory access controller comprising:

bus and terminal controller means coupled to the system bus of said data processing apparatus for obtaining a right to use the system bus responsive to a transfer request;

interrupt and slave controller means coupled to the system bus for controlling an interrupt which is made to the central processing unit when a data transfer ends for each of said plurality of channels and for controlling an access from the central processing unit; and

operation determination means for determining an operation of the direct memory access controller depending on the transfer request, whether or not said bus and terminal controller means obtained the right to use the system bus and whether or not the access is made from the central processing unit,

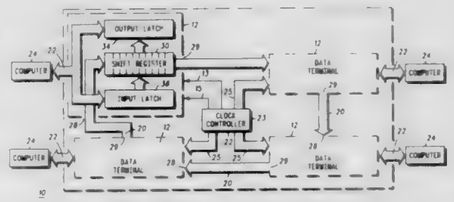
said slave and interrupt controller means including an interrupt controller for supplying to the central processing unit an interrupt of a channel, during an interrupt acknowledge cycle, in which an abnormal end of a data transfer has occurred with a priority over other channels, in which a normal end of a data transfer has occurred, regardless of the priority sequences of said plurality of channels.

5,056,012

MEMORY ADDRESSABLE DATA TRANSFER NETWORK

Mark G. Spiotta, Algonquin, and John P. Foley, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1988, Ser. No. 277,740
Int. Cl.[5] G06F *13/14, 13/42, 5/01*
U.S. Cl. 364—200 **7 Claims**



1. A computer data transfer network for transferring data between at least first, second and third computers, each of said computers being operatively coupled to said network through a plurality of memory means, said computers providing data to be transferred over said network and receiving data transferred on said network, said network comprised of: at least:

a first memory means, coupled to said first computer, for providing, at least first, second, and third storage locations within said first memory means, each storage location of said first memory means being readable by only said first computer, said first storage location of said first memory means having a first address and being capable of accepting and storing data from only said first computer, said second and third storage locations having second and third addresses not being capable of accepting and storing data from said first computer, each storage location in said first memory means having an address that uniquely identifies each storage location in said first memory means and identifies which of said first, second, and third computers is capable of storing data within said storage locations said first memory means including encoding means for encoding data in the storage locations into serial data packets and including means for transmitting said serial data packets from said first memory means, and including decoding means for decoding serial data packets received by said first memory means into parallel data words and for transferring said parallel data words into predetermined locations of said first, second, and third storage locations within said first memory means;

a second memory means, coupled to said second computer, for providing, at least first, second, and third storage locations within said second memory means, each storage location of said second memory means being readable by only said second computer, said second storage location of said second memory means having a second address and being capable of accepting and storing data from only said second computer, said first and third storage locations of said second memory means having first and third addresses and not being capable of accepting and storing data from said second computer, each storage location in said second memory means having an address that uniquely identifies each storage location in said second memory means and identifies which of said at least first, second, and third computers is capable of storing data within said at least first, second and third storage locations, being capable of accepting and storing new data from only said second computer, said second memory means including encoding means for encoding data in the storage locations into serial data packets and including means for transmitting said serial data packets from said second memory means, and including decoding means for receiving serial data packet from said first memory means and for decoding serial data packets received by said second memory means from said first memory means into

parallel data words and for transferring said parallel data words into predetermined locations of said first, second, and third storage locations;

a third memory means, coupled to said third computer, for providing, at least first, second, and third storage locations within said third memory means, each storage location of said third memory means being readable by only said third computer, said third storage location of said third memory means having a third address and being capable of accepting and storing data from only said third computer, said first and second storage locations having first and second addresses not being capable of accepting and storing data from said first computer, each storage location in said third memory means having an address that uniquely identifies each storage location in said third memory means and identifies which of said first, second, and third computers is capable of storing data within said storage locations, said third memory means including encoding means for encoding data in the storage locations into serial data packets and including means for transmitting said serial data packets from said third memory means to said first memory means, and including decoding means for receiving serial data packets from said second memory means and for decoding serial data packets received from said second memory means into parallel data words and for transferring said parallel data words into predetermined locations of said first, second, and third locations;

data transfer means for transferring serial data packets between said first memory means and said second memory means, between said second memory means and said third memory means; and

means for transferring serial data packets between said third memory means and said first memory means.

5,056,013

IN-CIRCUIT EMULATOR

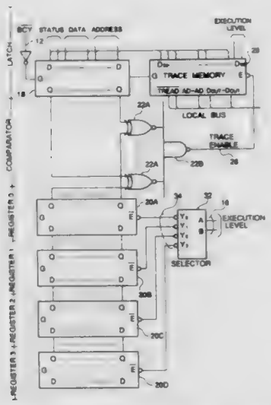
Mitsuhiro Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 14, 1989, Ser. No. 435,959

Claims priority, application Japan, Nov. 14, 1988, 63-288585

Int. Cl.[5] G06F *11/00*

U.S. Cl. 364—200 **2 Claims**



1. An in-circuit emulator comprising an emulation microprocessor for directly outputting at least an address and an execution level information, a latch circuit for latching at least the address outputted from the emulation microprocessor, a register device composed of a plurality of registers corresponding to different execution levels to be traced, a selector receiving the execution level information outputted from the emulation microprocessor for selecting one of the plurality of registers corresponding to the execution level information, a comparator receiving respective contents of the latch circuit and the selected register for generating an enable signal when the content latched in the latch circuit is consistent with a content of the selected register, and a trace memory coupled to receive the address outputted from the emulation microprocessor and responding to the enable signal so as to store the address outputted from the emulation microprocessor, whereby only a result of execution belonging to a selected execution level is traced in the trace memory.

5,056,014

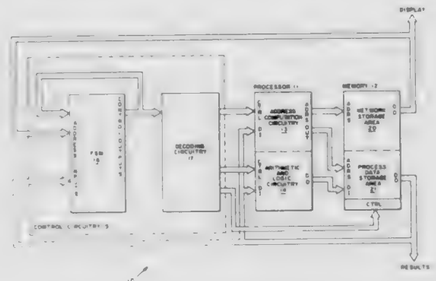
NETWORK SIMULATION SYSTEM

James L. Burrows, Merrimack, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 698,514, Feb. 4, 1985, abandoned. This application Sep. 11, 1987, Ser. No. 96,172

Int. Cl.[5] G06F *12/00, 9/455, 15/00*

U.S. Cl. 364—200 **4 Claims**



1. A data processing system for processing a network of processing elements each identified by a code representation, said data processing system comprising:

A. storage means comprising a plurality of addressable storage locations each identified by an address and each storing a code representation as well as process data for each of the processing elements, said storage means including address and process data input terminals, address and process data output terminals, network storage means including a plurality of storage locations for storing code representations of the processing elements and being connected to said address input terminal for receiving address signals for identifying the storage locations in the network storage means and said data output terminal for transmitting the code representation in the storage location identified by the address signals at the address input terminal, and process data storage means including a like plurality of storage locations to said plurality of storage locations in said network storage means for storing process data, said process data storage means being connected to said address input terminal, data input terminal and data output terminal and further including a control terminal for selectively receiving process data through said data input terminal for storage in the storage location identified by the address at said address input terminal or transmitting process data from the storage location identified by the address at said address input terminal through said data output terminal in response to a control signal from a finite state means received through said control terminal;

B. processing means including:

i. address computation means connected to said address input terminals of said storage means for generating addresses to iteratively identify said storage locations in said storage means to permit said storage means to transit the code representations identified by said addresses; and

ii. arithmetic and logic means connected to the data output terminal of said storage means for receiving and performing arithmetic and logical operations on the process data received from said storage means, said arithmetic and logic means being further connected to the data input terminal of said storage means for coupling data from the arithmetic and logical operations to said storage means for storage therein; and

C. said finite state means connected to said processing means and said storage means for receiving the code representations from said storage means and for generating control signals coupled to said processing means and said storage means for controlling the operations of said storage means, said address computation means and said arithmetic and logic means in response to the received code representations for enabling iterative processing of the processing elements in the network.

5,056,015

ARCHITECTURES FOR SERIAL OR PARALLEL LOADING OF WRITABLE CONTROL STORE

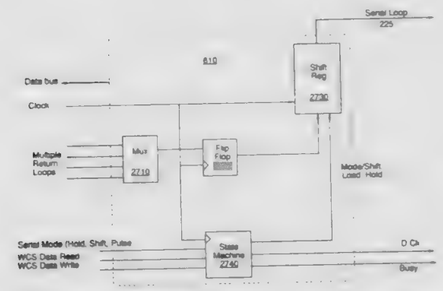
David R. Baldwin, Weybridge; Malcolm E. Wilson, Salwayash, and Neil F. Trevett, Kingston-upon-Thames, all of United Kingdom, assignors to Du Pont Pixel Systems Limited, Stevenage, United Kingdom

Filed Mar. 21, 1989, Ser. No. 326,811

Claims priority, application United Kingdom, Mar. 23, 1988, 8806855; Mar. 23, 1988, 8806869

Int. Cl.[5] G06F *12/00*

U.S. Cl. 364—200 **32 Claims**



1. A multiprocessor subsystem, comprising:

a plurality of processors, each connected to execute instruction sequences from a respective control store thereof;

a plurality of serial/parallel registers, each having a parallel port connected to a respective one of said control stores, and each having serial input and output ports,

said serial ports being connected in series to provide a serial loop interface to said plural control stores;

wherein said serial/parallel registers can selectably operate in a first mode, wherein data is shifted along as rapidly as possible, and in a second mode, wherein data is loaded in parallel into said respective control store.

5,056,016

DEVICE FOR DETERMINING GEOMETRIC PARAMETERS OF A STRUCTURAL ELEMENT

Klaus Dobler, Gerlingen, and Hansjoerg Hachtel, Weissach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

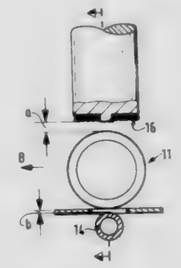
Filed Jan. 10, 1990, Ser. No. 462,798

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 8902231[U]

Int. Cl.[5] G01R *33/12;* **G01N** *27/82;* **G01B** *7/28;* **B07C** *5/00*

U.S. Cl. 324—232 **3 Claims**

1. A device for determining geometric parameters of a screw-shaped structural element, comprising a first cylindrical coil for determining a first geometric parameter, said first cylindrical coil having a length substantially corresponding to a length of the structural element; a second coil spaced from said first cylindrical coil and arranged opposite said first cylindrical coil for determining a second geometric parameter, said first and second coils being adapted to be located at different sides of a structural element and connectable to a source of an alternating voltage that provides for flow of an alternating current through said first and second coil, and each of said first and second coils generating a signal representative of a respective parameter of the structural element resulting from a change in an alternating current resistance in a respective coil caused by eddy current generated in the structural element by flow of the alternating current through the respective coil; and evaluating means for comparing the signal generated by each of said first and second coils with a nominal value for the respective parameter of the structural element to thereby provide an evaluation of the respective parameters.



5,056,017

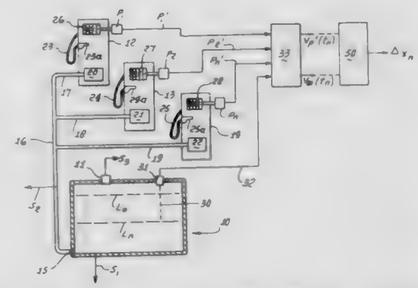
SYSTEM TO MONITOR FUEL LEVEL IN A TANK, AND FUEL DISPENSED FROM THE TANK, TO DETERMINE FUEL LEAKAGE AND THEFT LOSSES

David C. McGarvey, San Gabriel, Calif., assignor to LRS, Inc., El Monte, Calif.

Filed Jul. 31, 1989, Ser. No. 386,813

Int. Cl.[5] G01F *23/00*

U.S. Cl. 364—403 **8 Claims**



6. In apparatus to maintain liquid loss from a tank, in a system wherein liquid is dispensed from the tank via dispenser means which has an associated dispenser fluid accumulative output, the combination comprising

a) first means to monitor liquid fuel level in the tank and to provide a first output indicative of liquid volume loss from the tank, over a time interval t_o—t_n,

b) second means to monitor liquid dispensed by said dispenser means to provide a second output indicative of liquid volume dispensed, over said time interval t_o—t_n,

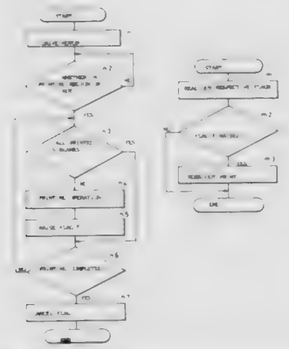
c) and processor means to process said first and second outputs and to detect any difference therebetween.

5,056,018

PRINTER WITH IMPROVED POWER-FAILURE RESTART FUNCTION

Keiichi Ikoma, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1989, Ser. No. 423,895
Claims priority, application Japan, Oct. 27, 1988, 63-271696
Int. Cl.[5] G06F *15/21;* **G07G** *1/12*
U.S. Cl. 364—405 **3 Claims**



1. A printer which continues a print operation interrupted by a power failure, once power is resumed, comprising:

a power supply;

a printing head operative with a voltage fed from said power supply for printing line by line on recording paper;

detection means for comparing the voltage fed from said power supply with a predetermined voltage to detect a power failure and a power resumption;

print detection means responsive to the detection of the power resumption by said detection means, following the detection of the power failure by said detection means, fo, detecting a character other a blank which has been printed by said printing head on a line where said printing head is positioned, and to output a detecting signal; and

control means responsive to the detecting signal from said print detection means for controlling said printing head to cross out the line after the power resumption if any character other than blanks had been printed by said printing head on the line where printing was interrupted by the power failure, and to print the same contents on the line after the power resumption, as should have been printed if nothing other than blanks has been printed, before the power failure.

5,056,019

AUTOMATED PURCHASE REWARD ACCOUNTING SYSTEM AND METHOD

John Schultz, Stamford, and Donald Irion, Westport, both of Conn., assignors to Citicorp POS Information Servies, Inc., Stamford, Conn.

Filed Aug. 29, 1989, Ser. No. 400,650
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—405 **21 Claims**

8. A method for effecting manufacturer purchase reward offers for use in a retail point-of-sale system having scanners at customer check-out locations and in-store program data collector, said data collector comprising data storage means and communicating with the scanners and with a remotely located program management computer system, comprising the steps of:

defining a plurality of purchase reward offers, each purchase reward offer promising a reward to a plurality of offerees for purchasing at least one reward product;

storing offer information regarding the plurality of purchase reward offers in an offer file in a management data bank of the program management computer system;

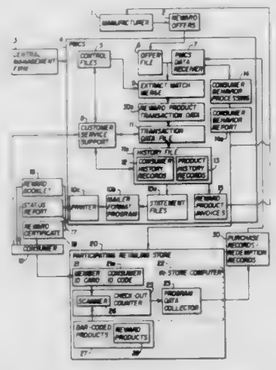
providing each offeree with a member identification card with a consumer identification code thereon;

identifying one of the plurality of offerees at one of the customer check-out locations by reading the consumer identification code of said one of the plurality of offerees;

reading product identification information from machine-readable codes affixed to products purchased by said identified one of the plurality of offerees with one of the scanners;

storing the product identification information in the data storage means with said consumer identification code, said consumer identification code and said product identification information forming a purchase record;

transferring the purchase record to a data receiver in the program management computer system;



comparing the product identification information with the reward offer information to determine which purchased products are reward products;

combining the determined reward product identification information with the product identification information of previously purchased reward products stored in a consumer history file in the management data bank;

comparing the reward product information in the consumer history file with the offer information to determine which rewards have been earned by said identified one of the plurality of offerees and further rewards available to said identified one of the plurality of offerees;

providing said identified one of the plurality of offerees with a reward certificate for the rewards earned; and

providing said identified one of the plurality of offerees an outline of his or her progress towards completion of the requirements for a plurality of available rewards.

5,056,020

METHOD AND SYSTEM FOR THE CORRECTION OF IMAGE DEFECTS OF A SCANNER DUE TO THE MOVEMENTS OF THE LATTER

Andréi Feldman, Paris, and Dominique Cornuejols, Palaiseau, both of France, assignors to General Electric CGE SA, Issy-les-Moulineaux, France

Filed Sep. 12, 1989, Ser. No. 406,039
Claims priority, application France, Sep. 16, 1988, 88 12120
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.19 **5 Claims**

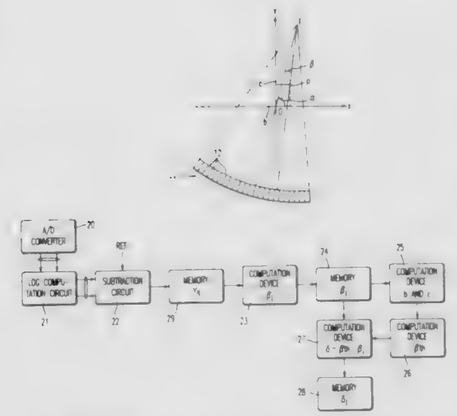
1. A method for the correction of defects in images of a scanner, due to movements by the latter, said method comprising the following operations:

the positioning of at least one rod which introduces a major weakening or attenuation in the incident X-radiation,

the rotation of the scanner by a full turn so as to achieve a number m of views on the N detectors or channels of the scanner, each view corresponding to a determined angular section α_j of the scanner around its center of rotation;

the determining, for each view, of the center of gravity of the attenuation (rod) so as to measure an angle β_j between the axes of radiation, one of which goes through the center of rotation and the other through the center of gravity of the attenuation;

the measurement of the Cartesian coordinates b and c of the center of gravity of the rod,



the computation, for each view, of the theoretical angle β_{th} between the axes of radiation, one of which goes through the center of rotation of the scanner, and the other through the point of coordinates b and c;

the computation, for each view, of the difference δ_j between the angles β_{th} and β_j and the memorizing of the m values δ_j, each value δ_j being then used to modify the corresponding value of the angular position α_j.

5,056,021

METHOD AND APPARATUS FOR ABSTRACTING CONCEPTS FROM NATURAL LANGUAGE

Carolyn Ausborn, 1904 Bluebird Ave., Huntsville, Ala. 35816

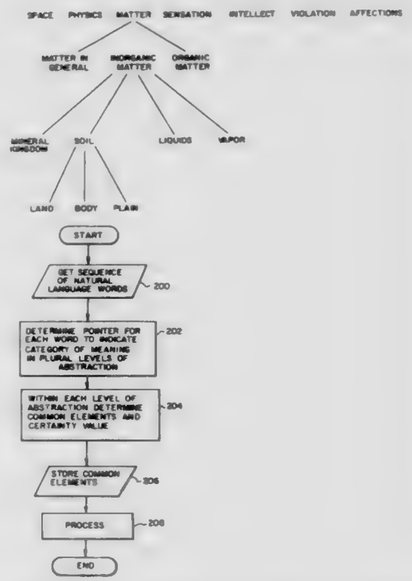
Filed Jun. 8, 1989, Ser. No. 363,181
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—419 **34 Claims**

1. A method for automatically determining a meaning from a sequence of words in a machine, comprising the steps of:

receiving a sequence of words in the machine;

using said machine to access a database that includes a prestored plurality of categories of meaning for each said word, to obtain at least one category of meaning for each of said words of said sequence; and

using said machine to select certain ones of said plurality of categories of meanings by determining ones of said categories of meanings which are common for different ones of said respective words, said common categories of



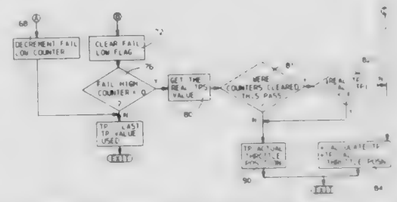
meanings being used as abstracted meanings for the sequence.

5,056,022

THROTTLE POSITION SENSOR ERROR RECOVERY CONTROL METHOD

Michael R. Witkowski, Sterling Heights; William J. Bolander, Clarkston, and Larry T. Nitz, Troy, all of Mich., assignors to Saturn Corporation, Troy, Mich. and Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 24, 1990, Ser. No. 587,929
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—424.1 **3 Claims**



3. A method of operation for a vehicle powertrain controller which schedules shifting of an automatic transmission as a function of a throttle position variable, the method comprising the steps of:

setting the throttle position variable in accordance with a sensor value returned from an engine throttle position sensor;

periodically measuring the sensor

comparing the sensor value to minimum and maximum values which form an acceptable range of throttle positions;

setting the throttle position variable in accordance with a default value corresponding to an estimate of throttle

position if it is determined that the throttle position sensor is not functioning properly;

monitoring the sensor value to determine if it is within the acceptable range for a fixed number of measurements to ensure that the sensor is functioning properly; and

determining if the difference between the default value and the sensor value is within a reference amount and resuming the setting of the throttle position variable in accordance with the sensor value if it is determined that the sensor is functioning properly and the difference is within such reference amount.

5,056,023

DIAGNOSIS SYSTEM FOR MOTOR VEHICLE

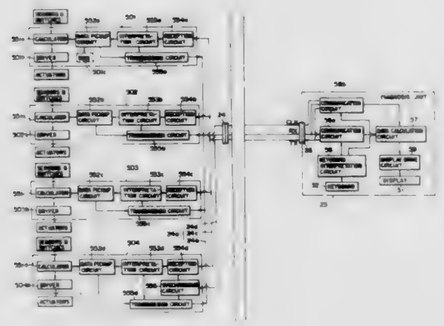
Kunihiro Abe, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1989, Ser. No. 423,779

Claims priority, application Japan, Oct. 21, 1988, 63-266308

Int. Cl.[5] G01M *15/00*; G06F *15/20*

U.S. Cl. 364—424.03 **7 Claims**



1. A diagnosis system for a motor vehicle, having sensing means for sensing operating conditions of the vehicle as input data, a plurality of electronic control units being responsive to the input data from the sensing means for providing output data for controlling the vehicle, independently, a diagnosis unit for sending a demand signal demanding specific data of the input and output data to the electronic control units for diagnosing the specific data and connecting means provided with a bus and a connector for connecting the diagnosis unit to the electronic control units in parallel to communicate bidirectionally, comprising:

a clock signal line connecting the diagnosis unit to at least one of the electronic control units to transmit a clock signal therebetween;

first communication means for transmitting the demand signal and the specific data between the diagnosis unit and said at least one of the electronic control units in a clock synchronous communication in synchronous to said clock signal;

second communication means for transmitting the demand signal and the specific data in a start-stop synchronous communication through the connecting means between the diagnosis unit and the other of the electronic control units;

a keyboard for inputting into the diagnosis unit a diagnosis mode designating an unit to be accessed of the electronic control units; and

interpretation means for interpretating said designated unit from said diagnosis mode and for selecting one of said first and second communication means matching said designated unit so as to perform every diagnosis item dependent on different communication types at one time without disconnecting the connector.

5,056,024

APPARATUS FOR TESTING THE WHEEL SUSPENSION OF A VEHICLE

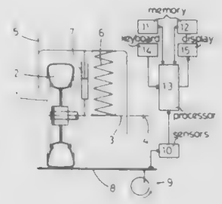
Victor C. L. H. Stuyts, Haarlem, Netherlands, assignor to Initial Investments, B.V., Antilles, Netherlands

Filed Sep. 11, 1989, Ser. No. 405,738

Claims priority, application Netherlands, Sep. 13, 1988, 8802251

Int. Cl.[5] G01M *17/04*

U.S. Cl. 364—424.03 **5 Claims**



1. Apparatus for testing wheel suspension of a vehicle, in particular a shock absorbing element of said wheel suspension, wherein the vehicle has an upsprung mass at each wheel to be tested, said apparatus comprising:

a measuring plate;

means for oscillating said measuring plate with a frequency varying in a predetermined range, wherein a tire of the vehicle to be tested exerts vertical forces on the measuring plate during oscillation;

means for measuring values of the vertical forces exerted by the tire of the vehicle on the measuring plate and for measuring values of the corresponding frequency oscillation;

means for storing the vertical force values and the corresponding frequency oscillation values;

means for storing a mathematical model of a linear second order mass spring system formed by the upsprung mass at each wheel to be tested, a tire and a shock absorbing element, said mathematical model representing the performance of the wheel suspension in the range around resonance frequency;

a logic circuit for determining a minimum vertical force value and corresponding frequency value from said stored vertical force values and corresponding frequency values and for using the mathematical model to compute a relative damping factor as a test result for the wheel suspension from said minimum vertical force value and corresponding frequency value.

5,056,025

Patent Not Issued For This Number

5,056,026

USER MODIFIABLE FUEL INJECTION COMPUTER

Steven J. Mitchell, and William R. Mitchell, both of 10 Macintyre Crescent, Sylvania, New South Wales, Australia 2224

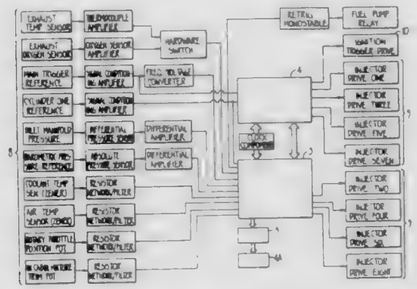
PCT No. PCT/AU88/00430, § 371 Date Jul. 5, 1989, § 102(e) Date Jul. 5, 1989, PCT Pub. No. WO89/04425, PCT Pub. Date May 18, 1989

PCT Filed Nov. 4, 1988, Ser. No. 381,691

Claims priority, application Australia, Nov. 6, 1987, P15283

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—431.03 **8 Claims**



1. An E.F.I. computer system for an internal combustion engine comprising:

control means for controlling E.F.I. equipment in said engine; said control means coupled with

information means for producing information to fit said engine, said information comprising a range of fuel delivery curves, a range of ignition timing curves, or both;

said control means and information means being modifiable while installed in and during operation of said engine, and further being user-accessible through a serially connected external computer means.

5,056,027

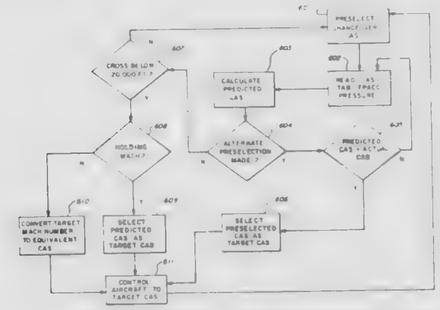
APPARATUS AND METHOD FOR A SMOOTH TRANSITION BETWEEN CALIBRATED AIRSPEED CONTROL OF AN AIRCRAFT AND MACH NUMBER CONTROL OF AN AIRCRAFT

Jeffery A. Kahler, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 26, 1990, Ser. No. 485,258

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—433 **19 Claims**



1. A method for providing a transition between an aircraft controlled by a calibrated airspeed aircraft parameter value and said aircraft controlled by a Mach number parameter value, said method comprising the steps of:

selecting a current parameter value for control of said aircraft prior to said transition;

selecting a selected target parameter value to which control of said aircraft is to be transferred after said transition;

based on current flight conditions and response characteristics of control systems of said aircraft, calculating a predicted target parameter value for said aircraft before said transition from a current parameter value; and

transferring control of said aircraft to said selected target parameter value when said predicted target parameter value equals said selected target parameter value.

5,056,028

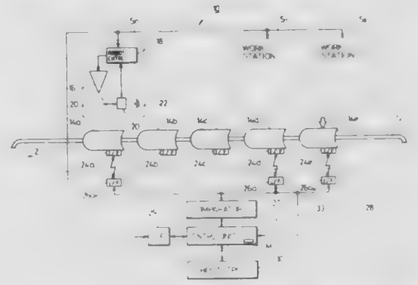
PRODUCTION MANAGEMENT SYSTEM WITH SIMULTANEOUS MULTIPLE DATA TRANSMISSION

Yoshimasa Ohta; Masayasu Arakawa, and Masanao Yamamoto, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1989, Ser. No. 384,761

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **12 Claims**



9. A method of controlling a production system including production line means having a plurality of movable carriages for transporting workpieces along the production line means to plural work stations to be machined comprising the steps of:

transmitting identification data of each respective movable carriage therefrom through first communication means to a control means;

storing in a memory means of the control means the transmitted identification data; and

transmitting from the control means to each respective work station, through second communication means, the stored identification data and workpiece type data descriptive of the workpieces and processing steps to be performed on workpieces of a particular movable carriage located at a particular work stations and for a subsequent movable carriage to arrive following the particular movable carriage along the production line means under direction of the control means.

5,056,029

METHOD AND APPARATUS FOR MANUFACTURING AND VENDING SOCIAL EXPRESSION CARDS

Thomas G. Cannon, 8017 Glade Rd., Loveland, Colo. 80537

Filed Sep. 18, 1989, Ser. No. 408,773

Int. Cl.[5] G06F *15/20*

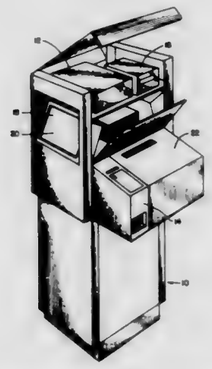
U.S. Cl. 364—468 **21 Claims**

1. A method of the on-site manufacture and vending of social expression cards, comprising the steps of:

inputting a plurality of social expression card designs into an information storage and retrieval system for storing, referencing, and retrieving the social expression card designs,

where each of the social expression card designs comprises a front page and an inside page and each social expression card design is uniquely identified by a plurality of special occasion parameters, and where the special occasion parameters are used to group social expression card designs with like special occasion parameters into fields;

querying the customer for a plurality of input data set items, all of the plurality of input data set items being special occasion parameters to identify a field of social expression card designs;



searching the information storage and retrieval system for social expression card designs having special occasion parameters that match those input by the customer;

displaying those social expression card designs having special occasion parameters that match those input by the customer;

selecting a social expression card design to be reproduced; and

reproducing said selected social expression card design in tangible form.

5,056,030

APPARATUS FOR CARRYING OUT DECOUPLING CONTROL OF A T-DIE

Yoshiyuki Tomita, Tokyo, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Aug. 31, 1989, Ser. No. 401,171
Claims priority, application Japan, Aug. 31, 1988, 63-214794
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—473 **4 Claims**

1. In an apparatus for use in combination with a T-die which comprises a lip member having a pair of lip portions with a gap extended between said lip portions along a predetermined direction, said lip member being divisible into first through N-th zones along said predetermined direction and defined by a stiffness matrix, said T-die extruding a flow material through said gap in the form of a sheet and further comprising first through N-th driving means coupled to said first through N-th zones for individually driving said first through said N-th zones of the lip member, respectively, to partially and individually control said gap, said apparatus comprising:

comparing means for comparing a plurality of measured thicknesses of said flow material at said first through said N-th zones with desired thicknesses predetermined for the first through N-th zones, respectively, to produce first through N-th thickness differences;

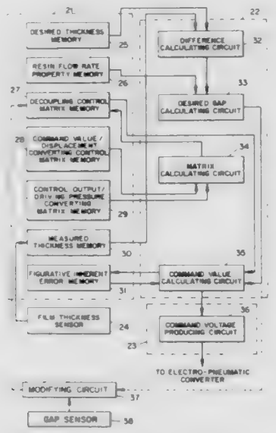
desired gap calculating means coupled to said comparing means for calculating N-dimensional desired displacement vectors of said gap corresponding to each of said zones from said thickness differences;

controlling means for individually controlling said driving means on the basis of said desired displacement vectors, respectively;

the improvement wherein said controlling means comprises:

decoupling control matrix memorizing means for memorizing N×N inverse matrix on the basis of said stiffness matrix as N×N decoupling control matrix for said first through N-th zones, respectively;

command value processing means coupled to said driving



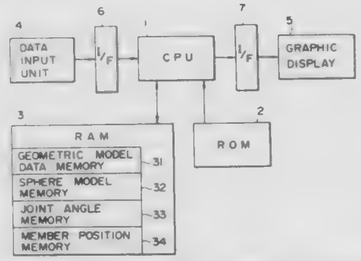
means and said decoupling control matrix memorizing means for processing N-dimensional command value vectors in response to said desired displacement vectors and said decoupling control matrix by the use of a decoupling control algorithm predetermined in connection with said decoupling control matrix and said desired displacement vectors to partially and individually control said gap and to extrude said flow material with a substantial uniform film thickness.

5,056,031

APPARATUS FOR DETECTING THE COLLISION OF MOVING OBJECTS

Masaru Nakano; Minoru Tanaka; Toshiaki Ikeda, and Toshitaka Kuno, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenyusho, Aichi, Japan

Filed Nov. 9, 1989, Ser. No. 435,070
Claims priority, application Japan, Nov. 12, 1988, 63-286347
Int. Cl.[5] B25J *9/00*
U.S. Cl. 364—461 **16 Claims**



1. An apparatus for detecting the collision of objects including at least one moving object, comprising:

face information storing means for storing face information describing the surfaces of each of said objects;

hierarchical sphere model generating means for modeling the surfaces of each of said objects by hierarchically arranging spheres having a plurality of radii uniformly over all of the surfaces of each object on the basis of said face information;

sphere model storing means for storing the positions of said modeled spheres generated;

sphere position updating means for updating the position of each of said modeled spheres having said plurality of radii with respect to said moving object in correspondence with the movement of said moving object and outputting said updated position to said sphere model storing means; and

sphere collision computing means

for executing procedures in which mutually colliding ones of said spheres are detected on the basis of the positions of said modeled spheres concerning two of said objects generated at an arbitrary time and stored in said sphere model storing means, and colliding spheres among spheres belonging to said mutually colliding spheres and having a smaller radius are further detected with respect to only said spheres determined to collide with each other, said procedures being executed hierarchically and consecutively starting with spheres having a large radius toward spheres having a smaller radius, and

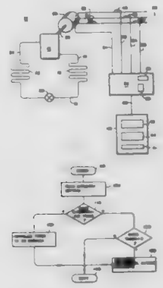
for determining the collision of said two objects with each other when finally mutually colliding spheres having the smallest radius are present.

5,056,032

COMPRESSOR MOTOR PROTECTION SYSTEM

Robert M. Swanson, and Paul C. Pentmeester, both of La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Mar. 30, 1990, Ser. No. 502,354
Int. Cl.[5] G06F *15/20, 15/46, 15/56*
U.S. Cl. 364—483 **19 Claims**



1. A method of protecting a compressor motor in a refrigeration system from overload comprising the steps of:

setting a first overload trip point in an input device of a compressor motor protection system;

setting a second overload trip point in an alternate location;

periodically transferring the second overload trip point setting from the alternate location to the compressor motor protection system;

comparing, in the compressor motor protection system, the first trip point setting with the second trip point setting; and

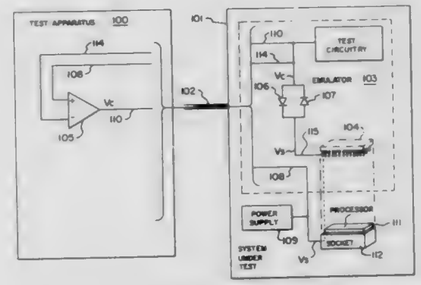
shutting down the compressor motor if the comparing step determines that the first trip point setting is not substantially equal to the second trip point setting.

5,056,033

MICROPROCESSOR EMULATOR ACTIVE PROBE POWER SUPPLY

Charles P. Hill, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 24, 1990, Ser. No. 557,256
Int. Cl.[5] G01R *19/00*
U.S. Cl. 364—483 **18 Claims**



7. In a test system, which is connected to a system under test which is controlled by an application processor via data, address and control buses and which includes a power supply which produces a voltage output of predetermined magnitude, power supply regulation apparatus in said test system for providing power to an active probe which is connected to said test system by a cable and which is directly connectable to said data, address and control buses in said system under test, comprising:

means having sense and reference inputs and an output for generating a voltage at said output identical to the voltage appearing on said reference input;

means for interconnecting said reference input to said voltage output;

means for applying said output to a power supply input of at least one device in said active probe that drives said data, address and control buses;

means for interconnecting said power supply input with said sense input in said active probe;

means for providing a feedback path between said voltage lead and said power supply input in said active probe.

5,056,034

METHOD AND APPARATUS FOR CONTROLLING THE GAS CONTENT OF FOAM MATERIALS

William M. Rucki, Aurora, and Jeanne M. Leidy, Rocky River, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Nov. 20, 1989, Ser. No. 439,251
Int. Cl.[5] G01N *9/02*
U.S. Cl. 364—510 **19 Claims**

1. A foam dispensing system comprising:

means for dispensing foamable material;

means for supplying liquid material to said foamable material dispensing means;

means for supplying a pressurized gas to said foamable material dispensing means;

means connected in said liquid material supply means for generating a digital liquid material flow signal comprised of a series of pulses, each pulse representing the flow of a fixed amount of liquid material from said liquid material supply means;

means connected in said gas supply means for generating a gas flow signal relating to the amount of gas supplied from said gas supply means;

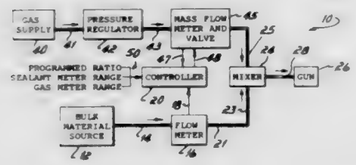
variable gas flow valve means connected in said gas supply means for varying the flow of gas from said gas supply means in response to a control signal; and

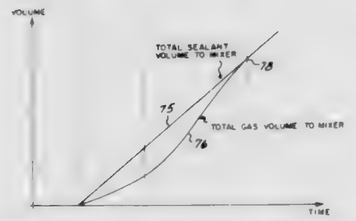
controller means having an output connected to said gas

flow valve means for controlling the rate of the flow of gas from said gas supply means, said controller means including:

means receiving and storing predetermined setting information of desired gas content of the foamable material,

means responsive to the predetermined setting information, the liquid material flow signal and the gas flow signal for accumulating information relating to the





difference between the amount of gas required to be supplied from said gas supply means to maintain the desired gas content of the foamable material being dispensed and the amount of gas supplied from said gas supply means, and

means for generating a control signal at said controller output at least partially in relation to said accumulated information.

5,056,035

METHOD FOR PROCESSING INFORMATION ON CHEMICAL REACTIONS

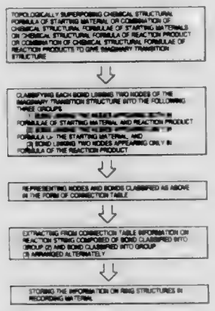
Shinsaku Fujita, Minami-ashigra, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 903,154, Sep. 3, 1986, abandoned. This application Aug. 25, 1988, Ser. No. 237,613

Claims priority, application Japan, Sep. 5, 1985, 60-197463

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—497 **7 Claims**



1. A method of storing information for an organic chemical reaction in which a reaction of at least one starting material to give at least one reaction product is involved; which comprises the steps of:

(a) topologically superposing a chemical structural formula of the starting material or a combination of chemical structural formulae of the starting materials on a chemical structural formula of the reaction product or a combination of chemical structural formulae of the reaction products to produce an imaginary transition structure;

(b) classifying each bond linking two nodes of the imaginary transition structure into the following three groups; (1) bond linking two nodes appearing both in the formulae of the starting material and the reaction product, (2) bond linking two nodes appearing only in the formula of the starting material, and (3) bond linking two nodes appearing only in the formula of the reaction product;

(c) representing nodes and bonds classified in step (b) in the form of a connection table;

(d) extracting from the connection table information on a reaction string composed of the bonds classified into the group (2) and the bonds classified into the group (3) arranged alternately; and

(e) storing the information on the reaction string in a recording material.

5,056,036

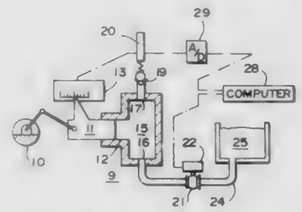
COMPUTER CONTROLLED METERING PUMP

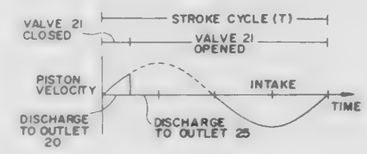
Erik C. Van Bork, Honeoye Falls, N.Y., assignor to Pulsafeeder, Inc., Rochester, N.Y.

Filed Oct. 20, 1989, Ser. No. 424,443

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—510 **16 Claims**





14. A computer controlled pump comprising:

a diaphragm pump having a pumping piston displacing an intermediate fluid in an intermediate chamber against a movable diaphragm in fluid communication with a pumping chamber;

a media reservoir connected to said pumping chamber;

a media outlet connected to said pumping chamber;

a diaphragm position sensor means connected to measure said diaphragm displacement;

an intermediate media reservoir connected by electrically controlled valve means to said intermediate chamber for supplying said intermediate fluid to said intermediate chamber, and venting said intermediate chamber to said intermediate media reservoir; and

a computer connected to receive a signal from said diaphragm sensor, said computer determining from said sensor signal a related volumetric displacement of said pumping media, and comparing said related volumetric displacement with a desired displacement, and for supplying an actuation signal to said electrically controlled valve means for terminating pumping by said diaphragm pump when said related volumetric displacement equals said desired volumetric displacement.

5,056,037

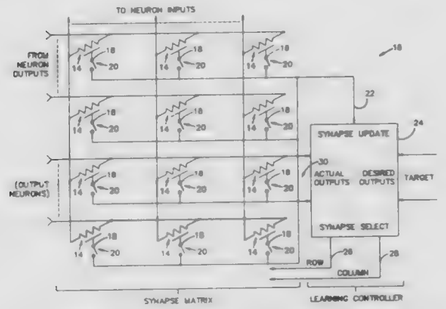
ANALOG HARDWARE FOR LEARNING NEURAL NETWORKS

Silvio P. Eberhardt, Pasadena, Calif., assignor to The United States of America as represented by the administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 28, 1989, Ser. No. 463,720

Int. Cl.[5] G06G *7/12*

U.S. Cl. 364—513 **10 Claims**



1. A neural network processor capable of fully-parallel analog implementation of both single-attractor and multiple-attractor configurations with maximum speed of operation comprising:

a) a plurality of input neurons each having an input for receiving a voltage stimulus and an output for outputting a voltage output;

b) a plurality of output neurons each having an input for receiving a voltage input and an output for outputting a voltage output;

c) a synaptic array comprising a plurality of synapses connecting said output of respective ones of said input neurons to said input of respective ones of said output neurons, each of said synapses having a weighting factor associated therewith determining a conductance value therethrough and means for changing said weighting factor including a weighting factor input;

d) a weighting factor update conductor disposed throughout said synaptic array;

e) a plurality of individually addressable switches connected between said weighting factor input of respective ones of said synapses and said weighting factor update conductor;

f) learning controller means connected to said individually addressable switches and said weighting factor update conductor for enabling selected ones of said switches to connect said weighting factor input of a corresponding one of said synapses to said weighting factor update conductor and for simultaneously applying a weighting factor update voltage value to said weighting factor update conductor; and,

wherein said learning controller means includes logic for updating each said synapse in turn by enabling a corresponding one of said individually addressable switches, making an initial change in the conductance value of said corresponding synapse, evaluating corresponding changes at outputs of said output neurons, and implementing therefrom a learning rule to determine a final change in said conductance of said corresponding synapse.

5,056,038

APPARATUS FOR EFFECTING COORDINATED POSITION/FORCE CONTROL FOR A MANIPULATOR

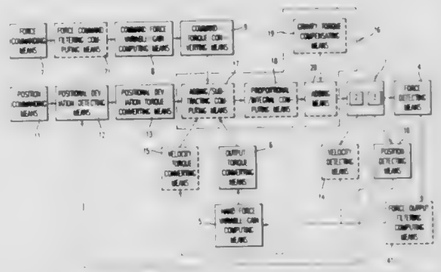
Toshitaka Kuno, and Mitsuo Koide, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 23, 1990, Ser. No. 527,367

Claims priority, application Japan, May 25, 1989, 1-132145

Int. Cl.[5] G06F *15/46;* **G05B** *19/42*

U.S. Cl. 364—513 **23 Claims**



1. An apparatus for effecting coordinated position/force control for a manipulator, comprising:

manipulator driving means for driving each joint of said manipulator;

force detecting means for detecting in a tool coordinate system at least one of a force and moment which said manipulator receives from an external environment;

hand force variable-gain computing means for providing arithmetic processing for changing a gain in response to a degree of coordination between a position and a force with respect to an output of said force detecting means;

output-torque converting means for converting an output of said hand force variable-gain computing means to at least one of the force and moment in each joint coordinate system of said manipulator;

force commanding means for sending a force command signal in which at least one of the force and moment is expressed by the tool coordinate system;

command force variable gain computing means for providing arithmetic processing for changing the gain in response to a degree of coordination between the position and the force with respect to a force command signal sent from said force commanding means;

command-torque converting means for converting an output of said command force variable gain computing means to at least one of the force and moment in each joint coordinate system of said manipulator;

position detecting for detecting the position of each joint of said manipulator;

position commanding means for sending a command position of each joint of said manipulator;

positional deviation detecting means for detecting a positional deviation which is a difference between the position detected by the position detecting means and the command position sent by said position commanding means;

positional deviation-torque converting means for converting a virtual spring constant set by the tool coordinate system in response to a degree of coordination between the position and the force to a virtual spring constant in each joint coordinate system of said manipulator, and for converting the positional deviation to at least one of the force and moment corresponding to the positional deviation on the basis of the converted virtual spring constant and the positional deviation detected by said positional deviation detecting means; and

feedback compensation computing means for computing a command value for at least one of the force and moment

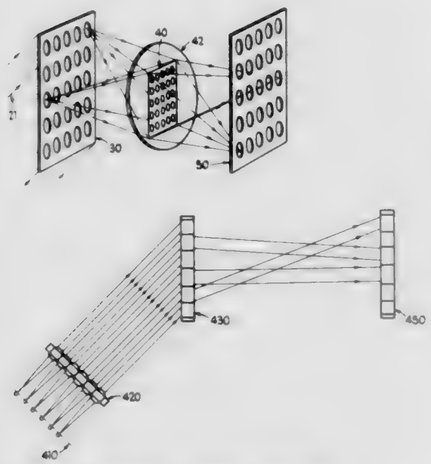
for said manipulator driving means on the basis of at least one of the force and moment converted by said command-torque converting means, at least one of the force and moment converted by said positional deviation-torque converting means, and at least one of the force and moment converted by said output-torque converting means.

5,056,039

HOLOGRAPHIC INTERCONNECT SYSTEM

H. John Caulfield, Cornersville, Tenn., assignor to University of Alabama in Huntsville, Huntsville, Ala.

Filed Jul. 14, 1988, Ser. No. 219,614
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 **50 Claims**



1. A neural interconnect system, comprising:
input means for providing a plurality of input signals;
output means for providing a plurality of output signals; and
planar holographic array between said input means and said output means for providing a fixed modulation of said input signals in a predetermined manner and selectively transferring each of said plurality of input signals to the output means.

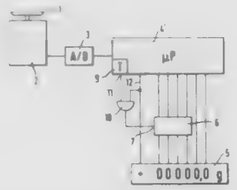
5,056,040

ELECTRIC BALANCE WITH DIGITAL DISPLAY

Franz-Josef Melcher, Hardegsen; Christoph Berg, Adelebsen, and Christian Oldendorf, Göttingen, all of Fed. Rep. of Germany, assignors to Sartorius AG, Göttingen, Fed. Rep. of Germany

Filed Sep. 27, 1988, Ser. No. 249,827
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1987, 3735733
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—518 **5 Claims**

1. An electric balance comprising:
a sensor (**2**) for measuring a load on a balance scale (**1**) and producing a measured result output,
digital signal processing unit (**4,4'**) responsive to the measured result output of the sensor (**2**) and having a decade output means which includes an output to indicate the sign of the measured result;
digital display (**5**) coupled to the digital signal processing unit (**4,4'**) through the decade output means,
switching means (**6**) coupled, between the decade output means and the display means (**5**), to a portion of the output from the decade output means to suppress the leading zeros supplied to the digital display (**5**), and wherein the switching means (**6**) for the suppression of leading zeros consist of a control input means (**7**) which selectively



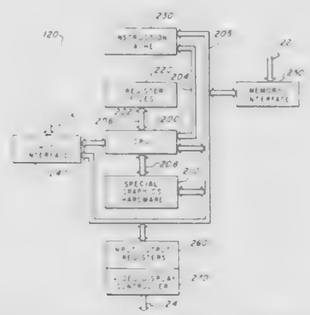
activates and deactivates the switching means (**6**) for the suppression of the leading zeros derived according to the sign of the measured result output.

5,056,041

DATA PROCESSING APPARATUS WITH IMPROVED BIT MASKING CAPABILITY

Karl M. Guttag, Missouri City; Michael Asal, Sugar Land, both of Tex.; Richard Simpson, Bedford, England; Thomas Preston, Middlebury, Conn., and John Sharkey, Glasgow, United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 947,944, Dec. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 790,299, Oct. 22, 1985, abandoned. This application Jul. 31, 1989, Ser. No. 387,404
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—518 **27 Claims**



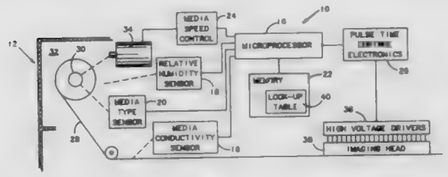
1. A memory controller, comprising: a data bus for communicating a plurality of data bits in parallel;
a mask bus for communicating a plurality of mask bits in parallel, each of said mask bits associated with a data bit of said data bus, each of said mask bits having a first logic state and having a second logic state;
data processing circuits for executing data processing instructions, said data processing circuits presenting data on said data bus and the mask information on said mask bus as a result of said instructions;
data terminals; and
data control means, connected to said data bus, to said mask bus and to said data terminals, for presenting on said data terminals selected data communicated by said data bus from said data processing circuits, wherein said data control means is responsive to said mask bus so that responsive to a mask bit being in its first logic state, the data bit of said data bus associated with said mask bit is blocked from said data terminals, and so that responsive to a mask bit being in its second logic state, the data bit of said data bus associated with said mask bit is presented on said data terminals, said data control means including plural latches each connected to one of said associated data and mask bits and data terminal, said mask bit state controlling the latching of a data bit in said latch.

5,056,042

MEDIA CONDUCTIVITY-BASED PULSE CONTROLLER FOR ELECTROSTATIC PRINTER

Stephen Lieb, Brea, Calif., assignor to Calcomp Inc., Anaheim, Calif.

Filed Apr. 2, 1990, Ser. No. 502,920
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 **20 Claims**



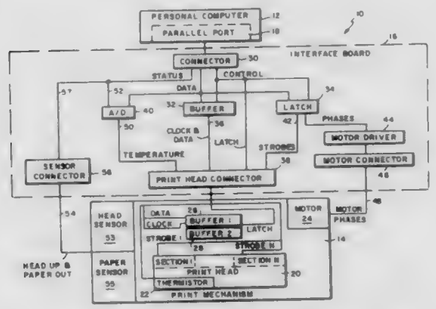
1. A method for controlling an electrostatic printer/plotter which is electrostatically generating an image on a recording media moving over a plurality of image-forming electrodes by applying image writing pulses to the electrodes, said method comprising the steps of:
a) sensing which one of a plurality of pre-determined media types is currently being used in the printer/plotter;
b) measuring a parameter related to conductivity of the media;
c) determining from the conductivity and the media type an optimum pulse width for the image writing pulses which maintains the density of an image produced on the media by the electrodes at a maximum density; and
d) generating images employing image writing pulses transmitted to the electrodes which are of the optimum pulse width.

5,056,043

METHOD AND APPARATUS FOR INTERFACING A THERMAL PRINTER

Calvert T. Hawkes, Newport, R.I., assignor to Island Software, Inc., Middletown, R.I.

Filed Apr. 25, 1990, Ser. No. 514,849
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 **19 Claims**



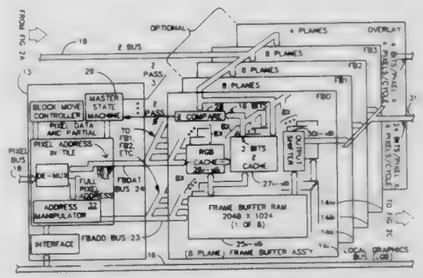
1. An interface for operating a thermal printer from a selected processor, the printer having a print head and a buffer, the interface comprising:
means for determining the operating speed of the processor;
means for loading a line of data to be printed into said buffer;
means for strobing said print head with data from said buffer; and
means responsive to the determined operating speed of the processor for controlling the duration of each strobe by said strobing means, whereby a desired strobe duration may be obtained regardless of the operating speed of the processor.

5,056,044

GRAPHICS FRAME BUFFER WITH PROGRAMMABLE TILE SIZE

Robert W. Frederickson, and Andrew C. Goris, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 455,801, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 86,759, Aug. 18, 1987, abandoned. This application Aug. 8, 1990, Ser. No. 565,863
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—521 **13 Claims**

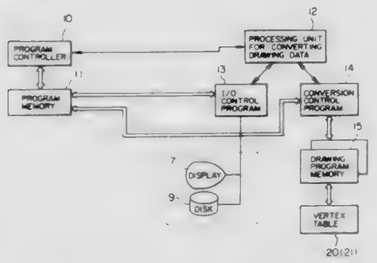


1. A frame buffer storing pixel values in frame buffer addresses corresponding to a pixel address space describing spatial positions upon a graphics output device in a computer graphics system or the like, the frame buffer comprising:
memory means having K-many separately addressable groups of RAM, each group for reading and writing N-bit words, K being an integer greater than or equal to two and N being an integer greater than or equal to one, the K-many N-bit groups appearing upon a combined data path of (KN)-many bits organized as an ordering by group of the K-many N-bit groups;
tile address production means for receiving pixel address having X direction and Y direction components, for receiving a P-many pixel by Q-many pixel tile size specification dividing the pixel address space into contiguous tiles each of (PQ)-many contiguous pixels, P and Q being integers greater than or equal to one, and for producing therefrom a tile address having X direction and Y direction components specifying which tile contains the received pixel address; and
frame buffer address production means, coupled to the tile address and to the tile size specification, for producing therefrom K-many addresses, each of which is coupled to an associated one of the K-many separately addressable groups of the memory means, and each of which is a function of the pixel address, the tile size specification and the associated one of the K-many separately addressable groups.

5,056,045
GEOMETRIC PROCESSING SYSTEM

Akira Ohsawa, Higashimurayama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 867,154, May 27, 1986, Pat. No. 4,944,034. This application May 3, 1990, Ser. No. 518,570
Claims priority, application Japan, May 24, 1985, 60-110346; Jun. 5, 1985, 60-120401; Jun. 28, 1985, 60-140301
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—522 **24 Claims**



1. A geometrical processing system for processing figures having edges and characteristic points in a geometrical space, comprising:

means for holding a data structure formed by a plurality of characteristic data which correspond to said characteristic points, respectively, wherein said data structure represents a plurality of partial spaces which are divided from said geometrical space on the basis of said edges and imaginary division lines each passing through a respective characteristic point of said figures; and

means, coupled to said holding means, for accessing said holding means to obtain portions of said data structure and for performing geometric processings on said portions of said data structure,

wherein each of at least two characteristic data which represent a predetermined partial space divided by a predetermined edge in said edges and a predetermined imaginary division line passing through a characteristic point corresponding to one of said two characteristic data comprises indication information to link with each other, and wherein one of said two characteristic data comprises position information for representing a position of a characteristic point corresponding to said one characteristic data and another characteristic data comprises position information for representing a position of a characteristic point corresponding to said another characteristic data.

5,056,046
PNEUMATIC OPERATED VALVE DATA ACQUISITIONER

John H. Mutchler, Enfield; Timothy P. Jaeger, North Granby; Richard J. Matt, Avon, and Theodore B. Farver, Windsor Locks, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 368,604, Jun. 20, 1989, abandoned. This application Nov. 8, 1990, Ser. No. 610,450
Int. Cl.[5] H04N *7/18;* **F16K** *31/02;* **G01M** *19/00*
U.S. Cl. 364—551.01 **27 Claims**

1. A system for acquiring characteristic operating data regarding a pneumatic valve connected to fluid line, the valve having a body containing a sealable passage through which line fluid may flow, an operator including a stem for positioning sealing means in the passage, and an actuator for displacing the stem a stroke distance corresponding to the open and closed position of the sealing means, said system comprising:

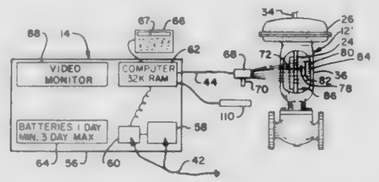
means for sensing the pneumatic pressure in the operator as the stem is displaced over the stroke distance;

means responsive to the means for sensing, for generating pressure data commensurate with the pneumatic pressure in the operator as the stem is displaced over the stroke distance;

marker means associated with the valve and defining a known absolute distance;

a target member associated with the stem and displaceable therewith;

camera means adapted to be fixed in position adjacent the valve stem, for generating a video data signal of the marker means and the target member during the displacement of the stem over the stroke distance;



converter means responsive to the video signal for generating target data commensurate with the displacement of the target resulting from a change in operator pressure;

first data interface means for digitizing the sensed pneumatic pressure data;

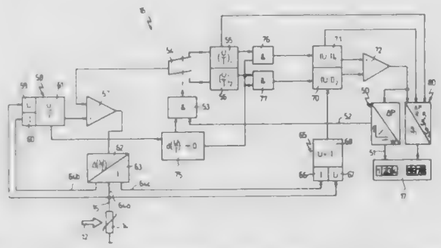
second data interface means for digitizing the target data; and

means for storing the digitized pressure and target data as first and second characteristic data, respectively.

5,056,047
METHOD AND DEVICE FOR MEASURING FLUIDIC OR CALORIMETRIC PARAMETERS

Manfred Sondergeld, St. Georgen/Schwarzwald, Fed. Rep. of Germany, assignor to Gebr. Schmidt Fabrik fur Feinmechanik, Fed. Rep. of Germany

Filed Dec. 7, 1989, Ser. No. 447,376
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841637
Int. Cl.[5] G01F *25/00*
U.S. Cl. 364—556 **11 Claims**



1. A method for measuring a parameter of a fluid flowing through a measuring environment using a heatable, temperature-sensitive sensor element being in thermal contact with the measuring environment, said environment being at an ambient temperature, the method evaluating heat transmission between said measuring environment and said sensor element by means of a heat transmission function for said sensor element, defined as a ratio between thermal flow at a higher temperature above said ambient temperature and a difference between said higher temperature and said ambient temperature, the method comprising the steps of:

setting a first operating equilibrium condition at said sensor element by feeding electric heating power to said sensor element until a stationary temperature equilibrium between said sensor element and said measuring environment at a first predetermined temperature above said ambient temperature is established;

determining a first value of electric heating power at said first operating equilibrium condition;

setting a second operating equilibrium condition at said sensor element by feeding electric heating power to said sensor element until a stationary temperature equilibrium between said sensor element and said measuring environment at a second predetermined temperature above said ambient temperature is established;

determining a second value of electric heating power at said second operating equilibrium condition;

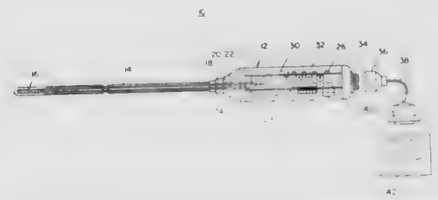
determining a first difference between said first and said second values of heating power;

dividing said difference between said values of heating power by a difference of said first and said second predetermined temperature values, and comparing the resulting quotient with said heat transmission function to derive therefrom said parameter as a numerical value.

5,056,048
INTEGRATED DIGITAL STANDARDIZED PRECISION THERMOMETER

Horst Seperant, P.O. Box 839, 73 Plympton Rd., Sudbury, Mass. 01776

Filed Jul. 18, 1989, Ser. No. 381,487
Int. Cl.[5] G01K *1/14;* **G06F** *15/20*
U.S. Cl. 364—557 **18 Claims**



1. An integrated digital standardized precision thermometer comprising:

a sheath including a temperature sensing element;

a handle, physically interconnected with said sheath and housing an integrated digital standardized thermometer circuit including:

an analog to digital converter responsive to said temperature sensing element for converting an analog signal representative of the resistance of the sensing element, to a digital signal representative of the resistance of the sensing element;

said analog to digital converter including a buffer circuit for correcting said digital signal; and

a microcomputer, responsive to said digital signal representative of the resistance of said sensing element for conversion to a standardized temperature scale.

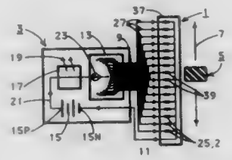
5,056,049
POSITION TRANSMITTER

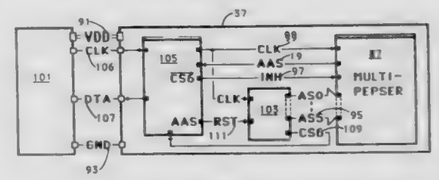
Timothy P. O'Neill, 1176 Blue Bird Canyon Trail, Vista, Calif. 92084

Filed Oct. 23, 1989, Ser. No. 425,069
Int. Cl.[5] G01F *23/62*
U.S. Cl. 364—562 **50 Claims**

1. A PEPS array for use with an electrically powered external controller that electrically energizes a combination of one of a plurality of row outputs and one of at least one column outputs as directed by internally generated address signals, generates an address active signal when an electrical status current exceeds an electrical reference current and is an active status current, and displays the address signal that corresponds to said address active signal in determining the position of a physical exciter moving along an intended path, comprising:

a) a plurality of PEPS each of which achieves an active state and conducts said active status current only if electrically energized and physically excited, connected as a plurality of rows connected to said row outputs and at least one column connected to said column outputs such that each PEPS is electrically connected to a unique combination of one of said rows and one of said columns, electrically energized by said controller one of said PEPS at a time,





such that each of said PEPS is electrically energized in turn; and

b) support means to fixedly support said plurality of PEPS in a spaced relationship along said intended path and in close proximity to said exciter such that said exciter physically excites only the nearest PEPS and only said nearest PEPS can achieve said active state thereby causing said controller to display the address signal that corresponds to said nearest PEPS whereby the position of said exciter is directly related to the address signal which is displayed.

5,056,050
METHOD FOR DETERMINING THE NECESSITY OF ADJUSTING A HIGH-RESOLUTION ELECTRONIC BALANCE

Fritz Fuchs, Uster; Linus Meier, Saland, and Arthur Reichmuth, Wetzikon, all of Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland

Continuation of Ser. No. 31,074, Mar. 26, 1987, abandoned. This application Oct. 6, 1989, Ser. No. 418,927
Claims priority, application Switzerland, May 23, 1986, 02094/86
Int. Cl.[5] G01G *23/01*
U.S. Cl. 364—571.03 **8 Claims**

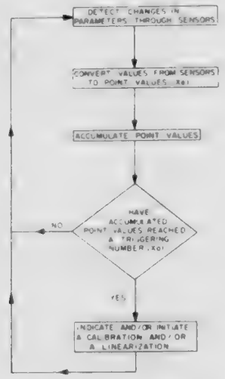
1. A method for determining the necessity of adjusting a high-resolution electronic balance comprising the steps of:

for each of a plurality of parameters that interfere with the accuracy of a weighing result, monitoring said parameters to detect changes in said paramaters affecting accuracy of a weighing result;

converting each detected change in a parameter into a numerical point value that is a function of the magnitude of the change, using different functions to convert the changes in at least some of the different parameters;

accumulating the numerical point values to obtain an accu-

mulated point value associated with the changes in all the different parameters; and



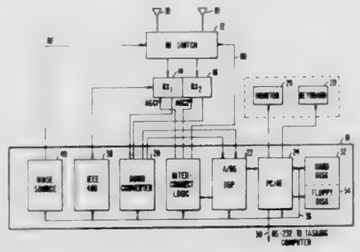
determining whether the accumulated point value has reached a triggering point number.

5,056,051

SIGNAL DIRECTION FINDING PROCESSOR USING FAST FOURIER TRANSFORMS FOR RECEIVER MATCHING

Slobodan Tkalcevic, Fremont, Calif., assignor to Technology for Communications International, Fremont, Calif.

Filed Jun. 6, 1989, Ser. No. 361,877
Int. Cl.[5] G01S *7/40*
U.S. Cl. 364—571.05 **3 Claims**



1. A calibration apparatus for a signal processing system having at least two receiver channels, comprising:

a noise source coupled to an input of each of said receiver channels for providing signals across a passband of said receiver channels;

at least two analog-to-digital converters, each coupled to an output of one of said receivers;

at least two downconverters, each coupled between said one of said receiver channels and one of said analog-to-digital converters for converting an intermediate frequency from the receiver channel to a baseband frequency;

digital signal processing means coupled to said analog-to-digital converters for taking a plurality of samples of the outputs of said analog-to-digital converters, performing a spectral analysis on each of a plurality of portions of each sample from each receiver channel across said passband, averaging the results of the spectral analysis for each portion and determining a calibration difference between each average portion for one receiver channel and the corresponding average portion for the other receiver channel;

a memory table for storing said calibration difference for each portion so that said difference can be used as an offset for measurements of the difference between signals from said two receiver channels;

said digital signal processing means including means for determining which of said portions has a strongest signal amplitude from spectral analysis for a sample from each of said receiver channels, determining a gain difference between receiver channels for the portion having a strongest signal amplitude and modifying said calibration difference for each of said portions by a difference between said calibration difference and said gain difference for said portion having a strongest signal amplitude;

a second memory table for storing said modified calibration differences; and

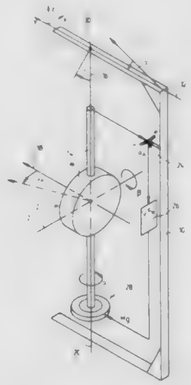
programmed computer means for determining a direction of origin of a signal received by said receivers by comparing a difference in phase from a spectral analysis of a plurality of portions of a sample of said signal from said two receiver channels, said difference in phase being offset by said modified calibration difference.

5,056,052

FILTER ARRANGEMENT FOR GENERATING AN ESTIMATE OF A MEASURED VARIABLE INFLUENCED BY DISTURBANCES

Detlev Wick, Elbgaustrasse 178, 2000 Hamburg 53, and Hans J. Senn, Wallstr. 3, 7860 Schopjheim, both of Fed. Rep. of Germany

Filed Oct. 20, 1989, Ser. No. 424,533
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1988, 3836417
Int. Cl.[5] H03H *17/00;* **G01C** *21/00;* **G01B** *21/24*
U.S. Cl. 364—572 **10 Claims**



1. Filter arrangement for generating an estimate of a measured variable influenced by disturbances by means of a filter effecting a weighting of measuring signals comprising means (50) for achieving a measure of the disturbance and means (52) for changing the weighting of the measuring signal in dependence on the measure of the disturbance.

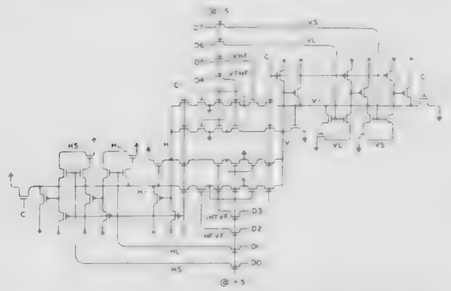
5,056,053

ALGEBRAIC TRANSFORM MACHINE

W. Worth Kirkman, Fairfax, and T. Michael Louden, Annandale, both of Va., assignors to The Mitre Corporation, Bedford, Mass.

Continuation of Ser. No. 142,068, Feb. 11, 1988, abandoned. This application Apr. 27, 1990, Ser. No. 517,522
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—716 **32 Claims**

1. An algebraic transform machine comprising a regular array of functionally equivalent elements interconnected by a regular network of signal paths, each said signal path adapted to hold an algebraic variable value and each said signal path including switching apparatus allowing the signal path to be programmably and reprogrammably enabled and disabled, and each said element adapted to store control signals allowing the element to programmably and reprogrammably affect the algebraic variable value of one or more of the element's signal



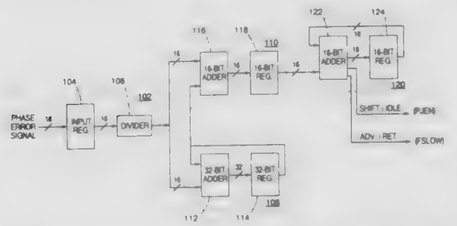
paths as a function of the element's control signals and the algebraic variable values of one or more of the element's signal paths, wherein signal paths from multiple elements programmably and reprogrammably contribute their algebraic variable values as term elements to algebraic operations with the result of each operation held on a signal path common to all of the elements contributing to that operation.

5,056,054

DIGITAL PHASE LOCKED LOOP UTILIZING A MULTI-BIT PHASE ERROR INPUT FOR CONTROL OF A STEPPED CLOCK GENERATOR

Hee Wong, San Jose; Howard Wilson, Santa Clara, both of Calif., and Jesus Guinea, Verdellino, Italy, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 2, 1990, Ser. No. 518,029
Int. Cl.[5] G06F *15/31;* **H03K** *7/08;* **H03D** *3/24*
U.S. Cl. 364—724.01 **13 Claims**



1. A digital phase locked loop (DPLL) for tracking changes in the frequency of an incoming analog signal, the DPLL comprising:

(a) a multi-phase clock generator responsive to a control signal for selecting one of a plurality of phase-separated clock signals generated by the multi-phase clock generator as a sample clock output signal;

(b) phase comparator means for generating a multi-bit phase error signal corresponding to the phase difference between the incoming analog signal and the sample clock output signal;

(c) proportional means responsible to the multi-bit phase error signal for generating a current multi-bit proportional term;

(d) integrator accumulator means for accumulating the current proportional term to generate a current integral term;

(e) summing means responsive to the current proportional term and the current integral term for generating a current multi-bit integral-plus-proportional term; and

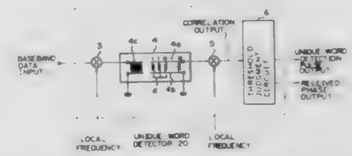
(f) pulse density modulation (PDM) accumulator means for accumulating the current multi-bit integral-plus-proportional term to generate the control signal, the control signal comprising components indicative of both the number of phase jumps to be taken by the multi-phase clock generator and the direction of the phase jumps.

5,056,055

COHERENT SURFACE ACOUSTIC WAVE UNIQUE WORD DETECTOR

Hideyuki Shinonaga, Saitama, Japan, assignor to Kokusai Denshin Denwa Co., Ltd, Tokyo, Japan

Filed Aug. 29, 1989, Ser. No. 400,297
Claims priority, application Japan, Sep. 7, 1988, 63-222274
Int. Cl.[5] G06G *7/12*
U.S. Cl. 364—821 **9 Claims**



1. A unique word detector in an absolute phase-shift keyed system, wherein a coherent phase demodulator is used which outputs a correct data stream or an inverted data stream of the correct data stream in accordance with a recovered phase in a coherent phase demodulator, said unique word detector comprising:

a first mixer, to which baseband data stream output from said coherent phase demodulator and a local frequency from a local oscillator are supplied, for binary-phase-shift keying said baseband data stream;

a surface acoustic was matched filter, coupled with said first mixer, having a) a piezoelectric substrate, b) a first interdigital electrode disposed on said substrate to which binary-phase-shift keyed signal by said baseband data stream is applied from said first mixer, and c) said second interdigital electrode disposed on said substrate wherein a relationship thereof is so designed as to provide a maximum envelope output in response to a predetermined unique word pattern of absolute phase coding;

a second mixer, coupled with said second interdigital electrode, to which a local frequency from said local oscillator is supplied, for coherently detecting an output signal of said surface acoustic wave matched filter; and

determining means, coupled with said second mixer, for detecting a unique word and determining a recovered phase in said coherent phase demodulator, wherein a unique word detection pulse is output when an absolute value of the output signal of said second mixer exceeds a predetermined value, and at the same time, recovered phase information is determined and output in accordance with a polarity of the output signal of said second mixer.

5,056,056

DATA RECORDER INCLUDING A RECIRCULATING NON-VOLATILE MEMORY

Thomas W. Gustin, Xenia, Ohio, assignor to Systems Research Laboratories, Inc., Dayton, Ohio

Filed Feb. 2, 1989, Ser. No. 305,038
Int. Cl.[5] G11C *11/00*
U.S. Cl. 364—900 **7 Claims**

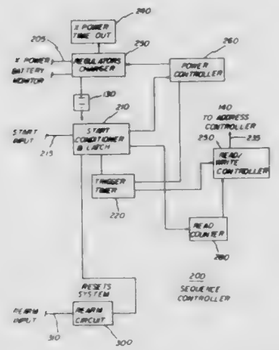
1. A portable multiple channel data recorder for use in storing in a non-volatile memory a limited quantity of data

occurring before and after a triggering event, said recorder comprising:

digital memory means comprising a plurality of separate channels for storing simultaneously a fixed amount of data in each channel;

means for retaining the data stored in said memory means;

control circuit means for controlling the flow of data into said memory means;



means responsive to the occurrence of the triggering event for providing a signal to said control circuit means to terminate the input of new data into said memory means a predetermined time thereafter; and

means responsive to a unique signal for thereafter permitting the recording of new data into said memory means.

5,056,057

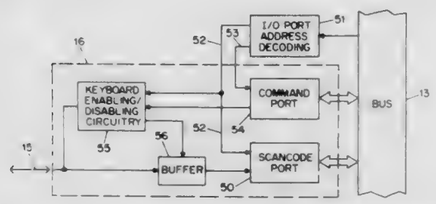
KEYBOARD INTERFACE FOR USE IN COMPUTERS INCORPORATING TERMINATE-AND-STAY-RESIDENT PROGRAMS

Jack D. Johnson, and Roger A. Kaiser, Jr., both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed May 3, 1989, Ser. No. 346,902

Int. Cl.[5] G06F *3/023, 13/24*

U.S. Cl. 364—900 **9 Claims**



1. For use in a keyboard interface for interfacing a keyboard providing scancodes corresponding to actuation of respective keys thereof to a data bus of a central processor, the central processor providing a keyboard enable signal upon completion of processing of a key value associated with a scancode received at the data bus, and the keyboard interface for measuring a predetermined interval of time, a method comprising the steps of:

storing a scancode provided by the keyboard and received by the keyboard interface, thereby prompting the keyboard interface to commence measurement of the predetermined interval of time;

providing an interrupt to the central processor indicative of the receipt of the scancode by the keyboard interface, thereby prompting the central processor to process the scancode;

maintaining the scancode available to the data bus of the central processor until the passage of the predetermined interval of time measured by the keyboard interface, if no keyboard enable signal is received by the keyboard interface from the central processor during the predetermined interval of time; and

after completion of the previous maintaining step, maintaining any subsequently received scancode available to the data bus.

5,056,058

COMMUNICATION PROTOCOL FOR PREDICTING COMMUNICATION FRAME TYPE IN HIGH-SPEED PROCESSING SYSTEM

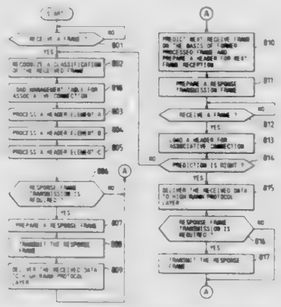
Tetsuhiko Hirata; Susumu Matsui; Matsuaki Terada; Tatsuya Yokoyama, all of Machida, and Sinichi Kouyama, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1990, Ser. No. 489,243

Claims priority, application Japan, Mar. 13, 1989, 1-57701

Int. Cl.[5] G06F *15/56, 15/16, 13/00*

U.S. Cl. 364—900 **7 Claims**



1. A communication control method for communicating between first and second stations operatively associated by a network line, in accordance with a predetermined communication protocol, the method comprising the steps of:

receiving and identifying a first communication frame of a first kind transmitted from said second station by said network line;

transmitting a second communication frame of a second kind to said second station by said network line; and

selectively predicting a kind of a third communication frame which is next expected to be received from said second station on the basis of the kind of either the first communication frame received in said receiving step and the second kind of the second communication frame transmitted in said transmitting step;

preparing a header data including plural pieces of header element information for a header processing to be executed when a next communication frame is received by the first station in accordance with the kind of third communication frame;

waiting for the actual reception of said third communication frame;

comparing at least a part of a header of said next communication frame with said header data previously prepared when said next communication frame is actually received; and,

processing said actually received next communication frame in accordance with a result of said comparing.

5,056,059

MEDICAL MONITORING SYSTEM INTERFACE

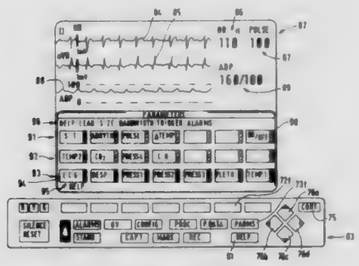
Gerhard Tivig, Boeblingen; Wilhelm Meier, Herrenberg, and Egon Pfeil, Aidlingen, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 253,813, Oct. 5, 1988, abandoned. This application Nov. 19, 1990, Ser. No. 617,372

Claims priority, application European Pat. Off., Sep. 10, 1987, 87114741.9

Int. Cl.[5] G09G *1/00;* **G06E** *15/20*

U.S. Cl. 364—900 **4 Claims**



1. A medical monitoring system comprising:

a display means for displaying medical parameters from a plurality of medical monitors,

a keyboard, and

a processor for responding to the keyboard to control display actions of the display means, the display actions comprising:

a first display of physiological waves of plural medical parameters,

a second display, caused by the processor in response to actuation of a hardkey, of a menu of medical parameters as objects to be manipulated, the menu positioned as a window partially covering the first display, and serving as soft key labels; and

a third display, caused by the processor in response to soft key selection of a medical parameter from the menu of medical parameters, of a task menu of tasks available to be performed relative to a selected medical parameter, the task menu replacing the menu of medical parameters to serve as soft key labels, there being displayed with the task menu a selection of actions within a window which only partially covers the first display and is linked to a selected task, the actions being only those available to be selected and performed relative to the selected task, the processor responding to the selection of any other selected task from the task menu to display only actions available relative to the other selected task, there being displayed in the window a physiological wave of the selected medical parameter upon which an action is to be performed.

5,056,060

PRINTED CIRCUIT CARD WITH SELF-CONFIGURING MEMORY SYSTEM FOR NON-CONTENTIOUS ALLOCATION OF RESERVED MEMORY SPACE AMONG EXPANSION CARDS

Jonathan Fitch, Cupertino, and Ronald Hochsprung, Saratoga, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

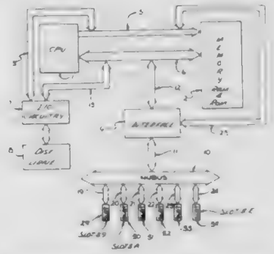
Continuation of Ser. No. 25,500, Mar. 13, 1987, Pat. No. 4,905,182. This application Jan. 16, 1990, Ser. No. 464,952

The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.

Int. Cl.[5] G06F *13/14, 13/36*

U.S. Cl. 364—900 **1 Claim**

1. A printed circuit board card having terminals electrically connecting with cooperating terminals on a slot for receiving said card, said slot being located on a main circuit board of a computer system, said main circuit board including a central processing unit (CPU), memory coupled to said CPU to receive addresses of memory locations from said CPU and to provide data to said CPU, 32-bit address bus being coupled to said CPU and to said memory to address said memory, and input/output circuitry coupled to said memory to provide data to said memory and coupled to said CPU to receive control signals from said CPU, said slot being coupled to said 32-bit address bus, said CPU including an address generation means for generating 2^{32} different addresses ranging from location **$0000 0000** to location **$FFFF FFFF**, said locations being in hexadecimal notation, said slot having a distinct number in said computer system and being coupled to distinct identification line means on said main circuit board, said distinct identification line means providing a distinct signal to said slot, said distinct signal identifying the distinct number of said slot, said card comprising a decoding means coupled to said distinct



identification line means for receiving said distinct signal, said decoding means comparing said distinct number to an address appearing on said 32-bit address bus, said decoding means causing 256 megabytes of memory space to be reserved for said slot such that, where said distinct number of said slot is **X**, said 256 megabytes of memory space begins at location **$X000 0000** and ends at location **$XFFF FFFF**, said locations being in hexadecimal notation and wherein said card in slot X includes a second memory disposed on said card, said second memory being coupled to said CPU through said 32-bit address bus to receive addresses of memory locations from said CPU and to provide data to said CPU, said second memory being coupled to said 32-bit address bus which provides, during a first cycle, an address and receives during a second cycle, data located at said address, wherein said second memory has memory locations reserved beginning at location **$X000 0000** and ending at location $XFFF FFFF, and wherein X may be any number between 1 and 14.

5,056,061

CIRCUIT FOR ENCODING IDENTIFICATION INFORMATION ON CIRCUIT DICE USING FET CAPACITORS

Victor R. Akylas, San Jose, Calif., and Cornelis J. H. De Zeeuw, Eindhoven, assignors to N. A. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1989, Ser. No. 453,546

Int. Cl.[5] G11C *17/00*

U.S. Cl. 365—96 **4 Claims**

1. A programmable circuit for encoding and storing information, comprising:

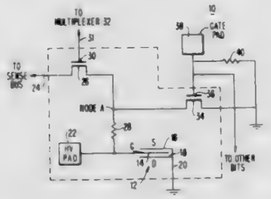
(a) a plurality of single bit information storage and reading bit cells, each bit cell including

(i) a field effect transistor having a gate, a source and a drain, the source and drain being connected in common to ground so as to constitute one plate of a capacitor structure of which said gate serves are the other plate thereof, there normally being an open circuit between said plates;

(ii) means to selectively apply a high voltage to said gate

so as to cause said capacitor structure to physically break down and form closed circuit between the plates thereof, whereby the capacitor structure acts as a single bit binary store representing a first binary value when there is an open circuit between said plates and representing a secondary binary value when there is a closed circuit between said plates; and

(iii) a pass transistor for selectively connecting the gate of said bit cell to a sensing bus;



(b) a read circuit connected to said sensing bus for sensing whether there is a closed or open circuit between the plates of the capacitor structure of a bit cell when the gate of such bit cell is connected to said sensing bus; and

(c) multiplexer means for selectively enabling the pass transistors of successive bit cells to connect the gates thereof to said sensing bus, so that said read circuit successively senses whether there is a closed or an open circuit between the plates of the capacitor structures of the successive bit cells.

5,056,062

METHOD OF OPERATING AN EPROM INCLUDING DELAYING AND BOOSTING STEPS

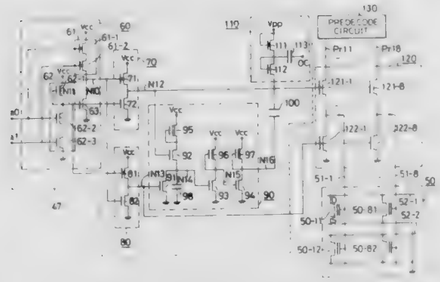
Hiroshi Kuwabara, and Shooji Kitazawa, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 225,375, Jul. 28, 1988, Pat. No. 4,967,399. This application Jun. 29, 1990, Ser. No. 545,583

Claims priority, application Japan, Aug. 3, 1987, 62-194258

Int. Cl.[5] G11C *16/06*

U.S. Cl. 365—189.11 **10 Claims**



1. A method of boosting a potential of a selection signal generated in an erasable and programmable read-only memory system in a writing operation, the system including a plurality of memory cell blocks, each block having a plurality of memory cells, with each cell being connected through a word line to at least one transistor in a selector circuit, the transistor having a first electrode, a second electrode and a control gate, the first electrode being connected to a predecode circuit, the second electrode being connected to the word line, said method comprising:

generating the selection signal and an inverted signal thereof in accordance with an internal address signal;

generating a delayed signal in response to the selection signal and the inverted signal so that the delayed signal rises by a predetermined time delay behind a rising of the selection signal, and the delayed signal rapidly falls substantially simultaneously with a rising of the inverted signal;

a first boosting step of boosting the potential of the selection signal in accordance with a potential of the delayed signal;

a second boosting step of boosting the potential of the selection signal as boosted by said first boosting step; and

supplying the selection signal as boosted by said first and second boosting steps to the control gate of the transistor in the selector circuit.

5,056,063

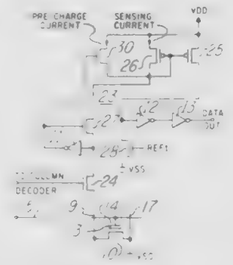
ACTIVE SENSE AMPLIFIER WITH DYNAMIC PRE-CHARGE TRANSISTOR

Giovanni Santin, and Giovanni Naso, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1990, Ser. No. 529,292

Int. Cl.[5] G11C *11/409*

U.S. Cl. 365—208 **20 Claims**



1. A sense amplifier, comprising:

an input and an output;

a supply-voltage source, a derived-voltage source and a reference potential;

first and second current-mirror transistors of a first conductivity-type, each said current-mirror transistor having a first and a second source-drain electrode and a gate, each said first source-drain electrode of said each said current-mirror transistor connected to said supply-voltage source, said second source-drain electrode of said first current-mirror transistor connected to furnish a signal to said output of said sense amplifier, said second source-drain electrode of said second current-mirror transistor connected to sense an impedance corresponding to an impedance at said input of said sense amplifier, each said gate of said first and second current-mirror transistors connected to the other said gate, said gate of said second current-mirror transistor connected to said second source-drain electrode of said second current-mirror transistor;

a reference transistor of a second conductivity-type having a first and a second source-drain electrode and a gate, said first source-drain electrode of said reference transistor connected to said second source-drain electrode of said first current-mirror transistor, said second source-drain electrode of said reference transistor connected to said reference potential, said gate of said reference transistor connected to said derived-voltage source; and

a first inverter having an input and an output, said input of said first inverter connected to said input of said sense amplifier,

a pre-charge transistor of said second conductivity-type having a first and a second source-drain electrode and a gate, said first source-drain electrode of said pre-charge transistor connected to said supply-voltage source, said second source-drain electrode of said pre-charge transistor connected to said second source-drain electrode of said second current-mirror transistor, said gate of said pre-charge transistor connected to said output of said first inverter.

5,056,064

SEMICONDUCTOR INTEGRATED CIRCUIT

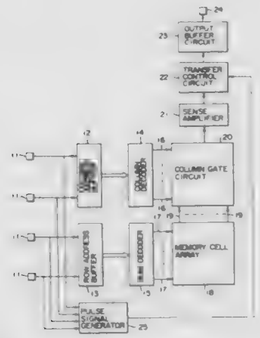
Hiroshi Iwahashi, Yokohama; Hideo Kato, Kawasaki, and Yuuichi Tatsumi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 290,721, Dec. 27, 1988, Pat. No. 4,959,816. This application Aug. 17, 1990, Ser. No. 568,734

Claims priority, application Japan, Dec. 28, 1987, 62-330056; Oct. 7, 1988, 63-252971; Nov. 18, 1988, 63-291969

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—233.5 **41 Claims**



1. A semiconductor integrated circuit comprising:

data storage means for storing data;

pulse signal generating means for detecting a change in address input and generating a pulse signal;

data detecting means for detecting data stored in said data storage means corresponding to the address input;

pulse width detecting means for detecting a width of said pulse signal generated by said pulse signal generating means, and generating a pulse signal when the width of said pulse signal output from said pulse signal generating means is longer than a predetermined width;

data transfer means for transferring the data detected by said data detecting means to data output means, the data transfer means being controlled by the pulse signal generated by said pulse width detecting means such that the data transfer means has a first response time in transferring the data when the pulse signal is generated, and has a second response time in transferring the data when the pulse signal is not generated, the first response time being shorter than the second response time so that the data transfer means transfers the data when the pulse signal is generated faster than in the case when the pulse signal is not generated; and

said data output means for externally outputting the data transferred from said data transfer means.

5,056,065

SYSTEM FOR DEPLOYING HORIZONTAL LINE ARRAY

Craig V. Bruengger, Marshfield, Mass., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Jul. 24, 1988, Ser. No. 383,485

Int. Cl.[5] H04B *1/59*

U.S. Cl. 367—4 **8 Claims**

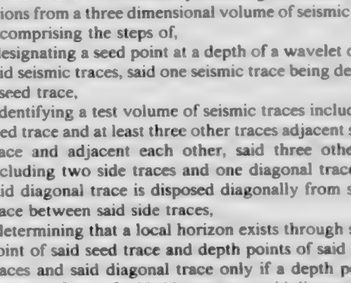
1. A sonobuoy system for deploying an array of transducers in a substantially horizontal line at a predetermined depth below the surface of a body of water having prevailing surface and subsurface currents, comprising:

an array cable having a plurality of transducers affixed thereto, and having a leading end and a trailing end;

means for suspending the leading end of said array cable at a predetermined depth below the surface of said water;

means for suspending the trailing end of said array cable at a predetermined depth below the surface of said water and for impeding the drift o& said trailing end relative to said leading end;

means for controlling the deployment of said array cable and said suspension means;



wherein, said control means releases the trailing end of said array cable and said trailing end suspension means after said sonobuoy system is deposited in the water, permitting said trailing end to descend until said predetermined depth is reached while restraining the leading end of said cable until a first predetermined time has elapsed, then releasing the leading end of said array cable after said first predetermined time has elapsed, allowing the leading end of said array cable to descend to said predetermined depth.

5,056,066

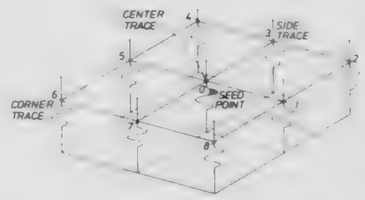
METHOD FOR ATTRIBUTE TRACKING IN SEISMIC DATA

Robert E. Howard, Houston, Tex., assignor to Landmark Graphics Corporation, Houston, Tex.

Filed Jun. 25, 1990, Ser. No. 543,663

Int. Cl.[5] G01V *1/30*

U.S. Cl. 367—72 **9 Claims**



1. A method of automatically selecting a horizon of earth formations from a three dimensional volume of seismic wavelet traces comprising the steps of,

(a) designating a seed point at a depth of a wavelet of one of said seismic traces, said one seismic trace being designated a seed trace,

(b) identifying a test volume of seismic traces including said seed trace and at least three other traces adjacent said seed trace and adjacent each other, said three other traces including two side traces and one diagonal trace, where said diagonal trace is disposed diagonally from said seed trace between said side traces,

(c) determining that a local horizon exists through said seed point of said seed trace and depth points of said two side traces and said diagonal trace only if a depth point of a wavelet of one of said side traces or said diagonal trace is picked via at least two different paths from said seed trace,

where a path includes one or more path links each including a starting trace to a target trace and picking for each path link is achieved where a characteristic of a wavelet of said target trace corresponds in depth to such characteristic of a wavelet of said starting trace,

(d) storing each of said depth points of said two side traces and said diagonal trace only if it is determined that a horizon exists through said depth point of said seed trace and said other traces in step (c), and

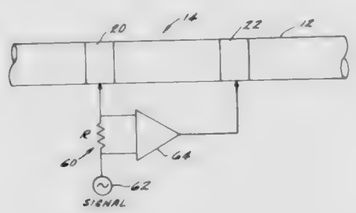
(e) using each of said depth points of said two side traces and said diagonal trace as a seed point of step (a) and repeating steps (b), (c) and (d).

5,056,067

ANALOG CIRCUIT FOR CONTROLLING ACOUSTIC TRANSDUCER ARRAYS

Douglas S. Drumheller, Cedar Crest, N. Mex., assignor to Teleco Oilfield Services Inc., Meriden, Conn.

Filed Nov. 27, 1990, Ser. No. 619,172
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—82 **10 Claims**



1. An analog circuit for controlling electromechanical transmitter transducer pairs in an acoustic telemetry system which further includes a drill collar segment having a first acoustic transducer spaced from a second acoustic transducer, the analog control circuit comprising:

volt source means;

resistor means connected between said first transducer and said volt source means;

amplifier means connected between said resistor means and said second transducer; and

wherein said first transducer is driven in series with said resistor means and wherein any voltage drop across said resistor means is amplified by said amplifier means and used to drive said second transducer so that the voltage drop across said resistor means is proportional and in phase with the current in said second transducer.

5,056,068

APPARATUS AND METHOD FOR DETECTING SHARP SIGNAL VARIATIONS AGAINST AMBIENT SIGNALS

Ralph W. Barnes, Winston-Salem, N.C., assignor to Accu-Sport International, Inc., Winston-Salem, N.C.

Filed Feb. 5, 1990, Ser. No. 475,022
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—124 **52 Claims**

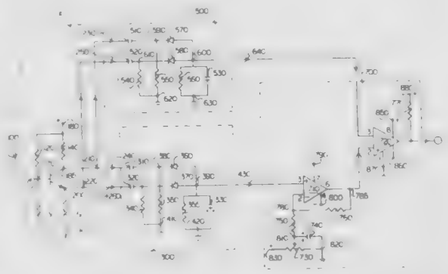
1. An apparatus for detecting an event against background in an input time varying signal having an input time coordinate, which comprises:

a) envelope detector means for receiving the input signal and providing equivalent first and second envelope detector outputs in response thereto;

b) background filter means for inputting the first envelope detector output and providing a background filter output responsive thereto;

c) event filter means for inputting the second envelope detector output and providing an event filter output responsive thereto, the background filter means and the event filter means independently providing a background filter output and an event filter output, and the background filter output and event filter output differing in response to at least one particular input signal;

d) decision means for making a comparison between a background filter base reference responsive to the background filter output and an event filter base reference responsive



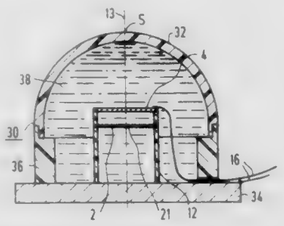
to the event filter output, and providing an output signal having an output signal time coordinate related to the input signal being in either a detection state or a non-detection state, but not both, in response to the background filter base reference and the event filter base reference.

5,056,069

ULTRASONIC SENSOR

Bernd Granz, Oberasbach, and Georg Koehler, Geisfeld, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 1, 1990, Ser. No. 473,576
Claims priority, application European Pat. Off., Feb. 10, 1989, 89102331.9
The portion of the term of this patent subsequent to Mar. 29, 2005, has been disclaimed.
Int. Cl.[5] H04R *17/00;* **H01L** *41/08*
U.S. Cl. 367—164 **6 Claims**



1. An ultrasonic sensor comprising:

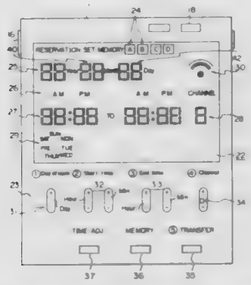
a self-supporting polymeric foil fastened within a holding device, said foil being piezoelectrically activated at least in one region and being coupled to electrodes, the polymeric foil being disposed within a housing having a convex curved, dome-shaped surface at least in one region located opposite a flat side of the polymeric foil, the dome-shaped surface being provided with a center of curvature coinciding at least approximately with the piezoelectrically activated region.

5,056,070

TIMER PROGRAMMING APPARATUS

Kenichi Shibuya; Hirotsugu Okubo, both of Tokyo, and Yukio Furudate, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 2, 1989, Ser. No. 360,420
Claims priority, application Japan, Jun. 6, 1988, 63-139069; Jun. 8, 1988, 63-141368
Int. Cl.[5] G04B *47/00;* **H04N** *5/782;* **G11B** *31/00*
U.S. Cl. 368—10 **15 Claims**



1. A timer programming apparatus that outputs a predetermined signal for controlling a device, comprising:

a hand-held, remote control unit for controlling the device;

memory means arranged in said remote control unit for storing a reserved date;

means arranged in said remote control unit for comparing said reserved date with a present date and for changing the reserved date stored in said memory means to a nearest future date of the same day of the week as said reserved date, both when said means for comparing determines that the reserved date and the present date coincide and when said means for comparing determines that the reserved date is older than the present date; and

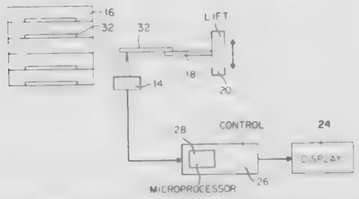
means for transmitting the reserved date to the device following operation of said means for comparing and for changing.

5,056,071

CD APPARATUS WITH DYNAMIC FUNCTION GENERATION

Reinhard Gehringer, Blumberg, and Hans-Robert Kühn, St. Georgen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen, Fed. Rep. of Germany

Filed Sep. 28, 1988, Ser. No. 250,851
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1987, 3732938
Int. Cl.[5] G11B *17/22;* **H04N** *05/85*
U.S. Cl. 369—30 **3 Claims**



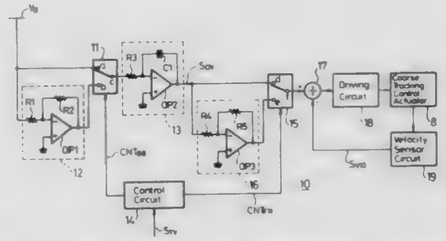
1. A compact disc recording and/or playback set comprising: display means at an operational side of the set for displaying data intended for operational use of single record operation; static display means, and dynamic display means dependent on performance of searches or selection operations and having a flow of motion of data elements related to search or selection operations arranged perpendicular to each other in respect to their direction of motion, title or track search being carried out horizontally according to a horizontal plane of motion of pick-up means and magazine compartment search being carried out vertically according to a vertical plane of motion corresponding to a direction of a record gripper and record lift when using a magazine having record compartments or record receiving means one above another.

5,056,072

SEEK APPARATUS FOR OPTICAL DISC DRIVE

Shigeaki Wachi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1988, Ser. No. 234,197
Claims priority, application Japan, Aug. 20, 1987, 62-206971
Int. Cl.[5] G11B *17/00*
U.S. Cl. 369—32 **5 Claims**



1. An optical disc drive having a seek control circuit for driving an optical pickup to reach a target recording track, comprising:

(a) velocity feedback means for controlling the moving velocity of said optical pickup by detecting the velocity thereof;

(b) seek control means for calculating the number of remaining tracks to said target recording track during a seek operation in response to a signal derived from said optical pickup and for supplying a target velocity signal to said velocity feedback means in response to the calculated result;

(c) said seek control means including an up/down first counter and a digital-to-analog converter connected to said counter, and means for causing said counter to count up during the first one-half of said seek operation and for causing said counter to count downwardly during the second half of said seek operation, whereby said target velocity signal increases during the first half of said seek operation and decreases during the second half of said seek operation.

5,056,073

OPTICAL DISK CARTRIDGE HANDLING APPARATUS

Timothy P. Fitzgerald, Minneapolis; David J. Rother, Hastings; Darryl T. Wrolson, Chanhassen; Richard H. Nelson, Richfield, and Robert E. Takala, Minnetonka, all of Minn., assignors to 501 International Data Engineering, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 602,631, Oct. 24, 1990. This application Nov. 9, 1990, Ser. No. 611,414
Int. Cl.[5] G11B *17/00, 5/48;* **G11C** *13/04*
U.S. Cl. 369—36 **18 Claims**

1. An optical disk cartridge handling apparatus for storing, handling, reading and writing of optical disks stored in cartridges which store data comprising

(a) an import/export element for loading and unloading the cartridges in the apparatus;

(b) a cartridge store with slots therein for storing the cartridges;

(c) a flipper mechanism adapted to receive one of the cartridges from either of the cartridge store or an optical disk drive with a cartridge slot and to invert the cartridge;
d) a picker mechanism comprised of slidably aligned cartridge pusher and picker blocks mounted on a guide shaft for moving the cartridge into and out of the flipper mechanism from either of the cartridge store or the optical disk drive; and
e) a traverse mechanism for supporting and moving the flipper mechanism along either one of two axes of motion to locate the flipper mechanism adjacent either of the cartridge store or the optical disk drive.

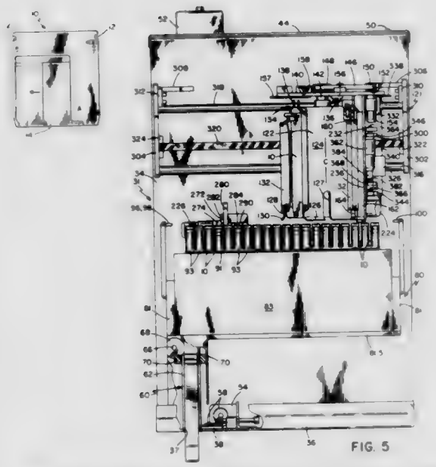


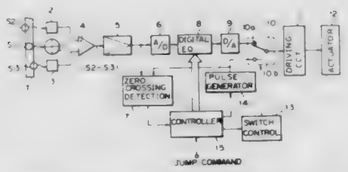
FIG. 5

5,056,074

TRACKING SERVO SYSTEM WITH A VARIABLE EQUALIZING CHARACTERISTIC

Kiyoshi Tateishi, and Haruyasu Sakata, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,443
Claims priority, application Japan, Sep. 13, 1988, 63-229329
Int. Cl.[5] G11B *7/095, 21/08*
U.S. Cl. 369—44.28 **4 Claims**



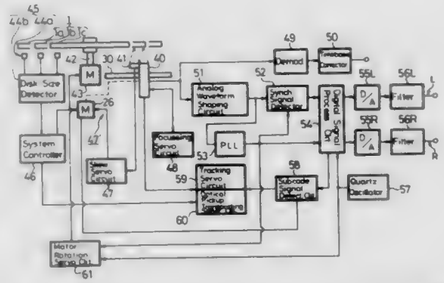
1. A tracking servo system for use in a disc player having a pickup, for playing an information recording disc having a recording track, said tracking servo system comprising:
means for generating a tracking error signal corresponding to an amount of deviation, in a radial direction of said disc, of an information reading spot of said pickup with respect to said recording track,
an equalizing circuit means for compensating for a frequency characteristic of said tracking error signal, said equalizing circuit means performing a compensation operation in accordance with a predetermined compensation characteristic during a normal playback of said disc;
a driving means for shifting said information reading spot in said radial direction of disc in response to said tracking error signal passed through said equalizing circuit means; and
a servo loop switch adapted to open in response to a jump command signal generated in said disc player, and to close at a predetermined timing in a period of a jump operation, wherein coefficients determining predetermined compensation characteristic of said equalizing circuit means are made variable, and said tracking servo system is provided with a control means for varying said coefficients so that said compensation characteristic has a phase margin in a middle frequency range larger than a corresponding phase margin in said predetermined compensation characteristic at said predetermined timing, and a middle frequency gain of said equalizing circuit means is gradually increased with time until said compensation characteristic equals said predetermined compensation characteristic when a predetermined time period elapses.

5,056,075

OPTICAL DISK PLAYER WITH DISK SIZE AND PICKUP LOCATION RESPONSIVE SKEW SERVO CONTROL

Keiji Maruta, Kanagawa, and Masanobu Nishikata, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,640
Claims priority, application Japan, Oct. 15, 1987, 62-260177
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.29 **6 Claims**



1. An optical disk player capable of reading information stored on a video disk, on an audio compact disk having a diameter different from said video disk, and on a video and audio compact disk, wherein both the audio compact disk and the video and audio compact disk have lead-in tracks storing identification signals for identifying the type of compact disk, said disk player comprising:
an optical pickup for reading stored information from a disk;
means for detecting the size of the disk;
means for detecting the identification signal from the lead-in tracks of the disk;
a skew sensor for detecting an inclination angle of skew of the disk relative to said optical pickup;
means for adjusting said angle;
skew servo means for supplying a skew signal to said means for adjusting upon detection of an inclination by said skew sensor, said skew signal being adjusted during reading from a beginning point to a predetermined radial track location on the disk but being held at its value obtained when said optical pickup is at said predetermined radial track location on the disk during reading at locations radially outward from the predetermined radial track location, when said means for detecting the size detects that the disk is a compact disk and said means for detecting the identification signal detects that the disk is an audio compact disk,

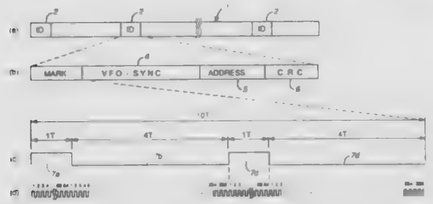
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5,056,076

METHOD FOR CONTROLLING THE ROTATIONAL VELOCITY OF AN INFORMATION RECORDING DISK

Kentaroh Tsuji, Nara; Hiroshi Fuji; Tomiyuki Numata; Tsuneo Fujiwara, and Shigeo Terashima, all of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 125,413, Nov. 25, 1987, abandoned.
This application Apr. 10, 1990, Ser. No. 508,538
Claims priority, application Japan, Nov. 27, 1986, 61-283198
Int. Cl.[5] G11B *5/09, 15/52, 20/10, 27/22*
U.S. Cl. 369—50 **12 Claims**



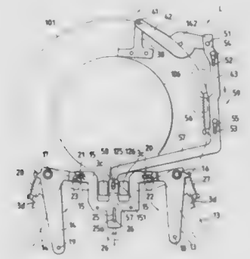
8. An information recording disk having one or more tracks, wherein a plurality of marks are formed in said tracks, each said mark including at least a first set of patterns including a first specific pattern and a second specific pattern wherein each said pattern has a predetermined length, and wherein two patterns within a given mark are a fixed distance apart, the ratio of the length of said first specific pattern to the length of said second specific pattern being constant.

5,056,077

CENTERING MECHANISM FOR AUTOMOTIVE DISC PLAYER

Kiyoshi Morikawa; Masakazu Kurumada; Kazuo Kobayashi; Yoshinori Yamada, and Masanori Sugihara, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 2, 1990, Ser. No. 487,508
Claims priority, application Japan, Mar. 3, 1989, 1-52603
Int. Cl.[5] G11B *33/02, 5/016, 17/04*
U.S. Cl. 369—77.1 **4 Claims**



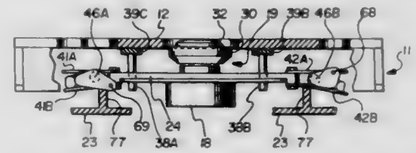
1. A disc player comprising:
a casing having a disc inserting opening;
a turntable driven by a spindle motor;
a clamper arm operating means for operating a clamper arm in cooperation with said turntable;
a centering means for guiding a disc from said disc inserting opening onto said turntable, said centering means including a pair of centering arms each having at distal end portions contact portions which are to be brought into contact with a circumferential edge of the disc, said centering arms being pivotally movable at a predetermined distance in the disc inserting opening;
detecting means including a detecting pin for detecting a condition that the disc is laid on at a predetermined position within said casing;
means for separating said pair of centering arms away from the circumferential edge of the disc when the disc is loaded on said turntable in cooperation with said clamper arm operating means, said separating means being in cooperation with said centering means whereby the disc is located outside of a vibration range of the disc; and
a centering lever means interposed between said centering arms,
wherein said separating means includes a linkage means, said detecting pin being disposed on said linkage means, said linkage means including a push portion for engaging with said centering lever means.

5,056,078

LOAD MECHANISM FOR A BEAM ADDRESSABLE INFORMATION STORAGE DISK DRIVE SYSTEM

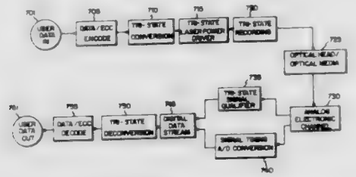
James R. Carey; David L. Rowden, both of Rochester, N.Y., and Patrick J. Champagne, Cupertino, Calif., assignors to Literal Corporation, Colorado Springs, Colo.

Filed Dec. 20, 1988, Ser. No. 287,805
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—77.2 **8 Claims**



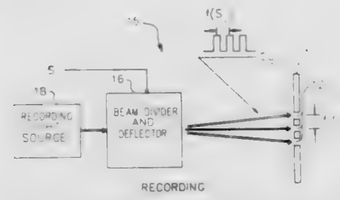
1. Load mechanism for a beam addressable information storage disk drive system comprising:
means for receiving and holding a cartridge with a beam addressable storage disk therein, said disk having a drive engaging surface;
disk drive means, including a disk centering drive spindle and spindle drive motor, adapted to be translated to said cartridge for engaging said disk drive engaging surface and for rotationally driving said disk;
translation means disposed on opposite sides of said disk drive means for providing reciprocal driving motion in a direction toward and away from said disk; and
at least two pairs of relatively stiff, compliant leaf springs extending between said disk drive means and said translation means for compliantly conveying said reciprocal drive motion from the translation means to the disk drive means;
whereby any overtravel of the translation means beyond that required to properly position the disk drive means at either end of its translation motion is absorbed by the compliant leaf springs.

5,056,079
MULTI-STATE OPTICAL CONTRASTS IN OPTICAL RECORDING MEDIA FOR DATA COMPRESSION
Chi H. Chung, San Jose, Calif., assignor to Literal Corporation, Colorado Springs, Colo.
Filed Aug. 4, 1988, Ser. No. 228,395
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—100 15 Claims



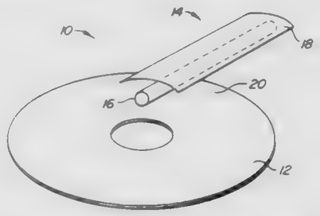
1 A method to increase the information storage capacity of optical recording structures having a photosensitive layer in a first physical state having a first reflectivity comprising the steps of:
irradiating the photosensitive layer in a first location by a laser beam of a first optical power modulated by a first digital information carrying signal creating a second physical state having a second reflectivity representative of the first digital information carrying signal, and
irradiating the photosensitive layer in a second location by a laser beam of a second optical power modulated by a second digital information carrying signal creating a third physical state having a third reflectivity representative of the second digital information carrying signal wherein the first, second, and third physical states are representative of digital information carried on the photosensitive layer.

5,056,080
OPTICAL RECORDING/REPRODUCING SYSTEM USING INTERFERENCE TECHNIQUES
James T. Russell, 15305 SE. 48th Dr., Bellevue, Wash. 98006
Filed Sep. 22, 1989, Ser. No. 410,943
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—100 30 Claims



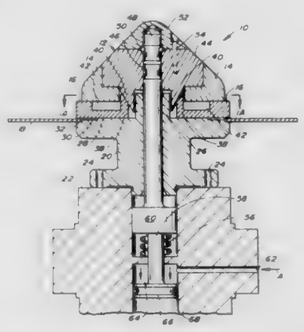
1. A system for recording information onto and reproducing such information from an optical storage medium, comprising:
recording means for writing information onto an optical storage medium, including means for forming along a record track a plurality of sets of spaced apart marks in which the information is encoded by variable spacing of the marks generally transverse to the record track;
reproducing means for retrieving information from an optical storage medium having said plurality of sets of variably spaced marks along a record track, including a source of light that is adapted to be directed at the sets of marks so as to form an optical interference pattern in which variable spacing between maxima and/or minima of such interference pattern represents said variable spacing of the sets of marks; and
said reproducing means further including photosensing means adapted to be disposed for receiving light from said optical interference pattern so as to convert light from said variable interference pattern into an electrical signal representing said information.

5,056,081
SYSTEM AND METHOD FOR ERASING LIGHT-RESPONSIVE OPTICAL DISKS
Der-Chang Hsieh, Cupertino, Calif., assignor to Tandy Corporation, Fort Worth, Tex.
Filed Jan. 2, 1990, Ser. No. 459,923
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—100 26 Claims



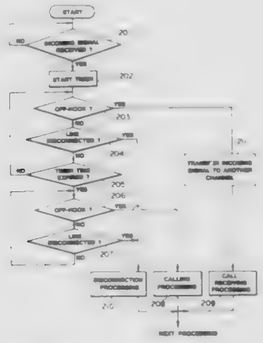
1. A system for erasing an optical recording disk of the type having a surface which is responsive to light of first selected characteristics to produce a detectable physical change and is further responsive to light of second selected characteristics to reverse said physical change, said system comprising:
means for projecting a curtain of light of said second characteristics; and
means for rotating the optical disk relative to the projecting means so that said curtain of light is swept across the surface of the optical disk to reverse any physical changes which might have been present.

5,056,082
APPARATUS FOR CLAMPING REMOVABLE DISKS
Donald L. Ekhoff, 2600 Day Rd., Gilroy, Calif. 95020
Filed Jun. 12, 1989, Ser. No. 365,097
Int. Cl.[5] G01D 15/28; G11B 17/02
U.S. Cl. 369—270 23 Claims



1. A spindle clamp for removably supporting a disk comprising,
a spindle having a rotational axis and a disk-seating surface perpendicular to said rotational axis,
means for driving said spindle about said rotational axis,
a jaw assembly axially coupled to said spindle proximate to said disk-seating surface, said jaw assembly being radially expandable,
a cam member in frictional contact with said jaw assembly for exerting a radially expandable force thereon as said cam member is moved parallel to said rotational axis in a direction towards said disk-seating surface,
means for selectively moving said cam member parallel to said rotational axis from a disk-clamping position to a disk-releasing position, and
a load transfer member disposed between said jaw assembly and said cam member, said load transfer member being forced downwardly against said jaw assembly as said cam member nears said disk-clamping position.

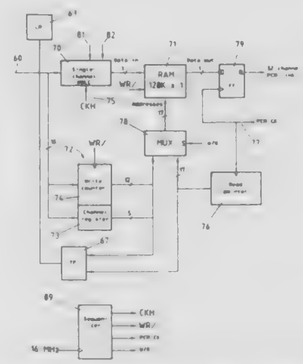
5,056,083
TELEPHONE APPARATUS AND A METHOD OF CONTROLLING SAME
Jun Sasano, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 1, 1989, Ser. No. 317,409
Claims priority, application Japan, Mar. 2, 1988, 63-49207
Int. Cl.[5] H04J 3/12
U.S. Cl. 370—110.1 14 Claims



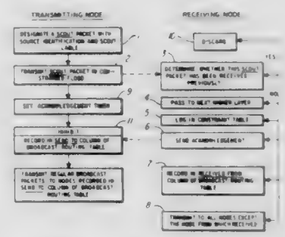
1. A telephone apparatus comprising:
incoming signal detecting means connected with an Integrated Services Digital Network, for detecting reception of an incoming signal sent from the Integrated Services Digital Network;
timer means which is caused to start to operate in response to the detection of an incoming signal supplied from the incoming signal detecting means; and
off-hook detecting means for detecting an off-hook operation conducted at the telephone apparatus; and
control means for initiating, when the reception of the incoming signal is detected, calling processing in response to the off-hook operation conducted before the expiration of a period of time during which the timer means is operational, and call-receiving processing in response to the off-hook operation conducted after the expiration of the period of time during which the timer means is operational.

5,056,084
SYSTEM FOR TRANSMITTING HDLC FRAMES ON A PCM TYPE LINK USING A SINGLE HDLC CIRCUIT AND A TRANSPOSITION BUFFER MEMORY
Noël Le Corre, Saint Michel, France, assignor to Alcatel Cit, Paris, France
Filed Dec. 29, 1989, Ser. No. 459,223
Claims priority, application France, Dec. 30, 1988, 88 17504
Int. Cl.[5] H04L 5/22
U.S. Cl. 370—99 13 Claims

1. System for transmitting HDLC frames on a multi-channel PCM type link, the system comprising HDLC frame building first means for each transmission channel feeding second means for inserting the HDLC frames in a time-division multiplexing PCM format, wherein said first and second means are constituted by a single transposition buffer memory with a read cycle distinct from the write cycle cooperating with a single single-channel HDLC frame formatting circuit, said memory being written with said formatted HDLC frames and read under the control of means for selective sampling in said memory of data for building successive blocks of interleaved channels of said PCM frame.



5,056,085
FLOOD-AND-FORWARD ROUTING FOR BROADCAST PACKETS IN PACKET SWITCHING NETWORKS
Thu V. Vu, West Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Aug. 9, 1989, Ser. No. 391,197
Int. Cl.[5] H04Q 11/04
U.S. Cl. 370—60 3 Claims



1. In a communication network having a plurality of communication nodes including at least one source node and a plurality of receiving nodes, the source node transmitting data packets to all the receiving nodes in a broadcast transmission mode, a method of operation comprising:
(a) at the source node, periodically designating one of the data packets as a scout packet for establishing broadcast routes to the receiving nodes; incorporating into the scout packet a source identification, indicative of the identification of the source node, and a scout label, indicative of the particular scout packet; transmitting that scout packet to all the receiving nodes in a constrained flood broadcast transmission; and initiating a first time interval having a predetermined duration for receipt of acknowledgements of receipt of the scout packet;
(b) at each receiving node, maintaining a constraint table of the source identifications and scout labels of received scout packets and a broadcast routing table for received scout packets, said broadcast routing table being indexed by source identifications and scout labels; receiving the transmitted scout packet; determining whether the source identification and scout label of the received scout packet

are in the constraint table; if the source identification and scout label of the received scout packet are in the constraint table, then discarding the scout packet; and if the source identification and scout label of the received scout packet are not in the constraint table, then (1) transmitting an acknowledgement of the scout packet to the node from which the scout packet was received, (2) transmitting the scout packet to other receiving nodes in accordance with the constrained flood broadcast transmission, (3) initiating a second time interval having a predetermined duration for receipt of acknowledgements of receipt of the scout packet by said other receiving nodes, (4) recording the source identification and scout label of the scout packet in the constraint table, and (5) recording in a "received column" in the broadcast routing table the identification of the node from which the scout packet was received, and (6) recording in a "send to" column in the broadcast routing table the identification of the other receiving nodes from which an acknowledgement of receipt of the scout packet is received during the second time interval;

(c) at the source node, receiving acknowledgements of receipt of transmitted scout packets; incorporating into non-scout data packets the source identification and scout label of the scout packet for which the first time interval has most recently expired; and transmitting the non-scout data packets to those nodes from which an acknowledgement has been received of receipt of the scout packet having the source identification and scout label that are incorporated into such non-scout data packet; and

(d) at each receiving node, receiving non-scout data packets; determining whether the "received from" column of the broadcast routing table has recorded therein as the node from which said receiving node received the scout packet having the same source identification and scout label as are incorporated in the received non-scout data packet the identification of the node from which said each receiving node received the non-scout-data packet; if the "received from" column of the broadcast routing table has recorded as the node from which said receiving node received the scout packet having the same source identification and scout label as are incorporated in the received non-scout data packet the node from which the receiving node received the non-scout data packet to those receiving nodes recorded in the "send to" column of the broadcast routing table for that scout packet; and if the "received from" column of the broadcast routing table does not have recorded as the node from which said receiving node received the scout packet having the same source identification and scout label as are incorporated in the received non-scout data packet the node from which the receiving node received the non-scout data packet, then discarding the non-scout data packet.

5,056,086

APPARATUS FOR PROVIDING TELEPHONIC MASS ANNOUNCEMENT SERVICE AND METHODS FOR USE THEREIN

Michael G. Libonati, Harrison, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 21, 1989, Ser. No. 454,720

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—62 **28 Claims**

1. Mass announcement apparatus for telephonically providing announcements to callers therefor comprising:

a processor;

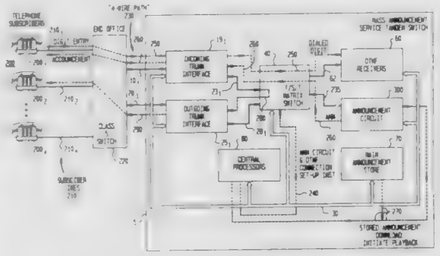
storage means for digitally storing a first plurality of announcements;

announcement circuit means for storing a second plurality of announcements and for producing a first time division multiplexed signal having a first plurality of recurring time slots wherein each announcement in said second plurality of announcements appears on a corresponding one of said first time slots;

interface means for producing a second time division multiplexed signal having a second plurality of recurring time slots;

switch means for establishing a first time slot connection between a time slot of said first plurality of recurring time slots in said first time division multiplexed signal and a time slot of said second plurality of recurring time slots in said second time division multiplexed signal and associated with a caller; and

means for interconnecting said processor, said storage means and said announcement circuit means; and



wherein said processor, in response to a telephone number dialed by said caller and associated with a selected one of said first plurality of announcements, instructs said switch means to establish said first time slot connection between said first and said second plurality of recurring time/slots, causes the selected announcement to be downloaded over said interconnecting means from said storage means to said announcement circuit means for storage therein as one of said second plurality of announcements, and instructs said announcement circuit means to play back said selected announcement on the time slot of said first plurality of recurring time slots so as to carry the selected announcement over the first time slot connection from said announcement circuit to said caller.

5,056,087

PCM COMMUNICATION SYSTEM

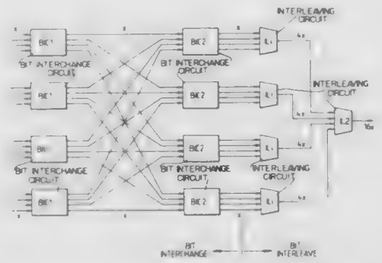
Stephen P. Ferguson, Coventry, England, assignor to GEC Plessey Telecommunications Limited, England

Filed Feb. 26, 1990, Ser. No. 485,995

Claims priority, application United Kingdom, Mar. 10, 1989, 8905533

Int. Cl.[5] H04J *3/22*

U.S. Cl. 370—84 **10 Claims**



1. A digital communications apparatus for receiving a plurality of parallel, multiple bit, digital input data streams all at a predetermined bit rate, and for interleaving multiple bit sequences of a predetermined length from each of the input data streams into a single, multiple bit, digital output data stream at a higher bit rate greater than said predetermined rate, the apparatus comprising:

(a) a plurality of first stage bit interchange means, each operative for receiving, and interchanging bits of, the input data streams, and for generating a plurality of first bit-interchanged data streams at the predetermined bit rate, said bits of each input data stream being distributed among each of the first bit-interchanged data streams;

(b) a plurality of second stage bit interchange means, each connected to all of said first stage bit interchange means for receiving the first bit-interchanged data streams therefrom, each second stage bit interchange means being connected to each first stage bit interchange means by one of said first bit-interchanged data streams, said second stage bit interchange means being operative for interchanging the bits of the first bit-interchanged data streams from all said first stage bit interchange means to generate a plurality of second bit-interchanged data streams; and

(c) means for interleaving the second bit-interchanged data streams to produce said output data stream at said higher bit rate.

5,056,088

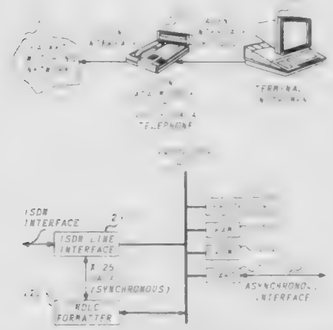
APPARATUS AND METHOD FOR EFFICIENTLY COUPLING DIGITAL SIGNALS TO A COMMUNICATIONS MEDIUM IN INFORMATION PACKETS

John D. Price, Colts Neck, and Ralph E. Richardson, Tinton Falls, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 1, 1989, Ser. No. 345,912

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—94.1 **25 Claims**



1. An apparatus for coupling digital signals to a communications medium in information packets, the apparatus comprising:

signal receiving means for receiving data from an asynchronous signal source, the data being arranged in a plurality of groups of identifiable digits;

processor means for converting the asynchronous signal data from the signal receiving means into information packets;

buffer memory means for storing data from the asynchronous signal source, the data to the buffer memory means being provided by the signal receiving means;

timing means for comparing the time period for receipt of each group of identifiable digits of data into the buffer memory means with a predetermined time period;

sampling means for periodically interrogating the buffer memory means for data stored therein;

counting means for counting the number of groups of identifiable digits of data provided to the buffer memory means between sampling periods provided by the sampling means; and

the sampling means being responsive to both the timing means and the counting means for determining the time for receipt and the number of groups of identifiable digits of data stored in the buffer memory means between sampling periods, the data in the buffer memory means being coupled by the processor means to the communications medium in an information packet when both a) the time period for receipt of a group of identifiable digits of data exceeds the predetermined time period and b) only one group of identifiable digits of data is stored in the buffer memory means.

5,056,089

MEMORY DEVICE

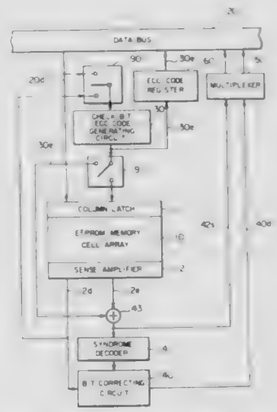
Shigeru Furuta; Kenichi Takahira; Atsuo Yamaguchi; Takesi Inoue; Toshiyuki Matsubara, and Shuzo Fujioka, all of Itami City, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 6, 1989, Ser. No. 306,565

Claims priority, application Japan, Feb. 8, 1988, 63-26903

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—3 **12 Claims**



1. A memory system for storing data and detecting and correcting an error in the stored data comprising:

an error checking and correcting (ECC) code generating circuit having an input connected to a data bus for generating an error checking and correcting code in response to a data word supplied from the data bus during data writing, said ECC code generating circuit having an output from which the ECC code is output, the data word and the ECC code together constituting a systematic code;

a memory device having a first input connected to the data bus to receive the data word and a second input connected to the output of said ECC code generating circuit for receiving and storing the systematic code and having an output;

an error detecting and correcting system connected to the output of said memory device for reading the systematic code, calculating a syndrome from the systematic code read from said memory device, decoding the syndrome to determine whether an error exists in a bit in the data word and to identify a bit position at which an error has occurred, and correcting the error contained in the data word by inverting the bit of the data word at the bit position at which the error was identified;

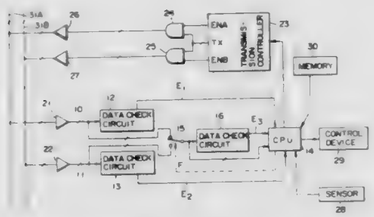
output means for outputting the corrected data word from the error detecting and correcting system to said data bus; and

code reading means for reading out the ECC code generated by said ECC code generating circuit directly into said data bus whereby functional checking of said code generating circuit can be immediately performed without being influenced by said memory device.

5,056,090
DATA TRANSMISSION APPARATUS TO BE CONNECTED TO MULTIPLEXED TRANSMISSION LINE

Soichi Kubota, Tama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 9, 1989, Ser. No. 350,690
Claims priority, application Japan, May 10, 1988, 63-113248
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—8.2 **19 Claims**



1. A data transmission system, comprising:
multiplexed data transmission means, including a plurality of transmission channels, for transmitting the same data through the plurality of transmission channels at a normal time;
first data check means, connected to said data transmission means, for making an error check with respect to data transmitted through the transmission channels;
selection means, connected to said data transmission means, for selecting one of the transmission channels to receive data transmitted through the selected transmission channel and for outputting the received data;
second data check means, connected to said selection means to receive data output therefrom, for making an error check with respect to the data output from said selection means; and
determination means, connected to said first and second data check means, for determining that an error is caused as a result of switching of transmission line selection performed by said selection means during data reception, if the error is detected by said second data check means without being detected by said first data check means

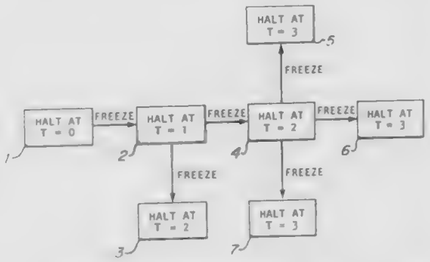
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5,056,091
METHOD FOR HANDLING ERRORS DETECTED IN A COMPUTER SYSTEM

Douglas B. Hunt, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1990, Ser. No. 494,005
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—14 **7 Claims**

1. A method for halting operation of all computing sections within a computing system when a first computing section within the computing system detects an error, the method comprising the steps of:
(a) immediately halting operation of the first computing section,
(b) notifying, by the first computing section, all computing sections within the computing system which are adjacent to the first computing section of the detection of the error, wherein every computing section which receives notification of the detection of the error becomes a notified computing section; and,
(c) when a computing section within the computing system first becomes a notified computing section, performing the following substeps by the notified computing section:
(c1) immediately halting operation of the notified computing section, and

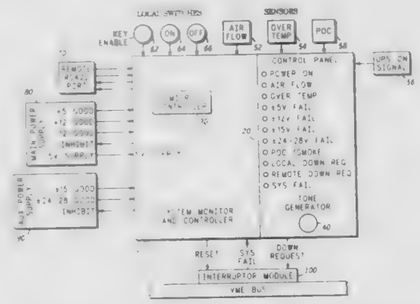


(c2) notifying all computing sections within the computing system which are adjacent to the notified computing section of the detection of the error, the adjacent computing sections which are not already notified computing sections becoming notified computing sections.

5,056,092
COMPUTER SYSTEM MONITOR AND CONTROLLER

Robert W. Bruner, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1989, Ser. No. 345,937
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—14 **6 Claims**



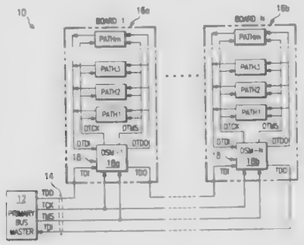
1. A computer system monitor and controller comprising:
system monitor and controller means for coupling to at least one power supply of a computer system having an operating system with a controlled shutdown procedure;
sensor means for detecting one or more abnormal conditions of said computer system, coupled to said system monitor and controller means;
communications bus interface means coupled to said system monitor and controller means for coupling to said operating system of said computer system; and
control means, coupled to said system monitor and controller means, for providing operator command signals to said system monitor and controller means;
wherein said system monitor and controller provides an immediate shutdown signal to said at least one power supply in response to signals from said sensor means indicating certain predetermined ones of said abnormal conditions and provides a delayed shutdown signal to said at least one power supply in response to either certain predetermined signals from said control means or signals from said sensor means indicating certain other predetermined ones of said abnormal conditions; and

wherein said control means comprises a plurality of switches and further comprises remote access means for providing command signals from a remote location.

5,056,093
SYSTEM SCAN PATH ARCHITECTURE

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 9, 1989, Ser. No. 391,751
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.3 **41 Claims**

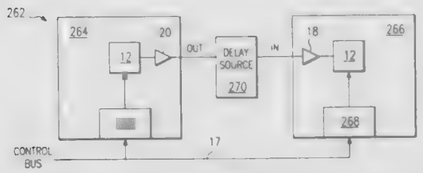


1. Circuitry for performing serial-scan testing of a plurality of predefined circuits, each having a plurality of secondary scan paths, comprising:
a test bus comprising control and data signal lines;
a test bus controller for transmitting and receiving signals to and from the predefined circuits on said bus;
a primary scan path comprising linked selected secondary scan paths of selected ones of said predefined circuits; and
device select modules associated with each of said respective predefined circuits and responsive to said control and data lines for selectively coupling secondary scan paths onto the primary scan path such that the length of the scan path may be optimized for a desired serial-scan test operation.

5,056,094
DELAY FAULT TESTING METHOD AND APPARATUS

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 9, 1989, Ser. No. 364,915
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—25.1 **28 Claims**

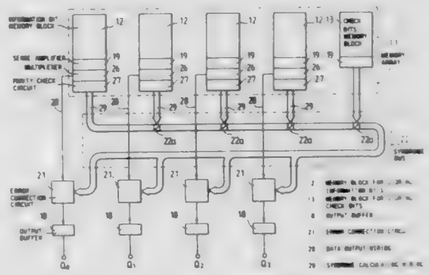


1. A method of testing a propagation delay between a driving and a receiving device, comprising the steps of:
outputting a signal corresponding to a known value from said driving device responsive to a first clock edge;
sampling the signal at an input of the receiving device responsive to a second clock edge; and
comparing the sampled input to said known value to determine whether said signal propagated to the receiving device within the time period between said first and second clock edges.

5,056,095
SEMICONDUCTOR MEMORY HAVING ERROR CORRECTION CIRCUIT

Masashi Horiguchi, Kokubunji; Masakazu Aoki, Tokorozawa, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 12, 1989, Ser. No. 296,135
Claims priority, application Japan, Jan. 13, 1988, 63-3865
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.1 **22 Claims**



1. A semiconductor memory comprising:
a) a memory array comprising:
i) a plurality of information memory blocks storing information bits, each having an output section;
ii) a check memory block storing check bits;
iii) a plurality of multiplexers one disposed at the respective output section of each information memory block, each having a first output and a second output;
iv) a plurality of parity check circuits, one coupled to the second output of each of said multiplexers, each of said plurality of parity check circuits receiving information bits for a parity check;
b) a plurality of error correcting circuits, one for each information memory block having as one input information bits from the first output of the multiplexer of its respective memory block and having another input;
c) a syndrome bus electrically coupled to the respective outputs of said parity check circuits, the output of said check memory block, and the other inputs of said plurality of error correction circuits; and
d) each error correction circuit correcting the information bits supplied thereto from the first output of said multiplexer in response to a syndrome from said syndrome bus.

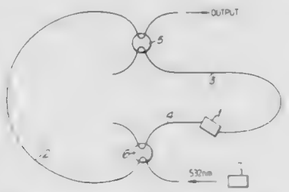
5,056,096
HYBRID DOPED FIBER-SEMICONDUCTOR AMPLIFIER RING LASER SOURCE

Robert A. Baker, London; Wilson Sibbett, and David Burns, both of Fife, all of England, assignors to STC PLC, London, England

Filed Sep. 17, 1990, Ser. No. 583,590
Claims priority, application United Kingdom, Sep. 20, 1989, 8921295
Int. Cl.[5] H01S *3/098, 3/23*
U.S. Cl. 372—6 **5 Claims**

1. An hybrid laser source comprising a semiconductor diode amplifier chip, a length of rare-earth-doped single mode optical fiber, first and second optical couplers coupling the chip and the rare-earth-doped fiber together in a ring, and an optical pumping source for the rare-earth-doped fiber, which pumping source is external to the ring and is coupled to the rare-earth-doped fiber via said first optical coupler, a hybrid laser source

output being provided by the second optical coupler, the ring comprising a resonant cavity for the hybrid laser source, and

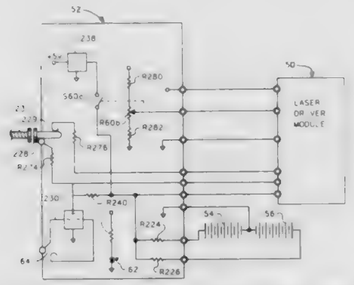


the hybrid laser source gain medium being comprised by the rare-earth-doped fiber and the chip.

5,056,097
TARGET ILLUMINATORS AND SYSTEMS EMPLOYING SAME

Brad E. Meyers, c/o B. E. Meyers Co., Inc., 17525 N E. 67th Ct., Redmond, Wash. 98052

Division of Ser. No. 489,280, Mar. 2, 1990. This application Oct. 1, 1990, Ser. No. 597,803
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 10 Claims

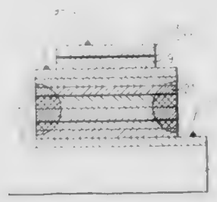


1. The combination of a hand holdable night vision system comprising an image intensifier, a detachable grip for supporting said image intensifier, a device for illuminating a target acquired by the night vision system and thereby making available additional energy usable by the image intensifier of the night vision system to produce a visual image, and means for mounting the target illuminating device on the image intensifier, said target illuminating device comprising a casing; a diode-type laser for generating a beam of coherent energy, said laser being housed in said casing; an optical lens in said casing on the output side of said laser for projecting the beam of coherent energy; and means in said casing for operating said laser, said detachable grip including an operator activatable switch, and said combination further including connector means extending between and so electrically connecting said switch to the operating means of the target illuminating device that the laser in that device cannot be turned on unless the switch is closed.

5,056,098
VERTICAL CAVITY LASER WITH MIRROR HAVING CONTROLLABLE REFLECTIVITY

Philip J. Anthony; Leo M. F. Chirovsky, both of Bridgewater; Lucian A. D'Asaro, Madison; Vincent D. Mattera, Flemington, all of N.J., and Robert A. Morgan, Topton, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 5, 1990, Ser. No. 548,033
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 7 Claims

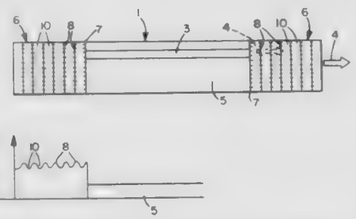


1. A laser comprising a vertical cavity surface emitting laser having an active region;
first and second mirrors on opposite sides of said active region, at least one of said mirrors having controllable reflectivity, said at least one of said mirrors having an electrically controlled reflectivity; and means for injecting carriers into said active region.

5,056,099
RUGATE FILTER ON DIODE LASER FOR TEMPERATURE STABILIZED EMISSION WAVELENGTH

Eric M. Bradley, San Diego, Calif., assignor to General Dynamics Corp., Electronics Division, San Diego, Calif.

Filed Sep. 10, 1990, Ser. No. 579,933
Int. Cl.[5] H01S *3/19*; G02B *1/10*
U.S. Cl. 372—49 6 Claims

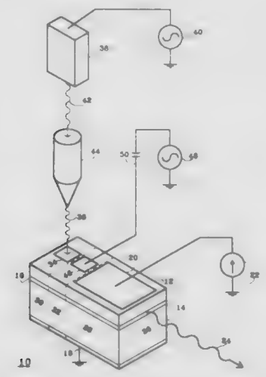


1. A filter for temperature stabilization of a diode laser for emission at a desired wavelength comprising:
a dielectric film deposited on at least one end facet of said diode laser, said film comprising a layer of dielectrics co-deposited with a periodic variation in the relative concentration of two dielectrics having approximately equal and opposite index-temperature coefficients, and a resultant periodically varying refractive index corresponding to said desired wavelength, each period being sinusoidal, said film having sufficient thickness to cover a plurality of periods, whereby said dielectric film acts like a Bragg grating to selectively reflect light of said desired wavelength back into said diode laser.

5,056,100
SEMICONDUCTOR LASER WITH PHOTON GAIN LEVER

Kerry J. Vahala, San Gabriel, and Michael A. Newkirk, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 19, 1990, Ser. No. 513,099
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 42 Claims

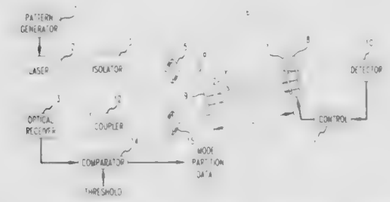


1. A controllable semiconductor laser system, comprising:
a plurality of semiconductor regions forming at least one resonant cavity;
a first semiconductor region in said plurality operating at a first differential gain;
a second semiconductor region in said plurality operating at a second differential gain, said second differential gain being sufficiently smaller than said first differential gain so that the effect on lasing of a given amount of energy applied to the first semiconductor region is substantially greater than the effect on lasing of the application of the same amount of energy to the second semiconductor region;
pumping means for applying energy to said second semiconductor region to excite lasing in said resonant cavity; and
control means for applying energy to said first semiconductor region to control the lasing in said resonant cavity in response thereto.

5,056,101
MODE PARTITION SCREENING APPARATUS

Peter D. Magill, Lakewood, and Kenneth C. Reichmann, Hamilton Square, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 19, 1990, Ser. No. 585,763
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—32 16 Claims

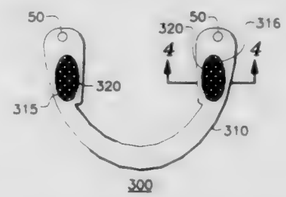


1. Apparatus for observing mode partitioning activity in a radiated beam from a laser emitting said beam in a single main longitudinal mode and a plurality of side longitudinal modes, the apparatus comprising
means tuned to a first wavelength corresponding substantially to said main longitudinal mode for separating said main longitudinal mode of said radiated beam from said plurality of side longitudinal modes to provide substantially all of said plurality of side longitudinal modes in a predetermined range of wavelengths simultaneously at a first output, and
square law means for detecting a power characteristic of said plurality of side longitudinal modes output from said mode separating means.

5,056,102
GETTER ASSEMBLY

Craig A. Galbrecht, Lino Lakes, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 15, 1989, Ser. No. 351,979
Int. Cl.[5] H01S *3/097*
U.S. Cl. 372—87 6 Claims

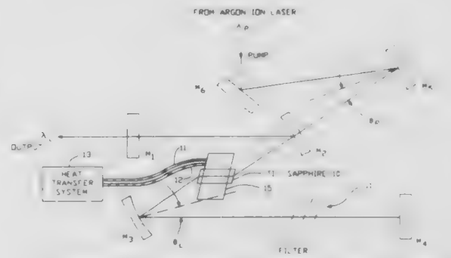


1. A getter assembly for a gas discharge comprising:
a snap-ring wherein said snap-ring includes first and second opposite annualar surfaces;
at least a first depression in a selected portion of said first annualar surface; and
getter material contained within said depression.

5,056,103
APPARATUS FOR ALIGNING THE OPTIC AXIS OF AN INTRA-CAVITY BIREFRINGENT ELEMENT, AND TUNABLE LASER USING SAME

Anthony J. Alfrey, Half Moon Bay, and James A. Palmer, San Jose, both of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 319,980, Mar. 7, 1989, Pat. No. 5,020,073. This application Jan. 24, 1990, Ser. No. 469,135
The portion of the term of this patent subsequent to May 8, 2008, has been disclaimed.
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—105 26 Claims



1. An apparatus for supporting an optical device in an optical path, the optical device having a first face and a second face, at least one of the first and second faces at Brewster's angle so that a plane of polarization is defined, comprising:
rotatable means, having an axis of rotation and an adjustable

angular position about the axis of rotation, for supporting the optical device, wherein the axis of rotation is normal to the one face at Brewster's angle;

support means, connected to the rotatable means, for supporting the optical device in the optical path so that the optical path intersects the first and second faces and so that the axis of rotation does not intersect the optical device;

means, connected to the rotatable means and the support means, for adjusting the adjustable angular position relative to the plane of polarization.

5,056,104

APPARATUS FOR ADJUSTING THE POSITION OF AN ELECTRODE IN A METAL SMELTING FURNACE

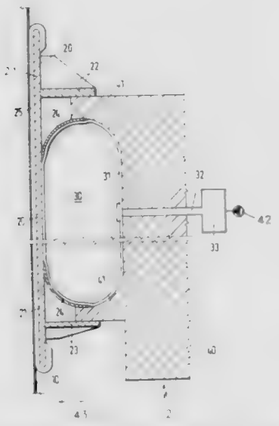
Luciano Ambrosi, Moers, Fed. Rep. of Germany, assignor to Mannesmann AG, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 21, 1990, Ser. No. 541,615

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1939, 3921238

Int. Cl.[5] **H05B** *7/10*

U.S. Cl. 373—100 **20 Claims**



1. Apparatus for adjusting the position of an electrode in a metal smelter, said apparatus comprising:

clamp means for supporting the electrode;

frame means positioned adjacent said clamp means;

pressurization means supported by said frame means;

said pressurization means having a surface positioned in abutting relation with said clamp means;

support element means positioned in contact with said pressurization means and attached to said clamp means;

means projecting from said frame means for slidably receiving said support element means for movement of said support element means relative to said frame means;

bracket means for guiding movement of said clamp means relative to said frame means;

said bracket means being retained on said clamp means;

said bracket means being slideable on said frame means;

said bracket means, said clamp means and said frame means each being configured and relatively positioned with one another to support substantially the entire vertical weight of the electrode such that said pressurization means is subjected to only substantially horizontal forces from the electrode; and

means for altering the pressure in said pressurization means to expand and contract said pressurization means to slide said support element means relative to said frame means and move said clamp means, thereby adjusting the position of the electrode relative to said frame means.

5,056,105

INTERLEAVING METHOD FOR A DIGITAL TRANSMISSION SYSTEM

Marc Darmon; Philippe Sadot, both of Paris, and Sami Harari, Levallois Perret, all of France, assignors to Alcatel Transmission par Faisceaux Hertziens, Levallois Perret Cedex, France

Filed Nov. 20, 1989, Ser. No. 438,380

Claims priority, application France, Nov. 25, 1988, 88 15422

Int. Cl.[5] **H04L** *27/30;* **H03M** *7/00*

U.S. Cl. 375—1 **2 Claims**



1. A method of pseudo-random interleaving for a digital data transmission system, wherein the method consists in:

using a vector whose size is not less than the size of a code word multiplied by the minimum predetermined distance after interleaving between two symbols initially belonging to the same code word, in initially filling this vector with the series **S1** of the first Tv symbols of the sequence of code words, then, at each of the addresses of said vector given one after the other by a pseudo-random pilot sequence, taking the symbol from that address to incorporate it into the channel sequence for transmission, and immediately replacing it at said address with the following symbol in code word order taken from the series **S2** of the following Tv symbols, until all of the symbols of said first series **S1** have been taken one after the other and replaced by all of the symbols of said second series **S2**, and then in repeating the process, by taking all of the symbols of said second series **S2** in the same manner in a pseudo-random order specified by said pilot sequence, replacing each of them in turn in said vector with symbols taken in order from the third series **S3** of the following Tv symbols in code word order, and so on until all of the words have been incorporated in said channel sequence:

said pilot sequence being established, pseudo-randomly by obeying the three following laws:

(I) no address in the vector may be selected more than once while transmitting the symbols of a series Sn and replacing them in the vector with the symbols of a series Sn + 1;

(II) once one of these addresses n has been selected, any other address in the vector that contains another symbol in the same code word as the code word that contains the symbol found at the address n when said address was selected may not itself be selected until Lm turns later; and

(III) if blocking occurs, i.e. if an address cannot be selected without transgressing one or other of the two preceding laws, then an address is selected which does not transgress the first law I, even if it does transgress the second law II;

and, on reception, the received signal sequence is deinterleaved by using another vector of the same size Tv as the vector used on transmission, said vector being initially filled in successive addresses with the first Tv symbols from the channel sequence in the order in which they are received, after which, in the same manner as at the transmission end, the symbols are simultaneously read from the vector and replaced by the following symbols of the channel sequence at successive addresses given by an inverse pilot sequence determined so that the symbols read in this way one after the other are in the initial order of the encoded symbols before interleaving.

5,056,106

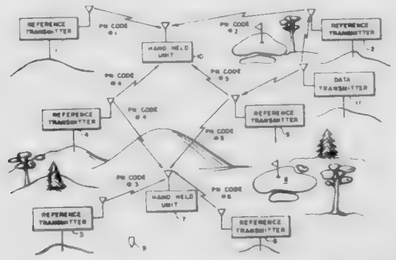
GOLF COURSE RANGING AND DIRECTION-FINDING SYSTEM USING SPREAD-SPECTRUM RADIOLOCATION TECHNIQUES

James J. Wang, 2625 Monterey Rd., San Marino, Calif. 91108, and Robert M. Grayson, 3082 Inverness Dr., Los Alamitos, Calif. 90720

Filed Aug. 2, 1990, Ser. No. 561,579

Int. Cl.[5] **G01S** *5/12;* **A63B** *57/00*

U.S. Cl. 375—1 **11 Claims**



1. A system for determining the distance from a first point on a golf course to a second point on the golf course, comprising:

a plurality of transmitters provided within or proximate to the boundaries of the golf course, each of said transmitters provided with a means for transmitting the same RF signal as all of the transmitters, said RF signal modulated by a spread-spectrum pseudo-noise (PN) coded sequence unique to each of said transmitters;

at least one portable receiver unit capable of receiving the signals transmitted by said transmitters, said receiver provided with the PN codes for each of said transmitters and including a means for acquiring the reference coordinate with respect to a reference point for each of said transmitters as well as the coordinates of various features on the golf course, including the position of each of the holes on the golf course, said receiver also provided with a processor for determining the position of said receiver based upon time differences of the epochs of each of said transmitter's PN code and the PN code for each of said transmitters provided in said receiver, said receiver provided with a means for determining the distance between said receiver and a specified second point based upon the determined position of said receiver and a second point, said receiver provided with an input means for inputting the second specified point and a display means for displaying the distance and direction to the second specified point.

5,056,107

RADIO COMMUNICATION NETWORK FOR REMOTE DATA GENERATING STATIONS

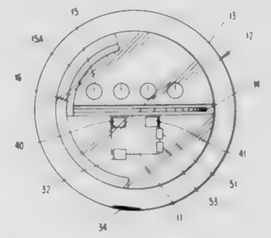
Dennis F. Johnson, and Michael Wiebe, both of Winnipeg, Canada, assignors to Iris Systems Inc., Winnepeg, Canada

Filed Feb. 15, 1990, Ser. No. 480,573

Int. Cl.[5] **H04K** *1/00;* **H04B** *15/00;* **G08C** *17/00*

U.S. Cl. 375—1 **19 Claims**

1. A radio communication network for communicating information comprising a plurality of remote data generating stations, each of the remote stations having means for generating data for transmission, control means for modulating the data for transmission on a radio frequency carrier and arranged to form said data into a packet of data and to transmit said data at a specific time which is pseudorandomly selected within a predetermined time period, and an antenna for transmitting multi-directionally the carrier, the radio frequency carrier being the same for each of said remote stations, a central station for receiving and storing the data, and a plurality of receiving stations each including means for receiving the data and means for subsequently retransmitting the data to the central station, the receiving stations being arranged in an array relative to the remote stations such that each receiving station can receive data from a plurality of said remote stations and such that the data transmitted by most of said remote



stations can be received by at least a respective two of said receiving stations to generate, in the absence of collisions between the transmission of separate ones of said remote station, duplicate packets of the data at lest one of which is redundant, the central station including means for receiving the data from each of said receiving stations, that being provided for identifying and collating the data from each of said remote stations arranged such that only one of the duplicate packets is collated.

5,056,108

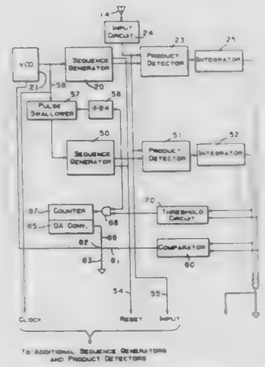
COMMUNICATION SYSTEM

Van Metre Lund, 2294 Elm Ridge Dr., Northbrook, Ill. 60062

Filed Apr. 4, 1990, Ser. No. 505,239

Int. Cl.[5] **H04L** *27/30*

U.S. Cl. 375—1 **22 Claims**



8. A communication system, comprising transmitter means for operating at a transmitting point to propagate a wavetrain into a medium, said wavetrain including a sequence of variations each variation having one polarity during an initial phase of the variations of the sequence of variations of the wavetrain and an opposite plurality during a final phase of the variation of the sequence of variations of the wavetrain, said variations having predetermined varying durations and being in a predetermined distinctive pseudo-random order, and receiver means for operating at a receiving point remote from said transmitting point in said medium and including means to develop a received signal from ambient wave energy at said receiving point, and sampling means for sampling said received signal in

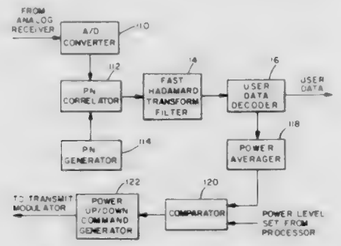
a sampling sequence to produce samples therefrom, and summing said samples to develop an output signal therefrom, said sampling sequences including sampling times having durations and an order corresponding to said predetermined varying durations and said predetermined distinctive order of said sequence of propagated variations.

5,056,109

METHOD AND APPARATUS FOR CONTROLLING TRANSMISSION POWER IN A CDMA CELLULAR MOBILE TELEPHONE SYSTEM

Klein S. Gilhousen; Roberto Padovani, both of San Diego, and Charles E. Wheatley, III, Del Mar, all of Calif., assignors to Qualcomm, Inc., San Diego, Calif.

Filed Nov. 7, 1989, Ser. No. 433,031
Int. Cl.[5] H04L *27/30;* **H04J** *13/00;* **H04B** *7/204*
U.S. Cl. 375—1 **27 Claims**



1. In a cellular mobile telephone system in which system users communicate information signals between one another via at least one cell-site using code division multiple access (CDMA) spread spectrum communication signals, a power control system for controlling transmission signal power for each mobile telephone in said cellular mobile telephone system, wherein each mobile telephone has an antenna, transmitter and receiver, and each cell-site has an antenna, at least one transmitter and at least one receiver, said power control system comprising:

at least one first power measurement means, each coupled to a respective mobile telephone receiver, for measuring signal power in CDMA communication signals received by said respective mobile telephone receiver;

at least one first power adjustment means, each coupled to a respective mobile telephone receiver and corresponding first power measurement means, said first power adjustment means responsive to decreases and increases in power measurements of said corresponding first power measurement means with respect to a first predetermined power level, for respectively increasing and decreasing transmission signal power of said corresponding mobile telephone transmitter;

at least one second power measurement means, each coupled to a respective cell-site receiver, for measuring signal power in each CDMA communication signal directed to said respective cell-site receiver from a corresponding mobile telephone transmitter in communication therewith;

at least one power adjustment command generator means, each coupled to a respective cell-site transmitter and corresponding second power measurement means, for generating power adjustment commands corresponding to deviations in power measurements of said corresponding second power measurement means from a second predetermined power level, said respective cell-site transmitter transmitting said power adjustment commands; and

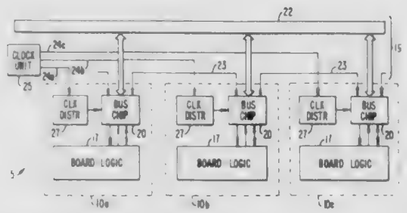
at least one second power adjustment means, each coupled to a respective mobile telephone receiver and corresponding transmitter, said second power adjustment means responsive to said power adjustment commands directed to said respective mobile telephone receiver, for adjusting transmission signal power of said corresponding mobile telephone transmitter.

5,056,110

DIFFERENTIAL BUS WITH SPECIFIED DEFAULT VALUE

Timonty S. Fu, Fremont, and Allen W. Roberts, Union City, both of Calif., assignors to MIPS Computer Systems, Inc., Sunnyvale, Calif.

Filed Dec. 11, 1989, Ser. No. 448,715
Int. Cl.[5] H04B *3/56*
U.S. Cl. 375—36 **7 Claims**



1. A differential bus for use in a system with a number of bus units wherein at least one bus unit includes a driver and at least one unit includes a receiver,

each driver having first and second output terminals and operating in response to input signals specifying that the driver is to provide a signal of at least a first predetermined voltage increment on one or the other but not both of the output terminals,

each receiver having first and second input terminals and operating in response to a voltage differential at its input terminals of at least a second predetermined lesser voltage increment to indicate a signal value depending on the sense of the voltage differential, the differential bus comprising:

means defining a first signal line adapted to be coupled to respective first output terminals of the drivers and first input terminals of the receivers;

means defining a second signal line adapted to be coupled to respective second output terminals of the drivers and second input terminals of the receivers; and

means for terminating said first and second signal lines at respective first and second voltage levers, said first and second voltage levels being offset with respect to each other by an amount that is at least as great as the second predetermined voltage increment and is no greater than the difference between the first and second predetermined voltage increments;

whereupon a receiver having its input terminals coupled to said signal lines detects a defined default value that depends on which of said signal lines is terminated at the higher voltage level when no driver is driving either of said signal lines.

5,056,111

INTEGRATED TERAHERTZ ELECTROMAGNETIC WAVE SYSTEM

Irl N. Duling, III, Arlington, Va.; Daniel R. Grischkowsky, Peekskill, N.Y.; Jean-Marc Halbout, Larchmont, N.Y., and Mark B. Ketchen, Ossining, N.Y., assignors to IBM Corporation, Armonk, N.Y.

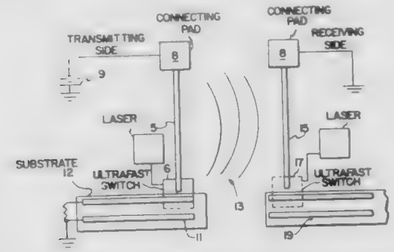
Filed Aug. 9, 1988, Ser. No. 230,212
Int. Cl.[5] H04L *27/00*
U.S. Cl. 375—37 **20 Claims**

1. A system for generating and transmitting terahertz frequency pulses comprising:

means for producing laser pulses;

an ultrafast switch responsive to laser pulses, said switch including a transmission line;

a transmitting antenna connected to said ultrafast switch, said transmitting antenna positioned and spaced with



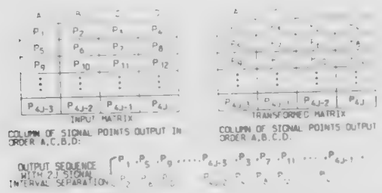
respect to said transmission line to create an excitation gap between an end of said transmitting antenna and the transmission line, wherein said laser pulses excite said excitation gap to produce a periodic terahertz oscillation transmitted by said transmitting antenna.

5,056,112

INTERLEAVING IN CODED MODULATION FOR MOBILE RADIO

Lee-Fang Wei, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 386,185, Jul. 28, 1989, Pat. No. 5,029,185. This application Dec. 27, 1989, Ser. No. 457,438
Int. Cl.[5] H04L *27/10*
U.S. Cl. 375—53 **37 Claims**



1. Apparatus for use in a communication system comprising:

means for encoding input data to generate a sequence of interdependent signal points, the signal points having an original order and the encoding means causing the signal points to exhibit an X-fold time diversity, where X is an integer greater than one; and

means for interleaving the interdependent signal points to form a reordered sequence of signal points, where a) the X-fold diversity of the signal points caused by the encoding means and b) the reordering sequence of the interleaving means, are matched.

5,056,113

DATA COMMUNICATION SYSTEM

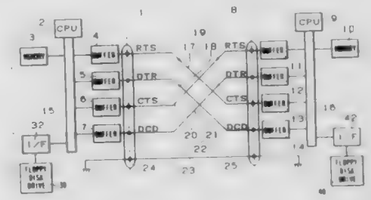
Mamoru Takai, Osaka, Japan, assignor to Megasoft Inc., Suita, Japan

Filed Sep. 21, 1989, Ser. No. 410,206
Claims priority, application Japan, Sep. 22, 1988, 63-238370
Int. Cl.[5] H04B *15/00*
U.S. Cl. 375—58 **20 Claims**

1. A method of communicating data between a sending device and a receiving device via a plurality of m parallel data lines, said method comprising:

encoding each value of original data into a string of numeric code figures, wherein each figure in each code string has a value not greater than 2 to the power m such that when expressed in binary, each figure comprises m bits, and adjacent figures in each code string have different numeric values;

transmitting each figure of encoded data from the sender to the receiver by simultaneously transmitting one of the m bits of each figure on each of the m parallel data lines;



receiving the transmitted data on the m parallel data lines at the receiver; and

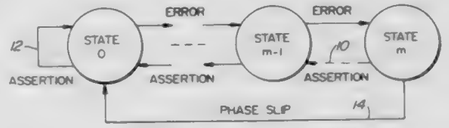
decoding strings of code figures to recover the original data.

5,056,114

METHOD AND APPARATUS FOR DECODING MANCHESTER ENCODED DATA

Mark S. Wight, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 3, 1989, Ser. No. 389,242
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—87 **9 Claims**



1. A method of decoding data represented by a bit stream in which two bit, sequences, 10 and 01 represent respective data bits, comprising the steps of:

producing a clock signal with a period corresponding to the duration of each data bit;

producing decoded data from the bit stream in dependence upon the clock signal;

detecting in the bit stream consecutive bits having the same binary value;

in response to such detection, advancing a state machine towards a first state or towards a second state, the first and second states representing respectively synchronized and out-of-synchronism phases of the clock signal, with respect to the data bit sequences, in dependence upon the phase of the clock signal, the state machine having at least one intermediate state between the first and second states for reducing erroneous phase slips due to bit errors; and

in response to the state machine having the second state, effecting a phase slip of the clock signal and advancing the state machine towards the first state.

5,056,115

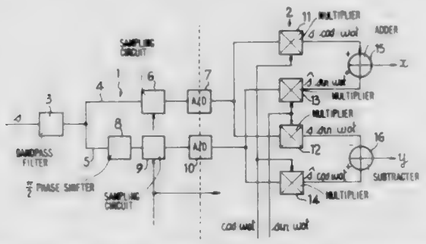
DEVICE FOR THE DIVISION, AT AN OPTIMUM SAMPLING RATE, OF A PASSBAND SIGNAL INTO ITS COMPONENTS ON TWO CARRIERS IN QUADRATURE

Bernard Meuriche, 64-70 rue Rouget de l'Isle, 92150 - Suresnes, France

Filed Feb. 27, 1990, Ser. No. 484,858
Claims priority, application France, Feb. 27, 1989, 89 02495
Int. Cl.[5] H04L *7/06*
U.S. Cl. 375—81 **8 Claims**

1. A device for the simultaneous division of a bandpass input signal $s(t)=x(t)\cos\omega ot-y(t)\sin\omega ot$, ωo being an arbitrary

angular velocity and x(t) and y(t) being two components of the input signal s(t), into its components x(t), y(t), according to two carriers cos ωot and −sin ωot in quadrature at the angular velocity ωo, characterized in that it comprises an analog section comprising means (**3**; **27**,**28**) and (**8**; **25**,**26**; **27**, **28**) for filtering and producing a Hilbert transform of the input signal s(t) provided in at least one of the channels of the device, a first sampler (**6**; **21**) for sampling the filtered input signal s(t) and a second sampler (**9**;**22**) for sampling the Hilbert transform s(t) of s(t), the first and second samplers having a sampling rate fe controlled by a sampling oscillator at frequency fe, fe being at least 2F, F being the difference between fo=ωo/2π and the frequency of the spectrum of the filtered input signal s(t) which is most distant from fo, and two analog-digital converters (**7**,**10**; **23**, **24**) respectively associated with said first and second samplers (**6**,**9**; **21**, **22**) and operating at the same frequency fe, wherein the frequency fe of the sampling oscillator and its



phase are chosen as a function of fo such that at any sampling instant te there is a relationship of the type:

$$\cos(\omega ote)=1 \text{ and } \sin(\omega ote)=0$$

or

$$\cos(\omega ote)=-1 \text{ and } \sin(\omega ote)=1$$

or

$$\cos(\omega ote)=0 \text{ and } \sin(\omega ote)=-1$$

whereby the sampling frequency fe can be chosen to be smaller than fo and the values of the components according to the two carrier in quadrature at ωo, x and y are directly available at the outputs of the analog-digital converters (**7**, **10**; **23**, **24**) at the sampling instants te and except for the sign depending on case in question.

5,056,116

DATA DEMODULATION APPARATUS

Toshiyuki Shimada; Kazuhiro Aoki, both of Osaka; Akira Kurahashi, Kyoto, and Noboru Kikuchi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 26, 1989, Ser. No. 357,737
Claims priority, application Japan, May 27, 1988, 63-130676
Int. Cl.[5] **H04L** *27/06*
U.S. Cl. 375—94 **10 Claims**

1. A data demodulation apparatus for demodulating a bi-level pulse code modulation input signal, comprising:

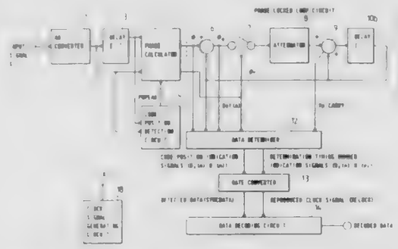
means (**18**) for generating a processing clock signal (CLK1) having a fixed period which is identical to a bit separation of said input signal;

analog/digital conversion means (**1**) controlled by the processing clock signal for periodically sampling said input signal at successive sampling time points separated by sampling periods, to produce successive digital sample values, said sampling periods being respectively identical to periods of said processing clock signal;

means (**3**, **4**) responsive to said sample values for detecting each occurrence of a code position of the input signal within a sampling period and for generating a detection signal indicative of such detection;

means (**3**, **5**) functioning upon each detection of a code position to derive an input phase value of a regenerated clock phase, the input phase value being established with respect to the code position as a reference phase value;

means (**11**, **12**) responsive to said detection signal and successive ones of said input phase values for deriving a number of determination time points, said determination time points representing respective bit positions of said input



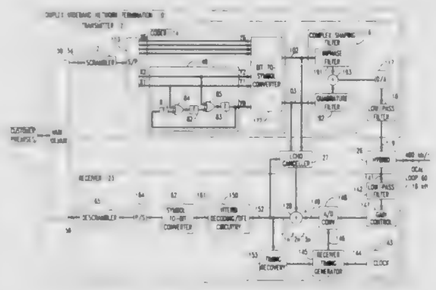
signal which have occurred during a specific one of said sampling periods and for producing a first output data signal (N1(n), N2(n)), as determination time point indication data representing said determination time points, and further for detecting the presence of any code position during said specific sampling period and for determining a time relationship of said code position to said determination time points, and for producing a second output data signal (D1(n), D2(n)) as code position indication data indicating said presence of a code position and indicating said time relationship.

5,056,117

DECISION FEEDBACK EQUALIZATION WITH TRELLIS CODING

Richard D. Gitlin, Little Silver, and Nicholas A. Zervos, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 7, 1989, Ser. No. 390,005
Int. Cl.[5] **H04B** *1/10*
U.S. Cl. 375—102 **32 Claims**



1. Apparatus for recovering information from a received signal corrupted by noise which is dominantly colored, said information being encoded using a code which provides optimum immunity to noise which is white, said apparatus comprising

means for filtering said received signal corrupted by noise which is dominantly colored to provide a filtered signal corrupted by noise which is dominantly white, and

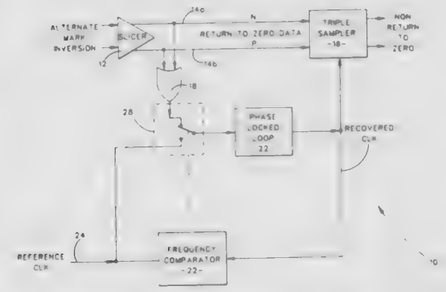
means for decoding the filtered signal corrupted by noise which is dominantly white to recover said information.

5,056,118

METHOD AND APPARATUS FOR CLOCK AND DATA RECOVERY WITH HIGH JITTER TOLERANCE

Yinshang Sun, Laguna Niguel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1989, Ser. No. 353,137
Int. Cl.[5] **H04L** *7/033*
U.S. Cl. 375—106 **53 Claims**



39. Apparatus for recovering an embedded clock in a data stream comprising:

a data activated sequential logic frequency/phase detector having a data input, a recovered clock input, an UP output, a DOWN output, and control means for deactivating said detector unless data is received during a clock pulse;

a charge pump loop filter connected in series with said frequency/phase detector having an UP input and a DOWN input connected to said Up and DOWN frequency/phase detector outputs respectively;

a current controlled oscillator connected in series with said loop filter having a current input connected to an output of said loop filter and an output providing an output recovered clock signal; and

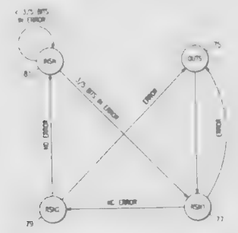
means for transferring said recovered clock signal to said frequency/phase detector clock input.

5,056,119

ADAPTIVE FRAME RESYNCHRONIZER APPARATUS

Steve Y. Sakalian, 3222 Shield La., Garland, Tex. 75044, and Jeffrey L. Zwiebel, 6756 Hillbriar Dr., Dallas, Tex. 75248

Filed Jan. 8, 1990, Ser. No. 462,162
Int. Cl.[5] **H04L** *7/06;* **H04J** *3/06*
U.S. Cl. 375—106 **9 Claims**



1. Frame synchronization apparatus comprising, in combination;

A. synchronization state first means for providing an output indicative of one of four possible states of synchronization of the apparatus where state **1** is no synchronization, state **4** indicates an in-sync condition and states **2** and **3** are indicative of intermediate states in an attempt to establish synchronization;

B. data stream supplying second means for supplying a data bit stream comprising logic ones and logic zeros and including a synchronization framing bit position which occurs every Nth bit position with the logic value of this bit position having a predetermined pattern;

C. resettable storage third means, connected to said second means, for storing data indicative of the correctness of the logic value of data bits received each Nth framing bit;

D. detection fourth means, connected to said first, second and third means, for alternatively either;

(a) finding the next data bit in the data bit stream having a logic zero, resetting said third means to a cleared condition and then altering said first means to state **2** from a state **1** condition when said fourth means detects that said first means is in a state **1** condition,

(b) checking each Nth data bit for first a logic one and then a logic zero value, supplying signals to said third means as to the correctness of the logic value of each received Nth data bit and then, exclusively

(i) altering said first means to a state **1** condition if either Nth data bit is of the wrong logic value and reinitializing the detection process, or

(ii) altering said first means to state **3** from a state **2** condition when said fourth means detects that said first means is in a state **2** condition and both received Nth data bits are of the correct logic value, or

(c) checking each Nth data bit for first a logic one and then a logic zero value, supplying signals to said third means as to the correctness of the logic value of each received Nth data bit and then, exclusively

(i) altering said first means to a state **1** condition if either Nth data bit is of the wrong logic value and reinitializing the detection process, or

(ii) altering said first means to state **4** from a state **3** condition when said fourth means detects that said first means is in a state **3** condition and both received Nth data bits are of the correct logic value; and

(d) detection fifth means, connected to said first, second, third and fourth means, for checking each Nth data bit for alternating logic values, supplying signals to said third means as to the correctness of the logic value of each received Nth data bit and when said fifth means detects that the data stored by said third means indicates that three out of the last five Nth data bits do not comply with the predetermined logic value pattern, altering said first means to a state **2** condition and resetting said third means to a cleared condition.

5,056,120

PHASE ADJUSTING CIRCUIT

Atsuki Taniguchi, Kawasaki; Nobuhiro Fujimoto, Ebina; Tomohiro Ishihara, Hachioji, and Takaaki Wakisaka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

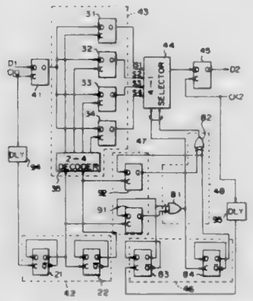
Filed Jul. 18, 1989, Ser. No. 381,389
Claims priority, application Japan, Jul. 18, 1988, 63-178380
Int. Cl.[5] **H04L** *7/00*
U.S. Cl. 375—118 **17 Claims**

1. A phase adjusting circuit for adjusting a phase of each bit of serial data by synchronizing with a system clock, comprising:

register means including n one-bit registers, each of which inputs every n-bit of serial data, synchronized with a receiving clock which is extracted from the serial data so that respective bits of said serial data input to said registers in a predetermined cyclic order, where n is an integer and each of said registers holds and outputs each bit which is input therein, for a duration which is equal to n times the cycle time of said receiving clock;

selector control signal generating means for detecting a phase relationship between phases of said system clock

and said receiving clock, and generating, based on said phase relationship, a selector control signal indicating one of said registers has an output to be selected, and a duration for which the selected output is stable by a phase thereof;



selecting means for selecting one of said outputs of said registers in said cyclic order of the inputs into said registers, under the control of said selector control signal; and

data outputting means for receiving an output of said selecting means, and serially outputting the receiving outputs, synchronized with said system clock.

5,056,121

CIRCUIT FOR OBTAINING ACCURATE TIMING INFORMATION FROM RECEIVED SIGNAL

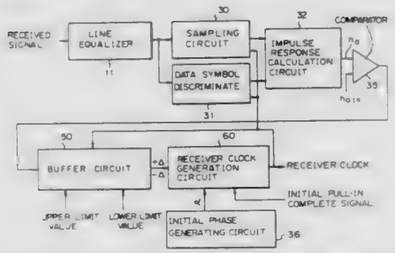
Shinji Ohta, Kawasaki; Misao Fukuda, Suginami, and Toshitaka Tsuda, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 20, 1989, Ser. No. 326,175

Claims priority, application Japan, Mar. 19, 1988, 63-66387; Mar. 19, 1988, 63-66388; Jun. 27, 1988, 63-158915; Aug. 19, 1988, 63-206158; Aug. 19, 1988, 63-206159

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—118 **27 Claims**



1. A circuit for obtaining accurate timing information from a received signal, comprising:

impulse response obtaining means for obtaining an impulse response from the received signal by sampling the received signal at a sampling phase which is determined by a reference phase of a receiver clock;

initial pull-in means for temporarily extracting a provisional timing signal from the received signal as an initial phase of said reference phase;

initial phase setting means for advancing said initial phase of said reference phase by a predetermined phase difference just after the operation of said initial pull-in means;

previous impulse response register means for holding an impulse response at said sampling phase in a previous period of said receiver clock, as a reference level; and

comparator means for comparing said impulse response at said sampling phase with said reference level.

5,056,122

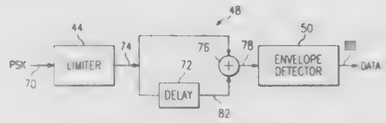
PHASE-SHIFT KEYED DEMODULATION APPARATUS

Alistair J. Price, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 16, 1989, Ser. No. 366,950

Int. Cl.[5] H04L *27/22*

U.S. Cl. 375—80 **6 Claims**



4. Apparatus for demodulating a high bit rate phase-shift keyed signal comprising, in combination:

signal source first limiting means for supplying a non-delayed amplitude limited carrier phase-shift keyed signal to be demodulated;

delay second means, connected to said first means and including output means, for delaying the limited signal by a time equivalent to one data bit period; and

summing third means, connected to said first limiting and second means, for summing the delayed and non-delayed versions of the signals together to obtain a differential resultant (amplitude shift keyed) signal (A.S.K.).

5,056,123

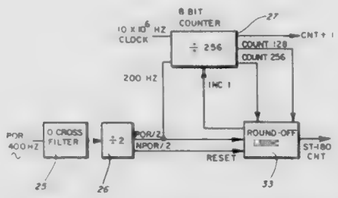
FREQUENCY COUNTER WITH ROUND OFF FUNCTION

Abdul Rashid, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 3, 1989, Ser. No. 431,375

Int. Cl.[5] G01R *23/02, 23/10;* **G06M** *3/00*

U.S. Cl. 377—49 **5 Claims**



1. In a control for an AC generator, the generator having an output signal with a period and frequency, the control including a generator signal frequency counter in which the generator frequency is determined by measuring the period of the generator output signal,, the control including a counter clocked at a rate greater than the generator frequency, the counter providing first count pulses which are compared with the generator signal to indicate generator frequency, a round off circuit comprising:

means in said counter providing second count pulses at twice the rate of said first count pulses,

a circuit for comparing the zero crossing of the generator output signal with the second count pulses, representing the midpoint between the first count pulses of the counter.

5,056,124

METHOD OF AND APPARATUS FOR EXAMINING OBJECTS IN CONTAINERS IN NON-DESTRUCTIVE MANNER

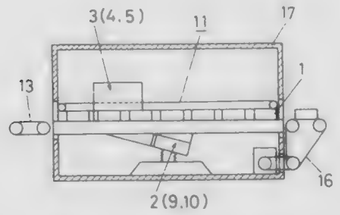
Kenichi Kakimoto; Toshitaka Kobayashi, both of Higashimurayama; Masanori Nagata, Tokyo; Shigeki Imano, Tokyo; Hideaki Honma, Tokyo, and Hideki Nishiyama, Tokyo, all of Japan, assignors to Meiji Milk Products Co., Ltd.; Fujimori Kogyo Co., Ltd. and Softex Co., Ltd., all of Tokyo, Japan

Filed May 23, 1990, Ser. No. 527,732

Claims priority, application Japan, May 24, 1989, 1-130380

Int. Cl.[5] G01N *23/04, 23/06;* **G21K** *5/08*

U.S. Cl. 378—57 **5 Claims**



1. A non-destructive testing method for enabling examination of a package constituted by a container and fluid content to be examined to determine whether there has been any unacceptable alteration of the properties of the fluid content, the method comprising the steps of:

shaking the package of the container containing the fluid content in its unaltered state under a predetermined vibrating condition for causing the fluid content and any gaseous substance also contained in said container to mix together;

causing said package to vibrate under said vibrating condition until it vibrates at the natural resonance frequency of the package;

exposing said package including the fluid content therein to an irradiation of ultra-soft X-rays while said package is vibrating at the resonance frequency;

detecting the strength of said ultra-soft X-rays that have been transmitted through said package as a reference value;

repeating the said shaking, vibrating and exposing steps for other packages each having a container containing the same fluid content but the amount of alteration of the properties of which is unknown, and obtaining a specific value of the transmitted X-ray strength for each of said other packages;

comparing each such specific value with said reference value and determining any difference between said each specific value and said reference value; and

determining from said differences whether there is any unacceptable alteration of the properties of the fluid content in each of the said other packages.

5,056,125

DISCHARGE MODULE FOR X-RAY CABLE

Robert Beland, c/o Electromed Int'l Ltd., 310 Boul. Industriel, St. Eustache, Canada J7R 5V3

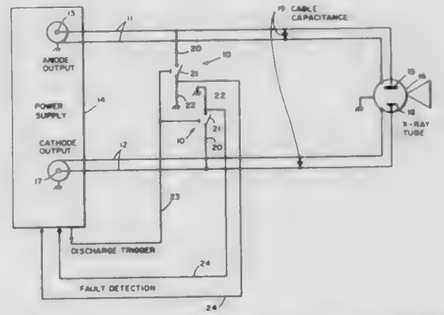
Filed Dec. 7, 1989, Ser. No. 447,388

Int. Cl.[5] H05G *1/10*

U.S. Cl. 378—101 **5 Claims**

1. Apparatus for discharging the capacitive voltage on a cable connecting a high-voltage power supply and an X-ray generating source, the apparatus comprising:

a discharge circuit including a high-voltage portion and a low-voltage portion, electrically isolated form one another, and means for transmitting a trigger signal between the high and low-voltage portions, the high-voltage portion including resistor means and switch means activated by the trigger signal for coupling that resistor means to the cable, the low-voltage portion including means for generating the trigger signal to activate the switch means and thereby couple the cable to the resistor means and discharge any capacitive voltage on the cable, and the high-voltage portion further including means for monitoring current int he resistor means and generating a fault signal for disabling the power supply if the current goes above a predetermined magnitude.



5,056,126

AIR COOLED METAL CERAMIC X-RAY TUBE CONSTRUCTION

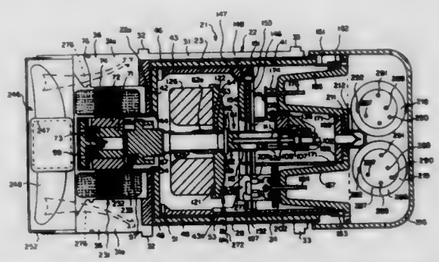
Heinrich F. Klostermann, Menlo Park, and Martin Braun, San Jose, both of Calif., assignors to Medical Electronic Imaging Corporation, Pleasanton, Calif.

Filed Nov. 30, 1987, Ser. No. 126,842

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

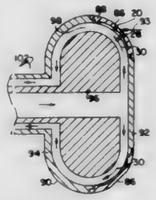
Int. Cl.[5] H01J *35/10, 35/26*

U.S. Cl. 378—127 **39 Claims**



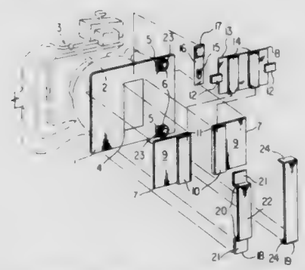
30. In an x-ray tube construction, a housing, a shaft having an exterior surface and front and rear ends, an anode plate carried by the shaft, front and rear bearing means disposed on opposite sides of the anode plate for rotatably mounting the front and rear ends of the shaft in the housing, motor drive means coupled to the shaft for rotating the shaft and the anode plate, a cathode for supplying electrons, voltage means connected to the anode plate and to the cathode for accelerating the electrons so the electrons impinge upon the anode plate to create x-rays, a heat cage disposed in the housing and surrounding the anode plate, a metal evacuated envelope disposed within the housing and enclosing the heat cage and solid means disposed between the housing and the envelope and in intimate contact with the housing and the envelope to form a heat conducting path between the envelope and the housing, said heat cage, said solid means and said housing having windows in registration to permit x-rays to pass therethrough.

5,056,127
ENHANCED HEAT TRANSFER ROTATING ANODE X-RAY TUBES
Arthur H. Iversen, 15315 Sobey Rd., Saratoga, Calif. 95070, and Stephen Whitaker, 409 11st., Davis, Calif. 95616
Filed Mar. 2, 1990, Ser. No. 487,137
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—130 **10 Claims**



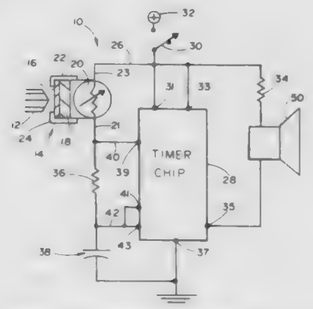
1. A heat sink structure, comprising:
a heated surface;
a heat exchange surface on the interior surface thereof;
means for enclosing said heat exchange surface in a fluid tight manner;
means for providing a flow of coolant fluid to remove heat from said heat exchange surface, said heat exchange surface being concavely curved in the direction of said flow; and
at least one fin formed on said heat exchange surface, said fin being of generally triangular cross section and extending in the direction of coolant flow substantially the length of said heat exchange surface.

5,056,128
X-RAY FILTRATION APPARATUS
George Thompson, 118, 7930 Bowness Road N.W., Calgary, Alberta, Canada T3B 0H3
Filed Apr. 17, 1990, Ser. No. 509,637
Claims priority, application Canada, Apr. 17, 1989, 596939
Int. Cl.[5] G21K *3/00*
U.S. Cl. 378—156 **6 Claims**



1. An X-ray shielding support device comprising apertured, metal base plate means for defining a frame around the collimator aperture of an X-ray machine; metal spacer means for mounting on said base plate means to define a support surface around and spaced from the collimator aperture and base plate means; and X-ray filter holder means for mounting on at least one of said base plate means and said spacer means, selective of said base plate means, spacers means and filter holder means being magnetic, whereby the holder means can be mounted on said base plate means or on said spacer means to shield any area in front of the collimator aperture.

5,056,129
APPARATUS FOR MONITORING X-RAY BEAM ALIGNMENT
Peter A. Steinmeyer, Arvada, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 12, 1989, Ser. No. 406,003
Int. Cl.[5] A61B *6/08*
U.S. Cl. 378—705 **9 Claims**

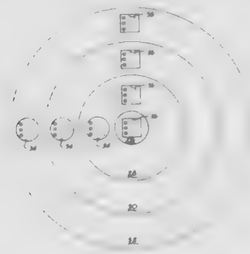


1. An apparatus for monitoring alignment of an X-ray beam, comprising:
a housing
means for providing electrical signals responsive to X-ray beam intensities during alignment of the X-ray beam, comprising
a protective filter layer transparent to X-rays but opaque to visible light, a layer of X-ray fluorescent material, adjacent to said filter layer, and
a photoresistor in close proximity to said X-ray fluorescent material, for providing variable resistance responsive to said X-ray beam intensities,
audio frequency generating means, electrically connected to said photoresistor, for generating variable frequencies corresponding to said variable resistance,
sound generating means, electrically connected to said audio frequency generating means, for generating sounds corresponding to said variable frequencies, and
low voltage power supply means connected to said monitoring apparatus by a switching means, for enabling said apparatus,
whereby, by monitoring the frequency of the sounds emitted by said sound generating means, an X-ray beam is aligned to a desired alignment by adjusting the X-ray beam to produce a sound corresponding to a desired X-ray beam intensity.

5,056,130
COMPUTERIZED TOMOGRAPHY CALIBRATOR
Herbert P. Engel, Melbourne, Fla., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 6, 1989, Ser. No. 418,364
Int. Cl.[5] G01D *18/00*
U.S. Cl. 378—207 **26 Claims**

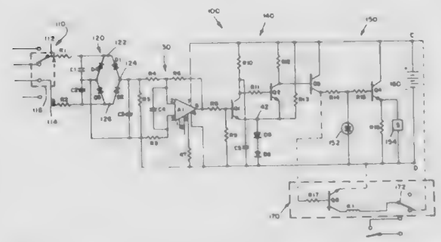
1. An industrial computerized tomography calibrator, comprising:
a plurality of nestable, planar rings, removably received relative one another, and each respectively defining at least one opening of predetermined size situated therein, between their respective inside and outside diameters; and
a plurality of planar inserts for being fit and removably received in said predetermined-size openings;
wherein said rings and inserts are comprised of selected materials having known densities and dimensions;

so that differing combinations of said rings and inserts are provided to establish predetermined density and dimensional material relationships in a given plane, for use in calibrating an industrial computer tomography system; and further wherein
said inserts each respectively define a plurality of sub-openings of predetermined size therein, and said calibrator further includes a plurality of planar sub-inserts for being fit and removably received in said sub-openings;



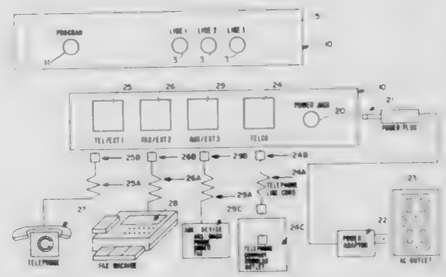
a central ring of said plurality of rings defines a disc with a generally square opening therein, and the remainder of said plurality of rings each respectively define a generally square opening and a separate circular opening therein; and
said sub-openings and sub-inserts are generally rectangular in shape.

5,056,131
TELEPHONE LINE MONITORING CIRCUITRY AND APPARATUS
Edward Kanare, 4143 Via Marina, No. 1019, Santa Monica, Calif. 90292, and Kenneth Rehler, Santa Monica, both of Calif., assignors to Edward Kanare, Marina Del Rey, Calif.
Filed Oct. 29, 1990, Ser. No. 606,060
Int. Cl.[5] H04M *1/24, 3/24*
U.S. Cl. 379—33 **44 Claims**



18. A telephone line monitoring circuitry and apparatus comprising:
a. a circuit connector means for connecting a telephone line to a first circuit means;
b. said first circuit means provides an input voltage to a second circuit means where said input voltage is positive when said telephone line is operative and zero when said telephone line is inoperative;
c. said second circuit means provides a defining voltage to a third circuit means where said defining voltage is low when said input voltage is positive and high when said input voltage is zero;
d. said third circuit means provices a working voltage to a fourth circuit means where said working voltage is inadequate when said defining voltage is low and adequate when said defining voltage is high;
e. said fourth circuit means which has a light emitting diode and an auditory sounder where said light emitting diode and said auditory sounder are not energized when said working voltage is inadequate and energized when said working voltage is adequate; and
f. a circuit power means having a power source which provides energy to the circuit components;
g. whereby when said circuit connector means is connected to a telephone line, the telephone line monitoring circuitry and apparatus can detect if said telephone line becomes inoperative and cause said light emitting diode to provide a visual signal and said auditory sounder to provide an audible signal if the telephone line becomes inoperative.

5,056,132
SWITCH DEVICE ADAPTED TO INTERFACE BETWEEN AN INCOMING TELEPHONE LINE AND AN INTERNAL TELEPHONE SYSTEM
Edward R. Coleman, Natick; Danny C. Vogel, Randolph; David A. Vogel, Westwood, and Diane P. Cherry, Foxboro, all of Mass., assignors to Intertech Engineering Associates, Inc., Dedham, Mass.
Filed Jul. 25, 1989, Ser. No. 384,772
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—95 **13 Claims**
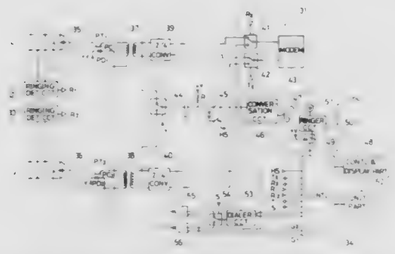


1. A switch device adapted to interface between an incoming telephone line and an internal telephone system which includes a telephone, a facsimile machine and an auxiliary device, said switch device for receiving an incoming communication over the incoming telephone line, including:
a) connector means for connecting said switch device to the incoming telephone line for receiving the incoming communication;
b) ring detector means connected to said connector means for detecting a ring signal of the incoming communication;
c) a central processing unit, connected to and being alerted by said ring detector means, for initiating a program for answering the incoming communication;
d) a voice synthesis circuit, responsive to said central processing unit, for identifying the internal telephone system to a caller and requesting a code from the caller which identifies the incoming communication;
e) code detection means for receiving said code and for classifying the incoming communication based on said code, said code detection means includes default means for defaulting to a preselected one of the telephone, the facsimile machine and the auxiliary device should the caller fail to provide a proper code thereby assuring that no incoming communication will be lost;
f) means for programming the default means to default to the preselected one of the telephone, facsimile machine or the auxiliary device;
g) means for ringing one of the telephone, the facsimile machine or the auxiliary device of the internal telephone system in accordance with the classification of the incoming communication; and

h) means for blocking out access to the other two of the internal telephone system.

5,056,133
DATA COMMUNICATION APPARATUS COUPLED TO TWO TELEPHONE LINES

Masaharu Iida, Ebina, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 24, 1989, Ser. No. 384,163
Claims priority, application Japan, Aug. 5, 1988, 63-196276
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—98 **12 Claims**



1. A data communication apparatus which is coupled to two telephone lines, said data communication apparatus comprising

a single telephone circuit coupled to the two telephone lines for making a telephone call;

call detecting means coupled to the two telephone lines for independently detecting a call received from the two telephone lines and for outputting a call detection signal indicative of a telephone line which receives the call,

modem means for transmitting and receiving data for making a data communications;

switching means coupled to said telephone circuit and said modem means for coupling a selected one of said telephone circuit and said modem means to a selected one of the two telephone lines responsive to a switching signal;

line protection means including a transformer means having primary and secondary slides wherein said primary side is coupled to said two telephone lines and wherein said secondary side is connected to said switching means and wherein said telephone circuit is provided on said secondary side of said line protection means and wherein said telephone circuit receives current from a predetermined current source means; and

control means for controlling said switching means by generating the switching signal responsive to the called detection signal received from said call detecting means.

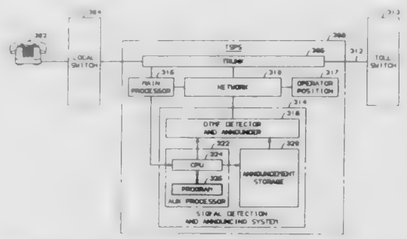
5,056,134
AUDIBLE LOGO FOR IDENTIFYING A COMMON CARRIER

Thomas M. Bauer, Belle Mead; Thomas A. Dunn, Edison, both of N.J.; Christina M. Gurke, Naperville, Ill.; John W. Hopkins, Woodridge, Ill., and Richard D. Nafziger, Wheaton, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 341,458, Apr. 21, 1989, Pat. No. 4,930,154. This application Feb. 27, 1990, Ser. No. 485,405
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—246 **31 Claims**

1. A method of processing a call from an originating customer to a terminating customer station over one of a plurality of common carrier networks, comprising the ordered steps of:

determining the identity of one of said common carriers for serving said call;

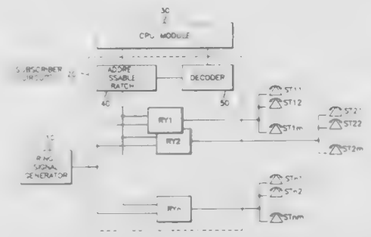


responsive to said determining, connecting said call to a source of a logo identifying said carrier prior to receipt of billing information for said call.

5,056,135
METHOD OF AUTOMATIC EQUALIZED DISTRIBUTION OF RING LOADS FOR TELEPHONE EXCHANGE SYSTEM

Kyo-Hwan Ahn, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 29, 1989, Ser. No. 442,715
Claims priority, application Rep. of Korea, Nov. 30, 1988, 1988-15866
Int. Cl.[5] H04M *3/02*
U.S. Cl. 379—252 **8 Claims**



4. A method of equally and adequately furnishing a ring service to plural subscribers in a telephone exchange system by providing an adequate ring signal to said plural subscribers from a single ring generator comprising the steps of:

comparing a desired number of subscribers to be serviced by said ring service with a predetermined number;

adjusting an on/off time for the ring signal to a basic on/off time when said desired number of subscribers to be serviced is equal to or less than said predetermined number, and recording said basic on/off time in a basic service data table;

calculating a subtracting time and recording said subtracting time into a dynamic service data table, determining a dynamic on/off time for the ring signal in response to said subtracting time and calculating a number of ring service groups to be serviced when said desired number of subscribers to be serviced is greater than said predetermined number, wherein said dynamic on/off time and said number of ring service groups to be serviced are also recorded in said dynamic service data table;

determining whether or not on-time data in a present service data table is indicative of an intermittent ring signal service;

providing said ring signal, according to said dynamic on/off time, to each subscriber in a present ring service group listed in said present service data table when said on-time

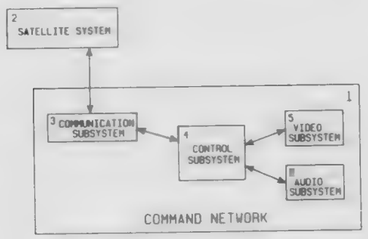
data is indicative of said intermittent ring signal service; and

updating said present service data table to list a next ring service group to be serviced.

5,056,136
SECURE VIDEO COMMUNICATIONS SYSTEM

Robert L. Smith, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 9, 1990, Ser. No. 490,892
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—10 **16 Claims**



1. A secure video communications system having at least one command network, each of said command networks comprising:

a video subsystem, an audio subsystem, and a control subsystem;

said control subsystem having means providing a common-user interface mode, including means for linking said command networks allowing access to and operation of said audio and video subsystems of other command networks, manual operating means of said audio and video subsystems, security means for encrypting and decrypting audio, video, and data signals, and a manual override for said audio and video subsystems;

said video subsystem having means for allowing control and transmission of multiple video signals, by using said manual operating means to select a source of said video signals, to add or remove the destination of said video signals, and to activate or cancel any signal transmitted to said control subsystem;

said audio subsystem having means for allowing control and transmission of multiple audio signals, by using said manual operating means to mute said audio signals, and to activate or cancel sound transmitted to said control subsystem; and

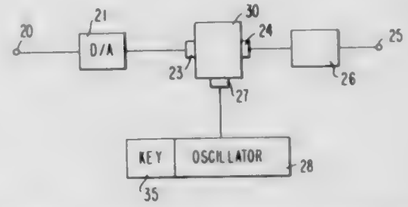
said control subsystem having indexing means associated with each command network for receiving said audio and video signals and having the ability to designate and store a configuration of the video to audio signals and the ability to retrieve different configurations, and wherein said indexing means can index said configuration and said configuration can be recalled by name by said manual operating means.

5,056,137
METHOD AND APPARATUS FOR ENCODING AND DECODING SIGNALS

Richard R. Sills, 1085 Park Ave., New York, N.Y. 10128

Filed Sep. 27, 1989, Ser. No. 413,417
Int. Cl.[5] H04K *1/02;* **H03H** *9/00;* **H03M** *1/00*
U.S. Cl. 380—9 **18 Claims**

1. An apparatus for encoding digital signals, comprising a body of a material that has a transfer function and modifies a characteristic of signals passing therethrough, digital to analog converting means connected to receive said digital signals, means for applying the output of said converting means to said body, means for receiving signals from said body, means for converting said signals received from said body to output

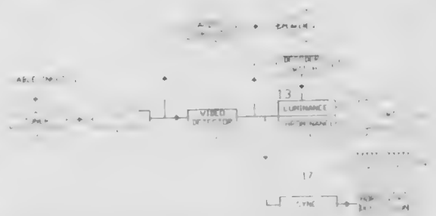


digital signals, and means for controlling the transfer function of said body.

5,056,138
TELEVISION SELECTION SYSTEM

Jerroll R. Tyson, Sr., Miami, Fla., assignor to Nuphase Electronics, Inc., Miami, Fla.

Filed Sep. 11, 1989, Ser. No. 405,125
Int. Cl.[5] H04N *3/24, 5/46*
U.S. Cl. 380—10 **17 Claims**



1. A television circuit for receiving information at plural predetermined channel frequencies, comprising:

(a) display means;

(b) luminance control means to normally control the luminance of said display means;

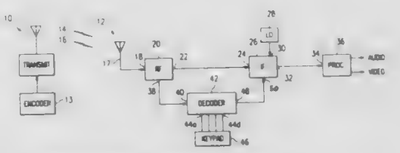
(c) modulator means associated with predetermined ones of said channel frequencies for providing a predetermined encoded signal responsive to selection of one of said predetermined ones of said channel frequencies; and

(d) decoder means responsive to a said predetermined encoded signal to cause said luminance means to blank said display means.

5,056,139
METHODS AND APPARATUS FOR ELECTRONICALLY LIMITING BROADCAST COMMUNICATION

David E. Littlefield, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 22, 1990, Ser. No. 527,218
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—20 **44 Claims**

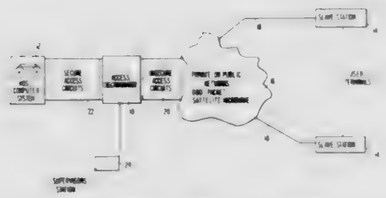


1. A communication system comprising:

a transmitter for broadcasting communication signals, said signals having an information content which must be

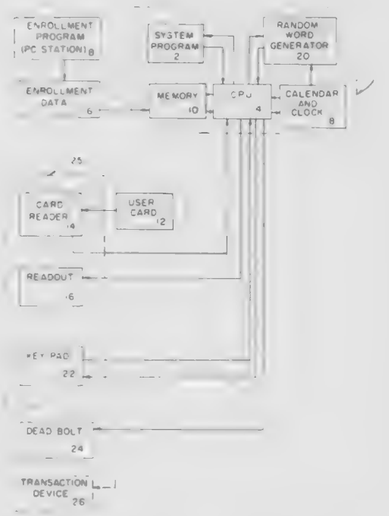
processed, and also containing a periodic coded information signal useful for controlling said processing;
a receiver for receiving and processing said communication signals, said receiver comprising:
circuitry for processing said information content of said communication signals;
circuitry for matching said periodic coded information signal against stored information; and
circuitry operable in response to said matching circuitry for controlling said processing.

5,056,140
COMMUNICATION SECURITY ACCESSING SYSTEM AND PROCESS
Blanton Kimbell, 27 Hastings Rd., Marlboro, N.J. 07746
Filed Feb. 22, 1990, Ser. No. 483,443
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—23 **5 Claims**



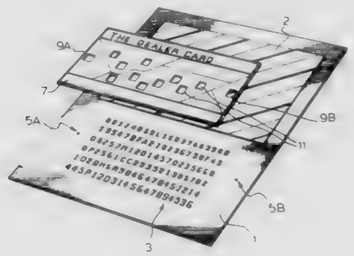
1. A process for limiting access to an information source to authorized devices, said devices having a remote terminal with stored identification data, comprising the steps of:
establishing a communication link between an access discriminator associated with said information source and an access requester device, said communication link being initiated by said requester;
generating at said access discriminator a random number each time one said communication link is established;
encrypting said random number;
transmitting said encrypted random number to said access requester via said communication link;
decrypting said encrypted random number at said remote terminal to extract said random number at said access requester;
encrypting said access requester's identification data using said random number as an encryption key;
transmitting said encrypted identification data via said communication link to said access discriminator;
decrypting said encrypted identification data using said random number as the key to extract said identification data at said access discriminator;
comparing said decrypted identification data with units of identification data available to said access discriminator from storage; and
connecting said access requester to said information source if said decrypted identification data matches one of said units of identification data.

5,056,141
METHOD AND APPARATUS FOR THE IDENTIFICATION OF PERSONNEL
David W. Dyke, 342 Club View Dr., Great Falls, Va. 22066
Filed Jun. 18, 1986, Ser. No. 875,492
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—25 **5 Claims**



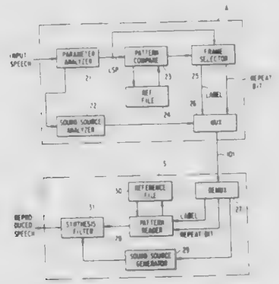
1. A system for identifying individual users for granting access comprising,
enrolling means for enrolling a user in a system, the enrolling means further comprising display means for displaying an enrollment outline, purpose and instructions, a keyboard inputting means for inputting information, means for acquainting a user with a keyboard, means for obtaining information about the user, a prompter list display means for displaying a list of prompter words, prompter word selection means for selecting with the keyboard certain of the displayed prompter words selected by the user, prompter word inserting means for inserting additional prompter words selected by the user, means for presenting prompter words selected by the user, and means for accepting user generated response words in response to the user selected prompter words, means for recording prompter words and user generated response words which become required response words as word pairs, means for reinforcing word-pair associations including means for presenting word-pairs, one pair at a time and means for presenting selected prompter words and means for the user filling in required response words,
means for testing validity of word pairs by presenting selected prompter words and accepting user generated response words from the keyboard and comparing the user generated response word with the previously recorded response word, means for timing the inputting of response words in reactions to prompter words, and means for selecting the strongest word pairs of prompter and response words,
storage means comprising means for storing user identification and selected word pairs, and random selection means for randomly selecting single prompter and response word pairs from the storage means,
user identifying means for identifying a person as the particular user for which information is stored in the storage means comprising input means for inputting user identification, display means for displaying a prompter word from a word-pair selected by the random selecting means from the group of preselected word-pairs related to the particular user stored in the storage means, and alpha inputting means for inputting a response word by the person to be identified,
matching means for matching the user generated response word with the response word from the randomly selected word pair in the storage means, and action means associated with the identifying means for permitting access when the user generated response matches the response in the storage means.

5,056,142
DECRYPTION DEVICE
Jacques Lapointe, 53 Place Mercier, #103, Candiac, Quebec, Canada J5R 4V9 , and Pierre Cousineau, 237 Hugo Street, St. Eustache, Quebec, Canada J7T 3Y7
Filed Nov. 30, 1989, Ser. No. 443,127
Claims priority, application Canada, Nov. 30, 1988, 584606
Int. Cl.[5] G09C *5/00*
U.S. Cl. 380—54 **13 Claims**



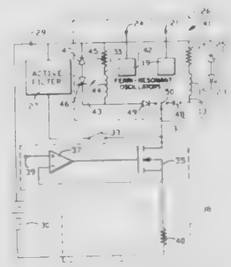
1. A decryption device, comprising:
a) a substrate carrying a representation of an article of merchandise;
b) a plurality of encrypted information symbols for identifying said article of merchandise which are located within an array of further symbols carried by said substrate, said array being arranged in a plurality of rows by a further plurality of columns;
c) a pair of registration marks carried by said substrate and located at a predetermined orientation with respect to said array, said predetermined orientation being selectable to within a predetermined number of said rows and columns of said array; and
d) overlay means adapted for covering said rectangular array, said overlay means including a first pair of apertures arranged to uncover said pair of registration marks, and a plurality of further apertures arranged to uncover said encrypted information symbols responsive to said first pair of apertures uncovering said pair of registration marks, thereby identifying said article of merchandise.

5,056,143
SPEECH PROCESSING SYSTEM
Tetsu Taguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 841,657, Mar. 20, 1986, abandoned. This application Jun. 23, 1989, Ser. No. 373,013
Claims priority, application Japan, Mar. 20, 1985, 60-57324; Mar. 26, 1985, 60-61316; Mar. 26, 1985, 60-61317
Int. Cl.[5] G10L *9/18, 5/04*
U.S. Cl. 381—35 **22 Claims**



1. A speech processing system for processing an input speech signal having a plurality of sections each including a plurality of signal frames, said system comprising:
first means for extracting feature parameters of said input speech signal for each signal frame;
second means for determining at least one representative frame for each said section approximating at least one of said plurality of signal frames included in said each section, the first appearing representative frame in a present section being determined on the basis of a plurality of said signal frames in said present section and the last representative frame in a preceding section; and
third means for generating an output signal indicating information contained in said at least one representative frame and the number of said plurality of signal frames to be replaced with said at least one representative frame.

5,056,144
FAST SWITCHING DRIVE CIRCUIT FOR A FERRI-RESONANT OSCILLATOR
William P. Cornelius, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 15, 1990, Ser. No. 597,970
Int. Cl.[5] H03B *5/18*
U.S. Cl. 331—49 **13 Claims**



1. A rapid switching current drive circuit for facilitating frequency switching of an oscillator, the apparatus comprising:
an oscillator interface circuit, having an oscillator coil with an input terminal to receive an input signal on a signal input line and with an output terminal, the interface circuit including a ferri-resonant oscillator, the oscillator coil having an impedance Z_c and further having voltage control means for controlling the voltage developed between the input terminal and the output terminal of the coil;
a current drive module connected to the signal input line terminal of the oscillator coil to provide a controllably variable current for the circuit; and
an active filter, having an input terminal to receive an input signal and an output terminal to issue an output signal, where the active filter has first and second modes of operation and can be rapidly switched between these two modes, where in the first mode the active filter has an impedance $Z_A(f)$, depending upon signal frequency f, that has a much higher magnitude $|Z_{A1}(f)|$ than the coil impedance magnitude $|Z_c|$ if the signal input frequency f is less than a first selected frequency f_1, and that has a much lower magnitude $|Z_{A2}(f)|$ than the coil impedance magnitude $|Z_c|$ if the signal input frequency f is greater than a second selected frequency f_2, where $0<f_1<f_2$, and where in the second mode the active filter has the frequency dependent impedance $Z_B(f)$ that satisfies the relation $|Z_c|/|Z_B|<<1$.

5,056,145

DIGITAL SOUND DATA STORING DEVICE

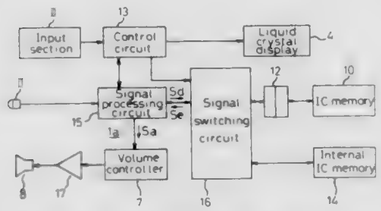
Takaharu Yamamoto; Syuzi Hashiba, and Toshimitsu Imai, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 199,333, May 26, 1988, abandoned. This application Jan. 22, 1990, Ser. No. 469,810

Claims priority, application Japan, Jun. 3, 1987, 62-139505; Jun. 4, 1987, 62-140567; Jun. 5, 1987, 62-140916; Jun. 5, 1987, 62-140918

Int. Cl.[5] **G09B** *19/04, 19/06;* **G10L** *3/00*

U.S. Cl. 381—51 **5 Claims**



1. A portable language learning device comprising:

A) a card-shaped external storage unit incorporating a built-in integrated circuit memory for storing first digitized speech data corresponding to speech of at least two languages, respectively, said speech of said two languages representing contents corresponding to each other, said built-in memory including a plurality of first memory areas for storing said first digitized speech data in units of speech and a plurality of second memory areas for storing speech identification data corresponding to start addresses of said first memory areas, respectively; and

B) a case to which said external storage unit is detachably attached, said case enclosing a reproduction unit comprising

a) an input section including a plurality of operation switches each manually operated such that a selecting signal is produced;

b) a control section encoding said selecting signal produced from said input section, said control section controlling said device so that said speech identification data corresponding to an encoded selecting signal is retrieved and said first digitized speech data corresponding to retrieved data and represented in said two languages is alternately read out from said memory continuously;

c) a signal processing circuit sequentially synthesizing analog speech signals from said first digitized speech data read out by said control section from said built-in memory;

d) an amplifying circuit amplifying said analog speech signals synthesized by said signal processing circuit; and

e) output means for producing speech based on said speech signals amplified by said amplifying circuit.

5,056,146

THREE-DIMENSIONAL LABELING APPARATUS FOR TWO-DIMENSIONAL SLICE IMAGE INFORMATION

Akihiko Nishide, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1988, Ser. No. 250,152

Claims priority, application Japan, Sep. 29, 1987, 62-245432

Int. Cl.[5] **G06K** *9/00*

U.S. Cl. 382—6 **6 Claims**

1. A three-dimensional labeling apparatus for two-dimensional sliced image information, comprising:

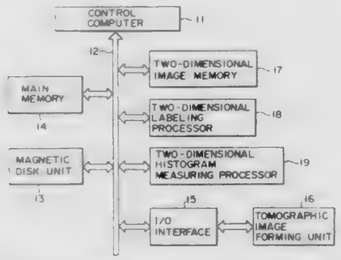
means for storing a plurality of two-dimensional sliced image information of a three-dimensional object, said two-dimensional sliced image information being composed of a plurality of image pixels;

means for binarizing each of said plurality of two-dimensional sliced image information by using a same predetermined threshold level to form a plurality of binarized image regions in each of said two-dimensional sliced image information;

means for two-dimensionally labeling said plurality of binarized image regions in each of said two-dimensional sliced image information to obtain two-dimensionally labeled sliced image information;

two-dimensional histogram forming means for forming a two-dimensional histogram representing a three-dimensional connection information of adjacent two of said two-dimensional sliced image information;

means for determining a connection relationship between two binarized image regions having labels applied by said



two-dimensionally labelling means and included in the adjacent two of said two-dimensional sliced image information by referring to the two-dimensional histogram formed in said two-dimensional histogram forming means;

means for three dimensionally labeling each of said two-dimensionally labeled binarized image regions in each of said adjacent two sliced image information in accordance with a determination result of said determining means to form a first three-dimensional connection information table; and

means for determining a connection relationship between a first three-dimensionally labeled image region in a first two-dimensional sliced image information and a second three-dimensionally labeled image region in a second two-dimensional sliced image information which is not adjacent to said first two-dimensional sliced information to form a re-labeled three-dimensional connection information table.

5,056,147

RECOGNITION PROCEDURE AND AN APPARATUS FOR CARRYING OUT THE RECOGNITION PROCEDURE

Stephen J. Turner, Saffron Walden, and John B. Lilley, Brentwood, both of England, assignors to Products From Ideas Ltd., Basildon, England

Filed May 9, 1990, Ser. No. 520,195

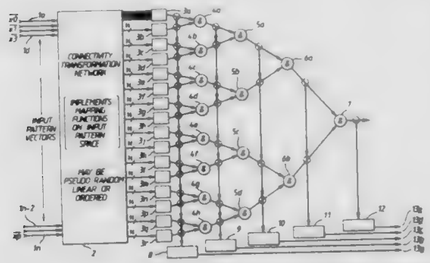
Claims priority, application United Kingdom, May 16, 1989, 8911130; Jun. 13, 1989, 8913522; Jun. 13, 1989, 8913523

Int. Cl.[5] **G06K** *9/00*

U.S. Cl. 382—14 **18 Claims**

1. A recognition procedure including the steps of teaching a reference pattern to a machine-based recognition system by writing a first binary digit to each of a plurality of addressable data stores, each of which has a plurality of addressable data storage locations, at locations selected by applying respective sets of values as addresses to the addressable data stores, where the sets of values represent characteristics of parts of the reference pattern, writing a second binary digit to all locations not selected in the addressable data stores, and of measuring another pattern against the reference pattern by applying, as

addresses, to the addressable data stores, sets of values representing characteristics of parts of the other pattern, where the parts correspond to the said parts of the reference pattern, reading the contents of those locations selected, applying the binary digits read from the selected locations to a network that provides an output signal representing one binary digit as its output only when the first binary digit is obtained from each selected location, and which provides an output signal repre-



senting the other binary digit if one second binary digit is obtained from the selected locations, forming at least one sum of the total number of occurrences of the first binary digit at selected positions within the network, and providing a result signal indicating the result of the measurement, where the result signal is determined by the output signal from the network and the sum of the total number of occurrences of the first binary digit at selected positions within the network.

5,056,148

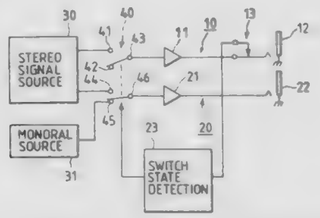
OUTPUT CIRCUIT OF AUDIO DEVICE

Satoru Hayashi, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Nov. 21, 1990, Ser. No. 616,968

Int. Cl.[5] **H04H** *5/00*

U.S. Cl. 381—11 **2 Claims**



1. A signal switching circuit for a stereo/monaural audio device, including:

a first channel having an input connected by a first switch to one of two outputs of a stereo signal source and having an output connected to a first stereo output jack with a second normally closed internal switch,

a second channel having an input connected by said switch selectively to an other output of said stereo signal source or an output of a monaural signal source and having an output connected to a second stereo output jack with no internal switch

said normally closed internal switch being adapted to be opened when a plug associated therewith and connected through a changeover switch to a first stereo output system is inserted into said first stereo output jack, said second stereo output jack being connected to a second stereo output system and adapted also to be used as an output jack for a monaural signal,

and said signal switching circuit comprising switch state detection means for detecting an opening of said internal switch of said first stereo output jack to disconnect said stereo signal source from said inputs of said first and said second channels and connect said monaural signal source to said input of said second channel.

5,056,149

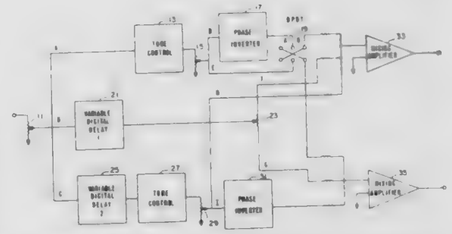
MONAURAL TO STEREOPHONIC SOUND TRANSLATION PROCESS AND APPARATUS

Richard G. Broadie, P.O. Box 615, Palm Springs, Calif. 92263

Continuation-in-part of Ser. No. 22,580, Mar. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 833,820, Feb. 26, 1986, abandoned. This application May 4, 1990, Ser. No. 519,283

Int. Cl.[5] **H04R** *5/00*

U.S. Cl. 381—17 **21 Claims**



1. Apparatus for producing a two channel simulated stereophonic output from a monaural input which has initially been divided into three equal signals; A, B and C, comprising:

a) means for providing tone control of signal A;

b) means for providing gain control of tone controlled signal A;

c) means for dividing gain controlled signal A into signals D and E.

d) means for inverting signal D 180 degrees with respect to signal E;

e) means for switching signals D and E to opposing output channels;

f) means for imparting time delay to signal B;

g) means for providing gain controlled balance of time delayed signal B to provide signals F and G.

h) means for imparting time delay to signal C;

i) means for providing tone control of time delayed signal C;

j) means for providing gain control of tone controlled signal C;

k) means for dividing gain controlled signal C into equal signals, H and I;

l) means for inverting signal I 180 degrees with respect to signal H;

m) means for mixing said signal E, said signal F and said signal H to produce first one of said simulated stereophonic channel outputs and;

n) means for mixing said phase inverted signal D, said signal G and said phase inverted signal I to produce second one of said simulated stereophonic channel outputs;

o) or, in accordance with e above, means for mixing said phase inverted signal D, said signal F and said signal H to produce first one of said simulated stereophonic channel outputs and;

p) means for mixing said signal E, said signal G and said phase inverted signal I to produce second one of said simulated stereophonic channel outputs;

wherein said tone and gain controlled signals D and E are the signals of least amplitude and wherein said time delayed signal B is imparted with less delay value than is said time delayed signal C and;

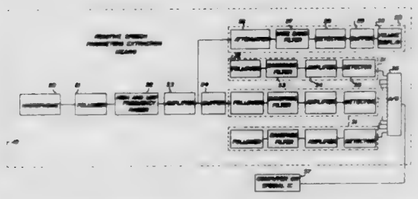
whereby the relationship of time, gain and phase imparts simulated stereophonic output, with little, if any, addition to reverberative content of the monaural input.

5,056,150

METHOD AND APPARATUS FOR REAL TIME SPEECH RECOGNITION WITH AND WITHOUT SPEAKER DEPENDENCY

Tiecheng Yu; Ning Bi; Meiling Rong, and Enyao Zhang, all of Beijing, China, assignors to Institute of Acoustics, Academia Sinica, Beijing, China

Filed Nov. 8, 1989, Ser. No. 433,098
Claims priority, application China, Nov. 16, 1988, 88107791
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—43 **18 Claims**



10. A speaker dependent and independent speech recognition apparatus based on a comparison between speech characteristic parameter frames and reference samples which are generated from one of a speaker in dependent recognition and from persons producing representative sounds in independent recognition, comprising:

a) a speech parameter extracting means for converting speech signals into a series of primitive sound spectrum parameter frames;

b) determining means for determining beginning and ending points of sounds of speech based on said series of primitive sound spectrum parameter frames, for obtaining a sound spectrum parameter frame series;

c) time domain normalization means for normalizing said sound spectrum parameter frame series into a speech characteristic parameter frame series of predefined length on the time domain including: forming a sound stimulus series corresponding to said sound spectrum parameter frame series, selecting or deleting each sound spectrum parameter frame, respectively, according to whether a sound stimulus value of said sound spectrum parameter frame is greater or less than an average sound stimulus value, wherein said sound stimulus value represents the difference between two adjacent sound spectrum parameter frames, and wherein said average sound stimulus value is the average of all of said sound stimulus values;

d) quantizing normalization means for performing amplitude quantizing normalization on each frame of said speech characteristic parameter frame series;

e) difference evaluation means for comparing said speech characteristic parameter frame series with said plurality of reference samples, for determining a reference sample having a closest match with said speech characteristic parameter frame series of equal length on the time domain; and

f) judgement means for determining a result of recognition according to said reference sample having said closest match.

5,056,151

ELECTRICAL COMPONENT CONNECTION AND COMBINATIONS OF ELECTRICAL COMPONENTS

Robert G. Simpson, Dundas, Canada, assignor to Gennum Corporation, Burlington, Canada

Filed Sep. 19, 1989, Ser. No. 409,378
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—69 **22 Claims**

1. An electrical component combination, comprising:

i. a first electrical component, including,

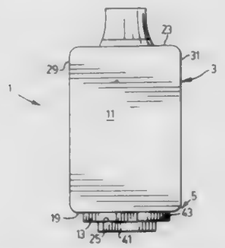
(a) a first component body having a front face, said first component body not being a circuit board;

(b) first and second rigid retaining and electrical connection members extending from the first component body from positions adjacent said front face for providing mechanical and electrical connection thereto; and

ii. a second electrical component, including,

(a) a second component body having a front face, a rear face, and a sidewall spacing apart said front and rear faces, said second component body not being a circuit board;

(b) first and second mechanical and electrical connection



pads on the second component body adjacent said front face thereof for providing mechanical and electrical connection thereto;

iii. said component bodies being located adjacent each other with the entire rear face of said second body lying against said front face of said first body and said members extending over said sidewall, in close proximity to said sidewall, to positions adjacent said pads, said members being bonded to their respective pads so that said components are mechanically held in close proximity to one another by said members;

iv. one of said components comprising a transducer for a hearing aid.

5,056,152

DUAL LEVEL PRIORITIZED VEHICULAR REPEATER SYSTEM

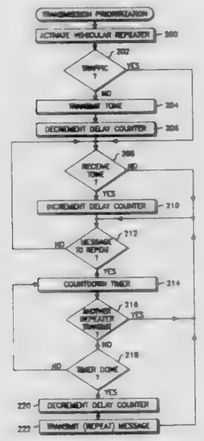
Brian K. Truby, Watauga, and Randall S. Coker, Bedford, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 8, 1988, Ser. No. 153,389
Int. Cl.[5] H04B *7/15*
U.S. Cl. 455—11 **6 Claims**

1. A dual level prioritized vehicular repeater system, comprising:

at least one primary unit constructed and arranged such that only one primary unit has, at any particular time, priority to repeat a message from at least one portable unit to at least one base unit;

at least one secondary unit constructed and arranged to repeat said message only upon the condition that no primary unit has repeated said message, and not another secondary unit has repeated said message.

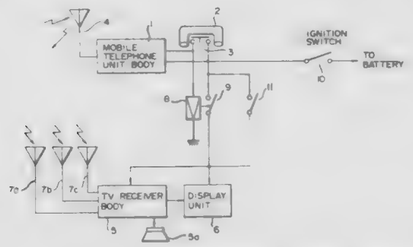


5,056,153

MOBILE ELECTRIC ACCESSORY APPARATUS

Tatsuaki Taniguchi, Hiroshima, and Takashi Hirata, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 28, 1988, Ser. No. 225,397
Claims priority, application Japan, Jul. 29, 1987, 62-187792; Jul. 29, 1987, 62-187794; Jul. 29, 1987, 62-187796
Int. Cl.[5] H04B *17/02*
U.S. Cl. 455—89 **14 Claims**



1. An apparatus for a vehicle having a wireless transceiver unit and a separate wireless receiver unit, comprising:

multiple receiving antennas for receiving electric waves for said wireless receiver unit, wherein one of the antennas of said multiple receiving antennas can be selectively connected to the wireless receiver in relationship to use of said transceiver unit;

a transceiving antenna, located elsewhere from the multiple receiving antennas, for transmitting and receiving electric waves for said wireless transceiver unit;

detecting means, operatively connected to said wireless transceiver unit, for detecting when the wireless transceiver unit is being used, and for providing an output signal in relationship thereto; and

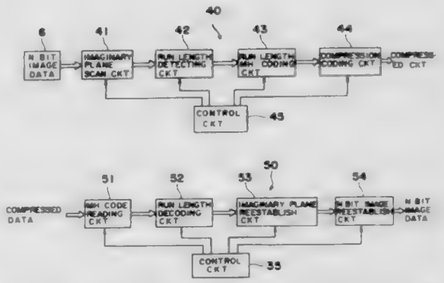
control means, operatively connected to said detecting means, for receiving the output signal from said detecting means when the detecting means detects that the transceiver unit is being used and for selecting an appropriate receiving antenna from said multiple receiving antennas for said wireless receiver unit in response to the output signal of said detecting means such that interference for the selected receiving antenna from the transceiving antenna is minimized.

5,056,154

TEXT IMAGE DATA COMPRESSION SYSTEM

Tomoko Aono, Tenri; Hiroyuki Katata, Nara, and Yoji Noguchi, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1989, Ser. No. 431,828
Claims priority, application Japan, Nov. 7, 1988, 63-281129; Apr. 26, 1989, 1-106328; Apr. 28, 1989, 1-109934
Int. Cl.[5] G06K *9/00;* **H04N** *7/12*
U.S. Cl. 382—56 **8 Claims**



1. A text image data compression system for compressing image data divided into bit planes and including data text images disposed in a plain background image, said text image data compression system comprising:

means for producing grey level image data for a plurality of pixels aligned in two orthogonal directions, each pixel being expressed by N bits of data which represent values varying from a maximum value to a minimum value, in which the pixels with maximum value represent background, the pixels with minimum value represent characters, and the pixels with intermediate value represent boundary portions between the background and characters;

means for replacing said maximum value N bit data with a first symbol followed by N−1 bit common data and replacing said minimum value N bit data with a second symbol followed by N−1 bit common data, so that background portions are expressed by N bit symbols comprised of said first symbol and a plurality of common symbols, character portions are expressed by N bit symbols comprised of said second symbol and a plurality of said common symbols, and intermediate grey level portions are expressed by N bit symbols comprised of binary 1's and binary 0's;

means for making a symbol alignment wherein the N bit symbols lie in different bit planes, such that the most significant symbols of said N bit symbols are collected and are aligned from a first row of said N bit symbols to a bottom row of said N bit symbols, the second significant symbols of said N bit symbols are collected and are aligned from said first row to said bottom row, kth significant symbols of said N bit symbols are collected and are aligned from said first row to said bottom row, in which k is between three and N−1, and the least significant symbols of said N bit symbols are collected and are aligned from said first row to said bottom row, and that all of said common symbols are removed; and

means for detecting run lengths in said symbol alignment after removal of said common symbols to produce run lengths of four different symbols.

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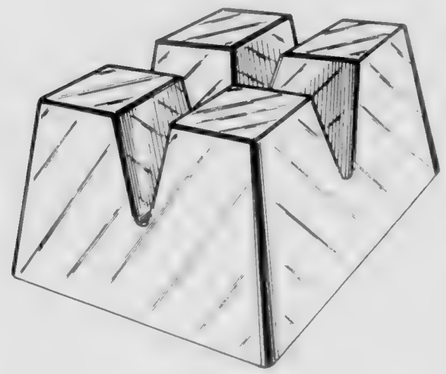
DESIGN PATENTS

GRANTED OCT. 8, 1991

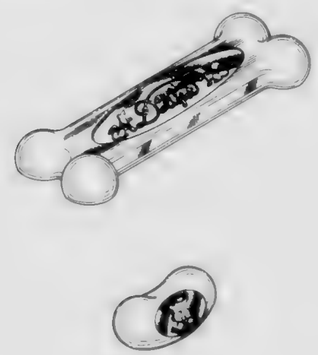
ERRATA

For CLASS	See PATENT NO.
D 6-333	320,528
D15-199	320,617

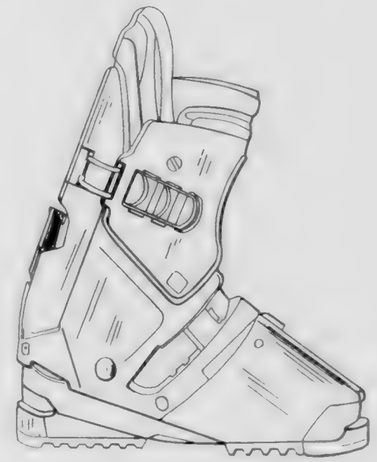
320,494
CUBIC ICE STRUCTURE
Sture C. Cederroth, New York, N.Y., and Bruce B. Zutler, Stamford, Conn., assignors to Arctic Icewater, Inc., New York, N.Y.
Filed Oct. 7, 1988, Ser. No. 255,149
Term of patent 14 years
U.S. Cl. D1—100



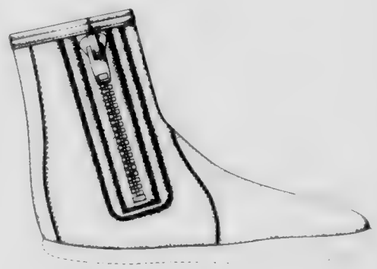
320,495
PET FOOD BISCUIT
Steven A. Pallesen, 8216 NW. 101st, Oklahoma City, Okla. 73162
Filed Sep. 9, 1988, Ser. No. 242,079
Term of patent 14 years
U.S. Cl. D1—110



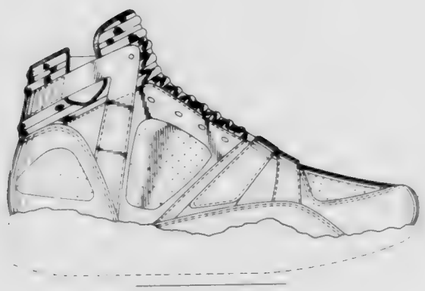
320,496
ALPINE SKI BOOT
Roger Pitiot, Chapeiry, and Henri De Rocca Serra, Annecy, France, assignors to Salomon S.A., Annecy, France
Filed Jan. 11, 1988, Ser. No. 141,902
Claims priority, application World Int. Prop. O., Jul. 13, 1987, DM/008953
Term of patent 14 years
U.S. Cl. D2—276



320,497
DIVER'S BOOT UPPER
Terry S. Steele, 221 Ocean Dunes Cir., Jupiter, Fla. 33477
Filed Jan. 6, 1989, Ser. No. 295,011
Term of patent 14 years
U.S. Cl. D2—314



320,498
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg. and Nike International Ltd., Bermuda
Filed Jul. 27, 1990, Ser. No. 558,415
Term of patent 14 years
U.S. Cl. D2—314



320,499
WOODEN NECKTIE
William A. White, and Deborah A. White, both of 15006 Inglewood Ave., #20, Lawndale, Calif. 90260
Filed Apr. 17, 1989, Ser. No. 338,774
Term of patent 14 years
U.S. Cl. D2—605

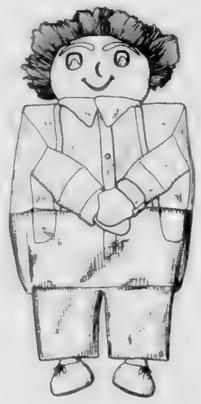


320,500
HOLDER FOR SCHOOL SUPPLIES
Erika Kuhnel, 10040 Kellogg Rd., El Paso, Tex. 79924
Filed Mar. 29, 1990, Ser. No. 500,854
Term of patent 14 years
U.S. Cl. D3—30.1

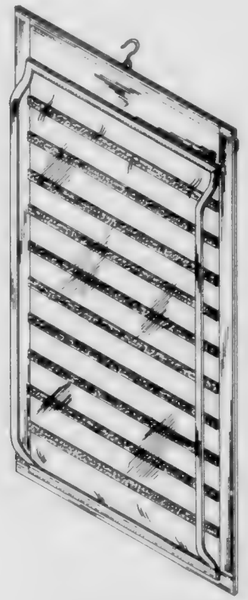




320,501
COMBINED BACK PACK AND DOLL
Victoria L. Marks, 2566 Laguna Rd., Santa Rosa, Calif. 95401
Filed Jul. 31, 1989, Ser. No. 387,107
Term of patent 14 years
U.S. Cl. D3—32



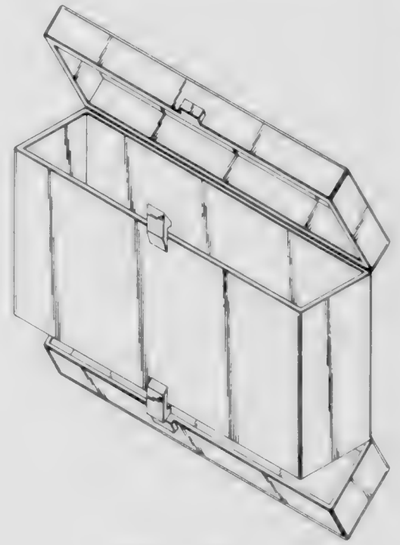
320,502
COLLAPSIBLE JEWELRY CLOSET OR THE LIKE
Linda J. Haines, 2582 Knotty Pine Way, Clearwater, Fla. 34621
Filed Apr. 5, 1989, Ser. No. 333,596
Term of patent 14 years
U.S. Cl. D3—75



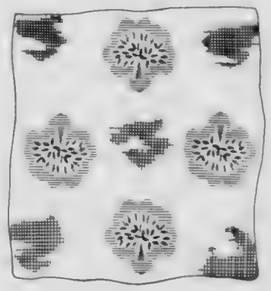
320,503
TRAVEL CASE
Jy-Cheng Jiang, 14, Sec. 1, Shin Ren Rd., Tay Pyng Shi, Tai-chung Hsien, Taiwan
Filed Oct. 6, 1988, Ser. No. 254,132
Term of patent 14 years
U.S. Cl. D3—76



320,504
COMBINED TACKLE AND BAIT CONTAINER
Leonard Mroczka, 1015 Literary Rd., Cleveland, Ohio 44113
Filed Jan. 13, 1989, Ser. No. 296,584
Term of patent 14 years
U.S. Cl. D3—104



320,505
WOVEN FABRIC
Roger Saul, Walton, assignor to Mulberry Company (Design) Limited, Bath, United Kingdom
Filed Jan. 9, 1989, Ser. No. 294,550
Claims priority, application United Kingdom, Jul. 7, 1988, 515197
Term of patent 14 years
U.S. Cl. D5—32



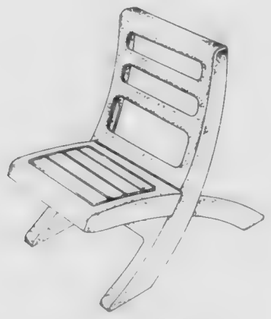
320,506
FABRIC
Frederick S. Nasser, 1502 W. 10th St., Sioux Falls, S. Dak. 57104
Filed Sep. 30, 1987, Ser. No. 102,902
Term of patent 14 years
U.S. Cl. D5—62



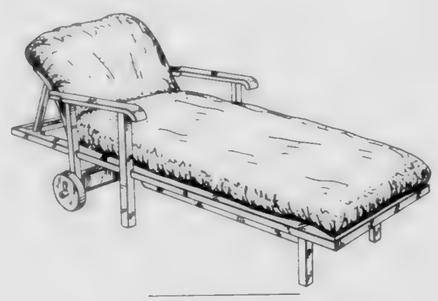
320,507
CHAIR
Michael R. Shields, Greensboro, N.C., assignor to Brayton International Collection, High Point, N.C.
Filed Aug. 15, 1988, Ser. No. 231,988
Term of patent 14 years
U.S. Cl. D6—366



320,508
CHILD'S MOLDED CHAIR
Ronald R. Klawitter, Berger, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Aug. 12, 1988, Ser. No. 231,467
Term of patent 14 years
U.S. Cl. D6—368



320,509
CHAISE LOUNGE
Sally S. Lewis, 8950 St. Ives Dr., Los Angeles, Calif. 90069
Filed May 31, 1988, Ser. No. 200,189
Term of patent 14 years
U.S. Cl. D6—361



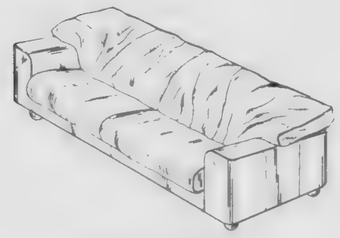
320,510
CHAIR
Dragomir N. Ivićević, New York, N.Y., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Apr. 24, 1986, Ser. No. 857,461
Term of patent 14 years
U.S. Cl. D6—379



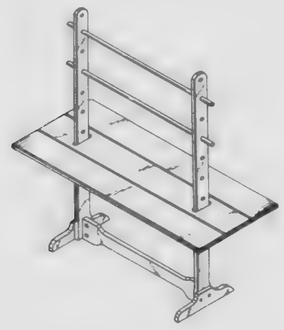
320,511
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company of Alabama, Inc., Birmingham, Ala.
Filed Aug. 24, 1988, Ser. No. 235,640
Term of patent 14 years
U.S. Cl. D6—379



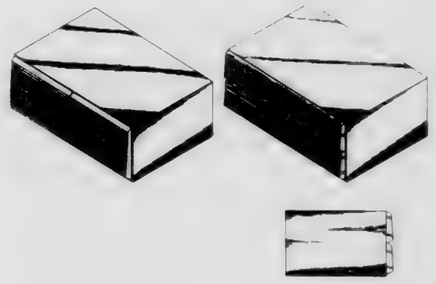
320,512
SOFA
Gerard Van Den Berg, Dongen, Netherlands, assignor to Montis B.V., Dongen, Netherlands
Filed Apr. 20, 1988, Ser. No. 184,035
Term of patent 14 years
U.S. Cl. D6—381



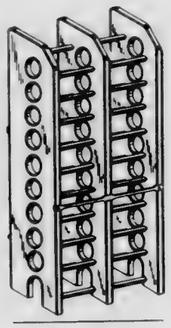
320,513
ADJUSTABLE RACK AND TABLE COMBINATION
Wm. David Atkins, 101B Parkside Pl., Rte. 1, Box 7149, Osage Beach, Mo. 65065
Filed Mar. 14, 1988, Ser. No. 167,454
Term of patent 14 years
U.S. Cl. D6—397



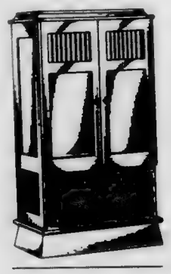
320,514
CABINET FOR AUDIO/VIDEO CASSETTE TAPES AND COMPACT DISCS
Richard D. Smith, 1942 W. Artesia Blvd., Torrance, Calif. 90504
Filed Apr. 19, 1990, Ser. No. 511,016
Term of patent 14 years
U.S. Cl. D6—407



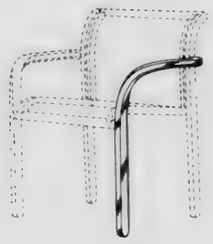
320,515
MODULAR SHOE ORGANIZER OR SIMILAR ARTICLE
George R. Staton, 3291 Solaridge, Las Cruces, N. Mex. 88001
Filed Apr. 8, 1988, Ser. No. 179,137
Term of patent 14 years
U.S. Cl. D6—411



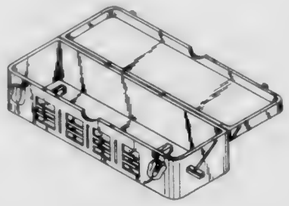
320,516
CUPBOARD
Jonathan Grey, Midhurst, England, assignor to Smallbone PLC, Berkshire, England
Filed Dec. 18, 1987, Ser. No. 134,893
Claims priority, application United Kingdom, Jun. 19, 1987, 1042972
Term of patent 14 years
U.S. Cl. D6—446



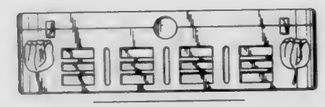
320,517
COMBINED LEG AND ARMREST UNIT FOR A CHAIR
Warren H. Snodgrass, 223 Woodland Rd., Kentfield, Calif. 94904
Division of Ser. No. 75,309, Jul. 20, 1987, Pat. No. Des. 308,305.
This application Dec. 1, 1987, Ser. No. 131,540
Term of patent 14 years
U.S. Cl. D6—501

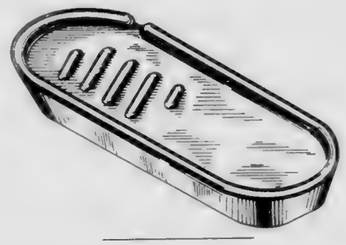


320,518
MOP HEAD STORAGE CONTAINER
Jean Sandt, 402 King St., E. Stroudsburg, Pa. 18301
Filed Aug. 21, 1989, Ser. No. 396,460
Term of patent 14 years
U.S. Cl. D6—512

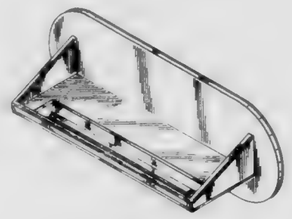


320,519
SOAP DISH
Maurice Y. Magnin, Par Bornel, France, and Mary J. Reid, Sheboygan, Wis., assignors to Jacob Delafon, Paris, France
Filed Oct. 31, 1989, Ser. No. 429,878
Term of patent 14 years
U.S. Cl. D6—536

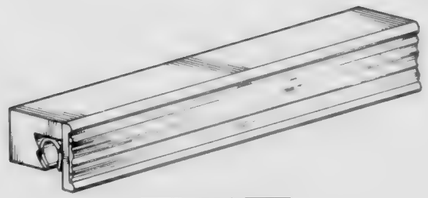




320,520
HOLDER FOR THE SUSPENSION OF A PAIR OF COLLAPSIBLE TOOTHPASTE OR SHAMPOO TUBES
Thomas H. Wolf, Buffalo Grove, and Andy L. Berger, Grayslake, both of Ill., assignors to Superwares, Inc., Hodgkins, Ill.
Filed Oct. 24, 1989, Ser. No. 426,392
Term of patent 14 years
U.S. Cl. D6—541

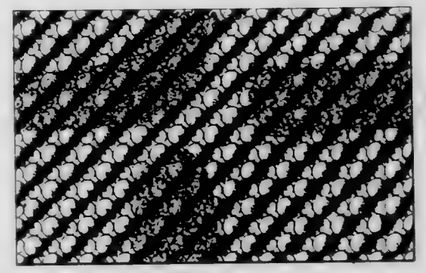


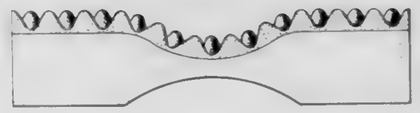
320,521
HANGER FOR WALL QUILTS
August Baur, R.R. #1 Box 254, Keene, N.H. 03431
Filed Aug. 14, 1989, Ser. No. 393,473
Term of patent 14 years
U.S. Cl. D6—553

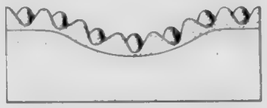


320,522
COMBINED PILLOW CASE AND MULTIPLE PILLOW ASSEMBLY
James R. Deremiah, 1530 Key Blvd., No. 317, Arlington, Va. 22209
Filed Sep. 12, 1988, Ser. No. 243,492
Term of patent 14 years
U.S. Cl. D6—601



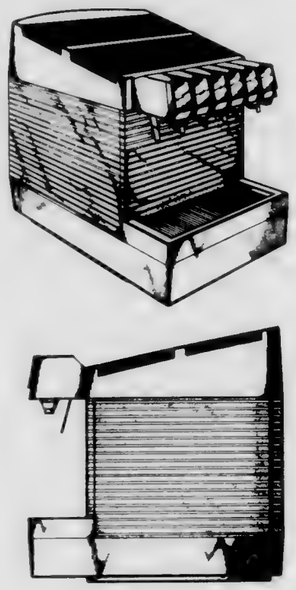




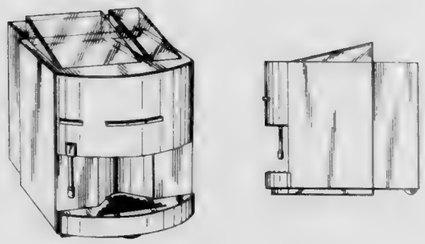


320,523
BODY SUPPORT FOR USE AS A NIGHTTIME CERVICAL SUPPORT OR A DAYTIME LUMBO-SACRAL SUPPORT
John E. Vinsant, Jr., 1112 S. North Lake Dr., Hollywood, Fla. 33019
Filed Feb. 1, 1989, Ser. No. 304,834
Term of patent 14 years
U.S. Cl. D6—601

320,524
BEVERAGE DISPENSER
Alvin H. Schechter, New York, N.Y., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Sep. 2, 1988, Ser. No. 240,788
Term of patent 14 years
U.S. Cl. D7—308



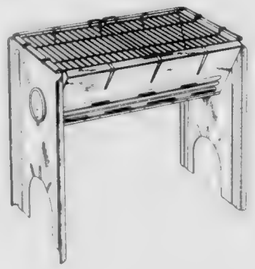
320,525
COFFEE MAKER
Jose M. Vidal-Brualla, Barcelona, Spain, assignor to C.M.H., S.A., Barcelona, Spain
Filed Oct. 12, 1988, Ser. No. 257,025
Claims priority, application Spain, Apr. 15, 1988, 115.726
Term of patent 14 years
U.S. Cl. D7—309



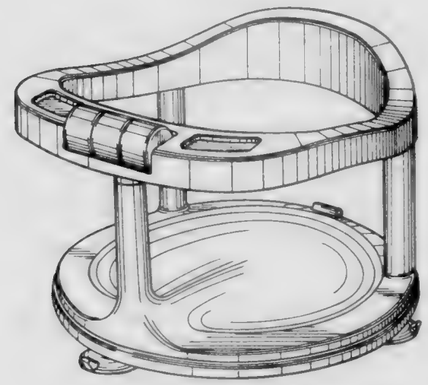
320,526
TEA POT OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 17, 1988, Ser. No. 169,354
Term of patent 14 years
U.S. Cl. D7—321



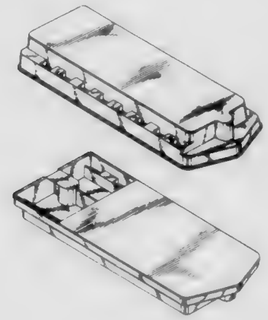
320,527
GRILL
James O. Carroll, Dallas, Tex., assignor to Band of the West, Irving, Tex.
Filed Aug. 5, 1988, Ser. No. 228,560
Term of patent 14 years
U.S. Cl. D7—332



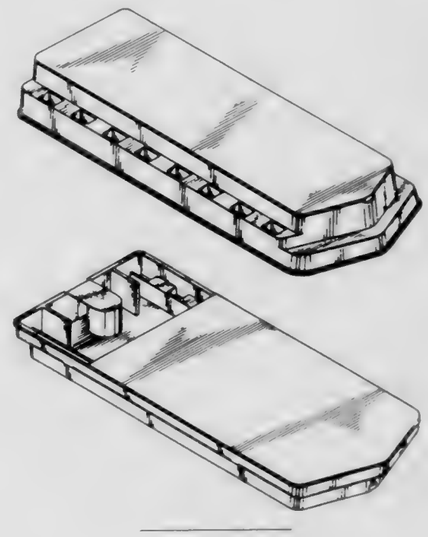
320,528
SWIVEL BATH SEAT FOR INFANTS
Michael S. Bernstein, Natick, Mass.; David W. Crossley, Woonsocket, R.I., and Michael I. Lerner, Brookline, Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Nov. 20, 1989, Ser. No. 441,063
Term of patent 14 years
U.S. Cl. D6—333



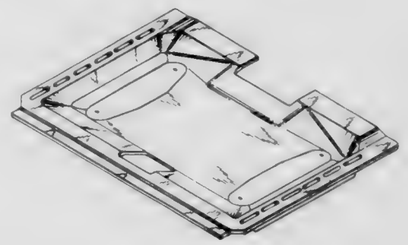
320,529
PACKAGE-FILTER COMBINATION FOR A BEVERAGE PREPARATION MACHINE OR THE LIKE
Alec T. Newman, and Charles A. Bentley, both of Banbury, United Kingdom, assignors to General Foods Limited, Banbury, United Kingdom
Filed Sep. 13, 1988, Ser. No. 244,452
Claims priority, application United Kingdom, Mar. 17, 1988, 1049284
Term of patent 14 years
U.S. Cl. D7—399



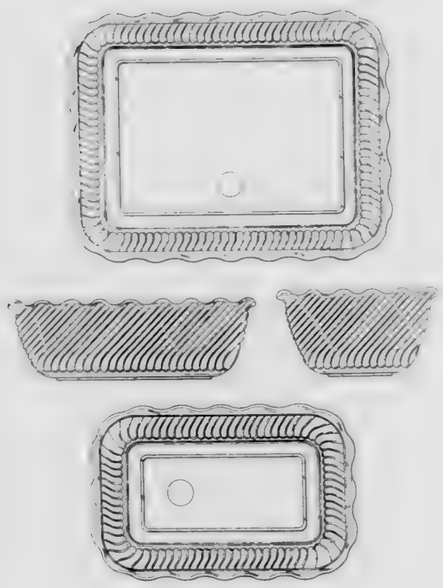
320,530
PACKAGE-FILTER COMBINATION FOR A BEVERAGE PREPARATION MACHINE OR THE LIKE
Alec T. Newman, and Charles A. Bentley, both of Banbury, United Kingdom, assignors to General Foods Limited, Banbury, United Kingdom
Filed Sep. 13, 1988, Ser. No. 244,453
Claims priority, application United Kingdom, Mar. 17, 1988, 1049286
Term of patent 14 years
U.S. Cl. D7—399



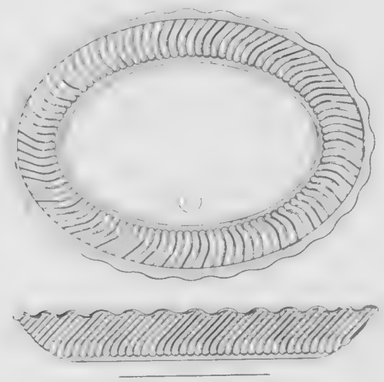
320,531
SUB-TOP FOR A GAS RANGE
Ronald D. Schweitzer, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed May 29, 1987, Ser. No. 55,750
Term of patent 14 years
U.S. Cl. D7—402



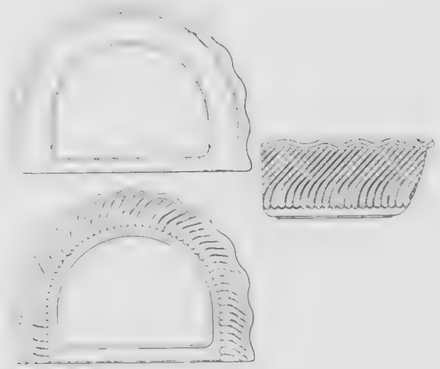
320,532
FOOD SERVING BOWL
David J. Zielinski, and Lloyd M. Finney, both of Oklahoma City, Okla., assignors to Continental Carlisle Inc., Oklahoma City, Okla.
Filed Mar. 13, 1989, Ser. No. 322,068
Term of patent 14 years
U.S. Cl. D7—560



320,533
FOOD SERVING BOWL
David J. Zielinski, and Lloyd M. Finney, both of Oklahoma City, Okla., assignors to Continental Carlisle Inc., Oklahoma City, Okla.
Filed Mar. 13, 1989, Ser. No. 322,230
Term of patent 14 years
U.S. Cl. D7—560



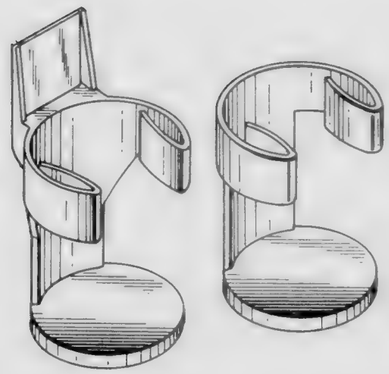
320,534
FOOD SERVING BOWL
Lloyd M. Finney; David J. Zielinski, and Steven R. Lawson, all of Oklahoma City, Okla., assignors to Continental Carlisle Inc., Oklahoma City, Okla.
Filed May 30, 1989, Ser. No. 357,874
Term of patent 14 years
U.S. Cl. D7—560



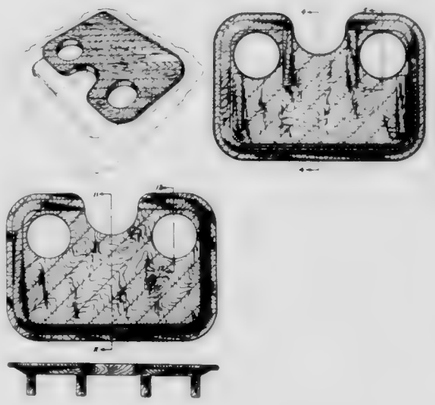
320,535
FOOD SERVER
Ferdinand H. Ferino, 736 Robinson Ave., San Diego, Calif. 92103
Filed Aug. 8, 1988, Ser. No. 229,358
Term of patent 14 years
U.S. Cl. D7—589



320,536
CONTAINER HOLDER
Bryan D. Silbernagel, 2311 Hwy. 1D East, Moorhead, Minn. 56560
Filed Jul. 3, 1989, Ser. No. 374,937
Term of patent 14 years
U.S. Cl. D7—619



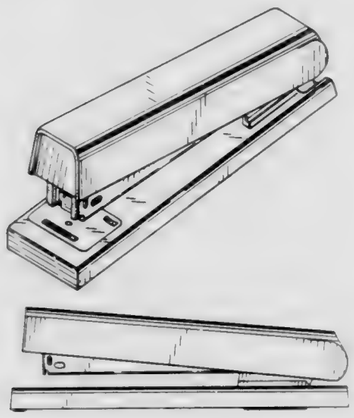
320,537
CUTTING BOARD OR THE LIKE
Bruce M. Sauter, Schaumburg, Ill., and Robert B. Freville, Sheboygan Falls, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 17, 1989, Ser. No. 297,914
Term of patent 14 years
U.S. Cl. D7—698



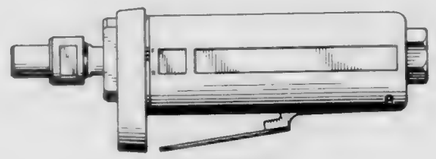
320,538
FIREPLACE FORK
Roger S. Thompson, and Doris Thompson, both of Rte. 1, Box 90-C, Goodwater, Ala. 35072
Filed Aug. 11, 1988, Ser. No. 231,049
Term of patent 14 years
U.S. Cl. D8—14



320,539
HOME/OFFICE STAPLER
Martin J. Leff, New York; Edward E. Barrett, Missapequa Park, both of N.Y.; William S. Carvell, Mt. Prospect, and Charles J. Fahrner, Streamwood, both of Ill., assignors to Swingline Inc., Long Island City, N.Y.
Filed Feb. 7, 1989, Ser. No. 307,102
Term of patent 14 years
U.S. Cl. D8—50

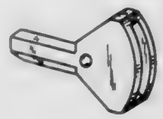


320,540
PNEUMATIC TOOL
Robert B. Staubitz, Collinsville, Conn.; Gregory P. Albert, Waverly, N.Y.; Kenneth J. Dubuque, Sheshequin, and Charles J. Hix, Jr., Ulster, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Mar. 15, 1989, Ser. No. 324,333
Term of patent 14 years
U.S. Cl. D8—61

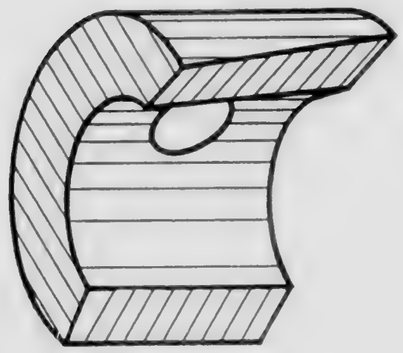


320,541
ANGLED PNEUMATIC TOOL
Robert B. Staubitz, Collinsville, Conn.; Gregory P. Albert, Waverly, N.Y.; Kenneth J. Dubuque, Sheshequin, Pa.; Charles J. Hix, Jr., and Duane S. Gable, both of Ulster, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Mar. 16, 1989, Ser. No. 324,520
Term of patent 14 years
U.S. Cl. D8—61

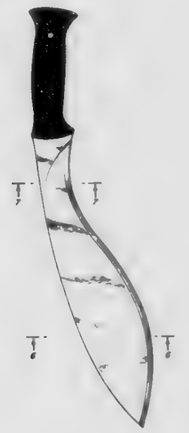
320,542
ROUNDED CUP HOOK DRIVER
Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Filed Sep. 27, 1988, Ser. No. 250,124
Term of patent 14 years
U.S. Cl. D8—70



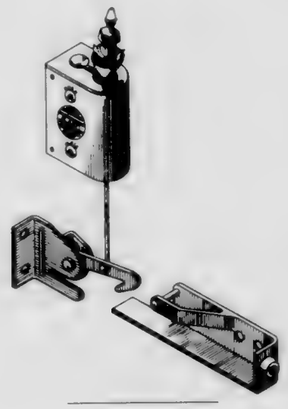
320,543
SAW TOOTH
Sylvain Gilbert, 1641 St. Dominique Street, Roberval, Canada G8H 2P1
Filed Oct. 21, 1988, Ser. No. 264,249
Term of patent 14 years
U.S. Cl. D8—70



320,544
UTILITY KNIFE
Lynn C. Thompson, 987 Sand Piper Ct., Ventura, Calif. 93001
Filed Dec. 27, 1988, Ser. No. 289,794
Term of patent 14 years
U.S. Cl. D8—98



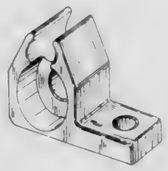
320,545
ALARMED LATCH ASSEMBLY FOR A SLIDING DOOR
Joseph T. Sciarrino, 2271 Woodlawn Cir., Melbourne, Fla. 32935
Filed Feb. 2, 1989, Ser. No. 305,209
Term of patent 14 years
U.S. Cl. D8—339



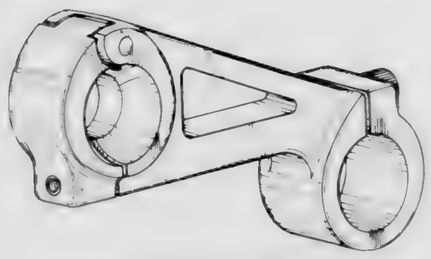
320,546
LOCKING FASTENERS
Elov Olssen, Alfta, Sweden, assignor to NEFAB AB, Alfta, Sweden
Filed Jun. 12, 1989, Ser. No. 365,234
Term of patent 14 years
U.S. Cl. D8—389



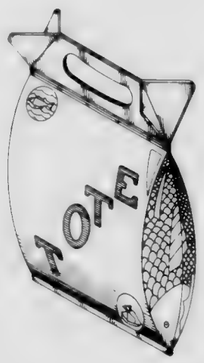
320,547
UNIVERSAL HOLD DOWN BRACKET FOR VENETIAN BLINDS
George Georgopoulos, Pine Brook, N.J., assignor to Levolor Corporation, Sunnyvale, Calif.
Filed May 30, 1989, Ser. No. 359,089
Term of patent 14 years
U.S. Cl. D8—396



320,548
MOUNTING BRACKET
John A. Blatt, 47 Willison, Grosse Pointe Shores, Mich. 48026
Division of Ser. No. 271,083, Nov. 14, 1988, Pat. No. Des. 315,094. This application May 7, 1990, Ser. No. 519,676
Term of patent 14 years
U.S. Cl. D8—396



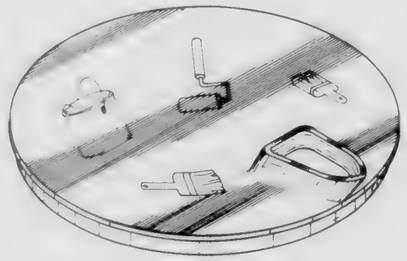
320,549
CARTON
Kelly McKellar, 24 Fay Road, S.E., Calgary, Alberta, Canada T2H-1H4, and Robert Pozzebon, 10407 2nd St., S.E., Calgary A.B., Canada T2V 0W6
Filed Jul. 13, 1989, Ser. No. 379,149
Term of patent 14 years
U.S. Cl. D9—311



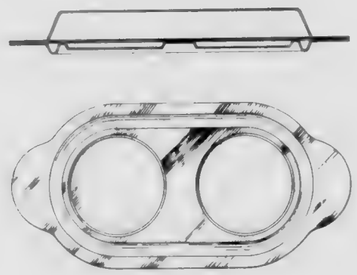
320,550
COMBINED PERFUME BOTTLE AND CAP
Ricci Arturo, Milan, Italy, assignor to Proteo S.p.A., Milan, Italy
Filed Apr. 21, 1989, Ser. No. 342,382
Claims priority, application Italy, Jun. 17, 1988, 21451/88[U]
Term of patent 14 years
U.S. Cl. D9—367



320,551
DISPENSING CLOSURE
Vyrene S. Wilson, 19323 Carolina Cir., Boca Raton, Fla. 33434
Filed Dec. 2, 1988, Ser. No. 280,194
Term of patent 14 years
U.S. Cl. D9—447



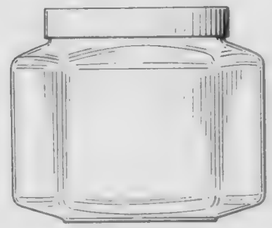
320,552
PACKAGE
Arthur Chanel, Polliat, France, assignor to Fromageries Bresse-Bleu- Societe Laitiere Cooperative Agricole, Servas, France
Filed Jan. 11, 1988, Ser. No. 142,237
Claims priority, application France, Jul. 10, 1987, 874.124
Term of patent 14 years
U.S. Cl. D9—341



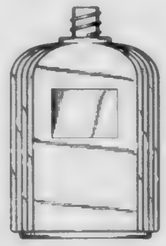
320,553
BOTTLE
Kenneth G. McLin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 18, 1989, Ser. No. 381,563
Term of patent 14 years
U.S. Cl. D9—376



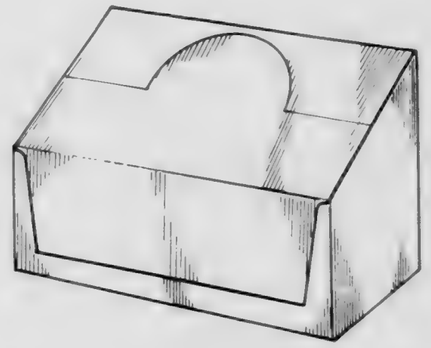
320,554
COMBINED JAR AND LID
Robert Van Dine, and John L. Boyle, both of Los Angeles, Calif., assignors to St. Ives Laboratories, Inc., Chatsworth, Calif.
Filed Sep. 19, 1988, Ser. No. 246,175
Term of patent 14 years
U.S. Cl. D9—403



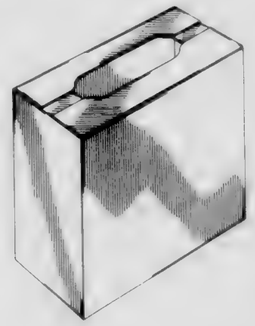
320,555
BOTTLE
Sergio O. Ramos, Oso No. 40, 4th Floor, Col. del Valle, 03100 Mexico, D. F., Mexico
Filed Oct. 17, 1988, Ser. No. 258,595
Claims priority, application Mexico, Oct. 23, 1987, 1138
Term of patent 14 years
U.S. Cl. D9—407



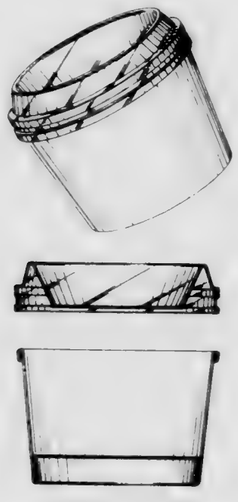
320,556
DISPLAY BOX
Mark Fairhurst, Cornwall, England, assignor to Fax-Pax Investments N.V., Curacao, Netherlands Antilles
Filed Aug. 25, 1988, Ser. No. 236,135
Claims priority, application United Kingdom, Feb. 26, 1988, 1048861; Feb. 26, 1988, 1048862
Term of patent 14 years
U.S. Cl. D9—414



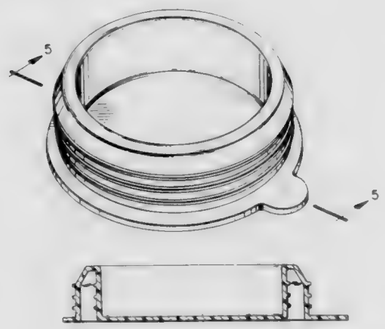
320,557
CARTON WITH PARTIALLY OPEN ENDS
Richard L. Schuster, Monroe, La., assignor to Manville Forest Products Corporation, Denver, Colo.
Filed Oct. 5, 1989, Ser. No. 417,758
Term of patent 14 years
U.S. Cl. D9—418



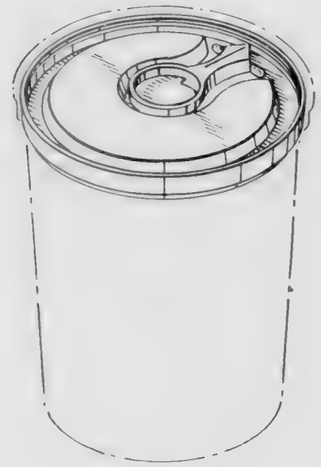
320,558
COMBINED CONTAINER AND CLOSURE FOR FROZEN COMESTIBLES
Timothy L. Timm, Green Bay, Wis., assignor to Steve's Homemade Ice Cream, Inc., Lindenhurst, N.Y.
Filed Feb. 3, 1989, Ser. No. 306,312
Term of patent 14 years
U.S. Cl. D9—435



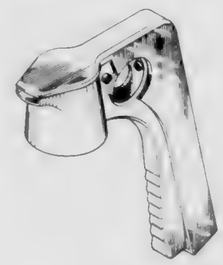
320,559
JAR LID
Luverne C. Olson, Rte. 1, Box 316, Kasota, Minn. 56050
Filed Apr. 7, 1989, Ser. No. 334,383
Term of patent 14 years
U.S. Cl. D9—439



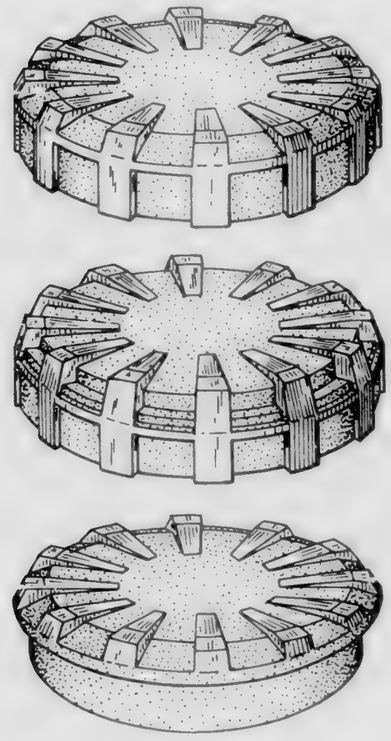
320,560
COMBINED CLOSURE AND OPENER FOR A CUP LID
David O. Allen, Wilmington, Ohio, assignor to Allen Tool Company, Inc., Wilmington, Ohio
Continuation-in-part of Ser. No. 894,674, Aug. 8, 1986, Pat. No. Des. 305,734, which is a continuation-in-part of Ser. No. 526,352, Aug. 25, 1983, Pat. No. Des. 285,056. This application Sep. 29, 1989, Ser. No. 414,933
Term of patent 14 years
U.S. Cl. D9—438



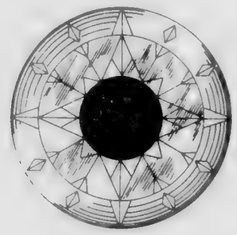
320,561
COMBINED DISPENSING SPOUT AND HANDLE FOR CONTAINERS
Gdalia Glazer, Jabotinsky St. 66/10, Rishon L'Zion, Israel
Filed Aug. 7, 1989, Ser. No. 390,264
Term of patent 14 years
U.S. Cl. D9—443



320,562
FUEL CAP
Robert R. Brester, New Berlin, and Thomas L. Roberts, Mukwonago, both of Wis., assignors to Velvac, Inc., New Berlin, Wis.
Filed Dec. 11, 1989, Ser. No. 448,597
Term of patent 14 years
U.S. Cl. D9—452



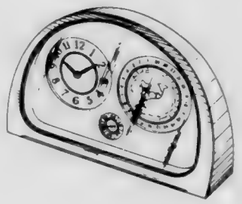
320,563
CLOCK
Janis Skrundens, 2190 Loring Pl., Bronx, N.Y. 10453
Division of Ser. No. 919,779, Oct. 1, 1990, Pat. No. Des. 314,341. This application Feb. 5, 1991, Ser. No. 650,653
Term of patent 14 years
U.S. Cl. D10—1



320,564
COMBINED CLOCK AND CALENDAR
John F. Sharkey, Sarasota, Fla., assignor to Robert Blend, Sarasota, Fla.
Filed Jan. 30, 1989, Ser. No. 303,950
Term of patent 14 years
U.S. Cl. D10—3



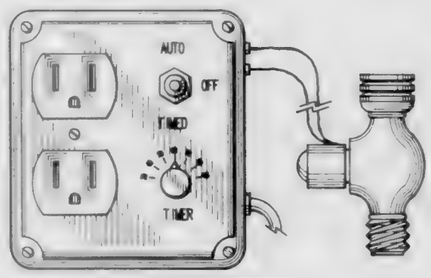
320,565
CLOCK
Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1989, Ser. No. 297,826
Claims priority, application Japan, Aug. 11, 1988, 6332194
Term of patent 14 years
U.S. Cl. D10—10



320,566
WRISTWATCH AND STRAP
Doris Ericson, 48, Prins Boudewijnlaan, Schilde, Belgium
Filed Nov. 4, 1988, Ser. No. 266,995
Claims priority, application World Int. Prop. O., May 11, 1988, DM/010931
Term of patent 14 years
U.S. Cl. D10—32



320,568
COMBINED TIMER AND VALVES FOR WASHING MACHINE WATER FLOW CONTROL
Don L. Black, 10051 Biscanewoods Way, Sacramento, Calif. 95827
Filed Sep. 2, 1988, Ser. No. 239,969
Term of patent 14 years
U.S. Cl. D10—40



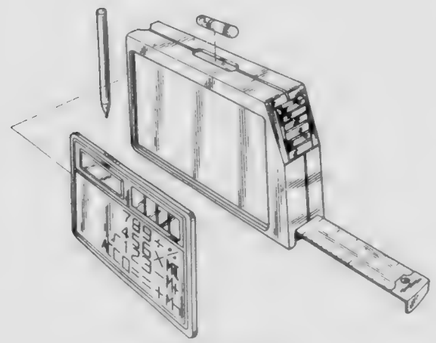
320,569
TENNIS HEIGHT MEASURING ROD
Irwin Goldberg, 31 N. Mill Rd., Cranbury, N.J. 08512
Filed Jul. 25, 1989, Ser. No. 384,675
Term of patent 14 years
U.S. Cl. D10—70



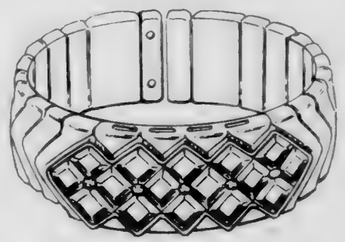
320,567
WRIST WATCH
Masamichi Wakamatsu, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1988, Ser. No. 289,573
Term of patent 14 years
U.S. Cl. D10—38



320,570
MULTIPLEX MEASURING TAPE
Henry Lin, Shin Joun, Taiwan, assignor to Index Measuring Tape Company Ltd., Shin Joun, Taiwan
Filed Mar. 7, 1989, Ser. No. 319,786
Term of patent 14 years
U.S. Cl. D10—72



320,572
BRACELET
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Filed Jul. 13, 1988, Ser. No. 218,035
Claims priority, application World Int. Prop. O., Jan. 14, 1988, DM/010065; Jan. 29, 1988, DM/010181
Term of patent 14 years
U.S. Cl. D11—16



320,573
EARRING
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Division of Ser. No. 44,113, Apr. 30, 1987, Pat. No. Des. 310,182. This application Apr. 26, 1990, Ser. No. 514,527
Claims priority, application Italy, Oct. 31, 1986, 36212/86[U]
Term of patent 14 years
U.S. Cl. D11—76



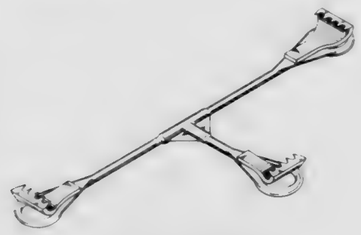
320,571
ALARM UNIT HOUSING
Terence J. Ray, 45 Edna Ave., Merrylands, N.S.W. 2160, Australia
Filed Mar. 16, 1989, Ser. No. 324,344
Claims priority, application Australia, Sep. 16, 1988, 3139/88
Term of patent 14 years
U.S. Cl. D10—106



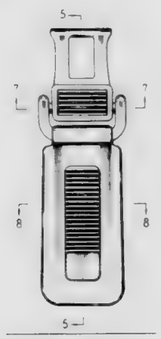
320,574
PENDANT
Charles E. Alton, 209 75th Ave., St. Petersburg Beach, Fla. 33706
Filed Apr. 18, 1988, Ser. No. 182,575
Term of patent 14 years
U.S. Cl. D11—82



320,575
DIAPER FASTENER
Japie Crafford, Pretoria, South Africa, assignor to Snappi Holdings (Proprietary) Limited, Pretoria, South Africa
Filed Jan. 26, 1989, Ser. No. 302,218
Claims priority, application South Africa, Jul. 26, 1988, 88/0833
Term of patent 14 years
U.S. Cl. D11—200



320,576
PULL TAB FOR SLIDE FASTENER
Yasuharu Terada, Uozu, and Chiharu Takemura, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Apr. 24, 1989, Ser. No. 342,566
Term of patent 14 years
U.S. Cl. D11—221



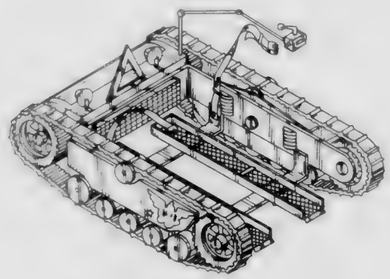
320,577
PULL TAB FOR SLIDE FASTENER
Yasuharu Terada, Uozu, and Yoshiyuki Horita, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed May 30, 1989, Ser. No. 357,857
Term of patent 14 years
U.S. Cl. D11—221



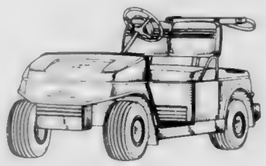
320,578
PULL TAB FOR SLIDE FASTENER
Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jun. 5, 1989, Ser. No. 361,587
Claims priority, application Japan, Dec. 8, 1988, 63-47903
Term of patent 14 years
U.S. Cl. D11—221



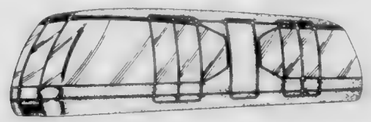
320,579
MOTORIZED INVALID CHAIR TRANSPORT VEHICLE
Robert M. Manning, and Suzan M. Manning, both of 1505 W. 25th St., #114-A, Sanford, Fla. 32773
Filed Feb. 23, 1989, Ser. No. 313,817
Term of patent 14 years
U.S. Cl. D12—1



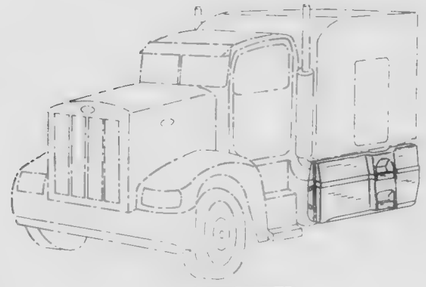
320,580
GOLF CAR
Deok J. Kim, Seoul, Rep. of Korea, assignor to Hyundai Precision & Ind. Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 16, 1989, Ser. No. 367,226
Term of patent 14 years
U.S. Cl. D12—16



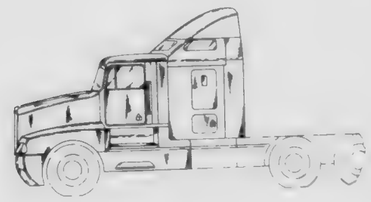
320,581
PASSENGER VEHICLE
Joseph Gallitzendörfer, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany
Filed Dec. 6, 1988, Ser. No. 280,534
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1988, MR 6435
Term of patent 14 years
U.S. Cl. D12—37



320,582
FAIRING FOR THE SLEEPER COMPARTMENT OF A TRUCK CAB
Robert F. Fingerle, Fremont, Calif., assignor to Paccar Inc., Bellevue, Wash.
Filed Jun. 30, 1989, Ser. No. 374,941
Term of patent 14 years
U.S. Cl. D12—96



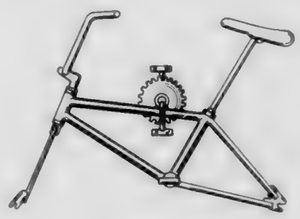
320,583
COMBINED TRUCK CAB BODY AND SLEEPER COMPARTMENT
Wayne K. Simons, Kent; Donald A. Richardson, Renton, and Roy L. Meryman, Bellevue, all of Wash., assignors to Paccar Inc., Bellevue, Wash.
Division of Ser. No. 374,645, Jun. 30, 1989, abandoned. This application Mar. 15, 1990, Ser. No. 493,892
Term of patent 14 years
U.S. Cl. D12—96



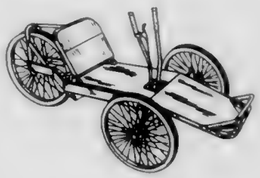
320,584
COMBINED FRONT PANEL AND BUMPER UNIT EXTERIOR SURFACE
Clayton D. Partin, Riverside, Calif., assignor to Fleetwood Enterprises, Inc., Riverside, Calif.
Filed Feb. 27, 1990, Ser. No. 485,729
Term of patent 14 years
U.S. Cl. D12—100



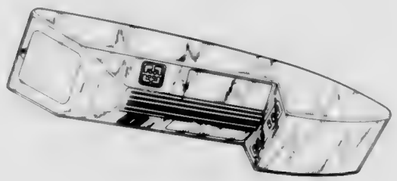
320,585
BICYCLE FRAME
Sidney S. Brown, 2269 Creston Ave., Bronx, N.Y. 10453
Filed Nov. 29, 1989, Ser. No. 442,940
Term of patent 14 years
U.S. Cl. D12—111



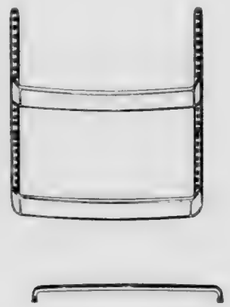
320,586
RECUMBENT TRICYCLE
Kelvin Tellinghuisen, 5100 E. Prospect, Sioux Falls, S. Dak. 57103
Filed Aug. 10, 1989, Ser. No. 393,302
Term of patent 14 years
U.S. Cl. D12—112



320,587
OVERHEAD CONSOLE
Gregory W. Kapp, St. Joseph, and Michael L. Ives, Coloma, both of Mich., assignors to Innocorp Manufacturing, Inc., Coloma, Mich.
Filed May 12, 1989, Ser. No. 351,163
Term of patent 14 years
U.S. Cl. D12—155



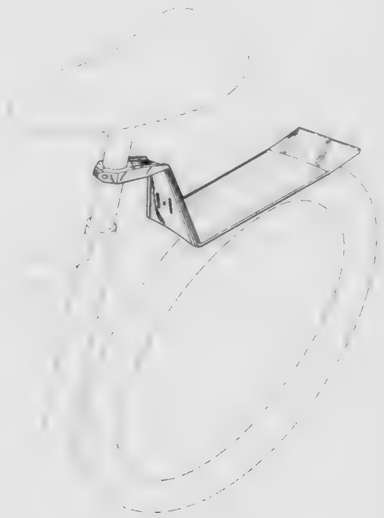
320,588
LUGGAGE CARRIER
Jerald J. Foster, Milford, and Craig Stapleton, Port Huron, both of Mich., assignors to Huron/St. Clair Incorporated, Port Huron, Mich.
Filed Jun. 1, 1989, Ser. No. 360,172
Term of patent 14 years
U.S. Cl. D12—157



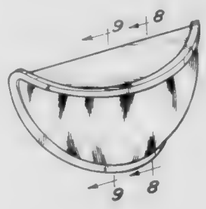
320,589
MULTI-PURPOSE CONTROL HANDLE
Craig B. Kelley, Dunlap; Val G. Boucher, Roanoke, and Noel J. Rytter, Peoria, all of Ill., assignors to Caterpillar, Inc., Peoria, Ill.
Filed Nov. 2, 1989, Ser. No. 430,446
Term of patent 14 years
U.S. Cl. D12—179



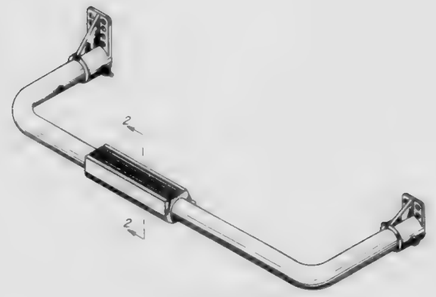
320,590
BICYCLE MUD GUARD
Christopher J. Dunn, 690 Manzanita, Corte Madera, Calif. 94925
Filed Aug. 10, 1989, Ser. No. 392,148
Term of patent 14 years
U.S. Cl. D12—186



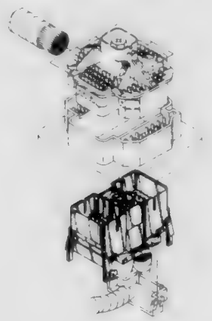
320,591
VEHICULAR MIRROR
William P. Schmidt, 21000 Woodruff, Rockwood, Mich. 48173, and Franklin D. Hutchinson, 28000 Beel Rd., New Boston, Mich. 48164
Filed Dec. 16, 1988, Ser. No. 285,230
Term of patent 14 years
U.S. Cl. D12—187



320,592
VEHICLE MOUNTED SIDE BAR
Michael J. Straka, Newbergh, N.Y., assignor to Sparkomatic Corporation, Milford, Pa.
Filed Nov. 2, 1988, Ser. No. 266,362
Term of patent 14 years
U.S. Cl. D12—190



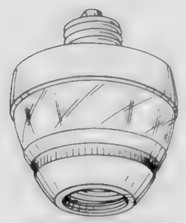
320,593
ELECTRICAL CONNECTOR HOUSING
Yasuhiro Nagasaka, Toyota, and Yuji Hatagishi, Shizuoka, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jul. 3, 1989, Ser. No. 374,859
Claims priority, application Japan, Jan. 6, 1989, 64-52
Term of patent 14 years
U.S. Cl. D13—147



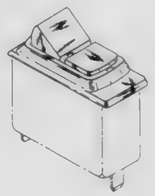
320,594
ELECTRICAL CONNECTOR HOUSING
Yasuhiro Nagasaka; Yasuo Hirayama; Ichiro Shibata, all of Toyota; Tadahiro Sueyoshi, Shizuoka; Masanori Tsuji, Shizuoka; Yoshihiro Murakami, Shizuoka; Takayuki Yamamoto, Shizuoka, and Masaru Fukuda, Shizuoka, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jul. 3, 1989, Ser. No. 374,862
Claims priority, application Japan, Jan. 6, 1989, 64-000058
Term of patent 14 years
U.S. Cl. D13—147



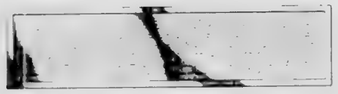
320,595
LIGHT SOCKET WITH PASSIVE INFRARED MOTION ACTUATED SWITCH
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Northbrook, Ill.
Filed May 13, 1987, Ser. No. 49,085
Term of patent 14 years
U.S. Cl. D13—158

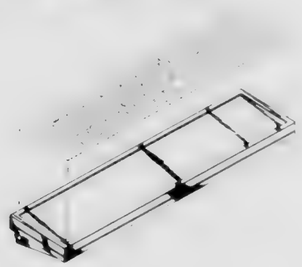


320,596
MANUAL OPERATOR FOR CIRCUIT BREAKER
Bruce C. Sdunek, Howell, Mich., assignor to Mechanical Products, Inc., Jackson, Mich.
Filed Mar. 15, 1989, Ser. No. 323,981
Term of patent 14 years
U.S. Cl. D13—174



320,597
COMPUTER KEYBOARD HOUSING
Clifford E. Lacount, Townsend, and Peter S. Macdonald, Reading, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Jan. 24, 1989, Ser. No. 301,305
Term of patent 14 years
U.S. Cl. D14—115

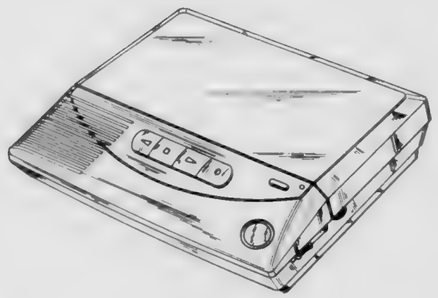




320,598
PORTABLE KEYBOARD FOR REMOTE CONTROLLER
Marc Auerbach, Huntington Beach; Lawrence D. Emmons, Grass Valley, and Douglas M. Patton, Irvine, all of Calif., assignors to Mitsubishi Electric Sales America, Inc., Cypress, Calif.
Filed Nov. 2, 1989, Ser. No. 430,658
Term of patent 14 years
U.S. Cl. D14—115

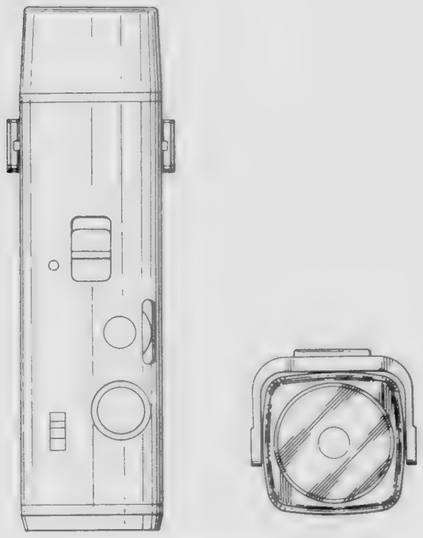


320,599
TELEPHONE ANSWERING MACHINE
Paul B. Ocepek, Syracuse, N.Y., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Feb. 19, 1991, Ser. No. 657,219
Term of patent 14 years
U.S. Cl. D14—141





320,600
COMBINED AM/FM RADIO, TORCH BLINKER AND BEAM LIGHT WITH CLIP
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Hong Kong
Filed Oct. 4, 1989, Ser. No. 417,004
Claims priority, application United Kingdom, Apr. 4, 1989, 1058364
Term of patent 14 years
U.S. Cl. D14—168



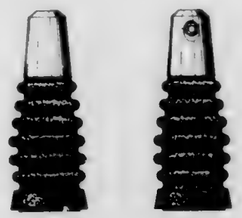
320,601
AUTOMOBILE ANTENNA
Shoji Harada, Gardena, Calif., assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 8, 1989, Ser. No. 349,064
Term of patent 14 years
U.S. Cl. D14—234



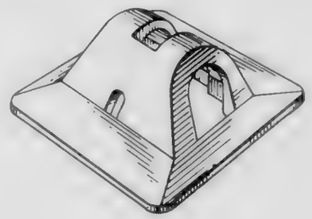
320,602
ANTENNA MOUNT
Alex F. Wells, and David M. Phemister, both of Vancouver, Wash., assignors to Larsen Electronics, Inc., Vancouver, Wash.
Filed Mar. 10, 1989, Ser. No. 322,048
Term of patent 14 years
U.S. Cl. D14—238



320,603
ANTENNA MOUNT
George R. Jones, Arlington, Tex., assignor to Fastener Specialty, Inc., Grand Prairie, Tex.
Filed Jun. 22, 1989, Ser. No. 369,915
Term of patent 14 years
U.S. Cl. D14—238



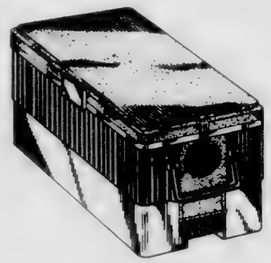
320,604
COVER FOR AN ANTENNA BASE
David A. Hutchison, Solon, and James Hadzoglou, Mayfield Hts., both of Ohio, assignors to Orion Industries, Inc., Solon, Ohio
Filed Oct. 23, 1990, Ser. No. 602,197
Term of patent 14 years
U.S. Cl. D14—238

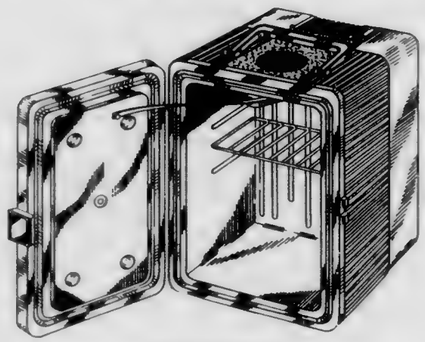


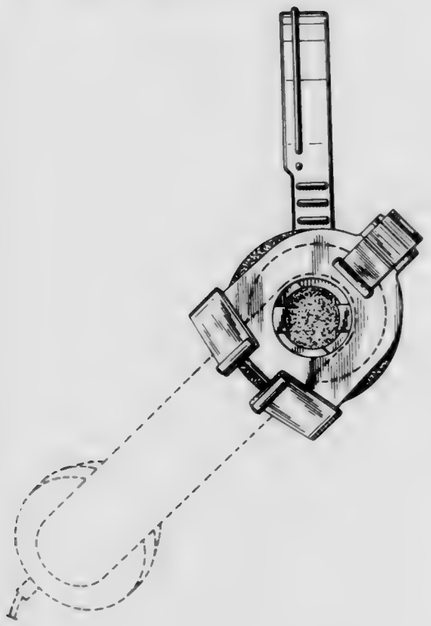
320,605
HEAD SUPPORT FOR A TELEPHONE HANDSET
Dennis Chan, Kowloon, Hong Kong, assignor to Sun Plan Investments Limited, Hong Kong, Hong Kong
Filed Sep. 6, 1989, Ser. No. 403,731
Claims priority, application United Kingdom, Mar. 6, 1989, 1057646
Term of patent 14 years
U.S. Cl. D14—253



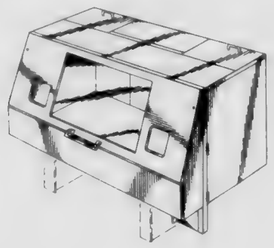
320,606
PORTABLE REFRIGERATOR, WARMER, OR THE LIKE
Udo Fritsch, Powers St., Milford, N.H. 03055
Filed Jul. 31, 1989, Ser. No. 387,891
Term of patent 14 years
U.S. Cl. D15—83



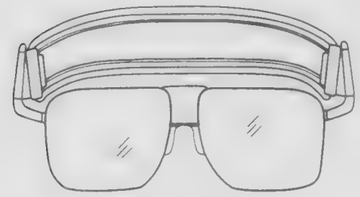




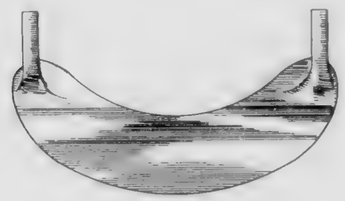
320,607
MACHINE GUARD
David A. Smith, Halstead, and Stephen G. Bernhard, Rugby, both of England, assignors to Atterton & Ellis Limited, Haverhill, England
Filed Jul. 29, 1988, Ser. No. 225,947
Claims priority, application United Kingdom, Feb. 3, 1988, 1048207
Term of patent 14 years
U.S. Cl. D15—126



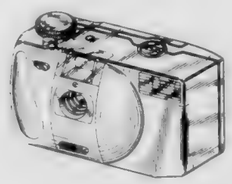
320,608
COMBINED ADJUSTABLE SUNGLASSES AND HEADBAND
Ramer B. Holtan, Jr., 5003 E. Mercer Way, Mercer Island, Wash. 98040; James F. Bergman, 16218 59th Ave. SE., Snohomish, Wash. 98290; Kenneth E. Nelson, 2626 E. Lake Samammish Pky. NE., Redmond, Wash. 98052, and Kevin Falk, 5021 84th Ave. SE., Mercer Island, Wash. 98040
Filed Aug. 5, 1988, Ser. No. 229,024
Term of patent 14 years
U.S. Cl. D16—107



320,609
EYEGLASS SUN VISOR
Gregory L. Cross, and Wendell C. Cross, both of Arvada, Colo., assignors to Sun Company, Inc., Arvada, Colo.
Filed Nov. 10, 1988, Ser. No. 269,982
Term of patent 14 years
U.S. Cl. D16—110



320,610
CAMERA
Yet Chan, Kowloon, Hong Kong, assignor to Achiever Industries Ltd., Kowloon, Hong Kong
Filed Jan. 4, 1989, Ser. No. 293,485
Claims priority, application United Kingdom, Aug. 10, 1988, 1052859
Term of patent 14 years
U.S. Cl. D16—209



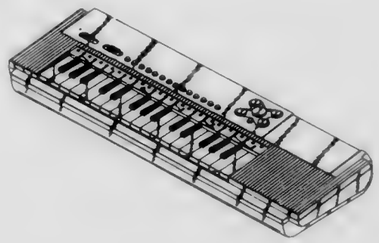
320,611
ELECTRONIC MUSICAL KEYBOARD
Junichi Ono, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 2, 1989, Ser. No. 360,724
Term of patent 14 years
U.S. Cl. D17—1



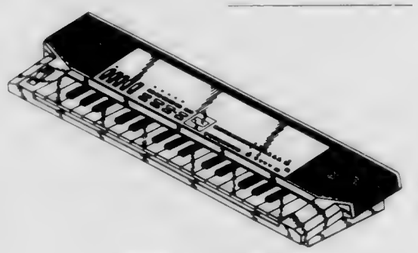
320,612
ELECTRONIC MUSICAL KEYBOARD
Yuji Ohki, Ohme, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 28, 1989, Ser. No. 372,937
Term of patent 14 years
U.S. Cl. D17—1



320,613
ELECTRONIC MUSICAL KEYBOARD
Masaki Koide, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1989, Ser. No. 407,765
Term of patent 14 years
U.S. Cl. D17—1



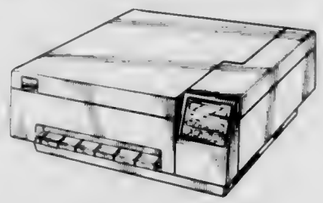
320,614
ELECTRONIC MUSICAL KEYBOARD
Junichi Ono, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Sep. 29, 1989, Ser. No. 414,940
Term of patent 14 years
U.S. Cl. D17—1



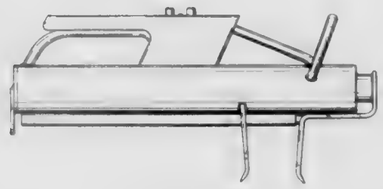
320,615
GUITAR BODY
John R. Lendrum, P.O. Box 704, Franklin, Pa. 16323
Filed Jul. 27, 1988, Ser. No. 224,479
Term of patent 14 years
U.S. Cl. D17—14



320,616
LASER PRINTER
Akio Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Filed Oct. 27, 1988, Ser. No. 263,488
Claims priority, application Japan, May 25, 1988, 63-20600
Term of patent 14 years
U.S. Cl. D18—13



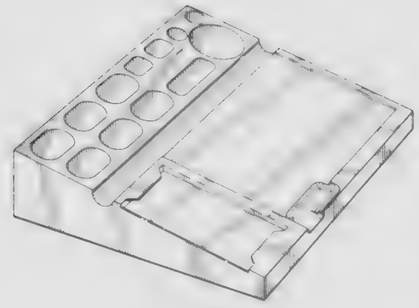
320,617
TIRE SPREADER
Ronald E. Haugen, and David T. Murphy, both of Forest City, Iowa, assignors to Vix Design Products, Inc., Forest City, Iowa
Filed Apr. 24, 1989, Ser. No. 342,446
Term of patent 14 years
U.S. Cl. D15—199



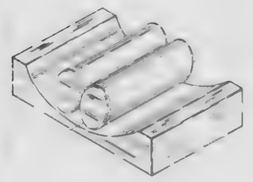
320,618
WRITING AND DRAWING INSTRUMENT
Gerald Grötsch, Fürth, Fed. Rep. of Germany, assignor to J. S. Staedtler GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Feb. 16, 1989, Ser. No. 311,585
Term of patent 14 years
U.S. Cl. D19—48



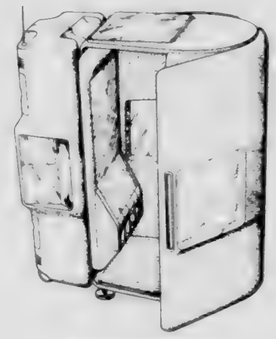
320,619
HOLDER FOR ASSORTED DESK ARTICLES
Reinhold Schleeh, Fuerth; Gudrun Cerv, and Anke Wehrhoff, both of Nuremberg, all of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhaeusser GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed May 15, 1989, Ser. No. 351,572
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 8803865
Term of patent 14 years
U.S. Cl. D19—78



320,620
HOLDER FOR FLEXIBLE SHEET MATERIAL
David Levy, P.O. Box 542, Davis, Calif. 95616
Filed Oct. 7, 1987, Ser. No. 106,443
Term of patent 14 years
U.S. Cl. D19—90



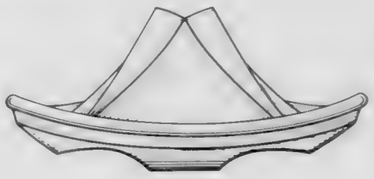
320,621
VENDING BOOTH
Peter Busby, Vancouver, Canada, assignor to Trident Videogram International Corp., Vancouver, Canada
Filed Oct. 6, 1988, Ser. No. 254,301
Claims priority, application Canada, Apr. 6, 1988, 06048814
Term of patent 14 years
U.S. Cl. D20—4



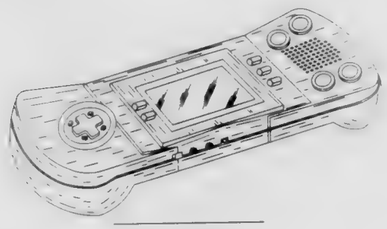
320,622
DISPLAY STAND FOR NOTING TELEVISION SCHEDULES
Douglas P. Yasika, P.O. Box 698, Danville, N.H. 03819
Filed Apr. 10, 1989, Ser. No. 335,978
Term of patent 14 years
U.S. Cl. D20—18



320,623
AERIAL GAME PROJECTILE
Richard E. Arons, 28666 Cloverleaf Pl., Castaic, Calif. 91384
Filed Jun. 19, 1987, Ser. No. 64,774
Term of patent 14 years
U.S. Cl. D21—2



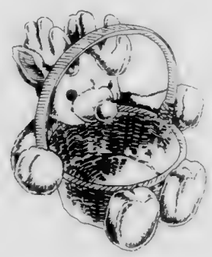
320,624
HAND-HELD ELECTRONIC GAME APPARATUS HOUSING
Neil Taylor, Alameda, Calif., assignor to Atari Corporation, Sunnyvale, Calif.
Filed May 26, 1989, Ser. No. 357,591
Term of patent 14 years
U.S. Cl. D21—13



320,625
SET OF CHESSMAN
Tye Rubins, 829 N. Fuller Ave., Los Angeles, Calif. 90046
Filed May 15, 1989, Ser. No. 351,570
Term of patent 14 years
U.S. Cl. D21—52



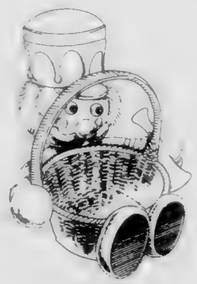
320,626
COMBINED REINDEER FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,590
Term of patent 14 years
U.S. Cl. D21—148



320,627
COMBINED PUMPKIN FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,539
Term of patent 14 years
U.S. Cl. D21—155



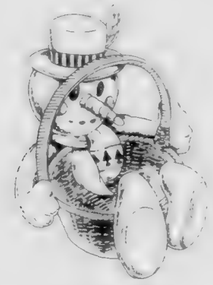
320,628
COMBINED NUTCRACKER MAN FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,586
Term of patent 14 years
U.S. Cl. D21—155



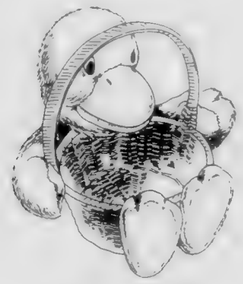
320,629
COMBINED RABBIT FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,587
Term of patent 14 years
U.S. Cl. D21—155



320,630
COMBINED SNOWMAN FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,977
Term of patent 14 years
U.S. Cl. D21—155



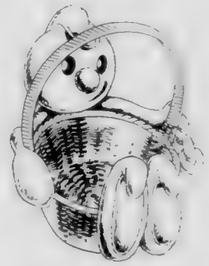
320,631
COMBINED DUCK FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,585
Term of patent 14 years
U.S. Cl. D21—157



320,632
COMBINED CAT FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,561
Term of patent 14 years
U.S. Cl. D21—163



320,633
COMBINED GHOST FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,523
Term of patent 14 years
U.S. Cl. D21—166



320,634
COMBINED CLOWN FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 425,971
Term of patent 14 years
U.S. Cl. D21—173



320,635
COMBINED SANTA CLAUS FIGURE PLUSH TOY AND BASKET
Frederick A. Fortune, and Timothy Bumb, both of San Jose, Calif., assignors to Fact Games, Ltd., San Jose, Calif.
Filed Oct. 20, 1989, Ser. No. 424,584
Term of patent 14 years
U.S. Cl. D21—179



320,636
WEIGHTLIFTING BAR
Christopher W. Eckler, 3 Union St., Nashua, N.H. 03060
Filed Oct. 18, 1988, Ser. No. 259,099
Term of patent 14 years
U.S. Cl. D21—198



320,637
TOY BASKETBALL GOAL
Thomas E. Fish, Jr., Wickliffe; Michael J. Healy, Tallmadge; Robert L. Houry, Solon, and Keith A. Pelfrey, Wadsworth, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Nov. 14, 1988, Ser. No. 270,300
Term of patent 14 years
U.S. Cl. D21—201



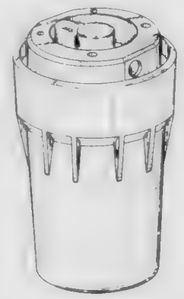
320,638
GOLF CLUB PUTTER HEAD
Jean-Francois Mermillod, Grand Bornand, France, assignor to Salomon, S. A., France
Filed May 2, 1988, Ser. No. 189,671
Claims priority, application France, Apr. 2, 1988, 88 0705
The portion of the term of this patent subsequent to Jul. 25, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—219



320,639
FISHING LURE
R. Graham McClenahan, 2078 Thistle Crescent, Ottawa, Ontario, Canada, and Weldon K. Baker, P.O. Box 51, Lombardy, Ontario, Canada K0G 1L0
Filed Jun. 24, 1988, Ser. No. 211,661
Claims priority, application Canada, Feb. 16, 1988, 1602885
Term of patent 14 years
U.S. Cl. D22—126



320,640
WATER FILTER
Percy E. Goodwin, 2601 - 169th St. Northeast, Bothell, Wash. 98012
Filed Feb. 2, 1990, Ser. No. 473,702
Term of patent 14 years
U.S. Cl. D23—209



320,641
PORTABLE WATER SPRAYER
Lloyd G. Williams, P.O. Box 159, Ridgeland, Miss. 39158
Filed Apr. 11, 1989, Ser. No. 336,296
Term of patent 14 years
U.S. Cl. D23—213



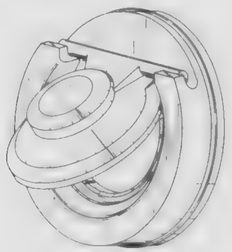
320,642
SHOWER HEAD WITH SPONGE ATTACHMENT IN PLACE THEREON
Francois Geneve; Luc Heiligenstein, and Stephen Melamed, all of Chicago, Ill., assignors to Associated Mills Inc., Chicago, Ill.
Filed Mar. 6, 1989, Ser. No. 320,035
Term of patent 14 years
U.S. Cl. D23—223



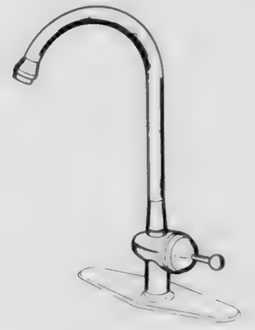
320,643
HAND HELD SPRAYER
Benjamin H. Stansbury, Jr., Beverly Hills, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Jul. 27, 1989, Ser. No. 387,636
Term of patent 14 years
U.S. Cl. D23—226



320,644
SWING CHECK VALVE
John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170
Continuation-in-part of Ser. No. 23,786, Mar. 9, 1987, abandoned. This application Jun. 8, 1987, Ser. No. 59,398
Term of patent 14 years
U.S. Cl. D23—237



320,645
FAUCET
Alfons Knapp, Biberach, Fed. Rep. of Germany, and Daniel E. Wittum, Greensburg, Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.
Filed Feb. 15, 1989, Ser. No. 311,672
Claims priority, application Italy, Aug. 18, 1988, 53364/88[U]
Term of patent 14 years
U.S. Cl. D23—238



320,646
ORNAMENTS FOR TOILET FLUSH HANDLES
Ronald P. Hardman, 1046 W. Tropicana Ct., Ontario, Calif. 91762
Filed Feb. 27, 1989, Ser. No. 315,771
Term of patent 14 years
U.S. Cl. D23—251

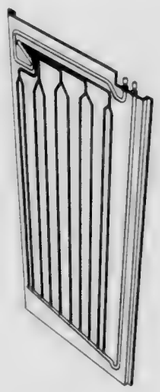
320,647
WASH BASIN
Jonathan G. Waldren, London, England, assignor to B. C. Sanitan Limited, Berkshire, England
Filed Jan. 19, 1990, Ser. No. 467,219
Claims priority, application United Kingdom, Jul. 21, 1989, 1060991
Term of patent 14 years
U.S. Cl. D23—294



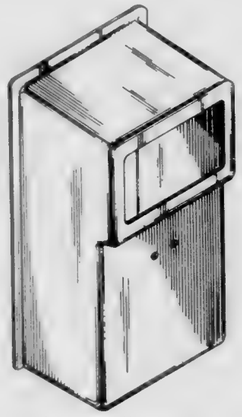
320,648
PORTABLE HEATER
Joseph E. Velazquez, Englewood, Colo., assignor to Techno-Therm Corporation, Erie, Colo.
Filed Jun. 28, 1990, Ser. No. 547,432
Term of patent 14 years
U.S. Cl. D23—335



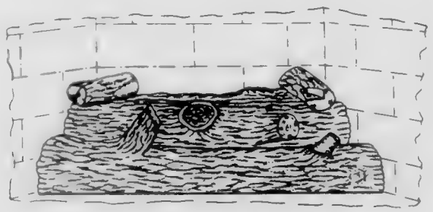
320,649
EVAPORATOR PANEL TO BE WRAPPED AROUND A SOLAR AND OTHER ATMOSPHERIC ENERGY SOURCES HOT WATER HEATER
Mark G. Fleming, Victoria, Australia, assignor to Siddons Ramset Limited, Victoria, Australia
Filed Feb. 8, 1989, Ser. No. 307,716
Claims priority, application Australia, Aug. 9, 1988, 2669/88
Term of patent 14 years
U.S. Cl. D23—386

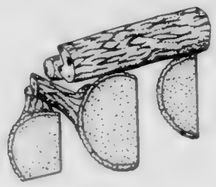


320,650
SIDEWALL VENT TERMINAL COVER
Matthew Kujawa, Danville, and Paul J. Otts, Plainfield, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 1, 1990, Ser. No. 591,491
Term of patent 14 years
U.S. Cl. D23—393

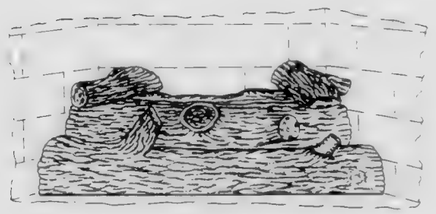


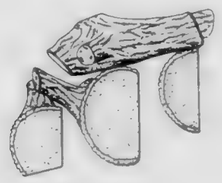
320,651
ARTIFICIAL LOG ASSEMBLAGE FOR A GAS-FIRED FIREPLACE
Ian Thow, Cincinnati, Ohio, assignor to Yale & Valor p.l.c., London, England
Filed Jan. 19, 1989, Ser. No. 299,745
The portion of the term of this patent subsequent to Oct. 8, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—409



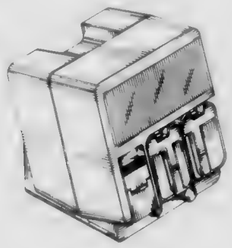


320,652
ARTIFICIAL LOG ASSEMBLAGE FOR A GAS-FIRED FIREPLACE
Ian Thow, Cincinnati, Ohio, assignor to Yale and Valor p.l.c., London, England
Filed Jan. 19, 1989, Ser. No. 299,747
The portion of the term of this patent subsequent to Oct. 8, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—409

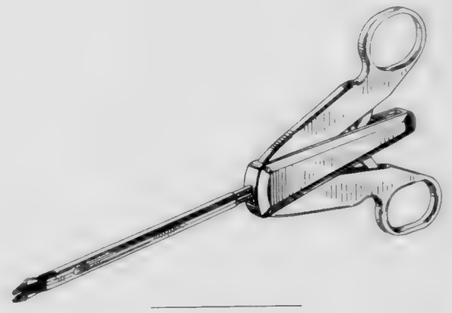




320,653
COMBINED DEFIBRILLATOR, ECG MONITOR AND RECORDER
Paul W. Jones, Issaquah, and Mike M. Paull, Seattle, both of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Filed Jan. 9, 1989, Ser. No. 295,475
Term of patent 14 years
U.S. Cl. D24—167



320,654
SURGICAL CLIP APPLICATOR
David T. Green, Westport; Richard A. McGarry, Norwalk, and Paul O. Rawson, Easton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 150,321, Jan. 29, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 512,551
Term of patent 14 years
U.S. Cl. D24—145



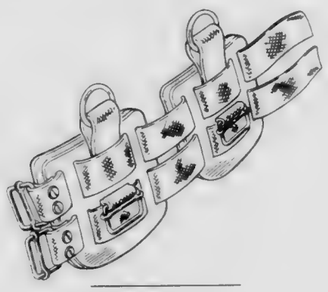
320,655
BIOCIRCUIT
Leslie Patten, and Terry Patten, both of 4286 Redwood Hwy., #C, San Rafael, Calif. 94903
Filed Oct. 7, 1988, Ser. No. 254,948
Term of patent 14 years
U.S. Cl. D24—200



320,656
MASSAGER
Ka-Duk Lam, Kowloon, Hong Kong, assignor to Sealand Industrial Co., Ltd., Kowloon, Hong Kong
Filed Feb. 15, 1989, Ser. No. 310,717
Term of patent 14 years
U.S. Cl. D24—214



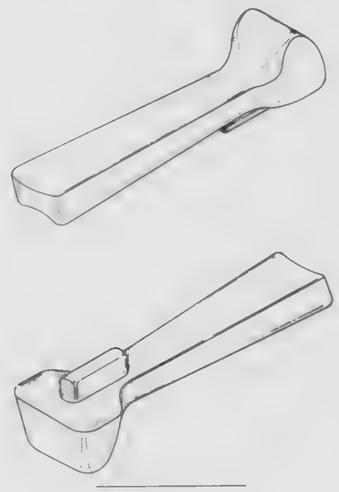
320,657
ANKLE SUPPORT
John D. R. Moorehead, 103 Church Street, East Hawthorn, Victoria 3123, Australia
Filed May 19, 1989, Ser. No. 354,428
Claims priority, application Australia, Nov. 21, 1988, 3898/88
Term of patent 14 years
U.S. Cl. D24—192



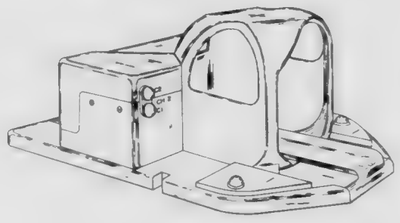
320,658
SURGICAL RETRACTOR
Patrick C. Quigley, Cameron Park; Timothy C. Quigley, Grizzly Flat, and Bernard Goott, Del Mar, all of Calif., assignors to Adept-Med International, Inc., Cameron Park, Calif.
Filed Jun. 7, 1989, Ser. No. 362,789
Term of patent 14 years
U.S. Cl. D24—135



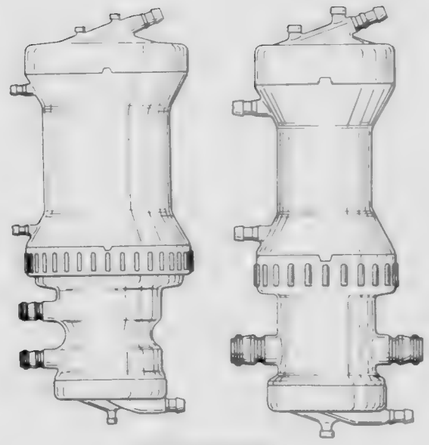
320,659
NASAL IMPLANT
Ole H. Johansson, 725 Yananoli St., Santa Barbara, Calif. 93103, and Robert J. Capriotti, 2800 Garth Rd., Baytown, Tex. 77521
Filed Jul. 15, 1988, Ser. No. 220,100
Term of patent 14 years
U.S. Cl. D24—155



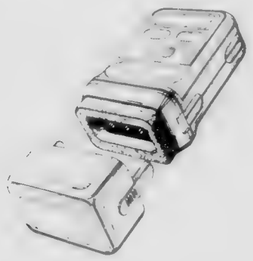
320,660
HEAD IMAGING COIL FOR MAGNETIC RESONANCE IMAGING APPARATUS
Philip C. Foreman, Santa Clara; Hendricus J. Wolters, and John M. Amber, both of Menlo Park, all of Calif., assignors to Resonex, Inc., Sunnyvale, Calif.
Filed Feb. 24, 1989, Ser. No. 315,693
Term of patent 14 years
U.S. Cl. D24—158



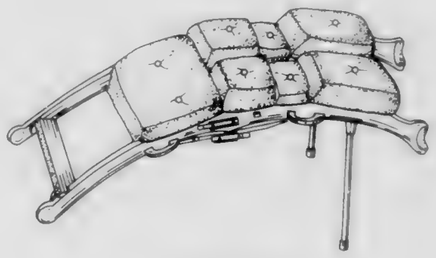
320,661
OXYGENATOR
Yoshihisa Sone, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1989, Ser. No. 331,535
Claims priority, application Japan, Oct. 4, 1988, 63-38758; Oct. 4, 1988, 63-38759
Term of patent 14 years
U.S. Cl. D24—169



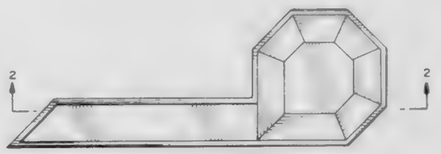
320,662
COMBINED BODY COMPOSITION MEASURER AND COVER THEREFOR FOR DETERMINING BODY FAT
Takashi Nakai, Kawasaki, Japan, assignor to Futrex, Inc., Gaithersburg, Md.
Filed Mar. 7, 1989, Ser. No. 320,049
Term of patent 14 years
U.S. Cl. D24—186



320,663
GRAVITY TRACTION ORTHOPEDIC COUCH
William A. Brann, P.O. Box 285, Montross, Va. 22520
Filed May 5, 1989, Ser. No. 350,139
Term of patent 14 years
U.S. Cl. D24—183



320,664
SWIMMING POOL
Richard B. Dempsey, 49 W. 24th St., New York, N.Y. 10010
Filed Aug. 1, 1989, Ser. No. 388,135
Term of patent 14 years
U.S. Cl. D25—2



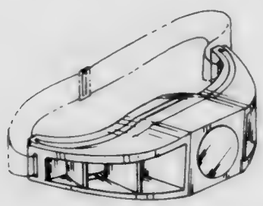
320,665
TOP LIGHT PANEL
Norbert J. Guetle, Jr., Cincinnati, Ohio, assignor to Pease Industries, Inc., Fairfield, Ohio
Filed Jan. 30, 1989, Ser. No. 302,866
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—103



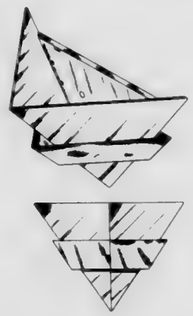
320,666
AUXILIARY ILLUMINATED TURN SIGNAL FOR SEMI-TRAILERS
Wesley P. Brandon, Palestine, Tex., assignor to Safety Signals, Inc., Jacksonville, Tex.
Filed Jan. 24, 1989, Ser. No. 301,276
The portion of the term of this patent subsequent to Sep. 10, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—31



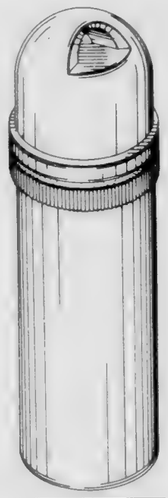
320,667
HEADLIGHT FOR RUNNERS OR THE LIKE
Vernon L. Smith, 27230 Red River, Lathrup Village, Mich. 48076
Filed May 22, 1989, Ser. No. 354,671
Term of patent 14 years
U.S. Cl. D26—39



320,668
WEDGE SCONCE
Kevin von Kluck, 809 Burlington Ave., Western Springs, Ill. 60558
Filed Sep. 25, 1989, Ser. No. 413,015
Term of patent 14 years
U.S. Cl. D26—85



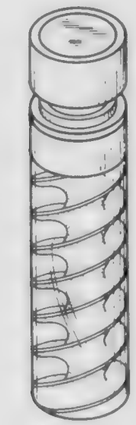
320,669
WATERPROOF LIGHTER CONTAINER
Michael J. Panaggio, 645 Pelican Bay Dr., Daytona Beach, Fla. 32119
Filed Aug. 6, 1990, Ser. No. 563,077
Term of patent 14 years
U.S. Cl. D27—144



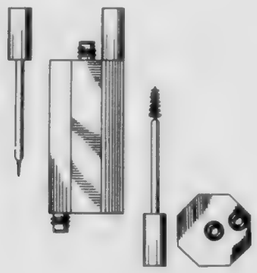
320,670
SMOKE CONTAINER FOR SMOKERS
Michael W. Johnson, and Susan M. Johnson, both of 1340 Anderson Mill Rd., Austell, Ga. 30001
Filed Sep. 25, 1990, Ser. No. 587,433
Term of patent 14 years
U.S. Cl. D27—172



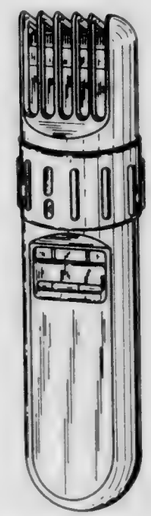
320,671
COSMETIC MASCARA PRODUCT AND TRANSPARENT CONTAINER THEREFOR
David Hoenig, East Brunswick, N.J., assignor to Revlon, Inc., New York, N.Y.
Filed Feb. 3, 1989, Ser. No. 306,658
Term of patent 14 years
U.S. Cl. D28—7



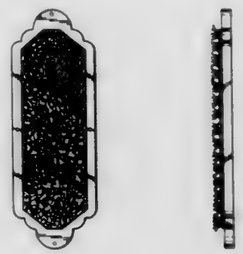
320,672
COMBINED CONTAINER/BOTTLE AND COSMETIC WAND APPLICATORS OR THE LIKE
Henry J. Cassai, 163-47 85th St., Howard Beach, N.Y. 11414, and Gino H. Cassai, deceased, late of Brooklyn, N.Y. by Josephine Cassai, legal representative, assignors to Henry J. Cassai, Howard Beach, N.Y.
Division of Ser. No. 337,532, Apr. 14, 1989, Pat. No. Des. 305,945, which is a division of Ser. No. 765,394, Aug. 14, 1985, abandoned. This application Aug. 23, 1989, Ser. No. 397,297
The portion of the term of this patent subsequent to Feb. 6, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—7



320,673
ELECTRIC HAIR TRIMMER
Olivier Sterk, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 15, 1988, Ser. No. 285,883
Term of patent 14 years
U.S. Cl. D28—52

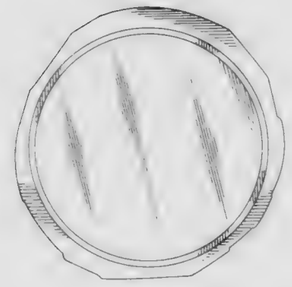


320,674
BACK SCRATCHING DEVICE
Powell U. Pinkston, P.O. Box 565, Cypress, Tex. 77429
Filed Dec. 6, 1988, Ser. No. 280,653
Term of patent 14 years
U.S. Cl. D28—63



320,675
LID FOR POWDER PUFFCASE
Victor Carranza, Colonia Independencia, Mexico, assignor to Godinger Silver Art Co., Ltd., New York, N.Y.
Division of Ser. No. 165,885, Mar. 8, 1985. This application Dec. 6, 1990, Ser. No. 622,947
Term of patent 14 years
U.S. Cl. D28—91

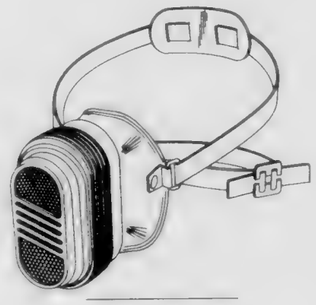




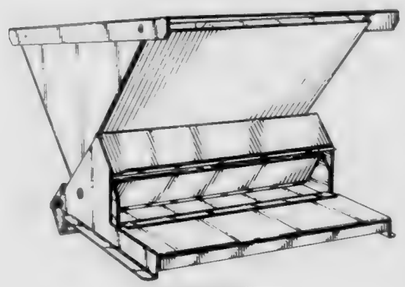
320,676
AEROSOL FIRE EXTINGUISHER
Cyril I. Silverman, 821 Kimball Rd., Highland Park, Ill. 60035
Filed Oct. 10, 1989, Ser. No. 419,440
Term of patent 14 years
U.S. Cl. D29—2



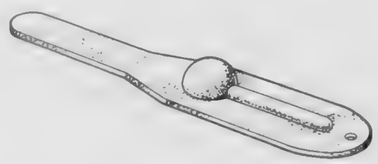
320,677
GAS MASK
Akira Kumagai, 4-21-42-101, Irifune, Urayasu-shi, chiba-ken, and Hitoshi Kumagai, 4-25-21, Okudo, Katsushika-ku, Tokyo both of Japan
Filed Nov. 16, 1989, Ser. No. 437,501
Term of patent 14 years
U.S. Cl. D29—7



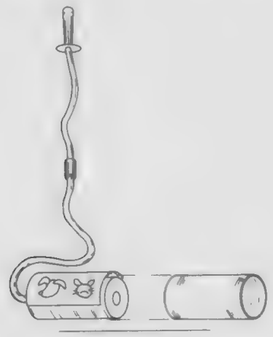
320,678
BIRD FEEDER
Donald F. Handley, 203 E. Little Canada Rd., St. Paul, Minn. 55117
Filed Jan. 12, 1989, Ser. No. 296,576
Term of patent 14 years
U.S. Cl. D30—124



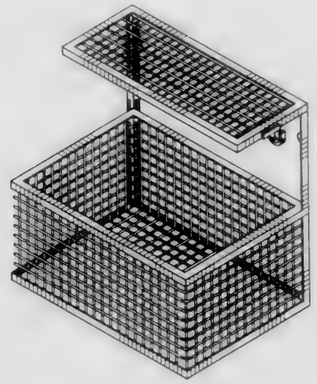
320,679
ATTACHMENT FOR A HORSE HARNESS CRUPPER
Kenneth R. Edwards, 5538 S. Section Line Rd., Delaware, Ohio 43015
Filed Jun. 6, 1989, Ser. No. 361,967
Term of patent 14 years
U.S. Cl. D30—138



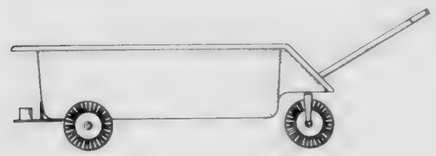
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PET GROOMING TOOL
Stewart O. Stetson, and Cecilia K. Stetson, both of Rte. 1, Box 176-D, Pillager, Minn. 56473
Filed May 27, 1988, Ser. No. 199,580
Term of patent 14 years
U.S. Cl. D30—158



320,681
BABY BOTTLE DRAIN RACK
Brian O. Boula, 4007 Bremner Blvd., Richmond, Va. 23228
Filed Sep. 2, 1988, Ser. No. 239,840
Term of patent 14 years
U.S. Cl. D32—55



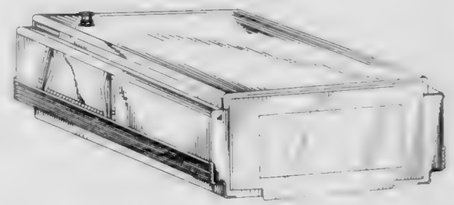
320,682
BEACH CART
Bobby R. Braswell, 813 S. Andrews Ave., Goldsboro, N.C. 27530
Filed May 5, 1989, Ser. No. 347,800
Term of patent 14 years
U.S. Cl. D34—18



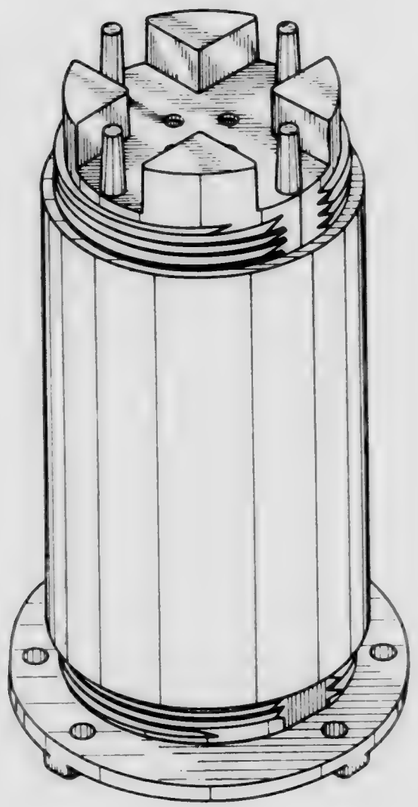
320,683
LINEN CART
Robert J. Welch, Dallas, Pa., assignor to InterMetro Industries Corp., Wilkes-Barre, Pa.
Filed Feb. 3, 1989, Ser. No. 305,654
Term of patent 14 years
U.S. Cl. D34—19



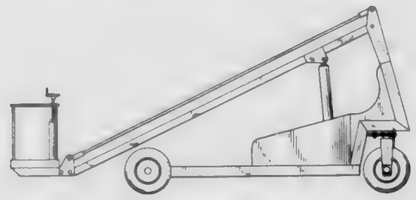
320,684
AUTOMATIC PRINTED CIRCUIT BOARD HANDLER
James E. Berry, Fort Collins; Ronald K. Kerschner, and Lisa M. Kent, both of Loveland, all of Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.
Filed Aug. 2, 1988, Ser. No. 227,278
Term of patent 14 years
U.S. Cl. D34—29



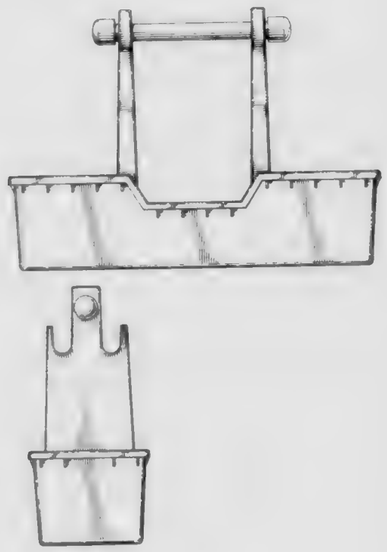
320,685
ADJUSTABLE FLOOR-LEVEL-SETTING UNIT
Chien-Teh Huang, No. 105, Sec. 4, Shan-Ho Road, Shan-Chung City, Taipei, Taiwan
Filed May 17, 1989, Ser. No. 352,906
Term of patent 14 years
U.S. Cl. D34—31



320,686
MOBILE MAN LIFT
Art Still, 12000 SW. 45 St., Miami, Fla. 33175
Filed May 4, 1988, Ser. No. 190,212
Term of patent 14 years
U.S. Cl. D34—34



320,687
CARRIER FOR CLEANING EQUIPMENT OR THE LIKE
Joseph S. Perry, 6054 Santa Monica Blvd., Hollywood, Calif. 90038
Filed Jan. 3, 1989, Ser. No. 292,728
Term of patent 14 years
U.S. Cl. D34—44



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF OCTOBER, 1991

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Riffe, William J.; Carter, Jack D.; and , 5,055,165, Cl. 204-147.000.

A-LOK Products, Inc.: *See*—
Westhoff, James; and Kelly, James A., 5,054,794, Cl. 277-1.000

A/S Logstrup-Steel: *See*—
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AB Mahler & Soner: *See*—
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Abbatte, Gerard P.; Breads, Peter R.; Warunek, Stephen P.; and Willison, Brain D., to Great Lakes Orthodontics, Ltd. Orthodontic positioner and methods of making and using same. 5,055,039, Cl. 433-24.000.

Abbiss, John B.; Azzazy, Medhat; McCullough, Robert W.; and Smart, Anthony E., to Titan Corporation, The. System for measuring ambient pressure and temperature. 5,055,692, Cl. 250-372.000.

Abbott, James R., to Tennessee Gas Pipeline Company. Catalytic converter and substrate support with one piece housing. 5,055,274, Cl. 422-171.000.

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Abdallah, Ali H.; and Grosso, Donald S., to Teleco Oilfield Services Inc. Analysis and identification of a drilling fluid column based on decoding of measurement-while-drilling signals. 5,055,837, Cl 340-853.000.

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Abele, Manlio G.; Chandra, Ramesh; Rusinek, Henry; Potenziani, Ernest, II; and Leupold, Herbert A., to United States of America, Army. Compensation for magnetic nonuniformities of permanent magnet structures. 5,055,812, Cl. 335-210.000.

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Barnes, Ralph W., 5,056,068, Cl. 367-124.000

Acharya, Kishore C.; and Schanen, Paul C., to General Electric Company. Parallel processor with single program storage and sequencer and simultaneous instruction processing. 5,056,006, Cl. 364-200.000

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Acquanetta. Remote control illuminator. 5,055,977, Cl. 362-23.000.

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Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., 5,055,718, Cl. 307-465.000.

Acushnet Company: *See*—
Gobush, William; and Days, Charles, 5,054,785, Cl. 273-184.00R

Adair, Paul C.: *See*—
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Adolfsson, Rune, to SKF Nova AB. Magnetic sliding bearing. 5,054,939, Cl. 384-133.000.

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Gould, Ross; and Gandionco, Isidro, 5,055,109, Cl. 604-95.000

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Maute, P. A. Alexandre, 5,054,719, Cl. 244-164.000.

Aerotech, Inc.: *See*—
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Kuhnert, Peter, 5,055,384, Cl. 430-450.000.

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Ahn, Kyo-Hwan, to SamSung Electronics Co., Ltd. Method of automatic equalized distribution of ring loads for telephone exchange system. 5,056,135, Cl. 379-252.000

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Aisin Seiki Kabushiki: *See*—
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Akhtar, Masood: *See*—
Blanchette, Robert A.; Leatham, Gary F.; Attridge, Michael; Akhtar, Masood; and Myers, Gary C., 5,055,159, Cl. 162-72.000

Akhter, Pervez, to Wayne/Scott Fetzer Company. Enclosed pump motor and housing thereof. 5,055,000, Cl. 417-40.000.

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Akiike, Katsumi; Sekine, Nobuhiro; Matsuoka, Tadashi; and Oyama, Tsutomu, to Fuji Electric Co., Ltd. Inversion spring for thermal overload relay and method for making the same. 5,054,754, Cl. 267-159.000.

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Almgren, Olle K. S.; Andersson, Kjell H.; Duker, Goran B. D.; Lamm, Bo R.; and Strandlund, Gert C., 5,055,490, Cl. 514-524.000.

Akylas, Victor R.; and De Zeeuw, Cornelis J. H., to N. A. Philips Corporation. Circuit for encoding identification information on circuit dice using FET capacitors. 5,056,061, Cl. 365-96.000

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Sandrin, Glannino, 5,054,473, Cl. 128-66.000.

Albaugh, Pamela, to Allergan, Inc. Novel pharmaceutical epinephrine-pilocarpine compounds. 5,055,467, Cl. 514-235.800.

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Albright, Robert L.; Fisher, Jon R.; Isacoff, Eric G.; and Peters, Eric C., to Rohm and Haas Company. Process for removing residual monomers and oligemers from amine-containing polymers. 5,055,197, Cl. 210-638.000.

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Losch, Kurt; and Florjancic, Matjaz, 5,054,870, Cl. 385-14.000.
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Breen, John D., to Rubbermaid Incorporated. Adjustable tray riser 5,054,629, Cl. 211-128.000

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Sukonnik, Israil M.; Forster, James A.; Breit, Henry F.; and Raphanella, Gary A., 5,055,967, Cl. 361-387.000

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Knobloch, Osbert R.; Brentrop, Ludger; Kimmeyer, Ludger; Muller, Manfred; and Wenningkamp, Peter, 5,054,694, Cl 241-24.000

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Marks, Paul A.; Rifkind, Richard A.; and Breslow, Ronald, 5,055,608, Cl. 560-169.000

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Chakrabarti, Dhruba J.; Staley, James T.; Baumann, Stephen F.; Sawtell, Ralph R.; Bretz, Philip E.; and Jensen, Craig L., 5,055,257, Cl. 420-902.000

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Vassiliadis, Arthur; Shaffer, Joseph W.; Fullmer, David J.; Brewer, Michael H.; Hennings, David R.; and Myers, Terry D., 5,055,048, Cl. 433-215.000

Bridges, James R., to Halliburton Logging Services, Inc. Pulse height analyzer for spectroscopy thermal multigate decay well logging system. 5,055,675, Cl. 250-262.000.

Bridges, Kenneth L.; and Kalinski, Kerry L., to Osca, Inc. Reduction of the viscosity of solutions viscosified with Xanthan gum polymers 5,055,209, Cl. 252-8.510

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Hisatomi, Hideo; Iwata, Toshiro; Kosoegawa, Toshihide; Oka, Kikuo; Ichikawa, Seizo; and Mitarai, Kuninori, 5,055,245, Cl 264-40.600
Kohno, Yoshihide; Kobayashi, Yasuhiko; Sato, Kiyoshi; and Koseki, Hiroyuki, 5,054,532, Cl. 152-527.000.
Ogawa, Yuichiro, 5,055,149, Cl. 156-124.000.

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Lawson, David F., 5,055,545, Cl. 528-61.000

Bnet, Gilles, to Hutchinson. Joining and connecting block between flexible elastomer material ducts. 5,054,818, Cl. 285-137.100

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Chuttani, Ram; Apstein, Michael D.; and Carr-Locke, David L., 5,054,501, Cl. 128-772.000.
Pier, Gerald B., 5,055,455, Cl. 514-54.000.

Bngham & Womens Hospital, Inc., The: *See—*
Jacobs, Kenneth A.; Steinbrink, D. Randall; Floros, Joanna; Phelps, David S.; and Taeusch, H. William, 5,055,553, Cl 530-300.000

Brilliant, Stuart D.: *See—*
Croce, Michael R.; and Brilliant, Stuart D., 5,055,495, Cl. 521-85.000

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Brine, Peter J.: *See—*
Brine, William H., III; and Brine, Peter J., 5,054,790, Cl 273-326.000

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Hung, Kung C.; Milewicz, Leo, Jr.; and Rohrs, Donald L., 5,055,984, Cl. 362-183.000

Brisson, Alfred G.: *See—*
Grychowski, Jerry R.; Brisson, Alfred G.; Cruz, Exequiel D.; and Nowacki, Christopher, 5,054,478, Cl. 128-200.210

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Calton, Richard L., 5,055,799, Cl. 330-297.000

Broadie, Richard G. Monaural to stereophonic sound translation process and apparatus. 5,056,149, Cl. 381-17.000.

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Kawakami, James H.; Muruganandam, Natarajan; and Brode, George L., 5,055,114, Cl. 55-16.000.

Brodt, Rainer; Gorka, Gunther; Fehse, Peter; Reid, John; and Holmes, Steve, to Flemming GmbH. Device for ascertaining the presence of an antigen or of an antibody in a liquid sample. 5,055,258, Cl. 422-61.000

Bronder, Klaus; and Dietrich, Joachim, to Degussa Aktiengesellschaft. Bath for the electrolytic deposition of fine gold coatings. 5,055,173, Cl. 204-47.500

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Greitzer, Yeshayahu; and Bronicki, Lucient Y., 5,054,556, Cl. 166-302.000

Bronstert, Klaus; Schwaben, Hans-Dieter; and Echte, Adolf, to BASF Aktiengesellschaft. Thermoplastics impact modified with functionalized polymers and use thereof for producing moldings. 5,055,527, Cl. 525-207.000

Brormann, Hubert, to Haver & Boecker, Firma. Apparatus for supplying valved sacks to a filling nozzle. 5,054,275, Cl. 53-573.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hayakawa, Atsuya, 5,054,408, Cl. 112-266.100.
Sakaida, Kazuichi; Sonobe, Katsuyoshi; Aoki, Nobuo; Uchiyama, Satoshi; and Yamada, Makoto, 5,055,872, Cl. 355-55.000

Brown, Alan J.: *See—*
James, Roger; and Brown, Alan J., 5,055,429, Cl. 501-;80.000.

Brown, Daniel E., to Ohio Mattress Company Licensing and Components Group, The. Notched span for press-fit mounted springs 5,054,751, Cl. 267-103.000.

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Bingham, Grady A.; and Brown, Henry P., II, 5,054,140, Cl. 5-61.000

Brown, Paul: *See—*
Schad, Robert D.; and Brown, Paul, 5,055,250, Cl. 264-297.200.

Brown, Ronald E.; Lee, Fu M.; and Matson, Michael S., to Phillips Petroleum Company. Extractive distillation of cycloalkane/alkane feeds. 5,055,162, Cl. 203-56.000

Brown, Vincent B., to Mthode Electronics, Inc. Push/pull fiber optic connector. 5,054,879, Cl. 385-59.000.

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Miller, James E.; Lowe, Byron L.; Finn, Everett N.; and Milliner, Kenneth M., 5,054,259, Cl. 53-157.000.

Browne, John, to Dayco Products Canada Inc. Display element with notched disk. 5,055,832, Cl. 340-764.000.

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Larson, Marlow W., 5,054,462, Cl. 124-25.600.

Bruce, E. William, II: *See—*
Wu, Andrew L.; Smelser, Donald W.; Bruce, E. William, II; and O'Dea, John, 5,055,910, Cl. 357-74.000

Bruckner, Raimund, to Didier-Werke AG. Inductively heatable refractory member, inductive coil employable therewith, and process for use thereof. 5,054,664, Cl. 222-590.000

Bruengger, Craig V., to Hazeltine Corporation. System for deploying horizontal line array. 5,056,065, Cl. 367-4.000.

Bruggendieck, Siegfried, to U.S. Philips Corp. Method of manufacturing an optical line. 5,054,880, Cl. 385-111.000.

Brun, Claude: *See—*
Spitz, Roger; Brun, Claude; and Joly, Jean-Francois, 5,055,535, Cl. 526-142.000

Brun-Vezinet, Francoise: *See—*
Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,055,391, Cl. 435-5.000

Bruner, Robert W., to Motorola, Inc. Computer system monitor and controller. 5,056,092, Cl. 371-14.000

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Link, Joseph; Bolan, Michael L.; Brunk, Allen H., Jr.; and Schneikart, Paul E., 5,055,704, Cl. 307-66.000.

Brunson, David A.: *See—*
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Hauenstein, Frederick M.; and Hedge, George C., 5,054,793, Cl. 277-1.000.

Bryan, Raymond G., to Linear Instruments Corporation. Seal for high pressure and small volume sample cells. 5,054,919, Cl. 356-246.000

Bryant, Charles B. Linear actuator with improved force distribution characteristics. 5,054,608, Cl. 198-816.000.

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Daniels, Raymond R.; Scheid, Norman W.; and Bryant, Donald C., 5,055,008, Cl. 417-403.000.

Brzezniak, Edward J., to Verson, A division of Allied Products Corporation. Transfer finger shift apparatus for transfer presses. 5,054,306, Cl. 72-405.000.

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Illetschko, Gerhard; Richter, Hans-Peter; and Noske, Reiner, 5,055,920, Cl. 358-36.000

Bucefari, Massimo; and Giogli, Giovanni. Apparatus for manoeuvring a TV camera remotely in special shooting conditions. 5,054,725, Cl 248-123.100.

Buchan, Leon, to Control Chemicals (Proprietary) Limited. Water treatment device. 5,055,183, Cl. 210-085.000.

Buchanan, John M.: *See—*
Slusarek, Wojciech; Buchanan, John M.; and Lau, Philip T. S., 5,055,385, Cl. 430-544.000.

Buchegger, Rudolf, to Voest-Alpine Industrieanlagenbau Gesellschaft m.b.H. Apparatus for hardening rails. 5,054,746, Cl. 266-114.000.

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Chara, Alexander, 5,054,952, Cl. 403-326.000.

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Buckley, Thomas F., III, to Chevron Research Company. Long chain aliphatic hydrocarbyl amine additives having an oxy-carbonyl connecting group. 5,055,607, Cl. 560-158.000

Buckwalter, Brian L.: *See—*
Barden, Timothy C.; and Buckwalter, Brian L., 5,055,486, Cl. 514-450.000.

Budge, John R., to Standard Oil Company, The. Process for the hydrogenation of maleic anhydride to tetrahydrofuran and gamma-butyrolactone. 5,055,599, Cl. 549-429.000.

Budzyna, W. James: *See—*
Johnson, William A.; Budzyna, W. James; Smilanich, Nicholas J.; and Doan, Chi-Thien, 5,055,763, Cl. 320-15.000.

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Bueschel, David M., to Cooper Industries, Inc. Flagged blown fuse indicator. 5,055,818, Cl. 337-267.000.

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Saita, Taketsugu; Kuma, Yoshiharu; Bukawa, Norio; and Saga, Tomoko, 5,055,309, Cl. 426-34.000.

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Bullock, Michael L.: *See—*
Kerschner, Ronald K.; Bullock, Michael L.; and Hayes, James M., 5,055,779, Cl. 324-158.00F

Bunshah, Rointan F.; Deshpandey, Chandra V.; Doerr, Hans J.; and Yoon, Jong S., to University of California, The Regents of the. Controlled high rate deposition of metal oxide films. 5,055,319, Cl. 427-38.000.

Burger, Hans: *See—*
Eder, Bernhard; Burger, Hans; and Reitinger, Franz, 5,055,339, Cl. 428-157.000.

Burgess, Peter H. Radiation meter. 5,055,691, Cl. 250-370.070.

Burgoyne, William F., Jr.; and Langsam, Michael, to Air Products and Chemicals, Inc. Ortho-alkylated bisanilines having fluorenylidene bridging groups. 5,055,616, Cl. 564-322.000.

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Burkhardt, Henry, III: *See—*
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Burnett, Karen G.: *See—*
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Burns, David: *See—*
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Burns, Marvin D.; and Orr, Albert S., to Ransburg Corporation. Pressure feed paint cup. 5,054,687, Cl. 239-373.000.

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Burrows, James L., to Lockheed Sanders, Inc. Network simulation system. 5,056,014, Cl. 364-200.000.

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Bussiere, Raymond, to High-Line Manufacturing Inc. Bracket for attachment of a ground working tool on a tool bar. 5,054,561, Cl. 172-674.000.

Butcher Company, The: *See—*
Coty, Dominique, 5,054,245, Cl. 51-170.00R

Butler, Robert R.: *See—*
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Buxbaum, Gunter: *See—*
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Wimmer, Peter; Buysch, Hans-Josef; Puppe, Lothar; and Froehlich, Christian, 5,055,617, Cl. 564-401.000

Bykhovsky, David G.; and Panov, Alexandr N. Apparatus for meter-feeding and heating of molten metal. 5,054,750, Cl. 266-237.000

Byrum, Barney L. Slow positive action low amperage switch 5,055,646, Cl. 200-507.000

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Cahn Instruments, Inc.: *See—*
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Cai, Zhixia, to Tsinghua University. Air filtering apparatus. 5,055,117, Cl. 55-126.000.

Calabrese, Anthony; and Scialli, Sandy, to Charles Greiner and Company, Inc. Emergency medical collar, collar/stabilizer, collar/-stabilizer/head immobilizer. 5,054,475, Cl. 128-75.000.

Calcomp Inc.: *See—*
Lieb, Stephen, 5,056,042, Cl. 364-519.000

California Institute of Technology: *See—*
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Vahala, Kerry J.; and Newkirk, Michael A., 5,056,100, Cl 372-50.000.

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Callet, Andre R.: *See—*
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Calmac Manufacturing Corporation: *See—*
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Calpis Food Industry Co., Ltd., The: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl. 530-313.000.

Calton, Richard L., to British Telecommunications public limited company. Amplifier circuit with non-linear load resistance which increases amplifier forward gain at high frequency. 5,055,799, Cl 330-297.000.

Cama, Lovji D.; and Christensen, Burton G., to Merck & Co., Inc Process for preparing 1-carba-2-penem-3-carboxylic acid. 5,055,573, Cl. 540-302.000.

Cammarata, Edward. Automatic toriod turns counter. 5,055,757, Cl. 318-640.000.

Camp, Betty J. Jewelry caddy. 5,054,624, Cl. 211-13.000.

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Hill, Kenneth O.; Johnson, Derwyn C.; and Lamont, Robert G., 5,054,874, Cl. 385-28.000.

Canepa, George R.; Holler, Mark A.; and Tam, Simon M., to Intel Corporation. Semiconductor cell for neural network and the like. 5,055,897, Cl. 357-23.500.

Canich, Jo Ann M. Olefin polymerization catalysts. 5,055,438, Cl. 502-117.000.

Cannon, Thomas G. Method and apparatus for manufacturing and vending social expression cards. 5,056,029, Cl. 364-468.000.

Canon Kabushiki Kaisha: *See—*
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Baba, Takashi; Niwa, Yukichi; Yoshii, Minoru; and Watanabe, Takako, 5,055,665, Cl. 250-201.700.
Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000
Hanyu, Yukio; Taniguchi, Osamu; Uchimi, Toshiharu; and Asaoka, Masanobu, 5,054,890, Cl. 350-344.000.
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Murayama, Yasushi; Aoki, Tomohiro; Uchida, Takashi; Mitomi, Tatsuo; and Nemura, Masaharu, 5,055,861, Cl. 346-140.00R.
Ohkoda, Keiji; and Inoue, Hitoshi, 5,055,756, Cl. 318-618.000.
Usui, Yoshiko, 5,055,921, Cl. 358-44.000.

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Capewell, Dennis M.: *See—*
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Scribner, Robert M.; Salmon, Stephen M.; and Pomeranz, Mark L., 5,054,492, Cl. 128-662.060

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Carl-Zeiss-Stiftung: *See—*
Kuchel, Michael, 5,054,912, Cl. 356-5.000.

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Carlson, Russell L., deceased; and Carlson, Irene L., executrix, 5,055,071, Cl. 439-621.000

Carlson, J. David, to Lord Corporation. Electrophoretic fluid torque transmission apparatus and method. 5,054,593, Cl. 192-21.500

Carlson, Robert A. Chain saw projection mensuration method and apparatus for determining the diameter of trees. 5,054,206, Cl. 33-555.100.

Carlson, Russell L., deceased; and by Carlson, Irene L., executrix In-line fuse holder. 5,055,071, Cl. 439-621.000

Carpenter, Robert K.; and Lyman, Harrison F., Jr., to Redux Corporation. Gas assisted flotation apparatus. 5,055,184, Cl. 210-109.000

Carr-Locke, David L.: *See—*
Chuttani, Ram; Apstein, Michael D.; and Carr-Locke, David L., 5,054,501, Cl. 128-772.000

Carr, Peter, to Instatherm Company. Thermal energy storage apparatus. 5,054,540, Cl. 165-10.000

Carreno, Diether, to General Electric Company. Thermal linear actuator for rotor air flow control in a gas turbine. 5,054,996, Cl. 415-115.000

Carrera, Renzo: *See—*
Alessandri, Mauro; Carrera, Renzo; and Iannuzzi, Giulio, 5,054,834, Cl. 294-87.100

Carrier Corporation: *See—*
Dudley, Kevin F., 5,054,294, Cl. 62-228.400
Zohler, Steven R., 5,054,548, Cl. 165-133.000

Carroll, Barry N.; and Ho, Jean H., to Compaq Computer Corporation. Lossless snubber. 5,055,991, Cl. 363-56.000.

Carroll, Lawrence B.; Kidder, Kenneth H., Jr.; and Visentin, Thomas, to International Business Machines Corporation. Three phase to single phase converter. 5,055,989, Cl. 363-36.000

Carroll, Noel; Carroll, Robert W.; and Kalnins, Charles M., to Conoco Specialty Products Inc. Method and apparatus for maintaining predetermined cyclone separation efficiency. 5,055,202, Cl. 210-739.000.

Carroll, Randy L.: *See—*
Simin, Gerald L.; and Carroll, Randy L., 5,054,846, Cl 296-218.000

Carroll, Robert W.: *See—*
Carroll, Noel; Carroll, Robert W.; and Kalnins, Charles M., 5,055,202, Cl. 210-739.000

Carroll Touch Incorporated: *See—*
Bartlett, Alan L., 5,055,840, Cl. 341-31.000

Carruthers, Alec R., to British Gas plc. Pipe burster. 5,054,677, Cl 225-106.000

Carter, Jack D.: *See—*
Riffe, William J.; Carter, Jack D.; and , 5,055,165, Cl. 204-147.000

Carter-Wallace, Inc.: *See—*
Sofia, Robert D., 5,055,489, Cl. 514-483.000

Cartwright, Richard N., to Schroer Manufacturing Company. Surgery lamp with ventilation for cooling. 5,055,988, Cl. 362-294.000

Case, Allen W., Jr.: *See—*
Jones, Marshall G.; and Case, Allen W., Jr., 5,055,652, Cl 219-121.640

Casio Computer Co., Ltd.: *See—*
Higa, Masakatsu; Nakajima, Yasushi; and Aoki, Hisashi, 5,054,891, Cl. 359-43.000
Usami, Ryuji, 5,054,358, Cl. 84-617.000
Wakabayashi, Takeshi; and Ochi, Tsuneo, 5,055,859, Cl. 346-76.0PH
Wakai, Haruo; Yamamura, Nobuyuki; Sato, Syunichi; and Kanbara, Minoru, 5,055,899, Cl. 357-23.700

Cassells, Alan C., to 3i Research Exploitation Limited. Plant package. 5,054,234, Cl. 47-69.000

Cassidy, Edward F.; Gillis, Herbert R.; Hannaby, Malcolm; and Parfondry, Alain, to Imperial Chemical Industries PLC. Internal mould release compositions. 5,055,134, Cl. 106-38.220

Castaldi, Graziano; and Allegrini, Pietro, to Enichem Synthesis, S.p.A Photochromatic and thermochromatic spiro-oxazepin-oxazine compounds and the process for their preparation. 5,055,576, Cl 540-543.000

Castro Lara, Sarah A.: *See—*
Dathe, Wilfried; Castro Lara, Sarah A.; Gutierrez, Reynaldo L.; Cueto Rodriguez, Miguel A.; and Sembdner, Guenther, 5,055,126, Cl. 71-89.000

Catalano, Anthony W.: *See—*
Arya, Rajeewa R.; and Catalano, Anthony W., 5,055,141, Cl. 136-258.000

Cataldo, Roy S., to General Motors Corporation. Continuously variable transmission. 5,055,094, Cl. 475-211.000.

Caterpillar Inc.: *See—*
Grawey, Charles E.; Johnson, L. Ted; Sloma, John M.; and Szentes, John F., 5,055,734, Cl. 310-366.000.
Marcott, Tony L., 5,054,599, Cl. 192-85.00R.

Caterpillar Industrial Inc.: *See—*
Wiblin, Wayne T.; and Wild, Arthur, 5,055,961, Cl. 361-154.000.

Cathel, Frank; and Leshofs, Robert, to Stratagene Cloning Systems. Electrophoresis control system with wide dynamic range. 5,055,172, Cl. 204-299.00R.

Catheter Research, Inc.: *See—*
McCoy, William C., 5,055,101, Cl. 604-95.000.

Catt, Ivor. Integrated circuit integrity testing apparatus. 5,055,774, Cl. 324-158.00R.

Caulfield, H. John, to University of Alabama in Huntsville. Holographic interconnect system. 5,056,039, Cl. 364-513.000.

Cavaluzzi, Frank: *See—*
Schumacher, Kevin; Striefler, Martin J.; Cavaluzzi, Frank; and Domicoli, Orazio, 5,054,210, Cl. 34-78.000.

Cazaux, Yvon; and Boucharlat, Gilles, to Thomson Composants Militaires et Spatiaux. Image sensor with high storage capacity per pixel. 5,055,931, Cl. 358-213.110

CE Plastics Japan Limited: *See—*
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000

Cecchini, Albert B.: *See—*
Kapp, John P.; and Cecchini, Albert B., 5,054,497, Cl. 128-748.000

Central Glass Company, Limited: *See—*
Okumura, Yuji; and Saeki, Shoji, 5,055,122, Cl. 65-29.000

Centre National de la Recherche Scientifique: *See—*
Perrier de la Bathie, Rene ; and Chavanne, Joel, 5,055,142, Cl. 148-101.000

Cerqua, Kathleen A.: *See—*
Jacobs, Stephen D.; Marshall, Kenneth L.; and Cerqua, Kathleen A., 5,054,888, Cl. 359-76.000

Cesena, Richard. Trunk storage apparatus. 5,054,864, Cl. 312-328.000.

CGE Compagnia Generale Elettromeccanica SpA: *See—*
Pardini, Franco; and Fiorino, Falchi, 5,055,643, Cl. 200-318.200.

Chai, Chang-Shung; Fink, David A.; and Gonzalez, John, to Lincoln Electric Company, The. Low hydrogen basic metal cored electrode. 5,055,655, Cl. 219-145.220

Chakrabarti, Dhruba J.; Staley, James T.; Baumann, Stephen F.; Sawtell, Ralph R.; Bretz, Philip E.; and Jensen, Craig L., to Aluminum Company of America. Superplastic aluminum products and alloys. 5,055,257, Cl 420-902.000

Chambers, Michael K.: *See—*
Sage, Ian C.; and Chambers, Michael K., 5,055,224, Cl 252-299.630.

Champagne, Patrick J.: *See—*
Carey, James R.; Rowden, David L.; and Champagne, Patrick J., 5,056,078, Cl. 369-77.200.

Champoux, Bruno. Laptop reading and writing stand. 5,054,736, Cl 248-444.000

Chan, Eric Y., to Boeing Company, The. Monolithic interleaved LED/PIN photodetector array. 5,055,894, Cl. 357-19.000.

Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., to R. R. Donnelley & Sons Company. Binding line book tracking system and method. 5,054,984, Cl. 412-001.000

Chande, Tushar S.: *See—*
Ortiz, Angel L., Jr.; and Chande, Tushar S., 5,054,877, Cl 385-33.000

Chandra, Ramesh: *See—*
Abele, Manlio G.; Chandra, Ramesh; Rusinek, Henry; Potenziani, Ernest, II; and Leupold, Herbert A., 5,055,812, Cl. 335-210.000.

Chang, Robin, to International Parallel Machines, Inc. Synchronized parallel processing with shared memory. 5,056,000, Cl. 364-200.000.

Chao, Clinton C.: *See—*
Leibovitz, Jacques; Cobarruviaz, Maria L.; Scholz, Kenneth D.; and Chao, Clinton C., 5,055,425, Cl. 437-195.000.

Chapman, Dorothy L. Vehicular child divider apparatus. 5,054,837, Cl. 296-24.100

Chapman, Lloyd R.: *See—*
Holcombe, Cressie E., Jr.; and Chapman, Lloyd R., 5,055,137, Cl. 106-600.000

Chara, Alexander, to Bucher-Guyer AG Maschinenfabrik. Device for detachably fastening and securing an insert in a sleeve. 5,054,952, Cl. 403-326.000

Charlery-Adele, Pierre: *See—*
Weisang, Francois; and Charlery-Adele, Pierre, 5,054,749, Cl 266-220.000

Charles Greiner and Company, Inc.: *See—*
Calabrese, Anthony; and Scialli, Sandy, 5,054,475, Cl. 128-75.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Hubbard, James E., Jr.; and Burke, Shawn E., 5,054,323, Cl. 73-754.000

Charlot, Lincoln H., Jr.: *See—*
Hogan, Dennis L.; Lynch, John L.; and Charlot, Lincoln H., Jr., 5,054,172, Cl. 24-704.100.

Chater, William T. Bias control for power amplifiers. 5,055,797, Cl. 330-268.000

Chatteex: *See—*
Belsito, Anne W., 5,054,774, Cl. 272-130.000.

Chatterjee, Chandralekha: *See—*
Siuciak, Alan M.; Chatterjee, Chandralekha; and Palmer, Neil D., 5,055,790, Cl. 324-309.000

Chaudhuri, Ratan K.; Haldar, Rama K.; and Gangadharan, Balgopal, to ISP Investments Inc. Bioadhesive composition. 5,055,046, Cl. 433-180.000.

Chauvire, Pascal: *See—*
Anciaux, Ghislain; Guilloteau, Rene ; Tucoulat, Daniel; and Chauvire, Pascal, 5,054,348, Cl. 83-157.000.

Chavanne, Joel: *See—*
Perrier de la Bathie, Rene ; and Chavanne, Joel, 5,055,142, Cl. 148-101.000.

Chaviel, Anderson: *See—*
Manzano, Rafael; and Chaviel, Anderson, 5,054,960, Cl. 405-72.000.

Cheek, William B. Modular walkway system. 5,054,580, Cl. 182-179.000.

Chemical Research & Licensing Company: *See—*
Smith, Lawrence A., Jr.; Arganbright, Robert P.; and Hearn, Dennis, 5,055,627, Cl. 585-467.000.

Chemieanlagenbau GmbH: *See—*
Dummersdorf, Hans-Ulrich; Jahn, Wolfgang; Noack, Werner; and Heidel, Wolfgang, 5,055,167, Cl. 204-165.000.

Chemilizer Products, Inc.: *See—*
Daniels, Raymond R., Scheid, Norman W.; and Bryant, Donald C., 5,055,008, Cl. 417-403.000.

Cheminal, Bernard: *See—*
Laniz, Andre; and Cheminal, Bernard, 5,055,624, Cl. 570-167.000.

Chemisches Laboratorium Dr. Kurt Richter GmbH: *See—*
Kludas, Martin, 5,055,298, Cl. 424-401.000.

Chen, Abraham S. C.: *See—*
O'Neill, Gary A.; Misra, Chanakya; and Chen, Abraham S. C., 5,055,199, Cl. 210-684.000.

Chen, Dennis. Weight adjustable tennis racquet. 5,054,780, Cl. 273-73.00R.

Chen, Hsing-Yao; and Gorski, Richard M., to Zenith Electronics Corporation. Self-convergent electron gun system. 5,055,749, Cl. 315-368.00R.

Chen, Tsang J.: *See—*
Bagchi, Pranab; Reithel, Raymond F.; Chen, Tsang J.; and Evans, Steven, 5,055,379, Cl. 430-289.000.

Cheng, Wei T. Ribbon inking apparatus and printer cartridge. 5,054,943, Cl. 400-202.300.

Chern, Ching-Shyang, to Ying Hung Enterprise Co., Ltd. Food utensil. 5,054,465, Cl. 126-39.00R.

Cherry, Diane P.: *See—*
Coleman, Edward R.; Vogel, Danny C.; Vogel, David A.; and Cherry, Diane P., 5,056,132, Cl. 379-95.000.

Chester, Darren D., to Chrysler Corporation. Dual function vehicle tow hook. 5,054,806, Cl. 280-495.000.

Chevrette, Roger N.: *See—*
Bhatia, Sushil K.; Brefka, Paul E.; Rath, Mihira K.; Misra, Nick; and Chevrette, Roger N., 5,054,417, Cl. 118-242.000.

Chevron Research Company: *See—*
Buckley, Thomas F., III, 5,055,607, Cl. 560-158.000

Chevron Research and Technology Company: *See—*
Duerksen, John H., 5,054,551, Cl. 166-272.000.

Chew, Weng C.: *See—*
Kleinberg, Robert L.; Griffin, Douglas D.; Fukuhara, Masafumi; Sezginer, Abdurrahman; and Chew, Weng C., 5,055,787, Cl. 324-303.000.

Chiancone, Emilia; and Gattoni, Maurizio, to Consiglio Nazionale Della Ricerche. Method for the selective deproteinization of whey. 5,055,558, Cl. 530-386.000.

Chiang, Chih-Cheng: *See—*
Kao, Hsin-Ching; Lee, Mao-Mong; Chiang, Chih-Cheng; Lin, Jen-Lien; and Wu, Ting-Kai, 5,055,505, Cl. 524-83.000.

Chiba, Shuuichi: *See—*
Matsui, Norio; Sanjo, Isao; and Chiba, Shuuichi, 5,054,587, Cl. 188-267.000.

Chiba, Teruhisa, to Laurel Bank Machines Co., Ltd. Adjustable bill-damage discrimination system. 5,055,834, Cl. 340-825.340.

Chicago Dryer Company: *See—*
Thomas, Ronald; and Kober, Kasimir, 5,054,543, Cl. 165-89.000.

Chin, Arthur A.: *See—*
Avidan, Amos A.; Chin, Arthur A.; and Green, Gary J., 5,055,029, Cl. 431-7.000.

China-Japan Friendship Hospital: *See—*
Wen, Yingmei; Wang, Zhengping; Liu, Xiaojie; Zhang, Yuping; Fang, Qiding; Wang, Xiaoyin; and Shen, Chun, 5,054,496, Cl. 128-696.000.

Chirovsky, Leo M. F.: *See—*
Anthony, Philip J.; Chirovsky, Leo M. F.; D'Asaro, Lucian A.; Mattera, Vincent D.; and Morgan, Robert A., 5,056,098, Cl. 372-45.000.

Chisso Corporation: *See—*
Maeda, Hirotoshi; and Kunimune, Kouichi, 5,055,549, Cl. 528-310.000.
Ohno, Kouji; Saito, Shinichi; Inukai, Takashi; Inoue, Hiromichi; and Miyazawa, Kazutoshi, 5,055,222, Cl. 252-299.610.
Uchida, Manabu; Goto, Yasuyuki; and Ogawa, Tetsuya, 5,055,220, Cl. 252-299.010.

Chiu, Hsiu-Hui, to Sunshon Molding Co., Ltd. Seat attachment device for infant walk support. 5,054,851, Cl. 297-136.000.

Chiyoda Corporation: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000.

Cho, Hae-Suk, to SamSung Electronics Co., Ltd. Baking machine provided with yogurt manufacturing device. 5,054,383, Cl. 99-327.000.

Cho, Hojin: *See—*
Yun, Joyung; and Cho, Hojin, 5,055,736, Cl. 313-402.000.

Chow, Jessie. Portable distributor for seeds or fertilizer. 5,054,693, Cl. 239-681.000.

Christensen, Brent R.: *See—*
Christensen, Linda B.; and Christensen, Brent R., 5,054,800, Cl. 280-204.000.

Christensen, Burton G.: *See—*
Cama, Lovji D.; and Christensen, Burton G., 5,055,573, Cl. 540-302.000.

Christensen, Linda B.; and Christensen, Brent R. Bicycle trailer for small children. 5,054,800, Cl. 280-204.000.

Christensen, Richard H. Apparatus for maneuvering a physically unpaired individual. 5,054,137, Cl. 5-81.00R.

Christensen, Wynn; Anderson, Forrest L.; and Kortegaard, Birchard L., to United States of America, Energy. Video image position determination. 5,055,926, Cl. 358-125.000.

Christian, Donald J.: *See—*
Downing, Elizabeth A.; Rogers, Steven W.; Titsworth, Raymond; Christian, Donald J.; and Baird, Michael L., 5,054,918, Cl. 356-152.000.

Christie Electric Corp.: *See—*
Larsen, Steinar A., 5,054,909, Cl. 352-198.000.

Chrysler Corporation: *See—*
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Chu, Wing F.; Rohr, Franz-Josef; and Reich, Andreas, to Asea Brown Boveri Aktiengesellschaft. Catalyst and method for its manufacture. 5,055,440, Cl. 502-303.000.

Chuang, Cliff L., to Prospect Corporation. Automobile environment management system. 5,054,686, Cl. 236-49.300.

Chun Zu Machinery Industry Co., Ltd.: *See—*
Wang, Sheng-Yau, 5,054,330, Cl. 74-53.000.

Chung, Chi H., to Literal Corporation. Multi-state optical contrasts in optical recording media for data compression. 5,056,079, Cl. 369-100.000.

Chung, Tai-Shung: *See—*
Kohn, Rachel S.; Coleman, Maria R.; and Chung, Tai-Shung, 5,055,116, Cl. 55-16.000.

Churchland, Mark T.; and Schilling, Walter W., to MacMillan Bloedel, Limited. Apparatus for laying elongate members. 5,054,603, Cl. 198-382.000.

Chuttani, Ram; Apstein, Michael D.; and Carr-Locke, David L., to Brigham & Women's Hospital. Steerable guide wire for cannulation of tubular or vascular organs. 5,054,501, Cl. 128-772.000.

Ciba-Geigy Corporation: *See—*
Ajello, Marc, 5,054,610, Cl. 206-5.100.
Clubley, Brian G.; and Parker, David C., 5,055,230, Cl. 252-389.620.
Liechti, Peter; Emmenegger, Karl; and Trottmann, Martin, 5,055,567, Cl. 534-753.000.
Wagnieres, Georges; van den Bergh, Hubert; and Monnier, Philippe, 5,054,867, Cl. 385-31.000.
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Ciolino, John V.: *See—*
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Citicorp POS Information Servies, Inc.: *See—*
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Clairol Incorporated: *See—*
Lim, Mu-Ill; and Botta, Nancy A., 5,055,110, Cl. 8-405.000.

Clar, Milton. Tooth shade selection using a new comparator. 5,055,040, Cl. 433-26.000.

Clark, Douglas S.; and Osterhaus, Elmer, to Wenger Manufacturing, Inc. Diverter apparatus for pneumatic conveying system. 5,054,965, Cl. 406-151.000.

Clarke, Richard H., to Boston Advanced Technologies, Inc. Laser systems for material analysis based on reflectance ratio detection 5,054,487, Cl. 128-633.000.

Clavel, Francois: *See—*
Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,055,391, Cl. 435-5.000.

Claverie, Pierre: *See—*
Jalby, Pierre; Claverie, Pierre; Rotman, Frederic; Kimura, Masao; Friedt, Jean-Marie; and Arai, Juichi, 5,055,246, Cl. 264-81.000.

Clayton, Richard R.: *See—*
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Clean-Pak, Inc.: *See—*
Rhodes, John C.; Aljoe, Ronald R.; and Ellers, Berpe F., 5,055,332, Cl. 428-74.000.

Clopay Corporation: *See—*
Leist, Alan R.; Mushaben, Thomas G.; and Youtsey, Thomas E., 5,054,536, Cl. 160-229.100.

Clorox Company, The: *See—*
Smith, William L., 5,055,219, Cl. 252-102.000.

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Clubley, Brian G.; and Parker, David C., to Ciba-Geigy Corporation. Corrosion inhibiting compositions. 5,055,230, Cl. 252-389.620.

CMB Foodcan plc: *See—*
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Perigo, John A.; and Tucker, Geoffrey, 5,054,265, Cl. 53-425.000.

CMB Packaging (UK) Limited: *See—*
Heyes, Peter J.; and Rowland, Mark J., 5,055,647, Cl. 219-10.430.
CMI International, Inc.: *See—*
McKibben, Kenneth D.; and Wuepper, Thomas E., 5,054,155, Cl. 15-304.000
Cobarruviaz, Maria L.: *See—*
Leibovitz, Jacques; Cobarruviaz, Maria L.; Scholz, Kenneth D.; and Chao, Clinton C., 5,055,425, Cl. 437-195.000
Cobb, Lincoln C.; and Hirsch, Teddy J., to International Barrier Corporation. Roadway barrier. 5,054,954, Cl. 404-6.000
Cockburn, John B. Security system employing digitized personal physical characteristics. 5,055,658, Cl. 235-382.000.
Cocucci, Anthony R.: *See—*
Hull, Harold L.; and Cocucci, Anthony R., 5,054,718, Cl. 244-155.00A
Cofflard, Daniel; Bouvier, Maurice; and Engler, Bernard, to Montupet Mechanical fatigue test bench for engine cylinder heads. 5,054,314, Cl. 73-118.100
Cohen, Abraham D.: *See—*
Sartori, Guido; Ho, W. S. Winston; Noone, Robert E.; and Cohen, Abraham D., 5,055,631, Cl. 585-819.000
Cohen, Allen L. Progressive intensity phase bifocal. 5,054,905, Cl. 351-161.000
Cohen, George H.: *See—*
Horvath, Mark S.; Nance, Roy A.; Cohen, George H.; and Fodor, George, 5,054,321, Cl. 73-597.000.
Cohen, Todd J., to Bloom, Leonard, a part interest. Hemodynamically responsive system for and method of treating a malfunctioning heart 5,054,485, Cl. 128-419.00D
Cohn, Jay N.; and Finkelstein, Stanley M., to University of Minnesota, Regents of the. Method for diagnosing, monitoring and treating hypertension. 5,054,493, Cl. 128-672.000.
Coker, Randall S.: *See—*
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Colbow, Konrad: *See—*
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Coleman, Edward R.; Vogel, Danny C.; Vogel, David A.; and Cherry, Diane P., to Intertech Engineering Associates, Inc. Switch device adapted to interface between an incoming telephone line and an internal telephone system. 5,056,132, Cl. 379-95.000.
Coleman, Maria R.: *See—*
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Colgate-Palmolive Co.: *See—*
Sherman, Adam; and Stagl, Peter, 5,054,660, Cl. 222-454.000
Colin Electronics Co., Ltd.: *See—*
Uemura, Masahiro; Tsuda, Hideichi; Yokoe, Hifumi; and Hayakawa, Tokuji, 5,054,495, Cl. 128-680.000
Collander, Paul J.: *See—*
Gibson, Jeremy H.; Buehner, Lawrence E.; and Collander, Paul J., 5,054,969, Cl. 408-115.00R
Colley, David E.; Fain, Donald G.; and Arnett, Frederick R. Power spring bow. 5,054,463, Cl. 124-25.600.
Collins, Eddie "B" Jr.; Shah, Arun; and Giambattista, Louie M., to Amdahl Corporation. Cross-coupling of service processor driven system control facilities in a multiple service processor data processing system. 5,056,007, Cl. 364-200.000
Collins, Frank T. Golf club head. 5,054,784, Cl. 273-167.00E.
Collins, Paul W.: *See—*
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Columbia University, Trustees of: *See—*
Manning, Maurice; and Sawyer, Wilbur H., 5,055,448, Cl. 514-16.000
Columbia University in the City of New York, The Trustees of: *See—*
Fossum, Eric R.; and Kemeny, Sabrina E., 5,055,900, Cl. 357-24.000
Columbus, Richard L., to Eastman Kodak Company. Blood collection device with reduced serum dispensing volume and integral needle 5,055,203, Cl. 210-741.000.
Combs, Paul D. Hinge pin tool. 5,054,180, Cl. 29-275.000
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Comfort Key Corporation: *See—*
Scott, Steven S.; Franklin, Robert W.; and Davis, Manfred, 5,054,569, Cl. 180-167.000.
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Communications Systems, Inc.: *See—*
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Compagnie Generale des Etablissements Michelin-Michelin & CIE: *See—*
Dosjoub, Andre, 5,054,315, Cl. 73-146.500.
Compaq Computer Corporation: *See—*
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Carroll, Barry N.; and Ho, Jean H., 5,055,991, Cl. 363-56.000.
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Condea Chemie GmbH: *See—*
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Conoco Inc.: *See—*
Gergely, John S.; and Myers, Wilbur J., 5,054,878, Cl. 385-33.000.
Le, Hanh T., 5,055,212, Cl. 252-48.600.
Conoco Specialty Products Inc.: *See—*
Carroll, Noel; Carroll, Robert W.; and Kalnins, Charles M., 5,055,202, Cl. 210-739.000.
Conopco, Inc.: *See—*
Bee, Rodney D., 5,055,315, Cl. 426-565.000.
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Contico Internation, Inc.: *See—*
Foster, Donald D.; and Auer, Harry T., 5,054,692, Cl. 239-589.000.
Contreras, Patricia C.: *See—*
Gray, Nancy M.; and Contreras, Patricia C., 5,055,468, Cl. 514-249.000
Control Chemicals (Proprietary) Limited: *See—*
Buchan, Leon, 5,055,183, Cl. 210-085.000.
Cook, Alexander, to Sundstrand Corporation. Control for full-bridge inverter. 5,055,992, Cl. 363-98.000
Cook, Alexander: *See—*
Rozman, Gregory I.; Glennon, Timothy F.; and Cook, Alexander, 5,055,764, Cl. 322-10.000
Cook, John E., to Siemens-Bendix Automotive Electronics Limited Regulated flow canister purge system. 5,054,455, Cl. 123-520.000.
Cooney, Kevin G. Rotary tool for sharpening studs in snowmobile treads. 5,054,972, Cl. 408-211.000.
Cooper Industries, Inc.: *See—*
Bueschel, David M., 5,055,818, Cl. 337-267.000
Cooper, Thomas M.; and Clayton, Richard R. Method for stopping smoking. 5,055,478, Cl. 514-343.000.
Coors Brewing Company: *See—*
Johansson, Bert E.; and Bowles, Ray L., 5,054,341, Cl. 82-47.000
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Logan, Kent E., 5,055,010, Cl. 417-410.000.
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Garcia, Rigoberto F.; Coppinger, Elizabeth M.; Irwin, Charles F.; and Sangirardi, Angela M., 5,055,217, Cl. 252-94.000.
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Sells, Gary, 5,054,254, Cl. 52-199.000.
Cordell, Robert R., to Bell Communications Research, Inc. High-speed feedforward variable word length decoder. 5,055,841, Cl. 341-67.000.
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Hillstead, Richard A., 5,054,821, Cl. 285-321.000.
Jackowski, Stefan; and Pinchuk, Leonard, 5,055,024, Cl. 425-140.000
Cordonnier, Alain: *See—*
Durinck, Rene; Lagache, Philippe; and Cordonnier, Alain, 5,054,701, Cl. 241-167.000.
Cornelius, William P., to Hewlett-Packard Company. Fast switching drive circuit for a ferri-resonant oscillator. 5,056,144, Cl. 331-49.000.
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Corsmeier, Robert J.; and Petsche, Joseph, to General Electric Company. Blade tip clearance control apparatus using bellcrank mechanism. 5,054,997, Cl. 415-173.200.
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Gmoch, Richard, 5,054,198, Cl. 30-2.000.
Cosgrove, John P., to Westvaco Corporation. Sovlent-borne alkyd resin compositions. 5,055,548, Cl. 528-272.000.
Costa, Mark W.; and Shach, Steven P., to United Technologies Corporation. Drain assembly. 5,054,282, Cl. 60-39.094.
Coty, Dominique, to Butcher Company, The. Combination of cleaning pads, cleaning pad mounting members and a base member for a rotary cleaning machine. 5,054,245, Cl. 51-170.00R.
Courage, Wilfried, to Courage+Khazaka electronic GmbH. Device and a method for measuring the elastic and elasticoviscous deformability of skin. 5,054,502, Cl. 128-774.000.
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Courage, Wilfried, 5,054,502, Cl. 128-774.000.
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Covert, Charles H.: *See—*
Sherwood, Carl H.; Turner, Kenneth W.; DuBois, Patti S.; and Covert, Charles H., 5,054,520, Cl. 137-587.000.
Coviello, Andrew G. Adjustable animal feeder. 5,054,431, Cl. 119-61.000
CPS Superconductor Corp.: *See—*
Klemptner, Lori J.; Hodge, James D.; and Halloran, John W., 5,055,436, Cl. 501-152.000

Cradduck, Kevin M.; and Iacchetta, Nicholas A., to Borg-Warner Automotive, Inc. Spring blade chain tensioner. 5,055,088, Cl. 474-111.000.
Crawford, Edward J.: *See—*
Blum, Yigal D.; and Crawford, Edward J., 5,055,431, Cl. 501-97.000.
Cray Computer Corporation: *See—*
Cray, Seymour R.; and Krajewski, Nicholas J., 5,054,192, Cl. 29-835.000.
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Young, Michael E.; Edwards, David M.; and Lyons, Robin S., 5,054,617, Cl. 206-509.000.
Cribbs, Thomas P., III: *See—*
Long, John J.; Krauss, Susan R.; and Cribbs, Thomas P., III, 5,055,382, Cl. 430-400.000.
Croce, Michael R.; and Brilliant, Stuart D., to Witco Corporation. Stabilization and foaming of polyvinylchloride resins. 5,055,495, Cl. 521-85.000.
Cross, Peter E.: *See—*
Arrowsmith, John E.; Cross, Peter E.; and Thomas, Geoffrey N., 5,055,473, Cl. 514-311.000.
Crotty, Wayne E.; and Phelps, Harold J., to Texstyle, Inc. Method and apparatus for laminating flexible magnetic strips onto flexible plastic substrates. 5,055,155, Cl. 156-256.000.
Crucible Materials Corporation: *See—*
Narasimhan, Kalathur S. V. L.; and Ma, Bao-Min, 5,055,146, Cl. 148-302.000
Cruden, John M.: *See—*
Mahil, Mahinder S.; and Cruden, John M., 5,055,504, Cl. 524-48.000.
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Grychowski, Jerry R.; Brisson, Alfred G.; Cruz, Exequiel D.; and Nowacki, Christopher, 5,054,478, Cl. 128-200.210.
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Miller, Gert; Jendges, Heinz-Gerd; and Crynen, Norbert, 5,055,657, Cl. 235-381.000.
Crystal Semiconductor Corporation: *See—*
Welland, David R., 5,055,846, Cl. 341-155.000.
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Culver, Robbyn, Marie, to VLSI Technology, Inc. System for achieving desired bondlength of adhesive between a semiconductor chip package and a heatsink. 5,055,909, Cl. 357-81.000.
Cummins-Allison Corporation: *See—*
Raterman, Donald E.; Primdahl, Richard D.; and Mazur, Richard A., 5,055,086, Cl. 453-10.000.
Cunningham, Ernest R.; and Miller, Merlin, to Grip-Pak, Inc. Cut-off device for can-container packaging equipment. 5,054,257, Cl. 53-48.400.
Cuno Incorporated: *See—*
Artinyan, Arto; and Krzyston, John, 5,055,192, Cl. 210-346.000.
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Mercier, Marc; and Curcio, Marc, 5,055,443, Cl. 502-439.000
Curran, Mark E., to General Dynamics. Fiber-optic equalizer. 5,054,875, Cl. 385-27.000.
Curtis, John L.: *See—*
Young, Tommis E.; Curtis, John L.; and Barnett, Dennis A., 5,054,542, Cl. 165-58.000.
Curtiss, Linda K.; and Smith, Richard S., to Scripps Clinic and Research Foundation. Diagnostic methods and systems for quantifying APO AI. 5,055,396, Cl. 435-7.930.
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Scheel, Fredrick S.; Bailey, Byron; and Lorenzo, Richard, 5,054,385, Cl. 99-453.000.
Cwalinski, Alexander J.; and Walsh, Brian M. Flying disc with depending flexible strips. 5,055,080, Cl. 446-46.000
Cyberlab, Inc.: *See—*
Meltzer, Walter, 5,055,263, Cl. 422-65.000.
Czarnecki, Jerzy P., to Cahn Instruments, Inc. Apparatus for directing the flow of condensable matter. 5,055,264, Cl. 422-80.000.
Dabbs, Timothy P.; Hegedus, Zoltan S.; and Higgerson, Graham J., to Commonwealth Scientific and Industrial Research Organisation. Distance measuring device. 5,054,926, Cl. 356-345.000.
Daicel Chemical Industries Ltd.: *See—*
Takase, Ichirou; Sato, Kazuo; Yamasaki, Noritsugu; and Goto, Yukihisa, 5,055,588, Cl. 548-344.000.
Daihen Corporation: *See—*
Yamamoto, Yasuo; Hanaoka, Katsumi; Hirai, Masatake; and Yamada, Toshiko, 5,055,815, Cl. 336-196.000.
Daikin Industries Ltd.: *See—*
Amimoto, Yoshio; Shinjo, Masayoshi; Enomoto, Takashi; and Hayashi, Kazunori, 5,055,538, Cl. 526-245.000.
Daimaru, Norio: *See—*
Morimura, Toshiaki; Daimaru, Norio; and Wachi, Akira, 5,055,814, Cl. 336-119.000.
Daimler-Benz AG: *See—*
Paulsen, Lutz, 5,054,590, Cl. 192-3.300.
Reimer, Uwe; Kretschmer, Jurgen; and Brecht, Klaus, 5,054,459, Cl. 123-549.000.
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Resch, Reinhard, 5,054,861, Cl. 303-110.000.
Dainippon Ink and Chemicals, Inc.: *See—*
Ikeda, Takenori; Ohtsubo, Mitsuru; Arimoto, Shunji; and Okoshi, Noboru, 5,055,522, Cl. 525-124.000.
Koyayashi, Nagatoshi; and Ando, Hirohito, 5,055,564, Cl. 534-575.000.
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Dainippon Screen Mfg. Co. Ltd.: *See—*
Kishida, Yoshihiro, 5,055,943, Cl. 358-459.000.
Kitagawa, Osamu; and Sakamoto, Takashi, 5,055,923, Cl. 358-75.000.
Dainippon Screen Mfg Co. Ltd.: *See—*
Kubota, Toshihiro, 5,054,884, Cl. 359-566.000.
Dallaire, Michel; and Seguin, Michel, to Vogue Industries Ltd. Above ground pool. 5,054,135, Cl. 4-506.000
Daly, Neil: *See—*
Hunerberg, Edward C.; and Daly, Neil, 5,054,689, Cl. 239-412.000.
Dammers, Matthias: *See—*
Farber, Jurgen;; and Dammers, Matthias, 5,054,684, Cl. 229-103.100
Dana Corporation: *See—*
Osenbaugh, Carl D.; and Reaser, Howard, 5,055,095, Cl. 475-233.000
Tarlton, James K., Sr., 5,054,597, Cl. 192-70.250.
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Nicolaisen, Holger, 5,054,742, Cl. 251-129.190.
Danielli, Franco, to Marposs Societa' Per Azioni. Wide range apparatus for checking linear dimensions of parts. 5,054,205, Cl. 33-555.100
Daniels, Raymond R.; Scheid, Norman W.; and Bryant, Donald C., to Chemilizer Products, Inc. Proportionating pump for liquid additive metering. 5,055,008, Cl. 417-403.000
Danielson, Robert J. G. Dart game scoring system. 5,054,792, Cl. 273-408.000
Danon, Albert: *See—*
Amirav, Aviv; and Danon, Albert, 5,055,677, Cl. 250-282.000.
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Ibsen, Peter, 5,054,538, Cl. 164-154.000.
Darian, Saeed T.; and Weinberg, Stephen P., to ENSR Corporation Extraction process to remove PCBs from soil and sludge. 5,055,196, Cl. 210-638.000.
Darmon, Marc; Sadot, Philippe; and Harari, Sami, to Alcatel Transmission par Faisceaux Hertziens. Interleaving method for a digital transmission system. 5,056,105, Cl. 375-1.000.
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Greene, Benjamin; McPherson, Robert A.; Darnall, Dennis W.; and Gardea-Torresdey, Jorge L., 5,055,402, Cl. 435-174.000
Darvas, Robert L. Hair cutting cape kit with cape and pad members utilizing adhesive to seal and remove hair clippings. 5,054,124, Cl. 2-50.000
D'Asaro, Lucian A.: *See—*
Anthony, Philip J.; Chirovsky, Leo M. F.; D'Asaro, Lucian A.; Mattera, Vincent D.; and Morgan, Robert A., 5,056,098, Cl. 372-45.000
Datajet, Inc.: *See—*
Ridkosil, Frank, 5,055,845, Cl. 341-155.000.
Date, Takao, to Toshiba Kakai Kabushiki Kaisha. Machine tool having automatic changeable tables. 5,054,175, Cl. 29-33.00B
Dathe, Wilfried; Castro Lara, Sarah A.; Gutierrez, Reynaldo L.; Cueto Rodriguez, Miguel A.; and Sembdner, Guenther, to Akademie der Wissenschaften der DDR; and Akademie der Wissenschaften Kubas, Institut Fuer Grundlagen der Tropischen Landwirtschaft "Alexander von Humboldt". Composition for increasing the yield of soybeans. 5,055,126, Cl. 71-89.000.
Daughenbaugh, Gerald A.; and Rigby, Eugene B., to International Business Machines Corporation. Method of making low wear glass for magnetic heads. 5,055,957, Cl. 360-121.000.
Davenport, Franklyn J., to Boeing Company, Inc., The. Thrust reversing system for counter rotating propellers. 5,054,998, Cl. 416-1.000
Davey, David D., to Berlex Laboratories, Inc. Imidazoquinoxalinones, their aza analogs and process for their preparation. 5,055,465, Cl. 514-228.200.
David International Ltd.: *See—*
Parviainen, Arno, 5,054,773, Cl. 272-118.000
Davies, Gareth M.; Strawson, Colin J.; and Lohmann, Jean J., to Imperial Chemical Industries plc; and ICI Pharma. Cephalosporin compounds. 5,055,462, Cl. 514-202.000.
Davis, Bob G.; and Antweil, Barry L., to WADA Ventures. Fishing tool for retrieving implements from a hole. 5,054,832, Cl. 294-86.300
Davis, James P., Jr. Double-bladed combat weapon. 5,054,200, Cl. 30-152.000.
Davis, John C.; and Irwin, John C., to International Business Machines Corporation. Breakaway keyboard. 5,055,839, Cl. 341-22.000
Davis, Manfred: *See—*
Scott, Steven S.; Franklin, Robert W.; and Davis, Manfred, 5,054,569, Cl. 180-167.000.
Davis, Richard L.; and Stoll, Harold M., to Northrop Corporation. High density integrated optical multiplexer/demultiplexer. 5,054,873, Cl. 385-27.000.
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Howell, Jerald A.; Tabler, Donald C.; Davis, Thomas; and Kukes, Simon G., 5,055,174, Cl. 208-112.000.
Davis, Thomas L.; Shell, John P.; and Elliott, Robert N., III. Multi-bay system for the forced air postharvest conditioning of agricultural crops. 5,054,291, Cl. 62-62.000.
Davis, Verlon L. Wear members for the inside of a chute. 5,055,336, Cl. 428-137.000.

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Wilhelm, Fritz; Witt, Heinz-Gunter; and Holting, Ludwig, 5,055,273, Cl. 422-135.000.

Dawson, L. Ralph; Osbourn, Gordon C.; Peercy, Paul S.; Weaver, Harry T.; and Zipperian, Thomas E., to United States of America, Energy. Nonvolatile semiconductor memory having three dimension charge confinement. 5,055,890, Cl. 357-16.000.

Day, Michael J.: *See*—
Bowman, Anthony L.; Lewis, Norris E.; Perdue, Jerry T.; Wright, James M.; and Day, Michael J., 5,054,189, Cl. 29-597.000

Dayco Products Canada Inc.: *See*—
Browne, John, 5,055,832, Cl. 340-764.000.

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Grantham, Rodger P., 5,054,509, Cl. 137-68.100.
Miranti, Joseph P., Jr., 5,055,090, Cl. 474-249.000.

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Gobush, William; and Days, Charles, 5,054,785, Cl. 273-184.00R.

DBJU Inc.: *See*—
Pine, James J., 5,054,850, Cl. 297-84.000

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Johnston, John A.; Forrest, Lindsay W.; and Wickham, Colin P., 5,055,188, Cl. 210-222.000

Dechene, Ronald L.; Smith, Thomas B.; and Newton, Robert E., to Auburn International, Inc. Flow measurement by collision characterization. 5,054,325, Cl. 73-861.040

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Weisbuch, Claude; De Cremoux, Baudouin; and Pocholle, Jean P., 5,055,422, Cl. 437-129.000.

Deere & Company: *See*—
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Rosenfeld, Aron M.; Smits, Paul; and DeFerrari, Howard F., 5,055,150, Cl. 156-150.000

de Fraine, Paul J.; and Martin, Anne, to Imperial Chemical Industries PLC. Fungicides. 5,055,471, Cl. 514-255.000

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Degussa Aktiengesellschaft: *See*—
Bilger, Edgar; and Gubisch, Urban, 5,055,283, Cl. 423-366.000
Bronder, Klaus; and Dietrich, Joachim, 5,055,173, Cl. 204-47.500

Deimen, James M.: *See*—
Onufer, George R., 5,054,453, Cl. 123-516.000.

DeJaynes, Arnold M. Ribbon curling and shredding device. 5,054,699, Cl. 241-101.200

De Jong, Tjitte; Bens, Florentinus L. M.; and Hermans, Danny L. V., to U.S. Philips Corporation. High pressure discharge lamp having improved containment structure. 5,055,735, Cl. 313-25.000

DeLancey, Daniel D. Universal support apparatus for a fishing rod 5,054,737, Cl. 248-515.000

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Fuller, Clyde R.; Delaney, Joseph B.; and Skinner, Robbie W., 5,055,908, Cl. 357-71.000

Delco Electronics Corporation: *See*—
Witkowski, Michael R.; Bolander, William J.; and Nitz, Larry T., 5,056,022, Cl. 364-424.100.

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Iceland, William F.; Demonet, Robert J.; Jimenez, Richard M.; and Houston, Donald W., 5,055,648, Cl. 219-10.770.

Demuth, Robert; Fritzsche, Peter; Waeber, Rene; Staheli, Paul; and Faas, Jurg, to Maschinenfabrik Rieter, AG. Adjustable textile card element and method of use. 5,054,166, Cl. 19-113.000

Denker, James M. Orbital sprocket drive. 5,055,093, Cl. 475-167.000.

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Bhatia, Sushil K.; Brefka, Paul E.; Rath, Mihira K.; Misra, Nick; and Chevrette, Roger N., 5,054,417, Cl. 118-242.000.

den Otter, Gerrit J.: *See*—
Gilson, Jean-Pierre; Nanne, Johannes M.; and den Otter, Gerrit J., 5,055,629, Cl. 585-739.000

D'Entremont, John R.; and Nield, Joseph G., Jr., to Texas Instruments Incorporated. Plug-on protector for compressor motor. 5,055,726, Cl. 310-71.000.

Denz, Helmut, to Robert Bosch GmbH. Method and apparatus for detecting a fault condition of a lambda probe. 5,054,452, Cl. 123-479.000

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DePeaux, Pierre; and DePeaux, Marie F., 5,054,381, Cl. 99-277.100.

DePeaux, Pierre; and DePeaux, Marie F. Method for contriving an insert in a receptacle, means for performing the method, and receptacles provided with such means. 5,054,381, Cl. 99-277.100.

Deri, Robert J.; and Wada, Osamu, to Bell Communications Research, Inc.; and Fujitsu Limited. Semiconductor waveguide and impedance-matched detector. 5,054,871, Cl. 385-30.000.

Derksen, Michael; and Domke, Joachim, to Dr. Herfeld GmbH & Co., KG. Mixing device with means to introduce and extract gaseous material. 5,054,933, Cl. 366-138.000.

Deschamps, Michel: *See*—
Lebarbier, Armand; and Deschamps, Michel, 5,055,251, Cl. 264-313.000.

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Bunshah, Rointan F.; Deshpandey, Chandra V.; Doerr, Hans J.; and Yoon, Jong S., 5,055,319, Cl. 427-38.000.

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Stuttem, Manfred; and Deters, Ludger A., 5,055,829, Cl. 340-677.000

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Deutsch, Robert W.; and Sun, Koushun, to Motorola, Inc. Ionization control for automotive ignition system. 5,054,461, Cl. 123-609.000.

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Wiehn, Helmut; Rehwinkel, Heiko; Mollenhoff, Horst; and Meier, Hans-Joachim, 5,054,435, Cl. 122-4.00D

Deutsche Thomson-Brandt GmbH: *See*—
Gehringer, Reinhard; and Kuhn, Hans-Robert, 5,056,071, Cl. 369-30.000
Keesen, Heinz-Werner; Hepper, Dietmar; and Peters, Hartmut, 5,055,927, Cl. 358-133.000

DeVilbiss Air Power Company: *See*—
Wheeler, Roger D., 5,054,740, Cl. 248-675.000.

DeWitt, Robert R.; Lile, William R.; Mitchell, Paul; and Stevens, Albert F., to Opex Corporation. Apparatus for the automated processing of bulk mail and the like. 5,054,620, Cl. 209-3.100.

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DeWoskin, Irvin S., to Barnhart Industries, Inc. Packaging apparatus 5,054,271, Cl. 53-559.000

Dey, Thomas W., to Eastman Kodak Company. Optical alignment method using arbitrary geometric figures. 5,054,929, Cl. 356-401.000.

De Zeeuw, Cornelis J. H.: *See*—
Akylas, Victor R.; and De Zeeuw, Cornelis J. H., 5,056,061, Cl. 365-96.000

Dhyanchand, P. John. Brushless generator having prime mover start capability. 5,055,700, Cl. 290-31.000

Diamantoglou, Michael, to Akzo N.V. Cuprammonium-stable cellulose esters and carbamates for dialysis membranes. 5,055,570, Cl. 536-84.000

Dickie, Robert G.; and Stein, Volker W. Disposable dental matrix retainer clamp. 5,055,045, Cl. 433-155.000.

Didier-Werke AG: *See*—
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Gimpera, Jose, 5,054,665, Cl. 222-598.000

Diederich, Anthony F., Jr.; and Merritt, John H., to Ford New Holland, Inc. Apparatus for wrapping bales with twine. 5,054,387, Cl. 100-5.000

Diehl, Donald R.; and Malec, Michael C., to Eastman Kodak Company. Sensitizing dye for photographic materials. 5,055,387, Cl. 430-591.000

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Bar, Klaus; and Lehrieder, Gunther, 5,054,712, Cl. 244-3.220.

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Vetter, Bernhard; and Diepold, Gisela, 5,054,395, Cl. 102-202.300.

Dieterich, Charles B., to General Electric Company. Chrominance encoding for a widescreen television system. 5,055,916, Cl. 358-12.000

Dietrich, Joachim: *See*—
Bronder, Klaus; and Dietrich, Joachim, 5,055,173, Cl. 204-47.500

Dietrich, Walter; Krieger, Eberhard; and Weber, Siegfried, to Robert Bosch GmbH. Apparatus for transferring flat articles. 5,054,761, Cl. 271-95.000

Dietz, David H., to Foster Wheeler Energy Corporation. Fluidized bed combustion system and process for operating same. 5,054,436, Cl. 122-4.00D

Dietz, Erwin; and Prokschy, Frank, to Hoechst Aktiengesellschaft. Substituted polycylic derivatives of the 9-oxo-1,9a,10-triaza-9-hydroanthracene and method for coloring of native or synthetic materials. 5,055,580, Cl. 544-233.000

Dietz, Paul F.: *See*—
Banford, Jonathan; and Dietz, Paul F., 5,055,513, Cl. 524-433.000.

Digital Appliance Controls, Inc.: *See*—
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Saliba, George A., 5,055,959, Cl. 360-122.000.
Wu, Andrew L.; Smelser, Donald W.; Bruce, E. William, II; and O'Dea, John, 5,055,910, Cl. 357-74.000.

Dijkstra, Hendrik: *See*—
Sluijter, Robert J.; Huizer, Cornelis M.; and Dijkstra, Hendrik, 5,055,997, Cl. 364-200.000.

Dillon, Matthew G.: *See*—
Gamble, John G.; and Dillon, Matthew G., 5,055,771, Cl. 324-117.00R

DiNinno, Frank P.: *See*—
Greenlee, Mark L.; DiNinno, Frank P.; and Salzmann, Thomas N., 5,055,463, Cl. 514-210.000

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Fu, Timonty S.; and Roberts, Allen W., to MIPS Computer Systems, Inc. Differential bus with specified default value. 5,056,110, Cl 375-36.000.
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Fudala, John J.; and Samaha, Magda H., to AT&T Bell Laboratories. Magnetic component using core clip arrangement operative for facilitating pick and place surface mount. 5,055,971, Cl. 361-400.000
Fuji Electric Co., Ltd.: *See—*
Akiike, Katsumi; Sekine, Nobuhiro; Matsuoka, Tadashi; and Oyama, Tsutomu, 5,054,754, Cl. 267-159.000
Miki, Hiroshi; Fujiwara, Yoshitaka; Iida, Kiyoshi; Takubo, Hiromu; Shibayama, Kunio; and Kobayashi, Shinichi, 5,055,990, Cl. 363-56.000.
Fuji, Hiroshi: *See—*
Tsuji, Kentaroh; Fuji, Hiroshi; Numata, Tomiyuki; Fujiwara, Tsuneo; and Terashima, Shigeo, 5,056,076, Cl. 369-50.000
Fuji Jukogyo Kabushiki Kaisha: *See—*
Abe, Kunihiro, 5,056,023, Cl. 364-424.030.
Morikawa, Koji, 5,054,444, Cl. 123-295.000.
Saitoh, Shirou, 5,054,528, Cl. 141-59.000.
Fuji Photo Film Co., Ltd.: *See—*
Abe, Akira; Fujita, Yoshihiro; and Koshimizu, Toshio, 5,055,381, Cl. 430-398.000.
Fujita, Shinsaku, 5,056,035, Cl. 364-497.000
Hirano, Tsumoru; Gotou, Haruyoshi; and Takahashi, Osamu, 5,055,386, Cl. 430-545.000
Ishikawa, Norio, 5,054,212, Cl. 34-155.000

Kato, Eiichi; Ishibashi, Hiroshi; and Ishii, Kazuo, 5,055,369, Cl 430-114.000

Kawata, Ken; Sato, Kozo; and Tsuboi, Masayoshi, 5,055,537, Cl 526-240.000

Mitsuhashi, Daisuke; and Kawasaki, Noboru, 5,055,955, Cl 360-104.000

Mizukawa, Yuki, 5,055,587, Cl. 548-262.400.

Namiki, Tomizo; Suzuki, Tamotsu; and Katayama, Masashi, 5,055,329, Cl. 428-42.000

Nishio, Tomonori, 5,055,855, Cl. 346-1.100

Ohba, Hisao; Yoshida, Susumu; and Miura, Toru, 5,055,870, Cl 354-317.000.

Saeki, Keiso; Shinozaki, Fumiaki; and Endo, Toshiaki, 5,055,373, Cl. 430-130.000

Suzuki, Kenji; and Matsumoto, Fumio, 5,055,941, Cl. 358-450.000

Suzuki, Nobuo; and Sakasai, Yutaka, 5,055,370, Cl. 430-114.000

Takeo, Hideya, 5,055,682, Cl. 250-327.200.

Yamada, Yasuyuki; and Hashimoto, Hiroshi, 5,055,352, Cl 428-336.000.

Yamamoto, Ryoichi; Umemura, Shizuo; Kato, Kiichi; and Yamada, Takashi, 5,055,353, Cl. 428-336.000.

Fuji Xerox Co., Ltd.: *See—*
Kin, Seki; Tanaka, Hiroyuki; Saeki, Satoshi; Torikoshi, Kaoru; and Pu, Lyong S., 5,055,615, Cl. 564-307.000
Yoshikado, Shouji; Kawada, Masami; Amamoto, Hidekazu; Saiki, Atsuna; Endo, Kiyoyuki; and Inasaki, Yutaka, 5,055,885, Cl. 355-318.000

Fujie, Shinichi; Oshima, Nobuo; and Matsuyuki, Akira, to Kabushiki Kaisha Meidensha. Process for measuring the concentration of a component in body fluid such as urine or blood. 5,055,398, Cl 435-10.000

Fujikawa, Shoji, to Matsushita Electric Works, Ltd. Hair cutter. 5,054,199, Cl. 30-34.100

Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, to Nissan Chemical Industries, Ltd. Pyrazolopyrimidine type mevalonolactones. 5,055,472, Cl. 514-258.000

Fujikura Ltd.: *See—*
Sakaya, Masuji; Okuai, Ryuichi; Mochizuki, Masataka; and Mashiko, Kouichi, 5,054,196, Cl. 29-890.032.

Fujimaki, Michio; Ikematsu, Shojiro; Hada, Masao; Fukue, Hidetaka; and Fukutake, Katsuhiro, to Juntendo, Tsumura. Immunopotentiator. 5,055,297, Cl. 424-195.100

Fujimori Kogyo Co., Ltd.: *See—*
Kakimoto, Kenichi; Kobayashi, Toshitaka; Nagata, Masanori; Imano, Shigeki; Honma, Hideaki; and Nishiyama, Hideki, 5,056,124, Cl. 378-57.000.

Fujimori, Toshiro: *See—*
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.

Fujimoto, Nobuhiro: *See—*
Taniguchi, Atsuki; Fujimoto, Nobuhiro; Ishihara, Tomohiro; and Wakisaka, Takaaki, 5,056,120, Cl. 375-118.000.

Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, to Canon Kabushiki Kaisha. Metal thin film type magnetic recording medium. 5,055,351, Cl. 428-336.000.

Fujinawa, Shohei; Iizuka, Harumasa; Kodama, Seiichi; and Yada, Hideo, to Takeda Chemical Industries, Ltd. Acid urease preparations for alcoholic beverages. 5,055,308, Cl. 426-11.000.

Fujino, Akihiko; Ichikawa, Tsutomu; Nanba, Katsuyuki; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Flashlight photographing device. 5,055,865, Cl. 354-127.110.

Fujioka, Shuzo: *See—*
Furuta, Shigeru; Takahira, Kenichi; Yamaguchi, Atsuo; Inoue, Takesi; Matsubara, Toshiyuki; and Fujioka, Shuzo, 5,056,089, Cl 371-3.000.

Fujita, Kenichi: *See—*
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.

Fujita, Naoki: *See—*
Kishi, Hajimu; Fujita, Naoki; and Ishikawa, Haruyuki, 5,055,754, Cl. 318-565.000.

Fujita, Shigeo: *See—*
Manabe, Osamu; Fujita, Shigeo; Iwata, Shizuo; and Kamiyama, Morihiro, 5,055,589, Cl. 548-427.000.

Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Method for processing information on chemical reactions. 5,056,035, Cl. 364-497.000.

Fujita, Yoshihiro: *See—*
Abe, Akira; Fujita, Yoshihiro; and Koshimizu, Toshio, 5,055,381, Cl. 430-398.000.

Fujitsu Limited: *See—*
Deri, Robert J.; and Wada, Osamu, 5,054,871, Cl. 385-30.000.
Matsuoka, Makoto; and Sakakura, Shigeki, 5,055,876, Cl. 355-211.000.
Ohta, Shinji; Fukuda, Misao; and Tsuda, Toshitaka, 5,056,121, Cl. 375-118.000.
Shimizu, Nobutaka; Tsujimura, Takehisa; Sugimoto, Masahiro; and Harada, Shigeki, 5,055,914, Cl. 357-81.000.
Taniguchi, Atsuki; Fujimoto, Nobuhiro; Ishihara, Tomohiro; and Wakisaka, Takaaki, 5,056,120, Cl. 375-118.000.
Wakatsuki, Noboru; Kurashima, Shigemi; Shimizu, Nobuyoshi; Endoh, Michiko; and Tanaka, Akira, 5,055,786, Cl. 324-252.000.
Yoshitake, Akihiro; Iino, Hideyuki; and Hida, Hidenori, 5,056,011, Cl. 364-200.000.

Fujitsu Microcomputer Systems Limited: *See—*
Yoshitake, Akihiro; Iino, Hideyuki; and Hida, Hidenori, 5,056,011, Cl. 364-200.000

Fujiwara, Katsuyoshi, to Sharp Kabushiki Kaisha. Copying apparatus 5,055,880, Cl. 355-235.000

Fujiwara, Tsuneo: *See—*
Tsuji, Kentaroh; Fuji, Hiroshi; Numata, Tomiyuki; Fujiwara, Tsuneo; and Terashima, Shigeo, 5,056,076, Cl. 369-50.000.

Fujiwara, Yoshitaka: *See—*
Miki, Hiroshi; Fujiwara, Yoshitaka; Iida, Kiyoshi; Takubo, Hiromu; Shibayama, Kunio; and Kobayashi, Shinichi, 5,055,990, Cl. 363-56.000.

Fukuchi, Masakazu: *See—*
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.

Fukuchi, Yutaka, to Ricoh Company, Ltd. Device for supplying a toner to a developing unit. 5,055,881, Cl. 355-260.000.

Fukuda, Hitoki: *See—*
Asoh, Seiichi; Kubota, Satoshi; Fukuda, Hitoki; Ushijima, Kajuhiro; Murakami, Fumiyuki; Taguchi, Tomoo; and Kohno, Shigefumi, 5,054,847, Cl. 296-219.000.

Fukuda, Misao: *See—*
Ohta, Shinji; Fukuda, Misao; and Tsuda, Toshitaka, 5,056,121, Cl 375-118.000

Fukue, Hidetaka: *See—*
Fujimaki, Michio; Ikematsu, Shojiro; Hada, Masao; Fukue, Hidetaka; and Fukutake, Katsuhiro, 5,055,297, Cl. 424-195.100.

Fukuhara, Masafumi: *See—*
Kleinberg, Robert L.; Griffin, Douglas D.; Fukuhara, Masafumi; Sezginer, Abdurrahman; and Chew, Weng C., 5,055,787, Cl. 324-303.000.
Kleinberg, Robert L.; Griffin, Douglas D.; Fukuhara, Masafumi; and Sezginer, Abdurrahman, 5,055,788, Cl. 324-303.000.

Fukui, Takashi; and Kawai, Hironobu, to Asmo Co., Ltd. Air damper operating system of vehicle air conditioners. 5,055,750, Cl. 318-254.000.

Fukui, Wataru; and Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control device and method for an internal combustion engine. 5,054,447, Cl. 123-414.000.

Fukui, Yoshio: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000.

Fukushima, Fumio: *See—*
Sagawa, Morikazu; Endo, Haruyoshi; Makimoto, Mitsuo; and Fukushima, Fumio, 5,055,809, Cl. 333-219.000.

Fukutake, Katsuhiro: *See—*
Fujimaki, Michio; Ikematsu, Shojiro; Hada, Masao; Fukue, Hidetaka; and Fukutake, Katsuhiro, 5,055,297, Cl. 424-195.100.

Fuller, Clyde R.; Delaney, Joseph B.; and Skinner, Robbie W., to Texas Instruments Incorporated. Semiconductor circuit having metallization with TiW. 5,055,908, Cl. 357-71.000.

Fuller, Kip L., to Innovision Technologies Group, Inc. Portable anti-theft alarm and locking device for vehicles. 5,055,823, Cl. 340-426.000

Fullmer, David J.: *See—*
Vassiliadis, Arthur; Shaffer, Joseph W.; Fullmer, David J.; Brewer, Michael H.; Hennings, David R.; and Myers, Terry D., 5,055,048, Cl. 433-215.000.

Fuma, Hiroshi: *See—*
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.

Funada, Fumiaki: *See—*
Kozaki, Shyuichi; and Funada, Fumiaki, 5,054,910, Cl. 353-31.000.

Funami, Koji; Uesugi, Yuji; and Nishikawa, Yukio, to Matsushita Electric Industrial Co., Ltd. Laser beam machining device. 5,055,653, Cl. 219-121.750.

Funer, Ernst: *See—*
Kieninger, Walter; Funer, Ernst; and Hetzinger, Herbert, 5,054,971, Cl. 408-205.000.

Furlenmeier, Andre; Gotschi, Erwin; Hebeisen, Paul; Hofheinz, Werner; and Link, Helmut, to Hoffmann-La Roche Inc. Cephalosporin derivatives. 5,055,572, Cl. 514-206.000.

Furudate, Yukio: *See—*
Shibuya, Kenichi; Okubo, Hirotsugu; and Furudate, Yukio, 5,056,070, Cl. 368-10.000.

Furuhama, Kokichi, to Kabushiki Kaisha Toshiba. Cold storage system. 5,054,297, Cl. 62-260.000.

Furukawa Electric Co., Ltd.: *See—*
Sotani, Junji; Okuyama, Tetsuo; Seo, Susumu; Ohi, Tohru; Mori, Naoki; and Mabuchi, Minoru, 5,054,296, Cl. 62-259.100.

Furukawa, Naoto, to Atsugi Motor Parts Company, Limited. Seal structure for rotary body and vane-type rotary compressor employing the same. 5,055,015, Cl. 418-104.000.

Furukimi, Osamu: *See—*
Kiyota, Yoshisato; and Furukimi, Osamu, 5,055,128, Cl. 75-246.000.

Furuta, Shigeru; Takahira, Kenichi; Yamaguchi, Atsuo; Inoue, Takesi; Matsubara, Toshiyuki; and Fujioka, Shuzo, to Mitsubishi Denki Kabushiki Kaisha. Memory device. 5,056,089, Cl. 371-3.000.

Furuya, Masato: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; and Furuya, Masato, 5,054,892, Cl. 359-72.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; and Suzuki, Tetsuji, 5,055,936, Cl. 358-296.000

Fushimi, Seiichiro, to Kabushiki Kaisha Toshiba. Developing agent dispersing unit for an image forming apparatus. 5,055,882, Cl. 355-269.000.

Fushiya, Fusao; Ito, Katuyasu; and Niinomi, Mitsuyoshi, to Makita Electric Wroks, Ltd. Miter saw. 5,054,352, Cl. 83-468.300.

Fusselman, David F.: *See—*
Townsend, Peter K.; and Fusselman, David F., 5,055,069, Cl. 439-608.000

Futuba Denshi Kogyo K.K.: *See—*
Tsuruoka, Yoshihisa, 5,055,744, Cl. 315-169.100.

G. D. Searle & Co.: *See—*
Babiak, Kevin A.; Behling, James R.; Dygos, John H.; and Ng, John S., 5,055,604, Cl. 556-437.000.
Baran, John S.; and Lowrie, Harman S., 5,055,613, Cl. 562-582.000
Becker, Daniel P.; Collins, Paul W.; and Flynn, Daniel L., 5,055,569, Cl. 536-26.000.
Gray, Nancy M.; and Contreras, Patricia C., 5,055,468, Cl. 514-249.000

G.T. Products, Inc.: *See—*
Benjey, Robert P., 5,054,508, Cl. 137-43.000.

Gabas, Carlos, to Industrias Techno-Matic, S.A. Support bracket for attachment to automobile sun visors. 5,054,734, Cl. 248-316.500

Gable, Richard J.: *See—*
Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., 5,055,862, Cl. 346-154.000.

Gaetano, Louis G.: *See—*
Palumbo, Perry A.; Singleton, Oscar; and Gaetano, Louis G., 5,055,269, Cl. 422-96.000.

GAF Building Materials Corporation: *See—*
Grube, Louis L.; and Frankoski, Stanley P., 5,055,135, Cl. 106-281.100.

Galarza, James; and Skoczylas, Henry F., to Galarza, James. Sailboat pennant mounting unit. 5,054,413, Cl. 114-102.000.

Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., to Actel Corporation. Logic module with configurable combinational and sequential blocks. 5,055,718, Cl. 307-465.000.

Galbrecht, Craig A., to Honeywell Inc. Getter assembly. 5,056,102, Cl. 372-87.000

Gallagher, Richard N. Holster paddle. 5,054,670, Cl. 224-191.000

Gallagher, William J.; Hu, Chao-Kun; Jaso, Mark A.; Ketchen, Mark B.; Kleinsasser, Alan W.; and Pearson, Dale J., to International Business Machines Corporation. Planarization of Josephson integrated circuit. 5,055,158, Cl. 156-643.000.

Gamble, John G.; and Dillon, Matthew G., to Sigma Instruments, Inc. Faulted current indicators with improved signal to noise ratios 5,055,771, Cl. 324-117.00R.

Gammerler, Hagen. Conveying apparatus for paper products, in particular in stream form. 5,054,767, Cl. 271-272.000.

Gandionco, Isidro: *See—*
Gould, Ross; and Gandionco, Isidro, 5,055,109, Cl. 604-95.000.

Gandy, Kenneth A.; and Maginot, Paul J. Clip providing improved storage and handling of flexible bags. 5,054,168, Cl. 24-30.50R

Ganesan, Apparajan: *See—*
Ferguson, Paul F., Jr.; Ganesan, Apparajan; and Adams, Robert W., 5,055,843, Cl. 341-143.000.

Gangadharan, Balgopal: *See—*
Chaudhuri, Ratan K.; Haldar, Rama K.; and Gangadharan, Balgopal, 5,055,046, Cl. 433-180.000.

Gann, Gary D.: *See—*
Mennel, David B.; Wilson, Joseph H.; Elliott, Martin E.; and Gann, Gary D., 5,054,696, Cl. 241-34.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Haghiri-Tehrani, Yahya, 5,055,913, Cl. 357-74.000.

Garbisch, Max: *See—*
Henkel, Dietmar; and Garbisch, Max, 5,054,445, Cl. 123-300.000.

Garcia, Rigoberto F.; Coppinger, Elizabeth M.; Irwin, Charles F.; and Sangirardi, Angela M., to Lever Brothers Company, Division of Conopco, Inc. Polymer protected bleach precursors. 5,055,217, Cl. 252-94.000

Gardea-Torresdey, Jorge L.: *See—*
Greene, Benjamin; McPherson, Robert A.; Darnall, Dennis W.; and Gardea-Torresdey, Jorge L., 5,055,402, Cl. 435-174.000

Gardner, Robert C.; Smith, George E.; and McLeod, Cheryl L., to Hewlett-Packard Company. High efficiency lamp or light accepter. 5,055,892, Cl. 357-17.000.

Garito, Nicholas: *See—*
Tran, Danh C.; Mossadegh, Reza; Garito, Nicholas; and Farid, Mohamad, 5,055,120, Cl. 65-3.110.

Garland, Robert B.; and Miyano, Masateru, to National Research Development Corporation. Process for preparing thromboxane A_2 antagonists. 5,055,582, Cl. 546-256.000

Garnier, Robert C. Magnetic frill generator. 5,055,853, Cl. 343-769.000.

Garretson, Jay H., to General Motors Corporation. Electrical connector cover having integral cable strap. 5,055,066, Cl. 439-464.000.

Gartner, Klaus W.; and Uyeda, Alan K., to H.P.C., Inc. Key punch machine. 5,054,350, Cl. 83-414.000.

Garves, John C. Apparatus and method for determining the thickness of insulated glass. 5,054,927, Cl. 356-382.000.

Gas Research Institute: *See—*
Bonne, Ulrich, 5,055,690, Cl. 250-343.000

Gates, Donald C., to Expertek, Inc. Fully automated leak testing apparatus. 5,054,311, Cl. 73-41.400.

Gattoni, Maurizio: *See—*
Chiancone, Emilia; and Gattoni, Maurizio, 5,055,558, Cl. 530-386.000.

Gau, Tien-Ho: *See—*
Huang, Huei-Huay; Peng, Yu-Yin; and Gau, Tien-Ho, 5,054,691, Cl. 239-585.000.

Gavagan, James A., to Takata, Inc. Shoulder belt comfort mechanism. 5,054,815, Cl. 280-808.000.

Gayes, George P.: *See—*
Egan, Walter G.; Ryan, Robert E.; and Gayes, George P., 5,054,928, Cl. 356-400.000.

GE Fanuc Automation North America, Inc.: *See—*
Sexton, Daniel W., 5,056,001, Cl. 364-200.000.

Geacintov, Nicholas E.; Valinsky, Jay E.; Williams, Bolanle; and Horowitz, Bernard, to New York Blood Center, Inc. Inactivation of viruses in cell- and protein-containing compositions using aryl diol epoxides. 5,055,485, Cl. 514-449.000

Gebr. Schmidt Fabrik fur Feinmechanik: *See—*
Sondergeld, Manfred, 5,056,047, Cl. 364-556.000

GEC Marconi Limited: *See—*
Taylor, Douglas R., 5,054,717, Cl. 244-110.00F.

GEC Plessey Telecommunications Limited: *See—*
Ferguson, Stephen P., 5,056,087, Cl. 370-84.000

Geddings, Warren E. Over-ride valve assembly for air operated double diaphragm pumps. 5,055,007, Cl. 417-393.000.

Gehringer, Reinhard; and Kuhn, Hans-Robert, to Deutsche Thomson-Brandt GmbH. CD apparatus with dynamic function generation. 5,056,071, Cl. 369-30.000

Geidel, Helmjut-Arnd; Enderle, Heinrich; and Rohra, Alois, to MTU Motoren- und Turbinen-Union Munchen GmbH. Thrust reverser for turbofan engine. 5,054,285, Cl. 60-226.200

Geinert, Anita G. Movable heading system. 5,054,817, Cl. 283-66.100.

Geisthoff, Hubert: *See—*
Kampf, Klaus; and Geisthoff, Hubert, 5,054,594, Cl. 192-35.000.

Gelardi, Anthony; Lovecky, Craig; and Lowry, Alan, to Shape, Inc. Removable windows for video tape cassette and related methods of assembly. 5,054,616, Cl. 206-393.000

Gelorme, Jeffrey D.: *See—*
Fan, Bunsen; Flagello, Donis G.; Gelorme, Jeffrey D.; Oprysko, Modest M.; Speth, Albert; and Trewhella, Jeannine M., 5,054,872, Cl. 385-130.000.

Genentech, Inc.: *See—*
Palladino, Michael A.; and Sherwin, Stephen A., 5,055,447, Cl. 514-12.000.
Snedecor, Bradley R.; and Hsu, Chung C., 5,055,399, Cl. 435-68.100

General Dynamics: *See—*
Curran, Mark E., 5,054,875, Cl. 385-27.000

General Dynamics Corp., Electronics Division: *See—*
Bradley, Eric M., 5,056,099, Cl. 372-49.000.

General Electric CGE SA: *See—*
Feldman, Andrei; and Cornuejols, Dominique, 5,056,020, Cl. 364-413.190.

General Electric CGR S.A.: *See—*
LeRoux, Patrick; Malgouyres, Agnes; and Bossaert, Jean, 5,055,791, Cl. 324-318.000.

General Electric Company: *See—*
Acharya, Kishore C.; and Schanen, Paul C., 5,056,006, Cl 364-200.000.
Carreno, Diether, 5,054,996, Cl. 415-115.000
Corsmeier, Robert J.; and Petsche, Joseph, 5,054,997, Cl 415-173.200
Dieterich, Charles B., 5,055,916, Cl. 358-12.000
Eckberg, Richard P., 5,054,883, Cl. 385-145.000
Fogarty, James M.; and Anderson, James M., 5,055,729, Cl 310-214.000
Fox, Daniel W.; Peters, Edward N.; Smith, Gary F.; and Sybert, Paul D., 5,055,531, Cl. 525-439.000.
Henry, Michael F., 5,055,147, Cl. 148-428.000
Hines, William R., 5,054,279, Cl. 60-39.050.
Jones, Marshall G.; and Case, Allen W., Jr., 5,055,652, Cl 219-121.640
Ortiz, Angel L., Jr.; and Chande, Tushar S., 5,054,877, Cl. 385-33.000.
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,054,286, Cl. 60-226.300.
van der Meer, Roelof, 5,055,494, Cl. 521-61.000

General Kinematics Corporation: *See—*
Musschoot, Albert, 5,054,606, Cl. 198-751.000

General Motors Corporation: *See—*
Cataldo, Roy S., 5,055,094, Cl. 475-211.000
Disser, Robert J.; and Lehnhoff, Richard N., 5,055,762, Cl. 318-811.000.
Dow, Ian J.; Kowalczyk, David; May, Carl D.; and Wilson, Charles M., 5,054,826, Cl. 292-125.000.
Ebbing, David M.; Swadner, Robert L.; and Puterbaugh, Jerome E., 5,055,004, Cl. 417-222.00R
Garretson, Jay H., 5,055,066, Cl. 439-464.000
Konchan, Jeffrey L.; and Paulik, Jiri, 5,054,827, Cl. 292-216.000
Osterday, Craig A.; and Flory, Donald M., 5,054,370, Cl. 91-396.200.
Rex, Jay A., 5,054,243, Cl. 51-78.000.

Rush, William B., II; and Elder, Jack E., 5,054,456, Cl. 123-531.000.
Sherwood, Carl H.; Turner, Kenneth W.; DuBois, Patti S.; and Covert, Charles H., 5,054,520, Cl. 137-587.000.
Simin, Gerald L.; and Carroll, Randy L., 5,054,846, Cl. 296-218.000.

General Parking Corporation: *See*—
Hammerschlag, John W.; Weingart, Arne; and McLaughlin, Andrew R., 5,054,646, Cl. 221-26.000.

Genetics Institute Inc.: *See*—
Jacobs, Kenneth A.; Steinbrink, D. Randall; Floros, Joanna; Phelps, David S.; and Taeusch, H. William, 5,055,553, Cl. 530-300.000.

Gennum Corporation: *See*—
Simpson, Robert G., 5,056,151, Cl. 381-69.000.

Gentile, Philip J., to Fleming Group, The. Method and apparatus for identifying AC service configuration. 5,055,769, Cl. 324-86.000.

Gerard, Jacques, to Valinox. Process and apparatus for hot shaping of metals or metal alloys. 5,054,184, Cl. 29-423.000.

Gergely, John S.; and Myers, Wilbur J., to Conoco Inc. Device for source compensating a fiber optic coupler output. 5,054,878, Cl 385-33.000.

Germanaud, Laurent; Truong-Dinh, Nguyen; Marie, Gilbert; and Turello, Patrick, to Societe Nationale Elf Aquitaine. Additives to lubricants resulting from the condensation of an alkylene polyamine with a copolymer containing vicinal carboxylic groups. 5,055,213, Cl 252-51.50A.

Gerson, Philips M.: *See*—
Wechem, Guus V.; Beunk, Gerrit; Van Den Elst, Fritz; and Gerson, Philips M., 5,054,458, Cl. 123-549.000.

Geschka, Martin; and ten Hompel, Michael, to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e.V. Plastic contracting system for transmission to vehicles. 5,055,638, Cl. 191-22.0DM.

Getty, Edward E.; Hunter, Kathleen B.; and Sadlowski, Eugene S., to Procter & Gamble Company, The. Bleach granules containing an amidoperoxyacid. 5,055,218, Cl. 252-94.000.

Gewerkschaft Eisenhutte Westfalia GmbH: *See*—
Langenberg, Werner; and Bohle, Werner, 5,055,092, Cl. 475-2.000.

GFK GmbH: *See*—
Skutta, Hans, 5,055,924, Cl. 358-84.000.

Ghaemian, Allen, to Northern Telecom Limited. Heat exchanger for a sealed cabinet. 5,054,545, Cl. 165-104.330.

Ghandehari, Mohammad H., to Union Oil Company of California. Rare earth-iron-boron sintered magnets. 5,055,129, Cl. 75-255.000.

Giacomelli, Gene A.: *See*—
Ting, Kuan-Chong; Giacomelli, Gene A.; Mears, David R.; Kabala, Witold P.; Shen, Shou-Jin; and Williamson, Steven E., 5,054,831, Cl. 294-61.000.

Giambattista, Louie M.: *See*—
Collins, Eddie "B" Jr.; Shah, Arun; and Giambattista, Louie M., 5,056,007, Cl. 364-200.000.

Gibson, Jeremy H.; Buehner, Lawrence E.; and Collander, Paul J., to Leichtung, Inc. Marking, gauging and dowel drilling device. 5,054,969, Cl. 408-115.00R

Gilbert Engineering Company, Inc.: *See*—
Down, William J.; and Hayward, Robert D., 5,055,060, Cl. 439-304.000

Gilbert, John G.: *See*—
Yelland, David R.; Gilbert, John G.; and Ewans, John, 5,054,479, Cl. 128-201.250.

Gilbertson, Donald J. Cap chucks for use with bottle capping machines. 5,054,261, Cl. 53-331.500

Gilhousen, Klein S.; Padovani, Roberto; and Wheatley, Charles E., III, to Qualcomm, Inc. Method and apparatus for controlling transmission power in a CDMA cellular mobile telephone system. 5,056,109, Cl. 375-1.000.

Gillette, William J.; and Hemler, Joseph L., Jr., to Novatec, Inc. Tubular diffuser. 5,054,208, Cl. 34-57.00A.

Gillies, John D.; and Bisley, Robin S., to Gillies, John D. Infant safety chairs. 5,054,853, Cl. 297-250.000.

Gillis, Herbert R.: *See*—
Cassidy, Edward F.; Gillis, Herbert R.; Hannaby, Malcolm; and Parfondry, Alain, 5,055,134, Cl. 106-38.220.

Gilmour, Hugh S. A.: *See*—
Bertucci, Sidney J.; and Gilmour, Hugh S. A., 5,055,380, Cl 430-346.000.

Gilroy, Thomas E., to Mycogen Corporation. Chimeric *Bacillus thuringiensis* crystal protein gene comprising HD-73 and Berliner 1715 toxin genes, transformed and expressed in *Pseudomonas fluorescens*. 5,055,294, Cl. 424-93.000.

Gilson, Jean-Pierre; Nanne, Johannes M.; and den Otter, Gerrit J., to Shell Oil Company. Process for isomerizing hydrocarbons. 5,055,629, Cl. 585-739.000.

Gimesi, Antal: *See*—
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000.

Gimpera, Jose, to Didier-Werke AG. Elongated nozzle assembly including stator and rotor members with elongated slots. 5,054,665, Cl 222-598.000.

Gingeras, Thomas R.: *See*—
Kwoh, Deborah Y.; and Gingeras, Thomas R., 5,055,393, Cl. 435-6.000.

Giogli, Giovanni: *See*—
Bucefari, Massimo; and Giogli, Giovanni, 5,054,725, Cl. 248-123.100.

Gitlin, Richard D.; and Zervos, Nicholas A., to AT&T Bell Laboratories. Decision feedback equalization with trellis coding. 5,056,117, Cl. 375-102.000.

Gitzel, Jorg; Macholdt, Hans-Tobias; and Knaup, Wolfgang, to Hoechst Aktiengesellschaft. Phosphonium compounds and processes for their preparation. 5,055,619, Cl. 568-2.000.

Giuffre, Carmelo A.: *See*—
Giuffre, Kenneth A.; and Giuffre, Carmelo A., 5,054,225, Cl. 42-101.000.

Giuffre, Kenneth A.; and Giuffre, Carmelo A. Gunsight flexibility and variable distance aiming apparatus. 5,054,225, Cl. 42-101.000.

Givens, John H.: *See*—
Hock, Vincent F., Jr.; Givens, John H.; Suarez, Joseph E.; and Rigsbee, James M., 5,055,169, Cl. 204-192.310.

GKN Automotive AG: *See*—
Riemscheid, Helmut; Frielingsdorf, Herbert; Greulich, Klaus; and Amborn, Peter, 5,055,096, Cl. 475-249.000.

Glaus, Heinrich; Lehmann, Peter; Joehr, Hans; and Freiburghaus, Rene , to Styner & Bienz AG. Twistable wire clamp for connecting or closing objects. 5,054,614, Cl. 206-343.000.

Glazer, Alexander N.: *See*—
Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., 5,055,556, Cl. 530-370.000.

Glennon, Timothy F.: *See*—
Rozman, Gregory I.; Glennon, Timothy F.; and Cook, Alexander, 5,055,764, Cl. 322-10.000.

Globe Manufacturing Company: *See*—
Snedeker, Julie A., 5,054,125, Cl. 2-81.000.

Globe-Union, Inc.: *See*—
Farah, Andrew J.; and Wruck, William J., 5,055,656, Cl. 219-209.000

Gloser, Wolfgang; Kuhn, Siegfried; Rader, Robert; and Setzer, Friedhelm, to Boehringer Werkzeugmaschinen GmbH. Table of turret lathe. 5,054,343, Cl. 82-159.000.

Glossop, Donald L., Jr.; Fobar, William J.; Gopigian, Hachig A.; Haddad, Charles J.; and Holka, Thomas C., to Ford Motor Company. Window panel position regulating assembly. 5,054,238, Cl. 49-211.000

Glover, John E. S.; Glover, Timothy N.; and Miller, Andrew J., to Thermabate Limited. Panel jointing system. 5,054,256, Cl. 52-765.000

Glover, Timothy N.: *See*—
Glover, John E. S.; Glover, Timothy N.; and Miller, Andrew J., 5,054,256, Cl. 52-765.000.

Glynn, William D., to SINCO, Incorporated. Roof lifeline safety system and anchor assembly therefor. 5,054,576, Cl. 182-3.000.

Gmoch, Richard, to Cosco Industries, Inc. Carton opener. 5,054,198, Cl 30-2.000

Go, Inc.: *See*—
McGushion, Kevin D., 5,054,822, Cl. 285-330.000.

Gobush, William; and Days, Charles, to Acushnet Company. Game ball support device and piezoelectric ball motion detector. 5,054,785, Cl. 273-184.00R

Gochi, Hidenobu, to Mitsubishi Denki Kabushiki Kaisha. IC card with switchable bus structure. 5,055,661, Cl. 235-492.000.

Goddard, Errol D.: *See*—
Pelton, Robert H.; and Goddard, Errol D., 5,055,229, Cl 252-321.000

Goessler, Gerhard; and Wilde, Eugen, to E.G.O. Elektro-Gerate Blanc u. Fischer. Temperature switch. 5,055,819, Cl. 337-394.000.

Goettker, Bernhardt P., to Unique Functional Products. Grease pressurizing hubcap for a wheel hub. 5,054,859, Cl. 301-108.00R

Goetz, Victor; and Graves, David J., to University of Pennsylvania. Support for high performance liquid chromatography in a magnetically stabilized fluidized bed. 5,055,194, Cl. 210-635.000.

Gohlisch, Hans-Joachim, to Paul Troester Maschinenfabrik. Process and apparatus for the production of thin wall tubes from rubber - and/or plastic mixtures. 5,055,244, Cl. 264-40.300.

Gokita, Satoshi: *See*—
Kaneko, Katsuyuki; Gokita, Satoshi; and Zaiki, Koji, 5,056,005, Cl 364-200.000.

Goldner, John S.: *See*—
Boland, Steven H.; Goldner, John S.; and Weaver, James F., 5,055,979, Cl. 362-32.000.

Golias, Tipton L.; Mayes, Ovay H.; and Sarrine, Robert J., to Helena Laboratories Corporation. Pump inserter for test tubes. 5,055,271, Cl. 422-99.000

Gomez-Henry, Michel: *See*—
Dusseux, Thierry; and Gomez-Henry, Michel, 5,055,852, Cl. 343-725.000

Gomi, Shuichi: *See*—
Takeuchi, Tomio; Hara, Takeshi; Hamada, Masa; Kondo, Shinichi; Sezaki, Masaji; Yamamoto, Haruo; and Gomi, Shuichi, 5,055,453, Cl. 514-27.000.

Gonzalez, John. *See*—
Chai, Chang-Shung; Fink, David A.; and Gonzalez, John, 5,055,655, Cl. 219-145.220.

Goodman, Nathan: *See*—
Frank, Steven J.; Burkhardt, Henry, III; Lee, Linda O.; Goodman, Nathan; Margulies, Benson I.; and Weber, Frederick D., 5,055,999, Cl. 364-200.000.

Goodwin, Charles E.: *See*—
Hobson, Philip H.; and Goodwin, Charles E., 5,055,079, Cl. 446-8.000

Goodyear Tire & Rubber Company, The: *See*—
Lindsay, Robert B.; and Parrish, Gary C., 5,055,148, Cl. 156-96.000.

Gopigian, Hachig A.: *See*—
Glossop, Donald L., Jr.; Fobar, William J.; Gopigian, Hachig A.; Haddad, Charles J.; and Holka, Thomas C., 5,054,238, Cl 49-211.000

Gorbaty, Martin L.: *See*—
Maa, Peter S.; and Gorbaty, Martin L., 5,055,181, Cl. 208-421.000.

Gordon, Edward A., to Sony Corporation of America. Position detector for a multi-gate valve assembly. 5,055,026, Cl. 425-146.000.

Goris, Andrew C.: *See*—
Frederickson, Robert W.; and Goris, Andrew C., 5,056,044, Cl. 364-521.000.

Gorka, Gunther: *See*—
Brodt, Rainer; Gorka, Gunther; Fehse, Peter; Reid, John; and Holmes, Steve, 5,055,258, Cl. 422-61.000.

Gorski, Richard M.: *See*—
Chen, Hsing-Yao; and Gorski, Richard M., 5,055,749, Cl. 315-368.00R

Goshen Cushion Inc.: *See*—
Williams, Thomas J.; and Mills, Gary D., 5,054,855, Cl. 297-395.000

Gotaverken Arendal AB: *See*—
Williamsson, Robert, 5,054,963, Cl. 405-224.000.

Goto, Masayoshi: *See*—
Inukai, Sinji; Agata, Mitsuzi; Akiba, Kiyoshi; Ohmura, Takeo; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, 5,055,481, Cl. 514-381.000.

Goto, Yasuyuki: *See*—
Uchida, Manabu; Goto, Yasuyuki; and Ogawa, Tetsuya, 5,055,220, Cl. 252-299.010.

Goto, Yukihisa: *See*—
Takase, Ichirou; Sato, Kazuo; Yamasaki, Noritsugu; and Goto, Yukihisa, 5,055,588, Cl. 548-344.000.

Gotoh, Kazuhisa: *See*—
Ozawa, Katsuko; Gotoh, Kazuhisa; Murayama, Tomohiro; Tokuda, Momoyo; Sumida, Satoshi; and Suzuki, Tetsuo, 5,055,755, Cl. 318-568.110.

Gotou, Haruyoshi: *See*—
Hirano, Tsumoru; Gotou, Haruyoshi; and Takahashi, Osamu, 5,055,386, Cl. 430-545.000.

Gotschi, Erwin: *See*—
Furlenmeier, Andre; Gotschi, Erwin; Hebeisen, Paul; Hofheinz, Werner; and Link, Helmut, 5,055,572, Cl. 514-206.000

Gottschalk, Peter: *See*—
Shanklin, Michael S.; Gottschalk, Peter; and Adair, Paul C., 5,055,372, Cl. 430-138.000.

Gough, David S.: *See*—
Hannaford, Peter; and Gough, David S., 5,054,921, Cl. 356-311.000

Gould, Gregory. Apparatus for auditing means used for measuring an aliquot from a bulk material for measurement of one or more characteristics of said bulk material. 5,054,327, Cl. 73-863.000.

Gould Inc.: *See*—
O'Shields, Larry D.; and Perreault, Richard J., 5,055,817, Cl. 337-161.000

Gould, Ross; and Gandionco, Isidro, to Advanced Cardiovascular Systems, Inc. Torque transmitting assembly for intravascular devices. 5,055,109, Cl. 604-95.000

Goulooze, Gene D. Transport with variable volume, independently cooled compartments. 5,054,295, Cl. 62-239.000.

GPAC, Inc.: *See*—
Newman, Eugene E., 5,054,252, Cl. 52-169.140.

Gradecki, Raymond J.: *See*—
Kuhlman, Marvin G.; Finkiewicz, Daniel J.; and Gradecki, Raymond J., 5,054,389, Cl. 101-28.000.

Graff, Timothy: *See*—
Peterson, Gregory A.; and Graff, Timothy, 5,055,962, Cl. 361-187.000

Graham Engineering Corporation: *See*—
Dundas, Dennis L., 5,054,267, Cl. 53-477.000.
Dundas, Dennis L., 5,054,272, Cl. 53-561.000.

Grantham, Rodger P., to Dayco Products, Inc. Breakaway coupling, conduit system utilizing the coupling and methods of making the same. 5,054,509, Cl. 137-68.100.

Granz, Bernd; and Koehler, Georg, to Siemens Aktiengesellschaft. Ultrasonic sensor. 5,056,069, Cl. 367-164.000.

Grasso, Giorgio; Righetti, Aldo; and Fontana, Flavio, to Societa' Cavi Pirelli S.p.A. Optical fiber telecommunication line including amplifiers distributed along the line for the transmitted signals. 5,054,876, Cl. 385-24.000.

Gravereaux, Daniel W.: *See*—
Karamon, John J.; and Gravereaux, Daniel W., 5,055,939, Cl. 358-341.000

Graves, David J.: *See*—
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Graves Spray Supply, Incorporated: *See*—
McNab, John G., 5,054,653, Cl. 222-28.000.

Grawey, Charles E.; Johnson, L. Ted; Sloma, John M.; and Szentes, John F., to Caterpillar Inc. Single-piece multiple electrode conductor. 5,055,734, Cl. 310-366.000.

Gray, Larry J., to Trailmobile, Inc. Bonded composite insulated floor construction. 5,054,843, Cl. 296-191.000.

Gray, Nancy M.; and Contreras, Patricia C., to G. D. Searle & Co. Use of bridged tricyclic amine derivatives as anti-ischemic agents. 5,055,468, Cl. 514-249.000.

Grayson, Robert M.: *See*—
Wang, James J.; and Grayson, Robert M., 5,056,106, Cl. 375-1.000.

Great Lakes Orthodontics, Ltd.: *See*—
Abbatte, Gerard P.; Breads, Peter R.; Warunek, Stephen P.; and Willison, Brain D., 5,055,039, Cl. 433-24.000

Green Bay Packaging Inc.: *See*—
Hoffman, Roger P., 5,055,161, Cl. 162-125.000

Green, Gary J.: *See*—
Avidan, Amos A.; Chin, Arthur A.; and Green, Gary J., 5,055,029, Cl. 431-7.000.

Greene, Benjamin; McPherson, Robert A.; Darnall, Dennis W.; and Gardea-Torresdey, Jorge L., to Bio-Recovery Systems, Inc. Removal of metal ions with immobilized metal ion-binding microorganisms. 5,055,402, Cl. 435-174.000.

Greene, Jonathan W.: *See*—
Galbraith, Douglas C.; El Gamal, Abbas; and Greene, Jonathan W., 5,055,718, Cl. 307-465.000.

Greenlee, Mark L.; DiNinno, Frank P.; and Salzmann, Thomas N., to Merck & Co., Inc. Spirocyclic 6-amido carbapenems. 5,055,463, Cl 514-210.000.

Greenslade, Robert C., to Nomix Manufacturing Company Limited. Box. 5,054,644, Cl. 220-403.000

Greenstreak Plastic Products Company: *See*—
Duffy, Thomas P., 5,055,151, Cl. 156-167.000.

Greenwood, Richard P., to Vickers plc. Lithographic printing press having an ink duct with a divided chamber. 5,054,392, Cl. 101-142.000

Gregory, Frederic M. Display device for merchandising nuts and bolts. 5,054,627, Cl. 211-94.000.

Gregory, Peter; and Kenyon, Ronald W., to Imperial Chemical Industries PLC. Amine salts of disazo black dyes having good solubility in polar organic solvents. 5,055,566, Cl. 534-228.000

Greisman, Stewart L.: *See*—
Bar-Or, David; Greisman, Stewart L.; and Kastendieck, Jon G., 5,055,389, Cl. 435-4.000

Greitzer, Yeshayahu; and Bronicki, Lucient Y., to Ormat Turbines (1965) Ltd. Method of and means for operating geothermal wells 5,054,556, Cl. 166-302.000

Grettenberg, Thomas L.: *See*—
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Greulich, Klaus: *See*—
Riemscheid, Helmut; Frielingsdorf, Herbert; Greulich, Klaus; and Amborn, Peter, 5,055,096, Cl. 475-249.000

Grewe, Heribert: *See*—
Riemscheid, Helmut; Weiss, Karl; Frielingsdorf, Herbert; Schwarz, Engelbert; and Grewe, Heribert, 5,054,182, Cl. 29-281.500
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Griat, Jacqueline: *See*—
Zabotto, Arlette; Griat, Jacqueline; Handjani, Rose-Marie J.; Vanlerberghe, Guy G.; and Ribier, Alain J., 5,055,228, Cl. 252-312.000

Griffin, Douglas D.: *See*—
Kleinberg, Robert L.; Griffin, Douglas D.; Fukuhara, Masafumi; Sezginer, Abdurrahman; and Chew, Weng C., 5,055,787, Cl. 324-303.000.
Kleinberg, Robert L.; Griffin, Douglas D.; Fukuhara, Masafumi; and Sezginer, Abdurrahman, 5,055,788, Cl. 324-303.000

Grimm, Hartmut; and Rabold, Karl, to Alfa-Laval Agriculture International AB. Method of milking an animal. 5,054,425, Cl. 119-14.020.

Grindley, John R., to Robwen, Inc. Foam producing nozzle. 5,054,688, Cl. 239-407.000.

Grip-Pak, Inc.: *See*—
Cunningham, Ernest R.; and Miller, Merlin, 5,054,257, Cl. 53-48.400

Grischkowsky, Daniel R.: *See*—
Duling, Irl N., III; Grischkowsky, Daniel R.; Halbout, Jean-Marc; and Ketchen, Mark B., 5,056,111, Cl. 375-37.000.

Groger, Howard P.: *See*—
Jaeger, Douglas J.; and Groger, Howard P., 5,055,784, Cl. 324-233.000.

Groman, Ernest V.: *See*—
Lewis, Jerome M.; Menz, Edward T.; Kenny, Francis E.; Groman, Ernest V.; and Josephson, Lee, 5,055,288, Cl. 424-9.000

Grommes, Peter-Josef; Florin, Hans; Faber, Gunther; and Roh, Peter, to Dynamit Nobel Aktiengesellschaft. Fuse element, preferably with long delay period and method for producing the same. 5,054,396, Cl 102-204.000.

Grosse, Debora Y.: *See*—
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Grossman, Mark W., to GTE Products Corporation. Nested reactor chamber and operation for Hg-196 isotope separation process 5,055,693, Cl. 250-436.000.

Grosso, Donald S.: *See*—
Abdallah, Ali H.; and Grosso, Donald S., 5,055,837, Cl. 340-853.000.

Grotendorst, Gerhard, to Terratronic GmbH. Method of underground-water exploration during well-construction by hydraulic-system drilling. 5,054,553, Cl. 166-278.000.

Groya, Robert J.; and Hofmann, Richard W., to Magenta Corporation. Side dispensing closure. 5,054,663, Cl. 222-531.000

Grube, Louis L.; and Frankoski, Stanley P., to GAF Building Materials Corporation. Flame retardant bitumen. 5,055,135, Cl. 106-281.100

Grumbine, Michael T., to Paragon Podiatry Laboratories. Orthotic with textured surface and method for producing same. 5,054,148, Cl. 12-142.00N.

Grumman Aerospace Corporation: *See—*
Egan, Walter G.; Ryan, Robert E.; and Gayes, George P., 5,054,928, Cl. 356-400.000.
Keslowitz, Saul L., 5,055,996, Cl. 364-188.000.
Grunwald, Donald R., to Victaulic Company of America. Plumbing elbows or bends. 5,054,819, Cl. 285-179.000.
Grychowski, Jerry R.; Brisson, Alfred G.; Cruz, Exequiel D.; and Nowacki, Christopher, to Trudell Medical. Nebulizer. 5,054,478, Cl 128-200.210.
GTE Laboratories Incorporated: *See—*
Dunn, Edmund M.; Kang, Shinhoo; and Wei, George C., 5,055,361, Cl. 428-633.000.
Piejak, Robert B.; and Lapatovich, Walter P., 5,055,772, Cl. 324-122.000.
GTE Northwest Incorporated: *See—*
Fisher, William C.; and Bevis, Michael E., 5,054,881, Cl 385-113.000
GTE Products Corporation: *See—*
Grossman, Mark W., 5,055,693, Cl. 250-436.000.
Rogoff, Gerald L., 5,055,978, Cl. 362-31.000
Guardian Industries Corp.: *See—*
Tisse, Thor R.; and Turner, Ricky J., 5,054,355, Cl. 83-879.000
Gubelmann, Michel; Popa, Jean-Michel; and Tirel, Philipe-Jean, to Rhone-Poulenc Chimie. Preparation of phenols by direct N_2O hydroxylation of aromatic substrates. 5,055,623, Cl. 568-800.000.
Gubisch, Urban: *See—*
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Guetard, Denise: *See—*
Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,055,391, Cl. 435-5.000.
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Gunderson, Inc.: *See—*
Hill, Charles C.; Thomas, Gareth R.; Kaleta, Gary S.; and Saxton, Gregory J., 5,054,403, Cl. 105-419.000
Gunn, Lawrence H. Fumigating apparatus for shipping containers 5,055,277, Cl. 422-294.000.
Gupta, D. V. Satyanarayana: *See—*
Hall, Bobby E.; Szemenyei, Clarita A.; and Gupta, D. V. Satyanarayana, 5,054,552, Cl. 166-278.000
Gupta, Kashmiri L., to Basic Bio Systems, Inc. Time release protein 5,055,300, Cl. 424-409.000
Gurke, Christina M.: *See—*
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Gurney, Anthony R.: *See—*
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Gustafsson, Regis, to Sparbanken Syd. Reflector for parabolic antennae. 5,055,854, Cl. 343-912.000
Gustin, Thomas W., to Systems Research Laboratories, Inc. Data recorder including a recirculating non-volatile memory. 5,056,056, Cl. 364-900.000.
Gutierrez, Felipe, to Fabrica Nacional de Moneda Y Timbre. Security paper with rigid segments. 5,055,160, Cl. 162-103.000
Gutierrez, Reynaldo L.: *See—*
Dathe, Wilfried; Castro Lara, Sarah A.; Gutierrez, Reynaldo L.; Cueto Rodriguez, Miguel A.; and Sembdner, Guenther, 5,055,126, Cl. 71-89.000
Gutknecht, Daniel A., to Allied-Signal Inc. Turbocharger with improved roller bearing shaft support. 5,055,009, Cl. 417-407.000
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, to Texas Instruments Incorporated. Data processing apparatus with improved bit masking capability. 5,056,041, Cl. 364-518.000.
Gutterman, Jordan U.: *See—*
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H P.C., Inc.: *See—*
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Haack, Johannes; and Wymann, Hans, to Feintool International Holding. Blanking press. 5,054,353, Cl. 83-639.500.
Habarth, Richard A.: *See—*
Wawrzyniak, Walter W.; and Habarth, Richard A., 5,054,975, Cl. 409-131.000.
Habeeb, Jacob J.; and Singhal, Gopal H., to Exxon Research and Engineering Company. Lubricating oil containing a mixed ligand metal complex and a metal thiophosphate. 5,055,211, Cl. 252-42.700.
Habernig, Reinhold. Gate pole for ski sport. 5,054,955, Cl. 404-10.000.
Hachtel, Hansjoerg: *See—*
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Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., to Xerox Corporation. Film ghost removal in electrographic plotters by voltage bias of the plotter fountain or film edge-strip. 5,055,862, Cl. 346-154.000
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Hara, Soichi: *See—*
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Harada, Takashi: *See—*
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Harris, Bruce J.; Lawter, James R.; and Ritter, Lawrence, to American Cyanamid Co. Anti-alopecia composition. 5,055,456, Cl. 514-57.000.
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Vu, Thu V., 5,056,085, Cl. 370-60.000.
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Harvey, Donald M., to Eastman Kodak Company. Still camera with enhanced multiple frame burst capability. 5,055,867, Cl. 354-173.110.
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Thorp, Phil D.; Harvey, Ward W.; and Pyles, Douglas E., 5,054,588, Cl. 192-0.034.
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Hasegawa, Ryusuke: *See—*
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Haseley, Robert K.; and Kirkpatrick, Paul A., to Ingersoll-Rand Company. Apparatus for controlling a fluid compression system 5,054,995, Cl. 415-17.000
Hashiba, Syuzi: *See—*
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Hashimoto, Hiroshi: *See—*
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Hashimoto, Morimi: *See—*
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Hashizume, Nobuo: *See—*
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Hatton, Leslie R.; Hawkins, David W.; Pennicard, Richard G.; and Roberts, David A., to May & Baker Ltd. N-phenylpyrazol-4-yl ether derivatives. 5,055,482, Cl. 514-407.000
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Hattori, Noboru: *See—*
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Hatwar, Tukaram K., to Eastman Kodak Company. Magnetooptical recording element. 5,055,364, Cl. 428-694.000
Hauenstein, Frederick M.; and Hedge, George C., to Brunswick Corporation. Resilient gasket with spacers. 5,054,793, Cl. 277-1.000.
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Jurell, Scott R.; Motto, Eric R.; Windows, Gordon E., Jr.; Luchaco, David G.; Capewell, Dennis M.; Hausman, Doanld F.; and Spira, Joel S., 5,055,742, Cl. 315-94.000
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Hawkes, Calvert T., to Island Software, Inc. Method and apparatus for interfacing a thermal printer. 5,056,043, Cl. 364-519.000.
Hawkes, Lester K. Joist hanger mounting tool. 5,054,755, Cl. 269-3.000
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Hawkins, Robert E.; Small, Richard; and Naiman, Alaric, to Shipley Company Inc. Electrodepositable photoresists for manufacture of hybrid circuit boards. 5,055,164, Cl. 204-15.000
Hawley, David W.; Pickett, Scott K.; and Leung, Frederick K. Y., to National Semiconductor Corp. Register file with programmable control, decode and/or data manipulation. 5,055,712, Cl. 307-465.000
Hayakawa, Atsuya, to Brother Kogyo Kabushiki Kaisha. Method of and apparatus for preparing sewing data for a multi-needle embroidery sewing machine. 5,054,408, Cl. 112-266.100.
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Hayashi, Hidechika: *See—*
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Hayashi, Kazunori: *See—*
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Hayden, Richard F.: *See—*
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Hayes, James K.; and Larsen, James W., to Combustion Engineering, Inc. High volume permanent magnet filter. 5,055,190, Cl 210-222.000.

Hayes, James M.: *See—*
Kerschner, Ronald K.; Bullock, Michael L.; and Hayes, James M., 5,055,779, Cl. 324-158.00F.

Hayes, Thomas H.; Ochs, Charles S.; and Koontz, Carl E., to Anchor Hocking Packaging Company. Press on, screw tight means for applying a closure. 5,054,268, Cl. 53-490.000.

Hayward, Robert D.: *See—*
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Hazeltine Corporation: *See—*
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Hearn, Dennis: *See—*
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Hebeisen, Paul: *See—*
Furlenmeier, Andre; Gotschi, Erwin; Hebeisen, Paul; Hofheinz, Werner; and Link, Helmut, 5,055,572, Cl. 514-206.000.

Hebeler, Robert F., Jr. Tracheostomy device. 5,054,484, Cl. 128-207.160.

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Heger, Friedrich, to J.S. Staedtler GmbH & Co. Cap for writing implement with air vent. 5,054,949, Cl. 401-202.000.

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Hehlen, Laurent, legal representative: *See—*
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Heidelberger Druckmaschinen AG: *See—*
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Heili, Dean H.; and Diring, James A., to James River Corporation. Dispenser actuator handle. 5,054,161, Cl. 16-124.000.

Hein-Werner Corporation: *See—*
Wisner, Craig A., 5,054,307, Cl. 72-457.000.

Heine, Richard F., to Minnesota Mining and Manufacturing Company. Tufted carpet. 5,055,333, Cl. 428-88.000.

Heinemann, Otto, to Krupp Polysius AG. Rotary crushing roll. 5,054,702, Cl. 241-230.000.

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Heldmann, Heinrich; and Wallwey, Erich, to Wegmann & Co. Ammunition positioner, especially for a combat vehicle. 5,054,367, Cl. 89-46.000.

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Golias, Tipton L.; Mayes, Ovay H.; and Sarrine, Robert J., 5,055,271, Cl. 422-99.000.

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Hunold, Franz-Josef; Dreger, Michael; and Schafer, Heinrich, 5,055,983, Cl. 362-80.000.

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Hellstrom, Karl E.; and Hellstrom, Ingegerd, 5,055,559, Cl. 530-387.000.

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Hemler, Joseph L., Jr.: *See—*
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Hendrick, Fred W., to Automatic Control Components, Inc. Multiple orifice valve with improved turn-down ratio. 5,054,521, Cl. 137-625.310.

Hendrick, Peter L.; Speirs, Donald F.; and Wolf, Michael A., to Amtech Technology Corp. High speed system for reading and writing data from and into remote tags. 5,055,659, Cl. 235-439.000.

Hengel, Rolf; and Notzon, Hein to Hoechst Aktiengesellschaft. Molding made from a vinylidene fluoride copolymer and process for its production. 5,055,539, Cl. 526-254.000.

Henkel, Dietmar; and Garbisch, Max, to MAN Nutzfahrzeuge AG. Fuel injection system for self-ignition internal combustion engines. 5,054,445, Cl. 123-300.000.

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Urbach, Hansjorg; Henning, Rainer; Wissmann, Hans; and Teetz, Volker, 5,055,591, Cl. 548-452.000.

Hennings, David R.: *See—*
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Henry, Michael F., to General Electric Company. Fatigue crack resistant rene' 95 type superalloy. 5,055,147, Cl. 148-428.000.

Henry Vogt Machine Co.: *See—*
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Herbert, Harry N.: *See—*
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Herbert Maninfior Design/Engineering: *See—*
Maninfior, Herbert E., 5,054,255, Cl. 52-239.000.

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Lazzaro, Gerard M.; and Huey, Raymond J., 5,054,494, Cl. 128-677.000.

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Salzmann, Peter; and Hugi, Hans, 5,054,964, Cl. 405-288.000

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Murphy, Gary J.; Murphy, Derrick L.; Murphy, Michael J.; and Barnes, Michael, 5,054,621, Cl. 209-534.000

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Frincke, James M.; Unger, Barbara W.; Burnett, Karen G.; Hersh, Evan M.; Rosenblum, Michael G.; and Gutterman, Jordan U., 5,055,289, Cl. 424-85.400

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Lemaire, Francoise; and Farce, Jean-Michel, 5,054,649, Cl 221-248.000

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Cradduck, Kevin M.; and Iacchetta, Nicholas A., 5,055,088, Cl. 474-111.000

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Alessandri, Mauro; Carrera, Renzo; and Iannuzzi, Giulio, 5,054,834, Cl. 294-87.100.

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Enomoto, Ryo; and Asai, Motoo, 5,055,321, Cl. 427-98.000.

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Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000.

Ichitsuka, Takeshi: *See—*
Tsuru, Sumiaki; Tsugita, Masashi; Takasaki, Ken; Yokoo, Akihiko; and Ichitsuka, Takeshi, 5,055,307, Cl. 424-493.000.

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Edwards, Philip D.; Schwartz, John A.; Stein, Mark M.; Trainor, Diane A.; and Wildonger, Richard A., 5,055,450, Cl. 514-019.000

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Davies, Gareth M.; Strawson, Colin J.; and Lohmann, Jean J., 5,055,462, Cl. 514-202.000.

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Watts, Leonard A.; and Espinosa, Medardo, 5,054,993, Cl. 414-790.500.

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Iggulden, Jerry R.; and Streck, Donald A. Compact window-washing bottle with protected sponge and squeegee. 5,054,945, Cl. 401-23.000.

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Vogel, Ignaz, 5,054,845, Cl. 297-216.000.

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Tomii, Tsuyoshi; and Iida, Katsuhiko, 5,055,856, Cl. 346-1.100

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Miki, Hiroshi; Fujiwara, Yoshitaka; Iida, Kiyoshi; Takubo, Hiromu; Shibayama, Kunio; and Kobayashi, Shinichi, 5,055,990, Cl. 363-56.000

Iida, Masaharu, to Ricoh Company, Ltd. Data communication apparatus coupled to two telephone lines. 5,056,133, Cl. 379-98.000.

Iino, Hideyuki: *See—*
Yoshitake, Akihiro; Iino, Hideyuki; and Hida, Hidenori, 5,056,011, Cl. 364-200.000.

Iizuka, Harumasa: *See—*
Fujinawa, Shohei; Iizuka, Harumasa; Kodama, Seiichi; and Yada, Hideo, 5,055,308, Cl. 426-11.000.

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Shikada, Tsutomu; Asanuma, Minoru; and Ikariya, Takao, 5,055,282, Cl. 423-351.000.

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Tanabe, Yuzuru; and Ikawa, Koji, 5,054,935, Cl. 374-131.000.

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Murakami, Shu; Ikebe, Tsuguo; Hakamada, Ichiro; and Anami, Koretake, 5,055,464, Cl. 514-211.000.

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Katagiri, Hiroyuki, 5,055,020, Cl. 425-111.000.

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Ikeda, Shuji; Nagasawa, Kouichi; Motoyoshi, Makoto; Nagai, Kiyoshi; and Meguro, Satoshi, to Hitachi, Ltd. Process for fabricating semiconductor integrated circuit devices. 5,055,420, Cl. 437-34.000.

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Ikeda, Takeshi: *See—*
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Nakano, Masaru; Tanaka, Minoru; Ikeda, Toshiaki; and Kuno, Toshitaka, 5,056,031, Cl. 364-461.000.

Ikeda, Yasuji: *See—*
Nishimoto, Shigeru; Nakao, Akio; Ikeda, Yasuji; and Nate, Hiroyuki, 5,055,575, Cl. 540-491.000.

Ikegami, Yuji; Sasayama, Shinichi; Tachino, Noboru; and Kamiya, Takeshi, to Nippon Yakin Kogyo Co., Ltd. Production process of ferrite stainless steel covered with oxide whisker. 5,055,145, Cl. 148-285.000.

Ikematsu, Shojiro: *See—*
Fujimaki, Michio; Ikematsu, Shojiro; Hada, Masao; Fukue, Hidetaka; and Fukutake, Katsuhiro, 5,055,297, Cl. 424-195.100.

Ikoma, Keiichi, to Sharp Kabushiki Kaisha. Printer with improved power-failure restart function. 5,056,018, Cl. 364-405.000.

Illetschko, Gerhard; Richter, Hans-Peter; and Noske, Reiner, to BTS Broadcast Television Systems GmbH. Still picture decoder for color television signals having a phase changing color carrier. 5,055,920, Cl. 358-36.000.

Illinois Tool Works Inc.: *See—*
Rayburn, Charles C., 5,055,965, Cl. 361-303.000.

Imai, Kyoko; and Nomura, Yasushi, to Hitachi, Ltd. Method for immunoassay procedure for the detection of antigen by reacting with antibody which increases its electrical charge and electrophoretic mobility. 5,055,415, Cl. 436-516.000.

Imai, Toshimitsu: *See—*
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Imaizumi, Haruo; Nishizawa, Toshihiko; and Kato, Masatoshi, to Junkosha Co., Ltd. Branching connector for a shielded cable. 5,055,064, Cl. 439-402.000.

Imaje SA: *See—*
Regnault, Luc, 5,055,857, Cl. 346-75.000.

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Cassidy, Edward F.; Gillis, Herbert R.; Hannaby, Malcolm; and Parfondry, Alain, 5,055,134, Cl. 106-38.220
Davies, Gareth M.; Strawson, Colin J.; and Lohmann, Jean J., 5,055,462, Cl. 514-202.000.
de Fraine, Paul J.; and Martin, Anne, 5,055,471, Cl. 514-255.000.
Gregory, Peter; and Kenyon, Ronald W., 5,055,566, Cl. 534-228.000.
Ludvik, Charles N., 5,055,605, Cl. 560-11.000.

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Berman, Allan, 5,054,519, Cl. 137-563.000

Ina, Teruo: *See—*
Ito, Hiroki; and Ina, Teruo, 5,054,421, Cl. 118-723.000

Inaba, Hideo, to NEC Corporation. Semiconductor integrated circuit provided with monitor-elements for checking affection of process deviation on other elements. 5,055,715, Cl. 307-443.000

Inagaki, Hiromichi, to Mitsubishi Monsanto Chemical Company; and Nihon Tokkyo Kanri Company Limited. Easily separable laminated/perforated film for packings, and its manufacturing method. 5,055,152, Cl. 156-244.110.

Inagaki, Jitsuo. Bed with a bath-tub. 5,054,136, Cl. 4-546.000.

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Inax Corporation: *See—*
Ban, Kazu, 5,054,676, Cl. 225-42.000.
Saito, Shiro, 5,055,170, Cl. 204-228.000.

Inch, John: *See—*
Pickerrell, Daniel A.; Schrock, Donald C.; and Inch, John, 5,054,133, Cl. 4-428.000.

Indalex Limited: *See—*
Newman, Michael J., 5,054,303, Cl. 72-38.000.

Industria Tecnica de la Bisagra, S.A. (I.T.B.): *See—*
Blanco-Equiluz, Maria B., 5,054,164, Cl. 16-258.000.

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Huang, Huei-Huay; Peng, Yu-Yin; and Gau, Tien-Ho, 5,054,691, Cl. 239-585.000.
Huang, Po C., 5,056,010, Cl. 364-200.000.
Kao, Hsin-Ching; Lee, Mao-Mong; Chiang, Chih-Cheng; Lin, Jen-Lien; and Wu, Ting-Kai, 5,055,505, Cl. 524-83.000.

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Gabas, Carlos, 5,054,734, Cl. 248-316.500.

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Margolis, H. Jay, 5,054,896, Cl. 359-379.000.

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Tran, Danh C.; Mossadegh, Reza; Garito, Nicholas; and Farid, Mohamad, 5,055,120, Cl. 65-3.110.

Ing.C. Olivetti & C., S.p.A. Ivrea: *See—*
Bernardis, Francesco; Fenoglio Gaddo, Elio; and Ferrarotti, Rinaldo, 5,054,942, Cl. 400-124.000.

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Haseley, Robert K.; and Kirkpatrick, Paul A., 5,054,995, Cl. 415-17.000.

Ingle, David M., to Union Oil Company of California. Mastic and caulking compositions. 5,055,511, Cl. 524-406.000.

Ings, John B.: *See—*
Belt, Roger F.; and Ings, John B., 5,055,445, Cl. 505-1.000.

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Stuyts, Victor C. L. H., 5,056,024, Cl. 364-424.030.

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Fuller, Kip L., 5,055,823, Cl. 340-426.000.

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Inoue, Hiromichi: *See—*
Ohno, Kouji; Saito, Shinichi; Inukai, Takashi; Inoue, Hiromichi; and Miyazawa, Kazutoshi, 5,055,222, Cl. 252-299.610.

Inoue, Hiroshi, to Kansai Paint Company Limited. Epoxy resin-modified polyamide resin. 5,055,530, Cl. 525-423.000.

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Ishibashi, Yoji; Inoue, Hiroshi; Ohmori, Takashi; Hashimoto, Takashi; Kato, Fumio; Akatsu, Shigeyuki; Arai, Akira; Kuroda, Michio; and Hisano, Katsukuni, 5,054,280, Cl. 60-39.060.

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Ohkoda, Keiji; and Inoue, Hitoshi, 5,055,756, Cl. 318-618.000.

Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, to CE Plastics Japan Limited. Aromatic polycarbonate resin composition. 5,055,523, Cl. 525-148.000.

Inoue, Nobuhiro; Nakano, Akira; and Oshima, Nobuhiro, to Kabushiki Kaisha Toshiba. Method for manufacturing a thermal head 5,054,190, Cl. 29-611.000.

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Instatherm Company: *See—*
Carr, Peter, 5,054,540, Cl. 165-10.000.

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Sugier, Andre; Bourgmayer, Paul; and Rojey, Alexandre, 5,055,178, Cl. 208-188.000.
Wittrisch, Christian, 5,054,557, Cl. 166-309.000.

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Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,055,391, Cl. 435-5.000.

Institute of Acoustics, Academia Sinica: *See—*
Yu, Tiecheng; Bi, Ning; Rong, Meiling; and Zhang, Enyao, 5,056,150, Cl. 381-43.000.

Intec, Corp.: *See—*
Adelson, Alexander, 5,054,930, Cl. 356-429.000.

Integrated Applied Physics Inc.: *See—*
Reinhardt, Nicholas, 5,055,748, Cl. 315-335.000.

Intel Corporation: *See—*
Canepa, George R.; Holler, Mark A.; and Tam, Simon M., 5,055,897, Cl. 357-23.500.

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Johns, Douglas A., 5,055,747, Cl. 315-307.000.

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Cobb, Lincoln C.; and Hirsch, Teddy J., 5,054,954, Cl. 404-6.000

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Davis, John C.; and Irwin, John C., 5,055,839, Cl. 341-22.000.
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Hammer, William E.; Schwane, Walter H.; and Ziecina, Frederick J., 5,056,003, Cl. 364-200.000.
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Lisle, Ronald J.; McDonald, B. Scott; and Wilkes, Michael D., 5,054,360, Cl. 84-645.000.
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Chang, Robin, 5,056,000, Cl. 364-200.000.

International Technidyne Corporation: *See—*
Mintz, Michael D., 5,055,099, Cl. 604-4.000.

Intertech Engineering Associates, Inc.: *See—*
Coleman, Edward R.; Vogel, Danny C.; Vogel, David A.; and Cherry, Diane P., 5,056,132, Cl. 379-95.000.

Intevep, S.A.: *See—*
Manzano, Rafael; and Chaviel, Anderson, 5,054,960, Cl. 405-72.000

Inui, Takashi: *See—*
Naito, Atsushi; Nakatsuka, Kiyoshi; Yamamoto, Seiichi; Inui, Takashi; and Suzuki, Tomohiro, 5,055,717, Cl. 307-463.000.

Inukai, Sinji; Agata, Mitsuzi; Akiba, Kiyoshi; Ohmura, Takeo; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, to Wakamoto Pharmaceutical Co., Ltd. Tetrazole derivatives and aldose reductase inhibition therewith. 5,055,481, Cl. 514-381.000

Inukai, Takashi: *See—*
Ohno, Kouji; Saito, Shinichi; Inukai, Takashi; Inoue, Hiromichi; and Miyazawa, Kazutoshi, 5,055,222, Cl. 252-299.610.

Ion Systems, Inc.: *See—*
Partridge, Leslie W., 5,055,963, Cl. 361-231.000.

IPL, Inc.: *See—*
Lesquir, Dominique; and Landry, Bernard, 5,054,820, Cl. 285-197.000.

Irion, Donald: *See—*
Schultz, John; and Irion, Donald, 5,056,019, Cl. 364-405.000.

Iris Systems Inc.: *See—*
Johnson, Dennis F.; and Wiebe, Michael, 5,056,107, Cl. 375-1.000

Irwin, Charles F.: *See—*
Garcia, Rigoberto F.; Coppinger, Elizabeth M.; Irwin, Charles F.; and Sangirardi, Angela M., 5,055,217, Cl. 252-94.000

Irwin, John C.: *See—*
Davis, John C.; and Irwin, John C., 5,055,839, Cl. 341-22.000

Irwin Magnetic Systems, Inc.: *See—*
Behr, Michael I., 5,055,951, Cl. 360-77.120.

Isacoff, Eric G.: *See—*
Albright, Robert L.; Fisher, Jon R.; Isacoff, Eric G.; and Peters, Eric C., 5,055,197, Cl. 210-638.000.

ISC Chemicals Limited: *See—*
Slinn, David S. L., 5,055,138, Cl. 134-11.000

Iseda, Ken, to Kabushiki Kaisha Toshiba. Sheet conveying apparatus 5,054,768, Cl. 271-291.000

Ishibashi, Hiroshi: *See—*
Kato, Eiichi; Ishibashi, Hiroshi; and Ishii, Kazuo, 5,055,369, Cl. 430-114.000.

Ishibashi, Yoji; Inoue, Hiroshi; Ohmori, Takashi; Hashimoto, Takashi; Kato, Fumio; Akatsu, Shigeyuki; Arai, Akira; Kuroda, Michio; and Hisano, Katsukuni, to Hitachi, Ltd. Gas turbine combustor and method of running the same. 5,054,280, Cl. 60-39.060

Ishida, Akinori, to Kabushiki Kaisha Toshiba. Apparatus for destroying calculuses. 5,054,469, Cl. 128-24.0EL

Ishida, Hiromi: *See—*
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000.

Ishida, Masahiko: *See—*
Yamaji, Katsuhiko; Ishida, Masahiko; and Tsukamoto, Masahiro, 5,055,341, Cl. 428-174.000

Ishiguro, Yoichi: *See—*
Kanamori, Hiroo; Ishiguro, Yoichi; and Tanaka, Gotaro, 5,055,121, Cl. 65-3.120.

Ishihara, Tomohiro: *See—*
Taniguchi, Atsuki; Fujimoto, Nobuhiro; Ishihara, Tomohiro; and Wakisaka, Takaaki, 5,056,120, Cl. 375-118.000

Ishii, Kazuo: *See—*
Kato, Eiichi; Ishibashi, Hiroshi; and Ishii, Kazuo, 5,055,369, Cl 430-114.000.

Ishikawa Gasket Co., Ltd.: *See—*
Udagawa, Tsunekazu; and Inamura, Susumu, 5,054,795, Cl. 277-234.000.

Ishikawa, Haruyuki: *See—*
Kishi, Hajimu; Fujita, Naoki; and Ishikawa, Haruyuki, 5,055,754, Cl. 318-565.000

Ishikawa, Katsukiyo: *See—*
Seio, Mamoru; Ikeda, Takeshi; Nishijima, Kanji; and Ishikawa, Katsukiyo, 5,055,374, Cl. 430-190.000

Ishikawa, Muneharu; and Taniji, Ayafumi, to Kowa Company Ltd Method and apparatus for measuring the velocity of a fluid using analysis of Young's fringes in speckle photography. 5,054,913, Cl. 356-28.500

Ishikawa, Norio, to Fuji Photo Film Co., Ltd. Gas-sealing device for web passage section located at treatment chamber wall. 5,054,212, Cl 34-155.000

Ishikawa, Yasuki: *See—*
Shiraishi, Yasuhiro; and Ishikawa, Yasuki, 5,054,568, Cl 180-140.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.
Teratsuji, Osamu; Nishimura, Keiichi; Moriya, Yoshiro; and Ueda, Yukihiko, 5,054,134, Cl. 4-488.000.

Ishiwata, Masao: *See—*
Naraoka, Naohito; Ishiwata, Masao; and Thunoda, Akiji, 5,055,344, Cl. 428-213.000

Ishiwatari, Makoto; Handa, Akio; Kobayashi, Takeshi; Shibukawa, Takerou; Murata, Yutaka; and Masuda, Tatsuo, to Honda Giken Kogyo Kabushiki Kaisha. Floor panel for off-road vehicle. 5,054,842, Cl. 296-191.000.

Ishiwatari, Takao: *See—*
Yano, Toshihiko; Ishiwatari, Takao; Sekihachi, Hiroko; Matsuo, Noritada; Takagaki, Tohei; and Kakimizu, Akiko, 5,055,491, Cl. 514-531.000

Island Software, Inc.: *See—*
Hawkes, Calvert T., 5,056,043, Cl. 364-519.000

Ismert, Joseph P., to Sioux Chief Manufacturing Co., Inc. Multiple size tubing hanger. 5,054,741, Cl. 248-74.500.

Isobe, Kunio: *See—*
Yamashita, Michio; Isobe, Kunio; and Yarita, Ikuo, 5,054,302, Cl. 72-8.000.

Isono, Toru: *See—*
Asai, Tomohito; and Isono, Toru, 5,054,308, Cl. 72-463.000.

Isover Saint-Gobain: *See—*
Seignan, Jacques; and Kafka, Bernard, 5,055,241, Cl. 264-8.000

Isozumi, Shuzoo: *See—*
Morishita, Akira; Isozumi, Shuzoo; and Tanaka, Takao, 5,054,329, Cl. 74-7.00R.

ISP Investments Inc.: *See—*
Chaudhuri, Ratan K.; Haldar, Rama K.; and Gangadharan, Balgopal, 5,055,046, Cl. 433-180.000.
Plotkin, Jeffrey S.; Dougherty, James A.; Vara, Fulvio J.; and Taylor, Paul D., 5,055,357, Cl. 428-413.000

Isuzu Motors Limited: *See—*
Kawamura, Hideo, 5,054,443, Cl. 123-254.000.

Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, to Konica Corporation. Image forming apparatus. 5,054,419, Cl. 118-657.000.

Ito, Hiroki; and Ina, Teruo, to Mitsubishi Denki K.K. Substrate cleaning device. 5,054,421, Cl. 118-723.000

Ito, Katuyasu: *See—*
Fushiya, Fusao; Ito, Katuyasu; and Niinomi, Mitsuyoshi, 5,054,352, Cl. 83-468.300.

Ito, Koichi; and Ogaki, Kitio, to Kyosan Denki Kabushiki Kaisha. Fuel filter incorporated in a fuel tank. 5,055,187, Cl. 210-172.000.

Ito, Masashi. Apparatus for water treatment using a magnetic field and far infrared rays. 5,055,189, Cl. 210-222.000

Ito, Masayoshi: *See—*
Nakano, Yoshinori; Kotsuma, Kyohisa; and Ito, Masayoshi, 5,055,543, Cl. 528-58.000.

Ito, Toshiyasu: *See—*
Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, 5,054,895, Cl. 359-265.000.

Itoh, Fumikazu: *See—*
Haraichi, Satoshi; Itoh, Fumikazu; Shimase, Akira; and Takahashi, Takahiko, 5,055,696, Cl. 250-492.200.

Itoh, Kiyoo: *See—*
Horiguchi, Masashi; Aoki, Masakazu; and Itoh, Kiyoo, 5,056,095, Cl. 371-40.100.

Itoh, Masahiko: *See—*
Minowa, Emiko; Kobayashi, Shiro; and Itoh, Masahiko, 5,055,356, Cl. 428-409.000.

Itoh, Yoshihori; and Oizumi, Kouji, to Canon Kabushiki Kaisha. Variable magnification finder of real image type. 5,055,868, Cl. 354-222.000

Itoi, Hideyuki: *See—*
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000.

Iversen, Arthur H.; and Whitaker, Stephen. Enhanced heat transfer rotating anode x-ray tubes. 5,056,127, Cl. 378-130.000.

Iwahashi, Hiroshi; Kato, Hideo; and Tatsumi, Yuuichi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit. 5,056,064, Cl. 365-233.500.

Iwahashi, Hiroshi: *See—*
Nakai, Hiroto; Iwahashi, Hiroshi; Asano, Masamichi; and Kumagai, Shigeru, 5,055,706, Cl. 307-265.000.

Iwai, Hiroyuki: *See—*
Asano, Takanobu; Iwai, Hiroyuki; and Ono, Yuji, 5,055,036, Cl 432-5.000.

Iwanaga, Kazuyoshi: *See—*
Umebayashi, Shigeto; Iwanaga, Kazuyoshi; and Hattori, Noboru, 5,055,098, Cl. 475-312.000

Iwasaki, Hiroshi: *See—*
Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,055,472, Cl. 514-258.000.

Iwasaki, Shuji: *See—*
Higo, Yuji; Hayashi, Hidechika; and Iwasaki, Shuji, 5,055,408, Cl. 436-48.000.

Iwasaki, Takeshi; and Takeuchi, Hiroshi, to Mitsubishi Denki K.K. Wire electrode supplying device in wire cut electric discharge machine. 5,055,649, Cl. 219-69.120.

Iwasawa, Masashi: *See—*
Sugimoto, Tadashi; Iwasawa, Masashi; and Shoji, Yasuo, 5,055,685, Cl. 250-342.000.

Iwata, Shizuo: *See—*
Manabe, Osamu; Fujita, Shigeo; Iwata, Shizuo; and Kamiyama, Morihiro, 5,055,589, Cl. 548-427.000.

Iwata, Toshio: *See—*
Fukui, Wataru; and Iwata, Toshio, 5,054,447, Cl. 123-414.000.
Matsuoka, Atsuko; and Iwata, Toshio, 5,054,448, Cl. 123-425.000.

Iwata, Toshiro: *See—*
Hisatomi, Hideo; Iwata, Toshiro; Kosoegawa, Toshihide; Oka, Kikuo; Ichikawa, Seizo; and Mitarai, Kuninori, 5,055,245, Cl 264-40.600.

Iwata, Yoshitaka: *See—*
Oguma, Shingo; Muroya, Hideki; and Iwata, Yoshitaka, 5,055,945, Cl. 358-468.000.

Iyoda, Motomi: *See—*
Nagasaka, Yasuhiro; Shigenobu, Hiromichi; Shiraki, Kazuyuki; Iyoda, Motomi; and Maeda, Akira, 5,055,058, Cl. 439-188.000.

Izumi, Tomoyuki: *See—*
Shinonome, Osami; Kishida, Minoru; Izumi, Tomoyuki; Murakami, Kunio; and Menju, Akira, 5,055,337, Cl. 428-147.000.

J. M. Huber Corporation: *See—*
Andrews, Claude R.; Koson, John A.; and Tarquini, Michael E., 5,055,284, Cl. 423-419.00P.

J.S. Staedtler GmbH & Co.: *See—*
Heger, Friedrich, 5,054,949, Cl. 401-202.000.

Jabil Circuit Company: *See—*
Hock, Darryl A., 5,055,758, Cl. 318-645.000.

Jackowski, Stefan; and Pinchuk, Leonard, to Cordis Corporation. Apparatus for manufacturing balloons for medical devices. 5,055,024, Cl. 425-140.000

Jackson, Ernest E.: *See—*
Jones, William F.; Hinton, Alfred E.; Hibbert, Frederick M.; and Jackson, Ernest E., 5,055,783, Cl. 324-216.000.

Jackson, Franklin D.: *See—*
Thompson, Michael S.; Hubbard, Steven R.; and Jackson, Franklin D., 5,054,418, Cl. 118-500.000

Jacob, Greg; and Outhyse, Joseph. Water massage apparatus. 5,054,474, Cl. 128-66.000.

Jacobs, Anita I.: *See—*
Bracken, Robert L.; and Jacobs, Anita I., 5,055,014, Cl 417-572.000

Jacobs, Kenneth A.; Steinbrink, D. Randall; Floros, Joanna; Phelps, David S.; and Taeusch, H. William, to Genetics Institute Inc.; and Brigham & Womens Hospital, Inc., The. Low molecular weight pulmonary surfactant proteins. 5,055,553, Cl. 530-300.000.

Jacobs, Paul G.: *See—*
Williams, William H.; and Jacobs, Paul G., 5,054,158, Cl. 15-354.000.

Jacobs, Scott L., to Mosaic, Inc. Extended integration semiconductor structure with wiring layers. 5,055,907, Cl. 357-71.000

Jacobs, Stephen D.; Marshall, Kenneth L.; and Cerqua, Kathleen A., to University of Rochester, The. Methods of making composite optical devices employing polymer liquid crystal. 5,054,888, Cl. 359-76.000.

Jaeger, Douglas J.; and Groger, Howard P., to American Research Corporation of Virginia. Bridgeless system for directly measuring complex impedance of an eddy current probe. 5,055,784, Cl 324-233.000

Jaeger, Timothy P.: *See—*
Mutchler, John H.; Jaeger, Timothy P.; Matt, Richard J.; and Farver, Theodore B., 5,056,046, Cl. 364-551.010.

Jahn, Wilhelm;: *See—*
Scherz, Michael; Jahn, Wilhelm;; and Roschlau, Wilhelm, 5,055,775, Cl. 324-158.0MG

Jahn, Wolfgang: *See—*
Dummersdorf, Hans-Ulrich; Jahn, Wolfgang; Noack, Werner; and Heidel, Wolfgang, 5,055,167, Cl. 204-165.000.

Jain, Tikam: *See—*
Shorr, Robert; and Jain, Tikam, 5,055,517, Cl. 524-813.000.

Jalby, Pierre; Claverie, Pierre; Rotman, Frederic; Kimura, Masao; Friedt, Jean-Marie; and Arai, Juichi, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude Method of forming high purity metal silicides targets for sputtering. 5,055,246, Cl. 264-81.000.

James River Corporation: *See—*
Heili, Dean H.; and Diring, James A., 5,054,161, Cl. 16-124.000.

James, Roger; and Brown, Alan J., to ECC International Limited. Porous inorganic material. 5,055,429, Cl. 501-;80.000.

Janiw, Dusan. Adjustable can opener. 5,054,203, Cl. 30-408.000.

Jannard, James H.; and Arnette, Gregory F., to Oakley, Inc. Eyewear traction device. 5,054,903, Cl. 351-123.000.

Jansen, Jozef, to Elgarden Aktiengesellschaft. Dental drill and drilling template. 5,055,042, Cl. 433-76.000.

Japan Aviation Electronics Industry Limited: *See—*
Okada, Kenichi, 5,054,923, Cl. 356-350.000.

Jaso, Mark A.: *See—*
Gallagher, William J.; Hu, Chao-Kun; Jaso, Mark A.; Ketchen, Mark B.; Kleinsasser, Alan W.; and Pearson, Dale J., 5,055,158, Cl. 156-643.000.

Jatco Corporation: *See—*
Umebayashi, Shigeto; Iwanaga, Kazuyoshi; and Hattori, Noboru, 5,055,098, Cl. 475-312.000.

Jaunet, Alain: *See—*
Brault, Francois; Jaunet, Alain; and Mendowski, Marc, 5,054,373, Cl. 92-92.000.

Javaher, Troy. Anti-wrinkle pillow. 5,054,143, Cl. 5-434.000.

Jaycox, Donald F., to Reliance Comm/Tec Corporation. Sealed reenterable splice enclosure. 5,055,636, Cl. 174-87.000.

Jean Walterscheid GmbH: *See—*
Kampf, Klaus; and Geisthoff, Hubert, 5,054,594, Cl. 192-35.000.

Jeco Co., Ltd.: *See—*
Miyahara, Norio, 5,055,759, Cl. 318-651.000.

Jednacz, Thomas C.: *See—*
Hu, Feng-Kang; Lau, Chung M.; Yang, Kevin; Zhu, Joshua S.; Shen, Peter S.; and Jednacz, Thomas C., 5,055,746, Cl. 315-291.000.

Jeffers, Larry A.; Schmotzer, Jack K.; and Stauffer, Charles C., to Babcock & Wilcox Company, The. Method and apparatus for monitoring and measuring the concentration of ion exchange resin particles in water. 5,055,694, Cl. 250-458.100.

Jendges, Heinz-Gerd: *See—*
Miller, Gert; Jendges, Heinz-Gerd; and Crynen, Norbert, 5,055,657, Cl. 235-381.000.

Jendralla, Heiner; Beck, Gerhard; Baader, Ekkehard; and Kerekjarto, Bela, to Hoechst Aktiengesellschaft. 7(1H-pyrrol-3-YL)-substituted 3,5-dihydroxyhept-6-enoic acids, 7-(1H-pyrrol-3-YL)-substituted 3,5-dihyroxyhept-anoic acids, their corresponding delta-lactones and salts, their use as medicaments and pharmaceutical products and intermediates. 5,055,484, Cl. 514-422.000.

Jenkins, E. Preston. Appliance for maintaining moisture in the mouth. 5,055,108, Cl. 604-54.000.

Jensen, Craig L.: *See—*
Chakrabarti, Dhruba J.; Staley, James T.; Baumann, Stephen F.; Sawtell, Ralph R.; Bretz, Philip E.; and Jensen, Craig L., 5,055,257, Cl. 420-902.000

Jensen, Wayne E., to B & J Manufacturing Company. Tire rasp blade. 5,054,177, Cl. 29-78.000

Jenson, Daniel M.: *See—*
Hermanson, Donald R.; Prokosch, Steven A.; and Jenson, Daniel M., 5,055,753, Cl. 318-571.000.

Jewett, Michael K.: *See—*
Hertel, Philip G.; DuVander, James D.; and Jewett, Michael K., 5,054,262, Cl. 53-381.100.

Jiles, Stephen L. Insertion assembly for a pipe stopper. 5,054,512, Cl. 137-317.000.

Jimenez, Juan: *See—*
Ohms, Kurt; and Jimenez, Juan, 5,054,193, Cl. 29-840.000

Jimenez, Richard M.: *See—*
Iceland, William F.; Demonet, Robert J.; Jimenez, Richard M.; and Houston, Donald W., 5,055,648, Cl. 219-10.770.

Joehr, Hans: *See—*
Glaus, Heinrich; Lehmann, Peter; Joehr, Hans; and Freiburghaus, Rene , 5,054,614, Cl. 206-343.000.

Johansson, Bert E.; and Bowles, Ray L., to Coors Brewing Company Apparatus and method for trimming a can body. 5,054,341, Cl. 82-47.000

Johansson, Evald V. Device for fixation of the spatial interrelationship of upended frames. 5,054,613, Cl. 206-325.000.

John Sterling Corporation: *See—*
Sterling, John R.; and Kluge, Richard G., 5,054,163, Cl. 16-244.000.

Johns, Douglas A., to Intent Patents A.G. Self-regulating, no load protected electronic ballast system. 5,055,747, Cl. 315-307.000.

Johns Hopkins University, The: *See—*
Packard, Beverly; Edidin, Michael; and Komoriya, Akira, 5,055,561, Cl. 530-390.000.

Johnsen, Malvin, to Laerdal Medical. Model for practicing artificial respiration and a simulated respiratory tract. 5,055,052, Cl. 434-265.000

Johnson, Aslaug R. Multilayer cleansing tissue containing a perfume and/or an emollient suitable for human skin. 5,055,216, Cl. 252-91.000.

Johnson, Dennis F.; and Wiebe, Michael, to Iris Systems Inc. Radio communication network for remote data generating stations 5,056,107, Cl. 375-1.000.

Johnson, Derwyn C.: *See—*
Hill, Kenneth O.; Johnson, Derwyn C.; and Lamont, Robert G., 5,054,874, Cl. 385-28.000.

Johnson, Frank E.: *See—*
Rhoades, Lawrence J.; Nokovich, Nicholas P.; Kohut, Thomas A.; and Johnson, Frank E., 5,054,247, Cl. 51-317.000.

Johnson, Gary E.; Schneider, John T.; and Sundquist, Nils E., to Mate Punch & Die Co. Punch assembly with improved disassembly features. 5,054,347, Cl. 83-140.000.

Johnson, Jack D.; and Kaiser, Roger A., Jr., to Compaq Computer Corporation. Keyboard interface for use in computers incorporating terminate-and-stay-resident programs. 5,056,057, Cl. 364-900.000

Johnson, John V., II. Paving block. 5,054,957, Cl. 404-41.000.

Johnson, L. Ted: *See—*
Grawey, Charles E.; Johnson, L. Ted; Sloma, John M.; and Szentes, John F., 5,055,734, Cl. 310-366.000.

Johnson, Mary B. Combination light, radio and clock. 5,055,986, Cl. 362-253.000.

Johnson, Michael B. External light visor's visual and application designs. 5,055,982, Cl. 362-61.000.

Johnson, Terry R. Magnetization/demagnetization device. 5,055,813, Cl. 335-284.000.

Johnson, William A.; Budzyna, W. James; Smilanich, Nicholas J.; and Doan, Chi-Thien, to Eveready Battery Company, Inc. Electronic battery charger device and method. 5,055,763, Cl. 320-15.000.

Johnston, John A.; Forrest, Lindsay W.; and Wickham, Colin P., to Debug Filters Limited. Magnetic apparatus for controlling Protista in distillates. 5,055,188, Cl. 210-222.000

Johnston, Mark A.: *See—*
Hoffman, Harry O.; Kalbes, James E.; and Johnston, Mark A., 5,055,317, Cl. 427-8.000.

Jokic, Zoran. Card box with spring surprise flap. 5,055,084, Cl. 446-486.000

Jolliffe, William C.; Mandich, Steve; and Obukuro, Kazuhide, to MRP Recycling Technologies Inc. Tire splitter. 5,054,351, Cl. 83-430.000.

Joly, Jean-Francois: *See—*
Spitz, Roger; Brun, Claude; and Joly, Jean-Francois, 5,055,535, Cl. 526-142.000.

Jones, Anthony, to Sundstrand Corporation. Turbine engine impingement assembly. 5,054,283, Cl. 60-39.142.

Jones, Barbara L. Radiation detector. 5,055,686, Cl. 250-370.010

Jones, Marshall G.; and Case, Allen W., Jr., to General Electric Company. Laser soldering of flexible leads. 5,055,652, Cl. 219-121.640

Jones, Paul H., to SpaceLabs, Inc. Apparatus for detecting transducer movement using a first and second light detector. 5,055,671, Cl 250-227.210.

Jones, Thomas L. Bed with concealed entertainment center. 5,054,139, Cl. 5-2.100.

Jones, William F.; Hinton, Alfred E.; Hibbert, Frederick M.; and Jackson, Ernest E., to Westinghouse Electric Corp. Magnetic field strength indicator for use prior to a magnetic particle inspection procedure. 5,055,783, Cl. 324-216.000.

Jonge Poerink B.V.: *See—*
Poerink, Nikolaas J., 5,054,609, Cl. 198-852.000

Jonsson, Arne F., to Jonsson Pumpkonsult. Flow machine. 5,054,999, Cl. 416-204.00R

Jonsson Pumpkonsult: *See—*
Jonsson, Arne F., 5,054,999, Cl. 416-204.00R.

Josef, Moshe: *See—*
Wiesenfeld, David; and Josef, Moshe, 5,054,146, Cl. 10-27.00E

Joseph, Michael D.: *See—*
Harris, Robert F.; and Joseph, Michael D., 5,055,544, Cl. 528-59.000.

Josephson, Lee: *See—*
Lewis, Jerome M.; Menz, Edward T.; Kenny, Francis E.; Groman, Ernest V.; and Josephson, Lee, 5,055,288, Cl. 424-9.000

Joyce, Michael, to Joyce Molding Corp. Cassette housing. 5,054,643, Cl. 220-335.000.

Joyce Molding Corp.: *See—*
Joyce, Michael, 5,054,643, Cl. 220-335.000

Judd, Wendell, to Technology Development Corporation. Water retardant covering material for solid waste landfills. 5,054,406, Cl. 110-346.000

Junkosha Co., Ltd.: *See—*
Imaizumi, Haruo; Nishizawa, Toshihiko; and Kato, Masatoshi, 5,055,064, Cl. 439-402.000

Juntendo, Tsumura: *See—*
Fujimaki, Michio; Ikematsu, Shojiro; Hada, Masao; Fukue, Hidetaka; and Fukutake, Katsuhiro, 5,055,297, Cl. 424-195.100

Jurell, Scott R.; Motto, Eric R.; Windows, Gordon E., Jr.; Luchaco, David G.; Capewell, Dennis M.; Hausman, Doanld F.; and Spira, Joel S., to Lutron Electronics Co., Inc. Gas discharge lamp dimming system. 5,055,742, Cl. 315-94.000.

Kabala, Witold P.: *See—*
Ting, Kuan-Chong; Giacomelli, Gene A.; Mears, David R.; Kabala, Witold P.; Shen, Shou-Jin; and Williamson, Steven E., 5,054,831, Cl 294-61.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Tojima, Hiromi, 5,054,598, Cl. 192-70.270.

Kabushiki Kaisha Isekikaihatsu Koki: *See—*
Akesaka, Toshio; and Ogawara, Takashi, 5,054,976, Cl. 409-143.000

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Hayashi, Satoru, 5,056,148, Cl. 381-11.000.

Kabushiki Kaisha Meidensha: *See—*
Fujie, Shinichi; Oshima, Nobuo; and Matsuyuki, Akira, 5,055,398, Cl. 435-10.000

Kabushiki Kaisha Okuma Tekkosho: *See—*
Nashiki, Masayuki; and Yura, Motozumi, 5,055,760, Cl 318-687.000

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Tanaka, Kohbun, 5,054,171, Cl. 24-637.000

Kabushiki Kaisha Topcon: *See—*
Ohishi, Masahiro; and Ohtomo, Fumio, 5,054,911, Cl. 356-5.000

Kabushiki Kaisha Toshiba: *See—*
Furuhama, Kokichi, 5,054,297, Cl. 62-260.000
Fushimi, Seiichiro, 5,055,882, Cl. 355-269.000
Hasegawa, Haruyoshi, 5,055,662, Cl. 235-492.000.
Ichihara, Takashi, 5,055,687, Cl. 250-363.090.
Inoue, Nobuhiro; Nakano, Akira; and Oshima, Nobuhiro, 5,054,190, Cl. 29-611.000
Iseda, Ken, 5,054,768, Cl. 271-291.000
Ishida, Akinori, 5,054,469, Cl. 128-24.0EL
Iwahashi, Hiroshi; Kato, Hideo; and Tatsumi, Yuuichi, 5,056,064, Cl. 365-233.500.
Kageyama, Mokuji; and Maeda, Ayako, 5,055,413, Cl. 436-178.000.
Kasai, Kazuhiko, 5,055,844, Cl. 341-144.000
Kato, Masao, 5,054,711, Cl. 242-201.000
Kawakami, Chikahisa, 5,055,949, Cl. 360-71.000
Kondo, Masafumi; and Satoh, Kozo, 5,055,789, Cl. 324-309.000
Kubota, Soichi, 5,056,090, Cl. 371-8.200
Mase, Yasukazu; Abe, Masahiro; and Yamamoto, Tomie, 5,055,906, Cl. 357-54.000
Miyamura, Masataka; Wada, Yusuke; Nakagawa, Toshiharu; Nakaizumi, Yuji; and Takeda, Kazuhiro, 5,055,378, Cl. 430-280.000.
Nakai, Hiroto; Iwahashi, Hiroshi; Asano, Masamichi; and Kumagai, Shigeru, 5,055,706, Cl. 307-265.000.
Nishide, Akihiko, 5,056,146, Cl. 382-6.000
Ozawa, Katsuko; Gotoh, Kazuhisa; Murayama, Tomohiro; Tokuda, Momoyo; Sumida, Satoshi; and Suzuki, Tetsuo, 5,055,755, Cl. 318-568.110.
Sakashita, Wataru; and Ichikawa, Tsutomu, 5,055,012, Cl 417-440.000
Sasano, Jun, 5,056,083, Cl. 370-110.100.
Takamatsu, Hiroshi; and Ueda, Katsunobu, 5,054,244, Cl. 51-165.710.
Tsuchiya, Yuzo, 5,055,953, Cl. 360-96.500.
Watanabe, Yuji; and Sahara, Hiroshi, 5,055,713, Cl. 307-443.000
Yamamoto, Takaharu; Hashiba, Syuzi; and Imai, Toshimitsu, 5,056,145, Cl. 381-51.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kuno, Toshitaka; and Koide, Mitsuo, 5,056,038, Cl. 364-513.000
Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, 5,054,895, Cl. 359-265.000.

Kabushiki Kaisha Toyota Chuo Kenyusho: *See—*
Nakano, Masaru; Tanaka, Minoru; Ikeda, Toshiaki; and Kuno, Toshitaka, 5,056,031, Cl. 364-461.000

Kadokawa, Satoshi, to Nippon Seiko Kabushiki Kaisha. Cam follower device for valve driving mechanism in engine. 5,054,440, Cl. 123-90.500.

Kafka, Bernard: *See*—
Seignan, Jacques; and Kafka, Bernard, 5,055,241, Cl. 264-8.000.

Kagawa, Mitsuru: *See*—
Mori, Kiji; Kanemitsu, Nobuhisa; Watanabe, Junichi; Kagawa, Mitsuru; Hasegawa, Kazuhiro; Mochizuki, Shigehiro; and Kondo, Fumio, 5,055,076, Cl. 445-25.000.

Kageyama, Hiroshi: *See*—
Kawabata, Yasuhiro; Hara, Soichi; Machida, Shirou; and Kageyama, Hiroshi, 5,054,375, Cl. 92-126.000.

Kageyama, Mokuji; and Maeda, Ayako, to Kabushiki Kaisha Toshiba. Method of measuring impurities in oxide films using a meltable sample collection stick. 5,055,413, Cl. 436-178.000.

Kahler, Jeffery A., to Honeywell Inc. Apparatus and method for a smooth transition between calibrated airspeed control of an aircraft and Mach number control of an aircraft. 5,056,027, Cl. 364-433.000.

Kaiser, Roger A., Jr.: *See*—
Johnson, Jack D.; and Kaiser, Roger A., Jr., 5,056,057, Cl. 364-900.000.

Kakimizu, Akiko: *See*—
Yano, Toshihiko; Ishiwatari, Takao; Sekihachi, Hiroko; Matsuo, Noritada; Takagaki, Tohei; and Kakimizu, Akiko, 5,055,491, Cl. 514-531.000.

Kakimoto, Kenichi; Kobayashi, Toshitaka; Nagata, Masanori; Imano, Shigeki; Honma, Hideaki; and Nishiyama, Hideki, to Meiji Milk Products Co., Ltd.; Fujimori Kogyo Co., Ltd.; and Softex Co., Ltd. Method of and apparatus for examining objects in containers in non-destructive manner. 5,056,124, Cl. 378-57.000.

Kakizaki, Shinobu, to Atsugi Unisia Corporation. Rolling suppressive control system for automotive suspension system with enhanced response characteristics. 5,054,813, Cl. 280-772.000.

Kakizaki, Shinobu: *See*—
Yamaoka, Fumiyuki; Kakizaki, Shinobu; and Kikushima, Shigeru, 5,054,809, Cl. 280-707.000.

Kakizoe, Masahiro; and Ootsuka, Shigeharu, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic apparatus. 5,055,811, Cl. 335-59.000.

Kakuk, Jay ᵀ: *See*—
Ellison, Bart T.; Kakuk, Jay J.; and Beachy, Robert W., 5,055,987, Cl. 362-277.000.

Kalbes, James E.: *See*—
Hoffman, Harry O.; Kalbes, James E.; and Johnston, Mark A., 5,055,317, Cl. 427-8.000.

Kale, Hemant D. Storage tank for water heaters and the like with collector outlet dip tube. 5,054,437, Cl. 122-13.100.

Kaleta, Gary S.: *See*—
Hill, Charles C.; Thomas, Gareth R.; Kaleta, Gary S.; and Saxton, Gregory J., 5,054,403, Cl. 105-419.000.

Kalinski, Kerry L.: *See*—
Bridges, Kenneth L.; and Kalinski, Kerry L., 5,055,209, Cl. 252-8.510.

Kalnins, Charles M.: *See*—
Carroll, Noel; Carroll, Robert W.; and Kalnins, Charles M., 5,055,202, Cl. 210-739.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Kuhn, Bernhard, 5,055,044, Cl. 433-126.000.

Kamegamori, Masayuki: *See*—
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.

Kamiya, Takeshi: *See*—
Ikegami, Yuji; Sasayama, Shinichi; Tachino, Noboru; and Kamiya, Takeshi, 5,055,145, Cl. 148-285.000.

Kamiyama, Morihiro: *See*—
Manabe, Osamu; Fujita, Shigeo; Iwata, Shizuo; and Kamiyama, Morihiro, 5,055,589, Cl. 548-427.000.

Kammermaier, Johann: *See*—
Birkle, Siegfried; Kammermaier, Johann; Schulte, Rolf; Winnacker, Albrecht; and Rittmayer, Gerhard, 5,055,421, Cl. 437-101.000.

Kampf, Klaus; and Geisthoff, Hubert, to Jean Walterscheid GmbH. Pawl freewheel clutch. 5,054,594, Cl. 192-35.000.

Kampmann, Detlef; Weber, Jurgen; and Kniep, Claus, to Hoechst Aktiengesellschaft. Process for the preparation of α,ω-diamines. 5,055,618, Cl. 564-473.000.

Kan, Philip T., to Rockwell International Corporation. High speed polarization switch array for selecting a particular orthogonal polarization. 5,055,805, Cl. 333-21.00A.

Kanamori, Hiroo; Ishiguro, Yoichi; and Tanaka, Gotaro, to Sumitomo Electric Industries, Ltd. Method for producing glass preform for optical fiber. 5,055,121, Cl. 65-3.120.

Kanare, Edward; and Rehler, Kenneth, to Kanare, Edward. Telephone line monitoring circuitry and apparatus. 5,056,131, Cl. 379-33.000.

Kanazawa, Hiroaki: *See*—
Yikai, Kunio; and Kanazawa, Hiroaki, 5,055,115, Cl. 55-124.000.

Kanbara, Minoru: *See*—
Wakai, Haruo; Yamamura, Nobuyuki; Sato, Syunichi; and Kanbara, Minoru, 5,055,899, Cl. 357-23.700.

Kanda, Masahiko; and Awazu, Kunio, to Sumitomo Electric Industries, Ltd. Liver function testing apparatus. 5,054,915, Cl. 356-39.000.

Kanda, Masahiko; and Awazu, Kunio, to Sumitomo Electric Industries, Ltd. Liver function testing apparatus. 5,054,916, Cl. 356-39.000.

Kanda, Zensho: *See*—
Honda, Shinzo; Hirose, Kazunori; and Kanda, Zensho, 5,054,948, Cl. 401-196.000.

Kane, Michael G., to Siemens Aktiengesellschaft. Wideband solid-state analog switch. 5,055,836, Cl. 340-825.850.

Kane, Robert C., to Motorola, Inc. Cold cathode field emission device having an electrode in an encapsulating layer. 5,055,077, Cl. 445-50.000.

Kaneda, Masahiro: *See*—
Kishida, Kazuo; Kitai, Kiyokazu; Kaneda, Masahiro; and Okano, Kenji, 5,055,529, Cl. 525-309.000.

Kaneko, Katsuyuki; Gokita, Satoshi; and Zaiki, Koji, to Matsushita Electric Industrial Co., Ltd. Data buffer device using first-in first-out memory and data buffer array device. 5,056,005, Cl. 364-200.000.

Kanemitsu, Nobuhisa: *See*—
Mori, Kiji; Kanemitsu, Nobuhisa; Watanabe, Junichi; Kagawa, Mitsuru; Hasegawa, Kazuhiro; Mochizuki, Shigehiro; and Kondo, Fumio, 5,055,076, Cl. 445-25.000.

Kang, Shinhoo: *See*—
Dunn, Edmund M.; Kang, Shinhoo; and Wei, George C., 5,055,361, Cl. 428-633.000.

Kangas, Waino J. Segmented barrel extruder device. 5,054,932, Cl. 366-84.000.

Kanniainen, Kauko; and Loukeinen, Veikko, to Kemira Oy. Reinforced catalytic unit intended for purifying exhaust gases. 5,055,275, Cl. 422-180.000.

Kano, Akiko: *See*—
Tsuchino, Hisanori; Kano, Akiko; Amitani, Koji; and Shimada, Fumio, 5,055,681, Cl. 250-327.200.

Kanome, Rieko: *See*—
Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000.

Kansai Paint Company Limited: *See*—
Inoue, Hiroshi, 5,055,530, Cl. 525-423.000.

KantoYaking Kogyo K.K.: *See*—
Takahashi, Susumu, 5,055,243, Cl. 264-29.100.

Kao, Hsin-Ching; Lee, Mao-Mong; Chiang, Chih-Cheng; Lin, Jen-Lien; and Wu, Ting-Kai, to Industrial Technology Research Institute. Heat stabilized ABS-polycarbonate polymer blend compositions 5,055,505, Cl. 524-83.000.

Kapala, Fred J.; and Kapala, Robert A., to Rockford Ornamental Iron Incorporated. Vehicle safety barrier. 5,054,237, Cl. 49-35.000.

Kapala, Robert A.: *See*—
Kapala, Fred J.; and Kapala, Robert A., 5,054,237, Cl. 49-35.000.

Kaplan, David R.: *See*—
Miller, Brian S.; and Kaplan, David R., 5,055,776, Cl. 324-158.00P.

Kapp, John P.; and Cecchini, Albert B., to Biomedical Monitors and Implants, Inc. Cranial sensor attaching device and method for its use. 5,054,497, Cl. 128-748.000.

Kappa, Wilfried: *See*—
Hadamik, Franz-Josef; Kappa, Wilfried; and Urban, George F., 5,055,231, Cl. 252-391.000.

Karamon, John J.; and Gravereaux, Daniel W. Method system & apparatus for synchronizing an auxiliary sound source containing multiple language channels with motion picture film video tape or other picture source containing a sound track. 5,055,939, Cl. 358-341.000.

Karl Schaeff GmbH & Co.: *See*—
Schaeff, Hans, 5,054,990, Cl. 414-694.000.

Karl Schnell GmbH & Co. Maschinenfabrik: *See*—
Schnell, Karl, deceased, 5,054,698, Cl. 241-82.600.

Karol, Thomas J. Maleic derivatives of 2,5-dimercapto-1,3,4-thiadiazoles and lubricating compositions containing same. 5,055,584, Cl. 548-142.000.

Kasai, Kazuhiko, to Kabushiki Kaisha Toshiba. Digital to analog converter. 5,055,844, Cl. 341-144.000.

Kasei Optonix, Ltd.: *See*—
Yoneshima, Kunihiko; and Takahashi, Fumio, 5,055,227, Cl. 252-301.60S.

Kashima, Tsunehiro: *See*—
Nishi, Yoshio; Yasuda, Akio; Kashima, Tsunehiro; Hori, Takeshi; Higuchi, Shigetaka; and Shimizu, Hidetoshi, 5,055,968, Cl. 361-395.000.

Kashiwa, Norio: *See*—
Kioka, Mamoru; Toyota, Akinori; and Kashiwa, Norio, 5,055,528, Cl. 525-270.000.

Kasper, Bryon L.; and Mizuhara, Osamu, to AT&T Bell Laboratories. Traveling wave type transversal equalizer. 5,055,795, Cl. 330-54.000.

Kasravi, Peter B. Word listing system. 5,055,049, Cl. 434-156.000.

Kastendieck, Jon G.: *See*—
Bar-Or, David; Greisman, Stewart L.; and Kastendieck, Jon G., 5,055,389, Cl. 435-4.000.

Kaszczuk, Linda A., to Eastman Kodak Company. Intermediate receiver subbing layer for thermal dye transfer. 5,055,444, Cl. 503-227.000.

Katagiri, Hiroyuki, to Ikeda Bussan Co., Ltd. Mold for manufacturing a skin covered foamed plastic article. 5,055,020, Cl. 425-111.000.

Kataoka, Keiichi; and Tamura, Shuji, to Asahi Kasei Kogyo Kabushiki Kaisha. Refractory fiber spacial structure and manufacturing method thereof. 5,055,348, Cl. 428-307.300.

Kataoka, Shoei: *See*—
Shintaku, Hidetaka; Tsuchimoto, Shuhei; Hashizume, Nobuo; and Kataoka, Shoei, 5,055,785, Cl. 324-248.000.

Katata, Hiroyuki: *See*—
Aono, Tomoko; Katata, Hiroyuki; and Noguchi, Yoji, 5,056,154, Cl. 382-56.000.

Katayama, Masashi: *See*—
Namiki, Tomizo; Suzuki, Tamotsu; and Katayama, Masashi, 5,055,329, Cl. 428-42.000.

Katayama, Shinya: *See*—
Tsuno, Toshio; Katayama, Shinya; Kawakita, Shinya; and Shimizu, Tomoyasu, 5,055,359, Cl. 428-448.000.

Kato, Eiichi; Ishibashi, Hiroshi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Liquid developer for electrostatic photography. 5,055,369, Cl. 430-114.000.

Kato, Fumio: *See*—
Ishibashi, Yoji; Inoue, Hiroshi; Ohmori, Takashi; Hashimoto, Takashi; Kato, Fumio; Akatsu, Shigeyuki; Arai, Akira; Kuroda, Michio; and Hisano, Katsukuni, 5,054,280, Cl. 60-39.060.

Kato, Hideo: *See*—
Iwahashi, Hiroshi; Kato, Hideo; and Tatsumi, Yuuichi, 5,056,064, Cl. 365-233.500.

Kato, Hiroaki; Hirobe, Toshihiko; and Hibino, Yoshitaka, to Sharp Kabushiki Kaisha. Active matrix type liquid crystal display. 5,054,887, Cl. 359-59.000

Kato, Hisao: *See*—
Nakakita, Issey; and Kato, Hisao, 5,054,531, Cl. 152-527.000.

Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for joining synthetic resin structural members. 5,054,197, Cl. 29-897.310.

Kato, Katsuhiko, to MECS Corporation. Wafer positioning apparatus. 5,054,991, Cl. 414-783.000.

Kato, Kiichi: *See*—
Yamamoto, Ryoichi; Umemura, Shizuo; Kato, Kiichi; and Yamada, Takashi, 5,055,353, Cl. 428-336.000.

Kato, Masahiko: *See*—
Nomura, Yoshihisa; Kato, Masahiko; and Nishii, Michiharu, 5,054,860, Cl. 303-92.000

Kato, Masao, to Kabushiki Kaisha Toshiba. Belt driven tape running apparatus with after shock protection. 5,054,711, Cl. 242-201.000

Kato, Masatoshi: *See*—
Imaizumi, Haruo; Nishizawa, Toshihiko; and Kato, Masatoshi, 5,055,064, Cl. 439-402.000

Kato, Takahiro, to Pioneer Electronic Corp. Cassette loading apparatus in which cassette is loaded short side first. 5,055,954, Cl. 360-96.500.

Kato, Yasushi; Tsurugi, Noriyoshi; Suzuki, Hiroaki; and Ogata, Shigeji, to Nippon Seiko K.K. Solid-color weave pattern belt. 5,054,524, Cl. 139-383.00R.

Katoh, Hiromasa: *See*—
Tanaka, Kazuo; Hamamoto, Masato; Yamada, Toshio; Kobayashi, Tohru; and Katoh, Hiromasa, 5,055,710, Cl. 307-303.100.

Katsumi, Osamu; and Miyanaga, Yoshitaka, to Eye Research Institute of Retina Foundation. Method and apparatus for evaluating human visual function. 5,054,908, Cl. 351-239.000

Kaubek, Fritz: *See*—
Maier-Laxhuber, Peter; and Kaubek, Fritz, 5,054,544, Cl. 165-104.120.

Kauffman, James W.; and Palmer, Bruce R., to Kerr-McGee Chemical Corporation. Ultraviolet light stable polymeric compositions. 5,055,512, Cl. 524-413.000.

Kawabata, Yasuhiro; Hara, Soichi; Machida, Shirou; and Kageyama, Hiroshi, to Aisin Seiki Kabushiki. Piston for internal combustion engine. 5,054,375, Cl. 92-126.000.

Kawada, Masami: *See*—
Yoshikado, Shouji; Kawada, Masami; Amamoto, Hidekazu; Saiki, Atsuna; Endo, Kiyoyuki; and Inasaki, Yutaka, 5,055,885, Cl 355-318.000

Kawade, Tsuneshige, to Atsugi Unisia Corporation. Alloy material to reduce wear used in a vane type rotary compressor. 5,055,016, Cl. 418-179.000.

Kawai, Hironobu: *See*—
Fukui, Takashi; and Kawai, Hironobu, 5,055,750, Cl. 318-254.000.

Kawai, Kazuhide: *See*—
Niwa, Shigeki; Kawai, Kazuhide; Nishibe, Takahumi; and Kawamura, Toshio, 5,055,433, Cl. 501-105.000.

Kawakami, Chikahisa, to Kabushiki Kaisha Toshiba. Disk drive and method for controlling the cleaning of the floppy disk. 5,055,949, Cl. 360-71.000.

Kawakami, James H.; Muruganandam, Natarajan; and Brode, George L., to Union Carbide Industrial Gases Technology Corporation. Semipermeable membranes based on specified tetrabromobisphenol type polyesters. 5,055,114, Cl. 55-16.000

Kawakita, Shinya: *See*—
Tsuno, Toshio; Katayama, Shinya; Kawakita, Shinya; and Shimizu, Tomoyasu, 5,055,359, Cl. 428-448.000.

Kawamura, Hideo, to Isuzu Motors Limited. Heat-insulating engine with swirl chamber. 5,054,443, Cl. 123-254.000.

Kawamura, Koichiro: *See*—
Kimura, Keita; and Kawamura, Koichiro, 5,055,950, Cl. 360-74.500.

Kawamura, Naoto: *See*—
Inoue, Tsutomu; Okamura, Kazuhiko; Kawamura, Naoto; Tone, Hiroshi; and Okamoto, Rokuro, 5,055,259, Cl. 422-61.000.

Kawamura, Takanori: *See*—
Imanishi, Masao; Ohtaka, Atsushi; Hiyama, Kunio; and Kawamura, Takanori, 5,054,889, Cl. 359-76.000.

Kawamura, Toshio: *See*—
Niwa, Shigeki; Kawai, Kazuhide; Nishibe, Takahumi; and Kawamura, Toshio, 5,055,433, Cl. 501-105.000.

Kawano, Katsunori: *See*—
Miyata, Osamu; Kawano, Katsunori; and Oki, Youji, 5,055,993, Cl. 363-98.000.

Kawasaki, Noboru: *See*—
Mitsuhashi, Daisuke; and Kawasaki, Noboru, 5,055,955, Cl. 360-104.000.

Kawasaki Steel Corporation: *See*—
Kiyota, Yoshisato; and Furukimi, Osamu, 5,055,128, Cl. 75-246.000
Yamashita, Michio; Isobe, Kunio; and Yarita, Ikuo, 5,054,302, Cl. 72-8.000.

Kawashima, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Static induction electric apparatus. 5,055,794, Cl. 324-453.000

Kawata, Ken; Sato, Kozo; and Tsuboi, Masayoshi, to Fuji Photo Film Co., Ltd. Metal-containing organic polymer. 5,055,537, Cl 526-240.000.

Kaya, Akimasa; and Niinuma, Takashi, to Teac Corporation. Composite magnetic head assembly for guiding a magnetic tape with improved stability. 5,055,956, Cl. 360-109.000.

Kaye, Bernard. Adjustable binocular spectacles for image magnification. 5,054,901, Cl. 351-41.000.

KB Alloys, Inc.: *See*—
Sigworth, Geoffrey; and Guzowski, Matthew, 5,055,256, Cl 420-548.000.

Keck, Volker; Hora, Pavel; and Conradt, Walter, to Mercedes-Benz AG. Process for the production of a valve. 5,054,195, Cl. 29-888.453.

Keene Corporation: *See*—
Fabbri, William, 5,055,985, Cl. 362-221.000

Keesen, Heinz-Werner; Hepper, Dietmar; and Peters, Hartmut, to Deutsche Thomson-Brandt GmbH. Dual channel video signal transmission system. 5,055,927, Cl. 358-133.000.

Kel Corporation: *See*—
Atoh, Kiyoshi, 5,055,972, Cl. 361-400.000.

Kelleher, Peter J.: *See*—
Lam, Dominic M-K; and Kelleher, Peter J., 5,055,291, Cl. 424-85.910.

Kelleher, William J.; and McClintock, William J., to Richardson-Vicks Inc. Anesthetic oral compositions and methods of use. 5,055,461, Cl 514-162.000.

Keller, Walter. Closable container having abrasive body in finger treating solution. 5,054,503, Cl. 132-73.000.

Keller, Walter; and Peter, Fritz, to Siemens Aktiengesellschaft. System for transmitting data between a rotating part and a stationary part 5,055,821, Cl. 340-286.010.

Keller, Wilhelm A. Dispensing apparatus for handling cartridges. 5,054,655, Cl. 222-153.000

Kelly, James A.: *See*—
Westhoff, James; and Kelly, James A., 5,054,794, Cl. 277-1.000

Kelly, Michael: *See*—
Panarelli, Ronald J.; and Kelly, Michael, 5,054,426, Cl. 119-17.000.

Kelm, Carsten: *See*—
Henn, Manfred; and Kelm, Carsten, 5,054,765, Cl. 271-213.000.

Kemeny, Sabrina E.: *See*—
Fossum, Eric R.; and Kemeny, Sabrina E., 5,055,900, Cl 357-24.000.

Kemeny, Zoltan A. Structural shock isolation system. 5,054,251, Cl. 52-167 00R.

Kemira Oy: *See*—
Kanniainen, Kauko; and Loukeinen, Veikko, 5,055,275, Cl. 422-180.000.

Kendall Square Research Corporation: *See*—
Frank, Steven J.; Burkhardt, Henry, III; Lee, Linda O.; Goodman, Nathan; Margulies, Benson I.; and Weber, Frederick D., 5,055,999, Cl. 364-200.000.

Kenderdine, Eugene W., to United States of America, Energy. Rotary drive mechanism. 5,055,727, Cl. 310-78.000.

Kener, Agota: *See*—
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000.

Kennametal Inc.: *See*—
Erickson, Robert A.; and Massa, Ted R., 5,054,344, Cl. 82-160.000

Kennedy, Arthur E.: *See*—
Kole, Donald R.; Kennedy, Arthur E.; and Bean, George J., Jr., 5,055,323, Cl. 427-265.000.

Kenny, Francis E.: *See*—
Lewis, Jerome M.; Menz, Edward T.; Kenny, Francis E.; Groman, Ernest V.; and Josephson, Lee, 5,055,288, Cl. 424-9.000

Kent, Graham B.; and Nair, Moolamkuzhiel R. V., to Post Office, The. Sorting system. 5,054,602, Cl. 198-370.000.

Kenyon, Ronald W.: *See*—
Gregory, Peter; and Kenyon, Ronald W., 5,055,566, Cl. 534-228.000.

Kerdraon, Philippe: *See*—
Pineau, Jean-Pierre; Frehaut, Jean-Pierre; and Kerdraon, Philippe, 5,054,400, Cl. 102-489.000.

Kerekjarto, Bela: *See*—
Jendralla, Heiner; Beck, Gerhard; Baader, Ekkehard; and Kerekjarto, Bela, 5,055,484, Cl. 514-422.000.

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Kletschka, Harold D. Fluid pump with levitated impeller. 5,055,005, Cl. 417-356.000.
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Nguyen, Khe C.; and Klose, Thomas R., 5,055,368, Cl. 430-78.000.
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Knabbe, Cornelius: *See*—
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Kobayashi, Tohru: *See*—
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Terada, Takao; Kobayashi, Toshiyuki; and Miyake, Tamio, 5,054,477, Cl. 128-200.140.
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Koblinger, Otto; Meissner, Klaus; Muhl, Reinhold; Trumpp, Hans-Joachim; and Zapka, Werner, to International Business Machines Corporation. Process for making masks with structures in the submicron range. 5,055,383, Cl. 430-312.000.
Koch, Horst: *See*—
Littmann, Dieter; and Koch, Horst, 5,055,377, Cl. 430-271.000.
Koch, Loyd L., to Bourn & Koch Machine Tool Co. Transmission for driving a machine tool spindle. 5,055,087, Cl. 474-73.000
Koch, Ulf, to Esselte Meto International Produktions GmbH. Thermal printing head. 5,055,858, Cl. 346-76.0PH.
Kodaira, Tetsuji: *See*—
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000.
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Koehler, Georg: *See*—
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Koff, William. Centrifuge for drying salad greens and other foods. 5,054,209, Cl. 34-58.000.
Koga, Fumiaki; and Matsumoto, Tokikazu, to Matsushita Electric Industrial Co., Ltd. Digital phase locked loop for correcting a phase of an output signal with respect to an input signal. 5,055,801, Cl. 331-14.000.
Koganty, R. Rao, to Biomira, Inc. Fluorocarbon chain-containing antigenic conjugates. 5,055,562, Cl. 530-403.000.
Kogiso, Harumi: *See*—
Mishima, Kunio; Hamabata, Mitsuo; Kogiso, Harumi; and Nozaki, Masahiro, 5,054,241, Cl. 49-488.000.
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Kohn, Rachel S.; Coleman, Maria R.; and Chung, Tai-Shung, to Hoechst Celanese Corp. Gas separation membranes comprising miscible blends of polyimide polymers. 5,055,116, Cl. 55-16.000.
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Kohut, Thomas A.: *See*—
Rhoades, Lawrence J.; Nokovich, Nicholas P.; Kohut, Thomas A.; and Johnson, Frank E., 5,054,247, Cl. 51-317.000.
Koide, Masaru: *See*—
Tsuchiya, Kouji; Tsutsui, Keiichiro; and Koide, Masaru, 5,054,145, Cl. 5-448.000.
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Kokusai Denshin Denwa Co., Ltd: *See*—
Shinonaga, Hideyuki, 5,056,055, Cl. 364-821.000.
Kolb, Michael; and Van Hijfte, Luc, to Merrell Dow Pharmaceuticals. Novel process and intermediates. 5,055,592, Cl. 549-206.000.
Kole, Donald R.; Kennedy, Arthur E.; and Bean, George J., Jr., to National Gypsum Company. Method of making predecorated gypsum board face paper. 5,055,323, Cl. 427-265.000.
Kolom, Aaron L., to Alcoa/Tre, Inc. Rapid assembly and load distribution system for nestable container sections. 5,054,635, Cl. 220-4.150.
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Komatsu, Hironori: *See*—
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Komatsu Zenoah Company: *See*—
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Komurasaki, Takeshi: *See*—
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Konchan, Jeffrey L.; and Paulik, Jiri, to General Motors Corporation. Vehicle door latch. 5,054,827, Cl. 292-216.000.

Kondo, Fumio: *See—*
Mori, Kiji; Kanemitsu, Nobuhisa; Watanabe, Junichi; Kagawa, Mitsuru; Hasegawa, Kazuhiro; Mochizuki, Shigehiro; and Kondo, Fumio, 5,055,076, Cl. 445-25.000.

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Kondo, Shinichi: *See—*
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Kondo, Susumu: *See—*
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Konica Corporation: *See—*
Ikariya, Toshiyuki; and Shibazaki, Osamu, 5,054,710, Cl. 242-74.000.
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.
Naraoka, Naohito; Ishiwata, Masao; and Thunoda, Akiji, 5,055,344, Cl. 428-213.000.
Tsuchino, Hisanori; Kano, Akiko; Amitani, Koji; and Shimada, Fumio, 5,055,681, Cl. 250-327.200.
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Konig, Johan W.; and Houpt, Pieter M., to Nederlandse Organisatie Voor Toegepastnatuurwetenschappelijk Onderzoek Tno. Device for measuring the refractive index of a fluid, in particular intended for measuring the density of that fluid or the concentration of a substance dissolved in that fluid. 5,055,699, Cl. 250-577.000.

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Maki-Rahkola, Jari; Kononen, Juhani; and Surakka, Jorma, 5,054,263, Cl. 53-399.000.

Koontz, Carl E.: *See—*
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Dobler, Josef; and Kostelezky, Peter, 5,054,398, Cl. 102-387.000.

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Konigstein, Dietrich; and Koster, Dieter, 5,055,828, Cl. 340-664.000.

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Naito, Yasuo; and Kouzuki, Hiroyuki, 5,054,570, Cl. 180-170.000.

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Ishikawa, Muneharu; and Taniji, Ayafumi, 5,054,913, Cl. 356-28.500.

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Nonaka, Masahiko; Soeda, Takahiko; Yamagiwa, Keiko; Kowata, Hiroko; Motogi, Masao; and Toiguchi, Seiichiro, 5,055,310, Cl. 426-46.000.

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Miki, Toshiyuki; Tono, Show; Kozu, Kazunori; and Hayashi, Shintaro, 5,055,200, Cl. 210-726.000.

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Cray, Seymour R.; and Krajewski, Nicholas J., 5,054,192, Cl. 29-835.000.

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Fischer, Hermann; and Nemcik, Jan, 5,055,875, Cl. 355-89.000.

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Scheuble, Bernhard; Bofinger, Klaus; Hopf, Reinhard; Pausch, Axel; Eidenschink, Rudolf; Krause, Joachim; and Wachtler, Andreas, 5,055,221, Cl. 252-299.610.

Krauss, Susan R.: *See—*
Long, John J.; Krauss, Susan R.; and Cribbs, Thomas P., III, 5,055,382, Cl. 430-400.000.

Krenzer, Eberhard, to Barmag AG. Method of producing an air textured yarn. 5,054,174, Cl. 28-271.000.

Kresse, Peter: *See—*
Wiese, Jurgen; Buxbaum, Gunter; and Kresse, Peter, 5,055,136, Cl. 106-456.000

Kretschmer, Jurgen: *See—*
Reimer, Uwe; Kretschmer, Jurgen; and Brecht, Klaus, 5,054,459, Cl. 123-549.000.

Krieg, Adrian H. Method and apparatus for underwater remote controlled radioactive waste reduction of boiling water nuclear reactor control rods. 5,055,236, Cl. 252-626.000.

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Dietrich, Walter; Krieger, Eberhard; and Weber, Siegfried, 5,054,761, Cl. 271-95.000.

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Werner, Kurt; Krieger, Leo G.; Bewley, Wilbur C.; Tillman, Ennis L.; and Riesberg, Richard D., 5,054,157, Cl. 15-328.000.

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Reidick, Heinz, 5,055,278, Cl. 423-235.000.

Kronenberg, Klaus, to VDO Adolf Schindling AG. Method for determining the absolute position of a pointer in an indicating device, and indicating device. 5,055,782, Cl. 324-207.250.

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Puppel, Gunter, 5,055,630, Cl. 585-814.000.

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Heinemann, Otto, 5,054,702, Cl. 241-230.000.
Knobloch, Osbert R.; Brentrop, Ludger; Kimmeyer, Ludger; Muller, Manfred; and Wenningkamp, Peter, 5,054,694, Cl. 241-24.000
Lohnherr, Ludger, 5,055,182, Cl. 209-148.000.

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Artinyan, Arto; and Krzyston, John, 5,055,192, Cl. 210-346.000.

Kubis, Leon. Saw blade. 5,054,354, Cl. 83-835.000.

Kubo, Mineo: *See—*
Sato, Koichiro; Kubo, Mineo; and Nakagawa, Mikio, 5,055,526, Cl. 525-74.000

Kubota, Satoshi: *See—*
Asoh, Seiichi; Kubota, Satoshi; Fukuda, Hitoki; Ushijima, Kajuhiro; Murakami, Fumiyuki; Taguchi, Tomoo; and Kohno, Shigefumi, 5,054,847, Cl. 296-219.000.

Kubota, Soichi, to Kabushiki Kaisha Toshiba. Data transmission apparatus to be connected to multiplexed transmission line. 5,056,090, Cl. 371-8.200.

Kubota, Toshihiro, to Dainippon Screen Mfg Co. Ltd. Beam splitter including a diffraction grating and one of step shaped, inclined, or curved transparent surface. 5,054,884, Cl. 359-566.000.

Kuchel, Michael, to Carl-Zeiss-Stiftung. Optical distance-measuring device. 5,054,912, Cl. 356-5.000.

Kuhlman, Marvin G.; Finkiewicz, Daniel J.; and Gradecki, Raymond J., to NCM International Inc. Unitary paper impression device. 5,054,389, Cl. 101-28.000.

Kuhn, Bernhard, to Kaltenbach & Voigt GmbH & Co. Dental handpiece with removable handpiece sleeve. 5,055,044, Cl. 433-126.000.

Kuhn, Hans-Robert: *See—*
Gehringer, Reinhard; and Kuhn, Hans-Robert, 5,056,071, Cl. 369-30.000

Kuhn, Manfred: *See—*
Springer, Hartmut; Kuhn, Manfred; Russ, Werner H.; and Schlafer, Ludwig, 5,055,565, Cl. 534-642.000.

Kuhn, Siegfried: *See—*
Gloser, Wolfgang; Kuhn, Siegfried; Rader, Robert; and Setzer, Friedhelm, 5,054,343, Cl. 82-159.000.

Kuhnert, Peter, to Agfa Gevaert Aktiengesellschaft. Granulated photographic fixative and its preparation. 5,055,384, Cl. 430-450.000.

Kukes, Simon G.: *See—*
Howell, Jerald A.; Tabler, Donald C.; Davis, Thomas; and Kukes, Simon G., 5,055,174, Cl. 208-112.000.

Kulay Manufacturing Limited: *See—*
Sutter, James J., 5,054,782, Cl. 273-143.00R.

Kulinowski, Alexander M.: *See—*
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Kuma, Yoshiharu: *See—*
Saita, Taketsugu; Kuma, Yoshiharu; Bukawa, Norio; and Saga, Tomoko, 5,055,309, Cl. 426-34.000

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Kumagai, Shigeru: *See—*
Nakai, Hiroto; Iwahashi, Hiroshi; Asano, Masamichi; and Kumagai, Shigeru, 5,055,706, Cl. 307-265.000.

Kumamoto, Toshio: *See—*
Kimura, Masatoshi; and Kumamoto, Toshio, 5,055,820, Cl. 338-32.00H

Kumar, R.: *See—*
Bhattacharjee, H. R.; Khanna, Y. P.; Kumar, R.; and Belles, J. J., Jr., 5,055,509, Cl. 524-136.000.

Kunert, Peter: *See—*
Knoller, Anton; Kunert, Peter; and Soehnlein, Dieter, 5,054,973, Cl. 408-226.000.

Kunimune, Kouichi: *See—*
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Kunishi, Shinsuke: *See—*
Yamada, Yuuji; Kunishi, Shinsuke; and Mizuno, Yoshiyuki, 5,055,073, Cl. 439-892.000.

Kuno, Toshitaka; and Koide, Mitsuo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Apparatus for effecting coordinated position/force control for a manipulator. 5,056,038, Cl. 364-513.000.

Kuno, Toshitaka: *See—*
Nakano, Masaru; Tanaka, Minoru; Ikeda, Toshiaki; and Kuno, Toshitaka, 5,056,031, Cl. 364-461.000.

Kurahashi, Akira: *See—*
Shimada, Toshiyuki; Aoki, Kazuhiro; Kurahashi, Akira; and Kikuchi, Noboru, 5,056,116, Cl. 375-94.000.

Kurahashi, Yoshiyuki; and Yamamoto, Masanori, to Minolta Camera Kabushiki Kaisha. Image processing apparatus. 5,055,946, Cl. 358-498.000.

Kuraray Company, Ltd.: *See—*
Okada, Koichi; and Omura, Ikuo, 5,055,497, Cl. 523-116.000.

Kurashima, Shigemi: *See—*
Wakatsuki, Noboru; Kurashima, Shigemi; Shimizu, Nobuyoshi; Endoh, Michiko; and Tanaka, Akira, 5,055,786, Cl. 324-252.000.

Kuroda, Ichiro: *See—*
Ohde, Yuko; Tanaka, Hideo; and Kuroda, Ichiro, 5,056,004, Cl. 264-200.000.

Kuroda, Michio: *See—*
Ishibashi, Yoji; Inoue, Hiroshi; Ohmori, Takashi; Hashimoto, Takashi; Kato, Fumio; Akatsu, Shigeyuki; Arai, Akira; Kuroda, Michio; and Hisano, Katsukuni, 5,054,280, Cl. 60-39.060.

Kurotaki, Ayako: *See—*
Naijoh, Shuichi; Inoue, Chozo; Kurotaki, Ayako; and Nagai, Kimie, 5,055,225, Cl. 252-299.650.

Kurumada, Masakazu: *See—*
Morikawa, Kiyoshi; Kurumada, Masakazu; Kobayashi, Kazuo; Yamada, Yoshinori; and Sugihara, Masanori, 5,056,077, Cl. 369-77.100.

Kusaka, Shigeru: *See—*
Hayashi, Shigeki; and Kusaka, Shigeru, 5,054,304, Cl. 72-131.000.

Kushi, Naoto, to Toyota Jidosha Kabushiki Kaisha. Control apparatus for internal combustion. 5,054,451, Cl. 123-478.000.

Kuwabara, Hiroshi; and Kitazawa, Shooji, to Oki Electric Industry Co., Ltd. Method of operating an EPROM including delaying and boosting steps. 5,056,062, Cl. 365-189.110.

KV Pharmaceutical Company: *See—*
Riley, Thomas C., Jr., 5,055,303, Cl. 424-436.000.

Kvalheim, Andrew M. Convertible chair. 5,054,857, Cl. 297-423.000.

Kwoh, Deborah Y.; and Gingeras, Thomas R., to Salk Institute Biotechnology/Industrial Associates, Inc. Prenatal sex determination of bovine cells using male-specific oligonucleotides. 5,055,393, Cl 435-6.000.

Kyosan Denki Kabushiki Kaisha: *See—*
Ito, Koichi; and Ogaki, Kitio, 5,055,187, Cl. 210-172.000.

Labinal Components and Systems, Inc.: *See—*
Plegge, Richard W.; Walsh, Charles T.; Peters, Rocco J.; and Sellers, Gregory J., 5,055,070, Cl. 439-609.000.

Laboratory Equipment, Corp.: *See—*
Fry, Francis J.; and Sanghvi, Narendra T., 5,054,470, Cl. 128-24 0AA.

Laerdal Medical: *See—*
Johnsen, Malvin, 5,055,052, Cl. 434-265.000.

Lagache, Philippe: *See—*
Durinck, Rene; Lagache, Philippe; and Cordonnier, Alain, 5,054,701, Cl. 241-167.000.

Lagrange, Alain: *See—*
Forestier, Serge; Lagrange, Alain; Lang, Gerard; and Shroot, Braham, 5,055,452, Cl. 514-25.000

Lagsdin, Andry. Stabilizer pad for earth-moving apparatus. 5,054,812, Cl. 280-764.100.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Jalby, Pierre; Claverie, Pierre; Rotman, Frederic; Kimura, Masao; Friedt, Jean-Marie; and Arai, Juichi, 5,055,246, Cl. 264-81.000
Mettes, Jacques; Kimura, Takako; and Schack, Michael, 5,054,309, Cl. 73-1.00G.
Weisang, Francois; and Charlery-Adele, Pierre, 5,054,749, Cl. 266-220.000.

Lakin, Gerald C.: *See—*
Hager, Thomas R.; Lakin, Gerald C.; and Rogers, John T., 5,054,715, Cl. 244-54.000.

Lalande, Phillip T.; and Acker, W. Keith, to Technical Concepts, Inc. Tension-actuated mechanical detonating device useful for detonating downhole explosive. 5,054,555, Cl. 166-298.000.

Lam, Dominic M-K; and Kelleher, Peter J., to Baylor College of Medicine. Compositions for preventing secondary cataracts. 5,055,291, Cl. 424-85.910.

Lamb, Bruce J.; and Stepaniuk, Nickolas J., to Mallinckrodt Specialty Chemicals Company. Continuous preparation of aromatic diazonium fluoride salts from corresponding aromatic amines. 5,055,563, Cl. 534-565.000.

Lambert, Craig N. V*p*-corrected offset voltage trim. 5,055,902, Cl. 357-41.000

Lamicela, Wayne N.: *See—*
Kim, Chang K.; Lamicela, Wayne N.; and Allen, David L., 5,055,586, Cl. 548-262.400.

Lamm, Bo R.: *See—*
Almgren, Olle K. S.; Andersson, Kjell H.; Duker, Goran B. D.; Lamm, Bo R.; and Strandlund, Gert C., 5,055,490, Cl. 514-524.000.

Lamnabhi, Moustanir, to U.S. Philips Corporation. Arrangement for estimating motion in television pictures. 5,055,925, Cl. 358-105.000.

Lamont, Robert G.: *See—*
Hill, Kenneth O.; Johnson, Derwyn C.; and Lamont, Robert G., 5,054,874, Cl. 385-28.000.

Lamper, David; and Grettenberg, Thomas L., to Electronics & Space Corporation. Waveform generator. 5,055,850, Cl. 342-201.000.

Landmark Graphics Corporation: *See—*
Howard, Robert E., 5,056,066, Cl. 367-72.000.

Landry, Bernard: *See—*
Lesquir, Dominique; and Landry, Bernard, 5,054,820, Cl 285-197.000.

Landsmann, Gerhard; and Soehner, Gerhard, to Robert Bosch GmbH. Arrangement for improving electromagnetic compatability of electrical device. 5,055,635, Cl. 174-36.000

Lane, Charles: *See—*
Marten, Lewis H.; and Lane, Charles, 5,054,483, Cl. 128-207.140.

Lane, Kenneth R.: *See—*
Morris, Carl A., Jr.; and Lane, Kenneth R., 5,055,091, Cl. 414-621.000

Lang, Gerard: *See—*
Forestier, Serge; Lagrange, Alain; Lang, Gerard; and Shroot, Braham, 5,055,452, Cl. 514-25.000

Lange, Steven R., to Wyko Corporation. Alignment system and method for infrared interferometer. 5,055,695, Cl. 250-459.100

Langenberg, Werner; and Bohle, Werner, to Gewerkschaft Eisenhutte Westfalia GmbH. Driving systems for driving endless chains or the like in mining apparatus. 5,055,092, Cl. 475-2.000

Langley, Lawrence W.; and Moses, Hal L. Circular airplane. 5,054,713, Cl. 244-12.200.

Langsam, Michael: *See—*
Burgoyne, William F., Jr.; and Langsam, Michael, 5,055,616, Cl. 564-322.000.

Langton, Douglas: *See—*
Phillips, Gregory; and Langton, Douglas, 5,054,764, Cl. 271-189.000.

Lantz, Andre; and Cheminal, Bernard, to Atochem. Synthesis of 1,1-dichloro-1,2,2,2-tetrafluoroethane. 5,055,624, Cl. 570-167.000

Lapatovich, Walter P.: *See—*
Piejak, Robert B.; and Lapatovich, Walter P., 5,055,772, Cl 324-122.000.

Lapointe, Jacques; and Cousineau, Pierre. Decryption device. 5,056,142, Cl. 380-54.000.

Lara, Edwardo D.: *See—*
Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., 5,055,862, Cl. 346-154.000.

La Rovere, Ruggiero, to Rheem Empreendimentos Industriais E Comerciais S/A. Can end for a tubular container. 5,054,637, Cl. 220-660.000.

Larsen, James W.: *See—*
Hayes, James K.; and Larsen, James W., 5,055,190, Cl. 210-222.000.

Larsen, Steinar A., to Christie Electric Corp. Lamp housing for motion picture film projector. 5,054,909, Cl. 352-198.000.

Larson, Eric G.; and Kirk, Alan R., to Minnesota Mining and Manufacturing Company. Abrasive product having binder comprising an aminoplast resin. 5,055,113, Cl. 51-298.000
Larson, Marlow W., to Browning. Compound archery bow. 5,054,462, Cl. 124-25.600
Lasner, Jeffrey I. Fluid container with pump and attached dosage dispenser. 5,054,656, Cl. 222-158.000
LaSota, Laurence. Linear motor. 5,055,725, Cl. 310-14.000
Lasy of North America Ltd.: *See*—
Nayak, Devdas U., 5,055,081, Cl. 446-75.000
Laties, Alan M.; and Stone, Richard A., to University of Pennsylvania, Trustees of the. Neuropeptide control of ocular growth. 5,055,302, Cl. 424-427.000
Latos, Thomas S.; and Wingate, Kevin L., to Sundstrand Corporation Gate drive for insulated gate device. 5,055,722, Cl. 307-570.000.
Lau, Arthur L. Y.; and Pendergrass, James H., to Miles, Inc. Composition and method of assaying aqueous liquids for specific gravity 5,055,407, Cl. 436-2.000
Lau, Chung M.: *See*—
Hu, Feng-Kang; Lau, Chung M.; Yang, Kevin; Zhu, Joshua S.; Shen, Peter S.; and Jednacz, Thomas C., 5,055,746, Cl 315-291.000
Lau, Philip T. S.: *See*—
Slusarek, Wojciech; Buchanan, John M.; and Lau, Philip T. S., 5,055,385, Cl. 430-544.000.
Laubscher, Hanspeter, to Zellweger Uster AG. Device for monitoring and/or measuring parameters of a running, thread-like or wire-like test material and method for operating the device. 5,054,317, Cl 73-160.000
Laurel Bank Machines Co., Ltd.: *See*—
Chiba, Teruhisa, 5,055,834, Cl. 340-825.340
Law, Kock-Yee, to Xerox Corporation. Imaging members with bichromophoric bisazo perinone photoconductive materials. 5,055,367, Cl. 430-59.000
Lawless, Michael W.: *See*—
Natwick, Vernon R.; and Lawless, Michael W., 5,055,001, Cl. 417-63.000
Lawrenz, Dirk; Schupp, Eberhard; and Schwerzel, Thomas. Binder for cathodic electrocoating. 5,055,168, Cl. 204-181.700
Lawson, David F., to Bridgestone/Firestone, Inc. Urethane-rubber adhesives based on azoester prepolymers and derivatives thereof. 5,055,545, Cl. 528-61.000.
Lawson, John A.: *See*—
Lindenfelser, Jerome W.; and Lawson, John A., 5,055,863, Cl. 354-75.000
Lawter, James R.: *See*—
Harris, Bruce J.; Lawter, James R.; and Ritter, Lawrence, 5,055,456, Cl. 514-57.000.
Lawyer, Carl H.: *See*—
Wagle, Sukahakar S.; Tanaka, S. Ken; Steinbach, Thomas; Lawyer, Carl H.; and Hermann, William J., Jr., 5,055,296, Cl. 424-553.000.
Lazzaro, Gerard M.; and Huey, Raymond J., to U.S. Medical Corporation. Oscillometric blood pressure device. 5,054,494, Cl. 128-677.000
Le, Hanh T., to Conoco Inc. Oil compositions containing alkyl mercaptan derivatives of copolymers of an alpha olefin or an alkyl vinyl ether and an unsaturated alpha, beta-dicarboxylic compound 5,055,212, Cl. 252-48.600.
Leake, Craig H.; Tsai, John J.; and Meier, Eric A., to National Starch and Chemical Investment Holding Corporation. Water resistant alkaline corrugating adhesive composition and paperboard product produced therewith. 5,055,503, Cl. 524-30.000.
Leatham, Gary F.: *See*—
Blanchette, Robert A.; Leatham, Gary F.; Attridge, Michael; Akhtar, Masood; and Myers, Gary C., 5,055,159, Cl. 162-72.000
Lebarbier, Armand; and Deschamps, Michel, to Caoutchouc Manufacture et Plastiques S.A. Proces and apparatus for forming extremities of tubes. 5,055,251, Cl. 264-313.000
Lechuga, Gabriel V. Heat protective cover for hot water pipes. 5,055,334, Cl. 428-99.000.
Le Corre, Noel, to Alcatel Cit. System for transmitting HDLC frames on a PCM type link using a single HDLC circuit and a transposition buffer memory. 5,056,084, Cl. 370-99.000.
Leder, Jonathan, to Union Carbide Chemicals and Plastics Technology Corporation. Antimicrobial composition and method of use in oil well flooding. 5,055,493, Cl. 514-727.000
Lee, Anseob; and Son, Kyungcheon, to Samsung Electron Devices Co., Ltd. Manufacturing method of oxide cathode. 5,055,078, Cl 445-51.000.
Lee, Fu M.: *See*—
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Lee, Jong S.; Maier, Larry K.; and Rimai, Donald S., to Eastman Kodak Company. Receiver sheet for toner images. 5,055,371, Cl 430-126.000.
Lee, Kil J. Rotating clothes hanger and artificial Christmas tree. 5,054,622, Cl. 211-2.000.
Lee, Linda O.: *See*—
Frank, Steven J.; Burkhardt, Henry, III; Lee, Linda O.; Goodman, Nathan; Margulies, Benson I.; and Weber, Frederick D., 5,055,999, Cl. 364-200.000.
Lee, Mao-Mong: *See*—
Kao, Hsin-Ching; Lee, Mao-Mong; Chiang, Chih-Cheng; Lin, Jen-Lien; and Wu, Ting-Kai, 5,055,505, Cl. 524-83.000.
Lee, Mark C.; Schilling, Christopher H.; and Wang, Taylor G., to United States of America, National Aeronautics and Space Administration. Method and apparatus for producing microshells. 5,055,240, Cl. 264-5.000
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Lee, Shan. Lighter device. 5,055,033, Cl. 431-255.000.
Leeds, Harry D.; and Thompson, Raymond F., to Arkansas Technologies, Inc. Apparatus for stacking unfired brick. 5,054,994, Cl 414-793.400
Leeds and Micallef: *See*—
Micallef, Lewis A., 5,054,659, Cl. 222-321.000
Le Galguen, Maurice: *See*—
Hehlen, Robert, deceased; Hehlen, Philippe, legal representative; Hehlen, Bernard, legal representative; Le Galguen, Maurice; and Mourey, Bruno, 5,055,833, Cl. 340-784.000
Lehmann, Peter: *See*—
Glaus, Heinrich; Lehmann, Peter; Joehr, Hans; and Freiburghaus, Rene , 5,054,614, Cl. 206-343.000.
Lehnhoff, Richard N.: *See*—
Disser, Robert J.; and Lehnhoff, Richard N., 5,055,762, Cl 318-811.000
Lehrieder, Gunther: *See*—
Bar, Klaus; and Lehrieder, Gunther, 5,054,712, Cl. 244-3.220
Lehto, John M., to Northern States Power Company. Cogeneration process for production of energy and iron materials. 5,055,131, Cl. 75-499.000
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Rucki, William M.; and Leidy, Jeanne M., 5,056,034, Cl. 364-510.000
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Lesquir, Dominique; and Landry, Bernard, to IPL, Inc. Connector for sap collecting system. 5,054,820, Cl. 285-197.000.
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Thioulouse, Pascal, 5,055,739, Cl. 313-507.000.
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Lii, Jong-Yih. Wind-shield blind system. 5,054,533, Cl. 160-302.000.
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Bryan, Raymond G., 5,054,919, Cl. 356-246.000.
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Dobkin, Robert C., 5,055,711, Cl. 307-362.000.
Nelson, Carl T., 5,055,767, Cl. 323-285.000.
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Furlenmeier, Andre; Gotschi, Erwin; Hebeisen, Paul; Hofheinz, Werner; and Link, Helmut, 5,055,572, Cl. 514-206.000.
Link, Joseph; Bolan, Michael L.; Brunk, Allen H., Jr.; and Schneikart, Paul E., to SGS-Thomson Microelectronics, Inc. Integrated circuit package with battery housing. 5,055,704, Cl. 307-66.000.
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Stillwagon, Ross I.; Fischbach, Fernando; and Linscott, Jon F., 5,054,615, Cl. 206-373.000.
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Carey, James R.; Rowden, David L.; and Champagne, Patrick J., 5,056,078, Cl. 369-77.200.
Chung, Chi H., 5,056,079, Cl. 369-100.000.
Littlefield, David E., to Texas Instruments Incorporated. Methods and apparatus for electronically limiting broadcast communication 5,056,139, Cl. 380-20.000.
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Belt, Roger F.; and Ings, John B., 5,055,445, Cl. 505-1.000.
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Lloyd, William A.: *See*—
Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., 5,055,862, Cl. 346-154.000.
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Burrows, James L., 5,056,014, Cl. 364-200.000.
Loechel, Stephen J.; and Henderson, Kerry W., to Tango Proprietary Limited. Food handling implement. 5,054,835, Cl. 294-99.200.
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Logan, Joseph S.; Ruckel, Raymond R.; Tompkins, Robert E.; and Westerfield, Robert P., Jr., to International Business Machines Corporation. Electrostatic chuck having tapered electrodes. 5,055,964, Cl. 361-234.000.
Logan, Kent E., to Copeland Corporation. Suction baffle for refrigeration compressor. 5,055,010, Cl. 417-410.000.
Logstrup, Jorgen, to A/S Logstrup-Steel. Current connection member for large amperages, especially to be used in metal-enclosed electric systems. 5,055,059, Cl. 439-214.000.
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Davies, Gareth M.; Strawson, Colin J.; and Lohmann, Jean J., 5,055,462, Cl. 514-202.000.
Lohnherr, Ludger, to Krupp Polysius AG. Separator. 5,055,182, Cl. 209-148.000.
Lohrmann, Gerhard; and Setz, Michael, to Mannesmann Aktiengesellschaft. Apparatus for feeding individual sheets in office machines 5,054,759, Cl. 271-22.000.
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Long, John J.; Krauss, Susan R.; and Cribbs, Thomas P., III. Bleach-fix regeneration kit and use thereof in photographic processing 5,055,382, Cl. 430-400.000.
Long Reach Holdings, Inc.: *See*—
Morris, Carl A., Jr.; and Lane, Kenneth R., 5,055,091, Cl. 414-621.000.
Long, Stephen E.; and Poli, Albert A., to Mine Safety Appliances Company. Gas analyzer with diffusion filter. 5,054,328, Cl. 73-864.810.
Looper, Timothy J.; and Sistare, James R., to Ryobi Motor Products Corp. Motor assembly with combined armature shaft bearing support and brush tube holder. 5,055,728, Cl. 310-91.000.
Loral Fairchild Corporation: *See*—
Sayag, Michel, 5,055,667, Cl. 250-208.100.
Lord Corporation: *See*—
Carlson, J. David, 5,054,593, Cl. 192-21.500.
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Forestier, Serge; Lagrange, Alain; Lang, Gerard; and Shroot, Braham, 5,055,452, Cl. 514-25.000.
Morane, Bruno, 5,054,651, Cl. 222-1.000.
Zabotto, Arlette; Griat, Jacqueline; Handjani, Rose-Marie J.; Vanlerberghe, Guy G.; and Ribier, Alain J., 5,055,228, Cl. 252-312.000.
Lorenzo, Richard: *See*—
Scheel, Fredrick S.; Bailey, Byron; and Lorenzo, Richard, 5,054,385, Cl. 99-453.000.
Losch, Kurt; and Florjancic, Matjaz, to Alcatel N.V. Electro-optical multiple connection arrangement. 5,054,870, Cl. 385-14.000.
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Loukeinen, Veikko: *See*—
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Miller, James E.; Lowe, Byron L.; Finn, Everett N.; and Milliner, Kenneth M., 5,054,259, Cl. 53-157.000
Lowrie, Harman S.: *See*—
Baran, John S.; and Lowrie, Harman S., 5,055,613, Cl. 562-582.000.
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LRS, Inc.: *See*—
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LSI Logic Corporation: *See*—
Pasch, Nicholas F., 5,055,871, Cl. 355-53.000.

Lubisch, Wilfried; and Von Philipsborn, Gerda, to BASF Aktiengesellschaft. P-hydroxy phenone derivatives and drugs containing these. 5,055,475, Cl. 514-326.000.

Luchaco, David G.: *See—*
Jurell, Scott R.; Motto, Eric R.; Windows, Gordon E., Jr.; Luchaco, David G.; Capewell, Dennis M.; Hausman, Doanld F.; and Spira, Joel S., 5,055,742, Cl. 315-94.000

Ludvik, Charles N., to Imperial Chemical Industries plc. Preparation of trisubstituted benzoic acid precursors. 5,055,605, Cl. 560-11.000

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Lund, Van Metre. Communication system. 5,056,108, Cl. 375-1.000

Lundgren, Alvar; and Lundgren, Anders. Arrangement for the connection of tubes. 5,054,951, Cl. 403-293.000.

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Lundgren, Dan. Scalpel. 5,055,106, Cl. 606-167.000.

Luoma, Eugene H. Highway cone dispenser and collector. 5,054,648, Cl. 221-185.000

Lusk, Dennis S.: *See—*
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Lutron Electronics Co., Inc.: *See—*
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Lutz, Rolf; Reinalter, Franz; and Fiechtner, Heinz, to Zahnradfabrik Friedrichshafen AG. Locking synchronizing means for transmission shifts. 5,054,595, Cl. 192-53.00F.

Lyman, Harrison F., Jr.: *See—*
Carpenter, Robert K.; and Lyman, Harrison F., Jr., 5,055,184, Cl. 210-109.000.

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Hogan, Dennis L.; Lynch, John L.; and Charlot, Lincoln H., Jr., 5,054,172, Cl. 24-704.100.

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Alberghini, Alfred C.; Brunson, David A.; and Lynn, Stephen R., 5,054,632, Cl. 215-1.00C.

Lyons, Robin S.: *See—*
Young, Michael E.; Edwards, David M.; and Lyons, Robin S., 5,054,617, Cl. 206-509.000.

Lyons, William G., Jr., to Brimfield Precision, Inc. Indirectly illuminating ophthalmological speculum. 5,054,906, Cl. 351-205.000

M & C Schiffer GmbH: *See—*
Schiffer, Carl; and Meyer, Berthold, 5,054,154, Cl. 15-167.100.

Ma, Bao-Min: *See—*
Narasimhan, Kalathur S. V. L.; and Ma, Bao-Min, 5,055,146, Cl. 148-302.000

Maa, Peter S.; and Gorbaty, Martin L., to Exxon Research and Engineering Company. Hydropyrolysis-gasification of carbonaceous material. 5,055,181, Cl. 208-421.000

Mabuchi, Minoru: *See—*
Sotani, Junji; Okuyama, Tetsuo; Seo, Susumu; Ohi, Tohru; Mori, Naoki; and Mabuchi, Minoru, 5,054,296, Cl. 62-259.100.

MacCracken, Mark M., to Calmac Manufacturing Corporation. Ice-cap prevention barrier for an ice bank. 5,054,298, Cl. 62-434.000.

MacElwee, Donald B.: *See—*
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Machida, Shirou: *See—*
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Macholdt, Hans-Tobias: *See—*
Gitzel, Jorg; Macholdt, Hans-Tobias; and Knaup, Wolfgang, 5,055,619, Cl. 568-2.000.

Machura, Bernard C.; and Mysiak, Eugene J., to Phoenix Company of Chicago, Inc. Stamped and formed coaxial connectors having insert-molded center conductors. 5,055,068, Cl. 439-581.000

MacKelvie, John S. Brushless motor control system. 5,055,751, Cl 318-254.000

MacMillan Bloedel, Limited: *See—*
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MacPhee, John, to Baldwin Technology Corp. Internal worm drive and oscillating roller assembly for use in inking systems for printing presses 5,054,393, Cl. 101-348.000.

Maeda, Akira: *See—*
Nagasaka, Yasuhiro; Shigenobu, Hiromichi; Shiraki, Kazuyuki; Iyoda, Motomi; and Maeda, Akira, 5,055,058, Cl. 439-188.000.

Maeda, Ayako: *See—*
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Maeda, Hirotoshi; and Kunimune, Kouichi, to Chisso Corporation. Process for preparing photosensitive heat-resistant polymer 5,055,549, Cl. 528-310.000.

Maeda, Tsuyoshi: *See—*
Kobayashi, Makoto; Ouchi, Kiyoshi; Nishimori, Shinji; Maeda, Tsuyoshi; and Miyake, Yoshio, 5,055,006, Cl. 417-366.000

Maeda, Yasutaka; Tanaka, Natsuko; Nagayama, Katsuhiro; and Nishimura, Hideyuki, to Sharp Kabushiki Kaisha. Copying apparatus with moveable screen and method. 5,055,877, Cl. 355-214.000

Maempel, Lothar: *See—*
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Magenta Corporation: *See—*
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Magill, Peter D.; and Reichmann, Kenneth C., to AT&T Bell Laboratories. Mode partition screening apparatus. 5,056,101, Cl. 372-32.000.

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Maguire, Lowell L. Bicycle with belt drive. 5,054,801, Cl. 280-261.000.

Mahil, Mahinder S.; and Cruden, John M., to Harlow Chemical Company Limited. Surface coating compositions. 5,055,504, Cl. 524-48.000.

Mai, Dieter, to Veit GmbH & Co. Steam ironing device having rotatable pairs of ironing bars, a slide box, and a steam iron for ironing garments mounted on the bars. 5,054,218, Cl. 38-1.00B.

Maier, Larry K.: *See—*
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Maier-Laxhuber, Peter; and Kaubek, Fritz, to Zeo-Tech (Zeolith-Technologie GmbH). Sorption container for solid sorption medium. 5,054,544, Cl. 165-104.120.

Mains, Harold E.; and Piepmeyer, Joseph A., to Fabritec International Corporation. Unit-dose drycleaning product and method. 5,055,215, Cl. 252-90.000.

Majumdar, Gourab; and Yoshida, Shigekazu, to Mitsubishi Denki Kabushiki Kaisha. Drive circuit for IGBT device. 5,055,721, Cl. 307-570.000

Maki-Rahkola, Jari; Kononen, Juhani; and Surakka, Jorma, to Insinooritoimisto Pesmel Oy. Method and apparatus for wrapping a plastic film around a load. 5,054,263, Cl. 53-399.000.

Makimoto, Mitsuo: *See—*
Sagawa, Morikazu; Endo, Haruyoshi; Makimoto, Mitsuo; and Fukushima, Fumio, 5,055,809, Cl. 333-219.000

Makino, Tadashi; and Doi, Koji, to Senju Pharmaceutical Co., Ltd. Stabilized pharmaceutical composition and method of producing same. 5,055,304, Cl. 424-465.000.

Makita Electric Wroks, Ltd.: *See—*
Fushiya, Fusao; Ito, Katuyasu; and Niinomi, Mitsuyoshi, 5,054,352, Cl. 83-468.300.

Malec, Michael C.: *See—*
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Maleyko, John R. K. Lighted ball. 5,054,778, Cl. 273-58.00G.

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Man Design Co., Ltd.: *See—*
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Man Gutehoffnungshutte Aktiengesellschaft: *See—*
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MAN Nutzfahrzeuge AG: *See—*
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Manabe, Osamu; Fujita, Shigeo; Iwata, Shizuo; and Kamiyama, Morihiro, to Asahi Chemical Co., Ltd. Indolenine derivative. 5,055,589, Cl. 548-427.000

Mandich, Steve: *See—*
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Maner, Asim: *See—*
Bier, Wilhelm; Maner, Asim; and Schubert, Klaus, 5,055,163, Cl. 204-11.000

Mangin, Robert; Muller, Jean-Pierre; and Weil, Francois, to Vachette. Antipanic lock and housing for such a lock. 5,054,825, Cl. 292-92.000.

Maninfior, Herbert E., to Herbert Maninfior Design/Engineering. Wall panel construction and connection system. 5,054,255, Cl. 52-239.000

Mannesmann AG: *See—*
Ambrosi, Luciano, 5,056,104, Cl. 373-100.000.
Keutgen, Franz; Willems, Erich; and Wagner, Siegbert, 5,054,539, Cl. 164-457.000

Mannesmann Aktiengesellschaft: *See—*
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Manning, Maurice; and Sawyer, Wilbur H., to Medical College of Ohio; and Columbia University, Trustees of, a part interest. Linear derivatives of arginine vasopressin antagonists. 5,055,448, Cl. 514-16.000.

Manning, Monte, to Micron Technology, Inc. Method for forming a multilevel interconnect structure on a semiconductor wafer. 5,055,426, Cl. 437-195.000.

Manoogian, Ara K.; and Rutberg, J. Gary, to Electro-Mechanical Imagineering, Inc. Infrared radiator. 5,055,697, Cl. 250-504.00R.

Mansfield, Michael R., to Outer Sports, Inc. Computer-interactive game machine with swing-action. 5,054,771, Cl. 272-73.000.

Mantoku, Hotishi: *See—*
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Manzano, Rafael; and Chaviel, Anderson, to Intevep, S.A. Floating barriers for containing oil spills. 5,054,960, Cl. 405-72.000.

Marchione, Joseph H., to Atwood Industries, Inc. Door on-door off vehicle hinge with hold-open mechanism. 5,054,165, Cl. 16-270.000

Marcott, Tony L., to Caterpillar Inc. End of fill detector for a hydraulic clutch. 5,054,599, Cl. 192-85.00R.

Margolis, H. Jay, to Infinity Photo-Optical Corporation. Continuously focusable microscope incorporating an afocal variator optical system. 5,054,896, Cl. 359-379.000.

Margotteau, Jacques, to Societe de Conseils et d'Etudes de Emballages - S.C.E.E. Capsule with a drawer and a sliding cursor. 5,054,634, Cl. 215-322.000.

Margulies, Benson I.: *See—*
Frank, Steven J.; Burkhardt, Henry, III; Lee, Linda O.; Goodman, Nathan; Margulies, Benson I.; and Weber, Frederick D., 5,055,999, Cl. 364-200.000.

Marie, Gilbert: *See—*
Germanaud, Laurent; Truong-Dinh, Nguyen; Marie, Gilbert; and Turello, Patrick, 5,055,213, Cl. 252-51.50A.

Marine Environmental Research, Inc.: *See—*
Riffe, William J.; Carter, Jack D.; and , 5,055,165, Cl. 204-147.000.

Marino, John V., II.: *See—*
Marino, Vincent J.; and Marino, John V., II., 5,055,156, Cl. 156-499.000.

Marino, Richard L. Water heater tank cleaning kit. 5,054,160, Cl. 15-401.000.

Marino, Vincent J.; and Marino, John V., II., to Flex Par K Corp. Flooring panel manufacture. 5,055,156, Cl. 156-499.000.

Maritano, Mauro: *See—*
Fiore, Leonardo; Motroni, Giuseppe; and Maritano, Mauro, 5,055,547, Cl. 528-249.000.

Markovich, Voya; Mehta, Ashit; Park, Jae M.; Skarvinko, Eugene; and Wang, David W., to International Business Machines Corporation. Fluorinated polymeric composition, fabrication thereof and use thereof. 5,055,342, Cl. 428-137.000.

Marks, Paul A.; Rifkind, Richard A.; and Breslow, Ronald, to Sloan-Kettering Institute for Cancer Research. Novel potent inducers of thermal differentiation and method of use thereof. 5,055,608, Cl 560-169.000.

Marposs Societa' Per Azioni: *See—*
Danielli, Franco, 5,054,205, Cl. 33-555.100.

Marrello, Hugo. Tennis racquet. 5,054,779, Cl. 273-73.00D.

Marshall, D. Ray, to Race Spec, Inc. Dimension checking apparatus for vehicles. 5,054,207, Cl. 33-600.000

Marshall Industries Limited: *See—*
Marshall, John J., 5,054,415, Cl. 114-293.000.

Marshall, John J., to Marshall Industries Limited. Mooring/support system for marine structures. 5,054,415, Cl. 114-293.000.

Marshall, Kenneth L.: *See—*
Jacobs, Stephen D.; Marshall, Kenneth L.; and Cerqua, Kathleen A., 5,054,888, Cl. 359-76.000

Marten, Andrew W.: *See—*
Hoban, Fay A.; Duff, Harold S.; and Marten, Andrew W., 5,054,868, Cl. 385-99.000.

Marten, Lewis H.; and Lane, Charles, to Hood Laboratories. Tracheal cannulas and stents. 5,054,483, Cl. 128-207.140.

Martin, Anne: *See—*
de Fraine, Paul J.; and Martin, Anne, 5,055,471, Cl. 514-255.000.

Martin Industries, Inc.: *See—*
Moon, W. Larry; and Hand, Paul N., 5,054,468, Cl. 126-512.000.

Martin, Peter G., to Easterm Electronics Manufacturing Corp. Airborne alcohol sensor. 5,055,268, Cl. 422-84.000

Martin, Samuel W.; Miller, Carl A.; Pickering, William V., Jr.; Supron, Steven A.; Murcko, David, deceased; and by Murcko, Linda, administrator. Mechanism and method for accumulating and folding sheets. 5,054,757, Cl. 270-45.000.

Maruta, Keiji; and Nishikata, Masanobu, to Sony Corporation. Optical disk player with disk size and pickup location responsive skew servo control. 5,056,075, Cl. 369-44.290

Maschinenfabrik J. Dieffenbacher GmbH & Co.: *See—*
Bielfeldt, Friedrich B., 5,054,388, Cl. 100-154.000.

Maschinenfabrik Rieter, AG: *See—*
Demuth, Robert; Fritzsche, Peter; Waeber, Rene; Staheli, Paul; and Faas, Jurg, 5,054,166, Cl. 19-113.000.

Masco Corporatiopn of Indiana: *See—*
Pickerrell, Daniel A.; Schrock, Donald C.; and Inch, John, 5,054,133, Cl. 4-428.000.

Mase, Yasukazu; Abe, Masahiro; and Yamamoto, Tomie, to Kabushiki Kaisha Toshiba. Semiconductor device having a composite insulating interlayer. 5,055,906, Cl. 357-54.000.

Mashiko, Kouichi: *See—*
Sakaya, Masuji; Okiai, Ryuichi; Mochizuki, Masataka; and Mashiko, Kouichi, 5,054,196, Cl. 29-890.032.

Masonic Medical Research Laboratory: *See—*
Massie, Harold R.; and Williams, Trevor R., 5,055,492, Cl. 514-553.000.

Massa, Ted R.: *See—*
Erickson, Robert A.; and Massa, Ted R., 5,054,344, Cl. 82-160.000.

Massachusetts Institute of Technology: *See—*
Weaver, James C.; Williams, Gregory B.; and Bliss, Jonathan G., 5,055,390, Cl. 435-5.000.

Massey-Ferguson Services N.V.: *See—*
Bennett, John S., 5,054,573, Cl. 180-244.000.

Massie, Harold R.; and Williams, Trevor R., to Masonic Medical Research Laboratory. Method for affecting reproductive cycle of insects. 5,055,492, Cl. 514-553.000.

Mastrantonis, Nicholas: *See—*
Phaal, Cornelius; and Mastrantonis, Nicholas, 5,054,246, Cl. 51-204.000.

Masuda, Tatsuo: *See—*
Ishiwatari, Makoto; Handa, Akio; Kobayashi, Takeshi; Shibukawa, Takerou; Murata, Yutaka; and Masuda, Tatsuo, 5,054,842, Cl. 296-191.000.

Matcor, Inc.: *See—*
Schutt, William R., 5,055,166, Cl. 204-147.000.

Mate Punch & Die Co.: *See—*
Johnson, Gary E.; Schneider, John T.; and Sundquist, Nils E., 5,054,347, Cl. 83-140.000.

Matkan, Josef; and Alston, John T., to Stork Colorproofing B.V. Electrostatic proofing of negative color separations. 5,055,365, Cl. 430-42.000.

Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, to Nitrokemia Ipartelepek. Antidoted herbicide compositions and antidote compositions. 5,055,125, Cl. 71-88.000.

Matson, Michael S.: *See—*
Brown, Ronald E.; Lee, Fu M.; and Matson, Michael S., 5,055,162, Cl. 203-56.000.

Matsubara, Akira; Sakai, Kazuya; Tanada, Hideki; and Komatsu, Hironori, to Mitsui Toatsu Chemicals, Incorporated. Preparation process of aminoketones. 5,055,585, Cl. 548-248.000.

Matsubara, Mamoru: *See—*
Sakakibara, Shinichi; and Matsubara, Mamoru, 5,055,781, Cl. 324-207.210.

Matsubara, Toshiyuki: *See—*
Furuta, Shigeru; Takahira, Kenichi; Yamaguchi, Atsuo; Inoue, Takesi; Matsubara, Toshiyuki; and Fujioka, Shuzo, 5,056,089, Cl. 371-3.000.

Matsuda, Hideaki: *See—*
Ueda, Minoru; Matsuda, Hideaki; Hara, Masanori; and Murakami, Koichi, 5,055,247, Cl. 264-109.000.

Matsui, Fumio: *See—*
Murata, Yasushi; and Matsui, Fumio, 5,055,737, Cl. 313-524.000.

Matsui, Norio; Sanjo, Isao; and Chiba, Shuuichi, to Tokyo-Buhin Kogyo Co., Ltd. Eddy-current brake. 5,054,587, Cl. 188-267.000.

Matsui, Susumu: *See—*
Hirata, Tetsuhiko; Matsui, Susumu; Terada, Matsuaki; Yokoyama, Tatsuya; and Kouyama, Sinichi, 5,056,058, Cl. 364-900.000.

Matsumoto, Fumio: *See—*
Suzuki, Kenji; and Matsumoto, Fumio, 5,055,941, Cl. 358-450.000.

Matsumoto, Takeshi: *See—*
Usui, Masayoshi; and Matsumoto, Takeshi, 5,054,185, Cl. 29-455.100.

Matsumoto, Tokikazu: *See—*
Koga, Fumiaki; and Matsumoto, Tokikazu, 5,055,801, Cl. 331-14.000

Matsumura, Hiroshi; and Nii, Koji, to Asahi Kagaku Kogyo Co., Ltd. Grip tape. 5,055,340, Cl. 428-172.000.

Matsunaga, Tadahiro: *See—*
Dohara, Kazunobu; Matsunaga, Tadahiro; Shiraishi, Motomitsu; and Shinjo, Goro, 5,055,299, Cl. 424-405.000

Matsuo, Masaaki; Sumita, Masujiro; Hosoi, Isao; Aoki, Hirohumi; and Ohta, Masaru, to Toyo Ink Manufacturing Co., Ltd. Method of image formation using heated rollers. 5,055,375, Cl. 430-254.000

Matsuo, Noritada: *See—*
Yano, Toshihiko; Ishiwatari, Takao; Sekihachi, Hiroko; Matsuo, Noritada; Takagaki, Tohei; and Kakimizu, Akiko, 5,055,491, Cl. 514-531.000

Matsuoka, Atsuko; and Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Knocking suppression apparatus for an internal combustion engine. 5,054,448, Cl. 123-425.000.

Matsuoka, Makoto; and Sakakura, Shigeki, to Fujitsu Limited. Image formation apparatus having a process cartridge acting as guidance for a medium. 5,055,876, Cl. 355-211.000.

Matsuoka, Tadashi: *See—*
Akiike, Katsumi; Sekine, Nobuhiro; Matsuoka, Tadashi; and Oyama, Tsutomu, 5,054,754, Cl. 267-159.000.

Matsura, Yoshinori: *See—*
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,055,103, Cl. 604-385.200.

Matsushita Electric Industrial Co., Ltd.: *See—*
Funami, Koji; Uesugi, Yuji; and Nishikawa, Yukio, 5,055,653, Cl. 219-121.750.
Kaneko, Katsuyuki; Gokita, Satoshi; and Zaiki, Koji, 5,056,005, Cl. 364-200.000.
Koga, Fumiaki; and Matsumoto, Tokikazu, 5,055,801, Cl. 331-14.000
Nagoshi, Hitoshi; Kimura, Taizou; and Takashima, Kazushige, 5,055,118, Cl. 55-146.000.
Sagawa, Morikazu; Endo, Haruyoshi; Makimoto, Mitsuo; and Fukushima, Fumio, 5,055,809, Cl. 333-219.000
Shimada, Toshiyuki; Aoki, Kazuhiro; Kurahashi, Akira; and Kikuchi, Noboru, 5,056,116, Cl. 375-94.000
Washio, Yukari; Takeishi, Nobuhiro; Shimamoto, Hideki; Mori, Keiji; Ushio, Noriki; Shiono, Katsuji; Kishi, Takaaki; and Samura, Hideo, 5,055,974, Cl. 361-527.000.
Yabuki, Hiroyuki; and Sagawa, Morikazu, 5,055,804, Cl. 331-117.00R.

Matsushita Electric Works, Ltd.: *See—*
Fujikawa, Shoji, 5,054,199, Cl. 30-34.100.

Matsushuta Electric Works, Ltd.: *See—*
Akiyama, Sigeo; Suzumura, Masahiko; and Nobe, Takeshi, 5,055,895, Cl. 357-23.400

Matsuyama, Yukio, to NEC Corporation. Serial printer having a carrier cable connected to a movable print head. 5,054,944, Cl. 400-679.000.

Matsuyuki, Akira: *See—*
Fujie, Shinichi; Oshima, Nobuo; and Matsuyuki, Akira, 5,055,398, Cl. 435-10.000.

Matt, Richard J.: *See—*
Mutchler, John H.; Jaeger, Timothy P.; Matt, Richard J.; and Farver, Theodore B., 5,056,046, Cl. 364-551.010.
Mattar, Wade M., to Foxboro Company, The. Density compensator for coriolis-type mass flowmeters. 5,054,326, Cl. 73-861.380.
Mattera, Vincent D.: *See—*
Anthony, Philip J.; Chirovsky, Leo M. F.; D'Asaro, Lucian A.; Mattera, Vincent D.; and Morgan, Robert A., 5,056,098, Cl. 372-45.000.
Matthews International Corporation: *See—*
Hancovsky, John P., 5,055,035, Cl. 431-291.000.
Matthies, Wayne H.: *See—*
Zimbardi, D. John; and Matthies, Wayne H., 5,054,669, Cl. 224-42.45R
Mattiazzi, Joseph A.: *See—*
Westberg, Tom; and Mattiazzi, Joseph A., 5,055,074, Cl. 440-77.000.
Mattiolo, Silvio, to Videoplastic S.p.A. Self-adjusting device for mutual locking of two bodies, having a variable distance between fastening points. 5,054,953, Cl. 403-406.100.
Mattiuzzo, Mario: *See—*
Tonel, Valerio; Mattiuzzo, Mario; Foscaro, Giancarlo; and Soligo, Stefano, 5,054,215, Cl. 36-170.000.
Mattox, Robert T. Communion cup holder. 5,054,726, Cl. 248-206.500.
Matusik, Frank J.: *See—*
Fitzgerald, John V.; Walsh, Teresa M.; Matusik, Frank J.; Stone, John; Dougherty, Edmond; and Batton, John, 5,054,313, Cl 73-59.000
Maurice, Granger. Device to adjust and dispense webs of rolled up material. 5,054,706, Cl. 242-55.200
Maute, P. A. Alexandre, to Aerospatiale Societe Nationale Industrielle Active three-axis attitude control system for a geostationary satellite. 5,054,719, Cl. 244-164.000.
Maveety, Susan C. Jewelry, without fasteners, formed by the wearer by bending from a planar configuration into circular and/or other configurations to be worn as a necklace, bracelet, belt, etc, and reformed many times to serve as the same or other jewelry. 5,054,299, Cl 63-3.000
Maxim Integrated Products: *See—*
Schaffer, Gregory L., 5,055,796, Cl. 330-263.000.
Maxim Marketing: *See—*
Schmitt, George E., 5,054,273, Cl. 53-564.000.
May & Baker Ltd.: *See—*
Hatton, Leslie R.; Hawkins, David W.; Pennicard, Richard G.; and Roberts, David A., 5,055,482, Cl. 514-407.000.
May, Carl D.: *See—*
Dow, Ian J.; Kowalczyk, David; May, Carl D.; and Wilson, Charles M., 5,054,826, Cl. 292-125.000.
Mayerhofer, Friedrich, to Saurer First Tech-Products Ltd. Process for the manufacture of zip fasteners. 5,054,183, Cl. 29-410.000
Mayes, Ovay H.: *See—*
Golias, Tipton L.; Mayes, Ovay H.; and Sarrine, Robert J., 5,055,271, Cl. 422-99.000.
Mayo, Scott: *See—*
Wright, Terrence; Mayo, Scott; and Lischner, Ray, 5,055,998, Cl. 364-200.000
Mayville Engineering Company, Inc.: *See—*
Bachhuber, Robert L., 5,054,362, Cl. 86-27.000.
Mazda Motor Corporation: *See—*
Akagi, Yuji; and Okazaki, Shunki, 5,054,439, Cl. 123-52.00M
Asoh, Seiichi; Kubota, Satoshi; Fukuda, Hitoki; Ushijima, Kajuhiro; Murakami, Fumiyuki; Taguchi, Tomoo; and Kohno, Shigefumi, 5,054,847, Cl. 296-219.000.
Oota, Yuji; Momii, Katsuhiro; and Okamoto, Kenji, 5,054,450, Cl. 123-478.000.
Taniguchi, Tatsuaki; and Hirata, Takashi, 5,056,153, Cl. 455-89.000
Mazur, Richard A.: *See—*
Raterman, Donald E.; Primdahl, Richard D.; and Mazur, Richard A., 5,055,086, Cl. 453-10.000.
McCarron, Eugene M., III; and Parise, John B., to Du Pont de Nemours, E. I., and Company. Process for preparation of metal oxides of molybdenum or mlybdenum and tungsten. 5,055,441, Cl. 502-321.000.
McCarthy, Francis L.: *See—*
Fernandez, William J.; and McCarthy, Francis L., 5,055,132, Cl. 106-11.000.
McClanahan, Robert F.: *See—*
Smith, Hal D.; McClanahan, Robert F.; Shapiro, Andrew A.; and Pelzman, George, 5,055,966, Cl. 361-321.000.
McClintock, William J.: *See—*
Kelleher, William J.; and McClintock, William J., 5,055,461, Cl. 514-162.000.
McCormick, Ronald J.; and Yeager, G. Leonard, to Allegheny Ludlum Corporation. Pressurize-bonded composite material. 5,055,362, Cl 428-683.000.
McCoy, William C., to Catheter Research, Inc. Variable shape guide apparatus. 5,055,101, Cl. 604-95.000.
McCracken, William L. Line scanner. 5,055,683, Cl. 250-334.000.
McCullough, Robert W.: *See—*
Abbiss, John B.; Azzazy, Medhat; McCullough, Robert W.; and Smart, Anthony E., 5,055,692, Cl. 250-372.000.
McDermott, Brian; and Morgan, Robert L., to Duke Power Company. Voltage regulator compensation in power distribution circuits. 5,055,766, Cl. 323-255.000.
McDonald, B. Scott: *See—*
Lisle, Ronald J.; McDonald, B. Scott; and Wilkes, Michael D., 5,054,360, Cl. 84-645.000.
McDonald, Vincent; and Shirley, Martin W., to National Research Development Corporation. Vaccines for coccidiosis comprising live sporulated oocysts from strains of eimeria species. 5,055,292, Cl. 424-88.000
McDonnell Douglas Corporation: *See—*
Page, Mark A., 5,054,720, Cl. 244-199.000
Runyan, Max R.; Salmon, Carolyn; and Silliman, Scott D., 5,055,143, Cl. 148-11.50R.
McFarland, Keith E.: *See—*
Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., 5,055,862, Cl. 346-154.000.
McGahee, Welbourne D.: *See—*
Campbell, John W.; McGahee, Welbourne D.; and Muir, James H., 5,054,727, Cl. 248-220.300.
McGarvey, David C., to LRS, Inc. System to monitor fuel level in a tank, and fuel dispensed from the tank, to determine fuel leakage and theft losses. 5,056,017, Cl. 364-403.000
McGhee, William D.: *See—*
Riley, Dennis P.; and McGhee, William D., 5,055,577, Cl. 544-172.000.
McGuire, Kevin T.: *See—*
Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.
McGushion, Kevin D., to Go, Inc. Anti-twist union. 5,054,822, Cl. 285-330.000.
McKibben, Kenneth D.; and Wuepper, Thomas E., to CMI International, Inc. Apparatus for cleaning passageways in metal castings. 5,054,155, Cl. 15-304.000
McLaughlin, Andrew R.: *See—*
Hammerschlag, John W.; Weingart, Arne; and McLaughlin, Andrew R., 5,054,646, Cl. 221-26.000
McLeod, Cheryl L.: *See—*
Gardner, Robert C.; Smith, George E.; and McLeod, Cheryl L., 5,055,892, Cl. 357-17.000.
McMahon, Michael J., to Zip-Pak Incorporated. Bag support/spreader for vertical form, fill and seal machines. 5,054,270, Cl. 53-552.000.
McMillan, Charles: *See—*
Sklar, H. Alfred; Frank, Alan M.; McMillan, Charles; and Ferrer, Olga M., 5,054,907, Cl. 351-212.000
McMurphy, Luther M. Anti-freeze separator assembly. 5,055,185, Cl. 210-123.000
McNab, John G., to Graves Spray Supply, Incorporated. Pneumatic material alarm. 5,054,653, Cl. 222-28.000.
McPherson, Robert A.: *See—*
Greene, Benjamin; McPherson, Robert A.; Darnall, Dennis W.; and Gardea-Torresdey, Jorge L., 5,055,402, Cl. 435-174.000.
Meacle, Thomas, to Ardagh Glass Limited. Method and apparatus for equalization of temperature in a forehearth in glass manufacture. 5,055,123, Cl. 65-137.000.
Mead Corporation, The: *See—*
Shanklin, Michael S.; Gottschalk, Peter; and Adair, Paul C., 5,055,372, Cl. 430-138.000.
Mears, David R.: *See—*
Ting, Kuan-Chong; Giacomelli, Gene A.; Mears, David R.; Kabala, Witold P.; Shen, Shou-Jin; and Williamson, Steven E., 5,054,831, Cl. 294-61.000
MECS Corporation: *See—*
Kato, Katsuhiko, 5,054,991, Cl. 414-783.000.
Medea Research S.r.l.: *See—*
Quadro, Giuseppe, 5,055,488, Cl. 514-452.000
Media Craft A.S.: *See—*
Hognestad, Jon; and Selvig, Einar K., 5,054,992, Cl. 414-786.000.
Medical College of Ohio: *See—*
Manning, Maurice; and Sawyer, Wilbur H., 5,055,448, Cl. 514-16.000
Medical Electronic Imaging Corporation: *See—*
Klostermann, Heinrich F.; and Braun, Martin, 5,056,126, Cl. 378-127.000.
Medical SafeTEC, Inc.: *See—*
Mennel, David B.; Wilson, Joseph H.; Elliott, Martin E.; and Gann, Gary D., 5,054,696, Cl. 241-34.000.
Megasoft Inc.: *See—*
Takai, Mamoru, 5,056,113, Cl. 375-58.000.
Meguro, Satoshi: *See—*
Ikeda, Shuji; Nagasawa, Kouichi; Motoyoshi, Makoto; Nagai, Kiyoshi; and Meguro, Satoshi, 5,055,420, Cl. 437-34.000
Mehta, Ashit: *See—*
Markovich, Voya; Mehta, Ashit; Park, Jae M.; Skarvinko, Eugene; and Wang, David W., 5,055,342, Cl. 428-137.000.
Meichsner, Christoph: *See—*
Schrinner, Elmar; Winkler, Irvin; Meichsner, Christoph; and Helsberg, Matthias, 5,055,457, Cl. 514-59.000.
Meier, Eric A.: *See—*
Leake, Craig H.; Tsai, John J.; and Meier, Eric A., 5,055,503, Cl. 524-30.000
Meier, Hans-Joachim: *See—*
Wiehn, Helmut; Rehwinkel, Heiko; Mollenhoff, Horst; and Meier, Hans-Joachim, 5,054,435, Cl. 122-4.00D.
Meier, Linus: *See—*
Fuchs, Fritz; Meier, Linus; and Reichmuth, Arthur, 5,056,050, Cl. 364-571.030

Meier, Thomas: *See—*
Lippi, Bruno; Suter, Ernst; Wuthrich, Hans-Rudolf; and Meier, Thomas, 5,055,640, Cl. 200-144.00B
Meier, Wilhelm: *See—*
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Meiji Milk Products Co., Ltd.: *See—*
Kakimoto, Kenichi; Kobayashi, Toshitaka; Nagata, Masanori; Imano, Shigeki; Honma, Hideaki; and Nishiyama, Hideki, 5,056,124, Cl. 378-57.000.
Meissner, Klaus: *See—*
Koblinger, Otto; Meissner, Klaus; Muhl, Reinhold; Trumpp, Hans-Joachim; and Zapka, Werner, 5,055,383, Cl. 430-312.000.
Melby, Jeffrey J., to Minnesota Mining and Manfuacturing Company. Light fixture including a partially collimated beam of light and reflective prisms having peaks lying on a curved surface. 5,054,885, Cl. 359-618.000.
Melcher, Franz-Josef; Berg, Christoph; and Oldendorf, Christian, to Sartorius AG. Electric balance with digital display. 5,056,040, Cl. 364-518.000.
Melet, Francois. Device for taking samples of blood with floating piston. 5,054,498, Cl. 128-763.000.
Melgers, George. Showroom furniture construction system. 5,054,404, Cl. 108-108.000.
Mello, Frank C.; and Wyslotsky, Ihor, to Bil-Mar Foods, Inc. Vacuum seal station for a vacuum packaging machine. 5,054,266, Cl. 53-433.000.
Melpolder, John B., to Bausch & Lomb Incorporated. Polymerizable dye. 5,055,602, Cl. 552-238.000.
Meltzer, Walter, to Cyberlab, Inc. Automated pipetting system. 5,055,263, Cl. 422-65.000.
Mendowski, Marc: *See—*
Brault, Francois; Jaunet, Alain; and Mendowski, Marc, 5,054,373, Cl. 92-92.000.
Menju, Akira: *See—*
Shinonome, Osami; Kishida, Minoru; Izumi, Tomoyuki; Murakami, Kunio; and Menju, Akira, 5,055,337, Cl. 428-147.000.
Mennel, David B.; Wilson, Joseph H.; Elliott, Martin E.; and Gann, Gary D., to Medical SafeTEC, Inc. Medical waste disposal system. 5,054,696, Cl. 241-34.000.
Menz, Edward T.: *See—*
Lewis, Jerome M.; Menz, Edward T.; Kenny, Francis E.; Groman, Ernest V.; and Josephson, Lee, 5,055,288, Cl. 424-9.000.
Mercedes-Benz AG: *See—*
Keck, Volker; Hora, Pavel; and Conradt, Walter, 5,054,195, Cl. 29-888.453.
Pietsch, Albert; Eiermann, Georg; and Boll, Wolf, 5,054,442, Cl. 123-195.00H
Mercier, Marc; and Curcio, Marc, to Rhone-Poulenc Chimie. Attrition resistant agglomerates of active alumina. 5,055,443, Cl. 502-439.000.
Merck & Co., Inc.: *See—*
Bartizal, Kenneth F.; Milligan, James A.; Rozdilsky, Walter; and Onishi, Janet C., 5,055,487, Cl. 514-452.000.
Blizzard, Timothy A.; and Mrozik, Helmut, 5,055,454, Cl. 514-30.000.
Cama, Lovji D.; and Christensen, Burton G., 5,055,573, Cl. 540-302.000.
Greenlee, Mark L.; DiNinno, Frank P.; and Salzmann, Thomas N., 5,055,463, Cl. 514-210.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Reiffenrath, Volker; Eidenschink, Rudolf; and Weber, Georg, 5,055,223, Cl. 252-299.620.
Sage, Ian C.; and Chambers, Michael K., 5,055,224, Cl. 252-299.630.
Scheuble, Bernhard; Bofinger, Klaus; Hopf, Reinhard; Pausch, Axel; Eidenschink, Rudolf; Krause, Joachim; and Wachtler, Andreas, 5,055,221, Cl. 252-299.610.
Merck Sharp & Dohme Ltd.: *See—*
Billington, David C., 5,055,597, Cl. 549-358.000.
Merrell Dow Pharmaceuticals: *See—*
Kolb, Michael; and Van Hijfte, Luc, 5,055,592, Cl. 549-206.000.
Merritt, John H.: *See—*
Diederich, Anthony F., Jr.; and Merritt, John H., 5,054,387, Cl. 100-5.000.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Dobler, Josef; and Kostelezky, Peter, 5,054,398, Cl. 102-387.000.
Messick, Virginia B.: *See—*
Hoffman, Dwight K.; Messick, Virginia B.; and Stevens, Michael G., 5,055,532, Cl. 525-528.000.
Metal Research Corporation: *See—*
Ototani, Tohei, 5,055,018, Cl. 420-8.000.
MetoKote Equipment Corporation: *See—*
Blankemeyer, James C.; Blankemeyer, Robert L.; and Miller, James C., 5,054,600, Cl. 198-345.200.
Mettes, Jacques; Kimura, Takako; and Schack, Michael, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for producing low-concentration gas mixtures, and apparatus for producing the same. 5,054,309, Cl. 73-1.00G.
Mettler-Toledo AG: *See—*
Fuchs, Fritz; Meier, Linus; and Reichmuth, Arthur, 5,056,050, Cl. 364-571.030.
Meuriche, Bernard. Device for the division, at an optimum sampling rate, of a passband signal into its components on two carriers in quadrature. 5,056,115, Cl. 375-81.000.
Meyer, Arnold; Noweck, Klaus; and Reichenauer, Ansgar, to Condea Chemie GmbH. Process for the production of boehmitic aluminas. 5,055,019, Cl. 423-625.000.
Meyer, Berthold: *See—*
Schiffer, Carl; and Meyer, Berthold, 5,054,154, Cl. 15-167.100.
Meyer, Ernst-August: *See—*
Liesenhoff, Thomas; Meyer, Hans-Friedrich; Schmitz, Manfred; Meyer, Ernst-August; and Moller, Rudolf, 5,054,517, Cl. 137-513.500.
Meyer, Hans-Friedrich: *See—*
Liesenhoff, Thomas; Meyer, Hans-Friedrich; Schmitz, Manfred; Meyer, Ernst-August; and Moller, Rudolf, 5,054,517, Cl 137-513.500.
Meyer, Otto E., Jr. Facial tissue sanitary system including closure sealer. 5,054,612, Cl. 206-233.000.
Meyers, Brad E. Target illuminators and systems employing same. 5,056,097, Cl. 372-38.000.
Micallef, Lewis A., to Leeds and Micallef. Double acting pump 5,054,659, Cl. 222-321.000.
Michaels, Glenda B.; and Riese, Walter C., to Atlantic Richfield Company. Geomicrobiological methods of ore and petroleum exploration. 5,055,397, Cl. 435-9.000.
Michaelsen, Lars T.: *See—*
Franken, Wilhelm; Pohe, Dieter; and Michaelsen, Lars T., 5,054,714, Cl. 244-50.000.
Micron Technology, Inc.: *See—*
Manning, Monte, 5,055,426, Cl. 437-195.000.
Sabado, Gregorio T., 5,054,188, Cl. 29-564.600.
Mierzwinski, Marek E.: *See—*
Moll, Nicolas J.; Hueschen, Mark R.; and Mierzwinski, Marek E., 5,055,891, Cl. 357-16.000.
Miki, Hiroshi; Fujiwara, Yoshitaka; Iida, Kiyoshi; Takubo, Hiromu; Shibayama, Kunio; and Kobayashi, Shinichi, to Fuji Electric Co., Ltd. Snubber circuit for power conversion semiconductor elements and assembly thereof. 5,055,990, Cl. 363-56.000.
Miki, Jun: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000.
Miki, Toshiyuki; Tono, Show; Kozu, Kazunori; and Hayashi, Shintaro, to Aoki Corporation. Method of treating low-concentration turbid water. 5,055,200, Cl. 210-726.000.
Miles Inc.: *See—*
Khoja, Mirza A.; and Wogoman, Frank W., 5,055,261, Cl. 422-64.000.
Lau, Arthur L. Y.; and Pendergrass, James H., 5,055,407, Cl 436-2.000.
Milewicz, Leo, Jr.: *See—*
Hung, Kung C.; Milewicz, Leo, Jr.; and Rohrs, Donald L., 5,055,984, Cl. 362-183.000.
Millar, David R.: *See—*
Bare, Rex O.; Millar, David R.; and Herbert, Harry N., 5,054,480, Cl. 128-201.250.
Miller, Andrew J.: *See—*
Glover, John E. S.; Glover, Timothy N.; and Miller, Andrew J., 5,054,256, Cl. 52-765.000.
Miller, Brian S.; and Kaplan, David R., to United States of America, Army. Flexible membrane circuit tester. 5,055,776, Cl. 324-158.00P.
Miller, Carl A.: *See—*
Martin, Samuel W.; Miller, Carl A.; Pickering, William V., Jr.; Supron, Steven A.; Murcko, David, deceased; and Murcko, Linda, administrator, 5,054,757, Cl. 270-45.000.
Miller, Cedric C., to Miller, Cedric C.; and Ferguson, Janice L. Easy tear straw cover. 5,054,264, Cl. 53-412.000.
Miller, Charles E., to Tennessee Valley Authority. Cleaning and lubricating composition for mechanical seals. 5,055,210, Cl. 252-32.000
Miller, Gert; Jendges, Heinz-Gerd; and Crynen, Norbert, to Scheidt & Bachmann Gesellschaft mit beschrankter Haftung. Vending type machine dispensing a redeemable credit voucher upon payment interrupt. 5,055,657, Cl. 235-381.000.
Miller, James C.: *See—*
Blankemeyer, James C.; Blankemeyer, Robert L.; and Miller, James C., 5,054,600, Cl. 198-345.200.
Miller, James E.; Lowe, Byron L.; Finn, Everett N.; and Milliner, Kenneth M., to Brown & Williamson Tobacco Corporation. Apparatus for positioning a spacer panel. 5,054,259, Cl. 53-157.000.
Miller, Merlin: *See—*
Cunningham, Ernest R.; and Miller, Merlin, 5,054,257, Cl. 53-48.400.
Miller, Thomas R.: *See—*
Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.
Milligan, James A.: *See—*
Bartizal, Kenneth F.; Milligan, James A.; Rozdilsky, Walter; and Onishi, Janet C., 5,055,487, Cl. 514-452.000.
Milligan, Robert J.: *See—*
Wilson, James B. S.; Milligan, Robert J.; and Loughron, Alan J., 5,054,959, Cl. 404-94.000.
Milliner, Kenneth M.: *See—*
Miller, James E.; Lowe, Byron L.; Finn, Everett N.; and Milliner, Kenneth M., 5,054,259, Cl. 53-157.000.
Mills, Gary D.: *See—*
Williams, Thomas J.; and Mills, Gary D., 5,054,855, Cl 297-395.000.
Mills, James L., to Linear Instruments. Smooth rotation by a galvanometer. 5,055,761, Cl. 318-696.000.

Milne, Douglas L., to NCR Corporation. Document sensing apparatus which detects voltage dropage and generates a first and second signal. 5,055,670, Cl. 250-223.00R.

Minami, Masataka; Sato, Kazushige; Watanabe, Atsuo; Shukuri, Shoji; Nishida, Takashi; and Nagano, Takahiro, to Hitachi, Ltd. Semiconductor device. 5,055,904, Cl. 357-43.000.

Minato, Masahiro: *See—*
Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000.

Mine Safety Appliances Company: *See—*
Long, Stephen E.; and Poli, Albert A., 5,054,328, Cl. 73-864.810.

Minemura, Hiroyuki: *See—*
Nihei, Hideki; Tsuboi, Nobuyoshi; Minemura, Hiroyuki; Kimura, Hiroshi; and Morinaga, Shigeki, 5,055,731, Cl. 310-309.000.

Miner, Kevin: *See—*
Friar, Glenn; Miner, Kevin; Rinaldi, Christopher; and Wilson, David, 5,054,224, Cl. 42-076.020.

Mink, Ronald: *See—*
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, 5,055,405, Cl. 435-240.270

Minnesota Mining and Manfuacturing Company: *See—*
Melby, Jeffrey J., 5,054,885, Cl. 359-618.000.

Minnesota Mining and Manufacturing Company: *See—*
Bacon, Chester A., Jr., 5,055,347, Cl. 428-250.000.
Bonelli, Riccardo; and Plohn, Gunter, 5,055,777, Cl. 324-158.00F
Eshleman, Ronald J., 5,054,704, Cl. 242-1.000.
Heine, Richard F., 5,055,333, Cl. 428-88.000.
Larson, Eric G.; and Kirk, Alan R., 5,055,113, Cl. 51-298.000.
Shinoda, Kei-ichi, 5,055,072, Cl. 439-751.000.
Weber, Michael F., 5,055,416, Cl. 437-4.000.

Minolta Camera Kabushiki Kaisha: *See—*
Fujino, Akihiko; Ichikawa, Tsutomu; Nanba, Katsuyuki; and Taniguchi, Nobuyuki, 5,055,865, Cl. 354-127.110.
Kurahashi, Yoshiyuki; and Yamamoto, Masanori, 5,055,946, Cl 358-498.000.
Nakatani, Munehiro; Sugawa, Hiroya; and Kishi, Masamichi, 5,055,886, Cl. 355-326.000.

Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, to Toyoda Gosei Co. Ltd.; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Electrochromic element. 5,054,895, Cl. 359-265.000

Minowa, Emiko; Kobayashi, Shiro; and Itoh, Masahiko, to Hitachi, Ltd. Aluminium and aluminium alloy having corrosion-resistant protective layer, and methods of making such a layer. 5,055,356, Cl. 428-409.000

Mintz, Michael D., to International Technidyne Corporation. Apparatus and method for utilizing autotransfusion systems and related equipment. 5,055,099, Cl. 604-4.000.

MIPS Computer Systems, Inc.: *See—*
Fu, Timonty S.; and Roberts, Allen W., 5,056,110, Cl. 375-36.000.

Miranti, Joseph P., Jr., to Dayco Products, Inc. Endless power transmission belt construction and method of making the same. 5,055,090, Cl. 474-249.000.

Mishima, Kunio; Hamabata, Mitsuo; Kogiso, Harumi; and Nozaki, Masahiro, to Toyoda Gosei Co., Ltd. Door glass weather strip for vehicles. 5,054,241, Cl. 49-488.000.

Misra, Chanakya: *See—*
O'Neill, Gary A.; Misra, Chanakya; and Chen, Abraham S. C., 5,055,199, Cl. 210-684.000.

Misra, Nick: *See—*
Bhatia, Sushil K.; Brefka, Paul E.; Rath, Mihira K.; Misra, Nick; and Chevrette, Roger N., 5,054,417, Cl. 118-242.000.

Mistry, Pravin, to CMB Foodcan plc. Method of bonding a tool material to a holder and tools made by the method. 5,054,682, Cl. 228-194.000.

Misumi, Hiroyoshi; and Tsuruno, Kunio, to Canon Kabushiki Kaisha. Reproduction apparatus for reproducing successive image signals of different frequency bands. 5,055,938, Cl. 358-340.000.

Mita Industrial Co., Ltd.: *See—*
Shibahara, Kenji, 5,055,944, Cl. 358-465.000.
Watashi, Masahiro, 5,054,769, Cl. 271-306.000.

Mitarai, Kuninori: *See—*
Hisatomi, Hideo; Iwata, Toshiro; Kosoegawa, Toshihide; Oka, Kikuo; Ichikawa, Seizo; and Mitarai, Kuninori, 5,055,245, Cl 264-40.600

Mitchell, Hal D., to Figgie International Inc. Athletic pad. 5,054,121, Cl. 2-2.000.

Mitchell, Paul: *See—*
DeWitt, Robert R.; Lile, William R.; Mitchell, Paul; and Stevens, Albert F., 5,054,620, Cl. 209-3.100

Mitchell, Steven J.; and Mitchell, William R. User modifiable fuel injection computer. 5,056,026, Cl. 364-431.030.

Mitchell, William R.: *See—*
Mitchell, Steven J.; and Mitchell, William R., 5,056,026, Cl. 364-431.030

Mitomi, Tatsuo: *See—*
Murayama, Yasushi; Aoki, Tomohiro; Uchida, Takashi; Mitomi, Tatsuo; and Nemura, Masaharu, 5,055,861, Cl. 346-140.00R.

Mitre Corporation, The: *See—*
Kirkman, W. Worth; and Louden, T. Michael, 5,056,053, Cl 364-716.000.

Mitsubishi Denki K.K.: *See—*
Ito, Hiroki; and Ina, Teruo, 5,054,421, Cl. 118-723.000
Iwasaki, Takeshi; and Takeuchi, Hiroshi, 5,055,649, Cl. 219-69.120.
Terauchi, Tsuneo; and Nishimura, Takaaki, 5,054,332, Cl. 74-479.000

Mitsubishi Denki Kabushiki Kaisha: *See—*
Amano, Masaaki, 5,054,585, Cl. 187-124.000
Fukui, Wataru; and Iwata, Toshio, 5,054,447, Cl. 123-414.000.
Furuta, Shigeru; Takahira, Kenichi; Yamaguchi, Atsuo; Inoue, Takesi; Matsubara, Toshiyuki; and Fujioka, Shuzo, 5,056,089, Cl. 371-3.000.
Gochi, Hidenobu, 5,055,661, Cl. 235-492.000.
Kakizoe, Masahiro; and Ootsuka, Shigeharu, 5,055,811, Cl. 335-59.000
Kawashima, Takeshi, 5,055,794, Cl. 324-453.000.
Kimura, Masatoshi; and Kumamoto, Toshio, 5,055,820, Cl. 338-32.00H
Majumdar, Gourab; and Yoshida, Shigekazu, 5,055,721, Cl. 307-570.000
Matsuoka, Atsuko; and Iwata, Toshio, 5,054,448, Cl. 123-425.000.
Mizuta, Masaharu, 5,056,009, Cl. 364-200.000.
Morishita, Akira; Isozumi, Shuzoo; and Tanaka, Takao, 5,054,329, Cl. 74-7.00R
Murasawa, Yasuhiro; Toda, Hitoshi; Sawano, Hiroshi; and Yagoura, Hideya, 5,055,912, Cl. 357-74.000.
Naito, Yasuo; and Kouzuki, Hiroyuki, 5,054,570, Cl. 180-170.000.
Ogata, Toshikazu, 5,055,911, Cl. 357-74.000.
Ohuchi, Hirofumi, 5,054,446, Cl. 123-339.000.
Takagi, Ryouichi; Tada, Tetsuo; and Kohara, Masanobu, 5,055,780, Cl. 324-158.00F.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Nakatani, Yoshihide; Okada, Shigeichi; Yaezawa, Eiji; Takata, Makoto; and Nakahara, Takafumi, 5,054,441, Cl. 123-182.000

Mitsubishi Kasei Corporation: *See—*
Oda, Masatsugu; Sakaki, Toshiro; and Kikutake, Kazuhiko, 5,055,477, Cl. 514-341.000.

Mitsubishi Monsanto Chemical Company: *See—*
Inagaki, Hiromichi, 5,055,152, Cl. 156-244.110.

Mitsubishi Rayon Company, Ltd.: *See—*
Kishida, Kazuo; Kitai, Kiyokazu; Kaneda, Masahiro; and Okano, Kenji, 5,055,529, Cl. 525-309.000.

Mitsuhashi, Daisuke; and Kawasaki, Noboru, to Fuji Photo Film Co., Ltd. Dual magnetic recording and reproduction heads with elastic mounting. 5,055,955, Cl. 360-104.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Kioka, Mamoru; Toyota, Akinori; and Kashiwa, Norio, 5,055,528, Cl. 525-270.000
Motooka, Masanori; Mantoku, Hotishi; Yagi, Kazuo; Takeda, Hiroyuki; and Takimoto, Kazuyuki, 5,055,248, Cl. 264-210.300
Nakagawa, Hiroaki; Kondo, Masahiro; and Ohishi, Noriake, 5,055,568, Cl. 536-35.000.
Sato, Koichiro; Kubo, Mineo; and Nakagawa, Mikio, 5,055,526, Cl. 525-74.000

Mitsui Toatsu Chemicals, Incorporated: *See—*
Matsubara, Akira; Sakai, Kazuya; Tanada, Hideki; and Komatsu, Hironori, 5,055,585, Cl. 548-248.000.

Mitsuku Denshi Kogyo Kabushiki Kaisha: *See—*
Miyata, Muneyoshi, 5,055,642, Cl. 200-293.000.

Mitsumori, Naomichi; Nishimura, Yasuhiro; Yokota, Keiko; Okuno, Shiro; and Suzuki, Motoko, to Hamari Chemicals, Ltd. Quaternary pyridinium salts useful for ulcer treatment. 5,055,469, Cl. 514-252.000.

Miura, Morikazu: *See—*
Ikeda, Masanori; Miura, Morikazu; and Aoshima, Atsushi, 5,055,601, Cl. 549-521.000.

Miura, Takaharu; Shigetani, Tsunehisa; and Moriki, Minoru, to Oji Paper Co., Ltd. Process for the preparation of support sheet for photographic printing paper and resulting article. 5,055,320, Cl. 427-40.000

Miura, Toru: *See—*
Ohba, Hisao; Yoshida, Susumu; and Miura, Toru, 5,055,870, Cl. 354-317.000

Miwa, Tsutomu. Aerodynamic motorcar. 5,054,844, Cl. 296-198.000.

Miyachi, Takumi: *See—*
Ono, Hisao; Nagano, Masanobu; Ieki, Yasuo; and Miyachi, Takumi, 5,055,519, Cl. 525-71.000.

Miyahara, Kenji. Surveying apparatus detecting relative angular position of projector and range finder. 5,055,666, Cl. 250-206.100.

Miyahara, Norio, to Jeco Co., Ltd. Servo accelerometer. 5,055,759, Cl. 318-651.000

Miyake, Tamio: *See—*
Terada, Takao; Kobayashi, Toshiyuki; and Miyake, Tamio, 5,054,477, Cl. 128-200.140.

Miyake, Yoshio: *See—*
Kobayashi, Makoto; Ouchi, Kiyoshi; Nishimori, Shinji; Maeda, Tsuyoshi; and Miyake, Yoshio, 5,055,006, Cl. 417-366.000.

Miyamoto, Isao: *See—*
Oshima, Yasushi; Miyamoto, Isao; and Harada, Shogo, 5,054,652, Cl. 222-1.000

Miyamoto, Tsumoru: *See—*
Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, 5,055,598, Cl. 549-407.000

Miyamura, Masataka; Wada, Yusuke; Nakagawa, Toshiharu; Nakaizumi, Yuji; and Takeda, Kazuhiro, to Kabushiki Kaisha Toshiba. Solder resist composition. 5,055,378, Cl. 430-280.000

Miyanaga, Yoshitaka: *See—*
Katsumi, Osamu; and Miyanaga, Yoshitaka, 5,054,908, Cl. 351-239.000.

Miyano, Masateru: *See—*
Garland, Robert B.; and Miyano, Masateru, 5,055,582, Cl. 546-256.000.

Miyata, Muneyoshi, to Mitsuku Denshi Kogyo Kabushiki Kaisha. Push button switch. 5,055,642, Cl. 200-293.000.

Miyata, Osamu; Kawano, Katsunori; and Oki, Youji, to Stanley Electric Company, Ltd. Invertor apparatus. 5,055,993, Cl. 363-98.000.

Miyazawa, Kazutoshi: *See—*
Ohno, Kouji; Saito, Shinichi; Inukai, Takashi; Inoue, Hiromichi; and Miyazawa, Kazutoshi, 5,055,222, Cl. 252-299.610.

Miyoshi, Tadahiko: *See—*
Sakamoto, Hiroshi; and Miyoshi, Tadahiko, 5,055,430, Cl. 501-90.000.

Mize, Patrick D., to Becton, Dickinson and Company. Fluorogenic trypotophanase substrates. 5,055,594, Cl. 549-223.000.

Mizuhara, Osamu: *See—*
Kasper, Bryon L.; and Mizuhara, Osamu, 5,055,795, Cl. 330-54.000.

Mizukawa, Yuki, to Fuji Photo Film Co., Ltd. Process for preparing 1H-pyrazolo-[5,1-c]-1,2,4-triazole compounds. 5,055,587, Cl. 548-262.400.

Mizuno, Yoshiyuki: *See—*
Yamada, Yuuji; Kunishi, Shinsuke; and Mizuno, Yoshiyuki, 5,055,073, Cl. 439-892.000.

Mizuta, Masaharu, to Mitsubishi Denki Kabushiki Kaisha. IC memory card incorporating software copy protection. 5,056,009, Cl. 364-200.000.

Moazed, Khosrow L.: *See—*
Zeidler, James R.; and Moazed, Khosrow L., 5,055,424, Cl. 437-188.000.

Mobil Oil Corporation: *See—*
Allen, Luanne M.; Hagerty, Robert O.; and Mohring, Richard O., 5,055,533, Cl. 526-125.000.
Avidan, Amos A.; Chin, Arthur A.; and Green, Gary J., 5,055,029, Cl. 431-7.000.
Haddad, James H.; Owen, Hartley; and Schatz, Klaus W., 5,055,177, Cl. 208-161.000.
Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., 5,055,176, Cl. 208-120.000.
Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., 5,055,437, Cl. 502-67.000.
Ho, Suzzy C.; and Wu, Margaret M., 5,055,626, Cl. 585-416.000.

Mobilio, Dominick, to American Home Products Corporation. Preparation of 2,3,4,9-tetrahydro-1H-carbazole acetic acid derivatives. 5,055,590, Cl. 548-439.000.

Mochel, Paul J.; and Stobar, Leonard, to Elixir Industries. Vehicle ventilation. 5,054,377, Cl. 98-2.140

Mochizuki, Hideharu, to Koito Manufacturing Co., Ltd. Automobile headlamp. 5,055,980, Cl. 362-61.000.

Mochizuki, Kesaaki: *See—*
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.

Mochizuki, Masataka: *See—*
Sakaya, Masuji; Okiai, Ryuichi; Mochizuki, Masataka; and Mashiko, Kouichi, 5,054,196, Cl. 29-890.032.

Mochizuki, Shigehiro: *See—*
Mori, Kiji; Kanemitsu, Nobuhisa; Watanabe, Junichi; Kagawa, Mitsuru; Hasegawa, Kazuhiro; Mochizuki, Shigehiro; and Kondo, Fumio, 5,055,076, Cl. 445-25.000.

Moen Incorporated: *See—*
Rini, Anthony S., 5,054,179, Cl. 29-213.100.

Mogi, Shoichi. Manikin head support. 5,054,729, Cl. 248-225.310.

Mohn, Hans-Werner: *See—*
Zodrow, Rudolf; and Mohn, Hans-Werner, 5,055,154, Cl. 156-256.000.

Mohr, Peter: *See—*
Klaus, Michael; Loeliger, Peter; Mohr, Peter; and Weiss, Ekkehard, 5,055,622, Cl. 568-609.000

Mohring, Richard O.: *See—*
Allen, Luanne M.; Hagerty, Robert O.; and Mohring, Richard O., 5,055,533, Cl. 526-125.000.

Mohsen, Amr M., to Aptix Corporation. Custom tooled printed circuit board. 5,055,973, Cl. 361-414.000.

Moldovan, Anton G., to Ford Aerospace Corporation. Multi-layer metal silicide infrared detector. 5,055,901, Cl. 357-30.000.

Molex Incorporated: *See—*
Yamada, Yuuji; Kunishi, Shinsuke; and Mizuno, Yoshiyuki, 5,055,073, Cl. 439-892.000.

Molins, PLC: *See—*
Horsley, John K.; and Nixon, John E., 5,054,604, Cl. 198-444.000.

Moll, Nicolas J.; Hueschen, Mark R.; and Mierzwinski, Marek E., to Hewlett-Packard Company. Heterostructure transistor using real-space electron transfer. 5,055,891, Cl. 357-16.000.

Mollenhoff, Horst: *See—*
Wiehn, Helmut; Rehwinkel, Heiko; Mollenhoff, Horst; and Meier, Hans-Joachim, 5,054,435, Cl. 122-4.00D.

Moller, Rudolf: *See—*
Liesenhoff, Thomas; Meyer, Hans-Friedrich; Schmitz, Manfred; Meyer, Ernst-August; and Moller, Rudolf, 5,054,517, Cl. 137-513.500.

Momii, Katsuhiro: *See—*
Oota, Yuji; Momii, Katsuhiro; and Okamoto, Kenji, 5,054,450, Cl. 123-478.000.

Momose, Terunobu; and Shibata, Tetsuo, to Wing Highcera Co., Ltd Ceramic bearing. 5,054,940, Cl. 384-193.000.

Monnier, Philippe: *See—*
Wagnieres, Georges; van den Bergh, Hubert; and Monnier, Philippe, 5,054,867, Cl. 385-31.000.

Monsanto Company: *See—*
Baysdon, Sherrol L.; and Pulwer, Mitchell J., 5,055,583, Cl. 546-315.000.
Dupont, William A.; and Sheldrick, George E., 5,055,518, Cl. 525-59.000.
Riley, Dennis P.; and McGhee, William D., 5,055,577, Cl. 544-172.000.
Warren, Beth Z., 5,055,313, Cl. 426-268.000.

Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, to Institut Pasteur. Method and kit or detecting antibodies to antigens of Human Immunodeficiency Virus type 2 (HIV-2). 5,055,391, Cl. 435-5.000.

Montedison S.p.A.: *See—*
Fiore, Leonardo; Motroni, Giuseppe; and Maritano, Mauro, 5,055,547, Cl. 528-249.000.

Montupet: *See—*
Cofflard, Daniel; Bouvier, Maurice; and Engler, Bernard, 5,054,314, Cl. 73-118.100.

Moon, W. Larry; and Hand, Paul N., to Martin Industries, Inc. Unvented gas-fired fireplace heater. 5,054,468, Cl. 126-512.000

Moore Business Forms, Inc.: *See—*
Anderson, Michael W., 5,055,153, Cl. 156-252.000.

Morales, Anthony: *See—*
Scott, Gerald D.; Shabel, Barrie S.; and Morales, Anthony, 5,055,255, Cl. 420-534.000.

Morane, Bruno, to L'Oreal. Method of packaging under pressure of a fluid, using a system of fermentation creating a propulsive gas. 5,054,651, Cl. 222-1.000.

Morel, Simone, to Societe de Conseils et d'Etudes des Emballages Scee. Applicator device for cosmetics. 5,054,946, Cl. 401-122.000

Morey, Norval, to Wood Technology, Inc. Stump chipper knife assembly. 5,054,703, Cl. 241-296.000.

Morflex, Inc.: *See—*
Hull, Ezekiel H.; and Frappier, Edward P., 5,055,609, Cl 560-180.000

Morgan, Craig D.: *See—*
Hamlin, Arthur H.; and Morgan, Craig D., 5,055,105, Cl. 606-80.000.

Morgan, David O.: *See—*
Baker, Geoffrey H.; Dorgan, Roderick J.; Morgan, David O.; Banks, Rhona M.; Blanchflower, Simon E.; Poulton, Mark E.; and Shelley, Peter R., 5,055,596, Cl. 549-268.000.

Morgan, Robert A.: *See—*
Anthony, Philip J.; Chirovsky, Leo M. F.; D'Asaro, Lucian A.; Mattera, Vincent D.; and Morgan, Robert A., 5,056,098, Cl 372-45.000

Morgan, Robert L.: *See—*
McDermott, Brian; and Morgan, Robert L., 5,055,766, Cl. 323-255.000.

Mori, Goro: *See—*
Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000.

Mori, Keiji: *See—*
Washio, Yukari; Takeishi, Nobuhiro; Shimamoto, Hideki; Mori, Keiji; Ushio, Noriki; Shiono, Katsuji; Kishi, Takaaki; and Samura, Hideo, 5,055,974, Cl. 361-527.000

Mori, Kiji; Kanemitsu, Nobuhisa; Watanabe, Junichi; Kagawa, Mitsuru; Hasegawa, Kazuhiro; Mochizuki, Shigehiro; and Kondo, Fumio, to Stanley Electric Co., Ltd. Electroluminescent panel and method of manufacturing the same. 5,055,076, Cl. 445-25.000

Mori, Naoki: *See—*
Sotani, Junji; Okuyama, Tetsuo; Seo, Susumu; Ohi, Tohru; Mori, Naoki; and Mabuchi, Minoru, 5,054,296, Cl. 62-259.100.

Mori, Tamotsu, to Man Design Co., Ltd. Electromagnetic type reciprocating pump. 5,055,011, Cl. 417-417.000

Morii, Nobuyuki: *See—*
Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000

Morikawa, Kiyoshi; Kurumada, Masakazu; Kobayashi, Kazuo; Yamada, Yoshinori; and Sugihara, Masanori, to Pioneer Electronic Corporation. Centering mechanism for automotive disc player. 5,056,077, Cl. 369-77.100.

Morikawa, Koji, to Fuji Jukogyo Kabushiki Kaisha. Fuel injection control system for a two-cycle engine. 5,054,444, Cl. 123-295.000.

Moriki, Minoru: *See—*
Miura, Takaharu; Shigetani, Tsunehisa; and Moriki, Minoru, 5,055,320, Cl. 427-40.000.

Morimoto, Akira; and Ohwaki, Akira, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical scanning system and method for adjusting thereof. 5,055,663, Cl. 250-201.400.

Morimura, Toshiaki; Daimaru, Norio; and Wachi, Akira, to Ohkura Electric Co., Ltd. Displacement detector. 5,055,814, Cl. 336-119.000.

Morinaga, Shigeki: *See—*
Nihei, Hideki; Tsuboi, Nobuyoshi; Minemura, Hiroyuki; Kimura, Hiroshi; and Morinaga, Shigeki, 5,055,731, Cl. 310-309.000.

Morishita, Akira; Isozumi, Shuzoo; and Tanaka, Takao, to Mitsubishi Denki Kabushiki Kaisha. Starter motor pinion shaft oil seal 5,054,329, Cl. 74-7.00R.

Morita, Shizuo: *See*—
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000

Morito, Hiroshi: *See*—
Nikoh, Hidemitsu; and Morito, Hiroshi, 5,055,917, Cl. 358-22.000

Moriya, Tetsuo; and Kondo, Susumu, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for producing highly water-absorbing resins from diepoxides and acrylic polymers. 5,055,501, Cl 523-409.000

Moriya, Yoshiro: *See*—
Teratsuji, Osamu; Nishimura, Keuchi; Moriya, Yoshiro; and Ueda, Yukihiko, 5,054,134, Cl. 4-488.000.

Morris, Carl A., Jr.; and Lane, Kenneth R., to Long Reach Holdings, Inc. Wear strip for a clamp attachment on a lift truck. 5,055,091, Cl 414-621.000

Morris Resources, Inc.: *See*—
Personette, David L., 5,055,139, Cl. 134-22.170

Morse, Hugh B.; and Ciolino, John V. Sanitary bulk food dispenser with rotary cone feeder. 5,054,657, Cl. 222-162.000

Mosaic, Inc.: *See*—
Jacobs, Scott L., 5,055,907, Cl. 357-71.000.

Moses, Hal L.: *See*—
Langley, Lawrence W.; and Moses, Hal L., 5,054,713, Cl 244-12.200

Moson, John A. Ladder having an anchoring system. 5,054,579, Cl. 182-107.000

Mossadegh, Reza: *See*—
Tran, Danh C.; Mossadegh, Reza; Garito, Nicholas; and Farid, Mohamad, 5,055,120, Cl. 65-3.110

Motogi, Masao: *See*—
Nonaka, Masahiko; Soeda, Takahiko; Yamagiwa, Keiko; Kowata, Hiroko; Motogi, Masao; and Toiguchi, Seiichiro, 5,055,310, Cl 426-46.000

Motooka, Masanori; Mantoku, Hotishi; Yagi, Kazuo; Takeda, Hiroyuki; and Takimoto, Kazuyuki, to Mitsui Petrochemical Industries, Ltd. Process for producing stretched article of ultrahigh-molecular weight polyethylene. 5,055,248, Cl. 264-210.300

Motorola, Inc.: *See*—
—Altman, Leonard F.; and Stengel, Robert E., 5,055,816, Cl 336-200.000
—Black, Gregory; and Hietala, Alexander W., 5,055,800, Cl. 331-1.00A
—Bruner, Robert W., 5,056,092, Cl. 371-14.000
—Deutsch, Robert W.; and Sun, Koushun, 5,054,461, Cl. 123-609.000
—Hietala, Alexander W.; and Rabe, Duane C., 5,055,802, Cl 331-16.000
—Hietala, Alexander W., 5,055,803, Cl. 331-17.000.
—Kane, Robert C., 5,055,077, Cl. 445-50.000
—Obregon, Carlos D., 5,055,714, Cl. 307-443.000.
—Pollock, Randy, 5,054,194, Cl. 29-840.000.
—Rybicki, Mathew A.; Whatley, Roger A.; and Nakamura, Katsufumi, 5,055,847, Cl. 341-162.000
—Schneider, Robert B.; Halabi, Nadim; and Peana, Daniel, 5,055,651, Cl. 219-121.680
—Smith, Robert T., 5,055,709, Cl. 307-279.000
—Spiotta, Mark G.; and Foley, John P., 5,056,012, Cl. 364-200.000
—Truby, Brian K.; and Coker, Randall S., 5,056,152, Cl. 455-11.000.
—Walker, Brian C.; and Munn, Robert J., 5,055,808, Cl. 333-207.000

Motoyoshi, Makoto: *See*—
Ikeda, Shuji; Nagasawa, Kouichi; Motoyoshi, Makoto; Nagai, Kiyoshi; and Meguro, Satoshi, 5,055,420, Cl. 437-34.000.

Motroni, Giuseppe: *See*—
Fiore, Leonardo; Motroni, Giuseppe; and Maritano, Mauro, 5,055,547, Cl. 528-249.000.

Motsch, Gerhard. Fabrication last for shoe manufacture on a computer-controlled transfer line. 5,054,147, Cl. 12-133.00R.

Motto, Eric R.: *See*—
Jurell, Scott R.; Motto, Eric R.; Windows, Gordon E., Jr.; Luchaco, David G.; Capewell, Dennis M.; Hausman, Doanld F.; and Spira, Joel S., 5,055,742, Cl. 315-94.000.

Moulinex (Societe Anonyme): *See*—
San Juan, Antonio B., 5,054,386, Cl. 99-511.000.

Mourey, Bruno: *See*—
Hehlen, Robert, deceased; Hehlen, Philippe, legal representative; Hehlen, Bernard, legal representative; Le Galguen, Maurice; and Mourey, Bruno, 5,055,833, Cl. 340-784.000.

Mrozik, Helmut: *See*—
Blizzard, Timothy A.; and Mrozik, Helmut, 5,055,454, Cl. 514-30.000.

MRP Recycling Technologies Inc.: *See*—
Jolliffe, William C.; Mandich, Steve; and Obukuro, Kazuhide, 5,054,351, Cl. 83-430.000.

Mthode Electronics, Inc.: *See*—
Brown, Vincent B., 5,054,879, Cl. 385-59.000.

MTU Motoren- und Turbinen-Union Munchen GmbH: *See*—
Geidel, Helmjut-Arnd; Enderle, Heinrich; and Rohra, Alois, 5,054,285, Cl. 60-226.200.

Muckenfuhs, Delmar R., to Procter & Gamble Company, The. Side opening flexible bag with longitudinally oriented carrying handle secured to side panels. 5,054,619, Cl. 206-610.000.

Mueller, Rudi, to Siemens Aktiengesellschaft. Multi-stage serial-to-parallel/parallel-to-serial converter processing data words by segments. 5,055,842, Cl. 341-100.000.

Mueller, Werner H.; Khanna, Dinesh N.; Vora, Rohitkumar H.; and Erckel, Ruediger J., to Hoechst Celanese Corp. Polymers prepared from 4,4'-bis(2-[3,4(dicarboxyphenyl)hexafluoroisopropyl] diphenyl ether dianhydride. 5,055,550, Cl. 528-353.000.

Muelling, Duane D.: *See*—
Pratt, Keith; and Muelling, Duane D., 5,054,316, Cl. 73-149.000.

Muhl, Reinhold: *See*—
Koblinger, Otto; Meissner, Klaus; Muhl, Reinhold; Trumpp, Hans-Joachim; and Zapka, Werner, 5,055,383, Cl. 430-312.000.

Muir, James H.: *See*—
Campbell, John W.; McGahee, Welbourne D.; and Muir, James H., 5,054,727, Cl. 248-220.300.

Mulcahey, Donald M., to Mulcahey, Thomas W. Portable transmitter apparatus for inducing alternating current in a buried metallic line. 5,055,793, Cl. 324-326.000.

Mulcahey, Thomas W.: *See*—
Mulcahey, Donald M., 5,055,793, Cl. 324-326.000.

Muller, Fritz. Injection mold apparatus with improved heating and cooling system. 5,055,025, Cl. 425-144.000.

Muller, Jean-Pierre: *See*—
Mangin, Robert; Muller, Jean-Pierre; and Weil, Francois, 5,054,825, Cl. 292-92.000.

Muller, Manfred: *See*—
Knobloch, Osbert R.; Brentrop, Ludger; Kimmeyer, Ludger; Muller, Manfred; and Wenningkamp, Peter, 5,054,694, Cl. 241-24.000

Mulley, Bryan A.: *See*—
Barry, Brian W.; Mulley, Bryan A.; and York, Peter, 5,055,306, Cl. 424-482.000

Multipoint Control Systems: *See*—
Blake, Frederick H.; and Long, C. David, 5,055,669, Cl. 250-214.0AL

Munn, Robert J.: *See*—
Walker, Brian C.; and Munn, Robert J., 5,055,808, Cl. 333-207.000.

Munters Corporation: *See*—
Thomas, Patricia T., 5,055,239, Cl. 261-112.200.

Murakami, Fumiyuki: *See*—
Asoh, Seiichi; Kubota, Satoshi; Fukuda, Hitoki; Ushijima, Kajuhiro; Murakami, Fumiyuki; Taguchi, Tomoo; and Kohno, Shigefumi, 5,054,847, Cl. 296-219.000.

Murakami, Koichi: *See*—
Ueda, Minoru; Matsuda, Hideaki; Hara, Masanori; and Murakami, Koichi, 5,055,247, Cl. 264-109.000.

Murakami, Kunio: *See*—
Shinonome, Osami; Kishida, Minoru; Izumi, Tomoyuki; Murakami, Kunio; and Menju, Akira, 5,055,337, Cl. 428-147.000.

Murakami, Shu; Ikebe, Tsuguo; Hakamada, Ichiro; and Anami, Koretake, to Yoshitomi Pharmaceutical Industries Ltd. Benzolactam compounds and pharmaceutical uses thereof. 5,055,464, Cl. 514-211.000

Murasawa, Yasuhiro; Toda, Hitoshi; Sawano, Hiroshi; and Yagoura, Hideya, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 5,055,912, Cl. 357-74.000.

Murata Mfg. Co., Ltd.: *See*—
Kounoike, Takehiro; and Tomono, Kunisaburo, 5,055,214, Cl. 252-62.570.
Kumada, Akira; and Kitoh, Norimitsu, 5,055,140, Cl. 136-212.000.

Murata, Yasushi; and Matsui, Fumio, to Pioneer Electronic Corporation. Luminescent screen. 5,055,737, Cl. 313-524.000.

Murata, Yutaka: *See*—
Ishiwatari, Makoto; Handa, Akio; Kobayashi, Takeshi; Shibukawa, Takerou; Murata, Yutaka; and Masuda, Tatsuo, 5,054,842, Cl. 296-191.000

Murayama, Tomohiro: *See*—
Ozawa, Katsuko; Gotoh, Kazuhisa; Murayama, Tomohiro; Tokuda, Momoyo; Sumida, Satoshi; and Suzuki, Tetsuo, 5,055,755, Cl. 318-568.110.

Murayama, Yasushi; Aoki, Tomohiro; Uchida, Takashi; Mitomi, Tatsuo; and Nemura, Masaharu, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 5,055,861, Cl. 346-140.00R.

Murcko, David, deceased: *See*—
Martin, Samuel W.; Miller, Carl A.; Pickering, William V., Jr.; Supron, Steven A.; Murcko, David, deceased; and Murcko, Linda, administrator, 5,054,757, Cl. 270-45.000.

Murcko, Linda, administrator: *See*—
Martin, Samuel W.; Miller, Carl A.; Pickering, William V., Jr.; Supron, Steven A.; Murcko, David, deceased; and Murcko, Linda, administrator, 5,054,757, Cl. 270-45.000.

Muroya, Hideki: *See*—
Oguma, Shingo; Muroya, Hideki; and Iwata, Yoshitaka, 5,055,945, Cl. 358-468.000

Murphy, Derrick L.: *See*—
Murphy, Gary J.; Murphy, Derrick L.; Murphy, Michael J.; and Barnes, Michael, 5,054,621, Cl. 209-534.000.

Murphy, Gary J.; Murphy, Derrick L.; Murphy, Michael J.; and Barnes, Michael, to Hybrid Systems, Inc. Document sorting apparatus. 5,054,621, Cl. 209-534.000

Murphy, James J., to American Decal & Manufacturing Company. Patterned metallized film and method for making same. 5,055,343, Cl. 428-209.000

Murphy, Michael J.: *See*—
Murphy, Gary J.; Murphy, Derrick L.; Murphy, Michael J.; and Barnes, Michael, 5,054,621, Cl. 209-534.000.

Murray, William T.: *See*—
Brackenridge, David R.; and Murray, William T., 5,055,235, Cl 252-609.000.

Murrell, William H.: *See*—
DeAntonis, Ferdinand A.; Murrell, William H.; and Degrassi, Alfieri, 5,055,355, Cl. 428-476.300.

Muruganandam, Natarajan: *See*—
Kawakami, James H.; Muruganandam, Natarajan; and Brode, George L., 5,055,114, Cl. 55-16.000.

Mushaben, Thomas G.: *See*—
Leist, Alan R.; Mushaben, Thomas G.; and Youtsey, Thomas E., 5,054,536, Cl. 160-229.100.

Musschoot, Albert, to General Kinematics Corporation. Control system for vibratory apparatus. 5,054,606, Cl. 198-751.000.

Musto, Dominick J.: *See*—
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,055,050, Cl. 434-226.000.

Mutch, Henry, to Rohr Industries, Inc. Gas turbine engine compartment vent system. 5,054,281, Cl. 60-39.830.

Mutchler, John H.; Jaeger, Timothy P.; Matt, Richard J.; and Farver, Theodore B., to Combustion Engineering, Inc. Pneumatic operated valve data acquisitioner. 5,056,046, Cl. 364-551.010.

Muz, Edwin, to Nicolay GmbH. Optoelectronic sensor for producing electrical signals representative of physiological values. 5,054,488, Cl. 128-633.000.

Mycogen Corporation: *See*—
Gilroy, Thomas E., 5,055,294, Cl. 424-93.000.

Myers, Gary C.: *See*—
Blanchette, Robert A.; Leatham, Gary F.; Attridge, Michael; Akhtar, Masood; and Myers, Gary C., 5,055,159, Cl. 162-72.000.

Myers, Terry D.: *See*—
Vassiliadis, Arthur; Shaffer, Joseph W.; Fullmer, David J.; Brewer, Michael H.; Hennings, David R.; and Myers, Terry D., 5,055,048, Cl. 433-215.000.

Myers, Wilbur J.: *See*—
Gergely, John S.; and Myers, Wilbur J., 5,054,878, Cl. 385-33.000.

Mysiak, Eugene J.: *See*—
Machura, Bernard C.; and Mysiak, Eugene J., 5,055,068, Cl. 439-581.000.

N. A. Philips Corporation: *See*—
Akylas, Victor R.; and De Zeeuw, Cornelis J. H., 5,056,061, Cl. 365-96.000.

Naeger, Duane M.: *See*—
Henton, David E.; Flaver, F. Michael; Naeger, Duane M.; and Drzal, Robert S., 5,055,525, Cl. 525-66.000.

Nafziger, Richard D.: *See*—
Bauer, Thomas M.; Dunn, Thomas A.; Gurke, Christina M.; Hopkins, John W.; and Nafziger, Richard D., 5,056,134, Cl. 379-246.000.

Nagai, Kazutoshi, to Ebara Corporation. Fast atom beam source. 5,055,672, Cl. 250-251.000.

Nagai, Kimie: *See*—
Naijoh, Shuichi; Inoue, Chozo; Kurotaki, Ayako; and Nagai, Kimie, 5,055,225, Cl. 252-299.650.

Nagai, Kiyoshi: *See*—
Ikeda, Shuji; Nagasawa, Kouichi; Motoyoshi, Makoto; Nagai, Kiyoshi; and Meguro, Satoshi, 5,055,420, Cl. 437-34.000.

Nagano, Masanobu: *See*—
Ono, Hisao; Nagano, Masanobu; Ieki, Yasuo; and Miyachi, Takumi, 5,055,519, Cl. 525-71.000.

Nagano, Takahiro: *See*—
Minami, Masataka; Sato, Kazushige; Watanabe, Atsuo; Shukuri, Shoji; Nishida, Takashi; and Nagano, Takahiro, 5,055,904, Cl 357-43.000.

Nagaoka, Futami: *See*—
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.

Nagasaka, Yasuhiro; Shigenobu, Hiromichi; Shiraki, Kazuyuki; Iyoda, Motomi; and Maeda, Akira, to Yazaki Corporation. Device for checking for incomplete locking of connector housings. 5,055,058, Cl. 439-188.000.

Nagasaki, Tatsuo; and Yamada, Hidetoshi, to Olympus Optical Co., Ltd. Image sensing and recording device having a multilayer analog memory stacked on an image sensing array. 5,055,930, Cl. 358-213.110.

Nagasawa, Hideyuki, to Seiko Epson Corporation. Diagonal insertion apparatus. 5,054,181, Cl. 29-281.100.

Nagasawa, Kouichi: *See*—
Ikeda, Shuji; Nagasawa, Kouichi; Motoyoshi, Makoto; Nagai, Kiyoshi; and Meguro, Satoshi, 5,055,420, Cl. 437-34.000.

Nagase, Shinichiro: *See*—
Nakahara, Hisao; Sakuma, Hiroshi; Eto, Noriaki; and Nagase, Shinichiro, 5,054,240, Cl. 49-476.000.

Nagata, Masanori: *See*—
Kakimoto, Kenichi; Kobayashi, Toshitaka; Nagata, Masanori; Imano, Shigeki; Honma, Hideaki; and Nishiyama, Hideki, 5,056,124, Cl. 378-57.000.

Nagatomo Fluid Machinery Laboratory Limited: *See*—
Nagatomo, Hisao, 5,054,289, Cl. 60-468.000.

Nagatomo, Hisao, to Nagatomo Fluid Machinery Laboratory Limited. Hydraulic transmission. 5,054,289, Cl. 60-468.000.

Nagayama, Katsuhiro: *See*—
Maeda, Yasutaka; Tanaka, Natsuko; Nagayama, Katsuhiro; and Nishimura, Hideyuki, 5,055,877, Cl. 355-214.000.

Nagoshi, Hitoshi; Kimura, Taizou; and Takashima, Kazushige, to Matsushita Electric Industrial Co., Ltd. Dust-collecting electrode unit. 5,055,118, Cl. 55-146.000.

Naijoh, Shuichi; Inoue, Chozo; Kurotaki, Ayako; and Nagai, Kimie, to Showa Denko K.K. Alkyl thiobenzoate derivative, production of same and liquid crystal display element. 5,055,225, Cl. 252-299.650.

Naiman, Alaric: *See*—
Hawkins, Robert E.; Small, Richard; and Naiman, Alaric, 5,055,164, Cl. 204-15.000.

Naimer, Hubert L.: *See*—
Alsch, Gottfried, 5,055,644, Cl. 200-325.000.

Nair, Moolamkuzhiel R. V.: *See*—
Kent, Graham B.; and Nair, Moolamkuzhiel R. V., 5,054,602, Cl. 198-370.000.

Naito, Atsushi; Nakatsuka, Kiyoshi; Yamamoto, Seiichi; Inui, Takashi; and Suzuki, Tomohiro, to Texas Instruments Incorporated. Data selector circuit and method of selecting format of data output from plural registers. 5,055,717, Cl. 307-463.000.

Naito, Yasuo; and Kouzuki, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Cruise control apparatus for vehicle. 5,054,570, Cl. 180-170.000.

Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; and Furuya, Masato, 5,054,892, Cl. 359-72.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; and Suzuki, Tetsuji, 5,055,936, Cl. 358-296.000.

Nakagawa, Hiroaki; Kondo, Masahiro; and Ohishi, Noriake, to Mitsui Petrochemical Industries, Ltd. Process for preparation of cellulose nitrate films. 5,055,568, Cl. 536-35.000.

Nakagawa, Kazuyuki: *See*—
Oshiro, Yasuo; Ueda, Hiraki; and Nakagawa, Kazuyuki, 5,055,474, Cl. 514-316.000.

Nakagawa, Mikio: *See*—
Sato, Koichiro; Kubo, Mineo; and Nakagawa, Mikio, 5,055,526, Cl. 525-74.000.

Nakagawa, Toshiharu: *See*—
Miyamura, Masataka; Wada, Yusuke; Nakagawa, Toshiharu; Nakaizumi, Yuji; and Takeda, Kazuhiro, 5,055,378, Cl. 430-280.000.

Nakaguro, Kazuhiro, to Sanden Corporation. Heat exchanger. 5,054,549, Cl. 165-133.000.

Nakahara, Hisao; Sakuma, Hiroshi; Eto, Noriaki; and Nagase, Shinichiro, to Kinugawa Rubber Industrial Co., Ltd. End member for sealing open end of vehicle weatherstrip. 5,054,240, Cl. 49-476.000.

Nakahara, Kazumi; Honma, Mikio; and Kobayashi, Fumio, to Ohi Seisakusho Co., Ltd. Vehicle door lock system. 5,054,300, Cl. 70-262.000.

Nakahara, Takafumi: *See*—
Nakatani, Yoshihide; Okada, Shigeichi; Yaezawa, Eiji; Takata, Makoto; and Nakahara, Takafumi, 5,054,441, Cl. 123-182.000.

Nakai, Hiroto; Iwahashi, Hiroshi; Asano, Masamichi; and Kumagai, Shigeru, to Kabushiki Kaisha Toshiba. Delay circuit that resets after pulse-like noise. 5,055,706, Cl. 307-265.000.

Nakaizumi, Yuji: *See*—
Miyamura, Masataka; Wada, Yusuke; Nakagawa, Toshiharu; Nakaizumi, Yuji; and Takeda, Kazuhiro, 5,055,378, Cl. 430-280.000.

Nakajima, Yasushi: *See*—
Higa, Masakatsu; Nakajima, Yasushi; and Aoki, Hisashi, 5,054,891, Cl. 359-43.000.

Nakakita, Issey; and Kato, Hisao, to Yokohama Rubber Co., Ltd., The. Pneumatic radial tire with 1×2 steel belt cord structure. 5,054,531, Cl. 152-527.000.

Nakamura, Katsufumi: *See*—
Rybicki, Mathew A.; Whatley, Roger A.; and Nakamura, Katsufumi, 5,055,847, Cl. 341-162.000.

Nakamura, Yasunori: *See*—
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl. 530-313.000.

Nakano, Akira: *See*—
Inoue, Nobuhiro; Nakano, Akira; and Oshima, Nobuhiro, 5,054,190, Cl. 29-611.000.

Nakano, Masaru; Tanaka, Minoru; Ikeda, Toshiaki; and Kuno, Toshitaka, to Kabushiki Kaisha Toyota Chuo Kenyusho. Apparatus for detecting the collision of moving objects. 5,056,031, Cl. 364-461.000.

Nakano, Yoshinori; Kotsuma, Kyohisa; and Ito, Masayoshi, to Sunrise Meisei Corporation. High speed moisture cure polyurethane sealant. 5,055,543, Cl. 528-58.000.

Nakao, Akio: *See*—
Nishimoto, Shigeru; Nakao, Akio; Ikeda, Yasuji; and Nate, Hiroyuki, 5,055,575, Cl. 540-491.000.

Nakasugi, Nobuyasu: *See*—
Nakatani, Keiichi; and Nakasugi, Nobuyasu, 5,055,581, Cl. 544-235.000.

Nakatani, Isao; and Ozawa, Kiyoshi, to National Research Institute For Metals. Process for producing transition metal boride fibers. 5,055,280, Cl. 423-276.000.

Nakatani, Keiichi; and Nakasugi, Nobuyasu, to San-Apro Limited. Bis(piperazinylalkyl) ether compound and method for the preparation thereof. 5,055,581, Cl. 544-235.000.

Nakatani, Munehiro; Sugawa, Hiroya; and Kishi, Masamichi, to Minolta Camera Kabushiki Kaisha. Image forming apparatus capable

of forming copied images edited from an original image. 5,055,886, Cl. 355-326.000

Nakatani, Yoshihide; Okada, Shigeichi; Yaezawa, Eiji; Takata, Makoto; and Nakahara, Takafumi, to Mitsubishi Jukogyo Kabushiki Kaisha Decompression device in a two-cycle engine. 5,054,441, Cl 123-182.000

Nakatsugawa, Naoki; and Horikoshi, Koki, to Research Development Corporation of Japan; Nakatsugawa, Naoki; and Horikoshi, Koki, a part interest to each. Extremely halophilic methanogenic archaebacteria. 5,055,406, Cl. 435-252.100.

Nakatsuka, Kiyoshi: *See*—
Naito, Atsushi; Nakatsuka, Kiyoshi; Yamamoto, Seiichi; Inui, Takashi; and Suzuki, Tomohiro, 5,055,717, Cl. 307-463.000.

Nakaya, Hiroaki: *See*—
Ogura, Takashi; Yamashita, Takuo; Nakaya, Hiroaki; and Yoshida, Masaru, 5,055,360, Cl. 428-473.500

Nakayama, Hiroki: *See*—
Kitagishi, Nozomu; Nakayama, Hiroki; Hattori, Jun; Suda, Shigeyuki; and Horiuchi, Akihisa, 5,054,898, Cl. 359-654.000

Nalco Chemical Company: *See*—
Trivett, Robert L., 5,055,325, Cl. 427-388.100.

Namaritani, Kazuo: *See*—
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.

Names, Curtis D. Metal impression confirmation system for dental implants. 5,055,047, Cl. 433-214.000

Namiki, Tomizo; Suzuki, Tamotsu; and Katayama, Masashi, to Fuji Photo Film Co., Ltd. Image-receiving sheet material and process for the formation of a transferred image. 5,055,329, Cl. 428-42.000.

Nanba, Katsuyuki: *See*—
Fujino, Akihiko; Ichikawa, Tsutomu; Nanba, Katsuyuki; and Taniguchi, Nobuyuki, 5,055,865, Cl. 354-127.110.

Nance, Roy A.: *See*—
Horvath, Mark S.; Nance, Roy A.; Cohen, George H.; and Fodor, George, 5,054,321, Cl. 73-597.000.

Nanne, Johannes M.: *See*—
Gilson, Jean-Pierre; Nanne, Johannes M.; and den Otter, Gernt J., 5,055,629, Cl. 585-739.000.

Naraoka, Naohito; Ishiwata, Masao; and Thunoda, Akiji, to Konica Corporation; and Hikari Chemical Industry Corporation Limited Material for packaging light-sensitive materials. 5,055,344, Cl 428-213.000

Narasimhan, Kalathur S. V. L.; and Ma, Bao-Min, to Crucible Materials Corporation. Permanent magnet alloy. 5,055,146, Cl. 148-302.000

Nashiki, Masayuki; and Yura, Motozumi, to Kabushiki Kaisha Okuma Tekkosho. Linear actuator drive control apparatus. 5,055,760, Cl. 318-687.000

Nastatka, John R., to Duo-Fast Corporation. Furniture clip/tool. 5,054,678, Cl. 227-8.000.

Naso, Giovanni: *See*—
Santin, Giovanni; and Naso, Giovanni, 5,056,063, Cl. 365-208.000.

Nate, Hiroyuki: *See*—
Nishimoto, Shigeru; Nakao, Akio; Ikeda, Yasuji; and Nate, Hiroyuki, 5,055,575, Cl. 540-491.000.

National Gypsum Company: *See*—
Kole, Donald R.; Kennedy, Arthur E.; and Bean, George J., Jr., 5,055,323, Cl. 427-265.000.

National Metal and Refining Company, Ltd.: *See*—
Fitzgerald, John V.; Walsh, Teresa M.; Matusik, Frank J.; Stone, John; Dougherty, Edmond; and Batton, John, 5,054,313, Cl. 73-59.000.

National Research Development Corporation: *See*—
Garland, Robert B.; and Miyano, Masateru, 5,055,582, Cl. 546-256.000
McDonald, Vincent; and Shirley, Martin W., 5,055,292, Cl. 424-88.000

National Research Institute For Metals: *See*—
Nakatani, Isao; and Ozawa, Kiyoshi, 5,055,280, Cl. 423-276.000.

National Semiconductor Corporation: *See*—
Akcasu, Osman E., 5,055,417, Cl. 437-6.000
Hall, Christopher M., 5,055,705, Cl. 307-296.400
Hawley, David W.; Pickett, Scott K.; and Leung, Frederick K. Y., 5,055,712, Cl. 307-465.000.
Vora, Madhukar B., 5,055,418, Cl. 437-31.000.
Wong, Hee; Wilson, Howard; and Guinea, Jesus, 5,056,054, Cl. 364-724.010.

National Starch and Chemical Investment Holding Corporation: *See*—
Leake, Craig H.; Tsai, John J.; and Meier, Eric A., 5,055,503, Cl. 524-30.000

Natori, Shunji, to Sanwa Kagaku Kenkyusho Co., Ltd. Cloning of DNA encoding transcription factor S-11. 5,055,392, Cl. 435-6.000.

Natwick, Vernon R.; and Lawless, Michael W., to Abbott Laboratories. Volumetric pump with spring-biased cracking valves. 5,055,001, Cl 417-63.000

Navistar International Transportation Corp.: *See*—
Hoffman, Lawrence A., 5,054,567, Cl. 180-68.200

Nayak, Devdas U., to Lasy of North America Ltd. Play table and activity center. 5,055,081, Cl. 446-75.000.

NCM International Inc.: *See*—
Kuhlman, Marvin G.; Finkiewicz, Daniel J.; and Gradecki, Raymond J., 5,054,389, Cl. 101-28.000.

NCR Corporation: *See*—
Milne, Douglas L., 5,055,670, Cl. 250-223.00R.

Ndebi, Sylvain L.; and Bobo, Robert D., to Eastman Kodak Company. Electrostatographic equipment with multiplex fuser. 5,055,884, Cl. 355-282.000

NEC Corporation: *See*—
Inaba, Hideo, 5,055,715, Cl. 307-443.000.
Matsuyama, Yukio, 5,054,944, Cl. 400-679.000.
Nikoh, Hidemitsu; and Morito, Hiroshi, 5,055,917, Cl. 358-22.000.
Ohde, Yuko; Tanaka, Hideo; and Kuroda, Ichiro, 5,056,004, Cl. 264-200.000
Ono, Kazuhiko, 5,056,008, Cl. 364-200.000.
Sugawara, Mitsutoshi, 5,055,708, Cl. 307-270.000.
Taguchi, Tetsu, 5,056,143, Cl. 381-35.000
Watanabe, Takayuki, 5,056,002, Cl. 364-200.000
Yamamoto, Mitsuhiro, 5,056,013, Cl. 364-200.000.

NEC Home Electronics Ltd.: *See*—
Sakai, Toshihisa, 5,055,929, Cl. 358-166.000

Nederlandse Organisatie Voor Toegepastnatuurwetenschappelijk Onderzoek Tno: *See*—
Konig, Johan W.; and Houpt, Pieter M., 5,055,699, Cl. 250-577.000.

Neefe, Charles W. Composite railroad cross-tie. 5,055,350, Cl 428-331.000

Neidiffer, Fred; and Fox, Charles E., to Neidiffer, Fred. Gasoline additive composition and method for using same. 5,055,625, Cl. 585-14.000

Nelson & Associates Research, Inc.: *See*—
Nelson, Jerry L., 5,055,253, Cl. 420-87.000.

Nelson, Carl T., to Linear Technology Corporation. Analog multiplier in the feedback loop of a switching regulator. 5,055,767, Cl 323-285.000

Nelson, Jerry L., to Nelson & Associates Research, Inc. Metallic composition. 5,055,253, Cl. 420-87.000.

Nelson, John: *See*—
Evert, Charles P.; and Nelson, John, 5,055,328, Cl. 428-34.900.

Nelson, Marshall B.: *See*—
Lin, Ronny W.; Nelson, Marshall B.; and Peters, Bruce C., 5,055,628, Cl. 585-.647.

Nelson, Richard H.: *See*—
Fitzgerald, Timothy P.; Rother, David J.; Wrolson, Darryl T.; Nelson, Richard H.; and Takala, Robert E., 5,056,073, Cl. 369-36.000

Nelson, Victor A. High performance sailing craft. 5,054,411, Cl. 114-61.000

Nemcik, Jan: *See*—
Fischer, Hermann; and Nemcik, Jan, 5,055,875, Cl. 355-89.000.

Nemura, Masaharu: *See*—
Murayama, Yasushi; Aoki, Tomohiro; Uchida, Takashi; Mitomi, Tatsuo; and Nemura, Masaharu, 5,055,861, Cl. 346-140.00R

Netzer, Karl. Drum storage system utilizing detachable blocks. 5,054,636, Cl. 220-23.400.

New York Blood Center, Inc.: *See*—
Geacintov, Nicholas E.; Valinsky, Jay E.; Williams, Bolanle; and Horowitz, Bernard, 5,055,485, Cl. 514-449.000.

Newkirk, Michael A.: *See*—
Vahala, Kerry J.; and Newkirk, Michael A., 5,056,100, Cl. 372-50.000

Newman, Eugene E., to GPAC, Inc. System for sealing asbestos contaminated material in building crawl space. 5,054,252, Cl. 52-169.140.

Newman, Michael J., to Indalex Limited. Method of extrusion, and extrusion press. 5,054,303, Cl. 72-38.000.

Newton, Robert E.: *See*—
Dechene, Ronald L.; Smith, Thomas B.; and Newton, Robert E., 5,054,325, Cl. 73-861.040.

Ng, Flora T. T.; and Tsakiri, Sophia K., to University of Waterloo. Upgrading crude oil emulsions. 5,055,175, Cl. 208-112.000

Ng, John S.: *See*—
Babiak, Kevin A.; Behling, James R.; Dygos, John H.; and Ng, John S., 5,055,604, Cl. 556-437.000.

NGK Insulators, Ltd.: *See*—
Hamanaka, Toshiyuki; Harada, Takashi; and Hattori, Fumio, 5,055,435, Cl. 501-134.000

Nguyen, Khe C.; and Klose, Thomas R., to Eastman Kodak Company. Electrophotographic recording elements containing titanyl phthalocyanine pigments and their preparation. 5,055,368, Cl. 430-78.000.

Nguyen, Kim D.; and Spink, Donald R., to Alpine Plant Foods Limited Production of low-chloride fertilizers. 5,055,124, Cl. 71-34.000.

NHK Spring Co., Ltd.: *See*—
Ojima, Juji, 5,055,089, Cl. 474-138.000.

Nickolson, Victor J., to Akzo N.V. Vincristine-containing product. 5,055,449, Cl. 514-17.000.

Nicolaisen, Holger, to Danfoss A/A. Magnetic valve. 5,054,742, Cl. 251-129.190.

Nicolay GmbH: *See*—
Muz, Edwin, 5,054,488, Cl. 128-633.000.

Niedheiser, Robert W.: *See*—
Schroeder, Alfred A.; Durham, Samuel; and Niedheiser, Robert W., 5,054,654, Cl. 222-146.600.

Niegl, Manfred: *See*—
Schels, Wilhelm; Niegl, Manfred; and Behrend, Rainer, 5,055,639, Cl. 200-144.00B.

Nield, Joseph G., Jr.: *See*—
D'Entremont, John R.; and Nield, Joseph G., Jr., 5,055,726, Cl. 310-71.000

Nigro, Philip, Jr. Pegboard hanger. 5,054,728, Cl. 248-220.400.

Nihei, Hideki; Tsuboi, Nobuyoshi; Minemura, Hiroyuki; Kimura, Hiroshi; and Morinaga, Shigeki, to Hitachi, Ltd. High-speed two-dimensional electrostatic actuator. 5,055,731, Cl. 310-309.000

Nihon Denshizairyo Kabushiki Kaisha: *See*—
Okubo, Kazumasa; Okubo, Masao; Yoshimitsu, Yasuro; and Sugaya, Kiyoshi, 5,055,778, Cl. 324-158.00P.

Nihon Tokkyo Kanri Company Limited: *See*—
Inagaki, Hiromichi, 5,055,152, Cl. 156-244.110.

Nii, Koji: *See*—
Matsumura, Hiroshi; and Nii, Koji, 5,055,340, Cl. 428-172.000.

Niinomi, Mitsuyoshi: *See*—
Fushiya, Fusao; Ito, Katuyasu; and Niinomi, Mitsuyoshi, 5,054,352, Cl. 83-468.300.

Niinuma, Takashi: *See*—
Kaya, Akimasa; and Niinuma, Takashi, 5,055,956, Cl. 360-109.000

Nikoh, Hidemitsu; and Morito, Hiroshi, to NEC Corporation. Output apparatus for image signals. 5,055,917, Cl. 358-22.000.

Nikon Corporation: *See*—
Kimura, Keita; and Kawamura, Koichiro, 5,055,950, Cl. 360-74.500.

Nilsson, Erik R.; Sjodin, Per-Goran; and Tiback, Bo G., to Sandvik AB Hard insert for ice/snow clearing tool. 5,054,217, Cl. 37-244.000.

Nino, Naohi, to Koito Manufacturing Co., Ltd. Automotive projector type headlight. 5,055,981, Cl. 362-61.000.

Ninomiya, Ken; and Suzuki, Keizo, to Hitachi, Ltd. Surface analysis method and apparatus. 5,055,679, Cl. 250-306.000.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Moriya, Tetsuo; and Kondo, Susumu, 5,055,501, Cl. 523-409.000.

Nippon Paint Co., Ltd.: *See*—
Seio, Mamoru; Ikeda, Takeshi; Nishijima, Kanji; and Ishikawa, Katsukiyo, 5,055,374, Cl. 430-190.000.

Nippon Seiko K.K.: *See*—
Kato, Yasushi; Tsurugi, Noriyoshi; Suzuki, Hiroaki; and Ogata, Shigeji, 5,054,524, Cl. 139-383.00R.

Nippon Seiko Kabushiki Kaisha: *See*—
Kadokawa, Satoshi, 5,054,440, Cl. 123-90.500.

Nippon Sheet Glass Co., Ltd.: *See*—
Tsuno, Toshio; Katayama, Shinya; Kawakita, Shinya; and Shimizu, Tomoyasu, 5,055,359, Cl. 428-448.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.
Osaka, Shigemi; Hata, Kazuo; and Takashashi, Tsukasa, 5,055,442, Cl. 502-439.000.

Nippon Yakin Kogyo Co., Ltd.: *See*—
Ikegami, Yuji; Sasayama, Shinichi; Tachino, Noboru; and Kamiya, Takeshi, 5,055,145, Cl. 148-285.000.

Nippon Zeon Co., Ltd.: *See*—
Yamamoto, Haruhisa, 5,055,322, Cl. 427-128.000.

NIRSystems Incorporated: *See*—
Honigs, David E., 5,055,684, Cl. 250-339.000.

Nisenbaum, Philip. Shovel. 5,054,830, Cl. 294-58.000.

Nishi, Yoshio; Yasuda, Akio; Kashima, Tsunehiro; Hori, Takeshi; Higuchi, Shigetaka; and Shimizu, Hidetoshi, to Sony Corporation. Thin electronic device having an integrated circuit chip and a power battery and a method for producing same. 5,055,968, Cl. 361-395.000.

Nishibe, Takahumi: *See*—
Niwa, Shigeki; Kawai, Kazuhide; Nishibe, Takahumi; and Kawamura, Toshio, 5,055,433, Cl. 501-105.000.

Nishida, Takashi: *See*—
Minami, Masataka; Sato, Kazushige; Watanabe, Atsuo; Shukuri, Shoji; Nishida, Takashi; and Nagano, Takahiro, 5,055,904, Cl 357-43.000

Nishide, Akihiko, to Kabushiki Kaisha Toshiba. Three-dimensional labeling apparatus for two-dimensional slice image information. 5,056,146, Cl. 382-6.000.

Nishii, Michiharu: *See*—
Nomura, Yoshihisa; Kato, Masahiko; and Nishii, Michiharu, 5,054,860, Cl. 303-92.000.

Nishijima, Kanji: *See*—
Seio, Mamoru; Ikeda, Takeshi; Nishijima, Kanji; and Ishikawa, Katsukiyo, 5,055,374, Cl. 430-190.000.

Nishikata, Masanobu: *See*—
Maruta, Keiji; and Nishikata, Masanobu, 5,056,075, Cl. 369-44.290.

Nishikawa, Kazunori: *See*—
Haruna, Tohru; and Nishikawa, Kazunori, 5,055,507, Cl. 524-117.000.

Nishikawa, Yukio: *See*—
Funami, Koji; Uesugi, Yuji; and Nishikawa, Yukio, 5,055,653, Cl. 219-121.750.

Nishimori, Shinji: *See*—
Kobayashi, Makoto; Ouchi, Kiyoshi; Nishimori, Shinji; Maeda, Tsuyoshi; and Miyake, Yoshio, 5,055,006, Cl. 417-366.000

Nishimoto, Shigeru; Nakao, Akio; Ikeda, Yasuji; and Nate, Hiroyuki, to Tanabe Seiyaku Co., Ltd. Process for preparing 1,5-benzothiazepine derivatives. 5,055,575, Cl. 540-491.000.

Nishimura, Hideyuki: *See*—
Maeda, Yasutaka; Tanaka, Natsuko; Nagayama, Katsuhiro; and Nishimura, Hideyuki, 5,055,877, Cl. 355-214.000.

Nishimura, Keiichi: *See*—
Teratsuji, Osamu; Nishimura, Keiichi; Moriya, Yoshiro; and Ueda, Yukihiko, 5,054,134, Cl. 4-488.000.

Nishimura, Takaaki: *See*—
Terauchi, Tsuneo; and Nishimura, Takaaki, 5,054,332, Cl. 74-479.000.

Nishimura, Yasuhiro: *See*—
Mitsumori, Naomichi; Nishimura, Yasuhiro; Yokota, Keiko; Okuno, Shiro; and Suzuki, Motoko, 5,055,469, Cl. 514-252.000.

Nishio, Tomonori, to Fuji Photo Film Co., Ltd. Pixel interval compensating method. 5,055,855, Cl. 346-1.100.

Nishiyama, Hideki: *See*—
Kakimoto, Kenichi; Kobayashi, Toshitaka; Nagata, Masanori; Imano, Shigeki; Honma, Hideaki; and Nishiyama, Hideki, 5,056,124, Cl. 378-57.000.

Nishizawa, Toshihiko: *See*—
Imaizumi, Haruo; Nishizawa, Toshihiko; and Kato, Masatoshi, 5,055,064, Cl. 439-402.000.

Nissan Chemical Industries, Ltd.: *See*—
Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,055,472, Cl. 514-258.000.

Nissan Motor Co., Ltd.: *See*—
French, Patrick J., 5,055,668, Cl. 250-208.200
Shiraishi, Yasuhiro; and Ishikawa, Yasuki, 5,054,568, Cl. 180-140.000.
Tabata, Toshiyuki, 5,054,752, Cl. 267-140.100.
Takeuchi, Mikio, 5,055,701, Cl. 307-10.200.
Takizawa, Satoshi, 5,054,336, Cl. 74-866.000
Tsuchiya, Kouji; Tsutsui, Keiichiro; and Koide, Masaru, 5,054,145, Cl. 5-448.000
Tsukamoto, Masahiro, 5,054,808, Cl. 280-707.000.
Umebayashi, Shigeto; Iwanaga, Kazuyoshi; and Hattori, Noboru, 5,055,098, Cl. 475-312.000.

Nitrokemia Ipartelepek: *See*—
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000.

Nitz, Larry T.: *See*—
Witkowski, Michael R.; Bolander, William J.; and Nitz, Larry T., 5,056,022, Cl. 364-424.100

Niwa, Shigeki; Kawai, Kazuhide; Nishibe, Takahumi; and Kawamura, Toshio, to Toshiba Ceramics Co., Ltd. Refractory having high resistance to corrosion and spalling and manufacturing method thereof 5,055,433, Cl. 501-105.000.

Niwa, Yukichi: *See*—
Baba, Takashi; Niwa, Yukichi; Yoshii, Minoru; and Watanabe, Takako, 5,055,665, Cl. 250-201.700

Nixon, John E.: *See*—
Horsley, John K.; and Nixon, John E., 5,054,604, Cl. 198-444.000.

NKK Corporation: *See*—
Shikada, Tsutomu; Asanuma, Minoru; and Ikariya, Takao, 5,055,282, Cl. 423-351.000.
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi, Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl 562-416.000.

Noack, Werner: *See*—
Dummersdorf, Hans-Ulrich; Jahn, Wolfgang; Noack, Werner; and Heidel, Wolfgang, 5,055,167, Cl. 204-165.000

Nobe, Takeshi: *See*—
Akiyama, Sigeo; Suzumura, Masahiko; and Nobe, Takeshi, 5,055,895, Cl. 357-23.400.

Noguchi, Kazuo; Takahashi, Nobuhiro; Hideshima, Masafumi; and Asai, Tsuyoshi, to Sumitomo Electric Industries, Ltd. Throw away cutting tool. 5,054,967, Cl. 407-110.000.

Noguchi, Yoji: *See*—
Aono, Tomoko; Katata, Hiroyuki; and Noguchi, Yoji, 5,056,154, Cl. 382-56.000.

Noh, Il-Young, to SamSung Electronics Co., Ltd. Automatic track finding (ATF) controller for digital audio tape recorder. 5,055,952, Cl. 360-77.140

Nojima, Hisatake; and Nojima, Youko, to Yuugen-Kaisha Parasight Multi-layered gaseous phase cultivation. 5,054,422, Cl. 119-3.000

Nojima, Youko: *See*—
Nojima, Hisatake; and Nojima, Youko, 5,054,422, Cl. 119-3.000.

Nokovich, Nicholas P.: *See*—
Rhoades, Lawrence J.; Nokovich, Nicholas P.; Kohut, Thomas A.; and Johnson, Frank E., 5,054,247, Cl. 51-317.000

Nomix Manufacturing Company Limited: *See*—
Greenslade, Robert C., 5,054,644, Cl. 220-403.000

Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, to Uni-Charm Corporation. Disposable garments. 5,055,103, Cl. 604-385.200.

Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, to Calpis Food Industry Co., Ltd., The. Renal growth promoter and process for the production of the same. 5,055,554, Cl. 530-313.000.

Nomura, Yasushi: *See*—
Imai, Kyoko; and Nomura, Yasushi, 5,055,415, Cl. 436-516.000.

Nomura, Yoshihisa; Kato, Masahiko; and Nishii, Michiharu, to Aisin Seiki Kabushiki Kaisha. Hydraulic braking system for an automotive vehicle. 5,054,860, Cl. 303-92.000.

Nonaka, Masahiko; Soeda, Takahiko; Yamagiwa, Keiko; Kowata, Hiroko; Motogi, Masao; and Toiguchi, Seiichiro, to Ajinomoto Co., Inc. Process of preparing shelf-stable "tofu" at normal temperature for long term. 5,055,310, Cl. 426-46.000.

Nonnemann, Robert W.: *See*—
Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.

Noone, Robert E.: *See—*
Sartori, Guido; Ho, W. S. Winston; Noone, Robert E.; and Cohen, Abraham D., 5,055,631, Cl. 585-819.000.

Nordica S.p.A.: *See—*
Sartor, Mariano, 5,054,214, Cl. 36-119.000.
Tonel, Valerio; Mattiuzzo, Mario; Foscaro, Giancarlo; and Soligo, Stefano, 5,054,215, Cl. 36-170.000.

Nordine, Darrell H. Protective cover for slack adjusters. 5,054,586, Cl. 188-79.550.

Nordson Corporation: *See—*
Price, Richard P., 5,054,650, Cl. 222-1.000.
Rucki, William M.; and Leidy, Jeanne M., 5,056,034, Cl 364-510.000.

Norkey, Phillip J.; and Bocson, David A., to U.S. Plastics Corporation. Fluid connector. 5,054,743, Cl. 251-149.600.

North American Philips Corporation: *See—*
Tsinberg, Mikhail, 5,055,915, Cl. 358-12.000.

North, Bernard F.: *See—*
Floyd, William C.; Dragner, Louis R.; Black, Blanche H.; and North, Bernard F., 5,055,541, Cl. 527-300.000.

Northern States Power Company: *See—*
Lehto, John M., 5,055,131, Cl. 75-499.000.

Northern Telecom Limited: *See—*
Ghaemian, Allen, 5,054,545, Cl. 165-104.330.
Wight, Mark S., 5,056,114, Cl. 375-87.000.

Northrop Corporation: *See—*
Davis, Richard L.; and Stoll, Harold M., 5,054,873, Cl. 385-27.000

Noske, Reiner: *See—*
Illetschko, Gerhard; Richter, Hans-Peter; and Noske, Reiner, 5,055,920, Cl. 358-36.000.

Notzon, Heinz: *See—*
Hengel, Rolf; and Notzon, Heinz, 5,055,539, Cl. 526-254.000.

Novatec, Inc.: *See—*
Gillette, William J.; and Hemler, Joseph L., Jr., 5,054,208, Cl 34-57.00A.

Nowacki, Christopher: *See—*
Grychowski, Jerry R.; Brisson, Alfred G.; Cruz, Exequiel D.; and Nowacki, Christopher, 5,054,478, Cl. 128-200.210.

Noweck, Klaus: *See—*
Meyer, Arnold; Noweck, Klaus; and Reichenauer, Ansgar, 5,055,019, Cl. 423-625.000.

Nozaki, Masahiro: *See—*
Mishima, Kunio; Hamabata, Mitsuo; Kogiso, Harumi; and Nozaki, Masahiro, 5,054,241, Cl. 49-488.000.

Numata, Tomiyuki: *See—*
Tsuji, Kentaroh; Fuji, Hiroshi; Numata, Tomiyuki; Fujiwara, Tsuneo; and Terashima, Shigeo, 5,056,076, Cl. 369-50.000.

Nuphase Electronics, Inc.: *See—*
Tyson, Jerroll R., Sr., 5,056,138, Cl. 380-10.000.

Nusco Co., Ltd.: *See—*
Hayashi, Shigeki; and Kusaka, Shigeru, 5,054,304, Cl. 72-131.000.

Oakes, Fred T.: *See—*
Babb, Bruce E.; and Oakes, Fred T., 5,055,414, Cl. 436-501.000.

Oakley, Inc.: *See—*
Jannard, James H.; and Arnette, Gregory F., 5,054,903, Cl. 351-123.000.

Obrecht, Gordon A.: *See—*
Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.

Obrecht, Robert E.; and Waltonen, Edward J., to REO Hydraulic Pierce & Form Inc. Multiple function hydraulic apparatus. 5,054,305, Cl. 72-333.000.

Obregon, Carlos D., to Motorola, Inc. Undershoot reduction circuit. 5,055,714, Cl. 307-443.000.

Obukuro, Kazuhide: *See—*
Jolliffe, William C.; Mandich, Steve; and Obukuro, Kazuhide, 5,054,351, Cl. 83-430.000.

Ocean Todd Enterprises Inc.: *See—*
Sherman, Lynn D., 5,054,961, Cl. 405-128.000.

Ochi, Tsuneo: *See—*
Wakabayashi, Takeshi; and Ochi, Tsuneo, 5,055,859, Cl. 346-76.0PH.

Ochs, Charles S.: *See—*
Hayes, Thomas H.; Ochs, Charles S.; and Koontz, Carl E., 5,054,268, Cl. 53-490.000.

Oda, Masatsugu; Sakaki, Toshiro; and Kikutake, Kazuhiko, to Mitsubishi Kasei Corporation. Pyrazolyl acrylic acid derivatives, useful as systemic fungicides for plant and material protection. 5,055,477, Cl 514-341.000.

O'Dea, John: *See—*
Wu, Andrew L.; Smelser, Donald W.; Bruce, E. William, II; and O'Dea, John, 5,055,910, Cl. 357-74.000.

Odetics, Inc.: *See—*
Schulz, Gordon R., 5,054,836, Cl. 294-116.000.

Oestreich, Michael L.; and Pollard, Norman S., to Halliburton Company. Well perforating apparatus. 5,054,564, Cl. 175-4.600.

Ogaki, Kitio: *See—*
Ito, Koichi; and Ogaki, Kitio, 5,055,187, Cl. 210-172.000.

Ogata, Shigeji: *See—*
Kato, Yasushi; Tsurugi, Noriyoshi; Suzuki, Hiroaki; and Ogata, Shigeji, 5,054,524, Cl. 139-383.00R.

Ogata, Toshikazu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device package utilizing a solder flow prevention wall. 5,055,911, Cl 357-74.000.

Ogawa, Tetsuya: *See—*
Uchida, Manabu; Goto, Yasuyuki; and Ogawa, Tetsuya, 5,055,220, Cl. 252-299.010.

Ogawa, Yuichiro, to Bridgestone Corporation. Method for centering and joining two belt components. 5,055,149, Cl. 156-124.000.

Ogawara, Takashi: *See—*
Akesaka, Toshio; and Ogawara, Takashi, 5,054,976, Cl. 409-143.000

Ogita, Tamotu, to Toyota Jidosha Kabushiki Kaisha. Exhaust gas recirculation system. 5,054,460, Cl. 123-571.000.

Oguma, Shingo; Muroya, Hideki; and Iwata, Yoshitaka, to Hitachi, Ltd. Broadcasting communication apparatus. 5,055,945, Cl. 358-468.000.

Ogura, Takashi; Yamashita, Takuo; Nakaya, Hiroaki; and Yoshida, Masaru, to Sharp Kabushiki Kaisha. Thin film electroluminescent device. 5,055,360, Cl. 428-473.500.

Ohba, Hisao; Yoshida, Susumu; and Miura, Toru, to Fuji Photo Film Co., Ltd. Waterless presensitized lithographic printing plate developing apparatus. 5,055,870, Cl. 354-317.000.

Ohbe, Yoshitaka: *See—*
Sugimoto, Hiroaki; Ohbe, Yoshitaka; and Hayatsu, Kazuo, 5,055,546, Cl. 528-193.000.

Ohde, Yuko; Tanaka, Hideo; and Kuroda, Ichiro, to NEC Corporation. Program control system which simultaneously executes a program to be repeated and decrements repetition numbers. 5,056,004, Cl. 264-200.000.

Ohi Seisakusho Co., Ltd.: *See—*
Nakahara, Kazumi; Honma, Mikio; and Kobayashi, Fumio, 5,054,300, Cl. 70-262.000

Ohi, Tohru: *See—*
Sotani, Junji; Okuyama, Tetsuo; Seo, Susumu; Ohi, Tohru; Mori, Naoki; and Mabuchi, Minoru, 5,054,296, Cl. 62-259.100

Ohio Mattress Company Licensing and Components Group, The: *See—*
Brown, Daniel E., 5,054,751, Cl. 267-103.000

Ohishi, Masahiro; and Ohtomo, Fumio, to Kabushiki Kaisha Topcon. Light wave distance measuring instrument of the pulse type. 5,054,911, Cl. 356-5.000

Ohishi, Noriake: *See—*
Nakagawa, Hiroaki; Kondo, Masahiro; and Ohishi, Noriake, 5,055,568, Cl. 536-35.000.

Ohkoda, Keiji; and Inoue, Hitoshi, to Canon Kabushiki Kaisha. Traverse apparatus and image recording apparatus. 5,055,756, Cl. 318-618.000.

Ohkura Electric Co., Ltd.: *See—*
Morimura, Toshiaki; Daimaru, Norio; and Wachi, Akira, 5,055,814, Cl. 336-119.000.

Ohlson, Sven-Åke. Female breast treatment arrangement. 5,054,471, Cl. 128-24.00R.

Ohmori, Takashi: *See—*
Ishibashi, Yoji; Inoue, Hiroshi; Ohmori, Takashi; Hashimoto, Takashi; Kato, Fumio; Akatsu, Shigeyuki; Arai, Akira; Kuroda, Michio; and Hisano, Katsukuni, 5,054,280, Cl. 60-39.060.

Ohms, Kurt; and Jimenez, Juan, to Hewlett-Packard Company. Printed circuit board fixture and a method of assembling a printed circuit board. 5,054,193, Cl. 29-840.000.

Ohmura, Kazutaka: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl. 530-313.000.

Ohmura, Takeo: *See—*
Inukai, Sinji; Agata, Mitsuzi; Akiba, Kiyoshi; Ohmura, Takeo; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, 5,055,481, Cl. 514-381.000.

Ohnishi, Hirofumi: *See—*
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,055,103, Cl. 604-385.200.

Ohno, Katsuyuki, to Ricoh Company, Ltd. Control device for a digital copier with simultaneous operations for reading a succeeding image while reproducing a preceding image without interruption of either operation upon detecting an error with the operation. 5,055,935, Cl. 358-296.000

Ohno, Kouji; Saito, Shinichi; Inukai, Takashi; Inoue, Hiromichi; and Miyazawa, Kazutoshi, to Chisso Corporation. α-substituted-propionic acid esters. 5,055,222, Cl. 252-299.610.

Ohsawa, Akira, to Hitachi, Ltd. Geometric processing system. 5,056,045, Cl. 364-522.000

Ohsumi, Jun: *See—*
Takiguchi, Yo; Ohsumi, Jun; Shimoji, Yasuo; and Sasagawa, Kazuhiko, 5,055,479, Cl. 514-359.000.

Ohta, Masaru: *See—*
Matsuo, Masaaki; Sumita, Masujiro; Hosoi, Isao; Aoki, Hirohumi; and Ohta, Masaru, 5,055,375, Cl. 430-254.000.

Ohta, Shinji; Fukuda, Misao; and Tsuda, Toshitaka, to Fujitsu Limited. Circuit for obtaining accurate timing information from received signal. 5,056,121, Cl. 375-118.000.

Ohta, Yoshimasa; Arakawa, Masayasu; and Yamamoto, Masanao, to Honda Giken Kogyo Kabushiki Kaisha. Production management system with simultaneous multiple data transmission. 5,056,028, Cl. 364-468.000

Ohtaka, Atsushi: *See—*
Imanishi, Masao; Ohtaka, Atsushi; Hiyama, Kunio; and Kawamura, Takanori, 5,054,889, Cl. 359-76.000.

Ohtomo, Fumio: *See—*
Ohishi, Masahiro; and Ohtomo, Fumio, 5,054,911, Cl. 356-5.000.

Ohtomo, Takashi: *See—*
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000.

Ohtsubo, Kazunari, to Idemitsu Petrochemical Co., Ltd. Polycarbonate resin composition. 5,055,508, Cl. 524-128.000.

Ohtsubo, Mitsuru: *See—*
Ikeda, Takenori; Ohtsubo, Mitsuru; Arimoto, Shunji; and Okoshi, Noboru, 5,055,522, Cl. 525-124.000

Ohuchi, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Idle revolution speed control apparatus for an internal combustion engine. 5,054,446, Cl. 123-339.000.

Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, to Ono Pharmaceutical Co., Ltd. Benzopyran derivatives. 5,055,598, Cl. 549-407.000

Ohura, Osami: *See—*
Watanabe, Satoru; and Ohura, Osami, 5,055,286, Cl. 423-584.000

Ohwaki, Akira: *See—*
Morimoto, Akira; and Ohwaki, Akira, 5,055,663, Cl. 250-201.400.

Oi, Vernon T.: *See—*
Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., 5,055,556, Cl. 530-370.000.

Oikawa, Tomohiro: *See—*
Tomita, Kan; and Oikawa, Tomohiro, 5,054,866, Cl. 359-201.000.

Oizumi, Kouji: *See—*
Itoh, Yoshihori; and Oizumi, Kouji, 5,055,868, Cl. 354-222.000.

Oji Paper Co., Ltd.: *See—*
Miura, Takaharu; Shigetani, Tsunehisa; and Moriki, Minoru, 5,055,320, Cl. 427-40.000.

Ojima, Juji, to NHK Spring Co., Ltd. Belt tensioner for power transmitting system. 5,055,089, Cl. 474-138.000.

Oka, Kikuo: *See—*
Hisatomi, Hideo; Iwata, Toshiro; Kosoegawa, Toshihide; Oka, Kikuo; Ichikawa, Seizo; and Mitarai, Kuninori, 5,055,245, Cl. 264-40.600

Okabayashi, Katsuaki: *See—*
Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, 5,054,895, Cl. 359-265.000.

Okada, Kenichi, to Japan Aviation Electronics Industry Limited. Fiber optic gyro using a pulsed light source. 5,054,923, Cl. 356-350.000

Okada, Koichi; and Omura, Ikuo, to Kuraray Company, Ltd. Curable resinous composition. 5,055,497, Cl. 523-116.000.

Okada, Shigeichi: *See—*
Nakatani, Yoshihide; Okada, Shigeichi; Yaezawa, Eiji; Takata, Makoto; and Nakahara, Takafumi, 5,054,441, Cl. 123-182.000

Okamoto, Keiji; and Komurasaki, Takeshi, to Ricoh Company, Ltd Image forming apparatus. 5,055,878, Cl. 355-219.000.

Okamoto, Kenji: *See—*
Oota, Yuji; Momii, Katsuhiro; and Okamoto, Kenji, 5,054,450, Cl. 123-478.000.

Okamoto, Rokuro: *See—*
Inoue, Tsutomu; Okamura, Kazuhiko; Kawamura, Naoto; Tone, Hiroshi; and Okamoto, Rokuro, 5,055,259, Cl. 422-61.000.

Okamoto, Yukio: *See—*
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.

Okamura, Kazuhiko: *See—*
Inoue, Tsutomu; Okamura, Kazuhiko; Kawamura, Naoto; Tone, Hiroshi; and Okamoto, Rokuro, 5,055,259, Cl. 422-61.000.

Okano, Kenji: *See—*
Kishida, Kazuo; Kitai, Kiyokazu; Kaneda, Masahiro; and Okano, Kenji, 5,055,529, Cl. 525-309.000

Okazaki, Shunki: *See—*
Akagi, Yuji; and Okazaki, Shunki, 5,054,439, Cl. 123-52.00M.

Okerblom, Charles L., to Taco, Inc. Automatic flow control valve. 5,054,516, Cl. 137-504.000.

Oki Electric Industry Co., Ltd.: *See—*
Kuwabara, Hiroshi; and Kitazawa, Shooji, 5,056,062, Cl. 365-189.110.

Oki, Youji: *See—*
Miyata, Osamu; Kawano, Katsunori; and Oki, Youji, 5,055,993, Cl. 363-98.000.

Okiai, Ryuichi: *See—*
Sakaya, Masuji; Okiai, Ryuichi; Mochizuki, Masataka; and Mashiko, Kouichi, 5,054,196, Cl. 29-890.032.

Okoshi, Noboru: *See—*
Ikeda, Takenori; Ohtsubo, Mitsuru; Arimoto, Shunji; and Okoshi, Noboru, 5,055,522, Cl. 525-124.000.

Okubo, Hirotsugu: *See—*
Shibuya, Kenichi; Okubo, Hirotsugu; and Furudate, Yukio, 5,056,070, Cl. 368-10.000.

Okubo, Kazumasa; Okubo, Masao; Yoshimitsu, Yasuro; and Sugaya, Kiyoshi, to Nihon Denshizairyo Kabushiki Kaisha. Probe card in which contact pressure and relative position of each probe end are correctly maintained. 5,055,778, Cl. 324-158.00P.

Okubo, Masao: *See—*
Okubo, Kazumasa; Okubo, Masao; Yoshimitsu, Yasuro; and Sugaya, Kiyoshi, 5,055,778, Cl. 324-158.00P.

Okumura, Yuji; and Saeki, Shoji, to Central Glass Company, Limited. Method of controlling feed of molten glass onto molten metal bath 5,055,122, Cl. 65-29.000.

Okuno, Shiro: *See—*
Mitsumori, Naomichi; Nishimura, Yasuhiro; Yokota, Keiko; Okuno, Shiro; and Suzuki, Motoko, 5,055,469, Cl. 514-252.000.

Okura Kogyo Kabushiki Kaisha: *See—*
Ueda, Minoru; Matsuda, Hideaki; Hara, Masanori; and Murakami, Koichi, 5,055,247, Cl. 264-109.000.

Okuyama, Tetsuo: *See—*
Sotani, Junji; Okuyama, Tetsuo; Seo, Susumu; Ohi, Tohru; Mori, Naoki; and Mabuchi, Minoru, 5,054,296, Cl. 62-259.100

Olaer Industries: *See—*
Brault, Francois; Jaunet, Alain; and Mendowski, Marc, 5,054,373, Cl. 92-92.000.

Oldendorf, Christian: *See—*
Melcher, Franz-Josef; Berg, Christoph; and Oldendorf, Christian, 5,056,040, Cl. 364-518.000.

Oldfield, William W., to Wiltron Company. Method and apparatus for multiplexing broad band high frequency signals for use in network analyzers. 5,055,807, Cl. 333-110.000

Olin Corporation: *See—*
Duncan, Budd L.; and Flowers, William O., 5,055,285, Cl 423-473.000.

Olsen, Eugene. Suction attachment for electrosurgical instruments or the like. 5,055,100, Cl. 604-22.000.

Olsen, Peter F. Wire placing device. 5,054,829, Cl. 294-19.100.

Olson, Donald O. Drip irrigation multi-outlet emitter head assembly 5,054,690, Cl. 239-542.000.

Olson, Jayme B., to American National Can Company. Winder rider roll. 5,054,707, Cl. 242-64.000

Olympus Optical Co., Ltd.: *See—*
Nagasaki, Tatsuo; and Yamada, Hidetoshi, 5,055,930, Cl 358-213.110.
Saito, Yoshitake; and Hirooka, Kenji, 5,054,491, Cl. 128-662.060
Sakagami, Toshio, 5,055,262, Cl. 422-64.000.

Omron Tateisi Electronics Co.: *See—*
Terada, Takao; Kobayashi, Toshiyuki; and Miyake, Tamio, 5,054,477, Cl. 128-200.140.

Omura, Ikuo: *See—*
Okada, Koichi; and Omura, Ikuo, 5,055,497, Cl. 523-116.000.

Oncogen: *See—*
Hellstrom, Karl E.; and Hellstrom, Ingegerd, 5,055,559, Cl 530-387.000.

O'Neill, Gary A.; Misra, Chanakya; and Chen, Abraham S. C., to Aluminum Company of America. Method for reducing the amount of anionic metal-ligand complex in a solution. 5,055,199, Cl. 210-684.000.

O'Neill, Timothy P. Position Transmitter. 5,056,049, Cl. 364-562.000.

Ong, Tiong E.: *See—*
Si-Hoe, Kok S.; and Ong, Tiong E., 5,054,149, Cl. 15-28.000.

Onishi, Janet C.: *See—*
Bartizal, Kenneth F.; Milligan, James A.; Rozdilsky, Walter; and Onishi, Janet C., 5,055,487, Cl. 514-452.000

Ono, Hisao; Nagano, Masanobu; Ieki, Yasuo; and Miyachi, Takumi, to Shell Internationale Research Maatschappij B.V. Thermoplastic elastomer compositions and process for the preparation thereof. 5,055,519, Cl. 525-71.000.

Ono, Kazuhiko, to NEC Corporation. Data processor having expanded operating functions. 5,056,008, Cl. 364-200.000.

Ono, Masami: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl 562-416.000.

Ono Pharmaceutical Co., Ltd.: *See—*
Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, 5,055,598, Cl. 549-407.000

Ono, Yuji: *See—*
Asano, Takanobu; Iwai, Hiroyuki; and Ono, Yuji, 5,055,036, Cl. 432-5.000

Onufer, George R., to Deimen, James M. Mobile fuel tank vapor emission control system and method. 5,054,453, Cl. 123-516.000

Oota, Yuji; Momii, Katsuhiro; and Okamoto, Kenji, to Mazda Motor Corporation. Control system for an automobile engine with automatic transmission. 5,054,450, Cl. 123-478.000.

Ootake, Yasuhiro: *See—*
Inukai, Sinji; Agata, Mitsuzi; Akiba, Kiyoshi; Ohmura, Takeo; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, 5,055,481, Cl. 514-381.000.

Ootsuka, Shigeharu: *See—*
Kakizoe, Masahiro; and Ootsuka, Shigeharu, 5,055,811, Cl 335-59.000.

Opex Corporation: *See—*
DeWitt, Robert R.; Lile, William R.; Mitchell, Paul; and Stevens, Albert F., 5,054,620, Cl. 209-3.100.
DeWitt, Robert R., 5,054,700, Cl. 241-101.400.

Oprysko, Modest M.: *See—*
Fan, Bunsen; Flagello, Donis G.; Gelorme, Jeffrey D.; Oprysko, Modest M.; Speth, Albert; and Trewhella, Jeannine M., 5,054,872, Cl. 385-130.000.

Optex Co., Ltd.: *See—*
Sugimoto, Tadashi; Iwasawa, Masashi; and Shoji, Yasuo, 5,055,685, Cl. 250-342.000.

Ormat Turbines (1965) Ltd.: *See—*
Greitzer, Yeshayahu; and Bronicki, Lucient Y., 5,054,556, Cl. 166-302.000.

Ormco Corporation: *See—*
Yawata, Haruyasu, 5,054,647, Cl. 221-41.000.

Orr, Albert S.: *See—*
Burns, Marvin D.; and Orr, Albert S., 5,054,687, Cl. 239-373.000
Ortech Corporation: *See—*
Tyrer, J. David, 5,055,179, Cl. 208-254.00R.
Ortiz, Angel L., Jr.; and Chande, Tushar S., to General Electric Company. Multi-fiber optical coupler for a high power laser beam. 5,054,877, Cl. 385-33.000.
Osaka, Shigemi; Hata, Kazuo; and Takashashi, Tsukasa, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Carrier for catalyst and method for production thereof. 5,055,442, Cl. 502-439.000.
Osawa, Toshiaki: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl 530-313.000.
Osbourn, Gordon C.: *See—*
Dawson, L. Ralph; Osbourn, Gordon C.; Peercy, Paul S.; Weaver, Harry T.; and Zipperian, Thomas E., 5,055,890, Cl. 357-16.000.
Osca, Inc.: *See—*
Bridges, Kenneth L.; and Kalinski, Kerry L., 5,055,209, Cl. 252-8.510
Osenbaugh, Carl D.; and Reaser, Howard, to Dana Corporation. Spring loaded pinion gears for differential. 5,055,095, Cl. 475-233.000
O'Shields, Larry D.; and Perreault, Richard J., to Gould Inc. Fuse with improved fusible element. 5,055,817, Cl. 337-161.000.
Oshima, Nobuhiro: *See—*
Inoue, Nobuhiro; Nakano, Akira; and Oshima, Nobuhiro, 5,054,190, Cl. 29-611.000.
Oshima, Nobuo: *See—*
Fujie, Shinichi; Oshima, Nobuo; and Matsuyuki, Akira, 5,055,398, Cl. 435-10.000.
Oshima, Yasushi; Miyamoto, Isao; and Harada, Shogo, to Yamato Scale Company, Limited. Device and method for controlling distributive feeding device. 5,054,652, Cl. 222-1.000.
Oshiro, Yasuo; Ueda, Hiraki; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. 2,3-dihydro-1H-indene derivatives and their use as pharmaceutical agents. 5,055,474, Cl. 514-316.000.
Osterday, Craig A.; and Flory, Donald M., to General Motors Corporation. Vacuum booster with dual durometer reaction disc. 5,054,370, Cl. 91-396.200.
Osterhaus, Elmer: *See—*
Clark, Douglas S.; and Osterhaus, Elmer, 5,054,965, Cl. 406-151.000
Ototani, Tohei, to Metal Research Corporation. Clean steel. 5,055,018, Cl. 420-8.000.
Otrusina, Edward C. Connector engageable in multiple positions and releasable in only one position. 5,054,170, Cl. 24-597.000
Otsuka Pharmaceutical Co., Ltd.: *See—*
Oshiro, Yasuo; Ueda, Hiraki; and Nakagawa, Kazuyuki, 5,055,474, Cl. 514-316.000.
Ouchi, Kiyoshi: *See—*
Kobayashi, Makoto; Ouchi, Kiyoshi; Nishimori, Shinji; Maeda, Tsuyoshi; and Miyake, Yoshio, 5,055,006, Cl. 417-366.000.
Outboard Marine Corporation: *See—*
VanRens, Russell J., 5,054,537, Cl. 164-34.000.
Westberg, Tom; and Mattiazzi, Joseph A., 5,055,074, Cl. 440-77.000.
Outer Sports, Inc.: *See—*
Mansfield, Michael R., 5,054,771, Cl. 272-73.000.
Outhyse, Joseph: *See—*
Jacob, Greg; and Outhyse, Joseph, 5,054,474, Cl. 128-66.000.
Overbay, Mark A., to Combustion Engineering, Inc. Mast assembly for rotary tool. 5,055,654, Cl. 219-136.000
Owen, Hartley: *See—*
Haddad, James H.; Owen, Hartley; and Schatz, Klaus W., 5,055,177, Cl. 208-161.000.
Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., 5,055,176, Cl. 208-120.000.
Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., 5,055,437, Cl. 502-67.000.
Owens-Corning Fiberglas Corporation: *See—*
Flautt, Martin C.; and Adzima, Leonard J., 5,055,119, Cl. 65-3.100.
Smith, Roy E., 5,054,705, Cl. 242-42.000.
Stahl, Julia A.; and Hayden, Richard F., 5,055,330, Cl. 428-61.000.
Owens-Corning Fiberglass Corporation: *See—*
Porter, Russell M., 5,055,428, Cl. 501-35.000.
Owens, Thomas P. Contoured body cushion. 5,054,142, Cl. 5-431.000
Owens, William R.: *See—*
Rozman, Gregory I.; and Owens, William R., 5,055,765, Cl. 322-22.000.
Oya, Hiroshi: *See—*
Kato, Kanji; Mochizuki, Kesaaki; Hamamoto, Akira; Oya, Hiroshi; Ando, Kozo; Namaritani, Kazuo; Fujita, Kenichi; and Nagaoka, Futami, 5,054,197, Cl. 29-897.310.
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Pu, Lyong S.: *See—*
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Yelland, David R.; Gilbert, John G.; and Ewans, John, 5,054,479, Cl. 128-201.250

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Van Bork, Erik C., 5,056,036, Cl. 364-510.000.

Pulwer, Mitchell J.: *See—*
Baysdon, Sherrol L.; and Pulwer, Mitchell J., 5,055,583, Cl. 546-315.000

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Puppel, Gunter, to Krupp Koppers GmbH. Process for making p-xylene with a purity of more than 99.8% by weight. 5,055,630, Cl. 585-814.000.

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Aronson, Arthur I.; and Dunn, Peter E., 5,055,293, Cl. 424-93.000.

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Riccitelli, Samuel D.; and Shern, Thomas A., 5,054,882, Cl. 385-12.000

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Ebbing, David M.; Swadner, Robert L.; and Puterbaugh, Jerome E., 5,055,004, Cl. 417-222.00R

Putnam, John S., to Seagate Technology, Inc. Servo/data actuator arm flexible circuit. 5,055,969, Cl. 361-398.000.

Pyle, Mark C. Marching percussion instrument stand. 5,054,357, Cl. 84-421.000

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Thorp, Phil D.; Harvey, Ward W.; and Pyles, Douglas E., 5,054,588, Cl. 192-0.034.

Quadro, Giuseppe, to Medea Research S.r.l. 3-methyl-3-(4-acetylaminophenoxy)-2,4-dioxabenzocyclohexanone-1 and a pharmaceutical composition containing the same. 5,055,488, Cl. 514-452.000.

Qualcomm, Inc.: *See—*
Gilhousen, Klein S.; Padovani, Roberto; and Wheatley, Charles E., III, 5,056,109, Cl. 375-1.000.

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Proffit, Robert L.; and Rose, Edward A., 5,055,689, Cl. 250-349.000

Quinto, Mario J. Cartridge valve. 5,054,515, Cl. 137-454.500.

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Sjogren, Christer A.; Houseman, J. D.; and Paets, Henri T., 5,054,601, Cl. 198-365.000.

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Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.

Rabe, Duane C.: *See—*
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Rabold, Karl: *See—*
Grimm, Hartmut; and Rabold, Karl, 5,054,425, Cl. 119-14.020.

Race Spec, Inc.: *See—*
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Rad Elec, Inc.: *See—*
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Gloser, Wolfgang; Kuhn, Siegfried; Rader, Robert; and Setzer, Friedhelm, 5,054,343, Cl. 82-159.000.

Raghavan, Narasimha S.; and Timsit, Roland S., to Alcan International Limited. Use of a particulate packed bed at the inlet of a vertical tube MOCVD reactor to achieve desired gas flow characteristics 5,054,420, Cl. 118-715.000

Ram, Zeev: *See—*
Weiss, Ervin; and Ram, Zeev, 5,055,043, Cl. 433-86.000.

Ramsey, D. Bruce, Sr.: *See—*
Farago, Charles P.; and Ramsey, D. Bruce, Sr., 5,055,730, Cl. 310-237.000.

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Rankin, George J. Method and apparatus for liquid-abrasive blast cleaning. 5,054,249, Cl. 51-436.000.

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Burns, Marvin D.; and Orr, Albert S., 5,054,687, Cl. 239-373.000.

Raphanella, Gary A.: *See—*
Sukonnik, Israil M.; Forster, James A.; Breit, Henry F.; and Raphanella, Gary A., 5,055,967, Cl. 361-387.000.

Rapid Racker Systems: *See—*
Campbell, John W.; McGahee, Welbourne D.; and Muir, James H., 5,054,727, Cl. 248-220.300

Rashid, Abdul, to Sundstrand Corporation. Frequency counter with round off function. 5,056,123, Cl. 377-49.000.

Raterman, Donald E.; Primdahl, Richard D.; and Mazur, Richard A., to Cummins-Allison Corporation. Coin sorter with counter and brake mechanism. 5,055,086, Cl. 453-10.000.

Rath, Mihira K.: *See—*
Bhatia, Sushil K.; Brefka, Paul E.; Rath, Mihira K.; Misra, Nick; and Chevrette, Roger N., 5,054,417, Cl. 118-242.000.

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Rayburn, Charles C., to Illinois Tool Works Inc. Method and apparatus for making capacitive structure and laminate useful in making same. 5,055,965, Cl. 361-303.000.

Raychaudhuri, Pranab K., to Eastman Kodak Company. Phase-change optical recording media. 5,055,331, Cl. 428-64.000

Reaser, Howard: *See—*
Osenbaugh, Carl D.; and Reaser, Howard, 5,055,095, Cl. 475-233.000.

Redux Corporation: *See—*
Carpenter, Robert K.; and Lyman, Harrison F., Jr., 5,055,184, Cl. 210-109.000.

Reed, Jason C.; Bushnell, Dennis M.; and Weinstein, Leonard M., to United States of America, National Aeronautics and Space Administration. Hydrodynamic skin-friction reduction. 5,054,412, Cl. 114-67.00A.

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Frank, Peter L.; and Reents, Terry R., 5,054,947, Cl. 401-146.000.

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Rehler, Kenneth: *See—*
Kanare, Edward; and Rehler, Kenneth, 5,056,131, Cl. 379-33.000.

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Reich, Andreas: *See—*
Chu, Wing F.; Rohr, Franz-Josef; and Reich, Andreas, 5,055,440, Cl. 502-303.000.

Reichenauer, Ansgar: *See—*
Meyer, Arnold; Noweck, Klaus; and Reichenauer, Ansgar, 5,055,019, Cl. 423-625.000.

Reichmann, Kenneth C.: *See—*
Magill, Peter D.; and Reichmann, Kenneth C., 5,056,101, Cl. 372-32.000.

Reichmuth, Arthur: *See—*
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Reid, John: *See—*
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Reijenga, Tjerk, to Technoplast B.V. Tamper evident safety closure. 5,054,633, Cl. 215-220.000.

Reimer, Uwe; Kretschmer, Jurgen; and Brecht, Klaus, to Daimler-Benz AG. Preheating device for internal combustion engine intake air and method of making same. 5,054,459, Cl. 123-549.000.

Reinalter, Franz: *See—*
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Reist, Walter, to Ferag AG. Apparatus for conveying flat products. 5,054,760, Cl. 271-69.000.

Reithel, Raymond F.: *See—*
Bagchi, Pranab; Reithel, Raymond F.; Chen, Tsang J.; and Evans, Steven, 5,055,379, Cl. 430-289.000.

Reitinger, Franz: *See—*
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Renken, Uwe W.: *See—*
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REO Hydraulic Pierce & Form Inc.: *See—*
Obrecht, Robert E.; and Waltonen, Edward J., 5,054,305, Cl. 72-333.000.

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Pierce, William M., Jr., 5,055,480, Cl. 514-363.000.

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Bartolles, Rolf, 5,054,366, Cl. 89-26.000
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Frances, Jean-Marc; and Peccoux, Pierre-Michel, 5,055,502, Cl. 524-780.000.
Gubelmann, Michel; Popa, Jean-Michel; and Tirel, Philipe-Jean, 5,055,623, Cl. 568-800.000.
Mercier, Marc; and Curcio, Marc, 5,055,443, Cl. 502-439.000.

Ribeiro, Marcos P., to Petroleo Brasileiro S. A. Selective valve to pass fluids. 5,054,510, Cl. 137-199.000.

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Zabotto, Arlette; Griat, Jacqueline; Handjani, Rose-Marie J.; Vanlerberghe, Guy G.; and Ribier, Alain J., 5,055,228, Cl. 252-312.000.

Ricchiuti, Patrick J. Car trunk carrier tray. 5,054,668, Cl. 224-42.420.
Riccitelli, Samuel D.; and Shern, Thomas A., to Puritan-Bennett Corporation. Multiple optical fiber event sensor and method of manufacture. 5,054,882, Cl. 385-12.000.
Richards, Gary H. Fluid-flow-control-switch valve. 5,055,641, Cl. 200-81.90M.
Richardson, John, to Selectro-Vision, Ltd. Portable validation unit for gaming system. 5,054,787, Cl. 273-369.000
Richardson, Paul D. Debris removal apparatus for power blowers 5,054,159, Cl. 15-400.000.
Richardson, Ralph E.: *See—*
Price, John D.; and Richardson, Ralph E., 5,056,088, Cl 370-94.100.
Richardson-Vicks Inc.: *See—*
Kelleher, William J.; and McClintock, William J., 5,055,461, Cl. 514-162.000
Young, Kenneth, 5,055,305, Cl. 424-466.000.
Richter, Gunter. Apparatus for manufacturing large-volume hollow bodies of plastics material having multiple-layer walls. 5,055,023, Cl. 425-133.100.
Richter, Hans-Peter: *See—*
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Ricoh Company, Ltd.: *See—*
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Fukuchi, Yutaka, 5,055,881, Cl. 355-260.000
Iida, Masaharu, 5,056,133, Cl. 379-98.000.
Kodama, Yutaka, 5,054,762, Cl. 271-162.000.
Ohno, Katsuyuki, 5,055,935, Cl. 358-296.000
Okamoto, Keiji; and Komurasaki, Takeshi, 5,055,878, Cl 355-219.000
Ozawa, Toshiro, 5,054,897, Cl. 350-426.000.
Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000.
Tomita, Kan; and Oikawa, Tomohiro, 5,054,866, Cl. 359-201.000.
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Riemscheid, Helmut; Weiss, Karl; Frielingsdorf, Herbert; Schwarz, Engelbert; and Grewe, Heribert, to Emitec Gesellschaft fur Emissionstechnologie mbH. Assembly device for assembling camshafts. 5,054,182, Cl. 29-281.500
Riemscheid, Helmut; Frielingsdorf, Herbert; Grewe, Heribert; Weiss, Karl; Schulze, Rudolf; Schwarz, Engelbert; Swars, Helmut; and Palussek, Arnold, to Emitec Gesellschaft fur Emissionstechnologie mbH. Device for hydraulic expansion. 5,054,756, Cl. 269-48.100.
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Riesberg, Richard D.: *See—*
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Riese, Walter C.: *See—*
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Riffe, William J.; Carter, Jack D.; and , to Marine Environmental Research, Inc. Method and apparatus for the prevention of fouling and/or corrosion of structures in seawater, brackish water and fresh water. 5,055,165, Cl. 204-147.000
Rifkind, Richard A.: *See—*
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Riley, Thomas C., Jr., to KV Pharmaceutical Company. Solid controlled release bioadherent emulsions. 5,055,303, Cl. 424-436.000
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Rini, Anthony S., to Moen Incorporated. Faucet valve removal and insertion tool. 5,054,179, Cl. 29-213.100.
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Rittersdorf, Walter: *See—*
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Roach, Dan V. Clad mailbox. 5,054,685, Cl. 232-17.000
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Robbins, Edward S., III. Disposable beverage containers having integral drinking straws. 5,054,631, Cl. 215-1.00A.
Roberge, Raymond P.; Francis, Arthur W., Jr.; and Wolfe, Thomas G., to Union Carbide Industrial Gases Technology Corporation. Reactor analysis system. 5,055,260, Cl. 422-62.000.
Robert Bosch GmbH: *See—*
Denz, Helmut, 5,054,452, Cl. 123-479.000.
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Roberts, Wilfred: *See—*
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Rockwell International Corporation: *See—*
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Kan, Philip T., 5,055,805, Cl. 333-21.00A.
Price, Alistair J., 5,056,122, Cl. 375-80.000.
Sun, Yinshang, 5,056,118, Cl. 375-106.000.
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Rodgers, Andrew T. Controllable gyroscopic propulsion apparatus. 5,054,331, Cl. 74-84.00R
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Rogers, Steven W.: *See—*
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Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., to Symtron Systems, Inc. Fire fighting trainer. 5,055,050, Cl. 434-226.000.
Rogoff, Gerald L., to GTE Products Corporation. Uniform light source. 5,055,978, Cl. 362-31.000
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Rohm, Gunter H. Self-tightening hammer-drill chuck. 5,054,796, Cl. 279-60.000
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Rohr Industries, Inc.: *See—*
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Rose, Steven B. Beverage can handle with key ring attached. 5,054,638, Cl. 220-85.00H.
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Rosengarten, Gerald J. Combined book closure and page indexing device. 5,054,816, Cl. 281-42.000.
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Rotgans, Petrus J., to Hollandse Signaalapparaten B.V. Radar apparatus for the detection of helicopters. 5,055,848, Cl. 342-90.000.
Rother, David J.: *See—*
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Rovira Badia, Antonio; and Franco Tarazaga, Jose , to Tecnica E Innovaciones Ganaderas, S.A. (TIGSA). Fowl drinker. 5,054,432, Cl. 119-81.000
Rowden, David L.: *See—*
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Rowley, Clare J. Presser foot having an adjustable guide for sequin and ribbon. 5,054,407, Cl. 112-235.000.
Rozdilsky, Walter: *See—*
Bartizal, Kenneth F.; Milligan, James A.; Rozdilsky, Walter; and Onishi, Janet C., 5,055,487, Cl. 514-452.000.
Rozier, Alain, to Zona Industrial De Montras. Filler heads for pressurized bottles. 5,054,527, Cl. 141-39.000.
Rozman, Gregory I.; Glennon, Timothy F.; and Cook, Alexander, to Sundstrand Corporation. Low voltage aircraft engine starting system. 5,055,764, Cl. 322-10.000
Rozman, Gregory I.; and Owens, William R., to Sundstrand Corporation. Voltage regulator for direct current aircraft power bus. 5,055,765, Cl. 322-22.000.
Rozon, David P., to 139088 Canada Ltee. Vertical blind. 5,054,535, Cl. 160-38.000.
Rubbermaid Incorporated: *See—*
Breen, John D., 5,054,629, Cl. 211-128.000.
Rubin, Fran A.: *See—*
Kopecko, Dennis J.; Barson, Louis S.; and Rubin, Fran A., 5,055,394, Cl. 435-6.000.
Ruckel, Raymond R.: *See—*
Logan, Joseph S.; Ruckel, Raymond R.; Tompkins, Robert E.; and Westerfield, Robert P., Jr., 5,055,964, Cl. 361-234.000.
Rucki, William M.; and Leidy, Jeanne M., to Nordson Corporation. Method and apparatus for controlling the gas content of foam materials. 5,056,034, Cl. 364-510.000.
Ruf, Erich, to Th. Goldschmidt AG. Method for the preparation of dialkyl-tin-dichlorides. 5,055,603, Cl. 556-102.000
Ruger, Wolfgang; Urbach, Hansjorg; Becker, Reinhard; and Hock, Franz, to Hoechst Aktiengesellschaft. Novel amino acid glycerides, learning medicaments containing them and their use. 5,055,483, Cl. 514-412.000.
Ruhrgas Aktiengesellschaft: *See—*
Altemark, Detlef; Stenzel, Gerhard; and Weid, Manfred, 5,055,032, Cl. 431-158.000
Rumball, Robert: *See—*
Tripp, Benjamin A., 5,054,541, Cl. 165-45.000.
Runyan, Max R.; Salmon, Carolyn; and Silliman, Scott D., to McDonnell Douglas Corporation. Re-entrant angle closure on superplastically formed structure. 5,055,143, Cl. 148-11.50R.
Rush, William B., II; and Elder, Jack E., to General Motors Corporation. Fuel injection. 5,054,456, Cl. 123-531.000.
Rusinek, Henry: *See—*
Abele, Manlio G.; Chandra, Ramesh; Rusinek, Henry; Potenziani, Ernest, II; and Leupold, Herbert A., 5,055,812, Cl. 335-210.000.
Russ, Werner H.: *See—*
Springer, Hartmut; Kuhn, Manfred; Russ, Werner H.; and Schlafer, Ludwig, 5,055,565, Cl. 534-642.000.
Russeler, Wolfgang: *See—*
Schmidt, Manfred; Arit, Wolfgang; Tresper, Erhard; and Russeler, Wolfgang, 5,055,551, Cl. 528-388.000.
Russell, James T. Optical recording/reproducing system using interference techniques. 5,056,080, Cl. 369-100.000.
Russomanno, Anthony; and Russomanno, Gary. Lunch box having selectable displays. 5,054,611, Cl. 206-45.280.
Russomanno, Gary: *See—*
Russomanno, Anthony; and Russomanno, Gary, 5,054,611, Cl. 206-45.280.
Rutberg, J. Gary: *See—*
Manoogian, Ara K.; and Rutberg, J. Gary, 5,055,697, Cl. 250-504.00R.
Rutgers University: *See—*
Ting, Kuan-Chong; Giacomelli, Gene A.; Mears, David R.; Kabala, Witold P.; Shen, Shou-Jin; and Williamson, Steven E., 5,054,831, Cl. 294-61.000.
Ryan, Robert E.: *See—*
Egan, Walter G.; Ryan, Robert E.; and Gayes, George P., 5,054,928, Cl. 356-400.000.
Rybicki, Mathew A.; Whatley, Roger A.; and Nakamura, Katsufumi, to Motorola, Inc. Differential sensing current-steering analog-to-digital converter. 5,055,847, Cl. 341-162.000
Ryczek, Lawrence J., to Eaton Corporation. Optical distance measuring system using a position sensitive device and a ramp generator driven light source. 5,055,664, Cl. 250-201.400
Ryobi Motor Products Corp.: *See—*
Looper, Timothy J.; and Sistare, James R., 5,055,728, Cl. 310-91.000.
Ryono, Denis E.: *See—*
Weller, Harold N., III; and Ryono, Denis E., 5,055,466, Cl. 514-235.800.
S&K Products International, Inc.: *See—*
Schumacher, Kevin; Striefler, Martin J.; Cavaluzzi, Frank; and Domicoli, Orazio, 5,054,210, Cl. 34-78.000.
Sabado, Gregorio T., to Micron Technology, Inc. Trim cut and form machine. 5,054,188, Cl. 29-564.600
Sachsenwerk Aktiengesellschaft: *See—*
Schels, Wilhelm; Niegl, Manfred; and Behrend, Rainer, 5,055,639, Cl. 200-144.00B.
Sadlowski, Eugene S.: *See—*
Getty, Edward E.; Hunter, Kathleen B.; and Sadlowski, Eugene S., 5,055,218, Cl. 252-94.000.
Sado, Yukio: *See—*
Wagatsuma, Michio; and Sado, Yukio, 5,054,985, Cl. 414-11.000.
Sadot, Philippe: *See—*
Darmon, Marc; Sadot, Philippe; and Harari, Sami, 5,056,105, Cl. 375-1.000.
Saeki, Keiso; Shinozaki, Fumiaki; and Endo, Toshiaki, to Fuji Photo Film Co., Ltd. Multicolor recording material. 5,055,373, Cl. 430-130.000.
Saeki, Satoshi: *See—*
Kin, Seki; Tanaka, Hiroyuki; Saeki, Satoshi; Torikoshi, Kaoru; and Pu, Lyong S., 5,055,615, Cl. 564-307.000.
Saeki, Shoji: *See—*
Okumura, Yuji; and Saeki, Shoji, 5,055,122, Cl. 65-29.000
Saeva, Franklin D., to Eastman Kodak Company. Curable compositions containing onium salt photoinitiators which have a chromophore linked to the onium salt moiety through the 3-position and method of use. 5,055,376, Cl. 430-270.000.
Saf-T-Gard International, Inc.: *See—*
Rivkin, Richard A., 5,054,126, Cl. 2-161.00R.
Saga, Tomoko: *See—*
Saita, Taketsugu; Kuma, Yoshiharu; Bukawa, Norio; and Saga, Tomoko, 5,055,309, Cl. 426-34.000.
Sagawa, Koichi: *See—*
Watanabe, Syuji; Satoh, Susumu; and Sagawa, Koichi, 5,054,156, Cl. 15-325.000
Sagawa, Morikazu; Endo, Haruyoshi; Makimoto, Mitsuo; and Fukushima, Fumio, to Matsushita Electric Industrial Co., Ltd. Resonator and a filter including the same. 5,055,809, Cl. 333-219.000
Sagawa, Morikazu: *See—*
Yabuki, Hiroyuki; and Sagawa, Morikazu, 5,055,804, Cl. 331-117.00R.
Sage, Ian C.; and Chambers, Michael K., to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystal phase. 5,055,224, Cl 252-299.630.
Sahara, Hiroshi: *See—*
Watanabe, Yuji; and Sahara, Hiroshi, 5,055,713, Cl. 307-443.000.
Saigo, Masashi: *See—*
Yorifuji, Takashi; and Saigo, Masashi, 5,055,738, Cl. 313-490.000.
Saiki, Atsuna: *See—*
Yoshikado, Shouji; Kawada, Masami; Amamoto, Hidekazu; Saiki, Atsuna; Endo, Kiyoyuki; and Inasaki, Yutaka, 5,055,885, Cl 355-318.000.
Saita, Taketsugu; Kuma, Yoshiharu; Bukawa, Norio; and Saga, Tomoko, to Yakult Honsha Co., Ltd. Production process for kefir-like fermented milk. 5,055,309, Cl. 426-34.000
Saito, Akhiro: *See—*
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000.

Saito, Nobuyuki: *See—*
Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000.

Saito, Shinichi: *See—*
Ohno, Kouji; Saito, Shinichi; Inukai, Takashi; Inoue, Hiromichi; and Miyazawa, Kazutoshi, 5,055,222, Cl. 252-299.610.

Saito, Shiro, to Inax Corporation. Ion concentration setting apparatus for ionic water generator. 5,055,170, Cl. 204-228.000.

Saito, Yoshitake; and Hirooka, Kenji, to Olympus Optical Co., Ltd. Ultrasonic endoscope apparatus. 5,054,491, Cl. 128-662.060.

Saitoh, Shirou, to Fuji Jukogyo Kabushiki Kaisha. Venting device of a fuel tank for a motor vehicle. 5,054,528, Cl. 141-59.000

Sakagami, Toshio, to Olympus Optical Co., Ltd. Automatic cuvette loading apparatus. 5,055,262, Cl. 422-64.000.

Sakai, Kazuya: *See—*
Matsubara, Akira; Sakai, Kazuya; Tanada, Hideki; and Komatsu, Hironori, 5,055,585, Cl. 548-248.000.

Sakai, Toshihisa, to NEC Home Electronics Ltd. Ghost canceler for television and video tape recorder. 5,055,929, Cl. 358-166.000.

Sakaida, Kazuichi; Sonobe, Katsuyoshi; Aoki, Nobuo; Uchiyama, Satoshi; and Yamada, Makoto, to Brother Kogyo Kabushiki Kaisha Image recording apparatus having image magnification control means. 5,055,872, Cl. 355-55.000.

Sakaki, Toshiro: *See—*
Oda, Masatsugu; Sakaki, Toshiro; and Kikutake, Kazuhiko, 5,055,477, Cl. 514-341.000.

Sakakibara, Norio: *See—*
Sugita, Kazuhiko; Sakakibara, Norio; Hori, Nobumitsu; and Yamakawa, Yoichi, 5,054,340, Cl. 82-18.000.

Sakakibara, Shinichi; and Matsubara, Mamoru, to Aisan Kogyo Kabushiki Kaisha. Rotational angle detecting sensor having a plurality of magnetoresistive elements located in a uniform magnetic field 5,055,781, Cl. 324-207.210.

Sakakura, Shigeki: *See—*
Matsuoka, Makoto; and Sakakura, Shigeki, 5,055,876, Cl 355-211.000.

Sakalian, Steve Y.; and Zwiebel, Jeffrey L. Adaptive frame resynchronizer apparatus. 5,056,119, Cl. 375-106.000.

Sakamoto, Hiroshi; and Miyoshi, Tadahiko, to Hitachi, Ltd. Carbon coated silicon carbide, silicon nitride or sialon fibers in a ceramic matrix. 5,055,430, Cl. 501-90.000.

Sakamoto, Kazuo: *See—*
Tanaka, Toshio; Hyama, Noboru; Komata, Satoru; and Sakamoto, Kazuo, 5,054,391, Cl. 101-127.100

Sakamoto, Osamu, to Sanshin Kogyo Kabushiki Kaisha. Water eliminating system for fuel injection system. 5,054,457, Cl. 123-533.000.

Sakamoto, Takashi: *See—*
Kitagawa, Osamu; and Sakamoto, Takashi, 5,055,923, Cl. 358-75.000.

Sakasai, Yutaka: *See—*
Suzuki, Nobuo; and Sakasai, Yutaka, 5,055,370, Cl. 430-114.000

Sakashita, Mitsuaki: *See—*
Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,055,472, Cl. 514-258.000.

Sakashita, Wataru; and Ichikawa, Tsutomu, to Kabushiki Kaisha Toshiba. Scroll compressor with bypass release passage in stationary scroll member. 5,055,012, Cl. 417-440.000.

Sakata, Haruyasu: *See—*
Tateishi, Kiyoshi; and Sakata, Haruyasu, 5,056,074, Cl. 369-44.280

Sakaya, Masuji; Okiai, Ryuichi; Mochizuki, Masataka; and Mashiko, Kouichi, to Fujikura Ltd. Method of manufacturing a heat pipe. 5,054,196, Cl. 29-890.032.

Sakuma, Hiroshi: *See—*
Nakahara, Hisao; Sakuma, Hiroshi; Eto, Noriaki; and Nagase, Shinichiro, 5,054,240, Cl. 49-476.000.

Sakurai, Hisayuki: *See—*
Soga, Ryuji; Hojo, Nobuaki; Hakozaki, Kenichia; Sakurai, Hisayuki; and Seya, Shigehisa, 5,054,301, Cl. 72-8.000.

Salasmaa, Eero: *See—*
Andersson, Henry; and Salasmaa, Eero, 5,055,849, Cl. 342-104.000

Salemann, Victor, to Boeing Company, The. Bypass duct for a hypersonic propulsion system. 5,054,288, Cl. 60-244.000.

Saliba, George A., to Digital Equipment Corporation. Tape head with low spacing loss produced by narrow and wide wear regions. 5,055,959, Cl. 360-122.000.

Salk Institute Biotechnology/Industrial Associates, Inc.: *See—*
Kwoh, Deborah Y.; and Gingeras, Thomas R., 5,055,393, Cl. 435-6.000

Salmon, Carolyn: *See—*
Runyan, Max R.; Salmon, Carolyn; and Silliman, Scott D., 5,055,143, Cl. 148-11.50R.

Salmon, Stephen M.: *See—*
Scribner, Robert M.; Salmon, Stephen M.; and Pomeranz, Mark L., 5,054,492, Cl. 128-662.060.

Salomon S.A.: *See—*
Bonaventure, Laurent, 5,054,213, Cl. 36-117.000.
Fauvet, Jean-Francois, 5,054,807, Cl. 280-607.000.

Saluski, Ronald B.: *See—*
Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.

Salzmann, Peter; and Hugi, Hans, to Pantex-Stahl AG. Stiffening element for a lattice girder. 5,054,964, Cl. 405-288.000.

Salzmann, Thomas N.: *See—*
Greenlee, Mark L.; DiNinno, Frank P.; and Salzmann, Thomas N., 5,055,463, Cl. 514-210.000.

Samaha, Magda H.: *See—*
Fudala, John J.; and Samaha, Magda H., 5,055,971, Cl. 361-400.000.

Samsung Electron Devices Co., Ltd.: *See—*
Lee, Anseob; and Son, Kyungcheon, 5,055,078, Cl. 445-51.000.
Yang, Junmo, 5,055,226, Cl. 252-301.40R.
Yun, Joyung; and Cho, Hojin, 5,055,736, Cl. 313-402.000.

SamSung Electronics Co., Ltd.: *See—*
Ahn, Kyo-Hwan, 5,056,135, Cl. 379-252.000.
Cho, Hae-Suk, 5,054,383, Cl. 99-327.000
Noh, Il-Young, 5,055,952, Cl. 360-77.140.

Samura, Hideo: *See—*
Washio, Yukari; Takeishi, Nobuhiro; Shimamoto, Hideki; Mori, Keiji; Ushio, Noriki; Shiono, Katsuji; Kishi, Takaaki; and Samura, Hideo, 5,055,974, Cl. 361-527.000.

San-Apro Limited: *See—*
Nakatani, Keiichi; and Nakasugi, Nobuyasu, 5,055,581, Cl. 544-235.000

Sanchez Rubio, Gines. Electric ceiling fan. 5,054,376, Cl. 98-1.000.

Sanden Corporation: *See—*
Nakaguro, Kazuhiro, 5,054,549, Cl. 165-133.000.

Sandrin, Glannino, to Albatros System S.p.A. Hydromassage carpet. 5,054,473, Cl. 128-66.000

Sands, Katie M. Christmas tree self-watering ornament. 5,054,236, Cl. 47-79.000

Sandvik AB: *See—*
Nilsson, Erik R.; Sjodin, Per-Goran; and Tiback, Bo G., 5,054,217, Cl. 37-244.000.

Sanghvi, Narendra T.: *See—*
Fry, Francis J.; and Sanghvi, Narendra T., 5,054,470, Cl. 128-24.0AA

Sangirardi, Angela M.: *See—*
Garcia, Rigoberto F.; Coppinger, Elizabeth M.; Irwin, Charles F.; and Sangirardi, Angela M., 5,055,217, Cl. 252-94.000.

Sanjo, Isao: *See—*
Matsui, Norio; Sanjo, Isao; and Chiba, Shuuichi, 5,054,587, Cl. 188-267.000

San Juan, Antonio B., to Moulinex (Societe Anonyme). Centrifuge basket. 5,054,386, Cl. 99-511.000.

Sankyo Company, Limited: *See—*
Takiguchi, Yo; Ohsumi, Jun; Shimoji, Yasuo; and Sasagawa, Kazuhiko, 5,055,479, Cl. 514-359.000.

Sano, Chitatsu: *See—*
Yagami, Kojiro; Sano, Chitatsu; and Tamura, Toshiya, 5,055,958, Cl. 360-122.000.

Sanraku Incorporated: *See—*
Inoue, Tsutomu; Okamura, Kazuhiko; Kawamura, Naoto; Tone, Hiroshi; and Okamoto, Rokuro, 5,055,259, Cl. 422-61.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Sakamoto, Osamu, 5,054,457, Cl. 123-533.000

Santagiuliana, Evans, to Taplast SNC di Evans Santagiuliana & C. Cap with a dispenser for liquids. 5,054,662, Cl. 222-531.000.

Santin, Giovanni; and Naso, Giovanni, to Texas Instruments Incorporated. Active sense amplifier with dynamic pre-charge transistor. 5,056,063, Cl. 365-208.000.

Sanwa Kagaku Kenkyusho Co., Ltd.: *See—*
Natori, Shunji, 5,055,392, Cl. 435-6.000

Sanyo Electric Co., Ltd.: *See—*
Hidaka, Masaru, 5,055,933, Cl. 358-227.000.

Sarp Kabushiki Kaisha: *See—*
Tomomura, Yoshitaka; and Kitagawa, Masahiko, 5,055,363, Cl. 428-690.000.

Sarrine, Robert J.: *See—*
Golias, Tipton L.; Mayes, Ovay H.; and Sarrine, Robert J., 5,055,271, Cl. 422-99.000.

Sartor, Mariano, to Nordica S.p.A. Shell structure for ski boots. 5,054,214, Cl. 36-119.000.

Sartori, Guido; Ho, W. S. Winston; Noone, Robert E.; and Cohen, Abraham D., to Exxon Research & Engineering Company. Sulfonated polysulfone membranes for aromatics/saturates separation 5,055,631, Cl. 585-819.000.

Sartorius AG: *See—*
Melcher, Franz-Josef; Berg, Christoph; and Oldendorf, Christian, 5,056,040, Cl. 364-518.000

Sasagawa, Kazuhiko: *See—*
Takiguchi, Yo; Ohsumi, Jun; Shimoji, Yasuo; and Sasagawa, Kazuhiko, 5,055,479, Cl. 514-359.000.

Sasagawa, Teruo, to Eastman Kodak Company. Light-emitting diode array with reflective layer. 5,055,893, Cl. 357-17.000.

Sasaki, Akihiro; and Kikuchi, Tohru, to Hitachi Chemical Company, Ltd. 1,3-bis(dicarboxyphenyl)-1,1,3,3-tetraphenyldisiloxane derivative, process for producing the same, and process for producing polyimide from the same. 5,055,593, Cl. 549-214.000.

Sasaki, Tohru: *See—*
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,055,103, Cl. 604-385.200.

Sasakura, Takao: *See—*
Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000

Sasano, Jun, to Kabushiki Kaisha Toshiba. Telephone apparatus and a method of controlling same. 5,056,083, Cl. 370-110.100.

Sasayama, Shinichi: *See—*
Ikegami, Yuji; Sasayama, Shinichi; Tachino, Noboru; and Kamiya, Takeshi, 5,055,145, Cl. 148-285.000.

Sassenfeld, Helmut. Purification of G-CSF. 5,055,555, Cl. 530-351.000.

Sato Iron Works Co., Ltd.: *See—*
Sato, Takuya, 5,055,027, Cl. 425-197.000.

Sato, Kazuo: *See—*
Takase, Ichirou; Sato, Kazuo; Yamasaki, Noritsugu; and Goto, Yukihisa, 5,055,588, Cl. 548-344.000.

Sato, Kazushige: *See—*
Minami, Masataka; Sato, Kazushige; Watanabe, Atsuo; Shukuri, Shoji; Nishida, Takashi; and Nagano, Takahiro, 5,055,904, Cl. 357-43.000.

Sato, Kensaku, to Hirose Electric Co., Ltd. Multiconductor cable connector and method of loading same. 5,055,062, Cl. 439-395.000.

Sato, Kensaku, to Hirose Electric Co., Ltd. Multiconductor cable connector and method of loading same. 5,055,063, Cl. 439-395.000.

Sato, Kiyoshi: *See—*
Kohno, Yoshihide; Kobayashi, Yasuhiko; Sato, Kiyoshi; and Koseki, Hiroyuki, 5,054,532, Cl. 152-527.000.

Sato, Koichiro; Kubo, Mineo; and Nakagawa, Mikio, to Mitsui Petrochemical Industries, Ltd. Adhesive resin compositions and laminates utilizing same. 5,055,526, Cl. 525-74.000.

Sato, Kozo: *See—*
Kawata, Ken; Sato, Kozo; and Tsuboi, Masayoshi, 5,055,537, Cl. 526-240.000.

Sato, Masanori, to Sony Corporation. Tape cassette reel having upper flanges molded therewith. 5,054,709, Cl. 242-71.800.

Sato, Syunichi: *See—*
Wakai, Haruo; Yamamura, Nobuyuki; Sato, Syunichi; and Kanbara, Minoru, 5,055,899, Cl. 357-23.700

Sato, Takuya, to Sato Iron Works Co., Ltd. Screw type extruding apparatus. 5,055,027, Cl. 425-197.000.

Sato, Wasuke, to Showa Denko Kabushiki Kaisha. Lid for can-like container and method of manufacturing same. 5,054,641, Cl. 220-270.000.

Satoh, Kozo: *See—*
Kondo, Masafumi; and Satoh, Kozo, 5,055,789, Cl. 324-309.000.

Satoh, Susumu: *See—*
Watanabe, Syuji; Satoh, Susumu; and Sagawa, Koichi, 5,054,156, Cl. 15-325.000.

Satoh, Takateru, to TDK Corporation. Cassette for storing data in a solid state memory in lieu of tape. 5,055,947, Cl. 360-62.000.

Saturn Corporation: *See—*
Weselak, Mark R., 5,054,186, Cl. 29-467.000.
Witkowski, Michael R.; Bolander, William J.; and Nitz, Larry T., 5,056,022, Cl. 364-424.100.

Sauer, Joe D.; Smith, Kim R.; and Borland, James E., to Ethyl Corporation. Pourable liquid blend of amine oxide and nonionic surfactant. 5,055,232, Cl. 252-547.000

Sauer, Joe D.; Smith, Kim R.; and Borland, James E., to Ethyl Corporation. Amine oxide composition and process. 5,055,614, Cl. 564-298.000.

Saurer First Tech-Products Ltd.: *See—*
Mayerhofer, Friedrich, 5,054,183, Cl. 29-410.000.

Sawaki, Shohei: *See—*
Inukai, Sinji; Agata, Mitsuzi; Akiba, Kiyoshi; Ohmura, Takeo; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, 5,055,481, Cl. 514-381.000.

Sawano, Hiroshi: *See—*
Murasawa, Yasuhiro; Toda, Hitoshi; Sawano, Hiroshi; and Yagoura, Hideya, 5,055,912, Cl. 357-74.000.

Sawtell, Ralph R.: *See—*
Chakrabarti, Dhruba J.; Staley, James T.; Baumann, Stephen F.; Sawtell, Ralph R.; Bretz, Philip E.; and Jensen, Craig L., 5,055,257, Cl. 420-902.000.

Sawyer, Wilbur H.: *See—*
Manning, Maurice; and Sawyer, Wilbur H., 5,055,448, Cl. 514-16.000.

Saxton, Gregory J.: *See—*
Hill, Charles C.; Thomas, Gareth R.; Kaleta, Gary S.; and Saxton, Gregory J., 5,054,403, Cl. 105-419.000.

Sayag, Michel, to Loral Fairchild Corporation. Non-linear photosite response in CCD imagers. 5,055,667, Cl. 250-208.100.

Sayre, Jack H.: *See—*
Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., 5,055,862, Cl. 346-154.000.

Scarborough, Greer T. Hydrofoil sailboat with control system. 5,054,410, Cl. 114-391.000.

Schack, Michael: *See—*
Mettes, Jacques; Kimura, Takako; and Schack, Michael, 5,054,309, Cl. 73-1.00G.

Schad, Robert D.; and Brown, Paul, to Husky Injection Molding Systems Ltd. Injection molding process. 5,055,250, Cl. 264-297.200.

Schaeff, Hans, to Karl Schaeff GmbH & Co. Excavator arm. 5,054,990, Cl. 414-694.000.

Schafer, Heinrich: *See—*
Hunold, Franz-Josef; Dreger, Michael; and Schafer, Heinrich, 5,055,983, Cl. 362-80.000.

Schafer, Klaus, to Barmag AG. Method and apparatus for the enhanced crimping of multifilament yarn. 5,054,173, Cl. 28-263.000.

Schaffer, Gregory L., to Maxim Integrated Products. CMOS output stage. 5,055,796, Cl. 330-263.000.

Schanen, Paul C.: *See—*
Acharya, Kishore C.; and Schanen, Paul C., 5,056,006, Cl 364-200.000

Scharch, Daniel J. Multi-channel apparatus for visually inspecting and packaging loose ammunition cartridges. 5,054,363, Cl. 86-47.000

Schatz, Klaus W.: *See—*
Haddad, James H.; Owen, Hartley; and Schatz, Klaus W., 5,055,177, Cl. 208-161.000.

Schaumstoffwerk Greiner Gesellschaft m.b.H.: *See—*
Eder, Bernhard; Burger, Hans; and Reitinger, Franz, 5,055,339, Cl. 428-157.000.

Scheel, Fredrick S.; Bailey, Byron; and Lorenzo, Richard, to Custom Control Products, Inc. Pasteurizing control apparatus. 5,054,385, Cl. 99-453.000.

Scheid, Norman W.: *See—*
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Pickerrell, Daniel A.; Schrock, Donald C.; and Inch, John, 5,054,133, Cl. 4-428.000

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Aono, Tomoko; Katata, Hiroyuki; and Noguchi, Yoji, 5,056,154, Cl. 382-56.000.
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Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi,

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Haraichi, Satoshi; Itoh, Fumikazu; Shimase, Akira; and Takahashi, Takahiko, 5,055,696, Cl. 250-492.200.

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Nishi, Yoshio; Yasuda, Akio; Kashima, Tsunehiro; Hori, Takeshi; Higuchi, Shigetaka; and Shimizu, Hidetoshi, 5,055,968, Cl. 361-395.000.

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Tsuno, Toshio; Katayama, Shinya; Kawai ra, Shinya; and Shimizu, Tomoyasu, 5,055,359, Cl. 428-448.000.

Shimoji, Yasuo: *See—*
Takiguchi, Yo; Ohsumi, Jun; Shimoji, Yasuo; and Sasagawa, Kazuhiko, 5,055,479, Cl. 514-359.000.

Shimura, Misunori: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000.

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Araki, Satoru, 5,055,238, Cl. 261-35.000.

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Dohara, Kazunobu; Matsunaga, Tadahiro; Shiraishi, Motomitsu; and Shinjo, Goro, 5,055,299, Cl. 424-405.000.

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Amimoto, Yoshio; Shinjo, Masayoshi; Enomoto, Takashi; and Hayashi, Kazunori, 5,055,538, Cl. 526-245.000.

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Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000.

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Saeki, Keiso; Shinozaki, Fumiaki; and Endo, Toshiaki, 5,055,373, Cl. 430-130.000.

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Hawkins, Robert E.; Small, Richard; and Naiman, Alaric, 5,055,164, Cl. 204-15.000.

Shipley, Kenneth R., to Henry Vogt Machine Co. Vertical tube heat exchanger apparatus having resilient distributor devices and a resilient distributor device therefor. 5,054,547, Cl. 165-115.000.

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Shiraishi, Katsumune: *See—*
Yikai, Kunio; and Kanazawa, Hiroaki, 5,055,115, Cl. 55-124.000.

Shiraishi, Motomitsu: *See—*
Dohara, Kazunobu; Matsunaga, Tadahiro; Shiraishi, Motomitsu; and Shinjo, Goro, 5,055,299, Cl. 424-405.000.

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Nagasaka, Yasuhiro; Shigenobu, Hiromichi; Shiraki, Kazuyuki; Iyoda, Motomi; and Maeda, Akira, 5,055,058, Cl. 439-188.000.

Shirakura, Yuri: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl. 530-313.000.

Shircliff, Michael W.: *See—*
Chan, Wai-Kwong; Allsopp, Mary F.; Brandt, Peter A.; Butler, Robert R.; McGuire, Kevin T.; Miller, Thomas R.; Nonnemann, Robert W.; Obrecht, Gordon A.; Saluski, Ronald B.; Shircliff, Michael W.; and Walker, Samuel A., 5,054,984, Cl. 412-001.000.

Shirley, Martin W.: *See—*
McDonald, Vincent; and Shirley, Martin W., 5,055,292, Cl. 424-88.000

Shiroto, Yoshimi: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000

Shizume, Kazuo: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl. 530-313.000

Shoji, Akio: *See—*
Kumada, Hajime; and Shoji, Akio, 5,055,514, Cl. 524-484.000.

Shoji, Yasuo: *See—*
Sugimoto, Tadashi; Iwasawa, Masashi; and Shoji, Yasuo, 5,055,685, Cl. 250-342.000

Shorr, Robert; and Jain, Tikam, to AT Biochem. Electrophoretic media. 5,055,517, Cl. 524-813.000.

Shotts, David A.; and Basile, Raffaele, to Allied Tube & Conduit Corporation. Apparatus for manufacturing plastic-lined pipe. 5,054,679, Cl. 228-17.500.

Showa Denko K.K.: *See—*
Naijoh, Shuichi; Inoue, Chozo; Kurotaki, Ayako; and Nagai, Kimie, 5,055,225, Cl. 252-299.650.

Showa Denko Kabushiki Kaisha: *See—*
Sato, Wasuke. 5,054,641, Cl. 220-270.000.

Shroot, Braham: *See—*
Forestier, Serge; Lagrange, Alain; Lang, Gerard; and Shroot, Braham, 5,055,452, Cl. 514-25.000.

Shucker, Erle B.: *See—*
Hull, Harold L.; Belvoir, Clive R.; and Shucker, Erle B., 5,055,645, Cl. 200-331.000

Shuei-Lai, Tsai. Roller bracket structure for a skateboard. 5,054,797, Cl. 280-11.280.

Shukuri, Shoji: *See—*
Minami, Masataka; Sato, Kazushige; Watanabe, Atsuo; Shukuri, Shoji; Nishida, Takashi; and Nagano, Takahiro, 5,055,904, Cl. 357-43.000.

Shulman, Burt H. Hair dryer attachment for creating an orbiting stream of air. 5,054,211, Cl. 34-97.000.

Si-Hoe, Kok S.; and Ong, Tiong E. Electric toothbrush. 5,054,149, Cl. 15-28.000.

SiArc: *See—*
El Gamel, Abbas, 5,055,716, Cl. 307-446.000.

Sibbett, Wilson: *See—*
Baker, Robert A.; Sibbett, Wilson; and Burns, David, 5,056,096, Cl. 372-6.000.

Siedel, Joachim: *See—*
Vogt, Bernd; Schellong, Lieselotte; Siedel, Joachim; and Ziegenhorn, Joachim, 5,055,388, Cl. 435-4.000.

Siemens Aktiengesellschaft: *See—*
Behrend, Guenter, 5,055,975, Cl. 361-527.000.
Birkle, Siegfried; Kammermaier, Johann; Schulte, Rolf; Winnacker, Albrecht; and Rittmayer, Gerhard, 5,055,421, Cl. 437-101.000
Granz, Bernd; and Koehler, Georg, 5,056,069, Cl. 367-164.000.
Kane, Michael G., 5,055,836, Cl. 340-825.850.
Keller, Walter; and Peter, Fritz, 5,055,821, Cl. 340-286.010.
Mueller, Rudi, 5,055,842, Cl. 341-100.000.
Wichmann, Bernhard, 5,055,903, Cl. 357-42.000.

Siemens-Bendix Automotive Electronics Limited: *See—*
Cook, John E., 5,054,455, Cl. 123-520.000.

Sigel, Alwin, to Sika Robotics AG. Method and means for remote-controlled sheathing installation when renovating pipelines. 5,054,187, Cl. 29-507.000

Sigma Instruments, Inc.: *See—*
Gamble, John G.; and Dillon, Matthew G., 5,055,771, Cl. 324-117.00R.

Sigworth, Geoffrey; and Guzowski, Matthew, to KB Alloys, Inc. Grain refiner for aluminum containing silicon. 5,055,256, Cl. 420-548.000.

Sika Robotics AG: *See—*
Sigel, Alwin, 5,054,187, Cl. 29-507.000.

Siliconix Incorporated: *See—*
Williams, Richard K.; and Bolger, Steven H., 5,055,896, Cl. 357-23.800.

Silliman, Paul D. Golf club cleaner. 5,054,153, Cl. 15-160.000.

Silliman, Scott D.: *See—*
Runyan, Max R.; Salmon, Carolyn; and Silliman, Scott D., 5,055,143, Cl. 148-11.50R.

Sills, Richard R. Method and apparatus for encoding and decoding signals. 5,056,137, Cl. 380-9.000.

Silver, Paul A.: *See—*
Endo, Zenichiro; Hara, Shigeyoshi; Silver, Paul A.; and Yamada, Hikoichiro, 5,055,499, Cl. 523-214.000

Sim, Jae K. Toilet assembly. 5,054,131, Cl. 4-216.000

Simcoke, David R., to Phomat Reprographics, Inc. Transparentized paper and method for its manufacture. 5,055,354, Cl. 428-342.000.

Simin, Gerald L.; and Carroll, Randy L., to General Motors Corporation. Folding glass sunroof. 5,054,846, Cl. 296-218.000

Simpson, Logan L.: *See—*
Allen, Robert D.; Hinsberg, William D., III.; Simpson, Logan L.; Twieg, Robert J.; Wallraff, Gregory M.; and Willson, Carlton G., 5,055,439, Cl. 502-158.000

Simpson, Richard: *See—*
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,056,041, Cl. 364-518.000.

Simpson, Robert G., to Gennum Corporation. Electrical component connection and combinations of electrical components. 5,056,151, Cl 381-69.000.

Simson, Anton K. Panoramic rearview mirror with narrow elongated reflective panels. 5,054,900, Cl. 359-851.000.

Simtek Corporation: *See—*
Tiede, John W., 5,055,720, Cl. 307-530.000.

Sinclair, Norval A.: *See—*
Arnold, Robert G.; Sinclair, Norval A.; and Sharp, James E., 5,055,130, Cl. 75-744.000.

SINCO, Incorporated: *See—*
Glynn, William D., 5,054,576, Cl. 182-3.000.

Singer, Debra L.: *See—*
Pettit, Paul H., Jr.; Singer, Debra L.; and Ewing, William S., 5,055,524, Cl. 525-172.000.

Singh, Prithvi P.: *See—*
Borden, Teddy H.; and Singh, Prithvi P., 5,054,777, Cl. 273-32.00B.

Singhal, Gopal H.: *See—*
Habeeb, Jacob J.; and Singhal, Gopal H . 5,055,211, Cl. 252-42.700.

Singleton, Oscar: *See—*
Palumbo, Perry A.; Singleton, Oscar; and Gaetano, Louis G., 5,055,269, Cl. 422-96.000.

Sioux Chief Manufacturing Co., Inc.: *See—*
Ismert, Joseph P., 5,054,741, Cl. 248-74.500.

Sisselman, Ronald: *See—*
Cousins, Otto J.; Paulick, Thomas E.; Woodburn, James H.. and Sisselman, Ronald, 5,055,830, Cl. 340-693.000.

Sistare, James R.: *See—*
Looper, Timothy J.; and Sistare, James R., 5,055,728. Cl 310-91.000.

Sitnik, Lee. Swing-away disposable syringe needle cover. 5,055,102, Cl. 604-192.000

Siuciak, Alan M.; Chatterjee, Chandralekha; and Palmer, Neil D., to Picker International, Inc. SSFP imaging technique with improved T1 contrast. 5,055,790, Cl. 324-309.000.

Sjodin, Per-Goran: *See—*
Nilsson, Erik R.; Sjodin, Per-Goran; and Tiback, Bo G., 5,054,217, Cl. 37-244.000.

Sjogren, Christer A.; Houseman, J. D.; and Paets, Henri T., to Quipp, Incorporated. Sorting conveyor. 5,054,601, Cl. 198-365.000.

Skarvinko, Eugene: *See—*
Markovich, Voya; Mehta, Ashit; Park, Jae M.; Skarvinko, Eugene; and Wang, David W., 5,055,342, Cl. 428-137.000.

SKF Nova AB: *See—*
Adolfsson, Rune, 5,054,939, Cl. 384-133.000.

Skinner, Robbie W.: *See—*
Fuller, Clyde R.; Delaney, Joseph B.; and Skinner, Robbie W., 5,055,908, Cl. 357-71.000.

Sklar, H. Alfred; Frank, Alan M.; McMillan, Charles; and Ferrer, Olga M., to Phoenix Laser Systems, Inc. Ophthalmic diagnostic apparatus and method. 5,054,907, Cl. 351-212.000.

Skoczylas, Henry F.: *See—*
Galarza, James; and Skoczylas, Henry F., 5,054,413, Cl 114-102.000.

Skutta, Hans, to GFK GmbH. Remote-controlled substitution of a defined program part of a TV program by a separately transmitted program part for defined, selected receivers, household terminal for executing the method and method for operating a household terminal 5,055,924, Cl. 358-84.000.

SKW Trostberg Aktiengesellschaft: *See—*
Hirt, Hans-Dieter; and Reinemann, Peter, 5,055,279, Cl. 423-239.000.

Slamka, Richard: *See—*
Consadori, Franco; Slamka, Richard; and Colbow, Konrad, 5,055,270, Cl. 422-98.000.

Slikkers, David A. Portable camera bracket. 5,055,864, Cl. 354-81.000.

Slinn, David S. L., to ISC Chemicals Limited. Cleaning and drying of electronic assemblies. 5,055,138, Cl. 134-11.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Marks, Paul A.; Rifkind, Richard A.; and Breslow, Ronald, 5,055,608, Cl. 560-169.000.

Sloma, John M.: *See—*
Grawey, Charles E.; Johnson, L. Ted; Sloma, John M.; and Szentes, John F., 5,055,734, Cl. 310-366.000.

Sluijter, Robert J.; Huizer, Cornelis M.; and Dijkstra, Hendrik, to U.S. Philips Corporation. System with plurality of processing elememts each generates respective instruction based upon portions of individual word received from a crossbar switch. 5,055,997, Cl. 364-200.000.

Slusarek, Wojciech; Buchanan, John M.; and Lau, Philip T. S., to Eastman Kodak Company. Photographic elements containing release compounds-II. 5,055,385, Cl. 430-544.000

Small, Richard: *See—*
Hawkins, Robert E.; Small, Richard; and Naiman, Alaric, 5,055,164, Cl. 204-15.000.

Smart, Anthony E.: *See—*
Abbiss, John B.; Azzazy, Medhat; McCullough, Robert W.; and Smart, Anthony E., 5,055,692, Cl. 250-372.000.

Smelser, Donald W.: *See—*
Wu, Andrew L.; Smelser, Donald W.; Bruce, E. William, II; and O'Dea, John, 5,055,910, Cl. 357-74.000

Smilanich, Nicholas J.: *See—*
Johnson, William A.; Budzyna, W. James; Smilanich, Nicholas J.; and Doan, Chi-Thien, 5,055,763, Cl. 320-15.000

Smillie, Charles M., III; and Tomac, Anthony J., to C. M. Smillie & Company. Power-operated lift and presenting mechanism. 5,054,578, Cl. 182-63.000

Smith, Douglas S.: *See—*
Bowers, Derek F.; and Smith, Douglas S., 5,055,723, Cl 307-581.000.

Smith, Gary A.: *See—*
Livingston, Robert L.; and Smith, Gary A., 5,055,358, Cl. 428-433.000.

Smith, Gary F.: *See—*
Fox, Daniel W.; Peters, Edward N.; Smith, Gary F.; and Sybert, Paul D., 5,055,531, Cl. 525-439.000.

Smith, George E.: *See—*
Gardner, Robert C.; Smith, George E.; and McLeod, Cheryl L., 5,055,892, Cl. 357-17.000

Smith, Gregory C.; and Bonifield, Thomas D., to Texas Instruments Incorporated. Planarized selective tungsten metallization system. 5,055,423, Cl. 437-187.000

Smith, Hal D.; McClanahan, Robert F.; Shapiro, Andrew A.; and Pelzman, George, to Hughes Aircraft Company. Via capacitors within multi-layer, 3 dimensional structures/substrates. 5,055,966, Cl 361-321.000.

Smith, Kim R.: *See—*
Borland, James E.; and Smith, Kim R., 5,055,233, Cl. 252-547.000.
Sauer, Joe D.; Smith, Kim R.; and Borland, James E., 5,055,232, Cl. 252-547.000
Sauer, Joe D.; Smith, Kim R.; and Borland, James E., 5,055,614, Cl. 564-298.000.

Smith, Lawrence A., Jr.; Arganbright, Robert P.; and Hearn, Dennis, to Chemical Research & Licensing Company. Process for the preparation of cumene. 5,055,627, Cl. 585-467.000.

Smith, Richard M., Jr., to Dunckel, Louis D. System for filling cooking pans with eggs. 5,054,384, Cl. 99-335.000.

Smith, Richard S.: *See—*
Curtiss, Linda K.; and Smith, Richard S., 5,055,396, Cl. 435-7.930.

Smith, Robert L., to United States of America, Energy. Secure video communications system. 5,056,136, Cl. 380-10.000

Smith, Robert T., to Motorola, Inc. DCFL latch having a shared load. 5,055,709, Cl. 307-279.000.

Smith, Roger A.: *See—*
Krantz, Alexander; Pauls, Heinz W.; Smith, Roger A.; and Spencer, Robin W., 5,055,451, Cl. 514-19.000.

Smith, Roy E., to Owens-Corning Fiberglas Corporation. Reciprocating strand guide for split strand roving packages. 5,054,705, Cl 242-42.000

Smith, Stephen W., to Hedstrom Corporation. Bicycle frame. 5,054,802, Cl. 280-279.000.

Smith, Thomas B.: *See—*
Dechene, Ronald L.; Smith, Thomas B.; and Newton, Robert E., 5,054,325, Cl. 73-861.040

Smith, William L., to Clorox Company, The. Viscoelastic cleaning compositions and methods of use therefor. 5,055,219, Cl. 252-102.000

Smiths Industries Public Limited Company: *See—*
Lester, Graham G., 5,055,107, Cl. 604-51.000.

Smits, Paul: *See—*
Rosenfeld, Aron M.; Smits, Paul; and DeFerrari, Howard F., 5,055,150, Cl. 156-150.000.

Snedecor, Bradley R.; and Hsu, Chung C., to Genentech, Inc. Enzymatic synthesis of alpha-L-aspartyl-L-phenyalanine lower alkyl esters. 5,055,399, Cl. 435-68.100

Snedeker, Julie A., to Globe Manufacturing Company. Protective garment with liner indicator. 5,054,125, Cl. 2-81.000

Societa' Cavi Pirelli S.p.A.: *See—*
Grasso, Giorgio; Righetti, Aldo; and Fontana, Flavio, 5,054,876, Cl. 385-24.000.

Societe d'Applications Generales d'Electricite et de Mecanique Sagem: *See—*
Yvon, Amand, 5,054,320, Cl. 73-517.00B.

Societe de Conseils et d'Etudes de Emballages - S.C.E.E.: *See—*
Margotteau, Jacques, 5,054,634, Cl. 215-322.000.

Societe de Conseils et d'Etudes des Emballages Scee: *See—*
Morel, Simone, 5,054,946, Cl. 401-122.000.

Societe Generale pour les Techniques Nouvelles S.G.N.: *See—*
Anciaux, Ghislain; Guilloteau, Rene ; Tucoulat, Daniel; and Chauvire, Pascal, 5,054,348, Cl. 83-157.000

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Barthes, Claude P.; Callet, Andre R.; and Ptchelinseff, Johan D., 5,055,650, Cl. 219-69.150.

Societe Nationale Elf Aquitaine: *See—*
Germanaud, Laurent; Truong-Dinh, Nguyen; Marie, Gilbert; and Turello, Patrick, 5,055,213, Cl. 252-51.50A

Sodec, Franc, to H. Krantz GmbH & Co. Air release box. 5,054,379, Cl. 98-40.050.

Soeda, Takahiko: *See—*
Nonaka, Masahiko; Soeda, Takahiko; Yamagiwa, Keiko; Kowata, Hiroko; Motogi, Masao; and Toiguchi, Seiichiro, 5,055,310, Cl 426-46.000.

Soehner, Gerhard: *See—*
Landsmann, Gerhard; and Soenner, Gerhard, 5,055,635, Cl 174-36.000.

Soehnlein, Dieter: *See—*
Knoller, Anton; Kunert, Peter; and Soehnlein, Dieter, 5,054,973, Cl. 408-226.000.

Sofia, Robert D., to Carter-Wallace, Inc. Method for the prevention and control of hypoxic damage resulting from cerebral ischemic events. 5,055,489, Cl. 514-483.000.

Softex Co., Ltd.: *See—*
Kakimoto, Kenichi; Kobayashi, Toshitaka; Nagata, Masanori; Imano, Shigeki; Honma, Hideaki; and Nishiyama, Hideki, 5,056,124, Cl. 378-57.000.

Soga, Ryuji; Hojo, Nobuaki; Hakozaki, Kenichia; Sakurai, Hisayuki; and Seya, Shigehisa, to Honda Giken Kogyo Kabushiki Kaisha Method of forming metallic product. 5,054,301, Cl. 72-8.000.

Solarex Corporation: *See—*
Arya, Rajeewa R.; and Catalano, Anthony W., 5,055,141, Cl. 136-258.000.

Solas, Dennis W.: *See—*
Hale, Ron L.; and Solas, Dennis W., 5,055,578, Cl. 544-209.000.

Soligo, Stefano: *See—*
Tonel, Valerio; Mattiuzzo, Mario; Foscaro, Giancarlo; and Soligo, Stefano, 5,054,215, Cl. 36-170.000.

Solomon, Bart R. Tethered golf ball. 5,054,786, Cl. 273-200.00R

Sommer, Karl-Heinz: *See—*
Unterforsthuber, Karl; and Sommer, Karl-Heinz, 5,054,811, Cl 280-742.000.

Son, Kyungcheon: *See—*
Lee, Anseob; and Son, Kyungcheon, 5,055,078, Cl. 445-51.000.

Sondergeld, Manfred, to Gebr. Schmidt Fabrik fur Feinmechanik. Method and device for measuring fluidic or calorimetric parameters. 5,056,047, Cl. 364-556.000.

Sonobe, Katsuyoshi: *See—*
Sakaida, Kazuichi; Sonobe, Katsuyoshi; Aoki, Nobuo; Uchiyama, Satoshi; and Yamada, Makoto, 5,055,872, Cl. 355-55.000

Sony Corporation: *See—*
Anmo, Hiroaki, 5,055,905, Cl. 357-51.000
Maruta, Keiji; and Nishikata, Masanobu, 5,056,075, Cl. 369-44.290.
Nishi, Yoshio; Yasuda, Akio; Kashima, Tsunehiro; Hori, Takeshi; Higuchi, Shigetaka; and Shimizu, Hidetoshi, 5,055,968, Cl 361-395.000
Sato, Masanori, 5,054,709, Cl. 242-71.800
Shibuya, Kenichi; Okubo, Hirotsugu; and Furudate, Yukio, 5,056,070, Cl. 368-10.000.
Wachi, Shigeaki, 5,056,072, Cl. 369-32.000.

Sony Corporation of America: *See—*
Gordon, Edward A., 5,055,026, Cl. 425-146.000
Klingelhofer, Marc, 5,055,928, Cl. 358-139.000.

Soong, Tsai C. Sports equipment with enhanced flexibility. 5,054,781, Cl. 273-80.00B

Soptei, Csaba: *See—*
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000

Sotani, Junji; Okuyama, Tetsuo; Seo, Susumu; Ohi, Tohru; Mori, Naoki; and Mabuchi, Minoru, to Furukawa Electric Co., Ltd. Pipe for cooling unit, cooling unit and individual cooling system. 5,054,296, Cl 62-259.100

SpaceLabs, Inc.: *See—*
Jones, Paul H., 5,055,671, Cl. 250-227.210.

Spaller, Albert E., Jr., to Eastman Kodak Company. Filtration of cellulose ester dope. 5,055,207, Cl. 210-805.000.

Sparbanken Syd: *See—*
Gustafsson, Regis, 5,055,854, Cl. 343-912.000.

Sparks, Terry L. Portable beach cache. 5,054,507, Cl. 135-97.000.

Spector, George: *See—*
Levy, Sol; and Spector, George, 5,054,667, Cl. 223-116.000
Ward, Edward D.; and Spector, George, 5,054,382, Cl. 99-327.000.

Spectra Physics, Inc.: *See—*
Ekstrand, John P., 5,055,743, Cl. 315-111.510.

Spectra-Physics Lasers, Inc.: *See—*
Alfrey, Anthony J.; and Palmer, James A., 5,056,103, Cl. 372-105.000

Speece, Donald R. Combination commuter van and air conditioner system therefor. 5,054,378, Cl. 98-2.150.

Speirs, Donald F.: *See—*
Hendrick, Peter L.; Speirs, Donald F.; and Wolf, Michael A., 5,055,659, Cl. 235-439.000.

Spencer, Philip N.: *See—*
Wentzel, Bruce J.; and Spencer, Philip N., 5,054,368, Cl. 89-196.000.

Spencer, Robin W.: *See—*
Krantz, Alexander; Pauls, Heinz W.; Smith, Roger A.; and Spencer, Robin W., 5,055,451, Cl. 514-19.000.

Speth, Albert: *See—*
Fan, Bunsen; Flagello, Donis G.; Gelorme, Jeffrey D.; Oprysko, Modest M.; Speth, Albert; and Trewhella, Jeannine M., 5,054,872, Cl. 385-130.000.

Spierings, Gijsbertus: *See—*
Haisma, Jan; Spierings, Gijsbertus; Van Lierop, Joseph G.; and Van Den Berg, Hendrik F., 5,054,683, Cl. 228-198.000.

Spink, Donald R.: *See—*
Nguyen, Kim D.; and Spink, Donald R., 5,055,124, Cl. 71-34.000.

Spiotta, Mark G.; and Foley, John P., to Motorola, Inc. Memory addressable data transfer network. 5,056,012, Cl. 364-200.000

Spira, Joel S.: *See—*
Jurell, Scott R.; Motto, Eric R.; Windows, Gordon E., Jr.; Luchaco, David G.; Capewell, Dennis M.; Hausman, Doanld F.; and Spira, Joel S., 5,055,742, Cl. 315-94.000.

Spitz, Roger; Brun, Claude; and Joly, Jean-Francois, to Atochem. Procedure for gas-phase polymerication of ethylene allowing the fabrication of linear polyethylene with a narrow molecular-weight distribution. 5,055,535, Cl. 526-142.000.

Sports Licensing, Inc.: *See—*
Brine, William H., III; and Brine, Peter J., 5,054,790, Cl. 273-326.000

Sprecher Energie AG: *See—*
Lippi, Bruno; Suter, Ernst; Wuthrich, Hans-Rudolf; and Meier, Thomas, 5,055,640, Cl. 200-144.00B.

Sprenger, Walter: *See—*
Honel, Michael; Ziegler, Peter; Sprenger, Walter; and Wendt, Wolfgang, 5,055,542, Cl. 528-45.000

Springer, Hartmut; Kuhn, Manfred; Russ, Werner H.; and Schlafer, Ludwig, to Hoechst Aktiengesellschaft. Water-soluble disazo compounds, containing a vinylsulfonyl or β-chloroethylsulfonyl grouping bonded directly or via a methylene group or a lower alkyl amino group to a benzoylamino group, suitable as dyestuffs. 5,055,565, Cl 534-642.000.

Spuhl AG: *See—*
Zuger, Jakob, 5,054,178, Cl. 29-91.100.

SRI International: *See—*
Blum, Yigal D.; and Crawford, Edward J., 5,055,431, Cl. 501-97.000

Staedtler & Uhl: *See—*
Egerer, Josef, 5,054,167, Cl. 19-218.000.

Stafford, George C., Jr.: *See—*
Taylor, Dennis M.; Amy, Jonathan W.; and Stafford, George C., Jr., 5,055,678, Cl. 250-291.000.

Stagl, Peter: *See—*
Sherman, Adam; and Stagl, Peter. 5,054,660, Cl. 222-454.000.

Staheli, Paul: *See—*
Demuth, Robert; Fritzsche, Peter; Waeber, Rene; Staheli, Paul; and Faas, Jurg, 5,054,166, Cl. 19-113.000.

Stahl, Julia A.; and Hayden, Richard F., to Owens-Corning Fiberglas Corporation. Edge-reinforced folded glass wool insulation layers. 5,055,330, Cl. 428-61.000.

Staley, James T.: *See—*
Chakrabarti, Dhruba J.; Staley, James T.; Baumann, Stephen F.; Sawtell, Ralph R.; Bretz, Philip E.; and Jensen, Craig L., 5,055,257, Cl. 420-902.000

Stanbury, Evan J.: *See—*
Thomas, Lloyd S.; and Stanbury, Evan J., 5,055,773, Cl. 324-132.000

Standard Oil Company, The: *See—*
Budge, John R., 5,055,599, Cl. 549-429.000.
Percec, Elena S.; and Takigawa, Doreen Y., 5,055,520, Cl. 525-74.000

Standard Products Company, The: *See—*
Keys, James F.; Vaughan, Robert A.; and Belser, John W., 5,054,242, Cl. 49-491.000.

Stanley Electric Company, Ltd.: *See—*
Miyata, Osamu; Kawano, Katsunori; and Oki, Youji, 5,055,993, Cl. 363-98.000
Mori, Kiji; Kanemitsu, Nobuhisa; Watanabe, Junichi; Kagawa, Mitsuru; Hasegawa, Kazuhiro; Mochizuki, Shigehiro; and Kondo, Fumio, 5,055,076, Cl. 445-25.000

Stark, Charles E. CCAC (cylinder-cone air chamber) carburetor. 5,054,449, Cl. 123-434.000

Stauffer, Charles C.: *See—*
Jeffers, Larry A.; Schmotzer, Jack K.; and Stauffer, Charles C., 5,055,694, Cl. 250-458.100

STC PLC: *See—*
Baker, Robert A.; Sibbett, Wilson; and Burns, David, 5,056,096, Cl. 372-6.000
Scovell, Peter D.; Blomley, Peter F.; Baker, Roger L.; and Tomkins, Gary J., 5,055,419, Cl. 437-31.000.

Stecker, William M. Method of forming a synthetic surface simulating stone, marble or the like. 5,055,324, Cl. 427-281.000.

Stefan, Alexander. Massage machine. 5,054,472, Cl. 128-58.000.

Stein Atkinson Stordy Limited: *See—*
Perry, Ophneil H., 5,054,747, Cl. 266-205.000.
Perry, Ophneil H., 5,055,037, Cl. 432-72.000.

Stein, Mark M.: *See—*
Edwards, Philip D.; Schwartz, John A.; Stein, Mark M.; Trainor, Diane A.; and Wildonger, Richard A., 5,055,450, Cl. 514-019.000.

Stein, Volker W.: *See—*
Dickie, Robert G.; and Stein, Volker W., 5,055,045, Cl. 433-155.000.

Steinbach, Thomas: *See—*
Wagle, Sukahakar S.; Tanaka, S. Ken; Steinbach, Thomas; Lawyer, Carl H.; and Hermann, William J., Jr., 5,055,296, Cl. 424-553.000.

Steinbrink, D. Randall: *See—*
Jacobs, Kenneth A.; Steinbrink, D. Randall; Floros, Joanna; Phelps, David S.; and Taeusch, H. William, 5,055,553, Cl. 530-300.000.

Steiner, Rudolph, to Parlec, Inc. Boring head with a pair of axially and radially individually adjustable cutting elements. 5,054,970, Cl. 408-146.000.

Steinmeyer, Peter A., to United States of America, Energy. Apparatus for monitoring X-ray beam alignment. 5,056,129, Cl. 378-705.000.

Stempinski, George. Storage rack. 5,054,626, Cl. 211-40.000.

Stengel, Robert E.: *See—*
Altman, Leonard F.; and Stengel, Robert E., 5,055,816, Cl. 336-200.000.

Stenzel, Gerhard: *See—*
Altemark, Detlef; Stenzel, Gerhard; and Weid, Manfred, 5,055,032, Cl. 431-158.000.

Stepaniuk, Nickolas J.: *See—*
Lamb, Bruce J.; and Stepaniuk, Nickolas J., 5,055,563, Cl. 534-565.000.

Sterling, John R.; and Kluge, Richard G., to John Sterling Corporation. Bottom pivot assembly for folding doors. 5,054,163, Cl. 16-244.000.

Stetter, Joseph D.; Zaromb, Solomon; and Findlay, Melvin W., Jr., to ARCH Development Corporation. Method for detecting toxic gases. 5,055,266, Cl. 422-83.000.

Stevens, Albert F.: *See—*
DeWitt, Robert R.; Lile, William R.; Mitchell, Paul; and Stevens, Albert F., 5,054,620, Cl. 209-3.100.

Stevens, Michael G.: *See—*
Hoffman, Dwight K.; Messick, Virginia B.; and Stevens, Michael G., 5,055,532, Cl. 525-528.000

Stewart, Harry E.; and MacElwee, Donald B., to Powsus, Inc. Fire extinguishing compositions. 5,055,208, Cl. 252-8.000.

Stewart, Thomas, to Trinity Industries, Inc. Collapsible hitch. 5,054,804, Cl. 280-435.000.

Stillwagon, Ross I.; Fischbach, Fernando; and Linscott, Jon F. Hot work organizer. 5,054,615, Cl. 206-373.000.

Stobar, Leonard: *See—*
Mochel, Paul J.; and Stobar, Leonard, 5,054,377, Cl. 98-2.140.

Stockham, Norman R., to Welding Institute, The. Bonding electrical conductors. 5,054,680, Cl. 228-104.000.

Stockler, Jerry R.: *See—*
Blumenthal, Michael M.; Stockler, Jerry R.; and Van Tassell, Harry M., 5,055,410, Cl. 436-60.000.

Stoll, Harold M.: *See—*
Davis, Richard L.; and Stoll, Harold M., 5,054,873, Cl. 385-27.000.

Stoller, Christian: *See—*
Roscoe, Bradley A.; and Stoller, Christian, 5,055,676, Cl. 250-270.000.

Stone, John: *See—*
Fitzgerald, John V.; Walsh, Teresa M.; Matusik, Frank J.; Stone, John; Dougherty, Edmond; and Batton, John, 5,054,313, Cl. 73-59.000.

Stone, Richard A.: *See—*
Laties, Alan M.; and Stone, Richard A., 5,055,302, Cl. 424-427.000.

Stork Colorproofing B.V.: *See—*
Matkan, Josef; and Alston, John T., 5,055,365, Cl. 430-42.000.

Strandlund, Gert C.: *See—*
Almgren, Olle K. S.; Andersson, Kjell H.; Duker, Goran B. D.; Lamm, Bo R.; and Strandlund, Gert C., 5,055,490, Cl. 514-524.000.

Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., to General Electric Company. Bypass valve system. 5,054,286, Cl 60-226.300.

Stratagene Cloning Systems: *See—*
Cathel, Frank; and Leshofs, Robert, 5,055,172, Cl. 204-299.00R

Strathdee, Craig A.: *See—*
Lo, Reggie Y. C.; Shewen, Patricia E.; and Strathdee, Craig A., 5,055,400, Cl. 435-69.100.

Strawson, Colin J.: *See—*
Davies, Gareth M.; Strawson, Colin J.; and Lohmann, Jean J., 5,055,462, Cl. 514-202.000.

Streck, Donald A.: *See—*
Iggulden, Jerry R.; and Streck, Donald A., 5,054,945, Cl. 401-23.000.

Striefler, Martin J.: *See—*
Schumacher, Kevin; Striefler, Martin J.; Cavaluzzi, Frank; and Domicoli, Orazio, 5,054,210, Cl. 34-78.000

Strunk, Wayne D. Apparatus to prepare a road surface. 5,054,958, Cl. 404-75.000.

Stryer, Lubert; Glazer, Alexander N.; and Oi, Vernon T., to Leland Stanford Jr. Univ., The Board of Trustees of the. Fluorescent conjugates for analysis of molecules and cells. 5,055,556, Cl. 530-370.000.

Stuart, Carole M.: *See—*
Stuart, James C.; and Stuart, Carole M., 5,054,144, Cl. 5-443.000.

Stuart, James C.; and Stuart, Carole M. Tiltable and horizontally adjustable leg or foot rest. 5,054,144, Cl. 5-443.000.

Sturdivant, Linda D.: *See—*
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, 5,055,405, Cl. 435-240.270.

Sturgis, James D.: *See—*
White, John E.; Sturgis, James D.; Erikson, Raymond J.; Waligroski, Gregg A.; and Scott, Michael A., 5,054,466, Cl 126-438.000.

Stuttem, Manfred; and Deters, Ludger A., to Barmag AG. Method and apparatus for monitoring yarn tension. 5,055,829, Cl. 340-677.000.

Stuyts, Victor C. L. H., to Initial Investments, B.V. Apparatus for testing the wheel suspension of a vehicle. 5,056,024, Cl. 364-424.030.

Styner & Bienz AG: *See—*
Glaus, Heinrich; Lehmann, Peter; Joehr, Hans; and Freiburghaus, Rene , 5,054,614, Cl. 206-343.000.

Suarez, Joseph E.: *See—*
Hock, Vincent F., Jr.; Givens, John H.; Suarez, Joseph E.; and Rigsbee, James M., 5,055,169, Cl. 204-192.310.

Suda, Shigeyuki: *See—*
Kitagishi, Nozomu; Nakayama, Hiroki; Hattori, Jun; Suda, Shigeyuki; and Horiuchi, Akihisa, 5,054,898, Cl. 359-654.000.

Sugawa, Hiroya: *See—*
Nakatani, Munehiro; Sugawa, Hiroya; and Kishi, Masamichi, 5,055,886, Cl. 355-326.000.

Sugawara, Mitsutoshi, to NEC Corporation. Circuit for driving an inductive load. 5,055,708, Cl. 307-270.000.

Sugaya, Kiyoshi: *See—*
Okubo, Kazumasa; Okubo, Masao; Yoshimitsu, Yasuro; and Sugaya, Kiyoshi, 5,055,778, Cl. 324-158.00P.

Sugier, Andre; Bourgmayer, Paul; and Rojey, Alexandre, to Institut Francais du Petrole. Process for extraction of water mixed with a liquid fluid. 5,055,178, Cl. 208-188.000.

Sugihara, Masanori: *See—*
Morikawa, Kiyoshi; Kurumada, Masakazu; Kobayashi, Kazuo; Yamada, Yoshinori; and Sugihara, Masanori, 5,056,077, Cl. 369-77.100.

Sugimoto, Hiroaki; Ohbe, Yoshitaka; and Hayatsu, Kazuo, to Sumitomo Chemical Company, Ltd. Process for producing aromatic polyesters. 5,055,546, Cl. 528-193.000.

Sugimoto, Masahiro: *See—*
Shimizu, Nobutaka; Tsujimura, Takehisa; Sugimoto, Masahiro; and Harada, Shigeki, 5,055,914, Cl. 357-81.000.

Sugimoto, Tadashi; Iwasawa, Masashi; and Shoji, Yasuo, to Optex Co., Ltd. Infrared detecting apparatus. 5,055,685, Cl. 250-342.000.

Sugita, Kazuhiko; Sakakibara, Norio; Hori, Nobumitsu; and Yamakawa, Yoichi, to Toyoda Koki Kabushiki Kaisha. Apparatus for machining a non-circular workpiece. 5,054,340, Cl. 82-18.000.

Sugiyama, Yoshihide: *See—*
Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000.

Sugizaki, Tsugio: *See—*
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000.

Sukonnik, Israil M.; Forster, James A.; Breit, Henry F.; and Raphanella, Gary A., to Texas Instruments Incorporated. Substrate for an electrical circuit system and a circuit system using that substrate. 5,055,967, Cl. 361-387.000.

Sukup, Eldon R. Intravenous feeder support for stroller. 5,054,732, Cl. 248-309.100.

Sulcs, Juris, to Venture Lighting International, Inc. Horizontal burning metal halide lamp. 5,055,740, Cl. 313-634.000.

Sumida, Satoshi: *See—*
Ozawa, Katsuko; Gotoh, Kazuhisa; Murayama, Tomohiro; Tokuda, Momoyo; Sumida, Satoshi; and Suzuki, Tetsuo, 5,055,755, Cl. 318-568.110.

Sumita, Masujiro: *See—*
Matsuo, Masaaki; Sumita, Masujiro; Hosoi, Isao; Aoki, Hirohumi; and Ohta, Masaru, 5,055,375, Cl. 430-254.000.

Sumitomo Chemical Company, Limited: *See—*
Dohara, Kazunobu; Matsunaga, Tadahiro; Shiraishi, Motomitsu; and Shinjo, Goro, 5,055,299, Cl. 424-405.000.
Sugimoto, Hiroaki; Ohbe, Yoshitaka; and Hayatsu, Kazuo, 5,055,546, Cl. 528-193.000.
Yano, Toshihiko; Ishiwatari, Takao; Sekihachi, Hiroko; Matsuo, Noritada; Takagaki, Tohei; and Kakimizu, Akiko, 5,055,491, Cl. 514-531.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kanamori, Hiroo; Ishiguro, Yoichi; and Tanaka, Gotaro, 5,055,121, Cl. 65-3.120.
Kanda, Masahiko; and Awazu, Kunio, 5,054,915, Cl. 356-39.000.
Kanda, Masahiko; and Awazu, Kunio, 5,054,916, Cl. 356-39.000.
Noguchi, Kazuo; Takahashi, Nobuhiro; Hideshima, Masafumi; and Asai, Tsuyoshi, 5,054,967, Cl. 407-110.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Tomita, Yoshiyuki, 5,056,030, Cl. 364-473.000.

Sumitomo Rubber Industries: *See—*
Yamaguchi, Tetsuo, 5,054,414, Cl. 114-219.000.

Summagraphics Corporation: *See—*
Padula, Michael J., 5,055,831, Cl. 340-706.000.

Sun, Koushun: *See—*
Deutsch, Robert W.; and Sun, Koushun, 5,054,461, Cl. 123-609.000.

Sun, Yinshang, to Rockwell International Corporation. Method and apparatus for clock and data recovery with high jitter tolerance. 5,056,118, Cl. 375-106.000.

Sundquist, Nils E.: *See—*
Johnson, Gary E.; Schneider, John T.; and Sundquist, Nils E., 5,054,347, Cl. 83-140.000.

Sundstrand Corporation: *See—*
Bracken, Robert L.; and Jacobs, Anita I., 5,055,014, Cl. 417-572.000.
Cook, Alexander, 5,055,992, Cl. 363-98.000.

Jones, Anthony, 5,054,283, Cl. 60-39.142
Latos, Thomas S.; and Wingate, Kevin L., 5,055,722, Cl. 307-570.000
Rashid, Abdul, 5,056,123, Cl. 377-49.000
Rozman, Gregory I.; Glennon, Timothy F.; and Cook, Alexander, 5,055,764, Cl. 322-10.000
Rozman, Gregory I.; and Owens, William R., 5,055,765, Cl. 322-22.000
Shekleton, Jack R., 5,054,284, Cl. 60-39.142
Tysver, John D., 5,054,592, Cl. 192-8.00R.
Wrzyszczynski, Jack A., 5,054,583, Cl. 184-6.260.

Sunrise Meisei Corporation: *See*—
Nakano, Yoshinori; Kotsuma, Kyohisa; and Ito, Masayoshi, 5,055,543, Cl. 528-58.000

Sunshon Molding Co., Ltd.: *See*—
Chiu, Hsiu-Hui, 5,054,851, Cl. 297-136.000

Supercomputer Systems Limited Partnership: *See*—
Beard, Douglas R., 5,055,707, Cl. 307-269.000

Superior Walls of America, Ltd.: *See*—
Zimmerman, Melvin M., 5,055,252, Cl. 264-263.000

Supron, Steven A.: *See*—
Martin, Samuel W.; Miller, Carl A.; Pickering, William V., Jr.; Supron, Steven A.; Murcko, David, deceased; and Murcko, Linda, administrator, 5,054,757, Cl. 270-45.000

Surakka, Jorma: *See*—
Maki-Rahkola, Jari; Kononen, Juhani; and Surakka, Jorma, 5,054,263, Cl. 53-399.000

Surgical Dynamics, Inc.: *See*—
Ray, Charles D., 5,055,104, Cl. 606-61.000

Suter, Ernst: *See*—
Lippi, Bruno; Suter, Ernst; Wuthrich, Hans-Rudolf; and Meier, Thomas, 5,055,640, Cl. 200-144.00B

Sutter, James J., to Kulay Manufacturing Limited. Toy gaming device. 5,054,782, Cl. 273-143.00R

Sutton, Malcolm S., to British Railways Board. Track to train communication systems. 5,055,835, Cl. 340-825.540

Suzuki, Hiroaki: *See*—
Kato, Yasushi; Tsurugi, Noriyoshi; Suzuki, Hiroaki; and Ogata, Shigeji, 5,054,524, Cl. 139-383.00R

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Takasaka, Masao, 5,054,571, Cl. 180-219.000

Suzuki, Keizo: *See*—
Ninomiya, Ken; and Suzuki, Keizo, 5,055,679, Cl. 250-306.000

Suzuki, Kenichiro: *See*—
Wise, Kensall D.; and Suzuki, Kenichiro, 5,055,838, Cl. 340-870.370

Suzuki, Kenji; and Matsumoto, Fumio, to Fuji Photo Film Co., Ltd. Photographic printer with monitor. 5,055,941, Cl. 358-450.000.

Suzuki, Kenji: *See*—
Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000

Suzuki, Mikio: *See*—
Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,055,472, Cl. 514-258.000

Suzuki, Motoko: *See*—
Mitsumori, Naomichi; Nishimura, Yasuhiro; Yokota, Keiko; Okuno, Shiro; and Suzuki, Motoko, 5,055,469, Cl. 514-252.000.

Suzuki Motor Company Limited: *See*—
Hirasawa, Kiyoshi; and Yamamoto, Nobunari, 5,054,814, Cl. 280-803.000

Suzuki, Nobuo; and Sakasai, Yutaka, to Fuji Photo Film Co., Ltd. Image forming resin particles for liquid developer for printing plate 5,055,370, Cl. 430-114.000

Suzuki, Tamotsu: *See*—
Namiki, Tomizo; Suzuki, Tamotsu; and Katayama, Masashi, 5,055,329, Cl. 428-42.000

Suzuki, Tetsuji: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; and Suzuki, Tetsuji, 5,055,936, Cl. 358-296.000

Suzuki, Tetsuo: *See*—
Ozawa, Katsuko; Gotoh, Kazuhisa; Murayama, Tomohiro; Tokuda, Momoyo; Sumida, Satoshi; and Suzuki, Tetsuo, 5,055,755, Cl. 318-568.110

Suzuki, Tomohiro: *See*—
Naito, Atsushi; Nakatsuka, Kiyoshi; Yamamoto, Seiichi; Inui, Takashi; and Suzuki, Tomohiro, 5,055,717, Cl. 307-463.000.

Suzumura, Masahiko: *See*—
Akiyama, Sigeo; Suzumura, Masahiko; and Nobe, Takeshi, 5,055,895, Cl. 357-23.400

Svensson, Gosta, to Teknovia AB. Liquid driven jet pump. 5,055,003, Cl. 417-191.000.

Swadner, Robert L.: *See*—
Ebbing, David M.; Swadner, Robert L.; and Puterbaugh, Jerome E., 5,055,004, Cl. 417-222.00R.

Swank, Harry R., to Thomson Consumer Electronics, Inc. Implosion protection means having mounting lug base-accommodating concavities therein. 5,055,934, Cl. 358-246.000.

Swanson, Robert M.; and Pentmeester, Paul C., to American Standard Inc. Compressor motor protection system. 5,056,032, Cl. 364-483.000

Swars, Helmut, to Emitec Gesellschaft fur Emissionstechnologie mbH Assembled driveshaft. 5,054,334, Cl. 74-567.000

Swars, Helmut. *See*—
Riemscheid, Helmut; Frielingsdorf, Herbert; Grewe, Heribert; Weiss, Karl; Schulze, Rudolf; Schwarz, Engelbert; Swars, Helmut; and Palussek, Arnold, 5,054,756, Cl. 269-48.100.

Swayze, Frank A.; and Bourell, Irvin R. Auxiliary winch for all terrain vehicle. 5,054,745, Cl. 254-325.000

Sweeprite Manufacturing Inc.: *See*—
Hulicsko, Leslie, 5,054,152, Cl. 15-84.000

Swiatowy, Jeffrey M.; and Polifka, Keith P., to E.H. Wachs Company, The. Pipe machining apparatus. 5,054,342, Cl. 82-113.000.

Swierczek, Remi D. Disposable skin perforator and blood testing device. 5,054,499, Cl. 128-770.000

Swift, Graham: *See*—
Hughes, Kathleen A.; and Swift, Graham, 5,055,540, Cl. 526-318.200.

Swinney, Louis E. Radial pump/motor. 5,054,371, Cl. 91-497.000.

Sy, Leng K. Aquarium ecosystem. 5,054,424, Cl. 119-5.000.

Sybert, Paul D.: *See*—
Fox, Daniel W.; Peters, Edward N.; Smith, Gary F.; and Sybert, Paul D., 5,055,531, Cl. 525-439.000.

Symtron Systems, Inc.: *See*—
Rogers, William; Ernst, James J.; Williamson, Steven; and Musto, Dominick J., 5,055,050, Cl. 434-226.000.

Syntex Inc.: *See*—
Krantz, Alexander; Pauls, Heinz W.; Smith, Roger A.; and Spencer, Robin W., 5,055,451, Cl. 514-19.000

Systems Research Laboratories, Inc.: *See*—
Gustin, Thomas W., 5,056,056, Cl. 364-900.000.

Szabo, Geza: *See*—
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000.

Szemenyei, Clarita A.: *See*—
Hall, Bobby E.; Szemenyei, Clarita A.; and Gupta, D. V. Satyanarayana, 5,054,552, Cl. 166-278.000.

Szentes, John F.: *See*—
Grawey, Charles E.; Johnson, L. Ted; Sloma, John M.; and Szentes, John F., 5,055,734, Cl. 310-366.000.

T and G Corporation: *See*—
Peck, Robert L., 5,055,171, Cl. 204-290.00R.

Tabata, Toshiyuki, to Nissan Motor Co., Ltd. Fluid-filled power unit mount. 5,054,752, Cl. 267-140.100.

Tabler, Donald C.: *See*—
Howell, Jerald A.; Tabler, Donald C.; Davis, Thomas; and Kukes, Simon G., 5,055,174, Cl. 208-112.000.

Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, to NKK Corporation; and Chiyoda Corporation. Process for the preparation of naphthalene carboxylic acids. 5,055,612, Cl. 562-416.000

Tachino, Noboru: *See*—
Ikegami, Yuji; Sasayama, Shinichi; Tachino, Noboru; and Kamiya, Takeshi, 5,055,145, Cl. 148-285.000.

Taco, Inc.: *See*—
Okerblom, Charles L., 5,054,516, Cl. 137-504.000.

Tada, Tetsuo: *See*—
Takagi, Ryouichi; Tada, Tetsuo; and Kohara, Masanobu, 5,055,780, Cl. 324-158.00F

Tadanobu, Eiji: *See*—
Takigawa, Masuhiko; and Tadanobu, Eiji, 5,054,202, Cl. 30-208.000

Taeusch, H. William: *See*—
Jacobs, Kenneth A.; Steinbrink, D. Randall; Floros, Joanna; Phelps, David S.; and Taeusch, H. William, 5,055,553, Cl. 530-300.000

Taguchi, Tetsu, to NEC Corporation. Speech processing system. 5,056,143, Cl. 381-35.000

Taguchi, Tomoo: *See*—
Asoh, Seiichi; Kubota, Satoshi; Fukuda, Hitoki; Ushijima, Kajuhiro; Murakami, Fumiyuki; Taguchi, Tomoo; and Kohno, Shigefumi, 5,054,847, Cl. 296-219.000.

Tait, Charles N.; and Volpe, Ralph A., to Warner-Lambert Company. Capsule transport tray. 5,054,258, Cl. 53-137.200.

Takagaki, Tohei: *See*—
Yano, Toshihiko; Ishiwatari, Takao; Sekihachi, Hiroko; Matsuo, Noritada; Takagaki, Tohei; and Kakimizu, Akiko, 5,055,491, Cl. 514-531.000

Takagi, Hiroshi: *See*—
Fujimoto, Ryo; Arisaka, Katsumi; Sasakura, Takao; Takagi, Hiroshi; Suzuki, Kenji; Shinmi, Akira; Kanome, Rieko; Hashimoto, Morimi; and Saito, Nobuyuki, 5,055,351, Cl. 428-336.000.

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Takahashi, Fumio: *See*—
Yoneshima, Kunihiko; and Takahashi, Fumio, 5,055,227, Cl. 252-301.60S.

Takahashi, Hironori; Aoshima, Shinichiro; and Tsuchiya, Yutaka, to Hamamatsu Photonics K. K. Method and apparatus for detecting voltage. 5,055,770, Cl. 324-96.000

Takahashi, Nobuhiro: *See*—
Noguchi, Kazuo; Takahashi, Nobuhiro; Hideshima, Masafumi; and Asai, Tsuyoshi, 5,054,967, Cl. 407-110.000.

Takahashi, Osamu: *See*—
Hirano, Tsumoru; Gotou, Haruyoshi; and Takahashi, Osamu, 5,055,386, Cl. 430-545.000.

Takahashi, Shigeyuki: *See*—
Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, 5,054,895, Cl. 359-265.000

Takahashi, Susumu, to KantoYaking Kogyo K.K. Method of preparing carbon fiber-reinforced carbon modules. 5,055,243, Cl. 264-29.100.

Takahashi, Takahiko: *See*—
Haraichi, Satoshi; Itoh, Fumikazu; Shimase, Akira; and Takahashi, Takahiko, 5,055,696, Cl. 250-492.200.

Takahira, Kenichi: *See*—
Furuta, Shigeru; Takahira, Kenichi; Yamaguchi, Atsuo; Inoue, Takesi; Matsubara, Toshiyuki; and Fujioka, Shuzo, 5,056,089, Cl. 371-3.000.

Takai, Mamoru, to Megasoft Inc. Data communication system. 5,056,113, Cl. 375-58.000.

Takala, Robert E.: *See*—
Fitzgerald, Timothy P.; Rother, David J.; Wrolson, Darryl T.; Nelson, Richard H.; and Takala, Robert E., 5,056,073, Cl. 369-36.000.

Takamatsu, Hiroshi; and Ueda, Katsunobu, to Kabushiki Kaisha Toshiba. Polishing apparatus. 5,054,244, Cl. 51-165.710.

Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; and Furuya, Masato, to Victor Company of Japan, Ltd. Photo-to-photo conversion element and its applied system. 5,054,892, Cl. 359-72.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; and Suzuki, Tetsuji, to Victor Company of Japan, Ltd. Charge latent image recording medium and recording/reproducing apparatus thereof. 5,055,936, Cl. 358-296.000.

Takasaka, Masao, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Oil tank device for motorcycle. 5,054,571, Cl. 180-219.000.

Takasaki, Ken: *See*—
Tsuru, Sumiaki; Tsugita, Masashi; Takasaki, Ken; Yokoo, Akihiko; and Ichitsuka, Takeshi, 5,055,307, Cl. 424-493.000.

Takase, Ichirou; Sato, Kazuo; Yamasaki, Noritsugu; and Goto, Yukihisa, to Daicel Chemical Industries Ltd. Process for preparing N-substituted amino acid esters. 5,055,588, Cl. 548-344.000.

Takashashi, Tsukasa: *See*—
Osaka, Shigemi; Hata, Kazuo; and Takashashi, Tsukasa, 5,055,442, Cl. 502-439.000

Takashima, Jiro. Floating cylinder internal combustion engine. 5,054,438, Cl. 123-50.00R.

Takashima, Kazushige: *See*—
Nagoshi, Hitoshi; Kimura, Taizou; and Takashima, Kazushige, 5,055,118, Cl. 55-146.000.

Takata Corporation: *See*—
Hamaue, Tetsuya, 5,055,824, Cl. 340-438.000.

Takata, Inc.: *See*—
Gavagan, James A., 5,054,815, Cl. 280-808.000.

Takata, Makoto: *See*—
Nakatani, Yoshihide; Okada, Shigeichi; Yaezawa, Eiji; Takata, Makoto; and Nakahara, Takafumi, 5,054,441, Cl. 123-182.000.

Takebayashi, Tatsuhide, to Asahi Kogaku Kogyo Kabushiki Kaisha. Retractable zoom-strobe device. 5,055,866, Cl. 354-149.100.

Takeda Chemical Industries, Ltd.: *See*—
Fujinawa, Shohei; Iizuka, Harumasa; Kodama, Seiichi; and Yada, Hideo, 5,055,308, Cl. 426-11.000.

Takeda, Hiroyuki: *See*—
Motooka, Masanori; Mantoku, Hotishi; Yagi, Kazuo; Takeda, Hiroyuki; and Takimoto, Kazuyuki, 5,055,248, Cl. 264-210.300.

Takeda, Kazuhiro: *See*—
Miyamura, Masataka; Wada, Yusuke; Nakagawa, Toshiharu; Nakaizumi, Yuji; and Takeda, Kazuhiro, 5,055,378, Cl. 430-280.000.

Takei, Nobuhiro: *See*—
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000.

Takeishi, Nobuhiro: *See*—
Washio, Yukari; Takeishi, Nobuhiro; Shimamoto, Hideki; Mori, Keiji; Ushio, Noriki; Shiono, Katsuji; Kishi, Takaaki; and Samura, Hideo, 5,055,974, Cl. 361-527.000.

Takeo, Hideya, to Fuji Photo Film Co., Ltd. Method for judging an irradiation field. 5,055,682, Cl. 250-327.200.

Takeuchi, Hiroshi: *See*—
Iwasaki, Takeshi; and Takeuchi, Hiroshi, 5,055,649, Cl. 219-69.120.

Takeuchi, Mikio, to Nissan Motor Company, Limited. Operator responsive keyless entry system with variable random codes. 5,055,701, Cl. 307-10.200.

Takeuchi, Tomio; Hara, Takeshi; Hamada, Masa; Kondo, Shinichi; Sezaki, Masaji; Yamamoto, Haruo; and Gomi, Shuichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Benanomicins A and antibiotic compositions. 5,055,453, Cl. 514-27.000.

Takigawa, Doreen Y.: *See*—
Percec, Elena S.; and Takigawa, Doreen Y., 5,055,520, Cl. 525-74.000.

Takigawa, Masuhiko; and Tadanobu, Eiji, to ARS Edge Co., Ltd. Pruning machine. 5,054,202, Cl. 30-208.000.

Takiguchi, Yo; Ohsumi, Jun; Shimoji, Yasuo; and Sasagawa, Kazuhiko, to Sankyo Company, Limited. Method of treating cachexia. 5,055,479, Cl. 514-359.000.

Takimoto, Kazuyuki: *See*—
Motooka, Masanori; Mantoku, Hotishi; Yagi, Kazuo; Takeda, Hiroyuki; and Takimoto, Kazuyuki, 5,055,248, Cl. 264-210.300.

Takizawa, Satoshi, to Nissan Motor Co., Ltd. Shift control for automatic transmission for effective engine brake running. 5,054,336, Cl. 74-866.000.

Takubo, Hiromu: *See*—
Miki, Hiroshi; Fujiwara, Yoshitaka; Iida, Kiyoshi; Takubo, Hiromu; Shibayama, Kunio; and Kobayashi, Shinichi, 5,055,990, Cl. 363-56.000.

Tam, Simon M.: *See*—
Canepa, George R.; Holler, Mark A.; and Tam, Simon M., 5,055,897, Cl. 357-23.500.

Tamura, Akihiko: *See*—
Itaya, Masahiko; Okamoto, Yukio; Yasuda, Kazuo; Kamegamori, Masayuki; Yoshino, Kunihisa; Morita, Shizuo; Fukuchi, Masakazu; Tamura, Akihiko; Fuma, Hiroshi; Fujimori, Toshiro; and Sugizaki, Tsugio, 5,054,419, Cl. 118-657.000

Tamura, Shuji: *See*—
Kataoka, Keiichi; and Tamura, Shuji, 5,055,348, Cl. 428-307.300.

Tamura, Toshiya: *See*—
Yagami, Kojiro; Sano, Chitatsu; and Tamura, Toshiya, 5,055,958, Cl. 360-122.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Nishimoto, Shigeru; Nakao, Akio; Ikeda, Yasuji; and Nate, Hiroyuki, 5,055,575, Cl. 540-491.000

Tanabe, Yuzuru; and Ikawa, Koji, to Asahi Glass Company, Ltd. Temperature-measuring method and distributed optical fiber temperature sensor. 5,054,935, Cl. 374-131.000.

Tanada, Hideki: *See*—
Matsubara, Akira; Sakai, Kazuya; Tanada, Hideki; and Komatsu, Hironori, 5,055,585, Cl. 548-248.000.

Tanaka, Akira: *See*—
Wakatsuki, Noboru; Kurashima, Shigemi; Shimizu, Nobuyoshi; Endoh, Michiko; and Tanaka, Akira, 5,055,786, Cl. 324-252.000

Tanaka, Gotaro: *See*—
Kanamori, Hiroo; Ishiguro, Yoichi; and Tanaka, Gotaro, 5,055,121, Cl. 65-3.120.

Tanaka, Hideo: *See*—
Ohde, Yuko; Tanaka, Hideo; and Kuroda, Ichiro, 5,056,004, Cl. 264-200.000.

Tanaka, Hiroyuki: *See*—
Kin, Seki; Tanaka, Hiroyuki; Saeki, Satoshi; Torikoshi, Kaoru; and Pu, Lyong S., 5,055,615, Cl. 564-307.000

Tanaka, Kazuo; Hamamoto, Masato; Yamada, Toshio; Kobayashi, Tohru; and Katoh, Hiromasa, to Hitachi, Ltd. Integrated logic circuit having plural input cells and flip-flop and output cells arranged in a cell block. 5,055,710, Cl. 307-303.100.

Tanaka, Kohbun, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho Buckle device. 5,054,171, Cl. 24-637.000.

Tanaka, Minoru: *See*—
Koike, Kiyofumi; and Tanaka, Minoru, 5,054,941, Cl. 400-124.000.
Nakano, Masaru; Tanaka, Minoru; Ikeda, Toshiaki; and Kuno, Toshitaka, 5,056,031, Cl. 364-461.000.

Tanaka, Natsuko: *See*—
Maeda, Yasutaka; Tanaka, Natsuko; Nagayama, Katsuhiro; and Nishimura, Hideyuki, 5,055,877, Cl. 355-214.000

Tanaka, S. Ken: *See*—
Wagle, Sukahakar S.; Tanaka, S. Ken; Steinbach, Thomas; Lawyer, Carl H.; and Hermann, William J., Jr., 5,055,296, Cl. 424-553.000.

Tanaka, Sokichi. Automatic molten substance bagging method and system. 5,054,274, Cl. 53-570.000.

Tanaka, Takao: *See*—
Morishita, Akira; Isozumi, Shuzoo; and Tanaka, Takao, 5,054,329, Cl. 74-7.00R.

Tanaka, Toshio; Hyama, Noboru; Komata, Satoru; and Sakamoto, Kazuo, to Riso Kagaku Corporation. Thermal stencil sheet assembly with stencil sheet temporarily detachable from frame. 5,054,391, Cl. 101-127.100.

Tandy Corporation: *See*—
Hsieh, Der-Chang, 5,056,081, Cl. 369-100.000.

Tango Proprietary Limited: *See*—
Loechel, Stephen J.; and Henderson, Kerry W., 5,054,835, Cl. 294-99.200.

Taniguchi, Atsuki; Fujimoto, Nobuhiro; Ishihara, Tomohiro; and Wakisaka, Takaaki, to Fujitsu Limited. Phase adjusting circuit 5,056,120, Cl. 375-118.000.

Taniguchi, Hiroaki: *See*—
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl. 562-416.000.

Taniguchi, Nobuyuki: *See*—
Fujino, Akihiko; Ichikawa, Tsutomu; Nanba, Katsuyuki; and Taniguchi, Nobuyuki, 5,055,865, Cl. 354-127.110.

Taniguchi, Osamu: *See*—
Hanyu, Yukio; Taniguchi, Osamu; Uchimi, Toshiharu; and Asaoka, Masanobu, 5,054,890, Cl. 350-344.000.

Taniguchi, Tatsuaki; and Hirata, Takashi, to Mazda Motor Corporation. Mobile electric accessory apparatus. 5,056,153, Cl. 455-89.000.

Taniji, Ayafumi: *See*—
Ishikawa, Muneharu; and Taniji, Ayafumi, 5,054,913, Cl. 356-28.500.

Tao, Shih-Li: *See*—
Tie , Ho T.; and Tao, Shih-Li, 5,055,745, Cl. 315-226.000.

Taplast SNC di Evans Santagiuliana & C.: *See—*
Santagiuliana, Evans, 5,054,662, Cl. 222-531.000.
Tarlton, James K., Sr., to Dana Corporation. Adapter clip for friction clutch having intermediate plate positioning means. 5,054,597, Cl. 192-70.250.
Tarquini, Michael E.: *See—*
Andrews, Claude R.; Koson, John A.; and Tarquini, Michael E., 5,055,284, Cl. 423-419.00P.
Tate, Kazuhiko: *See—*
Tachibana, Yakudo; Tate, Kazuhiko; Ono, Masami; Takei, Nobuhiro; Miki, Jun; Taniguchi, Hiroaki; Shiroto, Yoshimi; Shimura, Misunori; and Fukui, Yoshio, 5,055,612, Cl 562-416.000.
Tateishi, Kiyoshi; and Sakata, Haruyasu, to Pioneer Electronic Corporation. Tracking servo system with a variable equalizing characteristic. 5,056,074, Cl. 369-44.280.
Tatsumi, Yuuichi: *See—*
Iwahashi, Hiroshi; Kato, Hideo; and Tatsumi, Yuuichi, 5,056,064, Cl. 365-233.500.
Taureg, Herbert; and Schonenbrucher, Paul-Erich, to Viscodrive GmbH. Spacing means for spacing plates in a fluid friction coupling. 5,054,596, Cl. 192-58.00B.
Taves, Bill. Tissue dispenser. 5,054,675, Cl. 225-20.000
Taylor, Dennis M.; Amy, Jonathan W.; and Stafford, George C., Jr., to Finnigan Corporation. Metal surfaces for sample analyzing and ionizing apparatus. 5,055,678, Cl. 250-291.000.
Taylor, Douglas R., to GEC Marconi Limited. Aircraft capture systems. 5,054,717, Cl. 244-110.00F.
Taylor, Duncan P.: *See—*
Boissard, Christopher G.; Taylor, Duncan P.; and Eison, Michael S., 5,055,470, Cl. 514-252.000.
Taylor, Paul D.: *See—*
Plotkin, Jeffrey S.; Dougherty, James A.; Vara, Fulvio J.; and Taylor, Paul D., 5,055,357, Cl. 428-413.000.
Tazaki, Hidenori: *See—*
Inoue, Kazushige; Saito, Akhiro; Kitamura, Takorou; Ohtomo, Takashi; Tazaki, Hidenori; Kodaira, Tetsuji; Yoshida, Yumiko; Ishida, Hiromi; Yokoshima, Takahiro; and Itoi, Hideyuki, 5,055,523, Cl. 525-148.000.
TDK Corporation: *See—*
Satoh, Takateru, 5,055,947, Cl. 360-62.000.
Yagami, Kojiro; Sano, Chitatsu; and Tamura, Toshiya, 5,055,958, Cl. 360-122.000.
Teac Corporation: *See—*
Kaya, Akimasa; and Ninnuma, Takashi, 5,055,956, Cl. 360-109.000
Tech Textiles Limited: *See—*
Vane, Jeffrey A., 5,055,242, Cl. 264-22.000.
Technical Concepts, Inc.: *See—*
Lalande, Phillip T.; and Acker, W. Keith, 5,054,555, Cl 166-298.000
Technology Development Corporation: *See—*
Judd, Wendell, 5,054,406, Cl. 110-346.000
Technology for Communications International: *See—*
Tkalcevic, Slobodan, 5,056,051, Cl. 364-571.050.
Technology International Incorporated: *See—*
Husseiny, Abdo A., 5,055,237, Cl. 252-631.000.
Technoplast B.V.: *See—*
Reijenga, Tjerk, 5,054,633, Cl. 215-220.000.
Tecnica E Innovaciones Ganaderas, S.A. (TIGSA): *See—*
Rovira Badia, Antonio; and Franco Tarazaga, Jose , 5,054,432, Cl 119-81.000.
Teetz, Volker: *See—*
Urbach, Hansjorg; Henning, Rainer; Wissmann, Hans; and Teetz, Volker, 5,055,591, Cl. 548-452.000.
Teknovia AB: *See—*
Svensson, Gosta, 5,055,003, Cl. 417-191.000.
Tel Sagami Limited: *See—*
Shiraiwa, Hirotsugu, 5,054,988, Cl. 414-404.000.
Teleco Oilfield Services Inc.: *See—*
Abdallah, Ali H.; and Grosso, Donald S., 5,055,837, Cl. 340-853.000.
Drumheller, Douglas S., 5,056,067, Cl. 367-82.000.
ten Hompel, Michael: *See—*
Geschka, Martin; and ten Hompel, Michael, 5,055,638, Cl. 191-22.0DM.
Tennessee Gas Pipeline Company: *See—*
Abbott, James R., 5,055,274, Cl. 422-171.000.
Tennessee Valley Authority: *See—*
Miller, Charles E., 5,055,210, Cl. 252-32.000.
Tenryu Chemical Industry Co., Ltd.: *See—*
Yoshida, Yoshiaki, 5,054,642, Cl. 220-276.000.
Terada, Matsuaki: *See—*
Hirata, Tetsuhiko; Matsui, Susumu; Terada, Matsuaki; Yokoyama, Tatsuya; and Kouyama, Sinichi, 5,056,058, Cl. 364-900.000.
Terada, Takao; Kobayashi, Toshiyuki; and Miyake, Tamio, to Omron Tateisi Electronics Co. Nebulizer. 5,054,477, Cl. 128-200.140.
Terai, Akio; and Wada, Minoru, to Komatsu Zenoah Company. Cutting blade for a mowing apparatus. 5,054,276, Cl. 56-242.000.
Terashima, Shigeo: *See—*
Tsuji, Kentaroh; Fuji, Hiroshi; Numata, Tomiyuki; Fujiwara, Tsuneo; and Terashima, Shigeo, 5,056,076, Cl. 369-50.000.
Teratsuji, Osamu; Nishimura, Keiichi; Moriya, Yoshiro; and Ueda, Yukihiko, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Upper layer water flow type circulating water pool. 5,054,134, Cl 4-488.000.
Terauchi, Tsuneo; and Nishimura, Takaaki, to Mitsubishi Denki K.K. Articulated robot. 5,054,332, Cl. 74-479.000.
Terratronic GmbH: *See—*
Grotendorst, Gerhard, 5,054,553, Cl. 166-278.000
Terumo Kabushiki Kaisha: *See—*
Honda, Shinzo; Hirose, Kazunori; and Kanda, Zensho, 5,054,948, Cl. 401-196.000.
Texas Instrumenets Incorporated: *See—*
Agiman, Dan, 5,055,888, Cl. 357-13.000.
Texas Instruments Incorporated: *See—*
D'Entremont, John R.; and Nield, Joseph G., Jr., 5,055,726, Cl. 310-71.000
Fuller, Clyde R.; Delaney, Joseph B.; and Skinner, Robbie W., 5,055,908, Cl. 357-71.000
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,056,041, Cl. 364-518.000
Littlefield, David E., 5,056,139, Cl. 380-20.000.
Naito, Atsushi; Nakatsuka, Kiyoshi; Yamamoto, Seiichi; Inui, Takashi; and Suzuki, Tomohiro, 5,055,717, Cl. 307-463.000.
Santin, Giovanni; and Naso, Giovanni, 5,056,063, Cl. 365-208.000
Smith, Gregory C.; and Bonifield, Thomas D., 5,055,423, Cl. 437-187.000
Sukonnik, Israil M.; Forster, James A.; Breit, Henry F.; and Raphanella, Gary A., 5,055,967, Cl. 361-387.000.
Wechem, Guus V.; Beunk, Gerrit; Van Den Elst, Fritz; and Gerson, Philips M., 5,054,458, Cl. 123-549.000.
Whetsel, Lee D., 5,056,093, Cl. 371-22.300.
Whetsel, Lee D., 5,056,094, Cl. 371-25.100.
Texstyle, Inc.: *See—*
Crotty, Wayne E.; and Phelps, Harold J., 5,055,155, Cl. 156-256.000
Th. Goldschmidt AG: *See—*
Ruf, Erich, 5,055,603, Cl. 556-102.000
Thayer, Donald R. Four-way hand sander. 5,054,248, Cl. 51-392.000
Theobald, Eugene H., to Union Carbide Chemicals and Plastics Technology Corporation. Preparation of very low molecular weight polyethylene in a fluidized bed. 5,055,534, Cl. 526-133.000.
Thermabate Limited: *See—*
Glover, John E. S.; Glover, Timothy N.; and Miller, Andrew J., 5,054,256, Cl. 52-765.000.
Thermotaxis Development, Inc.: *See—*
Young, Tommis E.; Curtis, John L.; and Barnett, Dennis A., 5,054,542, Cl. 165-58.000
Thibodeaux, Glenn. Crawfish peeling apparatus. 5,055,085, Cl. 452-5.000
Thioulouse, Pascal, to L'Etat Francais represente par le Ministre des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications). Memory-equipped monochrome display of the photoconductor-electroluminescent type. 5,055,739, Cl. 313-507.000
Tholkes, Alan L. Utility station with controlled seating. 5,054,852, Cl. 297-172.000
Thomas, Gareth R.: *See—*
Hill, Charles C.; Thomas, Gareth R.; Kaleta, Gary S.; and Saxton, Gregory J., 5,054,403, Cl. 105-419.000.
Thomas, Geoffrey N.: *See—*
Arrowsmith, John E.; Cross, Peter E.; and Thomas, Geoffrey N., 5,055,473, Cl. 514-311.000.
Thomas, Lloyd S.; and Stanbury, Evan J., to Alcatel N.V. Detection and measurement of a DC component in an AC waveform. 5,055,773, Cl. 324-132.000.
Thomas, Patricia T., to Munters Corporation. Liquid and gas contact apparatus. 5,055,239, Cl. 261-112.200.
Thomas, Ronald; and Kober, Kasimir, to Chicago Dryer Company. Expansion joint for rotary ironers. 5,054,543, Cl. 165-89.000.
Thometzek, Peter; and Freudenberg, Bernard, to Bayer Aktiengesellschaft. Sinterable pulverulent raw material based on aluminum titanate, a process for its preparation and the sintered bodies produced therefrom and their use. 5,055,434, Cl. 501-127.000.
Thompson, Francis M.: *See—*
Sheth, Paresh J.; and Thompson, Francis M., 5,055,338, Cl. 428-155.000.
Thompson, George. X-ray filtration apparatus. 5,056,128, Cl. 378-156.000
Thompson, Michael S.; Hubbard, Steven R.; and Jackson, Franklin D., to Union Oil Company of California. Cage boat having removable slats. 5,054,418, Cl. 118-500.000.
Thompson, Raymond F.: *See—*
Leeds, Harry D.; and Thompson, Raymond F., 5,054,994, Cl. 414-793.400
Thomson-Brandt & Armements: *See—*
Pineau, Jean-Pierre; Frehaut, Jean-Pierre; and Kerdraon, Philippe, 5,054,400, Cl. 102-489.000.
Thomson Composants Militaires et Spatiaux: *See—*
Cazaux, Yvon; and Boucharlat, Gilles, 5,055,931, Cl. 358-213.110.
Thomson Consumer Electronics, Inc.: *See—*
Swank, Harry R., 5,055,934, Cl. 358-246.000.
Thomson-CSF: *See—*
Pepin, Christian; Vilbois, Vincent; and Audion, Marc, 5,054,917, Cl. 356-152.000.
Weisbuch, Claude; De Cremoux, Baudouin; and Pocholle, Jean P., 5,055,422, Cl. 437-129.000.
Thomson Grand Public: *See—*
Hehlen, Robert, deceased; Hehlen, Philippe, legal representative; Hehlen, Bernard, legal representative; Le Galguen, Maurice; and Mourey, Bruno, 5,055,833, Cl. 340-784.000.

Thorndike, Charles E. Operation of long-handled tools. 5,054,278, Cl. 56-400.140.
Thornton, George, to Valcomatic Systems, Inc. Load transfer device. 5,054,987, Cl. 414-390.000.
Thorp, Phil D.; Harvey, Ward W.; and Pyles, Douglas E., to Aro Corporation, The. Torque sensing automatic shut-off and reset clutch for screwdrivers, nutsetters and the like. 5,054,588, Cl. 192-0.034.
Thunoda, Akiji: *See—*
Naraoka, Naohito; Ishiwata, Masao; and Thunoda, Akiji, 5,055,344, Cl. 428-213.000.
Tiback, Bo G.: *See—*
Nilsson, Erik R.; Sjodin, Per-Goran; and Tiback, Bo G., 5,054,217, Cl. 37-244.000.
Tiede, John W., to Simtek Corporation. Current mirror sense amplifier with reduced current consumption and enhanced output signal. 5,055,720, Cl. 307-530.000.
Tiegel Manufacturing Company: *See—*
Wegner, Paul C., 5,055,201, Cl. 210-727.000.
Tien, Ho T.; and Tao, Shih-Li. Fluorescent lamp stabilizer circuit device. 5,055,745, Cl. 315-226.000.
Tillman, Ennis L.: *See—*
Werner, Kurt; Krieger, Leo G.; Bewley, Wilbur C.; Tillman, Ennis L.; and Riesberg, Richard D., 5,054,157, Cl. 15-328.000.
Timminco Limited: *See—*
Zuliani, Douglas J., 5,055,254, Cl. 420-409.000.
Timsit, Roland S.: *See—*
Raghavan, Narasimha S.; and Timsit, Roland S., 5,054,420, Cl. 118-715.000.
Ting, Kuan-Chong; Giacomelli, Gene A.; Mears, David R.; Kabala, Witold P.; Shen, Shou-Jin; and Williamson, Steven E., to Rutgers University. Piercing element gripping apparatus. 5,054,831, Cl. 294-61.000.
Tioxide Group PLC: *See—*
Banford, Jonathan; and Dietz, Paul F., 5,055,513, Cl. 524-433.000.
Tirel, Philipe-Jean: *See—*
Gubelmann, Michel; Popa, Jean-Michel; and Tirel, Philipe-Jean, 5,055,623, Cl. 568-800.000.
Tisse, Thor R.; and Turner, Ricky J., to Guardian Industries Corp. Automatic glass cutting and positioning system. 5,054,355, Cl. 83-879.000.
Titan Corporation, The: *See—*
Abbiss, John B.; Azzazy, Medhat; McCullough, Robert W.; and Smart, Anthony E., 5,055,692, Cl. 250-372.000.
Titsworth, Raymond: *See—*
Downing, Elizabeth A.; Rogers, Steven W.; Titsworth, Raymond; Christian, Donald J.; and Baird, Michael L., 5,054,918, Cl. 356-152.000.
Tivig, Gerhard; Meier, Wilhelm; and Pfeil, Egon, to Hewlett-Packard Company. Medical monitoring system interface. 5,056,059, Cl. 364-900.000.
Tkalcevic, Slobodan, to Technology for Communications International. Signal direction finding processor using fast Fourier transforms for receiver matching. 5,056,051, Cl. 364-571.050.
Toda, Hitoshi: *See—*
Murasawa, Yasuhiro; Toda, Hitoshi; Sawano, Hiroshi; and Yagoura, Hideya, 5,055,912, Cl. 357-74.000.
Toda, Masaaki: *See—*
Ohuchida, Shuichi; Toda, Masaaki; and Miyamoto, Tsumoru, 5,055,598, Cl. 549-407.000.
Toiguchi, Seiichiro: *See—*
Nonaka, Masahiko; Soeda, Takahiko; Yamagiwa, Keiko; Kowata, Hiroko; Motogi, Masao; and Toiguchi, Seiichiro, 5,055,310, Cl 426-46.000.
Tojima, Hiromi, to Kabushiki Kaisha Daikin Seisakusho. Clutch cover assembly. 5,054,598, Cl. 192-70.270.
Tokai Denka Kogyo Kabushiki Kaisha: *See—*
Watanabe, Satoru; and Ohura, Osami, 5,055,286, Cl. 423-584.000.
Tokuda, Momoyo: *See—*
Ozawa, Katsuko; Gotoh, Kazuhisa; Murayama, Tomohiro; Tokuda, Momoyo; Sumida, Satoshi; and Suzuki, Tetsuo, 5,055,755, Cl. 318-568.110
Tokyo-Buhin Kogyo Co., Ltd.: *See—*
Matsui, Norio; Sanjo, Isao; and Chiba, Shuuichi, 5,054,587, Cl 188-267.000.
Tokyo Electron Sagami Limited: *See—*
Asano, Takanobu; Iwai, Hiroyuki; and Ono, Yuji, 5,055,036, Cl. 432-5.000.
Tomac, Anthony J.: *See—*
Smillie, Charles M., III; and Tomac, Anthony J., 5,054,578, Cl. 182-63.000.
Tomatsuri, Koichi, to Hitachi, Ltd. Video memory control apparatus. 5,055,940, Cl. 358-444.000.
Tombor, Antalne : *See—*
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000
Tomii, Tsuyoshi; and Iida, Katsuhiko, to Seiko Epson Corporation. Capping device for ink jet printers. 5,055,856, Cl. 346-1.100.
Tomimura, Eijiro, to Enzyme Bio-Systems, Ltd. Thermoduric and aciduric pullulanase enzyme and method for its production. 5,055,403, Cl. 435-210.000.
Tomita, Kan; and Oikawa, Tomohiro, to Ricoh Company, Ltd. Scanning optical apparatus. 5,054,866, Cl. 359-201.000.
Tomita, Yoshiyuki, to Sumitomo Heavy Industries, Ltd. Apparatus for carrying out decoupling control of a T-die. 5,056,030, Cl. 364-473.000.
Tomkins, Gary J.: *See—*
Scovell, Peter D.; Blomley, Peter F.; Baker, Roger L.; and Tomkins, Gary J., 5,055,419, Cl. 437-31.000
Tomomura, Yoshitaka; and Kitagawa, Masahiko, to Sarp Kabushiki Kaisha. Electroluminescent device of compound semiconductor 5,055,363, Cl. 428-690.000.
Tomono, Kunisaburo: *See—*
Kounoike, Takehiro; and Tomono, Kunisaburo, 5,055,214, Cl. 252-62.570.
Tompkins, Robert E.: *See—*
Logan, Joseph S.; Ruckel, Raymond R.; Tompkins, Robert E.; and Westerfield, Robert P., Jr., 5,055,964, Cl. 361-234.000.
Tone, Hiroshi: *See—*
Inoue, Tsutomu; Okamura, Kazuhiko; Kawamura, Naoto; Tone, Hiroshi; and Okamoto, Rokuro, 5,055,259, Cl. 422-61.000.
Tonel, Valerio; Mattiuzzo, Mario; Foscaro, Giancarlo; and Soligo, Stefano, to Nordica S.p.A. Adjustment device particularly for ski boots. 5,054,215, Cl. 36-170.000.
Tono, Show: *See—*
Miki, Toshiyuki; Tono, Show; Kozu, Kazunori; and Hayashi, Shintaro, 5,055,200, Cl. 210-726.000.
Torikoshi, Kaoru: *See—*
Kin, Seki; Tanaka, Hiroyuki; Saeki, Satoshi; Torikoshi, Kaoru; and Pu, Lyong S., 5,055,615, Cl. 564-307.000.
Toro Company, The: *See—*
Ellson, Bart T.; Kakuk, Jay J.; and Beachy, Robert W., 5,055,987, Cl. 362-277.000.
Toshiba Ceramics Co., Ltd.: *See—*
Niwa, Shigeki; Kawai, Kazuhide; Nishibe, Takahumi; and Kawamura, Toshio, 5,055,433, Cl. 501-105.000.
Toshiba Kakai Kabushiki Kaisha: *See—*
Date, Takao, 5,054,175, Cl. 29-33.00B.
Toshiba Lighting & Technology Corporation: *See—*
Yorifuji, Takashi; and Saigo, Masashi, 5,055,738, Cl. 313-490.000.
Toth, Tibor, to Behringwerke Aktiengesellschaft. Latex agglutination method for the detection of anti-streptococcal deoxyribonuclease B. 5,055,395, Cl. 435-7.330.
Touzalin, Richard J.; and Zettler, Brian J., to Warner-Lambert Company. Product identification system. 5,054,220, Cl. 40-642.000.
Townsend, Peter K.; and Fusselman, David F., to Du Pont de Nemours, E. I., and Company. Connectors with ground structure. 5,055,069, Cl. 439-608.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Matsuo, Masaaki; Sumita, Masujiro; Hosoi, Isao; Aoki, Hirohumi; and Ohta, Masaru, 5,055,375, Cl. 430-254.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Higo, Yuji; Hayashi, Hidechika; and Iwasaki, Shuji, 5,055,408, Cl. 436-48.000.
Toyoda Gosei Co., Ltd.: *See—*
Asai, Tomohito; and Isono, Toru, 5,054,308, Cl. 72-463.000.
Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, 5,054,895, Cl. 359-265.000.
Mishima, Kunio; Hamabata, Mitsuo; Kogiso, Harumi; and Nozaki, Masahiro, 5,054,241, Cl. 49-488.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Sugita, Kazuhiko; Sakakibara, Norio; Hori, Nobumitsu; and Yamakawa, Yoichi, 5,054,340, Cl. 82-18.000.
Toyoshima, Satoshi: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl 530-313.000.
Toyota, Akinori: *See—*
Kioka, Mamoru; Toyota, Akinori; and Kashiwa, Norio, 5,055,528, Cl. 525-270.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kushi, Naoto, 5,054,451, Cl. 123-478.000
Ogita, Tamotu, 5,054,460, Cl. 123-571.000.
TrackMobile, Inc.: *See—*
Sheffer, Eliezer A., 5,055,851, Cl. 342-457.000.
Trailmobile, Inc.: *See—*
Gray, Larry J., 5,054,843, Cl. 296-191.000.
Trainor, Diane A.: *See—*
Edwards, Philip D.; Schwartz, John A.; Stein, Mark M.; Trainor, Diane A.; and Wildonger, Richard A., 5,055,450, Cl. 514-019.000.
Trakas, Panos. Internally heated torpedo with internal melt distribution chamber. 5,055,028, Cl. 425-549.000.
Tran, Danh C.; Mossadegh, Reza; Garito, Nicholas; and Farid, Mohamad, to Infrared Fiber Systems, Inc. Fluoride glass fibers with reduced defects. 5,055,120, Cl. 65-3.110.
Translab, Inc.: *See—*
Brenholt, David L., 5,054,721, Cl. 244-903.000.
Trasch, Heinz-Friedrich; Endres, Erwin; Trost, Andreas; and Ritterstorf, Walter, to Boehringer Mannheim GMBH. Erythrocyte-retention substrates. 5,055,195, Cl. 210-638.000.
Treadaway, James E., Sr. Substance spill pick-up device. 5,055,191, Cl. 210-242.300.
Tresper, Erhard: *See—*
Schmidt, Manfred; Arlt, Wolfgang; Tresper, Erhard; and Russeler, Wolfgang, 5,055,551, Cl. 528-388.000.
Trevett, Neil F.: *See—*
Baldwin, David R.; Wilson, Malcolm E.; and Trevett, Neil F., 5,056,015, Cl. 364-200.000.

Trewhella, Jeannine M.: *See—*
Fan, Bunsen; Flagello, Donis G.; Gelorme, Jeffrey D.; Oprysko, Modest M.; Speth, Albert; and Trewhella, Jeannine M., 5,054,872, Cl. 385-130.000.

Tri-Tronics, Inc.: *See—*
Farkus, Gregory J., 5,054,428, Cl. 119-29.000.

Trinity Industries, Inc.: *See—*
Stewart, Thomas, 5,054,804, Cl. 280-435.000.

Tripp, Benjamin A., to Rumball, Robert. Ground coil assembly 5,054,541, Cl. 165-45.000.

Trivett, Robert L., to Nalco Chemical Company. Aqueous blanking solution for solid film prelube forming operations. 5,055,325, Cl. 427-388.100

Trost, Andreas: *See—*
Trasch, Heinz-Friedrich; Endres, Erwin; Trost, Andreas; and Rittersdorf, Walter, 5,055,195, Cl. 210-638.000.

Trottmann, Martin: *See—*
Liechti, Peter; Emmenegger, Karl; and Trottmann, Martin, 5,055,567, Cl. 534-753.000

Truby, Brian K.; and Coker, Randall S., to Motorola, Inc. Dual level prioritized vehicular repeater system. 5,056,152, Cl. 455-11.000

Trudell Medical: *See—*
Grychowski, Jerry R.; Brisson, Alfred G.; Cruz, Exequiel D.; and Nowacki, Christopher, 5,054,478, Cl. 128-200.210.

Trueb, Steven R.; and Trueb, Thomas W. Protective system for P-trap 5,054,513, Cl. 137-375.000.

Trueb, Thomas W.: *See—*
Trueb, Steven R.; and Trueb, Thomas W., 5,054,513, Cl. 137-375.000.

Trumpp, Hans-Joachim: *See—*
Koblinger, Otto; Meissner, Klaus; Muhl, Reinhold; Trumpp, Hans-Joachim; and Zapka, Werner, 5,055,383, Cl. 430-312.000

Truong-Dinh, Nguyen: *See—*
Germanaud, Laurent; Truong-Dinh, Nguyen; Marie, Gilbert; and Turello, Patrick, 5,055,213, Cl. 252-51.50A

Truth Division of SPX Corporation: *See—*
Tucker, Daniel G.; and Vetter, Gregory J., 5,054,239, Cl. 49-279.000

TRW Inc.: *See—*
Bidefeld, Branko, 5,054,980, Cl. 411-171.000.

Tsai, John J.: *See—*
Leake, Craig H.; Tsai, John J.; and Meier, Eric A., 5,055,503, Cl 524-30.000

Tsakiri, Sophia K.: *See—*
Ng, Flora T. T.; and Tsakiri, Sophia K., 5,055,175, Cl. 208-112.000

Tsinberg, Mikhail, to North American Philips Corporation. Method and apparatus for the transmission and reception of two conventional television signals using a two-line MAC format. 5,055,915, Cl. 358-12.000

Tsinghua University: *See—*
Cai, Zhixia, 5,055,117, Cl. 55-126.000

Tsubakimoto Chain Co.: *See—*
Hirano, Tadao; and Yanagase, Hiroshi, 5,054,986, Cl. 414-282.000

Tsuboi, Masayoshi: *See—*
Kawata, Ken; Sato, Kozo; and Tsuboi, Masayoshi, 5,055,537, Cl. 526-240.000

Tsuboi, Nobuyoshi: *See—*
Nihei, Hideki; Tsuboi, Nobuyoshi; Minemura, Hiroyuki; Kimura, Hiroshi; and Morinaga, Shigeki, 5,055,731, Cl. 310-309.000

Tsuchimoto, Shuhei: *See—*
Shintaku, Hidetaka; Tsuchimoto, Shuhei; Hashizume, Nobuo; and Kataoka, Shoei, 5,055,785, Cl. 324-248.000

Tsuchino, Hisanori; Kano, Akiko; Amitani, Koji; and Shimada, Fumio, to Konica Corporation. Radiographic image storage panel and process for reading out a radiographic image. 5,055,681, Cl. 250-327.200

Tsuchiya, Kouji; Tsutsui, Keiichiro; and Koide, Masaru, to Nissan Motor Company, Limited. Cushion arrangement. 5,054,145, Cl 5-448.000

Tsuchiya, Yutaka: *See—*
Takahashi, Hironori; Aoshima, Shinichiro; and Tsuchiya, Yutaka, 5,055,770, Cl. 324-96.000

Tsuchiya, Yuzo, to Kabushiki Kaisha Toshiba. Cassette loading apparatus having a guide member with worm unit for reduction of drive torque. 5,055,953, Cl. 360-96.500.

Tsuda, Hideichi: *See—*
Uemura, Masahiro; Tsuda, Hideichi; Yokoe, Hifumi; and Hayakawa, Tokuji, 5,054,495, Cl. 128-680.000.

Tsuda, Toshitaka: *See—*
Ohta, Shinji; Fukuda, Misao; and Tsuda, Toshitaka, 5,056,121, Cl. 375-118.000

Tsugita, Masashi: *See—*
Tsuru, Sumiaki; Tsugita, Masashi; Takasaki, Ken; Yokoo, Akihiko; and Ichitsuka, Takeshi, 5,055,307, Cl. 424-493.000

Tsuji, Kentaroh; Fuji, Hiroshi; Numata, Tomiyuki; Fujiwara, Tsuneo; and Terashima, Shigeo, to Sharp Kabushiki Kaisha. Method for controlling the rotational velocity of an information recording disk. 5,056,076, Cl. 369-50.000.

Tsujimura, Takehisa: *See—*
Shimizu, Nobutaka; Tsujimura, Takehisa; Sugimoto, Masahiro; and Harada, Shigeki, 5,055,914, Cl. 357-81.000

Tsukamoto, Masahiro, to Nissan Motor Company, Limited. Working fluid circuit for active suspension system with surge suppressive feature. 5,054,808, Cl. 280-707.000.

Tsukamoto, Masahiro: *See—*
Yamaji, Katsuhiko; Ishida, Masahiko; and Tsukamoto, Masahiro, 5,055,341, Cl. 428-174.000.

Tsuno, Toshio; Katayama, Shinya; Kawakita, Shinya; and Shimizu, Tomoyasu, to Nippon Sheet Glass Co., Ltd. Magnetic recording medium with an intermediate protective layer of silicon dioxide and a perfluoroalkylpolyether lubricant layer. 5,055,359, Cl. 428-448.000.

Tsuru, Sumiaki; Tsugita, Masashi; Takasaki, Ken; Yokoo, Akihiko; and Ichitsuka, Takeshi, to Asahi Kagaku Kogyo Kabushiki Kaisha. Slow release drug delivery granules and process for production thereof. 5,055,307, Cl. 424-493.000.

Tsurugi, Noriyoshi: *See—*
Kato, Yasushi; Tsurugi, Noriyoshi; Suzuki, Hiroaki; and Ogata, Shigeji, 5,054,524, Cl. 139-383.00R.

Tsuruno, Kunio: *See—*
Misumi, Hiroyoshi; and Tsuruno, Kunio, 5,055,938, Cl. 358-340.000

Tsuruoka, Yoshihisa, to Futuba Denshi Kogyo K.K. Display device. 5,055,744, Cl. 315-169.100

Tsutsui, Keiichiro: *See—*
Tsuchiya, Kouji; Tsutsui, Keiichiro; and Koide, Masaru, 5,054,145, Cl. 5-448.000

Tuan, C. T.; and Duan, T. L. Tire valve having an automatic pressure release device. 5,054,511, Cl. 137-224.000

Tubb, Roy S.: *See—*
Liljestrom, Pirkko L.; Tubb, Roy S.; and Korhola, Matti P., 5,055,401, Cl. 435-172.300.

Tucker, Daniel G.; and Vetter, Gregory J., to Truth Division of SPX Corporation. Unified casement operator. 5,054,239, Cl. 49-279.000.

Tucker, Geoffrey: *See—*
Perigo, John A.; and Tucker, Geoffrey, 5,054,265, Cl. 53-425.000.

Tucker, Terence. Protective cap for beverage containers. 5,054,640, Cl 220-90.200

Tucoulat, Daniel: *See—*
Anciaux, Ghislain; Guilloteau, Rene ; Tucoulat, Daniel; and Chauvire, Pascal, 5,054,348, Cl. 83-157.000

Turello, Patrick: *See—*
Germanaud, Laurent; Truong-Dinh, Nguyen; Marie, Gilbert; and Turello, Patrick, 5,055,213, Cl. 252-51.50A.

Turner, Kenneth W.: *See—*
Sherwood, Carl H.; Turner, Kenneth W.; DuBois, Patti S.; and Covert, Charles H., 5,054,520, Cl. 137-587.000.

Turner, Ricky J.: *See—*
Tisse, Thor R.; and Turner, Ricky J., 5,054,355, Cl. 83-879.000.

Turner, Stephen J.; and Lilley, John B., to Products From Ideas Ltd. Recognition procedure and an apparatus for carrying out the recognition procedure. 5,056,147, Cl. 382-14.000.

Twieg, Robert J.: *See—*
Allen, Robert D.; Hinsberg, William D., III.; Simpson, Logan L.; Twieg, Robert J.; Wallraff, Gregory M.; and Willson, Carlton G., 5,055,439, Cl. 502-158.000

Tyrer, J. David, to Ortech Corporation. Upgrading heavy oil. 5,055,179, Cl. 208-254.00R.

Tyson, Jerroll R., Sr., to Nuphase Electronics, Inc. Television selection system. 5,056,138, Cl. 380-10.000.

Tysver, John D., to Sundstrand Corporation. Manual/powered operation safety device. 5,054,592, Cl. 192-8.00R.

Uchida, Manabu; Goto, Yasuyuki; and Ogawa, Tetsuya, to Chisso Corporation. Dicyclohexylethylene derivatives. 5,055,220, Cl. 252-299.010.

Uchida, Takashi: *See—*
Murayama, Yasushi; Aoki, Tomohiro; Uchida, Takashi; Mitomi, Tatsuo; and Nemura, Masaharu, 5,055,861, Cl. 346-140.00R.

Uchimi, Toshiharu: *See—*
Hanyu, Yukio; Taniguchi, Osamu; Uchimi, Toshiharu; and Asaoka, Masanobu, 5,054,890, Cl. 350-344.000.

Uchiyama, Satoshi: *See—*
Sakaida, Kazuichi; Sonobe, Katsuyoshi; Aoki, Nobuo; Uchiyama, Satoshi; and Yamada, Makoto, 5,055,872, Cl. 355-55.000

Udagawa, Tsunekazu; and Inamura, Susumu, to Ishikawa Gasket Co., Ltd. Metal laminate gasket. 5,054,795, Cl. 277-234.000.

Ueda, Hiraki: *See—*
Oshiro, Yasuo; Ueda, Hiraki; and Nakagawa, Kazuyuki, 5,055,474, Cl. 514-316.000

Ueda, Katsunobu: *See—*
Takamatsu, Hiroshi; and Ueda, Katsunobu, 5,054,244, Cl. 51-165.710.

Ueda, Masamichi; and Yoshiki, Tatsuhiro. Monoclonal antibody specifically reactive to surface of human prostatic epithelial cells. 5,055,404, Cl. 435-240.270.

Ueda, Minoru; Matsuda, Hideaki; Hara, Masanori; and Murakami, Koichi, to Okura Kogyo Kabushiki Kaisha. Process for producing woody moldings. 5,055,247, Cl. 264-109.000

Ueda, Yukihiko: *See—*
Teratsuji, Osamu; Nishimura, Keiichi; Moriya, Yoshiro; and Ueda, Yukihiko, 5,054,134, Cl. 4-488.000.

Ueki, Tadashi: *See—*
Yamada, Yasuyuki; and Ueki, Tadashi, 5,055,937, Cl. 358-335.000.

Uemura, Masahiro; Tsuda, Hideichi; Yokoe, Hifumi; and Hayakawa, Tokuji, to Colin Electronics Co., Ltd. Automatic blood-pressure measuring apparatus. 5,054,495, Cl. 128-680.000.

Uemura, Toshiya: *See—*
Minoura, Jun; Uemura, Toshiya; Takahashi, Shigeyuki; Ito, Toshiyasu; and Okabayashi, Katsuaki, 5,054,895, Cl. 359-265.000.

Ueno, Yuji: *See—*
Seki, Nobuyoshi; Morii, Nobuyuki; Komada, Takashi; Hosoi, Masatoshi; Sugiyama, Yoshihide; Hujiwara, Atuhisa; Shimada, Masashi; Ichinose, Tsutomu; Ueno, Yuji; Mori, Goro; Kikuchi, Toshiyuki; Minato, Masahiro; Umeda, Shin; and Yoshino, Hirobumi, 5,054,766, Cl. 271-221.000.

Uerdingen, Walter: *See—*
Wank, Joachim; Uerdingen, Walter; Schrader, Lutz; and Waldenrath, Werner, 5,055,345, Cl. 428-215.000.

Uesugi, Yuji: *See—*
Funami, Koji; Uesugi, Yuji; and Nishikawa, Yukio, 5,055,653, Cl. 219-121.750.

Ujihara, Makoto: *See—*
Nomura, Kaoru; Ohmura, Kazutaka; Shirakura, Yuri; Nakamura, Yasunori; Ujihara, Makoto; Toyoshima, Satoshi; Yamamoto, Kazuo; Osawa, Toshiaki; and Shizume, Kazuo, 5,055,554, Cl. 530-313.000.

Umebayashi, Shigeto; Iwanaga, Kazuyoshi; and Hattori, Noboru, to Nissan Motor Company, Limited; and Jatco Corporation. Automatic power transmission with mechanism for establishing under-drive speed ratio and bearing structure therefor. 5,055,098, Cl. 475-312.000.

Umeda, Shin: *See—*
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Kinnan, Frank R., 5,054,565, Cl. 175-19.000.

Unger, Barbara W.: *See—*
Frincke, James M.; Unger, Barbara W.; Burnett, Karen G.; Hersh, Evan M.; Rosenblum, Michael G.; and Gutterman, Jordan U., 5,055,289, Cl. 424-85.400.

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Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,055,103, Cl. 604-385.200.

Unidynamics Corporation: *See—*
Rink, Helm A., 5,054,523, Cl. 137-377.000.

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Fernyhough, Robert, 5,055,314, Cl. 426-423.000.
Payne, Laurence S., 5,055,621, Cl. 568-433.000.

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Leder, Jonathan, 5,055,493, Cl. 514-727.000.
Pelton, Robert H.; and Goddard, Errol D., 5,055,229, Cl. 252-321.000.
Theobald, Eugene H., 5,055,534, Cl. 526-133.000.

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Kawakami, James H.; Muruganandam, Natarajan; and Brode, George L., 5,055,114, Cl. 55-16.000.
Roberge, Raymond P.; Francis, Arthur W., Jr.; and Wolfe, Thomas G., 5,055,260, Cl. 422-62.000.

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Ghandehari, Mohammad H., 5,055,129, Cl. 75-255.000.
Ingle, David M., 5,055,511, Cl. 524-406.000.
Kissel, Charles L., 5,055,510, Cl. 524-211.000.
Knutson, Gaylen M., 5,055,506, Cl. 524-100.000.
Thompson, Michael S.; Hubbard, Steven R.; and Jackson, Franklin D., 5,054,418, Cl. 118-500.000.
Young, Donald C., 5,055,127, Cl. 71-83.000.

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Goettker, Bernhardt P., 5,054,859, Cl. 301-108.00R.

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Klein, Robert; and Grosse, Debora Y., 5,055,919, Cl. 358-261.100.

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Administrator, National Aeronautics and Space Administration: *See—*
Engel, Herbert P., 5,056,130, Cl. 378-207.000.
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Schlie, LaVerne A., 5,055,741, Cl. 315-39.000.
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Abele, Manlio G.; Chandra, Ramesh; Rusinek, Henry; Potenziani, Ernest, II; and Leupold, Herbert A., 5,055,812, Cl. 335-210.000.
Friar, Glenn; Miner, Kevin; Rinaldi, Christopher; and Wilson, David, 5,054,224, Cl. 42-076.020.
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Miller, Brian S.; and Kaplan, David R., 5,055,776, Cl. 324-158.00P.
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Berry, Gregory F., 5,055,724, Cl. 310-11.000.
Christensen, Wynn; Anderson, Forrest L.; and Kortegaard, Birchard L., 5,055,926, Cl. 358-125.000.
Dawson, L. Ralph; Osbourn, Gordon C.; Peercy, Paul S.; Weaver, Harry T.; and Zipperian, Thomas E., 5,055,890, Cl. 357-16.000.
Horvath, Mark S.; Nance, Roy A.; Cohen, George H.; and Fodor, George, 5,054,321, Cl. 73-597.000.

Kenderdine, Eugene W., 5,055,727, Cl. 310-78.000.
Smith, Robert L., 5,056,136, Cl. 380-10.000.
Steinmeyer, Peter A., 5,056,129, Cl. 378-705.000.

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Burroughs, G. Edward; and Huebener, David J., 5,055,267, Cl. 422-83.000.

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Eberhardt, Silvio P., 5,056,037, Cl. 364-513.000.
Lee, Mark C.; Schilling, Christopher H.; and Wang, Taylor G., 5,055,240, Cl. 264-5.000.
Reed, Jason C.; Bushnell, Dennis M.; and Weinstein, Leonard M., 5,054,412, Cl. 114-67.00A.
Schneider, Steven J., 5,054,287, Cl. 60-240.000.

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Dragonuk, Leo, deceased; Randall, Elana D., executrix; and Kilkenny, executrix; by N. Paige, 5,054,364, Cl. 89-1.510.
Hoban, Fay A.; Duff, Harold S.; and Marten, Andrew W., 5,054,868, Cl. 385-99.000.
Kersey, Alan D., 5,054,922, Cl. 356-345.000.
Windsor, Bruce M., III, 5,054,758, Cl. 270-52.500.
Zeidler, James R.; and Moazed, Khosrow L., 5,055,424, Cl. 437-188.000.

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Bruggendieck, Siegfried, 5,054,880, Cl. 385-111.000.
De Jong, Tjitte; Bens, Florentinus L. M.; and Hermans, Danny L. V., 5,055,735, Cl. 313-25.000.
Haisma, Jan; Spierings, Gijsbertus; Van Lierop, Joseph G.; and Van Den Berg, Hendrik F., 5,054,683, Cl. 228-198.000.
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Lamnabhi, Moustanir, 5,055,925, Cl. 358-105.000.
Sluijter, Robert J.; Huizer, Cornelis M.; and Dijkstra, Hendrik, 5,055,997, Cl. 364-200.000.
Weihs, Hans, 5,055,970, Cl. 361-399.000.

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Schoofs, Franciscus A. C. M., 5,055,994, Cl. 363-127.000.

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Norkey, Phillip J.; and Bocson, David A., 5,054,743, Cl. 251-149.600.

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Wessling, Richard J., 5,055,922, Cl. 358-60.000.

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Leistensnider, George W.; Albetski, Alfred J.; Welz, Russell S.; and Petersen, Carl E., 5,055,752, Cl. 318-570.000.

Unitika Ltd.: *See—*
Shinonome, Osami; Kishida, Minoru; Izumi, Tomoyuki; Murakami, Kunio; and Menju, Akira, 5,055,337, Cl. 428-147.000.

University of Alabama in Huntsville: *See—*
Caulfield, H. John, 5,056,039, Cl. 364-513.000.

University of California, The Regents of the: *See—*
Bunshah, Rointan F.; Deshpandey, Chandra V.; Doerr, Hans J.; and Yoon, Jong S., 5,055,319, Cl. 427-38.000.

University of Cincinnati: *See—*
Alexander, J. Wesley; and Peck, Michael D., 5,055,446, Cl 514-2.000.

University of Guelph: *See—*
Lo, Reggie Y. C.; Shewen, Patricia E.; and Strathdee, Craig A., 5,055,400, Cl. 435-69.100.

University of Michigan, The Regents of the: *See—*
Wise, Kensall D.; and Suzuki, Kenichiro, 5,055,838, Cl. 340-870.370.

University of Minnesota, Regents of the: *See—*
Cohn, Jay N.; and Finkelstein, Stanley M., 5,054,493, Cl. 128-672.000.
Hooper, Alan, 5,055,193, Cl. 210-601.000.

University of Pennsylvania, The Trustees of the: *See—*
Axel, Leon; and Dougherty, Lawrence, 5,054,489, Cl. 128-653.00A.
Goetz, Victor; and Graves, David J., 5,055,194, Cl. 210-635.000.
Laties, Alan M.; and Stone, Richard A., 5,055,302, Cl. 424-427.000.

University of Rochester, The: *See—*
Jacobs, Stephen D.; Marshall, Kenneth L.; and Cerqua, Kathleen A., 5,054,888, Cl. 359-76.000.

University of Waterloo: *See—*
Ng, Flora T. T.; and Tsakiri, Sophia K., 5,055,175, Cl. 208-112.000.

Unterforsthuber, Karl; and Sommer, Karl-Heinz, to Bayern-Chemie, Gesellschaft fur Flugchemische Antriebe mbH. Arrangement for an airbag gas generator. 5,054,811, Cl. 280-742.000.

UOP: *See—*
Volles, Warren K., 5,055,633, Cl. 585-826.000.
Volles, Warren K., 5,055,634, Cl. 585-826.000

Urbach, Hansjorg; Henning, Rainer; Wissmann, Hans; and Teetz, Volker, to Hoechst Aktiengesellschaft. Process for the preparation of octahydropenta(b)pyrrole carboxylates. 5,055,591, Cl. 548-452.000.

Urbach, Hansjorg: *See—*
Ruger, Wolfgang; Urbach, Hansjorg; Becker, Reinhard; and Hock, Franz, 5,055,483, Cl. 514-412.000.

Urban, George F.: *See—*
Hadamik, Franz-Josef; Kappa, Wilfried; and Urban, George F., 5,055,231, Cl. 252-391.000.

Usa, Satoshi, to Yamaha Corporation. Electronic musical instrument with vibration feedback. 5,054,361, Cl. 84-737.000.

Usami, Ryuji, to Casio Computer Co., Ltd. Polymphonic electronic musical instrument. 5,054,358, Cl. 84-617.000.

Ushijima, Kajuhiro: *See—*
Asoh, Seiichi; Kubota, Satoshi; Fukuda, Hitoki; Ushijima, Kajuhiro; Murakami, Fumiyuki; Taguchi, Tomoo; and Kohno, Shigefumi, 5,054,847, Cl. 296-219.000.

Ushio, Noriki: *See—*
Washio, Yukari; Takeishi, Nobuhiro; Shimamoto, Hideki; Mori, Keiji; Ushio, Noriki; Shiono, Katsuji; Kishi, Takaaki; and Samura, Hideo, 5,055,974, Cl. 361-527.000.

Usui Kokusai Sangyo Kaisha, Ltd.: *See—*
Usui, Masayoshi; and Matsumoto, Takeshi, 5,054,185, Cl. 29-455.100.

Usui, Masayoshi; and Matsumoto, Takeshi, to Usui Kokusai Sangyo Kaisha, Ltd. Method of fabricating double pipe. 5,054,185, Cl. 29-455.100.

Usui, Yoshiko, to Canon Kabushiki Kaisha. Color reading line sensor. 5,055,921, Cl. 358-44.000.

Uyeda, Alan K.: *See—*
Gartner, Klaus W.; and Uyeda, Alan K., 5,054,350, Cl. 83-414.000.

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Mangin, Robert; Muller, Jean-Pierre; and Weil, Francois, 5,054,825, Cl. 292-92.000.

Vahala, Kerry J.; and Newkirk, Michael A., to California Institute of Technology. Semiconductor laser with photon gain lever. 5,056,100, Cl. 372-50.000.

Vaisala Oy: *See—*
Andersson, Henry; and Salasmaa, Eero, 5,055,849, Cl. 342-104.000.

Valcomatic Systems, Inc.: *See—*
Thornton, George, 5,054,987, Cl. 414-390.000.

Valdes Marin, Osvaldo, to Plumbmaster, Inc. Drinking fountain cartridge valve. 5,054,514, Cl. 137-454.200.

Valinox: *See—*
Gerard, Jacques, 5,054,184, Cl. 29-423.000.

Valinsky, Jay E.: *See—*
Geacintov, Nicholas E.; Valinsky, Jay E.; Williams, Bolanle; and Horowitz, Bernard, 5,055,485, Cl. 514-449.000.

Van den Bergh Foods Co., Division of Conopco Inc.: *See—*
Van Lookeren, Gerard J., 5,055,571, Cl. 536-124.000.

Vanaman, Cynthia L. Information dispensing container. 5,054,852, Cl. 312-100.000.

Van Bork, Erik C., to Pulsafeeder, Inc. Computer controlled metering pump. 5,056,036, Cl. 364-510.000.

Van Den Berg, Hendrik F.: *See—*
Haisma, Jan; Spierings, Gijsbertus; Van Lierop, Joseph G.; and Van Den Berg, Hendrik F., 5,054,683, Cl. 228-198.000.

van den Bergh, Hubert: *See—*
Wagnieres, Georges; van den Bergh, Hubert; and Monnier, Philippe, 5,054,867, Cl. 385-31.000.

Van Den Elst, Fritz: *See—*
Wechem, Guus V.; Beunk, Gerrit; Van Den Elst, Fritz; and Gerson, Philips M., 5,054,458, Cl. 123-549.000.

Vanderboegh, Ronald A.: *See—*
Amstutz, Douglas D.; and Vanderboegh, Ronald A., 5,054,863, Cl. 312-111.000.

van der Meer, Roelof, to General Electric Co. Method of improving the resistance of polyphenylene ether articles to sunlight, and articles improved by this method. 5,055,494, Cl. 521-61.000.

Vane, Jeffrey A., to Tech Textiles Limited. Process for continuously forming reinforced articles. 5,055,242, Cl. 264-22.000.

Van Hijfte, Luc: *See—*
Kolb, Michael; and Van Hijfte, Luc, 5,055,592, Cl. 549-206.000.

Vanlerberghe, Guy G.: *See—*
Zabotto, Arlette; Griat, Jacqueline; Handjani, Rose-Marie J.; Vanlerberghe, Guy G.; and Ribier, Alain J., 5,055,228, Cl. 252-312.000.

Van Lierop, Joseph G.: *See—*
Haisma, Jan; Spierings, Gijsbertus; Van Lierop, Joseph G.; and Van Den Berg, Hendrik F., 5,054,683, Cl. 228-198.000.

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VanRens, Russell J., to Outboard Marine Corporation. Lost foam pattern assembly for V-block engine. 5,054,537, Cl. 164-34.000.

Van Tassell, Harry M.: *See—*
Blumenthal, Michael M.; Stockler, Jerry R.; and Van Tassell, Harry M., 5,055,410, Cl. 436-60.000.

Van Toever, James W. Pellet media to support growth of microorganisms and systems for the utilization of same. 5,055,186, Cl. 210-150.000.

Vara, Fulvio J.: *See—*
Plotkin, Jeffrey S.; Dougherty, James A.; Vara, Fulvio J.; and Taylor, Paul D., 5,055,357, Cl. 428-413.000.

Varga, Imre: *See—*
Matolcsy, Gyorgy; Gimesi, Antal; Tombor, Antalne ; Bordas, Barna; Benczik, Janosne ; Kolonics, Zoltan; Soptei, Csaba; Boros, Sandor; Kener, Agota; Sebok, Denzso; Szabo, Geza; and Varga, Imre, 5,055,125, Cl. 71-88.000.

Varner Incorporated: *See—*
Varner, Steven R., 5,055,082, Cl. 446-308.000.

Varner, Steven R., to Varner Incorporated. Convertible toy. 5,055,082, Cl. 446-308.000.

Vascular Laboratory, Inc.: *See—*
Welzel, Dieter; and Wolf, Helmut, 5,055,295, Cl. 424-94.200.

Vassiliadis, Arthur; Shaffer, Joseph W.; Fullmer, David J.; Brewer, Michael H.; Hennings, David R.; and Myers, Terry D., to American Dental Laser, Inc. Dental laser assembly. 5,055,048, Cl. 433-215.000.

Vaughan, Robert A.: *See—*
Keys, James F.; Vaughan, Robert A.; and Belser, John W., 5,054,242, Cl. 49-491.000.

VDO Adolf Schindling AG: *See—*
Kronenberg, Klaus, 5,055,782, Cl. 324-207.250.

Veit GmbH & Co.: *See—*
Mai, Dieter, 5,054,218, Cl. 38-1.00B.

Venture Lighting Interntional, Inc.: *See—*
Sulcs, Juris, 5,055,740, Cl. 313-634.000.

Verson, A division of Allied Products Corporation: *See—*
Brzezniak, Edward J., 5,054,306, Cl. 72-405.000.

Vetter, Bernhard; and Diepold, Gisela, to Bayern-Chemie, Gesellschaft fur flugchemische Antriebe mbH GmbH. Plug connection for an electric ignitor. 5,054,395, Cl. 102-202.300.

Vetter, Gregory J.: *See—*
Tucker, Daniel G.; and Vetter, Gregory J., 5,054,239, Cl. 49-279.000.

Vickers plc: *See—*
Greenwood, Richard P., 5,054,392, Cl. 101-142.000.

Victaulic Company of America: *See—*
Grunwald, Donald R., 5,054,819, Cl. 285-179.000.

Victor Company of Japan, Ltd.: *See—*
Hijikata, Isao, 5,055,932, Cl. 358-227.000.
Hikawa, Kazuo, 5,054,359, Cl. 84-645.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; and Furuya, Masato, 5,054,892, Cl. 359-72.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; and Suzuki Tetsuji, 5,055,936, Cl. 358-296.000.
Yamada, Yasuyuki; and Ueki, Tadashi, 5,055,937, Cl. 358-335.000.

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Mattiolo, Silvio, 5,054,953, Cl. 403-406.100.

Videtto, Donald W., Jr. Solar hot dog cooker. 5,054,467, Cl. 126-451.000.

Videx-Wire Products (Pty.) Limited: *See—*
Wiesenfeld, David; and Josef, Moshe, 5,054,146, Cl. 10-27.00E.

Vilbois, Vincent: *See—*
Pepin, Christian; Vilbois, Vincent; and Audion, Marc, 5,054,917, Cl. 356-152.000.

Viscodrive GmbH: *See—*
Taureg, Herbert; and Schonenbrucher, Paul-Erich, 5,054,596, Cl. 192-58.00B.

Visentin, Thomas: *See—*
Carroll, Lawrence B.; Kidder, Kenneth H., Jr.; and Visentin, Thomas, 5,055,989, Cl. 363-36.000.

Viskase Corporation: *See—*
Evert, Charles P.; and Nelson, John, 5,055,328, Cl. 428-34.900.

VLSI Technology, Inc: *See—*
Culver, Robbyn, Marie, 5,055,909, Cl. 357-81.000

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Buchegger, Rudolf, 5,054,746, Cl. 266-114.000.

Vogel, Danny C.: *See—*
Coleman, Edward R.; Vogel, Danny C.; Vogel, David A.; and Cherry, Diane P., 5,056,132, Cl. 379-95.000.

Vogel, David A.: *See—*
Coleman, Edward R.; Vogel, Danny C.; Vogel, David A.; and Cherry, Diane P., 5,056,132, Cl. 379-95.000.

Vogel, Ignaz, to Ignaz Vogel GmbH & Co. KG Fahrzeugsitze. Passenger seat having yielding band structure. 5,054,845, Cl. 297-216.000.

Vogel, Wolfgang: *See—*
Bahnmuller, Heinz; Fricke, Hans-Otto; Koglin, Bernd; Rink, Rolf; and Vogel, Wolfgang, 5,054,962, Cl. 405-129.000.

Vogt, Bernd; Schellong, Lieselotte; Siedel, Joachim; and Ziegenhorn, Joachim, to Boehringer Mannheim GmbH. Process and reagent composition for determination of fructosamine in body fluids. 5,055,388, Cl. 435-4.000.

Vogue Industries Ltd.: *See—*
Dallaire, Michel; and Seguin, Michel, 5,054,135, Cl. 4-506.000.

Vohringer, Fritz, to F. Oberdorfer GmbH & Co.; and KG Industriegewebe-Technik. Double layer forming wire fabric. 5,054,525, Cl. 139-383.00A.

Voigt, Klaus-Dieter; and Knabbe, Cornelius, to Entec Gesellschaft fur Endokrinologische Technologie m.b.H. Use of dextran sulphate for the treatment of human prostatic carcinoma. 5,055,301, Cl. 424-422.000.

Volkert, Otto: *See—*
Fisch, Herbert; Maempel, Lothar; and Volkert, Otto, 5,055,516, Cl. 524-541.000.

Volles, Warren K., to UOP. Adsorption and isomerization of normal and mono-methyl paraffins. 5,055,633, Cl. 585-826.000.

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Vollmer, Elmar: *See—*
Backhaus, Hans-Gert; and Vollmer, Elmar, 5,054,810, Cl. 280-734.000.

Volpe, Ralph A.: *See—*
Tait, Charles N.; and Volpe, Ralph A., 5,054,258, Cl. 53-137.200.

Von Philipsborn, Gerda: *See—*
Lubisch, Wilfried; and Von Philipsborn, Gerda, 5,055,475, Cl. 514-326.000.

Vora, Madhukar B., to National Semiconductor Corporation. Process for fabricating complementary contactless vertical bipolar transistors. 5,055,418, Cl. 437-31.000.

Vora, Rohitkumar H.: *See—*
Mueller, Werner H.; Khanna, Dinesh N.; Vora, Rohitkumar H.; and Erckel, Ruediger J., 5,055,550, Cl. 528-353.000.

Vu, Thu V., to Harris Corporation. Flood-and-forward routing for broadcast packets in packet switching networks. 5,056,085, Cl. 370-60.000.

Vuillaume, Andre. Procedure and apparatus for perforating a product in sheets and perforated product obtained like this. 5,054,349, Cl. 83-177.000.

W-N Apache Corporation: *See—*
Hodge, Lee R., 5,054,550, Cl. 166-78.000.

W. R. Grace & Co.-Conn.: *See—*
—Wax, Michael J.; and Boyer, Timothy A., 5,054,434, Cl. 119-171.000.

WABCO Westinghouse Steuerungstechnik GmbH & Co.: *See—*
Liesenhoff, Thomas; Meyer, Hans-Friedrich; Schmitz, Manfred; Meyer, Ernst-August; and Moller, Rudolf, 5,054,517, Cl. 137-513.500.

Wachi, Akira: *See—*
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Wachi, Shigeaki, to Sony Corporation. Seek apparatus for optical disc drive. 5,056,072, Cl. 369-32.000.

Wachter, Franz. Machine tool and chucking attachment and tool head therefor. 5,054,176, Cl. 29-40.000.

Wachtler, Andreas: *See—*
Scheuble, Bernhard; Bofinger, Klaus; Hopf, Reinhard; Pausch, Axel; Eidenschink, Rudolf; Krause, Joachim; and Wachtler, Andreas, 5,055,221, Cl. 252-299.610.

Wada, Minoru. *See—*
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Wada, Osamu: *See—*
Deri, Robert J.; and Wada, Osamu, 5,054,871, Cl. 385-30.000.

WADA Ventures: *See—*
Davis, Bob G.; and Antweil, Barry L., 5,054,832, Cl. 294-86.300.

Wada, Yusuke: *See—*
Miyamura, Masataka; Wada, Yusuke; Nakagawa, Toshiharu; Nakaizumi, Yuji; and Takeda, Kazuhiro, 5,055,378, Cl. 430-280.000.

Waeber, Rene: *See—*
Demuth, Robert; Fritzsche, Peter; Waeber, Rene; Staheli, Paul; and Faas, Jurg, 5,054,166, Cl. 19-113.000.

Wagatsuma, Michio; and Sado, Yukio, to Yoshida Kogyo K.K. Method for mounting wall constituent members and a guide jig to be used in the same method. 5,054,985, Cl. 414-11.000.

Wagle, Sukahakar S.; Tanaka, S. Ken; Steinbach, Thomas; Lawyer, Carl H.; and Hermann, William J., Jr. Method of treating chronic fatigue syndrome. 5,055,296, Cl. 424-553.000.

Wagner, Ross I., to Rockwell International Corporation. Glycidyl azide polymer (GAP) synthesis by molten salt method. 5,055,600, Cl. 552-11.000.

Wagner, Siegbert: *See—*
Keutgen, Franz; Willems, Erich; and Wagner, Siegbert, 5,054,539, Cl. 164-457.000.

Wagner Spray Tech Corp.: *See—*
Frank, Peter L.; and Reents, Terry R., 5,054,947, Cl. 401-146.000.

Wagnieres, Georges; van den Bergh, Hubert; and Monnier, Philippe, to Ciba-Geigy Corporation. Apparatus for irradiating the bronchi of a patient for the purpose of photodynamic therapy. 5,054,867, Cl. 385-31.000.

Waineo, Keith R.: *See—*
Scroggie, David E.; Willis, Timothy K.; and Waineo, Keith R., 5,054,574, Cl. 180-268.000.

Wakabayashi, Takeshi; and Ochi, Tsuneo, to Casio Computer Co., Ltd. Integrated thermal printhead and driving circuit. 5,055,859, Cl. 346-76.0PH.

Wakai, Haruo; Yamamura, Nobuyuki; Sato, Syunichi; and Kanbara, Minoru, to Casio Computer Co., Ltd. Thin film transistor. 5,055,899, Cl. 357-23.700.

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Inukai, Sinji; Agata, Mitsuzi; Akiba, Kiyoshi; Ohmura, Takeo; Horio, Yoshihiro; Ootake, Yasuhiro; Sawaki, Shohei; and Goto, Masayoshi, 5,055,481, Cl. 514-381.000.

Wakatsuki, Noboru; Kurashima, Shigemi; Shimizu, Nobuyoshi; Endoh, Michiko; and Tanaka, Akira, to Fujitsu Limited. Barber-pole magnetoresistive magnetic field sensor. 5,055,786, Cl. 324-252.000.

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Waldenrath, Werner: *See—*
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Waligroski, Gregg A.: *See—*
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Walker, Betty R.: *See—*
Walker, Robert; and Walker, Betty R., 5,055,083, Cl. 446-478.000.

Walker, Brian C.; and Munn, Robert J., to Motorola, Inc. Bandwidth agile, dielectrically loaded resonator filter. 5,055,808, Cl. 333-207.000.

Walker, David R., to Serawaste Systems Corporation. High temperature turbulent gasification unit and method. 5,054,405, Cl. 110-254.000.

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Waller, Harold E., Jr., to WXW, Inc. Directional fins for body and body board surfing. 5,055,075, Cl. 441-59.000.

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Wallraff, Gregory M.: *See—*
Allen, Robert D.; Hinsberg, William D., III.; Simpson, Logan L.; Twieg, Robert J.; Wallraff, Gregory M.; and Willson, Carlton G., 5,055,439, Cl. 502-158.000.

Wallwey, Erich: *See—*
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Cwalinski, Alexander J.; and Walsh, Brian M., 5,055,080, Cl. 446-46.000.

Walsh, Charles T.: *See—*
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Walsh, Teresa M.: *See—*
Fitzgerald, John V.; Walsh, Teresa M.; Matusik, Frank J.; Stone, John; Dougherty, Edmond; and Batton, John, 5,054,313, Cl 73-59.000.

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Wang, Chuan M. Headrest of a car seat. 5,054,856, Cl. 297-408.000

Wang, David W.: *See—*
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Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, to Warner-Lambert Company. Hybridoma cell line and monoclonal antibodies to Treponema species *T. denticola* JD-1 and Treponema 10A. 5,055,405, Cl. 435-240.270.

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Wang Laboratories, Inc.: *See—*
Wright, Terrence; Mayo, Scott; and Lischner, Ray, 5,055,998, Cl 364-200.000.

Wang, Sheng-Yau, to Chun Zu Machinery Industry Co., Ltd. Motion transfer mechanism with a linkage. 5,054,330, Cl. 74-53.000

Wang, Taylor G.: *See—*
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Wang, Xiaoyin: *See—*
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Wang, Zhi-Lin. Windproof cigarette lighter with double flames. 5,055,034, Cl. 431-255.000.

Wank, Joachim; Uerdingen, Walter; Schrader, Lutz; and Waldenrath, Werner, to Bayer Aktiengesellschaft. Multilayer composite material. 5,055,345, Cl. 428-215.000.

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Ward, Troy L.; and Bilbey, Terry L. Shotgun sighting device. 5,054,204, Cl. 33-233.000.

Wardle, John W.; and Wernberg, Donald E., to Woodward Governor Company. Multiplexed hydraulic control system with plural selector valves. 5,054,369, Cl. 91-361.000.

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Touzalin, Richard J.; and Zettler, Brian J., 5,054,220, Cl. 40-642.000.
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Warren, Beth Z., to Monsanto Company. Food preservative compositions. 5,055,313, Cl. 426-268.000.

Warszawski, Bernard, to Alpine Polyvision, Inc. Light modulating process. 5,054,894, Cl. 359-270.000.

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Washington Research Foundation: *See—*
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Washio, Yukari; Takeishi, Nobuhiro; Shimamoto, Hideki; Mori, Keiji; Ushio, Noriki; Shiono, Katsuji; Kishi, Takaaki; and Samura, Hideo, to Matsushita Electric Industrial Co., Ltd. Electrolyte for use in electrolytic capacitors. 5,055,974, Cl. 361-527.000.

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Watanabe, Satoru; and Ohura, Osami, to Tokai Denka Kogyo Kabushiki Kaisha. Process for preparing high purity hydrogen peroxide. 5,055,286, Cl. 423-584.000.

Watanabe, Syuji; Satoh, Susumu; and Sagawa, Koichi, to Hitachi, Ltd. Suction nozzle with rotary brush for vacuum cleaner. 5,054,156, Cl 15-325.000.

Watanabe, Takako: *See—*
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Watanabe, Takayuki, to NEC Corporation. Cache memory for use with multiprocessor systems. 5,056,002, Cl. 364-200.000.

Watanabe, Yuji; and Sahara, Hiroshi, to Kabushiki Kaisha Toshiba. Output circuit of semiconductor integrated circuit. 5,055,713, Cl 307-443.000.

Watashi, Masahiro, to Mita Industrial Co., Ltd. Delivery unit attaching structure. 5,054,769, Cl. 271-306.000.

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Weaver, Harry T.: *See—*
Dawson, L. Ralph; Osbourn, Gordon C.; Peercy, Paul S.; Weaver, Harry T.; and Zipperian, Thomas E., 5,055,890, Cl. 357-16.000

Weaver, James C.; Williams, Gregory B.; and Bliss, Jonathan G., to Massachusetts Institute of Technology. Process for chemical manipulation of non-aqueous surrounded microdroplets. 5,055,390, Cl. 435-5.000

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Frank, Steven J.; Burkhardt, Henry, III; Lee, Linda O.; Goodman, Nathan; Margulies, Benson I.; and Weber, Frederick D., 5,055,999, Cl. 364-200.000.

Weber, Georg: *See—*
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Weber, Guenther. Method of obtaining constant weight portions or slices of sliced food products. 5,054,345, Cl. 83-42.000.

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Weber, Michael F., to Minnesota Mining and Manufacturing Company Electrolytic etch for preventing electrical shorts in solar cells on polymer surfaces. 5,055,416, Cl. 437-4.000

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Wechem, Guus V.; Beunk, Gerrit; Van Den Elst, Fritz; and Gerson, Philips M., to Texas Instruments Incorporated. Combustion engine with fuel injection system, and a spray valve fo r such an engine 5,054,458, Cl. 123-549.000.

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Wegner, Paul C., to Tiegel Manufacturing Company. Process for removing dissolved contaminants from aqueous solutions using reversibly dispersible getters. 5,055,201, Cl. 210-727.000.

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Wei, Lee-Fang, to AT&T Bell Laboratories. Interleaving in coded modulation for mobile radio. 5,056,112, Cl. 375-53.000

Weid, Manfred: *See—*
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Weihs, Hans, to U.S. Philips Corporation. Scanning apparatus for chip card. 5,055,970, Cl. 361-399.000.

Weil, Francois: *See—*
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Weinberg, Stephen P.: *See—*
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Weinstein, Leonard M.: *See—*
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Weis, Jonathan C. Combination cap remover and carton top opener tool. 5,054,338, Cl. 81-3.090.

Weisang, Francois; and Charlery-Adele, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Tundish for continuous casting of steel. 5,054,749, Cl. 266-220.000.

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Weiss, Ekkehard: *See—*
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Weiss, Ervin; and Ram, Zeev. Dental fluid control apparatus. 5,055,043, Cl. 433-86.000

Weiss, Karl: *See—*
Riemscheid, Helmut; Weiss, Karl; Frielingsdorf, Herbert; Schwarz, Engelbert; and Grewe, Heribert, 5,054,182, Cl. 29-281.500.
Riemscheid, Helmut; Frielingsdorf, Herbert; Grewe, Heribert; Weiss, Karl; Schulze, Rudolf; Schwarz, Engelbert; Swars, Helmut; and Palussek, Arnold, 5,054,756, Cl. 269-43.100.

Weissman, Bernard. Portable power pack and electric motor dental tool holster. 5,054,672, Cl. 224-252.000

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Weller, Harold N., III; and Ryono, Denis E., to E. R. Squibb & Sons, Inc. N-morpholino derivatives and their use as anti-hypertensive agents. 5,055,466, Cl. 514-235.800.

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Welzel, Dieter; and Wolf, Helmut, to Vascular Laboratory, Inc. Lysis of fibrin blood clots with urokinase and pro-urokinase. 5,055,295, Cl. 424-94.200.

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Werner, John. Fire vortex display. 5,055,031, Cl. 431-726.000

Werner, Kurt; Krieger, Leo G.; Bewley, Wilbur C.; Tillman, Ennis L.; and Riesberg, Richard D., to Whirlpool Corporation. Combination stand alone and canister vacuum cleaner. 5,054,157, Cl. 15-328.000.

Weselak, Mark R., to Saturn Corporation. Clutch assembly method 5,054,186, Cl. 29-467.000.

Wesley, Marla. Crib apparatus. 5,054,138, Cl. 5-93.100.

Wessling, Richard J., to U.S. Precision Lens Incorporated. Color TV projection lens system. 5,055,922, Cl. 358-60.000.

Westberg, Tom; and Mattiazzi, Joseph A., to Outboard Marine Corporation. Molded control panel for outboard motor. 5,055,074, Cl. 440-77.000

Westerfield, Robert P., Jr.: *See—*
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Westhoff, James; and Kelly, James A., to A-LOK Products, Inc. Clamping band for gaskets and the like and expansion means therefor. 5,054,794, Cl. 277-1.000.

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Jones, William F.; Hinton, Alfred E.; Hibbert, Frederick M.; and Jackson, Ernest E., 5,055,783, Cl. 324-216.000.

Westvaco Corporation: *See—*
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Weyer, Paul P. Adjustable shaft actuator. 5,054,372, Cl. 92-13.500.

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Wheatley, Charles E., III: *See—*
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Wheeler, Roger D., to DeVilbiss Air Power Company. Air compressor tank mount. 5,054,740, Cl. 248-675.000

Whetsel, Lee D., to Texas Instruments Incorporated. System scan path architecture. 5,056,093, Cl. 371-22.300.

Whetsel, Lee D., to Texas Instruments Incorporated. Delay fault testing method and apparatus. 5,056,094, Cl. 371-25.100.

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White, Harold R., to Alar Engineering Corporation. Pressurized continuous operating rotary drum filter and method. 5,055,205, Cl. 210-784.000.

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White, John E.; Sturgis, James D.; Erikson, Raymond J.; Waligroski, Gregg A.; and Scott, Michael A., to Harris Corporation. Offset truss hex solar concentrator. 5,054,466, Cl. 126-438.000.

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Wichmann, Bernhard, to Siemens Aktiengesellschaft. Circuit for reducing the latch-up sensitivity of a CMOS circuit. 5,055,903, Cl. 357-42.000

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Wiesenfeld, David; and Josef, Moshe, to Videx-Wire Products (Pty.) Limited. Anchor bolt. 5,054,146, Cl. 10-27.00E.

Wietfeld, Bernhard, to Ciba-Geigy Corporation. Etherified fluorescein compounds. 5,055,595, Cl. 549-224.000.

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Wight, Mark S., to Northern Telecom Limited. Method and apparatus for decoding Manchester encoded data. 5,056,114, Cl. 375-87.000.

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Wilhite, Dennis. Method and apparatus for covering open truck beds. 5,054,840, Cl. 296-98.000.

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Williams, Gregory B.: *See—*
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Wilson, Charles N., II. Fuel tank air pocket removal device. 5,054,312, Cl. 73-49.200.

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Wilson, Malcolm E.: *See—*
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Wilson, Thomas R. Toilet deodorizing device. 5,054,130, Cl. 4-213.000.

Wiltron Company: *See—*
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Momose, Terunobu; and Shibata, Tetsuo, 5,054,940, Cl. 384-193.000.

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Latos, Thomas S.; and Wingate, Kevin L., 5,055,722, Cl 307-570.000.

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Croce, Michael R.; and Brilliant, Stuart D., 5,055,495, Cl. 521-85.000.
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Wilhelm, Fritz; Witt, Heinz-Gunter; and Holting, Ludwig. 5,055,273, Cl. 422-135.000

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Kralles, Christopher J.; and Wolf, Michael T., 5,055,874, Cl 355-76.000.

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Roberge, Raymond P.; Francis, Arthur W., Jr.; and Wolfe, Thomas G., 5,055,260, Cl. 422-62.000.

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Morey, Norval, 5,054,703, Cl. 241-296.000.

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Bowman, Anthony L.; Lewis, Norris E.; Perdue, Jerry T.; Wright, James M.; and Day, Michael J., 5,054,189, Cl. 29-597.000

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Peters, Kimberly T.; and Wu, Stephen H. W., 5,055,500, Cl. 523-319.000.

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Kao, Hsin-Ching; Lee, Mao-Mong; Chiang, Chih-Cheng; Lin, Jen-Lien; and Wu, Ting-Kai, 5,055,505, Cl. 524-83.000.

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Lippi, Bruno; Suter, Ernst; Wuthrich, Hans-Rudolf; and Meier, Thomas, 5,055,640, Cl. 200-144.00B.

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Waller, Harold E., Jr., 5,055,075, Cl. 441-59.000.

Wychffe, Henryk, to BOC Group plc, The. Mechanical pumps. 5,055,017, Cl. 418-183.000.

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Lange, Steven R., 5,055,695, Cl. 250-459.100.

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Haack, Johannes; and Wymann, Hans, 5,054,353, Cl. 83-639.500.

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Wyss, Walter, to Hobas Engineering & Durotec AG. Coupling for plastic pipe formed by centrifugal casting. 5,054,824, Cl. 285-369.000.

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Hansen, Lorin K.; Gable, Richard J.; Lara, Edwardo D.; Lloyd, William A.; McFarland, Keith E.; Sayre, Jack H.; and White, Stephen D., 5,055,862, Cl. 346-154.000.
Law, Kock-Yee, 5,055,367, Cl. 430-59.000.
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Murasawa, Yasuhiro; Toda, Hitoshi; Sawano, Hiroshi; and Yagoura, Hideya, 5,055,912, Cl. 357-74.000.

Yakult Honsha Co., Ltd.: *See—*
Saita, Taketsugu; Kuma, Yoshiharu; Bukawa, Norio; and Saga, Tomoko, 5,055,309, Cl. 426-34.000

Yamada, Hidetoshi: *See—*
Nagasaki, Tatsuo; and Yamada, Hidetoshi, 5,055,930, Cl. 358-213.110.

Yamada, Hikoichiro: *See—*
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Yamada, Mamoru. Remedial techniques for the treatment of painful disorders such as intervertebral disc hernia and the like. 5,054,486, Cl. 128-421.000

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Yamada, Toshiko: *See—*
Yamamoto, Yasuo; Hanaoka, Katsumi; Hirai, Masatake; and Yamada, Toshiko, 5,055,815, Cl. 336-196.000.

Yamada, Toshio: *See—*
Tanaka, Kazuo; Hamamoto, Masato; Yamada, Toshio; Kobayashi, Tohru; and Katoh, Hiromasa, 5,055,710, Cl. 307-303.100

Yamada, Yasuyuki; and Hashimoto, Hiroshi, to Fuji Photo Film Co., Ltd. Ferromagnetic thin film magnetic recording medium having an intermediate layer containing ultrafine particles and a polar group containing binder resin having a loss tangent peak temperature in a specified range. 5,055,352, Cl. 428-336.000.

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Yamada, Yuuji; Kunishi, Shinsuke; and Mizuno, Yoshiyuki, to Molex Incorporated. Pin spacer in a multi-pin connector and method of fabricating same. 5,055,073, Cl. 439-892.000.

Yamagiwa, Keiko: *See—*
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Yamaguchi, Atsuo: *See—*
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Yamaguchi, Tetsuo, to Sumitomo Rubber Industries. Hollow rubber fender. 5,054,414, Cl. 114-219.000.

Yamaha Corp.: *See—*
Imanishi, Masao; Ohtaka, Atsushi; Hiyama, Kunio; and Kawamura, Takanori, 5,054,889, Cl. 359-76.000.
Usa, Satoshi, 5,054,361, Cl. 84-737.000.

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Yamakawa, Yoichi: *See—*
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Yamamoto, Haruhisa, to Nippon Zeon Co., Ltd. Method of producing magnetic recording media. 5,055,322, Cl. 427-128.000.

Yamamoto, Haruo: *See—*
Takeuchi, Tomio; Hara, Takeshi; Hamada, Masa; Kondo, Shinichi; Sezaki, Masaji; Yamamoto, Haruo; and Gomi, Shuichi, 5,055,453, Cl. 514-27.000

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Yamamoto, Kazuo: *See—*
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Yamamoto, Masanao: *See—*
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Yamamoto, Masanori: *See—*
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Yamamoto, Mitsuhiro, to NEC Corporation. In-circuit emulator. 5,056,013, Cl. 364-200.000.

Yamamoto, Nobunari: *See—*
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Yamamoto, Seiichi: *See—*
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Yamamoto, Takaharu; Hashiba, Syuzi; and Imai, Toshimitsu, to Kabushiki Kaisha Toshiba. Digital sound data storing device. 5,056,145, Cl. 381-51.000.

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Yamaoka, Fumiyuki; Kakizaki, Shinobu; and Kikushima, Shigeru, to Atsugi Unisia Corporation. Variable damping characteristics shock absorber. 5,054,809, Cl. 280-707.000.

Yamasaki, Noritsugu: *See—*
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Yamashita, Michio; Isobe, Kunio; and Yarita, Ikuo, to Kawasaki Steel Corporation. Hardness compensated thickness control method for wet skin-pass rolled sheet. 5,054,302, Cl. 72-8.000.

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Yamato Scale Company, Limited: *See—*
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Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. FET with a super lattice channel. 5,055,887, Cl. 357-4.000.

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Yang, Junmo, to Samsung Electron Devices Co., Ltd. Manufacturing method for red phosphor. 5,055,226, Cl. 252-301.40R.

Yang, Kap-Soo, to Hanil Industrial Co., Ltd. Method and circuit for self-checking troubles of a heating system. 5,055,825, Cl. 340-439.000.

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Yano, Toshihiko; Ishiwatari, Takao; Sekihachi, Hiroko; Matsuo, Noritada; Takagaki, Tohei; and Kakimizu, Akiko, to Sumitomo Chemical Company, Limited. Carboxylic acid esters, methods for producing them and insecticides and/or acaricides containing them as an active ingredient. 5,055,491, Cl. 514-531.000.

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Yazaki Corporation: *See—*
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Yelland, David R.; Gilbert, John G.; and Ewans, John, to Pulsafe Safety Products Limited. Safety visor having a rotatably mounted shield and filter. 5,054,479, Cl. 128-201.250.

Yikai, Kunio; and Kanazawa, Hiroaki, to Kanazawa, Hiroaki; and Shiraishi, Katsumune. Air cleaner including an electrostatic precipitator. 5,055,115, Cl. 55-124.000.

Ying Hung Enterprise Co., Ltd.: *See—*
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Yokoe, Hifumi: *See—*
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Yokohama Rubber Co., Ltd., The: *See—*
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Yokoo, Akihiko: *See—*
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Yoneyama, Shuhji, to Asahi Kogaku Kogyo K.K. Medium telephoto lens system. 5,054,899, Cl. 359-745.000.

Yoon, Jong S.: *See—*
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Yorifuji, Takashi; and Saigo, Masashi, to Toshiba Lighting & Technology Corporation. Low-pressure mercury vapor discharge lamp having a folded tube. 5,055,738, Cl. 313-490.000.

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Yoshida Industry Co., Ltd.: *See—*
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Yoshitake, Akihiro; Iino, Hideyuki; and Hida, Hidenori, to Fujitsu Limited; and Fujitsu Microcomputer Systems Limited. Direct memory access controller with expedited error control. 5,056,011, Cl. 364-200.000.

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Young, Donald C., to Union Oil Company of California. Vegetation control with monourea sulfuric acid. 5,055,127, Cl. 71-83.000.

Young, Kenneth, to Richardson-Vicks, Inc. Cleansing compositions. 5,055,305, Cl. 424-466.000.

Young, Michael E.; Edwards, David M.; and Lyons, Robin S., to Creative Design and Packaging Cardiff Limited. Improvements relating to containers. 5,054,617, Cl. 206-509.000.

Young, Tommis E.; Curtis, John L.; and Barnett, Dennis A., to Thermotaxis Development, Inc. Heat transfer system. 5,054,542, Cl 165-58.000.

Young, William G. Rapid fire gas powered projectile gun. 5,054,464, Cl. 124-72.000.

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Yu, Robert C. U.; and Premo, Ronald P., to Xerox Corporation. Polymeric protective overcoatings contain hole transport material for electrophotographic imaging members. 5,055,366, Cl. 430-58.000.

Yu, Tiecheng; Bi, Ning; Rong, Meiling, and Zhang, Enyao, to Institute of Acoustics, Academia Sinica. Method and apparatus for real time speech recognition with and without speaker dependency. 5,056,150, Cl. 381-43.000.

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Yun, Joyung; and Cho, Hojin, to Samsung Electron Devices Co., Ltd. Shadow mask for use in a three-gun color picture tube. 5,055,736, Cl 313-402.000

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Yuugen-Kaisha Parasight: *See*—
Nojima, Hisatake; and Nojima, Youko, 5,054,422, Cl. 119-3.000

Yvon, Amand, to Societe d'Applications Generales d'Electricite et de Mecanique Sagem. Pendulous Accelerometer with electrostatic rebalancing. 5,054,320, Cl. 73-517.00B.

Zabotto, Arlette; Griat, Jacqueline; Handjani, Rose-Marie J.; Vanlerberghe, Guy G.; and Ribier, Alain J., to L'Oreal. Process for the preparation of stable dispersions of at least one water-immiscible liquid phase in an aqueous phase. 5,055,228, Cl. 252-312.000.

Zahnradfabrik Friedrichshafen AG: *See*—
Lutz, Rolf; Reinalter, Franz; and Fiechtner, Heinz, 5,054,595, Cl 192-53.00F

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Takeuchi, Tomio; Hara, Takeshi; Hamada, Masa; Kondo, Shinichi; Sezaki, Masaji; Yamamoto, Haruo; and Gomi, Shuichi, 5,055,453, Cl. 514-27.000

Zaiki, Koji: *See*—
Kaneko, Katsuyuki; Gokita, Satoshi; and Zaiki, Koji, 5,056,005, Cl 364-200.000.

Zalman, George R. Portable pickup truck camper shell standard or roll bar model. 5,054,841, Cl. 296-165.000.

Zapf, Jurgen, to Proxxon Werkzeug GmbH. Electrical hand tool 5,054,563, Cl. 173-163.000.

Zapka, Werner: *See*—
Koblinger, Otto; Meissner, Klaus; Muhl, Reinhold; Trumpp, Hans-Joachim; and Zapka, Werner, 5,055,383, Cl. 430-312.000

Zaromb, Solomon: *See*—
Stetter, Joseph D.; Zaromb, Solomon; and Findlay, Melvin W., Jr., 5,055,266, Cl. 422-83.000.

Zeidler, James R.; and Moazed, Khosrow L., to United States of America, Navy. Method for fabricating ohmic contacts on semiconducting diamond. 5,055,424, Cl. 437-188.000.

Zellweger Uster AG: *See*—
Laubscher, Hanspeter, 5,054,317, Cl. 73-160.000.

Zenith Electronics Corporation: *See*—
Chen, Hsing-Yao; and Gorski, Richard M., 5,055,749, Cl. 315-368.00R

Zeo-Tech (Zeolith-Technologie GmbH): *See*—
Maier-Laxhuber, Peter; and Kaubek, Fritz, 5,054,544, Cl 165-104.120

Zervos, Nicholas A.: *See*—
Gitlin, Richard D.; and Zervos, Nicholas A., 5,056,117, Cl 375-102.000

Zetah, Richard H. Boat anchor with fluke release and reset mechanism. 5,054,416, Cl. 114-310.000.

Zettler, Brian J.: *See*—
Touzalin, Richard J.; and Zettler, Brian J., 5,054,220, Cl 40-642.000

Zevchak, Eric Scott. Detachable pocket system for garments and the like. 5,054,127, Cl. 2-247.000.

Zhang, Enyao: *See*—
Yu, Tiecheng; Bi, Ning; Rong, Meiling; and Zhang, Enyao, 5,056,150, Cl. 381-43.000.

Zhang, Yuping: *See*—
Wen, Yingmei; Wang, Zhengping; Liu, Xiaojie; Zhang, Yuping; Fang, Qiding; Wang, Xiaoyin; and Shen, Chun, 5,054,496, Cl. 128-696.000

Zhu, Joshua S.: *See*—
Hu, Feng-Kang; Lau, Chung M.; Yang, Kevin; Zhu, Joshua S.; Shen, Peter S.; and Jednacz, Thomas C., 5,055,746, Cl 315-291.000

Ziecina, Frederick J.: *See*—
Hammer, William E.; Schwane, Walter H.; and Ziecina, Frederick J., 5,056,003, Cl. 364-200.000

Ziegenhorn, Joachim: *See*—
Vogt, Bernd; Schellong, Lieselotte; Siedel, Joachim; and Ziegenhorn, Joachim, 5,055,388, Cl. 435-4.000

Ziegler, Peter: *See*—
Honel, Michael; Ziegler, Peter; Sprenger, Walter; and Wendt, Wolfgang, 5,055,542, Cl. 528-45.000.

Zillgen, Joachim; and Renken, Uwe W. Fastener for construction systems comprising tubes and nodes. 5,054,950, Cl. 403-171.000.

Zimbardi, D. John; and Matthies, Wayne H. Portable lure container 5,054,669, Cl. 224-42.45R

Zimmerman, Melvin M., to Superior Walls of America, Ltd. Method of constructing an integrated concrete wall structure. 5,055,252, Cl. 264-263.000

Zimmerman, Theodore S., to Scripps Clinic & Research Foundation. Ultrapurification of factor IX and other vitamin K-dependent proteins. 5,055,557, Cl. 530-381.000

Zip-Pak Incorporated: *See*—
McMahon, Michael J., 5,054,270, Cl. 53-552.000.

Zipperian, Thomas E.: *See*—
Dawson, L. Ralph; Osbourn, Gordon C.; Peercy, Paul S.; Weaver, Harry T.; and Zipperian, Thomas E., 5,055,890, Cl. 357-16.000

Zirger, Herschel E.: *See*—
Bishop, Thomas R.; and Zirger, Herschel E., 5,054,833, Cl 294-86.300.

Zodrow, Rudolf; and Mohn, Hans-Werner. Method and apparatus for affixing labels and/or foils to bottles. 5,055,154, Cl. 156-256.000

Zohler, Steven R., to Carrier Corporation. High performance heat transfer surface for high pressure refrigerants. 5,054,548, Cl 165-133.000

Zona Industrial De Montras: *See*—
Rozier, Alain, 5,054,527, Cl. 141-39.000

Zuger, Jakob, to Spuhl AG. Process and apparatus for the production of innersprings for mattresses and upholstered furniture. 5,054,178, Cl. 29-91.100.

Zulawski, Dennis P., to Arctco, Inc. Adjustable steering post with bearings. 5,054,798, Cl. 280-16.000

Zuliani, Douglas J., to Timminco Limited. Magnesium-aluminum-zinc alloy. 5,055,254, Cl. 420-409.000.

Zweig, Leon A. Isopropyl alcohol-free catalytic fountain solution concentrate and method for introducing a catalytic agent into lithographic printing ink. 5,054,394, Cl. 101-451.000.

Zwiebel, Jeffrey L.: *See*—
Sakalian, Steve Y.; and Zwiebel, Jeffrey L., 5,056,119, Cl. 375-106.000

Zygo Corporation: *See*—
Hunter, George C., 5,054,925, Cl. 356-363.000.

ZYP Coatings, Inc.: *See*—
Holcombe, Cressie E., Jr.; and Chapman, Lloyd R., 5,055,137, Cl 106-600.000

139088 Canada Ltee: *See*—
Rozon, David P., 5,054,535, Cl. 160-38.000

3i Research Exploitation Limited: *See*—
Cassells, Alan C., 5,054,234, Cl. 47-69.000.

501 International Data Engineering, Inc.: *See*—
Fitzgerald, Timothy P.; Rother, David J.; Wrolson, Darryl T.; Nelson, Richard H.; and Takala, Robert E., 5,056,073, Cl. 369-36.000

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF OCTOBER, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baroid Technology, Inc.: *See*—
Roesler, Richard F., Re. 33,708, Cl. 33-304.000.

Hayashi, Takashi: *See*—
Watanabe, Tomoyuki; Shigematsu, Takashi; Tokoro, Setsuo; and Hayashi, Takashi, Re. 33,713, Cl. 192-0.032.

Ingersoll-Rand Company: *See*—
Ono, Akira; and Iritani, Toshiro, Re. 33,711, Cl. 81-464.000.

Iritani, Toshiro: *See*—
Ono, Akira; and Iritani, Toshiro, Re. 33,711, Cl. 81-464.000.

Mariotti, Rene G., to Ore-Ida Vended Products, Inc. Deep-fryer pan for industrial fryers. Re. 33,712, Cl. 99-330.000.

Ono, Akira; and Iritani, Toshiro, to Ingersoll-Rand Company. Ratchet wrench. Re. 33,711, Cl. 81-464.000.

Ore-Ida Vended Products, Inc.: *See*—
Mariotti, Rene G., Re. 33,712, Cl. 99-330.000.

Roesler, Richard F., to Baroid Technology, Inc. Surveying of boreholes using shortened non-magnetic collars. Re. 33,708, Cl. 33-304.000.

Shigematsu, Takashi: *See*—
Watanabe, Tomoyuki; Shigematsu, Takashi; Tokoro, Setsuo; and Hayashi, Takashi, Re. 33,713, Cl. 192-0.032.

Tokoro, Setsuo: *See*—
Watanabe, Tomoyuki; Shigematsu, Takashi; Tokoro, Setsuo; and Hayashi, Takashi, Re. 33,713, Cl. 192-0.032.

Toyota Jidosha Kabushiki Kaisha: *See*—
Watanabe, Tomoyuki; Shigematsu, Takashi; Tokoro, Setsuo; and Hayashi, Takashi, Re. 33,713, Cl. 192-0.032.

Vicino, Robert K. Inflatable sign. Re. 33,709, Cl. 40-610.000.

Watanabe, Tomoyuki; Shigematsu, Takashi; Tokoro, Setsuo; and Hayashi, Takashi, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling an electromagnetic clutch for use on a vehicle. Re. 33,713, Cl. 192-0.032.

World Shelters, Inc.: *See*—
Zeigler, Theodore R., Re. 33,710, Cl. 52-648.000

Zeigler, Theodore R., to World Shelters, Inc. Portable shelter assemblies. Re. 33,710, Cl. 52-648.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Keene, Bruce W.: *See*—
Shug, Austin L.; and Keene, Bruce W., B1 4,883,672, Cl. 426-2.000.

Shug, Austin L.; and Keene, Bruce W. Method for preventing diet induced carnitine deficiency in domesticated dogs and cats. B1 4,883,672, 10-8-91, Cl. 426-2.000.

LIST OF DESIGN PATENTEES

Achiever Industries Ltd.: *See*—
Chan, Yet, 320,610, Cl. D16-209.000.

Adept-Med International, Inc.: *See*—
Quigley, Patrick C.; Quigley, Timothy C.; and Goott, Bernard, 320,658, Cl. D24-135.000.

Akashi, Shunji, to Yoshida Kogyo K. K. Pull tab for slide fastener. 320,578, 10-8-91, Cl. D11-221.000.

Albert, Gregory P.: *See*—
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; and Hix, Charles J., Jr., 320,540, Cl. D8-61.000.
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; Hix, Charles J., Jr.; and Gable, Duane S., 320,541, Cl. D8-61.000.

Allen, David O., to Allen Tool Company, Inc. Combined closure and opener for a cup lid. 320,560, 10-8-91, Cl. D9-438.000.

Allen Tool Company, Inc.: *See*—
Allen, David O., 320,560, Cl. D9-438.000.

Alton, Charles E. Pendant. 320,574, 10-8-91, Cl. D11-82.000.

Amber, John M.: *See*—
Foreman, Philip C.; Wolters, Hendricus J.; and Amber, John M., 320,660, Cl. D24-158.000.

Arctic Icewater, Inc.: *See*—
Cederroth, Sture C.; and Zutler, Bruce B., 320,494, Cl. D1-100.000.

Arons, Richard E. Aerial game projectile. 320,623, 10-8-91, Cl. D21-2.000.

Arturo, Ricci, to Proteo S.p.A. Combined perfume bottle and cap. 320,550, 10-8-91, Cl. D9-367.000.

Asahi Kogaku Kogyo K.K.: *See*—
Takahashi, Akio, 320,616, Cl. D18-13.000.

Associated Mills Inc.: *See*—
Geneve, Francois; Heiligenstein, Luc; and Melamed, Stephen, 320,642, Cl. D23-223.000.

Atari Corporation: *See*—
Taylor, Neil, 320,624, Cl. D21-13.000.

Atkins, Wm. David. Adjustable rack and table combination. 320,513, 10-8-91, Cl. D6-397.000.

Atterton & Ellis Limited: *See*—
Smith, David A.; and Bernhard, Stephen G., 320,607, Cl. D15-126.000.

Auerbach, Marc; Emmons, Lawrence D.; and Patton, Douglas M., to Mitsubishi Electric Sales America, Inc. Portable keyboard for remote controller. 320,598, 10-8-91, Cl. D14-115.000.

B. C. Sanitan Limited: *See*—
Waldren, Jonathan G., 320,647, Cl. D23-294.000.

Baker, Weldon K.: *See*—
McClenahan, R. Graham; and Baker, Weldon K., 320,639, Cl. D22-126.000.

Band of the West: *See*—
Carroll, James O., 320,527, Cl. D7-332.000.

Barrett, Edward E.: *See*—
Leff, Martin J.; Barrett, Edward E.; Carvell, William S.; and Fahrner, Charles J., 320,539, Cl. D8-50.000.

Baur, August. Hanger for wall quilts. 320,521, 10-8-91, Cl. D6-553.000.

Bentley, Charles A.: *See*—
Newman, Alec T.; and Bentley, Charles A., 320,529, Cl. D7-399.000.
Newman, Alec T.; and Bentley, Charles A., 320,530, Cl. D7-399.000.

Berger, Andy L.: *See*—
Wolf, Thomas H.; and Berger, Andy L., 320,520, Cl. D6-541.000.

Bergman, James F.: *See*—
Holtan, Ramer B., Jr.; Bergman, James F.; Nelson, Kenneth E.; and Falk, Kevin, 320,608, Cl. D16-107.000.

Bernhard, Stephen G.: *See*—
Smith, David A.; and Bernhard, Stephen G., 320,607, Cl. D15-126.000.

Bernstein, Michael S.; Crossley, David W.; and Lerner, Michael I., to Safety 1st, Inc. Swivel bath seat for infants. 320,528, 10-8-91, Cl. D6-333.000.

Berry, James E.; Kerschner, Ronald K.; and Kent, Lisa M., to Hewlett-Packard Co. Automatic printed circuit board handler. 320,684, 10-8-91, Cl. D34-29.000.

Black, Don L. Combined timer and valves for washing machine water flow control. 320,568, 10-8-91, Cl. D10-40.000.
Blatt, John A. Mounting bracket. 320,548, 10-8-91, Cl. D8-396.000.
Blend, Robert: *See—*
Sharkey, John F., 320,564, Cl. D10-3.000.
Boucher, Val G.: *See—*
Kelley, Craig B.; Boucher, Val G.; and Rytter, Noel J., 320,589, Cl. D12-179.000.
Boula, Brian O. Baby bottle drain rack. 320,681, 10-8-91, Cl. D32-55.000.
Boyle, John L.: *See—*
Van Dine, Robert; and Boyle, John L., 320,554, Cl. D9-403.000.
Brandon, Wesley P., to Safety Signals, Inc. Auxiliary illuminated turn signal for semi-trailers. 320,666, 10-8-91, Cl. D26-31.000.
Brann, William A. Gravity traction orthopedic couch. 320,663, 10-8-91, Cl. D24-183.000.
Braswell, Bobby R. Beach cart. 320,682, 10-8-91, Cl. D34-18.000.
Brayton International Collection: *See—*
Shields, Michael R., 320,507, Cl. D6-366.000.
Brester, Robert R.; and Roberts, Thomas L., to Velvac, Inc. Fuel cap. 320,562, 10-8-91, Cl. D9-452.000.
Brown, Sidney S. Bicycle frame. 320,585, 10-8-91, Cl. D12-111.000.
Bulgari, Paolo, to Partecipazioni Bulgari S.p.A. Bracelet. 320,572, 10-8-91, Cl. D11-16.000.
Bulgari, Paolo, to Partecipazioni Bulgari S.p.A. Earring. 320,573. 10-8-91, Cl. D11-76.000.
Bumb, Timothy: *See—*
Fortune, Frederick A.; and Bumb, Timothy, 320,626, Cl. D21-148.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,627, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,628, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,629, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,630, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,631, Cl. D21-157.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,632, Cl. D21-163.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,633, Cl. D21-166.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,634, Cl. D21-173.000.
Fortune, Frederick A.; and Bumb, Timothy, 320,635, Cl. D21-179.000.
Busby, Peter, to Trident Videogram International Corp. Vending booth. 320,621, 10-8-91, Cl. D20-4.000.
C.M.H., S.A.: *See—*
Vidal-Brualla, Jose M., 320,525, Cl. D7-309.000.
Capriotti, Robert J.: *See—*
Johansson, Ole H.; and Capriotti, Robert J., 320,659, Cl. D24-155.000.
Carranza, Victor, to Godinger Silver Art Co., Ltd. Lid for powder puffcase. 320,675, 10-8-91, Cl. D28-91.000.
Carrier Corporation: *See—*
Kujawa, Matthew; and Otts, Paul J., 320,650, Cl. D23-393.000.
Carroll, James O., to Band of the West. Grill. 320,527, 10-8-91, Cl. D7-332.000.
Carvell, William S.: *See—*
Leff, Martin J.; Barrett, Edward E.; Carvell, William S.; and Fahrner, Charles J., 320,539, Cl. D8-50.000.
Casio Computer Co., Ltd.: *See—*
Koide, Masaki, 320,613, Cl. D17-1.000.
Ohki, Yuji, 320,612, Cl. D17-1.000.
Ono, Junichi, 320,611, Cl. D17-1.000.
Ono, Junichi, 320,614, Cl. D17-1.000.
Wakamatsu, Masamichi, 320,567, Cl. D10-38.000.
Cassai, Gino H., deceased: *See—*
Cassai, Henry J.; and Cassai, Gino H., deceased, 320,672, Cl. D28-7.000.
Cassai, Henry J.; and Cassai, Gino H., deceased (by Cassai, Josephine, legal representative), to Cassai, Henry J. Combined container/bottle and cosmetic wand applicators or the like. 320,672, 10-8-91, Cl D28-7.000
Cassai, Josephine, legal representative: *See—*
Cassai, Henry J.; and Cassai, Gino H., deceased, 320,672, Cl. D28-7.000.
Caterpillar, Inc.: *See—*
Kelley, Craig B.; Boucher, Val G.; and Rytter, Noel J., 320,589, Cl. D12-179.000.
Cederroth, Sture C.; and Zutler, Bruce B., to Arctic Icewater, Inc Cubic ice structure. 320,494, 10-8-91, Cl. D1-100.000.
Cerv, Gudrun: *See—*
Schleeh, Reinhold; Cerv, Gudrun; and Wehrhoff, Anke, 320,619, Cl. D19-78.000.
Chan, Dennis, to Sun Plan Investments Limited. Head support for a telephone handset. 320,605, 10-8-91, Cl. D14-253.000.
Chan, Yet, to Achiever Industries Ltd. Camera. 320,610, 10-8-91, Cl. D16-209.000
Chanel, Arthur, to Fromageries Bresse-Bleu- Societe Laitiere Cooperative Agricole. Package. 320,552, 10-8-91, Cl. D9-341.000.
Coca-Cola Company, The: *See—*
Schechter, Alvin H., 320,524, Cl. D7-308.000.
Continental Carlisle Inc.: *See—*
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Zielinski, David J.; and Finney, Lloyd M., 320,532, Cl. D7-560.000.
Zielinski, David J.; and Finney, Lloyd M., 320,533, Cl. D7-560.000.
Crafford, Japie, to Snappi Holdings (Proprietary) Limited. Diaper fastener. 320,575, 10-8-91, Cl. D11-200.000.
Cross, Gregory L.; and Cross, Wendell C., to Sun Company, Inc. Eyeglass sun visor. 320,609, 10-8-91, Cl. D16-110.000.
Cross, Wendell C.: *See—*
Cross, Gregory L.; and Cross, Wendell C., 320,609, Cl. D16-110.000.
Crossley, David W.: *See—*
Bernstein, Michael S.; Crossley, David W.; and Lerner, Michael I., 320,528, Cl. D6-333.000.
Daimler-Benz AG: *See—*
Gallitzendorfer, Joseph, 320,581, Cl. D12-37.000.
Delafon, Jacob: *See—*
Magnin, Maurice Y.; and Reid, Mary J., 320,519, Cl. D6-536.000.
Dempsey, Richard B. Swimming pool. 320,664, 10-8-91, Cl. D25-2.000.
Deremiah, James R. Combined pillow case and multiple pillow assembly. 320,522, 10-8-91, Cl. D6-601.000.
De Rocca Serra, Henri: *See—*
Pitiot, Roger; and De Rocca Serra, Henri, 320,496, Cl. D2-276.000.
Dubuque, Kenneth J.: *See—*
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; and Hix, Charles J., Jr., 320,540, Cl. D8-61.000.
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; Hix, Charles J., Jr.; and Gable, Duane S., 320,541, Cl. D8-61.000.
Dunn, Christopher J. Bicycle mud guard. 320,590, 10-8-91, Cl. D12-186.000.
Eckler, Christopher W. Weightlifting bar. 320,636, 10-8-91, Cl. D21-198.000
Edwards, Kenneth R. Attachment for a horse harness crupper. 320,679, 10-8-91, Cl. D30-138.000.
Emmons, Lawrence D.: *See—*
Auerbach, Marc; Emmons, Lawrence D.; and Patton, Douglas M., 320,598, Cl. D14-115.000.
Ericson, Doris. Wristwatch and strap. 320,566, 10-8-91, Cl. D10-32.000.
Fact Games, Ltd.: *See—*
Fortune, Frederick A.; and Bumb, Timothy, 320,626, Cl. D21-148.000
Fortune, Frederick A.; and Bumb, Timothy, 320,627, Cl. D21-155.000
Fortune, Frederick A.; and Bumb, Timothy, 320,628, Cl. D21-155.000
Fortune, Frederick A.; and Bumb, Timothy, 320,629, Cl. D21-155.000
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Fortune, Frederick A.; and Bumb, Timothy, 320,635, Cl. D21-179.000.
Fahrner, Charles J.: *See—*
Leff, Martin J.; Barrett, Edward E.; Carvell, William S.; and Fahrner, Charles J., 320,539, Cl. D8-50.000.
Fairhurst, Mark, to Fax-Pax Investments N.V. Display box. 320,556, 10-8-91, Cl. D9-414.000.
Falk, Kevin: *See—*
Holtan, Ramer B., Jr.; Bergman, James F.; Nelson, Kenneth E.; and Falk, Kevin, 320,608, Cl. D16-107.000.
Fastener Specialty, Inc.: *See—*
Jones, George R., 320,603, Cl. D14-238.000.
Fax-Pax Investments N.V.: *See—*
Fairhurst, Mark, 320,556, Cl. D9-414.000.
Fenne, Kenneth R., to Pittway Corporation. Light socket with passive infrared motion actuated switch. 320,595, 10-8-91, Cl. D13-158.000.
Ferino, Ferdinand H. Food server. 320,535, 10-8-91, Cl. D7-589.000
Fingerle, Robert F., to Paccar Inc. Fairing for the sleeper compartment of a truck cab. 320,582, 10-8-91, Cl. D12-96.000.
Finney, Lloyd M.; Zielinski, David J.; and Lawson, Steven R., to Continental Carlisle Inc. Food serving bowl. 320,534, 10-8-91, Cl. D7-560.000
Finney, Lloyd M.: *See—*
Zielinski, David J.; and Finney, Lloyd M., 320,532, Cl. D7-560.000.
Zielinski, David J.; and Finney, Lloyd M., 320,533, Cl. D7-560.000.
Fish, Thomas E., Jr.; Healy, Michael J.; Houry, Robert L.; and Pelfrey, Keith A., to Little Tikes Company, The. Toy basketball goal. 320,637, 10-8-91, Cl. D21-201.000.
Fleetwood Enterprises, Inc.: *See—*
Partin, Clayton D., 320,584, Cl. D12-100.000.
Fleming, Mark G., to Siddons Ramset Limited. Evaporator panel to be wrapped around a solar and other atmospheric energy sources hot water heater. 320,649, 10-8-91, Cl. D23-386.000.
Foreman, Philip C.; Wolters, Hendricus J.; and Amber, John M., to Resonex, Inc. Head imaging coil for magnetic resonance imaging apparatus. 320,660, 10-8-91, Cl. D24-158.000.

Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined reindeer figure plush toy and basket. 320,626, 10-8-91, Cl. D21-148.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined pumpkin figure plush toy and basket. 320,627, 10-8-91, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined nutcracker man figure plush toy and basket. 320,628, 10-8-91, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined rabbit figure plush toy and basket. 320,629, 10-8-91, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined snowman figure plush toy and basket. 320,630, 10-8-91, Cl. D21-155.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined duck figure plush toy and basket. 320,631, 10-8-91, Cl. D21-157.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined cat figure plush toy and basket. 320,632, 10-8-91, Cl. D21-163.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined ghost figure plush toy and basket. 320,633, 10-8-91, Cl. D21-166.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined clown figure plush toy and basket. 320,634, 10-8-91, Cl. D21-173.000.
Fortune, Frederick A.; and Bumb, Timothy, to Fact Games, Ltd. Combined Santa Claus figure plush toy and basket. 320,635, 10-8-91, Cl. D21-179.000.
Foster, Jerald J.; and Stapleton, Craig, to Huron/St. Clair Incorporated. Luggage carrier. 320,588, 10-8-91, Cl. D12-157.000.
Freville, Robert B.: *See—*
Sauter, Bruce M.; and Freville, Robert B., 320,537, Cl. D7-698.000.
Fritsch, Udo. Portable refrigerator, warmer, or the like. 320,606, 10-8-91, Cl. D15-83.000.
Fromageries Bresse-Bleu- Societe Laitiere Cooperative Agricole: *See—*
Chanel, Arthur, 320,552, Cl. D9-341.000.
Fukuda, Masaru: *See—*
Nagasaka, Yasuhiro; Harayama, Yasuo; Shibata, Ichiro; Sueyoshi, Tadahiro; Tsuji, Masanori; Murakami, Yoshihiro; Yamamoto, Takayuki; and Fukuda, Masaru, 320,594, Cl. D13-147.000.
Futrex, Inc.: *See—*
Nakai, Takashi, 320,662, Cl. D24-186.000.
Gable, Duane S.: *See—*
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; Hix, Charles J., Jr.; and Gable, Duane S., 320,541, Cl. D8-61.000.
Gallitzendorfer, Joseph, to Daimler-Benz AG. Passenger vehicle. 320,581, 10-8-91, Cl. D12-37.000.
General Foods Limited: *See—*
Newman, Alec T.; and Bentley, Charles A., 320,529, Cl. D7-399.000.
Newman, Alec T.; and Bentley, Charles A., 320,530, Cl. D7-399.000.
Geneve, Francois; Heiligenstein, Luc; and Melamed, Stephen, to Associated Mills Inc. Shower head with sponge attachment in place thereon. 320,642, 10-8-91, Cl. D23-223.000.
Georgopoulos, George, to Levolor Corporation. Universal hold down bracket for venetian blinds. 320,547, 10-8-91, Cl. D8-396.000.
Gilbert, Sylvain. Saw tooth. 320,543, 10-8-91, Cl. D8-70.000.
Glazer, Gdalia. Combined dispensing spout and handle for containers. 320,561, 10-8-91, Cl. D9-443.000.
Godinger Silver Art Co., Ltd.: *See—*
Carranza, Victor, 320,675, Cl. D28-91.000.
Goldberg, Irwin. Tennis height measuring rod. 320,569, 10-8-91, Cl. D10-70.000.
Goodwin, Percy E. Water filter. 320,640, 10-8-91, Cl. D23-209.000.
Goott, Bernard: *See—*
Quigley, Patrick C.; Quigley, Timothy C.; and Goott, Bernard, 320,658, Cl. D24-135.000.
Green, David T.; McGarry, Richard A.; and Rawson, Paul O., to United States Surgical Corporation. Surgical clip applicator. 320,654, 10-8-91, Cl. D24-145.000.
Grey, Jonathan, to Smallbone PLC. Cupboard. 320,516, 10-8-91, Cl. D6-446.000
Grotsch, Gerald, to J. S. Staedtler GmbH & Co. Writing and drawing instrument. 320,618, 10-8-91, Cl. D19-48.000
Guetle, Norbert J., Jr., to Pease Industries, Inc. Top light panel. 320,665, 10-8-91, Cl. D25-103.000
Hadzoglou, James: *See—*
Hutchison, David A.; and Hadzoglou, James, 320,604, Cl. D14-238.000.
Haines, Linda J. Collapsible jewelry closet or the like. 320,502, 10-8-91, Cl. D3-75.000.
Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 320,508, Cl. D6-368.000.
Handley, Donald F. Bird feeder. 320,678, 10-8-91, Cl. D30-124.000.
Harada Kogyo Kabushiki Kaisha: *See—*
Harada, Shoji, 320,601, Cl. D14-234.000.
Harada, Shoji, to Harada Kogyo Kabushiki Kaisha. Automobile antenna. 320,601, 10-8-91, Cl. D14-234.000.
Harayama, Yasuo: *See—*
Nagasaka, Yasuhiro; Harayama, Yasuo; Shibata, Ichiro; Sueyoshi, Tadahiro; Tsuji, Masanori; Murakami, Yoshihiro; Yamamoto, Takayuki; and Fukuda, Masaru, 320,594, Cl. D13-147.000.
Hardman, Ronald P. Ornaments for toilet flush handles. 320,646, 10-8-91, Cl. D23-251.000.
Hatagishi, Yuji: *See—*
Nagasaka, Yasuhiro; and Hatagishi, Yuji, 320,593, Cl. D13-147.000.
Hatfield, Tinker L., to Nike, Inc.; and Nike International Ltd. Shoe upper. 320,498, 10-8-91, Cl. D2-314.000.
Haugen, Ronald E.; and Murphy, David T., to Vix Design Products, Inc. Tire spreader. 320,617, 10-8-91, Cl. D15-199.000.
Healy, Michael J.: *See—*
Fish, Thomas E., Jr.; Healy, Michael J.; Houry, Robert L.; and Pelfrey, Keith A., 320,637, Cl. D21-201.000.
Heiligenstein, Luc: *See—*
Geneve, Francois; Heiligenstein, Luc; and Melamed, Stephen, 320,642, Cl. D23-223.000.
Herman Miller, Inc.: *See—*
Ivicevic, Dragomir N., 320,510, Cl. D6-379.000.
Hess, Stephen C., to Winston Furniture Company of Alabama, Inc. Chair frame. 320,511, 10-8-91, Cl. D6-379.000.
Hewlett-Packard Co.: *See—*
Berry, James E.; Kerschner, Ronald K.; and Kent, Lisa M., 320,684, Cl. D34-29.000.
Hix, Charles J., Jr.: *See—*
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; and Hix, Charles J., Jr., 320,540, Cl. D8-61.000.
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; Hix, Charles J., Jr.; and Gable, Duane S., 320,541, Cl. D8-61.000.
Hoenig, David, to Revlon, Inc. Cosmetic mascara product and transparent container therefor. 320,671, 10-8-91, Cl. D28-7.000.
Holtan, Ramer B., Jr.; Bergman, James F.; Nelson, Kenneth E.; and Falk, Kevin. Combined adjustable sunglasses and headband. 320,608, 10-8-91, Cl. D16-107.000.
Horita, Yoshiyuki: *See—*
Terada, Yasuharu; and Horita, Yoshiyuki, 320,577, Cl. D11-221.000.
Houry, Robert L.: *See—*
Fish, Thomas E., Jr.; Healy, Michael J.; Houry, Robert L.; and Pelfrey, Keith A., 320,637, Cl. D21-201.000.
Huang, Chien-Teh. Adjustable floor-level-setting unit. 320,685, 10-8-91, Cl. D34-31.000.
Huron/St. Clair Incorporated: *See—*
Foster, Jerald J.; and Stapleton, Craig, 320,588, Cl. D12-157.000.
Hutchinson, Franklin D.: *See—*
Schmidt, William P.; and Hutchinson, Franklin D., 320,591, Cl. D12-187.000.
Hutchison, David A.; and Hadzoglou, James, to Orion Industries, Inc. Cover for an antenna base. 320,604, 10-8-91, Cl. D14-238.000.
Hyundai Precision & Ind. Co., Ltd.: *See—*
Kim, Deok J., 320,580, Cl. D12-16.000.
Index Measuring Tape Company Ltd.: *See—*
Lin, Henry, 320,570, Cl. D10-72.000.
Ingersoll-Rand Company: *See—*
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; and Hix, Charles J., Jr., 320,540, Cl. D8-61.000.
Staubitz, Robert B.; Albert, Gregory P.; Dubuque, Kenneth J.; Hix, Charles J., Jr.; and Gable, Duane S., 320,541, Cl. D8-61.000.
Innocorp Manufacturing, Inc.: *See—*
Kapp, Gregory W.; and Ives, Michael L., 320,587, Cl. D12-155.000.
InterMetro Industries Corp.: *See—*
Welch, Robert J., 320,683, Cl. D34-19.000.
Ives, Michael L.: *See—*
Kapp, Gregory W.; and Ives, Michael L., 320,587, Cl. D12-155.000.
Ivicevic, Dragomir N., to Herman Miller, Inc. Chair. 320,510, 10-8-91, Cl. D6-379.000.
J. S. Staedtler GmbH & Co.: *See—*
Grotsch, Gerald, 320,618, Cl. D19-48.000.
Jiang, Jy-Cheng. Travel case. 320,503, 10-8-91, Cl. D3-76.000
Johansson, Ole H.; and Capriotti, Robert J. Nasal implant. 320,659, 10-8-91, Cl. D24-155.000.
John Manufacturing Limited: *See—*
Yuen, John S., 320,600, Cl. D14-168.000.
Johnson, Michael W.; and Johnson, Susan M. Smoke container for smokers. 320,670, 10-8-91, Cl. D27-172.000.
Johnson, Susan M.: *See—*
Johnson, Michael W.; and Johnson, Susan M., 320,670, Cl. D27-172.000.
Jones, George R., to Fastener Specialty, Inc. Antenna mount. 320,603, 10-8-91, Cl. D14-238.000.
Jones, Paul W.; and Paull, Mike M., to Physio-Control Corporation. Combined defibrillator, ECG monitor and recorder. 320,653, 10-8-91, Cl. D24-167.000.
Kapp, Gregory W.; and Ives, Michael L., to Innocorp Manufacturing, Inc. Overhead console. 320,587, 10-8-91, Cl. D12-155.000
Kelley, Craig B.; Boucher, Val G.; and Rytter, Noel J., to Caterpillar, Inc. Multi-purpose control handle. 320,589, 10-8-91, Cl. D12-179.000.
Kent, Lisa M.: *See—*
Berry, James E.; Kerschner, Ronald K.; and Kent, Lisa M., 320,684, Cl. D34-29.000.
Kerschner, Ronald K.: *See—*
Berry, James E.; Kerschner, Ronald K.; and Kent, Lisa M., 320,684, Cl. D34-29.000.
Kim, Deok J., to Hyundai Precision & Ind. Co., Ltd. Golf car. 320,580, 10-8-91, Cl. D12-16.000.
Klawitter, Ronald R., to Handi-Pac, Inc. Child's molded chair. 320,508, 10-8-91, Cl. D6-368.000.
Knapp, Alfons; and Wittum, Daniel E., to Masco Corporation of Indiana. Faucet. 320,645, 10-8-91, Cl. D23-238.000.

Kohler Co.: *See—*
Sauter, Bruce M.; and Freville, Robert B., 320,537, Cl. D7-698.000.
Koide, Masaki, to Casio Computer Co., Ltd. Electronic musical keyboard. 320,613, 10-8-91, Cl. D17-1.000.
Kuhnel, Erika. Holder for school supplies. 320,500, 10-8-91, Cl. D3-30.100.
Kujawa, Matthew; and Otts, Paul J., to Carrier Corporation. Sidewall vent terminal cover. 320,650, 10-8-91, Cl. D23-393.000.
Kumagai, Akira; and Kumagai, Hitoshi. Gas mask. 320,677, 10-8-91, Cl. D29-7.000.
Kumagai, Hitoshi: *See—*
Kumagai, Akira; and Kumagai, Hitoshi, 320,677, Cl. D29-7.000.
Lacount, Clifford E.; and Macdonald, Peter S., to Wang Laboratories, Inc. Computer keyboard housing. 320,597, 10-8-91, Cl. D14-115.000.
Lam, Ka-Duk, to Sealand Industrial Co., Ltd. Massager. 320,656, 10-8-91, Cl. D24-214.000.
Larsen Electronics, Inc.: *See—*
Wells, Alex F.; and Phemister, David M., 320,602, Cl. D14-238.000.
Lawson, Steven R.: *See—*
Finney, Lloyd M.; Zielinski, David J.; and Lawson, Steven R., 320,534, Cl. D7-560.000.
Leff, Martin J.; Barrett, Edward E.; Carvell, William S.; and Fahrner, Charles J., to Swingline Inc. Home/office stapler. 320,539, 10-8-91, Cl. D8-50.000.
Lendrum, John R. Guitar body. 320,615, 10-8-91, Cl. D17-14.000.
Lerner, Michael I.: *See—*
Bernstein, Michael S.; Crossley, David W.; and Lerner, Michael I., 320,528, Cl. D6-333.000.
Levolor Corporation: *See—*
Georgopoulos, George, 320,547, Cl. D8-396.000.
Levy, David. Holder for flexible sheet material. 320,620, 10-8-91, Cl. D19-90.000.
Lewis, Sally S. Chaise lounge. 320,509, 10-8-91, Cl. D6-361.000.
Lin, Henry, to Index Measuring Tape Company Ltd. Multiplex measuring tape. 320,570, 10-8-91, Cl. D10-72.000.
Little Tikes Company, The: *See—*
Fish, Thomas E., Jr.; Healy, Michael J.; Houry, Robert L.; and Pelfrey, Keith A., 320,637, Cl. D21-201.000.
Macdonald, Peter S.: *See—*
Lacount, Clifford E.; and Macdonald, Peter S., 320,597, Cl. D14-115.000.
Magnin, Maurice Y.; and Reid, Mary J., to Delafon, Jacob. Soap dish. 320,519, 10-8-91, Cl. D6-536.000.
Manning, Robert M.; and Manning, Suzan M. Motorized invalid chair transport vehicle. 320,579, 10-8-91, Cl. D12-1.000.
Manning, Suzan M.: *See—*
Manning, Robert M.; and Manning, Suzan M., 320,579, Cl. D12-1.000.
Manville Forest Products Corporation: *See—*
Schuster, Richard L., 320,557, Cl. D9-418.000.
Marks, Victoria L. Combined back pack and doll. 320,501, 10-8-91, Cl. D3-32.000.
Masco Corporation of Indiana: *See—*
Knapp, Alfons; and Wittum, Daniel E., 320,645, Cl. D23-238.000.
McClenahan, R. Graham; and Baker, Weldon K. Fishing lure. 320,639, 10-8-91, Cl. D22-126.000.
McCord, Wilfred M., Jr., to Vermont American Corporation. Rounded cup hook driver. 320,542, 10-8-91, Cl. D8-70.000.
McGarry, Richard A.: *See—*
Green, David T.; McGarry, Richard A.; and Rawson, Paul O., 320,654, Cl. D24-145.000.
McKellar, Kelly; and Pozzebon, Robert. Carton. 320,549, 10-8-91, Cl. D9-311.000.
McLin, Kenneth G., to Procter & Gamble Company, The. Bottle. 320,553, 10-8-91, Cl. D9-376.000.
Mechanical Products, Inc.: *See—*
Sdunek, Bruce C., 320,596, Cl. D13-174.000.
Melamed, Stephen: *See—*
Geneve, Francois; Heiligenstein, Luc; and Melamed, Stephen, 320,642, Cl. D23-223.000.
Mermillod, Jean-Francois, to Salomon, S. A. Golf club putter head. 320,638, 10-8-91, Cl. D21-219.000.
Meryman, Roy L.: *See—*
Simons, Wayne K.; Richardson, Donald A.; and Meryman, Roy L., 320,583, Cl. D12-96.000.
Mitsubishi Electric Sales America, Inc.: *See—*
Auerbach, Marc; Emmons, Lawrence D.; and Patton, Douglas M., 320,598, Cl. D14-115.000.
Modern Faucet Mfg. Co.: *See—*
Stansbury, Benjamin H., Jr., 320,643, Cl. D23-226.000.
Montis B.V.: *See—*
Van Den Berg, Gerard, 320,512, Cl. D6-381.000.
Moorehead, John D. R. Ankle support. 320,657, 10-8-91, Cl. D24-192.000.
Mroczka, Leonard. Combined tackle and bait container. 320,504, 10-8-91, Cl. D3-104.000.
Mulberry Company (Design) Limited: *See—*
Saul, Roger, 320,505, Cl. D5-32.000.
Murakami, Yoshihiro: *See—*
Nagasaka, Yasuhiro; Harayama, Yasuo; Shibata, Ichiro; Sueyoshi, Tadahiro; Tsuji, Masanori; Murakami, Yoshihiro; Yamamoto, Takayuki; and Fukuda, Masaru, 320,594, Cl. D13-147.000.
Murphy, David T.: *See—*
Haugen, Ronald E.; and Murphy, David T., 320,617, Cl. D15-199.000.
Nagasaka, Yasuhiro; and Hatagishi, Yuji, to Yazaki Corporation. Electrical connector housing. 320,593, 10-8-91, Cl. D13-147.000.
Nagasaka, Yasuhiro; Harayama, Yasuo; Shibata, Ichiro; Sueyoshi, Tadahiro; Tsuji, Masanori; Murakami, Yoshihiro; Yamamoto, Takayuki; and Fukuda, Masaru, to Yazaki Corporation. Electrical connector housing. 320,594, 10-8-91, Cl. D13-147.000.
Nakai, Takashi, to Futrex, Inc. Combined body composition measurer and cover therefor for determining body fat. 320,662, 10-8-91, Cl. D24-186.000.
Nasser, Frederick S. Fabric. 320,506, 10-8-91, Cl. D5-62.000.
NEFAB AB: *See—*
Olssen, Elov, 320,546, Cl. D8-389.000.
Nelson, Kenneth E.: *See—*
Holtan, Ramer B., Jr.; Bergman, James F.; Nelson, Kenneth E.; and Falk, Kevin, 320,608, Cl. D16-107.000.
Newman, Alec T.; and Bentley, Charles A., to General Foods Limited. Package-filter combination for a beverage preparation machine or the like. 320,529, 10-8-91, Cl. D7-399.000.
Newman, Alec T.; and Bentley, Charles A., to General Foods Limited. Package-filter combination for a beverage preparation machine or the like. 320,530, 10-8-91, Cl. D7-399.000.
Nike, Inc.: *See—*
Hatfield, Tinker L., 320,498, Cl. D2-314.000.
Nike International Ltd.: *See—*
Hatfield, Tinker L., 320,498, Cl. D2-314.000.
Ocepek, Paul B., to Thomson Consumer Electronics, Inc. Telephone answering machine. 320,599, 10-8-91, Cl. D14-141.000.
Ohki, Yuji, to Casio Computer Co., Ltd. Electronic musical keyboard. 320,612, 10-8-91, Cl. D17-1.000.
Olson, Luverne C. Jar lid. 320,559, 10-8-91, Cl. D9-439.000.
Olssen, Elov, to NEFAB AB. Locking fasteners. 320,546, 10-8-91, Cl. D8-389.000.
Ono, Junichi, to Casio Computer Co., Ltd. Electronic musical keyboard. 320,611, 10-8-91, Cl. D17-1.000.
Ono, Junichi, to Casio Computer Co., Ltd. Electronic musical keyboard. 320,614, 10-8-91, Cl. D17-1.000.
Orion Industries, Inc.: *See—*
Hutchison, David A.; and Hadzoglou, James, 320,604, Cl. D14-238.000.
Otts, Paul J.: *See—*
Kujawa, Matthew; and Otts, Paul J., 320,650, Cl. D23-393.000.
Paccar Inc.: *See—*
Fingerle, Robert F., 320,582, Cl. D12-96.000.
Simons, Wayne K.; Richardson, Donald A.; and Meryman, Roy L., 320,583, Cl. D12-96.000.
Pallesen, Steven A. Pet food biscuit. 320,495, 10-8-91, Cl. D1-110.000.
Panaggio, Michael J. Waterproof lighter container. 320,669, 10-8-91, Cl. D27-144.000.
Partecipazioni Bulgari S.p.A.: *See—*
Bulgari, Paolo, 320,572, Cl. D11-16.000.
Bulgari, Paolo, 320,573, Cl. D11-76.000.
Partin, Clayton D., to Fleetwood Enterprises, Inc. Combined front panel and bumper unit exterior surface. 320,584, 10-8-91, Cl. D12-100.000.
Patten, Leslie; and Patten, Terry. Biocircuit. 320,655, 10-8-91, Cl. D24-200.000.
Patten, Terry: *See—*
Patten, Leslie; and Patten, Terry, 320,655, Cl. D24-200.000.
Patton, Douglas M.: *See—*
Auerbach, Marc; Emmons, Lawrence D.; and Patton, Douglas M., 320,598, Cl. D14-115.000.
Paull, Mike M.: *See—*
Jones, Paul W.; and Paull, Mike M., 320,653, Cl. D24-167.000.
Pease Industries, Inc.: *See—*
Guetle, Norbert J., Jr., 320,665, Cl. D25-103.000.
Pelfrey, Keith A.: *See—*
Fish, Thomas E., Jr.; Healy, Michael J.; Houry, Robert L.; and Pelfrey, Keith A., 320,637, Cl. D21-201.000.
Perry, Joseph S. Carrier for cleaning equipment or the like. 320,687, 10-8-91, Cl. D34-44.000.
Phemister, David M.: *See—*
Wells, Alex F.; and Phemister, David M., 320,602, Cl. D14-238.000.
Physio-Control Corporation: *See—*
Jones, Paul W.; and Paull, Mike M., 320,653, Cl. D24-167.000.
Pinkston, Powell U. Back scratching device. 320,674, 10-8-91, Cl. D28-63.000.
Pitiot, Roger; and De Rocca Serra, Henri, to Salomon S.A. Alpine ski boot. 320,496, 10-8-91, Cl. D2-276.000.
Pittway Corporation: *See—*
Fenne, Kenneth R., 320,595, Cl. D13-158.000.
Pozzebon, Robert: *See—*
McKellar, Kelly; and Pozzebon, Robert, 320,549, Cl. D9-311.000.
Procter & Gamble Company, The: *See—*
McLin, Kenneth G., 320,553, Cl. D9-376.000.
Proteo S.p.A.: *See—*
Arturo, Ricci, 320,550, Cl. D9-367.000.
Quigley, Patrick C.; Quigley, Timothy C.; and Goott, Bernard, to Adept-Med International, Inc. Surgical retractor. 320,658, 10-8-91, Cl. D24-135.000.
Quigley, Timothy C.: *See—*
Quigley, Patrick C.; Quigley, Timothy C.; and Goott, Bernard, 320,658, Cl. D24-135.000.
Ramos, Sergio O. Bottle. 320,555, 10-8-91, Cl. D9-407.000.
Rawson, Paul O.: *See—*
Green, David T.; McGarry, Richard A.; and Rawson, Paul O., 320,654, Cl. D24-145.000.

Ray, Terence J. Alarm unit housing. 320,571, 10-8-91, Cl. D10-106.000.
Reid, Mary J.: *See—*
Magnin, Maurice Y.; and Reid, Mary J., 320,519, Cl. D6-536.000.
Resonex, Inc.: *See—*
Foreman, Philip C.; Wolters, Hendricus J.; and Amber, John M., 320,660, Cl. D24-158.000.
Revlon, Inc.: *See—*
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Richardson, Donald A.: *See—*
Simons, Wayne K.; Richardson, Donald A.; and Meryman, Roy L., 320,583, Cl. D12-96.000
Roberts, Thomas L.: *See—*
Brester, Robert R.; and Roberts, Thomas L., 320,562, Cl. D9-452.000.
Rubins, Tye. Set of chessman. 320,625, 10-8-91, Cl. D21-52.000.
Rytter, Noel J.: *See—*
Kelley, Craig B.; Boucher, Val G.; and Rytter, Noel J., 320,589, Cl. D12-179.000.
Safety Signals, Inc.: *See—*
Brandon, Wesley P., 320,666, Cl. D26-31.000.
Safety 1st, Inc.: *See—*
Bernstein, Michael S.; Crossley, David W.; and Lerner, Michael I., 320,528, Cl. D6-333.000.
St. Ives Laboratories, Inc.: *See—*
Van Dine, Robert; and Boyle, John L., 320,554, Cl. D9-403.000.
Salomon, S. A.: *See—*
Mermillod, Jean-Francois, 320,638, Cl. D21-219.000.
Salomon S.A.: *See—*
Pitiot, Roger; and De Rocca Serra, Henri, 320,496, Cl. D2-276.000.
Sandt, Jean. Mop head storage container. 320,518, 10-8-91, Cl. D6-512.000
Saul, Roger, to Mulberry Company (Design) Limited. Woven fabric. 320,505, 10-8-91, Cl. D5-32.000.
Sauter, Bruce M.; and Freville, Robert B., to Kohler Co. Cutting board or the like. 320,537, 10-8-91, Cl. D7-698.000
Scaramucci, John P. Swing check valve. 320,644, 10-8-91, Cl. D23-237.000
Schechter, Alvin H., to Coca-Cola Company, The. Beverage dispenser. 320,524, 10-8-91, Cl. D7-308.000.
Schleeh, Reinhold; Cerv, Gudrun; and Wehrhoff, Anke, to Schwan-Stabilo Schwanhaeusser GmbH & Co. Holder for assorted desk articles. 320,619, 10-8-91, Cl. D19-78.000.
Schmidt, William P.; and Hutchinson, Franklin D. Vehicular mirror. 320,591, 10-8-91, Cl. D12-187.000.
Schuster, Richard L., to Manville Forest Products Corporation. Carton with partially open ends. 320,557, 10-8-91, Cl. D9-418.000.
Schwan-Stabilo Schwanhaeusser GmbH & Co.: *See—*
Schleeh, Reinhold; Cerv, Gudrun; and Wehrhoff, Anke, 320,619, Cl. D19-78.000.
Schweitzer, Ronald D., to White Consolidated Industries, Inc. Sub-top for a gas range. 320,531, 10-8-91, Cl. D7-402.000.
Sciarrino, Joseph T. Alarmed latch assembly for a sliding door. 320,545, 10-8-91, Cl. D8-339.000.
Sdunek, Bruce C., to Mechanical Products, Inc. Manual operator for circuit breaker. 320,596, 10-8-91, Cl. D13-174.000.
Sealand Industrial Co., Ltd.: *See—*
Lam, Ka-Duk, 320,656, Cl. D24-214.000.
Seikosha Co., Ltd.: *See—*
Takashima, Asao, 320,565, Cl. D10-10.000
Sharkey, John F., to Blend, Robert. Combined clock and calendar. 320,564, 10-8-91, Cl. D10-3.000.
Shibata, Ichiro: *See—*
Nagasaka, Yasuhiro; Harayama, Yasuo; Shibata, Ichiro; Sueyoshi, Tadahiro; Tsuji, Masanori; Murakami, Yoshihiro; Yamamoto, Takayuki; and Fukuda, Masaru, 320,594, Cl. D13-147.000.
Shields, Michael R., to Brayton International Collection. Chair. 320,507, 10-8-91, Cl. D6-366.000.
Siddons Ramset Limited: *See—*
Fleming, Mark G., 320,649, Cl. D23-386.000.
Silbernagel, Bryan D. Container holder. 320,536, 10-8-91, Cl. D7-619.000.
Silverman, Cyril I. Aerosol fire extinguisher. 320,676, 10-8-91, Cl. D29-2.000
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CLASS 137
43 5,054,508
68.1 5,054,509
199 5,054,510

224 5,054,511
317 5,054,512
375 5,054,513
377 5,054,523
454 2 5,054,514
454 5 5,054,515
504 5,054,516
513 5 5,054,517
516.27 5,054,518
563 5,054,519
587 5,054,520
625 31 5,054,521
625 33 5,054,522

CLASS 139

383 A 5,054,525
383 R 5,054,524

CLASS 141

1 5,054,526
39 5,054,527
59 5,054,528
312 5,054,529

CLASS 148

11.5 R 5,055,143
101 5,055,142
129 5,055,144
285 5,055,145
302 5,055,146
428 5,055,147

CLASS 152

209 A 5,054,530
527 5,054,531
5,054,532

CLASS 156

96 5,055,148
124 5,055,149
150 5,055,150
167 5,055,151
244 11 5,055,152
252 5,055,153
256 5,055,154
5,055,155
499 5,055,156
620 7 5,055,157
643 5,055,158

CLASS 160

38 5,054,535
84 1 5,054,534
229 1 5,054,536
302 5,054,533

CLASS 162

72 5,055,159
103 5,055,160
125 5,055,161

CLASS 164

34 5,054,537
154 5,054,538
457 5,054,539

CLASS 165

10 5,054,540
45 5,054,541
58 5,054,542
89 5,054,543
104 12 5,054,544
104 33 5,054,545
110 5,054,546
115 5,054,547
133 5,054,548
5,054,549

CLASS 166

78 5,054,550
272 5,054,551
278 5,054,552
5,054,553
280 5,054,554
298 5,054,555
302 5,054,556
306 5,054,557
372 5,054,558

CLASS 172

59 5,054,559
248 5,054,560
674 5,054,561

CLASS 173

139 5,054,562
163 5,054,563

CLASS 174

36 5,055,635
87 5,055,636
260 5,055,637

CLASS 175

4.6 5,054,564
19 5,054,565

CLASS 177

184 5,054,566

CLASS 180

68.2 5,054,567
140 5,054,568
167 5,054,569
170 5,054,570
219 5,054,571
224 5,054,572
244 5,054,573
268 5,054,574
354 5,054,575

CLASS 182

3 5,054,576
5 5,054,577
63 5,054,578
107 5,054,579
179 5,054,580
206 5,054,581

CLASS 184

3 2 5,054,582
6 26 5,054,583
55.1 5,054,584

CLASS 187

124 5,054,585

CLASS 188

79 55 5,054,586
267 5,054,587

CLASS 190

18 A 5,054,589

CLASS 191

22 DM 5,055,638

CLASS 192

0 032 Re.33,713
0 034 5,054,588
3.3 5,054,590
3 63 5,054,591
8 R 5,054,592
21.5 5,054,593
35 5,054,594
53 F 5,054,595
58 B 5,054,596
70 25 5,054,597
70 27 5,054,598
85 R 5,054,599

CLASS 198

345 2 5,054,600
365 5,054,601
370 5,054,602
382 5,054,603
444 5,054,604
750 5,054,605
751 5,054,606
813 5,054,607
816 5,054,608
852 5,054,609

CLASS 200

81.9 M 5,055,641
144 B 5,055,639
5,055,640
293 5,055,642
318 2 5,055,643
325 5,055,644
331 5,055,645
507 5,055,646

CLASS 203

56 5,055,162

CLASS 204

11 5,055,163
15 5,055,164
47.5 5,055,173
147 5,055,165
5,055,166
165 5,055,167
181.7 5,055,168
192.31 5,055,169
228 5,055,170
290 R 5,055,171
299 R 5,055,172

CLASS 206

5 1 5,054,610
45.28 5,054,611
233 5,054,612
325 5,054,613
343 5,054,614
373 5,054,615
393 5,054,616
509 5,054,617
605 5,054,618
610 5,054,619

CLASS 208

112 5,055,174
5,055,175
120 5,055,176
161 5,055,177
188 5,055,178
254 R 5,055,179
402 5,055,180
421 5,055,181

CLASS 209

3.1 5,054,620
148 5,055,182
534 5,054,621

CLASS 210

085 5,055,183
109 5,055,184
123 5,055,185
150 5,055,186
172 5,055,187
222 5,055,188
5,055,189
5,055,190
242.3 5,055,191
346 5,055,192
601 5,055,193
635 5,055,194
638 5,055,195
5,055,196
5,055,197
650 5,055,198
684 5,055,199
726 5,055,200
727 5,055,201
739 5,055,202
741 5,055,203
758 5,055,204
784 5,055,205
805 5,055,207

CLASS 211

2 5,054,622
11 5,054,623
13 5,054,624
5,054,625
40 5,054,626
94 5,054,627
104 5,054,628
128 5,054,629

CLASS 213

56 5,054,630

CLASS 215

1 A 5,054,631
1 C 5,054,632
220 5,054,633
322 5,054,634

CLASS 219

10.43 5,055,647
10 77 5,055,648
69 12 5,055,649
69.15 5,055,650
121 64 5,055,652
121 68 5,055,651
121.75 5,055,653
136 5,055,654
145 22 5,055,655
209 5,055,656

CLASS 220

4.15 5,054,635
23.4 5,054,636
85 H 5,054,638
90 2 5,054,639
5,054,640
270 5,054,641
276 5,054,642
335 5,054,643
403 5,054,644
445 5,054,645
660 5,054,637

CLASS 221

26 5,054,646
41 5,054,647
185 5,054,648
248 5,054,649

CLASS 222

1 5,054,650
5,054,651
5,054,652
28 5,054,653
146.6 5,054,654
153 5,054,655
158 5,054,656
162 5,054,657
232 5,054,658
321 5,054,659
454 5,054,660
465.1 5,054,661
531 5,054,662
5,054,663
590 5,054,664
598 5,054,665

CLASS 223

88 5,054,666
116 5,054,667

CLASS 224

42.42 5,054,668
42.45 R 5,054,669
191 5,054,670
192 5,054,671
252 5,054,672
324 5,054,673

CLASS 225

6 5,054,674
20 5,054,675
42 5,054,676
106 5,054,677

CLASS 227

8 5,054,678

CLASS 228

17.5 5,054,679
104 5,054,680
191 5,054,681
194 5,054,682
198 5,054,683

CLASS 229

103.1 5,054,684

CLASS 232

17 5,054,685

CLASS 235

381 5,055,657
382 5,055,658
439 5,055,659
472 5,055,660
492 5,055,661
5,055,662

CLASS 236

49.3 5,054,686

CLASS 239

373 5,054,687
407 5,054,688
412 5,054,689
542 5,054,690
585 5,054,691
589 5,054,692
681 5,054,693

CLASS 241

24 5,054,694
30 5,054,695
34 5,054,696
61 5,054,697
82 6 5,054,698
101 2 5,054,699
101 4 5,054,700
167 5,054,701
230 5,054,702
296 5,054,703

CLASS 242

1 5,054,704
42 5,054,705
55 200 5,054,706
64 5,054,707
67.10 R 5,054,708
71.8 5,054,709
74 5,054,710
201 5,054,711

CLASS 244

3 22 5,054,712
12 2 5,054,713
50 5,054,714
54 5,054,715
56 5,054,716
110 F 5,054,717
155 A 5,054,718
164 5,054,719
199 5,054,720
903 5,054,721

CLASS 246

126 5,054,722

CLASS 248

65 5,054,723
74.5 5,054,741
97 5,054,724
123.1 5,054,725
206 5 5,054,726
215 5,054,735
220 3 5,054,727
220 4 5,054,728
225 31 5,054,729
231.2 5,054,730
309.1 5,054,732
313 5,054,733
316.5 5,054,734
444 5,054,736
515 5,054,737
538 5,054,738
550 5,054,739
675 5,054,740

CLASS 250

201 4 5,055 663
5,055,664
201.7 5,055,665
206 1 5,055,666
208 1 5,055,667
208 2 5,055,668
214 AL 5,055,669
223 R 5,055,670
227 21 5,055,671
233 5,055,673
251 5,055,672
255 5,055,674
262 5,055,675
270 5,055,676
282 5,055,677
291 5,055,678
306 5,055,679
5,055,680
327.2 5,055,681
5,055,682
334 5,055,683
339 5,055,684
342 5,055,685
343 5,055,690
344 5,055,688
349 5,055,689
363 09 5,055,687
370 01 5,055,686
370.07 5,055,691
372 5,055,692
436 5,055,693
458 1 5,055,694
459 1 5,055,695
492 2 5,055,696
504 R 5,055,697
574 5,055,698
577 5,055,699

CLASS 251

129.19 5,054,742
149.6 5,054,743

CLASS 252

8 5,055,208
8.51 5,055,209
32 5,055,210
42.7 5,055,211
48 6 5,055,212
51.5 A 5,055,213
62 57 5,055,214
90 5,055,215
91 5,055,216
94 5,055,217
5,055,218
102 5,055,219
299 01 5,055,220
299 61 5,055,221
5,055,222
299.62 5,055,223
299.63 5,055,224
299 65 5,055,225
301.4 R 5,055,226
301.6 S 5,055,227
312 5,055,228
321 5,055,229
389 62 5,055,230
391 5,055,231
547 5,055,232
5,055,233
609 5,055,235
626 5,055,236
631 5,055,237

CLASS 254

228 5,054,744
325 5,054,745

CLASS 261

35 5,055,238
112.2 5,055,239

CLASS 264

5 5,055,240
8 5,055,241
22 5,055,242
29.1 5,055,243
40.3 5,055,244
40 6 5,055,245
81 5,055,246
109 5,055,247
200 5,056,004
210.3 5,055,248
236 5,055,249
263 5,055,252
297.2 5,055,250
313 5,055,251

CLASS 266

114 5,054,746
205 5,054,747
208 5,054,748
220 5,054,749
237 5,054,750

CLASS 267

103 5,054,751
140.1 5,054,752
153 5,054,753
159 5,054,754

CLASS 269

3 5,054,755
48 1 5,054,756

CLASS 270

45 5,054,757
52.5 5,054,758

CLASS 271

22 5,054,759
69 5,054,760
95 5,054,761
162 5,054,762
182 5,054,763
189 5,054,764
213 5,054,765
221 5,054,766
272 5,054,767
291 5,054,768
306 5,054,769

CLASS 272

70 5,054,770
73 5,054,771
75 5,054,772
118 5,054,773
130 5,054,774

CLASS 273

13 5,054,776
32 B 5,054,777
58 G 5,054,778
73 D 5,054,779
73 R 5,054,780
80 B 5,054,781
143 R 5,054,782
148 A 5,054,783
167 E 5,054,784
184 R 5,054,785
200 R 5,054,786
272 5,054,788
288 5,054,789
326 5,054,790
369 5,054,787
396 5,054,791
408 5,054,792
431 5,054,775

CLASS 277

1 5,054,793
5,054,794
234 5,054,795

CLASS 279

60 5,054,796

CLASS 280

11.28 5,054,797
16 5,054,798
164.1 5,054,799
204 5,054,800
261 5,054,801
279 5,054,802
301 5,054,803
435 5,054,804
475 5,054,805
495 5,054,806
607 5,054,807
707 5,054,808
5,054,809
734 5,054,810
742 5,054,811
764.1 5,054,812
772 5,054,813
803 5,054,814
808 5,054,815

CLASS 281

42 5,054,816

CLASS 283

66.1 5,054,817

CLASS 285

137.1 5,054,818
179 5,054,819
197 5,054,820
321 5,054,821
330 5,054,822
363 5,054,823
369 5,054,824

CLASS 290

31 5,055,700

CLASS 292

92 5,054,825
125 5,054,826
216 5,054,827

CLASS 294

1.3 5,054,828
19.1 5,054,829

5 5,054,830
61 5,054,831
86.3 5,054,832
5,054,833
87.1 5,054,834
99.2 5,054,835
116 5,054,836

CLASS 296

24.1 5,054,837
97.1 5,054,839
98 5,054,840
165 5,054,841
191 5,054,842
5,054,843
198 5,054,844
218 5,054,846
219 5,054,847

CLASS 297

39 5,054,848
45 5,054,849
84 5,054,850
136 5,054,851
172 5,054,852
216 5,054,845
250 5,054,853
284 5,054,854
395 5,054,855
408 5,054,856
423 5,054,857

CLASS 299

81 5,054,858

CLASS 301

108 R 5,054,859

CLASS 303

92 5,054,860
110 5,054,861

CLASS 307

10.2 5,055,701
29 5,055,702
64 5,055,703
66 5,055,704
265 5,055,706
269 5,055,707
270 5,055,708
279 5,055,709
296.4 5,055,705
303.1 5,055,710
362 5,055,711
443 5,055,713
5,055,714
5,055,715
446 5,055,716
463 5,055,717
465 5,055,712
5,055,718
491 5,055,719
530 5,055,720
570 5,055,721
5,055,722
581 5,055,723

CLASS 310

11 5,055,724
14 5,055,725
71 5,055,726
78 5,055,727
91 5,055,728
214 5,055,729
237 5,055,730
309 5,055,731
323 5,055,732
328 5,055,733
366 5,055,734

CLASS 312

100 5,054,862
111 5,054,863
328 5,054,864

CLASS 313

25 5,055,735
402 5,055,736
490 5,055,738
507 5,055,739
524 5,055,737
634 5,055,740

CLASS 315

39 5,055,741
94 5,055,742
111.51 5,055,743
169.1 5,055,744
226 5,055,745
291 5,055,746
307 5,055,747
335 5,055,748
368 R 5,055,749

CLASS 318

254 5,055,750
5,055,751
565 5,055,754
568.11 5,055,755
570 5,055,752
571 5,055,753
618 5,055,756
640 5,055,757
645 5,055,758
651 5,055,759
687 5,055,760
696 5,055,761
811 5,055,762

CLASS 320

15 5,055,763

CLASS 322

10 5,055,764
22 5,055,765

CLASS 323

255 5,055,766
285 5,055,767
368 5,055,768

CLASS 324

86 5,055,769
96 5,055,770
117 R 5,055,771
122 5,055,772
132 5,055,773
158 F 5,055,777
5,055,779
5,055,780
158 MG 5,055,775
158 P 5,055,776
5,055,778
158 R 5,055,774
207.21 5,055,781
207.25 5,055,782
216 5,055,783
232 5,056,016
233 5,055,784
248 5,055,785
252 5,055,786
303 5,055,787
5,055,788
309 5,055,789
5,055,790
318 5,055,791
5,055,792
326 5,055,793
453 5,055,794

CLASS 330

54 5,055,795
263 5,055,796
268 5,055,797
295 5,055,798
297 5,055,799

CLASS 331

1 A 5,055,800
14 5,055,801
16 5,055,802
17 5,055,803
49 5,056,144
117 R 5,055,804

CLASS 333

21 A 5,055,805
22 R 5,055,806
110 5,055,807
207 5,055,808
219 5,055,809
262 5,055,810

CLASS 335

59 5,055,811
210 5,055,812
284 5,055,813

CLASS 336

119 5,055,814
196 5,055,815
200 5,055,816

CLASS 337

161 5,055,817
267 5,055,818
394 5,055,819

CLASS 338

32 H 5,055,820

CLASS 340

286.01 5,055,821
407 5,055,822
426 5,055,823
438 5,055,824
439 5,055,825
442 5,055,826
568 5,055,827
664 5,055,828
677 5,055,829
693 5,055,830
706 5,055,831
764 5,055,832
784 5,055,833
825.340 5,055,834
825.54 5,055,835
825.85 5,055,836
853 5,055,837
870.370 5,055,838

CLASS 341

22 5,055,839
31 5,055,840
67 5,055,841
100 5,055,842
143 5,055,843
144 5,055,844
155 5,055,845
5,055,846
162 5,055,847

CLASS 342

90 5,055,848
104 5,055,849
201 5,055,850
457 5,055,851

CLASS 343

725 5,055,852
769 5,055,853
912 5,055,854

CLASS 346

1.1 5,055,855
5,055,856
75 5,055,857
76 PH 5,055,858
5,055,859
108 5,055,860
140 R 5,055,861
154 5,055,862

CLASS 350

344 5,054,890
426 5,054,897

CLASS 351

41 5,054,901
44 5,054,902
123 5,054,903
159 5,054,904
161 5,054,905
205 5,054,906
212 5,054,907
239 5,054,908

CLASS 352

198 5,054,909

CLASS 353

31 5,054,910

CLASS 354

75 5,055,863
81 5,055,864
127.11 5,055,865
149.1 5,055,866
173.11 5,055,867
222 5,055,868
276 5,055,869
317 5,055,870

CLASS 355

53 5,055,871
55 5,055,872
75 5,055,873
76 5,055,874
89 5,055,875
211 5,055,876
214 5,055,877
219 5,055,878
5,055,879
235 5,055,880
260 5,055,881
269 5,055,882
282 5,055,884
318 5,055,885
326 5,055,886

CLASS 356

5 5,054,911
5,054,912
28.5 5,054,913
36 5,054,914
39 5,054,915
5,054,916
152 5,054,917
5,054,918
246 5,054,919
5,054,920
311 5,054,921
345 5,054,922
5,054,926
350 5,054,923
359 5,054,924
363 5,054,925
382 5,054,927
400 5,054,928
401 5,054,929
429 5,054,930

CLASS 357

4 5,055,887
13 5,055,888
14 5,055,889
16 5,055,890
5,055,891
17 5,055,892
5,055,893
19 5,055,894
23.4 5,055,895
23.5 5,055,897
23 6 5,055,898
23.7 5,055,899
23.8 5,055,896
24 5,055,900
30 5,055,901
41 5,055,902
42 5,055,903
43 5,055,904
51 5,055,905
54 5,055,906
71 5,055,907
5,055,908
74 5,055,910
5,055,911
5,055,912
5,055,913
81 5,055,909
5,055,914

CLASS 358

12 5,055,915
5,055,916
22 5,055,917
5,055,918
36 5,055,920
44 5,055,921
60 5,055,922
75 5,055,923
84 5,055,924
105 5,055,925
125 5,055,926
133 5,055,927
139 5,055,928
166 5,055,929
213.11 5,055,930
5,055,931
227 5,055,932
5,055,933
246 5,055,934
261.1 5,055,919
296 5,055,935
5,055,936
335 5,055,937
340 5,055,938
341 5,055,939
444 5,055,940
450 5,055,941
456 5,055,942
459 5,055,943
465 5,055,944
468 5,055,945
498 5,055,946

CLASS 359

43 5,054,891
59 5,054,887
72 5,054,892
76 5,054,888
5,054,889
201 5,054,866
254 5,054,893
265 5,054,895
270 5,054,894
379 5,054,896
566 5,054,884
617 5,054,865
618 5,054,885
654 5,054,898
745 5,054,899
823 5,054,886
851 5,054,900

CLASS 360

62 5,055,947
69 5,055,948
71 5,055,949
74.5 5,055,950
77.120 5,055,951
77.14 5,055,952
96 5 5,055,953
5,055,954
104 5,055,955
109 5,055,956
121 5,055,957
122 5,055,958
5,055,959
132 5,055,960

CLASS 361

154 5,055,961
187 5,055,962
231 5,055,963
234 5,055,964
303 5,055,965
321 5,055,966
387 5,055,967
395 5,055,968
398 5,055,969
399 5,055,970
400 5,055,971
5,055,972
414 5,055,973
527 5,055,974
5,055,975

CLASS 362

17 5,055,976
23 5,055,977
31 5,055,978
32 5,055,979
61 5,055,980
5,055,981
5,055,982
80 5,055,983
183 5,055,984
221 5,055,985
253 5,055,986
277 5,055,987
294 5,055,988

CLASS 363

36 5,055,989
56 5,055,990
5,055,991
98 5,055,992
5,055,993
127 5,055,994

CLASS 364

188 5,055,996
200 5,055,997
5,055,998
5,055,999
5,056,000
5,056,001
5,056,002
5,056,003
5,056,005
5,056,006
5,056,007
5,056,008
5,056,009
5,056,010
5,056,011
5,056,012
5,056,013
5,056,014
5,056,015
5,056,017
405 5,056,018
5,056,019
413.19 5,056,020
419 5,056,021
424 03 5,056,023
5,056,024
424 1 5,056,022
431.03 5,056,026
433 5,056,027
461 5,056,031
468 5,056,028
5,056,029
473 5,056,030
483 5,056,032
5,056,033
497 5,056,035
510 5,056,034
5,056,036
513 5,056,037
5,056,038
5,056,039
518 5,056,040
5,056,041
519 5,056,042
5,056,043
521 5,056,044
527 5,056,045
551.01 5,056,046
556 5,056,047
557 5,056,048
562 5,056,049
571.03 5,056,050
571.05 5,056,051
572 5,056,052
716 5,056,053
724.01 5,056,054
821 5,056,055
900 5,056,056
5,056,057
5,056,058
5,056,059
5,056,060

CLASS 365

96 5,056,061
189 11 5,056,062
208 5,056,063
233.5 5,056,064

CLASS 366

25 5,054,931
84 5,054,932
138 5,054,933
196 5,054,934

CLASS 367

ill 5,056,065
72 5,056,066
82 5,056,067
124 5,056,068
164 5,056,069

CLASS 368

10 5,056,070

CLASS 369

30 5,056,071
32 5,056,072
36 5,056,073
44.28 5,056,074
44 29 5,056,075
50 5,056,076
77.1 5,056,077
77 2 5,056,078
100 5,056,079
5,056,080
5,056,081
270 5,056,082

CLASS 370

60 5,056,085
62 5,056,086
84 5,056,087
94 1 5,056,088
99 5,056,084
110 1 5,056,083

CLASS 371

3 5,056,089
8 2 5,056,090
14 5,056,091
5,056,092
22 3 5,056,093
25 1 5,056,094
40 1 5,056,095

CLASS 372

6 5,056,096
32 5,056,101
38 5,056,097
45 5,056,098
49 5,056,099
50 5,056,100
87 5,056,102
105 5,056,103

CLASS 373

100 5,056,104

CLASS 374

131 5,054,935
164 5,054,936

CLASS 375

1 5,056,105
5,056,106
5,056,107
5,056,108
5,056,109
36 5,056,110
37 5,056,111
53 5,056,112
58 5,056,113
80 5,056,122
81 5,056,115
87 5,056,114
94 5,056,116
102 5,056,117
106 5,056,118
5,056,119
118 5,056,120
5,056,121

CLASS 377

49 5,056,123

CLASS 378

57 5,056,124
101 5,056,125
127 5,056,126
130 5,056,127
156 5,056,128
207 5,056,130
705 5,056,129

CLASS 379

33 5,056,131
95 5,056,132
98 5,056,133
246 5,056,134
252 5,056,135

CLASS 380

9 5,056,137
10 5,056,136
5,056,138
20 5,056,139
23 5,056,140
25 5,056,141
54 5,056,142

CLASS 381

11	5,056,148
17	5,056,149
35	5,056,143
43	5,056,150
51	5,056,145
69	5,056,151

CLASS 382

6	5,056,146
14	5,056,147
56	5,056,154

CLASS 384

49	5,054,937
117	5,054,938
133	5,054,939
193	5,054,940

CLASS 385

12	5,054,882
14	5,054,870
24	5,054,876
27	5,054,873
	5,054,875
28	5,054,874
30	5,054,871
31	5,054,867
33	5,054,877
	5,054,878
59	5,054,879
99	5,054,868
111	5,054,880
113	5,054,881
130	5,054,872
133	5,054,869
145	5,054,883

CLASS 400

124	5,054,941
	5,054,942
202.3	5,054,943
679	5,054,944

CLASS 401

23	5,054,945
122	5,054,946
146	5,054,947
196	5,054,948
202	5,054,949

CLASS 403

171	5,054,950
293	5,054,951
326	5,054,952
406.1	5,054,953

CLASS 404

6	5,054,954
10	5,054,955
26	5,054,956
41	5,054,957
75	5,054,958
94	5,054,959

CLASS 405

72	5,054,960
128	5,054,961
129	5,054,962
224	5,054,963
288	5,054,964

CLASS 406

151	5,054,965
191	5,054,966

CLASS 407

110	5,054,967

CLASS 408

97	5,054,968
115 R	5,054,969
146	5,054,970
205	5,054,971
211	5,054,972
226	5,054,973
239 A	5,054,974

CLASS 409

131	5,054,975
143	5,054,976

CLASS 411

43	5,054,977
85	5,054,978
171	5,054,980
340	5,054,981
400	5,054,982
480	5,054,983

CLASS 412

001	5,054,984

CLASS 414

11	5,054,985
282	5,054,986
390	5,054,987
404	5,054,988
607	5,054,989
621	5,055,091
694	5,054,990
783	5,054,991
786	5,054,992
790.5	5,054,993
793.4	5,054,994

CLASS 415

17	5,054,995
115	5,054,996
173.2	5,054,997

CLASS 416

1	5,054,998
204 R	5,054,999

CLASS 417

40	5,055,000
63	5,055,001
172	5,055,002
191	5,055,003
222 R	5,055,004
356	5,055,005
366	5,055,006
393	5,055,007
403	5,055,008
407	5,055,009
410	5,055,010
417	5,055,011
440	5,055,012
474	5,055,013
572	5,055,014

CLASS 418

104	5,055,015
179	5,055,016
183	5,055,017

CLASS 420

8	5,055,018
87	5,055,253
409	5,055,254
534	5,055,255
548	5,055,256
902	5,055,257

CLASS 422

61	5,055,258
	5,055,259
62	5,055,260
64	5,055,261
	5,055,262
65	5,055,263
80	5,055,264
82.05	5,055,265
83	5,055,266
	5,055,267
84	5,055,268
96	5,055,269
98	5,055,270
99	5,055,271
133	5,055,272
135	5,055,273
171	5,055,274
180	5,055,275
191	5,055,276
294	5,055,277

CLASS 423

235	5,055,278
239	5,055,279
276	5,055,280
331	5,055,281
351	5,055,282
366	5,055,283
419 P	5,055,284
473	5,055,285
584	5,055,286
625	5,055,019

CLASS 424

7.1	5,055,287
9	5,055,288
85.4	5,055,289
85.8	5,055,290
85.91	5,055,291
88	5,055,292
93	5,055,293
	5,055,294
94.2	5,055,295
195.1	5,055,297
401	5,055,298
405	5,055,299
409	5,055,300
422	5,055,301
427	5,055,302
436	5,055,303
465	5,055,304
466	5,055,305
482	5,055,306
493	5,055,307
553	5,055,296

CLASS 425

111	5,055,020
	5,055,021
131.1	5,055,022
133.100	5,055,023
140	5,055,024
144	5,055,025
146	5,055,026
197	5,055,027
549	5,055,028

CLASS 426

2	B1 4,883,672
11	5,055,308
34	5,055,309
46	5,055,310
82	5,055,311
107	5,055,312
268	5,055,313
423	5,055,314
565	5,055,315

CLASS 427

2	5,055,316
8	5,055,317
38	5,055,318
	5,055,319
40	5,055,320
98	5,055,321
128	5,055,322
265	5,055,323
281	5,055,324
388.1	5,055,325

CLASS 428

4	5,055,326
15	5,055,327
34.9	5,055,328
42	5,055,329
61	5,055,330
64	5,055,331
74	5,055,332
88	5,055,333
[redacted]	5,055,334
	5,055,335
137	5,055,336
	5,055,342
147	5,055,337
155	5,055,338
157	5,055,339
172	5,055,340
174	5,055,341
209	5,055,343
213	5,055,344
215	5,055,345
216	5,055,346
250	5,055,347
307.3	5,055,348
323	5,055,349
331	5,055,350
336	5,055,351
	5,055,352
	5,055,353
342	5,055,354
409	5,055,356
413	5,055,357
433	5,055,358
448	5,055,359
473.5	5,055,360
476.3	5,055,355
633	5,055,361
683	5,055,362
690	5,055,363
694	5,055,364

CLASS 430

42	5,055,365
58	5,055,366
59	5,055,367
78	5,055,368
114	5,055,369
	5,055,370
126	5,055,371
130	5,055,373
138	5,055,372
190	5,055,374
254	5,055,375
270	5,055,376
271	5,055,377
280	5,055,378
289	5,055,379
312	5,055,383
346	5,055,380
398	5,055,381
400	5,055,382
450	5,055,384
544	5,055,385
545	5,055,386
591	5,055,387

CLASS 431

7	5,055,029
10	5,055,030
158	5,055,032
255	5,055,033
	5,055,034
291	5,055,035
726	5,055,031

CLASS 432

5	5,055,036
72	5,055,037

CLASS 433

24	5,055,038
	5,055,039
26	5,055,040
56	5,055,041
76	5,055,042
86	5,055,043
126	5,055,044
155	5,055,045
180	5,055,046
214	5,055,047
215	5,055,048

CLASS 434

156	5,055,049
226	5,055,050
262	5,055,051
265	5,055,052
343	5,055,053

CLASS 435

4	5,055,388
	5,055,389
5	5,055,390
	5,055,391
6	5,055,392
	5,055,393
	5,055,394
7.33	5,055,395
7.93	5,055,396
9	5,055,397
10	5,055,398
68.1	5,055,399
69.1	5,055,400
172.3	5,055,401
174	5,055,402
210	5,055,403
240.27	5,055,404
	5,055,405
252.1	5,055,406

CLASS 436

2	5,055,407
48	5,055,408
52	5,055,409
60	5,055,410
63	5,055,411
69	5,055,412
178	5,055,413
501	5,055,414
516	5,055,415

CLASS 437

4	5,055,416
6	5,055,417
31	5,055,418
	5,055,419
34	5,055,420
101	5,055,421
129	5,055,422
187	5,055,423
188	5,055,424
195	5,055,425
	5,055,426
203	5,055,427

CLASS 439

66	5,055,054
78	5,055,055
98	5,055,056
134	5,055,057
188	5,055,058
214	5,055,059
304	5,055,060
377	5,055,061
395	5,055,062
	5,055,063
402	5,055,064
425	5,055,065
464	5,055,066
540	5,055,067
581	5,055,068
608	5,055,069
609	5,055,070
621	5,055,071
751	5,055,072
892	5,055,073

CLASS 440

77	5,055,074

CLASS 441

59	5,055,075

CLASS 445

25	5,055,076
50	5,055,077
51	5,055,078

CLASS 446

8	5,055,079
46	5,055,080
75	5,055,081
308	5,055,082
478	5,055,083
486	5,055,084

CLASS 452

5	5,055,085

CLASS 453

10	5,055,086

CLASS 455

11	5,056,152
89	5,056,153

CLASS 474

73	5,055,087
111	5,055,088
138	5,055,089
249	5,055,090

CLASS 475

2	5,055,092
167	5,055,093
211	5,055,094
233	5,055,095
249	5,055,096
271	5,055,097
312	5,055,098

CLASS 501

35	5,055,428
90	5,055,430
97	5,055,431
	5,055,432
.80	5,055,429
105	5,055,433
127	5,055,434
134	5,055,435
152	5,055,436

CLASS 502

67	5,055,437
117	5,055,438
158	5,055,439
303	5,055,440
321	5,055,441
439	5,055,442
	5,055,443

CLASS 503

227	5,055,444

CLASS 505

1	5,055,445

CLASS 514

2	5,055,446
12	5,055,447
16	5,055,448
17	5,055,449
19	5,055,451
25	5,055,452
27	5,055,453
30	5,055,454
54	5,055,455
57	5,055,456
59	5,055,457
81	5,055,458
019	5,055,450
114	5,055,459
161	5,055,460
162	5,055,461
202	5,055,462
206	5,055,572
210	5,055,463
211	5,055,464
228.2	5,055,465
235.8	5,055,466
	5,055,467
249	5,055,468
252	5,055,469
	5,055,470
255	5,055,471
258	5,055,472
311	5,055,473
316	5,055,474
326	5,055,475
338	5,055,476
341	5,055,477
343	5,055,478
359	5,055,479
363	5,055,480
381	5,055,481
407	5,055,482
412	5,055,483
422	5,055,484
449	5,055,485
450	5,055,486
452	5,055,487
	5,055,488
483	5,055,489
524	5,055,490
531	5,055,491
553	5,055,492
727	5,055,493

CLASS 521

61	5,055,494
85	5,055,495
174	5,055,496

CLASS 523

116	5,055,497
164	5,055,498
214	5,055,499
319	5,055,500
409	5,055,501

CLASS 524

30	5,055,503
48	5,055,504
83	5,055,505
100	5,055,506
117	5,055,507
128	5,055,508
136	5,055,509
211	5,055,510
406	5,055,511
413	5,055,512
433	5,055,513
484	5,055,514
533	5,055,515
541	5,055,516
780	5,055,502
813	5,055,517

CLASS 525

59	5,055,518
66	5,055,525
71	5,055,519
74	5,055,520
	5,055,526
124	5,055,522
148	5,055,523
172	5,055,524
182	5,055,521
207	5,055,527
270	5,055,528
309	5,055,529
423	5,055,530
439	5,055,531
528	5,055,532

CLASS 526

125	5,055,533
133	5,055,534
142	5,055,535
194	5,055,536
240	5,055,537
245	5,055,538
254	5,055,539
318.2	5,055,540

CLASS 527

300	5,055,541

CLASS 528

45	5,055,542
58	5,055,543
59	5,055,544
61	5,055,545
193	5,055,546
249	5,055,547
272	5,055,548
310	5,055,549
353	5,055,550
388	5,055,551
392	5,055,552

CLASS 530

300	5,055,553
313	5,055,554
351	5,055,555
370	5,055,556
381	5,055,557
386	5,055,558
387	5,055,559
	5,055,560
390	5,055,561
403	5,055,562

CLASS 534

228	5,055,566
565	5,055,563
575	5,055,564
642	5,055,565
753	5,055,567

CLASS 536

26	5,055,569
35	5,055,568
84	5,055,570
124	5,055,571

CLASS 540

302	5,055,573
491	5,055,575
543	5,055,576

CLASS 544

172	5,055,577
209	5,055,578
216	5,055,579
233	5,055,580
235	5,055,581

CLASS 546

256	5,055,582
315	5,055,583

CLASS 548

142	5,055,584
248	5,055,585
262.4	5,055,586
	5,055,587
344	5,055,588
427	5,055,589
439	5,055,590
452	5,055,591

CLASS [redacted]

106	5,055,592
214	5,055,593
223	5,055,594
224	5,055,595
[redacted]	5,055,596
[redacted]	5,055,597
407	5,055,598
429	5,055,599
521	5,055,601

CLASS 552

11	5,055,600
111	5,055,602

CLASS 556

102	5,055,603
437	5,055,604

CLASS 560

11	5,055,605
152	5,055,606
158	5,055,607
169	5,055,608
180	5,055,609

CLASS 562

124	5,055,610
406	5,055,611
416	5,055,612
582	5,055,613

CLASS 564

298	5,055,614
307	5,055,615
322	5,055,616
401	5,055,617
473	5,055,618

CLASS [redacted]

[redacted]	5,055,619
353	5,055,620
433	5,055,621
609	5,055,622
[redacted]	5,055,623

CLASS 570

167	5,055,624

CLASS 585

14	5,055,625
416	5,055,626
467	5,055,627
647	5,055,628
739	5,055,629
814	5,055,630
819	5,055,631
	5,055,632
826	5,055,633
	5,055,634

CLASS 604

[redacted]	5,055,099
22	5,055,100
51	5,055,107
54	5,055,108
95	5,055,101
	5,055,109
192	5,055,102
385.2	5,055,103

CLASS 606

61	5,055,104
80	5,055,105
167	5,055,106

CLASSIFICATION OF DESIGNS

D1—	100	320,494		321	320,526		443	320,561		190	320,592		13	320,624		158	320,660
	110	320,495		332	320,527		447	320,551	D13—	147	320,593		52	320,625		167	320,653
D2—	276	320,496		399	320,529		452	320,562			320,594		148	320,626		169	320,661
	314	320,497		[redacted]	320,530	D10—	1	320,563		158	320,595		155	320,627		183	320,663
		320,498		[redacted]	320,531		3	320,564		174	320,596			320,628		186	320,662
	605	320,499		560	320,532		10	320,565	D14—	115	320,597			320,629		192	320,657
D3—	30.1	320,500			320,533		32	320,566			320,598			320,630		200	320,655
	32	320,501			320,534		38	320,567		141	320,599		157	320,631		214	320,656
	75	320,502		[redacted]	320,535		40	320,568		[redacted]	320,600		163	320,632	D25—	2	320,664
	76	320,503		619	320,536		70	320,569		234	320,601		166	320,633		103	320,665
	104	320,504		698	320,537		72	320,570		238	320,602		173	320,634	D26—	31	320,666
D5—	32	320,505	D8—	14	320,538		106	320,571			320,603		179	320,635		39	320,667
	62	320,506		50	320,539	D11—	16	320,572			320,604		198	320,636		85	320,668
D6—	333	320,528		61	320,540		76	320,573		253	320,605		[redacted]	320,637	D27—	144	320,669
	361	320,509			320,541		[redacted]	320,574	D15—	[redacted]	320,606		219	320,638		172	320,670
	366	320,507		70	320,542		200	320,575		126	320,607	D22—	126	320,639	D28—	7	320,671
	368	320,508			320,543		221	320,576		199	320,617	D23—	209	320,640			320,672
	379	320,510		98	320,544			320,577	D16—	107	320,608		213	320,641		52	320,673
		320,511		339	320,545			320,578		110	320,609		223	320,642		63	320,674
	381	320,512		389	320,546	D12—	1	320,579		209	320,610		226	320,643		91	320,675
	397	320,513		396	320,547		16	320,580	D17—	1	320,611		237	320,644	D29—	2	320,676
	407	320,514			320,548		37	320,581			320,612		238	320,645		7	320,677
	411	320,515	D9—	311	320,549		96	320,582			320,613		251	320,646	D30—	124	320,678
	446	320,516		341	320,552			320,583			320,614		294	320,647		138	320,679
	501	320,517		367	320,550		100	320,584		14	320,615		335	320,648		158	320,680
	512	320,518		376	320,553		111	320,585	D18—	13	320,616		386	320,649	D32—	55	320,681
	536	320,519		403	320,554		112	320,586	D19—	48	320,618		393	320,650	D34—	18	320,682
	541	320,520		407	320,555		155	320,587		78	320,619		409	320,651		19	320,683
	553	320,521		414	320,556		157	320,588		90	320,620			320,652		29	320,684
	601	320,522		418	320,557		179	320,589	D20—	4	320,621	D24—	135	320,658		31	320,685
		320,523		435	320,558		186	320,590		18	320,622		145	320,654		34	320,686
D7—	308	320,524		438	320,560		187	320,591	D21—	2	320,623		155	320,659		[redacted]	320,687
	309	320,525		439	320,559												

CLASSIFICATION OF PLANTS

P.—	20	7,666		28	7,668												
	22	7,667		68	7,669		7,670		7,671		69	7,672		74	7,673		

GEOGRAPHICAL INDEX
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,054,468	5,054,410	5,054,903	5,055,607	5,056,079	5,055,461
	5,054,621	5,054,423	5,054,907	5,055,625	5,056,081	5,055,467
	5,054,631	5,054,424	5,054,909	5,055,641	5,056,082	5,055,470
	5,054,817	5,054,467	5,054,918	5,055,648	5,056,091	5,055,584
	5,055,026	5,054,476	5,054,920	5,055,660	5,056,099	5,055,608
	5,055,336	5,054,480	5,054,924	5,055,667	5,056,100	5,055,752
	5,056,021	5,054,482	5,054,934	5,055,678	5,056,103	5,055,787
02 :	5,054,554	5,054,485	5,054,945	5,055,689	5,056,106	5,055,788
	5,054,586	5,054,492	5,055,001	5,055,692	5,056,109	5,055,831
	5,054,801	5,054,507	5,055,009	5,055,697	5,056,110	5,055,837
04	5,054,124	5,054,512	5,055,031	5,055,698	5,056,118	5,055,939
	5,054,194	5,054,519	5,055,047	5,055,705	5,056,126	5,055,982
	5,054,251	5,054,521	5,055,048	5,055,711	5,056,127	5,056,019
	5,054,335	5,054,551	5,055,049	5,055,712	5,056,131	5,056,046
	5,054,397	5,054,580	5,055,055	5,055,716	5,056,144	10 : 5,054,932
	5,054,428	5,054,615	5,055,061	5,055,718	5,056,149	5,055,212
	5,054,584	5,054,622	5,055,075	5,055,723	08 : 5,054,318	5,055,346
	5,054,670	5,054,623	5,055,082	5,055,733	5,054,322	5,055,441
	5,054,841	5,054,627	5,055,100	5,055,743	5,054,341	5,055,450
	5,055,030	5,054,635	5,055,109	5,055,746	5,054,363	12 : 5,054,172
	5,055,060	5,054,638	5,055,127	5,055,767	5,054,402	5,054,200
	5,055,130	5,054,640	5,055,129	5,055,793	5,054,775	5,054,209
	5,055,695	5,054,647	5,055,143	5,055,796	5,054,896	5,054,273
	5,055,709	5,054,657	5,055,172	5,055,797	5,055,389	5,054,354
	5,055,714	5,054,675	5,055,201	5,055,798	5,055,397	5,054,399
	5,055,957	5,054,681	5,055,219	5,055,805	5,055,720	5,054,405
	5,055,977	5,054,688	5,055,240	5,055,807	5,055,779	5,054,466
	5,056,027	5,054,690	5,055,264	5,055,810	5,055,823	5,054,474
	5,056,092	5,054,720	5,055,277	5,055,862	5,056,029	5,054,500
05 :	5,054,150	5,054,722	5,055,289	5,055,871	5,056,033	5,054,601
	5,054,994	5,054,726	5,055,294	5,055,891	5,056,044	5,054,724
06 :	Re.33,709	5,054,729	5,055,300	5,055,892	5,056,129	5,054,727
	5,054,131	5,054,733	5,055,319	5,055,896	09 : 5,054,221	5,054,771
	5,054,137	5,054,776	5,055,334	5,055,897	5,054,282	5,054,791
	5,054,143	5,054,787	5,055,393	5,055,901	5,054,393	5,054,821
	5,054,148	5,054,792	5,055,396	5,055,902	5,054,431	5,054,904
	5,054,158	5,054,799	5,055,399	5,055,909	5,054,494	5,054,993
	5,054,193	5,054,800	5,055,418	5,055,928	5,054,513	5,055,008
	5,054,204	5,054,803	5,055,424	5,055,951	5,054,515	5,055,024
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	5,054,262	5,054,830	5,055,427	5,055,963	5,054,576	5,055,191
	5,054,281	5,054,836	5,055,431	5,055,966	5,054,757	5,055,239
	5,054,283	5,054,840	5,055,439	5,055,973	5,054,925	5,055,312
	5,054,284	5,054,849	5,055,447	5,055,979	5,054,936	5,055,651
	5,054,310	5,054,857	5,055,506	5,056,007	5,054,943	5,055,747
	5,054,319	5,054,859	5,055,510	5,056,017	5,054,977	5,055,757
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OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

October 15, 1991



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1126 O.G. 2, on May 7, 1991.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on July 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the German mark, and was announced in the *Official Gazette* at 1126 O. G. 76 on May 28, 1991.

International fees were changed on August 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss franc, and were announced in the *Official Gazette* at 1128 O.G. 46, on July 23, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1320.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	490.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region for the first 10 national or regional offices	119.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	150.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

June 27, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 11, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,776,042 through 4,777,664
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 9, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,475,247 through 4,476,586
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$830.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 4, 1991
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,395,781	06/252,380	8/02/83
4,395,783	06/283,865	8/02/83
4,395,790	06/312,255	8/02/83
4,395,793	06/349,930	8/02/83
4,395,796	06/285,505	8/02/83
4,395,801	06/266,892	8/02/83
4,395,803	06/251,062	8/02/83
4,395,808	06/286,043	8/02/83
4,395,809	06/226,194	8/02/83
4,395,811	06/310,303	8/02/83
4,395,819	06/376,636	8/02/83
4,395,824	06/347,571	8/02/83
4,395,830	06/300,180	8/02/83
4,395,835	06/244,160	8/02/83
4,395,841	06/235,680	8/02/83
4,395,852	06/253,776	8/02/83
4,395,856	06/307,416	8/02/83
4,395,858	06/280,332	8/02/83
4,395,863	06/328,042	8/02/83
4,395,866	06/322,480	8/02/83
4,395,875	06/286,318	8/02/83
4,395,879	06/303,602	8/02/83
4,395,882	06/236,096	8/02/83
4,395,892	06/224,036	8/02/83
4,395,893	06/289,271	8/02/83
4,395,894	06/291,235	8/02/83
4,395,900	06/318,015	8/02/83
4,395,911	06/244,869	8/02/83
4,395,921	06/277,902	8/02/83
4,395,922	06/231,304	8/02/83
4,395,924	06/320,988	8/02/83
4,395,929	06/354,578	8/02/83
4,395,930	06/342,846	8/02/83
4,395,941	06/289,973	8/02/83
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4,395,963	06/250,814	8/02/83
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4,395,965	06/219,463	8/20/83
4,395,968	06/357,406	8/02/83
4,395,971	06/271,218	8/02/83
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4,395,983	06/257,553	8/02/83
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4,396,088	06/232,095	8/02/83
4,396,092	06/253,715	8/02/83
4,396,096	06/223,770	8/02/83
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4,396,100	06/216,481	8/02/83
4,396,104	06/232,613	8/02/83
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4,396,108	06/331,158	8/02/83
4,396,110	06/240,234	8/02/83
4,396,112	06/229,158	8/02/83
4,396,113	06/307,204	8/02/83
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4,396,156	06/355,768	8/02/83
4,396,158	06/268,059	8/02/83
4,396,164	06/252,651	8/02/83
4,396,167	06/252,027	8/02/83
4,396,170	06/317,729	8/02/83
4,396,178	06/387,643	8/02/83
4,396,182	06/330,770	8/02/83
4,396,183	06/376,402	8/02/83
4,396,190	06/253,775	8/02/83
4,396,191	06/279,344	8/02/83
4,396,194	06/396,240	8/02/83
4,396,198	06/405,729	8/02/83
4,396,209	06/223,127	8/02/83
4,396,213	06/298,749	8/02/83
4,396,216	06/413,044	8/02/83
4,396,220	06/274,176	8/02/83
4,396,241	06/229,236	8/02/83
4,396,243	06/281,386	8/02/83
4,396,248	06/223,228	8/02/83
4,396,249	06/280,560	8/02/83
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4,396,274	06/344,142	8/02/83
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4,396,284	06/370,224	8/02/83
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4,396,296	06/317,230	8/02/83
4,396,297	06/351,438	8/02/83
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4,396,453	06/373,894	8/02/83
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4,396,461	06/289,672	8/02/83
4,396,469	06/302,986	8/02/83
4,396,475	06/315,477	8/02/83
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4,396,485	06/259,944	8/02/83
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4,396,495	06/342,523	8/02/83
4,396,499	06/326,462	8/02/83
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4,396,507	06/287,058	8/02/83
4,396,515	06/281,597	8/02/83
4,396,536	06/301,555	8/02/83
4,396,540	06/301,065	8/20/83
4,396,546	06/348,382	8/02/83
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4,396,563	06/297,074	8/02/83
4,396,569	06/314,540	8/02/83
4,396,575	06/221,867	8/02/83
4,396,576	06/276,833	8/02/83
4,396,588	06/323,889	8/02/83
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4,396,613	06/330,294	8/02/83
4,396,614	06/332,842	8/02/83
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4,683,719	06/813,967	8/04/87
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4,683,860	06/804,304	8/04/87
4,683,871	06/756,704	8/04/87
4,683,876	06/837,804	8/04/87
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4,685,119	06/720,877	8/04/87
4,685,133	06/776,611	8/04/87
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NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,557,453	06/614,125	12/10/85	5/25/84	7/10/91
4,622,305	06/732,649	11/11/86	6/10/85	8/27/91

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,554,308, Re. S.N. 07/708,829, Filed May 29, 1991, Cl. 524/589, CROSSLINKED POLYURETHANE DISPERSIONS, Andrea Russiello, Owner of Record: *Inventor*, Attorney or Agent: Barbara E. Johnson, Ex. Gp.: 151

4,804,538, Re. S.N. 07/654,956, Filed Feb. 13, 1991, Cl. 424/401, A METHOD AND APPARATUS FOR PRODUCING POWDER CAKE COSMETICS, Mei L. Chen, Owner of Record: *Misasa Inc. New York, N.Y.* Attorney or Agent: Thomas M. Galgano, Ex. Gp.: 152

4,815,042, Re. S.N. 07/721,685, Filed June 26, 1991, Cl. 366/141, PROGRAMMABLE APPARATUS AND METHOD FOR DELIVERING MICROINGREDIENT ADDITIVES TO ANIMALS BY WEIGHT, William C. Pratt, Owner of Record: *Micro Chemical, Inc., Amarillo, Tex.*, Attorney or Agent: James S. Leigh, Ex. Gp.: 242

4,846,326, Re. S.N. 07/728,117, Filed July 10, 1991, Cl. 192/70.19, CARBON TO CARBON FRICTION CLUTCH, McLean Tilton, et. al., Owner of Record: *Tilton Engineering, Inc., Buellton, Calif.*, Attorney or Agent: Richard E. Campbell, Esq., Ex. Gp.: 352

4,865,321, Re. S.N. 07/757,209, Filed Sept. 10, 1991, Cl. 273/85, MEMORY CARTRIDGE AND INFORMATION PROCESSING UNIT USING SUCH CARTRIDGE, Katsuya Nakagawa, et. al., Owner of Reocrd: *Nintendo Co. Ltd., Higashiyama-Ku Kyoto, Japan*, Attorney or Agent: Mark E. Nusbaum, Ex. Gp.: 334

4,866,542, Re. S.N. 07/754,640, Filed Sept. 4, 1991, Cl. 360/10.3, REMOTE CONTROLLING COMMANDER WITH MULTI-FUNCTION ROTARY DIAL, Keiichiro Shimada, et. al., Owner of Record: *Sony Corp., Tokyo, Japan*, Attorney or Agent: Phillip M. Shaw Jr., Ex. Gp.: 235

4,867,012, Re. S.N. 07/753,824, Filed Sept. 3, 1991, Cl. 74/774, VARIABLE SPEED TRANSMISSION, Clifford B. McGarraugh, Owner of Record: *Inventor*, Attorney or Agent: D. A. N. Chase, Ex. Gp.: 352

4,867,074, Re. S.N. 07/756,460, Filed Sept. 9, 1991, Cl. 108/51.3, CORRUGATED CONSTRUCTION PALLET, Robert J. Quasnick, Owner of Record: *Gate Pallet Systems Inc., Valparaiso, Ind.*, Attorney or Agent: Allen J. Hoover, Ex. Gp.: 357

4,872,432, Re. S.N. 07/756,258, Filed Sept. 6, 1991, Cl. 123/193, OILLESS INTERNAL COMBUSTION ENGINE HAVING GAS PHASE LUBRICATION, Vemulapalli Durga N. Rao et. al., Owner of Record: *The Ford Motor Co., State, Mich.*, Attorney or Agent: Joseph W. Malleck, Ex. Gp.: 342

4,906,340, Re. S.N. 07/756,257, Filed Sept. 6, 1991, Cl. 401/186, PROCESS FOR ELECTROPLATING METAL, Craig J. Brown, Owner of Reocrd: *ECO-TEC Ltd., Ontario, Canada*, Attorney or Agent: David W. R. Langton, Ex. Gp.: 331

4,962,730, Re. S.N. 07/755,500, Filed Sept. 3, 1991, Cl. 119/073, ANIMAL DRINKER, Kenneth L. Schafer, Owner of Record: *Inventor*, Attorney or Agent: Richard O. Bartz, Ex. Gp.: 333

4,972,872, Re. S.N. 07/753,425, Filed Aug. 30, 1991, Cl. 137/487.5, RELIEF VALVE, Kevin F. Hunt, Owner of Record: *Inventor*, Attorney or Agent: Jennings B. Thompson, Ex. Gp.: 347

4,994,312, Re. S.N. 07/754,951, Filed Sept. 4, 1991, Cl. 428/36.5, SHAPED ARTICLES FROM ORIENTABLE POLYMERS AND POLYMER MICROBEADS, Larry K. Maier, et. al., Owner of Record: *The Eastman Kodak Co., Rochester, N.Y.*, Attorney or Agent: Michael L. Goldman, Ex. Gp.: 158

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,230,793, Reexam. No. 90/002,433, Requested: Sept. 9, 1991, Cl. 430/315, PROCESS FOR THE PRODUCTION OF SOLDER MASKS FOR PRINTED CIRCUITS, Ewald Losert, et. al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.*, Attorney or Agent: Harry Falber, Ciba-Geigy Corp., Hawthorne, N.Y., Ex. Gp.: 156, Requester: Gerald K. White, Morton International, Inc., Chicago, Ill.

4,506,241, Reexam. No. 90/002,434, Requested: Sept. 9, 1991, Cl. 333/222, COAXIAL DIELECTRIC RESONATOR HAVING DIFFERENT IMPEDANCE PORTIONS AND METHOD OF MANUFACTURING THE SAME, Mitsuo Makimoto, et. al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan*, Attorney or Agent: Lowe, Price, Le Blanc & Becker, Alexandria, Va., Ex. Gp.: 252, Requester: Paul Martin, Flushing, N.Y.

4,793,854, Reexam. No. 90/002,438, Requested: Sept. 11, 1991, Cl. 075/010.1, HIGHLY PURE TITANIUM AND PROCESS FOR PRODUCING THE SAME, Kazumi Shimotori, et. al., Owner of Reocrd: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan*, Attorney or Agent: Foley & Lardner, Alexandria, Va., Ex. Gp.: 111, Requester: Alta Group, Inc., Fombell, Pa.

4,795,278, Reexam. No. 90/002,435, Requested: Sept. 9, 1991, Cl. 384/448, BEARING ASSEMBLY, Yoshitaka Hayashi, Owner of Record: *Nippon Seiko Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Shapiro and Shapiro, Arlington, Va., Ex. Gp.: 245, Requester: Victor M. Wigman, Wigman & Cohen, Arlington, Va.

4,907,533, Reexam. No. 90/002,437, Requested Sept. 10, 1991, Cl. 118/663, AUTOMOTIVE COATING TREATMENT APPARATUS WITH PLURAL RADIANT LAMPS, James S. Nelson, et. al., Owner of Record: *BGK Finishing Systems, Inc., Plymouth, Minn.*, Attorney or Agent: Merchant, Gould, Smith, Edell, Welter & Schmidt, Minneapolis, Minn., Ex. Gp.: 133, Requester: Owner

4,908,231, Reexam. No. 90/002,436, Requested: Sept. 10, 1991, Cl. 427/055, AUTOMOBILE COATING HEAT TREATING PROCESS, James S. Nelson, et. al., Owner of Record: *BGK Finishing Systems, Inc., Plymouth, Minn.*, Attorney or Agent: Merchant, Gould, Smith, Edell, Welter & Schmidt, Minneapolis, Minn., Ex. Gp.: 139, Requester: Owner

Commissioner Ordered Reexaminations

Notice under 37 CFR 1.11(c). the orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other relateed papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.24(a)(5) and 1.525(b).

4,844,252, Reexam. No. 90/002,432, Requested: Sept. 12, 1991, Cl. 206/223, MULTI-PART DISPOSABLE HANDLE FOR HOSPITAL SURGERY ROOM LIGHT FIXTURE, John M. Barron, et. al., Owner of Record: *Devon Industries, Chatsworth, Calif.*, Attorney or Agent: Poms, Smith, Lande & Rose, Los Angeles, Calif,. Ex. Gp.: 244, Requester: Commissioner of Patents and Trademarks

Errata

The following registration numbers were erroneously listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the Trademark Official Gazette:

TM 173 & TMI 30	1,618,316	Oct. 23, 1990
TM 200 & TMI 6	1,620,475	Oct. 30, 1990
TM 247 & TMI 17	1,622,905	Nov. 13, 1990

TM 242 & TMI 20	1,622,706	Nov. 13, 1990
TM 148 & TMI 6	1,623,779	Nov. 20, 1990

Consequently, the certificate of registration bearing the above-identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Sept. 6, 1991

PATRICIA M. DAVIS
Administrator for
Trademark Operations

The following registration numbers were erroneously listed as cancelled in the "Trademark Registrations Cancelled, Section 8" and "Index of Registrants" sections of the Official Gazette:

TM 200 & TMI 28	1,306,660	Sept. 18, 1984
TM 226 & TMI 22	1,271,675	Sept. 11, 1990
TM 227 & TMI 17	1,244,903	Nov. 30, 1990
TM 185 & TMI 13	1,271,879	Mar. 12, 1991
TM 196 & TMI 6	1,297,851	Mar. 26, 1991
TM 210 & TMI 12	1,312,351	May 7, 1991
TM 210 & TMI 18	1,370,845	May 7, 1991
TM 186 & TMI 27	1,313,342	June 18, 1991
TM 194 & TMI 24	1,317,364	June 25, 1991

Consequently, the above-identified registrations are still active.

Sept. 6, 1991

PATRICIA M. DAVIS
Administrator for
Trademark Operations

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Avenue of the Stars University Corp., dba University of Beverly Hills, Beverly Hills, Calif., Reg. No. 1,371,801, for the mark "UNIVERSITY OF BEVERLY HILLS", Canc. No. 19,515.

Emporium Distributing Co., Houston, Tex., Reg. No. 1,477,938 for the mark "CHINA SILK", Canc. No. 19,522.

Lord & Lord Wines and Spirits Ltd., Inc., Ft. Lauderdale, Fla., Reg. No. 1,132,826, for the mark "LE GRAND MEDALLION" and design, Canc. No. 19,527.

Maple Tree, Inc., New York, N.Y., Reg. No. 1,142,625, for the mark "KANGA", Canc. No. 19,535.

First Capital Corporation of America, dba Resort Systems International, St. Petersburg, Fla., Reg. No. 1,355,082, for the mark "TIME PRO." and design, Canc. No. 19,536.

Shari West, Inc., dba. U.S. Health Services, Tamarac, Fla., Reg. No. 1,420,645, for the mark "U.S. HEALTH SERVICES, INC.", Canc. No. 19,549.

Gericho Entertainment Corp., Tarzana, Calif., Reg. No. 1,362,107, for the mark "UNEEK BY GERICHO", Canc. No. 19,632.

Healthwear Underwear, Inc., Wernersville, Pa., Reg. No. 1,038,860, for the mark "FRUITS-BEST BY HEALTHWEAR", Canc. No. 19,654.

JEAN BROWN
Administrator of the
Trademark Trial and
Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for
Trademarks

Service by Publication

Petitions to cancel the registrations identified below having been filed, and the notices of such proceedings sent by registered mail to registrants at the last known addresses having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellations will be proceeded with as in the case of default.

Hinton & Co., Inc., Farmingdale, N.Y., Reg. No. 940,232, for the mark "SHAKE-N-GROW", Canc. No. 19,561.

United States Football League, New York, N.Y., Reg. No. 1,365,268, for the mark "L.A. EXPRESS", Canc. No. 19,610.

Datamax Business Sytems, Inc., Hermosa Beach, Calif., Reg. No. 1,421,770, for the mark "SERVICE PRO (STYLIZED)", Canc. No. 19,602.

Insure, Inc., Belleville, N.J., Reg. No. 1,464,478, for the mark "INSURE", Canc. No. 19,603.

Computer Information Sytems, Inc., Crofton, Maryland, Reg. No. 1,554,449, for the mark "CISI COMPUTER INFORMATION SYSTEMS, INC. AND DESIGN", Canc. No. 19,532.

Global Systems Design, Chambersburg, Pa., Reg. No. 970,630, for the mark "GLOBALPHONE" and design, Canc. No. 19,576.

JEAN BROWN
Administrator, Trademark
Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

PATENT NOTICES

Certificates of Correction For Week of October 15, 1991

D. 306,893	4,872,426	4,912,814	4,931,416
4,645,884	4,872,562	4,913,313	4,931,509
4,665,569	4,873,263	4,913,482	4,931,512
4,670,494	4,873,409	4,914,672	4,931,677
4,754,073	4,874,832	4,914,737	4,932,335
4,764,886	4,875,275	4,914,908	4,932,745
4,778,838	4,875,920	4,916,039	4,933,777
4,793,263	4,880,653	4,916,340	4,934,004
4,797,390	4,881,100	4,916,613	4,934,524
4,813,073	4,881,833	4,917,120	4,934,613
4,823,903	4,882,565	4,918,320	4,935,153
4,825,883	4,885,231	4,918,614	4,935,154
4,826,206	4,887,367	4,919,666	4,935,543
4,830,009	4,888,886	4,920,123	4,935,808
4,833,083	4,891,639	4,920,214	4,936,144
4,836,019	4,891,769	4,920,543	4,936,169
4,836,446	4,893,490	4,920,825	4,937,407
4,837,063	4,896,749	4,921,674	4,937,604
4,837,152	4,897,311	4,922,269	4,938,280
4,837,285	4,897,817	4,923,797	4,938,443
4,847,146	4,897,869	4,924,068	4,939,915
4,854,437	4,898,302	4,925,544	4,940,771
4,855,585	4,900,292	4,925,652	4,941,082
4,855,697	4,900,516	4,926,095	4,941,200
4,856,807	4,900,518	4,926,557	4,945,019
4,856,881	4,900,982	4,928,357	4,946,762
4,858,071	4,905,557	4,928,537	4,949,311
4,859,735	4,906,074	4,928,687	4,950,153
4,860,622	4,906,306	4,929,322	4,950,351
4,861,796	4,907,133	4,929,375	4,951,014
4,861,893	4,908,288	4,929,394	4,967,067
4,863,505	4,908,388	4,929,524	4,976,381
4,864,795	4,909,175	4,929,636	4,997,448
4,866,536	4,911,356	4,929,654	5,003,495
4,868,077	4,911,374	4,930,130	5,028,992
4,868,927	4,911,385	4,931,022	
4,872,425	4,912,408	4,931,081	

SPECIAL BOXES FOR MAIL

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1`Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110 — D. E. TALBERT, Director	308-0661	5/31/90
ORGANIC CHEMISTRY, GROUP 120 — JOHN F. TERAPANE, JR., Director	308-1235	10/1/90
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130 — BARRY S. RICHMAN, Director	308-0651	2/1/91
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150 — J. O. THOMAS, Director	308-2351	6/1/90
BIOTECHNOLOGY, GROUP 180 — EDWARD E. KUBASIEWICZ, Director	308-0196	1/1/90
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210 — D. G. KELLY, Director	308-1782	3/1/90
SPECIAL LAWS ADMINISTRATION, GROUP 220 — ROBERT E. GARRETT, Director	308-0511	1/15/90
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230 — GERALD GOLDBERG, Director	308-0754	7/1/89
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 240 — CARLTON CROYLE, Director	308-0771	9/1/90
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250 — JOSEPH J. ROLLA, Director	308-0956	12/1/90
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 — BOBBY R. GRAY, Director	308-0962	6/1/90
DESIGN, GROUP 290 — ROBERT E. GARRETT, Director	308-0511	1/15/89
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 310 — D. G. KELLY, Director	308-1113	10/1/90
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320 — N. GODICI, Director	308-1148	1/1/91
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330 — J. J. LOVE, Director	308-0858	10/1/90
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340 — JOHN KITTLE, Director	308-0861	12/7/90
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 350 — A. L. SMITH, Director	308-0651	10/1/90

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,832,735 to 3,838,465 inclusive
Plant Patents ..... 3,604 to 3,627

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REEXAMINATIONS

OCTOBER 15, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,193,889 (1567th)

MICROENCAPSULATION WITH MODIFIED ALIPHATIC POLYISOCYANATES

Gunther Baatz; Walter Schäfer, both of Cologne, and Manfred Dahm, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Reexamination Request No. 90/002,044, Jun. 6, 1990.
Reexamination Certificate for Patent No. 4,193,889, issued Mar. 18, 1980, Ser. No. 855,743, Nov. 29, 1977.
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655048
Int. Cl.[5] **A01N** *25/34;* **A61K** *7/46;* **B01J** *13/16*
U.S. Cl. 428—402.21

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **8** is cancelled.

Claims **1** and **4** are determined to be patentable as amended.

Claims **2**, **3** and **5–7**, are determined to be patentable.

New claims **9–12** are added and determined to be patentable.

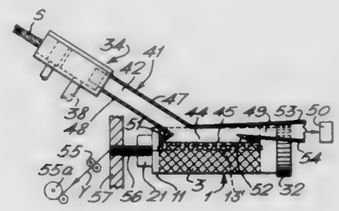
1. Microcapsules having walls which comprise a polycondensate of a film-forming aliphatic polyisocyante containing at least one biuret group or a polyaddition product thereof with a chain-extending agent selected from the group consisting of water, a polyol and a polyamine *and containing an encapsulated material, said microcapsules being produced by dissolving or dispersing a solvent-free film-forming aliphatic polyisocyanate containing biuret groups in materials to be encapsulated, emulsifying the resulting solution or dispersion in water, adding a tertiary amine or a basically acting compound or an NCO-reactive chain-extending agent to initiate the polycondensation, and admixing the reaction mixture obtained until the G37 microcapsules are formed.*

B1 4,315,398 (1568th)

OPEN-END SPINNING APPARATUS

Alan Parker, Bolton, and William M. Farnhill, Burnley, both of England, assignors to Platt Saco Ltd., London, England

Reexamination Request No. 90/001,914, Dec. 15, 1989.
Reexamination Certificate for Patent No. 4,315,398, issued Feb. 16, 1982, Ser. No. 88,262, Oct. 25, 1979.
Claims priority, application United Kingdom, Oct. 26, 1978, 42074; Jun. 6, 1979, 26163; Aug. 4, 1979, 27245
Int. Cl.[3] **D01H** *4/16, 4/34*
U.S. Cl. 57—401



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3** and **9** are cancelled.

Claims **4–8**, **10–19** and **22–28** are determined to be patentable as amended.

Claims **20** and **21** dependent on an amended claim, are determined to be patentable.

New claims **29** and **30** are added and determined to be patentable.

29. An open-end yarn spinning apparatus comprising a yarn formation surface;

fiber feed means for feeding discrete fibers to said surface;

fiber duct means for conveying said fibers from said fiber feed means to said yarn formation surface;

surface-moving means for moving said yarn formation surface in such a manner as to twist said discrete fibers conveyed thereto and deposited thereon to form a yarn thereby;

yarn withdrawal means for withdrawing said formed yarn from said surface in a direction transverse to the direction of movement of said surface; and

fiber-entraining means including first suction means disposed behind a side of said yarn formation surface facing away from said fiber duct means for creating a first suction directed generally perpendicular to said yarn formation surface at said yarn formation surface, said first suction means producing a first airstream within said fiber duct means to entrain said discrete fibers and move the same through said fiber duct means from said fiber feed means to said yarn formation surface, said fiber duct means including a duct for containing said airstream for transporting said fibers from said fiber feed means to said surface, said duct being oblique to a yarn axis of said yarn being formed whereby said fibers within said duct have a component of movement parallel to said yarn axis, said fiber-entraining means including second suction means which includes a suction port disposed in said fiber duct means which communicates with a side of said yarn formation surface facing towards said fiber duct means opposite saidfirst suction means, said second means being effective adjacent said surface for providing a second airstream moving substantially parallel to the axis of said yarn being formed and in the same direction to said component of movement of the fibers whereby fibers entrained in said first airstream towards said surface are turned to a direction more parallel to said yarn axis as said fibers approach said yarn formation surface, and said second airstream coacting with said first airstream to provide a resultant airstream free from turbulence by and devoid of any additional airstreams introduced into said duct means.

B1 4,688,529 (1570th)

LUBRICATING SYSTEM FOR HORIZONTAL CYLINDER OVERHEAD VALVE ENGINE

Takashi Mitaders, Akashi; Tetsuaki Shirai, Kobe; Tomozo Nakagawa; Naotake Nii, both of Akashi, and Kozo Watanabe, Ono, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Reexamination Request No. 90/002,240, Dec. 26, 1990.
Reexamination Certificate for Patent No. 4,688,529, issued Aug. 25, 1987, Ser. No. 883,718, Jul. 9, 1986.
Claims priority, application Japan, Jul. 10, 1985, 60-152812; Feb. 20, 1986, 61-36033
Int. Cl.[5] **F01M** *1/00*
U.S. Cl. 123—196 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2**, **3** and **4**, dependent on an amended claim, are determined to be patentable.

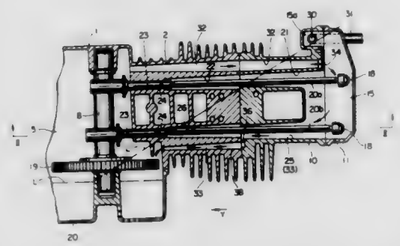
New claims **5**, **6**, **7**, **8**, **9** and **10** are added and determined to be patentable.

1. A lubricating system for an internal combustion engine having:

a cylinder with a substantially horizontal axis and a valve [at] *in* the head thereof;

a crank chamber for accumulating lubricating oil;

an air-oil separating chamber for accomodating a part of a mechanism for operating said valve;



a breather passage *directly* connecting said crank chamber and said air-oil separating chamber for supplying oil mist to said valve operating mechanism; and

a lubricating-oil returning passage which is disposed under said breather passage such as to connect said crank chamber and said air-oil separating chamber and through which said lubricating oil accumulated in said air-oil separating chamber flows toward said crank chamber,

said system comprising means disposed in said breather passage in such a manner as to allow a fluid to flow solely toward said air-oil separating chamber and means disposed in said lubricating-oil returning passage in such a manner as to impart to the flow of said fluid toward said air-oil separating chamber a resistance higher than that of said fluid flow toward said air-oil separating chamber through said breather passage.

B1 4,748,161 (1571st)

TRITERPENYL ESTERS OF ORGANIC ACIDS AND HYPOLIPIDEMIC AGENTS COMPOSED OF THEM

Goro Kimura, Kamakura; Yoshihiko Hirose, Ohgaki; Kumi Yoshida, Sayamachi; Fumio Kuzuya, Nagoya, and Katsunari Fujita, Aichi, all of Japan, assignors to Amano Pharmaceutical Co., Ltd.

Reexamination Request No. 90/001,980, Apr. 4, 1990.

Reexamination Certificate for Patent No. 4,748,161, issued May 31, 1988, Ser. No. 739,183, May 30, 1985.

Claims priority, application Japan, Jun. 4, 1984, 59-115306; Jun. 4, 1984, 59-115307; Apr. 19, 1985, 60-85254; Apr. 19, 1985, 60-85255

Int. Cl.[5] **A61K** *31/56*; **C07J** *9/00*

U.S. Cl. 514—182

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **21** is confirmed.

Claims **1–9** and **11–19** are determined to be patentable as amended.

Claims **10** and **20**, dependent on an amended claim, are determined to be patentable.

New claims **22–33** are added and determined to be patentable.

11. A pharmaceutical composition for the treatment of hyperlipidemia comprising a pharmaceutical carrier and an effective amount of a triterpenyl ester derived from triterpenyl alcohol and organic acid other than ferulic acid and monobasic and dibasic saturated fatty acids, wherein

(a) the triterpenyl alcohol is selected from the group consisting of cycloartenol, cyclobranol, *and* 24-methylenecycloartanol, [lanosterol, lanostenol, agnosterol, cyclosadol, dihydroagnosterol, cyclolaudenol, cycloartanol, cycloeucalenol, euphol, butyrospermol, tirucallol, euphorbol and dammerdienol] and

(b) the organic acid is [nicotinic acid,] linoleic acid[,] or an organic acid of the formula

$$[Ar(CH{=}CR)_n{-}COOH]\ Ar(CH{=}CR){-}COOH$$

wherein R is [hydrogen or] a C_{1-4}-alkyl group and Ar is aminophenyl, nitrophenyl, hydroxyphenyl, a C_{1-4}-alkoxyphenyl, C_{1-4}-alkyl-CONH-phenyl, (C_{1-5}-alkyl)COO-phenyl, C_{1-4}-alkoxyhydroxyphenyl, hydroxy-(C_{1-5}-alkyl)COO-phenyl, C_{1-4}-alkoxy-(C_{1-5}-alkyl)COO-phenyl, C_{1-4}-alkoxynitrophenyl, C_{1-4}-alkoxyaminophenyl, C_{1-4}-alkyl-CONH-C_{1-4}-alkoxyphenyl, di-(C_{1-4}-alkoxyphenyl), di-(C_{1-5}-alkyl-COO)phenyl and dihydroxyphenyl [and n is 0 or 1].

B1 4,762,754 (1572nd)

DYNAMIC HIGH PRESSURE PROCESS FOR FABRICATING SUPERCONDUCTING AND PERMANENT MAGNETIC MATERIALS

William J. Nellis, 471 Cragmont Ave., Berkeley, Calif. 94708; M. Brian Maple, 478 Zuni Dr., Del Mar, Calif. 92014, and Theodore H. Geballe, 259 Kings Mountain Rd., Woodside, Calif. 94062

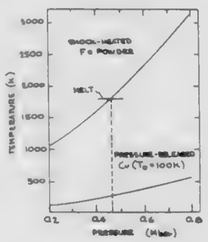
Reexamination Request No. 90/001,605, Oct. 4, 1988.

Reexamination Certificate for Patent No. 4,762,754, issued Aug. 9, 1988, Ser. No. 111,544, Oct. 23, 1987.

Continuation-in-part of Ser. No. 937,794, Dec. 4, 1986, Pat. No. 4,717,627

Int. Cl.[5] **B22F** *3/00*

U.S. Cl. 428—552



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1**, **2**, **5–14**, **20–24** and **27–32** is confirmed.

Claims **3**, **4**, **15**, **25** and **26** are determined to be patentable as amended.

Claims **16**, **17**, **18** and **19**, dependent on an amended claim, are determined to be patentable.

1. In a method for producing superconducting electric and magnetic circuit components, the steps comprising:

disposing powdered superconducting ceramic oxide between sheets of conductive metal in a shock dissipative backing environment;

generating a supersonic shockwave generally normal to planes of said sheets of conductive metal and said layer of ceramic oxide to thereby compact said powdered ceramic oxide into a densified superconducting body having superconducting current paths therethrough enclosed in and integral with said sheets of conducting metal.

B1 4,799,695 (1573rd)

METALLIC GASKET

Nobuo Yoshino, Tokyo, Japan, assignor to Nihon Metal Gasket Kabushiki Kaisha, Saitama, Japan

Reexamination Request No. 90/002,237, Dec. 26, 1990.

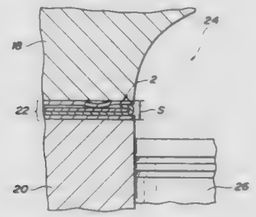
Reexamination Certificate for Patent No. 4,799,695, issued Jan. 24, 1989, Ser. No. 114,699, Oct. 29, 1987.

Division of Ser. No. 827,837, Feb. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,142, Apr. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 493,174, May 10, 1983, abandoned

Claims priority, application Japan, May 17, 1982, 57-81530; May 17, 1982, 57-81531; Dec. 27, 1985, 6^-292892; Dec. 27, 1985, 60-292893

Int. Cl.[5] **F16J** *15/08*

U.S. Cl. 277—231



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **8** is confirmed.

Claims **1**, **3**, **5**, and **7** are determined to be patentable as amended.

Claims **2**, **4**, and **6**, dependent on an amended claim, are determined to be patentable.

New claims **9** and **10** are added and determined to be patentable.

1. A metallic gasket for creating a sealed engagement between the cylinder head and cylinder block of an internal combustion engine, comprising:

first, second and third elastic metal base plates disposed in overlying relationship with one another and being laminated together, said second base plate being interposed between said first and third base plates, and said base plates having a combustion chamber hole extending therethrough;

said first base plate having an annular bead formed therein and projecting axially thereof, said bead being spaced radially outwardly from said combustion chamber hole in concentric surrounding relationship thereto;

said second [based] *base* plate being substantially flat and free of annular beads;

annular compensating means having a predetermined thickness and extending around said combustion chamber hole, said compensating means being disposed radially inwardly of said annular bead;

said annular compensating means including an inner annular edge part of one of said second and third base plates and being folded axially and radially outwardly through an angle of about 180°, said folded inner annular edge part defining said combustion chamber hole; and

said third base plate also being flat and free of annular beads, said folded annular edge part being defined on one of said second and third base plates and being folded around the inner annular edge part of the other of said second and third base plates, *one of (1) said folded annular edge part and (2) the remainder of said one base plate being interposed axially between said first base plate and said other base plate.*

B1 4,826,283 (1574th)

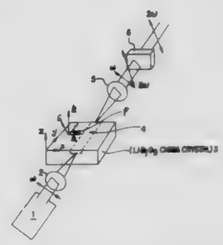
LiB_3O_5 CRYSTAL AND ITS NONLINEAR OPTICAL DEVICES

Chen Chuangtian, Fuzhou; Wu Yicheng, Hefei; Jiang Aidong, Fuzhou; Wu Bochang, Fuzhou, and You Guming, Fuzhou, all of China, assignors to Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, China

Claims priority, application China, Apr. 14, 1988, 88102084.2

Int. Cl.[5] **G02B** *6/10*; **H03F** *7/00*

U.S. Cl. 385—130



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. A NLO device comprising means to direct at least one incident beam of electromagnetic radiation into at least one crystal having NLO properties whereby electromagnetic radiation emerging from said crystal contains at least one frequency different from the frequency of any incident beam of radiation, wherein said crytal is a single crystal of LiB_3O_5.

4. A waveguide device comprising means to direct at least one incident beam of electromagnetic radiation into the waveguide region of at least one NLO crystal whereby radiation emerging from said waveguide region contains at least one frequency different from the frequency of any incident beam of radiation, wherein a waveguide region on the surface of said crystal and said crystal is a single crystal of LiB_3O_5.

B1 4,830,505 (1575th)

PARTICLE WETTING PROCESS AND APPARATUS

Harvey R. Dunton, Anaheim, and Donald H. Rez, Newport Beach, both of Calif., assignors to Standard Concrete Products, Inc., Santa Ana, Calif.

Reexamination Request No. 90/001,972, Mar. 26, 1990.

Reexamination Certificate for Patent No. 4,830,505, issued May 16, 1989, Ser. No. 194,227, May 16, 1988.

Int. Cl.[5] **B28C** *5/08*

U.S. Cl. 366—2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **3**, **4**, **8**, **15**, **17**, **18**, **19**, **25** and **26** are determined to be patentable as amended.

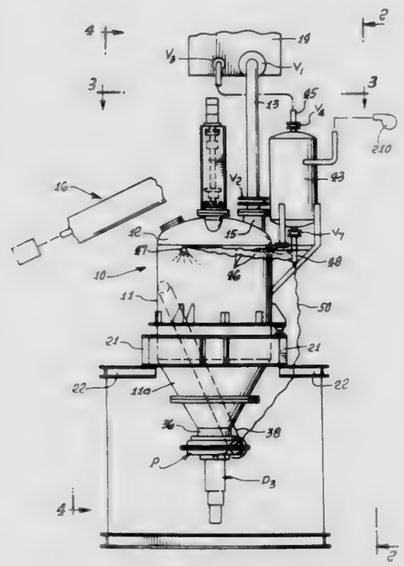
Claims **2**, **5–7**, **9**, **10**, **11**, **12–14**, **16**, **20–24** and **27**, dependent on an amended claim, are determined to be patentable.

New claims **28–41** are added and determined to be patentable.

1. The method of mixing particulate cement and water in a primary mixing vessel *having an inverted lower frusto-conical interior*, to form a slurry batch, that includes:

(a) introducing a measured quantity of water into the vessel,

(b) introducing a measured quantity of particulate cement into the vessel,



(c) agitating the water and cement in the vessel to form a slurry[,] *comprising the steps of using an impeller inlet side of a pump exposed to lower slurry in the inverted lower frusto-conical interior of the vessel for inducing rotation of the lower slurry in one rotary direction about the vessel central vertical axis* [(d)] and, while continuing said agitating, pumping slurry from the lower interior extent of the vessel and delivering the pumped slurry to the upper interior of the vessel, at high velocity.

[(e)] (*d*) removing slurry from the vessel for flow to an auxiliary mixing vessel for mixing with aggregate, *and*

[(f) and] (*e*) employing wash water to wash [remanent] *remnant* slurry from surfaces in the primary mixing vessel for flow to the auxiliary vessel.

B1 4,854,473 (1576th)

SINGLE-PIECE SNAP HINGE CLOSURE

Werner F. Dubach, Maur, Switzerland, assignor to Alfatechnic AG, Dietlikon, Switzerland

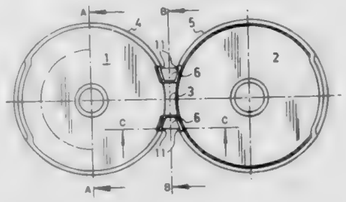
Reexamination Request No. 90/002,114, Aug. 17, 1990.

Reexamination Certificate for Patent No. 4,854,473, issued Aug. 8, 1989, Ser. No. 189,787, May 3, 1988.

Claims priority, application Switzerland, May 13, 1987, 1834/87

Int. Cl.[5] **B65D** *43/24*

U.S. Cl. 220—335



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2**, **3** and **4** are cancelled.

Claims **1**, **5**, **6** and **7** are determined to be patentable as amended.

New claim **8** is added and determined to be patentable.

1. [In a] *A plastic* single-piece snap hinge closure [having] *comprising: two* vertical casing walls [with a generally rounded periphery of plastic comprising] *forming a peripherally rounded* lower part (**1**) and [an] *a peripherally rounded* upper part (**2**), [each of which has one of said casing walls (**4**, **5**), whereby both said casing walls (**4**, **5**),] in a closed condition of the hinge closure[, matching] *both said casing walls (4, 5)* vertically *aligned* above one another[, and whereby] *and forming a junction plane* (*E*) *between said lower part* (*1*) and said upper part (*2*), said lower part (**1**) [is] connected with said upper part (**2**) by [means of at least one] *a* film hinge (**3**)[,] and by [means of] two tension bands (**6**) *each* positioned on [each side] *opposite sides of and at a distance from* said [at least one] film hinge (**3**), *in an open condition of the hinge closure said film hinge coplanar with said junction plane* (*E*), in said closed condition of the hinge closure, said tension bands (**6**) [are] tensioned and [are] positioned in *two corresponding* recesses (**11**) in said casing walls (*4, 5*), [the improvement comprising:] *two opposing ends of each said tension band* (*6*) *respectively molded into said casing walls* (*4, 5*) *so that said tension band* (*6*) *merge integrally into said casing walls* (*4, 5*), in said closed condition said opposing ends being positioned on opposite sides of said junction plane (*E*), said tension bands (**6**) being elastically stretchable, [and distally positioned on both sides of said at least one film hinge (**3**), and] said tension bands (**6**) having [a trapezoidal cross-sectional shape of] approximately uniform thickness over an entire length of each said tension band (*6*), *and in said closed condition each said tension band* (*6*) *having a trapezoidal shape between said integrally formed opposing ends of each said tension band* (*6*).

REISSUES

OCTOBER 15, 1991

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,714

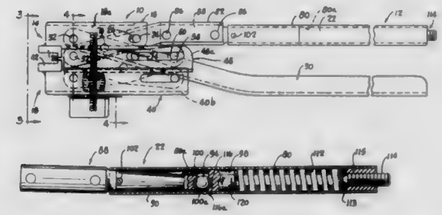
CRIMPING TOOL

J. Edward C. Anderson, Moreland Hills, and Merritt A. Osborn, Chesterland, both of Ohio

Original No. 4,640,117, dated Feb. 3, 1987, Ser. No. 626,920, Jun. 29, 1984. Application for reissue Feb. 1, 1989, Ser. No. 305,381

Int. Cl.[5] **B21D** *7/06*

U.S. Cl. 72—410 **11 Claims**



7. For a handle crimping tool of the type including a pair of crimping jaws movable towards and away from each other, apparatus for indicating the attainment of a predetermined crimping force, comprising:

a) handle structures operatively connected to said crimping jaws to produce relative crimping movement in said jaws;

b) at least one of said handle structures including a signalling means for indicating the application of a predetermined compressive crimping force by said jaws, said signalling means including:

i) an extension arm portion,

ii) a grip portion releasably and pivotally connected to the extension arm portion,

iii) elements yieldably maintaining the portions in an unloaded position until such predetermined compressive crimping force is reached, whereupon the portions move relatively, signalling that the predetermined crimping force has been attained.

Re. 33,715

SHOCK ABSORBER

Takeshi Miura, Fukushima, Japan, assignor to NOK Corporation, Japan

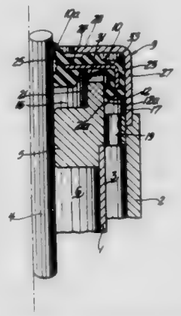
Original No. 4,542,811, dated Sep. 24, 1985, Ser. No. 436,711, Oct. 26, 1982. Application for reissue Sep. 17, 1987, Ser. No. 98,041

Claims priority, application Japan, Sep. 21, 1982, 57-142915

Int. Cl.[5] **F16F** *9/36*

U.S. Cl. 188—322.17 **13 Claims**

1. A shock absorber comprising an oil cylinder **1** and a gas tube **2**, which are jointed together in a concentrically-arranged state to form a gas chamber **3** therebetween; a rod **4** moved reciprocatingly in said oil cylinder **1**; and a bearing **5** having an axially extending cylindrical support portion **21**, fixed to an end portion of said oil cylinder **1**, forming an oil chamber **6** in cooperation with said oil cylinder **2** and said rod **4**, said axially extending cylindrical support portion **21** having a communication groove **31** and *having cylindrical surface means* supporting said rod **4** in such a manner that said rod **4** can be slidingly moved; and [an] *a unitized* oil seal **10** *having a portion* reinforced by an annular reinforcing member **33**, which has a main lip **25** sealingly slidable with respect to a circumferential surface of said rod **4**, and a check valve lip **12** *disposed radially outward of said main lip 25* having substantially frusto-concial shape, resiliently [contracting] contacting an outer circumferential surface of said cylindrical support portion **21**, and adapted to allow an oil to flow from said oil chamber **6** to said gas chamber **3**, and prevent a gas from flowing in the opposite direction, and whose reinforced portion is firmly held between



said bearing **5** and inwardly-extending flange portion **28** provided at the end portion of said gas tube **2** as a radially-extending portion **24**, with which said main lip **25** and said check valve lip **12** are connected integrally with each other [is] *and said reinforced portion being* supported on said cylindrical support portion **21**.

Re. 33,716

COUPLING DEVICES FOR USE WITH ELECTROFUSION FITTINGS OF THERMOPLASTIC MATERIAL

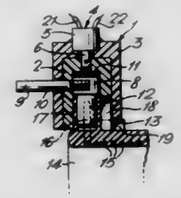
Alan Johnson, Marshfield, Mass., assignor to British Gas PLC, London, England

Original No. 4,639,580, dated Jan. 27, 1987, Ser. No. 682,184, Dec. 17, 1984. Application for reissue Jan. 26, 1989, Ser. No. 302,207

Claims priority, application United Kingdom, Dec. 16, 1983, 8333550

Int. Cl.[5] **H05B** *3/08*

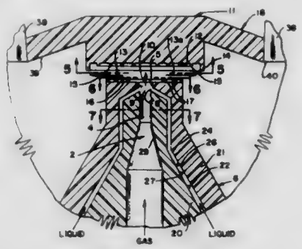
U.S. Cl. 219—541 **36 Claims**



1. A coupling device for use with an electrofusion fitting of thermoplastic material comprising; identifying means in the form of shaped portions carried by the fitting and arranged in a predetermined formation representative of that fitting; and separate connector means having indicator means selectively operable by said connector means when the connector means is brought into register with said identifying means so as to provide an indication of the identity of the fitting and the optimum period [and value] of electrical energisation of its

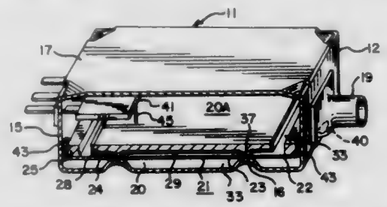
resistance heating wire winding required for satisfactory electrofusion.

Re. 33,717
LIQUID ATOMIZING DEVICE AND METHOD
Steven A. Svoboda, P.O. Box 443, Soulsbyville, Calif. 95372
Original No. 4,746,067, dated May 24, 1988, Ser. No. 928,842, Nov. 7, 1986. Application for reissue May 24, 1990, Ser. No. 527,957
Int. Cl.[5] A61M *11/00*
U.S. Cl. 239—338 **1 Claim**



2. A device for aerosolizing a liquid with a gas comprising:
a. a container for holding said liquid;
b. a venturi tube having an upstream opening adapted for connection to a source of pressurized gas, a throat portion, a gas discharge opening, and a liquid and gas discharge opening;
c. liquid conduit means connected to said container holding said liquid and having a liquid discharge opening adjacent the down stream end of said throat portion of said venturi tube;
d. said venturi tube is dimensioned and positioned to withdraw said liquid fluid from said container through said conduit means and to project a mixture of said liquid and gas out said liquid and gas discharge opening at high velocity in a directed stream in a first direction;
e. a deflector member positioned adjacent and disposed from said discharge opening of said venturi tube and having a surface formed with a generally planar surface intersecting said directed stream and causing a dispersion of said liquid and gas forming a flow mass in a second direction at an angle to said first direction; and
f. said deflector member is formed with a projection member disposed at an angle to said deflector surface and disposed at an angle from said liquid and gas discharge opening of said venturi tube, causing turbulence in said flow mass;
g. said structure resulting in said liquid being dispersed as a fine mist in a flow of said gas;
h. said deflector member being a disc whose perimeter is substantially encircled by said projection member and from which disc a plurality of concentric projecting rings depend, disposed inwardly from said projection member, said projecting rings projecting a lesser distance from said surface of said deflector member than said projection member.

Re. 33,718
ACOUSTIC TRANSDUCER WITH IMPROVED ELECTRODE SPACING
Elmer V. Carlson, Prospect Heights, and Peter L. Madaffari, Elgin, both of Ill., assignors to Knowles Electronics, Inc., Itasca, Ill.
Original No. 4,730,283, dated Mar. 8, 1988, Ser. No. 907,498, Sep. 15, 1986. Application for reissue Feb. 16, 1990, Ser. No. 482,265
Int. Cl.[5] H04R *19/00*
U.S. Cl. 367—181 **12 Claims**



7. An acoustical transducer comprising, in combination: a case; a diaphragm having peripheral mounting portions and a central vibrating plate portion forming a movable electrode, the peripheral mounting portions of said diaphragm being sealed in said casing to define separate first and second acoustic chambers on opposite sides thereof; backplate support means having an opening; a backplate in said second acoustic chamber confronting said diaphragm in close but spaced relation thereto, said backplate being mounted within said opening of said support means and secured thereto at spaced points and being unsecured thereto and spaced from the support means and casing between said spaced points of securement, said spacing between the backplate and support member and casing between said spaced points of securement extending substantially around the entire periphery of said backplate so as to substantially lower the capacitance between said backplate and the peripheral mounting portions of said diaphragm, the side of said backplate facing away from said diaphragm being spaced from a confronting side of said case to define a relatively large space communicating with the space between said backplate and diaphragm and constituting the major portion of the volume of said acoustic chamber on one side of said diaphragm, said backplate having a layer of electret material thereon and cooperating with said diaphragm to generate a signal therebetween upon movement of said diaphragm relative to said backplate or the diaphragm being moved relative to the backplate when a signal is applied therebetween; and a pair of electric terminals respectively coupled to said backplate and diaphragm for coupling a signal to or from the same.

Re. 33,719
SWEETENED EDIBLE FORMULATIONS
Gilbert V. Levin, Annapolis, Md., assignor to Biospherics Incorporated, Beltsville, Md.
Original No. 4,262,032, dated Apr. 14, 1981, Ser. No. 838,211, Sep. 30, 1977. Continuation-in-part of Ser. No. 683,157, May 4, 1976, abandoned, which is a continuation of Ser. No. 106,896, Jan. 15, 1971, abandoned, which is a continuation of Ser. No. 672,457, Oct. 3, 1967, abandoned. Application for reissue May 16, 1989, Ser. No. 352,847
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Int. Cl.[5] A23L *1/09*
U.S. Cl. 426—658 **18 Claims**

1. A process for the preparation of a sweetened edible formulation in which the sweetening agent is non-calorific *in a human* and less susceptible to spoilage due to the growth of microorganisms which comprises the step of mixing a food stuff with an amount sufficient to sweeten said food stuff of an L-hexose monosaccharide selected from the group consisting of L-glucose, L-allose, L-fructose, L-gulose, L-galactose, L-altrose, L-idose, L-talose, L-tagatose and L-psicose as a sweetening agent.

PLANT PATENTS

GRANTED OCTOBER 15, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

7,674
AFRICAN VIOLET PLANT NAMED NANCYFI
Arnold Fischer, Kahlendamm 22, 3000 Hannover 51, Fed. Rep. of Germany
Filed May 16, 1990, Ser. No. 524,071
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Nancyfi characterized by the following combination of characteristics:

(a) forms attractive red-purple single zygomorphic rotate flowers having a strong undulation of the petals,
(b) forms light green pubescent foliage comprising oval leaves with a crenate margin having a broad apex and a cordate base,
(c) exhibits a compact rosette growth habit with the flowers being held erect above the foliage on upright peduncles, and
(d) exhibits a very floriferous habit with the flowers continuing to open for many weeks after the onset of flowering;

substantially as herein shown and described.

7,675
AFRICAN VIOLET PLANT NAMED REGGI
Arnold Fischer, Kahlendamm 22, 3000 Hannover 51, Fed. Rep. of Germany
Filed May 24, 1990, Ser. No. 828,092
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Reggi characterized by the following combination of characteristics:

(a) forms attractive bicolored medium blue semi-double zygomorphic rotate flowers having white slightly undulated petal margins,
(b) forms dark green pubescent foliage comprising oval leaves with a very slightly crenate margin having a narrow apex and a cordate base,
(c) exhibits a compact miniature rosette growth habit with the flowers being held erect above the foliage on upright peduncles, and
(d) exhibits a very floriferous habit with the flowers continuing to open for many weeks after the onset of flowering;

substantially as herein shown and described.

7,676
AFRICAN VIOLET PLANT NAMED ANTIGUA
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,738
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Antigua, as described and illustrated, and particularly characterized by its small, single violet-shaped, blue flowers with white, slightly frilled edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval leaves; profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,677
AFRICAN VIOLET PLANT NAMED GRENADA
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,739
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Grenada, as described and illustrated, and particularly characterized by its single violet-shaped, light blue flowers with white, slightly frilled edges and darker center; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval to heart-shaped, leaves; profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,678
AFRICAN VIOLET PLANT NAMED YELLOWSTONE
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Jul. 12, 1990, Ser. No. 551,740
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Yellowstone, as described and illustrated, and particularly characterized by its double, purplish blue flowers with frilled white edges; strong, upright flower stems that curve slightly toward the center to form a bouquet above the leaves; medium green, velvety leaves; profuse flowering, vigorous growth habit, flowering 9–10 weeks after potting, and its long-lasting and non-dropping flowers.

7,679
AFRICAN VIOLET PLANT NAMED CANDY
Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany
Filed Aug. 10, 1990, Ser. No. 565,321
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Candy, as described and illustrated, and particularly characterized by its single pink flowers with slightly wavy, white edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,680
***FICUS BENJAMINA* 'CITATION'**
Bret T. Wood, 27999 Lake Jem Rd., Mt. Dora, Fla. 32745
Filed May 7, 1990, Ser. No. 520,352
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of *Ficus benjamina* plant substantially as herein shown and described, characterized particularly as to novelty by the tightly curled form of its leaves, which are deeply V-shaped in cross-section, presenting a dense overall plant appearance as bush, shrub, pillar and standard tree form, the other characteristics of my new variety being essentially the same as those of *F. benjamina*.

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PATENTS

GRANTED OCT. 15, 1991

ERRATA

For CLASS	See PATENT NO.
132-114	5,056,480
165-047	5,056,601
271-113	5,056,604
212-147	5,056,671
359-029	5,056,880
359-019	5,056,881
359-212	5,056,882
385-008	5,056,883
385-013	5,056,884
385-013	5,056,885
385-020	5,056,886
385-036	5,056,887
385-123	5,056,888
359-572	5,056,889
359-572	5,056,890
359-630	5,056,890
359-813	5,056,891
359-831	5,056,892
359-054	5,056,893
359-058	5,056,894
359-087	5,056,895
359-063	5,056,896
359-072	5,056,897
359-094	5,056,898
359-676	5,056,900
359-737	5,056,901
359-503	5,056,902
359-513	5,056,903
359-841	5,056,904
359-843	5,056,905
359-227	5,056,915
434-146	5,057,024
623-023	5,057,101
530-387	5,057,598
206-366	5,057,656
392-458	5,057,667
359-127	5,058,101
359-125	5,058,102
359-124	5,058,103
359-164	5,058,206

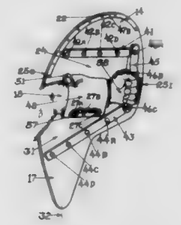
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GRANTED OCTOBER 15, 1991

GENERAL AND MECHANICAL

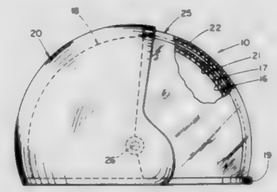
5,056,155
BUCKLER/SHIELD FOR MELEE FIGHTING
Leland C. Truxell, R.D. 5, Box 249, Danville, Pa. 17821
Filed Jul. 26, 1990, Ser. No. 559,150
Int. Cl.[5] F41H *5/08*
U.S. Cl. 2—2 9 Claims



1. A buckler-shield assembly for use by a sporting melee combatant, comprising:
(a) a generally planar surface with a vertically elongated unitary body having an irregular but smoothly contoured periphery, further comprising:
(i) an upper segment of a unitary body presenting a generally triangular configuration having a substantially curvilinear upper apex;
(ii) a contiguous intermediate body segment having a variable but transverse dimension larger than said upper segment and having substantially parallel lateral sides;
(iii) an integral depending tail segment also of a generally triangular configuration presenting a substantially curvilinear lower apex, which apex is located eccentric of a vertical midline of the unitary body but being essentially aligned with an outward lateral side of the shield;
(iv) a rigid manually grippable means affixed to a rearward surface of the unitary body and centered somewhat above a horizontal midline of said body shield, but also being proximal to the inward lateral side thereof; and,
(v) a forearm engagable means affixed on a rearward surface of said intermediate segment with its longitudinal axis being spaced apart laterally from the manually grippable means, and also being centered near the horizontal midline of the shield body, thereby making the shield assembly somewhat top-heavy when presented in a vertical position for initial defense.

5,056,156
HELMET OF A LAMINATE CONSTRUCTION OF POLYCARBONATE AND POLYSULFONE POLYMERIC MATERIAL
Joseph J. Kosmo, Seabrook, and Frederic S. Dawn, Houston, both of Tex., assignors to United States of America as represented by the Administrator National Aeronautics and Space Administration, Washington, D.C. and The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 30, 1989, Ser. No. 443,414
Int. Cl.[5] A42B *3/00;* B32B *27/36*
U.S. Cl. 2—2.1 A 8 Claims

1. An article of laminate construction adapted for configuration in the form of a protective shell, said article comprising:
a rigid underlayer of polycarbonate polymer material approximately 0.0625 inch in thickness, and
a rigid outer layer of polysulfone polymer material laminated to said layer of polycarbonate by thermal compression for providing resistance to chemical attack while



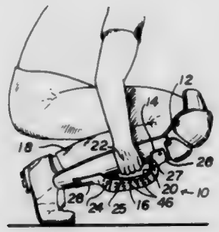
preserving optical qualities of high visibility and transparency.

5,056,157
SOLAR RADIATION PROTECTING DEVICE AND METHOD
Linda D. Pryor, 5012 7th Ave., Los Angeles, Calif. 90043
Filed Jul. 26, 1990, Ser. No. 557,729
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 13 Claims

1. A device for protecting a bare forearm including the upper exposed portion of that forearm and a bare portion of an upper arm of an individual projecting outwardly of a vehicle window from solar radiation exposure, said device comprising:
a) a protective flexible fabric covering which is sized to extend at least over a portion of a circumference of a forearm of an individual and when worn to have one end located to extend over and beyond the elbow of the individual's forearm, said covering having an opposite end which is located in proximity to the wrist of the individual when worn by the individual, said fabric covering extending around and generally conforming to but loosely fitting around a portion of a circumference of the forearm and lower portion of an upper arm of the individual to protect the forearm including the upper exposed portion of that forearm and a lower portion of the upper arm from solar radiation exposure when the forearm projects outwardly of and beyond the window of the vehicle, said fabric covering being formed of a cloth material which will block solar radiation but allows substantial air flow through the device and which also permits relatively unrestricted movement of the arm of an individual when worn without impeding any driving activity of the individual, and
b) strap means on one side of said fabric for releasably securing the fabric covering to the forearm and a bare portion of the upper arm of the individual, said strap means being

adapted to enable the device to be worn on forearms and bare portions of the upper arms of differing sizes and to conform to the sizes and shapes thereof.

5,056,158
BASEBALL CATCHER'S HAND PROTECTOR
John F. Lutz, N. Redington Beach, Fla., assignor to Liberty Bell Sports Equipment, Inc., N. Redington Beach, Fla.
Filed Apr. 17, 1991, Ser. No. 686,816
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—22 11 Claims



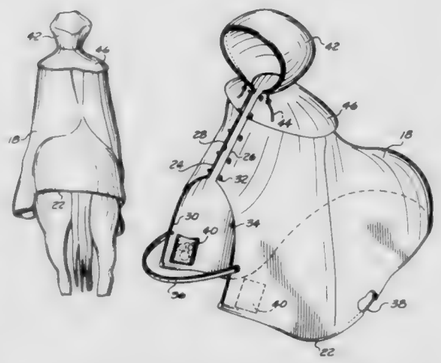
1. A protective device for the throwing hand of a baseball catcher, said device being for use with a leg protector worn by catchers and being mounted on the catcher's leg that corresponds to the throwing hand of the catcher and comprising:
at least one substantially rigid member supported on said leg protector and having at least one portion thereof extending away from the leg of the catcher to permit placement of at least part of said throwing hand between the leg and said one portion such that said one portion of said device is interposed between pitched balls and the throwing hand of the catcher.

5,056,159
COMBINATION TRAY AND BIB
William, L. Zemke, Jr. 299 S. Shore Dr., Forest Lake, Minn. 55025
Filed Sep. 21, 1990, Ser. No. 586,510
Int. Cl.[5] A41B *13/10*; A41D *1/00*
U.S. Cl. 2—49 A 23 Claims



1. A disposable bib-tray comprising a bib portion and a lap area portion; wherein two liquid impermeable sheets are layered on top of one another and sealed together at edges of the sheets to form an internal cavity, wherein a top sheet of the material has perforations defining the bib portion including an unperforated base, such that when the bib portion is pulled away from the top sheet, the base of the bib portion remains attached to the top sheet; wherein the lap area portion is comprised of a bottom sheet of the liquid impermeable material sealed at the edges to the top sheet having an opening defined by the perforations of the bib portion and the base of the bib.

5,056,160
RAIN COAT FOR HORSE AND RIDER
Roger T. Buchanan, 908 South Mud Springs Rd., Payson, Ariz. 85541
Filed Mar. 22, 1990, Ser. No. 497,486
Int. Cl.[5] A41D *3/08*
U.S. Cl. 2—88 14 Claims

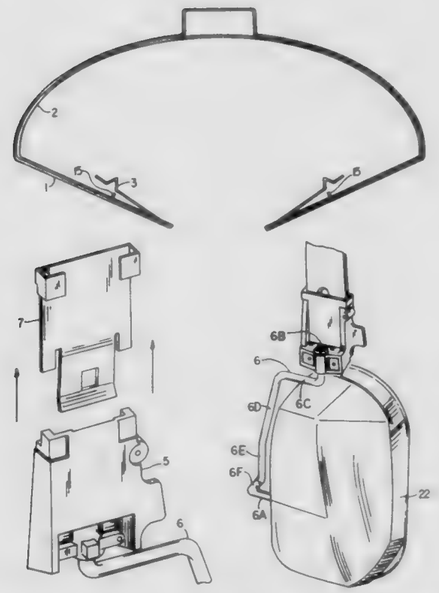


1. A rain coat to be worn by a rider of a horse equipped with a saddle, stirrups and reins, said rain coat comprising:
(a) a weatherproof cloak for draping over said individual's shoulders and encircling said rider's upper body, the contour and dimensions of said cloak being selected so that said cloak loosely covers said saddle, said stirrups and approximately one half of said horse's buttocks when said rider is seated on said horse, and the length of said cloak not exceeding the distance from said rider's feet to said rider's shoulders when said rider is in a standing position dismounted from said horse;
(b) a vent formed in the front of said cloak for allowing said rider to grasp said reins, said vent extending from the bottom edge of said cloak to above the pommel of said saddle when said rider is seated on said horse;
(c) a front opening extending from the top of said vent to the top edge of said clock;
(d) first fastening means for selectively closing said front opening;
(e) second fastening means extending across said vent for securing said cloak about the throat of said horse; and
(f) a weatherproof hood secured to the top of said cloak for covering the head of said rider.

5,056,161
HEADSET HAVING REDUCED WIDTH NESTED BANDS WHICH ARE GRASPED BY EARCUP SUPPORTING BLOCK
John J. Breen, Southboro, Mass., assignor to Bose Corporation, Framingham, Mass.
Filed Sep. 26, 1989, Ser. No. 412,946
Int. Cl.[5] H04R *1/10*
U.S. Cl. 2—209 11 Claims

1. A low spring rate headset having at least one ear cup comprising,

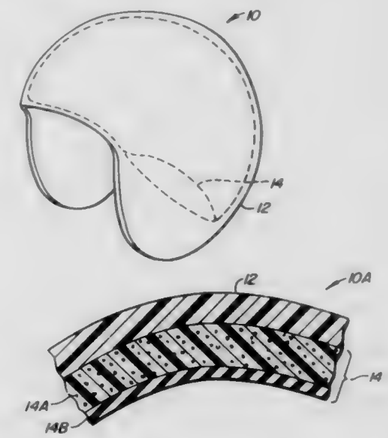
(a) a first band of first width and first length;
(b) a second band of second width and second length approximately equal to said first width and first length respectively;
(c) said first and second bands nested together to form a nested set of said first and second bands of substantially



constant nest length and substantially constant nest width substantially equal to said first length and said first width respectively;
(d) said bands being grasped at each end so that said bands are working in a bending moment;
(e) and a means to attach at least one ear cup to at least one end of said bands.

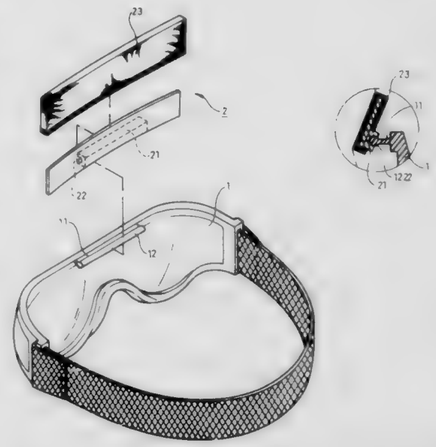
5,056,162
FORM-FITTING, ENERGY-ABSORBING MATERIAL AND METHOD FOR MAKING THE SAME
Andrew T. Tirums, San Jose, Calif., assignor to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.
Filed Jun. 7, 1990, Ser. No. 534,779
Int. Cl.[5] A42B *3/00*
U.S. Cl. 2—412 19 Claims

4. A method for producing a material for use as an energy-absorbing, formable liner that conforms to the contours of a body-part of a person, the method comprising the steps of:
forming the material from an open-cell urethane foam impregnated with a room-temperature curable thermoset epoxy that is plastically deformable at an elevated temperature, the ratio of impregnated weight to unimpregnated weight of the liner being the range of about 2.4 to 3.0;
heating the material to a temperature that causes the material to become plastically deformable;



fitting the material to the body-part of a person, and allowing the material to cool until the material becomes non-plastic.

5,056,163
SWEAT-ABSORBING STRIP FOR SPORT GOGGLES
Chih T. Chou, 4, Hsin-I South Rd., Tainan City, Taiwan
Filed May 15, 1990, Ser. No. 523,357
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—453 3 Claims



1. A sport goggle having a frame for covering a user's eyes, head-encircling means directly attached to said frame for mounting said frame in an approximately fixed position relative

to the user's forehead, and a perspiration-absorbing strip assembly comprising:

perspiration-absorption means; and

angularly adjustable means rotatably mounting said perspiration-absorption means on said goggle frame for rotational adjustment of the perspiration absorbing means relative to the user's forehead when the frame is mounted thereon by the head-encircling means.

5,056,164

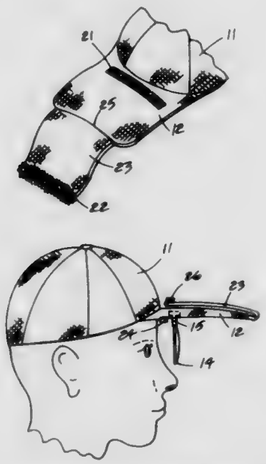
VISOR CAP AND EYE GLASS ORGANIZATION

Tommy W. Lisle, 806 N. Franklin, Sand Springs, Okla. 74063, and Bill L. Lisle, 2813 E. El Paso St., Broken Arrow, Okla. 74014

Filed Mar. 15, 1990, Ser. No. 493,638

Int. Cl.[5] A61F *9/02*

U.S. Cl. 2—453 **3 Claims**



1. A visor cap comprising in combination a cap member including a body portion and a visor extending forwardly of the body portion, the visor including a top surface and a bottom surface and the visor mounted to the body portion at an intersection line, and

an eyeglass frame and lens member including a top longitudinal strut, the top longitudinal strut mounted to a rigid plate, and

mounting means to permit selective mounting of the rigid plate to the bottom surface of the visor, and

wherein the mounting means includes a first hook and loop fastener strip mounted to the bottom surface of the visor adjacent the intersection line and arranged laterally of a forward extent of the visor relative to the body portion, and the rigid plate including a second hook and loop fastener strip selectively securable to the first hook and loop fastener strip, and

wherein a flexible stripper tab extends laterally of the rigid plate and the second hook and loop fastener strip is mounted coextensively to a top surface of the rigid plate, and

wherein the longitudinal strut includes a plurality of spaced bifurcated frame members, each bifurcated frame member including a frame leg pivotally mounted within each bifurcated frame member, and each frame leg integrally and orthogonally mounted to a bottom surface of the rigid plate to permit pivotment of the longitudinal strut relative to the rigid plate, and

a flexible cover flap including a forward flap end and a rear flap end, the rear flap end including a hinge coextensive therewith, and

wherein the hinge is mounted at a forward terminal end of the visor, and the flap including a top flap surface and a bottom flap surface, and the top flap surface including a fourth hook and loop fastener strip mounted coextensively with the forward flap end and the bottom flap surface including a sixth hook and loop fastener strip underlying the fourth hook and loop fastener strip and coextensive therewith and contiguous with the forward flap end.

5,056,165

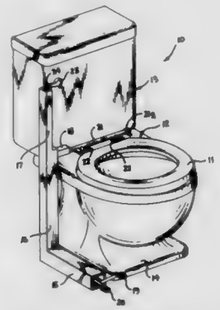
COMMODE FLUSH AND SEAT LIFT APPARATUS

Reginald E. Wescott, Sr., 3405 W. Clearfield St., Philadelphia, Pa. 19132

Filed Jul. 9, 1990, Ser. No. 550,062

Int. Cl.[5] E03D *5/08;* **A47K** *13/10*

U.S. Cl. 4—249 **7 Claims**



1. A commode flush and seat lift apparatus comprising, in combination,

a commode including a lid overlying the commode, with a fluid tank positioned rearwardly of the lid, with the fluid tank including a flush lever pivotally mounted to the fluid tank to effect a flushing of the commode, wherein the apparatus further includes,

a first shaft mounted to the commode rearwardly of the lid, wherein the first shaft includes a plurality of spaced plates orthogonally and fixedly mounted to the first shaft and mounted to a rear end face of the lid, wherein rotation of the first shaft effects rotation of the lid, and

a second shaft orthogonally oriented relative to the first shaft, wherein the second shaft includes a clamp member mounted to an upper terminal end of the second shaft with the clamp member mounted to the flush lever, and

the commode including a commode base, with a seat lift pedal positioned adjacent a lower terminal end of the commode base, including first linkage means for effecting rotation of the first shaft upon depressing of the seat lift pedal, and

a flush pedal including second linkage means for effecting downward reciprocation of the second shaft upon depressing of the flush pedal, and

wherein the apparatus includes a first conduit orthogonally oriented to and integrally mounted to a second conduit, wherein the second conduit projects upwardly relative to the first conduit, and a third conduit projecting longitudinally of and beyond the second conduit, and a fourth conduit projecting orthogonally relative to the second conduit, and the first shaft is rotatably mounted within and extends beyond the fourth conduit, wherein the first linkage means is wholly contained within the second conduit and the first conduit, and the second shaft is reciprocatably mounted within the third conduit and second conduit, with the second linkage means wholly contained within the first conduit.

5,056,166

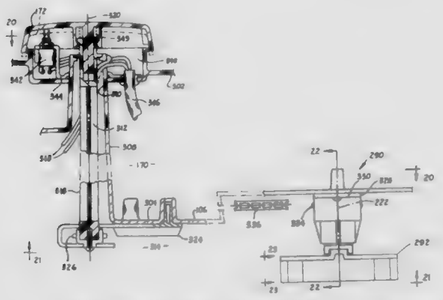
SELF-CONTAINED RV SANITARY SYSTEMS

Charles L. Sargent, and John M. Antos, both of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Division of Ser. No. 427,030, Oct. 25, 1989, Pat. No. 4,944,048, which is a continuation of Ser. No. 180,321, Mar. 11, 1989, abandoned, which is a division of Ser. No. 870,800, Jun. 5, 1986, Pat. No. 4,776,631. This application Jul. 2, 1990, Ser. No. 546,870

Int. Cl.[5] E03D *1/34*

U.S. Cl. 4—321 **4 Claims**



1. In a self-contained water use system comprising sanitary fixture and holding tank sections separable along a line, said sections being organized and arranged with the holding tank section disposed at a vertical level lower than that of the sanitary fixture section so that waste water from the sanitary fixture section passes into the holding tank section and wherein said holding tank section comprises a valve for opening and closing an opening in the holding tank section through which waste water from the sanitary fixture section passes, a connectable and disconnectable connection in an operative coupling which operates the valve from the sanitary fixture section, said coupling including means for preventing separation of the holding tank section from the sanitary fixture section along said line unless said valve is closed.

5,056,167

MODULAR ASSEMBLY FOR SWIMMING POOLS

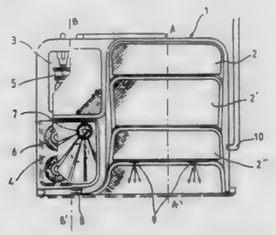
Andre Cholley, 6 Rue du Gobenwald, 68580 Seppois Le Bas, France

Continuation of Ser. No. 137,210, Dec. 23, 1987, abandoned. This application May 11, 1990, Ser. No. 522,089

Claims priority, application France, Dec. 23, 1986, 8618248

Int. Cl.[5] E04H *4/00*

U.S. Cl. 4—492 **13 Claims**



1. A modular assembly for use in a swimming pool comprising a water filtration system for filtering water between said swimming pool and said module assembly and a water pumping and recycling system for pumping and recycling water between said swimming pool and said modular assembly, integrated in a prefabricated module having a substantially horizontal submerged bathing portion capable of supporting a user while sitting or lying, formed for at least partial submersion in a swimming pool, said prefabricated module comprising at least one stair, a filtration vat enclosing said water filtration system, and a technical vat enclosing said water pumping and recycling system, water intake means and water discharge means for passage of water to and from said swimming pool, a foot bath, a countercurrent swimming system, and an electrical power connection means for accessing electrical power, said water pumping system further comprising means for drawing water from said foot bath through a plurality of filtering cartridges, said water being discharged into said swimming pool through nozzle means.

5,056,168

WHIRLPOOL BATHTUB

Heinz-Werner Mersmann, Ahlen, Fed. Rep. of Germany, assignor to Franz Kaldewei GmbH & Co., Fed. Rep. of Germany

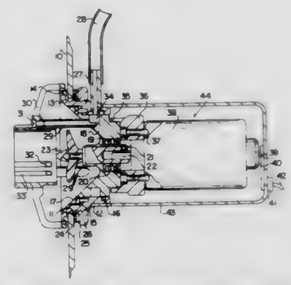
PCT No. PCT/DE88/00564, § 371 Date Mar. 16, 1990, § 102(e) Date Mar. 16, 1990, PCT Pub. No. WO89/02263, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 10, 1988, Ser. No. 490,689

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3731084; Jan. 9, 1988, 3800401

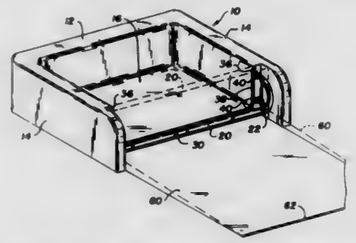
Int. Cl.[5] A61H *33/02*

U.S. Cl. 4—542 **10 Claims**



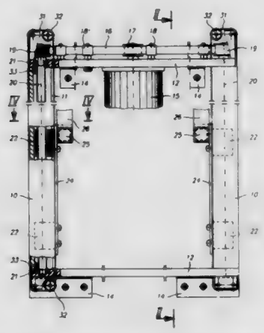
1. In a whirlpool bathtub with fixtures (**44**) for producing jets of at least one of water and air, which can be delivered to an interior of the bathtub at a plurality of points on a tub wall (**10**), each said point on the tub wall having a cup-shaped housing mounted through an opening in the tub wall with an open end thereof directed into the tub and having an individual, drivable fixture (**44**) mounted in said housing, where each said fixture is individually drivable by a motor activated by driving energy from outside of the bathtub, and has a propeller (**23**) which can be set into rotating motion by said motor, the improvement comprising: a truncated cone-shaped seat sealingly mounted within said housing adjacent said open end thereof, said truncated cone-shaped seat positioned such that an apex thereof is directed towards a closed end of said housing and an opposite end thereof defines a propeller chamber, said propeller (**23**) positioned in said chamber and being mounted on a shaft sealingly mounted through an aperture in said apex of said seat and connected to said motor, a nozzle cover (**30**) mounted on said open end of said housing and having aspirating openings (**34**) and exit openings (**33**), whereby water in said chamber empties completely through said nozzle cover (**30**) when the bathtub is emptied.

5,056,169
BATHING APPARATUS FOR HANDICAPPED PEOPLE AND THE LIKE
Joseph P. A. Roguebrune, 6415 East Broadway, Burnaby, B.C., Canada V5B 2Y4
Continuation-in-part of Ser. No. 388,795, Aug. 2, 1989, Pat. No. 4,993,087. This application Jun. 25, 1990, Ser. No. 543,282
Int. Cl.[5] A47K *3/02*
U.S. Cl. 4—556 **10 Claims**



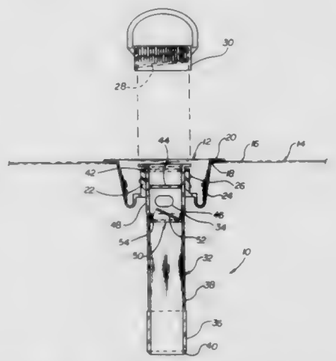
1. A bathing apparatus for handicapped people and the like comprising:
a bathtub having a first and a second vertical side and a first and a second end wall extending up from a bottom surface, one vertical side being fixed, said second vertical side of the bathtub having a single unitary sliding panel therein, the sliding panel mounted in track means in two external walls extending beyond the second vertical side of the bathtub, the track means extending downwards and curved under the bathtub into an opening provided under the bathtub, allowing the sliding panel to be lowered, turned and slid into the opening under the bathtub to provide a lowered position to permit entry and exit to the bathtub,
means to raise and lower the sliding panel between the lowered position and the raised position, and
sealing means to effect a seal for the sliding panel in the raised position.

5,056,170
LIFTING DEVICE, PARTICULARLY FOR BEDS
Manfred Kronshagen, Poststrasse 212, CH-8957 Spreitenbach, Switzerland
Filed Apr. 15, 1991, Ser. No. 685,606
Claims priority, application Switzerland, Apr. 18, 1990, 1310/90
Int. Cl.[5] A47C *19/04*; **B66F** *7/14*
U.S. Cl. 5—10.1 **8 Claims**



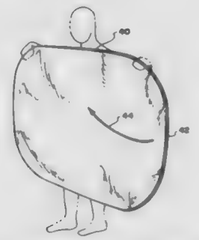
1. A lifting device, particularly for beds, having two vertical guide posts, each formed as a hollow profile having a longitudinal slot and provided with a screw shaft spindle rotatably mounted within the hollow profile, drive means for jointly rotating said spindles, a load-carrying element associated with each guide post, each connected across said respective longitudinal slot to a spindle nut means riding on said respective spindle, the two load-carrying elements thereby being adapted to be jointly raised and lowered, wherein said two guide posts are connected to each other by an upper and a lower cross-strut to form a flat, rigid frame suitable for wall fixing, and wherein on each screw-shaft spindle rides a pair of spindle nuts arranged above each other a distance apart, a cantilever being attached to each pair of spindle nuts and projecting from the plane of said frame.

5,056,171
WATERBED MATTRESS AIR BLEEDER VALVE
Lynn D. Larson, 1052 N. Lakeshore Dr., Lincoln, Nebr. 68528
Filed Mar. 27, 1991, Ser. No. 675,671
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—451 **18 Claims**



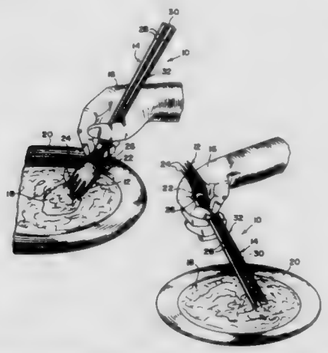
1. A standpipe adapted to facilitate bleeding of air through the flexible filler spout of a waterbed mattress, which spout includes an outermost generally cylindrical end fitting, said standpipe comprising,
an elongated generally cylindrical tube having a top end portion and an open bottom end portion,
said top end portion having an external diameter such that the top end portion is adapted for a frictional slide fit within said end fitting so as to afford a substantially liquid tight seal between said top end portion and said end fitting, and further comprising
a collar protruding outwardly from said top end portion for engaging the top of the spout end fitting upon downward movement of said standpipe into said spout for storage,
a transverse closure plate across said top end portion of said tube to block fluid flow therethrough,
said tube including a sidewall having at least one opening therethrough adjacent and below said closure plate for release of air therethrough,
said bottom end portion having an external diameter such that said bottom end portion is adapted for a frictional slide fit within said end fitting so as to afford a substantially liquid tight seal between said end portion and said end fitting, and
a lip protruding outwardly from the bottom end portion of the tube at a position for engaging the underside of the spout end fitting upon upward movement of said bottom end portion in sealed relation within said end fitting thereby to resist removal of said standpipe from the spout.

5,056,172
METHOD OF FOLDING A BEACH BLANKET
Richard Kaiser, 5761 Tuxedo Ter., Los Angeles, Calif. 90068; John T. Gutch, 16945 Sunset Blvd., Pacific Palisades, Calif. 90272, and Richard Rasof, 7923 Agnes St., #5, North Hollywood, Calif. 91605
Division of Ser. No. 452,636, Dec. 19, 1989, Pat. No. 4,951,333. This application Jul. 23, 1990, Ser. No. 557,318
Int. Cl.[5] A47G *9/06*
U.S. Cl. 5—417 **8 Claims**



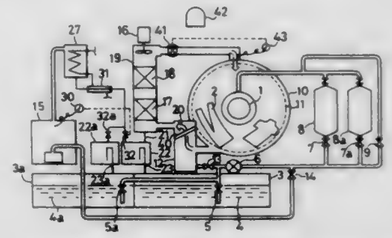
2. A method of folding a beach blanket having a center portion, a left end, and a right end bounded by the perimeter formed by a flexible spring support hoop retained against a fold formed in the peripheral edge of the beach blanket comprising the steps of:
supporting the center portion of a blanket against the user's chest;
first folding the left and right ends of the blanket forward and then inward over the center portion of the blanket to form top and bottom portions while restraining the center portion from movement toward the user by the chest support; and
moving the partially folded blanket forward so as to allow the top and bottom portions of the blanket to move vertically together under spring tension caused by the support hoop into a folded configuration.

5,056,173
COMBINATION FORK AND CHOPSTICKS
Frank J. Brincat, 22-02 25th Rd., Astoria, N.Y. 11102
Filed Aug. 31, 1990, Ser. No. 576,372
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—112 **3 Claims**



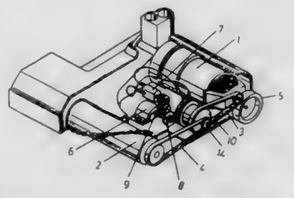
1. A combination fork and chopsticks utensil, comprising:
(a) a fork portion; and
(b) a chopsticks portion extending from said fork portion and being one homogeneous piece with said fork portion, said chopsticks portion being flexible and substantially parallel and have square cross-sections that taper towards said fork portion, said chopsticks portion including a pair of elongated slender rods, said slender rods having a space extending therebetween so that said slender rods can be flexed by the hand to move towards each other to pick up the food, said slender rods acting as a handle for said fork portion so that in a first instance a hand can grip said chopsticks portion with said fork portion facing downwardly to use said fork portion for picking up and eating food and in a second instance the hand can grip said chopsticks portion with said fork portion facing upwardly to use said chopsticks portion for picking up and eating food.

5,056,174
DRY CLEANING METHOD AND APPARATUS
Haruo Hagiwara, Aichi, Japan, assignor to Mitsubishi Jukogyo K.K., Tokyo, Japan
Division of Ser. No. 384,843, Jul. 24, 1989, Pat. No. 4,912,793. This application Jan. 30, 1990, Ser. No. 472,570
Claims priority, application Japan, Jul. 17, 1986, 61-168837
Int. Cl.[5] D06F *43/08*
U.S. Cl. 8—158 **3 Claims**



1. A dry cleaning apparatus using organic solvents characterized by the provision of a processing tank, solvent tanks containing at least two or more types of solvents both of which are melted to each other and mixed to a predetermined mixture ratio, filters for the respective solvents disposed between the solvent tanks and the processing tank, a fractionating device including a distiller, a condenser and a water separator for fractionating and withdrawing the at least two or more types of solvents, and a recovery duct including a cooler and a heater having both ends connected to the processing tank and which are connected to a refrigerator.

5,056,175
FLOOR CLEANING MACHINE
Klaus Stein, and Heinz Kaulig, both of Velbert, Fed. Rep. of Germany, assignors to Stein & Co. GmbH, Velbert, Fed. Rep. of Germany
Filed Jan. 17, 1990, Ser. No. 466,038
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1989, 3913390
Int. Cl.[5] A47L *11/18*
U.S. Cl. 15—49.1 **20 Claims**



1. A floor care machine or the like comprising:
a lower side;
a brush roller disposed on the lower side of said machine,

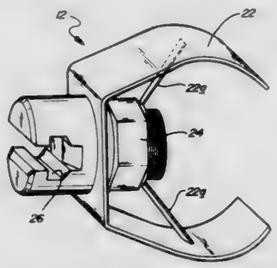
said brush roller comprising brush means disposed thereon;
drive means for driving the brush roller;
a plurality of wheels disposed on the lower side of said machine;
adjusting means for adjusting at least one of said wheels of said machine, said adjusting being for at least one of increasing and decreasing a height of said machine at said brush roller relative to the floor;
said height being adjustable within a predetermined range of heights;
detecting means for detecting a torque transmitted between said brush roller and said drive means;
said detecting means being for generating a first signal upon said torque exceeding a predetermined range of torques, said first signal being for causing said adjusting means to increase said height of said machine within said predetermined range of heights;
said detecting means being for generating a second signal upon said torque falling below a predetermined range of torques, said second signal being for causing said adjusting means to decrease said height of said machine within said predetermined range of heights; and
said detecting means being for deactivating said adjusting means upon said torque being within said predetermined range of torques, said deactivating being for maintaining said height of said machine.

5,056,176

CUTTER ASSEMBLY FOR ROTARY DRAIN CLEANER

Walter C. Belcher, 20068 Poncianna, Redford, Mich. 48240

Filed Jan. 29, 1990, Ser. No. 471,481
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.10 R **9 Claims**



1. An improved cutter assembly for use with a drain cleaning apparatus of the type adapted to rotatably advance a cable through a drain line, said cutter assembly comprised of:
at least one cutter blade fabricated from a synthetic polymeric material and having a metallic core therein;
a connector operative to (1) affix the cutter assembly to the cable and (2) rigidly retain said at least one cutter blade; whereby said assembly is particularly adapted to clean a polymeric drain line without damage thereto.

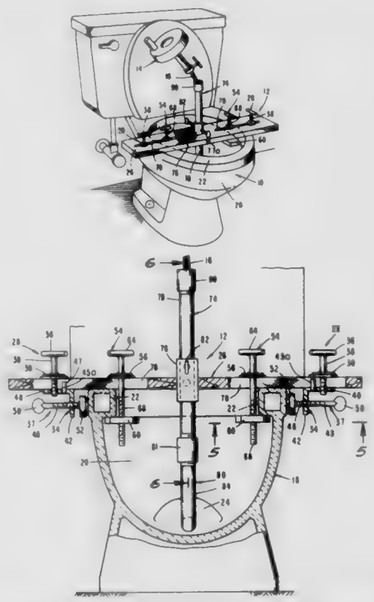
5,056,177

CLEANOUT APPARATUS

Irving J. Nast, 217 N. Kenwood St., Glendale, Calif. 91206

Filed Jul. 31, 1989, Ser. No. 387,628
Int. Cl.[5] B08B *9/04*
U.S. Cl. 15—104.33 **10 Claims**

1. An apparatus for use in cleaning out a clogged toilet of the type having a top open bowl provided with a circumferentially extending rim and a curved internal drain, said apparatus being usable with a sewer cleanout tool of the character having an elongated coil spring which is controllably fed into the toilet drain and rotated about its longitudinal axis, said apparatus comprising:
(a) an elongated base having a length sufficient to span the opening in the toilet;
(b) means carried by said base for engagement with the rim of the toilet bowl to prevent movement of said base relative to the rim of the toilet, said means comprising first and second clamping means affixed to said base, said first clamping means exerting an inward pressure on the outside of said rim portion of said bowl and said second clamping means exerting a pressure on said rim portion of said bowl to secure said base against upward movement,



said first clamping means comprising a pair of clamping assemblies each including a support member, means for connecting said support member to said base and rim engaging means connected to said support member for movement relative thereto to exert an inward pressure on the outside of said rim portion of said bowl; and
(c) coil spring guide means centrally carried by said base for telescopically receiving the elongated coil spring of the plumber's tool and guiding it into the curved internal drain of the toilet.

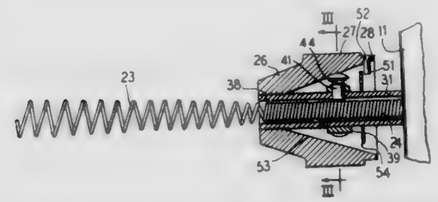
5,056,178

PLUMBING TOOL WHICH HAS A NOVEL CHUCK AND METHOD OF JOINING THE SHAFT TO THE CASE

Aaron J. Levine, 3180 N. Lake Shore Dr., Apt. 5A, Chicago, Ill. 60657

Filed May 4, 1990, Ser. No. 519,393
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.33 **7 Claims**

1. A power tool comprising a main body portion, a hollow shaft rotatably supported by said main body portion and with one end externally threaded, a hollow storage drum connected to the second end of said hollow shaft, a snake extending through said hollow shaft and into said storage drum, a chuck formed with an internal threaded opening that fits over said one externally threaded end of said hollow shaft, a conical opening formed in said chuck, at least one locking pin extending through an opening formed in said hollow shaft and with one end engageable with said snake and a second end engageable with aid chuck within said conical opening of said chuck, and including means for limiting the movement of said chuck



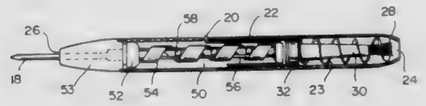
relative to said hollow shaft so as to prevent said locking pin from being removed from said hollow shaft.

5,056,179

COSMETIC APPLICATOR WITH PLURAL APPLICATOR ELEMENTS

Joseph P. Capponi, Maspeth, N.Y., assignor to Aversa & Martin, Inc., Brooklyn, N.Y.

Filed Jul. 31, 1990, Ser. No. 560,432
Int. Cl.[5] A47L *25/00*
U.S. Cl. 15—105 **14 Claims**



1. A cosmetic applicator embodying plural cosmetic applicator elements in a single housing, said cosmetic applicator comprising
an elongated tubular barrel having opposite open barrel ends,
a first cosmetic applicator element disposed in a normally retracted position in said barrel adjacent one of said open ends,
means in said barrel operable to stroke said first applicator element outwardly of said barrel a distance through said one open end,
a second cosmetic applicator element disposed in a normally retracted position in said barrel adjacent the other one of said open ends, and
means in said barrel operable to stroke said second applicator element outwardly of said barrel a distance through said other open end, said first-mentioned operating means extending at least a common longitudinal distance within said barrel with said second-mentioned operating means and being nested about said second-mentioned operating means in non-interfering positional relationship therewith, said common longitudinal distance being substantially less than the sum of the distances said applicator elements can be stroked by their respective operating means whereby the length of the barrel occupied by both said operating means can be reduced while retaining normal applicator extension function.

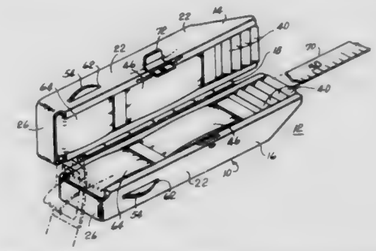
5,056,180

FIELD TAPE CLEANING AND LUBRICATING DEVICE

Timothy F. Stanton, 332 Maple St., Danvers, Mass. 01923

Filed Jun. 12, 1989, Ser. No. 364,464
Int. Cl.[5] F01M *11/12*
U.S. Cl. 15—118 **7 Claims**

1. A portable hand held field tape cleaning and selective lubrication device, comprising;
a housing having first and second portions hingedly attached to one another;
a serially disposed array of chambers in each housing portion arranged for performing successive operations on a tape pulled therebetween, including:
the first of said chambers containing a scraping means to remove chunks of debris as the tape enters the housing;
the second of said chambers containing a plurality of elongated removable wiper pads, said elongated pads being biased towards a tape pulled therepast, by biasing means



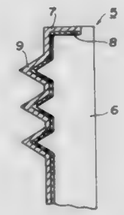
also disposed within said chamber, between said elongated pads and said housing;
the last of said chambers containing an articulable lubricating sponge; and
wherein said sponge is disposed in a container means, said container means being disposed in said chamber in said housing to permit pivoting thereof from a first retracted position to hold said sponge out of engagement with a tape, to a second upright orientation perpendicular to and in engagement with a tape thereadjacent.

5,056,181

ROTARY BRUSH

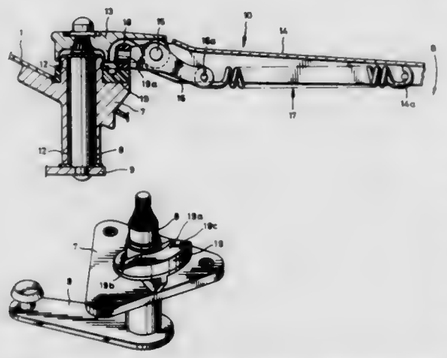
Toshihiro Tsuchiya; Tomoharu Mitsunari, both of Chiba, and Mitsuaki Noguchi, Saitama, all of Japan, assignors to Kabushiki Kaisha Hoky, Chiba, Japan

Filed Sep. 25, 1989, Ser. No. 412,141
Claims priority, application Japan, Oct. 13, 1988, 63-258095
Int. Cl.[5] A47L *13/36*
U.S. Cl. 15—230.16 **8 Claims**



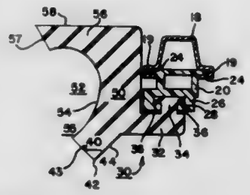
1. In a rotary brush, including a shaft and at least one flexible blade being mounted on a surface of said shaft, said blade comprising:
a base material made from rubber or other thermoplastic elastomer including a plurality of projections disposed on an extreme edge portion of said base material;
a thermoplastic covering having wear resistance and slipperiness, said covering being applied to at least one side surface of said base material which in use opposes a surface to be cleaned; and
a heat-sensitive reactive type rubber adhesive disposed on a surface of said covering which is to be bonded to said base material.

5,056,182
WIPER STRUCTURE WITH VARIABLE WIPING PRESSURE
Ryoichi Fukumoto, Nagoya; Tokihiko Yamamoto, Kariya; Gosaku Terabayashi, Okazaki, and Eiichi Hamada, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan
Filed Sep. 7, 1990, Ser. No. 578,648
Claims priority, application Japan, Sep. 8, 1989, 1-233131
Int. Cl.[5] B60S *1/18, 1/04*
U.S. Cl. 15—250.20 **5 Claims**



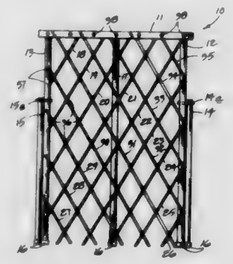
1. A wiper structure comprising stationary means supporting wiper head means for reciprocating rotational movement in a plane, wiper arm means supported on said wiper head means for pivotable movement through reciprocable strokes in a direction perpendicular to said plane in which said wiper head means is rotationally moved, wiper blade means carried by said wiper arm means, resilient biasing means for urging said wiper arm means and said wiper blade means under a biasing force toward a surface which is adapted to be wiped by said wiper blade means, cam means for changing said biasing force, said cam means having a cam surface, the profile of said cam surface establishing an intermediate surface portion to fix said biasing force through a major portion of each of said strokes, and a pair of opposite end portions for decreasing said biasing force at both ends of each of said strokes.

5,056,183
WINDSHIELD WIPER BLADE
Alonzo Haney, III, 739 Broadway, North Chicago, Ill. 60064
Continuation-in-part of Ser. No. 43,204, Apr. 23, 1987, abandoned. This application May 12, 1988, Ser. No. 194,432
Int. Cl.[5] B60S *1/04*
U.S. Cl. 15—250.36 **3 Claims**



1. A windshield wiper blade mountable to a wiper arm of a vehicle for scraping material from the windshield upon movement of said wiper arm, said wiper arm being reciprocatably movable along an arcuate path in a plane generally parallel and adjacent to said windshield between a rest position wherein the wiper arm and wiper blade extend parallel to an edge of the windshield, and a second extended position, wherein the wiper arm and the blade are disposed generally perpendicular to said rest position, said wiper blade comprising an elongate blade body including a base portion extending generally at an acute angle with respect to said windshield, said base portion having a rearward windshield facing end with a pointed tip formation and an opposing forward facing end, an upper body portion having a generally inverted L-shaped cross-sectional configuration defined by a first arm extending upwardly from the rearward end of the base to a free end spaced from the base, and a second arm cantilevered from the free end of the first arm, extending rearwardly perpendicularly from the free end of the first arm to a bevelled free end spaced above and rearwardly of said pointed tip formation, said upper body portion further including an elongate continuous, concave curvilinear sidewall surface extending between said pointed tip formation and said bevelled free end and defining a reservoir for accumulating scraped material, said pointed tip formation and said bevelled free end each being maintained in spaced relation to said windshield surface, said blade body further including a scrapper tip portion depending normally from a point adjacent the rearward end of the base, opposite said upper body portion, and positioned for wipingly, scrapingly engaging the windshield surface, said blade body further including a leading margin surface extending between said scraper tip portion and said pointed tip formation, said blade body further including mounting means extending upwardly from the front end of the base portion for mounting said blade body to said wiper arm, said wiper blade being configured and mounted so that as the wiper arm is moved from said rest position to said second extended position, materials on said windshield are scrapingly removed by said scraper tip portion, and upon continued movement of said wiper arm, said scraped materials are displaced upwardly from the windshield surface along said leading margin surface, over said pointed tip formation and into said reservoir; and upon stopping movement of the wiper arm at said second extended position, any accumulated materials present in said reservoir are ejected generally parallel to said windshield surface, thereby avoiding accumulation of wiped materials on the windshield.

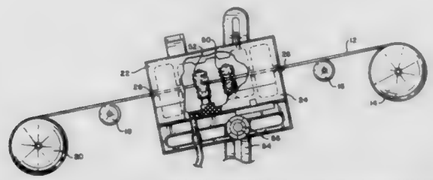
5,056,184
BLIND CLEANING RACK APPARATUS
George H. Pitchford, 60 Prescott St., Jersey City, N.J. 07304
Filed Feb. 5, 1990, Ser. No. 475,238
Int. Cl.[5] A46B *17/02*
U.S. Cl. 15—268 **1 Claim**



1. A cleaning rack apparatus for mounting and cleaning a venetian blind assembly thereon, wherein the apparatus comprises,
a top horizontal frame member, including a horizontal frame plate orthogonally mounted to a vertical frame plate, and
a right vertical frame leg slidably detachably and orthogonally mounted to the horizontal frame plate, adjacent a right end of the horizontal frame member, and

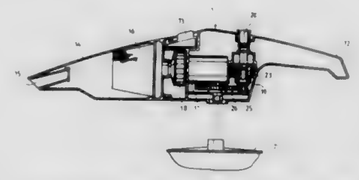
a left vertical frame leg slidably detachably and orthogonally mounted to the horizontal frame plate adjacent the left end of the horizontal frame member, and
means detachably mounting right and left frame caps to said horizontal frame plate, and
a series of pegs integrally and orthogonally mounted to the vertical frame plate and extending outwardly thereof, and
a lattice matrix of planar bars pivotally mounted to each other, with selective ones of the bars pivotally mounted to the right and left vertical frame legs to enable collapse of the rack apparatus when the top horizontal frame member is removed from the right and left frame legs, and
further including a central support member orthogonally and detachably mounted to the horizontal frame plate to provide stability thereto, and further including a right and left stabilizer leg pivotally mounted to a respective right and left vertical frame leg at respective upper ends of the right and left stabilizer legs, and the stabilizer legs including plural link members, the plural link members pivotally mounted to each respective right and left stabilizer leg medially thereof at one end and to the respective right and left vertical frame leg at the other end of the link member, and
means detachably mounting a central frame cap to said horizontal frame plate, and
wherein the matrix of planar bars include a first series of bars arranged parallel to one another, and a second series of bars, wherein the second series of bars are arranged parallel to one another, the first and second series of bars intersecting each other, and each of the intersections defining a pivotal connection, and
wherein the right vertical frame leg, the left vertical frame leg and the central frame leg are respectively defined by a right, left, and central upper end, each upper end frictionally and slidably received within a resilient cap defining said means for detachably mounting said legs each resilient cap fixedly mounted to the horizontal frame plate, and
further including a cleaning assembly, wherein the cleaning assembly comprises a central, elongate, rigid conduit formed with a connector at a rearward end thereof, and a brush head at a forward end thereof, the brush head orthogonally mounted to the central rigid conduit and in fluid communication therewith, and a detergent canister mounted to the central rigid conduit adjacent the connector.

5,056,185
OPTICAL FIBER CLEANER
Daniel K. Schotter, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 8, 1989, Ser. No. 404,809
Int. Cl.[5] B08B *7/04*
U.S. Cl. 15—302 **4 Claims**



1. Apparatus for cleaning the outer surface of an optical fiber with outer buffer coating as it moves along a generally straight line path from a storage spool to a canister upon which the fiber is being wound, comprising:
a housing having an entrance opening, an exit opening, and a chamber for receiving the optical fiber and allowing the fiber to pass therethrough without contacting the same, a straight line between said entrance and exit openings passing through the chamber;
first and second rotatable brushes are mounted within the first housing chamber spaced apart along the fiber path of movement and on opposite sides of the fiber; and having respective parts located for contacting opposite sides of the fiber without inducing more than a minimum stress in the fiber or distorting the fiber from the straight line path of movement with contact pressure on the fiber being only sufficient to rotate the said brushes;
a source of supply of a liquid cleaning solvent;
a spray nozzle located within the housing chamber and interconnected with said liquid cleaning solvent source for directing a solvent spray into the chamber onto both the brushes and the fiber moving therethrough.

5,056,186
CLEANER
Weng Jiam-Fa, 2nd Fl. 1, Sec. 2, Chung Yang Rd., San Chung, Taipei, Taiwan, Taiwan
Filed Oct. 2, 1990, Ser. No. 591,760
Int. Cl.[5] A47L *7/02*
U.S. Cl. 15—328 **1 Claim**



1. A combination cleaner including a hollow main body housing accommodating a filter net, a reversible motor, a draft fan and having a handle extending from a rear section of said hollow main body housing, a frontal hood releaseably coupled to a front section of said hollow main body housing by a buckle, said frontal hood having a suction inlet, wherein the improvement comprises:
clutch means located within said hollow main body housing for operating said combination cleaner as (1) a vacuum cleaner or (2) a brush cleaning apparatus, said clutch means including a worm gear coupled to an output shaft of said motor and a driving gear for engagement and disengagement with said worm gear, said driving gear being reversibly displaceable by a pull rod member extending at least partially external said main body housing, said pull rod member having a hollow sleeve contour including an upper and lower groove formed within an external surface thereof, said upper and lower grooves being engaged by said main body housing to maintain said clutch means in a positionally stable location, said pull rod member having an inwardly directed flange member extending into a groove formed within an upper driving gear shaft extending from an upper end of said driving gear for constraining said pull rod member to said driving gear, said driving gear coupled to a first gear through a lower driving gear shaft extending from a lower end of said driving gear, said first gear for engaging a second gear coupled to a brush member wherein when said pull rod member is displaced to a position where said driving gear engages said worm gear, said clutch means is engaged and drives said brush through mating engagement of said first and second gears.

5,056,187

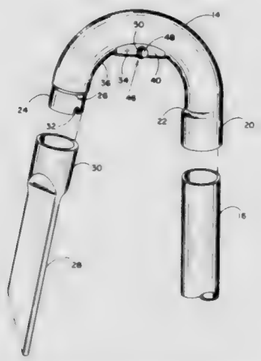
EAVE TROUGH CLEANING APPARATUS

Wayne A. Higgins, 1527 Southridge Rd., New Ulm, Minn. 56073

Filed Aug. 31, 1990, Ser. No. 575,643

Int. Cl.[5] A47L *9/02*

U.S. Cl. 15—339 **19 Claims**



1. An eave trough cleaning apparatus which can be operated by a person from ground level, comprising:

(a) an elongated at least semi-rigid tubular member having an arcuately-shaped terminal portion with a free end, and an opposite end which is constructed and arranged to sealably connect to a suction means which draws from said tubular member, said tubular member being of suitable length to allow the operator of the cleaning apparatus to reach the eave trough from ground level and insert said free end of said tubular member into the trough;

(b) a mirror mounted on the intrados surface of said arcuate terminal portion of said tubular member, said mirror being mounted such that the reflection surface of said mirror is disposed in a general plane which is substantially normal to the longitudinal axis of said elongated member, thereby enabling the operator of the cleaning apparatus to view the cleaned portion of the inner bottom surface of the eave trough when said free end of said terminal portion is inserted into the eave trough; and

(c) said arcuate terminal portion being constructed of suitable dimensions and curvature to facilitate insertion of its free end into the eave trough of a building when standing at ground level.

5,056,188

PROCESS AND APPARATUS FOR SECURING A GRIP ELEMENT TO CROCKERY OR POTTERY

Walter Kramer, Mainz, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Aug. 2, 1989, Ser. No. 388,465

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1988, 3826314

Int. Cl.[4] A47J *45/00*

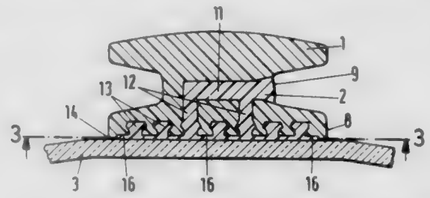
U.S. Cl. 16—110 R **11 Claims**

1. A grip element to be secured to a pottery or crockery article with an adhesive, the grip element comprising:

a body;

a first face on the body for engaging the article, the first face including a peripheral skirt of a selected height having vent means therein and rib means of a height less than the selected height of the skirt, the rib means defining groove means therebetween; and

a passage in the body communicating with the groove means and having an opening through the body spaced from the first face for receiving an injection of adhesive, whereby the adhesive flows from the groove means defined by the



rib means to the peripheral skirt for bonding the grip element to the article.

5,056,189

HINGE WITH TIGHT FIT BETWEEN BASE PLATE AND ADAPTER

Klaus Brüstle; Helmut Rupprechter, both of Lauterach, and Lother Prager, Lustenau, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

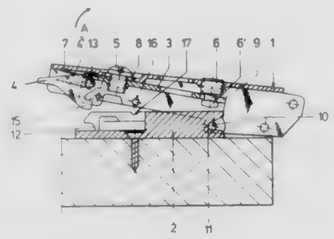
PCT No. PCT/AT88/00067, § 371 Date Feb. 28, 1990, § 102(e) Date Feb. 28, 1990, PCT Pub. No. WO89/02022, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 26, 1988, Ser. No. 490,586

Claims priority, application Austria, Aug. 31, 1987, 2178/87; Aug. 31, 1987, 2179/87

Int. Cl.[5] E05D *07/04*

U.S. Cl. 16—235 **5 Claims**



1. In a hinge including a base plate having first and second longitudinally spaced ends, opposite sides, a transverse notch formed in said first end and latching means formed at said second end, a hinge arm, an adapter adjustably supporting said hinge arm for mounting said hinge arm on said base plate and having first and second longitudinally spaced ends, said adapter having U-shaped configuration including opposite, longitudinally extending side arms, a transverse pin extending between said side arms at said first end of said adapter, said pin fitting in said notch in said first end of said base plate and thereby forming a pivot about which said adapter and said hinge arm are pivotable with respect to said base plate, and a rocker lever mounted at said second end of said adapter for engaging said latching means at said second end of said base plate when said adapter and said hinge arm are pivoted about said pivot toward said base plate, thereby fastening said adapter to said base plate, the improvement comprising means for ensuring that said adapter fits tightly on said base plate without transverse or lateral play therebetween, said ensuring means comprising:

inner surfaces of said side arms of said adapter being spaced from each other in an unstressed state by a first distance less than a second distance between outer surfaces of said opposite sides of said base plate, and at least one of said side arms having a weakened area enabling said at least one side arm, upon said adapter being pivoted toward said base plate, to deform laterally outwardly, such that said inner surfaces of said side arms of said adapter tightly grip said outer surfaces of said sides of said base plate; and

said transverse pin and said notch having respective longitudinal center axes extending in an untensioned state at an angle to each other, such that upon said transverse pin being fit into said notch to conform thereto said adapter is twisted, thereby causing said inner surfaces of said side walls to further grip said outer surfaces of said sides.

5,056,190

HINGE WITH HINGE ARM RELEASABLY CONNECTED TO MOUNTING PLATE

Erich Röck, Höchst, and Klaus Brüstle, Helmut Rupprechter, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

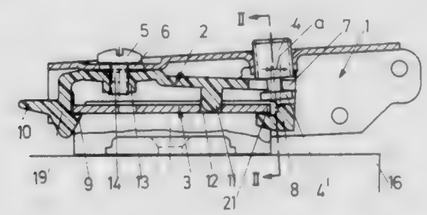
Continuation-in-part of Ser. No. 246,073, Sep. 19, 1988, Pat. No. 4,888,853, and Ser. No. 246,074, Sep. 19, 1988, Pat. No. 4,882,808, each is a division of Ser. No. 878,868, Oct. 3, 1985, Pat. No. 4,800,622. This application Nov. 13, 1989, Ser. No. 435,811

Claims priority, application Austria, Oct. 19, 1984, 3336/84; Oct. 19, 1984, 3337/84; May 9, 1985, 1393/85; Aug. 19, 1985, 2404/85; Nov. 16, 1988, 2806/88

The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.

Int. Cl.[5] E05D *7/06*

U.S. Cl. 16—240 **25 Claims**



1. A hinge comprising:

a mounting plate having first and second ends;

a hinge arm having first and second ends;

said hinge arm having relatively adjacent said first end thereof means cooperative with said first end of said mounting plate for defining a first bearing such that said hinge arm is held relative to said first end of said mounting plate and is pivotable about said first bearing relative to said mounting plate;

said hinge arm having relatively adjacent said second end thereof means cooperative with said second end of said mounting plate for forming a resilient snap connection therebetween and thus defining a second bearing, whereby said hinge arm is mounted on said mounting plate by said first and second bearings; and

said resilient snap connection forming means having extending therefrom handle means for enabling said resilient snap connection to be released by lifting said handle means from said mounting plate, and thereby rotating said hinge arm about said first bearing in the same direction as said handle means and thus releasing said hinge arm from said mounting plate.

5,056,191

BUTT HINGE PAINT MASK AND MASKING METHOD

Fred Love, 7119 University Blvd., Winter Park, Fla. 32792

Filed Aug. 28, 1990, Ser. No. 574,200

Int. Cl.[5] E05D *11/00*

U.S. Cl. 16—251 **12 Claims**

1. A mask for protecting a butt hinge hanging a door on a joint; said hinge comprising first and second flat rectangular leaf portions having upper, lower and side edges and front and rear faces; barrel portions spaced along adjacent ones of said side edges and brought into vertically aligned interdigitated positions to define a barrel having a front, a back, a top and a bottom and including a central bore therethrough; and a pin having a head with a top and inserted into said bore up to said head to join said leaf portions at said barrel in pivotal side-by-side relationship; said first leaf portion being attached within a recess formed on said door and said second leaf portion being attached within a recess formed on said joint; said recesses acting to cover opposite ones of said side edges and parts of said upper and lower edges and said rear faces; and said mask comprising:

a thin flexible body member having a front surface and a back surface;

a coating of pressure sensitive adhesive applied to said back surface of said body member; and

a protective backing sheet disposed in juxtaposition with the adhesive coating on said back surface to protect the adhesive coating while being readily peelable therefrom to expose the adhesive coating preparatory to use of said body member;



said body member including a generally rectangular main portion dimensioned, configured and adapted to match and cover the contour of said front faces of said leaf portions and said front of said barrel when said door is brought into position with said first and second leaf portions in coplanar alignment; and central tab portions, extending respectively upwardly and downwardly from said main portion, and being dimensioned, configured and adapted to be folded over when said main portion is matched to said front faces and said front, to cover exposed parts of said upper and lower edges not covered by said recesses; said body member further including vertical kiss score lines for separating said body member into first and second subregions respectively including left and right wing subportions of said main portion.

5,056,192

PROTECTIVE COVER FOR SINGLE AND MULTIPLE ARTICULATION HINGES

Alfred Grass, Hochst/Vlbg., Austria, assignor to Grass AG, Hochst/Vlbg., Austria

Filed Jul. 11, 1990, Ser. No. 551,196

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1989, 3924385

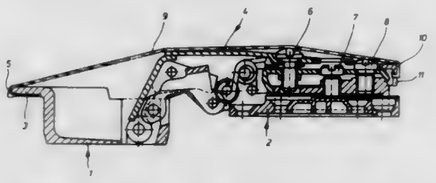
Int. Cl.[5] E05D *11/00*

U.S. Cl. 16—251 **13 Claims**

1. A protective cover for a hinge having a hinge arm and a hinge barrel comprising:

a longitudinally elastic and flexible strip-like cover extending longitudinally relative to the hinge and having one end connected with the upper flange of the hinge barrel and

the other end of the cover strip connected with the hinge arm and wherein the cover strip covers at least substantially the entire top side of the hinge arm and the upper flange of the hinge barrel.



5,056,193

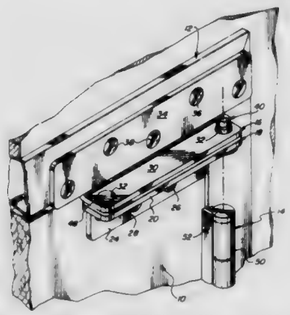
NON-HANDED SHOCK ARRESTOR DOOR PIVOT

Dominic J. Colamussi, Kensington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Dec. 26, 1990, Ser. No. 634,059

Int. Cl.[5] E05D *7/10, 5/06*

U.S. Cl. 16—262 **12 Claims**



1. A non-handed shock arrestor for use with pivotally mounted doors comprising:

(a) an elongated frame member having a pivot plate portion with pivot apertures, one of said apertures being adjacent either each thereof said pivot plate portion adapted to be disposed horizontally on the associated door frame in a position extending over the hinges mounting the associated door thereon, and a mounting portion extending perpendicularly to said pivot plate portion and having apertures therein for seating fasteners to secure said frame member to the face of the associated door frame above the hinges;

an elongated door member having a pivot plate portion with pivot apertures, one of said apertures being adjacent each end thereof, said apertures being cooperatively spaced for alignment with said pivot apertures of said member member said plate portion being adapted to be disposed horizontally at the upper edge of the associated door in a position extending over the hinges, and a mounting portion intermediate the ends of said pivot plate portion extending perpendicularly thereto, and having apertures therein for seating fasteners to secure said door member to the face of the door; and

(c) a pivot member in an aligned pair of said pivot apertures to provide a pivotal connection between said frame and door members and alignable with the pivot axis of the associated hinges of the door assembly, said pivot member being mountable in the other of said aligned pair of pivot apertures for a door of the opposite hand.

5,056,194

HINGE FOR USE IN SERVING CARTS AND THE LIKE

Thomas Huber, Oberkulm, Switzerland, assignor to Romay AG, Oberkuln, Switzerland

Filed Feb. 27, 1989, Ser. No. 316,222

Claims priority, application Switzerland, Feb. 26, 1988, 721/88

Int. Cl.[5] E05D *3/06*

U.S. Cl. 16—366 **13 Claims**



1. A hinge for pivotally securing a first component to a second component comprising a first pintle arranged to be mounted in and so as to extend through a portion of one of the components; a second pintle adjacent and parallel to the first pintle and arranged to be mounted in and so as to extend through a portion of the other of the components; a plurality of leaves each having bearings for the first and second pintles, said leaves being disposed one behind the other in the axial direction of said pintles and being arranged to connect said pintles to each other for movement of the pintle in the first component to and from a position in which the first component lies substantially flush against the second component; and means for non-rotatably connecting at least one of said pintles with one of the parts including (a) the respective component and (b) said leaves.

5,056,195

MINERAL FIBER COLLECTION PROCESS AND DEVICE

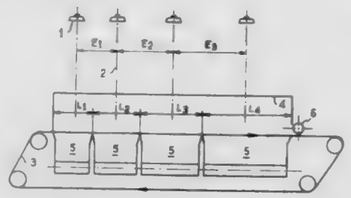
Hans Furtak, Speyer am Rhein, Fed. Rep. of Germany, and James Ahart, Blue Bell, Pa., assignors to Isover Saint-Gobain, Courbevoie, France

Filed Jun. 27, 1990, Ser. No. 544,500

Claims priority, application European Pat. Off., Jun. 29, 1989, 89.401.863.9

Int. Cl.[5] D04H *1/72*

U.S. Cl. 19—304 **6 Claims**



1. Collection process for collecting mineral wool fibers produced by a plurality of fiber making machines in order to form a mat of said fibers, comprising the steps of:

entraining the fibers produced by each of the fiber making machines in a gas,

collecting the fibers produced by each of said fiber making machines on a gas permeable fiber/gas separating surface by drawing the gas through said separating surface, said separating surface comprising a flat conveyor belt; and

advancing said collected fibers in a flow direction, wherein said collecting step comprises applying the fibers produced by each of said fiber making machines to said separating surface in separate collection zones of said separating surface with a constant gas back flow rate, wherein surface areas of said separate collection zones increase along said flow direction.

5,056,196

PIPE-CLIP

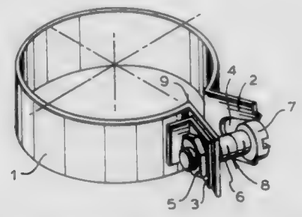
Jan van Walraven, Mijdrecht, Netherlands, assignor to J. van Walraven B.V., Mijdrecht, Netherlands

Filed Mar. 13, 1990, Ser. No. 492,638

Claims priority, application Netherlands, Mar. 14, 1989, 8900619

Int. Cl.[5] A44B *1/04*

U.S. Cl. 24—279 **7 Claims**



1. A pipe-clip comprising an annular clip body formed from a flexible strip having its ends integrally made of a flexible strip having its ends integrally formed into outward flanges, of which a first flange has an outwardly open slot of a shape and size for receiving, through its open end, the shank of a fastening screw and a second flange has an aperture of a size and shape for allowing passage of said screw at any of a predetermined variety of distances from the place where said second flange joins the remainder of said clip body, and further comprising:

an angle bracket nut-holding piece made of resilient material of a configuration having first and second wings integrally joined together to form a corner at least approximately fitting, when said clip body is not under tension, in the corner formed by said second flange and the portion of said clip body extending away from said second flange,

said first wing of said angle bracket piece being in sheet form shaped for fitting on the outside of a portion of said annular clip body near said second flange thereof and being firmly attached to said portion of said clip body at least at a portion of said first wing which is spaced away from said corner by said annular clip body,

said second wing of said angle bracket piece having an outer contour of about the size and shape of said second flange of said clip body, also having means for holding a nut facing said aperture of said second flange, at least when said clip body is not under tension and said second wing is accordingly close to said second flange, said second wing further having aperture means for facilitating the passage of said shank of said screw through said nut when said screw is screwed into said nut,

the resilience of said angular bracket piece being sufficient so that when said screw shank is already screwed into said nut held in said second wing, said second wing of said bracket piece can be swung, by manipulation of said screw, back away from said second flange over an angle sufficient for enabling a portion adjacent to a head of said screw to be swung outward of said first flange and then inserted into the open end of said slot thereof, and the force of said resilience of said angle bracket then being effective, as the screw is further tightened, to propel the head of said screw towards the bottom of said open slot.

5,056,197

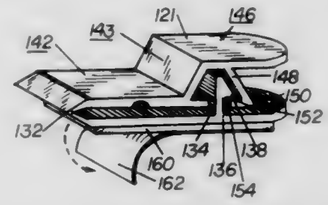
CLIP OF EXTRUDED PLASTIC MATERIAL

Joel Cohen, 1020 NW. 99th Ave., Plantation, Fla. 33322

Filed Feb. 25, 1991, Ser. No. 660,723

Int. Cl.[5] A44B *21/00;* **A61B** *5/04*

U.S. Cl. 24—304 **7 Claims**



1. A clip **101** of extruded plastic material including a hingedly connected base leaf **103** and a swing leaf **105**, and means to hold the leaves releasably in clasping and holding relation of an item **107** captivated between the leaves,

A) said base leaf being of a predetermined thickness and having an upper surface **109** and a flat outer surface **111** and having a straight hinge edge **113**, an outer edge **115** spaced from the straight hinge edge, and a pair of spaced parallel side edges **117** and **119** extending from said straight hinge edge to said outer edge,

B) said swing leaf **105** being sized to overlay the upper surface, swing leaf having an exterior surface **121** and an inner surface **123** to be hingedly moved into confronting relation to the upper surface **109** when clamping and holding an item and said swing leaf **105** having a straight hinge edge **125**, an outer edge **127** spaced from said straight hinge edge, and a pair of opposed side edges **129**, **130** extending from said swing leaf straight edge to said swing leaf outer edge,

C) said base leaf and said swing leaf being tapered along said straight edges defining a recessed weakened hinge zone **132** of reduced thickness across said clip and hingedly interconnecting said leaves at said straight edges,

D) an upstanding lock wall **134** on said base leaf upper surface spaced from and parallel to said straight hinge edge **113** and adjacent the base leaf outer edge **115**, said lock wall **134** having a terminal end **136** and comprising an upstanding portion integral with and on said upper surface and extending across the clip between the side **117**, **119** edges of said base leaf **103**, and said lock wall having an enlarged end zone at the terminal end,

a) a lock shoulder **138** at the juncture of said enlarged end zone and upstanding portion, said lock shoulder having a surface generally parallel to and in spaced relation from said upper surface **109** extending from said upstanding portion to a terminal edge **140** and extending in parallel relation to said straight hinge edges **113**, **125** and extending across the clip **101** between said side edges **117**, **119**, and

b) an inclined cam surface **141** between the terminal edge **140** and terminal end **136** and extending upwardly and away from said base leaf outer edge and said terminal end, said cam surface extending across the clip between said base leaf side edges **117** and **119** and being parallel to said straight edges **113** and **125**,

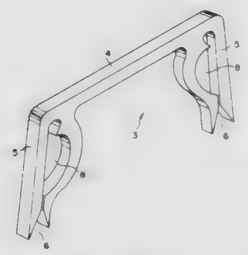
E) said swing leaf **105** including

a) a first portion **142** extending outwardly away from said straight edges,

b) an outwardly extending intermediate portion **144** extending outwardly from said inner portion, and

c) a left tab portion **146** extending outwardly of said intermediate portion,
d) a catch rail **148** extending downwardly away from said swing leaf tab portion and away from said swing leaf straight edge to a catch wall terminal tip, said catch wall terminal tip **150** being enlarged with respect to said catch rail defining a catch surface **152** extending from the catch wall toward the swing leaf straight edge,
e) said catch surface **152** being generally parallel to the inner surface of said swing leaf **105** and extending between the swing leaf side edges **129** and **130** to a cam follower edge, and
F) said cam follower edge **154** and said cam surface **141** being spaced from said straight hinge edges components for mating sliding engagement of one another on swinging movement of closing of said clip leaves into hooked up engagement with one another to embrace an item between the leaves straight edges and lock wall.

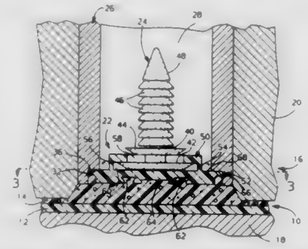
5,056,198
PLANTER CLIP
Dean P. Viglione, Lot 31 Koala Way, Horsley Park, New South Wales 2164, Australia
Filed Aug. 13, 1990, Ser. No. 566,665
Claims priority, application Australia, Aug. 14, 1989, PJ5761
Int. Cl.[5] A47G *29/00;* **A44B** *21/00*
U.S. Cl. 24—336 **4 Claims**



1. A planter clip apparatus comprising an elongate middle section having two ends with clip means at both ends thereof, wherein the clip means are able to be secured to the top rim of a pot thereby securing two different pots together in a spaced arrangement, wherein the apparatus is made from a flexible material and each said clip means comprises two flexible fingers which are biased towards each other such that a lip on each said pot is accommodated between said fingers, one of said fingers abutting an interior surface of the lip and the other finger abutting an exterior surface of the lip.

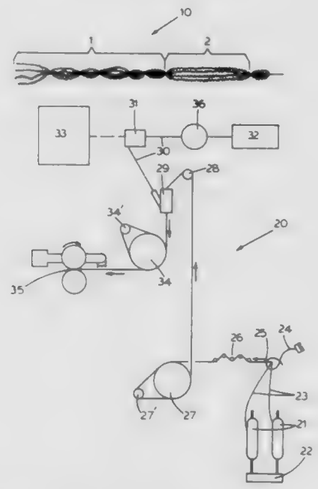
5,056,199
PLASTIC FASTENER TO ATTACH DOOR TRIM PANEL
Arthur C. Stein, Grosse Ile, and John J. Reynolds, Howell, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 2, 1990, Ser. No. 473,759
Int. Cl.[5] A44B *17/00*
U.S. Cl. 24—682 **6 Claims**

1. A retainer for receiving a fastener and adapted for loading into a mold for embedment in a trim article molded of molding material, comprising:
a housing having an upper portion for accepting the fastener and a lower portion for embedment in the molded trim article,
a flexible lip encompassing the housing for sealingly engaging with the mold thereby preventing the molding material from making contact with the upper portion of the



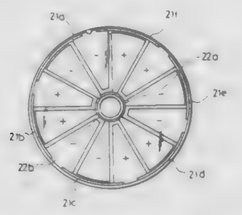
housing and allowing the molding material to make contact with the lower portion of the housing.

5,056,200
APPARATUS FOR MAKING NOVEL TEXTURED YARN
Nathan G. Schwartz, Bryn Mawr, Pa., and Harry A. Prosceno, Wilmington, Del., assignors to Textured Yarn Company, Inc., Kennett Square, Pa.
Division of Ser. No. 462,654, Jan. 9, 1990, Pat. No. 4,993,218.
This application Nov. 28, 1990, Ser. No. 619,320
Int. Cl.[5] D02G *1/20, 3/22*
U.S. Cl. 28—258 **8 Claims**



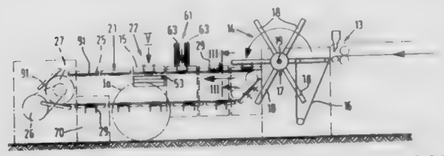
1. Apparatus to make a novelty yarn useful in knitted, woven, and tufted fabrics comprising:
a) a source of crimped supply yarn:
b) means for forwarding the supply yarn as a bundle;
c) an entangling jet in fluid connection, including valving means, with a source of fluid under pressure at a level that entangles yarn passing therethrough into nodes;
d) means for programmed timed sequencing of the valving means between two conditions in a preselected ratio of time durations;
e) a first condition enabling yarn entangling in the jet into the nodes of substantially entangled crimped filaments alternating with sections of substantially unentangled crimped filaments, the nodes and the sections of substantially unentangled yarns alternating in closely, substantially randomly variably spaced sequence;
f) a second condition not enabling yarn entangling in the jet and the time duration of an second condition is such that the extent between the nodes bounding the unentangled yarn thereby produced is greater than an extent between any of the nodes bounding the unentangled yarn produced during the first condition;
g) means for yarn overfeed transport; and
h) yarn take-up means.

5,056,201
METHOD OF MAKING A TRAVELLING-WAVE MOTOR
Masao Kasuga; Takayuki Mori, and Nobuo Tsukada, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan
Division of Ser. No. 291,459, Dec. 29, 1988, Pat. No. 5,006,746
This application Jul. 13, 1990, Ser. No. 553,758
Claims priority, application Japan, Dec. 29, 1987, 62-332501; Sep. 1, 1988, 63-1543[U]
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **5 Claims**



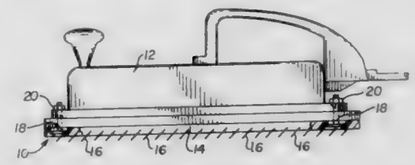
1. A method of making a piezoelectric vibrator, comprising the steps of:
providing a disk-shaped piezoelectric member having a central hole therethrough;
depositing a pattern of excitation electrodes on one side of the piezoelectric member, the excitation electrodes having the general shape of circular segments and being circumferentially spaced apart from one another;
polarizing the excitation electrodes according to a predetermined pattern; and
depositing an outer short-circuit electrode pattern on the outermost periphery of the piezoelectric member to interconnect the radial outer ends of selected ones of the excitation electrodes and depositing an inner short-circuit electrode pattern on the periphery of the central hole of the piezoelectric member to interconnect the radial inner ends of selected ones of the excitation electrodes.

5,056,202
APPARATUS FOR MAKING AND TRANSPORTING STACKS OF FOIL SECTIONS
Karl H. Stiegler, Mohlstr. 1, D-7000 Stuttgart 1, Fed. Rep. of Germany
Filed Oct. 5, 1989, Ser. No. 417,552
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1988, 3834115
Int. Cl.[5] B23Q *5/00;* **B65G** *61/00*
U.S. Cl. 29—33 P **20 Claims**



1. Apparatus for making and transporting stacks of foil sections comprising:
a stacking station;
a row of interconnected transport members;
a pair of wicketing pins on each transport member on which said foil sections can be placed to form said stacks in said stacking station;
a drive for driving in a step-wise manner the row of transport members to form a stack conveying device, and
a take-off station in which said stacks can be taken off said stack conveying device, characterized in that;
(a) a bracket of U-shaped bent configuration is provided to form each pair of wicketing pins,
(b) each transport member comprises a releasable holding device for a bracket to hold said bracket in a stacking position in which the legs of said bracket form said wicketing pins,
(c) a bracket delivery station in which said brackets are fed by a delivery device to said transport members and gripped there by said holding devices is provided beside said stack conveying device, and
(d) releasing device for releasing said holding device is provided in said take-off station.

5,056,203
ABRADING AND CUTTING TOOL ASSEMBLY
Darrell W. Miller, 4925 Young Dr., Pittsburgh, Pa. 15227
Continuation-in-part of Ser. No. 34,666, Apr. 6, 1987, abandoned. This application Apr. 5, 1991, Ser. No. 680,739
Int. Cl.[5] B23D *67/01*
U.S. Cl. 29—78 **10 Claims**

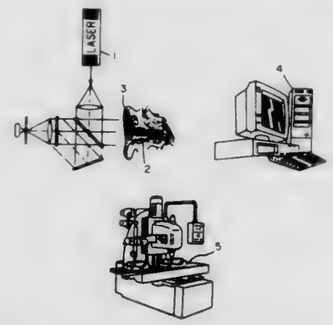


1. An abrading and cutting tool comprising:
a tool body;
attaching means on said tool body for securing said tool body to a drive assembly; and
a plurality of successively spaced elongated cutting and abrading blades secured in fixed, unmovable relationship at an acute angle to the surface of said tool body, each of said blades having toothed cutting edges, said acute angle each blade makes with the surface of said tool body being about 45 degrees, and all of said blades being inclined and facing the same direction for abrading and cutting.

5,056,204
METHOD OF PRODUCING HEARING AIDS
Anton Bartschi, Antoni, Switzerland, assignor to Ascom Audiosys AG, Flamatt, Switzerland
Filed May 17, 1990, Ser. No. 524,840
Claims priority, application Switzerland, May 17, 1989, 01828/89
Int. Cl.[5] H04R *25/00*
U.S. Cl. 29—169.5 **6 Claims**

1. A method of producing a hearing aid which is worn in the ear and includes an amplifier and a sound transducer built into a body member which is made to conform to the inner space of a respective ear, comprising the steps of initially taking measurements of the inner space of the ear up to the eardrum for use in producing an individual shape of the body member corresponding with the measurements of the inner space of the ear, storing the measurements in an electronic memory, providing a body member blank of plastic material and having an electronic amplifier and a sound transducer molded therewithin, and controlling a cutting operation of a cutting ma-

chine based upon the stored measurements to cut an outer surface of the body member blank to provide a desired shaped



individual body member having an outer surface shape that corresponds with the ear inner space measurements.

5,056,205

METHOD OF AND APPARATUS FOR MANUFACTURING SLIDE FASTENERS

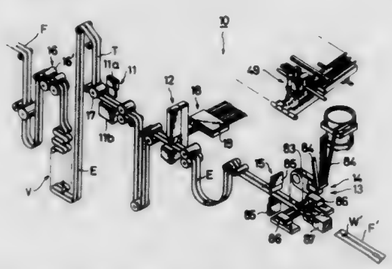
Kazuki Kuse; Yozo Okada, both of Toyama, and Tatsuo Ito, Kurobe, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 12, 1990, Ser. No. 581,551

Claims priority, application Japan, Sep. 12, 1989, 1-235954; May 29, 1990, 2-138932

Int. Cl.[5] B29B *5/00*

U.S. Cl. 29—408 **10 Claims**



1. A method of manufacturing slide fasteners in combination with the steps of gapping an elongate continuous stringer chain to provide element-free space portions at predetermined intervals therealong, applying various fastener component parts to said stringer chain and cutting said stringer chain into individual slide fastener products, said method comprises metering said elongate continuous stringer chain to provide different prospective slide fastener product lengths and maintaining a provisional inventory of the thus metered lengths of the stringer chain in advance of said gapping.

6. An apparatus for manufacturing slide fasteners, wherein a gapping means is utilized for gapping an elongate continuous stringer chain to provide element-free space portions at predetermined intervals therealong, applying means are utilized for applying fastener component parts to the stringer chain, and a cutting means is utilized for cutting said stringer chain into individual slide fastener products, comprising a metering means for metering said stringer chain to provide different prospective slide fastener product lengths; and

a reservoir for maintaining a provisional inventory of the thus metered lengths of the stringer chain, both of said metering means and said reservoir being located upstream of the position of said gapping means.

5,056,206

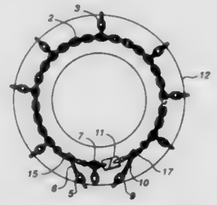
METHOD FOR SECURING A TIRE CHAIN TO A TIRE

Thomas E. Poulsen, Box 19, Jiggs, Nev. 89801

Filed Feb. 8, 1988, Ser. No. 154,119

Int. Cl.[5] B21D *39/00*; **B23P** *11/00*; **B60C** *27/06*

U.S. Cl. 29—428 **22 Claims**



1. A method of securing a tire chain or a cable chain, to a tire, wherein a separate line comprised of a cable, cord, or chain, or any combination thereof, comprises or extends from each of the two opposite end portions of said tire chain or cable chain, on the same side (**1,21,41 & 61**) of said tire chain or cable chain; and wherein said method comprises the steps of moving said lines across the outer surface of said tire, to the other side of said tire, and releasably connecting said lines with the portion (**2,22,42 & 62**) of said tire chain or cable chain located at the other side of said tire from where said lines extend from; and releasably connecting said lines with each other.

5,056,207

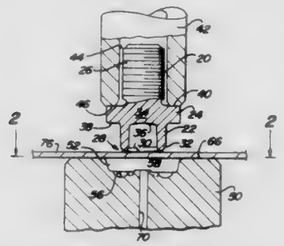
METHOD OF ATTACHING A SELF-PIERCING AND RIVETING FASTENER AND IMPROVED DIE MEMBER

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed Jan. 16, 1990, Ser. No. 464,813

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—432.2 **17 Claims**



1. A method of attaching a self-piercing and riveting fastener to a panel, said fastener including an annular barrel portion having a free open end and a piercing surface adjacent said free end, said method comprising the following steps:

(a) driving said fastener barrel portion free end against said panel, piercing a slug from said panel, and forming an opening through said panel;

(b) driving said barrel portion free end through said panel opening and deforming said free end of said barrel portion radially outwardly, riveting said barrel portion to said panel; and

(c) simultaneously driving said panel slug into said barrel portion through said free open end and shearing a ribbon from an internal surface of said barrel portion, said ribbon remaining integral with said barrel portion and staking said panel slug in said barrel portion.

5,056,208

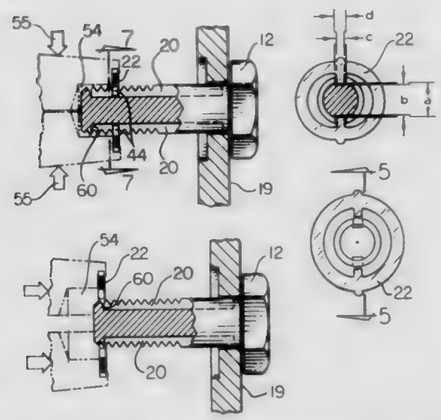
METHOD FOR PROVIDING CAPTIVE PANEL FASTENER ASSEMBLY

Jay M. Stafford, Torrance, Calif., assignor to VSI Corporation, Chantilly, Va.

Filed Mar. 19, 1990, Ser. No. 495,510

Int. Cl.[5] B23P *11/00*; **B21D** *39/00*

U.S. Cl. 29—515 **13 Claims**



1. A method for installing a retaining ring on a fastener to provide a captive panel fastener in place comprising the steps of:

providing a fastener having a head and a threaded outer end, said threaded outer end having first and second longitudinally extending slots, the end of each of said slots speaced from said fastener head having vertically extending abutment portions;

mounted said fastener in the desired captive location;

placing a continuous ring of a predetermined shape over the front end of said fastener, said retaining ring having first and second inwardly extending tang members which fit into and slide along said first and second slots, respectively, the front edge of said tang members being spaced a first distance from the bottom of said slots; and

permanently deforming said retaining ring in a manner such that said tang members are spaced a second distance from the bottom of said slots, such that the tang members slide along the slots with said ring moving over said threaded outer end and the tang members contact said abutments when said retaining ring slides to the spaced end of said slots whereby said retaining ring is prevented from being removed from said fastener.

5,056,209

PROCESS FOR MANUFACTURING CLAD METAL TUBING

Yoshihisa Ohashi, Takarazuka; Mutsuo Nakanishi, Kobe; Shigeharu Takai; Junichi Kikuchi, both of Nishinomiya; Tadashi Fukuda, Amagasaki, and Nobushige Hiraishi, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Dec. 8, 1989, Ser. No. 448,010

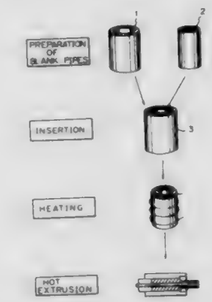
Claims priority, application Japan, Dec. 9, 1988, 63-312338; Dec. 28, 1988, 63-334600; May 19, 1989, 1-127534

Int. Cl.[5] B21D *39/00*

U.S. Cl. 29—517 **35 Claims**

1. A process for manufacturing clad metal tubing from two different types of metals having different deformation resistances, which comprises:

preparing a billet comprising a first pipe having a first deformation resistance and a second pipe having a second deformation resistance, the second deformation resistance being greater than the first deformation resistance, the first and second pipes being arranged concentrically with each other and the pipes being made of different metals,



heating the billet;

adjusting heating temperatures of the first and second pipes such that the second pipe is at a higher temperature than the first pipe; and

applying hot extrusion to the billet while maintaining the heating temperatures of the first and second pipes such that the second pipe is at a higher temperature than the first pipe.

5,056,210

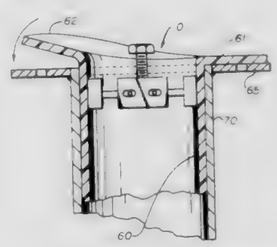
METHOD OF RADIALLY FLARING A RESILIENT PIPE LINER

Howard W. King, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 8, 1990, Ser. No. 477,279

Int. Cl.[5] B21D *39/00*

U.S. Cl. 29—523 **12 Claims**



1. A method for flaring an end of a resilient loose pipe liner within rigid conduit, comprising the steps of:

(a) inserting into the bore of the loose pipe liner within the conduit an expander mandrel comprising:

a rigid body having at least one longitudinal bore generally perpendicular to the axis of the liner and a threaded bore generally parallel to the axis of the liner, said threaded bore intersecting said longitudinal bore;

at least one expander arm having a first end generally conforming to an axial and circumferential segment of the pipe liner and a second beveled end, each beveled end and a portion of the expander arm contiguous with the beveled end being slideably engaged in each longitudinal bore; and

a bolt having a first end and a second end, said first end being tapered, said taper corresponding to each second

beveled end of each expander arm, the bolt being threadably engaged in the threaded bore, said second bolt end being configured for turning to advance the bolt in the threaded bore;

(b) advancing the bolt in the threaded bore such that the taper of the first end of the bolt engages the first beveled end of each expander arm thereby forcing each expander arm radially outward such that the second ends of the expander arms forceably engage the resilient liner causing the resilient liner to forcefully engage the rigid conduit;

(c) rendering the resilient liner material pliable; and

(d) flaring the pliable resilient liner material to form a flange from liner material.

5,056,211

METHOD FOR THE MANUFACTURE OF A BALL NUT AND SCREW SPINDLE SYSTEM

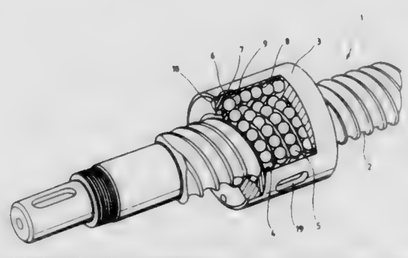
Karl-Heinz Hauser, Steinenbronn, Fed. Rep. of Germany, assignor to NEFF GmbH, Waldenbuch, Fed. Rep. of Germany

Filed Mar. 26, 1990, Ser. No. 499,048

Claims priority, application Fed. Rep. of Germany, May 30, 1989, 3917578

Int. Cl.[5] B21B *15/00*

U.S. Cl. 29—527.2 **14 Claims**



1. Method for the manufacture of a nut (3) of a ball screw spindle system,

in which the nut (3) has a ball redirecting means (6),

said redirecting means defining a redirecting channel (8, 9) for returning balls (5) running in a thread groove (2) of the screw spindle of the system and also within a thread groove (4) of said nut,

said redirecting channel (8, 9) opening into at least one thread groove (4) of said nut and being delimited there at one side by an abutment shoulder (10) for said balls (5) located in said nut, and which protrudes into said nut thread groove (4),

said method comprising

forming at least one opening (7, 19) in the wall of said nut (3), said opening leading to the thread groove (4) thereof;

inserting a mold part (12) which, at least in the region of said opening (7, 18) of said nut (3), corresponds substantially to a negative profile of the thread groove of the nut;

inserting a mold core (16) which is shaped and dimensioned in accordance with the shape of said redirecting channel (8, 9) into said nut in a region intersecting said opening (7, 18);

then filling a free-flowing solidifiable or hardenable or curable material through said opening into said nut to flow to said mold part and around said mold core (16) and filling said opening; and

removing said mold part (12) and said mold core (16) after solidification or hardening or curing of said material, thereby leaving said redirecting channel in the nut, while maintaining the integrity of said thread groove (4) in the nut.

5,056,212

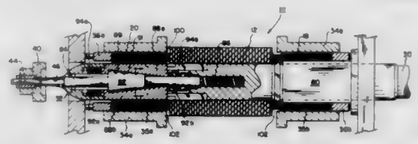
APPARATUS FOR PREFORMING AND FINAL FORMING OF STATOR COIL END TURNS

Mark A. Scherer, Fort Wayne, Ind., assignor to Advanced Machine & Tool Corporation, Fort Wayne, Ind.

Filed Sep. 20, 1990, Ser. No. 585,406

Int. Cl.[5] B23P *23/00*

U.S. Cl. 29—564.5 **19 Claims**



1. An apparatus for preforming and final forming first and second winding end turns of a stator, said apparatus comprising;

an elongated arbor, said arbor having one end which is axially extendible to preform said winding end turns;

means for holding a stator with its bore in axial alignment with said axially extendible arbor end;

means for extending said arbor through an aligned stator bore to preform first and second winding end turns;

first and second defining means for defining respective first and second end turn spaces circumferentially around the respective preformed end turns of a held stator; and

first and second means operatively associated with said first and second defining means for final forming the respective first and second winding end turns.

5,056,213

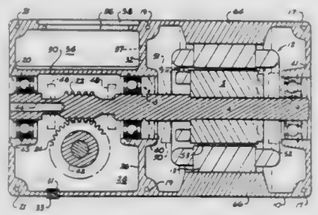
METHOD OF ASSEMBLING A GEARMOTOR AND HOUSING

Edward Behnke, Taylors, S.C., and Joseph E. Dickey, Columbus, Ind., assignors to Reliance Electric Industrial Company, Greenville, S.C.

Continuation of Ser. No. 140,492, Dec. 28, 1987, abandoned, which is a division of Ser. No. 786,600, Oct. 11, 1985, Pat. No. 4,791,831. This application Dec. 8, 1989, Ser. No. 449,115

Int. Cl.[5] H02K *15/00*

U.S. Cl. 29—596 **16 Claims**



1. A method of assembling a motor so as to establish a uniform air gap between respective rotor and stator assemblies thereof, comprising in sequence the steps of:

providing an integral support frame having a pair of axially-aligned shaft receiving members and at least one stator support member;

temporarily supporting said stator assembly relative said frame;

securely rotatably supporting a shaft, having said rotor assembly secured thereon, on said pair of frame shaft receiving members and within said stator;

temporarily inserting shim means between said rotor and stator assemblies so as to define a predetermined air gap therebetween;

securing said stator assembly to said support frame stator support member without changing the defined predetermined air gap; and

removing said shim means, thereby providing a concentric rotor/stator assembly of desired predetermined air gap.

5,056,214

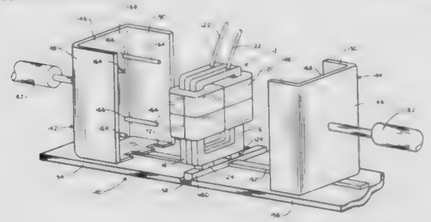
METHOD OF MAKING A MOLDED TRANSFORMER ENCLOSURE

Gary E. Holt, Holland, Mich., assignor to Mark IV Industries, Inc, Amherst, N.Y.

Filed Dec. 19, 1989, Ser. No. 452,786

Int. Cl.[5] H01F *7/06*

U.S. Cl. 29—602.1 **24 Claims**



1. A method of constructing an induction transformer having at least one primary coil and at least one secondary coil, said primary coil having leads to electrically connect to a source of current, and said secondary coil having leads to conduct current therefrom,; comprising:

assembling primary and secondary coils and means to maintain a magnetic flux density therearound in a manner to create an inductive subassembly having primary coil leads extending from the primary coil and secondary coil leads extending from the secondary coil;

providing a mold having a wall portion, said wall portion having at least one stub projecting inwardly of the mold;

seating the subassembly on a mounting means adjacent the wall portion;

filling the mold with an epoxy resin to sealingly encapsulate the subassembly except for the primary and secondary coil leads; and

allowing the epoxy resin to harden, thereby providing a molded enclosure about said subassembly, said molded enclosure having at least one premolded mounting hole integrally formed by the at least one stub for mounting the transformer to a support.

5,056,215

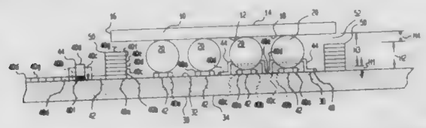
METHOD OF PROVIDING STANDOFF PILLARS

James A. Blanton, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 10, 1990, Ser. No. 624,794

Int. Cl.[5] H05K *3/34*

U.S. Cl. 29—840 **14 Claims**



1. A method of providing standoff pillars to space an integrated circuit above an electrical circuit containing support surface of a substrate during solder flow bonding to discrete electrical circuit contact areas on the substrate support surface of solder contact deposits depending from the integrated circuit underside, comprising:

forming a series of discontinuous layers on the substrate support surface, each layer comprising a selective circuit component material;

the layers being disposed on the support surface individually in a selective pattern of circuit functioning areas and at least some of the layers commonly in at least three spaced-apart non-circuit island areas arranged as apexes of an imaginary polygon;

so as to provide on the substrate a circuit layer pattern composite of selectively electrically connected and selectively electrically insulated circuit component functioning areas defining an electrical circuit and including a contact layer portion of electrically conductive material of selective height containing discrete electrical circuit contact areas arranged for solder flow bonding thereto of corresponding integrated circuit solder contact deposits, and at least three laminar plateaus comprising at least some of the layers of the series stacked in the at least three island areas and defining standoff pillars of substantially common height selectively longer than the height of the contact layer portion containing the discrete contact areas.

5,056,216

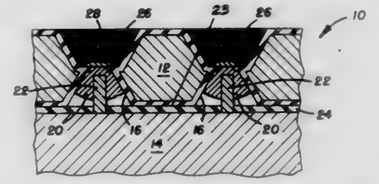
METHOD OF FORMING A PLURALITY OF SOLDER CONNECTIONS

Marc J. Madou, Palo Alto, Calif., and Scott Gaisford, Hundvag, Norway, assignors to SRI International, Menlo Park, Calif.

Filed Jan. 26, 1990, Ser. No. 470,622

Int. Cl.[5] H01R *9/09*

U.S. Cl. 29—843 **14 Claims**



1. A method of forming a plurality of solder I/O connections between a first semiconductor substrate and a second semiconductor substrate, comprising:

creating a plurality of wells arrayed in a pattern, each well extending into said first substrate from a flat surface thereof to a respective well bottom;

providing an electrically insulating layer in each of said wells insulating the first semiconductor substrate from the wells;

providing a respective hole through said insulating layer in each of said wells;

providing a plurality of electrical conductors, one in conductive contact via each representative one of said holes with a corresponding one of said wells;

depositing a plurality of aliquots of solder, one in each of said wells, each of said aliquots being of substantially no greater volume than that of the respective well it occupies, each aliquot being in conductive contact with the respective one of said electrical conductors;

providing a plurality of conductive posts extending outwardly from a flat surface of said second substrate, said posts being arrayed in alignment with the pattern of said wells;

heating said first substrate sufficiently to melt the solder in said wells;

inserting each post into the molten solder in the corresponding one of said wells and

allowing said solder to solidify.

5,056,217

METHOD FOR MANUFACTURING SEMICONDUCTOR ELEMENTS EQUIPPED WITH LEADS

Nobuto Yamazaki, and Akihiro Nishimura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Apr. 16, 1990, Ser. No. 510,035

Claims priority, application Japan, Apr. 17, 1989, 1-96950

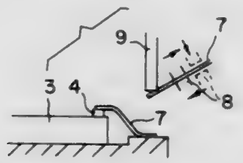
Int. Cl.[5] H01R *43/02*

U.S. Cl. 29—860 **2 Claims**

1. A method for manufacturing semiconductor elements equipped with leads by bonding leads to electrodes of the semiconductor elements comprising the ordered steps of:

positioning and holding each semiconductor element at a bonding stage;

extending a predetermined amount of wire along an undersurface of a bonding tool via a wire guide and a wire clamp;
clamping said wire with said clamper;
lowering said bonding tool to press and bond said wire to an electrode of said semiconductor elements;
unclamping said wire from said clamper;
raising the bonding tool and moving said bonding tool to a position above a wire-cutting section with said wire extending between said bonding tool and said wire-cutting section;



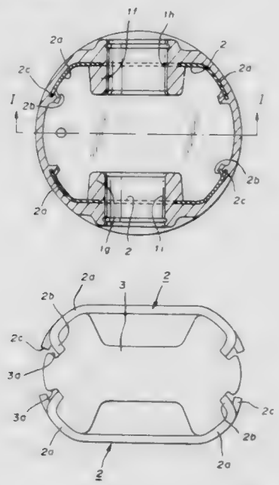
lowering said bonding tool to press said wire against said wire-cutting section;
clamping said wire with said clamper;
moving said clamper obliquely while said bonding tool is pressed against said wire-cutting section to pull and cut said wire; and
raising said bonding tool and unclamping said wire.

5,056,218

METHOD OF MAKING A HOLLOW METAL PISTON HAVING ELASTIC STRIP CASTED TO ITS SKIRT

Masaaki Kudou, Kumagaya, and Tosio Ogiwara, Gyoda, both of Japan, assignors to Izumi Automative Industry Co., Ltd., Kawagoe, Japan

Division of Ser. No. 93,242, Sep. 4, 1987, Pat. No. 4,890,543.
This application Oct. 2, 1989, Ser. No. 415,875
Claims priority, application Japan, Nov. 25, 1986, 61-179773
Int. Cl.[5] **B23P** *15/10*
U.S. Cl. 29—888.045 6 Claims



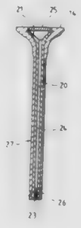
1. A method of making a hollow metal piston comprising a skirt having a predetermined thermal expansion, and at least one insert elastic strip having a different thermal expansion than that of said skirt so that when said piston is in use, said thermal expansion of said strip at least partially compensates for the thermal expansion of said skirt, the method comprising the steps of:
providing a mold core having two opposite ends, each of said opposite ends having at least one groove formed therein;
providing at least one insert elastic strip having end portions;
shaping end portions of said at least one strip, thereby producing a bent portion at each end portion of said at least one strip;
positioning said at least one strip around said mold core so that said bent portions of said at least one strip elastically enter and securely engage said grooves of said mold core, said bent portions of said at least one strip elastically biasingly holding said mold core, thereby producing a strip and core assembly;
placing the strip and core assembly inside of a skirt portion;
casting at least a partial portion of metal around said strip and core assembly, thereby joining said at least one strip to an inner wall of said skirt portion;
removing said mold core from the casting metal, thereby leaving said at least one strip casted to said skirt portion.

5,056,219

METHOD OF MANUFACTURING HOLLOW ENGINE VALVE

Satoru Iwase, Obu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 5, 1990, Ser. No. 608,746
Claims priority, application Japan, Feb. 16, 1990, 2-36708
Int. Cl.[5] **F02B** *77/02*
U.S. Cl. 29—888.451 4 Claims



1. A method of manufacturing a hollow engine valve, comprising the steps of:
inserting a core of free-cutting metal into a pipe material of heat-resistant steel to provide a shaping stock;
shaping said shaping stock into a rough valve profile including a substantially mushroomshaped portion;
subsequently forming a hole axially through a central portion of said rough valve profile by cutting; and
sealingly plugging an open end of said hole close to the valve mushroom portion.

5,056,220

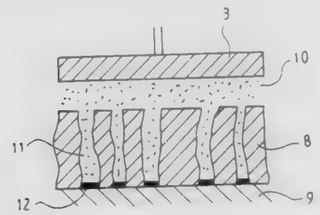
METHOD OF MAKING A PAPER MACHINE ROLL

Ari Telama, Jyväskylä, Finland, assignor to Valmet Paper Machinery Inc., Finland

Filed Aug. 17, 1990, Ser. No. 569,070
Claims priority, application Finland, Aug. 24, 1989, 893970
Int. Cl.[5] **B21B** *31/08*
U.S. Cl. 29—895.32 8 Claims

1. A method for manufacturing a roll for paper making, said method comprising the steps of:

forming a porous coating having pores therethrough on a roll of a paper making machine;



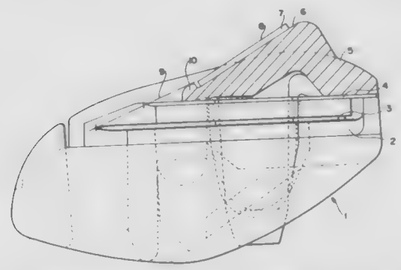
then electrochemically depositing an electrolytic precipitate within said pores of said porous coating.

5,056,221

RAZOR AND PROCESS FOR MANUFACTURING A SURFACE OF LOW FRICTIONAL RESISTANCE ON A RAZOR

Jochen Thoene, Wuppertal, Fed. Rep. of Germany, assignor to Wilkinson Sword GmbH, Solingen, Fed. Rep. of Germany

Continuation of Ser. No. 285,175, Dec. 16, 1988, abandoned.
This application Dec. 14, 1990, Ser. No. 626,402
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1987, 3743298
Int. Cl.[5] **B26B** *19/44*
U.S. Cl. 30—41 44 Claims



1. A razor blade unit comprising a support for at least one razor blade, a surface for slidably engaging the skin of a user, and a xerogel on the surface, wherein the xerogel comprises a homogeneous mixture of homopolymers and copolymers of polyvinyl pyrrolidone with polyurethane in which the ratio of the amount of polyvinyl pyrrolidone to polyurethane is about (3-5):1.

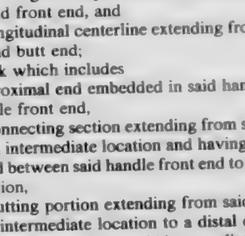
5,056,222

SHAVING SYSTEM

Gary R. Miller, Tewksbury; Chester F. Jacobson, Southboro, and Robert A. Trotta, Pembroke, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Sep. 28, 1990, Ser. No. 589,989
Int. Cl.[5] **B26B** *21/14*
U.S. Cl. 30—77 31 Claims

1. A shaving system comprising
body structure that incorporates guide structure,
blade structure carried by said body structure, said blade structure having a cutting edge extending along the length of said body structure,
a housing assembly carried by said body structure adjacent said cutting edge of said blade structure,
said housing assembly including guide portions disposed in said guide structure, skin-engaging surface structure disposed for skin-engagement adjacent said cutting edge, chamber defining structure, a wall of said chamber defining structure having apertures therein adjacent said skin-engaging surface structure, and
a member of shaving aid material disposed in said chamber defining structure for transfer of shaving aid material through said apertures to the skin surface being shaved during the course of a shaving stroke,



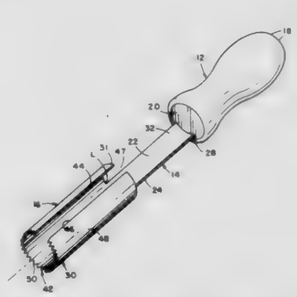
and biasing structure cooperating with said housing assembly and said body structure for dynamic movement of said housing assembly against said biasing structure as guided by said guide structure in the course of shaving.

5,056,223

HAND TOOL FOR DE-CORING CABBAGE HEADS

Helen Buck, and Evelyn Sterling, 905 Sanderson Ave., both of Scranton, Pa. 18509

Filed Feb. 12, 1990, Ser. No. 478,689
Int. Cl.[5] **A47J** *25/00*
U.S. Cl. 30—113.1 3 Claims



1. A hand-held tool for de-coring a cabbage head comprising:
A) a handle including
(1) an arcuate butt end,
(2) a planar front end which has a circular outer periphery,
(3) an hour-glass shaped sidewall connecting said butt end to said front end, and
(4) a longitudinal centerline extending from said front end to said butt end;
B) a shank which includes
(1) a proximal end embedded in said handle through said handle front end,
(2) a connecting section extending from said proximal end to an intermediate location and having a length as measured between said handle front end to said intermediate location,
(3) a cutting portion extending from said connecting section intermediate location to a distal end and having a length measured from said intermediate location to said distal end that is essentially equal to the length of said connecting section,
(4) a multiplicity of cutting teeth on said cutting portion distal end,

(5) said connecting section having an arcuate outer periphery and having a center of curvature which is positioned in line with said handle longitudinal centerline, said connecting section having a radius of curvature as measured from said connecting section center of curvature to said connecting section outer periphery and having a peripheral angular extent of less than ninety degrees with respect to said center of curvature, said connecting section being spaced from said handle longitudinal centerline and from said handle front end outer periphery,

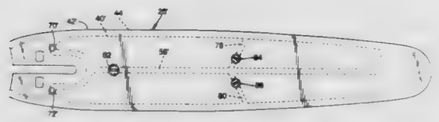
(6) said cutting portion having an arcuate outer periphery and having a center of curvature which is positioned in line with said handle longitudinal centerline, said cutting portion having a radius of curvature as measured from said cutting portion center of curvature to said cutting portion outer periphery and having a peripheral angular extent of more than two hundred and seventy degrees and less than three hundred and sixty degrees with respect to said center of curvature to define a gap in said cutting portion outer periphery, said cutting portion outer periphery being flush with said connecting portion outer periphery and having a radius of curvature that is the same as the radius of curvature of said connecting section.

5,056,224

TREE HARVESTER GUIDE BAR

Christopher D. Seigneur, West Linn, Oreg., assignor to Blount, Inc., Portland, Oreg.

Filed Jan. 7, 1991, Ser. No. 639,676
Int. Cl.[5] B23D *59/04*
U.S. Cl. 30—123.4 **7 Claims**



1. A guide bar for guiding a driven saw chain comprising;

a planar elongate bar having one end adapted to be mounted to a motor mount, an opposite nose end, and side edges extended between said ends, edge grooves formed in the side edges and around the nose end for guiding a saw chain from one side edge adjacent the motor mount end toward and around the nose end and back along the opposite side edge to the motor mount end,

said bar having a fluid inlet hole adjacent said motor mount end for receiving fluid injected into the hole from a fluid source, a plurality of fluid carrying channels provided within the elongate bar and in communication with said fluid inlet hole and in communication with said edge grooves at a plurality of positions along said edge grooves, said plurality of channels having a common juncture wherein fluid is received and disbursed to said channels, and

a valve in said juncture, said valve being adjustable for selectively controlling the flow of fluid to said channels.

5,056,225

FLAT SCRAPER TOOL

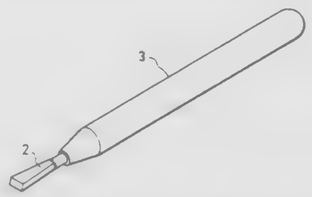
William Jubran, Meiliya, Israel, and Andre Carossino, Louveciennes, France, assignors to Vargus Ltd, Nahariya, Israel

Filed Sep. 4, 1990, Ser. No. 576,868
Claims priority, application Israel, Sep. 8, 1989, 91568
Int. Cl.[5] B26B *3/00*; **A47L** *13/02*; **A61C** *3/02*
U.S. Cl. 30—169 **15 Claims**

1. A scraper tool particularly useful for hand deburring various surfaces at different cutting angles, comprising:

a scraper blade at the front end of the tool joined to a handle at the back end of the tool;

said scraper blade being of rectangular section defining four continuous sharp edges extending axially of the scraper blade;



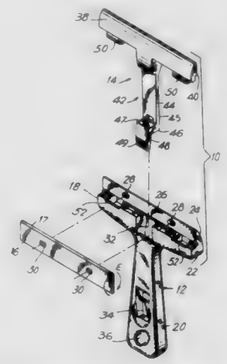
the front face of the front end of the scraper blade being of rectangular configuration and forming an oblique angle to the plane passing perpendicularly through the scraper blade forming four additional sharp edges extending peripherially around the scraper blade.

5,056,226

TOOL FOR CARRYING A SCRAPING OR STRIPPING BLADE

Donald Gringer, New York, N.Y., assignor to Allway tools, Inc., Bronx, N.Y.

Filed Feb. 1, 1991, Ser. No. 649,419
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—169 **10 Claims**



1. A hand-held tool for carrying a scraping/stripping blade, comprising:

a base element, generally T-shaped in outline, including handle means adapted for gripping by a human hand, and blade receiver means for holding the blade, having a lever aperture extending therethrough;

said handle including a locking aperture extending through said handle at a location remote from said blade receiver means, with a locking rail disposed therein;

blade clamping means, pivotally attached to said base element and including

movable jaw means for clamping the blade against a portion of said base element;

a blade clamping lever extending generally perpendicular from said movable jaw portion and including

a proximate leg, integral with and extending from said movable jaw portion and carrying thereon a locking point, oriented in the same direction as said movable jaw face;

an offset leg, integral with and extending from said proximate leg at an offset angle thereto, in a direction transverse to the plane defined by said movable jaw means and

said proximate leg, carrying thereon a latch, adapted to engage said locking rail, located at the extremity of said offset leg; and

a distal leg, integral with and extending from said offset leg at an angle such that said distal leg lies generally parallel to said proximate leg, and carrying thereon an unlocking point, located at the distal end thereof and oriented in a direction opposite from said movable jaw face;

wherein said blade clamping means is mounted to pivot on said base element, said blade clamping lever extending through said lever aperture and disposed with said unlocking point extending into said locking aperture, the distance from said pivotal axis to said latch being less than the distance from said pivotal axis to said locking rail;

such that said blade clamping means pivots from a locked position, in which said latch engages said locking rail, with said movable jaw face clamping the blade against said fixed jaw face; and an open position, in which said movable jaw face pivots away from said fixed jaw face to permit removal of the blade; and

wherein, in said open position, force applied to said locking point urges said latch against said locking rail, causing said proximate leg to flex, such that said offset leg bends away from said proximate leg, allowing said latch to engage said locking rail; and,

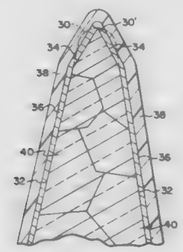
wherein, in said locked position, force applied to said unlocking point causes said offset leg to bend away from said proximate leg, allowing said latch to disengage from said locking rail.

5,056,227

RAZOR BLADE TECHNOLOGY

Carolyn M. Kramer, Moorestown, N.J., assignor to The Gillette Company, Boston, Mass.

Filed Mar. 19, 1990, Ser. No. 495,475
Int. Cl.[5] B26B *21/54*
U.S. Cl. 30—346.54 **6 Claims**



1. A razor blade comprising a polycrystalline ceramic substrate of less than two micrometers grain size with mechanically abraded facets that have a width of at least about 0.1 centimeter and an included angle of less than twenty degrees, and a sputter-etched cutting edge of tip radius less than about 200 Angstroms.

5,056,228

JIG FOR CROSS HATCHING TEST

Norihiko Yamamoto, Toyonaka, and Mansbu Nakamura, Osaka, both of Japan, assignors to Taiyu Kizai Co., Ltd., Osaka, Japan

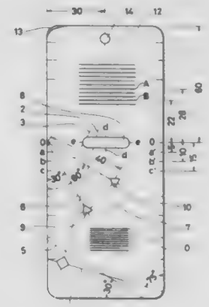
Filed Sep. 26, 1990, Ser. No. 588,432
Int. Cl.[5] B43L *5/00*
U.S. Cl. 33—1 B **7 Claims**

1. A rectangularly-shaped jig used for ruling straight lines intersecting each other at a predetermined angle on a rectangular test plate for a cross hatching test, comprising:

(a) a first straight line defined on the surface of the jig for alignment with a first longer side of the test plate to orient the jig for cutting a first line on the test plate in alignment with the opposite longer side of the jig;

(b) a second straight line defined on the surface of the jig, oriented orthogonal to said first straight line, for alignment with one of the shorter sides of the test plate simultaneous with alignment of said first straight line with said first longer side of the test plate, for positioning the jig such that the first line may be cut almost through the center of the test plate;

(c) a third straight line defined on the surface of the jig oriented at said predetermined angle relative to a first longer side of the jig for alignment with the first line cut through the test plate, for positioning the jig such that a



second line may be cut through the test plate in alignment with the first longer side of the jig and intersecting said first line at said predetermined angle relative thereto;

(d) an opening interposed in the middle of said first straight line and extending through the jig, for alignment of the first straight line with the first longer side of the test plate to orient the jig for cutting the first line on the test plate; and

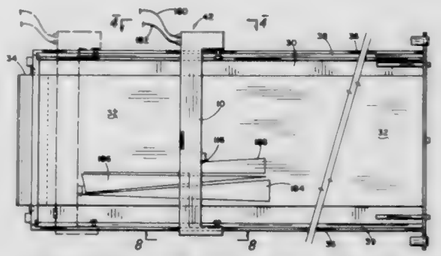
(e) said first, second and third straight lines and said opening being so positioned that the intersection of the first and second lines cut in the test plate is disposed almost in the center of the test plate and the cuts uniformly extend from the intersection in four directions.

5,056,229

SAIL PLOTTER

Gregory H. Carlson, 1801 N. 170th E. Ave., Tulsa, Okla. 74116

Filed Feb. 1, 1989, Ser. No. 304,483
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—23.03 **5 Claims**



1. A device for marking lines on a piece of sail cloth for cutting out sections therefrom for making a sail, comprising an elongated and horizontally extending table for supporting a length of sail cloth thereon and being wider than the width of the sail cloth, a continuous strip of gearbelt material extending along each side edge of the table whereby the strips of gearbelt

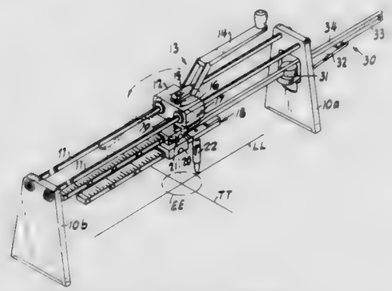
material are parallel to each other and to the longitudinal axis of the table, each strip of gearbelt material being pliant and being provided with internal reinforcements to prevent substantial longitudinal stretching thereof, the upper portion of each strip of gearbelt material being provided with uniformly spaced gear teeth for the length of each strip, a longitudinally moveable carriage mounted on the table, a transverse rotatable shaft mounted in the carriage, a pair of gears mounted adjacent the ends of the shaft for rotation therewith, each gear being adapted to mesh with a gearbelt strip such that a substantial portion of the weight of the carriage is exerted against the gearbelt strips through the gears, a first motor mounted on the carriage for rotating the shaft in response to a first series of signals received from a sail plotting program whereby the carriage can be positioned at a precise position along the length of the table, a stylus mounting means supported on the carriage for transverse sliding movement across the width of the sail cloth, a second motor mounted on the carriage and responsive to a second series of signals from the sail plotting program to move the stylus mounting means transversely along the carriage so as to position the stylus mounting means in a precise transverse position, a stylus carried by the stylus mounting means and adapted to bear against the upper surface of the sail cloth, and a stylus control means operatively associated with the stylus for lifting and lowering the stylus in relation to the sail cloth in response to a third series of signals from the sail plotting program.

5,056,230

ELLIPSOGRAPH STRUCTURE

Yuk L. Lok, 33-39 73rd St., Jackson Hts., Queens, N.Y. 11372

Filed Nov. 21, 1990, Ser. No. 616,912
Int. Cl.[5] B43L *11/04*
U.S. Cl. 33—30.1 **20 Claims**



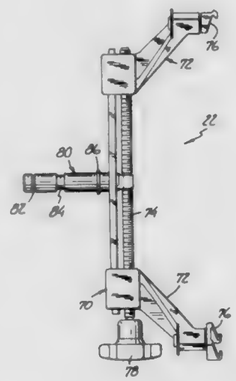
1. An ellipsograph structure comprising:
a pair of end supports,
a longitudinal member extending therebetween along a longitudinal axis over an area where an ellipse is to be drawn,
a carriage member slidably supported on said longitudinal member and having a rotatable driving member mounted thereon, wherein upon rotation said driving member supported on said carriage can freely slide on said longitudinal member along said longitudinal axis,
a first arm and a second arm, said first arm having one end thereof fixedly coupled by a first pin connection to said driving member and an opposite end fixedly coupled by a second pin connection to one end of said second arm,
a stylus fixed to an opposite end of said second arm, and
a straight line motion mechanism mounted to one of said end supports for constraining movement of the second pin connection between said first and second arms on a straight line along a transverse axis perpendicular to said longitudinal axis upon rotation of said driving member,
wherein said straight line motion mechanism includes a pivot member mounted to said one end support at a fixed pivot point along said longitudinal axis, an extension member mounted to said one end support having a distal end extending a first length therefrom in alignment with said longitudinal axis, a swing arm having a second length with one end thereof pivotally coupled to said distal end of said extension member, and a guiding arm having a third length longer than the sum of said first and second lengths with one end thereof pivotally coupled to an opposite end of said swing arm and an opposite end thereof pivotally coupled to said second pin connection between said first and second arms, said pivot member having a retaining channel formed therein intersecting said pivot point in which said guiding arm is slidably retained for sliding movement at all times intersecting said pivot point in conjunction with rotation of said driving member and movement of said second pin connection along said transverse axis.

5,056,231

APPARATUS FOR LOCKING WHEEL UNIT IN AUTOMOTIVE WHEEL ALIGNMENT SYSTEM

Michael P. Alusick, Hartland, and John M. Surwillo, Milwaukee, both of Wis., assignors to Bear Automotive Service Equipment Co., Milwaukee, Wis.

Filed Jun. 1, 1990, Ser. No. 531,919
Int. Cl.[5] G01B *5/255, 11/275*
U.S. Cl. 33—203.18 **5 Claims**



1. An automotive vehicle wheel alignment apparatus comprising:
a main console for receiving wheel angle information coupled to wheels of an automotive vehicle from a plurality of angle sensors and providing an output representative of wheel alignment;
a rim clamp for clamping to a rim of a wheel of the automotive vehicle, the rim clamp including a spindle which lies generally coaxial with an axis of rotation of the wheel, wherein the spindle includes a first groove which has generally sloping sides defining a generally V shape and a second groove which has generally straight sides defining generally squared groove edges;
a head unit which includes at least one of the plurality of angle sensors and a housing, wherein the housing defines a spindle receiving cavity shaped to receive the spindle;
a set screw threadably received through the housing and into the spindle receiving cavity, the set screw including a tip portion for being received in the second groove, the set screw movable between a disengaged position in which the tip portion is disengaged from the second groove and an engaged position in which the tip portion is engaged with the second groove wherein the head unit is fixedly attached against rotation to the spindle when the set screw is in the engaged position; and

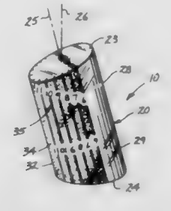
a spring plunger received in the housing, the spring plunger including an abutting tip which extends into the spindle receiving cavity and is urged in a direction into the spindle receiving cavity, the abutting tip is positioned for being received into the first groove of the spindle wherein the abutting tip rides along sides of the spindle and the generally sloping sides of the first groove as the head unit is moved longitudinally relative to the spindle and the abutting tip engages the first groove, wherein when the first groove of the spindle is engaged by the abutting tip, the head unit is secured longitudinally relative to the spindle and the head unit is rotatable relative to the spindle.

5,056,232

REMOTE LIGHT SOURCE RESPONSIVE VISUAL TIME INDICATOR

Timothy F. Cunningham, Spokane, Wash., assignor to B. Sirius Toys, Inc., Millville, N.J.

Filed Aug. 24, 1990, Ser. No. 573,480
Int. Cl.[5] G04B *49/00*
U.S. Cl. 33—269 **30 Claims**



1. A visual time indicator responsive to a remote light source, comprising:
a transparent light refractive body having a continuously arcuate external surface formed about a central axis and extending along the axis;
said external surface having first and second sides;
an axial transparent light receiving and refracting surface on the first side of the body to focus light from the remote light source through the body and to produce a single concentrated axial column of light at any given time on the second side of the body opposite to the light receiving and refracting surface;
an axial image producing surface on the transparent light refractive body and on the second side thereof to visually display the single axial column of light; and
calibrated indicia on the second side of the transparent light refractive body substantially diametrically opposed to the axial transparent light receiving and refracting surface, identifying a time increment visually relative to the axial column of light on the axial image producing surface.

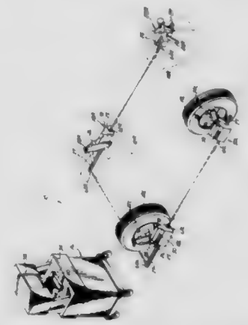
5,056,233

METHOD AND APPARATUS FOR MEASURING CROSS-TOE

Dennis L. Hechel, New Berlin; Peter A. Puetz, Waukesha, and Gary R. Kercheck, Colgate, all of Wis., assignors to Bear Automotive Service Equipment Company, New Berlin, Wis.

Filed Jun. 4, 1990, Ser. No. 532,908
Int. Cl.[5] G01B *5/255, 11/275*
U.S. Cl. 33—288 **22 Claims**

22. A system for measuring the angular relationship of wheels of a vehicle comprising:
a first head unit for mounting to a first wheel of the vehicle, comprising:
a first wheel for mounting to the first wheel;
a first arm having a distal end, a proximal end, and a length, the proximal end connected to the first wheel mount, the first arm extending in a horizontal plane generally perpendicular to an axis of rotation of the first wheel;
a first angle sensor connected to the first arm at the distal end of the first arm for sensing an angular relationship;
a first pitch sensor coupled to the first arm for sensing a first pitch angle of the first arm with a horizontal plane which is referenced to ground;
a second head unit for mounting to a second wheel of the vehicle, comprising:
a second wheel mount for mounting to the second wheel;
a second arm having a distal end, a proximal end, and a length, the proximal end connected to the second wheel mount, the second arm extending in a horizontal plane generally perpendicular to an axis of rotation of the second wheel;



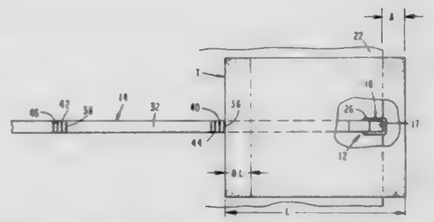
a second angle sensor connected to the second arm at the distal end of the second arm for sensing an angular relationship;
a second pitch sensor coupled to the second arm for sensing a second pitch angle of the second arm with a horizontal plane which is referenced to ground;
means connected to the first head unit and the second head unit for calculating toe angle measurements of the first wheel and of the second wheel based upon outputs from the first and second angle sensors; and
means for correcting errors introduced into toe angle measurements due the length of the first arm and the length of the second arm based upon the first pitch angle and the second pitch angle.

5,056,234

ROOFING TILE COURSE MARKING DEVICE

Curtis Han, 608 Hawthorne St., Unit A, Glendale, Calif. 91204

Filed Jun. 14, 1990, Ser. No. 538,153
Int. Cl.[5] G01B *3/10;* **G01D** *21/00*
U.S. Cl. 33—494 **7 Claims**



1. A roofing tile course layout device for use in installing a multiplicity of first, second and third tile of differing configurations, said first tile having a first length, a first eave overhang distance and a first overlap distance, said second tile having a

second tile length, a second eave overhang distance, and a second overlap distance, and said third tile having a third tile length, a third overhang distance, and a third overlap distance, said device comprising a tape assembly having a first end and including an elongated thin tape having:

(a) a series of first indicia, a first indicator of said series of first indicia being located a distance from said first end of said tape assembly equal to said length of said first tile minus said first overhang distance; a second indicator of said series of first indicia being located a distance from said first indicator equal to said length of said first tile minus said first overlap distance; and at least third and fourth indicator of said series of first indicia being spaced apart by a distance equal to said length of said first tile minus said first overlap distance;

(b) a series of second indicia, a first indicator of said series of second indicia being located a distance from said first end of said tape assembly equal to said second length of said second tile minus said second overhang distance; a second indicator of said series of second indicia being located a distance from said first indicator equal to said length of said second tile minus said second overlap distance; and at least third and fourth indicators of said series of second indicia being spaced apart by a distance equal to said length of said second tile minus said second overlap distance; and

(c) a series of third indicia, a first indicator of said series of third indicia being located a distance from said first end of said tape assembly equal to said third length of said third tile minus said third overhang distance; a second indicator of said series of third indicia being located a distance from said first indicator equal to said length of said third tile minus said third overlap distance; and at least third and fourth indicators of said series of third indicia being spaced apart by a distance equal to said length of said third tile minus said third overlap distance.

5,056,235

SIGNAL TRANSMISSION SYSTEM FOR MACHINE TOOLS, INSPECTION MACHINES, AND THE LIKE

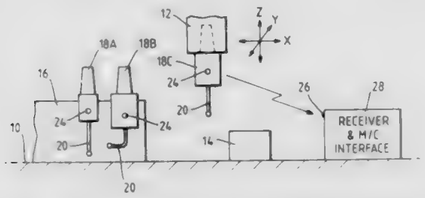
David K. Thomas, Dursley, United Kingdom, assignor to Renishaw plc, United Kingdom

Filed Apr. 7, 1989, Ser. No. 334,537

Claims priority, application United Kingdom, Apr. 12, 1988, 88086137

Int. Cl.[5] G01B *5/03;* **G08C** *19/16*

U.S. Cl. 33—503 **10 Claims**



1. A signal transmission system for a machine tool which has a plurality of sensors for producing a signal in response to a sensed condition, the system comprising:

a plurality of signal transmission means, one for each sensor, for transmitting data associated therewith,

carrier generating means in each signal transmission means, for generating a carrier signal for transmission by said signal transmission means, the carrier signal of each transmission means having a different carrier frequency,

phase modulating means in each signal transmission means, for modulating said data onto said carrier signal by modulating the phase thereof,

receiving means for receiving the signals transmitted simultaneously by the plurality of signal transmission means, and

a plurality of filters contained in the receiving means and corresponding in number to the plurality of signal transmission means, each filter being responsive to one of the carrier frequencies of the plurality of signal transmission means to separate the data on a corresponding carrier signal from the data on other carrier signals without interference among the carrier signals.

5,056,236

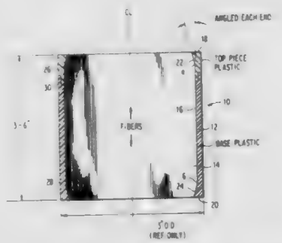
SCULPTING DEVICE

Henry Glass, P.O. Box 7553, Roanoke, Va. 24019

Filed Apr. 27, 1990, Ser. No. 515,950

Int. Cl.[5] G01B *5/00*

U.S. Cl. 33—561.1 **3 Claims**



1. A sculpting device comprising a hollow cylindrical tube defining a hollow interior and a plurality of parallel fibers each having a length the same as the tube and completely filling the interior of the tube so as to be frictionally held therein by frictional engagement with each other and the tube, wherein said tube has an interior cylindrical surface having a substantially constant diameter throughout a middle portion of the tube and gradually decreasing internal diameters at either end to define inwardly tapered surfaces to enhance the frictional engagement of the fibers with each other and the tube.

5,056,237

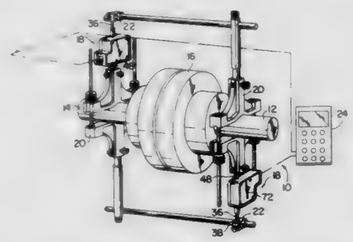
ELECTRONIC INDICATING DEVICE FOR COAXIALLY ALIGNING A PAIR OF ROTARY MEMBERS

Paul R. Saunders, Bloomfield, Conn., assignor to SPM Instrument Inc., Marlborough, Conn.

Filed Jul. 2, 1990, Ser. No. 547,689

Int. Cl.[5] G01B *5/25, 7/31*

U.S. Cl. 33—645 **19 Claims**



1. An electronic indicating device for monitoring radial displacement of a rotary member and comprising a housing, mounting means for supporting said housing in fixed position relative to the rotary member for angular movement with the rotary member and about the axis of rotation of the rotary member, sensing means supported to move with the housing and relative thereto for detecting radial displacement of the rotary member, transducer means disposed within said housing and coupled to said sensing means within said housing for generating output signals indicative of the magnitude of radial displacement detected by said sensing means, angular position discriminating means disposed within said housing and comprising a pair of rotary electrical switches connected together in electrical series, said switches being responsive to changes in the angular position of said housing for generating enabling signals at predetermined angular positions of said housing, and coupling means associated with said housing for electrically connecting said transducer means and said angular position discriminating means to a receiving apparatus whereby said output signals received from said transducer means are processed by the receiving apparatus in response to said enabling signals received by the receiving apparatus from said angular position discriminating means.

5,056,238

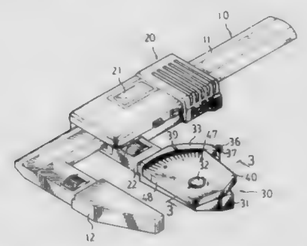
PAIR OF VERNIER CALIPERS HAVING A PROTRACTOR

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Taichung Hsien, Taiwan

Filed Nov. 7, 1990, Ser. No. 610,357

Int. Cl.[5] G01B *3/56*

U.S. Cl. 33—810 **4 Claims**



1. A pair of vernier calipers comprising:

a scale body which is L-shaped and includes an elongated shaft and a leg integrally formed together;

a vernier being coupled to said elongated shaft and being slidable along said elongated shaft, an extension being integrally fixed to one end of said vernier close to said leg of said scale body, said extension being parallel to said leg and movable toward said leg; and

a protractor being coupled to a free end of said extension, said protractor including a base coupled to said free end of said extension, a pin being fixed on said base and extending upward therefrom, a follower having an opening engaged on said pin so that said follower is rotatable about said pin, a spring being biased between said follower and said base so as to bias said follower to rotate in one direction relative to said base, a graduation being provided on an upper edge of said follower, a mark being provided on said base; and

when an object is disposed between said leg and said protractor, and when said vernier is pushed toward said object, said follower being caused to rotate about said pin so that a relative movement between said mark and said graduation indicates an angular dimension of said object.

5,056,239

VACUUM DRYING MACHINE FOR TANNED SKINS, WITH MULTIPLE WORK SURFACES

Antonio Corner, Thiene, Italy, assignor to Officine di Cartigliano, Cartigliano, Italy

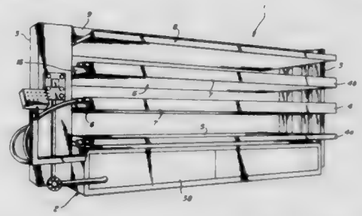
Continuation of Ser. No. 306,201, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 127,296, filed as PCT EP87/00155 on Mar. 19, 1987 abandoned. This application Oct. 3, 1989, Ser. No. 416,385

Claims priority, application Italy, Mar. 24, 1986, 85531 A/86

The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.

Int. Cl.[5] F26B *13/30*

U.S. Cl. 34—92 **19 Claims**



1. Vacuum drying machine for tanned skins with multiple work surfaces, comprising:

a fixed framework formed from at least a pair of substantially vertical uprights each having a top, a mounting base and vertical guide means;

a plurality of substantially horizontal elongated platforms having longitudinal axes, longitudinal sides and transverse sides, each platform being arranged for vertical movement along said guide means;

each of said platforms defining an upper work surface for supporting a skin to be treated and a lower face having a cover for sealingly engaging with an underlying adjacent platform to define a drying chamber;

heating means arranged within said platforms for heating the skins to be dried;

suction means connected to each platform to provide a vacuum within said chamber;

a plurality of double-acting hydraulic cylinders each having a liner and a stem, at least one of said platforms being coupled to at least one pair of said cylinders, said at least one pair of cylinders adapted to move vertically said at least one platform relative to said framework;

said plurality of cylinders have movable liners and stationary stems having upper free ends and connecting joints provided at the upper free end of said stems to suspend the cylinder downwardly from the top of a corresponding vertical upright, said at least one platform being coupled to the movable liners of said at least one pair of cylinders at a predetermined level accessible to an operator with said pair of cylinders in a fully extended condition.

5,056,240

OVERSHOES FOR PROTECTING CLEAN FLOORS FROM SOILED SHOES OR BOOTS

William T. Sherrill, 1302 E. Wendover Ave., Greensboro, N.C. 27405

Filed May 22, 1989, Ser. No. 354,823

Int. Cl.[5] A43B *3/16*

U.S. Cl. 36—7.3 **8 Claims**

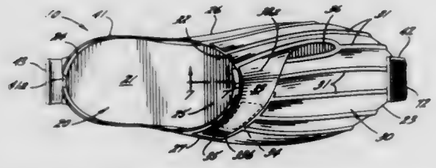
1. An overshoe for wearing over dirty or muddy shoes, boots and the like indoors and characterized by the ability to keep the dirt or mud from being deposited indoors, particularly on floors, carpets and walls, and comprising

a sole having an inside wall and an outside wall and a heel portion, an arch portion and a toe portion,

an upper portion attached to the edge of said sole and disposed substantially over said arch and toe portions of said

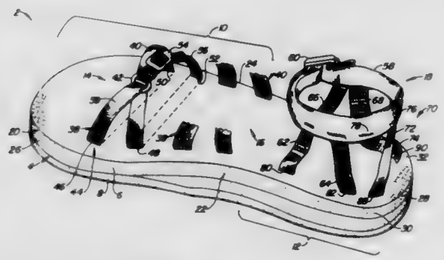
sole so that said sole and upper portion are adapted to overlie the shoe or boot,

an upstanding lip attached to the edge of said heel portion of said sole and extending upwardly a distance less than the height of said upper portion and extending around the edge of said heel portion for receiving the heel of the shoe or boot and retaining mud or dirt inside the overshoe that becomes separated from the shoe or boot, said upstanding lip having a gap in the rearmost portion thereof, and



restraining means attached to at least one of said heel and toe portions for being stepped upon to restrain movement of the overshoe for facilitating insertion or removal of the shoe or boot, said restraining means extending upwardly to a height above said lip so as to be readily accessible for being stepped upon whereby, a dirty or muddy shoe or boot can be easily inserted into the overshoe so that the overshoe will be removeably attached to the shoe or boot and mud and dirt separated form the shoe or boot will remain in the overshoe.

5,056,241
SANDAL
Clifford K. Young, 244 N. Highway 101, Encinitas, Calif. 92024
Continuation of Ser. No. 260,626, Oct. 21, 1988, abandoned.
This application Apr. 11, 1990, Ser. No. 512,625
Int. Cl.[5] A43B *3/12*
U.S. Cl. 36—11.5 **9 Claims**



1. A sandal comprising:

a sole having an upper surface, a bottom surface, a front portion, a heel portion, and a circumferential edge surrounding the upper and lower surfaces, the circumferential edge including an inside edge and an outside edge on opposite sides of the sole; and

a foot strap, sized for engaging the instep portion of a user's foot, attached to the front portion of the sole, the footstrap including:

a first, flexible loop extending from the front portion of said sole at first and second positions along the inside edge;

a second, a flexible loop extending from the front portion of the sole at third and fourth positions along the outside edge;

a connector coupling the first and second loops to one another;

at least one of the first and second loops being an adjustable length loop to permit the snugness of fit to be adjusted; and

the second loop being the adjustable-length loop to permit the snugness of fit to be adjusted, the second loop including a buckle for varying the length of the second loop.

5,056,242
UNDERGROUND WALL CONSTRUCTION METHOD AND APPARATUS
Giouse Miotti, Lugano, Switzerland, assignor to Finic, B. V., Rotterdam, Netherlands
Filed May 12, 1989, Ser. No. 350,993
Int. Cl.[5] E02F *5/08;* **E02D** *5/18*
U.S. Cl. 37—94 **8 Claims**



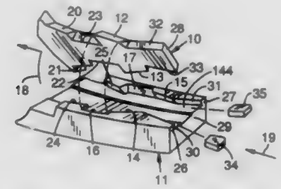
1. In a slurry trench excavating method wherein a trench excavation having walls with surfaces is maintained full of a slurry for sustaining said walls of the excavation and an initial bore hole is made at the beginning of a line defining said excavation, said initial bore hole having a bottom, the improvement comprising,

excavating adjacent unexcavated columns of earth along said line of said excavation from the bottom of said bore hole upwardly by a cutting tool having a cutting edge and reaction forces and a point of advancement such that cuttings fall away from said point of advancement of said cutting edge to improve the excavation rate, removing said cuttings from said slurry trench, and while said excavating progresses discharging the reaction forces from said cutting tool to a wall surface directly opposite and aligned with the surface of an adjacent unexcavated column.

5,056,243
CONNECTION FOR ELEMENTS AT LEAST ONE OF WHICH IS SUBJECT TO ABRASIVE WEAR
Paul C. Sprunger, Dundee, and Terry L. Briscoe, Portland, both of Oreg., assignors to ESCO Corporation, Portland, Oreg.
Filed May 11, 1990, Ser. No. 522,324
The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—115 **15 Claims**

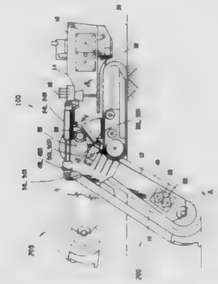
1. A relatively elongated plate-like element having outer surfaces one of which is subject to abrasive wear, said element being mateable with a base member by movement parallel to the longitudinal centerline of said element, said element having outstanding integral portions on the outer of said surfaces adjacent the longitudinally extending sides of said element, said integral portions providing opposed female dovetail walls adapted to receive male dovetail surfaces on said base member,

said female dovetail walls being convergently related to said longitudinal centerline in proceeding toward one end of said element, at least one of said female dovetail walls adjacent an



end of said element having a further dovetail wall divergently related to said longitudinal centerline in proceeding toward said one end of said element.

5,056,244
DIGGING CHAIN VIBRATORY SYSTEM
John F. Bryan, Jr., 3510 Woodcreek Cir., Parker, Tex. 75002
Filed Dec. 1, 1989, Ser. No. 444,402
Int. Cl.[5] E02F *5/02*
U.S. Cl. 37—191 A **14 Claims**



1. A chain type excavating machine comprising:

a main frame;

an undercarriage supporting said main frame for forward and reverse movement along the ground;

an elongate digging chain support boom having upper and lower ends;

upper and lower chain sprockets rotatably mounted at said upper and lower boom ends respectively;

a continuous digging chain in assembly with said upper and lower chain sprockets for rotation about said digging chain support boom;

cutting means at the periphery of said continuous digging chain for cutting and excavating;

pivotal connecting means adjacent said boom assembly upper end connecting said digging chain support boom to said main frame for rotation thereof from a first raised position to a second lowered position in which said digging chain engages the ground along a cutting surface;

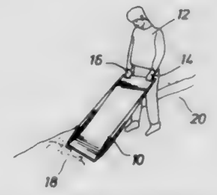
hydraulic cylinder means, connecting said main frame to said boom to a position adjacent said upper sprocket, for rotating said boom assembly about said pivotal connecting means between said first and second positions;

chain back support means between said upper and lower chain sprocket means for holding said cutting means against said cutting surface;

chain sprocket drive means for rotating said continuous digging chain about said digging chain support boom; and

directionally oriented vibration exciting means acting at the center of percussion of said digging chain support boom assembly with respect to said pivotal connecting means for vibrating said boom assembly only in a direction perpendicular to said cutting surface.

5,056,245
SNOW REMOVER
Stephen L. Jenkins, and Stephen L. Jenkins, Jr., both of 7 Stillforest, Houston, Tex. 77024
Filed Jun. 28, 1990, Ser. No. 544,948
Int. Cl.[5] E01H *5/02*
U.S. Cl. 37—265 **5 Claims**

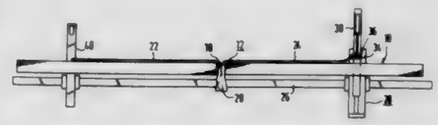


1. An article of manufacture adapted for snow removal including in combination

an elongated, unitary scoop having a curved lower portion, a plurality of holes extending through the center of said scoop at said curved lower portion, said scoop consisting of a single wheel attached to the bottom of said scoop using some of said plurality of holes, first and second elongated openings on one end of said scoop, first and second sides extending along the length of said scoop, and first and second elongated protrusions extending longitudinally along the bottom of said scoop, and

a metal strip attached to the edge of said scoop at the end opposite the end having said first and second elongated openings.

5,056,246
DEVICE FOR TAKING TROUSERS OFF AN IRONING MACHINE
Nikolaus Balonier, Maintalstr. 34, D-8750 Aschaffenburg-Obernau, Fed. Rep. of Germany, and Ottmar Promper, Neubofen, Austria, assignors to Nikolaus Balonier, Aschaffenburg-Obernau, Fed. Rep. of Germany
Filed Oct. 27, 1989, Ser. No. 427,722
Int. Cl.[5] D06F *71/28*
U.S. Cl. 38—7 **10 Claims**

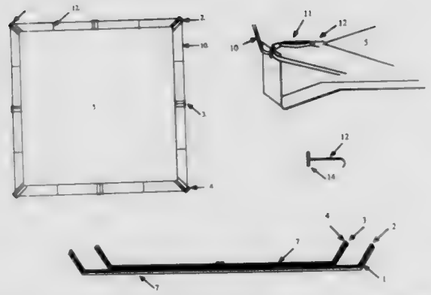


1. A device for removing trousers from a double leg ironing board, comprising:

gripping means mounted for motion along the ironing board including at least one clamping plate mounted for vertical motion from the surface of the ironing board; and

automatic means for actuating the gripping means to grip a first end of a first trouser leg, raise the first end above the ironing board, and release the first end at an end of a second trouser leg.

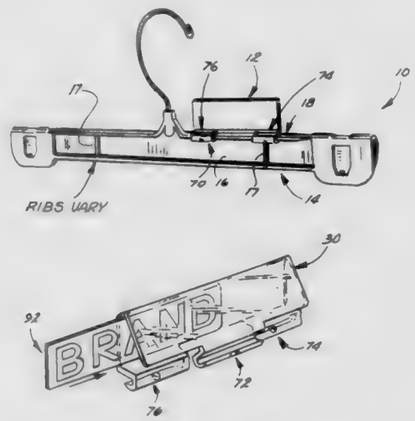
5,056,247
FABRIC TENSIONING DEVICE HAVING A COLLAPSIBLE SUPPORT, ELASTIC MEANS, AND FABRIC HOOKS
Leo S. Loomie, 9 Hall Pl., Albany, N.Y. 12210
Filed Jun. 6, 1990, Ser. No. 534,513
Int. Cl.[5] D06C *3/08*
U.S. Cl. 38—102.1 **20 Claims**



1. A lightweight collapsible apparatus for suspending fabric under tension above a work surface, wherein;
said fabric is removably attached at the marginal edges of said fabric to
a fabric attachment means removably attached to
an elastic means removably attached to
a pivotable foldable support means.

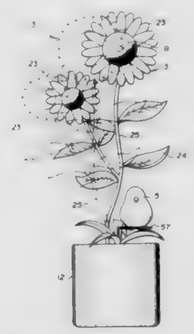
5,056,248
BRAND IDENTIFICATION SYSTEM
Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.
Filed Apr. 17, 1990, Ser. No. 510,024
Int. Cl.[5] G09F *3/06*
U.S. Cl. 40—322 **17 Claims**

1. A device for displaying information including an article hanger of the type having a body which defines an upper, configured portion, said device further comprising:
a pair of plates, each plate including an inner face, an outer face and upper and lower lateral edges;
hinge means joined to said plates for hingedly interconnecting said plates along said upper lateral edges for movement between an open position and a closed position with the inner faces of said plates in an opposed relationship and for resiliently biasing said plates towards said open position; and
clamp means of the lower lateral edges of said plates for engaging the article hanger with said hinge means resiliently biasing said clamp means into clamping engagement with the article hanger, said clamp means defining a channel dimensioned to receive the hanger and including portions defining outer, curved camming surfaces which are



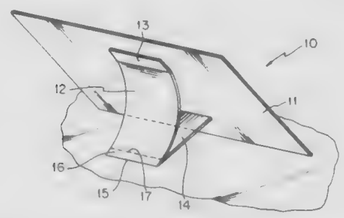
configured to cam over the article hanger so that the clamp means snaps over the hanger.

5,056,249
SOUND-SENSITIVE DANCING TOY
Koichi Sakurai, Gumma, Japan, assignor to Sakuraya Corporation, Japan
Filed May 2, 1990, Ser. No. 517,733
Claims priority, application Japan, May 16, 1989, 1-121732
Int. Cl.[5] G09F *19/08*
U.S. Cl. 40—414 **9 Claims**



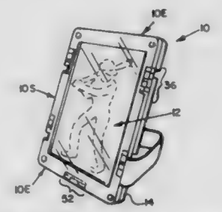
1. A sound-sensing dancing toy operative in response to the sensing of external sound, comprising:
a container;
sound-sensing operational means contained within said container and including motor means having driving shaft means, said sound-sensing operational means sensing the external sound to drive said motor means;
artificial-flower dancing means supported in said container and including angularly movable shaft means and at least one artificial flower which has a stem and a core rod inserted in said stem, said core rod of said artificial flower having a lower end portion which is connected to said angularly movable shaft means for angular movement therewith about an axis of said angularly movable shaft means, said artificial flower being mounted on said container in an upstanding manner, wherein said angularly movable shaft means is connected to said driving shaft means of said angularly movable shaft means, so that said artificial flower is danced by said motor means of said sound-sensing operational means,
a crying means including flute means having piston means and bellows means;
cam means having driving gear means, a bellows operational cam surface and a sound-interval regulating cam surface;
crying lever means having one end thereof in contact with said bellows operational cam surface and the other end supported by said bellow means;
sound-interval regulating lever means having one end thereof in contact with said sound-interval regulating cam surface of said cam means and the other end supported by said piston means of said flute means;
intermediate gear means through which said driving gear means of said cam means is connected to said driving shaft means of said motor means for angular movement about an axis of said cam means; and
crying stop means located at said bellows means of said flute means for angular movement about an axis of said crying stop means,
wherein said crying stop means has, at its lower end, eccentric projection means for abutting against said bellows means and, at an upper end, operational knob means for angularly moving said eccentric projection means about the axis of said crying stop means to abut said eccentric projection means against said bellows means thereby disengaging said crying lever means from said bellows operational cam surface.

5,056,250
STACKABLE EASEL
Richard P. Weissleder, 71 Charter Cir., Ossining, N.Y. 10512; Lawrence I. Chipkin, N. Terry Hill Rd., Carmel, N.Y. 10512, and Frank A. Lamendola, 9 Monroe Pl., Portchester, N.Y. 10573
Filed Jan. 31, 1990, Ser. No. 472,704
Int. Cl.[5] G09F *1/08*
U.S. Cl. 40—539 **18 Claims**



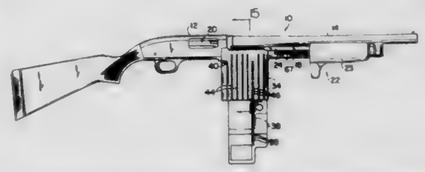
12. A self-standing device comprising:
a placard member for bearing a message on its front side;
a first member extending at one end from the placard member and adapted to be curved, and
a spacing member at the other end of the first member, having a free end in contact with said placard member when said device is in the operative position, further having a fold line between said first member and said spacing member, and additional means in juxtaposition to said fold line further securing said first and spacing members together, whereby when erected the spacing member forms an angle between about 60 degrees to about 100 degrees with the back of the placard, so that the first member and the spacing member support the placard member, and when the spacing member is collapsed and flush against said first member, a plurality of the self-standable placards can be stacked one atop another in a packet.

5,056,251
CARD DISPLAY APPARATUS
John K. Connor; Charles M. Connor, Jr., and H. B. Stroup, Jr., all of Asheville, N.C., assignors to Collector's Products Corporation, Asheville, N.C.
Continuation-in-part of Ser. No. 566,568, Aug. 13, 1990, which is a continuation-in-part of Ser. No. 376,816, Jul. 7, 1989. This application Dec. 6, 1990, Ser. No. 625,288
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—661 **28 Claims**



1. A card display holder apparatus for receiving and containing a display item, comprising:
(a) a clear base panel having a top surface and a bottom surface and a surface area greater than that of the display item, the top surface having a recess therein for containing the display item and at least two notch/engager pairs spaced around the periphery of the base panel, the engagers extending upwardly from the top surface of the base panel;
(b) a separate clear cover panel having a top surface and a flat bottom surface and a surface area greater than that of the display item, and having notch/engager pairs spaced around the periphery of the cover panel in positions corresponding to the notch/engager pairs on the top surface of the base panel and adapted for mating with the notch/engager pairs of the base panel, wherein a portion of each engager extends across a portion of its associated notch, each cover panel notch/engager pair defines a ledge-like L-shaped structure, and each base panel notch/engager pair defines an overhang-type structure; and
(c) means for locking and unlocking the cover panel to and from the base panel, wherein said locking and unlocking means includes at least one extension member extending downwardly from the outer periphery of one end of the cover panel, a cavity within the base panel adapted for receiving the extension member, and a bridge member covering at least a portion of the cavity, the bridge member adapted for retaining the extension member upon insertion of the extension member within the cavity.

5,056,252
FIREARM MAGAZINE
George A. Velezis, 175 Skyline Dr., Middlebury, Conn. 06762
Continuation-in-part of Ser. No. 429,798, Oct. 31, 1989, abandoned, which is a division of Ser. No. 375,835, Jul. 5, 1989, Pat. No. 5,027,541. This application Oct. 18, 1990, Ser. No. 611,488
Int. Cl.[5] F41A *9/71*
U.S. Cl. 42—50 **25 Claims**



1. A firearm magazine for containing a plurality of rounds of

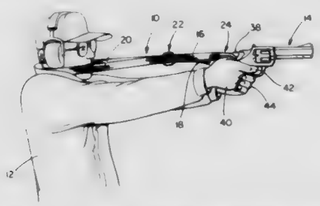
ammunition, said magazine comprising a housing having a bottom wall, a pair of laterally opposing sidewalls and longitudinally opposing front and rear walls defining a magazine chamber and an opening at the upper end of said magazine chamber through which successive rounds of ammunition are released from said magazine, follower means for biasing rounds of ammunition contained within said magazine chamber in an upward direction toward said opening, and adjusting means for selectively changing the effective longitudinal extent of said magazine chamber to accommodate rounds of ammunition of differing lengths including at least one set of vertically disposed opposing guide tracks on said opposing sidewalls and an elongated spacer for selective positioning in said one set.

5,056,253

HANDGUN STABILIZING STRAP

Phillip L. Willumsen, 2730 Valley View Dr., Missoula, Mont. 59803

Filed Jul. 23, 1990, Ser. No. 555,602
Int. Cl.[5] F41C *27/22*
U.S. Cl. 42—94 **4 Claims**



1. A stabilizing strap for a sighting instrument comprising an elongated, flexible, inelastic strap, said strap including a neck engaging loop at one end thereof and a thumb engaging loop at the other with the thumb engaging loop engaging the thumb of the strong hand of a person holding and sighting the instrument, said strap including a buckle structure adjustably receiving a free end of the strap to form the neck engaging loop, said buckle structure being a slip buckle enabling the size of the neck engaging loop to be varied and enabling the overall length of the strap to be adjusted to fit different positions of a user and users of different size, said thumb engaging loop including a reversely folded end portion of the strap with the end of the reversely folded strap being stitched to the strap to form a permanent loop, said thumb loop having a major portion of its length folded along a longitudinal center line and stitched in parallel relation to the overlapping edges of the fold along the longitudinal center line thereby forming a thumb loop having a width substantially ½ of the width of the strap.

5,056,254

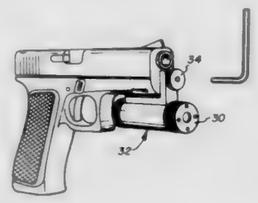
METHOD AND APPARATUS FOR ATTACHING AN AUXILIARY AIMING DEVICE TO A SEMI-AUTOMATIC PISTOL

Daniel L. Bechtel, 4701 Inwood Rd., Fort Worth, Tex. 76109

Filed Oct. 9, 1990, Ser. No. 594,825
Int. Cl.[5] F41G *1/35*
U.S. Cl. 42—103 **14 Claims**

1. An article of manufacture having utility in mounting an auxiliary aiming device on a semi-automatic pistol when the pistol is of the type having a recoil spring guide that has a fixed position which is adjacent and generally parallel to the pistol's barrel, and wherein the recoil spring guide has a portion that is exposed at the front of the pistol when the pistol is assembled for firing, comprising:

a. a rigid body having the gereral configuration of the original O.E.M. recoil spring guide, said rigid body having a first end that is configured to engage a structural portion of the pistol for holding the recoil spring in an operative position, and said rigid body having a second end with a portion that is at least partially exposed when the rigid body is inserted in a pistol as a substitute for the original O.E.M. recoil spring guide;



b. a mounting bracket for supporting an auxiliary aiming device with respect to a pistol; and

c. means for connecting the mounting bracket to the rigid body.

5,056,255

FISHING ROD JIGGING APPARATUS

Richard A. Campbell, 34 St. James Square, Huntsville, Ala. 35801

Filed Sep. 28, 1990, Ser. No. 589,778
Int. Cl.[5] A01K *91/06, 97/01, 97/10*
U.S. Cl. 43—19.2 **8 Claims**



1. Apparatus for supporting a fishing rod and for moving the same through repeated cycles of pivotal upward and downward movement comprising:

a housing;

a rod holder for removably supporting a fishing rod in longitudinal position and including an arm disposed for being pivoted around an axis transverse to said holder by means located in said housing;

pivoting means comprising:

a motor, and

an inner shaft coupled to said motor for being driven thereby and defining said axis of rotation;

an outer shaft fixedly connected to said arm and disposed around and concentric with said inner shaft for relative rotation with respect to the same;

means for engaging said inner shaft to said outer shaft whereby said outer shaft may be driven and rotated through a predetermined, normal portion of a revolution;

means for detecting relative angular positions of said inner shaft and said outer shaft with respect to one another;

means for switching said motor responsive to said detected angular positions;

tension-sensing means responsive to a bite of a fish on a line supported by said rod;

means for providing a signal indicative of said sensed tension;

means responsive to said signal for overriding said switching means; and

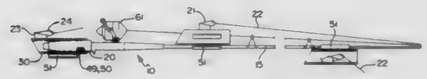
means for driving said arm upward rapidly to an elevated position past its normal uppermost position.

5,056,256

ROD-MOUNTABLE FISHING TACKLE HOLDER

Afred J. Truax, 38530 Orangelawn, Livonia, Mich. 48150

Filed Apr. 26, 1990, Ser. No. 514,924
Int. Cl.[5] A01K *87/00*
U.S. Cl. 43—25.2 **12 Claims**



7. A fishing tackle holder comprising:

(a) a substantially tubular main body, the body having:

(1) at least one longitudinal wall defining a longitudinal bore for receiving fishing tackle;

(2) a slit formed through a longitudinal wall of the body for accommodating the passage of at least a portion of fishing tackle through the slit;

(3) a closed end for preventing the escape of fishing tackle through the closed end from the longitudinal bore;

(4) and an open end communicating with the longitudinal bore; and

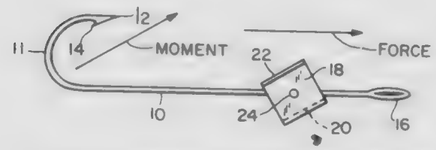
(b) means for attachment of the tackle holder to a fishing rod handle, wherein the means comprises one half of a hook-and-pile fabric fastener located within the longit udinal bore, and a complementary fastener half being located on the fishing rod handle.

5,056,257

FISH HOOK CONSTRUCTION

Russell P. Cook, Wellesley, Mass., assignor to Wellesley Research Associates, Inc., Wellesley, Mass.

Continuation-in-part of Ser. No. 441,638, Nov. 27, 1989, Pat. No. 4,987,696. This application May 21, 1990, Ser. No. 525,644
Int. Cl.[5] A01K *83/00*
U.S. Cl. 43—43.16 **5 Claims**



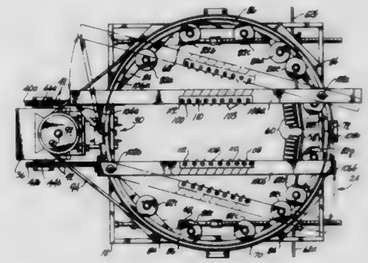
1. A fish hook construction which comprises a hook shank, a hook barb attached to said shank and defining one end of said construction, a unitary construction comprising a stabilizer secured to said shank, said stabilizer comprising a planar body in a plane substantially parallel to the plane of said hook barb and said hook shank and two wings secured to said stabilizer, said wings extending in a direction substantially perpendicular to said stabilizer, said wings being positioned at an angle between 30 and 60 degrees from the hook shank and means for attaching a line to said construction.

5,056,258

TREE TRUNK SMOOTHING DEVICE

Robert V. Quinn, Glendora, Calif., assignor to John W. Wootton, Glendora, Calif., a part interest

Continuation-in-part of Ser. No. 29,736, Mar. 24, 1987. This application Jul. 24, 1989, Ser. No. 384,549
Int. Cl.[5] A01G *1/04*
U.S. Cl. 47—1.01 **5 Claims**



1. A device for trimming and smoothing a tree trunk comprising:

a frame positionable about the trunk;

means disposed on the frame for engaging the trunk and driving the frame upwardly and downwardly along said trunk;

a generally circular carriage rotatably mounted on the frame to encircle the trunk;

means for rotating the carriage about the trunk;

trimming means for easily engaging branch segments from the tree trunk, including first and second arm members horizontally mounted on opposite sides of the carriage so as to form chords of a circle defined by the carriage and to bracket the trunk therebetween;

a plurality of cutting means mounted on each of said first and second arm members, said cutting means being positioned to engage the trunk when said arms are pivoted into operating position adjacent the trunk; and

means for urging the arm members inward to engage the tree trunk, rotation of the carriage causing the cutting means to trim branch segments from the trunk of the tree to produce a clean, relatively smooth surface, wherein the urging means comprise spring biasing means for causing the arm members to pivot in an articulating manner toward and away from each other as the tree trunk increases or decreases in diameter.

5,056,259

SOLAR GREENHOUSE FOR GROWING PLANTS

William M. Allen, 204 Cayuga Rd., Louisville, Ky. 40207

Filed Mar. 27, 1989, Ser. No. 329,378
Int. Cl.[5] A01G *9/18*
U.S. Cl. 47—17 **15 Claims**

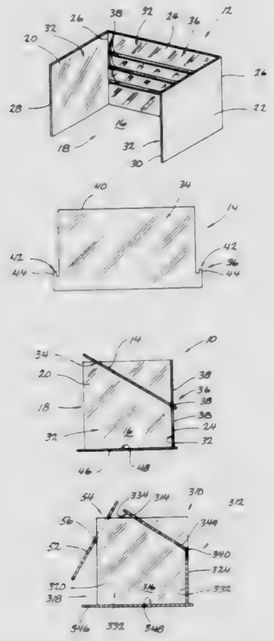
1. A solar greenhouse for growing plants indoors comprises:

a wall structure defining a partially enclosed area open at one side, the interior surface of the wall structure being light reflective;

a roof disposed over the wall structure, the interior of the roof being light reflective;

means for attaching the roof to the wall structure opposite the open side of the wall structure at different selected elevations on the wall structure; and,

means for coacting with the roof and wall structure above the elevation of the attaching means attaching the roof to



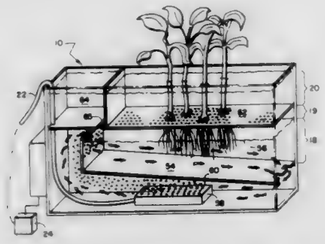
the wall structure for supporting the roof at different selected inclinations.

5,056,260

APPARATUS FOR ACCELERATING THE GROWTH RATE OF AGRONOMIC AND HORTICULTURE PLANT VARIETIES

David K. Sutton, Box 308, Catoosa, Okla. 74015

Filed Nov. 22, 1989, Ser. No. 440,370
Int. Cl.[5] A01G *9/14*
U.S. Cl. 47—59 10 Claims



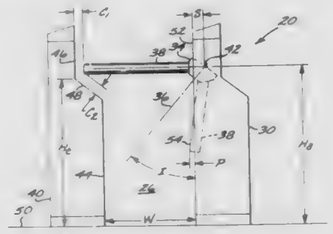
1. An apparatus for accelerating the growth rate of plants, said apparatus comprising: a water-tight container, means providing for a layer of water at the bottom of the container, means providing for support of the plants so that the roots of the plants can reach the water layer, and means for applying controlled motion to the plants continuously during predetermined timed intervals, the motion applied to the plants being applied for intervals of 5 to 15 minutes on and 15 to 120 minutes off.

5,056,261

TURNSTILE SYSTEM

Cyril F. Tetherton, Poway, Calif., assignor to Cubic Automatic Revenue Collection Group, San Diego, Calif.

Filed Dec. 19, 1990, Ser. No. 633,062
Int. Cl.[5] E06B *11/08*
U.S. Cl. 49—47 14 Claims



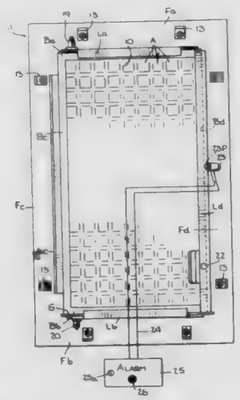
1. A turnstile system, comprising:
a first cabinet having a passageway side and a floor level; and
a turnstile hub rotationally mounted in the first cabinet with an axis of rotation of the hub inclined at an angle of from about 38 to about 41 degrees from the vertical toward the passageway side, the turnstile hub having a tripod of three turnstile arms of equal length extending therefrom with the arms lying along the edges of an equilateral pyramid having a pyramid apex that lies along the rotational axis of the hub.

5,056,262

RELEASABLE WINDOW GUARD ASSEMBLY

Kenneth K. Schweiss, Wyoming; Charles D. Flack, Jr.; Harold E. Flack, II, both of Dallas, all of Pa., and Lawrence P. Simms, New York, N.Y., assignors to Exeter Architectural Products, Inc., Wyoming, Pa.

Continuation-in-part of Ser. No. 421,344, Oct. 19, 1989, Pat. No. 4,993,187. This application Nov. 7, 1990, Ser. No. 610,073
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[5] E06B *3/68*
U.S. Cl. 49—56 10 Claims



1. a releasable screen and frame assembly mountable on the jamb of a window to prevent an intruder from gaining access to a building through the window, the screen when unlatched

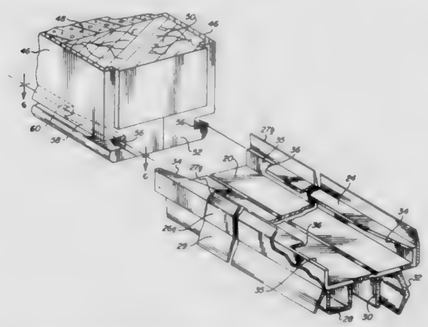
permitting exit from the building through the window, the assembly comprising:
(a) a rectangular screen fabricated from a single sheet of metal whose margins define end branches and side branches which border a planar field;
(b) a metal frame dimensioned to overlie or nest within the jamb of the window and being attachable to the jamb, said frame defining a rectangular opening whose height matches that of the screen and whose width is smaller than that of the screen whereby the screen can only swing out from the opening when the rectangular screen assumes an angle with respect thereto;
(c) a slideway socket including end and side legs formed on the rear surface of the frame and surrounding the opening to accommodate the screen; and
(d) hinges mounted on the end legs of the socket adjacent one end thereof and having pins extending through slots in corresponding end branches of the screen, whereby the screen is slidable in the socket from a security mode position wherein it lies parallel to the frame and is blocked thereby to guard the window, to an access mode position in which the hinged screen can be caused to assume an angle with respect to the opening and swung out therefrom to permit exit through the window.

5,056,263

SELF-POSITIONING AND SELF-LOCKING DOOR SWEEP AND DOOR ASSEMBLY THEREWITH

Sylvester W. Bies, Lake Orion, Mich., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 17, 1991, Ser. No. 642,421
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—488 13 Claims



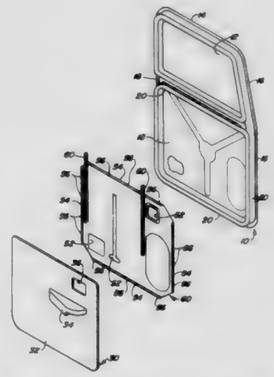
1. A door assembly including:
(a) a door with a pair of parallel faces and having horizontally extending channels in each of said faces adjacent the bottom edge of said door;
(b) an integrally formed bottom seal and sweep member having a body portion with a horizontally disposed transverse wall extending along the bottom edge of said door, upstanding side walls extending along the faces of said door, and generally horizontally and inwardly extending flanges at the upper ends of said side walls, said flanges extending into said channels of said door, said bottom sweep and seal member also having a plurality of elements depending from said transverse wall to close the space between the bottom edge of said door and the associated threshold, said channels of said door and said flanges of said seal and sweep member having cooperating and interengaging positioning means thereon to secure said seal and sweep member in a predetermined position along the length of said channels against inadvertent longitudinal movement on said door.

5,056,264

MOTOR VEHICLE DOOR ASSEMBLY WITH REINFORCEMENT PANEL

John H. Jewell, II, Denton, Tex., and Ross S. Sasamura, Honolulu, Hi., assignors to Paccar Inc., Bellevue, Wash.

Filed Jan. 5, 1990, Ser. No. 461,365
Int. Cl.[5] B60J *5/04*
U.S. Cl. 49—502 7 Claims



1. In a motor vehicle door including an outer door panel assembly having a window opening in an upper portion thereof, a reinforcing panel mounted to said outer door panel assembly below said window opening and in substantially parallel face-to-face relation to a lower portion of said outer door panel assembly, and an inner door cover panel mounted to said vehicle door in substantially parallel face-to-face relation to said reinforcing panel, the improvement in said vehicle door comprising:
said outer door panel assembly including an outer door sheet and an inner door sheet secured together in face-to-face relation and having a common periphery, said inner door sheet being formed proximate said common periphery with an inwardly protruding channel having a U-shaped transverse cross section, said outer door sheet being secured and extending across the mouth of said U-shaped channel of said inner door sheet to form with said inner sheet a reinforcing edge structure having a hollow box-like transverse cross section, and said reinforcing edge structure extending substantially around the entire common periphery of said outer door panel assembly; and
said reinforcing panel extending between opposed portions of said reinforcing edge structure and being secured to said outer door panel assembly to reinforce said vehicle door between said opposed portions of said reinforcing edge structure.

5,056,265

TUBE END ABRADING TOOL

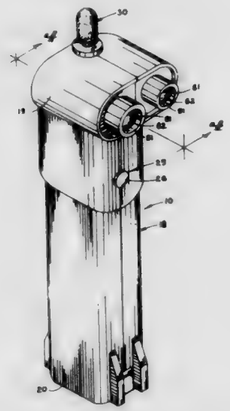
Richard H. Hurst, P.O. Box 628, Kettle Falls, Wash. 99141

Filed Feb. 27, 1990, Ser. No. 486,087
Int. Cl.[5] B24B *5/12*
U.S. Cl. 51—5 B 22 Claims

1. A tubular workpiece end abrading device for selectively abrading an end of a first or a second tubular workpiece, each workpiece being formed substantially about a central workpiece axis and terminating at an end including an internal surface and an external surface having a dimension different than the other workpiece, the device comprising:
a first abrader head mounting a first female abrasive member for rotation about a first rotary axis to coaxially receive the end of the workpiece with the first female abrasive

member in abrasive contact against the external surface of the first workpiece;

a second abrader head mounting a second female abrasive member for receiving the end of the second workpiece with the second female abrasive member in abrasive contact therewith and for rotating the second abrasive member about a second rotary axis and against the external surface of the second workpiece;



a male abrader mounting a male abrasive member for rotation about a male abrader axis and for insertion into at least one of the tubular workpieces to engage the internal surface thereof;

a driver operable to produce rotational driving force about a driver axis angularly offset from the first rotary axis; and

a reducer drive connecting the driver, the first and second abrader heads and male abrader for driven rotation about the first and second rotary axes and the male abrader axis respectively.

5,056,266

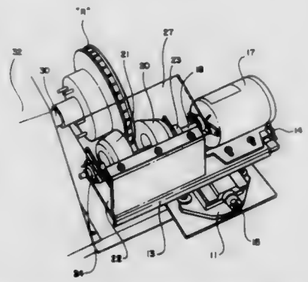
ROTARY BRAKE ROTOR RESURFACER

Bobby D. Norris, 2 Bryce Ct., Fletcher, N.C. 28732

Filed Jan. 4, 1990, Ser. No. 461,012

Int. Cl.[5] B24B *7/00*

U.S. Cl. 51—111 R **7 Claims**



1. A brake rotor resurfacer for resurfacing opposed braking surfaces of a vehicle brake rotor while the brake rotor is demounted from the vehicle, comprising:

(a) brake rotor rotating means for rotating a brake rotor;

(b) a grinder rotating means comprising a common shaft;

(c) first and second coaxial and rotatably-mounted grinding stones mounted on the common shaft in a fixed and parallel plane of rotation relative to the plane of rotation of said brake rotor;

(d) locking means for locking the first and second grinding stones on the grinder rotating means at a distance apart from each other greater than the axial thickness of the brake rotor to be resurfaced;

(e) engagement means for selectively moving the first grinding stone against the first braking surface of said rotating brake rotor for resurfacing the first braking surface of said brake rotor while said second grinding stones is spaced apart from the second braking surface of the brake rotor, and for thereafter selectively moving the second grinding stone against the second braking surface of said rotating brake rotor for resurfacing the second braking surface of said brake rotor while said first grinding stone is spaced apart from the first braking surface of the brake rotor;

whereby both first and second faces of said brake rotor are successively resurfaced by the respective first and second grinding stones without adjustment to the axis of rotation of the grinding stones to thereby enhance the parallelism of the resurfacing.

5,056,267

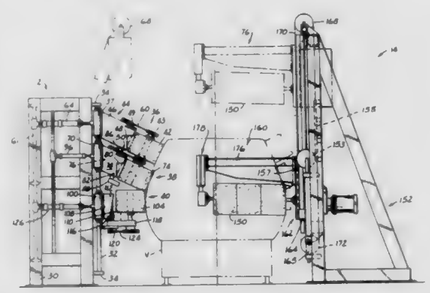
BRUSH FINISHING METHOD AND APPARATUS

Gerald W. Nicely, Romeo; Steven R. Lipple, Troy, and Dennis G. Schmalzel, Almont, all of Mich., assignors to Omni Engineering, Inc., Troy and General Motors Corporation, Detroit, both of, Mich.

Filed Nov. 13, 1989, Ser. No. 434,369

Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—165.9 **10 Claims**



8. Apparatus for polishing the surfaces of successive automotive vehicle bodies moving past a polishing station, comprising supporting structure adjacent said station, a rotary brush, means mounting said brush on said supporting structure for movement toward and away from an automotive vehicle body as it moves past said polishing station, means for rotating said brush, fluid pressure operated means for advancing said brush toward the automotive vehicle body into pressure contact therewith and for retracting the same, means for supplying fluid under pressure to actuate said fluid pressure operated means, an adjustable pressure regulator for maintaining the pressure of the fluid supplied to said fluid pressure operated means within a predetermined range to control the pressure with which said brush contact s said automotive vehicle body, and a stop control operable when said brush is in contact with the automotive vehicle body to override said adjustable pressure regulator and lock said fluid pressure operated means and hence said brush in a given position so that said brush is incapable either of advancing or retracting and will maintain its position relative to the moving automotive vehicle body while passing over a low spot or vacant area such as a window opening in the automotive vehicle body.

5,056,268

ACCESSORY DEVICE FOR ANGLE GRINDER

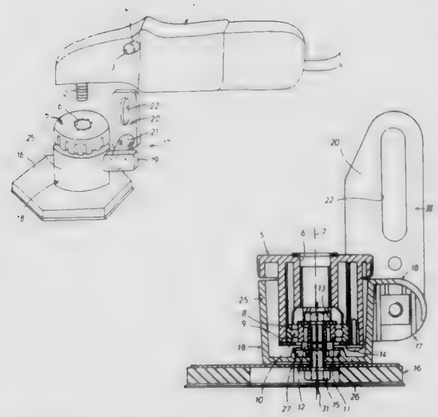
Robert Wolff, Engeln, Fed. Rep. of Germany, assignor to Werkzeug GmbH, Weibern, Fed. Rep. of Germany

Filed Oct. 17, 1990, Ser. No. 598,942

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1989, 3935179

Int. Cl.[5] B24B *23/04*

U.S. Cl. 51—170 MT **21 Claims**



1. An accessory device for a driven hand tool including an output spindle means, the accessory device including a toolholder means, an eccentric head means adapted to be coupled to the output spindle means for rotation therewith, bearing means arranged in the eccentric head means and including an outer race means coupled to said eccentric head means, means resiliently coupling the toolholder means to a housing of the driven hand tool for restricting a freedom of movement of the toolholder means to a reciprocatory movement in dependence on the eccentricity and to a superimposed pivoting motion about the resilient point of the coupling means, and a central bushing means mounted in said outer race means, wherein said resilient coupling means includes a plate means adapted to be secured to a handle of the driven hand tool, a radially outwardly projecting member coupled to said central bushing means, and an elastic means interposed between said plate means and said radially outwardly projecting member wherein said toolholder means is an independent structural assembly separate from said resilient coupling means and said eccentric head means.

5,056,269

APPARATUS FOR WORKING IN PIPES

Stig Westman, Räfsvägen 22, S-740 40 Heby, Sweden

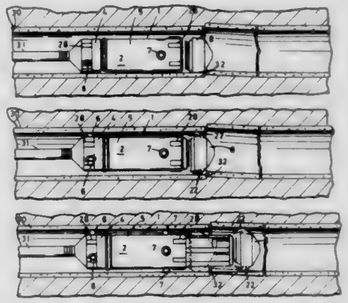
PCT No. PCT/SE88/00333, § 371 Date Dec. 13, 1989, § 102(e) Date Dec. 13, 1989, PCT Pub. No. WO88/10393, PCT Pub. Date Dec. 29, 1988

PCT Filed Jun. 16, 1988, Ser. No. 435,462

Claims priority, application Sweden, Jun. 17, 1987, 8702543-3

Int. Cl.[5] B24B *5/40;* **E21B** *29/00*

U.S. Cl. 51—245 **8 Claims**



1. Apparatus (**1**, **51**) for work inside piping (**30**, **59**) and comprising an elongate clamping and/or moving unit (**2**, **52**) with a working attachment (**8**, **58**) at one end, characterized in that the clamping and/or moving unit (**2**, **52**) includes two arrays of radially projectable feet (**6**, **7**; **56**, **57**) one array at either end of the unit, in that the working attachment (**8**, **58**) includes radially projectable elements (**22**, **55**) all of which are adapted for being displaced to the same extent, and in that the array of feet (**6**, **56**) at the end of the clamping and/or moving unit facing away from the working attachment (**8**, **58**) is adapted such that the feet are all displaced to the same extent.

5,056,270

METHOD AND APPARATUS FOR GRINDING LENSES

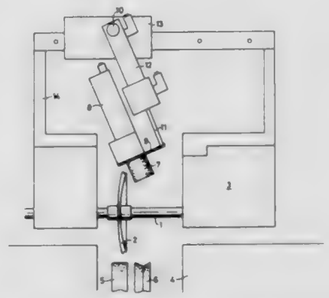
Dennis V. Curcher, Thatcham, England, assignor to Berkshire Ophthalmic Laboratories Limited, Berkshire, England

Filed Jul. 6, 1989, Ser. No. 376,304

Claims priority, application United Kingdom, Jul. 7, 1988, 8816182

Int. Cl.[5] B24B *9/14*

U.S. Cl. 51—284 E **14 Claims**



1. A method of edge grinding a lens comprising the steps of:

a. grinding the periphery of the lens to the required basic size and shape using first grinding means;

b. producing a feature selected from the group consisting of outwardly-extending peripheral ridges and inwardly-extending peripheral grooves on the lens using second

grinding means the grinding face of which is suitably contoured to provide said feature; and

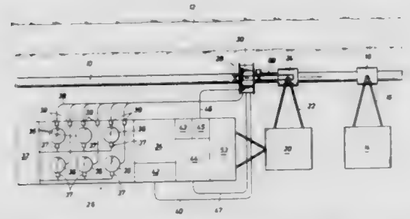
c. automatically providing a safety bevel on the lens using third grinding means by pivoting a shaft carrying the third grinding means about a fixed point until the third grinding means contacts the lens.

5,056,271

METHOD FOR CLEANING PIPE

James L. Rose, Houston, Tex., assignor to E. B. Thomas, Houston, Tex.

Division of Ser. No. 470,819, Jan. 26, 1990, abandoned. This application Jan. 2, 1991, Ser. No. 636,673
Int. Cl.[5] B24C *3/06*
U.S. Cl. 51—319 6 Claims



1. A method for cleaning the outside of a pipe from a self propelled carriage supported on the upper surface of the pipe for movement along the pipe and a skid pulled alongside the pipe by a prime mover; said method comprising the following steps:

providing an enclosed housing for the carriage having a pair of opposed side sections on opposite sides of the pipe hinged for swinging movement to an open position from a center body section and spaced from the pipe to permit the housing to be lowered onto the pipe;

providing rollers on said housing for contacting the outer surface of the pipe to support the carriage for movement along the pipe;

lowering the housing onto the pipe with said side sections in an open position and said center body section contacting the upper surface of the pipe;

swinging said side sections to a closed position about said pipe and releasably securing said side sections in closed position about said pipe;

mounting a plurality of nozzles on the housing at spaced arcuate intervals about the pipe with the lower ends of said nozzles extending within a blast chamber formed by said housing about said pipe;

supplying abrasive particles from the skid to said nozzles in a pressurized stream of air from the skid; and

mounting fluid motors on the outer surface of said enclosed housing operatively connected to said nozzles for oscillating said nozzles in a predetermined stroke for cleaning a predetermined outer surface area of the pipe as the carriage moves along the pipe.

5,056,272

METHOD AND APPARATUS FOR REDUCING THICKNESS OF STONE SLABS

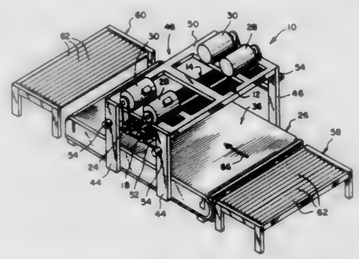
Gino C. Battaglia, 25022 S. Vermont Ave., Harbor City, Calif. 90710

Filed Jul. 16, 1990, Ser. No. 552,541
Int. Cl.[5] B24B *7/06*
U.S. Cl. 51—283 R 16 Claims

14. A method of reducing the thickness of a stone slab using a plurality of mutually parallel saw disks divided into two sets for rotation about separate, parallel axes, wherein the blades in each set are separated from each other by gaps of separation aligned with the disks in each other set, and using a flat supporting bed extending parallel to said axes to define a uniform distance equal to a desired slab thickness between said saw disks and said supporting bed, the steps comprising:

rotating said sets of saw disks about their respective axes,

passing a stone slab of initial thickness greater than said uniform distance between said saw disks and said supporting bed in a direction of advancement parallel to both said saw disks and said supporting bed to define channels in



said stone slab separated from each other by intervening ridges left by said gaps of separation between said saw disks in said first set, and

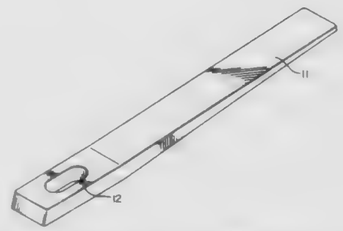
passing said stone slab in said direction of movement past said saw disks in said second set to remove said intervening ridges therefrom and reduce said slab to a uniform thickness equal to said desired slab thickness.

5,056,273

ABRASIVE DEVICE WITH REPLACEABLE MULTI-PACK INSERTS

Richard I. Martel, P.O. Box 1011, Marathon, Fla. 33050, and Gerald G. Brown, P.O. Box 127, Lummi Island, Wash. 98262

Filed Oct. 16, 1989, Ser. No. 421,846
Int. Cl.[5] B24D *15/00*
U.S. Cl. 51—392 7 Claims



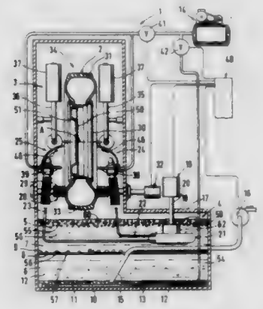
6. A multi-pack of separate, independent, discrete abrasive sheets having like abrasive characteristics for use with a hand-held, hand-operable, abrasive tool, said multi-pack of separate, independent, discrete abrasive sheets consisting solely of a unitary assemblage of a plurality of separate, independent, imperforate abrasive sheets disposed in face-to-face abutting relation with their peripheral edges aligned and with their abrasive surfaces facing in a common direction, said plurality of abrasive sheets being separably held together in a unitary multi-pack by means of adhesive applied to the exposed peripheral edges of said sheets and with said multi-pack being devoid of bonding means extending through said sheets and like separable fastening elements used to maintain said sheets as a unitary assemblage, whereby when the outermost exposed one of said abrasive sheets is expended, the user need merely peel such exposed sheet off said multi-pack so as to expose the underlying unused abrasive sheet in a condition devoid of adhesive on its exposed abrasive surface.

5,056,274

DEVICE FOR CLEANING VEHICLE WHEELS

Leif E. Stern, Fattershus, Lund, Sweden S-225 90

Continuation of Ser. No. 340,552, Apr. 19, 1989, abandoned. This application Aug. 22, 1990, Ser. No. 569,762
Claims priority, application Sweden, Apr. 22, 1988, 8801493
Int. Cl.[5] B24C *3/04*
U.S. Cl. 51—425 14 Claims



1. A device for cleaning contaminants from vehicle wheels, comprising:

(a) a container for containing a blasting agent including a liquid and plastic granules having a lower density than the liquid such that said plastic granules float in a surface area in said liquid;

(b) the container having a lower part and an upper part for the liquid, the upper part being adapted to contain the plastic granules floating in the surface area of the liquid and the lower part being adapted to collect contaminants removed from the vehicle wheels beneath said surface area;

(c) a pump for distributing the blasting agent from the container to a vehicle wheel, the pump including an inlet positioned in the upper part of the container for sucking plastic granules from the surface area of the liquid into the pump; and

(d) nozzle means communicating with the outlet of the pump for receiving the blasting agent therefrom and blasting the agent towards the vehicle wheel to remove the contaminants therefrom.

5,056,275

CONTINUOUSLY-OPERABLE ABRASIVE BLASTING APPARATUS

Hirokazu Wada; Nagio Minami, and Tamotsu Oka, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1990, Ser. No. 497,612
Claims priority, application Japan, Apr. 17, 1989, 1-44082[U]
Int. Cl.[5] B24C *7/00, 9/00*
U.S. Cl. 51—437 11 Claims

1. A continuously-openable type hydraulic blasting apparatus comprising:

an abrasive recovery tank;

a hydraulic pressurized abrasive tank located beneath the abrasive recover tank;

abrasive storage tank means for operatively connecting the abrasive recovery tank and the hydraulic pressurized abrasive tank, said abrasive storage tank means being positioned between the abrasive recovery tank and the hydraulic pressurized abrasive tank;

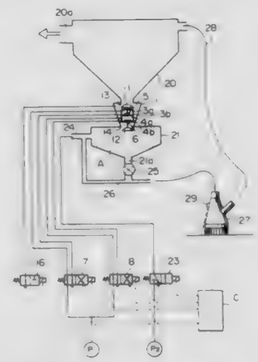
first valve means connected to the abrasive storage tank means for opening the abrasive storage tank means to atmosphere;

second valve means provided in the abrasive storage tank means for opening and closing an opening between the abrasive storage tank means and the abrasive recovery tank;

third valve means provided in the abrasive storage tank means for opening and closing an opening between the abrasive storage tank means and the hydraulic pressurized abrasive tank, said second valve means and third valve means being in opposed relationship with one another;

cylinder means positioned in the abrasive storage tank means for holding the second and third valve means; and

control means for independently controlling opening and closing of the first, second and third valve means such that at least said second and third valve means can simultaneously be one of both opened, both closed and one valve means opened, one valve means closed,



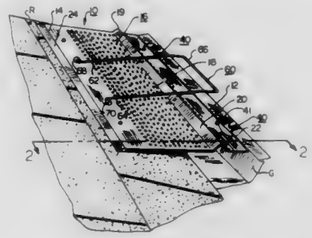
wherein the second valve means and the third valve means both have piston rods and wherein said control means further comprises a pair of pistons, a first piston being connected to the piston rod of the second valve means and being located within a first chamber defined in the cylinder means and a second piston being connected to the piston rod of the third valve means and being located within a second chamber defined in the cylinder means, the piston rods being generally aligned along a longitudinal axis and the second and third valve means being slidably reciprocable along the longitudinal axis.

5,056,276

GUTTER GUARD CONSTRUCTION

J. Arne Nielsen, 2903 Riding Trail Ct., Oak Ridge, N.C. 27310, and Majid N. Moghaddassi, 2009 Smokeridge La., Greensboro, N.C. 27407

Filed May 15, 1990, Ser. No. 523,855
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—12 11 Claims



1. A gutter guard for use with rain gutters of the type which are attached to the eaves of a house and extend beneath the

roof edge thereof, wherein the gutter includes an outer edge and an elongated trough, said gutter guard comprises:

a) generally planar body member having an inner edge and an outer edge;

b) means for attaching said outer edge of said body member to the outer edge of said gutter with said inner edge resting on the roof, the width of said body member being such that said gutter guard, when so positioned, forms an angle with the horizontal in the range of 5°–30°;

c) said body member containing a relatively wide, flat perforate portion overlying at least the entirety of the elongated trough of said gutter and a single weir extending upwardly from the surface thereof along a line extending parallel to and adjacent said outer edge, said perforate portion containing a multiplicity of openings therein of approximately ¼ inch in diameter;

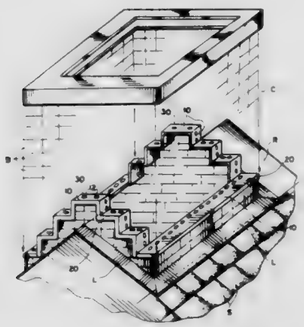
d) said weir having an imperforate upstream inclined surface impeding the flow of water across the surface of said body member, causing said water to enter said perforate portion.

5,056,277

PREFORMED CHIMNEY FLASHING

William P. Wilson, 100 Maple Dr., Orchard Park, N.Y. 14127

Filed Oct. 29, 1990, Ser. No. 604,228
Int. Cl.[5] E04D *1/36*
U.S. Cl. 52—62 **9 Claims**



1. Flashing for a vertical wall constructed of bricks and mortar and having an exterior surface, said flashing comprising:

a generally flat horizontal plate of essentially constant plate width, said horizontal plate having an outside edge adjacent said exterior surface, said horizontal plate disposed between two adjacent bricks;

holes in said horizontal plate for admitting therethrough said mortar; and

a generally flat lip of essentially constant lip width joined to said horizontal plate along said outside edge, said lip extending from said outside edge generally parallel to said exterior surface, said lip adjacent said outside edge, said horizontal plate and said lip continuous;

said bricks having corners, and

said horizontal plate and said lip continuous in a region of any one of said corners;

said lip including a ridge area, said ridge area thicker than areas of said lip adjacent said ridge area,

said ridge area protruding from a side of said lip adjacent said exterior surface, and

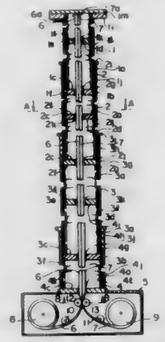
said ridge area distal said outside edge on said lip; whereby a slot space is created between said exterior surface.

5,056,278

EXTENSION SUPPORT UNIT

Masumi Atsukawa, Tokyo, Japan, assignor to K & M Enterprise Co., Ltd., Japan

Filed Nov. 13, 1990, Ser. No. 611,527
Claims priority, application Japan, Nov. 22, 1989, 1-301884
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—108 **15 Claims**



1. An extension support unit having an extendable support pole formed by connecting a plurality of cylindrical bodies having different diameters, each of said cylindrical bodies having a smaller diameter being closely and movably inserted into another one of said cylindrical bodies having a larger-diameter, said smaller-diameter cylindrical body having a lower end outside diameter larger than an upper end inside diameter of said larger-diameter cylindrical body, said extension support unit comprising:

a) a partition member disposed in each of said cylindrical bodies, said partition member extending in a transverse direction of said cylindrical bodies, a top cover being provided on an uppermost end of one of said cylindrical bodies having the smallest diameter and located at the top of said support pole, one of said cylindrical bodies having the largest diameter located at a lowermost end of said support pole being made to stand on a machine chamber;

b) said partition member of each cylindrical body having at least one guide slit having an arched shape formed of a straight line or a curved line;

c) said machine chamber having at least one wind-up roll for winding up a band-like plate having an arched cross-sectional shape coinciding with said slit, at least one band-like plate feed mechanisms for paying out and drawing back said band-like plate by pinching same, and a device for driving said mechanisms;

d) said band-like plate having an arched sectional shape being made to pass through said guide slit having an arched sectional shape and formed in each of said partition members, said band-like plate being connected at its upper end to said top cover or a bottom portion of said cylindrical body having the smallest diameter and located at the uppermost end of said support pole;

e) said support pole being extended by rotating said band-like plate feed mechanism in a normal direction to pay out said band-like plate from said wind-up roll and to thereby lift said smallest-diameter cylindrical body located uppermost end of said support pole, by drawing up the second cylindrical body circumscribed about said smallest-diameter cylindrical body with the upward movement of said smallest-diameter cylindrical body, and by successively drawing up each larger-diameter cylindrical body with the smaller-diameter cylindrical body in this manner; and

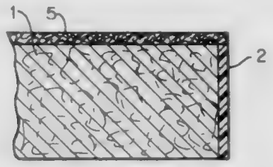
f) said support pole being contracted by rotating said band-like plate feed mechanism in a reverse direction to draw back said band-like plate previously paid out, to wind up said band-like plate around said wind-up roll and to draw down the second cylindrical body circumscribed about said smallest-diameter cylindrical body with the downward movement of said smallest-diameter cylindrical body, and by successively drawing down each larger-diameter cylindrical body with the smaller-diameter cylindrical body in this manner.

5,056,279

FLAT PANEL AND METHOD FOR FABRICATING IT

George G. Veldhoen, Staartmolen 3, 3352 BA Papendrecht, Netherlands

Continuation of Ser. No. 250,382, Sep. 28, 1988, abandoned. This application May 1, 1990, Ser. No. 517,572
Claims priority, application Netherlands, Sep. 29, 1987, 870234
Int. Cl.[5] E04B *1/84*
U.S. Cl. 52—144 **16 Claims**



1. An acoustical panel for use with a supporting profile, the profile having a pair of opposing flanges between which an edge of the panel is positioned, the acoustical panel comprising:

a flat panel comprising a self-supporting core of sound-proofing material and having a narrow side edge;

thin flexible strips applied to the side edge and extending completely around the core to define a panel width of constant thickness, wherein the side edge of the panel may be positioned between a pair of opposing parallel flanges in a supporting profile to provide a substantially constant line contact between the flanges and panel, and wherein the strips are relatively light weight compared to the core and do not significantly contribute to the weight of the core nor to the self-supporting capacity of the core;

wherein an acoustic open fabric is applied onto at least one of the faces of the core and extends over one end of the flexible strip, and

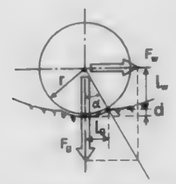
wherein the acoustic open fabric is near to its circumferential edge provided with a continuous groove.

5,056,280

MULTI-STEP BASE ISOLATOR

Valentin N. Shustov, 536 3/4 N. Genesee Ave., Los Angeles, Calif. 90036

Filed Sep. 12, 1990, Ser. No. 588,976
Int. Cl.[5] E02D *27/34;* **E04B** *1/98;* **E04H** *9/02*
U.S. Cl. 52—167 R **1 Claim**



1. A system of seismic base isolation devices adapted to separate a superstructure from a foundation for protection against damaging effect of strong earthquakes and at the same time to prevent a separation under wind loads or minor earthquakes, each of said devices comprising:

a ball transfer unit consisting of a large ball positioned in a massive steel housing, said housing located above said ball and connected rigidly to a supported superstructure, said ball separated from said housing by a plurality of smaller balls running in a hemispheric shell;

a pedestal plate attached to a foundation and supporting said ball transfer unit being in rollable contact with an upper surface of said pedestal plate during a horizontal vibration of said foundation, said upper surface being a plurality of concentric spherical surfaces with a common vertical axis of symmetry and with successively increasing radii of curvature, the maximum vertical grade of said spherical surfaces being a function of the ratio of the design wind load to the weight of the superstructure, the geometry of said upper surface of said pedestal plate being governed by correlation of natural periods of vibration of isolated and fixed-base structures, as well as by characteristics of the anticipated earthquake;

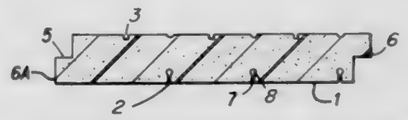
a depression in the center of said pedestal plate forming a contacting surface following the shape of said ball, the geometry of said depression at given radius of said ball being governed by interrelation between design wind load and weight of the superstructure in supposition that said ball remains in said depression retaining integrity of the superstructure with the foundation under wind pressure or minor earthquakes but may roll out of said depression, permitting relative movement of the foundation with respect to the superstructure during earthquakes of moderate to strong magnitude.

5,056,281

BASEWRAP FOUNDATION WALL INSULATION AND DRAINAGE

Grant McCarthy, Gibbons, Canada, assignor to 501 Beaver Plastics, Ltd., Edmonton, Canada

Filed Jun. 18, 1990, Ser. No. 539,213
Claims priority, application Canada, Jun. 22, 1989, 603561
Int. Cl.[5] E02D *31/02*
U.S. Cl. 52—169.5 **3 Claims**



1. In a building construction having a one-piece molded insulating member for direct engagement with exterior foundation walls and adapted to be directed engaged by backfill earth, the improvement comprising;

a panel constructed from expanded thermoplastics exhibiting low water vapor permeability and having opposite first and second faces with said first face engageable with backfill earth and said second face adapted to abut a foundation wall,

said first and second panel faces respectively provided with a plurality of vertically disposed laterally spaced apart first and second drainage channels,

said first channels having narrow exterior openings on said panel first face communicating with enlarged openings towards the interior of said panel,

said second channels defining a substantially rectangular configuration in cross-section,

said first channels defining a depth of at least ¾ inch and said second channels defining a depth of at least ½ inch,

said panel having opposite ends respectively provided with offset L-shaped grooves to allow the adjacent secure connection between a plurality of said panels, whereby

said first channel exterior openings resist clogging from

directly engaging surrounding earth while allowing passage of water into said first channel enlarged openings for drainage while said second channels freely allow drainage of any water reaching said panel second face abutting the foundation wall.

5,056,282

INJECTION HOSE FOR JOINTS TO BE SEALED IN CONCRETE WORKS

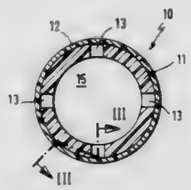
Lieselotte Pflieger, Eichenweg 3, 7405 Dettenhausen, Fed. Rep. of Germany

Filed Aug. 23, 1990, Ser. No. 572,756

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 3929848

Int. Cl.[5] E04H *14/00*

U.S. Cl. 52—173 R **5 Claims**



1. An injection hose for supplying an injection fluid for sealing of joints in concrete works, comprising a flexible, liquid-impermeable supply hose element adapted to supply an injection fluid, said supply hose having an injection region provided with a plurality of radial openings; and an envelope hose element composed of liquid-tight material and tightly surrounding said supply hose element at least in said injection region, said envelope hose being composed of an elastically expansible material and provided with radial openings which are offset relative to said radial openings of said supply hose.

5,056,283

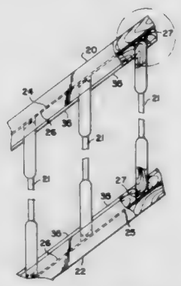
ADJUSTABLE STAIR RAIL

Thomas A. Sapinski, Jacksonville, Fla., assignor to Visador Company, Jacksonville, Fla.

Filed Jun. 6, 1990, Ser. No. 533,928

Int. Cl.[5] E04F *11/00*

U.S. Cl. 52—184 **20 Claims**



1. In a stair rail section comprising a generally planar assembly of a hand rail, a shoe rail, and a plurality of spaced balusters having long axes and with their upper ends fastened to a rabbet in the hand rail and their lower ends fastened to a rabbet in the shoe rail; the improvement wherein each baluster has its upper end and its lower end fashioned with two intersecting planar faces, the first face being perpendicular to the long axis of the baluster and the second face being at an angle of about 120°–150° to the first face and meeting in an intersection line which is perpendicular to the plane of the stair rail section, the faces on the upper end and the faces on the lower end being oriented as reverse images of each other such that when a baluster is rotated end-for-end the orientation of the two faces is identical and wherein a plastic web is fastened to the rail in the rabbet groove of each rail between the rail and the ends of the balusters; a plurality of spaced U-shaped flaps in the web with a flap aligned with each baluster end, each flap having a free end and an end joined to the web, the free end of the flap being fastened to the first face of the baluster end adjacent thereto.

5,056,284

BUNDLED TENSIONING MEMBER FOR PRESTRESSING A TALL STRUCTURAL MEMBER AND METHOD OF INSTALLING SAME

Franz Ruckdeschel; Reinhard Klöckner; Dieter Jungwirth, all of Munich, and Gero Herrmann, Karlsfeld, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann AG, Munich, Fed. Rep. of Germany

Filed Jul. 11, 1989, Ser. No. 378,136

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1988, 3824394

Int. Cl.[5] E04C *5/08*

U.S. Cl. 52—230 **11 Claims**



1. Bundled tensioning member having a long length for use in prestressing a concrete structure with subsequent composite action, said tensioning member formed of a plurality of individual tensioning elements such as at least one of steel rods, steel wired or steel wire strands, means forming an axially elongated tensioning duct located in the concrete structure, said tensioning duct extending generally upwardly and having a first end at the lower end thereof and a second end at the upper end thereof, said tensioning duct having an axial region extending from the first end thereof, said tensioning duct being accessible only at the second end, means for supporting said tensioning member adjacent the second end thereof, said means comprising an anchor disk, wherein the improvement comprises that said tensioning elements are joined together in a compact contacting unitary arrangement in the axial region at the first end of said tensioning duct, means secured on said tensioning members for affording additional anchoring with a hardenable material to be injected into the tensioning duct for providing a composite action and forming an anchored length in the axial region at the first end in said tensioning duct wherein the anchored length extends for the axial region of the duct from the first end thereof.

5,056,285

PARTITION WALL, PARTICULARLY FOR OFFICES

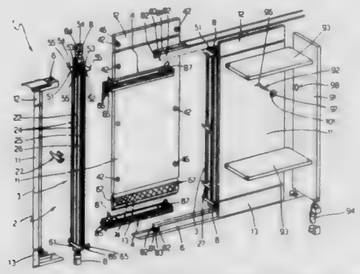
Francesco Frascaroli, Bologna, and Edgardo Versari, Forli', both of Italy, assignors to C.O.M. Cooperativa Operai Mobilieri S.C.R.L., Persiceto, Italy

Filed Jul. 6, 1988, Ser. No. 215,646

Claims priority, application Italy, Jul. 6, 1987, 4912/87[U]

Int. Cl.[5] E04B *2/78*

U.S. Cl. 52—243 **8 Claims**



1. A partition wall comprising a self-supporting preassembled frame having first and second opposite lateral surfaces, at least one panel extending outside and along each said lateral surface, and first fastening means to releasably connect the panels to said frame; said frame comprising a number of elongated bars defining vertical uprights, and horizontal upper and lower crosspieces connecting the uprights in pairs; and each elongated bar having two lateral outer substantially parallel walls and two inner substantially parallel transverse walls extending between said two outer walls, and defining therewith a substantially rectangular tubular center portion and two opposed substantially C-shaped lateral portions of said elongated bar; said two outer walls extending transversely of the lateral surfaces of said frame, and having turned-in opposite longitudinal end portions each arranged substantially in contact with an inner surface of a respective said panel, and wherein each elongated bar is formed from a single elongated metal sheet having opposite longitudinal lateral edges, the sheet having been transversely bent to form said two outer walls and said two inner walls, and said longitudinal lateral edges having been clinched together at one of said inner walls.

5,056,286

SCREEN PLATE

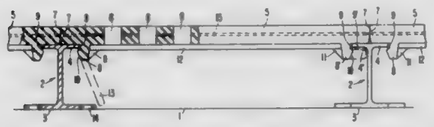
Anton Bokor, Stutensee-Blankenloch, Fed. Rep. of Germany, assignor to Ludwig Krieger Draht-und Konststoff, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 29, 1989, Ser. No. 414,319

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1988, 8812647[U]

Int. Cl.[5] E06B *3/54*

U.S. Cl. 52—483 **11 Claims**



1. Screen plate comprising a support frame, a plurality of spaced support profiles disposed on said support frame, a plurality of multi-apertured screen linings of a rubber elastic material respectively arranged between adjacent support profiles, ledge means arranged along respective opposite end faces of the respective screen linings projecting downwardly from an underside of said screen lining for detachably mounting the respective screen linings between adjacent support profiles, wherein each of the support profiles are constructed as I-shaped beams each having a central web and an upper flange and lower flange arranged at respective opposite ends of the central web, and each of the ledge means includes a slot means opening in a direction of the respective end faces for engaging a free edge of the upper flange of adjacent I-shaped beams with a portion of the respective screen linings disposed over an upper surface of the upper flanges of the respective adjacent I-shaped beams, and wherein a width of each of the screen linings measured on a bottom of the slot means is at least zonally somewhat larger than a clearance width between the free edges of the upper flanges of adjacent I-shaped beams whereby the screen linings are pretensioned between adjacent I-shaped beams.

5,056,287

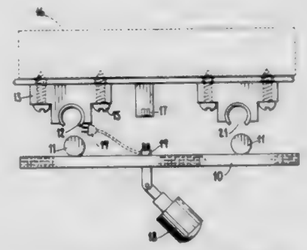
PANEL MOUNTING CONSTRUCTION AND METHOD OF USE

Michael Weber, 1633 Alpine Dr., R.D. #1, Pen Argyl, Pa. 18072

Filed Aug. 30, 1990, Ser. No. 575,298

Int. Cl.[5] E04C *1/40*

U.S. Cl. 52—511 **20 Claims**



1. A panel mounting construction, comprising:

a plurality of channels formed by slotted pipes defining in cross section a relatively smaller entrance opening at a slot to a relatively larger cavity;

means for holding the channels in parallel relationship on a mounting surface;

a plurality of panels, each of the panels having at least one projection dimensioned to engage resiliently through the entrance opening in the channels to reside securely in the cavity of the channels, at least one of the projection and the channels being resiliently deformable to receive the other of the projection and the channels,

whereby the panels are removably mountable to the mounting surface on the channels.

5,056,288

ROOF STRUCTURE AND FIXTURE THEREFOR

Motokatsu Funaki, 430 Shimotsuchidana, Fujisawa-shi, Kanagawa-ken, Japan

Division of Ser. No. 223,579, Jul. 25, 1988, Pat. No. 4,926,611, which is a division of Ser. No. 910,576, Sep. 23, 1986, Pat. No. 4,803,818. This application Feb. 20, 1990, Ser. No. 481,840

Int. Cl.[5] E04D *1/34*

U.S. Cl. 52—545 **4 Claims**

1. A roof structure comprising:

a plurality of roof boards connected to one another in side-by-side relation between a ridge of said roof and an eave of said roof and mounted on a roof support means, said roof boards each comprising a flat surface section, a ridge side connection portion formed at the side of said flat surface section facing the ridge and an eaves side connection portion formed at the side of said flat surface section facing the eave, each two adjacent roof boards of said roof boards including an upper roof board closest to the ridge and a lower roof board closest to the eave;

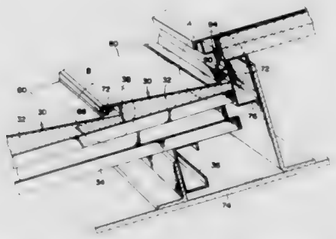
said ridge and eaves side connection portions of said roof boards being adapted to permit the connection between each two adjacent roof boards by engaging the eaves side connection portion of the upper roof board of said two adjacent roof boards with the ridge side connection portion of the lower roof board of said two adjacent roof boards;

a ridge side rising support means on which the roof board closest to the ridge of said roof boards is held;

a holding member for engaging and securely holding the ridge side connection portion of said roof board closest to the ridge on said ridge side rising support means;

a backing member arranged under each of said roof boards;

a fixture disposed in the region of the adjacent ridge and eaves side connection portions of each two adjacent roof



boards, said fixtures being fixed on said roof support means at a position beyond the eaves side of the upper roof board of each two adjacent of roof boards;

said fixture being formed into a substantially C-shaped to have a base section fixed on said roof support means, a holding section upwardly extending from the side of said base section facing the ridge and a support section formed by bending a distal end portion of said holding section in the direction facing the eave and adapted to support thereon an end portion of said flat surface section of said upper roof board adjacent the eaves side connection portion thereof, said holding section holding the end facing the eave of the backing member under the upper roof board, and said support section being securely held at a free end thereof in said eaves side connection portion of said upper roof board.

5,056,289

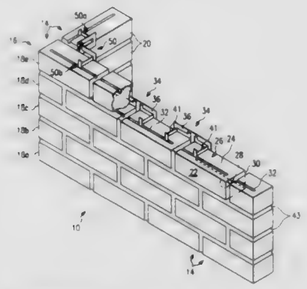
WALL CONSTRUCTION AND SPACER FOR USE THEREWITH

William J. Colen, 11248 Jamestown, Dallas, Tex. 75230

Filed Jul. 13, 1990, Ser. No. 553,176

Int. Cl.[5] E04B *1/02*

U.S. Cl. 52—564 **14 Claims**



1. A wall, comprising:

a plurality of blocks arranged in at least first and second layers spaced one above the other by a predetermined distance, each of the blocks having an exterior face, an interior face, a top and a bottom, the top and bottom of each block having a longitudinal groove located a predetermined distance from the interior face and adapted to be aligned with the grooves of adjacent blocks, wherein the tops of adjacent blocks in each layer are located in a common plane;

a plurality of spacers each having a base supported against the interior faces of adjacent blocks in the first layer, each spacer having first and second arms with each arm extending transversely from the base in a plane perpendicular to the common plane, each arm having an upper edge supported against the bottom of a block in the second layer and a lower edge supported against the top of a block in the first layer, each arm including at its distal end a tab having first and second portions, the first portion extending downwardly into the longitudinal groove of a block in the first layer and the second portion extending upwardly into the longitudinal groove of a block in the second layer; and

a cementitious material located in the space between the first and second layers.

5,056,290

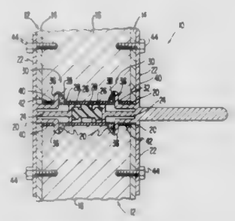
METHOD, ASSEMBLY AND APPARATUS FOR JOINING PANELS

Jack L. Alexander, Danville, Va., and Michael G. Bledsoe, Madison, N.C., assignors to AC Corporation, Greensboro, N.C.

Filed Nov. 15, 1989, Ser. No. 436,644

Int. Cl.[5] E04C *2/40*

U.S. Cl. 52—584 **13 Claims**



1. A connector apparatus for use in securing at least a panel thereto, said connector apparatus comprising:

at least a first pair of generally parallel and spaced apart flange members, a web assembly interconnecting said first pair of flange members and defining a first space with said first pair of flange members which is adapted to receive therein a panel:

first protruding means for gripping an edge of the panel when the panel is inserted between said first pair of flange members in said first space and for defining at least a first sealant reservoir for sealant material which seals the panel edge when the pane edge is seated thereagainst.

5,056,291

MODULAR SYSTEM FOR SPACE FRAME STRUCTURES

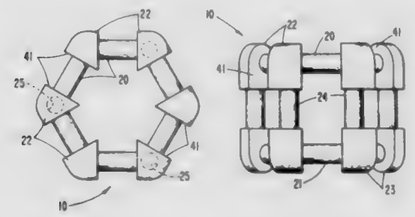
Wan-Keung Leung, Kowloon, Hong Kong, assignor to Skilland Engineering, Ltd., Hong Kong

Filed Oct. 19, 1989, Ser. No. 423,390

Int. Cl.[5] E04B *1/32;* **E04H** *12/18*

U.S. Cl. 52—637 **14 Claims**

1. A coupling system for lightweight structures comprising a crystal-like hub having a plurality of trunnions joined at enlarged joints, said trunnions being generally cylindrical members, said crystal-like hub having at least two pairs of parallel trunnions, said system including at least one strut with end grips, said end grips being attached to opposite ends of said strut, each of said end grips comprising generally C-shaped resilient gripping means for snappingly engaging said strut with and disengaging said strut from one of said trunnions with



a simple pushing motion, said crystal-like hub defining a plurality of planes, comprised of two identical mating half-hubs, each half-hub having an odd number of cantilevered trunnions extending therefrom prior to being joined with a mating half-hub.

5,056,292

VACUUM CHAMBER PACKAGING MACHINE

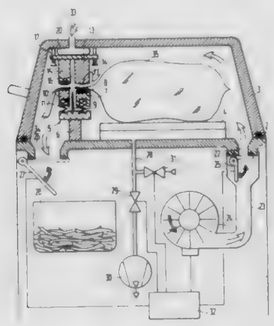
Johann Natterer, Legau, Fed. Rep. of Germany, assignor to Multivac Sepp Haggenmuller KG, Fed. Rep. of Germany

Filed May 10, 1990, Ser. No. 521,439

Claims priority, application Fed. Rep. of Germany, May 18, 1989, 3916170

Int. Cl.[5] B65B *31/02*

U.S. Cl. 53—86 **11 Claims**



1. A vacuum chamber packaging machine comprising a chamber for receiving a bag containing products to be packed, said chamber having a lower chamber part and an upper chamber part which is moveable relative to said lower chamber part, sealing means provided in the interior of said chamber for sealing an open end of said bag, cutting means provided in the interior of said chamber adjacent to said sealing means at the side opposite to said bag received in said chamber for severing an excess portion of the bag collar, a first opening provided in the interior of said chamber at the side of said cutting means opposite to said sealing means for removing said severed bag collar, means for closing or clearing said first opening and means for supplying blow air into said chamber for blowing said severed bag collar into said first opening.

5,056,293

APPARATUS FOR PRODUCING LAYERED TUBES OR RINGS

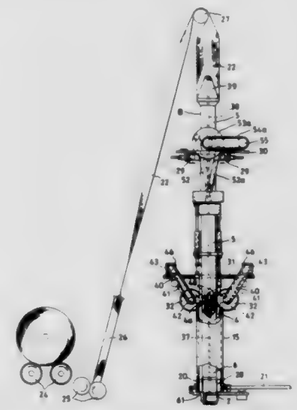
David C. Richards, Wokingham; Maurice S. Williams, Cranleigh, and Brian Ward, Blackwater, all of United Kingdom, assignors to Process Improvements Limited, Berkshire, United Kingdom

Filed Jun. 18, 1990, Ser. No. 539,437

Claims priority, application United Kingdom, Jun. 19, 1989, 8914064

Int. Cl.[5] B65B *63/02, 63/04, 25/24, 27/12*

U.S. Cl. 53—116 **18 Claims**



1. Apparatus for producing a series of layered packs of tubing from a length of flexible, non-resilient tubing, the apparatus comprising a layering tube having an internal diameter determined by the external diameter of each layered pack to be produced, a central mandrel mounted concentrically inside said layering tube and having an external diameter determined by the internal diameter required for each said layered pack, whereby an annular passage is formed between said layering tube and said central mandrel, means closing said annular passage at one end thereof, means for feeding flexible, nonresilient tubing having a diameter appreciably larger than that of said central mandrel into said passage at a rate such that the tubing gathers in a ring about said central mandrel, reciprocable means inside said passage for compacting the tubing into layers as it gathers towards said closed end of said passage, driving means for reciprocating said reciprocable means in timed relationship with the operation of said feeding means and means for severing a portion of the tubing when so compacted from a remaining portion of the tubing, said means closing said annular passage being mounted for movement to enable said severed compacted tubing to be discharged from said passage as a layered pack.

5,056,294

APPARATUS (PACKAGING MACHINE) FOR THE PACKAGING OF ARTICLES OF DIFFERING SIZE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Mar. 7, 1990, Ser. No. 489,640

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1989, 3907615

Int. Cl.[5] B65B *11/12*

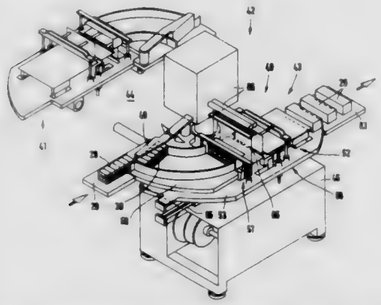
U.S. Cl. 53—201 **20 Claims**

1. An apparatus for packaging a group of small packs into one appropriately sized outer wrapping (**31**) of plastic film for making a larger bundle (**20**), said apparatus comprising:

a) a packaging station (**42**) comprising:

a feed conveyor (**29**) for longitudinally feeding a group of small packs (**21**);
a main track (**52**) on which the small packs (**21**) and the bundle (**20**) rest and are transported;
first conveying means for feeding a film web (**65**) transverse to a longitudinal direction of movement of the small packs (**21**);
severing knives (**67**) for severing a blank from the web (**65**);
second conveying means (**63**) for conveying the small packs in a region of said packaging station (**42**);
first folding means, in the form of an upper folder (**71**) and a lower folder (**73**), for folding the blank in a region of a rear side of the bundle (**20**) to be made; and
second folding means, in the form of side folders (**69**), for folding front and rear side tabs (**36, 37**) which laterally project from the group of small packs (**21**);

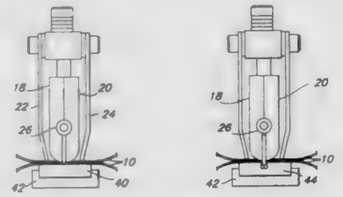
b) a first carrier device (**53**);



c) first exchangeable packaging means, coupled to said first carrier device (**53**) and dependent on the size of bundles (**20**) to be made, comprising at least said main track (**52**), a pushing-off device (**63**), said upper folder (**71**), said lower folder (**73**) and said side folders (**69**);
d) mounting means for rotatably mounting said first carrier device for rotation about an axis of rotation (**45**), which is arranged offset next to said packaging station (**42**), from a packaging position within the packaging station (**42**) to an exchange position (**44**) laterally offset thereto and next to the packaging station (**42**); and
e) opposite the carrier device (**53**) relative to said axis of rotation (**45**), a corresponding second carrier device which is rotatable, together with said first carrier device (**53**), about said axis of rotation from said exchange position (**44**) into said packaging station (**42**), said second carrier device carrying second exchangeable packaging means for packaging a bundle (**20**) having a format different from that accommodated by said first exchangeable packaging means.

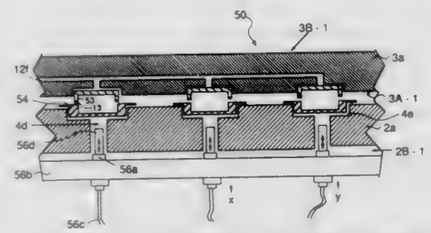
5,056,295
CUTTER AND SEALER FOR FILM
Jerry L. Williams, Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Jan. 22, 1991, Ser. No. 644,362
Int. Cl.[5] B65B *51/30, 51/14*
U.S. Cl. 53—450 **5 Claims**

4. A method of adjusting film cutting and sealing apparatus to provide different blade projections for articles of different sizes to be packaged in the film, comprising releasably clamping a cutting blade between heater bars with a clamping means in a first position on means for reciprocating the blade and bars together, the blade in said first position having a projection suitable for cutting and sealing film around relatively small articles, providing a first yieldable cutting and sealing pad opposite to the blade in said first position so that the blade cuts film where it rests on a surface of the first pad, releasably securing the blade in a second position on said means for reciprocating the blade, the blade in said second position having a longer projection suitable for cutting and sealing film around larger articles, removing the first pad from its position opposite



to the blade, mounting a second cutting and sealing pad having a slot in position to receive the blade in its second position, and changing the projection of the blade from one of said positions to the other by releasing but not removing the blade from the clamping means that holds it in said positions.

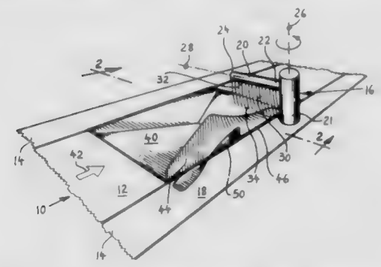
5,056,296
ISO-THERMAL SEAL PROCESS FOR ELECTRONIC DEVICES
Richard J. Ross, Moraga, and Jerry E. Campbell, Pacheco, both of Calif., assignors to R. J. R. Polymers, Inc., San Francisco, Calif.
Filed Mar. 30, 1990, Ser. No. 502,558
Int. Cl.[5] B65B *7/28, 51/10*
U.S. Cl. 53—478 **28 Claims**



1. An iso-thermal sealing apparatus for sealing together an electronic package with a thermosetting adhesive comprising:
a first planten for holding a package, said first platen having a first means for heating said first platen and said package;
a second platen for holding a lid, said second platen having a second means for heating said second platen and said lid, said second platen being operatively coupled to said first platen, wherein said first platen and said second platen provide iso-thermal conditions for said package and said lid when said first platen and said second platen are in a sealing position.

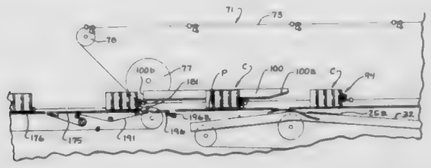
5,056,297
ROTARY BRUSH FLAP CLOSER
George Fallos, Easton, Pa., assignor to Bell & Howell Phillipsburg Co., Skokie, Ill.
Filed Dec. 28, 1990, Ser. No. 635,712
Int. Cl.[5] B65B *7/00, 49/06*
U.S. Cl. 53—482 **21 Claims**

15. A method for closing flaps of envelopes in a rotary flap closer during processing of mailable articles, said method comprising the steps of:
(a) conveying envelopes in seriatim upon and along a conveying face in flap-up orientation and in the direction of a flap-fold edge so that said flap-fold edge faces toward a first lateral side of said conveying face;
(b) revolving about an axis an elastically-resilient member that is secured to and extends along a cantilevered arm at a proximal-end region of said elastically-resilient member, said elastically-resilient member having a distal-end region, at least a portion of said distal-end region being capable of reaching envelopes that are conveyed past said distal-end region while said elastically-resilient member revolves, said axis being fixedly oriented and spaced with respect to said conveying face, said cantilevered arm being supported on said first lateral side;
(c) slidingly contacting and sweeping said elastically-resilient member over the flap areas of said envelopes while said envelopes are conveyed and disposed between said



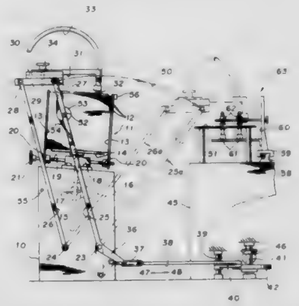
conveying face and said distal-end region and while said elastically-resilient member revolves;
(d) deflecting and pressing said flaps of said envelopes onto the envelope bodies and thereby closing said envelope flaps as said distal-end region resiliently and slidingly contacts and sweeps over said envelopes that are being conveyed along said conveying surface beneath said elastically-resilient member while said elastically-resilient member revolves; and,
(e) flexing said elastically-resilient member while step (d) is being effected so that said flaps of said envelopes having different thicknesses are closed without need for adjustment of the rotary flap closer.

5,056,298
MACHINE FOR METERING AND LOADING GROUPS OF ARTICLES
Richard S. Deadmond. Rockford, Ill., assignor to APV Crepaco, Inc., Rockford, Ill.
Filed Jan. 15, 1991, Ser. No. 641,266
Int. Cl.[5] B65B *5/10, 35/44*
U.S. Cl. 53—534 **21 Claims**



1. A continuous motion machine for metering and loading groups of articles onto flat pads comprising:
(a) a plurality of endless type infeed conveyor means each having a generally horizontal upper run arranged to support and advance articles in a downstream direction in sidewise adjacent lanes to an outlet end of the infeed conveyor means,
(b) generally horizontal stationary support means having a first section extending downstream from the infeed conveyor means to a pad transfer passage and a second section extending downstream from the pad transfer passage,
(c) endless type metering means intermediate the ends of the upper run of the infeed conveyor means and including article engaging pin means movable in an endless loop and arranged to project above the upper run of the infeed conveyor means in a portion of the loop to retard advance of articles on the infeed conveyor means,
(d) endless type overhead conveyor means having article engaging flight bar means at a preselected pitch therealong, the overhead conveyor means having an inlet run extending downwardly toward the upper run of the infeed conveyor means at a location downstream of the metering means and a lower run extending in the downstream direction above the infeed conveyor means and above the first and second sections of the support means to an outlet run downstream of the pad transfer passage,
(e) endless type pad conveyor means below the support means having pad pushers pitched therealong corresponding to the pitch of the flight bars on the overhead conveyor means for advancing flat pads along a pad path and through the pad transfer passage,
(f) drive means for driving said overhead conveyor means and said pad conveyor means and said metering means in timed relation,
(g) a pair of lane guide means individual to each infeed conveyor means having inlet ends upstream of the metering means and outlet ends downstream of the outlet ends of the infeed conveyor means,
(h) the flight bar means each including a pad pusher means, means for moving the pad pusher means on each flight bar means to a raised position above the lane guide means as the flight bar means advances along the lower run toward the outlet ends of the lane guide means, and means for moving the pad pusher on each flight bar means to a lowered position closely adjacent the stationary support means after the flight bar means advances past outlet ends of the lane guide means and for maintaining the pad pusher means in the lowered position as the flight bar means advances above the second section of the stationary support means to engage the trailing edge of a pad advanced through the pad transfer passage and advance the pad across the second section of the stationary support means.

5,056,299
APPARATUS FOR OPENING AND PLACING BAGS ON A FILLING HOPPER
Takao Furukawa, and Hiroyoshi Odawara, both of Onomichi, Japan, assignors to ECS Corporation, Hiroshima, Japan
Filed May 8, 1990, Ser. No. 520,781
Claims priority, application Japan, Jun. 30, 1989, 1-170924
Int. Cl.[5] B65B *43/18, 43/30*
U.S. Cl. 53—571 **4 Claims**



1. An apparatus for successively opening the mouths of bags which are fed one by one to a table and putting each bag over a guide hopper for charging the bag with an article to be packaged, comprising:
a rail extending from the table to the hopper,

a guide body movable along said rail between said table and hopper,

first and second vacuum suction means carried by said guide body for engaging the opposite sides of the mouth of each bag fed to said table, said first vacuum suction means having a fixed suction head provided with first vacuum cup means capable of sucking one surface of the bag, said second vacuum suction means having a movable suction head provided with second vacuum cup means capable of sucking the other surface of the bag;

said first vacuum suction means including a pillar installed on said guide body, a first support member projecting from said pillar to said table, first arm means installed on said first support member, said first vacuum cup means being installed on said first arm means;

a cam disposed alongside of said rail;

said second vacuum suction means including a lever swingably supported between its opposite ends on said guide body,, a second support member projecting from one end of said lever to said table, second arm means installed on said second support member, said second vacuum cup means being installed on said second arm means in opposed relation to said first vacuum cup means, and

means on the other end of said lever for engaging said cam, said cam being adapted to gradually swing said lever to separate said second vacuum cup means from said first vacuum cup means when said guide body is moved from said table to said hopper.

5,056,300

BAGGING APPARATUS, AND BAG OPENING DEVICE FOR ARTICLE-BAGGING

Tomosaburo Suzuki, Tsukui; Mitsuo Takahashi, Yokohama, and Hajime Chikatani, Tokyo, all of Japan, assignors to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

Filed Dec. 6, 1989, Ser. No. 446,698

Claims priority, application Japan, Dec. 6, 1988, 63-308394; Dec. 6, 1988, 63-308396

Int. Cl.[5] B65B *43/26*

U.S. Cl. 53—572 **5 Claims**

1. A bagging apparatus comprising:

a bag holding device for holding a plurality of bags in a horizontal stacked manner;

means for picking up and partially turning up one corner of an uppermost bag of said stacked bags at a top opening end of said uppermost bag;

separator plate means for insertion, at said picked-up corner, between said uppermost bag and a further bag stacked directly under said uppermost bag so as to separate said uppermost bag from the remaining bags of said stacked bags and restrict the movement of said remaining bags;

a touching member which is movable from above said uppermost bag to contact said top opening end of said uppermost bag when said top uppermost bag is separated from the remaining stacked bags by said separator plate means, said touching member comprising means for sliding an upper film of said uppermost bag with respect to a lower film of said uppermost bag in a direction from the top opening end of said uppermost bag to a bottom closed end of said uppermost bag, said touching member further comprising hook means for lifting the upper film of said uppermost bag after said upper film has been slid toward said bottom end of said uppermost bag so as to open said bag; and

means for pushing an article to be bagged into said opened uppermost bag.

5,056,301

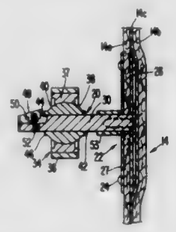
DEVICE FOR CONNECTING A SHAFT TO A HARNESS

Carl C. Garland, 8550 Frandor, Northville, Mich. 48167, and M. Gaylord Boutilier, R.R. #2, Box 3980, Jay, Me. 04239

Filed Sep. 28, 1989, Ser. No. 414,146

Int. Cl.[5] B68B *1/00;* **B62C** *5/02*

U.S. Cl. 54—2 **10 Claims**



8. A device connecting a sulky shaft to a horse harness, comprising:

a baseplate mounted on the harness,

a pin projecting substantially perpendicularly outwardly form the baseplate,

a sleeve mounted on the end of the shaft,

a socket rigidly mounted to the end of the sleeve,

a ball mounted within the socket for rotational movement and having a central aperture for receiving the pin to connect the shaft directly to the harness, and

a latch member carried by the outer end of the pin for releasably latching the ball to the pin to secure the shaft to the harness, wherein the sleeve mounts the ball substantially centrally of the end thereof to maintain maximum spacing of the shaft form the horse in all positions of the all during rotation within the socket.

5,056,302

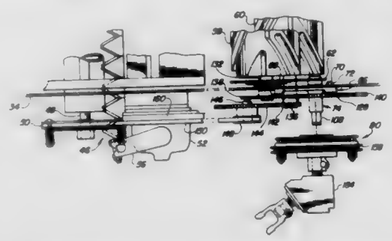
MOWER-CONDITIONER DRIVE SYSTEM

Allan W. Rosenbalm, and James C. Walters, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 8, 1990, Ser. No. 534,999

Int. Cl.[5] A01D *69/08*

U.S. Cl. 56—10.3 **14 Claims**



1. In a mower-conditioner header including a support frame having transversely spaced end structures supporting crop severing and conditioning devices extending therebetween and a drive system for the crop severing and conditioning devices, the improvement comprising: said drive system including a stub shaft fixed to and projecting outwardly from an upright wall section of one of the end structures; a main drive slip clutch supported by and mounted for rotation about said stub shaft; said clutch including inner and outer pressure plates located on opposite sides of a main drive plate and biased towards each other by spring means connected therebetween; a first drive element being joined for rotation together with said inner pressure plate; a first drive connection between the first drive element and the crop conditioning device; and a second drive element being joined for rotation together with said outer pressure plate; and a second drive connection between the second drive element and the crop severing device.

5,056,303

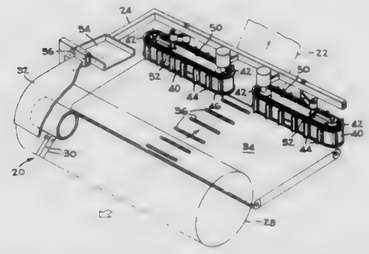
PEA HARVESTER HEAD

Terence M. Lawrence, Fakenham, England, assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 30, 1990, Ser. No. 501,462

Int. Cl.[5] A01D *45/24*

U.S. Cl. 56—14.5 **12 Claims**



1. In a harvester for harvesting legume pods, a header having a picking reel and an elevator conveyor, the improvement comprising:

a main apron substantially horizontally disposed adjacent said picking reel for receiving said pods picked by said picking reel;

a pair of gathering conveyor belts carried above said main apron and generally perpendicular relative to said main apron for urging said pods to said elevator conveyor, said gathering conveyor belts running perpendicular to the running direction of said main apron.

5,056,304

APPARATUS FOR MOWING GRASS OR SIMILAR VEGETATION

Arne Jacobsen, Herlufmagle, Denmark, assignor to Spragelse Maskinfabrik AS, Herlufmagle, Denmark

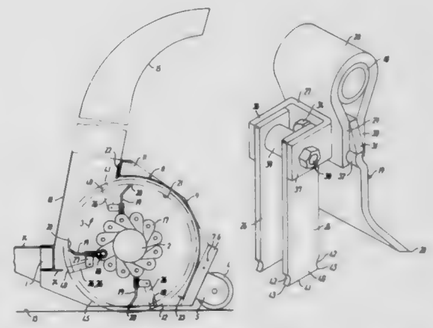
PCT No. PCT/DK89/00041, § 371 Date Oct. 17, 1990, § 102(e) Date Oct. 17, 1990, PCT Pub. No. WO89/07882, PCT Pub. Date Sep. 8, 1989

PCT Filed Feb. 22, 1989, Ser. No. 555,465

Int. Cl.[5] A01D *34/62*

U.S. Cl. 56—251.0 **6 Claims**

1. Apparatus for mowing grass or similar vegetation, comprising a frame, a shaft rotatably mounted in said frame in such a manner as to extend substantially horizontally in the position of the use of the apparatus, a plurality of swingles provided along and around said shaft, said swingles being rotatably connected with said shaft for rotation about axes substantially parallel to said shaft and being constructed at their outer ends with edges for cutting grass or similar vegetation, and where at least some of the swingles carry tilling elements for producing airing openings or grooves in the soil, the tilling elements having plate-shaped tilling portions substantially perpendicular to the shaft and in the working position extending radially beyond the edge of the respective swingle, wherein the tilling elements are connected with their associated swingles by means of a bracket.



5,056,305

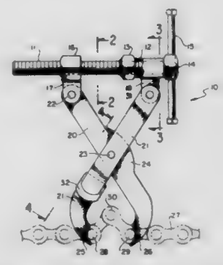
TOOL FOR SEPARATING CHAIN LINKS

Francisco J. Cole, P.O. Box 48, Myrtle Creek, Oreg. 97457

Filed Mar. 19, 1991, Ser. No. 672,122

Int. Cl.[5] B21L *21/00*

U.S. Cl. 59—7 **9 Claims**



1. A chain link disassembly and assembly apparatus for use with detachable sprocket or link chains comprising the combination of:

a support member having opposite ends with a bore extending between its opposite ends;

a threaded shaft disposed in said bore of said support member so as to extend out of said opposite ends;

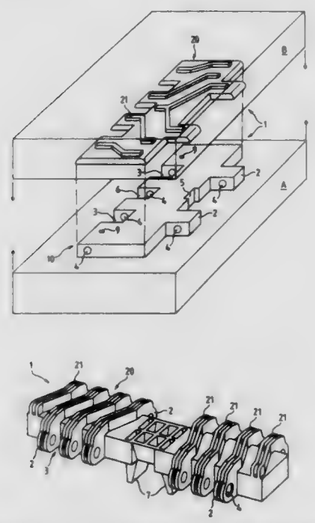
a turning rod disposed on one end of said threaded shaft for rotating said shaft within said bore;
a threaded travelling nut movably carried on the other end of said shaft opposite the one end carrying said turning rod;
a pair of jaw links pivotally coupled at their midsections to provide a scissors-like construction;
pivots movably coupling one pair of ends of said jaw links to said travelling nut and said support member respectively; and
said jaw links having toothed elements carried on the pair of jaw link ends opposite to said one pair of ends connected to said travelling nut and said support member respectively.

5,056,306

TRACK ASSEMBLY FOR TRACK-LAYING VEHICLE

Hans-Rudolf Zepf, Glärnischstrasse 15, 8803 Rüschlikon, Switzerland

PCT No. PCT/CH89/00057, § 371 Date Nov. 6, 1989, § 102(e) Date Nov. 6, 1989, PCT Pub. No. WO89/09105, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 21, 1989, Ser. No. 455,379
Claims priority, application Switzerland, Mar. 23, 1988, 01104/88
Int. Cl.[5] B62D *55/20*
U.S. Cl. 59—84 **11 Claims**



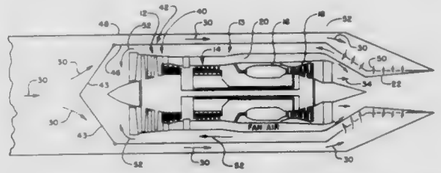
1. An endless track assembly for a track-laying vehicle of the type having a circumferentially toothed drive wheel and a plurality of guide wheels forming a bogie, the track comprising the combination of
a plurality of track plates hingedly connected to each other to form said track assembly, each of said plates comprising a base part and a sole part,
said base part including front, rear and side edges, one of said front and rear edges having a plurality of protruding rings and the other of said front and rear edges having first means defining a plurality of ring recesses shaped and dimensioned to receive said rings of an adjacent base part, and second means defining a drive recess having a driving face for receiving and engaging a tooth of said drive wheel,
said rings and said means defining said recesses each having coaxially aligned transverse bores,
each said base part including guide lugs for engaging said guide wheels, and
each said sole part including a ground-engaging surface with ribs including rib portions extending onto said rings so that when the rings of one plate are received in the recesses of an adjacent plate the ribs of the two plates overlap, said rib portions extending onto said rings being reduced in height relative to the remainder of said ribs on said sole portion; and a plurality of king pins transversely penetrating said bores in said rings of one plate and said means defining recesses of an adjacent plate to hingedly interconnect adjacent plates.

5,056,307

EXHAUST NOZZLE COOLING UTILIZING TOTAL ENGINE FLOW

George Liang, Palm City, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 25, 1990, Ser. No. 529,070
Int. Cl.[5] F02K *3/02, 1/38*
U.S. Cl. 60—226.1 **8 Claims**



1. A gas turbine engine arrangement comprising:
an ambient air inlet for admitting ambient air, a core engine including a bypass fan, said core engine having an air inlet and an outlet for the combustion gases of said engine, and an exhaust nozzle for the outflow of said combustion gases;
a flow path for said ambient air from said air inlet to said nozzle for directly supplying essentially unheated ambient air to said nozzle for cooling said nozzle; and
a reverse flow path from said nozzle to the inlet of said core engine to provide air for said core engine for supporting combustion therein, said flow path to said nozzle and said reverse flow path comprising first and second spaced concentric casings surrounding and spaced from said core engine, said casings extending from the inlet of said core engine to said exhaust nozzle, the space between said first and second casings providing said flow path to said nozzle, the space between said second casing and said core engine providing the reverse flow path from said nozzle to the air inlet to said core engine.

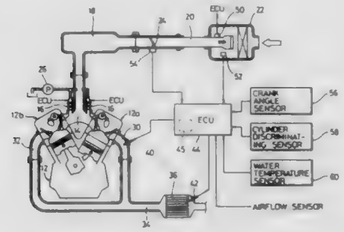
5,056,308

SYSTEM FOR FEEDBACK-CONTROLLING THE AIR-FUEL RATIO OF AN AIR-FUEL MIXTURE TO BE SUPPLIED TO AN INTERNAL COMBUSTION ENGINE

Tateo Kume; Michiyasu Yoshida; Yoshiaki Kodama, all of Kyoto, and Kazuo Koga, Otokuni, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,135
Claims priority, application Japan, Jan. 27, 1989, 1-16288
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—276 **18 Claims**

1. A system for feedback-controlling the air-fuel ratio of an air-fuel mixture to be supplied to an internal combustion engine so that the air-fuel ratio is equal to a target air-fuel ratio, said internal combustion engine including a plurality of cylinders classified into first and second groups, first and second exhaust pipes for guiding exhaust gas from the cylinders of the internal combustion engine which are connected to the corresponding exhaust pipe, a common exhaust pipe connected with both the first and second exhaust pipes, a catalyst-type exhaust gas disposer located in the common exhaust pipe and used to purify the exhaust gas from the internal combustion engine guided through the first and second exhaust pipes, and first and second fuel supply means assigned to the first and second groups of cylinders, respectively, and adapted to supply a fuel independently to the cylinders of the corresponding groups, said system comprising:
first detecting means for detecting the oxygen concentration of the exhaust gas flowing through the first exhaust pipe;



second detecting means for detecting the oxygen concentration of the exhaust gas after being purified by means of the exhaust gas disposer;
decision means for determining the amount of fuel to be supplied from the first and second fuel supply means to the first and second groups of cylinders, in accordance with the oxygen concentration of the exhaust gas detected by the first detecting means; and
correction means for correcting the amount of fuel to be supplied from the second fuel supply means determined by the decision means, in accordance with the oxygen concentration of the exhaust gas detected by the second detecting means.

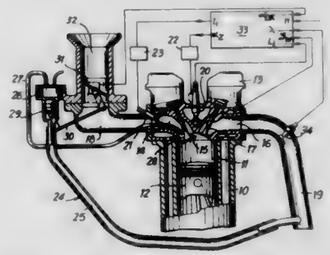
5,056,309

INTERNAL COMBUSTION ENGINE, PARTICULARLY OTTO ENGINE

Ernst Linder, Mühlacker; Wilhelm Hertfelder, Steinenbronn, both of Fed. Rep. of Germany; Hans Lenz, Vienna, Austria; Erich Breuser, Vaihingen/Enz, Fed. Rep. of Germany; Winfried Moser, Ludwigsburg, Fed. Rep. of Germany, and Hans Schlembach, Mühlacker, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE88/00314, § 371 Date Mar. 3, 1989, § 102(e) Date Mar. 3, 1989, PCT Pub. No. WO89/00241, PCT Pub. Date Jan. 12, 1989
PCT Filed May 28, 1988, Ser. No. 346,114
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1987, 3722048
Int. Cl.[5] F02M *25/06*
U.S. Cl. 60—278 **15 Claims**

1. An internal combustion engine particularly Otto engine comprising:
an intake manifold including a throttle valve for controlling air flow therein;
an exhaust manifold;
a plurality of combustion cylinders, each combustion cylinder having a combustion chamber, an inlet chamber communicating with said intake manifold, an inlet valve for communicating said inlet chamber with said combustion chamber, an outlet chamber communicating with said exhaust manifold, and an outlet valve for communicating said combustion chamber with said outlet chamber;
exhaust recycling means comprising an exhaust return line connected with said exhaust manifold, an exhaust metering device communicating with said exhaust return line and including a first metering member actuatable jointly with said throttle valve of said intake manifold, and a second metering member located downstream of said first metering member and including a plurality of turbulence nozzles corresponding to said plurality of combustion cylinders, each of said turbulence nozzles being located immediately adjacent to a respective inlet valve of a respective combustion cylinder, said exhaust recycling means further comprising a header reservoir located downstream of said first metering member, and a plurality



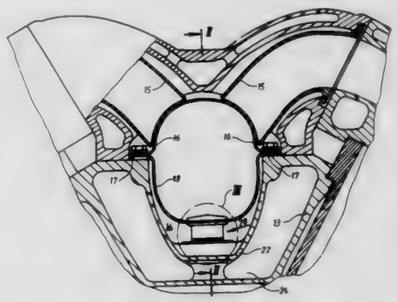
of separate exhaust return lines connecting said header reservoir with said plurality of turbulence nozzles; and a plurality of intake tubes for communicating said intake manifold with said plurality of combustion cylinders, each intake tube comprising an inlet opening communicating with a respective inlet chamber of a respective combustion cylinder and a check valve located upstream of said inlet opening for preventing backflow from said inlet chamber into said intake manifold.

5,056,310

EXHAUST PIPE FOR A MULTI-CYLINDER PISTON INTERNAL-COMBUSTION ENGINE

Georg Donauer, and Otto Reifenscheid, both of Friedrichshafen, Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen- Union Friedrichshafen GmbH, Fed. Rep. of Germany

PCT No. PCT/DE89/00771, § 371 Date May 17, 1990, § 102(e) Date May 17, 1990, PCT Pub. No. WO90/08250, PCT Pub. Date Jul. 26, 1990
PCT Filed Dec. 14, 1989, Ser. No. 499,303
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1989, 3900830
Int. Cl.[5] F01N *7/10*
U.S. Cl. 60—322 **3 Claims**



1. An exhaust pipe for a multi-cylinder piston internal-combustion engine having at least one interior pipe carrying the exhaust gases and having a gastight cooled housing which surrounds the interior pipe at a distance, the interior pipe fastened to the surrounding housing comprising individual sections arranged in series while leaving expansion joints, the

length of each section corresponding approximately to the cylinder spacing of the piston internal-combustion engine, and each section having a plug-type connection which interacts with the housing at approximately the halfway point of its length, at the outer circumference, wherein the plug-type connection **20** is arranged approximately opposite the lead-in point of an exhaust stub **15** of a cylinder interacting with the section **18**, wherein the plug-type connection **20** comprises a receiving device arranged in the housing in a cooled manner and a corresponding plug **23** which is connected with the section **18** of the interior pipe.

5,056,311

HYDROSTATIC STEERING DEVICE

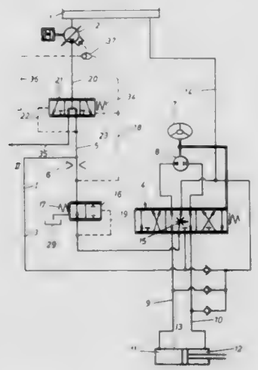
Werner Tischer, Heubach-Lautern, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichschafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 27, 1989, Ser. No. 445,721

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1987, 3721094; PCT Int'l Appl., Jun. 22, 1988, PCT/EP88/00544

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—384 **7 Claims**



1. In a hydrostatic steering device including a pump (2) connected with a reservoir (1), a steering valve (4) connected with said pump via a variable pressure line (3) and a constant pilot line (5), a controlled-volume pump (8) activated by a steering wheel and connected with said steering valve, a steering cylinder (13) connected with said steering valve, a constant throttle connected with said pilot line to produce a pressure drop which serves as a control signal for the flow in said variable pressure line, an adjustment throttle (15) connected with said pilot line and arranged in said steering valve for connection with said controlled-volume pump, the improvement which comprises

(a) a pressure compensator (16) connected with said pilot line between said constant and adjustment throttles, said compensator being controlled by a differential pressure of said adjustment throttle; and

(b) a control line (18) connected with said pilot line between said constant throttle and said compensator and with said pump for delivering said control signal to said pump.

5,056,312

HYDRAULIC DRIVE SYSTEM FOR CONSTRUCTION MACHINES

Toichi Hirata, Ushiku; Genroku Sugiyama, Ibaraki; Yusuke Kajita, Tsuchiura; Yukio Aoyagi, Ibaraki; Tomohiko Yasudi, Kashiwa; Gen Yasuda, Ibaraki; Hiroshi Watanabe, Ushiku; Eiki Izumi, Ibaraki; Yasuo Tanaka, Tsukuba; Hiroshi Onoue, Ibaraki, and Shigetaka Nakamura, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

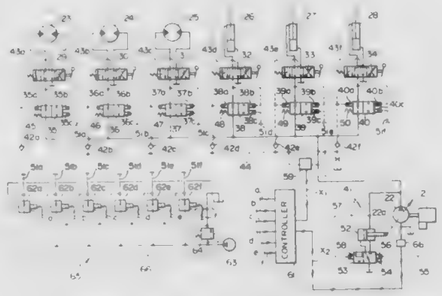
PCT No. PCT/JP89/00691, § 371 Date Nov. 22, 1989, § 102(e) Date Nov. 22, 1989, PCT Pub. No. WO90/00683, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 7, 1989, Ser. No. 449,845

Claims priority, application Japan, Jul. 8, 1988, 63-169065; Jul. 21, 1988, 63-180196; Sep. 12, 1988, 63-226365; Nov. 2, 1988, 63-276015

Int. Cl.[5] F15B *11/00, 11/05, 11/16*

U.S. Cl. 60—426 **15 Claims**



1. A hydraulic drive system for a construction machine comprising a hydraulic pump, at least first and second hydraulic actuators driven by a hydraulic fluid supplied from said hydraulic pump, first and second flow control valves for controlling flows of the hydraulic fluid supplied to said first and second actuators, respectively, first and second distribution compensating valves for controlling first differential pressures produced between inlets and outlets of said first and second flow control valves, respectively, and discharge control means responsive to a second differential pressure between a discharge pressure of said hydraulic pump and a maximum load pressure out of said first and second actuators for controlling a flow rate of the hydraulic fluid discharged from said hydraulic pump, said first and second distribution compensating valves having respective drive means for applying control forces in accordance with said second differential pressure to the associated distribution compensating valves, to thereby set target values of said first differential pressures, comprising:

first means for detecting said second differential pressure from the discharge pressure of said hydraulic pump and the maximum load pressure out of said first and second actuators;

second means for calculating individual values, as values of said control forces applied from the respective drive means of said first and second distribution compensating valves, in accordance with at least the second differential pressure detected by said first means; and

first and second control pressure generator means provided in association with said first and second distribution compensating valves, respectively, said first and second control pressure generator means producing control pressures dependent on the individual values obtained by said second means and outputting said control pressures to the respective drive means of said first and second distribution compensating valves.

5,056,313

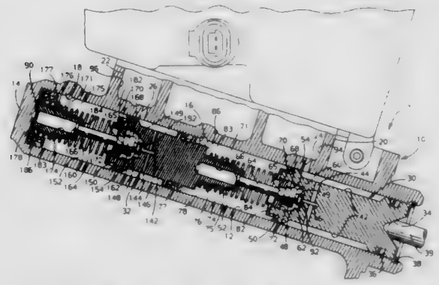
THREE PISTON MASTER CYLINDER

Brad N. Venetos, Spring Valley; Tomas L. Shroyer, Centerville, and Kenneth R. Hous, Beavercreek, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1990, Ser. No. 607,124

Int. Cl.[5] B60T *11/28;* **F15B** *7/08*

U.S. Cl. 60—562 **5 Claims**



1. A dual brake circuit vehicle master cylinder, the master cylinder in combination comprising:

a housing with a longitudinal bore having a closed end, the bore having intersecting first and second reservoir passages and respective intersecting first and second brake circuit passage spaced from one another;

first and second pistons, the second piston being more adjacent the closed end of the longitudinal bore, the first and second pistons being slidably mounted within the housing bore sealably separating the respective reservoir passages from the brake circuit passage when the pressure within the bore exposed to the brake circuit passages exceeds the pressure within the bore exposed to the reservoir passage, the second piston also having a compensating passage with an inclusive valve seat allowing fluid communication between the second reservoir and the second brake circuit passage, and the second piston also having a support surface;

a compensating valve mounted within the second piston compensating passage having a head captured between the second piston support surface and the compensating valve seat being compliantly biased in a direction to mate with the second piston valve seat to seal off the compensating passage, the valve also having a stem connected with the head;

first and second return springs contacting the first and second pistons respectively for urging the pistons to a retracted position;

an auxiliary piston slidably mounted within the housing bore and separated from the second reservoir passage by the second piston, the auxiliary piston capturing the second return spring between itself and the second piston, the auxiliary piston having means to limit the relative movement of the compensating valve stem away from the auxiliary piston and the auxiliary piston being sealed within the housing bore when pressure within the bore urges the auxiliary piston in a direction away from the second piston whereby when the master cylinder is in a non-actuated position the auxiliary piston retains the compensating valve head at a clearance from the second piston valve seat to allow fluid communication through the second valve piston compensating passage and whereby after activation of the master cylinder if excessive pressure in the second brake circuit enters the master cylinder bore to retain the second compensating valve in a mated position with the second compensation valve seat the auxiliary piston will be urged by the excessive pressure to cause the compensating valve head to pull away from the first piston valve seat wherein excessive pressure within the second brake circuit passage will be exposed to the second reservoir passage.

5. A method of compensating a second brake circuit of a dual brake circuit master cylinder the method in combination comprising:

intersecting a bore of a housing with a first and second brake circuit passages and with respective first and second reservoir passages separated from one another;

separating the brake fluid passages from the reservoir passages with respective first and second pistons slidably mounted within the bore;

fluidly communicating the second reservoir passage with the second brake circuit passage through a second compensating passage which is inclusive of a valve seat;

supporting within the compensating passage of the second piston a second compensating valve having a stem at one end and a head compliantly biased towards the second piston valve seat;

sealing the second piston within the bore when the pressure within the bore exposed to the second brake circuit passage is greater than the pressure within the bore exposed to the second reservoir passage;

slidably mounting within the bore an auxiliary piston on a side of the second piston opposite the first piston;

limiting the travel of the stem of the compensating valve with respect to the auxiliary piston;

capturing between the second piston and the auxiliary piston a return spring biasing the second piston into the retracted position and causing the auxiliary piston to pull back the stem of the second compensating valve to provide a clearance between the head of the second compensating valve and the valve seat of the second piston in the a non-actuated position of the master cylinder; and

sealing the auxiliary piston when the pressure within the bore urges the auxiliary piston in a direction away from the second piston whereby excessive pressure within the housing bore will cause the auxiliary piston to retain the second compensating valve head away from the second piston valve seat.

5,056,314

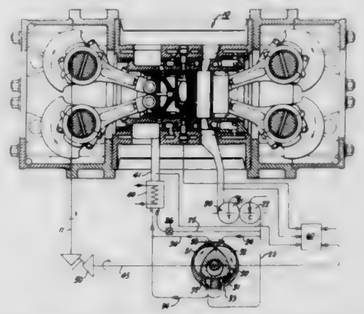
INTERNAL COMBUSTION ENGINE WITH COMPOUND AIR COMPRESSION

Marius A. Paul, and Ana Paul, both of 1100 Orangethorpe Ave., Ste. 140, Anaheim, Calif. 92801

Filed Oct. 30, 1989, Ser. No. 428,853

Int. Cl.[5] F02B *37/04*

U.S. Cl. 60—609 **6 Claims**



1. An internal combustion engine in combination with a compound air compression system, comprising:

a) a reciprocator with at least one cylinder, at least one piston reciprocal in the cylinder and a combustion chamber formed in substantial part by portions of the piston and cylinder, the reciprocator having a drive shaft;

b) a rotary compressor having a drive shaft mechanically coupled to the drive shaft of the reciprocator, the rotary compressor having a Wankel-type, three-lobe, epitrochoidal configuration with compressor sides for compressing an intake gas, and expander sides for expanding an intake gas with the compressor sides having a conduit connected to the reciprocator for supplying compressed air to the reciprocator;

c) a turbocharger with a gas turbine and a turbocompressor, the turbocompressor having an air conduit connected to the expander sides of the rotary compressor; and a bypass conduit with a valve means connecting the turbocharger to the reciprocator for supplying compressed air directly to the reciprocator wherein the drive shaft of the reciprocator and the drive shaft of the compressor have connecting means for transmitting mechanical energy to the reciprocator at mid to high operating speeds of the engine when the turbocharger supplies compressed air to the rotary compressor and, at least in part, drives the rotary compressor.

5,056,315

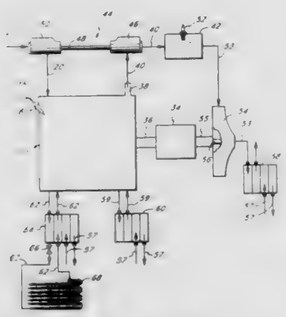
COMPOUNDED TURBOCHARGED ROTARY INTERNAL COMBUSTION ENGINE FUELED WITH NATURAL GAS

Peter E. Jenkins, 421 Sycamore, Lincoln, Nebr. 68510

Filed Oct. 17, 1989, Ser. No. 423,257

Int. Cl.[5] F02C *5/00*; F01N *3/10*

U.S. Cl. 60—614 **16 Claims**



1. A compounded engine, comprising:

a first Wankel engine having a housing with a trochoidal inner surface containing a generally triangular shaped rotor, the engine containing a fuel supply system suitable for operating the engine with natural gas as a fuel;

a turbocharger compressing air for combustion by the engine, the turbocharger being driven by the exhaust gases which exit from the engine;

a combustion chamber in fluid communication with the exhaust from the engine after that exhaust has passed through the turbocharger, the chamber having an ignition device suitable for igniting hydrocarbons in the engine exhaust, whereby the engine timing, and the air and fuel mixture of the engine are controlled so that when the engine exhaust reaches the combustion chamber the exhaust contains a sufficient amount of oxygen and hydrocarbons to enable ignition and combustion of that engine exhaust in the combustion chamber without the addition of fuel or air, and whereby the engine operating conditions are controlled to vary the performance of the secondary combustor; and

a controllable ignition device to ignite the exhaust gases in the combustion chamber at predetermined times.

5,056,316

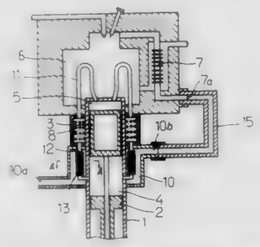
COOLING SYSTEM FOR STIRLING ENGINE

Woo S. Chung, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 20, 1990, Ser. No. 555,626

Int. Cl.[5] F25B *21/02*

U.S. Cl. 62—3.2 **8 Claims**



1. A cooling system for Stirling engine, which comprises:

a thermoelectric heat pump having a container configuration for filling cooling water therewithin, both ends of said thermoelectric heat pump being connected to a pair of cooling pipes which are connected to a cooling chamber and a regenerator, whereby when direct current is applied, an inner side portion thereof is cooled and an outer side portion thereof is heated.

5,056,317

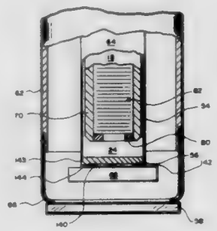
MINIATURE INTEGRAL STIRLING CRYOCOOLER

Norman B. Stetson, 194 Grant St., Lexington, Mass. 02173

Division of Ser. No. 188,287, Apr. 29, 1988, Pat. No. 4,858,442. This application Mar. 22, 1990, Ser. No. 497,548

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 **10 Claims**



1. A cryocooler including a cold well having a rim extending therefrom, a regenerator arranged to reciprocate inside the cold well, a piston arranged to reciprocate inside a compression cylinder, and means for connecting the regenerator and the piston, wherein the rim of the cold well is proximal to the free end of the regenerator and receives a device to be cooled by the cryocooler in such a manner that the device only contacts the rim.

5,056,318

REFRIGERATING AND/OR HEATING DEVICE OF CONTACT TYPE

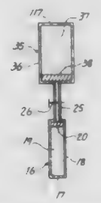
Takahiro Yonesaki, Moriguchi; Akio Furukawa, Osaka; Shin Fujitani, Hirakata; Kenji Nasako, Hirakata, and Ikuo Yonezu, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 28, 1990, Ser. No. 486,469

Claims priority, application Japan, Mar. 1, 1989, 1-50496; Sep. 26, 1989, 1-250267

Int. Cl.[5] F17C *3/10*

U.S. Cl. 62—48.3 **2 Claims**



1. In a hand held portable refrigerator-heater utilizing endothermic and exothermic reactions of a hydrogen absorbing alloy, a refrigerating and/or heating device of the contact type comprising:

a contact member including a closed container, the closed container having a contact surface to be brought into direct contact with an external article and being packed with a hydrogen absorbing alloy, the contact surface outwardly exposed and disposed between the hydrogen absorbing alloy and the external article when the external article is in direct contact with the contact member;

a handle member including a closed container packed with a hydrogen absorbing alloy different in kind from the alloy n the contact member, and the alloy in the handle member which is to absorb hydrogen is greater in amount than the alloy in the contact member which is to desorb hydrogen;

a gas pipe means having opposite ends connected to the respective closed containers of the contact member and the handle member in communication with the interior of the containers, wherein the gas pipe means allows hydrogen to interchangeably pass between the hydrogen absorbing alloys of the contact member an the handle member; and

a valve disposed in the contact member-gas pipe-handle member channel, one of the contact member and the handle member being higher in hydrogen equilibrium pressure than the other when serving as a hydrogen desorption side.

5,056,319

REFRIGERATOR-OPERATED APPARATUS

Wilhelm Strasser, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 16, 1990, Ser. No. 494,688

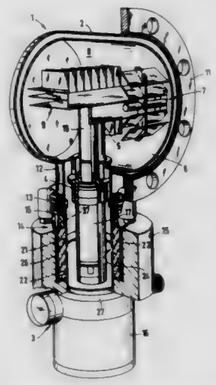
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3008992

Int. Cl.[5] B01D *8/00*

U.S. Cl. 62—55.5 **17 Claims**

1. In a refrigerator-operated apparatus having an apparatus housing adapted to accept components to be cooled, said apparatus housing being mechanically connected to a refrigerator housing of a refrigerator unit via a connecting pipe, said refrigerator unit including a refrigerator generator extending through said housing and said connecting pipe and encompassing at least one oscillatory assembly adapted to carry said components to be cooled, said refrigerator housing and said connecting pipe forming a vibration-transmitting unit, the improvement of a means for inhibiting transmittal of vibrations from said refrigerator unit to said apparatus housing via said vibration-transmitting unit, said improvement comprising:

said vibration-transmitting unit having a separation space dividing said vibration-transmitting unit into first and second connecting sections; and



an elastic ring disposed adjacent said separation space connecting said first connecting section to said second connecting section and inhibiting transmittal of vibrations therethrough.

5,056,320

PROCESS FOR COOLING AN APPARATUS, DEVICE FOR PERFORMING THE PROCESS, AND REFRIGERATING MACHINE FOR COOLING THE COOLANT PRESENT IN THE DEVICE

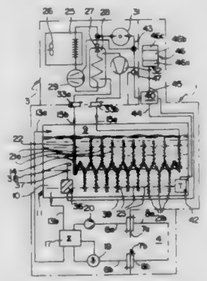
Norbert Winkler, Nuremberg, Fed. Rep. of Germany, assignor to Spectron Laser GmbH, Heroldsberg, Fed. Rep. of Germany

Filed Jul. 31, 1990, Ser. No. 560,833

Claims priority, application Switzerland, Aug. 10, 1989, 02944/89

Int. Cl.[5] F25D *3/06*

U.S. Cl. 62—59 **12 Claims**



1. A process for cooling an apparatus having an inlet and an outlet for a coolant, comprising the steps of

cooling a coolant of a movable coolant storage means at a make-ready station, said movable coolant storage means having an outlet and an inlet for the coolant,

transporting said storage means to said apparatus,

connecting the inlets and outlets of said apparatus and said storage means,

pumping said coolant from said storage means to said apparatus and mixing the coolant flowing back from said apparatus with the coolant from said storage means in such a

proportion that the mixture supplied to the apparatus has a predetermined temperature,

detaching after a period of operation said storage means from said apparatus, and

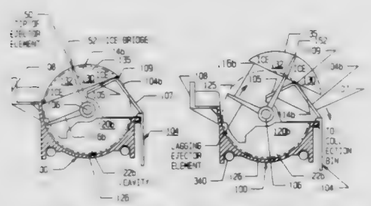
transporting said storage means back to said make-ready station for a re-cooling of the coolant.

5,056,321

HALF CRESCENT SHAPED ICE PIECE MAKER

Kenneth H. Patrick, Rainbow City, Ala., assignor to Mid-South Industries, Inc., Rainbow City, Ala.

Filed Nov. 20, 1990, Ser. No. 617,012
Int. Cl.[5] F25C *5/08*
U.S. Cl. 62—73 **16 Claims**



12. In a half crescent shaped ice piece maker having an elongated freezing tray with an arcuately shaped cross-sectional inside surface, with equal-spaced partitions formed within said tray parallel to the axis of said arcuately shaped inner surface of said tray to form full crescent shaped cavities, a power source, and an ice piece ejector assembly comprising:

a first rotatable, hollow cylindrical shaft with a second, non-rotatable hollow cylindrical tube positioned substantially along the length of the first hollow shaft and further with a heating element positioned within the length of said second hollow tube;

means, when powered by said power source, for rotating said first rotatable hollow cylindrical shaft and for energizing said heating element;

a timing means for controlling the time of connection of said power source to said first rotatable hollow cylindrical shaft and to said heating element;

said heating element responsive energization by said power source to heat said first hollow shaft, said second hollow shaft, and said second hollow tube, and said ejector elements to release said notched, full crescent ice pieces from said ejector elements;

stripping elements positioned on each side of each ejector element and having a rising portion and a contiguous descending portion beginning at the peak of said rising portion and positioned with the rising portion being in the path of said rotating notched full crescent shaped ice pieces;

means for filling said full crescent shaped ice pieces with water and then freezing said ice pieces with said ejector elements down into one of said frozen full crescent shaped ice pieces to divide each of such full crescent shaped ice pieces into two half crescent shaped ice pieces; and sensing

means responsive to the freezing of said full crescent shaped ice pieces to energize said means to rotate said first rotatable hollow cylindrical shaft under the control of said timing control means and to energize said heating during a time period which will enable the surfaces between said ejector elements and said notched full crescent shaped ice pieces to thaw before said ice pieces impact said stripper elements;

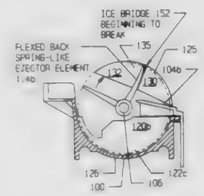
said stripper elements responsive to the impact of full crescent shaped ice pieces to cause said full crescent shaped ice pieces to move up and away from said ejector elements and finally move over the peak of said stripper elements and onto the descending slope of said stripper elements and down into the collection bin.

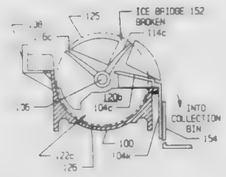
5,056,322

HALF CRESCENT SHAPED ICE PIECE MAKER

Kenneth H. Patrick, Rainbow City, Ala., assignor to Mid-South Industries, Inc., Rainbow City, Ala.

Filed Jan. 4, 1991, Ser. No. 637,617
Int. Cl.[5] F25C *5/08*
U.S. Cl. 62—73 **12 Claims**





1. A method of making half crescent shaped ice pieces comprising the steps of:

injecting water into crescent shaped cavities of an elongated arcuately shaped tray having adjacent, spaced-apart separators positioned in planes normal to the radial axis of said arcuately shaped tray;

positioning a first rotatable shaft with its axis coincident with the radial axis of said arcuately shaped tray;

initially positioning a plurality of flexible, spring-like ejector elements, aligned in a common plane and secured to said rotatable shaft, individually into the center of each of said cavities to divide the crescent shaped volume of water contained therein into half crescent shaped volumes of water;

freezing the water in each of said cavities to produce a notched, full crescent shaped ice piece in each cavity with the notch being formed by the presence of said flexible, spring-like element therein to divide the full crescent shaped ice piece into rotatively leading and lagging half crescent shaped ice pieces;

rotating said shaft to rotate said notched, full crescent shaped ice pieces; and

impeding the rotating, notched crescent shaped ice pieces by impact with a plurality of ice piece stripper elements positioned adjacent each side of each flexible spring-like ejector element to flex said flexible spring-like element backward with respect to the direction of rotation of said shaft to break apart the leading and lagging rows of half crescent shaped ice pieces and thereby enable the flexible, spring-like ejector elements to spring forward to impel the leading row of half crescent ice pieces forward onto and over said stripper elements and out of the tray into an external collection bin; and

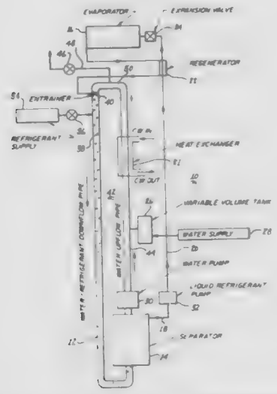
ejecting said lagging row of half crescent ice pieces into said collection bin as said shaft continues to rotate.

5,056,323

HYDROCARBON REFRIGERATION SYSTEM AND METHOD

Warren Rice, Tempe, Ariz.; Craig Hosterman, Corvallis, Oreg., and George C. Beakley, Jr., Tempe, Ariz., assignors to Natural Energy Systems, Tempe, Ariz.

Filed Jun. 26, 1990, Ser. No. 543,976
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—114 **30 Claims**



10. A method for compressing and withdrawing heat from a hydrocarbon fluid within a refrigeration system having an evaporator and an expansion valve, said method comprising the steps of:

a) establishing downward flow of a fluid non-miscible with the hydrocarbon fluid within a down pipe;

b) conveying the hydrocarbon fluid in a gaseous state from the evaporator to the upper end of the down pipe;

c) entraining the hydrocarbon fluid within the downward flow of the non-miscible fluid to convert the hydrocarbon fluid to a liquid state;

d) separating the hydrocarbon fluid from the non-miscible fluid at the lower end of the down pipe; and

e) transmitting the separated hydrocarbon fluid from the lower end of the down pipe through the expansion valve and to the evaporator.

5,056,324

TRANSPORT REFRIGERATION SYSTEM HAVING MEANS FOR ENHANCING THE CAPACITY OF A HEATING CYCLE

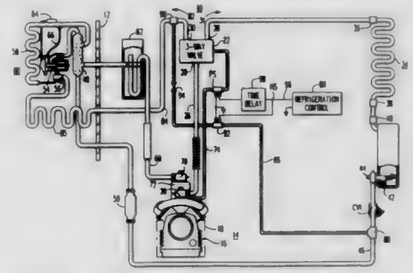
James H. Haley, Eden Prairie, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 21, 1991, Ser. No. 658,735
Int. Cl.[5] F25B *13/00*
U.S. Cl. 62—115 **4 Claims**

1. In a transport refrigeration system which holds a set point temperature via heating and cooling cycles, a first refrigerant circuit which includes a compressor, condenser, receiver, evaporator, and accumulator, a second refrigerant circuit which includes the evaporator and accumulator, mode selector valve means having cooling and heating output ports selectively connectable to the first and second refrigeration circuits, respectively, and control means for providing a heat signal when the need for a heating cycle is detected, the improvement comprising:

means responsive to said heat signal for connecting the receiver to the second refrigerant circuit, between the heating output port of the mode selector valve means and the evaporator, while the cooling output port of the mode selector valve means is providing refrigerant to the first refrigerant circuit,

and time delay means responsive to said heat signal which operates said mode selector valve means to direct refrigerant to the second refrigerant circuit via the heating output port of the mode selector valve means after a predetermined time delay,



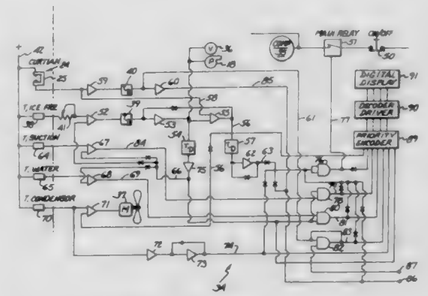
whereby a condenser flushing mode occurs prior to each heating cycle, which forces liquid refrigerant in the condenser to flow into the receiver and then to the second refrigeration circuit, to enhance the heating capacity of the system without introducing liquid refrigerant directly into the accumulator.

5,056,325

ICE CUBE MAKER WITH NEW FREEZE AND HARVEST CONTROL

Marvin H. Josten, Garner; Terry L. Merrill, Mason City; Kenneth W. Schneider, Mason City, and Robert P. Utter, Mason City, all of Iowa, assignors to The Cornelius Company, Anoka

Division of Ser. No. 174,061, Mar. 28, 1988, Pat. No. 4,938,030, which is a division of Ser. No. 937,931, Dec. 4, 1986, Pat. No. 4,733,539. This application May 4, 1990, Ser. No. 518,882
Int. Cl.[5] F25B *39/04*
U.S. Cl. 62—126 **5 Claims**



1. An ice cube maker, comprising

a) an ice making refrigeration system having a compressor, condenser, condenser fan, evaporator plate, water reservoir, water pump for pumping water in the reservoir over the plate, hot gas defrost valve, and means for control of the defrost valve;

b) temperature sensor means for sensing the temperature of the condenser;

c) first control means operatively connected to said sensor means for turning the condenser fan off when the condenser is at a temperature below a predetermined low value;

d) second control means operatively connected to said sensor means for turning the condenser fan on when the

condenser is at a temperature above a predetermined middle value; and

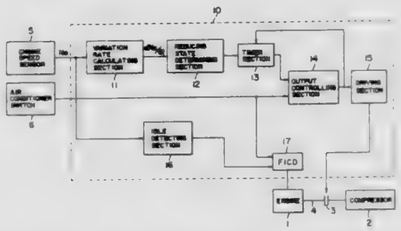
e) third control means operatively connected to said sensor for shutting off the compressor when the condenser temperature exceeds a predetermined maximum operative temperature.

5,056,326

APPARATUS FOR CONTROLLING AIR CONDITIONING UNIT FOR AUTOMOTIVE VEHICLE

Hiroya Ohkumo, and Shuji Miyama, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1990, Ser. No. 523,536
Claims priority, application Japan, May 18, 1989, 1-125140
Int. Cl.[5] B60H *3/04*
U.S. Cl. 62—133 **4 Claims**



1. An apparatus for controlling an air conditioning unit for an automotive vehicle wherein an engine is operatively connected to a compressor via a clutch which is to be connected or disconnected in response to a signal outputted from a controller, comprising:

an air conditioner switch **6** being closed to operate the compressor,

detecting means **5** for detecting an engine speed,

calculating means **11** responsive to the engine speed for calculating an engine speed variation rate,

determining means **12** responsive to the engine speed variation rate for determining a reducing state of the engine speed and for producing a determining signal, and

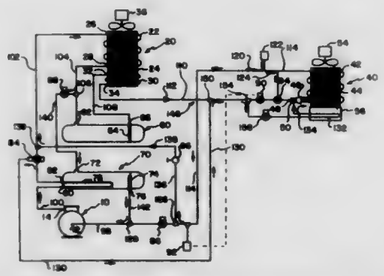
controlling means **13, 14, 15** responsive to the determining signal for controlling the compressor to hold in an inoperative state even though the air conditioner switch is in a closed state.

5,056,327

HOT GAS DEFROST REFRIGERATION SYSTEM

Paul F. Lammert, Danville, Ill., assignor to Heatcraft, Inc., Grenada, Miss.

Filed Feb. 26, 1990, Ser. No. 484,922
Int. Cl.[5] F25D *21/06;* **F25B** *47/02*
U.S. Cl. 62—151 **40 Claims**



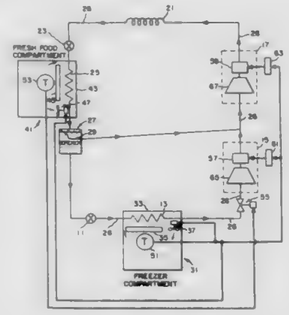
1. A hot gas defrost refrigeration system having a compressor, a condenser, an evaporator, each having inlets and outlets interconnected by fluid passage means and incorporating valve means to cause refrigerant to discharge from the compressor and flow sequentially through the condenser and the evaporator to the compressor during the refrigeration cycle, and to discharge from the compressor and flow through the evaporator to the compressor during the defrost cycle, characterized by defrost passage means including compressor discharge valve means for directing refrigerant from the evaporator outlet to the condenser inlet and from the condenser outlet to the compressor inlet during the defrost cycle, thereby utilizing the condenser as a reevaporator during the defrost cycle, further characterized by a superheater in the defrost passage means adapted to receive refrigerant from the condenser outlet during the defrost cycle, and the passage means connecting the compressor outlet with the evaporator inlet including a superheat passage in heat exchange relationship with the superheater for transferring heat from the refrigerant discharged from the compressor outlet to the refrigerant delivered to the compressor inlet during the defrost cycle to enhance operation of the system during the defrost cycle.

5,056,328

APPARATUS FOR CONTROLLING A DUAL EVAPORATOR, DUAL FAN REFRIGERATOR WITH INDEPENDENT TEMPERATURE CONTROLS

Heinz Jaster, and Warren F. Bessler, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 293,034, Jan. 3, 1989, Pat. No. 4,966,010.
This application Aug. 1, 1990, Ser. No. 561,044
Int. Cl.[5] F25D *17/00*
U.S. Cl. 62—180 **3 Claims**



1. A refrigerator apparatus comprising:

a freezer compartment;

a fresh food compartment,

a refrigerator system having a first expansion valve, a first evaporator situated in said freezer compartment, a first and second compressor, a condenser, a second expansion valve, a second evaporator situated in said fresh food compartment, all the above elements of the refrigerator system connected together in series, in that order, in a refrigerant flow relationship and a phase separator connecting said second evaporator to said first expansion valve in a refrigerant flow relationship, said phase separator providing intercooling between said first and second compressors;

a first fan situated in said freezer compartment for providing air flow over said first evaporator;

a second fan situated in said fresh food compartment for providing air flow over said second evaporator;

a servovalve connected to the input of said first compressor for reducing the refrigerant mass flow rate through said first evaporator when activated;

a first thermostatic controller situated in said freezer compartment for maintaining a desired temperature in said freezer compartment by causing operation of said compressors and said fans; and

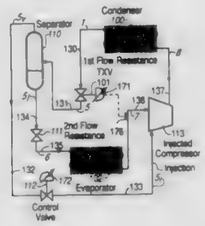
a second thermostatic controller situated in said fresh food compartment for maintaining a desired temperature in fresh food compartment by activating said servovalve reducing the mass flow rate in said first evaporator.

5,056,329

HEAT PUMP SYSTEMS

William H. Wilkinson, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Jun. 25, 1990, Ser. No. 543,606
Int. Cl.[5] F25B *41/00, 43/00*
U.S. Cl. 62—197 **23 Claims**



1. A heat pump system (principally FIG. 3; also FIG. 5, 7, or 9) comprising, in circuit of fluid means,

A. injected compressor means **113** for providing a compressed gas discharge **137** to

B. condenser means **100** for providing an at least partly liquid output **130** to

C. first flow resistance means **101** for providing **131** to

D. separator means **110**

a. for providing liquid **134** to second flow resistance means **111**, and

b. for providing gas **132** to control valve means **112**;

E. the second flow resistance means **111** comprising means for providing liquid **135** to

F. evaporator means **102** for providing gas **136** to inlet means of the injected compressor means **113**;

the control valve means **112** comprising means for providing gas **133** to injection input means of the injected compressor means **113**; and

the first flow resistance means **101** being adjustable by means **176,171** responsive to the temperature of the gas that is provided **136** from the evaporator means **102** to the injected compressor means **113**.

5,056,330

REFRIGERATING SYSTEM FOR USE IN VEHICLE WITH ENGINE WHICH ENABLES SELECTIVE USE OF COMMERCIAL AC POWER AND A GENERATOR DRIVEN BY THE ENGINE FOR DRIVING THE REFRIGERANT COMPRESSOR

Toshimi Isobe, Isesaki, and Riichi Sakano, Saitama, both of Japan, assignors to Sanden Corporation, Japan

Filed May 18, 1990, Ser. No. 524,988
Claims priority, application Japan, May 19, 1989, 1-124517
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—236 **24 Claims**

1. A system for driving a refrigerant compressor in a refrigerating system for use in a vehicle having an engine, which comprises:

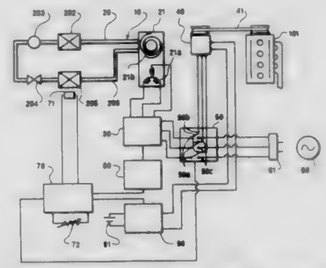
an electric generator mounted on the vehicle and driven by the engine of the vehicle for generating AC electric power, the electric generator including a field coil which receives a direct current;

selecting means having a first input port coupled to the electric generator for receiving AC electric power generated by the electric generator, a second input port which may be coupled to a commercial AC electric power source, and an output port, the selecting means selecting the input to one of the input ports and supplying the selected input to the output port as the selected AC electric power, said selecting means further providing a power select signal indicating whether the selected AC electric power is the AC electric power provided by the electric generator or the AC electric power provided by a commercial AC electric power source;

rectifying means coupled to the output port of the selecting means for rectifying the selected AC electric power to produce DC electric power;

a DC electric motor to be driven by the DC electric power produced by said rectifying means, said DC electric motor being mechanically coupled to the refrigerant compressor;

sensing means for sensing the temperature of a refrigerated compartment mounted on said vehicle, said sensing means



producing a sensed temperature signal which represents the sensed temperature of the refrigerated compartment;

setting means for setting the temperature of the refrigerated compartment, said setting means producing a set temperature signal which represents the temperature to which the refrigerated compartment is to be set;

processing means coupled to said sensing means, said setting means and said selecting mean so as to receive the sensed temperature signal, the set temperature signal and the power select signal, said processing means calculating the difference between the temperature of the refrigerated compartment and the temperature to which the refrigerated compartment is to be set, and producing a difference signal therefrom; and

current control means coupled to said processing means for receiving the power select signal and the difference signal, said current control means further coupled to the field coil of the electric generator so as to control the amount of current supplied to the field coil of the electric generator in response to changes in the difference signal.

5,056,331

ENCLOSURE FOR ELECTRONIC EQUIPMENT

Paul B. Lotz, 1860 Schwenksville Rd., Schwenksville, Pa. 19473

Filed Aug. 14, 1990, Ser. No. 567,187
Int. Cl.[5] F25D *11/00, 15/00;* **B60H** *1/32*
U.S. Cl. 62—237 **39 Claims**

1. An enclosure for electrical components such as computer printers, to be isolated from dust, comprising:

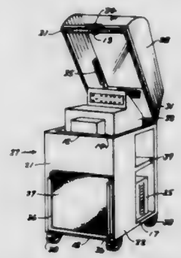
a plurality of abutting walls defining an at least partial case forming a cavity, said case having at least one intake vent and at least one air outlet;

air conditioning means having separate air input and air output sections;

a horizontal support surface adjacent said case, said support surface adapted to hold the electrical components thereon;

an, openable cover, sealingly engaging said support surface when closed;

said air conditioning means being at least partially housed within said case, said air conditioning means drawing air through said at least one intake vent, said air conditioning means forcing conditioned air through said at least one



outlet, said outlet being substantially adjacent said horizontal support surface, said closed cover sealingly encompassing said at least one air outlet, the electrical components and said horizontal surface whereby conditioned air from said outlet is trapped beneath said cover for preventing the ingress of dirt.

5,056,332

REFRIGERATOR

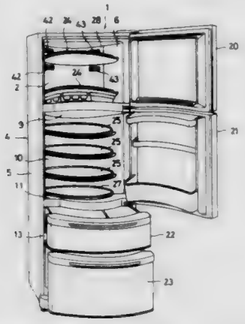
Hiroshi Tajima, Tochigi, and Yoshihide Sato, Gunma, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 19, 1991, Ser. No. 688,059

Claims priority, application Japan, Apr. 20, 1990, 2-106252; Sep. 19, 1990, 2-250798

Int. Cl.[5] A47F *3/04*

U.S. Cl. 62—252 **9 Claims**



1. A refrigerator comprising:

a storage chamber having a ceiling wall, side walls and a bottom wall, all of which are composed of thermal insulator;

at least one cold air outlet for providing cold air to the storage chamber is provided in one of said walls;

shelves rotatably supported in horizontal plane are settled in the storage chamber for putting goods thereon to be stored in said refrigerator; and

a cold air passage being formed at a corner space between the junction of side walls and the outer peripheries of said shelves providing cold air to said storage chamber through said air outlet.

5,056,333

AIR CONDITIONER WITH VENTILATING MEANS

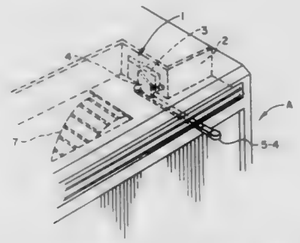
Jun-Kuk Cho, Kyunggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 7, 1990, Ser. No. 624,223

Claims priority, application Rep. of Korea, Dec. 9, 1989, 89-18672

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—262 **4 Claims**



1. In an air conditioner with ventilating means having a partition wall dividing a bulkhead of the air conditioner into the inside and outside section, a blower blowing the indoor air to be recirculated. said partition wall provided with a port communicating an outdoor air and said ventilating means comprising: throttle means provided at the port for selectively opening and closing a half of the port; air introducing means provided at the throttle means keeping apart from the partition wall for directing the recirculated indoor air stream to flow against it thereby causing the outdoor air to be introduced to the port; and an adjusting means connected to the throttle means for selectively positioning the throttle means between the open and close positions.

5,056,334

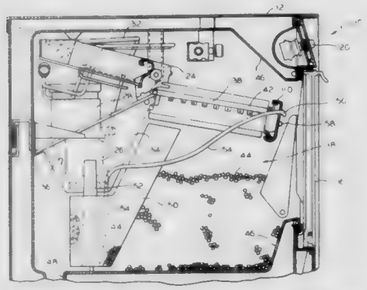
APPARATUS AND METHOD FOR MAKING PURE WATER

Charles R. Hooper, St. Paul; Herbert H. Rhoda, White Bear Lake, both of Minn., and Philip B. Stace, Knight Township, Vanderburgh County, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 25, 1990, Ser. No. 514,145

Int. Cl.[5] F25C *5/18*

U.S. Cl. 62—320 **25 Claims**



5. In an ice making apparatus having a cabinet provided with means for forming a plurality of ice bodies and an ice collecting bin therebelow for storing formed ice bodies, the improvement comprising:

a water storage tank is positioned in said ice collecting bin and having an open top portion for receiving a select portion of the plurality of ice bodies formed by said forming means and to melt the same to provide fresh water, said top portion being positioned to prevent entry of ice bodies from the collecting bin;

means for delivering a desired quantity of fresh water from said tank to a water dispenser associated with said cabinet; and

means for heating said water storage tank to facilitate melting of ice bodies received therein.

5,056,335

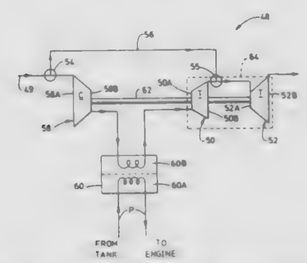
AUXILIARY REFRIGERATED AIR SYSTEM EMPLOYING INPUT AIR FROM TURBINE ENGINE COMPRESSOR AFTER BYPASSING AND CONDITIONING WITHIN AUXILIARY SYSTEM

Stanton W. Renninger, and Rollin G. Giffin, III, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 2, 1990, Ser. No. 502,893

Int. Cl.[5] F25D *9/00*

U.S. Cl. 62—402 **12 Claims**



1. An auxiliary refrigerated air system, comprising:

(a) first and second tandemly-arranged auxiliary turbine components having respective entrance and exit sides, said turbine components being operable for successively receiving air at said entrance sides thereof and producing energy-depleted air at said exit sides thereof;

(b) means connectable to a source of input air for receiving and dividing input air into first and second input air portions;

(c) means connected in communication between said exit side of said first auxiliary turbine component and said entrance side of said second auxiliary turbine component for mixing the first portion of the input air with energy-depleted air exiting from said first auxiliary turbine component;

(d) an air bypass loop connected in communication between said dividing means and said mixing means for bypassing to said mixing means from said dividing means the first portion of the input air;

(e) an auxiliary air compressor having inlet and outlet sides, said auxiliary compressor being drivingly connected to said first and second auxiliary turbine components and connected in communication at said inlet side with said dividing means, said auxiliary compressor being operable for receiving at said inlet side the second portion of the input air from said dividing means and producing compressed air at said outlet side upon operation of said first and second turbine components; and

(f) a heat exchanger having a first side connectable in communication with a flow of fluid providing a heat sink and a second side connected in communication between said outlet side of said auxiliary air compression for receiving compressed air therefrom and said entrance side of said first turbine component for discharging conditioned air thereto.

5,056,336

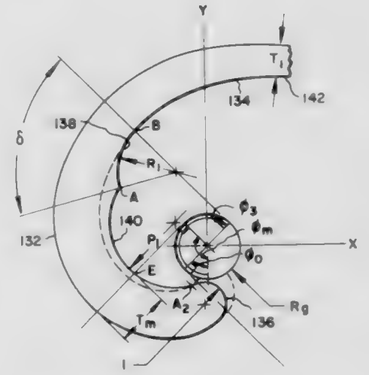
SCROLL APPARATUS WITH MODIFIED SCROLL PROFILE

Mark W. Harrison, Onalaska, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 6, 1989, Ser. No. 318,876

Int. Cl.[5] F04C *18/04*; F25B *1/04*

U.S. Cl. 62—498 **14 Claims**

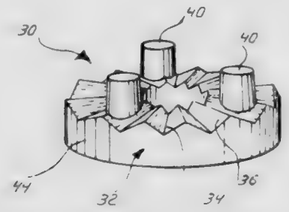


1. A scroll apparatus comprised of:

a first scroll element defined by a first upstanding involute scroll wrap element having a first outer wall and a first inner wall extending between a first inner tip portion and a first outer end, said first outer wall and said first inner wall defining a first wrap thickness T therebetween, said first inner wall further including a first inner wall surface extending from said first inner tip portion, said first inner wall surface including a first point A_f and a second point B_f defined thereon, said first inner wall surface further defined by an arcuate portion extending between said first inner tip portion and said first point A_f and a circular arc portion extending from said point A_f to said point B_f, wherein said first wrap thickness T is greater between said first inner tip portion and said second point B_f than between said second point B_f and said first outer end;

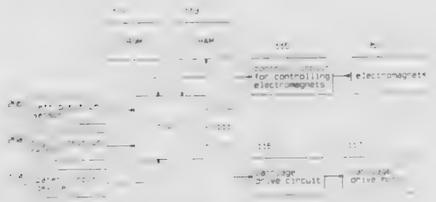
a second scroll defined by a second upstanding involute scroll wrap element for interleaving engagement with said first involute scroll wrap element, said second involute scroll wrap element including a second outer wall and a second inner wall extending between a second inner tip portion and a second outer end, said second outer wall and said second inner wall defining a second wrap thickness T therebetween, said second inner wall further including a second inner wall surface extending from said second inner tip portion, said second inner wall surface including a first point A_o and a second point B_o defined thereon, said second inner wall surface further defined by an arcuate portion extending from said second inner tip portion to said point A_o and a circular arc portion extending from said point A_o to said point B_o of a circle, wherein said second wrap thickness T is greater between said second inner tip portion and said second point B_o than between said second point B_o and said second outer end, whereby when said second scroll orbits with respect to said first scroll, said second inner tip portion engages in moving line contact said first inner wall surface from said point B_f to said point A_f while said fist inner tip portion simultaneously engages in moving line contact said second inner wall surface from said point B_o to said point A_o during a portion of said orbit.

5,056,337
DIAMOND SETTING
Eric Nhaissi, New York, N.Y., assignor to Pan American Diamond Corporation, New York, N.Y.
Continuation of Ser. No. 238,557, Aug. 30, 1988, abandoned.
This application Jun. 4, 1990, Ser. No. 536,013
Int. Cl.[5] A44C *17/02*
U.S. Cl. 63—26 13 Claims



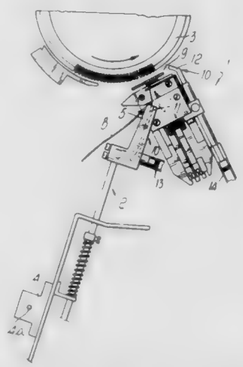
1. A generally round setting for a diamond which simulates the appearance of a larger diamond, comprising:
(A) reflecting means for reflecting light upwardly through the diamond, said reflecting means including an annulus having an inner surface, an outer surface spaced from said inner surface, and an upper surface stamped with at least nine equally spaced apart, radially extending cuts providing planar reflecting surfaces, each of said cuts being wedge shaped in plan and V-shaped in cross section, and
(B) means upstanding from said annulus upper surface for receiving and holding the girdle of the diamond in a position spaced above said annulus upper surface, thereby to permit light to be reflected upwardly by said reflecting means through the diamond, including not more than three equally spaced apart prongs upstanding from said annulus upper surface.

5,056,338
YARN POSITIONING CONTROLLER FOR FLAT-BED KNITTING MACHINES
Naohito Asai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Jun. 8, 1990, Ser. No. 535,138
Claims priority, application Japan, Jun. 14, 1989, 1-151181
Int. Cl.[5] D04B *15/52*
U.S. Cl. 66—127 5 Claims



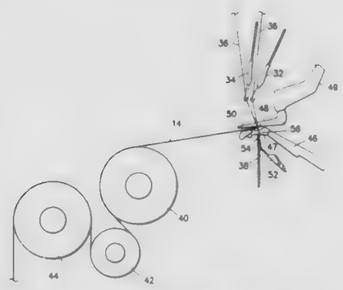
1. A flat bed knitting machine comprising:
a needle bed having a knitting section;
a carriage slidably mounted on the needle bed, the carriage including yarn support means for selectively receiving a yarn;
first and second yarn support racks for holding a plurality of yarns, each yarn support rack having a plurality of holders for detachably holding an associated yarn and wherein each said yarn has an associated holder in both the first and second yarn support racks, the holders each having a transfer position and a withdrawn position;
holder driving means for moving said holders between their withdrawn and transfer positions to facilitate transferring the yarns between said yarn support means and their associate holders;
carriage driving means for moving said carriage relative to the needle bed;
data storage means for storing data indicative of the desired initial positions of said yarns before knitting begins; and
control means for directing said holder driving means and said carriage driving means in response to information stored within said data storage means in order to preset the yarns into the desired initial positions for knitting.

5,056,339
PROCESS AND DEVICE FOR PRODUCING DESIGNS ON STOCKING IN TWIN-CYLINDER CIRCULAR KNITTING MACHINE
Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy
Filed May 9, 1989, Ser. No. 349,541
Claims priority, application Italy, May 18, 1988, 20632 A/88
Int. Cl.[5] D04B *15/60*
U.S. Cl. 66—134 13 Claims



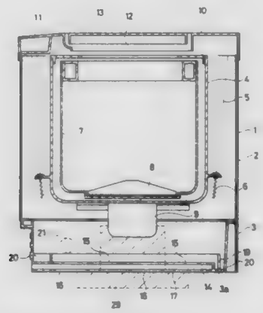
1. A device for producing designs on stockings in twin-cylinder circular knitting machines of the type having needle cylinders defining an annular periphery, said device comprising;
thread guide means controllably movable in a radial direction with respect to needle cylinders in a twin-cylinder circular knitting machine, said thread guide means positioned at an inoperative position located remote from said needle cylinders, and movable radially inwardly to at least one operative position located proximate to said needle cylinders for feeding a first thread to a preset number of needles for forming a design;
means for retaining and cutting a first thread located downstream of said thread guide means with respect to a direction of rotation defined by said needle cylinders,
means for delivering a jet of air located proximate to said thread guide means and said means for retaining and cutting, said means for delivering being controllably actuatable for conveying free ends of a portion of a first thread knit by said preset number of needles towards a position overlying at least one of said needle cylinders,
wherein said thread guide is selectively movable between said operative position and said inoperative position outside said annular periphery defined by said needle cylinders.

5,056,340
TRICOT KNITTING MACHINE IMPROVEMENT
Kenneth H. Sanders, Jonesville, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Division of Ser. No. 551,295, Jul. 12, 1990, Pat. No. 5,017,425.
This application Sep. 14, 1990, Ser. No. 582,311
Int. Cl.[5] D04B *23/12, 27/04*
U.S. Cl. 66—203 2 Claims



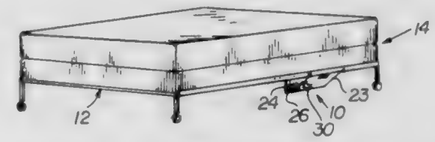
1. A tricot knitting machine comprising: a row of needles, guide bar means operably associated with said needles to supply yarn thereto, sinker bar means having sinkers operably associated with said needles and being fixed to prevent movement of said sinkers with the fabric being knit on said needles, means to pull knitting fabric away from the vertical axis of the knitting machine in a direction substantially perpendicular thereto and fabric hold means operably associated with said needles to hold down the courses of the fabric next adjacent to said needles, said fabric hold down means including a plurality of fingers which project between adjacent needles and beyond the outer extremity of said sinkers to hold down the knit fabric to prevent the knit fabric from breaking out as it comes off the needles.

5,056,341
WASHING MACHINE
Koichi Mori, and Tomonari Kawaguchi, both of Otsu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 20, 1990, Ser. No. 512,790
Claims priority, application Japan, Jun. 8, 1989, 1-145794; Oct. 5, 1989, 1-260762
Int. Cl.[5] B65D *85/68;* D06F *37/24*
U.S. Cl. 68—3 R 9 Claims



1. A washing machine comprising:
a washing tub;
a body in which said washing tub is resiliently supported;
sound insulation means for supporting said body and for preventing the noise generated during operation of said washing machine from leaking out of said body, said sound insulation means comprising:
a base for supporting said body and having a first opening for receiving a packing that prevents said washing tub from moving when said washing machine should be packed, and a second opening on a side of said base; and
a removable sound absorbing element made of a synthetic resin having a high specific gravity and including a filler for increasing the specific gravity thereof insertable through said second opening for closing said first opening, said sound absorbing element being removable for opening the first opening to enable installation of the packing.

5,056,342
SECURITY CONTAINER FOR MOUNTING TO AN UNDERSURFACE
Robert E. Prinz, 5360 S.W. 82nd Ave., Miami, Fla. 33155
Filed Jun. 25, 1990, Ser. No. 543,103
Int. Cl.[5] E05B *65/52*
U.S. Cl. 70—63 20 Claims



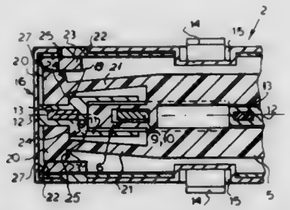
1. A security box assembly designed to be mounted to the undersurface of a mounting structure, said assembly comprising:
a container having a hollow interior disposed between a top portion and a base portion and an open face communicating with said hollow interior,
cover means movably mounted on said container and positionable into and out of a closed, locked position defined by covering relation to said open face, said cover means being positioned and disposed on said container so as to define an at lead partially angled front portion extending upwardly at an at lead partially angled orientation from an outer edge of said base portion to an outer edge of said top portion in such a manner so as to be angled away from a line of sight,
mounting means secured in supporting engagement with said top portion of the container for mounting the container to the undersurface of the mounting structure in such a manner so as to position and support the container in a substantially out-of-sight location entirely beneath the mounting structure,
locking means secured to said container for maintaining said cover means in said closed, locked position, and including release means structured to release said locking means to allow movement of said cover means between said closed, locked position and an open position permitting access to said hollow interior,
said front portion including a highly reflective finish on an outer surface thereof being adapted to mirror an appearance of an underlaying surface so as to effectively camouflage the container.

5,056,343

ACTUATOR FOR POWER DOOR LATCH

Frank Kleefeldt, and Rolf Schüler, both of Heiligenhaus, Fed. Rep. of Germany, assignors to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 389,832, Aug. 4, 1989, abandoned. This application Oct. 18, 1990, Ser. No. 599,795
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3827586
Int. Cl.[5] E05B *53/00, 65/36*
U.S. Cl. 70—264 **8 Claims**



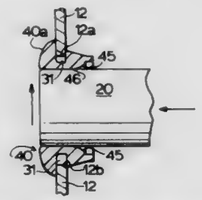
1. In combination with a motor-vehicle latch having
an actuating lever displaceable between a position in which a respective door of the vehicle is locked and a position in which the respective door is unlocked, the lever being formed with a portion projecting from the latch; and
a locking knob connected to the lever and accessible from inside the vehicle to displace the lever between its positions; a power actuator comprising:
a housing mounted directly on the door latch and formed with at least one longitudinally directed abutment face;
a motor in the housing;
a nut longitudinally displaceable in the housing by the motor between unlocked, locked, and antitheft positions;
a slide in the housing movable by the nut between locked and unlocked positions and formed with a recess receiving the projection portion of the lever;
at least one flexible arm extending longitudinally from the slide and having a head formed with a face directed longitudinally opposite the abutment face of the housing, the faces longitudinally confronting but being out of longitudinal line with each other in the locked positions of the slide and nut; and
a respective actuating formation on the nut engageable with the arm for laterally elastically deflecting the arm on displacement of the nut from the respective locked to the antitheft position, the faces being longitudinally aligned and preventing displacement of the slide into the unlocked position with the nut in the antitheft position.

5,056,344

BEZEL

Andrzej Bartczak, Newmarket, Canada, assignor to KTM Locks, Division of Atoma International Inc., Concord, Canada

Filed Sep. 20, 1990, Ser. No. 585,523
Int. Cl.[5] E05B *15/02*
U.S. Cl. 70—381 **67 Claims**



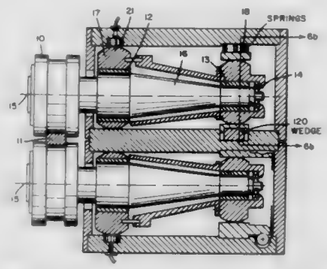
1. An insert for a panel opening, the panel having edges disposed therewith proximate the opening, the insert comprising a resilient member having a perimeter and two ends, the member being flexible in a direction transverse to the ends of the member when the insert is inserted in the opening, the member having disposed intermediate the ends thereof at least one recess having a bottom, the recess for securing the edges of the panel therewith when the insert is inserted in the opening of the panel, the bottom of the recess being positioned to allow for the lateral movement of the insert in relation to the panel opening transverse to the ends of the member.

5,056,345

ROLLING STAND WITH ROLLING RINGS SUPPORTED AS A CANTILEVER AND HAVING THEIR AXES AT AN ANGLE TO EACH OTHER

Geremia Nonini, Buttrio, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Italy

Continuation-in-part of Ser. No. 309,194, Feb. 13, 1989, Pat. No. 4,962,655. This application Jul. 30, 1990, Ser. No. 559,078
Claims priority, application Italy, Feb. 25, 1988, 83324 A/88
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] B21B *37/08, 31/26, 31/30*
U.S. Cl. 72—21 **14 Claims**



1. A rolling stand for rolling metallic products, comprising:
a plurality of rolling rings for forming said metallic products;
a plurality of rolling ring shafts supported as a cantilever, supporting said plurality of rolling rings, and each having an axis of rotation coinciding with an axis of rotation of a rolling ring; and
a plurality of bearings rotatably supporting said plurality of rolling ring shafts;
said rings are unsupported about their circumferences and the bearings are positioned on said shafts so that during operation of said rolling stand, said plurality of rolling ring shafts are resiliently bent due to resistance to deformation of said metallic products so that the axes of rotation of said plurality of rolling rings are in an optimum orientation;
wherein an angle exists between said axes of rotation of each said plurality of rolling rings such that said axes of rotation converge at a point in front of said rolling stand while the rolling stand is idle, said angle compensating for the bending of the rolling ring shafts during operation of said rolling stand, further comprising wedge means to effectuate adjustment of said angle.

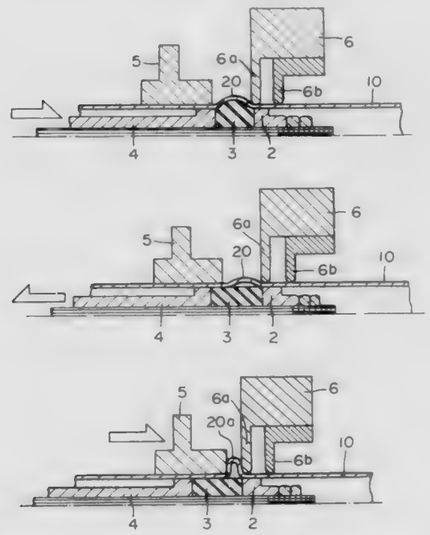
5,056,346

METHOD AND DEVICE FOR MANUFACTURING BELLOWS PIPE

Mitsumasa Ohtaka, Aichi Prefecture, Japan, assignor to Usui Kikusai Sangyo Kaisha, Limited, Japan

Filed Dec. 29, 1989, Ser. No. 458,899
Claims priority, application Japan, Dec. 30, 1988, 63-332184
Int. Cl.[5] B21D *15/10*
U.S. Cl. 72—59 **5 Claims**

1. A method of manufacturing a bellows pipe having opposed first and second longitudinal ends, said method comprising the steps of:
providing an elongated collar dimensioned to be inserted into the pipe;
providing an elastic body at one longitudinal end of the collar, said elastic body, in an unbiased condition, being dimensioned to be inserted in to the pipe;
providing a stopper adjacent the elastic body, said stopper being dimensioned to be inserted in to the pipe and being selectively movable toward and away from the collar for selectively expanding the elastic body radially outwardly between the stopper and the collar;
inserting the stopper, elastic body and collar into the pipe;
providing a punch around the pipe at a location intermediate the first and second ends thereof, said punch being selectively moveable toward and away from the second end of the pipe;
providing a chuck around the pipe intermediate the punch and the second end thereof, said chuck comprising first and second axially spaced apart arms selectively moveable



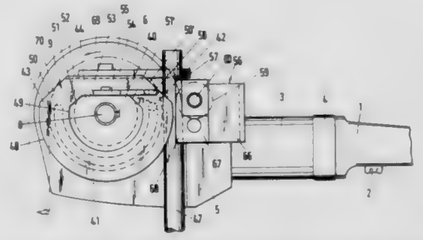
in radial directions toward and away from the pipe and in axial directions toward and away from the punch;
pressing the elastic body in the axial direction of the pipe between the collar and the stopper to resiliently expand the elastic body radially of the pipe such that a circumferential portion of the pipe changes to an annular convex portion,
permitting the elastic body to return to an unexpanded condition,
compressing the annular covex portion between the chuck and the punch to form a bellows portion,
moving the chuck sequentially outwardly away from the pipe, longitudianally toward the punch and then inwardly toward the pipe to pinch the bellows portion between the arms of the chuck,
moving the chuck longitudinally away from the punch for shifting the pipe to a given position while continuing the pinching of the bellows portion by the chuck,
wherein a plurality of bellows portions spaced a given distance from each other are successively formed by repeating the steps from the pressing from the elastic body.

5,056,347

HAND-HELD BENDING TOOL FOR CONDUITS AND RODS

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to REMS-Werk Christian Föhl und Söhn GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Feb. 2, 1990, Ser. No. 475,141
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3903041
Int. Cl.[5] B21D *7/04*
U.S. Cl. 72—149 **26 Claims**



1. In a hand-held bending tool for conduits, tubes, and rods, including a bending matrix and a sliding shoe that during a bending process are movable relative to one another and each have a groove-like recess means in which said tube that is to be bent is disposed, with said recess means of said bending matrix extending in a curved manner in conformity with the tube bending radius that is to be produced, and including at least one support for said tube, the improvement wherein:
said bending tool is embodied as an electrically powered tool having an electric motor with a drive shaft that rotatably drives said bending matrix via a reduction gear arrangement having an at least two stage reduction mechanism, with the force caused by said tool during a bending process being self-contained in such a way that said force during said bending process is absorbed by said hand-held bending tool without requiring a reaction force by the operator.

5,056,348

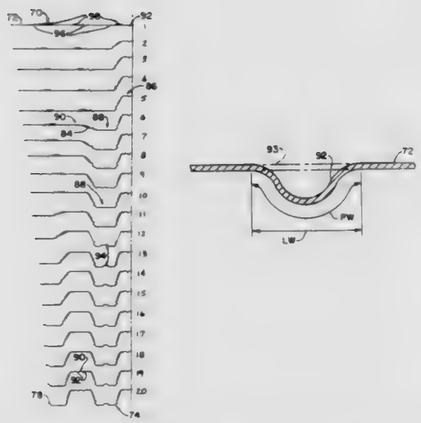
METHOD OF MAKING A PROFILED SHEET METAL BUILDING UNIT

Raymond E. Albrecht, Sewickley, and Charles R. Gray, Aliquippa, both of Pa., assignors to Robertson-Ceco Corporation, Pittsburgh, Pa.

Division of Ser. No. 359,585, Jun. 1, 1989, Pat. No. 4,962,622. This application Feb. 22, 1990, Ser. No. 482,865
Int. Cl.[5] B21D *5/08*
U.S. Cl. 72—177 **10 Claims**

1. In the method of profiling a sheet metal strip of substantially uniform strip thickness and of preselected width as the strip is moved along its length to produce a cold formed building unit having at least one longitudinal flat region, the improvement comprising;
forming spaced-apart longitudinal lateral stiffening ribs in said metal strip, one on each side of said flat region, by laterally drawing in the opposite sides of said metal strip, while simultaneously
forming at least one longitudinal stiffening rib in a segment

of said flat region by stretching said segment throughout its thickness and within said segment such that said stiffening rib has a substantially uniform rib thickness that is less than said uniform strip thickness.



5,056,349

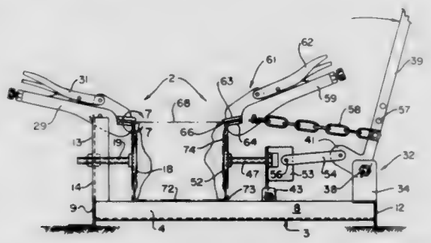
CAN STRAIGHTENING APPARATUS

Philip C. Aiello, 1981 Minna Way, San Jose, Calif. 95124

Filed Nov. 1, 1990, Ser. No. 607,719

Int. Cl.[5] B21D *1/10*

U.S. Cl. 72—302 **8 Claims**



8. An apparatus for straightening bent cans normally having spaced parallel opposed end lids joined in first and second spaced beads with a cylindrical side wall symmetrical about a central axis and filled with a food product to enable placement of a label thereon, comprising:

a) an elongated base member having a longitudinal axis for supporting a bent can to be straightened so that the central axis of the can extends longitudinally of the base member;

b) first clamp means operatively mounted on one end of said base member and manipulable to detachably grasp a selected portion of said firs bead at one end of a can supported on said base member;

c) second clamp means operatively mounted on the other end of said base member and manipulable to detachably grasp a selected portion o the second bead at the opposite end of the can from said first bead;

d) means operatively associated with side other end of said base member and connected to said second clamp means and manipulable to impose a tensive force on the cylindrical wall of said can in the direction of said central axis to thereby straighten a dented portions a cylindrical wall;

e) means on said base member operatively associated with said second clamp means and forming an abutment against which the associated end of a can supported on said base member may abut when said tensive force is applied to said cylindrical wall; and

f) said abutment means associated with said second clamp means including linkage means optionally mounted on said base member and operative to alter the position of said abutment means as tensive force is applied to the cylindrical side wall of the can being straightened.

5,056,350

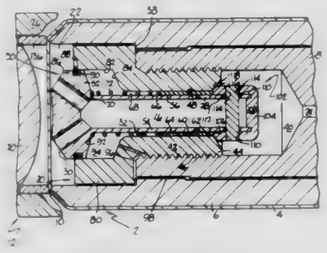
APPARATUS AND METHOD FOR STRIPPING A WORKPIECE FROM A SUPPORTING DEVICE

Bruce A. Moen, Golden; Warren R. Williams, Fort Collins; Bert E. Johansson, Arvada, and Leo W. Mayer, Lakewood, all of Colo., assignors to Coors Brewing Company, Golden, Colo.

Filed Aug. 6, 1990, Ser. No. 562,747

Int. Cl.[5] B21D *45/08*

U.S. Cl. 72—345 **19 Claims**



1. Apparatus for stripping a cylindrical workpiece, such as a can body, from a cylindrical supporting device, such as a punch on a reciprocating ram of a can body making apparatus, comprising:

a cylindrical supporting device mounted on said ram for reciprocal movement therewith, said reciprocal movement having a forward stroke and a return stroke along a longitudinal axis;

said cylindrical supporting device having a cylindrical workpiece supported thereon, said cylindrical workpiece having a closed end and an open end;

doming means located to be contacted by said closed end of said cylindrical workpiece as said cylindrical supporting device is moving in said forward stroke;

valve means having a movable stem portion for movement between closed and opened positions mounted on said cylindrical supporting device;

a supply of fluid under pressure;

said valve means mounted on said cylindrical supporting device so that a cavity is formed between at least a portion of said valve means and said closed end of said cylindrical workpiece;

force applying means for applying a force on said movable stem portion so that it is normally in said closed position;

at least one passageway extending through said stem portion and when said stem portion is in an opened position, said passageway having one end thereof in fluid communication with said supply of fluid under pressure and the other end thereof in fluid communication with said cavity; and

moving means for moving said stem portion from said closed position to said opened position so that said fluid under pressure moves through said at least one passageway into said cavity to apply forces on said closed end to prevent axial movement of said cylindrical workpiece as said cylindrical supporting device moves in said return stroke to strip said cylindrical workpiece from said cylindrical supporting device.

5,056,351

CRIMPING DEVICE AND ADJUSTING RING

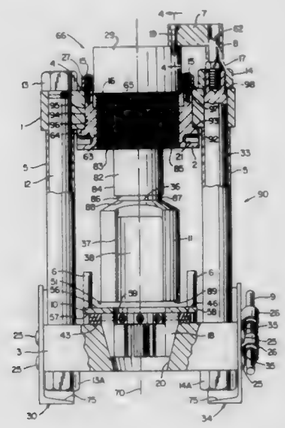
C. Edward Stiver; George J. Teti, both of Ocala, Fla.; Charles S. Pearson, Waynesville, N.C., and Kenneth R. Brown, Silver Springs, Fla., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 366,083, Jun. 14, 1989, Pat. No. 4,953,383, which is a division of Ser. No. 150,263, Jan. 26, 1988, Pat. No. 4,862,725. This application May 30, 1990, Ser. No. 530,371

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] B21D *41/04, 39/04*

U.S. Cl. 72—402 **14 Claims**



1. In a device for crimping a coupling to an end of a hose, said device comprising support means, die means carried by said support means for holding said hose end and said coupling, and crimping means carried by said support means and spaced apart from said die means a certain distance and in axial alignment therewith and comprising a cylinder member having a stop means and a piston member carried by said cylinder member adapted to be moved axially relative to said cylinder member into engagement with said die means to axially move said die means therewith until a part of said piston member abuts said stop means, said crimping means further including a chamber established between said piston member and cylinder member so that pressurizing said chamber produces relative movement between the piston member and cylinder member, the improvement comprising adjusting means movably carried by said support means and being operatively interconnected to said cylinder member of said crimping means for adjusting the entire axial position of said crimping means relative to said adjusting means and to said die means as said adjusting means is moved relative to said support means so as to change said certain distance to a new certain distance whereby when said piston member of said crimping means is moved into engagement with said stop means said coupling is crimped to said hose end by said die means in accordance with a predetermined relationship that is determined by said new certain distance.

5,056,352

METHOD AND APPARATUS FOR GENERATING A PRECISELY DEFINED DYNAMIC PRESSURE PULSE

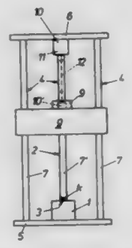
Gerhard Muhrer, and Josef Riegebauer, both of Graz, Austria, assignors to AVL Gesellschaft fur Verbrennungskraft-maschinen und Messtechnik mbH., Prof. Dr. Dr. h.c. Hans List, Austria

Filed Nov. 6, 1989, Ser. No. 431,875

Claims priority, application Austria, Nov. 4, 1988, 2715/88

Int. Cl.[5] G01L *27/00*

U.S. Cl. 73—4 D **8 Claims**



1. A method for generating a precisely defined dynamic pressure pulse curve having selectably predetermined duration and amplitude, said method comprising the following steps:

providing a substantially rigid pressure chamber containing a pressure transmission agent;

causing a drop weight to coact with a piston to compress said pressure transmission agent and generate a pressure pulse;

directly measuring acceleration of said drop weight during said coaction with said piston and generating a chronological curve of said acceleration;

quantifying the mass of said drop weight and the cross sectional area of said piston; and

using said acceleration curve, said drop weight mass, and said piston cross section to generate a curve corresponding to said pressure pulse

said drop weight has a predetermined mass;

said piston has a predetermined cross sectional area; and

said curve corresponding to said pressure pulse obeys the following equations:

$$p(t) = \frac{m \cdot a(t)}{A}$$

wherein:

m=mass of the drop weight;

a(t)=said acceleration curve; and

A=said cross sectional area of said piston.

5,056,353

MARKER FOR DETECTING AMOUNT OF WORKING AND PROCESS FOR PRODUCING THIN FILM MAGNETIC HEAD

Naoto Matono, Yawata, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Apr. 5, 1989, Ser. No. 333,400

Claims priority, application Japan, Apr. 6, 1988, 63-84436; Nov. 16, 1988, 63-291823

Int. Cl.[5] G01N *3/50*

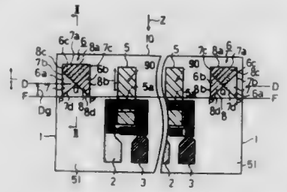
U.S. Cl. 73—7 **4 Claims**

1. A working amount detecting marker for detecting a worked condition of a thin film laminated structure formed by a machining process that removes material from a worked edge portion of said laminated structure in a direction of working perpendicular to said worked edge, said marker comprising:

a first marker layer and a second marker layer each having

a predetermined shape when seen in a plan view, said layers being partially superimposed to form a pattern comprising at least a first detecting portion consisting only of the first marker layer, a second detecting portion consisting only of the second marker layer and a third detecting portion consisting of both superimposed layers:

said first and second marker layers each being contoured to have a plurality of sides, one of the two marker layers including a side inclined at a predetermined angle to said



direction of working so as to intersect a side of another one of the two marker layers at a point in a plan view, a portion of each of the two intersecting sides forming a boundary line between said third detecting portion and said first and second detecting portions, respectively;

the point of intersection of the sides being located at a predetermined position of the laminated structure so as to indicate, by inspection of said marker layers at said worked edge, a position where working is to be completed.

5,056,354

ROAD CONDITION MONITORING SYSTEM

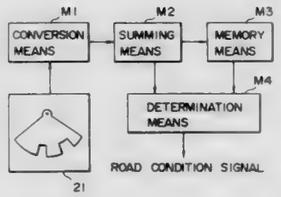
Kazutaka Kuwana, Toyota; Kuniaki Okamoto, Nagoya; Tsuyoshi Yoshida, Obu; Hiroyuki Ichikawa, Okazaki; Masaru Kamikado, Anjo; Nobuyasu Nakanishi, Toyota; Tatsuo Sugitani, Mishima, and Kazunori Sakai, Aichi, all of Japan, assignors to Aisin Seiki K.K. and Toyota Jidosha K.K., both of Aichi, Japan

Filed Aug. 6, 1990, Ser. No. 563,158

Claims priority, application Japan, Aug. 4, 1989, 1-203491

Int. Cl.[5] G01N *19/02*

U.S. Cl. 73—9 **6 Claims**



5. A road condition monitoring system comprising:

an acceleration sensor for detecting an acceleration of a vehicle and producing a signal corresponding thereto;

conversion means for receiving said signal from said acceleration sensor and converting said signal into one of three predetermined values in response to a magnitude of said acceleration every cycle of a predetermined time period;

summing means for summing up said one of three predetermined values in a predetermined number of consecutive cycles and providing a total value in the last cycle thereof;

memory means for storing the total value provided by said summing means; and

determination means for providing a first high standard value, a first low standard value, a second high standard value higher than said first high standard value, and a second low standard value higher than said first low standard value, and determining the condition of increase or decrease of the total value in the present cycle provided by said summing means as compared with the total value in the previous cycle stored in said memory means, wherein said determination means compares the total value in the present cycle with said first high and low standard values, when the total value in the present cycle decreases, to produce a first road condition signal in case of being higher than said first high standard value, a second road condition signal in case of getting lower than said first high standard value, and a third road condition signal in case of getting lower than said first low standard value, and wherein said determination means compares the total value in the present cycle with said second high and low standard values, when said total value in the present cycle increases, to produce said first road condition signal in case of exceeding said second high standard value, said second road condition signal in case of exceeding said second low standard value, and said third road condition signal in case of being lower than said second low standard value, and produce a road condition signal determined on the basis of the total value in the previous cycle when the total value in the present cycle is the same as the total value in the previous cycle.

5,056,355

DUST MONITORS AND DUST MONITORING

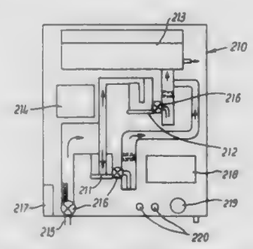
Michael J. Hepher, Coylton, and Jonathan N. Hides, Glasgow, both of Scotland, assignors to Murgitroyd & Company, Glasgow, England

Filed Dec. 1, 1989, Ser. No. 444,734

Claims priority, application United Kingdom, Dec. 3, 1988, 8828277

Int. Cl.[5] G01N *15/02, 29/02*

U.S. Cl. 73—24.03 **3 Claims**



1. A dust monitor comprising a piezoelectric sensor including a piece of piezoelectric material and an electrode system thereon, and exposure means to expose the piezoelectric sensor at least periodically to a stream of a gas which may contain dust or other organic or inorganic particulate material whose presence in or absence from the gas is to be monitored wherein the exposure means comprises a dust size discriminator which cause substantially only particles of repirable size to reach the piezoelectric sensor and diverts larger particles to a second piezoelectric sensor.

5,056,356

NONDESTRUCTIVE TESTING OF PENETRABLE MATERIAL BOND INTERFACES

David R. Kuhns, Carlsbad, and Gerald L. O'Barr, San Diego, both of Calif., assignors to General Dynamics Corporation, Space Systems Division, San Diego, Calif.

Filed Apr. 2, 1990, Ser. No. 502,713

Int. Cl.[5] G01M *3/32*

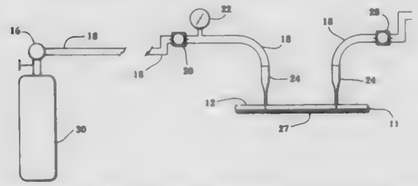
U.S. Cl. 73—49.2 **10 Claims**

1. An apparatus for testing for disbounds at a bond line disbond between a metal surface and a layer of insulation material bonded thereto comprising:

a source of fluid under pressure;

a pressure regulator for regulating the level of pressure from said source of fluid under pressure exiting said pressure regulator;

a hollow needle with a opening at each end, a first end of said needle communicating with the fluid under pressure exiting said pressure regulator and the other end for inserting through said insulation material to said bond line adjacent said metal surface; and



a first flow meter in series between said exit of said pressure regulator and the first end of said needle whereby in the absence of said disbonds a low flow rate will be observed on said flow meter and when a disbond is present a higher then said low flow rate will be indicated by said flow meter.

5,056,357

ACOUSTIC METHOD FOR MEASURING PROPERTIES OF A MOBILE MEDIUM

Stephan Dymling, Rudbecksgatan 113, S-216 22 Malmö ; Tomas Hertz, Filippavägen 2 D, S-222 41 Lund; Kjell Lindström, N. Skogsvägen 3, S-236 00 Höliviken, and Hans W. Persson, Thulehemsvägen 3, S-223 67 Lund, all of Sweden

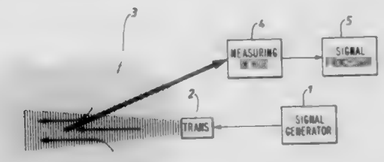
PCT No. PCT/SE88/00587, § 371 Date Jun. 30, 1989, § 102(e) Date Jun. 30, 1989, PCT Pub. No. WO89/04482, PCT Pub. Date May 18, 1989

PCT Filed Nov. 1, 1988, Ser. No. 378,204

Claims priority, application Sweden, Nov. 2, 1987, 8704255

Int. Cl.[5] G01N *11/02*

U.S. Cl. 73—54 **19 Claims**



1. A method for determining changes in viscosity and other properties of a medium including a liquid and substances suspended in or blended into the liquid, said substances having an acoustic impedance differing from said liquid, comprising:

(a) transmitting acoustic waves into the medium causing a flow movement in said medium;

(b) detecting acoustic waves that have passed through the medium;

(c) calculating a difference in frequency between said transmitted acoustic waves and said detected acoustic waves; and

(d) determining a relative measure of the velocity between said liquid and said substances based on said difference.

5,056,358

APPARATUS FOR THE DETERMINATION OF RHEOLOGICAL PROPERTIES OF SEDIMENTING SUSPENSIONS

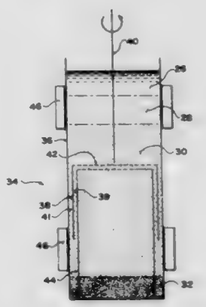
Janusz S. Laskowski, Richmond; Berahard Klein, Vancouver, and Susan J. Partridge, Vancouver, all of Canada, assignors to University of British Columbia, Vancouver, Canada

Filed Aug. 24, 1989, Ser. No. 398,184

Claims priority, application Canada, Aug. 26, 1988, 575872

Int. Cl.[5] G01N *11/14*

U.S. Cl. 73—6 **15 Claims**



1. An apparatus for evaluating the rheological properties of sedimenting particle suspensions having a temporary constant density zone comprising:

(a) means for retaining a sedimenting suspension:

(b) means suspended in said retaining means and being fully submerged in said sedimenting suspension, said retaining means and said suspended means being capable of being rotated relative to one another, said suspended means having an uninterrupted surface adjacent an uninterrupted surface of the retaining means, said suspended means being permeable to the passage of particles settling in the sedimenting suspension, the suspended means being suspended entirely in the sedimenting suspension in the temporary constant density zone.

5,056,359

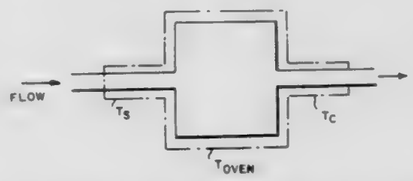
METHOD AND APPARATUS TO MEASURE VAPOR PRESSURE IN A FLOW SYSTEM

Mark W. Grossman, Belmont, and Oscar Biblarz, Swampscott, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Mar. 15, 1989, Ser. No. 323,640

Int. Cl.[5] G01N *7/00*

U.S. Cl. 73—64.2 **4 Claims**



1. A method for determining the vapor pressure of mercury in a photochemical mercury enrichment process (^{196}Hg) which comprises the steps of:

(1) flowing enriched mercury vapor through a vapor pressure monitor having at least three independently controlled temperature regions or zones, (a) an entrainment zone, (b) an oven zone, and (c) a collector zone;

(2) heating said vapor pressure monitor such that the mer-

cury is heated to a first temperature (T_e) in the entrainment zone;
(3) passing the heated mercury to the over zone heated to temperature (T_{owen}) and thereafter;
(4) passing the mercury to the collector zone, wherein the temperature in the collector zone (T_c) is varied among predetermined temperatures;
(5) monitoring the mercury flowing through the collector zone for condensation at the variable temperatures used for T_c; and
(6) when condensation is detected, measuring the mercury flow rate Q, and solving the following equations for P_p, the product vapor pressure:

Q=n vA

$$(b)\ Q_p = n_p \frac{Q}{n} = P_p \frac{Q}{p}$$

$$(c)\ P_p = \frac{Q_p}{Q} \cdot P$$

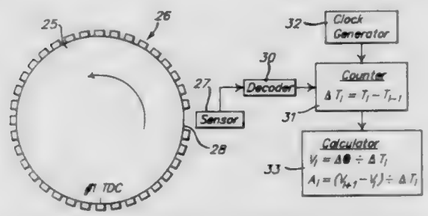
wherein:
Q=mercury flow rate
n=mercury density
vA=volumetric flow rate
Q_p=product flow rate
n_p=product density
P_p=product pressure
P=Hg pressure.

5,056,360

SELECTION OF VELOCITY INTERVAL FOR POWER STROKE ACCELERATION MEASUREMENTS

James M. Dosdall, Grosse Ile, and John V. James, Walled Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 24, 1990, Ser. No. 572,282
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 14 Claims



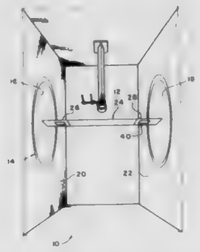
1. A method for determining crankshaft acceleration corresponding to individual power strokes of an internal combustion engine, said method comprising the steps of:
providing position signals at predetermined points of the rotation of said combustion engine, said points being at substantially regularly spaced rotation angles such that at least one position signal occurs during every power stroke;
establishing one velocity measurement interval for each power stroke, each velocity measurement interval including between about 45° and 180° of rotation of said crankshaft;
measuring a time period during each respective velocity measurement interval; and
calculating said acceleration corresponding to each individual power stroke as a function of the difference between the time period for each individual power stroke and the time period for the next successive power stroke;
wherein each velocity measurement interval has a phase in relation to its respective power stroke such that a loss of power occurring in a particular power stroke causes a drop in the calculated acceleration corresponding to said particular power stroke and causes a smaller but substantially equal drop in the calculated accelerations corresponding to the power strokes immediately preceding and immediately following said particular power stroke.

5,056,361

DUAL STRAIN GAGE BALANCE SYSTEM FOR MEASURING LIGHT LOADS

Paul W. Roberts, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 18, 1990, Ser. No. 584,018
Int. Cl.[5] G01L *5/16*; G01M *9/00*
U.S. Cl. 73—147 13 Claims



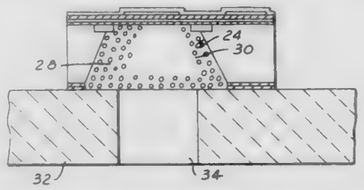
1. A dual strain gage balance system for measuring normal and axial forces and pitching moment of a metric airfoil model imparted by aerodynamic loads applied to the airfoil model during wind tunnel testing, comprising:
a pair of non-metric panels being rigidly connected to and extending towards each other from opposite sides of the wind tunnel; and
a pair of strain gage balances, each connected to one of the non-metric panels and to one of the opposite ends of the metric airfoil model for mounting the metric airfoil model between the pair of non-metric panels, each strain gage balance having a first measuring section mounting first strain gage means for measuring normal force and pitching moment and a second measuring section mounting second strain gage means for measuring axial force.

5,056,362

STRENGTHENING A SILICON MICROMACHINED MASS AIR FLOW SENSOR IN THE REGION OF ITS HOT ELEMENT

Leoncio T. Ang, Newport News, and Charles R. Cook, Jr., Williamsburg, both of Va., assignors to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jul. 25, 1990, Ser. No. 558,118
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 6 Claims



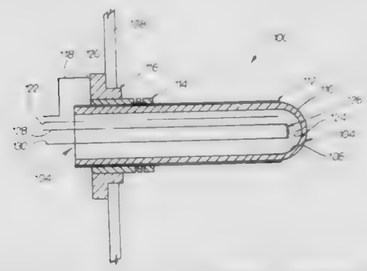
1. In a silicon micromachined sensor element for mass air flow sensing wherein a hot element is disposed on the frontside of a silicon diaphragm, the improvement which comprises means forming a cavity at the backside of the diaphragm directly behind the hot element, and a matrix disposed within said cavity to strengthen said diaphragm, said matrix comprising cured epoxy resin containing glass microspheres distributed throughout and bonding with the backside of the diaphragm directly behind the hot element and with a sidewall of the cavity.

5,056,363

INTEGRAL TEMPERATURE AND LIQUID LEVEL SENSOR AND CONTROL

Anil K. Arekapudi; Donnld G. Bryan, Jr., and Thomas Holden, all of St. Louis, Mo., assignors to Industrial Engineering and Equipment Company, Inc., St. Louis, Mo.

Filed Mar. 8, 1990, Ser. No. 490,472
Int. Cl.[5] G01F *23/24*
U.S. Cl. 73—292 11 Claims



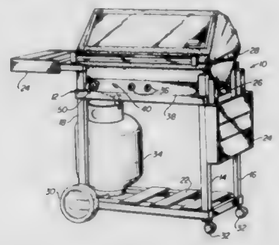
1. A sensor for use in a vessel containing a conductive liquid, the sensor comprising:
a sensor housing, the housing including an open end and a closed end, the housing being electrically insulated except for an electrically conductive portion of the closed end, and the electrically conductive closed end suitable for insertion into the liquid vessel, the sensor including the electrically insulated portion remaining heat conductive;
attachment means for attaching an electrical insulator around the housing;
electrically conductive means intermediate the housing and the attachment means for maintaining current flow with the housing immersed in an electrically conductive liquid; and
temperature sensing means inserted into the housing open end with sensor output leads extending outwardly from the housing through the open end.

5,056,364

FUEL GAUGE ASSEMBLY FOR LP GAS TANKS

Andrew W. Kahler, and Wesley J. Wagner, both of Columbus, Ga., assignors to W.C. Bradley Company, Columbus, Ga.

Filed Aug. 10, 1990, Ser. No. 565,518
Int. Cl.[5] G01F *23/20*
U.S. Cl. 73—296 18 Claims



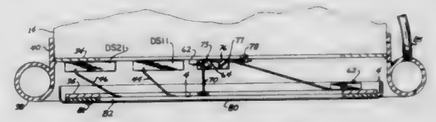
1. A fuel gauge for measuring an attitude of fuel tanks mounted on a cart in which the cart includes a front control panel and the fuel gauge includes means for indicating the fuel level on said control panel, and in which the tank is mounted on the cart in an off-center position thus causing the tank to lean to one side or the other, said gauge comprising a mounting bracket means secured to the cart and having an arm member projecting generally horizontally therefrom, a tank holding bracket means secured to the LP gas tank and having a slot means formed therein for receiving said arm member, and an indicator rod means having a first end adapted to be disposed around said arm member and a second end extending radially therefrom and adapted to engage said means for indicating the fuel level on said control panel to thereby indicate an attitude of the fuel tank.

5,056,365

COLLISION SENSOR

Floyd L. Gray, Muskego; Duane A. Filtz, Brookfield; Jonathan C. Boomgarden, Waukesha, and Timothy F. Hamers, Windlake, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed May 31, 1990, Ser. No. 531,222
Int. Cl.[5] H05G *1/02*
U.S. Cl. 73—432.1 21 Claims



1. A collision sensor, comprising:
a base plate defining a base plane and a longitudinal axis perpendicular to said plane;
a support plate spaced apart from said base plate along said longitudinal axis and defining a support plane;
means for biasing said support plate away from said base plate along said longitudinal axis;
collapsible, non-distensible extension limiting means extending between the base plate and the support plate in a direction generally parallel to said longitudinal axis for positioning said support plane parallel to said base plane when said means are fully extended; and
means positioned between said base and support plates for sensing the proximity of said support plate to said base plate.

5,056,366

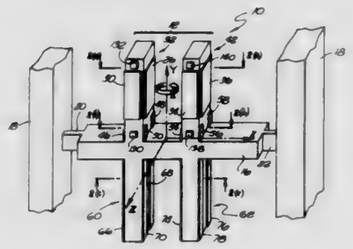
PIEZOELECTRIC VIBRATORY RATE SENSOR

Samuel N. Fersht, Studio City, and Stanley F. Wyse, Encino, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 26, 1989, Ser. No. 456,532
Int. Cl.[5] G01P *9/04*
U.S. Cl. 73—505 22 Claims

1. In a rotation rate sensor of the type that includes a generally planar and H-shaped sensor frame of piezoelectric material, said frame including an upper pair of tines and a lower pair of tines, said tines being joined to an intermediate cross-piece and further including a first array of drive electrodes fixed to said upper tines for transmitting electrical signals for driving said upper tines in-plane and a second array of pickoff electrodes fixed to said lower tines for transmitting electrical signals generated in said lower tines in response to Coriolis-induced out-of-plane bending thereof, the improvement comprising:
a) a third array of control electrodes for transmitting electri-

cal signals for counteracting Coriolis-induced out-of-plane bending of said upper tines; and



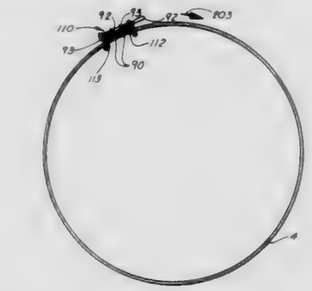
b) said control electrodes are fixed to said upper tines adjacent said cross-piece.

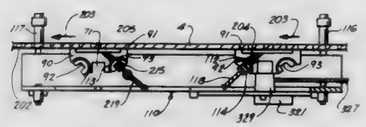
5,056,367

ULTRASONIC LINEAR MEASUREMENT SYSTEM

Scot H. Marshall, Slidell, La., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 29, 1989, Ser. No. 329,939
Int. Cl.[5] G01H *5/00*
U.S. Cl. 73—597 **14 Claims**





1. A method of measuring a subject surface length of a three-dimensional curvilinear body, the method comprising the steps of:

(i) initially placing the transmitter a first distance from the receiver;

(ii) generating a first surface wave on the surface of the body using the ultrasonic transmitter;

(iii) detecting receipt of the first surface wave with the ultrasonic receiver;

(iv) measuring the time period between generation of the first wave by the transmitter and detection of the first wave by the receiver;

(v) moving the transmitter relative to the receiver a measured distance such that the transmitter is a second distance from the receiver;

(vi) generating a second surface wave on the surface of the body using the ultrasonic transmitter;

(vii) detecting receipt of the second surface wave with the ultrasonic receiver;

(viii) measuring the time period between generation of the second wave by the transmitter and detection of the second wave by the receiver;

(ix) determining the surface wave velocity by dividing the measured distance by the difference between the time period measured in step (viii) and the time period measured in step (iv); and

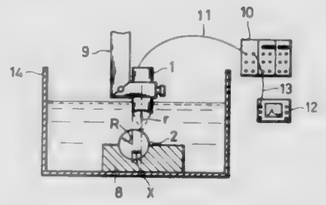
(x) determining the subject surface length by multiplying the time period measured in step (iv) by the velocity determined in step (ix).

5,056,368

ULTRASONIC TESTING METHOD

Keiji Kawasaki, Nagoya, and Koji Fushimi, Gifu, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 24, 1990, Ser. No. 572,272
Claims priority, application Japan, Aug. 30, 1989, 1-223940
Int. Cl.[5] G01N *9/24*
U.S. Cl. 73—642 **6 Claims**



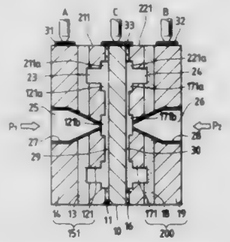
1. An ultrasonic flaws detecting method for a material having a curved portion which comprises detecting and testing flaws of the material by using an ultrasonic probe with a tip portion having a curved surface of the same kind as the curved portion of a material and a curvature radius of from 1.0 to 3.0 times a radius of the curved portion of the material, eccentricaly setting the center axis of curvature of the curved portion and the center axis of curvature of the probe to make a refraction angle of an ultrasonic wave 90°.

5,056,369

CAPACITIVE DIFFERENTIAL PRESSURE DETECTOR

Mitsuru Tamai; Tadanori Yuhara; Kimihiro Nakamura; Kazuaki Kitamura; Toshiyuki Takano; Teizo Takahama; Mikihiko Matsuda, and Shinichi Souma, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 12, 1990, Ser. No. 507,843
Claims priority, application Japan, Apr. 14, 1989, 1-94804; Apr. 14, 1989, 1-94805; Aug. 8, 1989, 1-205265; Aug. 8, 1989, 1-205266; Aug. 8, 1989, 1-205267
Int. Cl.[5] G01L *7/08, 9/12*
U.S. Cl. 73—718 **17 Claims**



1. A capacitive differential pressure detector comprising:

a diaphragm having opposite radially extending surfaces; and

a pair of fixed electrodes, each including:

at least one plate having a radially extending surface opposing a radially extending surface of the diaphragm, each of said at least one plate having a centrally disposed pressure guide hole communicating at the inner end edge with the diaphragm,

an annular support, disposed between and bonding the opposing radially extending surfaces of the plate and the diaphragm adjacent an outer peripheral portion of the at least one plate,

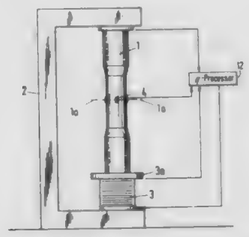
one of said opposing radially extending surfaces of said at least one plate having a first annular recessed portion formed therein defining an annulus radially spaced from and surrounding a central portion of said one radially extending surface, said annulus having a first depth and spaced inner and outer edges defining a first width, a second annular recessed portion between said inner and outer edges having a second width less than the first width and a second depth extending from said first depth.

5,056,370

METHOD AND APPARATUS FOR TESTING A TEST PIECE

Wolfgang Maier, Berliner Strasse 111, 3300 Braunschweig, Fed. Rep. of Germany

Filed Jul. 19, 1990, Ser. No. 554,346
Int. Cl.[5] G01N *3/00*
U.S. Cl. 73—794 **22 Claims**



1. A method of testing a test piece having opposite ends, comprising the steps of:

(A) connecting one end of said test piece to a plate of a test apparatus;

(B) connecting the opposite end of said test piece to a first displaceable load head of said test apparatus, which load head is displaceable by actuating driving means;

(C) displacing said load head by actuating said driving means;

(D) determining the magnitude and direction of load forces and load moments applied to said first load head by said driving means, and measuring the actual magnitude and direction of displacement of said first load head in relation to a fixed plate, in order to set or vary boundary conditions of said test piece from the displacement of said first load head;

(E) comparing actual values of said boundary conditions with freely programmable predetermined desired values of said boundary conditions to determine a test piece end value in the form of at least one at a displacement variable and a force variable to be used as a control variable for said driving means;

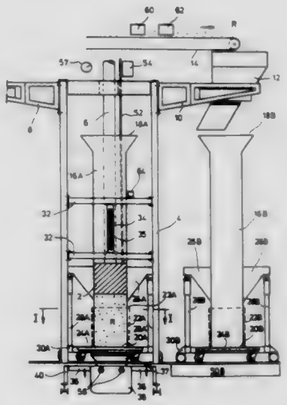
(F) determining additional control variables for said driving means and substituting said additional control variables for at least one of said boundary conditions, wherein the functional dependencies of said additional control variables on said load head displacements all are known before said determining step or are identified during said determining step.

5,056,371

METHOD AND APPARATUS FOR DETERMINING THE FILLING CAPACITY OF TOBACCO

Wolfgang Graudejus, Haselau, and Martin Rattemeyer, Hamburg, both of Fed. Rep. of Germany, assignors to H. F. & Ph. F. Reemtsma GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Aug. 24, 1990, Ser. No. 571,975
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929154
Int. Cl.[5] G01N *11/00*
U.S. Cl. 73—823 **16 Claims**



1. A method for determining the filling capacity of tobacco wherein a predetermined quantity of tobacco is filled into a volume of known cross-section defined by a column, closed on one side by a movable plunger forming part of a tobacco press and on its other side by a support surface, comprising the steps of:

disposing the tobacco into the column onto the support surface;

compressing the tobacco in the volume by relatively moving the plunger and support surface toward one another;

determining the length of the tobacco column during relative movement of the plunger and support surface as a function of time by measuring the distance covered by the relative movement of the plunger and the support surface and providing an output signal responsive thereto;

determining the force acting on the tobacco as a function of time when the tobacco is compressed in the column and providing an output signal responsive thereto;

independently measuring at least one of temperature and moisture content of the tobacco and providing an output signal in response thereto; and

processing said signals by a computer to determine the filling capacity of the tobacco.

5,056,372

COPPER COLLET GRIP MECHANISM

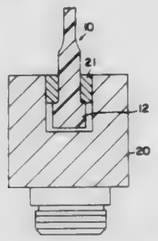
Joseph S. Estano, Rockland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 28, 1990, Ser. No. 619,163
Int. Cl.[5] G01N *3/04*
U.S. Cl. 73—859 **7 Claims**

1. A collet comprising:

a plurality of members forming an annular opening wherein each member has an upper surface, a transitional surface and an annular surface, the upper surface joining the transitional surface, the transitional surface being circular

over a 90° spectrum and the transitional surface joining the annular surface,



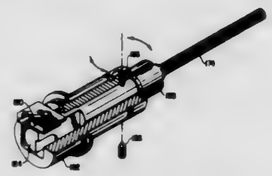
the annular opening being formed by the transitional surface and annular surface of each member.

5,056,373

FLOW RESPONSIVE TRANSMITTER AND INDICATOR

Tommy L. Gray, Dallas, Tex., assignor to Span Instruments, Inc., Plano, Tex.

Division of Ser. No. 5,830, Jan. 21, 1987, Pat. No. 4,898,036.
This application Nov. 1, 1989, Ser. No. 430,133
Int. Cl.[5] G01F *1/28*
U.S. Cl. 73—861.71 **3 Claims**



1. A flow responsive transmitter, comprising:
a housing having an internal cavity;
first means mounted in the cavity of said housing and extending therefrom into a flow stream, said first means including a vane at one end and a spring as an integral unit with said vane extending into the flow stream to flex in response to the flow stream and position said vane linearly with reference to the flow stream and effect a dampening of turbulent flow motion;
flexible sealing means connected to said first means and said housing to seal the cavity from the flow stream; and
a transducer mounted in said housing and responsive to the movement of said vane to generate a signal varying with measured flow, the movement of said vane with reference to said transducer provides a measured flow signal varying linearly with the rate of flow.

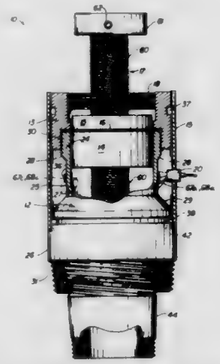
5,056,374

QUICKLY INSTALLED LOAD MEASURING APPARATUS AND ASSOCIATED SYSTEM

John A. McMennamy; Bruce T. Boone, both of Acworth, and James H. Jenkins, Gwinnett County, all of Ga., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 168,161, Mar. 15, 1988, Pat. No. 4,912,984.
This application Jan. 8, 1990, Ser. No. 461,669
Int. Cl.[5] G01L *1/22, 1/26, 3/02*
U.S. Cl. 73—862.65 **11 Claims**

1. A load measuring apparatus for measuring the load delivered by a shaft which shaft moves relative to a shaft housing, said apparatus comprising:
a body member for attachment to the shaft housing, said body member defining an elongated, generally cylindrical member, said body member including, at least, a test region deformable by forces acting on said body member, an inner, cylindrical wall defining a cylindrical passage extending axially through said body member, and a housing mount portion whereby said body member is attachable to the shaft housing;
combination force transfer and release means for transferring force on the shaft to force acting on said body member and for negating the function of transferring force when the force on the shaft has exceeded a threshold value, whereby, once the threshold value is exceeded, force on the shaft is no longer transferred to force acting on the body member; and



strain means for detecting deformation at said test region and for converting detected deformation to a signal representative of the force acting on said body member; and
wherein said body member further comprises an interface portion whereby said body member interfaces with said combination means; and
wherein said test region defines a cylindrical region of said body member between said housing mount portion and said interface portion.

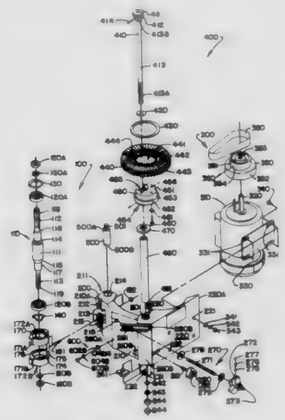
5,056,375

SPINDLE ADJUSTMENT MECHANISM

Kenneth Kapton, Verona; Stephen O. Sutton, Wexford, and Barry D. Wixey, Pittsburgh, all of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.

Filed May 22, 1990, Ser. No. 525,265
Int. Cl.[5] F16H *29/20;* **B25H** *1/00*
U.S. Cl. 74—89.15 **5 Claims**

1. A spindle adjustment mechanism, comprising: a rotatable handwheel; a bracket for rotatably retaining a spindle and operably retaining a motor for rotatably driving the spindle; and a means for uniaxially transmuting rotation of the handwheel to linear movement of the bracket which includes a spur gear in communication with the handwheel such that rotation of the handwheel effects rotation of the spur gear, and a shaft having a first end coupled to the spur gear and a second end threadably engaged to the bracket whereby rotation of the



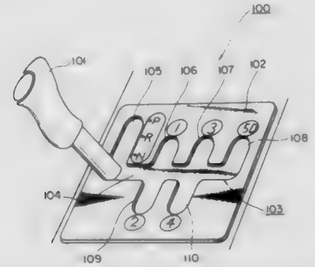
spur gear effects rotation of the shaft which causes linear movement of the bracket along the shaft.

5,056,376

MANUAL SPEED SELECTOR OF AUTOMATIC VEHICLE TRANSMISSION

Shuzo Moroto; Shiro Sakakibara; Hidehiro Kondo; Takesi Inuzuka, and Masahiro Hasebe, all of Aichi, Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Nov. 7, 1990, Ser. No. 612,062
Claims priority, application Japan, Nov. 9, 1989, 1-291739
Int. Cl.[5] F16H *59/04*
U.S. Cl. 74—335 **16 Claims**



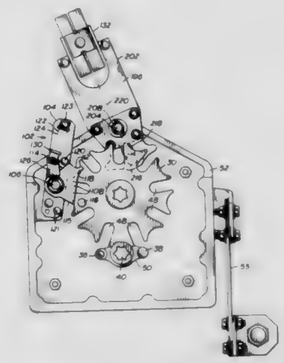
1. A manual speed selector for an automatic transmission for a vehicle having a plurality of frictional engagement elements and a torque converter with a lock-up clutch, said manual speed selector comprising:
(a) shift lever means, including a shift lever, for selecting one of a plurality of shift stages in:
(i) an automatic shift mode position;
(ii) a manual shift mode position; and
(iii) a transitive position connecting said automatic shift mode position to said manual shift mode position;
(b) a hydraulic control system including:
(i) a manual valve linked to said shift lever, at least in said automatic shift mode position, for movement responsive of movement of said shift lever;
(ii) a plurality of shifting solenoid valves turned on or off responsive to the selection of a shift stage;
(iii) a plurality of shift valves, operated by said solenoid valves, for selectively transmitting hydraulic pressure to at least one frictional engagement element to establish a shift stage; and
(iv) a source of hydraulic pressure in hydraulic communication with the frictional engagement devices through said shift valves;
(c) means for setting the manual valve to connect said hydraulic pressure source to at least one of the frictional engagement elements when said shift lever is placed in said transitive position; and
(d) an electronic controller including means for controlling operation of said solenoid valves in accordance with the position of said manual valve.

5,056,377

TAP SELECTOR ANTI-ARCING SYSTEM

Joseph W. Yatchum, McMurray, and Clarence K. Hess, Beallsville, both of Pa., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 9, 1989, Ser. No. 434,917
Int. Cl.[5] F16H *27/00;* **H01H** *19/54*
U.S. Cl. 74—436 **10 Claims**



1. A rotary tap selector for selecting taps on a transformer including first and second rotary tap selector gears in shafted engagement with selector tap arms having actuator slots therein for receiving a pin mounted to a rotary pin drive shaft adjacent the gears for inducing rotary actuation thereof, the improvement therein comprising:
a selector gear travel limiting means disposed adjacent said selector gears and said drive shaft to limit the rotary travel of the gears to less than 360° in response to actuation thereof by the pin.

5,056,378

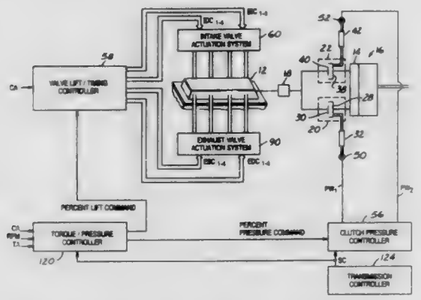
ENGINE VALVE CONTROL DURING TRANSMISSION SHIFTS

Michael G. Aimone, Westland; Julian A. LoRusso, Woodhaven, and William E. Tobler, Willis, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 28, 1989, Ser. No. 413,642
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—858 **7 Claims**

1. An apparatus for controlling a drivetrain during an automatic transmission shift, comprising:
a plurality of actuation means each coupled to a hydraulic fluid source and each coupled to an individual engine valve for electronically controlling valve lift, said actuation means comprising a hydraulically operated piston coupled to each of said engine valves, and an electronically actuated valve responsive to signal and coupled between said hydraulically operated piston and said source of hydraulic fluid;

transmission control means for providing a shift command correlated with the automatic transmission shift; and



control means responsive to said shift command for providing said signal to appropriately reduce valve lift during said automatic transmission shift.

5,056,379

REMOTE CONTROL OF ENGINE FUNCTIONS

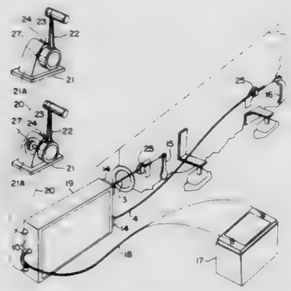
Willem H. den Ouden, Rotterdam, Netherlands, assignor to W. H. den Ouden N.V., Schiedam, Netherlands

Filed Nov. 29, 1989, Ser. No. 442,557

Claims priority, application Netherlands, Aug. 30, 1989, 8902185

Int. Cl.[5] G05G *7/02*

U.S. Cl. 74—858 **3 Claims**



3. A method for remotely controlling engine functions comprising the steps of:

a) generating a first electrical signal via a first control potentiometer which is coupled to a gear wheel which in turn engages a swiveling gear segment coupled to an output shaft of an adjusting motor and to a first push-pull cable connected to a fuel engine control lever,

b) generating a second electrical signal via a second control potentiometer coupled to an operating handle located remote from said first potentiometer;

c) comparing said first and second electrical signals to determine a difference between said first and second electrical signals;

d) actuating said adjusting motor when the difference between said first and second electrical signals exceeds a first predetermined threshold to rotate said output shaft and said gear wheel segment, thereby moving said first push-pull cable and adjusting a position of said fuel engine control lever;

e) generating a third electrical signal via a third control potentiometer which is coupled to a gear wheel which in turn engages a swiveling gear segment coupled to an output shaft of a second adjusting motor and to a second push-pull cable connected to a reverse clutch lever;

f) comparing said second and third electrical signals to determine a difference between said second and third electrical signals;

g) actuating said second electric motor when the difference between said second and third electrical signals exceeds a second predetermined threshold to rotate said second output shaft and said gear wheel segment, thereby moving said second push-pull cable and switching said reverse clutch into and out of engagement; and

wherein said second threshold value is lower than said first threshold value.

5,056,380

HYDRAULIC CONTROL SYSTEM FOR STEPLESSLY VARIABLE TRANSMISSION

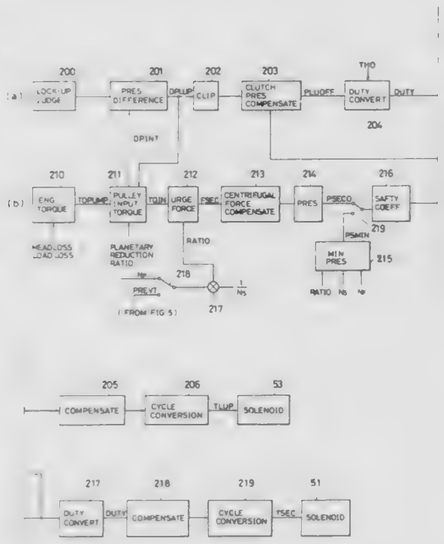
Tomoo Sawasaki, and Chitoshi Morishige, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 400,922, Aug. 30, 1989, abandoned. This application Feb. 22, 1991, Ser. No. 658,466

Claims priority, application Japan, Aug. 30, 1988, 63-213722; Jan. 19, 1989, 1-10431

Int. Cl.[5] B60K *41/12*

U.S. Cl. 74—866 **10 Claims**



8. A steplessly variable power transmission comprising:

a torque converter provided with a pump device, having an input member connected with an engine output member of an engine so as to receive an engine output torque, and a turbine device having an output member,

lock-up clutch means provided in the torque converter for directly connected said input member with the output member of the turbine device so as to transmit said engine output torque directly from the input member to the output member of the turbine device in a predetermined engine operating condition, and

a control unit for calculating a magnitude of a clutch torque transmitted through the lock-up clutch means and a magnitude of a converter torque transmitted through the turbine device, and for processing signals representing the clutch torque and converter torque so as to calculate a total torque transmitted through the torque converter.

5,056,381

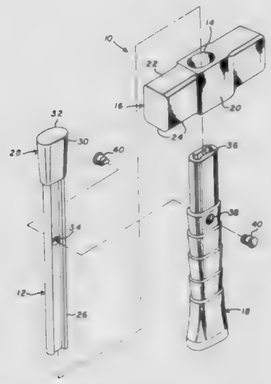
REPLACEMENT TOOL HANDLE, HAND TOOL AND METHOD

Joseph A. Carmein, 525 N. Maple Dr., Beverly Hills, Calif. 90210

Continuation-in-part of Ser. No. 486,440, Feb. 28, 1990, Pat. No. 5,031,272. This application Mar. 1, 1990, Ser. No. 487,420

Int. Cl.[5] B21K *5/00;* **B25D** *1/00*

U.S. Cl. 76—103 **27 Claims**



1. A replacement tool handle for a tool having a tool head including an eyehole, the tool handle comprising:

a high strength, load-bearing rod including a handle shaft capable of passing through the eyehole of the tool head, and means located at a first end of the shaft for preventing an adjacent end of the rod from passing through the eyehole;

a grip incapable of passing through the eyehole and positioned over a portion of the rod extending away from the tool head, the grip being slidably received onto a second end of the handle shaft for positioning a first end of the grip toward the tool head; and

means for locking the grip with respect to the rod, the locking means including co-linear apertures through the grip and the rod, and means inserted through the co-linear apertures for limiting movement of the grip relative to the rod, the means for limiting movement of the grip relative to the rod including two oppositely facing, interlocking members situated within the co-linear apertures.

5,056,382

MATRIX DIAMOND DRAG BIT WITH PCD CYLINDRICAL CUTTERS

Mark Clench, Spring, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Dec. 20, 1990, Ser. No. 630,682

Int. Cl.[5] B21K *5/02*

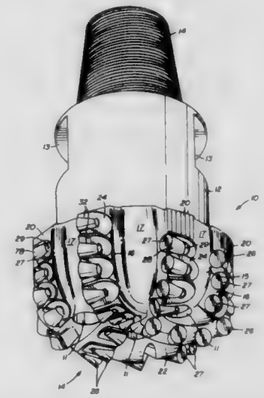
U.S. Cl. 76—108.2 **8 Claims**

1. A process of forming a matrix type diamond drag bit cutter head having a multiplicity of cylindrically shaped polycrystalline diamond inserts strategically positioned and metallurgically secured to a drag bit face comprising the steps of:

forming a female mold of heat resisting material,

milling a multiplicity of first cylindrically shaped insert channels in said mold, said channels being formed in a direction of rotation of said drag bit and at an angle to an earthen formation such that a negative rake angle is established with respect to a cutting face of said cylindrically shaped polycrystalline diamond insert,

milling a second non-parallel channel substantially axially aligned with and superimposed over said first channel but at a shallower angle and at a depth less than the depth of said first cylindrically shaped channel, said second channel provides a pocket surrounding said first channel thus providing a matrix filled support for said cylindrically shaped insert,



securing a heat resistant cylindrically shaped stud in each of said first cylindrically shaped insert channels,

inserting said matrix material in powder form in said female mold,

heating said matrix material in said mold in a furnace thereby forming said cutter head,

removing said heat resistant studs from said first cylindrically shaped insert channels; and

bonding metallurgically, said cylindrically shaped polycrystalline diamond inserts into each of said first insert channels, said inserts having additional support provided by the matrix filled second channel at a different angle and a lesser depth surrounding said insert.

5,056,383

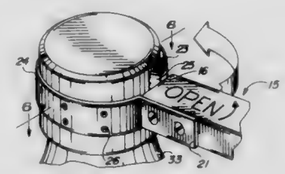
BOTTLE OPENER

Harold W. Halpin, 2902 N. 44th La., Phoenix, Ariz. 85031

Filed Mar. 18, 1991, Ser. No. 670,563

Int. Cl.[5] B67B *7/18*

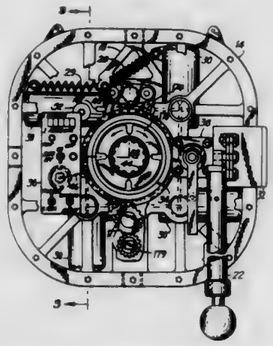
U.S. Cl. 81—3.43 **3 Claims**



1. A tool for attaching and removing twist caps from containers comprising a handle, cap gripping means attached to one end of said handle, said cap gripping means further comprising a generally circular shaped band formed of a relatively

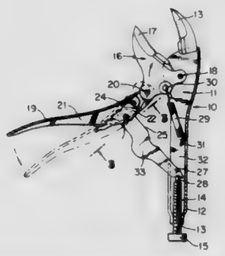
thin, spring-like material, one end of which is attached to said handle with the opposite end thereof being unattached, the surface of said band which is in contact with said cap being provided with gripping means, with the unattached end of said band being bent inwardly to provide additional gripping means.

5,056,384
TORQUE WRENCH
Anthony J. Sergan, Farmington, Conn., assignor to Barnes Group Inc., Bristol, Conn.
Filed May 22, 1990, Ser. No. 526,927
Int. Cl.[5] B25B *13/40*
U.S. Cl. 81—57.39 **28 Claims**



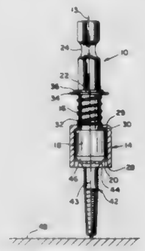
1. A torque wrench for applying torque to an article, comprising:
a frame defining a central aperture concentric with a central vertical axis;
drive means for converting linear force applied to said drive means to angular force and for engaging such article, said drive means being supported by the frame in said central aperture for rotation about the central vertical axis; and
means for applying two pairs of equal and diametrically opposed linear forces to said drive means, said linear forces being at least approximately equally spaced around said central aperture whereby said wrench provides at least a four-point stabilized torquing force.

5,056,385
COMPOUND TOGGLE LINK
Ralph Petersen, DeWitt, Nebr., assignor to Petersen Manufacturing Co., Inc., DeWitt, Nebr.
Filed Apr. 30, 1990, Ser. No. 516,153
Int. Cl.[5] B25B *7/12*
U.S. Cl. 81—370 **12 Claims**



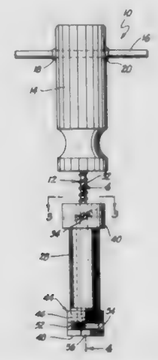
1. A plier-type, toggle-locking, hand tool comprising:
a fixed handle with adjusting means at one end and a fixed jaw member at the other end;
a movable jaw pivotably mounted at a first pivot point on the fixed handle, the movable jaw being adapted to cooperate with the fixed jaw to hold a workpiece;
a movable handle pivotably connected at a second pivot point to the movable jaw, said movable handle cooperating with the fixed handle in opening and closing the jaws;
a compound link having first and second ends, said compound link pivotably mounted at said first end and by means of a third pivot point to the movable handle, said third pivot point positioned away from said second pivot point;
a toggle member having third and fourth ends, said toggle member pivotably mounted to the compound link at said third end by means of a fourth pivot point and engaged with said adjusting means of the fixed handle at said fourth end,
said second end of the compound link extends substantially linearly beyond said fourth pivot point to define an engaging area,
said fixed handle with said fixed jaw, said movable jaw and movable handle are shiftable from locked to unlocked position and vice versa,
whereby in said locked position said third and fourth pivot points are in over-center position and prevented from moving closer to said fixed handle since at least a part of said toggle member presses against said engaging area of said second end of said compound link.

5,056,386
SCREWDRIVER BIT AND FINDER SYSTEM
Peter C. Chaconas, Glyndon, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 22, 1989, Ser. No. 440,539
Int. Cl.[5] B25B *23/08*
U.S. Cl. 81—451 **14 Claims**



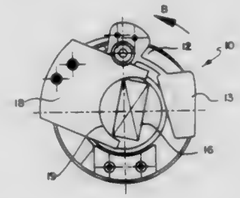
1. A screwdriver bit and finder system for driving a slotted-head fastener having an axis and a predetermined head diameter, comprising:
(a) a screwdriver bit including a shank having a first end and defining a bit axis;
(b) a finder having a predetermined length and a base slideably and rotatably coaxially mounted on said bit adjacent said first end;
(c) means operatively associated with said bit and finder for biasing said finder toward said first end to an extended position relative to said bit;
(d) alignment means for coaxially aligning said bit axis with said fastener axis and for maintaining said alignment thereafter while said bit drives said fastener;
(e) said alignment means including a driver portion having a predetermined length formed at said bit first end, and coaxial therewith, having an outer cylindrical surface of a uniform diameter along the entirety of said driver portion predetermined length, and having a blade formed thereon having a width equal to said driver portion uniform diameter, said blade width being sized to substantially match said fastener predetermined head diameter;
(f) said cylindrical driver portion being engageable with said finder base when said finder is biased in its extended position;
(g) said alignment means further including a first inside cylindrical guide surface defined by said finder and having a length substantially equal to said finder predetermined length and further having a predetermined uniform diameter sized to give a close fit with said fastener head upon insertion of said fastener head into said finder, said first cylindrical guide surface being coaxial with said bit driver portion and having an axial length greater than said predetermined length of said driver portion;
(h) said finder defining a second inside guide surface having a diameter less than the diameter of said first guide surface;
(i) said second inside guide surface rotatably and slideably engaging said bit shank; and
(j) whereby said cylindrical driver portion is guided along substantially the entire length of said finder.

5,056,387
SCREW-HOLDING SCREWDRIVER
Chester L. Cook, 410 Bluebird St., Slidell, La. 70458
Continuation-in-part of Ser. No. 392,458, Aug. 11, 1989, abandoned. This application Oct. 15, 1990, Ser. No. 597,366
Int. Cl.[5] B25B *23/08*
U.S. Cl. 81—456 **13 Claims**



1. A screw-holding screwdriver comprising:
a shank having an axis;
drive means mounted on said shank for rotating said shank about its axis, screw threads on said shank adjacent said drive means;
a bit on the end of said shank opposite said drive means, said bit being configured to engage the head of a screw for rotating the screw;
a tubular sleeve mounted on said shank, three balls in said sleeve for engaging said screw threads for engaging said screw threads on said shank for providing axial movement of said sleeve with respect to said shank when said sleeve is rotated on said shank, said three balls being spaced around said sleeve, said sleeve having an upper end adjacent said drive means and a chuck end adjacent said bit, said sleeve having screw threads on the chuck end thereof;
a chuck detachably screwed onto said threads on said chuck end of said sleeve, said chuck having a front wall away from said drive means and a screw slot in said front wall, said slot having a width greater than the shank width of a screw to be driven by said screwdriver and narrower than the head of a screw to be driven by said screwdriver, a transverse slot in said chuck, said transverse slot intersecting said screw slot and being sufficiently large to receive the head of the screw to be driven by said screwdriver, both said slots extending to said axis, said transverse slot forming a screw-engaging surface facing said bit so that a screw may be inserted into said chuck and said drive means and said sleeve relatively rotated to axially move said sleeve on said shank so that said bit engages the screw in said chuck so that rotation of said drive means and said sleeve causes rotation of the screw.

5,056,388
BLIND CUTTING MACHINE
Thomas J. Dekker, Arana Hills, and Joseph Chua, Park Ridge, both of Australia, assignors to Hunter Douglas International N.V., Curacao, Netherlands Antilles
Filed Apr. 6, 1990, Ser. No. 505,819
Claims priority, application Australia, Jan. 22, 1990, 48701/90
Int. Cl.[5] B23B *5/14, 27/04, 27/08;* **B26B** *9/02*
U.S. Cl. 82—59 **21 Claims**



9. A cutting machine for cutting elongated objects having parts of their cross-section formed of different materials, comprising:
a rotatable cutting member having a body with at least one cutting edge wherein said at least one cutting edge defines at lest one cavity in said body for receiving and at least partially surrounding the object to be cut and includes a first cutting surface and a second cutting surface parallel and adjacent to at least part of said first cutting surface, such that the object to be cut is first engaged by said first cutting surface followed by said second cutting surface;
a weight connected to said cutting member to define an arm-weight assembly;
a driven member defining a central opening, said cutting member and arm-weight assembly being pivotally mounted on said driven member to drive said cutting member in a circular path around said central opening; and
means for rotating the driven member around said central opening, whereby said at least one cutting edge of said cutting member is biased inwardly across said central opening by said weight and centrifugal force resulting from rotation of the driven member.

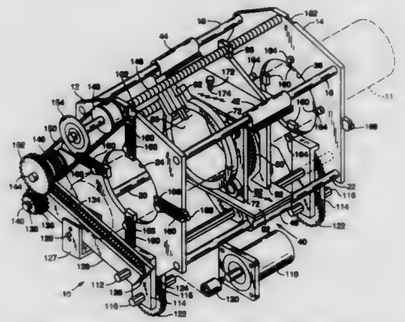
5,056,389
PORTABLE OPEN TURNING LATHE
Park L. Johnstead, 17100 SW. Bryant Rd., Lake Grove, Oreg. 97035
Filed Aug. 30, 1990, Ser. No. 576,618
Int. Cl.[5] B23B *5/04*
U.S. Cl. 82—128 **12 Claims**

3. A portable lathe mountable on a member for performing machining operations on the member, comprising:
a pair of configured end housings spaced at a distance from each other, each end housing having a bore therethrough for receiving the member to be machined and having a side entrance to the bore;
multiple parallel guide ways, each of the guide ways of a length to span the distance between the housings, one end of each guide way affixed to one end housing and an

opposite end of each guide way affixed to the other end housing;

locking means for locking the end housings to the member in a manner to establish a desired alignment with the guide ways;

guide means mounted on said guide ways for guiding a machining tool on a travel path, said guide means having



a bore therethrough for receiving the member to be machined and said guide means having a removable segment providing a side opening to the bore and said segment being replaceable so as to encircle the member received,

said lathe mountable on the member from a side of the member with the member entering the bores of the end housings and the guide means through the side openings of said bores.

5,056,390

WORKPIECE HOLDING DEVICES

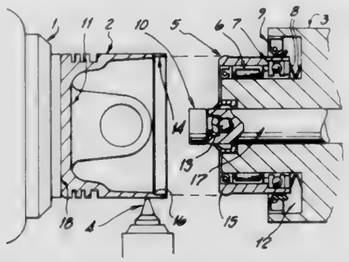
Roger H. Slee, Warwick, England, assignor to T&N Technology Limited, England

Filed Apr. 23, 1990, Ser. No. 512,420

Claims priority, application United Kingdom, Apr. 28, 1989, 8902525

Int. Cl.[5] B23B *33/00*

U.S. Cl. 82—165 **9 Claims**



1. A device for holding and supporting a piston having a crown and a skirt during machining comprises a headstock against which the crown of the piston is to be located and a tailstock comprising a skirt locating ring having a conical locating surface adapted to engage a conical register inside the piston skirt and a ram adapted to push against the crown of a piston from the interior of the piston and force the crown against the headstock, the longitudinal axis of the ram substantially corresponding to the axis of the conical locating surface.

5,056,391

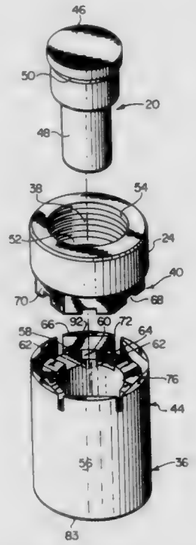
STRIPPER FOR USE IN PRESSES AND IRONWORKERS

Robert C. Stewart, 1420-34 S. Rockwell St., Chicago, Ill. 60608

Continuation of Ser. No. 477,310, Feb. 8, 1990, abandoned. This application Jan. 4, 1991, Ser. No. 638,339

Int. Cl.[5] B26D *7/08*

U.S. Cl. 83—139 **6 Claims**



4. A stripper assembly comprising: a stripper device and coupler means for coupling a punch to a punch press apparatus, said stripper device being removably attachable on said coupler means positioned between said punch press apparatus and a workpiece for retaining said workpiece relative to said punch press apparatus when said punch is advanced into and withdrawn from said workpiece; said stripper device comprising an axially elongate single piece body integrally formed of a generally uniform elastically deformable resiliently compressible material, said body having a top end abutting said coupler means and a bottom end for engaging a workpiece axially spaced from said top end, attachment means integrally formed upon said body on said top end thereof for releasable interengageable attachment to said coupler means, a bore formed through said body for freely receiving said punch therethrough, said body being in its uncompressed state at least slightly longer than said punch retained by said coupler means and projecting through said bore; said attachment means further comprising complementary interengageable key and key way means including at least one upwardly protruding key formed on said top end of said body and at least one key way formed in and cooperatively positioned on an abutting surface of said coupler means for receiving said key, said key being removably retainably insertable into said key way when said stripper device is brought into contact with said coupler means for attaching said stripper device to said coupler means; said coupler means being formed with a polygonal exterior surface and said attachment means include integrally formed peripheral flanges on said single piece of generally uniform material projecting upwardly from said top end, said peripheral flanges being resiliently engageable over said polygonal surface of said coupler means for retaining said stripper device on said coupler.

5,056,392

PUNCH ASSEMBLY

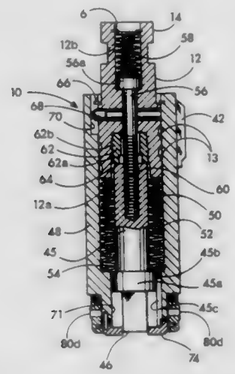
Gary E. Johnson; John T. Schneider, both of Ramsey, and Nils E. Sundquist, Plymouth, all of Minn., assignors to Mate Punch & Die Co., Anoka, Minn.

Continuation of Ser. No. 233,735, Aug. 19, 1988, Pat. No. 4,989,484. This application Sep. 18, 1990, Ser. No. 585,008

The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.

Int. Cl.[5] B26D *7/08;* **B26F** *1/14*

U.S. Cl. 83—140 **7 Claims**



6. A punching assembly for a punch press or the like having an opening for the punch assembly and a ram, said punch assembly comprising,

(a) a sleeve having upper and lower ends and being adapted to be mounted for sliding movement in the opening of the press,

(b) a punch slidably mounted in the sleeve for movement along a punch axis therewithin,

(c) a stripper plate mounted at the lower end of the sleeve, said stripper plate having an opening corresponding in shape to the shape of the punch and being sized to provide a sliding fit for an operating end of the punch,

(d) spring means for yieldably biasing the punch toward a retracted position in the sleeve,

(d) a tang spaced apart from the upper end of the punch for engagement with said ram, the upper end of the sleeve extending upwardly to overlap and partially enclose the tang,

(f) a releasably fastener connected between the tang and the ram for securing the tang and the ram ridigly to one another,

(g) spacer means located between the tang and the punch to establish said space therebetween,

(h) means for reducing wear and distributing loading more evenly throughout the punch assembly between the punch and the sleeve and between the punch and the the stripper plate whereby rework and replacement of parts is reduced,

(i) the means for reducing wear comprises a three-way guide means for the punch comprising:

(1) linear bearing means between the tang and the sleeve allowing the tang to slide within the sleeve,

(2) a surface on the punch slidably engaging the sleeve, and

(3) a sliding fit between the operating end of the punch and the stripper plate whereby said stripper plate prevents lateral deflection of an operating end of the punch to thereby reduce wear and lengthen the life of the punch.

5,056,393

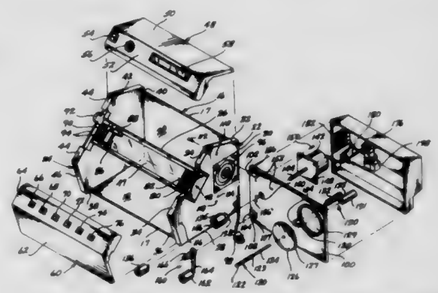
REVERSIBLE FILM CUTTER ASSEMBLY

Allen E. Fleckenstein, Bellevue, Wash., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 20, 1990, Ser. No. 496,275

Int. Cl.[5] B65H *21/00*

U.S. Cl. 83—365 **8 Claims**



1. A film cutter assembly reversible between a right-to-left and a left-to-right film feed configuration, the film cutter assembly comprising:

a housing including multi-edged first and second end panels with each of said end panels having adjacent first and second resting edges and a film track edge not adjacent said resting edges, a base having contiguous first and second base plates sharing a longitudinal edge and orthogonally coupled at each end to said end panels at a location adjacent said resting edges, and a film track coupled at its ends to said end panels at a location adjacent said film track edges;

first and second control panels coupled at each end to said end panels of said housing at locations between said film track and said base plates on opposite sides of said film track, each of said control panels being selectively mountable to said housing adjacent either side of said film track, so that said first control panel is located above said film track and said second control panel is located below said film track regardless of which of said resting edges said housing rests on; and

a reel assembly selectively mountable to said first end panel of said housing, so that said reel assembly is vertically oriented regardless of which of said resting edges said housing rests on.

5,056,394

BLADE HOLDING DEVICE OF A BLADE SLIDE FOR A SCRAP CUTTER

Helmut Manschwetus, Fuldabruck, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Essen, Fed. Rep. of Germany

Filed Dec. 7, 1990, Ser. No. 624,347

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1989, 3940717

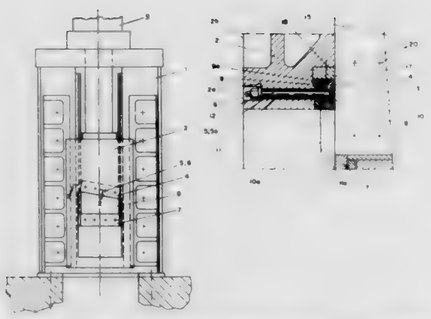
Int. Cl.[5] B26D *1/08*

U.S. Cl. 83—694 **7 Claims**

1. In a blade holding device of a blade slide for a scrap cutter in which a slanted blade is fastened in a cutout of a blade slide with blade securing screws and blade securing nut means, and is secured against sliding in a vertical blade contact surface of said blade slide in a form-locking manner with sleeves that are concentrically arranged about a shaft of said blade securing screws, the improvement wherein:

a first end of said sleeve extends into a recess of a rearward abutting surface of said blade and a second end of said sleeve extends into throughbores of said blade slide, which throughbores extend from said blade contact surface of said blade slide to a second recess at a backside of said blade slide which second recess has a contact surface on which said blade securing nut means rests, and with said

sleeve, during demounting of said blade, after removal of said nut means and said screws in a longitudinal direction of a feed channel, being slid toward said backside of said blade slide until said first end of said sleeve is outside said recess of said rearward abutting surface of said blade so that form-locking between said blade and said blade slide is canceled.

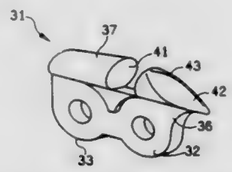


5,056,395

CUTTER LINK FOR A MOTORIZED SAW CHAIN

Miles Sovak, Rancho Santa Fe, and Robert A. Rauch, Poway, both of Calif., assignors to Sovac Corporation, Las Vegas, Nev.

Filed Jan. 24, 1990, Ser. No. 469,150
Int. Cl.[5] B27B *33/14*
U.S. Cl. 83—830 **11 Claims**



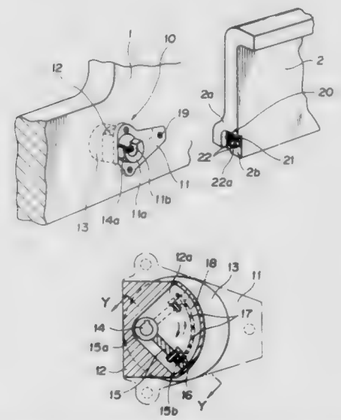
1. A cutter link for a saw chain, comprising:
a base member having a top section, and having a bottom section having holes therethrough for connecting links together by means of pintles, said base member having a forwardly facing end and a rearwardly facing end;
a raker formed within said top section at said forwardly facing end of said base member within said top section and having a rearwardly facing end which is generally circular in cross section; and
a body formed within said top section rearwardly of said raker and spaced therefrom, said body including a forward end having a cutting edge facing said rearwardly facing end of said raker, said cutting edge being of the same shape as said rearward facing end of said raker and having a diameter greater than the diameter of said rearward facing end of said raker.

5,056,396

OPENING/CLOSING APPARATUS OF KEYBOARD COVER

Tatsuo Furukawa, Shizuoka, Japan, assignor to Kawai Gakki Seisakusho Co., Ltd., Hamamatsu, Japan

Filed Jun. 12, 1990, Ser. No. 536,795
Claims priority, application Japan, Jun. 13, 1989, 1-68155[U]
Int. Cl.[5] G10C *3/02*
U.S. Cl. 84—179 **4 Claims**



1. A musical instrument having a keyboard with side plates at opposite ends of the keyboard and a keyboard cover pivotally attached to the side plates through respective pivot connections wherein at least one of said pivot connections includes a liquid damper having a liquid filled damper chamber, a damper shaft having a first portion extending into the chamber and a second portion extending outwardly from the chamber to provide a pivot shaft of said pivot connection, a damper vane carried by said shaft in the damper chamber for movement through the liquid when the cover is opened and closed, and an array of apertures in one wall of the chamber, the apertures being inter-connected by a flow passage outside of the chamber for passing liquid between opposite sides of the vane as the vane moves through the liquid during opening and closing movements of the cover.

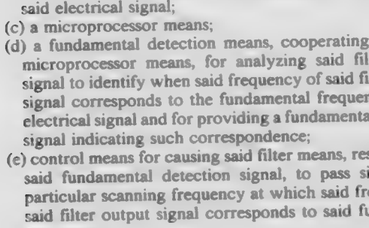
5,056,397

FIXED FINGERING DEVICE FOR FRETTED STRINGED MUSICAL INSTRUMENT

Eric S. Leifheit, 7451 E. 34th St., Tucson, Ariz. 85710

Filed Dec. 4, 1989, Ser. No. 445,007
Int. Cl.[5] G10D *3/00, 3/04*
U.S. Cl. 84—318 **18 Claims**

1. On a fretted stringed musical instrument having a vibrational length of string stretched between two points overlying a plurality of frets on an instrument fretboard surface, a fixed fingering device to mechanically finger the string to selectively vary the string vibrational length and pitch comprising:
a device to secure the string at a selected position on the fretboard to selectively vary the vibrational length of the string, said device including means to substantially encircle a selected fret to secure said device to the fret, and



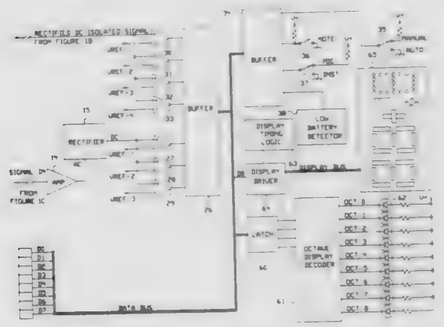
means operably holding the string whereby said device secures the string to the selected fret.

5,056,398

DIGITAL AUDIO SIGNAL PROCESSOR EMPLOYING MULTIPLE FILTER FUNDAMENTAL ACQUISTION CIRCUITRY

Tod M. Adamson, 412 Jefferson St., Alexandria, Va. 22314

Continuation-in-part of Ser. No. 246,811, Sep. 20, 1988. This application Aug. 7, 1990, Ser. No. 563,615
Int. Cl.[5] G10G *7/02*
U.S. Cl. 84—454 **9 Claims**



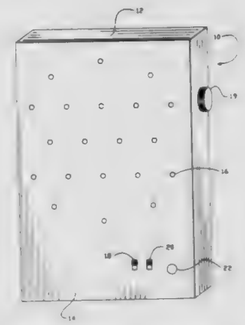
1. An apparatus for identifying the octave, note and degree of sharpness or flatness of a musical sound, comprising:
(a) a transducer means for converting said sound into an electrical signal;
(b) a filter means, responsive to said electrical signal provided by said transducer means, for passing a filter output signal having a frequency corresponding to a frequency of said electrical signal;
(c) a microprocessor means;
(d) a fundamental detection means, cooperating with said microprocessor means, for analyzing said filter output signal to identify when said frequency of said filter output signal corresponds to the fundamental frequency of said electrical signal and for providing a fundamental detection signal indicating such correspondence;
(e) control means for causing said filter means, responsive to said fundamental detection signal, to pass signals at a particular scanning frequency at which said frequency of said filter output signal corresponds to said fundamental frequency;
(f) a square wave generator means, responsive to said frequency of said filter output signal corresponding to said fundamental frequency, for providing a square wave output signal having a same period as said filter output signal;
(g) a logic circuit means, responsive to said square wave output signal, for providing an output indicating a period of said square wave output signal;
(h) said microprocessor means comprising means for comparing said output from said logic means with a look-up table including a plurality of previously calculated periods to provide an output indicating the octave, note and degree of sharpness or flatness or said musical sound; and
(i) a display means, responsive to said output of said microprocessor means, for displaying said octave, note and degree of sharpness or flatness of said musical sound, said note being displayed as an alphanumeric character and said degree of sharpness or flatness being displayed as a positive or negative number on a scale including a zero value representing perfect concert pitch and a plurality of positive or negative values on each side of zero.

5,056,399

AUDIO REACTIVE LIGHT DISPLAY

Richard Hornstein, Mill Valley, Calif., assignor to Mark Watts, Mill Valley, Calif.

Filed Nov. 21, 1990, Ser. No. 617,022
Int. Cl.[5] A63J *17/00*
U.S. Cl. 84—464 R **12 Claims**



2. An audio display module, comprising:
a plurality of light sources;
an audio responsive circuit connected in circuit with said light sources, said audio responsive circuit including:
(a) means for providing an electrical signal representative of an audio signal,
(b) at least first and second counter means for driving said light sources in response to said electrical signal, each counter means having first and second inputs responsive to a positive and a negative edge, respectively, of said electrical signal to initiate the operation of said counter means; and
(c) means for biasing said inputs to vary which of said first and second counter means responds to said positive and negative edge of said electrical signal.

5,056,400

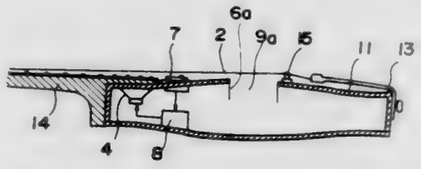
MUSICAL INSTRUMENT WITH ELECTRO-ACOUSTIC TRANSDUCER FOR GENERATING MUSICAL TONE

Masatada Wachi, and Yasuhiko Asahi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 13, 1989, Ser. No. 379,437
Claims priority, application Japan, Jul. 20, 1988, 63-179063; Jul. 20, 1988, 63-179064; Jul. 20, 1988, 63-179065; Jul. 30, 1988, 63-189594; Jul. 30, 1988, 63-189595
Int. Cl.[5] G10H *1/00*
U.S. Cl. 84—600 **5 Claims**

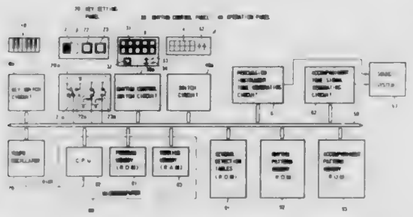
1. A musical instrument which houses a tone generation controlling apparatus for generating an electrical signal having a musical tone waveform according to a performance operation and an acoustic apparatus for converting the electrical signal into an acoustic wave and producing a sound,
wherein said acoustic apparatus comprises:

a resonator comprising a cavity and acoustic mass means for causing said cavity to acoustically communicate with an external region;
a vibrator disposed in an outer wall of a housing which



forms said cavity and has a vibrating body for driving said resonator with one surface thereof; and
vibrator driving means for driving said vibrator to cancel a counteraction from said resonator to said vibrating body when said resonator is driven.

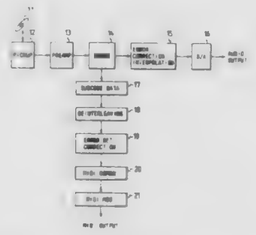
5,056,401
ELECTRONIC MUSICAL INSTRUMENT HAVING AN AUTOMATIC TONALITY DESIGNATING FUNCTION
Yorihisa Yamaguchi, Hamamatsu, and Hasegawa Tsutomu, Tokyo, both of Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Jul. 20, 1989, Ser. No. 383,312
Claims priority, application Japan, Jul. 20, 1988, 63-180840; Jul. 20, 1988, 63-180841; Jul. 20, 1988, 63-180842; Jul. 20, 1988, 63-180843; Jul. 20, 1988, 63-180844; Jul. 20, 1988, 63-180845
Int. Cl.[5] G10H *1/38, 1/40*
U.S. Cl. 84—635 **35 Claims**



21. In an electronic musical instrument which detects a chord based on a combination of plural note name information each indicative of each of plural note names within a scale, said electronic musical instrument comprising:
(a) chord extracting means for extracting plural chords each having a root which corresponds to each of said plural note names designated by said plural note name information to be inputted; and
(b) chord selecting means for selecting a desirable chord among said plural chords extracted by said chord extracting means wherein each of said plural chords relates to its own tension note whose note name is included in said plural note names, said desirable chord having the tension note concerning a tension degree which is the smallest among all tension notes relating to said plural chords.

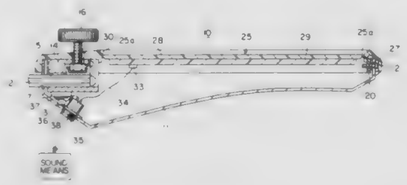
5,056,402
MIDI SIGNAL PROCESSOR
Kazuo Hikawa, and Tsuneo Kosugi, both of Tokyo, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Feb. 7, 1990, Ser. No. 476,236
Claims priority, application Japan, Feb. 8, 1989, 1-29307
Int. Cl.[5] G10H *7/00;* **G11B** *5/00*
U.S. Cl. 84—645 **3 Claims**

1. A MIDI signal processor comprising:
means for reproducing MIDI data from a recording medium;
means for outputting the reproduced MIDI data;
means for detecting an interruption of the reproducing of the MIDI data;



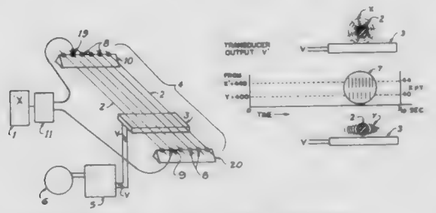
means for detecting a MIDI status byte after the interruption ends;
means for suspending the outputting of the reproduced MIDI data when the interruption is detected; and
means for continuing the suspending until the MIDI status byte is detected.

5,056,403
ELECTRONIC DRUM WITH VIBRATION ISOLATING HEAD
Toshinori Yamashita, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Continuation of Ser. No. 338,348, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 108,092, Oct. 13, 1987, abandoned. This application May 15, 1990, Ser. No. 526,700
Claims priority, application Japan, Oct. 14, 1986, 61-156058[U]
Int. Cl.[5] G10H *1/32, 3/12*
U.S. Cl. 84—723 **11 Claims**



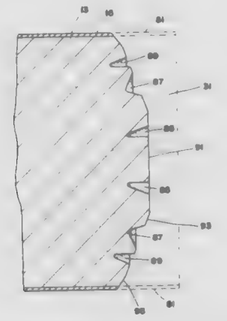
1. An electronic drum comprising:
a head portion to be struck by a performer;
a pad cover integrated with said head portion and covering an upper portion of said electronic drum;
an annular frame arranged to generally surround said head portion;
a vibration plate arranged to be in tight contact with a lower surface of said head portion for vibrating spatially in response to said performer's strike of said head portion;
a vibration preventing means provided between said head portion and said pad cover for preventing vibration of said vibration plate from being transmitted to said annular frame;
a pickup device mounted on said vibration plate for detecting vibrations of said vibration plate; and
a sound device connected to said pickup device for sounding in response to the detected vibration;
said head portion and said cover being made of a flexible material to form a unitary piece;
said pad cover being fitted over said frame to support said head portion.

5,056,404
INSTANT GUITAR TUNING BY EAR
John R. Wyss, 4020 - 148th Ave. NE. Suite F, Redmond, Wash. 98052
Filed Apr. 11, 1990, Ser. No. 507,648
Int. Cl.[5] G10H *1/04, 3/26, 3/18, 3/12*
U.S. Cl. 84—725 **1 Claim**



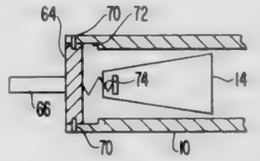
1. An electronic stringed instrument comprising:
at least one string which is vibrated,
a transducer for converting the electromagnetic energy produced by vibrations of said string into representative electrical signals,
amplifying means to amplify the electrical signals and
reproducing means to convert the amplified electrical signals into audible sounds;
in combination with an apparatus for tuning strings of an electronic stringed instrument comprising:
an oscillator for generating a fundamentally correct tone signal which corresponds to a desired tone of a string to be tuned,
transmissions means for transmitting the correct tone signal of the oscillator as cycles of electromagnetic energy,
connection means for connecting the cycles of electromagnetic energy to one of the strings which is to be tuned,
whereby the transducer means of the stringed instrument converts both the electromagnetic energy produced by the vibration of the strings and the electromagnetic energy from the transmission means into a blended electric signal which is then amplified and reproduced so that a difference in the frequency of these signals will be audible to a user who may then correct the tuning.

5,056,405
PROPELLANT-TO-INHIBITOR BONDING SYSTEM
Thomas F. Davidson, Manassas, Va., and Evester Sullivan, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 30, 1990, Ser. No. 621,256
Int. Cl.[5] F42G *3/00*
U.S. Cl. 86—20.14 **7 Claims**



1. A propellant to inhibitor/insulator bonding system for applying said bonding system to the interior surface of a cavity wherein said interior surface includes said inhibitor and insulator which are made of the same material comprising the steps of:
(a) cleaning said cavity surface with a solvent;
(b) applying a barrier coat to said cavity surface;
(c) curing said barrier coat;
(d) applying a liner coat to the cured barrier coat;
(e) curing said a liner coat;
(f) casting an uncured propellant into said cavity and against said cured liner coat;
(g) curing said uncured propellant; wherein
(h) said propellant is adhered to said cavity surface by said barrier
and liner coats.

5,056,406
FIBER OPTIC MORTAR PROJECTILE
George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.
Filed Mar. 15, 1990, Ser. No. 493,817
Int. Cl.[5] F42B *14/00, 15/04*
U.S. Cl. 89—1.816 **9 Claims**

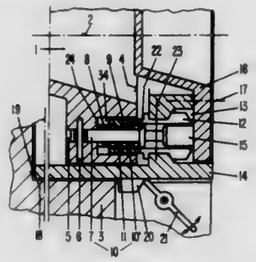


1. A tube-launched projectile having an open aft end of predetermined diameter containing a bobbin, the projectile including an aft closure, the aft closure comprising:
means for protecting the bobbin including a rigid and solid aft closure plate having a diameter no greater than the predetermined diameter and sized to seal the open aft end of the tube-launched projectile;
attaching means for connecting said aft closure plate to the aft end of the tube-launched projectile, wherein said aft closure plate and said attaching means act together to protect the interior of the tube-launched projectile from the force of expanding launch gases; and
detaching means for releasing said attaching means after launch of the tube-launched projectile.

5,056,407
ROCKET RETAINER IN A LAUNCHING DEVICE
Christoph Mathey, Ockenfels, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany
Filed Nov. 2, 1990, Ser. No. 608,261
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1989, 3937344
Int. Cl.[5] F41F *3/052*
U.S. Cl. 89—1.806 **8 Claims**

1. A rocket retainer in a launching device for at least one rocket inserted in a retaining sleeve connectible to the launching device wherein the attachment of the rocket in the retaining sleeve takes place via a connecting member, the connecting member exhibiting a conical end which can be expanded and positioned by means of a displacement pin at a detachable sealing lid of the retaining sleeve, the expanded connecting member engaging at the retaining sleeve, and the connection of the rocket with the retaining sleeve being releasable by removal of the displacement pin, characterized in that at least

one damping elastic element is provided between the rocket and the launching device in such a way that, upon an axial



movement of the rocket, deformation of an elastic element takes place.

5,056,408

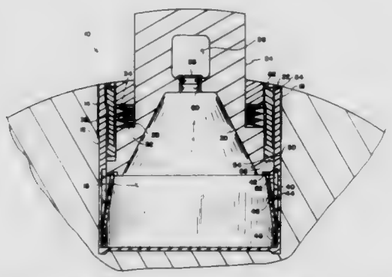
SELF-RETRACTING, DRAG-FREE LUG FOR BOMBS

Bruno Joner, Huntsville, Ala., and John W. Williams, Bellevue, Wash., assignors to TechTeam, Inc., Huntsville, Ala.

Filed Jul. 31, 1990, Ser. No. 560,802

Int. Cl.[5] B64D *1/04;* **F41F** *5/00*

U.S. Cl. 89—1.51 **13 Claims**



1. A self-retracting suspension lug assembly for an aerial bomb having a well for receiving said assembly and an outer surface adjacent thereto comprising:

a housing adapted to be secured within said well and having an outer surface shaped to conform to said bomb surface;

a lug having an externally graspable support member and being disposed within said housing for movement across the outer surface thereof from a loading position wherein said graspable support member is accessible to grasping means to a fully extended position wherein the weight of the bomb bears fully on said support member to a fully retracted position upon release of the bomb;

said lug having an upper surface that conforms to the shape of said housing surface and the adjacent bomb surface so that when the lug is fully retracted upon release of the bomb, aerodynamic drag resulting from the presence of the lug is minimized;

spring means biasing said lug inward and providing retracting movement when the bomb is dropped; and

cocking means for holding said lug in graspable loading position until the full weight of the bomb is applied to said support member.

5,056,409

LIGHTWEIGHT DEPLOYABLE TURRET

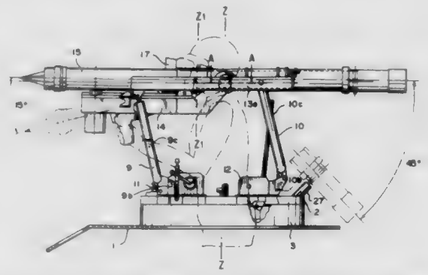
Jean-Philippe P. B. Allais, Montivilliers; Alain R. Guillermond, Epouville, and Pascal G. Rouyer, Le Havre, all of France, assignors to Societe Anonyme Dite Hispano Suiza, Saint Cloud Cedex, France

Filed Jul. 31, 1990, Ser. No. 560,729

Claims priority, application France, Jul. 31, 1989, 89 10289

Int. Cl.[5] F41A *23/34, 23/50*

U.S. Cl. 89—37.01 **14 Claims**



1. A turret for supporting one or more weapons on a vehicle having a front and rear comprising:

a) a support plate mounted on the vehicle so as to rotate about a generally vertically extending azimuth axis;

b) a first mounting member attached to the support plate so as to pivot about a first axis, the first mounting member having a general "U" shape with a base and two arms extending from the base;

c) a second mounting member attached to the support plate so as to pivot about a second axis extending generally parallel to the first axis, the second mounting member having a general "U" shape with a base and two arms extending from the base;

d) a pair of crossmembers: a first crossmember pivotally connected to an arm of the first mounting member and to a corresponding arm of the second mounting member; and a second crossmember pivotally connected to an opposite arm of the first mounting member and to a corresponding arm of the second mounting member such that the mounting members and the crossmembers are movable as a four-bar linkage between a stowed position and a deployed position; and,

e) weapon support means pivotally attached to the crossmembers so as to pivot about an elevational axis such that the weapon support means is movable between minimum and maximum angles of elevation.

5,056,410

FIREARM RECOIL ABSORBER

Homer E. Pitts, Eugene, Oreg., assignor to Zero Coil, Inc., Eugene, Oreg.

Filed Sep. 22, 1989, Ser. No. 410,816

Int. Cl.[5] F41A *23/16*

U.S. Cl. 89—37.04 **15 Claims**

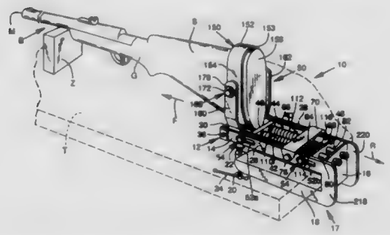
1. A firearm recoil absorbing device for supporting a firearm during firing, comprising:

nested inner and outer frames, the inner frame being slidably connected to the outer frame for relative sliding motion between the nested frames, each of the inner and outer frames having two opposing sidewalls interconnected by a front wall, with the sidewalls of the inner frame being shorter in length than the sidewalls of the outer frame;

firearm receiving means extending upwardly from the inner frame for receiving the firearm;

recoil energy absorbing spring means resiliently coupling the inner and outer frames for absorbing the recoil energy from the firearm during firing; and

roller means attached to one of the inner and outer frames for slidably engaging adjacent respective said sidewalls of



the other of the inner and outer frames to allow the relative sliding motion between the nested frames.

5,056,411

COURSE RECOMMENDATION DISPLAY

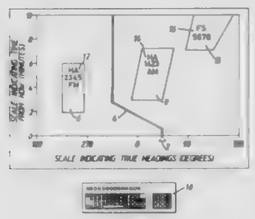
Michael O. Baker, Hampshire, England, assignor to GEC-Macroni Limited, Stanmore, England

Filed Sep. 14, 1989, Ser. No. 406,907

Claims priority, application United Kingdom, Sep. 15, 1988, 8821570

Int. Cl.[5] F41G *3/02, 3/06*

U.S. Cl. 89—41.22 **7 Claims**



1. A command and control system for a vessel, the system including:

(1) detection means for detecting an object which may be hostile to the vessel;

(2) a weapon system including a munition firing means;

(3) a computing system coupled to said detection means and including processing means for calculating a range of future time intervals and a range of headings for said vessel, in which ranges the weapon system cannot engage said object;

(4) a visual display system coupled to said computing system and including a visual display unit (VDU) for providing a display for use in selection of a course for said vessel;

(5) said display system providing a display having a first co-ordinate, representing heading of the vessel, and a second co-ordinate representing future time, said display having at least one region thereon representing said ranges to indicate heading constraints to be considered when selecting a course for said vessel whereby if during said range of future time intervals, said range of headings is avoided, said weapon system may remain engaged with said object.

5,056,412

BRAKE SERVOMOTOR ASSEMBLY MOUNTED ON A STATIONARY WALL OF A VEHICLE

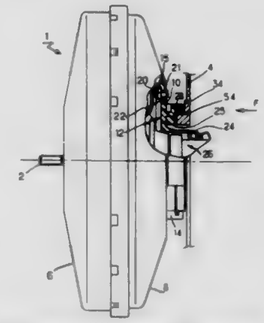
Jean-Pierre Gautier, and Guy Meynier, both of Aulnay Sous Bois, France, assignors to Bendix France, Drancy, France

Filed Oct. 4, 1989, Ser. No. 416,819

Claims priority, application France, Oct. 28, 1988, 88 14119

Int. Cl.[5] B60T *13/46*

U.S. Cl. 91—368 **9 Claims**



1. A brake servomotor assembly comprising a front half-shell and a rear half-shell and mounted on a stationary part of a vehicle by means of a lug/bearing surface attachment consisting of lugs arranged in a plane perpendicular to an axis of the servomotor and disposed around said axis to extend radially outwardly and cooperate with bearing surfaces with corresponding shapes and dimensions to effect mounting of the servomotor on the stationary part by means of axial engagement followed by rotation of the servomotor, elastic means arranged between the servomotor and stationary part, and a servomotor central hub at the rear half-shell and which extends axially and exteriorly of the rear half-shell, the hub including control valve means of the servomotor, and one of said lugs and bearing surfaces integral with the servomotor central hub and cooperating with an opposite one of said bearing surfaces and lugs integral with the stationary part of the vehicle.

5,056,413

PNEUMATIC BRAKE BOOSTER WITH TWO VALVES FOR ALLOWING ATMOSPHERIC AIR INTO A VARIABLE PRESSURE CHAMBER

Manfred Kaub, Im Zillgen 16, 5401 Rhens, Fed. Rep. of Germany

Filed Jun. 26, 1990, Ser. No. 543,861

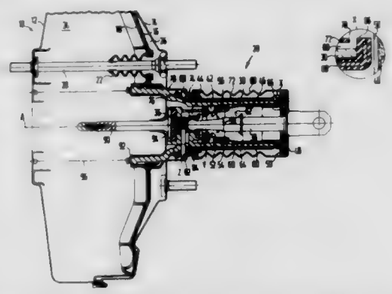
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 8908040[U]

Int. Cl.[5] F15B *9/10*

U.S. Cl. 91—369.3 **5 Claims**

1. In a pneumatic brake booster having first and second chambers separated by a pressure responsive movable wall, said first chamber being adapted to be connected at all times during use to a source of vacuum and said second chamber being adapted to be selectively connected through first and second valves to said first chamber or to an atmospheric inlet, said booster including a manually operable actuating member and a valve assembly responsive to movement of said actuating member, said assembly comprising a valve housing, a valve body and first and second valve seats arranged in said housing which, with said valve body, define said first and second valves, said first valve seat in one position of said actuating member being lifted clear of said valve body to connect said two booster chambers to each other and separate both chambers from said atmospheric air inlet, said second valve seat when it only is lifted clear of said valve body in another posi-

tion of said actuating member separating said two chambers from each other while connecting said second chamber to said atmospheric air inlet, the invention comprising an additional venting channel opening directly into said second chamber and adapted to be connected to said atmospheric air inlet, a normally closed third valve for controlling the connection of said venting channel with said atmospheric air inlet, and means



responsive to movement of said actuating member in excess of that required to lift said second valve seat from said valve body and connect said second chamber to said air inlet to open also said third valve and connect said second chamber directly to said atmospheric air inlet through said venting channel whereby atmospheric air flows to said second chamber both through said second valve and through said venting channel.

5,056,414

LINEAR DRIVE WITH HYDRAULIC AMPLIFICATION

Peter Fuchs, Adlikon, Switzerland, assignor to Nova-Werke AG, Effretikon, Switzerland

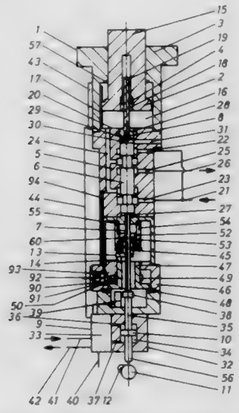
PCT No. PCT/CH88/00174, § 371 Date Jun. 20, 1989, § 102(e) Date Jun. 20, 1989, PCT Pub. No. WO89/03939, PCT Pub. Date May 5, 1989

PCT Filed Sep. 27, 1988, Ser. No. 381,649

Claims priority, application Switzerland, Oct. 20, 1987, 04101/87

Int. Cl.[5] F15B *9/12*

U.S. Cl. 91—380 **11 Claims**



1. A linear drive with hydraulic amplification including a hydraulic cylinder which is integrated in a drive housing, a piston connected with a first screw drive which forms a mechanical return, a control valve arranged along the longitudinal axis of the first screw drive for the pressure medium, the control valve having a piston movable through a setting member, the setting member being connected at one end through a second screw drive with the first screw drive, and a setting drive acting on the setting member, with the distinction that the setting drive (9) has a movable element (35) and a translationally movable active element (10) for translationally moving the movable element (35) in the direction of the axis (60), the movable element (35) being connected with the setting member (17) and being movable with the latter in the direction of the axis (60) of the setting member (7), the setting member (7) being rotatable around the axis (60) independent of the setting drive (9), a lever (13) being fastened to the setting member (7), and being rotatable with it around the axis (60), and that on the drive housing is arranged a stop element (14) which can be adjusted in the range of rotation of the lever (13).

5,056,415

PILOT OPERATED CONTROL VALVE SYSTEM PERFORMING A SUPPORT FUNCTION

Tadao Karakama; Naoki Ishizaki, and Yosuke Oda, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

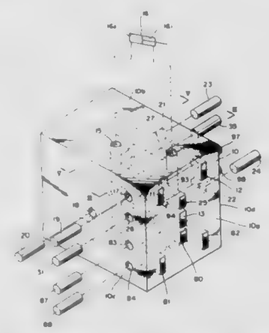
PCT No. PCT/JP89/00206, § 371 Date Oct. 17, 1989, § 102(e) Date Oct. 17, 1989, PCT Pub. No. WO89/08199, PCT Pub. Date Sep. 8, 1989

PCT Filed Feb. 28, 1989, Ser. No. 425,163

Claims priority, application Japan, Feb. 29, 1988, 63-44105

Int. Cl.[5] F15B *11/08*

U.S. Cl. 91—454 **4 Claims**



1. A pilot operated control valve system having a support function, comprising: a valve housing which is provided with a predetermined lateral width, a predetermined longitudinal width and a predetermined height, and assumes a substantially rectangular parallelepiped form; a first and a second pump port passage so formed in an upper portion of said valve housing as to have the same height, to be spaced apart in parallel from each other in said longitudinal width direction of said valve housing and to horizontally extend in said lateral width direction of said valve housing; a tank port passage so formed in said valve housing as to be disposed in a central position of both of said height direction and said longitudinal width direction of said valve housing and to horizontally extend in said lateral width direction of said valve housing; a pilot tank port passage and an auxiliary pilot tank port passage so formed in said valve housing as to vertically sandwich said tank port passage therebetween and to extend in parallel with said tank port passage in said lateral width direction of said valve housing so as to be adjacent to said tank port passage; a first and a second pump port passage so formed in a lower portion of said valve housing as to have the same height, to be spaced apart in parallel from each other in said longitudinal width direction of said valve housing and to horizontally extend in said lateral width direction of said valve housing; a first and a second port passage so formed in said valve housing as not to be aligned with each other in either said lateral width direction or said longitudinal width direction of said valve housing, to extend vertically to

open into an upper surface of said valve housing and to communicate with at least a pair of hydraulic devices; a first meter-in valve so inserted into a first meter-in valve receiving bore as to selectively shut off said first pump port passage from said first port passage in operation, said first meter-in valve receiving bore being formed in an upper portion of said valve housing so as to open into a side surface of said valve housing perpendicular to said longitudinal width direction thereof, to horizontally extend in said longitudinal width direction to penetrate said first pump port passage and to communicate with said first port passage; a first meter-out valve so inserted into a first meter-out valve receiving bore as to selectively shut off said tank port passage from said second port passage, said first meter-out valve receiving bore being formed in a central portion of said valve housing so as to open into said side surface of said valve housing perpendicular to said longitudinal width direction thereof, to horizontally extend in said longitudinal width direction to sequentially communicate with said second port passage and said tank port passage; a second meter-in valve so inserted into a second meter-in valve receiving bore as to selectively shut off said second pump port passage from said second port passage in operation, said second meter-in valve receiving bore being formed in the upper portion of said valve housing so as to open into the other side surface of said valve housing perpendicular to said longitudinal width direction thereof, to horizontally extend in said longitudinal width direction to penetrate said second pump port passage and to communicate with said second port passage; a second meter-out valve so inserted into a second meter-out valve receiving bore as to selectively shut off said tank port passage from said first port passage, said second meter-out valve receiving bore being formed in a central portion of said valve housing so as to open into the other side surface of said valve housing perpendicular to said longitudinal width direction thereof, to horizontally extend in said longitudinal width direction to sequentially communicate with said first port passage and said tank port passage; a first pilot valve so inserted into a first pilot valve receiving bore as to supply pilot pressure oil to at least one of said first meter-in valve and said first meter-out valve, said first pilot valve receiving bore being so formed in said valve housing at the same height as that of said pilot tank port passage as to horizontally extend in said longitudinal direction of said valve housing to open into the side surface of said valve housing and to communicate with said pilot tank port passage; a second pilot valve so inserted into a second pilot valve receiving bore of said valve housing as to supply said pilot pressure oil to both of said second meter-in valve and said second meter-out valve, said second pilot valve receiving bore being so formed in said valve housing at the same height as that of said pilot tank port passage as to open into the other side surface of said valve housing perpendicular to said longitudinal width direction of said valve housing, to horizontally extend in said longitudinal width direction of said valve housing and to communicate with said pilot tank port passage; a first auxiliary meter-in valve so inserted into a first auxiliary meter-in valve receiving bore of said valve housing as to selectively shut off said first port passage from said first auxiliary pump port passage, said first auxiliary meter-in valve receiving bore being formed in a lower portion of said valve housing so as to open into said side surface of said valve housing perpendicular to said longitudinal width direction of said valve housing, to horizontally extend in said longitudinal width direction of said valve housing, to penetrate said first auxiliary pump port passage and to communicate with said first port passage; a second auxiliary meter-in valve so inserted into a second auxiliary meter-in valve receiving bore of said valve housing as to selectively shut off said second port passage from said second auxiliary pump port passage, said second auxiliary meter-in valve receiving bore being formed in a lower portion of said valve housing so as to open into said other side surface of said valve housing perpendicular to said longitudinal width direction of said valve housing, to horizontally extend in said longitudinal width direction of said valve housing and to communicate with said pilot tank port passage; a first auxiliary pilot valve so inserted into a first auxiliary meter-in valve receiving bore of said valve housing as to supply said pilot pressure oil to said first auxiliary meter-in valve, said first auxiliary pilot valve receiving bore being formed in a lower portion of said valve housing so as to open into the side surface of said valve housing perpendicular to said longitudinal width direction of said valve housing in the vicinity of said first auxiliary meter-in valve receiving bore and to horizontally extend in said longitudinal width direction of said valve housing; and a second auxiliary pilot valve so inserted into a second auxiliary pilot valve receiving bore of said valve housing as to supply the pilot pressure oil to said second auxiliary meter-in valve, said second auxiliary pilot valve receiving bore being formed in an upper portion of said valve housing so as to open into said other side surface of said valve housing perpendicular to said longitudinal width direction of said valve housing in the vicinity of said second auxiliary meter-in valve receiving bore and to horizontally extend in said longitudinal width direction of said valve housing.

5,056,416

VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR WITH ABRASION AVOIDABLE MOUNTING STRUCTURE FOR WOBBLE PLATE PRESSING SPRING

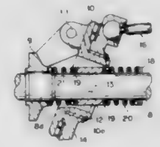
Masaki Ota; Tohru Takeichi, and Takahiro Hamaoka, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

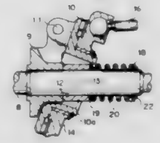
Filed Sep. 10, 1990, Ser. No. 580,216

Claims priority, application Japan, Sep. 16, 1989, 1-108531[U]

Int. Cl.[5] F01B *3/00, 13/04*

U.S. Cl. 92—12.2 **4 Claims**





1. A variable capacity wobble plate type refrigerant compressor including a rotatably supported axial drive shaft driven by an external drive source, a plurality of pistons reciprocating in cylinder bores to compress a refrigerant gas and discharge compressed refrigerant gas, an assembly of drive and wobble plates slidably mounted on the drive shaft via a slide member, and engaged with the plurality of pistons via connecting rods, the assembly of drive and wobble plates being provided for converting a rotation of the drive shaft into a reciprocation of each of the plurality of pistons, and capable of changing an angle of inclination thereof from a plane vertical to the axis of the drive shaft to change the stroke of each of the pistons to thereby vary the compressor capacity, and at least one coil spring mounted around the drive shaft for applying a biasing force to the assembly of drive and wobble plates to thereby constantly urge the assembly toward a predetermined angular position of inclination, the compressor comprising:

annular flanged support means for supporting opposite ends of the coil spring so that the coil spring does not come into contact with an outer surface of the drive shaft during a contracting and expanding movement of the coil spring on the drive shaft when the assembly of drive and wobble plates is slid on the drive shaft to change the angle of inclination thereof, said coil spring supporting means

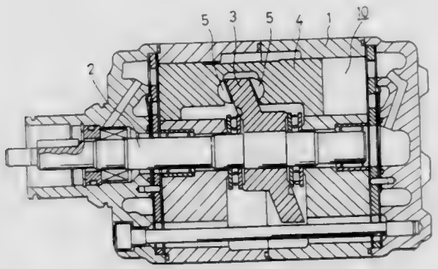
comprising a first annular flanged member slidably mounted on the drive shaft for fixedly supporting one of the opposite ends of the coil spring, a second annular flanged member slidably mounted on the drive shaft at a position adjacent to the slide member which permits the assembly of drive and wobble plates to slide on the drive shaft, said second annular flanged member being arranged to be axially spaced from the first annular flanged member for fixedly supporting the other opposite end of the coil spring, and a snap ring member fixedly mounted on the drive shaft at a predetermined position on one end portion of said drive shaft for stopping sliding movement of said first annular flanged member beyond said predetermined position on the drive shaft.

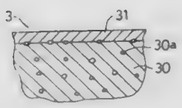
5,056,417

SWASH PLATE TYPE COMPRESSOR HAVING A SURFACE COATING LAYER ON THE SURFACE OF SWASH PLATE

Masafumi Kato; Takenori Sawa; Futoshi Sakata, and Yoshifumi Kato, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 13, 1989, Ser. No. 434,240
Claims priority, application Japan, Nov. 11, 1988, 63-286479
Int. Cl.[5] F01B *3/00*
U.S. Cl. 92—71 **10 Claims**





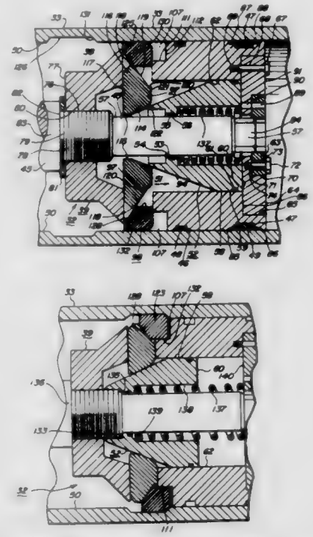
1. A swash plate type compressor comprising:
a cylinder block having a cylinder bore disposed parallel to the axis of said cylinder block;
a rotary shaft rotatably mounted within said cylinder block;
a swash plate fixed to said rotary shaft for rotation with said rotary shaft within said cylinder block;
a piston reciprocally fitted in said cylinder bore; and
shoes which slidably intervene between said piston and said swash plate and reciprocate said piston by rotations of said swash plate;
wherein said swash plate comprises a matrix composed of aluminum or aluminum alloy and at least a part of the surface of said swash plate is coated with a surface coating layer comprising at least 50% by weight of tin and the balance substantially comprising at least one metal selected from the group consisting of copper, nickel, zinc, lead and indium, and said part of the surface of said swash plate is in slidable contact with said shoes.

5,056,418

SELF-ADJUSTING AUTOMATIC LOCKING PISTON FOR RAM BLOWOUT PREVENTERS

Stanley W. Granger, 23800 Gold Nugget, Diamond Bar, Calif. 91765; Joseph O. Beard, 1625 N. Lincoln Ave., Fullerton, Calif. 92631, and Frode Sveen, 12697 Orgren Ave., Chino, Calif. 91710

Filed Oct. 18, 1990, Ser. No. 600,314
Int. Cl.[5] F15B *15/26;* **E21B** *33/06*
U.S. Cl. 92—24 **13 Claims**



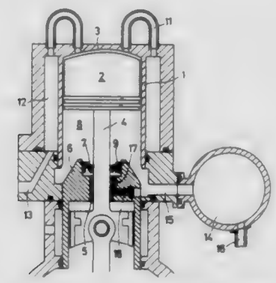
1. A hydraulic piston for use in a hydraulic cylinder having an internal annular groove adapted to receive locking segments or dogs for retaining a hydraulic piston at a fixed longitudinal position within said cylinder, said hydraulic piston being characterized by being automatically lockable at a self-adjusting range of forward positions from a rearward groove-engaging locked position, said self-adjusting automatic locking piston comprising;
a. an outer, hollow main piston of generally cylindrical shape having a rear cylindrical body, a transversely disposed rear circular piston head, a smaller diameter cylindrically-shaped front boss section, and a tapered intermediate annular section joining said rear and front sections, said outer piston including means for fastening thereto a piston rod, a coaxial bore and a plurality of radially disposed apertures through the outer wall surface of said outer piston and communicating with said coaxial bore, and a plurality of circumferentially elongated grooves cut inwards from the outer cylindrical wall surface, one each groove communicating with the rear end of each aperture,
b. an inner locking piston having a generally cylindrical rear section and a tapered front section longitudinally slidably contained within said coaxial bore of said main outer piston, said inner locking piston having a central coaxial bore adapted to slidably receive said piston rod,
c. a plurality of driver segments, one each of said driver segments radially slidably located within a separate one of each of said radially disposed apertures through the outer surface of said main outer piston, each of said driver segments having a sloping lower wall surface adapted to slidable engagement by said tapered front surface of said inner locking piston, whereby forward motion of said inner locking piston within said main outer piston forces each of said driver segments to move radially outwards within said aperture, each of said driver segments having a sloping upper rear surface, and
d. a plurality of locking segments, one each radially slidably positioned in each of said grooves in the outer cylindrical wall surface of said main outer piston, each of said locking segments including a rear portion having an outer surface adapted to engage the inner wall surface of said annular groove in said inner wall surface of said hydraulic cylinder, and each of said locking segments including a narrower front section having a sloping lower front surface adapted to slidable engagement by said sloping upper rear surface of said driver segment, whereby radial outward motion of each of said driver segments forces each of said locking segments radially outwards into locking engagement with said annular cylinder groove.

5,056,419

SEALING DEVICE FOR A PISTON ROD OF A STIRLING ENGINE

Tetsumi Watanabe, Okazaki; Tomokimi Mizuno, Chiryu; Hiroyuki Katsuda, Okazaki, and Yutaka Momose, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 13, 1990, Ser. No. 552,228
Claims priority, application Japan, Jul. 21, 1989, 1-190109
Int. Cl.[5] F15B *21/04*
U.S. Cl. 92—80 **6 Claims**



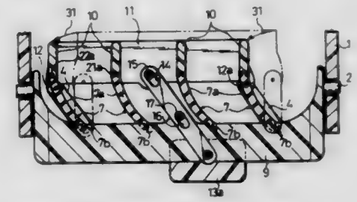
1. A sealing device for a rod of a Stirling engine comprising:
a piston connected to the rod for obtaining the output of the engine therefrom;
an intermediate member through which the rod is reciprocally guided;
an intermediate chamber provided between the piston and the intermediate member;
an oil-scraper seal having an outer periphery secured to the intermediate member and an inner periphery in sealing contact with an outer periphery of the rod, said seal preventing introduction of oil from said rod into said chamber;
a space defined between the oil-scraper seal and the intermediate member;
a passageway extending between said chamber and said space; and
a one-way valve positioned in said passageway for permitting communication from the intermediate chamber to the space.

5,056,420

GRILLES FOR AIR CONDITIONING

Takahiro Komori; Kazuo Fujihara, both of Inazawa, and Hiroshi Iwata, Aichi, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 18, 1989, Ser. No. 381,317
Claims priority, application Japan, Jul. 27, 1988, 63-99691[U]; Aug. 8, 1988, 63-104804[U]; Nov. 8, 1988, 63-145804[U]; Nov. 25, 1988, 63-153884[U]; Mar. 16, 1989, 1-30170[U]
Int. Cl.[5] B60H *1/34*
U.S. Cl. 98—2 **19 Claims**



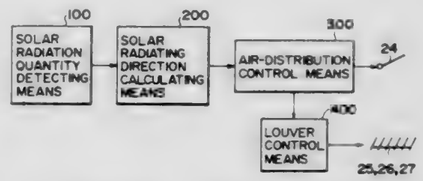
1. A grille for air conditioning comprising:
a main body case having an opening for blowing out a wind,
a plurality of curvable wind direction adjusting plates supported so as to be rotatable relative to said main body case, each of said wind direction adjusting plates having a proximal edge located at a downstream side of the wind and a distal edge located at an upstream side of the wind, both said edges extending in a plane substantially intersecting with a blowing direction of the wind,
a support member supporting said distal edges of said wind direction adjusting plates, said support member having extension plates respectively extending along an extending plane of said distal edge of each said wind direction adjusting plate and coupling plates coupling said extension plates with each other, said each extension plate having a groove for receiving said distal edge which is not rotatable relative to said extension plate,
moving means for moving said support member on a circular locus relative to said main body case, said arc having a shorter radius of curvature than a span between said two edges of said wind direction adjusting plate in an unstressed configuration.

5,056,421

AUTOMOBILE AIR-CONDITIONER

Katsumi Iida, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Oct. 3, 1990, Ser. No. 593,024
Int. Cl.[5] B60H *1/00*
U.S. Cl. 98—2.01 **5 Claims**



1. An air-conditioner for an automobile, comprising:
(a) solar radiation quantity detecting means for detecting a quantity of solar radiation at the right side of a passenger compartment of the automobile and a quantity of solar radiation at the left side of the passenger compartment;
(b) solar radiating direction calculating means for calculating a solar radiating direction based on a solar radiation

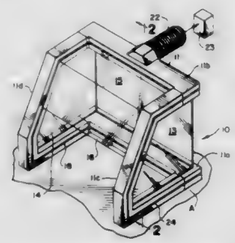
quantity signal detected by the solar radiation quantity detecting means;
(c) air-distribution control means for determining proportions of air to be distributed to the left side of the passenger compartment and air to be distributed to the right side of the passenger compartment according to the solar radiating direction calculated by the solar radiating direction calculating means;
(d) an air-distribution door operable under the control of the proportions of air determined by the air-distribution control means;
(e) a plurality of louvers disposed, respectively, at a plurality of upper air outlets facing to the passenger compartment, the louvers being capable of swinging to set the direction air-discharged from the respective upper air outlets; and
(f) louver control mean for controlling the direction of louvers so that said louvers are directed straight when an angle of deviation of the solar radiation direction relative to the direction of travel of the automobile is within a predetermined angle, and when said angle of deviation exceeds said predetermined angle, said louvers are tilted toward an occupant of the automobile.

5,056,422

FUME HOOD APPARATUS

Earl Horntvedt, Manitowoc, assignor to Hamilton Industries, Inc., Two Rivers, Wis.

Filed Aug. 9, 1990, Ser. No. 564,789
Int. Cl.[5] B05B *15/02*
U.S. Cl. 98—115.3 **15 Claims**



10. In a fume hood having panel means for defining an enclosed work space, an elongate frame member for the entire fume hood has a circuitous configuration and defines peripheral edge portions of the fume hood, said frame member removes gases from the work space and also defines an elongate chamber, inlet means for receiving the gases, and outlet means for discharging the gases.

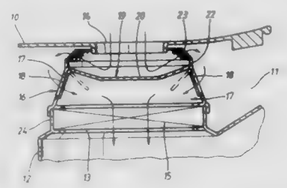
5,056,423

DEVICE FOR SUPPLYING FRESH AIR TO THE PASSENGER SPACE OF A VEHICLE

Heinz Koukal; Klaus Arold, both of Sindelfingen; Hans Trube, Herrenberg, and Gernoth Karioth, Sindelfingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 18, 1990, Ser. No. 553,620
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1989, 3924293
Int. Cl.[5] B60H *1/28*
U.S. Cl. 98—2.17 **11 Claims**

1. Device for supplying fresh air to the passenger space of a vehicle having a body front end preceding the passenger space in the driving direction and surrounding an engine space coverable by an engine hood, comprising:
a fresh-air inlet arranged on a top side of the body front end, and
an air distributor box which is located underneath the fresh-air inlet which is covered with an air filter towards the fresh-air inlet and is equipped with a water run-off, wherein the fresh-air inlet is arranged in the engine hood and the water run-off is arranged on the top side of a hood-like filter cover which covers the air filter facing the



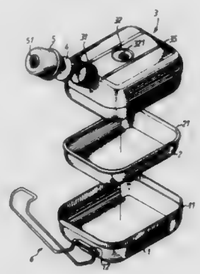
fresh-air inlet and is fastened releasably to the air distributor box and carries air throughflow orifices in its casing region.

5,056,424

PICNIC COOKING ASSEMBLY

Kou Yen Lai, No. 32, Alley 27, Lane 127, Nan Shan Road, Chung Ho City, Taipei Hsien, Taiwan

Filed Apr. 23, 1990, Ser. No. 513,218
Int. Cl.[5] A47J *33/00;* **B65D** *45/04, 21/02, 25/28*
U.S. Cl. 99—339 **4 Claims**



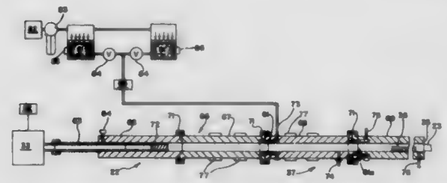
1. A picnic cooking assembly comprising:
a skillet having a rim formed with a lip;
a first handle attached to the skillet;
a cooking pan which in a first uninverted position fits inside said skillet and in a second, inverted position fits on an inner ledge of said lip of said skillet to form a food storage container, a second handle being attached to said cooking pan and being collapsible to facilitate the fit of said cooking pan within said skillet when the cooking pan is in the second position;
a kettle having a spout, said kettle being shaped to nest within said cooking pan when said cooking pan is in said first position said kettle having a threaded mounting bolt in a top portion of the kettle;
a cap having a threaded hole in a central portion thereof and being fitted with a cork plug, said cap having a first position covering said spout wherein said cap seals said spout; and said cap having a second position threadedly engaging the mounting bolt of the kettle so that said cap provides a handle for holding the kettle.

5,056,425

FORMING CASINGLESS SAUSAGE AND THE LIKE

Timothy G. Mally, Oregon, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 400,080, Aug. 29, 1989, Pat. No. 4,989,505, and a continuation-in-part of Ser. No. 575,044, Aug. 30, 1990. This application Sep. 25, 1990, Ser. No. 587,839
Int. Cl.[5] A22C *7/00, 11/00*
U.S. Cl. 99—483 **26 Claims**



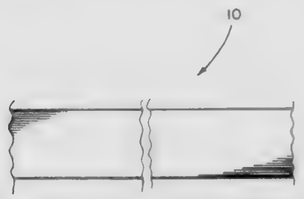
1. An apparatus for forming a casingless sausage comprising:
means for stuffing and shaping flowable batter material;
treating means associated with said stuffing and shaping means, said treating means being for contacting the flowable batter material with a treatment fluid and for thus forming a proteinaceous skin of batter material from the batter material of the stuffing and shaping means;
ejecting means for removing a blank from the stuffing and shaping means, the blank having a shape determined by said stuffing and shaping means, the blank further having an external surface including the proteinaceous skin and a core portion including batter material which has not been formed into the proteinaceous skin; and
conveyor means for receiving and conveying the blank, said conveyor means including end forming means for engaging batter material at at least one end of the blank and for shaping the end batter material into a generally rounded configuration by relative rotational movement between the blank and the end forming means to thereby form a shaped product.

5,056,426

STRAPPING BAND FOR AUTOMATIC STRAPPING MACHINES

Hans Warych, Gelsenkirchen, Fed. Rep. of Germany, assignor to Signode System GmbH, Dinslaken, Fed. Rep. of Germany

Filed Jan. 25, 1990, Ser. No. 469,906
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3902240
Int. Cl.[5] B65B *13/04, 13/00;* **C08K** *5/34;* **C08F** *8/42*
U.S. Cl. 100—26 **8 Claims**



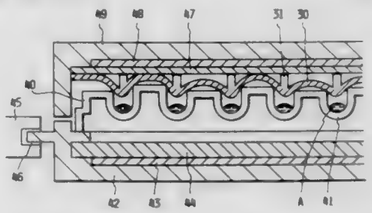
1. In combination with an automatic strapping machine having a looping frame and a roller conveyor for processing a strapping band during a strapping operation, said strapping band comprising a drawn thermoplastic material which normally exhibits an arcuate camber within the plane of said band as a result of being processed within said automatic strapping machine, the improvement comprising:
the addition of a nucleation agent to said thermoplastic material so as to serve as a camber effect inhibitor in order to suppress any camber effect imposed upon said strapping band by said automatic strapping machine.

5,056,427

SEALING OF CAVITY ON REAGENT TRAY

Munechika Sakabe, and Osamu Segawa, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 14, 1990, Ser. No. 493,520
Claims priority, application Japan, Mar. 15, 1989, 1–63166, 1–63169, 1–63170
Int. Cl.[5] B30B *5/02*
U.S. Cl. 100—211 **2 Claims**



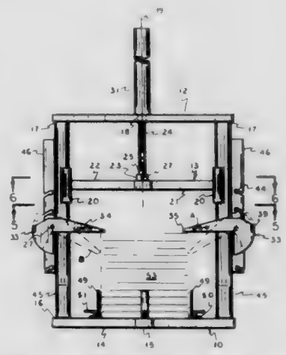
1. An apparatus for sealing liquid within cavities, comprising:
a tray having cavities for storing therein liquid; the cavities having openings arranged at varying levels in the thickness direction of the tray;
an elastic sealing member disposed on the tray to cover the openings, the sealing member having thereon projections arranged in registration with the respective cavities; and
a pressure plate disposed on the sealing member in contact with the projections for applying thereto pressure effective to deform locally the sealing member through the projections to enable the sealing member to fittably seal the varying levels of the cavity openings the thereby prevent evaporation of the liquid stored in the cavities.

5,056,428

APPARATUS FOR COMPACTING USED TIRES

Lewis E. Allen, P.O. Box 8026, Longview, Tex. 75607

Continuation-in-part of Ser. No. 430,865, Oct. 31, 1989, abandoned. This application Feb. 25, 1991, Ser. No. 660,796
Int. Cl.[5] B30R *15/00*
U.S. Cl. 100—200 **4 Claims**



1. Apparatus for compacting used tires comprising:
a) a rigid base member,
b) a pair of substantially identical columns rising vertically from opposed sites on said base member, and terminating in uppermost extremities,
c) a top beam extending in joinder between said uppermost

extremities and disposed in substantially parallel relationship to said base member, said beam having an aperture therein centered upon a vertical axis positioned midway between said columns,

d) movable engagement means slidably interactive with said columns and adapted to undergo vertical movement while remaining in substantially parallel juxtaposition to said base member, said engagement means having a lower surface directed toward said base member and an upper surface directed toward said top beam,

e) pivot means centered upon the upper surface of said engagement means and aligned with the aperture in said top beam,

f) retaining means adjustably positionable at different elevations upon said column for permitting downward movement of tires being compacted while preventing substantial upward movement of compacted tires disposed upon said base member, and

g) a shaft having a lower extremity that engages said pivot means, and an upper extremity activated by a cylinder confining a pressurized fluid, said shaft passing vertically through said aperture.

5,056,429

BAR CODE PRINTING METHOD AND THE PRINTER

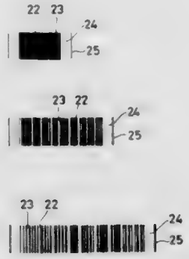
Yukihiro Hirosaki, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 381,836

Claims priority, application Japan, Jul. 20, 1988, 63-180585; Jun. 15, 1989, 1-153104

Int. Cl.[5] B41J *9/42, 5/00*

U.S. Cl. 101—93.01 **7 Claims**



1. A method of printing a bar code pattern with a printer comprising a thermal print head using a thermal transcription ink ribbon, comprising the steps of:

printing the bar code pattern formed of a combination of wide lines and narrow lines having been previously standardized;

determining a fixed margin on sides of the bar code pattern;

printing symbol guards on the sides of the printed bar code pattern with the determined fixed margin separating the symbol guards from the bar code pattern, wherein placement of said symbol guards reduces incomplete printing of the bar code pattern by said ink ribbon.

5,056,430

METHOD OF POSITIONING PLATE CYLINDERS IN A MULTI-COLOR ROTARY PRINTING MACHINE

Friedrich K. Bayerlein, Veitshöchheim, and Dietrich R. K. Leuerer, Wüzburg, both of Fed. Rep. of Germany, assignors to Koening & Bauer Aktingesellschaft, Wurzburg, Fed. Rep. of Germany

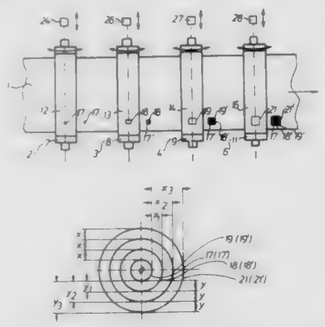
PCT No. PCT/DE88/00192, § 371 Date Sep. 15, 1989, § 102(e) Date Sep. 15, 1989, PCT Pub. No. WO88/07449, PCT Pub. Date Oct. 6, 1988

PCT Filed Mar. 25, 1988, Ser. No. 415,309

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1987, 3709951; Mar. 24, 1988, 3809941

Int. Cl.[5] B41M *1/14*

U.S. Cl. 101—211 **3 Claims**



1. A method of positioning plate cylinders in a multiple color rotary printing machine usable for printing a multiple color image on a print carrier, said method comprising:

providing a first register mark image on a first plate cylinder of a first color printing unit;

forming said first register mark image as a closed regular geometric shape having thin lines and having a first size;

providing a second register mark image on a second plate cylinder of a second color printing unit;

forming said a second register mark image having said closed regular geometric shape having thin lines and having a second size, said second size of said second register mark image being different than said first size of said first register mark image;

providing a plurality of successive register mark images on successive plate cylinders of successive color printing units;

forming each of successive register mark images as said closed regular geometric shape of said first and second register mark images, each of said successive register mark images having thin lines and having a size which is different than said first and second sizes of said first and second register mark images and from sizes of other ones of said successive register mark images;

providing a separate one of said first, second, and successive register mark images for each color to be printed in a multiple color printing machine;

passing said print carrier through each of said first, second, and successive color printing units;

contacting each of said first, second, and successive closed regular geometric shaped, thin lined and different sized register mark images with said print carrier as said print carrier passes through said first, second, and successive color printing units;

printing first, second, and successive register mark prints on said print carrier corresponding to said first, second, and successive register mark images;

forming a plurality of similar concentric closed regular geometric figures on said print carrier, each of said concentric closed regular geometric figures having one of said first, second, and successive register mark prints;

detecting the position of each of said register mark prints in a selected one of said concentric closed regular geometric figures by using an image detecting device;

measuring relative distances between adjacent ones of said register mark prints in a selected one of said concentric closed regular geometric figures in X and Y axis directions;

converting said measured relative distances into adjusting values usable for adjusting relative positions of plate cylinders; and

positioning one of said first, second, and successive plate cylinders using said adjusting values and obtaining proper color register of said first, second, and successive printing plates in said multiple color rotary printing machine.

5,056,431

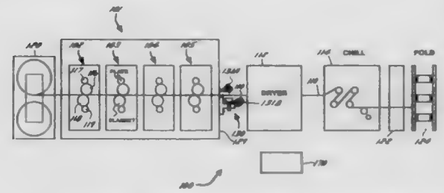
BERNOULLI-EFFECT WEB STABILIZER

Jeffrey W. Sainio, Hartland, Wis., assignor to Quad/Tech, Inc., Pewaukee, Wis.

Continuation-in-part of Ser. No. 340,498, Apr. 19, 1989, Pat. No. 4,913,049. This application Apr. 3, 1990, Ser. No. 503,711

Int. Cl.[5] B41F *5/04*

U.S. Cl. 101—219 **28 Claims**



1. A system for controlling the registration and cutoff of a moving web in a printing press, comprising:

a printing unit having a print cylinder about which the web follows, disposed to print an image on the web and to direct the web along an actual web path in a manner tending to induce fluctuations in the position of said web in a direction transverse to a nominal plane of said web path; and

a noninvasive stabilizer means mounted immediately adjacent said printing unit between said nominal plane of said web path and said actual web path for utilizing gas pressure and the Bernoulli effect to maintain said web within a preselected range of distance from said nominal plane of said web path controlling the degree of follow of said web with respect to said print cylinder and substantially inhibiting the generation of said fluctuations in said web to enhance the registration and cutoff control.

5,056,432

PRINTER WITH SHEET FEEDING APPARATUS

Kazuaki Sugimoto; Tomio Nishijima; Teruhisa Inoue; Yoshihiko Sugimoto; Masashi Suzuki, and Izumi Matsushita, all of Shizuoka, Japan, assignors to Tokyo Electric Company, Ltd., Tokyo, Japan

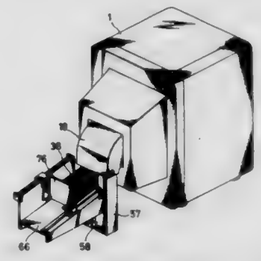
Division of Ser. No. 469,021, Jan. 23, 1990, Pat. No. 5,007,340. This application Dec. 17, 1990, Ser. No. 628,432

Claims priority, application Japan, Jan. 24, 1989, 1-14796; Jan. 25, 1989, 1-15651; Jan. 26, 1989, 1-16676; Jan. 27, 1989, 1-18574; Jan. 27, 1989, 1-18575

Int. Cl.[5] B41F *13/56*

U.S. Cl. 101—227 **1 Claim**

1. A printer with a sheet feeding apparatus comprising a printer case incorporating a printing mechanism for printing onto continuous forms, said printer case having a continuous forms discharging port adjacent to which is provided a sheet feeding means which has a cutter locationally followed downstream by a sheet pushing section, said sheet feeding means fixedly comprising a first strut which has latching edges positioned vertically thereto and a second strut which has a vertical relief notch and sliding edges vertically formed on both sides thereof, said sheet feeding means further comprising a horizontally long sheet stacker which allows sheets to be stacked thereon, each sheet being positioned in a substantially



vertical direction, said sheet stacker having a sheet pushing member slidingly mounted thereon, said sheet pushing member receiving the tips of said sheets, said sheet stacker having relocatable rollers which are in contact with said sliding edges and a projection which, located lower than said relocatable rollers, is inserted into said relief notch to come in contact with said latching means.

5,056,433

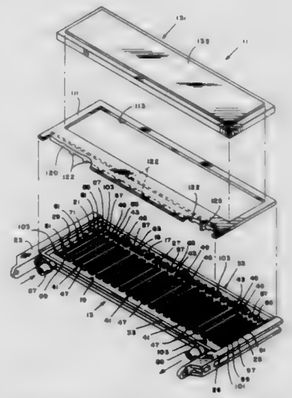
INK TRAY WITH DISPERSION CHANNELS

Charles F. Murphy, Fairfield, Conn.; Jerome E. Jackson, Newtown, N.Y., and Danilo P. Buan, Easton, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 4, 1990, Ser. No. 533,306

Int. Cl.[5] B41F *1/42;* **B41G** *27/04*

U.S. Cl. 101—364 **7 Claims**



1. An improved ink tray having a plurality of housing side walls and a bottom surface defining a ink well for receiving printing ink and having means for supporting a ink pad in said ink tray above said ink well, wherein said improvement comprises:

a plurality of channel ribs formed on said bottom surface, said channel ribs at their respective ends being spaced apart from first and second ones of said side walls, said first and second side walls being aligned opposite to each other;

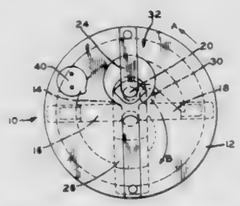
a top fixably mounted to said ink tray and having an opening aligned above said ink well;
a first baffle formed to the underside of said top in contact with said bottom surface and extending generally parallel to and spaced apart from said first wall, said first baffle having a plurality of formed laterally spaced apart studs;
inlet means for supplying ink to said ink tray through said first well at a first end of said ink tray;
outlet means for removing excess ink from said ink tray through said first wall at a second end of said ink tray;
a flow brake formed in said ink tray between said first wall and said first baffle such that ink introduced to said ink well through said inlet means is directed between said studs in said first baffle and between said channel ribs located to one side of said flow brake and therefrom along said second wall and between said channel ribs located to the other side of said flow brake to said outlet means.

5,056,434

SPIN INTEGRATING SAFE AND ARM DEVICE FOR SPINNING MUNITIONS

Chiman R. Patel, Fort Wayne, Ind., and George Webb, Irvington, Ill., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Aug. 27, 1990, Ser. No. 572,574
Int. Cl.[5] F42C *15/22, 15/40*
U.S. Cl. 102—238 **3 Claims**



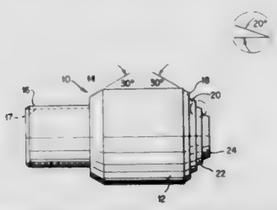
2. A method of arming a spinning munition, comprising the steps of:
(a) measuring a function related to the number of revolutions of said munition after a given point in the firing thereof by releasing a mass within a housing mounted to said munition to rotate relative to said housing; and
(b) fully arming said munition after a selected number of revolutions of the mass relative to the housing.

5,056,435

INFRARED ILLUMINANT AND PRESSING METHOD

Leon L. Jones, 344 W. Pleasant View, Ogden, Utah 84414, and Daniel B. Nielson, 407 E. 1st South, Brigham City, Utah 84302

Filed Nov. 29, 1989, Ser. No. 443,658
Int. Cl.[5] F42B *4/26, 3/00, 33/00*
U.S. Cl. 102—336 **26 Claims**



1. An infrared illuminant flare which upon burning has a burn rate of from about 0.055 in./sec., an infrared intensity of about 1,060 watts/steradian and visible light intensity of less than about 3000 candlepower.

5,056,436

SOLID PYROTECHNIC COMPOSITIONS FOR PROJECTILE BASE-BLEED SYSTEMS

Robert W. Greene, Costa Mesa, Calif., assignor to Loral Aerospace Corp., New York, N.Y.

Filed Oct. 3, 1988, Ser. No. 252,626
Int. Cl.[5] F42B *13/12*
U.S. Cl. 102—490 **10 Claims**

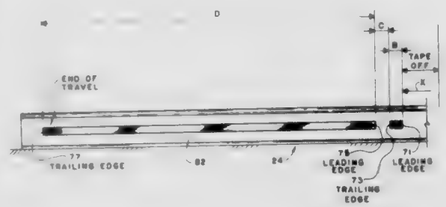
1. A method for reducing the base-drag of a non-self-propelled projectile comprising the steps of:
providing a non-self-propelled projectile having a cavity wherein and fluid communication between said cavity and the near wake zone at the base of said projectile;
loading said cavity with a pyrotechnic composition that provides upon burning of said composition a low mass flow of gaseous combustion products in the near wake zone of said projectile, said low mass flow of combustion products being sufficient to increase the base pressure in the near wake zone and decrease the base-drag of said projectile, wherein said pyrotechnic composition comprises:
(A) oxygenated hydrocarbon component selected from the group consisting essentially of dehydroacetic acid, sorbital, ascorbic acid, adipic acid, lactose, glucose, and mixtures of any of them, said oxygenated hydrocarbon component having a melting point above 90° C.; and
(B) oxidizing agent component; and
reacting said oxygenated hydrocarbon component with said oxidizing agent component during at least a portion of flight of said projectile.

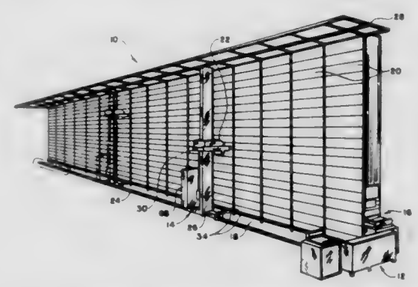
5,056,437

DEVICE FOR INITIALIZING AN AUTOMATED WAREHOUSING SYSTEM

John C. Maddock, Canton, Ohio, assignor to Republic Storage Systems Company, Inc., Canton, Ohio

Filed May 15, 1990, Ser. No. 524,216
Int. Cl.[5] G05D *1/00*
U.S. Cl. 104—88 **8 Claims**





1. An automated warehouse/staging system comprising a series of stations, a track extending along at least a portion of the stations, and a carriage moveable along said track for registration with the portion of said stations;

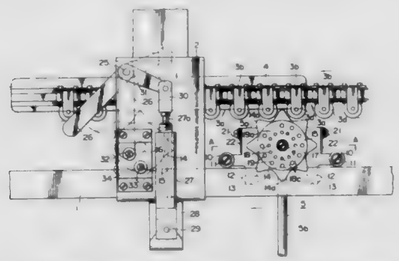
said system having a power-up mode when power is initially delivered to the system;
initializing means operative during said powerup mode for establishing a reference point against which movement of said carriage along said track is controlled, said initializing means comprising a pair of strips of retroreflective material located in series along said track with a gap located therebetween, and means for (a) sensing both the leading and trailing edges of the gap, (b) measuring the gap, (c) locating the midpoint of the gap, (d) establishing the midpoint as the reference point against which movement of the carriage along the track is controlled.

5,056,438

DETECTION SYSTEM FOR CONVEYER SYSTEM WHICH UTILIZES CONVEYOR DRIVE TO ROTATE IDENTIFYING CODE WHEEL

Yoshihisa Nozaki, Toyokawa, and Takashi Inden, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisa, Nagoya, Japan

Filed Jul. 26, 1990, Ser. No. 558,763
Claims priority, application Japan, Jul. 27, 1989, 1-196362
Int. Cl.[5] B61K *7/00;* **B65G** *29/00, 47/84*
U.S. Cl. 104—88 **19 Claims**



1. A detection system provided in a conveyer system in which carrier members carrying workpieces are conveyed by conveying means between working stations, said conveying means being continuously fed in a predetermine direction, said detection system comprising:
identifying means movably supported on each of said carrier members for identifying said carrier member;
holding means for holding the carrier member at a predetermined position of said conveying means;
transmitting means provided with said carrier member for transmitting the conveying force of said conveying means to said identifying means only when said carrier member is held by said holding means, whereby said identifying means is moved at said predetermined position; and
detecting means for detecting said identifying means at said predetermined position when said identifying means is moved with respect to said carrier member.

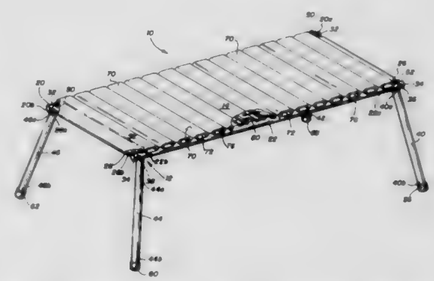
5,056,439

BACKPACKER'S CAMP TABLE

William G. Hodge, Jr., and William G. Hodge, III, both of 1215 Northlake, Richardson, Tex. 75080

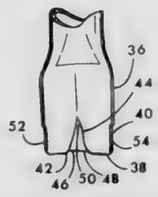
Filed Mar. 26, 1990, Ser. No. 499,177
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—34 **6 Claims**

1. A portable table, comprising:
a first tubular side member having first and second ends thereof, and including first and second apertures adjacent to each of said ends, said first apertures being perpendicularly disposed to the longitudinal axis of said first tubular side member;
a second tubular side member having first and second ends thereof, and including first and second apertures adjacent each of said ends, said first apertures being perpendicularly disposed to the longitudinal axis of said second tubular side member;
a first tubular end member having a first diameter and first and second ends, said first and second ends having a projection of a second diameter less than said first diameter for engagement with said first apertures of said first ends of said first and second tubular side members;
a second tubular end member having a first diameter and first and second ends, said first and second ends having a projection of a second diameter less than said first diameter for engagement with said first apertures of said second ends of said first and second tubular side members;
said members forming a table frame;
first and second tubular support members for supporting said first tubular end member above a surface, each of said first and second tubular support members having a first diameter and first and second ends, said first ends having a projection of a second diameter less than said first diameter for engagement with said second apertures of said first ends of said first and second tubular side members, said second ends of said first and second tubular support members extending to the surface and extending beyond said first ends of said first and second tubular side members and beyond said first and second ends of said first tubular end member;



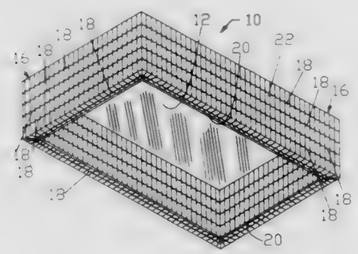
third and fourth tubular support members for supporting said second tubular end member above the surface, said third and fourth tubular support members each having a first diameter and first and second ends, said first ends having a projection of a second diameter less than said first diameter for engagement with said second apertures of said second ends of said first and second tubular side members, said second ends of said third and fourth tubular support members extending to the surface and extending beyond said second ends of said first and second tubular side members and beyond said first and second ends of said second tubular end member;
said first and third tubular support members generating a first torque pressure on said first tubular side member and said second and fourth tubular support members generating a second torque pressure on said second tubular side member in a direction opposite said first torque pressure, such that said first and second tubular side members generate a force applied to said first and second tubular end members for maintaining said side and end members interconnected to form said table frame and for further maintaining said tubular support members interconnected to said first and second tubular side members when said table frame is assembled; and
a flexible top member supported by said table frame.

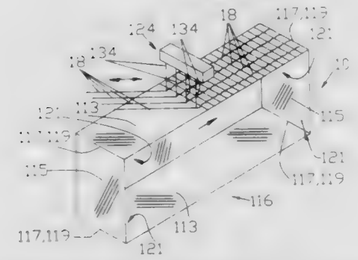
5,056,440
WATER WEEDING TOOL
Alvin J. Eissens, 10517 Laws Dr., Mazomanie, Wis. 53560
Filed Aug. 31, 1990, Ser. No. 576,355
Int. Cl.[5] A01B *1/16*
U.S. Cl. 111—7.1 11 Claims



1. An apparatus for removing plants rooted in soil, comprising:
a) an elongated tube adapted for attachment to a source of pressurized water;
b) a valve for controlling the flow of water through the apparatus;
c) a nozzle formed in one end of the tube which has a flattened section with two opposed segments and a notch formed in at least one segment, the opposed segments are spaced apart to define a gap having a narrow cross section in a first transverse direction and a broad cross section in a second transverse direction perpendicular to the first transverse direction for dispersing water in a planar flow pattern beneath the surface of the soil onto the roots of the plant to dislodge the plant from the soil.

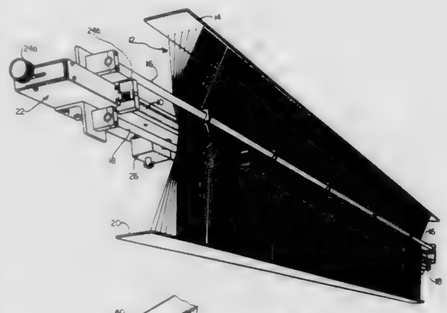
5,056,441
FITTED MATTRESS COVER AND METHOD OF MAKING SAME
Michael E. Seago, Louisville, Ky., assignor to Louisville Bedding Co., Louisville, Ky.
Division of Ser. No. 482,515, Feb. 21, 1990, Pat. No. 4,985,953.
This application Oct. 22, 1990, Ser. No. 600,812
Int. Cl.[5] D05B *11/00;* A47G *9/00*
U.S. Cl. 112—2.1 10 Claims

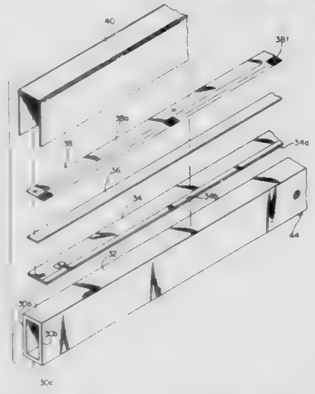




1. A method of making a fitted mattress cover having a top panel for fitting in overlaying relationship to a top surface of a mattress and a peripheral skirt for overlaying the sides and ends of the mattress, comprising the steps of:
concurrently progressively stitching a plurality of longitudinally stressed, parallel, spaced-apart rows of elastic cords into the peripheral skirt generally parallel to a juncture of the peripheral skirt and top panel; and,
allowing the elastic cords to progressively relax as the cords are stitched into the skirt thereby progressively forming gathers in the skirt.

5,056,442
TIGHT END DETECTOR FOR TUFTING MACHINES
Lawrence C. Nickell, Fairlea, and Curtis L. Perkins, Ronceverte, both of W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.
Filed Aug. 14, 1990, Ser. No. 567,172
Int. Cl.[5] B69H *63/04;* D05C *15/04*
U.S. Cl. 112—80.18 9 Claims



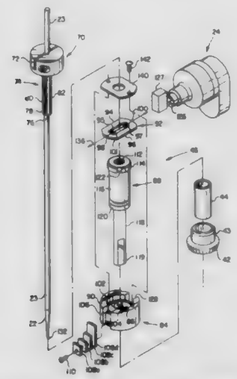


1. A tight end detector for tufting machines and the like for sensing occurrence of yarn tension above a predetermined tightness level in any of a plurality of yarn ends moving along a plural yarn feed path to a textile processing machine and signalling detection of yarn tensions above said tightness level prior to yarn breakage, comprising an elongated tight end detector bar assembly for contacting the yarns spanning the width of the yarn feed path and defining an elongated narrow width planiform contact surface over which the yarns are to be drawn, the yarn contacting bar assembly comprising an elongated hollow tubular rigid bar of rectangular cross section having a narrow yarn-confronting first face joined along lateral edges thereof by side walls forming leading and trailing sides of the bar relative to yarn feed direction along the feed path, a stationary switch-contact-forming PC board having a dielectric base panel fixed to and covering the first face over the whole area thereof and a narrow stripe electrically conductive layer thereon extending along and located slightly inwardly of the lateral PC board edge substantially registering with the trailing side of the bar, a thin spacer strip of electrically insulating material fixed against and covering said PC board over substantially half the width of said first face extending from the lateral edge thereof adjoining said leading side of the bar, a leaf-metal electrical contact member of thin strip material having an uninterrupted spine portion extending at substantially co-extensive covering registry with said spacer strip and fixed therealong to the spacer strip and having parallel spaced contact finger formations protruding therefrom to a contact zone overlying said narrow stripe conductive layer of the PC board with the fingers normally spaced out of electrical contact therewith but being deformable by force of the yarn ends thereon exceeding said predetermined tightness level to be flexed into electrical circuit-making contact with the underlying PC board conductive layer, and thin plastic sheet material covering the first face of the bar and the PC board, spacer strip and leaf-metal contact member surmounted thereon providing a wear surface against which the yarn ends bear during travel along the yarn feed path.

5,056,443

Patent Not Issued For This Number

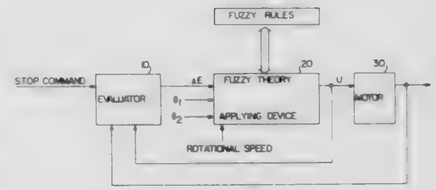
5,056,444
METHOD AND APPARATUS FOR AUTOMATICALLY STEERING AND ADJUSTING THE HEIGHT OF A NEEDLE IN A CHENILLE TYPE EMBROIDERY MACHINE
Robert G. Lowry, Highlands Ranch, and Ronald C. Rockwell, Aurora, both of Colo., assignors to Melco Industries, Inc., Denver, Colo.
Filed Aug. 29, 1990, Ser. No. 575,435
Int. Cl.[5] D05B *69/00;* D05C *3/02*
U.S. Cl. 112—221 25 Claims

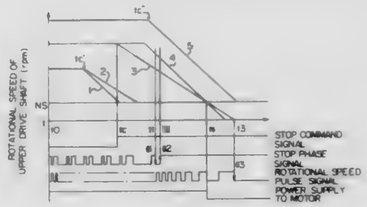


1. An apparatus for automatically adjusting a height of a needle in an embroidery machine, comprising:
a needle height adjuster assembly comprising a first portion rotatably inserted into a second portion, wherein the needle is adjustably received by said first portion;
means for rotating said needle assembly about a longitudinal axis of the needle; and
means for disengaging said second portion of said assembly from said first portion of said assembly including the needle, wherein the height of the needle is adjusted by rotating said first portion while said second portion is disengaged therefrom.

25. A method for forming a needle steering and height adjustment apparatus for an embroidery machine, comprising the steps of:
inserting a needle bar into which the needle is threadably received into a needle bar clamp;
threading said clamp into an internal needle height adjuster;
rotatably inserting said internal adjuster into a height adjuster locking block;
positioning an actuator having an extendable shaft opposite said locking block; and
slidably inserting a spring biased locking clip into said locking block, wherein said clip is biased to lock said locking block to said internal adjuster for steering the needle and said clip is moved against said bias by said extendable shaft to unlock said locking block from said internal adjuster for height adjustment of the needle.

5,056,445
CONTROL SYSTEM FOR STOPPING SEWING MACHINE NEEDLE AT PREDETERMINED POSITION
Akira Orii, Hachioji, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Tokyo, Japan
Filed Dec. 1, 1989, Ser. No. 444,643
Claims priority, application Japan, Dec. 2, 1988, 63-304158
Int. Cl.[5] D05B *69/22*
U.S. Cl. 112—275 11 Claims





1. A control system for stopping at a predetermined position a vertically reciprocating needle of a sewing machine including an electric motor and an upper drive shaft connected at one end to the electric motor to be driven thereby, the needle being connected to the other end of the upper drive shaft to be vertically reciprocated in synchronism with rotation of the upper drive shaft, said control system comprising:
means for generating a signal commanding that rotational speed of the upper drive shaft decrease toward a predetermined rotational speed (NS); and
fuzzy theory applying means operated in response to said means for generating a signal, the fuzzy theory applying means responding to inputs of rotational speed difference ($N\theta_1$–$N\theta_2$) at two specific rotational angles (θ_1, θ_2) of the upper drive shaft and a rotational speed ($N\theta_2$) at the second rotational angle (θ_2) to thereby output a control command to the electric motor to bring the upper drive shaft to a standstill at a predetermined rotational angle (θ_3).

5,056,446

AUTOMATIC THREAD SUPPLY DEVICE

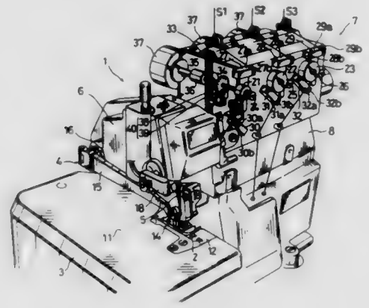
Minoru Nakano, and Toru Yamazaki, both of Osaka, Japan, assignors to Pegasus Sewing Machine Mfg., Co., Ltd., Osaka, Japan

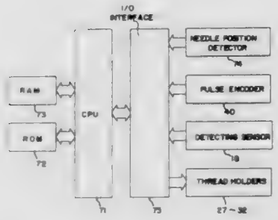
Filed Jul. 26, 1989, Ser. No. 386,082

Claims priority, application Japan, Jul. 27, 1988, 63-187838; Jul. 27, 1988, 63-187839

Int. Cl.[5] D05B *47/04*

U.S. Cl. 112—302 **5 Claims**





4. An automatic thread supply device for an overlocking sewing machine having a main shaft, thread sources and a sewing area where a thread chain is formed during one sewing cycle according to rotation of said main shaft, said automatic thread supply device comprising:

thread supply means for conveying a transporting force to needle and looper threads of said thread sources through rollers, each of which is rotating at a certain speed independently from said main shaft;

thread supply stopping means for holding the threads in order to stop the threads from being supplied to the thread supply means, the thread supply stopping means being between the thread supply means and said thread sources;

memory means for storing a predetermined length ratio of the needle and the looper threads; and

control means for controlling the thread supply stopping means according to said predetermined length ratio of the needle and looper threads stored in said memory means to hold the threads for optimum periods during said one sewing cycle in order that the thread supply means supply the threads to said sewing area.

5,056,447

REIN-DEER KITE

Gaudencio A. Labrador, 1312 Leaf Terr., San Diego, Calif. 92114

Filed Oct. 13, 1988, Ser. No. 255,657

Int. Cl.[5] F03D *5/02*

U.S. Cl. 114—39.1 **26 Claims**

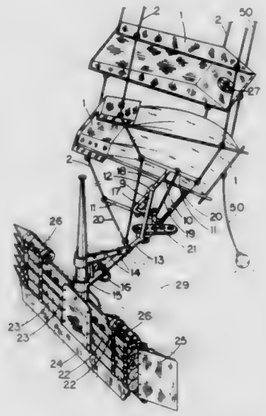
1. A lighter than air inflatable device, comprising:

a plurality of flat generally rectangular kites assembled into a vertical array to function as a wind sail;

each kite being formed with left and right trapezoidal walls extending downward at sides of a flat main body portion and each kite being formed with a deflection flap;

each pair of left and right walls active as aerodynamic stabilizers to form a concave face with the body for stability and lift;

each deflection flap attached to the rear of each kite body to provide lift;



each kite including the body, walls, and flap being formed of binding means surrounding a honeycomb array of containers inflated with light gas to further provide lift;

control ropes connecting the kites together at their corners in an evenly spaced manner;

an anchor; and,

each binding means being in the form of strings or straps which form a net structure to entrap each honeycomb array.

5,056,448

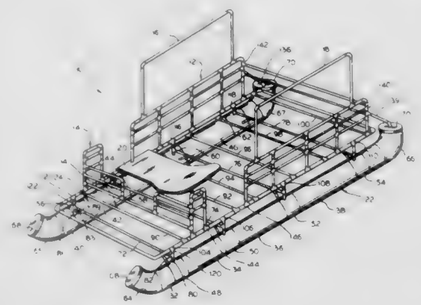
PVC BOAT

Terry L. Miller, Sr., P.O. Box 162, Afton, Okla. 74331

Filed Mar. 19, 1990, Ser. No. 495,402

Int. Cl.[5] B63B *1/00*

U.S. Cl. 114—61 **2 Claims**



1. A boat comprising:

a pair of elongated spaced apart parallel pontoons formed by a plurality of tubular polyvinyl chloride pontoon pipe sections coaxially adhesively connected together by a plurality of tubular polyvinyl chloride pontoon pipe section connectors having a perimeteral shape and size substantially equal to the perimeteral shape and size of said pontoon pipe sections;

a plurality of parallel spaced apart polyvinyl chloride transverse members connected between said pontoons;

a deck frame formed by a plurality of polyvinyl chloride pipes and pipe fittings adhesively secured together to form a perimeteral portion and a plurality of spaced apart parallel cross members connected between opposing portions of said perimeteral portion, said deck frame including a plurality of mounting members;

each pontoon pipe section connector including a polyvinyl chloride pipe T-fitting having three attachment connections, one attachment connection of each T-fitting adhesively connected to one of said pontoon pipe section connectors, a second attachment connection of each T-fitting adhesively connected to an end of one of said transverse members and a third attachment connection of each T-fitting adhesively connected to one of said mounting members on said deck frame.

5,056,449

SAIL BATTEN

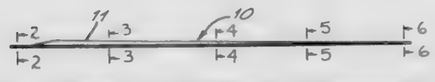
Ian C. Howlett, Chestnut Cottage, Beaulieu, Hampshire SO42 7YB, England

Filed Apr. 11, 1990, Ser. No. 508,155

Claims priority, application United Kingdom, Apr. 12, 1989, 8908280

Int. Cl.[5] B63H *9/04*

U.S. Cl. 114—103 **9 Claims**



1. A sail batten for use in stiffening a sail, comprising a one piece elongate member having a rectangular section, lying in a plane and having opposite sides, opposite surfaces extending between the opposite sides, and opposite ends, the one piece member having a mid width channel section portion rising from only one surface of the member, and out of the plane of the member, the channel section portion gradually decreasing in height from one end of the member to the opposite end of the member so that the stiffness of the member varies along the length of the member from its one end to its opposite end, the member including side sections extending along the opposite sides of the member, on opposite sides of the channel section portion.

5,056,450

PERSONAL WATERCRAFT WITH EXTENDABLE HANDLEBAR

Albert A. Mardikian, 45 Goleta Point Dr., Corona del Mar, Calif. 92625

Filed Dec. 22, 1989, Ser. No. 455,632

Int. Cl.[5] B63H *25/46*

U.S. Cl. 114—144 R **10 Claims**

1. A personal watercraft for use by a rider in a sitting or standing position comprising:

a hull adapted for movement across a water surface;

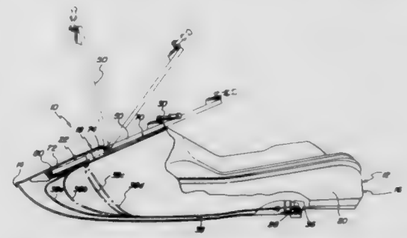
at least one jet pump including a steerable nozzle secured to said hull for generating a rearward stream of water from the nozzle which provides forward thrust to propel the craft forward, the nozzle being pivotally mounted on the hull;

an elongated steering arm;

a handlebar rotatably mounted on one end of the steering arm;

means connected between the handlebar and the nozzle so that the nozzle will follow the rotation of the handlebar to thereby control the direction of movement of the hull; and

securing means for attaching the end of the steering arm remote from the handlebar to the hull, the securing means and the steering arm being constructed and arranged so that the arm may be extended from a retracted position to a fully extended position relative to the hull through the



application of force only to the handlebar by a rider while the hull is in motion, the securing means being further arranged so that the arm may be rotated vertically to accommodate a rider in a standing position only when the arm is in an extended position whereby the steering arm may be placed in a retracted position to accommodate the rider in a sitting position and in an extended and rotated position to accommodate the rider in a standing position.

5,056,451

RUDDER CONSTRUCTION WITH INTEGRAL STOCK

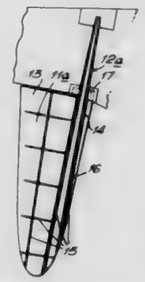
Ian C. Howlett, Chestnut Cottage, Beaulieu, Hampshire S042 7YB, England

Filed Apr. 11, 1990, Ser. No. 508,146

Claims priority, application United Kingdom, Apr. 12, 1989, 8908277

Int. Cl.[5] B63H *25/06*

U.S. Cl. 114—162 **9 Claims**



1. A method of constructing a rudder of a water-borne craft, comprising:

forming two female moulds having open sides, each mould having the shape of one half the rudder, the shape of each half of the rudder including a blade portion and a stock portion;

forming a rudder half in each female mould by the lay-up of material into each mould through the open side of each mould, to form the blade portion of each rudder half and the stock portion of each rudder half with the stock portion extending substantially continuously and in aligned fashion through most of the length of the blade portion and out through a top end of the blade portion to form an external part of the stock portion;

removing each rudder half from each respective female

mould through the open side of each respective female mould;

placing the two mould halves in a face to face relationship and connecting the rudder halves to each other to form the rudder with integral blade and stock portions.

5,056,452

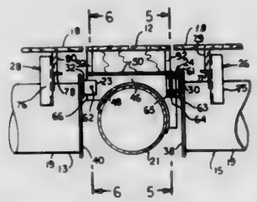
FLOATING DOCK CONNECTION

Charles R. McCain, 9060 Old Albion Rd., Girard, Pa. 16417

Filed Aug. 27, 1990, Ser. No. 572,699

Int. Cl.[5] B63B *35/72*

U.S. Cl. 114—263 **13 Claims**



1. A floating dock comprising a plurality of elongated finger sections each comprising a single relatively rigid integral member having a first end, a second end and an intermediated part and disposed in spaced parallel relation to one another with spaces therebetween,

a plurality of headwalk sections each comprising two parallel float members,

each said headwalk section having a first end and a second end,

each said headwalk section having a first end disposed in alignment with one another and perpendicular to said finger sections,

each said headwalk section being disposed in a said space between two adjacent said finger sections,

laterally spaced first horizontal hinge means swingably connecting each said first end of each said headwalk section to a said intermediate part of said finger section to swing about a horizontal axis.

5,056,453

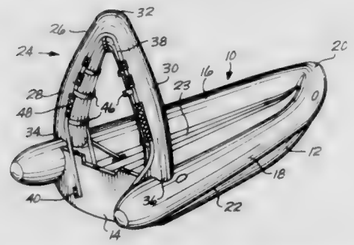
APPARATUS FOR SELF-RIGHTING A RIGID INFLATABLE BOAT

Derek Wright, 962 Plymouth Place, North Vancouver, B.C., Canada V7H 2J2

Continuation-in-part of Ser. No. 479,950, Feb. 14, 1990, abandoned. This application Sep. 18, 1990, Ser. No. 584,513

Int. Cl.[5] B63B *7/08*

U.S. Cl. 114—345 **8 Claims**



1. An apparatus for self-righting a rigid inflatable boat, comprising:

an elongated boat hull having a determinable center of gravity and beam and having an elongated rigid bottom and inflatable sidewalls, said sidewalls having top, bottom and inner edges;

an inflatable arch member having first and second leg portions extending upwardly and inboard from opposite sidewalls of said hull and converging at a central point spaced upwardly a first predetermined vertical distance above said top edges;

said first predetermined distance being at least equal to the sum of one-half of the beam of the hull plus a distance equal to a vertical distance at which said center of gravity is located above said sidewalls' bottom edges; and

each said leg portion having an axial centerline which extends upwardly and inwardly substantially between its respective sidewall and said central point, each said axial centerline passing vertically above said inner edge of its respective sidewall at a vertical level above said bottom edge a distance equal to at least one-half of the vertical distance between said central point and said bottom edge;

said inflatable arch member being sized to have an overall width substantially not greater than the beam of said boat and to provide a total displacement sufficient to lift said boat, said arch member being positioned along said elongated boat hull aft of said center of gravity.

5,056,454

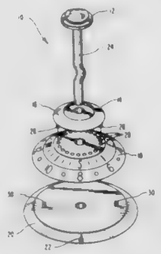
UTILITY LOCATOR

Lance H. Turner, 276 E. 4000 North, Provo, Utah 84604

Filed Jun. 22, 1989, Ser. No. 369,755

Int. Cl.[5] G09F *11/04*

U.S. Cl. 116—209 **25 Claims**



1. A utility locator for providing upon inspection from the surface of the ground preselected information about a utility buried in the ground, said locator comprising:

(a) a multiple piece assembly comprising:

(i) a first piece having thereon a first means for indicating the type of the utility,

(ii) a second piece having thereon a second means for cooperating within said multiple piece assembly to selectively indicate the drift of the utility,

(iii) a third piece carrying thereon a third means for cooperating with said second means to selectively indicate the drift of the utility and a fourth means for cooperating within said multiple piece assembly to selectively indicate the depth of the utility, said second and third pieces being capable of being positioned with respect to one another, such that the direction of drift of the utility is indicated by the relative positions of the second and third means, and

(iv) a fourth piece carrying thereon a fifth means for cooperating with said fourth means to selectively indicate the depth of the utility, said fourth piece being capable of being positioned with respect to said third piece, such that the depth of the utility is indicated by the relative positions of the fourth and fifth indication means;

(b) first fixation means for fixing the relative positions of said second and third pieces;

(c) second fixation means for fixing the relative positions of said third and fourth pieces; and

(d) means for securing the multiple piece assembly to the surface of the ground above the utility.

5,056,455

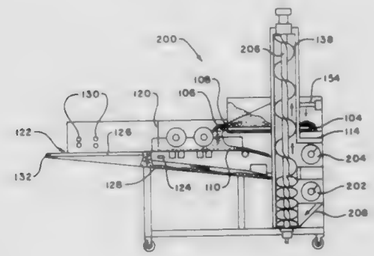
BREADING MACHINE

Paul Ritz, Marblehead, Ohio, assignor to Stein, Inc., Sandusky, Ohio

Filed Aug. 9, 1989, Ser. No. 391,477

Int. Cl.[5] A23P *1/08;* **B05C** *19/06*

U.S. Cl. 118—17 **17 Claims**



1. A breading machine for dispensing a coating material onto a work product, comprising,

an enclosure defining a breading chamber, and means to convey work products through said breading chamber,

a breading hopper adapted to dispense a coating material on said work product within said breading chamber,

a first generally horizontal screw positioned in a first housing adapted to accept excess coating material from said breading chamber,

a second generally vertical screw positioned in a second housing adapted to supply breading material to said breading hopper,

said first screw acting to convey said excess breading material to said second screw which acts to convey said excess breading material to said breading hopper, wherein said first screw is positioned in overlapping directly adjacent relationship to said second screw such that said first and second screws are in auger-to-auger contact for direct transfer of said breading material therebetween.

5,056,456

AUTOMATICALLY OPENED AND CLOSED BARREL

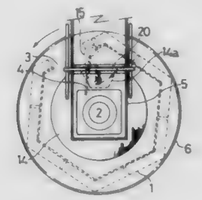
Takashi Kobayashi, 60-4, Aza Susaki, Oaza Saijo, Oharu-cho, Aichi-ken Ama-gun, Japan

Filed Oct. 2, 1989, Ser. No. 416,326

Claims priority, application Japan, Jul. 21, 1989, 1-189257

Int. Cl.[5] B05C *3/08;* **C25D** *17/20*

U.S. Cl. 118—418 **12 Claims**



1. An apparatus for automatically opening and closing a lid pivotably mounted to a barrel to cover an opening in the barrel, the barrel being rotatable, said apparatus comprising:

a lever adapted to be fixed for pivotal movement with the lid;

a cam adapted to be mounted for rotation with the barrel at an end thereof, said cam having a groove formed across a peripheral edge thereof;

a supplementary plate;

support means for rotatably supporting the barrel, and for slidably supporting said supplementary plate for sliding movement relative to said cam between a covering position in which said supplementary plate is adjacent said cam and is adapted to cover said groove formed in said peripheral edge of said cam, and an exposing position in which said supplementary plate is separated from said cam, said support means being adapted to be vertically movable;

spring means for biasing said supplementary plate toward said covering position; and guide means, operatively connected with said support means, for guiding said supplementary plate to move between said covering position as said support means is moved vertically; and

guide means, operatively connected with said support means, for guiding said supplementary plate to move between said covering position and said exposing position as said support means is moved vertically.

5,056,457

VARNISH IMPREGNATION METHOD AND APPARATUS

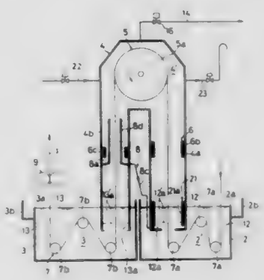
Mitsuaki Harada, Osaka, Japan, assignor to Takuma Co., Ltd.; Takuma Research & Development Co., both of Osaka, Japan;

Filed Nov. 2, 1989, Ser. No. 430,329

Claims priority, application Japan, Nov. 18, 1988, 63-292958; Feb. 8, 1989, 1-29043; Feb. 14, 1989, 1-34670; Feb. 14, 1989, 1-34671; Feb. 14, 1989, 1-34672

Int. Cl.[5] B05C *3/152*

U.S. Cl. 118—419 **20 Claims**



1. A varnish impregnation apparatus comprising:

a low-viscosity liquid storage tank containing a low-viscosity liquid such as a solvent;

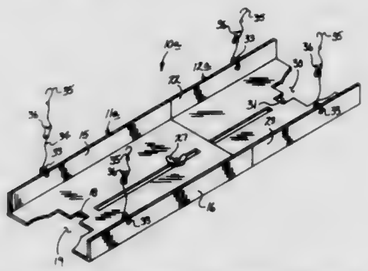
a varnish storage tank for holding a varnish;

a thermal syphon room provided with a base material inlet opening under a liquid surface in said low-viscosity liquid storage tank and a base material outlet opening under a liquid surface in said varnish storage tank;

a guiding device for guiding a sheet-like base material along a path sequentially through said low-viscosity liquid storage tank, said thermal syphon room and said varnish storage tank; and

a heating device for heating said base material in said thermal syphon room to evaporate low-viscosity liquid impregnated in said base material as it is guided through the low-viscosity liquid in said low-viscosity liquid storage tank to thereby produce a vapor of said low-viscosity liquid in said thermal syphon room.

5,056,458
PAINTING SHIELD
David R. Askeland, 765 Almond Tree Ct., Dixon, Calif. 95620
Filed Feb. 5, 1990, Ser. No. 475,412
Int. Cl.[5] B05C *11/11*
U.S. Cl. 118—505 3 Claims



1. A painting shield position at between vertically aligned and spaced door frames defining a portal opening therebetween, wherein the door frames each include an irregular confronting surface relative to one another, and wherein the shield comprises,

a first longitudinally aligned tray slidably receivable within a second longitudinally aligned tray, the first and the second tray each including a respective first planar base and a second planar base, wherein the first planar base is slidably received overlying the second planar base, and

a first enclosed slot formed through the first planar base formed medially and longitudinally aligned thereof within the first tray and aligned with a second enclosed slot formed through the second planar base in the second tray and longitudinally and medially aligned through the second planar base, and

fastening means directed through the first and second slots to secure the first and second trays together, and

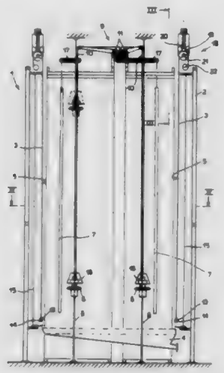
wherein each planar base includes a first and second flange coextensive with and orthogonally mounted to parallel side edge portions of each of the respective first and second planar bases, and the first planar base formed with a forward edge, and the second planar base with a further forward edge, and at least one recess formed through the forward edge and further edge of the first respective first and second planar bases, and

wherein the recess formed through the forward edge of the first planar base is of a generally "U" shaped configuration and further includes side edges and a base edge with a further "U" shaped recess medially formed of and directed through the base edge, and the further forward edge of the second planar base includes a further "U" shaped recess with further side edges and a further base edge defining the further "U" shaped recess with a yet further "U" shaped recess formed medially through the yet further base edge of the further "U" shaped recess, and the recesses formed through the first and second planar bases aligned relative to one another when the first and second trays are secured together, and

wherein the flanges of the first and second planar bases each include a rigid "O" ring pivotally mounted therethrough, each of the "O" rings aligned with one another and including a flexible line directed therefrom, the flexible line further including a hook member mounted at a forward terminal end of each flexible line, and

wherein each flexible line further includes a spool member thereof with the flexible line wound about the spool member to provide adjustment of an effective length defined by each flexible line to adjustably suspend the painting shield relative to an overlying support surface of the door frames.

5,056,459
CABINET FOR ELECTROSTATIC PAINTING
Lino Urban, Gerenzano; Gian F. Moscardini, Cornaredo, and Gabriele Missier, Milan, all of Italy, assignors to Trasmetal di Gabriele Missier, Milan, Italy
Filed Apr. 17, 1990, Ser. No. 509,836
Claims priority, application Italy, Apr. 21, 1989, 20244 A/89
Int. Cl.[5] B05B *15/12*
U.S. Cl. 118—634 11 Claims



1. Cabinet (**1**) for electrostatic painting comprising a framework (**2**) supporting flat walls (**3**) whose inner surfaces (**5**) bound a volume inside which at least one pneumatic distributor (**6**) is installed, which distributes the powders to be applied onto a workpiece (**7**) to be painted, also contained inside said volume, which cabinet is characterized in that it comprises means (**19**) for removing the powder which settles on all of the inner surfaces of said walls, said means (**19**) comprising at least one suction mouth (**19**) per each wall (**3**), which suction mouth (**19**) generates an air stream adjacent to and which cleans the inner surface (**5**) of the wall (**3**), and means (**22**) for moving each wall (**3**) past its associated suction mouth (**19**) to thereby progressively clean each wall (**3**) during the movement thereof.

5,056,460
POWDER-SPRAY CABIN HAVING A BAFFLE FOR RAW GAS IN THE SUCTION OUTFLOW
Gerhard F. Vöhringer, Markdorf, Fed. Rep. of Germany, assignor to Esb Elektrostatische Spruh-Und Beschichtungsanlagen G.F. Vohringer GmbH, Meersburg, Fed. Rep. of Germany
Filed Feb. 20, 1990, Ser. No. 483,209
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3905057
Int. Cl.[5] B05B *15/12*; B05C *19/06*
U.S. Cl. 118—634 12 Claims

1. A powder-spray cabin comprising:

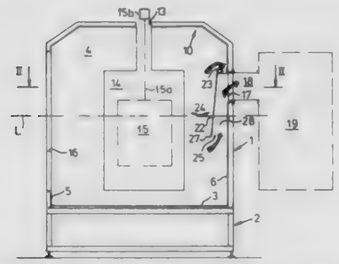
means forming an enclosure having top, bottom and peripheral walls defining a spraying chamber surrounded by said peripheral walls and formed with means for introducing an article to be sprayed with powder into said chamber, for supporting said article for spraying in said chamber and for removal of a powder-coated article from said chamber;

means in said peripheral walls forming a spraying opening communicating with said chamber, traversed by a gas flow and enabling the spraying of an article supported in said chamber with powder entrained in said gas flow through said spraying opening;

means in said peripheral walls, spaced from said spraying opening, forming an outlet opening for discharge of said gas;

collecting means connected with said outlet opening and applying suction thereto for collecting excess powder particles from the gas traversing said outlet opening;

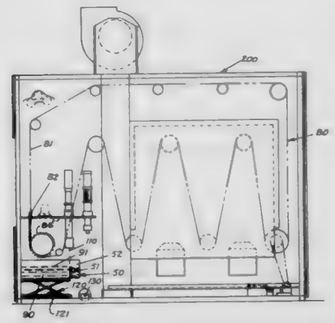
a shield member spaced from the peripheral wall formed with said outlet opening and disposed in said chamber to overlie said outlet opening and extend beyond the perimeter thereof at least downwardly so as to deflect powder-entraining gas around said shield member into said outlet opening from said chamber, said shield member defining a



plurality of suction passages around a periphery of said shield member and generally radial with respect to a center of said outlet opening between said chamber and said outlet opening, said suction passages including at least one upwardly extending suction passage with a flow cross section which increases in a direction of said bottom wall; and

means for adjusting a flow cross section of at least one of said suction passages.

5,056,461
CIRCUIT BOARD DIPPING FIXTURE
René R. Rice, Wind Lake, Wis., assignor to The Paint Line Supply Co., Inc., Burlington, Wis.
Filed Jun. 8, 1990, Ser. No. 535,433
Int. Cl.[5] B05C *3/02, 3/10*
U.S. Cl. 118—663 8 Claims



1. In a machine for coating an electronic circuit board with a protective material by dipping said circuit board into said protective material, having a tank for holding said protective material and a conveyor system for moving said circuit board though said machine, the improvement comprising:

a fixture for supporting said circuit board from said conveyor system as it passes through said machine and is coated with said protective material;

said fixture supporting said board in a generally horizontal position to the surface of said protective material in said tank so that a predetermined area of said circuit board is dipped into said protective material;

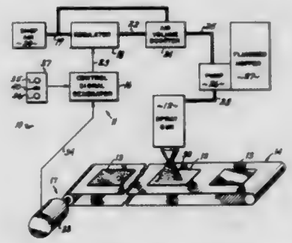
pivot means engageable with said conveyor system such that said fixture may pivot with respect to the orientation of said conveyor system and said circuit board is maintained in said generally horizontal position to said surface of said protective material;

said tank having level control means for controlling the level of said surface of said protective material in said tank to a high accuracy with respect to the horizontal position of said circuit board;

sensor means for sensing the distance between said surface of said protective material and a predetermined point;

dip depth control means responsive to said sensor means, for controlling the depth to which said circuit board is dipped into said protective material so that said depth of said dip is controlled to minimum of 0.38 mm; whereby a predetermined portion of said circuit board is coated with said protective material with out the need for masking other portions of sid circuit board with making material.

5,056,462
COATING SYSTEM WITH CORRECTION FOR NON-LINEAR DISPENSING CHARACTERISTICS
Jeffrey A. Perkins, Lorain, and Jack A. Redilla, Amherst, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio
Filed Nov. 27, 1989, Ser. No. 441,820
Int. Cl.[5] B05C *19/06*
U.S. Cl. 118—683 16 Claims



1. A powder coating system for dispensing powder coating material upon objects carried by a conveyor with a uniformity that is corrected for a non-linear relationship between the material pumped by a pumping apparatus and the speed of the conveyor, said system comprising:

a powder pumping apparatus which pumps powder coating material to a dispensing device in response to a control input signal in accordance with output characteristics at which powder is pumped by the apparatus, the characteristics having a non-linear relationship with the control input signal;

means for sensing the speed of the conveyor and for generating a conveyor speed signal in response to and related to the sensed conveyor speed;

means for storing data related to the output characteristics of said pumping apparatus; and

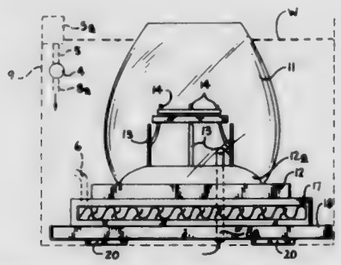
means for generating a control input signal to said pumping apparatus in response to said conveyor speed signal and the stored data, said control input signal generating means including means for transforming said conveyor speed signal in accordance with the output characteristics of said pumping apparatus to produce a non-linear control input signal in response to which the output of said pumping apparatus is linearly proportional to the conveyor speed signal.

5,056,463

AQUARIUM-TERRARIUM APPARATUS

James F. Wilkins, 8712 Dayton Oxford Rd. Apt. F, and Charles K. Hill, 8712 Dayton Oxford Rd. Apt. J., both of Carlisle, Ohio 45005

Filed Nov. 29, 1990, Ser. No. 619,397
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—5 **3 Claims**



1. An aquarium-terrarium apparatus, comprising in combination,
an aquarium enclosure, and
the aquarium enclosure including air pump means for directing pressurized air mounted to the aquarium enclosure, and
a fluid impermeable rigid dome mounted within the aquarium enclosure, and
a dome base member for sealingly receiving a lower terminal end of the dome, and
an air supply conduit, the air supply conduit projecting through the dome base interiorly of the dome, and
pot holder means mounted on the dome base member for securing a plant pot therewithin, and
wherein the pot holder means includes a plurality of pot holder legs fixedly and orthogonally mounted to a top surface of the dome base member, the pot holder legs defining a cylinder of revolution, and each pot holder leg including a branch leg extending radially interiorly and extending above each pot holder leg, and a support base extending between the pot holder legs for mounting the plant pot thereon, and at least one elastomeric band in surrounding relationship to the branch legs for engaging and securing the plant pot within the branch legs, and
wherein the dome base member includes an upper arcuate resilient convex dome base to sealingly engage a lower terminal edge of the dome, and
wherein the dome includes a plurality of through-extending openings directed through the dome contiguous with the lower terminal edge of the dome, and the air supply conduit extends above the through-extending apertures, and
including a deformable bulb, the deformable bulb coaxially aligned and including a removable fill plug mounted to an upper axial end of the bulb, and a bulb conduit coaxially aligned and mounted to a lower axial end of the bulb, and the deformable bulb including a water filled cavity therewithin permitting replenishment through the removable fill plug, and the bulb conduit in fluid communication with the air supply conduit.

5,056,464

AUTOMATED INJECTION SYSTEM FOR AVIAN EMBRYOS WITH ADVANCED FLUID DELIVERY SYSTEM

Robert H. Lewis, Cary, N.C., assignor to Embrex, Inc., Durham, N.C.

Filed Jan. 18, 1990, Ser. No. 466,878
Int. Cl.[5] A01K *45/00*
U.S. Cl. 119—6.8 **29 Claims**

1. An apparatus for automatically injecting eggs with a desired fluid such as a medical vaccine or a therapeutic preparation and which eliminates the pumping of fluids through conventional fluid handling systems and thereby increases the accuracy and precision of a volume delivery while eliminating much of the possibility of contamination of the fluid and the system, the apparatus comprising:
a syringe having a delivery tip comprising an injection needle and a portion for containing a pre-determined quantity of fluid;
means operatively associated with said syringe for intaking and delivering controllable amounts of fluids through said delivery tip of said syringe;
means for positioning a fluid reservoir in alignment with said delivery tip of said syringe so that fluid from said reservoir



may be intaken through said delivery tip and into said fluid containing portion of said syringe;
means for supporting an egg in alignment with said syringe;
a tubular punch surrounding portions of said injection needle for puncturing the upwardly facing shell portion of an egg aligned with said syringe and for forming a small opening in the shell of a supported egg;
means for moving said syringe and a supported egg in relation to one another so that the delivery tip of said syringe extends through the opening in the egg formed by said opening forming means so that said intake and delivery means can deliver a fluid through said delivery tip, through the opening and into the egg to be treated by the fluid.

5,056,465

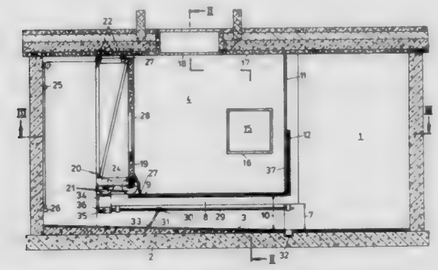
CAGE STRUCTURE FOR RESTRAINING PRIMATES

Gerald Eder, Rekawinkel; Karl Womastek, Vienna; Josef Reiländer, Vienna, and Walter Simonich, Vienna, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Mar. 28, 1990, Ser. No. 500,192
Claims priority, application European Pat. Off., Apr. 7, 1989, [illegible]
Int. Cl.[5] A01K *1/03*
U.S. Cl. 119—17 **15 Claims**

1. In a cage structure for restraining primates, such as chimpanzees in biomedical research, of the type including a bottom of rectangular ground plan formed by rods or tubes, side wall means surrounding said bottom, and a ceiling, the improvement wherein said side wall means comprise immovable side walls, a front wall, and a rear wall arranged opposite said front wall and movable towards and away from said front wall; said front wall being composed of rods or tubes and said side walls

and said rear wall being made of concrete or brickwork and having their interior surfaces smoothed; and wherein at least



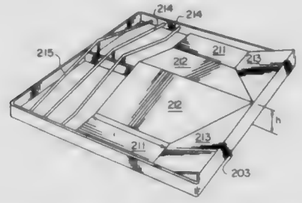
one of said side wall means and said ceiling incorporates inspection panes made of bullet-proof glass.

5,056,466

POSITIONING MEANS FOR AN ANIMAL RELATIVE TO AUTOMATIC MILKING APPARATUS

Jacobus P. M. Dessing, Nieuw-Vennep; Pieter J. Roodenburg, Lelystad; Erik A. Aurik, Amsterdam, and Folcko P. Borgman, Witteueen, all of Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Division of Ser. No. 294,794, Jan. 9, 1989, Pat. No. 5,020,477.
This application Dec. 11, 1990, Ser. No. 625,357
Claims priority, application Netherlands, Jan. 8, 1988, 8800042; Feb. 4, 1988, 8800272; Jul. 13, 1988, 8801785
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—28 **11 Claims**



1. Positioning apparatus for an animal comprising a support surface for supporting the hoof of the animal, and inclined surface means extending upwardly from said support surface so that an animal's hoof will be guided downwardly to rest on said support surface when the weight of the animal is placed on its hoof, said positioning apparatus further including a front end, a rear end and a pair of sides extending between said front and rear ends, said inclined surface means including a first inclined surface extending upwardly from said support surface toward said front end and a second inclined surface extending upwardly from said support surface away from one of said sides.

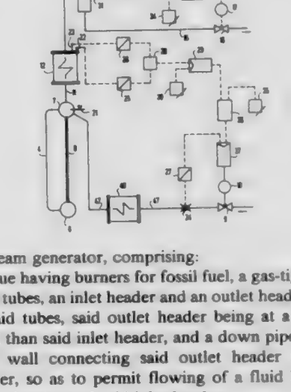
5,056,467

SWINGING FEEDER FOR LIVESTOCK WITH INSECTICIDE APPLICATION APPARATUS

Alan Schaefer, Rte. Two, Ste. Generieve, Mo. 63670

Filed Oct. 17, 1990, Ser. No. 598,929
Int. Cl.[5] A61D *7/00*; A01K *29/00*
U.S. Cl. 119—159 **8 Claims**

1. An insecticide spray applicator for suspension in space to yield to being butted by the approach of an animal, said applicator comprising:
(a) a housing forming an enclosure for animal feed to entice an animal to seek the feed in the housing;
(b) an animal access opening in said housing adjacent the location of the animal feed;
(c) a system of insecticide delivery to the animal using the housing, including a source of insecticide and spray means to deliver the insecticide upon the animal;
(d) actuator means operable at said access opening in position to be operated by an animal butting against said actuator means on seeking the feed, said actuator means upon



being butted effecting operation of said insecticide spray means; and
(e) means connected to said housing for suspending said housing for substantial swinging motion responsive to animal butting.

5,056,468

STEAM GENERATOR

Eberhard Wittchow, Erlangen; Joachim Franke, Altdorf, and Wolfgang Vollmer, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 31, 1991, Ser. No. 648,904
Claims priority, application European Pat. Off., Jan. 31, 1990, 90101940.6
Int. Cl.[5] F22D *5/26*
U.S. Cl. 122—451.5 **19 Claims**

1. A steam generator, comprising:
a gas flue having burners for fossil fuel, a gas-tight tube wall with tubes, an inlet header and an outlet header connected to said tubes, said outlet header being at a higher local level than said inlet header, and a down pipe outside said tube wall connecting said outlet header to said inlet header, so as to permit flowing of a fluid between said outlet header and said inlet header;

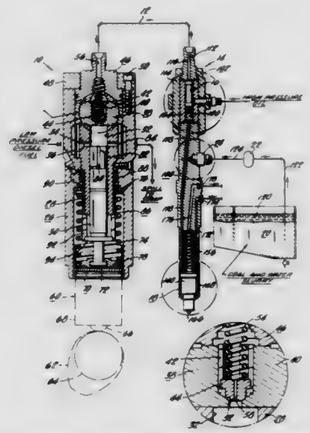
a steam line connected to said outlet header, at least one heating surface connected downstream of said outlet header in said steam line, so as to permit flowing of a fluid from said outlet header to said heating surface;
a feedwater line connected to said gas flue, an economizer connected upstream of said gas flue in said feedwater line, so as to permit flowing of a fluid from said economizer to said gas flue;
and a regulating device for influencing feedwater flow in said feedwater line, said regulating device detecting at least one of the following controlled variables:
(a) steam enthalpy in one of said heating surface and said steam line downstream of said heating surface,
(b) steam temperature in one of said heating surface and said steam line downstream of said heating surface,
(c) thermal output transfer to one of said tubes of said gas-tight tube wall,
(d) a ratio of feedwater flow in said feedwater line to steam flow in said steam line,
(e) a ratio of injection water flow into an injection cooler connected in the steam line to feedwater flow in said feedwater line, and
(f) residual moisture of steam in said steam line.

5,056,469

FUEL INJECTION SYSTEM

John A. Kimberley, East Granby, Conn., assignor to AIL Corporation, Columbia, S.C.

Filed Jun. 29, 1990, Ser. No. 546,506
Int. Cl.[5] F02D *19/04*
U.S. Cl. 123—23 **6 Claims**



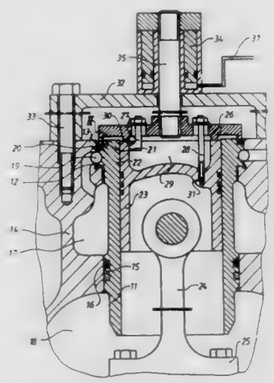
1. A fuel injection system for alternate fuels such as coal-water slurry, heavy oils and the like, comprising;
a diesel fuel injection pump for delivering timed and metered pulses of diesel fuel at injection intervals,
an injector assembly,
a cylinder within said injector assembly having first and second ends,
a free shuttle piston slideably disposed within said cylinder,
an injection line connecting said fuel injection pump to said first end of said cylinder,
an injection nozzle on said injector assembly,
passage means in said injector assembly connecting said injection nozzle with said second end of said cylinder,
means for delivering an alternate fuel into said passage means and maintaining said fuel at a minimum pressure level therein between injection intervals,
said injection nozzle comprising a normally closed spring-loaded nozzle valve adapted to open when said alternate fuel reaches a predetermined pressure,
and means for lowering the pressure in said first end of said cylinder between injection intervals to a pressure lower than said alternate fuel minimum pressure level,
the timed and metered pulses of diesel fuel producing commensurate timed and metered pulses of alternate fuel within said passage means and injection nozzle by movement of said shuttle piston, thereby opening said nozzle to produce a spray of alternate fuel therefrom.

5,056,470

PISTON-OPERATED INTERNAL-COMBUSTION ENGINE HAVING WET CYLINDER LINERS

Gerd-Michael Wolters, Immenstaad; Otto Reifenscheid, Friedrichshafen, and Michael Groddeck, Meckenbeuren, all of Fed. Rep. of Germany, assignors to S. Soga & Co.

PCT No. PCT/DE89/00019, § 371 Date Aug. 15, 1990, § 102(e) Date Aug. 15, 1990, PCT Pub. No. WO89/07710, PCT Pub. Date Aug. 24, 1989
PCT Filed Jan. 17, 1989, Ser. No. 423,413
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1988, 3803890
Int. Cl.[5] F02F *1/10*
U.S. Cl. 123—41.84 **3 Claims**



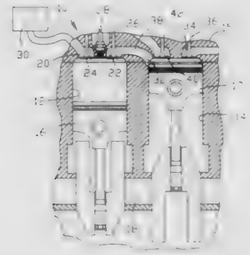
1. A piston-operated internal-combustion engine having wet cylinder liners, whose collars are each arranged in the cylinder block and crankcase in a sunk manner, the bearing eye of the connecting rod pertaining to each cylinder on the side of the crankshaft being wider than the inside diameter of the cylinder liner, and the piston / connecting rod assembly which is assigned to each cylinder being mountable and dismountable only together with the pertaining cylinder liner as a unit, characterized in that, at the end of the collar of each cylinder liner on the cylinder head side, an external thread is arranged which is concentric with respect to the collar, that the external thread, with respect to the outer diameter of the collar of the cylinder liner has a smaller outer diameter while forming a plane surface which pointed to he cylinder head, and in that each piston has a device arranged in the piston head for the application of a load lifting device.

5,056,471

INTERNAL COMBUSTION ENGINE WITH TWO-STAGE EXHAUST

Norman R. Van Husen, 46000 Geddies Rd.-Lot 189, Canton, Mich. 48188

Filed Oct. 12, 1990, Ser. No. 597,545
Int. Cl.[5] F02B *75/28*
U.S. Cl. 123—51 R **4 Claims**



1. An internal combustion reciprocating piston engine (10) comprising:
(a) a first cylinder (12), said fist cylinder (12) having ignition means (28) associated therewith;
(b) a first cylinder piston (16), reciprocally residing within said first cylinder (12), said first cylinder piston (16) being reciprocated by a first reciprocating means, said first cylinder piston (16) successively having a first intake stroke, a first compression stroke, a first power stroke and a first exhaust stroke;
(c) a first cylinder intake port (20) located in said first cylinder (12);
(d) a first cylinder intake valve (24) operatively associated with said first cylinder intake port (20), said first cylinder intake valve (24) being capable of closing said first cylinder intake port (20) by operation of a first camming means in communication therewith, said first cylinder intake port (20) being opened by said first cylinder intake valve (24) during a first cylinder intake stroke of said first cylinder piston (16), said first cylinder intake port (20) being closed by said first cylinder intake valve (24) during a first cylinder compression stroke, a first cylinder power stroke and a first cylinder exhaust stroke of said first cylinder piston (16);
(e) a first cylinder exhaust port (22) located in said first cylinder (12);
(f) a first cylinder exhaust valve (26) operatively associated with said first cylinder exhaust port (22), said first cylinder exhaust valve (26) being capable of closing said first cylinder exhaust port (22) by operation of a second camming means in communication therewith, said first cylinder exhaust port (22) being opened by said first cylinder exhaust valve (26) during said exhaust stroke of said first cylinder piston (16), said first cylinder exhaust port (22) being closed by said first cylinder exhaust valve (26) during said intake stroke, said compression stroke and said power stroke of said first cylinder piston (16);
(g) a second cylinder (14) in communication (22) (38) (32) with said first cylinder (12);
(h) a second cylinder piston (17) reciprocally residing within said second cylinder (14), said second cylinder piston (17) being reciprocated by a second reciprocating means, said second cylinder piston (17) leading said first cylinder piston (16) by approximately a 30 to 90 degree phase angle such that said second cylinder piston (17) is retreating from top dead center when said first cylinder piston (16) is at top dead center, said second cylinder piston (17) successively having a second cylinder intake-power stroke, a second cylinder exhaust stroke, a second cylinder intake-purge stroke and a second cylinder exhaust-purge stroke;
(i) a second cylinder intake port (32) located in said second cylinder (14);
(j) a second cylinder exhaust port (34) located in said second cylinder (14);
(k) a second cylinder exhaust valve (36) operatively associated with said second cylinder exhaust port (34), said second cylinder exhaust valve (36) being capable of closing said second cylinder exhaust port (34) by operation of a third camming means in communication therewith, said second cylinder exhaust port (34) being opened by said second cylinder exhaust valve (36) during said exhaust stroke of said second cylinder piston (17), said second cylinder exhaust port (34) being closed by said second cylinder exhaust valve (36) during said intake-power stroke of said second cylinder piston (17);
(l) fluidic communication means (38) between said first cylinder exhaust port (22) and said second cylinder intake port (32);
(m) fuel supply means (30) for providing a combustible fuel to said first cylinder (12) through said first cylinder intake port (20), said combustible fuel being introduced into said first cylinder (12) during said intake stroke of said first cylinder piston (16);
(n) said combustible fuel producing combustion gases within said first cylinder (12) upon ignition of said combustible fuel mixture by an ignition means, said combustion gases being expelled from said first cylinder (12) during said exhaust stroke of said piston (16);
(o) said combustion gases flowing to said second cylinder (14) via said first cylinder exhaust port (22), said fluidic communication means (38) and said second cylinder intake port (32);
(p) said combustion gases being received by said second cylinder (14) during said intake-power stroke of said second cylinder piston (17), said combustion gases being expelled from said second cylinder (14) during said exhaust stroke of said second cylinder piston (17);
(q) an auxiliary intake port (40) located in said second cylinder (14) and an auxiliary intake valve (42) operatively associated with said auxiliary intake port (40);
(r) said second cylinder auxiliary intake valve (40) being capable of closing said second cylinder auxiliary intake port (40) by operation of a fourth camming means in communication therewith;
(s) said second cylinder auxiliary intake port (40) being opened by said second cylinder auxiliary intake valve (42) during the intake-purge stroke of said second cylinder piston (17); and,
(t) said second cylinder auxiliary intake port (40) being closed by said second cylinder auxiliary intake valve (42) during the exhaust stroke of said second cylinder piston (17).

5,056,472

4-CYCLE 12-CYLINDER ENGINE

Toshikazu Kurokawa; Hiroshi Sumimoto; Takashiga Tokushima, and Tadao Suemori, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 4, 1990, Ser. No. 532,632
Claims priority, application Japan, Jun. 6, 1989, 1-143392; Jun. 6, 1989, 1-143393
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 MV **10 Claims**

1. A four cycle, twelve cylinder engine, including six cylinders arranged in a first row and six cylinders arranged in a second row, comprising:
a common crankshaft for said cylinders arranged in said first row and said cylinders arranged in said second row, said cylinders oriented so as to provide a V-shaped cylinder arrangement,
a first cylinder group comprising three cylinders from one end of said first row,

a second cylinder group comprising the remaining three cylinders in said first row,

a third cylinder group comprising three cylinders from one end of said second row,

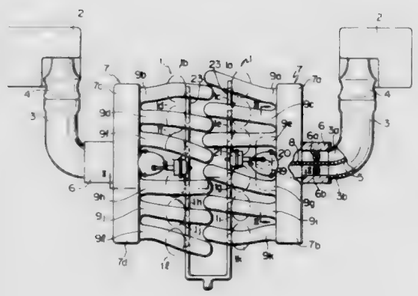
a fourth cylinder group comprising the remaining three cylinders in said second row,

said cylinders in each cylinder group having intake stroke timings spaced 240° in terms of angle of rotation of said crankshaft,

said cylinders in the first cylinder group having intake stroke timings spaced 120° in terms of angle of rotation of said crankshaft relative to said cylinders in the second cylinder group,

said cylinders in the third cylinder group having intake stroke timings spaced 120° in terms of angle of rotation of said crankshaft relative to said cylinders in the fourth cylinder group,

a first common intake passage means connected, through first branch intake passages, with respective cylinders in said first cylinder group,



a second common intake passage means connected, through second branch intake passages, with respective cylinders in said second cylinder group,

a third common intake passage means connected, through third branch intake passages, with respective cylinders in said third cylinder group, and

a fourth common intake passage means connected, through fourth branch intake passages, with respective cylinders in said fourth cylinder group,

said first common intake passage means and said second common intake passage means being communicated with each other at a first upstream portion thereof, and said third common intake passage means and said fourth common intake passage means being communicated with each other at a second upstream portion thereof, said first and second upstream portions being spaced from each other so that intake resonant supercharging can be achieved in both the first row and the second row of cylinders.

5,056,473

INTAKE DEVICE FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

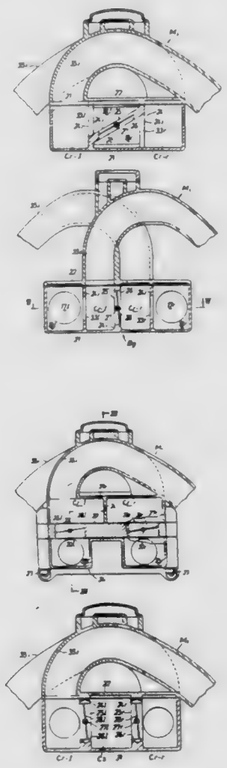
Yasuaki Asaki; Masaaki Hiratani, and Yasuo Kitami, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1990, Ser. No. 530,008

Claims priority, application Japan, May 29, 1989, 1-135199

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MB **8 Claims**



1. An intake device for a multi-cylinder internal combustion engine, said engine being V-shaped and including left and right groups of cylinders having such an order of ignition that any one of the cylinders is not ignited immediately before or after ignition of the other cylinders of the same group, and said intake device comprising a pair of resonance chambers independently communicating with said left and right groups of cylinders, and a pair of resonance passages communicating at their downstream sides with the resonance chambers and at their upstream sides with the atmosphere through a throttle valve, wherein said pair of resonance chambers and said pair of resonance passages are disposed in parallel in a V-space defined between the left and right groups of cylinders, with a common dividing wall interposed therebetween.

5,056,474

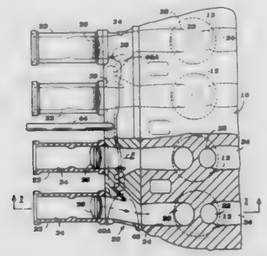
INTERNAL COMBUSTION ENGINE HAVING MULTIPLE CARBURETORS AND A STARTING MIXTURE

Etsuhiro Tezuka, Hamamatsu; Koichiro Kaji, Iwata, and Toru Ichinose, Fukuroi, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 378,833, Jul. 12, 1989, abandoned, which is a division of Ser. No. 792,223, Oct. 25, 1985, Pat. No. 4,867,109, which is a continuation of Ser. No. 410,390, Aug. 23, 1982, abandoned, which is a continuation of Ser. No. 115,414, Jan. 25, 1980, abandoned, which is a continuation of Ser. No. 854,260, Nov. 23, 1977, abandoned. This application Aug. 31, 1990, Ser. No. 577,088

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MB **2 Claims**



1. A fuel enrichment system for a multi cylinder internal combustion engine having a plurality of cylinders, a separate carburetor for each of said cylinders, a manifold interposed between said cylinders and said carburetors for supplying a fuel/air mixture from said carburetors to said cylinders, said manifold having individual passageways each extending from one of said carburetors to one of said cylinders, balance passage means interposed between said carburetors and said cylinders for communicating said passageways of said manifold with each other, and means for delivering a starting fuel/air mixture to said cylinders through said balance passage means.

5,056,475

MOTION CONVERSION MECHANISM FOR CONVERTING BETWEEN ROTATING AND RECIPROCATING MOTION AND AN INTERNAL COMBUSTION ENGINE USING THE SAME MECHANISM

Young K. Park, Soungsan Siyoung Apt., 17-1305, 450, Soungsan 2-dong, Mapo-ku, Seoul 121-252, Rep. of Korea

PCT No. PCT/KR89/00009, § 371 Date Dec. 20, 1989, § 102(e) Date Dec. 20, 1989, PCT Pub. No. WO89/10502, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 22, 1989, Ser. No. 438,403

Claims priority, application Rep. of Korea, Apr. 22, 1988, 88-4603[U]

Int. Cl.[5] F02B *75/22*

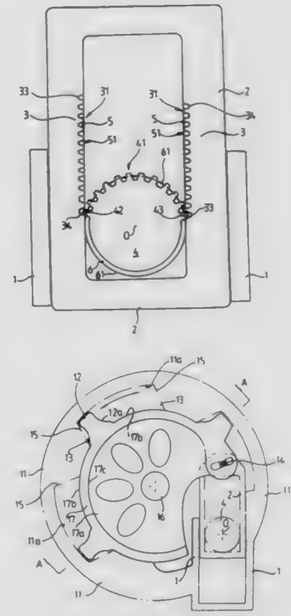
U.S. Cl. 123—55 R **15 Claims**

1. A motion conversion mechanism for converting between rotating motion and reciprocating motion comprising:

a reciprocator including two inner opposed sides and two racks, one rack being disposed on each of the inner sides, at least one of the racks having an acceleration/deceleration tooth;

a guide supporting the reciprocator for reciprocating movement; and

a pinion disposed between the racks of the reciprocator, having a circumference and pinion teeth disposed along part of the circumference, the pinion teeth alternatively engaging the respective racks, the pinion rotating about an axis in response to reciprocating movement of the reciprocator, the pinion having an acceleration/deceleration tooth engaging the acceleration/deceleration tooth of the rack, wherein the intersection of a straight line drawn from the axis of the pinion perpendicular to the reciprocating movement of the racks and a line normal to and passing through a point of contact between the accelera-



tion/deceleration tooth of the rack and the acceleration/deceleration tooth of the pinion gradually and smoothly move along the straight line as the pinion rotates.

5,056,476

VARIABLE VALVE DURATION AND LIFT FOR AN INTERNAL COMBUSTION ENGINE

Brian T. King, 48000 Elkview Road, Sardis, BC, Canada V2R 1B1

Filed Aug. 28, 1990, Ser. No. 573,708

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **14 Claims**

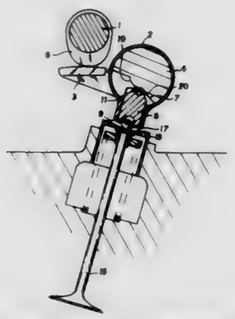
1. A mechanism to actuate a valve in an internal combustion engine, comprising:

a camshaft carrying a camlobe;

a fulcrum rotatable about its own axis;

a first lever rotatable about the axis of said fulcrum, and having both camfollower means to engage said camlobe for rotation of said first lever by rotation of said camlobe, and means for engaging operatively said valve, said means for engaging operatively said valve being extensible relative to said first lever so as to actuate said valve;

means for extending, relative to said first lever, said means for engaging operatively said valve, so as to actuate said valve when said first lever is rotated by rotation of said camlobe;



said fulcrum having means for varying the phase relationship between rotation of said first lever rotated by rotation of said camlobe, and extension, relative to said first lever, of said means for engaging operatively said valve, so as to vary the duration and lift of said valve relative to the duration and lift of said camlobe.

5,056,477

APPARATUS FOR ADJUSTING A ROTATIONAL ANGULAR RELATIONSHIP BETWEEN A CAMSHAFT AND ITS DRIVE ELEMENT

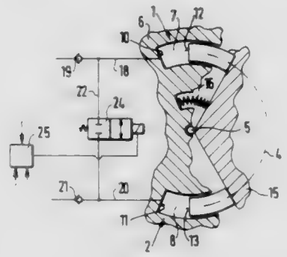
Ernst Linder, Muehlacker, and Helmut Rembold, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

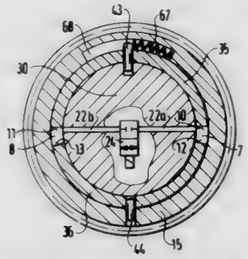
Filed Jul. 6, 1990, Ser. No. 549,034

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930157

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **24 Claims**





1. An apparatus for adjusting a rotational angular relationship of a camshaft (**6**), serving in particular to actuate gas exchange valves of an internal combustion engine, to its drive element (**15**), having two control motors (**1**, **2**) actuated by a control pressure medium with said control motors located opposite one another in an adjusting direction for rotation of the camshaft relative to the drive element, each control motor having two first walls (**10**, **11**), movable relative to one another in the adjusting direction, and second walls (**12**, **13**) which are each coupled to one another in such a way that upon adjustment in the adjusting direction, the first or second walls are adjusted in the same direction, and in this process the volume enclosed in a work chamber, defined by one first and one second wall each, increases whenever the volume in the other work chamber decreases, and these first and second work chambers (**7**, **8**) defined by the first and second walls can be made to communicate via a valve with a control pressure fluid source, characterized in that the volumes enclosed in the work chambers (**7**, **8**) upon an adjustment are increased and decreased by equal amounts, and the work chambers are made to communicate with the control pressure fluid source via a respective check valve (**19**, **21**) which opens toward the work chamber, and can be made to communicate with one another directly via a control valve (**24**) controlled by a control device (**25**).

5,056,478

VARIABLE CAMSHAFT PHASING MECHANISM

Thomas T. Ma, Chelmsford, Great Britain, assignor to Ford Motor Company, Dearborn, Mich.

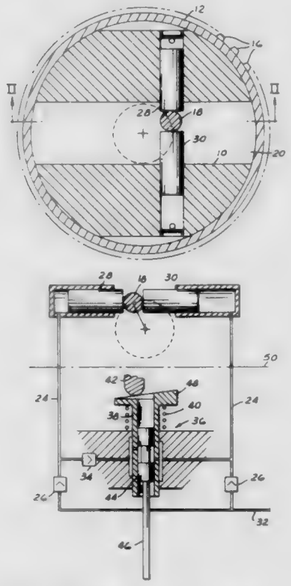
PCT No. PCT/GB89/00459, § 371 Date Oct. 22, 1990, § 102(e) Date Oct. 22, 1990, PCT Pub. No. WO89/10469, PCT Pub. Date Nov. 2, 1989

PCT Filed May 2, 1989, Ser. No. 598,739

Claims priority, application United Kingdom, Apr. 30, 1988, 8810343

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **7 Claims**



1. A variable camshaft phasing mechanism, comprising concentric drive and driven members (**12**,**10**) rotatable respectively with a drive pulley (**12**) and a camshaft (**14**), the members (**10**,**12**) being coupled to one another by means of an

eccentric cranking element (**18**) on one of the members (**12**) engaged by two hydraulic jacks (**28**,**30**) on the other member (**10**) and valve means (**36**) for controlling the flow of the hydraulic fluid from chambers of the hydraulic jacks (**28**,**30**) to lock the members against rotation relative to one another in different relative angular positions of the members, characterised in that the eccentric element (**18**) is tightly gripped between the two hydraulic jacks (**28**,**30**) acting on opposite sides of the eccentric element (**18**) in order to avoid backlash, and in that a hydraulic circuit connected to the two jacks comprises a three position valve means (**36**) serving to maintain the jacks (**28**,**30**) isolated from one another in one position, and to provide communication between the two jacks (**28**,**30**) in each of two directions of fluid flow in each of respective two other positions.

5,056,479

VALVE TIMING CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

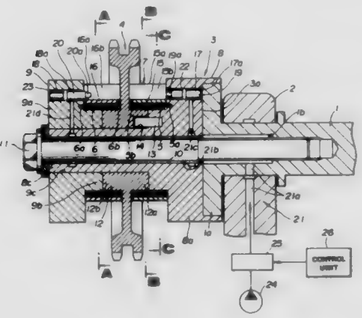
Seiji Suga, Kanagawa, Japan, assignor to Atsugi Unidia Corporation, Kanagawa, Japan

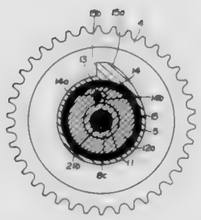
Filed Nov. 29, 1990, Ser. No. 619,732

Claims priority, application Japan, Nov. 30, 1989, 1-312094

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **5 Claims**





1. A valve timing control device for an internal combustion engine, comprising:

an engine revolution synchronous rotary member which is drivingly connected to the internal combustion engine to be driven for rotation in synchronism with the engine revolution;

a camshaft associated with at least one of an intake and exhaust valves of an engine cylinder for driving associated intake and exhaust valves;

a camshaft synchronous rotary member connected to said camshaft for rotation in synchronism with rotation of said camshaft, said camshaft synchronous rotary member being coupled with said engine revolution synchronous rotary member to be rotatingly driven by rotational torque transmitted through said engine revolution synchronous rotary member with maintaining given rotational phase relationship to the latter;

a first and second spring clutch assemblies which are selectively engaged and disengaged for selectively permitting relative phase shift between said engine revolution synchronous rotary member and said camshaft synchronous rotary member in timing advancing and retarding timing in order to set said given rotational phase relationship.

5,056,480

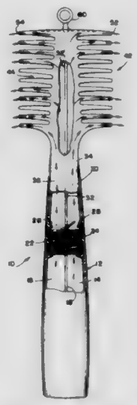
LIQUID COMB COMBINATION AND METHOD FOR ITS MANUFACTURE

Ralph Murray, Sr., 19920 Conley, Detroit, Mich. 48234

Filed Sep. 28, 1990, Ser. No. 589,513

Int. Cl.[5] A45D *24/22*

U.S. Cl. 132—114 **16 Claims**



1. Liquid comb combination with plural distribution system comprising

an elongated reservoir containing a plurality of compartment means extending in the same direction as the elongated reservoir and each having an exiting means proximate a handle of the combination,

liquid supply means having a matching supply reservoir with an opening means for each of the exiting means of the plurality of the compartment means of the elongated reservoir,

a set of a plurality of hollow comb teeth means extending from each of the supply means,

separately sized apertures for each set of the plurality of comb teeth means for dispensing liquid conditioned on respective sizings of the separately sized apertures, and

liquid supply means having a matching supply reservoir with an exiting means for each of the plurality of the compartment means of the elongated reservoir, and

gate means disposed between the opening of the supply means and the exiting means of the compartment means for allowing for passage of a selected one of the compartment means to a selected one of the supply means.

5,056,481

MAGNETO-SEMICONDUCTOR IGNITION SYSTEM

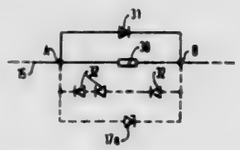
Jiri Podrapsky, Buchschwabach, and Josef Orova, Schwabach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 152,533, May 23, 1980, Pat. No. 4,395,981. This application Aug. 19, 1982, Ser. No. 409,596

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920831

Int. Cl.[5] **F02P** *1/08*

U.S. Cl. 123—149 D **4 Claims**



1. Internal combustion engine magneto ignition system for a spark gap having

a magneto generator (**10**) to generate ignition energy, including a magnet system (**13**) coupled to rotate with the engine and an induction coil (**12***b*) in magnetically coupled relation to the magnet to furnish alternating voltage for conversion to a high voltage pulse to form an ignition pulse for the spark gap (**14**);

a semiconductor switch (**16**) and an inherent inverse diode (**18**) comprising a single monolithic integrated circuit element, the semiconductor switch having its main switching path connected to the induction coil and forming a primary circuit therewith;

control circuit means (**19, 20, 22, 25**) connected to the induction coil and to the controlled semiconductor switch and controlling said switch to change from conductive to nonconductive state, and thereby generate the ignition pulse;

and a damping network connected in series with the main switching path of the controlled semiconductor switch (**16**) in the primary circuit to remove high-voltage conditions from the inherent inverse diode (**18**) during half waves derived from the induction coil which are of a polarity causing conduction of the inverse diode, comprising

a parallel circuit including a diode (**31**) and a resistance means (**30, 32**) connected in parallel to the diode, said diode being poled in conductive direction when the controlled semiconductor switch (**16**) is conductive.

5,056,482

ENGINE PROTECTING SYSTEM

Misugi Chonan, Tokyo, and Yoshiki Yuzuriha, Isesaki, both of Japan, assignors to Fuji Heavy Industries Ltd., Tokyo and Japan Electronic Control Systems Co., Ltd., Isesaki, both of, Japan

Filed Oct. 26, 1990, Ser. No. 603,404

Claims priority, application Japan, Dec. 1, 1989, 1-138638

Int. Cl.[5] **F02D** *17/04, 41/22;* **F02B** *77/08*

U.S. Cl. 123—331 **11 Claims**



1. A system for protecting an engine where the driving power is transmitted through a variable reduction gear ratio belt, which comprises engine revolution speed-detecting means for detecting the revolution speed of the engine, belt breaking-judging means for judging, based on a detection value signal outputted from the engine revolution speed-detecting means, whether or not the variable reduction gear ratio belt is broken, and engine-stopping control means for performing the control of stopping the engine when it is judged by the judging means that the belt is broken.

5,056,483

ENGINE SPEED CONTROL APPARATUS

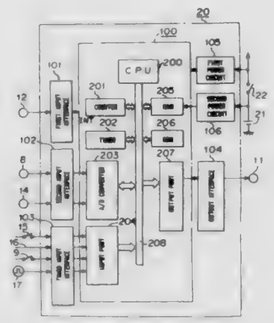
Hirofumi Ohuchi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 554,483

Claims priority, application Japan, Jul. 27, 1989, 1-196163; Jul. 27, 1989, 1-196164

Int. Cl.[5] **F02M** *3/00*

U.S. Cl. 123—339 **2 Claims**



1. An engine speed control apparatus which comprises:

a switch means which assumes a predetermined state when the degree of opening of a throttle valve is in a range from a fully closed state to a predetermined value of opening,

an idling mode detecting means which detects an idling mode of the engine on the basis of the operating conditions of the engine which include the output signal of the switch means, and

a control means which controls the air intake rate of the engine in a feed-back control mode while the engine is operating in an idling mode so that the engine speed coincides with a target speed,

wherein the idling mode detecting means detects the idling mode of the engine by detecting the throttle valve which is in a predetermined range of throttle opening narrower than said predetermined range from the fully closed state to the predetermined value.

5,056,484

REGULATING DEVICE FOR ADJUSTING A REGULATING MEMBER

Helmut Denz, Stuttgart, and Ernst Wild, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany and Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

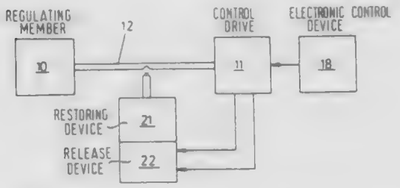
Filed Feb. 12, 1990, Ser. No. 478,321

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1989, 3904478

Int. Cl.[5] **F02D** *9/02, 41/22;* **G05G** *5/12;* **H01F** *7/14*

U.S. Cl. 123—399 **17 Claims**

1. A regulating device for adjusting a rotary regulator for regulating an angle of rotation of a throttle member for determining a cross-sectional passage area in a flow line of an internal combustion engine, comprising a regulating member in said flow line, a regulatable, electrical control drive connected to the regulating member, a restoring device which acts upon the regulating member as well as said control drive and returns the regulating member to a position that ensures a predetermined cross-sectional passage area in the flow line, an electromagnetically operated release device (**22**) which is only effective during uninterrupted normal operation of the control drive (**11**)



and which produces a counterforce compensating for a restoring force of the restoring device (**21**).

5,056,485

CRANK ANGLE SENSOR AND IGNITION TIMING CONTROL SYSTEM USING SAME

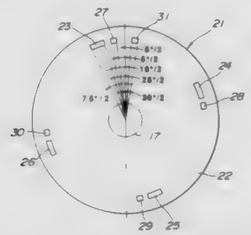
Sadao Kobayashi, and Hisayuki Yamamoto, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., No. 2, Yokohama, Japan

Filed May 29, 1990, Ser. No. 529,418

Claims priority, application Japan, May 29, 1989, 1-132792

Int. Cl.[5] **F02D** *28/00*

U.S. Cl. 123—414 **3 Claims**



1. A system for controlling an ignition timing in an internal combustion engine having a start switch, comprising:

means for generating a train of pulses including a train of leading pulses and a train of trailing pulses superimposed on each other;

means for determining whether the start switch is turned ON or not;

means for determining whether an engine temperature is greater than a predetermined value or not; and

means for carrying out an ignition at a falling edge of each of said trailing pulses when said engine temperature is greater than said predetermined value, and at a falling edge of each of said leading pulses when said engine temperature fails to be greater than said predetermined value.

5,056,486

COMBUSTION ENGINE

Nicholas J. Johannes, Rothstrasse 30, CH-8042 Zurich, Switzerland

PCT No. PCT/CH89/00186, § 371 Date Jul. 18, 1990, § 102(e) Date Jul. 18, 1990, PCT Pub. No. WO90/05842, PCT Pub. Date May 31, 1990

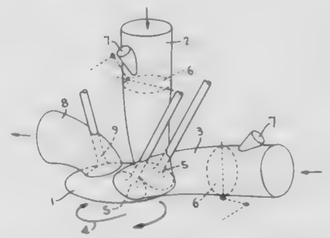
PCT Filed Oct. 20, 1989, Ser. No. 543,722

Claims priority, application Switzerland, Nov. 18, 1988, 4298/88

Int. Cl.[5] **F02B** *15/00*

U.S. Cl. 123—432 **3 Claims**

1. A combustion engine with at least one exhaust valve and more than one inlet valve per cylinder, wherein a separate intake port is assigned to each inlet valve and each intake port is controlled by a individual air throttle and fuel supply, wherein of the multiple separate intake ports at least one port joins the cylinderhead from the top and at least one port joins in an angle from the side; whereby every further port joining



either from the top of from the side is positioned in the same circumferential direction so that a continuous unidirectional gas whirl is achieved in the cylinder.

5,056,487

TORQUE CONTROL APPARATUS AND METHOD FOR INTERNAL COMBUSTION ENGINES

Makoto Yamakado; Yuzo Kadomukai, both of Ibaraki; Ryoichi Maeda, Fujisawa; Masao Fukushima, Machida, and Kei Murakami, Zama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 31, 1990, Ser. No. 575,644

Claims priority, application Japan, Sep. 2, 1989, 1-227765

Int. Cl.[5] **F02B** *75/06;* **F02D** *29/06, 41/14*

U.S. Cl. 123—436 **17 Claims**

1. A torque control apparatus for internal combustion engines, comprising:

means for detecting the state of combustion of an internal combustion engine,

means for deciding whether or not the state of combustion detected by said detecting means is an irregular combustion;

control means for, when a decision is made that the detected state of combustion is irregular combustion, comparing a torque waveform generated by the internal combustion engine in accordance with the irregular combustion state, and a torque waveform generated by the internal combustion engine, which corresponds to a normal combustion state, and outputting control signals; and

torque correcting means, mounted fixedly to the internal combustion engine, for correcting the torque of the internal combustion engine according to a control signal so that said former torque waveform approaches said latter torque waveform.

5,056,488

FUEL INJECTION SYSTEM IN PARTICULAR UNIT FUEL INJECTOR, FOR INTERNAL COMBUSTION ENGINES

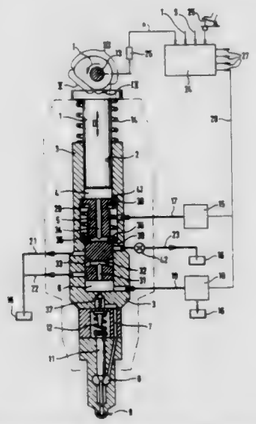
Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1990, Ser. No. 508,431

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913128; Feb. 15, 1990, 4004610

Int. Cl.[5] F02M *7/00*

U.S. Cl. 123—446 **12 Claims**



1. A fuel injection system for internal combustion engines, comprising:
- a fuel injector having a pump chamber provided with a reciprocable pump piston;
- a pressure chamber adapted to supply an injection nozzle of said injector via a pressure line with a quantity of fuel to be injected;
- an intermediate piston hydraulically dividing the pump chamber and the pressure chamber of said injector;
- a metering device associated with said injector delivering the quantity of fuel to be injected to the pressure chamber during an intake stroke of the pump piston;
- means to define a supply onset of the injector by an injection fluid volume present in the pump chamber, said volume being variable in controlled fashion via a metering line;
- and a throttle conduit (**23**) that branches off from the pump chamber (**4**), said throttle conduit (**23**) containing a throttle (**42**) which is opened by means of the intermediate piston (**5**) shortly before the end of a compression stroke of the pump piston (**1**) but still during an effective injection stroke of the intermediate piston (**5**).

5,056,489

FUEL RAIL FOR V-TYPE ENGINE

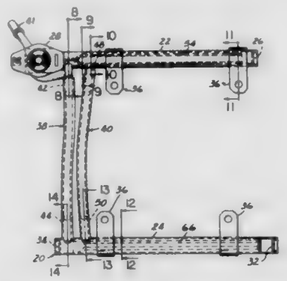
Jack R. Lorraine, Newport News, Va., assignor to Siemens-Bendix Automotive Electronics L.P., Troy, Mich.

Filed Jul. 10, 1989, Ser. No. 377,678

Int. Cl.[5] F02M *39/00*

U.S. Cl. 123—468 **31 Claims**

1. A fuel rail for an internal combustion engine fuel injection system comprising a main tube and a pair of further tubes that transversely intercept said main tube, a closure at an end of said main tube, a baffle extending axially within said main tube from the locations where said pair of further tubes communicate with said main tube toward, but stopping short of, said closure, said baffle dividing said main tube into two individual axially extending flow channels one of which extends from the point of communication of one of said further tubes with said main tube to the end of said baffle that stops short of said closure, and the other of which extends from the end of said baffle that stops short of said closure to communicate with the other of said further tubes, said baffle further comprising a second closure that closes the end of said one flow channel at a location along said main tube that is axially beyond said one further



tube relative to said first-mentioned closure, the axial location of the point of communication of said other further tube with said main tube being nearer said first-mentioned closure than the location of communication of said one further tube with said main tube, said second closure also isolating said one flow channel from the other flow channel.

5,056,490

FUEL INJECTION CONTROL APPARATUS FOR ALCOHOL ENGINE

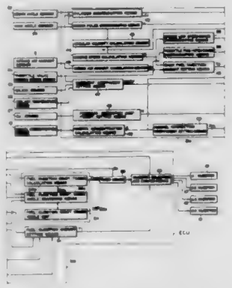
Takamitsu Kashima, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1990, Ser. No. 552,530

Claims priority, application Japan, Jul. 19, 1989, 1-187816[U]; Sep. 29, 1989, 1-256307[U]

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—478 **9 Claims**



1. A fuel injection control apparatus of an engine for injecting a mixed fuel containing gasoline and alcohol, comprising:
- a throttle opening degree sensor for detecting an actual throttle opening degree;
- a crank angle sensor for producing a crank pulse at a predetermined crank angle;
- engine speed calculating means responsive to said crank pulse for calculating an engine speed;
- throttle full-open range discriminating means responsive to said actual throttle opening degree for discriminating a throttle full-open range;
- engine low speed range discriminating means for discriminating an engine low speed range in accordance with said engine speed;
- an alcohol concentration sensor for detecting an alcohol concentration of the fuel; and
- fuel injection start timing setting means for delaying a fuel injection start timing in accordance with an increasing of said alcohol concentration, when said throttle full-open range discriminating means discriminates said throttle full-open range and said engine low speed range discriminating means discriminates said engine low speed range so as to prevent the volumetric efficiency from being lowered during the low speed, high load running.

5,056,491

APPARATUS FOR CONTROLLING AN AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

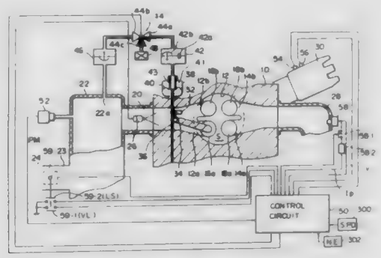
Keisuke Tsukamoto, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 4, 1990, Ser. No. 504,252

Claims priority, application Japan, Apr. 11, 1989, 1-89855; Apr. 11, 1989, 1-89856

Int. Cl.[5] F02D *41/10*

U.S. Cl. 123—492 **14 Claims**



1. An internal combustion engine, comprising:
- an engine body;
- an intake system connected to the engine body for an introduction of an amount of intake air to the engine body;
- an exhaust system connected to the engine body for a removal of a resultant exhaust gas from the engine body;
- for introducing an amount of fuel into a flow of an intake air at a predetermined timing in one complete engine cycle to obtain a combustible mixture to be introduced into the engine;
- means for controlling the air-fuel ratio of the combustible mixture in the intake system by controlling said amount of fuel
- first air-fuel ratio setting means for setting said air-fuel ratio to the lean mixture side;
- second air-fuel ratio setting means for setting said air-fuel ratio to obtain an engine power;
- means for detecting a load of the engine;
- first calculating means for calculating a rate of change in the engine load during a first period short enough for a detection of a change in the engine load during a slight acceleration condition;
- second calculating means for consecutively calculating an accumulated value of values of a rate of change in the engine load in a predetermined second period;
- means, based on the calculated accumulated value, for determining an acceleration operation of the engine; and
- switching means for switching a connection of the air-fuel ratio control means from the first setting means to said second setting means when the acceleration operation is determined.

5,056,492

FUEL TANK

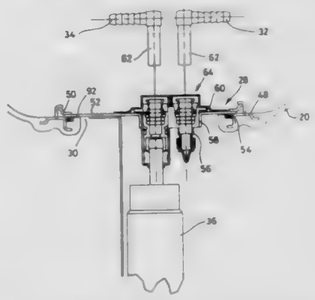
Permjit S. Banse, Billericay, Great Britain, assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 9, 1990, Ser. No. 565,291

Claims priority, application United Kingdom, Aug. 11, 1989, 8918362

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—509 **1 Claim**



1. A blow-molded plastic fuel tank comprising:
- walls defining an internal cavity for containing fuel, one said wall having a generally planar top face; said top face having a dish shaped area recessed from said top face and containing a closure means;
- said closure means to sealably engage a circular opening in said area, said closure means comprising a plate means having a circular aperture therethrough, and a connector body made from a molded plastic material;
- said connector body being received in said aperture and communicating with said internal cavity, said connector body defining a first push-fit socket having a first mouth internally receiving a rotatable first fuel pipe and a second push-fit socket having a second mouth internally receiving a rotatable second fuel pipe, said recessed area having a depth exceeding the height of said first and second mouths, whereby said first and second mouths are located below said top face;
- said plate having an outer surface and an inner surface and said first and second mouths are substantially flush with said outer surface;
- a first passage means through said connector body communicating with said first push-fit socket, said first passage means having an inner end capable of communicating fuel from said internal cavity to said first fuel pipe;
- a second passage means through said connector body communicating with said second socket, said second passage means having an inner end capable of communicating fuel from said second fuel pipe to said internal cavity;
- a non-return valve attached to said inner end of said second passage means, said non-return valve preventing fuel from passing from said internal cavity to said second passage means;
- an in-tank fuel pump and fuel level sensor means attached to and supported by said plate;
- a check valve attached between said fuel pump means and said first inner end, said check valve means preventing the inadvertent release of fuel from said internal cavity;
- a seal means between said plate means and said connector body to seal said fuel within said internal cavity;
- a securing ring integrally molded within the periphery of said opening, said securing ring having upstanding lugs projecting outwardly from said tank;
- a metal retaining ring engaging said lugs, said retaining ring comprising axially extending cam forms, said cam forms engage said lugs on said securing ring and securing said plate to said tank; and

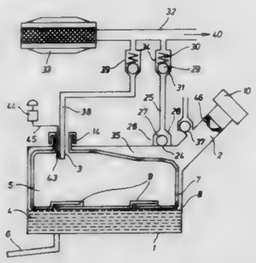
an O-ring seal between said connector body and said plate.

5,056,493

ENVIRONMENTALLY HARMONIOUS FUEL TANK

Walter Holzer, Drosteweg 19, D-7758 Meersburg, Fed. Rep. of Germany

Filed Jan. 17, 1990, Ser. No. 466,578
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1989, 3901978; Apr. 4, 1989, 3910841; Jun. 2, 1989, 3918073; Sep. 28, 1989, 3932062
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—518 8 Claims



1. Apparatus for controlling fuel in connection with a combustion engine and a fuel tank, wherein liquid fuel in the tank vaporizes, comprising,

means including a conduit for suctioning the vapors from the tank and conducting them to the combustion engine, and

a flexible air container in the tank above the liquid fuel,

the flexible air container being entirely self contained and being entirely continuous and closed except for a ventilation opening formed by a flange, the flange being secured to the tank and continuing said ventilation opening through an opening in the tank to the exterior,

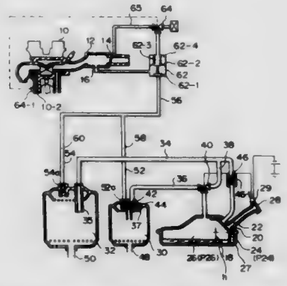
the container sealing the tank to the exterior through the tank opening and being sufficiently large to substantially fill the tank when the tank is empty of liquid fuel.

5,056,494

SYSTEM FOR TREATING VAPORIZED FUEL IN AN INTERNAL COMBUSTION ENGINE

Nobuzki Kayanuma, Gotenba, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 23, 1990, Ser. No. 512,452
Claims priority, application Japan, Apr. 26, 1989, 1-48234[U]
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—519 9 Claims



1. An internal combustion engine, comprising:

an engine body;

a fuel tank;

an intake system connected to the engine body and having a throttle valve therein;

canister means for temporarily holding fuel vaporized from the fuel tank;

means for reintroducing the fuel vapor held in the canister means into the intake system;

partition means arranged in said fuel tank for forming therein a first small volume chamber and a second large volume chamber, respectively, said first and second chambers being separated from each other in such a manner that a communication of vaporized fuel therebetween is prevented while allowing a communication of liquid fuel between locations in the fuel tank below the fuel levels in the first and second chambers;

said fuel tank having a fuel filling pipe and a filler cap detachably connected to the filling pipe, said filling pipe being opened to the first chamber at a position above the fuel level therein;

first conduit means for allowing a flow of vaporized fuel between the first chamber and the canister while maintaining a positive value pressure in the first chamber near the atmospheric pressure;

second conduit means for allowing a flow of vaporized fuel between the second chamber and the canister; and

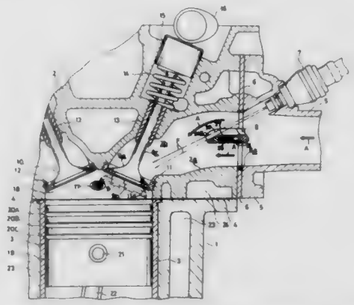
pressure control means provided in said second conduit means for obtaining a positive value pressure in the second chamber larger than that in the first chamber.

5,056,495

FUEL SUPPLY DEVICE AND HEATING DEVICE

Takahisa Yamashita, Suntoh, and Kazuo Kayanuma, Gotenba, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1990, Ser. No. 515,939
Claims priority, application Japan, Jun. 20, 1989, 1-158758
Int. Cl.[5] F02M *31/00*
U.S. Cl. 123—549 2 Claims



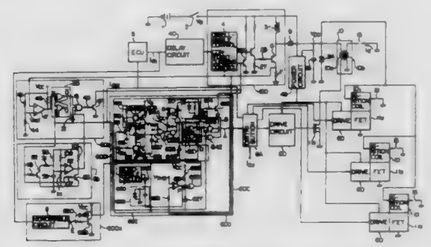
1. A fuel supply and heating means comprising a cylinder head for an engine having walls defining a cylinder inlet passageway leading to an air-fuel inlet opening in an engine cylinder, an air intake and a fuel injector respectively directing air and fuel into the cylinder inlet passageway, and a heating device located in the passageway having a heating surface arranged to receive fuel from the fuel injector for heating the fuel, the heating surface being disposed relative to the fuel injector so that fuel received from the heating surface and deflected therefrom is deflected into the cylinder inlet opening substantially free of contact with the walls defining the cylinder inlet passageway to assure provision of a desired air-fuel ratio within the cylinder during engine start-up.

5,056,496

IGNITION SYSTEM OF MULTISPARK TYPE

Seiji Morino, Okazaki; Yasuhito Takasu, Toyohashi; Kozo Takamura, Nagoya, and Masato Somiya, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 12, 1990, Ser. No. 492,472
Claims priority, application Japan, Mar. 14, 1989, 1-61823; Aug. 1, 1989, 1-199894
Int. Cl.[5] F02P *15/10*
U.S. Cl. 123—604 9 Claims



1. An ignition system of multispark type comprising:

a first series closed circuit including a DC power supply, an energy storage coil and a first switching device;

a second series closed circuit including the energy storage coil, a reverse flow blocking means, the primary winding of the ignition coil and a second switching device;

a capacitor connected to the energy storage coil through the reverse flow blocking means;

first control signal generating means for generating a first control signal for cutting off the first switching device at an ignition timing after being turned on a predetermined time before the ignition timing to store energy in the energy storage coil;

means for generating a multispark control signal for turning on and off the first and second switching devices alternately during a predetermined spark period after turning on the second switching device from the ignition timing;

means for generating a second control signal for charging the capacitor with the energy stored in the energy storage coil by turning off the first switching device after being turned on to store energy in the energy storage coil while the second switching device is turned off, and

current-responsive conduction time-determining means whereby the turn-on time of the first switching device started by said multispark control signal generation means is determined in accordance with the current flowing in the first switching device.

5,056,497

IGNITION CONTROL SYSTEM

Motonobu Akagi, Anjo; Nobuyuki Oota, Kariya, and Yasutoshi Yamada, Chita, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1990, Ser. No. 511,231
Claims priority, application Japan, Apr. 27, 1989, 1-108558; Mar. 1, 1990, 2-50324
Int. Cl.[5] G01S *5/14*; F02P *9/00, 15/08*
U.S. Cl. 123—609 2 Claims

1. An ignition control system comprising:

switching means for supplying/interrupting a current through a primary winding of an ignition coil;

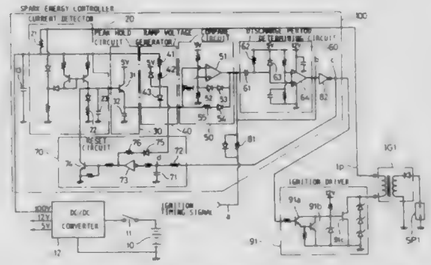
supply command means for providing a conduction signal to the switching means as long as an ignition timing signal is at its supply command level and in the absence of an interrupt command signal and for providing an interrupt signal to the switching means in response to an ignition timing signal at its interrupt command level and the interrupt command signal;

primary current detecting means for detecting the current through the primary winding;

peak hold means for detecting the peak value of the detected primary current;

peak value detection command means for commanding the peak hold means to detect a peak value for a given time interval after the occurrence of the conduction signal;

ramp signal generating means for generating an electrical



signal which linearly rises from a base point defined by the peak value held in the peak hold means;

compare means for producing an interrupt timing signal when the linearly rising electrical signal reaches a preset level;

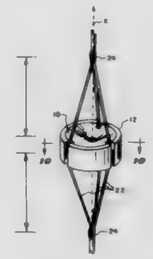
and interrupt interval presetting means for delivering the interrupt command signal which commands a preset time interval to be interrupted to the supply command means in response to the interrupt timing signal.

5,056,498

ARCHERY BOW PEEP SIGHT

Patrick L. Scherz, 1632 18½ St., Rice Lake, Wis. 54868

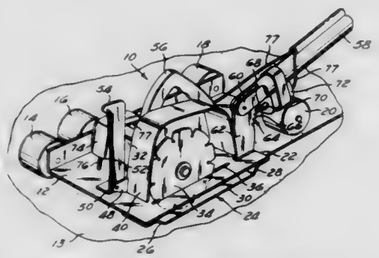
Continuation of Ser. No. 160,394, Feb. 25, 1988, Pat. No. 4,934,332. This application Jun. 15, 1990, Ser. No. 538,978
The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—87 4 Claims



1. An archery bow peep sight comprising a disk having parallel faces with opposing smooth frusto-conical surfaces, a sighting hole penetrating the disk through the apexes of said frusto-conical surfaces, and slots distributed uniformly about the periphery and extending from face to face for receiving strands of a multi-strand bowstring permitting horizontal insertion of the peep sight into the bowstring.

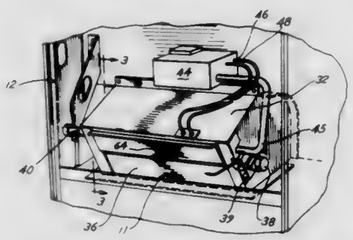
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5,056,499
APPARATUS FOR CUTTING CONCRETE
Edward Chiuminatta, 16405 Evrett, and Alan R. Chiuminatta, 3855 Skofstad Apt. #33, both of, Riverside, Calif. 92504
Continuation of Ser. No. 386,814, Jul. 27, 1989, Pat. No. 4,938,201, which is a division of Ser. No. 185,055, Apr. 22, 1988, Pat. No. 4,889,675, which is a continuation of Ser. No. 843,779, Mar. 25, 1986, Pat. No. 4,869,201. This application Jul. 2, 1990, Ser. No. 547,837
Int. Cl.[5] B28D *1/04*
U.S. Cl. 125—14 19 Claims



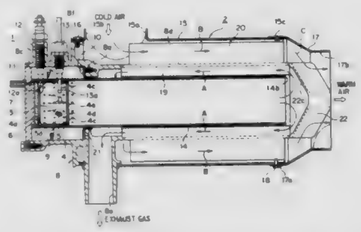
1. A saw for cutting concrete, comprising:
a circular concrete cutting blade having a leading edge and sides;
a motor connected to a portion of the saw and further connected to rotate the concrete cutting blade;
a skid plate connected to the saw, the skid plate having a slot therein through which the cutting blade extends to cut the concrete, the skid plate configured so that during cutting the skid plate contacts the surface of the concrete at least adjacent the leading edge of cutting blade; and
wheels connected to the saw to movably support the saw on the surface of the concrete during cutting.

5,056,500
FURNACE DAMPER MEANS
Lance J. Evens, 2028 Grenoble, Carrollton, Tex. 75007
Continuation of Ser. No. 398,423, Aug. 25, 1989, abandoned. This application Nov. 21, 1990, Ser. No. 616,666
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 R 5 Claims



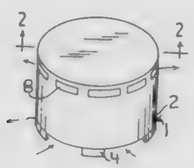
1. In a furnace for heating an area comprising a housing, fan means for moving air through said housing, burner means in the housing, fuel supply means operatively connected to the burner means, combustion chamber means in the housing operatively associated with the burner means, and heat exchanger means in the housing operatively connected with the combustion chamber means, there being an entry opening in the housing, the improvement characterized by enclosure means positioned on the housing to enclose said entry opening, said enclosure means having a damper opening therein, damper means operable to control the flow of air through the damper opening to the burner means, said damper means comprising a pivotally mounted plate member that is in a closed position when the burner means is off and is in an open position when the burner means is on, said plate member being pivotally mounted on said enclosure means, drive means for pivoting the plate member to the open position, spring means for biasing the plate member to the closed position, control means for actuating the drive means for positioning the damper means in response to the attainment of a predetermined temperature in the area to be heated and, a limit switch cooperating with the fuel supply means, said damper means including a rotatable shaft to which the plate member is secured, and a spring actuator on said shaft for actuating said limit switch, whereby when the plate member is moved to the open position by the spring means, the spring actuator will close the limit switch and the fuel supply means will supply fuel to the burner means, and when the plate member is moved to the closed position, by the drive means, the limit switch can open and the supply of fuel from the fuel supply means to the burner means will be terminated.

5,056,501
COMBUSTION HEATER
Hiroyuki Ida, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan
Filed Nov. 7, 1990, Ser. No. 610,352
Claims priority, application Japan, Nov. 16, 1989, 1-133474[U]
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—110 B 6 Claims



1. A combustion heater including a burner cylinder defining therein a combustion chamber, said burner cylinder comprising
a peripheral wall having a number of air inlet holes formed therein;
a bottomed end including an end wall having a plurality of openings therein;
an open end having a peripheral edge;
a wick for being impregnated with liquid fuel; said peripheral edge of said open end of said burner cylinder being disposed in close contact with said wick;
said end wall of said bottomed end being opposed to said wick; and
means including a wick holder for holding said wick in place;
said plurality of openings in said end wall of said bottomed end being circumferentially arranged in said end wall of said bottomed end; and
said burner cylinder having a reflecting portion formed by a central portion of said end wall of said bottomed end thereof.

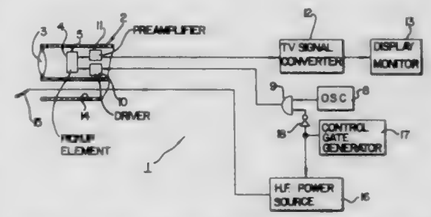
5,056,502
FRICTION HEAT GENERATOR
Ramon C. Eyzaguirre, 1494 SW. 32nd Ct., Fort Lauderdale, Fla. 33315, and Patrick S. Thomas, 862 SW. 118th Ter., Davie, Fla. 33325
Filed Mar. 8, 1991, Ser. No. 666,627
Int. Cl.[5] F24C *9/00*
U.S. Cl. 126—247 20 Claims



1. A friction heat generating device comprising:
a) a chamber having two end plates and containing a heat transfer fluid;
b) a drive shaft journaled in said end plates for rotation within said chamber;
c) a drive motor attached to one of said end plates and operably connected by connecting means to said drive shaft for rotation thereof, said drive motor being of the variable speed type;
d) a heat exchanger means in fluid connection with said chamber;
e) fluid pump means for circulating said fluid through said heat exchanger means and said chamber;
f) air blower means for forcing a current of ambient air through said heat exchanger means to transfer heat from said fluid to said current of air;
g) at least one rotatable disc connected to said drive shaft for rotation therewith;
h) at least one stationary disc, mounted on one of said end plates by mounting means, for frictional contact with one rotatable disc; and
i) proportioning control means connected to said drive motor and arranged to sense a first temperature at a particular location and having means for setting a desired temperature, said control means regulating the speed of said drive motor in proportion to the difference between the first temperature and the desired temperature.

5,056,503
ENDOSCOPE WITH HIGH FREQUENCY ACCESSORY AND REDUCED VIDEO INTERFERENCE
Tatsuo Nagasaki, Musashino, and Hiroyoshi Fujimori, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 494,834, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 161,276, Feb. 22, 1988, abandoned, which is a continuation of Ser. No. 915,876, Oct. 8, 1986, abandoned, which is a continuation of Ser. No. 657,274, Oct. 3, 1984, abandoned. This application Feb. 28, 1991, Ser. No. 658,419
Claims priority, application Japan, Oct. 3, 1983, 58-184684
Int. Cl.[5] A61B *17/32, 1/06*
U.S. Cl. 128—6 8 Claims

1. An endoscope comprising:
an elongate insertion member insertable within a body cavity;
an image-forming optical system disposed at a tip of said insertion member, said image-forming optical system for forming an image of an object under observation on a focal plane thereof;
illuminating means for illuminating an object to be imaged within an image-forming range of said image-forming optical system;
a solid state optical image pickup having a plurality of photo-electrically converting receiver elements each arranged on a pickup plane coinciding with said focal plane of said image forming optical system, said solid state optical image pickup producing picture element signals corresponding to an image formed thereon;
driving circuit means connected with said solid state optical image pickup, said driving circuit means for applying clock signals to said solid state optical image pickup in order to read out said picture element signals during a reading period;
frame memory means connected with said solid state optical image pickup, said frame memory means for storing read out picture element signals;
television signal converter means connected with said frame memory means for reading out said picture element signals written in said frame memory means and for converting said read out picture element signals into video signals of a predetermined television signal format;
display means connected with said television signal converter means, said display means for displaying said video signals as a television picture on a display monitor;

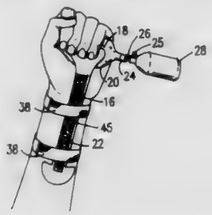


accessory means for being locatable through said insertion member;
high frequency oscillation means for driving said accessory means, said high frequency oscillation means for producing high frequency components within a band when said pickup element signals are read out of said solid state optical image pickup;
gate means connected to said driving circuit means, said gate means for gating clock signals of said driving circuit means during a read out period of said solid state optical image pickup; and
control gate generator means for supplying high and low levels of control gate signals in repeated synchronization with a pickup function of said solid state optical image pickup, said control gate generator means being connected to said gate means and said high frequency oscillation means in order to inhibit an operation of said accessory means only during said reading period;
wherein said reading period is of shorter duration than each video frame period of said predetermined television signal format.

5,056,504
INFLATABLE BALL HAND SPLINT
Donaerl B. Mann, St. Petersburg, Fla., assignor to D'mannco, Inc., Clearwater, Fla.
Continuation-in-part of Ser. No. 612,319, Nov. 13, 1990, Pat. No. 5,020,515. This application Jun. 3, 1991, Ser. No. 709,591
Int. Cl.[5] A61H *1/02;* A61F *5/04*
U.S. Cl. 128—26 11 Claims

1. An inflatable hand splint comprising
a pliable wrist element attached at a first end to an inflatable ball and having a second end extending away from the ball, an air valve integral with the ball connectable to a hand operated air pump to provide a source of air to inflate the ball,
a stiff sheet substantially conforming in width and contour to a patient's wrist and forearm located in parallel alignment with the pliable wrist element, at least two straps each

having means to connect together at oppositely connecting ends attached to an exterior surface of the stiff sheet and the pliable wrist element located adjacent an interior surface of the stiff sheet and between the stiff sheet and a wrist and forearm of a patient, the straps being wound around and connected at each end to hold the stiff sheet



and pliable wrist element in position around a forearm of a patient,

the deflated ball attached at the first end of the pliable wrist element being located between contorted fingertips and palmer portion of the hand of the patient and the ball when inflated causing the patient's fingers to move away from the palmer region of the hand.

5,056,505

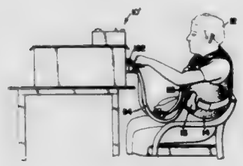
CHEST COMPRESSION APPARATUS

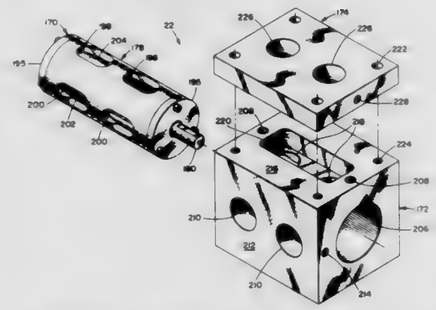
Warren J. Warwick, Minneapolis, and Leland G. Hansen, St. Paul, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 366,686, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 45,888, May 1, 1987, Pat. No. 4,838,263. This application Jan. 30, 1990, Ser. No. 472,333

Int. Cl.[5] A61H *31/02*

U.S. Cl. 128—30.2 **4 Claims**





1. Compression apparatus for thoracic region of a person, comprising:

means for applying a force to the thoracic region of said person, said force applying means including a bladder for receiving pressurized air;

means for supplying pressure pulses of said pressurized air to said bladder, said pulses having a rise time at least twice as fast as the rise time of a sinusoidal pulse of equivalent amplitude and frequency; and

means for venting said pressurized air from said bladder.

5,056,506

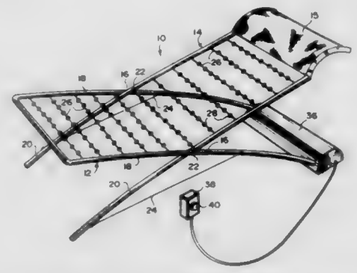
VERSATILE RELAXING CHAIR

A Verduci, 6476 Thornberry, Windsor, Ontario, Canada N8T 2X1

Filed Aug. 29, 1990, Ser. No. 574,077

Int. Cl.[5] A61H *1/00*

U.S. Cl. 128—32 **4 Claims**



1. A versatile relaxing chair, comprising:

(a) a first elongated U-shaped open ended frame member;

(b) a second elongated U-shaped open ended frame member having a head rest and oppositely intermingled with said first elongated U-shaped open ended frame member directly with two axle aperture points along the long sides thereof, said first and said second elongated U-shaped open ended frame members are substantially the same size;

(c) a pair of axle pins, each inserted in one of the two axle aperture points to hold said first elongated U-shaped open ended frame member to said second elongated U-shaped open ended frame member;

(d) a pair of retainer members, each extending between one of the long sides of said first elongated U-shaped open ended frame member and said second elongated U-shaped open ended frame member so that the distal ends of the long sides can sit securely upon a flat surface in a number of different positions, such as a lounge chair and a bed;

(e) a plurality of nylon cable strips, spaced apart and extending across the long sides of said first elongated U-shaped open ended frame member and said second elongated U-shaped open ended frame member;

(f) a plurality of plastic spheres spaced apart from each other and affixed in a stationary position onto said nylon cable strips longitudinally and laterally so that a person can sit in said chair; and

(g) means, on the distal ends of the long sides of said first elongated U-shaped open ended frame member, for causing vibrations through said chair so as to massage the person sitting in said chair.

5,056,507

COMBINATION FOOT SUPPORT AND FOOT MASSAGING DEVICE

Steve Yum, 8107 Overlake Ct., Fairfax Station, Va. 22039

Filed Jun. 15, 1990, Ser. No. 538,533

Int. Cl.[5] A61H *7/00*

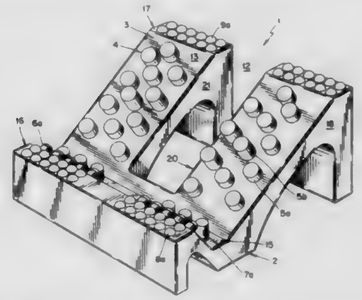
U.S. Cl. 128—62 R **20 Claims**

20. A foot massaging device which can support and massage both feet of a person simultaneously while the person is comfortably seated with the person's legs extending vertically and the person's feet angled downwardly such that point pressure from the device is applied to soles of the feet, the device comprising:

a support having a lower surface adapted to rest on a floor and protrusions on an upper surface of the support;

first support means for supporting at least one sole of a person's foot such that the heel of the foot is vertically above the toes of the foot, said first support means comprising a first group of the protrusions having upper surfaces thereof arranged so as to support the sole of the foot such that the heel of the foot is vertically above the toes of the foot;

second support means for supporting the toes of the foot such that they are bent upwardly at an angle to the sole of the foot, the second support means comprising a second group of the protrusions having upper surfaces thereof arranged so as to support the toes of the foot such that they are bent upwardly at an angle to the sole of the foot, the first group of protrusions being supported on a first



surface of the support and the second group of protrusions being supported on a second surface of the support, the first and second surfaces being inclined such that they are closer together at a lower end thereof than at an upper end thereof;

a third group of protrusions supported on a third surface of the support located between the first and second surfaces, a fourth group of protrusions supported on a fourth surface of the support located such that the second surface is between the fourth surface and the third surface, and a fifth group of protrusions supported on a fifth support surface of the support located such that the first surface is between the fifth surface and the third surface; and

a cut-out extending through a side of the support, the cut-out passing through the fifth surface, and part of the first surface.

5,056,508

NECK SUPPORT FOR CERVICAL OR WHIPLASH PROBLEMS

Gladys B. Brunell, 237 Park Ave., Worcester, Mass. 01609

Filed Oct. 9, 1990, Ser. No. 594,431

Int. Cl.[5] A61H *1/02;* **A61F** *5/04*

U.S. Cl. 128—75 **4 Claims**

1. A support for the nape and sides of the neck of a patient comprising:

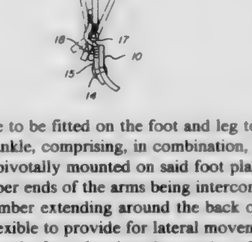
an elongated fabric envelope having a central portion and opposite ends portions, said central portion being of a generally uniform height, each of said end portions being tapered from the height of said central portion to an end of substantially reduced height, the length of said envelope being sufficient to extend over the nape and partially around the sides of the neck without fully encompassing the neck.

strengthening material in the envelope;

a pair of stretch tapes each with opposite ends, one of said stretch tapes being secured at one of its ends to one end of said envelope, with the other stretch tape being secured at one of its ends to the other end of said envelope,

and non-stretch ties secured to the other ends of the stretch tapes,

said envelope being narrow throughout its length and constructed to suitably fit the nape of the neck or the sides of the neck of a patient;



and said tapes being of lengths to accomodate themselves to passing under the arms of the patient and being tied together under conditions of variable tightness due to the stretch tapes.

5,056,509

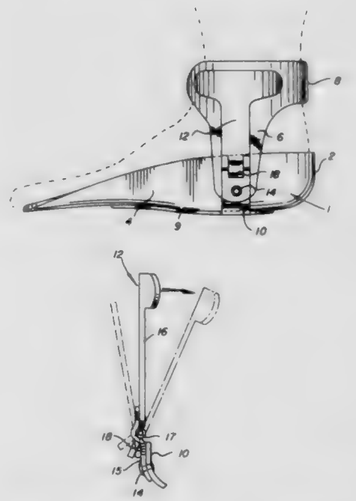
ANKLE BRACE

Derritt R. Swearington, 672 Forest Ave., Jackson, Miss. 39206

Filed Jan. 11, 1991, Ser. No. 640,148

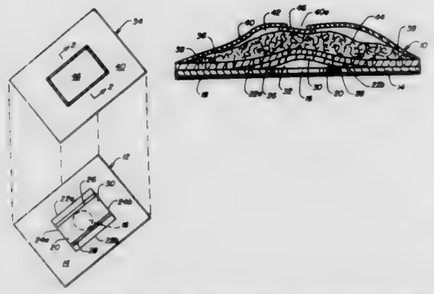
Int. Cl.[5] A61F *5/00;* **A43B** *7/20*

U.S. Cl. 128—80 H **14 Claims**



10. A brace to be fitted on the foot and leg to provide support for the ankle, comprising, in combination, a foot plate, a pair of arms pivotally mounted on said foot plate beneath the ankle, the upper ends of the arms being interconnected with a U-shaped member extending around the back of the leg, said arms being flexible to provide for lateral movement of the leg with respect to the foot, the pivotal mounting of the arms with respect to the foot plate permitting forward and rearward movement of the leg with respect to the foot and upwardly extending means pivotally mounted on the foot plate and overlying said upper ends of said arms, said upwardly extending means including means for limiting the lateral movement of the leg with respect to the foot.

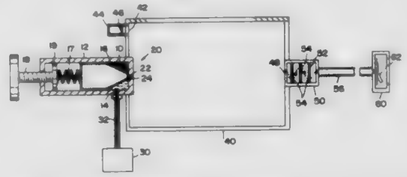
5,056,510
VENTED WOUND DRESSING
Thomas H. Gilman, Mansfield, Mass., assignor to The Kendall Company, Mansfield, Mass.
Continuation-in-part of Ser. No. 337,591, Apr. 13, 1989. This application Jan. 5, 1990, Ser. No. 461,588
Int. Cl.[5] A61F *13/00, 15/00;* A61L *13/00*
U.S. Cl. 128—155 30 Claims



1. In a wound dressing comprising a base sheet having at least one opening adapted for placement over a wound, and vent means for providing controlled leakage of wound fluid along a path from said wound through each said opening of said base sheet, the vent means permitting passage of wound fluid therethrough while reducing evaporation through each said opening and thereby helping to insure a moist environment when excess would fluid is removed from the wound;
the improvement comprising a cover element secured to said dressing over said base sheet and said vent means, said cover element having wall members defining a chamber into which said wound fluids leaking through said vent means can wick or diffuse; a fabric reservoir having voids or interstices adapted for receiving and retaining said would fluids diffusing thereto within said chamber, the wall members defining said chamber providing an effective barrier against ingress of bacteria and other external contaminants, at least a portion of an outer wall member of said chamber being characterized as being both a bacterial barrier and as being air permeable, the air permeability of said at least portion being sufficient to permit egress of air from said voids or interstices within said reservoir, whereby to optimize the amount of fluids said reservoir can receive by diffusion or wicking through said dressing.

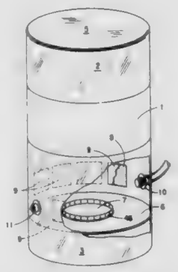
5,056,511
METHOD AND APPARATUS FOR COMPRESSING, ATOMIZING, AND SPRAYING LIQUID SUBSTANCES
Georg Ronge, Munich, Fed. Rep. of Germany, assignor to Juergen L. Fischer, Tegna, Switzerland and Manfred Buesselmann, Paris, France
Filed Dec. 14, 1989, Ser. No. 450,598
Int. Cl.[5] A61M *11/00, 11/06;* B05B *9/047, 9/04*
U.S. Cl. 128—200.14 25 Claims

1. A method for dispensing atomized liquid substances for inhalation comprising:
a. compressing the liquid substance to be atomized at a pressure of 300×10^5 Pa to 800×10^5 Pa so that the liquid substance decreases in volume;
b. explosively releasing the compressed liquid substance to



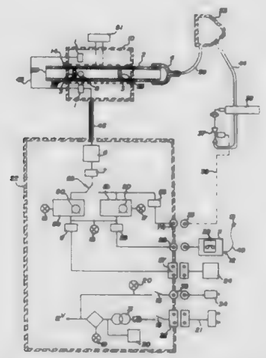
the normal atmosphere at a pressure of 1×10^5 Pa, for causing the liquid substance to burst into extremely small particles; and
c. repeating steps a and b preferably several times.

5,056,512
MULTILAYERED HOOD WITH ELASTOMERIC NECK SEAL
James W. Bower, Wilmington; James K. Odle, Newark, both of Del., and Evan B. Welch, Medway, Mass., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 363,388, Jun. 6, 1989, abandoned, which is a continuation of Ser. No. 120,533, Nov. 13, 1987, abandoned. This application Feb. 20, 1990, Ser. No. 481,222
Int. Cl.[5] A62B *7/10*
U.S. Cl. 128—201.25 9 Claims



1. In a protective hood having a generally tubular configuration with a closed top end and a bottom end having a resilient neck seal with an opening which permits at least the heat of a user into the hood and forming a closure around the user, the improvement wherein the hood is constructed from a laminate comprising
(a) a core layer of polyimide film having an inner and an outer surface,
(b) a layer of fluoropolymer film bonded to each surface of the core layer,
(c) a layer of heat sealable polymeric material that is melt bonded to the fluoropolymer of layer (b) which is on the inner surface of the core layer, and wherein, the hood has at least one seam in which layer (c) is heat sealed to itself.

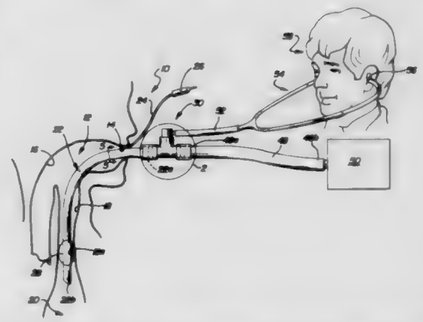
5,056,513
MICRO-AIR-WAVE DETECTION DEVICE PARTICULARLY FOR BREATHING MONITORING AND SURVEILLANCE
Guy Boutin, Villeneuve Les Avignon, France, assignor to Revo' Air, Salon De Provence, France
Filed May 25, 1990, Ser. No. 528,988
Claims priority, application France, May 29, 1989, 8907278
Int. Cl.[5] A61M *16/00;* A61B *5/087*
U.S. Cl. 128—204.23 21 Claims



1. A micro air-wave detection device for monitoring or alerting a sleeping subject as soon as an abnormal breathing stoppage occurs, comprising:
a detection unit housing a transparent tube disposed in a horizontal or slightly inclined position;
a movable ball disposed in said transparent tube, the diameter of said ball being slightly less than an internal diameter of said tube so that said ball moves inside said tube with a minimum clearance between said ball and an internal wall of said tube;
a conduit connected at one end thereof to said transparent tube for conveying pressure variations to said tube;
two internal stops disposed respectively at opposite ends of said tube for retaining said ball inside said tube, said internal stops having respective air passages therein;
detector means disposed adjacent said tube for detecting a to-and-fro movement of said ball within said tube;
electronic control and alarm means for emitting an alarm when said abnormal breathing stoppage occurs, said electronic control and alarm means receiving a signal from said detection means, said signal being transmitted though a signal line connecting said detector means and said electronic control and alarm means.

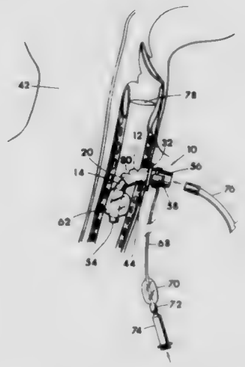
5,056,514
ENDOTRACHEAL STETHOSCOPE
Frank DuPont, 4495 Clarke Drive, St. Clair, Mich. 48079
Filed Oct. 30, 1989, Ser. No. 428,892
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 21 Claims

4. A stethoscopic device for use with an endotracheal tube having an outer end and an inner end and adapted to be inserted through the mouth cavity of a surgery patient and into the trachea of the patient to position the outer end of the tube exteriorly of the patient's mouth and position the inner end of the tube proximate the patient's lungs to facilitate the delivery of anesthesia through the tube to the patient's lungs and/or to facilitate the delivery of a gaseous substance from a breathing machine through the tube to the patient's lungs during the surgical procedure, said device comprising:
means defining a membrane proximate the outer end of the endotracheal tube extending in a direction generally parallel to the central axis of said tube and radially offset with respect to said axis and having opposed sides;
means defining a chamber closed at one side by one side of said membrane;
means defining a fitting for connection to a stethoscope opening into said chamber; and



a tube member adapted to be fitting at one end thereof on the outer end of said endotracheal tube with the central axis of said tube member generally coaxial with the central axis of said endotracheal tube.

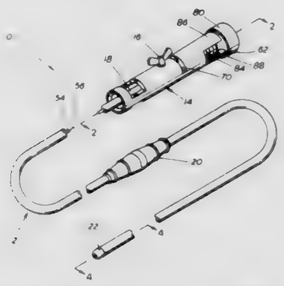
5,056,515
TRACHEOSTOMY TUBE ASSEMBLY
Elaine R. Abel, 134 Fernwood Ave., Oroville, Calif. 95966
Filed Jan. 4, 1991, Ser. No. 637,603
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.15 13 Claims



1. A tracheostomy tube assembly for insertion through an opening into a trachea to help support breathing, comprising:
an outer cannula having a first end adapted for placement outside a trachea, said outer cannula further having a second end adapted for placement within the trachea,
means for providing stability of said outer cannula relative to the trachea during use,
an inner cannula having a first end and a second end, said inner cannula removably inserted into a lumen through said outer cannula,
connecting means releasably affixing said inner cannula stationary relative to said outer cannula,
said second end of said inner cannula extending beyond said second end of said outer cannula,
at least one inflatable cuff affixed to said inner cannula adja-

cent said second end of said inner cannula, said cuff when inflated within the trachea providing sealing means between the inner wall of the trachea and said second end of said inner cannula,
means for selectively inflating and deflating said inflatable cuff.

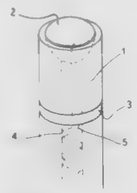
5,056,516
IMPLANTABLE ENDOCORDIAL LEAD WITH TORQUE-TRANSMITTING LANYARD
Paul R. Spehr, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.
Filed Nov. 2, 1989, Ser. No. 432,142
Int. Cl.[5] A61N *1/04*
U.S. Cl. 128—419 P **9 Claims**



1. A lead assembly for implantation in a patient, the assembly comprising:
an electrode adapted for insertion into a chamber of the patient's heart for electrical stimulation thereof and having a lumen extending through the electrode from a proximal end to a distal end thereof;
a lead connected to proximal end of the electrode at a distal end of the lead and adapted to transmit electrical impulses between the electrode and a proximal end of the lead, the lead having a lumen extending through the lead from the proximal end to the distal end thereof,
fixation means for securing the electrode to the lining of the heart chamber, the fixation means being in slidable contact with the electrode in the lumen thereof,
a lanyard attached to a proximal end of the fixation means, said lanyard being adapted to simultaneously displace the fixation means along a longitudinal axis of the electrode to selectively expose at least part of the fixation means outside the electrode and to rotate the fixation means without rotating the lead and being further adapted to withdraw the fixation means within the electrode.

5,056,517
BIOMAGNETICALLY LOCALIZABLE MULTIPURPOSE CATHETER AND METHOD FOR MAGNETOCARDIOGRAPHIC GUIDED INTRACARDIAC MAPPING, BIOPSY AND ABLATION OF CARDIAC ARRHYTHMIAS
Riccardo Fenici, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy
Filed Jul. 24, 1989, Ser. No. 383,581
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—419 P **11 Claims**

1. A multipurpose cardiac electrocatheter for use with an external pacing device, comprising:
at least two non-ferromagnetic non-polarizable electrode means for generating an electric field having a dipolar configuration;
a pair of copper insulated wires connected to said electrode means;
said pair of copper insulated wires being twisted along a total length of the multipurpose cardiac electrocatheter up to said electrodes;
said electrode means forming a distal electrode and a proximal electrode;



said pair of copper insulated wires preventing generation of spurious magnetic fields along the multipurpose cardiac electrocatheter during pacing operations; and
a flexible cylindrical tube constructed of plastic electrically insulated material.

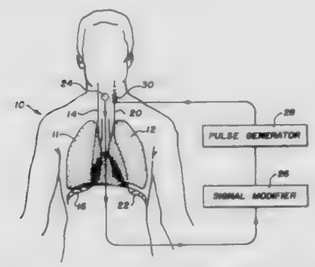
5,056,518
OPTIMIZATION OF BONE FORMATION AT CATHODES
Brian A. Pethica, Upper Montclair; James M. Devine, Hope, and Anthony J. Varrichio, Flanders, all of N.J., assignors to Electro-Biology, Inc., Parsippany, N.J.
Filed Jul. 2, 1990, Ser. No. 547,821
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 F **20 Claims**

1. A method of stimulating osteogenesis or other tissue repair processes at a tissue site within a living body comprising:
locating a first electrode at said tissue site within the living body;
coupling a second electrode to said living body remote from said tissue site;
applying various signal levels to said first and second electrodes and monitoring the resulting current flows between the electrodes to determine a current-voltage characteristic of said electrodes;
identifying a voltage signal level at which a distinctive transition occurs in said current-voltage characteristic; and
applying a voltage signal level to said electrodes to cause the electrodes to operate at a point on the current-voltage characteristic which is just beyond the point at which said transition occurs.

5,056,519
UNILATERAL DIAPHRAGMATIC PACER
Dennis J. Vince, 610-943 West Broadway, Vancouver, British Columbia V5Z 1K3, Canada
Filed May 14, 1990, Ser. No. 522,778
Int. Cl.[5] A61N *1/36*
U.S. Cl. 128—419 G **12 Claims**

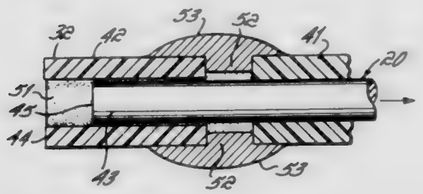
1. An apparatus to innervate a deinnervated lung diaphragm and pace the deinnervated diaphragm with a normal innervated lung diaphragm, comprising:

a sensing device adapted to be located to produce a signal representative of a change resulting from normal operation of the innervated diaphragm;
means to modify the signal in accordance with a predetermined pattern to provide a modified signal representative of the rate and duration of inspiration for the normal innervated lung diaphragm;



pulse generator means fed by the modified signal to produce a pulse; and
stimulating means adapted to innervate the deinnervated diaphragm at the same rate and duration as the normal innervated lung diaphragm in response to the pulse.

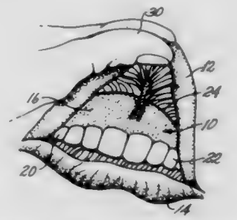
5,056,520
PROBE FOR BLOOD GAS SENSING
Dennis M. Tomisaka, Dublin, and John C. Toomey, West Worthington, both of Ohio, assignors to Medex, Inc., Hilliard, Ohio
Filed Oct. 11, 1989, Ser. No. 419,692
Int. Cl.[5] G01N *33/49*; **G02B** *6/02*; **A61B** *10/00*
U.S. Cl. 128—634 **5 Claims**



1. A blood probe comprising:
an optical fiber having two ends, one of which is a distal end,
a cylindrical sleeve surrounding said fiber and extending beyond said distal end of said fiber, thereby creating a receptacle at the distal end of said fiber,
a sensitive dye bound in a cured gel disposed in said receptacle and in intimate contact with the distal end of said optical fiber and free of oxygen at the interface between said dye and the distal end of said fiber,
said dye being exposed at the end of said sleeve for contact with blood.

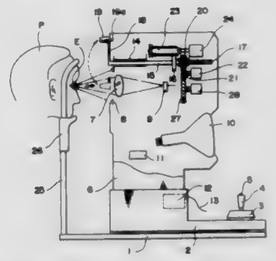
5,056,521
METHOD FOR MONITORING GLUCOSE LEVEL
J. Stuart Parsons, Laguna Niguel, and Jon Booher, Lake Forest, both of Calif., assignors to Health Craft International, Inc., Pasadena, Calif.
Filed Jun. 29, 1989, Ser. No. 374,535
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—635 **5 Claims**

1. A method for monitoring glucose comprising the steps of:
placing a nonreactive absorbent collecting swab in contact with a surface of the oral cavity of a patient to collect thereon a sample of glucose level indicative oral fluid;
removing the collecting swab from the oral cavity;
transferring the sample from the collecting swab to an enzyme electrode off site of the patient;



sensing an electric current produced by the enzyme electrode in response to the sample and displaying the sensed electric current to indicate glucose level.

5,056,522
SUPERSONIC OPHTHALMIC MEASURING APPARATUS
Isao Matsumura, Yokosuka; Takashi Masuda, Kawasaki; Yoshimasa Hamano, Yamato; Shigeo Maruyama, Machida; Yukitsugu Nakamura, Sagamihara, and Kazunobu Kobayashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 264,894, Oct. 31, 1988, abandoned.
This application Dec. 28, 1990, Ser. No. 633,180
Claims priority, application Japan, Nov. 2, 1987, 62-277733; Mar. 31, 1988, 63-79260; Jul. 22, 1988, 63-183335
Int. Cl.[5] A61B *3/16*
U.S. Cl. 128—645 **13 Claims**



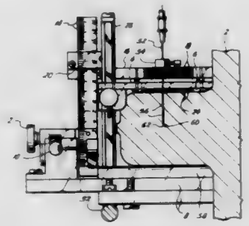
1. A supersonic ophthalmic measuring apparatus comprising:
measuring means for measuring a distance from the cornea of an eye to be examined to a predetermined region of the eye to be examined by a supersonic wave emitted by a supersonic probe which contacts and depresses the cornea of the eye to be examined;
calculating means for quantitatively calculating an amount of depression of the cornea of the eye to be examined caused by the supersonic probe; and
correcting means for correcting the measurement of said measuring means by adding the amount of depression calculated by said calculating means to the distance measured by said measuring means.

5,056,523

PRECISION BREAST LESION LOCALIZER

John E. Hotchkiss, Jr., Tiburon, Calif., and Granville C. Coggs, San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Nov. 22, 1989, Ser. No. 441,114
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—653 R **20 Claims**



1. A device for positioning a probe in a bodily protuberance comprising:
a base;
a first radiolucent platform attached to said base;
a second radiolucent platform attached to said base being adjustably positionable in parallel and space relation to said first platform to secure and compress a bodily protuberance between said first and second platforms;
a radiolucent insert positioned in said second platform, said insert comprising a plurality of probe passages, said probe passages being positioned in a plurality of rows;
means for adjusting said spaced relation of said first and second platforms;
a radiolucent probe guide comprising a plurality of probe guide passages,
said probe guide passages being positioned in a row and spaced a distance substantially equal to the space between said insert passages,
said probe guide being in proximal relation to said second platform and in distal relation to said first platform;
means for supporting said probe guide in spaced relation to said insert;
at least radiopaque scale markers positioned in a path substantially perpendicular to said first platform and in a plane substantially parallel to said row of probe guide passages.

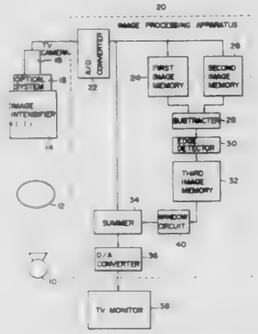
5,056,524

IMAGE PROCESSING METHOD AND SYSTEM FOR RADIOLOGICAL DIAGNOSTICS

Mitsuo Oe, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 23, 1989, Ser. No. 425,300
Claims priority, application Japan, Oct. 25, 1988, 63-268857
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—654 **15 Claims**

1. An image processing system for radiological diagnostics, with use of fluoroscopic images, one obtained by emitting radiation to a subject with no contrast medium being in a blood vessel, and another obtained with a contrast medium being in the blood vessel, said system comprising:
image data output means for converting the fluoroscopic images to fluoroscopic image data;
subtraction means, connected to said image data output means, for subjecting to a subtraction operation the fluoroscopic image data regarding the one fluoroscopic image obtained with no contrast medium being in the blood vessel and the fluoroscopic image data regarding said another fluoroscopic image obtained with contrast medium being in the blood vessel, thus obtaining subtraction image data corresponding to the blood vessel;
edge detection means, connected to said subtraction means for detecting edge image data corresponding to edges of the blood vessel, on the basis of the subtraction image data output from the subtraction means; and
summing means, connected to the image data output means and the edge detection means, for summing the fluoroscopic image data regarding the one fluoroscopic image obtained with no contrast medium being in the blood vessel and the edge image data, thus forming road map image data corresponding to a road map image including a contour of the blood vessel and the one fluoroscopic image.

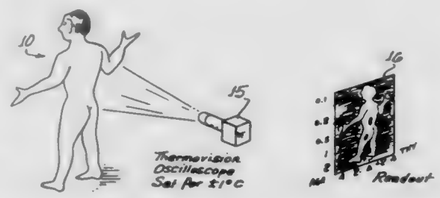


5,056,525

PROCESS FOR DIAGNOSING SPINAL CONDITIONS

Fred F. Hafezi, 3101 Sunrise Ridge, Hacienda Heights, Calif. 91745

Continuation of Ser. No. 591,802, Mar. 21, 1984, abandoned, which is a continuation of Ser. No. 181,096, Aug. 25, 1980, abandoned. This application Apr. 8, 1985, Ser. No. 720,909
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—664 **5 Claims**



1. A process for diagnosing abnormal spinal conditions comprising the steps of:
placing the patient whose spinal abnormality is to be diagnosed in a standing position in a room free from random draft, and free from a source of radiant heat in order to provide a uniform heat loss about the patient's body;
spraying each side of the patient's skin with an evaporative liquid while the patient's legs are not touching each other and the patient's arms are not touching any part of the patient's body;
uniformly blowing room temperature air on the patient's skin to allow the evaporative liquid to evaporate thereby cooling the skin surface;
waiting while the patient stands in a relaxed manner in the room for a period of from three to fifteen minutes to permit the skin surface temperature to return in part to normal;
measuring the skin surface temperature to determine the mean skin temperature;
mapping the areas of differential skin surface temperature about the patient's torso and limbs including areas remote from the site of pain where said temperature differs from the mean skin temperature by at least one degree centigrade above or below said mean skin temperature to locate a pattern characteristic of a particular injury; and
determining the area of the spinal abnormality by comparing the map of the areas of differential skin surface temperature with the peripheral distribution of particular sympathetic sensory nerves near the spinal abnormality.

5,056,526

DEVICE FOR GLOBAL EVALUATION OF THE LEFT VENTRICULAR EJECTION FRACTION BY THERMODILUTION

Hassan H. Khalil, P.O. Box 296, Alexandria, Egypt

Filed Oct. 27, 1989, Ser. No. 428,160
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—692 **7 Claims**



1. A left ventricular catheter system including a heater winding (A) tightly wound in a bifilar manner on a distal segment of a left ventricular catheter comprising a flexible tubular arrangement with a pigtail distal end adapted to be introduced through a percutaneous introducer with a side port into the femoral artery, and advanced through the aorta and aortic valve until positioned in the cavity of the left ventricle and including a dummy load heater winding (B) of identical impedance to that of the heater winding (A) on said distal segment of said catheter, said heater winding (B) being situated external to the patient receiving said catheter, and said two heater windings (A and B) being connected in such a manner that they can receive alternate pulses of electric energy from a regulated high frequency power supply at a predetermined rate of heating.

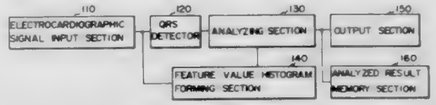
5,056,527

APPARATUS FOR ANALYZING VITAL SIGNALS BASED UPON A FEATURE SELECTED FROM A PLURALITY OF VITAL SIGNAL FEATURES

Takafumi Go, and Tadashi Fujii, both of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Japan

Filed Jul. 26, 1990, Ser. No. 557,766
Claims priority, application Japan, Aug. 3, 1989, 1-202186
Int. Cl.[5] A61N *9/04*
U.S. Cl. 128—702 **15 Claims**

1. An apparatus for analyzing vital signals captured from a subject, said apparatus comprising:
histogram forming means for receiving vital signals and forming different histograms based upon received vital signals with each formed histogram indicating a different feature of the received vital signals;
selecting means for selecting a selected vital signal feature which is most useful for analysis of the received vital signals based upon histogram distributions provided in the histograms formed by the histogram forming means; and



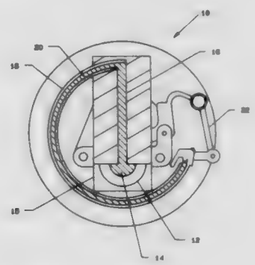
analyzing means, responsive to selection of one of the vital signal features as the selected feature by the selecting means, for analyzing the received vital signals on the basis of the selected feature to determine whether or not the received vital signals are normal.

5,056,528

PRESSURE GAUGE: GELATINOUS FILLED BOURDON TUBE

Duane Zytkovicz, Onamia, and Thomas J. McEvoy, Minnetonka, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Aug. 16, 1990, Ser. No. 568,085
Int. Cl.[5] G01L *7/04*
U.S. Cl. 128—741 **2 Claims**



1. A pressure gauge comprising:
a) a bore,
b) a bourdon tube,
c) a tube means connecting said bore and said tube,
d) indicating means connected to said bourdon tube for indicating pressure at said bore and,
e) a resilient gelatinous material that is incompressible yet deformable and that at least almost completely fills the bourdon tube.

5,056,529

APPARATUS AND METHOD FOR PERFORMING A TRANSBRONCHEAL BIOPSY

William J. de Groot, No. 1 Cedar Lawn South, Galveston, Tex. 77550

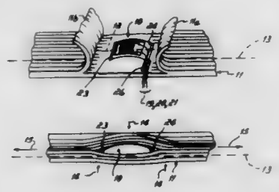
Filed Apr. 3, 1990, Ser. No. 503,758
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **4 Claims**



1. Apparatus for obtaining cells in performing a transbron-

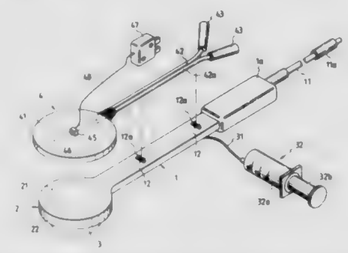
cheal lung biopsy comprising, a rigid bronchoscope having a proximate end and a distal end adapted to be inserted into the lower broncheal tree of a patient, a manipulator inserted into the proximate end of said bronchoscope, said manipulator including a relatively long thin needle, a shoulder provided on the wall of said needle in proximity to the top thereof, a cell retrieving instrument slidably mounted in said needle, a syringe assemble connected to said needle and said cell retrieving instrument, said syringe assembly including a cylinder portion connected to one end of said needle, and a plunger portion slidably mounted in said cylinder portion, said cell retrieving instrument being connected to said plunger portion, whereby the needle and cell retrieving instrument can be slid relative to each other, and an activator device, having an adjustable flange portion, connected to the cylinder portion and the plunger portion of the manipulator said adjustable flange engaging with the proximate end of said bronchoscope to thereby provide a fixed platform against which the activator device rests during the actuation thereof, whereby a specimen cell can be obtained by inserting the bronchoscope into the lower broncheal tree of the patient, inserting the manipulator through the bronchoscope and into the lung parenchyma of the patient, the depth of penetration being limited by the needle shoulder, retracting the bronchoscope until the end thereof abuts the adjustable flange portion on the activator device, actuating the activator device to move the manipulator through a sequence wherein the cell retrieving instrument is held fixed while the needle is retracted to expose the cell retrieving instrument within the patient's lung, the needle then being held fixed while the cell retrieving instrument is then retracted into the needle.

5,056,530
METHOD OF MEASURING AXIAL FORCE IN MAMMALIAN FIBROUS TISSUE AND DEVICE
David L. Butler, Fairfield; Edward S. Grood, Cincinnati; Donald C. Stouffer, Cincinnati, and David L. Glos, Cincinnati, all of Ohio, assignors to University of Cincinnati, Cincinnati, Ohio
Filed Dec. 15, 1988, Ser. No. 284,949
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 9 Claims



1. A method of measuring axial force in fibrous tissue comprising implanting a flexible arcuate member completely within said tissue in a position whereby lateral compressive forces generated by said axial force act to flatten said arcuate member;
measuring flattening of said arcuate member caused by said lateral compressive forces to thereby provide an indication of said axial force.

5,056,531
ELECTRODE STRUCTURE FOR HIGH FREQUENCY HYPERTHERMIA DEVICE
Jun Shimoyama, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Oct. 30, 1989, Ser. No. 427,876
Claims priority, application Japan, Nov. 7, 1988, 63-145320; Nov. 7, 1988, 63-280684
Int. Cl.[5] A61N *1/06*
U.S. Cl. 128—784 5 Claims



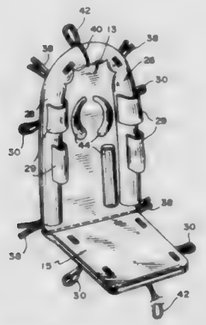
1. An electrode structure for a high frequency hyperthermia device for nonsurgical insertion into a body cavity of a person, which comprises:
a rigid supporting arm;
an electrode unit incorporating an electrode which is provided at one end of said supporting arm; and
a cooling solution containing bag detachably mounted on one side of said electrode unit;
wherein said supporting arm is of a length to position said electrode unit in said body cavity from the exterior of said person.

5,056,532
ESOPHAGEAL PACING LEAD
Vincent Hull, Fridley; Creg Dance, Elk River; Terrell Williams, Coon Rapids, and Wayne Voightschild, Apple Valley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Jul. 25, 1989, Ser. No. 385,348
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—785 10 Claims



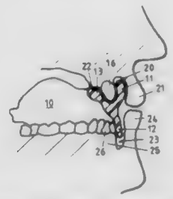
1. A medical electrical lead comprising:
an elongated flexible lead body having an outer surface, and having an elongated lead lumen;
an electrode lead, slideably mounted within said elongated lead lumen, said electrode lead including at least one electrode;
wherein said elongated lead body is provided with an elongated aperture, opening said lead lumen to the exterior surface of said lead body, said at least one electrode on said electrode lead located exposed to the exterior of said lead body within said elongated aperture, said lead body further comprising expondable means located radially opposite said aperture, and expandable in a direction opposite said aperture.

5,056,533
SUPPORT CUSHION
Toni Solano, 113 Gayle St., Fort Morgan, Colo. 80701
Filed Oct. 17, 1990, Ser. No. 599,126
Int. Cl.[5] A61G *15/00, 7/08;* A61F *5/37*
U.S. Cl. 128—845 18 Claims



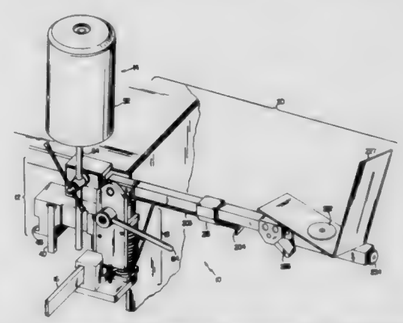
1. A support cushion comprising:
a generally flexible unitary body piece defined by a casing having back and seat portions encompassing a cushion insert;
lifting handles attached to a side edge of the back and seat portions respectively for aiding in transport of a patient or the cushion;
an elliptical circumferential pad attached to the casing at the periphery of the back portion for supporting the patient's head; and said circumferential pad includes a plurality of pockets for storage.

5,056,534
SNORE INHIBITING DEVICE
David W. R. Wright, 20 Cross Road, Myrtle Bank, South Australia, 5064, Australia
Continuation of Ser. No. 215,643, Jul. 6, 1988, abandoned. This application May 2, 1990, Ser. No. 519,257
Claims priority, application Australia, Jul. 8, 1987, PI2979
Int. Cl.[5] A61F *5/56*
U.S. Cl. 128—848 4 Claims



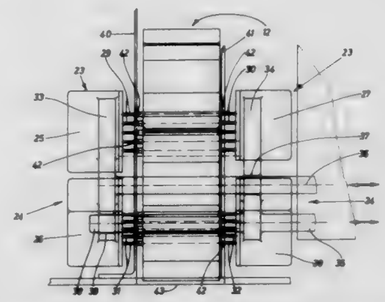
1. A snore inhibiting oral device comprising an imperforate, heat deformable, unitary moulding which comprises means for normally obstructing air passage through the mouth of a user causing the flow of air to the lungs of the user to pass solely through the user's nose yet allowing additional air passage through the mouth upon wide opening of the user's mouth, said obstruction means including means for defining a recess for receiving the teeth of the user's upper arch and for engaging front and rear surfaces of the teeth of the user's upper arch and means for lying in the recess between the teeth of the user's lower arch and adjacent lip of the user, said defining means comprising a first two flanges including an upper, inner flange and an upper, outer flange defining a space therebetween, said lying means comprising a third flange including a lower outer flange being of predetermined depth for extending into the lower recess of the user's mouth without extending the entire depth of the recess, said moulding further comprising, in plan, a general "U" shape and in cross-section, a general "Y" shape defined by said three flanges.

5,056,535
VARUS AND VALGUS LEG MANIPULATOR
Leonard Bonnell, Huntingdon Valley, Pa., assignor to Leonard Medical, Huntingdon Valley, Pa.
Filed Jan. 22, 1990, Ser. No. 467,982
Int. Cl.[5] A61F *5/37, 5/04;* A61G *13/00*
U.S. Cl. 128—882 19 Claims



1. An apparatus for adjustable positioning of a patient's leg during a medical procedure, comprising
a base;
means for attachment of said base to an operating table;
a pitch/yaw assembly mounted upon said base;
a leg extension having a first end and a second end, said first end mounted upon said pitch/yaw assembly for pivoting movement of said second end in horizontal and vertical planes relative to said base;
means associated with said second end for securement of the lower end portion of the patient's leg; and
means for fixed positioning of the patient's thigh.

5,056,536
PROCESS AND APPARATUS FOR TESTING CIGARETTES
Heinz Focke, and Jürgen Focke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany
Filed Oct. 28, 1988, Ser. No. 263,943
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1987, 3738820
Int. Cl.[5] A24C *5/60*
U.S. Cl. 131—283 9 Claims



1. Process for testing cigarettes of a cigarette group corre-

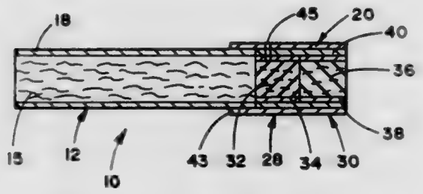
sponding to the contents of a cigarette pack, whereby testing members assigned to each cigarette of a cigarette group are moved near to the end faces of each of the cigarettes, characterized in that the cigarettes (10, 11) of a cigarette group (16, 17) are tested in two successive testing cycles, whereby cigarettes lying spaced apart from one another are tested simultaneously during one testing cycle.

5,056,537

CIGARETTE

Thomas W. Brown, Winston-Salem; Glenn E. Creamer, Pfafftown; William R. Cook, Clemmons; Alan B. Norman; Jerry W. Lawson, both of Clemmons, and Barry L. Saintsing, Lexington, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sep. 29, 1989, Ser. No. 416,332
Int. Cl.[5] A24B *15/18, 15/24, 15/28*
U.S. Cl. 131—352 **16 Claims**



1. A cigarette having a charge of smokable material contained in a circumscribing paper wrapping material, the cigarette comprising:

(a) the paper wrapping material having a cellulosic base web containing an inorganic filler; and

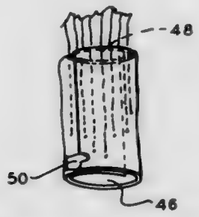
(b) the smokable material such that greater than about 70 weight percent thereof is a blend of (i) volume expanded tobacco filler, and (ii) a reconstituted tobacco filler including about 20 to about 70 parts inorganic filler, about 30 to about 80 parts extracted tobacco material and tobacco extract.

5,056,538

HAIR COLORING DEVICE AND METHOD

Allan Matula, 185 Meisel Ave., Springfield, N.J. 07981

Filed Dec. 18, 1989, Ser. No. 452,252
Int. Cl.[5] A61K *7/13*
U.S. Cl. 132—208 **3 Claims**



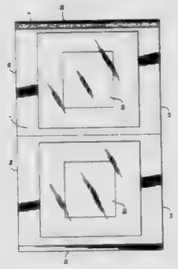
1. In a method of coloring a section of hair having a plurality of hair strands utilizing a heat generating coloring agent, including the steps of forming the section of hair having the plurality of hair strands; placing the section of hair on a plastic strip having a center portion and a left portion and a right portion with the left portion and the right portion in an open condition; and applying the heat generating coloring agent to the hair strands disposed on the center portion; the improvement which comprises folding over the left and right portions for enclosing the hair strands to form a heat conducting air passage between the hair and the folded plastic strip.

5,056,539

PRODUCT AND PROCESS FOR HIGHLIGHTING HAIR

Kevin G. Abramson, 18 Dorothy Rd., Brockton, Mass. 02402

Filed Feb. 22, 1991, Ser. No. 659,846
Int. Cl.[5] A45D *19/18*
U.S. Cl. 132—270 **10 Claims**



1. A product for highlighting hair through foiling; comprising:

a segment of aluminum foil having two window panes of a transparent material arranged equidistant from each other, such that when said foil is folded in half, the two panes are aligned one on top of the other, further having a fold at each of two opposing ends of said foil; and

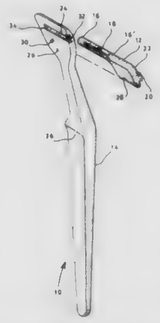
no-slip adhesive affixed to at least one of said folds.

5,056,540

TOOTH FLOSSER

Daniel A. Page, 2906 N. Main St., Crossville, Tenn. 38555

Filed Apr. 16, 1990, Ser. No. 509,600
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 **6 Claims**



1. A tooth flossing device for making the task of flossing teeth easier, neater and more effective, comprising:

handle means for being held and gripped by a hand of a user, said handle means defining a cartridge receiving portion at an end thereof;

removable, replaceable dental floss-carrying cartridge means having two pole pieces for carrying between said pole pieces a selected length of dental floss in taut suspension to be removably and repeatedly inserted between a user's teeth; and

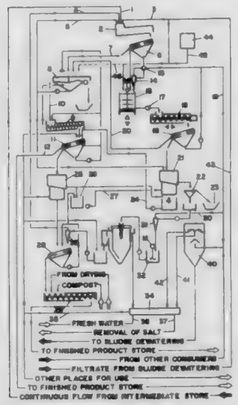
interlocking means for releasably securing said cartridge means to said cartridge receiving portion of said handle means whereby said replaceable floss-carrying cartridge is rigidly carried by said handle means when mounted thereon, said interlocking means including a mortise and tenon dovetail joint.

5,056,541

METHOD AND APPARATUS FOR REMOVING POLLUTANTS FROM CONTAMINATED SOIL

Horst Schade, In der Marpe 16, 4320 Hattingen, Fed. Rep. of Germany, and Wilko Werner, Forstweg 7a, 1000 Berlin 28, Fed. Rep. of Germany

Filed Mar. 16, 1990, Ser. No. 494,603
Claims priority, application European Pat. Off., Mar. 20, 1989, 89104982.7
Int. Cl.[5] B08B *9/00*
U.S. Cl. 134—25.1 **33 Claims**



1. A method of purifying contaminated soil from contaminants including organic pollutants, cyanide and mercury compounds, said method comprising the steps of:

separating from the contaminated soil a first particle size fraction no greater than minus 150 μm in size;

distilling the first particle size fraction in order to purify the first particle size fraction from organic pollutants and from cyanide and mercury compounds;

extracting contaminants from the balance of the contaminated soil by subjecting the balance of the contaminated soil to washing water in order to create a balance of washed soil;

separating the contaminant-bearing washing water from the washed soil;

rinsing the washed soil with rinsing water; and

purifying the rinsing water from residual contaminants acquired thereby during said step of rinsing.

5,056,542

APPARATUS FOR DISPENSING DETERGENT IN A WAREWASH MACHINE

Roger A. Reinhard, Greensboro, N.C., assignor to Kay Chemical Company, Greensboro, N.C.

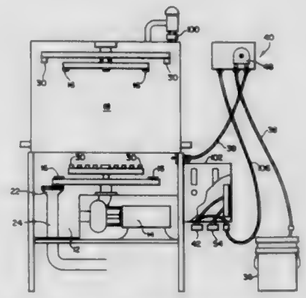
Filed Feb. 28, 1990, Ser. No. 486,426
Int. Cl.[5] A47L *15/44*
U.S. Cl. 134—57 D **15 Claims**

1. An apparatus for dispensing detergent in a warewash machine including a washtank for holding a supply of wash water, a rinse water spray head through which water is supplied in a rinse cycle and in a fill cycle, and flow control means for controlling the flow of water being supplied to the warewash machine, the apparatus comprising:

means, coupled with the flow control means, for determining whether the water is being supplied in a fill cycle or a rinse cycle;

means for dispensing detergent to the washtank of the warewash machine;

first control means for operating the dispensing means to dispense a first predetermined amount of detergent, said first control means activated by the determining means in response to a determination that water is being supplied in a fill cycle; and



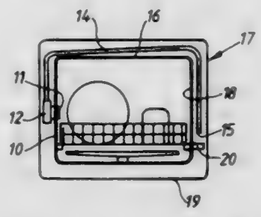
second control means for operating the dispensing means to dispense a second predetermined amount of detergent, said second control means activated by the determining means in response to a determination that water is being supplied in a rinse cycle.

5,056,543

DEVICE FOR DRYING DISHES IN A DISHWASHER

Hans G. E. Dygve, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 26, 1990, Ser. No. 470,914
Claims priority, application Sweden, Feb. 3, 1989, 8900380
Int. Cl.[5] A47L *15/48*
U.S. Cl. 134—107 **4 Claims**



1. In a dishwasher having a tub with a floor, a roof and sidewalls, a heated liquid being circulated within said tub to clean dishes contained therein, the improvement comprising:

passageway means establishing fluid communication between the interior of said tub and the ambient atmosphere for venting at least a portion of the heated, moist air developed within said tub, said passageway means including a conduit extending from a sidewall of said tub and continuing above said roof, said conduit being spaced from the outer surface of said tub and leading to the exterior of said tub after continuing above said roof, said conduit defining a condensation chamber which condenses moisture from the heated moist air passing therethrough.

5,056,544

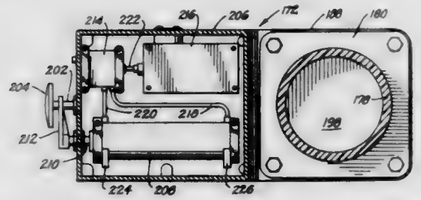
RECREATIONAL VEHICLE REMOTELY CONTROLLED TANK DRAIN VALVE AND FLUSHING METHOD

Charles F. Stevens, 19991 Wrightwood Ct., Yorba Linda, Calif. 92886

Division of Ser. No. 134,768, Dec. 18, 1987, Pat. No. 4,903,716. This application Jan. 16, 1990, Ser. No. 466,250

Int. Cl.[5] B08B *9/08;* **F16K** *31/143*

U.S. Cl. 134—166 R **7 Claims**



6. A recreational vehicle waste water tank flushing system comprising:

a control system;

a drain valve for connection to the recreational vehicle tank for draining the waste water tank, said drain valve being connected to said control system for opening and closing upon command by said control system, said drain valve having a body having a drain passage therethrough, said body being a twopiece body including a first body half and a second body half, said first and second body halves having facing flanges for engagement to each other and means for clamping said flanges together, at least one of said body halves having a pocket therein, first and second gaskets between said first and second body halves, at least one of said gaskets having a gate pocket therein, said drain passage extending through said flanges and including openings in said gaskets between said flanges;

a gate in said gate pocket in said gasket, said gate being movable from a position where it obstructs and closes said passage and is in contact with said first and second gaskets to seal said passage to a position where it is away from obstruction of said passage;

an operating rod, said operating rod being smooth and being fixed to said gate and extending out of said body comprising said first and second flanges;

a fluid cylinder, said fluid cylinder having a piston rod therein, said piston rod lying substantially parallel to and detachably connected to said operating rod;

a fluid control valve connected to said fluid cylinder to move the piston therein and said piston rod;

a source of fluid under pressure connected to said control valve for supplying fluid under pressure to said cylinder to move said piston therein to open and close said drain valve;

a water spray nozzle for positioning in the recreational vehicle waste water tank for spraying the walls of the tank;

a pressurized water supply valve connected to said spray nozzle for supplying water to said spray nozzle, said pressurized water control valve being connected to said control system, said water supply valve being for connection to the waste water tank and being connected to be controlled by said control system so that said control system opens said spray water valve and opens said drain valve for spraying down the walls of the waste water tank and thereupon said control system closes said spray water valve and said drain water valve and opens said water supply valve to fill the waste water tank and upon completion of filling said control system closes said water supply valve and opens said drain valve until the waste water tank is empty; and

a fluid chemical degreaser dispensing tank, a chemical degreaser dispensing control valve connected to said chemical degreaser dispensing tank, said chemical degreaser dispensing control valve being for connection to the recreational vehicle waste water tank so that upon opening of said chemical degreaser dispensing valve, chemical is dispensed to the recreational vehicle waste water tank, said chemical dispensing valve being connected to said control system so that said control system controls said valves to spray the walls of the recreational vehicle waste water tank and thereupon said control system closes said drain valve and opens said chemical supply valve to place degreaser treatment chemical in the waste water tank.

5,056,545

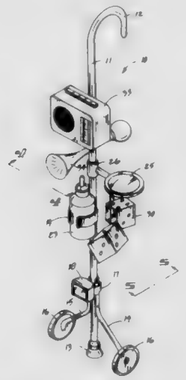
SAFETY WALKING CANE

Phillip A. Spaeth, Box 507, Kearney, Mo. 64060

Filed Oct. 15, 1990, Ser. No. 597,553

Int. Cl.[5] A45B *1/00*

U.S. Cl. 135—66 **1 Claim**



1. A safety walking cane comprising, in combination,

an elongate shaft, the shaft including a handle at an upper terminal end of the shaft, and

a resilient friction tip mounted at a lower terminal end of the shaft, and

stabilizing means mounted adjacent the lower terminal end of the shaft extending laterally of the shaft for imparting stability to the shaft during use, and

a reflector member, including a first mounting bracket, with the first mounting bracket securable to the stabilizing means, and

wherein the stabilizing means includes a first and second generally "Z" shaped wheel support bracket, the first and second wheel support brackets fixedly mounted to the can shaft on diametrically opposed sides of the cane shaft, and the first and second respective wheel support brackets including respective first and second lower legs, with each respective first and second lower leg rotatably mounting a support wheel, each support wheel diametrically aligned relative to the shaft and extending laterally thereof, and each support wheel including an elastomeric rim, the elastomeric rim aligned with the friction tip in a first position, wherein each elastomeric rim of each support wheel is compressible to permit engagement of the friction tip relative to an underlying support surface, and

wherein the reflector member is mounted within a housing, and the housing is mounted to the first mounting bracket, and the reflector orthogonally bisecting a spacing between the first and second wheel support brackets, and

including a second mounting bracket, the second mounting bracket including a forward "C" shaped jaw pair and a rear "C" shaped jaw pair, and the rear "C" shaped jaw pair mounted to the shaft, and the forward "C" shaped jaw pair mounted resiliently including a water container, the water container including a nozzle member mounted to an upper terminal end of the water container, and

including a third mounting bracket, the third mounting bracket mounted to the shaft above the second mounting bracket, and the third mounting bracket including spring-biased jaws to engage the shaft with the third mounting bracket fixedly mounting a mirror thereto, and

including a fourth mounting bracket, the fourth mounting bracket mounted on the shaft above the third mounting bracket, and including a horn member secured to the fourth mounting bracket, and the fourth mounting bracket including a semi-cylindrical mounting plate fixedly mounted to the shaft, and the semi-cylindrical mounting plate including a fourth mounting bracket "C" shaped spring-biased jaw pair to resiliently secure the horn member to the fourth mounting bracket, and

including a fifth mounting bracket fixedly mounted to the shaft above the fourth mounting bracket, with the fifth mounting bracket including an audible tape member to permit play-back of various audible tapes from the tape player and a radio receiver.

5,056,546

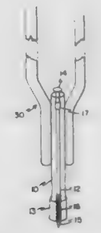
NON-SLIP WALKING ASSIST DEVICE

David Sharp, Rte. 7, Byrd Ave., Chippewa Falls, Wis. 54729

Filed Apr. 2, 1990, Ser. No. 503,262

Int. Cl.[5] A61H *3/02*

U.S. Cl. 135—68 **3 Claims**



1. A slip-resistent walking assist device, comprising:

a shaft having a hand grip at one end and having a padded end piece at the other end;

a retractable member having a point at one end, said member positioned within said shaft and having a first position such that said point protrudes from the end of said end piece and having a second position such that said point is retracted within said end piece;

positioner means connected between said shaft and said retractable member for alternately positioning said point in either said first or second positions

said positioner means further includes a locking mechanism to place said retractable member in either the first or second positions; and

said locking mechanism includes a first cylindrical member connected to said positioner means having a slot in the surface thereof sized to receive a projection from said shaft and a cap member connected to said retractable member also having a seat in the surface thereof to receive said projection whereby said cap member rotates upon a downward pressure on said positioner means causing said projection to alternately be placed into said slot of said cap member causing said point to be alternately placed in said first or second positions.

5,056,547

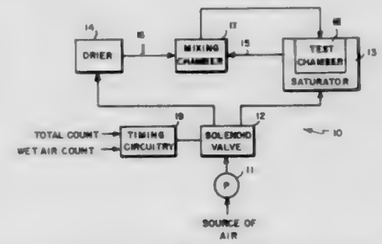
RELATIVE HUMIDITY GENERATION TECHNIQUE

Mark E. Brownawell, Wellesley, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Continuation of Ser. No. 295,125, Jan. 9, 1989, abandoned. This application Jun. 27, 1990, Ser. No. 545,093

Int. Cl.[5] E03B *1/00*

U.S. Cl. 137—3 **11 Claims**



1. An apparatus for providing an air stream having a desired relative humidity to a chamber, said apparatus comprising

a source of air at room temperature and room humidity;

saturator means for receiving air from said source and supplying a wet air stream;

drier means for receiving air from said source and supplying a dry air stream;

control means for controlling a cyclical supplying of alternating, preset and substantially constant times quantities of said wet air stream and said dry air stream to said chamber for mixing so as to provide a mixed air stream therein having said desired relative humidity independently of the humidity in said chamber, said control means including

valve means for providing the quantities of said wet and said dry air streams, wherein said valve means receives the air from said source thereof and responds to said timing means so as to supply the air from said source to said drier means and to said saturator means in accordance with a selected timed manner.

5,056,548

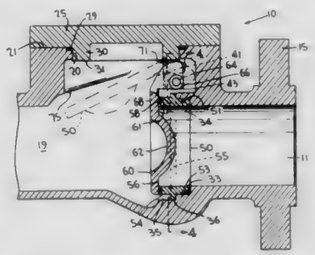
CHECK VALVE ASSEMBLY WITH REMOVABLE SEAT

Maury J. Mills, Oklahoma City, Okla., assignor to KF Industries, Inc., Oklahoma City, Okla.

Filed Oct. 12, 1990, Ser. No. 596,508

Int. Cl.[5] F16K *15/03*

U.S. Cl. 137—15 **26 Claims**



26. The method of retaining a removable valve seat in place in a valve body comprising the steps of:

disposing one surface of a radially projecting flange of the valve seat against an annular shoulder in a flow passage of the valve;

defining first and second retainer bores through an interior body portion of said valve such that one end of each bore opens into said flow passage adjacent a second surface of

said flange facing opposite from said one surface, and such that a second end of each bore opens at a hanger surface disposed in proximity to an access port of said valve to render the bores both visible and accessible via said access port;

slidably disposing first and second retainer pins in said first and second retainer bores, respectively, such that each pin abuts the valve seat periphery at one end and extends beyond said hanger surface at a second end, whereby a portion of each pin is positioned adjacent the second surface of the flange to axially retain the flange between said shoulder and said pin; and

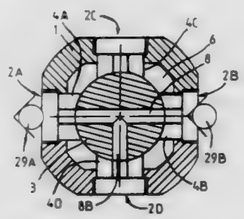
preventing inadvertent lengthwise retraction of said pins into said second end of said bores and out of adjacency with said flange by projecting a stop member from a cover of said access port into adjacent relation with the second ends of said pins.

5,056,549

VALVE FLUID CONTROL DEVICE AND FLUID BACKFLOW PROTECTION DEVICE COMPRISING SAME

Christian Bouilloux, Tournus; Pierre Marmol, Chalon/Saone, and Jean Richard, St Marcel, all of France, assignors to Socla, Chalon sur Saone, France

Filed Jul. 14, 1989, Ser. No. 380,070
Claims priority, application France, Jul. 15, 1988, 88 09643
Int. Cl.[5] F16K *25/00, 3/24, 5/04, 24/02*
U.S. Cl. 137—218 **22 Claims**



1. Valve comprising a valve body with at least first and second ports adapted to be connected to a fluid pipe;

a mobile valve member within the valve body, having an open position in which said first and second ports communicate via a passage in the valve member, and a closed position in which the valve member provides a closing off for each of said first and second ports;

respective sealing areas for sealing said closing off of the first and second ports when in the closed position;

a chamber exterior to the valve member and provided with a vent opening to free air, disposed between said sealing areas in the closed position of the valve member, whereby possible leakages at said sealing areas in the closed position are collected in said chamber, vented to atmosphere and removed from the valve through said vent;

said valve body is a shell casing (1), said valve member (3) turns in the shell casing in which it is mounted by means of sleeves (4A, 4B) coaxial with the ports that the latter comprises, and said chamber (6) is a space between the shell casing and the valve member due to the fact that said sleeves project relative to the inside wall of the shell casing; and

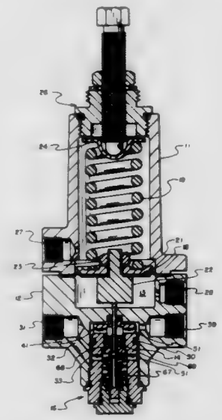
said shell casing (1) comprises as ports adapted to be connected to a fluid pipe said first and second ports (2A, 2B) and a third port (2C) and a port (2D) for mounting a vacuum-breaker valve, the first and the second ports being diametrally opposed on a first diameter and the third port being diametrically opposed to the port for mounting a vacuum-breaker on a diameter transverse to said first diameter, and the passage of the valve member (3) is T-shaped with a diametrical part (8) to the center of which is transversely connected a radial part (8B), the orifice of the radial part being disposed in the closed position of the valve between the port (2D) for mounting a vacuum-breaker and the second port (2B), a first orifice of the diametral part between the first port and the port for mounting a vacuum-breaker (2A, 2D) and the second orifice of the diametral part between the second and third ports (2B, 2C).

5,056,550

PILOT REGULATOR FOR VALVES

Richard J. Mooney, 2552 Neffs La., Salt Lake City, Utah 84109

Filed Nov. 6, 1990, Ser. No. 610,135
Int. Cl.[5] G05D *16/06*
U.S. Cl. 137—270 **7 Claims**



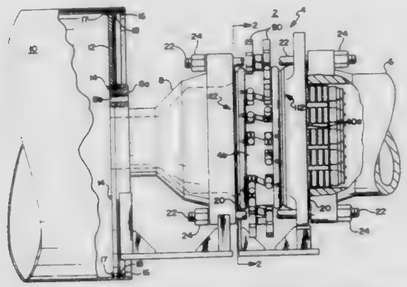
1. A pilot regulator for operating the control device of a main valve adapted to use in a fluid-flow system wherein the upstream side including control device of said main valve connects to an inlet conduit providing a source of pressured fluid and the downstream side of said main valve connects to a discharge conduit; said pilot regulator comprises; a body having defined therein a sensing chamber and a receiving chamber, said sensing chamber being defined on one side by a common wall with said receiving chamber and on an opposite side by a flexible diaphragm; a compression spring urging said flexible diaphragm toward said sensing chamber; a housing secured to said body enclosing both said flexible diaphragm and said compression spring; means enabling connection of said sensing chamber to the conduit either upstream or downstream of said main valve as selected; a primary inlet in said receiving chamber adapted to be connected to communicate with said upstream side of said main valve, a primary outlet in said receiving chamber spaced from said primary inlet and adapted to be connected to communicate with said downstream side of said main valve, a subsidiary valve and subsidiary valve control means removably received in said receiving chamber between said primary inlet and said primary outlet whereby to control flow therebetween, said subsidiary valve control means being responsive to deflection of said flexible diaphragm in said sensing chamber to regulate flow through said receiving chamber, said subsidiary valve and subsidiary valve control means being combined as a component adapted to be installed in and/or removed from said receiving chamber as a unit while said housing enclosing said compression spring and flexible diaphragm is secured to said body.

5,056,551

FAST ACTING MULTIPLE ELEMENT VALVE

Jefferson Y. S. Yang, Orange, and James M. Wada, Torrance, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 17, 1989, Ser. No. 394,989
Int. Cl.[5] F16K *3/26*
U.S. Cl. 137—315 **20 Claims**



1. A fast acting multiple element valve for controlling a large volume fluid flow comprising:

a bulkhead having an array of openings therethrough;

a plurality of valve elements removably inserted into said openings from a downstream side of said bulkhead, portions of said valve elements extending through said bulkhead and projecting from an upstream side thereof;

locking means securing said valve elements to said bulkhead, said locking means being operable from said downstream side of said bulkhead;

an upstream conduit connected to said upstream side of said bulkhead, said upstream conduit enveloping said plurality of valve elements whereby said portions of said valve elements extend into said upstream conduit; and

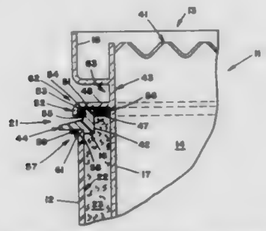
control means operating said valve elements between open and closed positions, said control means comprising separable connections to said valve elements at said downstream side of said bulkhead.

5,056,552

HIGH TEMPERATURE RECIRCULATING CHEMICAL BATH CONSTRUCTION

Allan Berman, Sunnyvale, Calif., assignor to Imtec Products, Inc., Sunnyvale, Calif.

Filed Feb. 4, 1991, Ser. No. 650,193
Int. Cl.[5] F16K *49/00*
U.S. Cl. 137—334 **10 Claims**



1. A recirculating chemical bath for immersing articles in a flow of hot liquid chemical comprising:

a casing having a chamber therein and having a rim which extends around the perimeter of said chamber at the upper end thereof,

a liquid chemical receptacle having a lower region situated within said chamber and an upper region which extends above said rim thereof, said receptacle having a first compartment forming a processing vessel for receiving said articles and a second compartment forming a sump for containing liquid chemical which overflows from said processing vessel and having a trough which extends along said processing vessel in position to receive said overflow therefrom and to carry said overflow to said sump, said trough being at a location on said receptacle that is above said casing rim and vertically spaced apart therefrom, said receptacle further having an outwardly extending flange overlying said casing rim which flange is below said trough and vertically spaced apart therefrom,

sealing material disposed at the underside of said flange and contacting both said underside of said flange and said casing rim, and

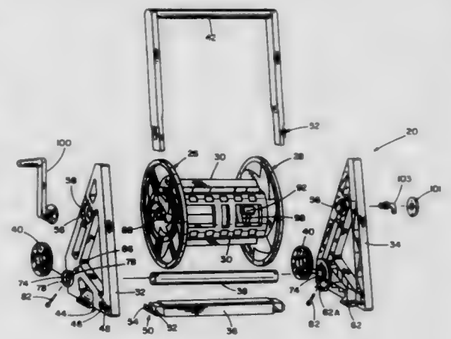
means for heating said liquid chemical and means for recirculating said liquid chemical from said sump back to said processing vessel.

5,056,553

PORTABLE HOSE CART

Stephen P. Whitehead, and Joseph J. Sanchez, both of Elgin, Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed Aug. 7, 1990, Ser. No. 564,222
Int. Cl.[5] B65H *75/34*
U.S. Cl. 137—355.27 **15 Claims**





1. A portable hose cart for movement between a storage location and a use location, said cart comprising;

a first frame side and a second frame side, each side frame side having a top, a bottom and a hub bearing surface disposed between said top and bottom;

a reel disposed between said frame sides and including a first reel flange having a hub rotatably supported by the hub bearing surface of said first frame side, a second reel flange having a hub rotatably supported by the hub bearing surface of said second frame side, and a plurality of cross braces joining said reel flanges and defining a support surface for the winding of a hose;

a demountable upstanding handle having a first leg detachably secured to said first frame side and a second leg detachably secured to said second frame side;

an axle extending between and detachably secured to each frame side adjacent the bottom of each frame side, said axle maintaining said frame sides spaced a predetermined distance apart;

a pair of wheels journaled on said axle with one of said wheels adjacent tc each frame side and extending beneath the bottom thereof, each frame side at its bottom having mounting means for attaching said frame sides to a wall after detaching said handle and said wheels.

5,056,554

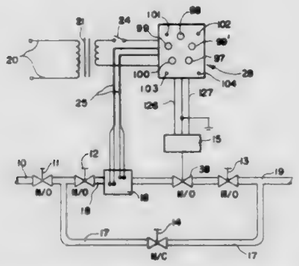
FLUID LOSS, DAMAGE PREVENTION AND CONTROL SYSTEM

F. Grove White, P.O. Box 4, Midtothian, Va. 23113

Continuation-in-part of Ser. No. 89,074, Aug. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 16,866, Feb. 20, 1987, Pat. No. 4,730,637. This application Jul. 11, 1988, Ser. No. 217,345

Int. Cl.[5] **F16K** *31/02;* **G01F** *1/24*

U.S. Cl. 137—486 **1 Claim**



1. In combination, an apparatus for regulating a low-voltage circuit, said circuit having control means, said control means including means for programmably establishing pre-set current limitations therewithin, a hydraulic system, said hydraulic system having a throughput line connected to a building supply line, said throughout line includes a control portion having a sensing means attached thereto, said sensing means actuating means for generating a low-voltage current;

said control means being adapted to monitor said low-voltage current and being actuated as said low-voltage current exceeds pre-set low-voltage limitations;

a solenoid in said circuit electrically connected to said control means and operable to manipulate one of a plurality of valves in said throughput line control portion;

said solenoid being operable to close said one valve when pre-set current limitations are exceeded, whereby fluid flow in said throughput line is shut off;

said means for sensing fluid flow in said throughput line including a positive displacement fluid-driven disc, said positive displacement fluid-driven disc being rotatable at a rate correlative to the rate of flow of fluid in said throughput line, said positive displacement disc having means magnetically coupled thereto for generating digitized low-voltage pulses of a frequency indicative of the rate of rotation of said positive displacement fluid-driven disc, said low voltage signal pulses providing a digitized input signal to a microprocessor incorporated in said apparatus which times out and actuates said solenoid;

said control means including a time-delay relay, further including in said microprocessor thereof electronic means for providing a comparison of the frequency of said digitized pulses as said pulses are produced by the means for sensing fluid flow which actuates a transducer for the control means, a bypass fluid line bounding said throughput line and said valves, a normally closed manual valve in said bypass line, whereby in the event that the control portion of the throughput line needs to be bypassed due to a malfunction in said hydraulic system, the fluid flow is diverted through said bypass line to said building supply line when said other throughput line valves are closed and said bypass valve is opened; and

said fluid flow sensing means for generating a sequence of low-voltage pulses including a magnet operatively associated with said positive displacement fluid-driven disc to provide additional magnetic coupling to an optical pulse conveying-and-transducing means for providing an input signal to the microprocessor for actuating said solenoid.

5,056,555

DEVICE FOR PROTECTION AGAINST AN EXCESS PRESSURE

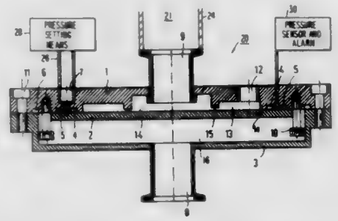
Peter Frijlink, Crosne, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1990, Ser. No. 542,462

Claims priority, application France, Jun. 27, 1989, 89 08520

Int. Cl.[5] **F16K** *17/02*

U.S. Cl. 137—522 **18 Claims**



1. A device for the protection of the internal space of an apparatus at a first pressure from excess pressure comprising:

a first nozzle adapted to be secured to the apparatus for communicating with said internal space;

a displaceable valve member releaseably secured to said nozzle with a given force for releaseably sealing said internal space, said member being placed in a released state in response to said excess pressure;

pneumatic means for pneumatically applying said given force independent of the pressure in said space, said pneumatic means including a second nozzle coupled to said valve member and at a second pressure different than a third pressure for creating said given force in accordance with the difference between the second and third pressures; and

sealing means for coupling the first and second nozzles when the valve member is in said released state and decoupling the nozzles when the valve member is secured to the nozzles.

5,056,556

SOLENOID VALVE

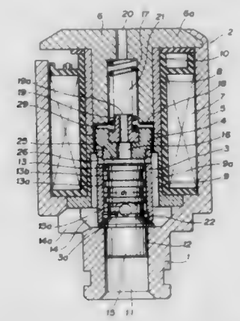
Takashi Nishimoto; Tohru Matsuoka, both of Toyama; Fumio Honda, Takaoka, and Mineyuki Naruse, Toyama, all of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama, Japan

Filed Jul. 24, 1990, Ser. No. 556,425

Int. Cl.[5] **F16K** *31/06, 1/42*

U.S. Cl. 137—522 **6 Claims**

1. In a solenoid valve including a body, a poppet slidably movable within said body, and a valve seat arranged within said body and having a seat surface, said poppet being moved to and from the seat surface of said valve seat by an electromagnetic force and a spring to open and close a port in said body, the improvement comprising a seat guide extending from said seat surface of the valve seat, said poppet being fit around said seat guide and slidably movable along said seat guide, said seat guide having a diameter slightly smaller than



an effective diameter of a pressure receiving portion of said seat surface and acting as an on-off valve and a relief valve.

5,056,557

BUTTERFLY-TYPE CHECK VALVE

John N. Tervo, Scottsdale, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Mar. 6, 1991, Ser. No. 665,391

Int. Cl.[5] **F16K** *15/03*

U.S. Cl. 137—527.8 **9 Claims**

1. A butterfly-type check valve, comprising in combination:

a flow body forming a flow path extending therethrough;

a support member secured to the flow body and extending across the flow path;

a valve plate secured to the support member such that the plate is movable in a first rotational direction away from a position closing fluid communication along the flow path, and in an opposite second rotational direction toward the position, and such that the valve plate moves translationally incident to rotational movement in each of the two directions, the translational movement occurring in directions substantially parallel to the valve plate, whereby the valve is structurally adapted to be operative in response to fluid flow in a first flow direction along the path to move the plate translationally and rotationally toward the position, and is operative in response to fluid flow in an opposite flow direction along the path to move the plate translationally and rotationally away from the position; and

biasing means for cooperating with fluid pressure exerted on the valve plate in the opposite flow direction to initiate movement of the plate in the first rotational direction.

5,056,558

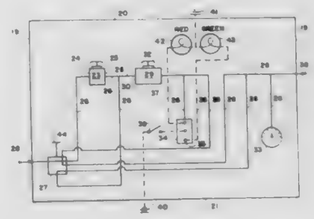
DUNNAGE AIRBAG PRESSURE CONTROLLER

Charles A. Rodgers, 6903 Quail Lake, San Antonio, Tex. 78244

Filed Aug. 30, 1990, Ser. No. 574,801

Int. Cl.[5] **F16K** *37/00;* **B61D** *45/00*

U.S. Cl. 137—552 **5 Claims**



1. A system for controlling the pressure in a multitude of dunnage bags associated with a transportational conveyance comprising:

a) a box-like moisture-resistant enclosure having a face panel, opposed rear panel, side panel structure, and means for mounting said enclosure to a support surface;

b) a gas pressure regulator valve mounted within said enclosure, said regulator valve having a high pressure inlet port and reduced pressure exit port, and conduit means associated with said ports,

c) a high pressure inlet line which penetrates said enclosure,

d) a linear air reset controller communicating with the exit port of said regulator valve and having a downstream port coupled to conduit means which extends to a low pressure exit attachment fitting external to the enclosure,

e) a pressure gauge mounted upon said face panel and adapted to indicate the pressure in the conduit means emergent from said downstream port,

f) manual adjustment means operable upon said face panel and adapted to act upon said air reset controller to control the pressure at said downstream port,

g) a pneumatically activated double position electrical switch communicating with said downstream port and adapted to reside in a first position at a low pressure and in a second position at a higher pressure,

h) said first position causing activation of a red light on said face panel, and said second position causing activation of a green light on said face panel, the activation of said lights being achieved by said conveyance's electrical power supply,

i) a three position switching valve which communicates with said high pressure inlet line, said low pressure exit attachment, and said pressure regulator valve, and

j) a reduced pressure supply conduit communicating with said exit attachment fitting and communicating with said dunnage bags, whereby

k) when the pressure in said bags is too low, said red light will be illuminated, and when the pressure in said bags is at proper level, said green light will be illuminated.

5,056,559

PURGE VALVE ASSEMBLY

Francis H. Golembiski, 24 W. Main St., Box 87, Elverson, Pa. 19520

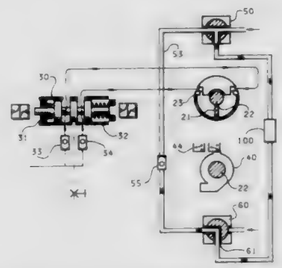
Filed May 31, 1990, Ser. No. 531,908

Int. Cl.[5] **F16K** *11/076*

U.S. Cl. 137—595 **7 Claims**

1. A purge valve assembly for purging a burner in a pressure boiler comprising a single fluid driven rotary actuating cylinder having a rotor which rotates on a shaft from a mechanical stop at first or zero degrees position through a pneumatic stop at second or 90 degrees position to a mechanical stop at third or 180 degrees position, the shaft having upper and lower ends

which extend exteriorly through the cylinder's housing, the upper end being coupled to a first three-way valve for controlling the flow of steam and the lower end coupled to a second three-way valve for controlling the flow of fuel, the first and second valves being coupled to the rotor shaft such that when



the rotor is in the third or 180 degrees position steam and fuel shall pass through both valves to the burner, when the rotor is in the second or 90 degree position steam only shall pass to the burner and when the rotor is in the first or zero degrees position neither steam nor fuel shall pass to the burner.

5,056,560

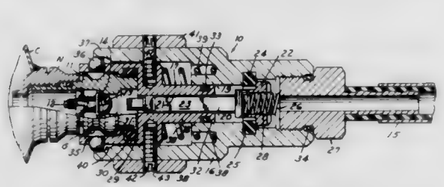
QUICK DISCONNECT COUPLINGS UNTHREADED REFRIGERANT FITMENTS

David L. DeMartelaere, Romeo, Mich., assignor to SPX Corporation, Muskegon, Mich.

Filed Apr. 17, 1991, Ser. No. 686,667

Int. Cl.[5] F16L *29/00*

U.S. Cl. 137—614.04 **13 Claims**



1. A quick disconnect coupling for unthreaded refrigerant fitments comprising

an outer housing having a seal at one end,

an inner housing over which the outer housing is telescoped and a spring loaded plunger mounted for sliding movement within the inner housing,

said inner housing having a circumferential portion at one end that is adapted to telescope over a valve fitting on a refrigeration system which has an annular groove and a one way valve normally closing the fitting,

said plunger normally having one end out of engagement with the one way valve when the coupling is first placed in position on the fitment,

a plurality of groove engaging elements provided on the one end of the inner housing for movement radially into and out of engagement with the groove on the fitment,

said outer housing having a circumferential portion normally overlying the elements and movable to bring a ramp portion thereon into engagement with the elements and thereby force the elements into the groove of the fitment, and

interengaging portions between the outer housing and inner housing operatable upon rotation of the inner housing to move the outer housing axially relative to the inner housing causing the ramp portion to engage the elements and move them into the grooves, and further rotation of the outer housing relative to the inner housing causes the outer housing to move axially to permit the spring loaded plunger to move axially toward the one way valve in the fitting and open the one way valve as well as move the seal away from the plunger and provide communication to the exterior at the other end of the outer housing.

5,056,561

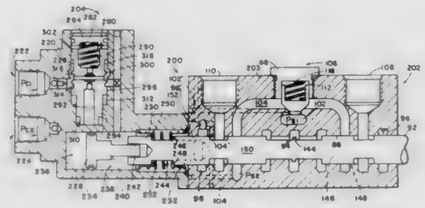
REMOTE CONTROLLED, INDIVIDUALLY PRESSURE COMPENSATED VALVE

James O. Byers, 5388 Orchard Hill, Kalamazoo, Mich. 49002

Filed Feb. 8, 1990, Ser. No. 477,334

Int. Cl.[5] F15B *13/044, 13/06*

U.S. Cl. 137—625.64 **39 Claims**



1. A servo and pilot valve assembly for controlling the flow rate of fluid between an inlet passage and a pressure passage in an hydraulic valve by positioning a valve in response to first and second control input pressures, said assembly comprising:

a body defining a first control pressure input, a second control pressure input, an inlet passage, a pressure passage, a drain, a servo bore, a pilot bore and passage means for interconnecting the control pressure inputs, the servo bore, the pilot bore, the inlet passage, the pressure passage and the drain;

a servo spool movably disposed within said servo bore, said servo spool and said bore defining a command pressure chamber, a pressure passage chamber, a first control pressure chamber, a drain chamber, a second control pressure chamber and an inlet passage chamber; and

a pilot piston disposed within said pilot bore and dividing the bore into first and second cylinder chambers, said pilot piston adapted to be connected to the valve, said passage means connecting said first control pressure chamber with said first cylinder chamber and said second control pressure chamber with said second cylinder chamber, said control pressure inputs with said command pressure chamber, said inlet passage with said inlet passage chamber, said pressure passage with said pressure passage chamber and wherein said passage means and said servo spool are configured and dimensioned so that said assembly compares the differential pressure between the inlet passage and the pressure passage to the pressure within said command pressure chamber to direct fluid to the pilot bore and to the drain port to position the valve spool until the differential pressure equals the command pressure.

5,056,562

CONVERTIBLE FAUCET/HAND-SHOWER FITTING

Manfred Pawelzik, Soost, and Rudolf Haufe, Menden, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Mar. 9, 1990, Ser. No. 491,665

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907894

Int. Cl.[5] E03C *1/04;* **F16K** *11/00*

U.S. Cl. 137—801 **10 Claims**

1. A plumbing fitting comprising:

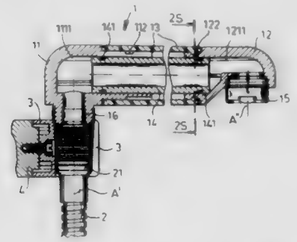
a flexible hose suppliable with water under pressure and having an outer end;

an upstream end piece having an upstream side connected to the outer end and a downstream side;

a downstream end piece having a downstream side and an upstream side;

an outer sleeve having an upstream end and a downstream end;

respective couplings releasably connecting the upstream end of the sleeve to the downstream side of the upstream end



piece and the downstream end of the sleeve to the upstream side of the downstream end piece;

an inner tube having a downstream end connected to the upstream side of the downstream end piece and an upstream end connected to the downstream side of the upstream end piece and forming a flow conduit therebetween; and

seals at the ends of the tube between same and the respective sides of the end pieces.

5,056,563

HIGH PRESSURE GAS CHARGING APPARATUS

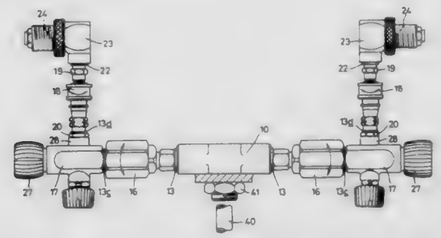
Ronald Glossop, 208 Urmston La., Stretford, Manchester, M32 9DH, England

Filed May 29, 1990, Ser. No. 529,499

Claims priority, application United Kingdom, Jun. 2, 1989, 8912693

Int. Cl.[5] F17C *5/00*

U.S. Cl. 137—883 **3 Claims**



1. Apparatus for charging portable pressurized gas cylinders comprising a single common element adapted for connection to a gas source, two coupling elements adapted for direct connection to respective cylinders which are to be charged, and respective series of rigid components whereby each of said coupling elements is respectively connected, in non-flexible manner, to said common element, each of said series of rigid elements including an elbow element, a quick release coupling, at least one rotatable connection and an adjustable charging valve provided with a manually actuable control knob.

5,056,564

INSULATING MAT FOR BODIES OF WHICH AT LEAST PORTIONS OF THE SURFACE ARE CURVED, AND IN PARTICULAR FOR PIPES, AND THE USE OF SUCH A MAT

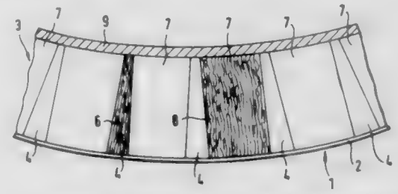
Klaus Roth, Viernheim, Fed. Rep. of Germany, assignor to Isover Saint-Gobain, Courbevoie, France

Filed Feb. 21, 1989, Ser. No. 312,494

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1988, 3805269

Int. Cl.[5] F16L *9/14*

U.S. Cl. 138—149 **8 Claims**



1. An insulating mat for bodies of which at least parts of the surface are curved, comprising:

a substantially planar carrier web; and

an insulating layer fixed to at least one surface of said carrier web, said insulating layer comprising:

a) a plurality of mutually parallel compressible strips of mineral fiber material mounted to said carrier and spaced in a direction included in the plane of said carrier web, a main orientation of the mineral fibers of said material of said compressible strips being substantially at a right angle to the plane of said carrier web, and

b) bracing strips mounted to said carrier web at positions between said compressible strips, said bracing strips being constructed so as to have a compression strength in a direction at a right angle to the plane of said carrier web which is substantially greater than a compression strength of said compressible strips in said direction of a right angle to the plane of said carrier web,

whereby upon applying said insulating mat to a convex curved body, said plurality of compressible strips of mineral fiber material are compressed into a wedge shape having a progressively reduced width with increasing distance from said carrier web, wherein said bracing strips each consist of a strip of mineral fiber material, a main orientation of the mineral fibers of said bracing strip being substantially at a right angle to the plane of said carrier web.

5,056,565

PAPER MAKING DRAINAGE BELT WITH FUNNEL-LIKE CHANNELS

Franz F. Kufferath, Lommessemstrasse 37, 5160 Duren, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 57,689, Jun. 1, 1987, Pat. No. 4,867,206, which is a continuation-in-part of Ser. No. 755,807, Jul. 17, 1985, abandoned. This application Sep. 18, 1989, Ser. No. 408,548

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1984, 3426264

Int. Cl.[5] D03D *15/00*

U.S. Cl. 139—383 A **22 Claims**

1. A paper-making machine drainage belt comprising:

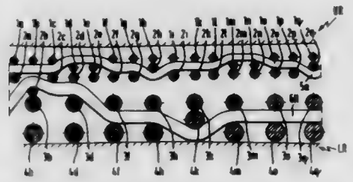
a) a first layer of transverse yarns having a first diameter;

b) a second layer of transverse yarns having a second diameter;

c) a support layer of transverse yarns having a diameter larger than the first and second diameters;

d) a longitudinal yarn system interwoven with the first layer to form a single plane structure, and also interwoven with

the second layer to create open spaces forming drainage channels in said drainage belt from said first layer to said support layer, wherein the drainage channels become progressively larger from said first layer to said support layer; and wherein said drainage channels are formed such



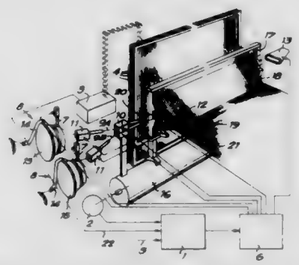
that the permeability of the support layer for water and air is greater than that of the second layer and in that the permeability of second layer is greater than the first layer such that the relative permeabilities are equivalent to a funnel opening toward the underside of the support layer.

5,056,566

CONTROL OF WEFT INSERTION TIMING AS A FUNCTION OF SHED OPENING

Herman Salomez, Zonnebeke, Belgium, assignor to Picanol N.V. naamloze vennootschap, Belgium

Filed Apr. 11, 1990, Ser. No. 507,456
Claims priority, application Belgium, Apr. 19, 1989, 8900424
Int. Cl.[5] D03D *47/30*
U.S. Cl. 139—452 **12 Claims**



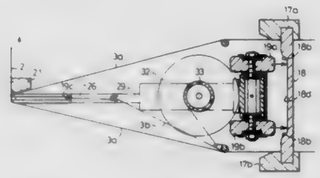
7. A device for supplying weft threads to the shed of a weaving machine which includes insertion means for inserting weft threads into the shed by means of a transport fluid, means for influencing timing of said insertion of weft threads into the shed, and means including harnesses for opening and closing the shed, comprising a computing unit and memory, said computing unit including means to which signals related to a moving pattern of the harnesses and information regarding a weft pattern are transmitted, and to which data regarding a relation between the moving pattern of the harnesses and shed formation is transferred; and control means coupled to said computing unit and memory and responsive to said signals and data for controlling said insertion timing influence means to ensure the optimal use of an unentangled opening of the shed before weft insertion.

5,056,567

MECHANISM FOR GUIDING SHUTTLES IN A CIRCULAR LOOM

Makoto Kitazawa, Kyoto, Japan, assignor to Toril Winding Machine Co., Ltd., Kyoto, Japan

Filed May 1, 1990, Ser. No. 517,113
Claims priority, application Japan, May 2, 1989, 1-113489
Int. Cl.[5] D03D *37/00*
U.S. Cl. 139—457 **4 Claims**



1. A mechanism for guiding shuttles in a circular loom, wherein shuttles provided with a plurality of rotatable supporting wheels are moved along a circular running passage and a weft taken out from each shuttle is inserted into successive sheds of warps created immediately before the arrival of said shuttle so that said weft is interwoven with said warps to form a tubular fabric, comprising:

an annular reed member provided with said circular running passage for restricting a passage of said supporting wheels of said shuttle,

said annular reed member comprising an upper annular holding member and a lower annular holding member, a plurality of vertical reed elements rigidly supported by said upper and lower holding members with an identical spacing therebetween for allowing a free passage of said warp between two adjacent reed elements,

each of said reed elements being provided with a particular cross sectional shape with regard to an axial center of said annular reed member, said cross sectional shape being provided with at least one guide surface for guiding a corresponding one of said supporting wheels of said shuttle at a position separated from said upper and lower annular holding members by a predetermined distance,

said running passage of said shuttle being defined by said guide surfaces of said reed elements of said annular reed member

said predetermined distance of said guide surface of said reed elements being designed to prevent any pressing of said warps against said annular holding member by said supporting wheels,

whereby said shuttles are able to run on said circular passage without damaging said warps by said supporting wheels of each of said shuttles.

5,056,568

AUTOMATED SYSTEM FOR ADDING MULTIPLE FLUIDS TO A SINGLE CONTAINER

Aleandro DiGianfilippo, Crystal Lake; James R. Hitchcock, Barrington; Robert E. Lewis, Waukegan; Randall A. Zielsdorf, Mundelein, all of Ill.; James P. Vos, Burlington, Wis.; Rudolph Starai, Arlington Heights, Ill.; Michael J. Becker, Palatine, Ill.; Donald W. Warner, Gurnee, Ill., and Leon Huang, Hoffman Estates, Ill., assignors to Clintec Nutrition Company, Deer, Ill.

Division of Ser. No. 245,426, Sep. 16, 1988, Pat. No. 4,967,811, which is a continuation of Ser. No. 144,673, Jan. 12, 1988, Pat. No. 4,789,014. This application May 4, 1990, Ser. No. 500,811
Int. Cl.[5] B65B *3/28*
U.S. Cl. 141—1 **6 Claims**

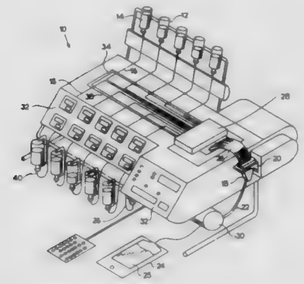
1. A method for transferring fluids from multiple source containers to a single receiving container, comprising the steps of:

providing a transfer chamber in fluid communication between said source containers and said receiving container, each source container having a separable fluid communication line connected to said transfer chamber which is initially subject to a removable occlusion force, said transfer chamber and said receiving container also having a fluid communication line therebetween which is initially subject to a removable occlusion force;

selecting an amount of one of said fluids to be transferred;

generating a signal indicating said amount of said fluid to be transferred;

transferring said selected fluid from its source container to said chamber under the influence of a pressure differential



and by removing the occlusion force between said source container and said transfer chamber;

measuring the amount of said fluid in said chamber;

generating a signal indicative of the actual amount of said selected fluid present in said chamber;

terminating transfer of said fluid when said actual amount of said fluid present in said chamber is equal to or greater than said selected amount by again subjecting said fluid communication between said source container and said transfer chamber to an occlusion force; and then

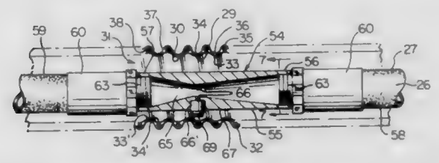
transferring said fluid from said chamber to said receiving chamber under the influence of a pressure differential and by removing the occlusion force between said transfer chamber and said receiving container.

5,056,569

HOSE ASSEMBLY AND METHOD OF MAKING THE SAME

Glenn K. Walker, Miamisburg, Ohio; Rodger P. Grantham, Springfield, and Guy L. Renshaw, Ash Grove, both of Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 913,060, Sep. 29, 1986, abandoned. This application Feb. 5, 1988, Ser. No. 152,612
Int. Cl.[5] B67D *5/06*
U.S. Cl. 141—44 **4 Claims**



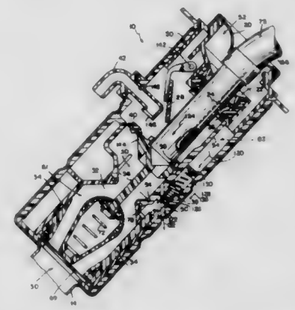
1. In a hose assembly having a first fluid passage therein for conveying a volatile liquid in one direction to a container and a second fluid passage therein for returning the vapors of the volatile liquid from the container, the assembly comprising a flexible inner hose having an outer peripheral surface and defining said first fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining said second fluid passage therebetween, said inner hose having a Venturi means therein that tends to remove liquid from a certain area of said second fluid passage, said Venturi means having an inlet opening that is generally flat and generally faces said inner peripheral surface so as to be adapted to interconnect said second fluid passage with said first fluid passage through said Venturi means, the improvement wherein said outer hose is corrugated in a helical manner so that said inner peripheral surface thereof defines alternating crests and valleys with each crest and each valley defining an arcuate surface, said arcuate valleys and crests being of such a size that the same will not completely block said inlet opening when said inlet opening is engaging said inner surface of said outer hose and is facing substantially vertically downwardly.

5,056,570

CAPLESS VEHICLE REFUELING SYSTEM

Robert S. Harris, and Jeffrey Griffin, both of Connersville, Ind., assignors to Stant Inc., Connersville, Ind.

Filed Mar. 26, 1990, Ser. No. 498,612
Int. Cl.[5] B65B *31/00, 1/04*
U.S. Cl. 141—59 **36 Claims**



1. An assembly for controlling filling of a vehicle fuel tank having a filler neck, the assembly comprising

means for conducting liquid fuel through a fill passageway to the filler neck for delivery to the fuel tank, the conducting means being formed to include means for admitting a fuel-dispensing nozzle therein to introduce liquid fuel into the conducting means and valve means for normally closing the fill passageway, the valve means being movable between a fill passageway-opening position and a fill passageway-closing position, the conducting means including partition means for dividing the fill passageway into an outer chamber communicable with the atmosphere and an inner chamber in fluid communication with the filler neck, the partition means being formed to include an aperture interconnecting the outer and inner chambers in fluid communication, the valve means including a closure member situated in the inner chamber and configured to close the aperture to block flow of fluid from the outer chamber into the inner chamber upon movement of the valve means to its fill passageway-closing position and first spring means for yieldably biasing the closure member normally into engagement with the partition means to close the aperture interconnecting the inner and outer chambers, and

valve control means for moving the valve means from its fill passageway-closing position to the fill passageway-opening position in response to movement of a fuel-dispensing nozzle into the fill passageway, the valve control means being situated in the fill passageway to engage a fuel-dispensing nozzle inserted therein and connected to the valve means, the valve control means including means for en-

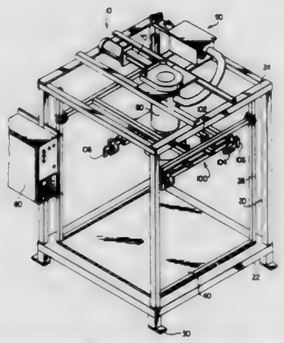
gaging a fuel-dispensing nozzle inserted into the outer chamber, means for moving the closure member against a biasing force provided by the first spring means to move the closure member from its normal position closing the aperture to a retracted position opening the aperture in response to movement of the fuel-dispensing nozzle in the outer chamber against the engaging means, a slide member movable in the fill passageway, and second spring means for yieldably urging the slide member toward the admitting means, the second spring means interconnecting the slide member an the valve means to move the closure member away from the aperture during movement of the valve means to its fill passageway-opening position, the second spring means being compressible between the slide member and the valve means to permit movement of the slide member relative to the valve means.

5,056,571

CONTAINER FILL SYSTEM

Norwin C. Derby, Sherman, Tex., assignor to Super Sack Manufacturing Company, Dallas, Tex.

Continuation of Ser. No. 364,315, Jun. 12, 1989, abandoned.
This application Feb. 28, 1991, Ser. No. 662,020
Int. Cl.[5] B65B *3/16, 1/04*
U.S. Cl. 141—114 **18 Claims**



1. A container fill system for filling flexible bulk containers having lift straps with a product comprising:
a support frame having first and second ends;
a scale connected to the first end of the support frame for determining the weight of the flexible bulk containers;
a fill control device mounted on the second end of the support frame for controlling the flow rate of product into the flexible bulk containers;
a rotatable holder connected to the support frame for supporting the flexible bulk container therefrom for rotation about a vertical axis;
attachment means for securing the lift straps to the rotatable holder for supporting the flexible bulk containers; and
a fill spout connected to the fill control device and the rotatable holder for providing a passageway for the flow of product into the flexible bulk containers.

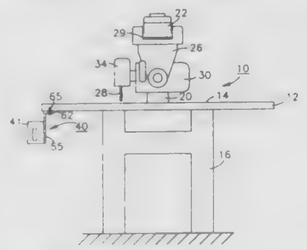
5,056,572

CADDY FOR USE WITH A POWER SAW

Vincent A. Del Vacchio, 2747 Harmil Rd., Broomall, Pa. 19008

Filed Dec. 7, 1990, Ser. No. 623,775
Int. Cl.[5] A47F *5/08;* **B25H** *1/00;* **B65D** *85/28*
U.S. Cl. 144—286 A **8 Claims**

1. In a power saw having a generally horizontal working table on which items are supported while being cut by the saw, said table having a plurality of edges, a caddy for holding tools and accessories usable by the saw operator in connection with operating the saw or preparing work for the saw, said caddy comprising:
(a) a receptacle having compartments therein for receiving said tools and accessories,
(b) one or more brackets, each having a first portion that is fixed to said receptacle and extends upwardly therefrom and a second portion that is adapted to be attached to said table, and
(c) means for attaching said second portion to said table adjacent one of said table edges and thereby positioning said receptacle in a position underneath the table and



vertically spaced from the table near said one edge, and in which:
(d) said receptacle is a box-like structure, which when mounted underneath the table, has a top surface facing the underside of said table and an end surface facing the normal location of the saw operator, and
(e) one of said compartments has an entryway through the top surface of said receptacle through which an elongated tool or accessory can be inserted into said one compartment and another of said compartments has an entryway through said end surface through which another tool or accessory can be inserted into said other compartment.

5,056,573

REDUCED VIBRATION PNEUMATIC TRACTOR TIRE

Jimmie P. O'Brien, 33 Spindrift La., Milford, Conn. 06460, and James P. Mueller, Seven Alexander Dr., West Haven, Conn. 06516

Filed Feb. 12, 1990, Ser. No. 478,543
Int. Cl.[5] B60C *11/03*
U.S. Cl. 152—209 B **13 Claims**



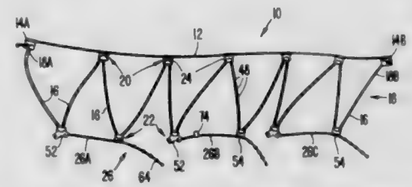
1. A pneumatic tire for tractors and like vehicles comprising a ground surface-engaging tread portion surrounding a reinforcing carcass, said tread portion comprising:
(a) a first set of long lugs and a first set of medium lugs alternately disposed about the circumferential periphery of the tread, each lug of said first set of long lugs and said first set of medium lugs being upstanding from the tread base and emanating from the same lateral edge of said tread and extending axially inward therefrom, the spacing of said alternately disposed lugs about said circumferential periphery being such that void space exists in the tread between each alternating lug, the emanation point of each long or medium lug along the lateral tread edge being substantially equally spaced apart along the lateral tread edge from the emanation point of the next alternating lug;
(b) a second set of long lugs and a second set of medium lugs being identical to said first set of long lugs and said first set of medium lugs but opposite in hand, alternately disposed about the circumferential periphery of the tread and emanating from the other lateral edge of said tread and extending axially inward therefrom, the alternating circumferential disposition of said second set of long lugs and said second set of medium lugs being offset relative to the disposition of said first set of long lugs and said first set of medium lugs such that across the tread width, an emanating point for a medium lug along one lateral tread edge is substantially directly opposite an emanating point for a long lug along the other lateral tread edge; wherein:
(i) each said lug comprises (1) a bar portion commencing from said lateral tread edge which is smoothly curved along its length from the emanating point of said lug at said lateral tread edge to the termination point of said bar portion axially inward thereof, the direction of axially inward curvature being in the direction of intended tire rotation, said bar portion having spaced-apart leading and trailing edges having the same radius of curvature and oriented such that the width of said bar portion, measured as the perpendicular distance between said spaced-apart leading and trailing edges, progressively decreases from said emanating point of said bar portion at said lateral tread edge to said termination point of said bar portion axially inward thereof, and (2) a bulbous head portion transitioned from said bar portion axially inward of the termination point of said bar portion, said bulbous head portion having a rounded leading edge;
(ii) said tread having circumferential pitch length equal to the length along a lateral tread edge from the trailing edge of a long or medium lug to the trailing edge of the next similar lug emanating from the same tread edge;
(iii) each said long lug extending axially inward beyond the centerline of said tread and circumferentially extending greater than one-half the pitch length, and each said medium lug terminating axially outward of said centerline and circumferentially extending less than one-half the pitch length;
(iv) the length of said long lugs being from about 67 to about 75% of the arc width of said tread, said length measured on a curve equal to the radius of curvature of said leading and trailing edges of said bar portion and bisecting said bar portion, from the emanation point of said long lugs at said tread edge to a termination point along said centerline and disposed beyond the half-pitch distance a distance of from about 12 to 17% of the pitch length; and
(v) the length of said medium lugs being from about 49 to about 54% of the arc width, said length measured on a curve equal to the radius of curvature of said leading and trailing edges of said bar portion and bisecting said bar portion, from the emanation point of said medium lug along said tread edge to a termination point which is axially outward of the centerline by a distance equal to about 8 to 12% of the arc width and which is short of the half-pitch distance a distance of from about 1 to 3% of the pitch length.

5,056,574

TIRE CHAIN WITH CROSS MEMBERS FORMING A ZIG-ZAG PATTERN

Joseph D. Maresh, Dundee; René J. Martinelli, West Linn; Daniel B. Griffith, Lake Oswego; Jack H. Burns, Portland, and Steven A. Dehne, West Linn, all of Oreg., assignors to Burns Bors., Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 363,147, Jun. 8, 1989, abandoned. This application Nov. 21, 1989, Ser. No. 439,802
Int. Cl.[5] B60C *27/20;* **A44B** *13/00*
U.S. Cl. 152—241 **30 Claims**



1. A tire chain for use on a tire mounted on a rim of a vehicle wheel, comprising:
(a) an elongated inner side member adapted to form a circle of predetermined circumference about the rim of the vehicle wheel at an inner side thereof, said inner side member having cooperable fastener elements at opposite ends thereof which join to complete said circle;
(b) a plurality of cross members forming a substantially uniform zig-zag pattern, with cross members at opposite ends of the pattern converging toward said fastener elements when said fastener elements are joined, said pattern including a plurality of inner vertices adjacent to said inner side member and a plurality of outer vertices remote from said inner side member and adapted to be positioned adjacent to said rim at an outer side thereof, whereby said cross members are positioned to extend back and forth across said tire, said cross members having attaching means adjacent to the inner vertices for attaching said cross members to said inner side member at predetermined substantially equally spaced positions therealong; and
(c) tensioning means for drawing said outer vertices toward a rotational axis of said wheel and for providing adjustable substantially equal spacing between successive outer vertices while maintaining said zig-zag pattern substantially uniform.

5,056,575

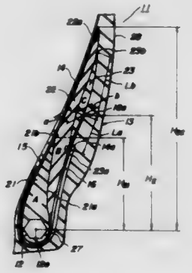
HEAVY DUTY PNEUMATIC RADIAL TIRES WITH THREE PIECE RUBBER STOCKS

Hiroshi Yamaguchi, Tokorozawa; Shigehito Kishinami, Higashiyamato; Hiroshi Ueda, and Fumio Bamba, both of Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 260,091, Oct. 19, 1988, abandoned. This application Mar. 14, 1990, Ser. No. 494,863
Claims priority, application Japan, Oct. 24, 1987, 62-267623; Nov. 6, 1987, 62-281752
Int. Cl.[5] B60C *15/06*
U.S. Cl. 152—541 **3 Claims**

2. A heavy duty pneumatic radial tire comprising: a carcass composed of at least one carcass ply containing steel wire cords substantially arranged in a radial plane of the tire and wound around each of bead c ores from inside of the tire toward outside thereof to form a turnup portion, said turnup portion having an end portion going away and extending from said bead core through a reversing point of said turnup portion, which approaches to a pass line of said carcass once and separates away therefrom, is substantially linear between normal line (n) drawn from said pass line of said carcass through an end of said turnup portion and a straight line (l_1) extending in

parallel to said normal line (n) at a distance corresponding to 5% of tire section height therefrom toward said bead core and is inclined at an intersecting angle of 60°–80° with respect to said normal line, and a second straight line (l_2) extending in parallel to said normal line (n) at the same distance as mentioned above in opposition to said straight line (l_1) and intersections of these lines (n, l_1, and l_2) with an outer surface of the tire are Pn, Pl_1 and respectively Pl_2, a ratio of distance (L_2) between said intersection Pn and an intersection (Pa) of said normal line (n) with a line segment Pl_1–Pl_2 to said distance (L_1) between said intersection Pn and said turnup end is within a range of 0.20–0.50; and that a three layer rubber stock having a first rubber (A) is arranged between said carcass play and its



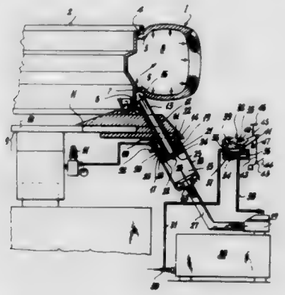
turnup portion and adjacent to said bead core, a second rubber (B) is arranged between said carcass ply and its turnup portion and above said rubber (A), a third rubber (C) is arranged along said rubber (B) and adjacent to said turnup portion to form a rubber stock as a reinforcement of bead portion; said rubber (A) has a 100% modulus of not less than 60 kgf/cm^2, said rubber (B) has a 100% modulus of 15–35 kgf/cm^2 and less than a 100% modulus of rubber (C), and a rebound resilience of 65–85 that is larger than a resilience of rubber (C), and said rubber (C) has a 100% modulus of 35–60 kgf/cm^2 and a rebound resilience of 50–65; a ratio of thickness (b) of said rubber (C) to thickness (a) of said rubber stock as measured along normal line (n) drawn from said carcass ply through an end of said turnup portion is within a range of 0.3–0.75.

5,056,576

APPARATUS FOR QUICKLY POSITIONING A TUBE TIRE ON A CORRESPONDING WHEEL RIM

Werter Iori, Reggio Emilia, Italy, assignor to Werther International S.r.l., Italy

Filed Jun. 28, 1990, Ser. No. 545,053
Claims priority, application Italy, Jul. 21, 1989, 46862 A/89
Int. Cl.[5] B60C *25/12*
U.S. Cl. 157—1.17 **6 Claims**



1. An apparatus for quickly positioning a tubeless tire on a corresponding wheel rim, said apparatus comprising:

a mounting device for supporting a wheel rim during mounting of a tubeless tire onto a wheel rim, said mounting device including clampling means for firmly retaining said wheel rim on said device when mounting said tire on said wheel rim, said clamping means including a retractable inflation nozzle;

a cylinder including a piston fixedly attached to said nozzle;

a valve member, said valve member and said piston being movable within said cylinder;

means for supplying pressurized air to move said valve member and said piston within said cylinder in a first direction;

means for supplying air at a constant pressure to oppose movement of said valve member and said piston within said cylinder in said first direction;

said valve member opening at the end of its movement in the chamber to enable said pressurized air to reach said nozzle; and

control valve means for discharging air through said nozzle;

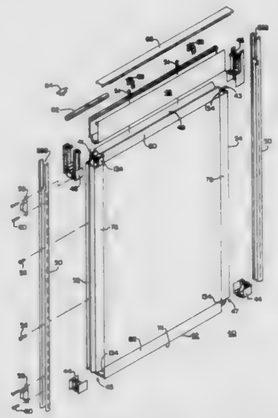
said nozzle having an end adapted to extend from said clamping device into an operating position between a bead of the tire and an edge of the wheel rim when said piston moves in said first direction in order to supply the pressurized air into an interior of the tire.

5,056,577

OFFICE SPACE DIVIDING SYSTEM

Ronald B. DeLong; James R. Bouse, both of Belmont; John P. Conner, Grandville; Charles G. Raabe, Leonard Heights, and William L. Nieboer, Grand Rapids, all of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1990, Ser. No. 523,772
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—135 **32 Claims**



1. An office space dividing system, including at least one rectangular panel having a frame which includes first and second stiles and upper and lower rails arranged to define two upper and two lower corners, with the first and second stiles and upper and lower rails having substantially flat front and back sides disposed in common front and back planes, respectively, and inner and outer facing sides which extend between the front and back planes, characterized by:

the first and second stiles and upper and lower rails being constructed of tubular members having the same cross-sectional configuration, and having square cut ends having edges which define openings to the tubular members,

said first and second stiles and upper and lower rails being arranged such that the inner side of each rail is substantially aligned with an end of each stile, and the inner side of each stile is substantially aligned with an end of each rail, to provide adjoining obstructed openings at each of the upper and lower corners,

and including right-angle metallic joining means linking the rails and stiles at each of the upper and lower corners via the adjoining openings, with the rails and stiles being adjusted relative to the right-angle metallic joining means to provide square upper and lower corners,

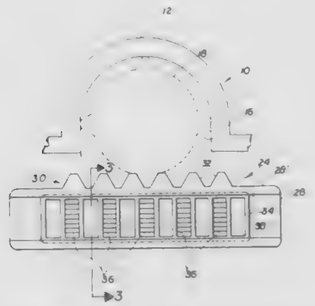
said right angle joining means including first and second spaced identical right angle members formed from a flat metallic sheet, with each having a centrally located joining tab bent orthogonally towards, and joined to, the joining tab of the other.

5,056,578

CARRIER STRUCTURE FOR A VERTICAL BLIND ASSEMBLY

Oscar Helver, 13501 SW. 81st St., Miami, Fla. 33183

Filed Jul. 30, 1990, Ser. No. 559,134
Int. Cl.[5] E06B *9/26*
U.S. Cl. 160—177 **13 Claims**



1. A carrier assembly for movably supporting one of a plurality of vertically oriented slats in a vertial blind assembly, said carrier comprising:

(a) a frame having an opening formed therein and disposed and dimensioned to rotatabily receive a splined tilt rod therein in substantially transverse relation to the frame,

(b) a support finger movably mounted to rotate on said frame about its own longitudinal access and being removably and supportingly attached to an upper end of the one slat,

(c) a gear means drivingly interconnecting the tilt rod to the support finger for rotation of the support finger and the slat attached thereto upon rotation of the tilt rod,

(d) said gear means comprising a drive gear formed on said support finger and further comprising a first gear connected in driven engagement to the tilt rod and a second gear connected in driving engagement to said drive gear and said support finger and movable with said first gear upon rotation of the tilt rod, and

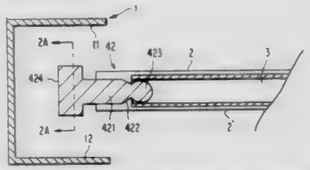
(e) said first and second gears each having an elongated linear configuration and said first gear mounted to move linearly with and relative to said second gear and movable with continued rotation of the tilt rod upon fixed positioning of said second gear and said support finger and slat supported thereon.

5,056,579

REINFORCING AND GUIDING BAR FOR A FLEXIBLE CURTAIN IN A VERTICALLY RAISABLE DOOR

Bernard Krafutler, Dunieres, France, assignor to Nergeco, Dunieres, France

Continuation of Ser. No. 279,005, Dec. 2, 1988, abandoned. This application Mar. 2, 1990, Ser. No. 489,889
Claims priority, application France, Dec. 2, 1987, 87 16700
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—271 **2 Claims**



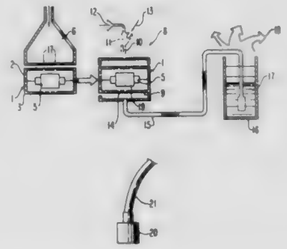
1. A flexible curtain reinforced with horizontal bars, and two vertical side guideways for guiding the ends of said bars, wherein said bars include zone defining means (**41**; **42**; **43**) defining at each of said ends a zone of mechanical strength less than the strength of said bars, to enable the portion of at least one end of one of said bars penetrated in said guideways to be broken before the bars are permanently bent when subjected to a thrust of predetermined magnitude directed substantially perpendicularly to the curtain, wherein each of said bars comprises a tubular portion (**3**) which is shorter than the distance between the guideways; and wherein said zone defining means comprises two protective end pieces of mechanical strength less than the strength of said tubular portion, fitted to respective opposite ends of the tubular portion, wherein the protective end pieces (**42**) are rigid and each comprise a guiding body (**421**, **424**) connected to a sphere (**423**), said sphere being received in an end of the tubular portion such that in conjunction with said end it constitutes a ball-and-socket connection capable of coming apart.

5,056,580

METHOD FOR PRODUCING FOUNDRY PRODUCTS WITH NOZZLE OPENINGS

Klaus Werner, Am Güterbahnhof 18, 7895 Klettgau-Erzingen, Fed. Rep. of Germany

PCT No. PCT/DE89/00049, § 371 Date Nov. 17, 1989, § 102(e) Date Nov. 17, 1989, PCT Pub. No. WO89/07024, PCT Pub. Date Aug. 10, 1989
PCT Filed Jan. 30, 1989, Ser. No. 427,832
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1988, 3802970
Int. Cl.[5] B22C *7/06*
U.S. Cl. 164—19 **7 Claims**



1. A process for the production of moldings comprising the steps of

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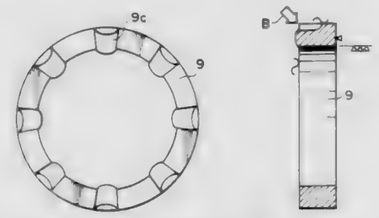
providing means defining a mold cavity within which a molding is to be formed,
inserting at least one insert member into the mold cavity, each insert member having the shape of a nozzle to be subsequently used,
forming the molding in the cavity with the at least one insert member positioned so that each insert passes through an outer surface of the formed molding,
removing each insert from the formed molding to thereby leave at least one vent opening in place of each insert, and
inserting a nozzle into each vent opening to vent gases during subsequent processing.

5,056,581

METHOD FOR FORMING AN ASSEMBLY OF ONE-WAY CLUTCH RING AND ITS HOUSING

Akira Tagawa, Chigasaki; Mikio Uchida, Yamato, and Akihiro Ishida, Fujisawa, all of Japan, assignors to NSK-Warner Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1989, Ser. No. 441,505
Claims priority, application Japan, Nov. 25, 1988, 63-152539[U]
Int. Cl.[5] B22D *19/00, 19/08*
U.S. Cl. 164—100 **3 Claims**



1. A method for manufacturing an assembly of a ring of a one-way clutch and a housing, comprising the steps of:
providing a ring having an axial outer peripheral surface;
forging an up and down structure at said peripheral surface which extends an axial distance from one side only halfway through to an opposite side by forming a spaced number of dents in said peripheral surface and thereby forming plastically deformed axial protrusions extending outwardly from said one side, said dents and said protrusions being formed by said forging step, said up and down structure having a varying diameter which varies periodically in a circumferential direction, a remaining axial portion of said peripheral surface defining a smooth cylindrical surface having a constant diameter; and
forming a housing by molding or casting using said ring as an insert, thereby having said up and down structure and said axial protrusions embedded by said housing.

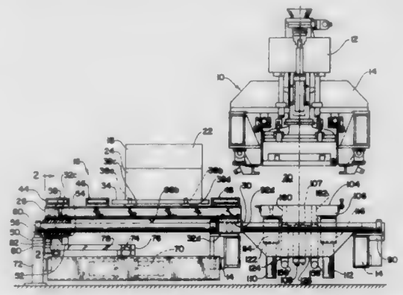
5,056,582

CORE BOX SHUTTLE SYSTEM

Raymond F. Witte, Romeoville; Clyde Eicher, Naperville; Donald F. Moonert, Somonauk, and Pheroze J. Nagarwalla, St. Charles, all of Ill., assignors to Disamatic, Inc., Oswego, Ill.

Filed Dec. 14, 1990, Ser. No. 627,342
Int. Cl.[5] B22C *7/06, 9/10*
U.S. Cl. 164—228 **21 Claims**

1. A core box shuttle system, comprising:
a shuttle car movable along a path toward and away from a molding position and having spaced main members, a cross member disposed atop the main members and means for supporting a core box portion atop the shuttle car;
means for moving the shuttle car along the path; and
means operable when the shuttle car is in the molding position and extending between the main members of the



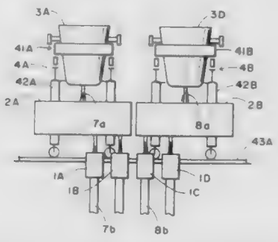
shuttle car for lifting the core box portion off the shuttle car.

5,056,583

CONTINUOUSLY AND CONCURRENTLY CASTING DIFFERENT ALLOYS

Kiyoshi Morii, Kohnan; Shuzo Kumura, Aichi; Shyzunori Hayakawa, Tokai, and Yoshio Inagaki, Aichi, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagaya, Japan

Filed Aug. 16, 1990, Ser. No. 568,123
Claims priority, application Japan, Aug. 17, 1989, 1-211857
Int. Cl.[5] B22D *11/10, 11/18*
U.S. Cl. 164—453 **9 Claims**



1. A method for casting alloys of different compositions comprising:
supplying at least a first molten metal and a second molten metal to a plurality of ladles, said first and second molten metals having different compositions,
feeding said first molten metal to a first tundish and said second molten metal to a second tundish,
continuously and concurrently casting said first and second molten metals through four water-cooled molds by feeding said first molten metal from said first tundish to at least two of said four water-cooled molds and feeding said second molten metal from said second tundish to at least one of said four water-cooled molds.

5,056,584

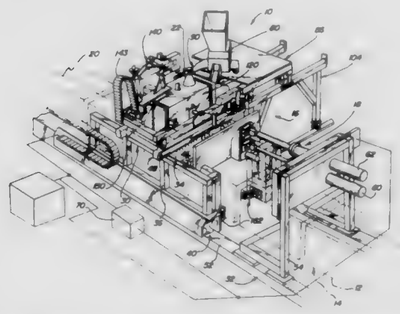
METHOD OF AND APPARATUS FOR POURING MOLDS ON A CONTINUOUSLY MOVING CONVEYOR

Williams W. Seaton, Dexter, Mich., assignor to CMI International, Inc., Southfield, Mich.

Filed Dec. 7, 1989, Ser. No. 447,192
Int. Cl.[5] B22D *39/00, 46/00*
U.S. Cl. 164—457 **17 Claims**

1. An apparatus for pouring molds on a continuously moving conveyor comprising:

a frame adapted to be positioned over a moving conveyor including one or more molds;
means for moving said frame in a direction along a path defined by said conveyor; and
means for pouring molten metal into one or more molds on said conveyor, said pouring means associated with said frame such that said pouring means fills molds on said conveyor while moving during filing at a speed substantially equal to a speed of the conveyor enabling filling of the molds on the moving conveyor;
said pouring means includes a means for receiving molten metal from a molten metal source, a trough coupled with said receiving means for transferring the molten metal from the receiving means, a ladle on said frame for receiving molten metal from said trough, said ladle including means for releasing the molten metal from said ladle into said molds;
said receiving means is pivotal such that as said ladle moves along said conveyor path said trough pivots, continuously pouring molten metal into said ladle.



15. A method for pouring molds on a movable conveyor comprising the steps of:
providing a moving conveyor with one or more molds thereon to be poured;
providing an apparatus for pouring said molds positioned over said conveyor, said apparatus including a receiving means for receiving molten metal and a ladle;
moving said apparatus along the path of said conveyor at a speed substantially equal to the speed of said conveyor;
pivoting said receiving means during movement of said apparatus to continuously pour molten metal into said ladle;
pouring molten metal from said ladle into one of said molds during movement of said apparatus as said apparatus moves along with said conveyor;
filling said one of said molds with said molten metal; and
terminating pouring of said molten metal into said one of said molds.

5,056,585

HIGH ENERGY PRODUCT RARE EARTH-IRON MAGNET ALLOYS

John J. Croat, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich. and General Motors Corporation, Detroit, Mich.

Division of Ser. No. 508,266, Jun. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 414,936, Sep. 3, 1982. This application Aug. 12, 1985, Ser. No. 764,720
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—463 **6 Claims**

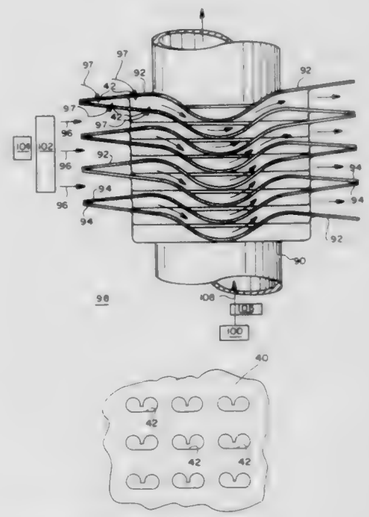
1. A method of making a composition having permanent magnet properties at room temperature comprising
preparing a melt of a composition comprising, on an atomic percentage basis of the total composition, 0.5 to 10 percent boron, 10 to 50 percent of one or more rare earth elements where neodymium or praseodymium or a mixture thereof constitutes at least 60 percent of the total rare earth element content, and one or more transition metal elements taken from the group consisting of iron and mixtures of iron and cobalt where iron constitutes at least 60 percent of the total transition metal, such molten composition being susceptible to being rapidly cooled to solidification over a determinable and controllable range of cooling rates within which range a series of fine grained crystalline products are formed that respectively display (a) values of magnetic coercivity that continually increase toward a maximum value and decrease from such value as the cooling rate is increased, and (b) values of magnetic remanence that increase over at least a part of such range as the cooling rate is increased, and
continually rapidly cooling portions of the melt by ejecting them onto a moving quench surface to form a fine grained crystalline product while controlling the cooling rate within said cooling range by a method comprising controlling the rate of movement of such surface such that the product has a desired combination of magnetic coercivity and remanence.

5,056,586

VORTEX JET IMPINGEMENT HEAT EXCHANGER

Charles H. Bemisderfer, Granger, Ind., assignor to Modine Heat Transfer, Inc., Racine, Wis.

Filed Jun. 18, 1990, Ser. No. 540,019
Int. Cl.[5] F28F *13/12*
U.S. Cl. 165—1 **19 Claims**



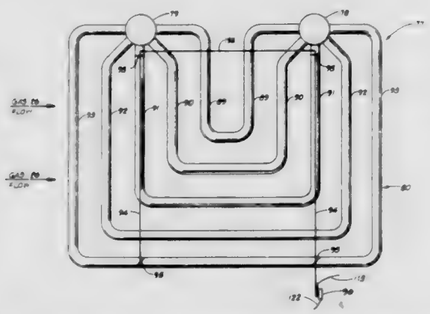
8. A heat exchanger, comprising:
first means for directing a first fluid to flow along a first predefined path;
second means for directing a second fluid to flow along a second predefined path;
means, associated with said second directing means, for causing said second fluid to form streams comprising pairs of counter rotating vortices; and
for directing said streams to flow away from said second directing means and against preselected surfaces of heat exchanger plates.

14. A method of exchanging heat between first and second fluids, comprising:

directing a first fluid to flow along a first predefined path;
directing a second fluid to flow along a second predefined path;
directing said second fluid to form streams comprising pairs of counter rotating vortices, said streams flowing transverse said second predefined path; and
directing said first fluid and said streams to flow against preselected surfaces of heat exchanger plates.

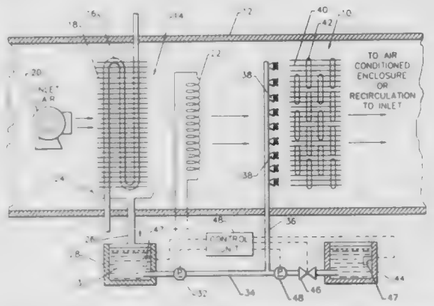
17. A finned tube heat exchanger comprising:
a tube shaped to contain and direct the flow of a first fluid;
a plurality of substantially parallel fins attached in thermal communication with said tube, each of said fins having a plurality of holes extending through the thickness thereof, the holes being coplanar with the fins;
said holes being shaped to form counter rotating vortices in a second fluid flowing substantially parallel to said fins and to direct said counter-rotating vortices to strike a surface of an adjacent fin at an angle transverse to the surface of the adjacent fin.

5,056,587
METHOD FOR DESLAGGING A BOILER
Linza J. Jones, Alvarado, Tex., and Richard N. Willis, Bossier City, La., assignors to Halliburton Company, Duncan, Okla. and Jet Research Center, Inc., Alvarado, Tex.
Continuation of Ser. No. 579,466, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 545,242, Jun. 28, 1990, abandoned, which is a continuation of Ser. No. 450,206, Dec. 12, 1989, abandoned. This application Jan. 9, 1991, Ser. No. 637,961
Int. Cl.[5] F28D *11/06*
U.S. Cl. 165—1 **13 Claims**



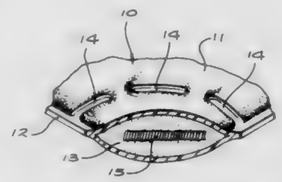
1. A method for separating ash from the exterior surface of tubing located in a stream generator, comprising the steps of:
selecting, within said stream generator, a plurality of tubing locations containing ash to be separated therefrom;
placing an explosive cord adjacent the exterior surface of each of said selected tubing locations, said explosive cord extending in a generally vertical direction and extending proximate the full vertical dimension of said adjacent tubing location;
establishing a sequence of detonation of each said explosive cord; and thereafter
detonating said explosive cords wherein each cords are detonated at separate times in the order of said sequence of detonation with a preselected delay between said separate detonations, whereby vibrations are established in said tubing and the ash separates therefrom.

5,056,588
EVAPORATIVE COOLING ENHANCED COLD STORAGE SYSTEM
Peter Carr, Cary, N.C., assignor to Instatherm Company, Cary, N.C.
Filed Dec. 28, 1990, Ser. No. 635,301
Int. Cl.[5] F28D *20/00*
U.S. Cl. 165—10 **40 Claims**



1. An air conditioning and cold storage process comprising the steps:
(a) cooling a warm air stream;
(b) passing the cooled air stream, in the presence of added moisture, in indirect heat exchange contact with a cold storage medium, the cold storage medium being at a temperature which is the same as or greater than the temperature of the cooled air stream to thereby vaporize at least a portion of the added moisture and effect enhanced cooling of the cold storage medium; and
(c) recovering a cooled air stream comprising vaporized moisture from indirect heat exchange contact with the cold storage medium and passing the cooled air stream comprising vaporized moisture to an air conditioned enclosure.

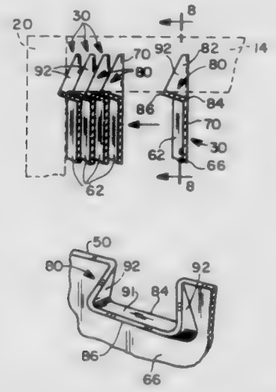
5,056,589
SUPERCOOLED LIQUID THERMAL GENERATOR AND IMPROVED TRIGGERING DEVICE
Bernd R. Hettel, 3881 W. 6th St., Los Angeles, Calif. 90020, and Jay E. Philippbar, 33815 Castano Dr. Bldg. A, Dana Point, Calif. 92629
Filed Dec. 19, 1989, Ser. No. 452,808
Int. Cl.[5] F28D *20/00*
U.S. Cl. 165—10 **12 Claims**



1. A self contained manually triggerable thermal energy pack comprising:
a flexible enclosure;
a material within said flexible enclosure exhibiting the properties of remaining in a liquid state until triggered to being crystallization;
trigger means within said enclosure;
said trigger means comprising a unitary close turn helical metallic spring having sufficient stiffness to maintain its generally cylindrical shape and sufficient resiliency to

allow bending by the application of manual pressure normal to its axis to spaced portions along its length through the flexible container.

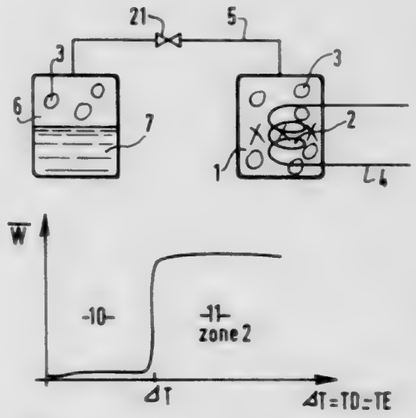
5,056,590
PLATE HEAT EXCHANGER
John C. Bohn, Crestwood, Ky., assignor to The Cherry-Burrell Corporation, Cedar Rapids, Iowa
Filed Mar. 30, 1990, Ser. No. 502,468
Int. Cl.[5] F28F *3/08*
U.S. Cl. 165—78 **10 Claims**



1. A heat exchanger plate apparatus, comprising:
a body having opposed ends and first and second opposed major surfaces;
edge means at an end of said body defining a recess for receiving guide bar means, said edge means and including a bottom portion intermediate a pair of opposed side portions;
passageway means in said plate for the passage of fluid therethrough;
tapered collar means surrounding at least a part of said recess, extending outwardly from said first major surface, having a first end adjacent said first major surface and an opposed free end, said collar means tapered inwardly toward said recess from said first end to said free end; and
said collar means defines a passageway for receiving at least part of a collar means of another heat exchanger plate, so as to be wedgingly engaged therewith.

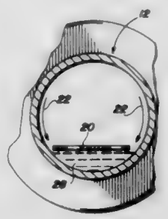
5,056,591
METHOD AND APPARATUS FOR CONDUCTING A THERMOCHEMICAL ABSORPTION AND DESORPTION REACTION BETWEEN A GAS AND A SOLID
Bernard Spinner, Corneilla del Vercol; Sylvain Mauran, Espira de l'Agly; Alain Roca, Perpignan, and Marianne Balat, Saleilles, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France
Filed Sep. 2, 1988, Ser. No. 239,666
Claims priority, application France, Sep. 7, 1987, 87 12388
Int. Cl.[5] F25B *17/00*
U.S. Cl. 165—104.16 **8 Claims**

1. Method of conducting a thermochemical absorption or desorption reaction between a gas and a solid in the presence of a heat-carrying fluid which reaction permits a heat exchange between the reaction medium and an external medium, said reaction taking place in an enclosure in contact with a second reactor which is the seat of a reaction using at least one gas, characterized in that it comprises:
a first step in which, for the pressure prevailing in the reactor, the variation of the mean power of the reaction is determined as a function of the difference which exists between the temperature of the heat-carrying fluid and the equilibrium temperature of the reaction, given by the Clapeyron diagram, thus making it possible to define an



optimum zone in which the reaction takes place with maximum mean power,
and a second step in which the reaction takes place, in which a reference temperature is imposed on the heat-carrying fluid such that the reaction takes place in the optimum zone.

5,056,592
IN-TUBE FLUID-CHANNELING BAFFELES FOR AIR-COOLED VACUUM STEAM CONDENSERS
Michael W. Larinoff, 370 Holly Hill Rd., Oldsmar, Fla. 34677
Filed Aug. 9, 1990, Ser. No. 564,601
Int. Cl.[5] F28B *9/08*
U.S. Cl. 165—111 **14 Claims**



2. A device for condensing steam, the device including a bundle of long heat exchange tubes extending from first and lower header means to second and upper header means defining paths for the steam as it moves from the lower header means toward the upper header means and for effecting a flow of steam upwardly and a flow of steam condensate downwardly within the tubes, and baffling located within the tubes of the bundle to channel and thus separate the upward bulk flow of steam and the downward bulk flow of condensate, said baffling having aperture means along the length thereof.

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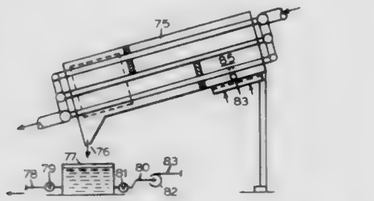
DEHUMIDIFYING HEAT EXCHANGER APPARATUS

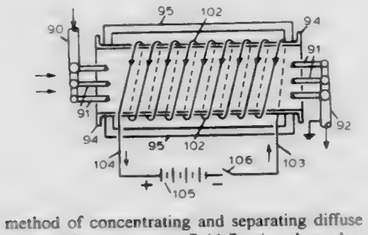
Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y. 11210

Continuation-in-part of Ser. No. 232,672, Aug. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 878,184, Jun. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 772,909, Sep. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 654,236, Sep. 25, 1984, Pat. No. 4,548,262, which is a continuation-in-part of Ser. No. 480,930, Mar. 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 237,909, Feb. 25, 1981, abandoned. This application Mar. 29, 1990, Ser. No. 501,274

Int. Cl.[5] F28B *1/02*

U.S. Cl. 165—111 25 Claims





1. A method of concentrating and separating diffuse condensable vapors from a gaseous fluid flowing through a thin-film condensing heat exchanger, comprising the steps of:

a) injecting a nucleating aerosol of cool liquid droplets into the gaseous fluid, to provide liquid surfaces for attachment and condensation of vapor molecules within the gaseous fluid;

b) flowing the gaseous fluid past electrically-charged ionizing apparatus having one polarity;

c) electrostatically impelling the movement of liquid droplets and ionized condensing vapors from the said ionizing apparatus towards adjacent surfaces of grounded or oppositely-charged horizontally-declined heat transfer conduits of the said heat exchanger;

d) condensing vapor adjacent surfaces of the said horizontally-declined heat transfer conduits by cooling thin films of condensable vapor to below local site saturation and dew-point temperatures, as heat is transferred through the said horizontally-declined heat transfer conduits to a second cooler fluid;

e) absorbing condensate drainage from the said horizontally-declined heat transfer conduits into absorbent wicks attached thereto; and

f) transferring condensate from the said horizontally-declined heat transfer conduits to an outlet of the said heat exchanger by drainage through the said absorbent wicks.

19. An electrostatically-enhanced electromagnetically-enhanced condensing heat exchanger for transferring heat between a gaseous fluid having a condensable vapor fraction and a second cooler fluid, comprising in combination:

a ferromagnetic outer shell enclosure having inlet means and outlet means for confining flow of the gaseous fluid therethrough, inlet and outlet means for confining flow of the second cooler fluid therethrough, and outlet means for discharging liquid condensate therefrom;

said ferromagnetic enclosure having a plurality of ferromagnetic bridges distributed about its outer periphery which communicate between the inlet and outlet portions thereof, to complete a plurality of magnetic circuits therebetween;

each of said ferromagnetic bridge members separated from the said ferromagnetic enclosure between their magnetic end connections thereto;

a fluid pump disposed to impel flow of the gaseous fluid through the said ferromagnetic enclosure;

a plurality of electrically-conducting heat transfer conduit means disposed within said ferromagnetic enclosure in a spaced parallel array with horizontal and vertical separations between members thereof, and communicating between the corresponding said inlet and outlet means for the second cooler fluid;

means defining and containing a supply of the second cooler fluid;

conduit supply means communicating between the said supply means of the second cooler fluid and the corresponding said inlet means of the said ferromagnetic enclosure;

conduit discharge means for the second cooler fluid communicating with the corresponding said outlet means of the said ferromagnetic enclosure;

means for supplying a nucleating aerosol of liquid droplets into the gaseous fluid within an inlet zone of said heat exchanger, to provide diffused liquid surfaces for attachment onto and condensation of vapor molecules carried within the gaseous stream;

gaseous electrostatic ionizing means comprising a plurality of charged elongate electrical conductors whose members are disposed longitudinally in a spaced alternate array between or adjacent members of the said plurality of electrically-conducting heat transfer conduit means within the said ferromagnetic enclosure;

a source of direct electrical current communicating with the said plurality of elongate electrical conductors of the said gaseous ionizing means;

electrical insulating means disposed within both said conduit supply and conduit discharge means for the second cooler fluid, to electrically isolate the said electrically-conducting heat transfer conduit means within the said ferromagnetic enclosure;

electrical conductor means communicating with the said electrically-conducting heat transfer conduit means between members of the said electrical insulating means, and with an exterior electrical ground;

an electrical conductor having end terminals is disposed about the outer periphery of said ferromagnetic enclosure in a plurality of circumferential turns between members of the said plurality of ferromagnetic bridges and said ferromagnetic enclosure, to comprise an electrical field coil;

and a second source of direct electrical current communicating with said end terminals of the said electrical field coil;

whereby the said ferromagnetic enclosure comprises a tubular electromagnet which exerts magnetic forces within the internal cavity thereof, members of the said plurality of electrically-conducting heat transfer conduit means become electrostatic collectors of liquid condensate droplets and ionized condensable vapor, unattached condensable vapor molecules are electrostatically stabilized in polar orientation between adjacent conductors of said gaseous ionizing means and members of said grounded heat transfer conduit means, and unattached condensable vapor molecules electrostatically stabilized in polar orientation between conductors of said gaseous ionizing means and members of said grounded heat transfer conduits within the internal cavity of said ferromagnetic enclosure are impelled by magnetic forces onto surfaces of adjacent grounded heat transfer conduits as a thin film of condensing vapor, as the gaseous fluid flows through the said ferromagnetic enclosure of the said heat exchanger.

5,056,594

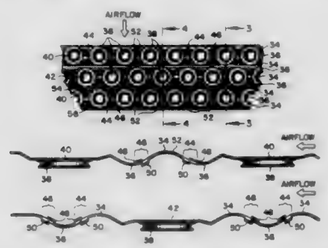
WAVY HEAT TRANSFER SURFACE

Michael L. Kraay, Dakota, Minn., assignor to American Standard Inc., New York, N.Y.

Filed Aug. 3, 1990, Ser. No. 563,163

Int. Cl.[5] F28F *1/30*

U.S. Cl. 165—151 32 Claims



12. A plate fin for use in a heat exchanger of a refrigeration system comprising:

a plate fin surface having a predetermined thickness, the plate fin surface including a series of alternating parallel peaks and troughs, the plate surface including apertures adapted to engage heat transfer tubes when such tubes are passed through the apertures, where the apertures are alternately aligned with every third peak or every third trough in rows parallel to the direction of the peaks and troughs, and the apertures in each row are separated by a smooth area of the plate fin surface where the smooth area is aligned with the respective peak or trough; and

means for enhancing the heat transfer rate of the plate fin surface wherein the enhancement means are located between the parallel peaks and troughs on the plate fin surface but are not located in the smooth area separating the aligned apertures.

5,056,595

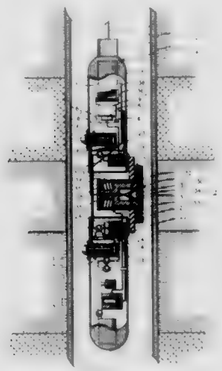
WIRELINE FORMATION TEST TOOL WITH JET PERFORATOR FOR POSITIVELY ESTABLISHING FLUIDIC COMMUNICATION WITH SUBSURFACE FORMATION TO BE TESTED

Robert Desbrandes, Baton Rouge, La., assignor to Gas Research Institute, Chicago, Ill.

Filed Aug. 13, 1990, Ser. No. 565,705

Int. Cl.[5] E21B *49/10*

U.S. Cl. 166—100 17 Claims



1. In a wireline formation test tool for suspension via a cable from the surface into a fluid filled wellbore for testing a low permeability subsurface formation wherein there is included

a body,

a passageway into the body which is communicated with a pressure gage, and at least one sample chamber for testing the flow rate of connate fluids introduced into the passageway from the subsurface formation, and

means for affixing and stabilizing the tool body in the wellbore at the level of the subsurface formation to be tested, which includes an extensible packer assembly, inclusive of a packer pad with openings, adapted for sealing engagement by projection of the pad of the packer assembly against a wall of the formation to be tested, and alignment of the pad opening with said passageway for isolation of said passageway of the tool body from wellbore fluids to establish a path for fluid communication between said passageway and the subsurface formation,

the improvement comprising

a jet perforator assembly, inclusive of a housing containing an open end firing chamber within which an explosive charge can be placed, the open end of the firing chamber being aligned upon and facing the wall of the formation to be tested, a fluid-fillable chamber in front of the firing chamber with one or more pistons mounted therein for applying pressure upon a fluid placed therein, and the volume thereof is substantially equal to that of the firing chamber, such that detonation of the explosive charge within the firing chamber will perforate the wall, penetrate said fluid-filled chamber, perforate said formation and connect the formation with said fluid-filled chamber, the fluid will fill the firing chamber, and establish a positive flow of connate fluids from the subsurface formation through said passageway into the body of the tool, for testing.

5,056,596

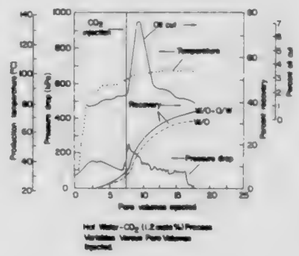
RECOVERY OF BITUMEN OR HEAVY OIL IN SITU BY INJECTION OF HOT WATER OF LOW QUALITY STEAM PLUS CAUSTIC AND CARBON DIOXIDE

Alexander S. McKay, Las Vegas, Nev., and Tawfik N. Nasr, Edmonton, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Continuation of Ser. No. 229,008, Aug. 5, 1988, abandoned. This application Jun. 7, 1990, Ser. No. 534,352

Int. Cl.[5] E21B *43/22, 43/24*

U.S. Cl. 166—272 8 Claims



1. A method of producing heavy crude oil or tar sand oil or bitumen from an underground formation containing the same which comprises utilizing or establishing an aqueous fluid communication path within and through said formation between an injection well or conduit and a production well or conduit which comprises introducing into said formation within said communication path via said injection well or conduit an aqueous stream comprising hot water and carbon dioxide, continuing the injection of said aqueous stream into said underground formation along said communication path and recovering or producing from said formation via said production well injected aqueous stream, together with heavy

crude oil or tar sand oil or bitumen, said recovered aqueous stream being at a temperature of about 130° C.

5,056,597

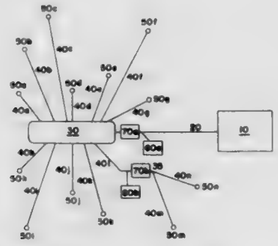
METHOD FOR IMPROVING THE STEAM SPLITS IN A MULTIPLE STEAM INJECTION PROCESS USING MULTIPLE STEAM HEADERS

George R. Stowe, III, Bakersfield, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 533,249, Jun. 4, 1990, Pat. No. 5,000,263, which is a continuation-in-part of Ser. No. 386,525, Jul. 27, 1989, Pat. No. 4,953,635. This application Dec. 7, 1990, Ser. No. 624,781

Int. Cl.[5] E21B *36/00, 43/24*

U.S. Cl. 166—303 **9 Claims**



1. A method for enhancing the uniformity of steam distribution in a multiple steam injection system comprising a steam generator, a primary steam header, at least one secondary steam header, a primary steam line connecting the generator to the primary header, at least one secondary steam line connecting the primary header to the secondary steam header, and a plurality of tertiary steam lines connecting the secondary steam header to a plurality of steam injection wells, the method comprising:

(a) injecting at least one surfactant into the primary steam line,

(b) mixing the surfactant and steam in the primary steam line sufficiently so that the surfactant and the steam enter the primary steam header as a foam,

(c) injecting additional surfactant into the at least one secondary steam line connecting the primary header to the secondary steam header, and

(d) mixing the surfactant and steam present in the secondary steam lines sufficiently so that the surfactant and the steam enter the secondary steam header as a foam.

5,056,598

METHOD OF PROTECTING CASING DURING HIGH PRESSURE WELL STIMULATION

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporatoin, Fairfax, Va.

Filed Sep. 20, 1990, Ser. No. 584,989

Int. Cl.[5] E21B *43/26*

U.S. Cl. 166—308 **17 Claims**

1. A method of protecting casing during high pressure stimulation in a well comprising:

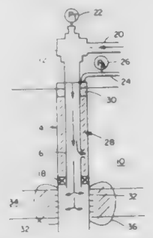
(a) loading an annulus or annular space between a casing and tubing in a well with a liquid; and

(b) displacing partially the liquid down said annulus and up the tubing with a substantially small volume of gas;

(c) placing a packer in said annular space thereby confining said liquid and gas within the annular space;

(d) instituting high pressure stimulation in said well; and

(e) injecting additional liquid into the annular space so as to offset pressure formed while the high pressure stimulation



is taking place thereby protecting the casing from rupturing.

5,056,599

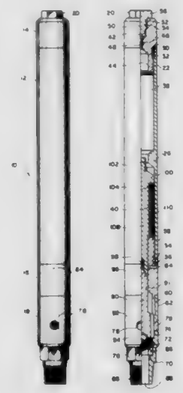
METHOD FOR TREATMENT OF WELLS

Walter B. Comeaux, Lafayette, La., and Larry Johnson, Lafayette, La., assignors to Walter B. Comeaux, III, Lafayette, La.

Continuation-in-part of Ser. No. 342,089, Apr. 24, 1989, abandoned. This application Feb. 15, 1990, Ser. No. 480,246

Int. Cl.[5] E21B *37/06, 34/10*

U.S. Cl. 166—310 **4 Claims**



1. A method of displacing fluid from a tubing of a well into a well casing, comprising the steps of:

providing a valve means having a substantially cylindrical body with a central opening axially extending through the body;

providing an upper compression chamber and a lower bellows chamber within said valve body;

providing a bellows compression means mounted within said bellows chamber;

providing a piston means within said central opening movable in response to an upset balance between a tubing pressure and pressure within said upper compression chamber;

providing means for sensing the tubing pressure and transmitting the tubing pressure to the bellows compression means;

providing a fluid outlet means allowing fluid communication between the tubing and the casing through said valve body ,said fluid communication being normally prevented by a downward position of the piston means;

providing means for controlling a flow of fluid through a fluid outlet means;

charging said compression chamber with a compression gas by applying said compression gas on exterior of the bellows compression means, which transmits a downward force on said piston means keeping the valve in its closed position;

positioning the valve in the tubing, while the valve is in its closed position;

increasing the tubing pressure inside said bellows compression means, causing the bellows compression means to expand and move the piston means upwardly, thus opening the fluid communication between the tubing and the casing;

admitting the tubing fluid through an open bottom end of the central opening; and

displacing the tubing fluid into the casing while restricting the flow of fluid through said fluid outlet means, so as to prevent closing of the valve immediately after communication with the casing has been established.

5,056,600

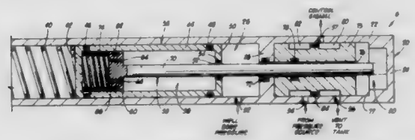
CONTROL APPARATUS AND METHOD RESPONSIVE TO A CHANGING STIMULUS

Jim B. Surjaatmadja, Duncan, Okla., and Bill W. White, Sandy, Utah, assignors to Halliburton Company, Duncan, Okla.

Filed May 7, 1990, Ser. No. 520,702

Int. Cl.[5] E21B *34/08, 43/12, 47/06*

U.S. Cl. 166—373 **18 Claims**



1. A control apparatus responsive to a changing stimulus, comprising:

means for producing a first response to a changing stimulus;

means for producing a second response to said stimulus wherein said second response is of the same type of response as said first response but wherein said first and second responses are of different relative varying degree so that said second response is initially masked by said first response, but so that said second response ultimately surpasses said first response; and

means for producing a control signal in response to said second response surpassing said first response.

7. An apparatus for controlling the opening of a valve, disposed in a tubing string in a well, during a drill stem test wherein the valve is opened during a flow period of the test and closed during a shut-in period of the test, comprising:

a housing adapted to be disposed in the tubing string;

a first slidable member disposed in said housing;

a second slidable member disposed in said housing;

first biasing means, disposed in said housing, for biasing said first slidable member to a starting position within said housing in response to reduced pressure in the well acting on said first slidable member within said housing during a flow period of a drill stem test;

second biasing means, disposed between said first and second slidable members, for biasing said second slidable member into movement relative to said first slidable member during a shut-in period of a drill stem test; and

means, disposed in said housing, for communicating a control signal to open the valve in the tubing string in response to said second slidable member moving relative to said first slidable member faster than said first slidable member is moved relative to said housing by pressure in the well acting on said first slidable member in opposition to said first biasing means.

5,056,601

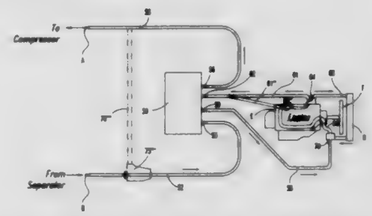
AIR COMPRESSOR COOLING SYSTEM

John E. Grimmer, 3 Susan La., Trafalgar, Ind. 46181

Filed Jun. 21, 1990, Ser. No. 541,778

Int. Cl.[5] F01M *5/00;* **F01P** *11/08;* **F16D** *31/02*

U.S. Cl. 165—47 **4 Claims**



1. A compressor cooling system for an oil-flooded air compressor for use in conjunction with an engine cooling system, the air compressor having an oil inlet and an oil outlet, and the engine cooling system having an engine cooling path including cooling passages in the engine block, with a coolant flowing therethrough, the cooling path including an engine heat exchanger having a coolant inlet and a coolant outlet, and a coolant pump, the engine cooling system further having a bypass line to the coolant pump in parallel with the engine heat exchanger, and a thermostat valve for bypassing coolant flow away from the heat exchanger through the bypass line to control the temperature of the coolant, said compressor cooling system comprising:

an oil flow path defined from the oil outlet to the oil inlet of the air compressor;

a compressor coolant flow path defined between an inlet to the coolant pump and a fluid intersection with the engine cooling path on the opposite flow side of the thermostat valve from the engine heat exchanger coolant inlet at a location where coolant has at least substantially traversed through cooling passages in the block of the engine;

an oil/coolant heat exchanger interposed in heat exchange relation between said oil flow path and said compressor coolant flow path for transferring heat between oil flowing through said oil flow path and coolant flowing through said compressor coolant flow path,

wherein said compressor coolant flow path is the only path for coolant through said oil/coolant heat exchanger,

and further wherein said compressor coolant flow path is in parallel with the engine heat exchanger so that coolant flow through said compressor coolant flow path is not diminished when the thermostat valve bypasses coolant flow away from the engine heat exchanger.

5,056,602

COPPER POWDER FIRE EXTINGUISHANT

Robert E. Tapscott, Albuquerque, N. Mex., and Gregory A. Levcun, Poulsbo, Wash., assignors to University of New Mexico, Albuquerque, N. Mex.

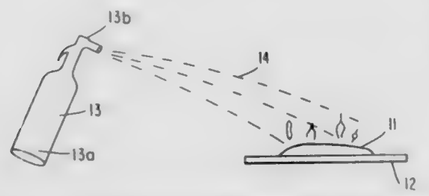
Filed Dec. 19, 1989, Ser. No. 452,485

Int. Cl.[5] A62C *3/00*

U.S. Cl. 169—46 **38 Claims**

1. A method of extinguishing the fire of a burning metallic body comprising the step of bringing into intimate physical contact with at least some portions of said body a substance

containing a substantial amount of elemental copper whereby, upon said contact, the body and the elemental copper in said



substance combine to form a mixture which acts as an adherent oxygen barrier.

5,056,603

FIRE RESISTANT CONTAINER HAVING BOTH ACTIVE AND PASSIVE PROTECTION

William R. Parkinson, Thomson, Ga., assignor to W.R. Parkinson Co., Inc., Thomson, Ga.

Filed Mar. 5, 1990, Ser. No. 489,292
Int. Cl.[5] A62C *35/02*
U.S. Cl. 169—48 **7 Claims**



1. A fire-resistant container comprising:

a plurality of walls defining an interior space, said walls being formed of a heat-insulating, fire-resistant material, said walls comprising an outer layer of a mechanically rugged water resistant material, a middle layer of a heat insulating material, and an inner layer of an aramid fiber material having an aluminized layer on a surface thereof disposed towards an outer surface of said container;

closure means for closing said interior space in a substantially gas-tight manner; and

means for releasing a halogenated hydrocarbon gas into said interior space when a temperature therein exceeds a predetermined temperature.

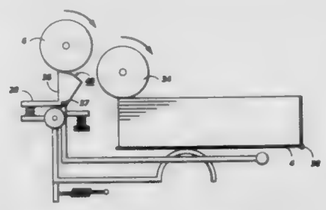
5,056,604

SHEET FEEDER DEVICES

Gerald M. Garavuso, Farmington, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1990, Ser. No. 517,885
Int. Cl.[5] B65H *3/32*
U.S. Cl. 271—113 **7 Claims**

1. A device for extracting sheets seriatim from the top of a stack of sheets and feeding them to a downstream sheet-using device, including: a pivotable tray adaped to support a stack of sheets; means for pivoting said tray in a counter clockwise direction; a feed roll disposed at a fixed location above said tray and adapted to contact and slide the top sheet of the stack in a sheet-feed direction by frictional engagement when said feed roll is rotated in a feed direction; a first lever adapted for movement about a fixed support, said fixed support being positioned below the lowest position of said tray; a retard pad mounted for pivotal movement about an axis at or near a movable end of said first lever means for biasing said retard pad into frictional engagement with said feed roll, said retard pad including a first arm; a pivotally mounted second lever adapted to urge said tray towards said feed roll, said second lever being movably connected to said first lever such that movement of said first arm about said pivotal axis of said retard pad is effective to increase the mechanical bias of said second



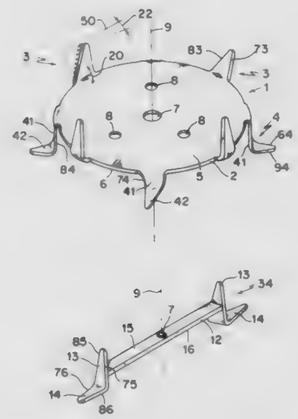
lever to thereby urge said tray towards said feed roll, and wherein said second lever is mounted to pivot about said axis of said retard pad; a second arm movable with said second lever and projecting substantially in parallel with said first arm; and a spring between said first and second arms, whereby said first arm is initially driven by said feed roll in a direction in which it increases the force applied by said spring to said second arm so as to augment the force applied to said tray by said second lever.

5,056,605

MULTIPURPOSE CUTTING MEANS

William R. Bond, 4710 Asdee Ln., and Daniel L. Markley, 2613 Davis Ford Rd., 190 72, both of Woodbridge, Va. 22192

Filed Oct. 30, 1990, Ser. No. 605,279
Int. Cl.[5] A01B *33/06*
U.S. Cl. 172—111 **20 Claims**



1. A multipurpose cutting means comprising:

an essentially planar extended support for cutting blades having a first side, a second side, a center and extremities, means near said center for mounting said extended support to a rotary power means for rotating said extended support about an axis of rotation that is essentially perpendicular to the plane of said extended support and that passes through said center, for rotation about said center;

first cutting blades attached to said extremities of said extended support, each said first cutting blade protruding outwardly at an angle from said first side so that mounting said extended support to a rotary power means on said second side provides a first cutting action by said first cutting blades when said extended support is rotated about said axis of rotation and moved parallel to its plane of rotation and that of the material being cut;

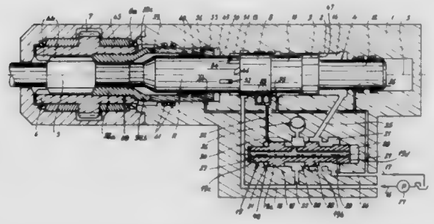
second cutting blades attached to the extremities of said extended support, each, said second cutting blade including a first and a second section, said first section of said second cutting blade protruding outwardly at an angle from said second side, said second section of said second cutting blade protruding outwardly at an angle from said first section and away from said extended support center and said axis of rotation such that said second section is essentially parallel to said extended support second side, said second section being an integral continuation of said first section such that mounting said extended support to said rotary power means on said first side provides a second different cutting action by said second cutting blades when said extended support is rotated about said axis of rotation and moved parallel to its plane of rotation and that of the material being cut, and such that mounting said extended support to said rotary power means on either said first side or said second side and rotating it provides a still further and different cutting action by said first and said second cutting blades when said extended support is moved at an angle that is not parallel to either the plane of rotation of said extended support or the surface of the material being cut.

5,056,606

DAMPED HAMMER DRILL

Jean-Claude Barthomeuf, Anse, France, assignor to Eimco-Secoma (Societe Anonyme), Meyzieu, France

Filed May 29, 1990, Ser. No. 530,551
Claims priority, application France, Jun. 6, 1989, 89 08136
Int. Cl.[5] B23Q *5/00*
U.S. Cl. 173—13 **8 Claims**



1. A hydraulic hammer drill usable in combination with a hydraulic pressure source having a high-pressure side and a low-pressure side and with a tool having a shaft with a rear end, the hammer comprising:

a housing formed with an axis-defining bore having a front end in which the tool shaft is normally coaxially engaged;

a piston coaxially displaceable in the bore, having a forwardly directed face defining in the bore a front return chamber of small effective piston surface area, and having a rearwardly directed face defining in the bore a rear drive chamber of larger effective surface area;

a passage permanently connecting the front chamber with the high-pressure side of the hydraulic pressure source;

means including a reversible control valve connected between both sides of the hydraulic pressure source and the rear chamber for alternately pressurizing and depressurizing the rear chamber and thereby alternately displacing the piston axially forward to a front position in which it strikes the rear end of the tool shaft and axially backward away from the tool;

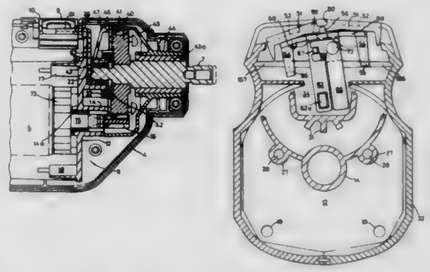
at least one recoil-damping sleeve surrounding the piston axially ahead of the front chamber and having a front end axially forwardly operatively engageable with the tool shaft in a frontmost position and a rear end defining with the bore a recoil chamber separated from the front return chamber, the housing being formed with a vent passage connected to the low-pressure side of the hydraulic pressure source and opening into the recoil chamber, the vent passage being uncovered by the sleeve for venting of the recoil chamber substantially only when the sleeve is in the frontmost position, the piston being formed with at least one bypass passage communicating for fluid flow between the recoil and front chambers when the piston is in or axially forward of its front position but blocked when the piston is axially backward of its front position.

5,056,607

MODE CHANGE MECHANISM FOR POWER TOOLS

Anthony J. Sanders, Newton Aycliffe, England, assignor to Black & Decker Inc., Newark, Del.

Filed May 14, 1990, Ser. No. 523,225
Claims priority, application United Kingdom, May 25, 1989, 8912066
Int. Cl.[5] B23B *45/16*; **F16H** *37/16*
U.S. Cl. 173—48 **18 Claims**



1. A power drill, comprising:

a housing;

an output shaft with a tool bit holder at an outer end of said shaft;

bearings for supporting the shaft in said housing for rotary and limited axial movement relative thereto;

a mode change mechanism for changing the operating condition of the drill between a non-hammer mode and a hammer mode;

said mode change mechanism comprising a first rigid member and a second resilient member, said members being carried by a common support movable between a first position in which said first rigid member is aligned with the output shaft to prevent axial movement of said shaft and a second position in which said second resilient mem-

ber is aligned with the output shaft to allow axial movement of said shaft;

said common support being mounted upon an internal partition in said housing, and said first rigid member being supported against rearward movement by said internal partition when said common support is in said first position;

said internal partition including a mounting for a first ratchet member and a bearing in which one end of said output shaft is rotatably supported, said output shaft carrying a second ratchet member cooperable with said first ratchet member to impart a hammering action to said output shaft along its axis when the power drill is operating in said hammer mode; and

said internal partition including a pocket, said first rigid member and said second resilient member being located in said pocket, and said one end of the output shaft projecting into said pocket.

5,056,608

BORING RAM

Kenneth L. Hemmings, Colchester, England, assignor to British Telecommunications public limited company, United Kingdom

PCT No. PCT/GB89/00037, § 371 Date Aug. 7, 1990, § 102(e) Date Aug. 7, 1990, PCT Pub. No. WO89/07406, PCT Pub. Date Aug. 24, 1989

PCT Filed Jan. 16, 1989, Ser. No. 543,728

Claims priority, application United Kingdom, Jan. 18, 1988, 8801042

Int. Cl.[5] E21B *4/14*

U.S. Cl. 175—19 **7 Claims**



1. A boring ram comprising a tubular body which contains a reciprocal hammer and a pneumatically balanced control member for supplying working fluid to the hammer, the ram including first and second working fluid inputs, the first working fluid input supplying working fluid to the hammer and the second working fluid input supplying working fluid to control means responsive to changes in fluid pressure to effect changes in the direction of the ram, wherein the control means is biased to a first operating direction by a spring and by working fluid pressure acting on at least one piston of the control means to select an opposed working direction and wherein said control means is biased towards a reverse operating direction by a piston acted on by fluid pressure from the first working fluid input to assist selection of a forward operating direction.

5,056,609

VALVE ASSEMBLY FOR A DOWNHOLE TO REMOVE BORE HOLE SUBSIDENCE

Ian G. Rear, 60 Clavering Road, Bayswater, Western Australia

Filed Aug. 28, 1989, Ser. No. 400,162

Claims priority, application Australia, Aug. 26, 1988, PJ0066

Int. Cl.[5] E21B *1/00*

U.S. Cl. 175—296 **8 Claims**

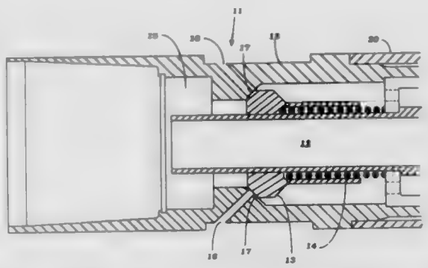
1. A valve assembly included within a downhole hammer assembly to remove subsidence from a bore hole, the valve assembly comprising:

a housing for the valve assembly having two ends, an upper end of the housing engaging a drill string and a lower end engaging a downhole hammer;

a fluid inlet means at the upper end of the housing enabling introduction of an inlet fluid into the housing from the drill string;

a fluid outlet means at the lower end of the housing enabling introduction of the inlet fluid into the downhole hammer from the fluid inlet means;

a valve in the housing between the fluid inlet means and the fluid outlet means having an open position and a closed position, wherein the valve is in the open position when a sufficient positive pressure differential exists between the fluid inlet means and the fluid outlet means thereby providing a fluid passageway for the inlet fluid from the drill string to the downhole hammer, and further wherein the valve is in the closed position at all other times thereby closing the fluid passageway; and



at least one bypass passageway in the housing between the fluid inlet means and the bore exterior to the housing, wherein the at least one bypass passageway provides a bypass for a portion of the inlet fluid into the bore hole when the valve is in the open position thereby returning the portion of the inlet fluid to the surface carrying therewith any bore hole subsidence contacted by the portion of the inlet fluid, and further wherein the at least one bypass passageway is closed when the valve is in the closed position.

5,056,610

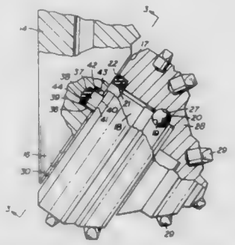
SHALE DIVERTING MEANS FOR A SEALED BEARING DRILL BIT

Michael S. Oliver, Lafayette, La.; Chris E. Cawthorne, The Woodlands, Tex., and Gary Erpenbeck, Costa Mesa, Calif., assignors to Smith International, Inc., Houston, Tex.

Filed Sep. 17, 1990, Ser. No. 583,902

Int. Cl.[5] E21B *10/22*

U.S. Cl. 175—371 **9 Claims**



1. A sealed bearing rotary cone drill bit comprising:

a body forming a first pin end and a second cutting end, a downward extending leg, said leg having an outer surface, a journal bearing formed integrally with the leg and projecting inward therefrom, an annular shoulder formed at the juncture of the journal bearing and the leg;

a cutting cone rotatively mounted on the journal bearing, the cone forming an annular end face adjacent said shoulder, the shoulder and the end face being normal to a rotary axis of the cones and having clearance space therebetween, the leg further forming at least one aperture laterally spaced from the leg outer surface, the aperture being normal to and intersecting the shoulder; and

a debris deflecting apparatus adapted to be retained within said at least one aperture, a face of said apparatus adjacent said annular face of said cone and forming a debris deflecting ridge thereby, elastomeric means to energize said debris deflecting apparatus to urge said ridged face of said apparatus against said annular face of said cone, said debris defelecting apparatus being so positioned in said aperture to orient said debris deflecting ridge such that debris is directed away from said clearance space between said leg and said cone.

5,056,611

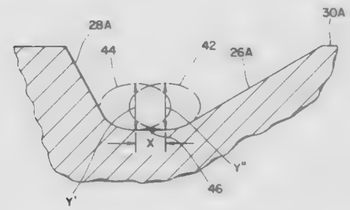
SCREW THREAD STRUCTURE

Faisal J. Yousef; Robert F. Kane, both of Houston; Joel Ham, Cypress, and David Mildren, Houston, all of Tex., assignors to Galloway Trust, Neenah, Wis.

Filed May 29, 1990, Ser. No. 529,575

Int. Cl.[5] E21B *10/36;* **F16B** *35/04*

U.S. Cl. 175—415 **10 Claims**



1. A percussion drill comprising a piston case and a drive sub connected to a lower end of said piston case by a thread coupling, said thread coupling comprising first and second screw structures on said piston case and driver sub, respectively, said first screw structure comprising at least one first thread extending helically in spaced thread turns about a longitudinal axis, said first thread including a first load bearing flank, a first non-load bearing flank and a first crest portion extending between said load bearing flank and said non-load bearing flank, a first root extending between adjacent turns of said first thread, said first root as viewed in longitudinal section having a first curvature defined by portions of two axially overlapping ellipses interconnected by a flat, said ellipses tangentially adjoining respective ones of said first load bearing flank and said first non-load bearing flank, said flat oriented parallel to said axis and tangentially adjoining said ellipses, said second screw structure comprising at least one second thread extending helically in spaced thread turns about said longitudinal axis, said second thread including a second load bearing flank, a second non-load bearing flank, a second crest portion extending between said first load bearing flank and said first non-load bearing flank, and a second root extending between adjacent turns of said second thread, said second root as viewed in longitudinal section having a second curvature defined by portions of two axially overlapping ellipses interconnected by a flat, said ellipses of said second curvature tangentially adjoining respective ones of said second load bearing flank and said second nonload bearing flank, said flat of said second thread oriented parallel to said axis and tangentially adjoining said ellipses of said second thread.

5,056,612

DEVICE FOR GUIDING THE MOVEMENT ON THE GROUND OF A SELF-DRIVEN MACHINE

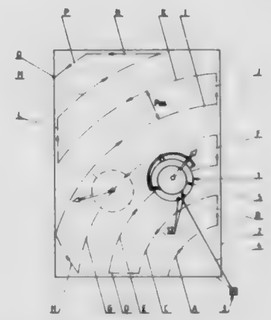
Max Roumagnac, 7 rue Berlioz, 33127 Martignas, France

Filed Aug. 7, 1989, Ser. No. 390,984

Claims priority, application France, Aug. 8, 1988, 88 10815

Int. Cl.[5] A61B *7/02*

U.S. Cl. 180—131 **9 Claims**



1. A device for controlling the movement of a machine on a surface, said device comprising:

(A) an obstacle disposed along at least part of a periphery of an area to be traversed by said machine;

(B) a winder-unwinder device connected to said machine;

(C) an anchor which is located remote from said machine and which is stationary with respect to said surface;

(D) a flexible connection attached at one end to said machine at another end to said anchor;

(E) obstacle detector means, carried by said machine, for detecting the presence of said obstacle;

(F) means for freeing a given length of said connection when said obstacle is detected by said obstacle detector means, and

(G) propulsive means for causing said machine to travel in a direction in which said connection is stretched again after said given length of said connection is freed, and for then causing said machine to travel in a direction which is opposite to a direction in which said machine was travelling before said obstacle was detected.

5,056,613

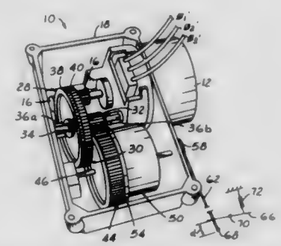
VEHICULAR SPEED CONTROL SYSTEM WITH REDUCED GEAR CHATTER

David L. Porter, Westland; Charles F. Weber, South Lyon, and Kah S. Oo, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 27, 1990, Ser. No. 558,918

Int. Cl.[5] F16H *55/24*

U.S. Cl. 180—178 **15 Claims**



1. A vehicular speed control system coupled to an engine

throttle by transfer gearing having reduced audible gear chatter, comprising:

phasing means for providing a sequence of electrical phase steps in response to a comparison of actual vehicle speed to a desired vehicle speed;

a stepper motor coupled to a pinion shaft for rotating said pinion shaft by discrete phase steps in response to said phasing means;

first gear transfer means having a plurality of gear teeth for rotatably coupling to said pinion shaft with minimal slack between said gear teeth of said first gear transfer means and gear teeth of said pinion shaft; and

transfer means coupled between said first gear transfer means and the throttle for displacing the throttle in response to rotational movement of said stepper motor.

5,056,614

APPARATUS FOR CONTROLLING THE DISTRIBUTION OF DRIVE POWER FOR MOTOR VEHICLES

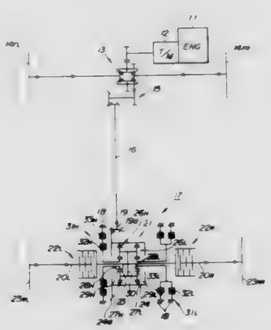
Shyoji Tokushima, and Makoto Watanabe, both of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1990, Ser. No. 514,448

Claims priority, application Japan, Apr. 26, 1989, 1-107056; Apr. 26, 1989, 1-107057; Apr. 26, 1989, 1-107058

Int. Cl.[5] B60K *17/348*

U.S. Cl. 180—248 **15 Claims**



1. In an apparatus for controlling the distribution of drive power in an all-wheel-drive motor vehicle which has main drive wheels, auxiliary drive wheels, and a drive power transmitting system for transmitting the drive power to the auxiliary drive wheels, said apparatus having a hydraulic pressure source, a hydraulic system, hydraulic clutch means disposed in the drive power transmitting system, for varying the drive power transmitted to the auxiliary drive wheels depending on the hydraulic pressure supplied from the hydraulic pressure source to the hydraulic clutch means through the hydraulic system, and means for controlling the ratio at which the drive power is distributed between the main and auxiliary drive wheels, through regulation of the hydraulic pressure supplied from the hydraulic pressure source to the hydraulic clutch means, the improvement comprising:

failure detecting means for detecting a failure of the hydraulic system; and

hydraulic pressure lowering means for lowering the hydraulic pressure supplied from the hydraulic pressure source to the hydraulic clutch means when a failure of the hydraulic system is detected by said failure detecting means.

5,056,615

VEHICLE CONTROL SYSTEM

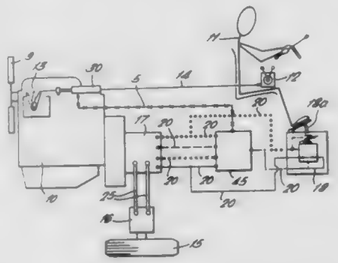
Anthony J. Duthie, and Mark Cullen, both of Horsham, United Kingdom, assignors to Johnston Engineering Limited, Surrey, United Kingdom

Filed Apr. 16, 1990, Ser. No. 509,364

Claims priority, application United Kingdom, Jul. 12, 1989, 8915937

Int. Cl.[5] B60K *17/00*

U.S. Cl. 180—306 **19 Claims**



1. A land vehicle having at least one drivable road wheel, hydrostatic transmission means to drive said road wheel to propel the vehicle, an engine that drives both said hydrostatic transmission means and auxiliary equipment mounted on said vehicle, a hydraulic pressure supply from the engine to the transmission means and means for controlling the speed of the vehicle, said speed control means comprising means for controlling the pressure supply to the transmission means and means connected to the pressure supply control means to control the speed of the engine whereby the engine speed is restricted to a preset limit when the auxiliary equipment is operating and the speed of the engine can be increased when the auxiliary equipment is inert and the vehicle in transit.

5,056,616

LOUDSPEAKER

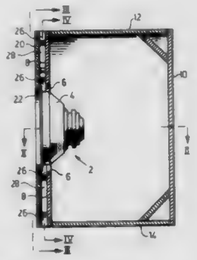
Thomas Aström, Kebnekaisevägen 9, S-161 33 Bromma, Sweden

PCT No. PCT/SE88/00428, § 371 Date Apr. 19, 1990, § 102(e) Date Apr. 19, 1990, PCT Pub. No. WO89/01728, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 22, 1988, Ser. No. 465,110

Int. Cl.[5] H05K *5/00*

U.S. Cl. 181—156 **23 Claims**



1. A loudspeaker comprising:

a loudspeaker cabinet having an interior and an exterior,

at least one loudspeaker element having a loudspeaker membrane, and

a plurality of sound passages defining a cavity in a cabinet wall, each sound passage terminating on one end in a proximal aperture acoustically coupled to said loudspeaker element and on the other end in a distal aperture acoustically coupled with exterior surroundings of the cabinet, whereby said loudspeaker membrane is acoustically coupled with the exterior surroundings of the cabinet,

the distal aperture of a first sound passage communicating with a distal aperture of a second sound passage, the sectional area of the distal aperture of said first sound passage being different from the sectional area of the distal aperture of said second sound passage, and said first and second sound passages having different lengths.

5,056,617

DIAPHRAGM FOR LOUDSPEAKER

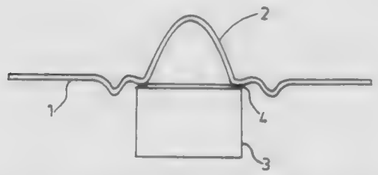
Joachim Wank, Dormagen; Werner Waldenrath, Cologne, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 8, 1989, Ser. No. 405,278

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831706

Int. Cl.[5] G10R *13/00;* **H04K** *7/00*

U.S. Cl. 181—173 **7 Claims**



1. Diaphragm for loudspeaker, consisting of a moving part (1, 21) with a cap-shaped dome or cone, in which at least the moving part (1,21) is made from a plastic sheet of thermoplastic polyurethane having a thickness of 0.02 to 0.8 mm, a modulus of shear according to between 10^0 and 10^1 MPa in a range 0° to 140° C., a hardness according to in a range of 80 to 96 Shore A and in a range of 30 to 60 Shore D, and a yield stress in a range of 1.0 to 10 MPa.

5,056,618

LOUDSPEAKER HOUSING

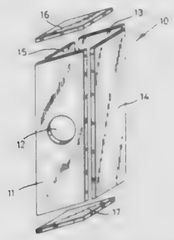
Hans-Joachim Prodan, Birkenallee 7, D-4415 Albersloh, Fed. Rep. of Germany

Filed Jan. 19, 1990, Ser. No. 468,688

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3903085; Feb. 23, 1989, 3905562

Int. Cl.[5] A47B *81/06*

U.S. Cl. 181—199 **8 Claims**



1. A housing for sound amplifying means comprising a plurality of walls together constituting at least one section which is a cast mixture of a first component consisting of particles of sand with a grain size of 0.1 to 3 mm and/or pure metallic powder and/or titanium carbide and/or granulated ilmenite and/or pulverulent chromite and/or lead monosilicate frit powder and/or pulverulent flint glass and/or plutonic rock powder and/or ceramic powder; a second component consisting of a twin-component adhesive and/or a grouting compound and having a viscosity between 150 and 10,000 mPa.s; and a third component consisting of granulated rubber with a grain size of 0.01 to 1 mm and/or soft polyvinyl chloride and/or polyethylene.

5,056,619

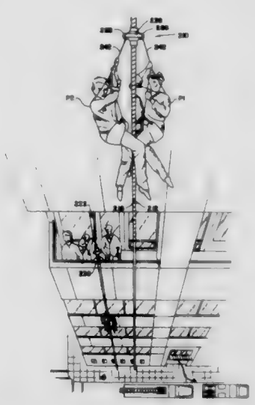
CONTROLLED DESCENT DEVICE

George Darnell, P.O. Box 589, Bokeelia, Fla. 33922, and John E. Darnell, 2026 Garrison St., Walla Walla, Wash. 99362

Filed Dec. 27, 1989, Ser. No. 457,259

Int. Cl.[5] A62B *1/02, 35/00*

U.S. Cl. 182—5 **18 Claims**



1. A controlled descent device comprising:

an elongate guide assembly that includes an upper portion, a lower portion, and a generally stationary helical track which is disposed peripherally about said guide assembly and extends from the upper portion to the lower portion;

a carriage, which includes primary bearing means that are movably engaged with said track such that at least a portion of said carriage is movable in a generally helical pattern about said guide; and

means for securing a harness to said carriage, said carriage being freely descendible along said track to lower a person fastened in said harness from said upper portion of said guide assembly to said lower portion thereof.

5,056,620

STEPLADDER PLATFORM

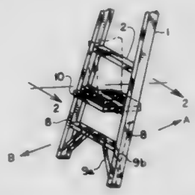
Donald A. Zumwalt, and Jean M. Zumwalt, both of 1946 Glenoaks Blvd., San Fernando, Calif. 91340

Continuation of Ser. No. 512,870, Apr. 23, 1990

Filed Oct. 17, 1990, Ser. No. 599,059

Int. Cl.[5] E06C *7/16*

U.S. Cl. 182—120 **23 Claims**



1. A stepladder platform constructed of rigid material for attachment to a stepladder of the type having a step formed of a channel cross-section member supported at left and right ends by stiles the step channel having a top channel wall, a rear

channel wall and a front channel wall and which is open at the bottom comprising,

a stepping platform adapted to be placed upon and supported by the top channel wall of the step channel, the stepping platform extending laterally forward and rearward of the forward and rearward edges of the top channel wall to provide a platform of sufficient lateral dimension and area for the sole and heel of the feet of a person standing thereon;

at least one hookflange attached to the stepping platform and capable of co-acting with the rear channel wall to prevent forward lateral movement and tilting of the stepping platform.

5,056,621

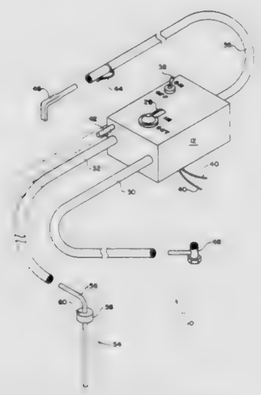
FLUID TRANSFER APPARATUS AND METHOD

Arnold G. Trevino, 1702-A Future Dr., Austin, Tex. 78754

Filed Nov. 9, 1989, Ser. No. 434,026

Int. Cl.[5] F16N *33/00*

U.S. Cl. 184—1.5 **9 Claims**



1. Fluid transfer mechanism comprising:

A. a frame;

B. a pump means, with a suction and a discharge port, mounted on said frame;

C. suction conduit with a first end connected to said suction port and a removably attachable second end free to provide suction to fluid reservoirs;

D. discharge conduit with a first end connected to said discharge port of said pump and a removably attachable second end free to direct discharged fluids as manipulated by an operator;

E. electrical connection means attached to said pump for operation of said pump as desired by said operator;

F. an oil pan adaptor means connected to an oil pan to which said removably attachable second end of said suction conduit is attached for draining oil in said oil pan;

G. an oil cap adaptor means connected to an oil cap to which said removably attachable second end of said discharge conduit is attached for adding oil;

H. a fill end, conformed to fit within a cut in an oil fill opening, passing into said oil fill opening; and

I. a receiving end, conformed to receive said removably attachable second free end of said discharge conduit, communicatively formed to said fill end at an angle so that when a fill cap is inserted into said oil fill opening said fill cap clamps said oil cap adapter in place.

5,056,622

OIL LEVEL REGULATOR

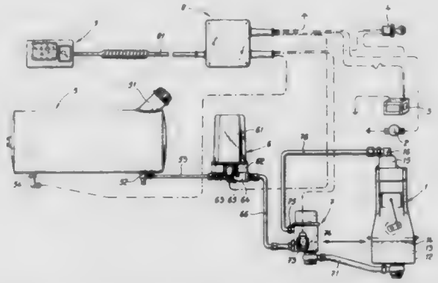
Martin A. Vermeulen, Utrecht, Netherlands, assignor to Groeneveld Transport Efficiency B.V., Gorinchem, Netherlands

Filed Aug. 30, 1990, Ser. No. 574,422

Claims priority, application Netherlands, Sep. 6, 1989, 8902235

Int. Cl.[5] F01M *1/18, 11/10*

U.S. Cl. 184—6.4 **7 Claims**



1. In an oil level regulator for an internal combustion engine, provided with a lubricating oil sump and a starter motor operated by means of an ignition switch having an ignition lock, comprising:

an enclosed measuring chamber which by means of an oil pipe is in communicating connection with the oil in the engine sump, so that the same oil level occurs in the measuring chamber as in the sump,

a tank for topping-up oil, which is connected to the sump by means of a controllable shut-off device,

a level measuring device in the measuring chamber at the level of the desired oil level in the sump, which controls the shut-off device; the improvement wherein

the shut-off device is electrically remote-controlled,

the level measuring device is in the form of a sensor for emitting an electrical signal as to whether the oil level is correct or too low,

a control device for controlling the shut-off device, which control device has a feed input and at least one input for the signal from the sensor and from said ignition switch, and has an output to the shut-off device and is programmed to measure the oil level only when the engine is off, after the ignition lock is placed in a first position, and

a) if "correct", then to release the ignition lock for a predetermined period, so that the engine can be started, if necessary repeatedly, by placing the ignition lock in a second position, or

b) if "too low", to open the shut-off device for a predetermined period, in order to allow a certain quantity of oil to the sump, then to measure the oil level again and, if "correct", to release the second or starting position of the ignition lock,

the shut-off device comprising a pump driven by an electric motor, so that any topped-up volume is essentially constant and the topping-up tank can be at any desired height and distance relative to said sump.

5,056,623

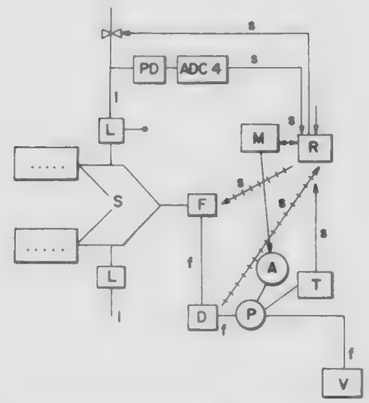
PROCESS FOR THE CONTROLLED RELEASE OF METERED QUANTITIES OF LUBRICANT WHEN COATING PRESSING TOOLS WITH LUBRICATING LIQUIDS AND SUSPENSIONS AND APPARATUS FOR CARRYING OUT THE PROCESS

Volker I. Glassl, Hegauweg, and Gunther M. Voss, Ziegelstadel, both of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Continuation of Ser. No. 284,287, Dec. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 101,882, Sep. 28, 1987, abandoned. This application Mar. 29, 1990, Ser. No. 501,452

Int. Cl.[5] F16N *27/00*

U.S. Cl. 184—7.4 **5 Claims**



1. A process for a controlled release of metered lubricating liquid or suspension in applying a coating of lubricant to mechanically stressed zones of pressing tools in tablet-making machines, comprising the use of a pump operating without pulsations for metering said lubricating liquid or suspension from a pressureless storage container to one or more liquid valves, whereby the delivery of the pump and the actuation of the liquid valves is matched to the cadence of the tablet-making machine, the delivery of said pump being checked by means of a tachogenerator running concurrently with the pump, the findings of the tachogenerator being compared by a computer with an established ratio of cadence of the machine to delivery of the lubricating solution or suspension fed in through a potentiometer, found deviations in the actual ratio of cadence to delivery from the pre-set ratio of cadence to delivery being corrected by a computer via a further potentiometer until said originally set-up ratio is restored, and, to compensate for an underpressure or overpressure of said lubricating liquid or suspension prevailing at the pump outlet, measuring the actual pressure at said pump outlet, comparing it to a pre-set pressure to obtain an error signal, changing the time of opening of the liquid valve in response to this error signal, whereby the pump performance and the actuation time of the valve remain always adapted to each other and to the cadence of the pressing tools, and measuring the actual pressure of gas before a gas valve upstream in a gas pipeline ending in the lubricant pipeline before the nozzle or nozzles, comparing the actual gas pressure to a preset gas pressure to obtain error signals, changing the time of opening of the gas valve or gas valves in response to said error signals, the actuation of the gas valve or gas valves being timely adapted to the cadence of the pressing tools in a way that a defined gas jet at a staggered time with regard to the actuation of the liquid valve is delivered.

5,056,624

SEE-SAW MOTION LOADING DEVICE FOR A LOADING-PLATFORM

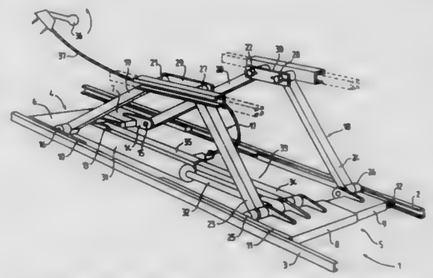
Jean Georges, Meuil aux Bois, France, assignor to Jige Lohr Wreckers, S.A., Revigny-sur-Ornain, France

Filed Jan. 9, 1990, Ser. No. 462,199

Claims priority, application France, Jan. 10, 1989, 89 00221

Int. Cl.[5] B66F *7/08*

U.S. Cl. 187—8.71 **7 Claims**



1. A loading device for a vehicle carrier, comprising:

a chassis;

a first pair of support arms respectively having one end thereof pivotably fixed about a stationary axis defined upon said chassis;

a base member movably disposed upon said chassis along a longitudinal direction of movement;

a second pair of support arms respectively having one end thereof pivotably fixed about a movable axis defined upon said base member;

a pair of laterally spaced block members having respective second ends of said first pair of support arms and said second pair of support arms pivotably fixed upon said pair of laterally spaced block members at longitudinally spaced locations such that said first and second pairs of support arms, said block members, and a portion of said chassis defined between said stationary axis and said movable axis define a trapezoidal support structure when said first and second pairs of support arms are disposed in a non-collapsed state; and

drive means interposed between said chassis and said movable base for moving said movable base in said longitudinal direction so as to in turn cause pivotal movement of said first and second pairs of support arms about said stationary and movable axes, as well as said spaced locations upon said block members, whereby said block members can be longitudinally and elevationally moved so as to support a load upon said vehicle carrier.

5,056,625

LOW PROFILE BASE FOR A STORAGE AND RETRIEVAL MACHINE

Stephen N. Miskin, Sandy, Utah, and Kurt M. Lloyd, Pewaukee, Wis., assignors to Harnischfeger Engineers, Inc., Brookfield, Wis.

Filed Sep. 22, 1989, Ser. No. 411,295

Int. Cl.[5] B66B *9/20*

U.S. Cl. 187—9 R **6 Claims**

1. A base for a storage and retrieval machine travelable along rail and having a must mounted on the base and carriage means movable in vertical directions on the mast for carrying objects to and from overhead locations, the base comprising:

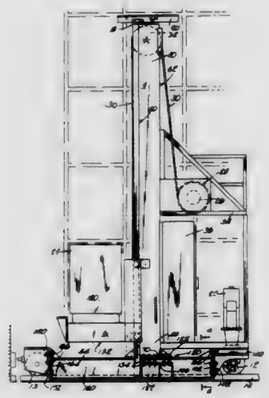
a pair of spaced apart frame members having a length generally parallel to the rail and extending a portion of the length of the base;

the rail having a height;

the frame member pair comprises a pair of L-shaped plate members each having a downwardly projecting upper

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wall spaced apart from the upper wall of the other L-shaped plate member and a lower wall, each lower wall being positioned at a lower height than that of the rail and projecting away from the lower wall of the other L-shaped plate member in a direction laterally of the length of the frame member pair, the downwardly projecting



upper walls and the lower walls forming the L-shape of the L-shaped members; and

the frame member pair have a position straddling the rail with the rail projecting upward into the space between the frame member pair whereby the base has a low profile support position on the rail.

5,056,626

ELEVATING STAGE

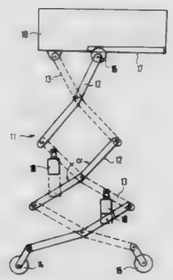
August Mayr, Ismaniger Strasse 114, D–8000 München 60, Fed. Rep. of Germany

Filed Mar. 21, 1990, Ser. No. 496,658

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1989, 3910180

Int. Cl.[5] B66B *11/04*

U.S. Cl. 187—18 **15 Claims**



1. An elevating stage comprising:

a stage;

a first group of scissor beams of equal length comprising upper, middle, and lower scissor beams pivotally connected end to end, the upper beam connected to said stage;

a second group of scissor beams of equal length to the length of the beams of said first group, said second group comprising upper, middle and lower scissor beams pivotally connected end to end, the upper beam of said second group connected to the stage; and

means for extending and collapsing said first and second groups of scissor beams,

wherein each scissor beam of said first and second group is upwardly bent at the middle, and the scissor beams of said first group are pivotally connected to respective scissor beams of said second group at the beam middle, and

wherein the pivotal connections between the beam ends of each of said groups are alternately offset from each other and the pivotal connections between middle beams of said groups are alternately offset from each other, whereby scissor diamonds are formed having sides of unequal length by portions of the first and second groups of scissor beams.

5,056,627

HYDRAULIC ELEVATOR

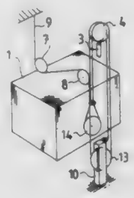
Raimo Pelto-Huikko, Vantaa, Finland, assignor to Kone Elevator GmbH, Baar, Switzerland

Filed Jun. 7, 1990, Ser. No. 534,641

Claims priority, application Finland, Jun. 9, 1989, 892843

Int. Cl.[5] B66B *9/04*

U.S. Cl. 187—20 **5 Claims**



1. A hydraulic elevator system comprising:

an elevator car for travelling vertically in an elevator shaft;

hydraulic actuator means, comprising a lifting cylinder having a movable piston, said actuator means being located in the elevator shaft, proximal to one lateral side of said elevator car;

a transversely extending beam fixed substantially in the middle of said elevator car roof, first and second rope pulleys rotatably supported by said beam and a compensating rope accommodated by said pulleys;

compensator means, mounted beside or below said hydraulic actuating means;

a diverting pulley carried by said movable piston;

a lifting rope having a first end fixed to said lateral side of the elevator car and a second end to said compensator means, said lifting rope engaging said diverting pulley, said compensating rope having a first end fixed to a fixed structure in the elevator shaft above and on the side opposite to said lateral side of the elevator car, and having a second end fixed to the compensator means, said compensating rope passing under the first pulley and above the second pulley.

5,056,628

APPARATUS AND METHOD FOR PROCESSING CALLS ENTERED IN ELEVATOR CARS

Michel Aime, Elancourt, France, assignor to Inventio AG, Switzerland

Filed Jul. 10, 1990, Ser. No. 550,394

Claims priority, application Switzerland, Jul. 11, 1989, 02583/89

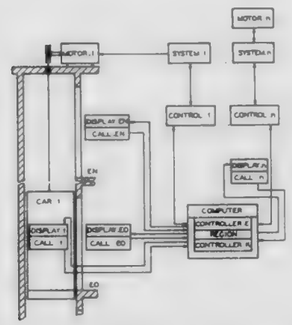
Int. Cl.[5] B66B *1/18*

U.S. Cl. 187—127 **19 Claims**

1. A method for processing destination calls entered in call registering devices in elevator cars of an elevator group, the cars having elevator controls with immediate allocation of destination calls entered on the floors served by the cars, comprising the steps of:

a. determining a value of the traffic volume of an elevator group from previously allocated destination calls by testing for at least low, average and high values of the traffic volume;

b. determining a trip distance from the position of a car destination call to be processed with respect to an elevator car of the elevator group in which said car destination call was entered;



c. comparing said car destination call with any destination calls allocated to the elevator car to determine coincidence; and

d. determining whether and when said car destination call is to be served by the elevator car based upon said value of traffic volume, said trip distance and any coincidence of said car destination call with a destination call allocated to the elevator car.

5,056,629

DISPLAY APPARATUS FOR ELEVATOR

Shintaro Tsuji, and Yasuhiro Nagata, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

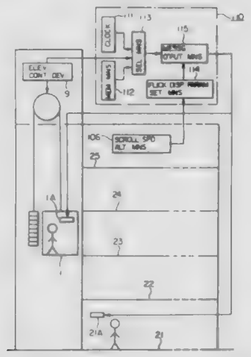
Filed Feb. 19, 1987, Ser. No. 16,388

Claims priority, application Japan, Feb. 25, 1986, 61-39614; Feb. 25, 1986, 61-39616; Mar. 20, 1986, 61-62656; Mar. 20, 1986, 61-62657

The portion of the term of this patent subsequent to Feb. 15, 2006, has been disclaimed.

Int. Cl.[5] B66B *3/00*

U.S. Cl. 187—139 **9 Claims**



1. In a display apparatus for an elevator having a display unit which is disposed in a cage or hall of the elevator, display control means for displaying a message to be reported to users in a designated display aspect of the display unit, and display aspect correction means connected to the display control means for designating the display aspect, said display aspect correction means comprising simulation means for simulatively displaying a predetermined message in an aspect corresponding to the designated display aspect.

5,056,630

WHEEL RIM FOR A BICYCLE

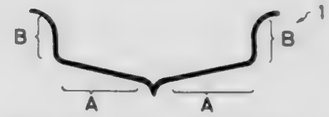
Yoshihiko Fujii, Tokorozawa; Bunji Mutoh, Kodaira; Yoshitaka Tamura, Saitama, and Kiyofumi Hirai, Ageo, all of Japan, assignors to Bridgestone Corporation and Bridgestone Cycle Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 50,253, May 13, 1987, abandoned. This application Mar. 7, 1989, Ser. No. 320,823

Claims priority, application Japan, May 27, 1986, 61-121839; Jun. 25, 1986, 61-148500

Int. Cl.[5] F16D *49/00;* **B22F** *7/00*

U.S. Cl. 188—24.13 **5 Claims**



1. A wheel rim for a bicycle with a brake shoe comprising a rim made of one of aluminum and stainless, and a layer directly spray-coated on the rim at a portion where the brake shoe contacts when stopping rotation of the wheel, said layer being formed of only ceramic materials and having a polished surface, the average roughness being 2.0–3.5 micra.

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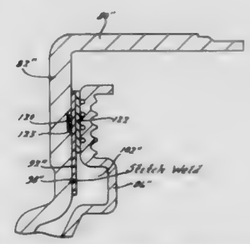
SLIPPING BYPASS CLUTCH CONSTRUCTION FOR A HYDROKINETIC TORQUE CONVERTER

Fraser J. Macdonald, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 377,032, Jul. 10, 1989, Pat. No. 4,969,543. This application Nov. 1, 1990, Ser. No. 576,567

Int. Cl.[5] F16H *45/02;* **F16D** *13/72*

U.S. Cl. 192—3.29 **5 Claims**



3. In a lockup clutch for a torque converter comprising an impeller shell enclosing a hydrokinetic turbine, an impeller and a lockup clutch plate connected to said turbine;

an annular friction disc having one margin located at a radially outward location, means for securing a second margin to the interior of said shell, and friction material on said disc adjacent a radially outward portion of said plate; and

a static seal ring between said disc and said shell preventing flow of fluid therebetween.

5,056,632

AUXILIARY-POWER-ACTIVATED CLUTCH AND GEAR-SHIFTING DEVICE

Norbert Lemp, Tettnang, and Rainer Petzold, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

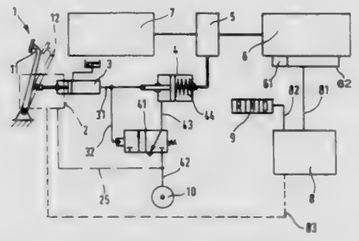
PCT No. PCT/EP88/00727, § 371 Date Jan. 31, 1990, § 102(e) Date Jan. 31, 1990, PCT Pub. No. WO89/01881, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 16, 1988, Ser. No. 458,688

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1987, 3728057

Int. Cl.[5] B60K *41/22*

U.S. Cl. 192—3.63 **2 Claims**



1. An auxiliary power actuated clutch and gear shifting device for a motor vehicle transmission (**6**) including a gear preselector and a gear change mechanism controlled by vehicle driver through a clutch actuated mechanism adjacent a clutch pedal (**1**); means for providing a response signal to the driver when a gear is engaged in the transmission (**6**) after the shifting of gears;

the improvement wherein:

a safety device (**2**) is provided mechanically connected with the clutch pedal (**1**) operative to hold an actuated clutch pedal (**1**) in the actuated position for restoration to idle position only when a gear has been engaged in the tansmission (**6**) or when the transmission (**6**) has been shifted into neutral; including a function selection device (**9**) independent of the gear shifting device and effective to shift the transmission (**6**) into neutral; wherein said safety device (**2**) has a clamping device (**210**) to secure the clutch pedal (**1**) in an actuated position when a gear is disengaged in the transmission (**6**) for the purpose of shifting gears and secures said clutch pedal (**1**) until a gear is again engaged in said transmission (**6**); wherein the clamping device (**210**) is held in clamped condition by a solenoid (**23**).

5,056,633

CENTRIFUGAL CLUTCH FOR A MOTOR VEHICLE DOORLOCK ACTUATOR

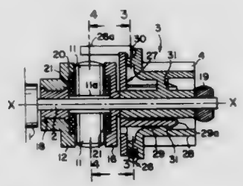
Jean P. Noel, St. Die, France, assignor to Rockwell-CIM, France

Filed Jan. 19, 1990, Ser. No. 467,438

Claims priority, application France, Jan. 24, 1989, 89 00820

Int. Cl.[5] F16D *13/10, 43/04*

U.S. Cl. 192—35 **4 Claims**



1. A centrifugal clutch (**3**) for an actuator for a motor-vehicle doorlock, intended to be interposed between an electric motor (**1**) and a gear train (**5**) for driving a prevention member, this clutch comprising at least one weight (**11**) which is arranged radially in a hub (**12**) fastened to an output shaft (**2**) of a motor (**1**) and is subjected to the action of an elastic member (**21**) for a return towards a disengaged position of rest and which is capable of being driven as a result of the rotation of the shaft (**2**) into an engaged position, in which it projects from the hub and is in engagement with means for transmitting the torque of the shaft (**2**) to the gear train, characterized in that the said transmission means comprise an elastic ring (**26**) mounted axially beyond the weight (**11**) in a direction away from the motor (**1**) to bear frictionally on a support (**27, 28**) coaxial relative to the output shaft (**2**) beyond the hub (**12**) and equipped with a driving pinion (**4**), and the ring (**26**) has two end parts (**26***a*) confronting one another and extending axially beyond said support (**27, 28**) to a position radially opposite the weight (**11**), in such a way that the weight can come to bear on the end parts when the weight is pushed as a result of a sufficient centrifugal force, the form of the end parts being such that the ring (**26**) can then drive the support (**27, 28**) and its pinion (**4, 28**) in rotation in either of the two directions of rotation of the motor.

5,056,634

CONTROL APPARATUS OF A REMOTE TYPE FREE WHEEL

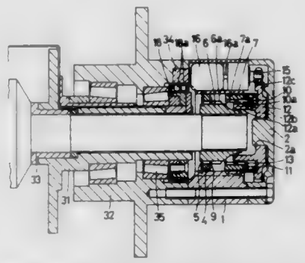
Masayoshi Shiba, Anjo, and Tooru Kagata, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 12, 1988, Ser. No. 242,902

Claims priority, application Japan, Sep. 12, 1987, 62-227569

Int. Cl.[5] B60K *23/08*

U.S. Cl. 192—40 **3 Claims**



1. A control apparatus for a remote type free wheel hub clutch for use in a vehicle capable of two-wheel and four-wheel operation comprising:

an inner sleeve integrally rotatable with a wheel axle,

a clutch ring integrally rotatable with said free wheel hub clutch,

actuating means for shifting between the two-wheel and the four-wheel drive operation of the vehicle by engaging and disengaging said clutch ring with said inner sleeve in response to a transfer shift position,

transfer shift position discriminating means for creating a shift signal which causes said actuating means to shift back and forth between the two-wheel and the four-wheel drive operation in response to an indicator signal from an indicator switch,

time limiting means for limiting a current flow to said actuating means for a predetermined time subsequent to receipt of said shift signal from said transfer shift position discriminating means,

electrical power source for providing a voltage to said actuating means, and

voltage detecting means for detecting said electrical power source voltage and preventing current from being transmitted to said actuating means until said electrical power source voltage exceeds a predetermined voltage.

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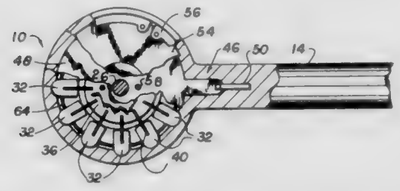
REVERSIBLE FREE WHEELING MECHANICAL DRIVE MECHANISM

John W. Grimsley, 201 NW. 41st St., Pompano Beach, Fla. 33064

Continuation-in-part of Ser. No. 335,887, Apr. 10, 1989, abandoned. This application Nov. 2, 1990, Ser. No. 608,198

Int. Cl.[5] F16D *41/08*

U.S. Cl. 192—43.2 **1 Claim**



1. A reversible, free-wheeling ratchet mechanism characterized as being shiftable from a first direction position to locked neutral position and to a second direction position, including in combination:

(a) driving means (**20**);

(b) drive locking means (**36**);

(c) a plurality of locking cams (**34**), each having a channel (**66**), a curved cam outer surface (**37**), and slot (**42'**);

(d) a plurality of flexible, resilient locking members (**40**) each engageable with a slot (**42**) in locking means (**36**) and with a slot (**42'**) in said locking cam (**34**);

(e) annular coiled spring means (**64**) extending through said channels (**66**);

(f) body means (**12**) having inner recesses (**30**) engageable with said cam surfaces (**37**);

(g) handle means (**14**) for moving said body means (**12**); and

(h) shifter means (**46**) connected to said drive locking means (**36**) for selecting first, locked neutral and second positions.

5,056,636

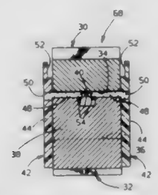
MODULAR LEG TYPE ROLLER CLUTCH WITH SNAP TOGETHER ASSEMBLY

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 7, 1991, Ser. No. 651,876

Int. Cl.[5] F16D *41/06*

U.S. Cl. 192—45 **3 Claims**



1. An overrunning roller clutch assembly, comprising,

a pathway race having a cylindrical pathway,

a cam race coaxially disposable relative to said pathway race, said cam race having a plurality of evenly circumferentially spaced legs extending toward said pathway at least one of which has an end with a generally centrally located groove therein and is radially spaced from said pathway,

a roller and energizing spring pair located between each pair of adjacent cam race legs,

a first cage member having a side plate abuttable with each of said races and a retention flange extending axially inwardly therefrom and sized so as to fit into the radial space between said pathway and cam race legs, said retention flange also having a flexible barb adapted to snap into said groove, and,

a second cage member having a side plate abuttable with each of said races and a retention flange extending axially inwardly therefrom and sized so as to fit into the radial space between said pathway and cam race legs, said retention flange also having a flexible barb adapted to snap into said groove,

whereby said races, rollers and springs may be retained together as a modular assembly by inserting said retention flange into the radial space between said pathway and cam race leg until said flexible barb enters said groove, thereby maintaining said side plates in abutment with said races and capturing said rollers and springs.

5,056,637

SYSTEM FOR CONTROLLING SPEED OF AN ENGINE FOR A MOTOR VEHICLE HAVING A CONTINUOUSLY VARIABLE TRANSMISSION

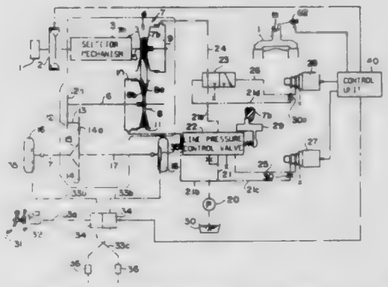
Motohisa Miyawaki, Kanagawa, and Hiroshi Tanaka, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1990, Ser. No. 628,174

Claims priority, application Japan, Dec. 28, 1989, 1-343302

Int. Cl.[5] B60K *41/02, 41/28*

U.S. Cl. 192—0.058 **4 Claims**



1. A system for controlling speed of an engine for a motor vehicle having a continuously variable belt-drive automatic transmission, an automatic clutch provided between the engine and the automatic transmission, an engine speed sensor for detecting speed of said engine, a wheel speed sensor for detecting speed of wheels of said vehicle, a hydraulic control system including an oil pump and a hydraulic circuit for controlling the transmission, the system comprising:

determining means responsive to the speed of the wheels for detecting a rapid deceleration of the wheels and for producing a wheel deceleration signal;

clutch release determining means responsive to said wheel deceleration signal for producing a clutch release signal when the engine speed is lower than a predetermined low speed;

clutch control means responsive to said clutch release signal for releasing said automatic clutch; and

actuating means responsive to said clutch release signal for increasing the speed of the engine, thereby maintaining sufficient output of said oil pump.

5,056,638

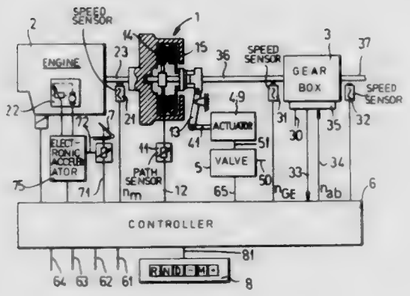
Patent Not Issued For This Number

5,056,639

DEVICE AND METHOD FOR THE CONTROL OF AN AUTOMATIC VEHICLE CLUTCH

Rainer Petzold, Friedrichshafen, and Norbert Wiencek, Hagnau, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 10, 1990, Ser. No. 581,396
Int. Cl.[5] B60K *41/02*
U.S. Cl. 192—0.076 11 Claims



1. A control system for control of a clutch of a motor vehicle connected between an engine and a transmission, the control system comprising the combination with said engine, said clutch and said transmission of:

a clutch actuator connected to said clutch for opening and closing said clutch and imparting a clutch-in movement to said clutch during closing of said clutch;

a transducing control element connected to said clutch actuator and transforming an electrical signal received by said transducing control element into a control signal for operating said actuator;

an electronic control device connected to said transducing control element and having means for storing a predetermined relationship between an accelerator-pedal position and a basic clutch-in speed V_{KG} for generating and applying said electrical signal to said transducing control element;

an accelerator pedal connected to said engine for controlling the acceleration thereof;

means coupled to said accelerator pedal and operatively connected to said electronic control device for supplying to said electronic control device a signal representing the instantaneous position of said accelerator pedal over an entire duration of a clutch-in process during which said clutch-in movement is applied to said clutch at least during startup of said vehicle, whereby said electrical signal represents a clutch-in speed determined by said position of said gas pedal in accordance with said relationship during said entire duration of the clutch-in process for said startup of said vehicle; and

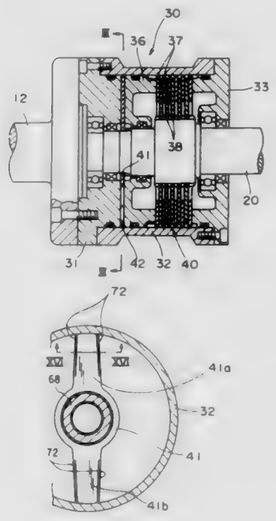
means for correcting the clutch-in speed determined by said position of said accelerator pedal and determining said electrical signal in accordance with the speed of said engine during said entire clutch-in process.

5,056,640

TORQUE TRANSMISSION DEVICE FOR A FOUR-WHEEL DRIVE VEHICLE

Masaji Yamamoto; Shigeo Tanooka, both of Okazaki; Toshifumi Sakai, Nukata; Nobunao Morishita, Okazaki, all of Japan, assignors to Toyota Motor Corporation, Aichi and Toyoda Koki Kabushiki Kaisha, Kariya, both of Japan

Division of Ser. No. 165,072, Mar. 7, 1988, Pat. No. 4,905,808.
This application Nov. 21, 1989, Ser. No. 439,429
Claims priority, application Japan, Oct. 5, 1987, 62-251305; Nov. 27, 1987, 62-297391; Dec. 26, 1987, 62-198046[U]
Int. Cl.[5] B60K *17/348*; F16D *25/02, 25/0638*
U.S. Cl. 192—85 AA 3 Claims



3. A torque transmission device having a rotational torque transmitting clutch provided between first and second rotation shafts for transmitting rotational torque between said first and second rotational shafts and a piston for operating said rotational torque transmitting clutch, said torque transmission device further comprising:

a rotary housing connected with said first rotational shaft for bodily rotation with said first rotational shaft and receiving said piston therein, said rotary housing defining between itself and said piston an axially narrow circular rotor chamber which is concentric with said first and second rotational shafts;

a rotor received within said rotor chamber and rotatable bodily with said second rotational shaft, said rotor having at least one radially extending blade portion for effecting fluid displacement when said rotor is rotated relative to said rotary housing, said at least one blade portion having a width substantially equal to a width of said rotor chamber between said rotary housing assembly and said piston; and

high viscous fluid filled within said rotor chamber for generating within said rotor chamber a pressure acting on said piston as a result of being displaced by said at least one blade portion when said rotor is rotated upon occurrence of relative rotation between said first and second rotational shafts,

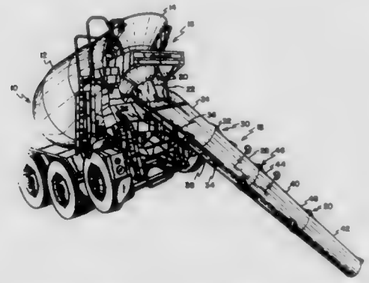
wherein said rotor is provided with portions producing a force as a result of rotation of said rotor to cause said rotor to be positioned at a mid portion position of said rotor chamber in the axial direction of said second rotational shaft during the rotation of said rotor.

5,056,641

EXTENSION CHUTE AND CONNECTION THEREFOR

William L. Loefke; Ronald E. Christenson, both of Kasson, and Garwin B. McNeilus, Dodge Center, all of Minn., assignors to McNeilus Truck and Manufacturing, Inc., Dodge City, Minn.

Filed Jan. 26, 1990, Ser. No. 470,915
Int. Cl.[5] B65G *11/00*
U.S. Cl. 193—2 R 17 Claims



1. A discharge chute of the type which is adapted for guiding a concrete mixture from a discharge end of a concrete mixer truck to a desired location, comprising:

an elongate chute wall having a concave inner guide surface and a convex outer surface;

means connected to said chute wall for reinforcing said chute wall against bending in the longitudinal direction; and

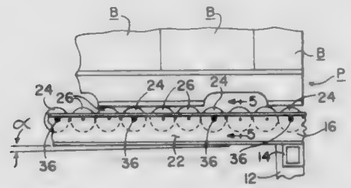
means adapted for joining an upstream end of said chute wall to an ancillary guide structure for receiving a concrete mixture; said reinforcing means and said chute wall being fabricated from a high strength, lightweight polymeric material which tends to remain smooth during wear.

5,056,642

ROLLER TRACK FOR STORAGE RACK, ROLLER CONVEYOR, OR SIMILAR APPARATUS

Charles E. Highsmith, Springfield, Tenn., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Sep. 13, 1990, Ser. No. 582,255
Int. Cl.[5] B65G *13/00*
U.S. Cl. 193—35 R 9 Claims



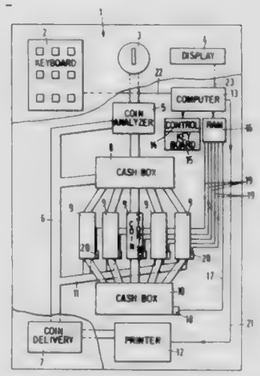
1. For a storage rack or roller conveyor, a roller track comprising two walls disposed in parallel relation to each other so as to define a space between the walls and a longitudinal array of freely rotatable rollers journalled between the walls in such manner that the rollers extend upwardly from the space between the walls, each roller having a spindle and being journalled on the spindle, the rollers being divided into a first group wherein the rollers are journalled on spindles bolted to and between the walls and a second group wherein the rollers are journalled on spindles held by but not bolted to the walls, wherein the rollers are arranged along a substantial portion of the roller track in a repeating pattern, in which every nth roller is a roller of the first group while every other roller is a roller of the second group, n being a whole number greater than one.

5,056,643

METHOD FOR RECORDING THE PLACEMENT OF REPLACEABLE, SELF-FILLING COIN-STORING UNITS

Bernd Kirberg, Mönchengladbach, Fed. Rep. of Germany, assignor to Scheidt & Bachmann Gesellschaft mit beschränkter Haftung, Mönchongladbach, Fed. Rep. of Germany

Continuation of Ser. No. 379,474, Jul. 13, 1989, abandoned. This application Feb. 25, 1991, Ser. No. 662,331
Claims priority, application European Pat. Off., Aug. 25, 1988, 88710022
Int. Cl.[5] G06F *15/30*
U.S. Cl. 194—202 2 Claims



1. A method for recording the placement of replaceable, self-filling coin-storing means within a number of automatic cashier vending-type machines for goods and services, whereby each one of said machines has at least one cash box, several of said coin-storing means for refunding money, and a computer that controls said machine, produces a balance, and is provided with a random access memory that is protected against loss of power, including the steps of:

encoding each of said automatic cashier vending-type machines with a respective code that identifies each of said automatic cashier vending-type machines;

providing each of said coin-storing means with an electronic memory that is protected against loss of data;

inserting a respective one of said coin-storing means into a first one of said automatic cashier vending-type machines and storing said respective code in said memory of said respective coin-storing means;

removing said respective coin-storing means from said first automatic cashier vending-type machine after use;

inserting said respective coin-storing means into further ones of said automatic cashier vending-type machines, storing said respective code in said memory of said respective coin-storing means, and removing said respective coin-storing means from said further automatic cashier vending-type machine after use;

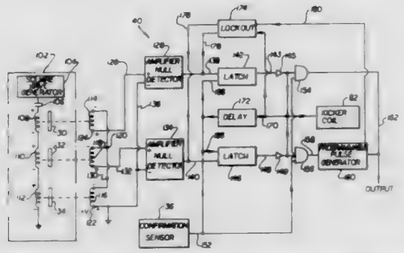
reading said respective codes stored in said electronic memory of said respective coin-storing means after a completed working cycle to facilitate searching for balance of account errors.

5,056,644

COIN ANALYZER SYSTEM AND APPARATUS

Donald O. Parker, 1003 Spring St., Grand Rapids, Mich. 49503

Continuation of Ser. No. 231,697, Aug. 12, 1988, Pat. No. 4,884,672. This application Aug. 7, 1989, Ser. No. 390,522
The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.
Int. Cl.[5] G07D *5/08*; G07F *3/02*
U.S. Cl. 194—318 **12 Claims**



9. A method of determining whether a tested coin is substantially identical to any one of a plurality of sample coins comprising the steps of:

generating a magnetic field;

positioning each of said sample coins in sample coin zones of said magnetic field and a tested coin in a tested coin zone of said magnetic field;

detecting the intensity of said magnetic field in each of said zones;

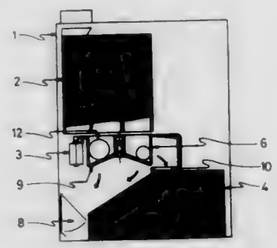
simultaneously comparing the intensity of said field in said tested coin zone with the intensity of said magnetic field in each one of said sample coin zones.

5,056,645

COIN OPERATED TELEPHONE PAYMENT DEVICE

Felix G. Vidondo, Peralta, Spain, assignor to Jofemar, S.A., Peralta, Spain

Continuation-in-part of Ser. No. 358,719, May 26, 1989, abandoned. This application Aug. 21, 1990, Ser. No. 570,866
Claims priority, application Spain, May 31, 1988, 8801709
Int. Cl.[5] G07F *9/04*
U.S. Cl. 194—346 **1 Claim**



1. A telephone payment device for use in a coin-operated telephone wherein the user inserts a series of coins of an identical or different value to pay for the telephone call, the telephone having a coin value selector with a coin outlet, a coin return box, and a coin collection box, the device comprising:

a provisional coin receptacle made up of a cylindrical body provided with a series of radial compartments able to position themselves successively under the coin outlet of the coin value selector for the depositing of a coin from the selector into a compartment, said compartments being open at the bottom;

a conical body mounted below the cylindrical body so as to normally block the open bottom of the cylindrical body to prevent coins from passing therethrough, said conical body having an inclination towards the perimeter with a plurality of slots in the conical body, whereby, upon rotating the conical body slightly with respect to the cylindrical body, the slots align with the open bottom of the cylindrical body so as to allow coins contained in the compartments to pass to the return box; and

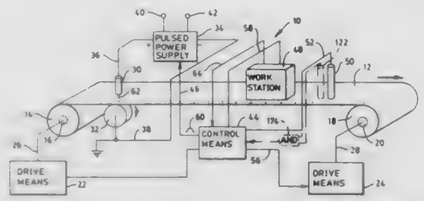
a payment door laterally adjacent the cylindrical body to allow a coin from a compartment to pass to the collection box.

5,056,646

ELECTROSTATIC-TYPE REGISTRATION SYSTEM

Semyon Kisler, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 645,993, Aug. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 364,658, Apr. 2, 1982, abandoned. This application Dec. 24, 1990, Ser. No. 633,015
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—341 **11 Claims**



1. Apparatus for positioning an article having a dielectric element arranged to move in unison therewith and capable of retaining a long-duration dipole-type electrostatic charge, the article being adapted to be positioned at a selected location for performance of a given operation therewith when a given reference frame of the article is in registration with a given reference frame of the selected location, said apparatus comprising:

means for defining a selected location for the performance of the given operation with the article;

means for conveying the article towards said selected location;

charging means for applying an electric dipole-type electrostatic charge in a limited area at a predetermined location on the element, said charging means including at least a pair of electrodes and a voltage source connected between said electrodes having a magnitude less than that required to produce visible light in the vicinity of at least one of said electrodes, the charge being in a fixed spacial relation to the given reference frames of the article;

sensing means for sensing the electric dipole-type electrostatic charge;

means for mounting said sensing means in a predetermined relation to said given reference frame of said selected location in correspondence with the fixed spacial relation of the limited area charge to the given reference frame of the article and in position to sense the dipole-type electrostatic charge as the article is moved into a given proximity therewith; and

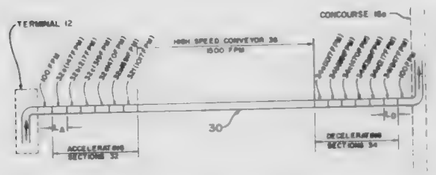
control means for controlling the operation of said conveying means to terminate the advancement of the article in accordance with the sensing of the dipole-type electrostatic charge by said sensing means whereby the advancement of the article is terminated when the given reference frame of the article is in registration with said given reference frame of said selected location.

5,056,647

HIGH-SPEED CONVEYOR BAGGAGE HANDLING SYSTEM

Werner Rosenbaum, New York, N.Y., assignor to London & Egazarian Associates, Inc., Rye Brook, N.Y.

Filed Apr. 16, 1990, Ser. No. 509,971
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—460 **31 Claims**



1. A high-speed conveyor system for rapidly conveying articles of baggage at an airport terminal facility over relatively long distances between an airport passenger terminal area and concourse areas at which arriving and departing aircraft are parked, the system comprising:

a terminal area at which outbound baggage articles and inbound baggage articles are deposited;

a number of aircraft concourse areas remote from said terminal area and at which inbound baggage articles are unloaded from and outbound baggage articles are loaded onto aircraft situated at the concourse areas;

first accelerating conveyor means in the region of the terminal area for receiving outbound baggage articles to be transported to the concourse areas, including a plurality of accelerating conveyor belt sections arranged in tandem for transporting a number of outbound baggage articles received at an upstream end of a first one of the accelerating conveyor belt sections to a downstream end of a last one of said accelerating conveyor belt sections of the first accelerating conveyor means;

first accelerating drive means for driving the accelerating conveyor belt sections of said first accelerating conveyor means at successively increasing rates of speed from the first to the last one of the accelerating conveyor belt sections;

first high-speed conveyor means for receiving outbound baggage articles from the downstream end of the last one of the accelerating conveyor belt sections of said first accelerating conveyor means, including at least one high speed conveyor belt section for transporting received outbound baggage articles at a relatively high rate of speed to a downstream end of the first high speed conveyor means;

first decelerating conveyor means in the region of the concourse areas for receiving outbound baggage articles from the downstream end of the first high speed conveyor means, including a plurality of decelerating conveyor belt sections arranged in tandem for transporting outbound baggage articles from an upstream end of a first one of the decelerating conveyor belt sections to a downstream end of a last one of the decelerating conveyor belt sections of said first decelerating conveyor means;

first decelerating drive means for driving the decelerating conveyor belt sections of said first decelerating conveyor means at successively decreasing rates of speed from the first to the last one of the decelerating conveyor belt sections;

passageways extending between said terminal area and said concourse areas, and wherein said first high-speed conveyor means are confined in said passageways;

pairs of said high-speed conveyor means are arranged parallel to one another in said passageways; and

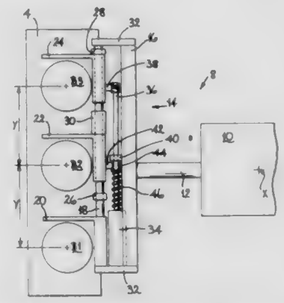
wherein each of the parallelly arranged high-speed conveyor means includes high-speed drive means for driving the associated high-speed conveyor belt sections, the drive means of the parallel high-speed conveyor means protruding sideways toward one another from the associated belt sections and being mutually staggered with respect to one another along the direction of the belt sections to permit movement of persons along service aisles between the parallel high-speed conveyor means.

5,056,648

PUSH CUT DEVICE

Robert Huber, Wettingen, and Vladimir Vajda, Nussbaumen, both of Switzerland, assignors to Emhart Glass Machinery Inc., Windsor, Conn.

Filed Mar. 26, 1991, Ser. No. 675,308
Claims priority, application United Kingdom, Apr. 6, 1990, 9007853
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—468.01 **4 Claims**



1. A push out device adapted for use with a multigob glassware forming machine to remove moulded containers from a dead plate of the machine to a conveyor comprising

a pusher head,

rotary means on which the pusher head is mounted and which is arranged to rotate the pusher head from an orientation in which it faces the dead plate to an orientation in which it faces the conveyor,

at least two pusher fingers mounted in the pusher head

means for moving the pusher fingers between an operative, extended, position and a retracted position,

the pusher fingers being mounted for relative movement in the direction of the line of the containers

and means for causing such relative movement of the pusher fingers between the lime when the fingers contact containers on the dead plate and the time when the fingers release the containers on the conveyor so that the spacing of the containers on the conveyor is varied from the spacing of the containers on the dead plate.

5,056,649

MECHANISM FOR INVERTING CARRIER

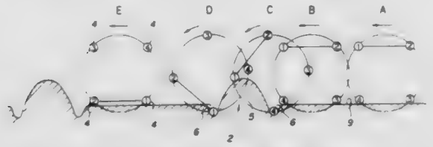
Mamoru Oshida, Funabashi; Masaru Oizumi, Tokyo, and Yoshiyuki Ichizawa, Soka, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 478,428, Feb. 12, 1990, abandoned. This application Feb. 14, 1991, Ser. No. 655,280
Claims priority, application Japan, Apr. 11, 1990, 1-34078
Int. Cl.[5] B65G *47/40*
U.S. Cl. 198—706 **2 Claims**

1. A mechanism for inverting a carrier in which a plurality of carriers are connected to an endless chain and transferred along a loop track, said mechanism comprising:

a body for inverting which includes a plate member fixed to each carrier and at least four inverting elements rotatably supported on the plate member at circumferential positions spaced equidistant from each other: and

at least one inverting cam including at least one projection formed on a track rail on which the inverting elements of



the body roll to guide the inverting elements so as to invert the body and grooves formed in the track at the front and rear sides of the projection.

5,056,650

VESSEL TREATMENT MACHINE

Hermann Kronseder, Regensburger Strasse 42, D-8404 Wörth/Donau, Fed. Rep. of Germany

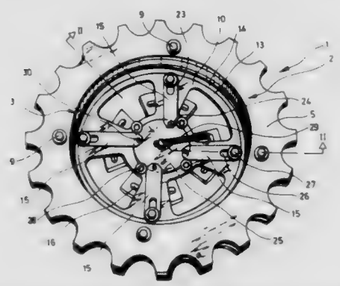
PCT No. PCT/EP88/01022, § 371 Date Oct. 13, 1989, § 102(e) Date Oct. 13, 1989, PCT Pub. No. WO89/04289, PCT Pub. Date May 18, 1989

PCT Filed Nov. 11, 1988, Ser. No. 425,171

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, 8715020[U]

Int. Cl.[5] B65G *35/00*

U.S. Cl. 198—723 **19 Claims**



1. A vessel treatment machine comprising a machine frame and a transport star, which is arranged on said machine frame such that it is adapted to be driven and which includes a star-shaped collar consisting of several outer star-shaped rings, which are arranged one on top of the other, and an inner flange plate, which is concentric with said star-shaped collar and which is located on the level of the lower star-shaped ring, the star-shaped collar being adapted to be secured to said flange plate via an inwardly directed rim and said flange plate being connected to a drive shaft, characterized in that the flange plate (**10**) is fixedly connected to the drive shaft (**12**) and that the outer rim (**13**) of the flange plate (**10**) has attached thereto quick-locking bars (**15**) which hold the inner rim (**14**) of the star-shaped collar (**3**).

5,056,651

FLIGHT FOR COLLECTING SLUDGE BY SWEEPING AND ROLLER SHOE FIXED THERETO

Hiromitsu Nagamatsu, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 1, 1990, Ser. No. 590,719

Claims priority, application Japan, Apr. 19, 1990, 2-41888

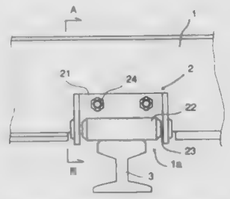
Int. Cl.[5] B65G *19/00*

U.S. Cl. 198—725 **2 Claims**

1. A roller shoe fixed to a flight for collecting sludge by sweeping, comprising:

(a) a frame having a substantially U-shaped across section, which has a pair of side plates, one side plate being provided with a first aperture, a first annular outward projection around said first aperture and a first center recess inside said first annular outward projection, and the other side plate being provided with a second aperture, a second annular outward projection around said second aperture and a second center recess inside said second annular outward projection;

(b) a shaft having a diameter-enlarged portion at one end and a threaded portion at the other end, said diameter-enlarged portion portion engaging said first center recess



without projecting from said first annular outward projection such that the rotation of said shaft is prevented, and said threaded portion projecting from said second aperture and being fastened to a threading means inside said second center recess so that said shaft is fixed to said frame; and

(c) a roller rotatably supportd by said shaft between the side plates,

wherein said frame is constituted by an injection-molded synthetic resin, and said roller is made of a synthetic resin.

5,056,652

VIBRATORY CONVEYOR

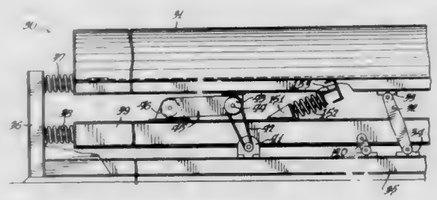
Richard R. Kraus, and Albert Musschoot, both of Barrington, Ill., assignors to General Kinematics Corporation, Barrington, Ill.

Continuation of Ser. No. 412,468, Sep. 26, 1989, abandoned, which is a division of Ser. No. 170,637, Mar. 16, 1988, abandoned, which is a continuation of Ser. No. 856,571, Apr. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 531,036, Sep. 12, 1983, Pat. No. 4,611,709, which is a division of Ser. No. 401,736, Jul. 26, 1982, Pat. No. 4,428,476, which is a continuation of Ser. No. 175,883, Aug. 6, 1980, abandoned, which is a continuation-in-part of Ser. No. 53,855, Jul. 2, 1979, abandoned. This application Jul. 24, 1990, Ser. No. 559,492

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.[5] B65G *27/28*

U.S. Cl. 198—760 **3 Claims**



1. A vibratory conveyor comprising:

an elongated material-carrying member;

a base;

a plurality of parallel legs supporting the material-carrying member with each leg having one end pivotally secured to the material-carrying member and the other end pivotally secured to the base;

a plurality of isolation springs, each isolation spring having one end connected to the material-carrying member and the other end connected to the base;

an exciter member, said exciter member being elongated in the direction of the elongation of the material-carrying member and said exciter member having a mass equal to approximately one-half of the mass of the material-carrying member;

a second plurality of isolation springs, each of said second plurality of isolation springs having one end connected to the exciter member and the other end connected to the base;

a plurality of parallel arms pivotally connected at one end to the exciter member and at the other end connected to the base;

means suspending the exciter member from the material-carrying member, said suspending means comprising a plurality of force transmitting springs, each of said force transmitting springs having one end secured to the exciter member and the other end secured to the material-carrying member; and

means for vibrating the exciter member at a rate and magnitude to produce vertical acceleration on material carried by the material-carrying member less than the acceleration of gravity, said means for vibrating the exciter member comprising motor means on the base, an eccentric shaft carried by the material-carrying member and driven by said motor means, bracket means mounted on said exciter member, crank means connecting said eccentric shaft to said bracket through a resilient means, whereby vibratory forces are transmitted from the eccentric shaft to the exciter member by shear of the resilient means, said exciter member and material-carrying member forming a two-mass system having a natural frequency.

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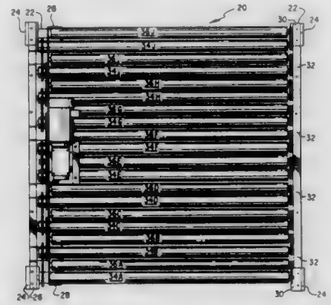
ROLLER CONVEYOR

William G. Lancaster, Louisville, Ky., assignor to Lantech, Inc., Louisville, Ky.

Filed Jan. 19, 1990, Ser. No. 467,368

Int. Cl.[5] B65G *13/07*

U.S. Cl. 198—790 **28 Claims**



1. A conveyor comprising:

a frame;

a series of closely spaced rollers mounted on the frame, each roller having an outer circumferential surface, a first end portion on a first side of the conveyor and a second end portion on a second side of the conveyor, the rollers including master rollers and slave rollers interspersed between the master rollers;

a drive train for driving every roller in the series of rollers, the drive train including a primary drive train for driving the master rollers and secondary drive trains for driving the slave rollers from respective master rollers, the primary drive train including primary drive elements located on the master rollers and means for connecting and driving the primary drive elements, the primary drive elements and the means for connecting and driving the primary drive elements together forming an effective outer radius for each primary drive element, the secondary drive train including secondary drive elements located on the rollers and means for connecting and driving the secondary drive elements, the secondary drive elements and the means for connecting and driving the secondary drive elements together forming an effective outer radius for each secondary drive element, the effective outer radius of each of the primary drive elements being greater than the radial distance from the center of the roller on which it is located to the outer circumferential surface of the nearest roller in the series of rollers, the effective outer radius of each of the secondary drive elements being less than the radial distance from the center of the roller on which it is located to the outer circumferential surface of the nearest roller in the series of rollers.

5,056,654

MAGNETIC CONVEYOR SYSTEM

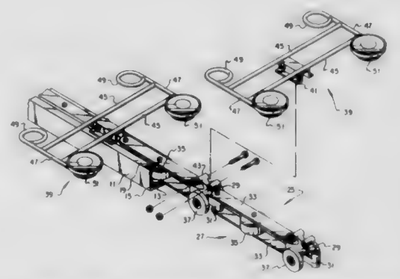
John P. Kasik, Dallas, Tex., assignor to Stewart Systems, Inc., Plano, Tex.

Continuation of Ser. No. 320,492, Mar. 8, 1989, Pat. No. 4,972,941, which is a continuation of Ser. No. 59,600, Jun. 8, 1987, Pat. No. 4,836,360. This application Sep. 7, 1990, Ser. No. 578,539

The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—803.6 **20 Claims**



1. A center driven chain conveyor for use in a food processing apparatus comprising:

an elongate track;

a conveyor chain;

drive means for advancing the conveyor around a predetermined course including at least one arcuate section;

a plurality of grids coupled to said conveyor chain at predetermined intervals;

a plurality of magnets, each of said magnets being mounted on one said grid for securing food conveying pans to the grids for transport around said predetermined course, said magnets being mounted for limited movement in a horizontal plane relative to said grid.

5,056,655

HIGHWALL MINER WITH CONVEYOR MODULE

James C. Justice, Beckley, W. Va., assignor to Coaltex, Inc., Beckley, W. Va.

Filed Oct. 4, 1990, Ser. No. 592,968

Int. Cl.[5] B65G *21/14*

U.S. Cl. 198—812 **20 Claims**

1. A conveyance module associated with a mining machine for conveying mining material from a bore out to a bore mouth, said module comprising:

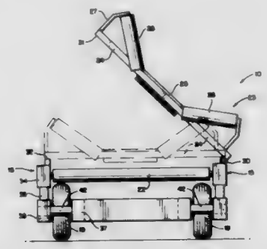
a carriage frame having a front, rear, top, and sides;

mobile means mounting said carriage frame for movement into a bore, front first;

a plurality of conveyor belt supporting return rollers extend-

ing between said frame sides below said top, and spaced from each other from front to rear along said frame;

a plurality of conveyor belt supporting trough roller sets mounted at the top of said frame, above said return rollers, said sets spaced from each other front to rear along said frame; and



means for mounting said sets for pivoted movement about a horizontal axis at one side of said frame, said axis parallel to a center line from the front to the rear of said frame, so that each said set may be pivoted up to expose said return rollers and allow the return portion of an endless conveyor belt to contact said return rollers.

5,056,656

STORAGE STRIP FOR GEMS OR OTHER SMALL PIECES

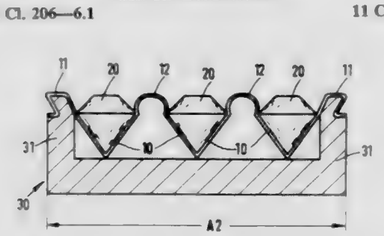
Martin Pöll, Fritzens, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Filed Apr. 3, 1990, Ser. No. 504,115

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912336

Int. Cl.[5] **B65D** *83/00*

U.S. Cl. 206—6.1 **11 Claims**



1. A storage strip (**1**) for small pieces, comprising a plastic sheet having depressions (**10**) receiving the small pieces (**20**), the depressions (**10**) conforming in shape with at least part of the profile of the small pieces (**20**) to be positioned therein and being disposed in rows, said sheet including lips (**11, 12**) provided adjacent the depressions (**10**), and engaged in the closed state, over the positioned small pieces (**20**) to thereby fix them is position, and the holding lips (**11, 12**) are adapted to be disengaged from the small pieces (**20**) by elastic deformation, characterized in that the holding lips (**11, 12**) extend continuously in the longitudinal or transverse direction of the storage strip (**1**) and have a profile that is continuously open downwardly, so that they can be disengaged from the small pieces (**20**) by stretching the storage strip (**1**) perpendicular to the direction in which the holding lips (**11, 12**) are disposed.

3. An orienting means for orienting a plurality of small, identical objects in rows, the orienting means comprising:

a sheet, the sheet being easily elastically deformable, the sheet having depressions in the form of rows, the depressions having side walls, the depressions adapted for receiving a plurality of identical small objects, each of the identical small objects being received into the depressions in an identical orientation, the associated small objects being removable by elastic deformation of the sheet in a direction perpendicular to the rows.

8. A method of removing small pieces from a storage strip by means of a guide track and adhesive or suction means, the storage strip comprising resilient outer holding lips and depressions, the guide track including side legs, a run-in portion with converging side legs and a removal portion with diverging side legs, the method comprising the steps of introducing side legs (**31**) of a guide track (**30**) into outer holding lips (**11**) of a storage strip (**1**), moving the storage strip (**1**) along the guide track (**3**) from a run-in portion (**301**) with converging side legs (**31***a*) to a removal portion (**302**) with diverging side legs (**31***b*), spreading apart the outer holding lips (**11**) against their resilient prestressing in the transverse direction of the storage strip as the outer holding lips run through the removal portion (**302**) of the guide track (**30**), and removing the small pieces (**20**) from the depressions (**10**) using adhesive or suction means in the spread-apart position of the outer holding lips (**11**).

11. A guide track for removing small identical objects from a storage means, the storage means having outer holding lips, the guide track comprising:

a run-in portion, the run-in portion having generally parallel side legs which cooperate with the outer holding lips to maintain the distance therebetween;

a transition portion, the transition portion having diverging side legs; and,

a removal portion having generally parallel side legs, the distance between the side legs of the removal portion being greater than the distance between the side legs of the run-in portion, the larger distance spreading the outer holding lips to facilitate removal of the small identical objects.

5,056,657

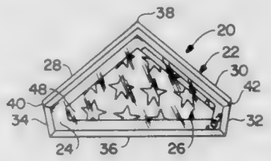
DISPLAY CASE FOR A FOLDED MEMORIAL FLAG

Lawrence Frye, 1902 Spillertown Rd., Marion, Ill. 62959

Filed Nov. 1, 1990, Ser. No. 607,708

Int. Cl.[5] **B65D** *25/00*

U.S. Cl. 206—45.34 **18 Claims**



1. A casing for displaying a folded memorial flag comprising:

a backing member having a peripheral edge;

siding means extending essentially perpendicular to the peripheral edge of said backing member, said siding means having a rearward edge and a forward edge;

securement means for securing the rearward edge of said siding means to said backing member;

a transparent front facing having a peripheral edge in contact with said siding means such that said transparent facing is closer to the forward edge of said siding means than to the rearward edge of said siding means; and

said siding means, backing member, and transparent front facing being dimensioned and arranged so as to compress the memorial flag in a fixed position between said facing and backing member, and said siding means including a planar support section and said securement means includes a hinge member pivotably connecting said planar support section to said backing member, and said securement means including a fastening device for releasably securing said backing member to said siding means so as to prevent pivoting of said backing member about said planar support section.

5,056,658

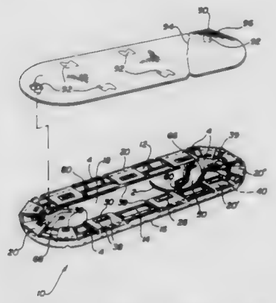
ONE PIECE CHANNEL SUTURE PACKAGES

Martin Sobel, Flemington; Stephen George, Wayne; Anthony Esteves, Somerville, all of N.J.; Robert J. Cerwin, Pipersville, Pa.; Marvin Alpern, Glen Ridge, and Robert A. Daniele, Flemington, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 406,223, Sep. 12, 1989, Pat. No. 4,967,902. This application Aug. 6, 1990, Ser. No. 563,236

Int. Cl.[5] **A61B** *17/06*

U.S. Cl. 206—63.3 **5 Claims**



1. A suture package including a floor describing an outer suture winding channel surrounding a central area, and a needle holder comprising: a wall projecting from a portion of said central area, said wall interrupted by at least one break, said break formed by a pair of tapered ends in said wall, said tapered ends facing each other across said break to enable a suture needle to fit therein.

5,056,659

PRIZE HOLDING CONTAINER ASSEMBLIES

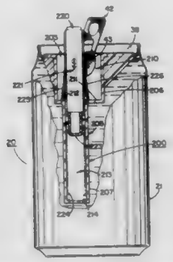
James P. Howes, 33 Cedar Rd., and Rocco Noschese, 35 Wilton Woods Rd., both of Wilton, Conn. 06897

Continuation-in-part of Ser. No. 250,755, Sep. 28, 1988. This application Mar. 12, 1990, Ser. No. 491,947

The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.

Int. Cl.[5] **B65D** *1/24*

U.S. Cl. 206—217 **36 Claims**



1. A container assembly, for use in association with liquid, semi-liquid and moist products, constructed for housing a prize award and being randomly distributed with non-prize bearing containers without being detected by the consumer prior to opening thereof, said container assembly comprising:

A. an outer surface defining shell

a. identical in appearance to the product bearing shell normally employed for the liquid, semi-liquid or moist product;

b. defining an internal retaining zone; and

c. comprising at least one entry portal formed at one end thereof;

B. closure means cooperatively associated with the outer shell for closing the entry portal thereof;

C. means positioned in the retaining zone for providing the container assembly with the sound, weight and feel of the product normally contained therein;

D. holding means cooperatively positioned in association with the retaining zone in cooperating relationship to the entry portal for securely retaining a prize award; and

E. a prize award positioned in secure, secret, and undiscoverable retention with the holding means and remaining undiscoverable until the container assembly is opened for gaining access to the internal retaining zone;

whereby a prize award holding container assembly for liquid, semi-liquid and moist products is achieved for being randomly distributed with non-prize bearing, product-holding containers without fear of being detected by the consumer prior to opening thereof.

5,056,660

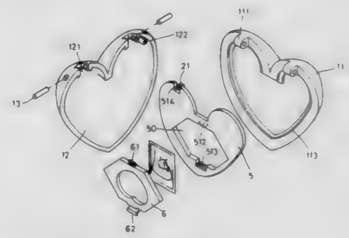
STRUCTURE OF MUSIC GIFT BOX

Andy Huang, No. 11, Lane 37, Sec. 4, Chung Yang Road, Tucheng Hsiang, Taipei, Taiwan

Filed Aug. 10, 1990, Ser. No. 565,391

Int. Cl.[5] **G09F** *25/00;* **G10F** *1/00*

U.S. Cl. 206—232 **2 Claims**



1. A music gift box, comprising:

a box of predetermined shape, including a first shell and a second shell and means for pivotally connecting the shells together, said second shell having a projecting strip extending toward said first shell;

a cover board mounted on said first shell, said cover board having a recess and means mounted to the recess for holding a picture in the recess for display, said cover board further including a circuit board, a battery holder and a speaker mounted thereon, said circuit board having a contact switch respectively connected to said battery holder and said speaker;

wherein said projecting strip of said second shell is positioned to press said contact switch to stop the operation of said circuit board when said first and second shells are closed together; said projecting strip of said second shell being released from said contact switch permitting said circuit board to produce music for output through said speaker when said second shell is opened relative to said first shell.

5,056,661

TOOL CADDY

Alfiero Balzano, 11762 (O) Western Ave., Stanton, Calif. 90680

Continuation-in-part of Ser. No. 338,763, Apr. 17, 1989, and a continuation-in-part of Ser. No. 180,233, Apr. 11, 1988, abandoned. This application Oct. 15, 1990, Ser. No. 597,568

Int. Cl.[5] **B65D** *85/28*

U.S. Cl. 206—372 **1 Claim**

1. In a tool caddy for releasably retaining a variety of hand

tool implements and accessories on a contoured support comprising the combination of:

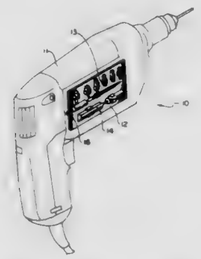
an elongated base sheet of flexible and bendable material having a top externally and visibly exposed flat surface;

retaining means fixedly carried on said flexible base sheet flat surface in spaced-apart relationship for removably holding small hand tool implements and accessories thereon;

said retaining means including a plurality of pronged clips outwardly projecting from said base sheet flat surface and each clip of said plurality having resilient prong elements defining a yieldable wedge entrance for insertably receiving said tool implements and accessories for frictional retention on said base sheet flat surface;

selected ones of said hand tool implements and accessories provided spaced-apart grooves aligned with aid spaced prong elements for insertably receiving said prong elements therein;

selected ones of said pronged clip elements arranged in linear spaced-apart pairs so as to combine and cooperate in the retention of said tool implements and accessories;



a contoured support having an exposed shaped exterior surface for releasably supporting said bendable base sheet and visibly exposing said tool implements and accessories;

pliable attachment means of a hook and pile fastener type carried on a reverse surface of said base flat sheet for detachably mounting said base sheet including said hand tool and accessories onto said contoured support and being characterized as bendable in cooperation with said base flat sheet so as to conform with said contoured support;

selected ones of said clip prongs having insert protective means carried on each of said pair of prong elements as a barrier between an inserted tool implement and said prong element;

a selected number of pairs of prong elements are disposed normal to a non-selected number of prong elements; and

said insert protective means being magnetic and carried on said prongs to generate magnetic flux loops releasably retaining said tools and accessories in combination with said resilient prong elements and said yieldable wedge.

5,056,662

WIDE ABRASIVE BELT CARTON

Kyle D. Lasenby, Eagan, and John J. Frautschi, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 26, 1990, Ser. No. 543,693
Int. Cl.[5] B65D *85/67*
U.S. Cl. 206—395 **17 Claims**

1. A two-way opening packaging carton for enclosing and protecting a plurality of endless abrasive belts wound about an axis into a coil having axially spaced edges, the packaging carton comprising:

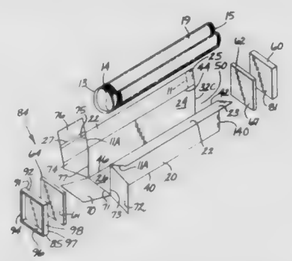
an elongate box including walls comprising:

four elongate side walls each having opposite first and second ends and opposite edges, each of said side walls being joined along said edges to the edges of two other of said side walls to form a tubular main portion of said box having a longitudinal axis, first and second ends, and inside and outside surfaces;

an end wall disposed generally radially of said axis and attached adjacent the second ends of said side walls to close the second end of said tubular main portion of said box, said end wall having an inner surface adjacent the inner surface of said main portion of said box;

a plurality of flaps each being integral with a different one of said side walls, being joined to the side wall at said first end along a fold line perpendicular to said longitudinal axis of said tubular main portion, and being movable by being bent along said fold line between a closed position with the flap being disposed about radially of said longitudinal axis to close the first end of said tubular main portion, and an open position spaced from the first end of said tubular main portion to afford removal of the abrasive belts axially of the main portion of the box;

manual opening means extending axially along one of said



side walls and transversely across said one side wall adjacent at least one of said first and second ends for affording manual separation of said one side wall into first and second portions pivotal to a position affording removal of abrasive belts from said container assembly between said portions;

a fixed resiliently compressible protective pad adapted to conform to one edge of the coil of endless abrasive belts, said protective pad having a rear major surface attached along the inner surface of said end wall and an opposite front surface;

a removable resiliently compressible protective pad adapted to conform to the other edge of the coil of endless abrasive belts, said removable protective pad having front and rear major surfaces; and

means for removably positioning said removable resiliently compressible protective pad adjacent the second ends of said side walls with the front surface of the removable pad facing the front surface of the fixed pad.

5,056,663

ADJUSTABLE PROTECTIVE BOOK COVER AND METHOD

Michael J. Ostrowski, 91 Old Toll Rd., West Barnstable, Mass. 02668

Continuation-in-part of Ser. No. 552,794, Jul. 16, 1990, abandoned. This application Sep. 26, 1990, Ser. No. 588,271
Int. Cl.[5] B42D *3/04*
U.S. Cl. 206—424 **29 Claims**

1. An adjustable, protective cover for books and other publications, which book cover comprises:

a) a generally rectangular, foldable, protective sheet cover material to protect the exterior surface of a book, the cover material having a top edge, a bottom edge and a one and the other side edges and having a front and a back surface;

b) four hook and loop elongated strip fastener means secured to the cover material and extending from each of the top and bottom edges and adjacent the one and the other sides and adapted on folding over toward each other to engage in a releasably, fastening, overlapping arrangement to provide for connected side strips adjacent the one and the other sides of the cover material so as to provide for the insertion of a cover of a book to be protected therein on either side;

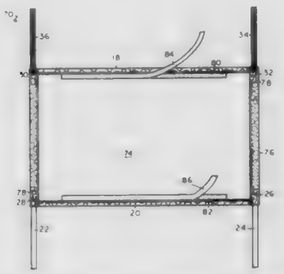
c) a plurality of hook and loop tab materials secured to the back surface of the book cover material, each tab material having a hook and a loop section therein adapted on the folding over of the top and bottom edges of the cover material to form an overlapping, releasably fastened edge which can be adjusted to the length of the book to be covered;

whereby the side edges of the cover material secured together by the elongated strip material may be folded over to form side pockets for the book cover to be received therein and wherein the tab materials provides for the folding down of the top and bottom edges to adjust to the length of the book to be covered thereby providing an adjustable book cover.

16. An adjustable, protective cover for books and other publications, which book cover comprises:

(a) a generally rectangular, foldable, protective sheet cover material to cover the exterior surface of a book, the cover material having a top edge, a bottom edge and a one and the other side edges and having a front and a back surface;

(b) four strip fastener means secured to the cover material and extending from each of the top and bottom edges at about the one and the other sides and adapted on folding



over toward each other to engage in a releasably, fastening, overlapping arrangement to provide for connected side strips adjacent the one and the other sides of the cover material so as to provide side pockets for the insertion of a cover of a book to be protected therein on either side; and

(c) length-adjusting fastening means secured to the back surface of the book cover material and generally adjacent the top and bottom edges of the cover material, and adapted on the folding over of the top and bottom edges of the cover material to form an overlapping, releasably fastened edge to the inside surface of the cover material adjusted to the length of the book to be covered;

whereby the side edges of the cover material secured together by the strip fastener means may be folded over to form side pockets to the book cover to be received therein and wherein the length-adjusting fastener provides for the folding down of the top and bottom edges to adjust to the length of the book to be covered thereby providing an adjustable book cover.

28. A method of covering a book or a publication, which method comprises:

(a) folding over the top and bottom edges of the book cover of claim **16** to a defined book length distance and securing the folded over edges by the length-adjusting fastening means;

(b) securing the strip fastener means to form side pockets for the book covers;

(c) folding over the side edges of the cover material to fit the width of the book; and

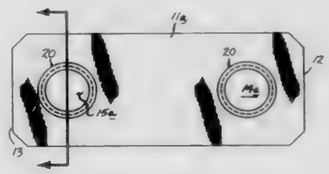
(d) slipping the covers of the book into the side pockets thereby providing a protective book cover.

5,056,664

CORNER PROTECTOR APPARATUS

Jean G. Demers, 5636 W. Berkeley Rd., Phoenix, Ariz. 85035

Filed Jun. 21, 1990, Ser. No. 541,318
Int. Cl.[5] B65D *63/00, 6/34*
U.S. Cl. 206—453 **5 Claims**



1. A corner protector apparatus for securement overlying a stack of sheet members, the corner protector member arranged to receive an elongate flexible tether line therethrough, the corner protector member including,

a first end edge spaced from and parallel to a second end edge, and

a top surface spaced from and coextensive with an underlying bottom surface, and

a first through-extending opening directed to the top surface and the bottom surface orthogonally therethrough adjacent the first end edge, and a second opening directed orthogonally to the top surface and bottom surface adjacent the second end edge, and

the first opening and the second opening receiving the tether line therethrough to secure the stack to an underlying member, and

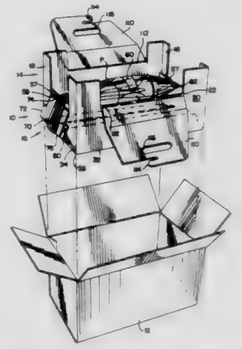
wherein the first opening and the second opening each receive a replaceable grommet member.

5,056,665

SUSPENSION PACKAGE

Mark E. Boecker, Beecher; Michael T. McGrath, Channahon, both of Ill., and Joseph Grygny, Milwaukee, Wis., assignors to ADE, Inc., Chicago, Ill.

Filed Jun. 18, 1990, Ser. No. 539,798
Int. Cl.[5] B65D *81/02*
U.S. Cl. 206—583 **26 Claims**



1. In a suspension package of the type comprising a frame

having two opposed ends, and a hammock stretched across the two opposed ends of the frame to suspend and protect a product within the frame, the improvement comprising:

at least one brace coupled to the opposed ends to reinforce the ends against movement toward one another, thereby reducing any tendency of the hammock to sag excessively during use of the suspension package;

wherein said at least one brace extends under at least a portion of the product when the hammock is positioned for removing the product from the hammock.

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PALLETS

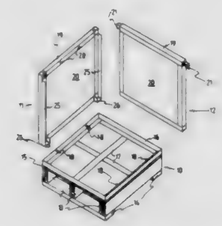
Werner J. Janssens, Auckland, New Zealand, assignor to Janssens Industries Limited, New Zealand

Filed Apr. 16, 1990, Ser. No. 510,298

Claims priority, application New Zealand, Apr. 7, 1989, 228669

Int. Cl.[5] B65D *19/12*

U.S. Cl. 206—600 8 Claims



1. A pallet including a rectangular base and a plurality of wall panels to be erected on the base and in which, when they are erected, two adjacent panels are connected together by fastening means which are urged into engagement by outward components of forces applied to said two panels by contents of the pallet, and in which the pallet is rectangular and in which a first opposing pair of the wall panels includes first bottom fastening means at the bottom thereof to cooperate with first fastening means on the base, said bottom fastening means being adapted to fasten each of said first panels to the base by movement of the bottom of the first panel in an outward direction from an interior of the pallet and to inhibit movement of the bottom of the first panel in any direction other than an inward direction, a second opposing pair of the wall panels includes second bottom fastening means at the bottom thereof to cooperate with second fastening means on one of a pair of pallet components comprising the pallet base and on the first pair of wall panels near the bottom thereof, the second bottom fastening means of the second pair of panels being adapted to fasten the second panels to one of said pair of pallet components by movement of the bottom of the second panels in a downward direction towards the base and to inhibit movement of the bottom of the second panels in any direction other than an upward direction, and in which the upper parts of adjacent panels of said first and second pairs of panels are connected together by said fastening means which are urged into engagement by the outward components of forces applied to the panels by the contents of the pallet, when assembled and at least partly filled.

5,056,667

COLLAPSIBLE PALLET CAGE

James D. Coogan, Plympton North, Australia, assignor to Rees Operations Pty. Ltd., Plympton, Australia

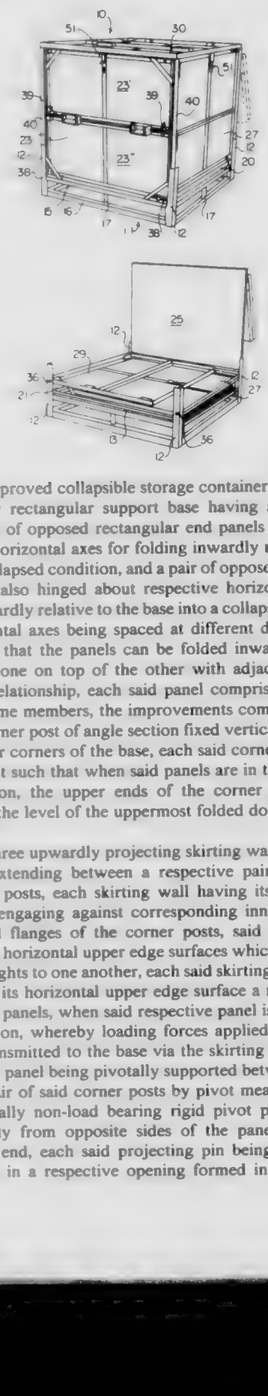
PCT No. PCT/AU89/00211, § 371 Date Jan. 17, 1990, § 102(e) Date Jan. 17, 1990, PCT Pub. No. WO89/11422, PCT Pub. Date Nov. 30, 1989

PCT Filed May 16, 1989, Ser. No. 458,760

Claims priority, application Australia, May 17, 1988, Pi8267

Int. Cl.[5] B65B *19/06*

U.S. Cl. 206—600 19 Claims



19. An improved collapsible storage container comprising a substantially rectangular support base having an horizontal floor, a pair of opposed rectangular end panels hinged about respective horizontal axes for folding inwardly relative to the base in a collapsed condition, and a pair of opposed rectangular side panels also hinged about respective horizontal axes for folding inwardly relative to the base into a collapsed condition, said horizontal axes being spaced at different distances from the base so that the panels can be folded inwardly approximately flat one on top of the other with adjacent panels in overlying relationship, each said panel comprising metal peripheral frame members, the improvements comprising:

a stub corner post of angle section fixed vertically at each of the four corners of the base, each said corner post having a height such that when said panels are in their collapsed condition, the upper ends of the corner posts project above the level of the uppermost folded down horizontal panel;

at least three upwardly projecting skirting walls on the base each extending between a respective pair of said stub corner posts, each skirting wall having its ends respectively engaging against corresponding inner surfaces of aligned flanges of the corner posts, said skirting walls having horizontal upper edge surfaces which are at different heights to one another, each said skirting wall supporting on its horizontal upper edge surface a respective one of said panels, when said respective panel is in its erected condition, whereby loading forces applied to the panels are transmitted to the base via the skirting walls;

each said panel being pivotally supported between a respective pair of said corner posts by pivot means comprising essentially non-load bearing rigid pivot pins projecting laterally from opposite sides of the panel adjacent its lower end, each said projecting pin being rotatably received in a respective opening formed in a flange of a

respective said corner post, said openings being dimensioned to prevent substantial vertical motion of said pins.

5,056,668

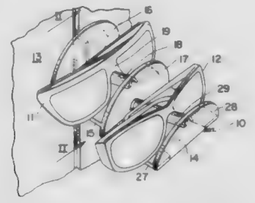
DISPLAY TRAY

Barry D. Berger, New York, N.Y., assignor to R.N. Koch, Inc., Providence, R.I.

Filed Oct. 19, 1990, Ser. No. 600,495

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—13 9 Claims



1. Display tray for an eyeglass, comprising:

(a) a main body having a horizontal floor and two spaced, substantially parallel, vertical walls extending upwardly therefrom,

(b) a support post for the nose piece of the eyeglass extending between the walls at a substantial angle to the floor,

(c) one of said walls being provided with means for attachment to a vertical supporting surface, and

(d) said support post extending from an attachment location on the other wall that is higher than the attachment position on the said one of the walls, so that the eyeglass rests with its nose piece on the support post and its bows leaning against the said one of the walls.

5,056,669

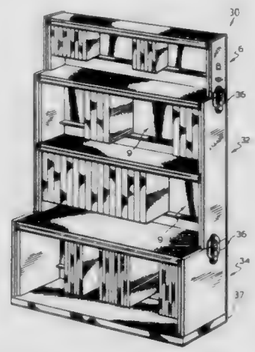
CASSETTE STORAGE SYSTEM

Raymond J. J. Villeneuve, R.R. #1, Oro Station, Ontario, Canada L0L 2E0

Filed Jun. 15, 1990, Ser. No. 540,432

Int. Cl.[5] A47B *81/06*

U.S. Cl. 211—40 12 Claims



1. A module storage unit for elective arrangement and dispensing of selected modules from a plurality thereof when stored within the unit, comprising:

end support means in mutually spaced apart, facing relation to support said unit in substantially vertical orientation;

at least one module support section extending in supported relation between said end support means, said support section having planar, substantially laterally continuous upper and lower support surfaces of sufficient lateral extent in use to accommodate a plurality of said modules in side by side, edge exposing relation, wherein said support surfaces engage at the rear of a bottom surface and the top of a front surface of diagonally opposed corner portions of each of said modules, in stable supporting relations therewith;

in use to permit side by side abutting storage therein, with free lateral displacement of said modules singly or in multiples in sliding relation therealong, and providing a clearance above said modules, to permit upward displacement of said module therein, for release of said module from restraint by said bottom surface, on insertion and removal of said modules singly or in multiples from the unit.

5,056,670

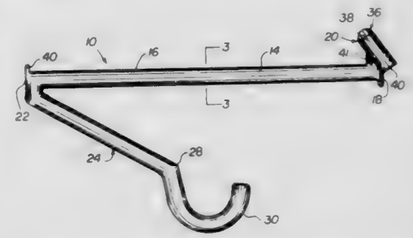
CLOTHES HANGER FOR LOCKER

James M. Fine, P.O. Box 330489, Miami, Fla. 33233-0489

Continuation-in-part of Ser. No. 434,710, Nov. 13, 1989, Pat. No. 4,995,516. This application Jan. 25, 1991, Ser. No. 645,750

Int. Cl.[5] A47F *5/08*

U.S. Cl. 211—87 3 Claims



1. A locker hanger structure designed to support clothes or like articles from the distal end zone wall mounted hook closely adjacent a ceiling surface above the hook within the locker and closely adjacent the wall mounting, said hanger structure comprising:

a support arm having a first end and a second end and having an elongate configuration of sufficient length and shape to hold an article of clothing thereover,

said first end of said support arm comprising a free end having a mounting means formed thereon and structured for removable attachment of said hanger structure to the hook,

said mounting means and said support arm cooperatively disposed and configured to disposed said support arm in an operative position when said mounting means is attached to the hook,

said operative position defined by an outwardly extending substantially horizontal orientation of said support arm relative to the wall on which the hook is mounted and closely adjacent the locker ceiling,

a body portion connected to said support arm in spaced relation to said mounting means,

said body portion extending from the second end of said support arm outwardly therefrom and away from said mounting means when said support arm is in said operative position,

said body portion being disposed and configured in coplanar disposition with said support arm and mounting means and said body portion depending downwardly from said support arm when said support arm is in said operative position,

said support portion comprising a handle means for carrying the support arm and an article of clothing thereon when not attached in said operative position to the hook,

said handle means being configured for gripping by the hand

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of a user and orienting said support arm in an inverted position when so gripped,

said handle means comprising a supporting hook configured to removably support the support arm and an article of clothing thereon to a horizontally oriented clothes rod when in said inverted position relative to said operative position,

said support arm comprising a substantially straight line configuration along its length and said body portion secured to said support arm at the second end thereof relative to said supporting means being spaced from said support arm along a major portion of the length of said support arm,

said support arm being configured to engage the article of clothing on a first exposed surface extending along the length of said support arm when in said operative position and on a second exposed surface extending along the length of said support arm and oppositely disposed to said first surface when said support arm is in said inverted position,

said mounting means comprising a finger extending from said first end away from said handle means and toward the centerline between the first and second ends,

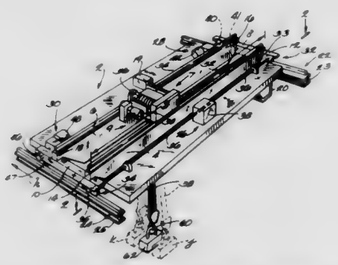
said mounting means comprising an elongate recess having an open mouth closely adjacent the first end dimensioned and configured to receive an outer free end of a locker hook therein so that said support arm and said body portion extend transversely outwardly from the hook structure and in cantilevered attachment thereto when in said operative position within a locker, and said channel is formed within and extends along a length of said finger integrally formed on said free end of said support arm.

5,056,671

APPARATUS AND METHOD FOR STRAIGHTENING CRANE RAILS

George B. Thorsen, Wauwatosa, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Oct. 31, 1990, Ser. No. 606,968
Int. Cl.[5] B66C *13/06*
U.S. Cl. 212—147 9 Claims



1. In a traveling crane having a bridge including opposite ends and a width spanning first and second spaced apart rails having generally parallel lengths, the crane traveling along and in a position generally parallel to the rails and being subject to forces causing skew of the crane, the combination comprising:

a first pair of wheels comprising first and second wheels respectively mounted opposite each other on the opposite ends of the bridge and each engaging a different one of the rails;

a second pair of wheels comprising third and fourth wheels mounted opposite each other on the opposite ends of the bridge and each engaging a different one of the rails;

each of the first and second rails have rail heads including laterally inward facing sides facing toward each other, and laterally outward facing sides facing away from each other, and each of the first and second rails also have laterally extending deviations both inward toward and outward from each other relative to their parallel spaced position resulting from stresses caused by the crane traveling on the rails;

the first wheel and the third wheel both engage the first rail at a spaced apart distance from each other in the direction of the length of the first rail, the first wheel having a radially extending inside flange facing the laterally inward facing side of the first rail head and the third wheel having a radially extending outside flange facing the laterally outward facing side of the first rail head;

the second wheel and the fourth wheel both engage the second rail at a spaced apart distance from each other in the direction of the length of the second rail, the second wheel having a radially extending inside flange facing the laterally inward facing side of the second rail head and the fourth wheel having a radially extending outside flange facing the laterally outward facing side of the second rail head;

the radially extending flange of the first wheel bears against the inward laterally facing side of the first rail head at laterally inward deviations of the first rail and the radially extending flange of the third wheel bears against the outward laterally facing side of the first rail head at laterally outward deviations of the first rail whereby the flanges of the first and third wheels push against the lateral sides of the first rail head to cause straightening of the first rail as the crane travels along the rails; and

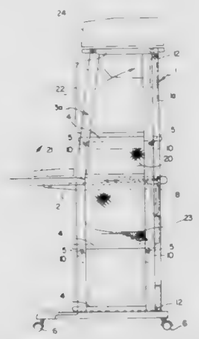
the laterally extending flange of the second wheel bears against the inward laterally facing side of the second rail head at laterally inward deviations of the second rail and the radially extending flange of the fourth wheel bears against the outward laterally facing side of the second rail head at laterally outward deviations of the second rail whereby the flanges of the second and fourth wheels push against the lateral sides of the second rail head to cause straightening of the second rail.

5,056,672

COMPUTER CARRIER RACK WITH PLURAL SHELVES

Tetsuya Yamada, Okayama, Japan, assignor to Sanwa Supply Co., Ltd., Okayama, Japan

Filed Aug. 14, 1990, Ser. No. 568,095
Claims priority, application Japan, Nov. 18, 1989, 1-134165[U]
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—149 1 Claim



1. A computer carrier rack having a plurality of shelves comprising:

a vertically elongated rear frame structure of a generally rectangular shape;

a computer mount panel attached on said rear frame structure so as to be slideable in the horizontal direction by

joints with respect to the rear frame structure and rotatable about a common axis of said joints;

side frame structures swingably connected by pivotable joints to the left and right sides of the rear frame structure;

supporting portions provided on the insides of both left and right side frame structures, for supporting said plurality of shelves; and

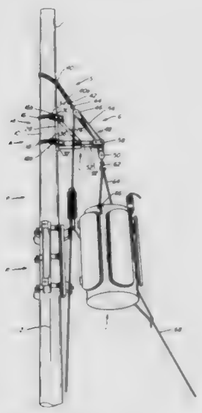
carrier wheels secured on the lower portions of the side frame structures.

5,056,673

GIN FOR ELECTRICAL EQUIPMENT

Danny R. Williams, Houston, Tex., assignor to Houston Industries Incorporated, Houston, Tex.

Filed May 4, 1990, Ser. No. 519,117
Int. Cl.[5] B66C *23/18*
U.S. Cl. 212—179 12 Claims



1. A lifting mechanism adapted to be removably connected to a vertically extending support for lifting a load relative thereto, comprising:

a generally horizontally extending lifting arm with an inner end and an outer end;

sheave wheel means mounted on the said lifting arm at said outer end;

means for removably attaching said inner end of said lifting arm to a selected intermediate portion of the vertically extending support;

load transfer means removably mounted to the vertically extending support at a location above said lifting arm and at an angle thereto;

said load transfer means being operative to transfer a component of the force of the load that is lifted by said lifting arm to the vertically extending lifting support;

lift assembly means including an upper pulley, means connecting said upper pulley to said load transfer means at a location above said lifting arm, a lower pulley located beneath said outer end of said lifting arm, and means attached to said lower pulley for engaging a load to be lifted by the mechanism;

load hoist rope or cable means extending between said upper and lower pulley; said rope or cable means passing over said sheave wheel means on said lifting arm at a location between said upper and lower pulleys; and

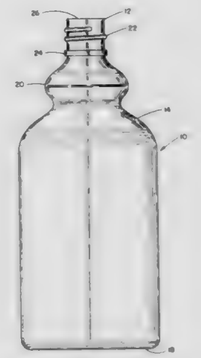
means for moving said sheave wheel means with respect to said lifting arm in a horizontal plane with respect to the vertical central axis of the lifting support.

5,056,674

LIQUID CONTAINER

Larry Swartley, 5 Silver City Rd., Newtown, Conn. 06470

Continuation of Ser. No. 271,606, Nov. 15, 1988, abandoned.
This application May 30, 1990, Ser. No. 529,713
Int. Cl.[5] B65D *1/02, 1/46*
U.S. Cl. 215—31 5 Claims



1. A liquid container comprising:

a cylindrical neck portion having a dispensing opening at an upper end thereof,

a cylindrical container body coaxial with said neck portion and being of a larger diameter than said neck portion; an outwardly extending taper portion extending from the lower end of said neck portion to define a juncture, said taper portion connecting to said body at the opposite end thereof,

a base portion at the lower end of said container body, and

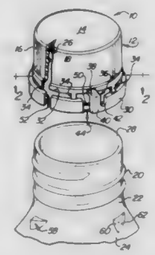
an integral convex annular ring extending about said taper portion adjoining said juncture of said taper portion with said neck portion, said ring having a semi-circular shape extending outwardly from said taper portion and having an external diameter approximately twice the diameter of said cylindrical neck portion and less than one-half the diameter of said cylindrical container body, whereby the ring will permit the bottle to be used with a variety of merchandising racks.

5,056,675

TETHER WEB RATCHET DRIVE TAMPER INDICATING BAND CLOSURE

Randall K. Julian, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jan. 18, 1991, Ser. No. 644,013
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 11 Claims



1. A tamper indicating closure for use on a container having

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a threaded neck with circumferentially spaced ratchet teeth below the threads, said closure comprising:

a cap with a top and a depending annular skirt having threads for engaging the container neck threads;

a tamper indicating band connected to the bottom of said cap skirt by a plurality of circumferentially spaced frangible connections;

a plurality of circumferentially spaced ratchet teeth on said band for engagement with ratchet teeth on the container neck;

said band having an axially extending frangible area;

a permanent tether rib connecting said band to the bottom of said cap skirt, said rib being located downstream from said frangible area in the direction of cap unthreading; and

pliant means associated with said tether rib which allows relative rotation between said cap and said band;

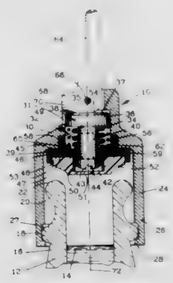
wherein as the closure is being unthreaded from the container neck, the band ratchet teeth engage the container neck ratchet teeth to stop relative rotation between the band and the container neck, and said pliant means permits continuing rotation of said cap which causes fracture of said frangible connections with substantially no axial tension applied to or axial stretching of said frangible connections followed by fracture of said axially extending frangible area allowing the band to open up and the cap to be completely unthreaded from the container neck with the band remaining tethered to said cap through said permanent tether rib.

5,056,676

BOTTLE CAP FOR REPEATABLE AIRTIGHT SEALING

Herbert Allen, deceased, late of Houston, by Virginia D. Bedford, executrix, 5800 Lumberdale #64, Houston, both of Tex. 77092

Filed Jan. 4, 1991, Ser. No. 638,178
Int. Cl.[5] B65D *45/24*
U.S. Cl. 215—284 **20 Claims**



1. A bottle cap for repeatedly providing airtight sealing of a bottle having a neck and an annular external lip on the neck of the bottle and an upper annular surface defining an opening from the bottle, the opening having a central axis passing through the neck of the bottle, the bottle cap comprising:

a housing for positioning on the neck of the bottle and about the opening from the bottle, the housing having a central aperture therein for positioning above the opening from the bottle, the aperture having a center axis for substantial alignment with the central axis through the neck of the bottle;

a lower skirt fixedly secured to the housing and having a radially inwardly directed flange for fitting beneath and engaging the annular external lip on the bottle;

an actuating carrier axially movable within the central aperture in the housing and having an upper surface and downwardly projecting member;

a ring-shaped pad holder positioned on and axially movable with respect to the downwardly projecting member;

an elastomeric pad secured to the ring-shaped holder;

a biasing member for acting between the actuating carrier and the pad holder to bias the pad holder axially away from the upper surface on the actuating carrier and toward the opening from the bottle; and

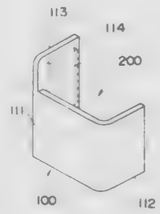
a handle rotatably secured to the housing and having a cam lobe affixed thereto for engaging the upper surface on the actuating carrier and moving the elastomeric pad into sealing engagement with the upper annular surface of the bottle.

5,056,677

SMALL ARTICLE HOLDERS

Manabu Toyosawa, Tokyo, Japan, assignor to Daiya Sangyo Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1990, Ser. No. 606,906
Claims priority, application Japan, Nov. 9, 1989, 1-130900; Jan. 19, 1990, 2-3832; May 17, 1990, 2-51373
Int. Cl.[5] B65D *5/32*
U.S. Cl. 220—4.21 **6 Claims**



1. An article holder for holding and supporting a container for wrapping film, a book or a kitchen utensil and the like comprising a pair of holder bodies normally disposed in side-by-side relationship, each of said holder bodies having a substantially vertical back section and means on said back section for defining a supporting section upon which at least a portion of an article is supported, said supporting sections each comprising a bottom section and a side wall section upstanding thereon, said bottom sections each having a portion facing each other and said side wall sections upstanding from said bottom sections from portions other than those facing portions, and means on said back section for securing said holder bodies to a fixed structure such that said supporting sections are one of contiguous to support a small article or spaced such that said supporting sections each supports a portion of a larger article.

5,056,678

ACCESS PORT SEALING DEVICE

Laurence M. Grills, Mission Viejo; Donald L. Morrison, Anaheim; Charles Saxton, Jr., Torrance, and Reuven Stein, Laguna Beach, all of Calif., assignors to Kaiser Aerospace and Electronics Corporation, Foster City, Calif.

Filed Jun. 11, 1990, Ser. No. 536,307
Int. Cl.[5] B65D *53/00*
U.S. Cl. 220—238 **21 Claims**

1. A cap assembly for sealing an access port to a conduit having an inner wall comprising:

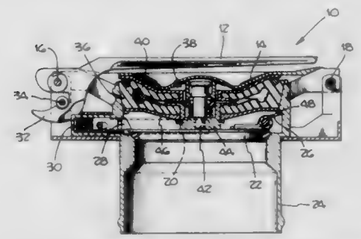
a) an outer cover mounted on the access port and adapted to pivot between an open position and a closed position;

b) a sealing plug loosely mounted on the inner surface of said outer cover and adapted to fit within the conduit;

c) an inner cover mounted within the conduit and adapted to pivot between an open position and a closed position; and

d) actuating means on said outer cover adapted to axially compress said sealing plug for radially extruding said plug into sealing engagement with the conduit interior and for holding said inner cover in the closed position.

said actuating means being adapted to close said inner cover when said outer cover is pivoted to the closed position, said sealing plug expanding radially under



axial compression to form a fluid tight seal against the inner wall of the conduit.

5,056,679

REFUSE CONTAINER ASSEMBLY

John Lonczak, 430 W. 24th St., New York, N.Y. 10011

Filed Jun. 30, 1989, Ser. No. 373,530
Int. Cl.[5] B65D *3/04, 25/16*
U.S. Cl. 220—404 **7 Claims**



1. A container assembly comprising:

(a) an erectable, open-ended cylinder formed from a rectangular flat board of thin, flexible, synthetic plastic material that is rollable into a cylindrical form, said board being die cut to define detachable locking means to maintain this form which seeks to unroll; and

(b) a collapsible plastic bag lining the cylinder and enclosing its bottom end, said bag having a length somewhat greater than that of the cylinder to define an upper margin that is folded over the rim of the cylinder to form a holding collar to maintain the bag in place, said locking means being constituted by a set of tabs projecting longitudinally from one end of the board and a corresponding set of transverse slots adjacent the opposite end of the board, each tab having a bendable cut-out flap which, when the tab is inserted in the corresponding slot, is caught in the slot as the cylinder seeks to unroll to prevent removal of the tab therefrom, said assembly having a storage mode in which said bag is in a collapsed state and said board is flat and free of protuberances, and a collection mode in which the board is rolled into a cylinder and is lined by the bag.

5,056,680

ATTACHMENT ASSEMBLY FOR SECONDARY CONTAINMENT TANKS

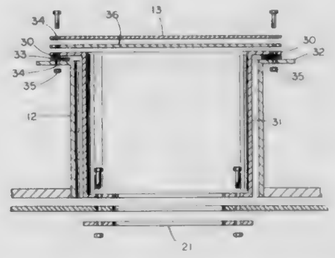
Bruce R. Sharp, 22375 Edgewater Dr. Unit 241, Charlotte Harbor, Fla. 33980

Filed Jul. 17, 1987, Ser. No. 74,870
Int. Cl.[5] B65D *87/00*
U.S. Cl. 220—465 **13 Claims**

1. In a storage tank having secondary containment provided by a bladder within a rigid tank and with a manway for entry into the interior of the tank, wherein the improvement comprises an assembly positioned within the manway, said assembly having:

(a) a cylindrical-shaped main body dimensioned to fit within said manway with an annular space between the manway walls and said main body and to extend substantially to the lowermost portion of the manway, said main body having a lower flange extending from its lower extremity;

(b) attachment means for holding the cylindrical-shaped body to the manway;



(c) a ring element dimensioned to mate with the lower flange extending from the main body so as to hold there between a bladder; and

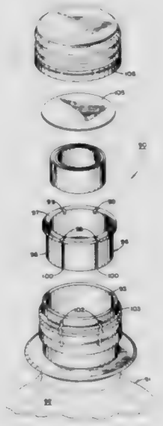
(d) securing means for holding the ring element to the lower flange.

5,056,681

PRIZE HOLDING CONTAINER ASSEMBLIES

James P. Howes, 33 Cedar Rd., Wilton, Conn. 06897

Division of Ser. No. 250,755, Sep. 28, 1988, Pat. No. 4,911,320.
This application Oct. 23, 1989, Ser. No. 425,298
Int. Cl.[5] B65D *51/28*
U.S. Cl. 220—522 **12 Claims**



1. A container assembly for use in association with liquid, semi-liquid and moist products, constructed for housing a prize award and being randomly distributed with transport non-prize, product-bearing containers, without being detected by the consumer prior to opening thereof, said container assembly comprising:

A. a transparent outer surface defining shell

a. identical in appearance to the transparent product bearing container normally employed for the liquid, semi-liquid or moist product;

b. defining an internal retaining zone; and

c. comprising at least one portal zone formed at one end thereof;

B. closure means comprising a cap peripherally surrounding and visually obscuring a portion of the portal zone of the outer shell and closing the entry portal thereof;

C. means positioned in the retaining zone for substantially filling the retaining zone and comprising the actual liquid, semi-liquid or moist product being sold; and

D. holding means

a. positioned within the retaining zone in juxtaposed, spaced cooperating relationship to the entry portal,

b. securely retaining a prize award, and

c. comprising a mirrored surface for reflecting the surrounding area and being incapable of detection by individual observation;

whereby a prize award holding container assembly for liquid, semi-liquid and moist products is achieved for being randomly distributed with non-prize bearing product-holding containers without fear of being detected by the consumer prior to opening thereof.

5,056,682

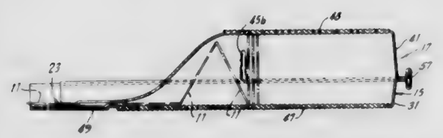
CONTAINER FOR FAN-FOLDED SHEETS

Richard P. Meyst, Valley Center; Joseph J. Manno, La Jolla; Jimmy J. Carlock, Vista; Ian F. Ayton, Palos Verdes Estates; Thomas K. Gregory, Carlsbad, and Edward D. Suszynski, Vista, all of Calif., assignors to Diatek Incorporated, San Diego, Calif.

Filed Dec. 12, 1989, Ser. No. 449,549

Int. Cl.[5] B65H *5/28*

U.S. Cl. 221—25 **27 Claims**



1. A container for carrying a plurality of substantially flat, flexible sheets and for allowing the sheets to be dispensed, one at a time, wherein the sheets are of substantially the same shape and size and are connected together in a chain and arranged in a uniform, fan-folded stack, the container comprising:

means defining an elongated storage chamber with a longitudinal axis and a transverse cross-sectional shape that corresponds generally with the shape of the individual sheets and with a size that permits the stack of fan-folded sheets to slide along the chamber's longitudinal axis;

means located at a forward end of the elongated chamber for defining a slot sized to allow the connected sheets to be dispensed therethrough, one at a time; and

retainer means located in the elongated chamber, rearwardly of the slot, for defining a constriction having a cross-sectional size slightly smaller than the sheets in a plane perpendicular to the chamber's longitudinal axis, so as to retain the stack of fan-folded sheets behind it, wherein the sheets can be individually dispensed by pulling the end sheet through the slot, which flexes a trailing sheet past the constriction, with the remaining sheets being retained behind the constriction.

5,056,683

SLING STYLE GUM DISPENSER

Denise M. O'Brien, Flemington, and Carlo P. Croce, Leonia, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 22, 1989, Ser. No. 440,938

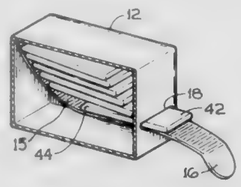
Int. Cl.[5] B65D *83/00*

U.S. Cl. 221—64 **7 Claims**

1. A stick gum dispenser which comprises:

a container having a front panel having an upper and lower part and formed with a slot on the lower part thereof and an opposed rear panel having an upper and lower part and disposed substantially parallel to said front panel; and

a sling having a fixed end and a free end and a continuous flexible body portion extending between said fixed end and said free end, said body portion dimensioned to support stacked gum sticks thereon and capable of being drawn from a rest position to a dispensing position and



returned to said rest position, said free end extending through said slot in said rest position sufficient to grasp and pull said sling to said dispensing position whereby a stick of gum is drawn through said slot, said fixed end joined to said upper part of said rear panel causing said sling to return to said rest position when said free end is not being held.

5,056,684

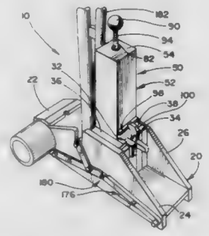
ROOFING WASHER-DISPENSING MACHINE

John R. Beach, Elmhurst, and Syed R. Hasan, Palatine, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 311,013, Feb. 15, 1989, Pat. No. 4,890,968. This application Nov. 6, 1989, Ser. No. 432,006

Int. Cl.[5] B65H *1/00*

U.S. Cl. 221—197 **20 Claims**



1. In combination with a washer-dispensing machine arranged to dispense stackable roofing washers having central apertures individually from a stack of such washers with their central apertures aligned vertically and equipped with a shuttle which is arranged to displace the lowermost washer from the stack of washers when it is desired to dispense the last-mentioned washer, a magazine comprising:

(a) containing means for containing said stack of washers but permitting the lowermost washer within the contained stack of washers to be horizontally displaced from the contained stack of washers, by means of the shuttle of the washer-dispensing machine, when it is desired to dispense the last-mentioned washer; and

(b) restraining means for coacting with the containing means, and with said stack of washers contained by the containing means, for restraining said stack of washers by engaging all of said washers within said stack of washers except for the lowermost washer within the contained stack, and for restraining the washers within said stack of washers against being inverted accidentally if the washer-dispensing machine is tipped and against being displaced along with the lowermost washer within the contained stack of washers.

5,056,685

SPRAYING DEVICE

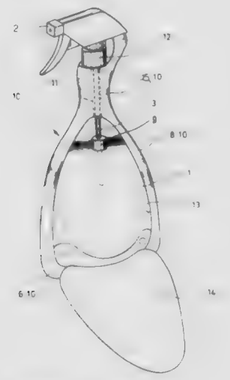
Rainer Wild, Heidelberg, Fed. Rep. of Germany, assignor to Indag Gesellschaft Fuer Industrie Bedarf GmbH, Heidelberg, Fed. Rep. of Germany

Division of Ser. No. 335,190, Apr. 7, 1989. This application Nov. 5, 1990, Ser. No. 609,444

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1988, 8804685[U]

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—82 **4 Claims**



1. A spraying apparatus, comprising:

a container for fluid to be sprayed;

a spray head disposed on said container for spraying the fluid;

a refill pouch in said container for receiving the fluid;

handle means for supporting said spray head on said container, said spray head being connected to the interior of said refill pouch through a connection means which penetrates into said refill pouch, said container having an elongated neck portion and a body portion having a wall which defines a hollow interior for receiving the refill pouch, said wall including a movable flap which is movable into an open position which enables access through an insertion opening to said hollow interior of said body from outside of said body;

means for pivotally connecting said flap to a bottom portion of said body so that said flap is pivotally movable from the open position to a closed position where the flap closes the insertion opening; and

a sleeve sealed to said refill pouch and having a sleeve opening through which is inserted said connection means, said sleeve projecting out of said pouch whereby the sleeve may be gripped through the insertion opening and aligned with the connection means to facilitate insertion of the connection means into the sleeve opening when said flap is in said open position.

5,056,686

BEVERAGE DISPENSING SYSTEM

Charles C. Jarrett, Bellevue, Wash., assignor to Nutri-Fruit, Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 372,837, Jun. 27, 1989, abandoned. This application May 29, 1990, Ser. No. 530,116

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.2 **23 Claims**

1. A beverage dispensing system comprising:

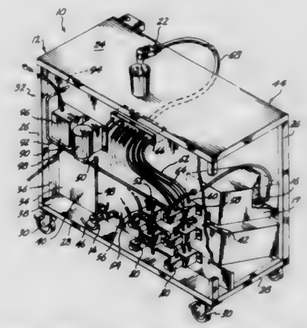
a plurality of containers for storing beverage concentrate;

a plurality of proportion pumps, each said proportion pump having a fluid drive side and a fluid pumping side, said fluid drive side having a fluid inlet and a fluid outlet, and said pumping side having a concentrate inlet and a concentrate outlet;

means for coupling said fluid inlet of each of said pumps to a source of pressurized fluid;

means for coupling each said pump concentrate inlet to a separate one of said concentrate containers;

a plurality of pairs of fluid supply and concentrate supply lines, said fluid supply line and said concentrate supply line of each said pair of supply lines respectively coupled to a fluid outlet and a concentrate outlet of one of said proportion pumps, each said pair of supply lines coupled to a separate one of said proportion pumps;



a dispensing head to which said pairs of fluid and concentrate supply lines are attached, said dispensing head having an outlet through which fluid and beverage concentrate from said supply lines is discharged, said dispensing head including a plurality of valve means, each said valve means associated with a separate pair of said fluid and concentrate supply lines for selectively controlling the discharge of fluid from said associated fluid supply line so that when a selected valve means is opened, fluid flows from said associated fluid supply line, allowing fluid to flow through said respective proportion pump and causing concentrate to flow from said concentrate supply line and be discharged concurrently with fluid from said dispensing head outlet.

5,056,687

SLIT NOZZLE

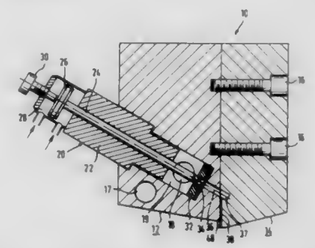
Henning J. Claassen, Lüneburg, Fed. Rep. of Germany, assignor to Corporation Nordson, Westlake, Ohio

Filed Oct. 3, 1989, Ser. No. 416,747

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1988, 8812493[U]

Int. Cl.[5] B05B *1/04;* **B29C** *47/14, 65/52, 41/12*

U.S. Cl. 222—146.5 **14 Claims**



1. A slit nozzle for applying to a substrate liquid high-polymer material, in particular a hot-melt adhesive with a polyurethane base, comprising:

a nozzle body including, at least one bore, a supply passage

extending perpendicular to said at least one bore, a spreading chamber, a short passage and an exit slit, said nozzle body consists of two parts which are connected with each other, said exit slit is formed between engaging faces of said parts, said spreading chamber is located in said engaging face of one of the two parts; and

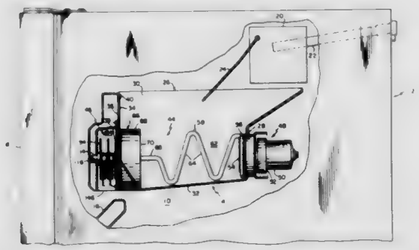
a controllable shut-off valve disposed inside the nozzle body in said at least one bore, wherein the liquid high-polymer material flows in a substantially straight path from the controllable shut-off valve through the short passage into the spreading chamber which is connected to the exit slit.

5,056,688

ICE CUBE AND CRUSHED ICE DISPENSER

Glenn E. Goetz, Amana; Brian D. Towle, Belle Plaine, and Michael J. Eveland, Cedar Rapids, all of Iowa, assignors to Amana Refrigeration Inc., Amana, Iowa

Filed Jan. 2, 1990, Ser. No. 459,503
Int. Cl.[5] G01F *11/20*
U.S. Cl. 222—146.6 **12 Claims**



1. An ice dispenser, comprising:

a receptacle for storing ice pieces, said receptacle including a front plate having a discharge opening;

means for discharging ice pieces from said receptacle through said discharge opening;

means for selectively crushing said ice pieces discharged from said receptacle through said discharge opening, said selective ice crushing means comprising at least one ice crusher arm mounted to a rotatable shaft and at least one stationary crusher arm; and

said selective ice crushing means further comprising means for rotating said shaft and said at least one shaft mounted crusher arm in a first direction to catch and crush discharged ice pieces between said rotating arm and said stationary arm and for rotating said shaft and said at least one shaft mounted crusher arm in a second direction opposite said first direction to permit discharged ice pieces to escape being crushed.

5,056,689

APPARATUS FOR REMOVING COMPONENTS FROM SOLUTIONS

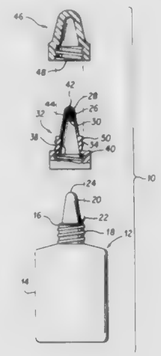
Barbara L. Heyl, Atlanta; Lynn C. Winterton, Roswell; Kai C. Su, Alpharetta, and Jack C. White, Stone Mountain, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 8, 1990, Ser. No. 461,988
Int. Cl.[5] B67D *5/00;* **B65D** *37/00, 47/18*
U.S. Cl. 222—189 **23 Claims**

22. A dispensing device, comprising:

a) a container body defining a solution retaining chamber therein, said container having a container outlet for dispensing said solution from said chamber, and said container body having a dispensing head having a duct therethrough, said duct having one end in flow registration with said chamber and said container outlet being at the other end thereof,

b) a fitment releasably engagable with said container body and having a passage therethrough, one end of said passage being in flow communication with said container outlet and a fitment outlet through which said solution may be dispensed from said container being at the other end of said passage,



c) means for removing a component from said solution as said solution is dispensed, said removing means being provided within the said passage through said fitment, and,

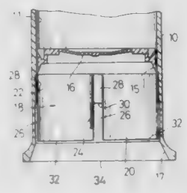
d) means for releasably mating said fitment with said dispensing head.

5,056,690

DISPENSING CONTAINER FOR VISCOUS MATERIAL

Takashi Ichihara, Fujisawa, and Yoshio Hirai, Yokohama, both of Japan, assignors to Lion Corporation, Japan

Filed Feb. 1, 1990, Ser. No. 473,583
Claims priority, application Japan, Feb. 3, 1989, 1-12049[U]; Feb. 9, 1989, 1-13605[U]
Int. Cl.[5] B67D *5/42;* **G01F** *11/00*
U.S. Cl. 222—386 **20 Claims**



1. A container for dispensing a viscous material, comprising

a cylindrical container body extending in an axial direction from a proximal end to a distal end,

said container body having an inner surface defining a piston guide region extending in said axial direction a predetermined distance from said proximal end of said container body, said piston guide region having a first portion adjacent said proximal end of said container body and a second portion,

a piston assembled in said piston guide region in contact with said inner surface of said container body and adapted for displacement in said axial direction, and

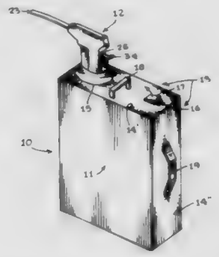
gap defining means disposed in said piston guide region for defining at least one gap between said piston and said inner surface of said container body, said at least one gap having a larger cross-section on said first portion of said piston guide region than on said second portion of said piston guide region.

5,056,691

VALVED FUEL DISPENSING CONTAINER

Douglas Tolbert, 2014 Atlanta, Dear Park, Tex. 77536

Filed May 21, 1990, Ser. No. 525,584
Int. Cl.[5] B65D *83/00, 3/00*
U.S. Cl. 222—466 **3 Claims**



1. A valved fuel dispensing container device for dispensing fuel into a vessel wherein the device comprises:

a container member having a nozzle aperture, a vent aperture, and a first handle member disposed proximate the nozzle aperture; and

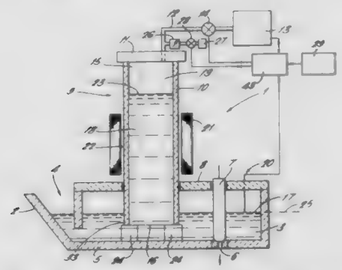
a nozzle unit including a housing member containing a nozzle having a nozzle inlet, a nozzle outlet, and a valve mechanism including a valve seat and a generally L-shaped valve member having foot and leg portions disposed intermediate said inlet and outlet; wherein, the nozzle inlet is adapted to be engaged in the nozzle aperture in the container member; and, a generally L-shaped actuator member pivotally secured on one end to the generally L-shaped valve member and suspended by a spring biasing element from the interior of said housing member; wherein, the generally L-shaped valve member is pivotally secured to the interior of the housing member at the juncture of the leg and foot portions of the generally L-shaped valve member; and, wherein the foot portion of the valve member is dimensioned to operatively engage the said valve seat.

5,056,692

DISPENSING APPARATUS FOR MOLTEN METAL

Colin F. Wilford, Mollington, and Norman B. Williams, Shrewsbury, both of United Kingdom, assignors to The Electricity Counsil and Chamberlin & Hill plc, Walsall, United Kingdom

Filed Oct. 6, 1989, Ser. No. 418,207
Claims priority, application United Kingdom, Oct. 13, 1988, 8824000; Jul. 17, 1989, 8916295
Int. Cl.[5] C21C *5/42*
U.S. Cl. 222—590 **14 Claims**



1. Dispensing apparatus for molten material comprising:

a vessel for receiving in use a main body of liquid and having dispensing valve means operable to dispense a flow of liquid therefrom;

a container having an open mouth and defining a chamber;

support means for supporting the container such that the open mouth thereof is immersed in the main body of liquid to define a head space above liquid in the chamber;

suction means connected to the container and operable to reduce pressure in the head space so as to draw liquid from the vessel into the chamber;

an induction heating coil operable to heat liquid in the chamber above the level of the main body of liquid;

sensing means for sensing the level of the main body of liquid; and

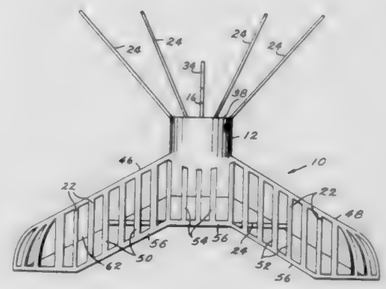
regulating means responsive to the sensing means and operable to regulate the pressure in the head space to thereby regulate the volume of liquid in the chamber such that the level of the main body of liquid is maintained substantially constant during dispensing of the liquid.

5,056,693

GARMENT HANGER FOR WETSUIT WITH REMOVABLE DRYING RODS

Thomas S. DeBoe, 17320 Evangeline La., Olney, Md. 20832

Filed May 17, 1990, Ser. No. 524,504
Int. Cl.[5] A47G *25/38*
U.S. Cl. 223—88 **16 Claims**



1. A garment drying hanger comprising:

a body member defining a first substantially normally vertical opening;

a hook member positioned within said opening and projecting above said body member for removably suspending said hanger from a conventional support;

means in operative relationship with said hook member and with said body member for retaining said hook member within said opening;

said body member further defining a plurality of second openings;

a cage-like structure substantially in the shape of human shoulders attached to and suspended beneath said body member;

a plurality of rods for selective insertion into said second openings; and

means in operative relationship with said cage-like structure for holding and storing said rods.

5,056,694

CLOTHES HANGER PAD CONSTRUCTION

Albert S. Michalik, 15326 S. Diekman Ct., Dolton, Ill. 60419

Filed Jul. 20, 1990, Ser. No. 555,189
Int. Cl.[5] A47G *25/20, 25/60*
U.S. Cl. 223—98 **4 Claims**

1. A clothes hanger and pad construction for securement to a clothes hanger member, wherein the clothes hanger member includes a first leg fixedly mounted to a second leg, and wherein the first and second legs each define a respective

spaced leg corner, with a cross leg mounted to each lower terminal end of each first and second leg, and

each clothes hanger pad arranged for securement about each corner, and each clothes hanger pad comprising an elongate longitudinally aligned cover pad, the cover pad including a top surface and a bottom surface, and

a forward end, and

a lower end, wherein the lower end is positioned adjacent a respective corner of the hanger member, and

the bottom surface of the cover pad including a longitudinally aligned channel directed medially and bisecting the forward end and lower end, and

the pad including a right side and a left side, and

a first support band mounted to the right side and a second support band mounted to the left side, wherein the first and second bands are flexible and arranged for securement relative to one another for securement to the hanger member, and

wherein the forward end is defined by a first radius of curvature and the lower end is defined by a second radius of



curvature, wherein the second radius of curvature is greater than that defined by the first radius of curvature to define a generally pie-shaped cover pad, and

wherein the first support band is mounted at an acute included angle to the right edge and the second flexible band is mounted at an acute angle to the second edge, and the first band including a first band lower end and the second band including a second lower end, wherein each lower end is oriented at the acute angle relative to the respective right and left edges of the cover pad, and a first hook and loop fastener strip mounted adjacent the first band lower end, and a second hook and loop fastener strip mounted adjacent the second band lower end, wherein the first and second hook and loop fastener strips are arranged for securement relative to one another to envelope the hanger member for securement thereto, and

wherein the cover pad includes a plurality of deformable parallel rods imbedded within and directed coextensively and longitudinally of the cover pad to permit deformation of the cover pad to accommodate various contours of clothing positioned thereon.

5,056,695

LUGGAGE CARRIER ASSEMBLY

Allen L. Gibiet, 137 Quail Dr., Cordell, Okla. 73632

Continuation-in-part of Ser. No. 100,568, Sep. 24, 1987, Pat. No. 4,907,728. This application Mar. 12, 1990, Ser. No. 492,734

Int. Cl.[5] B60R *9/06*

U.S. Cl. 224—42.01 **20 Claims**

1. A luggage carrier assembly comprising:

an inner tubular frame having a forward side, a rear side, a pair of opposed lateral sides and a bottom, said frame having a luggage-admitting opening at the top thereof;

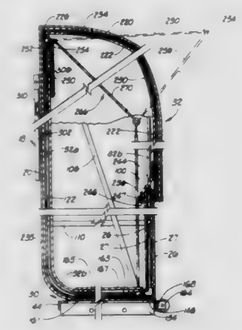
a flexible outer fabric cover covering said inner tubular frame;

smoothing, cushioning panels positioned between said inner frame and said flexible outer fabric cover;

a rigid closure subassembly of arcuate cross-section in a vertical plane, said rigid closure subassembly being pivotally connected to the forward side of said inner frame at the top of said inner frame and pivotable about a horizontal axis from an open position in which the closure subassembly is lifted upwardly to admit luggage into, and allow the removal of luggage from, the interior of said luggage carrier assembly;

a rigid panel secured across the forward side of said tubular frame to form an eating surface in one position of said luggage carrier;

a lower external subframe having a forward side and a rear side on the outer side of said flexible fabric outer cover and secured through said fabric cover to the bottom side of said inner tubular frame, said external subframe includ-



ing means for detachably mounting said subframe to an automotive vehicle for pivotation from a substantially horizontally extending transport position to a vertically extending static position;

means for locking said external subframe in a horizontally extending transport position; and

rearwardly extending spaced rollers mounted upon the rear side of said external subframe when said subframe extends substantially horizontally, and said rollers being positioned on said subframe for ground engagement when said external subframe is pivoted downwardly about a horizontal axis into a substantially vertically extending position.

5,056,696

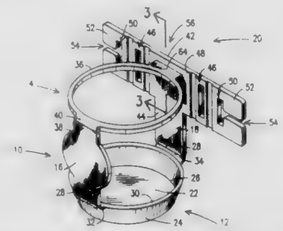
BEVERAGE CONTAINER HOLDER

Richard Lahr, 10705 Forest Run Dr., Bradenton, Manatee County, Fla. 34202

Filed Sep. 10, 1990, Ser. No. 579,693

Int. Cl.[5] A45F *5/00*

U.S. Cl. 224—148 **38 Claims**



1. A beverage container holder to retain and support a beverage container therein comprising a single piece body including a lower container support and upper container retainer held in spaced relationship relative to each other by a first and second substantially parallel interconnecting member and an attachment member to attach the beverage container holder to a belt, said attachment member comprising a belt attachment element extending upwardly from the upper portion of said second interconnecting member having a first pair of substantially vertical belt slots formed on the inner portion thereof and a second pair of substantially vertical belt slots in combination with a corresponding horizontal slot permitting access to each of said pair of second substantially vertical belt slots.

5,056,697

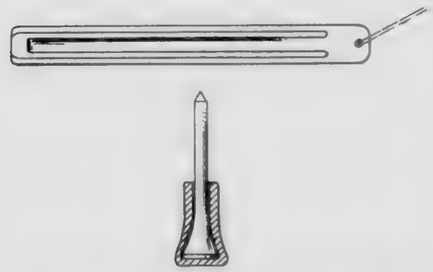
GOLF TEE HOLDER

George E. Sheffield, 10215 SW. 53rd St., Cooper City, Fla. 33328

Filed May 21, 1990, Ser. No. 528,166

Int. Cl.[5] A63B *57/00*

U.S. Cl. 224—253 **14 Claims**



1. A receptacle for holding a plurality of conventional golf tees in a serial line side by side, each tee having ahead and a shaft, said receptacle comprising;

(a) an elongated back wall having at least one planar surface, said planar surface having a width larger than the golf tee head diameter of one of said golf tees;

(b) a pair of parallel side walls connected to and projecting orthogonally outward from said planar surface along the longitudinal axis of said planar surface, said side walls forming a substantially golf tee shaped channel between said side walls, said channel having a first and an opposite second end, said channel sized to retain said golf tees located in said channel in an outward direction from said back wall;

(c) means, located at said channel first end, for retaining said plurality of golf tees within said channel; and,

(d) means, located at said channel second end, for retaining said plurality of golf tees within said channel, said means for retaining located at said second end, including means for allowing mutual insertion and removal of golf tees located in said channel;

whereby said plurality of golf tees are manually inserted into said channel past said means for retaining at said channel second end and are securely held in said channel until said golf tees are removed form said channel at said second end.

5,056,698

ELECTRIC CORD HOLDER FOR AUTOMOTIVE VEHICLE

Bernie Kozakevich, Box 233 Redwater, Alberta, Canada T0A 2W0

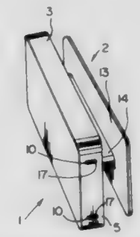
Filed Nov. 19, 1990, Ser. No. 615,375

Claims priority, application Canada, May 18, 1990, 2020120

Int. Cl.[5] B60R *11/00*

U.S. Cl. 224—273 **5 Claims**

1. An electrical cord and license plate carrier for use on an automotive vehicle comprising rectangular casing means, said casing means including side walls, top and bottom walls and one wall; spool means slidable in an open end of said casing means, at least one of the said casing means and said spool means being adapted to carry a license plate; and stop means



for limiting movement of said spool means between a closed position in which said spool means is located in and closes said open end of the casing means, and an open position in which said spool means is accessible, permitting winding of a cord thereon.

5,056,699

BICYCLE CARRIER

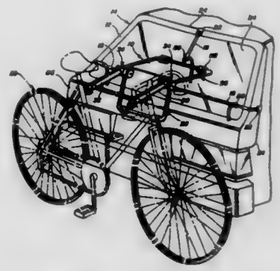
Dixon Newbold, Cranston, and Ned Levine, Providence, both of R.I., assignors to Bell Helmets, Inc., Calif.

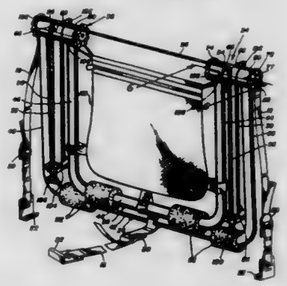
Continuation of Ser. No. 352,050, May 15, 1989, abandoned, which is a continuation of Ser. No. 948,333, Dec. 31, 1986, Pat. No. 4,830,250. This application Sep. 7, 1990, Ser. No. 581,141

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.[5] B60R *9/10*

U.S. Cl. 224—314 **42 Claims**





1. In a collapsible carrier for use on the rear portion of a motor vehicle, the carrier adapted to be positioned in a storage position and in various use positions, and further adapted to support a bicycle when positioned on a motor vehicle in one of the use positions, the improvement comprising,

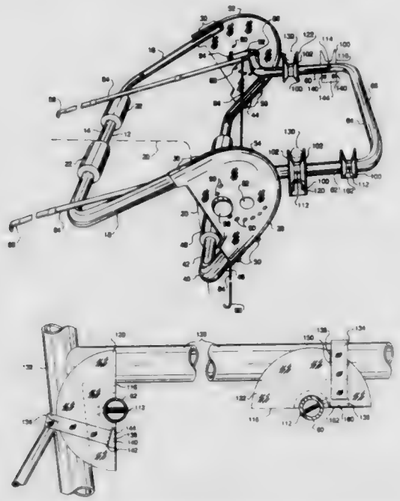
a first frame member having attached to it a first frame hub having a first frame hub radius and projections for interengagement with another hub, and wherein the frame member is captured within a channel in the frame hub.

5,056,700

AUTOMOBILE MOUNTABLE BICYCLE CARRIER

James R. Blackburn, Los Gatos, and Brandon A. Lee, San Mateo, both of Calif., assignors to Blackburn Designs, Inc., Campbell, Calif.

Filed Sep. 29, 1989, Ser. No. 414,870
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—324 22 Claims



1. An automobile mountable bicycle carrier, comprising:
a frame;
an automobile attachment means being joined to said frame for the removable mounting of said frame to the outside body of an automobile;
a bicycle engagement means being joined to said frame, said bicycle engagement means including two arm members;
at least one bicycle attachment means being engaged to each said arm member, each said bicycle attachment means being adapted to releasably, fixedly hold at least one tube of a bicycle frame; and
wherein one said bicycle attachment means is disposed upon one said arm member to hold the top tube of said bicycle frame, and another said bicycle attachment means is disposed upon the other of said arm members to simultaneously hold both the top tube and the seat tube of said bicycle frame.

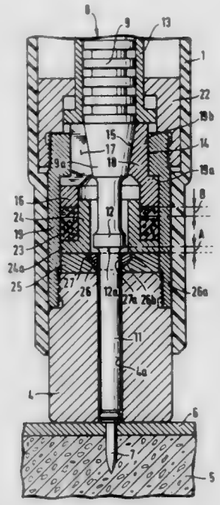
5,056,701

EXPLOSIVE POWDER CHARGE OPERATED FASTENING ELEMENT SETTING TOOL

Rolf Bereiter, Grabs, Switzerland, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Jul. 26, 1990, Ser. No. 557,938
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1989, 3924620
Int. Cl.[5] B25C *1/04*
U.S. Cl. 227—10 9 Claims

1. Explosive powder charge operated fastening element setting tool having a leading end from which the fastening elements are driven in a driving direction and a trailing end, said tool comprising a driving piston (**8**, **36**) including a head (**9**, **37**) and a shank (**11**, **38**) extending in the driving direction from the head, a bolt guide (**4**, **32**) having an axially extending bore (**4***a*, **32***a*) located at the leading end of the tool with the bore having a diameter substantially the same as the diameter of said shank (**11**, **38**), and arranged to receive said shank when said driving piston is driven, an annular interceptor (**14**, **41**) encircling said shank and located along the path of travel of said driving piston (**8**, **36**) in the driving direction for intercepting or cushioning the driving piston while overcoming a predetermined advancing travel (**B**) of the piston in the driving direction, said head (**9**, **37**) having an axially extending frusto-conically shaped section (**9***a*, **37***a*) adjoining a trailing end of said shank and said interceptor having a axially extending frusto-conically shaped bore having a shape corresponding to said frusto-conically shaped section, said driving piston (**8**, **36**) being axially displaceable into contact with said interceptor (**14**, **41**) and a plastically deformable stopper (**27**, **46**), wherein the improvement comprises said stopper is spaced in the driving direction from said interceptor, said interceptor has an axially extending inner surface arranged to be contacted by



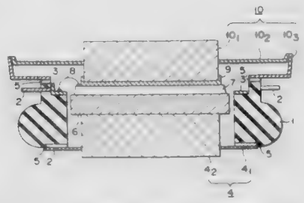
said frusto-conically shaped section and an axially extending outer surface, means laterally enclosing the axially extending outer surface of said interceptor, elastic buffer means arranged to deform gradually as said frusto-conically shaped section contacts and radially displaces said interceptor as said driving piston moves an umber of times in the driving direction, said plastically deformable stopper (**27**, **46**) abuts in the driving direction against said bolt guide (**4**, **32**), said driving piston (**8**, **36**) comprises a shoulder (**12***a*, **47**) projecting radially outwardly from said shank and spaced axially from said frusto-conically shaped section, said shoulder being axially displaceable into an axial range of said stopper (**27**, **46**) as said elastic buffer means deforms, said driving piston when driven having a first position wherein said shoulder (**12***a*, **47**) is spaced axially from said stopper (**27**, **46**) by a distance (A) and a second position where said shoulder contacts and plastically deforms said stopper following the deformation of said elastic buffer means and the distance (A) corresponds at most to the advancing travel predetermined by the interceptor (**14**, **41**) so that said stopper jams the shank of said piston and prevents the piston to return to a driving position.

5,056,702

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Masako Nakahashi; Makoto Shirokane; Hiromitsu Takeda; Tatsuo Yamazaki, all of Tokyo; Tsutomu Okutomi, Yokohama; Shozi Niwa, Sagamihara; Mikio Okawa, Tama; Mitsutaka Homma, Fuchu; Seiichi Suenaga, and Shigeru Miyakawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 176,752, Apr. 1, 1988, Pat. No. 4,917,642. This application Oct. 10, 1989, Ser. No. 419,029
Claims priority, application Japan, Apr. 2, 1987, 62-79618; Jul. 13, 1987, 62-172843; Jul. 13, 1987, 62-172845; Mar. 4, 1988, 63-49758
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] H01L *23/08*
U.S. Cl. 228—123 7 Claims



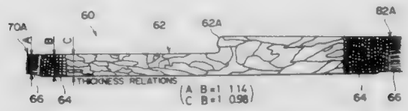
1. A method of manufacturing an airtight semiconductor device comprising a ceramic cylinder, a metal seal member closing an open end of the cylinder, a semiconductor element located within the cylinder and having electrodes, and leads or electrodes connected to the electrodes of the semiconductor element and extending from the cylinder, said method comprising the steps of:
coating powder of active metal consisting of Ti and/or Zr on the end face of said ceramic cylinder without heating said ceramic cylinder, in an amount of 0.1 mg/cm^2 to 10 mg/cm^2;
mounting a layer of brazing filler metal on the end face of said ceramic cylinder, which has been coated with the powder of the active metal;
placing said metal seal member selected from the group consisting of Mo, W, an alloy of Fe and Ni, and alloy of Fe, Ni and Co, an alloy of Fe, Ni and Mn, and Cu composites thereof on said layer of brazing filler metal; and
heating said ceramic cylinder, said metal seal member, and said layer of brazing filler metal, thereby melting said layer of brazing filler metal and, thus, brazing said metal seal member to the open end of said ceramic cylinder.

5,056,703

METHOD OF SPLICING WEBS

Hirokazu Sawada; Tsutomu Kakei, and Masaya Matsuki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 301,564, Jan. 26, 1989, Pat. No. 4,983,241. This application Jun. 12, 1990, Ser. No. 536,862
Claims priority, application Japan, Jan. 28, 1988, 63-017631; Feb. 13, 1988, 63-031630; Jun. 6, 1988, 63-139164
Int. Cl.[5] B23K *9/02, 9/23*
U.S. Cl. 228—158 4 Claims



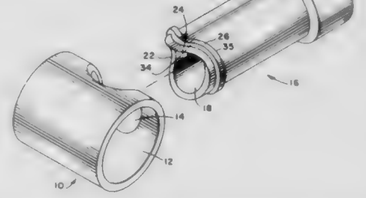
1. In a method of splicing webs together in which the ends of the webs are welded and spliced together and the thus welded and spliced portion of the webs includes a fusion portion and first and second recrystallized portions which are respectively produced on both sides of said fusion portion due to heat during welding, and a web thickness difference in at least one of a first given region having a boundary surface between said fusion portion and said first recrystallized portion as the center thereof and a second given region having a boundary surface between said fusion portion and said second recrystalized portion as the center thereof is greater than 30%, the improvement which comprises the step of:
forming said welded and spliced portion so that web thickness differences in said first and second given regions are respectively within 30%, and a web thickness difference between said first and second recrystallized portions and a portion of said web which is not affected by heat during welding is within 30%.

5,056,704

TUBE FITTING HAVING A SADDLE BEAD WITH CONFORMING PILOT

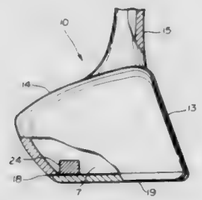
Robert E. Martin, Dallas, and Richard B. Martin, Carrollton, both of Tex., assignors to Tube Forming, Inc., Carrollton, Tex.

Filed Feb. 22, 1988, Ser. No. 158,797
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—173.4 1 Claim



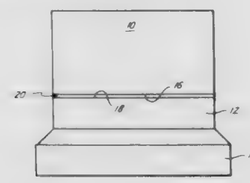
1. In the method of joining primary and secondary sections of metal tubing in an intersecting union, the improvement comprising the steps:
forming an aperture through the sidewall of the primary tubing section at a location at which the union is to be produced;
swaging an end portion of said secondary tubing section to produce a saddle bead and pilot end portion;
forming an annular face on the saddle bead and contouring said annular face for conformed surface engagement with the outside diameter surface of the primary tubing section;
forming an annular end face on the tubular pilot portion and contouring said pilot portion annular end face substantially in concentric relation with said contoured saddle bead annular face;
inserting the pilot end portion of the secondary tubing section into said primary tubing aperture with the contoured annular face of said saddle bead engaging the outside diameter surface of said primary tubing section; and,
producing a metal bond beween the contoured saddle bead and the external sidewall surface of the primary tubing section.

5,056,705
METHOD OF MANUFACTURING GOLF CLUB HEAD
Saburo Wakita; Junji Hoshi, both of Okegawa; Shinich Miyamoto, and Hideo Kawabata, both of Omiya, all of Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan
Filed Jul. 18, 1990, Ser. No. 555,181
Claims priority, application Japan, Jul. 19, 1989, 1-187155
Int. Cl.[5] B23K *31/02, 103/14*
U.S. Cl. 228—176 **9 Claims**



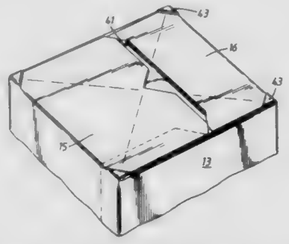
1. A method of manufacturing a golf club head, comprising the steps of:
precision-casting a golf club head body integrally by one of titanium and an alloy thereof, said golf club head body having a hollow section and an opening communicating with said hollow section and opening to a position corresponding to a sole face of the golf club head;
manufacturing a sole closure by punching a plate made of pure titanium with a punching die so as to form a punched plate having dimensions in conformance with said opening, stamping a surface of said punched plate with a stamping die, and bending said punched plate with a bending die to provide said punched plate with a curved surface, thereby forming said sole closure; and
welding said sole closure to said golf club head to cover said opening in said golf club head.

5,056,706
LIQUID METAL PASTE FOR THERMAL AND ELECTRICAL CONNECTIONS
Thomas P. Dolbear; Colin A. Mackay, and Richard D. Nelson, all of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.
Filed Nov. 20, 1989, Ser. No. 438,563
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—180.2 **20 Claims**



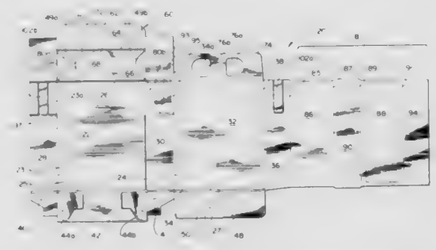
1. A method of making a detachable and compliant thermally conductive connection between two surfaces comprising,
releasably connecting the two surfaces together with a thermally conductive non-solidifying paste comprised of a liquid metal and particulate solid constituents, wherein the proportions of the mixture of liquid and solids, in the range of operational temperatures encountered, lies between the ultimate liquidus and the ultimate solidus of the metallurgical phase diagram of the mixture.

5,056,707
PACKAGING
Per O. Larsen, Oslo, Norway, assignor to Elopak Systems A.G., Glattbrugg, Switzerland
Filed Jan. 19, 1990, Ser. No. 467,159
Claims priority, application United Kingdom, Jan. 21, 1989, 8901319
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—104 **1 Claim**



1. A carton sleeve having a polygonal end closure with corner zones which protrude outwards, relative to respective adjacent zones of said end closure, in an outward longitudinal direction of said carton sleeve, said end closure having a zone at which panels of said end closure overlap each other and which is recessed inwards, relative to adjacent zones of said end closure, in an inward longitudinal direction of said carton sleeve, and the inward recess of said zone taking the form of an isolated trough extending transversely of said end closure from one side thereof to an opposite side thereof.

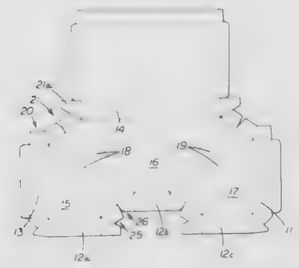
5,056,708
TWO-CELL SLIDE TOP DISPENSER WITH TAMPER EVIDENT TOP
Daniel J. Boyle, Hartland, Wis., and Herbert L. Lambert, Chicago, Ill., assignors to Waldorf Corporation, St. Paul, Minn.
Filed Aug. 27, 1990, Ser. No. 573,363
Int. Cl.[5] B65D *5/72*
U.S. Cl. 229—120.03 **14 Claims**



1. A carton having a multi-layered, dispensing end closure, said carton having front and rear walls, opposed side walls connected to and extending between said front and rear walls, a closed bottom end and a top dispensing end, said dispensing end closure comprising a plurality of panels in parallel, planar relationship including:
an inside major panel having opposed front and rear edges and opposed side edges, said panel connected to said rear wall along the rear edge thereof, said panel having at least one aperture;
an outside major panel comprising an opening panel and a glue panel, said opening panel foldably connected to said front wall and said glue panel foldably connected to said opening panel, said opening panel having a generally

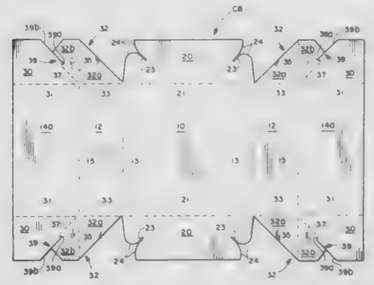
central security opener tab therein, said tab defined by a continuous perforated line of weakness;
two opposed minor slide flaps, one of said slide flaps foldably connected to each of said side walls; and
wherein said inside major panel, outside major panel and slide flaps are in overlying relationship and at least a portion of said security opener tab overlies said at least one aperture, one of said slide flaps interposed between.

5,056,709
MULTIPLE COMPARTMENT PAPERBOARD CARTON
John W. Cargile, Jr., Decatur, Ga., assignor to Kliklok Corporation, Decatur, Ga.
Filed Oct. 12, 1990, Ser. No. 596,768
Int. Cl.[5] B65D *25/04*
U.S. Cl. 229—120.17 **12 Claims**



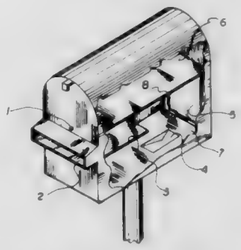
1. A multiple compartment leakproof carton formed from a paperboard blank for packaging separate food items or the like comprising;
adjacent side panels and bottom panels merging to form corners of said carton;
at least one diagonal divider panel extending from at least one corner and between said side panels and along said bottom panels;
connector means for said side panels and said divider panel at said corner; and
means for sealing said connector means to the adjacent side panel and to each other;
whereby a triangular compartment with a reinforced corner and enlarged open area is formed in said carton.

5,056,710
BOX WITH SELF-LOCKING HINGED COVER SECTIONS
Karl M. Ritter, Carol Stream, Ill., assignor to Container Corporation of America, Clayton, Mo.
Filed Apr. 19, 1991, Ser. No. 690,170
Int. Cl.[5] B65D *5/20*
U.S. Cl. 229—143 **12 Claims**



1. A collapsible box with a pair of integral, self-locking, hinged, top wall cover sections, said box being formed from a unitary blank of foldable paperboard, and comprising:
(a) a generally rectangular bottom wall panel;
(b) end wall panels having lower edges foldably joined to and upstanding from opposed end edges of said bottom wall panel;
(c) a pair of co-planer top wall panels having outboard end edges foldably joined to upper edges of respective end wall panels and having inboard end edges in abutting relation;
(d) a pair of opposed side walls, each including;
(i) an inner panel having a lower edge foldably joined to and upstanding from a side edge of said bottom wall panel;
(ii) a pair of outer panels foldably joined to and depending from corresponding side edges of respective top wall panels;
(e) web members foldably joining said side wall outer panels to related end wall panels, each including first and second panels foldably joined to each other along a fold line aligned with a fold line between related end wall and top wall panels;
(f) said web member first panel being foldably joined to a side edge of a related end wall panel;
(g) said web member second panel being foldably joined on a diagonally extending fold line to a related side wall outer panel and being separated therefrom by a cut line that forms an opening between said web member second panel and said side wall outer panel adapted to receive an adjacent corner portion of said side wall inner panel to provide snug, interlocking, frictional engagement between said side wall inner and outer panels.

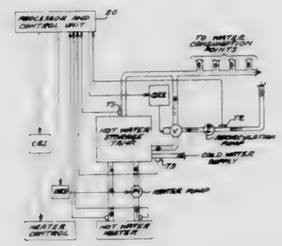
5,056,711
SAFE T BOX
Dan R. Bush, 230 Fort Boreman Ave., Parkersburg, W. Va. 26101
Filed Nov. 1, 1989, Ser. No. 430,165
Int. Cl.[5] B65D *9/00*
U.S. Cl. 232—17 **6 Claims**



1. An improved mailbox of rigid material comprising: a rigid structure enclosing a chamber, said structure including a bottom wall, a top wall, left and right side walls, rear wall and front wall, said top wall integral with top edges of said front back, and left and right side walls, said front wall integral with front edges of said left and right side walls, bottom wall and top wall, said rear wall integral with back edges of said top side and bottom walls and said bottom wall integral with bottom edges of said front, back, and side walls, an interior partition within said chamber whose sides are integral with said side, front and back walls at a point about half way up said walls, said partition dividing said chamber into upper and lower chambers, said front wall having an upper door and lower door, said lower door capable of being locked and capable of permitting access to lower chamber, said upper door capable of permitting access to said upper chamber; said lower door having a slot, said slot located below said partition and capable of allowing mail to enter through said slot and to be deposited

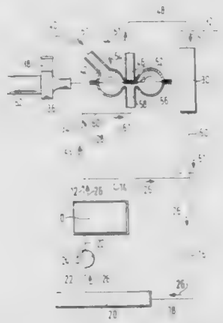
within said lower chamber, said slot having an annular flange around the periphery of said slot, said annular flange extending outwardly from said lower door, said slot having an inner flange located below said slot and extending toward the interior of said lower chamber, said inner flange capable of preventing the entry of hands through said slot and into said lower chamber, said back wall having a window, said window capable of allowing viewing of contents of said lower chamber.

5,056,712
WATER HEATER CONTROLLER
Harry J. Enck, 922 Berkeley, Santa Monica, Calif. 90403
Continuation of Ser. No. 449,363, Dec. 6, 1989, abandoned, which is a continuation of Ser. No. 292,524, Dec. 30, 1988, abandoned. This application Oct. 9, 1990, Ser. No. 595,789
Int. Cl.[5] F23N *1/08*
U.S. Cl. 236—20 R 60 Claims



1. A controller for a hot water heater system having a heater for heating water, a hot water outlet for supplying hot water, a cold water inlet for receiving cold water, and a return line for returning non-used supplied hot water for reheating, the controller comprising:
recirculating means for circulating the supplied hot water to points of usage and back to the heater via the return line;
means coupled to the hot water outlet for sensing the temperature of the hot water supply and providing hot water supply temperature data;
means coupled to the return line for sensing the temperature of the return water and providing return water temperature data;
means for sensing use and non-use of hot water;
means for storing historical data indicative of time periods of hot water use and non-use; and
control means responsive to said hot water supply temperature sensing means, said return temperature sensing means, and said use sensing means for (a) calculating a first setback temperature, (b) controlling the heater to permit the hot water supply temperature to decease to and remain within a first supply setback temperature range based on said calculated setback temperature during sensed non-use that is within a historically indicated hot water use period based on said historical use and non-use data, (c) selectively controlling the heater and said recirculating means to permit the hot water supply temperature to decrease to and remain within a second supply setback temperature range based on a second setback temperature that is lower than said first setback temperature and to permit the return water temperature to decrease to within a return setback temperature range based on said second setback temperature during non-use that occurs within a historically indicate non-use period based on said historical non-use data, (d) controlling the water heater and said recirculating means during sensed use of hot water so that the hot water supply temperature is controlled relative to a predetermined maximum temperature which is greater than said first setback temperature.

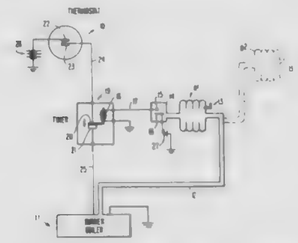
5,056,713
HEATING SYSTEM FOR THE PASSENGER COMPARTMENT OF A MOTOR VEHICLE HAVING A LIQUID-COOLED INTERNAL COMBUSTION ENGINE
Johannes-Gerhard Bertling, Vaihingen/Enz; Jürgen Hess, Baden-Baden; Gerd Lentz, Bühl-Oberweier, and Christoph Heier, Iffezheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE89/00547, § 371 Date Apr. 20, 1990, § 102(e) Date Apr. 20, 1990, PCT Pub. No. WO90/03285, PCT Pub. Date Apr. 5, 1990
PCT Filed Aug. 23, 1989, Ser. No. 477,989
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1988, 3831959
Int. Cl.[5] G05D *23/00*
U.S. Cl. 237—2 A 8 Claims



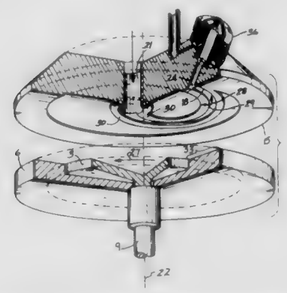
1. A heating system for a passenger compartment of a motor vehicle having a liquid-cooled internal combustion engine and a cooling circuit for cooling the same and including a delivery unit for circulating a cooling liquid, said heating system comprising a heat exchanger located in the passenger compartment; a feeding conduit extending between said heat exchanger and the cooling circuit and connected to the cooling circuit at a point downstream of the internal combustion engine in a direction of liquid flow; a return conduit extending between said heat exchanger and the delivery unit of the cooling circuit; and shut-off device for blocking flow of heat to said heat exchanger, said shut-off device including first and second chambers, inlet and outlet ports communicating with the first chamber, a pressure port communicating with the second chamber and connected with said feeding conduit, and a wall separating said first and second chambers and movable between a first position in which it blocks communication between the inlet port and outlet port, and a second position in which it closes said pressure port and provides for communication between said inlet and outlet ports.

5,056,714
LOW COST HIGH EFFICIENCY STEAM HEATING SYSTEM
Theodore Cohen, 55 Ruxton Rd., Great Neck, N.Y. 11027
Filed Jul. 13, 1990, Ser. No. 552,106
Int. Cl.[5] F24D *1/00*
U.S. Cl. 237—9 R 3 Claims

1. A high efficiency steam heating system for controlling the temperature in a space to be heated comprising a boiler, a radiator in said space to be heated, steam conduit means operatively connecting said boiler and radiator, a thermostate in said space to be heated said thermostat being operatively connected to said boiler to initiate a heating cycle responsive to a sensed temperature below a predetermined temperature in said space, pressure sensor means in communication with said radiator for sensing super-atmospheric pressures in said radiator of a predetermined magnitude, and timer means adapted to be energized by said sensor means responsive to sensing of said super atmospheric pressures for deactivating said boiler for a predetermined time period whereby said boiler is cyclically energized and de-energized until said predetermined temperature is reached.



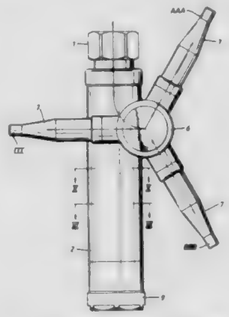
5,056,715
APPARATUS FOR MIXING AND SPRAYING A SLURRY
Richard W. Korsmeyer, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Feb. 21, 1990, Ser. No. 482,623
Int. Cl.[5] B05B *9/03*
U.S. Cl. 239—214 11 Claims



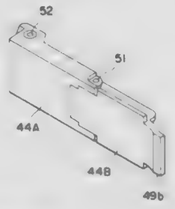
1. An apparatus particularly adapted for mixing and spraying a slurry comprising:
(a) a housing having a channel, an inlet, and an outlet;
(b) said channel having an upstream and downstream end;
(c) said channel being in fluid communication with said inlet at its upstream end;
(d) said channel being in fluid communication with said outlet at its downstream end; and
(e) said channel curving from its upstream end to its downstream end;
(f) said outlet being in fluid communication with an air atomization nozzle;
(g) a mixing surface capable of rotation with respect to said housing in a preselected rotation direction; and
(h) said channel being disposed open to said mixing surface.

5,056,716
TANK WASHER
Michael Robinson, Cheltenham, United Kingdom, assignor to Breconcherry Limited, Herefordshire, England
Filed Feb. 20, 1990, Ser. No. 482,244
Claims priority, application United Kingdom, Feb. 20, 1989, 8903775
Int. Cl.[5] B05B *3/14*
U.S. Cl. 239—227 10 Claims

1. A tank washer comprising a piston immovably connected, in operation, to liquid supply means, a body reciprocably surrounding said piston and at least one liquid ejection nozzle oscillatably connected to said body and a mechanism operable by the relative reciprocation between the body and the piston to index the body around an axis.



5,056,717
ELECTROMAGNETIC OPERATED SPRAYER WITH A LOCKING MECHANISM
Takanori Koide, Ebina, Japan, assignor to Showa Seiki Kogyo Kabushiki Kaisha, Kanagawa, Japan
Filed Sep. 19, 1990, Ser. No. 584,760
Claims priority, application Japan, Oct. 3, 1989, 1-115889[U]; Oct. 3, 1989, 1-115890[U]
Int. Cl.[5] B05B *9/04*
U.S. Cl. 239—332 5 Claims



1. A sprayer comprising:
a casing encasing an electromagnetic operated mechanism having a grip and a power switch and including a coil wound around a fixed core and a movable iron piece;
a piston pump comprising a cylinder formed in it front portion with a cylinder mounting pin contacting recess, a piston capable of being moved forward by said movable iron piece, a return spring interposed between a rear end of the cylinder and a flange portion of the piston and being wound around the piston and a valve set including a check valve, said piston pump being fitted in a piston pump cover portion formed In said casing;
a container mounting body mounted on said piston pump cover portion and having a supply through-hole in communication with a piston chamber of said piston pump and a return through-hole;
a coating container having a suction pipe for supplying a coating to said pump chamber, said suction pipe having an upper portion inserted into a suction pipe mounting portion having said supply through-hole and having a strainer provided on the lower end thereof; and
a left lock and a right lock comprising a front lock portion having a cylinder mounting pin at the front end thereof and a rear lock portion in which a front end is pivotally mounted by means of a mounting pin to the rear end of said front lock portion, said rear lock portion being pivotally mounted at the front to the piston pump cover portion

of said casing by means of said mounting pin through a mounting pin and being formed at the rear end with a knob, said left lock and said right lock being provided on opposite sides of said piston pump cover portion, whereby the rear lock portion of said left lock and said right lock are turned frontwardly in a horizontal plane to release the cylinder mounting pin of the front lock portion from the cylinder mounting pin contacting recess so that a nozzle head, a cylinder, a piston and a valve set can be removed.

5,056,718

JETTING NOZZLE

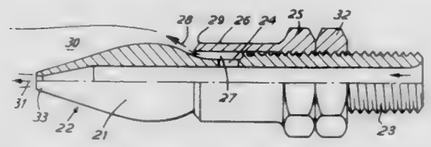
Anthony W. Wakefield, Little Casterton Road, Stamford, Lincs. PE9 1BE, United Kingdom

Filed Nov. 14, 1988, Ser. No. 270,043

Claims priority, application United Kingdom, Nov. 13, 1987, 8726688

Int. Cl.[5] B05B *1/32*

U.S. Cl. 239—441 **13 Claims**



1. An apparatus for producing a high volume, low velocity jet from a low volume high velocity supply, comprising: means for supplying fluid at low volume and high pressure and, within or adjacent the outlet of said means for supplying, a converter device arranged axially of the direction of flow of said fluid and comprising a body having a fluidic surface, whereby fluid issues from the outlet as an annular jet at low volume and high pressure and is constrained by the contours of the surface of the converter device to flow in contact with the surface so that the jet area is increased thereby increasing the flow and reducing the velocity of the jet.

5,056,719

APPARATUS FOR SIMULTANEOUSLY DISCHARGING A PLURALITY OF FLUIDS

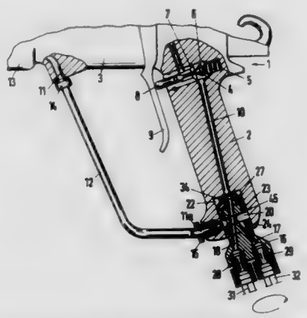
Norbert Lauter, Verl, and Wolfgang Kuhn, Schloss Holte-Stukenbrock, both of Fed. Rep. of Germany, assignors to Kopperschmidt-Mueller GmbH & Co. KG, Bielefeld, Fed. Rep. of Germany

Filed Oct. 13, 1989, Ser. No. 421,521

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1988, 3834983

Int. Cl.[5] B05B *7/26*

U.S. Cl. 239—526 **24 Claims**



1. A spray gun for discharging a plurality of flowable materials, comprising a housing having a socket and a plurality of channels, one for each of the plurality of flowable materials, in communication with said socket, said housing including a pistol grip handle having an underside and said socket being provided at the underside of and in said handle; an insert freely turnably received in said socket and having a plurality of passages each communicating with a different one of said channels but with the same channel in each angular position of said housing and said insert relative to each other; and means for supplying flowable materials to said passages.

5,056,720

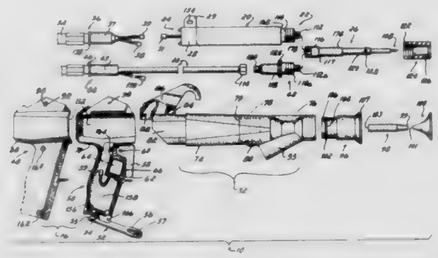
ELECTROSTATIC SPRAY GUN

Gerald W. Crum, and John C. A. Traylor, both of Elyria, Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Sep. 19, 1990, Ser. No. 585,241

Int. Cl.[5] B05B *5/053*

U.S. Cl. 239—698 **14 Claims**



1. An electrostatic spray gun for electrostatically charging coating material emitted from the nozzle thereof comprising:

a housing having an internal chamber capable of alternatively housing a) an internal voltage multiplication circuit powered from a remote external low voltage source for producing high dc voltage at its output and b) the end section of a high voltage cable powered from a remote external high voltage source;

a gun resistor and charging electrode assembly mounted within said housing, said gun resistor and charging electrode assembly includes a charging electrode proximate said nozzle and a gun resistor positioned remote from said nozzle, said charging electrode and said gun resistor being electrically connected; and

securing means for alternatively securing said internal voltage multiplication circuit and said end section of said high voltage cable within said internal chamber to selectively connect high dc voltage to said gun resistor and charging electrode assembly and power said charging electrode on an alternative basis, from either an external low voltage source via said internal voltage multiplication circuit or an external high voltage source, to thereby electrostatically charge coating material emitted from said gun nozzle.

5,056,721

METHOD FOR CLASSIFYING WHEAT KERNELS AS HARD OR SOFT

Gregory M. Glenn, Vallejo, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

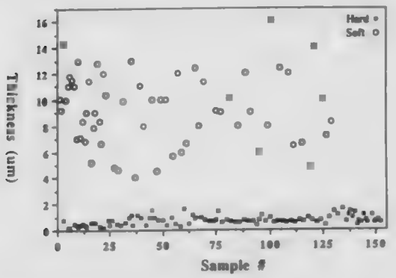
Filed Jun. 12, 1990, Ser. No. 536,865

Int. Cl.[5] B02B *5/00*

U.S. Cl. 241—9 **4 Claims**

1. A method for classifying a wheat kernel as hard or soft, comprising:

(a) cutting a wheat kernel having an aleurone layer and a subaleurone layer and having at least one substantially flat, planar face located below said subaleurone layer, said cutting carried out at a predetermined distance from said face and substantially parallel thereto, to obtain a kernel section having a thickness of about 1.3 to 4.8 microns; and



(b) classifying said kernel as hard if said section remains intact and classifying said kernel as soft if said section does not remain intact.

5,056,722

TUBE MILL PARTITION

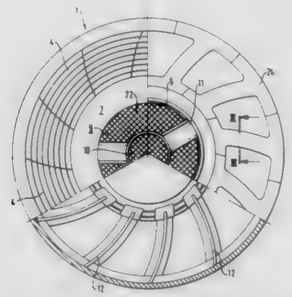
Ralph Michelsen, Eschede; Udo Schulze-Brockhausen, Everswinkel, and Herbert Weit, Beckum, all of Fed. Rep. of Germany, assignors to Christian Pfeiffer Maschinenfabrik GmbH & Co. KG, Beckum, Fed. Rep. of Germany

Filed Jan. 29, 1990, Ser. No. 470,610

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1989, 3903256

Int. Cl.[5] B02C *17/18*

U.S. Cl. 241—181 **12 Claims**



1. A tube mill partition with a material ball filling with a front slotted wall and downstream rear wall, in which radially inwards the slotted wall passes into a central part with a central air passage opening with a lattice and radially oriented buckets are positioned between the slotted and rear walls, wherein the central part (**6**) is essentially constructed as an axially parallel air passage opening with an internal radius, which is about 22 to 36% of the mill radius inside of the material ball filling and wherein the central part (**6**) has an adjusting ring (**15**) adjacent to the rear wall (**5**) and which is displaceably arranged in the vicinity of the rear wall (**5**) for regulating a first material through-flow opening (**16**).

5,056,723

AUTOMATIC WINDER

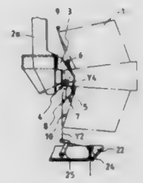
Kazuyuki Inoue, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 12, 1990, Ser. No. 493,007

Claims priority, application Japan, Mar. 13, 1989, 1-61149

Int. Cl.[5] B65H *54/02*

U.S. Cl. 242—18 EW **7 Claims**



1. In an automatic winder for winding yarn onto a bobbin to form a package, a restriction guide for guiding and restricting yarn which has been guided to and is displaced from an end face of the package to a bunching position of a bobbin, the restriction guide comprising:

a member having a slot for picking up and positioning the yarn which has been displaced from the end face of the package,

first and second inclined guide surfaces for moving a portion of the yarn extending between the slot and a surface of the package onto the bobbin, and

a tip portion contiguous to the slot and located in a position closer to an end face of the yarn package than to an outer peripheral edge of the yarn package, the tip portion enabling the yarn to enter the slot of the member.

5,056,724

PROCESS AND APPARATUS FOR CONTROLLING DISTRIBUTION OF THREAD ON A PACKAGE IN A COLLECTION UNIT FOR SYNTHETIC THREADS

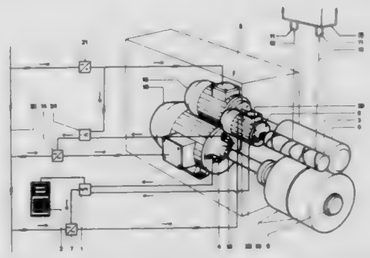
Paolo Prodi, Ravenna, and Adriano Albonetti, Forlì, both of Italy, assignors to Savio S.p.A., Pordenone, Italy

Filed Dec. 22, 1989, Ser. No. 455,755

Claims priority, application Italy, Dec. 23, 1988, 23104 A/88

Int. Cl.[5] B65H *54/38*

U.S. Cl. 242—18.1 **3 Claims**



3. A device for winding thread from a spinning apparatus in sequential steps in a winding cycle onto a rotating spindle of a collection unit at a constant rate for forming a package, wherein the collection unit comprises a means for rotating the spindle and a traversing device for guiding the thread from the spinning apparatus in reciprocating strokes to the rotating spindle in a winding ratio, wherein the winding ratio represents the ratio of the rotational speed of the package to two of the strokes of the traversing device, and wherein the winding ratio is constant during each step of the sequential steps of the winding cycle and the reciprocating speed of the traversing device

increases at the end of each step of the sequential steps of the winding cycle; wherein the device comprises:

a) a control unit, wherein said control unit comprises:

(1) a process for calculating values for the winding ratios for the collection device and the reciprocating speed of the traversing device during each step of the sequential steps of the winding cycle;

(2) a data storage means for storing operating parameters of the device;,

wherein said operating parameters comprise a reference value, a maximum winding angle, an optimum winding angle, and a minimum winding angle wherein said maximum winding angle and said minimum winding angle area equidistant from said optimum winding angle;

(3) a comparator means for comparing said calculated values with said operating parameters;

(4) a control signal generating means for generating control signals to the traversing device so that undesirable packages having ribboning are not formed,

wherein said processor, said data storage means, said comparator means and said control signal generating means are all operatively interconnected to one another;

(b) a control keyboard operatively connected to said control unit for entering said operating parameters so that said processor of said control unit processes said operating parameters for determining critical winding ratios, wherein said critical winding ratios form undesirable packages having ribboning and for determining said critical winding ratios closest one another, and wherein said reference value represents a value not greater than half the difference between the closest of said critical winding ratios, so that when said reference value is entered by said control keyboard into said control unit said critical winding ratios are stored in said data storage means;

c) a first detecting means operatively connected to the package and to said control unit for continually detecting the rotational speed of the package and for sending first signals to said control unit;

d) a second detecting means operatively connected to the traversing device and to said control unit for continually detecting the reciprocating speed of the traversing device and for sending second signals to said control unit,

so that when said control unit receives said first and second signals from said first and second detecting means respectively, said control unit compares said first and second signals with said values and said operating parameters stored in said data storage means by said comparator means, and said control signal generating means generates and send control signals for continually controlling the reciprocating speed of the traversing device so that during each step of the sequential steps of the winding cycle a constant winding ratio is maintained, wherein said constant winding ratio is separated from said critical winding ratio by not less than said reference value so that the reciprocating speed of the traversing device increases when the winding ratio reaches said minimum angle at the end of each step of the sequential steps of the winding cycle.

5,056,725

ASSEMBLY FOR READYING YARN PACKAGES FOR UNWINDING AT A TEXTILE WINDING MACHINE

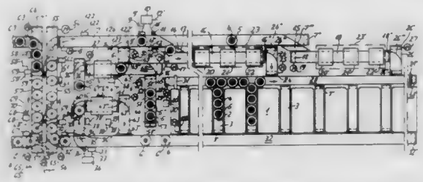
Ulrich Wirtz; Helmut Hensen, both of Moenchengladbach; Helmut Kohlen, Erkelenz; Paul Surkamp, Kempen; Hans Grecksch, and Dietmar Engelhardt, both of Moenchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Fed. Rep. of Germany

Filed Jun. 13, 1990, Ser. No. 537,363

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1989, 3919542

Int. Cl.[5] B65H *54/20, 67/06*

U.S. Cl. 242—35.50 A **19 Claims**



1. In a winding machine having a plurality of winding stations for winding yarn from yarn packages of the type formed from yarn built onto tubes, the tubes being supported by a plurality of package support members in upright dispositions, an assembly for handling yarn packages to prepare the yarn packages for unwinding at the winding stations and to prepare unwound tubes for transfer from the winding machine as empty tubes, comprising:

means for transporting package support members with yarn packages thereon along a supply travel path to the winding stations;

yarn end disposing means disposed along said supply travel path for disposing the yarn end of a yarn package in a preferred preliminary disposition for engagement at a winding station; and

another yarn end disposing means for disposing the yarn end of a yarn package in a preferred preliminary disposition for engagement at a winding station, said transporting means transporting package support members from said another yarn end disposing means along another travel path.

5,056,726

YARN END LOOSENING APPARATUS FOR A TEXTILE WINDING MACHINE

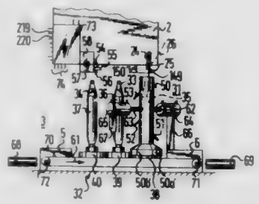
Hans Grecksch, and Dietmar Engelhardt, both of Monchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 26, 1989, Ser. No. 457,101

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843553

Int. Cl.[5] B65H *67/06, 67/08*

U.S. Cl. 242—35.5 A **13 Claims**



1. In a textile machine of the type having a plurality of independently movable tube support members for individually supporting tubes in generally upright dispositions, an unwinding device for unwinding, at an upwinding location, packages

of textile material such as yarn or the like which is wound on tubes supported on the tube support members, a delivery assembly for delivering the tube support members to a preliminary location for feeding to the unwinding device, a discharge assembly for transporting tube support members from a discharge location to a further handling location, and a cross-transport assembly for transporting the tube support members along a cross path extending from the preliminary location through the winding location to the discharge location, a yarn end loosening apparatus, comprising:

a first chamber portion;

a second chamber portion, said first and second chamber portions being positionable to combine to form a gas guide chamber and at least one of said first and second chamber portions having jet nozzles for directing jet streams of gas into the chamber against a yarn package therein to loosen a yarn end thereof;

first movement means connected to said first chamber portion for selectively moving said first chamber portion between a chamber forming position at the unwinding location in which said first chamber portion and said second chamber portion form said gas guide chamber for guiding gas relative to a yarn package supported by a respective tube support member at said unwinding location, a clearance position for permitting the respective tube support member to be moved from the unwinding location by the cross-transport assembly and a travel blocking position to block travel of the tube support member following the respective tube support member beyond the unwinding location; and

second movement means connected to said second chamber portion for selectively moving said second chamber portion between said chamber forming position and a clearance position spaced from the cross path for permitting travel of a tube support member therepast along the cross path.

5,056,727

DEVICE FOR PREVENTING YARN LOOP FORMATION AND FOR SAVING SUCTIONED YARN ON WINDING UNITS

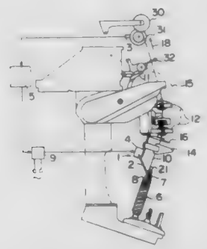
Luigi Colli; Roberto Badiali, and Luciano Bertoli, all of Pordenone, Italy, assignors to Savio S.p.A., Pordenone, Italy

Continuation-in-part of Ser. No. 133,312, Dec. 16, 1987, abandoned. This application Jun. 12, 1990, Ser. No. 536,515

Claims priority, application Italy, Dec. 23, 1986, 22810 A/86

Int. Cl.[5] B65H *54/02, 54/22*

U.S. Cl. 242—35.6 R **2 Claims**



1. An apparatus for preventing the formation of loops as yarn is wound in a cone winding unit when the cone winding unit stops winding, said cone winding unit comprising a pirn with wound yarn thereon, a bobbin adapted to receive the yarn unwound from the pirn, means for operating the winding unit at normal winding speeds, and stopping means for stopping the cone winding unit said apparatus comprising:

a) a sensor positioned adjacent the winding unit for detecting the speed of the yarn wound thereon and for sending a signal when the speed of the yarn wound decreases;

b) a bar positioned adjacent the pirn and moveable from a first position spaced apart from the pirn when the winding unit is operating at normal winding speeds to a second position in pressure engagement with the yarn on the pirn prior to the stopping of yarn winding; and

c) an actuator connected to said bar for said movement of said bar from said first position to said second position, wherein said actuator is responsive to said signal when the speed of the yarn wound by the winding unit decreases by the stopping means so that the yarn is secured on the pirn by means of said bar in said second position.

5,056,728

METHOD AND DEVICE TO SEIZE THE END OF A ROVING OR SLIVER AND MOVE IT TO A PREDETERMINED POSITION

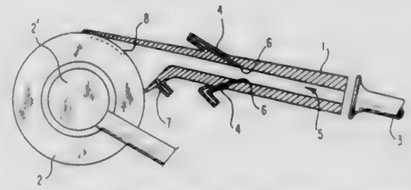
Enzo Scaglia, 21, Via Monte Rosa, Milano, Italy 20149

Continuation-in-part of Ser. No. 249,319, Sep. 26, 1988, abandoned. This application Aug. 13, 1990, Ser. No. 566,262

Claims priority, application Italy, Oct. 12, 1987, 22223 A/87

Int. Cl.[5] B65H *54/22*

U.S. Cl. 242—35.6 E **16 Claims**



1. A method of seizing and moving the end of a roving from a rotating cylindrical cop, said method comprising:

a. positioning an elongate hollow member having a large opening and an elongate chamber against a side of the rotating cylindrical cop in such a manner that the large opening matches the side of the rotating cop and covers a large portion thereof, and so that the elongate chamber is transverse to the axis of the rotating cop, wherein the arrangement of the large opening with the side of the rotating cop allows air to be entrained into the hollow member;

b. detaching the end of the roving from the rotating cylindrical cop so that the end of the roving is in the mouth of the elongate hollow member;

c. supplying at least a first stream of air or other gas into the elongate hollow member in a direction away from the cop so that the end of the roving is entrained through the elongate chamber of the elongate hollow member; and

d. opening said elongate hollow member along its length whereby said elongate hollow member can be moved without interfering with the unwinding of the yarn from the cop.

5,056,729

PORTABLE MACHINE FOR DISPENSING ROLL GOODS

Eli G. Spehar, 19441 Perch Cir., Huntington Beach, Calif. 92646

Filed Nov. 4, 1988, Ser. No. 267,040

Int. Cl.[5] B65H *19/20;* **B26D** *7/00*

U.S. Cl. 242—56.2 **7 Claims**

1. A portable device for dispensing a roll of sheet goods comprising:

a rigid frame;

a lever arm pivotally mounted on said frame, said arm being free to move between an initial position and a final position;

a drive drum rotationally mounted on said frame;

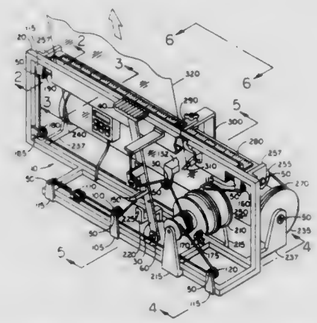
a first cable attached at one end to the lever arm and at the other end to the drive drum, being wrapped therearound,

one portion of the first cable forming a loop for storage, the loop being held taut by a tension spring;

a second cable fixed at one end to the frame and at the other end to the drive drum, being wrapped therearound in the opposite sense as said first cable, one portion of the second cable forming a loop for storage, the loop being held taut by said lever arm and being forced to move therewith, so that when said lever arm moves from said initial position to said final position the drive drum is forced to rotate in a first direction wrapping said first cable and unwrapping said second cable on said drum drive and expanding said tension spring, the spring thereafter retracting to rotate the drive drum in a second direction forcing said lever arm to move back to said initial position;

a driven drum, fixed to said drive drum for rotating with said drive drum;

a third cable attached at each end to said driven drum, each said end being wrapped in the opposite sense to the other



end, the third cable having at least one portion stretched over a horizontal span across said frame, so that when said lever arm is moved from said initial position to said final position and thereafter is returned, the driven drum is forced to rotate to wrap one end of said third cable while unwrapping the other end of said third cable on said driven drum thereby causing said third cable to traverse said horizontal span in first one direction and then in the opposite direction;

a cutoff blade attached to said third cable for moving with said cable to provide cutting action along said horizontal span;

a mounting for rotatably supporting said roll of sheet goods on said frame;

whereby when said sheet goods are unrolled, and passed over said horizontal span, said lever arm may be moved from said initial position to said final position thereby driving said cutoff knife across said sheet goods to sever said sheet goods.

5,056,730

APPARATUS AND PROCESS FOR TAKING UP A WEB OF FABRIC BY MEANS OF A CENTERED WINDER PLACED AFTER A WEAVING MACHINE

Hugo Bückle, Sulzbachweg 5, 7900 Ulm, Fed. Rep. of Germany

Filed Oct. 17, 1989, Ser. No. 422,616

Int. Cl.[5] **B65H** *23/10*

U.S. Cl. 242—75.2 **15 Claims**

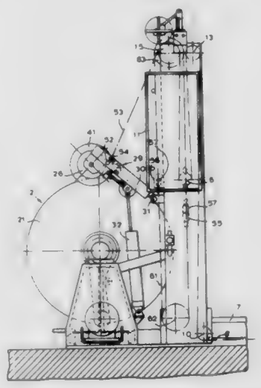
1. Apparatus for taking up a web of fabric, comprising:

a centered winder having a take-up drum placed after a weaving machine, said centered winder having a winding drum rotatable about a fixed winding axis to which the web of fabric is conveyed;

means for controlling the tensile strength of the web of fabric when the web of fabric is conveyed;

a pressure roller lying on the circumference of said winding drum or a roll of cloth on said winding drum; and,

means for braking the web of fabric prior to a point where



the web of fabric runs onto said winding drum, said means for braking the web of fabric being in a braking relationship with said pressure roller located at a point in a moving direction of said web ahead of said winding drum.

5,056,731

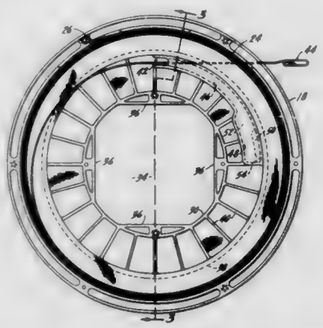
FISHTAPE REEL AND HANDLE

Terry J. Koehn, Geneva, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Jan. 3, 1990, Ser. No. 460,377

Int. Cl.[5] **E21C** *29/16;* **B65H** *75/36*

U.S. Cl. 242—96 **16 Claims**



1. In an electrician's fishtape reel, a pair of complementary, generally annular, side by side halves fitted together that form a generally enclosed annular case for a fishtape, each half being formed of slidingly interfitting inner and outer generally annular portion which define paired inner and outer halves that rotate relative to each other, and means joining the paired inner and outer halves so that they rotate as a unit relative to each other, one inside the other, and further characterized by and including a tangential outlet opening in the side of at least one of the inner halves so that a fishtape may be wound within itself in the outer half and withdrawn through the opening.

5,056,732

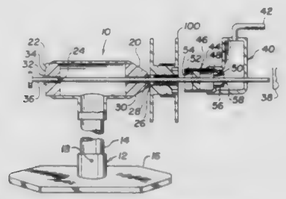
SPOOL WINDING APPARATUS

William B. Nicholson, Jr., 813 Festoon Ct., Tyler, Tex. 75703

Filed Jun. 18, 1990, Ser. No. 539,845

Int. Cl.[5] **B65H** *75/30*

U.S. Cl. 242—106 **20 Claims**



1. A spool winding apparatus, comprising

a stand;

a race on the stand;

a manually rotatable handle including a clutch having a mating surface for engaging and rotatably driving a spool positioned between the handle and the race; and

a spindle releasably and rotatably connecting the race and the handle.

5,056,733

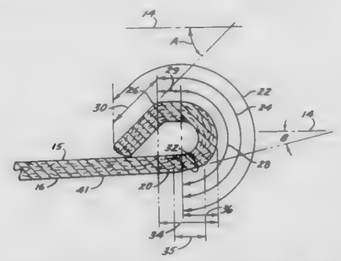
TUBULAR YARN CARRIER HAVING IMPROVED NOSE CONSTRUCTION

Jack W. Segars, and Roland S. Watford, Jr., both of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed May 1, 1990, Ser. No. 517,215

Int. Cl.[5] **B65H** *75/10*

U.S. Cl. 242—118.32 **4 Claims**



1. A tubular yarn carrier which is adapted to have a yarn wound thereon to form a yarn package, and comprising

a tubular body portion composed of convolutely wound layers of paper, and with said body portion defining a central axis, an inside wall surface, an outside wall surface, and opposite ends,

an inturned annular end portion integrally connected to one of said ends of said body portion and including a U-shaped portion which has one end thereof joined to said one end of said body portion and an opposite inner end positioned within said body portion, said U-shaped portion including an arcuate portion which is curved over an arc of about 180° from said one end of said U-shaped portion and extends along a predetermined axial length, and a frusto-conical portion which extends radially outwardly from said opposite inner end of said U-shaped portion and into contact with aid inside wall surface of said body portion, and with said frusto-conical portion being disposed at an angle of between about 35°–45° with respect to said central axis, and

a frusto-conical outer surface portion positioned to extend from a point adjacent said one end of said body portion and along a substantial portion of said predetermined axial length of said arcuate portion, and with said frusto-conical surface portion being inclined at an angle of between about 8° to 12° from said central axis.

5,056,734

AUTOMATIC WINDER

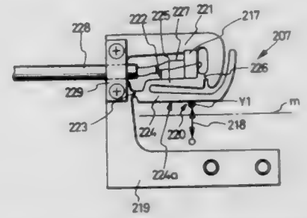
Hiroshi Uchida, Oumihachiman; Toshio Yamauchi, and Yoshiyuki Ichiba, both of Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 107,294, Oct. 9, 1987, abandoned. This application May 26, 1989, Ser. No. 361,778

Claims priority, application Japan, Oct. 11, 1986, 61-241798; Feb. 20, 1987, 62-23674[U]; Feb. 25, 1987, 62-424425; Feb. 26, 1987, 62-43997

Int. Cl.[5] **B65H** *59/22*

U.S. Cl. 242—147 R **4 Claims**



1. A yarn control device for an automatic winder having a winding unit in which yarn travels with a traversing motion in a path between a yarn defect detector and a traverse drum, the yarn control device comprising:

a tension sensor positioned between the yarn defect detector and the traverse drum and adjacent a location in the yarn travelling path at which the yarn reaches one extremity of the range of motion through which the yarn traverses, the tension sensor including a piezoelectric element for detecting the tension of a travelling a yarn in the winding unit and for generating a tension signal in response thereto,

a tensor for controlling the tension of the yarn, and

a tension controller for receiving the tension signal form the tension sensor and for providing a command signal to the tensor to thereby control the tension of the yarn,

whereby very slight variations in tension of the travelling yarn can be detected, and

wherein the tensor comprises:

a shaft,

a roller adapted to rotate about the shaft under the tension of yarn which is travelling through the tensor,

a solenoid, and

means for controlling the tension of the yarn travelling through the tensor, said means including means for moving the solenoid axially with respect to the roller to thereby impart a continuously variable resistance to the rotation of the roller about the shaft.

5,056,735

VIDEO CASSETTE INTEGRAL ACTUATOR/REEL LOCK/SPRING

John Gelardi, Cape Porpoise; Dick Rolfe, Biddeford, both of Me.; Alan Lowry, Canton, Mass., and Craig Lovecky, Old Orchard Beach, Me., assignors to Shape Inc., Biddeford, Me.

Filed Aug. 4, 1989, Ser. No. 389,906

Int. Cl.[5] **G11B** *15/32*

U.S. Cl. 242—198 **16 Claims**

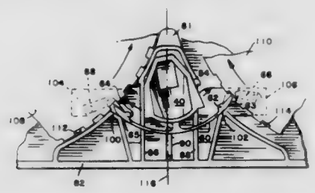
1. A one-piece reel lock device for a tape cassette including a cassette base with a first, elongated, central portion having a pair of lateral portions, a cassette cover, and a pair of tap reels, the reel lock comprising:

(a) a lock body having a first end and a second end, an

inclined area formed at the first end to receive a tape player pin, and a spring bar formed at the second end of the lock body, the spring bar including two opposite free ends and tape reel engaging means at each free end,

wherein said lock body is movable between a position locking the tape reels against rotation and a position unlocking the tape reels to allow rotation of the tape reels; and

(b) means formed on the lock body and the cassette for centering the lock body in the central portion, only after the lock body leaves the locked position and while the lock body is in an unlocked position,



wherein the lock body is in the locked position, when the lock body is positioned inward in the central portion, via the spring bar free ends abutting the lateral portions and normally urging the lock body in this direction, the engaging means engage each tape reel, and the lock body can freely pivot to either side of a center line of the central portion in response to one of the reels moving due to tolerance fits, and

wherein the lock body is in an unlocked position when the lock body is moved backward in the central portion of the base by the tape player pin, with the tape reel engaging means disengaged from the tape reels the centering means engaged and the lock body movable only in a linear path.

5,056,736

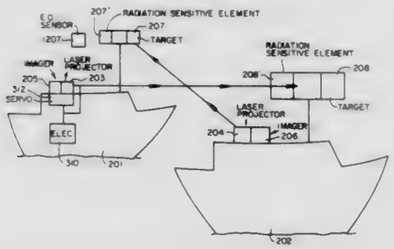
INFORMATION TRANSMISSION SYSTEM

Arthur E. M. Barton, Bristol, England, assignor to British Aerospace PLC, London, England

Continuation of Ser. No. 795,448, Nov. 6, 1985, abandoned. This application Oct. 19, 1987, Ser. No. 110,590

Int. Cl.[5] G01S *1/70*

U.S. Cl. 244—3.13 **11 Claims**



1. A method of passing information between missile guidance systems, comprising the steps of:

providing a first laser beam missile guidance system and a second laser beam missile guidance system, each system having a laser beam projector means for scanning a laser beam over a field of view and control means for controlling said laser beam projector means to guide a missile towards a target, both systems being capable of independently operating as optical missile guidance systems;

scanning with each said guidance system via a laser beam projector means over a field of view;

controlling via a control means said laser beam projector means to guide a missile towards a target, both systems being capable of independently operating as optical missile guidance systems;

using a first laser beam projector means sited at said first system to project a laser beam including information towards a laser radiation sensitive element at said second system;

controlling said laser beam to cause said sensitive element to produce a signal including said information;

establishing a non-communication time when said first and second systems are not communicating;

using said first laser beam projecting means at said non-communicating time to guide a missile; and

using said second laser beam projecting means at said non-communicating time to guide a missile.

5,056,737

VTOL AIRCRAFT WITH MOVABLE UNDERCARRIAGE

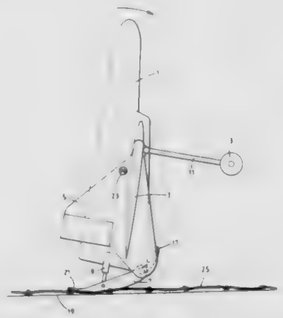
Douglas R. Taylor, Cliftonville, England, assignor to Gec-Marconi Limited, England

Filed Mar. 27, 1990, Ser. No. 499,809

Claims priority, application United Kingdom, Apr. 5, 1989, 8907643

Int. Cl.[5] B64C *29/00, 25/32*

U.S. Cl. 244—7 B **11 Claims**



1. A vertical take-off and landing aircraft, comprising: a center of gravity, an elongated fuselage, an undercarriage means, a tail, a nose, and a touchdown area at said tail, said touchdown area being located, when the aircraft lands tail-first in a generally vertical attitude relative to a generally horizontal landing surface, at a position offset from a line extending along the length of the fuselage through the center of gravity of the aircraft, said aircraft toppling under the action of gravity, after the touchdown area contacts the landing surface, to bring the undercarriage means into contact with the landing surface, at a relatively early stage of toppling, said undercarriage means being movable with respect to the fuselage so that as the aircraft topples further, a contact area between the landing surface and the undercarriage means moves toward the nose of the aircraft, thereby to attain a stable landed position.

5,056,738

DAMPER ASSEMBLY FOR A STRUT IN A JET PROPULSION ENGINE

Gary D. Mercer, Palm Beach, Fla., and Kurt T. Hildebrand, Mariemont, Ohio, assignors to General Electric Company, Cincinnati, Ohio

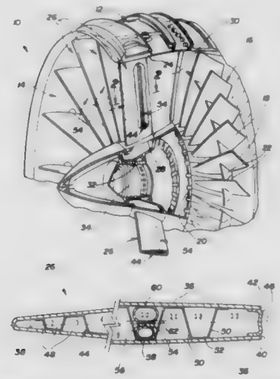
Filed Sep. 7, 1989, Ser. No. 404,018

Int. Cl.[5] B64B *27/00*

U.S. Cl. 244—54 **27 Claims**

14. A strut assembly for a jet propulsion engine including a front frame forming an inlet for an inlet airflow and a fan disposed downstream of the front frame to pressurize the inlet airflow, the fan having a rotor and a plurality of blade assemblies circumferentially disposed about the rotor, and the front frame having an outer cylindrical case and an inner circumferential hub ring radially spaced from the outer cylindrical case, the strut assembly extending radially between the outer cylindrical case and the inner circumferential hub ring, said strut assembly comprising:

a front frame strut including a pair of spaced walls extending between a leading edge and a trailing edge;



a strut stiffener disposed between said walls and said leading and trailing edges to form a plurality of cells; and

damping means disposed within at least one of said cells capable of coulomb damping and viscoelastic damping vibration of said strut as a result of pressure pulses from the blade assemblies causing excitation of said strut when the fan blades are operating at least at transonic speeds.

5,056,739

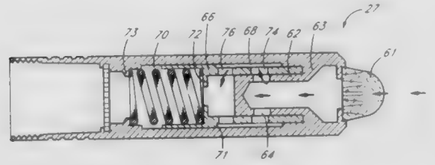
SAFETY HARNESS DEVICE

Robert C. LeVay, Anaheim, Calif., assignor to Pacific Scientific Company, Newport Beach, Calif.

Filed Dec. 1, 1989, Ser. No. 444,623

Int. Cl.[5] B64D *25/115*

U.S. Cl. 244—122 AG **7 Claims**



4. A safety harness device, comprising:

an inertia responsive portion having a casing;

a spindle rotatable within said casing;

a strap wound on said spindle and extending outwardly of said casing for connection to the safety harness of a user, said device having a fluid pressure actuated portion comprising a housing adjacent said inertia portion;

a drum rotatable within said housing;

a piston within said housing connected for driving said drum;

a rewind spring connected between said spindle and said drum, structure holding said drum against turning movement during normal operation of said inertia-responsive portion, said rewind spring means permitting unwinding of said strap and causing rewinding thereof during normal movements of the user in his seat; and

a conduit connecting a source of fluid pressure to said housing to drive said piston, the activation of the fluid pressure source in an emergency, causing yielding of said drum holding structure to effect the rotation of said drum and the winding of said spring thereon, thereby rotating said spindle to rewind said strap and draw the user firmly against the back of the seat prior to ejection, said fluid pressure actuated portion includes a flow regulator valve responsive to the fluid pressure applied to it to control the movement of said piston to provide a substantially constant velocity on the rotation of said spindle during the rewinding of said strap.

5,056,740

OVER-THE-HORIZON TARGETING SYSTEM AND METHOD

Michael W. Roth, Columbia, and Glenn E. Mitzel, Clarksville, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Sep. 22, 1989, Ser. No. 411,138

Int. Cl.[5] B64G *1/10*

U.S. Cl. 244—158 R **12 Claims**



1. An over-the-horizon targeting system comprising:

a satellite in earth orbit;

means for guiding said satellite to a position above a target;

a de-orbit rocket on said satellite which is ignited to decelerate said satellite;

a heat shield attached to said satellite to protect said satellite during de-orbiting;

a drogue chute which is deployed from said satellite to further decelerate said satellite to permit deployment of a maintaining means;

means for maintaining said satellite in said position above said target at an altitude which is above the limit of missiles that use aerodynamic control surfaces;

means for collecting information by said satellite about said target; and

means for communicating said target information to a receiver which is over-the-horizon from said target.

5,056,741

APPARATUS AND METHOD FOR AIRCRAFT WING STALL CONTROL

Wayne T. Bliesner, Snohomish; Timothy Wang, and Ronald C. Stoner, both of Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1989, Ser. No. 415,178

Int. Cl.[5] B64C *3/50*

U.S. Cl. 244—214 **17 Claims**

1. In a wing of an aircraft where the wing comprises:

a. a main wing structure having a leading edge portion, a trailing edge portion, an upper aerodynamic surface, a lower aerodynamic surface, and a forward gap forming surface portion which extends along the leading edge;

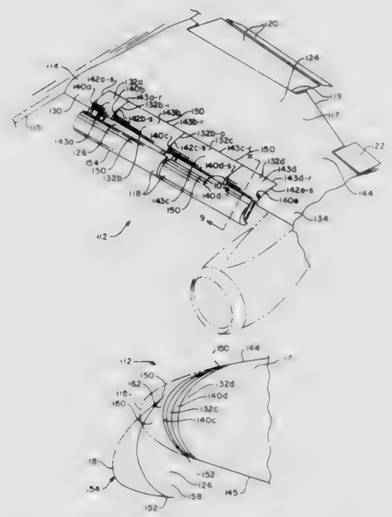
b. a leading edge member which is movable between a stowed position for cruise mode where the leading edge member aerodynamically conceals said gap forming sur-

face portion, and a deployed position for high lift mode where the leading edge member forms with the gap forming surface portion a slot for passage of air upwardly therethrough and over the upper surface of the wing structure; and

c. said wing structure being characterized in that said gap forming surface portion has an optimized continuous aerodynamic base surface contour to optimize airflow through the slot relative to drag and lift coefficient, and said wing structure being further characterized in that within a predetermined range of high angles of attack and with the leading edge member in the deployed position, and with the gap forming surface portion having said optimized aerodynamic base surface contour at first and second spanwise locations of the wing, there is an aerodynamic condition of initial stall at said first spanwise location, without a corresponding condition of stall developing at the second spanwise location, with said aerodynamic condition producing an undesired pitching moment;

the improvement comprising:

a. a first section of said gap forming surface portion at said



first spanwise location having an actual first continuous surface contour region corresponding to said optimized continuous aerodynamic surface contour;

b. a second section of said gap forming surface portion at said second spanwise location having an actual second surface contour region, at least a portion of which is spaced further from said leading edge member than said optimized continuous aerodynamic surface contour in a manner that within said range of high angles of attack, separated flow develops initially at a rear region of said upper aerodynamic surface of said main wing structure at said second spanwise location to develop a condition of stall at said second spanwise location corresponding to said condition to stall at said first spanwise location in a manner that said undesired pitching moment is alleviated;

c. said second surface contour region being stepped from said first surface contour region and having a configuration such that said slot at said second surface contour region has a cross-sectional flow area greater than a slot configuration which would be formed under a circumstance where said second surface contour region would be the same as said optimized continuous aerodynamic surface contour.

5,056,742

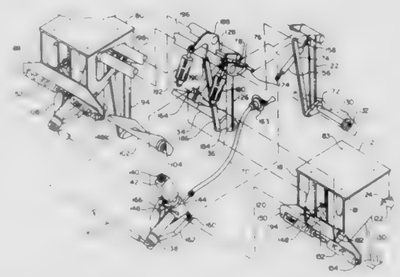
MODULAR RUDDER PEDAL AND BRAKE CONTROL ASSEMBLY FOR AIRCRAFT

Seiya Sakurai, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 120,324, Nov. 13, 1987, Pat. No. 4,848,708. This application Oct. 6, 1989, Ser. No. 418,389

Int. Cl.[5] B64C *13/06, 19/02*

U.S. Cl. 244—235 **27 Claims**



13. An aircraft utilizing a fly-by-wire control system and having:

a. a yaw control surface;

b. landing gear;

c. brakes;

d. a forward cockpit area with an instrument panel, a forward bulkhead, and a floor;

e. a first pilot station including:

(i) a first left rudder pedal and a first right rudder pedal and

(ii) a first right brake actuating mechanism and a first left brake actuating mechanism;

f. a second pilot station including:

(i) a second left rudder pedal and a second right rudder pedal and

(ii) a second right brake actuating mechanism and a second left brake actuating mechanism;

g. support means mounting said first left and right rudder pedals and said second left and right rudder pedals for pivotal movement about fixed, transverse, generally horizontal axes;

h. means for converting pivotal displacement of said rudder pedals at each of said pilot stations into electrical signals for direct or indirect transmission to and for control of aircraft yaw control surfaces;

i. means for causing each of said brake actuating mechanisms to provide a linear motion corresponding to a pivotable movement of the corresponding left and right pedals about a movable, transverse, generally horizontal axis;

j. means for converting the linear motions provided by said brake actuating mechanisms into electrical signals for direct or indirect transmission to and for control of the aircraft brakes;

k. means for converting said pivotable displacements of said rudder pedals into electrical signals for direct or indirect transmission to said landing gear for directional control of said aircraft; and

l. means, in each of said first and second pilot stations, for independent forward and rearward adjustment of the neutral positions of said left and right rudder pedals to thereby accommodate pilots with different physical dimensions;

m. the support means of each pilot station having a structural frame, said structural frame including attachment means and said attachment means being adapted to suspend said

structural frame and the pilot station in which that frame is incorporated:

(i) from the underside of said instrument panel,

(ii) above said cockpit floor, and

(iii) rearward of said forward bulkhead, to thereby:

(iv) eliminate the need for space below the cockpit floor for components of the several converting means in the pilot station, and

(v) eliminate the requirement for floor and bulkhead penetration in the installation of the pilot station.

5,056,743

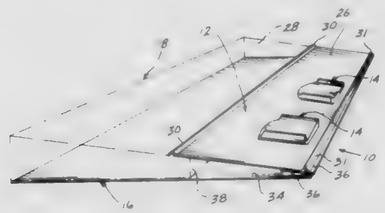
ARM SUPPORT SYSTEM

Kurt F. Zwar, 3954 NE. 115th St., Seattle, Wash. 98125, and Frederick W. Zwar, 13212 - 100th Pl. NE., Kirkland, Wash. 98034

Filed Aug. 17, 1990, Ser. No. 568,839

Int. Cl.[5] B68G *5/00*

U.S. Cl. 248—118 **11 Claims**



1. An arm support system for use in conjunction with a keyboard, the support comprising:

(a) a hand board including a bearing surface, said hand board being positionable adjacent the keyboard;

(b) hand pad means positionable on said hand board, the interface between said hand board and said hand pad means providing minimum friction such that the hand pad means slides freely over said hand board, whereby the physical loading of an operator's upper extremities and neck are reduced by allowing the operator to support a hand on said hand pad means during keying operations performed via the keyboard and during rest periods.

5,056,744

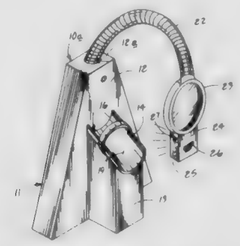
SYRINGE BOTTLE SUPPORT APPARATUS

John G. Ludwig, 480 S. Arcadia Ave., Arcadia, Fla. 33821

Filed Nov. 29, 1990, Ser. No. 619,388

Int. Cl.[5] A61B *19/00*

U.S. Cl. 248—154 **2 Claims**



1. A syringe bottle support apparatus comprising, in combination,

a first support base, the first support base defined by a first height and including a first support base forward vertical wall, and

a first support base horizontal top wall, and

a second support base defined by a second height less than the first height extending from a lower terminal end of the first support base and fixedly mounted to the first support base vertical wall and extending below the horizontal top wall, and

the second support base mounting a sleeve at an upper terminal end of the second support base, and

strap means mounted to the sleeve for securement of a chemical dispensing container to the sleeve, and

wherein the sleeve is of a semi-cylindrical configuration and fixedly mounted to the upper terminal end of the second support base, and the sleeve coextensively mounted to the upper terminal end of the second support base and extending forwardly thereof and extending downwardly relative to the first support base vertical wall, and defining an acute included angle between the sleeve and the first support base vertical wall, and

wherein the strap means is formed of elastomeric material and is fixedly mounted to a first side of the sleeve, wherein the strap is selectively and reasonably securable to a second side of the sleeve, wherein the second side of the sleeve includes a second hook and loop fastener patch, and the strap includes a first hook and loop fastener patch selectively cooperative with the second hook and loop fastener patch, with the first hook and loop fastener patch mounted to a free end of the strap remote from the first side of the sleeve, with the strap oriented to overlie the sleeve, and the sleeve defining a concave trough to receive the container therewithin, and

further including an adjustably mounted deformably positionable support arm fixedly mounted at its lower terminal end to the horizontal top wall, and a forward end of the supprt arm spaced from the horizontal top wall is radially and fixedly mounted to a magnification lens housing, including a magnification lens therewithin, and the housing including a light housing mounted to the magnification lens, with a light member mounted within the light housing positioned below the magnification lens, with a switch mounted within the light housing to selectively actuate the light member.

5,056,745

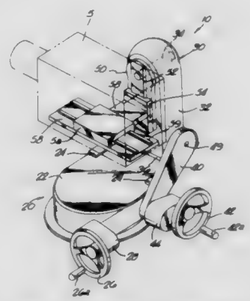
GEARED HEAD AND METHOD FOR SELECTIVE POSITION OF A CAMERA

Richard Gelbard, Los Angeles, Calif., assignor to Flight Research, Richmond, Va.

Filed Mar. 6, 1989, Ser. No. 320,005

Int. Cl.[5] F16M *11/00*

U.S. Cl. 248—183 **17 Claims**



1. A geared head for a camera, comprising a pan gearing means and a tilting means comprising:

a riser having a first end and a second end, the first end mounted upon the pan gearing means, the riser being rotatable in a first plane by the pan gearing means;

a mounting arm having one end rotatably connected to the second end of the riser so that the mounting arm rotates

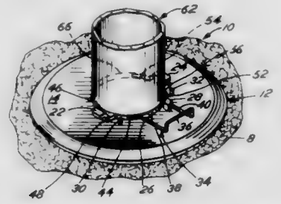
about 360° in a second plane perpendicular to said first plane;
a mounting plate suspended from the mounting arm;
a side drive arm having a first end and a second end, the first end being pivotally mounted to the riser such that the side drive arm is rotatably positionable in a third plane perpendicular to the first plane;
a tilt drive crank on the second end of the side drive arm; and
drive transmitting means between the tilt drive crank and the mounting arm for rotating the mounting arm with the tilt drive crank.

5,056,746

TABLE LEG LOCK

Kermit Parsons, White Pigeon, Mich.; John S. Chabot, Mishawaka, Ind., and Roger Bomgaars, Augusta, Mich., assignors to Mid America Sales Company, Inc., Elkhart, Ind.

Filed Sep. 10, 1990, Ser. No. 580,162
Int. Cl.[5] F16M *11/16*
U.S. Cl. 248—188 **7 Claims**



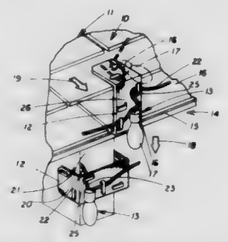
1. A lock for accommodating a table leg having an annular groove, said lock adapted for locking said leg against longitudinal movement relative to the lock, said lock comprising a plate having an inner surface adapted for mounting to a supporting surface and an outer surface, an opening in said plate for accommodating said table leg, a spring clip having a plurality of arcuate sections being shiftably carried by said plate, said clip being shiftable relative to said plate between a locking position wherein said arcuate sections protrude into said opening and an unlocked position wherein said arcuate sections are withdrawn from said opening, said arcuate sections being adapted for engagement with said table leg at its said groove when said clip is in its said locking position with the table leg extending into said plate opening.

5,056,747

BIASABLE BRACKET DEVICE FOR MOUNTING A DECORATIVE LIGHT IN MULTIPLE LOCATIONS

Andrew G. Kireta, 504 Whooper Way, Suisun, Calif. 94585

Filed Jul. 20, 1990, Ser. No. 556,105
Int. Cl.[5] A47B *96.06*
U.S. Cl. 248—231.8 **13 Claims**



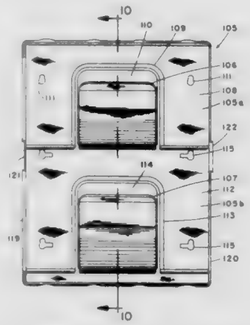
6. A biasable bracket device for a string of lights for use in association with a multiple number of fixtures about a house, business building or the like, comprising:
an inverted Cee-shaped central segment including first, second and third legs, said first and second legs extending cantilever style from said third leg in one direction from said third leg and having free ends biased inwardly toward each other, said first and third legs having clips to receive electrical conductors of a string of decorative lights to hold said string captive between said clips and said legs,
a Vee-shaped fourth leg extending from said third leg having an attached segment and a free segment folded back toward said third leg, said free segment being positioned adjacent to said second leg to provide a first passageway that can be biased open to fixedly receive first fixtures of moderate dimension to define a first working position, said attached end also defining a second passageway with respect to said first leg that can biasing receive second fixtures of larger dimension than said first passageway in define a second working position, said first and second passageways being positioned in non-intersecting relationship with respect to each other and each being individually and separately operational in a bi-pressure manner to receive said first and second fixtures whereby flexibility of operation to capture and display said string of lights in association with a plurality of different fixtures is attained.

5,056,748

PRINTED MATERIAL SUPPORT HOLDER

Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 7/434,435, Nov. 13, 1989, Pat. No. 5,002,249, which is a continuation of Ser. No. 7/332,538, Apr. 3, 1989, Pat. No. 4,943,024. This application May 31, 1990, Ser. No. 531,505
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—316.7 **7 Claims**



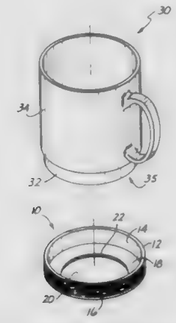
1. A holder for printed material and the like comprises:
a substantially flat support panel;
a first curved clip having a lower edge which is integrally joined to said support panel and an upper edge, said first curved clip being curved outwardly and upwardly from said lower edge and extending back toward said support panel as it extends toward said upper edge;
a second curved clip having a lower edge which is integrally joined to said support panel and an upper edge, said second curved clip being curved outwardly and upwardly from said lower edge and extending back toward said support panel as it extends toward said upper edge; and
a pair of side panels which are disposed on opposite sides of said support panel and integrally joined therewith.

5,056,749

RECEPTACLE AND COASTER ASSEMBLY

Frank T. Ige, 175 Tigertail Rd., Los Angeles, Calif. 90049

Filed Oct. 23, 1990, Ser. No. 601,420
Int. Cl.[5] A47B *91/00*
U.S. Cl. 248—346.1 **6 Claims**



1. A coaster for removable attachment to a receptacle, said coater comprising:
a generally flat bottom, said flat bottom comprising gripping means for gripping a supporting surface onto which said coaster is placed and easy removal means for easily separating said coaster from said receptacle, said easy removal means comprising a hole in said generally flat bottom, said hole being bounded by an inner edge which is adapted to be easily grasped by a user;
a resilient and flexible side wall integrally formed with, and extending generally perpendicularly from the perimeter of said flat bottom; the inside circumference of said side wall being slightly less than the outside circumference of a lower portion of said receptacle, said side wall being adapted to elastomerically retain said lower portion of said receptacle.

5,056,750

SUPPORT COLUMN

Rick Ellithorpe, 87 Woodridge Close, S.W., Calgary, Alta., Canada T2W 5M2

Filed Jun. 1, 1990, Ser. No. 531,649
Claims priority, application Canada, Aug. 1, 1989, 607259
Int. Cl.[5] E04G *25/00*
U.S. Cl. 248—354.3 **10 Claims**



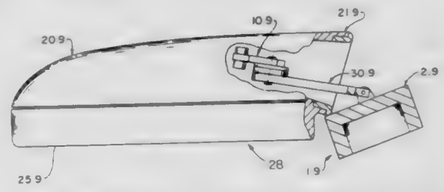
1. A load bearing support comprising:
a supporting column;
a head surmounting said supporting column; and
a saddle disposed on said head;
said saddle extending upwardly to form a load engaging member and including;
height adjustment means for adjusting the overall height of the support, said height adjusting means comprising a plurality of rods fixedly attached to said saddle, each of said plurality of rods being threadably engageable with a respective one of a plurality of nuts rotatable on a corresponding upper surface of said head, and
moment coupling means arranged substantially symmetrically about and substantially parallel to the longitudinal axis of said column, said moment coupling means comprising a central member fixedly attached to said saddle and slidably engageable with said head so as substantially prevent lateral movement of said saddle relative to the head;
said head being fixedly disposed at the top of said column, and comprising a saddle support means for said saddle, said saddle support means being disposed substantially perpendicularly to the longitudinal axis of said column, and substantially symmetrically about the upper end of said column whereby the head is adapted to slidably cooperate with said moment coupling means, and the upper surfaces of said saddle support means are adapted to cooperate with and support said height adjustment means.

5,056,751

HOLDING DEVICE FOR A TILTABLE MIRROR FOR VEHICLES

Herwig Polzer; Richard Seubert, both of Miltenberg, and Hai J. Fuchs, Dorfprozelten, all of Fed. Rep. of Germany, assignors to Hohe KG, Kommanditgesellschaft, Fed. Rep. of Germany

Division of Ser. No. 239,348, Sep. 1, 1988, Pat. No. 4,893,390. This application Oct. 23, 1989, Ser. No. 424,934
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1987, 8711959[U]
Int. Cl.[5] B60R *1/06*
U.S. Cl. 248—479 **1 Claim**



1. An outside mirror for a vehicle, said outside mirror comprising;
a mirror base,
a mirror housing tiltably mounted on said mirror base for forward and backward movement relative to said mirror base and out of a position of normal use,
holding means for holding said mirror housing in the position of normal use at the mirror base,
an edge of said mirror housing bearing against an edge of said mirror base during forward and backward movement of said mirror housing relative to said mirror base,
a catch member for holding said mirror housing in a defined tilted end position, said catch member having two ends with one end pivotably mounted on said mirror base and the other end extending into said mirror housing,
a catch element gripping said catch member at least in said tilted end position,
said catch member being articulated about two mutually perpendicular axes,
said catch element being articulated around an axis extending perpendicular to an articulated axis of said mirror housing and said catch element being completely covered by said mirror housing,
a disk mounted on said other end of said catch member,

a locking disk of said catch element being a same radial dimension as said disk mounted on said catch member,

a friction plate enclosed between said disk of said catch member and said locking disk of said catch element, and

a rivet for holding together said disk of said catch member, said locking disk of said catch element and said friction plate so that said disk of said catch member and said locking disk of said catch element press against said friction plate with such a force that a tensile force of said holding means is insufficient to overcome static friction between said friction plate and both said disk of said catch member and said locking disk of said catch element.

5,056,752

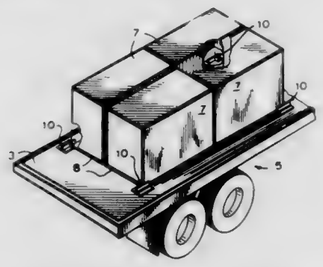
MULTIDIRECTIONAL BRACING DEVICE

Theodore Krause, 203 Mariners Way, Copaigue, N.Y. 11726

Filed Apr. 7, 1989, Ser. No. 334,349

Int. Cl.[5] B47B *97/00*

U.S. Cl. 248—500 **3 Claims**



1. A multidirectional bracing device, comprising,

a) a first angle piece having a substantially flat first supporting plate containing a first plurality of aligned throughbores and a substantially flat first connecting plate formed substantially perpendicular to said substantially flat first supporting plate, said substantially flat first connecting plate having a back surface with an approximate center and being of one homogeneous piece with said substantially flat first supporting plate; and

b) a second angle piece having a substantially flat second supporting plate containing a second plurality of aligned throughbores and a substantially flat second connecting plate formed substantially perpendicular to said substantially flat second supporting plate, said substantially flat second connecting plate having a lateral abutting edges and being of one homogeneous piece with said subtantially flat second supporting plate, said lateral abutting edge of said second angle piece attached to said back surface of said substantially flat first connecting plate so that said substantially flat first supporting plate and said substantially flat second supporting plate sit flat on a flat surface and said substantially flat second connecting plate being substantially perpendicular to said substantially flat first connecting plate and disposed at said approximate center of said back surface of said substantially flat first connecting plate wherein said back surface of said first connecting plate and said second connecting plate define a through opening to allow a corner of a pallet to sit flat on said flat surface within said through opening.

5,056,753

SAFETY SUPPORT STRUCTURE

Kevin R. Lunau, 3286 Michaud Avenue, Mississauga, Ontario, L4T 1P7; Geoffrey R. Fernie, 29 Blaketon Road, Etobicoke, Ontario, M9B 4W4, and Stephen P. Reed, 59 Spadina Road, Apt. 103, Toronto, Ontario, M5R 2T2, all of Canada

Filed Mar. 7, 1989, Ser. No. 320,061

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—542 **16 Claims**



1. A safety support structure for assisting the elderly or physically handicapped comprising:

a post having an upper end adapted to abut firmly against a ceiling surface, a lower end adapted to abut firmly against a floor surface, and an accessory mounting region disposed between said upper and said lower ends;

length adjustment means on said post, for adjusting the unstressed length of the post between said upper end and said lower end; and

pressure indicating means on said post, adapted to indicate whether the pressure on said structure, when positioned to abut against a floor surface and a ceiling surface as aforesaid, lies inside or outside a predetermined range;

wherein said accessory mounting region comprises an intermediate length of said post carrying mounting formations, said mounting formations being in the form of a plurality of longitudinally spaced ribs, said accessory mounting region for receiving and co-operating with laterally extending support accessories clamped to said accessory mounting region, said accessory mounting being configured to resist positively axial and/or rotational displacement of support accessories clamped to said accessory mounting region relative to the post.

5,056,754

ELECTROMAGNETICALLY ACTUATABLE VALVE

Juergen Graner, Ludwigsburg; Marcel Kibchner, Stuttgart, and Hans Kubach, Korntal-Muenchingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

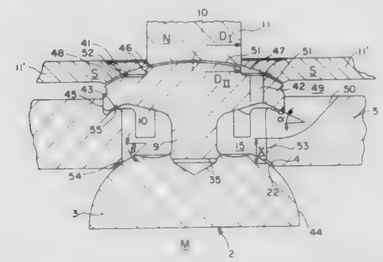
Division of Ser. No. 485,906, Feb. 28, 1990, Pat. No. 4,976,405. This application Sep. 21, 1990, Ser. No. 586,184

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909893

Int. Cl.[5] F16K *31/06*

U.S. Cl. 251—129.16 **15 Claims**

1. An electromagnetically actuatable valve, in particular a fuel injection valve for fuel injection systems of internal combustion engines, having a core (**11**, **11'**) and an armature (**10**) of soft magnetic material arranged to actuate a valve element (**2**) adapted to cooperate with a fixed valve seat (**4**), said valve element provided with a sealing element (**3**) movable outwardly for opening the valve, said armature (**10**) being connected to the valve element (**2**) by a connecting part (**9**), said connecting part being arranged to protrude substantially to-



tally through a flow bore (**53**) of a valve seat body (**5**), and the armature (**10**) and the valve seat body (**5**) are provided directly with bearing faces (**43**, **55**) disposed facing one another and embodied in calotte shape.

5,056,755

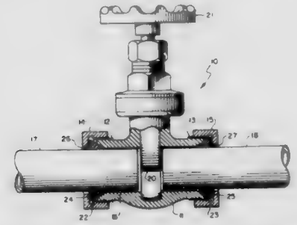
GATE VALVE

Young H. Jang, Apartado Postal 7902, Panama 9, Panama, and Joseph A. Francisco, 2268 Caminito Pescado #29, San Diego, Calif. 92107

Filed Jul. 26, 1990, Ser. No. 558,229

Int. Cl.[5] F16L *29/00*

U.S. Cl. 251—148 **1 Claim**



1. In a gate valve for installation between opposing ends of conduits, the improvement which comprises the combination of:

a body having a continuous open-ended passageway of constant diameter extending between integral opposite externally threaded ends;

said passageway diameter being larger than the outside diameter of said conduits;

each passageway end opening adapted to insertably receive a conduit so that said conduits are in spaced-apart relationship lying on the same central longitudinal axis within said passageway of larger diameter;

each passageway end opening terminating in a tapered surface;

end caps threadably carried on each of said threaded body ends and having an annular flange coaxially disposed with respect to said conduits cooperating with said tapered surface to define a sealing gland;

a frusto-conical resilient seal occupying said gland in compression between said flange and said tapered surface to seal said gland;

annular retaining washers disposed between each annular flange and each resilient seal;

a movable gate operably carried on said body for positioning between the opposing conduits to control fluid through said passageway; and

said frusto-conical seal includes a tapered sealing surface in abutting engagement with said tapered body end surface.

5,056,756

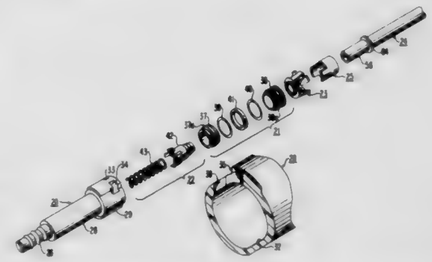
FLUID CONNECTOR

Phillip J. Norkey, Jackson, and David A. Bocson, Mt. Clemens, both of Mich., assignors to U.S. Plastics Corporation, Madison Heights, Mich.

Filed Apr. 24, 1991, Ser. No. 690,667

Int. Cl.[5] F16L *37/40*

U.S. Cl. 251—149.6 **20 Claims**



1. A fluid connector comprising:

a housing having a longitudinal opening therethrough, said housing having at least one transverse opening intersecting said longitudinal housing opening and providing at least one transversely disposed bearing surface and at least one longitudinally disposed guide surface;

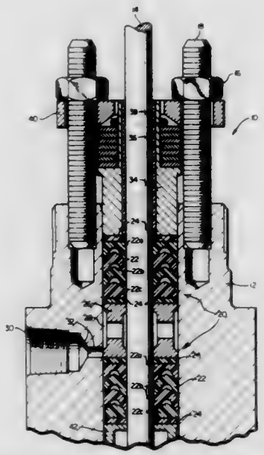
a conduit having a leading end portion insertable in said longitudinal housing opening in a coupling relation, said conduit having a fluid passageway communicating with said longitudinal housing opening and an annular flange disposed within said longitudinal housing opening and spaced from said transverse bearing surface when said conduit leading end portion is in said coupling position;

means providing a seal between said housing and said conduit when said conduit leading end portion is in said coupling position;

means disposed in said longitudinal housing opening for releaseably retaining said conduit leading end portion in said coupling position, said retaining means including at least one leg section having a transversely deflectable retaining leg portion disposable between said conduit annular flange and said housing, said retaining leg portion having a pad portion engageable with said transverse bearing surface whereby upon application of fluid pressure to said connector tending to eject said conduit from its coupling position in said housing, the force exerted thereby is caused to be transmitted through said conduit annular flange, said retaining leg portion and the pad portion thereof engaging said transverse bearing surface to said housing; and

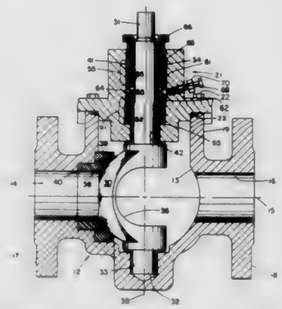
means for selectively deflecting said retaining leg portion outwardly to permit removal of said conduit from said housing, said deflecting means comprising a release member disposed in said longitudinal housing opening, displaceable axially in caming relation with said retaining leg portion to deflect said retaining leg portion outwardly clear of said conduit annular flange to permit removal of said conduit and having means cooperable with said guide surface of said housing for guiding the axial displacement of said release member.

5,056,757
PACKING CONTAINMENT FOR LIVE LOADED FUGITIVE EMISSION SEALS
Charles W. Wood, Marshalltown, Iowa, assignor to Fisher Controls International, Inc., Clayton, Mo.
Filed Oct. 12, 1990, Ser. No. 596,248
Int. Cl.[5] F16K *31/44*
U.S. Cl. 251—214 **6 Claims**



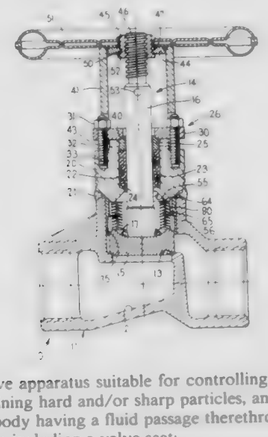
1 A fluid valve for use in high pressure and high temperature operating conditions greater than 1000 psi (6895 kPa) and around 450° F. (232° C.), said fluid valve comprising:
a valve body;
an operating member movably mounted within said valve body for operating said valve;
a packing bore within said valve body to surround the outer diameter of said operating member;
packing loading means at opposite ends of said packing bore;
at least two packing members in said packing bore formed of PTFE material for normal valve operation in environments having temperature ranges around 450° F. (232° C.) and surrounding the outer diameter of said operating member between said packing loading means, each of said packing members formed of a first face and an opposite second face with the respective first faces adapted for mating contact and the respective opposite second faces being planar-shaped, said packing members assembled and disposed in said packing bore with the first faces facing each other at the inner portion of the packing member assembly, and the respective planar-shaped second faces at the opposite outer ends of the packing members assembly;
at least one flat, thin, symmetrical, anti-extrusion wiper ring surrounding said operating member at each respective outer end of the packing members assembly and engageably contacting a respective planar-shaped second face thereof, said anti-extrusion wiper rings each formed of a filled PTFE material having higher strength characteristics than the PTFE material of said packing members and suitable for normal valve operation in environments having temperature ranges around 450° F. (232° C.) and having an inner diameter sized to form an interference fit with the operating member to wipe the operating member, inhibit packing extrusion, and contain any packing extrusion between said anti-extrusion wiper rings at respective outer ends of the packing members assembly during normal valve operation.

5,056,758
VALVE STEM PACKING STRUCTURE
John W. Bramblet, 5600 Harvey Wilson Dr., Houston, Tex. 77020
Filed May 11, 1990, Ser. No. 522,104
Int. Cl.[5] F16K *41/04*; F16J *15/20, 15/40*
U.S. Cl. 251—214 **10 Claims**



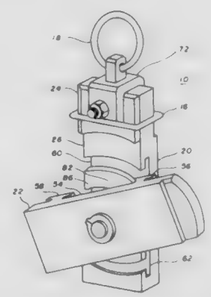
1. A packing structure for use in a valve having a valve body with a fluid flow passage, a valve element mounted for movement between an open position and a closed position relative to the flow passage, and a movable valve stem connected with the valve member and extending through a valve stem bore in the valve body and a packing chamber formed by an enlargement of said bore for effecting movement of the valve element between the open and closed positions, said packing structure comprising:
a first lower set of packing rings arranged within said bore enlargement in stacked coaxial relationship about said valve stem;
a second upper set of packing rings arranged within said packing chamber in stacked coaxial relationship about said valve stem, said packing chamber including a lower packing stop provided in said bore and at its upper end an upper packing stop provided in said bore;
spring means in said packing chamber in a space between said upper and lower sets of packing rings for exerting a force for axial compression of said lower set of packing rings against said lower packing stop and a force for axial compression of said upper set of packing rings against said upper packing stop to thereby urge the radial expansion of said packing rings and provide an enhanced substantially uniform sealing effectiveness of the packing rings, said spring means comprising at least one spring washer of frusto-conical configuration positioned between said retainer rings in encircling sleeved relation with said valve stem for exerting an axially compressive force on each set of packing rings;
said valve bonnet being provided with a port formed by a passage through the wall thereof which communicates with said spring means in said packing chamber in the space between said upper and lower sets of packing rings, and a pressure fitting provided in the outer end of said passage for allowing the detection of fluid leakage past said packing rings into said space or the selective pressurized injections of a sealing material or fluid into said space;
at least one of said spring washers being provided with a notch therein allowing communication between said port and the annulus defined by the valve stem and the inner surfaces of said frusto-conical washer and between said port and the annulus defined by the wall of said valve stem bore and the outer surfaces of 45 said spring washers whereby said pressurized sealing material is allowed to fill said annuluses to enhance the uniform sealing effectiveness of the packing rings; and
means for axially compressing said upper and lower sets of packing rings and said spring means for preloading both sets of said packing rings and for inducing an internal spring loaded force for axial compression of said sets of packing rings.

5,056,759
PROTECTED BELLOWS FOR VALVE
Ronald D. Schlesch, Three Rivers, Mich., assignor to Armstrong International, Inc., Three Rivers, Mich.
Filed Sep. 12, 1990, Ser. No. 581,288
Int. Cl.[5] F16K *1/02, 1/44, 41/10*
U.S. Cl. 251—330 **6 Claims**



1. A valve apparatus suitable for controlling the flow of a fluid containing hard and/or sharp particles, and comprising:
a valve body having a fluid passage therethrough, the fluid passage including a valve seat;
a valve member movable in said valve body from a valve closed position engaging said valve seat to a valve open position spaced from said valve seat, said valve body including a gallery in which said valve member is movable;
a bellows fixed adjacent one end with respect to the valve member and fixed adjacent its other end with respect to the valve body, the bellows being housed loosely in said gallery, said bellows preventing fluid communication between portions of said gallery respectively close to and remote from said valve seat, said bellows having leaves movable close to each other by opening movement of said valve member and damageable by particles have a selected size entering between adjacent leaves thereof;
protective means coactive between said valve body and valve member for protecting the bellows from foreign particles in fluid in said passage and from mechanical shock in all positions of said valve member, said protective means comprising:
first coactive means, mounted with respect to said valve member and valve body and maintaining a clearance gap therebetween in relative positions thereof between said valve open and valve closed positions, (1) for preventing particles above said selected size from passing from said fluid passage into spaces between leaves of said bellows and (2) for limiting fluid flow therethrough sufficient to avoid bellows damage by a water hammer, said gap corresponding in width to said selected particle size, yet (3) for allowing some fluid flow through said gap at all times, and
second coactive means mounted with respect to said valve member and valve body for defining a positive closure seal therebetween in said valve open position,
said first coactive means defining a cylindrical peripheral portion on said valve member across said gap from a radially inward extending flange on said valve body and axially slidable therepast during opening and closing movement of said valve member, said second coactive means comprising axially opposed poppit surfaces on said valve member and valve body positively engageable at the full open valve position to positively block fluid leakage therepast toward said bellows, and
means defining an axially extending annular space radially between said valve member and valve body and axially separating said radially inward extending flange from said poppit surface of said valve body, the radial width of said annular space being greater than said clearance gap, so that any particles being small enough to pass through the clearance gap form the fluid passage of the valve into said annular space will be contained loosely in said annular space and thereby not effective to jam the valve member with respect to the valve body, thereby preventing binding of said valve member during the opening and closing of said valve member, said particles in said annular space being trapped therein when the valve member fully opens by a selected axial distance.

5,056,760
T-SLOT SHEAVE
Eldon N. Jorgensen, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 2, 1990, Ser. No. 507,264
Int. Cl.[5] B66D *3/04*
U.S. Cl. 254—406 **10 Claims**



2. A sheave assembly for supporting a line, comprising
a stationary side member with an upper end and a lower end,
bowed grooves in the front face of said lower end,
a journal pin extending through and detachably secured to said lower end intermediate said bowed grooves,
a sheave rotatably mounted on the journal pin,
an attachment means secured to the upper end of the stationary side member for supporting the assembly,
a separate portion defining one side of the assembly adjacent the front face of the lower end of the stationary side member, said portion constituting an elongated plate having a first free end and a second free end and swingably mounted on the journal pin adjacent one end thereof to open the assembly to the upper part of the sheave in a first position of said plate for attaching or removal of the line, and to close the assembly in a second position of the plate for encasing the line on the sheave,
the free ends of said plate being provided on their inner side opposite said grooves with extensions that are bowed from end-to-end thereof and that are slidably received and fully engaged by said grooves when the plate is moved to said second position for closing the assembly and are fully disengaged from said grooves when the plate is moved to said first position,
wherein a segment of said front face is between one of said grooves and said sheave, said segment has a first end and a second end, with said plate covering said first end with said second free end of the plate and exposing said second

end when the plate is in said first position, with said plate covering both said first and second ends of the segment with said first free end of the plate when said plate is in said second position, and with said plate covering said second end with said first free end of the plate and exposing said first end when the plate is rotated into a position that is between the first and second positions, such that when said first end is exposed the plate is covering said second end, and when said second end is exposed the plate is covering said first end,

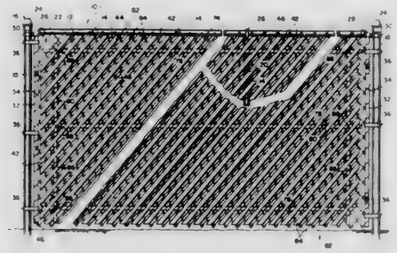
whereby said plate is in continuous bearing contact with said segment such that the extensions are maintained in planar alignment with its respective grooves when the plate is moved to said first position wherein the extensions and the grooves are fully disengaged, to assure against misalignment of the extensions with the grooves when the plate is rotated from said first position to re-engagement of the extensions with the grooves.

5,056,761

SLAT-RETAINING MEANS FOR CHAIN LINK FENCES

Don Meglino, and James V. Meglino, both of 100 Frank Rd., Hicksville, N.Y. 11801

Filed Jan. 4, 1991, Ser. No. 637,608
Int. Cl.[5] B21F *27/00*
U.S. Cl. 256—34 **3 Claims**



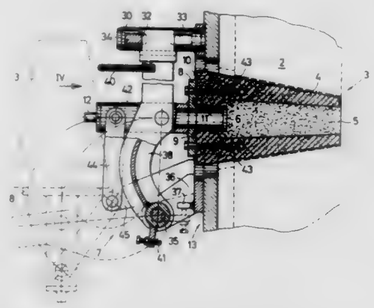
1. Improved slat retaining means for a chain link fence comprising plural cooperating interwoven forty-five degree angled crossing wire lengths forming a wire mesh body for said fence, said body having intersections of said crossing wire lengths bounding vertical diamond shapes throughout and having opposed first and second vertical ends, plural first slats of plastic construction material each disposed in an operative position at a forty-five degree angle through said diamond shapes throughout the fence area between said vertical ends to contribute to privacy and wind protection, each of said first slats having spaced horizontally aligned apertures in opposite edges thereof and each of said first slats bordering one of said vertical ends having vertically aligned apertures in opposite edges thereof proximate the bordering vertical end, and first and second elongated flexible plastic strips of a height substantially of an extent equal to one-half the vertical height of a wire mesh diamond shape, said first strips having an operative position interwoven through said diamond shapes and through horizontally aligned apertures of said first slats, said second strips having an operative position interwoven through said diamond shapes and through vertically aligned apertures of said first slats, whereby said first slats are held in interwoven positions in said wire mesh fence by said first and second strips.

5,056,762

APPARATUS FOR MOUNTING A GAS WASHING SINK IN A CENTERED MANNER IN A PERFORATED BRICK

Hans Rothfuss, Taunusstein; Raimund Brückner, Engenhahn-Niedernhausen; Peter Keutgen, Kreuzau; Josef Seeger, Düren; Manfred Winkelmann, Krefeld, and Herbert Metzger, Duisburg, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 413,673, Sep. 28, 1989. This application Aug. 23, 1990, Ser. No. 573,057
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833504
Int. Cl.[5] C21C *5/48*
U.S. Cl. 266—217 **16 Claims**



1. An apparatus for mounting a gas washing sink in a centered manner within an opening through a perforated brick in a wall of a metallurgical vessel, to enable gas to be introduced through the sink into molten metal within the vessel, and for removing the sink from the perforated brick, said apparatus comprising:

a support assembly to be fixedly mounted on the exterior of the wall of the metallurgical vessel adjacent the opening in the perforated brick;

fastening means including mounting means for mounting the sink at a position centered relative to said fastening means, said fastening means being mounted with respect to said support assembly for movement relative thereto between an operating position, whereat the sink is pressed into the opening through the perforated brick in a centered manner, and a maintenance position, whereat said fastening means is centered with respect to the opening through the perforated brick and thereby the sink is withdrawn from the opening through the perforated brick;

means, operable between said support assembly and said fastening means, for moving said fastening means and thereby the sink relative to said support assembly to said operating position; and

withdrawal means, operable between said support assembly and said fastening means, for moving said fastening means and thereby the sink relative to said support assembly from said operating position to said maintenance position.

5,056,763

DYNAMIC DAMPER

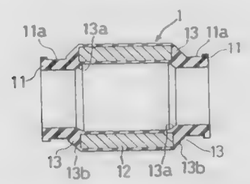
Masaaki Hamada, Komaki, and Masaaki Mishima, Kasugai, both of Japan, assignors to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Aug. 25, 1989, Ser. No. 398,392
Claims priority, application Japan, Aug. 27, 1988, 63-213289; Dec. 2, 1988, 63-306303; Dec. 2, 1988, 63-306304
Int. Cl.[5] F16F *7/00*
U.S. Cl. 267—141 **8 Claims**

1. A dynamic damper comprising:

a pair of ring-shaped fixing members spaced from each other by a predetermined distance, inserted onto and supported by a rotary shaft having vibrations to be absorbed;

a cylinder-shaped mass member having an inner surface larger than the outer surface of said rotary shaft, said cylinder-shaped mass member inserted onto and spaced away from said rotary shaft and disposed between said pair of ring-shaped fixing members; and



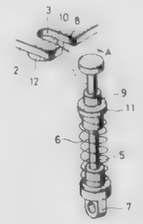
elastic members integrally connecting ends of said fixing members with ends of said cylinder-shaped mass member, said mass member being free of support except from said elastic members whereby said mass member vibrates by resonance and said elastic members are subjected to shear deformation between said mass member and said rotary shaft.

5,056,764

SHOCK ABSORBER FOR USE IN TOYS

Takashi Mochizuki, Shimizu, Japan, assignor to Kabushiki Kaisha Tamiya Mokei, Shizuoka, Japan

Continuation of Ser. No. 310,435, Feb. 15, 1989, abandoned. This application Sep. 21, 1990, Ser. No. 586,378
Claims priority, application Japan, Feb. 22, 1988, 63-22112
Int. Cl.[5] F16F *1/12*
U.S. Cl. 267—291 **2 Claims**



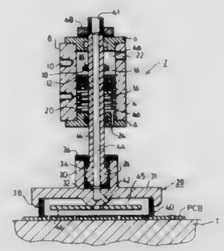
1. A shock absorber for use with a toy vehicle having a chassis, comprising a rod having a head at one end and a mounting member on the other end thereof, a retainer slidable along said rod between the head and said member, said retainer having a flange portion and an upper head portion smaller than said flange portion on the side of the retainer adjacent said head of the rod, a spring circling said rod and biased between the flange of said retainer and said member, a slotted bore in said chassis smaller in size than the head of the rod and said upper head portion of the retainer for slidably receiving said rod that communicates with an edge of the chassis to permit the rod to be inserted into said bore in a direction transverse to its length, and recess means mounted on the chassis co-axially with and on the lower side of the bore, said recess means having a first opening extending in the same direction as said slotted bore for receiving said rod but not large enough to permit said upper head portion of the retainer to pass through and having a second opening extending downwardly from the lower side of the bore for receiving the upper head portion of the retainer, the force of the spring holding the retainer in the recess means and thereby holding the shock absorber in place on the chassis of the vehicle when the rod is inserted into the bore with the head of the rod being located on the upper side of the bore.

5,056,765

IMMOBILIZING DEVICE PARTICULARLY USEFUL DURING PROCESSING OR TESTING FLAT WORKPIECES

Omri Brandstater, Ramat Hasharon, Israel, assignor to Orbot Systems, Ltd., Yaune, Israel

Filed May 25, 1990, Ser. No. 528,393
Claims priority, application Israel, Jun. 6, 1989, 90545
Int. Cl.[5] B65H *3/08*
U.S. Cl. 269—20 **20 Claims**



1. An immobilizing device particularly useful for immobilizing and flattening a substantially planar workpiece on a flat surface of a table during the processing or testing of the workpiece, comprising:

mounting means for mounting the device over the table;

a carrier member carried by said mounting means and vertically movable with respect thereto towards and away from the workpiece on the table when the device is mounted over the table;

an air-cushion unit carried by the lower end of said carrier member and movable therewith to a proximal position close to said workpiece, or to a distal position remote from the workpiece;

and a yieldable link between said mounting means and said air-cushion unit permitting said air-cushion unit to move vertically with respect to said mounting means;

said air-cushion unit including an annular skirt defining, with said workpiece when the air-cushion unit is in its proximal position, an air-cushion chamber, and means effective to pressurize said air-cushion chamber when the air-cushion unit is in its proximal position, to cause the air-cushion unit to hover over the workpiece in order to permit relative movement between the annular skirt and the workpiece and table, while immobilizing and flattening the workpiece with respect to the table.

5,056,766

PRECISION MACHINE VISE

Eddy Engibarov, c/o E.Z.E. Machine Company-616 Onderdonk Ave., Ridgewood, N.Y. 11385

Filed Jun. 16, 1989, Ser. No. 367,376
Int. Cl.[5] B23Q *3/02*
U.S. Cl. 269—136 **19 Claims**

1. A vise for use with a machining table having a flat upper surface and at least one elongated T-slot in said upper surface, comprising

a first vise jaw movable within said elongated T-slot to any desired position on said table,

first clamping means within said T-slot for clamping said first jaw in a first stationary position on said table,

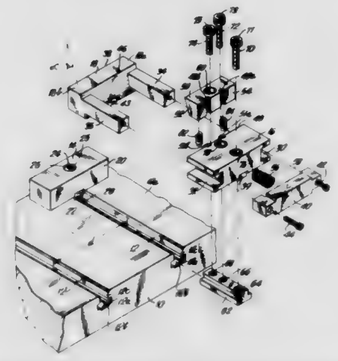
a second vise jaw,

a jaw support for supporting said second vise jaw,

second clamping means within said T-slot for clamping said

jaw support in a second stationary position on said table spaced from said first jaw,

means for mounting said second jaw on said jaw support for movement relative to said first jaw in the direction of said T-slot, said mounting means on said second jaw horizontally surrounding said jaw support said jaw support and said second jaw having opposing surfaces extending transverse to said T-slot, at least one of said opposing surfaces being in a plane inclined to said upper surface of said table,



a wedge member inserted between said opposing surfaces and having opposite sides conforming in inclination to, and pressing against said opposing surfaces, and

means for adjusting the position of said wedge member in a direction perpendicular to said upper surface of said table, thereby to adjust the position of said second jaw relative to said first jaw, wherein said second jaw is biased toward said jaw support by a biasing means acting between said second support mounting means and said jaw support in the direction of the slot.

5,056,767

DEVICE FOR INTERFACING A HIGH-SPEED PRINTER TO POST-PRINTER RECEIVING EQUIPMENT

Jonathan D. Emigh, Somerset, and Raymond P. Porter, Sherian, both of Calif., assignors to U.S. Computer Services, Sacramento, Calif.

Filed May 17, 1990, Ser. No. 525,885

Int. Cl.[5] B65H *39/02*

U.S. Cl. 270—58 **9 Claims**

1. An interfacing device for collating into a document packet the output of a printer and transferring to post-printer receiving equipment a complete designated document having one or more printed document pages, comprising:

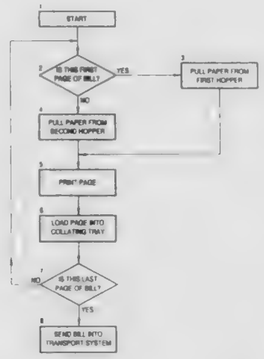
a) a collating tray for accepting from said printer each said document page, wherein said collating tray comprises a three walled printed page receptacle formed by two longitudinal side walls with proximal and distal ends and upper and lower edges, a transverse back wall having inner and outer surfaces with opposing ends and upper and lower edges connecting said proximal side wall ends, one said proximal side wall end at each said back wall opposing end, and a generally rectangular floor plate with top and bottom surfaces, two longitudinal side edges and proximal and distal end edges secured within said walls at an angle running from said back wall lower edge to said side wall distal end proximate said side wall upper edge;

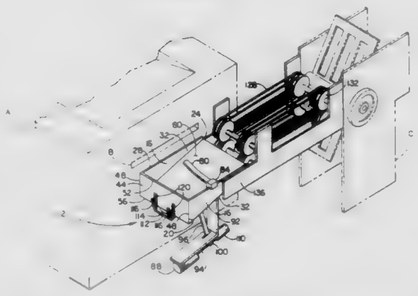
b) first means for transferring said document packet from said collating tray to post-printer receiving equipment, wherein said first means for transferring said document packet from said collating tray comprises:

a solenoid mounted by a solenoid support bracket to said collating tray;

an elongated lever arm having first and second ends wherein said first lever arm end is fastened to said solenoid and pivotally secured between said lever arm ends to said solenoid support bracket; and

means for ejecting said document packet from said collating tray fastened to said lever arm second end; and





c) second means for informing said first means that said complete designated document is printed and said document packet is within said collating tray ready for transferring to said post-printer receiving equipment.

5,056,768

IMAGE-FORMING MACHINE

Shigeo Koyama, Ibaraki, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 269,716, Nov. 10, 1988, Pat. No. 4,968,016. This application Mar. 22, 1990, Ser. No. 497,258

Claims priority, application Japan, Nov. 10, 1987, 62-282201; Nov. 11, 1987, 62-283078; Nov. 30, 1987, 62-300074; Nov. 30, 1987, 62-300079

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] B65H *83/00*

U.S. Cl. 271—3 **19 Claims**

1. A sheet feeding system for an image forming machine, comprising:

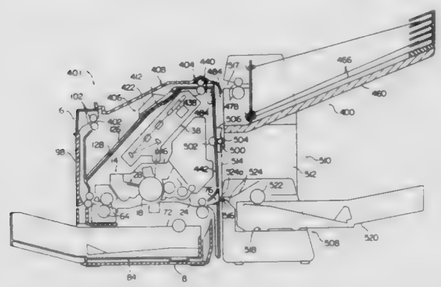
a main body having a conveying passage therein for guiding sheet materials therethrough;

feed means for feeding sheet materials to said conveying passage, said feed means including a feed roller;

a sorter means, having a plurality of bin trays into which sheet materials can be sorted, for receiving sheet materials discharged from said conveying passage; and

supporting means for supporting said feed means and said sorter means on one side of said main body, said supporting means being detachably mounted on said main body;

wherein said main body includes a receiving section therein for receiving sheet materials guided through said conveying passage, and means for guiding sheet materials from



said conveying passage, above said receiving section, through an introduction opening defined in said supporting means and into said sorting means.

5,056,769

SHEET SUPPLYING APPARATUS

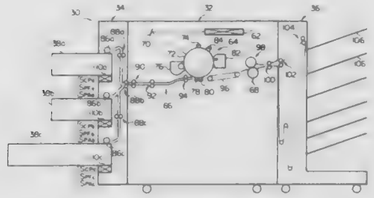
Yoshikazu Ikenoue, and Ikunori Yamaguchi, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1988, Ser. No. 180,908

Claims priority, application Japan, Apr. 15, 1987, 62-92192; Jun. 27, 1987, 62-160378

Int. Cl.[5] G03G *15/00*

U.S. Cl. 271—9 **6 Claims**



1. A sheet supplying apparatus comprising

a) a plurality of sheet supply stages each for storing a stock of sheets therein, each of the sheet supply stages comprising a vertically movable sheet support member capable of supporting a stock of sheets thereon and drive means for driving the sheet support member for vertical movement, said sheet supply stages being selected for use in a predetermined order of priority,

b) first control means associated with each of said sheet supply stages for driving the sheet support member of the associated sheet supply stage for movement to a position in which the uppermost one of the sheets supported thereon reaches a predetermined level,

c) detecting means associated with each of said sheet supply stages for detecting the presence of a sheet stored in the associated sheet supply stage,

d) initial conditioning means for selecting, from said sheet supply stages, a sheet supply stage having a stock of sheets stored therein and higher in said order of priority than another sheet supply stage having a stock of sheets stored therein, and

e) second control means responsive to termination of the operation of said drive means for enabling said initial conditioning means to operate upon termination of the operation of the drive means.

5,056,770

DEVICE FOR RELEASING A FILM SHEET ADHERING TO THE INNER SURFACE OF THE UPPER CASSETTE PORTION OF AN X-RAY FILM CASSETTE

Heinz Killguss, Kornwestheim; Bernd Mirlieb, Fellbach, and Gerhard Quanz, Stuttgart, all of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

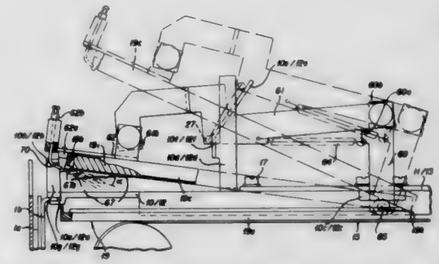
PCT No. PCT/EP88/00401, § 371 Date Nov. 8, 1989, § 102(e) Date Nov. 8, 1989, PCT Pub. No. WO88/09000, PCT Pub. Date Nov. 17, 1988

PCT Filed May 9, 1988, Ser. No. 444,169

Claims priority, application Fed. Rep. of Germany, May 11, 1987, 3715689

Int. Cl.[5] B65H *3/14*

U.S. Cl. 271—97 **13 Claims**



1. In apparatus for loading and unloading x-ray film cassettes of the type having a lower part and an upper part, the latter being raised to separate it from the lower part for loading and unloading, which apparatus utilizes air jet means to separate film from the raised upper cassette part; the improvement comprising:

means operated by movement of said upper cassette part toward its raised position to move said air jet means along with said upper cassette part.

5,056,771

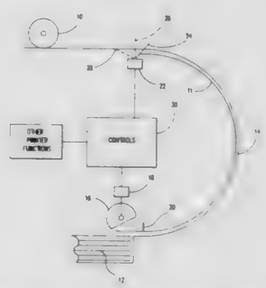
APPARATUS FOR CONTROLLING INTERPAGE GAPS IN PRINTERS AND METHOD OF INTERPAGE GAP CONTROL

James L. Beck, Versailles, and Stanley Dyer, Lexington, both of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Aug. 25, 1989, Ser. No. 399,633

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—114 **4 Claims**



1. An interpage gap width control for a utilization device having a page feeding apparatus comprising a page feed path for feeding pages to said utilization device, in a non-staged manner, and means for picking said pages, said control comprising:

means for monitoring passage of said pages along said feed path, including a sensor means, positioned at least partially in said feed path, for detecting the passage of a leading edge and a trailing edge of one of said pages, relative to said sensor means;

means responsive to said means for monitoring passage for controlling said means for picking for further controlling the width of said gap between said pages, including timing means for timing at least a first period of time from picking of said page until said page actuates said sensor means and a second time period from said actuation until said page deactivates said sensor means.

5,056,772

PAPER ROTATING TABLE

Wilbur J. Kellum, III, Redmond, Wash., assignor to EMF Corporation, Redmond, Wash.

Filed May 19, 1989, Ser. No. 354,977

Int. Cl.[5] B65H *29/20*

U.S. Cl. 271—184 **26 Claims**



1. An apparatus for receiving at a first end of said apparatus a sheet of paper, for rotating said sheet of paper through an arc, and for delivering said sheet at a second end of said apparatus, said apparatus comprising:

(a) a table having a sheet support surface;

(b) a paper drive mounted within said table for urging said sheet across said support surface from said first end to a spin station along a sheet entry path, and for urging said sheet from said spin station to said second end along a sheet exit path, said spin station mounted within said table and further comprising a pivot and a spin drive, said pivot disposed within said sheet entry path;

(c) a registration edge disposed upon said sheet surface down-path of said spin station;

wherein said pivot further comprises a pivot post positioned up-path from an upper end of said registration edge, and wherein said pivot post is free to rotate about an axis substantially normal to said support surface.

5,056,773

SHEET DELIVERER

Willi Weisgerber, Geisenheim-Johannisberg, Fed. Rep. of Germany, assignor to Miller-Johannisberg Druckmaschinen GmbH, Geisenheim, Fed. Rep. of Germany

Filed Jul. 3, 1990, Ser. No. 548,499

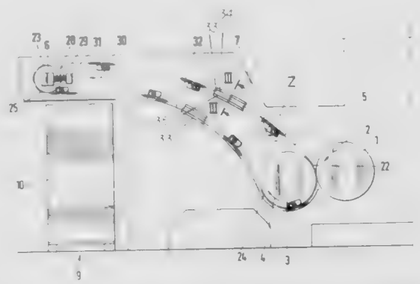
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1989, 3939250

Int. Cl.[5] B65H *29/04*

U.S. Cl. 271—204 **10 Claims**

1. In a sheet deliverer for use with a sheet processing machine such as a sheet printing machine with high stapling delivery in which controlled gripping pads take sheets off a cylinder (**1**) of such a machine and convey them to a stapling table (**9**) upon which the sheets are delivered and stapled to a high staple (**10**), the improvement comprising:

said gripping pads being spaced along a pair of endless, laterally spaced, orbitally moveable chains (**5**) and being fastened at their ends on both sides of said orbiting chains (**5**), said chains (**5**) traveling in chain guides (**33**) with upper and lower guide flanks (**34, 35**) wherein said chains (**5**) are guided at the input and at the output sides of said sheet deliverer over front and rear reversing guides (**3, 6**), and said chain guides (**33**) extend between said input and output reversing guides (**3, 6**) adjacent the upper side of such a stapling table (**9**), and wherein said chain guides



have upper and lower chain guide ways extending between pairs of transition points (**22, 23**; **24,25**) at the respective reversing guides (**3, 6**), said chain guide ways describing curves which over the entire extent of the respective chain guides extend in the same direction of curvature, and a clamping device (**28**) which urges said chains continuously into engagement with only one guide flank of the respective chain guide ways throughout their travel within the respective chain guide ways.

5,056,774

FINISHER FOR AN IMAGE FORMING APPARATUS

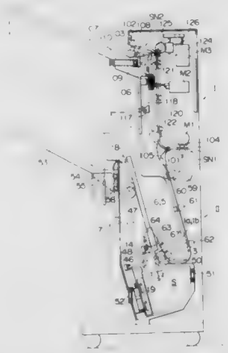
Kazunori Kubota, Yokohama; Hideo Yamazaki, Tokyo; Yuichi Fujii, Okazaki, and Mitsuru Ichikawa, Nishio, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1990, Ser. No. 509,239

Claims priority, application Japan, Apr. 18, 1989, 1-98386; Apr. 18, 1989, 1-98387; Apr. 20, 1989, 1-101271; Feb. 28, 1990, 2-48486

Int. Cl.[5] B65H *31/04*

U.S. Cl. 271—213 **8 Claims**



1. A finisher for finishing paper sheets which are sequentially driven out of an image forming apparatus, comprising:

a finisher body positionable for receiving paper sheets discharged from an image forming apparatus;

a tray for collecting the discharged paper sheets;

a support to which said tray is mounted by means permitting said tray to move vertically relative to said support but interlocking said tray and said support for horizontal movement in a direction perpendicular to a direction of discharge of the paper onto the tray;

drive means for vertically moving the tray;

means connected to said support for together reciprocating said support and said tray in said horizontal movement; and

paper pressing means mounted to said support for pressing on the paper sheets collected in the tray,

said paper pressing means reciprocating with the tray in the horizontal movement but being movable relative to the tray during the vertical movement of the tray, so that the vertical position of the tray relative to the paper pressing means can be adjusted.

5,056,775

DOCUMENT FEEDER WHICH PROPERLY POSITIONS A DOCUMENT ON THE PLATEN

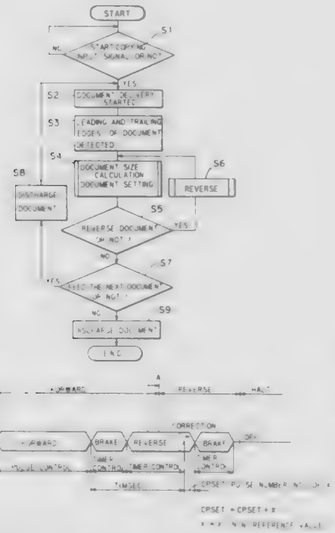
Yasuhiko Kida, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Jul. 6, 1990, Ser. No. 548,851

Claims priority, application Japan, Jul. 12, 1989, 1-180059; Jul. 12, 1989, 1-180060

Int. Cl.[5] B65H *7/14*

U.S. Cl. 271—227 **7 Claims**



1. An automatic document feeder having a document delivery belt, comprising:

pulse output means for outputting pulses in synchronism with the driving of the delivery belt;

belt driving means for driving the delivery belt by a predetermined amount in a first direction and then, driving the delivery belt in a second direction which is opposite to said first direction for a constant time period;

counting means for counting the number of pulses outputted from the pulse output means in the constant time period during which the delivery belt is driven in the second direction;

comparing means for comparing a counted value of the counting means with a predetermined reference value; and

additional belt driving means responsive to an output of the comparing means for driving the delivery belt in the second direction until a predetermined number of pulses corresponding to the output of the comparing means have been outputted from the pulse output means.

5,056,776

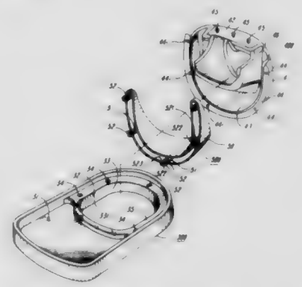
BABY WALKER CHAIR AND DESK ASSEMBLY

Chen J. Cheng, Tainan, Taiwan, assignor to Petrus Imports, Inc., Framingham, Mass.

Filed May 25, 1990, Ser. No. 529,142

Int. Cl.[5] A63B *25/00*; **B62B** *9/12*

U.S. Cl. 272—70.3 **11 Claims**



1. A baby walker chair and desk assembly comprising:

a desk having a chair mounting hole defined by a peripheral edge, and vertical holes provided in an upper surface of said desk around said mounting hole;

having an inner seat and a foldable flange having a plurality of apertures disposed therein;

a rigid mounting member conforming to the contour of said chair, and having engaging means engaging said vertical holes in said desk; and means extending through said apertures in said flange when said flange is folded inwardly, and said flange is clamped between said rigid mounting member and said upper surface of said desk, thereby releasbly locking said chair to said desk.

5,056,777

FORCE TRANSMISSION MECHANISM FOR EXERCISE MACHINES

Jan Capjon, Fagerstrand, and Atle Nygaardsvik, Fjellstrand, both of Norway, assignors to Potential Training Products Co. Inc., Oakville, Canada

Filed Feb. 15, 1990, Ser. No. 480,538

Int. Cl.[5] A63B *21/06*

U.S. Cl. 272—117 **1 Claim**

1. In an exercise machine comprising a frame, an exercise portion moveable with respect to said frame, weights raisable with respect to said frame, and force transmission means connecting said weights to said exercise portion to resist movement of said exercise portion, the improvement in which said force transmission means comprises:

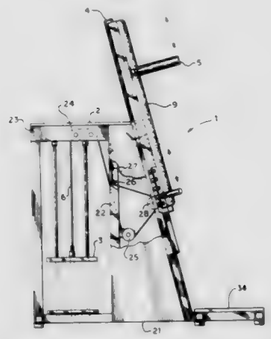
first and second pivot points mounted to said frame and spaced substantially apart from each other with pivot axes in a plane substantially parallel to and spaced from the plane of movement of said exercise portion, said exercise portion being confined to movement within a plane;

a third pivot point mounted to said exercise portion and moveable therewith; and

flexible connection means connected at one end to said frame, passing around one of said first and second pivot points, thence to and passing around said third pivot point, thence to and passing around the other of said first and second pivot points, thus defining a triangle with said

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third pivot point constituting a moveable apex, and thence connecting at its other end to said weights,



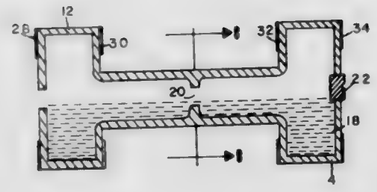
where said exercise portion comprises a member slidable on at least one track mounted to said frame generally parallel to the plane of said pivot axes of said first and second pivot points.

5,056,778

LIQUID FILLED DUMBBELL

Harold L. Hull, 401 Canyon Way, #43, Sparks, Nev. 89434, and Dennis J. Waite, 2245 Hedgewood Dr., Reno, Nev. 89509

Filed Apr. 6, 1990, Ser. No. 505,821
Int. Cl.[5] A63B *21/075*
U.S. Cl. 272—122 4 Claims



1. A dumbbell comprising: at least two hollow containers; a liquid within the containers; a short straight connecting member between the containers; said at least two containers being mounted on the ends of said connecting member, and said at least two containers and connecting member of a size and shape as to be grippable and moveable by a single hand of a user; said connecting member having a passageway for allowing said liquid to flow from one container to another, said passageway having an orifice in the center of said passageway; a threaded member extending from outside one of the containers, through said one container, to said orifice in the passageway; said threaded member having a distal end cooperating with said orifice to provide an adjustable opening for said liquid to flow through said passageway; and at least one of said containers having a closable access to its interior from its exterior to allow filling and emptying of said liquid into said container.

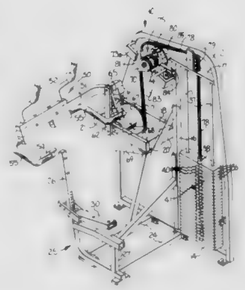
5,056,779

TORSO EXERCISE MACHINE WITH RANGE LIMITER

Gregory M. Webb, Independence, Va., assignor to Nautilus Acquisition Corporation, Independence, Va.

Filed Jul. 20, 1990, Ser. No. 555,989
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—134 28 Claims





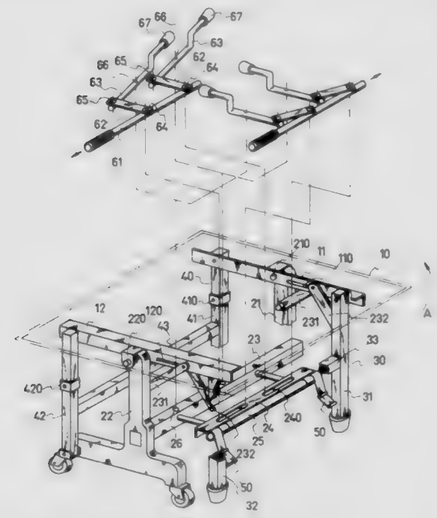
1. A torso exercise machine comprising
a frame,
a seat connected to said frame for supporting a user in a seated position thereon,
an upper body engaging member adapted for engaging a portion of the upper body of the user,
means pivotally mounting said body engaging member to said frame for back and forth movement about a horizontal pivot axis which is positioned to generally pass through the spine of the user when seated upon said seat and which moves in a generally vertical direction during such pivotal movement and so as to generally follow the changing axis of rotation of the spine of the user during corresponding movement of the user,
resistance means, and
means operatively connecting said mounting means to said resistance means for transmitting the pivotal movement of said body engaging member to movement of said resistance means to thereby exercise the torso of the user against the force of said resistance means.

5,056,780

FOLDING BILLIARD TABLE

Wu S. Tsang, P.O. Box 1-79, Taipei, Taiwan

Filed Jun. 12, 1990, Ser. No. 536,754
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—3 R 6 Claims



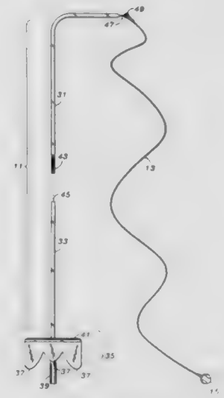
1. A folding billiard table, comprising:
a billiard table face with ball pockets;
a frame member disposed below said billiard table face so as to support the billiard table face, said frame member having at least a first support beam and a second support beam, said first support beam and said second support beam each being formed with a long slot;
a pair of main support legs, each of said main support legs having an upper end which is rotatably fixed to one of said first and second support beams of said frame member to support the same;
a middle main support beam extending between and attached to said main support legs;
a pair of foldable laterally disposed support legs, each of said pair of laterally disposed support legs having an upper end and a lower end, the upper end of each of said laterally disposed support legs being fixed to a first end of one of said first and second support beams, the lower end of each of said laterally disposed support legs being fixed to one side of one of said main support legs, each of said foldable laterally disposed support legs being provided with a foldable joint structure; and
a pair of liftable and foldable laterally disposed support legs, each of said pair of liftable and foldable laterally disposed support legs having an upper end and a lower end, the upper end of each of said liftable and foldable laterally disposed support legs being rotatably fixed to a second end of one of said first and second support beams, so that when said billiard table face is turned upward, and said liftable and foldable lateral support legs are raised off the ground, each said foldable joint structure is bent, and each of said pair of liftable and foldable laterally disposed support legs is lifted gradually, and when said billiard table face is folded and stands vertically, each of said pair of liftable and foldable laterally disposed support legs is located closely adjacent to said billiard table face.

5,056,781

TETHERED BALL PITCHING APPARATUS

George D. Preston, San Dimas; Timothy E. Kearney, Diamond Bar; Thomas A. Phelan, Moreno Valley, and John W. Tulac, Covina, all of Calif., assignors to Preston Sports Product Corporation, San Dimas, Calif.

Continuation-in-part of Ser. No. 474,516, Feb. 2, 1990, abandoned. This application Nov. 14, 1990, Ser. No. 613,277
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—26 E 18 Claims



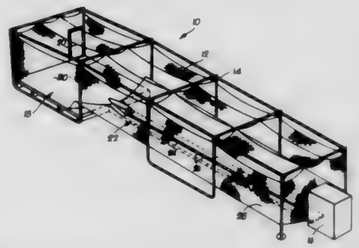
1. A pitching apparatus comprising: a vertically oriented base portion having an open upper end and a lower end terminating in a tapering center spike member for insertion into the ground; a hilt portion having a planar portion having an aperture through which said center spike member extends perpendicular to said planar center portion, a plurality of vertical teeth extending from said planar portion; an upper, davit shaped member having a vertically oriented portion connected to the upper end of said vertically oriented base portion, and a horizontally oriented portion having an aperture at its end; an elastic cord having a first end secured to a ring, said ring extending through said aperture, and a second end attachable to a ball;

5,056,782

BALL RETURN CONVEYOR SYSTEM FOR BASEBALL PITCHING MACHINE CAGES

Paul S. Giovagnoli, Kansas City, Mo., assignor to Master Pitching Machine, Inc., Kansas City, Mo.

Continuation of Ser. No. 250,520, Sep. 29, 1988, abandoned. This application Feb. 28, 1990, Ser. No. 492,288
Int. Cl.[5] A63B *69/00*; B65G *15/00*
U.S. Cl. 273—26 R 11 Claims



1. A ball return conveyor apparatus for use with a pitching machine in a batting cage, the conveyor apparatus comprising:

a belt formed into an endless loop and having an outward facing transport surface provided with ball retention means for retaining a plurality of balls on the transport surface during movement of the belt;

a pair of turning rollers each of a predetermined diameter and being positioned inside the endless loop of the belt for supporting the belt for travel along an upper belt run and a lower belt run, the upper belt run defining a ball return path and including upstream and downstream ends;

belt directing means in contact with the transport surface of the belt adjacent the upstream end of the upper run for directing the upper run toward the lower run; and

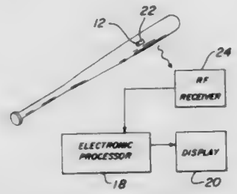
belt redirecting means in contact with the transport surface of the belt adjacent the downstream end of the upper run for redirecting the upper run of the belt away from the lower run of the belt, the belt directing means and the belt redirecting means together positioning the upper run for travel along a horizontal path substantially parallel with the path followed by the lower run along substantially the entire length of the runs at a vertical distance above the lower runs which is less than the diameter of at least one of the turning rollers.

5,056,783

SPORTS IMPLEMENT SWING ANALYZER

Robert R. Matcovich, King of Prussia; Thomas J. Matcovich, Maple Glen, both of Pa.; John J. Matcovich, Woodside, N.Y., and Kenneth W. Paist, Philadelphia, Pa., assignors to Batronics, Inc., Maple Glen, Pa.

Filed Oct. 18, 1989, Ser. No. 423,780
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—26 R **19 Claims**



1. A swing analyzer for analyzing the swing of an implement at an object comprising:

acceleration measurement means affixed to said implement for measuring the acceleration of said implement through a swing, including acceleration when said implement strikes said object, and for outputting a signal characteristic of said acceleration; said signal output having a peak upon said implement striking said object;

means for transmitting said acceleration signal;

means responsive to said transmitting means for processing said acceleration signal, said processing means providing a series of data points representing the acceleration signal characteristic;

means to store said data points;

means responsive to the peak of said signal output to select a predetermined number of data points before and after said peak; and

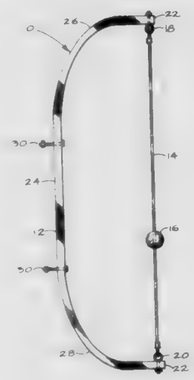
said processing means processing said selected data points according to a prestored algorithm for translating said data points into an output characteristic of said swing.

5,056,784

ATHLETIC SWING TRAINING DEVICE

Reggie Craig, 106 Dozent, Baytown, Tex. 77521

Filed May 17, 1990, Ser. No. 525,355
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—26 R **4 Claims**



1. An athletic swing training device, comprising:

a one-piece bow-shaped member having first and second arc-shaped terminal end portions;

an elongated elastic cord having a ball adjustable attached intermediate the ends thereof, said bow-shaped member having a straight portion extending between said arc-shaped end portions, said arc-shaped end-shaped portions being of equal radii;

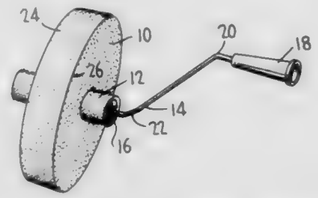
means for connecting said device to stable vertical support.

5,056,785

TENNIS STROKE PRACTICE APPARATUS

David M. Robey, Alexandria, Va., assignor to R. J. Lasker, Washington, D.C.

Filed Jul. 26, 1990, Ser. No. 558,211
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—29 A **8 Claims**



1. A device for teaching tennis strokes in combination with a tennis racquet, comprising:

a handle attached to a shaft and adapted to be held by one hand of a user;

a wheel rotatably mounted on said shaft about a spin axis; and

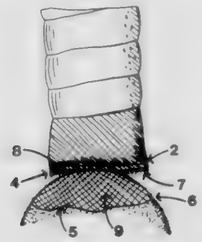
a tennis racquet held by the other hand of the user for stroking said wheel, said wheel when struck by said tennis racquet being induced to spin about said spin axis when said wheel is positioned by said one hand.

5,056,786

TENNIS BALL RETRIEVER

Richard J. Bellettini, Victory/Vanowen St., Burbank, Calif. 91505, and Arturo G. Bellettini, Washington & Dickinson St., Charleston, W. Va. 25311

Continuation-in-part of Ser. No. 325,654, Mar. 20, 1989, abandoned. This application Jan. 26, 1990, Ser. No. 471,799
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—29 R **5 Claims**



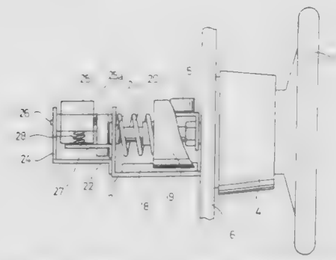
1. A tennis ball retrieval system comprising; the combination of a tennis racket, a tennis ball, a strip of hook fabric and a mesh fabric of move stocking material, said tennis racket having a ball contact head portion and an elongated handle attached to said head portion at one of its ends, said handle having at its other end a substantially planar surface perpendicular to the longitudinal axis thereof, said hook fabric being attached to said planar surface, said stocking material being attached to the outer surface of said ball, whereby when said hook fabric is engaged with said stocking material said ball will be attached to said racket handle.

5,056,787

STEERING APPARATUS FOR GAME MACHINE

Ishida Mitsuyoshi, Tokyo, Japan, assignor to Taito Corporation, Tokyo, Japan

PCT No. PCT/JP88/01290, § 371 Date Jul. 16, 1990, § 102(e) Date Jul. 16, 1990, PCT Pub. No. WO90/04440, PCT Pub. Date Mar. 5, 1990
PCT Filed Dec. 21, 1988, Ser. No. 499,445
Claims priority, application Japan, Oct. 25, 1988, 63-267166
Int. Cl.[5] A63F *9/22*; **G09B** *9/04*
U.S. Cl. 273—148 B **2 Claims**



1. A steering apparatus for a game machine comprising:

(a) a base plate (**7**) which is attached to a frame (**6**) of the game machine;

(b) a steering shaft (**8**) which is attached with a steering wheel (**1**) at one end thereof and is rotatably supported on said base plate (**7**);

(c) a bracket (**13**) fixed to an intermediate portion of said steering shaft (**8**);

(d) a guide roller (**15**) which is rotatably supported by the bracket (**13**) so that a central axis of said guide roller crosses perpendicularly to the steering shaft (**8**);

(e) an end cam (**19**) which has a cam face consisting of a pair of symmetrical helical surface which define one valley in a peripheral portion of one end face and is coaxially provided for the steering shaft (**8**) and is movably provided in its axial direction so that the cam face comes into contact with the guide roller (**15**);

(f) a guide to block the rotation of the end cam (**19**) and to allow the movement in only the axial direction;

(g) a coil spring (**20**) for exerting an elastic force on the end cam (**19**) so as to press the cam face of the end cam (**19**) to the guide roller (**15**);

(h) a stopper comprising a turning pin (**2**) provided for the steering wheel (**1**) and a fixed pin (**5**) provided on a turning track of the turning pin (**2**);

(i) a center detector (**11**) for generating an output when the guide roller (**15**) coincides with the valley of the cam face of the end cam (**19**); and

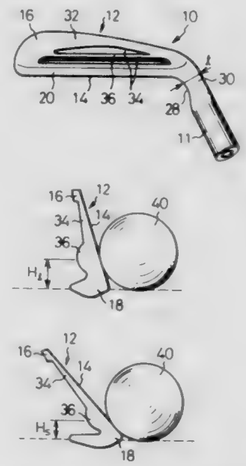
(j) a rotational angle detecting means (**25**) for detecting a rotational angle of the steering shaft (**8**).

5,056,788

CLUB SET WITH PROGRESSIVELY ALTERED HOSEL THICKNESS AND HEAD WEIGHT

Yutaka Katayama, Tokyo, Japan, assignor to Maruman Golf Kabushiki Kaisha, Tokyo, Japan

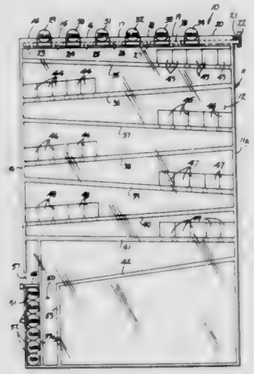
Filed Sep. 1, 1989, Ser. No. 401,688
Claims priority, application Japan, Sep. 2, 1988, 63-218439
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—77 A **1 Claim**



1. In a set of golf club irons consisting of long irons and short irons, each of said clubs having a shaft and a head, said head having a hitting portion with a hitting surface for hitting a golf ball, a hosel connecting said head to said shaft, a connecting wall on said head extending between said hitting portion and said hosel, said connecting wall forming a hosel pocket and having a thickness progressively smaller in said golf club in said set from a longest of said long irons to a shortest of said short irons, said connecting wall on the side of said hitting surface and between said hitting portion of said club head and said hosel being retracted for preventing a shank hit of a golf ball hit with said each of said club irons, said head of each of said clubs having a rear surface, a sole between said rear surface and said hitting surface and a weighted portion on said rear surface of said head, said weighted portion being progressively closer on said rear surface to said sole in said golf clubs

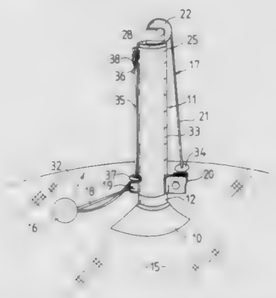
in said set from said longest of said long irons to said shortest of said short irons.

5,056,789
BALL SEQUENCING GAME
Derek J. Talbot, 188 Bastable Ave. Thames View Estate, Barking, Essex, United Kingdom
Filed May 7, 1990, Ser. No. 519,809
Int. Cl.[5] A63F *7/02, 9/06*
U.S. Cl. 273—153 R 5 Claims



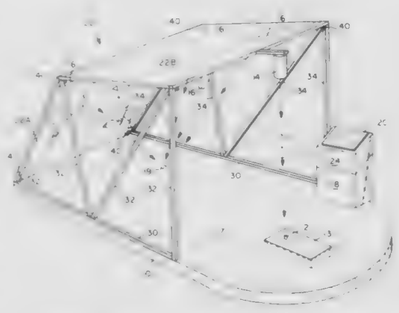
1. A game apparatus comprising, in combination,
a transparent housing including a front wall spaced from and parallel to a rear wall, a first side wall spaced from and parallel to a second side wall, the housing including a first predetermined number of slotted projections, each projection mounted to an uppermost end of the housing, wherein the projections each include a slot and each of the slots aligned coextensively relative to one another to define a parallelepiped elongated guideway, a gap defined between each of the projections, and
a game sphere mounted within each gap, and
a slide mounted within the guideway of the slotted projections, the slide plate including a series of openings directed therethrough, the openings spaced equally apart along the slide and positioned within each of the slots in a first position and positioned within each of the gaps in a second position when the slide is extended from a first retracted position to a second extended position relative to the housing, and
a plurality of ramps underlying the slide, the ramps fixedly mounted between the first and second side walls, and each of the ramps arranged at alternating inclinations relative to adjacent ramps, and
a lowermost ramp underlying the plurality of ramps, wherein the lowermost ramp is mounted to the first side wall and spaced from a second side wall defining a first column between a forward end of the lowermost ramp spaced from the first side wall and a floor defined by the housing.

5,056,790
GOLF PRACTICE DEVICE
Neil W. Russell, Aberdare Hotel, Weston, NSW 2326, Australia
PCT No. PCT/AU89/00228, § 371 Date Dec. 24, 1989, § 102(e) Date Dec. 24, 1989, PCT Pub. No. WO89/11315, PCT Pub. Date Nov. 30, 1989
PCT Filed May 22, 1989, Ser. No. 613,885
Claims priority, application Australia, May 20, 1988, PI8362
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—184 B 10 Claims



10. A golf practice device in which a practice ball is connected by a flexible cord to a ball-control frame mounted rotatably on a base, characterised in that:
when the device is arranged operatively, the base is secured at a location at which a golf club may be swung to strike said ball, the flexible cord being substantially inelastic and acting, when the ball is struck, to effect rotation of the ball-control frame in a circular path, the latter having damping means arranged to allow the cord to extend to an extent commensurate with the striking force on the ball.

5,056,791
GOLF SIMULATOR AND ANALYZER SYSTEM
Nannette Poillon, 21 Craig Ct., Stamford, Conn. 06903; Roland Melzer, Escondido, Calif., and Ronald F. Sienko, Southbury, Conn., assignors to Nannette Poillon, New York, N.Y.
Continuation-in-part of Ser. No. 413,789, Sep. 28, 1989. This application Dec. 11, 1989, Ser. No. 448,241
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 B 18 Claims

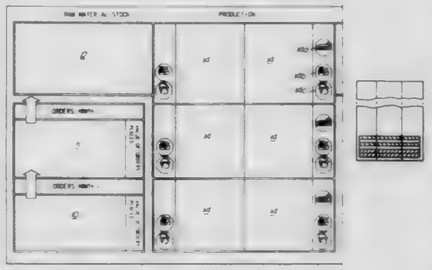


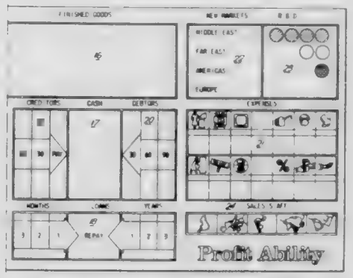
1. An indoor golf simulator comprising:
a tee area and a target screen spaced apart a distance over which a golf ball may be driven from the tee to said target screen;
projector means for projecting images onto said target screen;
computer means connected to the projector means for supplying information to the projector means;

golf swing analyzer means located at the tee area for providing signals representative of the characteristics of a golf swing at the tee area;
at least three acoustical detector means positioned at predetermined locations adjacent to a portion of said target screen for receiving a sound wave originating and radiating from the point of impact of the golf ball on said target screen;
first means for measuring the distance from a start point at the tee area to the point of impact of the golf ball on said target screen, and for determining the flight time of the golf ball;
second means for determining the first time the sound wave reaches each of the first three acoustical detector means;
third means for determining the time difference values amongst said second means determinations to calculate the point of impact of the golf ball on said target screen by using an algorithm that is based upon the pythagorean theorem, said third means for also determining an actual coordinate of the point of impact and for generating a signal representative of the actual coordinate;
fourth means for calculating the initial velocity of the golf ball by using said first means and the calculated point of impact of said third means to calculate three vector components of the initial velocity of the golf ball, said fourth means for generating a signal representative of the initial velocity of the golf ball;
fifth means connecting said golf swing analyzer means, said acoustical means, and said third and fourth means to said computer means,
wherein the signals representative of the characteristics of the golf swing and the signals representative of the initial velocity and the point of impact of the golf ball on said target screen are then inputted by said fifth means into said computer means to derive an unimpeded ball flight path, and wherein said computer means generates a signal to control the projector means that provides an image of the unimpeded ball flight path of the golf ball.

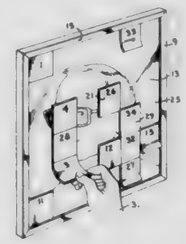
5,056,792
BUSINESS EDUCATION MODEL
Brian Helweg-Larsen, 16 Highmore Cottages, Little Missenden, Amersham, England HP7 0RB , and Gordon F. Cousins, 4, Delamare Street, Farramere, Benoni, Transvaal, South Africa
Filed Feb. 6, 1990, Ser. No. 475,776
Claims priority, application United Kingdom, Feb. 7, 1989, 8902680
Int. Cl.[5] A63F *3/00;* G09B *19/18*
U.S. Cl. 273—278 28 Claims

1. A business education model comprising a plurality of sets of tokens, the tokens of one set being distinguishable from the tokens of another set, the tokens of different sets indicating respectively the values of raw material, cash and debts;
a board itself comprising separate areas representing factory plant, a place for stocking bought raw materials, a location for illustrating the expense of the equipment and manning of manufacturing plant, a location for processing cash and loans, a location for showing the costs of building up a marketing force and a location for containing tokens showing expenditure incurred in the running of the model business, the appropriate tokens being locatable on and movable between different ones of their areas during use of the model;
and a plurality sets of plant cards, each said plant card indicating a different plant which may be locatable on one of said factory plant areas to show the commitment required for plant and labour required in a particular manufacture, each card of a said set of plant cards being differently coloured from other cards in said set and each said card containing spaces for different instructions thereon, the cards representing plant or varying capacity, cost and productivity, said plant cards having spaces representing month-by-month expenses in setting up the plant on one side thereof and spaces representing month-by-month processing of raw material on the other side thereof, there being provided indicia on each space on said one side of each card indicating the value of tokens to be provided on that space, and indicia on each space on said reverse side of each card indicating the value of tokens to be provided on that space.





5,056,793
PICTURE IDENTIFICATION GAME
Harold A. Sigle, 5731 SW. 69th, Auburn, Kans. 66402
Filed Jun. 1, 1990, Ser. No. 531,528
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—282 5 Claims

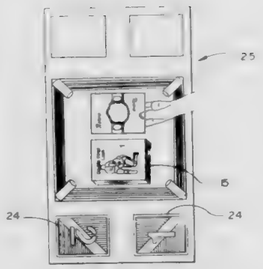


1. A picture identification game apparatus comprising:

(a) a picture contained on a planar surface;
(b) a planar backing board;
(c) a planar, transparent viewing window;
(d) a frame having a lip adapted to contain said picture, said backing board, and said viewing window therein in overlying abutting relationship; said frame comprising a slot adapted for first inserting said picture into said frame and for then inserting said viewing window into said frame in front of said picture said viewing window having a first side facing toward said picture and a second side facing away from said picture; and
(e) a plurality of opaque cover pieces for initially completely concealing said picture; each of said cover pieces having a pressure-sensitive adhesive strip along the edge of one side thereof; said cover pieces adhesively secured in side-by-side relationship to said second side of said viewing window; each of said cover pieces separately and individually peelingly removable from said viewing window such that a portion of said picture exposed by such removal of one of said cover pieces can be associated only with those portions of said picture exposed by previous removal of other ones of such cover pieces; each of said cover pieces uniquely identified by a mark on the side opposite the said side containing said adhesive strip.

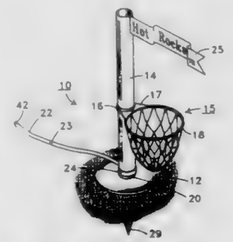
5,056,794
GAME TO SIMULATE WRESTLING
Cosmian E. Simms, 5510 Fernpark Ave., Baltimore, Md. 21207
Filed Sep. 18, 1990, Ser. No. 584,084
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—298 39 Claims





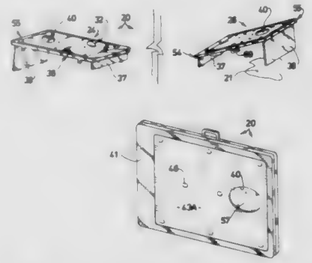
37. A method of playing a competitive game for four competitors, wherein a first team has two partners and a second opposing team has two partners, said game having a plurality of images, the method comprising the steps of: distributing a predetermined number of images to each competitor visually, comparing images between the partners of each respective team and determining a strategy of play by each respective team, exchanging of images between partners being prevented.

5,056,795
RECREATIONAL DEVICE AND METHODS OF USING SAME
Gerald L. Buhrow, 6910 N. 79th St., Scottsdale, Ariz. 85250
Filed May 14, 1990, Ser. No. 523,219
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—400 20 Claims



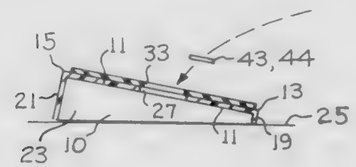
1. A recreational device comprising: a plurality of missiles distinguishable as to origin; a target assembly including a post member, a loop member, attachment means for securing said loop member to said post member and holding said loop member in a fixed horizontal plane a spaced preselected distance from said post member, support means for mounting said post member in a substantially vertical position, identifying means for identifying the source of said missiles which pass through said loop member; and scoring means for identifying the source of said missiles which do not pass through said loop member but land within predefined scoring zones disposed adjacent to and in circumscription about said target assembly.

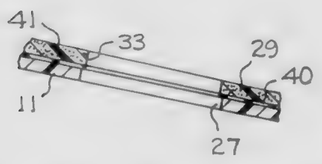
5,056,796
SELF CONTAINED BAG TOSSING GAME
David J. Conville, Hot Springs, Ark., assignor to Conlab, Inc., Hot Springs and Nancy E. Carver, Roland, both of, Ark.
Continuation-in-part of Ser. No. 479,976, Feb. 14, 1990, Pat. No. 4,961,586. This application Oct. 4, 1990, Ser. No. 592,813
The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.
Int. Cl.[5] A63B *63/00, 67/00*
U.S. Cl. 273—402 20 Claims



1. A portable, compact projectile tossing game for use by one or more players, said game comprising:
first and second target assemblies adapted to either be coupled to one another to dispose said game in a transportable mode or to be separated and detached from one another for orientation in an inclined configuration to dispose said game in a play mode;
a plurality of projectiles for tossing by said players at said target assemblies; and,
each of said target assemblies comprising:
a resilient, generally planar playing board comprising an aperture penetrable by said projectiles, pin means projecting away from said board, and aperture means defined in each playing board for mating with and receiving the pin means emanating from the other playing board when said boards are fitted together; and
elevator means foldably associated with each playing board adapted to be selectively disposed in either:
i) a storage orientation generally parallel with said playing board; or,
ii) an operational orientation perpendicular to said playing board.

5,056,797
DISK TOSS GAME
Tad L. Hockert, 507 S. Riverside, Goshen, Ind. 46526, and Steven L. Hockert, 1059 E. Centennial, Nappanee, Ind. 46550
Filed Feb. 28, 1991, Ser. No. 662,438
Int. Cl.[5] A63B *63/00, 67/06*
U.S. Cl. 273—402 6 Claims





1. A game comprising at least one target device adapted for positionment on a floor or ground surface; and a series of flat circular disks to be thrown by the game players onto each said target device; each said target device comprising a flat target board having a front edge, a rear edge, and two side edges; each target board having at least one target hole therein; each target board being tilted in a front-to-rear direction so that the rear edge is slightly higher than the front edge; a number of interchangeable cushioner pads adapted for disposition on each said target board; each cushioner pad comprising a multi-layer structure that includes a rubber layer adapted to cling to the target board surface; and a soft resilient foam layer bonded to said rubber layer so that when the pad is positioned on a target board any disk landing flatwise on the pad will tend to stay on the resilient foam surface instead of bouncing off of the foam surface; each pad having at least one hole therethrough alignable with the hole in the associated target board.

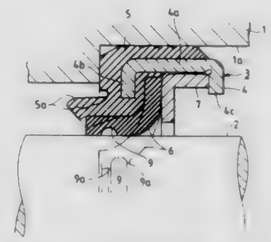
5,056,798
FREEWAY FRENZY
H. Bernice Wehrley, 323 S. Barnwell St., Oceanside, Calif. 92054
Continuation-in-part of Ser. No. 422,045, Oct. 16, 1989, abandoned. This application Aug. 29, 1990, Ser. No. 574,753
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—460 21 Claims

1. An electronic game apparatus which comprises:
a keyboard having a plurality of data entry keys and a plurality of function keys;
a screen for displaying alphanumeric information entered into said apparatus by said data entry keys;
a permanent memory matrix comprising character data wherein each character of said matrix corresponds to one of said data entry keys and represents a constant value used for comparison in each game; and
a microprocessor for controlling data flow between said memory, said data entry keys, said function keys, and said display, said microprocessor operative in play mode to



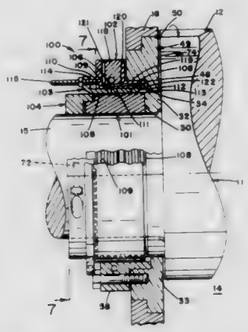
accept and compare data entered from said data entry keys with said character data stored in said permanent memory matrix to identify and accumulate matches therebetween and provide a win signal when all of said characters in said permanent memory have been matched.

5,056,799
LIP SEAL DEVICE
Akira Takenaka; Keiichi Shimasaki, and Hiroshi Kanayama, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan
Filed Feb. 26, 1990, Ser. No. 484,293
Claims priority, application Japan, Feb. 28, 1989, 1-48328
Int. Cl.[5] F16K *41/08*
U.S. Cl. 277—47 4 Claims



1. A lip seal device for sealing the gap between a housing and a rotary shaft, comprising:
a case adapted to surround said rotary shaft;
a lip seal located on said case, said lip seal being curved toward a sealed fluid, said lip seal having a seal surface in sliding contact with the outer circumferential surface of said rotary shaft; and
seal means on said seal surface for sealing a gap between said seal surface and said rotary shaft, said seal means including a primary annular groove and an auxiliary seal means, said primary annular groove extending continuously in the circumferential direction of said rotary shaft, and having an axial width significantly greater than the axial width of the auxiliary seal means, said auxiliary seal means being provided adjacent to said primary annular groove said groove being recessed into said seal surface, wherein said auxiliary seal means comprises at least one annular projection, said annular projection being provided adjacent to said primary annular groove and projecting from said sealing surface toward said rotary shaft.

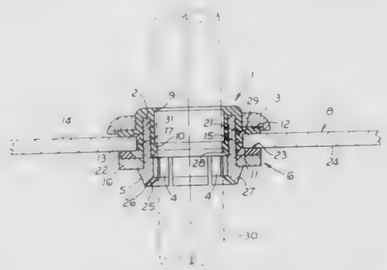
5,056,800
SEAL ASSEMBLY FOR INTERNAL MIXERS
Anton Becker, Stow, Ohio, assignor to Americhem, Inc., Cuyahoga Falls, Ohio
Filed Aug. 18, 1988, Ser. No. 233,593
Int. Cl.[5] F16J 15/44
U.S. Cl. 277—68 10 Claims



1. A seal assembly for the rotor shafts of internal mixers comprising:
seal rotor means carried directly by said rotor shaft outside of the mixing chamber of said mixer and having a continuous circumferential portion for the bi-directional movement of a viscous melt of flowable material, said continuous circumferential portion providing
first trough means extending axially away from said housing;
second trough means extending axially toward said housing; and
annular groove means between said first and second trough means, the pitch of said first and second trough means providing an opposed pumping action on the flowable material sufficient to create an equilibrium within said annular groove means;
sleeve means non-rotatably carried by the housing of said mixer concentrically disposed about said seal rotor means;
pressure balancing means, interposed between said seal rotor means and said sleeve means and comprising
a cylindrical sleeve portion movable, axially, between said seal rotor means and said sleeve means; and
radial flange means at one end of said cylindrical sleeve portion; and
retainer ring means rotatable with said rotor shaft and distally engageable with said seal rotor means, wherein movement of said flowable material between said continuous circumferential portion, said cylindrical sleeve portion and said sleeve means forms a dynamic melt seal thereby controlling the discharge of materials from said mixing chamber between the housing and said rotor shaft.

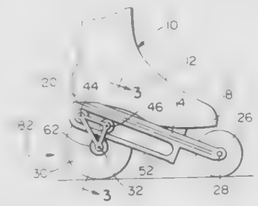
5,056,801
SEAL FOR A SHAFT
David E. Beadle, Birmingham, United Kingdom, assignor to Rover Group Limited, United Kingdom
PCT No. PCT/GB89/00370, § 371 Date Dec. 8, 1989, § 102(e) Date Dec. 8, 1989, PCT Pub. No. WO89/09900, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 11, 1989, Ser. No. 438,393
Claims priority, application United Kingdom, Apr. 15, 1988, 8808956
Int. Cl.[5] B16F 15/22
U.S. Cl. 277—178 6 Claims

1. A seal for sealing a shaft to a sheet of glass, the seal having a hollow body of relatively hard material to extend through an aperture in the sheet of glass,
an outwardly extending flange of relatively hard material on one end of the body,
at least one solid first annular sealing element of relatively soft elastomeric material, extending radially inwardly of the body, defining an outer annular surface in close proximity to the body and an inner annular surface for cooperation with the shaft to provide a seal between the body and the shaft, the annular space between the inner and outer annular surfaces being filled with the soft elastomeric material,
a second annular sealing element of relatively soft elastomeric material interposed between the flange and a first face of the sheet of glass to seal the flange to the sheet of glass,



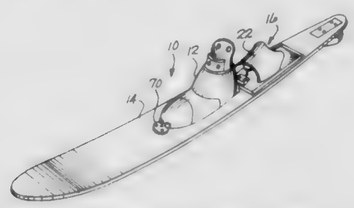
a relatively soft elastomeric annular element extending around the body to engage a bore of the aperture, and
retaining means on the other end of the body to bias the flange towards the first face of the sheet of glass and retain the body in the aperture, said retaining means comprising a plurality of resilient legs having outwardly extending feet on free ends thereof, the legs extending axially of the body from the other end thereof, and a washer comprising a layer of relatively soft elastomeric material and a layer of relatively hard material positioned around the legs and secured against the second face of the sheet of glass by the feet with the layer of soft elastomeric material being arranged to bear against the sheet of glass.

5,056,802
STEP ACTION WHEEL SKATE
Zygmunt Piotrowski, 4 M. 48, UL. Keniga, Warsaw, Poland
Filed Aug. 3, 1990, Ser. No. 562,622
Claims priority, application Poland, Apr. 6, 1990, 284665
Int. Cl.[5] A63C 17/12; B62M 1/04
U.S. Cl. 280—11.115 11 Claims



1. A step action wheeled shoe skate including an elongated frame having front and rear ends, a shoe having toe and heel ends, mounting means mounting said shoe from said frame with said shoe overlying and extending longitudinally of said frame and said toe and heel ends disposed over said front and rear ends, respectively, a first wheel assembly journaled from said front end for rotation about a first axis extending transversely of said frame and shoe and disposed substantially vertically beneath said toe end, a second wheel assembly, support means for said second wheel assembly from which said wheel assembly is journaled for rotation about a second axis substantially paralleling said first axis, said support means and frame including coacting guide means mounting said support means from said frame for shifting therealong between a forward limit position with said second wheel assembly closely rearward of said first wheel assembly and a rearward limit position with said second axis disposed generally vertically beneath said heel end, said guide means including a rack gear extending lengthwise along said frame, said wheel assembly including a spur gear rollingly engaged with said rack gear and one way clutch means drivingly connecting said spur gear to said second wheel assembly for forward rotation of the latter with said spur gear as said spur gear rolls rearwardly along said rack gear and allowing continued forward rotation of said rear wheel assembly relative to said spur gear as the latter rolls forwardly along said rack gear, said coacting guide means including an elongated guide track extending along each side of said frame and a pair of depending support frames each including a pair of followers guidingly engaged with the corresponding guide track at points spaced longitudinally therealong, said pairs of followers being carried by upper portions of the corresponding depending support frames and said second axis being stationarily mounted relative to and extending between lower portions of said support frames.

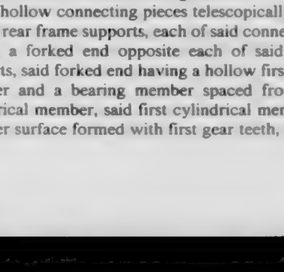
5,056,803
AUTOMATICALLY RELEASING SKI BINDING
Roger C. Teeter, and Lawrence C. Smith, both of Sumner, Wash., assignors to STL International, Incorporated, Tacoma, Wash.
Continuation-in-part of Ser. No. 169,789, Mar. 18, 1988. This application Aug. 16, 1989, Ser. No. 394,701
Int. Cl.[5] A63C 9/08
U.S. Cl. 280—14.2 26 Claims



1. A releasable ski binding for holding a skier's two feet in tandem arrangement on a single ski comprising a boot for retaining one of the two feet, means for holding one end of said boot to the ski, a keeper, pivot means held against translation lengthwise of the ski and pivotally mounting said keeper on the ski adjacent to the other end of said boot for swinging into engagement with such other end of said boot for holding it to the ski and away from such other end of said boot for releasing it from the ski, an instep strap secured to the ski for insertion of the other of the two feet therebeneath to hold such other of the two feet to the ski, and means operable automatically in response to removal of the other of the two feet from beneath said instep strap for enabling release of said keeper by swinging thereof away from such other end of said boot to free said boot from the ski.

5,056,804
FOLDING LOUNGE CHAIR AND CART
Beverly C. Wilson, and Kenneth L. Wilson, both of 3525 Blvd. Chatelaine, Delray Beach, Fla. 33445
Filed Jul. 9, 1990, Ser. No. 550,289
Int. Cl.[5] B62B 1/04
U.S. Cl. 280—30 8 Claims

5. A device having three operational modes, a rolling cart mode for transporting objects, an adjustable lounge chair mode for supporting the body of an occupant, and a storage mode in which said device is folded into a compact package, said device comprising:
A) a backrest frame having rigid, substantially straight and parallel side portions, a first end providing a handle for use in said cart mode and a second, hinge end;
B) a seat frame having rigid, substantially straight and parallel side portions, a first, foot end for supporting the lower portion of said body in said chair mode and a second, hinge end said second hinge end of said seat frame being pivotally connected to said second hinge end of said backrest frame;
C) a fabric web support means having two opposed broad faces attached to said frames and stretched between said sides to provide an object support surface on a first face for supporting objects transported in said cart mode and to provide a body support surface on a second face for supporting the body of an occupant in said chair mode;
D) a pair of wheels attached to said first, foot end of said seat frame, said wheels rotating about a common axis, said axis



permanently disposed in a second plane parallel to said seat plane, said second plane spaced apart from and adjacent said first face of said fabric support web means, whereby said wheels are permanently disposed with a greater portion of said wheels extending beyond said first face and a lesser portion of said wheels extending beyond said second face for supporting said occupant, so that said wheels minimally interfere with said occupant of said chair, said wheels being coaxial and parallel to one another in all three operational modes;
E) a plurality of foldable leg members pivotally attached to said sides of said frames arranged to fold substantially parallel to said frames in a folded position and extending downward to support said frames above a support surface for use as a chair; and
H) one of said foldable leg members being attached at said foot end of said seat frame and providing a second support for objects transported by said cart, disposed transversely to said object support surface.

5,056,805
STROLLER
Chia-Ho Wang, 12F, No. 311, Fu-Hsing N. Rd., Taipei City, Taiwan
Filed Jun. 5, 1990, Ser. No. 533,427
Int. Cl.[5] B62D 9/20
U.S. Cl. 280—47.36 3 Claims

1. A stroller, comprising:
a wheeled carriage frame;
a pair of hollow upwardly inclining rear frame supports mounted to the wheeled carriage frame;
a pair of hollow connecting pieces telescopically connected to said rear frame supports, each of said connecting pieces having a forked end opposite each of said rear frame supports, said forked end having a hollow first cylindrical member and a bearing member spaced from said first cylindrical member, said first cylindrical member having an inner surface formed with first gear teeth, said bearing

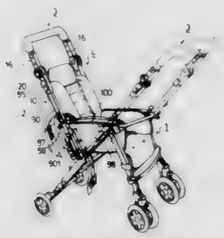
member having a central first through hole, said first cylindrical member and said bearing member having an axis transverse to said rear frame supports;

a substantially U-shaped handle having a pair of arm portions and a pair of hollow second cylindrical members respectively integrated with said arm portions, each of said second cylindrical members similarly having an inner surface formed with second gear teeth and an axis transverse to said arm portions, each of said second cylindrical members extending into a space formed between said first cylindrical member and said bearing member of one of said rear frame supports;

a pair of movable control pieces, each of said movable control pieces being disposed in said first and said second cylindrical members, each of said movable control pieces having a hollow cylindrical wall with an inner end, an outer end and external gear teeth formed adjacent said inner end, said external gear teeth engaging said first and said second gear teeth but releasable from one of said first and said second gear teeth; and

a first biasing means urging each of said movable control pieces so as to move said external gear teeth to an engaging position relative to both of said first and said second gear teeth;

whereby, said U-shaped handle can be rotated relative to said rear frame supports when said movable control pieces are moved against the action of said first biasing means, wherein said outer end of said cylindrical wall of each of said movable control pieces is a closed end, each of said movable control pieces further having an axial shaft projecting inwardly from an inner surface of said outer end of said cylindrical wall and extending past said inner end of said cylindrical wall into said central first through hole of said bearing member of one of said connecting pieces, wherein said first biasing means is a compression spring disposed around said axial shaft of each of said movable control pieces between said outer end of said cylindrical wall and said bearing member of one of said connecting pieces and wherein each of said connecting pieces further comprises a C-shaped locking ring disposed between said first cylindrical member and said cylindrical wall of one of said movable control pieces adjacent said outer end of said cylindrical wall so as to prevent the release of said movable control pieces.



5,056,806

TRAILER WITH AXLE

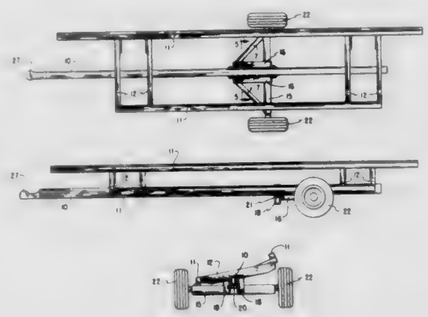
Harlan F. Johnson, R.R. 3, Box 189, Litchfield, Minn. 55355

Filed May 29, 1990, Ser. No. 529,628

Int. Cl.[5] B60P *1/00, 3/00*

U.S. Cl. 280—143 **3 Claims**

1. A trailer for carrying a farm implement which must be loaded from the side, said trailer comprising bed means for support of said implement including a central spine, axle carrying means movably mounted on said spine whereby said axle carrying means can be adjusted to various longitudinal positions relative to said spine, transverse rollers engaged between said spine and said axle carrying means to provide ease of movement therebetween, and means engaging both said spine and said axle carrying means to hold said spine and said axle carrying means in a fixed adjusted position.



5,056,807

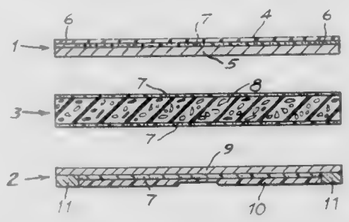
SKI CONSTRUCTION

Ahmet Comert, Chaineux; Michel Ladang, Herve, and Dominique Petit, Housse-Blegny, all of Belgium, assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 111,384, Oct. 21, 1987, Pat. No. 4,953,885. This application Mar. 26, 1990, Ser. No. 498,505

Int. Cl.[5] A63C *5/00*

U.S. Cl. 280—610 **9 Claims**



1. A laminated ski comprised of a top surface bearing section, a bottom surface bearing section, and a core section therebetween wherein the improvement comprises, a bonding layer between the top and bottom surface bearing sections and said core section wherein said bonding layer is a flexible hot melt adhesive.

5,056,808

SKI BINDING

Klaus, Holzl, Vienna; Erdei Roland, Weigelsdorf; Janisch Andreas, Tribuswinkel; Wladar Helmut, Vienna; Wurthner Hubert, Hainburg/D.; Hatvan Hans, Vienna, and Damborsky Klaus, Klosterneuburg/Kierling, all of Austria, assignors to TMC Corporation, Baar/Zug, Switzerland

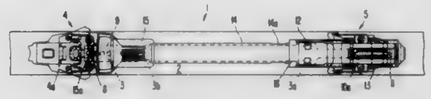
PCT No. PCT/EP89/00087, § 371 Date Oct. 3, 1988, § 102(e) Date Oct. 3, 1988, PCT Pub. No. WO89/07475, PCT Pub. Date Aug. 24, 1989

PCT Filed Feb. 2, 1989, Ser. No. 411,537

Claims priority, application Austria, Feb. 19, 1988, 394/88; Jul. 15, 1988, 1820/88; Sep. 30, 1988, 2411/88

Int. Cl.[5] A63C *9/00*

U.S. Cl. 280—617 **16 Claims**



1. A ski binding, comprising

a toe holding unit including a locking element, said toe holding unit being fastenable to the upper surface of a ski;

a heel holding unit, said heel holding unit being movable along a guide rail fixed to the ski;

a connecting element including at least one receptacle, said connecting element extending between said toe holeing unit and said heel holding unit, said locking element of said toe holding unit being selectively engageable with said at least one receptacle, and said heel holding unit being movable relative to the connecting element and being connectable to the connecting element to adjust the distance between the heel holding unit and the toe holding unit, said connecting element further including an encasing of plastic material located on external surfaces thereof;

a tread plate having a first portion extending over and engaging an upper surface of said connecting element, and having a second portion for disposal between the connecting element and the ski; and

a cover, spaced from said tread plate, and having a first portion overlying said connecting element, and a second portion disposed between the connecting element and the ski.

5,056,809

SAFETY SKI BINDING

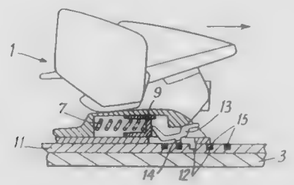
Jean-Claude Brischoux, Annecy Le Vieux, and Gilles Renaud-Goud, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Aug. 16, 1989, Ser. No. 394,721

Claims priority, application France, Aug. 17, 1988, 88 10955

Int. Cl.[5] A63C *9/08*

U.S. Cl. 280—617 **36 Claims**



1. A safety binding apparatus for a ski comprising:

(a) a longitudinal slide affixed to the ski;

(b) a body, including means for longitudinally slidably mounting said body on said slide;

(c) a retention jaw carried by said body for engagement with an end of a boot;

(d) an energization mechanism for biasing said jaw;

(e) means for immobilizing said body on said slide in one or more different longitudinal positions;

said means for immobilizing comprising, on one of said body and said slide;

(i) a plurality of longitudinally spaced notches respectively defining said different longitudinal positions that said body can occupy on said slide; and

(ii) a plurality of removable plugs positioned within all of said plurality of longitudinally spaced notches; and

said means for immobilizing comprising, on the other of said body and said slide:

(iii) a latch having at least one projection; and

(iv) means for elastically biasing said projection in a direction toward and against said slide for selective engagement of said projection in one of said notches, in response to a plug having been removed from said one of said notches, and in response to movement of said projection to a position in alignment with and engagement in said one of said notches, and thus immobilizing said body on said slide in one of said longitudinal positions.

5,056,810

SAFETY SKI BINDING

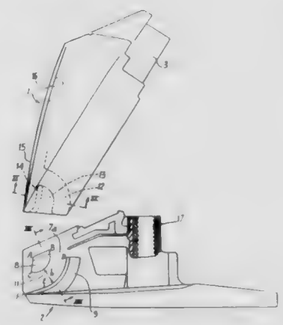
Jean-Pierre Rigal, La Balme de Sillingy, France, assignor to Salomon S.A., Annecy Cedex, France

Filed Feb. 5, 1990, Ser. No. 475,168

Claims priority, application France, Feb. 9, 1989, 89 01696

Int. Cl.[5] A63C *9/08*

U.S. Cl. 280—625 **31 Claims**



1. Safety ski binding adapted to hold the front of a boot mounted on a ski, comprising:

(a) a jaw adapted to engage a portion of the boot and adapted to be biased to a predetermined position by means of a biasing mechanism comprised of a spring and an element for transmitting force from the spring to said jaw; and

(b) a body comprising:

a lower part adapted to be affixed to the ski and having a front end and a rear end;

an upper part having a front end and a rear end, said jaw being supported by said rear end of said upper part, said upper part being movable with respect to said lower part about a generally horizontal transverse axis extending through said front end of said lower part and said front end of said upper part, one of said lower part and said upper part comprising a single member through which a longitudinal axis of the binding extends, and the other of said lower part and said upper part having a pair of laterally spaced arms for receiving said single member of said one of said lower part and said upper part; and

means for journalling said front end of said upper part to said front end of said lower part for relative movement about said transverse axis, said means for journalling including respective generally vertical surfaces of said upper part and said lower part being positioned laterally adjacent each other, wherein projecting portions and hollow portions, having respective complementary shapes for respective engagement with one another, extend from and are unitary with said respective vertical surfaces of said upper part and said lower part of said body.

5,056,811

ACTIVELY CONTROLLED AUTOMOTIVE SUSPENSION SYSTEM WITH MUTUALLY INDEPENDENT HYDRAULIC SYSTEMS HAVING MUTUALLY DIFFERENT DAMPING CHARACTERISTICS FOR IMPROVING RESPONSE CHARACTERISTICS IN ACTIVE SUSPENSION CONTROL

Yukio Fukunaga, Zushi; Naoto Fukushima, Kamakura; Yohsuke Akatsu, Yokohama, and Sunao Hano, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 24, 1990, Ser. No. 472,443
Claims priority, application Japan, Jun. 12, 1986, 61-137108
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 **20 Claims**

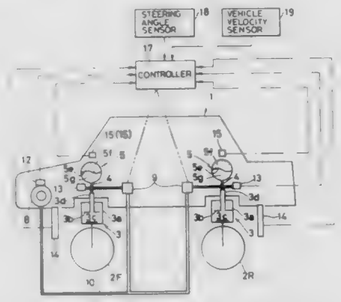
1. An actively controlled suspension system for an automotive vehicle comprising:
a suspension assembly interposed between a vehicle body and a suspension member rotatingly supporting a road wheel, said suspension assembly including a variable pressure chamber, a pressurized fluid source connected to said assembly via a circuit including a pressure control unit, acceleration sensors, and high pressure accumulators;
first pressure adjusting means, coupled to said variable pressure chamber and responsive to vibration input from said suspension member, for adjusting pressure in said variable pressure chamber for absorbing variation energy input to said suspension assembly, said first pressure adjusting means including allow pressure accumulator connected to said variable pressure chamber and first flow restriction means interposed between said variable pressure chamber and said low pressure accumulator for limiting flow of said fluid for absorbing said vibration energy; and
second pressure adjusting means, coupled to said variable pressure chamber and responsive to vibration input from said vehicle body, for adjusting pressure in said variable pressure chamber for suppressing an attitude change of said vehicle body, said second pressure adjusting means including said pressurized fluid source, said circuit connecting said pressurized fluid source to said variable pressure chamber, valve means for adjusting flow of pressurized fluid, and an electronic controller detecting an attitude change of said vehicle body for operating said valve means for adjusting fluid pressure in said variable pressure chamber for suppressing said attitude change of said vehicle body,
said second adjusting means further including a second flow restriction means for restricting fluid flow between said variable pressure chamber and said valve means, said second flow restriction means having a flow restriction create which is variable depending upon the frequency of said vibration input from said vehicle body so that said variable flow restriction rate becomes greater than a flow restriction rate of said first flow restriction means when said frequency is higher than a given valve.

5,056,812

SUSPENSION SYSTEM FOR A VEHICLE

Shin Takehara, and Toshiki Morita, both of Higashi-Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 14, 1990, Ser. No. 523,025
Claims priority, application Japan, May 17, 1989, 1-124063
Int. Cl.[5] B60G *11/26, 17/00*
U.S. Cl. 280—707 **5 Claims**



1. A suspension system for a vehicle, comprising:
a plurality of cylinder devices, each provided between a vehicle body member and one of a plurality of vehicle wheel members supporting the vehicle body member, suspension characteristics of the suspension system being changed by controlling fluid supply to and fluid discharge from said cylinder devices,
a hydraulic circuit for supplying fluid to and discharging fluid from said cylinder devices,
pressure sensor means for sensing fluid pressure in said cylinder devices, and
a controller for computing warping of said vehicle based on fluid pressure signals from said pressure sensor means and controlling the fluid supply to and fluid discharge from said cylinder devices based on a warp gain coefficient so as to suppress said warping of the vehicle, and for changing said warp gain coefficient according to predetermined conditions, thereby changing the fluid supply to and fluid discharge from said cylinder devices.

5,056,813

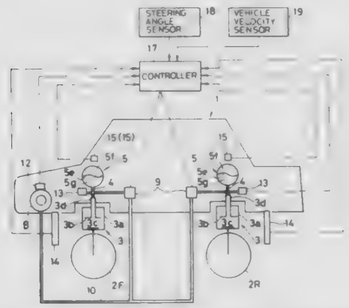
VEHICLE SUSPENSION SYSTEM

Mineharu Shibata, Otake; Shin Takehara, and Toshiki Morita, both of Higashi-Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 14, 1990, Ser. No. 522,791
Claims priority, application Japan, May 17, 1989, 64-124066
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 **2 Claims**

1. A vehicle suspension system comprising:
a plurality of cylinder devices, provided between a vehicle body member and each of a plurality of vehicle wheel members for the vehicle body member, in which suspension characteristics are changed by controlling hydraulic fluid supply for the cylinder devices,
pressure detecting means for detecting a hydraulic pressure in the cylinder devices for each of the vehicle wheel members, and
a warp control unit for controlling a hydraulic fluid supply for the cylinder device so that warp of the vehicle body is suppressed, wherein the warp control unit is provided with front pressure ratio computing means for computing a front hydraulic pressure ratio between right and left front wheel cylinder devices and rear pressure ratio computing means for computing a rear hydraulic pressure ratio between right and left rear wheel cylinder devices so

that the warp control unit provides flow signals for controlling the hydraulic fluid supply for the cylinder devices based on the front and rear hydraulic pressure ratios, and wherein the front pressure ratio computing means pro-



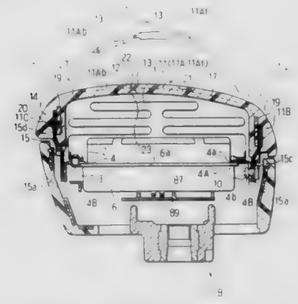
duces a hydraulic pressure ratio value corresponding to a threshold limit value when the front hydraulic pressure ratio computed by the front pressure ratio computing means is beyond the threshold limit value.

5,056,814

PAD FOR AIR BAG DEVICE

Kouji Shiraki, Gifu; Tadashi Yamamoto, Aichi, and Hiroaki Shinto, Toyota, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed May 9, 1990, Ser. No. 520,827
Claims priority, application Japan, May 10, 1989, 01-053654[U]
Int. Cl.[5] B60R *21/08*
U.S. Cl. 280—731 **11 Claims**



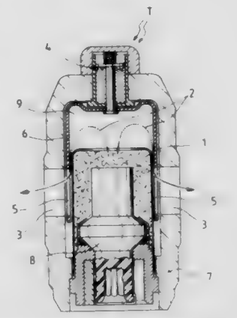
1. A pad covering an inflatable air bag for use in an air bag device, said pad being provided with an upper wall, said upper wall being broken upon inflation of said air bag, said pad also being provided with side walls extending downward from peripheral edges of said upper wall, said pad comprising:
(a) a base insert made of metal and disposed next to said side walls;
(b) a flexible net insert disposed within said upper wall;
(c) an attaching plate means made of synthetic resin for connecting said base insert and said net insert; and
(d) a coating layer made of soft synthetic resin for covering said base insert, said net insert and said attaching plate means.

5,056,815

ARRANGEMENT FOR AN AIRBAG GAS GENERATOR

Christian Geisreiter, Munich, Fed. Rep. of Germany, assignor to Bayern-Chemie, Gesellschaft fur flugchemische Antriebe mbH GmbH, Fed. Rep. of Germany

Filed Jun. 22, 1990, Ser. No. 542,002
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1989, 3924500
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—736 **11 Claims**



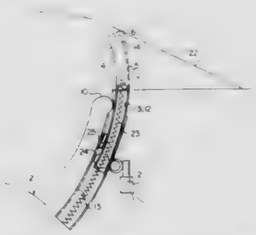
1. An arrangement for a gas generator of a motor vehicle occupant protection system, the primary charge of which is arranged in a housing which has at least one opening leading to the housing of the gas-generating propulsion charge, wherein the throughput of a flame jet generated by the primary charge through the at least one opening is automatically adjusted by means of temperature-dependent control elements as a function of the ambient temperature T.

5,056,816

HEAD RESTRAINT FOR REAR SEATS

Hans Lütze, Aidlingen; Günther Ast, Horb, and Ulrich Gerber, Wildberg, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jul. 9, 1990, Ser. No. 550,089
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922509
Int. Cl.[5] B60R *21/13*
U.S. Cl. 280—751 **8 Claims**



1. An arrangement of a headrest for rear seats in a convertible vehicle, comprising:
a U-shaped roll-over bar that is operable to be raised from a lowered position behind the rear seat to a support position above the rear seat in the direction of the roof, said roll-over bar largely spanning the width of the interior of the vehicle, said roll-over bar having lateral legs which uniformly extend in a curved manner such that the center of curvature lies on the seat side;
guide tubes fixed to the vehicle behind the rear seat, in which said lateral legs are displaced;

a pressure spring coupled to the roll-over bar that displaces the roll-over bar rapidly;
an additional controllable drive that displaces the roll-over bar slowly; and
a headrest attached to and displaceable with the roll-over bar.

5,056,817

TEMPERATURE-RISE LIMITING AUTOMOBILE BRA

Kip L. Fuller, Littleton, Colo., assignor to Innovision Technologies Group, Inc., Denver, Colo.

Filed Mar. 27, 1990, Ser. No. 499,988
Int. Cl.[5] B62D *25/00*
U.S. Cl. 280—770 **16 Claims**



1. A bra for covering an exterior surface of an automobile, said bra comprising:
(a) at least one panel of a size and shape conformable to said surface, said panel including:
(i) a first layer non-abrasive to said surface;
(ii) a second layer reflective of thermal radiation, said second layer overlying said first layer;
(iii) a third layer of reticulated foam, said third layer overlying said second layer, and
(iv) a fourth layer impervious to water in liquid form, said fourth layer overlying said third layer, and
(b) means for securing said panel to the automobile with said first layer facing said exterior surface and said fourth layer exposed.

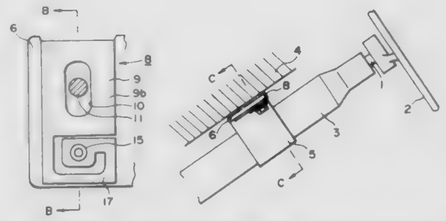
5,056,818

STEERING COLUMN MOUNTING APPARATUS

Kiyoshi Sadakata, Gunma, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1990, Ser. No. 546,943
Claims priority, application Japan, Jul. 13, 1989, 1-81617[U]
Int. Cl.[5] B62D *1/18*
U.S. Cl. 280—777 **7 Claims**

1. In a steering system of a vehicle, apparatus releasably mounting a steering column to a body of the vehicle for displacement of the steering column in response to driver impact upon a collision of the vehicle and electrically connecting the steering column to the vehicle body to effect electrical connection of an electric circuit to the vehicle body through the steering column, said apparatus comprising:
a support bracket fixed to said steering column and having at least one mounting web portion provided with a notch open at one end of said mounting web portion, and
a one-piece substantially U-shaped electrically conductive plate member having a pair of spaced, apertured plate portions with opposed inner surfaces provided with slip layers of electrically insulating material, and a winding portion extending from a main portion of one of said plate portions,
said plate member being secured to said vehicle body by bolt means extending through respective apertures in said plate portions and through said notch of said mounting web portion, with said mounting web portion being slidably releasably clamped between said inner surfaces of said plate portions to enable said displacement of said steering column,
said winding portion having a point of attachment to said mounting web portion remote from said main portion of



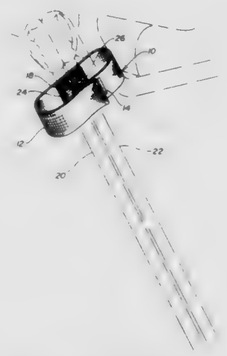
said one plate portion for displacement with said steering column and for unwinding said winding portion by such displacement, the attachment providing an electrical connection of said plate member to said mounting web portion.

5,056,819

SKI POLE STRAP

Bernard Hayes, Ridgewood, N.J., assignor to Polecat Enterprises, Inc., Ridgewood, N.J.

Continuation-in-part of Ser. No. 384,453, Jul. 21, 1989. This application Feb. 8, 1990, Ser. No. 476,796
Int. Cl.[5] A63C *11/00*
U.S. Cl. 280—809 **3 Claims**



1. Ski poles and a fastener strap therefore, comprising:
a fastener strap comprising:
a length of flexible material having first and second surfaces and first and second ends;
a hook fastening element on the first end and first surface;
a pile fastening element on the second end and second surface;
an intermediate fastening means on the second surface intermediate the first and second ends; and

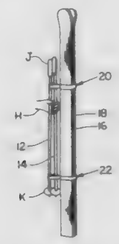
ski poles, each having a pole fastener element attached thereto which engages the intermediate fastener means, wherein each of the pole fastener elements engages with the fastener strap, within a loop formed by the attachment of the first and second ends of the fastener strap, to fasten the ski poles to the fastener strap.

5,056,820

TIE FOR SKIS AND SKI POLES

Victor Des Prez, 177 Riverside Ave., Newport Beach, Calif. 92663

Filed Mar. 19, 1990, Ser. No. 495,289
Int. Cl.[5] A63C *11/00*
U.S. Cl. 280—814 **8 Claims**



1. Apparatus for tying together a pair of ski poles and a pair of skis, wherein the pair of skis have approximately a predetermined width, have ski surfaces that lie facewise adjacent, and have two pairs of opposite ski edges, and the poles lie at approximately a predetermined spacing from each other and from said skis when the poles and skis are pressed together to be carried as a unit comprising:
a tie having a middle with opposite middle parts, said tie having a pair of pole strip end portions extending from one of said middle parts and wrapping about said pair of ski poles, said tie having a pair of ski strip end portions extending from the other one of said middle parts and wrapping about said pair of skis;
said pair of pole strip end portions including a first pole strip end portion having an outer side with first Velcro-type fastener elements, and including a second pole strip end portion having an inner side with second Velcro-type fastener elements, said pole strip end portions being positioned so at least one of them is wrapped about said poles and some of said first and second fastener elements are engaged with each other;
said pair of ski strip end portions including a first ski strip end portion having an outer side with first Velcro-type fastener elements, and including a second ski strip end portion having an inner side with second Velcro-type fastener elements, said ski strip end portions being wrapped about far locations on a pair of said ski edges that lie furthest from said middle;
said first ski strip end portion having a rubbery layer of soft rubber-like material on its inner side which engages said far location on said ski edges with said Velcro-type fasteners of said ski end portions extending far enough from said middle so they engage each other along a pair of said ski edges and along opposite sides of said skis.

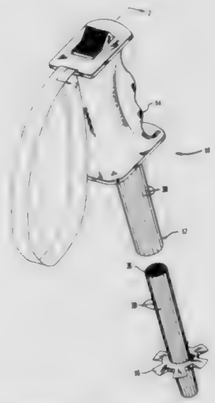
5,056,821

ILLUMINATED SKI POLE AND METHOD

Nicholas S. Fierro, 100 Knapp Pl., Englewood, N.J. 07631

Filed Jul. 20, 1989, Ser. No. 382,843
Int. Cl.[5] A63C *17/26*
U.S. Cl. 280—816 **21 Claims**

1. In a ski pole which includes a handle, at least one source of light housed in the handle, and a shaft extending from the handle, the improvement wherein the shaft is made from a solid, translucent, elastically resilient element having an unsmooth exterior surface extending along substantially the entire length of the shaft so as to disperse light from the light



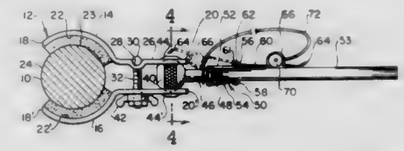
source along substantially the entire length of the shaft, whereby substantially the entire ski pole is illuminated.

5,056,822

PAD OR MAP HOLDING DEVICE

Henry H. Shim, 1124 S. Kingsley Dr., Los Angeles, Calif. 90006

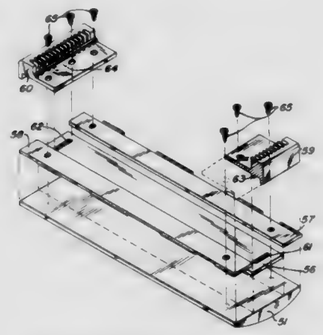
Filed Jul. 30, 1990, Ser. No. 559,658
Int. Cl.[5] B42D *17/00*
U.S. Cl. 281—44 **4 Claims**



1. A map or pad holding device comprising a pair of elongated bars, one end of said bars arcuate and the bars positioned so the concave surfaces of said arcuate ends of the bars face each other for attachment at a single location to an object, a first clamp secured to said bars positioned intermediate the ends of said bars for clamping the concave surfaces of said bars around said object, to hold said device to said object, a ball-like swivel positioned adjacent said first clamp in such a way that when said first clamp is tightened said first clamp causes said concave surfaces to grip said object and also grips said ball-like swivel so it doesn't pivot too easily, said ball-like swivel having a stem, a second clamp secured to the distal end of the stem of said ball-like swivel for holding a pad or map, said second clamp comprising a first plate and a second plate, means biasing the distal ends of said plates together to tightly grip a pad or map, an elongated lever attached to said first plate, said elongated lever having one end pivotally attached to a distal end of said first plate and extending out therefrom, and other end of said lever curved upward for ease in lifting said lever and separating the first and second plates of said second clamp so said map or pad can be removed from said second clamp, said lever having a downwardly open recess formed intermediate its ends for holding a writing instrument.

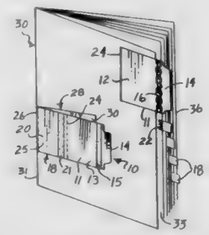
VOL
1131
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15
1991
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5,056,823
ALBUM DESIGN
Enzo Stancato, 33 Windy Knolls, Greenwich, Conn. 06830
Filed Nov. 15, 1989, Ser. No. 436,657
Int. Cl.[5] B42D *5/00*
U.S. Cl. 281—49 13 Claims



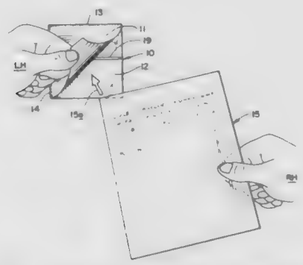
1. A new and improved album design in combination with an album page, said album design having a front cover member, a back cover member and a new and improved binder therebetween capable of selectively attaching and/or detaching therefrom said album page, wherein said binder comprises:
(a) a base member;
(b) a guide strip, structurally affixed to said base member;
(c) a first coupling hinge member being structurally affixed to said base member and adjacent to said guide strip and said front cover member;
(d) a second coupling hinge member being structurally affixed to said base member and adjacent to said guide strip and said back cover member but opposite to where said first coupling hinge member is adjacent to said guide strip;
(e) a first pin housing structure structurally affixed to said guide strip, said first coupling hinge member and said second coupling hinge member, and at one end of said base member wherein said first pin housing structure defines a series of laterally spaced configurations formed within the structure of said first pin housing structure wherein each such spaced configuration defines a recessed cavity formed within said first pin housing structure that overlaps with a trapezoidal opening additionally formed within said first pin housing structure directly above each said recessed cavity formed within said first pin housing structure so as to provide external access to said recessed cavity from above the top surface of said first pin housing structure via said trapezoidal opening;
(f) a second pin housing structure structurally affixed to said guide strip, said first coupling hinge member and said second coupling hinge member, and at the end of said base member opposite to where said first pin housing structure was structurally affixed, wherein said second pin housing structure additionally defines a series of laterally spaced configurations formed within the structure of said second pin housing structure identical to said laterally spaced configurations as formed within said first pin housing structure, wherein each such spaced configuration defines a recessed cavity formed within said second pin housing structure that overlaps with a trapezoidal opening additionally formed within said second pin housing structure directly above each said recessed cavity formed within said second pin housing structure so as to provide external access to said recessed cavity from above the top surface of said second pin housing structure via said trapezoidal opening, said second pin housing structure being axially aligned with said first pin housing structure so as to have the axis of the respective recessed cavities of each of said respective laterally spaced configurations aligned.

5,056,824
PUBLICATION REFERENCE-AID SYSTEM APPARATUS THEREFOR
Craig W. Olson, P.O. Box 302, Fontana on Geneva Lake, Wis. 53125
Continuation-in-part of Ser. No. 388,319, Jul. 31, 1989, which is a continuation-in-part of Ser. No. 147,366, Jan. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 940,422, Dec. 11, 1986, abandoned. This application Mar. 30, 1990, Ser. No. 504,912
Int. Cl.[5] B42F *21/00, 21/06;* B42D *15/00, 1/00*
U.S. Cl. 283—36 22 Claims



1. A reference-aid adapted for rapid retrieval and access of publication information, where the reference-aid is manufactured "in-line" or "off-line" and supplemented with a publication for removal and implementation by the user, the reference-aid having predetermined dimension parameters and predetermined dimension area and adhesion parameters of commercially available pressure-sensitive adhesive which adheringly mounts the reference-aid marker member or members to the margin adjacent the edge of the respective publication and said marker members being adapted to be periodically engaged and disengaged without deleterious damage to the adhesive layer and to the surface of said respective publication in which the application of said reference-aid provides a convenient systematic indexing system for one or more paginated or non-paginated publications, said reference-aid comprising:
a sheet of flexible double-faced material adapted to be imprinted with information means graphics,
said flexible sheet having said predetermined dimension size for supplementation means with a publication means,
said sheet unitarily formed with at least two panel portions to form at least one marker panel portion and at least one associated releasable cover panel portion,
each of said panel portions being hingedly connected to said sheet meeting at at least one foldable line means along at least one of the respective edges of the panel portion,
said marker panel portion essentially consisting of at least one marker member and said associated releasable cover panel portion essentially consisting of at least one releasable cover member,
said marker panel portion being detachably connected to said sheet along at least one respective panel portion edge by at least one separable line means,
each of said marker panel portion and said releasable cover panel portion having predetermined dimensions,
at least one adhesive layer means positioned and applied thereon said predetermined dimension attaching means area on the cooperating inner face of each marker member/marker panel portion,
each cooperating inner face of said marker panel portion and said associated releasable cover panel portion being folded and firmly creased along said foldable line means to originally engage said adhesive layer means of the marker member with the cooperating inner face of said associated releasable cover panel portion prior to disengagement thereof and separation of the selected marker member by a user from the associated releasable covering means and the sheet means,
said marker member being positioned and re-engaged along the margin adjacent said edge of the respective publication means.

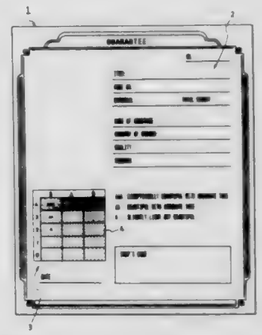
5,056,825
REFERENCING DEVICE
Vicki Templet, Wheaton, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.
Filed Apr. 9, 1990, Ser. No. 506,275
Int. Cl.[5] B42F *21/00*
U.S. Cl. 283—36 1 Claim



1. A stack of identical, superposed, aligned referencing devices, each device being adapted for mounting on the corner of a rectangular sheet, each device comprising upper and lower generally rectangular plies disposed in face-to-face relation and providing a first pair of substantially straight sides arranged perpendicularly to each other, said plies being adhesively secured together adjacent said two sides to provide a second pair of sides openable to develop a pocket for the receipt of a rectangular sheet, said upper ply being equipped with a biased cut at the intersection of only said second pair of sides, at least a portion of said upper ply being equipped with instructional indicia, and adhesive means releasably securing said devices in superposed, aligned relation along one of said pair of sides.

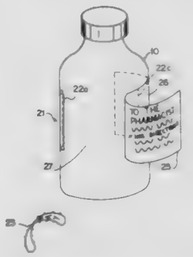
5,056,826
QUALITY INDICATOR FOR GEMSTONE
Yasukazu Suwa, Tokyo, Japan, assignor to Suwa Boeki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 25, 1990, Ser. No. 542,750
Claims priority, application Japan, Dec. 14, 1989, 1-144501
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—67 5 Claims

4. A method for preparing a quality indicator for a gemstone, comprising the steps of:
(a) preparing a grading scale having an array of colors that are defined by analyzing the degree of color tone and the degree of transparency inherent in a gemstone and applying the same or quite similar colors corresponding to the grades thereof in an orderly sequence to a chart with one of the degree of color tone or the degree of transparency being indicated on a vertical axis of the chart and the other of these being indicated on a horizontal axis of the chart; and



(b) providing indicia of grades expressed on said array of colors with respect to zones for several upper-ranking grades corresponding to the type of a gemstone.

5,056,827
PHARMACEUTICAL LABEL
Theodore S. Sasso, Washington Township, Bergen County, N.J., assignor to Challenge Printing Company, Wallington, N.J.
Filed Jan. 25, 1989, Ser. No. 302,019
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—105 6 Claims



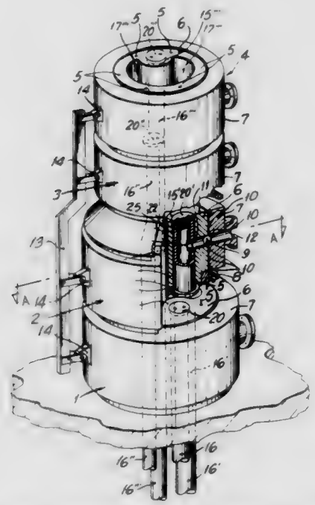
1. A label for a bottle containing a pharmaceutical, having a top and a bottom edge, comprising
a first end-section having an adhesive backing for adhering to said bottle,
a second end-section spaced apart from said first section and having an adhesive backing for adhering to said bottle,
a third relatively wide section having no adhesive backing and connected to said second end-section by means of a first perforation extending from said bottom edge to said top edge, and
a fourth relatively narrow section having no adhesive backing and connected between said first end-section and said third section by means of second and third perforations extending from said bottom edge to said top edge, said fourth section including tab means so that said fourth section may be easily removed by tearing along said second and third perforation and so that said third section can be removed by tearing only along said first perforation.

5,056,828

MODULAR, MULTI-PASSAGE ROTARY COUPLING FOR TRANSFERRING FLUIDS

Dario Falbo; Emanuele Garbuglia, both of Venice; Felice Da Prat, Pordenone, and Riccardo Belleli, Mantova, all of Italy, assignors to Comitato Nazionale per la Ricerca e per lo Sviluppo dell'Energia Nucleare e delle Energie Alternative, Rome; Tecnomare S.p.A., Venice and Belleli S.p.A., Montavo, all of, Italy

Filed Mar. 22, 1990, Ser. No. 497,357
Claims priority, application Italy, Mar. 31, 1989, 19971 A/89
Int. Cl.[5] F16L *55/10*
U.S. Cl. 285—12 2 Claims



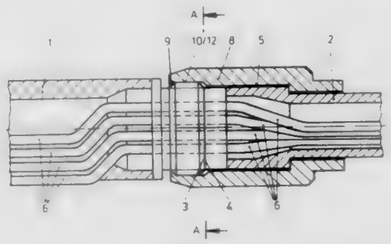
1. A modular multi-passage rotary coupling for transferring fluids, comprising a plurality of modules, said modules having different diameters and being coaxially superimposed to each other and fastened to one another, each of said modules comprising an inner fixed ring and an outer rotary ring connected with each other and kept mutually concentric by at least one bearing, the inner fixed ring and said outer rotary ring having formed between each other a toroidal chamber which is sealed by circular dynamic seals, each said ring having a duct therein communicating with said chamber for fluid passage therethrough, each fixed ring of said modules being rigidly connected to a pipe, said pipe passing through the inner fixed rings of underlying modules inside an inner free region provided in each inner fixed ring, each of said fixed pipes being rigidly connected with the inner fixed rings of the respective modules of the rotary coupling by means of a sleeve positioned in a bore in said inner fixed ring, said sleeve having a bore therethrough, and an opening through a wall in said sleeve for communication with said bore, and being coaxially fastened at its bottom end with said pipe and being fastened inside said bore provided in the fixed ring by means of a closure formed by a tightsealing screw-threaded cap which is screwed down on a corresponding inner threading provided at an upper end of the sleeve and said cap is provided with a crown which bears against an upper edge of the bore of said inner fixed ring, said sleeve having a shoulder step means at said bottom end jutting out and cooperating with a lower edge of said bore provided in the fixed ring, and an alignment key which is provided between said sleeve and said inner fixed ring for alignment of said opening with said duct in said inner ring.

5,056,829

DEVICE FOR INTERCHANGEABLE CONNECTION

Marcel Kramer, Jona, Switzerland, assignor to Prazisions-Werkzeug AG, Riiti, Switzerland

Filed Apr. 28, 1988, Ser. No. 187,514
Claims priority, application Switzerland, May 11, 1987, 1782/87
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—12 14 Claims



1. An apparatus for internal coating of cans comprising a treatment arm for the inside coating of cans, said treatment arm including a plurality of conduits extending therethrough for transporting coating material to and from cans being coated, said treatment arm including a section of the arm which can be connected to and disconnected from the arm, and a quick-action coupling for connecting and disconnecting said section to the arm, wherein said quick-action coupling includes a contact surface at the section and a contact surface at the arm, each of said contact surfaces having a plurality of openings in communication with corresponding ones of said conduits for transporting coating materials to and from cans being coated, the openings in the respective contact surfaces being aligned with one another when said section is connected to said arm, wherein said coupling further includes at least one locking member for pressing the contact surfaces together and wherein the locking member comprises a non-slip plug connection including a plug and a socket with at least one of the outside surface of the plug and the inside surface of the socket being coated with a rough material to provide a high slide resistance between the plug and socket.

5,056,830

FLANGED REPAIR COUPLING FOR PIPELINE SERVICE

James R. Reaux, 1019 Lafayette St., Lafayette, La. 70501

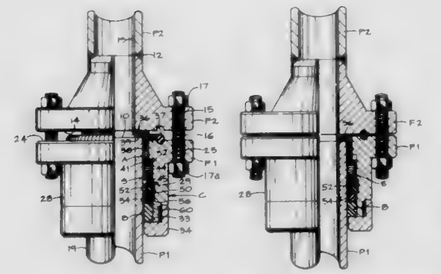
Filed Jul. 27, 1990, Ser. No. 558,948
Int. Cl.[5] F16L *55/18*
U.S. Cl. 285—15 3 Claims

1. In a repair coupling for connecting a first open ended pipe section to a first flange including a coupling flange sealing engagable with the first flange, said coupling flange including a cylindrical body having an inner diameter bore greater in diameter than the outside diameter of the first open ended pipe section to be received therein with an annulus therebetween and having a radially inwardly directed wall at each end of the annulus, piston means slidable axially within the annulus and with a head portion extending from the coupling flange to be depressed by the first flange, slip means and packing means within the annulus for anchoring and sealing against the pipe section by axial movement of the piston means, and means to draw the two flanges together, the improvement in means for isolating the packing means from tension and compression in the pipe comprising:

a ring positioned in the annulus between the slip means and the packing means,

means engagable with the ring limiting the movement of the ring towards the packing means,

said ring is discontinuous, and



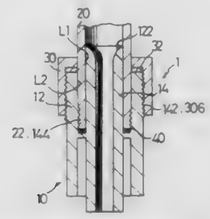
a second continuous ring is positioned between the discontinuous ring and the packing means.

5,056,831

FITTING CONSTRUCTION FOR CONNECTION OF PIPES AND PIPE ASSEMBLY

Kuei-Fang Ho, 1 Fl., No. 16, Lane 23, Nan Shen Rd., Taipei, Taiwan

Filed May 2, 1990, Ser. No. 517,820
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—93 4 Claims



1. Fitting construction for connection of pipes, comprising:

a first pipe assembly comprising an inner pipe, an outer pipe and means forming a juncture therebetween concentrically fixing said outer pipe to said inner pipe, and a first sealing means provided at said junction of said inner pipe and said outer pipe, said inner pipe extending axially a length larger than that of said outer pipe;

a second pipe having a threaded end, said first pipe assembly having a threaded portion near said junction of said inner pipe and said outer pipe configured so as to threadedly engage with said threaded end of said second pipe with an end portion of said second pipe being substantially sealingly sandwiched between an outside wall of said inner pipe and an inside wall of said outer pipe, said first sealing means being contacted and slightly pressed by an end surface of said second pipe to indicate and effect a seal between said outside wall of said inner pipe and said inside wall of said outer pipe and said end surface of said second pipe; and

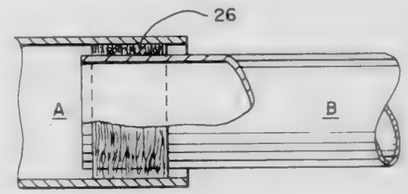
a second sealing means mounted on an end of said outer pipe of said first pipe assembly for radially urging an outside wall of said end portion of said second pipe inward toward said inner pipe of said first pipe assembly; said second sealing means sealingly engaging said second pipe and an end surface of said outer pipe so as to effect a seal therebetween.

5,056,832

SPACING RING FOR TUBES IN HIGH TEMPERATURE ENVIRONMENT

Yukihiro Nagagawa, Aza Higashinokawa 19, Oaza Takadaji, Shikatsucho, Nishikasugaigun, Aichi-Prefecture, Japan, and Alan L. Brittingham, 1531 13th St., Columbus, Ind. 47201

Filed Dec. 1, 1989, Ser. No. 444,535
Claims priority, application Japan, Dec. 2, 1988, 63-157872
Int. Cl.[5] F16L *55/02*
U.S. Cl. 285—138 10 Claims



1. A spacing ring for placement between a radially inwardly facing annular surface on a first member and a radially outwardly facing annular surface on a second member to maintain the first and second members in predetermined radially spaced relationship, said spacing ring comprising:

a plurality of matted metal threads formed into an annular configuration,

said ring having a radially inwardly facing surface to surroundingly engage the radially outwardly facing annular surface on the second member and a radially outwardly facing surface to be surroundingly engaged by the inwardly facing annular surface on the first member with the radially inwardly facing annular surface on the first member and the radially outwardly facing annular surface on the second member in axially overlapping relation,

wherein said metal threads have a diameter substantially less than 100 microns.

5,056,833

FLEXIBLE PIPE COUPLING

Ian R. Webb, Kenton; William Taylor, Pinner, and Neil J. T. Taylor, Rickmansworth, all of United Kingdom, assignors to Taylor Kerr (Couplings) Limited, London, United Kingdom

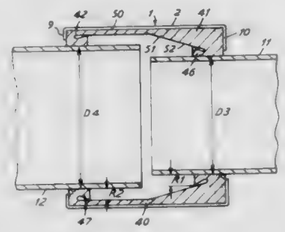
PCT No. PCT/GB88/00230, § 371 Date Sep. 11, 1989, § 102(e) Date Sep. 11, 1989, PCT Pub. No. WO88/07644, PCT Pub. Date Oct. 6, 1988

PCT Filed Mar. 25, 1988, Ser. No. 401,438

Claims priority, application United Kingdom, Mar. 25, 1987, 8707057

Int. Cl.[5] F16L *17/00*

U.S. Cl. 285—112 **12 Claims**



1. A resiliently flexible pipe coupling for interconnecting two pipe ends in a pressure-tight manner, said coupling comprising:

a tubular sealing sleeve of resilient flexible material; and

an adjustable tubular metal casing for clamping said sealing sleeve around said pipe ends;

said sealing sleeve comprising:

a central tubular web portion, and

sealing lips integral with said web portion, said sealing lips being formed in adjoining relationship to said web portion to define opposite free ends of said sealing sleeve, said sealing lips extending radially inwardly from said web portion, said sealing lips being spaced apart longitudinally, and said sealing lips each having a radially inner pipe-engaging surface for engaging one of said pipe ends, said radially inner pipe-engaging surface of one of said lips having a substantially different internal diameter from said radially inner pipe-engaging surface of the other of said lips, whereby said coupling is adapted to connect two pipe ends of different external diameter, each of said sealing lips having an annular extension formed on its axially inner side, said annular extension being separated from said web portion of said sealing sleeve by a groove, said web portion in the region of said extension to said sealing lip of smaller internal diameter being radially thicker than said web portion in the region of said extension to the other said sealing lip, and in the assembled condition when said coupling is fitted to said pipe ends, at least one of said grooves communicates with a void defined between said web portion and said pipe ends in said coupling.

5,056,834

SYSTEM FOR JOINING CORRUGATED PIPE

Winfield B. Scott, deceased, late of Granbury, and Barbara A. Scott, executrix, 58 Rough Creek Estates, Granbury, both of Tex. 76048

Filed Jul. 6, 1990, Ser. No. 549,355

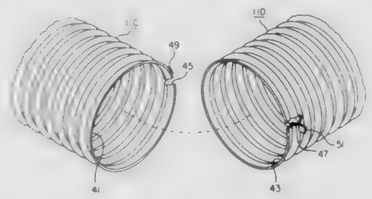
Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—325 **6 Claims**

1. A system for joining first and second lengths of corrugated pipe together, said first pipe length having a first end and said second pipe length having a second end, said first and second pipe lengths having respective longitudinal axes, comprising:

a) at least two notches formed in at least one of said first and second ends, said notches extending longitudinally from said respective end for at least one corrugation, said corrugations forming peaks and valleys on said pipe lengths, said one corrugation being the length between two adjacent peaks;

b) said respective notches on said respective ends being adapted to receive the other of said first and second such that said ends are interlockingly engaged with each other, wherein when said first and second ends are interlockingly engaged said second end partially encompasses said first end and said first end partially encompasses said



second end, and the corrugations at said first and second ends matingly fit each other;

c) retaining means for retaining said second end to said first end, said retaining means preventing movement of said second end transversely with respect to said first end, said retaining means comprising tabs formed in conjunction with said notches, each of said tabs being formed by a set of longitudinal cuts in said respective end, said tabs being adapted to be bent transversely so as to form said notch, said tabs being corrugated.

5,056,835

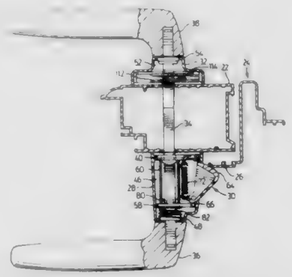
LATCHING MECHANISM FOR A CLOSURE WITH A DISCONNECTABLE HANDLE AND A SLIDING CATCH

Raymond A. Johnson, Hot Springs, Ark., assignor to The Chamberlain Group, Inc., Elmhurst, Ill.

Filed Sep. 26, 1990, Ser. No. 588,369

Int. Cl.[5] E05C *3/04*

U.S. Cl. 292—207 **16 Claims**



1. A latching mechanism for mounting on a closure, such as a storm door, for holding the closure in an opening, such as a doorway, said opening being defined by a frame including a striker, said latching mechanism comprising:

an inside housing for mounting on the inside of said closure;

a latch movably mounted on said inside housing, said latch including a tongue movable between a latching position in which said tongue will engage said striker upon attempted opening of said closure and an unlatching position wherein said tongue is not aligned to engage said striker, said tongue being biased toward said latching position;

an operating shaft extending through said closure and said inside housing, and pivotally mounted with respect to said closure and said housing;

an inside operator mounted on said shaft inside said closure;

an outside operator mounted on said shaft outside said closure;

cam means rotatable with said shaft and axially slidably with respect to said shaft between an operative position wherein said cam means is located to move said tongue toward said unlatching position upon actuation of one of said operators and an inoperative position wherein rotation of said cam means does not cause said tongue to move to said unlatching position; and

locking means for movement by a user between a locking position in which said-locking means causes said cam means to be moved to said inoperative position, and an unlocking position in which said cam means is permitted to be in said operative position, said locking means including abutment means for positioning in alignment with said tongue when said locking means is in its locking position for positively preventing said tongue from movement to said unlatching position.

5,056,836

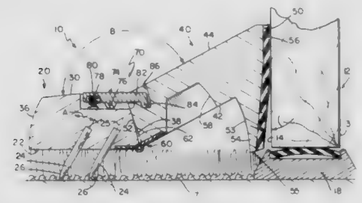
DOOR SECURITY DEVICE

Lewis M. Wells, 1103 Alma St., Elkhart, Ind. 46514

Filed Nov. 14, 1989, Ser. No. 436,310

Int. Cl.[5] E05C *17/54*

U.S. Cl. 292—288 **31 Claims**



1. A door security device, comprising:

a floor engaging member including a first end and a bottom surface;

at least one prong extending from said bottom surface of said floor engaging member;

a door abutting member including a first end, a second end and a bottom surface;

said bottom surface of said door abutting member having at least one opening corresponding to said at least one prong; and

said floor engaging member and said door abutting member are pivotaably connected such that when said floor engaging member and said door abutting member are rotated towards each other, said at least one opening in said bottoms surface of said door abutting member covers and surrounds said at least one prong extending from said bottom surface of said floor engaging member.

5,056,837

TAMPER RESISTANT SHACKLE SEAL WITH ASSEMBLED LOCKING COMPONENTS

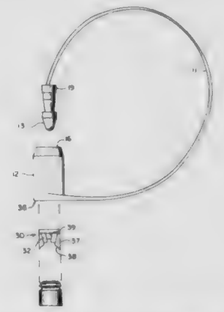
Charles Fuehrer, Scarsdale, N.Y., assignor to Stoffel Seals Corporation, Nyack, N.Y.

Filed Jul. 24, 1990, Ser. No. 556,399

Int. Cl.[5] B65D *33/34*

U.S. Cl. 292—307 R **16 Claims**

1. In a shackle seal of the type including a housing having first and second ends and in which the housing is defined having an inner surface, and wherein the housing is integrally formed with an elongated strap having an outer end portion which is selectively receivable within the first end of said housing and wherein the housing and strap are formed of a first material, the improvement comprising, a separate locking assembly means insertable within the housing through the second end thereof, said locking assembly means being formed of a material having a higher melting point than the first material, said locking assembly means including a base and at least two yieldable locking finger means extending from said base and extending outwardly and inwardly with respect thereto toward the second end of the housing, plug means for selectively sealing the second end of the housing, and said locking assembly further including at least two elongated spacing leg means extending from said base, said leg means extending beyond said locking finger means and toward said plug means so as to space said plug means from said locking finger means.



5,056,838

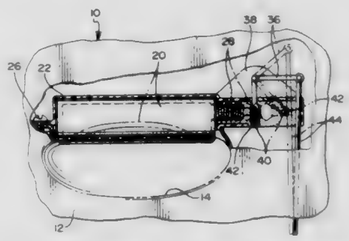
SOFT TOUCH DOOR HANDLE

Roy F. Tiesler, Troy, and Mark L. Kaski, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1990, Ser. No. 605,061

Int. Cl.[5] E05C *1/12*

U.S. Cl. 292—336.3 **1 Claim**



1. A door latch handle for a vehicle door latched in the closed position for a door latch releasable to permit opening of the door, comprising:

a recess formed in the door,

a fluid filled bladder mounted in the recess of the door,

said bladder having a bellows portion formed integrally thereon and being distended from the bladder by pressure imposed thereon by a vehicle user reaching into the recess and pressing the bladder,

and a linkage means operably connected to the bellows portion and adapted to release the door latch upon operation thereof by the distention of the bellows portion.

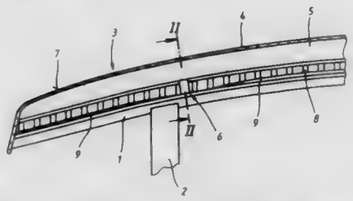
5,056,839
AUTOMOBILE COVER ASSEMBLY
Yi C. Yoon, 113-3 Joongang-Dong Wonju, Kangwon-Do, Rep. of Korea
Continuation-in-part of Ser. No. 539,361, Jun. 15, 1990, abandoned, which is a continuation of Ser. No. 289,819, Dec. 22, 1988, abandoned. This application Aug. 27, 1990, Ser. No. 572,643
Claims priority, application Rep. of Korea, May 30, 1988, 88-6029
Int. Cl.[5] B60R *19/48;* B60J *11/00*
U.S. Cl. 293—117 30 Claims



1. A cover assembly for an automobile comprising:
a case; and
an operating mechanism, said operating mechanism including a rotary shaft and means for bending said rotary shaft, and said operating mechanism further including mounting means for mounting said rotary shaft within said case, and said case forming a part of a curved bumper of the automobile and said rotary shaft having a bend conforming to a curvature of the

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5,056,840
MOTOR VEHICLE BUMPER
Konrad Eipper, Ammerbuch; Wolfgang Fischer, Leinfeiden; Wolfgang Klie, Korntal, and Horst Kleiner, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany
Filed Aug. 27, 1990, Ser. No. 572,544
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928060
Int. Cl.[5] B60R *19/24*
U.S. Cl. 293—120 1 Claim



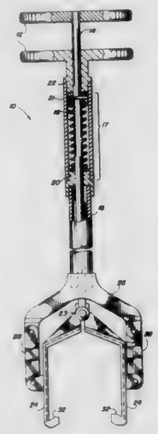
1. An elongated bumper for a motor vehicle, comprising a cross-member fixed to a vehicle body and to an elongated impact-confronting collision part, an elongated non-regenerable deformation member arranged between said collision part and said cross-member and said collision part being secured to said cross-member by a plurality of setbolts located at least one point along the bumper and passing through said deformation member and defining a support region on both sides of said plurality of setbolts, wherein said non-regenerable deformation member contacts said cross-member only in the support region and defines a gap along the remaining regions of the bumper with respect to the cross-member, each setbolt being surrounded by a spacer sleeve having end faces, one end face of which supports itself on said cross-member and the other end face of which is acted upon by the underside of a head of each setbolt and said impact-confronting collision part is a visco-plastic material trim part encasing an elastically deformable foam core.

5,056,841
CHOPSTICKS
Yim-Fong Yong, Carrera 66 No. 14-41, Bogotá D.E., Colombia
Filed Mar. 13, 1990, Ser. No. 492,195
Int. Cl.[5] A47G *21/00*
U.S. Cl. 294—1.1 9 Claims



1. A pair of chopsticks eating utensils, each of said chopsticks comprising
an elongated, hollow tube formed of rigid non-toxic plastic and having a lower closed end and an upper closed end, said tube having a sidewall of sufficient thickness to make said tube rigid, said tube having an intermediate corrugated portion near said lower closed end, said intermediate corrugated portion comprising a series of axially spaced corrugations extending substantially entirely about said sidewall.

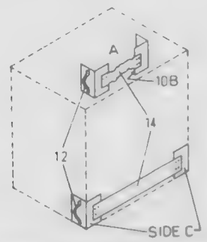
5,056,842
MANUAL COLLECTION APPARATUS
Judith C. Lindenberg, 812 Monte Leon Dr., Beverly Hills, Calif. 90210, and Avinoam S. Zerkowitz, 6226 Pat Ave., West Hills, Calif. 91307
Filed Oct. 16, 1989, Ser. No. 421,813
Int. Cl.[5] A01K *29/00;* E01H *1/12*
U.S. Cl. 294—1.4 13 Claims



1. In combination, a disposable container and hand-held apparatus for collecting and disposing of solid pet wastes in said container,
said apparatus comprising:
a pair of pivoted jaws having means for releasably retaining said container; said means including a pair of opposed protuberances, each being located along the inner surface of a corresponding one of said jaws and projecting inwardly therefrom, each protuberance having an inclined face on the side nearest the point where the jaws are pivoted, said face extending at an acute angle from said inner surface of said corresponding jaw;

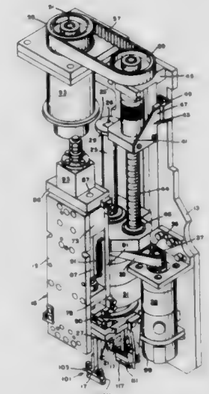
a frame member pivotably coupled to said jaws to move the jaws between open and closed positions;
a plunger rod mounted for longitudinal sliding movement relative to the frame member, said rod being coupled to the jaws and adapted to move between extended and retracted positions corresponding to the open and closed positions of the jaws;
a pair of handles affixed respectively to the frame member and the rod for facilitating relative longitudinal movement between the frame member and rod; and
a spring assembly coupled between the rod and the frame member to bias the rod and said jaws toward one of said open and closed positions; and
said disposable container comprising:
a pair of generally symmetrical, clamshell-shaped halves joined together by a flexible hinge and defining a hollow space when in the closed position;
means for latching said halves together in the closed position during release of said container halves from said jaws;
each container half including a formed recess shaped to releasably engage a mating protuberance located along the inner surface of a corresponding jaw of said apparatus, each formed recess including an inclined wall extending at an acute angle from the bottom of the recess to match the angle of said face of a corresponding protuberance;
whereby the two halves of the container, when mounted within said jaws, are releasably gripped by the jaws to open and close with said jaws when the latching means are not engaged and to release from said jaws as the jaws are driven to the open position when the two container halves are held together by said latching means.

5,056,843
SAFE-T-BOX CARRIER
Al Johnston, 14252 Culver Dr., Ste. A-689, Irvine, Calif. 92714
Filed Jul. 9, 1990, Ser. No. 550,178
Int. Cl.[5] B66C *1/16, 1/42*
U.S. Cl. 294—27.1 1 Claim



1. A tool consisting of two identical frames, each of said frames having two rectangular sides formed perpendicular to each other, with a substantially rectangular bottom lip mounted to and extending at a right angle from one said side and extending along the bottom of the opposite side, handles are attached to one said side of each frame, said handles centered on one said side, and a flexible element which is attached to one said side of each frame connects the two frames in order to grip at least one side of a load.

5,056,844
MULTIPLE JAW CENTERING HEAD STRUCTURE FOR SURFACE MOUNTED COMPONENT PLACEMENT MACHINES
Susumu Takabayashi, Oceanside, Calif., assignor to Amistar Corporation, San Marcos, Calif.
Filed Mar. 6, 1990, Ser. No. 489,908
Int. Cl.[5] B23P *19/04;* H05K *13/04*
U.S. Cl. 294—106 5 Claims



1. A multiple jaw centering head for surface mounted component placement machines, comprising:
at least one pair of elongated, pivotally supported, opposed primary jaw arms, the lower extremities of which being movable toward and away from a component to be mounted on a circuit board;
actuating means coupled to said jaw arms for causing relative movement therebetween;
a component-engaging jaw structure attached to the lower extremity of each of said primary jaw arms, said jaw structures each having mirror image matching smooth vertically curved inner surfaces adapted to engage opposite outer edges of the component to be mounted; and
also comprising a centering jaw assembly including a pair of opposing centering jaw members with matching upper and lower sections, said centering jaw assembly having upper and lower vertical positions, said centering jaw members each include a centering jaw having a broad surface upper portion and a relatively narrow lower portion, said upper portion registering with a component to be mounted when said centering jaw assembly is in said lower vertical position, and said lower portion registering with a component to be mounted when said centering jaw assembly is in said upper vertical position.

5,056,845
MATERIAL MANIPULATION APPARATUS
Carol A. Cook, 614 State St., Hanson, Mass. 02341
Filed Jul. 9, 1990, Ser. No. 550,068
Int. Cl.[5] B66C *1/44*
U.S. Cl. 294—118 1 Claim

1. A material manipulation apparatus comprising, in combination,
a first arm mounted to a second arm, including a first pivot axle pivotally mounting the first arm to the second arm in a cross configuration, wherein the first pivot axle divides the first arm as an upper first arm and a lower first arm and divides the second arm into an upper second arm and a lower second arm, and
the lower first arm includes a first jaw arm web arranged at

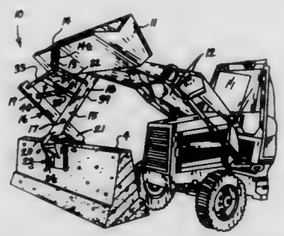
an acute angle to the lower first arm at a lower terminal end thereof mounting a first jaw, and the lower terminal end of the lower second arm includes second jaw arm webs arranged at an acute angle to the lower second arm mounting a second jaw, the first and second jaws arranged in confronting relationship relative to one another, and

a first link mounted adjacent an upper terminal end of the upper first arm, including a first link rear pivot mounting a rear terminal end of the first link to the upper first arm, the first link including a first link forward terminal end, and

a second link, including a second link forward terminal end and a second link rear terminal end, and a second link rear pivot mounting the second arm rear terminal end to the upper second arm, and the first link and the second link pivotally mounted together, including a second pivot directed adjacent the forward terminal ends of the first link and the second link, and

wherein the second pivot includes a support ring fixedly mounted thereto, and the support ring including a support link, the support link including a lock pin to selectively secure the support link to a support mount, the support mount fixedly mounted to a lift member to effect lifting and simultaneous closure of the first jaw relative to the second jaw, and

wherein the upper first arm includes a third link, including a third link rear pivot directed through the third link adjacent a rear terminal end of the third link and through the upper first arm between the first link rear pivot and the first pivot axle, and a fourth link, including a fourth link



rear terminal end and a fourth link forward terminal end, with the fourth link rear terminal end mounted to the upper second arm intermediate the second link rear pivot and the first pivot axle, and the forward terminal end of the fourth link including a third pivot directed intermediate the third link to pivotally secure the fourth link to the third link, and

wherein the third link includes an abutment flange fixedly mounted to the third link adjacent a forward terminal end of the third link to prevent over-centering of the third link relative to the fourth link, and

wherein the third link is defined by a predetermined length, and wherein the fourth link is defined by a fourth link length less than the predetermined length, and

wherein the first jaw includes a first jaw support web defined by a predetermined height, and the first jaw support web complementarily received within a "C" shaped jaw support, the "C" shaped jaw support defined by spaced flanges spaced apart the predetermined height, and the second jaw includes a second jaw support web defined by the predetermined height, the second jaw support web complementarily received within a "C" shaped jaw support, wherein the first and second jaw support webs are fixedly secured to the respective first and second jaw arm webs, and

wherein each of the first and second jaws include a resilient first jaw grasping member and a respective second resilient jaw grasping member, and

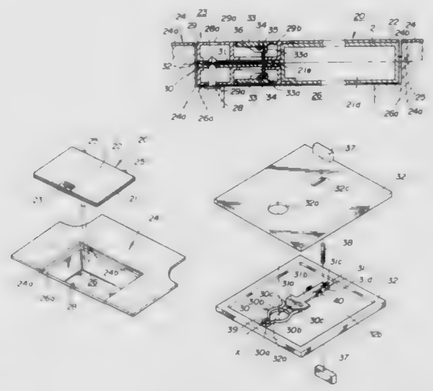
wherein the jaw grasping members each include resilient projections mounted orthogonally and outwardly of each forward surface of each grasping member, and each resilient projection defines a matrix of projections coextensively formed about the forward surface of each grasping member, and each resilient projection includes a threaded support shank, each threaded support shank threadedly received within a threaded bore formed within each grasping member.

5,056,846

PARTITION PLATE FOR AUTOMOTIVE VEHICLE

Yasuo Tanaka, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Mar. 7, 1991, Ser. No. 666,142
Claims priority, application Japan, Mar. 31, 1990, 2-34855[U]
Int. Cl.[5] B62D *43/10*
U.S. Cl. 296—37.1 **7 Claims**



6. A partition plate in use for a vehicle, said partition plate being detachable from a member defining a compartment which member is provided with a projecting pin, said partition plate comprising:

a board section; and

a locking device installed to said board section, said locking device including:

a housing member having a through-hole through which the projecting pin passes from one surface to the other surface of said housing member when the partition plate is secured to the compartment defining member;

a lock spring secured to said housing and lockably engageable with the projecting pin, said lock spring taking one of a first state in which said lock spring lockably engages with the projecting pin and a second state in which a lockable engagement of said lock spring and the projecting pin is released;

a sliding member contacted with said lock spring so that said lock spring is deformable to take one of said first and second states upon movement of said sliding member; and

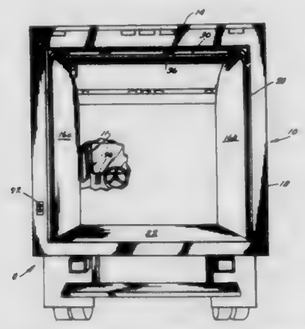
a pair of control levers connected to said sliding member to move said sliding member against a bias of said lock spring, said pair of control levers being located opposite to each other with respect to the center plane of said board section.

5,056,847

VEHICLE DOOR OPERATING MECHANISM

Richard L. Stillwell, Wyoming; Christopher G. Bohn, Kentwood, and Daniel W. Boerman, Jenison, all of Mich., assignors to Automatic Truck Door, Inc., Grandville, Mich.

Filed Nov. 13, 1989, Ser. No. 435,269
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—50 **31 Claims**



1. A power driven vehicular utility door operating mechanism for an enclosed container having a floor, ceiling, opposed sides, end and open rear selectively closed by a door, the door having multiple panels hinged together and moveable in opposed tracks, the tracks having a vertical section extending from the floor toward the ceiling along each side of the opening, a horizontal section extending along the upper edge of the sides of the container from the open end toward the front end, and a curved section interconnecting the vertical and horizontal sections whereby the door is moveable from a vertical position to fully close the opening to a generally horizontal position immediately beneath the ceiling to open the rear end, the mechanism comprising, in combination:

a reversible motor positioned adjacent one of said sides and in general alignment with the horizontal track section associated therewith, said motor including a drive shaft and a drive sprocket fixed to said drive shaft;

an idler pulley mounted in the same plane as said sprocket, said pulley being mounted at the upper end corner of said container adjacent said curved track section attached to said one of said horizontal track sections;

drive means cooperatively engaged with said drive sprocket and idler pulley forming an endless loop, said drive means moving in clockwise or counterclockwise direction depending on the direction movement of said motor drive sprocket;

link means interconnected to said drive means and said door, whereby movement of said drive means in one direction will raise said door selectively between a fully closed position to a fully open position and movement of said drive means in the other direction opposite said one direction will move said door from a fully raised open position to a fully closed position; and

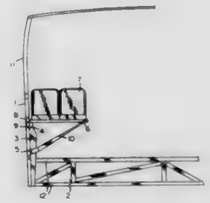
control means for selectively actuating said motor to raise and lower said door to said fully open or closed positions or positions intermediate thereto.

5,056,848

BODY SKELETON FOR SUPPORTING SUSPENDED PASSENGER SEATS IN VEHICLES

Attila Fekete; József Németh; István Raskó, and Ákos Fejes, all of Budapest, Hungary, assignors to Ikarusz Karosszéria és Járműgyár, Budapest, Hungary

Filed Oct. 17, 1989, Ser. No. 422,417
Claims priority, application Hungary, Sep. 6, 1989, 4647/89
Int. Cl.[5] B60N *1/00*
U.S. Cl. 296—63 **4 Claims**



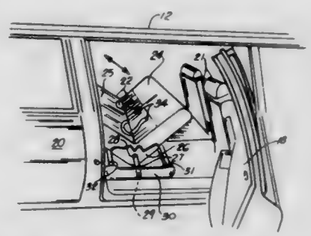
1. A body skeleton for mounting to the understructure of a bus, passenger seats having seat frames that are not attached to the sidewalls of the bus, said body skeleton being adapted to be attached to the understructure, wherein the body skeleton comprises a vertical supporting beam having an upper and a lower end for attachment at its lower end at least at two points to the understructure, the upper end of said supporting beam being adapted to support a part of said seat frame that is adjacent to said supporting beam, and a slanting supporting rod for supporting a part of the seat frame that is remote from said vertical beam.

5,056,849

LIMOUSINE CONSTRUCTION

Frank W. Norris, Jr., Lima; Charles L. Travis, West Liberty, and Ronald Benedict, Lima, all of Ohio, assignors to Superior Coaches, Stamford, Conn.

Continuation of Ser. No. 303,578, Jan. 27, 1989, abandoned. This application May 14, 1990, Ser. No. 523,836
Int. Cl.[5] B60N *2/10*
U.S. Cl. 296—65.1 **5 Claims**



1. A limousine construction comprising:

(a) a limousine having an exterior body with forward engine compartment, rear luggage compartment, a roof, floor and sides defining an interior for containing passengers, with six doors including three right and three side doors, each with forward pivotally attached edges, the doors being positioned in pairs including forward, center and rear door pairs;

(b) a plurality of seats including front, center, and rear seats, each extending transversely fully across the vehicle interior each seat having end portions that communicate with door openings of the respective front, center and rear pair

of doors, so that passengers can access any of the seats from either side of the vehicle via any of the doors;

(c) the center seat comprising:

(i) a base anchored to the vehicle chassis floor;

(ii) a generally L-shaped composite seat/seat back assembly movably mounted upon the base between a forward facing position in which the seat is in a position closely adjacent the vehicle floor and a rearward facing position in which the seat back is in a position closely adjacent the vehicle floor;

(iii) first and second cushioned seat elements connected with respect to each other in an L configuration;

(iv) a left seat support flange and a right seat support flange that rigidly hold each cushioned seat element with respect to the other,

wherein the seat/seat back retains the generally L shape during transition between the forward and rearward facing positions; and

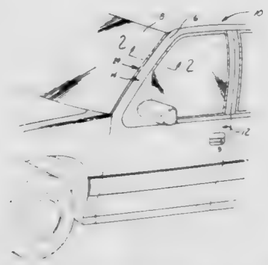
(d) a moving seat support mechanism including a single left pivot arm and a single right pivot arm, each pivot arm being pivotally mounted at one end portion thereof to the base and being pivotally mounted at the opposite end portion thereof to one of the flanges, the pivot arms comprising means for translating the center seat upwardly with respect to the base during transition between the forward and rearward facing positions.

5,056,850

WINDOW REVEAL MOLDING

Ricky V. Katcherian, Northville; Donald F. Rinke, Warren; Raymond D. Price, and Daniel R. Hunt, both of Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1991, Ser. No. 653,537
Int. Cl.[5] B60J *5/02*
U.S. Cl. 296—93 **2 Claims**



1. A motor vehicle molding assembly for concealing the space between the edges of a window panel and a door which are mounted to a pillar, the molding assembly comprising:

a retainer mounted to the pillar and having a first projection means projecting generally perpendicular to the pillar, with a hook means formed at the end of the projection means; and

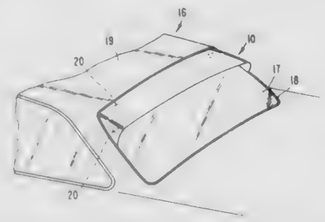
a dual durometer molding including a rigid portion having a groove with a catch portion adapted to receive and engage the hook means of the retainer to secure the molding to the door pillar, a pliable portion encasing the rigid portion and having a pair of legs depending towards and engaging the retainer mounted to the pillar for biasing the dual durometer molding away from the retainer and maintaining the engagement of the hook means with the catch portion, and a continuous flexible lip extruded integral with the pliable portion and bridges across the top of the legs and the interposed rigid portion, and the lip having a window engaging portion overlying the edge of the window and a door engaging portion underlying the door whereby the dual durometer molding bridges across the space between the window panel and the door.

5,056,851

REAR WINDOW SUNVISOR

Rodney E. Horwill, Brookfield, and Gregory M. Horwill, Kenmore, both of Australia, assignors to Cyclamen Services Proprietary, Ltd., Salisbury, Australia

Continuation of Ser. No. 463,229, Jan. 11, 1990, Pat. No. 4,962,959. This application Aug. 15, 1990, Ser. No. 567,734
Claims priority, application Australia, Jan. 13, 1989, PJ2255
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—95.1 **24 Claims**



1. A visor for mounting on the rear window of a vehicle the window having an upper portion and opposed side portions, the visor comprising:

a body member having a first leading edge for positioning against the window at the upper portion thereof, a trailing edge spaced from said leading edge, and a pair of opposed transverse ends, said body member being transversely elongated to span substantially the window between the opposed side portions;

depending support means connected to said body member transverse ends for spacing said trailing edge from said window; and

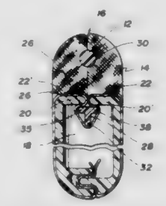
means associated with aid body member and said support means for adhesively mounting the visor directly to the window along the upper and opposed side portions thereof.

5,056,852

VEHICLE SUNVISOR INCLUDING MECHANISM FOR SECURING COVERING ON SUNVISOR AND SUPPORTING SUNVISOR WITHIN VEHICLE AND METHOD OF MAKING SAME

Douglas C. Miller, Hersey, Mich., assignor to Plasta Fiber Industries, Inc., Marlette, Mich.

Filed Feb. 4, 1991, Ser. No. 649,908
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.1 **9 Claims**



1. An improved material covered sunvisor having a retainer pin adapted to cooperate with a sunvisor support latch on a vehicle, said sunvisor comprising:

a shell having two halves foldable together along a common edge to form a cavity including a clamping flange, each half having a juxtaposed notch along said common edge which forms an aperture when said halves are placed together prior to folding together;

a material covering one side of both halves including said juxtaposed notches; and

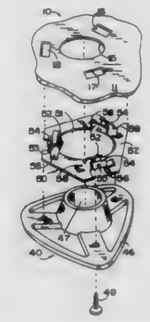
a support pin including a tucking flange insertable into said cavity through said aperture formed by said juxtaposed notches after said material covers said notches and while the two sides of said shell are folded together to form the cavity, said tucking flange being insertable into said cavity sufficiently to engage said material and said tucking flange on said clamping flange, whereby to retain said support pin and said material in said cavity after the two halves of said shell are folded together.

5,056,853

SNAP-IN VISOR MOUNT

Kim L. Van Order, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.

Division of Ser. No. 394,937, Aug. 16, 1989, Pat. No. 4,989,911.
This application Mar. 14, 1990, Ser. No. 493,419
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.9 **12 Claims**



1. A mounting assembly for mounting a vehicle accessory to a sheet metal structure of a vehicle comprising:

a generally planar mounting plate having a central opening and at least one aperture spaced from said central opening for receiving an accessory fastening means;

first fastening means for attaching a vehicle accessory to said plate; and

second fastening means for attaching said mounting plate to said sheet metal structure, wherein said second fastening means is separate from said first fastening means, and said second fastening means comprises spring means integrally formed in said mounting plate and shaped to extend into aperture means formed in said vehicle sheet metal structure for locking said plate to the vehicle such that the accessory and plate can be preassembled and such assembly subsequently installed by snap-fitting it into the vehicle.

5,056,854

SUN VISOR SYSTEM

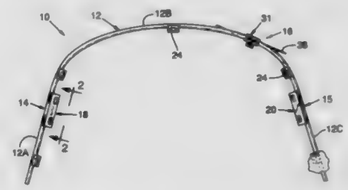
John B. Rosen, 2330 W. 27th, Eugene, Oreg. 97405

Filed May 2, 1991, Ser. No. 694,919
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.11 **13 Claims**

1. For use in a vehicle sun visor system controlled manipulation of a sun visor in the system:

rail structure including a pair of spaced elongate rail segments having operatively confronting segment ends; and

elongate gate structure operatively associated with said segments, said gate structure being configurable in a closed condition wherein said gate structure extends in said space between said segments to provide, in cooperation with said segments, a substantially contiguous pathdefiner along which the visor is controllably manipulable, said gate structure being actuable to at least one open



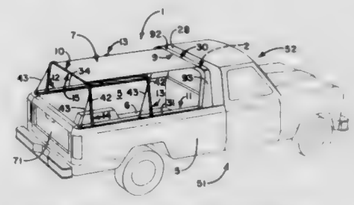
condition permitting removal of the visor by moving the same past one of said ends.

5,056,855

VEHICLE BED COVER ASSEMBLY

Andrew Moravsky, 16948 Planchet Rd., Greenwell Springs, La. 70839

Filed Aug. 10, 1990, Ser. No. 565,671
Int. Cl.[5] B60P *7/02, 3/34*
U.S. Cl. 296—98 **20 Claims**



1. A vehicle bed cover assembly, comprising:

a. a primary frame member having an exterior side and an interior side, fixedly connectable between the sidewalls of a vehicle bed, said frame member extending to a desired height above said sidewalls;

b. a means for anchoring and storing a top cover, mounted on said primary frame member;

c. a flexible top cover having a first end and a second end, said first end being connected to said means for anchoring and storing a top cover;

d. a first rail fixedly attachable one said sidewall of said vehicle bed, said first rail having a longitudinal flange extending upward from said sidewall, said flange having a plurality of adjustment holes therein spaced longitudinally along said flange;

e. a second rail fixedly attachable to the vehicle bed sidewall opposite said first rail, said second rail having a longitudinal flange extending upward from said sidewall, said flange having a plurality of adjustment holes therein spaced longitudinally along said flange;

f. at least one movable frame member, removably connectable to said first and second rails in a fixed position between said sidewalls of said vehicle bed and extending to a desired height above said sidewalls, said movable frame member including;

i. a main frame having two support ends, one said support end being removably and pivotally attachable to one said adjustment hole in said first rail and the other said support end being removably and pivotally attachable to one said adjustment hole in said second rail; and

ii. a plurality of braces, each said brace having a first end pivotally attached to said main frame and a second end removably and pivotally attachable to one said adjustment hole of one said rail; and

g. a means for attaching said flexible top cover to said movable frame member, fixedly connected to said second end

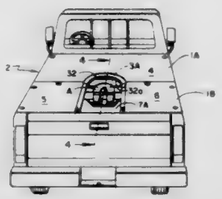
of said top cover and removably connectable to said movable frame member.

5,056,856

PROTECTIVE COVERING ATTACHMENT FOR CARGO HOLDS HAVING A FIFTH-WHEEL TRAILERING DEVICE

Merle L. Pederson, 1309 S. 4th, La Crosse, Wis. 54601

Filed Jan. 30, 1991, Ser. No. 648,160
Int. Cl.[5] B60P *7/04*
U.S. Cl. 296—100 **14 Claims**



1. A cargo bed attachment for use in covering a cargo hold of a transporting vehicle equipped with a cargo bed having vertically extending sidewalls and an end gate for accessing onto said bed, and a fifth-wheel hitching mount for hitching a fifth-wheel hitching post thereto, said attachment comprising:

A) a plurality of adjacently positioned and segmented covering panel sections of a size and arrangement so as to protectively cover said hold and to peripherally overlap onto said sidewalls and said end gate, with said panels including:

i) a removable port panel section which protectively covers a ported aperture of a sufficient size about the hitching mount to permit maneuverability of the hitching post therewithin while trailering a fifth-wheel trailer therewith, and

ii) a removable rearward panel section protectively covering a slotted passageway extending from said ported aperture onto said end gate;

B) an undercarriage frame which supportively engages onto said panels and provides detachable mounting sites for securing said panels together in an abutting protective relationship upon said frame, with said frame comprising:

i) an external framework defining a peripheral configuration bordering onto said sidewalls and said end gate, with said framework including a slotted framing entryway portion margining onto said ported aperture and said passageway so as to permit access of the hitching post to the hitching mount upon removal of said rearward panel section and said port panel section from said frame, and

ii) an internal framing chord structure interconnectively bridging segmented regions within said framework so as to supportively brace said framework and provide internal mounting sites for mounting said panels onto said frame;

C) securing means for attaching and detaching the panels from said frame so as to permit the port panel section and the rearward panel section to be separately attached and detached from said frame; and

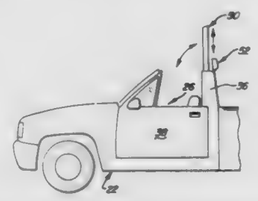
D) anchoring means for anchoring the attachment onto the cargo hold.

5,056,857

PICKUP TRUCK RIGID RETRACTABLE ROOF PANEL

Clyde W. Ney, Waterford, Mich., and Genaro Prats, Mission Viejo, Calif., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 14, 1990, Ser. No. 627,685
Int. Cl.[5] B60J *7/16*
U.S. Cl. 296—107 **17 Claims**



1. A power rigid retractable roof assembly for a pickup comprising:

a retractable substantially planar roof panel movable from a first substantially horizontal working position to a second substantially vertical storage position;

track means having movable means for providing movement of said roof panel between said first and said second positions, said track means coupled with said roof panel; and

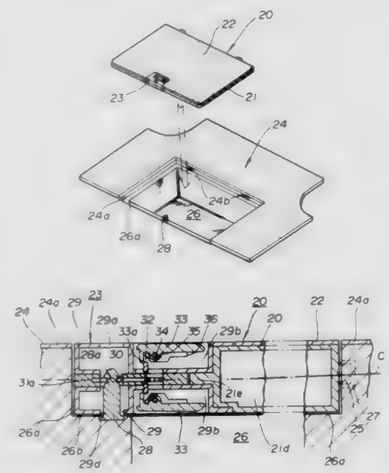
motor means for moving said movable means, said motor means coupled with said movable means for automatically moving said roof between said first and second positions in response to an operator signal.

5,056,858

PARTITION PLATE FOR AUTOMOTIVE VEHICLE

Yasuo Tanaka, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jan. 15, 1991, Ser. No. 641,296
Claims priority, application Japan, Mar. 29, 1990, 2-31836[U]
Int. Cl.[5] B60J *5/00;* **B62D** *43/10*
U.S. Cl. 296—146 **7 Claims**



1. A partition plate in use for a vehicle, said partition plate being detachable from a member defining a compartment which member is provided with a projecting pin, said partition plate comprising:

a board section; and

a locking device installed to said board section, said locking device including:

a housing member having a through-hole through which the projecting pin passes from one surface to another surface of said housing member when the partition plate is secured to the compartment defining member;

a lock spring disposed in said housing member and lockably engageable with the projecting pin;

a supporting plate disposed in said housing member to support and guide said lock spring in a manner to take one of a first state in which said lock spring lockably engages with the projecting pin and a second state in which a lockable engagement of said lock spring and the projecting pin is released;

a sliding member connected to said lock spring in a manner that said lock spring is deformable to take one of said first and second states upon movement of said sliding member; and

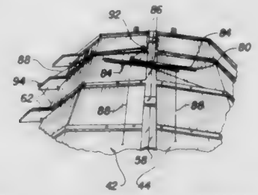
a pair of control levers operatively associated with said sliding member to move said sliding member against a bias of said lock spring, said pair of control levers being located opposite to each other with respect to a center plane of said board section.

5,056,859

MULTIPLE-USE WAGON ASSEMBLY

Daniel H. Walder, Rte. 1 Box 175, Wittenberg, Wis. 54499

Continuation-in-part of Ser. No. 476,303, Feb. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 299,054, Jan. 19, 1989, abandoned. This application Apr. 16, 1991, Ser. No. 685,659
Int. Cl.[5] B60J *7/08*
U.S. Cl. 296—180 **12 Claims**



1. A multiple-use wagon assembly comprising:

a bed supported on an undercarriage,

a pair of laterally spaced apart sidewalls extending upwardly from said bed and each having a top edge, said pair of sidewalls defining a cargo space therebetween,

a roof member attached adjacent each said sidewall top edge and including adjacent inner and outer roof sections, each said inner roof section having an inner edge,

hinge means pivotally joining each said roof member outer section to one said sidewall top edge,

actuating means on each said sidewall operable to displace said roof members about said hinge means from a closed position wherein said inner roof section inner edges are substantially juxtaposed atop said bed and between said sidewalls, to an open position wherein said roof members are in a generally vertical disposition above respective ones of said sidewalls,

alignment means on at least one said roof member adjacent said inner section inner edge,

said alignment means including a pivotally mounted elongated member having an arm and opposite leg, and

a cable joined between said elongated member and one said sidewall, whereby

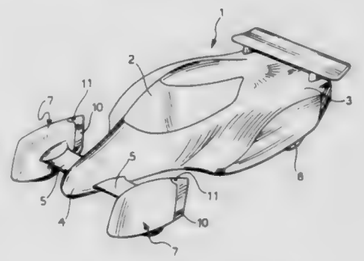
operation of said actuating means simultaneously pivots said roof members about said hinge means and pivots said elongated member arm and leg, with said arm moving from a position overlying both said inner section inner edges when said roof members are in a closed position, to a position wherein said arm is removed from overlying both said inner section inner edges, when said roof members are in an open position.

5,056,860

HIGH-PERFORMANCE MOTOR CAR

Felice Cornacchia, and Nevio Di Giusto, both of Torino, Italy, assignors to Fiat Auto S.p.A., Torino, Italy

Filed Apr. 5, 1990, Ser. No. 504,827
Claims priority, application Italy, Apr. 6, 1989, 67246 A/89
Int. Cl.[5] B62D *35/00*
U.S. Cl. 296—180.5 **2 Claims**



1. A high performance motor car comprising:

a body, rear wheels and front steering wheels, said body surrounding said rear wheels and having a tapered front part,

supporting means pivotally supporting said front steering wheels on opposite sides of said tapered front part,

aerodynamic fairings surrounding said front wheels and mounted for pivotal steering movement with said front wheels,

a movable, vertical, fin-like member pivotally mounted on each fairing adjacent a rear portion thereof and

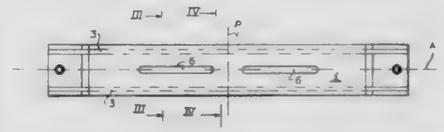
connecting means for pivoting said fin-like member in opposite direction to the pivotal movement of each fairing.

5,056,861

IMPACT GIRDER FOR THE SIDE OF AN AUTOMOTIVE VEHICLE

Peter Garnweidner, Lamprechtshausen, and Peter Üblacker, Bürmoos, both of Austria, assignors to Austria Metall Aktiengesellschaft, Braunau am Inn, Austria

Filed Apr. 23, 1990, Ser. No. 521,719
Int. Cl.[5] B60R *27/00*
U.S. Cl. 296—188 **10 Claims**



1. An impact girder for protecting a side of a passenger compartment of an automotive vehicle against a collision from that side, said impact girder comprising a longitudinally extending beam having opposite ends secured to a body of the vehicle, said beam having a compression flange facing outwardly from said compartment and being formed with a longitudinal flange axis lying in a central plane thereof, said compression flange being formed with a continuous slotless central region between ends of said compression flange and between opposite longitudinal edges thereof, said central region having a symmetry plane perpendicular to said central plane of said compression flange, a tension flange facing inwardly toward

said compartment, and at least one elongated hollow space extending within said beam between said flanges, said compression flange being formed with first and second linearly extending elongated slot-like openings spaced axially apart in said central plane on opposite sides of said central plane and each communicating with said hollow space between the central region of said flange and a respective one of said ends, each of said elongated openings having a pair of longitudinal parallel edges extending parallel to said longitudinal edges of said compression flange and lying symmetrically on opposite sides of said symmetry plane defining therebetween said central slotless region, said slot-like opening weakening said compressing flange to permit deformation thereof to displace the longitudinal edges of said opening out of a plane of the compression flange upon an impact from the outside of said compartment, said central region having a width along said central plane which is less than the lengths of said slot-like openings therealong.

5,056,862

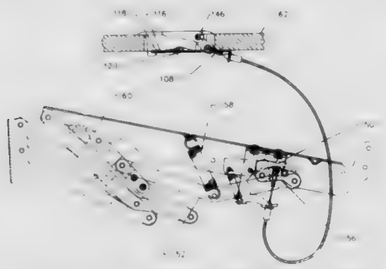
RECESSED LEVER ACTUATOR FOR RECLINER MECHANISM

Teddy J. May, and Steve R. Robison, both of Tupelo, Miss., assignors to Action Industries, Inc., Tupelo, Miss.

Filed Jul. 3, 1990, Ser. No. 547,221

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—85 **6 Claims**



1. A mechanism lock release actuator for a recliner chair which has a seat and arm frame unit supported on a base by an occupant force operated mechanism which is reversibly movable between a closed position in which the recliner chair is erect and at least one at least partially open position in which an ottoman mounted to the mechanism is raised and forwardly thrust from a location stowed under a forward edge of a seat cushion of the seat and arm frame unit, in which the seat and arm frame unit includes at least one arm constituted at least in part by a panel having a slot provided therethrough, and in which a mechanism lock must be released by movement of a lock portion of said mechanism a certain distance in a certain direction before said occupant force can be effectively applied to move said mechanism from said closed position to said at least partially open position,

said mechanism lock release actuator comprising:

a lock end portion, a lever end portion, and a flexible cable assembly;

said flexible cable assembly including:

a flexible sheath having two opposite ends;

a respective sheath mounting fitting provided at each end thereof;

a flexible cable longitudinally slidably received in said sheath and having two opposite end portions respectively protruding out of opposite ends of said sheath; and

a respective cable attachment fitting secured on each end portion of said flexible cable;

said lock end portion comprising:

a bracket and means for mounting said bracket in fixed relation to said seat and arm frame unit adjacent said look portion of said mechanism;

a lock portion engaging element and means mounting said element to said bracket for movement along a path between an inactive position, and an active position in which said element, having engaged said lock portion of said mechanism has forceably moved said lock portion of said mechanism said certain distance in said certain direction;

resilient means effectively secured between said bracket and said element and operative for tending to maintain said element in said inactive position and to resiliently force said element back to said inactive position after said element has been temporarily moved to said active position;

means securing one of said sheath mounting fittings to said brackets; and

means securing a respective one of said cable attachment fittings to said lock portion engaging element for temporarily applying pulling force to said element for temporarily moving said element from said inactive position thereof to said active position thereof; said lever end portion comprising:

a housing having an outer side and an inner side; means providing a recess being bordered by a bezel; means defining a slot through said housing, said slot intersecting said recess;

a lever protruding through said recess so that an outer portion thereof is juxtaposed with said outer side of said housing and an inner portion thereof is juxtaposed with said inner side of said housing;

trunnion means and hinge barrel means provided on said housing, adjacent said slot, and on an intermediate portion of said lever, between said inner and outer portions of said lever, whereby said lever is pivotally movable on said trunnion means between an inactive position in which said outer portion of said lever is substantially completely recessed in said recess and bordered by said bezel, and an active position in which said outer portion slants out of said recess beyond said bezel;

means for mounting said housing to said panel in bridging relation to said slot through said panel from one face of said panel, so that said inner portion of said lever is exposed internally of the seat and arm frame unit through said slot through said panel;

means for securing the other of said sheath mounting fittings in fixed relation to said bracket;

means securing the other of said cable attachment fittings to said inner portion of said lever at such a distance from said hinge barrel means, that pivotal movement of said lever from said inactive position thereof to said active position thereof reversibly pulls said flexible cable longitudinally in said sheath by an amount which moves said element from inactive position thereof to said active position thereof; and

resilient means effectively secured between said lever and said bracket and operative for tending to maintain said lever in said inactive position thereof and to resiliently force said lever back to said inactive position thereof after said lever has bee temporarily moved to said active position thereof.

5,056,863

LATERALLY ADJUSTABLE ARMREST FOR A CHAIR

Larry DeKraker, Holland; Thomas R. Demmon, Grand Rapids, and James P. Steffens, Hopkins, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 418,837, Oct. 10, 1989. This application Dec. 6, 1990, Ser. No. 447,001

Int. Cl.[5] A47C *7/54*

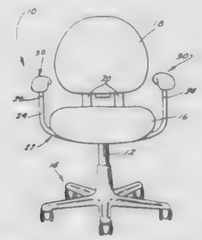
U.S. Cl. 297—411 **11 Claims**

1. A laterally adjustable armrest assembly for a chair, said assembly comprising:

an armrest support adapted to be secured to a chair;

an armrest, said armrest comprising an elongated member having a plurality of longitudinally extending, spaced ribs defining a plurality of grooves; and

armrest adjustment means on said support and said armrest for permitting selective lateral adjustment of said armrest with respect to said armrest support, and wherein said adjustment means comprises an elongated bracket joined to said support and having a generally U-shaped configuration in transverse cross section, said bracket including a base and generally upwardly extending side walls, said side walls disposed within selected ones of said grooves so that said armrest may be moved laterally with respect to said bracket and said support.



5,056,864

WORK STATION SYSTEM

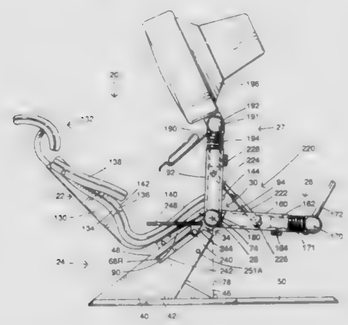
Lloyd G. B. Cooper, Birmingham, Ala., assignor to Workstation Environments, Birmingham, Ala.

Continuation of Ser. No. 367,469, Jun. 19, 1989, Pat. No. 4,915,450, which is a continuation-in-part of Ser. No. 261,525, Oct. 24, 1988, Pat. No. 4,880,270, which is a continuation-in-part of Ser. No. 934,970, Nov. 25, 1986, Pat. No. 4,779,922. This application Apr. 6, 1990, Ser. No. 505,484

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] A47C *7/62*

U.S. Cl. 297—188 **23 Claims**



1. A work station comprising:

frame means for holding aloft an horizontal axial member;

a chair for supporting a human operator;

a device carriage for supporting an operator-interactive device;

footrest means;

first coupling means upon which said chair is mounted, said first coupling means comprising a bracket having a proximal end attached to said axial member;

second coupling means for coupling said device carriage to said axial member, said second coupling means comprising an elongated member having a proximal end attached to said axial member;

third coupling means for coupling said footrest means to said axial member, said second coupling means comprising an elongated member having a proximal end attached to said axial member;

pivoting means for selectively pivoting in unison said chair, said device carriage, and said footrest means about a horizontal axis of said horizontal axial member; and,

elevating means included in said frame means for selectively elevating said horizontal axial member.

5,056,865

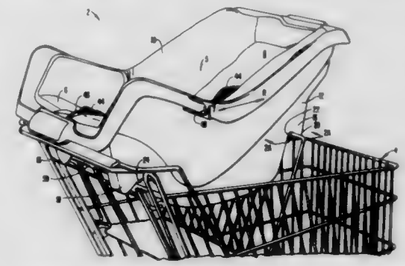
SHOPPING CART LOCKING MEANS

Mark A. Sedlack, Cuyahoga Falls, assignor to 501 Century Products Co., Macedonia, Ohio

Continuation of Ser. No. 394,021, Aug. 15, 1989, abandoned. This application Oct. 31, 1990, Ser. No. 609,132

Int. Cl.[5] A47C *1/08*

U.S. Cl. 297—250 **20 Claims**



1. An infant carrier for secure attachment to a shopping cart comprising:

a seating section including a bottom portion, a back portion disposed at an angle to said bottom portion, and side portions disposed adjacent to and substantially perpendicular to said back portion and said bottom portion;

rear side extensions generally parallel to said side portions and including a rear surface having an opening formed therein; and

lock means for attaching said seating section to the shopping cart formed in said rear side extensions, said lock means comprising a resilient cantilever member extending into and movable within said opening when said carrier is positioned on said shopping cart, said lock means being formed integrally with said rear surface at a lower end of said opening.

5,056,866

ROCKING CHAIR, PARTICULARLY OFFICE CHAIR CONSTRUCTION

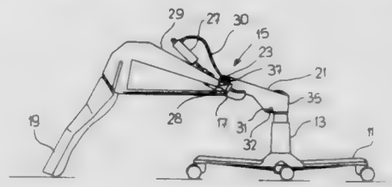
Peter Tobler, Sennwald, Switzerland, assignor to Sitag AG, Senwald, Switzerland

Filed Sep. 10, 1990, Ser. No. 580,635

Claims priority, application Switzerland, Sep. 21, 1989, 03436/89

Int. Cl.[5] A47C *3/026*

U.S. Cl. 297—302 **20 Claims**



1. Rocking or swivel chair, particularly office chair, having a seat (17);

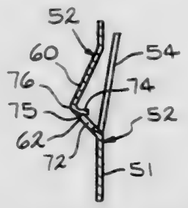
a floor support (**11**, **13**);
an elongated seat support (**21**) coupled to the floor support at a first end portion thereof;
a torsion spring system (**23**) coupled to both said seat support (**21**) adjacent a second end portion thereof and said seat (**17**),
said torsion spring system being deflectable about a tilt axis (**37**), and said seat being tiltably secured to said seat support for tilting movement about said tilt axis (**37**), said torsion spring system resiliently biassing said seat (**17**) to tilt or pivot the seat from a lower tilt position to an elevated tilt position;
spring tension setting means (**25**) coupled to said torsion spring system to set a bias spring tension therefor; and
an elongated position setting and blocking means (**27**) located between said seat support (**21**) and said seat to block tilting of said seat for positioning said seat at least in or between two tilt positions, and wherein
said position setting and blocking means (**27**) comprises a fluid blocking element (**27**);
a first end of said fluid blocking element being secured to said seat support (**21**) at a position between said second end portion and up to or at the first end portion thereof; and
a second end of said fluid blocking element (**27**) being secured to said seat (**17**) at a position such that the elongated fluid blocking element extends in the general direction of the elongated seat support (**21**) and forms an acute angle with respect to said seat support.

5,056,867

HEAD RESTRAINT ADJUSTMENT MECHANISM

Scott V. Foster, Northville, and Anthony J. Fecteau, Roseville, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jun. 18, 1990, Ser. No. 539,713
Int. Cl.[5] A47C *7/38*
U.S. Cl. 297—410 **7 Claims**



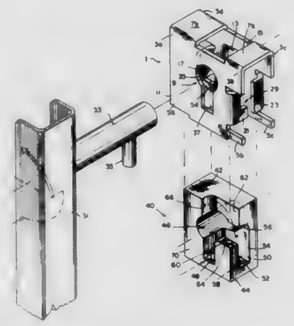
1. A mechanism for enabling a head restraint pad to be moved with respect to a seat, comprising:
at least one post connected to and supporting the head restraint pad, said post forming a plurality of spaced detent notches on its outer surface, said notches being generally V-shaped and extending transversely of said post forming upper and lower inclined ramp surfaces, said post further forming a locking notch spaced below said detent notches, said locking notch having an upper inclined ramp surface similar to said detent notch upper ramp surfaces and a radially extending lower surface spaced below said inclined upper surface;
a tubular bushing mounted to the seat and having an inside bore for receiving said post;
a spring retainer carried by said bushing, said retainer having a body portion and a cantilevered retaining arm extending from said body portion, aid retaining arm including a V-shaped contacting portion having upper and lower inclined legs, the outer surafces of said legs forming upper and lower engaging surfaces of said retaining arm, said arm being resiliently biased into said bore and said legs being sized to enable said upper and lower engaging surafces to concurrently contact said upper and lower ramp surfaces respectively when one of said detent notches is aligned with said V-shaped contacting portion whereby said post is held in place,
said ramp surfaces forcing said arm radially outward in response to longitudinal forces on said post to adjust the position of said head restrain; and
said lower inclined leg of said V-shaped contacting portion having a cut out portion forming an upper edge engagable with the radially extending lower surface of said locking notch simultaneous with engagement of the upper inclined leg with the upper ramp surface of the locking notch to prevent unintended removal of said post from the seat.

5,056,868

CHAIR ARM REST MOUNTING BRACKET AND INSERT

Stephen Beck, Elkhart, Ind., assignor to Global Glass Inc., Elkhart, Ind.

Filed Jul. 24, 1990, Ser. No. 556,462
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—417 **20 Claims**



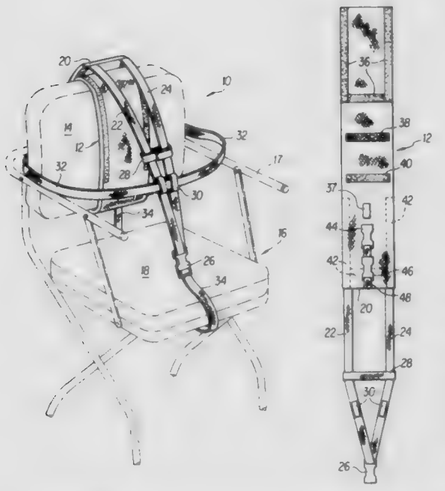
11. A support mounting for pivotally coupling a chair arm to a frame of a chair back comprising:
a chair arm having a pivot shaft attached to and extending therefrom;
a limit pin attached to and extending right angles to said pivot shaft;
a bracket attached to a frame of a chair back;
wherein the bracket has a generally key-shaped opening in one wall thereof for passage of said arm and limit pin therethrough;
a pivot arm insert attached to said bracket;
an insert block having at least three slots;
a first of the three slots being connected to and angled perpendicular to a second of the three slots; and
a third of the three slots being connected to and parallel to the second of the three slots;
wherein said shaft is nonrotatably slidable into said. bracket and insert block until said pin reaches said connection between the first and second slots and then said shaft being able to be rotated without sliding to a position wherein said pin is able to be nonrotatably slid through the connection between the second and third slots into the third slot and the shaft is then unable to be slid but is able to be rotated in said third slot; and
wherein normal rotational adjustment of the arm relative to the frame of the chair back takes place by rotation of the shaft while the pin is in the third slot.

5,056,869

RESTRAINING HARNESS TO HOLD CHILD IN HIGHCHAIR

George A. Morrison, 5919 E. 4th St., Tucson, Ariz. 85711, assignor to George A. Morrison, Tucson, Ariz.

Filed Jul. 2, 1990, Ser. No. 546,727
Int. Cl.[5] A47D *15/00*
U.S. Cl. 297—485 **15 Claims**



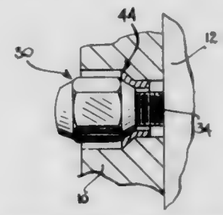
1. A restraining harness to secure a child in highchairs having a seat and a horizontal back member of varying vertical heights, the restraining harness comprising:
an elongated panel adapted to be operably attached to the highchairs' back, said elongated panel comprising flexible material and having a length with a first end and a second end, and a front and rear side, said elongated panel further including:
a first plurality of loop type fastener material strips situated on said front side proximate said second end and a second plurality of hook type fastener material strips situated on said rear side proximate said first end;
a third loop type fastener material strip situated on said front side spaced from said first plurality of loop type fastener material and a fourth hook type fastener material strip situated on said front side between said first plurality of loop type fastener material and said third loop type fastening material;
said elongated panel vertically encircling the highchairs' back member to permit said elongated panel first plurality of loop type fastener material to engage said elongated panel second plurality of hook type fastener material at selected points and to selectively permit said third loop type fastener material strip to engage said fourth hook type fastener material strip to form a loop to take up a portion of said elongated panel to selectively vary the length of the elongated panel, said elongated panel vertically encircling the horizontal back member in a secured manner;
a plurality of shoulder straps fixedly attached to said elongated panel, said plurality of shoulder straps adapted to pass over a child's shoulders; and
an under-the-seat strap operably attached to said plurality of shoulder straps, said under-the-seat strap adapted to pass under the highchairs' seat and operably attach to said elongated panel whereby a child may be secured in the highchairs.

5,056,870

WHEEL NUT ASSEMBLY

Mark J. Plumer, 10660 Wilshire Blvd. Apt. 1106, Los Angeles, Calif. 90024

Continuation of Ser. No. 222,668, Jul. 25, 1988, Pat. No. 4,898,429. This application Jan. 31, 1990, Ser. No. 472,823
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.
Int. Cl.[5] B60B *3/16*
U.S. Cl. 301—9 DN **12 Claims**



1. An improvement for use in the mounting of a non-ferrous wheel to a wheel hub having a hardness substantially greater than that of the wheel and where a plurality of threaded studs extend outwardly from the hub into and through respective ones of a plurality of openings in the wheel and where lug nuts are used to secure the wheel to the hub, the openings in the wheel each having a conically shaped region which diverges outwardly at a side of the wheel distal to the hub and a connected cylindrically shaped region, and each of the lug nuts being characterized in that they each comprise a body with an internally threaded bore for threaded engagement with the threaded studs, an outwardly extending conically shaped section on said body of each lug nut, each said conically shaped section having an end proximate said body and an end distal to said body and a tapered outer wall which converges towards a reduced diameter at the end distal to said body, the conically shaped section on each of said bodies extending outwardly from each said body toward one of the openings in said wheel and said conically shaped section also having a central bore sized to receive a threaded stud; the improvement comprising an insert for use with each of said lug nuts and which inserts are formed of a material of hardness similar to that of the hub and substantially greater than that of the wheel, each said insert comprising a body having a cylindrically shaped shank and an integral outwardly flaring conically shaped head with a central bore extending therethrough and which insert is adapted to extend about a portion of the conically shaped section on the body of the lug nut when in use, said head of each said insert having a conically shaped inner wall in said bore sized to bear against the conically shaped region on said body of a nut and a conically shaped outer wall sized to bear against the conically shaped region of said wheel, said insert also having the cylindrically shaped shank integral with the conically shaped section of the insert and having a cylindrically shaped exterior wall sized to bear against the cylindrically shaped region of the wheel such that the outer surface of the insert generally conforms to the shape of the opening in the wheel thereby enabling a generally even distribution of clamping forces from the nut, whereby a substantial length of the

studs can be gripped by the nut and with the insert of a harder material than said wheel bearing against the openings in the wheel, so that the nut may be tightened on the stud without crushing or bending the wheel and so that the nut can grip a sufficient length of a stud to preclude a vibrational unwinding from the stud.

5,056,871

STRUCTURE WITH MULTIPLE INDEPENDENT WHEELS FOR CYCLE OR ENGINE-DRIVEN VEHICLE

Franco Sbarro, Tuileries-de-Grandson, Switzerland, assignor to SM Sbarro Mottas Engineering S.A., Switzerland

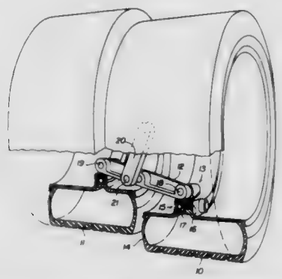
PCT No. PCT/CH89/00192, § 371 Date Jun. 29, 1990, § 102(e) Date Jun. 29, 1990, PCT Pub. No. WO90/05069, PCT Pub. Date May 17, 1990

PCT Filed Nov. 1, 1989, Ser. No. 536,685

Claims priority, application France, Nov. 2, 1988, 88 14528

Int. Cl.[5] B60B *11/08*; B62D *49/06*

U.S. Cl. 301—36 R **8 Claims**



1. A structure with multiple independent wheels for a motorized driven vehicle designed to move on an irregular surface, each wheel comprising a central portion (**13**) connected to the base structure of the vehicle and a peripheral portion (**14**) concentric with respect to said central portion and disposed to rotate thereabout, wherein said central portion and said peripheral portion are connected to each other by at least one bearing (**15**) comprising at least one interior annular element (**16**) connected to said central portion and at least one exterior annular element (**17**) concentric to said interior annular element and connected to said peripheral portion, said peripheral portion (**14**) having a tire appropriate for the type of surface on which the vehicle will travel, and wherein said central portion of each independent wheel is connected to the base structure of the vehicle by two anchor points (**18, 19**) which are off-center of the wheel, characterized in that at least one of said multiple independent wheels (**10, 11, 50, 51, 52, 60, 61, 62, 63**) is connected side by side with at least one other wheel (**10, 11, 50, 51, 52, 60, 61, 62, 63**) by at least two diametrically opposed rocker arms (**12**), each of said at least two diametrically opposed rocker arm is articulated at a first end thereof to one of the two anchoring points (**18**) of a first of the side by side wheels, and a second end of each of said at least two diametrically opposed rocker arms is articulated to one of the two anchoring points (**19**) of the other of the side by side wheels, and said rocker arms are connected to the base structure of the vehicle by pivoting elements (**21**).

5,056,872

WHEEL TRIM

Heinrich J. Hempelmann, Livonia, Mich., assignor to NI Industries, Inc., Novi, Mich.

Division of Ser. No. 145,513, Jan. 19, 1988, Pat. No. 4,943,121. This application May 16, 1990, Ser. No. 524,288

Int. Cl.[5] B60B *7/06*

U.S. Cl. 301—37 SS **13 Claims**

1. A spoke retention plate for use in a center hub assembly of simulated wheel trim securable to a vehicle wheel, characterized in that said plate is formed of a polymeric material and includes integral retention means for retaining the radial inner ends of the spokes;

first integral retention means for retaining the radially inner ends of an axially outer annular array of spoke members; and

second integral retention means for retaining the radially inner ends of an axially inner annular array of spoke members, said second integral retention means being axially spaced from said first annular retention means;

said first and second integral retention means each including first portions overlying an axially outwardly facing surface of said spoke members to limit axial movement of said spoke members and a second portion facing a radially inner end portion of said spoke members to limit radially inward movement of said spoke members.

5,056,873

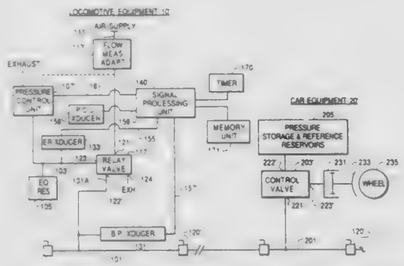
ADAPTIVE AIR BRAKING SYSTEM WITH CORRECTION FOR SECOND ORDER TRANSIENT EFFECTS

Milton C. Deno, Satellite Beach; Eugene A. Smith, Palm Bay, and Dale H. Delaruelle, Melbourne, all of Fla., assignors to Harris Corporation

Filed Sep. 13, 1990, Ser. No. 581,792

Int. Cl.[5] B60T *15/22*

U.S. Cl. 303—33 **18 Claims**



1. For use with the brake system of a railway train which has a locomotive having a braking control coupled in fluid communication with one or more train cars each of which has a brake mechanism for applying braking force thereto in response to a reduction in the pressure communicated by said braking control and for releasing said braking force in response to restoration of said pressure, said braking control comprising an equalizing reservoir, means for controlling pressure in said equalizing reservoir in response to requests communicated by an operator, and means for causing the pressure communicated to said brake mechanisms to increase or decrease in response to changes in the pressure in said equalizing reservoir, a method of controlling the pressure in said equalizing reservoir, and thereby the pressure communicated to said train cars, in response to a request for reduction in the pressure in said equalizing reservoir, comprising the steps of:

(a) measuring the pressure in said equalizing reservoir and in said brake pipe in response to a request for application of the train's brakes;

(b) determining a pressure reduction correction value equal to the difference between the measured pressures in said equalizing reservoir and in said brake pipe in response to said request for a reduction of the pressure in said equalizing reservoir; and

(c) causing the pressure in said equalizing reservoir to be modified by an amount equal to said pressure reduction correction value, whereby the pressure communicated to said brake mechanisms is caused to be reduced by an amount corresponding to said requested reduction.

5,056,874

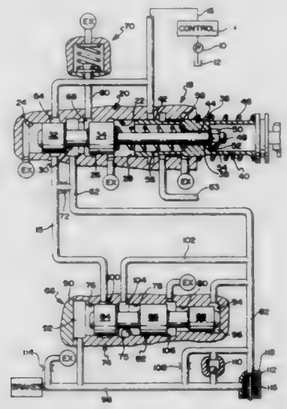
BRAKE CONTROL VALVE

Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1990, Ser. No. 617,322

Int. Cl.[5] B60T *15/04*

U.S. Cl. 303—50 **2 Claims**



1. A brake control valve apparatus comprising: a source of fluid pressure; a brake feed passage; a primary brake apply passage; a secondary brake apply passage in fluid communication with the primary brake apply passage; exhaust passage means; brake apply regulator valve means comprising operator input means for establishing a desired braking level, valve means operatively connected with the operator input means for controlling fluid flow from said source of fluid pressure to said primary brake apply passage at a pressure level determined by said operator input means; flow regulator valve means for selectively connecting said source to said secondary brake apply passage comprising a first pressure responsive area; means for urging said flow regulator valve means to a first position connecting said source to said secondary brake apply passage in response to fluid pressure is said primary brake apply passage, and a second pressure responsive area means in fluid communication with said brake feed passage for urging said flow regulator valve means to a second position disconnecting said source from said secondary brake apply passage in response to pressure in said brake feed passage; and flow restriction means and pressure reduction means disposed in parallel fluid flow relation between said primary brake apply passage and said brake feed passage for controlling both the change in pressure level of the fluid in said brake feed passage and the flow of fluid to said brake feed passage for limiting the pressure rise in said brake feed passage while providing a high flow rate until the pressure level in said brake feed passage operating on said secondary pressure responsive area is sufficient to move said flow regulator valve means to said second position.

5,056,875

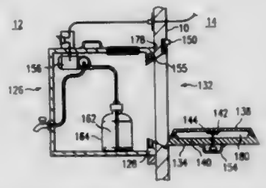
CONTAINER FOR USE WITHIN A CLEAN ENVIRONMENT

Vaughn E. Akins, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 20, 1989, Ser. No. 325,589

Int. Cl.[5] A61G *11/00*

U.S. Cl. 312—1 **58 Claims**



1. Apparatus for minimizing contamination of a clean environment comprising:

a container located within the clean environment and dimensioned t receive a contaminated object;

structure for communicating from the exterior of the clean environment into the interior of said container in order to allow the contaminated object to be inserted into said container without contaminating the clean environment; and

means associated with said container for enabling functional access to the contaminated object from within the clean environment, without contaminating the clean environment.

5,056,876

DRAWER LOCK AND INTERLOCK MECHANISM

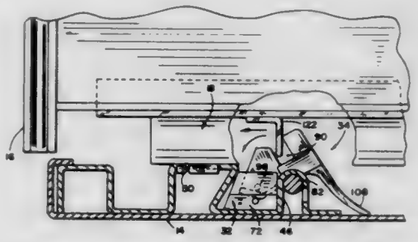
Douglas Scheerhorn, Byron Center, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 277,569, Nov. 29, 1988, Pat. No. 4,960,309. This application Aug. 8, 1990, Ser. No. 564,389

The portion of the term of this pateat subsequent to Oct. 2, 2007, has been disclaimed.

Int. Cl.[5] E05C *7/06*

U.S. Cl. 312—221 **11 Claims**



1. An interlock mechanism for use in a unit having a housing with an interior surface, at least two drawers and means for slidably mounting the drawers within the housing, said interlock mechanism comprising:

at least two control bars;

guide means defining a channel having closed ends for slidably supporting the control bars within the housing for vertical movement along the interior surface, adjacent control bars being movable from a contacting position to a spaced position;

at least two interlock cams, each cam defining an integral cam portion;

mounting means engaging said interlock cams for pivotally mounting said cams on the unit at selected positions adjacent said channel and without the use of tools for move-

ment from a first inoperative position to a second, operative position in engagement with one of said control bars, said bars and said cam portions being dimensioned so that when one of said cams is in its second position, further movement of the bars is prevented and the remaining cams cannot move to their second positions, said mounting means defining a plurality of spaced slot, each slot dimensioned to removably receive one of said interlock cams;

at least two control members, each member operatively associated with one of the drawers so that movement of a drawer from a closed position towards an open position causes the control member to engage a respective one of said interlock cams so that further opening movement is possible only if such cam can move to its second position; and

holding means on said cams for holding said cams in said second position, said holding means including resilient means for biasing said cams from said first position to said second position.

5,056,877

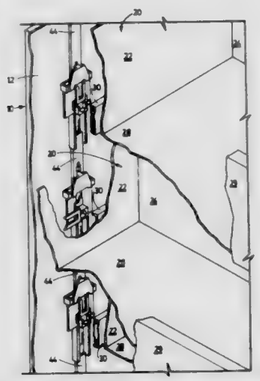
LOCKING ANTI-TIP DEVICE

Florian Westwinkel, Mississauga, Canada, assignor to Pundra Industries Limited, Toronto, Canada

Filed May 8, 1990, Ser. No. 520,797

Int. Cl.[5] E05C *7/06*

U.S. Cl. 312—221 **13 Claims**



1. A drawer interlock system for a stack of vertically stacked drawers, comprising

a plurality of stacked bars associated with the drawers and movable axially between locking and releasing positions;

a drawer latch cam for each drawer adapted to be engaged with the respective drawer in a closed position and adapted to be disengaged from the drawer in an open position, the latch cam being pivotally mounted on one of a pair of adjacent upper and lower bars for pivotal movement between the open and closed positions;

a bar latch associated with each latch drawer cam and fixed in position with respect to a respective cam for movement therewith, the bar latch securely attaching, in the closed position of the respective cam, the other of the pair of adjacent upper and lower bars in stacked, end-to-end, adjacent relationship with said one bar, and, in the open position of the respective cam, releasing said other bar;

translating means responsive to pivotal opening movement of the drawer latch cam to translate said pivotal movement into axial relative movement between the upper and lower bars to move said one bar between its releasing position and its locking position together with any bars stacked above it.

5,056,878

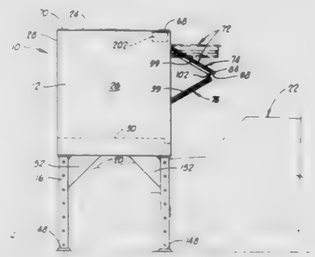
STORAGE APPARATUS AND METHOD

Charles S. Givens, 6307 Waterford Blvd., Oklahoma City, Okla. 73118

Filed Jun. 25, 1990, Ser. No. 543,358

Int. Cl.[5] A47B *91/00*

U.S. Cl. 312—255 **41 Claims**



1. A storage apparatus comprising:

a container portion;

leg receiving means on said container portion for defining a leg receiving opening;

a leg slidably disposed in said leg receiving opening, said leg being adapted for selective engagement with one of a ground surface and a ceiling surface;

a pair of gussets attached to said leg and to said container portion;

an L-shaped bolt engaging said pair of gussets and extending through a portion of said leg; and

a nut threadingly engaged with said L-shaped bolt.

5,056,879

PULL-OUT GUIDE ASSEMBLY FOR DRAWERS OR THE LIKE

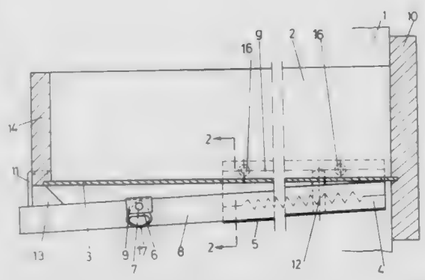
Erich Röck, and Reinhard Mäser, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed May 30, 1990, Ser. No. 530,393

Claims priority, application Austria, Jun. 2, 1989, A 1342/89

Int. Cl.[5] A47B *88/00*

U.S. Cl. 312—348 **14 Claims**



1. A pull-out guide assembly for use on each of opposite sides of a drawer that is movable into and out of a furniture body, said assembly comprising:

a supporting rail to be mounted on the furniture body and a pull-out rail to be mounted on the drawer, such that said pull-out rail is slidable relative to said supporting rail upon

movement of the drawer into and out of the furniture body;

means for imparting to the drawer and to said pull-out rail a horizontal force component tending to move the drawer and said pull-out rail in a closing direction into the furniture body and inwardly along said supporting rail, respectively; and

locking means for, when the drawer and said pull-out rail are moved to a fully withdrawn position, maintaining the drawer and said pull-out rail in said fully withdrawn position against said horizontal force component, said locking means comprising a sector-shaped pivot member mountable on one of the drawer or said pull-out rail, said pivot member having a circularly arched edge that is elastically deformable and that contacts a portion of said supporting rail in said fully withdrawn position and is deformed thereby.

5,056,880

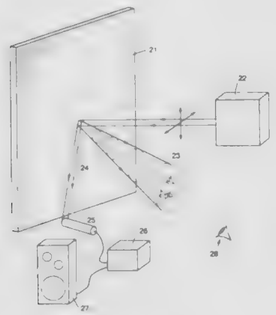
HOLOGRAPHIC WALLPAPER

Joseph Barbanell, Pleasant Hill, Calif., assignor to DZ Company, Walnut Creek, Calif.

Filed Apr. 8, 1990, Ser. No. 505,428

Int. Cl.[5] G03H *1/16, 1/30*

U.S. Cl. 359—29 **20 Claims**



1. A wallpaper system, including:

a substrate, with spatially separated copies of a sole phase-relief Fourier hologram embossed thereon; and

a means for scanning the embossed substrate with a focused, coherent beam and for reconstructing information having been recorded in the Fourier hologram by reflecting the beam from the embossed substrate.

5,056,881

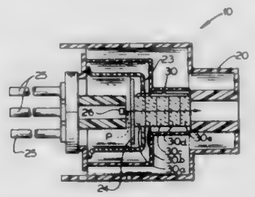
COLLIMATED LASER DIODE

Terry P. Bowen, Etters, Pa., and John R. Rowlette, Clemmons, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 12, 1990, Ser. No. 508,760

Int. Cl.[5] G02B *5/32*

U.S. Cl. 359—19 **8 Claims**



1. An optical source comprising:

(a) a laser light source hermetically encapsulated in a can, said can having a window for emitting light from said laser light source;

(b) a single discrete holographic optical element consisting of a collimator, a circular polarizer, an isolator, a launcher and a wavelength compensator;

(c) means for bonding said holographic optical element to said window, thereby forming a monolithic structure.

5,056,882

LASER BEAM DEFLECTING DEVICE INCLUDING A SURFACE WITH A GROOVE WHICH RECEIVES A LASER BEAM WITHOUT REFLECTING THE BEAM TO A SCANNED PORTION

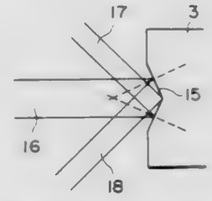
Yoshinori Suigiura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 149,020, Jan. 27, 1986, Pat. No. 4,915,465. This application Oct. 6, 1989, Ser. No. 417,909

Claims priority, application Japan, Jan. 30, 1987, 62-019915; Apr. 28, 1987, 62-107002; Jun. 30, 1987, 62-101356; Oct. 8, 1987, 62-254922

Int. Cl.[5] G02B *26/10*

U.S. Cl. 359—212 **7 Claims**



1. A laser beam deflecting device, comprising:

a rotational mirror for deflecting a laser beam, said rotational mirror including a plurality of generally circumferentially extending surfaces including a first surface for reflecting the laser beam to scan a portion to be scanned in a line and a second surface having a groove which receives the laser beam but which does not reflect the laser beam to scan the portion to be scanned in a line; and

driving means for continuously rotating said rotational mirror in one direction to deflect the beam.

5,056,883

INTEGRATED OPTICAL POLARIZATION SPLITTER

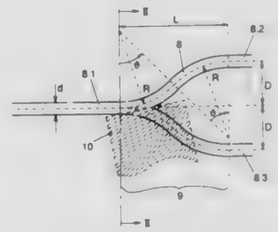
Martinus B. J. Diemeer, and Johannes J. G. Maria van der Tol, both of Zoetermeer, Netherlands, assignors to Koninklijke Ptt Nederland N.V., Groningen, Netherlands

Filed Jan. 25, 1991, Ser. No. 646,360

Claims priority, application Netherlands, Jan. 29, 1990, 9000210

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—8 **4 Claims**



1. An optical component for splitting an incident light signal

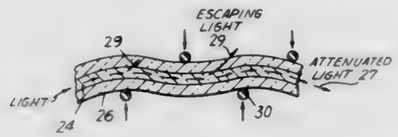
into two outgoing light signals having mutually perpendicular polarization directions, which component comprises an optical waveguide pattern provided on or in a substrate, including an essentially polarization-insensitive first channel-type optical waveguide and at least one polarization-sensitive second channel-type optical waveguide which joins the first optical waveguide as a side branch at an acute angle, characterized in that the optical waveguide pattern is composed of a transparent polable material which is in the unpoled state in the first optical waveguide and in the poled state in the second optical waveguide at least in the portion which connects directly to the first optical waveguide.

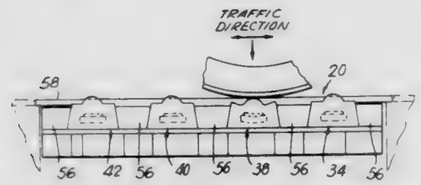
5,056,884

FIBER OPTIC LOAD SENSING DEVICE

Thomas J. Quinlan, Jr., Beach Haven Terrace, N.J., assignor to Automatic Toll Systems, Inc., Teterboro, N.J.

Filed Apr. 10, 1990, Ser. No. 508,139
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—13 **21 Claims**





2. A load sensing device adapted to be mounted transversely on a roadway and to receive downwardly applied loads of the type imparted by an automotive vehicle wheel comprising

a longitudinal envelope having spaced apart peripheral walls defining an interior space therebetween in a region of said envelope adapted to receive said load, said walls remaining substantially longitudinally parallel to one another substantially throughout the region of said envelope adapted to receive said load, at least one of said walls in said region having an elastically deformable portion having a first interior surface deflectable into said interior space towards an opposing second interior surface of one of said peripheral walls upon the application of said load to said envelope;

a relatively soft compressible elastomeric insert embedded in said interior space of said envelope;

a fiber optic cable longitudinally positioned within said interior space of said envelope and resting against said insert, said fiber optic cable comprising an optical fiber having a first end adapted to receive light and a second end adapted to permit the exit of said light, said fiber optic cable being subject to sufficent deformation into said insert upon deflection of said first interior surface caused by application of said load so as to permit localized bending of said optical fiber sufficient to substantially alter the light transmitted through the optical fiber; and

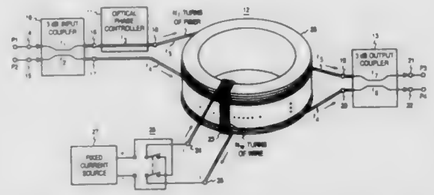
means for preventing complete compression of said elastomeric insert where said fiber optic cable rests against said elastomeric insert during application of said load when said device is mounted on the surface of the roadway.

5,056,885

FIBER OPTIC SWITCH

Stephen R. Chinn, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed May 10, 1990, Ser. No. 521,460
Int. Cl.[5] G02B *6/26; G01B 9/02*
U.S. Cl. 350—96.13 **6 Claims**



1. A fiber optic switch for circularly polarized light comprising

A) a first 3-dB fiber optic coupler comprising a pair of single mode optical fibers f1 and f2 for external connection to a source of circularly polarized light waves, between which an equal division of circularly polarized light waves occurs with a phase delay of the light wave in fiber f2 relative to that in fiber f1 of negative $\pi/2$ radians in passage through said coupler;

B) a Faraday effect phase rotator comprising

(1) a pair of single mode optical fibers f5 and f4 of a magneto-optically sensitive material, wound respectively in a clockwise and counter-clockwise sense to form two coaxial coils, circularly polarized light waves from said fibers f1 and f2 being supplied respectively to said fibers f5 and f4; and

(2) a toroidal electrical winding encircling said coils for generating a circular magnetic field in a codirectional or contra-directional sense with respect to the propagation of light waves in said fibers,

said phase rotator, when circularly polarized light waves are coupled to said fibers f5 and f4 and said winding is energized at a first current setting producing a phase delay of the light wave in fiber f5 relative to that in fiber f4 of $+\pi/2$ radians in passage through said rotator, and when said winding is energized at a second current setting producing a phase delay of the light wave in fiber f5 relative to that in fiber f4 of $-\pi/2$ radians in passage through said rotator;

C) a second 3-dB fiber optic coupler, comprising a pair of single mode optical fibers f7 and f6, circularly polarized light waves from said fibers f5 and f4 being supplied respectively to said fibers f7 and f6,

said second coupler, when circularly polarized light waves of equal intensity and of quadrature relative phase are coupled to said fibers f7 and f6, producing circularly polarized light waves in one fiber and none in the other fiber in passage through said coupler, or vice versa, dependent upon whether the relative quadrature phase is positive or negative, the switched output being derived from said fibers f7 and f6; and

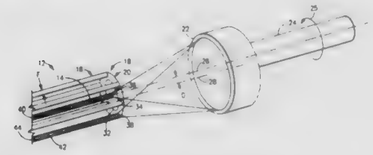
D) input electrical terminals for connection of said winding to a current source for supplying current at two settings, the change from one current setting to the other causing a change in the switching state of said fiber optic switch.

5,056,886

OPTICAL SWITCHING DEVICE

Robert A. Hoult, Bethel, Conn., assignor to Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 25, 1990, Ser. No. 603,592
Int. Cl.[5] G02B *6/32*
U.S. Cl. 385—20 **6 Claims**



1. An optical switching device comprising:

a primary pair of transmitters consisting of a first transmission means and a third transmission means, the first transmission means terminating in a first window and the third transmission means terminating in a third window, the first and third transmission means each being for transmitting a separate light beam;

a plurality of secondary pairs of transmitters, each secondary pair consisting of a second transmission means and a corresponding fourth transmission means, the second transmission means terminating in a second window and the fourth transmission means terminating in a fourth window, the second and fourth transmission means each being selectively transmitting a separate light beam;

a single imaging means having an optical axis and being disposed to effect two simultaneously active sets of conjugate foci, the sets consisting of a first active set and a second active set; and

rotating means for rotating the imaging means about a rotation axis different than the optical axis, so as to rotate the imaging means among a plurality of arcuately spaced selected positions, the selected positions being cooperative with placement of the windows so that, simultaneously for each selected position:

(a) the conjugate foci of the first active set are postionable so as to reciprocally image the first window and a selected second window on each other, and

(b) the conjugate foci of a second active set are positionable so as to reciprocally image the third window and a correspondingly selected fourth window on each other;

whereby in each selected position in the imaging means closes a first light circuit between the first transmission means and the second transmission means of a selected secondary pair, and simultaneously closes a second light circuit between the third transmission means and the corresponding fourth transmission means of the selected secondary pair.

5,056,887

OPTICAL MIXING DEVICE

Shigeru Ohshima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 1, 1989, Ser. No. 444,439
Claims priority, application Japan, Dec. 3, 1988, 63-306656; Aug. 16, 1989, 1-210850
Int. Cl.[5] G02B *27/10, 27/28, 27/42*
U.S. Cl. 385—36 **14 Claims**

1. A device for mixing a first input optical signal and a second input optical signal, comprising:

polarization separating means for separating each of the first and second input optical signals into polarized optical signals having different polarization planes;

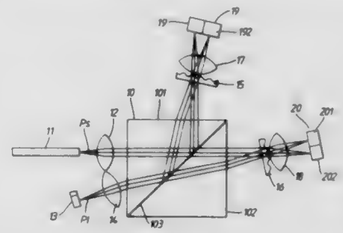
first means for transmitting the first input optical signal into the polarization separation means;

second means for transmitting the second input optical signal into the polarization separating means;

mixing means, disposed to receive the polarized optical signals from the polarization separating means at a position where the polarized optical signals corresponding to the first and second input optical signals intersect, for dividing each of the polarized optical signals into two divided optical signals to be transmitted in directions with an acute crossed angle such that a first divided optical signal of a first polarized optical signal is transmitted in the same direction as a first divided optical signal of a second polarized optical signal and a second divided optical signal of the first polarized optical signal is transmitted in the same direction as a second divided optical signal of the second polarized optical signal, thereby mixing the divided optical signals corresponding to the first and second input optical signals to produce mixed optical signals;

single focusing means for focusing at least two of the mixed optical signals; and

detecting means for detecting focused optical signals from the focusing means.

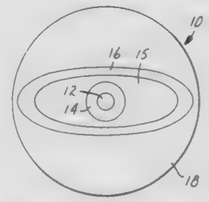


5,056,888

SINGLE-MODE, SINGLE-POLARIZATION OPTICAL FIBER

Michael J. Messerly, St. Paul, Minn.; James R. Onstott, Hudson, Wis., and Raymond C. Mikkelson, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 17, 1989, Ser. No. 381,038
Int. Cl.[5] G02B *6/22*
U.S. Cl. 385—123 **11 Claims**



1. A single-mode, single-polarization optical fiber comprising a core and a cladding including an asymmetric stress-applying region, which fiber has a depressed index of refraction along at least one axis of symmetry and is characterized by the feature that

a pair of refractive index profiles from a single symmetry axis of the optical fiber may be measured with plane polarized light that is aligned to be parallel to the chosen symmetry axis for one of said refractive index profiles and perpendicular to the chosen symmetry axis for the other of said refractive index profiles and a parameter and η may be calculated from each such profile by the expression

$$\eta = \int_0^\infty [n(r) - n_{cl}]^\alpha dr$$

where n(r) represents the refractive index at the radial position r measured along said symmetry axis and with one of the two said orientations of polarized light; n_{cl} is the average refractive index of the cladding over a distance from 4 to 7 core radii from the core center; and α has a value from 1 when both the core and cladding are circular to nearly 0 when the core and cladding are so elongated that the fiber behaves essentially as a planar waveguide; and

η for one symmetry axis is positive when calculated from the refractive index profile determined with one of the two said orientations of polarized light and is negative when calculated from the refractive index profile determined with the orthogonal orientation of polarized light, and for each other symmetry axis of the novel optical fiber η is positive for both orientations of plane polarized light.

5,056,889

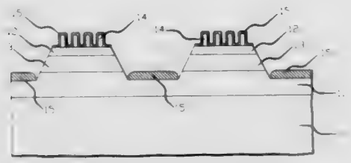
OPTICAL DEVICE INCLUDING A GRATING

Robert A. Morgan, Topton, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1989, Ser. No. 458,851

Int. Cl.[5] G02B *5/18*

U.S. Cl. 359—572 **5 Claims**



1. A device comprising a substrate, a quantum well region on said substate, said region comprises interleaved wide and narrow bandgap layers, at least one of said narrow bandgap layers comprising a quantum well, grating means for coupling optical radiation into said quantum well region, characterized in that grating means design introduces a phase shift of π between adjacent teeth.

5,056,890

DISPLAYING APPARATUS FOR A VEHICLE HAVING A PROJECTOR ON THE CEILING OF THE VEHICLE

Tadashi Iino; Kunimitsu Aoki, and Yoshiyuki Suzuki, all of Susono, Japan, assignors to Yazaki Corporation, Japan

Continuation of Ser. No. 283,252, Apr. 15, 1988, abandoned. This application May 23, 1989, Ser. No. 356,626

Claims priority, application Japan, Apr. 16, 1987, 62-056665; Apr. 24, 1987, 62-061474; Apr. 24, 1987, 62-61476

Int. Cl.[5] G02B *27/14, 7/18*

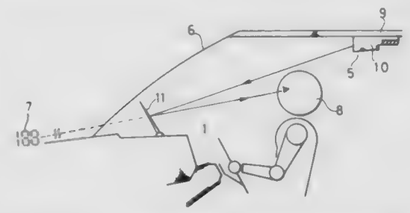
U.S. Cl. 359—630 **6 Claims**

1. A displaying apparatus for a vehicle to display a pattern at a position in front of a driver's seat in an interior of the vehicle by projecting the pattern on the position such that the pattern is visibly overlapped with views outside a front windshield of the vehicle, comprising:

(a) a reflector member installed on a dashboard in front of the driver's seat; and

(b) a projector for projecting the pattern on said reflector member,

(c) said projector being provided to a ceiling in the interior of the vehicle; wherein



a room lamp is provided to the ceiling in the interior of the vehicle to light up the interior, said projector being disposed within a case for receiving said room lamp.

5,056,891

METHOD OF PREPARING INFORMATION READING APPARATUS AND OBJECTIVE LENS SUSPENSION BODY

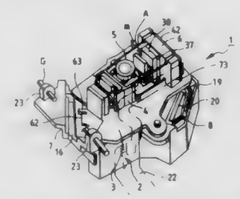
Yoshifumi Masunaga, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 20, 1990, Ser. No. 495,967

Claims priority, application Japan, May 22, 1989, 1-128544

Int. Cl.[5] B02B *7/02;* **G11B** *7/00, 21/10*

U.S. Cl. 359—813 **10 Claims**



1. A method of preparing an information reading apparatus comprising a body for accommodating optical elements such as a semiconductor laser, a photodiode and a prism, an objective lens disposed on a base of the body for reading information recorded in a recording medium, and an actuator means for positioning said objective lens with respect to a compact disk and actuating said objective lens in a direction along an optical axis thereof, said method comprising the steps of:

mounting a base of said actuator means to said body;

preparing an objective lens suspension body for suspending an objective lens holder from a suspension base member through a connection means;

securing elements including coils and suspension wires to said objective lens suspension body;

mounting said objective lens suspension body on said base of the actuator means; and

removing said connection means from the objective lens holder and the suspension base member so as to suspend said objective lens holder from said suspension base member.

5,056,892

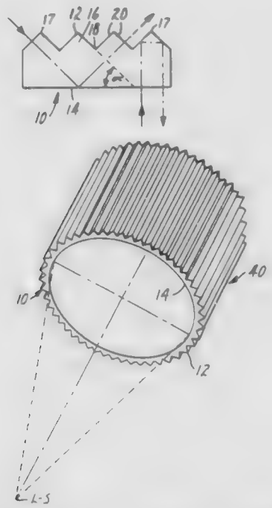
TOTALLY INTERNALLY REFLECTING THIN, FLEXIBLE FILM

Sanford Cobb, Jr., St. Mary's Point, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 218,087, Jul. 12, 1988, Pat. No. 4,906,070, which is a continuation of Ser. No. 903,655, Sep. 5, 1986, abandoned, which is a continuation-in-part of Ser. No. 799,869, Nov. 21, 1985, abandoned, and a continuation-in-part of Ser. No. 819,118, Jan. 15, 1986, abandoned. This application Jan. 30, 1990, Ser. No. 472,621

Int. Cl.[5] G02B *5/04, 5/124, 5/136*

U.S. Cl. 359—831 **8 Claims**



1. A thin, flexible film of a transparent polymeric material, comprising a structured surface on one side and a smooth surface opposite said structured surface on the other side, said structured surface includes a linear array of miniature isosceles prisms having substantially perpendicular sides arranged side-by-side to form a plurality of peaks and grooves said film having at least 40 of said prisms per inch, the perpendicular sides of said prisms make an angle of approximately 45° with said smooth surface opposite said structured surface, said film being capable of being curled such that said smooth surface lies in a smooth continuous arcuate curve having a diameter of approximately 18 inches.

5,056,893

DISPLAY DEVICE

Hermann Holz, Erbach; Rolf Salzmann, Berghülen-Bühlenhausen, and Wolfram Wiemer, Blaustein, all of Fed. Rep. of Germany, assignors to Licentia Patent-Vertwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 21, 1990, Ser. No. 496,586

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910418

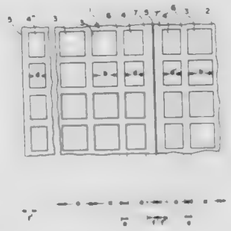
Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—54 **12 Claims**

1. A display device, comprising:

a base, said base having a lateral edge for abutting a lateral edge of another display device; and

a matrix array of rectangular liquid crystal display elements disposed on said base, said matrix array being arranged in rows and columns, said columns extending in a direction generally parallel to said lateral edge of said base and including outer columns and middle columns between said outer columns, said rows extending in a direction generally perpendicular to said lateral edge of said base, all of the display elements of said array having a same height measured in the direction of said columns, the display



elements of said middle columns all having a same width measured in the direction of said rows, the display elements of at least one of said outer columns have a smaller width than the width of the display elements of said middle columns.

5,056,894

SWITCHING UNIT FOR A DISPLAY DEVICE AND DISPLAY DEVICE INCLUDING SUCH A SWITCHING UNIT

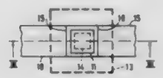
Karel E. Kuijk, and Frederikus R. J. Huisman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

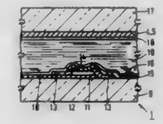
Filed Feb. 13, 1990, Ser. No. 479,330

Claims priority, application Netherlands, Mar. 3, 1989, 8900521

Int. Cl.[5] G02F *1/13;* **G09G** *3/36*

U.S. Cl. 350—58 **14 Claims**





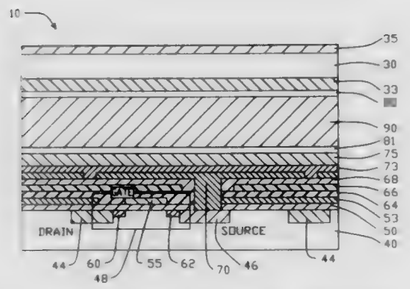
1. A display device provided with a supporting plate and including at least one switching unit which comprises a non-linear asymmetric switching element in a thin layer of semiconductor material and has a lower contact and an upper contact, characterized in that, at least the material of one of the contacts is opaque to light and extends throughout the surface of the semiconductor material, in that the other contact is made of a light-transparent material, and further characterized in that an intermediate layer of insulating material together with the materials of the lower contact and the upper contact constitute a non-linear resistance element or MIM element.

5,056,895

ACTIVE MATRIX LIQUID CRYSTAL LIQUID CRYSTAL LIGHT VALVE INCLUDING A DIELECTRIC MIRROR UPON A LEVELING LAYER AND HAVING FRINGING FIELDS

Frederic J. Kahn, Palo Alto, Calif., assignor to Greyhawk Systems, Inc., Milpitas, Calif.

Filed May 21, 1990, Ser. No. 527,753
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—87 **21 Claims**



14. An active matrix addressed liquid crystal light valve device for reflection mode projection, comprising:

a first substrate;

a transparent second substrate positioned substantially parallel to and spaced apart from said first substrate;

a transparent electrode means positioned proximate said transparent second substrate and between said first and second substrates;

first alignment means positioned proximate said transparent first electrode;

an addressing active matrix supported by said first substrate, said addressing active matrix including a plurality of substantially parallel, equally spaced conductive first busses, a plurality of substantially parallel, equally spaced conductive second busses, said first busses being substantially orthogonal and electrically insulated from said second busses, a field effect transistor formed within each cell area defined by the intersection of an adjacent pair of first busses with an adjacent pair of second busses, one of said first busses and one of said second busses in electrical connection with said first effect transistor, and an array of electrodes, each electrode of said array of electrodes overlying one of said field effect transistors and in electrical connection with said one of said field effect transistors;

leveling means located adjacent said addressing active matrix to form a substantially planar surface;

substantially nonconductive reflective means separate and distinct from the array of electrodes, said reflective means formed as a continuous sheet on the substantially planar surface of said leveling means;

second aligning means positioned proximate to said reflective means; and

a layer of liquid crystal material positioned between said first and second aligning means;

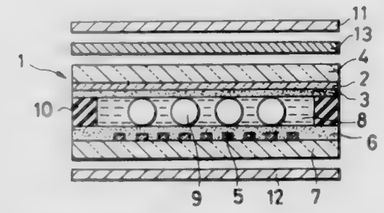
the distance between adjacent electrodes of said array of electrodes being sufficiently small that the electric fields created by said electrodes of said addressing active matrix have fringing fields which switch substantially all of the liquid crystal material including areas not directly over said electrodes.

5,056,896

LIQUID CRYSTAL DISPLAY DEVICE WITH DIELECTRIC ANISOTROPY

Haruo Iimura, Yokohama; Yasuyuki Takiguchi, Kawasaki; Akihiko Kanemoto; Kenya Yokoi, both of Yokohama, and Takamichi Enomoto, Shiroyama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 29, 1989, Ser. No. 400,012
Claims priority, application Japan, Aug. 29, 1988, 63-214415; Oct. 18, 1988, 63-261995; Dec. 23, 1988, 63-325297
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—63 **5 Claims**



1. A liquid crystal display device, comprising:

(1) a liquid crystal cell wherein a liquid crystal layer comprising a liquid crystal composition having positive dielectric anisotropy is sandwiched between a pair of substrates having at least one electrode, and liquid crystal molecules of the composition are oriented substantially parallel to a surface of one substrate and twisted at an angle of not less than 180° in a perpendicular direction to the substrate surface when an electric voltage is off;

(2) a pair of polarizers arranged to sandwich the liquid crystal cell; and

(3) a birefringence layer provided between the liquid crystal cell and a first polarizer at at least one side of the cell;

wherein a direction of transmission axis of the first polarizer is shifted from an orientation direction of the liquid crystal molecules adjacent to the first polarizer, an angle formed between a maximum refractive index direction of the birefringence layer and a direction of transmission axis of the first polarizer adjacent to the birefringence layer is not more than 5°, and a smaller angle of the two which are formed between an orientation direction of the liquid crystal molecules adjacent to the birefringence layer and directions of optical axes of the birefringence layer is in a range of 0° to 90°, when the three directions are projected on the birefringence layer surface, provided that the twist direction of the liquid crystal molecules to the side of the birefringence layer is positive.

5,056,897

SPATIAL LIGHT MODULATING ELEMENT AND NEURAL NETWORK CIRCUIT

Koji Akiyama, Neyagawa; Hiroshi Tsutsu, Osaka; Tetsu Ogawa, Kyoto, and Hiroshi Tsutsui, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

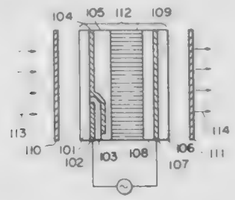
Filed Nov. 22, 1989, Ser. No. 440,325
Claims priority, application Japan, Nov. 25, 1988, 63-298701
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—72 **7 Claims**

1. A spatial light modulator, comprising:

a liquid crystal cell including a liquid crystal layer held between two opposite conductive electrodes having surface areas with different magnitudes; and

a photoconductive layer held between said conductive electrodes and connected in series with said liquid crystal cell;

wherein said photoconductive layer has a surface area having a magnitude which is less than 50% of a smaller one of



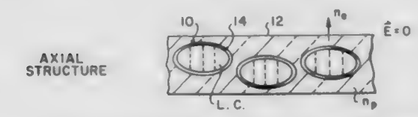
the magnitudes of the surface areas of the conductive electrodes between which the liquid crystal layer is held.

5,056,898

REVERSE MODE MICRODROPLET LIQUID CRYSTAL LIGHT SHUTTER DISPLAYS

Yao-Dong Ma, and Bao-Gong Wu, both of Richardson, Tex., assignors to Polytronix, Inc., Richardson, Tex.

Filed Jul. 17, 1989, Ser. No. 380,973
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—94 **15 Claims**



1. A liquid crystal light shutter device capable of transmitting and scattering light comprising, in combination:

a substrate of optically transparent polymer material;

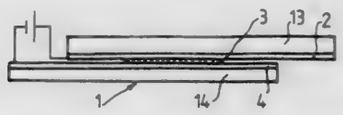
droplets of liquid crystal material dispersed in said polymer substrate, said droplets being effective to transmit incident light when the optical axes of said droplets are aligned substantially in parallel with incident light, wherein each droplet is encapsulated within a skin of heterotrophic polymer material and each encapsulated droplet being substantially in the form of an ellipsoid, with the liquid royal molecules within each droplet being aligned homeotropically in the absence of an applied electric field.

5,056,899

MATERIAL FOR LIGHT MODULATION AND MANUFACTURING PROCESSES

Bernard Warszawski, Paris, France, assignor to Alpine Polyvision, Inc., Hackensack, N.J.

Continuation of Ser. No. 221,540, Jul. 19, 1988, abandoned. This application Jan. 10, 1990, Ser. No. 462,977
Claims priority, application France, Jul. 24, 1987, 87 10561
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] G02F *1/01*
U.S. Cl. 350—357 **50 Claims**



1. A material intended for processes, cells, or devices relating to electrochromic modulation of light by reflection or transmission, the material having ionic electroconductivity and comprising a homogeneous mixture of solid consistency, comprising the following constituents:

a) a hydrosoluble salt or a hydrosoluble mixture of salts of at least one metal which can be cathodically deposited from an aqueous solution of one of its simple or complex ions;

b) at least one initially hydrosoluble film-forming polymer resin;

c) water; and

d) an auxiliary redox couple;

wherein the constituents are selected so as to allow plastic or viscoelastic deformability; and

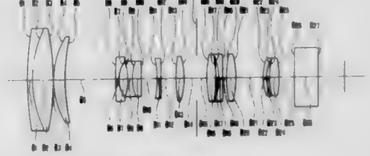
wherein the material is able to reversibly (1) develop metal or metal alloy deposits by cathodic reduction of at least one depositable metal ion present within the material, and (2) by anodic oxidation, dissolve the deposits and reincorporate into their original state the metal ion or ions produced by this oxidation.

5,056,900

ZOOM LENS

Hitoshi Mukaiya, Saitama; Akihisa Horiuchi, Kanagawa; Yasunori Murata, Tokyo, and Akihiro Nishio, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 594,957
Claims priority, application Japan, Oct. 31, 1989, 1-285891
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—676 **4 Claims**



1. A zoom lens comprising:

when counted from the object side,

a first lens unit having a positive refractive power;

a second lens unit having a negative refractive power and arranged to move along an optical axis for varying the image magnification;

a third lens unit arranged to move along the optical axis as the image magnification is varied; and

a fourth lens unit having a positive refractive power and arranged to be stationary,

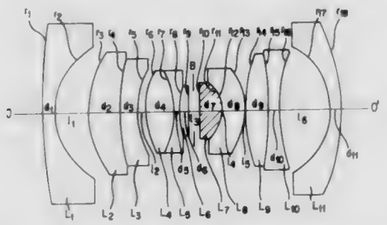
said fourth lens unit including a ti-convex first lens, when counted from the object side, a positive second lens, a negative third lens having a strong concave surface facing the object side, a positive fourth lens, a fifth lens having a strong concave surface facing the image side, and a positive sixth lens, and satisfying the following condition:

$0.5<D/Fw<1.5$

where D is the air separation between said positive fourth lens and said fifth lens, and Fw is the shortest focal length of the entire lens system.

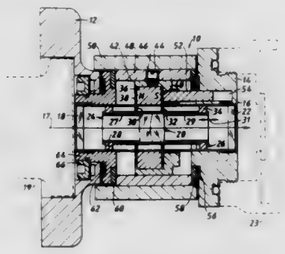
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5,056,901
WIDE-ANGLE OBJECTIVE
Gerd Rieche, Jena, and Gerhard Risch, Weimar, both of German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, Fed. Rep. of Germany
Filed Feb. 13, 1990, Ser. No. 479,324
Claims priority, application German Democratic Rep., Apr. 3, 1989, 3272015
Int. Cl.[5] G02B *11/34*
U.S. Cl. 359—737 1 Claim



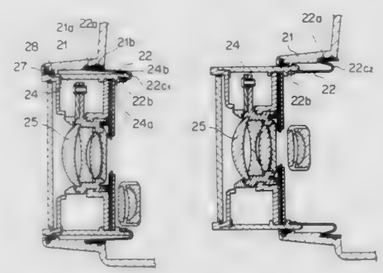
1. A wide-angle objective with a high resolution and low residual distortion, comprising 11 lenses and 14 glass-air interfaces. wherein, in the direction of light and centrically to the optical axis, 6 lenses are positioned before a center aperture, including a diverging meniscus lens, a converging double composite group and a first converging composite group, in that order, and 5 lenses are positioned after the center aperture, including a second converging group, a converging double composite group and finally a diverging meniscus lens, in that order, said first converging composite group comprising a converging lens of high refractive index, a diverging lens and a further converging lens, the second converging group, after the center aperture including a converging lens consisting of fluorspar or of a material of optical properties like those of flurospar and a diverging meniscus lens separated from one another by a small air gap.

5,056,902
MAGNETICALLY COUPLED LENS ACTUATOR
Randal B. Chinnock, North Reading, and Norman J. Dionne, Arlington, both of Mass., assignors to Smith & Nephew Dyonics, Inc., Andover, Mass.
Filed Apr. 25, 1990, Ser. No. 514,119
Int. Cl.[5] G02B *7/04, 7/08, 23/24*
U.S. Cl. 359—503 64 Claims



1. An apparatus for adjusting the position of a lens, comprising:
a sealed chamber surrounding said lens, said chamber including a window to permit light to enter said chamber and said lens;
an actuator held inside said chamber, said actuator being movable with respect to said chamber, said actuator being arranged to cause motion of said lens when said actuator is moved, said actuator having a plurality of projections that extend radially toward an inner surface of said chamber to provide a spacing between said actuator and said inner surface that is less at said projections than in a region of said actuator disposed between said projections; and
an element held outside said chamber and ferromagnetically coupled to at least some of said projections of said actuator through a surface of said chamber, said element being movable relative to said chamber to cause movement of said actuator to thereby adjust the position of said lens.

5,056,903
LENS BARREL STRUCTURE FOR WATERPROOF CAMERA
Ikushi Nakamura, and Shigeru Nagata, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Mar. 29, 1989, Ser. No. 330,134
Claims priority, application Japan, Mar. 31, 1988, 63-76512
Int. Cl.[5] G02B *7/02, 15/00;* G03B *17/08, 17/04*
U.S. Cl. 359—513 8 Claims

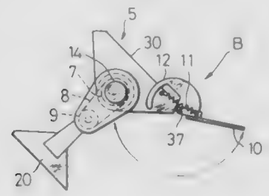


1. A lens barrel for a camera, comprising:
a fixed barrel provided on a body of said camera;
a movable barrel having at least a part of an optical system of said camera carried thereon and fitted for movement inside said fixed barrel between a first position advanced outwardly from said camera body and a second position retracted into said camera body; and
a bellows member of a tube shape secured at a whole end thereof to a periphery of a rear portion of said movable barrel so as to extend rearwardly therefrom and at the other whole end thereof to an inner periphery of a rear portion of said fixed barrel so as to extend rearwardly therefrom, said bellows member being folded back at an intermediate portion thereof in such a manner that said bellows member surrounds a rear end of said movable barrel when said movable barrel is in said second position.

5,056,904
VIEWER
Makoto Okamura, 1567-4, Sakata, Okegawa-shi, Saitama-ken, Japan
Filed Feb. 5, 1990, Ser. No. 475,183
Claims priority, application Japan, Feb. 6, 1989, 1-27112
Int. Cl.[5] G02B *5/08;* B60R *1/06*
U.S. Cl. 359—841 3 Claims

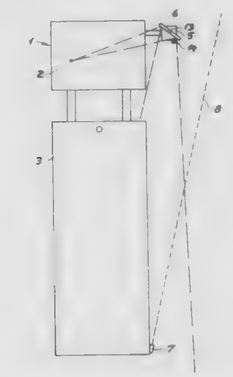
1. A viewer for vehicles, comprising:
a viewing unit which comprises a casing with two openings located at a predetermined angle, an optical element for view field expansion mounted to one opening, and a reflector mirror installed within the casing for reflecting an image incoming from said one opening and directing the reflected image through another opening;
a container box which houses the viewing unit so that the unit can be deployed out of and retracted into the container box;
means for deploying and retracting the viewing unit through an angle of substantially 180 degrees out of and into the container box;

a door mounted on said container box to swingingly open and close about a substantially vertical axis; and
toggle means including a spring coupled to said door for



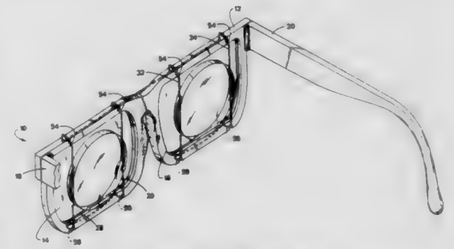
forcing the door closed when the door is open at an angle less than a predetermined angle and for forcing the door open when the door is open at an angle greater than said predetermined angle.

5,056,905
CONTROL SYSTEM FOR AUTOMATIC ADJUSTMENT OF THE REARVIEW MIRROR OF A VEHICLE
Kaj B. Jensen, Skovbrynet 24, 2. tv., DK-4700 Næstved, Denmark, assignor to Kaj B. Jensen; Bent Pedersen; Benita B. Jensen; Inge Pedersen, all of Næstved, Denmark; a part interest to each
PCT No. PCT/DK87/00097, § 371 Date Aug. 15, 1988, § 102(e) Date Aug. 15, 1988, PCT Pub. No. WO88/04619, PCT Pub. Date Jun. 30, 1988
PCT Filed Aug. 3, 1987, Ser. No. 235,878
Claims priority, application Denmark, Dec. 16, 1986, 6047/86
Int. Cl.[5] G02B *7/18*
U.S. Cl. 359—843 7 Claims



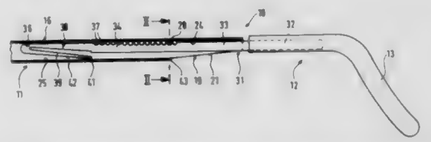
1. A control system for automatic adjustment of a rearview mirror of a vehicle, said system comprising:
a motor vehicle pivotally coupled at a rearward end thereof to a forward end of a trailer,
a rearview mirror mounted on a drive unit on a first side of said motor vehicle, a wireless signal transmitter mounted on a corresponding first side of said trailer adjacent to the rearward end of said trailer, and a wireless signal receiver for receiving a signal beam transmitted by said transmitter when mounted on said motor vehicle in preselected spatial relationship with said mirror, a horizontal angular position of said mirror being changed by said drive unit in response to a preselected change in the mutual angular position between said motor vehicle and said trailer, and said mutual angular position change being detected as a variation, said variation being between no signal when said motor vehicle is straight ahead of said trailer wherein said signal beam angularly passes said receiver and a signal received by said receiver from said transmitter when said motor vehicle is turned to said first side of said trailer wherein said signal beam hits said receiver.

5,056,906
PRESCRIPTION LENS ATTACHMENT FOR SUNGLASSES
Min Akiyoshi, 817 Oak Ave., Davis, Calif. 95616
Filed May 24, 1990, Ser. No. 527,835
Int. Cl.[5] G02C *7/08*
U.S. Cl. 351—57 10 Claims



1. Apparatus comprising, in combination:
sunglasses including a sunglass frame and tinted sunglass elements connected to said frame;
a prescription lens holder including two pairs of prescription lens holder elements, said prescription lens holder elements of each pair of prescription lens holder elements being spaced from each other and disposed in a common plane;
a prescription lens disposed between the lens holder elements of at least one of said pairs of prescription lens elements;
securement means for securing said prescription lens in fixed position between said lens holder elements; and
attachment means for removably attaching said prescription lens holder to said sunglass frame whereby said prescription lens is disposed behind a tinted sunglass element.

5,056,907
LONGITUDINALLY ADJUSTABLE BOW FOR GLASSES
Karl Weber, Stuttgart, Fed. Rep. of Germany, assignor to Sipal, SA, Morez, France
Filed May 2, 1990, Ser. No. 516,028
Claims priority, application Fed. Rep. of Germany, May 3, 1989, 8905575[U]
Int. Cl.[5] G02C *5/16, 5/20*
U.S. Cl. 351—118 9 Claims



1. A longitudinally adjustable bow for glasses, comprising:
a first bow section formed as a closed hollow section, said first bow section having at least one catch which extends into the hollow section; and
a second bow section slidably guided in the first bow section, said second bow section having a plurality of stop notches which face and engage said at least one catch, and a turned-back extension at its inner end forming a prestressed spring facing away from said at least one catch, against the force of which the second bow section can be

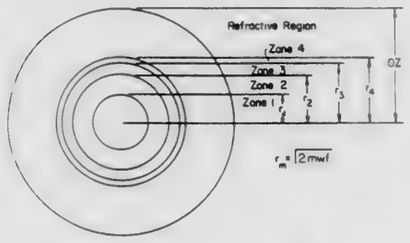
moved relative to the first bow section for disengagement of the stop notches.

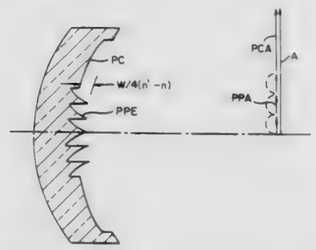
5,056,908

OPTIC ZONE PHASE CHANNELS

Allen L. Cohen, 10010 Waisham Ct., Richmond, Va. 23233

Continuation of Ser. No. 120,265, Nov. 12, 1987, Pat. No. 4,881,804. This application Nov. 20, 1989, Ser. No. 438,321
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.[5] G02C *7/04;* G02B *5/18, 27/44;* A61F *2/16*
U.S. Cl. 351—161 12 Claims





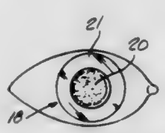
1. A lens comprising:
a carrier lens having an anterior surface and a posterior surface, said carrier lens being disposed along an optical axis and having an optic zone;
at least one phase zone plate disposed in said optic zone on one of said anterior and posterior surfaces substantially concentrically with said optical axis; and
at least one refractive region, separate from said at least one phase zone plate, disposed in said optic zone substantially concentrically with said optical axis.

5,056,909

CONTACT LENS FOR COMPENSATING EYE DOMINANCE CROSSOVER

Hugh L. Brown, 12053 N. Ridge Rd., Mequon, 53092, and Richard J. Stepniewski, Wauwatosa, both of Wis.

Division of Ser. No. 405,649, Sep. 11, 1989. This application Oct. 17, 1990, Ser. No. 599,140
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—177 3 Claims



1. A method for compensating non-dominant eye crossover and for improving the accuracy of visualizing and aiming at an object or the image of an object sighted by a non-dominant eye and for facilitating keeping the other dominant eye open simultaneously to preserve peripheral vision and depth perception, comprising:
before undertaking to sight said object or image with said non-dominant eye, applying to said other dominant eye a contact lens having a circular optically diffusing translucent central region whose diameter is sufficient to cover the pupil of the eye and having a transparent annular region surrounding said central region, and
positioning said translucent central region of the contact lens to completely cover the pupil and totally nullify visual acuity of said dominant eye.

5,056,910

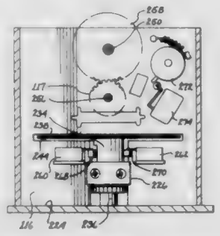
Patent Not Issued For This Number

5,056,911

CAMERA SHUTTER

Stanislav Maron, 7801 N. 54th St., Paradise Valley, Ariz. 85253

Division of Ser. No. 260,450, Oct. 20, 1988, Pat. No. 4,950,071.
This application May 18, 1990, Ser. No. 525,867
Int. Cl.[5] G03B *9/10*
U.S. Cl. 352—208 16 Claims



1. A shutter for a camera having a first compartment for positionally registering in a horizontal plane a length of film to expose the film to a light source to form an image thereon and a second compartment for housing power sources and actuating elements attendant transport and exposure of the film, said shutter comprising in combination:
a) a rotatable disk element for selectively shielding and exposing the film to a light source;
b) a shaft having a longitudinal axis and extending downwardly from said disk element;
c) means for journaling said shaft, said journaling means being disposed on only beneath said disk element;
d) means interconnected with one of the power sources for rotating said shaft; and
e) means disposed beneath said disc element for sensing the rotational position of said shutter and for energizing the actuating elements to rotationally and selectively position said disk element to expose and shield the film strip with respect to the light source.

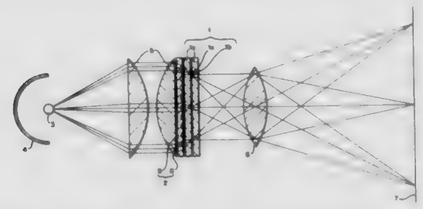
5,056,912

PROJECTION TYPE IMAGE DISPLAY APPARATUS

Hiroshi Hamada, Nara, and Fumiaki Funada, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Jul. 17, 1990, Ser. No. 553,084
Claims priority, application Japan, Jul. 19, 1989, 1-187714
Int. Cl.[5] G03B *21/14*
U.S. Cl. 353—38 2 Claims

1. A projection type image display apparatus comprising a source of light, a transmissive display device having a number of picture elements, a microlens array for converging rays of light in correspondence to one or more of the picture elements, a projecting lens disposed backward of the display device so as to project the image represented by the display device on a screen, the projection lens having a larger numerical aperture than that of the microlens array, wherein the microlens array is bonded to the display device with an adhesive.

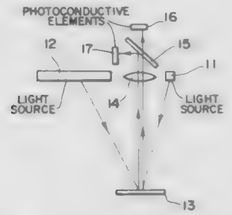


5,056,913

OPTICAL GAUGING APPARATUS

Hirokazu Tanaka; Kiyomitsu Ishikawa, both of Tokyo, and Fumio Ogawa, Kanagawa, all of Japan, assignors to Stanley Electric Corporation, Tokyo, Japan

Filed Sep. 5, 1990, Ser. No. 578,083
Claims priority, application Japan, Sep. 21, 1989, 1-243517; Oct. 20, 1989, 1-271487; Jun. 5, 1990, 2-145345; Jun. 5, 1990, 2-145346; Jun. 12, 1990, 2-151652
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—4 10 Claims



1. Optical gauging apparatus comprising light projecting means adapted to illuminate an object to be gauged using first and second light sources so that a luminance on the object under illumination by the first light source differs from a luminance on the object under illumination by the second light source; light receiving means adapted to receive and photoelectrically convert the light projected from these two light sources separately for the respective light sources; and a signal processor adapted to calculate a ratio of luminances on the object caused by said first and second light sources, respectively, from output signals of said light receiving means and thereby to output an information on an amount of change occurring in the object or a distance thereto.

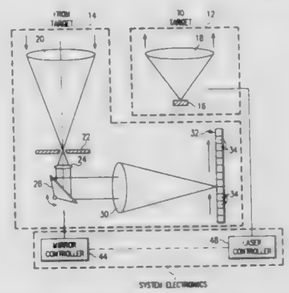
5,056,914

CHARGE INTEGRATION RANGE DETECTOR

Jerome C. Kollodge, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jul. 12, 1990, Ser. No. 551,887
Int. Cl.[5] G01C *3/08;* **G01B** *11/24*
U.S. Cl. 356—5 49 Claims

1. A method for obtaining positional data regarding an object within a range of interest comprising the steps of:
(a) transmitting a radiation pulse into said range;
(b) scanning, relative to the radiation pulse, any of the pulsed radiation that is reflected from within the range, wherein any of the pulsed radiation that is reflected from within each of at least two separate and predetermined distance subranges of the range is received during substantially separate time periods by radiation sensitive means having at least two separate and predetermined charge accumulating means corresponding with said at least two separate and predetermined distance subranges, wherein charge is accumulated during the substantially separate time periods in each of said at least two separate and predetermined charge accumulating means in corresponding relation to substantially only that pulsed radiation that is reflected from within the corresponding predetermined distance subrange; and
(c) generating positional data regarding said object utilizing said accumulated charge.

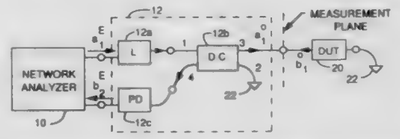


5,056,915

FIBER OPTIC CALIBRATION STANDARD APPARATUS

David D. Curtis, Haverhill, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

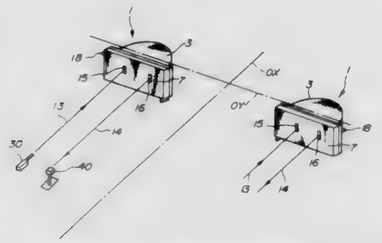
Filed May 25, 1990, Ser. No. 529,028
Int. Cl.[5] G01N *21/00*
U.S. Cl. 250—227.25 20 Claims



1. A fiber optic calibration standard apparatus comprising:
means for reflecting a signal, said signal reflecting means having a first end and a second end, said first end receiving an input signal, said second end is in contact with the reflective surface of a mirror, said second end and said reflective surface are immersed in an index fluid,
means for reflecting an offset signal, said offset signal reflecting means having a first end and a second end, said first end receiving an input signal, said second end is in contact with the reflective surface of a mirror, said second end and said reflective surface are immersed in an index fluid, said offset signal reflecting means is longer than said signal reflecting means by a predetermined length, and
means for terminating, said terminating means having a first end and a second end, said first end receiving a single mode modulated signal, said second end is sealed in a vial containing a fluid.

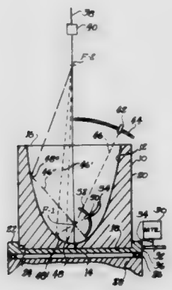
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5,056,916
OPTICAL AXIS ADJUSTING SYSTEM FOR LIGHTING UNIT OF VEHICLE
Yoichi Kikuchi, Yokohama, and Miyoshi Iwamoto, Odawara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 24, 1990, Ser. No. 586,648
Claims priority, application Japan, Sep. 25, 1989, 1-249868
Int. Cl.[5] G01J *1/00*
U.S. Cl. 356—121 **11 Claims**



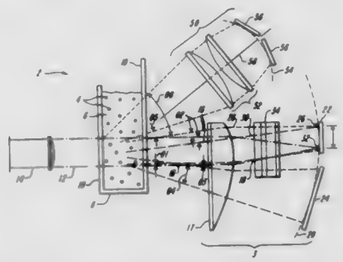
1. An optical axis adjusting system comprising:
a lighting unit for a vehicle, said lighting unit comprising a housing having a reflector therein, and a lens attached to said housing so as to close an opening of said housing, said lens comprising first and second portions located so that said first and second portions intersect, respectively, first and second straight lines which are parallel to an optical axis of said lighting unit, and symmetrical with respect to said optical axis; and
an optical means for projecting a beam of light to said reflector through said first portion of said lens, and receiving a reflected beam of light through said second portion to determine whether said lighting unit is placed in a predetermined correct position.

5,056,917
LITHOTRIPTER REFLECTOR INSPECTION
Christopher Nowacki, 1552 Chickamauga, Long Grove, Ill. 60047, and Mark T. Horbal, 2 S. 530 Iroquois Cts. West, Warrenville, Ill. 60555
Filed Apr. 2, 1990, Ser. No. 502,802
Int. Cl.[5] G01B *9/00*; **A61H** *1/00*
U.S. Cl. 356—124 **20 Claims**



1. The combination comprising a truncated ellipsoidal reflector having a truncated reflecting surface having an axis of rotation and an apex and a first focus point on said axis of rotation, there being a second focus point disposed on said axis of rotation outside said truncated ellipsoidal reflector, and structure for inspecting said reflector, comprising support means for said reflector, a source of a narrow beam of light movable relative to said reflector to project through said first focus point and to reflect from said reflecting surface, a target substantially at said second focus point for engagement by said reflected light beam, and means for moving said light beam source relative to said reflector while projecting said light beam through said first focus point to reflect from a successive plurality of areas of said reflecting surface.

5,056,918
METHOD AND APPARATUS FOR PARTICLE SIZE ANALYSIS
Steven E. Bott, Conway; Harry R. McKinley, Southampton, and W. Howard Hart, Amherst, all of Mass., assignors to Coulter Electronics of New England, Inc., Amherst, Mass.
Filed Mar. 3, 1989, Ser. No. 319,370
Int. Cl.[5] G01N *15/02, 21/53*
U.S. Cl. 356—336 **14 Claims**

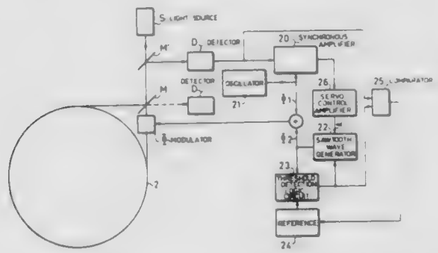


1. In a system for measuring the size of particles suspended in a sample volume, including illumination means for illuminating the sample with a light beam directed along an input axis, and plural photodetectors for measuring the intensity of light scattered by the sample, the improvement comprising
first light collector means, including at least a first Fourier lens system including a first lens for collecting light scattered over small angles relative to the input axis and illuminating a first set of the plural photodetectors therewith, said first lens and said first set of detectors of said first Fourier lens system being positioned so that said first set of detectors are substantially in the Fourier locus determined with respect to said sample volume and
second light collector means, including at least a second Fourier lens system including a second lens, for collecting light scattered over greater angles relative to the input axis and illuminating a second set of the plural photodetectors therewith, said second lens and said second set of photodetectors of said second Fourier lens system being positioned so that said second set of photodetectors are substantially in the Fourier locus determined with respect to said sample volume.

5,056,919
DEVICE FOR MEASURING A PHASE SHIFT WHICH IS NOT RECIPROCAL PRODUCED IN A RING INTERFEROMETER
Hervé J. Arditty; Claude Puech, and Michel Papuchon, all of Paris, France, assignors to Thomson CSF, Paris, France
Filed Oct. 6, 1981, Ser. No. 313,939
Claims priority, application France, Nov. 7, 1980, 80 23878
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 **13 Claims**

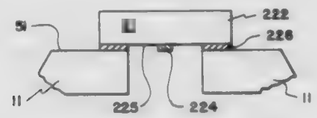
1. An optical interferometer device intended to measure a non reciprocal phase shift undergone by two radiations moving in opposite directions in a ring-shaped wave-guide, the device containing a monochromatic luminous source, means for photodetection of the interference of these radiations, and optical separator and mixer means, which connect the ends of this wave-guide directly to the luminous source and photodetector means: said device containing electrically controlled

means for giving an optical phase shift ϕ, which act on these radiations; an oscillator which delivers a periodic voltage of frequency $\frac{1}{2}\tau$, in which τ is the time taken by each of the radiations to pass through the path determined by the ring; an adjustable slope saw-tooth generator; a synchronous detector, which receives at one of its inputs this periodic voltage and is



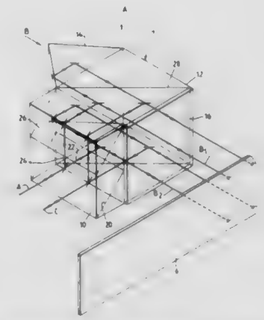
connected at its other input to the photodetector means; the output of this synchronous detector being connected to the slope control input of the saw-tooth wave generator, the resonant frequency of the saw-tooth being slaved to the non reciprocal phase shift; the periodic and saw-tooth voltages being superimposed at the input to the phase shift means.

5,056,920
LOW COST RING LASER ANGULAR RATE SENSOR INCLUDING THIN FIBER GLASS BONDING OF COMPONENTS TO A LASER BLOCK
Robert G. Ahonen, Cedar; John Malenick, Minneapolis, and Hans P. Meyerhoff, Fridley, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 106,002, Oct. 7, 1987, Pat. No. 4,865,436, which is a division of Ser. No. 843,959, Mar. 25, 1986, abandoned. This application Aug. 11, 1989, Ser. No. 392,638
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **8 Claims**



1. A ring laser angular rate sensor comprising:
a block of dimensionally stable material;
a plurality of interconnecting tunnels to form a closed-loop path within said block;
a mirror assembly including a first substrate having a bonding surface, said substrate including means for reflecting a laser beam from one to another of said interconnecting tunnels; and
a thin film glass layer of a thermally sealable bonding agent in between said laser block and said mirror assembly bonding surface for bonding said mirror assembly to said laser block, said thin film glass layer having been deposited by a selected thin film deposition process.

5,056,921
OPTICAL APPARATUS FOR USE WITH INTEFEROMETRIC MEASURING DEVICES
Raymond J. Chaney, Berkeley, United Kingdom, assignor to Renishaw plc, Gloucesterhire, United Kingdom
PCT No. PCT/GB88/01137, § 371 Date Aug. 4, 1989, § 102(e) Date Aug. 4, 1989, PCT Pub. No. WO89/05955, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 20, 1988, Ser. No. 382,658
Claims priority, application United Kingdom, Dec. 24, 1987, 8730169
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—351 **24 Claims**



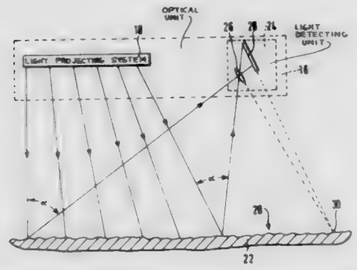
1. Optical apparatus for measuring deviations in the movement of a machine component during movement thereof along its main movement axis comprises:
an optical device and a straight mirror, one of which is attached to the machine component, the other of which is mounted on a fixed part of the machine whereby relative movement is established therebetween during movement of the machine component,
said mirror having a longitudinal axis which is arranged to be parallel to the main movement axis of the machine component so that its reflecting surface faces in a direction normal to the main movement axis of the machine component,
means for generating at least one light beam directed towards the optical device,
and wherein the optical device includes means for generating from said at least one light beam, a measuring beam directed orthogonally towards the reflecting surface of the mirror on a first path, and a reference beam,
means being provided for interferometrically determining any variation in the path length of the measuring beam in relation to that of the reference beam, and
means being provided for directing the reference beam at the mirror along a first path parallel to the first path of the measuring beam but laterally displaced therefrom.

5,056,922
METHOD AND APPARATUS FOR MONITORING THE SURFACE PROFILE OF A MOVING WORKPIECE
Paolo Cielo; Marc Dufour, both of Montréal, and Mario Lamontagne, Longueuil, all of Canada, assignors to Canadian Patents and Development Limited/Societe Canadienne des Brevets et D'Exploitation Limitee, Ottawa, Canada
Filed Feb. 6, 1989, Ser. No. 306,386
Claims priority, application Canada, Feb. 26, 1988, 559913
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—376 **13 Claims**

1. An optical inspecting apparatus for monitoring the surface profile of a moving workpiece at different positions along said workpiece, comprising at least one optical unit including:
a light projecting system for illuminating discrete points on

a first surface of said workpiece by projecting more than one discrete coplanar light beams, each of said light beams having an elliptically shaped cross section with a longer axis being perpendicular to a longitudinal axis of a single one-dimensional detector; and

light detecting means for imaging said illuminated points on said first surface, said light detecting means including an objective lens for gathering light beams reflected from



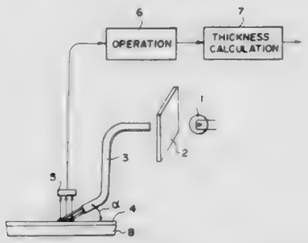
said first surface, and said single one-dimensional detector having detecting elements disposed in one line array, the longitudinal axis of said detector being coplanar with said more than one coplanar light beams, said detecting elements being elongated in a direction perpendicular to the longitudinal axis of said detector, said detector having an output indicative of the surface profile at different positions along said first surface.

5,056,923

OPTICAL THICKNESS MEASURING APPARATUS

Ryoji Ebisawa, and Toshihiro Matsushita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 371,854, Jun. 27, 1989, abandoned. This application Feb. 14, 1991, Ser. No. 655,020
Claims priority, application Japan, Jun. 29, 1988, 63-162149
Int. Cl.[5] G01B *11/06*
U.S. Cl. 356—382 2 Claims



1. An optical thickness measuring apparatus which comprises:

i) a light source,

ii) a spectral means which separates light produced by said light source into its spectral components,

iii) a photo detecting means for detecting the light which has been separated by said spectral means into its spectral components and which has been scatter-reflected by a material being subjected to thickness measurement, said photo detecting means receiving only scatter-reflected light,

iv) an operation processing means which calculates either one of variables a^* or b^* of an $L^*a^*b^*$ colorimetric system or either one of variables u^* or v^* of an $L^*u^*v^*$ colorimetric system on the basis of information about the light which has been scatter-reflected by said material, said information being received from said photo detecting means, and

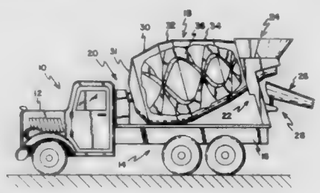
v) a thickness calculating means which calculates the thickness of said material from the value of the variable calculated by said operation processing means.

5,056,924

SYSTEM FOR MIXING AND DISPENSING CONCRETE

Ronald E. Christenson, Kasson, Minn., assignor to McNeilus Truck and Manufacturing, Inc., Dodge City, Minn.

Filed Jan. 26, 1990, Ser. No. 471,272
Int. Cl.[5] B01F *7/08*
U.S. Cl. 366—59 38 Claims



1. A mobile system for mixing and dispensing a mixture such as concrete, comprising:

a vehicle;

a mixing drum mounted for rotation on a rear portion of said vehicle, said mixing drum having an outer wall which defines a mixing space within said mixing drum;

fin means within said mixing space for mixing and guiding a substance within said mixing space when said mixing drum is rotated, said fin means being constructed of a lightweight, resilient, polyurethane-based polymeric material which is flexible and resistant to abrasion, whereby the fin means will flex during operation to cause any dried concrete adhering thereto to flick off and the weight of the system is reduced in comparison to systems which were heretofore known; and

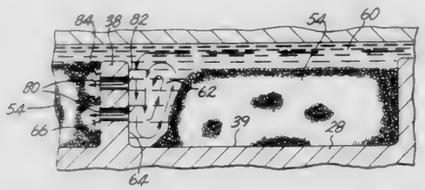
means for securing said fin means to said outer wall.

5,056,925

EXTRUDER SCREWS AND METHOD FOR ACCELERATING MELTING IN PLASTICATING EXTRUDERS

Imrich Klein, Highland Park, N.J., assignor to Scientific Process & Research, Inc., Somerset, N.J.

Filed Jun. 1, 1990, Ser. No. 531,760
Int. Cl.[5] B29B *7/42*
U.S. Cl. 366—90 18 Claims



1. Apparatus for use in a plasticating extruder of the type having an axially extending elongate barrel for preparing a plasticated material from solids introduced into the extruder, the apparatus comprising:

an axially extending screw conveyor for placement in the barrel, the screw conveyor having at least one flight defining a channel progressing along a helical path axially along the screw conveyor and having a radial depth for continuously conveying the material in a downstream direction as the material is melted within the channel, the flight having a leading face facing downstream and a trailing face facing upstream, the channel extending between the leading face and the trailing face, the leading face and the trailing face including confronting portions located within a melting zone in a screw conveyor, between which confronting portions the solids are compacted in a solid bed of material and melting takes place to form melted material within a melt film established between the solid bed and the barrel, the melted material passing progressively from the melt film into a melt pool formed at the leading face of the flight, within the melting zone of the screw conveyor; and

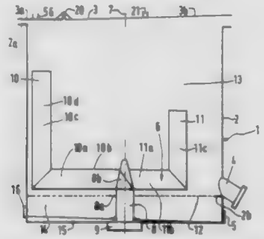
melt transfer means between a first location along the leading face of the flight within the melting zone of the screw conveyor and a second location along the trailing face of the flight for effecting transfer of melted material from the melt pool at the first location into the solid bed at the second location, whereby the transferred melted material is forced into intimate contact with unmelted material in the solid bed at the second location to heat the unmelted material and accelerate melting.

5,056,926

APPARATUS FOR TREATING A PARTICULATE THERMOPLASTIC MATERIAL WITH A PURGING GAS

Guy Bouheben, 41 avenue du mai 1945, 69500 Bron, France, assignor to Guy Bouheben; Christophe Bouheben, both of Bron and Carole Giambrone, Lissieu-Lozan, all of, France

PCT No. PCT/FR89/00611, § 371 Date Jul. 19, 1990, § 102(e) Date Jul. 19, 1990, PCT Pub. No. WO96/06173, PCT Pub. Date Jun. 14, 1990
PCT Filed Nov. 28, 1989, Ser. No. 543,715
Claims priority, application France, Dec. 9, 1988, 88 16510
Int. Cl.[5] B01F *7/20*
U.S. Cl. 366—102 10 Claims



1. In an apparatus for treating a particulate thermoplastic material with a purging gas, comprising:

A) a stationary container (**1**) for receiving a charge of a material, a side wall (**2**) of a shape of revolution relative to an axis (**7**), equipped with a means (**3**) for introducing the charge to be treated, a means (**4**) for discharging the treated charge, and a means (**5**, **56**) for circulating a purging gas through the container,

B) a rotor (**6**) for agitating the charge, movable in rotation relative to the container and around the said axis, arranged essentially inside the said container, comprising:

an axial shaft (**8**) provided with a means (**9**) for driving in rotation;

at least two blades (**10**, **11**) for upward centripetal flow, each blade comprising, on the one hand, a radial arm (**10***a*, **11***a*) extending radially and horizontally from the said shaft in the lower part of the container, provided with a front face (**10***b*, **11***b*) (depending on the direction of rotation) sloping forward and, on the other hand, a vertical upright (**10***c*, **11***c*) extending vertically inside the container, provided with a front face (**10***d*, **11***d*) (depending on the direction of rotation) which is oblique toward the center,

wherein:

each of the flow blades (**10**, **11**) is solid and has an edge (**10***e*, **11***e*, **10***f*) for picking up the particles of the thermoplastic material, situated at least partly at a certain distance from the opposing internal surface (**12**, **1**);

the container further comprises a lower partition (**12**) extending radially beneath said flow blade and permeable to the purging gas stream, ensuring ventilation of the treated charge, the said partition dividing the container into two compartments, namely a main, upper treatment compartment (**13**), and lower compartment (**14**) for introducing the gas stream;

and the front face (**10***b*, **10***d*, **11***b*, **11***c*) of at least one flow blade (**10**, **11**) in a direction of blade rotation, namely at least one of the radial arm (**10***a*, **11***a*) and the vertical upright (**10***c*, **11***c*) comprises a plurality of closed surface cavities (**17**) adjoining one another, for temporary retention of the conveyed particles of the charge while the latter is being treated.

5,056,927

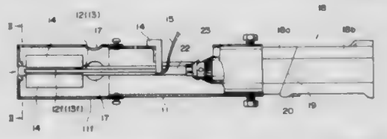
Patent Not Issued For This Number

5,056,928

METHOD AND APPARATUS FOR MEASURING A CHANGE IN STATE OF A SUBJECT FLUID

Kazuichi Aoki, Moroyama; Yukihiro Saiki, Tsurugashima; Katushtoshi Tanno, Sakato; Yasuhiko Shiinoki, Tokyo; Tomoshige Hori, Kitamoto; Kensuke Itoh, Kodaira; Tetsuo Nakamura, Iruma, and Osato Miyawaki, Asaka, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Sep. 5, 1990, Ser. No. 577,760
Claims priority, application Japan, Sep. 12, 1989, 1-106768[U]; Sep. 28, 1989, 1-113618[U]; Jan. 24, 1990, 2-5347[U]
Int. Cl.[5] G01N *25/02*
U.S. Cl. 374—16 24 Claims



1. A method for measuring a change in the state of fluid in a reservoir of subject fluid, comprising:

(1) placing in the reservoir of subject fluid an apparatus comprising:

(A) a tubular body having therewithin:

(i) a fluid inlet;

(ii) a fluid outlet; and

(iii) at least one hot wire heating sensor disposed between said inlet and said outlet; and

(B) a fluid moving means for moving a sample quantity of the fluid from the reservoir into said inlet, through said tubular body and out of said outlet;

(2) activating said moving means so that a sample quantity of the fluid in the reservoir moves into said tubular body;

(3) causing said hot wire heating sensor to be heated by said hot wire thereof;

(4) measuring the temperature of said sensor when said sample quantity of fluid is in a static flow state within said tubular body or in a laminar flow state within said tubular body;

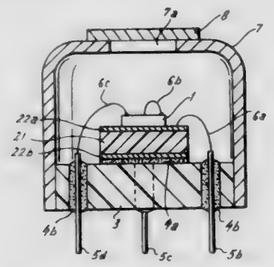
(5) measuring the temperature of the fluid in the reservoir or the temperature of the sample quantity of the fluid in the tubular body;

(6) discharging said sample quantity of fluid out of said outlet; and

(7) determining a change in the state of the fluid based on the measured temperature of the fluid and the measured temperature of the heated sensor.

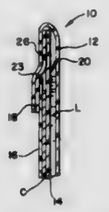
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5,056,929
TEMPERATURE COMPENSATION TYPE INFRARED SENSOR
Sigeru Watanabe, Tokorozawa; Kenji Kamiya, Iruma, and Takanori Nanya, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 30, 1991, Ser. No. 648,134
Claims priority, application Japan, Jan. 30, 1990, 2-7111[U]; Feb. 20, 1990, 2-15263[U]; Mar. 27, 1990, 2-30479[U]; Sep. 28, 1990, 2-101864[U]
Int. Cl.[5] G01K *7/02, 7/10*
U.S. Cl. 374—181 **16 Claims**



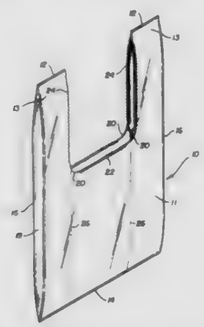
1. A temperature compensation type infrared sensor comprising a thermopile element including a substrate having a central pit and functioning also as a heat sink; an insulation film formed on the top face of said substrate and defining a diaphragm located above said pit; a plurality of thermocouples disposed on said insulation film and connected in series together, each of said thermocouples having a hot junction on said diaphragm and a cold junction on said heat sink; and a black body means on the central portion of said diaphragm in said insulation film and which serves to absorb infrared rays, said thermopile element being placed on a thermistor chip means for compensating for temperature.

5,056,930
SELF-SEALING SPECIMEN POUCH ASSEMBLY
Thomas Mestetsky, St. Charles, Ill., assignor to Hargro Lamcote, Inc., Chicago, Ill.
Filed Mar. 5, 1991, Ser. No. 664,816
Int. Cl.[5] B65D *33/20*
U.S. Cl. 383—5 **10 Claims**



1. A specimen pouch assembly, comprising:
first, second, and third plies of material, said plies being juxtaposed and at least partially coextensive,
said first and second plies being joined to each other at confronting peripheral portions thereof to define a specimen-receiving enclosure therebetween,
said second ply defining an access opening communicating with said enclosure for placing an associated specimen therein,
said third ply being joined to said second ply to define an identification-receiving pocket therebetween, said third ply having a length less than said second ply so that a free edge of said third ply defines, with said second ply, an opening into said pocket, said access opening defined by said second ply being positioned between said pocket opening and an associated end of said pouch assembly, and
self-sealing means for closing said access opening by folding and sealing an end portion of said pouch assembly to close said access opening, said folded end portion extending to overlap said free edge of said third ply and partially overlie said third ply and thereby close said opening into said pocket to retain associated identification means therein.

5,056,931
THERMOPLASTIC HANDLED BAGS AND THEIR METHOD OF MANUFACTURE
John W. Williams, Oak Lawn, Ill., assignor to First Brands Corporation, Danbury, Conn.
Filed Jul. 14, 1989, Ser. No. 380,188
Int. Cl.[5] B65D *30/02, 33/06*
U.S. Cl. 383—8 **12 Claims**



1. A handled bag made of a thermoplastic film comprising a thermoplastic film formed of a major amount of a high density polyethylene having a density greater than about 0.940 and a minor amount of a low density polyethylene having a density below about 0.930, said handled bag comprising a front bag side wall, a rear bag side wall, open top portion, a closed bottom portion, a first side edge, a second side edge, spaced apart handles, with top sealed edges, with the area between said handles defining a cut-out opening in said open top portion forming a bag mouth, said cut-out opening comprising two upper mouth edge portions formed along each handle, two mouth corner portions and a lower edge mouth portion between said two corner portions, said upper mouth edge portions extending above the mouth corner portions, wherein said lower mouth edge portion and said upper mouth edge portions meet at said mouth corner portions of said cut-out opening formign said bag mouth wherein said mouth corner portions are characterized by a smoother cut-out edge at said corner portions than provided at said lower mouth edge portion and said upper mouth edge portions whereby the smoother cut-out edge of said mouth corner portions reduce the tendency of said thermoplastic film to tear at said mouth corner portions when said mouth corner portions of said handled bag are subjected to stress.

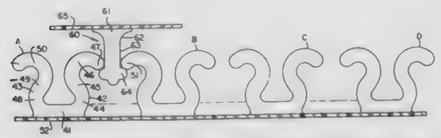
5,056,932
DISPOSABLE BAG APPARATUS AND METHOD
J. Winslow Young, 803 E. Center St., Centerville, Utah 84014
Continuation-in-part of Ser. No. 322,526, Mar. 13, 1989, abandoned. This application Apr. 27, 1990, Ser. No. 515,193
Int. Cl.[5] B65D *30/28, 33/20*
U.S. Cl. 383—36 **5 Claims**

1. A disposable bag having an integral reflux valve formed from an upper portion of the bag inverted inside the bag comprising:
an upwardly tapered plastic bag having a closed bottom and closed, tapered sides and an open top, said closed sides tapering inwardly toward said open top;
said integral reflux valve comprising an upper portion of said sides adjacent said open top being folded inwardly into said plastic bag at a fold with said open top being oriented toward said closed bottom with said open top being spaced above said closed bottom an incremental distance, said tapered sides also directing said open top away from said closed sides to provide said reflux valve as a freely depending reflux valve; and



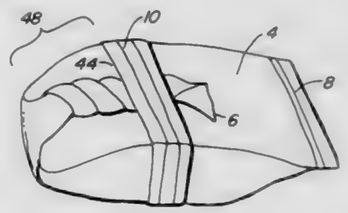
a funnel for said plastic bag fabricated as two flat surfaces joined along adjacent edges to form an open funnel when said edges are forced toward each other causing said flat surfaces to bow outwardly away from each other, said edges having a tapered profile corresponding to said taper of said closed sides so that said funnel will be received in said fold to thereby provide a funnel to said plastic bag with a portion of said reflux valve extending below said funnel.

5,056,933
MULTIPOSITION INTERLOCKING CLOSURE FASTENING DEVICE
Ewald A. Kamp, Chicago, Ill., assignor to First Brands Corporation, Danbury, Conn.
Continuation of Ser. No. 122,589, Nov. 17, 1987, Pat. No. 4,854,017, which is a continuation of Ser. No. 887,912, Jul. 22, 1986, abandoned. This application Sep. 22, 1989, Ser. No. 387,907
Int. Cl.[5] B65D *33/16*
U.S. Cl. 383—63 **5 Claims**



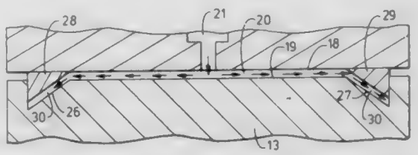
1. A closure fastening device comprising a first closure element and a second closure element; said first closure element comprising a profile having a generally straight bottom portion attached to a base and having a rod-shaped portion extending in a generally perpendicular direction from said bottom portion and having a generally rounded extremity with a portion of enlarged width located anteriorly of said extremity; said second closure element comprising a plurality of generally omega-shaped profile portions each of which comprises a generally straight bottom portion attached to a common base and having two spaced apart arm portions extending outwardly from opposite ends of said bottom portion, said arm portions being curved inwardly towards each other in the section closest to said bottom portion and thereafter curving outwardly and terminating in outwardly facing curvilinear hook portions, said first and second closure elements forming an interlocked closure fastening device when they are occluded together wherein the minimum distance between the interiorly curved portions of the two arms of each of said omega-shaped profile portions is substantially equal to the minimum distance between the juxtaposed curvilinear hook portions of adjoining omega-shaped profile portion.

5,056,934
TWIST AND TUCK FREEZER BAG
Angelo Ielmini, Patterson; Leslie Duck, Turlock, and John V. Wylie, Salinas, all of Calif., assignors to Del Puerto Marketing Company, Patterson, Calif.
Filed Jan. 18, 1991, Ser. No. 644,041
Int. Cl.[5] B65D *3/28*
U.S. Cl. 383—70 **9 Claims**



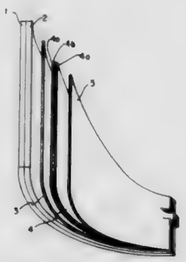
1. A recloseable container comprising:
a bag formed of flexible material having an outer surface, a first end, a second end and length therebetween;
a band spanning at least a portion of the length of said bag and located at a given distance from said second end;
said band having an underside surface adjacent an outer surface region of said bag;
at least one of said underside surface and outer surface region having adhesive and nonadhesive regions;
wherein said first end may be tucked between said band and said bag at said adhesive region to reclose the bag.

5,056,935
OIL FILM DAMPER SEAL RING
Anant P. Singh, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Nov. 5, 1990, Ser. No. 609,332
Int. Cl.[5] F16C *39/04*
U.S. Cl. 384—99 **9 Claims**



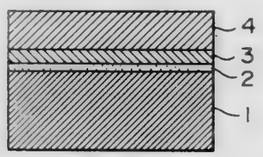
1. In a squeeze film damper comprising a housing with a rolling element bearing assembly therein with an annular bearing race member thereof slidingly fitted in an annular chamber of said housing for transverse radial and orbital motion therein, and where the bearing race member and housing each include a circumferential wall in close spaced nesting relationship to define a squeeze film space therebetween, the improvement comprising, the said bearing support circumferential wall having a pair of spaced apart concentric diagonal-containing cross-section grooves therein with said squeeze film space therebetween.

5,056,936
MULTILAYER PLAIN BEARING
Duraid Mahrus, and Ademir Carubelli, both of Sao Paulo, Brazil, assignors to Metal Leve S. A. Industria E Comercio, Sao Paulo, Brazil
Filed Oct. 17, 1989, Ser. No. 422,915
Claims priority, application Brazil, Oct. 17, 1988, PI 8805486
Int. Cl.[5] F16C *33/12, 9/02*
U.S. Cl. 384—276 9 Claims



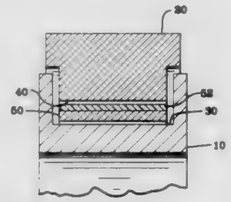
1. A multilayer plain bearing for internal combustion engines, said bearing being of the type comprising a backing layer, and one of a diffusion and bonding layer adjacent to said backing layer, and a sliding layer adjacent to said one of a diffusion and bonding layer, said sliding layer having a laminate structure of separate alternated layers of a softer material and a harder material, said laminate structure having at least two layers of softer material and at least one layer of harder material positioned between two layers of softer material, both the layer of said laminate structure closest to said backing layer and the layer of said laminate structure farthest from said backing layer being formed of softer material.

5,056,937
SLIDING BEARING
Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Motomu Wada, Owariasahi; Hideyuki Kidokoro, Komaki, and Yoji Nagai, Nagoya, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan
Filed Dec. 4, 1990, Ser. No. 622,022
Claims priority, application Japan, Dec. 5, 1989, 1-315603
Int. Cl.[5] F16C *33/12*
U.S. Cl. 384—278 3 Claims



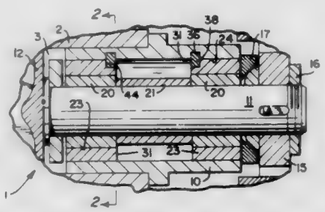
1. A sliding bearing comprising:
a back metal of a three-layer construction composed of a back metal portion of austenitic stainless steel having a thermal expansion coefficient of not less than 15×10^{-6}/° C., a plated bonding layer formed on said back metal portion and having a thickness of 0.05 to 5 μm, and a plating layer of Cu or a Cu alloy formed on said bonding layer and having a thickness of 1 to 20 μm; and
an alloy layer made of a copper-lead alloy or a lead-bronze alloy formed on said back plate and having a thickness of 0.1 to 2 mm.

5,056,938
TRACK ROLLER BEARING FLOATING SLEEVE SYSTEM
S. Robert Ahlman; William E. Dunn, both of Litchfield, and Harry Magazian, Monroe, all of Conn., assignors to The Torrington Company, Torrington, Conn.
Filed Oct. 4, 1990, Ser. No. 592,944
Int. Cl.[5] F16C *33/10*
U.S. Cl. 384—286 10 Claims



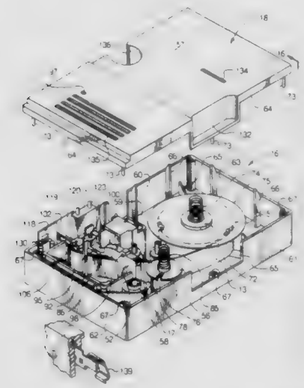
1. A bearing assembly comprising:
a first race member having a first peripheral bearing surface;
a coaxial second race member being rotatable relative to said first race member, said second race member having a second peripheral bearing surface;
a sleeve member having an outer radial surface and an inner radial surface, the sleeve member being disposed between and in sliding engagement with said first bearing surface and said second bearing surface; and
said sleeve member having a self-lubricating bearing material bonded to the radial surface adjacent said second bearing surface, the sleeve member being incrementally movable by the second bearing surface in response to wearing away of the material and said self-lubricating bearing material having a first surface, a second surface and a varying coefficient of friction between the surfaces.

5,056,939
JOURNAL BEARING RETAINER SYSTEM
Frederic W. Buse, Allentown, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jul. 12, 1990, Ser. No. 551,991
Int. Cl.[5] F16C *33/08*
U.S. Cl. 384—295 4 Claims



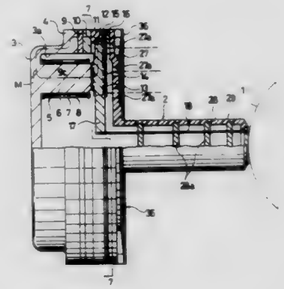
1. A bearing retainer system comprising: a hollow cylindrical bearing holder containing a bore for holding a bearing sleeve and containing an undercut slot extending circumferentially over a portion of the bore and having an arcuate bottom and spaced sidewalls facing axially; a bearing sleeve mounted in said bore and having a cylindrical periphery containing a notch forming an axially facing shoulder; and a key seated in said slot and extending into said bore and said notch to lock said bearing sleeve against rotating in said bore, said key having an arcuate bottom corresponding to and engaging the arcuate bottom of said slot whereby said key can slide circumferentially in said slot to adjust itself to proper position in the assembled condition of said system, said key engaging said sidewalls in said slot to prevent it from moving axially in said holder, said key engaging said shoulder to prevent said bearing sleeve from moving axially in said bore in at least one direction.

5,056,940
THERMAL PRINTING DEVICE AND TAPE SUPPLY CARTRIDGE THEREFOR
Peter A. Basile, Lawrenceville, N.J., assignor to Kroy Inc., Scottsdale, Ariz.
Continuation of Ser. No. 299,973, Jan. 19, 1989, Pat. No. 4,930,913, which is a continuation-in-part of Ser. No. 151,110, Feb. 1, 1988, Pat. No. 4,832,514. This application Jun. 4, 1990, Ser. No. 533,123
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] B41J *3/02*
U.S. Cl. 400—120 35 Claims



1. A tape supply cartridge for operative insertion into and use with a thermal printing device or the like having a print station for forming a selected image onto a tape and an elongated rotatably driven first tape advancement roller rotatably supported within said printing device and including a first generally cylindrical roller portion and a first drive member mounted to said first roller for rotation therewith, said cartridge comprising:
a cartridge housing having top and bottom walls and an edge wall joining said top and bottom walls;
a supply of tape for receiving a printed image;
guide and alignment means for guiding said tape into alignment with said print station; and
an elongated second tape advancement roller disposed within said cartridge housing and having a second generally cylindrical roller portion and a second drive member mounted to said second roller for rotation therewith, said second roller rotatably mounted within a portion of said cartridge and said second drive member adapted for operative engagement with said first drive member, the longitudinal axis of said second roller portion being generally parallel to the longitudinal axis of said first roller portion, said tape being disposed between said first and second roller portions for engagement therewith and said first and second drive members being engaged with one another when said cartridge is operatively inserted into said device; and
bias means for biasing one of said first and second tape advancement rollers toward the other.

5,056,941
PRINT HEAD ASSEMBLY OF A PRINTING DEVICE
Shigeki Kato, Chiryu; Yoshihumi Suzuki, Ena; Yasuji Chikaoka, Aichi; Miyuki Morimoto, Mie; Hiroyuki Watanabe, and Noriyuki Yoneyama, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Continuation-in-part of Ser. No. 326,429, Mar. 20, 1989, Pat. No. 4,944,615, which is a continuation of Ser. No. 35,677, Apr. 7, 1987, abandoned. This application Aug. 3, 1989, Ser. No. 389,371
Claims priority, application Japan, Apr. 7, 1986, 61-79586; Apr. 24, 1986, 61-42946; Aug. 6, 1988, 63-196434; Aug. 6, 1988, 63-196435
Int. Cl.[5] B41J *2/24*
U.S. Cl. 400—124 17 Claims

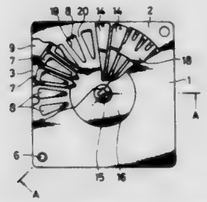


1. A print head assembly of a printing device which performs printing on a printing medium in a printing position, comprising:
a head body including a plurality of cores arranged at a regular interval in a ring-like array, and solenoid coils individually wound around said respective cores and capable of generating magnetic forces when energized;
armature members individually facing said respective cores;
a supporting member supporting said armature members for swinging movement;
print wires individually operatively connected to said respective armature members;
guide means for guiding the print wires in movement thereof toward the printing medium;
a cover member for covering said array of armature members in a substantially parallel fashion thereto;
said print wires being moved selectively to a printing position upon selective energization of the associated solenoid coils,
said supporting member being sandwiched along an axis between the head body and the cover member,
said armature members being put on the supporting member on the side thereof opposite said guide means
first aperture means formed in said cover member so as to face said armature members respectively; and first welding energy means applied to said supporting member and the armature members from the outside through said first aperture means, thereby to fix the supporting member and the armature members to one another.

5,056,942
DOT PRINTER HEAD
Takashi Norigoe, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Apr. 11, 1990, Ser. No. 507,404
Claims priority, application Japan, Apr. 20, 1989, 1-100967
Int. Cl.[5] B41J *3/10*
U.S. Cl. 400—124 3 Claims

1. A dot printer head comprising:
a polygonal plate-like yoke having corners and a circumferential wall at each corner, each of said circumferential

walls being separated from one another by a wall-free portion;
a plurality of cores erected annularly on one side of said yoke;
a plurality of electromagnetic coils wound round said cores;
a plurality of armatures opposed to end faces of said cores;
a plurality of needles connected to inner ends of said armatures;

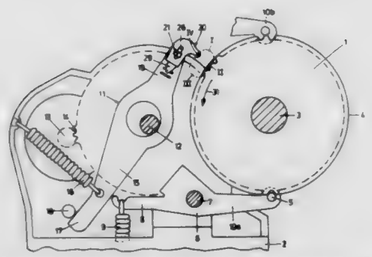


a guide member for arranging said needles in order and holding them slidably; and
a polygonal, side magnetic path plate having side magnetic paths each formed between adjacent said armatures, said side magnetic path plate holding said armatures so as to permit the armatures to rise and fall;
wherein the circumferential wall portions at the corners of said yoke are coupled magnetically to respective corners of said side magnetic path plate.

5,056,943
LINE-SPACING DEVICE FOR A TYPEWRITER OR THE LIKE

Johannes Haftmann, Schwabach, Fed. Rep. of Germany, assignor to Ta Triumph-Adler Aktiengesellschaft, Nurnberg, Fed. Rep. of Germany

Filed Jul. 3, 1990, Ser. No. 559,933
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1989, 3925713
Int. Cl.[5] B41J *11/51*
U.S. Cl. 400—547.7 **6 Claims**

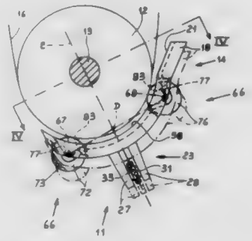


1. A superscript or subscript line spacing device for use with a typewriter or the like, said typewriter or the like having,
a rotatable paper support platen (**1**),
a toothed wheel (**4**) mounted on said platen (**4**),
at least one-spring loaded detent means releaseably engaging said toothed wheel (**4**) for maintaining said platen (**1**) in a defined typing position to which said platen (**1**) has been moved,
an eccentric shaft (**12**) arranged to rotate selectively and cyclically in a clockwise direction and in a counterclockwise direction,
a ratchet (**11**) slideably rotating on said eccentric shaft around a circular mid-section opening and substantially fixed at a first end against relative rotation,
said ratchet (**11**) having a gripper point (**20**) at a second end for intermittently engaging and rotating said toothed wheel (**4**),
a line spacing-motor driving said eccentric shaft with said ratchet (**11**) and said gripper point (**20**) to normally rotate said toothed wheel (**4**) and said platen (**1**) counterclockwise and clockwise from typing line to typing line in full steps,
said superscript or subscript line spacing device comprising,
means moveably connecting said gripper point (**20**) to said ratchet (**11**) for adding superscript or subscript between normal typing lines by selectively rotating said platen (**1**) one-half step.

5,056,944
PAPER PRESSING ARRANGEMENT FOR TYPEWRITERS

Claudio Gillio, Borsso Canavese, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed May 24, 1990, Ser. No. 527,772
Claims priority, application Italy, Jun. 14, 1989, 67480 A/89
Int. Cl.[5] B41J *13/02*
U.S. Cl. 400—637 **18 Claims**



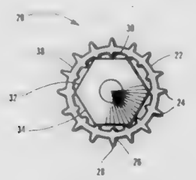
1. A paper pressing arrangement for typewriters having a platen roller defining a typing line, the paper pressing arrangement comprising:
a paper guide plate for guiding a sheet of paper towards said typing line, said plate including at least two conveyor modules;
paper pressing rollers carried by said conveyor modules for holding the sheet of paper against said platen roller; and
a control mechanism including:
spring means for urging said conveyor modules into an operative position in which said conveyor modules are held against said platen roller and parallel thereto;
a pivot element for each said conveyor module, said pivot element being disposed in a substantially barycentric position with respect to said paper pressing rollers;
a rocker lever having two ends pivotally connected to respective pivot elements of two said conveyor modules and, between its two ends, a central pivot; and
an actuating member connected to said spring means and cooperable with said central pivot of said rocker lever so as to hold said conveyor modules in said operative position and to distribute uniformly the action of the spring means to said paper pressing rollers.

5,056,945
WRITING INSTRUMENT GRIP

Gerald J. Klodt, Madison, Wis., assignor to W. T. Rogers Company, Madison, Wis.

Filed Sep. 4, 1990, Ser. No. 578,752
Int. Cl.[5] B43K *23/00*
U.S. Cl. 401—6 **6 Claims**

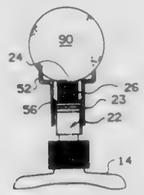
1. A grip for a writing instrument, comprising:
(a) a resilient hollow tube, adapted to fit snugly over the writing instrument;
(b) a plurality of uniform flexible exterior ribs extending radially outwardly from the tube and extending axially the length of the tube; and
(c) a plurality of flexible interior ribs extending radially inwardly from the tube and extending axially the length of the tube, wherein the interior ribs are shorter than the exterior ribs; and wherein the radial thickness of the tube is small in comparison to the diameter of the tube, the tube being sufficiently resilient to permit the grip to be inverted so that the interior ribs extend radially outwardly and the exterior ribs extend radially inwardly to accommodate writing instruments of lesser diameter.



5,056,946
COMBINATION GOLF CLUB AND GOLF BALL CLEANING SYSTEM

Mark Larkin, 419 Northgate, Lindenhurst, Ill. 60646

Continuation of Ser. No. 471,559, Jan. 29, 1990, abandoned. This application Jan. 8, 1991, Ser. No. 641,312
Int. Cl.[5] A63B *47/04*
U.S. Cl. 401—11 **5 Claims**

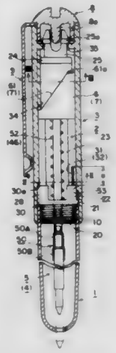


1. A system for cleaning both a golf ball and a golf club, said system comprising:
an squeezable bottle having a necked opening, said squeezable bottle constructed and arranged for the containment of fluid;
a closure assembly constructed and arranged to engage said necked opening of said squeezable bottle;
said closure assembly having:
brush bristles emanating from the top of said closure assembly; and
internal valve means for selectively providing fluid from within said squeezable bottle to moisten said brush bristles;
basin means constructed and arranged to rotatably engage and position a golf ball in rotatable contact with respect to said brush bristles, said basin means being further constructed and arranged to be removably positioned with respect to said brush bristles by frictional engagement with said closure assembly;
whereby golf balls may be cleaned when said means for positioning a golf ball in rotatable contact with said brush bristles is frictionally engaged with said closure assembly and a golf club may be cleaned when said means for positioning a golf ball is removed.

5,056,947
DUAL REFILL-TYPE WRITING UTENSIL

Masuo Kubota; Hidehei Kageyama; Saburo Kobayashi; Yoshihide Mitsuya, and Tadayoshi Ebinuma, all of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 268,478, Nov. 8, 1988, abandoned, which is a continuation of Ser. No. 6,070, Jan. 22, 1987, abandoned. This application Aug. 6, 1990, Ser. No. 563,808
Claims priority, application Japan, Aug. 7, 1986, 61-184317; Aug. 19, 1986, 61-192161; Aug. 19, 1986, 61-192162; Aug. 25, 1986, 61-197415
Int. Cl.[5] B43K *24/10, 24/14*
U.S. Cl. 401—29 **3 Claims**



1. A dual refill-type writing utensil comprising:
a rearward outer cylinder connected to a rear end portion of a forward outer cylinder,
a sheath detachably connected to the rear end portion of said forward outer cylinder, and having a first and a second refill axially slidably mounted thereto,
an engaging shaft portion formed on a rear end of said sheath, and slidably engaging said rearward outer cylinder,
a first and a second slider connected to rear ends of said first and second refills, respectively, and axially slidably inserted into said rearward outer cylinder,
first and second cam surfaces formed on said first and second sliders, respectively, each of said cam surfaces being of a substantially helical shape extending over about 180° of arc, and
a cam engaging projection formed on said rearward outer cylinder, for making said cam surfaces of said first and second sliders engage forcibly therewith, one at a time, and, thereby, making said first refill and second refill alternately project upon rotation of the rearward outer cylinder.

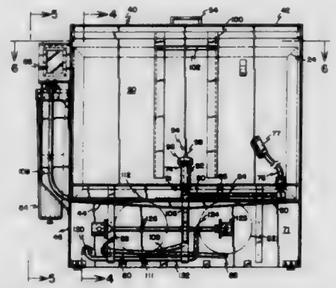
5,056,948
SCREEN CLEANING APPARATUS

Alan D. Puder; Carl W. Sims, both of St. Paul, and Louis R. Hudoba, Fridley, all of, assignors to Northwest Screen Systems Co., Minneapolis, Minn.

Filed Oct. 30, 1989, Ser. No. 428,865
Int. Cl.[5] B08B *3/02*
U.S. Cl. 401—143 **15 Claims**

1. A screen printing plate cleaning cabinet comprising:
a) wall means comprising a top wall, a bottom wall, and side walls constructed and arranged to provide a fluid tight internal chamber suitable for cleaning a screen printing plate therein;
b) access means extending through said wall means for positioning a screen printing plate in said internal chamber;

c) retaining means located within said internal chamber for retaining a screen printing plate placed therein;
d) a dispensing subsystem comprising spray head means, said spray head means having a first single point scanning



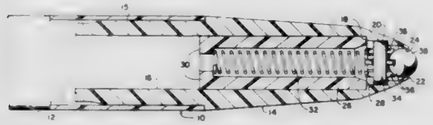
spray head for discharging a cleaning fluid against a screen printing plate first side to clean said screen printing plate; and
e) filter and drain subsystem means for removing residue and cleaning fluid from said internal chamber.

5,056,949

CORRECTION FLUID DISPENSER WITH BALL VALVE

Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 5, 1990, Ser. No. 593,239
Int. Cl.[5] B43K 7/00, 7/10
U.S. Cl. 401—214 8 Claims



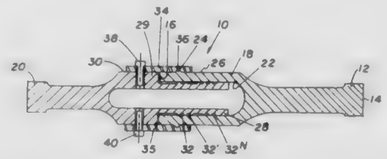
1. A correction fluid dispenser comprising:
a body member adapted to retain a correction fluid;
barrel means disposed at one end of said body member for delivery of correction fluid from said body member to the surface upon which a correction is to be made;
said barrel means having an orifice with a circular rim formed at the end thereof opening into a tubular passage extending to and communicating with the interior of said body member;
a spherical ball of greater diameter than said orifice circular rim disposed within said tubular passage adjacent said circular rim;
a socket member for axial movement in said tubular passage and comprising an annulus having wall structure contacting said tubular passage during axial movement of said socket member and a plurality of axially extending ribs equally spaced about a circumference of said annulus and extending beyond said annulus;
each said rib having a surface directed radially inwardly toward said annulus at either end therefor contacting said spherical ball at one rib end; and
spring means disposed within said tubular passage and contacting each of said ribs at a said surface at a rib end opposite said one rib end for biasing said socket member toward said orifice circular rim.

5,056,950

THERMALLY ACTIVATED JOINT

Richard G. Rateick, Jr., and Douglas A. Hall, both of South Bend, Ind., assignors to Allied-Signal Inc, Morristown, N.J.

Filed Aug. 31, 1990, Ser. No. 576,560
Int. Cl.[5] F16D 1/00
U.S. Cl. 403—24 11 Claims



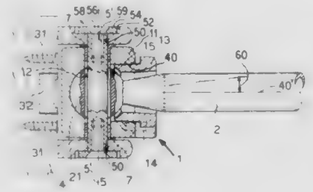
6. Connection means for establishing a joint between a ceramic member exposed to an environment where the temperature may reach 2000° F. and a metallic member exposed to an environment where the temperature must not exceed 400° F., said connection means comprising:
a first shaft having a cylindrical end with a bore therein, said cylindrical end having a rib located on its peripheral surface, said first shaft being made of a ceramic material that has a first coefficient of expansion with respect to temperature;
a second shaft having a cylindrical end with a first diameter surface located in said bore of said first shaft and a second diameter surface, said second shaft being made of a metallic material that has a second coefficient of expansion with respect to temperature;
a sleeve surrounding a portion of said cylindrical end of said first shaft and said second diameter surface of said second shaft, said sleeve having a groove for receiving said rib on said first shaft; and
means for securing said sleeve to said second diameter to establish an external compressive force between said sleeve and said rib to hold the first shaft and the second shaft in a fixed relationship to form a unitary structure, said first and second shafts responding to differences in coefficient of expansion with a reduction in said external compressive force while the first diameter surface of said second shaft expands to create an internal radial force which acts on the portion of said first cylindrical body surrounding said bore to maintain the space relationship of the first and second shafts with changes in temperature.

5,056,951

DEVICE FOR THE ROTATABLE AND ADJUSTABLE CONNECTION OF AN ARM TO A FASTENING PLATE

Roberto Mariani, Cesano Maderno, Italy, assignor to Ditta Mariani Enrico, Milan, Italy

Filed Feb. 28, 1990, Ser. No. 486,208
Int. Cl.[5] F16C 11/06
U.S. Cl. 403—90 10 Claims



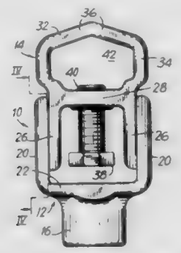
1. A device for the rotatable and adjustable connection of an arm to a fastening plate, particularly for the movement of a door of a cabinet, the device comprising:
an external connector member having a substantially cylindrical cavity extending therethrough along a cylindrical axis, the external connector member also having a hemispherical cavity formed at least partially internally therein, the hemispherical cavity communicating with the cylindrical cavity and being accessible from the exterior of the external connector member through an access port;
a substantially spherically-shaped internal connector member fastened to an extremity of the arm, the internal connector member being insertable into the hemispherical cavity of the external connector member through the access port, the internal connector member having a substantially cylindrical hole extending therethrough;
a pivot member extending through the substantially cylindrical cavity in the external connector member and through the substantially cylindrical hole in the internal connector member, a first clearance being provided between the pivot member and the substantially cylindrical hole to faciliate movement of the internal connector member when obtaining a selected position of the arm;
a clamping collar through which the arm extends, the clamping collar being mounted in the access port of the external connector member, the clamping collar having an annular surface for contacting the spherically-shaped internal connector member;
means for causing the annular surface of the clamping collar to apply pressure on the spherically-shaped internal connector member and thereby clamp the arm in a selected position of a range of angular inclination positions.

5,056,952

ROTATIONALLY ADJUSTABLE TOOL HOLDER

Donald Gringer, New York, N.Y., assignor to Allway Tools, Inc., Bronx, N.Y.

Filed Dec. 15, 1989, Ser. No. 451,205
Int. Cl.[5] F16C 11/00
U.S. Cl. 403—96 9 Claims



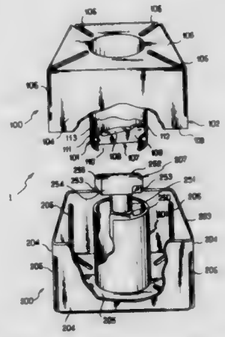
1. An adjustable tool holder for carrying a tool on a handle, said tool holder comprising:
yoke means for mounting the holder on the handle; carrier means for carrying the tool, said carrier means including link means for mounting said carrier means on said yoke for angular movement in discrete preselected steps about an axis passing through said yoke and operable by imposing a moment force on said link means; and
clamp means for accepting and retaining a selected portion of the tool therein;
said yoke means including a handle mount, having a bore threaded to accept the handle therein;
said yoke means including two parallel spaced yoke arms extending longitudinally from said handle mount, each said yoke arm having a link mounting aperture formed therein and jointly defining a transverse link rotating axis, and wherein inner yoke arm surfaces are mutually opposed, said inner yoke arm surfaces having a plurality of yoke detent recesses formed therein in circular opposed arrays around the periphery of each said link mounting aperture at a selected detent radius distance from said transverse link rotating axis;
said link means including:
two parallel link arms, dimensioned to fit within said yoke arms with outer link arm surfaces in sliding contact with respective inner yoke arm surfaces, each said link arm having a yoke mounting aperture formed therein and positioned on said transverse link rotating axis for rotational movement thereon, wherein each link arm includes an outer surface having a plurality of link detent means formed therein, in circular opposed arrays around the periphery of each said yoke mounting aperture at said selected detent radius distance from said transverse link rotating axis, said array on each said link arm capable of being moved into registration and engagement with said array of yoke detent recesses on said adjacent yoke arm;
whereby, at selected relative rotational positions of said carrier assembly with respect to said yoke assembly, said link detent means engage said yoke detent recesses to retain said carrier assembly at said selected rotational position, and whereby the application of rotational force to said carrier assembly causes said link detent means to disengage from said yoke detent recesses, permitting rotational movement of said carrier assembly;
said clamp means comprising:
a holder having a wall defining a hollow holder well dimensioned to accept a selected portion of the tool therein, a portion of said wall transversely extending between and integral with said link arms at a location spaced from said transverse link rotating axis by a distance greater than said selected detent radius distance, said wall portion having a threaded retaining aperture formed therein; and
a retaining screw threaded in said retaining aperture, the distal end of said screw extending into said holder well, whereby said screw exerts a retaining force on the selected tool portion.

5,056,953

ASSEMBLY DEVICE FOR ASSEMBLING DISMOUNTABLE OR MODULAR ELEMENTS

Jacques Marot, Eragny, and Jean-Claude Boue, Aumale, both of France, assignors to Societe de Design et d'Agencement, Aumale, France

PCT No. PCT/FR89/00226, § 371 Date Jan. 5, 1990, § 102(e) Date Jan. 5, 1990, PCT Pub. No. WO89/11043, PCT Pub. Date Nov. 16, 1989
PCT Filed May 9, 1989, Ser. No. 465,083
Claims priority, application France, May 11, 1988, 88 06392
Int. Cl.[5] F16B 9/00
U.S. Cl. 403—194 20 Claims



1. An assembly device for assembling dismountable or modular furniture elements, said elements being of the type comprising a framework and at least one rigid spacer held by said

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framework and disposed substantially transversely relative thereto, the said assembly device comprising:

a first assembly body (**100**) insertable in a hollow bar (**10**) constituting a portion of the framework, said first assembly body comprising a central locking portion (**101**) a first end of which is capable of penetrating through an associated hole of the spacer, said central locking portion further including first coupling means (**107**) at said first end, and a deformable peripheral portion (**102**) connected to said central locking portion via a central face (**105**) which projects from a second end of said central locking portion opposite said first end of said central locking portion, said peripheral portion having a free edge (**103**) capable of bearing against a first face of said spacer in a zone surrounding the hole provided therethrough, and

a second assembly body (**200**) having a free edge (**203**) capable of bearing against a second face of the spacer opposite said first face, and said second assembly body further having a central locking portion (**201**) associated to said central locking portion (**101**) of said first assembly body (**100**) and likewise having a first end which is capable of penetrating into said hole, said central locking portion (**201**) of said second assembly body further including second coupling means (**207**) at said first end thereof, said first and second coupling means constituting a sloping ramp bayonet coupling (**107, 207**); and

wherein said peripheral portion (**102**) of said first assembly body (**100**) is radially outwardly deformable under the combined effect of a bearing of the free edge (**103**) thereof against said first face of said spacer and of a traction exerted on said central locking portion (**101**) of said first assembly body, such that a relative rotation of the two assembly bodies (**100, 200**) in order to couple them together through said sloping ramp bayonet coupling (**107, 207**) exerts said traction of said central locking portion (**101**) of said first assembly body, and consequently produces said radial outward deformation of said peripheral portion (**102**) of said first assembly body, so that said relative rotation automatically locks said first assembly body (**100**) in the associated hollow bar (**10**), and furthermore locks said spacer between said free edge (**103**) of said first assembly body and said free edge (**203**) of said second assembly body.

5,056,954

RELEASABLE GRIPPING, LOCKING, COUPLING OR SUPPORT DEVICES

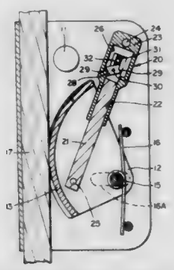
Peter R. Flux, Calne, and Alan W. Tupper, Chippenham, both of Great Britain, assignors to Latchways Limited, Chippenham, United Kingdom

Filed Jul. 20, 1989, Ser. No. 383,311

Claims priority, application United Kingdom, Jul. 21, 1988, 8819928; Jan. 30, 1989, 8901978

Int. Cl.[5] E04G *25/04*

U.S. Cl. 403—330 **13 Claims**



1. A releasable gripping device which, in a non-gripping condition, is in sliding cooperation with an elongated member and for, in a gripping condition, gripping said elongated member to prevent continued relative movement therebetween in a first direction, said gripping device comprising:

a body part having an abutment surface adapted to have said elongated member slide therealong;

a gripping member;

mounting means movably securing said gripping member to said body part such that, in said gripping condition, the gripping member is initially in sliding contact with the elongated member and, when movement between the elongated member and the body part is in said first direction, the mounting means permits gripping motion of the gripping member to clampingly press the elongated member against said abutment surface to prevent continued movement between said gripping member and said elongated member in said first direction;

control means coupled to the gripping member for, in said non-gripping condition of the device, blocking said gripping motion of the gripping member and, in response to relative motion between the body part and the elongated member in a second direction opposite to said first direction, enabling the gripping motion of said gripping member to place the device in said gripping condition;

wherein said control means comprises a telescoping assembly having two components slidable relative to each other, and a locking member rotatingly coupled to one of said two components and including (a) positioning means to selectively set said locking member at a locking angle and a non-locking angle, (b) a locking surface, and (c) a non-locking surface, said locking surface in said non-gripping condition of the device, lockingly engaging a corresponding opposed surface on the other of said two components, preventing rotation of said locking member and blocking relative motion between said two components in a given direction responsive to motion between the gripping member and elongated member being in said first direction, when the positioning means sets the locking member at said locking angle.

5,056,955

LOCKING DEVICE FOR COVERINGS FOR MANHOLES AND OTHER GROUND OPENINGS

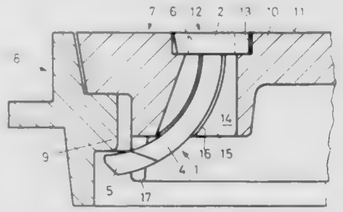
Hansruedi Spiess, Delemont, and Francois Galvanetto, Alle, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Continuation of Ser. No. 276,097, Nov. 23, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 513,012

Claims priority, application Switzerland, Nov. 26, 1987, 4600/87

Int. Cl.[5] E02D *29/14*

U.S. Cl. 404—25 **20 Claims**



1. Covering for a manhole provided in the floor or ground, comprising a frame having an inwardly radially extending flange, a cover inserted in said frame and being supported on said flange; a one-piece locking device for locking said cover to said frame, said one-piece locking device including a retaining head inserted in said cover and at least one elastically deformable locking arm rigidly connected to said retaining head and extending from said cover downwardly towards said frame; and at least one passage means provided in at least said cover, said locking arm extending through said passage means and including at least a portion which extends in a direction differing from a direction of extension of at least a portion of said passage means so that said locking arm is elastically deformed when inserted into said passage means whereby said locking device is retained in said cover in a locking position thereof.

5,056,956

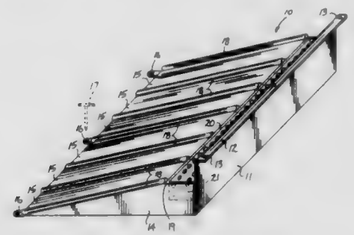
BEACH PROTECTION APPARATUS

Hubert H. Nicholson, 4710 Tammy Dr. NE., Dalton, Ga. 30721

Filed Mar. 27, 1991, Ser. No. 675,857

Int. Cl.[5] E02B *3/12*

U.S. Cl. 405—17 **5 Claims**



1. A beach protection apparatus comprising,

a container including an elongate rear wall mounted to a bottom wall at a rear terminal edge of the bottom wall, and

side walls orthogonally mounted to each side of the bottom wall, wherein the rear wall includes a top flange, the top flange including a plurality of openings directed therethrough, and

an anchor pin directed through each of the top flange openings to secure the rear wall to an underlying surface, and

a bottom wall forward edge, including a plurality of guide chutes extending coextensively between the side walls, wherein each of the guide chutes includes spaced parallel ribs, and wherein each of the guide chutes extends rearwardly of the bottom wall forward edge defining an acute included angle between the bottom wall and the guide chutes, and

defining a gap between the rear wall and the guide chutes, and

an elongate accumulating trough extending between the rear wall and the guide chutes extending coextensively along said rear wall between the side walls.

5,056,957

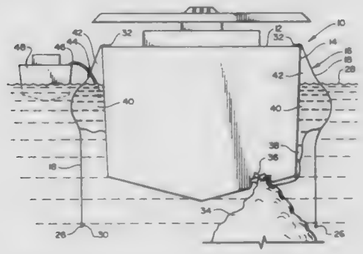
OIL SPILL RECOVERY APPARATUS AND METHOD

Jack S. Wood, Jr., 21859 Angeli Pl., Grass Valley, Calif. 95949

Filed May 16, 1990, Ser. No. 524,132

Int. Cl.[5] E02B *15/06*

U.S. Cl. 405—66 **13 Claims**



1. An apparatus adapted to contain a spill of a hazardous liquid substance from a vessel located in a body of water, where the vessel has an upper perimeter, said apparatus comprising:

a. containment skirt means having a stowed position where said skirt means is positioned at an upper perimeter location of said vessel in a non-extended position, and a deployed containment position where said skirt means extends downwardly from said vessel perimeter to substantially enclose said vessel, with said skirt means having a lower edge portion which extends from the vessel beneath a surface of surrounding water, so as to provide a containment area between said skirt means and said vessel;

b. deploying means to enable said skirt means in said stowed position, to be moved from the stowed position downwardly to the containment position, in a manner that said skirt means can be maintained in its stowed position for normal operation, and can be moved to the containment position when a substance spill occurs;

c. said skirt means having an upper edge which is connected to the upper perimeter of the vessel and forms a substantially airtight connection, whereby a contained area is provided above said water surface and between an upper portion of said skirt means and said vessel to contain fumes from the contained substance.

5,056,958

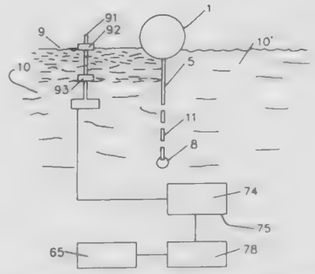
METHOD AND APPARATUS FOR RECOVERING FLOATING PETROLEUM

Colin G. Campbell, P.O. Box 38, Sugar Hill, N.H. 03585

Continuation-in-part of Ser. No. 341,581, Apr. 21, 1989. This application Jul. 25, 1990, Ser. No. 558,085

Int. Cl.[5] E02B *15/04*

U.S. Cl. 405—68 **19 Claims**



1. A method of recovering a product floating on water comprising the steps of:

a) positioning an elongate floatation containment barrier, having keel means, to encompass the floating product to be recovered;

b) gradually reducing the area encompassed by the floatation containment barrier, in a controlled manner, to develop a desired head of floating product within the area encompassed by the floatation containment barrier;

c) sensing the height of the developed head with sensor means; and, once the desired head has been developed;

d) gradually recovering a portion of the product floating on water; and

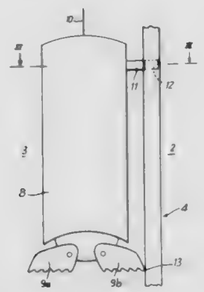
e) using the sensed height of developed head to control the area encompassed by the floatation containment barrier to maintain the desired head of floating product therein.

5,056,959

METHOD AND DEVICE FOR STRIPPING FROM THE CONCRETE TO WHICH IT ADHERES THE HEADER OF A WALL SECTION CAST IN THE GROUND

Paul Cannac, Le Bousquet d'Orb, and Gérard Geist, Calais, both of France, assignors to Soletanche, Nanterre, France

Filed May 31, 1990, Ser. No. 531,159
Claims priority, application France, Jun. 6, 1989, 89 07456
Int. Cl.[5] E02D *9/00*
U.S. Cl. 405—267 **6 Claims**



1. A method of stripping a header having a surface firmly adhered to a cast concrete section formed in the ground adjacent to the site of a contiguous concrete section to be cast in place comprising the steps of:

(a) providing said header with a track-like opening facing said site and extending vertically, said opening accommodating sliding movement of an impact device therein and limiting horizontal movement of said impact device away from said header;

(b) excavating said site adjacent said header with a heavy movable excavator;

(c) locating an impact device within said track-like opening; and

(d) providing an impact force to said impact device to cause said device to strike said header and to tend to disrupt said adhesion of said header to said cast concrete section.

4. Apparatus for stripping a header from a cast concrete section to which it is adhered adjacent to a site for contiguous concrete section comprising:

(a) vertical track means in direct association with said header;

(b) said track means having an opening facing said site;

(c) impact tool means adapted to move slidingly within said track means to predetermined locations therein; and

(d) said impact tool means being further adapted to be displaced horizontally within said track means to apply a separation force through said track means to said header to disrupt adhesion of said header with said concrete.

5,056,960

LAYERED GEOSYSTEM AND METHOD

Mark L. Marienfeld, Greer, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1989, Ser. No. 458,102
Int. Cl.[5] E02D *3/00*
U.S. Cl. 405—270 **30 Claims**



1. A layered geosystem positioned upon and in contact with the earth which comprises:

a treated fabric layer which comprises a fabric having at least one surface which is friction-treated with a treatment material comprising a material selected from the group consisting of natural rubber, a polymer of an acrylate, a styrene-diene copolymer, a polymer of vinyl acetate, and mixtures thereof;

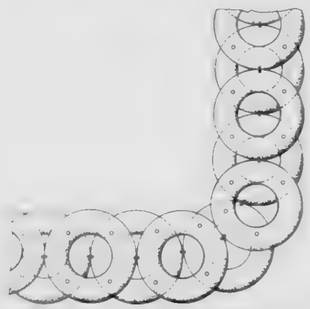
at least one additional layer which is positioned so as to be in contact with said at least one surface.

5,056,961

METHOD OF CONSTRUCTING WALLS FROM DISCARDED TIRES

John D. McMeans, and Julia L. R. McMeans, both of 112 Grant Ave., Chesterton, Ind. 46304

Filed May 23, 1990, Ser. No. 527,289
Int. Cl.[5] E02D *29/02;* **E02B** *3/12*
U.S. Cl. 405—284 **10 Claims**



1. A method of forming structural elements from discarded tires, said method comprising the following steps:

providing a plurality of tires of different sizes;

stacking said tires adjacent to, and with surfaces in contact with, one another to form a structural element; and

affixing said tires to one another by applying adhesive on respective contact surfaces of adjacent tires.

5,056,962

METHOD OF SAMPLING SOLID MATERIALS AND SAMPLING SYSTEM TO EXECUTE THE METHOD

Kiyoshi Morimoto, Mishima; Akikazu Iwamoto; Katsuya Watanabe, both of Sunto; Masahiko Shimizu, Mishima, and Masuo Moriyama, Numazu, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd. Kabushiki Kaisha Matsui Seisakusho, Osaka, Japan

Filed Dec. 27, 1989, Ser. No. 457,248
Claims priority, application Japan, Dec. 27, 1988, 63-332432; Nov. 8, 1989, 1-290883
Int. Cl.[5] B65G *53/66*
U.S. Cl. 406—49 **5 Claims**

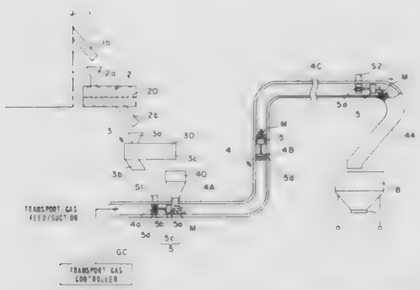
1. A sampling system for solid materials comprising:

a sampling/feeding means to sample solid materials as continuously manufactured by a compression molding machine at fixed intervals and to feed said sampled materials, said sampling/feeding means including a damper having a balance weight to weigh a fixed amount of solid materials;

a transport gas control means to reciprocate a transport plug by executing either a feed or a suction mode;

a transport pipe having an inlet to receive said sampled materials from said sampling/feeding means and connected to said transport gas control means at the initial end thereof and to a material receiver of an inspecting station at its terminal end; and

said transport plug disposed in said pipe under said sampling inlet, as a stand-by position, said plug being pneumatically transported while keeping said sampled materials at a low speed into a terminal position in proximity to said inspecting station from said stand-by position when said gas control means is set inn a feed mode, and then being returned to said stand-by position from said terminal position after being transferred into the terminal position in said pipe when said gas control mans is set in a suction mode.

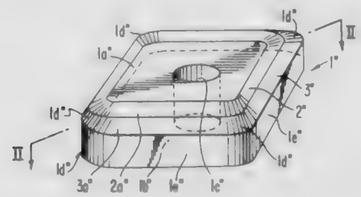


5,056,963

TIP FOR A CUTTING TOOL

Ryoki Kameno; Yasuhito Tomochika; Takao Tamagawa, and Yoshiki Fujimoto, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 315,510, Feb. 27, 1989, abandoned. This application Mar. 9, 1990, Ser. No. 492,411
Claims priority, application Japan, Mar. 7, 1988, 63-30514[U]
Int. Cl.[5] B23B *27/00;* **B24B** *39/00*
U.S. Cl. 407—1 **2 Claims**



1. A tip for a cutting tool for use in cutting and burnishing a workpiece, having:

mutually parallel upper and lower quadrilateral faces;

side walls connecting said upper and lower faces and forming upper and lower peripheral junctions peripherally about the upper and lower faces, respectively;

a hole formed through said upper and lower surfaces for use in connection of the tip to a cutting tool in such a manner that the upper face is positioned to face a cutting direction, said hole having a longitudinal axis;

a cutting portion formed along at least a pair of diametrically opposite portions of said upper peripheral junction;

said cutting portion comprising a first rake surface formed, as viewed in vertical cross section, along a line extending at a first angle with respect to said upper surface, a second rake surface formed, as viewed in vertical cross section, along a line extending at a second angle with respect to said upper surface, a first edge defined by a junction between said first and second rake surfaces, and a second edge defined by a junction between said second rake surface and at least one of said side walls, said first and second angles being defined by different angles, said first and second rake surfaces facing upwardly and radially outwardly with respect to said longitudinal axis and said second rake surface extending along substantially an entire length of said cutting portion;

wherein said first edge and said first rake surface together define a means for cutting away a predetermined depth of material from the workpiece, and said second edge and said second rake surface together define a means for burnishing the surface of the workpiece cut by said cutting means;

wherein said first rake surface is located radially inwardly from said second rake surface and said first angle is smaller than said second angle;

wherein said cutting portion is formed continuously along the entire upper peripheral junction; and

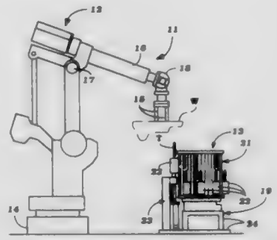
wherein said upper quadrilateral face and said first rake surface intersect at an edge extending along said upper peripheral junction.

5,056,964

MACHINING APPARATUS

Hirokazu Naka, and Tadashi Hayasaka, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1989, Ser. No. 320,104
Claims priority, application Japan, Jan. 28, 1988, 63-15856
Int. Cl.[5] B23B *39/20*
U.S. Cl. 408—35 **5 Claims**



1. A machining apparatus for performing machining operations on a work piece comprising gripping means for holding a work piece, a base adapted to be affixed to a horizontal surface, an upstanding member journaled upon said base for rotation about a vertical axis, an arm support pivotally mounted on said upstanding member about a horizontal axis, means mounting said arm on said arm support for movement with respect a universal joint carrying said gripping means and mounted to said arm, a machine tool base adapted to be affixed to the horizontal surface and carrying at least one machine tool for performing a machining operation, control means for controlling the pivotal movement of said arm and said upstanding member to position a work piece held by said gripping means in a location and desired orientation above said machine tool base and for operating said machine tool for performing a machining operation by said machine tool carried by said machine tool base upon the workpiece while supported solely by said gripping means and above said machine tool.

5,056,965

METHOD OF CONTROLLED INVENTORY FOR BUSHINGS

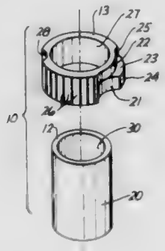
Gary Tsui, Rosemead; Thomas Heimbigner, and Fred Pearl, both of Bellflower, all of Calif., assignors to CBC Industries, Inc., City of Commerce, Calif.

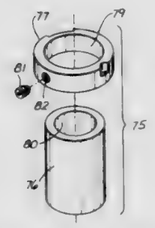
Continuation-in-part of Ser. No. 432,420, Nov. 3, 1989, abandoned, which is a continuation of Ser. No. 223,429, Jul. 25, 1988, abandoned, and a continuation-in-part of Ser. No. 426,493, Oct. 23, 1989, abandoned, which is a continuation of Ser. No. 233,116, Aug. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 223,429, Jul. 25, 1988, abandoned. This application Jun. 14, 1990, Ser. No. 539,070
Int. Cl.[5] B23B *49/02*
U.S. Cl. 408—72 B **12 Claims**

1. Method of providing a wide range of industry standard

precision press fit and slip fit tool bushings on demand from an inventory of industry standard headless press fit bushings comprising:

maintaining an inventory of industry standard headless press fit tool bushings, said inventory including an assortment of headless press fit bushings of various standard lengths, standard inside diameters and standard outside diameters, said inventory being sufficient in quantity and assortment to meet anticipated customer demand for standard headless press fit bushings and to satisfy anticipated customer demand for slip fit bushings of standard lengths and inside diameters, said standard headless press fit tool bushings having outside diameters which are greater than those of corresponding standard slip fit bushings;





maintaining a sub-inventory of separate bushing heads of assorted sizes and sufficient in quantity to provide heads for customer demanded slip fit bushings;

selecting a first standard headless press fit bushing from said inventory responsive to a first customer's demand for a required standard slip fit bushing;

reducing the outside diameter of said first standard headless press fit bushing to the standard outside diameter for said required standard slip fit bushing whereby a second headless slip fit sized bushing is produced;

selecting a bushing head from said sub-inventory; and

assembling said selected bushing head together with said second headless slip fit sized bushing to provide said required standard slip fit bushing.

5,056,966

DRILLING JIG

Robin C. Lee, Ottawa, Canada, assignor to Lee Valley Tools, Ltd., Ottawa, Canada

Filed Sep. 28, 1990, Ser. No. 590,667

Int. Cl.[5] B23B *47/28*

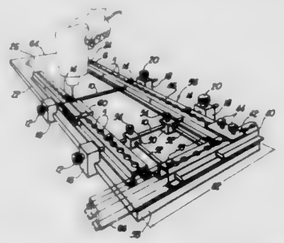
U.S. Cl. 408—115 R **10 Claims**

1. A drilling jig for locating holes to be drilled in a workpiece having a face and an edge comprising:

a) at least a first, second and third rails having spaced holes for locating the holes to be drilled in a workpiece;

b) a movable jaw and a fixed jaw;

c) a clamping rod which is inserted through the movable jaw and the fixed jaw and through holes in the sides of the rails, the rod being secured to the rails by a first set of clamping screws, the fixed jaw being secured to the clamping rod by a second clamping screw, and the movable jaw being secured to the clamping rod by a clamping nut;



d) a means for attaching the third rail perpendicular to the parallel rails; and

e) a drill guide.

5,056,967

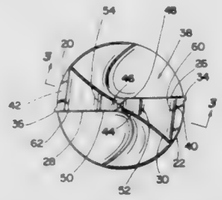
SPOTWELD REMOVAL TOOL

David C. Hageman, Chagrin Falls, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio

Continuation of Ser. No. 330,113, Mar. 28, 1989, abandoned. This application Jul. 27, 1990, Ser. No. 558,656

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—230 **9 Claims**



1. A split point twist drill including a generally cylindrical body having a predetermined diameter, an outer periphery, a longitudinal axis and first and second opposite ends, at least said first end including a cutting tip coincidental with said axis and having a pair of generally opposite cutting tip surfaces extending outwardly away from said axis and sloping toward said second end, each of said cutting tip surfaces having a leading edge and an outer edge intersecting one another at an included angle along said surface of less than 90°, each of said cutting tip surfaces sloping away from a perpendicular relationship with said axis and toward said second end at a common angle between 5°–20°, said cutting tip surfaces together across said outer edges thereof spanning between 25–50% of said predetermined diameter of said body, said cutting tip including a pair of generally opposite walls extending outwardly from said outer edges of said cutting tip surfaces toward said second end, each of said walls flaring outwardly slightly in a direction from said outer edges of said cutting tip surfaces toward said second end, each of said walls being inclined outwardly away from a parallel relationship with said axis at a common angle between 5°–20°, a pair of generally opposite generally flat surfaces adjacent said outer periphery of said body, each of said generally flat surfaces having an inner edge spaced inwardly toward said axis from said outer periphery, each said generally flat surface sloping from said inner edge thereof away from a perpendicular relationship with said axis toward said second end at a common shallow angle, said generally flat surfaces together spanning between 5–25% of said diameter of said body, a pair of generally opposite recessed surfaces extending between said walls and said inner edges of said generally flat surfaces, each of said recessed surfaces sloping outwardly from its associated said wall away from a perpendicular relationship with said axis and away from said second end at a common angle between 5–20%, said recessed surfaces having leading cutting edges and trailing edges that gradually diverge from one another continuously in a direction extending from said longitudinal axis toward said outer periphery.

5,056,968

DEVICE FOR COUPLING A ROD FOR DRILLING A TAPHOLE

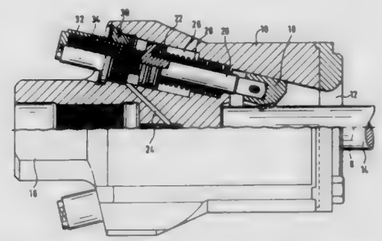
Jean Metz, Luxembourg, and Severino Venturini, Obercorn, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jun. 14, 1990, Ser. No. 538,208

Claims priority, application Luxembourg, Jun. 30, 1989, 87546

Int. Cl.[5] B23B *31/10;* **F27D** *3/15*

U.S. Cl. 408—239 R **3 Claims**



1. A device for coupling a rod for drilling the taphole of a shaft furnace to a drilling apparatus, comprising:

a coupling member;

means for securing the coupling member to the drilling apparatus;

means for securing the coupling member to the drilling rod, said means for securing the coupling member to the drilling rod comprising;

a cavity, defined within the coupling member and extending along a longitudinal axis, for receiving an end of the drilling rod, and

gripper means for gripping the end of the drilling rod, said gripper means comprising:

at least two gripper rods slidably mounted within the coupling member and arranged symmetrically about the longitudinal axis of the cavity, each of said gripper rods comprising a jaw for grippingly engaging the drilling rod, said gripper rods each having a first position wherein the jaw grippingly engages the drilling rod to secure the end of the drilling rod within the cavity and a second position wherein the jaws are displaced from the drilling rod;

first resilient means for urging the gripper rods into the second position;

pneumatic means for urging each of the gripper rods into the first position, said pneumatic means comprising:

a sealed chamber, closed at one end by a plug,

a piston slidably received within the chamber,

means for supplying fluid to the chamber, and

second resilient means, disposed between said plug and said piston, for urging said piston away from the plug counter to the action of the first resilient means.

5,056,969

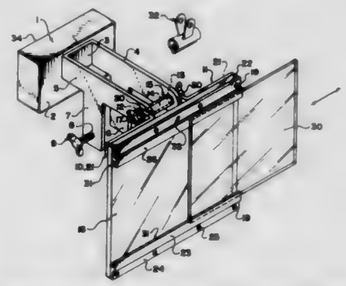
MAGNETICALLY ATTACHABLE SHIELD FOR MACHINE TOOLS

Norman Nerland, 1134 Argyle Street, Regina, Saskatchewan, Canada S4T 3R5 , and Dale Stephenson, 316 McDonald Street, Regina, Saskatchewan, Canada S4N 6P6

Filed Aug. 20, 1990, Ser. No. 569,655

Int. Cl.[5] B23C *9/00;* **B23Q** *11/06*

U.S. Cl. 409—134 **2 Claims**



1. A shield device for attachment to a machine tool comprising a substantially planar shield member, means defining a pair of opposed slots on the shield member into which a sheet of shield material can be inserted so as to be held thereby, a slip mounted on the shield member for releasably grasping a sheet of paper and for holding the sheet of paper flat against a face surface of the shield member, the shield member having bracket arm means mounted thereon and projecting rearwardly therefrom at a position adjacent an edge thereof, and a bracket for attachment of the shield member to a machine tool comprising a base member having a front surface and a rear surface magnet means on the rear surface of the base member for attachment of the bracket to a steel element of the machine tool, a U-shaped support having a planar base and two parallel planar arms extending forwardly from the base with the base attached to the front surface of the base member, each of the parallel arms having an end thereof remote from the base attached to said bracket arm means so as to allow pivotal movement of said shield member and said bracket arm means relative to said parallel arms about an axis parallel to said base and passing through each of said parallel arms.

5,056,970

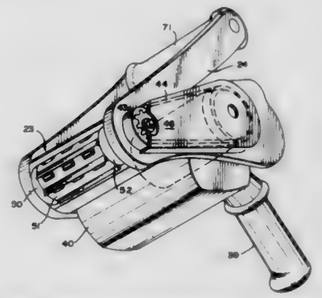
FIBERGLASS PLANER

Mattias Munch, 1225 E. Gemini Dr., Annapolis, Md. 21403

Filed Jan. 18, 1990, Ser. No. 466,772

Int. Cl.[5] B23C *1/20*

U.S. Cl. 409—136 **4 Claims**



1. A machine for planing gelcoat, fiberglass and other materials comprising:

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a planer unit for mounting a cutter head, said planer unit having a frame comprising two spaced side plates having ledge means connected by a half round cover and a plurality of tubes, a first one of said tubes being spaced from said cover to provide a first hand grip, a second hand grip connected to a second tube on said cover and extending generally transverse to the cover surface and to said first hand grip,

a cutter head shaft mounted for rotation between said side plates, said shaft mounting an elongated multiple tooth cutter head for rotation therewith,

and one roller guide rotatably mounted on said shaft at each side of the cutter head,

one of said roller guides has an outer diameter equal to the diameter of the cutter head and the other roller guide has an outer diameter slightly smaller than the diameter of the cutter head, means providing said smaller roller guide to be removable from said cutter head and replaceable by another roller guide of different diameter whereby the depth of cut is adjustable at the discretion of the operator,

a hydraulic motor having a drive shaft mounted to one of said side plates,

belt means connected to a pulley on said motor drive shaft and a pulley on said cutter head shaft to thereby drive said cutter head shaft in rotation;

water supply means comprising another of said tubes on said cover extending between said side plates and having holes therein and in said cover to direct water to flush the cutter head, said another of said tubes and said cover supported on said ledge means, and

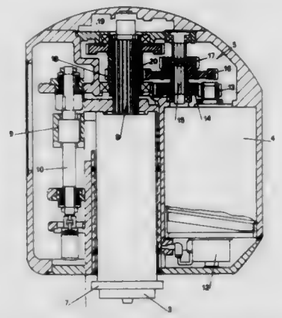
a bottom power unit remote from said planer unit and connected thereto by flexible power transmission lines to power said hydraulic motor.

5,056,971

OPERATING HEAD CHUCK UNIT FOR AUTOMATIC MACHINE TOOLS

Marco Sartori, Piacenza, Italy, assignor to JOBS S.p.A., Piacenza, Italy

Filed Oct. 31, 1989, Ser. No. 429,829
Claims priority, application Italy, Oct. 21, 1988, 44812 A/88
Int. Cl.[5] B23C *1/12*
U.S. Cl. 409—201 **9 Claims**



1. An operating head chuck unit for an automatic machine tool, comprising:

a fork support (**1**) having a fork axis (**x**);

a box frame (**2**) defining an interior space and adapted to have a plurality of degrees of freedom, said frame having an chuck axis and being mounted for pivotal motion to said fork support, about said fork axis, said fork axis being transverse to said chuck axis;

a bushing (**7**) mounted for axial movement in said frame along said chuck axis;

a chuck (**3**) mounted to said bushing for rotation around said chuck axis, and movable axially with movement of said bushing;

a first splined shaft (**8**) fixed to and rotationally and axially movable with said chuck, said first splined shaft extending along said chuck axis in said frame;

a splined sleeve (**20**) mounted for rotation about said chuck axis and in said frame, said sleeve being splined to said first splined shaft for co-rotation of said sleeve and said first splined shaft;

a first pair of cogwheels (**18, 19**) connected to said sleeve for rotation with said sleeve, said first pair of cogwheels having different dimensions from each other and being axially spaced from each other along said sleeve;

a second splined shaft (**15**) mounted for rotation in said frame, parallel to said chuck axis and spaced from said first splined shaft;

a second pair of cogwheels (**14, 17**) which are fixed to each other, mounted for co-rotation with and sliding movement along said second splined shaft;

a chuck rotation motor (**4**) mounted in said frame, next to said bushing, said chuck rotation motor having a drive shaft extending parallel to said chuck axis and operatively connected to said second splined shaft for rotating said second splined shaft to rotate said second pair of cogwheels;

said second pair of cogwheels having different dimensions from each other and having a first axial position on said second splined shaft for engaging one of said second pair of cogwheels with one of said first pair of cogwheels to produce a first velocity ratio between said rotation drive motor and rotation of said first splined shaft, and a second position with the other of said second pair of cogwheels engaged with the other of said first pair of cogwheels for producing a second velocity ratio between said rotation drive means and rotation of said first splined shaft;

cogwheel moving means (**21, 22**) mounted in said frame and engaged with said second pair of cogwheels for axially moving said second pair of cogwheels between said first and second positions on said second splined shaft; and

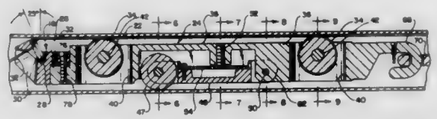
translation drive means (**6, 10**) mounted in said frame and connected to said bushing for moving said bushing axially along said shaft.

5,056,972

DEBURRING DEVICE

George E. Burwell, Newark, and Michael A. Nelson, Westerville, both of Ohio, assignors to Nelson Tool Corporation, Sunbury, Ohio

Filed Sep. 7, 1990, Ser. No. 578,479
Int. Cl.[5] B23D *1/08*
U.S. Cl. 409—299 **13 Claims**



1. A deburring device for deburring the inner longitudinal welding seam on the inner surface of a seam welded conduit formed with an axis, comprising:

an elongated frame for positioning in a longitudinal moving conduit, said frame having a trailing head,

a cutting ring mounted on said head, said ring having an axis extending obliquely from the direction of movement of said conduit, means forming a cutting edge on said ring, said edge extending above the surface of said head so as to cut and deburr said seam, wherein the improvement comprises,

said cutting ring being formed with an interior surface comprising a first frusto-conical section extending from the cutting edge of said ring inwardly to a lesser diameter at an angle in the range of about 40° to about 50° to the face of said ring, said cutting edge being circular and having a first diameter,

a cylindrical surface merging with said first frusto-conical section at said lesser diameter and extending through said ring,

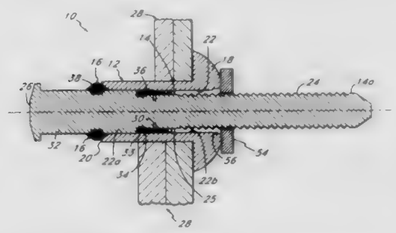
said ring being formed with an outer frusto-conical surface extending outwardly from said cutting edge at an angle in the range of about 10° to about 15° to a perpendicular to the face of said ring, said ring being positioned on said head so that the face of said ring forms an angle in the range of about 20° to about 30° to a perpendicular to the axis of said conduit.

5,056,973

BULB FASTENER

John D. Pratt, Rancho Cucamonga, and Mario A. Zermeno, Garden Grove, both of Calif., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 421,829, Oct. 16, 1989, abandoned. This application Jan. 31, 1990, Ser. No. 472,897
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—43 **17 Claims**



1. A blind fastener, comprising:

a tubular fastener body having a head and a tail, said fastener body being adapted for insertion through aligned apertures in a plurality of workpieces;

an elongate stem extending through said fastener body and having a cylindrical neck which fits closely within the fastener body tail, and having a stem midsection extending forwardly from said neck with a diameter reduced with respect to said neck and spaced from the surrounding fastener body, a shoulder being formed at the intersection of said midsection and said neck, an annular shear ring groove in said neck spaced from said shoulder; and

a shear ring separate from said stem, surrounding said neck and having an anchor portion positioned within said groove, said shear ring further having a bulbing portion extending radially outwardly from said neck to bulb the tail end of said fastener body as the stem is drawn into said fastener body, said shear ring bulbing portion being adapted to shear from said anchor portion after the bulbing portion bulbs said body tail and as the stem is drawn further into said body.

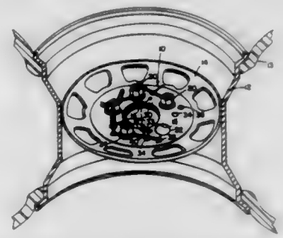
5,056,974

LUG NUT RETAINER

Lee A. Dolin, P.O. Box 320, Rt. 616, Calverton, Va. 22016

Continuation of Ser. No. 356,222, May 24, 1989, Pat. No. 4,971,495. This application Oct. 11, 1990, Ser. No. 595,569
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] F16B *39/02*
U.S. Cl. 411—102 **20 Claims**

1. A lug nut retainer comprising a lug nut and a resilient retaining clip affixed to a wheel and adapted to hold said lug nut in position proximate to a lug hole of the wheel to accept a stud extended through said lug hole and to resiliently urge said lug nut onto said stud and simultaneously allow said lug nut to rotate to screw onto and off of said stud, said retaining clip being positioned to engage the nut so that the nut will displace said retaining clip upon movement of the nut away from the lug hole, the nut including an outwardly extending flange and said retaining clip extending over said flange, said retaining clip including a retaining ring sized to extend at least partially around the nut and extend over said flange, the nut having a body with a bore extending through said body, said bore being threaded over at least a portion of its length, the nut having a socket end proximate one end of said bore, a hub end



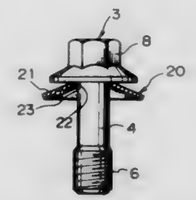
proximate the other end of said bore and a plurality of socket faces, each of said faces having a hub end and a socket end and each of said faces extending from said socket end of the nut towards said hub end of the nut and arranged on the outside of said body to accept a socket drive tool, said flange extending outward from said nut body at a position between the hub end of said faces and the hub end of said nut, the nut including a socket stop having a dimension sufficient to contact said socket drive tool to restrain said tool from significantly rubbing any portion of said retaining clip while said tool is used to turn said nut.

5,056,975

ELASTICALLY COMPRESSIBLE CONICAL LOCK WASHER

Tsuneo Ando, Aichi, Japan, assignor to TRW Steering & Industrial Products (Japan) Co. Ltd., Aichi, Japan

Filed Apr. 9, 1990, Ser. No. 506,462
Claims priority, application Japan, May 31, 1989, 1-137796
Int. Cl.[5] F16B *39/24, 43/02*
U.S. Cl. 411—155 **1 Claim**



1. A washer receivable between first and second members to be fastened together, said washer comprising:

a body having an axis, an annular surface defining a circular opening centered on said axis, a first side surface having a major portion and a projecting portion, and a second side surface spaced axially from said first side surface, said second side surface having a major portion and a recessed portion aligned radially with said projecting portion of said first side surface;

said body having an unstressed condition wherein said major portions of said side surfaces have frustoconical shapes;

said body being elastically compressible between said first and second members from said unstressed condition to a stressed condition wherein said major portions of said side

surfaces have flattened planar shapes, and wherein said major portions of said side surfaces abut against the first and second members; and

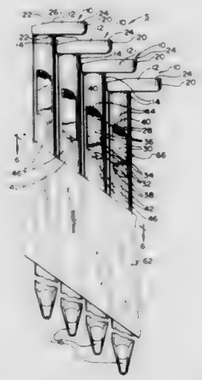
said washer further comprising a second projecting portion of said first side surface, said projecting portions have semi-circular cross sectional shapes and retaining said shapes when said body is compressed into said stressed condition, said projecting portions having locations on said body at different distances from said axis.

5,056,976

WIRE NAIL, STRIP OF COLLATED WIRE NAILS, AND RELATED APPARATUS

Henry A. Sygnator, Arlington Heights; John Binder, Morton Grove, and Robert E. Bellock, Arlington Heights, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Oct. 15, 1990, Ser. No. 597,025
Int. Cl.[5] F16B *15/08*
U.S. Cl. 411—442 **24 Claims**



1. A strip of similar, collated, wire nails, wherein:

each nail has a head and a shank integral with said head;

said shank of each nail being formed with a tip and having a longitudinal axis;

said head having a circumferential edge conforming to a complete circle and defining an axis which is radially offset with respect to said axis of said shank;

said nails being collated by means applied to said shanks so as to hold said shanks in a parallel relationship with respect to one another;

said shanks having peripheral portions thereof disposed substantially tangential to respective circumferential edge portions of said heads such that said heads are offset in a common direction relative to their respective shanks so that the head of one of said nails overlies the head of a succeeding nail disposed within said collated strip.

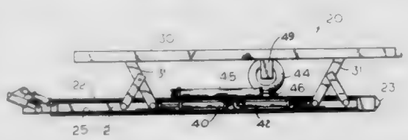
5,056,977

MOBILE HOME LIFTING AND POSITIONING APPARATUS

Benjamin J. May, Calhoun, Ga., assignor to Van L. Teems, Aragon, Ga., a part interest

Filed Mar. 23, 1987, Ser. No. 28,773
Int. Cl.[5] B66F *7/12*
U.S. Cl. 414—12 **8 Claims**

6. Mobile home lifting and positioning apparatus comprising an elongated track, an elongated platform mounted for movement above said elongated track, cylinder means for independently raising and lowering opposite ends of said elongated platform with respect to said track, a slide upon which said platform is supported, said slide being mounted for reciprocal movement along said track, and cylinder means for reciprocally moving said slide along said track so as to move said



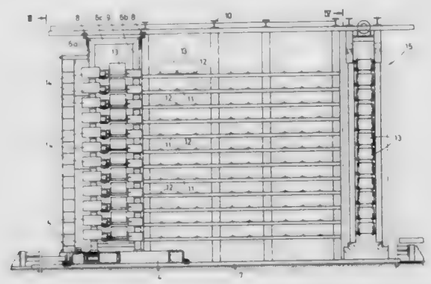
elongated platform longitudinally with respect to said elongated track.

5,056,978

SHELF SYSTEM WITH A CONVEYOR ARRANGEMENT

Wolfram Grafe, Bergkamen; Winfred Shroer, Castrop-Rauxel-Henrichenburg, and Werner Sondermann, Siegen, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zür Förderung der Angewandten Forschung e.V. & SIEMAG Transplan GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 11, 1989, Ser. No. 448,725
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1989, 3907623
Int. Cl.[5] B66F *9/07*; **B65G** *1/04*
U.S. Cl. 414—280 **14 Claims**



1. In a shelf system including shelf racks defining corridors between the shelf racks, each corridor having an inside width, the shelf racks including shelf compartments into which units to be stored can be inserted and from which the units can be removed, and a conveyor arrangement for each corridor, the conveyor arrangement including a vertical mast structure which is movable in longitudinal direction of the corridor between the shelf racks, the mast structure including load receiving means for handling units which can be aligned with the shelf compartments, the load receiving means being displaceable perpendicularly to the shelf corridor toward and away from the shelf compartments, at least one load receiving means being fixedly arranged on the mast structure for each shelf level, at least one loading and unloading station being provided for the conveyor arrangement, the loading and unloading station serving to vertically move the units to be stored between a storage input and output level and the shelf compartments, the improvement comprising each individual load receiving means including a rigid platform having ends facing away from each other and a length, the rigid platform carrying a transverse conveyor device which is adjustable along the entire length of the platform and beyond each end of the platform, wherein the platform of each load receiving means is mounted on the mast structure in a plane below a corresponding shelf level, the platform having a length which is greater than the inside width of the shelf corridor, such that the ends of the platform permanently engage by a predetermined distance into end faces of the shelf racks which face the shelf corridor, the platform supporting slide plates mounted on the same level as the shelf level, wherein the slide plates end at a

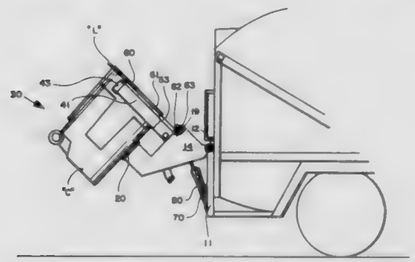
distance from the end faces of the shelf racks, wherein a slide of the transverse conveyor device is movable underneath the slide plates on its platform completely into the corresponding shelf level and wherein the slide has at both ends thereof locking means for engaging the units to be stored, means being provided for raising and lowering the locking means transversely with respect to a direction of movement of the slide.

5,056,979

LIFT UNIT FOR LIFTING AND EMPTYING WASTE CONTAINERS

Kurt W. Niederer, Charlotte, and John T. Prout, Winston-Salem, both of N.C., assignors to Toter, Inc., Statesville, N.C.

Filed May 25, 1990, Ser. No. 529,158
Int. Cl.[5] B65F *3/06*
U.S. Cl. 414—408 **17 Claims**



1. A lift unit for lifting and inverting a waste container for emptying, the waste container being of the type having an enlarged lip extending along the length of opposing sides of the container proximate the mouth of the container, and comprising:

(a) gripping means for gripping the enlarged lip of the container along the opposing sides of the container;

(b) lifting means for lifting and inverting the waste container for emptying while the enlarged lip is gripped by the gripping means, said gripping means being carried by said lifting means, and said lifting means including a pair of laterally opposed lifting arms for partially encircling the waste container in a non-gripping relation; and

(c) said gripping means comprising an elongate lower gripper and a cooperating elongate upper gripper for gripping the lip of the waste container therebetween, both of said upper and lower grippers carried by respective ones of said pair of laterally opposed lifting arms and extending laterally along opposing sides of the container when the container is in a lifting position.

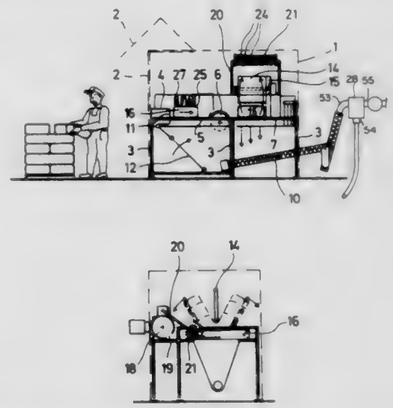
5,056,980

APPARATUS FOR TRANSPORTING AND EMPTYING SACKS FILLED WITH BULK MATERIAL

Simon Redl, Reichertshausen, Fed. Rep. of Germany, assignor to Anton Steinecker Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed May 2, 1990, Ser. No. 518,068
Claims priority, application Fed. Rep. of Germany, May 2, 1989, 3914459
Int. Cl.[5] B65B *69/00, 9/00*
U.S. Cl. 414—412 **14 Claims**

1. An apparatus for emptying a sack filled with bulk material, the sack having a bottom, a top, and transverse sides, the apparatus comprising a feed device transporting the sack within the apparatus, a cutting device in the form of a circular knife, and means for emptying the sack, said emptying means including a support surface and a receiving hopper receiving the bulk material, said feed device adapted to transport the sack from a feed surface onto said support surface, said cutting device arranged at said feed surface such that its top is positioned on a lower level than said sack top, said cutting device cutting said sack bottom into first and second sack portions, said support surface of said emptying means being adjacent first and second swivel plates having inner edges near each other and outer edges away from each other, said swivel plates adapted to swivel upwards from horizontal by moving their outer edges toward each other, said first and second swivel plates having spikes holding said first and second sack portions, respectively, during swivelling, said emptying means further including an upright abutment plate arranged above said first



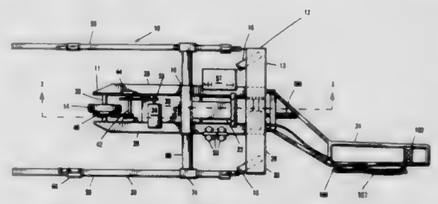
and second swivel plates when said first and second swivel plates are in their horizontal positions, said abutment plate having first and second abutment surfaces for abutting said top of said sack when said first and said second swivel plates are in their upright positions, said abutment plate further including a lower edge above said first and second swivel plates when they are in their horizontal positions, said lower edge abutting said top of said sack substantially between said first and second sack portions when said swivel plates are in their upright positions.

5,056,981

DOLLY FOR GROUND TRANSPORT OF A HELICOPTER

John B. Knowles, Route 1, Box 134, Blue River, Wis. 53518

Filed Jan. 31, 1990, Ser. No. 473,228
Int. Cl.[5] B64F *1/22*
U.S. Cl. 414—495 **31 Claims**



1. A dolly for ground transport of a helicopter having an underside with attached crossbars or other suitable lifting points and a tailboom, the dolly comprising:

(a) a chassis having a front end and a rear end that oppose each other in a longitudinal orientation, the chassis having a wheel arrangement that consists of a drive wheel mounted proximate the front end and two swivel wheels mounted proximate the rear end that are spaced apart to form a three point support on which the chassis is capable of movement;

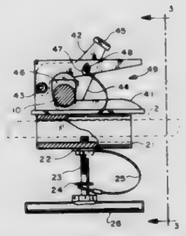
(b) a lifting frame that is attached to the chassis and is capable of being raised and lowered, the lifting frame having support members capable of engaging with the crossbars or other suitable lifting points on the underside of a helicopter to lift the helicopter off of the ground;
(c) means for raising and lowering of the lifting frame;
(d) a handle that is attached to the rear end of the chassis; and
(e) a control that is connected to control the drive wheel to move the dolly forward and backward and that is connected to control the means for raising and lowering the lifting frame to raise and lower the lifting frame.

5,056,982

APPARATUS TO FACILITATE THE HANDLING OF LARGE ROLLS OF PAPER STOCK OR SIMILAR MATERIAL

Brian W. Stockham, Canyon Country, Calif., assignor to GTE Data Services Incorporated, Tampa, Fla.

Filed Oct. 24, 1988, Ser. No. 261,536
Int. Cl.[5] B66F *9/06*
U.S. Cl. 414—607 **6 Claims**



1. An apparatus for transporting, via a forklift truck, an article that has an opening that accommodates the insertion of a shaft, the apparatus comprising, in combination:
(a) a pair of clamping fixtures for mounting on two fork tines of the forklift truck, each of the clamping fixtures for respective mounting on one of the fork tines and each respectively comprising:
(i) a sleeve conforming to the profile of a fork tine,
(ii) a clamping bracket having a frame affixed to the sleeve and a cam-clamp locking lever pivotally attached to the frame about a pivot point,
(iii) means for securing the sleeve to a fork tine at an adjustable position n the fork tine, and
(iv) safety latch means, coupled to said frame and said cam-clamp locking lever, for preventing pivotal movement of said locking lever to insure against inadvertent operation of said locking lever; and
(b) a shaft for insertion through the clamping fixtures and through the opening of the article so as to secure the article to the forklift truck.

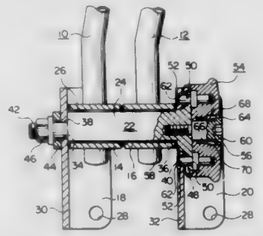
5,056,983

LOAD HANDLING CONTROL APPARATUS FOR A FORK LIFT TRUCK

Yasuhiko Naruse, and Masanso Kobayakawa, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 5, 1990, Ser. No. 505,886
Claims priority, application Japan, Apr. 13, 1989, 1-43470
Int. Cl.[5] B66F *9/22;* **G05G** *5/18*
U.S. Cl. 414—635 **3 Claims**

1. A loading handling control apparatus for a fork lift truck including a pair of brackets mounted on a truck body, an adjusting shaft rotatably supported between said brackets and having an eccentric shaft portion which is eccentric to a rotation axis of said adjusting shaft relative to said brackets and a base shaft portion at both ends of said adjusting shaft respectively, means for adjusting rotational positions of said adjusting shaft, said means including one of said brackets in which a plurality of engaging holes are disposed, said engaging holes surrounding one of said base shaft portions at equal radial distances from the center thereof, a knob mounted on an end of said adjusting shaft so as to be axially movable against the urging force of a spring mounted therein, a flange portion around an outer periphery of said end of the adjusting shaft,



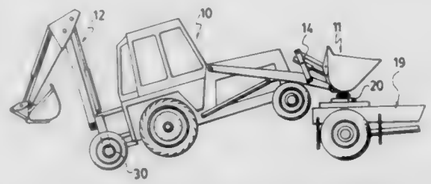
and at least one positioning pin mounted in said knob, said positioning pin passing through said flange portion and adapted to be inserted into and pulled out of one of said engaging holes in response to an axial movement of said knob, and at least one control lever for controlling a load handling device which is pivotally supported on said eccentric shaft portion, an arm end of said control lever being cooperatively connected to a spool of a control valve.

5,056,984

APPARATUS AND METHOD FOR TOWING A TRACTOR EQUIPPED WITH A FRONT END LOADER

Martin Hesterman, Box 45, Ormiston, Saskatchewan, Canada S0H 3H0

Filed Jul. 25, 1990, Ser. No. 559,159
Int. Cl.[5] B62D *53/00*
U.S. Cl. 414—685 **9 Claims**



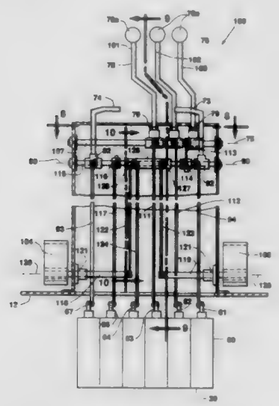
1. A tractor having front and rear wheels, comprising a front end loader bucket having a substantially planar lower wall, a rear wall and a curved interconnecting wall, and means for attachment of the tractor to a highway tractor vehicle for towing the trailer, said highway tractor vehicle having a fifth wheel device typically associated with a trailer for high speed highway travel, said attachment means comprising axle and ground wheel means including means for coupling said axle to said tractor rearwardly of said rear wheels, and a kingpin device for cooperating with said fifth wheel device in a towing position comprising a plate, a pin extending from said plate at right angles thereto, and a bracket for mounting said plate and pin on said bucket at said interconnecting wall thereof, said bracket being shaped and arranged such that the plate and pin are positioned so that they are wholly above the plane of the lower wall and, when the bucket is pulled upwardly to a rolled-back position, the plate is substantially horizontal and the pin projects vertically downwardly for engaging the fifth wheel device whereby the pin is engagable with the fifth wheel device, and the tractor may be towed by the highway tractor vehicle.

5,056,985

BACKHOE CONTROL MECHANISM

Russell I. Johnson, Leonard, Mich.; Garry L. Ball, Lancaster, Pa., and John O. Steinkamp, Milford, Mich., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 8, 1989, Ser. No. 447,744
Int. Cl.[5] E02F *3/42*
U.S. Cl. 414—694 **5 Claims**



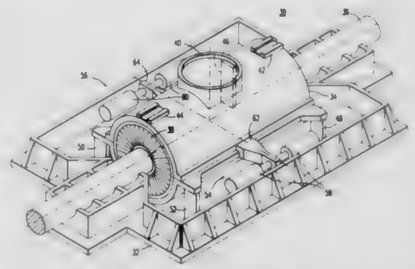
1. In a backhoe having a prime mover including a wheeled frame and an operator's cab mounted on said frame; an articulated boom assembly pivotally connected to said frame for movement about a generally vertical axis, said boom assembly having a mounting member pivotally supported from said frame, a boom member pivotally connected to said mounting member for movement about a generally horizontal axis carried by said mounting member, a dipper member pivotally connected to said boom member for movement in a generally vertical plane relative to said boom member, and a working tool pivotally connected to a distal end of said dipper member and being movable in a generally vertical plane relative to said dipper member; a hydraulic system operably associated with said boom assembly to effect the articulated movements thereof and to effect movement of said boom assembly about said generally vertical axis, said hydraulic system including a swing hydraulic cylinder interconnecting said frame and said mounting member to effect pivotal movement thereof about said generally vertical axis, a boom hydraulic cylinder interconnecting said mounting member and said boom member to effect pivotal movement of said boom member in said generally vertical plane, a dipper hydraulic cylinder interconnecting said boom member and said dipper member to effect pivotal movement of said dipper member relative to said boom member, and a bucket cylinder operatively interconnecting said dipper member and said working tool to effect pivotal movement thereof relative to said dipper member, said hydraulic system further including a source of hydraulic fluid under pressure in flow communication with each of said hydraulic cylinders to power the operation thereof and a hydraulic valve body having a movable spool associated with each said hydraulic cylinder to control the flow of hydraulic fluid thereto; and a control mechanism operatively associated with said hydraulic system to control the flow of said hydraulic fluid under pressure to said hydraulic cylinders to power the operation thereof by controlling the movement of said spools, an improved control mechanism comprising:
a plurality of control levers pivotally mounted for movement about a first pivot axis, some of said spools associated with the hydraulic cylinders to be controlled with the pivotal movement of a corresponding control lever being transversely displaced relative to the plane of pivotal movement of said corresponding control lever;
a plurality of linkage members pivotally supported for movement about a second pivot axis vertically spaced below said first pivot axis, selected ones of said linkage members being operable to transfer movement of a selected said control lever to actuate a corresponding said spool spaced transversely of the plane of movement of said selected said control lever, said linkage members being selectively positionable along said second pivot axis to permit each said control lever to effect actuation of a selected one of said spools; and
links interconnecting said control levers, said linkage members, and said spools to effect movement of each of said spools in response to the movement of the selected corresponding said control lever, thereby permitting said control mechanism to be selectively converted between configurations comprising two levers, three levers and four levers by adding or removing the additional levers along the first axis and connecting or unconnecting the appropriate linkage members and links between the levers and spools without changing the orientation of the spools.

5,056,986

INNER CYLINDER AXIAL POSITIONING SYSTEM

George J. Silvestri, Jr., Winter Park; Alvin L. Stock, Casselberry, and Michael Twerdochlib, Oviedo, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 22, 1989, Ser. No. 440,070
Int. Cl.[5] F01D *21/00*
U.S. Cl. 415—14 **19 Claims**



1. A positioning system for a steam turbine element having a rotor supporting plural rows of rotating blades, an inner cylinder supporting plural rows of stationary blades in alternating relationship with the rows of rotating blades so that the inner cylinder has an axial length which encompasses the plural rows of rotating and stationary blades, and an outer cylinder, the system comprising:
a plurality of movable support members supporting the inner cylinder within the outer cylinder with the rows of stationary blades and rows of rotating blades at a predetermined axial position relative to each other; and
means for driving the inner cylinder and thus the plural rows of stationary blades axially in a direction corresponding to a direction of axial movement of the rotor, thereby maintaining the predetermined axial position of the rows of rotating and rows of stationary blades.

5,056,987

CROSS FLOW FAN SYSTEM

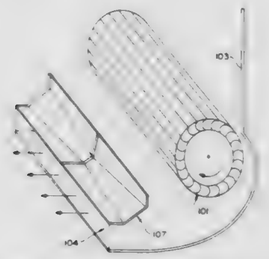
Syozo Tanaka, Nara, and Yoshiharu Shinobu, Kashiharashi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 150,390, Jan. 29, 1988, Pat. No. 4,913,622. This application Aug. 8, 1989, Ser. No. 390,833

Claims priority, application Japan, Jan. 30, 1987, 62-20890; Mar. 10, 1987, 62-54693; Mar. 10, 1987, 62-55067; Oct. 20, 1987, 62-160608[U]

Int. Cl.[5] F04D 5/00

U.S. Cl. 415—53.1 19 Claims



1. A cross flow fan system having an inlet and an outlet comprising:

a rear guider defining a portion of the inlet and the outlet and having a rear side;

a cross flow fan being rotatable to drive air from the inlet to the outlet of said system, said air being driven through a side of the cross flow fan next to said rear side of said guider by rotation of said cross flow fan; and

a tongue extending along the length of the cross flow fan, said tongue being positioned between the rear guider and a front side of the cross flow fan, the tongue having a cross sectional shape which is different at a middle section thereof as compared to the ends thereof, the tongue having at least three contiguous surfaces, a first surface positioned adjacent the outlet in a direction generally parallel to a direction of travel of a majority of the air driven through the outlet, a second surface having a given width and positioned at an angle relative to the first surface and a third surface having a given width and said third surface being positioned generally perpendicular to the first surface, the width of the second surface at the middle section of the tongue being different from the width of the second surface at the ends of the tongue.

5,056,988

BLADE TIP CLEARANCE CONTROL APPARATUS USING SHROUD SEGMENT POSITION MODULATION

Robert J. Corsmeier, Cincinnati, and Wu-Yang Tseng, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 12, 1990, Ser. No. 480,198

Int. Cl.[5] F01D 11/08

U.S. Cl. 415—173.2 22 Claims

1. In a gas turbine engine including a rotatable rotor having a central axis and a row of blades with outer tips and a stationary casing with a shroud disposed in concentric relation with said rotor, an apparatus for controlling the clearance between said rotor blade tips and casing shroud, said apparatus comprising:

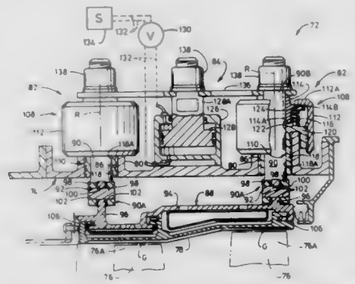
(a) a shroud segment defining a circumferential portion of said casing shroud and being separate from and spaced radially inwardly of said casing;

(b) at least one mounting structure on said stationary casing defining a passage between exterior and interior sides of said casing, said mounting structure being spaced radially outwardly from said shroud segment;

(c) a shroud segment positioning mechanism supported by said mounting structure, coupled to said shroud segment, and being actuatable for moving said shroud segment toward and away from said rotor axis to respective inner and outer positions relative to said rotor at which corresponding desired minimum and maximum clearances are established between said shroud segment and rotor blade tips; and

(d) means coupled to said positioning mechanism and being operable for actuating said positioning mechanism to move said shroud segment solely to one or the other of said inner and outer positions thereof;

(e) said positioning mechanism including



(i) a support member mounted through said passage defined by said mounting structure for radial movement relative thereto and toward and away from said rotor axis, said support member having a longitudinal axis and opposite inner and outer end portions, said shroud segment being coupled to said inner end portion of said support member at said interior side of said casing, and

(ii) means for defining inner and outer stops being coupled to said mounting structure and said outer end portion of said support member and located at said exterior side of the casing.

5,056,989

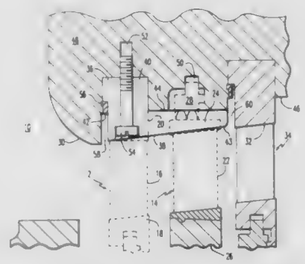
STAGE REPLACEMENT BLADE RING FLOW GUIDE

Joseph T. Turner; Anthony F. Ganci, both of Winter Park; Vernon J. Musko, Casselberry, and George J. Silvestri, Jr., Winter Park, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 1, 1990, Ser. No. 591,000

Int. Cl.[5] F01D 1/04

U.S. Cl. 415—189 4 Claims



1. Apparatus for reducing flow separation and turbulence in a multiple blade row steam turbine in which at least one blade row has been removed, the apparatus comprising a flow guide installed in the turbine circumscribing an area from which the at least one blade row was removed, the flow guide having a radially inner surface substantially conforming to an inner steam flow surface of the turbine adjacent to the other blade rows whereby a relatively smooth inner surface is presented to steam passing through the turbine.

2. A method of increasing mass flow and power output of a multiple blade row steam turbine, the method comprising the steps of:

machining away an airfoil section of each blade of at least one blade row;

removing a radially outer seal circumscribing the at least one blade row; and

installing a flow guide about the at least one blade row, the flow guide having a radially outer surface providing a relatively smooth surface conforming to an outer steam flow surface of the turbine adjacent to other turbine blade rows.

5,056,990

VARIABLE CAPACITY VANE COMPRESSOR

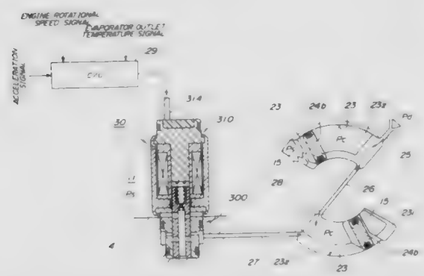
Nobuyuki Nakajima, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1989, Ser. No. 428,828

Claims priority, application Japan, Nov. 4, 1988, 63-144192[U]

Int. Cl.[5] F04B 49/00, 49/02

U.S. Cl. 417—295 8 Claims



1. In a variable capacity vane compressor having a cam ring, a pair of side blocks closing open opposite ends of said cam ring, a rotor rotatably received within said cam ring to define at least one compression space, a plurality of vanes radially slidably fitted in the vane slits of said rotor, a head fitted to an end face of one of said side blocks remote from said rotor to define a suction chamber, at least one inlet port formed in said one side block to communicate said suction chamber with said compression space, an annular recess formed in one end face of said one side block facing said rotor, a control element rotably received in said annular recess and having at least one pressure-receiving protuberance which defines at least one low pressure chamber disposed to be supplied with suction pressure from said suction chamber and at least one high pressure chamber for creating therein control pressure having a value higher than said suction pressure, communication passage means extending between said high pressure chamber and said suction chamber, and control valve means for opening and closing said communication passage means for varying said control pressure, wherein said control element rotates by the change of said control pressure to thereby vary compression starting timing in said compressor, resulting in varied capacity of said compressor,

the improvement wherein said control valve means comprises:

a spool valve displaceable between a valve opening position for opening said communication passage means and a valve closing position for closing said communicating passage means;

an electromagnetic actuator disposed to generate an electromagnetic force to cause said spool valve to assume said valve opening position when energized; and

control means arranged outside of said compressor for supplying said actuator with an external control signal for energizing same;

wherein said spool valve comprises a cylindrical valve casing having open opposite ends, said valve casing having inlet port means and outlet port means both formed therein and communicating with said high pressure chamber and said suction chamber, respectively, a spool slidably received within said valve casing for displacement in an air-tight manner between said valve opening position and said valve closing position, said spool having formed therein inlet passage means alignable with said inlet port means when it assumes said valve opening position, outlet passage means always aligned with said outlet port means irrespective of a position assumed by said spool, and internal passage means communicating between said inlet passage means and said outlet passage means, and spring means urging said spool toward said valve closing position; and

said spool valve being disposed to open and close only said communication passage means while maintaining said outlet passage means always communicating with said outlet port means,

said control signal is an ON-OFF signal, said spool valve being disposed to open and close said communication passage means at a rate corresponding to a pulse duty factor of said ON-OFF signal for varying said control pressure in accordance with the pressure in accordance with the pulse duty factor.

5,056,991

CRYOGAS PUMP

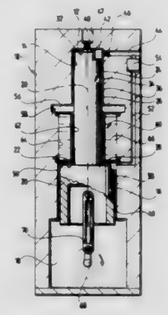
Walter Peschka, Sindelfingen, and Gottfried Schneider, Stuttgart, both of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.v., Fed. Rep. of Germany

Filed Mar. 8, 1990, Ser. No. 491,041

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907728

Int. Cl.[5] F25B 9/00

U.S. Cl. 417—439 20 Claims



1. Cryogas pump, in particular, a cryogas pump for cryogenic hydrogen fit for use in vehicles, comprising a cylinder housing and a piston which forms with said cylinder housing a first compression space for the cryogenic gas and which is mounted with a first piston section adjacent to said first compression space by a gas film in said cylinder housing, said cryogas pump having a second compression space with which said gas film is in communication and by means of which a flow of gas can be generated in said gas film in the direction of said first compression space.

5,056,992

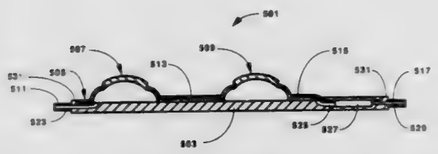
IV PUMP AND DISPOSABLE FLOW CHAMBER WITH FLOW CONTROL

Tad D. Simons, Menlo Park; Frederick A. Stawitcke, Sunnyvale, both of Calif.; William M. Reed, Carlisle, and Paul A. Tessier, Hudson, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 56,189, May 29, 1987, abandoned, which is a continuation of Ser. No. 170,351, Mar. 16, 1988, abandoned. This application Feb. 22, 1989, Ser. No. 314,322

Int. Cl.[5] F04B *45/08*

U.S. Cl. 417—474 29 Claims



2. A disposable pumping apparatus for use with first and second actuators for infusing fluids into patients under a pumping pressure, comprising:

base means for providing a base surface;

a first top portion having an inner surface spaced apart from said base surface and an outer surface positioned to contact said first actuator, said first top portion providing one side of said first pumping subchamber, an other side of said first pumping subchamber being provided by the base surface;

first flexible wall means connected to the base surface and to the inner surface of the first top portion for providing a first volume therebetween defining said first pumping subchamber, said first flexible wall means constructed of a material having a modulus of elasticity and a thickness such that when said first actuator is not moving said first cap means, said first flexible wall means does not collapse when subjected to a negative gauge pressure, said elasticity and said thickness also such that said first flexible wall means bends when said first actuator moves the first top portion relative to the base means;

a second top portion having an inner surface spaced apart from said base surface and an outer surface positioned to contact said second actuator, said second top portion for providing one side of said second pumping subchamber, an other side of said second pumping subchamber being provided by the base surface; and

second flexible wall means connected to the base surface and to the inner surface of the second top portion for providing a second volume therebetween defining said second pumping subchamber, said second flexible wall means constructed of a material having a modulus of elasticity and a thickness such that when said second actuator is not moving said second top portion, said second flexible wall means does not collapse when subjected to said negative gauge pressure, said elasticity and said thickness also such that said second flexible wall means bends when said second actuator means moves the second top portion relative to the base means;

inlet means connected to the first volume for permitting fluids to enter the first volume;

transfer means connected to the first volume and the second volume for providing a conduit for fluids being transferred between the first volume and the second volume;

outlet means connected to the second volume for permitting fluids to exit the second volume and wherein said outer surface of said first top portion is domed outwards relative to said base surface.

5,056,993

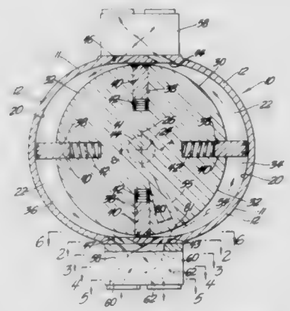
LIQUID INTAKE MECHANISM FOR ROTARY VANE HYDRAULIC MOTORS

Roger R. Smith, 7261 Lyons Rd., Imlay City, Mich. 48444

Continuation of Ser. No. 28,154, Mar. 17, 1987, abandoned. This application Nov. 20, 1990, Ser. No. 616,146

Int. Cl.[5] F01C *1/00*; F16L *9/00*

U.S. Cl. 418—259 11 Claims



1. A hydraulic motor comprising a housing having two parallel side walls, and an interconnecting circumferential wall; the interior surface of the circumferential wall defining a two-lobe epitrochoidal cavity; a rotor disposed within the housing for rotation on a central axis normal to the housing side walls; said rotor comprising a cylindrical hub having radial slots and a radial vane slidably disposed in each slot; the diameter of the cylindrical hub being the same as the minor dimension of the epitrochoidal cavity, the housing and rotor defining segmental working chambers:

the improvement comprising liquid intake means for minimizing turbulence and restrictions in the flow of liquid into the housing, there being a liquid intake means for at least one of the segmental chambers; the liquid intake means comprising an intake passage defined by the housing circumferential wall, the intake passage having a generally rectangular cross section terminating in a rectangular intake port on the wall interior surface; the intake port spanning substantially the entire distance between the two housing side walls; the liquid intake means further comprising a connector affixed to the housing having a duct therethrough such that the duct and the intake passage together form a smooth, continuous passage having a constant cross sectional area, the duct having a rectangular duct cross section at a proximal zone adjacent the intake passage and having a circular duct cross section at a distal zone remote from the intake passage, the duct cross section gradually changing from rectangular to circular between the proximal zone and the distal zone.

5,056,994

HYDROSTATIC ROTARY PISTON MACHINE HAVING INTERACTING TOOTH SYSTEMS

Siegfried Eisenmann, Conchesstrasse 25, and Hermann Härle, Conchesstrasse 23, both of D-7960 Aulendorf, Fed. Rep. of Germany

Filed Oct. 24, 1989, Ser. No. 427,236

Claims priority, application Switzerland, Oct. 24, 1988, 3943/88

Int. Cl.[5] F01C *1/10, 17/02*; F03C *2/08*

U.S. Cl. 418—61.3 13 Claims

1. A hydrostatic rotary piston machine comprising

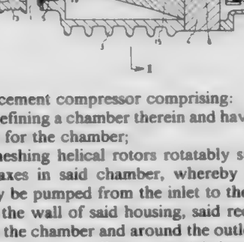
a displacement part for providing output,

a control part adjacent to the displacement part for supplying and removing operating fluid from the displacement part,

the displacement part having a rigid housing with a first inner tooth system, a rotatable, eccentrically arranged rotary piston with a first outer tooth system that intermeshes with the first inner tooth system, and a second inner tooth system,

a centrally mounted shaft with two ends, that passes at least through the control part, having a second outer tooth system that intermeshes with the second inner tooth system, and

mounting means for mounting the shaft at both ends,



wherein, the difference between the number of teeth of the first inner tooth system and the first outer tooth system is one, and the difference between the number of teeth of the second inner tooth system and the second outer tooth system is at least two, the outer tooth system in each case having the smaller number of teeth,

the control part having a rotary commutator and an arc gear with a transmission ratio of 1:1 for coupling the rotary commutator to the rotary piston.

5,056,995

DISPLACEMENT COMPRESSOR WITH REDUCED COMPRESSOR NOISE

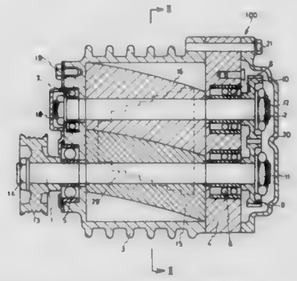
Shigehiro Tamura, Toyota; Hideaki Yoshidomi, Chiryu, and Toshio Takeda, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 23, 1990, Ser. No. 483,668

Claims priority, application Japan, Feb. 28, 1989, 1-47039

Int. Cl.[5] F04C *18/16*

U.S. Cl. 418—201.1 1 Claim



1. A displacement compressor comprising:

a housing defining a chamber therein and having an inlet and an outlet for the chamber;

a pair of meshing helical rotors rotatably supported about parallel axes in said chamber, whereby a compressible fluid may be pumped from the inlet to the outlet; and

a recess in the wall of said housing, said recess being positioned in the chamber and around the outlet, wherein said recess has a substantially trapezoidal shape, in plan, with non-parallel edges thereof being angled with respect to the axial direction of said rotors,

whereby noise producing pressure pulsations at the outlet are reduced,

wherein each of said non-parallel edges forms an angle with respect to the axial direction of said rotors, said angle being substantially equal to a twist angle of said rotors, and

wherein each of said non-parallel edges of said substantially trapezoidal shape is comprised of a plurality of stepped portions which together approximate a straight line having said angle.

5,056,996

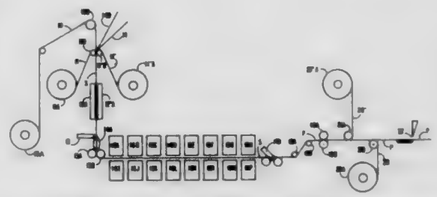
APPARATUS FOR MANUFACTURING CONTINUOUS, SUPPORTED POLYMERIC SHEETS FROM POLYMERIZABLE LIQUID STARTING MATERIALS

Theodore G. Papastavros, Weston; Samuel A. Alexander, Concord; Michael D. Benedict, Quincy; Vincent Cioffi, Braintree; Russell B. Hodgdon, Sudbury; Emery Richard, Lynn, all of Mass., and Winslow F. Tinkham, Ocala, Fla., assignors to Ionics, Incorporated, Watertown, Mass.

Continuation of Ser. No. 404,939, Sep. 8, 1989, abandoned. This application Feb. 25, 1991, Ser. No. 660,124

Int. Cl.[5] B29C *31/08*

U.S. Cl. 425—110 4 Claims



1. Apparatus for saturating foraminous substrates with fluid polymerizable liquid and subsequently polymerizing said liquid, said apparatus comprising:

(a) at least first, second and third roll support means, said first and third roll support means adapted to hold rolls of foil in substantially horizontal orientations, said second roll support means adapted to hold rolls of substrate in substantially horizontal orientations, said first, second and third roll support means presenting at least some resistance to the unwinding of said rolls of foil and substrate and positioned to permit substrate from said second roll support means to be unwound between foil unwound from said first and third roll support means;

(b) foil and substrate juxtapositioning means adapted to form a substantially vertically oriented, quasi-continuous sandwich by substantially vertically orienting, quasi-continuously substrate from said second roll support means, aligning and juxtaposing foil from said first roll support means on one side of said substrate and aligning and juxtaposing foil from said third roll support means on the other side of said substrate;

(c) positioned substantially vertically below said juxtapositioning means are nipping means adapted to squeeze the sandwich formed by said juxtapositioning means to a thickness substantially equal to the sum of the nominal thicknesses of the foil from said first and third roll support means and the substrate from said second roll support means;

(d) positioned substantially vertically below said juxtapositioning means and substantially vertically above said nipping means are sealing means adapted with said nipping means to form a substantially vertically oriented substantially leak-proof pocket in the sandwich formed by said juxtapositioning means by joining the lateral edges of the foil from said first roll support means to the juxtaposed lateral edges of the foil from said third roll support means from substantially said sealing means at least to said nipping means;

(e) at least one conduit means adapted to convey liquid into

said pocket formed by said sealing means and said nipping means;

(f) flow control means adapted to maintain the upper surface of said liquid in said pocket at a level which is substantially higher than said nipping means;

(g) traction means adapted to pull, at a substantially uniform linear velocity, foil from said first and third roll support means and substrate from said second roll support means through said juxtapositioning means, sealing means and nipping means in series and in a substantially horizontal direction after said nipping means; and

(h) between said traction means and said nipping means, a polymerization zone comprising sandwich support means adapted to maintain the said sandwich pulled by said traction means from said nipping means in a substantially horizontal orientation, said sandwich support means having a length which is at least sufficient for any fluid, polymerizable liquid in said sandwich pulled from said nipping means to cure at least to the glassy, gel or solid state.

5,056,997

APPARATUS FOR INJECTING A GAS INTO MOLTEN RESIN IN A CAVITY OF AN INJECTION MOLDING MACHINE

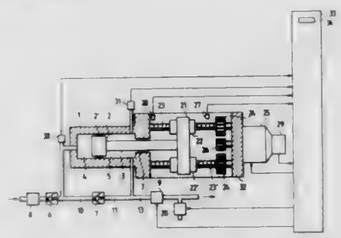
Hiromi Hayashi; Yasuaki Ichinose, both of Tokyo; Hiroshi Harada, Kanagawa, and Akimasa Kaneishi, Osaka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Incorporated, Chiyoda and Nireco Corporation, Hackioji, both of Japan

Filed Nov. 21, 1989, Ser. No. 439,421

Claims priority, application Japan, Nov. 22, 1988, 63-295347

Int. Cl.[5] B29C *45/16*

U.S. Cl. 425—130 **9 Claims**



1. An apparatus for pressurizing gas through two-stage compression and for injecting the pressurized gas into a molten resin to produce a molded article having a hollow part, comprising:

a compression cylinder defining a compression chamber, said compression chamber including oppositely positioned first and second sides;

a piston positioned in the compression chamber for reciprocating movement to perform two-stage compression of said gas, said piston being connected to a piston rod having a predetermined size so that a compression ratio of the gas at the first compression stage is determined by the ratio of a volume of the compression cylinder when the piston is moved to the second side of the compression chamber and the volume of the compression cylinder when said piston is moved to the first side of said compression chamber;

communication means for fluidly communicating the first side of the compression chamber with the second side of the compression chamber;

valve means disposed along the communication means for permitting the flow of fluid from the first side of the compression chamber to the second side of the compression chamber during a first compression stage in which the piston moves toward the first side of the compression chamber, and for isolating the first side of the compression chamber from the second side of the compression chamber during a second compression stage in which the piston moves toward the second side of the compression chamber;

a gas supplying conduit pipe through which said gas can be supplied to the compression chamber, said gas supplying conduit being in fluid communication with the compression chamber;

a conduit pipe for permitting said pressurized gas which has been pressurized in the compression chamber to be supplied to an injection molding apparatus, said conduit pipe being in fluid communication with the compression chamber; and

a motor for causing reciprocating movement of the piston within the compression chamber, said motor having an output shaft which is coupled to two feed screws, said piston being connected to a piston rod and said piston rod being connected to a sliding block, said sliding block being fixedly connected to ball nuts mounted on the feed screws so that operation of the motor causes rotation of the output shaft and the feed screws which in turn cause movement of the sliding block relative to the feed screws and corresponding movement of the piston.

5,056,998

APPARATUS FOR PRODUCING A SET OF MUTUALLY DISTINGUISHABLE FLOORING TILES

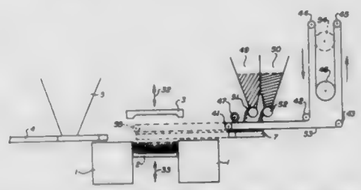
Johannes F. H. Goossens, Maastricht, Netherlands, assignor to Koninklijke Mosa B.V., Maastricht, Netherlands

Division of Ser. No. 216,278, Jul. 8, 1988, Pat. No. 4,939,010. This application Mar. 5, 1990, Ser. No. 488,953

Claims priority, application Netherlands, Jul. 8, 1987, 8701601

Int. Cl.[5] B29C *43/20*

U.S. Cl. 425—130 **4 Claims**



1. Apparatus for producing flooring tiles comprising

a mold having upper and lower stamps,

first supply means for supplying a first quantity of material for a ground layer of the flooring tile on the lower stamp and

second supply means for supplying a second quantity of material on the ground layer on the lower stamp for an upper layer of the flooring tile, whereby said second supply means is comprised of a plurality of containers holding differently colored materials for said upper layer, a slide with a sieve thereunder, said slide being movable between a starting position where it is in communication with the discharge of said containers and a depository position over said lower stamp, said first and second quantities of material define a substrate and

third supply means for supplying a third quantity of material onto said substrate comprising a drivable conveyor belt which collects said third quantity of material from one or more strewing bins as a portion of the belt is horizontally displaced from a first position to a second position above said lower stamp and which thereafter deposits said third quantity of material from a discharge end of said conveyor belt onto said substrate by driving said conveyor belt as the portion of the belt is horizontally displaced back toward said first position and further comprising one or more metering rollers for depositing said third quantity of material onto said belt from said strewing bin.

5,056,999

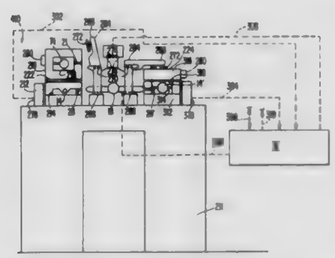
APPARATUS FOR FORMING OBJECTS FROM A MOLDABLE MATERIAL

Larry A. Lewis; David L. Kring, both of Whitehall, and Otto F. Ernst, New Era, all of Mich., assignors to Howmet Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 342,898, Apr. 25, 1989. This application May 24, 1989, Ser. No. 356,238

Int. Cl.[5] B29C *45/80*

U.S. Cl. 425—150 **12 Claims**



1. An apparatus for forming objects from a moldable material, comprising:

a lower mold piece including a lower half of a mold cavity;

an upper mold piece including an upper half of the mold cavity, said upper mold piece being pivotably connected to said lower mold piece at a first pivot point;

a lever arm having a proximal end and a distal end, said distal end extending outwardly from said upper mold piece;

actuator means, pivotably connected to said distal end of said lever arm at a second pivot point, for pivoting said lever arm and said upper mold piece about said first pivot point to move said upper mold piece and said upper mold cavity half in an arcuate path between a closed position, in which said upper and lower mold pieces and said upper and lower mold cavity halves are juxtaposed to close the mold cavity, and an open position in which said upper and lower mold cavity halves are spaced from one another to open the mold cavity;

said proximal end of said lever arm being pivotally connected to said upper mold piece at a third pivot point; and

spring means for biasing said lever arm toward said upper mold piece about said third pivot point and for accommodating over-travel of said actuator means.

5,057,000

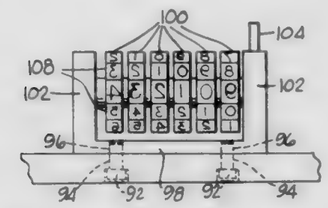
APPARATUS FOR MOLDING SEQUENTIALLY IDENTIFIED PRODUCTS

Peter G. Mangone, Jr., 28600 Buchanan Dr., Evergreen, Colo. 80439

Filed Jun. 21, 1990, Ser. No. 541,833

Int. Cl.[5] B29C *33/00*

U.S. Cl. 425—190 **15 Claims**



1. Molding apparatus comprising:

at least two mold parts separable after each molding operation and having mating surfaces which define therebetween at least one molding cavity and at least one injection channel opening into said at least one molding cavity for forming at least one molded product;

identification forming means as an integral part of said at least one cavity for forming identifying indicia on said at least one molded product;

said identification forming means comprising a plurality of rotatable members;

each of said rotatable members having an outer surface, said outer surface having a plurality of circumferentially spaced apart indicium forming means for forming one of said identifying indicia;

each of said indicium forming means forming a different indicium;

moving means located adjacent to said at least one cavity for rotating at least one of said rotatable members by increments so that said indicium forming means on said outer surface are presented one by one to said molding cavity and to rotate another of said rotatable members after said at least one one of the said rotatable members has been rotated through one complete revolution; and

actuating means to actuate said moving means by an increment during each cycle of operation of said at least two mold parts.

5,057,001

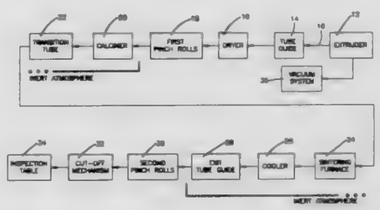
APPARATUS FOR MAKING CERAMIC TUBES

James L. Eucker, Fairview Park; Robert C. Ruhl, Cleveland Heights, both of Ohio, and Irving B. Ruppel, Jr., Kenmore, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 10, 1989, Ser. No. 322,482

Int. Cl.[5] B29C *47/88, 35/02, 35/16*

U.S. Cl. 425—315 **40 Claims**



1. Apparatus for manufacturing ceramic tubes from a mixture including ceramic powder, comprising:

an extruder adapted to receive the mixture, the extruder having a die of a pre-determined cross-section through which the mixture can be extruded to form a tube, the movement of the tube establishing a path of travel;

a dryer disposed downstream of the extruder, the dryer having a through opening through which the tube can be moved, the dryer having a longitudinally extending tube guide that supports the tube during its passage through the dryer;

a calciner disposed downstream of the dryer, the calciner having a through opening through which the tube can be moved, the calciner having a longitudinally extending tube guide that supports the tube during its passage through the calciner;

a sintering furnace disposed downstream of the calciner, the sintering furnace having a through opening through which the tube can be moved, the sintering furnace having a longitudinally extending tube guide that supports the tube during its passage through the sintering furnace;

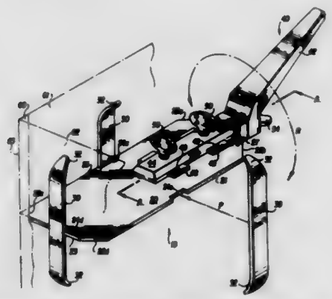
a cooler disposed downstream of the sintering furnace, the cooler having a through opening through which the tube can be moved, the cooler having a longitudinally extending tube guide that supports the tube during its passage through the cooler; and

means for cutting the tube, the means for cutting the tube being disposed downstream of the cooler.

5,057,002
BEAD SHAPER

Preston D. Whited, 2008 Milford St., Winston-Salem, N.C. 27107, and Ralph T. Hayes, Jr., P.O. Box 708, Clemmons, N.C. 27012

Filed Apr. 6, 1990, Ser. No. 505,485
Int. Cl.[5] B29C *59/02*; B05C *17/10*
U.S. Cl. 425—458 **20 Claims**

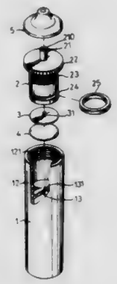


1. Apparatus for shaping beads of a fluent material laid between the seam of two intersecting surfaces, comprising blade means for shaping the fluent material, said blade means having a plurality of edges, and skid means disposed on at least one of said edges for contacting at least one of said intersecting surfaces, said skid means comprising an elongated member, narrow as compared with the length of an adjacent one of said edges, inserted transversely of said one edge.

5,057,003
GAS CANDLE

Chao-Ming Yang, No. 20, Lane 2, Kuang Wu Street, Pan Chao, Taipei Hsien, Taiwan

Filed Apr. 17, 1991, Ser. No. 686,519
Int. Cl.[5] F23Q *2/32*
U.S. Cl. 431—125 **1 Claim**



1. A gas candle, comprising:
a casing having a division plate dividing the holding space thereof into an enclosed gas chamber at the bottom for containing illuminating gas and a cylindrical control chamber at the top, said division plate having a gas outlet hole permitting illuminating gas to discharge from said enclosed gas chamber into said control chamber, said control chamber having an outer thread portion;
a sealing cover placed on said division plate at the top, to seal said gas outlet hole;
a pressure cushion placed on said sealing cover at the top, having a pin vertically projecting upwards at the center;
a gas flow rate regulating device comprising a cylindrical body set in said control chamber, said cylindrical body having nozzle tip disposed at the top and defining therein a gas passage way longitudinally piercing through said cylindrical body, an outer thread portion on the outer wall surface thereof screwed up with said inner thread portion of said control chamber, an annular groove around the outer wall surface thereof at a position below said outer thread portion, and an O-ring mounted on said annular groove to seal the gap between said cylindrical body and said control chamber; and
wherein said gas flow rate regulating device can be screwed upwards in said control chamber to regulate illuminating gas flow rate discharging out of said cylindrical casing through said nozzle tip or screwed downwards in said control chamber to drive said pressure cushion to force said sealing cap to seal said gas outlet hole.

5,057,004
SPRAY BURN FLOATING COMBUSTIBLE MATERIAL BURNER

Ian R. McAllister, 3922 W. 11th Avenue, Vancouver, B.C., Canada V6R 2L2

Filed Jul. 17, 1990, Ser. No. 553,973
Int. Cl.[5] F23D *11/00*
U.S. Cl. 431—202 **22 Claims**

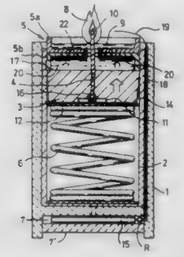


1. A spray burn, floating combustible material burner apparatus for removing a floating layer of combustible material from the surface of a body of water, comprising:
a. a support frame;
b. a buoyancy system attached to said support frame which enables said apparatus to float in said body of water, said buoyancy system being attached to said support frame such that when said apparatus is placed in said body of water, said support frame is submerged therein;
c. an air nozzle attached to said apparatus such that said air nozzle is disposed beneath said floating layer of combustible material when said apparatus is placed in said body of water, said air nozzle being attached to an adjustable supply of compressed air capable of lifting and atomizing said floating layer of combustible material into a combustion region located above said apparatus;
d. an air nozzle adjustment means disposed between said support frame and said air nozzle, said air nozzle adjustment means being capable of vertically adjusting the position of said air nozzle with respect to the surface of said body of water;
e. a drop-catching means attached to said apparatus positioned above said air nozzle, said drop-catching means being capable of catching ignited combustible material droplets which might fall from said combustion region when said apparatus is operating, said drop-catching means having a lower section;
f. a deflection plate attached to said drop-catching means, said defection plate having a lower circular opening, said lower circular opening being located above said air nozzle so that said adjustable supply of compressed air may be transmitted through said deflection plate and into said combustion region, said lower circular opening being capable of inducing the air current between said deflection plate and the surface of said floating layer of combustible material towards said lower circular opening when said compressed air is transmitted through said lower circular opening, whereby said air current acts to induce the flow of said floating layer of combustible material towards said air nozzle during operation;
g. a stabilization plate attached to said apparatus, said stabilization plate being attached to said apparatus such that said stabilization plate is disposed along said surface of said body of water when said apparatus is placed thereon, said stabilization plate being capable of stabilizing said apparatus in said body of water and being capable of inducing the flow of said floating layer of combustible material towards said air nozzle using normal wave action, and;
h. an ignition source used to ignite the atomized said floating layer of combustible material.

5,057,005
CANDLE DEVICE

Wai-Shi Kwok, Room 26, 25th Floor, Block C, Metropole Bldg., 7 King's Rd., North Point, Hong Kong

Filed May 25, 1989, Ser. No. 356,687
Int. Cl.[5] F23D *3/02*
U.S. Cl. 431—253 **14 Claims**

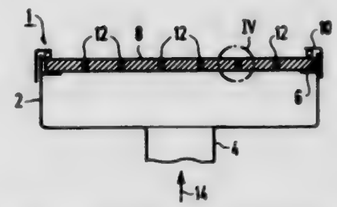


1. A candle device comprising a candle housed in a container having a bottom and a compartment formed at the bottom, a cover comprising a thermally-insulating plate located on top of the container and covering an upper surface of the candle, the plate having an aperture through which a wick of the candle projects, means for urging the candle upwardly in the container, a thermally conducting member which conducts heat from the region of the candle wick to the compartment, a music generator disposed in the compartment, and switching means disposed in the compartment for switching on said music generator to play music responsive to the heat conducted by said member, said switching means comprising a sealed container having a wall comprising at least in part a flexible membrane, said thermally-conducting member being in thermal contact with contents of the container to heat the contents, whereby the contents of the container expand and cause said membrane to flex outwardly, and a pressure-sensitive switch located in the path of said membrane and activated by the membrane to turn on the music generator.

5,057,006
BURNER PLATE FOR A FLAT BURNER

Ulrike Follert, Altendunstadt, and Jochen Jacobitz, Michelau/-Lettenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 24, 1990, Ser. No. 632,542
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942691
Int. Cl.[5] F23D *14/12*
U.S. Cl. 431—328 **15 Claims**

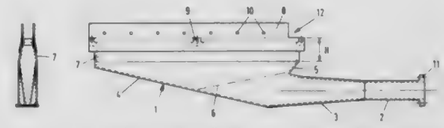


1. Flat burner, comprising a burner plate formed of an Al_2. TiO_5 ceramic having a surface, said burner plate having fuel gas passage openings formed therein being distributed over said surface.

5,057,007
LOW NO_x ATMOSPHERIC GAS BURNER

Willem W. Andringa, Beekbergen; Terence A. Devlin, Apeldoorn, and Hermanus J. Meuleman, Kaliumstraat, all of Netherlands, assignors to Remeha Fabrieken, Netherlands

Filed Oct. 16, 1989, Ser. No. 422,154
Claims priority, application Netherlands, Jan. 6, 1989, 8900030
Int. Cl.[5] F23D *14/12*
U.S. Cl. 431—328 **12 Claims**



1. A low NO_x atmospheric gas burner comprising at least one burner tube having a plurality of gas outlet orifices terminating in a burner bed, and a plurality of plates disposed above the burner tube within reach of a flame produced by said burner, said plates lowering a temperature of the flame and effecting a stepped combustion, characterized in that said plates (8) extend parallel to, and on opposite sides of, the orifices provided in the burner tube, said orifices being arranged in a line parallel to the burner axis, and said plates being connected directly to the burner tube substantially throughout an entire length of their lower edges.

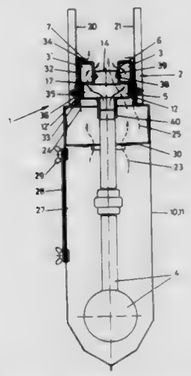
5,057,008
LINE BURNER

Gerardus C. Dielissen, Keerbergen, Belgium, assignor to Maxon International n.V., Belgium

Continuation of Ser. No. 385,803, Jul. 26, 1989, abandoned. This application Feb. 15, 1991, Ser. No. 657,342
Claims priority, application European Pat. Off., Jul. 26, 1988, 88111991
Int. Cl.[5] F23A *14/22*
U.S. Cl. 431—351 **22 Claims**

1. A line burner, comprising
a burner housing including a pair of spaced-apart interior side walls,

means for passing a stream of combustion air in the burner housing along each of said pair of spaced-apart interior side walls to provide a pair of spaced-apart curtains of air, a pair of elongated fuel gas manifolds arranged to lie in a space between the pair of spaced-apart curtains of air and in spaced-apart relation to define a channel therebetween, each of said pair of elongated fuel gas manifolds formed to include a plurality of fuel gas ports, and



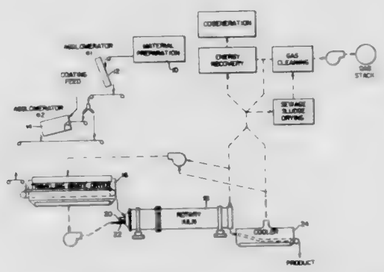
means for supplying combustion air through the channel provided between the pair of fuel gas manifolds to mix in the channel with fuel gas discharged from said fuel gas ports of the pair of fuel gas manifolds to create an air and fuel gas mixture that is ignitable to produce a flame in the burner housing in said space between the pair of spaced-apart curtains of air.

5,057,009

LIGHTWEIGHT AGGREGATE FROM FLYASH AND SEWAGE SLUDGE

Timothy M. Nechvatal, Waukesha, and Glenn A. Heian, Franklin, both of Wis., assignors to Wisconsin Electric Power Company, Milwaukee, Wis.

Filed Jan. 11, 1991, Ser. No. 640,184
Int. Cl.[5] F27B *15/00*; F23G *5/00*
U.S. Cl. 432—14 **19 Claims**



9. A method of treating flyash and sewage sludge, comprising:

mixing flyash with sewage sludge having a high fuel value;

agglomerating the mixture;

drying the agglomerated mixture;

heating the agglomerated mixture to a temperature less than the melting point of the mixture in a rotary kiln using the agglomerated mixture as the principal source of fuel in the kiln to form a porous nodular product; and

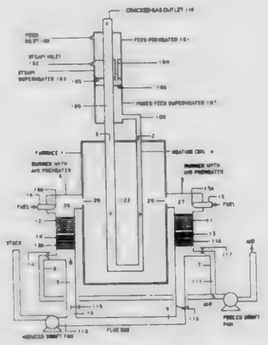
recovering the nodular product from the kiln.

5,057,010

FURNACE FOR HEATING PROCESS FLUID AND METHOD OF OPERATION THEREOF

Frank W. Tsai, 1842 Alpine Dr., San Marino, Calif. 91108

Filed May 15, 1990, Ser. No. 523,384
Int. Cl.[5] F27D *17/00*
U.S. Cl. 432—179 **14 Claims**



1. In an industrial furnace, the combination comprising:

(a) means forming first, second, third, fourth, and fifth zones connected in flow passing sequence,

(b) a primary heat regeneration means at first zone, and a secondary heat regeneration means at the fifth zone,

(c) a primary fuel burner means at the second zone and a secondary fuel burner means at the fourth zone,

(d) tubing means in the third zone for passing process fluid to be heated by hot combustion gases flowing in that zone, the third zone located generally between said second and fourth zones,

(e) and means for flowing one stream of air through said first zone to be preheated therein and into said second zone for combustion with fuel supplied via said primary burner means, thereby to produce hot combustion gases that flow through the third zone and fourth zone to said fifth zone for transfer of heat to process fluid and for heating said secondary heat regeneration means, all during a first time interval, and for flowing another stream of air through said fifth zone to be preheated therein, and into said fourth zone for combustion with fuel supplied via said secondary burner means, thereby to produce hot combustion gases that flow through the third zone and second zone to said first zone for transfer of heat to the process fluid and for heating said primary heat regeneration means, all during a second time interval,

(f) and control means for controlling said air flow on a cyclically repeated basis,

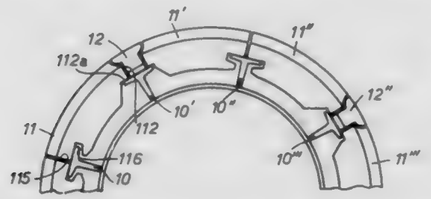
(g) and including NO_x catalyst bed means located in flow passing sequence with at least one of said primary and secondary heat regeneration means.

5,057,011

FURNACE GRATE ROLLER NAMELY FOR INCINERATING REFUSE WITH A TUBULAR CASING FORMED BY RINGS OF BARS SEPARATED BY BLOW GAPS OF SET WIDTH

André Le Lan, Marley-Le-Roi, and José de Freitas, Carrieres-Sur-Seine, both of France, assignors to Fours Picard, Rueil-Malmaison, France

Filed May 24, 1990, Ser. No. 527,829
Claims priority, application France, May 25, 1989, 89 06852
Int. Cl.[5] F27D *3/00*
U.S. Cl. 432—236 **12 Claims**



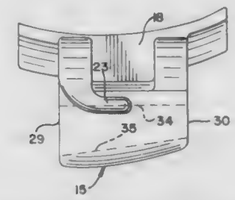
1. Furnace grate roller intended mainly for incinerating refuse and comprising a cascade of rollers driven in rotation about parallel horizontal axes, each roller comprising a cylindrical cage framework, with longitudinal members disposed between two flanges along generatrices regularly spaced around the periphery and a tubular casing formed by a plurality of groups of circular rings generally in planes perpendicular to the axis and in axial sequence from one flange to the other, gaps being provided between the rings for blowing combustion-supporting air, while the rings are segmented, comprising a plurality of arcuate bars which are mounted with play between two adjacent longitudinal members, and intermediate members associated with the respective groups of rings and fixed to the longitudinal members so as to limit relative axial movement of the bars in the groups, each intermediate member being fixed longitdinally to a longitudinal member over the axial dimension of a group of rings, between contiguous bar ends, the intermediate member and the contiguous bar ends having respective and complementary nesting configurations adapted to limit the relative movement of the bar ends in the axial, radial and peripheral directions.

5,057,012

MOLAR TUBE APPLIANCE FOR A LIP BUMPER OR A FACE BOW

Christopher K. Kesling, LaPorte, Ind., assignor to TP Orthodontics, Inc., Westville, Ind.

Continuation-in-part of Ser. No. 460,287, Jan. 3, 1990, abandoned. This application Dec. 21, 1990, Ser. No. 632,473
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—17 **11 Claims**



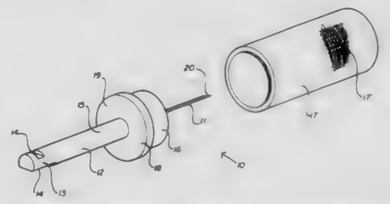
1. A molar tube for a lip bumper or a face bow comprising, a base having a lingually facing attaching surface for attaching to a tooth, an elongated mesialdistally extending tubular body projecting buccally from said base, said body including an opening therethrough for receiving the distal ends of a lip bumper or a face bow and having an inside lingual wall and an outside buccal wall, said opening being flared from the distal end to the mesial end such that the mesial end is larger than the distal end and of a size substantially larger than the distal end of a lip bumper or a face bow, said distal end of the opening being round and sized to closely receive the distal end of the lip bumper or face bow to provide lateral control, said mesial end being oval and having a vertical dimension to closely receive the distal end of the lip bumper or face bow to control tipping, and the long axis of the oval mesial end extending generally horizontally, whereby insertion of a distal end of a lip bumper or a face bow is greatly enhanced.

5,057,013

DENTAL CORTICAL PLATE PERFORATOR

Frank J. Dillon, 39 Eglington Rd., Donnybrook, Dublin 4, Ireland

Filed May 2, 1988, Ser. No. 188,966
Claims priority, application Ireland, May 19, 1987, 1308/87
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—165 **6 Claims**



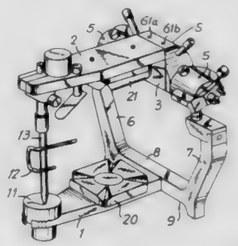
1. A dental apparatus for perforating the cortical plate of human maxillary and mandibular bones, comprising a solid metal needle fixed in a shank, the shank being formed with means for cooperation with and fixing of the shank into a dental handpiece, the shank having a collar at its front end, and a hollow protective cap removably fitted over the exposed needle and engaging the collar.

5,057,014

ARTICULATOR FOR DENTISTRY

Manfred P. Zeiser, Im Wolfsgalgen 8, 7141 Schwieberdingen, Fed. Rep. of Germany

Filed Jun. 29, 1990, Ser. No. 546,439
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1989, 3922078
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—57 **22 Claims**



1. An articulator for dentistry, comprising a base plate; an extension plate arranged at a distance from said base plate; a frame including two parallel columns and a traverse turnably supported between said columns at a distance from said base plate, said base plate and said extension plate forming mold supports, said frame having a frame opening; a pin-shaped connecting element fixing said mold supports on said frame and extending partially through said frame opening with a

radial play so as to form an intermediate space between said pin-shaped connecting element and a wall of said frame opening; and a hardenable material filling said intermediate space, said mold support having a mold support opening, said connecting element being formed at a threaded screw extending partially through said mold support opening and partially through said frame opening, said mold support opening being formed as a threaded opening for said threaded bolt, said frame opening having a diameter which is greater than an outer diameter of said threaded bolt, said hardenable material filling said intermediate space between said threaded bolt and said wall of said frame opening, said frame opening being formed also as a threaded opening.

5,057,015

DENTAL HANDPIECE HAVING AN ARRANGEMENT TO FORM COMPATIBLE CONNECTIONS TO DIFFERENTLY DESIGNED ROTATABLE JOINTS

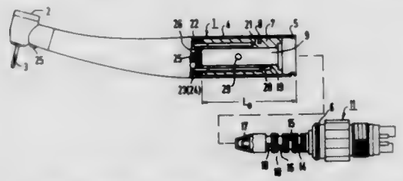
Otto Fleer, Bensheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 3, 1989, Ser. No. 431,247

Claims priority, application European Pat. Off., Nov. 14, 1988, 88118978.1

Int. Cl.[5] A61C *1/08*

U.S. Cl. 433—126 **17 Claims**



1. A dental handpiece having means for forming a compatible connection to differently design rotatable joints with different plug members that deliver different supply agents selected from air, water, electrical current and light, a rotatable joint being connectable to a supply hose, said means for forming compatible connection including an insert part of a plurality of insert parts, said handpiece having a sleeve-shaped end section at an end facing away from a head part for receiving said insert part, said insert part having an interior matched to one of the plug members of a rotatable joint for forming a rotatable connection therewith and enabling a transfer of agents from said plug member to the insert part, each of the insert parts having an exterior being matched to the interior of a sleeve portion of the dental handpiece, said exterior having outlet ports for communication to lines of said handpiece, said outlet ports being identically positioned for each of the insert parts so that by changing the insert part, the handpiece can be connected to a different type of rotatable joint which has a different configuration and shape.

5,057,016

FORCEPS HAVING REPLACEABLE TIPS FOR REMOVING A DENTAL PROSTHETIC

Stephen P. Lukase, Glendale, Ariz., and Thomas A. Lukase, 2670 Greentree La., La Jolla, Calif. 92037, assignors to Thomas A. Lukase, Glendale, Ariz.

Filed Oct. 23, 1990, Ser. No. 601,668

Int. Cl.[5] A61C *3/16*

U.S. Cl. 433—160 **20 Claims**

1. A pair of forceps for gripping in a non damaging manner a dental prosthetic device to effect removal of the dental prosthetic device, said pair of forceps comprising in combination:

a) a pair of handles for manipulating said pair of forceps;

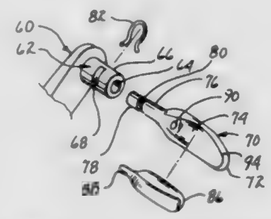
b) a pair of jaws extending from said pair of handles, each jaw being an extension of one handle of said pair of handles;

c) means for pivotally interconnecting said pair of handles to relocate said pair of jaws toward and away from one another;

d) a pair of studs, one of said pair of studs extending from each jaw of said pair of jaws;

e) a pair of tips for contacting opposed sides of the dental prosthetic device;

f) means for detachably attaching one tip of said pair of tips to each stud of said pair of studs;



g) a recess disposed in each tip of said pair of tips; and

h) an insert of a pair of inserts being disposed in each of said recesses for contacting the dental prosthetic device, each insert of said pair of inserts including means for restraining contact between the respective one of said tips and the dental prosthetic device.

5,057,017

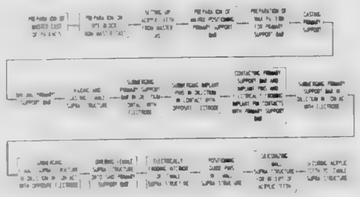
FIXED REMOVABLE DENTAL IMPLANT SYSTEM

Rannar Sillard, 206 Madison Ave., Lakewood, N.J. 08701

Continuation-in-part of Ser. No. 314,779, Feb. 24, 1989, Pat. No. 4,931,016. This application Apr. 30, 1990, Ser. No. 516,298

Int. Cl.[5] A61C *13/01*

U.S. Cl. 433—172 **4 Claims**



1. A process for the fabrication of a fixed removable dental implant having a primary support bar, a female supra structure secured to said primary support bar and acrylic teeth or prosthesis secured to said female supra structure comprising:

a. preparing a master cast of the patient's mouth;

b. preparing bite blocks with tracings and setting up said acrylic teeth for fit and aesthetics;

c. preparing a silicone matrix for the positioning of said primary support bar;

d. preparing a wax pattern of said primary support bar;

e. casting said primary support bar;

f. milling said primary support bar for proper shape;

g. waxing and casting said female supra structure;

h. connecting said primary support bar to an electrode and submersing said primary support bar in a mineral oil or dilectium bath;

i. connecting said implant pins to an opposing electrode and submersing said implant pins in said mineral oil or dilectium bath;

j. gradually contacting said implant pins and said primary support bar, electrically eroding the interior of said primary support bar to conform to the exterior configuration of said implant pins;

k. connecting said primary support bar to an electrode and submersing said primary support bar in a mineral oil or dilectium bath;

l. connecting said female supra structure to an opposing electrode and submersing said female supra structure in said mineral oil or dilectium bath;

m. gradually lowering said female supra structure onto said primary support bar, electrically eroding the interior of said female supra structure to conform to the exterior configuration of said primary support bar;

n. plasma welding guide pins to said female supra structure for path insertion of said female supra structure onto said primary support bar;

o. siliconizing the female supra structure for receipt of said acrylic teeth;

p. securing said acrylic teeth to said female supra structure.

5,057,018

MICROCRYSTALLINE INSERTS FOR MEGAFILLED COMPOSITE DENTAL RESTORATIONS

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association - Health Foundation, Gaithersburg, Md.

Continuation of Ser. No. 194,413, May 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 862,706, May 13, 1986, Pat. No. 4,744,759. This application Aug. 1, 1990, Ser. No. 561,357

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[5] A61C *5/04;* **A61K** *6/02*

U.S. Cl. 433—228.1 **7 Claims**

1. A method for repairing a dental cavity comprising filling the cavity with unhardened composite material or resin; selecting, from an array of assorted pre-formed dental inserts sized from about 0.5 to about 10 mm and shaped to fit typical dental cavities, an insert sized and shaped so as to fill the cavity as nearly as possible; pressing the insert into the unhardened composite or resin; removing excess extruded composite or resin; curing the composite material or resin; and contouring the surface of the insert and hardened composite material as needed; wherein said insert comprises a microcrystalline glass having a coefficient of thermal expansion less than about 5×10^{-6}/°K and containing one or more phases of beta-quartz solid solution, beta-spodumene solid solution, beta-eucryptite solid solution, stuffed beta-quartz and keatite; and wherein said insert is prepared by a method comprising:

a) preparing a mix consisting essentially of about 56 to about 60 percent SiO_2; about 16 to about 21 percent Al_2O_3; about 6 to about 8 percent Li_2O; about 5 to about 20 percent ZnO; about 3 to about 6 percent MgO; about 0 to about 6 percent TiO_2; about 0 to about 4 percent ZrO_2; about 0 to about 3 percent P_2O_5; about 0 to about 0.2 percent Fe_2O_3; and about 0 to about 2 percent CeO_2; to provide an X-ray opacity, shade, and visual translucency substantially within the range of human dentin and enamel upon treatment as specified hereinafter;

b) heating the mix to form a liquid;

c) mixing the liquid to homogenize it;

d) cooling the liquid to form cooled objects in assorted shapes and sizes, each of said objects being sized and shaped to full a typical dental cavity as nearly as possible with a single object; and

e) heat treating the cooled objects to obtain inserts having colors and visual translucency substantially within the range of human dentin and enamel, and to separate internal phases.

5,057,019

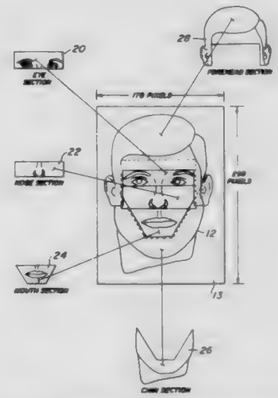
COMPUTERIZED FACIAL IDENTIFICATION SYSTEM

David W. Harvey, Youngsville, N.C., assignor to Sirchie Finger Print Laboratories, Raleigh, N.C.

Filed Dec. 23, 1988, Ser. No. 289,254

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—155 **9 Claims**



1. A process for creating a facial identification data base using a digital data processing system by digitizing and storing partial photographic images of the faces of real people comprising the steps of:

a. displaying an entire photographic facial image of a person;

b. providing a camera having sensors therein to receive said entire facial image to generate electrical signals corresponding to said facial image;

c. visually displaying said entire facial image from said camera;

d. adjusting said camera to pick up the entire facial image free of extraneous matter not required for creating said data base;

e. digitizing and electrical signals corresponding to said entire facial image form the sensors of said camera;

f. initializing specific image parameters of part of the digitized entire facial image from said camera to produce a preselected partial digitized image to block out other portions of said entire facial images, and

g. storing said partial digitized image for use in producing composite facial images when combined with other partial stored digitized partial images.

5,057,020

READING ENABLER

Kathryn F. Cytanovich, 161 California Ave., Palo Alto, Calif. 94306

Filed Apr. 15, 1986, Ser. No. 852,193

Int. Cl.[5] G09B *19/04*

U.S. Cl. 434—178 **7 Claims**

1. A reading machine to enable students to read information from a source of alphanumeric information comprising:

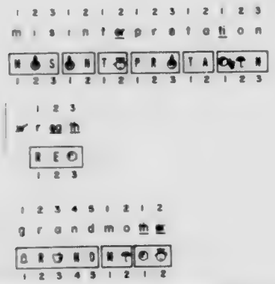
a memory containing words in augmented form;

alphanumeric information from the source; data entry means for entering information from scanner into memory;

an augmentor for adding symbols and numbers in association with the alphanumeric information from the source; and

display means for presenting the augmented information to

students in print or projected form, whereby information from the source is read by the scanner into a memory and



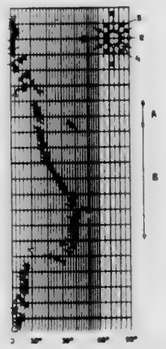
augmented with words and symbols for display in an easily readable form.

5,057,021

ARROW-PLOT WITH COLOR CODED AZIMUTH

Jean-Pierre Delhomme, Boulogne-Billancourt, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 18, 1990, Ser. No. 466,807
Claims priority, application France, Jan. 18, 1989, 89 00529
Int. Cl.[5] G09B *25/00*
U.S. Cl. 434—430 **9 Claims**



1. A method of representing information relating to the dip of earth formations by means of an arrow plot made up of nails, each nail having a head and a tip, the method comprising:

providing a local indication of amplitude of the dip and azimuth direction of the dip with the location of each nail head and the orientation of each nail tip respectively,

providing a global indication of dip azimuth direction by color coding each nail as a function of the direction of dip, the color being selected from a palette of colors that correspond to dip azimuth directions.

5,057,022

METHOD OF MAKING A SILICON INTEGRATED CIRCUIT WAVEGUIDE

Robert O. Miller, 5523 Vaden St., Box 99701, The Colony, Tex. 75056

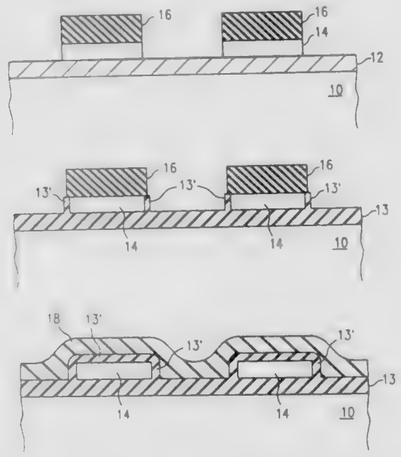
Continuation of Ser. No. 326,104, Mar. 20, 1989, Pat. No. 4,927,781. This application May 21, 1990, Ser. No. 528,126
Int. Cl.[5] H01L *21/76, 21/203*
U.S. Cl. 437—71 **1 Claim**

1. The method for fabricating a semiconductor waveguide, comprising:

providing a semiconductor substrate having a low or intrinsic level of dopant impurities;

forming a first layer of semiconductor material over one surface of the semiconductor substrate to a predetermined thickness;

forming a second layer of semiconductor material on the upper surface of the first layer of semiconductor material;



etching the second layer of semiconductor material to form at least one ridge that functions as an optical waveguide and having at least a lower surface adjacent the upper surface of the first layer of semiconductor material;

porifying the first layer of semiconductor material; and

converting the first layer of semiconductor material to silicon dioxide.

5,057,023

HIGH DENSITY CONNECTOR SYSTEM

Ashok N. Kabadi, Beaverton; Leonard O. Turner, Hillsboro, and Ronald C. Flamm, Newberg, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 1, 1990, Ser. No. 532,015
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **16 Claims**

1. A connector assembly for electrically connecting a flexible circuit with conductive pins of a surface mounted integrated circuit component , said flexible circuit defining a plurality of exposed conductive pads, said surface mounted integrated circuit component non-removably coupled to a printed circuit board, said connector comprising:

routing means for routing said flexible circuit towards said pins of said surface mounted integrated circuit component;

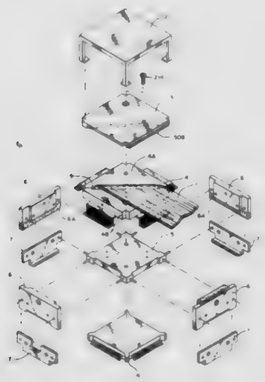
a plurality of side blocks, each of said plurality of side blocks coupled to said routing means;

a plurality of comb spacers coupled to a corresponding one of said blocks, each of said comb spacers defining a plurality of slots, each of said plurality of slots corresponding to an associated one of said pins of said surface mounted integrated circuit component;

a clamping means, said clamping means defining a plurality of legs said legs for fastening said connector to said surface mounted integrated circuit component;

a compressible material coupled to said side blocks, said compressible material for dampening a vertical force

created by said clamping means, when said clamping means is fastened to said surface mounted integrated circuit component, said flexible circuit coupled to a bottom side of said compressible material.

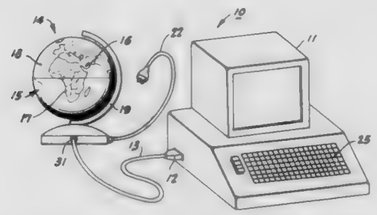


5,057,024

COMPUTERIZED GLOBE/ALMANAC SYSTEM

Glenn C. Sprott; Ruth J. Sprott, both of 10058 Cement Hill Rd., Nevada City, Calif. 95959, and Kevin C. Malone, Gin Cove Rd., Perry, Me. 04667

Continuation of Ser. No. 892,589, Aug. 1, 1986, abandoned. This application Aug. 22, 1988, Ser. No. 236,339
Int. Cl.[5] G09B *27/08*
U.S. Cl. 434—146 **6 Claims**



1. A computer controlled globe almanac comprising:

a globe having an outer surface;

means for rotating the globe to a selected viewing orientation relative to a viewer;

inserts attached to the globe outer surface via holes therein, said inserts defining regions and points corresponding to selected geographic and political features;

at least one illumination source, said illumination source optically coupled to a selected one of the inserts via one of said holes for internally illuminating said selected insert;

an optical light pipe means between said illumination source and said selected insert comprising an opaque cylinder in said one hole and a light pipe in said cylinder, for channeling light from said illumination source to said selected insert;

computer means controlling the rotating means to effect rotation of the globe to the selected viewing orientation and controlling activation of the illumination source to illuminate selected points and regions; and

the globe being mounted on a base housing, said base housing including power and control wiring for the globe rotation means and illumination source, said globe further comprising:

a shaft having one end mounted to the base housing and a second end extending into the globe for mounting the globe and routing said wiring into the globe;

a mounting plate mounted internally within the globe co-axially with said shaft;

said globe rotation means including a motor mounted on said mounting plate and adapted for rotating the globe about said shaft; and

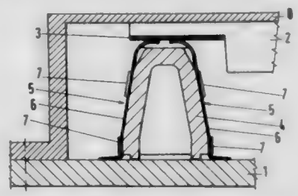
a slip ring assembly mounted on the second end of said shaft and to the mounting plate for connecting said wiring to said illumination source and said rotating means.

5,057,025

DISPLAY CONTACTS

Dieter Klatt, Wülfrath, and Dirk Pellizari, Wuppertal, both of Fed. Rep. of Germany, assignors to Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Aug. 22, 1990, Ser. No. 571,297
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927752
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—71 **11 Claims**



1. A display contact arrangement, comprising a display element with electrical contacts, which are arranged in a row next to each other, and a circuit board with corresponding electrical contacts; and an insulator body having side walls, at which are disposed parallel electrical leads, said electrical leads being arranged in an alternating and staggered fashion in a longitudinal direction relative to one another on said side walls of said insulator body and, with one end thereof, are in electrical contact with said corresponding contacts of said circuit board, and on which, on the other end thereof, respective contacts of said display element are resting in a resilient manner; and a press-on frame, which fixed, by mechanical means, said display element onto said insulator body; said display contact further comprising:

said other ends of said electrical leads that contact said display element being arranged such that said ends of a first row and said ends of a second row do not intermesh with one another, with a strip-shaped space being provided between said first and said second row.

5,057,026

ELECTRIC JUNCTION BOX

Mamoru Sawai; Mitsugu Watanabe; Hiroshi Suzuki, and Keiichi Ozaki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

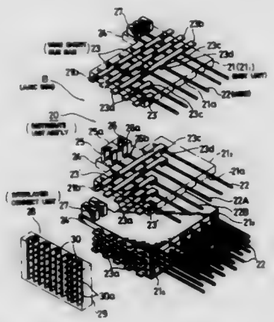
Filed Feb. 16, 1990, Ser. No. 480,975
Claims priority, application Japan, Feb. 16, 1989. 1-35100
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—76 **18 Claims**

1. An electric junction box, comprising:

(a) a plurality of stackable distributing units having end surfaces, each distributing unit including a plurality of parallel arranged wires connectable with at least one external subharness;

(b) wire shorting means arranged on each respective distributing unit so as to cross said parallel arranged wires, each wire shorting means being connected to at least one of said

parallel arranged wires arranged on said same distributing unit; and



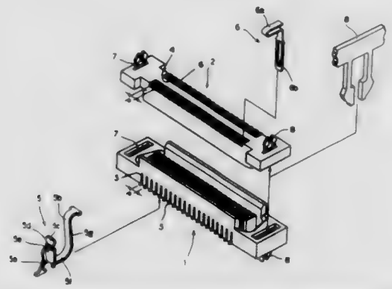
(c) interlayer connecting means, arranged so as to cross surface of said distributing units, for connecting said wires and said wire shorting means arranged on different distributing units.

5,057,027

FEMALE TERMINAL FOR AN ELECTRICAL CONNECTOR

Shoji Yamada, Mashida, and Masami Sasso, Kawasaki, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 11, 1991, Ser. No. 667,791
Claims priority, application Japan, Mar. 20, 1990, 2-28996[U]
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—83 9 Claims



1. A female terminal adapted for mounting in a housing of an electrical connector, the terminal comprising:

a T-shaped foot for soldering the terminal to a printed circuit board,

a contact section for engaging a mating male terminal,

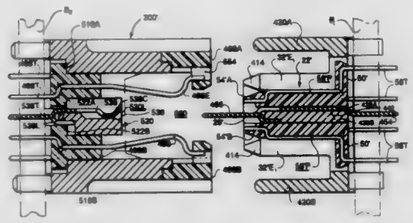
a mounting section, integrally connected with the T-shaped foot and the contact section, for mounting the terminal in the housing, wherein the terminal is stamped out from a flat metal strip, the stamped out terminal having a first and second opposite major sections, and wherein the T-shaped foot is bent substantially perpendicular to the first major surface of the mounting section and the contact section is formed such that it faces the second major surface of the mounting section.

5,057,028

RECEPTACLE HAVING A NOSEPEICE TO RECEIVE CANTILEVERED SPRING CONTACTS

Timothy A. Lemke, Carlisle; Richard A. Elco, Mechanicsburg, and Timothy W. Houtz, Etters, all of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 460,856, Mar. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 285,533, Dec. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 193,611, May 13, 1988, Pat. No. 4,824,383, which is a continuation-in-part of Ser. No. 91,002, Sep. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,921, Nov. 18, 1986, abandoned. This application Nov. 7, 1990, Ser. No. 609,941
Int. Cl.[5] H01R *4/66*
U.S. Cl. 439—101 16 Claims



1. A receptacle for a terminator comprising:

a frame formed of an upper and lower crossbar connected at opposed ends by uprights, a central plate extending between the uprights in generally parallel relation to and spaced from each of the crossbars, each crossbar having a forward surface thereon,

a nosepiece formed of an insulating material mounted on the forward surface of each of the crossbars, the nosepiece having a plurality of windows therein; and

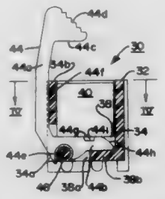
a separate contact block comprising an insulating member having a plurality of contact springs cantilevered therefrom, the contact block being mounted to the frame, the end of each of the contact springs being received within a respective window of the nosepiece and supported thereby.

5,057,029

ELECTRICAL EJECT HEADER

Peter Noorily, Bridgewater, N.J., assignor to Thomas & Betts Corporation, Bridgewater, N.J.

Filed May 31, 1990, Ser. No. 531,195
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—160 13 Claims



1. An eject header for releasable electrical connection to an electrical connector, said header being of the type including an elongated housing having a base, two opposing longitudinally extending sidewalls and two opposing transversely extending endwalls, said opposing sidewalls and said opposing endwalls defining a cavity therebetween, a plurality of electrical contacts supported by said base and having first ends extending within said cavity for electrical connection with said electrical connector and having second ends projecting outwardly from said base and defining terminals for engagement with an electrical component, and an ejector having a manually operable lever pivotally mounted on said housing for movement in a plane substantially parallel to said sidewalls, said lever having a first extent projecting generally upwardly from said base and a second extent extending transversely to said lever first extent within said cavity, said second extent being movable upon manual movement of said lever to engage an electrical connector within said cavity and cause upward movement thereof relative to said base, the improvement comprising:

said lever being supported on said housing adjacent one of said endwalls, and

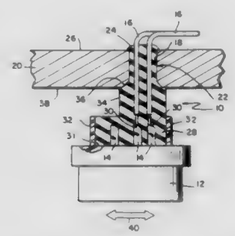
one of said sidewalls including a sidewall portion attached to said endwall adjacent said lever, said sidewall portion being disposed between said lever first extent and said lever second extent and intersecting the plane of movement of said lever, said sidewall portion having an opening through said sidewall, said opening communicating with said sidewall portion and being of size to permit said lever second extent to extend therethrough into said housing cavity, said lever first extent including a contact surface for engagement with an exterior surface of said sidewall portion, said lever second extent including a contact surface for engagement with an interior surface of said sidewall portion.

5,057,030

GROMMET/SEAL MEMBER FOR A CONNECTOR ASSEMBLY

Russell W. Hutson, Woodburn; Dennis W. Buhro, Kendallville; Nicholas S. Hodgman, and Brian T. Wright, both of Fort Wayne, all of Ind., assignors to ITT Corporation, New York, N.Y.

Filed Jul. 2, 1990, Ser. No. 547,789
Int. Cl.[5] H01R *13/73*
U.S. Cl. 439—247 14 Claims



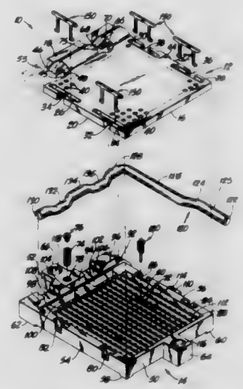
1. An arrangement for sealingly attaching a connector assembly to a housing and to an electrical conductor which extends through an opening in the housing, said connector assembly having a connector body and at least one terminal mounted in the connector body, said terminal being formed for connection to the electrical conductor at a connection point on the terminal spaced apart from the housing, the arrangement comprising a one-piece, non-rigid member having means which sealingly encloses the electrical conductor and the connection point, the non-rigid member having means for sealingly mounting the connector body to the housing so as to prevent the ingress of water and other contaminants into the housing, said means for sealingly mounting the connector body to the housing having a narrow cross section relative to the spacing between the connection point and the housing, and being flexible so as to allow the connector housing to be displaced for alignment with a mating connector assembly.

5,057,031

ZERO INSERTION FORCE PIN GRID ARRAY TEST SOCKET

William Y. Sinclair, Frenchtown, N.J., assignor to Aries Electronics, Inc., N.J.

Filed Aug. 15, 1990, Ser. No. 567,620
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—261 9 Claims



1. An electrical socket for making solderless connections between conductive pins of an electrical component and a printed circuit board, said electrical socket comprising:

a substantially rectangular dielectric lid member having a plurality of pin receiving apertures disposed in a grid array, and a plurality of clip receiving slots therein;

a substantially rectangular dielectric base member having a plurality of connector receiving ports disposed in a grid array corresponding to said plurality of pin receiving apertures in said lid member, and a plurality of clip locking slots corresponding to said clip receiving slots in said lid member;

a plurality of modified π-shaped flexible clips, each clip having a pair of parallel legs connected at one end by a bridge, said parallel legs being inwardly flexible such that each clip may be extended through one of said clip receiving slots in said lid member and thereafter said legs resiliently returning to a parallel condition so as to be engaged in the corresponding clip locking slot in said base member so as to connect said lid member to said base member in a manner to allow longitudinal translation of said lid member upon said base member, said clips being removable from said lid member and said base member;

a plurality of electrical connectors disposed in said receiving ports in said base member and extending through said base member for connection to said printed circuit board; and

actuation means for moving said lid member relative to said base member whereby the conductive pins of said electrical component are urged into said electrical connectors so as to make electrical connection between the electrical component and said printed circuit board.

5,057,032

BOARD EDGE CONNECTOR

John W. Kaufman, Hershey, and Donald J. Summers, Shiremanstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 4, 1990, Ser. No. 532,411
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—326 7 Claims

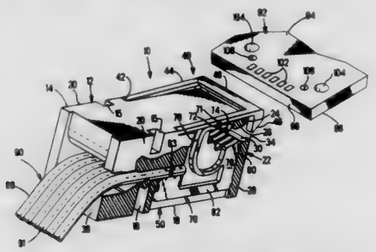
1. An electrical connector adapted to engage a portion of an edge of a circuit board having first and second major surfaces

and having conductive areas on said first major surface proximate the edge thereof, said connector being rotatable between a first and electrically disengaged angular position to a second angular position wherein the electrical terminal members of said connector are electrically engaged to said conductive areas on said circuit board, said connector comprising:

housing means having a plurality of terminal receiving cavities extending between opposed front and rear walls thereof, a board receiving slot extending along said front wall and through opposed sides of said housing means in communication with each of said plurality of terminal receiving cavities;

a plurality of electrical terminal members disposed in said terminal receiving cavities rearwardly of said front housing wall, said terminal members including first and second connecting portions, said first connecting portions extending a selected distance into said board receiving slot and including a contact area adapted to engage said conductive areas on said board upon said connector being moved to its second angular position;

opposed upper and lower bearing surface portions of said housing means within said slot defining opposed parallel planes associated with said first and second major surfaces of said board, said slot being of a selected dimension corresponding closely to the thickness of the board and defining means for guiding said connector onto said board at a preselected angle until the leading edge of said board engages a first stop surface within said terminal receiving cavity thereby defining a first angular position, said first



connecting portions being disposed inward of said upper bearing surface portions and said contact area recessed above said plane of said upper bearing surface portions;

fulcrum means at said front wall of said slot, said fulcrum having arcuate bearing surfaces engagable with said second major board surface at least at two spaced locations along said slot and defining an axis of rotation parallel to said slot and allowing said connector to be rotatably moved about the board edge from a first position through said intermediate position to a final position; and

means of said housing means engaging said second major surface of said board at least at two spaced locations proximate said front wall for preventing rotation until said connector is in said first angular position, whereafter said anti-rotation means is opposed from corresponding recess means of said second board surface and is received thereinto upon rotation of said connector from said first angular position through said intermediate position to said second angular position, said housing means including rotation stop means defining said second angular position, whereby

said upper and lower planes of bearing surfaces of said slot for said board protect at least contact areas of said first connecting portions of said terminal members of said connector from damage during initial receipt of said board into said slot and said connector can be mounted to a circuit board and electrical interconnection between said terminal members and said conductive areas can be effected with minimal insertion force.

5,057,033

BRANCH CONDUCTOR CONNECTING DEVICE

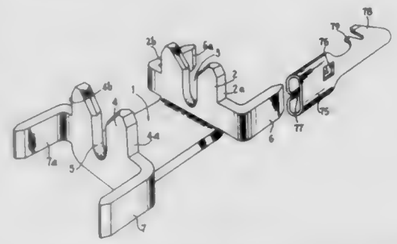
Léonard Nadin, L'Union, France, assignor to Societe anonyme dite : Labinal, Montigny Le Bretonneux, France

Filed Jul. 27, 1990, Ser. No. 558,490

Claims priority, application France, Aug. 7, 1989, 89 10603

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—397 **15 Claims**



1. Device for connecting a branch conductor to an insulated main conductor, comprising a body composed of a strip of metal that is a good electrical conductor cut out and bent to a U-shape cross-section, said body having a U-shaped cross-section including an inner web portion and two flange portions, each flange portion extending substantially upwardly to a free edge from opposite sides of said inner web portion and including a slot opening onto the free edge which is capable of being force-fitted to an insulated main conductor, and at least one of said two flange portions having at least one tang, with said at least one tang being bent to extend substantially perpendicular to said at least one flange portion and outwardly of said body.

5,057,034

DISTRIBUTOR DEVICE FOR TELECOMMUNICATION SYSTEMS

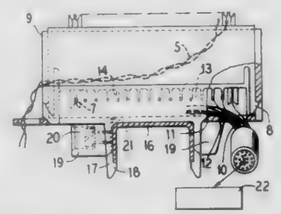
Hans Scholtholt, Lohhof B Muenchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 19, 1990, Ser. No. 540,112

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1989, 3921208

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—402 **17 Claims**



1. A distributor device for providing conductor distribution between system-side conductors and subscriber-side conductors in telecommunication systems, comprising:

a plug connector strip comprising

an elongate contact housing of insulating material including a first elongate side as a system side, a second elongate side as a subscriber side, a first end and a second end and first and second hooks respectively extending from said first and second ends, and

a plurality of contacts each including first and second insulation-piercing terminal ends and mounted offset from one another in rows in said contact housing with said first insulation-piercing terminal ends extending from said first

side of said contact housing for connection to the systems-side conductors and said second insulation-piercing terminal ends extending from said second side of said contact housing for connection to the subscriber-side conductors, each of said insulation-piercing terminal ends including insulation-opening means for disrupting the insulation of a respective insulated conductor and contacting the conductor thereof as the insulated conductor is pressed into the respective insulation-opening means; and

a retainer of insulating material for receiving and holding said plug connector strip, and comprising

a bottom wall having cable openings therethrough for receiving the insulated conductors of respective system-side cables therethrough, first and second spaced side walls extending perpendicular to said bottom wall and first and second end walls extending perpendicular to said bottom wall, said walls together defining a cavity for receiving said plug connector strip with said first side facing said bottom wall,

said first and second end walls each including a shoulder spaced from said bottom wall to be engaged by a respective one of said catch hooks upon mating of said plug connector strip to said retainer,

fixing means including a plurality of combs extending from said bottom wall in spaced pairs with each pair of said combs allocated to and for receiving said first terminal ends of said contacts of a respective row of said contacts therebetween, each of said combs including conductor holding means for holding the cable conductors of a shielded cable spaced from said bottom wall in the plugging paths of and for contacting by respective ones of said first insulation-piercing terminal ends, and

mounting means carried by said bottom wall for mounting said retainer to a support rail.

5,057,035

TELEPHONE EXTENSION SOCKET

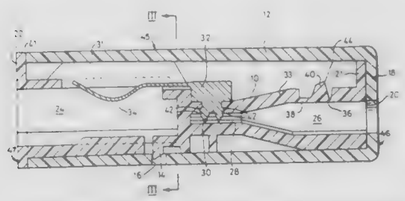
Richard Drewnicki, Rutland, England, assignor to Commtel Consumer Electronics, Plc., England

Filed Oct. 31, 1990, Ser. No. 606,818

Claims priority, application United Kingdom, Nov. 3, 1989, 8924898

Int. Cl.[5] H01R *11/20, 23/02*

U.S. Cl. 439—425 **8 Claims**



1. A telephone extension socket comprising a housing having opposed end portions, an entry formed in one end portion to receive a telephone cable having a plurality of electrically separate wires and a socket formed in the other end portion to receive a multi-contact plug, a plurality of recesses in the housing for the respective reception of the individual wires of the telephone cable, and a plurality of electrical contacts each in the form of a resilient metal strip and each having a first end which projects into a respective said recess and which has a formation serving to engage a corresponding wire of the telephone cable, and a second end projecting into the socket end for engagement with a corresponding contact of said multi-contact plug, and wherein the socket housing comprises two plastics mouldings which consist of an inner moulding which defines the recesses of the cable entry end portion, which provides the socket end portion, which is formed with supports for the electrical contacts and which has an end which serves as the end wall of the housing at the socket end thereof, and an outer moulding forming a casing which surrounds the majority of the outer surface of the inner moulding and which forms the cable entry end portion.

5,057,036

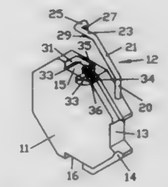
PULL RING LOCKING MECHANISM

Robert G. Dickie, Newmarket, Canada, assignor to Paige Manufacturing Inc., Toronto, Canada

Filed Jan. 22, 1991, Ser. No. 644,132

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—484 **5 Claims**



1. An electrical plug comprising

a molded plug body for mounting electrical pins,

a removal ring for attachment to said plug body, said ring having a retracted position in close contact with said plug body and an open position disposed away from said plug body to facilitate grasping said ring for removal of said plug from a mating socket,

a locking cavity in said plug body,

a rigid locking stub on said removal ring for insertion into said locking cavity, and

deformable means completely closing the entry to said locking cavity for permitting entry of said locking stub into said locking cavity by deforming in response to forces in the direction of said insertion, and for preventing exiting of said locking stub from said locking cavity by blocking deformation of said deformable means in response to forces in the direction opposite to said direction of insertion.

5,057,037

CONNECTOR

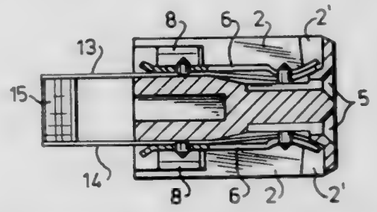
Bob Mouissie, Berlicum, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 22, 1991, Ser. No. 644,386

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1990, 9002181

Int. Cl.[5] H01R *13/12*

U.S. Cl. 439—495 **11 Claims**



1. A connector for electrically interconnecting conductor tracks on one side of a flexible circuit substrate to corresponding electrical contacts insertable into said connector comprising:

a housing of insulating material provided with apertures for receiving said electrical contacts and also provided with a

recess for receiving at least a portion of said flexible circuit substrate,

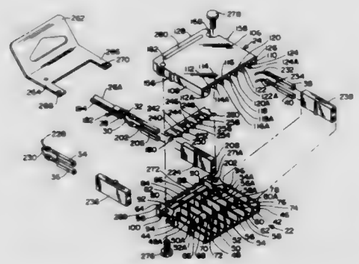
a spring clip disposed in said recess so that the conductor tracks on said one side of the flexible circuit substrate face said corresponding electrical contacts inserted in said apertures, said spring clip bearing against the other side of the flexible substrate to press said conductor tracks into electrical contact with respective ones of said electrical contacts, said spring clip being provided with strip-like legs having free ends disposed adjacent said apertures for applying pressure on said other side of the flexible subsrate and having at its side edges fastening elements for engaging respective walls of said recess.

5,057,038

SHIELDED ELECTRICAL CONNECTION

David C. Bowen, Downers Grove; Philip J. Dambach, Naperville; Joseph W. Nelligan, Jr., LaGrange Park, and Irvin R. Triner, Willow Springs, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Sep. 24, 1990, Ser. No. 587,137
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—497 **6 Claims**



1. An electrical connector for terminating a plurality of cables, each of said cables has at least one signal wire and a drain wire, said electrical connector comprising:

first and second conductive outer housing means adapted to be mated together, said first outer housing means having a first base wall and first opposed sidewalls extending from said first base wall between a front mating end of said electrical connector and a rear wire receiving end of said electrical connector and said second outer housing means having a second base wall and second opposed sidewalls extending from said second base wall between said mating end and said rear wire receiving end;

a plurality of first separating walls extending from said first base wall between said first sidewalls, each of said first sidewalls having a first mating edge;

a plurality of second separating walls extending from said second base wall between said second sidewalls, each of said second sidewalls having a second mating edge;

a plurality of contact modules into which is received terminals connected to said signal wires;

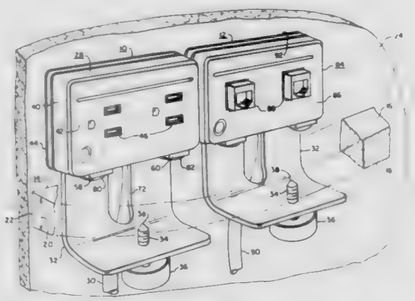
a plurality of shielded compartments in which said contact modules are positioned, said shielded compartments being formed by adjacent ones of said first and second separating walls when said first and second outer housing means are mated together such that said first mating edges of said first separating walls mate with corresponding ones of said second mating edges of said second sidewalls.

5,057,039

ELECTRICAL OR COMMUNICATIONS MONUMENT FOR MOUNTING ALONG AN EDGE OF A WORK SURFACE

Brian J. Persing, Northgate; Philip C. Banas, Park Township, Ottawa County; Timothy J. Wiersma, Wyoming; John P. Connor, Jamestown Township, Ottawa County, and James R. Bouse, Belmont, all of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 7, 1991, Ser. No. 637,722
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—574 **6 Claims**



1. An electrical or communications monument suitable for selective mounting along an edge of a work surface having upper and lower sides, and a predetermined minimum spacing between at least a portion of the edge and an adjacent obstruction, comprising:

a bracket formed from a single metallic sheet,

said bracket including an upright back portion having front and back surfaces, a horizontal base portion, and first and second spaced support arms,

said horizontal base portion integrally joining the upright back portion, from the front side, via a curved section having a predetermined radius,

said first and second spaced support arms extending outwardly from the front side of said upright back portion, in spaced parallel relation with said base portion,

said upright back portion extending vertically upward from said curved section to integrally join said first and second spaced support arms, and extending still further in an upward direction between said first and second spaced support arms to define at least one upstanding mounting flange,

a receptacle fixed to said at least one upstanding mounting flange,

and a screw threadably engaged with the base portion,

whereby the bracket may extend about an edge of a work surface such that the first and second support arms contact the upper side of the work surface and said screw contacts the lower side, to firmly secure the monument to the work surface with the resulting three-point engagement.

5,057,040

CONNECTOR TERMINAL ENGAGE STRUCTURE

Shinji Kodama; Satoshi Yamada, and Sakai Yagi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Feb. 6, 1991, Ser. No. 651,559
Claims priority, application Japan, Feb. 8, 1990, 2-11044[U]
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—595 **6 Claims**

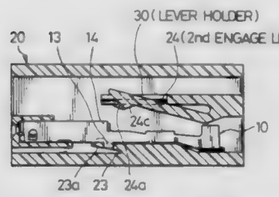
1. A connector terminal engage structure, comprising:

(a) a connector terminal; and

(b) a connector housing for housing said connector terminal, said connector housing having:

(1) first engage arm means for supporting said connector terminal;

(2) second engage arm means for supporting said connector terminal in cooperation with said first engage arm means; and



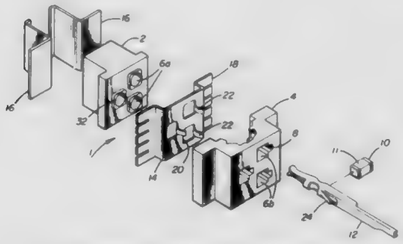
(3) arm holding means for holding at least one of said first and second engage arm means away from said connector terminal when said connector terminal is required to be removed from said connector housing.

5,057,041

USER CONFIGURABLE INTEGRATED ELECTRICAL CONNECTOR ASSEMBLY

Nobbert N.H. Yu, and Haw-Chan Tan, both of Culver City, Calif., assignors to Foxconn International, Sunnyvale, Calif.

Filed Jun. 29, 1990, Ser. No. 546,040
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **38 Claims**



1. A user configurable integrated electrical connector assembly comprising:

an insulated body having a plurality of passageways extending therethrough;

a grounding means disposed transversely to said passageways, having a plurality of projections for engagement with the interior of said passageways,

a plurality of electrical contacts for insertion in selected ones of said passageways, each contact being integrally formed from a single conductor and including a receptacle means having a base and at least two sidewalls disposed for conformably receiving and maintaining an integrated electrical filter component in invariant electrical contact with said projections.

5,057,042

ELECTRICAL CONNECTOR INCLUDING TERMINAL CONNECTOR WITH STABILIZER

Makoto Yamanashi, and Isao Kameyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

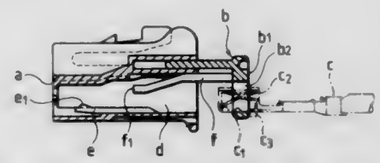
Filed Feb. 7, 1991, Ser. No. 651,863
Claims priority, application Japan, Feb. 21, 1990, 2-15630[U]
Int. Cl.[5] H01R *13/426*
U.S. Cl. 439—752 **2 Claims**

1. In an electrical connector comprising at least one metal terminal and a terminal retainer having at least one insertion hole for receiving said at least one metal terminal,

the improvement wherein said electrical connector further includes a connector housing, and wherein:

said at least one metal terminal comprises a stabilizer formed so as to project from a bottom of said at least one metal terminal; and

said insertion hole of said at least one terminal retainer has formed therein a passage guide projection having a smooth guide surface for engagement with a bottom portion of said at least one metal terminal;



such that said at least one terminal retainer is adapted to be connected to said connector housing at two stages, one of which is a provisional retaining condition, and the other of which is a complete retaining condition;

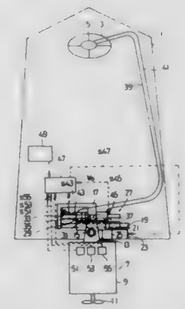
wherein an amount of projection of said passage guide projection is greater than an amount of projection of said stabilizer, such that said at least one metal terminal slides smoothly in said insertion hole, while having its insertion stabilized by said stabilizer.

5,057,043

POWER STEERING SYSTEM FOR BOAT

Fumikazu Sugimoto, Gifu; Masataka Kase, Kanagawa, and Manabu Yamada, Gifu, all of Japan, assignors to Kayaba Industry Co. Ltd., Japan

Filed Jun. 5, 1990, Ser. No. 533,537
Claims priority, application Japan, Jun. 7, 1989, 1-144432
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—61 **4 Claims**



1. A power steering system for a boat including an engine pivotally movably mounted on the boat, comprising:

a steering wheel mounted on the boat;

a lever connected to the engine;

a rack connected to said lever;

a pinion engaged with said rack;

a drive motor connected to said pinion;

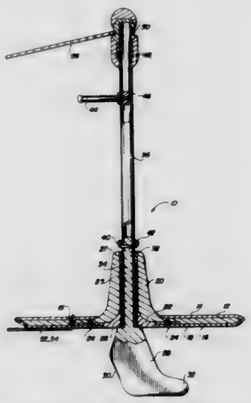
a cylinder mechanism including a cylinder, a piston connected to said lever and slidably arranged in said cylinder, and at least one piston rod provided on said piston;

said cylinder mechanism being formed with a pair of chambers on both sides of said piston;

a pressure oil feed means for discharging pressure oil at a flow rate corresponding to the number of revolutions of said steering wheel;

a pair of hydraulic pipings arranged between said pressure oil feed means and said chambers of said cylinder mechanism formed on both sides of said piston;
a pressure difference detection means for detecting a difference in pressure between said chambers of said cylinder mechanism to generate a detection signal; and
a controller for supplying a control signal to said drive motor depending upon said detection signal from said pressure difference detection means to cause said drive motor to generate assistance force corresponding to steering torque of said steering wheel.

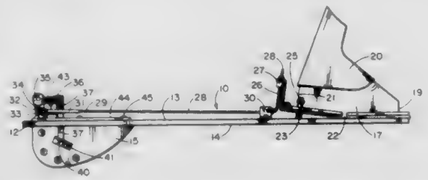
5,057,044
RECREATIONAL WATER SLED AND TOWING METHOD
Robert L. Moore, Orlando, and Kevin L. Moore, Winter Park, both of Fla., assignors to James M. Hoenstine, Orlando, Fla.
Filed Jun. 22, 1990, Ser. No. 542,097
Int. Cl.[5] B63B *35/81*
U.S. Cl. 441—67 **12 Claims**



1. A recreational water sled for carrying a rider while being towed behind a boat, the sled comprising:
a generally circular sled having a relatively flat lower surface and an upper surface with a stanchion extending centrally above the upper surface and with a steering hole extending through the sled and the stanchion;
a steering pole extending generally upwardly from the stanchion hole to a height approximately at least chest high for a rider standing upon the sled with a hub at the upper extremity of the pole;
a rudder extending rearwardly adjacent to and along the bottom surface, the rudder assembled for rotation with the steering pole through the steering hole; and
a three point tow rope system including first and second tow ropes attached at spaced points to the lower surface along a forward portion of the sled, and an elevated tow rope rotatably attached to the hub of the steering pole.

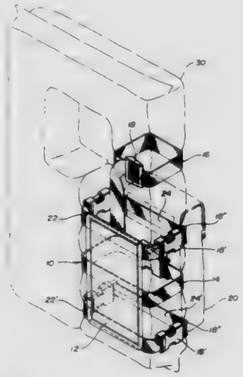
5,057,045
WATER SKI BRAKE
James R. Myers, 237 Robin Rd., Altamonte Springs, Fla. 32701
Filed Nov. 9, 1990, Ser. No. 611,719
Int. Cl.[5] B63B *35/81*
U.S. Cl. 441—79 **7 Claims**

1. A water ski brake comprising:
a water ski having a tip, a tail, and a top and a bottom and a vane attached to the bottom thereof, said water ski also having a ski boot having a toe and heel and the boot heel being hingedly attached at the toe to the top of said water ski;
a drag inducing foil movable attached transversely to said vane in a predetermined position thereon and shiftable between first and second positions, each position of said drag inducing foil being at a different angle to said vane; and



linkage means attached to said boot heel at one end and to said drag inducing foil at the other end and shiftable between first and second positions responsive to the movement of said boot heel on the boot hinge to shift said drag inducing foil between said first and second positions to thereby brake the water ski by increasing the water drag when said drag inducing foil is shifted to said second position in the water at the control of the skier shifting one foot in said boot.

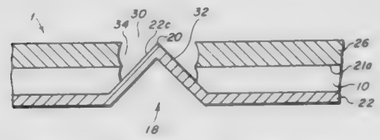
5,057,046
FLOTATION DEVICE PERIPHERAL SYSTEM
Robert F. Scannell, Jr., 500-2B Auten Rd., Somerville, N.J. 08876
Filed Mar. 30, 1990, Ser. No. 502,453
Int. Cl.[5] B63C *9/12*
U.S. Cl. 441—106 **26 Claims**



1. Harness apparatus for attaching equipment to a personal flotation device having left and right shoulder and chest-overlying portions, said harness apparatus comprising
a support backing having a first edge facing a normally vertical direction, and opposed second and third edges extending transversely to said first edge,
an adjustable attaching strap secured to said support backing, said strap adapted to encircle and fasten about any one of the left and right portions of a personal flotation device,
an anchoring strap having a first end secured to a normally vertical edge of said support backing, an adjustable fastening means, and a second end, said anchoring strap being arranged for encircling the same portion of a personal flotation device that said attaching strap encircles and for being secured therearound by said adjustable fastening means,

a first connecting strap secured to one edge of said support backing, said first connecting strap having a free end equipped with an adjustable fastening means adapted for attaching equipment to said harness, and
a second connecting strap secured to a further edge of said support backing, said second connecting strap further comprising a free end equipped with an adjustable fastening means adapted for attaching equipment to said harness,
whereby the equipment can connectingly attach to the personal flotation device by engagement with any one of said first and second connecting straps.

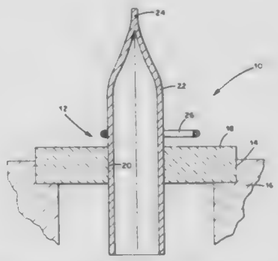
5,057,047
LOW CAPACITANCE FIELD EMITTER ARRAY AND METHOD OF MANUFACTURE THEREFOR
Richard F. Greene, Charlotte, N.C., and Henry F. Gray, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 27, 1990, Ser. No. 589,102
Int. Cl.[5] H01J *1/30*
U.S. Cl. 445—24 **8 Claims**



5. A method for manufacturing a field emitter structure comprising the steps of:
(a) providing a substrate of a single crystal material;
(b) masking a first surface of said substrate to form a mask having a pattern of exposed substrate;
(c) orientation-dependent etching the exposed substrate to form at least one hole in said substrate having a plurality of sides which intersect at a crystallographically sharp apex;
(d) removing said mask;
(e) depositing a first conducting layer on said first surface and said sides of said at least one hole;
(f) etching a second surface of said substrate to expose a predetermined first portion of said first conducting layer;
(g) depositing a second conducting layer on said second surface;
(h) depositing a planarization layer on said second conducting layer;
(i) etching said planarization layer and said second conducting layer to expose a predetermined second portion of said first conducting layer; and
(j) undercutting said planarization layer, said second conducting layer and said substrate to expose a predetermined third portion of said first conducting layer.

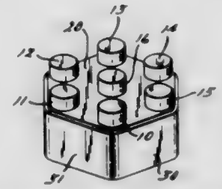
5,057,048
NIOBIUM-CERAMIC FEEDTHROUGH ASSEMBLY AND DUCTILITY-PRESERVING SEALING PROCESS
Alfred E. Feuersanger, Framingham, and William H. Rhodes, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Oct. 23, 1989, Ser. No. 425,072
Int. Cl.[5] H01J *9/26*
U.S. Cl. 445—44 **9 Claims**

1. A process for fabricating a niobium-ceramic throughwall assembly for a ceramic or metal wall of a vessel, comprising the steps of:
firing at a temperature of about 1400°–2000° C. in a pure inert atmosphere or vacuum a niobium-ceramic throughwall assembly comprising an alumina or yttria sealing means having a bore therethrough, and a ductile niobium throughpiece close fitted to and extending through the bore;
wherein the throughpiece consists essentially of about 0–2 weight % zirconium, remainder pure niobium; the sealing means before firing is sufficiently below full density to shrink fit during firing to form a hermetic seal between the



throughpiece and the sealing means; the pure inert atmosphere or vacuum includes less than about 5 ppm oxygen and less than about 5 ppm hydrogen; and the firing is carried out for a time sufficient to form the hermetic seal; and
cooling the assembly about 250° C. while maintaining the pure inert atmosphere or vacuum.

5,057,049
HEXAGONAL-SHAPED TOY BUILDING BLOCK
Thomas E. Kaczperski, 6383 Briggemen, St. Clair, Mich. 48079
Filed Apr. 6, 1990, Ser. No. 505,896
Int. Cl.[5] A63H *33/08*
U.S. Cl. 446—128 **2 Claims**



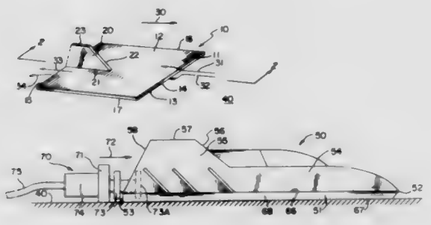
1. A toy building element adapted to interconnect with other toy building elements, comprising means defining a relatively planar block structure, wherein said block structure hosts a plurality of equidistantly spaced adjacent post members, each post member projecting perpendicularly from said planar block structure and being generally cylindrical in shape said block structure has a hexagonal-shaped outer body portion and stabilizing means extending downwardly from an inner surface of a top base plate surface which abuts the surface of one or more inserted posts, said stabilizing means including a hexagonal skirt with a plurality of recesses surrounding a depending cylinder, said hexagonal skirt recesses and cylinder abutting posts inserting into said stabilizing means to secure the posts to said building element.

5,057,050
SURFACE SKIMMING TOY
Peter C. Hill, Anaheim, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Mar. 20, 1990, Ser. No. 495,979
Int. Cl.[5] A63H *27/00*
U.S. Cl. 446—176 **8 Claims**

1. For use in response to an externally applied source of launching power upon an extended smooth play surface, a passive unpowered surface skimming toy comprising:

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a body defining an undersurface, means for causing said surface skimming toy to assume a skimming travel when launched across the play surface in which said undersurface is generally parallel to and closely spaced from the play surface, said means for causing including said body defining a generally flat planar surface for said undersurface free of any downwardly extending elements, an upper surface, a forward end, a trailing end, and an outer edge, said undersurface having a planar area sufficient to support said toy in a skimming travel by creating a ground



effect boundary layer between said undersurface and said play surface; and

a generally planar vertical fin member extending upwardly from said upper surface and aligned edgewise in the direction of the forward end to the trailing end;

said generally flat undersurface of said surface skimming toy being the lowest portion of said surface skimming toy launchable across the play surface and said toy being supported as it skims said play surface by boundary layer ground effect air between said undersurface and said play surface.

5,057,051

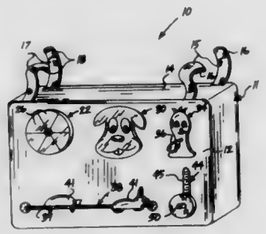
NIGHT LIGHT TOY APPARATUS

Amy H. Babicz, 130 Lincoln Pl., Liberty, N.Y. 12754

Filed Nov. 29, 1990, Ser. No. 619,391

Int. Cl.[5] A63H *33/00, 33/26, 33/00, 3/52*

U.S. Cl. 446—227 **1 Claim**



1. A night light toy apparatus comprising,

a housing, the housing including a forward wall and a rear wall, with a top wall mounted between the forward wall and the rear wall, and

the top wall including a first and second strap pair, wherein the first and second strap pair are arranged for securement of the housing to a support, and

the forward wall including an illuminated spin assembly arranged for rotation relative to the forward wall, and

a translucent night light member mounted to the forward wall, and

an audible reproduction assembly mounted on the forward wall, and

a slide assembly mounted to the forward wall, and

a bell assembly mounted to the forward wall, and

wherein the spin assembly includes a translucent cylindrical disk, the translucent cylindrical disk includes a plurality of contrasting colored sectors, each sector defined by a predetermined configuration, and the disk including an axle orthogonally and integrally mounted to the disk sitting rearwardly thereof, and the forward wall including an axle bore, and the axle bore rotatably mounted within the axle bore, and a first forward opening mounted within the forward wall, the first opening defined by a configuration equal to the predetermined configuration and coaxially aligned relative to the cylindrical disk to permit selective positioning of at least one of the sectors overlying the first opening, and an illumination bulb mounted within the first opening, and a switch means mounted to the housing on the rear wall, and battery means operative through the switch to effect selective illumination of the illumination bulb, and

wherein the forward wall includes a second forward wall opening, the second forward wall opening including a second illumination bulb mounted therewithin, wherein the second illumination bulb is selectively illuminated in cooperation with the switch and the battery means, and the night light member formed of a translucent material and includes a plurality of cylindrical pegs, and the forward wall includes a plurality of cylindrical positioning bores, wherein the pegs are aligned with the cylindrical bores mounting the night light member to the forward wall, and

wherein the audible reduction assembly includes a mounting plate, with the mounting plate fixedly mounted to the forward wall and an audible reproduction means mounted within the housing to effect audible reproduction, wherein the audible reproduction means includes a pull cord mounted in cooperation to the mounting plate in cooperation with the audible reproduction means for effecting an audible reproduction upon pulling of the pull cord, and

wherein the slide assembly includes a "U" shaped bar, wherein the "U" shaped bar includes a mounting plate fixedly and orthogonally mounted to each free end of the "U" shaped bar, wherein each mounting plate is mounted to the forward wall, and a plurality of body portions mounted to the bar, wherein the body portions each include a plurality of downwardly extending leg pairs, with the leg pairs surroundingly encompassing the "U" shaped bar to slidably mount each body portion to the "U" shaped bar, and

wherein the bell assembly includes a cylindrical bell housing, the cylindrical bell housing includes a cylindrical cavity and wherein a plurality of radially aligned and equally spaced tubular bell members are mounted within the bell housing circumferentially about the periphery of the bell housing interiorly thereof, and a dial coaxially

mounted to the cylindrical bell housing, and the dial including an elongate flexible support plate formed of memory retentent material, with a clapper rod mounted at a free terminal end of the support plate, wherein the clapper rod is rotatably within the bell housing and cooperative with the tubular bell members to effect audible actuation of the tubular bell members upon rotation of the dial.

5,057,052

PEDESTAL TOY

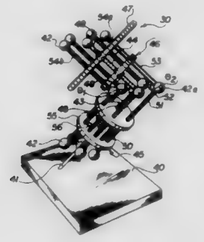
Andrew J. Kaplan, Portsmouth, N.H., and Edward B. Seldin, Cambridge, Mass., assignors to Kinderworks Corporation, Portsmouth, N.H.

Filed Sep. 13, 1990, Ser. No. 581,891

The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.

Int. Cl.[5] A63H *33/00*

U.S. Cl. 446—236 **10 Claims**



1. A pedestal toy including a base having an angular axle member secured thereto, said angular axle member including a first arm rigidly connected to said base, said axle member further including a second arm disposed at an angle with respect to said first arm and being connected thereto, said first arm having a first substantially circular rotatable member rotatably fitted thereon such that said first substantially circular rotatable member may rotate about said first arm, said second arm having a second substantially circular rotatable member rotatably fitted thereon such that said second substantially circular rotatable member may rotate about said second arm, said first and second substantially circular rotatable members being rotatably engaged with each other by at least one substantially circular rotatable member engaging means, said substantially circular rotatable member engaging means having a first shaft and a second shaft, said first and second shafts being connected to each other at an angle substantially corresponding to the angle of said angular axle member, said substantially circular rotatable member engaging means first shaft passing slidably through said first substantially circular rotatable member in a direction substantially parallel to said first arm of said angular axle member, said substantially circular rotatable member engaging means second shaft passing slidably through said second substantially circular rotatable member in a direction substantially parallel to said second arm of said angular axle member.

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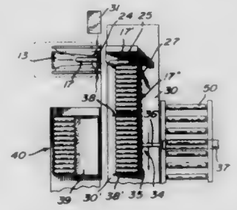
SAUSAGE LINK HANDLING AND PACKAGING MACHINE

Ghislain Michaud; Michel Presseau, both of Laval, and Roger Drolet, Mascouche, all of Canada, assignors to D M P Industries Inc., Laval, Canada

Filed May 14, 1990, Ser. No. 522,916

Int. Cl.[5] A22C *11/02;* **B65B** *5/06*

U.S. Cl. 452—51 **11 Claims**



1. A sausage link handling and packaging machine, said machine comprising a feed conveyor for receiving individual sausage links from a link forming machine and transferring same onto a main conveyor, guide means associated with said transfer conveyor to orient said sausage links on an ejecting path, alignment means at a receiving end of said main conveyor for orienting said sausage links in a side-by-side trans-

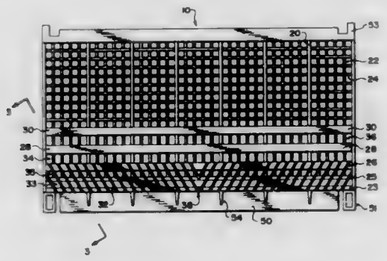
verse aligned relationship on said main conveyor, said alignment means being comprised of a side deflector plate positioned in said ejecting path and having a sloped deflecting surface sloping toward the direction of travel of a conveyor belt of said main conveyor, and a stopper plate positioned adjacent said deflector plate at a predetermined angle to cause said sausage links to align themselves in said side-by-side relationship, tranfer means at a transfer station of said main conveyor for transferring a predetermined number of said transversely aligned sausage links off said main conveyor and onto package support means, and means to further convey said package support means with said sausages downstream of said transfer station.

5,057,056

CONCAVE GUIDE FOR A COMBINE HARVESTER

Ben Kambeitz, Box 93, Richmound, Saskatchewan, Canada S0N 2E0

Filed Nov. 23, 1990, Ser. No. 617,162
Int. Cl.[5] A01F *12/00*
U.S. Cl. 460—110 **4 Claims**



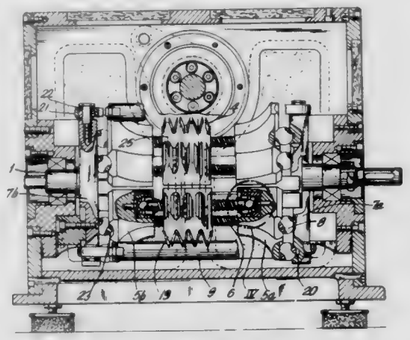
1. A concave for a cylinder of a combine harvester, said concave comprising means for attaching to a combine harvester, means for cooperation with a threshing cylinder, said concave comprising a part cylindrical body having a first front end and a second rear end and arranged to wrap around the cylinder such that the surface of the cylinder moves from the first front end towards the second rear end, said first end positioned to receive grain from the said threshing cylinder, said concave having a plurality of transversely extending threshing bars, and a plurality of angled guide bars fastened atop the threshing bars adjacent the first end, each of said angled guide bars having a front end and a rear end with said front end positioned closer to a centre line than the rear end so as to tend to move an incoming crop away from the centre of the concave toward the sides of the concave.

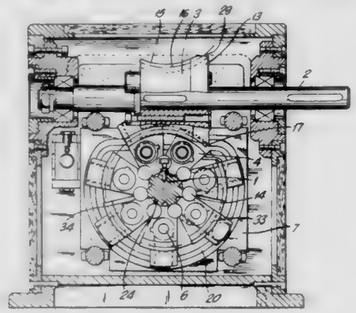
5,057,057

CONTINUOUSLY CONTROLLABLE DRIVE

Helmut Riemscheid, Lohmar; Rolf Cremerius, Bonn, and Hans-Joachim Bentz, Essen, all of Fed. Rep. of Germany, assignors to GKN Automotive AG

Filed Oct. 25, 1990, Ser. No. 603,538
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1989, 3935446; Apr. 14, 1990, 4012244
Int. Cl.[5] F16H *63/00*
U.S. Cl. 474—69 **30 Claims**





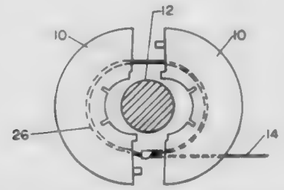
1. A continuously controllable drive having a form-fitting power transmitting system as a result of a discontinuous engagement of paired teeth, comprising: an input shaft (**1**, **101**); an output shaft (**2**, **102**); a first tooth assembly with toothed segment bars (**4**, **104**) which comprise teeth of uniform cross-sections with curved center lines which extend in a direction of circumferential lines relative to the axis of the input shaft (**1**, **101**) to which they are non-rotatingly as well as axially movably and fixably connected, and whose radius of curvature corresponds to the radius of rotation of the toothed segment bars (**4**, **104**) around the input axis (**1**, **101**); a second set of teeth at an output gear (**3**, **103**) which comprises teeth of variable cross-sections with curved center lines which extend in a direction of cylindrical lines relative to the axis of the output shaft (**2**, **102**) to which it is connected, whose radius of curvature corresponds to that of the teeth of the toothed segment bars (**4**, **104**), but in a concave shape, and which, starting from a minimum means cross-section of the output gear (**3**, **103**) towards its sides, comprises a positive profile displacement and a pitch aperture; and an adjustable control device for the toothed segment bars (**4**, **104**) which comprises rotational guiding means (**7**, **111**) which establish an operating connection with the latter and which are pivotable around at least one axis of adjustment extending at a right angle relative to the axes of the input and output shafts (**1**, **101**; **2**, **102**).

5,057,058

SPLIT PULLEY

Jack M. Crudup, 1008 Acorn Ct., Arlington, Tex. 76012

Filed Sep. 10, 1990, Ser. No. 580,325
Int. Cl.[5] F16H *55/12*
U.S. Cl. 474—95 **7 Claims**



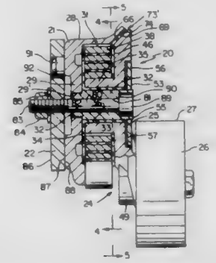
1. A polymeric cylindrical split pulley having a plurality of mating segments with mating faces joined at a split line between the segments and having a concentric bore,
a substantially concentric passageway adjacent but spaced from and encircling said bore and wholly within said pulley,
a flexible adjustable strap within and extending the full length of said concentric passageway, and
means for tightening said strap around said bore to hold the mating segments together.

5,057,059

BELT TENSIONER AND METHOD OF MAKING THE SAME

John N. Sidwell, and Linn E. Corbin, both of Springfield, Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 450,656, Dec. 13, 1989, Pat. No. 4,971,589.
This application Aug. 31, 1990, Ser. No. 576,299
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—135 **19 Claims**



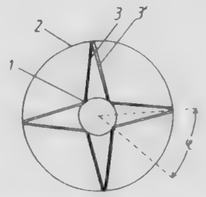
1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, and spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, said support means comprising a shaft means having a longitudinal axis, said belt engaging means comprising an arm rotatably mounted on said shaft means, the improvement wherein said arm has a bearing surface angled at a certain angle relative to said axis and wherein said support means has a bearing surface angled at said certain angle relative to said axis and facing said bearing surface of said arm, and a bushing means disposed between said bearing surfaces and in engagement therewith to facilitate movement therebetween and to tend to prevent cocking of said arm on said shaft means when said belt engaging means is tensioning said belt.

5,057,060

DRIVE PULLEY FOR CABLEWAYS

Herbert Kothmayer, Phil. Welserstr-5/II/5, Innsbruck, Austria 6020

Filed Apr. 23, 1990, Ser. No. 512,365
Claims priority, application Austria, Apr. 25, 1989, 995/89
Int. Cl.[5] F16H *55/36*
U.S. Cl. 474—166 **6 Claims**



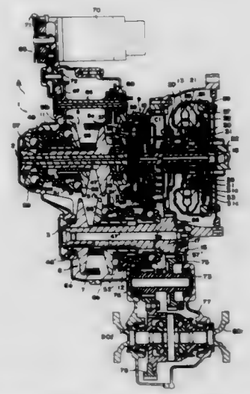
1. A cable drive pulley for cableways, comprising:
a hub having a longitudinally extending central axis,
an annular rim concentric with said annular rim about said central axis,
a plurality of spokes interconnecting said hub and said annular rim, each individual spoke of said plurality of spokes extending, independently of the other spokes of said plurality of spokes, from said hub to said rim and having one end thereof connected to said rim and an opposite end thereof connected to said hub,
the plurality of spokes comprising at least two pairs of spokes, the spokes of each of said pairs of spokes converging towards each other as said spokes of each of said pairs of spokes extend from the hub to the rim.

5,057,061

CONTINUOUSLY VARIABLE SPEED TRANSMISSION

Shiro Sakakibara; Masahiro Hasebe; Masashi Hattori, and Akihiro Kuroyanagi, all of Aichi, Japan, assignors to Aisin AW Kabushiki Kaisha, Japan

Filed Dec. 18, 1989, Ser. No. 451,983
Claims priority, application Japan, Dec. 30, 1988, 63-331246
Int. Cl.[5] F16H *37/08, 47/06*
U.S. Cl. 475—210 **7 Claims**



1. A continuously variable speed transmission for use in

conjunction with a vehicle engine, said transmission comprising: a belt drive continuously variable speed transmission having two pulleys, said pulleys being supported, respectively, on first and second shafts and each pulley including a pair of fixed and movable sheaves, said moveable sheaves capable of moving axially relative to said fixed sheaves, a belt wrapped around said two pulleys; and a forward/reverse rotation changeover mechanism; said continuously variable speed transmission comprising:

(a) a fluid torque converter for transmitting torque from the engine to said belt drive continuously variable speed transmission, said fluid torque converter including an output shaft, a pump impeller, a turbine runner fixed to said output shaft and fluidically driven by said pump impeller and a stator located between said pump impeller and said turbine runner;

(b) a pressure adjusting cam mechanism, mounted on said first shaft between one sheave of one of said pulleys and a stop member provided on said first shaft, for receiving said torque transmitted by said fluid torque converter and for transmitting an axial force corresponding to said transmitted torque to said one sheave; and

(c) a mechanical actuator mounted on each of said first and second shafts for axially moving said moveable sheaves of said pulleys.

5,057,062

OPERATING APPARATUS FOR FOUR-WHEEL DRIVE VEHICLE

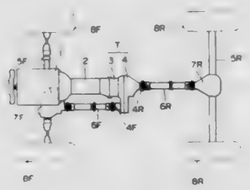
Hirokazu Yamasaki, Higashihiroshima; Nobuyuki Ikemoto, and Masaaki Koto, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 421,921, Oct. 16, 1989, abandoned, which is a continuation of Ser. No. 186,864, Apr. 27, 1988, abandoned. This application Apr. 2, 1990, Ser. No. 504,029

Claims priority, application Japan, Apr. 27, 1987, 62-103644

Int. Cl.[5] B60K *17/34*

U.S. Cl. 475—221 **10 Claims**



1. A transfer case operation mode shifting apparatus used on a vehicle equipped with part-time four-wheel drive having a center-differential which is shiftable between a differential-locked and a differential-free drive mode of operation and between a two-wheel and a four-wheel drive mode of operation, said apparatus comprising:

operation mode selecting means operated in a driver's compartment of a vehicle to select a drive mode of operation of said center-differential;

power drive operation mode shift means for selectively shifting said center-differential from one drive mode of operation to another;

control means for causing said power drive operation mode shift means to shift said center-differential into said selected drive mode of operation in a predetermined sequence according to an operation of said operation mode selecting means; and

said control means including mode detecting means for detecting said power drive operation mode shift means placed in a position where said center-differential is in a differential-locked four-wheel drive mode of operation so as to inhibit a transition of said center-differential to a two-wheel drive mode of operation from said differential-locked four-wheel drive mode of operation.

5,057,063

AUTOMATIC TRANSMISSION

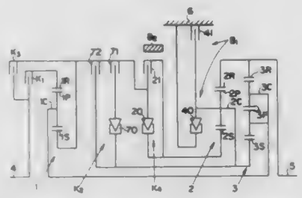
Toshiyuki Asada; Yasuhiko Higashiyama; Yasunori Nakawaki; Toshitake Suzuki; Akiharu Abe, and Naoki Moriguchi, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 15, 1990, Ser. No. 493,707

Claims priority, application Japan, Mar. 15, 1989, 1-63385; Sep. 12, 1989, 1-235968

Int. Cl.[5] F16H *57/10*

U.S. Cl. 475—278 **30 Claims**



1. An automatic transmission for changing the rotational speed of an input shaft to transmit the resultant rotation to an output shaft through a gear train including of a plurality of planetary gear sets, comprising:

a single pinion type first planetary gear set provided with a first sun gear, a first ring gear, and a first carrier for holding a pinion gear meshing with said first sun gear and said first ring gear;

a single pinion type second planetary gear set provided with a second sun gear normally or selectively connected to said first sun gear, a second ring gear, and a second carrier for holding a pinion gear meshing with said second sun gear and said second ring gear; and

a double pinion type third planetary gear set provided with a third sun gear normally or selectively connected to said second carrier, a third ring gear normally or selectively connected to said second ring gear, and a third carrier for holding an inner pinion gear meshing with said third sun gear and an outer pinion gear meshing with said inner pinion gear and said third ring gear and normally or selectively connected to said first carrier.

5,057,064

FOLDING JAW CYLINDER

Horst B. Michalik, Höchberg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Oct. 25, 1989, Ser. No. 426,439

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1988, 3838314

Int. Cl.[5] B65H *29/06, 37/06*

U.S. Cl. 493—8 **14 Claims**

1. A folding jaw cylinder assembly in a folder of a printing machine, said folding jaw cylinder assembly comprising:

a hollow rotatable shaft supporting said folding jaw cylinder assembly in said printing machine;

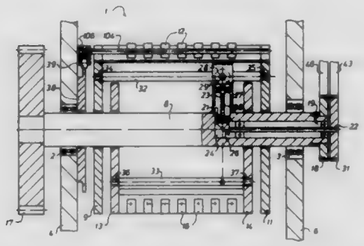
at least a first set of cooperating folding jaws carried by said folding jaw cylinder, said at least first set of cooperating folding jaws having a plurality of movable folding jaws carried on a folding jaw shaft and a plurality of stationary folding jaws carried on a folding jaw bar, said movable folding jaws and said stationary folding jaws in said at least first set of cooperating folding jaws being spaced at an adjustable folding jaw operating distance from each other;

a first pair of spaced support disks rotatably supported on said hollow shaft and receiving spaced ends of said folding jaw shaft;

a second pair of spaced support disks rotatably supported on said hollow shaft and receiving spaced ends of said folding jaw bar;

a first adjusting support extending between said first pair of spaced support disks and a second adjusting support extending between said second pair of spaced support disks;

a first threaded borehole in said first adjusting support and a second threaded borehole in said second adjusting support;



a rotatable adjusting spindle supported by said hollow shaft and having a first end received in said first threaded borehole in said first adjusting support and a second end received in said second threaded borehole in said second adjusting support;

means for sensing a thickness of a paper ribbon to be folded by said folded jaw cylinder; and

means for rotating said adjusting spindle to move said first and second adjusting supports with respect to each other to vary the spacing between said movable folding jaws and said stationary folding jaws to adjust said adjustable folding jaw operating distance in response to said sensed thickness of said paper ribbon.

5,057,065

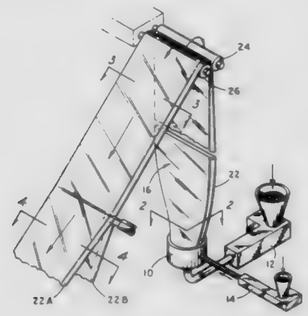
PROCESS FOR MAKING DRAW TAPE BAGS WITH INTEGRALLY FORMED DRAW TAPES

James E. Buchman, Appleton, Wis., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 8, 1989, Ser. No. 448,152

Int. Cl.[5] B31B *23/18, 23/86, 23/90*

U.S. Cl. 493—194 **23 Claims**



1. The process of forming draw tape bags comprising the steps of:

a) extruding a resin through a blow film die to form a tubular film having a blown cross section in which the film is substantially uniform over its entire circumference except in a region of greater tensile strength, where the cross section is substantially thicker,

b) slitting said substantially thicker region out of said tubular film and into two draw tape ribbons, leaving a continuous sheet of film of substantially uniform thickness and having two edges, the two edges and the two draw tape ribbons being substantially the same length,

c) forming draw tape access holes at bag width intervals adjacent the edges of said continuous sheet,

d) forming each of the edges into a hem around one of said ribbons, and

e) heat sealing and severing the folded film at transverse bag width intervals to form individual bags and to seal the draw tape ribbons to the bag walls at the resulting bag edges, the resulting bags having draw tapes of greater film thickness and tensile strength than the bag walls.

5,057,066

MAGAZINE AND METHOD OF FEEDING ARTICLES

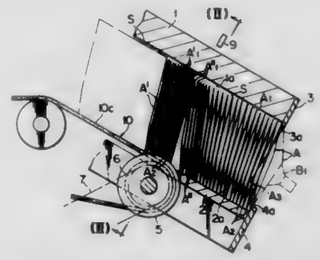
Toshio Nagahashi; Hisafumi Kobayashi, and Minoru Sato, all of Chiba, Japan, assignors to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan

Filed Dec. 30, 1988, Ser. No. 292,422

Claims priority, application Japan, Apr. 28, 1988, 63-107897

Int. Cl.[5] B65H *3/08, 3/34*

U.S. Cl. 493—317 **38 Claims**



1. A magazine for holding a plurality of stacked, flatwise folded cartons which are to be singularly withdrawn therefrom at a downstream end thereof, said magazine comprising:

an upper guide and a lower guide, generally parallel to said upper guide, each of said upper guide and said lower guide having a respective inner surface between which said stacked cartons are held, said upper guide and said lower guide being spaced apart by a distance greater than a given distance between a pair of edges of respective cartons in their flatwise folded condition, thereby creating a gap between one of said upper and lower guides and one of said pair of edges of respective cartons;

an upper stopper projecting from said upper guide surface and a lower stopper projecting from said lower guide surface, said upper stopper and said lower stopper being spaced apart by a distance less than said given distance between said pair of edges of said respective cartons;

at least one feed roller, at least a portion of which projects from said lower guide surface toward said upper guide surface and is spaced from said upper guide surface by a distance less than said given distance between said pair of edges of said respective cartons;

means for driving said at least one feed roller for rotation toward said downstream end of said magazine; and

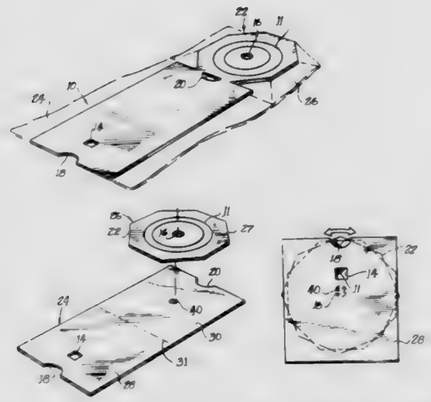
a sensor operatively associated with said driving means for controlling said rotation of said at least one feed roller as a function of the quantity of cartons positioned downstream of said at least one feed roller.

5,057,067

METHOD OF MAKING A PAPER SPINNING WHEEL PRODUCT

Susan Hibsch, Woodridge, Ill., assignor to The Lehigh Press, Inc., Cherryhill, N.J.

Filed Aug. 30, 1990, Ser. No. 575,273
Int. Cl.[5] B31B *1/62, 1/88*
U.S. Cl. 493—325 **8 Claims**



1. A method of fabricating a plurality of individual spinning wheel paper products from a single continuous moving web of material comprising the steps of:

cutting said web of material, thereby producing at least one window opening and a wheel having a central aperture;

slitting said web into two ribbons, one of said ribbons including said at least one window opening and the other including said wheel;

applying an area of glue to the ribbon carrying said at least one window opening at a location spaced apart from said at least one window opening;

stacking said ribbons in a position such that said central aperture of said wheel and said area of glue are in alignment so that the area of glue extents through said central aperture;

positioning the other ribbon carrying said wheel onto the ribbon carrying the window opening;

folding the ribbon carrying said window opening onto the other ribbon carrying said wheel so that said area of glue extending through the central aperture in said wheel adhesively secures opposing surfaces of said ribbon carrying said window opening together, and thereby enclosing said other ribbon carrying said wheel therebetween; and

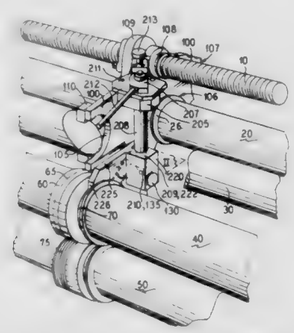
separating the web of material into individual spinning wheel paper products having a wheel rotatable about said area of glue securing said opposing surfaces of said ribbon carrying said window opening together.

5,057,068

DEVICE FOR SIDEWISE SHIFTING OF A TOOL IN A SLOTTING STATION CONTAINED WITHIN A MACHINE PROCESSING SHEET-LIKE WORKPIECES

Bernard Capdebosco, Saint-Just-Chaleyssin, France, assignor to SA Martin, France

Filed Feb. 23, 1990, Ser. No. 483,623
Claims priority, application France, Feb. 24, 1988, 8902730
Int. Cl.[5] B31B *1/20, 1/25;* **B26D** *7/26*
U.S. Cl. 493—355 **8 Claims**



1. In a device for shifting the lateral position of a tool in a slotting station situated within a machine processing sheet-like workpieces, said station having at least creasing tools and counterparts fitted in a corresponding fashion on a first vertical pair of parallel horizontal shafts arranged perpendicular to a conveying direction of the sheet-like workpieces through the machine, slotting tools and appropriate counterparts being fitted on another pair of shafts arranged downstream of said creasing tools in a fashion similar to the first-mentioned pair, as well as means for simultaneous sidewise positioning of all upper tools situated on a common line parallel to the conveying direction of the workpiece, every means consisting essentially of a master plate being held in a vertical position and having its plane oriented to extend parallel to the conveying direction by at least first and second crosswise shafts, said first shaft having a guiding function and the second shaft being provided with threading for shifting the plate laterally within said machine, said master plate being provided, on its periphery, with engagement means for laterally engaging the respective tools and guiding them on their respective shafts, the improvements comprising the engagement means including adjustment means mounted on the master plate for adjusting one of the tools, said adjustment means including a secondary plate and mechanical means for holding the secondary plate in a position extending parallel to the master plate and facilitating movement of the secondary plate and the tool relative to the master plate in a direction perpendicular to the plane of said master plate.

5,057,069

PROCESS AND DEVICE TO FOLD STRIPS OF SWABS

Louis Marion, Vieux bourg de Gondamine, 42230 Saint Victor sur Loire, France

Filed Nov. 29, 1989, Ser. No. 443,703
Claims priority, application France, Dec. 1, 1988, 88 16491
Int. Cl.[5] B31B *45/16, 45/18, 45/30*
U.S. Cl. 493—395 **8 Claims**

1. A method of folding a length of material, comprising the steps of:

forming first and second transverse folds at opposite ends of the material whereby the material defines first and second end parts and a central part;

forming longitudinal corrugations in the first and second end parts to reduce a transverse dimension of the first and second end parts; and,

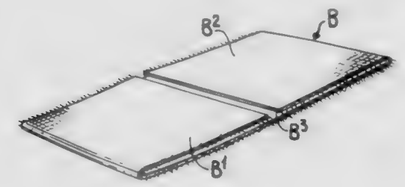
forming a third transverse fold in the central part, whereby the first and second end parts are brought into superposition and edges of the first and second end parts are recessed inward from edges of the central part.

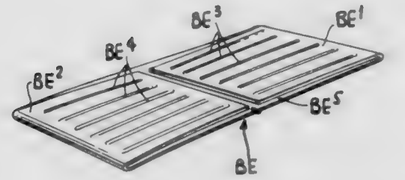
8. A device for folding a length of material, comprising:

a first cylindrical roll which is rotatable on a longitudinal axis and which defines a first plurality of grooves on its periphery,

a second cylindrical roll which is rotatable on a longitudinal axis and which defines a second plurality of grooves on its periphery, the second cylindrical roll being parallel to and elastically biased toward the first cylindrical roll;

a third cylindrical roll which is rotatable on a longitudinal axis, the third cylindrical roll being parallel to and elastically biased toward the first cylindrical roll;





a fourth cylindrical roll which is rotatable on a longitudinal axis and elastically biased toward the third cylindrical roll;

a first comb defining a first plurality of projections, the first comb being movable such that each of the first plurality of projections descends into one of the second plurality of grooves;

a first folding edge attached for movement with the first comb, the first folding edge being insertable between the first and second cylindrical rolls;

a second comb defining a second plurality of projections, the second comb being movable such that each of the second plurality of projections descends into one of the first plurality of grooves;

a second folding edge attached for movement with the second comb, the second folding edge being insertable between the first and third cylindrical rolls; and,

a third folding edge which is movable for insertion between the third and fourth cylindrical rolls.

5,057,070

APPARATUS FOR FOLDING AND COMPACTING A LARGE DIMENSION DOCUMENT

Ralph Pidcock, 2614 Greenleaf St., Allentown, Pa. 18104

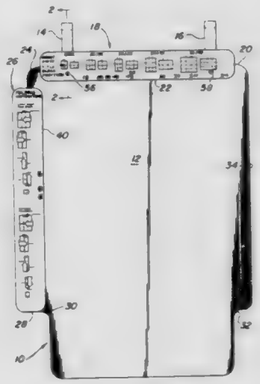
Filed Oct. 26, 1990, Ser. No. 603,928
Int. Cl.[5] B65H *45/04*
U.S. Cl. 493—405 **9 Claims**

1. A template for facilitating the folding and compaction of a large dimension document, print or plan into a folded form suitable for storage or insertion into conventionally sized mailing envelopes comprising:

(a) a formed and essentially rigid, substantially rectangular, planar board of a nominal thickness adapted to be mounted on its reverse side to a vertically oriented support surface;

(b) a first straight edge alignment means which is fixedly secured to and partially overlaps the top horizontal margin of the front surface of the underlying planar board, said first alignment means oriented such that its inwardly disposed, transverse edge is substantially parallel to said board margin;

(c) a first set of markings displayed upon said first alignment means which markings function to instruct the location of suitable folding lines for large variably dimensioned documents having rectangular linear dimensions;



(d) a second straight edge alignment means which is fixedly secured to and partially overlaps one of the opposing vertical margins of the front surface of the underlying planar board, said second alignment means oriented such that its inwardly disposed, transverse edge is substantially parallel to said one of the vertical board margins and perpendicular to the inwardly disposed edge of said first alignment means;

(e) a second set of markings displayed upon said second alignment means which markings function to instruct a document folding sequence for said large variably dimensioned documents, said folding sequence being contingent upon the document size and location of the legend or title block,

whereby said large variably dimensioned documents may be folded in accordance with said first and second sets of markings resulting in a folded document having the legend or title block in a visible position upon the uppermost document plate or segment upon the completion of the folding steps.

5,057,071

HYBRID CENTRIFUGE ROTOR

Alireza Piramoon, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 849,912, Apr. 9, 1986, abandoned. This application Aug. 21, 1989, Ser. No. 396,777
Int. Cl.[5] B04B *5/02, 7/08;* **B23P** *11/02*
U.S. Cl. 494—16 **9 Claims**

1. A hybrid centrifuge rotor for rotation about a spin axis, said rotor comprising:

a solid isotropic core symmetrical about said spin axis;

said solid isotropic core defining an exterior surface of revo-

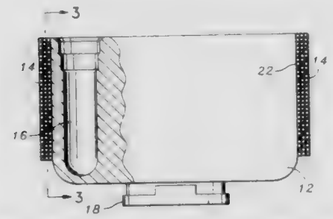
lution having a first radius with respect to said spin axis at a normal operating temperature;

a plurality of cylindrical sample receiving apertures defined symmetrically about said spin axis in said solid isotropic core, said cylindrical sample receiving apertures leaving a mass of said isotropic core extending across said isotropic core which withstands dynamic forces on said isotropic core;

a filament wound anisotropic reinforcement ring constructed of circumferentially wound fibers, said ring having an inside surface of revolution symmetrical about said spin axis;

said filaments having greater stiffness and stress resistance circumferentially of said ring than in other directions with respect to said ring to impart increased circumferential stiffness and stress resistance anisotropically relative to said other directions of stiffness and stress imposed on said ring;

said filament wound anisotropic reinforcement ring defining at normal operating temperature an inside surface of revo-



lution having a radius less than the first radius of the exterior surface of revolution of said isotropic core at said normal operating temperature of said isotropic core;

said exterior surface of revolution of said isotropic core having a second radius just less than the radius of the inside surface of revolution of said filament wound anisotropic reinforcement ring when said isotropic core is cryogenically cooled;

said second radius of said exterior surface of revolution of said solid isotropic core and said inside surface of revolution of said filament wound anisotropic reinforcement ring chosen to permit insertion of said isotropic core into said filament wound anisotropic ring when said isotropic core is cryogenically cooled whereby said isotropic core when cryogenically cooled just fits within said filament wound anisotripic reinforcement ring; and

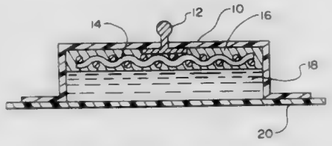
said isotropic core being thermally expanded interiorly of said filament wound anisotropic reinforcement ring to impart hoop tension to said anisotropic reinforcement ring and radial compression to said isotropic core.

5,057,072

IONTOPHORESIS ELECTRODE

Joseph B. Phipps, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 264,239, Oct. 28, 1988, abandoned.
This application Nov. 21, 1990, Ser. No. 616,724
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 **39 Claims**



1. An iontophoresis electrode comprising:

a conductive, current distributing member;

means for coupling said current distributing member to a source of electrical current;

reservoir means containing an ionic or ionizable drug to be delivered, and being further constructed and arranged to be in electrical contact with the current distributing member; and

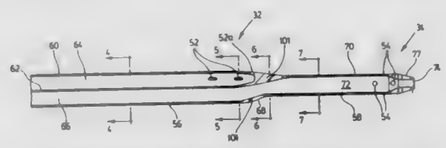
a layer of charge selective material applied directly to said current distributing member, and arranged intermediate said current distributing member and said reservoir means and coupling them together.

5,057,073

DUAL LUMEN CATHETER

Geoffrey S. Martin, Mississauga, Canada, assignor to Vas-Cath Incorporated, Ontario, Canada

Division of Ser. No. 184,529, Apr. 21, 1988, Pat. No. 4,961,809.
This application Jun. 26, 1990, Ser. No. 543,692
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—43 **24 Claims**



1. A dual lumen catheter for use in a vein to remove blood and to return treated blood to the vein comprising:

a flexible elongate body having first and second portions;

the first portion having a first cross-sectional area, a distal end, a proximal end, an outer wall and a continuous septum extending internally between spaced points on the outer wall to define D-shaped first and second passageways;

the second portion being tubular and having a second cross-sectional area smaller than said first cross-sectional area, a distal end with a cross-sectional area that reduces gradually to form a tip having an end opening, a proximal end, and an outer wall;

the distal end of the first portion being merged smoothly with the proximal end of the second portion at a transition portion which converges in cross-section from the first portion to the second portion;

the first passageway being closed at the transition portion to form a first lumen having a distal end at the transition portion;

at least one aperture at the distal end of the first lumen in the outer wall of the first portion providing access for blood into the first lumen;

the second passageway meeting the tubular second portion at the transition portion to form a second lumen which terminates at said end opening to permit treated blood to be returned to the vein; and

means coupled to the proximal end of the first portion to receive blood from the first lumen and to return treated blood to the second lumen.

5,057,074

MEDICAL CONTAINER REPLACING METHOD

Kensuke Suzuki, Nagaoka, and Norisuke Kira, Fujinomiya, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1990, Ser. No. 528,943
Claims priority, application Japan, May 26, 1989, 1-133393
Int. Cl.[5] A61M *5/14, 25/00*
U.S. Cl. 604—49 **5 Claims**

1. In a system comprising (A) a first tube having a first connector attached thereto at one end and (B) a second tube connected to a medical container and having a second connector attached thereto at a free end, both the first and second tubes requiring to be in a sterile condition when connected,

a method for replacing a medical container, comprising the steps of:

connecting the first connector to the second connector to provide fluid communication between the first and second tubes for allowing a medical treatment to be carried out,

blocking the second tube at one or more positions at the end of medical treatment, and



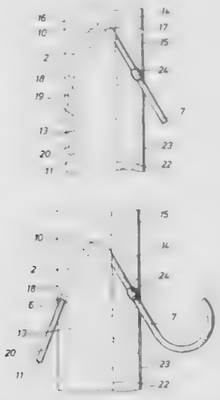
cutting the second tube at a position nearer to the medical container with respect to the blockade nearest to the second connector, the suspending section of the second tube with the second connector kept connected to the first connector serving as an antibacterial protective accessary for maintaining the connector connection in a sterile condition.

5,057,075

METHOD FOR IMPLANTING A CATHETER

Jack W. Moncrief, 3711 Greentrails South, Austin, Tex. 78731, and Robert P. Popovich, 2928 Kassarine Pass, Austin, Tex. 78704

Filed Dec. 13, 1989, Ser. No. 450,055
Int. Cl.[5] A61M *31/00, 1/00, 1/28*
U.S. Cl. 604—49 **16 Claims**



1. A method for implanting a catheter in a living body, wherein said catheter consists of a hollow tube with an arcuate bend between a subcutaneous cuff and a peritoneal cuff, with end portions of said catheter extending from said cuffs, and said cuffs are comprised of a biocompatible material amendable to in-growth of living tissue, said method comprising:

making a first incision in said body;

inserting the entire catheter through said incision into said body;

positioning the catheter in said body such that the peritoneal cuff is near but does not protrude into the peritoneal cavity;

making a second incision in said body near said first incision;

making a subcutaneous tunnel between said first and said second incisions, thereby forming a pocket in said tissue sufficient to accommodate the arcuate bend portion of the catheter;

positioning said arcuate bend portion of the catheter in said tunnel with said subcutaneous cuff adjacent subcutaneous tissue;

positioning said catheter end portion extending from said subcutaneous cuff such that said end is adjacent subcutaneous tissue;

closing the incisions such that the entire catheter is implanted inside the body;

allowing the site of said incisions to heal;

allowing subcutaneous tissue to grow into said cuffs;

making an incision in the body smaller that the first incision and near the subcutaneous cuff such that the end portion of the catheter adjacent the subcutaneous cuff may be brought outside the body through said incision; and

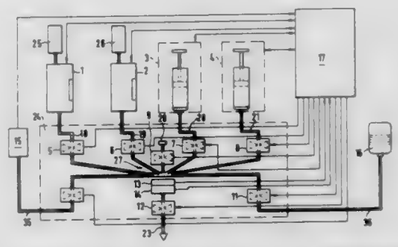
bringing outside the body through said smaller incision the end portion of the catheter adjacent the subcutaneous cuff without substantially disturbing tissue in-growth into the subcutaneous cuff and leaving inside said body the portions of the catheter including the subcutaneous cuff, the arcuate bend and the peritoneal cuff.

5,057,076

INFUSION APPARATUS

Hans D. Polaschegg, Oberursel, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg van der Hohe, Fed. Rep. of Germany

Filed Oct. 29, 1990, Ser. No. 604,961
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1989, 3939247
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—67 **10 Claims**



1. An apparatus for the dosed, continuous and simultaneous infusion of a plurality of infusion solutions or medicament solutions, comprising at least one pump (**1, 2**) respectively provided with a housing and a door, conveying conduits (**18–21**) which pass from containers containing said infusion solutions or medicament solutions and are connected via a transition member to a common patient's conduit (**23**), valves (**5–12**) provided in each of said conveying conduits, a flow sensor (**14**) provided in said patient's conduit (**23**) for sensing the flow rate, and a control unit operatively connected to said valves (**5–12**), said pump (**1, 2**) and said flow sensor (**14**), said flow sensor (**14**) being arranged downstream of said pump, and said control unit initiating the closure of said valves (**5–12**) upon detection of a fluid stop by said flow sensor (**14**),

characterized in that a said valve (**5, 6**) provided in said

conveying conduit of a said peristaltic pump (1, 2) is operatively connected to a door detector of said associated pump (1, 2) in such a way that said valve (5, 6) is closed when said door is opened, and opened when said door is closed.

5,057,077

FEEDING APPARATUS

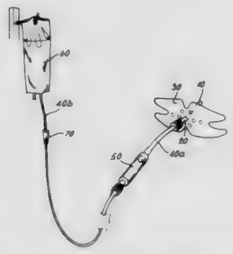
John J. Turner, Blundellsands; Mary J. A. Turner, Liverpool, and Peter Watt, Wirral, all of England, assignors to National Research Development Corporation, London, England

Filed Jun. 28, 1989, Ser. No. 372,615

Claims priority, application United Kingdom, Jun. 28, 1988, 8815379

Int. Cl.[5] A61J *9/00*

U.S. Cl. 604—77 **19 Claims**



1. Apparatus for administering ingestible oral fluid to a patient, comprising:

a chamber adapted to be held in the patient's mouth, the chamber having a fluid inlet opening directed outwardly of the mouth when so held, a fluid outlet opening and a resilient wall directed inwardly of the mouth;

an oral fluid reservoir separate from the chamber and adapted to be elevated relative to the patient's mouth;

a tube connected between the chamber inlet opening and the reservoir; and

a valve connected in said tube to control fluid flow through the tube from the reservoir to the patient, the valve including a hollow housing formed with a fluid inlet port and a fluid outlet port wherein the inlet port is positioned upstream of the outlet port, and a valve member in said housing, which member is freely movable into and out of engagement with said outlet port respectively to close and open the same;

the valve normally being operable under fluid pressure from the reservoir to move the valve member to close the outlet port, but being operable in response to distortion of the chamber resilient wall by patient oral action to move the valve member to open the outlet port and initiate fluid flow to the patient, with such flow continuing in predetermined metered manner independently of sustained patient action.

5,057,078

LOCKING SYRINGE

Jerrold L. Foote; Darla R. Gill; Fred P. Lampropolous, all of Salt Lake City, and William Padilla, Bennion, all of Utah, assignors to Merit Medical Systems, Inc., Salt Lake City, Utah

Filed Mar. 17, 1989, Ser. No. 325,561

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—99 **28 Claims**

1. A locking syringe, comprising:

a barrel including a set of internal threads;

a plunger disposed at lest partially within the barrel, the plunger comprising a set of external threads disposed on at least a portion of said plunger along the longitudinal axis thereof and which may threadably engage the set of internal threads; and



a triggering means attached to the plunger for selectively retracting said external threads, such that when the triggering means is actuated, the external and internal threads maintain a position of disengagement, thereby enabling the plunger to be freely moved with respect to the barrel.

5,057,079

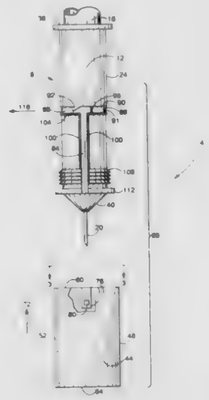
SHEATHING DEVICE FOR AFTER USE PROTECTION FROM A SYRINGE NEEDLE

Roland Tiemann, and Kevin Churchill, both of 2681 Ponderosa Rd., Shingle Springs, Calif. 95682

Filed Apr. 3, 1990, Ser. No. 523,706

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **17 Claims**



1. An irreversible locking protective syringe device for use on a syringe for sheathing a syringe attached needle post-use, comprising:

a) a cylindrical syringe body with an outer surface and an inner surface wherein said inner surface surrounds a body longitudinal central cavity entering said body at a proximal end and exiting said body at a restricted needle mounting distal end;

b) a cylindrical sheath with an outer surface and an inner surface wherein said inner surface surrounds a sheath longitudinal central bore running between proximal and distal sheath ends wherein said sheath central bore has a diameter suitable for receiving and encircling said syringe body;

c) first means associated with said body for locking said sheath substantially around said body in a pre-use, retracted position wherein said first means includes an annular stopping channel with proximal and distal walls having at least one locking ramp projecting from said proximal wall toward said body distal end substantially narrowing said stopping channel;

d) second means associated with said body for locking said sheath in an extended position that covers both a portion of said body proximate said distal end and all of said needle in a protective post-use position wherein said second means includes at least one annular element protruding above said outer body surface and at least one stop element protruding above both said outer body surface and said annular element and displaced from said annular element toward said distal body end; and

e) means associated with said sheath proximal end protruding inwardly from said sheath inner surface for locking said sheath in both pre-use and post-use positions.

5,057,080

MEDICAL SUCTION TUBE AND SUCTION CONTROL APPARATUS FOR ENDOSCOPE

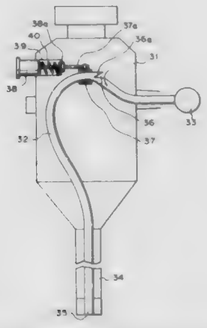
Nagashige Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1989, Ser. No. 330,465

Claims priority, application Japan, Apr. 8, 1988, 63-47919[U]; Apr. 13, 1988, 63-50129[U]; Dec. 20, 1988, 63-321099

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—118 **19 Claims**



1. A suction control apparatus provided on a control part of an endoscope having a suction port at the distal end of an insert part thereof, comprising:

a flexible tube communicating at the distal end thereof with said suction port and communicably connected at the proximal end thereof to a suction means;

a cut made in the intermediate portion of said tube so as to extend obliquely; and

switching means to bend and straighten a portion of said tube for switching over the following two states from one to the other, that is, a state wherein said tube is bent with said cut facing outward and a state wherein said tube is straightened at and near said cut,

whereby, when said tube is bent, said cut is opened and ambient air is sucked into said tube through said cut, whereas, when said tube is straightened, said cut is closed and suction is performed through said suction port.

5,057,081

PERISTALTIC INFUSION DEVICE

Richard A. Sunderland, Creve Coeur; Clarence L. Walker, Webster Groves, and Mark A. Davis, O'Fallon, all of Mo., assignors to Sherwood Medical Company, St. Louis Mo.

Filed Jun. 15, 1990, Ser. No. 538,791

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—153 **39 Claims**

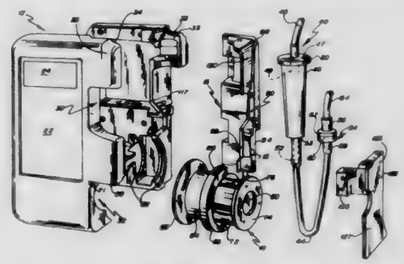
1. A fluid infusion device for delivering fluid to a patient comprising:

a housing assembly;

an infusion control means operatively associated with said housing assembly;

a fluid delivery set including a compressible tubing section adapted to be operatively mounted about said infusion control means;

a swing arm including a fluid delivery set receiving second channel means thereon and said second channel means adapted to receive at least a portion of said delivery set thereon, said swing arm being operatively mounted on said housing assembly and adapted to be rotatable between an open position wherein said at least a portion of said delivery set is insertable onto said second channel means and a closed position wherein at least a portion of said compressible tubing section is operatively stretched about said infusion control means and said at least a portion of said delivery set is retained on said second channel means on said swing arm.



5,057,082

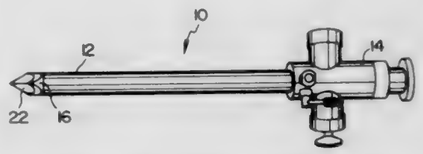
TROCAR ASSEMBLY

Robert L. Burchette, Jr., Mayo, S.C., assignor to Plastic Injectors, Inc., Spartanburg, S.C.

Filed Nov. 4, 1988, Ser. No. 267,497

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—164 **8 Claims**



1. An improved trocar obturator for insertion through body wall portions of humans and animals, comprising:

an elongated shank;

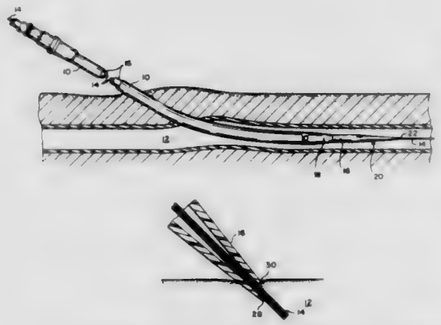
a solid cutting portion permanently secured to one end of said shank and having a plurality of faces each of said faces having a planar surface adjacent an outer free, distal end of same and a planar surface adjacent a proximal end of same, and defining a depression therebetween extending along said face, said faces merging into a cylindrical shank portion at said proximal end of same;

a piercing tip defined by said faces;

straight cutting edges defined at the intersection of each two adjacent faces, said cutting edge converging at said piercing tip and extending rearwardly from said tip towards said shank, said piercing tip and said cutting edges defining a cutting end of said trocar which minimizes tearing of surrounding body tissue during trocar penetration thereof; and

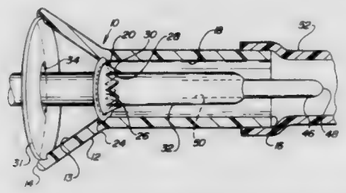
knob means located at an end of said shank opposite said cutting end to facilitate use of said trocar.

5,057,083
VASCULAR DILATOR WITH TRUNCATED TIP
Barry N. Gellman, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Jul. 25, 1989, Ser. No. 385,010
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **11 Claims**



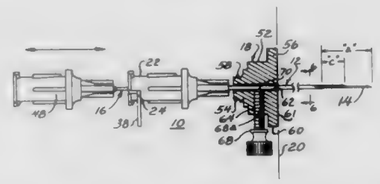
1. A vascular dilator for use with a guide member comprising:
an elongate tube having a uniform inner diameter defining a guide member lumen;
the dilator having a distal portion with a distally reducing wall thickness to define a tapered configuration, the distal portion terminating in an outlet with an edge having a first arcuate segment portion that lies generally in a plane perpendicular to the longitudinal axis of the tube and a second arcuate segment that extends from one end of the first segment to the other end of the first segment, said segments meeting at an angle that lies in the range of between about 30° to about 60°.

5,057,084
IMPLANTABLE INFUSION DEVICE
William D. Ensminger; James A. Knol, and James C. Andrews, all of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Mar. 1, 1990, Ser. No. 487,541
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **22 Claims**



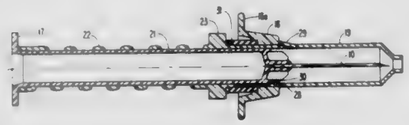
1. An implantable patient access device for permitting access to an internal catheter by a flexible filament such as an external catheter, wire or optical fiber comprising:
a housing defining an entrance orifice and a single exit orifice with said entrance orifice having a cross-sectional open area which decreases from said entrance orifice to a passageway communicating with said exit orifice, said housing causing said filament introduced into said entrance orifice to be directed to enter and pass through said passageway,
at least one articulating catheter valve positioned with said housing passageway which normally remains closed to provide resistance to flow of fluids through said valve, yet opens when contacted to permit said filament to pass through said valve enabling said filament to communicate with said internal catheter through said exit orifice, and
mounting means formed by said housing for enabling a fastener to affix said housing subcutaneously.

5,057,085
STABILIZED ASPIRATION BIOPSY NEEDLE ASSEMBLY
Daniel B. Kopans, Waban, Mass., assignor to Medical Device Technologies, Inc., Gainesville, Fla.
Filed Nov. 24, 1989, Ser. No. 441,079
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—173 **19 Claims**



1. A method for locating and positioning an aspiration biopsy needle including an introducing needle, a trocar member and an aspiration needle, each having a distal end, in a target area within a human or veterinary body, comprising:
inserting the introducing needle percutaneously into the body and advancing the introducing needle to the target area;
stabilizing the distal end of the introducing needle against lateral movement relative to the target area by advancing the trocar member axially through the introducing needle until its distal end extends beyond the distal end of the introducing needle and at least into the target area to maintain the distal end of the introducing needle in line with the target area and to form a coaxial unit,
introducing the aspiration needle axially into said coaxial unit formed by the trocar member and the introducing needle and advancing the aspiration needle through the coaxial unit formed by the trocar member and the introducing needle to the target area with the trocar member guiding the aspiration needle to the target area.

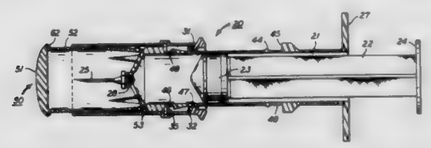
5,057,086
SAFETY SYRINGE
John A. B. Dillard, III, 1640 Pierside La., Camarillo, Calif. 93010, and James A. Orr, 7550 San Bari, Goleta, Calif. 93117
Filed Jul. 30, 1990, Ser. No. 559,836
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—195 **12 Claims**



1. In combination with a hypodermic syringe having:
(a) a hollow tubular syringe body,
(b) a hollow needle communicating with the hollow of the syringe body,

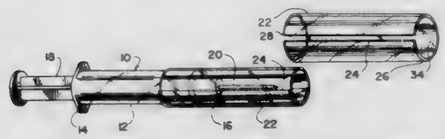
(c) a reciprocable tubular needle sheath disposed on the exterior of the syringe body, and
(d) a spring engaging the syringe body and the sheath to urge the sheath to cover the needle,
a latch mechanism to normally lock the sheath over the needle, and manually operable to unlock the sheath to expose the needle comprising:
1) a latch engaging the sheath and the syringe body to lock the sheath over the needle:
2) means for normally biasing the latch to a radially outward position to unlatch the sheath and syringe body;
3) a latch actuator collar slidingly mounted on at least one of said sheath or the syringe body; and
4) an actuator spring normally urging the collar to a position engaging the latch to hold the latch in engagement and to lock the sheath in a position over the needle, said actuator spring having a strength to be manually overcome to slide the actuator collar out of engagement with the latch.

5,057,087
HYPODERMIC NEEDLE SAFETY SYSTEM
James E. Harmon, 24 Margo Dr., Fairport, N.Y. 14450
Filed Apr. 24, 1989, Ser. No. 342,299
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—198 **7 Claims**



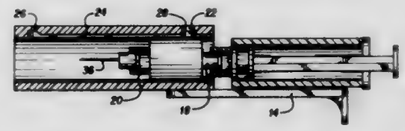
1. A hypodermic needle device including a barrel, a needle extending forwardly from said barrel, and a safety sleeve surrounding said barrel and axially movable thereon:
said barrel including a forward detent an intermediate detent and a rear detent, and said safety sleeve adapted for selective operative engagement with said detents;
said safety sleeve being movable to selective positions on said barrel, including a transport position in engagement with said intermediate detent, a retracted position in engagement with said rear detent, and a locked safety position in engagement with said forward detent;
said safety sleeve including an inner ring tapered to permit axial movement of said ring relative to said intermediate and rear detents: and
sealing means responsive to the operative engagement of said sleeve with said forward detent to form a liquid tight seal at the juncture of said sleeve and said barrel.

5,057,088
NEEDLE GUARD
Krishna Narayanan, 423 N. St. Clair, Pittsburgh, Pa. 15206, and Eugene D. Ross, 511 2nd St., Southampton, Pa. 18966
Filed Aug. 23, 1988, Ser. No. 235,101
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **18 Claims**



1. A hypodermic syringe for giving injections comprising:
a hollow barrel member with first and second opposite ends;
a plunger, slidably movable within said barrel member and extending from said first barrel end;
a hypodermic needle mounted on and extending axially outward from said second opposite end of said barrel;
a sleeve encircling a portion of said barrel and slidably movable between a first position being characterized by said needle being contained within said sleeve and a second position being characterized by said needle projecting from said sleeve;
said sleeve comprising a thermoplastic tube having a longitudinal slot along one side, said thermoplastic tube being constructed of an elastic and resilient thermoplastic material which grips said barrel of said syringe so as to remain fixedly positioned thereon, said thermoplastic sleeve being sufficiently elastic to allow said sleeve to be manually slid from said first position to said second position on said barrel; whereby accidental contact with said needle is prevented by said sleeve when said sleeve is in said first position.

5,057,089
SYRINGE NEEDLE GUARD
Robert M. Greco, 2 Pear St., Schuylkill Haven, Pa. 17972
Filed Oct. 4, 1990, Ser. No. 592,907
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **14 Claims**



1. For use with a syringe of the type having a syringe body internally accepting an injection plunger to define a fluid containing space communicating with a syringe needle for injecting fluid, said syringe needle joined to said syringe body by fluid-tight connectors, said connectors including a first body-type connector axially disposed on said syringe body distal said plunger and a first needle-type connector axially disposed on said syringe needle for mating with said first body-type connector, said syringe body and said syringe needle cylindrical and coaxial, said syringe body having an outer body diameter, a needle guard comprising:
a protective hollow sleeve axially movable along said syringe body, said sleeve including a distal end and a proximal end, said sleeve having an internal sleeve diameter greater than said external body diameter for accepting said syringe body therein, said proximal end open to accept therethrough said syringe body so that said injection plunger extends from said proximal end;
an adapter disposed within said sleeve and slidable within said sleeve, said adapter including a cylindrical outer adapter surface having an outer adapter diameter less than said internal sleeve diameter and generally equal to said external body diameter;
said adapter including a second needle-type connector axially disposed and adapted for fluid connection to said first body-type connector of said syringe body to join said syringe body and said adapter into a slide unit, a second body-type connector axially disposed and adapted for fluid connection to said first needle-type connector of said syringe needle, and a fluid passage between said second body-type connector and said second needle-type connector; and
a distal lock adjacent said distal end of said sleeve, and a proximal lock adjacent said proximal end of said sleeve, said distal lock adapted to hold said slide unit within said sleeve at a distal position adjacent said distal end, and said proximal lock adapted to hold said slide unit within said sleeve at a proximal position adjacent said proximal end;
said sleeve adapted in length to substantially cover said syringe needle when said syringe needle is joined to said

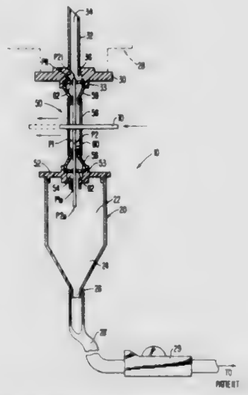
slide unit and said slide unit is in said proximal position, and to uncover said syringe needle when said syringe needle is joined to said slide unit and said slide unit is in said distal position.

5,057,090

DRIP METERING APPARATUS WITH SELECTABLE DROP SIZES AND COUPLING ARRANGEMENT THEREIN

Edward S. Bessman, 929 Rustling Oaks Dr., Millersville, Md. 21108

Filed Jun. 7, 1990, Ser. No. 536,348
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—251 **48 Claims**



1. Drip metering apparatus, comprising:
a drip chamber,
supply connector means for connection to a supply of liquid, and
means coupling said drip chamber to said supply connector means for conveying said liquid to an upper region of said drip chamber and introducing said liquid into said upper region in the form of drops,
said coupling means defining an inner passageway extending within an outer passageway, with said inner and outer passageways having respective inlet ends arranged to confront a common flow of said liquid from said supply connector means and respective drop-forming outlet ends disposed for introducing drops of said liquid into an upper region of said drip chamber, the drop-forming outlet end of said outer passageway being dimensioned to form relatively large volume drops, and the drop-forming outlet end of said inner passageway being dimensioned to form relatively small volume drops.

5,057,091

ENTERAL FEEDING TUBE WITH A FLEXIBLE BOLUS AND FEEDING BOLUS

Erik Andersen, Vernon Hills, Ill., assignor to Corpak, Inc., Wheeling, Ill.

Filed Jul. 31, 1989, Ser. No. 387,866
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—270 **7 Claims**

1. An enteral feeding tube adapted for transpyloric passage and duodenal intubation of a distal end of said feeding tube in a patient capable of peristaltic contractions of the stomach wall, comprising:
a. a feeding tube having a distal end;
b. a feeding bolus located at the distal end of said feed tube, said feeding bolus having at least one opening in fluid communication with said feeding tube for dispensing nutritional fluids, and being of greater rigidity than said feeding tube;
c. an elongated, generally flexible bolus, said flexible bolus extending from said feeding bolus; and,
d. means for linking said flexible bolus to the feeding bolus of said feeding tube, said linking means having outer dimensions smaller than the outer dimensions of said flexible



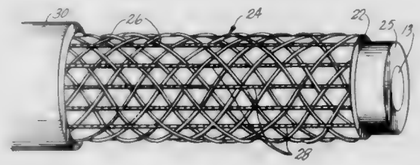
bolus and said feeding bolus, said linking means being of a length, diameter and deformability selected to initiate and maintain peristaltic contractions in the stomach walls around and behind said flexible bolus, the peristaltic contractions acting upon and advancing said flexible bolus, linking means, feeding bolus, and distal end of said feeding tube through the pylorus to achieve duodenal intubation.

5,057,092

BRAIDED CATHETER WITH LOW MODULUS WARP

Wilton W. Webster, Jr., 1388 Crest Dr., Altadena, Calif. 91001

Filed Apr. 4, 1990, Ser. No. 504,298
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—282 **7 Claims**



1. An intravascular catheter construction comprising:
a flexible inner tube;
a braided reinforcing mesh in surrounding relation to the inner tube, said reinforcing mesh comprising interwoven helical members and longitudinal warp members, said warp members comprising a lower modulus of elasticity than the helical members; and
a flexible plastic outer sleeve in surrounding relation to the reinforcing mesh.

5,057,093

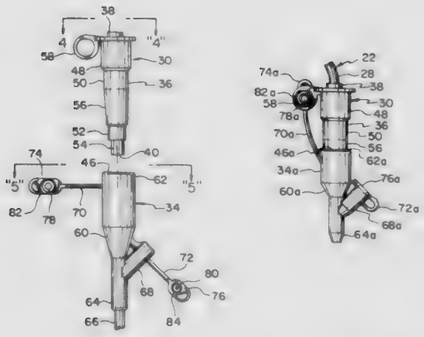
MEDICAL DEVICE IMPROVEMENTS FOR ENTERAL FEEDING

Robert D. Clegg, Pickerington, Ohio; Ronald A. Coules, Barrington, Ill.; Kent E. Iversen, Columbus; Robert S. Osborne, Gahanna, both of Ohio, and Patricia A. Schneider, Wauconda, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 7, 1989, Ser. No. 404,940
Int. Cl.[5] A61M *3/00*
U.S. Cl. 604—283 **14 Claims**

1. For use in various combinations between a feeding tube set and a catheter; an adaptor, a connector, and an adaptor hood;
said adaptor comprising a first generally tubular member having an upper end adapted to be mounted on the distal end of a feeding tube and a lower end adapted to be inserted into the upper end of either said connector or into said adaptor hood, the outer surface of said adaptor being characterized by a series of steps of progressively smaller diameters from the upper to the lower end thereof and

including at least one inverted, slightly conical section, and a ring member projecting radially from said upper end of said first tubular member in a longitudinal plane and adapted to have a locking plug of said connector removably secured therein;
said connector comprising a second generally tubular member mounted on the proximal end of a catheter and having an open end with any one of a plurality of inner diameters and adapted to receive therein the stepped lower end of said adaptor, a locking plug projecting radially from the upper portion of said second tubular member on a flexible, resilient arm with said plug being adapted either for plugging said open upper end of said second tubular member



when no adaptor is received therein or for being lockingly engaged in said adaptor ring member when said adaptor is received in said open upper end of said connector to prevent inadvertent separation of said adaptor and said connector; and
said adaptor hood comprising a third generally tubular member having an open upper end, an inner bore which tapers inwardly in a downward direction, and a tip at its lower end with the outer surface thereof being provided with a luer taper for interfitting engagement thereof in the open upper end of a connector having a bore with a luer taper, which connector is mounted on the proximal end of a catheter.

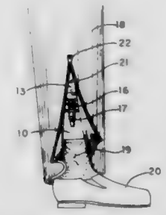
5,057,094

CONVENIENT EMPTYING OR URINARY LEG BAG

Sylvia Abbey, 5131 West Oakland Park Blvd., Ft. Lauderdale, Fla. 33313

Continuation-in-part of Ser. No. 332,979, Apr. 4, 1989, abandoned. This application Jul. 19, 1990, Ser. No. 554,463
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—351 **6 Claims**

4. In combination:
a urinary drainage leg bag having two upper corners and two lower corners and a connection for an incoming catheter drain, an outlet for effecting urine drainage from said urinary drainage leg bag, a valve to open and close said outlet, tabs attached to each corner of said urinary drainage leg bag, said tabs having one hole each, two elastic strap means attached to said tabs through said holes for holding said urinary drainage leg bag onto an inside of a calf of a leg of a wearer, with one of said strap means being above a protrusion of the calf but below the knee of the wearer's leg, and the other of said strap means being below the protrusion of the calf of the wearer's leg, said one of said strap means connects the hole in one upper corner to the hole in the other upper corner and includes means for encircling the leg without traversing the urinary drainage leg bag, and said other of said strap means connects the hole in one lower corner to the hole in the other lower corner and includes means for encircling the leg without traversing the urinary drainage leg bag; and



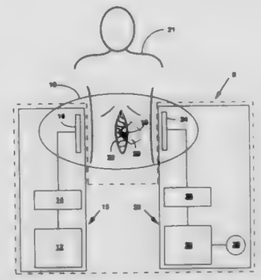
trousers having on the inside surface of only one trouser leg corresponding to the wearer's leg which will support said urinary drainage leg bag a flexible intermeshing closure extending from the bottom of said trouser leg only up to the location on the trouser leg adapted to overlie the calf protrusion, said flexible intermeshing closure covering said urinary drainage leg bag when sealed, but allowing access to said urinary drainage leg bag when unsealed.

5,057,095

SURGICAL IMPLEMENT DETECTOR UTILIZING A RESONANT MARKER

Carl E. Fabian, 577 NE. 96th St., Miami Shores, Fla. 33138

Filed Nov. 16, 1989, Ser. No. 437,182
Int. Cl.[5] A61F *13/16*
U.S. Cl. 604—362 **31 Claims**



1. An apparatus for detecting a surgical implement in human or animal tissue, comprising
(a) means for defining an interrogation zone encompassing a surgical wound in said tissue;
(b) a marker secured to a surgical implement appointed to be positioned within said wound, said marker comprising a marker element adapted to undergo resonance at only a preselected frequency, causing a substantial change in its effective impedance, when interrogated within a frequency band that is (i) below 1 gigahertz, and (ii) contains a frequency component equal to the preselected frequency, said marker element generating an electromagnetic dipole field that provides said marker element with signal identity;
(c) interrogating means comprising a frequency generating means, field generating means, and field changing means,

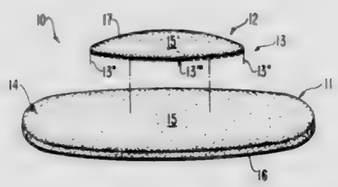
said frequency generating means generating said frequency band, said field generating means generating within said interrogation zone an interrogating field having said frequency band, and said field changing means varying the amplitude and direction of said interrogating field to alter the electromagnetic dipole coupling between said marker element and said interrogating field; and

(d) receiving means comprising a detecting antenna, an antenna changing means, and a detecting means, said detecting antenna receiving said marker dipole field, said antenna changing means varying the orientation and position of said detecting antenna relative to said marker element to alter said electromagnetic dipole coupling therebetween, and said detecting means detecting and verifying said marker dipole field.

5,057,096
GENITAL-VULVA PAD SANITARY NAPKIN CONSTRUCTION

Frances M. Faglione, 89-04 Doran Ave., Glendale, N.Y. 11385

Filed Jun. 21, 1990, Ser. No. 541,651
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.1 **2 Claims**



1. A genital vulva pad/sanitary napkin construction for absorbing mensa flow through a woman's vulva wherein the construction consists of

a sanitary napkin unit including a sanitary napkin member fabricated from an absorbent material;

a removable and replaceable vulva pad unit operatively associated with the sanitary napkin unit wherein the vulva pad unit comprises and elliptical vulva pad member fabricated from an absorbent material; and, wherein the vulva pad member is fabricated from an absorbent material and is dimensioned and configured to fit inside a woman's vulva; and the vulva pad member is generally centrally disposed on top of, and spaced a substantial distance from the sides of the sanitary napkin member whereby there is a substantial surface area of the absorbent material of the sanitary napkin member which surrounds the outer edges of the vulva pad member; and,

releasable securing means spaced from one another and fixedly attached on one end to the vulva pad member and having the other end penetratingly yet releasably engaged with the absorbent material of said sanitary napkin member for releasably securing the vulva pad member to the sanitary napkin member; wherein, the releasable securing means comprise flexible tangs.

5,057,097
STRETCHABLE BUT STABLE FILM AND FASTENING TAPE

Marc Gesp, Turnhout, Belgium, assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Sep. 13, 1988, Ser. No. 243,917
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—389 **13 Claims**

1. A pressure-sensitive stretchable fastening tape suitable for disposable diapers or other articles which are provided with a fastening tape, said tape having length, width and thickness directions, characterized in that said tape comprises a film and a pressure-sensitive adhesive layer associated with said film at the terminal segments thereof in its length direction to provide a central segment which is free of adhesive, said film comprising at least two layers, at least a first one of the layers being a substantially continous layer free of a perforated breakable joint and dimensionally stable up to a yield point or range where said layer yields under given manual stretching tensions

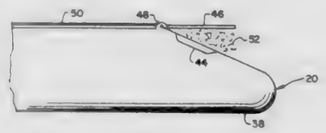


while at least a second of the layers remains substantially completely elastic under the same tensions, the film prior to manual tensioning to said given tensions being at least partially inelastic, said film upon manual stretching to said given tensions becoming substantially completely elastic, said first layer having a central segment portion of reduced thickness aligned with said central segment of said adhesive layer.

5,057,098
APPARATUS AND METHOD FOR EXTRACTING CATARACT TISSUE

Jerry Zelman, Miami Beach, Fla., assignor to Ophthalmocare, Inc., Los Gatos, Calif.

Continuation-in-part of Ser. No. 44,544, May 1, 1987, Pat. No. 4,825,865. This application Sep. 16, 1988, Ser. No. 245,144
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—6 **22 Claims**



1. An apparatus for extracting fragments of cataract tissue comprising:

a probe adapted for insertion into the eye through an incision for supplying an irrigating liquid to the interior of said eye through an irrigation opening and aspirating that liquid and fragments of cataract tissue through an aspiration opening, said probe having a distal insertion end and a proximal end, said distal end being shovel shaped so as to have a blunt distalmost end and a distal side face sloping from a maximum dimension to a minimum dimension at the blunt distalmost end, said aspiration opening and said irrigation opening being defined through said sloped side face; and

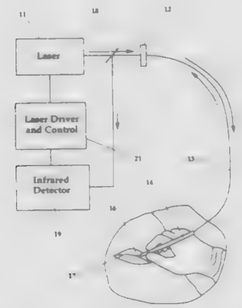
means for dislodging fragments of cataract tissue at said aspiration opening which have not passed through said aspiration opening.

5,057,099
METHOD FOR LASER SURGERY

John L. Rink, San Francisco, Calif., assignor to Xintec Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 265,565, Nov. 1, 1988, Pat. No. 4,950,268, which is a continuation-in-part of Ser. No. 19,755, Feb. 27, 1987. This application May 14, 1990, Ser. No. 523,473
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—12 **8 Claims**

1. A method for carrying out surgical procedures using a laser, having an output power, comprising the steps of connecting an optical fiber delivery system to the laser with the output end of the optical fiber at the surgical site, providing an infrared detector disposed to monitor the laser beam output path to receive infrared radiation from the optical fiber delivery system and generate an infrared detector signal, operating the laser and performing surgery with the output end of the optical fiber, and using the infrared detector signal to modulate and continue the power output by the laser to the optical fiber

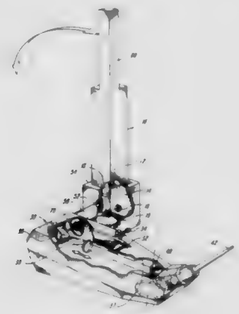


delivery system so that the output end of the optical fiber is maintained within a predetermined temperature range.

5,057,100
LASER HEAD AND MICROSCOPE ATTACHMENT ASSEMBLY WITH SWIVEL CAPABILITY

Igino Lombardo, Sharon, Mass., assignor to I.L. Med., Inc., Walpole, Mass.

Continuation-in-part of Ser. No. 179,819, Apr. 11, 1988, Pat. No. 4,856,512. This application Jul. 21, 1989, Ser. No. 383,852
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—17 **13 Claims**



1. A laser assembly for mounting a surgical laser to a surgical microscope over an operative area, and for directing a surgical laser beam into a surgical field of the microscope, comprising:

a microscope platform capable of receiving a laser beam at an entrance point and directing the beam through the microscope platform out to a desired point within the surgical field of the microscope;

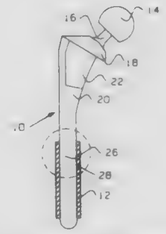
said microscope platform including mounting means attached to the microscope platform and being pivotably movable between a closed and an open position, and mirror means including a mirror, coupled to the mounting means, and operative to direct the laser beam to selectable points in the surgical field of the microscope;

the mounting means in the closed position being operative to dispose the mirror means in the path of the laser beam for selectable direction of the laser beam within the surgical field, and being operative in the open position to permit access to an objective lens of the surgical microscope.

5,057,101
FEMORAL PROSTHESIS WITH CENTERING SLEEVE

Lawrence D. Dorr, Flint Ridge, Calif., and Marc M. Vreede, Northville, Mich., assignors to Intermedics Orthopedics, Inc., Austin, Tex., a part interest

Filed Aug. 1, 1990, Ser. No. 561,461
Int. Cl.[5] A61F *2/36, 2/30*
U.S. Cl. 623—23 **9 Claims**



1. A femoral head prosthesis comprising

a generally circular head;

an enlarged portion distal from the head for insertion into a cavity in a patient's femur;

a shank distal from the enlarged portion for extending into a medullary canal of the femur, and

a sleeve adapted to fit over the shank for varying the effective diameter of the shank, the shank comprising means for engaging the sleeve, said engaging means comprising a male taper located between the enlarged portion and the midpoint of the length of the shank, and sleeve comprising an interior surface having a female taper for attaching the sleeve at the engaging means, said female taper comprising about one-fifth of said interior surface of the sleeve.

5,057,102
CONTRAST ADJUSTOR FOR AIMING LASER

Yuko Tomioka; Hiroshi Koizumi, and Masatsugu Kijima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Japan

Filed May 18, 1990, Ser. No. 524,876
Claims priority, application Japan, May 29, 1989, 1-132707
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—004 **6 Claims**

1. A laser treatment apparatus for treating a site of disease of a patient with a laser beam, comprising:

a source of illumination light including means for irradiating a site of treatment of the patient and a site around the site of treatment with the illumination light;

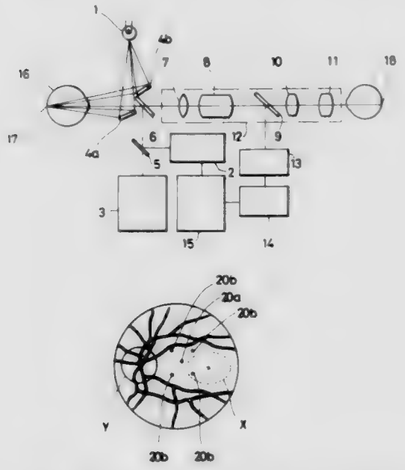
a source of aiming light including means for irradiating the site of treatment with the aiming light;

light-receiving means for receiving a light reflected from an aiming site to which the aiming light is applied and from a site around the aiming site;

a setting means for comparing a ratio of a quantity of light reflected from the aiming site, as received by the light-receiving means, to a quantity of light reflected from the site around the aiming site with a predetermined ratio; and

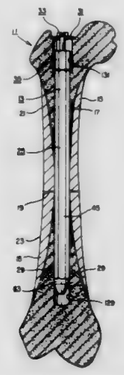
a control unit including means for controlling an illuminance of the aiming light with respect to the illumination light by

adjusting a ratio of the quantity of light reflected from the aiming site to the quantity of light reflected from the site



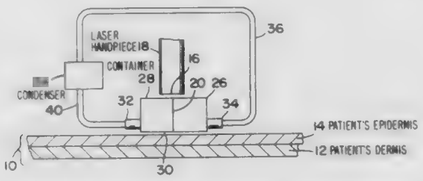
around the aiming site so as to reach a predetermined ratio.

5,057,103
COMPRESSIVE INTRAMEDULLARY NAIL
Emsley A. Davis, P.O. Box 942, McCamey, Tex. 79752
Filed May 1, 1990, Ser. No. 517,583
Int. Cl.[5] A61B *17/18*
U.S. Cl. 606—63 **22 Claims**



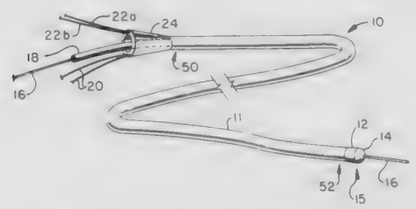
1. A device for use in promoting healing of a fractured bone in a human or animal, said bone having a cortex, a medullary canal and a fracture site, comprising:
(a) an elongated insertable member having a longitudinal axis, a first end portion, and a second end portion, and having an exterior surface, said insertable member having a transverse dimension which is small enough to allow the insertion of said insertable member into the medullary canal of said bone;
(b) first holding means located at said insertable member first end portion, said first holding means being adapted for engaging said bone cortex and for holding said first end portion in position relative to said bone cortex when so engaged;
(c) said first holding means being expandable into an engagement position from a stowed position in said insertable member, wherein said insertable member first end portion can be inserted into the medullary canal of said bone when said first holding means is in said stowed position;
(d) second holding means coupled with said insertable member second end portion, said second holding means being adapted for engaging said bone cortex and for holding said second end portion in position relative to said bone cortex when so engaged;
(e) means for adjusting the force exerted by said first and second holding means on said bone along said longitudinal axis, said force adjustment means being coupled with said first and second holding means, wherein said device is adapted to be inserted into the medullary canal of said bone so as to span the site of said bone fracture with said first holding means on one side of said fracture site and said second holding means on the other side of said fracture site, said device being adapted to exert compressive force onto said bone across said fracture site with said fist and second holding means;
(f) said first holding means comprising plural arms that are pivotable between said stowed position and said engagement position;
(g) said second holding means comprising a flanged cap member that is adapted to engage an outer surface of said bone cortex;
(h) said pivotable arms of aid first holding means have free ends that are adapted for engaging said bone cortex, said pivotable arms comprising snag means for snagging said cortex and for providing that said pivotable arms securely engage said bone cortex, said snag means being located at the free ends of said pivotable arms.

5,057,104
METHOD AND APPARATUS FOR TREATING CUTANEOUS VASCULAR LESIONS
Cyrus Chess, 49 Blue Spruce Cir., Weston, Conn. 06883
Filed May 30, 1989, Ser. No. 358,890
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—9 **11 Claims**



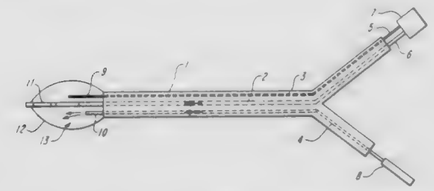
1. Apparatus for treating cutaneous vascular lesions in a target area under a patient's epidermis, said apparatus comprising:
a laser beam source means for directing a laser beam against and through a predetermined location of the patient's epidermis to the target area; and
a stationary container means for containing a cooling medium and for subjecting the patient's epidermis to the cooling medium at the target area of the patient's epidermis simultaneous with the application of the laser beam thereto, said container being a closed container and positioned directly between said laser beam source means and the target area of the patient's epidermis, but spaced from said laser beam source means.

5,057,105
HOT TIP CATHETER ASSEMBLY
David G. Malone, Mission; James L. Vacek, Lenexa, and G. Scott Smith, Lawrence, all of Kans., assignors to The University of Kansas Med Center, Kansas City, Kans.
Continuation-in-part of Ser. No. 399,773, Aug. 28, 1989, abandoned. This application Aug. 23, 1990, Ser. No. 571,212
Int. Cl.[5] A61B *17/38*
U.S. Cl. 606—28 **10 Claims**



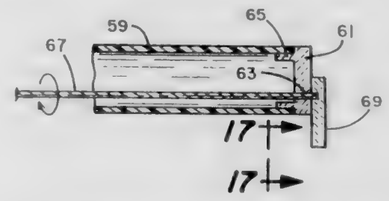
1. A method of applying heat to the interior of a vessel in vivo, said method comprising the steps of:
inserting an electrically heatable, voltage responsive, hot tip catheter assembly having a catheter tip into the vessel;
positioning said catheter tip in the vicinity of the vessel interior to be heated;
heating said catheter tip;
monitoring the temperature of said catheter tip;
comparing said temperature with a set point temperature representative of a predetermined temperature set point for said catheter tip;
determining the deviation between tip temperature and set point temperature;
determining the rate of change of said deviation; and
applying a voltage to said catheter tip in accordance with both said deviation and said rate of change of said deviation in order to control the temperature of said catheter tip at said set point temperature.

5,057,106
MICROWAVE BALLOON ANGIOPLASTY
Raymond S. Kasevich, Weston; James F. McQueeney, Natick, and Ronald H. Crooker, Stoneham, all of Mass., assignors to Kasevich Associates, Inc., Woburn, Mass.
Continuation of Ser. No. 195,584, May 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 100,465, Sep. 24, 1987, Pat. No. 4,776,086, which is a division of Ser. No. 834,199, Feb. 27, 1986, Pat. No. 4,700,716. This application Jul. 9, 1990, Ser. No. 550,341
Int. Cl.[5] A61N *5/02*
U.S. Cl. 606—33 **38 Claims**



1. A microwave catheter system for heating arterial plaque, comprising: a flexible catheter member having a distal end and a proximal end, and adapted for positioning in an artery, an inflatable balloon supported at the distal end of the catheter member, a microwave signal generator at the proximal end of the catheter member, transmission line means for transmitting energy coupled from said signal generator through said catheter member and including at the distal end thereof an antenna means for radiating energy substantially uniformly and controllably into said artery, optic fiber means for transmitting optical energy extending through said catheter member between proximal and distal ends thereof and having one end thereof disposed in said balloon in juxtaposition with said antenna means, and channel means extending through said catheter member between proximal and distal ends thereof for coupling a fluid to said balloon for inflation thereof.

5,057,107
ABLATION CATHETER WITH SELECTIVELY DEPLOYABLE ELECTRODES
David J. Parins, White Bear Lake; Mark A. Rydell, Golden Valley, and Peter Stasz, Moundsview, all of Minn., assignors to Everest Medical Corporation, Minneapolis, Minn.
Division of Ser. No. 580,782, Sep. 10, 1990, which is a division of Ser. No. 337,426, Apr. 13, 1989, Pat. No. 4,976,711. This application Feb. 19, 1991, Ser. No. 656,744
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—48 **5 Claims**

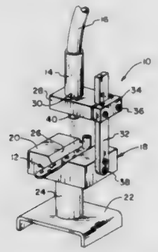


1. An RF ablation catheter for electrosurgically removing tissue deposits from the interior of a blood vessel, comprising:
(a) an elongated, flexible, plastic tubular member having a distal end and a proximal end and an outside diameter which is less than the diameter of the lumen of the blood vessel to be treated;
(b) means for mounting at least two conductive electrodes in non-contacting relation near said distal end of said tubular member to normally present a relatively small cross-sectional profile within said blood vessel prior to the placement of said two electrodes adjacent said tissue deposits;
(c) means for rotating said electrodes out of longitudinal alignment with respect to said tubular member coupled to said means for mounting which when manually actuated increases said cross-sectional profile to the point where said two electrodes contact said tissue deposits; and
(d) conductor means extending through said tubular member from said proximal end and connected to said two electrodes for applying an RF voltage across said two electrodes sufficient to cut said tissue deposits, said two electrodes being sufficiently closely spaced to allow electrical breakdown therebetween when bridged by said tissue deposits.

5,057,108
METHOD OF SURFACE FINISHING ORTHOPEDIC IMPLANT DEVICES
H. Ravindranath Shetty, Warsaw; John H. Hiss, Leesburg, and Kevin M. Greig, Warsaw, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Jan. 12, 1990, Ser. No. 464,096
Int. Cl.[5] A61F *5/04;* **B21S** *51/28*
U.S. Cl. 606—53 **9 Claims**

1. A method manufacturing an orthopaedic implant device having enhanced fatigue properties, comprising the steps of:
providing a metal substrate in the form of an orthopaedic implant device with an outer surface;
shot blasting said outer surface of said metal substrate with metal shot until a distinct cold-worked outer layer is

formed on said metal substrate, said cold-worked layer having a textured outer surface;



shot blasting said textured outer surface of said cold-worked outer layer with glass bead shot after shot blasting with metal shot is completed; and

electropolishing said textured outer surface.

5,057,109

FIXING INSTRUMENTS FOR SPINAL SURGERY

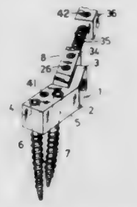
Sven Olerud, 710 11 Lännaholm, Malmen, Sweden

Filed Mar. 7, 1990, Ser. No. 489,703

Claims priority, application Sweden, Oct. 16, 1989, 8903403

Int. Cl.[5] A61F *5/04, 5/00*

U.S. Cl. 606—61 **17 Claims**



1. An apparatus for fixation to a human spine during spinal surgery, comprising:

a first block portion having opposite surfaces and opposite ends, one of said surfaces disposed to be fixed adjacent to a portion of the spine, a projecting portion extending from one said end, and at least two spaced apertures obliquely inclined relative to one another penetrating said first block portion between said opposite surfaces;

fixing means disposed in each of said apertures for fixing said first block portion to the spine;

locking means for rigidly locking said fixing means within said apertures of said first block portion;

a second block portion disposed to be fixed to another portion of the spine; and

attachment means for attaching said second block portion to said projecting portion in spaced relation to said first block portion, said attachment means including means for adjusting the space between said first and second block portions.

5,057,110

INTRAMEDULLAR NAIL

Curt Kranz, Berlin, and Hanns Seiler, Wadgassen, both of Fed. Rep. of Germany, assignors to Johnson & Johnson, New Brunswick, N.J.

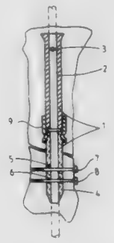
Filed Nov. 29, 1989, Ser. No. 442,795

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840798

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—62 **9 Claims**

1. An intramedullar nail, having a tip section constituting the tip of the nail for operative treatment of fractures of a long tubular bone, the nail being fixable by means of fixation screws, said nail tip section consisting of an absorbable material, said



tip section having fixation screws passing therethrough in order to attach the nail to the bone.

5,057,111

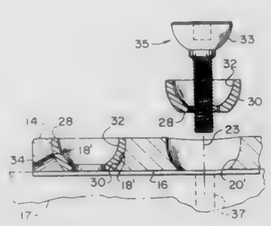
NON-STRESS-SHIELDING BONE FRACTURE HEALING DEVICE

Joon B. Park, 6 Lake Pointe Rd., R.R. #6, Iowa City, Iowa 52240

Filed Nov. 4, 1987, Ser. No. 116,497

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—69 **19 Claims**



1. A non-stress-shielding bone fracture compression healing device to be used with a means for attaching same to bone tissue having a fracture therein, the attaching means having an outer surface facing its environment, the device comprising:

a rigid plate having a length, a width, a height, a top surface, a bottom surface and a predetermined region extending along the length thereof intended to be disposed so as to extend across the bone fracture;

at least two openings defined in said plate and extending through said plate from said top surface to said bottom surface, said predetermined plate region being disposed between at least said two openings;

each said opening having an opening surface defining the boundary of said opening through said plate from said top plate surface to said bottom plate surface; and

at least one of said openings being a relaxation opening, for each said relaxation opening, means for producing a separation between at least a portion of the outer surface of the attaching means and at least a portion of said opening surface of said relaxation opening when the attaching means extends through said relaxation opening to attach said plate to the bone tissue, said separation producing means having a thickness profile, said thickness profile being controllable to change said thickness profile gradually over a predetermined period of time, said gradual change in said thickness profile causing gradual transfer of load from said plate and attaching means to the bone attached to said plate.

5,057,112

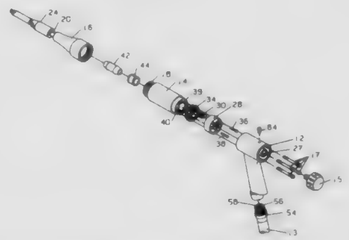
PNEUMATICALLY POWERED ORTHOPEDIC BROACH

Randy G. Sherman; Marc Vreede, and Fred D. Tripp, all of Austin, Tex., assignors to Intermedics Orthopedics, Inc., Austin, Tex.

Filed Jan. 4, 1990, Ser. No. 460,828

Int. Cl.[5] A61B *17/16*

U.S. Cl. 606—79 **33 Claims**



1. An apparatus for driving an orthopedic broach into a bone of a patient, comprising:

means for mounting a broach on the apparatus,

means continually operative to apply a periodic percussive force to the broach in a first direction,

means selectively operative to apply a second periodic percussive force to the broach in a second direction, said second direction being substantially opposite to said first direction, and

means for controlling the magnitude of the second percussive force applied by selectively operative means.

5,057,113

DEVICE FOR TENSIONING TRACTION WIRES IN ORTHOPEDIC SURGERY

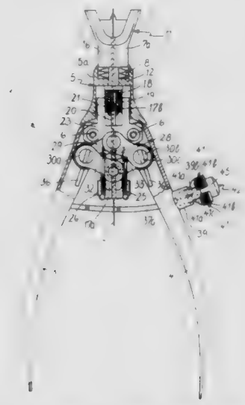
Franco Mingozzi, Lippo Di Calderara Di Reno, Italy, assignor to Citieffe S.r.l., Lippo Di Calderara Di Reno, Italy

Filed Apr. 2, 1990, Ser. No. 502,884

Claims priority, application Italy, Apr. 3, 1989, 3410 A/89

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—103 **11 Claims**



1. Device for tensioning traction wires during anchoring to external fixing devices in orthopedic surgery, comprising a hollow body to which a pair of actuation levers is pivoted, a movable head frontally guided in said hollow body, a slider slidably mounted inside said hollow body and adapted to be traversed by a traction wire, a traction element supported by said slider and provided with clamps for locking said traction wire, an anchoring element rigidly associated with said hollow body and provided with guiding means for said slider, lever means pivoted to said anchoring element and adapted to transmit to said slider compression force exerted on said actuation levers, and a movable locking element adapted to keep constant the tension exerted by means of said actuation levers.

5,057,114

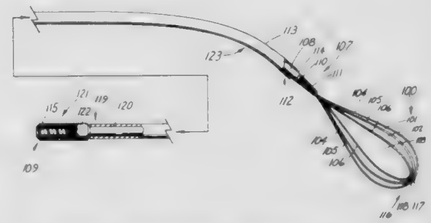
MEDICAL RETRIEVAL BASKET

Gerhard R. Wittich, Portola Valley, Calif.; Scott E. Boatman, and Joseph W. Roberts, both of Bloomington, Ind., assignors to Cook Incorporated, Bloomington, Ind.

Filed Sep. 18, 1990, Ser. No. 584,473

Int. Cl.[5] A61B *17/22*

U.S. Cl. 606—127 **20 Claims**



1. A medical retrieval basket comprising:

a first elongated member having a proximal end, a distal end, and a first hollow passageway longitudinally positioned therebetween;

a first superelastic metallic alloy wire having first and second ends extending through said first hollow passageway and fixedly positioned about said proximal end of said first member, said first wire forming a first loop extending longitudinally and distally from said distal end of said first member; and

a second superelastic metallic alloy wire having first and second ends extending through said first hollow passageway and fixedly positioned about said proximal end of said first member, said second wire forming a second loop extending longitudinally and distally from said distal end of said first member and interconnected distally to said first loop, whereby said said first and second loops interconnected distally form a bulbous shape for atraumatically capturing calculi with a heat-on approach.

5,057,115

HAIR REMOVAL DEVICE WITH IMPROVED COUPLED-DISC ELEMENT

Moshe Dolev, 22 Yehiam St., Ramat Hasharon, Israel

Continuation-in-part of Ser. No. 340,529, Apr. 19, 1989, Pat. No. 4,935,024. This application Feb. 26, 1990, Ser. No. 484,768

Claims priority, application Israel, Feb. 14, 1989, 89290

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] A61B *17/50*

U.S. Cl. 606—133 **8 Claims**

1. A motor-powered depilatory device comprising:

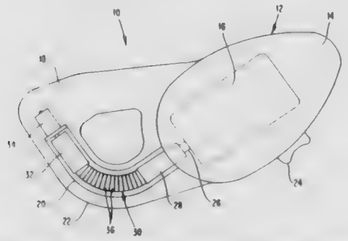
a manually-held housing;

motor means disposed in said housing; and

a longitudinal hair-plucking element coupled to said motor means and being rotatably supported by said housing in arched configuration, said hair-plucking element comprising a plurality of adjacent, axially-aligned discs of differing diameters having angled edges and being arranged to provide in said arched configuration a different arc curvature on a concave side thereof from that on a convex side thereof, each of said discs having a hole formed centrally

therein, the holes of said plurality of discs defining a cavity through which there extends a tensioning means,

each of said discs having formed on at least one side thereof at least one substantially perpendicular projection and on the other side thereof at least one corresponding recess for engaging said projection of an adjacently-disposed disc such that said plurality of discs are mechanically coupled together by said tensioning means which flexibly retains them adjacent one another under a predetermined tension to provide rotational coupling along the length of said hair-plucking element,



said arched configuration providing said hair-plucking element with spaces on the convex side thereof between adjacent ones of said plurality of mechanically-coupled discs, said spaces being closed on the concave side thereof, said hair-plucking element being mounted at an end of said housing so that the concave side thereof faces outwardly, enabling placement of said spaces between discs close to the skin,

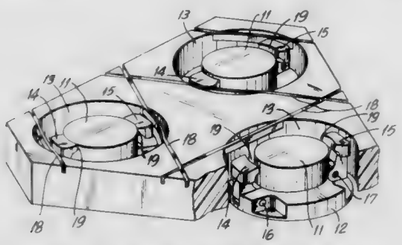
rotational motion provided to said hair-plucking element while it is passed over the skin causing plucking of hair trapped within said spaces upon closure of same during rotation.

5,057,116

DEPILATORY DEVICE

Shlomo Zucker, Yavneh, Israel, assignor to Crestmoore Ltd., Hong Kong, Isle of Man

Filed Sep. 6, 1990, Ser. No. 578,355
Claims priority, application Israel, Sep. 14, 1989, 91643; Feb. 4, 1990, 93266
Int. Cl.[5] A61K 7/00
U.S. Cl. 606—133 11 Claims



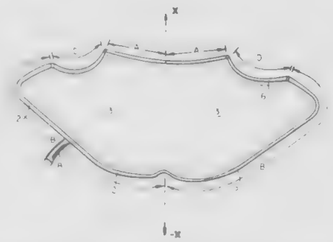
1. A depilatory cartridge including at least one head comprising a base plate, a drum carried by and rotatable with said base plate and a plurality of jaws mounted on said base plate being rotatable with and cammed toward said drum during part of the rotating cycle of said drum and then pushed apart from said drum in the remaining part of the rotating cycle, so that when said drum while rotating is placed in touch with body hair, the hair is caught in gaps formed between said jaws and said drum, and as said gap closes during the rotation of said drum, said hair is pulled out.

5,057,117

METHOD AND APPARATUS FOR HEMOSTASIS AND COMPARTMENTALIZATION OF A BLEEDING INTERNAL BODILY ORGAN

Nabil A. Atweh, Brooklyn, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Apr. 27, 1989, Ser. No. 344,970
Int. Cl.[5] A61B 17/12; A61F 2/00
U.S. Cl. 606—151 22 Claims



1. An apparatus for compartmentalizing a substantial portion of a bleeding internal body organ of a patient, said apparatus comprising:

a flexible compartment-defining structure having an inner surface and an outer surface, and having physical dimensions conforming to the gross geometry of said substantial portion of said organ;

said inner surface of said flexible compartment-defining structure facing said organ; and

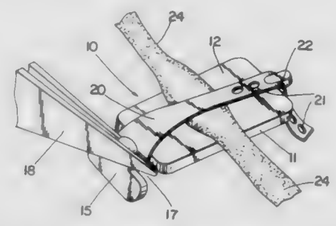
a flexible expandable receptable means disposed over a substantial portion of said inner surface of said flexible compartment-defining structure and capable of containing a volume of gas or liquid for applying a distribution of pressure to said open to affect hemostasis thereon.

5,057,118

VESSEL OCCLUSION DEVICE

George J. Picha, Independence, Ohio, assignor to Applied Medical Technology, Inc., Independence, Ohio

Filed May 29, 1990, Ser. No. 529,375
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—158 10 Claims



1. A vessel occlusion device comprising:

a base having a generally flat surface against which a vessel may be positioned; and

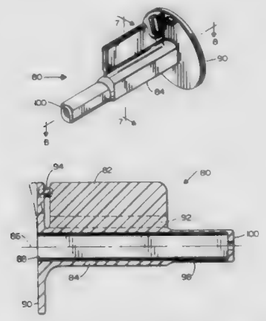
a strap formed of a soft absorbant material, the strap having two ends, one end being fastened to the base, the other end adapted to be removably attached to the base with the vessel between the base and the strap, at least one of the ends extending beyond the base, the strap provided with a plurality of attachment means for selectively attaching said other end of the strap to the base at any one of a plurality of adjustable positions.

5,057,119

APPARATUS AND METHODS FOR ATTACHING AND DETACHING AN ULTRASONIC ACTUATED BLADE/COUPLER AND AN ACOUSTICAL MOUNT THEREFOR

Richard J. Clark, Norfolk, Mass., and Alan E. Thomas, Ocean City, N.J., assignors to Ultracision Inc., Smithfield, R.I.

Continuation-in-part of Ser. No. 448,862, Dec. 12, 1989. This application Jan. 18, 1991, Ser. No. 642,879
Int. Cl.[5] A61B 19/02, 17/00; F16D 7/02; B25B 23/159
U.S. Cl. 606—169 13 Claims



10. Apparatus for attaching a surgical device to a mount wherein the surgical device includes a coupler carrying a surgical tool comprising:

an adaptor including an elongated sleeve, having an axis, for receiving the surgical tool, a flange having an abutment, guide surfaces engageable with the coupler when the surgical tool is received by the adaptor for rotating the coupler upon the rotation of said adaptor;

a generally radially extending element carried by said adaptor for rotating the adaptor to rotate the coupler, said element being movable in opposite directions about an axis non-coincident with the axis of said sleeve, said element being cooperable with said abutment in response to rotation of said element about its axis in one direction to rotate the adaptor and coupler about the axis of said sleeve and to limit the torque applied by said adaptor to the coupler to a predetermined magnitude thereof; and

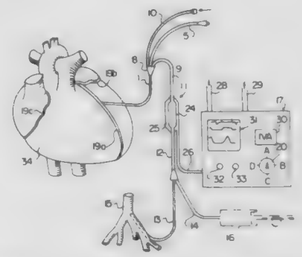
a second abutment carried by said flange, said element being cooperable with said second abutment in response to rotation of said element about its axis in the opposite direction for applying a torque to the adaptor and coupler in excess of said predetermined magnitude of torque.

5,057,120

APPARATUS FOR THE PERFORMANCE OF AN ANGIOPLASTY OF LONG DURATION

Jean-Christian Farcot, 20 Rue Parmentier, 92200 Neuilly, Seine, France

Filed Dec. 28, 1988, Ser. No. 291,307
Claims priority, application France, Oct. 27, 1988, 88 14022
Int. Cl.[5] A61M 25/10
U.S. Cl. 606—194 18 Claims



1. Apparatus for the performance of a long-duration angioplasty of a coronary artery or of a peripheral artery, comprising a catheter having a flexible guide rod and a dilation bulb which is located at a distal end of said catheter and is intended to be inflated at the required location, further comprising:

a perfusion pump connected at a proximate end of the catheter, and a control unit connected to said pump and which is capable of ensuring synchronization of the operation of said pump with the electrocardiogram of the patient to be treated in order to carry out distally of the dilation bulb a perfusion of blood or of oxygen-transporting physiological liquid at a variable flow rate and pressure corresponding to the physiological diastole and systole phases of the patient's heartbeat,

and wherein said guide rod extends along said catheter so as not to interfere with the circulation of liquid through the catheter and at the outlet of said catheter, and wherein said guide rod and said catheter are so dimensioned as to permit substantially free perfusion of blood through said catheter, in order to permit perfusion of blood or of physiological liquid distally of the dilation bulb throughout the period of inflation of said bulb;

said apparatus further comprising a tube extending into the inflatable bulb for inflating said bulb, said tube being secured to said catheter and having a substantially smaller diameter than said catheter.

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5,057,121

PROCESS FOR IMPARTING STAIN-RESIST AGENT

Patrick H. Fitzgerald, Pitman, N.J.; Joyce M. Materniak, Hockessin, Del.; Mead S. Moores, Wilmington, Del.; Ella D. Openstone, Wilmington, Del., and Ernest Rivet, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 4, 1989, Ser. No. 389,894
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] D06M *15/41, 23/00, 15/19*
U.S. Cl. 8—133 14 Claims

1. In a process for imparting stain-resistance to a textile substrate in continuous processes which comprises applying, as a simple aqueous preparation, an effective amount of a composition useful in imparting stain resistance to polyamide textile substrates comprising between about 95 and 30 weight % of a hydrolyzed copolymer of maleic anhydride and one or more ethylenically unsaturated aromatic monomers and between about 5 weight % and 70 weight % of a sulfonated phenol-formaldehyde condensation product which is useful as a dye-resist agent, a dye-fixing agent, a dye-reserving agent or an agent which improves the wet-fastness of dyeings on polyamide fibers, the improvement which comprises adding to the composition from about 2 weight % to about 30 weight % of an anionic surfactant in the form of an alkyl aryl sulfonic acid or an alkyl aryl sulfonate salt and applying the preparation at a pH of about 1.5 to about 3.0.

5,057,122

DIISOCYANATE DERIVATIVES AS LUBRICANT AND FUEL ADDITIVES AND COMPOSITIONS CONTAINING SAME

David A. Blain, Mt. Laurel, and Angeline B. Cardis, Florence, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 26, 1989, Ser. No. 456,895
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—387 23 Claims

1. A composition comprising a major amount of liquid fuel and a minor detergent/dispersant/antioxidant amount of a product of reaction prepared by reacting a diisocyanate with a polyether and thereafter catalytically or non-catalytically reacting the resultant intermediate product with a hydroxyalkylated polyamine to obtain the final desired product.

5,057,123

METHOD OF STABILIZING DIESEL FUELS

Sheldon Herbstman, New City, and Theodore E. Nalesnik, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 25, 1990, Ser. No. 528,503
Int. Cl.[5] C10L *1//10, 1/22*
U.S. Cl. 44—334 8 Claims

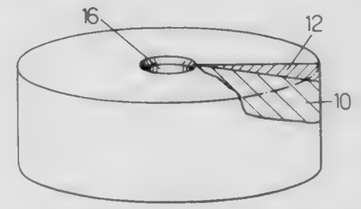
1. A method of stabilizing a diesel fuel formulation by substantially minimizing the oxidation of said fuel formulation, said method comprising incorporating at least one amine containing copolymer in said fuel formulation in an amount sufficient to substantially minimize the high temperature oxidation of said fuel formulation, said amine containing copolymer is selected from the group consisting of (a) an aminopropylmorpholine ethylene-propylene-hexadiene copolymer having about 5 weight percent unsaturation, (b) a N-phenylphenylenediamine ethylene-propylene-hexadiene copolymer having about 5 weight percent unsaturation, (c) a N-aminopropyl-N′-phenylphenylenediamine ethylene-propylene-hexadiene copolymer having about 5 weight percent unsaturation, and (d) mixtures thereof.

5,057,124

COMPOSITE ABRASIVE PRODUCT COMPRISING AN ACTIVE PART OF ULTRA-HARD MATERIAL AND METHOD OF MANUFACTURING SUCH A PRODUCT

Jean-Michel Cerceau, Seyssinet, France, assignor to Societe Industrielle de Combustible Nucleaire, Annecy, France

Filed Oct. 23, 1989, Ser. No. 425,333
Claims priority, application France, Nov. 3, 1988, 88 14335
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 13 Claims



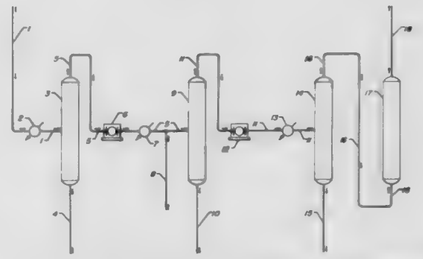
1. Composite abrasive product comprising a refractory carbide support having an axis and a ring-shaped compact having a rotational symmetry about said axis, having an axial thickness which is small as compared with the axial thickness of the support and having a substantially triangular axial cross-section, said compact having a face metallurgically bonded to a chamfered circumferential part of the support and the two remaining faces joining at a cutting edge.

5,057,125

PROCESS FOR THE TREATMENT OF VENT GAS CONTAINING ORGANIC HALIDE COMPOUNDS

Steven P. Lankton, Wheeling, Ill.; Richard T. Maurer, Nanuet, N.Y., and Robert B. James, Jr., Northbrook, Ill., assignors to UOP, Des Plaines, Ill.

Filed May 14, 1990, Ser. No. 522,719
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—23 16 Claims



1. A process for the removal of organic halide compounds from an effluent waste gas containing organic halide compounds and water vapor which process comprises:

(a) compressing said effluent waste gas in a first compression zone to produce a condensed water vapor liquid phase and a first gaseous phase having a pressure greater than that of said effluent waste gas and a reduced concentration of water vapor;

(b) compressing said first gaseous phase from step (a) in a second compression zone to produce a condensed organic halide liquid phase and a second gaseous phase having a pressure greater than that of said first gaseous phase and having a reduced concentration of organic halide compounds;

(c) contacting said second gaseous phase containing residual quantities of organic halide compounds in an adsorption

zone with an adsorbent which selectively retains organic halide compounds; and

(d) recovering an effluent waste gas containing reduced quantities of organic halide compounds from said adsorption zone.

5,057,126

GAS CHROMATOGRAPHY

Joaquin A. Lubkowitz, 100-C Nightingale La., Gulf Breeze, Fla. 32561, and Harold K. Bellows, 830 Bellows Ct., Walnut Creek, Calif. 94598

Filed Feb. 25, 1991, Ser. No. 659,111

Int. Cl.[5] B01D *15/08*

U.S. Cl. 55—67 11 Claims



1. A chromatagraphic process for rapidly determining the volatiles content of a multicomponent sample, said process comprising:

a. injecting said sample at an injection point into a heated sample chamber whereby said sample is vaporized, said chamber containing a packing material;

b. entraining said vaporized sample in a first stream of inert carrier gas flowing at a given volumetric flow rate sequentially through said chamber, a second packed column maintained at a lower temperature than said chamber, an intermediate conduit, and a chromatographic analytical column, said second packed column preferentially permitting passage therethrough of a first portion of said first stream having entrained therein more volatile components while preferentially retarding a second portion of said first stream having entrained therein less volatile components of said sample; and

c. when said first portion of said first stream having entrained therein said more volatile components has passed said intermediate conduit, substantially simultaneously:

(1) opening a vent near said injection point,

(2) continuing driving said first portion of said first stream toward and through said chromatographic analytical column; and

(3) introducing a backflush stream of inert carrier gas sequentially through said second packed column and said heated sample chamber to exit through said vent, whereby said backflush stream entrains and flushes said second portion of said first stream and said less volatile components out through said vent.

5,057,127

FILTER ELEMENT FOR USE IN BAGGING ASBESTOS DURING AN ASBESTOS REMOVAL PROCESS

Terry J. Lange, 17123 Coronado #2, Eagle River, Ak. 99577, and Greg Johnston, 11314 Noonday, San Antonio, Tex. 78233

Filed May 3, 1990, Ser. No. 517,078

Int. Cl.[5] B65B *31/00*

U.S. Cl. 55—97 6 Claims

4. A method of removing asbestos particles form a work area comprising:

A) transferring air and asbestos particles into a collection bag having an opening;

B) covering a hose inlet with a filter element by

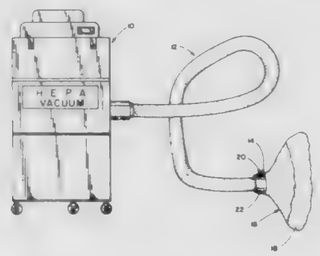
(1) attaching one end of the filter element to the hose at a location spaced from the hose inlet,

(2) covering the hose inlet with a stiff foraminous filter and

(3) extending a portion of the filter element radially outwardly from the hose;

C) inserting the hose inlet with the filter element covering that hose inlet into the collection bag via the bag opening;

D) locating the covered hose inlet between the asbestos in the bag and the bag opening;



E) attaching the bag to the hose so that the filter element is entirely interposed between the asbestos particles in the bag and the hose inlet;

F) drawing air out of the bag through the hose;

G) forcing the bag against the filter element between the filter element one end and the filter element radially extending portion;

H) withdrawing the hose from the bag;

I) sliding the filter element off of the hose while the filter element is still inside the bag;

J) removing the bag and the filter element from the hose; and

K) closing the bag with the filter element inside the bag.

5,057,128

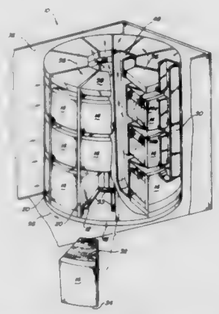
ROTARY ADSORPTION ASSEMBLY

Nicholas J. Panzica, Farmington Hills, Mich.; Lennart Gustavsson, Växjö , Sweden; Leif Josefsson, Sterling Heights, and Hans O. Lannefors, W. Bloomfield, both of Mich., assignors to Flakt, Inc., Madison Heights, Mich.

Filed Jul. 3, 1990, Ser. No. 547,988

Int. Cl.[5] B01D *53/06*

U.S. Cl. 55—181 9 Claims



1. An apparatus for adsorptive filtering of contaminants from a gaseous stream, said apparatus comprising:

a frame means for supporting a plurality of adsorption elements, said frame means including a base member rotatable about an axis, a wall means attached to said base member and upstanding axially therefrom for providing a plurality of circumferential segment areas, said wall means including a radially inner side for defining an axially extending inner chamber and a radially outer side for defining an outer periphery;

a plurality of adsorption elements axially spaced in each of said circumferential segment areas, each of said plurality of adsorption elements having an axial first side and an axial second side;

a means for radially directing contaminated air into at least one of said segment areas; and

a first duct means for directing said substantially radial flow of air between contiguous adsorption elements into at least one of said segment areas from said outer periphery through the axial first side of each of said adsorption elements to exit the axial second side and into said axially extending inner chamber for exhausting decontaminated air out through said axially extending inner chamber; wherein said base member is rotatable for sequentially interposing segment areas into the radially directed contaminated air for continual adsorptive purification of said gaseous stream.

5,057,129

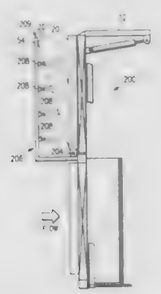
MOISTURE SEPARATOR

Frank J. Kierzkowski, Bedford, and Dudley R. Cornwell, Dallas, both of Tex., assignors to Peerless Manufacturing Company, Dallas, Tex.

Continuation-in-part of Ser. No. 374,145, Jun. 30, 1989, abandoned, which is a continuation of Ser. No. 69,710, Jul. 6, 1987, Pat. No. 4,854,950. This application Mar. 8, 1990, Ser. No. 490,485

Int. Cl.[5] B01D *29/02*

U.S. Cl. 55—213 3 Claims



1. An apparatus for filtering air entering a flow passage, comprising:

a frame surrounding an opening into the flow passage;

a panel mounted to said frame for pivotal motion between a closed position and an open position, the panel including means for filtering air passing through the panel, air entering the flow passage passing through the panel when the panel is in the closed position, air being permitted to pass through the frame and around the panel when the panel is in the opened position;

a double acting air cylinder having a cylinder and a piston, said cylinder being mounted on the panel;

a lever assembly mounted on said frame and pivotal between an open stop and a closed stop on said frame, the piston of said air cylinder being pivotally connected to said lever assembly;

at least one latching mechanism mounted on said frame for latching the panel in the closed position, said latching mechanism being operated by said lever assembly; and

at least one hinge assembly mounted between said frame and said panel to limit the movement of the panel into the open position.

5,057,130

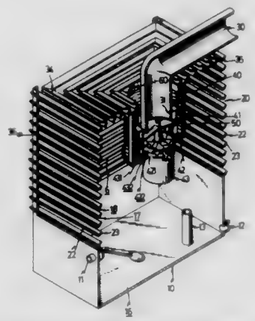
CENTRIFUGAL COOLING DEVICE

Wen H. Liu, No. 139, Chunghua Rd., Miaoli City, Taiwan

Continuation-in-part of Ser. No. 556,015, Jul. 20, 1990, abandoned. This application Apr. 18, 1991, Ser. No. 687,117

Int. Cl.[5] B01F *3/04*

U.S. Cl. 55—230 2 Claims



1. A centrifugal cooling device, comprising a housing, said housing including a water tank at a lower portion thereof, a valve to supply water, an overflow pipe and an outlet, the improvements comprising:

a plurality of louvers being provided on a perimeter and an upper portion of said housing, a plurality of long slits being formed between said louvers, each said perimetrical louver comprising an inner louver and an outer louver which are slanted downwardly toward each other, a gap being formed between each said inner louver and each said outer louver;

a ring portion being formed on an upper central portion of said housing, a plurality of fixed stands extending downwardly from said ring portion and a mounting means being fixedly attached to lower ends of said fixed stands, an annular screen member being peripherally supported on said fixed stands, a hole being centrally formed on said mounting means, said motor being fixedly mounted, in said hole, to said mounting means, a conical rotor plate being rotatably mounted, above said motor, on a spindle of said motor, a plurality of centrifugal blades being provided around an edge portion of an upper surface of said conical rotor plate, a plurality of fan blades being provided on an edge portion of an underside of said conical rotor plate, said fan blades, said conical rotor plate, and said mounting means together defining a chamber, a passage being defined between an outer periphery of said motor and said mounting means, through which air is passable from a lower side of said mounting means into said chamber, an output of an inlet tube for high temperature water being located at an inner side of said centrifugal blades.

5,057,131

VACUUM CLEANER FILTER BAG ASSEMBLY

John R. Lackner, North Ridgeville, and Stanley E. Grzywna, Elyria, both of Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio

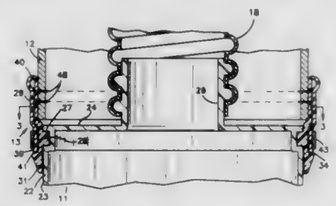
Continuation-in-part of Ser. No. 500,237, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 249,311, Sep. 26, 1988, abandoned. This application Nov. 9, 1990, Ser. No. 612,119

Int. Cl.[5] B01D *46/00*

U.S. Cl. 55—369 39 Claims

1. An upright domestic vacuum cleaner comprising a housing assembly providing a mounting projection having an external surface for mounting a filter bag, a porous filter bag having an opening therein, a flexible collar secured to said bag around

said opening and mounted on said external surface, said external surface and collar providing an interfitting structure locking said collar on said external surface, said flexible collar and mounting projection being sized so that said structure fails to provide a tight seal without separate clamping means, and a



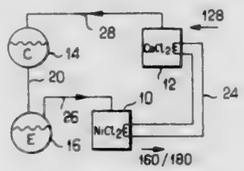
non-elastic tie strap on said collar around said collar providing said clamping means and pressing said interfitting structure into tight sealing engagement, said strap including permanently interconnected end portions of said tie strap and thereby permanently connecting said filter bag and said mounting projection.

5,057,132

DEVICE FOR PRODUCING COLD AND/OR HEAT BY A SOLID-GAS REACTION

Michel Lebrun, Perpignan; Michel Mayslich, Sevres, and Bernard Spinner, Corveilla del Vercol, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jan. 8, 1990, Ser. No. 461,940
Claims priority, application France, Jan. 11, 1989, 89 00268
Int. Cl.[5] F25D *5/00*
U.S. Cl. 62—4 **9 Claims**



1. Device for producing cold and/or heat by a solid-gas chemical reaction comprising a first (**10**;**34**) and a second (**12**;**38**) reactor each of which contains a salt capable of chemical reaction with a gas by an exothermic reaction, the first reactor (**10**;**34**) being in communication in a first operating stage with an enclosure (**14**;**32**) intended to retain the gas, the second reactor being in communication, in the first operating stage, with an enclosure (**16**;**36**) intended to release the gas, characterized in that each reactor contains a different salt; and further comprising a heat-transfer device (**24**) capable of transferring heat between the first and second reactor (**10**, **12**) during the second operating stage.

5,057,133

THERMALLY EFFICIENT MELTING AND FUEL REFORMING FOR GLASS MAKING

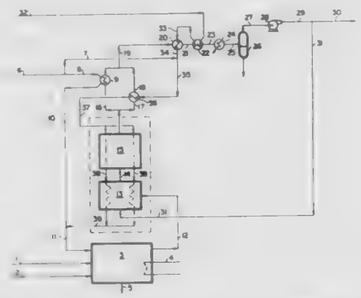
Michael S. Chen, Zionsville; Corning F. Painter; Steven P. Pastore, both of Allentown; Gary S. Roth, Trexlertown, and David C. Winchester, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 2, 1990, Ser. No. 547,894
Int. Cl.[5] C03B *5/235*
U.S. Cl. 65—27 **12 Claims**

1. An integrated process for the production of glass utilizing combustion heat to melt glass making materials in a glassmaking furnace, comprising:

(a) heating and melting glass making materials of batch and cullet feedstocks in a glassmaking furnace by the combustion of fuel with an oxygen-enriched oxidant stream;

(b) removing a hot offgas from said glassmaking furnace comprising a substantially carbon dioxide-containing combustion product and feedstock volatiles and quenching the offgas using a relatively cooler recycle stream of at least a portion of the offgas from downstream in the process;



(c) further cooling at least a portion of the offgas against at least a portion of a hydrocarbon fuel fed to the glassmaking furnace to reform the hydrocarbon fuel into a synthesis gas which is fed to the glassmaking furnace as a fuel; and

(d) recycling a portion of the resulting cooled offgas of step (c) to quench the hot offgas of step (b) from the glassmaking furnace.

5,057,134

PROCESS FOR PRODUCING A GLASS ARTICLE PROTECTED FROM COLORING BY ELECTRON RAYS

Kouichi Suzuki, and Kazuo Shibaoka, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Division of Ser. No. 146,449, Jan. 21, 1988, Pat. No. 4,897,371.
This application Jul. 24, 1989, Ser. No. 384,126
Claims priority, application Japan, Feb. 3, 1987, 62-23216; Feb. 4, 1987, 62-24381; Sep. 25, 1987, 62-241591; Sep. 25, 1987, 62-241592
Int. Cl.[5] C03C *21/00*
U.S. Cl. 65—30.13 **5 Claims**



1. A process for producing a glass article protected from coloring by electron rays, comprising:

preparing a soda-lime-silica glass composed of 50–75% by weight of SiO_2, 0.5–2.5% by weight of Al_2O_3, 0–1.0 % by weight of Fe_2O_3, 5.0–14.0% by weight of CaO, 0–4.5% by weight of MgO, 5.0–16.0% by weight of Na_2O, 0–2.0% by weight of K_2, 0–0.5% by weight of TiO_2, and 0–0.5% by weight of SO_3, content of alkali metal oxides in the glass being 5% and above, and ratio of Na_2O in the alkali metal oxides being 65% and above,

contacting said soda-lime-silica glass with a molten salt containing potassium ions so that sodium ions in a surface layer thereof are exchanged by potassium ions, and

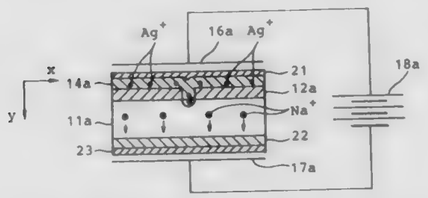
subjecting the glass to heat treatment so that the surface layer thereof in a depth to which irradiated electron rays penetrate when electron rays are irradiated has a composition defined by a molar ratio of 0.4 to 0.65 for $Na_2O/(-Na_2O+K_2O)$.

5,057,135

METHOD OF QUICKLY MANUFACTURING AN OPTICAL WAVEGUIDE

Osamu Maruyama, Tokyo, and Hiroshi Aoki, Kanagawa, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jul. 6, 1990, Ser. No. 549,289
Claims priority, application Japan, Jul. 7, 1989, 1-176429
Int. Cl.[5] C03C *21/00*
U.S. Cl. 65—30.13 **11 Claims**



1. A dry method of manufacturing an optical waveguide comprising a substrate having primary and secondary surfaces and an optical passage diffused through said primary surface in said substrate, said substrate containing a primary ion which provides a first refractive index while said optical passage contains a secondary ionizable species which provides a secondary refractive index greater than said first refractive index and which is ionized into secondary ions, said method comprising the steps of:

depositing, on said secondary surface, a diffusion-accelerator film in a vacuum atmosphere, said diffusion-accelerator film containing an additional ionizable species which includes a halogen and which is ionized into halogen ions when said additional ionizable species is ionized; and;

diffusing said primary ions, said secondary ions, and said additional ions in a dry atmosphere to make said primary ions react with said additional ions, to thereby reduce the amount of said primary ions in said substrate, and to consequently promote diffusion of said secondary ions into said substrate.

5,057,136

METHOD AND APPARATUS FOR MANUFACTURING PROFILED GLASS TUBING

Franz Ott, and Reinhard Mannl, both of Mitterteich, Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 415,480, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 207,557, Jun. 16, 1988, abandoned. This application May 14, 1990, Ser. No. 522,885
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1987, 3720526
Int. Cl.[5] C03B *15/14*
U.S. Cl. 65—87 **17 Claims**

1. A continuous process for making a solid glass tube for fabricating profiled glass tubing, comprising the steps of:

melting glass to form a molten glass mass;

supplying the molten glass mass to the outer surface of a rotating, round, barrel-shaped portion of a blowpipe;

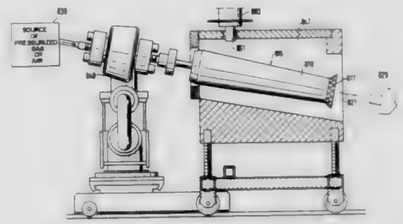
drawing the molten glass mass into a molten glass tube having an outer skin and an inner surface over the rotating blow-pipe oriented obliquely with respect to the horizontal and vertical direction and having an expanded profiled end head portion with a length no greater than about 10% of the length of the blow-pipe being surrounded by the molten glass tube;

expanding the diameter of the molten tube at the head portion of the blowpipe as the molten tube flows thereover;

maintaining the viscosity of the outer skin of the tubular glass stream in the range of about $4–10^5$ Poise to about $10-10^5$ Poise as the tubular glass stream flows thereover;

maintaining a pressure within the blowpipe sufficient to apply a pressure at the exit of the blowpipe head which exceeds the pressure on the outer skin of the tubular glass stream by 0.5 to 20 mbar;

adjusting the desired profile of the resulting solid glass tube



to a desired sharpness of contour and diameter in the range of $1/5^{th}$ to $1/10^{th}$ that of the expanded head portion by variation of at least one of the following parameters; drawing speed, viscosity of the glass, internal gas pressure at the exit of the blowpipe head and throughput rate of the glass melt; and

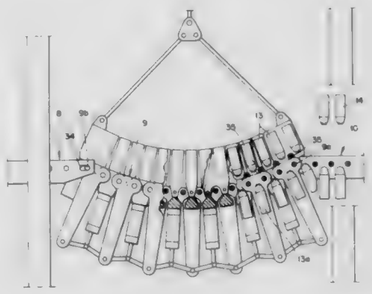
allowing the tubular glass stream to cool into the resulting solid glass tube.

5,057,137

METHOD OF AND APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS

Pauli T. Reunamäki, and Jouko K. Järvinen, both of Tampere, Finland, assignors to O/Y Kyro A/B Tamglass, Tampere, Finland

Continuation of Ser. No. 99,722, Sep. 22, 1987, Pat. No. 4,881,962. This application Sep. 6, 1989, Ser. No. 403,496
Claims priority, application Finland, Sep. 22, 1986, 863826
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.[5] C03B *23/023*
U.S. Cl. 65—104 **19 Claims**



1. A glass bending and tempering apparatus comprising:

a bending and tempering section having an upstream end for receiving a heated glass sheet and a downstream end for exiting a bent glass sheet;

a deformable glass support means disposed substantially horizontally between said upstream and downstream ends of said bending and tempering section, said support means being fixed at a center location of said upstream end of said bending and tempering section and a center location of said downstream end of said bending and tempering section, said centers of location being substantially fixed in a vertical direction, said support means being deformable

from a substantially flat configuration to a configuration having a desired curvature, said support means remaining substantially fixed at said centers of location of said upstream and downstream ends during deformation;

means for quenching a glass sheet in said bending and tempering section, said means for quenching being conformable to a curvature of said support means during deformation of said support means; and,

means for blowing air disposed above said support means that is deformable into a configuration that conforms with the curvature of said support means, said means for blowing being mounted so as to be vertically movable relative to said support means such that said means for blowing is spaced in close proximity to said support means in a lowered position during bending of said glass sheet and said means for blowing is displaced from said support means in a raised position.

5,057,138

METHOD AND APPARATUS FOR PREVENTING THE ARCHING OF GLASS SHEETS IN THE ROLLER-EQUIPPED FURNACE OF A HORIZONTAL TEMPERING PLANT

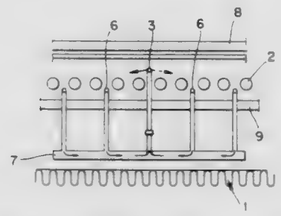
Jukka H. Vehmas, Tampere, and Esko O. Lehto, Kangasala, both of Finland, assignors to Tamglass Oy, Tampere, Finland

Filed Aug. 16, 1990, Ser. No. 568,052

Claims priority, application Finland, Sep. 6, 1989, 894191

Int. Cl.[5] C03B *27/044*

U.S. Cl. 65—111 **11 Claims**



1. A method of preventing arching of a glass sheet in a furnace of a glass tempering apparatus comprising the steps of:

supporting a glass sheet on a substantially horizontal conveyor in said furnace, said conveyor including a plurality of rollers;

heating top and bottom surfaces of said glass sheet with conduction, convection and radiation heat generated at least by a plurality of resistance elements and said rollers, said resistance elements being variously disposed above and below said glass sheet;

cooling a furnace space below said rollers by transferring heat generated at said furnace space to air so as to preheat said air;

blasting said preheated air toward said top surface of said glass sheet from a location adjacent the top surface so as to subject said top surface to a convection heat effect that substantially equalizes a total thermal heating effect at both said top and bottom surfaces; and,

blasting said preheated air toward said top surface through jets such that an injector effect of said jets produces a turbulent flow of said preheated air along said top surface of said glass sheet.

5,057,139

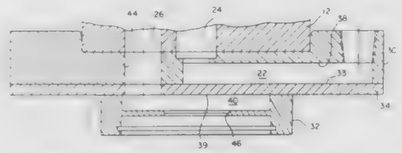
PLUNGER MECHANISM FOR I.S. MACHINE WITH THERMALLY ISOLATED CONDUITS

Michael J. Stankosky; Vaughan Abbott, both of Hartford, and Albert J. Trahan, Tolland, all of Conn., assignors to Emhart Industries, Inc., Towson, Md.

Filed Nov. 28, 1990, Ser. No. 619,075

Int. Cl.[5] C03B *11/12*

U.S. Cl. 65—319 **2 Claims**



1. A plunger mechanism assembly comprising

a plunger mechanism including three lower cylinder means for supporting plungers for selected displacement, each of said lower cylinder means having a cooling air conduit for delivering cooling air to the plunger and an exhaust conduit for exhausting hot air discharged from the plunger,

base plate means including

a lower plate having a bottom opening and an exhaust cavity including a plurality of horizontal conduits for directing hot exhaust air from locations horizontally spaced from said bottom opening to said bottom opening,

an upper plate having a plurality of top openings and cooling air conduit means for directing cooling air from a location horizontally spaced from said top openings to said top openings and

an intermediate plate of heat resistant material intermediate said upper and lower plates for insulating said upper plate from said lower plate, and

through hole means defined in said upper and intermediate plates interconnecting said exhaust cavity and said exhaust conduits.

5,057,140

APPARATUS FOR MELTING GLASS BATCH MATERIAL

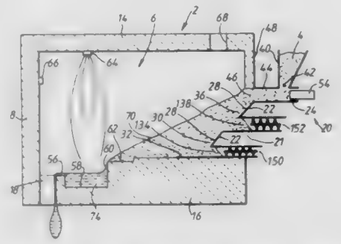
John S. Nixon, Wigan, England, assignor to Pilkington plc, Merseyside, England

Continuation of Ser. No. 356,859, May 25, 1989, abandoned. This application Sep. 5, 1990, Ser. No. 579,256

Claims priority, application United Kingdom, Jun. 13, 1988, 8813925

Int. Cl.[5] C03B *3/00*

U.S. Cl. 65—335 **11 Claims**



1. Apparatus for melting glass batch material, the apparatus comprising:

a heating chamber including a floor,

means for forming and maintaining of glass batch material into a pile having an elongate continuous sloping surface extending in the chamber from the floor to an elevated remote position in the chamber, said forming and maintaining means comprising:

feeding means disposed remote from the floor to feed glass batch material into the heating chamber by feeding batch material into the pile in the chamber, and

at least one pushing means disposed beneath the feeding means to push batch material which is in the pile toward the elongate continuous sloping surface,

burner means located and operable to melt the batch material along the elongate continuous sloping surface to cause the melting batch material to flow downwardly onto the floor,

the feeding means and pushing means being operable to replenish the pile from behind the elongate sloping surface to maintain the slope configuration during melting and establish a continuous flow of melting batch material which passes along the sloping surface onto the floor.

5,057,141

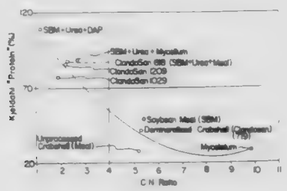
COMPOSITIONS FOR BIOLOGICAL CONTROL OF PLANT PATHOGENIC NEMATODES

R. Rodriquez-Kabana, Auburn, Ala., and Robert A. Milch, Baltimore, Md., assignors to Igene Biotechnology Inc., Columbia, Md.

Continuation-in-part of Ser. No. 84,061, Aug. 11, 1987, abandoned. This application Aug. 1, 1988, Ser. No. 226,904

Int. Cl.[5] C05C *9/00;* **C05F** *11/00*

U.S. Cl. 71—28 **18 Claims**



1. A soil amendment composition capable of stimulating the reproduction and development of normal soil microflora which produce ammonia and enzymes that are antagonistic to plant pathogenic nematodes of selected crop plants, which comprises:

(a) at least one of (a) (1) soybean meal and (a)(2) chitin-protein complex obtained from crustacean shells or fungal mycelia, and

(b) urea said component (b) being present in an amount effective to provide ammoniacal nitrogen sufficient for suppressing the growth of said pathogenic nematodes and said component (a) being present in an amount effective for suppressing the growth of said pathogenic nematodes in combination with component (b) while alleviating phytotoxic effects of component (b), whereby the amounts of (a) and (b) in said composition being adapted to provide about 1 to 3 grams of said composition per kilogram of soil in which said composition is admixed, wherein the ratio of (a)(1) meal to (b) is 2:1 to 8:1, or the ratio of (a)(2) complex to (b) is 5:1 to 1.5:1, or the ratio of (a)(1) meal:(b):(a)(2) complex is 3.0 to 5.0 parts (a)(1) meal:1:0 part:(b):1.5 to 3.5 parts (a)(2) complex.

5,057,142

HERBICIDAL THIAZOLECARBOXAMIDE DERIVATIVES

Bernd Baasner, Bergisch Gladbach; Michael Schwamborn, Cologne; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

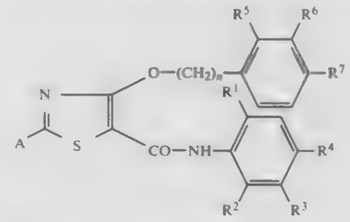
Filed Sep. 24, 1990, Ser. No. 587,283

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1989, 3934197

Int. Cl.[5] C07D *277/56;* **A01N** *43/78*

U.S. Cl. 71—90 **9 Claims**

1. A thiazolecarboxamide derivative of the formula



in which

n represents the numbers 0 or 1,

A represents C_1–C_{10}-alkyl, phenyl, furanyl, thienyl, pyrrolyl, thiazolyl, oxazolyl, pyrazolyl, imidazolyl, pyridyl, pyrimidinyl, phenylamino, pyridylamino or pyrimidinylamino, it being possible for these radicals to be substituted by halogen or (with the exception of alkyl) by C_1–C_4-alkyl,

R^1 represents hydrogen, fluorine, chlorine or C_1–C_4-alkyl,

R^2 represents hydrogen, fluorine, chlorine or C_1–C_4-alkyl,

R^3 represents hydrogen, fluorine or chlorine, or represents C_1–C_4-alkyl which is optionally monosubstituted or polysubstituted by at least one of fluorine and chlorine,

R^4 represents hydrogen, fluorine or chlorine, or represents C_1–C_4-alkyl which is optionally monosubstituted or polysubstituted by at least one of fluorine and chlorine,

R^5 represents hydrogen, fluorine, chlorine, C_1–C_4-alkyl, nitro or amino,

R^6 represents hydrogen, fluorine or chlorine, or represents C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio, each of which is optionally monosubstituted or polysubstituted by at least one of fluorine and chlorine or represents C_2–C_5-alkoxycarbonyl, and

R^7 represents hydrogen, fluorine, chlorine, C_1–C_4-alkyl, nitro or amino.

5,057,143

SALICYLIC ACID DERIVATIVES AND THEIR SULFUR ANALOGS

Joachim Rheinheimer, Ludwigshafen; Karl Eicken, Wachenheim; Peter Plath, Frankenthal; Gerhard Paul; Albrecht Harreus, both of Ludwigshafen; Karl-Otto Westphalen, Speyer; Bruno Wuerzer, Otterstadt; Klaus Grossmann, Limburgerhof; Wilhelm Rademacher, Limburgerhof, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 14, 1989, Ser. No. 366,492

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1988, 3820484; Feb. 4, 1989, 3903365

Int. Cl.[5] A01N *43/54;* **C07D** *239/34, 239/52, 239/60*

U.S. Cl. 71—92 **14 Claims**

1. A salicyclic acid derivative and its sulfur analogs of the formula I

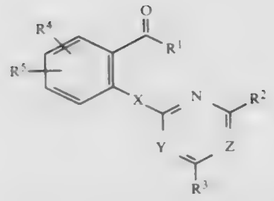
5,057,144

SULPHONYLAMINOCARBONYLTRIAZOLINONES

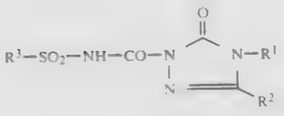
Werner Daum, Krefeld; Klaus-Helmut Müller, Duesseldorf; Michael Schwamborn, Cologne; Peter Babczinski, Wuppertal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 337,775, Apr. 13, 1989, abandoned. This application Jul. 20, 1990, Ser. No. 556,052
Claims priority, application Fed. Rep. of Germany, May 6, 1989, 3815765; Oct. 12, 1989, 3934081
Int. Cl.[5] A01N *43/653*; C07D *249/12*
U.S. Cl. 71—92 11 Claims

1. A sulphonylaminocarbonyltriazolinone of the formula



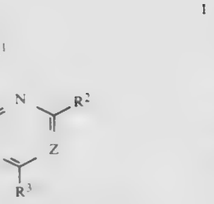
(I)



in which

R^1 represents hydrogen, hydroxyl or amino, or represents C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy, represents C_3–C_5-alkenyl or C_3–C_6-alkenyl, each of which is optionally substituted by fluorine, chlorine and/or bromine, or represents C_3–C_6-cycloalkyl which is optionally substituted by fluorine, chlorine, bromine and/or C_1–C_4-alkyl, or represents phenyl-C_1–C_3 alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxy-carbonyl, or represents phenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4alkyl, trifluoromethyl, C_1–C_4-alkoxy, fluorine- and/or chlorine-substituted C_1–C_3-alkoxy, C_1–C_4-alkylthio, fluorine and/or chlorine-substituted C_1–C_3-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl and/or C_1–C_4-alkoxycarbonyl, or represents C_1–C_6-alkoxy which is optionally substituted by fluorine, chlorine, cyano, phenyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl, or represents C_3–C_4-alkenyloxy, or represents C_1–C_4-alkylamino which is optionally substituted by fluorine, cyano, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl, or represents di-(C_1–C_4-alkyl)-amino, R^2 represents hydrogen, hydroxyl, mercapto or amino, or represents C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl, or represents C_3–C_6-cycloalkyl which is optionally substituted by fluorine, chlorine, bromine and/or C_1–C_4-alkyl, or represents cyclohexenyl, or represents phenyl-C_1–C_3-alkyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and/or C_1–C_4-alkoxy-carbonyl, or represents phenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, fluorine- and/or chlorine-substituted C_1–C_3-alkoxy, C_1–C_4 alkylthio, fluorine- and/or chlorine-substituted C_1–C_3-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, and/or C_1–C_4-alkoxycarbonyl, or represents C_1–C_6-alkoxy which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy or C_1–C_4 alkoxy-carbonyl, or represents C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino, and

R^3 represents the group



where the substituents have the following meanings:

R^1 is

1) a succinyliminooxy group;
2) a 5-membered heteroaromatic ring selected from the group consisting of imidazolyl, pyrazolyl and triazolyl which is unsubstituted or substituted by one to three halogen atoms and/or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;
3) a radical ON=CR^7R^8, where R^7 and R^8 are each C_1–C_{20}-alkyl which may carry a phenyl radical, or are each phenyl or together form a C_3–C_{12}-alkylene chain which may carry from one to three C_1–C_3-alkyl groups; or
4) a radical —OR^6, where R^6 is hydrogen, an alkali metal cation, one equivalent of an alkaline earth metal cation or an organic ammonium ion; C_1–C_{10}-alkyl which may carry from one to five halogen atoms and/or one of the following radicals: C_1–C_4alkoxy, C_1–C_4-alkylthio, cyano, C_1–C_8-alkylcarbonyl, C_1–C_8-alkoxycarbonyl, phenyl, phenoxy or phenylcarbonyl, where aromatic radicals in turn may carry from one to five halogen atoms and/or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio; or C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these groups in turn may carry from one to five halogen atoms;

R^2 and R^3 are C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

X is oxygen or sulfur;

Y is nitrogen and

Z a methine group =CH—;

R^4 is halogen,

a C_1–C_4-alkyl or C_1–C_4-alkoxy group which may carry from one to five halogen atoms and/or one of the following radicals: C_1–C_4-alkoxy or C_1–C_4-alkylthio;

a C_3–C_6-alkenyl, C_3–C_6-alkenyloxy, C_3–C_6-alkynyl or C_3–C_6-alkynyloxy group which may carry from one to five halogen atoms and/or one of the following radicals: C_1–C_4-alkoxy or C_1–C_4-alkylthio;

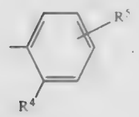
C_1–C_4-alkylamino, C_2–C_8-dialkylamino, N-hydrogen-N-phenylamino or N-C_1–C_4-alkyl-N-phenylamino;

R^5 is hydrogen or one of the radicals R^4;

with the proviso that:

a) when R^1 is —OR^6 and X is oxygen, then
   i) R^2 is C_1–C_4-haloalkyl or
   ii) R^4 is C_3–C_6-alkenyl which may carry from one to five halogen atoms; or
b) when R^1 is —OR^6 and X is sulfur, then R^6 is C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these groups in turn may carry from one to five halogen atoms; and their environmentally compatible salts.

3. A process for combating the growth of unwanted plants, wherein the unwanted plants and/or their habitat are treated with a herbicidally effective amount of a derivative I as set forth in claim 1.



where

R^4 and R^5 are identical or different and represent hydrogen, fluorine, chlorine, bromine, iodine, nitro, C_1–C_6-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylamino-carbonyl, di-(C_1–C_4-alkyl)amino-carbonyl, hydroxyl, C_1–C_4-alkoxy, formyloxy, C_1–C_4-alkyl-carbonyloxy, C_1–C_4-alkoxycarbonyloxy, C_1–C_4-alkylamino-carbonyloxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, di-(C_1–C_4-alkyl) aminosulphonyl, C_3–C_6-cycloalkyl or phenyl), or represent C_2–C_6-alkenyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy-carbonyl, carboxyl or phenyl), or represent C_2–C_6-alkinyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy-carbonyl, carboxyl or phenyl), or represent C_1–C_4-alkoxy (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4alkylsulphonyl), or represent C_1–C_4-alkylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C_1–C_4-alkoxy-carbonyl, C-hd 1-C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4 alkylsulphonyl), or represent C_3–C_6-alkenyloxy (which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxy-carbonyl), or represent C_2–C_6-alkenylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_3alkylthio or C_1–C_4-alkoxycarbonyl), C_3–C_6-alkinyloxy, C_3–C_6-alkinylthio, or represent the radical —S(O)p—R^6 where

p represents the numbers 1 or 2 and

R^6 represents C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano or C_1–C_4-alkoxy-carbonyl), C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkylamino, C_1–C_4-alkylamino, di (C_1–C_4-alkyl)-amino or phenyl, or represents the radical —$NHOR^7$ where R^7 represents C_1–C_2-alkyl (which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4 alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkylcarbonyl, C_1–C_4 alkoxycarbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl), or represents C_3–C_6-alkenyl (which is optionally substituted by fluorine, chlorine or bromine), C_3–C_6-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1–C_2-alkyl, phenyl-C_1–C_2-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl), or represents benzohydryl, or represents phenyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, trifluoromethyl, C_1C_4-alkoxy, C_1–C_2-fluoroalkoxy, C_1–C_4-alkylthio, trifluoromethylthio or C_1–C_4-alkoxycarbonyl),

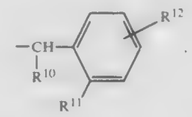
R^4 and/or R^5 furthermore represent phenyl or phenoxy, or represent C_1–C_4-alkylcarbonylamino, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkylamino-carbonyl-amino, di-(C_1–C_4-alkyl)amino-carbonylamino, or represent the radical —CO—R^8, where

R^8 represents C_1–C_6-alkyl, C_1–C_6-alkoxy, C_3–C_6-cycloalkoxy, C_3–C_6-alkenyloxy, C_1–C_4 -alkylthio, C_1–C_4-alkylamino, C_1–C_4-alkoxyamino, C_1–C_4-alkoxy-C_1-C_4-alkyl-amino or di-(C_1–C_4-alkyl)-amino (each of which is optionally substituted by fluorine and/or chlorine).

R^4 and/or R^5 furthermore represent trimethylsilyl, C_1–C_4-alkylsulphonyloxy, di-(C_1–C_4-alkyl)-aminosulphonylamino, or represent the radical —CH=N—R^9, where

R^9 represents C_1–C_6-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl, or represents benzyl which is optionally substituted by fluorine or chlorine, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, each of which is optionally substituted by fluorine or chlorine, or represents phenyl which is optionally substituted by fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, or represents C_1–C_6-alkoxy, C_3–C_6-alkenoxy, C_3–C_6-alkinoxy or benzyloxy, each of which is optionally substituted by fluorine and/or chlorine, or represents amino, C_1–C_4-alkylamino, di-(C_1–C_4-alkyl)-amino, phenylamino, C_1–C_4-alkyl-carbonyl-amino, C_1–C_4-alkoxy-carbonylamino or C_1–C_4-alkyl-sulphonylamino, or represents phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl, or

R^3 represents the radical

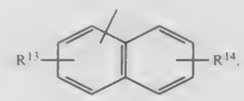


where

R^{10} represents hydrogen or C_1–C_4-alkyl,

R^{11} and R^{12} are identical or different and represent hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), carboxyl, C_1–C_4-alkoxy-carbonyl, dimethylaminocarbonyl, C_1–C_4-alkylsulphonyl or di-(C_1–C_4-alkyl)-aminosulphonyl; or furthermore

R^3 represents the radical



where

R^{13} and R^{14} are identical or different and represent hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine) or C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine) or a salt thereof with an alkali.

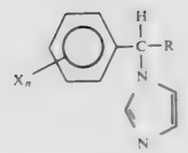
5,057,145

PHENYLALKYLIMIDAZOLE COMPOUNDS AS FUNGICIDES

Kenichi Tanaka; Shinji Nishimura; Hiroshi Kawada; Katsuya Yamaguchi; Yumi Tazaki; Yumi Mizumura, and Chieko Nomura, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1990, Ser. No. 555,618
Claims priority, application Japan, Jul. 28, 1989, 1-193847
Int. Cl.[5] C07D *233/54*; A01N *43/48, 43/64*
U.S. Cl. *i1*—92 3 Claims

1. A substituted phenylalkylimidazole compound of the formula:



(I)

wherein R is an alkyl group having three or more carbon atoms or an alkenyl group, X is a halogen atom, a methyl group, a methoxy group, a phenoxy group, a trifluoromethyl group or a dimethylamino group, and n is an integer of 1 or 2.

2. An agricultural or horticultural fungicide comprising a compound of the formula (I) as defined in claim 1, as an active ingredient.

5,057,146

CERTAIN 2-PYRIDYL OXY-PHENYL ACRYLATES HAVING FUNGICIDAL, INSECTICIDAL, NEMATOCIDAL AND PLANT GROWTH REGULATING ACTIVITY

Vivienne M. Anthony, Maidenhead; John M. Clough, Marlow; Paul DeFraine, Workingham; Christopher R. A. Godfrey, Bracknell; Ian Ferguson, Todmorden; Patrick J. Crowley, Crowthorne, and Michael G. Hutchings, Prestwich, all of England, assignors to Imperial Chemical Industries PLC, London, England

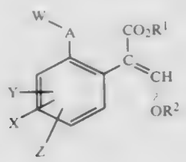
Continuation of Ser. No. 39,252, Apr. 17, 1987, abandoned. This application Jan. 17, 1990, Ser. No. 465,526

Claims priority, application United Kingdom, Apr. 17, 1986, 8609454; Dec. 23, 1986, 8630825

Int. Cl.[5] **A01N** *43/40*; **A61K** *31/44*; **C07D** *213/69, 213/70*

U.S. Cl. 71—94 **12 Claims**

1. A compound having the formula (I):



and stereoisomers thereof, wherein W is a substituted pyridinyl group linked to A by any one of its carbon atoms and bearing 1 to 4 substitutents as defined below; A is either an oxygen atom or $S(O)_n$ wherein n is 0, 1 or 2; W is substituted by halogen, hydroxy, C_{1-6} alkyl, C_{2-6} alkenyl, phenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, C_{1-6} alkylthio, phenoxy, phenylC_{1-6}alkoxy, nitro, cyano. NR′R″, —NHCOR′, —CONR′R″, —OCOR′, —CO_2R′, —COR′, —CH=NOR″, —CH_2NR′R″, —CH_2OR′, —CH_2NHCOR′, —CH_2OCOR′ or $S(O)_m$R′, wherein m is 0, 1 or 2; R′ and R″ are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl (C_{1-4})alkyl, phenyl or benzyl wherein the phenyl and benzyl may be optionally substituted with halogen, C_{1-4} alkyl, C_{1-4} alkoxy; X, Y and Z, which are the same or different, are hydrogen, fluorine, chlorine or bromine atoms, or C_{1-4} alkyl, C_{2-5} alkenyl, C_{2-5} alkynyl, phenyl, C_{1-4} alkoxy, phenoxy, benzyloxy or mono- or di- C_{1-4} alkylamino groups; wherein the alkyl, alkenyl and alkynyl moiety of any of the foregoing is optionally substituted with C_{1-4} alkoxy, fluorine chlorine or bromine, phenyl, nitro, amino, cyano, hydroxyl or carboxyl; and wherein the said phenyl moieties of any of the foregoing are optionally substituted with fluorine, chlorine or bromine, phenyl, C_{1-4} alkyl, C_{1-4} alkoxy, nitro, amino, cyano, hydroxyl or carboxyl; and R^1 and R^2 which are the same or different, are C_{1-4} alky each optionally substituted with one, two or three halogen atoms; provided that when W is 5-trifluoromethylpyridin-2-yl, A is oxygen, X is hydrogen, and R^1 and R^2 are both methyl, Y and Z are not both hydrogen, Y is not F, Cl, methyl, nitro, 5-CF_3, 5—CH_3, 5—SCH_3 or 4—$(CH_3)_2$N if Z is hydrogen and Y and Z together are not 3-nitro-5-chloro, 3,5-dinitro or 4,5-dimethoxy.

5,057,147

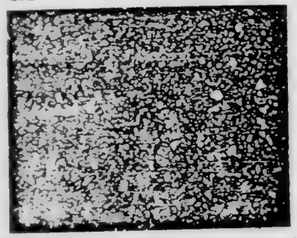
METHOD FOR PREPARATION OF WC-NI GRADE POWDER

Mary E. Shaffer, Towanda, and Edward R. Kimmel, Sayre, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 15, 1990, Ser. No. 538,630

Int. Cl.[5] **C22C** *29/00*

U.S. Cl. 75—252 **3 Claims**



1. A method for controlling the carbon content in tungsten carbide-nickel powder, said method comprising forming a powder mixture consisting essentially of, in percent by weight, about 0.1 to about 1.0 dimolybdenum carbide, about 1 to about 4 tungsten metal powder, about 80 to about 98 tungsten carbide and about 2 to about 20 nickel, and vacuum sintering a compacted article at 1460° C. having a relatively uniform microstructure and absence of exaggerated grain growth.

5,057,148

METHOD OF DECALCIFYING RARE EARTH METALS FORMED BY THE REDUCTION-DIFFUSION PROCESS

Adolph L. Micheli, and Dennis F. Dungan, both of Mt. Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1990, Ser. No. 565,080

Int. Cl.[5] **B22F** *1/00*

U.S. Cl. 75—351 **4 Claims**

1. A method for preparing a mixture of a rare earth and an intermetallic compound comprising said rare earth and a ferromagnetic metal selected from the group consisting of iron and cobalt comprising the steps of:

a) reducing a compound of said rare earth with calcium in the presence of said ferromagnetic metal at an elevated temperature;

b) heating the product of the reducing step for a time and at an elevated temperature sufficient to diffuse most of said rare earth into said ferromagnetic metal and produce a cake of said mixture containing CaO and unreacted Ca;

c) reacting said cake with neodecanoic acid to form calcium decanoate;

d) dissolving said calcium neodecanoate in and organic solvent;

e) separating said dissolved calcium decanoate and solvent from said mixture.

5,057,149

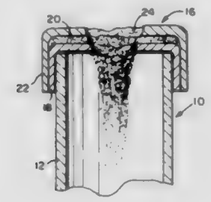
METHOD AND APPARATUS FOR INTRODUCING UNIFORM QUANTITIES OF A MATERIAL INTO A METALLURGICAL SAMPLE

Richard F. Conti, Holland, and Edwin Kaufman, Ambler, both of Pa., assignors to ElectroNite International, N.V., Antwerp, Belgium

Filed Jan. 5, 1990, Ser. No. 461,493

Int. Cl.[5] **C21B** *7/24*

U.S. Cl. 75—377 **17 Claims**



14. A method for introducing an additive material into a molten metal sample comprising:

(a) providing a probe having a generally enclosed sample cavity with an opening for directing molten metal into the sample cavity;

(b) providing a distribution means proximate the opening for inserting a predetermined quantity of additive material into the molten metal flowing through the opening and into the sample cavity, the distribution means comprising:

(i) a first layer of material having a first predetermined melting temperature, the first layer of material having first and second surfaces, the first surface of the first layer of material engaging the probe proximate the opening,

(ii) a second layer formed of an additive material, the additive material layer having first and second surfaces, the first surface of the additive material engaging the second surface of the first layer of material, and

(iii) a third layer of material having a second predetermined melting temperature, the third layer of material having first and second surfaces, the first surface of the third layer of material engaging the second surface of the additive material layer so that the additive material layer is generally sandwiched between the first and third material layers, the material of the first and third layer being selected so that the first and third material layers melt at a controlled rate as molten metal flows through the opening to expose the additive material to molten metal at the controlled rate; and

(c) immersing the probe into molten metal so that a portion of the molten metal flows through the opening and receives the additive material at the controlled rate whereby the additive material is alloyed into the molten metal flowing through the opening at the controlled rate so the additive material is generally homogeneously distributed throughout the molten metal entering the sample cavity.

5,057,150

PRODUCTION OF ALUMINUM MASTER ALLOY ROD

Martin R. Reeve; Pervez J. Bamji; Barrie Chamberlain, and John Sulzer, all of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

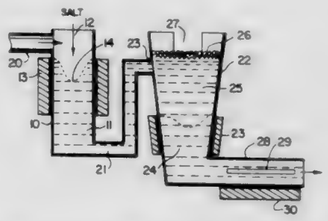
Filed Apr. 26, 1990, Ser. No. 515,168

Claims priority, application Canada, May 3, 1989, 598583

Int. Cl.[5] **C22B** *21/06*

U.S. Cl. 75—671 **12 Claims**

1. A process for producing an aluminum master alloy which comprises continuously passing molten aluminum through a confined reaction zone, continuously adding to the molten aluminum in the reaction zone at least one compound selected from titanium and boron compounds reducible by molten aluminum, continuously stirring the content of the reaction zone to submerge the titanium or boron compounds within the aluminum melt and form an alloy therewith, continuously transferring molten alloy and entrained reaction products from



a lower region of the reaction zone into a refining zone, collecting reaction product slag on the surface of the molten alloy in the refining zone and continuously transferring molten alloy via a transfer means from the refining zone to a casting station.

5,057,151

PROCESS FOR PREPARING HYDROPHOBIC PARTICULATE SOLIDS CONTAINING SI-OH GROUPS AND A PROCESS FOR USING THE SAME

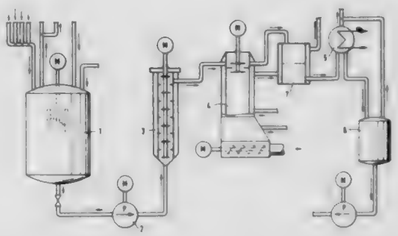
Johann Schuster; Horst Müller, both of Emmerting; Helmut Vorbuchner, Burghausen; Anton Maier, Burghausen, and Ferdinand Pradl, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 24, 1989, Ser. No. 440,831

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1988, 3839900

Int. Cl.[5] **C09K** *3/18*

U.S. Cl. 106—2 **9 Claims**



1. A process for rendering a particulate solid containing Si-OH groups hydrophobic which comprises reacting a water repellent containing an organosilicon compound with the particulate solid containing Si-OH groups with simultaneous mechanical loading of the reaction mixture, in which from 5 to 50 percent by weight of the particulate solid containing Si-OH groups are used, based on the total weight of the reaction mixture containing particulate solid and water repellent, and wherein the water repellent contains from 1 to 5 percent by weight of water based on the weight of the water repellent.

5,057,152

SURFACE CLEANER/POLISH COMPOSITIONS AND A PROCESS FOR THE PREPARATION THEREOF

Bonita K. Marcus, Rye, N.Y.; Anthony J. Gioffre, Ridgefield, Conn., and Marianne Elliott, Elmsford, N.Y., assignors to UOP, Des Plaines, Ill.

Filed Jun. 24, 1987, Ser. No. 66,062
Int. Cl.[5] C09B *1/02*
U.S. Cl. 106—3 **3 Claims**

1. A surface cleaner/polish composition comprising (i) a monohydroxy alcohol having from 1 to t carbon atoms, (ii) a crystalline aluminosilicate selected from Zeolite A, Zeolite X, Zeolite Y, Zeolite P and mixtures thereof as an abrasive material, (iii) a surfactant and (iv) a thickener or suspending aid, wherein said crystalline aluminosilicate has a particle size distribution in which less than 5 percent of the total crystalline aluminosilicate particles have a particle size greater than 5 microns in diameter, said particle size distribution being sufficient to (a) provide enhanced wettability properties, (b) provide enhanced dispersion stability, (c) provide enhanced antifogging properties, (d) reduce or eliminate residual filming, and/or (e) reduce or eliminate dust during surface removal.

5,057,153

PAINT CONTAINING HIGH LEVELS OF A PYRITHIONE SALT PLUS A COPPER SALT

Murray A. Ruggiero, East Haven, Conn., assignor to Olin Corporation, Chelshire, Conn.

Continuation-in-part of Ser. No. 518,602, May 3, 1990, abandoned. This application Feb. 4, 1991, Ser. No. 650,127
Int. Cl.[5] C09D *5/14*
U.S. Cl. 106—18.33 **10 Claims**

1. A paint or paint base composition which is essentially free of tin, lead, and vanadium and is characterized by enhanced biocidal efficacy wherein the paint or paint base composition comprises a pyrithione salt and a copper salt, said pyrithione salt being present in an amount of between about 5% and about 50%, and said copper salt being present in an amount of between about 5% and about 50%, the total amount of said pyrithione salt plus said copper salt being between about 10% and about 75%, based upon the total weight of the paint or paint base composition.

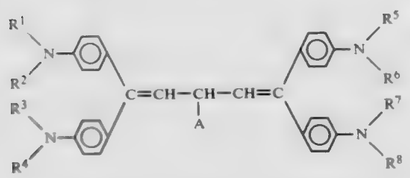
5,057,154

LEUCO DYES AND RECORDING MATERIAL EMPLOYING THE SAME

Shigeru Kusakata, Susono; Hiroshi Gotoh, Fuji, and Isao Shiojima, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

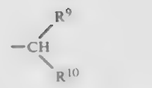
Division of Ser. No. 291,675, Dec. 29, 1988, Pat. No. 4,939,117. This application Apr. 20, 1990, Ser. No. 512,208
Claims priority, application Japan, Jan. 8, 1988, 63-2155; Jan. 18, 1988, 63-8179; Mar. 17, 1988, 63-64892; Mar. 17, 1988, 63-64893
Int. Cl.[5] C09D *11/00;* **C09B** *23/00;* **B41M** *5/136*
U.S. Cl. 106—21 **18 Claims**

1. A leuco dye of the formula (I):

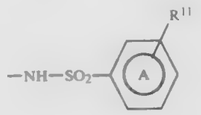


(I)

wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 each represent a lower alkyl group; A represents



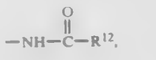
in which R^9 and R^{10} each represent hydrogen, —CN or —CON^{14} in which R^{14} represents a phenyl group which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxyl group having 1 to 4 carbon atoms, or a halogen, a naphthyl group which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms or a halogen, or a lower alkoxyl group,



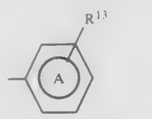
in which



represents a phenyl group or a naphthyl group, R^{11} represents hydrogen, a lower alkyl group, a halogen, an amino group, which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, or a nitro group, or



in which R^{12} represents a lower alkyl group or



in which R^{13} represents hydrogen, a lower alkyl group, a halogen, a hydroxyl gruop, a trifluoromethyl gruop, a nitro group, an amino group which is unsubstituted or is substituted by an alkyl group having 1 to 4 carbon atoms, or amide group, provided that both R^9 and R^{10} may not be hydrogen.

5,057,155

MOLD FORMING MATERIAL

Susumu Nakayama; Shogo Ishizaki, and Toru Iwaki, all of Osaka, Japan, assignors to Okazaki Minerals & Refining Co., Ltd., Osaka, Japan

Filed Jun. 18, 1990, Ser. No. 539,495
Claims priority, application Japan, Jun. 30, 1989, 1-170801
Int. Cl.[5] C09K *3/00;* **C04B** *35/68*
U.S. Cl. 106—35 **2 Claims**

1. A mold forming material comprising, as a fire resistant material, at least one component selected from the group consisting of alumina, zircon, zirconia, calcium oxide, quartz and cristobalite; as a binder, a mixture of ammonium primary phosphate and magnesium oxide; and 1–20% by weight, based on the weight of the mold forming material, of α-spodumene.

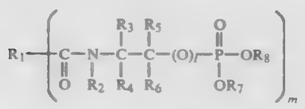
5,057,156

METALLIC PIGMENT COMPOSITION AND WATER BORNE COATING COMPOSITION THEREOF

Teruaki Kuwajima, Higashiosaka; Satoru Nagahata, Tokyo, and Sakuichi Konishi, Ikoma, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

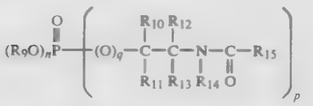
Filed Apr. 2, 1990, Ser. No. 502,771
Claims priority, application Japan, Mar. 31, 1989, 1-82368
Int. Cl.[5] C09C *1/62, 1/64, 3/08*
U.S. Cl. 106—403 **6 Claims**

1. A metallic pigment composition comprising a metallic pigment and a phosphorus compound represented by the following formula (I) or (II);



(I)

wherein l is 0 or 1, m is an integer of 1 to 4, R_1, R_2, R_7 and R_8 represent aliphatic, alicyclic or aromatic hydrocarbon groups, which are the same or different, selected from the group consisting of a hydrogen atom, a C_1–C_{24} aliphatic hydrocarbon group, a C_3–C_{24} alicyclic hydrocarbon group or a C_6–C_{24} aromatic hydrocarbon group, and R_1 has a valence of m, R_3, R_4, R_5 and R_6, which are the same or different, represent a C_1–C_3 aliphatic hydrocarbon group or a C_6 or C_7 aromatic hydrocarbon group,



(II)

wherein n is 0, 1 or 2, p is an integer of 1 to 3, n+p equals 3, q is 0 or 1, R_9, R_{14} and R_{15}, which are the same or different, represent a hydrogen atom, a C_1–C_{24} aliphatic hydrocarbon group, a C_3–C_{24} alicyclic hydrocarbon group or a C_6–C_{24} aromatic hydrocarbon group, R_{10}, R_{11}, R_{12} and R_{13}, which are the same or different, represent a C_1–C_3 aliphatic hydrocarbon group or a C_6 or C_7 aromatic hydrocarbon group;

said phosphorus compound being present in an amount of 0.5 to 200 parts by weight based on 100 parts by weight of the metallic pigment.

5,057,157

PREPARATION OF GRANULAR COLD WATER SWELLING/SOLUBLE STARCHES BY ALCOHOLIC-ALKALI TREATMENTS

Jay-lin Jane, Ames, Iowa, and Paul A. Seib, Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Oct. 22, 1990, Ser. No. 600,910
Int. Cl.[5] C08B *30/14, 30/12*
U.S. Cl. 127—70 **12 Claims**

1. A process for preparing granular cold water soluble starch comprising the steps of:

providing a quantity of starch granules;

contacting said granules with respective quantities of an alcohol and a strong base under conditions for causing swelling of said granules and conversion thereof to a form having increased cold water solubility, while retaining the granular character of the starch granules; and

recovering said converted starch granules having increased cold water solubility.

5,057,158

ETHYL CAMPHOLENATES AND DIHYDRO DERIVATIVES THEREOF AS FLAVORANTS AND ODORANTS

Martin Rohr, Glen Rock, and Cormack Flynn, Ramsey, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Sep. 30, 1986, Ser. No. 913,818
Int. Cl.[5] A24D *3/12, 15/30*
U.S. Cl. 131—276 **14 Claims**

1. A tobacco product comprising a flavoring effective amount of a compound of the formula



I

wherein:

two of the substituents designated by A, B, C and D are methyl groups and the other two are hydrogen with the proviso that A and D are both methyl or are both hydrogen and B and C are both methyl or are both hydrogen, and,

either the dotted line designated by δ or the dotted line designated by ϵ represents an optional bond, such that, when A and D are methyl, the optional bond is represented by δ, and, when B and C are methyl the optional bond is represented by ϵ.

5,057,159

CONTINUOUS AUTOMATIC SNOW AND ICE PREVENTION AND CLEARING OF WINDOWS, LIGHTS AND MIRRORS

Morton Weintraub, P.O. Box 229, Brooklyn, N.Y. 11230

Continuation-in-part of Ser. No. 126,469, Nov. 30, 1987, Pat. No. 4,877,458. This application Jun. 30, 1989, Ser. No. 374,308
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] B08B *7/04*
U.S. Cl. 134—5 **34 Claims**

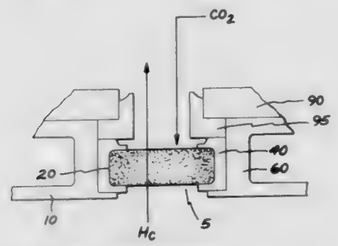
1. A method for preventing falling snow, ice, and condensation from accumulating upon one and a plurality of the following: a window, a mirror, a light, and for clearing an accumulation of snow, ice and condensation already accumulated upon said window, said mirror and said light, the steps comprising,

attaching one and a plurality of containers in a proximity to said one and a plurality of said window, said mirror, and said light, said one and a plurality of containers having means for allowing contact of said snow, said ice and said condensation, with hygroscopic material contained in said one and a plurality of containers such that when said snow and said ice and said condensation comes into said contact with said hygroscopic material, said snow and ice and said condensation dissolves a quantity of said hygroscopic material, said dissolved material flows onto said one and a plurality of said window, said mirror, said light via means for allowing said flow.

5,057,160
APPARATUS FOR PASSIVELY RELEASING GASES FROM A VESSEL AGAINST AN ADVERSE PRESSURE GRADIENT

William J. Ward, III; Philip G. Kosky, both of Schenectady, N.Y., and John A. Kamal, Philadelphia, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 31, 1989, Ser. No. 401,730
Int. Cl.[5] H01L *37/00*
U.S. Cl. 136—202 12 Claims



1. A power supply which comprises:
(a) a power source comprised of a plutonium 238 fuel and thermoelectric elements positoned so as to generate electric pwer from the heat of decay of plutonium 238;
(b) a housing for said power source and the helium produced from the radioactive decay of plutonium 238, said housing having an outlet;
(c) a microporous plug installed in said outlet so as to provide a seal which maintains a helium pressure differential across said microporous plug, said plug having parameters consisting of porosity, pore size, physical dimensions, configuration and composition to provide, when installed in said outlet, for Knudsen diffusion of helium from said housing into an environment of higher total pressure than the pressure with said housing, under conditions approximating those on the surface Mars; and
(d) an absorbent which reacts with carbon dioxide entering said housing.

5,057,161
P-TYPE FE SILICIDE THERMOELECTRIC CONVERSION MATERIAL

Masashi Komabayashi, and Kenichi Hijikata, both of Ohmiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

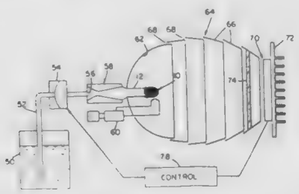
Filed Aug. 6, 1990, Ser. No. 563,291
Claims priority, application Japan, Aug. 15, 1989, 1-210273
Int. Cl.[5] H01L *35/20*
U.S. Cl. 136—240 18 Claims

1. A p-type Fe silicide thermoelectric conversion material comprising an Fe silicide,
wherein V is substituted for part of Fe in said Fe silicide.

5,057,162
THERMOPHOTOVOLTAIC TECHNOLOGY

Robert E. Nelson, Weston, Mass., assignor to TPV Energy Systems, Inc., Waltham, Mass.

Division of Ser. No. 344,695, Apr. 28, 1989, Pat. No. 4,976,606, which is a continuation of Ser. No. 168,458, Mar. 15, 1988, Pat. No. 4,826,426, which is a division of Ser. No. 815,888, Jan. 3, 1986, Pat. No. 4,764,104, which is a division of Ser. No. 634,379, Jul. 31, 1984, Pat. No. 4,584,426, which is a continuation-in-part of Ser. No. 529,016, Sep. 2, 1983, abandoned. This application Oct. 31, 1990, Ser. No. 606,527
The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.
Int. Cl.[5] H01L *31/058*
U.S. Cl. 136—253 15 Claims



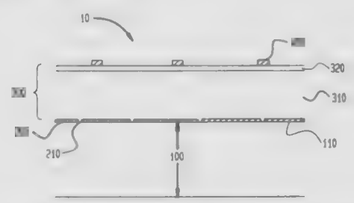
1. A method of thermophotovoltaic power generation comprising the steps of
providing a rare earth metal oxide radiator member that has a cross-sectional dimension in the range of five-thirty micrometers,
disposing a photovoltaic device in optically coupled relation to said radiation member, said photovoltaic device having an electron production threshold,
thermally exciting said radiator member to cause it to emit radiation that has a wavelength peak below said electron production threshold,
said radiator member, when heated to about 1700° C., having a concentrated radiated flux over the 400–2500 nanometer wavelength range such that at least 50% of said radiated flux is within a band less than 400 nanometers in width,
directing the emitted radiation from said radiator onto said photovoltaic device to generate an electrical output, said radiator-photovoltaic system having a photon conversion efficiency of more than fifty percent;
monitoring the electrical output of said photovoltaic device with a control circuit; and
modulating the flow of fuel to said radiator in response to the monitored electrical output of said photovoltaic device to control the electrical output of said photovoltaic device.

5,057,163
DEPOSITED-SILICON FILM SOLAR CELL

Allen M. Barnett; Robert B. Hall, both of Newark, Del.; James A. Rand, Oxford, Pa., and David H. Ford, Wilmington, Del., assignors to AstroPower, Inc., Newark, Del.

Filed May 4, 1988, Ser. No. 190,138
Int. Cl.[5] H01L *31/06*
U.S. Cl. 136—258 26 Claims

25. A thin-film photovoltaic solar cell comprising, in order:
a. a conductive ceramic substrate containing silicon in the amount of 20 to 90 percent by weight and functioning as a mechanical support and first electrical contact;
b. a silicon dioxide barrier layer over the substrate to provide for reflection of light, to minimize back surface recombination and to prevent diffusion of impurities;
c. a multiplicity of openings in the barrier layer occupying less than 5% of the area of the substrate to provide for electrical contact to the substrate;
d. a layer of polycrystalline silicon less than 100 microns thick over the barrier, which includes a p-type region and an n-type region thereon forming a photovoltaic homojunction therebetween;



e. a transparent second electrical contact means applied to the layer of polycrystalline silicon.

5,057,164
PROCESS FOR THERMAL TREATMENT OF METALS

Tom Nilsson, Helsingborg, Sweden; Yannick Rancon, Velizy, and Eric Duchateau, Versailles, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jun. 26, 1990, Ser. No. 543,434
Claims priority, application France, Jul. 3, 1989, 89 08877
Int. Cl.[5] C21D *9/00*
U.S. Cl. 148—16 12 Claims

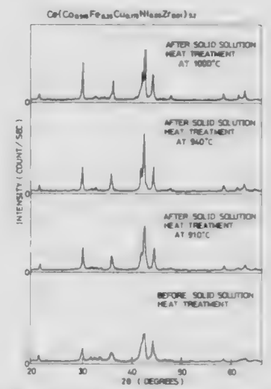
1. A process for thermal treatment of metals using nitrogen produced by permeation or adsorption techniques comprising: passing metallic pieces into an elongated zone under a controlled atmosphere, said elongated zone having an upstream section at an elevated temperature and a downstream section at a lower temperature, wherein said controlled atmosphere is formed essentially by admission into the upstream section of reductive chemicals and of nitrogen having a maximum residual oxygen content of 5% by volume produced from air by permeation or adsorption techniques, said reductive chemicals begin present at all times in an amount sufficient to substantially eliminate the residual oxygen admitted with the nitrogen, and wherein the controlled atmosphere in said downstream section is formed by admission of a gaseous flow taken from said upstream section at an elevated temperature and transferred directly to said downstream section at a lower temperature.

5,057,165
RARE EARTH PERMANENT MAGNET AND A METHOD FOR MANUFACTURE THEREOF

Hiroaki Nagata; Ken Ohashi; Yoshio Tawara, and Kenichi Uesaka, all of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 319,408, Mar. 3, 1989, abandoned. This application Jul. 27, 1990, Ser. No. 558,788
Claims priority, application Japan, Mar. 4, 1988, 63-50799
Int. Cl.[5] H01F *41/02*
U.S. Cl. 148—102 4 Claims

1. A method for manufacturing a rare earth permanent magnet comprising the steps of:
(i) applying a first solid solution heat treatment to an alloy ingot having the composition represented by the formula: $Ce(Co_{1-x-y-a}Fe_xCu_yM_a)_z$, wherein a, x, y, and z represent numbers such that: $0.005<a<0.100$; $0.20<x<0.40$; $0.10<y<0.30$; $4.8<z<6.0$; and M designates an element selected from the group consisting of zirconium, titanium, nickel, manganese and combinations thereof; at temperatures of 900°–1100° C. for a period from 10 minutes to 100 hours;
(ii) pulverizing the alloy ingot;
(iii) producing a magnet body from this pulverized alloy by:
a) orienting the pulverized alloy in a magnetic field; and
b) pressing the oriented alloy into a compact to form a magnet;
(iv) sintering the magnet;
(v) applying a second solid solution heat treatment to the

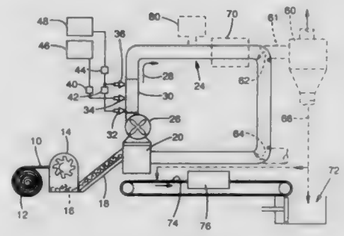


sintered magnet at temperatures 900°–1100° C. for a period from 10 minutes to 100 hours; and
(vi) applying an aging heat treatment to the sintered magnet.

5,057,166
METHOD OF TREATING DISCONTINUOUS FIBERS

Richard H. Young, Sr., Puyallup; Amar N. Neogi; Christel Brunnenkant, both of Seattle; James F. L. Lincoln, Kent, and Michael R. Hansen, Everett, all of Wash., assignors to Weyerhaeuser Corporation, Tacoma, Wash.

Filed Mar. 20, 1989, Ser. No. 326,190
Int. Cl.[5] B27N *3/00, 9/00*
U.S. Cl. 156—62.2 41 Claims



1. A method of treating discontinuous fibers comprising:
entraining the fibers in a gaseous medium;
applying a liquid binder material to the entrained fibers and repeating this applying step a sufficient number of times to produce fibers which are substantially continuously coated with a layer of the liquid binder and in which the binder material is at least about seven percent of the combined dry weight of the binder material and fibers.

5,057,167
METHOD FOR PRODUCING CHIP-AND FIBER-BOARD WEBS OF UNIFORM THICKNESS

Rolf Gersbeck, Ronnenberg, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

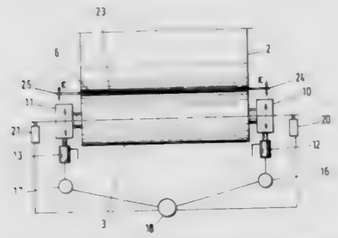
Filed Jan. 18, 1990, Ser. No. 466,753
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1989, 3903022
Int. Cl.[5] B27N *3/26*
U.S. Cl. 156—62.2 5 Claims

1. A method of continuously manufacturing chip and fiber-

board webs, having a substantially uniform thickness across their entire width, in a press comprising a press cylinder, journalling means rotatably mounting said cylinder, and upright support means accommodating said journalling means, said cylinder including an external curved surface, at least one pressure roller disposed adjacent said external curved surface of said press cylinder, said pressure roller having an external curved surface which jointly defines with said external curved surface of said press cylinder a pressing nip, said pressure roller further including first and second end regions, bearing body means disposed at each of said first and second end regions and mounting said pressure roller for rotation, an endless steel band disposed around said curved surface of said cylinder and passing through said pressing nip for carrying chips or fibers, and means for tensioning said band, comprising the steps of;

a) mixing a chip or fiber layer with a binding agent,

b) conveying said mixed layer on said band to said pressing



nip whereby said layer is subjected to a surface pressure between said band and said curved surface of said cylinder and to a line pressure in said pressing nip,

c) applying a preselected pressure to said bearing body provided at said first end of said pressure roller when said press is in its loaded state to cause displacement of said pressure roller towards said axis of rotation of said press cylinder,

d) measuring said spacing between said external surface of said press cylinder and said external surface of said pressure roller at said first end of said pressure roller at said preselected pressure and, on the basis of said measured spacing,

e) setting an equal spacing between said external surface of said press cylinder and said external surface of the pressure roller at said second end of said pressure roller by displacing said bearing body associated with said second end of said pressure roller.

5,057,168

METHOD OF MAKING LOW DENSITY INSULATION COMPOSITION

Paul M. Muncrief, 4771 Quail Run, Las Cruces, N. Mex. 88001

Filed Aug. 23, 1989, Ser. No. 397,980

Int. Cl.[5] B32B *5/26*

U.S. Cl. 156—62.6 **12 Claims**

3. A method for forming a thermal insulation batt, including the steps of

(a) blending at a first selected temperature insulative fibers to produce a mixture of said insulative fibers in random orientation, said insulative fibers having a melting temperature at which at least certain of said insulative fibers melt, said melting temperature being greater than said first selected temperature;

(b) feeding said mixture of fibers into processing means to produce a web;

(c) blending at a second selected temperature binder fibers with stilt fibers to produce a supplemental mixture comprised of said binder and stilt fibers in random orientation, said stilt fibers having a melting temperature at which at least certain of said stilt fibers melt, said binder fibers having a length in the rang of 0.5 inch to 2.0 inches and having a bonding temperature at which said binder fibers soften and adhere to said insulative fibers and said stilt fibers, said bonding temperature being greater than 130° F. and greater than said first and second selected temperatures and less than said melting temperature of said insulative fibers and said melting temperature of said stilt fibers;

(d) transporting at a third selected temperature said web to a lapping machine to be lapped into a batt having

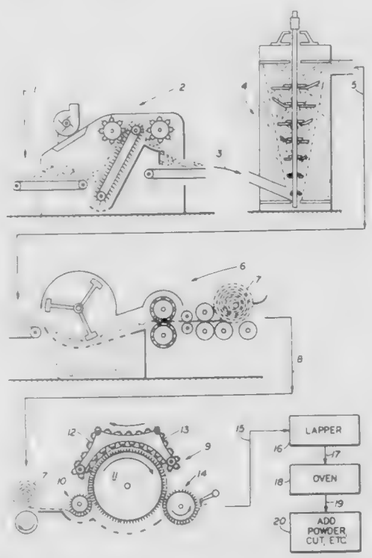
(i) a plurality of overlaid folded web layers; and,

(ii) a thickness greater than the thickness of said web;

(e) folding at a fourth selected temperature said web with said lapping machine to form one of said folded web layers;

(f) applying a layer of said supplemental mixture of fibers to said one of said folded web layers to ride on top of said one of said folded layers, said stilt fibers in said supplemental mixture each having a length in the range of 1/16 to ¾ inch and having a melting temperature at which at least certain of said stilt fibers melt;

(g) folding said web with said lapping machine to form another of said folded web layers extending over and



contacting said layer of said supplemental mixture of said stilt and binder fibers;

(h) transporting at a fifth selected temperature said batt from said lapping machine to apparatus for heating said batt to said bonding temperature, said bonding temperature being greater than said third, fourth and fifth selected temperatures;

(i) heating said batt with said heating apparatus to said bonding temperature to cause said binder fibers to soften and adhere to said insulative fibers and said stilt fibers such that

at least certain of said stilt fibers interconnect insulative fibers in said one of said layers and said another of said layers, and

said stilt filers maintain a spacing between said one of said layers and said another of said layers in the range of 1/32 inch to ⅛ inch; and,

(j) cooling said batt to harden said softened binder fibers, said cooled batt having a density of less than 1.0 pound per cubic foot.

5,057,169

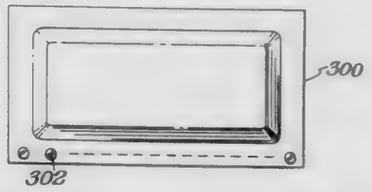
PROCESS OF PROTECTING A SURFACE USING A FOAM LAMINATE

Herbert B. Adelman, Hockessin, Del., assignor to The Crowell Corporation, Newport, Del.

Continuation-in-part of Ser. No. 63,573, Jun. 17, 1987, Pat. No. 4,823,945, which is a continuation-in-part of Ser. No. 665,383, Oct. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 589,699, Mar. 15, 1984, Pat. No. 4,601,157, and a continuation-in-part of Ser. No. 477,241, Mar. 21, 1983, Pat. No. 4,584,225, which is a continuation-in-part of Ser. No. 348,782, Feb. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 246,372, Mar. 23, 1981, Pat. No. 4,321,297. This application Feb. 6, 1989, Ser. No. 306,096

Int. Cl.[5] E04F *15/00;* **B65D** *65/02*

U.S. Cl. 156—71 **6 Claims**



1. In the process of protecting a key surface while work is being done on or near it or where it is used as a temporary walkway, the improvement according to which the surface is covered by a foam laminate having a layer of nonabrasive-faced resilient foam not over about ½ inch thick adhered to a supporting wear-resistant layer less than 1/25 inch thick, the face of the foam layer that is not adhered to the supporting layer carrying a stratum of friction-increasing material that reduces the tendency of the laminate to slide along a surface on which that face is placed, and the laminate is placed on the key surface with that face against that surface.

5,057,170

METHOD OF MAKING A SKI BY REVERSIBLE THERMOPLASTIC ASSEMBLY

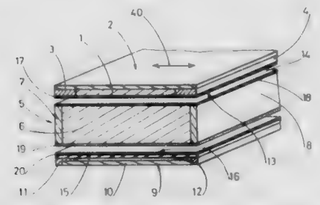
Maurice Legrand; Gilles Recher, and Jean-Mary Cazaillon, all of Annecy, France, assignors to Salomon, S.A., Annecy, France

Filed Feb. 27, 1989, Ser. No. 315,576

Claims priority, application France, Feb. 25, 1988, 88 02662

Int. Cl.[5] B29L *65/06*

U.S. Cl. 156—73.5 **21 Claims**



1. A process of assembling a ski from at least a first subassembly and a second subassembly comprising:

(a) applying a first solid layer of thermoplastic material on said first subassembly, thereby forming an assembly surface for said first subassembly;

(b) applying a second solid layer of thermoplastic material on said second subassembly, thereby forming an assembly surface for said second subassembly;

(c) placing said assembly surface of said first subassembly adjacent said assembly surface of said second subassembly;

(d) heating said thermoplastic material, of said first subassembly and said thermoplastic material of said second subassembly; and

(e) cooling said thermoplastic material of said first subassembly and said second subassembly to thereby weld said fist subassembly to said second subassembly.

5,057,171

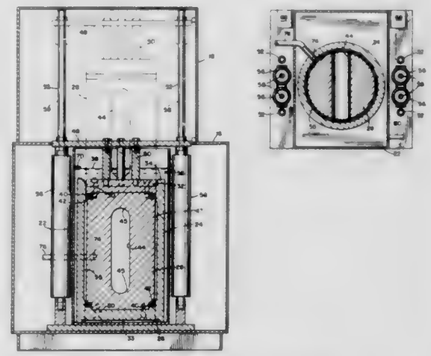
ISOSTATIC PRESS FOR LAMINATING MULTI-LAYER COMPONENTS AND METHOD OF LAMINATION

James W. Horner, and Gordon O. Zablotny, both of San Diego, Calif., assignors to Pacific Trinetics Corporation, San Marcos, Calif.

Filed Apr. 26, 1990, Ser. No. 515,056

Int. Cl.[5] C04B *37/00*

U.S. Cl. 156—89 **11 Claims**



1. A pressure chamber apparatus, comprising:

a pressure chamber having an opening at one end;

a plug member telescopically mounted in said chamber for sliding movement between a retracted position in which it is inside said chamber and an extended position in which it projects at least partially through said chamber opening, said plug member substantially filling said chamber in said retracted position and having a transverse through slot for containing one or more workpieces to be placed under pressure;

drive means for moving said plug member back and forth between said retracted and extended positions;

liquid supply means for supplying liquid to said pressure chamber;

seal means for sealing said chamber when said plug member is in said retracted position; and

pressure booster means for pressurizing liquid in said pressure chamber to a predetermined level.

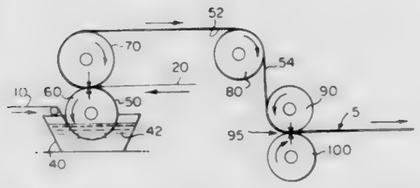
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5,057,172

METHOD OF MANUFACTURING A REINFORCED FILM

D. Mark Woiceshyn, St. Catharines, Canada, assignor to Bay Mills Limited, St. Catharines, Canada

Filed Sep. 7, 1989, Ser. No. 403,872
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—148 31 Claims



1. A continuous process for manufacturing a non-porous, reinforced, impervious, unitary film, said process comprising the steps of:

providing a low viscosity impregnating liquid comprising a thermoformable plastic having a sufficiently high percentage of solids to liquids so that a non-porous unitary film is capable of being formed upon calendering;

providing an open fabric having a plurality of yarns in a first direction and a plurality of yarns in a second direction at a substantial angle to the first;

providing at least one lightweight, porous mat having a plurality of filaments;

continuously feeding the fabric and the mat from respective feed ends to an exit end;

impregnating the fabric and the mat with the impregnating liquid, the impregnating liquid flowing into the open fabric and the porous mat to impregnate the yarns of the fabric and to surround the filaments of the mat and to form a side by side impregnated combination of fabric and mat in which the weight of the thermoformable plastic carried on the impregnated combination is 100 to 800% measured as dry pickup weight relative to the combined weight of the fabric and the mat, which amount is sufficient to be deformed into a non-porous unitary film upon calendering, the mat bridging gaps between the yarns of the fabric;

continuously setting the plastic of the impregnated combination of fabric and mat to eliminate essentially all carrier liquid by significantly reducing the viscosity and any tackiness of the plastic, and to form an impregnated combination of fabric, mat, and set plastic, the set, impregnated combination having gaps between the yarns of the fabric bridged by mat impregnated with set plastic and having a predetermined porosity; and

continuously deforming the set, impregnated combination of plastic, fabric, and may by calendering with a heated calender roll of sufficient heat and at a sufficient pressure gradient to deform the plastic to further impregnate and surround the yarns of the fabric and filaments of the mat with the plastic and to close essentially all remaining pores and voids in the impregnated combination, to create a non-porous, impervious, continuous, low-wicking, essentially void-free, unitary film having a reinforcement of fabric and mat embedded therein.

5,057,173

PROCESS FOR THE PRODUCTION OF NEEDLE FELT FROM ROCK WOOL

Lothar Bihy, Kaiserslautern; Hans Kummermehr, Ludwigshafen, and Reinhard Stoyke, Dudenhofen, all of Fed. Rep. of Germany, assignors to Grunzweig + Hartmann AG, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 26, 1989, Ser. No. 416,228
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1988, 3835007
Int. Cl.[5] B32B *17/00*
U.S. Cl. 156—148 13 Claims

1. A process for producing needle felt from rock wool, comprising the steps of:

breaking stone melt into fibers having a diameter with a maximum frequency distribution of fiber diameter below 6 μm;

forming the fibers into a felt web;

providing the fibers with an avivage having a viscosity between 2,000 and 10,000 cP to improve their suppleness and in a minimum amount of 0.05 and a maximum amount of 5 per cent by weight thereof relative to a weight of dry felt web; and

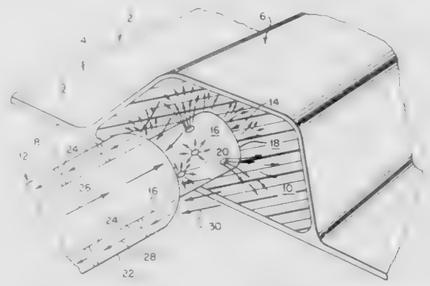
needling the felt with the fibers provided with the avivage to form a needled felt web.

5,057,174

FOAM TOOLING REMOVAL METHOD

Robert E. Anderson, Huntington Station, and Leonard M. Poveromo, Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 306,185, Feb. 6, 1989, abandoned. This application Jul. 5, 1990, Ser. No. 547,371
Int. Cl.[5] B24C *1/06, 3/04*
U.S. Cl. 156—155 4 Claims



1. A method for constructing a finished composite structural component wherein there is included at least one hollowed stiffener element, the method comprising the steps:

depositing a mandrel on a flat sheet of wet resin-impregnated material;

depositing a second sheet of resin-impregnated material over the mandrel and the flat sheet to form a stiffener;

curing the mandrel-enclosing sheets to form the structural component;

positioning a source of pressurized flow containing beads adjacent an end of the structural component;

impinging a flow of beads against the mandrel material;

pulverizing the material with the impinging beads;

progressively advancing the source into a void created within the structure resulting from material pulverization:

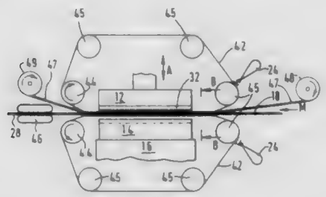
continuously evacuating the internal volume of the stiffener thereby clearing it of pulverized mandrel material and spent beads resulting in a thoroughly cleaned interior surface of the stiffener.

5,057,175

METHOD AND APPARATUS FOR MAKING CONTINUOUS LENGTHS OF THERMOPLASTIC FIBER REINFORCED LAMINATES

John W. Ashton, Leominster, England, assignor to H.R. Smith (Technical Developments, Ltd.), Oxfordshire, England

Continuation-in-part of Ser. No. 54,427, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 100,449, Jul. 30, 1986, abandoned. This application May 16, 1989, Ser. No. 352,331
Claims priority, application United Kingdom, Jul. 31, 1985, 8519297; PCT Int'l Appl., Jul. 30, 1986, PCT/GB/00449
Int. Cl.[5] B32B *31/08, 31/20*
U.S. Cl. 156—202 21 Claims



1. A method of making continuous lengths of thermoplastics material fibers reinforced laminates, comprising the steps of placing at least one layer of fibers reinforcement impregnated with a thermoplastics material between outer sheets of another material to form a stack, passing the stack through a tool having platens at least one of which is movable relative to the other, and operating the tool to compress the stack and form a laminate, wherein in said passing step the stack is moved from an entrance to an exit of the tool in increments which are substantially less than the length of the tool defined between the entrance and the exit thereof such that each area of the stack is subjected to repeated compressions by the tool in passing of the stack therethrough, and wherein in said step of passing through the tool the stack is moved along a recess formed in one of said platens, which recess is shaped to receive a land formed on another of said platens and the width of which is substantially the same as the width of the stack as the stack passes through the tool, and wherein at least one of said platens of the tool is differentially heated and cooled such that the temperature of the thermoplastics material impregnating the layer of fibers reinforcement of the stack in said passing step through the tool is first raised to at least a melt temperature of said thermoplastics material and then is allowed to fall below said melt temperature, and wherein a face of said at least one platen is profiled such that a spacing between opposed faces of said platens decreases along at least a part of the length of the recess through which the stack is moved from the entrance to the exit of the tool.

5,057,176

METHOD OF FORMING CORRUGATED PAPERBOARD AUTOMOTIVE LINER

William Bainbridge, Lakewood, Colo., assignor to Manville Corporation, Denver, Colo.

Division of Ser. No. 192,096, May 10, 1988, Pat. No. 4,886,696. This application Oct. 10, 1989, Ser. No. 419,165
Int. Cl.[5] B32B *31/18, 31/20*
U.S. Cl. 156—222 1 Claim

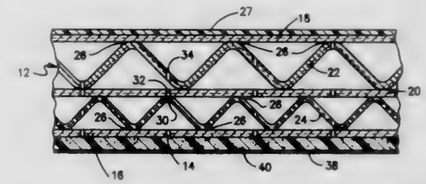
1. A method of forming a self-supporting panel for lining the interior face of an automotive roof, comprising the steps of:

providing a paperboard laminate comprising front, back and median paperboard sheets spaced from each other in substantially planar parallel relationship, the distance between the front and median sheets being less than the distance between the median and back sheets, and further comprising corrugated paperboard mediums located between the median sheet and the front and back sheets and being adhered thereto;

perforating the paperboard laminate to form relatively small diameter perforations in the front and median sheets and in the corrugated mediums to improve the sound absorption of the paperboard laminate;

moisturizing the perforated paperboard laminate to substantially soften and reduce the rigidity thereof;

molding the moisturized and softened laminate in a nonplanar heated mold having curved portions to mold the laminate into a nonplanar configuration including curved



portions, the curved portions of the molded laminate corresponding to the curved portions of the mold and comprising concave areas at the outer surface of the front sheet and convex areas at the outer surface of the back sheet, the molded laminate being of substantially uniform thickness;

adhering a layer of sound dampening material to the outer face of the front paperboard sheet, the sound dampening material permitting passage therethrough of ambient air; and

drying the molded laminate to increase the rigidity of the laminate.

5,057,177

LAMINATED PACKAGING FILM

Ricardo Balloni, Fairport, and A. Michael Nahmias, Victor, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 296,639, Jan. 13, 1989. This application May 25, 1990, Ser. No. 540,541
The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.
Int. Cl.[5] B32B *5/16*
U.S. Cl. 156—244.11 15 Claims

1. A method for manufacturing a polymer film laminate comprising:

providing a first polyolefin web, said first web including a first surface layer containing an anti-blocking agent and a coefficient of friction-reducing amount of silicone oil;

providing a second polyolefin web, said second web being substantially devoid of silicone oil;

applying an adhesive between said first and second webs;

bonding said first web to said second web such that said silicone oil-containing first surface layer of said first web remains exposed; and

contacting said silicone oil-containing first surface layer of said first web with a first surface layer of said second web, thereby transferring a coefficient of friction-reducing amount of silicone oil thereto.

5,057,178

METHOD OF MAKING A COUPLING COMPONENT BY EXPANDING AND VULCANIZING A TUBE DIRECTLY ONTO FRICTION SHOE ASSEMBLIES

James M. Latsko, North Royalton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 9, 1990, Ser. No. 520,223
Int. Cl.[5] B29C *49/20*
U.S. Cl. 156—245 28 Claims

1. A method of assembling a coupling component having a

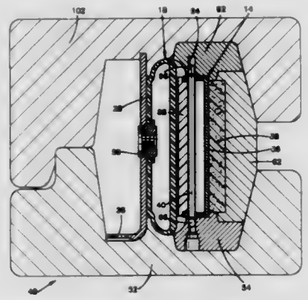
plurality of friction shoes attached to an annular tube, said method comprising:

providing an annular tube which is at least partially formed of uncured elastomeric material;

assembling a plurality of friction shoes with backing plates having flanges projecting to one side of the shoes and pins extending through aligned holes in the flanges;

positioning the assembled shoes and pins in a first mold part of a multi-part mold;

placing the tube in the first mold part;



placing another mold part in position with the first mold part to at least partially form an enclosed mold cavity containing the tube, assembled shoes and pins and securing the mold parts together;

heating the mold and tube to a curing temperature;

inflating the tube to radially expand the tube to cause elastomeric material to flow around the pins within the mold cavity and into contact with the backing plate of the friction shoe assemblies; thereby interconnecting the tube and friction shoe assemblies; and

removing the interconnected tube and friction shoe assemblies from the mold.

5,057,179

RESURFACING COMPOSITIONS AND METHODS

Donald C. DuLaney, and Robert H. Lindsay, both of Madison, Wis., assignors to Lindsay Finishes, Inc., Madison, Wis.

Division of Ser. No. 67,730, Jun. 26, 1987, Pat. No. 4,791,159. This application Sep. 22, 1988, Ser. No. 249,456

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—280 **17 Claims**

1. A method of resurfacing comprising the steps of:

applying a first coating of an adhesive composition to a surface to be resurfaced in a quantity sufficient to bridge imperfections in said surface and to mount a resurfacing fabric thereto, said adhesive composition having an applied thickness of at least about 14 mils and comprising a liquid dispersion of a polar latex resin binder comprising an emulsion of water and a polyvinyl acetate homopolymer with a polyvinyl alcohol protective colloid, said binder being present in a concentration effective to adhere a resurfacing fabric to a surface wetted with said composition; a chemical plasticizer effective in plasticizing and tackifying said latex resin binder; a solvent comprising a volatile water miscile glycol ether; a thickening agent present in an amount effective to modify the viscosity of said composition so that at atmospheric conditions said composition will not flow due to the influence of gravity once applied to a surface having interstices; and about 6 to about 7½ wt % diatomaceous silica;

applying a substantially continuous fibrous resurfacing fabric onto said adhesive coated surface, said applied resurfacing fabric having an outward facing exposed surface; and

applying a top coating of said adhesive composition, impregnating said interstices of said outward facing exposed surface of said resurfacing fabric and providing a substantially smooth outward facing surface, said adhesive composition having a viscosity sufficient so that at atmospheric conditions said top coating will not flow due to the influence of gravity once applied to said resurfacing fabric.

5,057,180

APPARATUS FOR FEEDING A PREFERABLY MULTI-PLY WEB OF SYNTHETIC THERMOPLASTICS

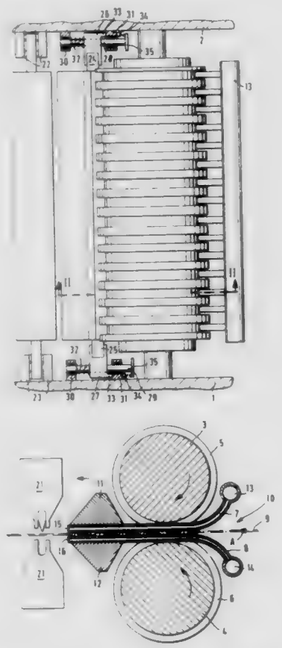
Gunter Mattiebe, Bielefeld, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 27, 1989, Ser. No. 441,120

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1988, 3841049; Mar. 14, 1989, 3808272

Int. Cl.[5] B32B *27/00, 31/00*

U.S. Cl. 156—352 **7 Claims**



1. An apparatus for feeding a web of synthetic thermoplastics, which apparatus comprises a pair of feed rolls in a frame, the rolls having an entrance side and an exit side defining a direction of travel of the web, a feeding nip on the entrance side of the rolls and each of which rolls is formed with annular grooves, and two scraping rakes, which are secured in the frame and have tines extending through the annular grooves, wherein at least one of said rakes is mounted in the frame for translatory movement lengthwise of the tines in the direction to travel of the web and arranged to actuate a switch for stopping the drive for the rolls when the scraping rake is moved out of its normal position by the web because it is bulged.

5,057,181

APPARATUS FOR APPLYING REINFORCING SLIPS PROVIDED WITH A GLUE COATING TO A WEB HAVING TRANSVERSE PERFORATION LINES

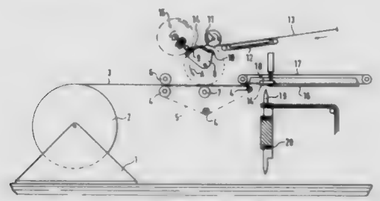
Friedhelm Mundus, Lengerich, Fed. Rep. of Germany, assignor to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany

Filed Feb. 7, 1990, Ser. No. 476,059

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1989, 3905469

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—510 **6 Claims**



1. An apparatus for applying reinforcing slips provided with a glue coating to a web which has transverse perforation lines, comprising means for tearing from the web sections which are joined at the transverse perforation lines, characterized in that

a belt conveyor is provided, which consists of spaced apart endless conveyor belts, which are trained around receiving-end reversing pulleys,

a conveyor roller is disposed above said receiving-end reversing pulleys and urges the web against said receiving-end reversing pulleys,

the conveying belts are supported in their upper course by a supporting roller, which is spaced behind the receiving-end reversing pulleys by a distance which is smaller than the spacing of the transverse perforation lines of the web,

the supporting roller constitutes a backing roller for cooperating with a rotating segment, which has a cyclindrical peripheral surface and serves to hold and transport the reinforcing slips,

the radius and the surface speed of the peripheral surface of said segment are so selected in dependence on the length of the sections of the web that said segment urges each section of the web against the backing roller and causes a portion of each section of the web to be in rolling contact with the backing roller between two conveying belts, and

the surface speed of the segment and of the backing roller exceeds the conveying speed of the belt conveyor so that a slip is stuck on each section and each section is torn from the web.

5,057,182

ULTRASONIC COMB HORN AND METHODS FOR USING SAME

David G. Wuchinich, New York, N.Y., assignor to Sonokinetics Group, Hoboken, N.J.

Filed Jan. 19, 1990, Ser. No. 467,624

Int. Cl.[5] B29C *65/00;* **B06B** *3/00;* **H02N** *2/00*

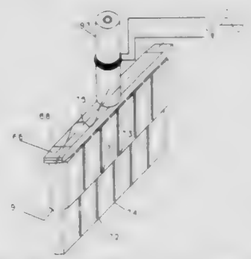
U.S. Cl. 156—580.1 **60 Claims**

1. A vibration generating apparatus comprising:

means for generating vibrations in a first direction;

a spine member having first and second ends and being operatively associated with the vibration generating means, said spine member being oriented perpendicular to the direction of said generated vibrations; and

a plurality of tine members having a working end for transmitting said generated vibrations and extending perpendicularly from said spine member in the direction of said generated vibrations, each tine member positioned and attached at an antinode location along said spine member and having a length of n Γ/2 wherein n is an integer and Γ is equal to c/f where c is the velocity of sound in the apparatus and f is the chosen frequency of vibration, wherein first and second tine members positioned on said spine member opposite the attachment of said vibration generation means are attached at their working end but are otherwise separated by a space extending along their length; and wherein each other tine member is connected



to adjacent tine members only at a points along their length of n Γ/4 wherein n is an odd integer; said other tine members forming a symmetrical pattern on each side of a plane passing vertically between said first and second tine members; wherein the working end of each tine member other than said first and second tine members is separated from the working end of each adjacent tine members.

5,057,183

PROCESS FOR PREPARING EPITAXIAL II-VI COMPOUND SEMICONDUCTOR

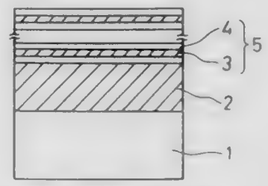
Yoshitaka Tomomura, and Masahiko Kitagawa, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 5, 1989, Ser. No. 446,114

Claims priority, application Japan, Dec. 8, 1988, 63-310512; Mar. 31, 1989, 1-82896

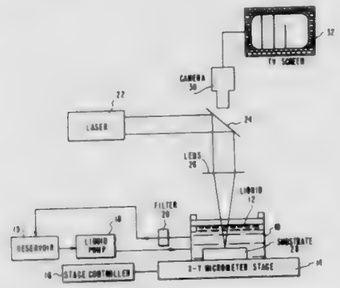
Int. Cl.[5] H01L *29/22*

U.S. Cl. 156—610 **12 Claims**



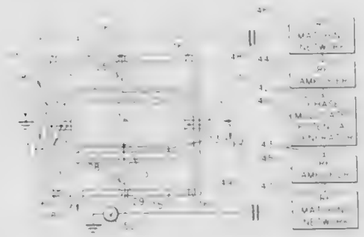
1. A process for preparing an epitaxial II-VI compound semiconductor containing sulfur as a VI element by molecular beam epitaxy employing a sulfur molecular beam and a II element molecular beam, the molecular beam epitaxy comprising the steps of heating solid sulfur at a first temperature to obtain a sulfur vapor with a suitable vapor pressure for the molecular beam epitaxy, and subsequently heating the sulfur vapor at a second temperature higher than said first temperature to produce the sulfur molecular beam.

5,057,184
LASER ETCHING OF MATERIALS IN LIQUIDS
Arunava Gupta, Valley Cottage, N.Y.; Belgacem Haba, Wilaya d'El-Oued, Algeria; Brian W. Hussey, Garrison, and Lubomyr T. Romankiw, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 6, 1990, Ser. No. 505,380
Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*
U.S. Cl. 156—637 42 Claims



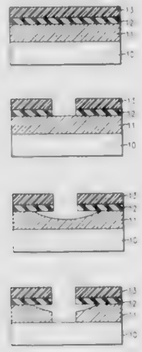
1. A laser etching method comprising the steps of:
disposing a laser energy absorbing substrate to be etched having a finite melting temperature and which does not sublime when heated into a liquid, and
scanning the substrate with a beam of laser energy at a location where etching is to occur, the characteristics of the laser energy causing the formation and collapse of liquid vapor bubbles at said location for etching the substrate

5,057,185
TRIODE PLASMA REACTOR WITH PHASE MODULATED PLASMA CONTROL
John Henry Thomas, III, Holland, Pa., and Bawa Singh, Voorhees, N.J., assignors to Consortium for Surface Processing, Inc., Princeton, N.J.
Filed Sep. 27, 1990, Ser. No. 589,401
Int. Cl.[5] H01L *21/306*; B44C *1/22*; B05D *3/06*; C23C *14/00*
U.S. Cl. 156—643 25 Claims



20. A method of processing a sample in a plasma reactor including first and second electrodes in a reaction chamber, comprising the steps of;
introducing a reactant into the reaction chamber;
generating first and second time varying potentials, with the second time varying potential being a phase modulated version of the first time varying potential;
applying the first time varying potential to the first electrode; and
applying the second time varying potential to the second electrode.

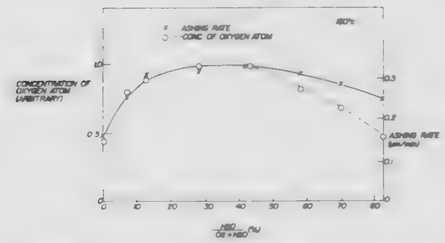
5,057,186
METHOD OF TAPER-ETCHING WITH PHOTORESIST ADHESION LAYER
Hongzong Chew, Allentown; Catherine A. Fieber, Upper Milford Township Lehigh County; Graham W. Hills, Salisbury Township Lehigh County, and Edward P. Martin, Jr., Bethlehem, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 387,254, Jul. 28, 1989, abandoned. This application Oct. 12, 1990, Ser. No. 597,295
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 12 Claims



1. A method for making an integrated circuit comprising the steps of:
making a dielectric opening in a dielectric, said dielectric opening being etched in the presence of a patterned photoresist layer, said photoresist layer having a photoresist opening with a first dimension,
said etching comprising a first step of isotropic etching followed by a second step of essentially anisotropic etching, and
prior to deposition of said photoresist layer, there being an additional layer deposited on said dielectric, the material of said additional layer being selected to enchance adhesion of said photoresist layer, said additional layer being etched to create an additional layer opening with a second dimension prior to said etching of said dielectric, said second dimension remaining substantially equal to said first dimension during both said isotropic and said anisotropic etching.

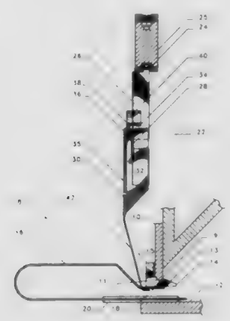
5,057,187
ASHING METHOD FOR REMOVING AN ORGANIC FILM ON A SUBSTANCE OF A SEMICONDUCTOR DEVICE UNDER FABRICATION
Keisuke Shinagawa, Kawasaki; Shuzo Fujimura, Tokyo, and Kenichi Hikazutani, Kuwana, all of Japan, assignors to Fujitsu Ltd., Kanagawa, Japan
Division of Ser. No. 361,178, Jun. 5, 1989, Pat. No. 4,961,820. This application May 18, 1990, Ser. No. 524,934
Claims priority, application Japan, Jun. 9, 1988, 63-142673
Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*; B29C *37/00*
U.S. Cl. 156—643 8 Claims

1. A method for removing an organic material formed on a ground substance of a semiconductor device, which comprises the steps of:
providing as a reactant gas, a mixed gas comprising oxygen, hydrogen, which comprises more than 1% of the mixed gas, and an additional gas;
controlling ratios of oxygen, hydrogen and said additional gas in said mixed gas such that when said reactant gas is formed into a plasma, and said plasma is impinged on said organic material under ashing conditions, the ashing rate is larger than and the activation energy is at most equal to, those respectively which would be achieved by using a reactant gas composed of oxygen and hydrogen;
generating a first plasma of said reactant gas;
providing a second plasma down stream of said first plasma, whereby producing active species of said reactant gas; and



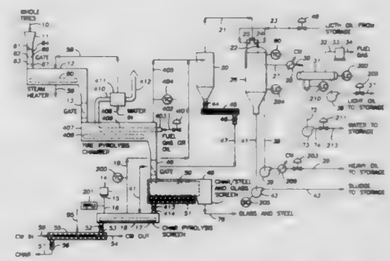
impinging said second plasma on said organic material down stream from said first plasma generating step, whereby removing the orgnaic material by means of the active species of said second plasma, but leaving the ground substance substantially unremoved.

5,057,188
SLICE CLEANING APPARATUS HAVING BIAS MEANS
Ahmed A. Ibrahim, Westerville, and Juan H. Crawford, Grove City, both of Ohio, assignors to Papyrus, Inc., Westerville, Ohio
Filed Apr. 11, 1991, Ser. No. 683,696
Int. Cl.[5] D21F *1/00, 11/00*
U.S. Cl. 162—199 16 Claims



1. In a paper manufacturing machine including a slice having, in an operable position, an upper lip and a lower lip between which a suspension of paper fibers and other materials in water flows, an improved slice cleaning apparatus comprising:
(a) a scraping body, which matingly conforms to at least a portion of the upper lip;
(b) a foot which seats against the lower lip; and
(c) a bias means which connects the scraping body with the foot for urging the scraping body against the upper lip.

5,057,189
RECOVERY APPARATUS
Fred Apffel, P.O. Box 691386, Houston, Tex. 77269-1386
Continuation-in-part of Ser. No. 742,724, Jun. 7, 1985, Pat. No. 4,647,443, which is a division of Ser. No. 19,638, Feb. 27, 1987, Pat. No. 4,839,151, and a continuation-in-part of Ser. No. 660,420, Oct. 12, 1984, abandoned. This application Jun. 12, 1989, Ser. No. 365,279
Int. Cl.[5] C10B *7/10, 23/00*
U.S. Cl. 202—113 5 Claims

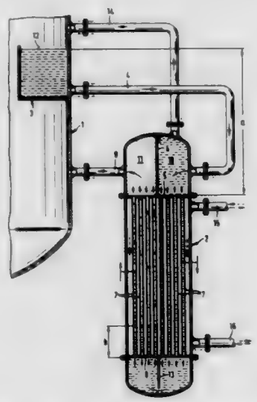


1. Apparatus for pyrolyzing discarded substantially whole tires, comprising;
a first reactor vessel having an inlet and outlet for receiving the tires and producing an organic and inorganic material mix and a first amount of char and glass and steel therefrom, said first reactor vessel having a radiant heat source;
first means for conveying the tires from the inlet to the outlet of the first reactor vessel;
second means outside of the first reactor vessel for separating a substantial amount of dust having a second amount of char entrained in the organic and inorganic material mix from the organic material; and
third means outside of the first reactor vessel for substantially separating the first amount of char from glass and steel in the first amount of char and glass and steel, and a second reactor vessel having receiving means for receiving the first amount of char from the third means; and
a microwave transmitter having microwave means for supplying microwave energy to the first amount of char in the second reactor vessel.

5,057,190
STRIPPING COLUMN INSTALLATION FOR SEPARATING MATERIALS WITH HIGH BOILING POINT DIFFERENCE
Luzian Skatulla, Mülheim/Ruhr, and Hans-Jürgen Vollmer, Essen, both of Fed. Rep. of Germany, assignors to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany
Filed Feb. 2, 1990, Ser. No. 473,877
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1989, 3904711
Int. Cl.[5] B01D *3/14*
U.S. Cl. 202—153 10 Claims

1. A stripping column installation for separating starting materials with a high boiling point difference, comprising a stripping column having a withdrawal plate and a column sump; and a circulating boiler connected with said stripping column and having a pipe bundle through which a liquid sump product from said withdrawal plate of said stripping column flows, said circulating boiler having an upper plate and a separating wall which separates a space above said plate into two chambers, one of said chambers having a connection for receiving the liquid sump product from said withdrawal plate of said stripping column and is connected with a first portion of said pipe bundle, while the other of said chambers is connected with a second portion of said pipe bundle and has a connection for discharging the sump product for return to said stripping column after heating in said boiler, said circulating boiler being

located relative to said stripping column so that a height difference is produced between a level of the liquid sump product on said withdrawal plate of said stripping column and said upper plate of said circulating boiler, said height difference having a



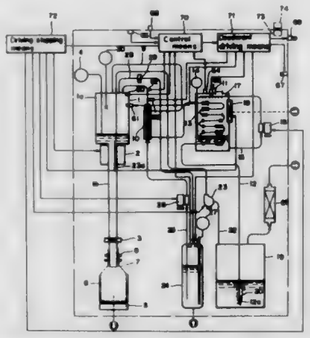
value selected so that a total pressure of a liquid column of the liquid sump product in said first portion of said pipe bundle in said circulating boiler is higher than a vapor pressure of vapor of the sump product to be heated.

5,057,191

PROCESSING METHOD OR PHOTOGRAPHIC PROCESSING WASTE LIQUOR

Masayuki Kurematsu; Shigeharu Koboshi; Nobutaka Goto, and Naoki Takabayashi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 262,519, Oct. 25, 1988, abandoned. This application Mar. 20, 1990, Ser. No. 497,763
Claims priority, application Japan, Nov. 1, 1987, 62-276416
Int. Cl.[5] B01D *3/34, 3/42*
U.S. Cl. 203—3 **12 Claims**



1. A method of processing photographic waste liquor which comprises the steps of:

effecting evaporation concentration of the photographic waste liquor

providing a condensing means to cool and condense vapor generated in the evaporation concentration of the photographic waste liquor;

detecting a predetermined concentration of hydrogen sulfide and/or sulfurous gas generated in the evaporation concentration of the photographic waste liquor; and then

stopping said evaporation concentration when said predetermined concentration of the gas is detected, wherein said predetermined concentration is 0.1 to 1000 ppm.

12. A method of processing photographic waste liquor comprising:

effecting evaporation concentration of the photographic waste liquor, said evaporation concentration being accompanied by the generation of hydrogen sulfide and/or sulfurous gas, and of vapor;

providing a condensing means to cool and condense the vapor;

detecting a predetermined concentration of the hydrogen sulfide and/or sulfurous gas generated in the evaporation concentration of the photographic waste liquor, said predetermined concentration being 0.1 to 1,000 ppm;

stopping said evaporation concentration when said predetermined concentration of the gas is detected; and

adding a deodorizer at the time of stopping or after stopping said evaporation concentration, in an amount of 0.1 to 500 grams per liter of the concentrate.

5,057,192

ACETONE REMOVAL FROM ACETIC ANHYDRIDE PRODUCTION PROCESS

Joseph R. Zoeller; Steven L. Cook; Charles E. Outlaw, and Robert M. Schisla, Jr., all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 616,528, Nov. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 590,838, Oct. 1, 1990, abandoned. This application Feb. 28, 1991, Ser. No. 662,158
Int. Cl.[5] B01D *3/40;* **C07C** *45/83, 51/12, 53/12*
U.S. Cl. 203—46 **7 Claims**

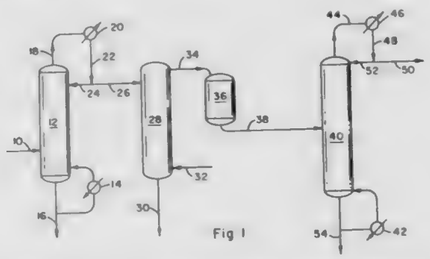


Fig 1

1. Process for the removal of acetone from a production system in which acetic anhydride is produced by contacting carbon monoxide with a mixture comprising methyl iodide and methyl acetate and/or dimethyl ether in the presence of a catalyst system and acetic acid by the steps comprising:

(1) obtaining from the production system a low-boiling stream comprising methyl acetate, methyl iodide, acetic acid and acetone;

(2) distilling the stream of Step (1) to obtain:

(a) an overhead stream comprising methyl acetate, methyl iodide and acetone; and

(b) an underflow stream comprising methyl acetate, acetone and essentially all of the acetic acid;

(3) extracting the Step(2)(a) stream with water to obtain:

(a) a methyl iodide phase containing methyl acetate; and

(b) an aqueous phase containing methyl acetate, methyl iodide and acetone; and

(4) distilling the aqueous phase to obtain:

(a) a vapor phase comprising methyl acetate, methyl iodide and minor amounts of acetone and water; and

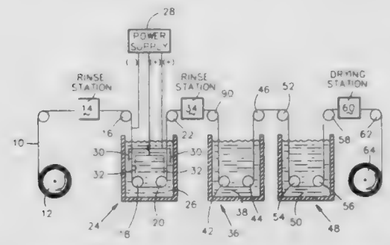
(b) an aqueous stream containing methyl acetate and acetone.

5,057,193

ANTI-TARNISH TREATMENT OF METAL FOIL

Lifun Lin, Hamden, and Ned W. Polan, Madison, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 333,210, Apr. 5, 1989, abandoned. This application Dec. 22, 1989, Ser. No. 453,370
Int. Cl.[5] C25D *5/48, 7/06*
U.S. Cl. 204—27 **12 Claims**



1. A process for imparting tarnish and oxidation resistance to copper and copper alloy foil material having one relatively roughened surface and one relatively smooth surface, said process comprising:

applying a coating of zinc on the smooth side of the foil material, and thereafter.

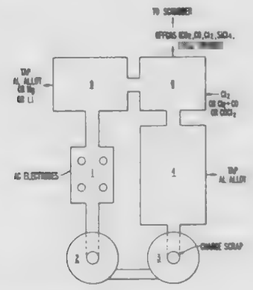
applying an aqueous sulfuric acid-chromic acid solution to said materials.

5,057,194

SALT-BASED MELTING PROCESS

Donald L. Stewart, Greensburg; Jan H. L. Van Linden, Allison Park; Alfred F. LaCamera, Trafford; Thomas V. Pierce, Delmont; James O. Parkhill, Tarentum; John M. Urbanic, Pittsburgh, and Thomas R. Hornack, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

PCT No. PCT/US88/02374, § 371 Date Oct. 13, 1989, § 102(e) Date Oct. 13, 1989, PCT Pub. No. WO89/06291, PCT Pub. Date Jul. 13, 1989
Continuation-in-part of Ser. No. 40,132, Apr. 20, 1987, Pat. No. 4,761,207, and a continuation-in-part of Ser. No. 40,133, Apr. 20, 1987, Pat. No. 4,758,316, and a continuation-in-part of Ser. No. 138,391, Dec. 28, 1987, abandoned, and a continuation-in-part of Ser. No. 197,889, May 24, 1988, abandoned. This PCT application Jul. 19, 1988, Ser. No. 435,502
Int. Cl.[5] C25C *3/06*
U.S. Cl. 204—67 **17 Claims**



1. A process comprising:

melting light metal scrap and/or skim in molten salt, whereby the molten salt accumulates metal oxide impurities; and

subjecting the molten salt to electrolysis to electrolyze the metal oxide impurities directly and remove the metal oxide impurities from the salt.

5,057,195

ELECTRODEPOSITION COATING METHOD AND AN ELECTROPAINT TO BE USED THEREIN

Tetsuo Ueda, Osaka; Haruhiko Takasaki, Hiroshima, and Shigeru Kurokawa, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 11, 1989, Ser. No. 392,281
Int. Cl.[5] C25D *13/10, 5/02;* **H01F** *1/26*
U.S. Cl. 204—181.4 **3 Claims**

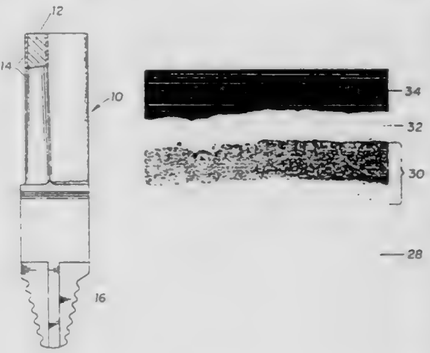
1. An electrodeposition coating method which comprises subjecting a substrate to an electrocoating in a magnetic field with an electropaint containing 0.01 to 30% by weight, with respect to the total solid of the paint, of particles each having a magnetic function such that the magnetization value is 0.3 to 90 emu/g.

5,057,196

METHOD OF FORMING PLATINUM-SILICON-ENRICHED DIFFUSED ALUMINIDE COATING ON A SUPERALLOY SUBSTRATE

George E. Creech, Indianapolis, and Michael J. Barber, Martinsville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1990, Ser. No. 628,030
Int. Cl.[5] C25D *13/04*
U.S. Cl. 204—181.5 **5 Claims**



1. A method of forming a hot corrosion- and oxidation-resistant diffused aluminide coating of improved ductility on a nickel- or cobalt-base superalloy substrate body, comprising:

(a) electrophoretically depositing onto a said substrate a platinum-silicon powder comprising about 3 percent to about 50 percent by weight silicon and the balance essentially platinum,

(b) heating the deposited platinum-silicon powder at a temperature sufficient to melt the powder into a transient liquid phase and to initiate diffusion of platinum and silicon into the substrate,

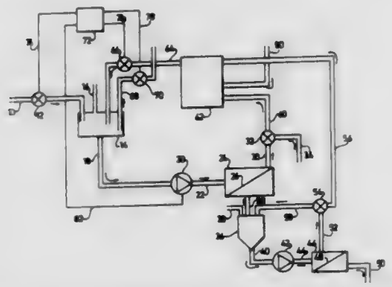
(c) electrophoretically depositing an aluminum-bearing powder comprising aluminum, chromium and optionally manganese onto the platinum and silicon-enriched substrate, and

(d) heating the deposited aluminum-bearing powder at a temperature and for a time sufficient to form a platinum- and silicon-enriched diffused aluminide coating on the substrate having a coating ductility at elevated temperatures greater than that of a platinum-enriched aluminide coating without silicon formed on the same substrate material.

5,057,197
PROCESS AND APPARATUS FOR THE REMOVAL OF UNDESIRED COMPONENTS FROM AQUEOUS FEEDSTOCKS

Mordechai Perry, Petach Tikva; Reuven Katraro, Rishon Lezion, and Charles Linder, Rehovot, all of Israel, assignors to Membrane Products Kiryat Weizmann Ltd., Rehovot, Israel

Filed May 8, 1989, Ser. No. 348,802
Claims priority, application Israel, May 9, 1988, 86319
Int. Cl.[5] B01D *13/02*
U.S. Cl. 204—182.4 **24 Claims**



1. A process for removing at least one dissolved non-fouling organic acid known not to foul electrodialysis membranes from an aqueous feedstock comprising such acid, and for interim removal of at least one dissolved fouling ingredient known to foul electrodialysis membranes, which comprises the steps of:

(i) subjecting said feedstock under superatmospheric pressure to the action of at least one selective non-electrodialysis membrane adapted to retain said at least one dissolved fouling ingredient while allowing the passage therethrough of said at least one dissolved non-fouling organic acid, said at least one selective non-electrodialysis membrane being a selective reverse osmosis membrane having pores within the range of 0.1 to 1.0 nanometers, thereby to obtain (a) treated feedstock and (b) a permeate having a significantly reduced content of said at least one dissolved fouling ingredient and a substantially unchanged content of said at least one dissolved non-fouling organic acid;

(ii) subjecting said permeate to treatment with at least one electrodialysis membrane, thereby to obtain (c) treated permeate from step (i) now having a significantly reduced content of said at least one dissolved non-fouling organic acid, compared with such content of said aqueous feedstock, and (d) effluent; and

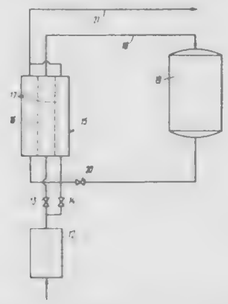
(iii) combining fractions (a) and (c) to give a product in which the content of water-soluble and water-insoluble ingredients is substantially unchanged, other than for said at least one dissolved non-fouling organic acid.

5,057,198
METHOD AND ELECTROLYZER FOR SOFTENING WATER

Gely R. Bochkarev; Alexandr V. Beloborodov, and Galina I. Pushkareva, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR, Novosibirsk, U.S.S.R.

PCT No. PCT/SU89/00124, § 371 Date Feb. 8, 1990, § 102(e) Date Feb. 8, 1990, PCT Pub. No. WO89/11453, PCT Pub. Date Nov. 30, 1989
PCT Filed May 19, 1989, Ser. No. 460,902
Claims priority, application U.S.S.R., May 19, 1988, 4420088
Int. Cl.[5] B01D *17/06, 61/42;* **B03C** *5/00;* **C25B** *1/00*
U.S. Cl. 204—186 **1 Claim**

1. A method for softening water by electrochemical treatment, comprising the steps of: causing water to pass in the form of two streams through a membrane electrolyzer; causing one stream to pass through an anode chamber to produce anolyte; causing the other stream to pass through a cathode chamber to produce catholyte from which precipitating hardness salts are

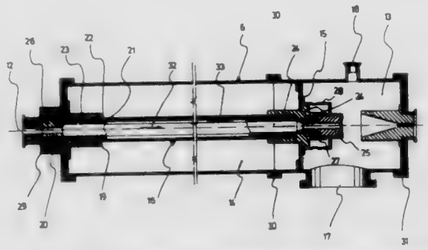


separated; preliminarily softening the water stream to be fed to the anode chamber before supplying it to the anode chamber, by using at least a part of the catholyte stream after the separation of precipitating hardness salts therefrom, the anolyte being used as the end product.

5,057,199
PROCESS AND APPARATUS FOR THE TREATMENT OF COATED, ELONGATED SUBSTRATE, AS WELL AS SUBSTRATES THUS TREATED AND ARTICLES OF POLYMERIC MATERIAL REINFORCED WITH THESE SUBSTRATES

Hugo Lievens, Gent, and Wilfried Coppens, Kortrijk-Marke, both of Belgium, assignors to N. V. Bekaert S. A., Zwevegem, Belgium

Continuation of Ser. No. 107,412, Oct. 13, 1987, abandoned. This application Oct. 10, 1989, Ser. No. 418,996
Claims priority, application Netherlands, Oct. 31, 1986, 8602759
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.15 **13 Claims**



1. A process for treating an elongated substrate comprising the steps of:

forming the substrate of steel;

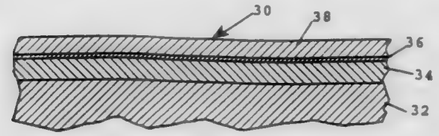
applying to the steel substrate a first coating of brass by a non-sputtering technique, wherein the first non-sputtered coating is applied with a thickness of 0.1 to 0.35 microns;

applying by cathode sputtering a second coating to the substrate, the second coating being cobalt.

5,057,200
METHOD OF FORMING THIN-FILM RECORDING MEDIUM

Brij B. Lal, San Jose, and Atef H. Eltoukhy, Saratoga, both of Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Continuation-in-part of Ser. No. 567,598, Aug. 15, 1990, Pat. No. 5,004,652. This application Mar. 14, 1991, Ser. No. 669,888
Int. Cl.[5] C21D *1/04;* **C23C** *15/00*
U.S. Cl. 204—192.15 **6 Claims**



1. A method of forming a magnetic recording medium comprising

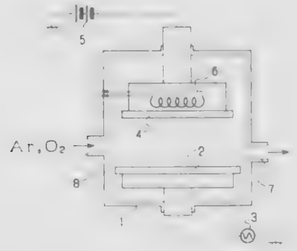
sputtering a chromium underlayer onto a substrate, and

sputtering onto the underlayer, magnetic layer composed of an alloy containing in atomic percent between 70–80 percent cobalt, 10–20 percent chromium, 3–20 percent platinum, and 2–10 percent tantalum.

5,057,201
PROCESS FOR DEPOSITING A SUPERCONDUCTING THIN FILM

Nobuhiko Fujita; Naoji Fujimori; Hideo Itozaki; Saburo Tanaka; Keizo Harada, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 167,895, Mar. 14, 1988, abandoned. This application Jan. 10, 1990, Ser. No. 462,983
Claims priority, application Japan, Mar. 14, 1987, 62-59214; Mar. 16, 1987, 62-60317; Mar. 18, 1987, 62-63203; Mar. 18, 1987, 62-63204; Mar. 18, 1987, 62-63205; Mar. 18, 1987, 62-63206
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—192.24 **49 Claims**



1. A process for producing a superconducting thin film on a substrate, comprising the steps of:

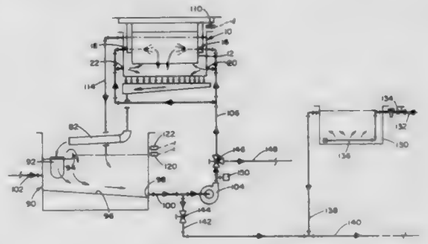
providing a substrate, and

depositing a superconducting thin film on the substrate by high-frequency sputtering by using a target made of a compound oxide containing Ba; one element M selected from the group consisting of Y, La, Gd, Ho, Er, and Yb; and Cu wherein the substrate is heated at a temperature in the range of 450° C. to 1,000° C. during the sputtering.

5,057,202
ELECTROLYTIC RECOVERY UNIT

Phillip M. Maitino, 2816 Ingleside Dr., Parma, Ohio 44134, and Eugene J. Maitino, 894 Circlewood Dr., Aurora, Ohio 44202

Filed Jul. 9, 1990, Ser. No. 550,311
Int. Cl.[5] C25D *17/00, 17/20, 21/06*
U.S. Cl. 204—212 **22 Claims**



1. An apparatus for recovering metals from waste metallic solutions, comprising:

a treatment tank;

a hollow perforated cathode element rotatably mounted in said treatment tank for holding associated workpieces which are to be coated with the recovered waste metal;

a fixed anode element extending in said treatment tank in spaced relation to said rotatable cathode element;

a first solution inlet conduit extending into said rotatable cathode element;

a second solution inlet conduit extending into said treatment tank in a manner spaced from said rotatable cathode element; and,

a drain conduit leading away from said treatment tank, said second solution inlet conduit being located between said drain conduit and said hollow perforated cathode element.

5,057,203
ULTRASTABLE Y CONTAINING FRAMEWORK GALLIUM

Cynthia T. Chu, Princeton Junction; Randall D. Partridge, W. Trenton, both of N.J., and Suzanne E. Schramm, Newton, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 7, 1990, Ser. No. 519,966
Int. Cl.[5] C10G *11/02, 35/06*
U.S. Cl. 208—46 **13 Claims**

1. A hydrocarbon conversion process for upgrading a petroleum feedstock, comprising aromatizable compounds comprising contacting the feedstock with a catalyst, under hydrocarbon conversion conditions wherein the LHSV of the feed ranges from 0.1 to 20; the temperature ranges from 120° to 1200° F.; the pressures range from subatmospheric to 3000 psig, and added hydrogen can be present up to 20:1 H_2/hydrocarbon mole ratio, and converting said aromatizable compounds,

wherein the catalyst consists essentially of ultrastable Y having a framework (silica:alumina+gallium oxide) mole ratio $SiO_2/(Al_2O_3+Ga_2O_3)$ ratio ranging from 10 to 500, a framework gallium content ranging from 0.1 to 5 weight %, a unit cell parameter of 24.25 to 24.50,

wherein the ultrastable Y has acidic sites which are protonated; and

wherein the catalyst is produced by the process of steaming ultrastable Y having a framework silica:alumina ratio of less than 10, at a temperature above 600° C.; ammonium ion exchanging the steamed ultrastable Y; and treating the ammonium ion exchanged ultrastable Y with a mineral acid; recovering the mineral acid treated ultrastable Y and subjecting it to a soluble source of gallium at a pH of greater than 7.

5,057,204

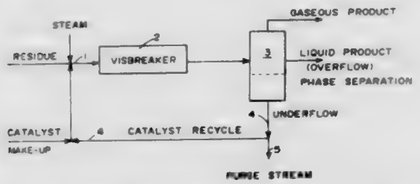
CATALYTIC VISBREAKING PROCESS

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 378,456, Jul. 10, 1989, abandoned, which is a continuation of Ser. No. 223,825, Jul. 25, 1988, abandoned. This application May 21, 1990, Ser. No. 527,673

Int. Cl.[5] C10G *47/04*

U.S. Cl. 208—108 **9 Claims**



1. In a process for visbreaking a hydrocarbon stream consisting of heavy petroleum residual oil in which the oil is subjected to temperatures, pressures, and reaction times sufficient to effect said visbreaking the improvement consisting of incorporating into the residual oil prior to the visbreaking step a catalyst consisting in elemental form or compound form of selenium or tellurium, and mixtures of these in an amount sufficient to promote and increase the transfer of hydrogen from a portion of said feedstream having donorable hydrogens to another portion of the feedstream having reactive radicals, the weight of active catalyst component utilized to residual oil being between about 0.001 and about 1 percent of the residual oil.

5,057,205

ADDITIVE FOR VANADIUM AND SULFUR OXIDE CAPTURE IN CATALYTIC CRACKING

Arthur A. Chin, Cherry Hill; Ajit V. Sapre, W. Berlin, and Michael S. Sarli, Haddonfield, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 10, 1988, Ser. No. 204,834

Int. Cl.[5] C10G *11/02*

U.S. Cl. 208—121 **16 Claims**

1. In a fluid catalytic cracking process in which a hydrocarbon feedstock containing a vanadium contaminant in an amount of at least 2 ppmw is cracked under fluid catalytic cracking conditions with a solid, particulate cracking catalyst to produce cracking products of lower molecular weight while depositing carbonaceous material on the particles of cracking catalyst, separating the particles of cracking catalyst from the cracking products in the disengaging zone and oxidatively regenerating the cracking catalyst by burning off the deposited carbonaceous material in a regeneration zone, the improvement comprising reducing the make-up rate of the cracking catalyst by contacting the cracking feed with a particulate additive composition for passivating the vanadium content of the feed, comprising an alkaline earth metal oxide and an alkaline earth metal spinel.

5,057,206

PROCESS FOR THE PRODUCTION OF WHITE OILS

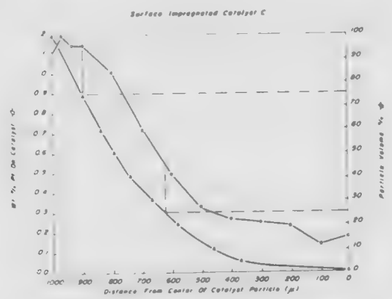
Dusan J. Engel, Des Plaines, and Bipin V. Vora, Darien, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 25, 1988, Ser. No. 236,437

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—143 **11 Claims**

1. A single reaction step hydrogenation process for producing a hydrocarbon white oil which process comprises contacting a feed stream comprising C_{15}–C_{50} hydrocarbons obtained directly from an aromatic alkylation process without any intermediate hydrotreating steps for the purpose of removing sulfurous components with a hydrogenation catalyst comprising a platinum group metal component that has been surface impregnated upon an alumina support to form an alumina catalyst particle in such a manner that the concentration of the platinum group metal on the outer 25 volume percent [vol. %] of the alumina catalyst particle is at least twice as great as the concentration of the platinum group metal component on the inner 25 volume per cent [vol. %] of the alumina catalyst



particle with the contacting occurring in a hydrogenation reaction zone operating at a temperature of from 125° to 300° C., a pressure of from 10 to 150 atmospheres, a liquid hourly space velocity of from 0.05 to 5 hr^{-1}, and a hydrogen-to-hydrocarbon molar feed ratio of from 2 to 15, and recovering the white oil produced in the hydrogenation reaction zone.

5,057,207

PROCESS FOR REDUCING HALOGEN IMPURITIES IN OIL PRODUCTS

Fritz Basler, Strengelbach, Switzerland, assignor to Geut AG, Zug, Switzerland

Filed Nov. 3, 1989, Ser. No. 431,946

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1989, 3900159

Int. Cl.[5] C10G *17/00*

U.S. Cl. 208—262.1 **22 Claims**

1. A method for reducing halogen impurities in oil products comprising the steps of:

(a) treating an oil product at temperatures up to about 150° C. with an aqueous solution of at least one compound selected from the group consisting of a strong acid, a salt of a weak base and a strong acid and precursors thereof;

(b) treating the oil product of step (a) at increased temperatures with at least one halogen binding agent selected from the group consisting of organic bases; and

(c) separating dehalogenated oil from the product of step (b).

5,057,208

METHOD FOR THE PRODUCTION OF POTASSIUM CHLORIDE WITH K_2O CONTENT OF MORE THAN 55 WEIGHT PERCENT

Fritz Hagedorn; Gerd Peuschel, both of Sehnde, and Arno Singewald, Kassel-Wilh., both of Fed. Rep. of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Continuation of Ser. No. 125,763, Nov. 23, 1987, abandoned, which is a continuation of Ser. No. 779,824, Sep. 25, 1985, abandoned. This application Oct. 6, 1988, Ser. No. 256,062

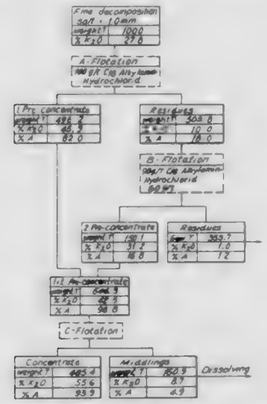
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1984, 3435124

Int. Cl.[5] B03D *1/02, 1/08*

U.S. Cl. 209—166 **2 Claims**

1. In a method for the production, by froth flotation, of potassium chloride with a K_2O content of >55 wt. % from the fine salt obtained during the decomposition of carnallite or of potash salts containing carnallite, and consisting essentially of the potassium chloride formed during the decomposition process, natural sylvite and kieserite, following conditioning of decomposition salt with water-soluble salts of primary n-alkyl amines with molecules containing 8 to 22 C-atoms, using flotation media containing magnesium chloride and potassium chloride, the improvement wherein:

a) the following conditions is performed with 50 to 200 g of n-alkyl amine salt per ton of decomposition salt, the fine salt of decomposition undergoes froth flotation and in the process a fine-grained potassium chloride with a grain of



<0.1 mm is separated off as a first pre-concentrate, and a residue containing decomposition salt is obtained,

b) said residue is again conditioned with 50 to 150 g of n-alkyl amine salt per ton of said residue and then undergoes froth flotation with potassium chloride being separated off as a second pre concentrate, and

c) said first pre-concentrate and said second pre-concentrate are jointly subjected to froth flotation and the potassium chloride of desired concentration of K_2O is separated off and collected.

5,057,209

DEPRESSION OF THE FLOTATION OF SILICA OR SILICEOUS GANGUE IN MINERAL FLOTATION

Richard R. Klimpel, Midland; Donald E. Leonard, Shepherd; Robert D. Hansen, Waters, all of Mich., and Basil S. Fee, Sarnia, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 336,196, Apr. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 310,271, Feb. 13, 1989, abandoned. This application Feb. 23, 1990, Ser. No. 484,012

Int. Cl.[5] B03D *1/01, 1/008, 1/02*

U.S. Cl. 209—167 **21 Claims**

1. A process for the recovery of mineral values by flotation comprising subjecting a particulate ore, which contains silica or siliceous gangue and is in the form of an aqueous slurry, to froth flotation in the presence of a collector and at least one additional flotation reagent comprising a lower alkanol amine in an amount effective to depress the flotation of the silica or siliceous gangue under conditions such that the minerals to be recovered are floated and recovered, with the proviso that the lower alkanol amine is not a constituent of a salt and is not premixed with the collector or any other flotation reagents prior to addition to said ore.

5,057,210

APPARATUS FOR SEPARATING NON-MAGNETIZABLE METALS FROM A SOLID MIXTURE

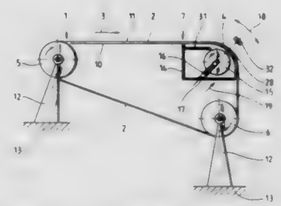
Jörg Julius, Düsseldorf, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH

Filed Feb. 22, 1990, Ser. No. 483,240

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1989, 3906422

Int. Cl.[5] B03C *1/02*

U.S. Cl. 209—212 **23 Claims**



1. An apparatus for separating non-magnetizable metals from a mixture of solid components by an alternating magnetic field, comprising:

a magnetic field generator;

a revolving conveyor belt arranged so as to feed the solid material mixture to the magnetic field generator; and

a curved slideway provided at a front end of the conveyor belt, relative to a transportation direction of the conveyor belt, so that the conveyor belt loops around the slideway, the slideway being made of a material having a low electrical conductivity, the magnetic field generator being arranged at the front end of the conveyor belt next to the slideway, the slideway being a part of a housing encapsulating said magnetic field generator.

5,057,211

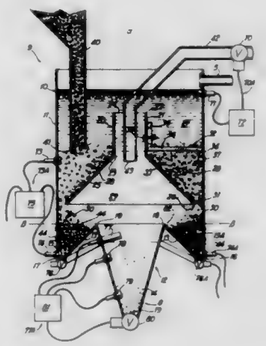
BENEFICATION APPARATUS AND PROCESS FOR LAND AND SEABED MINING

George P. Baummer, 25 Strabane Ct., Baltimore, Md. 21234

Continuation of Ser. No. 286,239, Dec. 19, 1988, abandoned. This application Feb. 1, 1991, Ser. No. 649,157

Int. Cl.[5] B03B *5/66, 11/00*

U.S. Cl. 209—448 **23 Claims**



1. A mineral beneficiation apparatus for separating particulate materials of various weights into a tailings portion and a product portion, comprising:

(a) a housing having a side wall and defining a main chamber therein for containing a quantity of liquid;

(b) a deflector positioned within said main chamber and having a peripheral edge spaced from said side wall for

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defining a passageway between said peripheral edge and said side wall, wherein said deflector is positioned to partition said main chamber into an upper chamber above said deflector and a lower chamber below said deflector, said upper chamber communicating with said lower chamber through said passageway;

(c) a tailings portion outlet positioned substantially completely beneath said deflector for discharging tailings from said lower chamber;

(d) a stratification hopper positioned below said passageway and extending beneath said peripheral edge of said deflector for collecting particulate material passed through said passageway;

(e) discharge means associated with a lower portion of said stratification hopper for periodically discharging product from said stratification hopper, said discharge means including an outlet and a valve means for controlling discharge of product through said outlet;

(f) material conduit means for introducing particulate material into said upper chamber; and

(g) liquid introduction means for introducing liquid into said main chamber for establishing at least a predetermined quantity of liquid in said main chamber.

5,057,212

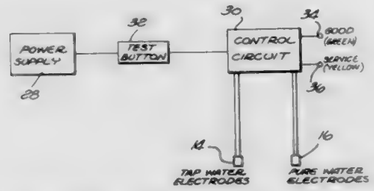
WATER CONDUCTIVITY MONITOR AND CIRCUIT WITH EXTENDED OPERATING LIFE

Bruce D. Burrows, 25581 Via Paladar, Valencia, Calif. 91355

Filed Mar. 9, 1990, Ser. No. 491,310

Int. Cl.[5] B01D *35/43*

U.S. Cl. 210—85 **17 Claims**



9. A water quality monitor for use in a water purification system or like adapted to produce a relatively purified water supply from a tap water supply, said water quality monitor comprising:

electrode means for contacting a purified water supply produced from a tap water supply by a purification system;

circuit means having a switch movable manually between first and second positions and including means activated upon movement of said switch to said first position for generating a short duration pulse and for deliverying said pulse to said electrode means, said circuit means further including means for determining the conductivity of the purified water supply in comparison with a selected threshold representing satisfactory operating performance of the purification system and for generating one of first and second outputs respectively representing satisfactory and unsatisfactory system performance; and

indicator means responsive to said one of said first and second outputs to indicate system performance;

said circuit means further including means for maintaining said indicator means is an operative state to indicate system performance while said switch is in said first position, and for a duration, independent of, and potentially longer than, the duration of said pulse.

5,057,213

APPARATUS AND A SYSTEM FOR MONITORING IMPURITY IN A LIQUID

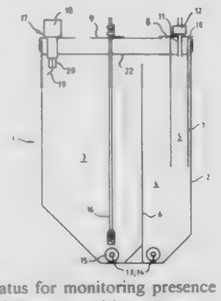
John M. C. Reid, Crowborough; Robert B. Nason, Barnehurst, and David F. James, Hornchurch, all of England, assignors to Thames Water PLC, United Kingdom

Filed Oct. 17, 1989, Ser. No. 422,508

Claims priority, application United Kingdom, Oct. 17, 1988, 8824286

Int. Cl.[5] C02F *11/02*

U.S. Cl. 210—94 **10 Claims**



1. An apparatus for monitoring presence of toxins in activated sewage sludge, comprising:

(i) a vessel for the sludge;

(ii) a plurality of chambers in said vessel through which the sludge is circulated sequentially in use to promote mixing of the sludge;

(iii) an inlet to one chamber of said plurality of chambers for passing the sludge into the vessel;

(iv) a compartment in one chamber of said plurality of chambers, said compartment being adapted to promote a quiescent settlement zone of the sludge within the vessel whereby solids can settle from the sludge;

(v) an outlet for sludge from said compartment comprising a dip tube which dips into the sludge in the compartment;

(vi) a peristaltic pump operative to withdraw sludge from the compartment through the outlet at a rate slightly in excess of the feed rate of sludge through the inlet to the vessel whereby sludge passes from the quiescent zone through the outlet intermittently in discrete sips; and

(vii) a device in one chamber of said plurality of chambers for measuring dissolved oxygen content of the sludge in the vessel.

5,057,214

FILTRATION AND BACKWASH CONTROL SYSTEM FOR WATER FILTERS ASSOCIATED WITH SPIGOT FAUCETS

Carl F. Morris, 11725 S. Ridgeland - Lot #17, Worth, Ill. 60482

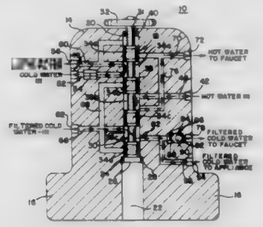
Filed Jun. 6, 1990, Ser. No. 533,782

Int. Cl.[5] F16K *11/06*

U.S. Cl. 210—136 **17 Claims**

1. A water filter and backwash control system for filtration of potable water including a water filter having an inlet, an outlet, and a filtration media through which water to be treated passes between said inlet and outlet; a control valve in fluid flow communication with said filter inlet and outlet and including a housing having a cold, unfiltered water inlet port adapted to be connected in fluid flow communication with a source of cold, unfiltered water; a hot water inlet port adapted to be connected in fluid flow communication with a source of hot water; a cold, filtered water outlet port adapted to be connected in fluid flow communication with a cold water faucet of a faucet spigot; a hot water outlet port adapted to be connected in fluid flow communication with a hot water faucet of said faucet spigot; a cold, unfiltered water outlet port adapted to be connected in fluid flow communication with said filter inlet; a

cold, filtered water inlet port adapted to be connected in fluid flow communication with said filter outlet; a spool valve member slidably disposed in said housing movable between a first, filter, position and a second, backwash, position; a central fluid passage defined in said housing; a plurality of fluid channels defined in said housing, each channel in fluid communication with said central fluid passage and one of said ports; means for moving said spool valve member between said first and second positions; said control valve operative such that when said spool valve member is in said filter position a pair of filtration fluid circuits are established including, a first filtration circuit conducting cold water from said cold, unfiltered water inlet port, through said central passage, through said filtration media, through said central passage again and to said cold water



faucet and a second filtration circuit conducting hot water from said hot water inlet port, through said central passage and to said hot water faucet, said control valve further operative such that when said spool valve is in said backwash position, said valve blocks flow between said cold unfiltered water inlet port and said central fluid passage and a backwash fluid circuit is established, conducting hot water from said hot water inlet port, through said central passage, through said filter outlet, through said filtration media in a reverse flow direction, through said filter inlet, through said central passage again and to said hot water faucet, whereby said filtration fluid circuits provide cold, filtered water to said faucet spigot and said backwash fluid circuit provides hot water backwash discharge from said faucet spigot.

5,057,215

REVERSIBLE-FLOW FILTER ASSEMBLY

Willi Hecking, Ingenieur, Askanierstr. 38, D-4050 Monchengladbach, Fed. Rep. of Germany

Filed Jun. 7, 1990, Ser. No. 534,928

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1989, 3918667

Int. Cl.[5] B01D *35/30*

U.S. Cl. 210—137 **7 Claims**

1. A reversible-flow filter assembly for installation in a flow conduit, comprising

(a) a filter housing (**10**) with a housing inner wall (**68**) and an outlet socket (**70**) coaxial thereto, projecting centrally into the interior of the filter housing (**10**) and connected to an outlet of the filter assembly and a guiding member (**76**) arranged coaxial to the outlet socket (**70**) but spaced therefrom,

(b) a filter (**116**), which is sealingly located on the outlet socket (**70**) and, on the guiding member (**76**) and bridges the distance between outlet socket (**70**) and guiding member (**76**), such that an annulus is formed between the housing inner wall (**68**), and the outlet socket (**70**), and another between the filter (**116**) and the guiding member (**76**),

(c) an inlet (**18**) which communicates with the annulus,

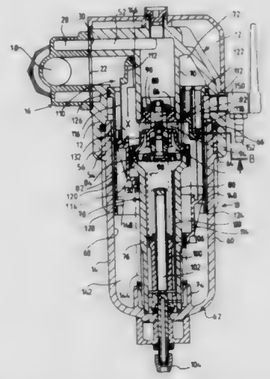
(d) a suction device (**118**) which engages the outer surface of the filter (**116**) with a limited suction opening (**136**), and

(e) an outlet valve (**150**), adapted to connect the suction device (**118**) to a drain (**152**),

wherein

(f) the suction device (**118**) forms a fixed housing annulus (**130**), which communicates with the suction opening (**136**) engaging the filter (**116**) and is arranged to be connected to the drain (**152**) through the outlet valve (**150**),

(g) the filter (**116**) is located in a filter holding device (**110**), which is slidably guided by a first guiding element (**112**) on the outlet socket (**70**), and by a second guiding element (**114**) on the guiding member (**76**) and in the suction device, whereby an actuating pressure chamber (**142**) is



defined by the housing inner wall (**68**), the guiding member (**76**), and the second guiding element (**114**),

(h) the actuating pressure chamber (**142**) communicates with the annulus (**130**) of the suction device (**110**) and

(i) the filter holding device (**110**) is loaded by a spring (**144**) in a direction to expand the actuating pressure chamber (**142**).

5,057,216

CAPILLARY FLOW CELL

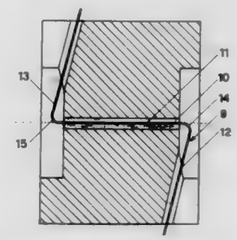
Jean-Pierre Chervet, Amsterdam, Netherlands, assignor to Kontron Instruments Holding NV, Curacao, Netherlands Antilles

Filed Mar. 27, 1990, Ser. No. 499,699

Claims priority, application European Pat. Off., Apr. 14, 1989, 89106700

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **1 Claim**



1. Capillary flow cell comprising an optical path, a capillary (**9**) which partially extends along the optical path of the cell, the capillary having two end portions (**12**, **13**) bent to achieve an essentially z-shaped configuration, and a template (**1**) with a central bore (**2**) in which a middle part (**11**) of the capillary is positioned.

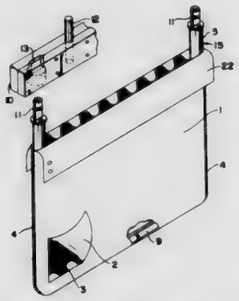
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5,057,217

INTEGRAL SUPPORTED FILTER MEDIUM ASSEMBLY

John H. Lutz, Claymont; James L. Manniso, Newark; Craig R. Rinschler, Hockessin, all of Del., and Gordon R. S. Smith, Northeast, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jun. 25, 1987, Ser. No. 66,281
Int. Cl.[5] B01D *29/39, 29/33*
U.S. Cl. 210—346 8 Claims



1. A leakproof integral leaf filter assembly comprising:
(a) an undulating screen bonded at its apices between
(b) two sheets of composite filter cloth, each of said filter cloth sheets comprising a microporous membrane bonded to a thermoplastic polymer textile felt wherein said screen is bonded to the felt side of said composite filter cloth sheets,
(c) said composite filter cloth sheets extending beyond the edge of the screen so as to enclose and be securely bonded about side and bottom members of the screen and to provide material for sealably closing the top of the assembly about
(d) a header or manifold assembly for gathering and removing filtrate from the filter.

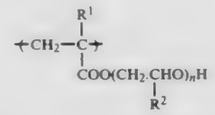
5,057,218

POROUS MEMBRANE AND PRODUCTION PROCESS THEREOF

Toshinobu Koshoji; Hironari Honda; Kiyonobu Okamura; Kunio Misoo, and Osamu Nishimura, all of Toyohashi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1990, Ser. No. 551,021
Claims priority, application Japan, Jul. 13, 1989, 1-181556; Apr. 16, 1990, 2-099998
Int. Cl.[5] B01D *39/00*
U.S. Cl. 210—500.35 6 Claims

1. A porous membrane comprising (1) a hydrophilic copolymer X composed principally of (poly)alkylene glycol mono(meth)acrylate units A and ethylene units B and (2) a polyolefin Y, the (poly)alkylene glycol mono(meth)acrylate units A being of the formula



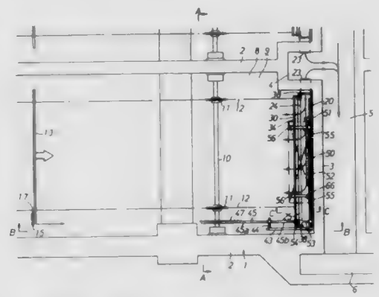
where R^1 and R^2 independently represent hydrogen or methyl, and n has a value in the range of 1 to 9.

5,057,219

SCUM TREATING APPARATUS

Michihiro Fujiwara, 2-13-37-1006, Mikunihonmachi, Yodogawa-ku, Osaka, Japan

Filed May 2, 1990, Ser. No. 518,531
Int. Cl.[5] B01D *21/00*
U.S. Cl. 210—525 2 Claims



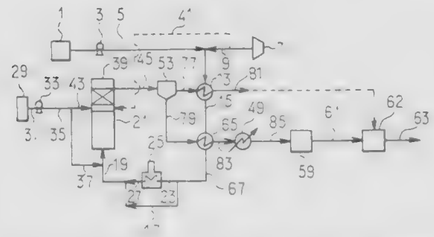
2. An apparatus installed in a disposal pond represented by a rectangular settling basin provided with a chain cyclically driven in such the cycle that said chain passes on a level immediately under a surface of the water and returns to said level immediately under said surface of the water through a bottom portion of said pond and flights projecting outward from a large number of places in the circumferential direction of the chain so as to move together with the chain for discharging scum floating on a surface of the water in said disposal pond out of the pond together with a little water, characterized in that interlocking means, damming-up means and scum-receiving means are provided, said interlocking means comprising a lever-type arm having a cam means at a pointed end thereof, means for rotatably supporting said arm and transfer means for interlocking the lever-type arm with said damming-up means, the damming-up means being hollow so as to rise up to the surface of the water by its own buoyant force, a damming-up portion in an upper portion of the damming-up means having a chevron sectional shape and extending long in one direction, the damming-up means being installed in a front of a side of a flowing-in port of said scum-receiving means by supporting means so as to be movable up and down, a long direction of said settling basin being directed so as to be parallel to the scum-receiving means, at least said damming-up portion rising up and sinking with the surface of the water as a boundary to dam up a front flow of scum by a rising-up action and flow scum into the scum-receiving means by sinking action, the scum-receiving means having a construction comprising a flowing-in port for receiving the scum and a subsequent long discharging passage extending in one direction and being fixedly installed in the disposal pond so that said flowing-in port may be positioned on the side of the damming-up means and the passage may be directed in a direction meeting at right angles with a direction in which said flights move, and wherein said cam means further comprises two downward projecting portions and a dented portion positioned between said projecting portions provided in the form of a continuous curve and being detachably mounted on a pointed end of the lever-type arm as a plate material separate from the lever-type arm, and said projecting portions and said dented portion being continuously engaged with driving portions provided in the flights to interlock the damming-up means so as to be submerged slightly deep under the surface of the water when said driving portion corresponds to the projecting portion on the first stage while the damming-up means is interlocked so as to be submerged slightly shallower under the surface of the water when the driving portion corresponds to the dented portion and the damming-up means is interlocked so as to be submerged slightly deeper under the surface of the water when the driving portion corresponds to the projecting portion on the second stage.

5,057,220

PROCESS FOR TREATING WASTE WATER

Yoshiaki Harada, Tsuzuki, and Kenichi Yamasaki, Gose, both of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Aug. 20, 1990, Ser. No. 569,906
Claims priority, application Japan, Aug. 18, 1989, 1-213987
Int. Cl.[5] C02F *11/08, 1/74*
U.S. Cl. 210—605 34 Claims



23. A process for treating waste water by wet oxidations which contains at least two components among suspended solids, ammonia and COD components, the process comprising the steps of;
(i) subjecting waste water to liquid phase oxidation in the absence of a catalyst and in the presence of an oxygen-containing gas,
(ii) subjecting the treated water from the step (i) to liquid phase oxidation in the presence of an oxygen-containing gas and a catalyst supported by a granular carrier and comprising at least one of iron, cobalt, manganese, nickel, ruthenium, rhodium, palladium, iridium, platinum, copper, gold and tungsten and compounds thereof insoluble or sparingly soluble in water,
(iii) subjecting the treated water from the step (ii) to anaerobic digestion by anaerobic methane fermentation, and
(iv) subjecting the treated water from the step (iii) to aerobic treatment by an activated sludge method, and
(v) returning the excess sludge from the steps (iii) and (iv) to the step (i).

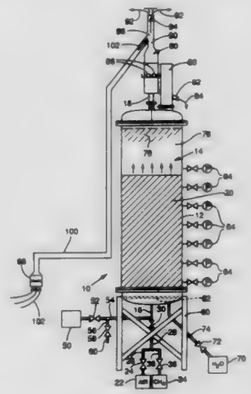
5,057,221

AEROBIC BIOLOGICAL DEHALOGENATION REACTOR

Curtis W. Bryant, Tucson, Ariz., and William A. Barkley, Maple Valley, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 19, 1988, Ser. No. 287,477
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] C02F *3/34*
U.S. Cl. 210—610 23 Claims

1. A method for dehalogenating and further biodegrading organic compounds present in an aqueous liquid mixture to at least partially reduce the concentrations of the organic compounds in the mixture, the method comprising:
supporting a mixed population of aerobic microorganisms on a substrate bed configured to allow liquid to flow therethrough with the liquid contacting the microorganisms;
passing the aqueous mixture containing halogenated organic compounds through the bed such that the microorganisms in at least a portion of the bed dehalogenate and metabolize the organic compounds in the mixture as the liquid flows through the bed;
maintaining a concentration of oxygen substantially throughout at least a portion of the bed which is sufficient to provide aerobic conditions in at least a portion of the bed, as the aqueous mixture flows through the bed; and
maintaining a concentration throughout the bed of a carbon and energy source for microorganisms on the bed,



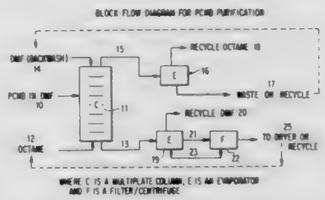
whereby the microorganisms dehalogenate and further biodegrade the organic compounds in the aqueous mixture via a co-metabolic process as the liquid flows through the bed.

5,057,222

PURIFICATION OF PCNB BY SOLVENT EXTRACTION

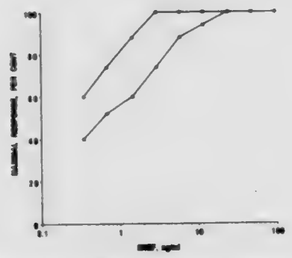
Gary A. Braden, Los Alamitos, Calif., assignor to Amvac Chemical Corporation, Los Angeles, Calif.

Filed Jun. 8, 1990, Ser. No. 534,895
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—634 17 Claims



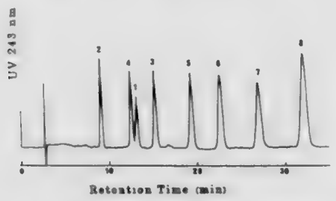
1. A process for purifying pentachloronitrobenzene (PCNB) containing HCB as an impurity at concentrations in excess of the commercially and environmentally acceptable level, which comprises the steps of:
combining the impure PCNB with a polar solvent to form a solution, suspension, or slurry:
contacting this solution, suspension, or slurry with a second, nonpolar, immiscible solvent to remove HCB;
recovering a purified PCNB product from the first solvent, wherein the HCB content of said purified PCNB product is below commercially or environmentally acceptable levels.

5,057,223
PURIFICATION OF NERVE GROWTH FACTOR (β SUBUNIT) BY SUBUNIT EXCHANGE CHROMATOGRAPHY
Francesco Della Valle, and Lanfranco Callegaro, both of Padova, Italy, assignors to Fidia, S.p.A., Abano Terme, Italy
Filed Jun. 28, 1990, Ser. No. 544,531
Claims priority, application Italy, Jul. 20, 1989, 48212 A/89
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 **8 Claims**

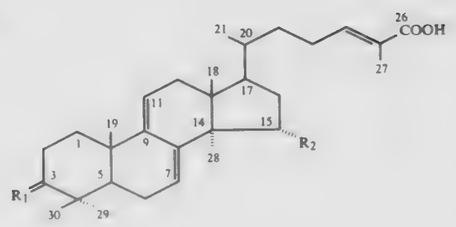


1. A method for the purification of the β subunit of a Nerve Growth Factor which comprises:
a) covalent binding a first β subunit of Nerve Growth Factor (NGF β subunit) to a solid matrix having a coupling density sufficient to achieve subunit exchange chromatography;
b) combining the matrix having said first NGF (β subunit) immobilized thereon with a preparation containing a second β subunit of Nerve Growth Factor (NGF β subunit), whereby said second NGF (β subunit) is bound to said matrix;
c) eluting said matrix with a releasing agent to release said second NGF (β subunit) from said matrix; and
d) recovering said released second NGF (β subunit).

5,057,224
METHOD FOR EVALUATING THE PERFORMANCE OF REVERSE PHASE HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC COLUMNS
Ming-Shi Shiao, and Lee-Julian Lin, both of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan
Filed Apr. 11, 1990, Ser. No. 507,455
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 **1 Claim**



1. A method for evaluating the performance of reverse phase high performance liquid chromatographic columns comprising subjecting a composition comprising the oxygenated triterpenoids having the formula



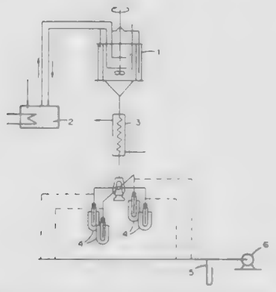
wherein:

Compounds	R_1	R_2
1	OH	OH
2	H	OH
3	OH	OAc
4	H	OAc
5	OAc	OH
6	H	OH
7	OAc	OAc
8	H	OAc

wherein Ac is $CH_3C(=O)-$

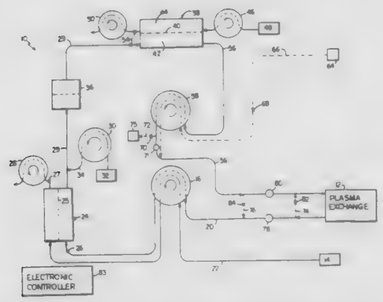
to reverse phase high performance liquid chromatography and evaluating the performance of the reverse phase high performance liquid chromatography columns based upon the results of subjecting said columns to said composition.

5,057,225
METHOD OF ENRICHMENT OF OXYGEN-18 IN NATURAL WATER
W. Alexander van Hook, Knoxville, Tenn.; Andrzej G. Chmielewski, Czarnomorska; Grazyna Zakrzewska-Trznadel, Gwiazdzista, both of Poland, and Nada Miljevic, Steve Todorovica, Yugoslavia, assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.
Filed Jun. 8, 1990, Ser. No. 534,960
Claims priority, application Poland, Jun. 9, 1989, 279949
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 **10 Claims**



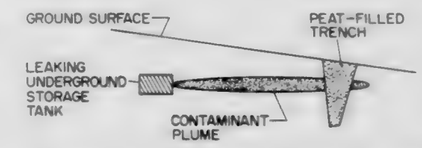
1. A method comprising enriching by pervaporation natural water in O-18 further by enabling enrichment of water in O-18 employing a semipermeable membrane having properties for retaining the enriched water on one side of the membrane.

5,057,226
TREATMENT OF LIQUID INCLUDING BLOOD COMPONENTS
Glen D. Antwiler, Lakewood, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.
Division of Ser. No. 195,496, May 18, 1988, Pat. No. 4,968,432.
This application Jul. 20, 1990, Ser. No. 556,033
The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.
Int. Cl.[5] B01D *21/00, 61/24*
U.S. Cl. 210—641 **8 Claims**



1. A method of regenerating a biological fluid obtained from a patient's blood prior to return of the biological fluid to said patient, said method comprising
receiving a continuously flowing stream of said biological fluid obtained from said patient's blood,
continuously adding an aqueous solution comprising a precipitation agent at a first flow rate to said stream of said biological fluid to provide a combined stream,
said stream of biological fluid continuously flowing at a second flow rate,
said first flow rate being equal to or less than 10% of said second flow rate,
inducing the precipitation of said constituent by said precipitation agent so as to cause a precipitate,
filtering said precipitate from said combined stream so as to provide a continuously flowing filtered stream of said biological fluid, and
returning said continuously flowing filtered stream to said patient.

5,057,227
METHOD FOR IN-SITU REMOVAL OF HYDROCARBON CONTAMINANTS FROM GROUNDWATER
Arthur D. Cohen, Columbia, S.C., assignor to University of South Carolina, Columbia, S.C.
Filed Oct. 9, 1990, Ser. No. 594,847
Int. Cl.[5] C02F *1/28*
U.S. Cl. 210—680 **8 Claims**



1. A method for in-situ removal of hydrocarbon contaminants from groundwater, comprising contacting in-situ groundwater containing hydrocarbon contaminants in aqueous solution with a permeable barrier comprising a naturally occurring peat material having an ash content of 25% or less, a birefringent organic content of 80% or less, a fiber content of 80% or less, a guaiacyl lignin pyrolysis product content of at least 10%, and a furan pyrolysis product content of at least 0.1%.

5,057,228
METAL ION COMPLEXES FOR USE AS SCALE INHIBITORS
Patrick J. Breen, Houston; Hartley H. Downs, Kingwood, both of Tex., and Bruce N. Diel, Willowbrook, Ill., assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Apr. 16, 1990, Ser. No. 509,911
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—700 **2 Claims**

1. A method of inhibiting the formation of scale including barium sulfate in an aqueous liquid having a pH of about 7 or less containing dissolved scale forming substances, comprising the steps of:
adding to the liquid an effective amount of a phosphonate metal complex molecule made by
mixing ethylenediaminetetra(methylenephosphonic) acid (ENTMP) or salt thereof with copper (II) ion to form a Cu-ENTMP phosphonate metal complex molecule, wherein the phosphonate metal complex molecule has a pH and the pH is adjusted to a value in the range of from about 4 to about 8.

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APPARATUS AND PROCESS FOR THE TREATMENT OF COOLING CIRCUIT WATER
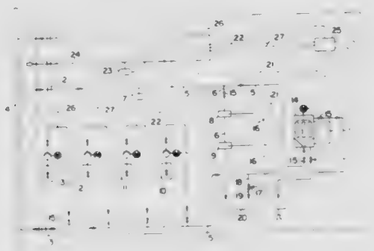
Michael Schulenburg, Mettmann, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 239,713, Sep. 1, 1988, abandoned. This application Jun. 12, 1990, Ser. No. 537,216

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1987, 3729270

Int. Cl.[5] G05D *11/08, 11/13;* C02F *1/50*

U.S. Cl. 210—743 12 Claims



1. A process for monitoring and treating the circulating water supply of an open water circulation system, comprising the steps of continuously diverting a predetermined portion of the water from a main conduit of said water circulation system through a diversion circuit, measuring the pH of the diverted water portion and adding sufficient acid thereto to maintain the pH of the circulating water supply at a predetermined pH value, inductively measuring the conductivity of said diverted water portion and replacing an amount of said diverted water portion with a measured amount of fresh water added to said main conduit sufficient to adjust the conductivity value of the circulating water supply to a desired conductivity value, filtering said diverted water portion to remove suspended particles therefrom, adding a corrosion inhibitor to said measured amount of fresh water in an amount which is a function of said measured amount of fresh water to produce the desired concentration thereof in the circulating water supply, and returning said diverted water portion from said diversion conduit to the circulating water supply, wherein said steps are integrated and monitored by a central control unit to maintain the desired pH, conductivity and corrosion inhibitor values in said circulating water supply.

5,057,230

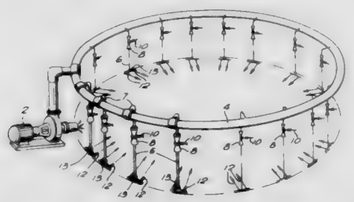
DISSOLUTION OF GAS

Michael J. Race, South Yorkshire, England, assignor to The BOC Group plc, Surrey, England

Filed Mar. 20, 1990, Ser. No. 496,392

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—758 12 Claims



1. A method of dissolving a gas in a volume of a liquid comprising:

pressurizing the liquid;

forming a main stream of the liquid;

distributing the main stream into a plurality of subsidiary streams having a length of less than about 2.0 meters and a velocity greater than that of the main stream;

passing each of the subsidiary streams through a venturi including a throat having a plurality of apertures, the throat configured to create turbulence therein;

introducing the gas into the turbulence through the apertures in the throat from a chamber surrounding the throat to create fine bubbles of the gas; and

after the introduction of the gas into the turbulent flow regions, introducing each of the subsidiary streams into the volume of the liquid at a velocity sufficient to create further turbulence causing the fine bubbles to shear into smaller bubbles that readily dissolve in the volume of the liquid.

5,057,231

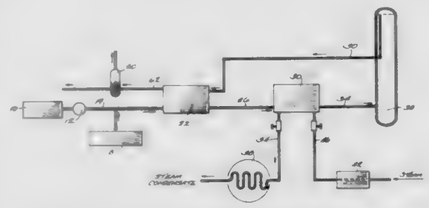
METHOD FOR STARTING UP AND CONTROLLING OPERATING TEMPERATURE OF A WET OXIDATION PROCESS

Gene W. Mueller, Easton, and Bruce L. Brandenburg, Rib Mountain, both of Wis., assignors to Zimpro Passavant Environmental Systems, Inc., Rothschild, Wis.

Filed Nov. 8, 1990, Ser. No. 610,922

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—761 1 Claim



1. A method for starting up and controlling the operating temperature in a wet oxidation process for treating an aqueous waste containing combustible materials, said process comprising the steps of:

mixing an oxygen-containing gas with said waste to form an influent for wet oxidation;

sequentially passing said influent through a first heat exchanger, a second heat exchanger and then into a reaction vessel for wet oxidation;

passing superheated steam through said second heat exchanger to heat said influent to a temperature sufficient to initiate the desire exothermic wet oxidation reaction in said reaction vessel and for a start-up time period sufficient to cause the wet oxidation reaction in said reaction vessel to substantially stabilize and reach a steady state condition;

withdrawing an oxidized effluent from said reaction vessel and passing said effluent through said first heat exchanger to preheat said influent; and

after said start-up period, adjusting the temperature and flow of the superheated steam passing through said second heat exchanger to cool said preheated influent to a temperature suitable for continued steady state operation of said reaction vessel.

5,057,232

FILTER ELEMENT AND METHOD OF FILTRATION

Ivo Schumacher, Jona, Switzerland; Werner Stahl, Landau, Fed. Rep. of Germany; Walter Stocker, and Patrick A. Müller, both of Stäfa, Switzerland, assignors to DrM, Dr.Müller AG, Männedorf, Switzerland

PCT No. PCT/CH89/00085, § 371 Date Jan. 24, 1990, § 102(e) Date Jan. 24, 1990, PCT Pub. No. WO89/11322, PCT Pub. Date Nov. 30, 1989

PCT Filed May 11, 1989, Ser. No. 459,783

Claims priority, application Switzerland, May 24, 1988, 1952/88

Int. Cl.[5] B01D *29/33, 29/52*

U.S. Cl. 210—806 6 Claims



1. Filter element for use in a container, comprising a central pipe (2) extending over a length and having a lower end, said central pipe being closed along said length and also being provided with an opening at said lower end; and a cylinder surrounding said central pipe in a concentric manner and having a closable lower end, said closable lower end of said cylinder projecting beyond said lower end of said central pipe and being provided with a base; at least two cylindrical filter means (1) which are arranged radially and symmetrically with respect to said cylinder, and a plurality of pipes, each of said cylindrical filter means being connected by one of said pipes with said cylinder so as to communicate therewith.

5,057,233

HYDROCARBON GELLER AND METHOD FOR MAKING THE SAME

David A. Huddleston, Sugarland, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 142,703, Jan. 11, 1988, Pat. No. 4,877,894. This application Oct. 30, 1989, Ser. No. 429,235

Int. Cl.[5] E21B *43/26*

U.S. Cl. 252—8.551 15 Claims

7. The method of preparing a gelled hydrocarbon comprising adding to a normally liquid hydrocarbon a gelling amount of a gelling agent and an effective amount of an alkaline metal aluminate activator, said gelling agent comprising the reaction product of (1) a polyphosphate intermediate produced by reacting triethyl phosphate and phosphorous pentoxide and (2) a mixed alcohol comprising from about 13% to about 92% by weight hexanol.

11. A well treating method comprising:

mixing a normally liquid hydrocarbon with an effective amount of a gelling agent and an effective amount of an alkaline metal aluminate activator to form a gel mixture, said gelling agent comprising the reaction product of (1) a polyphosphate intermediate produced by reacting triethyl phosphate and phosphorous pentoxide and (2) a mixed alkyl alcohol comprising from about 13% by weight to about 92% by weight hexanol;

aging said gel mixture at ambient temperature for a period of from about 30 minutes to about 48 hours to form a pumpable hydrocarbon gel;

mixing said pumpable hydrocarbon gel with a proppant to form a slurry;

introducing said slurry into a well formation at a location where the formation temperature exceeds approximately 200° Fahrenheit and at sufficient pressure to fracture said formation.

5,057,234

NON-HYDROCARBON INVERT EMULSIONS FOR USE IN WELL DRILLING OPERATIONS

Ronald G. Bland, and Dennis K. Clapper, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 11, 1990, Ser. No. 536,735

Int. Cl.[5] C09K *7/02*

U.S. Cl. 252—8.51 9 Claims

1. In a method of drilling a well, the improvement which comprises:

forming a replacement fluid for an oil-base mud, the replacement being a brine-in-glycol invert emulsion having a glycol external phase and a brine internal phase by first combining a glycol which is soluble in a brine solution of about 3% salinity or less with a brine solution having a salinity greater than about 3%, thereby rendering the external phase and internal phase immiscible, the emulsion being characterized by the absence of hydrocarbon, mineral, vegetable and animals oils;

adding an emulsifier to form an emulsion;

adding a weighting agent to the emulsion to form a weighted well bore fluid;

circulating said weighted well bore fluid in said well.

5,057,235

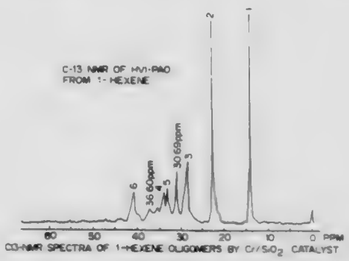
SULFUR-PHOSPHORUS ADDUCTS OF CHROMIUM CATALYZED POLYALPHAOLEFINS

Liehpao O. Farng, Lawrenceville; Andrew G. Horodysky, Cherry Hill, both of N.J., and Derek A. Law, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

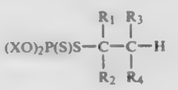
Filed Jun. 23, 1988, Ser. No. 210,599

Int. Cl.[5] C10M *137/10*

U.S. Cl. 252—46.6 30 Claims



1. A liquid derivative of an oligomer of an alpha-olefin, having a methyl group to methylene group branch ratio of less than 0.19, wherein the derivative has an empirical formula of



where X can be R which is a hydrocarbon group of 3 to 30 carbon atoms which is unsubstituted or substituted by O, S or N; and where each of R_1, R_2, R_3 and R_4 is hydrogen or alkyl or alkenyl of 1 to 500 carbon atoms.

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SURFACTANT ION PAIR FLUORESCENT WHITENER COMPOSITIONS

Michael Petrin, Pleasanton, and Gregory van Buskirk, Danville, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Jun. 20, 1990, Ser. No. 540,975
Int. Cl.[5] C09K *13/00*; C11D *7/54, 7/60*
U.S. Cl. 252—79.1 14 Claims

1. A fluorescent whitener agent composition stable to aqueous hypochlorite bleach comprising:
(a) a fluorescent whitener agent selected from the group consisting of a mono- or polysulfonated distyryl-biphenyl or the salts thereof; a mono- or polysulfonated triazinyl amino stilbene or the salts thereof; a mono- or polysulfonated triazoyl stilbene or the salts thereof; a mono- or polysulfonated naphthotriazolyl or salts thereof; or combinations thereof; and
(b) an N-higher alkyl, N,N,N-lower alkylammonium ion; wherein the N-higher alkyl, N,N,N-lower alkylammonium ion and fluorescent whitener agent are present in an ion-pair in at least a stoichiometric ratio-- based on the fluorescent whitener agent.

5,057,237

THIXOTROPIC LIQUID AUTOMATIC DISHWASHER DETERGENT COMPOSITION WITH IMPROVED PHYSICAL STABILITY

Julien Drapier, Seraing; Chantal Gallant, Cheratte; France Wouters, Herstal, and Leo Laitem, Orp-Jauche, all of Belgium, assignors to Colgate Palmolive Co., Piscataway, N.J.

Continuation of Ser. No. 131,278, Dec. 10, 1987, abandoned, which is a continuation of Ser. No. 744,754, Jun. 14, 1985, abandoned. This application Jan. 3, 1990, Ser. No. 462,891
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[5] C11D *17/00, 3/60, 10/04*
U.S. Cl. 252—97 16 Claims

1. An aqueous thixotrophic automatic dishwasher composition comprising approximately by weight:
(a) 5 to 35% alkali metal tripolyphosphate;
(b) 2.5 to 20% sodium silicate;
(c) 0 to 9% alkali metal carbonate;
(d) 0.5 to 2% chlorine bleach stable, water-dispersible organic detergent active material;
(e) 0.1 to 0.5% chlorine bleach stable foam depressant;
(f) chlorine bleach compound in an amount to provide about 0.2 to 4% of available chlorine;
(g) 0.1 to 10.0% thixotropic thickener in an amount sufficient to provide the composition with a thixotropy index of about 2 to 10;
(h) sodium hydroxide in amount sufficient to provide the composition with a pH of at least about 9.5;
(i) 0.02 to 0.4% of a polyvalent metal salt of a long chain 8 to 22 carbon fatty acid as a physical stability of the composition; and
(j) water in an amount so as not to destroy the thixotropic properties of the composition.

5,057,238

LIQUID LAUNDRY DETERGENT COMPOSITION CONTAINING POLYPHOSPHATE

Guy Broze, Grace Hollogne, and Trazollah Ouhadi, Liege, both of Belgium, assignors to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 781,189, Sep. 25, 1985, Pat. No. 4,800,035. This application May 18, 1988, Ser. No. 195,248
The portion of the term of this patent subsequent to Jan. 24, 2006, has been disclaimed.
Int. Cl.[5] C11D *7/56*
U.S. Cl. 252—99 20 Claims

1. A substantially nonaqueous, low-foaming liquid heavy duty laundry detergent composition comprising a low-foaming suspension of an alkali metal polyphosphate builder salt in a liquid nonionic surfactant said composition containing an organic phosphorus compound having an acidic —POH group and which is a partial ester of an alkanol of from about 5 to 20 carbon atoms and phosphoric acid or phosphorous acid and which compound is present in effective amount to raise the yield value of said compositions.

5,057,239

USE OF A SPIRANIC LACTONE AS FRAGRANCE INGREDIENT

François Delay, Carouge; Wolfgang K. Giersch, and Günther Ohloff, both of Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Continuation of Ser. No. 70,087, Jul. 7, 1987, abandoned, which is a continuation of Ser. No. 845,081, Mar. 27, 1986, abandoned. This application Dec. 8, 1988, Ser. No. 281,418
Claims priority, application Switzerland, Apr. 19, 1985, 1692/85
Int. Cl.[5] C11D *3/50, 9/44*; A61K *7/46*
U.S. Cl. 252—174.11 5 Claims

1. Method to modify the odor character of a consumable material in order to confer thereto a spicy, lactonic character in the direction of rose, tuberose and coumarin which comprises adding to a base composition selected from a perfume, a soap, a detergent, a fabric softener or a cosmetic product a fragrance effective amount amount of 1-oxaspiro [4,5] decan-2-one to modify the odor character in the direction of rose, tuberose and coumarin.

5,057,240

LIQUID DETERGENT FABRIC SOFTENING LAUNDERING COMPOSITION

Linda M. Madore, Midland, Mich., and Annemieke C. M. Donkers, Kessel-Lo, Belgium, assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 10, 1989, Ser. No. 419,181
Int. Cl.[5] D06M *11/77*
U.S. Cl. 252—174.15 16 Claims

1. In a liquid laundry detergent free from silicones containing amino substituents having fabric softening properties, the improvement comprising s silicone fabric softening agent selected from the group consisting of a polydiorganosiloxane gum having an average unit formula

$$R_aSiO_{\frac{4-a}{2}}$$

wherein each R is a monovalent radical selected from the group consisting of a methyl radical, a vinyl radical, a phenyl radical, an ethyl radical and a 3,3,3-trifluoropropyl radical, and a has an average value of 1.95 to 2.005 inclusive, at least 90 percent of the total R groups being methyl radicals, and molecules of said polydiorganosiloxane gum being terminated by a group selected from the group consisting of silanols, alkoxys and $R_3^3SiO_{0.5}$ where R is defined above; a mixture of at least one volatile cyclic silicone and a polydiorganosiloxane gum as defined above; and a mixture of a gum as defined above and a low viscosity polydiorganosiloxane.

5,057,241

DUAL POLYMER SELF-SEALING DETERGENT COMPOSITIONS AND METHODS

Colleen M. Merritt; Jerry L. Newman; David L. Shelton, and Sheng-Liang Tsaur, all of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Nov. 16, 1988, Ser. No. 271,784
Int. Cl.[5] C11D *3/37, 1/65, 1/88, 11/00*
U.S. Cl. 252—174.17 31 Claims

1. A thickened modified pseudoplastic detergent composition for dispensing from a high shear dispensing unit comprising:
(a) from about 1 to 20 percent by weight of the total composition of at least one surfactant selected from the group consisting of anionic, nonionic, and amphoteric surfactants;
(b) from about 0.3 to 1.5 percent by weight of the total composition of a water soluble polymer thickening agent which when neutralized to a pH of at least 5.5 is water soluble and imparts pseudoplastic characteristics to the detergent composition and is an addition polymer prepared from monomers comprising (1) at least one C_3–C_8 alpha-beta-monoethylenically unsaturated monocarboxylic acid or dicarboxylic acid monomer having from 3 to 8 carbon atoms; (2) at least one monoethylenically unsaturated copolymerizable monomer lacking surfactant capacity, and (3) at least one monomer possessing surfactant capacity which is the reaction product of a monoethylenically unsaturated monomer with a nonionic surfactant compound wherein the monomer is copolymerizable with the monomers of (1) and (2);
(c) from about 0.05 to 0.3 percent by weight of the total composition of a water soluble cellulosic polymer rheology modifying agent selected from the group consisting of hydroxyethyl cellulose and hydroxypropyl cellulose;
(d) an effective amount of an alkaline neutralizing agent to neutralize the polymer of (b) and render the pH of the composition in the range of about 5.5 to 8.5; and
(e) the balance of the composition comprising water, wherein the total of (a), (b), (c), (d) and (e) is 100% and said composition is a single phase pseudoplastic composition having a viscosity of at least about 500 centipoise at 25° C.

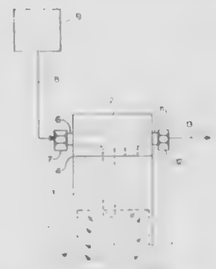
14. A method of making a thickened modified pseudoplastic detergent composition for dispensing from a high shear dispensing unit comprising (a) from about 1 to 20 percent by weight of the total composition of at least one surfactant selected from the group consisting of anionic, nonionic and amphoteric surfactants; (b) from about 0.3 to 1.5 percent by weight of the total composition of a water soluble polymer thickening agent which when neutralized to a pH of at least 5.5 is water soluble and imparts pseudoplastic characteristics to the detergent composition and is an addition polymer prepared from monomers comprising (1) at least one C_3–C_8 alpha-beta-monoethylenically unsaturated monocarboxylic acid or dicarboxylic acid monomer having from 3 to 8 carbon atoms; (2) of at least one monoethylenically unsaturated copolymerizable monomer lacking surfactant capacity, and (3) at least one monomer possessing surfactant capacity which is the reaction product of a monoethylenically unsaturated monomer with a nonionic surfactant compound wherein the monomer is copolymerizable with the monomers of (1) and (2); (c) from about 0.05 to 0.3 percent by weight of the total composition of a water soluble cellulosic polymer rheology modifying agent selected from the group consisting of hydroxyethyl cellulose and hydroxypropyl cellulose; (d) an effective amount of an alkaline neutralizing agent to neutralize the polymer of (b) and render the pH of the composition in the range of about 5.5 to 8.5; and (e) the balance of the composition comprising water, said method comprising the steps of:
(I) charging the polymer of (b) with the water to form a dispersion, followed by
(II) charging all surfactant of (a) into the dispersion of Step (I) to form a dispersion, followed by
(III) dissolving the water-soluble polymer rheology modifying agent of (c) in the dispersion of Step (II); and
(IV) adding a sufficient amount of an alkaline neutralizing agent to the product of Step (III) to neutralize the polymer thickening agent of (b) and form a single phase composition having a pH in the range of about 5.5 to 8.5 and a viscosity of at least about 500 centipoise at 25° C.,
wherein the total of (a), (b), (c), (d) and (e) is 100%.

5,057,242

COMPOSITION, PROCESS, AND APPARATUS, FOR REMOVAL OF WATER AND SILICON MU-OXIDES FROM CHLOROSILANES

Glenn M. Tom, New Milford, and James V. McManus, Danbury, both of Conn., assignors to Novapure Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 29,631, Mar. 24, 1987, Pat. No. 4,853,148. This application Mar. 14, 1989, Ser. No. 323,302
Int. Cl.[5] C09K *3/00*; C07F *7/08*
U.S. Cl. 252—194 9 Claims



1. A scavenger composition having utility for removal of water and silicon mu-oxide impurities from gaseous chlorosilanes, said scavenger composition consisting essentially of:
(a) an inert inorganic support characterized by (i) a BET surface area of from about 30 to about 1,000 square meters per gram of support, (ii) a significant porosity from pores of a diameter in the range of from about 3 to about 200 Angstroms, and (iii) being thermally stable at temperatures up to about 300° C. Centigrade; and
(b) associated with said support, active scavenging compound(s) constituted by the reaction product resulting from:
(1) the loading of one or more compound(s) onto the inert organic support, at a loading of from about 1 to about 5 moles per liter of a bed of the scavenger, wherein said compound(s) are selected from the group consisting of compound(s) of the formula:

$$R_{a-x}MCl_x$$

wherein:
M is a metal selected from the group consisting of the monovalent metals lithium, sodium, and potassium and the divalent metals magnesium, strontium, barium, and calcium.
R is alkyl
a is a number equal to the valency of metal M; and
x is a number having a value of from 0 to a, inclusive; and
(2) the activation of said compound(s) by a reaction scheme selected from those of the group consisting of:
(i) reaction of said compound(s) with hydrogen chloride to form a first reaction product therefrom, followed by reaction of said first reaction production with a chlorosilane of the formula:

$$SiH_{4-y}Cl_y$$

wherein y is a number having a value of from 1 to 3, inclusive; and
(ii) reaction of said compound(s) with a chlorosilane of the formula:

$$SiH_{4-y}Cl_y$$

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wherein y is a number having a value of from 1 to 3, inclusive.

8. A method of making a scavenger composition having utility for purifying gaseous chlorosilane to remove silicon mu-oxide and water impurities therefrom, consisting essentially of:

(a) providing an inert inorganic support characterized by (i) a BET surface area of from about 30 to about 1,000 square metals per gram of support, (ii) a significant porosity from pores of a diameter in the range of from about 3 to about 200 Angstroms, and (iii) being thermally stable at temperatures up to about 300° Centigrade;

(b) depositing on said inert inorganic support, at a loading of from about 1 to about 5 moles per liter of a bed of the scavenger, one or more compound(s) selected from the group consisting of compounds of the formula:

$R_{a-x}MCl_x$

wherein:

M is a metal selected from the group consisting of the monovalent metals lithium, sodium, and potassium; and the divalent metals magnesium, strontium, barium, and calcium;

is alkyl;

a is a number equal to the valency of metal M; and

x is a number having a value of from 0 to a, inclusive; and

(c) activating said compound(s) of the formula $R_{a-x}MCl_x$ for impurity removal service by a reaction scheme selected from those of the group consisting of:

(i) reaction of said compound(s) with hydrogen chloride to form a first reaction product therefrom, followed by reaction of said first reaction product with chlorosilane of the formula:

$SiH_{4-y}Cl_y$,

wherein y is a number having a value of from 1 to 3, inclusive; and

(ii) reaction of said compound(s) with a chlorosilane of the formula:

$SiH_{4-y}Cl_y$

wherein y is a number having a value of from 1 to 3, inclusive.

5,057,243

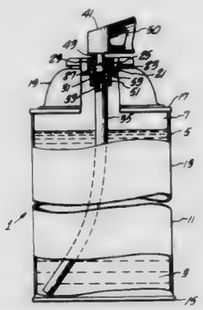
AEROSOL DIFFUSION FOGGER

Martin J. Becker, Glendale, and James G. Gill, North Hollywood, both of Calif., assignors to Pro Efx, Inc., Hollywood, Calif.

Filed Jun. 8, 1988, Ser. No. 203,766

Int. Cl.[5] C09K *3/30*

U.S. Cl. 252—305 **3 Claims**



1. Aerosol diffusion fogger apparatus for producing a fine light diffusion fog comprising an aerosol can containing about 10% by weight light white mineral oil and about 90% by weight of an isobutane and propane propellant mixture and having an aerosol valve and having a fine aerosol nozzle for producing a fine light diffusion fog having an average particle size less than about one micron.

5,057,244

TRANSPARENT, ELECTRICALLY CONDUCTIVE FILM

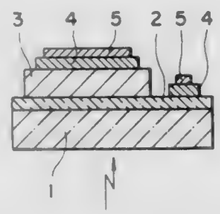
Shoji Nitta, Gifu, and Yukio Ide, Mishima, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 661,379, Oct. 16, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 816,685

Claims priority, application Japan, Oct. 20, 1983, 58-195181

Int. Cl.[5] H01C *13/00*

U.S. Cl. 252—501.1 **6 Claims**



1. A reductive, transparent and electrically conductive film comprising C and a first element which is selected from the group consisting of Sn, Pb, In, and Tl, in proportions defined by M_xC_z, where M=Sn, Pb, In or Tl and x+z=1.

5,057,245

FAST CURING AND STORAGE STABLE THERMOSET POLYMER THICK FILM COMPOSITIONS

Richard L. Frentzel, Chino Hills, and Warren R. Oakdale, Upland, both of Calif., assignors to Advanced Products, Inc., Cheshire, Conn.

Filed Apr. 17, 1990, Ser. No. 510,382

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—511 **24 Claims**

1. A thermally curable polymer thick film composition comprising, by weight:

(a) about 3–15 parts of at least one poly(hydroxystyrene) resin;

(b) a crosslinking resin selected from the group consisting of:

(i) about 5–25 parts of at least one blocked isocyanate resin; or

(ii) about 2–10 parts of at least one melamine-formaldehyde resin;

(c) an effective amount of at least one organic solvent capable of substantially dissolving (a) and (b) ingredients;

(d) conductive particulate matter selected from the group consisting of:

(i) about 50–80 parts silver flake;

(ii) a graphite/carbon black mixture consisting of:

(aa) about 15–45 parts graphite; and

(bb) about 1–10 parts carbon black; or

(iii) a mixture of (i) and (ii).

5,057,246

VISCOUS DETERGENT COMPOSITION CAPABLE OF BEING DILUTED AND PROCESS FOR PRODUCING IT

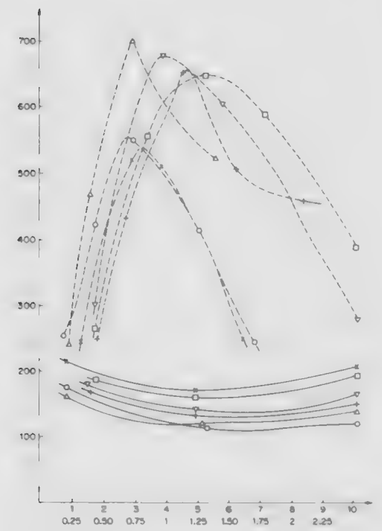
Annette Bertho, Aulnay-sous-Bois; Daniel Charpin, Saint-Maur; Catherine Heusele, Palaiseau, and Patrick Moireau, Vitry-Sur-Seine, all of France, assignors to Cotelle S.A., Courbevoie and Henkel Entretien, Boulogne Billancourt, both of, France

Filed Jul. 21, 1987, Ser. No. 76,162

Claims priority, application France, Jul. 25, 1986, 86 10790

Int. Cl.[5] C11D *17/00, 1/831, 1/94, 11/00*

U.S. Cl. 252—545 **24 Claims**



1. A process for controlling the viscosity V_1 of a concentrated liquid composition comprising at least one anionic surface active agent and the viscosity V_2 of a diluted composition produced by adding water to the concentrated liquid composition comprising adding to the concentrated composition a viscosity regulator consisting of

a) a viscosity regulating surface active agent selected from among nonionic, amphoteric and zwitterionic surface active agent, and

b) a viscosity coregulator selected from among acids and their salts, the viscosity regulating surface active agent and the viscosity coregulator being selected such that increasing the concentration of the viscosity coregulator causes a decrease in viscosity, and viscosity regulator being added in an amount effective to control viscosity.

3. A clear, concentrated liquid detergent composition comprising

a) at least one anionic surface active agent; and

b) a viscosity regulating component consisting of

at least one viscosity regulating surface active agent selected from the group consisting of nonionic, amphoteric and zwitterionic surface active agents; and

a viscosity coregulator selected from among acids and their salts, wherein the viscosity regulating surface active agent and the viscosity coregulator are selected such that increasing the amount of the viscosity coregulator leads to a decrease in the viscosity of the composition or to an increase followed by a decrease in the viscosity of the composition; and

c) water.

5,057,247

HIGH-VISCOSITY, NEUTRAL POLYOL ESTERS

Karl-Heinz Schmid, Mettmann; Uwe Ploog, Haan, and Alfred Meffert, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 21, 1987, Ser. No. 136,037

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1986, 3643935

Int. Cl.[5] C10M *105/42, 129/78*

U.S. Cl. 252—56 S **20 Claims**

1. In a lubricating oil, lubricating oil dispersion, or lubricating grease containing a carrier oil component the improvement comprising the presence therein of a temperature stabilizing quantity of a synthetic polyol ester comprising the esterification product of:

I. dipentaerythritol;

and based on each 6 hydroxyl equivalents of component I,

II. from about 4 to about 5.8 equivalents of either

A. at least one saturated branched C_8–C_{16} fatty acid, or

B. a mixture of at least one saturated branched C_8–C_{16} fatty acid and at least one saturated linear C_8–C_{14} fatty acid, wherein from about 1 to about 4 equivalents of branched C_8–C_{16} fatty acid and from about 2 to about 5 equivalents of linear C_8–C_{14} fatty acid is present in the mixture; and

III. from about 0.2 to about 2 equivalents of at least one compound selected from the group consisting of

A. a C_6–C_{14} di- or tri-carboxylic acid; and

B. an aromatic or cycloparaffinic polycarboxylic acid containing from 2 to 6 acid functions.

5,057,248

METHOD FOR PRODUCTION OF POLYMERIC NONLINEAR OPTICAL MATERIAL

Hiroo Matsuda; Shuji Okada; Hachiro Nakanishi, and Masao Kato, all of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Feb. 22, 1989, Ser. No. 313,448

Claims priority, application Japan, Jun. 29, 1988, 63-161915

Int. Cl.[5] F21V *1/00*

U.S. Cl. 252—582 **10 Claims**

1. A method for the production of a polymeric nonlinear optical material, comprising the steps of:

mixing (I) a polyelectrolyte solution containing at least one polyanion selected from the group consisting of (a) polystyrenesulfonic acid, (b) polyacrylamide sulfonic acid, (c) polyacrylic acid, (d) polymethacrylic acid, (e) inorganic or organic ion salts of said acids (a), (b), (c) and (d), and (f) copolymers of polyethylene, polystyrene, polyacrylonitrile, polyacrylae or polyethylene oxide at a maximum concentration of 95% by weight with at least one of said acids and said inorganic or organic ion salts (a), (b), (c), (d) or (e), with (II) an ionic pigment solution containing at least one member selected from the group consisting of cation pigments having a cation residue incorporated in cyanine pigments, hemicyanine pigments, diphenylmethane pigments, triphenyl methane pigments, acridine pigments, porphyrine, phthalocyanine, azo pigments, stilbene pigments, quinone pigments and coumarin pigments, thereby forming a solution containing a composite of said polyelectrolyte and said ionic pigment; and

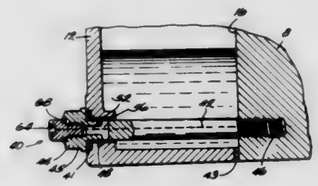
separating said composite from said solution.

5,057,249

CARBURETOR FLOAT CHAMBER DRAIN DEVICE

Gene F. Baltz, Lake Villa; Paul M. Dayenian, Waukegan, both of Ill., and John E. Stanley, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 14, 1990, Ser. No. 537,649
Int. Cl.[5] F02M *19/00*
U.S. Cl. 261—72.1 15 Claims



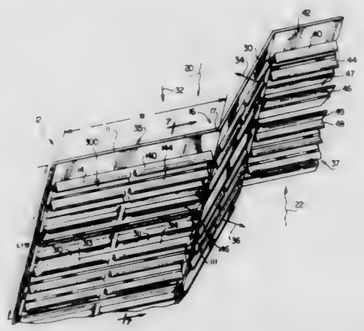
1. A carburetor comprising a main body, a float bowl defining a float chamber, means for connecting said float bowl to said main body, means for draining said float chamber, said draining means being located in said connecting means and comprising a fastening screw extending through a side of said float bowl and screwed into said carburetor body, having an internal passage therethrough communication with said float bowl and with a portion of said screw exterior of said bowl, and closure means normally closing said passage and operable when desired for draining said bowl.

5,057,250

TOWER PACKING WITH SMALL LOUVERS

Gilbert K. Chen, Farmers Branch; Robert McKelvy, Dallas; Jorge A. Bonilla, Dallas, and Don Glaspie, Dallas, all of Tex., assignors to Glitsch, Inc., Dallas, Tex.

Filed Nov. 27, 1990, Ser. No. 618,724
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—112.2 21 Claims



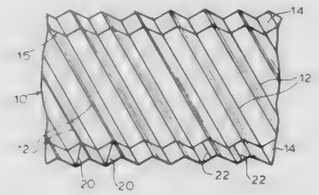
1. A tower packing for contacting a vapor stream with a liquid stream comprising a plurality of vertically oriented corrugated sheets in face to face contact with opposed corrugations inclined oppositely to one another, each of said sheets having fold lines therein establishing ridges and valleys separated by flat areas, said ridges, valleys and flat areas defining said corrugated configuration of said sheets, each of said flat areas being provided with a plurality of laterally extending louvers thereon, some of said louvers having upwardly facing edges and some having downwardly facing edges and substantially all of said louvers terminating adjacent but short of said fold lines.

5,057,251

DOUBLE-FOLD CONSTRUCTION FOR A CONTACT BODY ELEMENT

Jan O. Skold, Fort Myers, Fla., assignor to Munters Corporation, Fort Myers, Fla.

Filed Dec. 7, 1989, Ser. No. 447,385
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—112.2 5 Claims



1. A contact body element, for use in forming the fill of a gas and liquid contact apparatus to produce interaction between a gas and liquid flowing through the apparatus, comprising formed sheet members, each having integral longitudinally extending edge portions, said edge portions of each said sheet member being folded over on a longitudinally extending surface of the sheet to provide a strip of sheet material located in overlapping relationship to said surface of said sheet with the area between said longitudinally extending edge of said sheet and said longitudinally extending surface forming a fold, and an adhesive applied within said fold for securing the folded over edge portion to the sheet such that said longitudinal edge portion and surface and adhesive form a substantially rigid ply that is substantially resistant to corrosion; said adhesive being an intumescent adhesive and said edge portion having a plurality of longitudinally spaced slits therein.

5,057,252

METHOD OF PRODUCING HEAT-RESISTANT AND SHAPE MEMORY FORMED PRODUCTS

Seiji Kagawa; Hideaki Toda, and Shinichiro Nomura, all of Yokohama, Japan, assignors to Tonen Sekiyukagaku Kabushi Kaisha, Tokyo, Japan

Division of Ser. No. 289,100, Dec. 23, 1988, Pat. No. 4,945,127.
This application Jul. 2, 1990, Ser. No. 546,802
Claims priority, application Japan, Dec. 28, 1987, 62-333890; Mar. 10, 1988, 63-56695; Jun. 17, 1988, 63-149739
Int. Cl.[5] B29C *35/08, 35/02;* C08L *23/16, 31/04*
U.S. Cl. 264—22 15 Claims

1. A method of producing a formed product having a shape memory made of a polymer composition comprising 40–70 weight % of a thermoplastic elastomer containing a repeating unit derived from ethylene and a repeating unit derived from propylene, and 60–30 weight % of an ethylene-vinyl acetate copolymer containing 7.5 weight % or more of a vinyl acetate repeating unit, which comprises the steps of:

(a) blending said polymer composition at a temperature of 160° C. or less;

(b) molding said polymer blend at a temperature of 180° C. or less to provide a molded product having a desired shape;

(c) deforming said molded shaped product into a different shape while applying stress thereto at a temperature higher than a temperature at which crystal phases therein are melted but lower than the molding temperature; and

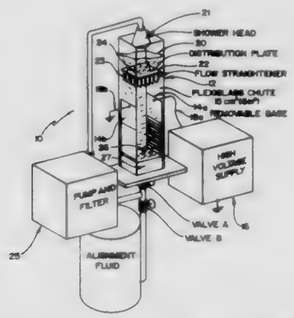
(d) cooling said deformed molded shape product to an extend sufficient to retain said deformed shape.

5,057,253

ELECTRIC ALIGNMENT OF FIBERS FOR THE MANUFACTURE OF COMPOSITE MATERIALS

Gerald M. Knoblach, 2421 Brenner Crt., Roseville, Minn. 55113

Filed May 8, 1990, Ser. No. 520,666
Int. Cl.[5] B29C *67/00*
U.S. Cl. 264—24 10 Claims



2. In a tank with a bottom containing a dielectric fluid, a method of manufacturing a composite material part, wherein prepreg rods are aligned into an orientation corresponding to stress lines of the composite material part the method comprising the steps of:

a) placing an electrode at at least one location corresponding to load bearing surfaces of a desired composite material part;

b) applying an electric field between the electrodes, wherein the electric field follows flow lines corresponding to the stress lines;

c) dispersing prepreg rods having a density greater than that of the dielectric fluid onto the dielectric fluid; and

d) collecting a mat of aligned prepreg rods as they fall to the bottom of the tank and forming the same into a composite material part.

5,057,254

PROCESS FOR PRODUCING CARBON/CARBON COMPOSITES

Yoshio Sohda; Yasuji Ido, both of Kanagawa; Toshinori Nakamura, and Takeshi Suemitsu, both of Hyogo, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo and Kawasaki Heavy Industries, Ltd., Hyogo, both of, Japan

Filed Mar. 30, 1989, Ser. No. 330,633
Claims priority, application Japan, Apr. 1, 1988, 63-77997
Int. Cl.[5] B29C *43/10;* C08L *95/00*
U.S. Cl. 264—29.2 5 Claims

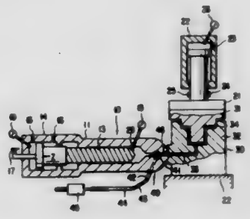
1. A process for producing a carbon/carbon composite, which comprises impregnating a primary-formed product with a carbonaceous pitch, said primary-formed product obtained by performing a first heat-treating of a matrix starting from a carbonaceous pitch and carbon fibers under uniaxial pressing, for carbonization or graphitization, said primary-formed product consisting essentially of said carbon fibers and said carbonized or graphitized matrix, performing a second heat-treating of the thus-impregnated primary-formed product under hot isostatic pressing, said second heat treatment under hot isostatic pressing being performed with an open container under a pressure of an inert gas and using a hot isostatic pressing system with an exhaust mechanism capable of continuously controlling and exhausting gases evolved during the hot isostatic pressing, and carbonizing or graphitizing the resultingly primary-formed product of the second heat treatment.

5,057,255

MOLDING METHOD AND MOLDING APPARATUS IN AN INJECTION-COMPRESSION MOLDING MACHINE

Kan-ichi Sato; Makoto Nogawa; Satoshi Fujimoto, all of Hiratsuka; Yosuke Sasaki, Zama, and Makoto Higuchi, Komatsu, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusha, Tokyo, Japan

PCT No. PCT/JP89/00316, § 371 Date Jan. 5, 1990, § 102(e) Date Jan. 5, 1990, PCT Pub. No. WO89/09125, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 24, 1989, Ser. No. 445,623
Claims priority, application Japan, Mar. 24, 1988, 63-70078
Int. Cl.[5] B29C *45/76*
U.S. Cl. 264—40.5 11 Claims



1. A method of molding a plastic resin comprising the steps of:

pressurizing a resin within an injection unit for a set period of time T_1;

determining that said resin has reached a set pressurizing value P_0;

sending an instruction for an opening angle B_1 of a valve means disposed between a mold cavity formed in a metal mold and said injection unit along a resin flow passage communicating said injection unit with said mold cavity and sending an instruction for an opening/closing speed C_1 of the metal mold for pressing the resin injected into the mold cavity when a set period of time T_2 has elapsed and when said resin has reached said set pressurizing value P_0;

determining that said opening angle B_1 of said valve means has become the instructed angle;

determining that a said opening/closing speed C_1 of said metal mold has become the instructed opening/closing speed; and

determining that a set period of time T_3 has elapsed.

5,057,256

PROCESS FOR MANUFACTURING A TOOL, PARTICULARLY A TOOL FOR STAMPING AND PRINTING METAL SHEET PARTS

Gilbert A. F. Gorin, Le Miroir, France, assignor to Societe Anonyme des Usines Chausson, Courbevoie, France

Filed Jul. 28, 1989, Ser. No. 386,090
Claims priority, application France, Aug. 2, 1988, 88 10422; Dec. 14, 1988, 88 16466
Int. Cl.[5] B23P *17/00;* B28B *1/16;* B29C *33/40;* B32B *31/00*
U.S. Cl. 264—113 28 Claims

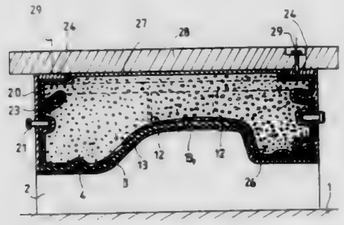
1. A process for manufacturing forming tools, comprising the steps of:

mixing a resin and hardening agent;

adding a siliceous pulverulent grain filler in a gravimetric ratio among said resin, said hardening agent and said grain filler to form a mixture, said grain filler being constituted by quartz silicas having a granulometry between 1.25 and 0.3 mm;

mixing said resin, said hardening agent and said grain filler at a work site within a range for about 10 to 15 minutes at a temperature between about 20° C. and 16° C.;

observing said mixture to determine the advent of polymerization;
interrupting said mixing within said time range substantially before the beginning of polymerization to thereby avoid the formation of the macromolecules and bending bridges within said mixture,
thereafter pouring said mixture essentially free of macromolecules into a dam containing working parts; and



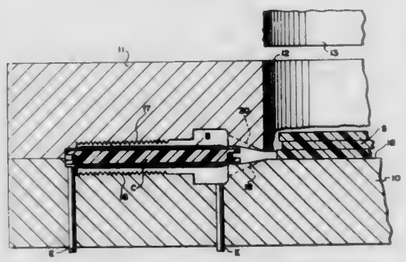
polymerizing said resin to create a resinous concrete forming tool;
wherein before said pouring of said mixture, said resin has moistened said grain filler and filled spaces between the grains of said grain filler thereby eliminating the formation of bending bridges within said mixture.

5,057,257

METHOD OF TRANSFER MOLDING FIBER-REINFORCED RESIN BOLT PRODUCTS

Mark K. Neitzke, Bay City, Mich., assignor to Quantum Composites, Inc., Midland, Mich.

Filed Feb. 20, 1990, Ser. No. 481,128
Int. Cl.[5] B29C *43/18, 43/20*
U.S. Cl. 264—138 **18 Claims**



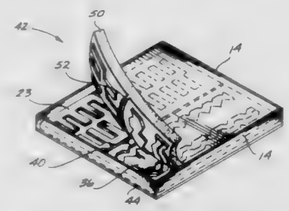
1. A method of molding high strength, fiber-reinforced, structural composites having axially elongated shanks including fiber-reinforced bolts requiring substantial strength in torsion. tension and shear, comprising the steps of:
a. providing a partible mold having an axially extending molding cavity shaped to mold an end portion with an axially extending shank portion and axially disposing an axially extending core, mounting an elongate bundle of elongate reinforcing fibers extending in an axial direction along an exposed face of the core substantially from one end of the core to the other, in said molding cavity;
b. supplying a fiber-reinforced resin in a flowable state to said mold cavity in a manner to perimetrally encapsulate said core substantially from end to end thereof and fill the mold cavity;
c. hardening the resin encapsulating said core with the bundle of fibers extending in an axial direction along the core and thereby resin-bonding the core, bundle of fibers, and the fiber-reinforced encapsulating resin to integrate them as a structural element; and
d. removing the composite product formed from the mold.

5,057,258

METHOD FOR MANUFACTURING ELASTOMERIC FORM LINERS USING SEGMENTS OF TIRE TREAD

Vicki B. Scuri, Suite 175, 1817 N. 7th St., Phoenix, Ariz. 85006

Filed Sep. 22, 1989, Ser. No. 410,710
Int. Cl.[5] B29C *41/02, 39/02*
U.S. Cl. 264—138 **11 Claims**



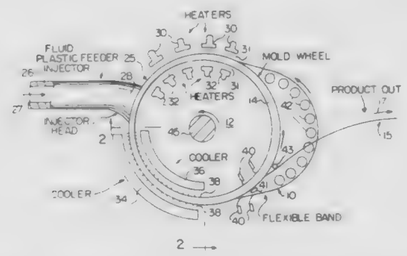
1. A method of producing an elastomeric form liner useful for creating a design on a surface of a poured concrete structure, the method comprising the steps of:
(a) cutting at least one tire tread segment having a first surface defining a geometric pattern of tread channels from a vehicle tire;
(b) positioning the tire tread segment in a mold box;
(c) pouring a liquid elastomeric material over the first surface of the tire tread segment and into the tread channels and allowing the elastomeric material to solidify in the mold box into an elastomeric form liner; and
(d) separating the elastomeric form liner from the tire tread segment.

5,057,259

METHOD AND APPARATUS FOR INJECTION MOLDING CONTINUOUS PRODUCTS

G. Kendall Parmelee, Riverside, Conn., assignor to Erblok Associates, Charlottesville, Va.

Filed May 25, 1989, Ser. No. 357,039
Int. Cl.[5] B29C *33/36, 41/26, 41/46*
U.S. Cl. 264—166 **18 Claims**



1. The method of continuous injection molding at least one continuous strip of molded plastic product with lugs thereon comprising the steps of:
providing a circular cylindrical mold member rotatable around an axis of rotation concentric with a peripheral surface of the cylindrical mold member, said mold member having at least one endless mold cavity extending circumferentially in said peripheral surface encircling the cylindrical mold member;
providing multiple circumferentially spaced driving elements associated with the peripheral surface of the mold member;
providing an endless, flexible mold band having injection ports therein;

providing multiple driven elements at longitudinally spaced positions in the mold band adapted for engagement with the driving elements;
positioning the driven elements in the mold band relative to said injection ports for producing registration of the injection ports with said endless mold cavity with said injection ports being adjacent to and in direct communication with said endless mold cavity upon engagement of the driven elements with the driving elements;
revolving the cylindrical mold member around the axis of rotation;
engaging the driven elements with the driving elements for causing the mold band to be revolved in contact with and in registration with the peripheral surface of the cylindrical mold member with said mold band overlying said mold cavity and being the only one mold band associated with said mold cavity;
performing a step of changing temperature of the revolving mold member and the band in a first predetermined direction of temperature change;
injecting fluid plastic material through said injection ports into said mold cavity following said temperature change for filling the endless mold cavity beneath said mold band and for filling injection ports in the mold band adjacent to and in direct communication with said mold cavity;
performing a step of changing temperature of the revolving mold member and the band in a second predetermined direction of temperature change opposite to said first predetermined direction of temperature change following the injection for solidifying the plastic material in the endless mold cavity and in said injection ports adjacent to and in direct communication with said endless mold cavity for producing a continuous strip of solid molded product in the mold cavity with lugs on the strip;
guiding the revolving mold band away from the revolving mold member following solidification of the plastic material in said endless cavity and in said injection ports adjacent to and in direct communication with said endless cavity;
removing the continuous strip of molded product from the endless mold cavity and removing the lugs from the injection ports; and
guiding the revolving mold band back into contact with the revolving peripheral surface of the mold member with the driven elements again engaging the driving elements and the injection ports in the mold band again in registration with the endless mold cavity in readiness for continuing operation.

7. The system for continuous injection molding of at least one continuous strip of molded plastic product having lugs thereon comprising:
a circular cylindrical mold member rotatably mounted for rotation around an axis of rotation concentric with a peripheral surface of the cylindrical mold member with drive means for turning said mold member in a rotational direction around said axis;
said peripheral surface having at least one endless mold cavity extending circumferentially therein encircling the cylindrical mold member;
sprocket teeth projecting above said peripheral surface;
an endless flexible mold band having injection ports therein;
said mold band having sprocket holes therein engageable with said sprocket teeth with said mold band being in contact with said peripheral surface of the cylindrical mold member and with said mold band being revolved by said sprocket teeth;
said mold band overlying said endless mold cavity with said injection ports being adjacent to said endless mold cavity in direct communication with said endless mold cavity for forming with said endless mold cavity in said revolving cylindrical mold member an endless revolving injection mold;
said mold band being one and the only one mold band associated with said endless mold cavity;
said sprocket holes in the mold band being positioned relative to the injection ports in the mold band for registering said injection ports adjacent to said endless mold cavity in direct communication with said endless mold cavity;
fluid plastic feeder means having an injection head communicating with said injection ports in the revolving mold band for injecting fluid plastic material through said injection ports into said endless mold cavity filling said endless mold cavity and said injection ports adjacent thereto in direct communication therewith;
heating and cooling means operatively associated with the revolving cylindrical mold member and mold band for changing temperature of the revolving mold member and mold band in a first predetermined direction of temperature change prior to injecting of the fluid plastic material for keeping the plastic material sufficiently fluid for injection and for changing the temperature of the revolving mold member and mold band in a second predetermined direction of temperature change opposite to said first predetermined direction of temperature change following injection for solidifying the plastic material in the mold cavity for producing a continuous strip of molded plastic product in the mold cavity with lugs thereon extending into the injection ports;
guide means for guiding the revolving mold band away from the revolving mold member following solidification of the plastic material;
means for removing the continuous strip of molded plastic material from the mold cavity and for removing the lugs thereon from the injection ports; and
said guide means guiding the revolving mold band back into contact with the revolving peripheral surface of the mold member with the sprocket holes again engaging with the sprocket teeth and the injection ports in the mold band again in registration with the mold cavity in readiness for continuing injection.

5,057,260

SPINNING OF SEGMENTED POLYURETHANE-UREA ELASTOMERS IN A STEAM ATMOSPHERE

Ulrich Reinehr, Dormagen; Heinz Gall, Goch/Niederrhein; Josef Kulig, Dormagen; Rudi Dauscher, Dormagen, and Rolf-Burkhard Hirsch, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 4, 1990, Ser. No. 504,491
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912510
Int. Cl.[5] D01D *5/04;* **D01F** *6/70*
U.S. Cl. 264—205 **6 Claims**

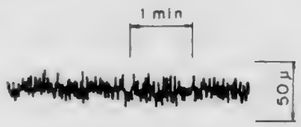
1. An improved dry spinning process for the production of polyurethane elastomer threads using superheated steam as the spinning medium, comprising
(1) spinning polyurethane-urea elastomers, prepared by chain lengthening of NCO pre-polymers with diamine from a solution containing dimethylformamide or dimethylacetamide, via a hot spinneret having a nozzle at a spinning solution temperature in the nozzle of not less than 100° C. into a heated spinning chimney having a chimney wall temperature of not less than 160° C., while
(2) introducing superheated steam into the spinning chimney at a temperature above 250° C. as the spinning medium in an amount of at least 20 kg/h, if the chimney diameter is less than or equal to 28 cm, or if the chimney diameter is greater than 28 cm, in an amount of at least 20 kg/h increased by up to a factor H, wherein factor H is equal to the chimney cross-section/615 cm^2,
(3) feeding the spinning medium and spinning solvent to a recovery step at the end of the spinning chimney, and
(4) maintaining a take-off speed of the threads from technique of at least 250 m/min.

5,057,261

PROCESS FOR PRODUCING MODIFIED ULTRAHIGH-MOLECULAR-WEIGHT POLYOLEFINS

Yoshiji Ohori, and Hirofumi Harazoe, both of Waki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 219,574, Jul. 15, 1988, Pat. No. 4,927,871. This application Nov. 6, 1989, Ser. No. 431,833
Claims priority, application Japan, Jul. 17, 1987, 62-177227
Int. Cl.[5] D01F *6/04;* **D01D** *1/04*
U.S. Cl. 264—210.6 **2 Claims**



1. A process for producing a stretched molded article of a graft-modified ultrahigh-molecular-weight polyolefin composition, which comprises

mixing 5 to 80% by weight of a powder having a particle diameter of 1 to 500 μm of an ultrahigh-molecular-weight polyolefin having an intrinsic viscosity [η] of 5 to 30 dl/g, 20 to 95% by weight of a normally solid flowability improver (B) having a melting point 20°–70° C. lower than the melting point of the ultrahigh-molecular-weight polyolefin (A), 0.1 to 20 parts by weight, per 100 parts by weight of the ultrahigh-molecular-weight polyolefin (A), of a monomer (C) selected from the group consisting of ethylenically unsaturated carboxylic acids, derivatives of the carboxylic acids, ethylenically unsaturated epoxy monomers and ethylenically unsaturated silane monomer, and 0.01 to 5 parts by weight, per 100 parts by weight of the ultrahigh-molecular-weight polyolefin (A), of a radical initiator (D) at the melting point of the flowability improver (B) or a higher temperature but below the melting point of the ultrahigh-molecular-weight polyolefin (A) to form a dispersion in which the flowability improver (B) forms the dispersion medium and the ultrahigh-molecular-weight polyolefin (A) forms the disperse phase, the monomer (C) and the radical initiator (D) exist dissolved or uniformly dispersed in the dispersion medium, and the ultrahigh-molecular-weight polyolefin (A) exists swollen with the flowability improver (B);

melt-kneading the dispersion at the melting point of the ultrahigh-molecular-weight polyolefin (A) or a higher temperature;

extruding the melt-kneaded mixture through a die to form an extruded article;

stretching the extruded article; and

removing the flowability improver (B) from the molded article before, during or after the stretching.

5,057,262

PROCESS FOR MELT EXTRUDING A SURFACE-SEGREGATABLE THERMOPLASTIC COMPOSITION

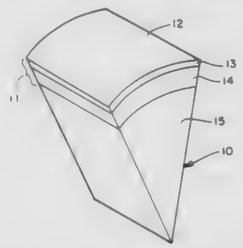
Ronald S. Nohr, Roswell, and J. Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 181,359, Apr. 14, 1988, Pat. No. 4,923,914. This application Jan. 17, 1990, Ser. No. 466,556
Int. Cl.[5] D01F *1/10*
U.S. Cl. 264—211 **6 Claims**

1. A method for preparing a fiber or film having a differential, increasing concentration of an additive from the center to the surface thereof, such that the concentration of additive in at least one of the interfacial surface, effective surface, and subsurface of the fiber or film is greater than the average concentration of additive in the core of the fiber or film, thereby imparting to the surface of the fiber or film at least one desired characteristic which otherwise would not be present, which method comprises melting a mixture of at least one thermoplastic polymer and at least one additive having at least two moieties, A and B, and extruding the resulting melt through a die at a shear rate of from about 50 to about 30,000 sec^{-1} and a throughput of no more than about 5.4 kg/cm/hour, in which:

(A) moiety A and moiety B act as a single molecular unit which is compatible with said polymer at melt extrusion temperatures but is incompatible at temperatures below melt extrusion temperatures, but each of moiety A and moiety B, taken as separate molecular units, is incompatible with said polymer at melt extrusion temperatures and at temperatures below melt extrusion temperatures;

(B) moiety B has at least one functional group which imparts to said additive at least one desired characteristic;

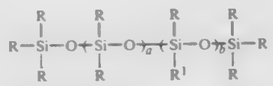


(C) said additive is miscible with said polymer at melt extrusion temperatures, under which conditions said additive and said polymer form a metastable solution, but as the temperature drops below melt extrusion temperatures, said additive becomes significantly less compatible with said polymer and, concurrently, the polymer begins to solidify, with both events contributing to the rapid, controlled surface segregation of said additive;

(D) the molecular weight of said additive is in the range of from about 400 to about 15,000; and

(E) the weight ratio of said polymer to said additive is in the range of from about 6 to about 350;

with the proviso that said additive cannot be a compound having the general formula,



in which each R independently is a monovalent organic group selected from the group consisting of alkyl groups; R^1 is a monovalent organic group containing at least one ethyleneoxy group, vicinal epoxy group, or amino group; and a and b, which can be the same or different, each have a value of at least 1.

5,057,263

METHOD OF FORMING A PIPE SOCKET

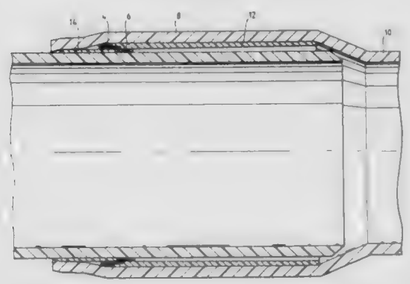
Christer Bengtsson, Varnamo, Sweden, assignor to Forsheda AB, Forsheda, Sweden

Division of Ser. No. 259,126, Oct. 18, 1988, Pat. No. 4,984,831. This application Aug. 3, 1989, Ser. No. 388,802
Claims priority, application Sweden, Oct. 29, 1987, 8704231
Int. Cl.[5] B29C *45/14, 57/00*
U.S. Cl. 264—249 **5 Claims**

1. A method of forming a pipe socket at the end portion of a continuous pipe having a substantially uniform diameter, said pipe end portion being made of a thermoplastic material, comprising the steps of:

providing an annular sleeve having opposite ends and having at least one opening therein intermediate its ends;

injection molding to said sleeve, at a position intermediate the ends thereof, an outer sealing ring adapted for sealing against an outer surface of the sleeve and an inner surface of the pipe end portion and an inner sealing ring adapted for sealing against an inner surface of the sleeve and an outer surface of a spigot end of a connecting pipe introduced into the socket, said step of injection molding connecting said outer sealing ring to said inner sealing ring through said intermediate opening to bond said rings to said sleeve;



heating the pipe end portion and expanding the heated pipe end portion; and

molding the heated pipe end portion around said sleeve and said outer sealing ring whereby the outer sealing ring seals said pipe end portion in relation to said sleeve, said molding step forming the entire socket and said sleeve extending substantially the entire length of the socket and defining an inner surface of the socket.

5,057,264

RAPIDLY CRYSTALLIZING POLYPHENYLENE SULPHIDE COMPOSITIONS

Peter Bier, Krefeld; Klaus Reinking, Wermelskirchen; Ludwig Bottenbruch, and Ernhard Tresper, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 172,638, Mar. 24, 1988, abandoned, which is a continuation of Ser. No. 894,680, Aug. 8, 1986, abandoned. This application Aug. 1, 1989, Ser. No. 390,494
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529838
Int. Cl.[5] C08F *265/04;* **B29C** *45/00, 35/12*
U.S. Cl. 264—328.1 **4 Claims**

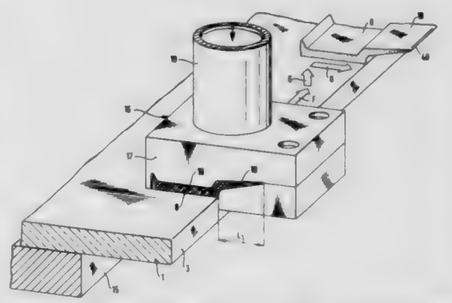
4. Process for injection molding highly crystalline rapidly crystallizing thermoplastic compositions wherein a mixture of a polyphenylene sulphide having a melt viscosity of at least 5 Pas, measured at 306° C. and at a shear stress of 10^2 Pa, and an oligomeric aliphatic ester having at least two recurring ester monomeric units and a maximum molecular weight, expressed as a number average, of 6000 are injection molded into molds having a temperature not higher than 120° C., the amount of oligomeric aliphatic ester being so chosen that the injection molded polyphenylene sulphide component has at least 70% of the degree of crystallinity achieved when a component of unmodified polyphenylene sulphide is injection molded at mold temperatures of at least 130° C.

5,057,265

METHOD OF MAKING A SPACER FOR A WINDSHIELD BRACKET

Heinz Kunert, Cologne; Gerd Cornils, Merzenich-Girbelsrath, and Heinrich Schnitter, Simmerath, all of Fed. Rep. of Germany, assignors to Saint Gobain Vitrage International, Courbevoie, France

Continuation-in-part of Ser. No. 360,654, Jun. 2, 1989, Pat. No. 4,933,032. This application Nov. 14, 1989, Ser. No. 436,280
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1989, 3930414
Int. Cl.[5] B29C *47/02*
U.S. Cl. 264—511 **26 Claims**



1. A process for providing a spacer upon a glazing which comprises:

guiding extrusion die means along and against an edge of said glazing while feeding a settable polymer to said die means and thereby forming a profiled extrudate of said polymer as a spacer upon a surface of said glazing adjacent said glazing edge, said polymer having viscosity and shape retention characteristics sufficient to said forming including

forming said spacer so as to have a lip portion which is oriented essentially parallel to the glazing surface and which extends beyond the edge of said glazing without support.

5,057,266

METHOD OF MAKING A HOLLOW POLYETHYLENE TEREPHTHALATE BLOW MOLDED ARTICLE WITH AN INTEGRAL EXTERNAL PROJECTION SUCH AS A HANDLE

Samuel L. Belcher, Cincinnati, Ohio, assignor to Sabel Plastechs, Inc., Cincinnati, Ohio

Division of Ser. No. 222,186, Jul. 21, 1988, Pat. No. 4,993,931. This application Oct. 20, 1989, Ser. No. 424,400
The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.
Int. Cl.[5] B29C *45/14, 49/20*
U.S. Cl. 264—513 **5 Claims**

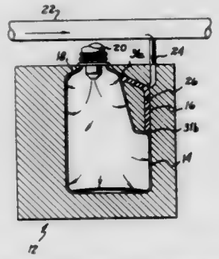
1. A method of making a hollow blow molded article of polyethylene terephthalate having an integral injection molded polyethylene terephthalate projection bonded to and extending from an exterior wall section thereof which is free of injection molded rings encircling the article and passing through the point where the projection bonds to the exterior wall section thereof, comprising the steps of:

(a) blow molding a hollow article of polyethylene terephthalate;

(b) inserting said hollow blow molded article of polyethylene terephtalate into a hollow article-defining blow mold cavity of a combination blow mold and injection mold having a projection-defining injection mold cavity which is physically separate and independent from the blow mold cavity except for communicating at an interface

therebetween, wherein the hollow article-defining blow mold cavity has an interior wall surface which corresponds to the exterior surface of the hollow blow molded article other than at said interface whereat the projection is to be bonded to the exterior wall section of the article, the projection-defining injection mold cavity defines the projection extending from said exterior wall section of the article, and the interface whereat the blow mold and injection mold cavities are in communication with each other corresponding to the location on the article wall from which the projection extends;

(c) closing the combination mold;



(d) injecting gas into the interior of said hollow blow molded article when said combination mold is closed to hold said location on said wall of said hollow article proximate said interface whereat the blow mold and injection mold cavities are in communication with each other;

(e) injection molten polyethylene terephthalate into the injection mold cavity while the gas is injected into the interior of the hollow article to form the integral injection molded projection bonded to said wall of the hollow blow molded article at the interface whereat the injection mold cavity communicates with the blow mold cavity;

(f) opening the combination mold; and

(g) removing the hollow blow molded article with integral injection molded projection from the combination mold.

5,057,267

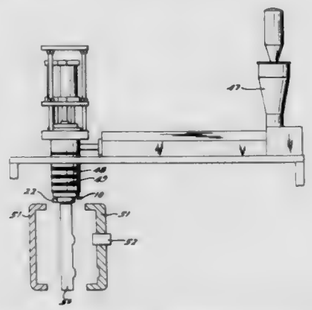
APPARATUS AND METHOD FOR FORMING HOLLOW PARISONS OF VARIABLE WALL THICKNESS

Robert D. Seizert, Canton, and James R. Osborne, Pontiac, both of Mich., assignors to Solvay Automotive, Inc., Houston, Tex.

Filed Jan. 10, 1990, Ser. No. 463,264

Int. Cl.[5] B29C *47/22*

U.S. Cl. 264—541 **34 Claims**



1. A parison forming device, comprising a means defining an orifice creating an outer circumferential perimeter of an annular opening, a mandrel assembly concentric to said orifice, creating an inner circumferential perimeter of said annular opening, and at least one radially displaceable slide, equipped with at least one individual actuator, defining the inner circumferential perimeter of said annular opening, attached to said mandrel assembly, wherein said slide moves radially along radial confines situated within said mandrel assembly and said radial slide's position is established by said actuator situated within said mandrel assembly.

19. A method for the formation of a cylindrical parison of variable wall thickness, comprising the steps of extruding a hollow parison, and varying a circumferential wall thickness at selected locations about an inner circumference of said parison via movement of at least one radially displaceable slide, equipped with at least one individual actuator, in contact with an interior surface of said extruding parison, wherein said slide moves radially along radial confines situated within a mandrel assembly, and movement of said slide's radial position responds to movement of said actuator located within the periphery of the inner surface of said slide.

5,057,268

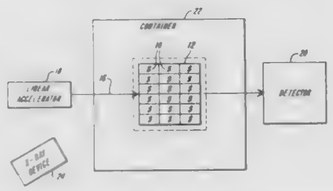
METHOD AND COMPOSITION OF MATTER FOR DETECTING LARGE QUANTITIES OF PAPER CURRENCY

Richard A. Muller, Berkeley, Calif., assignor to The MITRE Corporation, Bedford, Mass.

Filed Dec. 19, 1990, Ser. No. 629,994

Int. Cl.[5] G01N *23/221*; G21G *1/12*

U.S. Cl. 376—157 **10 Claims**



6. A method for detecting large concentrations of monetary currency in the form of sheets of principally a cellulose material comprising,

deuterating each sheet so that it contains at least 0.1 mg of deuterium for each $1.00 (U.S.) in value of the note,

interrogating the concentration of deuterated notes with a photon beam in the x-ray spectrum having an energy of at least 2 MeV, and

detecting the neutrons produced by the interrogation.

5,057,269

PRODUCTION OF ALUMINUM-26

Fred J. Steinkruger, and Dennis R. Phillips, Los Alamos, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 17, 1990, Ser. No. 628,125

Int. Cl.[5] G21G *1/10*

U.S. Cl. 376—192 **4 Claims**

1. A method for producing an aluminum isotope having an atomic weight of about 26 comprising:

a. exposing potassium chloride to a proton beam of sufficient energy to cause spallation of the potassium chloride for a time period sufficient for said spallation to take place;

b. dissolving said exposed potassium chloride and spallation products in hydrochloric acid or potassium hydroxide;

c. adjusting the pH of the solution from step b to about 6.0 using potassium hydroxide or hydrochloric acid;

d. mixing the solution from step c with an organic extracting agent and then separating the mixture into a first organic phase and a first aqueous phase;

e. subjecting said first organic phase to at least one back-extraction with hydrochloric acid and discarding the organic phase;

f. mixing said first aqueous phase with an organic extracting agent, separating the mixture into a second organic phase and an aqueous phase and discarding the aqueous phase;

g. subjecting said second organic phase to at least one back-extraction with hydrochloric acid and discarding the organic phase;

h. combining said aqueous phases from said back-extractions;

i. evaporating said combined aqueous phases to dryness and redissolving at least once in 16 N nitric acid;

j. evaporating the solution from step i to dryness and redissolving at least once in 12 N hydrochloric acid; and

k. subjecting the solution from step j to an ion exchange procedure to produce a substantially pure solution of Al-26.

5,057,270

INSTRUMENTATION ARRANGEMENT FOR A PRESSURIZED WATER NUCLEAR REACTOR

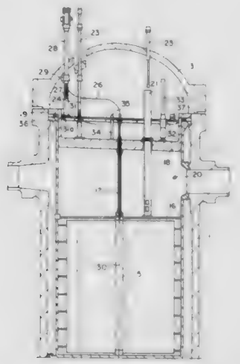
Gérard Chevereau, Le Raincy, France, assignor to Framatome, Courbevoie, France

Filed Aug. 25, 1989, Ser. No. 398,609

Claims priority, application France, Aug. 25, 1988, 88 11224

Int. Cl.[5] G21C *17/10*

U.S. Cl. 376—254 **8 Claims**



1. Instrumentation device for the core of a pressurized water nuclear reactor comprising a generally cylindrical vessel (**1**) arranged vertically and having an upper part closed by a closure head (**3**), a core (**4**) consisting of adjoining fuel assemblies (**5**) placed vertically inside the reactor vessel (**1**), upper internal equipment (**20**) arranged above the core and comprising an upper core plate (**16**) resting on the fuel assemblies (**5**) and a support plate (**18**) arranged above the core plate (**16**), the upper core plate and support plate being horizontal and connected together by vertical braces (**17**) and a set of tubular members (**23**, **25**, **28**) for passing through the closure head (**3**), the instrumentation device comprising a plurality of measurement conduits (**26**) containing neutron flux detectors, each of the neutron flux detectors passing through the closure head and entering an instrumentation tube (**30**) of a fuel assembly (**5**), the instrumentation device further comprising, between the vessel closure head (**3**) and the support plate (**18**), a plate for distributing and guiding (**31**) the measurement conduits (**26**), said plate being fastened onto the support plate (**18**) in a parallel arrangement and above the support plate (**18**) by vertical stanchions (**34**) fastened onto the support plate (**18**), to the upper part of which stanchions the distribution plate (**31**) is removably attached, the distribution plate (**31**) having passage openings for positioning members (**33**) carried by the support plate (**18**) and receiving vertical instrumentation columns (**27**) in positions corresponding to the positions of the tubular members (**28**) passing through the closure head (**3**) and means (**37**) for hooking up on its upper face and being integrally attached on its lower face directed towards the support plate (**18**) to a plurality of vertical guide tubes (**38**) in positions corresponding to positions of said tubular braces (**17**) for the upper internal equipment (**20**) in which the guide tubes (**38**) are engaged, each of the guide tubes (**38**) receiving at least one measurement conduit (**26**) originating from an instrumentation column (**27**) in order to guide it through the upper internal equipment (**20**) from the distribution plate (**31**) to the entry of an instrumentation tube (**30**) of a fuel assembly (**5**).

5,057,271

PROTECTION SYSTEM FOR THE BASEMAT REACTOR CONTAINMENT BUILDINGS IN NUCLEAR POWER STATIONS

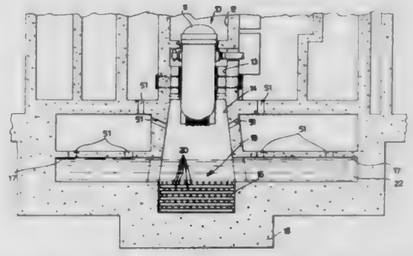
Arnaldo Turricchia, Rome, Italy, assignor to Enel-Ente Nazionale Per L'Energia Elettrica, Rome, Italy

Filed Apr. 10, 1990, Ser. No. 508,074

Claims priority, application Italy, Apr. 13, 1989, 20115 A/89

Int. Cl.[5] G21C *9/00*

U.S. Cl. 376—280 **16 Claims**



1. A device for protecting a basemat of a reactor containment building of a nuclear power station against degradation by a flow of molten material emanating from a reactor during an accident in the nuclear power station, wherein the reactor is a pressure vessel and the containment building has a cavity therebelow, wherein the device comprises a structure located in the cavity, wherein said structure comprises layers of stainless steel beams, and wherein said beams are immersed in water so that said layers of beams intercept and quench the flow of molten material during an accident in a nuclear power station.

5,057,272

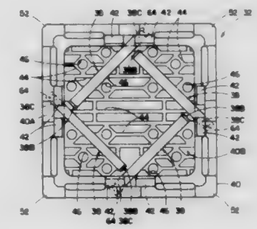
NUCLEAR FUEL ASSEMBLY TOP NOZZLE WITH IMPROVED ARRANGEMENT OF HOLD-DOWN LEAF SPRING ASSEMBLIES

Edmund E. DeMario, and Charles N. Lawson, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 1, 1989, Ser. No. 444,656

Int. Cl.[5] G21C *3/32*

U.S. Cl. 376—446 **19 Claims**



1. A top nozzle for use in a fuel assembly having a plurality

of guide thimbles for mounting said top nozzle, said top nozzle comprising:

(a) a lower adapter plate having a periphery bounding an interior thereof mountable to the guide thimbles;

(b) a plurality of guide structures attached to and extending along said periphery of said adapter plate and upwardly therefrom;

(c) an upper hold-down plate mounted to said guide structures for slidable movement relative thereto such that said upper plate can move toward and away from said interior of said lower plate within the space bounded by said guide structures as said upper plate slidably moves along said guide structures; and

(d) a plurality of leaf spring assemblies interposed between and engaged with said lower and upper plates so as to yieldably support said upper plate in spaced relation above said lower plate and bias said upper plate for movement away from said lower plate;

(e) said leaf spring assemblies being provided in a non-peripheral arrangement relative to said periphery of said lower plate in which said assemblies cross said interior of said lower plate in a diagonal fashion between adjacent ones of said guide structures.

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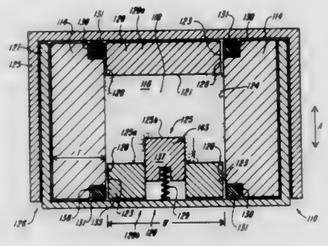
METHOD FOR UNIAXIAL COMPACTION OF MATERIALS IN A COLD ISOSTATIC PROCESS

Andrew D. Hanson, Derry, N.H., assignor to Industrial Materials Technology, Inc., Andover, Mass.

Filed Nov. 29, 1990, Ser. No. 620,159

Int. Cl.[5] B22F *1/00*

U.S. Cl. 419—68 **16 Claims**



1. A cold isostatic pressing method using fluid pressure to compact a material charge held in a flexible mold, the method comprising the steps of

placing a hard die inside the mold, the die defining a receiver which has a longitudinal axis, and

placing at least one tooling member and a material charge in the receiver such that when the hard die, tooling member and charge are sealed in the mold, pressure applied to the sealed mold will force the tooling member and the charge together to cause uniaxial compaction of the charge in the receiver along the longitudinal axis of the receiver.

5,057,274

DIE CAST HEAT TREATED ALUMINUM SILICON BASED ALLOYS AND METHOD FOR PRODUCING THE SAME

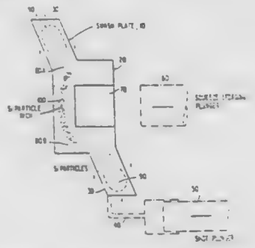
Kenichiro Futamura, and Keiichiro Otsu, both of Aichi, Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Continuation of Ser. No. 355,892, May 24, 1989, Pat. No. 4,934,442, which is a continuation of Ser. No. 207,040, Jun. 15, 1988, abandoned, which is a continuation of Ser. No. 124,438, Nov. 23, 1987, abandoned, which is a continuation of Ser. No. 867,665, May 28, 1986, abandoned. This application Feb. 27, 1990, Ser. No. 485,919

Claims priority, application Japan, Jun. 19, 1985, 60-131656

Int. Cl.[5] C22C *21/04, 21/02*

U.S. Cl. 420—534 **7 Claims**



1. A heat treated shaped aluminum silicon alloy sliding material produced by a two step die-casting process consisting essentially of, based on alloy weight, of from 13 to 25 wt % silicon, from 2 to 6 wt % copper, up to 1 wt % magnesium, balance aluminum, the microstructure of said aluminum silicon alloy particle consisting of:

primary silicon and eutectic silicon particles dispersed in an aluminum matrix;

wherein said primary silicon particles vary in size, shape and volume three dimensionally and have a size less than 40 millimicrons, said primary silicon particles also having their corners rounded due to a rotation of the primary silicon particles during a second step of said two step die-casting process;

wherein said eutectic silicon particles are essentially spherical in shape and the majority thereof have a size less than 5 millimicrons; and

wherein substantially all of the primary silicon particles are greater in size and volume than the eutectic silicon particles.

5,057,275

ANALYTIC READER DEVICE

Robert G. Neuman, Philadelphia, Pa., assignor to Exocell, Inc., Philadelphia, Pa.

Filed Sep. 16, 1988, Ser. No. 245,423

Int. Cl.[5] G01N *21/01*

U.S. Cl. 422—55 **21 Claims**

1. An analytical reader device for detecting the presence of an analyte in a sample, said device comprising:

a fixed support member;

a plurality of aligned standard units supported on said fixed support member and disposed generally along a line;

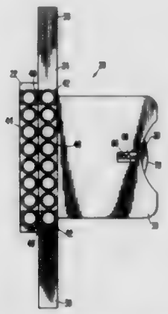
a movable support member adjacent to said fixed support member;

a plurality of aligned sample wells supported on said movable support member and disposed generally along a line adjacent and parallel to said standard units;

said movable support member being movable along the line of said sample wells to adjust the position of said sample wells relative to said standard units to position in alignment by visual inspection at least one of said sample wells of comparable visual property related to contents therein with at least one of said standard units to thereby define a relative corresponding position;

a dial rotatable about an axis fixed relative to said fixed support member;

a gear mechanism which rotates said dial about the axis as said movable support member is moved relative to said fixed support member to the relative corresponding position; and



indicating means associated with said dial for indicating the concentration of a substance in said sample wells when said movable support member is in the relative corresponding position.

5,057,276

PROCESS FOR THE PREPARATION OF REAGENT LAYERS CONTAINING HYDROPHOBIC REAGENTS

Günter Helling, Odenthal; Wolfgang Himmelmann, Leverkusen, both of Fed. Rep. of Germany; Gary Oosta, Elkhart, Ind.; Helmut Reiff, Leverkusen, Fed. Rep. of Germany; Alexander Riebel, Leverkusen, Fed. Rep. of Germany, and Karl Schranz, Odenthal-Hahnenberg, Fed. Rep. of Germany, assignors to Miles Inc., Elkhart, Ind.

Filed May 22, 1987, Ser. No. 52,998

Claims priority, application Fed. Rep. of Germany, May 28, 1986, 3618049

Int. Cl.[5] G01N *21/78*

U.S. Cl. 422—56 **8 Claims**

1. Process for the preparation of a reagent layer for placement upon a substrate, said layer containing hydrophobic reagents wherein an aqueous dispersion of hydrophobic reagents is prepared, said aqueous dispersion being prepared by adding hydrophobic reagents to an ionomeric polymer and dissolving the resulting combination in an organic solvent, thereafter adding water to the resulting mixture and then removing the organic solvent.

5,057,277

CHEMICALLY SENSITIVE, DIMENSIONALLY-STABLE ORGANOSILICON MATERIAL COMPOSITION

Ganapati Mauze, Sunnyvale; Robert R. Holloway, Montara, and Darlene J. Spira-Solomon, Stanford, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 17, 1988, Ser. No. 259,015

Int. Cl.[5] G01N *21/00, 31/22*

U.S. Cl. 422—56 **19 Claims**

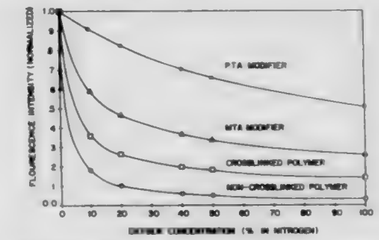
1. An analyte-concentration-responsive, dimensionally stable material composition comprising:

a predetermined amount of continuous phase silicone;

filler material dispersed in said silicone for strengthening said silicone so that it has a desired level of dimensional stability;

a selected amount of radiative material being dispersed within said silicone and having a radiativity which varies in accordance with concentrations of a selected analyte; and

a modifier material in said material composition for establishing a prescribed range of radiativity of said radiative material; said silicone being non-reactive to and not cross-



linked with the modifier material; and said modifier material being a substance which will react and cross-link with certain silicones other than said silicone.

5,057,278

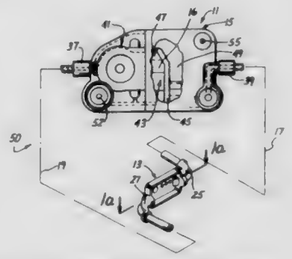
STERILE LOOP CALIBRATION SYSTEM

Thomas P. Maxwell, Santa Ana, and Thomas G. Hacker, Anaheim, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 26, 1990, Ser. No. 514,704

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—81 **35 Claims**



1. A sterile-loop calibration system comprising:

a sensor cassette having a flow-through passage and including at least one sensor to be calibrated, said sensor being responsive to a characteristic of a gas;

means defining a chamber;

means including said flow-through passage and said chamber for defining a closed, endless loop;

a sterile calibration liquid in said endless loop, said endless loop providing an endless path for circulation of the sterile calibration liquid whereby no calibration liquid is added to the endless loop and substantially little or no calibration liquid is drained from the endless loop during operation;

a gas injection passage through which a gas can be injected into the sterile calibration liquid in said endless loop;

means in said endless loop for mixing the gas and the sterile calibration liquid whereby the sterile calibration liquid and the gas can be circulated through the endless loop to thereby permit calibration of the sensor; and

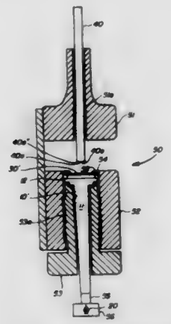
a gas vent leading from said endless loop to the exterior of the endless loop.

5,057,279

PRESSURIZED MEMBRANE CHEMICAL SENSOR

Scott M. Inman, San Diego; Stephen H. Lieberman, La Mesa, and Erik J. Stromvall, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 13, 1988, Ser. No. 257,678
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—82.07 5 Claims



1. An apparatus for providing indications of concentration of a metal ion in solution compromising:

means for emitting radiation at an illumination wavelength;

means for detecting radiation at a fluorescence wavelength;

a reservoir of a ligand having the property to fluoresce at said fluorescence wavelength when said metal ion is complexed therewith and is radiated with said illuminating wavelength;

a permeable membrane having a first side and a second side, said membrane contacting said ligand on the first side and said solution on the second side;

means coupled to said reservoir for pressurizing the ligand to exude controlled amounts thereof through said permeable membrane to contact said solution and be complexed with said metal ion;

a fiber optic cable having at least one illuminating optical fiber disposed to receive said illuminating wavelength at an input end and optically couple it to an illuminating output end and at least one detecting optical fiber disposed to transmit said fluorescence wavelength to the radiation detecting means from a detecting input end, said illuminating output end and said detecting input end being disposed to illuminate said second side of said membrane and spaced a sufficient distance from the exuded ligand on said permeable membrane to allow said solution to flow thereby so that said metal ion is complexed and said fluorescence wavelength is indicated.

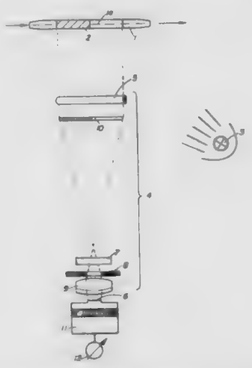
5,057,280

GAS MEASURING AND WARNING DEVICE

Burkhard Stock, and Jürgen Krüger, both of Lübeck, Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Feb. 10, 1987, Ser. No. 12,895
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1986, 3605047
Int. Cl.[5] G01N *21/01*
U.S. Cl. 422—83 8 Claims

1. In a gas measuring and warning device including a test tube having a reaction substance forming a reaction image when it is traversed by a gas to be detected, photoelectric sampling means for the test tube and an evaluating circuit connected to said photoelectric sampling means for producing a measurement signal; the improvement wherein said photoelectric sampling means comprises, in combination: at least one source of light directed at the test tube reaction image, a row of photosensitive sensor elements for observation of said reaction image, and an imaging optical system including a cylindrical lens having a cylinder axis which is parallel to the longitudinal axis of said test tube and to said row of photosensitive sensor elements and an imaging lens for projecting an intermediate test tube reaction image produced by said cylindrical lens onto said row of photosensitive sensor elements.

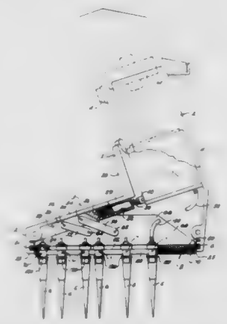


5,057,281

ADJUSTABLE MULTI-CHANNEL PIPETTER

Victor A. Torti, Brookline; Gary E. Nelson, Hollis, both of N.H.; R. Laurence Keene, Brookline, and George P. Kalmakis, Reading, both of Mass., assignors to Matrix Technologies Corporation, Lowell, Mass.

Filed May 7, 1990, Ser. No. 519,836
Int. Cl.[5] B01L *3/02*
U.S. Cl. 422—100 20 Claims



1. In a multi-channel pipetting system including a plurality of passages, each of said passages for transfering a liquid volume;

means for drawing a liquid volume into each of said passages; and

means for expelling each of the liquid volumes from each of said passages through a pipette tip in fluid communication therewith wherein the improvement comprises

a housing for the pipetting system;

a plurality of pipette tip fittings with one tip fitting connected to each passage and slidably mounted on the housing enabling independent adjustment of the distance between adjacent ones of said fittings,

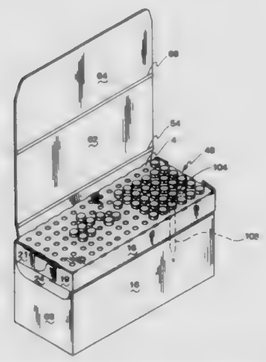
and means for releasably securing each of said fittings in any desired position.

5,057,282

PIPETTE UNITIZER AND SHIPPER

Alan J. Linder, Waukesha, Wis., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Jul. 27, 1990, Ser. No. 558,582
Int. Cl.[5] B01L *3/00;* B65D *5/00*
U.S. Cl. 422—104 20 Claims



16. A two-part container for holding a plurality of elongated objects upright in a predetermined array pattern comprising:

a first container part comprising

an upper array holding panel having a plurality of openings therethrough in a predetermined array pattern;

a lower array holding panel lying beneath and spaced from said upper array holding panel, said lower array holding panel having a plurality of openings therethrough that substantially match in vertical alignment and in array pattern the plurality of openings in the upper array holding panel; and

spacing means connected between said upper and lower array holding panels for holding said panels in aligned, spaced relation until frangible connections in said spacing means are fractured by a compressive force exerted on said upper and lower array holding panels causing them to move toward each other; and

a second container part comprising an open-topped box having a base panel and a pair of substantially parallel support flaps extending substantially vertically upward from said base panel, for engaging said first container part and supporting it above said base panel with said upper array holding panel lying substantially parallel to said base panel and spaced therefrom to define a cavity between said base panel and said first container part into which the elongated objects may extend.

5,057,283

AUTOMATIC APPARATUS FOR CLEANING DENTISTRY HAND-PIECES OR TURBINES

Bernhard Guggenheim, Erlenbach, Switzerland; Michel Seigneurin, Bruthiers, France; Bernard Lacour, and Jean-Paul Jacoulet, both of Besancon, France, assignors to Micro-Mega S.A., Besancon, France

Filed Jul. 25, 1988, Ser. No. 223,904
Claims priority, application France, Jul. 24, 1987, 87 10654
Int. Cl.[5] B08B *3/02, 3/04*
U.S. Cl. 422—116 8 Claims

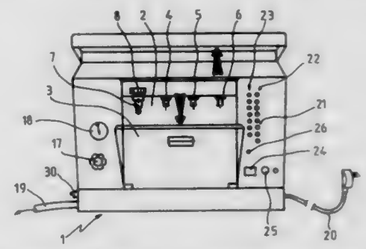
1. Automatic apparatus for cleaning one or more dental handpieces or turbines, comprising a housing having a compartment for receiving handpieces or turbines to be cleaned, said compartment having a hinged door,

a plurality of dental motor noses projecting downwardly from a top of said compartment so as to receive dental handpieces or turbines to be cleaned, said noses being equipped with an internal shaft and driver,

means for driving said shafts of said motor noses in rotation,

fluid reservoirs in said housing comprising a water reservoir, a reservoir for a disinfectant fluid and a lubricant fluid reservoir,

a source of air under pressure, supply lines connecting said source of air to said fluid reservoirs and connecting said reservoirs to said motor noses, solenoid valves positioned



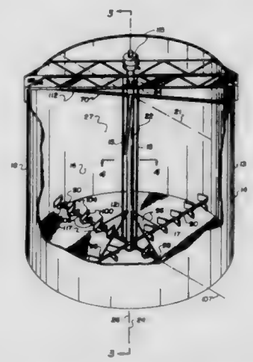
in said supply lines so as to control the transmission of the pressurized air to said reservoirs in predetermined timed sequence to propel the respective fluids through each of said supply lines and through said motor noses so that dental handpieces or turbines positioned thereon having internal shafts will be rotated by said shafts of said motor noses while fluids are passed through said handpieces, and further comprising a safety valve on said supply line of each of said motor noses to shut off said supply line of a motor nose when no handpiece is positioned thereon.

5,057,284

BIOSLURRY REACTOR FOR TREATMENT OF SLURRIES CONTAINING MINERALS, SOILS AND SLUDGES

Robert C. Emmett, Jr., Salt Lake City; Lawrence T. O'Connor, Midvale, and Gunter H. Brox, Salt Lake City, all of Utah, assignors to Envirotech, Menlo Park, Calif.

Continuation-in-part of Ser. No. 248,620, Jan. 21, 1987, Pat. No. 4,968,008, which is a continuation-in-part of Ser. No. 5,670, Jan. 21, 1987, Pat. No. 4,974,816, which is a continuation-in-part of Ser. No. 827,324, Feb. 7, 1986, Pat. No. 4,728,082. This application Mar. 13, 1989, Ser. No. 322,666
Int. Cl.[5] B01F *7/16, 7/18, 7/20;* C02F *11/02*
U.S. Cl. 422—225 12 Claims



1. A reactor vessel for use in treating through use of bacteria, slurries containing minerals, soils, or sludges, including such slurries as may be contaminated with hazardous waste organic

compounds, said slurries having a solids concentration by weight of approximately 6% or more, said vessel comprising:

a container means for containing a quantity of slurry;

an oxygen supply means mounted within said container means, said oxygen supply means including at least one flexible porous membrane diffuser adapted for receiving a supply of oxygen-containing gas and distributing said gas into said container means in a form of fine bubbles;

a mixing means for mixing and recirculating the slurry contained within said container means, said mixing means being positioned adjacent a bottom of said container means;

an exhaust gas recycling means mounted on said container means for drawing off a quantity of exhaust gas from said container means, treating said quantity of exhaust gas by extracting carbon dioxide therefrom, injecting oxygen into said quantity of exhaust gas and thereafter reintroducing said quantity of exhaust gas into said container means by means of said oxygen supply means;

wherein said container means is sealed to prevent escape of exhaust gas.

5,057,285

GAS GENERATOR/INDICATOR UNIT ADAPTED FOR USE IN AN UPRIGHT POSITION

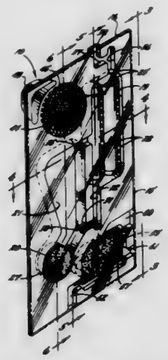
William E. Belt, Kansas City, Mo.; C. Frederick Avery, Rockford, Ill., and Vernon W. Klein, Kansas City, Mo., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed Mar. 9, 1987, Ser. No. 23,763

The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.

Int. Cl.[5] B01J *7/00*

U.S. Cl. 422—236 **4 Claims**



1. A generator unit for creating a predetermined gaseous atmosphere in the environment immediately surrounding the unit, said unit comprising a bubble pack including a first panel having inner and outer sides, bubble means made of flexible material formed in said first panel and projecting from said outer side of said first panel, a gas generating material disposed in said bubble means, a sealed ampoule disposed in said bubble means and containing an activating liquid, a second panel made of flexible material sealed to said inner side of said first panel and captivating said gas generating material and said ampoule in said bubble means, said ampoule being fringible and being capable of being broken when said flexible material is manually flexed and squeezed against said ampoule, the released liquid reacting with said gas generating material to cause a gas to be generated in said bubble means, passage means formed in said inner side of said first panel and leading from said bubble means to the atmosphere surrounding said generator unit, said passage means defining a tortuous path for the gas to flow from said bubble pack and into the atmosphere surrounding said generator unit while preventing said liquid from escaping from said bubble pack and into the surrounding atmosphere, said passage means in said first panel being closed by said second panel except at locations where said passage means initially lead from said bubble means and finally lead to the atmosphere surrounding said generator unit, said tortuous path being defined entirely by said passage means in said first panel, and said bubble pack is adapted to be located in a generally vertical position during use, said bubble means comprising first and second bubbles disposed alongside one another and each having an upper end and a lower end, said ampoule being located in said first bubble, said gas generating material being located in the lower end portion of said second bubble, a channel for liquid defined between said first and second panels and extending from the lower end portion of said first bubble to the lower end portion of said second bubble for carrying said activating liquid to said gas generating material when said ampoule is broken, and a channel for gas extending between said bubbles above said liquid channel for carrying the gas from said second bubble to said first bubble, said passage means communicating with the upper end portion of said first bubble.

5,057,286

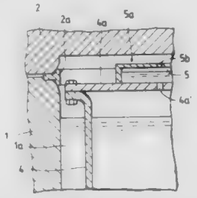
VESSEL FOR USE IN HYDROTHERMAL SYNTHESIS

Kotaro Chiba; Motohide Hatanaka, and Masayuki Kawai, all of Hokkaido, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 474,903

Int. Cl.[5] C30B *7/10*

U.S. Cl. 422—245 **9 Claims**



1. A vessel for use in hydrothermal synthesis, comprising:

a vessel body to be heated from outside;

an inner tubular vessel which is placed within said vessel body with a tubular gap being formed therebetween, said inner tubular vessel having an inner surface which is formed of a precious metal such as silver, gold or platinum, and having a cover with a first small hole therein; and

a buffer compartment for covering said first small hole, said buffer compartment having one wall which is defined by said cover and having the other wall with a second small hole therein, wherein said tubular gap communicates with an interior of said inner tubular vessel via said first and second small holes so that a pressure within said inner tubular vessel equilibrates with a pressure in the tubular gap.

5,057,287

LIQUID ENCAPSULATED ZONE MELTING CRYSTAL GROWTH METHOD AND APPARATUS

Edward M. Swiggard, Vienna, Va., assignor to SFA, Inc., Landover, Md.

Division of Ser. No. 265,533, Nov. 1, 1988, Pat. No. 5,007,980. This application Aug. 8, 1990, Ser. No. 564,420

Int. Cl.[5] C30B *27/02*

U.S. Cl. 422—248 **9 Claims**

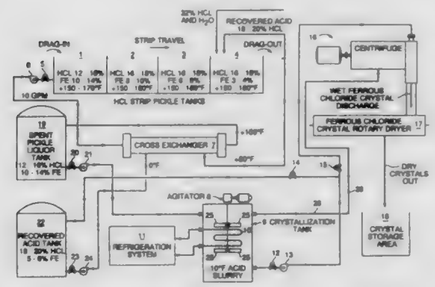
1. An apparatus for growing single crystals, comprising:

(a) a vessel comprising a pyrolytic crucible chemically resistant to molten Group III-V or II-VI material;

(b) a furnace with three successively adjacent and independent

degrees Fahrenheit and to about −10 degrees Fahrenheit without freezing the pickle liquor;

(b) cooling the pickle liquor by refrigeration means to a



temperature below about +20 degrees Fahrenheit to cause ferrous chloride crystals to form; and

(c) separating the ferrous chloride crystals from the supernatant.

5,057,292

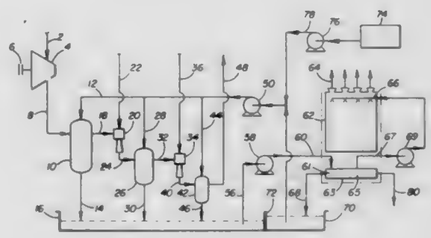
HYDROGEN SULFIDE ABATING COOLING TONER

Frank R. Monticelli, Jr., 1334 Wright St., Santa Rosa, Calif. 95404

Filed Dec. 6, 1989, Ser. No. 446,972

Int. Cl.[5] C01B *17/05*

U.S. Cl. 423—226 **8 Claims**



5,057,291

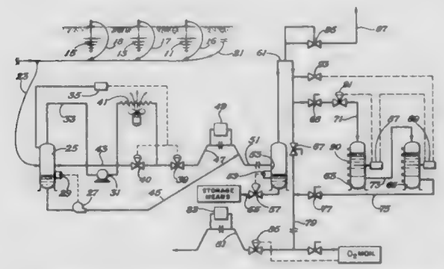
OXYGEN REMOVAL FROM GAS STREAMS

Edwin E. Fisher, and Richard B. Brantley, both of Midland, Tex., assignors to Vapor Compression, Inc, Midland, Tex.

Filed Feb. 5, 1990, Ser. No. 475,406

Int. Cl.[5] C01B *13/08;* **C07C** *7/12*

U.S. Cl. 423—219 **6 Claims**



1. A method of reducing the oxygen content of a natural gas stream below a predetermined maximum concentration initially with the range of 50–500 parts per million (ppm) comprising the steps of introducing the gas stream having the initial concentration in the range of 50–500 parts per million to a bed and passing the gas stream containing oxygen above said predetermined maximum concentration through a bed containing iron sulfide on a support in the presence of at least 17% by weight of water based on the weight of the iron sulfide and support at a velocity of between 2–10 feet per minute to give the natural gas stream a residence time of at least 1 minute and a temperature no greater than 120 degrees Fahrenheit such that oxygen concentration is reduced below said predetermined maximum concentration; and selling said natural gas stream after its oxygen content is reduced below said maximum concentration.

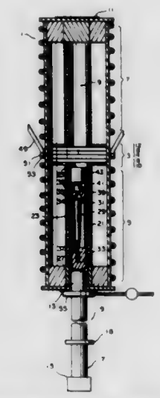
1. In a process for removing H_2S from a condensate comprising H_2S and water which comprises including with the condensate a catalyst in an amount sufficient to oxidize the H_2S to sulfur, introducing the condensate to the top portion of a cooling tower from which it flows downwardly against an upward flow of air whereby it is cooled and oxygenated and a portion of the condensate is evaporated to form a recycle liquid, collecting the recycle liquid in a water collection tray, discarding a portion of the recycle liquid corresponding generally to the non-evaporated portion of the condensate and recycling the remainder of the catalyst containing recycle liquid back to the condensate, an improvement comprising, carrying out said introducing step by:

adding the condensate to the recycle liquid in the water collection tray at first region thereof to form a recycle liquid-condensate mixture;

removing a portion of the mixture from a second region of the water collection try, said second region being spaced apart from said first region a distance selected to provide sufficient residence time of the mixture in the water collection try for the oxidation of the H_2S to be carried substantially to completion; and

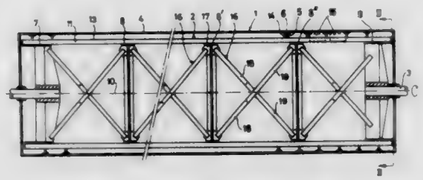
introducing the thus removed portion of the mixture to the top of the cooling tower whereby the condensate is thereby introduced to the top of the tower along with a proportionate amount of the recycle liquid.

dently temperature controlled furnace zones, including a central zone of shorter length than said vessel;
(c) a mechanism for controllably moving said vessel through said furnace zones; and



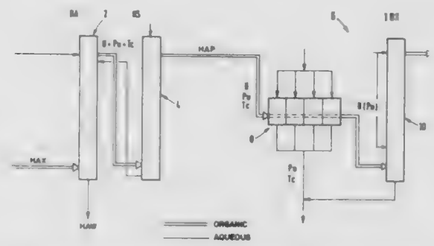
(d) means for tipping said vessel in said furnace to decant a molten encapsulant from said crucible.

5,057,288
DEVICE FOR STERILIZING PRODUCTS PACKED IN CYLINDRICAL CONTAINERS
Daniël L. Möllenkamp, Amsterdam, Netherlands, assignor to Stork Amsterdam B.V., Amsterdam, Netherlands
Filed May 17, 1988, Ser. No. 194,859
Claims priority, application Netherlands, May 18, 1987, 8701189
Int. Cl.[5] B65G *25/00*
U.S. Cl. 422—310 **4 Claims**



1. A device for sterilizing products packed in cylindrical containers, comprising:
(a) an elongated, essentially cylindrical housing, the housing having a circumferential wall which is provided, on the inside thereof, with a helically running, raised rib disposed thereon;
(b) an essentially cylindrical rotor located in the housing and which is drivable by a central shaft,
the rotor defining a cage comprising:
(1) a plurality of rings placed one behind another, the center line of which coincides with the axis of the rotor, and
(2) a plurality of raised ribs fastened to the circumference of the rings parallel to the axis of the rotor, the outer edges of the ribs being located near the inner edge of the helically running rib on the inner wall of the housing, so that spaces are formed between the ribs for receiving the cylindrical containers; and
(c) a plurality of bracing elements which are disposed, at an angle relative to the rotor shaft, within the rotor between neighboring rings to reinforce the rotor, said bracing elements comprising pipes,
wherein each pipe is made of parts which are formed of different materials, in a ratio such that the mean coefficient of expansion of each pipe is equal to the mean coefficient of expansion of the rings and the ribs of the rotor.

5,057,289
PROCESS FOR THE SEPARATION OF URANIUM FROM A RADIOACTIVE FEED SOLUTION CONTAINING TECHNETIUM
Wolfgang Issel, Karlsruhe; Werner Knoch, Springe, and Hartmut Ramm, Burgdorf, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft fur Wideraufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany
Filed Mar. 9, 1989, Ser. No. 321,636
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3809042
Int. Cl.[5] B01D *11/04*
U.S. Cl. 423—10 **2 Claims**



2. A process for separating uranium from a flowing stream of radioactive nitric acid feed solution containing uranium, plutonium and fission products including technetium, consisting of:
(a) flowing an organic extraction agent comprising tri-n-butylphosphate in an organic solvent countercurrent to said stream of feed solution to charge said organic extraction agent with U, Pu and fission products including Tc;
(b) washing said charged organic extraction agent in a countercurrent of nitric acid solution to remove fission products including Tc;
(c) flowing said charged organic extraction agent cross-current beneath multiple vertically-flowing individual streams of a reducing agent, comprising U(IV) nitrate and hydrazine nitrate, to remove Pu and remaining fission products including Tc from said charged organic extraction agent;
(d) flowing said charged organic extraction agent countercurrent to a solution of nitric acid to remove remaining Pu therefrom; and
(e) separating U from said organic extraction agent.

5,057,290
PROCESS AND APPARATUS FOR THE LOW TEMPERATURE RECOVERY OF FERROUS CHLORIDE FROM SPENT HYDROCHLORIC ACID PICKLE LIQUORS
Joseph C. Peterson, 3684 Waldon Pl., Carmel, Ind. 46032, and George A. Salof, 7708 Oakview La., Lenexa, Kans. 66216
Filed Apr. 23, 1990, Ser. No. 512,935
Int. Cl.[5] B01D *9/02;* **C01B** *7/07;* **C01G** *49/10*
U.S. Cl. 423—140 **9 Claims**

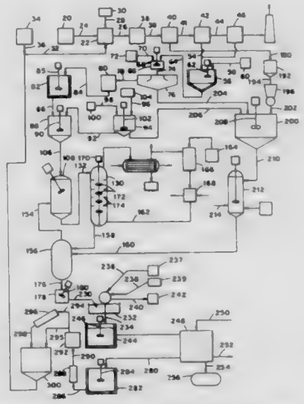
1. A process for recovering ferrous chloride from spent hydrochloric acid pickle liquors that have been used to pickle ferrous metals comprising:
(a) providing a spent hydrochloric acid pickle liquor having sufficient amounts of free hydrochloric acid and iron to allow subsequent precipitation of ferrous chloride crystals from the pickle liquor at temperatures below about +20

5,057,293
MULTI-STAGE PROCESS FOR REDUCING THE CONCENTRATION OF POLLUTANTS IN AN EFFLUENT
William R. Epperly, New Canaan, Conn.; Jeremy D. Peter-Hoblyn, Cornwall, United Kingdom; George F. Shulof, Jr., Wilton, Conn.; James C. Sullivan, Norwalk, Conn.; Barry N. Sprague, Bethlehem, Conn., and John H. O'Leary, Danbury, Conn., assignors to Fuel Tech, Inc., Rowayton, Conn.
Continuation-in-part of Ser. No. 22,716, Mar. 6, 1987, Pat. No. 4,777,024, and a continuation-in-part of Ser. No. 14,431, Feb. 13, 1987, Pat. No. 4,770,863, and a continuation-in-part of Ser. No. 22,799, Mar. 6, 1987, abandoned, and a continuation-in-part of Ser. No. 25,350, Mar. 13, 1987, Pat. No. 4,877,591, and a continuation-in-part of Ser. No. 25,493, Mar. 13, 1987, abandoned, and a continuation-in-part of Ser. No. 39,013, Apr. 15, 1987, Pat. No. 4,803,059, and a continuation-in-part of Ser. No. 50,198, May 14, 1987, Pat. No. 4,780,289, and a continuation-in-part of Ser. No. 100,128, Sep. 23, 1987, Pat. No. 4,863,705, and a continuation-in-part of Ser. No. 108,779, Oct. 14, 1987, Pat. No. 4,844,878, and a continuation-in-part of Ser. No. 132,801, Dec. 14, 1987, Pat. No. 4,830,839, and a continuation-in-part of Ser. No. 155,864, Feb. 2, 1988, Pat. No. 4,877,590, and a continuation-in-part of Ser. No. 207,292, Jun. 15, 1988, Pat. No. 4,863,704, and a continuation-in-part of Ser. No. 207,382, Jun. 15, 1988, Pat. No. 4,902,488. This application May 23, 1989, Ser. No. 416,317
Int. Cl.[5] C01B *21/00, 17/00;* **C01C** *3/00*
U.S. Cl. 423—235 **70 Claims**

1. A process for reducing the concentration of nitrogen oxides, sulfur trioxide or both in the effluent from the combustion of a carbonaceous fuel, the process comprising:
a. introducing a first treatment agent selected from the group consisting of gaseous ammonia, and an aqueous solution of urea or ammonia and mixtures thereof into the effluent at a first temperature zone in order to reduce the concentration of nitrogen oxides in the effluent; and
b. introducing a second treatment agent selected from the group consisting of urea, ammonia, hexamethylenetetraamine, an oxygenated hydrocarbon, a paraffinic hydrocarbon, an olefinic hydrocarbon, an aromatic hydrocarbon, an ammonium salt of an organic acid having a carbon to nitrogen ratio of greater than 1:1, a hydroxy amino hydrocarbon, a heterocyclic hydrocarbon having at least one cyclic oxygen, a five- or six-membered heterocyclic hydrocarbon having at least one cyclic nitrogen, hydrogen peroxide, guanidine, guanidine carbonate, biguanidine, guanylurea sulfate, melamine, dicyandiamide, calcium cyanamide, biuret, 1,1'-azobisformamide, methylol urea, methylol urea-urea condensation product, dimethylol urea, methyl urea, dimethyl urea, and mixtures thereof into the effluent at a second temperature zone in order to reduce the concentration of nitrogen oxides, sulfur trioxide, or both in the effluent, wherein said first and second treatment agents are introduced under conditions effective to lower the effluent pollution index.

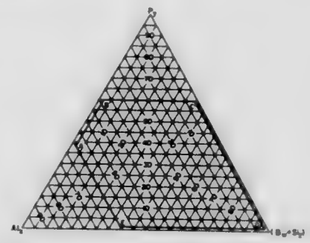
5,057,294
RECOVERY AND REGENERATION OF SPENT MHD SEED MATERIAL BY THE FORMATE PROCESS
Atul C. Sheth, Tullahoma; Jeffrey K. Holt, Manchester; Darryll G. Rasnake, Manchester, all of Tenn.; Robert L. Solomon, Seattle, Wash.; Gregory L. Wilson, Redmond, Wash., and Howard R. Herrigel, Seattle, Wash., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.
Filed Oct. 13, 1989, Ser. No. 421,617
Int. Cl.[5] B01J *8/00;* **C01B** *17/00*
U.S. Cl. 423—244 **10 Claims**

1. In an MHD method involving combustion of a sulfur-containing fossil fuel to produce a high-temperature flue gas wherein the gas is seeded with an ionizable alkali metal salt to render the gas electrically conductive by ionization of the alkali metal salt therein to enable generation of electricity by passage of the conductive gas through a magnetic field at a high velocity, and wherein alkali metal ions in the gas react with sulfur dioxide and slag produced by combustion of the fuel to form solid combustion products including a spent seed material containing the alkali metal sulfate and a slag material containing alkali metal aluminosilicates, an improvement in the method of recovering the alkali metal from the combustion products and regenerating the alkali metal to a sulfur-free form suitable for use in providing the seed material which comprises collecting the combustion products from the gas, dissolving



the alkali metal sulfate from the spent seed in water to provide an aqueous solution thereof, reacting the alkali metal sulfate in the solution with calcium hydroxide and carbon monoxide to form an alkali metal formate and calcium sulfate, adjusting the pH of the alkali metal formate solution to promote precipitation of any dissolved calcium salts and to suppress subsequent formation of formic acid, and employing the alkali metal formate solution as a source for the alkali metal salt seed material.

5,057,295
BORON-ALUMINUM-PHOSPHORUS-SILICON-OXIDE MOLECULAR SIEVE COMPOSITIONS
Edith M. Flanigen, White Plains, N.Y.; Richard T. Gajek, New Fairfield, Conn.; Brent M. T. Lok, New City, N.Y.; Robert L. Patton, Katonah, N.Y., and Stephen T. Wilson, Shrub Oak, N.Y., assignors to UOP, Des Plaines, Ill.
Continuation-in-part of Ser. No. 600,177, Apr. 13, 1984, abandoned. This application Mar. 28, 1986, Ser. No. 845,255
Int. Cl.[5] C01B *35/00*
U.S. Cl. 423—277 **29 Claims**



1. Crystalline molecular sieves comprising three-dimensional microporous framework structures of BO_2, AlO_2, PO_2 and SiO_2 tetrahedral units having an empirical chemical composition on an anhydrous basis expressed by the formula:

$$mR : (B_wAl_xP_ySi_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the molar amount of "R" present per mole of $(B_wAl_xP_ySi_z)O_2$ and has a value of zero to about 0.3; and "w", "x", "y" and "z" represent the mole fractions of boron, aluminum, phosphorus and silicon, respectively, present as tetrahedral oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D, and E of FIG. 1, said crystalline molecular sieves having a characteristic X-ray powder diffraction pattern which contains at least the d-spacings set forth in one of the following Tables C, F, J, N, P, T, V, W and X:

TABLE C

(BAPSO-14)

2θ	d (Å)	Relative Intensity
8.6–8.9	10.3–9.93	vs
13.0	6.81	w
21.9–22.2	4.06–4.00	w
25.4	3.51	w
27.5	3.24	w
29.7	3.01	w

TABLE F

(BAPSO-18)

2θ	d (Å)	Relative Intensity
9.6–9.65	9.21–9.16	vs
15.5–15.55	5.72–5.70	m
16.9–17.1	5.25–5.19	m
20.15–20.25	4.41–4.39	m
20.95–21.05	4.24–4.22	m
31.8–32.5	2.814–2.755	m

TABLE J*

(BAPSO-33)

2θ	d (Å)	Relative Intensity
9.25–9.55	9.56–9.26	w–m
12.5–12.9	7.08–6.86	vs
16.9–17.3	5.25–5.13	w–m
20.45–20.9	4.34–4.25	w–m
23.85–24.25	3.73–3.67	w–m
26.05–26.35	3.42–3.38	w–m
27.3–27.6	3.27–3.23	vs

*as-synthesized form

TABLE N

(BAPSO-36)

2θ	d (Å)	Relative Intensity
7.45–8.0	11.14–11.05	vs
8.1–8.3	10.91–10.65	w–m
16.3–16.6	5.44–5.34	w–m
18.9–19.4	4.70–4.57	w–m
20.7–21.0	4.29–4.23	w–m

TABLE P

(BAPSO-39)

2θ	d (Å)	Relative Intensity
9.2–9.6	9.61–9.21	m
13.1–13.5	6.76–6.56	m
17.8–18.4	4.98–4.82	w–m
20.8–21.3	4.27–4.17	m–vs
22.2–22.85	4.00–3.892	m–vs
26.4–27.05	3.376–3.296	w–m

TABLE T

(BAPSO-43)

2θ	d (Å)	Relative Intensity
12.3–12.95	7.20–6.83	m–vs
16.8–17.45	5.28–5.09	vw–w
21.45–21.85	4.145–4.071	m–vs
27.1–27.85	3.291–3.232	w–vs
32.4–33.2	2.763–2.699	vw–m

TABLE V

(BAPSO-46)

2θ	d (Å)	Relative Intensity
7.2–8.1	12.28–10.92	vs
12.9–13.6	6.86–6.51	vw
21.2–22.2	4.19–4.501	vw–m
22.5–23.45	3.95–3.793	vw–m
26.5–27.9	3.351–3.198	vw–m

TABLE W

(BAPSO-47)

2θ	d (Å)	Relative Intensity
9.4–9.6	9.41–9.21	vs
12.8–13.1	6.92–6.76	vw–m
16.0–16.3	5.54–5.44	vw–m
20.5–21.0	4.31–4.23	m–vs
24.6–25.3	3.613–3.526	vw–m
30.6–31.1	2.921–2.876	vw–m

TABLE X

(BAPSO-51)

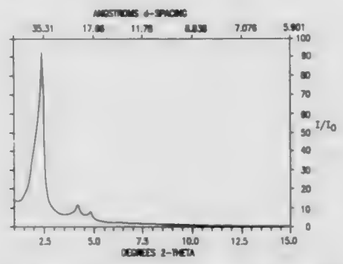
2θ	d (Å)	Relative Intensity
7.9–8.1	11.91–10.91	w–s
11.8–12.0	7.50–7.38	m–vs
13.7–13.9	6.46–6.37	m–vs
18.1–18.4	4.90–4.82	w–s
22.8–23.1	3.900–3.850	v–vs.

5,057,296

METHOD FOR SYNTHESIZING MESOPOROUS CRYSTALLINE MATERIAL

Jeffrey S. Beck, Princeton, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 10, 1990, Ser. No. 625,171
Int. Cl.[5] C01B *35/12*
U.S. Cl. 423—277 **43 Claims**



37. A method for synthesizing a composition of matter comprising an inorganic, non-layered, porous crystalline phase material having, after calcination, an arrangement of uniformly-sized pores having diameters of at least about 13 Angstrom Units, exhibiting an X-ray diffraction pattern with at least two peaks at positions greater than about 10 Angstrom Units d-spacing, at least one of which is at a position greater than about 18 Angstrom Units d-spacing, and no peaks at positions less than about 10 Angstrom Units d-spacing with relative intensity greater than about 20% of the strongest peak, which comprises

(i) preparing a reaction mixture capable of forming said composition, said mixture comprising one or a combination of oxides selected from the group consisting of divalent element, trivalent element, tetravalent element and pentavalent element, organic directing agent and solvent or solvent mixture, said organic directing agent comprising an ion of the formula $R_1R_2R_3R_4Q^{30}$, wherein Q is nitrogen or phosphorus and wherein at least one of R_1, R_2, R_3 and R_4 is selected from the group consisting of aryl of from 6 to about 36 carbon atoms, alkyl of from 6 to about 36 carbon atoms and combinations thereof, the remainder of R_1, R_2, R_3 and R_4 being selected from the group consisting of hydrogen, alkyl of from 1 to 5 carbon atoms and combinations thereof,

(ii) maintaining said mixture under sufficient conditions of pH, temperature and time for formation of said composition of matter and

(iii) recovering said composition of matter,

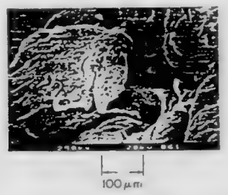
wherein added to said reaction mixture is an auxiliary organic selected from the group consisting of (1) aromatic hydrocarbons and amines of from 5 to 20 carbons and halogen- and C_1–C_{14} alkyl-substituted derivatives thereof, (2) cyclic aliphatic hydrocarbons and amines of from 5 to 20 carbons and halogen- and C_1–C_{14} alkyl-substituted derivatives thereof, (3) polycyclic aliphatic hydrocarbons and amines of from 6 to 20 carbons and halogen- and C_1–C_{14} alkyl-substituted derivatives thereof, (4) straight and branched aliphatic hydrocarbons and amines of from 3 to 16 carbons and halogen-substituted derivatives thereof, and (5) combinations thereof.

5,057,297

METHOD FOR PRODUCING ELASTIC GRAPHITE STRUCTURES

Masaki Fujii, Chikushino, and Masanori Minohata, Izumi, both of Japan, assignors to Koa Oil Company, Limited, Tokyo, Japan

Division of Ser. No. 214,645, Jul. 1, 1988, Pat. No. 4,908,200.
This application Oct. 27, 1989, Ser. No. 428,044
Int. Cl.[5] C01B *31/04*
U.S. Cl. 423—448 **1 Claim**



1. An elastic graphite structure having a packing density of 0.5 g/cm^3 or less and showing a recovery of 80% or higher at a compressibility of 95%, said elastic graphite structure being produced from a carbonaceous material having a hydrogen content of 2% by weight or higher by a process which comprises in succession the steps of:

(a) treating said carbonaceous material with nitric acid or a nitric-sulfuric acid mixture;

(b) bringing the acid-treated carbonaceous material into contact with a basic aqueous solution to make it soluble;

(c) adding an acidic aqueous solution to the obtained soluble matter to regulate the pH of said soluble matter to 3 or less, thereby precipitating a carbonaceous component therefrom; and

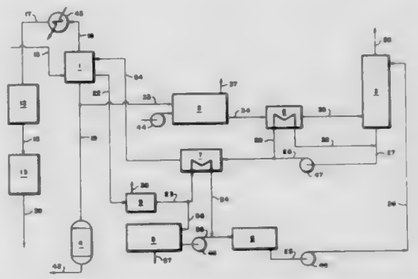
(d) graphitizing the thus precipitated carbonaceous component at 2400° C. or higher temperature.

5,057,298

PROCESS FOR RECOVERY OF SULFUR VALUES FROM A GAS STREAM

William G. Ray, Mountain Lakes, N.J.; John C. Arbo, New York, N.Y., and George E. Gryka, Southport, Conn., assignors to Pipco, Inc., Southport, Conn.

Continuation of Ser. No. 233,255, Aug. 16, 1988, abandoned. This application Jul. 2, 1990, Ser. No. 548,195
Int. Cl.[5] C01B *17/05*
U.S. Cl. 423—574 L **12 Claims**



1. A method for recovering sulfur which comprises: contacting a gas containing SO_2 in a gas contacting zone with a lean solution containing about a 1.0 to about 3.5 molar solution of potassium citrate at a pH from about 4.5–7.0 to form a rich solution containing from about 40 to about 160 grams per liter of SO_2; containing the rich solution with a gas containing H_2S in a reaction zone at a temperature above the melting point of sulfur to form liquid sulfur and a lean solution; removing the lean solution from the reaction zone; recovering the sulfur from the lean solution after the solution has contacted the H_2S; and passing the lean solution to the gas contacting zone to contract SO_2.

5,057,299

METHOD FOR MAKING BETA COBALTOUS HYDROXIDE

Jean A. Lown, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 8, 1989, Ser. No. 447,668
Int. Cl.[5] C01G *51/04*
U.S. Cl. 423—592 **14 Claims**

1. A method of making platelet-shaped, hexagonal beta cobaltous hydroxide, comprising the steps of:

a. combining a cobaltous ion; a complexing agent wherein the complexing agent has at least one functional group capable of acting as a Lewis base towards the cobaltous ion, and wherein the complexing agent is capable of forming a water-soluble complex with the cobaltous ion; and an aqueous medium, thereby forming an aqueous solution, wherein the molar ratio of the cobaltous ion to the complexing agent is from about one to about 20;

b. adding a sufficient amount of hydroxide ion to the aqueous solution, wherein the molar ratio of the hydroxide ion to the cobaltous ion is more than about 2, thereby forming an admixture of ingredients comprising the cobaltous salt, the complexing agent, the hydroxide ion, and the aqueous medium;

c. heating the admixture under hydrothermal conditions to a reaction temperature of from at least 100° C. to about 268° C.; and

d. maintaining the admixture under hydrothermal conditions for a time sufficient to precipitate beta cobaltous hydroxide.

5,057,300

BRIDGED TRANSITION-METAL COMPLEXES AND USES THEREOF FOR HYDROGEN SEPARATION, STORAGE AND HYDROGENATION

Michael A. Lilga, and Richard T. Hallen, both of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Division of Ser. No. 202,097, Jun. 2, 1988, Pat. No. 4,952,713. This application Apr. 24, 1990, Ser. No. 514,657

The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.

Int. Cl.[5] B01D *53/00*

U.S. Cl. 423—648.1 **4 Claims**

1. A process for separating H_2 from a mixed gas stream comprising the steps of:

providing a gas-permeable membrane containing an organometallic complex having the general formula $L_nMR_mCpXCpR'_{m'}M'L'_{n'}$, wherein:

L_n and $L'_{n'}$ are ancillary ligands taken from the group consisting of [Cr, Fe and Mn] CO and CNR (R=alkyl),

M and M' are transition metals taken from the group consisting of Cr, Fe and Mn,

Cp is the cyclopentadienyl group,

R_m and $R'_{m'}$ are alkyl groups substituted for hydrogen on the Cp ring,

m and m' represent integers from 0–4,

X is a bridging functionality taken from the group consisting of —CH_2—, —O—, —NR— (R=alkyl) and —CO—, and

n and n' represent integers from 1–6;

said membrane constructed and arranged so that a pressure differential can be applied across it;

supplying a mixed gas stream containing H_2 at a first higher pressure on one side of said membrane; and

drawing off a gas stream of hydrogen at a second lower pressure from the other side of said membrane.

5,057,301

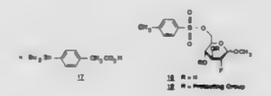
MODIFIED CELLULAR SUBSTRATES USED AS LINKERS FOR INCREASED CELL RETENTION OF DIAGNOSTIC AND THERAPEUTIC AGENTS

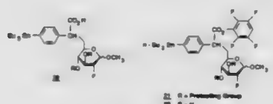
Daniel S. Wilbur, Edmonds, and Mark D. Hylarides, Everett, both of Wash., assignors to NeoRx Corporation, Seattle, Wash.

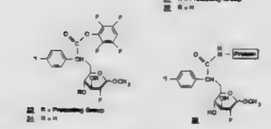
Filed Apr. 6, 1988, Ser. No. 178,418

Int. Cl.[5] A61K *39/395, 37/10, 43/00;* **C07H** *15/00*

U.S. Cl. 424—1.1 **12 Claims**







1. A conjugate of the formula:

Y—Linker—Ligand

wherein:

Y represents a targeting protein;

Linker represents a fluorinated analog of a naturally occurring sugar substrate, wherein the sugar substrate comprises at least one five-, six-, or seven-membered heterocyclic ring bearing multiple hydroxyl groups and having oxygen as the heteroatom, and wherein the fluorinated analog of said sugar substrate comprises one or two fluorine atoms bonded to a carbon atom of the heterocyclic ring; and

Ligand represents a ligand that comprises a diagnostic or therapeutic agent.

5,057,302

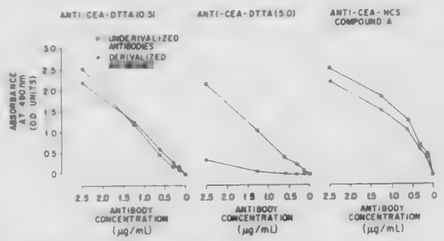
BIFUNCTIONAL CHELATING AGENTS

David K. Johnson, Vernon Hills, and Steven J. Kline, Grayslake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

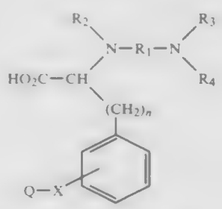
Continuation-in-part of Ser. No. 14,517, Feb. 13, 1987, abandoned. This application Jan. 4, 1988, Ser. No. 136,180

Int. Cl.[5] A61K *49/00, 39/44;* **C07K** *17/00;* **C12N** *11/00;* **C12Q** *1/00, 1/25*

U.S. Cl. 424—1.1 **29 Claims**



1. A substrate conjugate of the formula:



wherein Q is a substrate molecule and wherein X is meta or para and is a residue of a substrate reactive moiety;

wherein n=0 to about 10;

wherein R_1 is selected from the group consisting of:

—$(CH_2)q$—,

—$[(CH_2)_qN(R_5)(CH_2)_r]$—,

—$[(CH_2)_qO(CH_2)_rO(CH_2)_s]$—,

—$[(CH_2)_qN(R_5)(CH_2)_rN(R_6)(CH_2)_s]$—,



, and



wherein q=2 or 3,

r=2 or 3, and

s=2 or 3;

wherein R_2, R_3, R_4, R_5 and R_6 are the same or different and are selected from the group consisting of:

hydrogen

CH_2CO_2H

ortho-$CH_2C_6H_4OH$, and

wherein when $R_1=(CH_2)_q$

R_2 and R_3 may be fused to form a hydrocarbyl ring of the formula

—$(CH_2)_tN(R_7)(CH_2)_uN(R_8)(CH_2)_v$—

wherein t=2 or 3,

u=2 or 3, and

v=2 or 3

wherein R_7 and R_8 are selected from the group consisting of:

hydrogen,

—CH_2CO_2H, and

ortho—$CH_2C_6H_4OH$.

5,057,303

CLEANER AND DISINFECTANT WITH DYE

Irene Casey, P.O. Box 690566, Houston, Tex. 77269-0566

Division of Ser. No. 227,178, Aug. 2, 1988, Pat. No. 4,965,063, which is a continuation-in-part of Ser. No. 936,171, Dec. 1, 1986, Pat. No. 4,793,988. This application Aug. 13, 1990, Ser. No. 566,508

The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.

Int. Cl.[5] A61K *7/46, 7/50, 31.14*

U.S. Cl. 424—7.1 **4 Claims**

1. A composition for cleaning and disinfecting a surface comprising:

at least one surfactant;

a disinfectant system compatible with the selected surfactant;

a pH sensitive dye which changes color upon exposure to air;

an alkali means for adjusting the pH of the composition to an alkali pH to produce a color in the composition so that upon neutralization in the air the dye loses color;

said composition being a visually colored composition with the disappearing pH sensitive dye effectively indicating the delivery of the composition and giving a visual check as to the area contacted when the visually colored composition is applied; and

said composition packaged sealed airtight to maintain the alkali pH so the composition is visually colored.

5,057,304

ACTIVE COMPOUNDS FOR USE IN THE TREATMENT OF TUMORS

Rolf Kretzschmar, Gruenstadt; Erich Schlick, Neuhofen, and Michel Eichelbaum, Ludwigsburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 111,269, Oct. 22, 1987, abandoned. This application Jan. 3, 1989, Ser. No. 293,562

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1985, 3635930

Int. Cl.[5] A61K *49/00, 31/275*

U.S. Cl. 424—10 **10 Claims**

5. A method of reinforcing the antitumor effect of a cancerostatic agent on patients treated with cancerostatic agents consisting essentially of: administering to a patient in need thereof an effective amount of a compound having antitumor reinforcing properties along with an effective amount of a cancerostatic agent, the reinforcing compound being selected from the group consisting of (+)-verapamil, (+)-gallopamil, (+)-devapamil and (+)-emopamil, said cancerostatic agent and said reinforcing compound being administered either together or in sequence.

5,057,305

TOOTH CLEANING TABLET

Torwald Aberg, Stockholm, Sweden, assignor to Dentab, Inc., Stamford, Conn.

Continuation of Ser. No. 928,571, Nov. 10, 1986, Pat. No. 4,753,792, which is a continuation of Ser. No. 765,158, Aug. 13, 1985, abandoned. This application Jan. 22, 1988, Ser. No. 146,910

Claims priority, application United Kingdom, Aug. 21, 1984, 8421226

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.[5] A61K *9/46, 7/18, 33/16*

U.S. Cl. 424—44 **7 Claims**

1. A tooth cleaning tablet forming a self-foaming paste when chewed in the mouth comprising by weight:

A. about 75% polishing and filing agent; and,

B. about 18% of a carbon dioxide producing composition.

5,057,306

METHOD OF MANUFACTURING ORAL HYGIENE GELS

Ira D. Hill, Clay Ct., Locust, N.J. 07760, and Robert D. White, 65 Glen Grey Rd., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 927,725, Nov. 6, 1983, and a continuation-in-part of Ser. No. 927,805, Nov. 6, 1986, Pat. No. 4,950,479. This application Jun. 8, 1990, Ser. No. 535,912

Int. Cl.[5] A61K *7/16, 7/30*

U.S. Cl. 424—49 **13 Claims**

1. A method of manufacturing an oral hygiene gel suitable for cleaning, massaging and conditioning gums of babies and endentulous persons, wherein:

A. said gel is free from:

1. abrasive,
2. analgesic, and
3. substances that alter the microflora balance of the oral cavity;

B. said gel consists essentially of

1. a nonionic surfactant,
2. a coating substance insoluble in said surfactant, wherein the weight ratio of said nonionic surfactant to said coating substances is from between about 20:1 to about 2:1; and
3. a viscosifier; and

C. said gel is characterized as:

1. stable,
2. ingestible,
3. non-foaming,
4. substantive to the gums of babies and endentulous persons,
5. disruptive towards the formation of plaque-like films on the gums of babies and endentulous persons, and having
6. a pH of from between about 3 and about 10;

said method comprising the steps of:

1. emulsifying said coating substance in said surfactant at a temperature above the melt temperature of said surfactant,
2. adding said viscosifier to an appropriate carrier, and
3. mixing the hot-melt emulsion with the viscosifier/carrier to form a gel.

5,057,307

METHOD OF RELIEVING GUM DISCOMFORT

Ira D. Hill, Clay Ct., Locust, N.J. 07760, and Robert D. White, 65 Glen Grey Rd., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 927,752, Nov. 6, 1986, and Ser. No. 927,805, Nov. 6, 1986, Pat. No. 4,950,479. This application Jun. 8, 1990, Ser. No. 535,920

Int. Cl.[5] A61K *7/16, 7/30*

U.S. Cl. 424—049 **13 Claims**

1. A method for relieving the discomfort associated with

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teething in babies and the wearing of dentures by endentulous persons comprising;

applying to said gums an oral hygiene gel suitable for cleaning, massaging and conditioning gums, wherein:

A. said gel is free from:

1. abrasives,
2. analgesics, and
3. substances that alter the microflora balance of the oral cavity; and wherein

B. said gel consists essentially of:

1. a nonionic surfactant,
2. a coating substance insoluble in said surfactant, wherein the weight ratio of said nonionic surfactant to said coating substances is from between about 50.1 and 1:1; and
3. a viscosifier; and

C. said gel is characterized as being:

1. stable,
2. ingestible,
3. non-foaming,
4. substantive to the gums of babies and endentulous persons,
5. disruptive towards the formation of plaque-like films on the gums of babies and endentulous persons;

and having

6. a pH of from between about 3 and about 10.

5,057,308

METHOD OF TREATING THE ORAL CAVITY WITH ORAL HYGIENE PREPARATIONS CONTAINING ACTIVE SnF_2

Ira D. Hill, Clay Ct., Locust, N.J. 07760, and Robert D. White, 65 Glen Grey Rd., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 927,752, Nov. 6, 1986, and Ser. No. 927,805, Nov. 6, 1986, Pat. No. 4,950,479. This application Jun. 8, 1990, Ser. No. 535,913

Int. Cl.[5] A61K *7/18, 7/16*

U.S. Cl. 424—52 **9 Claims**

1. The method of treating the oral cavity with an oral hygiene preparation, comprising a nonionic surfactant, a coating substance insoluble in said surfactant and SnF_2;

wherein said preparation:

a. is non-aqueous, abrasive free, and free from substance that interfere with the microbial activity of SnF_2,

b. is characterized as ingestible, non-foaming, and substantive to hard and soft tissue in the oral cavity,

c. has a pH from between about 3.4 and about 6.5, and

d. is antimicrobially active towards *s. mutans*,

said method comprising the steps of periodically introducing said preparation into the oral cavity in one of several forms selected from the group consisting of sprays, rinses, pastes, gels and creams and retaining said preparation therein for a period of time sufficient to treat or prevent caries, plaque and/or gingivitis therein;

said preparation being conveniently stored in and dispensed from a container that is free from water and oxygen over the useful life of the preparation.

5,057,309

ORAL HYGIENE PREPARATIONS

Ira D. Hill, Clay Court, Locust, N.J. 07760, and Robert D. White, 65 Glen Grey Rd., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 927,752, Nov. 6, 1986, and a continuation-in-part of Ser. No. 927,805, Nov. 6, 1986, Pat. No. 4,950,479. This application Jun. 8, 1990, Ser. No. 535,911

Int. Cl.[5] A61K *7/18, 7/16*

U.S. Cl. 424—52 **24 Claims**

1. An oral hygiene preparation, comprising a nonionic surfactant, a coating substance insoluble in said surfactant and SnF_2;

wherein said preparation:

a. is non aqueous abrasive free, and free from substances that interfere with the microbial activity of SnF_2;

b. is characterized as ingestible, non-foaming, and substantive to hard and soft tissue in the oral cavity,

c. has a pH from between about 3.0 and about 8.5,

d. is antimicrobially active towards S. mutans, and

e. is in a delivery form selected from the group consisting of liquids and semi-solids.

5,057,310

METHOD OF MANUFACTURING ORAL HYGIENE PREPARATIONS CONTAINING ACTIVE SNF_2

Ira D. Hill, Clay Ct., Locust, N.J. 07760, and Robert D. White, 65 Glen Gray Rd., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 927,752, Nov. 6, 1986, and a continuation-in-part of Ser. No. 927,805, Nov. 6, 1986, Pat. No. 4,950,479. This application Jun. 8, 1990, Ser. No. 534,922

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 **20 Claims**

1. The method of manufacturing an oral hygiene preparation comprising a nonionic surfactant, a coating substance insoluble in said surfactant and SnF_2; wherein said preparation:

a. is nonaqueous, abrasive free, and free from substances that interfere with the microbial activity of SnF_2,

b. is characterized as ingestible, non-foaming, and substantive to hard and soft tissue in the oral cavity,

c. has a pH from between about 3.4 and about 6.5, and

d. is antimicrobially active towards *S. mutans*, comprising the steps of:

1. emulsifying said coating substance in said surfactant, at a temperature above the melt temperature of said surfactant, and
2. mixing said hot-melt emulsion with a solution of SnF_2 under nonaqueous, non-oxygen conditions.

5,057,311

LOW-IRRITATION DETERGENT COMPOSITION

Jun Kamegai, Ichikawa; Hideyuki Hanazawa, Funabashi, and Hajime Hirota, Tokyo, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 29, 1989, Ser. No. 330,278

Claims priority, application Japan, Apr. 12, 1988, 63-88291

Int. Cl.[5] A61K *7/075, 7/50*

U.S. Cl. 424—70 **3 Claims**

1. A low-irritation detergent composition consisting essentially of the following components (A), (B) and (C):

(A) at least one alkyl saccharide surface active agent represented by formula (I):

$$R_1—O—(R_2O)_m—(G)_n \qquad (I)$$

wherein R_1 represents a linear or branched alkyl group of a C_{8-18} carbon atom content, a linear or branched alkenyl group of a C_{8-18} carbon atom content, or an alkylphenyl group of a C_{8-18} carbonm atom content, with the alkyl group being either linear or branched, R_2 represents an alkylene group of a C_{2-4} carbon atom content, G represents a reduced sugar of a C_{5-6} carbon atom content, m denotes a value of 0 to 10 and n denotes a value of 1 to 10,

(B) at least one cationic poylmer and

(C) at least one humectants, pearling agents, perfumes, pigments, ultraviolet ray absorbers, antioxidants, biocidal agents, antiphlogistic agents, anti-dandruff agents, antiseptics, and synthetic surfactants other than alkyl saccharide surfactants.

5,057,312

ANHYDROUS NAIL VARNISHES

Bernard Langla, Paris; Jean Mondet, Drancy, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

Filed Jun. 17, 1988, Ser. No. 208,052

Claims priority, application Luxembourg, Jun. 19, 1987, 86924

Int. Cl.[5] A61K *31/78*

U.S. Cl. 424—81 **9 Claims**

1. Anhydrous nail varnish, free from nitrocellulose, containing 3 to 35% by weight of at least one resin in a solvent system for nail varnishes, wherein said resin is a copolymer containing units resulting from the copolymerization of a mixture consisting essentially:

(1) of 20 to 70% of at least one alkyl acrylate or methacrylate of the formula:

$$CH_2=C(R')—COOR \qquad (I)$$

in which:

R' denotes a hydrogen atom or a methyl radical, and R denotes a saturated, linear or branched hydrocarbon chain containing from 1 to 6 carbon atoms, and

(2) of 30 to 80% of at least one hydroxyalkyl acrylate or methacrylate of the formula:

$$CH_2=C(R_1)—COOR_2 \qquad (II)$$

in which:

R_1 denotes a hydrogen atom or a methyl radical and R_2 denotes a linear or branched hydrocarbon chain containing from 2 to 4 carbon atoms and 1 or 2 hydroxyl(s), provided that said copolymer does not contain more than 30% of units derived from the copolymerization of an alkyl acrylate and/or of a hydroxyalkyl acrylate,

the viscosity of the copolymer at a concentration of 28% in ethyl acetate at 25° C. being higher than 0.1 Pa s.

5,057,313

DIAGNOSTIC AND THERAPEUTIC ANTIBODY CONJUGATES

Lisa B. Shih, Cedar Grove, N.J.; Frederick J. Primus, Potomac, Md., and Milton D. Goldenberg, Short Hills, N.J., assignors to The Center for Molecular Medicine and Immunology, Newark, N.J.

PCT No. PCT/US87/00406, § 371 Date Aug. 23, 1988, § 102(e) Date Aug. 23, 1988

Continuation-in-part of Ser. No. 833,204, Feb. 25, 1986, Pat. No. 4,699,784. This PCT application Feb. 25, 1987, Ser. No. 309,204

The portion of the term of this patent subsequent to Oct. 13, 2004, has been disclaimed.

Int. Cl.[5] A61K *39/44, 49/02;* **C07K** *17/02;* **C12N** *11/06*

U.S. Cl. 424—85.91 **32 Claims**

1. A soluble antibody conjugate, comprising a plurality of drug, toxin, chelator, boron addend or detectable label molecules covalently bound to a polymer carrier having at least one remaining free amine group, to form a loaded carrier, said loaded carrier in turn being covalently bound through said at least one amine group to the carbohydrate portion of an antibody by a reduced Schiff base linkage; wherein said conjugate is soluble in human serum.

5,057,314

LOW MOLECULAR WEIGHT ANTIVIRAL FACTORS

Craig E. Whitfill, 1300 Wellstone Cir., Apex, N.C. 27502; Nicholas R. Gyles, 1336 Northview, and John A. Thoma, 1206 Crestwood, both of Fayetteville, Ark. 72702

Continuation-in-part of Ser. No. 252,554, Sep. 30, 1988, abandoned, and a continuation-in-part of Ser. No. 252,187, Sep. 30, 1988, abandoned. This application Jun. 20, 1989, Ser. No. 368,557

Int. Cl.[5] A61K *39/215, 35/16*

U.S. Cl. 424—89 **12 Claims**

1. A composition useful in preventing infectious bursal disease in an animal, the composition produced by isolating from the blood serum of a hyperimmune regressor line chicken at least one low molecular weight factor, obtained by taking peak IV off a G-25 Sephadex column, further purifying the mixture contained in the peak IV column by passage through a Biogel P-2 acrylamide column and taking peak I and combining peak I with an effective amount of a virus that causes infectious bursal disease.

5,057,315

METHOD AND DEVICE FOR THE BIOLOGICAL CONTROL OF COCKROACHES

Haim B. Gunner; Fernando Agudelo-Silva, both of Amherst, and Carol A. Johnson, Haydenville, all of Mass., assignors to EcoScience Laboratories, Inc., Amherst, Mass.

Filed Mar. 15, 1989, Ser. No. 324,461

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] A01N *63/00, 25/00;* **A01M** *1/00*

U.S. Cl. 424—93 **6 Claims**

1. A method for controlling roaches comprising providing a fungus that can be pathogenic to the roaches to be controlled in a chamber including a nutrient medium for the fungus, the chamber containing and maintaining an effective density of the fungus to infect the roaches, being attractive to roaches, and having a geometry or shape including apertures for the roaches which forces the roaches into contact with an effective amount of the fungus to lethally infect the roaches with the fungus.

5,057,316

METHOD AND DEVICE FOR THE BIOLOGICAL CONTROL OF INSECTS

Haim B. Gunner, Amherst, Mass.; Fernando Agudelo-Silva, San Francisco, Calif., and David W. Miller, Amherst, Mass., assignors to EcoScience Laboratories, Inc., Amherst, Mass.

Continuation-in-part of Ser. No. 572,486, Aug. 23, 1990, which is a continuation-in-part of Ser. No. 324,461, Mar. 15, 1989. This application Sep. 14, 1990, Ser. No. 583,230

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] A01N *63/00, 25/00;* **A01M** *1/00*

U.S. Cl. 424—93 **8 Claims**

1. A method for increasing the mortality rate of a targeted species of insects comprising providing

a chamber attractive for the targeted insects,

a) containing a live culture of a fungus that can be pathogenic for the targeted insects on a nutrient medium, the chamber protecting the fungal culture from the environment and concentrating a high number of a fungal inoculum in the chamber, and

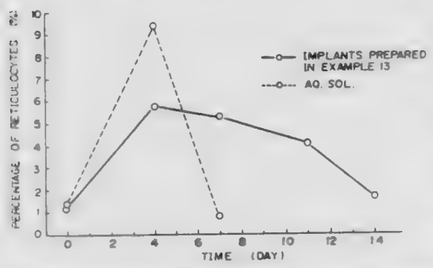
b) the geometry and shape of the chamber forcing the targeted insects attracted into the chamber into contact with an effective amount of the fungus to produce a lethal infection in the targeted insects.

5,057,317

SLOW-RELEASE PHARMACEUTICAL AGENT

Yoshimitsu Iida, Saitama, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1988, Ser. No. 171,817
Claims priority, application Japan, Mar. 24, 1987, 62-69677
Int. Cl.[5] A61K *9/00, 9/24, 9/26, 9/54*
U.S. Cl. 424—423 **18 Claims**



1. A pharmaceutical agent in compressed which comprises at least one slow-release rendering additive of adenine, cystine and D-tyrosine in combination with at least one pharmaceutically active substance in solid particulate form, said slow-release rendering additive being in the form of particles intermixed with said at least one pharmaceutically active substance in solid particulate form.

8. A slow-release pharmaceutical agent according to claim 1 in the form of an implant.

5,057,318

DELIVERY SYSTEM FOR BENEFICIAL AGENT OVER A BROAD RANGE OF RATES

Judy A. Magruder, Mt. View; James B. Eckenhoff, Los Altos; Richard Cortese, Los Gatos; Jeremy C. Wright, Los Altos, and John R. Perry, Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 283,359, Dec. 13, 1988, Pat. No. 5,034,229. This application Apr. 20, 1990, Ser. No. 513,327
The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.
Int. Cl.[5] A23K *1/18*
U.S. Cl. 424—438 **13 Claims**



1. The delivery system for delivering the beneficial agent to an environment of use, the delivery system comprising: (a) a first section comprising a wall that surrounds an internal lumen and comprises an open end, said wall comprising a member selected from the group consisting of a polymer, glass and stainless steel composition that restricts the passage of fluid into the internal lumen; (b) a second section comprising a wall that surrounds an internal lumen and comprises an enlarged open end that receives the end of the first section, said wall comprising a polymer composition that is permeable to the passage of fluid; (c) a beneficial agent in the first section; (d) an expandable member in the second section; and (e) at least on exit passageway in the delivery system for delivering the beneficial agent to the environment of use.

5,057,319

PHARMACEUTICAL COMPOSITIONS OF CIMETIDINE

Eberhard F. Gottwald; Hermann P. Osterwald, both of Bovenden; Horst M. Machoczek, Gleichen, all of Fed. Rep. of Germany, and David Mayron, Blue Bell, Pa., assignors to Smith Kline Dauelsberg GmbH, Gottingen, Fed. Rep. of Germany

Filed Dec. 20, 1988, Ser. No. 287,194
Claims priority, application United Kingdom, Dec. 23, 1987, 8730011
Int. Cl.[5] A61K *9/28*
U.S. Cl. 424—441 **20 Claims**

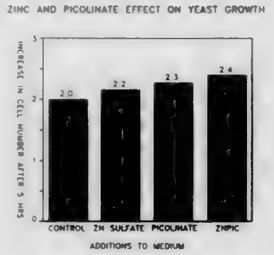
1. A pharmaceutical granule composition comprising from about 75 to 800 mg cimetidine and as a granulating agent and taste masking agent an ester of a polyhydroxy compound said polyhydroxy compound being a non-polymeric, non-aromatic hydrocarbon or carbohydrate having at least 2 hydroxyl groups per molecule, said composition providing a 90% by weight release of the cimetidine from the granule composition within about 50 minutes providing a 90% by weight release of the cimetidine from the granule composition within about 50 minutes.

5,057,320

MEANS AND METHOD FOR INCREASING SKIN RESPIRATION

Gary W. Evans, Puposky, Minn., and Henry J. Peppler, Whitefish Bay, Wis., assignors to Nutrition 21, San Diego, Calif.

Filed Aug. 1, 1988, Ser. No. 227,203
Int. Cl.[5] A61L *15/16*
U.S. Cl. 424—447 **15 Claims**



1. A method of enhancing respiration of mammalian skin, comprising applying to the skin a composition consisting essentially sufficient picolinic acid to provide at least 25,000 units of SRF activity per gram in a carrier selected from the group consisting of an ointment, cream, lotion and spray.

5,057,321

DOSAGE FORM COMPRISING DRUG AND MALTODEXTRIN

David E. Edgren, El Granada; Gurdish K. Bhatti, Fremont, and Howard A. Carpenter, Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Jun. 13, 1990, Ser. No. 538,046
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—413 **7 Claims**

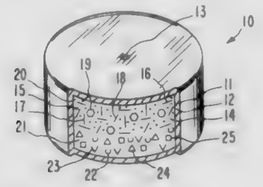
1. An improvement in a dosage form for delivering a drug to an animal, wherein the dosage form comprises:

(a) a wall comprising a composition permeable at least in part to the passage of fluid, which wall surrounds;

(b) a compartment;

(c) at least one exit passageway in the wall that connects the exterior of the dosage form with the composition;

(d) a composition in the compartment comprising a hydrogel that in the presence of fluid in the compartment expands and occupies space in the compartment; and,



(e) a composition in the compartment comprising a and an osmotically effective solute, wherein the improvement comprises a maltodextrin in the composition that is compatible with the drug, aids in delivering the drug through the passageway from the compartment and comprises a 500 to 1,000,000 molecular weight and a degree of polymerization of 3 to 6,140.

5,057,322

METHOD OF TREATING MAST CELL DISEASE

Phillip Frost, Miami Beach, Fla., assignor to Baker Cummins Dermatologicals, Inc., Miami, Fla.

Filed Aug. 10, 1990, Ser. No. 565,428
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] A61K *9/28, 9/60, 9/48, 31/44*
U.S. Cl. 424—474 **15 Claims**

1. A method of treating a patient suffering from a mast cell disease comprising the daily administration to the patient of from about 1 to about 150 mg of a pure narcotic antagonist.

5,057,323

HOLLOW GRANULAR MEDICINE AND ITS PREPARATION

Toshiyuki Niwa, Gifu, Japan; Yoshiaki Kawashima, 185, Shimotsuchii, Gifu-shi, Gifu-ken, Japan 502; Hirofumi Takeuchi, Gifu, Japan, and Yoji Ito, Toki, Japan, assignors to Showa Yakuhin Kako Co., Ltd., Aichi and Yoshiaki Kawashima, Gifu, both of, Japan

Filed Jun. 19, 1989, Ser. No. 367,948
Claims priority, application Japan, Oct. 18, 1988, 63-262550
Int. Cl.[5] A61K *9/16*
U.S. Cl. 424—497 **4 Claims**

1. A hollow granular body with a spherical hollow structure, in which a hydrophilic physiologically active substance is distributed only in the shell of the structure said structure comprising an enteron-soluble polymer, the amount of said polymer ranging from 20 to 1,000 weight percent with respect to the said hydrophilic physiologically active substance.

5,057,324

KALLIKREIN INHIBITOR SUBSTANCE, A PROCESS FOR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Yoji Shibayama, and Yoshio Toyomaki, both of Katoh, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 20, 1988, Ser. No. 221,975
Claims priority, application Japan, Jul. 23, 1987, 62-184981
Int. Cl.[5] A61K *35/12, 35/36*
U.S. Cl. 424—520 **8 Claims**

1. An inhibitor of kallikrein formation extracted from infected tissue inoculated with a poxvirus, and which is a hygroscopic powder, pale yellowish brown in appearance, soluble in water, methanol and acetone and insoluble in benzene and ether, has a molecular weight greater than 1,000 but less than 20,000 and an ultraviolet adsorption of λmax = 265–275 nm and which gives a positive color reaction for amino acid, sugar and phosphorus, and a negative color reaction for protein and phenol.

5,057,325

METHOD OF INHIBITING REPLICATION OF HIV WITH WATER-SOLUBLE MELANINS

David C. Montefiori, Nashville, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Filed Mar. 20, 1990, Ser. No. 496,241
Int. Cl.[5] A01N *37/18;* **A61K** *37/02*
U.S. Cl. 424—522 **14 Claims**

1. The method of treating a human patient infected with human immunodeficiency virus (HIV) which causes acquired immunodeficiency syndrome (AIDS), comprising administering to said patient water-soluble melanin, said melanin being administered by a route which introduces it into the blood in doses effective to inhibit the replication of HIV therein.

5,057,326

FUNGICIDES

Michael J. Sampson, 18 Christchurch Road, Norwich, Norfolk NR2 2AE, England

Continuation-in-part of Ser. No. 127,231, Dec. 1, 1987, Pat. No. 4,851,223, which is a continuation of Ser. No. 718,864, Apr. 2, 1985, abandoned. This application Apr. 12, 1989, Ser. No. 336,806
Claims priority, application United Kingdom, Apr. 13, 1988, 8808646
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] A01N *37/00, 59/02*
U.S. Cl. 424—711 **16 Claims**

1. A method of combatting fungi on plant material comprising applying to said plant material a synergistic effective amount of a fungicidal composition comprising from about 0.0125% to about 2.5% on a w/v basis of non-toxic water-soluble metabisulfite and from about 0.0125% to about 2.5% on a w/v basis of non-toxic water-soluble propionate salt.

5,057,327

CHEWING GUM WITH LONGER LASTING SWEETNESS USING ALITAME

Robert J. Yatka, Orland Park, and Gordon N. McGrew, Evanston, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of PCT 11589/01269 filed Mar. 28, 1989 published as WO90/06061 on Jun. 14, 1990. This application Dec. 29, 1989, Ser. No. 458,594
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 **16 Claims**

1. A chewing gum composition comprising:

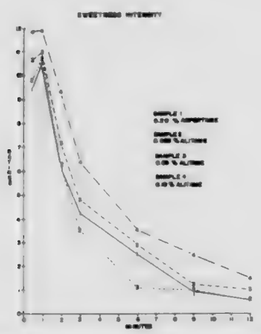
a) about 5% to about 95% gum base;

b) about 0.1% to about 10% flavor;

c) about 10% to about 90% of a sweetening agent selected from the group consisting of sugar, sugar alcohols, and mixtures thereof; and

d) a minor amount of Alitame, the Alitame being present in

an amount sufficient to provide the gum with an extended sweetness and flavor intensity compared to gum containing levels of sweeteners which impart a normal level of sweetness to the gum.



5,057,328

FOOD ACID DELIVERY SYSTEMS CONTAINING POLYVINYL ACETATE

Subraman R. Cherukuri, Towaco, N.J.; Gul Mansukhani, Staten Island, N.Y., and Steven M. Faust, Stanhope, N.J., assignors to Warner-Lamber Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 270,892, Nov. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 945,743, Dec. 23, 1986, abandoned. This application Mar. 5, 1990, Ser. No. 488,809

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—5 **35 Claims**

1. A chewing gum composition having prolonged sourness flavor and juiciness duration comprising:

A. a gum base in an amount of from about 5% to about 85% of said gum composition; and

B. a stable food acid delivery system capable of effecting controlled release acid comprising;

i. at least one solid food acid in an amount of from about 0.1% to about 10% by weight of said gum composition, said acid selected from the group consisting of citric acid, malic acid, tartaric acid, adipic acid, fumaric acid, succinic acid, glucono delta-lactone, ascorbic acid, lactic acid and mixtures thereof; and

ii. a coating matrix comprised of a combination of an emulsifier selected from the group consisting of lecithin, stearates, ester derivatives of stearates, palmitates, ester derivatives of palmitates, oleates, ester derivatives of oleates, glycerides, ester derivatives of glycerides, sucrose polyesters, polyglycerol esters, animal waxes, vegetable waxes, synthetic waxes, petroleum wax and mixtures thereof and polyvinyl acetate present in amounts of from about 30% to about 93% by weight of the total composition of said delivery system and having a molecular weight of from about 2,000 to about 65,000, whereby said prolonged sourness flavor and juiciness duration is provided.

5,057,329

OIL-IMPERVIOUS, WATER RETAINING, AND FLAVOR-CONTAINING COATED FOOD ARTICLES

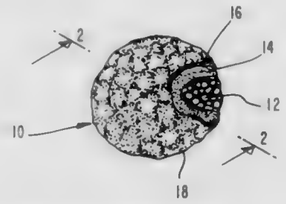
Richard J. Stypula, Colts Neck, and Lawrence Buckholz, Jr., Jackson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 114,697, Oct. 29, 1987, abandoned, which is a continuation of Ser. No. 93,352, Sep. 3, 1987, abandoned. This application Jan. 27, 1989, Ser. No. 302,272

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] A23L *1/317*

U.S. Cl. 426—92 **8 Claims**



1. A food article of manufacture having:

(1) a porous inner food structure consisting of water and macerated beef or macerated chicken meat, optionally containing one or more reaction flavor compositions, reaction flavor precursors and/or reaction flavor enhancers;

(2) a first outer surface contiguous with an integral part of said porous inner food structure; and

(3) fixedly coated on the entirety of said first outer surface a composition of matter consisting of:

(i) macerated beef or macerated chicken meat;

(ii) a fat and/or a polyol polyester; and

(iii) a barrier composition consisting of, in intimate admixture, a starch, methyl cellulose, xanthan gum, and optionally, one or more reaction flavor compositions, reaction flavor precursors and/or reaction flavor enhancers

wherein at least one of said porous inner food structure or said composition of matter fixedly coated on the entirety of said first outer surface includes at least one reaction flavor composition and/or at least one reaction flavor enhancer composition and/or at least one reaction flavor precursor composition, said food article having the properties of:

(x) retention of a substantial quantity of the water originally contained in said porous inner food structure on storage and/or on cooking; and

(y) substantial imperviousness to the absorption or adsorption of cooking oil into said porous inner food structure when said food article is contacted with cooking oil on storage and/or on cooking; and

(z) retention of substantially all of the flavor nuances originally present in the macerated chicken meat or macerated beef.

5,057,330

COOKED AND PACKAGED STARCHY FOODSTUFFS

Yanien Lee, Manlius; Carleton G. Merritt, Phoenix; Stephen R. Gillmore, Cato, and Nancy E. Dermody, Camillus, all of N.Y., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 140,208, Dec. 31, 1987, abandoned. This application Apr. 17, 1990, Ser. No. 511,965

Int. Cl.[5] A23L *1/10, 1/16, 3/00*

U.S. Cl. 426—120 **19 Claims**

18. A shelf-stable, fully cooked packaged meal comprising

(a) a primary sealed container which substantially isolates its contents from atmospheric oxygen, said contents being a preserved food composition comprised of

(i) a fully cooked foodstuff selected from the group consisting of alimentary pastes and grains that does not require further heating once cooked; and

(ii) an edible acid uniformly dispersed in said primary container with said foodstuff in a quantity sufficient to provide shelf-stability; and

(b) a secondary container which substantially isolates its contents from said preserved food composition during storage, the contents within said secondary container comprising an edible alkaline neutralizing agent in a quantity sufficient to increase the pH of said foodstuff upon mixing therewith to a value in the range of about 5 to about 7 following storage;

wherein said edible alkaline neutralizing agent is sufficiently reactive at ambient temperature to increase the pH of said foodstuff upon mixing therewith to a value in the range of about 5 to about 7 for consumption, within a short time after mixing.

5,057,331

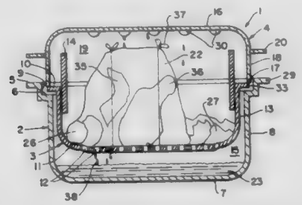
COOKING FOOD IN A FOOD PREPARATION KIT IN A MICROWAVE AND IN A THERMAL OVEN

Melvin L. Levinson, 140 W. Willow St., Colonia, N.J. 07067

Filed Jan. 13, 1989, Ser. No. 296,234

Int. Cl.[5] H05B *6/64*

U.S. Cl. 426—243 **29 Claims**



1. A method of combining the cooking of food in a gas or electric thermal oven with the cooking of food in a microwave oven which includes the steps of;

(a) placing a food, to be cooked, on a food-supporting surface, in an inner metal pot, of a kit which includes:

where the inner metal pot is nested within an outer metal pot,

where there is a collection chamber, located between the two metal pots, which chamber is shielded from exposure to microwave energy,

where a microwave transparent, cover covers, at least, the inner pot, and

means to pass vapors and liquid by-products from the inner pot to the collection chamber;

(b) exposing the food, in the kit, to microwave energy until said energy penetrates the cover and heats the food until liquid by-products and vapors emanate from the food,

(c) channeling the liquid by-products and vapors, which emanated from the food heating in the inner pot, through the means to pass vapors and liquid into the collection chamber where said liquid by-products are collected;

(d) concurrent, with step (b) and (c), the thermal oven is preheated to a temperature, at least, 50° F. higher than would provide satisfactory results if the food was cooked entirely by the thermal oven without the aide of the microwave oven; and

(e) thereafter removing the food from the microwave oven and placing said food into said preheated thermal oven to brown and crust while said food is, simultaneously, resting from being cooked in the microwave oven.

5,057,332

APPARATUS AND PROCESS FOR MARINATING FOODSTUFFS

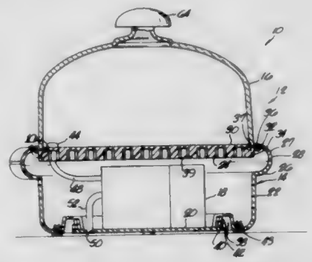
Peter G. Davidson, Malibu, and Robert H. Clark, III, Big Bear Lake, both of Calif., assignors to Minute Marinator, Inc., Big Bear City, Calif.

Continuation-in-part of Ser. No. 142,183, Jan. 11, 1988, Pat. No. 4,818,550. This application Apr. 3, 1989, Ser. No. 331,854

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.[5] A22C *9/00;* **A23L** *1/318*

U.S. Cl. 426—281 **18 Claims**



1. An apparatus for marinating foodstuffs in a marinade comprising: a base assembly; a generally planar and rigid fluid impermeable support surface defined by said base assembly; an annular sealing member disposed about the perimeter of said support surface; a removable cover adapted to be disposed over and about said support surface and abut said annular sealing member for forming an air-tight seal therebetween and defining an air-tight chamber within said cover; a vacuum port disposed in said support surface; a vacuum pump assembly carried by said base assembly in fluid communication with said port for withdrawing air from said chamber through said port to reduce the pressure within said chamber to about 15–27 in. Hg. below atmospheric pressure; and means for activating and deactivating said pump assembly.

5,057,333

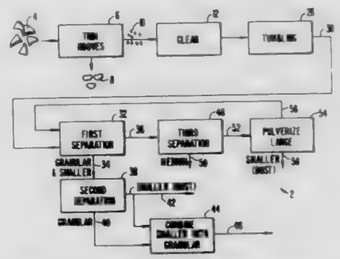
METHOD FOR MAKING PET FOOD FLAVOR ENHANCER

Richard L. Lawson, Sanger, Calif., assignor to Products Carousel, Incorporated, Fresno, Calif.

Filed Oct. 19, 1990, Ser. No. 600,467

Int. Cl.[5] A23K *1/00;* **A23P** *1/00*

U.S. Cl. 426—480 **12 Claims**



1. A method for making a pet food flavor enhancer comprising the following steps:

cleaning animal hooves;

reducing the size of the hooves to include granular hoof material; and

separating the granular hoof material from any other hoof

material created during the reducing step for use as a pet food flavor enhancer.

5,057,334

PROCESS FOR RECOVERY OF CELLULOSE

William J. Vail, Cumberland, Md., assignor to Ort's Inc., LaVale, Md.

Continuation-in-part of Ser. No. 552,073, Jul. 13, 1990, abandoned. This application Mar. 11, 1991, Ser. No. 667,533

Int. Cl.[5] A23B *1/20*

U.S. Cl. 426—634 **8 Claims**

1. A process for the production of purified short fiber cellulose suitable for human consumption, from the hulls of edible legumes, comprising the steps of:

(a) forming a slurry of particulate legume hulls in water,

(b) adding caustic oxidizing agent to the slurry to raise the pH to about 12,

(c) maintaining a highly alkaline pH in said slurry for 6½ to 23 hours during which the temperature of the slurry is maintained at 190° F. to 210° F. for at least 30 minutes, to oxidize, hydrolyze and extract the particulate legume hulls, thereby to solubilize the greater portion of the non-cellulose material present therein and form a pulp which consists predominantly of cellulose, in the slurry,

(d) separating the pulp from the slurry,

(e) redispersing the separated pulp in water to form a further slurry,

(f) adjusting the pH of the further slurry to be in the range of from about 6.5 to 7.5 by the addition of phosphoric acid,

(g) adding to the pH adjusted slurry resulting from (f) a bleaching effective amount of aqueous hydrogen peroxide solution, and mixing, and heating the resulting admixture to a below boiling temperature to promote breakdown of any non-cellulose material present and bleaching of the pulp, and

(h) separating from the resulting admixture a bleached pulp composition consisting predominantly of short fiber cellulose.

5,057,335

METHOD FOR FORMING A CERAMIC COATING BY LASER BEAM IRRADIATION

Haruo Hanagata, Ebina; Kathuhide Oshima; Hidesato Igarashi, both of Tokyo, and Noboru Morita, Chiba, all of Japan, assignors to Dipsol Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1989, Ser. No. 415,859

Claims priority, application Japan, Oct. 12, 1988, 1-256458; Mar. 7, 1989, 1-54074; Mar. 27, 1989, 1-74647

Int. Cl.[5] B05D *3/06, 5/12, 3/02;* **C01B** *00/00*

U.S. Cl. 427—53.1 **13 Claims**

1. A method for forming a ceramic coating on a substrate, which comprises immersing the substrate in an aqueous solution containing a soluble silicic acid compound, or a soluble metal salt of an oxyacid, or mixtures thereof and irradiating the substrate in the aqueous solution with a laser beam.

5,057,336

METHOD OF FORMING HIGH PURITY SiO_2 THIN FILM

Etsushi Adachi; Hiroshi Adachi; Osamu Hayashi, and Kazuo Okahashi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 304,474, Feb. 1, 1989, abandoned. This application Jun. 5, 1990, Ser. No. 532,231

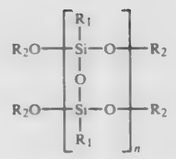
Claims priority, application Japan, Feb. 3, 1988, 63-24304

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—44 **4 Claims**

1. A method of forming a high purity SiO_2 thin film comprising:

coating a surface of a substrate with a film of a solution comprising an organic solvent and a silicone ladder polymer having the general formula



where R_1 represents a phenyl group or a lower alkyl group; R_2 represents a hydrogen atom, a methyl group, or an ethyl group; and n is any integer from 2 to 1000 wherein said silicone ladder polymer contains less than 0.1 parts per million of alkali metals, iron, lead, copper, and hydrogen halide and less than 0.1 parts per billion of uranium and thorium;

heating said film, thereby driving off said solvent and simultaneously curing said film; and

exposing the cured film to an oxygen plasma at a pressure from 5×10^{-3} Torr to 2 Torr.

5,057,337

METHOD AND APPARATUS FOR SOLDER COATING OF LEADS

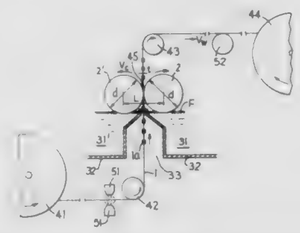
Shinichi Makino, and Naokatsu Kojima, both of Shizuoka, Japan, assignors to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Continuation of Ser. No. 287,904, Dec. 21, 1988, abandoned. This application May 16, 1990, Ser. No. 525,219

Claims priority, application Japan, Dec. 28, 1987, 62-332874; Dec. 28, 1987, 62-332875

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—96 **14 Claims**



6. A method of simultaneously applying a solder coating to opposite side surfaces of leads which project outwardly from a resin package, said leads and said resin package being joined to an elongate lead frame having a plurality of such leads and resin packages mounted thereon in longitudinally spaced relationship therealong, comprising the steps of:

providing a pair of solder-coating rolls supported for rotation about generally parallel horizontal axes with said rolls being disposed with the annular peripheral surfaces thereof in sidewardly closely adjacent and opposed relationship to define a narrow vertically-oriented nip radially therebetween with said nip having a radial width greater than the lead frame thickness for permitting the lead frame to pass vertically through said nip without contacting said rolls;

aligning a generally elongate lead frame section below said nip so that the elongate direction of said section is generally vertically aligned with said nip;

providing a bath of molten solder material in close proximity to but generally below said rolls;

applying molten solder material from said bath solely onto the lower parts of said rolls;

simultaneously rotating said rolls in opposite rotational directions to cause the peripheral surfaces thereof as disposed in directly opposed relationship on opposite sides of the nip to move upwardly and to cause the molten solder material to temporarily coat at least a part of the periphery of said rolls and be carried upwardly into said nip;

rotating said rolls at a predetermined peripheral velocity which, in conjunction with the width of the nip, is sufficient to create a small pool of liquid solder at the upper end of said nip; and

moving said lead frame section vertically upwardly into and through said nip and said pool of liquid solder at a linear velocity which is substantially less than the peripheral velocity of said rolls and without substantially contacting said rolls for causing thin layers of molten solder material to coat the opposite sides of said leads.

5,057,338

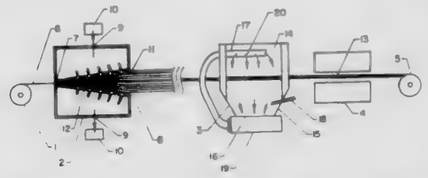
PROCESS FOR APPLICATION OF POWDER PARTICLES TO FILAMENTARY MATERIALS

Robert M. Baucom, Newport News; John J. Snoha, and Joseph M. Marchello, both of Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 16, 1990, Ser. No. 524,109

Int. Cl.[5] B05D *1/24*

U.S. Cl. 427—185 **2 Claims**



1. A process for the uniform application of polymer powder particles to a filamentary material in a continuous manner to form a uniform composite prepreg material, which process comprises the following combination of sequential procedural steps:

continuously feeding a tow of the filamentary material under controlled tension into a spreading unit,

spreading the moving filamentary tow into an even band by a controlled cross-flow of air providing lateral force on the moving filamentary tow,

coating the spread filamentary tow with polymer particles from a fluidized bed, which acts in cooperation with a bubbling bed resin feeder providing a constant, recirculating resin mass flow to the fluidized bed for steady-state operation,

fusing the coated filamentary tow, and taking up the fused, coated filamentary tow on a package for subsequent utilization.

5,057,339

METALLIZED POLYACETYLENE-TYPE OR POLYACENE-TYPE ULTRALONG CONJUGATED POLYMERS AND PROCESS FOR PRODUCING THE SAME

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

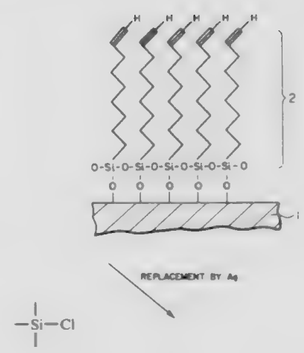
Filed Dec. 11, 1989, Ser. No. 448,237

Claims priority, application Japan, Dec. 29, 1988, 63-333288; Jan. 9, 1989, 1-002424

Int. Cl.[5] B05D *1/18*

U.S. Cl. 427—340 **24 Claims**

1. A process for producing a metallized polyacetylene-type ultralong conjugated polymer comprising immersing a substrate having a hydrophilic surface in a first nonaqueous organic solution containing a compound containing an acetylenic group (—C≡C—) and



group (hereinafter referred to as silane-type surfactant) to deposit a chemisorbed layer of the silane-type surfactant on the substrate by chemisorption, immersing the substrate on which the chemisorbed layer is deposited in an aqueous solution containing a metal ion to replace a hydrogen atom connected to the acetylenic group by the metal atom, and immersing the substrate on which the chemisorbed layer is deposited in a second organic solution containing a metal salt catalyst to polymerize the molecules at the acetylenic group in the monomolecular film.

5,057,340

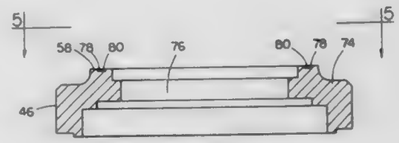
METHOD OF FORMING A COATING ON A REACTOR COOLANT PUMP SEALING SURFACE

Natraj C. Iyer, Monroeville, and Eleanor Gettliffe, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 20, 1990, Ser. No. 512,244

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—367 **18 Claims**



1. A method of forming a coating on a sealing surface of a sealing assembly component, said forming method comprising the steps of:

(a) processing a powder composed of a mixture of ceramic particles and a metal binder so as to substantially reduce the gas content of the mixture and at least partially coat the ceramic particles with the metal binder;

(b) applying the powder mixture onto a groove formed on the sealing surface of the sealing assembly component to form a coating thereon;

(c) encasing at least the coating on the sealing surface by applying a metallic cover thereover;

(d) evacuating the atmosphere between the cover and coating on the sealing surface; and

(e) hot isostatic pressing the sealing assembly component and the coating thereon encased by the cover in a manner which densifies the coating to substantially its full theoretical density, metallurgically bonds the coating to the surface of the sealing assembly component at the groove thereon, and wets the ceramic particles with the metal

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binder and forms an interparticle bond between the ceramic particles wetted by the metal binder;

(f) said powder processing including

(i) mixing the ceramic particles and metal binder to produce a mixture thereof,

(ii) heating the mixture of ceramic particles and metal binder to the melting point of the metal binder which is less than the melting point of the ceramic particles to produce a mass of ceramic particles coated with molten metal binder and having a reduced gas content,

(iii) cooling the mass of ceramic particles coated with molten metal binder to produce a solid mass thereof, and

(iv) pulverizing the solid mass of metal binder coated-ceramic particles to granulate the powder mixture of ceramic particles to the desired size and still at least partially coated with metal binder.

5,057,341

METHOD OF PROCESSING CARBON FIBER PRECURSOR FROM PITCHY MATERIALS

Osamu Ogiso, and Hideto Uchida, both of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Feb. 10, 1989, Ser. No. 309,297

Claims priority, application Japan, Feb. 24, 1988, 63-41671; Feb. 24, 1988, 63-41672

Int. Cl.[5] B05D *3/02;* **B27B** *17/00;* **D01F** *9/12;* **B32B** *9/00*

U.S. Cl. 427—387 **4 Claims**

1. A method of processing carbon fiber precursor from pitchy materials, said method comprising the step of applying to fibers from pitchy materials an aqueous emulsion containing

a first component which is a single silicone oil or a mixture of silicone oils selected from polydimethyl siloxane, phenyl modified polydimethyl siloxane and aminoalkyl modified polydimethyl siloxane and having kinetic viscosity at 25° C. of 100 centistokes or less,

a second component which is an alkanol amine salt of aliphatic monocarboxylic acid with 8–18 carbon atoms, and

a third component which is one or more selected from the group of non-ionic surfactants consisting of polyoxyethylene alkylphenylethers, polyoxyethylene alkylates, polyoxyethylene alkylaminoethers, and aliphatic monocarboxylic alkanolamides

such that 0.1–5 wt% by solid deposit of said aqueous emulsion apply to said fibers during any of processes from a spinning process and to an oxidizing process.

5,057,342

METHODS AND APPARATUS FOR OBTAINING A FEATHERED SPRAY WHEN SPRAYING LIQUIDS BY AIRLESS TECHNIQUES

Kenneth L. Hoy, Saint Albans; Kenneth A. Nielsen, Charleston, both of W. Va., and Hendrik F. Bok, Fairhaven, Mass., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 133,068, Dec. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 833,156, Jul. 8, 1986, abandoned. This application Mar. 22, 1989, Ser. No. 327,273

The portion of the term of this patent subsequent to May 23, 2008, has been disclaimed.

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—422 **34 Claims**

1. A method of spraying a liquid mixture to obtain a feathered spray which comprises:

(a) forming a liquid mixture in a closed system, said liquid mixture comprising:

(i) a solids fraction containing at least one component capable of forming a coating on a substrate;

(ii) a solvent fraction which is at least partially miscible with the solids fraction;

(iii) at least one supercritical fluid in at least an amount which when added to (i) and (ii) is sufficient to form a feathered spray pattern when sprayed; and

(b) spraying said liquid mixture by passing it under pressure through an orifice to form droplets having an average diameter of 1 micron or greater.

5,057,343

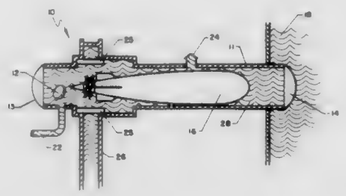
EFFERVESCENT CATIONIC FILM FORMING CORROSION INHIBITOR MATERIAL AND PROCESS

James E. Miller, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1990, Ser. No. 590,185

Int. Cl.[5] B05D *1/18*

U.S. Cl. 427—435 **9 Claims**



1. A method of providing a protective corrosion inhibitor film coating on the exterior surface of an aluminum weapon comprising:

loading an aluminum weapon into a launch tube;

providing an effervescent material containing preselected a quantity of a water soluble corrosion inhibitor;

placing the effervescent material within said launch tube; and

filling said launch tube with water to cause the effervescent material to undergo effervescence and produce a corrosion inhibitor solution that contacts the exterior surface of said aluminum weapon thereby producing a protective cation film of said corrosion inhibitor material on the exposed aluminum weapon surfaces contacted thereby.

5,057,344

FRAMED BOUQUET

Margaret P. Mealey, 9127 La Larga Vista, Spring Valley, Calif. 92077

Filed Feb. 12, 1990, Ser. No. 478,968

Int. Cl.[5] B44C *5/04;* **G02B** *5/08*

U.S. Cl. 428—13 **6 Claims**

1. A decorative plaque for displaying ornamental objects in an upright orientation, comprising:

a planar backing member having a flat front surface;

a three dimensional ornamental object mounted on the front surface of the backing member and projecting outwardly from the front surface by a varying amount over the area of the object to form a variable depth outer contour;

first securing means for securing the ornamental object to the front surface of the backing member at a selected position;

a flexible translucent cover sheet of larger area than the backing member covering the ornamental object and front surface of the backing member and conforming to the variable depth outer contour of the ornamental object; and

second securing means for securing the outer periphery of the translucent sheet to the outer periphery of the backing member with the sheet contacting but not compressing the ornamental object to maintain its three dimensional characteristics, and the sheet spaced away from the backing



member by a distance which varies across its area by the ornamental object.

5,057,345

FLUOROOPOLYMER BLENDS

Leonard Barrett, Bethlehem, Pa., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Aug. 17, 1989, Ser. No. 395,222

Int. Cl.[5] C08L *27/18, 27/20, 53/00*

U.S. Cl. 428—35.1 **24 Claims**

1. A polymer blend comprising

(A) a copolymer of tetrafluoroethylene and hexafluoropropylene and

a block copolymeric fluoroelastomer comprising tetrafluoroethylene, vinylidene fluoride, and hexafluoropropylene repeat units in a mole ratio 45–90:5–50:0–35 and at least one elastomeric segment comprising tetrafluoroethylene and ethylene repeat units;

the weight percent of copolymer (A) relative to the combined weights of copolymer (A) and fluoroelastomer (B) being about 70–90%.

13. A polymer blend comprising

(A) a copolymer of tetrafluoroethylene and hexafluoropropylene and

(B) a block copolymeric fluoroelastomer comprising tetrafluoroethylene, vinylidene fluoride, and hexafluoropropylene repeat units in a mole ratio 45–90:5–50:0–35 and at least one elastomeric segment comprising tetrafluoroethylene and ethylene repeat units;

the weight percent of copolymer (A) relative to the combine weights of copolymer (A) and fluoroelastomer (B) being about 3—30%.

5,057,346

FLOATABLE PAD WITH WEATHER PRECIPITATION COLLECTOR AND/OR REMOVABLE HOOK

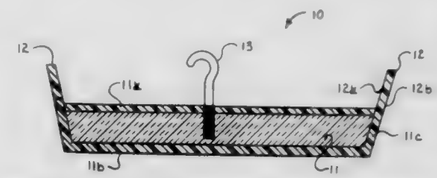
William W. Logan, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 14, 1989, Ser. No. 366,813

Int. Cl.[5] B32B *1/04, 3/02;* **E04H** *3/19*

U.S. Cl. 428—36.5 **16 Claims**

1. A floatable pad for providing a floating insulating cover on a process liquor comprising a hexagonally-shaped pad body having a top surface thereon and a bottom surface thereon and having side walls thereon which extend upwardly a predetermined distance from and perpendicular to the top of said pad body, or at an angle of from about 15 degrees to about 20 degrees from the perpendicular, thereby forming a collection



reservoir or barrel for collecting and holding weather precipitation on top of said pad body.

5,057,347

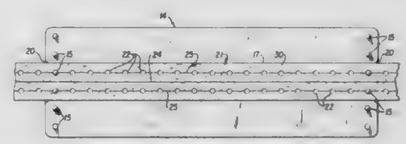
APPARATUS AND TAPE FOR SPLICING DATA PROCESSING WEBS AND MOUNTING MATERIAL THEREON

William R. Alvin, 12173 S. Dixie Hwy., Miami, Fla. 33156

Continuation of Ser. No. 55,373, May 29, 1987, abandoned. This application Sep. 21, 1989, Ser. No. 410,034

Int. Cl.[5] B32B *3/10;* **B65H** *69/06*

U.S. Cl. 428—43 **16 Claims**



1. For combination with a paper transport assembly for a printer having a type of paper feed mechanism which includes a pair of spaced sprockets for advancing webs of paper having regularly spaced perforations at their opposite side edges for engaging said sprockets, a tape for connecting a first web of paper to a second web of paper, the tape comprising an elongated ribbon of flexible material, said ribbon having a width which is greater than the distance between two adjacent of said perforations along each of said web's edges plus the diameters of said adjacent perforations, said tape having pairs of regularly spaced openings of slightly less diameter than said perforations extending longitudinally along said ribbon, each said pair of openings being the same distance apart as said perforations and of substantially the same configuration as said perforations, a layer of adhesive means on one side of said tape so that said tape is adapted to be fastened to said first web's end edge and to said second web's end edge to mate said first web's end edge with said second web's end edge in a manner that said mating end edges are interconnected by being connected to the adhesive means of said tape, two of said pairs of openings being in respective juxtaposition with the uppermost and lowermost perforations of said first web and said second web to receive said spaced sprockets as the interconnected first and second webs are advanced through said paper transport assembly, said openings being generally circular and having a diameter of about one-eighth of an inch, the openings in each said pair being one-half inch apart center to center and successive said pairs extending longitudinally along said ribbon being 0.50087 inch apart center to the next adjacent center.

12. A strip of flexible material for being connected to a paper web which is adapted to be drawn through a computer's printer, the web having perforations along both opposite side edges for receiving spaced sprockets of said printer, the strip being of elongated rectangular configuration having a longitudinal length substantially equal to the transverse width of said web and having at least two openings at each end of its length which are spaced apart the same distance as said perforations

so that oppositely disposed said openings are capable of simultaneously receiving said spaced sprockets, adhesive material covering substantially one entire surface of the strip's flexible material, a tear-off tab being provided at one end of said strip that extends transversely outwardly from said web.

5,057,348

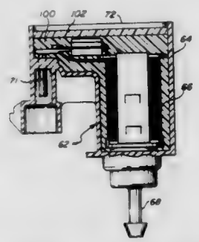
POTTED ELECTRICAL/MECHANICAL DEVICES, AND DUAL CURE POTTING METHOD

Kieran F. Drain, Rochester Hills, Mich., and Larry A. Nativi, Rocky Hill, Conn., assignors to Loctite Corporation, Hartford, Conn.

Division of Ser. No. 104,885, Aug. 19, 1987, Pat. No. 4,952,342, which is a continuation-in-part of Ser. No. 882,670, Jul. 7, 1986, which is a continuation-in-part of Ser. No. 801,984, Nov. 26, 1985. This application Jul. 25, 1990, Ser. No. 558,273

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—76 **38 Claims**



1. A device comprising a housing containing a mechanism potted therein by a cured mass of a self-leveling liquid composition;

the cured mass including a separate and discrete overlying layer comprising an actinic radiation cured first resin component, and an underlying layer comprising a second, ambient temperature curable resin component which is non-cured under actinic radiation conditions effective for curing the first resin component, and with the underlying layer not comprising the first resin component;

wherein the layers have been formed by providing in the housing a first portion of the self-leveling liquid components comprising a second resin component but not the first resin component, to form a first self-leveling liquid layer, and a second portion of the self-leveling liquid layer, and a second first component, to form a separate and discrete second self-leveling liquid layer on top of the first self-leveling liquid layer, and prior to curing of the second resin component, exposing the liquid composition to actinic radiation which is curingly effective for the first resin component, to form the overlying layer comprising the cured first resin component, above the uncured underlying layer comprising the second resin component, followed by curing of the second resin component.

5,057,349

INSERT FOR USE IN FABRIC-PAINTING

William Perry, P.O. Box 3094, Newport Beach, Calif. 92663

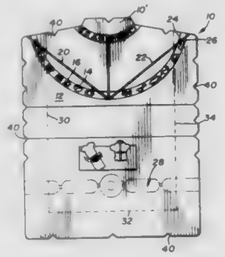
Filed Mar. 2, 1990, Ser. No. 487,285

Int. Cl.[5] B44D *3/00*

U.S. Cl. 428—81 **18 Claims**

1. In a board for use in fabric-painting, fabric-dyeing, fabric-splattering, or fabric-sponging, which board comprises a front surface, a rear surface, and a peripheral edge surface, said board being insertable into a garment between the front and rear portions thereof in order to prevent the paint or dye from soaking into a portion of the garment, the improvement comprising:

said peripheral edge surface comprising a series of spaced-apart notches formed therein; and



at least one stretchable rubber band for insertion into two of said notches, whereby said at least one rubber band may be used as a straight edge during the fabric-painting.

5,057,350

PALLET CHOCK

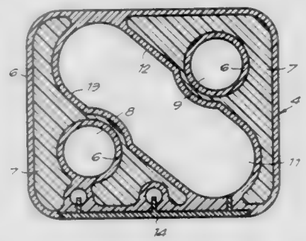
Jean-Marie Gezels, Pekelharing 35, 9000 Gent, Belgium, assignor to Jean-Marie J. Gezels, Gent, Belgium and Richard Leen, Mol, Belgium

Filed Aug. 10, 1990, Ser. No. 565,365

Claims priority, application Belgium, Aug. 10, 1989, 8900860

Int. Cl.[5] B32B *3/26*

U.S. Cl. 428—138 **10 Claims**



1. A pallet chock comprising an outer layer of compact synthetic material (**6**) and an inner, filler material of foamed synthetic material (**7**), formed by the process of injecting the filler material (**7**) immediately after the injection of the compact synthetic material (**6**) into a matrix in which the pallet chock (**4**) is formed.

9. Pallet chock according to claim **1**, wherein the chock (**4**) is substantially cubiform and has two diagonally placed through going openings (**8**, **9**) for the attachment thereof in a pallet (**1**).

5,057,351

METALLIZED POLYETHYLENE PLEXIFILAMENTARY FILM-FIBRIL SHEET

David C. Jones, Midlothian, and Chi-Chang Lee, Richmond, all of Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 377,682, Jul. 10, 1989, Pat. No. 4,999,222. This application Nov. 8, 1990, Ser. No. 610,760

Int. Cl.[5] B32B *3/10*

U.S. Cl. 428—138 **3 Claims**

1. A metallized polyethylene plexifilamentary film-fibril sheet having an emissivity on at least one side of from 0.06 to 0.18, a moisture vapor transport of at least 250 $g/m^2/24$ hours, a Gurley Hill porosity of at least 30 seconds and a hydrostatic head of at least 55 inches.

5,057,352

MAGNETIC RECORDING MEDIUM

Yasuo Ando, and Takuo Nishikawa, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 12, 1990, Ser. No. 536,535

Claims priority, application Japan, Jun. 15, 1989, 1-152506

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—141 **5 Claims**

1. A magnetic recording medium having a support and provided thereon a magnetic layer containing magnetic powder and a binder, wherein the surface of the magnetic layer has a Ns/Ns(t) ratio of 0.10 to 0.35, provided that the Ns is a number of spikes protruding from an average line of a surface roughness cross section curve by not less than 0.01 μm and the Ns(t) is a total number of spikes protruding from the average line.

5,057,353

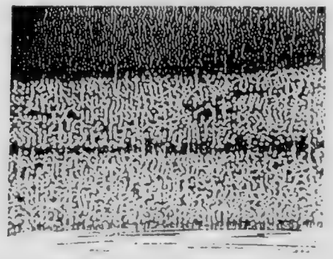
ADVANCE COMPOSITES WITH THERMOPLASTIC PARTICLES AT THE INTERFACE BETWEEN LAYERS

Artun Maranci, Westport; Steven L. Peake, Ridgefield, and Stanley S. Kaminski, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 353,277, May 17, 1989, Pat. No. 4,957,801. This application May 18, 1990, Ser. No. 526,272

Int. Cl.[5] B32B *5/28, 5/30*

U.S. Cl. 428—147 **4 Claims**



1. A fiber reinforced thermosetting resin matrix prepreg having an outer resin layer apart from the reinforcing fiber at one or both surfaces of the prepreg said outer layer comprising particles of thermoplastic resin of particle size in the range from 2 to 100 microns particle diameter, said thermoplastic resin particles being of resin that is soluble in the thermosetting matrix resin upon curing of the prepreg in a composite.

5,057,354

MOTOR VEHICLE GLAZING WITH PREASSEMBLED TEAR-AWAY CORD AND METHOD FOR ITS PREPARATION

Heinz Kunert, Cologne; Hans Ohlenforst, Aachen, and Gerd Cornils, Merzenich-Girbelsrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage International, Aubervilliers, France

Filed Oct. 31, 1989, Ser. No. 429,925

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1988, 3837043

Int. Cl.[5] B32B *23/02;* **B60J** *1/00*

U.S. Cl. 428—192 **10 Claims**

1. A motor vehicle glazing prepared by bonding in an opening comprising:

a transparent sheet having a peripheral edge,

a profile bead deposited on the peripheral edge of said sheet, said bead forming an intermediate bond between the sheet and an assembly adhesive, said bead having an upper surface which has a width equal to or larger than that of the assembly adhesive when the glazing is bonded in the opening, and a lower surface which provides a contact surface with the sheet, said bead having a substantially T-shaped cross section such that at least one air gap is formed between the sheet and the profile bead,

a flexible tear-away cord with high tensile strength, said cord having been placed in one of said air gaps after the profile bead has set, so that the cord can be used to shear a section of the profile bead to remove the glazing from the opening,

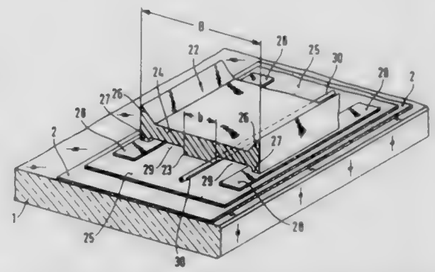
the section of the profile bead to be sheared for the removal of the glazing being substantially less in width than the width of the upper surface of the profile bead.

6. A motor vehicle glazing prepared for bonding in an opening comprising:

a transparent sheet having a peripheral edge,

a profile bead deposited on the peripheral edge of said sheet, said bead forming an intermediate bond between the sheet and an assembly adhesive, said bead having an upper surface which has a width equal to or larger than that of the assembly adhesive when the glazing is bonded in the opening, and a lower surface which provides a contact surface with the sheet, said bead having a substantially X-shaped cross section in which the widths of said lower surface and said upper surface are substantially equal, said bead having a lateral constriction between said lower and upper surfaces so as to form said air gaps between the upper and lower surfaces of said bead,

a flexible tear-away cord with high tensile strength, said



cord having been placed in one of said air gaps after the profile bead has set, so that the cord can be used to shear a section of the profile bead to remove the glazing from the opening,

the section of the profile bead to be sheared for the removal of the glazing being substantially less in width than the width of the upper surface of the profile bead.

7. A method for preparing a motor vehicle glazing for bonding in an opening, wherein the glazing comprises a transparent sheet having a peripheral edge, said method comprising the steps of:

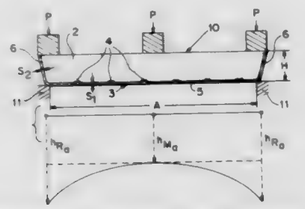
depositing a profile bead on the peripheral edge of said sheet, said bead forming an intermediate bond between the sheet and an assembly adhesive, said bead having an upper surface which has a width equal to or larger than that of the assembly adhesive when the glazing is bonded in the opening and a lower surface which provides a contact surface with the sheet, said bead having a cross section such that at least one air gap is formed between the sheet and the assembly adhesive,

inserting a flexible tear-away cord with high tensile strength in one of said air gaps after setting of the profile bead so that the cord can be used to shear a section of the profile bead so as to remove the glazing from the opening, wherein the section of the profile bead to be sheared for the removal of the glazing is substantially less in width than the width of the upper surface of the profile bead.

5,057,355
COMPOSITE PLATE, ESPECIALLY FOR RAISED FLOORS

Ulrich Klingelhofer, Neubaustrasse 7, D-8702 Waldbuettelbrunn, Fed. Rep. of Germany; Max Mengeringhausen, deceased, late of Wurzburg, Fed. Rep. of Germany, by Horst Klose, legal representative, Durrbachtal 30, D-8700 Wurzburg, Fed. Rep. of Germany

Filed Jul. 25, 1988, Ser. No. 208,132
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720238
Int. Cl.[5] F32B *23/02*
U.S. Cl. 428—192 12 Claims

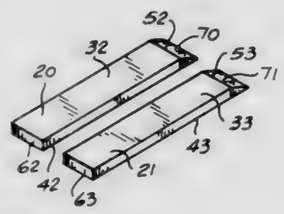


1. Composite plate, especially for raised floor plate constructions to be supported at the corners, comprising a shell having side walls and being open at the top, manufactured of tension-resistant material, a filling of pressure-resistant material, anchoring means in the shell for generating a binding effect between the filling and the shell, and reinforcing plate means connected to the shell, characterized in that the reinforcing plate means is provided on the side walls of the shell for increasing the thickness thereof so that it is at least twice the thickness of the bottom of the shell so that the bearing strength of the composite plate is substantially equalized in the border and the middle of the plate, whereby assurance is provided against rupture at the border.

5,057,356
TEMPORARY FLOOR SURFACE FOR MOVING HEAVY ITEMS

Terry C. Smith, 16435 SE. 34th St., Bellevue, Wash. 98008

Filed Jun. 13, 1990, Ser. No. 537,254
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—192 7 Claims



1. A removable floor surface which facilitates movement of a heavy household appliance, such as a refrigerator, without damage to a soft floor covering such as vinyl or wood with the removable floor surface supporting the appliance both in normal and in removed positions and comprising

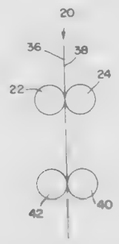
two elongated stationary plastic strips and two elongated temporary strips each with an upper surface, an undersurface, a first end, and a second end,

a severable ramp on a first end of each of the two temporary strips with a ramp surface extending from the undersurface to the upper surface of each temporary strip to facilitate initial positioning of a heavy item with legs, such as a refrigerator, onto the temporary strips, the first end becoming the same as its second end when the ramp is severed, each strip, respectively, placed in parallel, spaced-apart relation in front-to-back alignment with legs of the heavy item, each stationary strip being abutted without gap against an end of a temporary strip without a ramp thereby enabling the heavy item to be thereafter positioned on and supported by the two stationary strips with the heavy item in its normal location.

5,057,357
SOFT COVERSTOCK WITH IMPROVED DIMENSIONAL STABILITY AND STRENGTH AND METHOD OF MANUFACTURING THE SAME

Craig M. Winebarger, Mauldin, S.C., assignor to Fiberweb North America, Inc., Greenville, S.C.

Filed Oct. 21, 1988, Ser. No. 261,009
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 8 Claims



1. A thermally-bonded fibrous web having a basis weight in a range of about 10 to about 40 gm/sy and a caliper in a range of about 6.6 to about 11.1 mils produced by a method comprising the steps of:

forming a fibrous web, having a first face and an opposite second face, of thermally-bondable fibers;

passing said fibrous web through a first pair of cooperating rollers in a first calender nip, at least one of said first pair of rollers having a patterned surface;

applying heat and pressure to said fibrous web in said first nip for thermally bonding a first portion of said fibers with a pattern of bond points;

passing said fibrous web through a second pair of cooperating rollers in a second calender nip, at least one of said second pair of rollers having a patterned surface; and

applying heat and pressure to said fibrous web in said second nip for thermally bonding a second portion of said fibers with a pattern of bond points.

5,057,358
UV-CURABLE EPOXY SILICONES

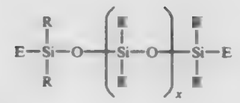
Karen D. Riding, Castleton, and David E. Farley, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Mar. 23, 1990, Ser. No. 498,300
Int. Cl.[5] B32B *3/00, 15/04;* C08G *77/06, 77/04*
U.S. Cl. 428—209 14 Claims

1. An ultraviolet radiation-curable composition having a tensile strength in the range of from about 45 to about 89 pounds per square inch and an elongation in the range of from about 80% to about 140%, comprising:

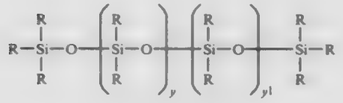
(A) a blend of epoxy-functional dialkylpolysiloxanes comprising by weight:

(a) about 5 to about 25 weight % of an epoxy-functional, dialkylpolysiloxane having the general formula



wherein x is a value in the range of about 200 to about 550;

(b) about 10 to about 30 weight % of an epoxy-functional dialkylpolysiloxane having the general formula



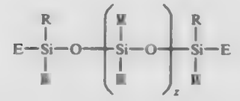
or the general formula:





or a mixture of the foregoing, wherein y is a value in the range of about 3 to about 5, and y^1 is a value in the range of about 20 to about 100; and

(c) about 45 to about 85 weight % of an epoxy-functional dialkylpolysiloxane having the general formula



wherein z is a value in the range of 75 to about 150;

wherein E represents an epoxy-functional organic radical having from 2 to 20 carbon atoms and R is individually a lower alkyl radical having 1 to 8 carbon atoms, and

(B) a catalytic amount of an onium salt photoinitiator or a combination of onium salt photoinitiators.

5,057,359
CARTON BLANK, ESPECIALLY FOR USE IN CONTAINERS FOR FOOD PRODUCTS

Knut Merdem, Fredrikstad, and Terje Hansen, Moss, both of Norway, assignors to Polycoat A/S, Dilling, Norway

Filed Oct. 19, 1988, Ser. No. 259,846
Claims priority, application Norway, Oct. 21, 1987, 874385
Int. Cl.[5] B32B *27/10;* B65D *65/40*
U.S. Cl. 428—213 12 Claims

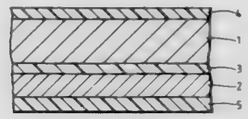
1. A carton blank comprising:

(a) a paperboard member;

(b) a layer of greaseproof paper laminated to said paperboard member by means of a layer of adhesive, to form a paperboard/greaseproof paper composite having first and second, opposite, sides;

(i) said greaseproof paper having a grease-resistance of at least 900 sec. according to the standard of the Technical Association of Pulp and Paper Industry;

(c) a first layer of polyethylene laminated to the paperboard/greaseproof paper composite first side;



(d) a second layer of polyethylene laminated to the paperboard/greaseproof paper composite second side; and,

(e) said carton blank being further characterized by the absence of a metal foil sheet therein.

5,057,360
CERAMIC GREEN SHEET

Shigemi Osaka; Kazuo Hata; Norikazu Aikawa, all of Himeji, and Masato Adachi, Takatsuki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 24, 1988, Ser. No. 261,620
Claims priority, application Japan, Oct. 23, 1987, 62-266497
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—220 14 Claims

1. A ceramic green sheet made of a sheet of a ceramic precursor composition comprising

(A) 100 parts by weight of at least one fine ceramic powder selected from the group consisting of zirconia and alumina and having an average particle diameter in the range of 0.01 to 2 microns and

(B) 10 to 40 parts by weight of a copolymer produced by copolymerizing

(a) 10 to 50% by weight of an alkyl or cycloalkyl acrylate having an alkyl group of 1 to 10 carbon atoms or a cycloalkyl group of 4 to 8 carbon atoms,

(b) 30 to 80% by weight of an alkyl or cycloalkyl methacrylate having an alkyl group of 1 to 20 carbon atoms or a cycloalkyl group of 4 to 8 carbon atoms,

(c) 1 to 5% by weight of a copolymerizable unsaturated carboxyl , and

(d) 3 to 59% by weight of a hydroxyalkyl acrylate having a hydroxyalkyl group of 2 to 10 carbon atoms (providing that the total amount of the monomers is 100% by weight)

and having a number average molecular weight in the range of 10,000 to 100,000 and a glass transition point in the range of −40° to 0° C.

5,057,361
WETTABLE POLYMERIC FABRICS

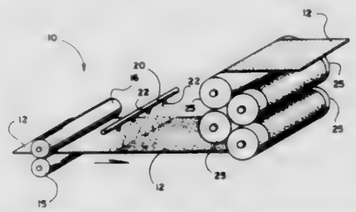
John J. Sayovitz, and Cheryl A. Perkins, both of Marietta, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 17, 1989, Ser. No. 439,062
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—290 41 Claims

10. A wettable polymeric fabric comprising:

a normally water repelling polymeric fabric having a surface; and a primary surfactant having a cloud point less

than about 50°C. substantially uniformly distributed on the surface of the polymeric fabric, the primary surfactant



also having a low solubility in water and being dispersible in water.

5,057,362

MULTILAYER CERAMIC OXIDE SOLID ELECTROLYTE FOR FUEL CELLS AND ELECTROLYSIS CELLS

James E. Schroeder, Claremont, Calif., and Harlan U. Anderson, Rolla, Mo., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 151,172, Feb. 1, 1988, Pat. No. 4,957,673. This application Jul. 13, 1990, Ser. No. 553,477

Int. Cl.[5] B32B *18/00, 5/18*

U.S. Cl. 428—312.2 **25 Claims**

22. An unitary ceramic structure comprising:

a first layer of sintered preagglomerated ceramic particles of a first composition which is operable for the flow therethrough of electrical current, the first layer having a density which is no more than about 70% of theoretical density, the first layer having interconnected pores which allow for the flow therethrough of gas;

a second layer of sintered dispersed small size ceramic particles of a second composition which is operable for the flow therethrough of ions, the second layer having a density which is at least about 95% of theoretical density, the second layer being impervious to the flow therethrough of gas; and

a third layer of sintered preagglomerated ceramic particles of a third composition which is operable for the flow therethrough of electrical current, the third layer having a density which is no more than about 70% of theoretical density, the third layer having interconnected pores which allow for the flow therethrough of gas, and wherein the second layer is bonded on one side thereof to the first layer and on the other side thereof to the third layer thereby forming an unitary ceramic structure.

5,057,363

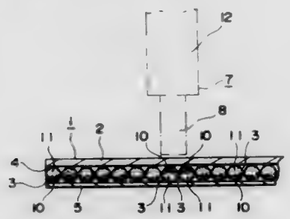
MAGNETIC DISPLAY SYSTEM

Masayuki Nakanishi, Kanagawa, Japan, assignor to Japan Capsular Products Inc., Tokyo, Japan

Filed Dec. 27, 1989, Ser. No. 457,938

Int. Cl.[5] B43L *1/12*

U.S. Cl. 428—321.5 **6 Claims**



1. A magnetic display system, comprising:

a display comprising a non-magnetic substrate forming a front side, a back side and a microcapsule coating layer on said substrate, said microcapsule coating layer including a plurality of microcapsules, and said microcapsules containing a plurality of magnetic particles having a light absorbing characteristic and a plurality of non-magnetic particles having a light reflecting characteristic, both said magnetic and said non-magnetic particles being disposed in an oily liquid in said microcapsules;

a first magnetic means for causing migration of said light absorbing magnetic particles in said microcapsules toward said back side of said display and migration of said light reflecting non-magnetic particles in said microcapsules toward said front side of said display in an area of said microcapsule coating layer to make said area light reflective from said front side of said display, said first magnetic means comprising a permanent magnet; and

a second magnetic means for causing migration of said light absorbing magnetic particles in said microcapsules toward said front side of said display and migration of said light reflecting non-magnetic particles in said microcapsules toward said back side of said display at localized positions in said area of said microcapsule coating layer to make said localized positions light absorbing from said front side of said display for contrast with the light reflective remainder of said area, said second magnetic means comprising a permanent magnet.

5,057,364

MAGNETIC RECORDING MEDIUM

Shinji Saito, and Hiroshi Ogawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1990, Ser. No. 549,026

Claims priority, application Japan, Jul. 6, 1989, 1-175178

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—323 **3 Claims**

1. A magnetic recording medium comprising a non-magnetic support having thereon at least one magnetic layer comprising a dispersion of ferromagnetic particles in a binder; said at least one magnetic layer comprising:

(a) a surface comprising abrasive agents having a Mohs' hardness of 6 or more in an average amount of 0.3 to 1.4 particles/μm^2, and

(b) a cutting cross section containing abrasive agents having a Mohs' hardness of 6 or more in an average amount of at least 0.1 particle/μm^2 greater than said average amount of abrasive agents contained on said surface.

5,057,365

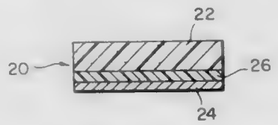
CAP LINER AND PROCESS FOR USING CAP LINER TO SEAL CONTAINERS

Harvey Finkelstein, Mahwah, and C. Walter Burgess, Somerville, both of N.J., assignors to 501 Tri-Seal International, Inc., Blauvelt, N.Y.

Filed Jul. 12, 1989, Ser. No. 378,763

Int. Cl.[5] B32B *7/12, 15/12*

U.S. Cl. 428—344 **5 Claims**



1. A cap liner for hermetically sealing a container having an open top, said cap liner comprising:

A. a backing layer comprising a coextruded material consisting of foamed thermoplastic material sandwiched between two layers of solid thermoplastic material;

B. a sealing layer comprising metallic foil having a coated surface and an uncoated surface, said coated surface of the metallic foil having a heat sealable adhesive coating thereon; and

C. a bond layer positioned between one of the layers of solid thermoplastic material of the backing layer and the uncoated surface of the metallic foil of the sealing layer.

5,057,366

ACRYLATE COPOLYMER PRESSURE-SENSITIVE ADHESIVE COATED SHEET MATERIAL

James R. Husman, South St. Paul; James N. Kellen, Oakdale; Rebecca E. McCluney, Maplewood, and Michael L. Tumey, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 16, 1982, Ser. No. 419,025

Int. Cl.[5] C09J *7/02;* **B32B** *23/08*

U.S. Cl. 428—355 **12 Claims**

1. A normally tacky and pressure-sensitive adhesive coated sheet material comprising a backing member and a coating covering at least a portion of one major surface thereof of a pressure-sensitive adhesive composition comprising copolymer having an inherent viscosity greater than 0.2 and consisting essentially of copolymerized repeating A and C monomers and optionally B monomer as follows:

A is a monomeric acrylic or methacrylic acid ester of a non-tertiary alcohol, said alcohol having from 1 to 14 carbon atoms with the average number of carbon atoms being about 4–12;

when used, B is at least one polar monomer copolymerizable with said monomeric acrylic acid ester, preferred monomers being acrylic acid, methacrylic acid, itaconic acid, acrylamide, methacrylamide, acrylonitrile and methacrylonitrile, the amount by weight of B monomer being up to 12% of the total weight of all monomers; and

C is a monomer having the general formula $X-(Y)_n-Z$ wherein

X is a vinyl group copolymerizable with said A and B monomers;

Y is a divalent linking group; where n can be zero or 1;

Z is a monovalent polymeric moiety having a T_g greater than 20° C. and a molecular weight in the range of about 2,000 to 30,000 and being essentially unreactive under copolymerization conditions;

wherein said vinyl group and said A and B monomers are copolymerized to form a soft polymeric backbone having pendant therefrom said polymeric moieties and wherein the weight of said C monomer is within the range of about 1 to 30% of the total weight of all monomers in said copolymer and the total weight of said B and C monomers in said copolymer is within the range of about 4 to 30% of the total weight of all monomers in said copolymer, the amount of C monomer in said polymer is such as to provide said adhesive composition with a shear holding value of at least 50 minutes.

5,057,367

FLAME RETARDANT AND A FLAME-RETARDANT RESIN COMPOSITION CONTAINING THE SAME

Akira Morii; Shunichi Fujimura, both of Ichihara, and Kiyoshi Nakayama, Chiba, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Ube Chemical Industries, Co., Ltd., Ube, both of, Japan

Filed Feb. 5, 1990, Ser. No. 475,179

Claims priority, application Japan, Apr. 19, 1989, 1-99381; Oct. 6, 1989, 1-260232

Int. Cl.[5] C08K *3/26*

U.S. Cl. 428—389 **36 Claims**

1. A flame retardant comprising a mixture of 10 to 90% by weight of a powder A and 90 to 10% by weight of a powder B of magnesium hydroxide, said powder A comprising 40 to 70% by weight of a powdered huntite, and 60 to 30% by weight of powdered hydromagnesite.

5,057,368

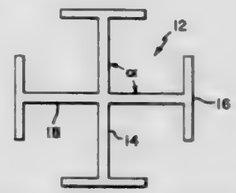
FILAMENTS HAVING TRILOBAL OR QUADRILOBAL CROSS-SECTIONS

Theodore Largman, Morristown; Fred J. Gefri, Hackettstown, and Frank Mares, Whippany, all of N.J., assignors to Allied-Signal, Morris Township, Morris County, N.J.

Filed Dec. 21, 1989, Ser. No. 454,209

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—397 **16 Claims**



1. Multilobal fibers composed of a thermoplastic polymer, said fiber having a cross-section comprised of a central core having three or four T-shaped lobes projecting therefrom, each of said T-shaped lobes having a leg and a cap, the legs of each of said lobes intersecting at the center of said core such that the angle between the legs of adjacent T-shaped lobes is in the range of from about 80° to about 130°, the legs of each of said T-shaped lobes having an average length, "W_1", of from about 4.5 to about 25 μm. from the center of said central core, and an average width, "W_t", of from about 0.5 to about 20 μm, the caps of each of said T-shaped lobes having an average length, "C_l", of from about 4.5 to about 50 μm and each of the caps having an average width, C_t", of from about 0.5 to about 20 μm, wherein the relative values of W_1, W_t, $C_1$and C_t are selected such that:

$$C_1(max)=2W_1-2C_t \text{ and}$$

$$C_1(min)=2W_t.$$

5,057,369

HEATSETTABLE ARTIFICIAL HAIR AND PRODUCTION THEREOF

Shinji Yamaguchi; Katsura Maeda, both of Kurashiki; Masami Ohta, Takatsuki, and Masao Kawamoto, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

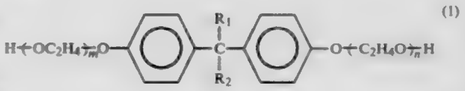
Filed Nov. 15, 1989, Ser. No. 436,632

Claims priority, application Japan, Nov. 21, 1988, 63-295119

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—400 **4 Claims**

1. A heatsettable artificial hair which can readily be heatset and is made of synthetic filaments comprising a copolyester comprising ethylene terephthalate residue in an amount of at least 80 mol% of the total constituting units copolymerized with a compound represented by the following general formula (1) in an amount of 1 to 8 mol% of the total constituting units



(1)

wherein R_1 and R_2 each is a hydrogen atom or a methyl group, and m and n each is an integer of 1 or 2, said filaments having a thermal shrinkage when heated at 170° C., DSr (170), calculated from the following formula of not more than 10%

$$DSr\,(170) = \frac{l_0 - l_1}{l_0} \times 100\,(\%)$$

wherein l_0 is the gauge length of a specimen filament under a load of 0.1 g/d before heat treatment and l_1 is the length measured under a load of 0.1 g/d after heat treatment in an oven at 170° C. for 10 minutes under a load of 1 mg/d followed by cooling.

5,057,370

ELECTRICALLY CONDUCTING SOLID PLASTICS

Manfred Krieg; Armin Meyer, both of Darmstadt; Winfried Wunderlich, Rossdorf, and Rainer Friederich, Biebesheim, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 259,431, Oct. 11, 1988, abandoned, which is a continuation of Ser. No. 935,201, Nov. 26, 1986, abandoned. This application Mar. 29, 1990, Ser. No. 501,957

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1985, 3543301

Int. Cl.[5] **B32B** *27/14, 27/18;* **H01C** *1/24*

U.S. Cl. 428—403 **12 Claims**

1. An electrically conductive solid thermoplastic, which consists essentially of:

a) bead-shaped particles of substantially non-crystalline polymethyl methacrylate polymer having a mean particle diameter in the range of about 10–1,000 μm, and

b) carbon black, as an electrically conducting substance, substantially all of which is present on the surface of said polymer particles, in an amount of 0.05–5 wt. %, based on the weight of the polymer, wherein said electrically conductive substance is in the form of a plurality of conducting particulate solid bodies, and further wherein the glass transition temperature of said polymer is not exceeded when the conducting substance is mixed with said polymer particles.

5,057,371

AZIRIDINE-TREATED ARTICLES

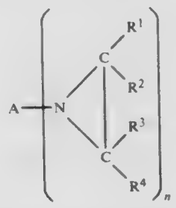
George Canty, Woodbury, and Robert E. Jones, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 14, 1985, Ser. No. 745,261

Int. Cl.[5] **B32B** *33/00*

U.S. Cl. 428—411.1 **2 Claims**

1. An aritcole,having at least one essentially flat major surface which has been treated with a composition consisting of an aziridine-containing compound having the formula



wherein A is an n-valent organic or inorganic group, R^1, R^2, R^3, R^4 are independently selected from hydrogen and lower alkyl groups, and n is a whole number of at least 1 so as to render said surface more adherent to subsequently applied layers and further wherein said article is an inorganic material.

5,057,372

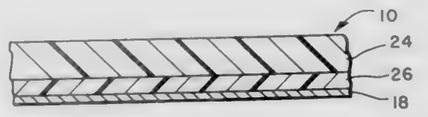
MULTILAYER FILM AND LAMINATE FOR USE IN PRODUCING PRINTED CIRCUIT BOARDS

Stephen M. Imfeld, Pataskala, and Randall S. Shipley, Reynoldsburg, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 22, 1989, Ser. No. 326,931

Int. Cl.[5] **B32B** *27/36, 15/08*

U.S. Cl. 428—412 **20 Claims**



1. A laminate for use in production of printed circuit boards comprising:

a layer of a cladding metal foil and

a releasable protective carrier sheet for said metal foil comprising a multilayer film having as one surface thereof a support layer containing an extrudable thermoplastic resin able to withstand up to 200 degrees C. without softening and as the other surface thereof an adhesive layer containing at least one extrudable thermoplastic resin having a melting point range of from 100 to 200 degrees C.,

said adhesive layer releasably bonding said carrier sheet to said cladding metal foil layer.

2. The laminate of claim 1 wherein said cladding metal foil is copper foil.

3. The laminate of claim 2 wherein said adhesive layer contains a polyolefin resin.

4. The laminate of claim 3 wherein said support layer contains a resin selected from the group consisting of polymethylpentene, polyamide, polycarbonate resins, and copolymers and mixture thereof.

5,057,373

MAGNETIC RECORDING MEDIUM

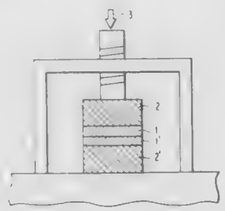
Fumihiro Tokunaga; Jun Nakagawa; Tsutomu Okita, and Toshio Kawamata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1989, Ser. No. 330,578

Claims priority, application Japan, Mar. 31, 1988, 63-76396

Int. Cl.[5] **G11B** *23/00*

U.S. Cl. 428—413 **10 Claims**



1. A magnetic recording medium comprising a non-magnetic support having thereon a magnetic layer comprising a binder and ferromagnetic particles dispersed therein, wherein said binder comprises (a) a vinyl chloride resin, (b) a phenoxy resin, (c) a polycarbonate polyurethane resin and (d) a polyisocyanate; wherein the amount of said vinyl chloride resin (a) is from 15 to 65 wt % based on the total amount of (a), (b) and (c),

the amount of said phenoxy resin (b) is from 10 to 60 wt % based on the total amount of (a), (b) and (c),

the amount of said polycarbonate polyurethane resin (c) is from 25 to 75 wt % based on the total amount of (a), (b) and (c), and

the amount of said polyisocyanate (d) is from 5 to 30 parts by weight per 100 parts by weight of the total amount of (a), (b) and (c);

and said magnetic layer further comprises at least one lubricating agent selected from the group consisting of polyalkyleneoxide alkylphosphate, an alkali salt thereof, and lecithin.

5,057,374

MNO/NIO-BASED NONMAGNETIC SUBSTRATE MATERIAL

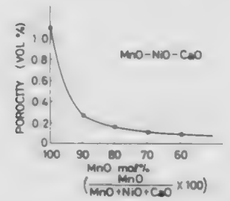
Kazuhiro Tsuchiya; Toshikazu Nishiyama, and Hiroshi Tomishima, all of Saitama, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Division of Ser. No. 887,184, Jul. 21, 1986, Pat. No. 4,805,059. This application Sep. 15, 1988, Ser. No. 244,292

Claims priority, application Japan, Jul. 22, 1985, 60-161660

Int. Cl.[5] **B32B** *17/06*

U.S. Cl. 428—426 **5 Claims**



1. A nonmagnetic substrate material comprising 67 to 90 mol % of MnO, 10 to 33 mol % of NiO, and at least about 0.1 mol % but not more than 10 mol % of at least one member selected from the group consisting of CaO, ZrO_2, V_2O_5, Y_2O_3, and CuO and having a rock salt type crystalline structure.

5,057,375

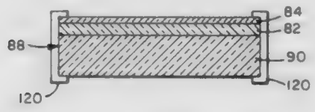
TITANIUM SILICIDE-COATED GLASS WINDOWS

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

Filed Apr. 15, 1988, Ser. No. 182,092

Int. Cl.[5] **B32B** *17/06*

U.S. Cl. 428—432 **10 Claims**



1. In a window having a transparent coated glass member, said member mounted in a frame so that it has a first surface facing outwardly of a structure and a second surface facing inwardly of said structure, the improvement wherein the window consists essentially of

a) a transparent glass substrate;

b) a transparent coating comprising titanium silicide on said substrate to enhance the solar-shielding properties of said window while preserving a color-neutral appearance of said window when viewed from either surface of said window; and

c) a protective overcoat for said titanium silicide coating on said window, said protective overcoat comprising silicon or a metal oxide selected from the group consisting of alumina, silica or tin oxide.

5,057,376

HYBRID PACKAGE, GLASS CERAMIC SUBSTRATE FOR THE HYBRID PACKAGE, AND COMPOSITION FOR THE GLASS CERAMIC SUBSTRATE

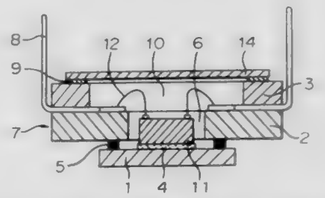
Kazuo Sunahara; Naosi Irisawa; Katumasa Nakahara; Kazunari Watanabe, and Mitsuo Takabatake, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 15, 1989, Ser. No. 436,738

Claims priority, application Japan, Nov. 15, 1988, 63-286664; Sep. 8, 1989, 1-231399

Int. Cl.[5] **B32B** *17/06*

U.S. Cl. 428—432 **7 Claims**



1. A hybrid package comprising a glass ceramic substrate layer and an aluminum nitride substrate bonded to said glass ceramic substrate layer by a bonding portion; said glass ceramic substrate layer, said aluminum nitride substrate and said bonding portion each having a respective thermal expansion coefficient, said glass ceramic substrate layer and said aluminum nitride substrate having a difference in thermal expansion coefficient having an absolute value of not more than 20×10^{-7}° C., said aluminum nitride substrate and said bonding portion having a difference in thermal expansion coefficient having an absolute value of not more than 30×10^{-7}/° C.; said glass ceramic substrate layer being made of at least one glass ceramic substrate comprising inorganic components consisting essentially of from 50 to 91% by weight of alumina, from 5 to 30% by weight of SiO_2, from 3 to 20% by weight of PbO, from 0 to 15% by weight of B_2O_3, from 0.5 to 15% by weight of an alkaline earth metal oxide and from 0 to 6% by weight of oxides of Ti+Zr+HF, and from 0.05 to 10% by weight, based on the total amount of the inorganic components, of chromium oxide+vanadium oxide+cerium oxide+cobalt oxide+tin oxide where the chromium oxide is calculated as Cr_2O_3, the vanadium oxide is calculated as V_2O_5, the cerium oxide is calculated as CeO_2, the cobalt oxide is calculated as CoO and the tin oxide is calculated as SnO_2.

5,057,377

FLUORINATED SILICON POLYMERS

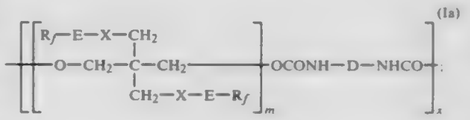
Athanasios Karydas, New York, and Juliana Rodgers, Staten Island, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 523,962, May 16, 1990, abandoned. This application Jul. 23, 1990, Ser. No. 556,936

Int. Cl.[5] **B32B** *9/04*

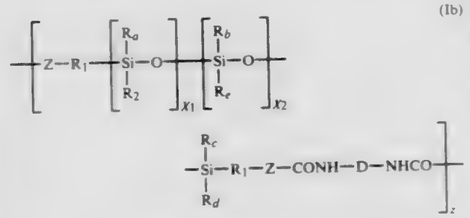
U.S. Cl. 428—447 **18 Claims**

1. A urethane containing polymer comprising about 5% to about 70% by weight of perfluoroalkyl containing segments of bis-R_f-containing neopentyleneoxy units and about 20–95% by weight of siloxane segments, wherein the perfluoroalkyl containing segment is selected from those of the structure:



and the siloxane-containing segment is selected from those of the structure:

(Ib)



wherein R_f is a straight or branched chain perfluoroalkyl up to 18 carbon atoms or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms, or mixtures thereof;

E is straight or branched chain alkylene of 1 to 10 carbon atoms or said alkylene interrupted by one to three groups independently selected from the group consisting of —NR—, —O—, —S—, —COO—, —OOC—, —CONR—, —NRCO—, —SO_2NR— and NRSO_2—, or attached at the R_f end with —CONR— or —SO_2NR— where such R_f is attached to the respective carbonyl carbon or sulfur atom thereof and X is —S—, —O—, SO_2— or —NR—; or E is a direct bond and X is —CONR— or —SO_2NR where R_f is attached to the respective carbonyl carbon or sulfur atom thereof; and R is independently hydrogen, alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 2 to 6 carbon atoms; m is 1–3 and x is 1 to 20; Z is —)—, —S— or —NR_4— where R_4 is hydrogen or lower alkyl; R_1 is straight or branched chain alkylene of up to 6 carbon atoms which may be interrupted by —N(-R)— where R is as defined hereinabove or is a polyoxyalkylene group of the formula

—(alk—O)$_f$—alk—

where alk is straight or branched chain alkylene of 2 to 4 carbon atoms and f is an integer of 1 to about 50. R_2, R_a, R_b, R_c, R_d and R_e are straight or branched chain alkyl of up to 18 carbon atoms, alkoxy of up to 5 carbon atoms, phenyl or aralkylene of 7 to 19 carbon atoms; X_1 and X_2 are integers from 1 to 500 with the proviso that X_1+X_2 is 5 to 1300; and z is 1 to 20;

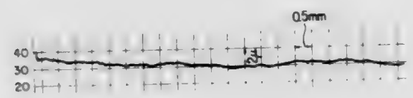
and D is the residue of an aromatic, aliphatic, cycloaliphatic or araliphatic diisocyanate.

5,057,378

GLASS CERAMIC FOR COATING METAL SUBSTRATE

Atsushi Nishino, Neyagawa; Yasuo Mizuno, Hirakata; Masaki Ikeda, Hirakata, and Masahiro Hiraka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 304,476, Feb. 1, 1989, Pat. No. 4,965,229.
This application Jul. 20, 1990, Ser. No. 554,929
Claims priority, application Japan, Feb. 5, 1988, 63-26131; Feb. 5, 1988, 63-26132
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—457 **3 Claims**



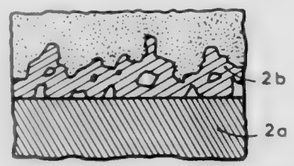
1. A circuit board comprising a metal substrate and a glass ceramic coated on the surface thereof in which the principal components of said glass ceramic at least comprises 3–40% of La_2O_3 or CeO_2, 20–50% of MgO, 1–20% of CaO, 0–15% of BaO, 10–30% of B_2O_3, 8–20% of SiO_2, 0-5% of MO_2, M being at least one metal selected from Zr, Ti and Sn, and 0–5% of P_2O_5, respectively in terms of % by weight.

5,057,379

HEAT ENGINE PARTS MADE OF ALLOY AND HAVING A METALLIC-CERAMIC PROTECTIVE COATING AND METHOD OF FORMING SAID COATING

Dominique M. M. Fayeulle, Charenton Le Pont; Jean-Paul Henon, Versailles, and René J. Morbioli, Corbeil, all of France, assignors to Societe Nationale D'Etude et De Construction De Moteurs D'Aviation "S.N.E.C.M.A." and Association Pour La Recherche et Le Developpement Des Methodes et Processus Industriels A.R.M.I.N.E.S., both of Paris, France

Filed May 23, 1988, Ser. No. 197,318
Claims priority, application France, May 26, 1987, 87 07372
Int. Cl.[5] C03C *27/08*
U.S. Cl. 428—632 **19 Claims**



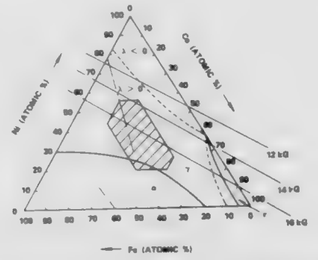
1. A heat engine part made of an alloy having good mechanical strength and resistance to high temperatures, said part having a protective coating comprising a metallic structure obtained by electrophoretic deposition and a consolidation treatment, said metallic structure being of a cellular form wherein the cells are substantially evenly distributed and are of a predetermined size depending on the conditions selected for said electrophoretic deposition, and said metallic structure having a modified composition and being bonded to said alloy part as a result of said consolidation treatment, and a ceramic based material applied to said metallic structure by atmospheric plasma spraying.

5,057,380

SOFT MAGNETIC THIN FILMS OF ALLOYS OF FECONI OR FECODY AND LAMINATES COMPRISING ALTERNATE LAYERS OF FACE CENTERED CUBIC AND BODY CENTERED CUBIC CRYSTAL STRUCTURE

Kazuhiko Hayashi; Masatoshi Hayakawa; Kenji Katori, and Koichi Aso, all of Kangawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 27, 1988, Ser. No. 212,183
Claims priority, application Japan, Jun. 30, 1987, 62-163593; Jun. 30, 1987, 62-163594
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—692 **5 Claims**



1. A soft magnetic thin film having a multi layered structure of alternately superposed 1st and 2nd magnetic thin films, wherein said first magnetic thin film having a face centered cubic structure and having a composition represented by the formula:

$$Fe_aCo_bNi_cM_d$$

wherein a, b, c and d represent the atomic percent of the elements and

$20 \leqq a \leqq 40$
$15 \leqq b \leqq 55$
$20 \leqq c \leqq 55$
$0 \leqq d \leqq 5$
$a+b+c+d=100$

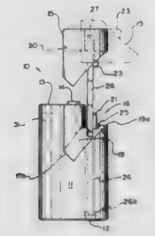
and M is at least one element selected from the group consisting of Ti, Zr, V, Nb, Ta, Cr, Mo, W, B, C, Si, Al, Ge, Ga and said second magnetic thin film having a body centered cubic structure.

5,057,381

SATELLITE RECHARGEABLE BATTERY AND RECHARGER SYSTEM

David Persen, P.O. Box 1526, San Mateo, Calif. 94401

Filed Dec. 20, 1990, Ser. No. 630,816
Int. Cl.[5] H01M *10/46*
U.S. Cl. 429—7 **9 Claims**



1. A satellite rechargeable battery and recharger system comprising, a battery housing that contains a secondary cell and wiring for connecting it to external positive and negative poles; a head insert that is configured to fit to battery housing and to be movable between first and second positions, in which first position said head insert nests into said battery housing, with a conductive bar means thereof extending into said battery housing that provides for electrically connecting said secondary cell to said battery poles, and in which second position said conductive bar means of said head insert is positioned to extend from said head insert to fit into a receptacle of a means for passing a charging current thereto, said conductive bar means electrically connected to pass charging current into said secondary cell; and a means for providing a charging current to said receptacle.

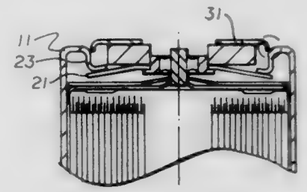
5,057,382

CIRCUIT INTERRUPTER FOR A GALVANIC CELL

Gary R. Tucholski, Parma Heights, Ohio, assignor to Eveready Battery Co., Inc., St. Louis, Mo.

Filed Oct. 6, 1989, Ser. No. 418,240
Int. Cl.[5] H01M *2/00*
U.S. Cl. 429—61 **34 Claims**

1. A galvanic cell with circuit interrupter comprising:
a metal container having a first end and a second end for containing the electrodes and electrolyte for said galvanic cell, said container being in electrical contact with one of the electrodes;
a cover for the first end of said container having an aperture therein;
a closure for the aperture in said cover;
a layer of adhesive on the exterior face of said cover, said layer covering a portion of the surface between said closure and said container; and
a secondary cover for said galvanic cell disposed on said layer of adhesive and in electrical contact with said container, whereby excessive bulging of said cover will cause said secondary cover to break electrical contact with said container thereby electrically isolating the secondary cover from the container of said galvanic cell.

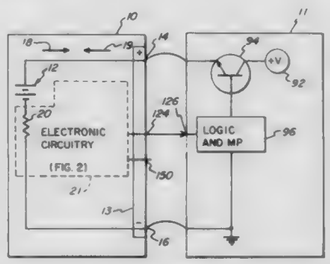


5,057,383

BATTERY SYSTEM

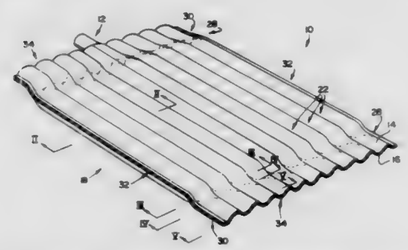
Thomas J. Sokira, Cheshire, Conn., assignor to Anton/Bauer, Inc, Shelton, Conn.

Filed Mar. 30, 1990, Ser. No. 502,557
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—92 **18 Claims**



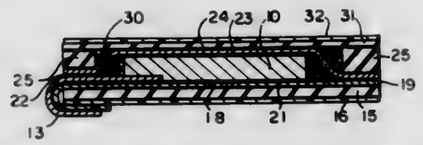
1. A battery system for use with a battery powered device comprising:
a. a battery pack, said battery pack including:
i. a plurality of battery cells;
ii. positive and negative terminals serially coupled to said battery cells, said positive terminal being adapted to deliver output current to a load and receive input current in the direction of charging current:
iii. circuit means coupled to said positive and negative terminals and producing at an analog output terminal an analog output signal related to the state of charge of the battery cells; and
b. display means separate from said battery pack and said battery powered device and electrically coupled to said analog output terminal for producing a display indicating the state of charge of said battery cells in accordance with said analog output signal.

5,057,384
ELECTRODE HOLDER
Roger J. Bones, Abingdon; James H. Duncan, Stafford, both of England, and Jacobus H. De Jager, Verwoerdburg, South Africa, assignors to Lilliwyte Societe Anonyme, Luxembourg
Filed Nov. 26, 1990, Ser. No. 618,313
Claims priority, application United Kingdom, Dec. 1, 1989, 8927274
Int. Cl.[5] H01M *10/39*
U.S. Cl. 429—104 17 Claims



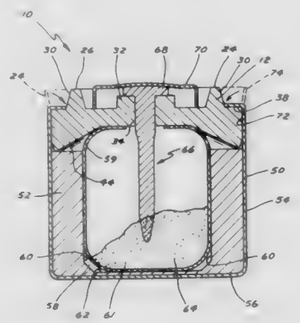
1. A laterally compressed envelope of solid electrolyte material for use as an electrode holder in an electrochemical cell, the envelope having a pair of opposed corrugated major faces provided by a pair of sheets of the solid electrolyte material joined to each other along their edges to provide a peripheral edge for the envelope, the major faces being aligned with each other so that their corrugations extend lengthwise along the envelope parallel to one another and so that at least one space is defined between the faces for holding electrode material, the corrugations in each major face nesting face-to-face in the corrugations of the other major face at the ends of the envelope where the sheets are joined to each other.

5,057,385
BATTERY PACKAGING CONSTRUCTION
Henry F. Hope, deceased, late of Huntingdon Valley; by Hazel Hope, executrix, and Stephen F. Hope, both of c/o Hope Industries, Inc., Willow Grove, Pa. 19090
Filed Dec. 14, 1990, Ser. No. 627,406
Int. Cl.[5] H01M *2/02*
U.S. Cl. 429—162 8 Claims



1. Battery packaging construction for packaging of flat alkaline metal or alkaline earth metal batteries which comprises
a first layer of metal foil having top and bottom surfaces,
said first layer having a layer of heat sealable plastic on its top surface,
a battery on said layer of heat sealable plastic,
a second layer of metal foil on and extending over said battery,
a heat sealable plastic layer on said second layer which faces and is in contact with said battery and said heat sealable layer on said first layer whereby said plastic layers can be heat sealed to enclose and contain said battery.

5,057,386
SEAL FOR CELLS CONTAINING ALKALINE ELECTROLYTE
Dennis J. Gordy, Mason City, Iowa, assignor to Alexander Manufacturing Company, Mason City, Iowa
Filed Jan. 4, 1989, Ser. No. 293,499
Int. Cl.[5] H01M *2/08*
U.S. Cl. 429—174 22 Claims



14. A cell comprising:
a. cell can;
b. cathode matrix;
c. separator;
d. anode material;
e. a seal of PPS material about and between said cell can and said separator;
f. anode and cathode conductors; and,
g. an alkaline electrolyte.

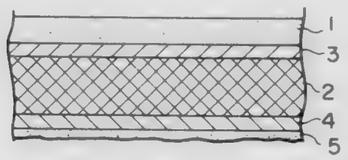
5,057,387
LITHIUM CELLS
Yoshitomo Masuda, Tachikawa; Masao Ogawa, Kawagoe; Katsuhiko Arai, Iruma; Kinya Suzuki; Tadashi Fuse, both of Kadaira, and Tetsuro Amano, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 312,914, Feb. 21, 1989, Pat. No. 4,960,657. This application May 16, 1990, Ser. No. 524,044
Claims priority, application Japan, Mar. 1, 1988, 63-48419; Mar. 1, 1988, 63-48420; Mar. 10, 1988, 63-57016; Jan. 24, 1989, 1-14432
The portion of the term of this patent subsequent to Oct. 2, 2007, has been disclaimed.
Int. Cl.[5] H01M *6/14*
U.S. Cl. 429—194 14 Claims

1. In a lithium cell comprising a negative electrode containing lithium, a positive electrode, and an electrolyte disposed between the positive and negative electrodes,
the improvement wherein said negative electrode has a coating thereon obtained by surface treating the negative electrode with a composition containing water in an amount of from more than 1% by weight to 50% by weight.

5,057,388
METHOD FOR THE PREPARATION OF MASK FOR X-RAY LITHOGRAPHY
Joseph Yahalom, Haifa, Israel, assignor to Technion Research and Development Foundation Ltd., Haifa, Israel
Continuation-in-part of Ser. No. 357,934, May 26, 1989, abandoned, and a continuation-in-part of Ser. No. 378,940, Jul. 12, 1989, abandoned, and a continuation-in-part of Ser. No. 442,868, Nov. 29, 1989, abandoned. This application Dec. 8, 1989, Ser. No. 447,752
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 20 Claims

1. A method for obtaining a mask for X-ray lithography which consists of the steps of:
(a) deposition of a metal oxide layer of titania, zirconia, niobia or tantalum oxide on a substrate;
(b) etching selectively a portion of the backside of the substrate, thus obtaining a metal oxide membrane supported on the substrate; and
(c) obtaining a pattern delineation on said membrane.

5,057,389
ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR WITH OVER BACK LAYER
Takao Nakayama; Chikashi Ohishi; Chiaki Kawamoto; Hidefumi Sera, and Sho Nakao, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 27, 1989, Ser. No. 371,784
Claims priority, application Japan, Jun. 27, 1988, 63-156927; Sep. 14, 1988, 63-228378
Int. Cl.[5] G03G *5/14, 5/147*
U.S. Cl. 430—49 26 Claims

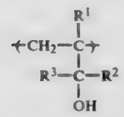


1. An electrophotographic lithographic printing plate precursor comprising a base of paper coated, on both surfaces thereof, with α-polyolefin laminated layers each having a volume resistivity of at most $1\times10^{10}\Omega$ and being provided, on one side thereof, with a photoconductive layer and on the other side thereof, with an over back layer having a surface resistivity of at most $1\times10^{10}\Omega$ and a larger friction coefficient than the α-polyolefin laminated layer.

5,057,390
PHOTOSENSITIVE COMPOSITION
Toshiaki Sato; Junnosuke Yamuchi, both of Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kurary Company, Ltd., Kurashiki, Japan
Filed Nov. 20, 1986, Ser. No. 932,591
Claims priority, application Japan, Nov. 29, 1985, 62-270007
Int. Cl.[5] G03C *1/73*
U.S. Cl. 430—281 7 Claims

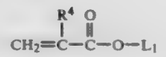
1. A photosensitive composition consisting essentially of:
(a) 100 parts by weight of a vinyl alcohol polymer consisting essentially of the following structural units A, vinyl alcohol units and vinyl acetate units, wherein the content of the structural unit A is 2 to 30 mol %, and wherein the molar ratio of vinyl alcohol units to the sum of vinyl alcohol units and vinyl acetate units is not less than 0.7:

(A)

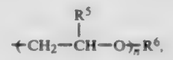


wherein R^1, R^2 and R^3 each represents H or a hydrocarbon group having 1 to 4 carbon atoms;
(b) 20 to 250 parts by weight of the radically polymerizable ethylenic unsaturated compound selected from the group consisting of:

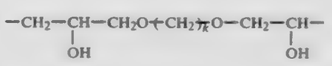
[I]

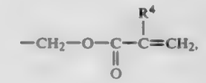


wherein R^4 is H or CH_3, and L_1 is:

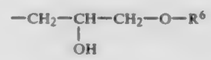


wherein n=1–100; $-CH_2-CH_2CH_2CH_2-O-_mR^6$, wherein m=1–100; $-C_pH_{2p+1}$, wherein p=1–6;

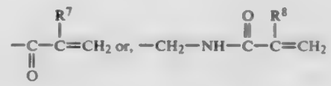




wherein k=2–10 or,

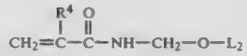


wherein R^5 is H or CH_3, and R^6 is hydrogen, methyl, ethyl, butyl,

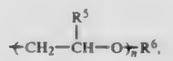


wherein R^7 or R^8 is H or CH_3;

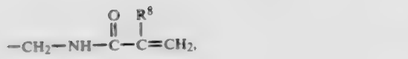
[II]



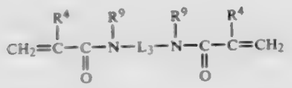
wherein R^4 is H or CH_3, and L_2 is



wherein N=1–100 $-CH_2-CH_2CH_2CH_2-O-_mR^6$, wherein m=1–100, $-C_pH_{2p+1}$, wherein p=1–6, or hydrogen, methyl, ethyl, butyl or

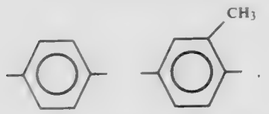


wherein R^8 is H or CH_3;

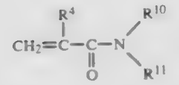


[III]

wherein
R^4 is H or CH_3,
R^9 is H, CH_3 or C_2H_5,
L_3 is $-CH_2-_q$, wherein q=1-6,



or, $-CH_2-CH_2-NH-_rCH_2-CH_2-$, wherein r=1-10;



[IV]

wherein
R^4 is H or CH_3,
R^{10} is H, CH_3, C_2H_5 or CH_2CH_2OH,
R^{11} is H, CH_3, C_2H_5 or CH_2CH_2OH;
trimethylolpropane dimethacrylate, trimethylolpropane trimethacrylate, triacryl formal, triallyl cyanurate and triallyl isocyanurate; and,

(c) 0.01 to 15 parts by weight of a photopolymerization initiator.

5,057,391

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR MAKING USING ELECTRON CYCLOTRON RESONANCE

Takashi Hayakawa, Nara; Shiro Narikawa, Kashihara; Kunio Ohashi, Nara, and Yoshiharu Tsujimoto, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 15, 1990, Ser. No. 523,242
Claims priority, application Japan, May 16, 1989, 54-124042
Int. Cl.[5] G03G *5/82, 5/14*
U.S. Cl. 430—66 **30 Claims**

1. A photosensitive member for electrophotography comprising a photoconductive layer formed on an electroconductive support, in which the photoconductive layer includes an amorphous silicon germanium layer formed by electron cyclotron response (ECR) and containing hydrogen and/or halogen in the range of 40 at.% to 65 at.% and an amorphous silicon nitride layer formed by ECR and containing hydrogen and/or halogen in the range of 40 at.% to 60 at.%, the amorphous silicon nitride layer being laminated on the amorphous silicon germanium layer.

5,057,392

LOW FUSING TEMPERATURE TONER POWDER OF CROSS-LINKED CRYSTALLINE AND AMORPHOUS POLYESTER BLENDS

John M. McCabe, Pittsford, and John C. Wilson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1990, Ser. No. 563,003
Int. Cl.[5] C08F *20/00;* **G03G** *9/08*
U.S. Cl. 430—109 **13 Claims**

1. A process for preparing a polyblend for a low fusing temperature toner powder comprising the steps of:

(a) admixing together:

(1) a crystalline polyester having a glass transition temperature in the range of about −5° to about 10° C., a melting temperature in the range of about 90° to about 110° C.; a number average molecular weight in the range of about 1000 to about 3000 and a weight average molecular weight in the range of about 2000 to about 6000;

(2) an amorphous polyester having a glass transition temperature in the range of about 55° to about 75° C., a number average molecular weight in the range of about 1000 to about 3000 and a weight average molecular weight in the range of about 2000 to about 9000 and containing an average of about 0.1 to about 1.0 reactable carboxyl groups per molecule;

(3) a low molecular weight epoxy novolac resin having an epoxy functionality in the range of about 2.5 to about 6; and

(4) a crosslinking catalyst;

(b) melt blending the mixture at a temperature in the range of about 150° to about 240° C.; and

(c) annealing the melt blended mixture at a temperature above the glass transition temperature of said amorphous polyester and below the melting temperature of said crystalline polyester for a time sufficient for said crystalline polyester to recrystallize as dispersed small particles within a matrix phase comprised of a cross-linked polymeric reaction product of said amorphous polyester and said epoxy novolac resin.

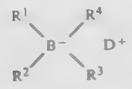
5,057,393

DYE BRANCHED-ALKYL BORATE PHOTOINITIATORS

Michael S. Shanklin, Miamisburg, and Peter Gottschalk, Centerville, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 10, 1989, Ser. No. 377,671
Int. Cl.[5] G03C *1/73*
U.S. Cl. 430—138 **9 Claims**

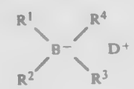
1. A photohardenable composition which comprises a free radical polymerizable compound and a photoinitiator of the formula (I):



(I)

where D^+ is a cationic dye moiety; R^1 is a branched chain secondary alkyl group; and R^2, R^3 and R^4 are aryl groups.

5. A photosensitive material comprising a support having a layer of photohardenable composition on the surface thereof, said composition comprising a free radical addition polymerizable compound and a photoinitiator represented by the formula (I):



(I)

where D^+ is a cationic dye moiety; R^1 is a branched chain secondary alkyl group; and R^2, R^3 and R^4 are aryl groups.

5,057,394

METHOD OF FORMING AN IMAGE

Norio Yabe, Higashi-matsuyama; Hideaki Sasaki, Moroyama, and Kuniaki Monden, Sakado, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 430,070, Nov. 1, 1989, which is a continuation of Ser. No. 120,546, Nov. 13, 1987, abandoned.
This application Mar. 14, 1989, Ser. No. 322,984
Int. Cl.[5] G03C *5/18;* **G03F** *7/008, 7/016*
U.S. Cl. 430—145 **2 Claims**

1. A method for forming a positive-type image characterized in that a photosensitive layer is formed on a substrate using a composition comprising water-soluble photo-crosslinking agent selected from the group consisting of a water-soluble azide compound, diazonium salt and tetrazonium salt, water-soluble resin and synthetic resin emulsion, exposing said photosensitive layer to active rays through a positive manuscript, then immersing said layer into warm water for not less than 3 seconds to allow the exposed area to swell and soften sufficiently with warm water and simultaneously to allow almost all of water-soluble photo-crosslinking agent in the nonexposed are to dissolve out into warm water, and successively rubbing out the swollen and softened exposed area to form a positive image having no coloring originating from the water-soluble photo-crosslinking agent using only warm water having a temperature of 30° to 60° C. as the development chemical.

5,057,395

SILVER COMPLEX DIFFUSION TRANSFER PROCESS

Yasuo Tsubai; Susumu Baba, and Akio Yoshida, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Nov. 17, 1989, Ser. No. 437,901
Claims priority, application Japan, Jun. 19, 1989, 1-156217
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—248 **10 Claims**

1. A silver complex diffusion transfer process which comprises imagewise exposing a photosensitive material comprising a support and at least a silver halide emulsion layer provided thereon and then developing it with a processing solution in the presence of a developing agent and a solvent for silver halide to transfer the thus produced imagewise silver complex to an image receiving material comprising a support and at least an image receiving layer containing physical development nuclei, wherein said image receiving layer has 1–3 g/m^2 of a hydrophilic colloid at least 80% by weight of which is gelatin; total amount of hydrophilic colloid present on the emulsion layer side of the photosensitive material is 5–8 g/m^2; when the materials are immersed in a 0.1 N aqueous sodium hydroxide solution at 200° C. for 1 minute, amount of the solution absorbed in the layer on the emulsion layer side of the photosensitive material is 3.5–7 ml per 1 g of hydrophilic colloid and amount of the solution absorbed in the layer on the image receiving layer side of the image receiving material is 2–4 ml per 1 g of hydrophilic colloid; and the processing of the materials in the developing processing solution is carried out in the presence of at least one 1-aryl or aralkyl substituted-5-mercaptotetrazole and at least one 4-amino-3-unsubstituted or C_{1-3} alkyl substituted-5-mercapto-1,2,4-triazole.

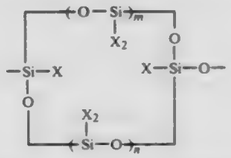
5,057,396

PHOTOSENSITIVE MATERIAL HAVING A SILICON-CONTAINING POLYMER

Akinobu Tanaka, Atsugi, and Masazumi Hasegawa, Shin Nanyo, both of Japan, assignors to Tosoh Corporation, Yamaguchi and Nippon Telegraph and Telephone Corporation, Tokyo, both of, Japan

Filed Sep. 21, 1989, Ser. No. 410,573
Claims priority, application Japan, Sep. 22, 1988, 63-236299
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—270 **5 Claims**

1. A photosensitive material containing silicon-containing polymer comprising repeating units of silicon-containing cyclic compound, represented by a general formula (II)



(II)

wherein m and n are positive integers including 0, respectively, however m+n>0, and X is any of alkyl group, alkoxy group, phenyl group, naphthyl group, substituted phenyl group and substituted naphthyl group or a mixture of these, and the substituent of said substituted phenyl group or substituted naphthyl group indicates any of halogen atom, halogenated alkyl group, amino group, aminoalkyl group and nitro group or a mixture of these.

5,057,397

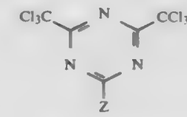
ELECTRON BEAM-CURABLE RESIST COMPOSITION AND METHOD FOR FINE PATTERNING USING THE SAME

Masanori Miyabe, Fujisawa; Hidekatsu Kohara, Chigasaki, and Toshimasa Nakayama, Hiratsuka, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

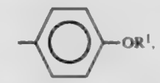
Filed Nov. 16, 1989, Ser. No. 438,334
Claims priority, application Japan, Nov. 28, 1988, 63-298335
Int. Cl.[5] G03F *7/038*
U.S. Cl. 430—270 **5 Claims**

1. An electron beam-curable resist composition which comprises, as a uniform mixture dissolved in an organic solvent:

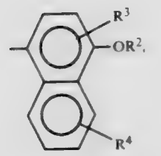
(A) a 1,3,5-triazine compound represented by the general formula



in which Z is a 4-alkoxy-substituted phenyl group of the general formula



R^1 being an alkyl group having 1 to 5 carbon atoms, or a 4-alkoxy-substituted α-naphthyl group of the general formula



R^2 being an alkyl group having 1 to 5 carbon atoms and R^3 and R^4 being, each independently from the other, a hydrogen atom, hydroxy group or carboxyl group;

(B) a cresol novolac resin, in which at least 30% by weight of the cresol moiety is derived from m-cresol; and

(C) an alkoxymethylated melamine resin,

in which the amount of the component (A) is in the range from 2 to 10% by weight based on the total amount of the components (B) and (C) and the weight ratio of the component (B) to the component (C) is in the range from 60:40 to 95:5.

5,057,398

PHOTOPOLYMERIZABLE COMPOSITION AND PHOTOPOLYMERIZABLE RECORDING MATERIAL CONTAINING SAME

Hans-Dieter Frommeld, Wiesbaden, and Hansjoerg Vollmann, Bad-Soden-Neuenhain, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Fed. Rep. of Germany

Continuation of Ser. No. 38,196, Apr. 14, 1987, abandoned. This application Apr. 26, 1990, Ser. No. 515,669

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613632

Int. Cl.[5] G03F *7/031*

U.S. Cl. 430—277 **19 Claims**

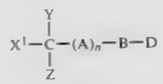
1. A photopolymerizable composition comprising:

(a) a polymeric binder,

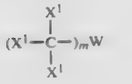
(b) an acrylic or methacrylic acid ester of a dihydric or polyhydric alcohol,

(c) an N-heterocyclic photoinitiator compound and additionally

(d) a halogen compound represented by one of the following formulas:



(I)



(II)

in which

X^1 is chlorine or bromine,

Y and Z are identical or different and each is X^1, hydrogen, CN or $(A)_n—(B)_n—D$,

A is a phenylene group,

n is 0 or 1,

B is CO or SO_2,

D is R, OR, NHR, NH_2, NR_2 or $CX^1X^2X^3$,

R is an alkyl, a cycloalkyl, an aryl or a heteroyl radical,

X^2 and X^3 are identical or different, and each is X^1, hydrogen or an alkyl group,

W is a five or six-membered heterocyclic ring having from 1 to 3 heteroatoms, and

m is 1 or 2,

wherein the N-heterocyclic photoinitiator is selected from the group consisting of a phenazine that has a total of 1 or 2 benzene rings fused to the outer rings thereof and that carries up to two alkyl or alkoxy groups having from 1 to 5 carbon atoms on one of the outer rings thereof, an acridine and a 2,3-dihydro-1H-cyclopenta[b]-quinoline.

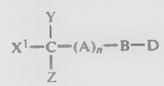
12. A photopolymerizable recording material comprising a support and a photopolymerizable layer that comprises:

(a) a polymeric binder,

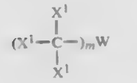
(b) an acrylic or methacrylic acid ester of a dihydric or polyhydric alcohol,

(c) an N-heterocyclic photoinitiator compound and additionally

(d) a halogen compound represented by one of the following formulas:



(I)



(II)

in which

X^1 is chlorine or bromine,

Y and Z are identical or different and each is X^1, hydrogen, CN or $(A)_n—(B)_n—D$,

A is a phenylene group,

n is 0 or 1,

B is CO or SO_2,

D is R, OR, NHR, NH_2, NR_2 or $CX^1X^2X^3$,

R is an alkyl, a cycloalkyl, an aryl or a heteroyl radical,

X^2 and X^3 are identical or different, and each is X^1, hydrogen or an alkyl group,

W is a five or six-membered heterocyclic ring having from 1 to 3 heteroatoms, and

m is 1 or 2,

wherein the N-heterocyclic photoinitiator is selected from the group consisting of a phenazine that has a total of 1 or 2 benzene rings fused to the outer rings thereof and that carries up to two alkyl or alkoxy groups having from 1 to 5 carbon atoms on one of the outer rings thereof, an acridine and a 2,3-dihydro-1H-cyclopenta[b]-quinoline.

15. A photopolymerizable recording material as claimed in claim **12**, wherein the support has a surface selected from the group consisting of aluminum, copper, an aluminum alloy and a copper alloy.

5,057,399

METHOD FOR MAKING POLYIMIDE MICROLITHOGRAPHIC COMPOSITIONS SOLUBLE IN ALKALINE MEDIA

Tony Flaim, Rte. 3, Box 3257, St. James, Mo. 65559; James Lamb, 1511 Science Dr., Rolla, Mo. 65401; Gregg Barnes, 1324 Woodhill, Lebanon, Mo. 65401, and Terry Brewer, Rte. 2, Box 297, Rolla, Mo. 65401

Filed Mar. 31, 1989, Ser. No. 331,355

Int. Cl.[5] G03F *7/30, 7/40*

U.S. Cl. 430—313 **16 Claims**

1. A method for making a wet-developable, polyamic acid/imide microlithographic polymer lift-off coatings, having improved resistant to thermal insolubiliation in alkaline media comprising:

(a) reacting, in suitable solvent to produce the polyamic acid,

nonamic acid functionalized diamines,

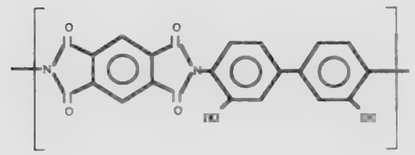
an effective amount of a suitable dianhydride, to interpose the acidic functional moieties at regular molar equivalent positions along the polymer backbone;

(b) coating the polyamic acid form onto a microelectric substrate as the lift-off coating;

(c) thermally curing the lift-off coating to render it insoluble in organic solvent and to impart at least 80% imidization;

(d) coating over the lift-off layer with a positive photoresist dissolved in organic solvent;

(e) photo imaging the overcoated photoresist and developing patterns in the lift-off coating concurrently after patterns are developed in the photoresist with alkaline developer solution at feature sizes as small as one micron,



whereby the unexposed lift-off coating remains soluble in alkaline media even after being highly imidized.

5,057,400

METHOD OF FORMING PHOTOSETTING FILM

Tatsuo Yamaguchi, Hino; Hiroyoshi Ohmika, and Yutaka Ohtsuki, both of Yokohama, all of Japan, assignors to Nippon Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1989, Ser. No. 387,215

Claims priority, application Japan, Jul. 30, 1988, 63-189596

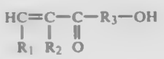
Int. Cl.[5] G03F *7/30*

U.S. Cl. 430—314 **25 Claims**

1. The method of manufacturing a printed circuit board which comprises:

a) reacting an α,β-unsaturated dicarboxylic acid anhydride with a conjugated diene polymer or copolymer having a number-average molecular weight of 500 to 5,000 and a vinyl group content or not less than 50 mol % whereby an adduct is obtained, said adduct having a softening point method of JIS K2531-60 not less than 70° C.;

b) reacting said adduct from step a) with an α,β-unsaturated monocarboxylic acid derivative having an alcoholic hydroxyl group of formula:



wherein each of R_1 and R_2 independently is a hydrogen atom or methyl and R_3 is a hydrocarbon residue which is unsubstituted or substituted by nitrogen or oxygen whereby a modified resin is obtained having at least 10% of the acid ring anhydride group open;

c) preparing a non-tacky photosensitive film comprising 100 parts by weight of said modified resin from step b) and 0.01 to 20 parts by weight of a photoinitiator on a copper clad laminate whereby said photosensitive film is formed on said copper-clad laminate;

d) contacting said photosensitive film with a circuit pattern mask and

e) exposing said photosensitive film through said circuit pattern mask to active light to photoset said photosensitive film and an uncured portion of said photosensitive film is removed by development so as to manufacture a printed circuit board.

4. The method according to claim **1**, further comprising the steps of performing etching to remove an unnecessary portion of copper and removing the remaining photosetting film by a removing agent.

5. A method according to claim **1** further comprising the steps of performing solder plating having an etching resistance, removing the remaining photosensitive film and performing etching to remove an unnecessary portion of copper.

5,057,401

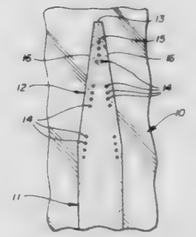
PROCESS FOR MAKING A DEVICE WITH A THREE-DIMENSIONALLY TAPERED POINT

Emil Borysko, Bridgewater, and Daniel Hughes, Raritan, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 7, 1990, Ser. No. 490,117

Int. Cl.[5] G03C *5/00;* **B21G** *3/18*

U.S. Cl. 430—320 **4 Claims**



1. In a process for preparing a device having a point with a tip of the type wherein a sheet material exhibiting the properties desired for the device is coated on the top and bottom surfaces thereof with a light-sensitive photoresist, the photoresist is exposed with light through a light-impenetrable mask wherein said mask is in the form of an image of the device shaped with a blunt end at the tip of the point to compensate for lateral etching during the etching step, said images for the top and bottom surfaces of the sheet material being mirror images of each other, the exposed photoresist is removed and the treated sheet material is contacted with an etchant to remove material not protected by the remaining photoresist; the improvement comprising the steps of:

a) shortening the length of the image of the point of the device on the top surface of the sheet material relative to the length of the image of said point on the bottom surface thereof so as to offset the images of the point of the device on the top and bottom surfaces of the sheet material relative to each other; and

b) exposing with light a portion of the image of the point of the device on the top surface of the sheet material with a V-shaped configuration disposed generally along the perimeter of said point and running substantially parallel to each side of said point to the blunt end of the tip of the point so as to form an apex in close proximity to said blunt end and axially aligned with the longitudinal axis of said point.

5,057,402

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Keisuke Shiba; Kazunori Hasebe, and Masahiro Asami, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 18, 1989, Ser. No. 298,444

Claims priority, application Japan, Jan. 18, 1988, 63-7861

Int. Cl.[5] G03C *7/16*

U.S. Cl. 430—377 **19 Claims**

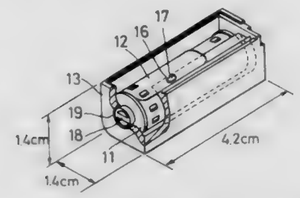
1. A silver halide photographic material having at least one light-sensitive emulsion layer containing surface latent image type silver halide grains on a support, wherein said emulsion layer comprises a silver halide emulsion containing substantially silver iodide-free silver chlorobromide grains having a silver chloride content of 90 mol % or more, as a means value, and further having a silver bromide-localized phase with a silver bromide content of less than 70 mol % on the surface of said grains, and still further an effective amount of iron ion being incorporated in the inside or surface of said grains.

5,057,403

PACKAGER OF PHOTOSENSITIVE MATERIAL

Yuuji Kume, and Shinpei Ikenoue, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 5, 1990, Ser. No. 461,391
Claims priority, application Japan, Jan. 6, 1989, 1-876
Int. Cl.[5] G03C *3/00*
U.S. Cl. 430—496 **11 Claims**



1. A package of photosensitive material which comprises a sealed container containing a silver halide photosensitive material comprising a transparent synthetic resin support having at least one photosensitive silver halide emulsion layer formed thereon, the support having a water content of 0.3 to 1.5% by weight and the content volume of the sealed container being $0.08 \times cm^3$ or less when the area of one surface of the photosensitive material is $\times cm^2$

5,057,404

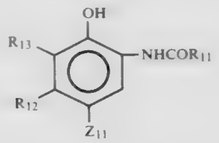
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING A CYAN COUPLER, A POLYMER, AND AN OXONOL DYE

Kokichi Waki, and Tsumoru Hirano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 12, 1989, Ser. No. 296,173
Claims priority, application Japan, Jan. 13, 1988, 63-3759
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] G03C *1/46, 7/32*
U.S. Cl. 430—503 **16 Claims**

1. A silver halide color photographic material having blue-sensitive, green-sensitive and red-sensitive silver halide emulsion layers on a support, wherein said red-sensitive silver halide emulsion layer contains a dispersion of fine oleophilic grains formed by dispersing by emulsification a solution comprising a water-insoluble and organic solvent-soluble homopolymer or copolymer and at least one coupler represented by formula (I) or formula (II), and a silver halide emulsion layer or a non-light-sensitive layer of the material contains a dye represented by formula (III);

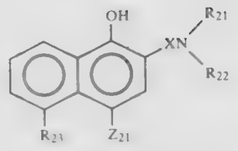
wherein formula (I) is prepresented by



(I)

wherein R_{11} represents an alkyl group, a cycloalkyl group, an aryl group, or a heterocyclic group; R_{12} represents an acylamino group or an alkyl group; R_{13} represents a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group, or R_{12} and R_{13} are bonded together to form a nitrogen-containing heterocyclic ring; Z_{11} represents a hydrogen atom, an alkoxy group, an aryloxy group, an alkylthio group or an arylthio group;

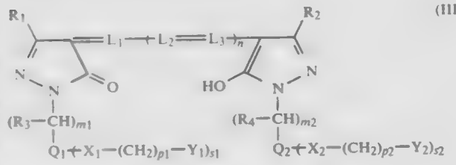
formula (II) is represented by



(II)

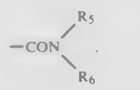
wherein R_{21} and R_{22} each represents a hydrogen atom, an alkyl group, a cycloalkyl group or an aryl group, provided that at least one of R_{21} and R_{22} is a substituent other than a hydrogen atom; R_{23} represents a hydrogen atom, a carbamoyl group, a sulfamyl group, an alkoxycarbonyl group or an aryloxycarbonyl group; Z_{21} represents a hydrogen atom, an alkoxy group, an aryloxy group, an alkylthio group or an arylthio group; X represents —CO—; and

formula (III) is represented by



(III)

wherein R_1 and R_2 each represents $—COOR_5$ or



R_3 and R_4 each represents a hydrogen atom or an alkyl group; R_5 and R_6 each represents a hydrogen atom, an alkyl group or an aryl group; Q_1 and Q_2 each represents an aryl group; X_1 and X_2 each represents a divalent linking group; Y_1 and Y_2 each represents a sulfo group or a carboxyl group; L_1, L_2, and L_3 each represents a methine group; m_1 and m_2 each represents 1 or 2; n represents 0, 1 or 2; p_1 and p_2 each represents 0, 1, 2, 3, or 4; and s_1 and s_2 each represents 1 or 2.

5,057,405

SILVER-HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Keisuke Shiba, and Tadashi Ogawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1990, Ser. No. 504,214
Claims priority, application Japan, Apr. 4, 1989, 1-84013; Jun. 5, 1989, 1-141141
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—505 **15 Claims**

1. A silver halide color photorgraphic material for scanning laser beam exposure and development processing of the exposed color photographic material in a color developer for not more than 30 seconds, comprising a support having thereon at least three photosensitive layers containing a silver chloride emulsion or a silver chlorobromide emulsion having an average silver chloride content of at least 96 mol % and containing substantially no silver iodide, said at least three photosensitive layers comprising a cyan coupler-containing layer, a magenta coupler-containing layer and a yellow coupler-containing layer, wherein said at least three photosensitive layers each has a different spectral sensitivity peak in the photosensitive wavelength regions of 650 to 690 nm, 720 to 790 nm and 770 to 850 nm, respectively, and the total coating weight of silver halide is not more than 0.78 g/m^2 in terms of silver.

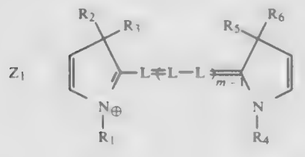
5,057,406

SILVER HALIDE PHOTOGRAPHIC MATERIAL

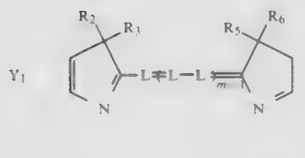
Yasushi Usagawa; Nobuaki Kagawa, and Kazuhiro Yoshida, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 4, 1989, Ser. No. 347,094
Claims priority, application Japan, May 7, 1988, 63-110848; May 20, 1988, 63-124453
Int. Cl.[5] G03C *1/84*
U.S. Cl. 430—522 **26 Claims**

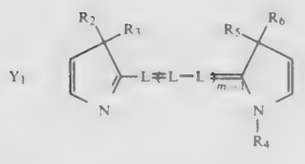
1. A silver halide photographic material having a hydrophilic colloidal layer that contains at least one cyanine dye which has in its dye molecule at least two acid groups or at least two substituents each having at least one $—CH_2CH_2OR$ group (where R is a hydrogen atom or an alkyl group) wherein said cyanine dye is selected from the group consisting of the compounds represented by the following general formulas (I), (II) and (III):



(I)



(II)



(III)

where

R_1, R_2, R_3, R_4, R_5 and R_6 each represents an alkyl group; Z_1 and Z_2 each represents the group of non-metallic atoms necessary to form a pyrrolopyridine, thienopyrrole or furopyrrole ring;

Y_1 and Y_2 each represents the group of non-metallic atoms necessary to form a pyrrolopyridine ring, provided that the ring Y_1 contains



bond and the ring Y_2 contains



bond;

L is a methine group, X^- is an anion; m is an integer of 4–5; and n is an integer of 1 or 2, provided that n is 1 when the dye forms an intramolecular salt.

5,057,407

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Hisashi Okamura, and Yasuo Mukunoki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 197,260, May 23, 1988, abandoned. This application Jun. 26, 1990, Ser. No. 544,092
Claims priority, application Japan, May 21, 1987, 62-124931; Jul. 14, 1987, 62-175485
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—531 **13 Claims**

1. A multilayer silver halide photographic element which comprises:

a support;

a first layer positioned on said support containing a light-sensitive silver halide emulsion; and

an outermost layer positioned on said first layer, wherein

said first layer and said outermost layer contain at least one component selected from the group consisting of

an organic hardener selected from the group consisting of reactive halogen-containing compounds, isocyanates, aziridine compounds, epoxy compounds, and isooxazole compounds and

a binder selected from the group consisting of gelatin, gelatin derivatives, cellulose derivatives, sugar derivatives, synthetic hydrophilic colloids, and hydrolysis products of synthetic hydrophilic colloids;

and wherein

vinyl polymer particles having a mean size of 0.5 to 10 microns are present in an amount of from 5 to 500 mg per m^2 in said first layer and form a matte surface for said element, at least 1 mol % of said vinyl polymer particles containing at least one reactive functional group selected from the group consisting of the groups represented by formulae (1) through (14) that forms a covalent bond with said binder or said organic hardener:

$$—SO_2—M^+ \quad (1)$$

wherein M^+ represents an alkali metal ion or an ammonium ion;

$$—NHR \quad (2)$$

where R represents a hydrogen atom, an alkyl group, or an aralkyl group;

$$—X—\overset{\overset{O}{\|}}{C}—CH_2—Y \quad (3)$$

where X represents —O— or

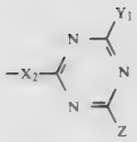
$$—\underset{\underset{R}{|}}{N}—.$$

wherein R is the same as described under general formula (2), above, and Y represents an electron attractive group where Y may form a ring by connecting with X or another group in said vinyl polymer particles;

$$—SO_2CH=CH_2 \quad (4)$$

$$—SO_2CH_2CH_2X_1 \quad (5)$$

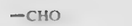
where X_1 is a group that splits off through a substitution reaction or an elimination reaction when the $—SO_2CH_2CH_2—$ moiety reacts with a nucleophilic reagent or a base;

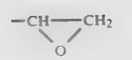


where X_2 represents a single bond, —O—, or

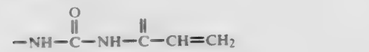


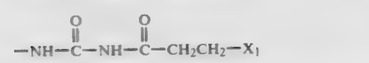
wherein R is the same as described under general formula (2), above and Y_1 and Z each independently represent a halogen atom, an alkoxy group, a hydroxy group, a salt of a hydroxy group, or an amino group which may be substituted provided that at least Y_1 or Z is a halogen atom;

(7) 

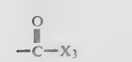
(8) 

(9)

(10) 

(11) 

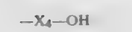
wherein X_1 is the same as described in general formula (5), above;

(12) 

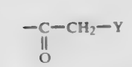
wherein X_3 represents a group that splits off upon reaction of the



moiety with an amino group;

(13) 

wherein X_4 represents a substituted or unsubstituted arylene group which may be derived from a heterocyclic ring; and

(14) 

wherein Y is the same as described under general formula (3), above.

5,057,408

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

(6) **Osamu Takahashi, and Tsumoru Hirano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

Filed Jan. 9, 1989, Ser. No. 294,701

Claims priority, application Japan, Jan. 8, 1988, 63-1247

The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.

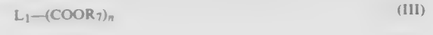
Int. Cl.[5] G03C *1/08*

U.S. Cl. 430—546 **13 Claims**

1. A silver halide color photographic material comprising a silver halide emulsion on a support, wherein said layer contains a dispersion of fine oleophilic grains, which grains contain at least one nondiffusible oil-soluble cyan coupler capable of forming a substantially nondiffusible dye by coupling with the oxidation product of an aromatic primary amine developing agent and at least one coupler solvent which is immiscible with water and has no aromatic group in the molecule and which has a melting point of 100° C. or lower and has a boiling point or decomposition point of 140° C. or higher and which is represented by one of the following formulae (III), (IV) or (VI), wherein the dispersion of said fine oleophilic grains is one obtained by emulsifying and dispersing a solution comprising at least one of said coupler, at least one of said coupler solvent and at least one water-insoluble and organic solvent-soluble homopolymer or copolymer having a Tg of at least 60° C.:

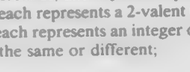


(III)



(IV)

wherein R_7 and R_8 each represents an aliphatic group; L_1 and L_2 each represents a 2-valent to 4-valent aliphatic group; n and m each represents an integer of from 2 to 4; and R_7 and R_8 may be the same or different;

(VI) 

wherein R^{12}, R^{13}, R^{14} and R^{15} each represents an alkyl or substituted alkyl group having from 1 to 40 carbon atoms, an alkoxycarbonyl or substituted alkoxycarbonyl group having from 1 to 40 carbon atoms, or a hydrogen atom, provided that all of R^{12}, R^{13}, R^{14} and R^{15} are not hydrogen atoms at the same time; and R^{12}, R^{13}, R^{14} and R^{15} may be the same or different and they may form rings.

5,057,409

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yoichi Suga, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 31, 1988, Ser. No. 264,554

Claims priority, application Japan, Oct. 30, 1987, 62-274841; Apr. 22, 1988, 63-99769

Int. Cl.[5] G03C *1/035*

U.S. Cl. 430—567 **4 Claims**

1. A sliver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein the silver halide emulsion layer comprises a silver halide emulsion which satisfies condition (i) and wherein said silver halide emulsion layer or another silver halide emulsion layer having the same color sensitivity as that of said silver halide emulsion layer comprises a silver halide emulsion which satisfies condition (ii):

Condition (i): (1) tabular grains having at least two twinning planes, a diameter of at least 0.15 μm and an average aspect ratio of 2 to 8 accounting for at least 70% of silver halide grains as calculated in terms of projected area and (2) grains having a (b/a) ratio of at least 5 wherein (a) is the longest distance between the two or more parallel twinning planes and (b) is the grain thickness accounting for at least 50% of said tabular grains by number;

Condition (ii): core/shell structure grains with the core comprising silver haloiodide having a silver iodide content of at least 5 mol % and with the shell having a silver iodide content at least 5 mol % lower than the silver iodide content of the core and with the core/shell structure grains having a diameter of at least 0.15 μm and an average aspect ratio of less than 2 accounting for at least 70% of silver halide grains as calculated in terms of projected area.

5,057,410

CHIMERIC MESSENGER RNA DETECTION METHODS

Ernest S. Kawasaki, Richmond; Francis P. McCormick, Albany, and Owen O. Witto, Sherman Oaks, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Aug. 5, 1988, Ser. No. 229,604

Int. Cl.[5] C12Q *1/68;* **C07H** *15/12;* **C12N** *15/00*

U.S. Cl. 435—6 **24 Claims**

1. A method for detecting a chimeric mRNA in a biological sample, wherein said chimeric mRNA is associated with acute lymphocytic leukemia (ALL) and comprises a BCR exon in junction with an ABL exon, the method has the step of:

a) synthesizing cDNA from mRNA in said sample;

b) contacting said cDNA with a first and second primer, wherein said first primer is homologous to a sequence contained in said BCR exon and said second primer is complementary to a sequence in said ABL exon to provide a mixture for amplifying chimeric mRNA associated with ALL;

c) treating the mixture prepared in step (b) under conditions and with reagents suitable for amplifying said cDNA segment by a polymerase chain reaction; and

d) determining if amplification has occurred.

5,057,411
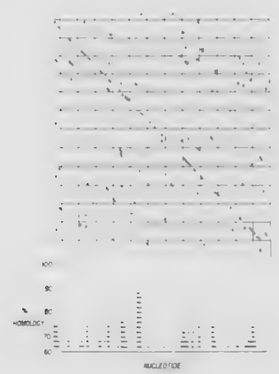
TYPE-SPECIFIC PAPILLOMAVIRUS DNA SEQUENCES AND PEPTIDES

Wayne D. Lancaster, and A. Bennett Jenson, both of Rockville, Md., assignors to Georgetown University, Washington, D.C.

Continuation of Ser. No. 719,979, Apr. 4, 1985, abandoned. This application May 1, 1989, Ser. No. 346,283

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **28 Claims**



1. A detectably labelled polynucleotide sequence comprising:

a papillomavirus polynucleotide sequence useful in distinguishing between papillomavirus types wherein said papillomavirus sequence comprises at lest 15 nucleotides of a L1 open reading frame type-specific sequence, but less than the entire genome of said papillomavirus.

5,057,412

ENZYMIC METHOD OF DETECTING ANALYTES AND NOVEL SUBSTRATES THEREFOR

Brian R. Rabin, Potters Bar; Michael R. Hollaway, East Molesey, and Christopher J. Taylorson, Chiswick, all of England, assignors to London Biotechnology Limited, London, England

Division of Ser. No. 715,236, Mar. 22, 1985, Pat. No. 4,745,054. This application Mar. 15, 1988, Ser. No. 167,756

Claims priority, application United Kingdom, Mar. 26, 1984, 8407736

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[5] C12Q *1/68;* **G01N** *33/535*

U.S. Cl. 435—6 **9 Claims**

1. An enzyme linked assay procedure in which a primary enzyme whose concentration is related to the presence of analyte to be detected catalyses a primary enzymic reaction leading to a detectable product, said assay procedure comprising the steps of

i. using as said primary enzyme a phosphodiesterase and contacting the primary enzyme with a substrate therefor comprising a pyrimidine ribonucleoside 3′-phosphodiester compound of the formula R—X, where R is a pyrimidine ribonucleoside 3′-phosphate and X is a leaving group linked to R through a 3′-phosphate group, so that said X is cleaved away by the primary enzyme to produce directly, or by one or more further reactions, a coenzyme or prosthetic group essential for the catalytic activity of another enzyme, and

ii. using the coenzyme or prosthetic group to activate said other enzyme to catalyze a secondary enzymic reaction leading to a detectable result related to the presence of analyte.

5,057,413

METHOD FOR DISCRIMINATING BETWEEN INTACT AND DAMAGED CELLS IN A SAMPLE

Leon W. M. M. Terstappen, Los Altos; Michael R. Loken, Palo Alto, and Virendra O. Shah, Santa Clara, all of Calif., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 13, 1988, Ser. No. 206,454

Int. Cl.[5] C12Q *1/68, 1/02, 1/04;* **G01N** *33/535*

U.S. Cl. 435—6 **10 Claims**

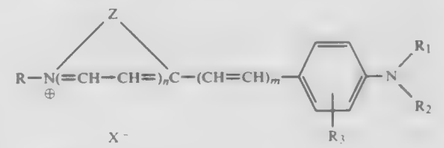
1. A method for discriminating between a heterogeneous population of intact and damaged cells in a peripheral blood sample comprising the steps of:

a) taking a sample of peripheral blood from an individual;

b) adding to the sample one or more monoclonal antibodies to cell surface antigens, wherein the monoclonal antibodies are labeled with fluorescent labels and wherein the fluorescent labels have peak emission spectra that are distinguishable from each other and from a nucleic acid dye;

c) adding a fixative to the sample;

d) adding to the sample a nucleic acid dye which preferentially binds DNA, wherein the nucleic acid dye comprises the formula



wherein

n is 0;

m is 1;
R is a lower alkyl;
R_1 and R_2 are lower alkyls;
R_3 is hydrogen;
Z is a quinoline nucleus which may be substituted with lower alkyl, halo, nitro, amino and dialkylamino; and
X represents an anion;

e) analyzing the sample in an automated instrument capable of passing the cells in the sample through a sensing region substantially one at a time and capable of detecting and recording both fluorescence and light scattered in more than one direction by each cell passing through said sensing region; and

f) discriminating between damaged and intact cells in the sample based upon relative fluorescence intensity of the nucleic acid dye in each cell and light scattered.

8. The method of claim 1 wherein the intact and damaged cells are further discriminated based upon relative fluorescence intensity of fluorescent labels and light scattered.

5,057,414

METHOD FOR THE DETERMINATION OF THE ACTIVITY OF SERINE PROTEASES OR SERINE PROTEASE INHIBITORS

Thomas Stief, and Norbert Heimburger, both of Marburg, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Fed. Rep. of Germany

Filed Jul. 1, 1988, Ser. No. 214,258

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1987, 3722082

Int. Cl.[5] C12Q *1/56*

U.S. Cl. 435—13 **23 Claims**

1. A method for the determination of the activity of serine proteases or serine protease inhibitors in a sample of plasma or other biological fluids comprising the steps of:

(i) adding at least one oxidizing agent to said sample which oxidizes methionine to methionine sulfoxide at a pH of 7.5 to 8.8;

(ii) adding simultaneously o rafter a preincubation period a plasminogen activator and a first substrate for said plasminogen activator, said first substrate being activated by a said plasminogen activator to yield an enzyme which can be detected by means of a second substrate; and

(iii) bringing said activated first substrate into contact with said second substrate which second substrate can be detected after conversion by said activated first substrate.

5,057,415

CONTINUOUS ENZYMATIC PROCESS FOR PREPARING PEPTIDES

Hans-Juergen Schuetz, Mettmann, and Christian Wandrey, Juelich, both of Fed. Rep. of Germany, assignors to Forschungszentrum Juelich GmbH, Juelich, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 251,176

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1987, 3733198

Int. Cl.[5] C12P *21/00;* **C12N** *11/08;* **C07K** *01/06, 01/14*

U.S. Cl. 435—68.1 **27 Claims**

1. A continuous process for preparing a peptide, comprising the steps of:

(A) supplying to a reaction vessel, containing a serine protease or peptidase enzyme which is retained in the reaction vessel, a first aqueous phase reactant comprising an alkyl ester of a first N-protected amino acid or oligopeptide, and a second aqueous phase recycle stream comprising a second amino acid or oligopeptide, with substantial exclusion of organic solubilizers, said second amino acid or oligopeptide being present in sufficient excess and for a sufficient holdup time in said reaction vessel to substantially completely convert said first N-protected amino acid or oligopeptide ester to a mixture containing N-protected chain extended peptide and hydrolyzate, said conversion being at a first pH;

(B) passing the mixture containing the N-protected chain extended peptide and hydrolyzate from said reaction vessel through a separating column containing a stationary phase comprising a hydrophobic adsorbent without adjusting the pH of the mixture, separating the N-protected chain extended peptide and hydrolyzate from the mixture by adsorption onto said adsorbent, and recycling adsorber effluent to step (A) as said recycle stream; and

(C) eluting the adsorbed N-protected peptide with an aqueous eluent solution at a second pH, and recovering an eluent stream comprising the N-protected chain extended peptide formed in step (A) wherein the N-protecting group is a N-phenacyl group.

5,057,416

SUPERSECRETING MUTANTS OF *SACCHAROMYCES CEREVISIAE*

Robert A. Smith, Watertown, and Margaret J. Duncan, Brookline, both of Mass., assignors to Collaborative Research, Inc., Bedford, Mass.

Continuation of Ser. No. 843,124, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 721,198, Apr. 9, 1985, abandoned. This application Nov. 18, 1988, Ser. No. 273,362

Int. Cl.[5] C12P *21/00;* **C12N** *1/16, 1/18*

U.S. Cl. 435—691 **22 Claims**

1. A method of obtaining a desired heterologous polypeptide product in high yield from supersecreting Saccharomyces yeast cells by collecting said product secreted from said yeast cells,

said yeast cells being obtained by selecting a starting transformable yeast strain,

causing said yeast strain to undergo mutagenesis and form mutant cells,

said mutant cells being transformed to secrete a heterologous polypeptide,

screening said mutant cells to determine those final cells which secrete said heterologous polypeptide in amounts greater than two times the amount secreted by said starting strain when so transformed,

and culturing said final cells to obtain said high yields of heterologous polpeptide.

5,057,417

COMPOSITIONS AND METHODS FOR THE SYNTHESIS OF GROWTH HORMONE RECEPTOR AND GROWTH HORMONE BINDING PROTEIN

R. Glina Hammonds, San Francisco; David W. Leung, Foster City; Steven A. Spencer, and William I. Wood, both of San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jun. 12, 1987, Ser. No. 62,542

Int. Cl.[5] C12P *21/00;* **C12N** *15/00, 5/00;* **C07H** *21/00*

U.S. Cl. 435—69.1 **21 Claims**

1. A DNA isolate encoding human or rabbit growth hormone receptor.

2. A DNA isolate encoding human or rabbit growth hormone binding protein.

5,057,418

PROCESS FOR THE PREPARATION OF DIFRUCTOSE DIANHYDRIDE III

Takao Uchiyama, Minoo; Kuniji Tanaka, Nishinomiya, and Mishio Kawamura, Toyonaka, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Mar. 3, 1989, Ser. No. 318,255

Claims priority, application Japan, Mar. 7, 1988, 63-53164

Int. Cl.[5] C12P *19/14, 19/12;* **C12R** *1/06*

U.S. Cl. 435—99 **1 Claim**

1. A process for preparing difructose dianhydride III (DFA III) comprising reacting inulin with an inulin lytic enzyme derived from *Arthrobacter ilicis* strain MCI 2297 (FERM BP-2279), in a solution containing inulin.

5,057,419

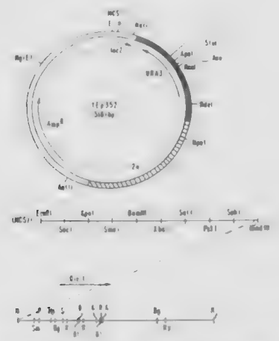
GENETICALLY ENGINEERED PLASMID AND ORGANISMS FOR THE PRODUCTION OF SPECIALIZED OILS

Charles E. Martin, Somerset, and Robert M. Johnston, Middletown, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Sep. 22, 1988, Ser. No. 247,918

Int. Cl.[5] C12P *7/64*

U.S. Cl. 435—134 **20 Claims**



1. An expression vector comprising a yeast gene encoding a delta-9 fatty acid desaturase enzyme which functions in a yeast cell to induce or enhance oil production.

5,057,420

BOVINE NUCLEAR TRANSPLANTATION

Joseph M. Massey, College Station, Tex., assignor to Granada Biosciences, Inc., Houston, Tex.

Continuation of Ser. No. 58,904, Jun. 5, 1987, abandoned. This application Oct. 16, 1990, Ser. No. 599,256

Int. Cl.[5] C12N *15/00*

U.S. Cl. 435—172.2 **20 Claims**

1. A process to produce viable bovine embryos through nuclear transplantation comprising the following steps:

(a) collecting recipient oocytes from donor cows;

(b) collecting embryos greater than 32 cells;

(c) removing a portion of the ooplasm from the recipient oocyte;

(d) separating the embryo cells into single donor cells for nuclear transplantation;

(e) inserting said donor cell into the recipient oocyte;

(f) electrofusing the oocyte and donor cell to form an embryo; and

(g) culturing said embryo.

5,057,421

THIN FILM MEMBRANE ENZYME/COEMZYME REACTOR AND METHOD OF USING SAME

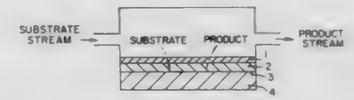
Frieder K. Hofmann, Oceanside, and Wolfgang J. Wrasidlo, LaJolla, both of Calif., assignors to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 26,380, Mar. 16, 1987, Pat. No. 4,956,289. This application Apr. 7, 1989, Ser. No. 334,321

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] C12N *11/02, 11/08, 11/14*

U.S. Cl. 435—182 **29 Claims**



1. An enzyme reactor comprising:

a support;

an enzyme hydrogel layer on said support, said enzyme hydrogel layer comprising an aqueous gel of a coenzyme-requiring enzyme, a coenzyme for said primary coenzyme-requiring enzyme, and a regeneration enzyme for said coenzyme;

said coenzyme-requiring enzyme being such as to catalyze a reaction involving a substrate and said coenzyme so as to form a product;

said regeneration enzyme being such as to catalyze a reaction involving a substrate so as to form a product, said product including said coenzyme; and

a porous thin film semipermeable membrane on said enzyme hydrogel layer, wherein said thin film semipermeable membrane has a thickness of from about 0.0012 to 0.2 microns and a pore size sufficient to permit diffusion of said substrate for said coenzyme-requiring enzyme, of said product of said reaction catalyzed by said coenzyme-requiring enzyme, of said substrate for said regeneration enzyme, and of said product of said reaction catalyzed by said regeneration enzyme, including said coenzyme; but which does not permit said coenzyme-requiring enzyme, said coenzyme, or said regeneration enzyme to pass through said thin film semipermeable membrane.

5,057,422

RECOMBINANT DNA: TRANSFORMED MICROORGANISMS, PLANT CELLS AND PLANTS: A PROCESS FOR INTRODUCING AN INDUCIBLE PROPERTY IN PLANTS, AND A PROCESS FOR PRODUCING A POLYPEPTIDE OR PROTEIN BY MEANS OF PLANTS OR PLANT CELLS

John F. Bol, Oegstgeest; Bernardus J. C. Cornelissen, Leiden, and Johannes A. L. van Kan, Oegstgeest, all of Netherlands, assignors to Mogen International N.V. and Rijksuniversiteit Leiden, both of Leiden, Netherlands

Filed Mar. 22, 1989, Ser. No. 327,340

Claims priority, application Netherlands, Mar. 23, 1988, 8800725

Int. Cl.[5] C12N *15/29, 15/82, 1/21;* **A01H** *5/00*

U.S. Cl. 435—240.4 **4 Claims**

1. Recombinant DNA comprising vector-DNA and a DNA sequence of nucleotide −645 to +8 of the GRP gene in clone gGRP8, or a variant or portion thereof, having a salicylate inducible promoter activity.

5,057,423

METHOD FOR THE PREPARATION OF PURE LAK-ACTIVE LYMPHOCYTES

John C. Hiserodt, Pittsburgh, Pa., and Nikola L. Vujanovic, Belgrade, Yugoslavia, assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 18, 1987, Ser. No. 134,717
Int. Cl.[5] C12N *5/00;* A01N *63/00*
U.S. Cl. 435—240.23 21 Claims

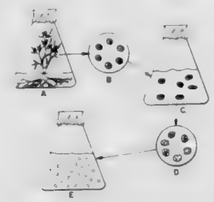
1. A method for isolating pure large granular lymphocytes from a semi-purified population of lymphocytes comprising culturing the semi-purified population of lymphocytes in plastic or glass containers with an effective amount of hIL-2 whereby only the large granular lymphocytes will adhere to the interior surface of the plastic or glass containers and harvesting the large granular lymphocytes adhered to the interior surface of the plastic or glass containers.

5,057,424

FLAVOR COMPOSITION AND METHOD

Mark E. Knuth, San Carlos, and Om P. Sahai, San Mateo, both of Calif., assignors to Escagenetics Corporation, San Carlos, Calif.

Continuation of Ser. No. 78,745, Jul. 28, 1987, abandoned. This application Oct. 30, 1989, Ser. No. 428,482
Int. Cl.[5] C12N *5/04;* C12P *1/00*
U.S. Cl. 435—240.48 3 Claims



1. Callus cells which are independent of and unattached to differentiated plant tissue, and which (a) are derived from vanilla plant tissue, (b) are capable of growth in cell culture without forming identifiable differentiated cell structures, and (c) secrete vanillin and related vanilla flavor components into culture medium in which the cells are cultured.

5,057,425

PICROMYCIN RESISTANCE-CONFERRING GENE, DESIGNATED PICA, FOR USE IN STREPTOMYCES AND OTHER ORGANISMS

Richard K. Stanzak, Poland, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 29, 1988, Ser. No. 226,360
Int. Cl.[5] C12N *1/21, 15, 52, 15/70, 15/74*
U.S. Cl. 435—252.3 31 Claims

1. A recombinant DNA cloning vector which comprises
a) a DNA sequence selected from the group consisting of an origin of replication and integration sequence, and
b) a picromycin resistance gene, encoded on plasmid pOJ 321 that confers resistance to the antibiotic picromycin, and other macrolides,
subject to the limitation that said origin of replication and integration sequence are functional in Streptomyces and Nocardia.

5,057,426

METHOD FOR SEPARATING LONG-CHAIN NUCLEIC ACIDS

Karsten Henco, Erkrath; Arndt Stichel, Duesseldorf, and Metin Colpan, Erkrath, all of Fed. Rep. of Germany, assignors to DIAGEN Institut fur molekular-biologische, Diagnostik GmbH, Fed. Rep. of Germany

Filed Nov. 23, 1987, Ser. No. 123,698
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1986, 3639949
Int. Cl.[5] C12N *1/08;* C07H *15/12*
U.S. Cl. 435—270 21 Claims

1. A method for the separation of long-chain nucleic acids from other substances in solutions containing nucleic acids and other materials, comprising:
fixing long-chain nucleic acids in a nucleic acid-containing solution onto a porous matrix, said matrix being an anion exchanger, the porous matrix having a particle size of from about 15 to about 250 μm and a pore diameter of about 100 to 2500 nm;
washing the porous matrix to separate the other substances from the long-chain nucleic acids; and
removing the fixed long-chain nucleic acids from the porous matrix.

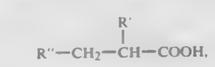
5,057,427

METHOD FOR RESOLUTION OF STEREOISOMERS

Stephen A. Wald, Wayland; Stephen L. Matson, Harvard; Charles M. Zepp, Berlin, and David R. Dodds, Millis, all of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

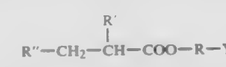
Filed Apr. 7, 1988, Ser. No. 178,950
Int. Cl.[5] C12P *7/62*
U.S. Cl. 435—280 70 Claims

1. A method for resolving a racemic mixture to produce a resolved preparation of a compound of formula (III),



(III)

wherein R' is selected from the group consisting of aryl, aryloxy, alkyl, hydroxyl, protected hydroxyl and halogen, and R'' is selected from the group consisting of hydrogen, benzyl, protected thiol and thiol, comprising:
a. enzymatically resolving a racemic mixture of ester compounds having enhanced aqueous solubility, of formula (I),



(I)

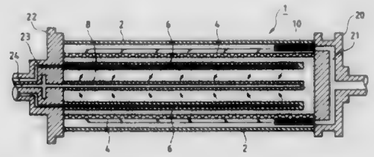
wherein R' is selected from the group consisting of aryl, aryloxy, alkyl, hydroxyl, protected hydroxyl and halogen, R is selected from the group consisting of alkyl and aryl; R'' is selected from the group consisting of hydrogen, benzyl, protected thiol and thiol, and Y^1 is selected from the group consisting of a quaternary amine, a salt of a quaternary amine, an inorganic acid, and a salt of an inorganic acid, which enhance the esters aqueous solubility; wherein when R is alkyl Y^1 is attached to any carbon of the alkyl group and when R is aryl Y^1 is attached to any of the ring atoms of the aryl group, by providing in a fluid a racemic mixture having at least a first and second stereoisomer of the compound of formula I, and an enzyme wherein said enzyme catalyzes the reaction of the first stereoisomer into a resolved preparation of a product of formula III; and
b. isolating said resolved preparation of a product of formula III from said fluid.

5,057,428

BIOREACTOR

Satoru Mizutani; Shoichi Matsuda, and Ryoichi Kunitake, all of Tokyo, Japan, assignors to Kirin Beer Kabushiki Kaisha, Japan

Filed Oct. 19, 1989, Ser. No. 424,062
Claims priority, application Japan, Oct. 20, 1988, 63-262912
Int. Cl.[5] C12M *3/06, 3/04*
U.S. Cl. 435—285 22 Claims



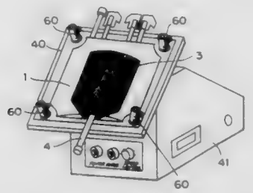
1. A bioreactor comprising:
a cylindrical tank;
a cylindrical mesh means arranged inside said tank concentrically therewith so that said cylindrical mesh means separates an inner space of said tank into inside and outside spaces, said outside space being filled with a culture medium including a biological catalyst and said inside space packed with a carrier;
an oxygen supplying means comprising a plurality of pipes each having pores through which oxygen is supplied in the culture medium and extending axially in said inside space for supplying an oxygen to the culture medium;
means for supplying the culture medium in said outside space so as to flow the culture medium radially inwardly inside the tank; and
a culture medium recovery means comprising a plurality of pipes extending axially in said inside space for recovering the culture medium after utilized, said mesh means having a mesh structure having a mesh size larger than a size of the biological catalyst and said culture medium recovery pipes each having a porous structure provided with pores each having a pore size smaller than the size of the biological catalyst.

5,057,429

APPARATUS FOR FLOATING ANIMAL CELLS IN A DOUBLE-BAG CONTAINER

Katsuto Watanabe, Hadano; Yoshihiko Nakamura, Isehara; Takashi Noto, Ayase; Masaichi Yamamura, Atsugi; Hitoshi Nakashima, Sagamihara; Kazunori Ichinohe, Sagamihara; Yukitaka Mino, Sagamihara, and Kazuhiro Nishijima, Sagamihara, all of Japan, assignors to Kawasumi Laboratories Inc., Tokyo, Japan

Division of Ser. No. 90,226, Aug. 27, 1987. This application May 10, 1989, Ser. No. 349,701
Claims priority, application Japan, Aug. 27, 1986, 61-198898; Mar. 31, 1987, 1-46745[U]; Apr. 3, 1987, 1-80991; Jul. 11, 1987, 1-172101
Int. Cl.[5] C12M *3/02*
U.S. Cl. 435—286 8 Claims



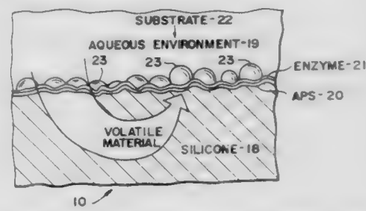
1. An apparatus for floating animal cells in a culture liquid comprising: a culture container, wherein said culture container comprises;
an outer bag means for sealing a culture liquid and a volume of gas, said outer bag means comprising a pair of plastic sheets sealed at circumferential parts thereof and plastic tubes secured between the sealed circumferential parts for injecting culture liquid and a volume of gas,
an inner bag means for supporting animal cells to be cultured under a condition wherein animal cells float in a culture liquid, said inner bag means comprising a pair of semipermeable film sheets sealed at circumferential parts thereof, said film sheets having pores of a sufficient size so as to prohibit cells within the inner bag from passing therethrough but allowing culture liquid and air to pass through it, and a plastic tube secured between the sealed circumferential parts of said inner bag means and said outer bag means for injecting a cell suspension, and
a protective plastic mesh surrounding said inner bag means so as to prevent said inner bag means from contacting said outer bag means.

5,057,430

BIOCHEMICAL SENSOR RESPONSIVE TO BUBBLES

Arnold L. Newman, Kensington, Md., assignor to Biotronic Systems Corporation, Rockville, Md.

Filed Sep. 15, 1988, Ser. No. 244,677
Int. Cl.[5] C12M *1/40*
U.S. Cl. 435—288 15 Claims



1. Apparatus for sensing a biochemical analyte comprising:
a sensor element having surface means which nucleate bubbles from volatile material;
producing means for producing a volatile material in an amount dependent on a concentration of the biochemical analyte, said producing means including an enzyme and having a portion bound to the surface means; and
wherein said surface means is adjacent to the producing means; and further comprising
detection means adjacent the surface means for responding to the bubbles that nucleate on the surface means and which provides an output which is indicative of the concentration of the biochemical analyte.

5,057,431

DEVICE FOR OPTICAL MEASURING OF PHYSICAL DIMENSIONS AND MATERIAL CONCENTRATIONS

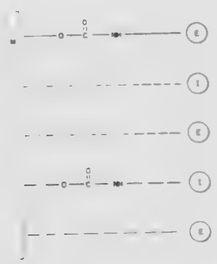
Dietrich W. Lübbers, Dortmund; Klaus P. Völkl, Lüdinghausen, and Norbert Opitz, Schwerte, all of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft Zur Förderung Der Wissenschaften, Göttingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 882,639, Jul. 7, 1986, abandoned, which is a continuation of Ser. No. 557,191, Dec. 1, 1983, abandoned, which is a continuation of Ser. No. 222,514, Jan. 2, 1981, abandoned. This application Sep. 15, 1988, Ser. No. 245,342

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001669

Int. Cl.[5] C12M *1/40*

U.S. Cl. 435—288 17 Claims



1. A device for optical measurement of a particle concentration comprising:

means for introducing particles;

a membrane;

at least one indicator material defining an indicator space, said indicator material emitting light upon light-excitation; and

a reagent which reacts with said particles to form an intermediate species, said intermediate species effecting said emitting of light from the indicator material, said reagent defining a reagent space;

wherein said at least one indicator material and said reagent are both covalently bound to said membrane.

5,057,432

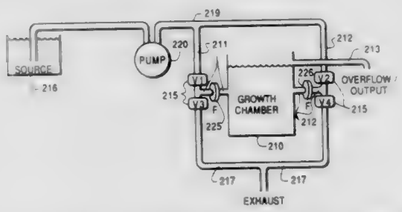
CAGE-CULTURE TURBIDOSTAT

Peter J. Wangersky, 6071 South Street, Halifax, Nova Scotia, Canada B3H 1S9 , and Charles P. Wangersky, 812 Young Avenue, Halifax, Nova Scotia, Canada B3H 2V7

Continuation of Ser. No. 826,267, Feb. 5, 1986, abandoned. This application Jan. 24, 1990, Ser. No. 469,726

Int. Cl.[5] C12M *1/34, 1/36, 1/40*

U.S. Cl. 435—289 4 Claims



1. In a cage-culture turbidostat device wherein organisms are continuously cultured at a substantially constant population comprising a growth chamber having filters for keeping said organisms confined therein; pumping means for pumping fresh nutrient medium to said growth chamber; a first conduit for feeding fresh nutrient medium into said growth chamber, a second conduit for discharging spent nutrient medium from said growth chamber, means for monitoring the organism population density in said growth chamber by measuring turbidity and dilution means for reducing the quantity of organisms in said growth chamber, the improvement which comprises

valve means for directing the flow of said fresh nutrient medium into said growth chamber alternatively through said first conduit and then said second conduit, said filters being positioned in said first and second conduits, said valve means simultaneously directing the flow of said spent nutrient medium from said growth chamber through said second conduit while fresh nutrient medium is flowing through said first conduit, and through said first conduit while fresh nutrient medium is flowing through said second conduit, said valve means being positioned in a flow path between said pumping means and said growth chamber, said first and second conduit having a substantially minor cross-sectional area relative to the cross-sectional area of the growth chamber to define a minor volume relative to the growth chamber, said minor volume being defined by a distance between the valve means and said filters, to limit reintroduction of any spent nutrient medium into the growth chamber upon flow reversal of said fresh nutrient medium to a minor portion, by volume, of the growth chamber.

5,057,433

INDICATOR ELEMENTS FOR AUTOCLAVES

Malcolm F. Douglas, Swansea, Great Britain, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 160,649, Feb. 26, 1988, abandoned. This application Nov. 27, 1990, Ser. No. 619,657

Claims priority, application United Kingdom, Feb. 27, 1988, 8704680

Int. Cl.[5] G01N *31/22*

U.S. Cl. 436—1 13 Claims

1. A steam sterilization indicating ink formulation which when printed on a substrate is capable of undergoing a visual change upon being subjected to steam sterilization and which undergoes no visible change or a different visual change upon being subjected to conditions milder than steam sterilization, the formulation comprising a non-reactive binder and as the primary visual change component:

(i) a sulfur-containing compound which is not a sulfide at ambient conditions but is capable of decomposition to yield a metal sulfide under steam sterilization conditions or,

(ii) a precursor of a sulfur-containing compound, which sulfur-containing compound is not a sulfide at ambient conditions but is capable of decomposition to yield a metal sulfide under steam sterilization conditions, said precursor capable of yielding said sulfur-containing compound under aqueous conditions.

10. A steam sterilization indicator comprising a substrate having coated on at least a portion of one major exterior surface thereof a medium capable of undergoing a visual change upon being subjected to steam sterilization and which undergoes no visible change or a different visible change upon being subjected to conditions milder than steam sterilization, wherein said medium comprises as the primary visual change component:

(i) a sulfur-containing compound which is not a sulfide at ambient conditions, but is capable of decomposition to yield a metal sulfide under steam sterilization conditions or,

(ii) a precursor of a sulfur-containing compound, which sulfur-containing compound is not a sulfide at ambient conditions but is capable of decomposition to yield a metal sulfide under steam sterilization conditions, said precursor capable of yielding said sulfur-containing compound under aqueous conditions.

5,057,434

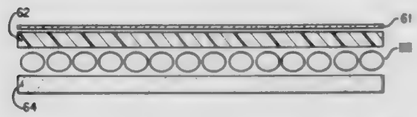
MULTIFUNCTIONAL TIME-TEMPERATURE INDICATOR

Thaddeus Prusik, Roosevelt, and Raymond M. Arnold, Harrisonville, both of N.J., assignors to LifeLines Technology, Inc., Morris Plains, N.J.

Filed Aug. 29, 1989, Ser. No. 400,308

Int. Cl.[5] G01N *31/22;* B05D *1/00*

U.S. Cl. 436—2 18 Claims



1. An integrated time-temperature indicator device comprising a system of printable multilayer compatible compositions including:

(i) at least one layer of a first composition (a) which develops a first color change as a result of a cumulative time-temperature exposure;

(ii) at least one composition (b) that is capable of melting at a predetermined temperature; and

(iii) at least one composition (c) capable of producing a second color change only as a result of the melting of composition (b) and wherein said second color change is combined with the first color change of composition (a) to yield an integrated color change result.

16. A method of making an integrated multilayer indicator device which substantially more closely traces the quality condition of a product than does a unitary indicator which comprises:

(i) depositing on a substrate a first layer of a composition (a) which develops a first color change as a result of a cumulative time-temperature exposure;

(ii) applying to the layer of (i) a layer of a composition (b) that melts at a predetermined temperature, and

(iii) combining with (i) and (ii) a composition (c) that changes color with the melt of (b) when the predetermined melt temperature of the (b) is attained at which time the composition of (c) adds to the color of the composition of the layer (i) to yield the desired color which signals the quality condition of a product that has been exposed to environmental temperature variation.

5,057,435

REAGENT AND METHODS FOR CALCIUM DETERMINATION

Jerry W. Denney, Lachine, Canada, assignor to Synermed, Inc., Quebec, Canada

Filed Oct. 12, 1990, Ser. No. 597,181

Int. Cl.[5] G01N *21/25, 21/64*

U.S. Cl. 436—79 28 Claims

1. A reagent for the assay of calcium, comprising:

a. arsenazo III in sufficient amount to react with all calcium in a sample of unknown calcium content;

b. 8-hydroxyquinoline in sufficient amount to bind all magnesium in the sample of unknown calcium content;

c. a buffer that does not bind calcium competitively with arsenazo III and that provides a reagent pH from about 8.5 to about 10, the buffer being in sufficient amount to maintain pH within +/−0.1 pH units of the reagent pH when the reagent is added to the sample of unknown calcium content;

d. dimethylsulfoxide in sufficient amount to solubilize the 8-hydroxyquinoline in the reagent; and

e. water.

5,057,436

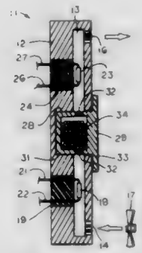
METHOD AND APPARATUS FOR DETECTING TOXIC GASES

Dean M. Ball, Gainesville, Ga., assignor to AgMaster, Inc., Gainesville, Ga.

Filed Oct. 2, 1989, Ser. No. 415,864

Int. Cl.[5] G01N *30/00*

U.S. Cl. 436—113 3 Claims



1. Apparatus for determining the level of ammonia in ambient air comprising

a member having an air passage extending therethrough having an inlet and an outlet,

first and second detecting means responsive to the presence of ammonia in the air for generating electric signals indicative of the amount of ammonia detected in the air, said first and second detecting means being spaced apart along said air passage with said first detecting means located adjacent said air passage inlet and said second detecting means located adjacent said air passage outlet,

absorbing means for absorbing at least a portion of ammonia in the air located in said air passage between said first and second detecting means, said absorbing means comprises a non-volatile acid that reacts with ammonia,

means for creating a continuous flow of air through said air passage over said non-volatile acid and said first and second detecting means, and

means for evaluating any differences in the electric signals from said first and second detecting means and for producing an output signal indicative of the presence of ammonia.

5,057,437

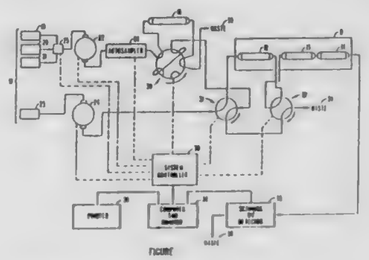
METHOD FOR BROAD SPECTRUM DRUG DETECTION

Steven R. Binder, Berkeley, Calif., assignor to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jul. 27, 1988, Ser. No. 225,108

Int. Cl.[5] G01N *30/02*

U.S. Cl. 436—161 26 Claims



1. A method for analyzing a biological sample for the presence of drugs in the form of anions, bases and neutral compounds, said method comprising:

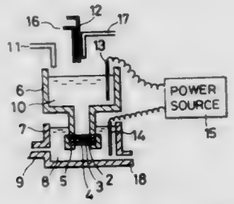
(a) purging said sample with a solvent to remove therefrom any inorganic salts and proteins contained therein:
(b) passing said purged sample obtained in step (a) through the following media in the sequence indicated:
(i) an anion exchange medium under conditions permitting selective retention of hydrophobic anions and neutral compounds, with substantially no retention of bases;
(ii) a reversed phase medium under conditions permitting chromatographic separation of weak bases, hydrophobic bases and neutral compounds, with substantially no retention of hydrophilic bases and anions; and
(iii) a cation exchange medium under conditions permitting chromatographic separation of bases, with substantially no retention of anions; and
(c) detecting said drugs in the form of anions, bases and neutral compounds emerging from said cation exchange medium.

5,057,438

ELECTROPHORETIC ANTIGEN-ANTIBODY DETERMINATION WITH LAMINATE OF MULTIPLE MEMBRANES

Kazumichi Imai; Daizo Tokinaga; Teruaki Kobayashi; Kenji Yasuda; Keiichi Nagai, and Satoshi Takahashi, all of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 30, 1987, Ser. No. 31,665
Claims priority, application Japan, Sep. 24, 1986, 61-223682; Nov. 7, 1986, 61-264056
Int. Cl.[5] G01N *33/561*
U.S. Cl. 436—516 **11 Claims**



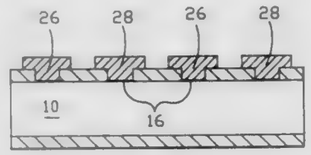
1. A method for the determination of the species of antigens or antibodies contained in a sample liquid effected by immobilizing said antigens or antibodies in a reaction membrane by allowing said antigens or antibodies to react with antibodies or antigens chemically bound in said reaction membrane, which are specific to said antigens or antibodies contained in added sample liquid, and measuring the concentration of said antigens or antibodies immobilized in said membrane, said method comprising the steps of:
(i) preparing a plurality of reaction membranes each having one of a plurality of species of antibodies or antigens chemically bound to the gelled electrophoretic carrier of a membrane;
(ii) superposing said reaction membrane into a laminate and inserting said laminate in an electrolyte so as to partition said electrolyte into an upper electrolyte and a lower electrolyte;
(iii) adding said sample liquid to said upper electrolyte;
(iv) electrophoretically moving antigens or antibodies contained in said added sample liquid toward said lower electrolyte and allowing said antigens or antibodies to react with said antibodies or antigens bound in said reaction membranes which are specific to said antigens or antibodies contained in said added sample liquid, thereby immobilizing the added antigens or antibodies in at least one of said membranes;
(v) adding to said upper electrolyte a plurality of species of labeled antibodies or labeled antigens, each having the same specificity as that of each species of said antibodies or antigens bound in said reaction membranes;
(vi) electrophoretically moving said labeled antibodies or labeled antigens toward said lower electrolyte to react with said antigens or antibodies contained in said added sample liquid and then immobilized in said reaction membranes, thereby immobilizing the labeled antibodies or labeled antigens in said reaction membranes;
(vii) separating said laminated reaction membranes; and
(viii) measuring the concentrations of the labeled antibodies or labeled antigens immobilized on each of said separated reaction membranes.

5,057,439

METHOD OF FABRICATING POLYSILICON EMITTERS FOR SOLAR CELLS

Richard M. Swanson, Los Altos, and Jon-Yiew Gan, Stanford, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Feb. 12, 1990, Ser. No. 478,616
Int. Cl.[5] H01L *31/18*
U.S. Cl. 437—2 **13 Claims**



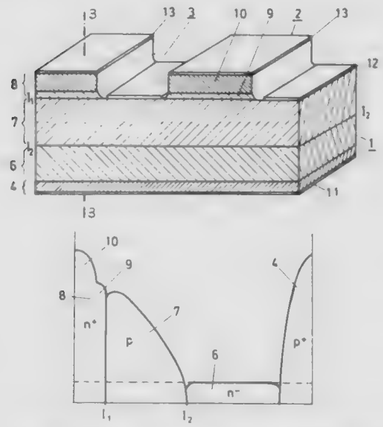
10. A method of fabricating P and N contacts on a surface of a silicon substrate during the fabrication of a silicon solar cell, comprising the steps of
a) providing a first silicon oxide layer on said surface,
b) forming a plurality of openings through said first silicon oxide layer thereby exposing contact surfaces on said surface of said silicon substrate,
c) thermally growing second silicon oxide layers on said contact surface, the thickness of said second silicon oxide layers being less than the thickness of said first silicon oxide layer,
d) forming a layer of undoped polysilicon material over said first silicon oxide layer and on said second silicon oxide layer,
e) annealing said silicon substrate to break said second layer of silicon oxide, thereby providing electrical contact between said substrate and said undoped polysilicon material at said contact surface,
f) providing a first layer of glass over said contact surfaces, said layer of glass containing atoms of a first dopant,
g) selectively etching said first layer of glass thereby removing said first layer of glass from over a first group of contact surfaces and leaving said first layer of glass over a second group of contact surfaces,
h) providing a second layer of glass over said layer of polysilicon material and over said first group of contact surfaces, said second layer of glass containing atoms of a second dopant, and
i) annealing said silicon substrate and driving atoms of dopants from said first layer of glass into said second group of contact surfaces and driving atoms of said second dopant from said second glass layer into said first group of contact surfaces.

5,057,440

MANUFACTURING GATE TURN-OFF THYRISTOR HAVING THE CATHODE PRODUCED IN TWO DIFFUSION STEPS

Peter Roggwiller, Riedt-Neerach, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Division of Ser. No. 177,489, Apr. 4, 1988, Pat. No. 4,910,573. This application Aug. 16, 1989, Ser. No. 394,555
Claims priority, application Switzerland, Apr. 7, 1987, 1327/87
Int. Cl.[5] H01L *49/00, 21/22*
U.S. Cl. 437—6 **2 Claims**



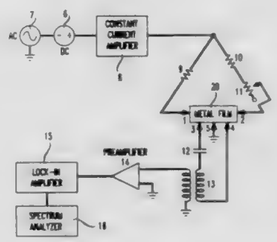
1. A method for producing a gate turn-off thyristor (GTO) having a semiconductor substrate including a p-conducting anode layer, an n-type base layer, a p-type base layer which is in electrical contact with a gate, and an n-conducting cathode layer, wherein the cathode layer has a highly doped zone which acts as n+ emitter and adjoins a cathode surface of the semiconductor substrate and has a doping density at least an order or magnitude higher than the p-type base layer, and wherein the cathode layer has a lightly doped zone which adjoins the pn-junction formed by the cathode layer and the p-type base layer and has a doping density which is comparable to that of the p-type base layer at the pn-junction to the cathode layer, comprising:
a first n-diffusion step comprising,
a first depositing step of depositing a first n-type dopant at a first surface concentration (atoms/cm^2) on the cathode surface of said substrate, and
a first heating step of heating said first n-type dopant at a predetermined first temperature and for a predetermined time to drive said first n-type dopant a predetermined first depth into said substrate and at a predetermined first doping concentration thereby to establish the depth and breakdown properties of the pn-junction between the cathode layer and the p-type base layer; and
a second n-diffusion step comprising,
a second depositing step of depositing a second n-type dopant at a second surface concentration greater than that of said first surface concentration on the cathode surface, and
a second heating step of heating said second n-type dopant at a predetermined second temperature lower than said first temperature and for a second predetermined period of time shorter than said first period of time to drive said second dopant a second depth shallower than said first depth and at a second doping concentration greater than said first doping concentration thereby to define the layer properties of the cathode layer without changing the position and properties of the pn-junction previously produced by the first depositing step and the first heating step;
wherein prior to said first n-diffusion step there is performed preliminary p-type impurity diffusion step comprising:
depositing a p-type dopant at a particular surface concentration to the cathode surface, and
heating said substrate at a particular temperature to drive the p-dopant a preliminary depth into said substrate;
wherein during the first n-diffusion step the p-dopant is driven further into the substrate and the pn-junction between the cathode layer and the p-type base layer is thereby formed and is unaffected by the second n-diffusion step; and wherein
the preliminary p-diffusion step comprises applying boron in a concentration amount of 5×10^{15} atom/cm^2, and heating the deposited boron at 1250° for 42 hours;
the first n-diffusion step comprises applying phosphorus at a surface concentration of 5×10^{15} atom/cm^2, heating at 1250° C. for 14 hours to produce the lightly doped zone of the cathode layer and the pn-junction between the p-base layer and the lightly doped zone of the cathode layer; and
the second n-diffusion step comprises applying phosphorus at a concentration of about 4×10^{16} atom/cm^2 and heating a temperature of 1200° for 4 hours to produce the highly doped zone of the cathode layer.

5,057,441

METHOD FOR RELIABILITY TESTING INTEGRATED CIRCUIT METAL FILMS

Gregory M. Gutt, Cupertino, Calif.; Avid Kamgar, Bernardsville, N.J.; Robert V. Knoell, Dearborn Heights, Mich., and Ronald J. Schutz, Warren, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 29, 1990, Ser. No. 605,043
Int. Cl.[5] H01L *21/78*
U.S. Cl. 437—8 **5 Claims**



1. A method for manufacturing an integrated circuit which includes the steps of:
providing one or more semiconductor substrates to be processed;
processing the substrates, said processing step including the step of forming, on each of the substrates, a patterned metallic film, and associated with the processing step there being a multiplicity of process parameters;
evaluating a film portion on at least one of the substrates relative to predetermined standards, and, if indicated by the result of the evaluation, adjusting one or more process parameters such that subsequently processed substrates include film portions conforming to the predetermined standards; and
optionally performing one or more additional steps toward formation of the integrated circuit,
characterized in that:
a) the film portion comprises a strip-like test portion;
b) the evaluating step comprises the steps of:
i) causing to flow, in the test portion, a direct current and an alternating current, the combined currents

being of sufficient magnitude to stimulate $1/f^2$ noise in the test portion; and

ii) determining the noise spectrum associated with the alternating current; and

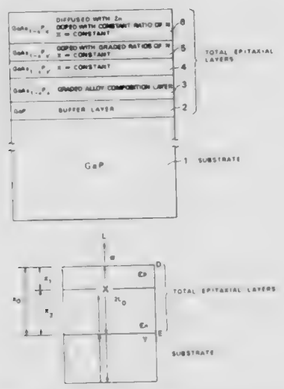
c) the evaluating step further comprises comparing the slope and amplitude of the spectrum with predetermined values at one or more preselected frequencies.

5,057,442

PROCESS FOR PREPARING LIGHT-EMITTING DIODES USING A MAXIMUM LAYER THICKNESS EQUATION

Hitoshi Habuka, Maebashi, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 30, 1990, Ser. No. 530,876
Claims priority, application Japan, May 30, 1989, 1-138355
Int. Cl.[5] H01L *21/66, 21/20*
U.S. Cl. 437—8 **1 Claim**



1. A process for preparing a light-emitting diode characterized in that a required maximum thickness of compound semiconductor epitaxial layers is determined by presuming light output power from a total thickness of said epitaxial layers by way of following equation:

$$L = exp(Ax_0 + B) + C$$

where A, B and C are given values obtained from experiments and said light output power is L and the total thickness of said epitaxial layers is x_0, in preparing a compound semiconductor wafer for said light-emitting diode having said compound semiconductor epitaxial layers which are constituted by $GaAs_{1-x}P_x$ $(0 \leqq x \leqq 1)$ formed on a compound semiconductor single-crystal substrate and having a light-emitting layer which is provided with a p-n junction formed in a surface layer region of said epitaxial layers.

5,057,443

METHOD FOR FABRICATING A TRENCH BIPOLAR TRANSISTOR

Louis N. Hutter, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 213,212, Jun. 29, 1988, Pat. No. 4,929,996. This application May 14, 1990, Ser. No. 523,436
Int. Cl.[5] H01L *21/328*
U.S. Cl. 437—31 **25 Claims**

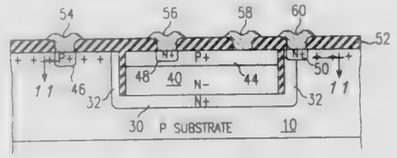
1. A method for fabricating bipolar transistor, comprising the steps of:

forming a trench depression in a semiconductor substrate;

forming a heavily doped layer of semiconductor material as a shell around said trench depression;

forming an insulating layer on the sidewalls of said trench depression, a bottom portion of said trench depression being defined by said heavily doped shell;

forming a semiconductor collector material in a lower portion of said trench depression;



forming a semiconductor base material in said collector material; and

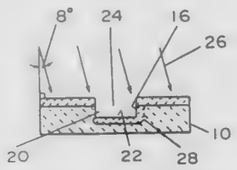
forming a semiconductor emitter material in said base material.

5,057,444

METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Genshu Fuse, Hirakata, and Takashi Ohzone, Yawata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 191,788, Apr. 27, 1988, Pat. No. 4,918,027, which is a continuation of Ser. No. 836,514, Mar. 5, 1986, abandoned. This application Jan. 19, 1990, Ser. No. 467,544
Claims priority, application Japan, Mar. 5, 1985, 60-43121
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—35 **3 Claims**



1. A method of fabricating a semiconductor device comprising:

a step of forming a trench in a semiconductor substrate having a principal surface, said trench having four side-walls which extend into said substrate in a direction substantially perpendicular to said principal surface of said semiconductor substrate and which are perpendicular to each other, and said trench having a bottom substantially parallel to said principal surface;

a step of positioning said semiconductor substrate in a first position;

a step of implanting ions into a first side-wall of said side-walls of said trench from a direction inclined to a normal to a plane containing said principal surface of said semiconductor substrate;

a step of positioning said semiconductor substrate in a second position which is different from said first position by rotating said semiconductor substrate by 90° about an axis of rotation which is perpendicular to said principal surface of said semiconductor substrate;

a step of implanting ions of the same type and to the same extent as implanted in the first side-wall into a second side-wall of said side-walls of said trench from said direction inclined to the normal to the plane containing said principal surface of said semiconductor substrate;

a step of positioning said semiconductor substrate in a third position which is different from said first and second positions by rotating said semiconductor substrate by 90° about said rotation axis;

a step of implanting ions of the same type and to the same extent as implanted in said first and second side-walls into a third side-wall of said side-walls of said trench from said direction inclined to the normal to the plane containing said principal surface of said semiconductor substrate;

a step of positioning said semiconductor substrate in a fourth position which is different from said first, second and third positions by rotating said semiconductor substrate by 90° about said rotation axis;

a step of implanting ions of the same type and to the same extent implanted in said first, second and third side-walls into a fourth side-wall of said side-walls of said trench from said direction inclined to the normal to the plane containing said principal surface of said semiconductor substrate; and

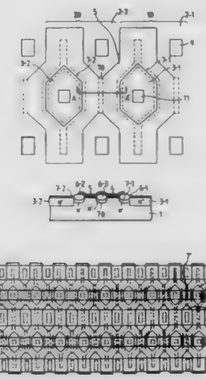
a step of implanting ions into the bottom of the trench by emitting ion beams of the same type as implanted in the side-walls in a direction perpendicular to said principal surface of said semiconductor device.

5,057,445

METHOD OF MAKING A HIGH-VOLTAGE, LOW ON-RESISTANCE IGFET

Ching F. Yeh, and Yuji Yatsuda, both of Kanagawa, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 544,205, Jun. 26, 1990, abandoned, which is a division of Ser. No. 183,847, Apr. 20, 1988, Pat. No. 4,961,101. This application Jan. 11, 1991, Ser. No. 639,767
Claims priority, application Japan, Apr. 21, 1987, 62-98109
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **2 Claims**



1. A method of manufacturing a semiconductor device with a plurality of planar high-voltage insulated-gate FETs, comprising the steps of:

forming first offset regions around regions where a plurality of drain regions will be formed and second offset regions between said regions adjacent to each other where said drain regions will be formed, near a surface of a semiconductor substrate by a selective ion implantation method;

forming LOCOS insulation films on said first and second offset regions by a LOCOS method;

forming a gate oxide film by oxidizing said surface of said semiconductor substrate;

forming gate electrodes by forming a polysilicon layer with high impurity concentration and patterning said polysilicon layer subsequently;

forming said plurality of drain regions and a plurality of source regions by implanting impurities with high concentration in a self-alignment manner with said LOCOS insulation films and said gate electrodes as masks;

forming an inter-layer insulation film made of silicon glass film by a CVD method; and

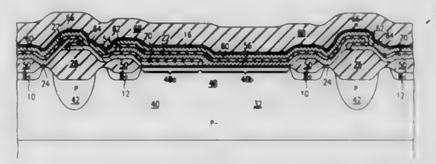
forming drain and source electrodes by making contact holes in said inter-layer insulation film and forming metal electrodes subsequently.

5,057,446

METHOD OF MAKING AN EEPROM WITH IMPROVED CAPACITIVE COUPLING BETWEEN CONTROL GATE AND FLOATING GATE

Manzur Gill, Rosharon, and David J. McElroy, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 6, 1990, Ser. No. 563,369
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **8 Claims**



1. A method for fabricating an electrically erasable and programmable memory cell at a face of a semiconductor layer having a first conductivity type, comprising the steps of:

selectively doping the semiconductor layer with a dopant of a second conductivity type opposite the first conductivity type to create a drain region and a source region spaced by a channel area;

forming a first conductor layer over the face;

selectively etching the first conductor layer to define a first control gate conductor;

forming a second conductor layer insulatively over the face;

selectively etching the second conducting layer to define a floating gate conductor, the floating gate conductor insulatively extending over the first control gate conductor; and

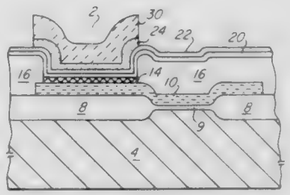
forming a second control gate conductor insulatively adjacent the floating gate conductor and inc contact with said first control gate conductor.

5,057,447

SILICIDE/METAL FLOATING GATE PROCESS

James L. Paterson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 9, 1990, Ser. No. 549,862
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—43 **6 Claims**



1. A method for fabricating a floating-gate transistor at a surface of a semiconductor body, said method comprising the steps of:

forming a field dielectric structure at said surface, to define

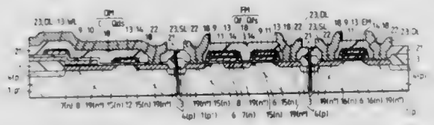
a moat region not covered by said field dielectric structure;
forming source diffusion and a drain diffusion at said moat region;
forming a floating gate, comprising polycrystalline silicon, said floating gate having a capacitor bottom plate section disposed over said field dielectric structure, and having a gate portion extending off of said field dielectric and disposed between said source and drain diffusions;
forming a multilevel dielectric layer overall;
removing a portion of said multilevel dielectric layer over said capacitor bottom plate section to expose a portion thereof;
forming a silicide film, disposed on said exposed portion of said capacitor bottom plate section;
forming a capacitor dielectric overall;
removing a portion of said capacitor dielectric and said multilevel dielectric layer over said moat region to expose a portion thereof; and
forming a patterned conductor layer, comprising a metal layer, with a first portion comprising a top plate disposed over and in contact with said capacitor dielectric layer at said capacitor bottom plate section, and a second portion disposed over and in direct contact with at least one of said source diffusion and said drain diffusion.

5,057,448

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING DRAM CELLS AND FLOATING GATE MEMORY CELLS

Kenichi Kuroda, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1989, Ser. No. 308,700
Claims priority, application Japan, Feb. 26, 1988, 63-44780; Feb. 26, 1988, 63-44781; Feb. 26, 1988, 63-44782; Feb. 26, 1988, 63-44783
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **24 Claims**



1. A method of manufacturing a semiconductor device having dynamic type memory elements and non-volatile memory elements on a semiconductor substrate, each of the dynamic type memory elements having a capacitance element which comprises a first electrode, a second electrode, and a dielectric film disposed therebetween, and each of the non-volatile memory elements having a floating gate electrode, a control gate electrode over the floating gate electrode, and a tunnel insulation film below the floating gate electrode, the method comprising the step of:
simultaneously forming the dielectric film of the capacitor element and the tunnel insulation film of the non-volatile memory element.

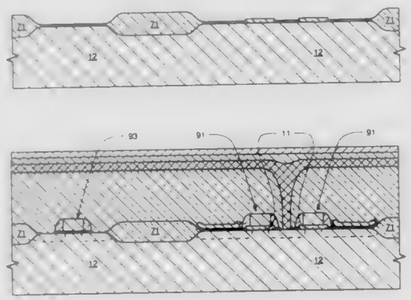
5,057,449

PROCESS FOR CREATING TWO THICKNESSES OF GATE OXIDE WITHIN A DYNAMIC RANDOM ACCESS MEMORY

Tyler A. Lowrey; Fernando Gonzalez, and Joseph J. Karniewicz, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 26, 1990, Ser. No. 498,669
Int. Cl.[5] H01L *21/72*
U.S. Cl. 437—60 **3 Claims**

2. A process for creating a dynamic random access memory fabricated on a silicon substrate, consisting of a process for creating a dual-function silicon dioxide layer having first and second thicknesses, said first thickness being greater than said second thickness, said dual-function silicon dioxide layer being initially used for a stress-relief layer between the substrate and a silicon nitride layering during a LOCOS step creating field



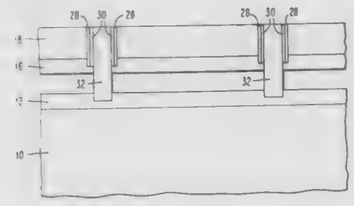
oxide regions, and subsequently used for gate oxide, constructing cell access transistor gates on top portions of said dual-function silicon dioxide layer of said first thickness, and constructing peripheral row line drive transistor gates on top portions of said dual-function silicon dioxide layer of said second thickness.

5,057,450

METHOD FOR FABRICATING SILICON-ON-INSULATOR STRUCTURES

Gary B. Bronner, Mount Kisco; Paul M. Fahey, Pleasantville; Bernard S. Meyerson, Yorktown Heights, all of N.Y., and Wilbur D. Pricer, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1991, Ser. No. 678,390
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—62 **8 Claims**



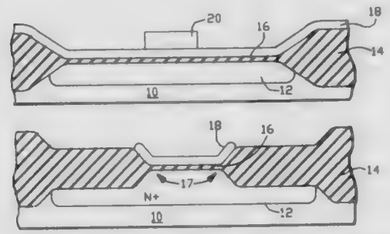
1. A method for fabricating a silicon-on-insulator structure comprising the steps of:
Step 1: forming a first layer of p++ silicon on a silicon substrate;
Step 2: forming a layer of intrinsic silicon on said first layer of p++ silicon;
Step 3: forming a second layer of p++ silicon on said layer of intrinsic silicon;
Step 4: forming a layer of p- silicon on said second layer of p++ silicon;
Step 5: forming at least one groove through said layer of p- silicon, said second layer of p++ silicon, said intrinsic layer and into said first layer of p++ silicon;
Step 6: filling said at least one groove with suitable material;
Step 7: and removing said layer of intrinsic silicon to provide an air gap space wherein said layer of p- silicon and said second layer of p++ silicon are supported above said air gap by said at least one filled groove extending into said first layer of p++ silicon below said air gap space.

5,057,451

METHOD OF FORMING AN ANTIFUSE ELEMENT WITH SUBSTANTIALLY REDUCED CAPACITANCE USING THE LOCOS TECHNIQUE

John L. McCollum, Saratoga, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Filed Apr. 12, 1990, Ser. No. 508,303
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—69 **7 Claims**



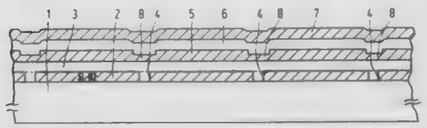
1. In an electrically programmable antifuse element including a dielectric layer between two conductive electrodes, one of said electrodes comprising an implanted region in a semiconductor substrate, a method for forming an antifuse aperture including the steps of:
forming a silicon dioxide layer over said implanted region,
forming a silicon nitride pad over said silicon dioxide layer,
exposing said semiconductor substrate to an oxidizing atmosphere to form an intermediate silicon dioxide layer such that the edges of said intermediate silicon dioxide layer encroach underneath the edges of said silicon nitride pad,
removing said silicon nitride pad.

5,057,452

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Matthias J. J. Theunissen; Johanna M. L. Mulder; Jan Haisma, and Wilhelmus P. M. Rutten, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1991, Ser. No. 650,520
Claims priority, application Netherlands, Feb. 12, 1990, 9000324
Int. Cl.[5] H01L *21/20, 21/268*
U.S. Cl. 437—109 **9 Claims**



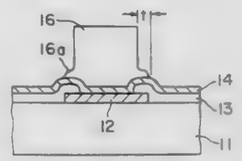
1. A method of manufacturing a semiconductor device in which a polycrystalline or amorphous silicon layer which is provided on a silicon oxide layer on a monocrystalline silicon substrate and which is in contact with the silicon substrate via an opening in the silicon oxide layer, is converted to a monocrystalline layer at least at the opening by means of a heat treatment in the presence of means for concentrating the heat at the opening, characterized in that, before the heat treatment, the polycrystalline or amorphous silicon layer is provided with the said means in the form of a second silicon oxide layer, a second polycrystalline or amorphous silicon layer, and a covering layer, and in that the second silicon oxide layer is given a thickness at the openings in the first silicon oxide layer which is smaller than that of the rest of the second silicon oxide layer, and in that the converted first silicon layer is provided with circuit elements after the heat treatment.

5,057,453

METHOD FOR MAKING A SEMICONDUCTOR BUMP ELECTRODE WITH A SKIRT

Takashi Endo, and Hirokazu Ezawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 260,042, Oct. 20, 1988, abandoned. This application May 29, 1990, Ser. No. 529,482
Claims priority, application Japan, Oct. 21, 1987, 62-265961
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—183 **9 Claims**



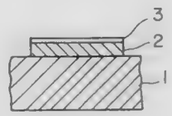
1. A method of manufacturing a semiconductor device having a bump electrode comprising the steps of:
forming on a semiconductor substrate an electrode pad and an insulating passivation film having a contact hole for contact with said pad, and forming a metal film on said pad and said insulating passivation film;
laminating a dry film on said metal film;
forming an opening in said dry film above said pad, said opening extending to said metal film;
performing electrolytic plating by using said metal film as one of electrolytic electrodes, and forming a bump substance as a deposit on said metal film above said electrode pad; wherein said laminating step is performed under a laminating condition that in said deposition step using a hot laminator with a roll, said bump material extends into a space between said dry film and said metal film to form a skirt so that the shape of said deposit is composed of a cubical portion corresponding in shape to said opening and said skirt extending outward from the bottom of said cubical portion;
removing said dry film; and
removing said metal film by using said deposit as a mask to make said deposit as a bump electrode.

5,057,454

PROCESS FOR PRODUCING OHMIC ELECTRODE FOR P-TYPE CUBIC SYSTEM BORON NITRIDE

Katsuhito Yoshida, and Kazuwo Tsuji, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 23, 1990, Ser. No. 601,626
Claims priority, application Japan, Oct. 23, 1989, 1-276346
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—184 **14 Claims**



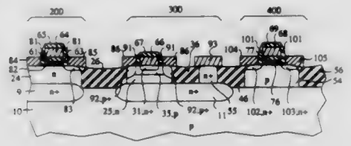
1. A process for producing an ohmic electrode for p-type cBN, which comprises the steps of: providing a thin alloy film composed of Au and Be, the weight ratio of Be being from 0.1 to 15% by weight, on p-type cBN; providing a thin film of a metal selected from Ni, Cr, Mo, and Pt on said thin alloy film; and subjecting said p-type cBN having said films thus provided to a heat-treatment in an inert gas or in vacuo at a temperature of from 350° C. to 600° C.

5,057,455

FORMATION OF INTEGRATED CIRCUIT ELECTRODES

Pang-Dow Foo, Berkeley Heights; William T. Lynch, Summit, and Chien-Shing Pai, Bridgewater, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1989, Ser. No. 443,766
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—193 **16 Claims**



1. A method of fabricating semiconductor integrated circuits including the steps of:

(a) forming a first relatively thick and a relatively thin insulating layer upon respective first and second portions of a major surface of a semiconductor body;

(b) forming a first horizontal polycrystalline silicon or amorphous silicon layer upon both the relatively thin and the first relatively thick insulating layer;

(c) forming a second relatively thick insulating layer upon the first polycrystalline or amorphous silicon layer;

(d) forming at least a first vertical aperture penetrating through the second relatively thick insulating layer but not through the first horizontal silicon layer;

(e) forming a first vertical polysilicon layer located within the first vertical aperture contacting the first polycrystalline silicon or amorphous horizontal silicon layer;

(f) removing the second relatively thick insulating layer; and

(g) removing the first horizontal silicon layer except at regions defined by and underlying the first vertical aperture.

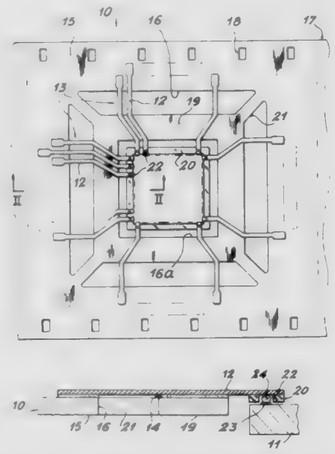
5,057,456

METHOD OF MANUFACTURING A TAB SEMICONDUCTOR PACKAGE BY SECURING A THIN INSULATING FRAME TO INNER LEADS OF THE PACKAGE

Gerard Dehaine, Chatillon, France, assignor to Bull, S.A., Paris, France

Filed Aug. 22, 1989, Ser. No. 396,690
Claims priority, application France, Aug. 23, 1988, 88 11107
Int. Cl.[5] H01L *21/60, 21/58*
U.S. Cl. 437—206 **20 Claims**

15. A method of manufacturing a TAB package, comprising: preforming an insulating substrate having an open window therein, fixing a conductive metal foil to the preformed insulating substrate via an adhesive layer, engraving the conductive metal foil to form a TAB lead frame comprising leads each having inside the window of the substrate an inner end adapted for connection to a respective pad of an integrated circuit, and



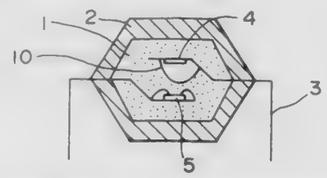
securing to said inner ends insulating frame means of a thickness less than the thickness of said insulating substrate.

5,057,457

MULTIMOLD SEMICONDUCTOR DEVICE AND THE MANUFACTURING METHOD THEREFOR

Syouichi Miyahara; Keiji Kamasaki, both of Yokohama, and Michiya Higashi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1990, Ser. No. 580,542
Claims priority, application Japan, Sep. 13, 1989, 1-237578
Int. Cl.[5] H01L *21/48, 21/56*
U.S. Cl. 437—207 **1 Claim**



1. A method of manufacturing semiconductor devices which comprises the following steps of:

(a) arranging semiconductor chips mounted on a lead frame and bonded with wires in cavities formed in an inner resin mold;

(b) injecting melted inner resin into an inner resin mold, wax to be added to the inner resin being at least one compound selected from the group consisting of ester group compound, fatty acid based compound, fatty acid metallic salt based compound, fatty alcohol compound, polyhydric alcohol compound, and fatty acid amide compound;

(c) removing the hardened inner resin sealed semiconductor devices from the inner resin mold;

(d) arranging the removed inner resin sealed semiconductor devices in cavities formed in an outer resin mold;

(e) injecting an outer resin into the outer resin mold; and

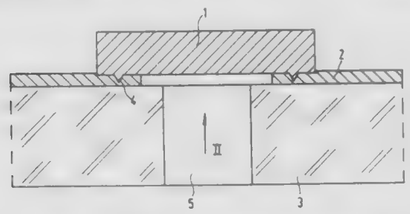
(f) removing the hardened outer resin enclosed semiconductor devices from the outer resin mold.

5,057,458

COMBINATION OF A SUPPORT AND A SEMICONDUCTOR BODY AND METHOD OF MANUFACTURING SUCH A COMBINATION

Arthur M. E. Hoeberechts, and Petrus J. M. Peters, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 334,063, Apr. 4, 1989, Pat. No. 4,929,999.
This application Jan. 23, 1990, Ser. No. 468,679
Claims priority, application Netherlands, Apr. 8, 1988, 8800901
Int. Cl.[5] H01L *23/48*
U.S. Cl. 437—209 **3 Claims**



1. A method of connecting a semiconductor body to a support, said method comprising forming at least one projecting part, projecting from the surface of the semiconductor body to face the support, providing a deformable metal layer between the surface of the semiconductor body provided with the projection and the support and then pressing the support and the semiconductor body under pressure at an elevated temperature in a manner such that the projecting part is pressed into the metal layer.

5,057,459

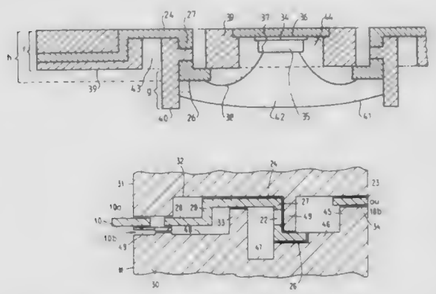
Patent Not Issued For This Number

5,057,460

METHOD OF MAKING AN ELECTRONIC MODULE, FOR INSERTION INTO AN ELECTRONIC MEMORY-CARD BODY

René Rose, Bretonneux, France, assignor to Schlumberger Industries, Montrouge, France

Filed Nov. 27, 1989, Ser. No. 441,587
Claims priority, application France, Nov. 29, 1988, 88 15553
Int. Cl.[5] H01L *21/56, 21/60, 23/495*
U.S. Cl. 437—217 **9 Claims**



1. A method of manufacturing an electronic module for incorporation in an electronic memory card, the method comprising the following steps:

a) providing a set of electrical conductors having a first face and a second face, the set defining external contact tabs for said card situated on said first face and lying in a reference plane, and electrical connection zones and a fixing zone for fixing a semiconductor chip situated on said second face located on one side of said reference plane;

b) providing a mold having a cavity which defines the outside shape of said electronic module, said mold including protection means for preventing molding material from being deposited between said protection means and the said external contact tabs, between said protection means and said electrical connection zones, and between said protection means and said fixing zone;

c) placing said set of electrical conductors in said mold;

d) injecting said molding material into said mold so as to fill said mold cavity only on a side of said reference plane which includes said set of electrical conductors;

e) removing said mold;

f) fixing said semiconductor chip on said fixing zone; and

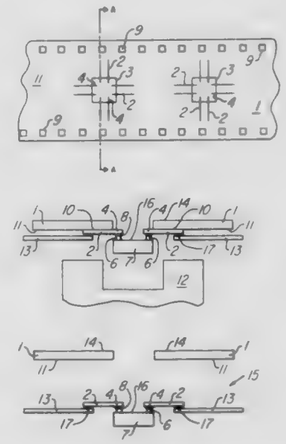
g) establishing electrical connections between the terminals of said semiconductor chip and said electrical connection zones.

5,057,461

METHOD OF MOUNTING INTEGRATED CIRCUIT INTERCONNECT LEADS RELEASABLY ON FILM

Galen F. Fritz, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 19, 1987, Ser. No. 27,716
Int. Cl.[5] H01L *21/06*
U.S. Cl. 437—220 **21 Claims**



6. A method of fabricating a semiconductor device, comprising the steps of:

providing film to which a plurality of metallic interconnect leads are affixed with an adhesive whose bonding strength is diminished by heat;

bonding an integrated circuit to the interconnect leads;

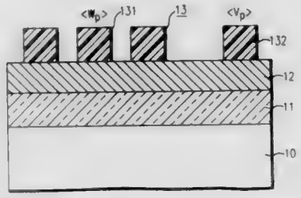
bonding a leadframe to the interconnect leads;

applying heat to the adhesive; and

detaching the film from the interconnect leads while the adhesive is hot.

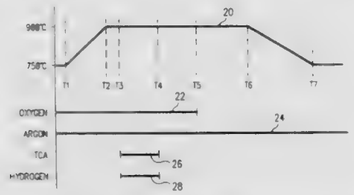
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5,057,462
COMPENSATION OF LITHOGRAPHIC AND ETCH PROXIMITY EFFECTS
Juli H. Eisenberg, Allentown; Larry B. Fritzinger, Bethlehem; Chong-Cheng Fu, South Whitehall; Taeho Kook, Lower Macungie Township, Lehigh County, and Thomas M. Wolf, Laurys Station, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 27, 1989, Ser. No. 413,356
Int. Cl.[5] H01L *21/312, 21/47*
U.S. Cl. 437—229 **12 Claims**



1. In the manufacture of integrated-circuit devices or of integrated-circuit projection masks, a process comprising selectively etching a layer of a desired material on a substrate, etching being in at least approximate conformance with a desired pattern which comprises a plurality of features, at least one of said features being in an environment in which lithographic as well as etch proximity effects are nonnegligible,
etching being preceded by a step of lithographically producing a first pattern in a resist layer on said desired layer, said first pattern being in first approximate conformance with said desired pattern, and
etching of said desired layer being such as to produce a second pattern in second approximate conformance with said first pattern,
characterized in that the actual value of a processing parameter is chosen such that a lithographic proximity effect is at least partially compensated for by an etch proximity effect, and such that said actual value is at least approximately equal to an optimal value of said processing parameter, said optimal value being defined such that compensation of said lithographic proximity effect by said etch proximity effect is locally optimal; said processing parameter being resist layer thickness.

5,057,463
THIN OXIDE STRUCTURE AND METHOD
Frank R. Bryant, Denton, and Fu-Tai Liou, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Feb. 28, 1990, Ser. No. 486,121
Int. Cl.[5] H01L *21/316*
U.S. Cl. 437—238 **12 Claims**



1. A method for forming an insulating layer on an integrated circuit, comprising the steps of:
introducing the integrated circuit into a furnace while oxygen and inert gas are flowing thereinto;
increasing the temperature of the furnace to a desired level;
holding the integrated circuit in the furnace for a first predetermined period of time;
introducing hydrogen and a gas containing chlorine into the furnace for a second predetermined time;
stopping the flow of hydrogen and the gas containing chlorine into the furnace, and holding the integrated circuit in the furnace for a third predetermined period of time;
ceasing the flow of oxygen into the furnace, and holding the integrated circuit in the furnace for a fourth predetermined period of time;
decreasing the furnace temperature; and
removing the integrated circuit from the furnace.

5,057,464
RADIATION SHIELDING GLASS HAVING AN IMPROVED GAMMA IRRADIATION BROWNING AND DIELECTRIC BREAKDOWN
Yoshiharu Miwa, and Kazuhiko Asahi, both of Shiga, Japan, assignors to Nippon Electric Glass Co., Ltd., Otsu, Japan
Filed Feb. 9, 1990, Ser. No. 477,735
Claims priority, application Japan, Feb. 10, 1989, 1-32419
Int. Cl.[5] C03C *3/06, 3/076, 3/102, 3/108*
U.S. Cl. 501—53 **2 Claims**

1. A radiation shielding glass composition having a high radiation shielding capacity, a high resistance to browning by irradiation of gamma ray, and a reduced dielectric breakdown, said composition consisting essentially of 40.0% to 60.0% SiO_2, 25.0% to 45.0% PbO, 1.5% to 2.0% CeO_2, 4.5% to 12.0% Na_2O, 2.0% to 9.0% K_2O, 0% to 5.0% B_2O_3, and 0% to 10.0% BaO, $Na_2O/(Na_2O+K_2O)$ being 0.5 to 0.8.

5,057,465
CERAMIC MATRICES REINFORCED WITH SIC, SI_3N_4 OR SIALON FIBERS HAVING A COATING OF C, B OR BN CONTAINING SIC OR SI_3N_4
Hiroshi Sakamoto, and Tadahiko Miyoshi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 60,335, Jul. 8, 1986, abandoned. This application Dec. 20, 1989, Ser. No. 453,925
Claims priority, application Japan, Jul. 10, 1985, 60-150248
Int. Cl.[5] C04B *35/52, 35/02;* **B32B** *9/00*
U.S. Cl. 501—90 **19 Claims**

1. Fiber-reinforced ceramics comprising at least one of fibers and whiskers distributed in a sintered ceramic matrix, the ceramic matrix being composed mainly of SiC, Si_3N_4 or $Si_{6-z}Al_zO_zN_{8-z}$ where $0<z\leqq 4$, the fibers and the whiskers consisting essentially of at least one of SiC, Si_3N_4, or $Si_{6-z}Al_zO_zN_{8-z}$ where $0<z\leqq 4$, and a coating film comprising C, B or BN containing 10–50 mol % of SiC or Si_3N_4 being provided on surfaces of the fibers and the whiskers; the coating film having a thickness of 0.1 to 5 μm, the diameter of fibers being in the range of 10 to 200 μm and the diameter of the whiskers being in the range of 0.5 to 5 μm.

5,057,466
DIELECTRIC CERAMIC MATERIAL AND METHOD OF PRODUCING SAME
Masaaki Sugiyama; Takayuki Inuzuka, and Hiroshi Kubo, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Feb. 22, 1990, Ser. No. 483,463
Claims priority, application Japan, Feb. 23, 1989, 1-41653; Oct. 25, 1989, 1-275946
Int. Cl.[5] C04B *35/04*
U.S. Cl. 501—135 **10 Claims**



1. A dielectric ceramic material consisting essentially of a complex perovskite $Ba(Mg_{\frac{1}{3}}Ta_{\frac{2}{3}})O_3$ phase, and phosphorus in an amount of 0.005 to 1.0% by weight.

5,057,467
PROCESSING ADDITIVES FOR CLAY PRODUCTION
Alan P. Croft, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 8, 1989, Ser. No. 433,630
Int. Cl.[5] C04B *33/04*
U.S. Cl. 501—148 **18 Claims**

1. A process for increasing the viscosity and filtration rate of a water and clay slurry, comprising admixing, at a pH greater than about 7.5, an additive selected from the group consisting essentially of (1) a non-flocculating polyalkylene polyamine having an average molecular weight of less than about 1000 and (2) a non-flocculating polyalkylene polyamine having an average molecular weight of less than about 1000 and a latex, with the water and clay slurry, said additive being used in an amount effective to increase the rate of filtration of liquids from the insoluble clay and increase the viscosity of the slurry as compared to a clay slurry containing only water and clay.

5,057,468
CATALYTIC DISTILLATION STRUCTURE
John R. Adams, Houston, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.
Filed May 21, 1990, Ser. No. 526,444
Int. Cl.[5] B01J *35/04*
U.S. Cl. 502—1 **17 Claims**

1. A catalytic distillation structure for disposition into a distillation column reactor, comprising a particulate catalyst component disposed in a rigid hollow cylinder closed at both ends having distillation surfaces thereon and circular ports in the ends and longitudinally slotted ports in the walls to allow free passage of gas and vapors, both the length and diameter of said hollow cylinder being substantially smaller than the corresponding dimensions of said distillation column reactor.

5,057,469
PREPARATION OF IRON NITROSYL CARBONYL CATALYST
Duane E. Heaton, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sep. 5, 1990, Ser. No. 578,108
Int. Cl.[5] B01J *38/68, 21/20, 21/18;* **C01B** *21/12*
U.S. Cl. 502—24 **24 Claims**

1. A process for preparing iron nitrosyl carbonyl catalyst in a reaction mixture, the improvement comprising preparing the catalyst in a solvent solution then adding miscible non-solvent to the solution to result in separation of the mixture into an upper layer and a lower layer containing iron nitrosyl carbonyl.

5,057,470
REGENERATION OF NOBLE METAL CATALYSTS USED IN HYDRODEHALOGENATION OF HALOGEN-SUBSTITUTED HYDROCARBONS CONTAINING FLUORINE AND AT LEAST ONE OTHER HALOGEN
Carl S. Kellner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed May 22, 1990, Ser. No. 526,720
Int. Cl.[5] B01J *23/96, 27/13, 38/42;* **C07C** *19/08*
U.S. Cl. 502—35 **9 Claims**

1. A process for regenerating a supported noble metal catalyst deactivated during hydrodehalogenation of a compound having the formula $C_nH_mF_pX_q$, where each X is independently selected from Cl and Br, wherein n is an integer from 1 to 6, m is an integer from 0 to 12, p is an integer from 1 to 13, and q is an integer from 1 to 13, and wherein $m+p+q$ equals $2n+2$ for saturated compounds which are acyclic, $m+p+q$ equals $2n$ for saturated compound which are cyclic, and for olefinic compounds which are acyclic, and $m+p+q$ equals $2n-2$ for olefinic compounds which are cyclic, comprising the step of contacting said deactivated catalyst with an atmosphere comprising at least about 0.5 volume percent chlorine gas in the substantial absence of hydrogen and oxygen at a temperature from about 100° C. to 400° C. for a time sufficient for said chlorine contact to improve the catalytic activity of said catalyst for said hydrodehalogenation.

5,057,471
PROCESS FOR THE OBTAINMENT OF A LIGHT PARAFFIN ISOMERIZATION CATALYST
Jesûs J. Lazaro Munoz, Madrid; Avelino Corma Canos, Valencia, and Juana M. Frontela Delgado, Madrid, all of Spain, assignors to Compania Espanola De Petroleos, S.A.-Cepsa, Madrid, Spain
Filed Jun. 29, 1990, Ser. No. 548,227
Claims priority, application Spain, Jul. 19, 1989, 8902553
Int. Cl.[5] B01J *29/18, 29/22*
U.S. Cl. 502—66 **23 Claims**

1. A process for the obtainment of a light paraffin isomerization catalyst which comprises the steps of
(a) treating a mordenite with an acid solution at a temperature of between 40° to 100° C.;
(b) contacting said mordenite with a gas stream comprising oxygen and steam at a temperature of between 300° and 600° C.;
(c) mixing said mordenite with inorganic refractory oxide at a mordenite/inorganic refractory oxide ratio between about 1:1 to 99:1 to form a mixture;
(d) depositing a group VIII metal onto the said mordenite, said oxide or said mixture to form a catalyst;
(e) calcinating said catalyst at a temperature of between 300° and 600° C.; and
(f) reducing said catalyst in the presence of hydrogen gas at a temperature between 300° and 500° C. to form said isomerization catalyst.

5,057,472
PROCESS FOR THE DEALUMINATION AND ION EXCHANGE OF ZEOLITES
Elliot P. Hertzenberg, Wilmington, Del.; Brendan D. Murray, Houston, Tex.; Gary M. Pasquale, Lansdale, Pa., and Bruce H. C. Winquist, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Nov. 28, 1989, Ser. No. 442,861
Int. Cl.[5] B01J *29/18, 29/20*
U.S. Cl. 502—66 51 Claims

32. A zeolite catalyst comprising at least one metal selected from Group VIII and a zeolite prepared of a process which comprises contacting an acid stable sodium ion-containing zeolite with an about 0.5M to about 3M nitric acid solution containing ammonium nitrate in an amount sufficient to fully exchange said sodium ions in said zeolite for ammonium and hydrogen ions and subsequently calcining at a temperature sufficient to at least partially convert the ammonium hydrogen form of the zeolite to a hydrogen form of the zeolite.

47. The catalyst of claim 32 wherein said zeolite is additionally calcined at a temperature in the range of from about 350° C. to about 650° C.

49. The catalyst of claim 32 wherein said catalyst additionally comprises an inorganic oxide.

5,057,473
REGENERATIVE CU LA ZEOLITE SUPPORTED DESULFURIZING SORBENTS
Gerald E. Voecks, La Crescenta, and Pramod K. Sharma, La Canada, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Apr. 12, 1990, Ser. No. 508,386
Int. Cl.[5] B01J *29/10*
U.S. Cl. 502—73 3 Claims

1. A sulfur sorbent comprising a porous, high surface area, refractory, alumino-silicate synthetic zeolite support having a free lattice spacing of at least 6 Angstroms, having a ratio of AlO_2 to SiO_2 within about ±20% of stoichiometry and containing from 0.05 to 3.0 moles of copper ions and of lanthanum ions.

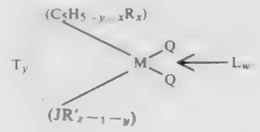
5,057,474
PREPARATION AND USE OF METAL-CONTAINING ZEOLITIC CATALYSTS
Antonius F. H. Wielers, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.
Filed May 14, 1990, Ser. No. 522,702
Claims priority, application United Kingdom, Jul. 13, 1989, 8916103
Int. Cl.[5] B01J *29/20, 37/00*
U.S. Cl. 502—74 8 Claims

1. A process for the preparation of a metal-containing zeolitic catalyst comprising the steps of exposing a zeolitic base material in the ammonium form to ammonia or a gaseous lower amine during a time sufficient to allow adsorption of said ammonia or amine to occur and contacting the zeolitic base material containing adsorbed ammonia or amine with an aqueous solution of a salt of the desired metal with a strong acid at an elevated temperature sufficient to release adsorbed ammonia or amine.

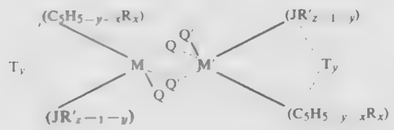
5,057,475
MONO-CP HETEROATOM CONTAINING GROUP IVB TRANSITION METAL COMPLEXES WITH MAO: SUPPORTED CATALYST FOR OLEFIN POLYMERIZATION
Jo Ann M. Canich, Webster, and Gary F. Licciardi, Humble, both of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Continuation-in-part of Ser. No. 533,245, Jun. 4, 1990, which is a continuation-in-part of Ser. No. 406,945, Sep. 13, 1989, abandoned. This application Sep. 13, 1990, Ser. No. 581,869
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] C08F *4/64*
U.S. Cl. 502—104 21 Claims

19. A process for producing a supported catalyst system comprising the steps of:

dissolving in a hydrocarbon solvent a Group IV B transition metal component of the formula:



or



wherein M is Zr, Hf, or Ti in its highest formal oxidation state:

$(C_5H_{5-y-x}R_x)$ is a cyclopentadienyl ring which is substituted with from zero to five substituent groups R, "x" is 0, 1, 2, 3, 4 or 5 denoting the degree of substitution, and each substituent group R is, independently, a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals, substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atoms is replaced by a halogen radical, an amido radical, a phosphido radical, an alkoxy radical, an alkylborido radical, or a radical containing Lewis acidic or basic functionality; C_1–C_{20} hydrocarbyl-substituted metalloid radicals wherein the metalloid is selected from the Group IV A of the Periodic Table of Elements; and halogen radicals, amido radicals, phosphido radicals, alkoxy radicals, alkylborido radicals, or a radical containing Lewis acidic or basic functionality; or $(C_5H_{5-y-x}R_x)$ is a cyclopentadienyl ring in which two adjacent R-groups are joined forming C_4–C_{20} ring to give a saturated or unsaturated polycyclic cyclopentadienyl ligand;

(JR'_{z-1-y}) is a heteroatom ligand in which J is an element with a coordination number of three from Group V A or an element with a coordination number of two from Group VI A of the Periodic Table of Elements, each R′ is, independently, a radical selected from a group consisting of C_1–C_{20} hydrocarbyl radicals; substituted C_1–C_{20} hydrocarbyl radicals wherein one or more hydrogen atom is replaced by a halogen radical, an amido radical, a phosphido radical, an alkoxy radical, an alkylborido radical, or a radical containing Lewis acidic or basic functionality; and "z" is the coordination number of the element J;

each Q is, independently, a univalent anionic ligand provided that where Q is a hydrocarbyl ligand such Q is different from $(C_5H_{5-y-x}R_x)$ or both Q together are an alkylidene, a cyclometallated hydrocarbyl or a divalent anionic chelating ligand;

"y" is 0 or 1 when "w" is greater than 0; "y" is 1 when "w" is when "y" is 1, T is a covalent bridging group containing a Group IV A or V A element;

L is a neutral Lewis base where "w" denotes a number from 0 to 3; and

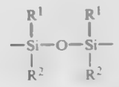
mixing with the dissolved transition metal component an alumoxane and an inert support material; and

recovering from the mixture a supported catalyst.

5,057,476
PLATINUM CATALYST COMPOSITION, METHOD FOR ITS PREPARATION AND CURABLE ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING SAME
Toshio Saruyama, Sakura; Hideko Takeda, Funabashi, and Atshushi Togashi, Ichihara, all of Japan, assignors to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan
Filed Aug. 22, 1990, Ser. No. 570,669
Claims priority, application Japan, Aug. 31, 1989, 1-225230
Int. Cl.[5] B01J *31/28*
U.S. Cl. 502—158 15 Claims

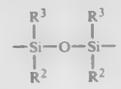
1. A platinum catalyst composition comprising

(A) a platinum complex having as a ligand an organosiloxane which has no more than 8 silicon atoms in each molecule and contains alkyl and alkenyl groups and which has in each molecule at least one bond as represented by the formula



wherein R^1 is an alkyl group having no more than 6 carbon atoms and R^2 is an alkenyl group, or a mixture of said platinum complex and said organosiloxane; and

(B) an organosiloxane which contains aryl and alkenyl groups and has no more than 8 silicon atoms in each molecule and which contains in each molecule at least one bond as represented by the formula



wherein R^3 is an aryl group and R^2 is defined as above, in a quantity of at least 2 moles of component (B) per 1 mole platinum atoms in component (A).

5,057,477
CYANOHYDRINATION CATALYST AND PROCESS
Yigal Becker, Tel Aviv; Asher Elgavi, Petach Tikva, and Youval Shvo, Kefar Shmaiahu, all of Israel, assignors to Bromine Compounds Ltd., Beer Sheva, Israel
Filed Dec. 6, 1989, Ser. No. 447,095
Claims priority, application Israel, Dec. 7, 1988, 88618
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—159 10 Claims

1. A catalyst for the asymmetric cyanohydrination of m-phenoxybenzaldehyde, comprising a catalytically effective amount of enantiomeric cyclo (phenylalanyl-histidine) adsorbed on a solid support comprising a non-ionic polymer resin.

5,057,478
METHOD OF PRODUCING A COMPOSITE MATERIAL COMPRISING A PEROVSKITE COMPLEX COMPOUND HAVING AN α-OLEFIN POLYMER DEPOSITED THEREON
Kazunobu Abe, and Takeshi Fukunaga, both of Osaka, Japan, assignors to Sakai Chemical Industry Co., Ltd., Osaka, Japan
Filed Feb. 21, 1990, Ser. No. 482,495
Claims priority, application Japan, Feb. 21, 1989, 1-041321
Int. Cl.[5] B01J *31/06*
U.S. Cl. 502—159 5 Claims

1. A method of producing a composite material comprising a perovskite type complex compound having an α-olefin polymer deposited thereon, which comprises: polymerizing an α-olefin in the presence of a perovskite type complex compound comprising a perovskite type compound represented by the formula

ABO_3

wherein A is at least one element selected from the group consisting of alkaline earth metals and Pb, and B is at least one element selected from the group consisting of Ti, Zr, Hf and Sn; the complex compound further containing at least one oxide of element selected from the group consisting of rare earth elements, transition elements, Bi, Sb and Sn doped in the perovskite type compound in an amount of 0.1–3 mol %.

5,057,479
AQUEOUS DISPERSIONS OF AROMATIC DIACYL PEROXIDES
Lawrence A. Bock, Walnut Creek, Calif., assignor to Witco Corporation, New York, N.Y.
Continuation of Ser. No. 520,860, May 9, 1990, abandoned, which is a continuation of Ser. No. 399,368, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 149,000, Jan. 27, 1988, abandoned. This application Feb. 1, 1991, Ser. No. 649,171
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—160 18 Claims

1. An aqueous dispersion for use in curing polyester resins and the suspension polymerization of vinyl monomers comprising a symmetrical or asymmetrical aromatic diacyl peroxide; a water-soluble alkylene glycol; a dispersion stabilizing amount of magnesium aluminum silicate and a cellulose ether; and sufficient water to form an aqueous dispersion.

5,057,480
BLOWING REACTION CATALYST COMPOSITION THAT PROVIDES CELL OPENING OF THE RESULTING POLYURETHANE FOAM
Robert G. Petrella, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Division of Ser. No. 652,143, Feb. 7, 1991. This application Mar. 12, 1991, Ser. No. 667,998
Int. Cl.[5] B01J *31/02*
U.S. Cl. 502—167 7 Claims

1. A blowing catalyst composition consisting essentially of

(a) 25 to 80 wt % pentamethyldiethylenetriamine and

(b) 20 to 75 wt % bis(dimethylaminopropyl)methylamine.

5,057,481
CATALYST COMPOSITION FOR OXIDATION OF ETHYLENE TO ETHYLENE OXIDE
Madan M. Bhasin, Charleston, W. Va., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.
Continuation-in-part of Ser. No. 18,809, Feb. 20, 1987, abandoned, which is a continuation of Ser. No. 640,269, Aug. 13, 1984, abandoned. This application Oct. 3, 1988, Ser. No. 251,814
Int. Cl.[5] B01J *21/04, 23/04, 23/50*
U.S. Cl. 502—208 30 Claims

1. A catalyst for the manufacture of ethylene oxide by the

epoxidation of ethylene containing an impregnated silver metal on an inert, refractory solid support and an efficiency-enhancing amount, relative to the amount of silver metal of a mixture of cesium salts, at least one of which is a cesium salt in which the anion thereof is an oxyanion of an element having an atomic number of 21 to 75 and being from groups 3b through 7b, inclusive, of the Periodic Table of the Elements.

5,057,482

CATALYTIC COMPOSITE FOR PURIFYING EXHAUST GASES AND A METHOD FOR PREPARING THE SAME

Hiroshi Fukuda, Nara; Ikuo Matsumoto, and Kenji Tabata, both of Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 7, 1989, Ser. No. 447,272

Claims priority, application Japan, Dec. 15, 1988, 63-317483; Dec. 15, 1988, 63-317484; Jun. 30, 1989, 1-170008

Int. Cl.[5] B01J *32/00, 35/06*

U.S. Cl. 502—303 **23 Claims**

1. A catalytic composite for purifying exhaust gases comprising a ceramic sheet consisting essentially of ceramic fibers, oxidation catalysts supported on the surface of said ceramic fibers and in the interstices between said ceramic fibers, and inorganic binders for binding said oxidation catalysts to said ceramic fibers, said ceramic sheet having vent holes for the passage of exhaust gases, said oxidation catalysts being present in an amount effective to purify exhaust gases by oxidation thereof, wherein said oxidation catalysts comprise perovskite compound oxides of the formula ABO_3, wherein A is selected from the group consisting of lanthanum (La), strontium (Sr) and cerium (Ce), and B is selected from the group consisting of cobalt (Co) and manganese (Mn).

5,057,483

CATALYST COMPOSITION CONTAINING SEGREGATED PLATINUM AND RHODIUM COMPONENTS

Chung-Zong Wan, Somerset, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Feb. 22, 1990, Ser. No. 483,485

Int. Cl.[5] B01J *21/04, 23/10, 23/42, 23/46*

U.S. Cl. 502—304 **43 Claims**

1. A catalyst composition comprising a carrier on which is disposed a catalytic material, the catalytic material comprising:
   a first coat carried on the carrier and comprising a first activated alumina support, a catalytically effective amount of a first platinum catalytic component dispersed on the first alumina support, and a catalytically effective amount of bulk ceria; and
   a second coat carried by the carrier and comprising a co-formed rare earth oxide-zirconia support, a catalytically effective amount of a first rhodium catalytic component dispersed on the co-formed rare earth oxide-zirconia support, a second activated alumina support, and a catalytically effective amount of a second platinum catalytically component dispersed on the second alumina support.

5,057,484

SINGLE CRYSTAL OXIDE SUPERCONDUCTOR AND METHOD OF PRODUCING THE SAME

Takao Shiota, Sakura; Hiroshi Hidaka, Tsukuba; Koichi Takahashi, Funabashi; Masahiro Sato, Yotsukaido, and Osamu Fukuda, Narashino, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed May 2, 1988, Ser. No. 188,937

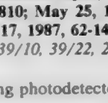
Claims priority, application Japan, May 1, 1987, 62-108051; May 1, 1987, 62-108052; May 8, 1987, 62-111784; May 25, 1987, 62-127335

Int. Cl.[5] B32B *9/00*

U.S. Cl. 505—1 **11 Claims**

1. A single crystal oxide superconductor comprising:
   a substrate made of a substance selected from the group consisting of: a polycrystalline metal of Pt, Cu, Ag, and Au; an alloy of Pt, Cu, Ag, and Au; a silica glass; an optical glass fiber; Al_2O_3; SiC; Si_3N_4; ZrO_2; and Y_2O_3; and
   a single crystal oxide superconductor layer coated over the substrate, the single crystal oxide superconductor layer being represented by the formula:

$$A_xB_yCu_zO_{9-\delta}$$



where: A includes at least one element selected from the group consisting of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu; B includes at least one element selected from the group consisting of Be, Sr, Mg, Ca, Ba and Ra; about $0.1<x<$about 2.0; about $1<y<$about 3; about $1<z<$about 3; and about $0<\delta<$about 7.

5,057,485

LIGHT DETECTING SUPERCONDUCTING JOSEPHSON DEVICE

Toshikazu Nishino, Kawasaki; Ushio Kawabe, Tokyo, and Mutsuko Hatano, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 11, 1988, Ser. No. 192,545

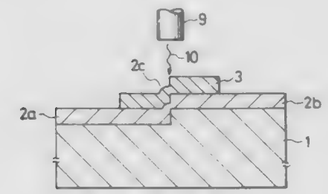
Claims priority, application Japan, May 15, 1987, 62-116809; May 15, 1987, 62-116810; May 25, 1987, 62-125922; Jun. 15, 1987, 62-147045; Jun. 17, 1987, 62-148942

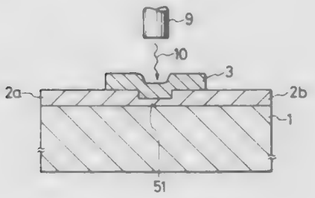
Int. Cl.[5] H01L *39/10, 39/22, 29/00;* **H01B** *12/00*

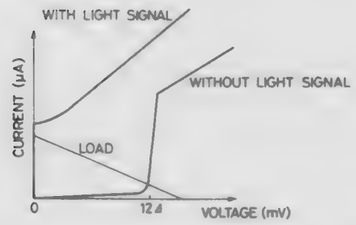
U.S. Cl. 505—1 **52 Claims**

1. A superconducting photodetector comprising:
   a substrate;
   an oxide-superconductor film which is formed on said substrate, and which has at least one superconducting weak link portion;
   a photoconductive semiconductor which is formed on said oxide-superconductor film so as to cover at least a part of said superconducting weak link portion; and

means for irradiating said photoconductive semiconductor with either light or an electromagnetic wave and thus







controlling superconducting current to flow within said oxide-superconductor film.

5,057,486

SYNTHESIS OF BI-PB-CA-SR-CU-O ORIENTED POLYCRYSTAL SUPERCONDUCTOR

Ronald H. Arendt, Schenectady, and Mary F. Garbauskas, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1990, Ser. No. 489,309

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C01F *11/02;* **C01G** *3/02, 21/02, 29/00*

U.S. Cl. 505—1 **8 Claims**

7. A process for making oriented superconductive crystalline $Bi_{2-y}Pb_yCa_2Sr_2Cu_3O_{10\pm z}$ in which y is from 0.1 to 0.5 and z is from zero to less than 1 which comprises forming a slurry comprising an organic liquid vehicle, $Bi_2CaSr_2Cu_2O_{8\pm x}$ where x is from 0 to 0.5, Ca_2CuO_3, cupric oxide, and lead oxide; simultaneously removing the liquid vehicle while aligning the $Bi_2CaSr_2Cu_2O_{8\pm x}$ with substantially parallel c-axes by means of an external magnetic field; heating the resulting admixture at a temperature between about 820° C. and 860° C. to convert aligned $Bi_2CaSr_2Cu_2O_{8\pm x}$ to aligned $Bi_{2-y}Pb_yCa_2Sr_2Cu_3O_{10\pm z}$.

5,057,487

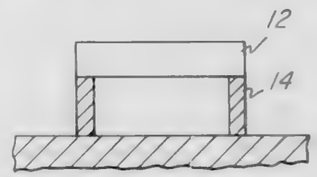
CRYSTAL GROWTH METHOD FOR Y-BA-CU-O COMPOUNDS

Sidney G. Parker, and Sam R. Walker, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 29, 1987, Ser. No. 114,885

Int. Cl.[5] C30B *15/34;* **B01J** *17/18*

U.S. Cl. 505—1 **12 Claims**



1. A crystallization method for Y-Ba-Cu-O compounds, comprising the step of:
   (a) providing a powdered mixture of Y, Ba, Cu and O containing materials of at least reagent grade purity;
   (b) pressing said mixture into a pellet;
   (c) suspending said pellet on a support, said pellet having a relatively minor area thereof in contact with said support;
   (d) raising the temperature of a portion of said pellet to the melting point thereof; and
   (e) cooling said pellet.

5,057,488

SYNTHESIS OF BI-PB-CA-SR-CU-O SUPERCONDUCTIVE MATERIAL

Ronald H. Arendt, Schenectady, and Mary F. Garbauskas, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,393

Int. Cl.[5] C01F *11/02;* **C01G** *3/02, 21/02, 29/00*

U.S. Cl. 505—1 **3 Claims**

1. A process for producing a solid superconductive material in powder form containing superconductive $Bi_{2-y}Pb_yCa_2Sr_2Cu_3O_{10\pm z}$ phase, in which y ranges from 0.1 to 0.5 and z ranges from zero to less than 1, which comprises providing a particulate mixture of reactants consisting essentially of $Bi_2CaSr_2Cu_2O_{8\pm x}$, x being between zero and 0.5, Ca_2CuO_3, cupric oxide, and lead oxide, in proportions for forming said superconductive phase, the Ca_2CuO_3 and cupric oxide in said mixture being present in approximately equal molar amounts; heating the mixture in an oxidizing atmosphere at a temperature ranging from about 820° C. to about 860° C. to form a reaction product comprising superconductive phase; cooling the reaction product in an oxidizing atmosphere; and comminuting the reaction product to produce powder.

5,057,489

MULTIFILAMENTARY SUPERCONDUCTING CABLE WITH TRANSPOSITION

Tihiro Ohkawa, La Jolla, and Robert A. Olstad, San Diego, both of Calif., assignors to General Atomics, San Diego, Calif.

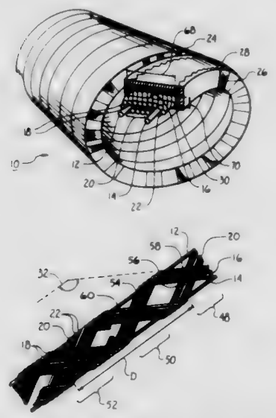
Filed Sep. 21, 1990, Ser. No. 586,535

Int. Cl.[5] H01B *12/00;* **H01L** *39/24*

U.S. Cl. 505—1 **18 Claims**

1. A multifilamentary superconducting cable comprising:
   a first guide wire;
   a second guide wire disposed substantially parallel to said first guide wire;
   a first layer having a plurality of mutually parallel superconducting filaments, said first layer being alternatingly passed in sequence under and over said first guide wire and said second guide wire at a predetermined oblique angle; and
   a second layer having a plurality of mutually parallel super-

conducting filaments, said second layer being alternatingly passed in sequence under and over said second guide wire and said first guide wire at said predetermined



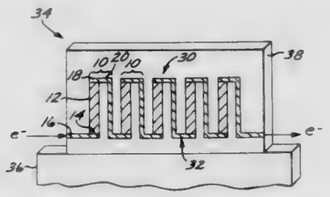
oblique angle with said first and second layers alternatingly overlapping each other as said respective layers pass between said first and second guide wires.

5,057,490

LOW-TEMPERATURE THERMOELECTRIC REFRIGERATING DEVICE USING CURRENT-CARRYING SUPERCONDUCTING MODE/NONSUPERCONDUCTING MODE JUNCTIONS

Matthew M. Skertic, Chatsworth, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 26, 1989, Ser. No. 427,676
Int. Cl.[5] H01B *12/00;* **F25B** *21/00*
U.S. Cl. 505—1 **21 Claims**



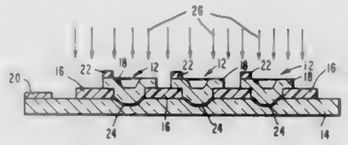
1. A refrigerating device that produces cooling below a preselected temperature, comprising:
a heat sink operable to produce the preselected temperature;
a refrigerating unit, including
a first piece of a first material that is electrically conducting but not superconducting at the preselected temperature,
a second piece of a second material that is superconducting at the preselected temperature, the second piece being electrically connected to the first piece at a first junction, the first piece and the heat sink in the region of the first junction, and
a third piece of a third material that is electrically conducting but not superconducting at the preselected temperature, the third piece being electrically connected to the second piece at a second junction, wherein the first material, the second material, and the third material are of the same composition, and the cross sectional areas of the first piece and the third piece are smaller than the cross sectional area of the second piece; and
means for causing an electrical current to flow from the first piece, into the second piece, and into the third piece.

5,057,491

HIGH CURRENT DENSITY TUNNEL JUNCTION FABRICATION FROM HIGH TEMPERATURE SUPERCONDUCTING OXIDES

Robert M. Housley, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Dec. 16, 1987, Ser. No. 134,160
Int. Cl.[5] H01B *12/00*
U.S. Cl. 505—1 **18 Claims**



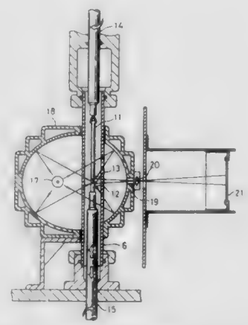
1. A two-terminal high current density tunnel junction device consisting essentially of:
(a) a first oxide layer consisting essentially of a high temperature superconducting oxide;
(b) a barrier layer formed between said first oxide layer and a second oxide layer having the same composition as said first oxide layer, said barrier layer having the same composition as said first and second oxide layers but having semiconducting properties provided by ions therein to form a tunnel junction; and
(c) a pair of electrical contacts, one contacting said first oxide layer and the other contacting said second oxide layer.

5,057,492

METHOD FOR PREPARING A SINGLE CRYSTAL OF LANTHANUM CUPRATE

Kunihiko Oka, and Hiromi Unoki, both of Tsukuba, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Division of Ser. No. 168,021, Mar. 14, 1988, Pat. No. 4,956,334. This application May 10, 1990, Ser. No. 521,624
Claims priority, application Japan, May 1, 1987, 62-109517; May 1, 1987, 62-109518; May 1, 1987, 62-109519
Int. Cl.[5] C30B *13/02*
U.S. Cl. 505—1 **4 Claims**



1. A method for preparing a single crystal of lanthanum cuprate comprising the steps of:
placing a flux composed of 28.9 to 7.1 mole % of at least one of lanthanum oxide and lanthanum carbonate and 71.1 to 92.9 mole % of copper oxide between a raw material rod of lanthanum cuprate and a seed crystal;
heating said flux at a temperature of 1040° to 1330° C. so that said flux melts and forms a floating zone; and
relatively moving said floating zone and said raw material rod in the direction of said raw material rod so that as passing said floating zone, said raw material rod melts, crystalizes and grows to a single crystal on said seed crystal.

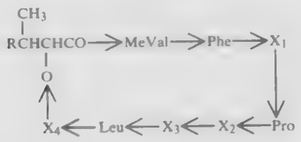
5,057,493

ANTIBIOTICS R106

Kazutoh Takesako, Kusatsu; Katsushige Ikai, Shiga; Kazuo Shimanaka, Tokyo; Junko Yamamoto, Moriyama; Fumiyo Haruna, Kyoto; Teruya Nakamura, Kusatsu; Hideyo Yamaguchi, Kawasaki, and Katsuhisa Uchida, Tokyo, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Jul. 13, 1989, Ser. No. 379,629
Claims priority, application Japan, Jul. 19, 1988, 63-180095; Feb. 16, 1989, 1-36736; Jun. 19, 1989, 1-158112
Int. Cl.[5] C07K *7/54;* **A61K** *37/02*
U.S. Cl. 514—11 **2 Claims**

2. An antifungal composition which comprises an effective amount of an antibiotic R106 represented by general formula (I):



(I)

wherein:
R is methyl or ethyl;
X_1 is MePhe, β-HOMePhe or Phe;
X_2 is allo-Ile, Val or Leu;
X_3 is MeVal or Val;
X_4 is β-HOMeVal, γHOMeVal, MeVal, Val, N,β-MeAsp, β-HOMePhe, MePhe, $MeDH_{2,3}Val$ or $MeDH_{3,4}Val$
and a pharmaceutically acceptable carrier therefor.

5,057,494

METHOD FOR PREVENTING TISSUE DAMAGE AFTER AN ISCHEMIC EPISODE

Warren D. Sheffield, Lebanon, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Aug. 3, 1988, Ser. No. 227,579
Int. Cl.[5] A61K *37/02, 37/36*
U.S. Cl. 514—12 **10 Claims**

1. A method for preventing tissue damage in a patient after the tissue has been deprived of blood supply for a tissue damaging amount of time, comprising administering to the patient an effective amount of polypeptide having epidermal growth factor activity so as to contact the blood deprived tissue therewith.

5,057,495

ATRIAL HYPOTENSIVE PEPTIDE

Thomas G. Flynn, and Donald B. Jennings, both of Kingston, Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 242,145, Sep. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 100,047, Sep. 23, 1987, abandoned. This application May 9, 1989, Ser. No. 349,487
Claims priority, application Canada, Jun. 24, 1988, 570432
Int. Cl.[5] C07K *7/10;* **A61K** *37/02*
U.S. Cl. 514—12 **7 Claims**

1. A peptide in substantially pure form selected from the group of peptides having the amino acid sequence: R_1-Ser-Ser-Cys-Phe-Gly-Gln-Lys-Ile-Asp-Arg-Ile-Gly-Ala-Val-Ser-Arg-Leu-Gly-Cys-Asp-R_2-R_3 and a disulphide double bond between said Cys and wherein R_1 is H, Ser, His-Ser, Ala-His-Ser, Met-Ala-His-Ser or Ser-Gln-Asp-Ser-Ala-Phe-Arg-Ile-Gln-Glu-Arg-Leu-Arg-Asn-Ser-Lys-Met-Ala-His-Ser, R_2 is Gly, Gly-Leu, Gly-Leu-Arg, Gly-Leu-Arg-Gln/Leu, or Gly-Leu-Arg-Gln/Leu-Phe and R_3 is OH.

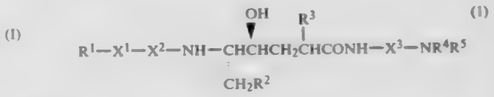
5,057,496

DIPEPTIDE COMPOUNDS CONTAINING HISTIDINE OR N-METHYL HISTIDINE PROCESSES FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Peter C. Cherry; Michael W. Foxton, both of Chalfont St. Giles; Barry E. Ayres, Ickenham, and Andrew D. Searle, Acton, all of England, assignors to Glaxo Group Limited, United Kingdom

Filed Dec. 6, 1988, Ser. No. 280,495
Claims priority, application United Kingdom, Dec. 7, 1987, 8728560
Int. Cl.[5] A61K *37/02;* **C07K** *5/06*
U.S. Cl. 514—19 **19 Claims**

1. A compound of formula (I)



(I)

wherein
R^1 represents an acyl group;
X^1 is selected from phenylalanine and p-methoxyphenylalanine bonded N-terminally to R^1 and C-terminally to X^2;
X^2 is selected from histidine and N-methylhistidine bonded N-terminally to X^1 and C-terminally to the group —NH—;
R^2 represents a C_{4-6} cycloalkyl group;
R^3 represents a group CHR^6R^7 (where R^6 is selected from hydrogen and hydroxyl and R^7 is a pyridinyl ring);
X^3 represents a C_{2-6} alkylene chain optionally substituted by one or more C_{1-4} alkyl groups;
R^4 and R^5, which may be the same or different, each independently selected from hydrogen and C_{1-4} alkyl group, or NR^4R^5 forms a 5- or 6- membered polymethylenimine ring;
and salts and solvates thereof.

5,057,497

ORAL METHOD FOR THE MAINTENANCE OF HEALTHY GINGIVAL TISSUES USING TRF

Henry D. Calam, Peekskill, N.Y., and Hans A. Schaeffer, Linden, N.J., assignors to Calam & Associates, Inc., Peekskill, N.Y.

Continuation-in-part of Ser. No. 119,142, Nov. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 791,377, Oct. 25, 1985, abandoned. This application Jul. 13, 1989, Ser. No. 379,078
Int. Cl.[5] A61K *7/16, 35/54, 37/22*
U.S. Cl. 514—21 **5 Claims**

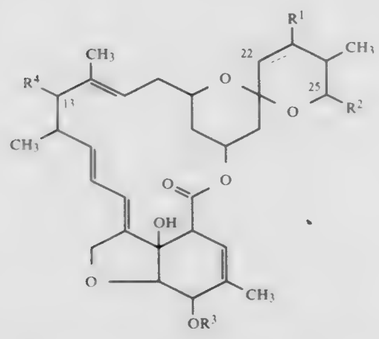
1. A method of treating gingival tissue which comprises applying to the gingival tissue a non-astringent pharmaceutical composition which comprises from about 200 to about 10,000 units per ounce of Tissue Respiration Factor, and from about 0.5% to about 10% by weight, of a penetration promoting substance which is both lipophilic and hydrophilic in a suitable pharmaceutical vehicle whereby the amount and rate of absorption of the Tissue Respiration Factor by the gingival tissue is increased thus promoting cellular proliferation and growth, in the absence of zinc ions.

5,057,498
ANTIPARASTIC AGENTS

Christopher J. Dutton, Sandwich; Stephen P. Gibson, Margate, and Nigel D. A. Walshe, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

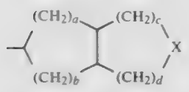
Division of Ser. No. 371,461, Jun. 26, 1989, Pat. No. 4,980,370.
This application Aug. 29, 1990, Ser. No. 575,039
Claims priority, application United Kingdom, Jul. 5, 1988, 8815967
Int. Cl.[5] A61K *31/335, 31/70*
U.S. Cl. 514—30 2 Claims

1. A method of combating insect or parasitic infections or infestations, including parasitic conditions in humans and animals which comprises administering an insecticidal or antiparasitic effective amount of a compound of formula (I)



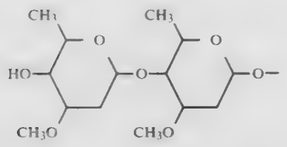
(I)

wherein the broken line at the 22-23 position represents an optional double bond; R^1 is hydrogen or hydroxy; R^2 is phenyl, substituted phenyl where said substituent is alkyl having one to four carbon atoms, alkoxy having one to four carbon atoms, alkoxy having one to four carbon atoms, alkylthio having one to four carbon atoms, chloro, fluoro, trifluoromethyl or cyano or a group of the formula



(II)

where X is O or $—CH_2—$ and a, b, c and d are each 0 to 2 such that the sum of a, b, c and d does not exceed 5; R^3 is hydrogen or methyl; and R^4 is hydrogen, hydroxy or a 4'-(alpha-L-oleandrosyl)alpha-L-oleandrosyloxy group of the formula



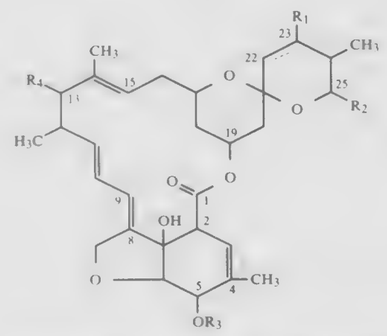
with the proviso that when the double bond is present at the 22-23 position R^1 is hydrogen to the organism responsible for said infection or infestation or to the location thereof.

5,057,499
AVERMECTIN DERIVATIVES

Helmut Mrozik, Matawan, N.J., and Peter J. Sinclair, Suffern, N.Y., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Jun. 2, 1989, Ser. No. 360,621
Int. Cl.[5] A61K *31/70, 31/35;* C07H *17/04;* C07D *305/00*
U.S. Cl. 514—30 14 Claims

1. A compound having the formula

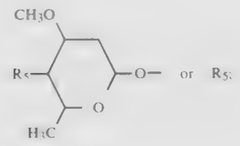


wherein the broken line at the 22,23 position represents a single bond and wherein R_1 is hydrogen or hydroxy or oxo, or the broken line represents a double bond and R_1 is absent;

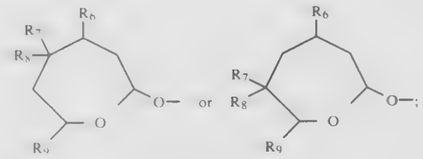
R_2 is methyl, ethyl, or an alpha-branched C_3-C_8 alkyl or alkenyl group;

R_3 is hydrogen, loweralkyl or loweralkanoyl;

R_4 is



R_5 is



R_6 is hydrogen or loweralkoxy;

R_7 is hydroxy, amino, N-loweralkylamino, N,N-diloweralkylamino, or loweralkanoylamino; and

R_8 is hydrogen; or

R_7 and R_8 together are oxo, methylene, $—CH_2O—$, hydroxyimino or semicarbazono;

R_9 is loweralkyl.

12. A method for the treatment of parasitic diseases of animals which comprises administering to an animal infected with parasites an effective amount of a compound of claim 1.

5,057,500
TREATMENT OF PRURITIS WITH ESTERS AND AMIDES

Carl R. Thornfeldt, Ontario, Oreg., assignor to Dermatologic Research Corporation, Napa, Calif.

Filed Feb. 12, 1990, Ser. No. 478,871
Int. Cl.[5] A61K *31/715*
U.S. Cl. 514—53 13 Claims

1. A method for the treatment of a subject suffering from a disease condition that manifests pruritis, said method comprising administering to said subject a therapeutically effective amount of a dermatological formulation comprising from about 0.5% to about 35% by weight of a compound selected from a group consisting of esters and amides of monocarboxylic acids, said monocarboxylic acids having 5 to 19 carbon atoms, said esters being selected from the group consisting of glycerides, saccharides, and esters of methanol, ethanol, propylene glycol, and polyethylene glycol, and said amides being N,N-dimethylamides.

5,057,501
METHODS FOR TREATMENT OF PAPULOSQUAMOUS AND ECZEMATOUS DISEASES

Carl R. Thornfeldt, Ontario, Oreg., assignor to Dermatologic Research Corporation, Napa, Calif.

Filed Mar. 13, 1990, Ser. No. 492,690
The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/335, 31/715*
U.S. Cl. 514—53 21 Claims

1. A method for the treatment of a subject suffering a disease condition selected from papulosquamous and eczematous diseases, said method comprising administering to said subject a therapeutically effective amount of a combination of:

(a) a compound containing an oxygenated tricyclic sesquiterpene structure containing an endoperoxide group, and

(b) a compound selected from the group consisting of C_5-C_{19} monocarboxylic acids and esters and amides thereof.

5,057,502
COMPOSITION AND TOPICAL AND SYSTEMIC TREATMENTS OF CONDITIONS CAUSED BY HEAVY, OILY OR GREASY SECRETIONS

William E. Walsh, 990 Lydia Dr., Roseville, Minn. 55113

Continuation-in-part of Ser. No. 57,166, Jun. 2, 1987, Pat. No. 4,898,852. This application Feb. 6, 1990, Ser. No. 475,717
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.
Int. Cl.[5] A61K *7/00*
U.S. Cl. 514—54 19 Claims

1. A process for recovering a crude secretion-changing composition active for oily skin, acne or other conditions, from a source of juniper berries which process comprises:

(a) rupturing juniper berries;

(b) extracting the crushed juniper berries with an extraction vehicle; and

(c) recovering the crude composition.

5,057,503
DERIVATIVIZED POLYSACCHARIDES WITH BIOLOGIC ACTIVITY, METHOD OF THEIR ISOLATION, AND USES THEREFOR

Joyce K. Czop, Norton, and Michael J. Janusz, West Newton, both of Mass., assignors to The Brigham and Women's Hospital, Boston, Mass.

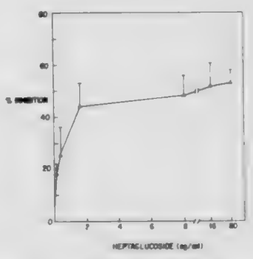
Filed Jan. 23, 1989, Ser. No. 299,693
Int. Cl.[5] A61K *31/00, 39/00*
U.S. Cl. 514—54 17 Claims

9. A process for obtaining from yeast cell walls a biologically active polysaccharide with a molecular weight of approximately 1,000 daltons, which can interact with β-glucan receptors on mammalian phagocytic cells comprising:

(a) solubilizing particulate glucans in said yeast cell walls;

(b) recovering the fraction of step (a) that contains biologic activity;

(c) subjecting the product obtained in step (b) to chromatographic fractionation;



(d) derivatizing the fractionated biologically active product obtained in step (c) with 2-aminopyridine; and

(e) subjecting the product obtained in step (d) to chromatographic fractionation.

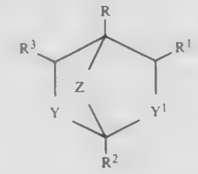
11. The heptaglucoside obtained by the process of claim 9.

5,057,504
1-HETEROCYCLIC BICYCLO-OCTANES

Malcolm H. Black; John A. Wyatt; John B. Weston; John P. Larkin; Ian H. Smith, and David A. Pulman, all of Berkhamsted, England, assignors to The Wellcome Foundation Limited, London, England

Continuation of Ser. No. 41,963, Apr. 24, 1987, abandoned. This application Aug. 16, 1989, Ser. No. 395,287
Claims priority, application United Kingdom, Apr. 25, 1986, 8610130; Apr. 25, 1986, 8610131
Int. Cl.[5] A01N *55/00, 43/40;* C07D *211/08, 213/24*
U.S. Cl. 514—63 9 Claims

1. A compound of the formula (I):



wherein

R is C_{2-10} alkyl, C_{2-10} alkenyl or C_{2-10} alkynyl or C_{1-10} alkyl, C_{2-10} alkenyl or C_{2-10} alkynyl substituted by cyano, halogen, C_{3-4} cycloalkyl, C_{1-4} alkoxy or a group $S(O)mR^4$ where R^4 is C_{1-4} alkyl optionally substituted by halogen and m is 0, 1 or 2, or R is C_{3-10} cycloalkyl, C_{4-10} cycloalkylalkyl, C_{4-10} cycloalkenyl or phenyl, each optionally substituted by C_{1-4} alkoxy, C_{1-3} alkyl, C_{2-4} alkynyl, halogen, cyano or a group $S(O)mR^4$ as hereinbefore defined;

R^1 is hydrogen, C_{1-3} alkyl, C_{2-3} alkenyl or alkynyl, each optionally substituted by halo, cyano, C_{1-4} alkoxy, alkyl carbalkoxy containing up to 6 carbon atoms or a group $S(O)mR^4$ as hereinbefore defined, or R^1 is cyano, CO_2R^4 wherein R^4 is as hereinbefore defined or gem dimethyl; or R^1 and R and the carbon atoms to which they are attached form a C_{5-7} carbocyclic ring optionally substituted by cyano, halogen, C_{1-3} alkyl, C_{2-3} alkoxy or alkenyl;

R^2 is a pyridine, piperdine or pyrrole or one of these rings substituted by hydroxy, oxo, halo, cyano, imino or amino or hydroxy, oxo, halo, cyano, imino or amino substituted

by C_{1-4} alkyl or C_{1-4} acyl or C_{1-6} carbalkoxy; azido, nitro, formyl, C_{1-6} carbalkoxy, thiocyanante, C_{1-4} acyl, C_{1-4} acyloxy, C_{1-4} alkoxyiminiomethylene, C_{1-4} acyloxyiminomethylene, or C_{1-3} alkyl or alkoxy each optionally substituted by halo; or C_{2-3} alkenyl or ethynyl each optionally substituted by cyano, a C_{1-9} aliphatic group optionally substituted by hydroxy, C_{1-4} alkoxy, C_{1-4} acyloxy, C_{1-4} acylthio or halogen, a group $—CO.R^7$ where R^7 is C_{1-6} hydrocarbyl or hydrocarbyloxy group or an amino group optionally substituted by one or two C_{1-4} alkyl groups; or by a silyl group substituted by three C_{1-4} alkyl groups or two C_{1-4} alkyl groups and a phenyl group; and R^3 is hydrogen, cyano, C_{1-3} alkyl, C_{2-3} alkenyl or alkynyl, each optionally substituted by cyano, C_{1-4} alkoxy, halo or a group $S(O)mR^4$ as hereinbefore defined,

Y and Y^1 are oxygen;

Z is CH_2O.

5,057,505

SUBSTITUTED AMINOMETHANEDIPHOSPHONIC ACIDS AND USE IN MEDICAMENTS

Leo Widler, Münchenstein, and Knut Jaeggi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

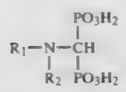
Continuation-in-part of Ser. No. 120,287, Nov. 13, 1987, abandoned. This application May 19, 1989, Ser. No. 354,053

Claims priority, application Switzerland, Nov. 21, 1986, 4665/86; May 27, 1988, 2005/88

Int. Cl.[5] A61K *31/675;* **C07F** *9/6506, 9/653, 9/6539*

U.S. Cl. 514—80 **23 Claims**

1. A heteroarylaminomethanediphosphonic acid of the formula



(I)

in which R_1 represents an imidazolyl, oxazolyl, or thiazolyl, benzothiazolyl or thiadiazolyl radical that is C-unsubstituted or C-mono- or C-di-substituted by lower alkyl; by lower alkoxy; by phenyl that is unsubstituted or is mono- or di-substituted by lower alkyl, lower alkoxy and/or by halogen; by hydroxy; by di-lower alkylamino; by lower alkylthio and/or by halogen; and that is unsubstituted at a substitutable N-atom which may be present or N-mono-substituted by lower alkyl or by phenyl-lower alkyl that is unsubstituted or is mono- or disubstituted by lower alkyl, lower alkoxy and/or by halogen; and R_2 represents hydrogen or lower alkyl, or a salt thereof.

23. A method of treatment of illnesses that can be attributed to calcium metabolism disorders, characterised in that as claimed in claim 1 a compound of the formula I or a pharmaceutically acceptable salt thereof is administered to a warm-blooded animal in need thereof.

5,057,506

CERTAIN PHOSPHONIC ACIDS AND DERIVATIVES USEFUL FOR THE TREATMENT OF DISORDERS RESPONSIVE TO N-METHYL-D-ASPARTATE RECEPTOR BLOCKADE

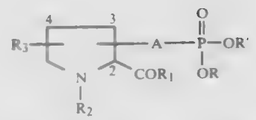
Alan J. Hutchison, Verona; Kenneth R. Shaw, Florham Park, and Josef A. Schneider, Murray Hill, all of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 124,226, Nov. 23, 1987, Pat. No. 4,906,621, which is a continuation-in-part of Ser. No. 933,702, Nov. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 867,114, May 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 738,102, May 24, 1985, abandoned. This application Nov. 27, 1989, Ser. No. 441,497

Int. Cl.[5] C07F *9/572;* **A61K** *31/40*

U.S. Cl. 514—91 **11 Claims**

1. A compound of the formula VI



(VI)

or with a double bond present between the 3 and 4 carbon atoms of the pyrrolidinyl ring, wherein R and R' represent hydrogen, lower alkyl, benzyl, benzyl substituted on phenyl by halogen, lower alkyl or lower alkoxy, or R and R' represent lower alkanoyloxymethyl, lower alkanoyloxymethyl substituted on oxymethyl by lower alkyl, cyclohexyl or cyclopentyl; R_2 represents hydrogen, lower alkyl or acyl; R_3 represents hydrogen, lower alkyl or aryl-lower alkyl; COR_1 represents carboxy, carbamoyl or carboxy esterified in form of a pharmaceutically acceptable prodrug ester; A represents lower alkylene or lower alkenylene; and in the above definitions acyl represents lower alkanoyl, aryl-lower alkanoyl, aroyl, lower alkoxycarbonyl, aryl-lower alkoxycarbonyl or alpha-amino-lower alkanoyl; aryl represents phenyl or phenyl substituted by one to three substituents selected from lower alkyl, lower alkoxy, trifluoromethyl and halogen; aroyl represents benzoyl or benzoyl substituted by one to three substituents selected from lower alkyl, lower alkoxy, trifluoromethyl and halogen; or a pharmaceutically acceptable salt thereof.

5,057,507

METHOD OF ALLEVIATING BONE DAMAGE WITH INOSITOLTRIPHOSPHATE

Matti Siren, Montagnola/Lugano, Switzerland, assignor to Perstorp AB, Perstorp, Sweden

Division of Ser. No. 492,740, Mar. 13, 1990, Pat. No. 5,015,634, Continuation-in-part of Ser. No. 173,985, Mar. 28, 1988, Pat. No. 5,019,566, and a continuation-in-part of Ser. No. 251,566, Sep. 30, 1988, Pat. No. 5,123,348, and a continuation-in-part of Ser. No. 367,968, Jun. 19, 1989. This application Jan. 24, 1991, Ser. No. 645,233

Int. Cl.[5] A01N *57/00*

U.S. Cl. 514—103 **8 Claims**

1. A method in preventing or alleviating bone damage comprising administering, to a mammal in need thereof, a bone damage preventing or alleviating effective amount of a pharmaceutical composition which includes at least one isomer of inositol triphosphate.

5,057,508

PESTICIDAL COMPOUNDS

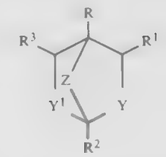
John E. Casida, Berkeley, Calif.; Christopher J. Palmer, Ipswich, England; John P. Larkin, Leighton Buzzard, England, and Ian H. Smith, Eaton Bray, England, assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 384,067, Jul. 24, 1989, Pat. No. 4,965,257, which is a continuation-in-part of Ser. No. 779,167, Sep. 23, 1985, Pat. No. 4,772,624, which is a continuation-in-part of Ser. No. 692,818, Jan. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 575,843, Jan. 30, 1984, abandoned. This application Feb. 20, 1990, Ser. No. 481,616

Int. Cl.[5] A61K *31/655, 31/335;* **C07D** *319/14*

U.S. Cl. 514—149 **9 Claims**

1. A compound of the formula (I):



(I)

wherein

R is C_{2-10} alkyl, alkenyl or alkynyl, each optionally substituted by, or methyl substituted by, cyano, halo, C_{3-4} cycloalkyl, C_{1-4} alkoxy, or a group $S(O)_mR^4$ where R^4 is C_{1-4} alkyl and m is 0, 1 or 2, or R is C_{3-10} cycloalkyl, C_{4-10} cycloalkenyl or phenyl, each optionally substituted by C_{1-4} alkoxy, C_{1-3} alkyl, C_{2-4} alkynyl, halo, cyano or a group $S(O)_mR^4$ as defined above;

R^1 and R^3, which are the same or different, are hydrogen, halo, C_{1-3} alkyl, C_{2-3} alkenyl or alkynyl, the alkyl, alkenyl or alkynyl each being optionally substituted by halo, cyano or C_{1-4} alkoxy; alkyl carbalkoxy containing up to 6 carbon atoms, a group $S(O)_mR^4$ or alkynyl substituted by tri-C_{1-4} alkylsilyl, or R^1 is $COO—C_{1-4}$-alkyl, cyano, gem-dicyano, gem-dihalo, gem-diethynyl, spirocyclopropyl, spiro-oxirane or spiro-oxetane, oxo or methylene optionally substituted by cyano, halo or $—CF_3$, or R^1 and R and the carbon atoms to which they are attached form a C_{5-7} carbocyclic ring optionally substituted by C_{1-3} alkyl or alkoxy or C_{2-3} alkenyl;

R^2 is a phenyl group substituted at the 4-position by halo, cyano, azido, nitro, C_{1-3} alkyl, C_{1-3} alkoxy, C_{1-3} alkyl or C_{1-3} alkoxy substituted by halo, C_{2-3} alkenyl, C_{2-3} alkynyl or C_{2-3} alkenyl or C_{2-3} alkynyl substituted by halo, or a group $—(C\equiv C)_nR^5$ wherein n is 1 or 2, R^5 is hydrogen, bromine, chlorine, iodine, a group $S(O)_mR^{4x}$ wherein R^{4x} is trifluoromethyl or a group R^4 where R^4 and m are defined above, methyl or ethyl substituted by hydroxy, a group OSO_2R^{10x} wherein R^{10x} is C_{1-4} alkyl, phenyl or tolyl, C_{1-4} alkoxy, C_{1-4} acyloxy optionally substituted by an amino group mono or di substituted by C_{1-4} alkyl groups or mono-substituted by phenyl optionally substituted by one to three halogen atoms, a group $SCOR^4$ or $S(O)_mR^4$ wherein m and R^4 are as hereinbefore defined or a group $NR^{11}R^{12}$ wherein R^{11} is hydrogen or C_{1-4} alkyl, R^{12} is hydrogen, C_{1-4} alkyl or a group COR^{13} wherein R^{13} is C_{1-4} alkyl or alkoxy, a group $—CX.R^6$ where X is oxygen or sulphur and R^6 is a C_{1-6} hydrocarbyl or hydrocarbyloxy group optionally substituted by fluoro or an amino group optionally substituted by one or two C_{1-4} alkyl groups or R^5 is cyano, or a silyl group substituted by three C_{1-4} alkyl groups or two C_{1-4} alkyl groups and a phenyl group;

Y and Y^1 are oxygen; and

Z is CH_2O;

with the proviso that when R^5 is a silyl group substituted by three alkyl groups then R^1 and R^3 must be hydrogen.

5,057,509

BILE ACID DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Roberto Pelliccinri; Aldo Roda, and Giuliano Frigerio, all of Milan, Italy, assignors to Giuliani S.p.A., Milan, Italy

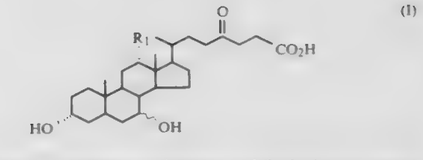
Filed Apr. 9, 1990, Ser. No. 507,260

Claims priority, application Italy, Apr. 17, 1989, 20169 A/89

Int. Cl.[5] C07J *9/00;* **A61K** *31/575*

U.S. Cl. 514—182 **4 Claims**

1. Compounds of formula I



(I)

wherein R_1 is hydrogen or hydroxy and the hydroxy group at the 7-position can be either in α or β configuration.

5,057,510

USE OF SELECTED PYRIDINE-2-THIONE-N-OXIDE COMPOUNDS AS GROWTH PROMOTERS FOR POULTRY

Jeffrey N. Davidson, Tulare, Calif.; John H. Wedig, Guilford, Conn.; John G. Babish, Ithaca, N.Y., and Richard A. McMillan, Exeter, Calif., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 532,883, Sep. 16, 1983, abandoned. This application Dec. 3, 1984, Ser. No. 677,630

Int. Cl.[5] A61K *31/555*

U.S. Cl. 514—188 **14 Claims**

1. A method for improving the growth response in poultry which comprises;

orally administering to said poultry a growth-promoting amount of at least one metallic salt of pyridine-2-thione-N-oxide.

5,057,511

3-HETEROCYCLIC THIOMETHYL CEPHALOSPORINS

Frederic H. Jung, Rilly la Montagne, and Annie Olivier, Reims, both of France, assignors to ICI Pharma, London, England

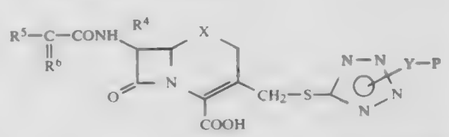
Filed Dec. 15, 1987, Ser. No. 133,482

Claims priority, application European Pat. Off., Dec. 23, 1986, 86402917.8

Int. Cl.[5] C07D *501/36;* **A61K** *31/545*

U.S. Cl. 514—206 **39 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt or pharmaceutically acceptable ester thereof; wherein

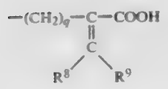
x is sulphur or sulphinyl;

R^4 is hydrogen, methoxy or formamido;

R^5 is 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each unsubstituted or substituted in the 5-position by fluorine, chlorine or bromine, or R^5 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl 2-aminopyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-triazol-3-yl;

R^6 is of the formula $=N.O.R^7$ (having the syn configuration about the double bond) wherein R^7 is hydrogen, (1-6C)alkyl, (3-8C)cycloalkyl, (1-3C)alkyl(3-6C)cycloalkyl, (3-6C)cycloalkyl(1-3C)alkyl, (3-6C)alkenyl, carboxy(3-6)C)alkenyl, (5-8C)cycloalkenyl, (3-6C)alkynyl, (2-5C)alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, (1-4C)alkylcarbamoyl(1-4C)alkyl, di(1-4C)alkylcarbamoyl(1-4C)alkyl, (1-4C)haloalkylcarbamoyl(1-4C)alkyl, (1-3C)haloalkyl, (2-6C)hydroxyalkyl, (1-4C)alkoxy(2-4C)alkyl, (1-4C)alkylthio(2-4C)alkyl, (1-4C)alkanesulphinyl(1-4C)alkyl, (1-4C)alkanesulphonyl(1-4C)alkyl, (2-6C)aminoalkyl, (1-4C)alkylamino(1-6C)alkyl, (2-

8(dialkylamino(2-6C)alkyl, (1-5C)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl, or R^7 is of the formula XIV:



(XIV)

wherein q is one or two and R^8 and R^9 are independently hydrogen or (1-4C)alkyl; or R^7 is of the formula XV:

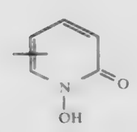
$$-CR^{10}R^{11}-(CH_2)_r-COR^{12} \quad (XV)$$

wherein r is 0–3, R^{10} is hydrogen, (1-3C)alkyl or methylthio, R^{11} is hydrogen (1-3C)alkyl, (3-7C)cycloalkyl, cyano, carboxy, (2-5C)carboxyalkyl or methanesulphonylamino, or R^{10} or R^{11} are joined to form, together with the carbon to which they are attached, a (3-7C)carbocyclic ring, and R^{12} is hydroxy, amino (1-4C) alkoxy, (1-4C)alkylamino or of the formula $NHOR^{13}$ in which R^{13} is hydrogen or (1-4-C)alkyl; or R^6 may be of the formula $=CH.R^{14}$ where R^{14} is hydrogen, halogen, (1-6C)alkyl, (3-7C)cycloalkyl, (2-6C)alkenyl, (3-7C)cycloalkenyl, phenyl or benzyl;

P represents:

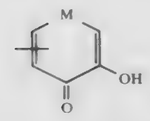
(i) a benzene ring substituted by groups R^1 and R^2 which are ortho with respect to one another wherein R^1 is hydroxy or an in vivo hydrolyzable ester thereof and R^2 is hydroxy or an in vivo hydrolyzable ester thereof

(ii) a group of the formula (II):



or;

(iii) a group of the formula (III):



wherein M is oxygen or a group NR^3 wherein R^3 is hydrogen or C_{1-4}alkyl;

the ring of group P is further unsubstituted or further substituted by C_{1-4} alkyl, halo, hydroxy, hydroxy C_{1-4} alkyl, cyano, trifluoromethyl, nitro, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, amino C_{1-4} alkyl, C_{1-4} alkylamino C_{1-4} alkyl, di-C_{1-4} alkylamino C_{1-4} alkyl, C_{1-4} alkanoy, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{1-4} alkanoyloxy, carbamoyl, C_{1-4} alkylcarbamoyl, di-C_{1-4} alkyl carbamoyl, carboxy, carboxy C_{1-4} alkyl, sulpho, sulpho C_{1-4} alkyl, C_{1-4} alkanesulphonamido, C_{1-4} alkoxycarbonyl, C_{1-4} alkanoylamino, nitroso, thioureido, amidino, ammonium, mono-, di-or tri-C_{1-4} alkylammonium pyridinium;

Y represents a covalent bond or a (1-4C)alkylene group unsubstituted or substituted by carboxy or sulpho or Y represents a group $-(CH_2)_m-Y'-$ wherein m=1 or 2 and Y' is —O.CO— or —NH.CO—.

5,057,512

3-AMINO-2-OXO-AZETIDINE-1-SULFONIC ACIDS

Rene Heymes, Vesoul, and Alain Bonnet, Livry-Gargan, both of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 68,141, Jun. 29, 1987, Pat. No. 4,900,728, which is a continuation of Ser. No. 855,161, Apr. 23, 1986, abandoned, which is a continuation of Ser. No. 588,139, Mar. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 436,526, Oct. 25, 1982, abandoned. This application Mar. 3, 1989, Ser. No. 319,477

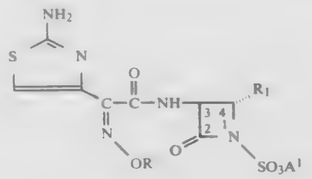
Claims priority, application France, Oct. 23, 1981, 8119942; Jan. 19, 1984, 8400799

The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.

Int. Cl.[5] A61K *31/425;* C07D *205/85, 417/12*

U.S. Cl. 514—210 12 Claims

1. A compound selected from the group consisting of syn isomers of racemates and optical isomers of 3-amino-2-oxo-azetidine-1-sulfonic acids of the formula



wherein R is difluoromethyl, R_1 is $-(CH_2)_n-X$, n is an integer from 1 to 4, X is fluorine, and A^1 is selected from the group consisting of hydrogen and pharmaceutically acceptable metal cations and their non-toxic, pharmaceutically acceptable acid addition salts, the wavy line indicates the cis form, trans form or cis trans form.

3. An antibacterial composition comprising an antibacterically effective amount of at least one compound of claim 1 and a pharmaceutically acceptable excipient.

5,057,513

SPIRO-THIAZEPINE DERIVATIVES USEFUL AS PAF ANTAGONISTS

Keiji Hemmi, Tsukuba; Ichiro Shima, Moriyamachi; Naoki Fukami, Ibaraki, and Masashi Hashimoto, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

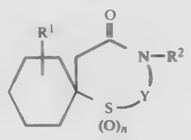
Filed May 4, 1990, Ser. No. 518,951

Claims priority, application United Kingdom, May 25, 1989, 8912055; Sep. 18, 1989, 8921077; Nov. 10, 1989, 8925403

Int. Cl.[5] C07D *513/02, 281/10;* A61K *31/55*

U.S. Cl. 514—211 10 Claims

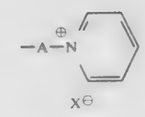
1. A compound of the formula:



wherein

R^1 is ar(lower)alkyl which may have suitable substituent(s),

R^2 is hydrogen, lower alkyl which may have suitable substituent(s), or a group of the formula:



in which A is lower alkylene and X is halogen, n is 0, 1 or 2 and Y is $-CH_2-CH_2-$ or



or a pharmaceutically acceptable salt thereof.

10. A method for treating or preventing PAF-mediated diseases which comprises administering an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt thereof to a human or animal.

5,057,514

COMPOUNDS EFFECTIVE AS CEREBRAL SCHEMIA TREATING AGENTS

Toshio Tatsuoka, Nishinomiya; Kenji Suzuki, Osaka; Fumio Satoh, Nagaokakyo; Seiji Mixano, Fukuoka, and Kunihiro Sumoto, Oonojo, all of Japan, assignors to Suntory Limited, Osaka, Japan

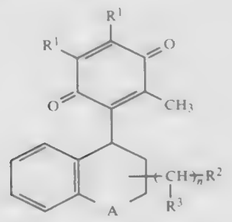
Filed Dec. 20, 1988, Ser. No. 286,857

Claims priority, application Japan, Dec. 22, 1987, 62-322951; Feb. 3, 1988, 63-21863; Sep. 5, 1988, 62-220497

Int. Cl.[5] C07C *62/38;* C07D *491/00, 513/00*

U.S. Cl. 514—227.5 9 Claims

1. A compound having the formula (I):



(I)

wherein A is $-CH_2-$; R^1 is CH_3 or OCH_3; R^2 is $-COR^4$ wherein; R^4 is a morpholino group, thiomorpholino group, piperdino group or N-methyl piperazinyl group; R^3 is H or a lower alkyl; and n is 0 or an integer of 1 to 6 and a salt thereof.

5,057,515

METHOD FOR AGONIZING A DOPAMINE RECEPTOR

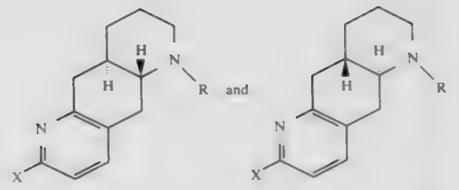
John M. Schaus, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 585,752, Sep. 20, 1990, Pat. No. 5,006,525, which is a division of Ser. No. 514,631, Apr. 25, 1990, Pat. No. 4,977,149, which is a division of Ser. No. 383,673, Jul. 24, 1989, Pat. No. 4,939,259. This application Jan. 8, 1991, Ser. No. 638,857

Int. Cl.[5] A61K *31/435, 31/445, 31/535*

U.S. Cl. 514—232.8 25 Claims

1. A method for agonizing a dopamine receptor in a mammal which comprises administering to said mammal a compound of the formulae



and

wherein:

X is halo, hydroxy, hydrogen, C_1–C_4 alkyl or a group of the formula $-NR^1R^2$, wherein R^1 and R^2 are individually hydrogen, C_1–C_6 alkyl, C_2–C_6 acyl, or C_1–C_6 alkylphenyl, or where R^1 and R^2, taken together with the nitrogen atom to which they are attached, form a three- to eight-membered heterocyclic ring containing either one or two nitrogen atoms, or one nitrogen atom and one oxygen atom; and

R is C_1–C_4 alkyl, allyl, or cyclopropylmethyl; or a pharmaceutically-acceptable salt thereof.

5,057,516

7,8-DIHYDROXY-1H-PYRAZOLO[3,4-F]QUINOXALINES

Poul Jacobsen, R dovre; Flemming E. Nielsen, Virum; Tage Honoré, K benhavn K, and J rgen Drejer, V rl se, all of Denmark, assignors to Novo Nordisk A/S, Bagvaerd, Denmark

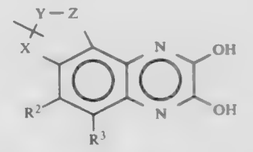
Division of Ser. No. 369,762, Jun. 22, 1989, Pat. No. 4,977,155. This application Aug. 22, 1990, Ser. No. 570,903

Claims priority, application Denmark, Jun. 28, 1988, 3567/88

Int. Cl.[5] C07D *487/04, 498/04, 517/04;* A61K *31/495*

U.S. Cl. 514—250 6 Claims

1. A heterocyclic compound selected from those having the formula I



(I)

wherein R^2 is hydrogen, NO_2, NH_2, CN, halogen, or SO_2NH_2;

—X—Y—Z— is selected from

$-NR^3-N=CR^3-$ and $-CR^3=N-NR^3-$,

wherein R^3 is hydrogen, lower alkyl, or CF_3, and a pharmaceutically-acceptable salt thereof.

6. A method of treating hyperactivity of the excitatory neurotransmitters, in a subject in need thereof, which comprises the step of administering to the said subject a neurologically-effective, glutamate antagonistic, amount of a heterocyclic compound of claim 1.

5,057,517

PIPERAZINYL DERIVATIVES OF PURINES AND ISOSTERES THEREOF AS HYPOGLYCEMIC AGENTS

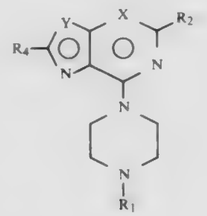
David B. R. Johnston, Warren; Malcolm MacCoss, Freehold; Stephen Marburg, Metuchen; Laura C. Meurer, North Plainfield, and Richard L. Tolman, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 217,893, Jul. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 75,362, Jul. 20, 1987, abandoned. This application Aug. 14, 1989, Ser. No. 393,200

Int. Cl.[5] A61K *31/52;* **C07D** *473/18, 473/34, 471/04*

U.S. Cl. 514—254 **36 Claims**

1. A compound having the formula:



wherein

X is N-(R_3)m and Y is N(R_3)n; and

R_1 and R_3 are independently hydrogen, loweralkyl, cycloloweralkyl, loweralkenyl, loweralkoxyloweralkyl, loweralkenyl, loweralkynyl, or substituted loweralkyl where the substituent is from 1 to 3 of halogen, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkylamino or diloweralkylamino, or the substituent is one of a 5- or 6-membered heteroaromatic ring system with sulfur as the heteroatom, and m and n are 0 or 1 such that when m is 0, n is 1 and when m is 1, n is 0;

R_2 and R_4 are independently hydrogen, loweralkyl, cycloloweralkyl, loweralkoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkenyl, loweralkenyloxy, loweralkynyl, substituted phenyl where the substituent is from 1 to 3 of halo or loweralkyl; or phenylloweralkyl; provided R_1, R_2, R_3 and R_4 are not simultaneously hydrogen; or

X is CR_3 and Y is $N—R_3$ and R_1 and R_3 are independently hydrogen, loweralkyl, cycloloweralkyl, loweralkenyl, loweralkoxyloweralkyl, loweralkenyl, loweralkynyl, or phenylloweralkyl or substituted loweralkyl where the substituent is from 1 to 3 of halogen, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkylamino or diloweralkylamino, or the substituent is one of a 5- or 6-membered heteroaromatic ring system with nitrogen, oxygen or sulfur as the heteroatom;

R_2 and R_4 are independently hydrogen, loweralkyl, cycloloweralkyl, loweralkoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkenyl, loweralkenyloxy, loweralkynyl, mono, di, or trihaloloweralkyl, phenyl or substituted phenyl where the substituent is from 1 to 3 of halo or lowerlalkyl, phenylloweralkyl, amino, loweralkylamino or dialkylamino where the alkyl groups can be linear, branched or joined in a ring of 5- or 6-members optionally containing oxygen or nitrogen as a heteroatom; or

X is N and Y is 0; and

R_1 is hydrogen, loweralkyl, cycloloweralkyl, loweralkenyl, loweralkoxyloweralkyl, loweralkenyl, loweralkynyl, where the substituent is from 1 to 3 of halogen, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkylamino or diloweralkylamino, or the substituent is one of a 5- or 6-membered heteroaromatic ring system with nitrogen, oxygen or sulfur as the heteroatom;

R_2 and R_4 are independently hydrogen, loweralkyl, cycloloweralkyl, loweralkoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkenyl, loweralkenyloxy, loweralkynyl, mono, di, or trihaloloweralkyl, phenyl or substituted phenyl where the substituent is from 1 to 3 of halo or loweralkyl, phenylloweralkyl, amino, loweralkylamino or dialkylamino where the alkyl groups can be linear branched; or joined in a ring of 5 or 6-members optionally containing oxygen or nitrogen as a heteroatom; or

X is N and Y is S and

R_1 is hydrogen, loweralkyl, cycloloweralkyl, loweralkenyl, loweralkoxyloweralkyl, loweralkenyl, loweralkynyl, or phenylloweralkyl or substituted loweralkyl where the substituent is from 1 to 3 of halogen, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkylamino or diloweralkylamino, or the substituent is one of a 5- or 6-membered heteroaromatic ring system with nitrogen, oxygen or sulfur as the heteroatom;

R_2 and R_4 are independently hydrogen, loweralkyl, cycloloweralkyl, loweralkoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkenyl, loweralkenyloxy, loweralkynyl, mono, di, or trihaloloweralkyl, phenyl or substituted phenyl where the substituent is from 1 to 3 of halo or loweralkyl; phenylloweralkyl, or amino;

and the pharmaceutically acceptable salts thereof.

35. A method for the treatment of diabetes or obesity with associated insulin resistance which comprises administering to a patient in need of such treatment an effective amount of a compound of claim **1**.

36. A composition useful for the treatment of diabetes or obesity with associated insulin resistance which comprises an inert carrier and an effective amount of a compound of claim **1**.

5,057,518

PHARMACEUTICAL PREPARATIONS

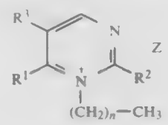
Henrich H. Paradies, Iserlohn, Fed. Rep. of Germany, assignor to Medice Hem.-Pharm. Fabrik Putter GmbH & Co. KG, Iserlohn, Fed. Rep. of Germany

Division of Ser. No. 82,899, Aug. 6, 1987, Pat. No. 4,965,357. This application May 24, 1990, Ser. No. 532,486

Int. Cl.[5] A61K *31/505;* **C07D** *239/00, 239/02, 211/70*

U.S. Cl. 514—274 **2 Claims**

1. Use of a nitrogen-containing heterocycle of the formula



in which:

the combination of R^1, R^2 and R^3 is a member selected from the group consisting of

$R^1=R^2=R^3=H$;

$R^1=NH_2$, $R^2=OH$, and $R^3=H$;

$R^1=OH$, $R^2=OH$, and $R^3=CH_3$;

$R^1=OH$, $R^2=OH$, and $R^3=H$;

$R^1=F$, $R^2=OH$, and $R^3=H$; and

$R^1=OH$, $R^2=OH$, and $R^3=F$;

n is 8 to 20; and

Z^- is a member selected from the group consisting of chloride, bromide, iodide, maleate, formate, acetate, propionate, hydrogen sulfate, malate, fumarate, salicylate, alginate, gluconate, glucoronate, galactoronate, ethyl sulfate and $H_2PO_4^-$;

for absorbing a hydrophobic pharmaceutically active substance at pH 6–8 in a polar or nonpolar solvent.

5,057,519

5-HT_3 ANTAGONISTS: USE IN REDUCING OPIATE TOLERANCE

Stacy N. Suberg, Northbrook, Ill., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jun. 11, 1990, Ser. No. 536,379

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—282 **7 Claims**

1. A method for significantly delaying the onset of opiate tolerance, which method comprises concomitantly administering an opiate with a therapeutically effective amount of a benzamide-type 5-HT_3 antagonist, or a pharmaceutically effective acid addition salt thereof, to a patient in need of such treatment.

5,057,520

7-(PEPTIDYLPYROLIDINYL)NAPHTHYRIDINE ANTIBACTERIAL COMPOUNDS

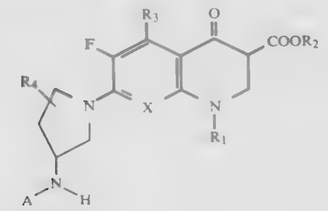
Daniel T. Chu, Vernon Hills, Ill., and Robert Hallas, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 328,401, Mar. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 313,260, Feb. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 247,990, Sep. 22, 1988, abandoned. This application Sep. 1, 1989, Ser. No. 400,111

Int. Cl.[5] C07D *471/04*

U.S. Cl. 514—300 **10 Claims**

1. A compound of the formula



wherein

R_1 is

alkyl of from one to six carbon atoms,

mono- or dihaloalkyl of from one to six carbon atoms,

mono- or dihydroxyalkyl of from one to six carbon atoms,

cycloalkyl of from three to six carbon atoms,

vinyl,

monocyclic aryl of five or six carbon atoms, selected from the group consisting of

furyl,

thienyl,

thiazolyl,

phenyl and

pyridyl, and

monocyclic aryl as previously defined, substituted with one to three substituents independently selected from the group consisting of

hydrogen,

halogen,

alkyl of from one to six carbon atoms,

mono- or dihaloalkyl of from one to six carbon atoms,

alkanolyloxy, and

a group having the formula —Y—R_5 wherein Y is O or S and R_5 is hydrogen or alkyl of from one to six carbon atom;

R_2 is hydrogen, alkyl of from one to six carbon atoms, mono- or dihaloalkyl of from one to six carbon atoms, or a carboxy protecting group;

R_3 is hydrogen or NH_2;

X is N;

R_4 is hydrogen, alkyl of from one to six carbon atoms or mono- or dihaloalkyl of from one to six carbon atoms;

A is a dipeptide or

a pharmaceutically acceptable salt thereof.

5,057,521

USE OF BICYCLIC IMIDAZOLE COMPOUNDS FOR THE TREATMENT OF HYPERALDOSTERONISM

Albert Häusler, Muttenz, and Ajay Bhatnagar, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

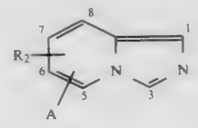
Filed Sep. 26, 1989, Ser. No. 412,369

Claims priority, application Switzerland, Oct. 26, 1988, 3994/88

Int. Cl.[5] A61K *31/41*

U.S. Cl. 514—300 **4 Claims**

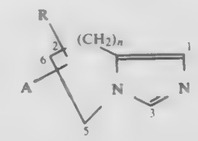
1. A method of treating hyperaldosteronism in a mammal in need thereof comprising administering an effective amount of a compound of formula Ia



(Ia)

wherein A is R_1-phenyl; R_1 is lower alkyl, hydroxy-lower alkyl, halogen, amino, formyl, carboxy, lower alkoxycarbonyl, cariamoyl, N-lower alkylcarbamoyl or cyano; and R_2 is hydrogen;

or of a compound of formula Ia*



(Ia*)

wherein n is 1, 2, or 3; A and R_1 are as defined above; and R_2 is hydrogen, lower alkylthio, lower alkoxycarbonyl, phenyl-lower alkyl, carboxy-lower alkyl, or lower alkoxycarbonyl-lower alkyl; in a compound of formula Ia* it being possible for A and R_2 to be attached to each of the saturated carbon atoms of the saturated ring, either both to the same carbon atom or to different carbon atoms;

or of a stereisomer or mixture of stereoisomers thereof or of a pharmaceutically acceptable salt thereof.

5,057,522

ANTI-HYPERSENSITIVE N2-TETRAZOLE-β-GLUCURONIDE ANALOG

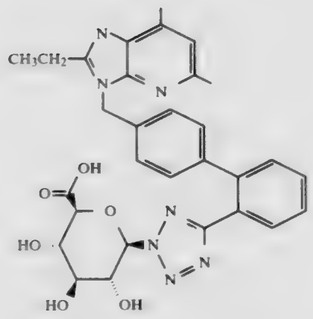
Shieh-Shung T. Chen, Morganville, and George Doss, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 19, 1990, Ser. No. 564,639

Int. Cl.[5] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—303 **3 Claims**

1. A compound of structural formula (I):



(I)

5,057,523

DIPEPTIDE QUINOLONE DERIVATIVES

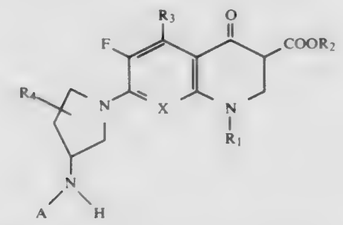
Daniel T. Chu, Vernon Hills, Ill., and Robert Hallas, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 400,111, Sep. 1, 1989, which is a continuation-in-part of Ser. No. 328,401, Mar. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 313,260, Feb. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 247,990, Sep. 22, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 452,459

Int. Cl.[5] C07D *215/233*

U.S. Cl. 514—312 7 Claims

1. A compound of the formula



wherein R_1 is

alkyl of from one to six carbon atoms, mono- or dihaloalkyl of from one to six carbon atoms, mono- or dihydroxyalkyl of from one to six carbon atoms, cycloalkyl of from three to six carbon atoms, vinyl,

monocyclic aryl of five or six carbon atoms, selected from the group consisting of

furyl,

thienyl,

thiazolyl,

phenyl and

pyridyl, or

monocyclic aryl as previously defined, substituted with one to three substituents independently selected from the group consisting of

hydrogen,

halogen,

alkyl of from one to six carbon atoms,

mono- or dihaloalkyl of from one to six carbon atoms,

alkanoyloxy, and

a group having the formula -Y-R_5 wherein Y is O or S and R_5 is hydrogen or alkyl of from one to six carbon atom;

R_2 is hydrogen, alkyl of from one to six carbon atoms, mono- or dihaloaklyl of from one to six carbon atoms, or a carboxy protecting group;

R_3 is hydrogen or NH_2;

X is CH, , C-O-alkyl, CF, CCl, C-alkyl or C-NH-alkyl;

R_4 is hydrogen, alkyl of from one to six carbon atoms or mono- or dihaloalkyl of from one to six carbon atoms;

A is a dipeptide residue; or a pharmaceutically acceptable salt thereof.

5,057,524

4-[DIARYL)HYDROXYMETHYL]-1-PIPERIDINEALKYL-CARBOXYLIC ACIDS, SALTS AND ESTERS USEFUL IN THE TREATMENT OF ALLERGIC DISORDERS

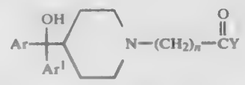
David A. Walsh, Richmond, Va., assignor to A. H. Robins Company Incorporated, Richmond, Va.

Filed Feb. 8, 1990, Ser. No. 476,803

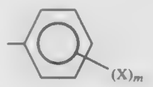
Int. Cl.[5] A61K *31/445;* C07D *211/32*

U.S. Cl. 514—317 15 Claims

14. A method of treating a warm blooded animal for allergic disorders which comprises the administration to said animal of an effective amount for treating allergic disorders of a compound having the formula:



wherein Ar and Ar^1, same or different, are pyridinyl or



where X is selected from H, CF_3, halogen, loweralkyl, loweralkoxy, or hydroxy and m is 1–3;

n is 1–12;

Y is —OH, —O⊖M⊕, O-loweralkyl, —O—aryl, or NR^1R^2 where R^1 and R^2, same or different, are H, loweralkyl, or aryl;

M⊕ is a pharmaceutically acceptable metal ion; or a pharmaceutically acceptable salt thereof.

5,057,525

N-(3-HYDROXY-4-PIPERIDINYL) BENZAMIDE DERIVATIVES

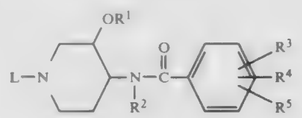
Georges Van Daele, Turnhout, Belgium, assignor to Janssen Pharmaceutica N. V., Beerse, Belgium

Division of Ser. No. 443,060, Nov. 28, 1989, Pat. No. 4,962,115, which is a continuation of Ser. No. 258,310, Oct. 17, 1988, abandoned, which is a continuation of Ser. No. 631,526, Jul. 18, 1984, abandoned, which is a continuation of Ser. No. 403,603, Jul. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 307,409, Oct. 1, 1981, abandoned. This application Jun. 11, 1990, Ser. No. 535,939

Int. Cl.[5] A61K *31/445;* C07D *211/08*

U.S. Cl. 514—318 15 Claims

1. A compound of the formula:



the pharmaceutically acceptable acid addition salts thereof, the stereochemically isomeric forms, and the pharmaceutically acceptable quaternary ammonium salts thereof, wherein:

the substituents in the 3 and 4 positions in the piperidine ring have the cis configuration;

R^1 represents a member selected from the group consisting of hydrogen, lower alkyl, (Ar^1)lower alkyl, and lower alkylcarbonyl;

R^2 represents hydrogen;

R^3, R^4, and R^5 each independently represent hydrogen, lower alkyl, lower alkyloxy, halo, hydroxy, amino, nitro, mono- or di(lower alkyl)amino, lower alkylcarbonylamino, lower alkylcarbonyl, lower alkylcarbonyloxy, aminosulfonyl, and lower alkylsulfonyl; and

L represents a group of the formula:

$$—C_rH_{2r}—Ar^2$$

wherein r represents an integer of from 1 to 6 inclusive and Ar^2 represents a member selected from the group consisting of naphthalenyl and pyridinyl,

wherein in the foregoing Ar^1 represents a member selected from the group consisting of phenyl being optionally substituted with up to 3 substituents each independently selected from the group consisting of halo, hydroxy, lower alkyl, lower alkyloxy, aminosulfonyl, lower alkylcarbonyl, nitro, trifluoromethyl, amino, aminocarbonyl, phenylcarbonyl wherein said phenyl may be optionally substituted with up to 3 halo atoms, and thienyl substituted with halo or lower alkyl.

5,057,526

PHARMACEUTICALLY ACTIVE PYRIDINYL SUBSTITUTED 5,7-DIHYDROPYRROLO-[3,2-F]BENZOXAZOLE-6-ONES

Wolfgang von der Saal, Weinheim, and Rainer Haag, Mannheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

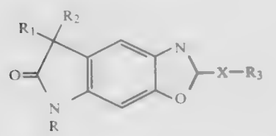
Filed Mar. 23, 1989, Ser. No. 327,827

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1988, 3809868

Int. Cl.[5] A61K *31/44;* C07D *498/04*

U.S. Cl. 514—338 17 Claims

1. A compound of the formula:



(I)

wherein

R is hydrogen or a C_1–C_6 alkyl,

R_1 is hydrogen or a C_1–C_6 alkyl, C_2–C_6-alkenyl or a C_3–C_8-cycloalkyl radical,

R_2 is hydrogen or a C_1–C_6 alkyl, C_2–C_6-alkenyl, C_1–C_6-alkylcarbonyl, C_1–C_6-alkoxycarbonyl, aminocarbonyl or hydrazinocarbonyl radical or

R_1 and R_2, together with the carbon atom to which they are attached, form a C_3–C_8 cycloalkyl ring,

X is a valency bond or C_1–C_8 alkylene or vinylene,

R_3 is pyridinyl unsubstituted or substituted one or more times by alkyl, alkoxy, alkoxycarbonyl, carboxyl, alkylthio, hydroxyl, nitro, amino, halogen; and the tautomer, optically-active form and physiologically acceptable salt thereof with inorganic and organic acids.

5,057,527

METHOD OF PREVENTING INFESTATION OF FLEAS

Bernd Alig, Koenigswinter; Wilhelm Stendel, Wuppertal, and Michael Londershausen, Erkrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

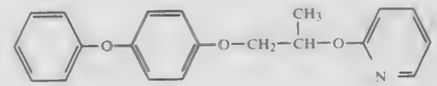
Filed Jul. 6, 1989, Ser. No. 376,340

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1988, 3825172

Int. Cl.[5] A61K *31/44;* C07D *237/02*

U.S. Cl. 514—345 1 Claim

1. A method of preventing infestation of fleas of the genera Ctenocephalides comprising applying to said fleas, their hosts or their habitat 10^{-4}–5% by weight of an alkoxydiphenyl ether of the formula



5,057,528

AMINO-PYRIDINE COMPOUNDS USEFUL AS ANTI-ARRHYTHMIC AGENTS

Peter E. Cross, and Roger P. Dickinson, both of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

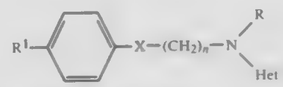
Division of Ser. No. 393,423, Aug. 14, 1989, Pat. No. 4,968,704. This application Aug. 23, 1990, Ser. No. 572,081

Claims priority, application United Kingdom, Aug. 13, 1988, 8819307

Int. Cl.[5] C07D *213/74;* A61K *31/44*

U.S. Cl. 514—352 11 Claims

1. A compound of the formula:



(IA)

or a pharmaceutically acceptable salt thereof, wherein

X is —O— or —N(C_1–C_4 alkyl)—;

R is C_1–C_4 alkyl;

R^1 is R^2SO_2NH— or R^2CONH— where R^2 is C_1–C_4 alkyl, C_3–C_7 cycloalkyl or R^3R^4N— where R^3 and R^4 are each independently hydrogen or C_1–C_4 alkyl;

"Het" is a 2-, 3- or 4-pyridyl group optionally substituted by one or two substituents each independently selected from amino and C_1–C_4 alkyl; and

n is an integer of from two to four, inclusive.

11. A method for preventing or reducing cardiac arrhythmias in the treatment of a mammal in need of such treatment, which comprises administering to said mammal an effective anti-arrhythmic amount of a compound as claimed in claim 1.

5,057,529

THIAZOLE DERIVATIVES

John R. H. Wilson, Rainham, and Indu Sawhney, Maidstone, both of England, assignors to Shell Research Limited, United Kingdom

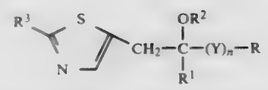
Filed Apr. 9, 1990, Ser. No. 506,069

Claims priority, application United Kingdom, Apr. 27, 1989, 8909737

Int. Cl.[5] C07D *277/24;* A01N *43/78*

U.S. Cl. 514—365 9 Claims

1. A compound of the general formula



(I)

or an acid-addition salt or metal salt complex thereof, in which R represents an optionally substituted phenyl group; R^1 represents a hydrogen atom or an optionally substituted C_{1-12} alkyl or phenyl group; R^2 represents a hydrogen atom or an optionally substituted C_{1-12} alkyl, C_{1-12} alkylcarbonyl, C_{2-12}alkenyl, C_{3-8}cycloalkylcarbonyl or benzyl group; R^3 represents a hydrogen or halogen atom or a C_{1-2} haloalkyl, C_{1-12} alkoxy, C_{1-12} haloalkoxy, C_{1-12} alkylthio, hydroxyl, cyano, nitro or di-C_{1-12} alkylamino group; Y represents a group —CH_2O— or —CH_2CH_2— and n is 0 or 1; said optional substituents being selected from halogen atoms, nitro, cyano, hydroxyl, C_{1-12} alkyl, C_{1-12} haloalkyl, C_{1-12} alkoxy, C_{1-12} haloalkoxy, amino, C_{1-12} alkylamino, di-C_{1-12} alkylamino, formyl, C_{1-12} alkoxycarbonyl, carboxyl, C_{1-12} alkanoyl, C_{1-12} alkylthio, C_{1-12} alkylsulphinyl, C_{1-12} alkylsulphonyl, carbamoyl and C_{1-12} alkylamido groups.

5,057,530

GLYCEROL DERIVATIVES

Richard Barner, Witterswil; Kaspar Burri, Rheinfelden, both of Switzerland; Jean-Marie Cassal, Mulhouse, France; Paul Hadvary, Biel-Benken, Switzerland; Georges Hirth, Huningue, France, and Klaus Müller, Münchenstein, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 871,185, Jun. 5, 1986, Pat. No. 4,863,941. This application May 19, 1989, Ser. No. 354,186

Claims priority, application Switzerland, Jun. 18, 1985, 2567/85

Int. Cl.[5] A61K *31/415, 31/425*

U.S. Cl. 514—365 **5 Claims**

1. A method of inhibiting blood platelet activating factor which comprises administering to a host requiring such treatment an effective amount of a compound of the formula:



I

wherein R^1 is —OCO—Z^1, —OCOO—Z^1 or NQ^1 $CO(A^1)_n$—Z^1, R^2 is OY^2 or —X^2—CO—$(A^2)_p$—Z^2; and R^3 is —X^3-T—(C_{2-6}-alkylene) —N^+RA^- in which one of X^2 and X^3 is oxygen and the other is oxygen, or if R^1 is —OCO—Z^1 or —OCOO—Z^1, one of X^2 and X^3 is also NQ^1;

Y^2 is C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{3-6}-cycloalkyl, C_{5-6}-cycloalkenyl, phenyl, benzyl or 2-tetrahydropyranyl,

A^1 and A^2 are oxygen or a group NQ^2,

n and p are the integer 1 or 0,

Z^1 is C_{9-25}-alkyl or C_{9-25}-alkenyl,

Z^2 is C_{1-5}-alkyl, C_{2-5}-alkenyl, phenyl or, when A^2 is not oxygen, Z^2 is also hydrogen,

T is carbonyl, COO or $CONQ^3$ or, when X^3 is oxygen, T is also methylene,

Q^1, Q^2 and Q^3 are hydrogen, C_{1-4}-alkyl,

C_{3-6}-cycloalkenyl or phenyl, A^- is the anion of a strong acid, $-N^+R$ is a 5- or 6-membered aromatic group attached to the quaternary nitrogen, optionally with an additional hetero atom O, S or N, optionally with fused benzene and optionally mono-substituted by alkyl or alkoxy with up to 4 C-atoms, hydroxy, nitro, carbamoyl or ureido, with the proviso that at least one of R^1, R^2 and R^3 contains a substituted N-atom, or its hydrate.

5,057,531

AZOLYLMETHYLOXIRANES AND FUNGICIDES CONTAINING THESE COMPOUNDS

Rainer Seele, Fussgoenheim; Stefan Karbach, Neustadt; Norbert Goetz, Worms; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

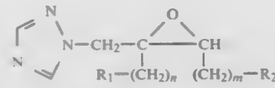
Filed Feb. 24, 1989, Ser. No. 314,963

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1988, 3806089

Int. Cl.[5] A01N *43/647;* **C07D** *249/08*

U.S. Cl. 514—383 **10 Claims**

1. A member selected from the group consisting of an azolylmethyloxirane of the formula:



(I)

wherein R_1 and R_2 are t-butyl, naphthyl, biphenyl, dioxanyl or phenyl, each of these radicals being unsubstituted or substituted by halogen, nitro, phenoxy, alkyl, alkoxy, amino or haloalkyl, where each alkyl radical contains 1 to 4 carbon atoms, m and n are each an integer of from 1 to 5 or 0, with the proviso that m+n is 1 or more and when R_1 or R_2 is t-butyl, the corresponding m or n is at least 1, and their plant-tolerated acid addition salts and metal complexes.

5,057,532

AZOLYLETHYLCYCLOPROPANES AND THEIR USE THEREOF AS CROP PROTECTION AGENTS

Rainer Seele; Reiner Kober, both of Fussgoenheim; Eberhard Ammermann, Ludwigshafen; Gisela Lorenz, Neustadt; Johann Jung, and Wilhelm Rademacher, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

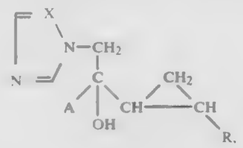
Filed Feb. 23, 1990, Ser. No. 483,674

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909862

Int. Cl.[5] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 514—383 **7 Claims**

1. A triazolylethylcyclopropane of the formula I



I

where A is C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkenyl or tetrahydropyranyl, and where R is phenyl, and each of the A and R groups is unsubstituted or mono- to trisubstituted by halogen, nitro, phenoxy, amino, alkyl or haloalkyl having 1 to 4 carbon atoms in each case, and X is N, and their acid addition salts and metal complexes which are tolerated by plants.

5,057,533

AGRICULTURAL OR HORTICULTURAL FUNGICIDE

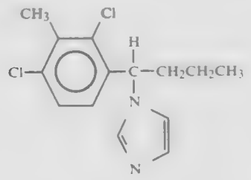
Kenichi Tanaka; Shinji Nishimura; Hiroshi Kawada; Katsuya Yamaguchi; Yumi Mizumura, and Chieko Nomura, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1990, Ser. No. 557,810

Int. Cl.[5] C07D *233/56;* **A01N** *43/50*

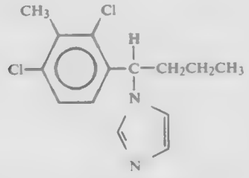
U.S. Cl. 514—396 **3 Claims**

2. The compound having the formula (I) shown below



(I)

3. A method of inhibiting agricultural and horticultural fungi, comprising contacting agricultural or horticultural fungi with an inhibitory amount of the compound having the formula (I)



(I)

or an agricultural or horticultural composition containing said compound.

5,057,534

3-AMINO-5-ARYLPYRAZOLE-4-ACETIC ACID DERIVATIVES EXHIBITING THERAPEUTIC EFFECTS

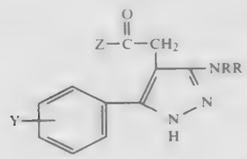
Chandler R. Taylor, Jr., Mechanicsville; Harold F. Stauffer, Jr., Midlothian, both of Va., and Bruce E. Tomczuk, Fairport, N.Y., assignors to A. H. Robins Company Incorporated, Richmond, Va.

Filed Apr. 12, 1991, Ser. No. 684,325

Int. Cl.[5] A61K *31/415;* **C07D** *231/38*

U.S. Cl. 514—404 **22 Claims**

1. Pyrazole-4-acetic acid derivatives corresponding to the formula:



where Y is hydrogen or a halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy substituent; Z is a hydroxy, C_1–C_4 alkoxy or —NRR substituent; and R is hydrogen or a C_1–C_4 alkyl substituent; and pharmaceutically acceptable salts thereof.

5,057,535

DERIVATIVES OF AN AMINOKETONE

Akira Shiozawa, Omiya; Michio Ishikawa, Tokyo; Giichi Izumi, Tokyo; Katsuhiko Sakitama, Tokyo; Kazuhisa Narita, Tokyo; Shuji Kurashige; Takeji Sakasai, both of Urawa; Kazuo Ohtsuki; Hideo Sugimura, both of Tokyo, and Hirotaka Yamamoto, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

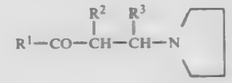
Continuation-in-part of Ser. No. 6,850,558, Apr. 11, 1986, abandoned. This application Sep. 25, 1987, Ser. No. 101,134

Claims priority, application Japan, Apr. 11, 1985, 60-75379; May 28, 1985, 60-113103; Jun. 19, 1985, 60-131629; Dec. 4, 1985, 60-271381; Oct. 9, 1986, 61-239115; Oct. 9, 1986, 61-239116; Aug. 11, 1987, 62-199086

Int. Cl.[5] A61K *31/40;* **C07D** *295/108*

U.S. Cl. 514—428 **11 Claims**

10. A method for the treatment of spastic paralysis or the improvement of hypertonia of muscles in a homoisothermic animal, which comprises administering 0.1–20 mg/kg/day of an aminoketone derivative or a pharmaceutically acceptable salt thereof represented by the following formula to a homoisothermic animal having spastic paralysis or hypertonia of muscles:



wherein R^1 is phenyl substituted by trihalogenmethyl, or 4-(C_1–C_4)alkoxy-5,6,7,8-tetrahydro-1-naphthyl, and one of R^2 and R^3 is a hydrogen atom and the other is (C_1–C_4) alkyl.

5,057,536

MACROLIDE COMPOUNDS

Michael J. Dawson, Ickenham; David Noble, Stoke Mandeville; Gordon C. Lawrence, Burnham; Richard A. Fletton, Ruislip; Stephen J. Lane, Eastcote; Michael V. J. Ramsay, South Harrow; Oswy Z. Pereira, Heston; Derek R. Sutherland, Chalfont St Giles, and Edward P. Tiley, Village Way, all of England, assignors to American Cyanamid Company, Wayne, N.J.

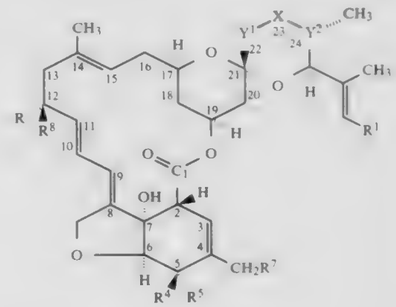
Filed May 9, 1989, Ser. No. 351,391

Claims priority, application United Kingdom, May 10, 1988, 8811034; May 10, 1988, 8811035

Int. Cl.[5] A61K *31/365;* **C07D** *493/22*

U.S. Cl. 514—450 **10 Claims**

1. Compounds of formula (1)



and salts thereof, wherein

R^1 represents a methyl, ethyl or isopropyl group;
Y^1 is $—CH_2—$; Y^2 is —CH— and X represents



wherein R^2 represents a hydrogen atom or a group OR^8 wherein OR^8 is a hydroxyl group or a substituted hydroxyl group having up to 25 carbon atoms, and R^3 represents a hydrogen atom, or R^2 and R^3 together with the carbon atom to which they are attached represent $>C=O$, $>C=CH_2$ or $>C=NOR^9$, wherein R^9 represents a hydrogen atom, a C_{1-8} alkyl group or a C_{3-8} alkenyl group, and the group $>C=NOR^9$ is in the E configuration, or $-Y^1-X-Y^2-$ represents $—CH=CH—CH—$ or $—CH_2—CH=C—$;

R^4 represents a group OR^8 as defined above and R^5 represents a hydrogen atom, or R^4 and R^5 together with the carbon atom to which they are attached represent $>C=O$ or $>C=NOR^{9a}$, wherein R^{9a} is as defined above for R^9;

R^6 represents a hydrogen atom and R represents $—CH_2OH$, —CHO, $—CO_2H$ or a carboxylic acid ester or amide group; or R^6 represents a hydroxyl group and R represents a methyl group; and

R^7 represents a hydrogen atom or when R represents a group $—CH_2OH$ then R^7 may also represent a hydroxy group;

R^8 of the substituted hydroxy group is selected from the group consisting of:

an acyl group having the formula $R^{10}CO—$ or $R^{10}OCO—$ or $R^{10}OCS—$;

a formyl group;

a group R^{11} wherein R^{11} is a cycloalkyl substituted alkyl or a group R^{10};

a group $R^{12}SO_2—$ wherein R^{12} is a C_{1-4} alkyl or a C_{1-6} aryl group;

a silyl group;

a cyclic or acyclic acetal group;

a group $—CO(CH_2)_nCO_2R^{13}$ wherein R^{13} is a hydrogen atom or a group R^{10} and n represents 0, 1 or 2;

a group $R^{14}R^{15}NCO—$ wherein R^{14} and R^{15} each independently represent a hydrogen atom or a C_{1-4} alkyl group;

R^{10} is selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, aryl, halogen substituted alkyl, carboxy substituted alkyl, C_{1-4} alkoxy substituted alkyl, phenoxy substituted alkyl, and silyloxy substituted alkyl;

said carboxylic acid ester having the formula $—CO_2R^{16}$;

wherein R^{16} is selected from the group consisting of alkyl, alkenyl, alkynyl, cycloalkyl, aralkyl, aryl, halogen substituted alkyl, carboxy substituted alkyl, C_{1-4} alkoxy substituted alkyl, phenoxy substituted alkyl, and silyloxy substituted alkyl;

and said carboxylic acid amide having the formula:

$—CONR^{17}R^{18}$;

wherein R^{17} and R^{18} each independently represent a hydrogen atom or a group R^{16}.

5,057,537

ORTHO-SUBSTITUTED 1-NAPHTHYL ETHERS AND FUNGICIDES CONTAINING THESE

Bernd Wenderoth, Lampertheim; Hubert Sauter, Mannheim; Albrecht Harreus, Ludwigshafen; Franz Roehl, Ludwigshafen; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 2, 1990, Ser. No. 474,506

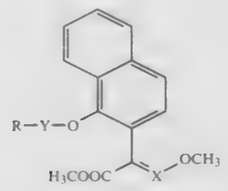
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906160

Int. Cl.[5] A01N *37/05*

U.S. Cl. 514—510 **6 Claims**

1. Ortho-substituted 1-naphthyl ethers of the general formula I

(I)



where X is N, Y is saturated or unsaturated C_1–C_{12}-alkylene and R is aryl, aryloxy, arylthio or arylalkoxy, it being possible for the aromatic ring to be substituted one to five times by the following: halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_4-alkylthio, C_1–C_2-haloalkyl, aryl, aryl-C_1–C_2-alkoxy, C_1–C_4-alkylcarbonyl, amino which is substituted once or twice by C_1–C_4-alkyl, or is cyano or nitro.

5,057,538

HYDROXYSTYRENE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL UTILITY

Tadayoshi Shiraishi, Takasago; Keiji Kameyama, Kakogawa; Takeshi Domoto, Kakogawa; Naohiro Imai, Kakogawa; Yoshio Shimada, Kakogawa; Yutaka Ariki, Himeji; Kazunoro Hosoe, Takasago; Masaji Kawatsu, both of Takasasgo; Ikuo Katsumi; Takayoshi Hidaka, both of Kobe, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Division of Ser. No. 283,992, Nov. 10, 1988, Pat. No. 4,971,996. This application Sep. 24, 1990, Ser. No. 587,147

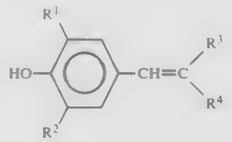
Claims priority, application Japan, Nov. 3, 1987, 62-55965; Nov. 3, 1987, 62-55966; Dec. 3, 1987, 62-57256

Int. Cl.[5] A61K *31/275;* **C07C** *121/75*

U.S. Cl. 514—521 **1 Claim**

1. A pharmaceutical composition having antiallergic activity, 5-lipoxygenase inhibiting activity, antibacterial activity, ultraviolet absorbing activity and reverse transcriptase inhibiting activity, which comprising a hydroxystyrene derivative represented by the formula (I):

(I)



wherein when R^1 and R^2 are the same or different and each is a phenyl, benzyl or phenethyl group, or R^1 is a group having the formula: $R^5O—$ in which R^5 is hydrogen, an alkyl group having 1 to 5 carbon atoms or a benzyl group and R^2 is benzyl group; R^3 is cyano group; and R^4 is carbamoyl group; or a pharmaceutically acceptable salt thereof as an active ingredient; and a pharmaceutically acceptable carrier.

5,057,539

MOTH- AND BEETLE-PROOFING AGENTS

Alfred J. Neukom, Kienberg, Switzerland; Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Werner Schmid, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

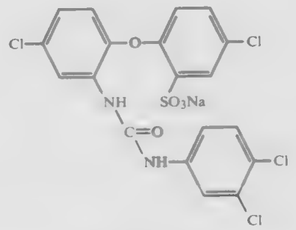
Division of Ser. No. 271,962, Nov. 16, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 512,710

Claims priority, application Switzerland, Nov. 24, 1987, 4559/87

Int. Cl.[5] A01N *47/28, 53/00*

U.S. Cl. 514—531 **2 Claims**

1. An agent for proofing keratinous material against attact by larvae of carpet beetles, which contains a synergistically effective amount of (A) a diphenylurea of the formula



and (b) permethrin, wherein the ratio of compounds (A) and (B) is from 4:1 to 8:1.

5,057,540

SAPONIN ADJUVANT

Charlotte A. Kensil, Milford; Dante J. Marciani, Hopkinton; both of Mass., assignors to Cambridge Biotech Corporation, Worcester, Mass.

Continuation of Ser. No. 200,754, May 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 55,229, May 29, 1987, abandoned. This application Aug. 27, 1990, Ser. No. 573,268

Int. Cl.[5] A61K *31/70, 31/705, 39/00*

U.S. Cl. 514—25 **16 Claims**

1. Substantially pure saponin purified from a crude *Quillaja saponaria* extract wherein said pure saponin is characterized by a single predominant peak which comprises 90% or more of the total area of all peaks of a chromatogram, excluding the solvent peak, when analyzed on reverse phase-HPLC on a Vydac C_4 column having 5 μm particle size, 330 Å pore, 4.6 mm ID×25 cm L in a solvent of 40 mM acetic acid in methanol/water (58/42; v/v) at a flow rate of 1 ml/mixture, and wherein said saponin has immune adjuvant activity and is less toxic when used as an adjuvant than said *Quillaja saponaria* extract.

5,057,541

COMPOSITION FOR EXTERNAL APPLICATION

Tomohiko Sano, Funabashi; Yuji Suzuki, Sakura, and Kayoto Iwata, Matsudo, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 281,854

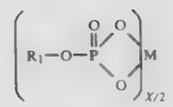
Claims priority, application Japan, Dec. 11, 1987, 62-313836

Int. Cl.[5] A61K *47/00*

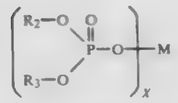
U.S. Cl. 514—772 **13 Claims**

1. An emulsion-like or creamy composition for external application, comprising water and 0.1 to 20% by weight of a metal alkyl phosphate combined in the presence of a shear force, wherein said metal alkyl phosphate consists essentially of polyvalent metal alkyl phosphates of the formulae (IV) or (V):

(IV)



(V)



wherein R_1, R_2, and R_3 independently represent a linear or branched, saturated or unsaturated hydrocarbon group having 4 to 38 carbon atoms, M represents a metal other than an alkali metal and X represents the valence of M, wherein said composition is substantially free of alkali metal alkyl phosphates, ammonium alkyl phosphates, and alkanolamine alkyl phosphates.

5,057,542

COSMETIC PREPARATION CONTAINING CHITOSAN

Jean-Louis Leuba, Boussens; Harriet Link, Vevey; Peter Stoessel, Aarau, and Jean-Louis Viret, Brent, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Oct. 30, 1989, Ser. No. 428,882

Claims priority, application Switzerland, Nov. 28, 1988, 04418/88

Int. Cl.[5] A61K *7/00*

U.S. Cl. 514—844 **14 Claims**

1. A composition comprising a cosmetic preparation and chitosan contained therein wherein the chitosan is in the form of a polymer having a molecular weight of from 120,000 to 450,000 and is contained in the preparation in the amount of from 50 μg chitosan/g of the preparation to 5000 μg chitosan/g of the preparation.

5,057,543

BLENDS OF ALKYLENE GLYCOLS AND RELATIVELY HIGH EQUIVALENT WEIGHT ACTIVE HYDROGEN COMPOUNDS CONTAINING ADDITIVES

Robert Carswell, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1989, Ser. No. 398,806

Int. Cl.[5] C08G *18/24, 18/14*

U.S. Cl. 521—51 **25 Claims**

1. A active hydrogen compound-alkylene glycol composition comprising components:

(A) a relatively high equivalent weight active hydrogen compound having an average of at least about 1.8 active hydrogen containing groups per molecule and an average molecular weight of from about 500 to about 5000 per active hydrogen containing group;

(B) an alkylene glycol; and

(C) a catalytic amount of at least one tin mercaptide; said composition containing at least one compound having at least one N—H containing group.

5,057,544

INTEGRAL SKIN RIGID URETHANE FOAM

David J. Ho, and David C. Krueger, both of Grosse Ile, Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Nov. 16, 1990, Ser. No. 614,321

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—51 **12 Claims**

1. An integral skin, rigid polyurethane foam having improved compressive strength and flexible strength characteristics, consisting of the reaction product of

a) a polyoxyethylene capped polyoxyalkylene polyether

polyol and at least one other polyol selected from the group consisting of a polyoxyalkylene polyether polyol wherein the polyoxyalkylene contains oxyalkylene monomers having greater than two carbons, a polyester polyol, and mixtures thereof,

b) an organic aromatic polyisocyanate wherein all the isocyanate groups are aromatically bound,

c) a chain extender,

d) a blowing agent mixture consisting of water and a volatile blowing agent,

e) a catalyst capable of promoting urethane formation, and

f) optionally pigments and flame retardant.

5,057,545

FIRE RETARDANT FOAM MATERIALS

Laszlo A. Muhl, Carlsbad; Thomas T. Omori, Glendale, and John Milligan, Encinitas, all of Calif., assignors to Fire Retardant Foam Technologies, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 418,691, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 245,956, Sep. 15, 1988, abandoned, which is a continuation of Ser. No. 78,026, Jul. 27, 1987, abandoned, which is a continuation of Ser. No. 911,015, Sep. 24, 1986, abandoned. This application Nov. 9, 1990, Ser. No. 611,298

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—103 **5 Claims**

1. A method for making a fire retardant polyurethane foam comprising reacting in the presence of a metallic catalyst and a non-metallic catalyst:

(a) a polyol having a molecular weight between about 1000 and about 9000;

(b) a polyisocyanate;

(c) a cross-linking agent;

(d) a foaming agent;

(e) a surfactant;

(f) a halogenated hydrocarbon;

(g) melamine;

(h) antimony oxide; and

(i) sodium borate.

5,057,546

SEMI-FLEXIBLE OR FLEXIBLE PHENOLIC FOAM COMPOSITION

Krishan Sudan, 3125 Cherrier, Ile Bizard, Quebec, Canada H9C 2J9

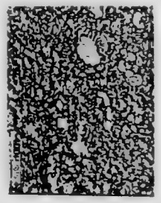
Filed Jul. 14, 1989, Ser. No. 379,825

Claims priority, application South Africa, Feb. 9, 1989, 89/1010; Jun. 16, 1989, 89/4589

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—107 **28 Claims**









1. A semi-flexible or flexible phenolic foam composition having a substantially open cellular structure comprising the reaction product of a mixture of 100 parts by weight of the reaction product of a phenol-aldehyde resin, between 0.5 and 20 parts by weight of a surfactant, from 1 to 20 parts by weight of a blowing agent; optionally between 0 and 10 parts by weight of a wetting agent and from 5 to 20 parts by weight of an acid catalyst, the foam composition having a density lower than 2 lbs/cu ft and being compressed to have a thickness between 50 and 95% of its original thickness.

5,057,547

RIGID FOAMS USING BLENDS OF CHLOROFLUOROCARBONS AND HYDROCARBONS AS BLOWING AGENT

Herman P. Doerge, Pittsburgh, Pa., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Apr. 6, 1990, Ser. No. 505,867

Int. Cl.[5] C08V *9/14*

U.S. Cl. 521—131 **3 Claims**

1. In a process for the preparation of closed cell, rigid foams by reacting a) a polyol component having a hydroxyl number of from about 200 to about 650, and b) an organic polyisocyanate, in the presence of c) a catalyst, d) a foam stabilizer, and e) a blowing agent, the improvement wherein the blowing agent comprises a mixture of i) from 30 to 95 percent by weight of a hydrochlorofluorocarbon selected from the group consisting of 2,2-dichlor-1,1,1-trifluoroethane and 1,1-dichloro-1.fluoroethane and ii) from 5 to 70 percent by weight of a hydrocarbon selected from the group consisting of n-pentane, 2-methylbutane, hexane, the position of isomers of hexane and mixtures thereof.

5,057,548

IMPINGEMENT MIXING APPARATUS

Franz Urban, Rohrdorf, and Adolf Bauer, Olching, both of Fed. Rep. of Germany, assignors to Krauss-Maffei A.G., Fed. Rep. of Germany

Division of Ser. No. 83,338, Aug. 10, 1987, Pat. No. 4,898,714. This application Dec. 19, 1989, Ser. No. 451,330

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1986, 3626990

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—170 **11 Claims**

1. A process of impingement mixing comprising the steps of:

continuously injecting first and second components into a mixing chamber in the form of opposing and impinging jets to form a component mixture;

displacing said component mixture from said mixing chamber to a quieting chamber;

displacing said mixture from said quieting chamber to a mold cavity through a discharge opening in said chamber; and

changing the size of said discharge opening during said injecting step.

5,057,549

ALKENYLOXY-FUNCTIONAL ORGANOSILICON COMPOUNDS, THEIR PREPARATION AND USE

Christian Herzig, Taching, and Doris Gilch, Eggenfelden, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 4, 1990, Ser. No. 519,370

Claims priority, application Fed. Rep. of Germany, May 5, 1989, 3914896

Int. Cl.[5] C07F *7/18*

U.S. Cl. 522—99 **18 Claims**

13. An organosilicon compound comprising units of the general formula

$$R_a(R^1O)_bY_cSiO_{\frac{4-(a+b+c)}{2}} \quad \text{(III)}$$

valent, hydrocarbon radical having from 1 to 8 carbon atom(s)

per radical, which is interrupted by an ether oxygen atom, and Y is a radical of the formula

$$-(CH_2)_2-R^2-(A-R^3)_z-O-CH=CH-CH-_{2-R^4} \quad \text{(I)}$$

in which A is selected from the group consisting of —O—, —S— and

$$-C(=O)-O-,$$

R^2 is selected from the group consisting of an an alkylene radical having from 1 to 7 carbon atoms(s) per radical and a cycloalkylene radical having from 5 to 7 carbon atoms per radical, R^3 is selected from the group consisting of an alkylene radical having from 2 to 4 carbon atoms per radical, and an alkylene radical having from 2 to 4 carbon atoms per radical which is substituted with a group selected from the group consisting of a hydroxyl group, methoxy group, ethoxy group and a trimethylsiloxy group, R^4 is selected from the group consisting of a hydrogen atom and an alkyl radical having from 1 to 4 carbon atom(s) per radical and a is 0, 1, 2 or 3, b is 0, 1, 2 or 3, c is 0 or 1, the sum of a+b+c is ≦4 and z is 0, 1 or 2, with the proviso that the organisilicon compound contains at least oen Si-bonded Y radical per molecule, said organosilicon compound is obtained by reacting in a 1st step, an organic compound (1) of the formula

$$H_2C=CH-R^2-(A-R^3)_z-O-CH_2-CH=CH-R^4$$

in which A, R^2, R^3, R^4 and z are the same, with an organosilicon compound (2) having at least one Si-bonded hydrogen atom in its molecule in the presence of a catalyst (3) which promotes the addition of Si-bonded hydrogen to the aliphatic double bond, to form an organosilicon compound having at least one Si-bonded Y^1 radical of the formula

$$-(CH_2)_2-R^2-(A-R^3)_z-O-CH_2-CH=Ch-R^4 \quad \text{(II)},$$

in which A, R^2, R^3, R^4 and Z are the same as above, and then in a 2nd step shifting the double bond in the Y^1 radical to the carbon atom adjacent to the ether oxygen atom by heating the organosilicon compound obtained in the 1st step and having at least one Si-bonded Y^1 radical, in the presence of a catalyst (4), which promotes the rearrangement of the double bond.

5,057,550

EPOXY-SILANOL FUNCTIONAL UV CURABLE POLYMERS

Michael A. Lutz, Midland, Mich.; Allen B. Puder, Cupertino; William E. Willy, Oakhurst, both of Calif., and Leon D. Crossman, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 4, 1989, Ser. No. 445,810

Int. Cl.[5] C08J *3/28;* **C08F** *2/46*

U.S. Cl. 522—148 **27 Claims**

1. A composition curable upon irradiation with ultraviolet radiation comprising a cationically curable organic epoxy resin having at least two epoxy groups per molecule, a silanol functional component which contains aryl groups bonded to silicon atom by a silicon-carbon bond, and a photoinitiator for an ultraviolet activated cationic cure.

5,057,551

ADHESIVES THAT CONTINUE TO HARDEN IN DARKNESS AFTER PHOTOINITIATION

Rene-Andres A. Gonzalez, Duesseldorf; Heinz-Christian Nicolaisen, and Lothar Kammer, both of Hanover, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 2, 1989, Ser. No. 318,091

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1988, 3806745

Int. Cl.[5] C08F *2/46;* **C08G** *8/28*

U.S. Cl. 522—170 **20 Claims**

1. An adhesive consisting essentially of:

(a) one or more components selected from the group of epoxy resins that are bifunctional glycidyl ethers of diphenylol propanes, having epoxide equivalents between about 150 and about 300;

(b) one or more components selected from the group of glycidyl ethers of glycerol, trimethylol propane, pentaerythritol, and novolaks, said glycidyl ethers containing at least three epoxide groups per molecule;

(c) one or more photoinitiators that release protons under the effect of electromagnetic radiation, said photoinitiators being selected from the group consisting of triaryl sulfonium salts corresponding to general formula (IV):

$$\{[Ar^1(R^3)][Ar^2(R^4)][(Ar^3(R^5)]S\}^+X^- \quad \text{(IV)}$$

and diaryl iodonium salts corresponding to general formula (V):

$$\{[Ar^1(R^3)][Ar^2(R^4)]I\}^+X^- \quad \text{(V)},$$

wherein each "Ar" with a superscript independently represents an arylene group; X^- is selected from the group consisting of perchlorate, tetrafluoroborate (III), hexachloroantimonate (V), hexafluoroantimonate (V), hexachlorostannate (IV), hexafluorophosphate, hexafluoroarsenate (V), tetrachloroferrate (III), and pentachlorobismuthate (III); each of R^3, R^4, and R^5, independently of one another, is selected from the group consisting of hydrogen, a nitro group, a halogen atom, alkoxyl and thioalkyl groups containing 1 to 6 C atoms in a straight-chain or branched radical, phenoxy and modified phenoxy groups containing 1 to 3 substituents in the phenyl radical, and alkanoyl and alkanoylamido radicals containing 1 to 6 C atoms, or in Formula (IV), two of the three substituents R^3, R^4, and R^5 may jointly represent a methylene group, i-propylene group, or carbonyl group that forms a bridge between two adjacent aryl radicals to result in a heterocyclic thioxanthenium ion; and

(d) one or more components selected from the group of acrylates and methacrylates corresponding to general formula I

$$CH_2=C(R^1)-C(=O)-O-(O-C_mH_{2m})_n-O-R^2 \quad \text{(I)}$$

in R^1 is hydrogen or methyl R^2 is a radical with up to 15 carbon atoms that is a hydrocarbon radical except for containing a cationically cleavable C_2–C_5 oxacycloalkyl or a C_5 oxacycloalkenyl group; m is either 2 or 3; and n is 1, 1, or 2.

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FLEXIBLE THERMOPLASTIC EPOXY RESIN AND COATINGS PREPARED THEREFROM

Michael B. Cavitt, Lake Jackson, and David J. Duncan, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 182,803, Apr. 18, 1988, Pat. No. 4,876,295, which is a division of Ser. No. 24,748, Mar. 11, 1987, Pat. No. 4,755,542. This application Feb. 28, 1989, Ser. No. 316,400

Int. Cl.[5] C08G *63/48;* C08L *61/04, 63/00;* F21V *7/22*

U.S. Cl. 523—172 33 Claims

1. A thermally stable, flexible thermoplastic epoxy resin resulting from

(A) reacting, in the presence of an effective quantity of a catalyst for effecting the reaction between a vicinal epoxide and an aromatic hydroxyl group, a mixture comprising

(1) at least one aromatic based epoxy resin having an average of more than 1 but not more than about 2.1 vicinal epoxy groups per molecule;

(2) at least one aliphatic based epoxy resin having an average of more than 1 but not more than about 2.1 vicinal epoxy groups per molecule;

(3) at least one material having an average of more than 1 but not more than about 2 phenolic hydroxyl groups per molecule;

wherein components (1) and (2) are employed in quantities such that from about 90 to about 99.6 percent of the vicinal epoxy groups are contributed by the aromatic based epoxy resin and from about 10 to about 0.4 percent of the vicinal epoxy groups are contributed by the aliphatic based epoxy resin; and wherein component (3) is employed in quantities such that the resultant product has an epoxide equivalent weight of from about 1600 to about 2500, calculated on the basis that the aromatic groups contained therein are free of substituent groups even if they do in fact contain substitutent groups;

(B) reacting, in the presence of an effective quantity of a catalyst for reacting a vicinal epoxide group with a carboxylic acid group, the product resulting from (A) with

(4) at least one aromatic or aliphatic monocarboxylic acid in a quantity which provides a ratio of moles of component (4) per epoxide group contained in component (1) of from about 0.033:1 to about 0.2:1; and

(C) reacting, in the presence of an effective quantity of a catalyst for effecting the reaction between a vicinal epoxy group and a carboxyl group, the product resulting from (B) with

(5) a carboxyl terminated elastomer in an amount which provides a ratio of carboxyl groups per vicinal epoxy group contained in components (1) and (2) of from about 0.0028:1 to about 0.03:1;

with the proviso that (a) the combined quantity of groups reactive with an epoxide group from components (3), (4) and (5) cannot exceed the combined quantity of epoxide groups contained in components (1) and (2).

5,057,553

CROSSLINKABLE COMPOSITIONS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS CASTING COMPOSITIONS AND FOR THE PRODUCTION OF MOULDINGS

Hans-Dieter Zagefka, Haltern, and Angelika Kahlert, Marl, both of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 10, 1989, Ser. No. 377,077

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1988, 3830895

Int. Cl.[5] B22D *7/10*

U.S. Cl. 523—180 18 Claims

1. A crosslinkable composition, consisting essentially of a binder, wherein said binder is an anhydride group-containing adduct of maleic anhydride and a polymer comprising 70–100 wt. % butadiene and 30-0 wt. % of copolymerizable vinyl-aromatic, C_{2-12} olefin, C_{4-12} diene monomers and mixtures thereof, and

a low molecular weight liquid diol or polyol crosslinking agent.

5,057,554

ADDITIVES FOR ENHANCED DIELECTRIC CURING

John N. Owens, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1989, Ser. No. 430,046

Int. Cl.[5] C08K *5/17*

U.S. Cl. 523—300 4 Claims

1. A method of preparing a heat curable resin composition including the steps of: mixing an epoxy resin and a curing agent which chemically reacts with the resin for curing the resin upon the application of a predetermined amount of heat for a predetermined period of time; dissolving quaternary ammonium salt in the resin and increasing the dielectric loss factor of the composition without a significant increase in viscosity of the composition; and dielectric heat curing the composition oat an accelerated rate which is faster than the rate of curing the mixture of the resin and curing agent alone.

5,057,555

MULTI-COMPONENT COATING COMPOSITION COMPRISING AN ANHYDRIDE CONTAINING POLYMER, A GLYCIDYL COMPONENT AND A POLYMER WITH MULTIPLE HYDROXYL GROUPS

Donald A. White, 23 Lorkim La., Atco, N.J. 08004; Robert J. Barsotti, R.D. 2, Box 163 A, Coles Mill Rd., Franklinville, N.J. 08322; Patrick H. Corcoran, 25 Laurel Hill Dr., Cherry Hill, N.J. 08003, and Lili W. Altschuler, 538 Northwynwood Ave., Wynwood, Pa. 19096

Continuation of Ser. No. 212,052, Jun. 27, 1988, abandoned. This application Feb. 8, 1990, Ser. No. 477,178

Int. Cl.[5] C08K *5/01, 5/10;* C08L *63/02*

U.S. Cl. 523—400 17 Claims

1. A coating composition having a hard, glossy and tack free finish comprising 20–80% by weight of reactive binder components and 80–20% by weight of an organic liquid carrier; wherein the binder comprises

(a) 25–90% by weight, based on the weight of the binder, of an anhydride acrylic polymer having at least two reactive anhydride groups and consists of polymerized monomers of an ethylenically unsaturated anhydride or an ethylenically unsaturated dicarboxylic acid and polymerized monomers selected from the group consisting of alkyl methacrylate, alkyl acrylate and any mixtures thereof, wherein the alkyl groups have 1–8 car bon atoms and the polymer has a weight average molecular weight of about 2,000–50,000;

(b) 5–50% by weight, based on the weight of the binder, of a glycidyl component having at least two reactive glycidyl groups;

(c) 5 to 50% of a polymeric component containing multiple hydroxy groups and no glycidyl groups, selected form the group consisting of acrylic polyols, polyester polyols, polyesterurethane polyols, polyether polyols, acryloure-thane polyols and any mixtures thereof; and having a weight average molecular weight of about 3,000 to 20,000; and

the composition contains about 0.1–5% by weight, based on the weight of the binder, of a catalyst and a maximum of 25% based on the weight of the binder of an aromatic vinyl; wherein components (a), (b), and (c) are three separate components.

5,057,556

COATING COMPOSITIONS COMPRISING NON-GELLED AMINE-EPOXIDE REACTION PRODUCTS

Richard P. Redman, Rochester Hills, Mich., assignor to Imperial Chemical Industries PLC, London, England

Filed Oct. 23, 1989, Ser. No. 425,054

Claims priority, application United Kingdom, Oct. 28, 1988, 8825315

Int. Cl.[5] C08G *59/50;* C09D *5/44;* C08L *63/00*

U.S. Cl. 523—404 18 Claims

1. A non-gelled amine-epoxide reaction product and acid addition salts thereof where the product is obtained by coreacting;

A) a secondary amine NHR^1R^2, wherein R^1 and R^2 are the same or different and are C^2 or C^3 hydroxyalkyl groups,

B) a polyepoxide,

C) optionally a polyoxyalkylene polyamine,

D) a product of the reaction between an epoxide with at least two epoxy groups and which contains less than 40% by weight of aromatic groups, and an amine of formula (1):

$$NR^3R^4(CH_2)_nNH_2 \quad (1)$$

in which n is from 2 to 6, and where R^3 and R^4, are the same or different and are methyl or ethyl, and optionally,

E) a monoepoxide

the components of the product (D) being chosen so that the non-gelled amine epoxide reaction product is a liquid at temperatures above −5° C.

5,057,557

MODIFIED EPOXY RESIN COMPOSITIONS

Duane S. Treybig; Pong S. Sheih, and John M. McIntyre, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 11, 1990, Ser. No. 522,341

Int. Cl.[5] C08G *59/50, 59/56;* C09D *5/02, 5/44*

U.S. Cl. 523—404 22 Claims

1. A modified epoxy resin resulting from reacting a composition comprising

(A) at least one epoxy resin selected from the group consisting of

(1) at least one epoxy resin having an average of more than one vicinal epoxy group per molecule;

(2) at least one epoxy resin having an average of more than one vicinal epoxy group per molecule wherein from about 1 to about 85 percent of the vicinal epoxy groups have been reacted with

(a) at least one compound containing an aromatic hydroxyl group;

(b) at least one compound containing a secondary amine group; or

(c) any combination of (a) and (b): and

(3) any combination of (1) and (2);

(B) at least one tertiary amine-containing component selected from the group consisting of

(1) at least one compound containing more than one aliphatic or cycloaliphatic tertiary amine group per molecule, which compound is essentially free of (a) aromatic ring moieties, (b) amide moieties, (c) carbamate moieties, (d) urea moieties and (e) primary amine moieties; or

(2) a mixture of tertiary amine-containing compounds consisting essentially of

(a) at least one compound containing more than one aliphatic or cycloaliphatic tertiary amine group per molecule, which compound is essentially free of (a) aromatic ring moieties, (b) amide moieties, (c) carbamate moieties, (d) urea moieties and (e) primary amine moieties: and

(b) at least one compound containing only one tertiary amine group per molecule: and

(C) at least one Brönsted acid.

5,057,558

POLYOL EXTENDED CATHODIC ELECTRODEPOSITION RESINS

Ding Y. Chung, Rochester Hills, and Tapan K. Debroy, Shelby Township, both of, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 27, 1990, Ser. No. 618,401

Int. Cl.[5] C08K *63/00*

U.S. Cl. 523—414 9 Claims

1. An improved cationic electrodeposition resin wherein the resin is made by chain extending an aromatic polyepoxide with an internal flexibilizer; wherein the improvement comprises said internal flexiblizer consisting of a monoepoxide-triol adduct.

5,057,559

CATIONIC PAINT BINDERS CONTAINING THE REACTION PRODUCT OF EPOXIDES AND SUBSTITUTED CARBAMIC ACID DERIVATIVES

Willibald Paar, and Rudolf Schipfer, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Sep. 6, 1988, Ser. No. 241,113

Claims priority, application Austria, Sep. 3, 1987, 2216/87

Int. Cl.[5] C08L *63/00*

U.S. Cl. 523—414 22 Claims

1. Cationic paint binders, water-dilutable after protonation, comprising the reaction products of

(A) an epoxide compound having at least one epoxy group and

(B) a substituted carbamic acid derivative having the formula

$$X-\left(\begin{array}{c}O\\ \|\\ NH-C-Y\end{array}\right)_{1-3}$$

wherein

X represents an aliphatic, cycloaliphatic, or aromatic moiety of a mono- or polyisocyanate compound which is reacted with a compound carrying a reactive H-atom,

Y represents the group —OR, —NH—R,

$$\begin{array}{c}O\\ \|\\ -N-C-OR\\ |\\ O=C-NH-X\end{array} \quad \text{or} \quad \begin{array}{c}O\\ \|\\ -N-C-NH-R\\ |\\ O=C-NH-X\end{array}$$

and

R represents an alkyl or tertiary aminoalkyl group; wherein components (A) and (B) have been reacted at about 60° C.−120° C. with

at least one of the components (A) or (B) containing basic groups whereby the end product contains protonatable groups corresponding to an amine number of at least about 30 mg KOH/g, and whereby the end product has an epoxide value of substantially zero.

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5,057,560

THERMOTROPIC COPOLYMER HYDROGELS FROM N,N-DIMETHYLACRYLAMIDE AND METHOXY-ETHYL (METH) ACRYLATE

Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 343,979, Apr. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 200,212, May 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 105,070, Oct. 5, 1987, abandoned. This application May 21, 1990, Ser. No. 526,191

Int. Cl.[5] C08L *89/00;* C08F *218/02*

U.S. Cl. 524—22 13 Claims

1. A random copolymer which comprises the copolymerization product of

(a) 10 to 60% by weight of N,N-dimethylacrylamide;

(b) 90 to 40% by weight of 2-methoxy-ethyl acrylate or methacrylate, and

(d) 0 to 30% by weight of one or more other monoolefinic monomers.

5,057,561

HOT MELT ADHESIVE COMPOSITIONS BASED ON POLYESTERS

Michele Manica, 22, via A. Ducco; Antonio Chiolle, 156, via Darsena, and Gian Paolo Maltoni, 80, via Garibaldi all of, 44100 Ferrara, Italy

Continuation of Ser. No. 099,737, Sep. 22, 1987, abandoned. This application Jul. 21, 1989, Ser. No. 383,253

Claims priority, application Italy, Sep. 25, 1986, 21807 A/86

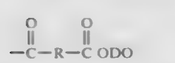
Int. Cl.[5] C08L *95/00*

U.S. Cl. 524—68 16 Claims

1. Hot melt adhesive compositions consisting essentially of:

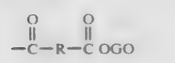
(a) from 40 to 90% by weight of a copolyester having a melt temperature between 50° C. and 150° C., a glass transition temperature (Tg) between −40° C. and +30° C., and a Brookfield viscosity at 180° C. greater than 1,500 centipoises and obtained by polycondensation of an aromatic dicarboxylic acid, an aliphatic dicarboxylic acid containing from 2 to 12 carbon atoms, and a glycol having from 2 to 20 carbon atoms;

(b) from 5 to 55% by weight of an elastomer based on a thermoplastic block copolyester, having a melt temperature of at least 100° C. and consisting of a plurality of recurring short chain ester units and recurring long chain ester units linked together by ester linkages, said short chain units being present in an amount from 10 to 75% by weight of the copolyester and having of the formula:



(I)

and said long chain units being present in an amount from 90 to 25% by weight of the copolyester and having the formula:



(II)

wherein R is an aromatic or cycloaliphatic divalent radical having from 6 to 20 carbon atoms, D is a divalent radical remaining after removal of the hydroxyl groups from an organic diol having a molecular weight of less than 250, and G is a divalent radical remaining after removal of the hydroxyl groups from a polyether-glycol having a molecular weight between 300 and 8,000;

(c) from 5 to 55% of a thermoplastic resin, of low molecular weight, having a Brookfield viscosity at 180° C. less than 25,000 centipoises; and

the sum of (a)+(b)+(c) being equal to 100.

5,057,562

PROCESS FOR THE PHOTOCHEMICAL STABILIZATION OF UNDYED AND DYED POLYPROPYLENE FIBRES

Gerhard Reinert, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 8, 1989, Ser. No. 363,649

Claims priority, application Switzerland, Jun. 14, 1988, 2274/88

Int. Cl.[5] C08K *5/34, 5/32;* D02G *3/00;* B32B *15/00*

U.S. Cl. 524—87 9 Claims

1. A process for the photochemical stabilization of undyed and dyed polypropylene fibers with light stabilizers, which comprises applying an aqueous solution containing a light stabilizer from the class of stearically hindered amines onto the polypropylene fibers by means of a bath.

5,057,563

SUBSTITUTED AMINOXY PROPIONAMIDES

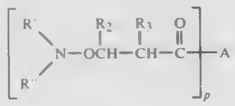
Ramanathan Ravichandran, Yonkers, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 185,595, Apr. 25, 1988, Pat. No. 4,929,657, which is a division of Ser. No. 848,106, Apr. 4, 1986, Pat. No. 4,760,179. This application Mar. 13, 1990, Ser. No. 492,710

Int. Cl.[5] C08K *5/34;* C07C *103/22;* C10M *133/16*

U.S. Cl. 524—98 14 Claims

1. A compound of the formula



wherein

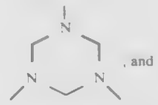
p is 2 to 4;

R′ and R″ are independently hydrogen, alkyl of 1 to 36 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 36 carbon atoms;

R_2 and R_3 are independently hydrogen or alkyl of 1 to 12 carbon atoms;

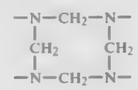
A, when p=2, is a bivalent radical of a 5–7 membered heterocyclic compound containing carbon atoms and two nitrogen atoms in the ring, with the free valencies on the nitrogen atoms;

A, when p=3, is a group of the formula



, and

A, when p=4, is a group of the formula



5,057,564

CYCLIC CARBONYL CONTAINING POLYMERS

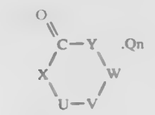
Stanley J. Brois, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 23, 1990, Ser. No. 556,243

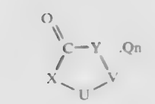
Int. Cl.[5] C08K *5/15;* C07D *251/04*

U.S. Cl. 524—101 15 Claims

1. An adduct of a substituted or unsubstituted, unsaturated olefinic or polymeric hydrocarbon and a cyclic, ene-reactive carbonyl-containing monomer, said adduct having a number average molecular weight in the range of about 500 to 10,000,000, said adduct prepared by heating a mixture of said unsaturated hydrocarbon and a cyclic, ene-reactive carbonyl-containing monomer characterized by the structures A, B or mixtures of A and B:



[A]



[B]

wherein Q is selected from the group consisting of H_2O, MeOH, EtOH, and BuOH; n is 0, 1 or greater than 1; X and Y are independently selected from the group consisting of CH_2, C═O and C═NOH; U, V and W are independently selected from the group consisting of CH_2, C═O, C═NH, C═N-alkyl, O, NH, N-alkyl, S, C-═S, CMe_2, CH-phenyl and CHCHOH—CH_0OH, wherein said alkyl group has from 1 to about 18 carbon atoms; and wherein U+V may be 1,2-phenylene, 1,8-naphthalene-diyl, and 1,2-dihydroxyethylene-1,2-diyl.

5,057,565

SOLID POLYELECTROLYTE POLYMER FILM

Stephen A. Noding, Brusly, La., and Sanford A. Siegel, Sarasota, Fla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 22, 1988, Ser. No. 283,744

The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.

Int. Cl.[5] C08K *5/15;* H01M *10/36*

U.S. Cl. 524—109 20 Claims

1. A solid polyelectrolyte polymer film which features:

a) a polymer,

b) a plasticizer for said polymer,

c) an epoxidized vegetable oil, and

d) an electrolyte disassociatingly solubilized in said plasticizer, said plasticizer and the solubilized electrolyte being substantially uniformly distributed within said polymer.

5,057,566

THERMOPLASTIC RUBBER COMPOSITIONS

Toshiaki Kobayashi; Tatsuo Nakayama, and Junichi Watanabe, all of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 830,839, Feb. 19, 1986, abandoned. This application Nov. 15, 1988, Ser. No. 271,904

Int. Cl.[5] C08F *8/42;* C08K *5/09, 5/12*

U.S. Cl. 524—297 18 Claims

1. A thermoplastic rubber composition comprising a nitrile rubber containing not less than 20% by weight of a gel insolule in methyl ethyl ketone, a vinyl chloride resin containing 0.05 to 20% by weight of a carboxyl group, a compound of a monovalent or divalent metal and a plasticizer, said monovalent or divalent metal compound being an ionic crosslinking agent which reacts ionically with the carboxyl group of the vinyl chloride resin to crosslink the vinyl chloride resin.

5,057,567

MIXED S-ALKYLTHIOPROPIONIC ACID ESTERS WITH PENTAERYTHRITOL

Michael H. Fisch, Wayne, and Richard D. Peveler, Woodcliff Lake, both of N.J., assignors to Witco Corporation, New York, N.Y.

Filed Jan. 22, 1990, Ser. No. 467,898

Int. Cl.[5] C08K *5/36*

U.S. Cl. 524—302 14 Claims

1. A process for preparing a mixed ester of pentaerythritol with a plurality of 3-alkylthiopropionic acids wherein each alkyl group thereof has between about 4 and about 20 carbon atoms, the process comprising:

(a) providing an alkyl mercaptan of the formula RSH, wherein R is an alkyl group having from about 4 to about 20 carbon atoms;

(b) reacting said RSH alkyl mercaptan by a direct addition reaction with an acrylic acid component selected from the group consisting of acrylic acid and an alkali metal acrylate, and recovering a 3-alkylthiopropionic acid having R as its alkyl group, said direct addition reaction being at a pH of at least about 11;

(c) providing an alkyl mercaptan of the formula R′SH, wherein R′ is an alkyl group different from R and having from about 4 to about 20 carbon atoms;

(d) reacting said R′SH alkyl mercaptan by a direct addition reaction with an acrylic acid component selected from the group consisting of acrylic acid and an alkali metal acrylate, and recovering a 3-alkylthiopropionic acid having R′ as its alkyl group, said direct addition reaction being at a pH of at least about 11; and

(e) reacting together said 3-alkylthiopropionic acid having R as its alkyl group, said 3-alkylthiopropionic acid having R′ as its alkyl group, and pentaerythritol in order to form a mixed ester product having a molecular structure containing both R and R′ groups; and

blending the extrudable polymer resin component with the mixed ester product into the stabilized polymer composition having maximized compatibility between the resin component and the mixed ester product.

5,057,568

POLYURETHANE ADHESIVES

James Nowicki, Hopewell, and Arthur Pruiksma, Chester, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Apr. 17, 1990, Ser. No. 510,366

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—361 9 Claims

1. A solvented polyurethane adhesive composition comprising 20 to 40% by weight of diphenylmethane diisocyanate, 0.5 to 4.0% by weight of a caprolactone triol, 40 to 75% by weight of a neopentyl adipate ester diol, 0 to 10% by weight of at least one polypropylene oxide diol, and a functionally effective amount of a catalyst therefor.

5,057,569

PROCESS FOR MANUFACTURING A LATEX-LIPOPHILIC POLYMER

John Biale, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

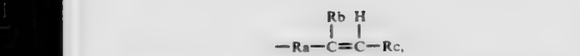
Filed Mar. 14, 1990, Ser. No. 493,999

Int. Cl.[5] C08F *8/12, 28/00, 16/12;* C08L *29/00*

U.S. Cl. 524—457 20 Claims

1. A synthesis process comprising the steps of:

(a) dissolving at least one substantially dry, solid lipophilic polymer having at least one vinyl-containing pendant group of the formula



wherein Ra is a divalent organic radical, —O—, —S—, or a covalent bond, and Rb and Rc are independently selected from the group consisting of hydrogen and methyl, in a plurality of alpha, beta-ethylenically unsaturated monomer units to form a reactor feed;

(b) combining the reactor feed formed in step (a) with an aqueous solution comprising an initiation catalyst to form a reaction medium; and

(c) polymerizing the alpha, beta-ethylenically unsaturated monomer units in the lipophilic polymer-containing reaction medium at reaction conditions sufficient to form a latex-lipophilic polymer composed of the lipophilic polymer and polymerized alpha, beta-ethylenically unsaturated monomers units, the latex-lipophilic polymer containing moieties that, when the latex-lipophilic polymer is subjected to a hydrolysis procedure, yield a 1,2-diol-containing compound, wherein the hydrolysis procedure entails placing a 2 sample of the latex-lipophilic polymer into a 125 ml Erlenmeyer flask, adding 20 ml of 2 N sodium hydroxide, fitting the flask with a micro reflux condenser, adding a boiling chip to the flask, and heating the solution under reflux for about one hour.

5,057,570

POLYVINYL ALCOHOL RESIN SOLUBLE IN HIGH SOLIDS AQUEOUS PAPER COATING COMPOSITIONS WITHOUT EXERNAL HEATING

Gerald D. Miller, Emmaus, Pa., and Michael M. Baas, KG Schalkwyk, Netherlands, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 13, 1990, Ser. No. 537,386
Int. Cl.[5] C08L *29/04*
U.S. Cl. 524—503 12 Claims

1. In a method for preparing a high solids, aqueous pigment dispersion for use in a paper coating composition comprising mixing an aqueous solution ot a polyvinyl alcohol co-binder with an aqueous pigment dispersion, the improvement which comprises adding the polyvinyl alcohol co-binder to the aqueous pigment dispersion as dry particulate solids, the polyvinyl alcohol being 85–90 mole% hyrolyzed and having a degree of polymerization ranging from 50 to 600 , and mixing without external heating.

5,057,571

DISPOSABLE ARTICLE CONSTRUCTION ADHESIVE

David B. Malcolm, Maplewood, and William L. Bunnelle, Hugo Township, Washington County, Minn., assignors to H. B. Fuller Licensing & Financing Inc., Wilmington, Del.

Division of Ser. No. 268,003, Nov. 7, 1988, Pat. No. 5,024,667.
This application Oct. 9, 1990, Ser. No. 594,603
Int. Cl.[5] C08L *53/00*
U.S. Cl. 524—505 10 Claims

1. A hot melt adhesive composition for the construction of disposable articles which comprises:

(a) 5 to 14 wt % of a radial block copolymer having a molecular weight of at least 145,000 having the formula:

$$(A-B)_n-Y$$

wherein Y is a multivalent coupling agent, A comprises a polyvinyl substituted aromatic block, B comprises a polymeric rubbery midblock, and n comprises an integer of at least 3;

(b) about 45 to 85 wt % of a compatible tackifying agent selected from the group consisting of a C_5 resin, a styrenated C_5 resin, a styrenated terpene resin, a hydrogenated C_9 resin, a rosin derivative, a styrenated terpene resin and mixtures thereof; and

(c) about 5 to 35 wt % of a plasticizing oil; wherein the hot melt pressure sensitive adhesive has a static shear at 100° F. of at least 30 min., a creep resistance at 100° F. of less than about 30% and exhibits a viscosity of less than 25,000 cP at 275° F.

5,057,572

AQUEOUS, FINELY DIVIDED TO OPTICALLY CLEAR, THERMALLY AND MECHANICALLY STABLE SILICONE EMULSIONS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Harald Chrobaczek, Augsburg, and Günther Tschida, Schwabmünchen, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

PCT No. PCT/EP88/00285, § 371 Date Oct. 16, 1989, § 102(e) Date Oct. 16, 1989, PCT Pub. No. WO88/08436, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 7, 1988, Ser. No. 424,244
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1987, 3713789; Jul. 17, 1987, 3723697
Int. Cl.[5] C08K *5/06;* D06M *15/643*
U.S. Cl. 524—588 19 Claims

1. A process for preparing an aqueous, finely divided to optically clear, thermally and mechanically stable silicone emulsion containing

(a) 3 to 25 parts by weight of an emulsifier which is soluble in water,

(b) 0.1 to 84 parts by weight of polysiloxane said polysiloxane consisting of 30 to 100 percent by weight of aminoalkyl-substituted polysiloxane having an amine number of at least 0.1, and 0 to 70 percent by weight of amino-free polysiloxane,

(c) 0.05 to 3.05 parts by weight of an acid,

(d) 5 to 96.85 parts by weight of water,

with the proviso that the parts of the emulsifier, the polysiloxane, the acid and the water add up to 100 parts by weight of the emulsion and with the further proviso that the ratio of (a) and (b) is at least 1.2:10;

said process comprising the steps of warming to at least 50° C., with stirring a mixture, containing at least the emulsifier, (a), and the water, (d), but which may also contain either the polysiloxane, (b), or both of (b) and the acid, (c), and establishing a pH of from 3 to 7 until a homogeneous phase is formed, with the proviso that if (b) and (c) or only (c) are not present in the mixture prior to warming, said process further comprises adding the missing components selected from (b) and (c) to the warm mixture, such that the mixture contains all four of (a), (b), (c), and (d).

5,057,573

URETHANE POLYMER COMPOSITION AND PREPARATION OF ARTICLES FROM THESE POLYMERS

Jean Pierre Pascault, Villeurbanne, and Lëon Cuve, Lyon, both of France, assignors to Societe Industrielle D'Applications Nouvelles De Procedes De Moulages Industriels (SAMI), Malesherbes, France

Filed Jan. 17, 1990, Ser. No. 466,214
Claims priority, application France, Jan. 19, 1989, 89 00600
Int. Cl.[5] C08K *3/22*
U.S. Cl. 524—871 21 Claims

1. A urethane polymer composition which contains:

an α,ω-diol oligomer

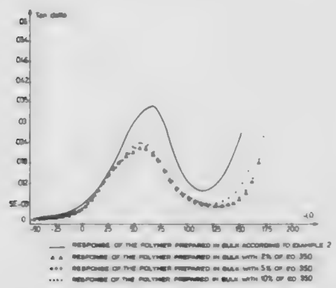
an isocyanate,

a chain extender diol, and

an emulsifying agent which is the product of reaction between:

(a) an α,ω-diol oligomer whose chain structure is identical or close in polarity to that of the above α,ω-diol oligomer,

(b) a diisocyanate, and optionally



(c) a chain extender of the diol or monoalcohol type, such as a monofunctional polyethylene oxide.

5,057,574

PROCESS FOR PRODUCING AN ALPHA-ALKYL-SUBSTITUTED AROMATIC VINYL COPOLYMER AND A THERMOPLASTIC RESIN COMPOSITION COMPRISING THE COPOLYMER

Makoto Uchida; Yutaka Toyooka, both of Otake; Kazuo Kishida, Hiroshima; Akira Nakata, Otake, and Naoki Yamamoto, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 204,972, Jun. 3, 1988, abandoned, which is a continuation of Ser. No. 812,895, Dec. 23, 1985, abandoned. This application May 14, 1990, Ser. No. 523,269
Claims priority, application Japan, Dec. 28, 1984, 59-274476; Dec. 28, 1984, 59-274477
Int. Cl.[5] C08L *51/04*
U.S. Cl. 525—85 8 Claims

1. A thermoplastic composition comprising

[A] 50 to 90% by weight of a copolymer comprising 60 to 85 parts by weight of an α-alkyl-substituted aromatic vinyl monomer, 15 to 35 parts by weight of a vinyl cyanide monomer, and 0 to 40 parts by weight of another vinyl monomer copolymerizable with these monomers, said copolymer being produced by a process comprising:

(1) all the amount of said aromatic vinyl monomer necessary for the entire polymerization and such partial amounts of the vinyl cyanide monomer and another copolymerizable vinyl monomer as to give a desired copolymer composition with respect to the content of said aromatic vinyl monomer, are first charged into a reaction vessel containing emulsifying agents,

(2) the charged monomers are emulsified by thorough mixing,

(3) emulsion polymerization is then initiated by adding polymerization initiator, and there is continuously added dropwise a solution of the residual amount of the vinyl cyanide monomer, another copolymerizable vinyl monomer and polymerization initiator, in such a manner that the range of change in the content of said aromatic vinyl monomer in said copolymer during the polymerization reaction will not vary more than 2% in the range of conversion of up to 90%, and

[B] 10 to 50% by weight of a graft copolymer comprising 30 to 85 parts by weight of a rubbery polymer and 15 to 70 parts by weight of a polymer combination consisting of a monovinyl aromatic monomer, vinyl cyanide monomer, and another monomer copolymerizable with these monomers in respective weight proportions of 84–40 : 0–40 : 0–60,

where the total amount of polymers [A] and [B] is 100% by weight.

5,057,575

PROCESSING AID FOR POLYMERS

George R. Chapman, Jr., Media, Pa.; Donnan E. Priester, Wilmington, and Charles W. Stewart, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 572,921, Aug. 29, 1990, Pat. No. 5,013,792, which is a continuation-in-part of Ser. No. 461,093, Jan. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 216,421, Jul. 8, 1988, Pat. No. 4,904,735. This application Feb. 1, 1991, Ser. No. 649,359
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] C08L *23/02, 27/12, 67/00, 77/00*
U.S. Cl. 525—199 17 Claims

1. Processing aid composition for a difficultly-melt-processible polymer selected from the group consisting of vinyl aromatic polymers; copolymers of alpha-olefins and vinyl esters, (meth)acrylic esters, acrylonitrile, and (meth)acrylic acids and their (ionomeric) metal salts; chlorinated polyethylene; polyvinyl chloride; polyester and polyamide, said composition consisting essentially of:

(a) a major portion of a polymer that is compatible with the difficultly-melt-processible polymer, and

(b) a minor portion of, with the parts totaling 100 parts:

(1) 2–95 parts by weight of a fluorocarbon copolymer which at the melt-processing temperature of the difficultly melt-processible polymer is either in a melted form if crystalline or is above its glass transition temperature if amorphous; and

(2) 98–5 parts by weight of a tetrafluoroethylene homopolymer or copolymer of tetrafluoroethylene and a monomer which is copolymerizable therewith, wherein the mole ratio of fluorine to hydrogen is at least 1:1, and which is solid at the melt-processing temperature of the difficultly melt-processible polymer.

5,057,576

ACRYLIC BLOCK COPOLYMER WITH CROSSLINKABLE SILICON SUBSTITUENT

Harry J. Spinelli, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1989, Ser. No. 414,416
Int. Cl.[5] C08F *293/00*
U.S. Cl. 525—267 10 Claims

1. A linear block copolymer consisting essentially of polyacrylate and/or polymethacrylate monomer units and being comprised of two end blocks, one at each end of the copolymer molecule, and containing in only one of said end blocks one or more multifunctional, crosslinkable silicon-containing groups as substituent groups in pendant acrylate and/or methacrylate ester groups and having a number average molecular weight of at least 1000.

5,057,577

WATER AND OIL REPELLANT

Masashi Matsuo; Takashige Maekawa, and Katsuji Ito, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 319,712, Mar. 7, 1989, abandoned. This application Mar. 12, 1990, Ser. No. 492,345
Claims priority, application Japan, Mar. 8, 1988, 63-52600
Int. Cl.[5] C08F *259/08;* B05D *7/02*
U.S. Cl. 525—276 24 Claims

1. A water and oil repellant comprising, as an effective component, core/shell type polymer particles each containing at least two polymers, wherein at least one of said at least two polymers is a polymer made of one of vinyl monomers contain-

ing a polyfluoroalkyl group or a copolymer made of two or more vinyl monomers containing a polyfluoroalkyl group.

5,057,578

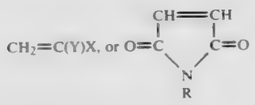
SILICONE-CONTAINING BLOCK COPOLYMERS AND MACROMONOMERS

Harry J. Spinelli, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

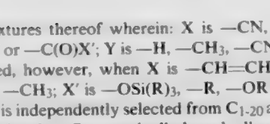
Filed Apr. 10, 1990, Ser. No. 507,276
Int. Cl.[5] C08F *265/06*
U.S. Cl. 525—278 **18 Claims**

1. An acrylic block copolymer comprised of:

(a) 10–90% by weight of one end block derived from one or more monomers having the formula

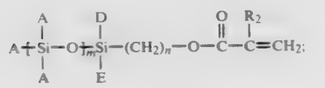


$CH_2{=}C(Y)X$, or

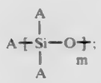


and mixtures thereof wherein: X is —CN, —CH=CH-C(O)X′ or —C(O)X′; Y is —H, —CH_3, —CN or —CO_2R, provided, however, when X is —CH=CHC(O)X′, Y is —H or —CH_3; X′ is —$OSi(R)_3$, —R, —OR or —NR′R″; each R is independently selected from $C_{1\text{-}20}$ alkyl, alkenyl, or alkadienyl or $C_{6\text{-}20}$ cycloalkyl, aryl, alkaryl or aralkyl, any of said groups optionally containing one or more ether oxygen atoms within aliphatic segments thereof and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and each of R′ and R″ is independently selected from $C_{1\text{-}4}$ alkyl; and

(b) 90–10% by weight of another end block derived from one or more polysiloxanylalkyl esters having the formula



where D and E are selected from the group consisting of C_1–C_5 alkyl groups, phenyl groups, and groups of the structure



where A is selected from the group consisting of C_1–C_5 alkyl groups and phenyl groups; m is an integer from one to five; and n is an integer from one to three; R_2 is —H or —CH_3; and

(c) having attached to only one of said end blocks of each molecule a terminal organo group containing a polymerizable carbon-carbon double bond.

5,057,579

POLYACRYLATE ESTERS WITH QUATERNARY AMMONIUM GROUPS

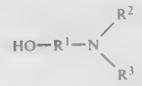
Jürgen Fock, Düsseldorf; Dietmar Schaefer, and Eberhard Esselborn, both of Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Fed. Rep. of Germany

Filed Dec. 8, 1989, Ser. No. 448,169
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 3842202
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—329.5 **4 Claims**

1. A polyacrylate ester having quaternary ammonium groups, said ester being the transesterification product of

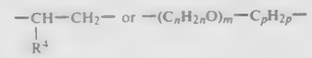
(a) an alkyl polyacrylate ester, obtained by free radical polymerization, the alkyl groups of which contain 1 to 8 carbon atoms, with

(b) a compound of the general formula



wherein

R^1 is a bivalent group of the general formula



which

R^4 is hydrogen or an alkyl group with 1 to 16 carbon atoms,

n=2, 3 or 4,

m=1 to 20,

p=2, 3 or 4 and

R^2, R^3 are alkyl groups with 1 to 18 carbon atoms, the transesterification being performed

(i) in such amounts that up to 70% of the ester groups are transesterified,

(ii) in the presence of a transesterification catalyst, and

(iii) in the presence of a solvent,

whereby a polyacrylate ester with tertiary amino groups is formed as an intermediate, and

(c) subsequent quaternization of the intermediate with alkyl or alkylaryl halide of the general formula

R^5X

wherein

R^5 is an alkyl group with 1 to 4 carbon atoms or a benzyl group and

X is a halogen atom,

or with dimethyl or diethyl sulfate, at normal or elevated pressure.

5,057,580

POLYACRYLATE ESTERS WITH QUATERNARY AMMONIUM GROUPS

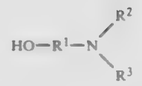
Jürgen Fock, Dusseldorf; Dietmar Schaefer, and Eberhard Esselborn, both of Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Dec. 8, 1989, Ser. No. 448,168
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 3842201
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—329.5 **5 Claims**

1. A polyacrylate ester having quaternary ammonium groups said ester being the transesterification product of

(a) an alkyl polyacrylate ester, obtained by free radical polymerization, the alkyl groups of which contain 1 to 8 carbon atoms, with

(b) a compound of the general formula



wherein

R^1 is a bivalent group of the general formula

in which

R^4 is hydrogen or an alkyl group with 1 to 16 carbon atoms,

n=2, 3 or 4,

m=1 to 20,

p=2, 3 or 4 and

R^2, R3 are alkyl groups with 1 to 18 carbon atoms, and

(c) a saturated or unsaturated aliphatic alcohol with 8 to 22 carbon atoms,

the molar ratio of the dialkylaminoalcohol (b) to the alkanol (c) with 8 to 22 carbon atoms being 1:9 to 9:1,

the transesterification being performed

(i) in such amounts that up to 70% of the ester groups are transesterified,

(ii) in the presence of a transesterification catalyst, and

(iii) in the presence of a solvent,

whereby a mixed polyacrylate ester with tertiary amino groups is formed as an intermediate, and

(d) subsequent quaternization of the intermediate with alkyl or alkylaryl halide of the general formula

R^5X

wherein

R^5 is an alkyl group with 1 to 4 carbon atoms or a benzyl group and

X is a halogen atom,

or with dimethyl or diethyl sulfate, at normal or elevated pressure.

5,057,581

POLYMER HYDROGENATION PROCESS

Garry L. Rempel; Neil T. McManus, both of Waterloo, and Narvoz Mohammadi, Sarnia, all of Canada, assignors to University of Waterloo, Waterloo, Canada

Filed May 2, 1990, Ser. No. 518,434
Int. Cl.[5] C08F *8/04*
U.S. Cl. 525—338 **24 Claims**

1. In a process for the selective hydrogenation of the carbon-carbon double bonds in a copolymer of a conjugated diene with at least one copolymerizable monomer, the improvement which comprises effecting said hydrogenation in the presence of at least one divalent ruthenium catalyst of the general formula:

$$RuXY(CO)ZL_2 \quad (1)$$

or

$$RuX(NO)(CO)L_2 \quad (2)$$

wherein X is a halogen atom or a carboxylate group, Y is a halogen atom, a hydrogen atom, a phenyl group, a carboxylate group, or a phenylvinyl group, Z is CO, pyridine, benzonitrile, trimethylphosphite or not ligan, and L is a phosphine ligand having at least one bulky alkyl substituent, wherein the term "bulky alkyl substituents" means substituents which cause the phosphine cone angle to be at least 160°.

5,057,582

HYDROGENATION CATALYST AND HYDROGENATION PROCESS WHEREIN SAID CATALYST IS USED

Ronald J. Hoxmeier, Houston, and Lyan H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1988, Ser. No. 289,158
Int. Cl.[5] C08F *8/04*
U.S. Cl. 525—338 **28 Claims**

1. A method for hydrogenating a block copolymer of a conjugated diene and a monoalkenyl aromatic hydrocarbon containing ethylenic and aromatic unsaturation comprising the steps of:

(a) contacting the block copolymer with hydrogen in a suitable solvent at a temperature within the range from about 20° C. to about 175° C. and a hydrogen partial pressure within the range from about 50 to about 3,000 psig and in the presence of a catalyst prepared by combining a nickel or cobalt compound with an alkylalumoxane at a temperature within the range from about 20° C. to about 100° C. and such that about 1.5 to about 20 moles or atoms of aluminum are added per mole or atom of nickel or cobalt, wherein the nickel or cobalt compound is selected from a group consisting of carboxylates, alkoxides, chelates, salts of sulfur-containing acids, salts of sulfur-containing acid partial esters, and salts of aliphatic or aromatic sulfonic acids;

(b) maintaining the contact in step (a) for a sufficient period of time to permit conversion of at least a portion of the ethylenic unsaturation contained in the block copolymer; and

(c) recovering an at least partially hydrogenated block copolymer.

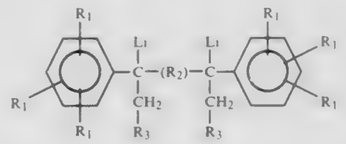
5,057,583

POLYMERIZATION PROCESS AND INITIATOR SYSTEM THEREFOR

Lu H. Tung, and Jerald A. Griggs, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 287,505, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 913,927, Oct. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 754,329, Jul. 12, 1985, abandoned. This application Oct. 2, 1989, Ser. No. 415,427
Int. Cl.[5] C08F *4/48, 36/04*
U.S. Cl. 526—175 **5 Claims**

1. In a solution polymerization of at least one conjugated diene monomer said solution comprising a hydrocarbon solvent wherein polymerization of the monomer is initiated in the presence of a multifunctional lithium containing soluble initiator the improvement which comprises employing as initiator a mixture comprising a multifunctional lithium compound corresponding to the formula:



wherein

R_1 is independently each occurrence hydrogen or an inert radical having from 0 to 16 carbon atoms;

R_2 is a divalent organic radical having at least 6 carbon atoms, R_2 having at least one aromatic ring and the aromatic ring being directly attached to a carbon which is attached to an aromatic ring of the above formula, with the further limitation R_2 contains carbon and hydrogen, and optionally oxygen; oxygen when present is present only in the configuration of a diphenyl oxide;

R_3 is selected from the group consisting of alkyl, cycloalkyl, and aromatic radicals containing from 1 to 20 carbon atoms; and

a lithium alkoxide of the formula LiOR the alkoxide (OR) containing 2–16 carbon atoms and the equivalent ratio of lithium alkoxide to multi-functional lithium compound being about 0.05 to 2.

5,057,584

SULFURIC ACID ADDUCT-CATALYZED POLYMERIZATION

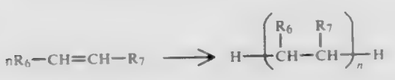
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 771,259, Aug. 30, 1985, Pat. No. 4,722,986, and a continuation-in-part of Ser. No. 679,235, Dec. 7, 1984, Pat. No. 4,589,925, Ser. No. 675,774, Nov. 28, 1984, Pat. No. 4,673,522, Ser. No. 673,358, Nov. 20, 1984, Pat. No. 4,664,717, Ser. No. 673,508, Nov. 20, 1984, Pat. No. 4,944,787, and Ser. No. 453,496, Dec. 27, 1982, Pat. No. 4,910,179, which is a continuation-in-part of Ser. No. 442,296, Nov. 17, 1982, abandoned, Ser. No. 444,667, Nov. 26, 1982, abandoned, Ser. No. 331,001, Dec. 15, 1981, Pat. No. 4,402,852, Ser. No. 330,904, Dec. 15, 1981, Pat. No. 4,404,116, Ser. No. 318,629, Nov. 5, 1981, Pat. No. 4,445,925, Ser. No. 318,368, Nov. 5, 1981, Pat. No. 4,447,253, and Ser. No. 318,343, Nov. 5, 1981, Pat. No. 4,397,675. This application Jan. 29, 1988, Ser. No. 150,079

Int. Cl.[5] C08F *4/00, 2/00*

U.S. Cl. 526—220 **21 Claims**

1. A method for conducting the acid-catalyzed polymerization of an organic compound having at least one carbon-to-carbon double bond capable of undergoing acid-catalyzed polymerization in accordance with the expression



wherein n is an integer greater than 1 and R_6 and R_7 are independently selected from hydrogen and monovalent organic radicals, which method comprises the step of conducting said reaction in the presence of a catalytically active amount of the monoadduct of sulfuric acid and a chalcogen-containing compound having the empirical formula



wherein X is a chalcogen, each of R_1 and R_2 is selected from the group consisting of hydrogen, NR_3R_4 and NR_5, at least one of R_1 and R_2 is other than hydrogen, each of R_3 and R_4 is selected from the group consisting of hydrogen and monovalent organic radicals, and R_5 is a divalent organic radical.

5,057,585

OXYGEN-PERMEABLE ARTICLE OF FLUORINATED HYDROCARBON GROUP-GRAFTED (METH)ACRYLATE POLYMERS

Tokinori Agou, Ohno; Takeshi Sakashita, Iwakuni; Tomoaki Shimoda, Waki; Masaru Sudo, Ohtake; Masahiro Kuwabara, Waki, and Masahide Tanaka, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

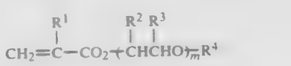
Continuation of Ser. No. 138,653, Dec. 29, 1987, Pat. No. 4,957,985. This application Jul. 19, 1990, Ser. No. 554,388

Claims priority, application Japan, Dec. 29, 1986, 61-312934; May 18, 1987, 62-118956

Int. Cl.[5] C08F *265/04, 120/28, 220/28*

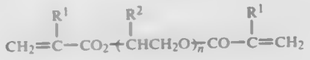
U.S. Cl. 526—246 **5 Claims**

1. An oxygen-permeable article composed of a fluorine-containing, hydrophilic, oxygen-permeable, gelled, crosslinked polymer having water swellability comprising as an essential monomer component a fluorine-containing (meth)acrylate monomer composed of a (meth)acrylate ester monomer represented by the following formula (I)



(I)

or the following formula (II)



(II)

wherein

R^1, R^2 and R^3 each represent a hydrogen atom or a methyl group,

R^4 represents a hydrocarbon group having 1 to 30 carbon atoms or a hydrocarbon group having 1 to 30 carbon atoms which contains not more than 61 oxygen or fluorine atoms, and

m and n each represent an integer of 1 to 1,000, and graft-bonded to the alkylene group in the main chain of the (meth)acrylate monomer at least one fluorine-substituted hydrocarbon group, having 1 to 30 carbon atoms and at least three fluorine atoms, per molecule of the (meth)acrylate monomer.

5,057,586

HALOGENATED 1,3-DIOXOLANES AND DERIVATIVES

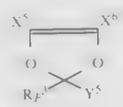
Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 274,435, Nov. 22, 1988, Pat. No. 4,973,714, which is a division of Ser. No. 80,473, Jul. 31, 1987, Pat. No. 4,810,806. This application Aug. 30, 1990, Ser. No. 574,876

Int. Cl.[5] C08F *16/12*

U.S. Cl. 526—247 **8 Claims**

1. A polymer consisting of dioxole monomer units of the formula



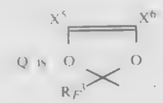
wherein

x^5 and x^6 are independently —F or —Cl with at least one being —F;

R^3_F is —F, a perfluorinated alkyl group having 1 to 14 carbon atoms and terminally substituted with —F, —Cl, $—OC_6F_5$, $—SO_2Cl$, $—SO_2F$, —CN, —C(O)F or —C(O)OR, or said perfluorinated alkyl group also containing ether oxygen;

R″is $—CH_3$, $—C_2H_5$or $—CH_2CF_3$;

Y^5 is —F, —R′, Q′, —Ror $—RC(O)CF_3$;



R'_F is a single bond or a perfluorinated alkyl group having 1 to 4 carbon atoms or said group containing ether oxygen; with the provisos that

(a) when R^3_F is a perfluorinated alkyl group terminally substituted with —F or —Cl, Y^5 is other than —F or $—R^3_F$ having terminal substitution with —F or —Cl; and

(b) when R^3_F is —F, Y^5 is $—R'_FQ'$.

5,057,587

RADIATION-CURABLE LIQUID RESIN FOR SECONDARY COATING OF LIGHTWAVE GUIDES

Siegfried Birkle, Hoechstadt A/Aisch; Hans-Dieter Feucht, Erlangen; Rainer Kamps, Coburg, and Eva Rissel, Forchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 16, 1988, Ser. No. 286,472

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743993

Int. Cl.[5] C08F *24/00*

U.S. Cl. 526—273 **4 Claims**

1. A radiation-curable liquid resin useful as a secondary coating of lightwave guides comprising a reaction product selected from the group consisting of an adduct (a) of glycerol-di(meth)acrylate or pentaerythzitoltri(meth)acrylate with a 2:1 addition compound of a diepoxide and an α,ω-diol with a mean molecular weight between 600 and 3000, and an adduct (b) of (meth)acrylic acid or -acid chloride or isocyanatoalkyl-(meth-)acrylate with a conversion produce of the 2:1 addition compound and a low-molecular monovalent alcohol (C_1 to C_{10}) or a low-molecular bivalent alcohol (C_2 to C_4) or water, where the diepoxide is an aromatic diglycidylether and the α,ω-diol is an α,ω-hydroxy-terminated polyoxyalkylene, an α,ω-hydroxy-terminated polyester, an α,ω-hydroxy-terminated polybutadiene, or an α,ω-hydroxy-terminated organo-functional polysiloxane.

5,057,588

VINYLIDENE CYANIDE ALTERNATING COPOLYMERS

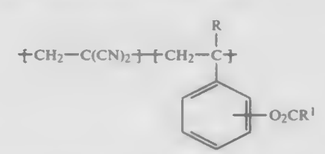
Anthony J. East, Madison, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Mar. 9, 1990, Ser. No. 491,138

Int. Cl.[5] C08F *22/34;* **B29C** *35/02;* **B06B** *1/02;* **G11C** *13/02*

U.S. Cl. 526—300 **8 Claims**

1. A copolymer which is characterized by alternating monomeric units corresponding to the formula:



where R is hydrogen, halogen or a C_1–C_4 alkyl substituent; and R^1 is hydrogen or a C_1–C_8 hydrocarbyl substituent.

5,057,589

PROCESS FOR THE PREPARATION OF MODIFIED POLYSILOXANES, THE POLYSILOXANES THUS PREPARED, THEIR USE AND THE MATERIALS THUS TREATED

Franz Mosch, Diedorf, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

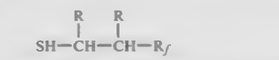
Filed Jan. 30, 1990, Ser. No. 472,678

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3903005

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—24 **12 Claims**

1. A process for the preparation of modified polysiloxanes, which comprises reacting polyvinylsiloxanes with compounds of the formula (1)



(1)

in which R is H, CH_3 or C_2H_5, in which at least one radical R is H, and R_f is a perfluoroalkyl radical having 8 to 16 C atoms, in about equivalent amounts, relative to the vinyl groups, at a temperature from about 40° C., to about 120° C.

5,057,590

BISLACTONE CURING AGENTS FOR EPOXY RESINS AND POLYMERS OBTAINED THEREFROM

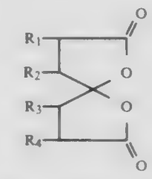
Allison M. Sikes, Chantilly, Va., and Robert F. Brady, Jr., Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1990, Ser. No. 500,839

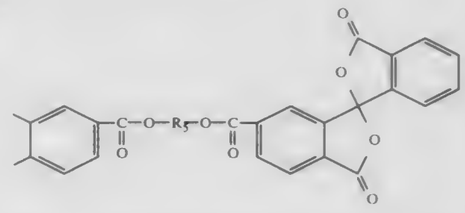
Int. Cl.[5] C08G *59/16, 59/42*

U.S. Cl. 528—116 **18 Claims**

1. A copolymer comprising the reaction product of the copolymerization of a bislactone having the formula:



where R_1 and R_2 may be, independently of each other, or in any combination with each other to form a divalent or higher organic radical: H or any organic radical lacking a functional group, other than one or more bislactone moieties, that reacts with an epoxy resin to be copolymerized with the bislactone, and R_3 and R_4 combine to form:



where R_5 is a divalent organic radical, with said epoxy resin.

5,057,591

FOAMABILITY OF PHENOLIC RESINS

William D. Detlefsen, Eugene; Lewis D. Creel, Dexter, and Lee R. Johnson, Springfield, all of Oreg., assignors to Borden, Inc., Columbus, Ohio

Filed Aug. 25, 1988, Ser. No. 236,379

Int. Cl.[5] C08G *8/04, 14/02, 65/38*

U.S. Cl. 528—140 **27 Claims**

1. An improved glue made by increasing the foamability of a glue comprising a solution of highly advanced phenolic resin, wherein said solution is the reaction product of a reaction mixture comprising phenol, aldehyde, water, and alkali, wherein said solution has a resin solids content of from about 35% to about 45% by weight and a viscosity of about 300 cps to about 1500 cps as measured on a Brookfield RVF viscometer at 25° C. with a #2 spindle at 20 RPM and wherein the increased foamability is brought about by the addition of soluble calcium compound to said reaction mixture at an early stage of the reaction in an amount of from about 0.25% to about 1% by weight based on the weight of said reaction mixture.

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5,057,592

POLY(ARYLENE SULFIDE SULFONE) POLYMER CONTAINING ETHER GROUPS

Rex L. Bobsein, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 487,364, Feb. 28, 1990, abandoned.
This application Feb. 6, 1991, Ser. No. 652,302
Int. Cl.[5] C08G *23/00*; H05K *1/03*; C08L *81/04*
U.S. Cl. 528—174 16 Claims

1. A process comprising:

(a) reacting in an enclosed vessel, a polar organic compound, a dihaloaromatic sulfone, an aromatic diphenol, and an alkali metal base at a temperature in the range of 150° C. to 250° C. for a time period in the range of about 1 minute to 2 hours, wherein the molar ratio of dihaloaromatic sulfone to diphenol is in the range of about 8:1 to 20:1; and then

(b) adding a sulfur source to the contents of the vessel and raising the temperature of the contents of the vessel to a temperature in the range of 175° C. to 235° C. for a time period in the range of 1 minute to 24 hours to form a recoverable poly(arylene sulfide sulfone) polymer containing ether groups.

5,057,593

FREE RADICAL COPOLYMERIZATION OF ETHYLENE AND CO WITH ACETONE

Donald R. Marshall, Orange, Tex.; Robert J. Statz, Kennett Square, Pa., and James D. White, Port Neches, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 11, 1990, Ser. No. 535,671
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—271 11 Claims

1. In a process for the continuous copolymerization of ethylene with carbon monoxide and up to about 40 weight percent of at least one comonomer selected from the group consisting of

(a) alpha-beta unsaturated carboxylic acids having 3 to 8 carbon atoms,

(b) esters and glycidyl esters of the above (a) acids with C_1–C_8 alcohols and with phenols and naphthols having up to 2 alkyl substituents of 1–4 carbon atoms,

(c) anhydrides of the above (a) acids, and

(d) vinyl esters of saturated aliphatic acids having 2–4 carbon atoms,

wherein the resulting copolymer contains about 15–95 weight percent of copolymerized ethylene, the monomers and a free-radical initiator are continuously introduced into a stirred copolymerization reactor maintained at a temperature of about from 120° C. to 300° C. at a rate such that the residence time of the material flowing through the reactor is about 10 seconds to 5 minutes, and recovering the copolymer from the reactor effluent,

the improvement which comprises introducing into the copolymerization reactor a solvent substantially free of alcohol, consisting of at least about 50% acetone, the solvent comprising about 2–20 weight percent of the total material flowing through the reactor.

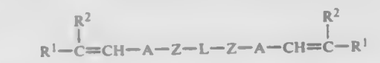
5,057,594

ULTRAVIOLET LIGHT-ABSORBING COMPOUNDS AND SUNSCREEN FORMULATIONS AND POLYMERIC MATERIALS CONTAINING SUCH COMPOUNDS OR RESIDUES THEREOF

James J. Krutak; Max A. Weaver; Clarence A. Coates, Jr., all of Kingsport; Samuel D. Hilbert, Jonesborough; Terry A. Oldfield, Kingsport; William W. Parham, Kingsport, and Wayne P. Pruett, Kingsport, all of Tenn. assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 17, 1989, Ser. No. 395,386
Int. Cl.[5] C08G *63/20*
U.S. Cl. 528—272 18 Claims

1. A polymeric composition comprising a polyester having reacted therein or copolymerized therewith the residue of at least one poly-methine compound having the formula



wherein

each R^1 is independently selected from cyano; carboxy; alkenyloxycarbonyl; an unsubstituted or substituted alkoxycarbonyl, cycloalkoxycarbonyl or aryloxycarbonyl radical; an unsubstituted or substituted, carbocyclic or heterocyclic aryl radical; an unsubstituted or substituted alkanoyl, cycloalkanoyl or aroyl radical; an unsubstituted or substituted carbamoyl radical; or an unsubstituted or substituted alkylsulfonyl, cycloalkylsulfonyl or arylsulfonyl radical;

each R^2 is independently selected from cyano or an unsubstituted or substituted alkoxycarbonyl, cycloalkoxycarbonyl or aryloxycarbonyl radical;

each A is independently selected from an unsubstituted or substituted 1,2-phenylene or 1,2-naphthylene radical;

each Z is independently selected from —O— or —S—; and

L is an organic linking group bonded by non-oxo carbon atoms to each Z atom, provided the poly-methine compound bears at least one substituent that is reactive with one of the monomers from which the polyester is derived.

5,057,595

COPOLYESTERS FROM 4,4'-BIPHENYLDICARBOXYLIC ACID, 1,4-CYCLOHEXANEDIMETHANOL AND ETHYLENE GLYCOL

John C. Morris, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 288,901, Dec. 23, 1988, Pat. No. 4,914,179.
This application Jan. 31, 1990, Ser. No. 473,018
Int. Cl.[5] C08G *63/02*
U.S. Cl. 528—272 10 Claims

1. A composition comprising:

(i) about 30 to 90 weight percent of the copolyester comprising,

(A) an acid component comprising repeating units of at least 80 mol % 4,4'-biphenyldicarboxylic acid, and

(B) a glycol component comprising repeating units of from about 90–20 mol % 1,4-cyclohexanedimethanol, and about 10–80 mol % ethylene glycol,

wherein the total mol % of acid component and glycol component are each 100 mol %, and wherein said copolyester has an inherent viscosity of at least about 0.6 determined at 25° C. in 25/35/40 (wt./wt./wt.) phenol/tetrachloroethane/p-chlorophenol at a concentration of 0.1 g/100 ml, and

(ii) about 1 to 70 weight percent of at least one property modifier selected from polyamides, poly(ether-imides), polyphenylene oxides, polyphenylene oxide/polystyrene blends, different polyesters, polyphenylene sulfides, polyphenylene sulfide/sulfone blends, poly(ester-carbonates), polycarbonates, polysulfone ethers, poly(ether-ketones) of aromatic dihydroxy compounds, phosphorus compounds, halogen compounds, halogen compounds in combination with antimony compounds, talc, mica, poly(1,4-phenylene terephthalamide), glass fibers, and carbon fibers.

5,057,596

CROSSLINKED POLYESTER RESIN FROM TRIHYDRIC ALCOHOL

Shinji Kubo; Noriyuki Tajiri; Masayuki Takyu, all of Toyohashi; Ryo Funato, and Hirokazu Ito, both of Nagoya, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Jul. 17, 1990, Ser. No. 553,415
Claims priority, application Japan, Jul. 17, 1989, 1-184373
Int. Cl.[5] C08G *68/02*
U.S. Cl. 528—272 12 Claims

1. A crosslinked polyester resin which is a non-linear polycondensate comprising (a) 1 to 30 moles%, based on total acid units, of units of a trihydric or higher alcohol or units of a trivalent or higher carboxylic acid, (b) 1 to 60 mole%, based on the total acid units, of units of an alicyclic diol in which at least one alcohol moiety is a secondary alcohol, (c) 40 to 100 mole%, based on the total acid units, of units of an aromatic dicarboxylic acid and (d) 40 to 99 mole%, based on the total acid units, of units of a non-alicyclic diol, said resin having an acid value of 0.5 to 25 mg-KOH/g, a glass transition temperature of 50° to 80° C., a softening temperature not higher than 145° C., a fixing temperature range of at least 30° C., and a difference between the softening temperature and the glass transition temperature not larger than 75° C.

5,057,597

PROCESS FOR THE MANUFACTURE OF ANHYDRO POLYAMINO ACIDS AND POLYAMINO ACIDS

Larry P. Koskan, 8617 Golfview Dr., Orland Park, Ill. 60462

Filed Jul. 3, 1990, Ser. No. 547,875
Int. Cl.[5] C08G *69/10*
U.S. Cl. 528—328 8 Claims

1. A method for producing a anhydropolyamino acid in relatively high yields comprising the steps of:

a.) providing an agitated, fluid bed constituted by freely flowing, solid, particulate, alpha amino acid;

b.) heating the fluid bed to a temperature of at least about 180° C. (356° F.) and maintaining the heated bed at a temperature in the range of about 180° C. (356° F.) to about 250° C. (482° F.) for a time period sufficient to polymerize the alpha amino acid and to drive off water from the heated bed while maintaining the mean bed particle size and a value of no more than about 150 microns and while providing a degree of agitation sufficient to maintain the particles in a substantially free-flowing state throughout the time period; and

c.) recovering anhydropolyamino acid from the fluid bed.

5,057,598

MONOCLONAL ANTIBODIES REACTIVE WITH ENDOTOXIN CORE

Matthew Pollack, Bethesda, and Kenneth W. Hunter, Kensington, both of Md., assignors to Centocor, Inc., Malvern, Pa.

Continuation of Ser. No. 771,178, Sep. 3, 1985, abandoned, which is a continuation of Ser. No. 492,374, May 6, 1983, abandoned. This application Feb. 1, 1989, Ser. No. 304,884
Int. Cl.[5] A61K *39/395*; C07K *15/28*; C12N *12/05*
U.S. Cl. 530—387 17 Claims

1. A monoclonal antibody which binds to antigenic determinants in the endoxtoxin core of different genera of gram negative bacteria, said core consisting essentially of the lipid A and core oligosaccharide regions, and not the 0-side chain region of bacterial lipopolysaccharide, wherein said antibody:

a) binds to endoxtoxin core from at least one species of gram negative bacteria from each of the genera of Escherichia, Salmonella and Pseudomonas; and,

b) is effective in treating clinical manifestations of infection in a mammalian host caused by gram negative bacteria when a therapeutically effective amount of said antibody is administered to the mammalian host.

5,057,599

POLYMERIZATION OF CARBON MONOXIDE/OLEFIN WITH AROMATIC TETRADENTATE PHOSPHORUS LIGAND

Pui K. Wong, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 30, 1990, Ser. No. 503,414
Claims priority, application Netherlands, Jul. 14, 1989, 8901829
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 11 Claims

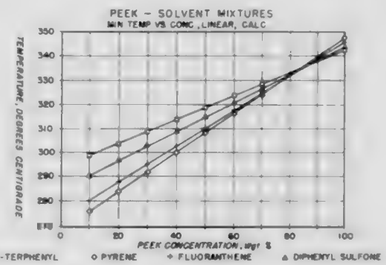
1. In the process of producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and hydrocarbon under polymerization conditions in the presence of a reaction diluent and a catalyst composition formed from a palladium compound, the anion of a strong non-hydrohalogenic acid and a phosphine ligand, the improvement wherein the phosphine ligand is an aromatic tetradentate phosphorus ligand.

5,057,600

PROCESS FOR FORMING AN ARTICLE COMPRISING POLY(ETHERETHERKETONE) (PEEK) TYPE POLYMERS

Henry N. Beck, Walnut Creek, and Richard A. Lundgard, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 9, 1987, Ser. No. 107,699
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] C08G *6/00, 8/02, 14/00*
U.S. Cl. 528—480 30 Claims



1. A process for the production of an article comprising a polymer itself comprising poly(etheretherketone), which process comprises:

A. contacting a polymer comprising poly(etheretherketone), with at least one organic compound, consisting essentially of carbon atoms and hydrogen atoms, and optionally oxygen atoms, nitrogen atoms, sulfur atoms, halogen atoms, or mixtures thereof, having a molecular weight of between about 160 and 450 daltons and having at least one six membered aromatic ring structure which compound is stable at a temperature of between 240° and 400° C. at ambient pressure, at a temperature of between about and 240° and 400° C. at ambient pressure for a time effective to dissolve greater than about 10% by weight of the poly(etheretherketone) present;

B. forming the solution of poly(etheretherketone) and or-

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ganic compound of step (A) into a desired article configuration;

C. removing the organic compound; and

D. recovering the article comprising poly(etheretherketone) formed thereby.

5,057,601

PROCESS FOR PRODUCING A GEL-FREE COAGULATED RUBBER WITH LOW ETHYLENIC UNSATURATION

Henry W. Schiessl, Northford, and Francis W. Migliaro, Jr., Waterbury, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Nov. 6, 1989, Ser. No. 432,026

Int. Cl.[5] C08F *6/10, 6/16, 6/24*

U.S. Cl. 528—483 **8 Claims**

1. A process for making nitrile rubber which comprises the steps of:

(a) reacting a reaction mixture containing an ethylenically unsaturated polymer in latex form, hydrazine, and an oxidant in order to reduce at least about 90% of the ethylenic unsaturation in said unsaturated polymer, thereby providing a reduced rubber, the molar ratio of hydrazine to unsaturated polymer being between about 7:1 and about 15:1, the molar ratio of oxidant to unsaturated polymer being between about 2.0:1 and about 5:1, said oxidant being added gradually to provide a controlled rate of reaction,

(b) adding a coagulating agent to said product mixture in order to coagulate the reduced rubber to provide coagulated reduced rubber in said product mixture, and

(c) filtering said coagulated reduced rubber in order to isolate said coagulated reduced rubber from said product mixture to provide an essentially gel-free coagulated reduced rubber that is at least about 90 percent saturated and a filtrate comprising aqueous hydrazine.

5,057,602

PARA-PHENYLENE DIAMINE POLYMER COLOR IMPROVEMENT WITH SEQUESTERING AGENT

Vlodek Gabara, and Angela M. Lapallo, both of Richmond, Va., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1989, Ser. No. 431,227

Int. Cl.[5] C08G *69/46*

U.S. Cl. 528—486 **10 Claims**

1. A process for treating para-phenylene diamine (PPD) polymer comprising the steps of:

(a) combining PPD polymer, newly-isolated from a PPD polymer polymerization system, at least 0.1%, based on weight of the PPD polymer, of a sequestering agent having a stability constant (K_1), for Fe(III), of greater than 12, and water in an amount adequate to yield a slurry of the PPD polymer;

(b) agitating the combination for at least ten seconds;

(c) separating the PPD polymer from the combination.

5,057,603

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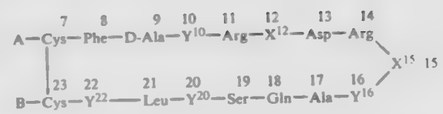
Ruth F. Nutt, Green Lane; Theresa M. Williams, Lansdale; Daniel F. Veber, Ambler, and Terry A. Lyle, Lederach, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 432,358, Sep. 8, 1989, and a continuation of Ser. No. 824,406, Jan. 31, 1986. This application Aug. 23, 1990, Ser. No. 571,803

Int. Cl.[5] A61K *37/02;* **C07K** *7/08, 7/10*

U.S. Cl. 530—324 **16 Claims**

1. A peptide of the amino acid sequence:



wherein

A is absent or is

Ser,

Ser-Ser,

Arg-Ser-Ser,

Arg-Arg-Ser-Ser,

Leu-Arg-Arg-Ser-Ser, or

Ser-Leu-Arg-Arg-Ser-Ser;

B is absent or is

Asn,

Asn-Ser,

Asn-Ser-Phe,

Asn-Ser-Phe-Arg, or

Asn-Ser-Phe-Arg-Tyr;

and Y^{10}, X^{12}, X^{15}, Y^{16}, Y^{20} and Y^{22} are selected from one of the amino acid sets comprising

Y^{10}	X^{12}	X^{15}	Y^{16}	Y^{20}	Y^{22}
Ala	Ile	Ile	Ala	Ala	D-Ala.
Gly	Ile	Ile	Ala	Ala	Gly.
Ala	Ile	Ile	Gly	Gly	Gly.
Gly	Ile	Ile	Ala	Gly	Gly.
Ala	Ile	Ile	Gly	Gly	D-Ala.
Gly	Met	Ile	Ala	Gly	Gly.
Gly	Ile	Ile	Gly	Gly	Ala.
Ala	Ile	Ile	Ala	Gly	Gly.
Ala	Ile	Ile	D-Ala	Gly	Gly and
Ala	Ile	Ile	Ala	Ala	Gly.

5,057,604

MONOCLONAL ANTIBODIES

Eric J. Brown, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Filed Aug. 3, 1988, Ser. No. 227,972

Int. Cl.[5] C07K *13/00;* **C12N** *5/00*

U.S. Cl. 530—387 **1 Claim**

1. Monoclonal antibody having the characteristics of B6H12, ATCC HB 9771.

5,057,605

SIALOCYLGLYCEROLIPIDS AND METHOD FOR PREPARING THE SAME

Shoji Yoshimura, Iruma; Yuzi Matsuzaki, Tokorozawa; Mamoru Sugimoto, Tokyo; Masayoshi Ito, Kunitachi; Yoshiyasu Shitori, Tokyo, and Tomoya Ogawa, Musashino, all of Japan, assignors to Meet Corporation, Tokyo, Japan

Filed Nov. 10, 1988, Ser. No. 269,697

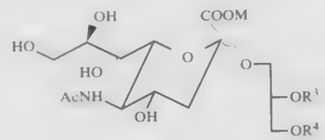
Claims priority, application Japan, Nov. 10, 1987, 62-283491

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.[5] C07H *1/00, 11/00, 15/00*

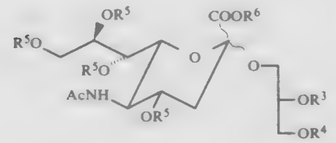
U.S. Cl. 536—4.1 **13 Claims**

7. A process for preparing a sialocylglycerolipid of formula (III):



wherein M is an alkali metal, R^3 represents a hydrogen atom or a C_nH_{2n+1}-group, and R^4 represents a C_mH_{2m+1} group, wherein each of n and m is an integer ranging from 1 to 30, comprising:

treating a compound of formula (II):



wherein R^5 represents a CH_3CO—group; R^6 a hydrogen atom or a lower alkyl group; and R^3 and R^4 are the same as defined above, in an aqueous alkaline solvent.

5,057,606

FORM-IN-PLACE POLYSACCHARIDE GELS

James E. Garbe, Inver Grove Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 24, 1989, Ser. No. 301,164

The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.

Int. Cl.[5] A61L *15/42, 25/00*

U.S. Cl. 536—54 **26 Claims**

1. A method of making a polysaccharide gel from water-soluble polysaccharides bearing pendant carboxylate groups comprising mixing together a first liquid component comprising an aqueous solution of one of said water-soluble polysaccharides having suspended therein particles of a water-insoluble di- or trivalent metal salt that will react with an acid to form a water-soluble metal salt, and that has a di- or trivalent metal ion capable of complexing with the pendant carboxylate groups of said water-soluble polysaccharides to form a water-insoluble polysaccharide gel; and a second liquid component comprising an aqueous solution of a water-soluble acid.

5,057,607

ENANTIOMERICALLY SELECTIVE BIOCATALYZED ACYLATION

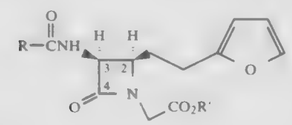
Milton J. Zmijewski, Jr., Carmel, and Jeffrey N. Levy, Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 535,086, Jun. 8, 1990, abandoned. This application Oct. 2, 1990, Ser. No. 591,586

Int. Cl.[5] C07D *205/085;* **C12P** *17/16;* **C07B** *43/06*

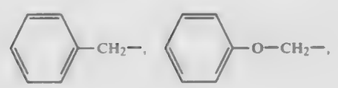
U.S. Cl. 540—364 **10 Claims**

1. A process for preparing a compound of Formula (1)

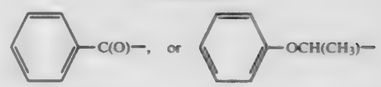


(1)

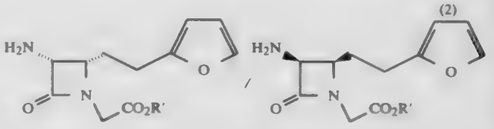
wherein R is



-continued



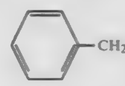
and R′ is hydrogen or a C_1–C_4 alkyl group; which comprises reacting a cis (2,3) racemic mixture of Formula (2)



wherein R′ is as defined above, with a compound of the formula



wherein R is as defined above, and R″ is C_1–C_4 alkyl or hydrogen, provided that when R″ is hydrogen, R is



in the presence of a penicillin G amidase enzyme.

5,057,608

IMMUNOREGULANTS, IMMUNOSUPPRESSANTS, PROCESS TO MAKE RING EXPANDED MACROLIDE RELATED TO FK-506/FK-520

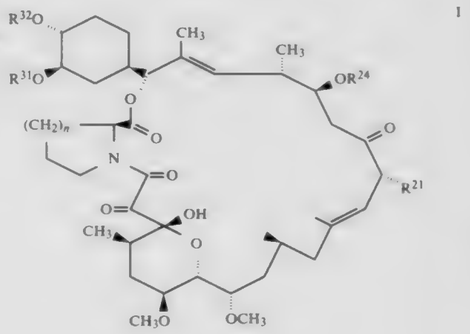
Matthew J. Wyvratt, Jr., Mountainside; Thomas R. Beattie, Scotch Plains; Hyun O. Ok, Edison; Byron H. Arison, Watchung, and Michael H. Fisher, Ringoes, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 341,342, Apr. 21, 1989, abandoned. This application Apr. 10, 1990, Ser. No. 508,519

Int. Cl.[5] C07D *498/16*

U.S. Cl. 540—456 **8 Claims**

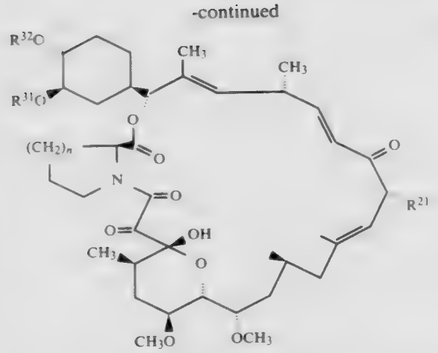
1. A method for producing immunosuppressive compounds of the formulae:



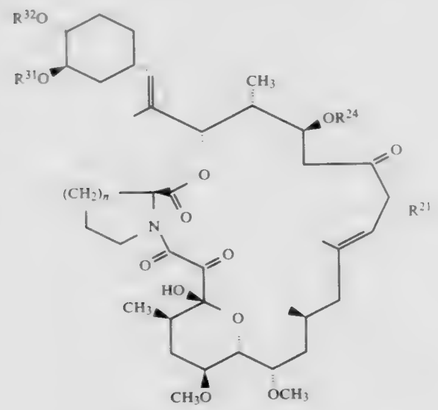
and

-continued

II



comprising the step of heating in organic solvent to a temperature of 130° to 150° C. for a time of from 1 to 48 hours a compound of the formulae:



wherein R^{21} is methyl, ethyl, propyl, or allyl; R^{24} and R^{32} are, independently, hydrogen or a protecting group for hydroxyl, R^{31} is hydrogen, methyl, or a protecting group for hydroxyl; and n is 1 or 2.

5,057,609

TRIPHENDIOXAZINE DYESTUFFS

Horst Jäger, Leverkusen, and Joachim Wolff, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

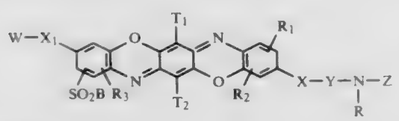
Filed Jun. 20, 1989, Ser. No. 369,441

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1988, 3822850

Int. Cl.[5] C07D *498/02*

U.S. Cl. 544—75 **7 Claims**

1. Triphendioxazine dyestuffs of the formula



in which

B is $-CH=CH_2$ or $-CH_2CH_2V$

V is a detachable group selected from the group consisting of OSO_3H, Cl, S_2O_3H, $OCOCH_3$, OPO_3H_2, and

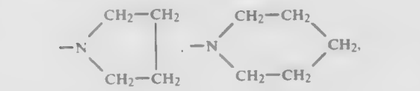
R is H, C_1–C_4-alkyl, or C_1–C_4-alkyl which is substituted by a substituent selected from the group consisting of OH, OCH_3, COOH, SO_3H, and OSO_3H,

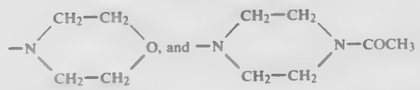
Z is a fibre-reactive radical,

T_1 and T_2 independently represent H, Cl, Br, C_1–C_4-alkoxy, C_1–C_4-alkyl, phenyl or phenoxy, or phenyl or phenoxy which are substituted by a substituent selected from the group consisting of Cl, CH_3, C_2H_5, OCH_3, and OC_2H_5,

X and X_1 independently represent O, S, or NM",

R" represents hydrogen or C_1–C_4-alkyl, or, if Y denotes a substituted or unsubstituted divalent aliphatic radical; then R" together with R also represents alkylene, or, if W denotes an aliphatic radical, then R" together with W also represents a ring selected from the group consisting of





Y represents a divalent aliphatic hydrocarbyl radical, araliphatic hydrocarbyl radical, cycloaliphatic hydrocarbyl raical or aromatic hydrocarbyl radical, which is unsubstituted or substituted by a substituent selected from the group consisting of SO_3H, OSO_3H, COOH, CH_3, OCH_3 and phenyl, the aliphatic portion of the radicals being uninterrupted or interrupted by a bridging group selected from O, S, NH, N($COCH_3$), and phenylene,

W represents H, a divalent aliphatic hydrocarbyl radical, araliphatic hydrocarbyl radical, cycloaliphatic hydrocarbyl radical or aromatic hydrocarbyl radical, which is unsubstituted or substituted by a substituent selected from the group consisting of SO_3H, OSO_3H, COOH, CH_3, OCH_3 and Cl, the aliphatic portion of the radicals being uninterrupted or interrupted by a bridging group selected from O, S, and NH,

R_1 is a water-solubilizing group, or is a sulphomoyl group, which is unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl, and phenyl, which are, in turn, further unsubstituted or substituted by a water-solubilizing group, or is a disulphimido group SO_2N-HSO_2R_4, or is a sulphone group $—SO_2R_4$,

R_4 is C_1–C_4-alkyl or phenyl or C_1–C_4-alkyl or phenyl which is substituted by methyl or chlorine, and

R_2 and R_3 are H, C_1–C_4-alkyl, C_1–C_4-alkoxy, carboxyl, F, Cl, or Br,

the radicals SO_2B and R_1 each being in the o-position relative to the substituents $—X_1$-W or —X—Y—NR—Z.

5,057,610

COMPOSITIONS STABILIZED WITH SUBSTITUTED AMINO CARBAMATES

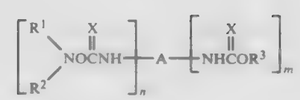
Stephen D. Pastor, Yonkers, N.Y.; Edward T. Hessell, Norwalk, Conn., and Ramanathan Ravichandran, Yonkers, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 855,662, Apr. 25, 1986, Pat. No. 4,758,614. This application Apr. 25, 1988, Ser. No. 185,579

Int. Cl.[5] C07D *251/00;* **C07C** *333/00, 261/00*

U.S. Cl. 544—196 **11 Claims**

1. A compound of the formula



wherein

n is 1 to 3;

m is 0 to 2;

n+m is 2 or 3;

R^1 and R^2 are independently hydrogen, alkyl of 1 to 36 carbon atoms, said alkyl substituted by halogen, alkoxyalkyl of 2 to 6 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 36 carbon atoms;

R^3 is alkyl of 1 to 18 carbon atoms;

X is oxygen or sulfur;

A, when n+m=2, is alkylene of 1 to 12 carbon atoms, alkylidene of 2 to 12 carbon atoms, cycloalkylene of 6 to 10 carbon atoms, (C_1–C_4)alkyl-substituted hexahydrobenzylene, arylene of 6 to 10 carbon atoms, or 4,4'-alkylidenediphenyl; and

A, when n+m=3, is alkanetriyl of 3 to 12 carbon atoms or tris(C_2–C_6 alkylene)isocyanurate.

5,057,611

BENZOYLPIPERIDINES

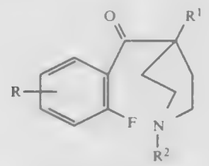
Raymond W. Kosley, Jr., Bridgewater, N.J., and Bernhard Seuring, Hofheim, Fed. Rep. of Germany, assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation of Ser. No. 917,886, Oct. 14, 1986, abandoned, which is a division of Ser. No. 725,853, Apr. 22, 1986, Pat. No. 4,654,336. This application Feb. 1, 1990, Ser. No. 473,517

Int. Cl.[5] C07D *211/44, 211/52, 211/06*

U.S. Cl. 546—216 **6 Claims**

1. A compound of the formula



wherein R is hydrogen, halogen or loweralkyl; R^1 is, halogen or hydroxy; R^2 is hydrogen or a group of the formula COR^3 wherein R^3 is loweralkyl; an optical or geometric isomer, or a salt thereof.

5,057,612

N,N'-DIHALOIMIDAZOLIDIN-4-ONES

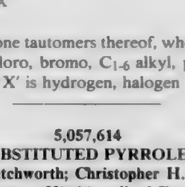
Shelby D. Worley; Techen Tsao, both of Auburn, and Delbert E. Williams, Waverly, all of Ala., assignors to Auburn Research Foundation, Auburn, Ala.

Filed Jan. 22, 1990, Ser. No. 467,929

Int. Cl.[5] C07C *233/20*

U.S. Cl. 548—301 **31 Claims**

1. N,N'-dihaloimidazolidin-4-one and N-haloimidazolidin-4-one represented by the graphic formula:



wherein X and X' are each halogen selected from the group consisting of chlorine and bromine, or one may be hydrogen while the other is halogen selected from the group chlorine and bromine; R_1, R_2, R_3, and R_4 are each selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, phenyl, and substituted phenyl, or R_1, R_2 and/or R_3, R_4 may represent spiro-substitution selected from the group consisting of pentamethylene and tetramethylene, and mixtures thereof; provided that not more than one of the substituents R_1–R_4 is hydrogen and provided that when X is chlorine and X' is hydrogen, that not more than three of the groups R_1–R_4 are methyl.

5,057,613

THIONE DOPAMINE BETA HYDROXYLASE INHIBITORS

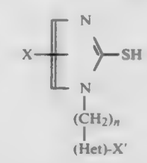
Donald P. Matthews; James R. McCarthy, both of West Chester, Ohio; Jeffrey P. Whitten, Zionsville, and Robert J. Brosersma, Jr., Noblesville, both of Ind., assignors to Merrell Dow Pharmaceuticals, Cincinnati, Ohio

Continuation-in-part of Ser. No. 860,263, May 6, 1986, abandoned. This application Oct. 27, 1987, Ser. No. 114,168

Int. Cl.[5] C07D *409/06*

U.S. Cl. 548—318 **3 Claims**

1. A compound of the formula:



including the 2-thione tautomers thereof, wherein n is 2, 3 or 4; X is hydrogen, chloro, bromo, $C_{1\text{-}6}$ alkyl, phenyl or benzyl; Het is thienyl; and X' is hydrogen, halogen or $C_{1\text{-}6}$ alkyl.

5,057,614

SUBSTITUTED PYRROLES

Peter D. Davis, Letchworth; Christopher H. Hill, Knebworth, and Geoffrey Lawton, Hitchin, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 6, 1989, Ser. No. 307,104

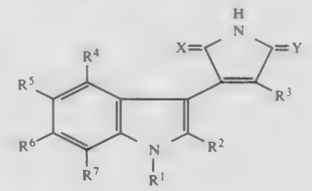
Claims priority, application United Kingdom, Feb. 10, 1988, 8803048; Nov. 25, 1988, 8827565

Int. Cl.[5] C07D *209/02*

U.S. Cl. 548—466 **12 Claims**

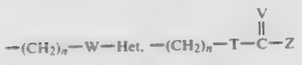
1. A compound of the formula

I



wherein

R^1 signifies hydrogen, alkyl, aryl, aralkyl, alkoxyalkyl, hydroxyalkyl, haloalkyl, aminoalkyl, monoalkylaminoalkyl, dialkylaminoalkyl, trialkylaminoalkyl, aminoalkylaminoalkyl, azidoalkyl, acylaminoalkyl, acylthioalkyl, alkylsulphonylaminoalkyl, arylsulphonylaminoalkyl, mercaptoalkyl, alkylthioalkyl, alkylsulphinylalkyl, alkylsulphonylalkyl, alkylsulphonyloxyalkyl, alkylcarbonyloxyalkyl, cyanoalkyl, amidinoalkyl, isothiocyanatoalkyl, glucopyranosyl, carboxyalkyl, alkoxycarbonylalkyl, aminocarbonylalkyl, hydroxyalkylthioalkyl, mercaptoalkylthioalkyl, arylthioalkyl or carboxyalkylthioalkyl or a group of the formula



(a) (b)



(c) (d)

in which

Het signifies a heterocyclyl group.

W signifies NH, S or a bond,

T signifies NH or S

V signifies O, S, NH. NNO_2, NCN or $CHNO_2$,

Z signifies alkylthio, amino, monoalkylamino or dialkylamino.

Im signifies 1-imidazolyl,

Ar signifies aryl, and

n stands for 2–6;

R^2 signifies hydrogen, alkyl, aralkyl, alkoxyalkyl, hydroxyalkyl, haloalkyl, aminoalkyl, monoalkylaminoalkyl, dialkylaminoalkyl, acylaminoalkyl, alkylsulphonylaminoalkyl, arylsulphonylaminoalkyl, mercaptoalkyl, alkylthioalkyl, carboxyalkyl, alkoxycarbonylalkyl, aminocarbonylalkyl, alkylthio or alkylsulphinyl;

R^3 signifies a carbocyclic or heterocyclic aromatic group;

R^4, R^5, R^6 and R^7 each independently signify hydrogen, halogen, alkyl, hydroxy, alkoxy, aryloxy, haloalkyl, nitro, amino, acylamino, monoalkylamino, dialkylamino, alkylthio, alkylsulphinyl or alkylsulphonyl;

and one of X and Y signifies O and the other signifies O, S, (H,OH) or (H,H);

with the proviso that R^1 has a significant different from hydrogen when R^2 signifies hydrogen, R^3 signifies 3-indolyl or 6-hydroxy-3-indolyl, R^4, R^5 and R^7 each signify hydrogen, R^6 signifies hydrogen or hydroxy and X and Y both signify O and when R^2 signifies hydrogen, R^3 signifies 3-indolyl, R^4, R^5, R^6 and R^7 each signify hydrogen, X signifies (H,H) and Y signifies O; or a pharmaceutically acceptable salt of acidic compounds of formula I with bases and of basic compounds of formula I with acids.

5,057,615

PROCESS FOR PURIFYING TRYPTOPHAN

Yoshitsugu Kono; Hiroyuki Itoh; Ryoichi Taneda, and Tsugio Watanabe, all of Omuta, Japan, assignors to Mitsui Toatsu Chamicals, Inc., Tokyo, Japan

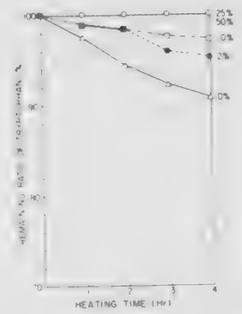
Filed Jun. 26, 1990, Ser. No. 544,227

Claims priority, application Japan, Jun. 27, 1989, 1-162688

Int. Cl.[5] **C07D** *209/20*

U.S. Cl. 548—497 **3 Claims**

1. A process for purifying tryptophan without involving neutralization with an alkali, said process comprising the steps of dissolving tryptophan in water-containing acetic acid and



the presence of heat and cooling the resulting tryptophan solution to obtain recrystallized tryptophan.

5,057,616

PODOPHYLLOTOXIN PURIFICATION PROCESS

Rex A. Jennings, Holland, Mich., and Jay F. Stearns, Santa Rosa, Calif., assignors to Oclassen Pharmaceuticals, Inc., San Rafael, Calif.

Filed Sep. 29, 1989, Ser. No. 415,170

Int. Cl.[5] **C07D** *307/77*

U.S. Cl. 549—298 **25 Claims**

1. In a process for purifying podophyllotoxin from an impure solution in a solvent comprising an aliphatic halohydrocarbon wherein the podophyllotoxin is recovered as a solid from the solution, the improvement comprising suspending a high surface area solid inorganic adsorbent with the impure solution to adsorb impurities and removing the solid adsorbent and then recovering the podophyllotoxin as a purified material.

12. A process for isolating podophyllotoxin from podophyllum resin comprising:

a. dissolving podophyllum resin in an organic solvent to yield an impure solution,

b. adding a cosolvent to the impure solution to cause precipitation of a first stage podophyllotoxin product,

c. recovering the precipitated first stage podophyllotoxin product,

d. dissolving the first stage podophyllotoxin product in an organic liquid phase comprising an aliphatic halohydrocarbon to yield a first stage podophyllotoxin product solution,

e. suspending in the first stage podophyllotoxin product solution the solid phase to yield a second stage solution of purified podophyllotoxin,

f. recovering purified podophyllotoxin from the second stage solution as a solid.

5,057,617

DISPERSANT ADDITIVES PREPARED FROM MONOEPOXY THIOLS

Jacob Emert, Brooklyn, N.Y., and Robert D. Lundberg, Bridgewater, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Nov. 7, 1988, Ser. No. 268,400

Int. Cl.[5] **C07D** *303/12, 303/32*

U.S. Cl. 548—557 **14 Claims**

1. An oil soluble adduct useful as an oil additive to oleaginous fluids comprising a polymer-substituted epoxy thioester adduct of:

(A) a long chain hydrocarbyl polymer substituted with at least one of C_4 to C_{10} monounsaturated dicarboxylic acid producing moieties and C_3 to C_{10} monounsaturated monocarboxylic acid producing moieties, said substituted polymer formed by reacting an olefin polymer of C_2 to C_{10} monoolefin having a number average molecular weight of about 700 to 5,000 and a monounsaturated carboxylic reactant comprising at least one member selected form the group consisting of (i) monounsaturated C_4 to C_{10} dicarboxylic acids; (ii) anhydride derivatives of (i); (iii) C_1 to C_5 alcohol derived mono- or di-ester derivatives of (i); (iv) monounsaturated C_4 to C_{10} monocarboxylic acids wherein the carbon-carbon double bond is conjugated to the carboxy group; and (v) C_1 to C_5 alcohol derived monoester derivatives of (iv); and

(B) a monoepoxy thiol.

5,057,618

COMPLEX COMPOUNDS CONTAINING SULFONATED PHENYL PHOSPHANES

Wolfgang A. Herrmann; Jurgen Kulpe, both of Freising; Jürgen Kellner, Unterschleissheim, and Herbert Riepl, Dachau, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 444,556

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1988, 3840600; Jun. 29, 1989, 3921295

Int. Cl.[5] **C07F** *9/04, 1/00, 15/00, 13/00*

U.S. Cl. 556—21 **7 Claims**

1. A complex compound comprising a central atom selected from the group consisting of elements of Groups IB, VIIA, and VIIIA of the IUPAC Periodic Table, said compound containing a trisodium salt of tris(m-sulfophenyl)-phosphine as a complex ligand, excluding a reaction product of bis(1,5cyclooctadiene)nickel with said salt, said compound being of the formula

$$L_w{}^1L_x{}^2M_y[P(C_6H_4\text{—m-}SO_3Na)_3]_z$$

wherein L^1 and L^2 are individually ligands which, in addition to said salt, are bound to said central atom, M is said central atom, w, x, y, and z are integers, w and x are 0 to 7y, y is 1 to 6, and z is $\leqq 4y$.

5,057,619

SILOXANE INIFERTER COMPOUNDS, BLOCK COPOLYMERS MADE THEREWITH AND A METHOD OF MAKING THE BLOCK COPOLYMERS

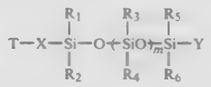
Ramesh C. Kumar; Milton H. Andrus, Jr., and Mieczyslaw H. Mazurek, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation of Ser. No. 393,550, Aug. 14, 1989, abandoned. This application Feb. 26, 1991, Ser. No. 660,979

Int. Cl.[5] **C07C** *51/16, 315/00;* **C08G** *77/04, 77/22*

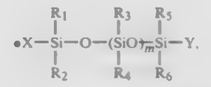
U.S. Cl. 556—420 **8 Claims**

1. A siloxane iniferter compound represented by the general formula



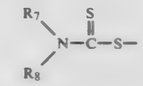
wherein

T and X are organic groups selected so that the T-X bond is capable of dissociating upon being subjected to a radiant energy source to form a terminator free radical of the formula T and an initiator free radical of the formula



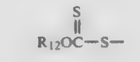
said initiator free radical being sufficiently reactive to initiate free radical polymerization of free radically polymerizable monomer and said terminator free radical being insufficiently capable of initiating free radical polymerization of free radically polymerizable monomer but capable of rejoining with said initiator free radical or a free radical polymer segment free radically polymerized with said initiator free radical;

wherein T is



wherein R_7 and R_8 are monovalent moieties selected from the group consisting of hydrogen, $C_{1\text{-}4}$ alkyl, $C_{1\text{-}4}$ fluoroalkyl including at least one fluorine atom, aryl and substituted aryl, R_7 and R_8 being the same or different and being selected so that they will not prevent said initiator free radical from initiating free radical polymerization or the combining of said terminator free radical with said initiator free radical or a polymer free radical segment including said initiator free radical; or

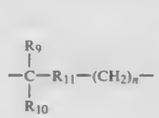
wherein T is



wherein R_{12} is a monovelent moiety selected from the group consisting of hydrogen, $C_{1\text{-}4}$ alkyl, aryl and substituted aryl;

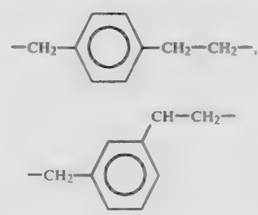
wherein -X- is a divalent species selected from the group consisting of alkylene, arylalkene, and arylene; or

wherein -X- is a divalent species having the general formula



wherein R_9 and R_{10} can be the same or different and are selected from the group consisting of hydrogen and $C_{1\text{-}6}$ alkyl, R_{11} is a divalent species selected from the group consisting of $C_{1\text{-}7}$ alkylene and phenylene, and n is an integer of at least 1; or

wherein X is selected from the group consisting of



and mixtures thereof;

R_1, R_2, R_5 and R_6 are monovalent moieties selected from the group consisting of hydrogen, $C_{1\text{-}4}$ alkyl, $C_{1\text{-}4}$ alkoxy and aryl which can be the same or different;

R_3 and R_4 are monovalent moieties which can be the same or different selected from the group consisting of hydrogen, $C_{1\text{-}4}$ alkyl, $C_{1\text{-}4}$ fluoroalkyl including at least one fluorine atom and aryl;

R_1, R_2, R_3, R_4, R_5 and R_6 are selected so that they do not prevent said initiator free radical from initiating free radi-

cal polymerization or the combining of said terminator free radical with said initiator free radical or a polymer free radical segment including said initiator free radical;
Y is selected from the group consisting of -X-T and -Z wherein X and T are defined above and Z is an organic moiety that will not dissociate to form free radicals when subjected to said energy source; and
m is an integer of at least 10.

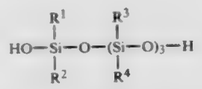
5,057,620

PROCESS FOR PRODUCING LINEAR ORGANOTETRASILOXANE HAVING A SILANOL RADICAL AT BOTH ENDS THEREOF

Yoshio Inoue, and Naoki Omura, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

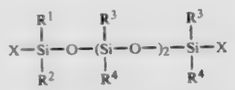
Filed Aug. 7, 1990, Ser. No. 563,330
Claims priority, application Japan, Aug. 8, 1989, 1-205082
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—459 **7 Claims**

1. A process for producing an organotetrasiloxane having the general formula (I):



(I)

wherein R^1, R^2, R^3 and R^4, which may be identical or different, each represent a univalent substituted or unsubstituted hydrocarbon radical of 1 to 10 carbon atoms, which process comprises the step of hydrolyzing a dihalotetrasiloxane having the general formula (II):



(II)

wherein R^1, R^2, R^3 and R^4 are as defined above and X represents a halogen atom, in the presence of an organic compound having at least one epoxy radical.

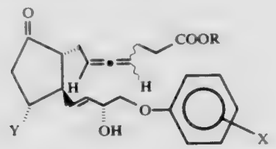
5,057,621

11-SUBSTITUTED-16-PHENOXY AND 16-SUBSTITUTED PHENOXY-PROSTATRIENOIC ACID DERIVATIVES

Gary F. Cooper, Portola Valley; John H. Fried, Palo Alto, and L. David Waterbury, San Mateo, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 18,766, Mar. 27, 1987, which is a continuation of Ser. No. 635,970, Jul. 31, 1984, abandoned.
This application Apr. 16, 1987, Ser. No. 39,560
Int. Cl.[5] C07C *177/00*
U.S. Cl. 560—53 **13 Claims**

1. A compound of the formula



or a stereoisomer or a mixture thereof, wherein:
R is hydrogen, lower alkyl or a pharmaceutically acceptable, non-toxic salt of the compound wherein R is hydrogen;
X is hydrogen, halo, trifluoromethyl, lower alkyl or lower alkoxy;
Y is



where Z is hydrogen, methyl, methoxy or trifluoromethyl; and
the wavy lines represent the α or β configuration with the proviso that when one wavy line is α the other is β.

5,057,622

S-ALKYLTHIOPROPIONIC ACIDS AND DERIVATIVES

Daniel R. Chisholm, Warwick, N.Y.; Michael H. Fisch, Wayne, N.J.; Mark E. Flanagan, Ft. Collins, Colo., and Richard D. Peveler, Woodcliff Lake, N.J., assignors to Witco Corporation, New York, N.Y.

Continuation of Ser. No. 394,547, Aug. 16, 1989, abandoned.
This application Dec. 10, 1990, Ser. No. 627,542
Int. Cl.[5] C07C *319/14, 323/52*
U.S. Cl. 560—152 **13 Claims**

1. A process for preparing a 3-alkylthiopropionic acid wherein the alkyl group thereof has between about 4 and about 20 carbon atoms, comprising:
(a) providing an alkyl mercaptan of the formula RSH, wherein R is an alkyl group having from about 4 to about 20 carbon atoms;
(b) reacting said alkyl mercaptan by a direct addition reaction with a charge of an acrylic component selected from the group consisting of acrylic acid or an alkali metal acrylate and blends thereof, said reacting step being carried out in an alkaline reaction solution and in the presence of an aqueous alkaline catalyst that is a strong base which is present in the reaction solution at a molar concentration in excess of that of any acrylic acid in the reaction solution, wherein said reaction solution is at a pH of at least about 11; and
(c) acidifying the reaction solution and recovering a water-insoluble phase as 3-alkylthiopropionic acid.

9. A process for preparing a pentaerythritol tetraester of a 3-alkylthiopropionic acid wherein the alkyl group thereof has between about 4 and about 20 carbon atoms, comprising:
(a) providing an alkyl mercaptan of the formula RSH, wherein R is an alkyl group having from about 4 to about 20 carbon atoms;
(b) reacting said alkyl mercaptan by a direct addition reaction with acrylic acid or an alkali metal acrylate, said reacting step being carried out in an alkaline reaction solution and in the presence of an aqueous alkaline catalyst that is a strong base which is present in the reaction solution at a molar concentration in excess of that of any acrylic acid in the reaction solution, wherein said reaction solution is at a pH of at least about 11;
(c) acidifying the reaction solution and recovering a water-insoluble phase as -b 3-alkylthiopropionic acid;
(d) reacting said 3-alkylthiopropionic acid with pentaerythritol in order to form a pentaerythritol tetraester of 3-alkylthiopropionic acid product; and
(e) solvent refining said pentaerythritol tetraester 3-alkylthiopropionic acid product with a blend of organic solvents selected from the group consisting of a blend of lower aliphatic alcohols and a blend of a lower aliphatic alcohol with a lower aliphatic ester of a lower aliphatic carboxylic acid.

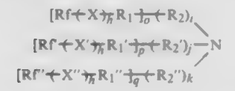
5,057,623

ORGANIC FLUORINE COMPOUND

Yoshiaki Kai, Neyagawa, and Takashi Suzuki, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1989, Ser. No. 420,876
Claims priority, application Japan, Oct. 14, 1988, 63-260079; Oct. 14, 1988, 63-260080; Nov. 29, 1988, 63-301151; Nov. 29, 1988, 63-301152; Dec. 9, 1988, 63-312298; Dec. 9, 1988, 63-312306
Int. Cl.[5] C07C *211/08, 211/07*
U.S. Cl. 564—82 **1 Claim**

1. An organic fluorine compound represented by the general formula



wherein Rf, Rf', and Rf'' respectively denote a fluoroalkyl terminal group of a carbon number of 3 or more, a fluoroalkenyl terminal group of a carbon number of 3 or more, or a fluoroaryl terminal group; X, X', and X'' respectively denote a linking group selected from —O—, —CON(R_3)— and —SO_2N(R_3)—, (wherein R_3 denote hydrogen atom, methyl group or ethyl group); h denotes 0 or 1; R_1, R_1' and R_1'' respectively denote an aliphatic alkylene group or a phenylene group having an alkylene group, and R_2, R_2' and R_2'' denote hydrogen atom, an aryl group or an aliphatic alkyl group; at least one group of said R_1, R_1' and R_1'', R_2, R_2' and R_2'' having a total carbon number of 10 or more; and o, p, q, i, j and k each denote 0 or 1, with the proviso that o+i=p+j=q+k=1 and o+p+q≧1.

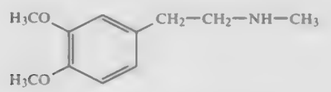
5,057,624

PROCESS FOR THE SYNTHESIS OF THE N-METHYL-3,4-DIMETHOXYPHENYLETHYLAMINE

Vincenzo Cannata; Giancarlo Tamerlani, and Graziano Zagnoni, all of Bologna, Italy, assignors to ALFA Wassermann S.p.A., Prescara, Italy

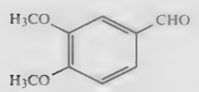
Filed Mar. 30, 1990, Ser. No. 502,038
Claims priority, application Italy, Mar. 31, 1989, 19959 A/89
Int. Cl.[5] C07C *209/28*
U.S. Cl. 564—375 **7 Claims**

1. A new chemical process for the synthesis of the N-methyl-3,4-dimethoxyphenylethylamine of formula



I

which comprises:
a) reacting the 3,4-dimethoxybenzaldehyde of formula



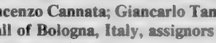
II

with an α-haloester of formula



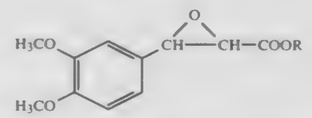
VI

wherein X represents a halogen atom and R represents an alkyl radical, straight or branched, containing from 1 to 6 carbon atoms, in the presence of an alkaline agent selected among an alcoholate of an alkaline metal of formula



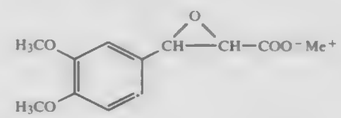
VII

wherein Me^+ represents the cation of an alkaline metal, and R_1 is an alkyl radical, straight or branched, containing from 1 to 6 carbon atoms, sodium amide or sodium hydride, optionally in the presence of a solvent selected between an aromatic hydrocarbon and an alcohol, straight or branched, containing from 1 to 6 carbon atoms, or mixtures thereof, for a period of time comprised between about 1 and about 6 hours at a temperature comprised between about 0° C. and about 40° C.
b) submitting the resulting glycidic ester of formula



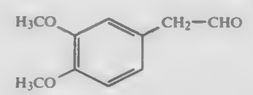
III

wherein R has the above seen meaning, to an alkaline hydrolysis at a temperature comprised between about 10° C. and about 40° C. for a period of time comprised between about 6 and about 24 hours, to obtain an alkaline salt of the epoxyacid of formula



IV

wherein Me^+ has the above seen meaning;
c) decarboxylating the compound of formula IV in acidic ambient, at a temperature comprised between about 10° C. and about 40° C., for a period of time comprised between about 1 and about 8 hours, to obtain the 3,4-dimethoxybenzeneacetaldehyde of formula



V

d) treating said aldehyde of formula V first with monomethylamine at a temperature comprised between about −10° C. and about 40° C., for a period of time comprised between about 1 and about 6 hours, and subsequently with sodium borohydride at a temperature comprised between about −10° C. and about 80° C., for a period of time comprised between about 2 and about 8 hours, to obtain the N-methyl-3,4-dimethoxyphenylethylamine of formula I.

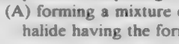
5,057,625

SELECTIVE ALKYLATION PROCESS

Kryn G. Ihrman, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 20, 1990, Ser. No. 481,173
Int. Cl.[5] C07C *45/00*
U.S. Cl. 564—409 **16 Claims**

1. A process for making mono-tert-butyl-toluenediamine, said process comprising:
(A) forming a mixture of toluenediamine and an aluminum halide having the formula



(I)

or

$R_3Al_2X_3$ (II)

or mixtures thereof,

wherein R is an alkyl group containing 1-10 carbon atoms, X is chlorine or bromine and n is 1 or 2 wherein the ratio of moles of toluenediamine:equivalents of Al:equivalents of X is in the range of 5-20:1.0:1-3,

(B) reacting said mixture with isobutylene at a temperature of about 150°-220° C. and a pressure of about 500-3000 psig until the mono-tert-butyl toluenediamine content of the reaction mixture is substantially maximized, and

(C) recovering said mono-tert-butyl toluenediamine.

5,057,626

DIFLUOROKETONES FROM DIFLUOROACYLSILANES

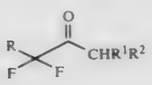
Peter A. McCarthy, Pawcatuck, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 369,161, Jun. 21, 1989, Pat. No. 4,996,345. This application Oct. 1, 1990, Ser. No. 590,890

Int. Cl.[5] C07C *45/42*

U.S. Cl. 568—322 **20 Claims**

1. A process for the preparation of an alpha,alpha-difluoroketone of the formula

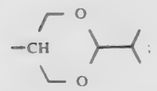


(I)

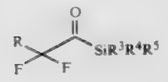
wherein

R is (C_1-C_{20})alkyl or (C_2-C_{20})alkenyl, or one of said groups substituted by the phenyl or (C_1-C_{20})alkoxy; and

R^1 and R^2 are each independently hydrogen, (C_1-C_{20})alkyl, (C_2-C_{20})alkenyl, phenyl or (C_7-C_{20})phenylalkyl; or R^1 is hydrogen and R^2 is

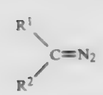


which comprises reacting an alpha,alpha-difluoroacylsilane of the formula



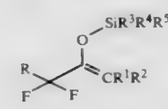
(III)

wherein R^3, R^4 and R^5 are each independently (C_1-C_{20})alkyl, (C_2-C_{20})alkenyl, phenyl or (C_7-C_{20})phenylalkyl; with a diazo compound of the formula



(III)

in a reaction-inert solvent at a temperature below the boiling point of the diazo compound and in the range of about −20° C. to 100° C. to form an intermediate silyl ether of the formula



(IV)

followed by hydrolysis in a reaction inert solvent with an aqueous acid to yield said alpha,alpha-difluoroketone of the formula (I).

5,057,627

ALKOXYLATION PROCESS CATALYZED BY PHOSPHATE SALTS OF THE RARE EARTH ELEMENTS

Charles L. Edwards, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 226,164, Jul. 29, 1988, abandoned, and a continuation-in-part of Ser. No. 204,329, Jun. 9, 1988, abandoned, and a continuation-in-part of Ser. No. 215,653, Jul. 6, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 482,379

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C07C *41/03*

U.S. Cl. 568—618 **45 Claims**

1. A process for the preparation of alkylene oxide adducts of active hydrogen containing organic compounds, which comprises contacting and reacting an alkylene oxide reactant comprising one or more vicinal alkylene oxides with an active hydrogen containing reactant comprising one or more active hydrogen containing organic compounds, in the presence of a catalytically effective amount of one or more of the phosphate salts of the rare earth elements having a formula LPO_4, $L_3(PO_4)_2$ or $L_3(PO_4)_4$, wherein L represents a rare earth element.

5,057,628

ALKOXYLATION PROCESS CATALYZED BY COMPOUNDS OF THE RARE EARTH ELEMENTS

Charles L. Edwards, Houston, and Richard A. Kemp, Stafford, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 215,653, Jul. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 204,329, Jun. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 134,272, Dec. 17, 1987, abandoned. This application Feb. 20, 1990, Ser. No. 482,378

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C07C *41/03*

U.S. Cl. 568—618 **58 Claims**

1. A process for the preparation of alkylene oxide adducts of active hydrogen containing organic compounds, which comprises contacting and reacting reactants consisting of (a) one or more alkylene oxides selected from the group consisting of ethylene oxide and propylene oxide and (b) one or more active hydrogen containing organic compounds, in the presence of a catalytically effective amount of one or more mono-metallic salts of one or more of the rare earth elements.

5,057,629

PROCESS FOR REDUCING ISOPROPYL ALCOHOL IN DIISOPROPYL ETHER

Zaida Diaz, and David I. Saletan, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 345,583, May 1, 1989, abandoned. This application May 31, 1990, Ser. No. 531,273

Int. Cl.[5] C07C *41/36*

U.S. Cl. 568—699 **6 Claims**

1. Process for reducing contaminating amounts of isopropyl alcohol from diisopropyl ether which process comprises

contacting diisopropyl ether containing up to about 10% by weight of isopropyl alcohol in a contact zone at a temperature from about 10° to about 30° C. and a pressure from about 1 to about 3 atmospheres with a bed of strong acid type cation exchange resin, said resin being in the hydrogen ion form and having a surface area of at least about 40 square meters per gram, to sorb said alcohol,

passing diisopropyl ether having reduced contaminant from said contact zone, and

intermittently regenerating said resins with water to displace the isopropyl alcohol from the resin, followed by removal of said water from said resin at an elevated temperature up to about 80° C.

5,057,630

SYNTHESIS OF CYCLOPENTENE DERIVATIVES

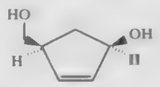
John W. Lackey, Durham; Robert A. Mook, Jr., and John J. Partridge, both of Chapel Hill, all of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Apr. 6, 1990, Ser. No. 505,861

Int. Cl.[5] C07C *35/06, 69/96*

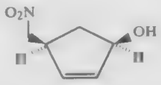
U.S. Cl. 568—838 **14 Claims**

1. A method for preparing the compound of formula (III),



(III)

comprising reacting a compound of formula (XII)



(XII)

sequentially with a strong base, ozone and an alkali metal or alkaline earth metal hydride reducing agent to yield the compound of formula (III).

5,057,631

PROCESS FOR CONTINUOUS PRODUCTION OF OCTA-2,7-DIEN-1-OL

Yasuo Tokitoh, and Noriaki Yoshimura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 181,163, Apr. 13, 1988, abandoned. This application Feb. 12, 1990, Ser. No. 478,744

Claims priority, application Japan, Apr. 16, 1987, 62-94668; Apr. 16, 1987, 62-94669

Int. Cl.[5] C07C *29/44, 29/36, 33/02*

U.S. Cl. 568—909.5 **18 Claims**

1. A process for the continuous production of octa-2,7-dien-1-ol, which comprises:

reacting butadiene continuously with water in a solvent which is capable of dissolving both reactants in the presence of a palladium catalyst with the mole ratio of butadiene to octa-2,7-dien-1-ol in the reaction mixture being maintained at 0.6 or more while steady state conditions are maintained.

5,057,632

PROCESS FOR PREPARING DINITROTOLUENE

Peter C. Imm, Sulphur, and Allan B. Quakenbush, Lake Charles, both of La., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 22, 1990, Ser. No. 600,785

Int. Cl.[5] C07C *7/06*

U.S. Cl. 568—934 **7 Claims**

1. A continuous process for the production of dinitrotoluene comprising the following steps:

(a) reacting toluene with dilute nitric acid to produce a product mixture containing mononitrotoluene, water and unreacted nitric acid;

(b) then separating the mononitrotoluene from the mixture;

(c) then reacting the mononitrotoluene recovered from step (b) with concentrated nitric acid to produce a product mixture containing dinitrotoluene, water and unreacted nitric acid;

(d) then separating a portion of the nitric acid from the mixture for recycle to step (c);

(e) then adding water to the mixture of water, unreacted nitric acid and dinitrotoluene;

(f) then separating the dinitrotoluene from the mixture by crystallization;

(g) then recycling the remaining dilute nitric acid from step (f) to step (a).

5,057,633

SYNTHESIS OF PERFLUOROALKYL BROMIDES

Gilles Drivon, Saint-Martin-En-Haut; Pierre Durual, Vernaison, and Elie Ghenassia, Grenoble, all of France, assignors to Societe Atochem, Puteaux, France

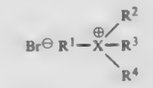
Filed Nov. 21, 1990, Ser. No. 617,128

Claims priority, application France, Nov. 24, 1989, 89 15522

Int. Cl.[5] C07C *17/22, 19/08*

U.S. Cl. 570—142 **12 Claims**

1. Process for the preparation of perfluoroalkyl bromides, consisting of reacting a perfluoroalkanesulphonyl chloride with an at least equimolar amount of a compound of formula:



(I)

in which X represents a nitrogen or phosphorus atom and the symbols R^1, R^2, R^3 and R^4, which may be identical or different, and each represent an optionally substituted hydrocarbon radical, one of these symbols R^1 to R^4 can be a hydrogen atom.

5,057,634

MULTISTEP SYNTHESIS OF HEXAFLUOROPROPYLENE

James L. Webster, Parkersburg, W. Va.; Elrey L. McCann, Mendenhall, Pa.; Douglas W. Bruhnke, Landenberg, Pa.; Jan J. Lerou, Chadds Ford, Pa.; William H. Manogue, Newark, Del.; Leo E. Manzer, Wilmington, Del.; Steven H. Swearingen, Wilmington, Del.; Swiatoslaw Trofimenko, Wilmington, Del., and Cristobal Bonifaz, Conway, Mass., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1989, Ser. No. 452,402

Int. Cl.[5] C07C *17/00, 17/08*

U.S. Cl. 570—157 **6 Claims**

1. A process for the preparation of hexafluoropropylene comprising, under effective reaction conditions:

(a) chlorofluorinating a member of the group consisting of propane, propylene and partially halogenated C-3 acyclic hydrocarbons, by contacting with hydrogen fluoride and chlorine in a hydrogen fluoride/chlorine ratio of about from 1 to 7 in the presence of a solid metal-containing catalyst, to produce saturated perhalogenated C-3 chlorofluorocarbons;

(b) hydrofluorinating any chlorofluorocarbons of (a) that are not $CF_3CFClCF_3$ to produce $CF_3CFClCF_3$ by contacting with hydrogen fluoride in the presence of a catalyst; and

(c) hydrodehalogenating said $CF_3CFClCF_3$ to hexafluoropropylene in the presence of hydrogen and a catalyst.

5,057,635

PROCESS FOR ISOMERIZING OLEFINS IN GASOLINE STREAMS

Gregory J. Gajda, East White Plains, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Feb. 8, 1990, Ser. No. 477,016

Int. Cl.[5] C07C *5/03, 5/23, 5/22*

U.S. Cl. 585—259 **18 Claims**

1. A process for the isomerization of isomerizable olefins in a feed stream consisting essentially of an olefin-containing gasoline-range stream produced by a catalytic cracking pro-

cess and containing highly unsaturated hydrocarbons comprising the steps of:

(a) selectively reducing the content of highly unsaturated hydrocarbons in the feed stream to produce a stable olefinic stream, and

(b) contacting the stable olefinic stream at olefin-isomerization conditions with an isomerization catalyst containing at least one medium-pore molecular sieve to produce an isomerized product having a ratio of branched to unbranched olefins of at least about 2.

5,057,636

PROCESS FOR RECOVERING N-HEXENES FROM A MIXTURE OF C_6 OLEFIN ISOMERS BY OLIGOMERIZING THE BRANCHED-CHAIN C_6 OLEFIN ISOMERS IN THE MIXTURE USING A MODERATE STRENGTH ACID CATLYST

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 22, 1990, Ser. No. 542,299

Int. Cl.[5] C07C *1/00*

U.S. Cl. 585—324 **23 Claims**

1. A process for the recovery of n-hexenes from a mixture comprising n-hexenes and at least one branched-chain C_6 olefin isomer, said process comprising:

A. contacting a mixture comprising n-hexenes and at least one branched-chain C_6 olefin isomer with a moderate strength acid catalyst capable of oligomerizing the branched-chain C_6 olefin but not the n-hexenes under reaction conditions and for a time sufficient to cause oligomerization of the branched-chain C_6 olefin; and

B. recovering the n-hexenes from the product of step A.

5,057,637

PROCESS FOR PRODUCING C_5 TO C_{18} STRAIGHT CHAIN α-OLEFINS FROM THE CORRESPONDING INTERNAL OLEFINS

William A. Sweeney, Larkspur, and Gar L. Woo, Tiburon, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 22, 1990, Ser. No. 542,387

Int. Cl.[5] C07C *1/00*

U.S. Cl. 585—324 **11 Claims**

1. A process for making C_5 to C_{18} straight chain α-olefins comprising:

A. reacting an olefinic reactant comprising a C_5 to C_{18} straight chain internal olefin or mixture of C_5 to C_{18} straight chain α-olefins and C_5 to C_{18} straight chain internal olefins with an electrophilic compound containing reactive hydrogen under conditions which permit the electrophilic compound containing reactive hydrogen to add to carbon-carbon double bonds; and

B. cracking the product of step A to produce a mixture of C_5 to C_{18} straight chain α-olefins and C_5 to C_{18} straight chain internal olefins containing a quantity of C_5 to C_{18} straight chain α-olefins greater than that in the olefinic reactant employed in step A.

5,057,638

PROCESS FOR MAKING 1-HEXENE FROM 1-BUTENE

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 22, 1990, Ser. No. 542,386

Int. Cl.[5] C07C *1/00*

U.S. Cl. 585—324 **18 Claims**

1. A process for making 1-hexene comprising:

A. metathesizing 1-butene to a mixture comprising 3-hexene and ethylene;

B. separating the 3-hexene from the product of step A;

C. reacting the 3-hexene with an electrophilic compound containing reactive hydrogen under acid catalyzed conditions which permit the electrophilic compound containing reactive hydrogen to add to carbon-carbon double bonds; and

D. cracking the product of step C to produce a mixture of n-hexenes containing 1-hexene.

5,057,639

DIMERIZATION PROCESS WITH SUPPORTED ELEMENTAL SODIUM CATALYST

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 380,574, Jul. 17, 1989, Pat. No. 4,988,658. This application Nov. 13, 1990, Ser. No. 611,816

Int. Cl.[5] C07C *2/24*

U.S. Cl. 585—516 **12 Claims**

1. A process for the dimerization of at least one dimerizable olefin which comprises contacting said olefin under dimerization conditions with a catalyst system comprising:

(a) elemental sodium; and

(b) a support comprising potassium carbonate within the range of about 15 to about 65 weight percent, sodium carbonate within the range of about 5 to about 25 weight percent, and at least one aluminum-containing compound within the range of about 20 to about 80 weight percent, all based on the total weight of the support;

wherein component (a) is supported on component (b).

5,057,640

PROPYLENE OLIGOMERIZATION OVER SILICA MODIFIED ZEOLITES

Clarence D. Chang, Princeton, and Paul G. Rodewald, Rocky Hill, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Jan. 2, 1991, Ser. No. 636,857

Int. Cl.[5] C07C *2/02*

U.S. Cl. 585—533 **11 Claims**

1. A process for oligomerizing propylene, said process comprising contacting propylene with a catalyst under sufficient oligomerization conditions, said catalyst comprising an aluminosilicate zeolite having a silica to alumina molar ratio of at least about 12, a Constraint Index within the approximate range of 1 to 12 and containing interspersed within the interior cystalline structure thereof added amorphous silica in an amount of at least about 0.1 weight percent based on the weight of the zeolite.

5,057,641

HIGH PRESSURE FACILITATED MEMBRANES FOR SELECTIVE SEPARATION AND PROCESS FOR THE USE THEREOF

Ronald J. Valus, Valley View; Reza Eshraghi, Hudson; Alexander E. Velikoff, Bay Village, and James C. Davis, Hudson, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 9, 1990, Ser. No. 506,721

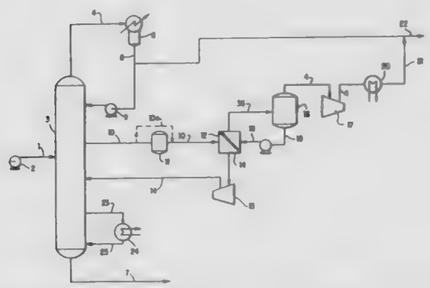
Int. Cl.[5] C07C *7/144*

U.S. Cl. 585—818 **25 Claims**

1. A process for the selective separation of at least one component of a gaseous feed stream comprising passing said feed stream containing said component through a separation unit, said separation unit operating at a transmembrane pressure of from about 100 psig to about 1000 psig, and containing a porous membrane having a feed side and a permeate side, and a pore size of from about 10 Angstroms to about 200 Angstroms, and having disposed in the pores of said porous membrane a facilitator liquid comprising a carrier dissolved in a suitable solvent, including:

a) dissolving said component in said facilitator liquid on said feed side of said porous membrane at the feed gas/membrane interface;

b) forming a component-carrier complex;



c) diffusing said complex to said permeate side of said porous membrane; and

d) releasing said component from said carrier.

5,057,642

REMOVAL OF BASIC IMPURITIES FROM OLEFIN STREAMS

Marvin M. Johnson; Gerhard P. Nowack, both of Bartlesville, Okla., and Mary E. Rezac, Austin, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 18, 1991, Ser. No. 687,343

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—823 **17 Claims**

1. A process for at least partially removing at least one basic impurity selected from the group consisting of ammonia, alkyl amines, cycloalkyl amines and aryl amines from a feed which comprises at least one monoolefin, comprising the step of contacting said feed with a hydrated acidic clay, under such contacting conditions as to obtain a product in which the concentration of said at least one basic impurity is lower than in said feed and the concentration of said at least one monoolefin is essentially the same as in said feed.

5,057,643

ZEOLITIC PARA-XYLENE SEPARATION WITH TETRALIN DERIVATIVES AS HEAVY DESORBENT

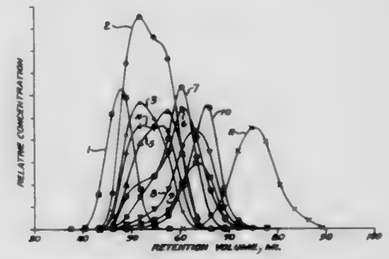
Hermann A. Zinnen, Evanston, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 197,787, May 22, 1988, Pat. No. 4,886,930. This application Oct. 16, 1989, Ser. No. 422,369

The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—828 **12 Claims**



1. A process for separating p-xylene from a mixture comprising p-xylene, at least about 0.1% C_9 aromatic hydrocarbons and at least one other isomer of xylene which process comprises contacting said mixture with an adsorbent crystalline aluminosilicate containing a Group IA or IIA metal ion at exchangeable cationic sites at adsorption conditions to effect the selective adsorption of said p-xylene by said adsorbent and to produce a raffinate stream comprising the less strongly adsorbed C_9 hydrocarbons and said other xylene isomers and contacting said adsorbent with a desorbent comprising an alkyl-, or dialkyl-substituted 1,2,3,4-tetrahydronaphthalene at desorption conditions to effect the removal of p-xylene from said adsorbent as an extract stream.

5,057,644

PROCESS FOR THE PURIFICATION OF ALPHA OLEFINS

Jiang-Jen Lin; Randall T. De Pue, and Keith M. Kreitman, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 31, 1990, Ser. No. 606,372

Int. Cl.[5] C07C *7/152, 7/00, 6/00*

U.S. Cl. 585—850 **20 Claims**

1. A process for the purification of an alpha olefinic feedstock contaminated with internal olefins which process comprises contacting said alpha olefinic feedstock with ethylene in the presence of a catalyst comprising an organoborane promoted, alkali-metal doped molybdenum oxide and/or rhenium oxide supported on an inorganic oxide support.

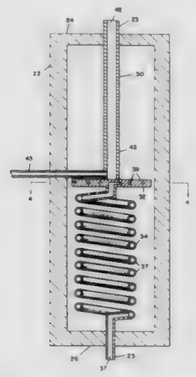
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5,057,645

LOW HEAT LOSS LEAD INTERFACE FOR CRYOGENIC DEVICES

Mohamed A. Hilal, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 17, 1989, Ser. No. 422,642
Int. Cl.[5] H01B *12/00*
U.S. Cl. 174—15.4 12 Claims



1. An interface between a normal conducting lead and a superconducting lead comprising:

(a) a normal conducting lead segment electrically continuous with the normal conducting lead;

(b) a superconducting lead segment electrically continuous with the superconducting lead;

(c) an intermediate segment at which the normal conducting lead segment and the superconducting lead segment are electrically joined;

(d) an insulating dewar surrounding the superconducting lead segment and from which the superconducting lead segment exits;

(e) means for allowing the superconducting lead segment and the intermediate segment to be cooled below the superconductor critical temperature of the superconducting lead segment including a channel in and extended through the superconducting lead segment and in communication with a channel in the intermediate segment, whereby a coolant may be passed through the channel to cool the superconducting lead segment and the intermediate segment.

5,057,646

FOLDED RIBBON CABLE ASSEMBLY HAVING INTEGRAL SHIELDING

Edward L. Nichols, Annapolis, and Gray L. Stirk, Graysonville, both of Md., assignors to Smartouse Limited Partnership, Upper Marlboro, Md.

Filed Mar. 21, 1990, Ser. No. 496,979
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 25 Claims

1. A ribbon cable assembly for conducting AC power and digital data signals comprising:

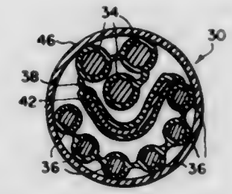
means for conducting AC power and digital data signals comprising:

a plurality of spaced, parallel, wire conductors arranged in a row, said conductors comprising at least three adjacent power conductors adaptable for conducting said AC power and at least two adjacent data conductors adaptable for conducting said digital data signals,

an insulating material for holding together and electrically insulating each of said plurality of conductors, and

means for shielding electromagnetic interference generated by AC power transmitted along said power conductors from said data conductors, said shielding means comprising an electrically conductive material arranged parallel to said plurality of wire conductors; and

an outer jacket enclosing said conducting means said conducting means being folded inside said outer jacket so that said shielding means is disposed substantially between said power conductors and said data conductors to maximize the electromagnetic interference shielding of said shielding means.

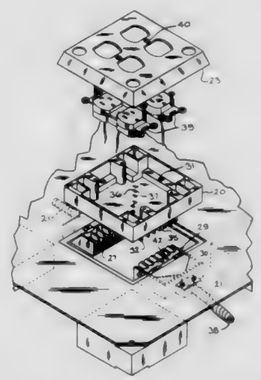


5,057,647

LOW RISE FLOORING STRUCTURE

Emil A. Bogden, 1357 W. Sixth Ave., Columbus, Ohio 43212, and Jeffrey S. Bogden, 285 Galloway Rd., Galloway, Ohio 43119

Continuation-in-part of Ser. No. 187,042, Apr. 27, 1988, abandoned. This application Dec. 4, 1989, Ser. No. 445,434
Int. Cl.[5] H02G *3/28*
U.S. Cl. 174—48 14 Claims



1. A false flooring structure for use in placement over an existing base structure demanding a low profile raised flooring structure comprising:

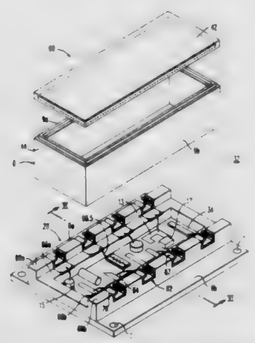
a plurality of deck units engaged together to form said flooring structure and means for interlocking said engaged deck units;

each of said deck units including a flooring panel of determined thin cross-section and a plurality of fibrous pads for supporting said flooring panel placed in spaced relationship about said flooring panels, said fibrous pads having a total cross-sectional surface area engaged with said flooring panel sufficient to maintain structural rigidity of said flooring panel under a force bearing load at such portion of said panel not engaged with said fibrous pads and to maximize the height of the chase between said flooring panel and the base structure while maintaining the overall low profile of the flooring system;

each of said flooring panels including at least one knockout member structurally connected with said flooring panel to provide a load bearing surface, said knockout member

being removable from said flooring panel to provide an access opening to said chase;
a cable means positioned in said chase for carrying electrical and telecommunications and data processing signals; and
a distribution means for placement into said access opening and connecting to said cable means to provide for electrical and telecommunication and data processing accessibility above said false flooring structure.

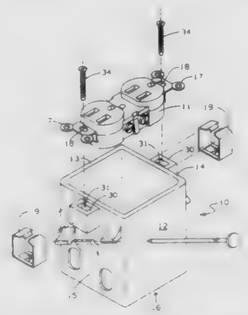
5,057,648
HIGH VOLTAGE HYBRID PACKAGE
David N. Blough, Linthicum, and Ngon B. Nguyen, Jessup, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 20, 1989, Ser. No. 439,053
Int. Cl.[5] H01L *23/02;* **H05K** *5/06*
U.S. Cl. 174—52.4 **22 Claims**



1. A package for a heat generating electrical circuit system, comprising:
a package housing including a sidewall structure having at least one sidewall substantially formed from an electrically insulative material and a plurality of feed-through means for providing electrical access to said electrical circuit system, wherein an electrical potential is present between at least two adjacent feed-through means, said insulative material of said sidewall structure eliminating unwanted arcing between adjacent feed-through means,
wherein said feed-through means includes a terminal connector that is connected to said circuit system,
wherein said feed-through means further includes a layer of hardenable material over said terminal connector for securing said terminal connector in said package housing and for hermetically sealing said package housing.

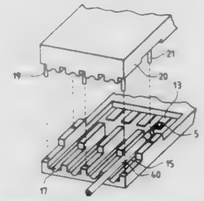
5,057,649
ELECTRICAL WIRING BOX
Gerard W. Ring, Rte. 1, Box 140A, Bryon, Minn. 55920
Filed Jan. 30, 1990, Ser. No. 472,113
Int. Cl.[5] H01R *13/502*
U.S. Cl. 174—53 **4 Claims**

1. In an electrical wiring box for mounting an electrical device therein by one or more screws, having opposed clip mounting brackets and one or more resilient screw-receiving clips, the improvement wherein each of said clips comprises:
(a) a base portion having an opening defined by a pair of downwardly disposed tabs; and
(b) a pair of inwardly extending top portions each having inner ends positioned adjacent one another; said inner ends being disposed downwardly and inwardly of said clip to define a screw-receiving space therebetween, said space



between said top portions being aligned with said opening in said base portion.

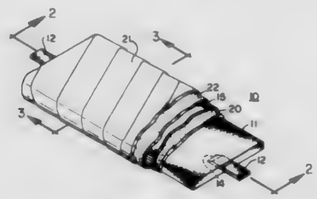
5,057,650
MOLDED CIRCUIT COMPONENT UNIT FOR CONNECTING LEAD WIRES
Kenichi Urushibata; Kiyoto Sugawara; Tatsuo Matsuda; Haruo Saen, all of Tochigi; Keiichi Kojima, Kanagawa; Syusaku Kawasaki, Osaka; Hiroshi Hatase, Osaka; Katsuya Saito, Osaka; Tetsuo Yumoto, Tokyo; Norio Yoshizawa, Tokyo, and Tooru Kanno, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka; Matsushita Electric Industrial Co., Ltd., Kadoma and Sankyo Kasei Co., Ltd., Tokyo, all of, Japan
Filed Aug. 2, 1990, Ser. No. 561,567
Claims priority, application Japan, Aug. 2, 1989, 1-91282; Aug. 2, 1989, 1-201022
Int. Cl.[5] H02G *15/113*
U.S. Cl. 174—88 R **12 Claims**



1. A molded electrical circuit connector for connecting to lead wires, the connector comprising:
a molded body having a plurality of fastening pin reception apertures, comprising:
a plurality of partition walls having positioning projections and defining a plurality of housing grooves, each groove formed by two adjacent partition walls and having a notch at a bottom portion thereof
the notches being positioned at front portions of the housing grooves; and
a plurality of metal lines, each line having connection terminals at ends thereof, the connection terminals being exposed at rear portions of the housing grooves, the metal lines being embedded in the molded body; and
a molded protective cover having a plurality of recesses corresponding to the plurality of positioning projections and a plurality of cover notches corresponding to the plurality of body notches, the molded protective cover including
a plurality of fastening pins corresponding to the plurality of fastening pin reception apertures,

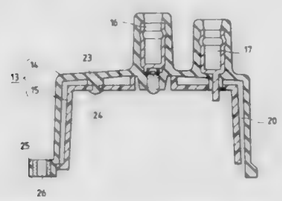
whereby the lead wires can be positioned in the grooves such that the lead wires can be attached to connection terminals and the molded protective cover can be attached to the molded body.

5,057,651
LIGHTWEIGHT ELECTROCONDUCTIVE WIRE
Henry F. Hope, and Stephen F. Hope, both c/o Hope Industries, Inc., Willow Grove, Pa. 19090
Filed Mar. 26, 1990, Ser. No. 498,725
Int. Cl.[5] H01B *7/00*
U.S. Cl. 174—107 **6 Claims**



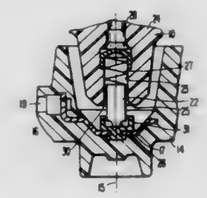
1. A lightweight wire which comprises
a core of lithium metal,
terminals secured to the ends of said core,
a first anhydrous adhesive coating in adhesive contact with said core,
a layer of moisture proof aluminum foil surrounding said core in adhesive contact with said adhesive,
a second anhydrous adhesive coating on said foil in adhesive contact therewith, and
a layer of insulating plastic surrounding said foil and in adhesive contact with said second layer of adhesive.

5,057,652
DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE
Ryoichi Koshida; Hiromitsu Nagae, both of Katsuta, and Takanori Satou, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 6, 1990, Ser. No. 578,203
Claims priority, application Japan, Sep. 14, 1989, 1-237244
Int. Cl.[5] H01H *19/00;* **F02P** *7/00*
U.S. Cl. 200—19 DC **5 Claims**



1. A distributor or an internal combusion engine comprising:
a housing;
a shaft rotatably mounted in said housing to rotate synchronously with the rotation of the internal combustion engine;
a distributor rotor supported on said shaft and including a rotor electrode means for distributing generated high voltage;
an outer distributor cap having first electrode means mounted therein and supplied with high voltage current and further electrode means mounted therein for supplying a distributed voltage from the rotor electrode means of the distributor rotor;
an inner distributor cap of an electrically insulating material nested inside of said outer cap so as to form a space between said outer distributor cap and said inner distributor cap when said inner distributor cap and said outer distributor cap are mounted on said housing, said space being defined between opposed surfaces of said outer distributor cap and outer surfaces of said inner distributor cap respectively defining an inner and outer surface of the outer distributor cap and the inner distributor cap, and
means for fixedly securing said outer distributor cap and said inner distributor cap to said housing.

5,057,653
HIGH-VOLTAGE DISTRIBUTOR FOR IGNITION SYSTEMS OF INTERNAL COMBUSTION ENGINES
Heinz Haug, Korntal-Münchingen, and Matthias Perner, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE89/00318, § 371 Date Jan. 10, 1990, § 102(e) Date Jan. 10, 1990, PCT Pub. No. WO90/00228, PCT Pub. Date Jan. 11, 1990
PCT Filed May 20, 1989, Ser. No. 459,701
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3821966
Int. Cl.[5] H01H *19/00;* **F02P** *7/02;* **H01R** *39/60*
U.S. Cl. 200—19 R **4 Claims**



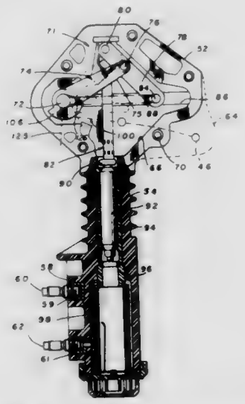
1. A high-voltage distributor for an ignition system of an internal combustion engine having a camshaft, said high-voltage distributor comprising a distributor cap formed of insulating material; a center electrode supported in said distributor cap and having a longitudinal axis and a substantially axially displaceable pin; a plurality of circumferentially equidistantly spaced secondary electrodes concentric with said center electrode and fixedly supported in said distributor cap; a distributor rotor having an axis of rotation substantially coaxial with the longitudinal axis of said center electrode and a rotor electrode, said distributor rotor rotating synchronously with the camshaft of the internal combustion engine for establishing a consecutive electrical connection between said center electrode and each of said secondary electrodes by said rotor electrode; a cylindrical guide supported in said distributor cap for guiding said substantially axially displaceable pin upon axial displacement thereof into engagement with said rotor electrode; and a compression spring supported in said cylindrical guide for biasing said substantially axially displaceable pin into engagement with said rotor electrode; said cylindrical guide having a pin emergence opening and a funnel-shaped widening in an area of said pin emergence opening for enabling lateral displacement of said substantially axially displaceable pin when it is subjected to bending forces acting thereon, and said rotor electrode having guide edges in a contact region of said rotor electrode with said substantially axially displaceable pin to provide for a substantially axial displacement of said pin in the contact region.

5,057,654

INTERRUPTING UNIT WITH MOLDED HOUSING AND SHUNT CURRENT PATH THERETHROUGH

Peter J. Meyer, Evanston; Leonard V. Chabala, Maywood, and Edward J. Rogers, Chicago, all of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Nov. 18, 1988, Ser. No. 273,399
Int. Cl.[5] H01H *9/38, 33/12*
U.S. Cl. 200—146 R 5 Claims



1. An interrupting unit for an electrical power distribution switch comprising:

an insulative housing; and

means for selectively providing an electrically conductive path therethrough comprising:

an operating mechanism disposed within said insulative housing and including a first movable member operable over a predetermined operating path;

contact means disposed within said insulating housing, defining open and closed position, and including a stationary contact and a movable contact, said movable contact being driven by said operating mechanism;

first conductive means communicating with the exterior of said housing being disposed within said insulative housing, and providing electrical connection to said stationary contact, said operating mechanism and said contact means including second conductive means for electrically connecting said first movable member to said movable contact; and

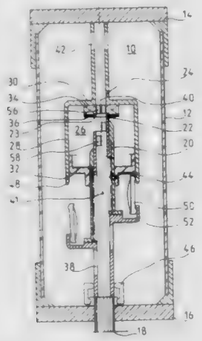
stationary conductive-path-defining means for communicating with the exterior of said housing and providing electrical connection to said first movable member as said first movable member moves over said predetermined operating path, said stationary conductive-path-defining means including a contact portion having resilient characteristics for biasing said contact portion against said first movable member, said stationary conductive-path-defining means further comprising a conductive element that is integrally molded with said housing, said insulative housing comprising a first generally planar housing portion and a second housing portion that are arranged to interfit in a predetermined manner, said second housing portion of said insulative housing carrying said operating mechanism and said contact means, said first generally planar housing portion carrying said stationary conductive-path-defining means, said first generally planar housing including an overhanging section that extends beyond said second housing portion, said stationary conductive-path-defining means communicating with the exterior of said first generally planar housing portion within said overhanging section.

5,057,655

ELECTRICAL CIRCUIT BREAKER WITH SELF-EXTINGUISHING EXPANSION AND INSULATING GAS

Jean-Pierre Kersusan, Grenoble; Hugues Filiputti, Monestier de Clermont; Victor Pennucci, Seyssinet Pariset, and Peter Malkin, Grenoble, all of France, assignors to Merlin Gerin, Meylan, France

Filed Mar. 15, 1990, Ser. No. 493,768
Claims priority, application France, Mar. 17, 1989, 89 03642
Int. Cl.[5] H01H *33/915, 9/44, 33/18*
U.S. Cl. 200—148 B 7 Claims



1. A self-extinguishing expansion electrical circuit breaker including a sealed enclosure filled with a high dielectric strength insulating gas, and housing one or more pole-units, each of the pole units comprising:

a first extinguishing chamber disposed within the enclosure for storing insulating gas;

a pair of arcing contacts disposed in said first chamber which are axially translatable with respect to each other and define a breaking gap therebetween when separated in which an arc is formed;

a tubular gas outflow duct arranged inside at least one of said contacts for communicating said first chamber with a second chamber formed by a remaining volume of the enclosure disposed around said first chamber; and

guiding means arranged on an interior of the duct for opposing Vortex-effect swirling gas flow therethrough.

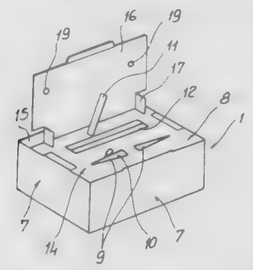
5,057,656

SAFETY CONTAINER FOR USED SYRINGES, PROVIDED WITH MEANS FOR REMOVING THE NEEDLES FROM THE SYRINGE BODY

Maria A. Galber, Via Biancamano, 14, 20052 Monza, Milano, Italy

Filed Nov. 10, 1988, Ser. No. 269,989
Claims priority, application Italy, Nov. 11, 1987, 22602 A/87
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—366 2 Claims

1. A safety container for used syringes comprising a box like body having a top surface, a bottom surface and side surfaces, a tiltable cover covering said top surface and openings through said top surface and cover, said box-like body being made by folding a flat die-cut rigid material element including a plurality of performed folding lines, wherein said openings of said top surface comprise at least a triangular opening therein a needle tip portion of a syringe can be engaged for separating said needle tip portion from said syringe and at least a rectangular opening therethrough a syringe body can pass to be introduced into said container, whereas said openings through said cover comprise at least a round hole adapted to circumferentially restrain a needle covering element so as to easily unthread a syringe needle from a said syringe body.

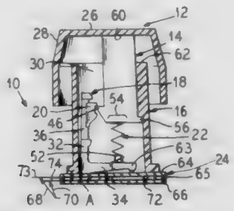


5,057,657

ELECTRICAL SWITCH ACTUATOR MECHANISM

Vedran Skulic, 7056 N. Monon, Chicago, Ill. 60646

Filed Jul. 23, 1990, Ser. No. 556,328
Int. Cl.[5] H01H *13/30*
U.S. Cl. 200—517 17 Claims



1. A low profile keyboard switch having tactile and/or audible feedback in operation and adapted for use in combination with a membrane switch array, comprising:

a housing mounted on top of a membrane switch structure and having an upright opening therein;

a plunger slidably positioned in said housing and having an inner end within said housing and an outer end extending out of said opening;

an actuator pivotally mounted within said housing and having a vertical arm section and a horizontal leg section;

spring means seated upon said horizontal leg section and thrusting against said inner end for urging said outer end of the plunger outwardly in said opening;

stop means for limiting outward movement of said plunger in a rest condition of the switch;

a slide member disposed slidably on said arm section in a space between the arm section and said plunger;

spaced upper and lower stops on said arm section for limiting reciprocating movements of said slide member;

cooperating cam surfaces on said plunger and said slide member preventing spring urged pivoting of said actuator at said rest condition of the switch;

limited inward movement of said plunger compressing said spring means and causing said cooperating cam surfaces to force said slide member to engage said lower stop, and continued inward movement of said plunger then causing disengagement of said cooperating cam surfaces with sensible feedback and freeing of said actuator to pivot under a compression force of said spring means and application of a switch closing force by said horizontal leg section of said actuator to the underlying switch structure, and further sensible feedback; and

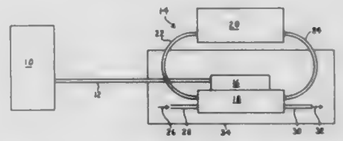
thereafter outward movement of said plunger by said compressed spring means effecting reengagement of said cooperating cam surfaces on said plunger and said slide member and thrusting of said member toward said upper stop and returning of said actuator pivotally to said rest condition of the switch.

5,057,658

APPARATUS FOR OIL FILTRATION AND RECIRCULATION

Daniel A. Cano, Boise, and James L. Buchanan, Mountain Home, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 27, 1989, Ser. No. 315,852
Int. Cl.[5] B01D *35/18*
U.S. Cl. 210—168 4 Claims



1. In a vacuum pump having a quantity of vacuum oil for removing airborne particulates from a process gas, an apparatus for filtering and recirculating the vacuum oil, comprising:

a. an inlet conduit coupled to the vacuum pump for receiving vacuum oil from the vacuum pump;

b. a first value in the inlet conduit for adding make-up vacuum oil to the vacuum oil;

c. a plurality of filter means coupled to the inlet conduit for removing particulate contamination from the vacuum oil;

d. an outlet conduit for receiving filtered vacuum oil from the filter means and for directing the filtered vacuum oil back into the vacuum pump;

e. a second valve in the outlet conduit for removing a quantity of the filtered vacuum oil;

f. pump means for circulating the vacuum oil from the inlet conduit through the filter means and through the outlet conduit; and

g. an enclosure for the vacuum pump for retaining heat within the vacuum oil;

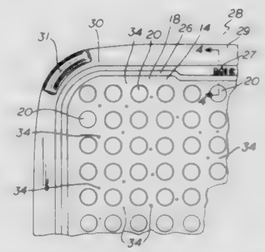
whereby vacuum oil may be recirculated from the vacuum pump through the filter means and then back into the vacuum pump.

5,057,659

MICROWAVE HEATING UTENSIL WITH PARTICULATE SUSCEPTOR LAYER

Marvin Schneider, Bryn Mawr, Pa., and Louis A. Bianco, Tuckahoe, N.Y., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed Feb. 4, 1986, Ser. No. 826,087
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E 25 Claims



1. A microwave heating utensil comprising a substantially

microwave-transparent body and a particulate susceptor material fixed to said body, said susceptor material consisting essentially of at least one metallic oxide and at least one metal in the reduced state, said susceptor material being disposed in a susceptor layer on a surface of said body, there being interstices between particles of said susceptor material, at least some of said interstices being unfilled.

5,057,660

METHOD OF MAKING MICROWAVE HEATING APPARATUS

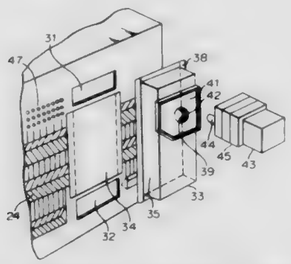
Katsuyoshi Yamada, and Tsutomu Arai, both of Hanazono, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Mitsubishi Electric Home Appliance Co., Ltd., Saitama, both of, Japan

Division of Ser. No. 450,250, Dec. 13, 1989. This application Nov. 20, 1990, Ser. No. 615,969

Claims priority, application Japan, Dec. 14, 1988, 63-313675; May 17, 1989, 1-123174

Int. Cl.[5] H05B *6/70*

U.S. Cl. 219—10.55 M **8 Claims**



1. A method of forming a waveguide of a microwave heating apparatus having a heating chamber including two openings in communication with an exterior of the heating chamber, the method comprising the steps of:

covering an exterior surface of the heating chamber extending between the two openings with a continuous guide plate, separate form the exterior surface of the heating chamber, without obstructing the two openings;

forming a guide box having a substantially prism body and an open major side extending between longitudinal ends of the guide box;

providing the guide box with a substantially round opening in a major surface thereof opposite to the open major side of the guide box for receiving a microwave oscillating antenna for emitting radiowaves of a given wavelength; and

attaching the guide box to the exterior surface of the heating chamber so as to enclose the two openings of the heating chamber with the open major side of the guide box facing the guide plate for a waveguide having at least a pair of power feed ports.

5,057,661

PROCESS FOR TERMINATING INSULATED CONDUCTOR WIRES

Alvin C. Banner, Montgomery County, Ohio, assignor to Globe Products Inc., Huber Heights, Ohio

Filed Oct. 26, 1989, Ser. No. 428,057

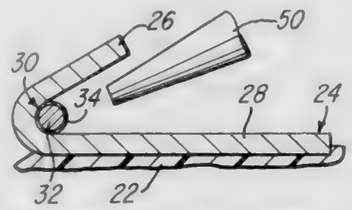
Int. Cl.[5] B23K *11/00*

U.S. Cl. 219—56.22 **8 Claims**

1. A method for terminating an insulated conductor wire to a terminal engaged by a stretch of said conductor wire, said method comprising the steps of:

removing a section of the insulating coating from said stretch of said conductor wire by directing an energized source of electromagnetic energy to said stretch of conductor wire while it is engaged with said terminal thereby to inductively heat said stretch of conductor wire to the temperature at which said section of the insulating coating is evaporated;

discontinuing the directing of energy to said stretch of conductor wire by said source; and



fusing said terminal to said section of conductor wire and said commutator body by heating the terminal body and the wire with a fusing electrode sufficient to soften the same while simultaneously applying pressure to the terminal body and the conductor wire to fuse them together.

5,057,662

ELECTROEROSION MACHINE FEATURING PHOTOELECTRIC SENSING MEANS FOR MEASURING WIRE ELECTRODE DEFLECTION

Ivano Beltrami, Via Mariana 1a, Muralto, Switzerland CH-6600; Peter Wehrli, Casa Maestretti, Verscio, Switzerland CH-6653 , and Axel Bertholds, Saars, Neuchâtel, Switzerland CH-2000

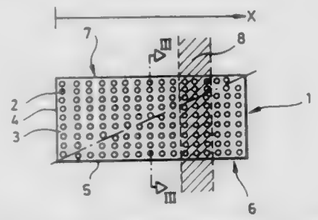
PCT No. PCT/CH88/00185, § 371 Date May 26, 1989, § 102(e) Date May 26, 1989, PCT Pub. No. WO89/03270, PCT Pub. Date Apr. 20, 1989

PCT Filed Oct. 11, 1988, Ser. No. 362,398

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1987, 3734677

Int. Cl.[5] B23H *7/02*

U.S. Cl. 219—69.12 **26 Claims**



1. A spark erosion machine comprising a travelling wire electrode (9); an optical measuring means to measure the deflection of the travelling wire electrode, the measuring means having a light source (10); a sensor assembly (1,11) for measuring a light beam (32) from the light source (10) and shaded by the travelling wire electrode (9); and an evaluation circuit (12) which is connected electrically to the sensor assembly, characterized in that the sensor assembly (1,11) absorbs a light quantity depending in one-to-one correspondence on the relative position of the travelling wire electrode (9), and further characterized in that an effective, light absorbing surface of the sensor assembly (1) has a strictly monotonically changing geometrical configuration.

5,057,663

AUTOMATIC WIRE EXTENSION METHOD

Hiroshi Kinoshita, Omuta, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

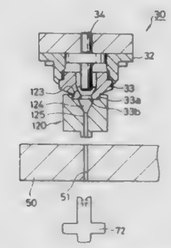
PCT No. PCT/JP89/01019, § 371 Date May 10, 1990, § 102(e) Date May 10, 1990, PCT Pub. No. WO90/03862, PCT Pub. Date Apr. 19, 1990

PCT Filed Oct. 4, 1989, Ser. No. 459,801

Claims priority, application Japan, Oct. 8, 1988, 63-252983

Int. Cl.[5] B23H *7/10*

U.S. Cl. 219—69.12 **8 Claims**



1. An automatic wire extension method, comprising the steps of:

(a) attaching a first nozzle to an upper wire guide when carrying out normal wire extension through a workpiece with a first initial hole having a diameter suited to normal electric discharge machining, and attaching a second nozzle, having a predetermined nozzle hole diameter smaller than the diameter of a second initial hole, to the upper wire guide when carrying out precision wire extension through the second initial hole whose diameter is smaller than that of the first initial hole and suited to precision electric discharge machining;

(b) positioning the first nozzle at a first predetermined distance from the workpiece when carrying out normal wire extension, and positioning the second nozzle at a second predetermined distance smaller than the first predetermined distance, from the workpiece when carrying out precision wire extension; and

(c) feeding a wire electrode through the upper wire guide to the workpiece and then to a lower wire guide while injecting a machining fluid from the first nozzle toward the workpiece when carrying out normal wire extension, and effecting said wire electrode feeding, with the injection of the machining fluid being interrupted, when carrying out precision wire extension.

5,057,664

METHOD AND APPARATUS FOR LASER PROCESSING A TARGET MATERIAL TO PROVIDE A UNIFORMLY SMOOTH, CONTINUOUS TRIM PROFILE

Joel C. Johnson, Lake Oswego; Ho W. Lo, Portland; David Rowley, and Terri J. Irland, both of Aloha, all of Oreg., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Filed Oct. 20, 1989, Ser. No. 424,802

Int. Cl.[5] B23K *26/00*

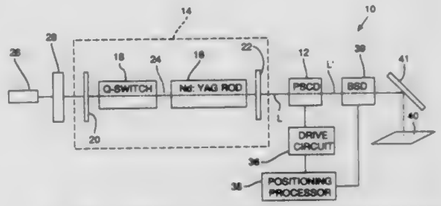
U.S. Cl. 219—121.69 **20 Claims**

1. A method of laser trimming a target material to provide a uniform trim profile, comprising:

directing a light beam emitted by a compact diode-pumped solid-state laser toward the surface of a thin-film target material;

moving the light beam and the target material relative to each other in a direction along the surface of the thin-film target material to form a trimming path; and

imparting to the light beam a polarization state with a polarization component of sufficient magnitude in the direction of the trimming path to substantially prevent the formation of a prominent striation pattern along the trimming path of the thin-film target material and thereby provide a uniform trim profile.



5,057,665

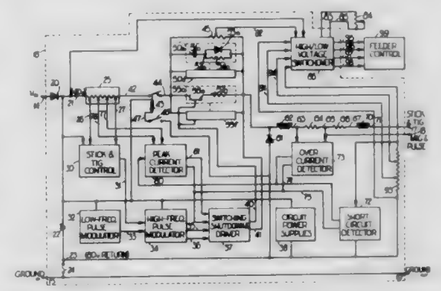
ELECTRONIC ARC WELDING STATION WITH INPUT VOLTAGE COMPENSATION

Malcolm T. Gilliland, 310 Pine Valley Rd., Marietta, Ga. 30067

Continuation of Ser. No. 118,613, Nov. 9, 1987, Pat. No. 4,887,046, which is a division of Ser. No. 791,224, Oct. 25, 1985, Pat. No. 4,716,274. This application Dec. 7, 1989, Ser. No. 447,527

Int. Cl.[5] B23K *9/10*

U.S. Cl. 219—130.21 **20 Claims**



1. An electronic welder, comprising:

a power supply for providing operating voltage and operating current;

a voltage divider responsive to said operating voltage for providing a first signal;

control means for providing a second signal;

a pulsewidth modulator for providing a third signal having a pulsewidth responsive to said first signal and said second signal; and

output means responsive to said third signal for providing welding power to a welding operation.

5,057,666

ANTI-FROST SYSTEM FOR MOTOR VEHICLE WINDSHIELD UTILIZING SATURATED STEAM CALCULATOR

Hirohisa Takada, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1989, Ser. No. 425,958

Claims priority, application Japan, Oct. 29, 1988, 63-275847

Int. Cl.[5] H05B *1/02*; **B60L** *1/02*

U.S. Cl. 219—203 **5 Claims**

1. An anti-frost system for a windshield of a motor vehicle,

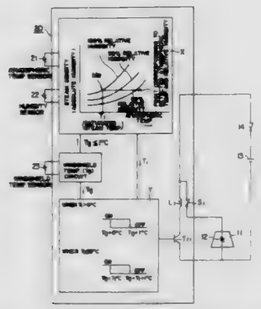
VOL 1131 ISS 3 OC 15 1991 UMI

having heating means incorporated in the windshield, and power supply means for supplying electric power to the heating means, said system comprising:

an atmospheric temperature sensor for sensing the atmospheric temperature and for delivering an atmospheric temperature signal indicative thereof;

a relative humidity sensor for sensing the atmospheric relative humidity and for delivering an atmospheric relative humidity signal indicative thereof;

a windshield temperature sensor for sensing the temperature of the windshield and for delivering a windshield temperature signal;



calculator means responsive to said atmospheric temperature signal and said atmospheric relative humidity signal for calculating a saturated steam temperature depending on a map representing steam density -temperature relations and for producing a saturated steam temperature signal; and

operation means responsive to said saturated steam temperature signal and said windshield temperature signal for determining frosting conditions on the windshield and for supplying the electric power to the heating means in accordance with determination of said frosting conditions, so as to accurately prevent the frosting on the windshield without respect to the location of the humidity sensor.

5,057,667

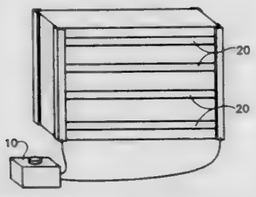
AQUARIUM HEATER

Mark Bell, 29852 Quail Hollow La., Valley Center, Calif. 92082, and Robert S. Alpert, 2227 Summerhill Dr., Encinitas, Calif. 92024

Filed Jul. 26, 1989, Ser. No. 385,076

Int. Cl.[5] H05B *3/86*

U.S. Cl. 392—458 **1 Claim**



1. In combination apparatus for heating water in a rectangular aquarium, said aquarium having a multiplicity of viewing windows wherein at least of one said viewing window comprises

a deposition of transparent conductive coating on the surface of said viewing window,

a sheet of insulating film to cover, protect, and isolate said deposition of transparent conductive film,

an electrode means connected to said deposition for applying an electric voltage across separated points of said coating,

a power supply means supplying potential to said electrode means,

a floating DC voltage output in the range of 10 to 50 volts emanating from said power supply which is converted from 110 volt AC line current,

so that the power dissipated in said deposition on said viewing window heats said water and is operated at an electrical potential so as not to constitute a shock hazard.

5,057,668

DEVICE FOR THE IMPLEMENTATION OF A CURING PROCESS AT A SEMICONDUCTOR WAFER AND METHOD FOR CURING A SEMICONDUCTOR WAFER

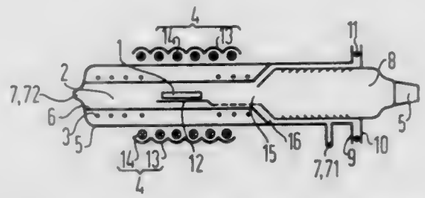
Spyridon Gisdakis, Munich, and Joachim Hoepfner, Planegg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 15, 1988, Ser. No. 232,237

' Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3731148

Int. Cl.[5] F27B *5/14;* **H05B** *3/62*

U.S. Cl. 219—390 **20 Claims**



1. A device for curing a semiconductor wafer comprising:

a reaction tube for receiving a semiconductor wafer, the reaction tube including at least one gas admission port and at least one gas discharge port;

a heater for heating the reaction tube to a base temperature;

a selective heater for heating the semiconductor wafer to a curing temperature;

an auxiliary tube coupled to the reaction tube;

at least one gas admission port provided at a point of attachment between the auxiliary tube and the reaction tube; and

the point of attachment between the auxiliary tube and the reaction tube being so constructed and arranged that counter-current flow of inert gas is generated through the gas admission port, said flow conducting decomposition products arising in the reaction tube into the auxiliary tube.

5,057,669

TEMPERATURE CONTROL CIRCUIT HAVING SERIES CONNECTED FAIL-SAFE CONTROL

Richard L. Dennison, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1990, Ser. No. 471,380

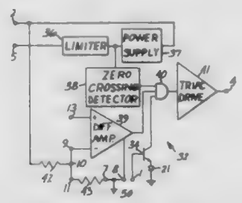
Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—501 **5 Claims**

1. An improved temperature control circuit that has a controller portion with an inhibit input, which, upon receiving a signal, inhibits operation of the control circuit, the temperature control circuit also having a temperature responsive circuit portion that includes a resistive portion connected in series with a sensor portion, the connection common to the resistive portion and sensor portion presenting a signal when the control circuit is energized that is applied to the controller for establishing the operating control point for the control circuit, the improvement comprising:

a semiconductor switch connected in series with the sensor portion, said semiconductor switch having a collector and an emitter, said semiconductor switch conducting so long as there is current flow via the sensor portion; and

an impedance connected between said collector and said



emitter of said semiconductor switch and to the inhibit input of the controller, said impedance presenting a signal to the inhibit input, when said semiconductor switch is not conducting, that is effective to inhibit the operation of the temperature control circuit.

5,057,670

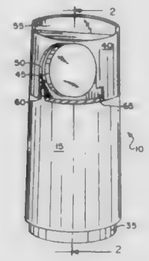
GOLF BALL HEATING DEVICE

Wilburt Cohen, Yorktown Heights, N.Y., assignor to Advanced Golf Concepts, Inc., Tarrytown, N.Y.

Filed Nov. 27, 1989, Ser. No. 441,863

Int. Cl.[5] H05B *3/00*

U.S. Cl. 219—521 **20 Claims**



1. A golf ball heating device comprising an elongated housing having a lower portion, an upper portion and an interior space for retaining a plurality of golf balls therein in a generally axial position, said housing also facilitating the flow of heated air around the balls, and including at least one aperture positioned on a side of the housing in the upper portion thereof for insertion and removal of the balls into and out of said interior space;

means for heating air located in the lower portion of said housing at a predetermined distance below the balls; and

a lid member operatively associated with said housing aperture and movable between a first position, where said lid member closes said housing aperture, and a second position where access to said interior space through said aperture is provided to allow insertion or removal of the balls into or out of said interior space.

5,057,671

SOLUTION WARMING UNIT

Charles R. Colson, 4702 N. Laurent, Victoria, Tex. 77904

Filed Aug. 7, 1989, Ser. No. 395,069

Int. Cl.[5] H05B *3/00*

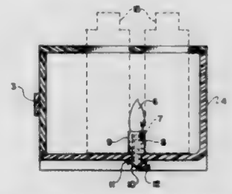
U.S. Cl. 219—521 **1 Claim**

1. A solution warming device comprising:

a heating chamber enclosed by a generally rectangular plastic housing having an upper wall, a lower wall, a back wall, two side walls, and a front wall;

a heating bulb supported by said lower wall of said housing and connected to a source of power to provide heat to the chamber;

a plurality of holes in said upper wall of said housing, each said hole being proportioned for receiving a bottle of solution to be warmed;



a plurality of bottles extending through said holes into the chamber and being supported on said lower wall;

a door in said front wall of said housing to enable insertion of small bottles into the housing through said door.

5,057,672

RADIATOR HAVING PTC ELECTRIC RESISTANCE HEATING ELEMENTS AND SPRING-BIASED FIN ARRANGEMENT

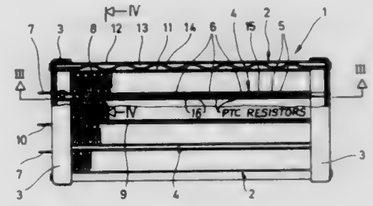
Franz Bohlender, Kandel, and Josef David, Bad Bergzabern, both of Fed. Rep. of Germany, assignors to Apparte und Heizwiderstande GmbH, Fed. Rep. of Germany

Filed Jun. 29, 1989, Ser. No. 373,906

Claims priority, application European Pat. Off., Jul. 15, 1988, 8111419

Int. Cl.[5] H05B *3/02, 3/14;* **F24H** *3/04;* **H01C** *1/084*

U.S. Cl. 219—540 **10 Claims**



1. A radiator comprising:

a plurality of first frame bars and a plurality of second frame bars, said plurality of first and second frame bars defining a planar mounting frame, said planar mounting frame retaining a plurality of elongate heat-emitting elements, said heat-emitting elements extending parallel to one another in the plane defined by said mounting frame, each said heat-emitting element being engaged on opposite sides by a plurality of fins formed of a material having good heat-conducting properties and extending in substantially parallel planes transversely of the length of said heat-emitting elements between two respective ones of the latter or between respective ones of the latter and two first bars of said mounting frame, respectively;

each of said heat-emitting elements comprising two sheet metal strips extending in parallel planes, and a plurality of electric PTC resistors disposed therebetween at spaced locations in surface contact with, and electrically connected to, said sheet metal strips;

said plurality of fins each having ends which are adjacent heat-emitting elements or one heat-emitting element and one of said first frame bars of said mounting frame, or one heat-emitting element and a support strip, said support strip disposed between adjacent heat-emitting elements;

each of said first frame bars comprising a rigid outer rail member extending parallel to an inner web movable rela-

tive thereto, said inner web contacting the ends of the adjacent fins, and a spring means disposed between said outer rail member and said inner web and supported on said outer rail member for biasing said inner web into engagement with said ends of adjacent fins; and

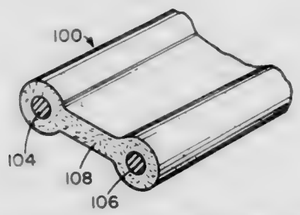
said sheet metal strips being electrically insulated from one another, said strips having their ends electrically insulatively retained in said second frame bars of said mounting frame extending perpendicular thereto, at least one end of at least some of said sheet metal strips being provided with a respective electric terminal element for connecting said PTC resistors to a power supply.

5,057,673

SELF-CURRENT-LIMITING DEVICES AND METHOD OF MAKING SAME

Richard W. Farkas, Stow; David A. Rock; Louis A. Miller, both of Ravenna, and Eric G. Hilston, Kent, all of Ohio, assignors to Fluorocarbon Company, Aurora, Ohio

Filed May 19, 1988, Ser. No. 196,146
Int. Cl.[5] H05B *3/00*
U.S. Cl. 219—549 **9 Claims**



9. A self-regulating electrical heating article comprising:

an electrically semi-conductive composition, formed into the shape of the electrical heating article to define a formed composition directly irradiated and annealed outer surface, having a positive temperature coefficient of electrical resistance and adapted for use in the self-regulating electrical heating article, said composition containing at least one polymeric component therein to provide sufficient crystallinity to promote the self-regulating conductive characteristics thereof and containing an amount of electrically conductive particles dispersed therein to promote the positive temperature coefficient characteristic of the composition, the amount of said particles being controlled within the range of 15 percent to 20 percent by weight to the total weight of the composition;

at least two elongate spaced-apart electrical conductors, substantially parallel with a longitudinal axis of said article, impregnated within the electrically semi-conductive composition of the electrical heating article, for delivering electrical energy thereto.

5,057,674

SELF LIMITING ELECTRIC HEATING ELEMENT AND METHOD FOR MAKING SUCH AN ELEMENT

Robert Smith-Johannsen, Borgheim, Norway, assignor to Smith-Johannsen Enterprises, Incline Village, Nev.

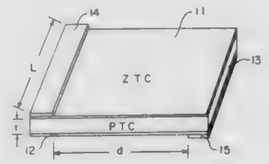
PCT No. PCT/NO89/00011, § 371 Date Aug. 8, 1990, § 102(e) Date Aug. 8, 1990, PCT Pub. No. WO89/07381, PCT Pub. Date Aug. 10, 1989
PCT Filed Jan. 30, 1989, Ser. No. 555,424
Claims priority, application Norway, Feb. 2, 1988, 880529
Int. Cl.[5] H05B *3/10*
U.S. Cl. 219—553 **6 Claims**

1. Self limiting electric heating element including two outer semiconductive layers (**1**, **2**; **11**, **12**) having zero temperature coefficient (ZTC) separated from one another by a continuous positive temperature coefficient (PTC) layer (**3**; **13**) and energized by two parallel electrodes (**4**, **5**; **14**, **15**), one of which is in contact with one end of one of the ZTC layers and the other parallel electrode is in contact with the other ZTC layer at its end furthest removed from said one end, characterized in that the resistances of the PTC and ZTC components have the following characteristics: at room temperature:

$$RPTC1 << RZTC << RPTC2,$$

and at control temperature:

$$RPTC1 = RZTC,$$



where RPTC1 is the electrical resistance measured across the PTC layer,

where RZTC is the resistance of the two ZTC layers connected in parallel, each having a resistance of 2·RZTC,

where RPTC2 is the resistance measured between the electrodes (**4**, **5**; **14**, **15**) along the PTC layer,

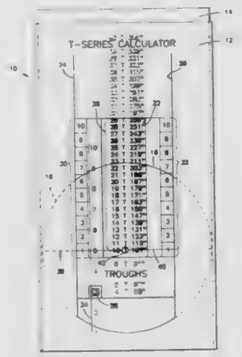
so that at the control temperature the heat generated per time and unit area, i.e. the watt density, of the PTC layer and the watt density of the two parallel ZTC layers are essentially equal.

5,057,675

PATCH CORD LENGTH CALCULATOR

Robert J. Gustason, Rosemount, Minn., assignor to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Aug. 30, 1990, Ser. No. 575,175
Int. Cl.[5] G06G *1/00, 1/02*
U.S. Cl. 235—70 A **4 Claims**



1. A hand held calculator for estimating a length of patch cord necessary to extend between any two of a plurality of known connection locations of spaced apart frames, said calculator comprising:

a first member having a first and second plurality of indicia, said first plurality corresponding with a plurality of connector locations on a first frame and said second plurality corresponding with a plurality of connector locations on said second frame;

a second member having a third plurality of indicia, said third plurality identifying a distance of separation between any two desired frames;

a fourth plurality of indicia identifying a plurality of possible lengths of a patch cord;

connection means for connecting said first member to said second member while providing relative movement between said first and second member;

alignment means for aligning any desired one of said fourth plurality with an alignment position;

a third member connected to said first and second member and moveable relative thereto, said third member having a fifth indicia disposed to be aligned with desired pair of said first and second plurality corresponding with said known connection locations on said spaced apart frames, said fifth indicia further disposed to indicate an individual one of said fourth plurality when said fifth indicia is aligned with said desired pair; and

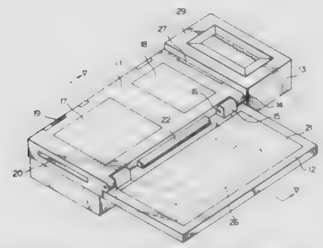
said first through fifth plurality selected and positioned for said fifth indicia to be aligned with a specific one of said fourth indicia indicating an amount of patch cord necessary to extend between said desired known locations when said fifth indica is aligned with said desired pair and when said third indicia is aligned with said alignment position.

5,057,676

PORTABLE ELECTRONIC APPARATUS

Shigeki Komaki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1990, Ser. No. 559,288
Claims priority, application Japan, Aug. 8, 1989, 1-93137[U]
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—375 **13 Claims**



1. A portable electronic apparatus comprising:

an electronic main unit having a front surface, a rear surface, side surfaces, and a first electrical connector, said electronic main unit being served to perform arithmetic operation;

a cover member provided on one of said side surfaces of said electronic main unit, for openably covering said front surface of said electronic main unit; and

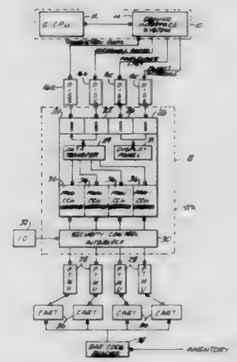
an electronic sub-unit capable of being coupled with said electronic main unit, said electronic sub-unit having a support portion to be located behind said electronic main unit to support said rear surface, a handle portion projected from a side of said electronic sub-unit for supporting said cover member when the cover member is opened, a second electrical connector capable of being connected to said first electrical connector, and an auxiliary electrical device capable of being cooperated with said electronic main unit.

5,057,677

TRANSACTION MONITORING AND SECURITY CONTROL SYSTEM FOR THE SALE AND DISTRIBUTION OF ARTICLES

Richard A. Bertagna, San Dimas, and Dickey J. Berry, LaVerne, both of Calif., assignors to Avicom International, Inc., Glendora, Calif.

PCT No. PCT/US86/00783, § 371 Date Jun. 16, 1988, § 102(e) Date Jun. 16, 1988, PCT Pub. No. WO87/06377, PCT Pub. Date Oct. 22, 1987
PCT Filed Apr. 14, 1986, Ser. No. 318,592
Int. Cl.[5] G06F *7/08*
U.S. Cl. 235—381 **15 Claims**



15. A transaction monitoring and security system for obtaining transaction data and providing security in the sale and distribution of a plurality of articles by authorized persons to customers, the system comprising:

article storage means for containing articles for sale and distribution by authorized persons;

locking means for controlling access to articles contained in the article storage means;

means for providing a digital data record of the inventory of articles contained in the article storage means prior to removal of articles from the storage means; and

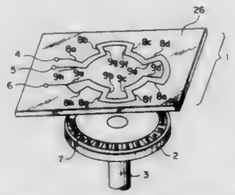
a central computing unit which includes a housing with compartments for storing separate portable transaction monitoring units, the central computing unit having security interlock means for controlling access to the portable transaction monitoring units in said compartments, the security interlock means being responsive to a coded input for permitting access to said compartments for removal and return of a selected portable transaction monitoring unit by an authorized person,

said locking means permitting access to the articles contained in the article storage means only in response to communication from the portable transaction monitoring unit removed from the central computing unit,

the portable transaction monitoring unit having data processing means for receiving the digital data record of inventory contained in the article storage means and for receiving data identifying articles removed from the article storage means to produce a digital data record of the inventory of articles removed from the container,

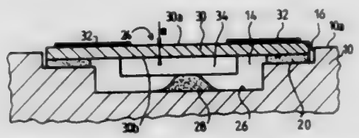
the central computing unit having digital data transfer and storage means for off-loading the digital data record in the portable transaction monitoring unit in response to the portable transaction monitoring unit being returned to its compartment in the central computing unit, the central computing unit also having means for recording the coded input used to actuate the security interlock means for removal of the portable transaction monitoring unit.

5,057,678
MAGNETIC SENSOR AND CARD READER CONTAINING IT
Yoshiaki Ichikawa, Saitama, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan
Filed Jun. 5, 1989, Ser. No. 361,202
Claims priority, application Japan, Jun. 9, 1988, 63-142422; Jul. 11, 1988, 63-172417; Oct. 7, 1988, 63-253032
Int. Cl.[5] G06K *9/18, 9/28;* **G11B** *21/03*
U.S. Cl. 235—449 **9 Claims**



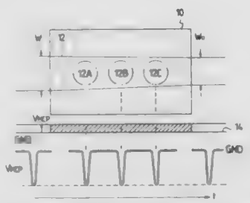
1. A magnetic sensor comprising: a rotatable magnetic disc having a circular surface, with a circular magnetic belt disposed on said surface including N and S magnetic poles alternately arranged at a constant pitch; and a sensor means comprising a support and at least one sensor element having a plurality of magnetoresistive portions fixed to at least one surface of said support, said magnetoresistive portions being connected to each other in series and arranged radially at a constant interval in a point-symmetric manner on said support, for sensing rotation of said disc.

5,057,679
TECHNIQUE FOR ATTACHING AN ELECTRONIC MODULE TO A CARD BODY TO FORM AN ELECTRONIC MEMORY CARD
Bernard Audic, Clamart, and Christian Bugein, Blois, both of France, assignors to Schlumberger Industries, Montrouge, France
Filed Mar. 17, 1989, Ser. No. 325,321
Claims priority, application France, Mar. 22, 1988, 88 03695
Int. Cl.[5] G06K *19/077, 19/07*
U.S. Cl. 235—492 **5 Claims**



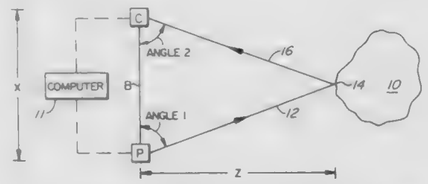
1. A method of making an electronic memory card comprising a card body having a main face, and an electronic module including a support having two faces, electrical contact tabs on a first of said two faces and a semiconductor chip fixed on a second of said two faces, the method comprising the steps of:
providing a card body having formed therein a cavity opening out into said main face thereof;
providing a fixing element constituted of a fibrous matrix structure impregnated with a thermal activatable adhesive and having a thickness that can be modified under the effect of pressure, said fixing element being ring-shaped and having two faces;
placing said fixing element in a portion of said cavity;
placing said electronic module into said cavity in such a manner that one face of said two faces of said fixing element comes into contact with a portion of the second face of said support which surrounds said semiconductor chip;
sizing the respective thicknesses of said fixing element and said support so that the first face of said support and the electrical contact tabs thereon lie outside said cavity when said one face of the fixing element comes into contact with said portion of the second face of said support;
supplying thermal energy to said fixing element in order to adhere said one face of the fixing element to said support and the other of said two faces of the fixing element to said card body; and
simultaneously with supplying said thermal energy, applying pressure to at least a portion of said first face of the support to decrease the thickness of said fixing element, until said contact tabs lie substantially in a plane defined by the main face of said card body and said fixing element provides secure adhesion, thereby retaining said decreased thickness of said fixing element.

5,057,680
ULTRAFAST GATING APPARATUS HAVING CHARACTERISTIC IMPEDANCE OF STRIP LINE SMALLER ON ITS INPUT SIDE THAN THE OUTPUT SIDE
Akira Takahashi, Shizuoka, Japan, assignor to Hamamatsu Photonics K. K., Shizuoka, Japan
Filed Jul. 12, 1990, Ser. No. 551,443
Claims priority, application Japan, Aug. 4, 1989, 1-202585
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—207 **9 Claims**



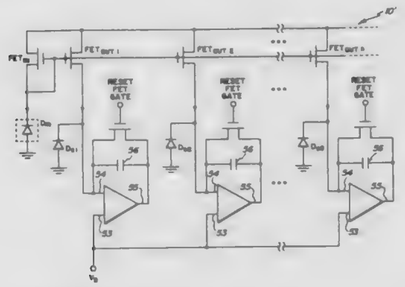
1. In a ultrafast gating apparatus having a stripline for gating input X-ray images, electron images or optical images projected onto the stripline by a pulse voltage applied to and propagating through the stripline, the improvement wherein:
a characteristic impedance of the stripline on its input side is smaller than a characteristic impedance on its output side.

5,057,681
LONG RANGE TRIANGULATING COORDINATE FINDER
Douglas S. Beder, Vancouver; Gordon E. Cornwall, North Vancouver; David A. Dieno, Port Coquitlam; Curtis E. Lang, North Vancouver, and David S. Sloan, Burnaby, all of Canada, assignors to Range Vision Inc., Burnaby, Canada
Filed Jul. 27, 1990, Ser. No. 558,458
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.2 **2 Claims**



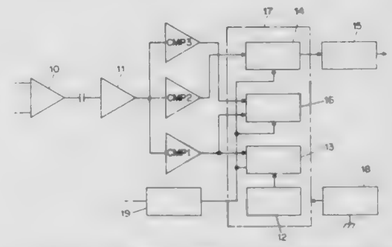
1. A method for adaptively scanning a surface comprising scanning said surface at a first scan rate by directing a beam of light onto said surface, sensing said light beam reflecting from said surface in a detector station having a detector array with detectors arranged in mutually perpendicular rows in a plane substantially perpendicular to a focal axis of said detector station and producing a discrete digitized signal from each said detectors of said array, said signals having an intensity corresponding to the amount of light received by its respective said detector, thresholding said signals to determine those signals having strengths above a selected value indicating locations on said array to which said beam is reflected, determining areas on said surface from which no signal having a strength above said threshold has been received and rescanning at least one of said areas at a second scan rate slower than said first scan rate by increasing the amount of illumination per unit area scanned to which said detectors are subjected to obtain a second scan of said selected area.

5,057,682
QUIESCENT SIGNAL COMPENSATED PHOTODETECTOR SYSTEM FOR LARGE DYNAMIC RANGE AND HIGH LINEARITY
Gerald J. Michon, Waterford, and Dale M. Brown, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 456,903, Dec. 26, 1989, abandoned. This application Nov. 5, 1990, Ser. No. 607,222
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 C **30 Claims**



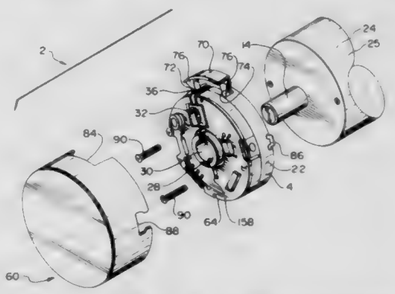
1. A photodetector system comprising:
a plurality of photosensitive devices which exhibit a condition-dependent quiescent output signal;
a plurality of output circuits each connected to receive the output signal from a different one of said photosensitive devices;
a quiescent signal monitor device having a condition-dependent quiescent output signal which is proportional to that of said photosensitive devices;
means for shielding said monitor device from the light to be sensed by said photosensitive devices, whereby the output signal from said monitor device is proportional to the condition-dependent-quiescent-output-signal contributions to the output signals of said photosensitive devices;
current mirror means responsive to the output signal from said monitor device for applying quiescent output signal compensating signals to a plurality of said output circuits to compensate for the condition-dependent-quiescent-output-signal contribution to the output signal of each of said photosensitive devices, whereby the output from each of said output circuits is substantially independent of the condition-dependent quiescent output signal of the one of said photosensitive devices to which it is coupled.

5,057,683
ERROR PREVENTIVE CIRCUIT FOR A PHOTOELECTRIC SWITCH
Toshifumi Fukuyama, Uji, Japan, assignor to Astex Co., Ltd. and Takenaka Electronic Industrial Co., Ltd., Kyoto, Japan
Filed Oct. 13, 1989, Ser. No. 421,611
Claims priority, application Japan, Oct. 28, 1988, 63-273918; Oct. 28, 1988, 63-273919
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 B **10 Claims**



1. An error preventive circuit for a photoelectric switch which operates in either transmission mode or reflection mode, whichever is selected, to detect an object by processing a light reception pulse by means of a plurality of comparators, wherein said circuit comprises: a base-of-N counter which is clocked by a synchronous signal for the light reception pulse detection, a flip-flop which receives an in-phase light reception pulse as a set input and a drive signal for a light projector as a reset input, a means of latching the Q output of said flip-flop in response to a periodic signal provided by said counter and producing a detection output signal, an exclusive-OR gate which receives the Q output of said flip-flop and an inverted output of said latch means, and an AND gate (AND2) arranged to produce, in response to the output of said exclusive-OR gate and an inverted version of the synchronous signal, a high-level output, by which said counter is cleared.

5,057,684
UNITARY ALIGNING AND GAPPING APPARATUS FOR MODULAR OPTICAL SHAFT ENCODER
Gregg R. Service, Santa Barbara, Calif., assignor to Robbins & Myers/Electro-Craft, a wholly owned sub. of Robbins & Myers, Inc., Eden Prairie, Minn.
Filed Aug. 30, 1990, Ser. No. 575,240
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.13 **12 Claims**



1. An improved modular optical shaft encoder having an encoder body with an upper body surface constructed and arranged for receiving a pattern wheel generally radially parallel to the upper surface, the encoder body also having a light source affixed to the upper surface and an opening constructed and arranged for receiving a rotatable shaft, the encoder body

being constructed and arranged for mounting on an external element stationary with respect to the rotatable shaft, the encoder also having a mask mounted above the encoder body upper surface aligned opposite the light source, the pattern wheel positioned between the upper body surface of the encoder body and the mask, the hub coaxially aligned with the opening of the encoder body, the hub having a central shaft hole for receiving the shaft inserted through the opening in the encoder body, the hub of the pattern wheel being constructed and arranged for axial positioning and mounting on the shaft, the encoder also having a photodetector positioned behind the mask from the wheel on the upper surface of the encoder body, the photodetector aligned with the light source and facing the upper body surface through the mask such that light from the light source is detectable by the photodetector through the pattern wheel and through the mask, wherein the improvement comprises:

the encoder body defining a radial enclosed passage parallel to the upper surface, the proximal end of the passage communicating with the opening and the distal end communicating with an exterior of the encoder body;

a linear cam mounted for slidable movement from a first to a second position along the passage within the encoder body for extension through the proximal and distal ends of the passage;

a centering collar having a central collar bore, the collar coaxially positioned for axial translation within the opening, an outside circumference of the collar constructed and arranged for nesting within a circumference of the opening, the collar also having a plurality of circumferential indentations and projections constructed and arranged for operative engagement with the linear cam extending through the proximal end of the passage;

such that movement of the cam to the first position displaces the collar from contact with the hub and movement of the cam to the second position urges translation of the collar into a light press fit contact with the wheel and establishes an interference fit between the hub and an inside circumference of the collar bore, with the light press fit contact and interference fit together causing alignment of the pattern wheel with the mask and the light source and positioning of the wheel a predetermined gap distance from the mask, the alignment and the gap distance being maintained during mounting of the pattern wheel on the shaft and mounting of the encoder body on the external element.

5,057,685

OPTICAL ROTATION DETECTOR INCLUDING A DISK HAVING SLITS WITH CONCAVE AND CONVEX PARTS AND METHOD OF MANUFACTURING

Ryoichi Kurosawa, Kokubunji, and Kozo Taira, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1989, Ser. No. 456,967

Claims priority, application Japan, Jan. 4, 1989, 64-15; Jan. 4, 1989, 64-17; Jan. 11, 1989, 1-2929

Int. Cl.[5] G01D *5/34*

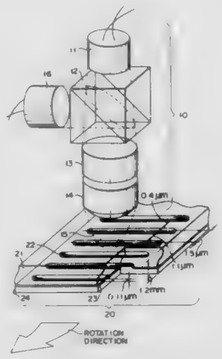
U.S. Cl. 250—231.14 **12 Claims**

1. An optical disk adapted to a rotation detector employing a combination of the optical disk and an optical pickup, said optical disk having front and rear surfaces comprising:

means located on said rear surface of said optical disk for reflecting a coherent light beam emitted from the optical pickup and toward said rear surface, said light beam having a prescribed beam spot size; and

a plurality of convex portions relative to said rear surface formed on said reflecting means,

wherein each of said convex portion has a longitudinal shape whose longitudinal axis is directed to a rotational center of said optical disk such that said convex portions reflect the coherent light from said optical pickup;



a distance of a space between adjacent two of said convex portions differs from a width of each said convex portion.

5,057,686

SELF-STABILIZING PHOTOELECTRIC DISPLACEMENT DETECTOR

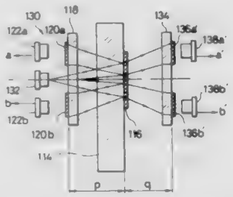
Norihito Hikawa, Yokohama, and Wataru Ishibashi, Kawasaki, both of Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,339

Claims priority, application Japan, Oct. 12, 1988, 63-256742; Oct. 12, 1988, 63-256743

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.16 **9 Claims**



1. A photoelectric displacement detector comprised of a main scale fixed to one of relatively movable members and including a main grating formed thereon,

a light source, an index scale including a sub grating formed thereon, and a displacement detecting optical detector element for photoelectrically converting lights modulated by at least said main grating and said sub grating, all fixed to the other of the relatively movable members,

whereby a periodic detection signal is generated responsively to a relative displacement between both said members, the photoelectric displacement detector further comprising:

a reference light transmission window disposed in the vicinity of the sub grating formed on said index scale; and

a reference light optical detector element for photoelectrically converting a light transmitted through said reference light transmission window,

whereby DC level variations of the displacement detection signal yielded by said displacement detecting optical detector element are corrected on the basis of a reference signal yielded by said reference light optical detector element.

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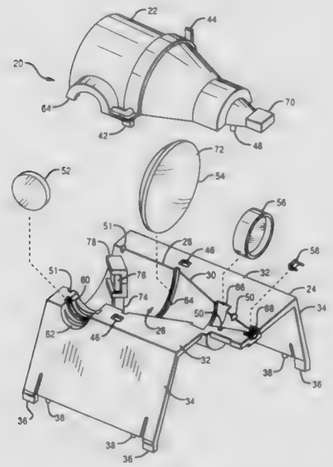
DETECTOR ASSEMBLY WITH PLURAL OPTICAL AXES

Frank A. Leyshon, Cambridge; Herbert D. McClain, Quaker City, and David A. Watson, New Concord, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 372,805, Jun. 29, 1989, abandoned. This application Nov. 6, 1990, Ser. No. 611,398

Int. Cl.[5] H01J *5/02*

U.S. Cl. 250—239 **7 Claims**



1. A low cost detector assembly for use with an optical reader which generates a scanning pattern for scanning a coded label and for receiving light reflected from the coded label comprising:

a housing assembly comprising an upper housing member and a lower housing member having opposite plano surfaces, said upper and lower housing members being assembled to form a unitary structure having a first central axis and including a large opening at one end and a small opening at the opposite end;

said lower housing member including an aperture portion in one of said plano surfaces, said housing assembly further including flexible means mounted on said upper housing member for engaging said aperture portion for releasably securing the upper housing member to the lower housing member;

a first optical member mounted in said unitary structure on said first central axis adjacent to and downstream from the large opening for collecting the light reflected from the coded label and for focusing the collected light at a location on said axis adjacent the small opening;

a second optical member mounted in said unitary structure on the same axis as the first optical member for filtering out selected frequencies of light from the reflected light;

said unitary structure further including an aperture having a second central axis extending in a direction perpendicular to the first central axis of said unitary structure and which is upstream from said first optical member, said unitary structure further including a third optical member mounted in said aperture for directing the scanning light along the second central axis of the aperture; and

detector means mounted in said unitary structure on said first central axis adjacent the small opening and at said location for receiving the reflected light and for generating electrical signals in response to receiving the reflective light.

5,057,688

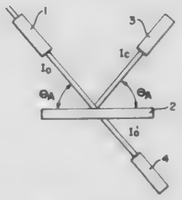
METHOD FOR THE DETERMINATION OF THE ELEMENT CONCENTRATION IN ELECTRON BEAM MELTING

Alexander von Ardenne; Eckehard Madler; Bernd Wehner; Kurt Richter; Nicolas Schiller; Josef Tobisch, all of Dresden, and Günter Hähnel, Freital, all of German Democratic Rep., assignors to Bakish Materials Corporation, Englewood, N.J.

Filed Aug. 31, 1990, Ser. No. 576,015

Int. Cl.[5] G01N *23/225*

U.S. Cl. 250—307 **3 Claims**



1. In a method for the determination of the element concentration in electron beam melting the utilization of the X-radiation generated thereby in which characteristic X-rays emitted from the elements contained in the melt are detected continuously and in situ by a detector via reflection from an analyzer crystal whereby the intensity of a portion of the X-ray spectrum obtained Via transmission through said analyzer crystal is also determined by a detector to form a ratio so that the said ratio of the two intensities is optimized as a function of the concentration of the element to be determined.

5,057,689

SCANNING ELECTRON MICROSCOPE AND A METHOD OF DISPLAYING CROSS SECTIONAL PROFILES USING THE SAME

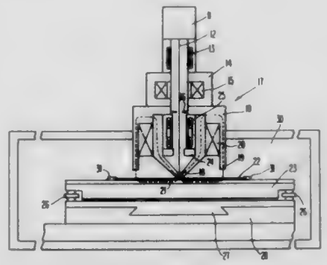
Noboru Nomura, Kyoto; Hideo Nakagawa, Moriguchi; Taichi Koizumi, Osaka; Kenji Harafuji, Moriguchi; Mitsuhiro Okuni, and Norimichi Anazawa, both of Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1990, Ser. No. 583,541

Claims priority, application Japan, Sep. 20, 1989, 1-244392; Jul. 9, 1990, 2-181891; Jul. 9, 1990, 2-181892; Jul. 9, 1990, 2-181893

Int. Cl.[5] H01J *37/28*

U.S. Cl. 250—310 **10 Claims**



1. A scanning electron microscope comprising:

an electron gun for emitting an electron beam;

an objective lens for forming a magnetic field in a path through which the electron beam passes; and

a secondary electron detector for detecting secondary electrons produced by the impingement of the electron beam on a specimen, wherein:

said objective lens includes a first pole piece and a second pole piece;

said first pole piece is provided with a hole through which the electron beam passes, and is disposed between said electron gun and said second pole piece; and

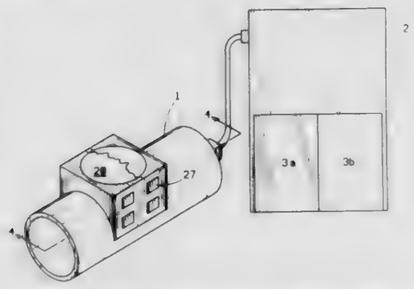
said second pole piece has a planar portion on which the specimen is placed, and said second pole piece being mounted on a supporting block movable in a plane substantially perpendicular to the projecting direction of the electron beam.

5,057,690

BATTERY DRIVEN 8 CHANNEL PULSE HEIGHT ANALYZER WITH COMPACT, SINGLE GAMMA-PEAK, DISPLAY

John P. Morgan, and Thomas C. Piper, both of Idaho Falls, Id., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 29, 1990, Ser. No. 574,405
Int. Cl.[5] G01T *1/00*
U.S. Cl. 250—336.1 **9 Claims**



1. An apparatus for the detection and analysis of gamma rays of an element comprising:

means for detection including a hand-held unit having the ability to detect and analyze said gamma rays, thereby generating a signal by using the pulse-height frequency-of-occurrence versus pulse-height of said gamma rays, and including means for displaying having the ability to display said signal as a single gamma line of an object for said element;

means for shielding resident gamma emissions encasing said means for detection including a lead tube having an open end and a closed end with an observation port located between said open and closed ends allowing visual access to said means for displaying; and

means for portable power connected to and receiving a signal from said means for detection and having the ability to amplify said signal from said means for detection.

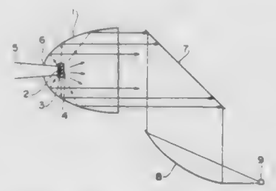
5,057,691

DILUTION MATERIAL, FILTER AND ACCESSORY FOR MEASURING INFRARED SPECTRA

Mikio Kaihara; Hiroaki Mametsuka, both of Tokyo; Naoki Gunji, Kanagawa; Hideo Iwata, Kanagawa, and Yohichi Gohshi, Kanagawa, all of Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jan. 3, 1990, Ser. No. 460,463
Claims priority, application Japan, Jun. 28, 1989, 1-163800
Int. Cl.[5] G01N *21/01*
U.S. Cl. 250—339 **9 Claims**

1. A dilution material for a sample whose infrared spectra is measured consisting essentially of two or more kinds of particles of inorganic materials having a particle size of less than 100 μm capable of transmitting infrared rays, of which the surface reflection loss is less than one third, and at least one of



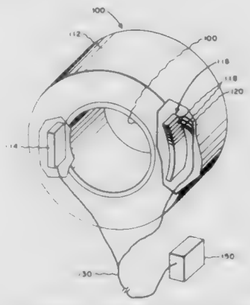
which the refractive index is different from another one by more than 0.1.

5,057,692

HIGH SPEED, RADIATION TOLERANT, CT SCINTILLATOR SYSTEM EMPLOYING GARNET STRUCTURE SCINTILLATORS

Charles D. Greskovich; William P. Minnear, both of Schenectady; Joseph P. Chernoch, Scotia, all of N.Y.; David M. Hoffman, New Berlin, and Robert J. Riedner, Waukesha, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1990, Ser. No. 547,007
Int. Cl.[5] G01T *1/202*
U.S. Cl. 250—361 R **26 Claims**



16. An x-ray scintillation detector element comprising:

a solid transparent body comprising a garnet host material selected from gadolinium, ytterbium and lutetium garnets and including an activator selected from chromium and neodymium for producing luminescent light in response to x-ray stimulation;

a photodetector disposed to receive luminescent light from said body; and

means for reflecting luminescent light toward said photodetector.

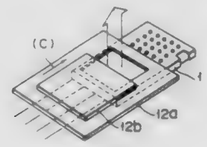
5,057,693

RADIATION DOSE READING APPARATUS

Bertram Burgkhardt, Karlsruhe; Ernst Piesch, Eggenstein-Leopoldshafen; Michael Vilgis, Baden-Baden, all of Fed. Rep. of Germany; Toru Ikegami, and Motoyuki Sato, both of Shizuoka, Japan, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany and Toshiba Glass Co. Ltd., Tokyo, Japan

Filed Sep. 17, 1990, Ser. No. 583,023
Claims priority, application Japan, Sep. 18, 1989, 1-239868
Int. Cl.[5] G01T *1/06*
U.S. Cl. 250—484.1 **7 Claims**

1. In a radiation dose reading apparatus for a fluorescent glass element irradiated by ionizing radiation, said glass element having a detecting face and being adapted to be subjected to ultraviolet radiation so as to cause fluorescence depending on the radiation dose to which the glass element was exposed and means for determines the radiation dose from the intensity of fluorescence emitted from the detecting face of said fluorescent glass element, the improvement comprising: a fluorescence diaphragm arrangement overlying said detecting face, said fluorescence diaphragm arrangement comprising a dia-



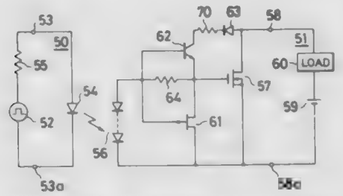
phragm formed with an opening having a predetermined area and a movable cover plate, said movable cover plate comprising means for changing in at least three steps the fluorescence detecting areas on the detecting face of said fluorescent glass element; and fluorescence intensity reading device for obtaining the fluorescence intensity distribution from the intensity of the fluorescence emitted from the selected fluorescence detecting areas on said detecting face of said fluorescent glass element.

5,057,694

OPTOELECTRONIC RELAY CIRCUIT HAVING CHARGING PATH FORMED BY A SWITCHING TRANSISTOR AND A RECTIFYING DIODE

Yukio Idaka, Nara; Shuichiroh Yamaguchi, Hirakata, and Takeshi Matsumoto, Neyagawa, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 6, 1990, Ser. No. 489,016
Claims priority, application Japan, Mar. 15, 1989, 1-64164; Jun. 27, 1989, 1-166325
Int. Cl.[5] G02B *27/00*
U.S. Cl. 250—551 **4 Claims**



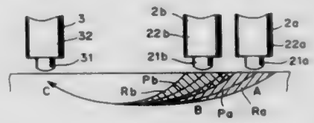
1. A semiconductor relay circuit comprising a light emitting means for generating a light signal, a diode array optically coupled to said light emitting means for generating a photovoltaic output in response to said light signal received, an output FET connected to said diode array for turning from a first impedance state to a second impedance state with an application of said photovoltaic output across a gate and a source of said output FET, an operation control means connected across the gate and source of said output FET, and a series circuit including a switching transistor and a rectifying diode connected across a drain and gate of said output FET, said switching transistor being turned to a low impedance state so as to form a charging path for an accumulated charge across the gate and source of said output FET when said diode array receives said light signal, and said rectifying diode preventing an reverse flow of a photocurrent across the gate and drain of said output FET when a voltage across the drain and source of said output FET becomes substantially zero.

5,057,695

METHOD OF AND APPARATUS FOR MEASURING THE INSIDE INFORMATION OF SUBSTANCE WITH THE USE OF LIGHT SCATTERING

Konomu Hirao, Ibaraki, and Naoki Inamoto, Higashiosaka, both of Japan, assignors to Otsuka Electronics Co., Ltd., Osaka, Japan

Filed Dec. 15, 1989, Ser. No. 450,980
Claims priority, application Japan, Dec. 19, 1988, 63-320083
Int. Cl.[5] G01N *21/49*
U.S. Cl. 250—575 **8 Claims**



1. A method of measuring the inside information of substance with the use of light scattering, comprising the steps of:

successively irradiating lights at a plurality of irradiation points which are disposed substantially in the same direction with respect to a light receiving point on the surface of substance, wherein substantial optical diffusion paths from said irradiation points to said light receiving point being different in length from one another, and wherein a distance between each pair of said irradiation points being shorter in length than a length of each of said optical diffusion paths;

receiving the irradiated lights at said light receiving point;

executing a predetermined calculation based on the difference of light reception data corresponding to the respective irradiations; and

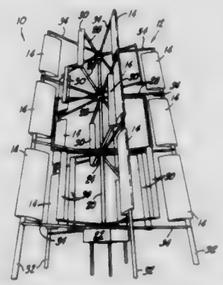
determining, from a result of said predetermined calculation, the inside information of said substance.

5,057,696

VERTICAL WINDMILL WITH OMNIDIRECTIONAL DIFFUSION

Robert N. Thomas, Ventura, Calif., assignor to Wind Harvest Co., Inc., Ventura, Calif.

Filed Jan. 25, 1991, Ser. No. 645,968
Int. Cl.[5] F03D *7/06*
U.S. Cl. 290—44 **40 Claims**



4. A windmill for producing power in a moving body of air comprising:

a support frame having upper support bars and vertical steel tubes;

a central shaft rotatably mounted to said support frame along a vertical axis of the support frame;

a plurality of elongate airfoils rotatably mounted on the ends of radial struts at a fixed radial distance from the central shaft;

a plurality of vertical elongate stators mounted between said upper support bars and the ground radially outwardly

from said airfoils, each stator being mounted on the steel tubes equally spaced circumferentially around, and at a uniform radial distance from, the central shaft and each stator having an elongate cross-section with the major dimension of said elongate cross-section extending substantially radially from the central shaft to form an omnidirectional diffuser;

a central disc mounted around the central shaft; and

brake means for slowing the rotation of the airfoils about the central shaft.

5,057,697

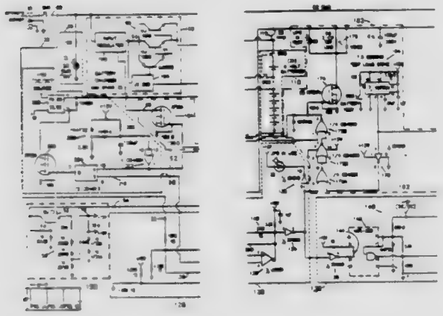
DC UNINTERRUPTED POWER SUPPLY HAVING INSTANTANEOUS SWITCHING FOLLOWED BY LOW IMPEDANCE SWITCHING

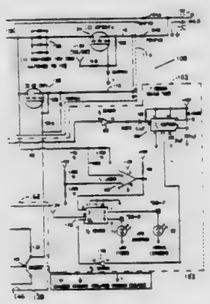
Russell E. Hammond, La Jolla; Robert L. Northup, San Diego, both of Calif., and Alan G. Shimp, Silver Springs, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1990, Ser. No. 497,374

Int. Cl.[5] H02J *7/10, 9/06*

U.S. Cl. 307—66 **4 Claims**





1. A DC backup power supply for supplying power to a load when primary power to the load falls below a predetermined level comprising:

energy storage means for storing DC energy;

instantaneous switching means for instantaneously switching said DC energy to said load when said primary power falls below said predetermined level, said switching means including at least one Zener diode operably coupled to conduct said DC energy between said energy storage means and said load;

comparator means for indicating a fall in said primary power below a second predetermined level that is below said predetermined level; and

low impedance switching means operably coupled to said comparator means between said energy storage means and said load, for providing a low impedance path around said instantaneous switching means when said primary power falls below said second predetermined level as indicated by said comparator means.

5,057,698

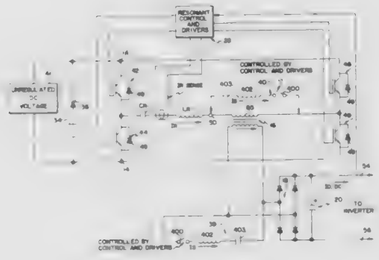
SHUNT CIRCUIT FOR REDUCING AUDIBLE NOISE AT LOW LOADING CONDITIONS OF A POWER SUPPLY EMPLOYING A HIGH FREQUENCY RESONANT CONVERTER

Steven R. Widener, and George W. Oughton, both of Raleigh, N.C., assignors to Exide Electronics, Raleigh, N.C.

Filed Nov. 13, 1989, Ser. No. 437,640

Int. Cl.[5] H02J *9/00;* **H02M** *3/335*

U.S. Cl. 307—66 **23 Claims**



1. A power supply for supplying power to an output circuit comprising:

a resonant converter having an operating frequency which increases with increases in load current delivered to the output circuit by the power supply, the load current flowing through said resonant converter to the output circuit; and,

nondissipative shunting means coupled in parallel relative to said output circuit for automatically maintaining a current flow through said resonant converter above a level required to maintain the operating frequency above a predetermined frequency irrespective of the level of the load current, the shunting means shunting a variable portion of the current flowing in said resonant converter as the load current varies, the current shunted by said shunting means decreasing toward zero as said load current increases, and the current shunted by the shunting means increasing as said load current decreases and as said operating frequency moves toward said predetermined frequency such that the load current flowing in said output circuit would be reduced toward zero as said operating frequency moves to said predetermined frequency.

5,057,699

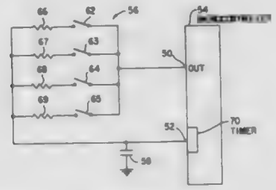
SWITCH INTERFACE FOR DETERMINING POSITION OF A PLURALITY OF SWITCHES USING A DETERMINED TIME

James W. Spence, Lawrence, Kans., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 20, 1989, Ser. No. 453,528

Int. Cl.[5] H03M *1/66;* **G05F** *1/00*

U.S. Cl. 307—98 **15 Claims**



1. A switch interface, comprising:

a first port for selectively outputting a lower and a higher voltage;

a second port;

a plurality of series combinations of a switch and a resistor which are connected in a parallel circuit, each of said plurality of series combinations having a unique resistance and each of said switches being in an open or closed position, said parallel circuit having a first node connected to said first port and a second node connected to said second port;

a capacitor connected between said second port and a node biased at a reference voltage;

means for determining a time for a voltage at said second port to increase to a predetermined voltage level when said first port changes state from said lower voltage to said higher voltage; and

means for determining said position of each of said switches in accordance with said time.

5,057,700

LIGHT CONTROL CIRCUIT FOR CAMCORDER

Yong H. Choi, Chungscheongnam, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 27, 1989, Ser. No. 412,817

Claims priority, application Rep. of Korea, Oct. 31, 1988, 14205/1988[U]

Int. Cl.[5] H01H *47/00*

U.S. Cl. 307—125 **6 Claims**

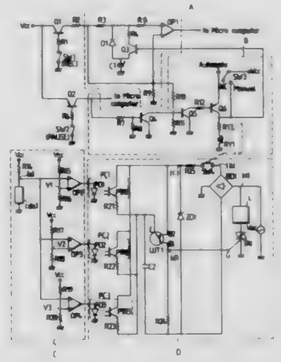
1. A light control circuit for a video camcorder, said camcorder including a microcomputer and a subject illumination light, said light control circuit comprising:

a pause switch for enabling a light on/off control means and applying a pause signal to said microcomputer;

a light relay;

a light on/off control means, responsive to said pause switch and a pause signal applied to said microcomputer, for energizing said light relay after said pause signal is applied to a microcomputer in accordance with the manipulation of said pause switch;

a record signal delay circuit means, responsive to said on/off control means, for applying a record signal to said microcomputer after a predetermined elapsed time when said light relay of said light on/off control circuit is operated by said pause switch;



a luminance detection means, responsive to a desired subject illumination, for generating a comparison output signal in accordance with the surrounding illuminance; and

a light control circuit means, enabled by said light relay and responsive to said comparison output signal, for controlling said subject illumination light of said camcorder in accordance with said light relay of the said light on/off control means.

5,057,701

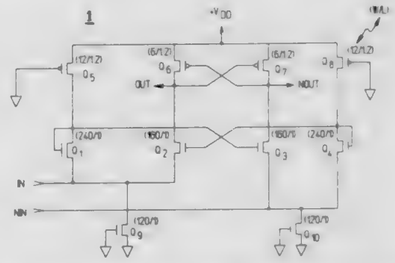
HIGH SPEED LOW SKEW CLOCK CIRCUIT

Robert H. Miller, Jr., Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 13, 1990, Ser. No. 479,562

Int. Cl.[5] H03K *5/00, 3/29, 5/13, 7/00*

U.S. Cl. 307—262 **3 Claims**



1. A circuit for generating complementary signals, comprising:

first and second output terminals (CK, NCK);

first switching means (**12**), coupled to the first output terminal, for pulling the first output terminal high in response to a first drive signal (**8**) having a logic level of true;

second switching means (**13**), coupled to the first output terminal, for pulling the first output terminal low in response to a second drive signal (**9**) having a logic level of true;

third switching means (**18**), coupled to the second output terminal, for pulling the second output terminal high in response to a third drive signal (**10**) having a logic level of true;

fourth switching means (**19**), coupled to the second output terminal, for pulling the second output terminal low in response to a fourth drive signal (**11**) having a logic level of true;

first holding means (**15**, **22**), coupled to the first and second output terminals and to the second drive signal, for holding the first output terminals high whenever the second output terminal is low and the second drive signal is false;

second holding means (**16**, **21**), coupled to the first and second output terminals and to the fourth drive signal, for holding the second output terminal high whenever the first output terminal is low and the fourth drive signal is false;

first logic means (**6**/**6**, **25**), coupled to an input signal and to the first output terminal, for producing first and fourth drive signals each having false to true transitions upon a false to true transition of the input signal while the first output terminal is low, and each also having true to false transitions upon a low to high transition of the first output terminal; and

second logic means (**7**/**7**, **24**), coupled to the input signal and to the second output terminal, for producing second and third drive signals each having false to true transitions upon a true to false transition of the input signal while the second output terminal is low, and each also having true to false transitions upon a low to high transition of the second output terminal.

5,057,702

DUTY RADIO CONTROL CIRCUIT APPARATUS

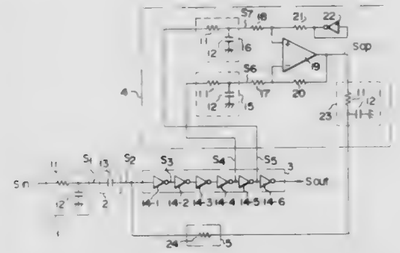
Nobutaka Kitagawa, Kawasaki; Hiroki Muroga, and Tomotaka Saito, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1989, Ser. No. 457,875

Claims priority, application Japan, Dec. 28, 1988, 63-328922

Int. Cl.[5] **H03K** *5/22*

U.S. Cl. 307—268 **16 Claims**



1. A duty ratio control circuit apparatus comprising:

a first integrating circuit for integrating an input signal;

an AC coupling circuit for allowing an AC component of an output from said first integrating circuit to pass therethrough;

a waveshaping circuit for waveshaping an output from said AC coupling circuit and extracting a duty converted output signal;

a duty ratio detecting circuit, for receiving a waveshaped output from said waveshaping circuit and for generating a voltage corresponding to a difference between a predetermined duty ratio and a duty ratio of the waveshaped output from said waveshaping circuit, and which comprises:

a second integrating circuit for receiving a first waveshaped output from said waveshaping circuit;

a third integrating circuit for receiving a second waveshaped output having a relationship with the first waveshaped output from said waveshaping circuit;

a comparing circuit, with an output terminal having a low pass filter coupled thereto, for receiving and comparing outputs from said second and third integrating circuits;

a DC bias generating circuit for applying a predetermined DC bias to an input terminal of said comparing circuit to which an output from one of said second and third integrating circuits is supplied; and

a feedback circuit for feeding back an output form said duty ratio detecting circuit to an output side of said AC coupling circuit.

5,057,703

WORKING/STANDBY CLOCK PULSE SUPPLY FOR DIGITAL SYSTEMS

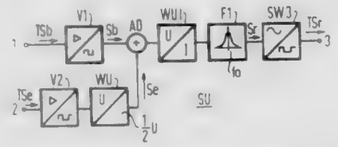
Imre Sarkoezi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich

Filed Aug. 15, 1990, Ser. No. 567,973

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1989, 3928401

Int. Cl.[5] **H03K** *3/00*; **H04L** *1/00*

U.S. Cl. 307—269 **11 Claims**



1. In a working/standby clock pulse supply of the type in which an operating clock oscillator produces a working clock, a standby clock oscillator produces a standby clock, and in which the working clock and the standby clock are supplied to at least one assembly, the improvement therein comprising:

at least one clock summing circuit connected to receive said working and standby clocks and including first means for combining predetermined harmonic spectral shares of various amplitudes of said clocks to form a resulting spectral signal, and second means connected to said first means and operable in response to said resulting spectral signal to produce a resulting clock.

5,057,704

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING SUBSTRATE POTENTIAL DETECTING CIRCUIT COMMONLY USED

Masaru Koyanagi, Tokyo, and Minoru Yamada, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1990, Ser. No. 496,961

Claims priority, application Japan, Mar. 22, 1989, 1-69826

Int. Cl.[5] **H03L** *1/00*; **H03K** *3/354*

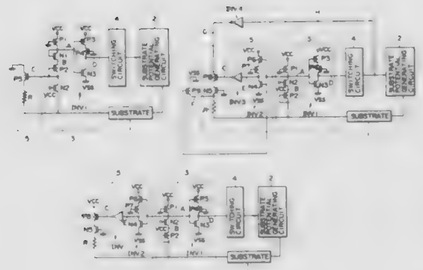
U.S. Cl. 307—296.2 **24 Claims**

1. A semiconductor integrated circuit comprising:

means for generating a substrate potential, connected to a substrate and set operative on at least a certain operation voltage level;

detection means including a first detection means for outputting a first detection signal upon detecting that the substrate potential generated by said substrate potential generating means has become lower than the operation voltage level by more than a preset amount, and including a second detection means for outputting a second detection signal upon detecting that the substrate potential has reached a preset level which is set slightly lower than the operation voltage level, said first and second detection means each including a common reference circuit; and

means connected to said detection means, for charging the substrate upon receiving the first detection signal, and



interrupting the charging operation upon receiving the second detection signal.

5,057,705

CLOCK FORMATION CIRCUIT WITH PHASE LOCKED LOOP CONTROL

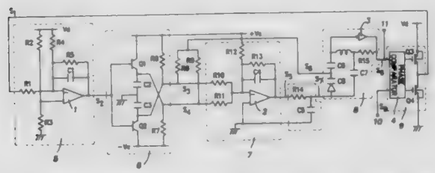
Gohji Uchikoshi, Higashimurayama, Japan, assignor to Nakamichi Corporation, Kodaira, Japan

Filed Sep. 28, 1989, Ser. No. 413,619

Claims priority, application Japan, Oct. 4, 1988, 63-250698; Dec. 16, 1988, 63-163330[U]

Int. Cl.[5] **H03K** *5/00, 5/13*

U.S. Cl. 307—269 **8 Claims**



1. A clock formation circuit for forming from a digital data signal a formation clock signal corresponding to data clocks controlling an inversion timing of said digital data signal comprising:

phase difference information output means to compare a phase of said digital data single with that of said formation clock signal to provide a phase difference information signal having a saw-tooth periodical waveform when a frequency of said data clocks is different from that of said formation clock signal, said phase difference information signal having a level varying in accordance with a phase difference between said digital data signal and said formation clock signal;

means to provide a first envelope signal having a level increasing in accordance with said phase difference information signal and decreasing at a predetermined characteristic when said phase difference information signal rapidly decreases and a second envelope signal having a level decreasing in accordance with said phase difference information signal and increasing at a predetermined characteristic when said phase difference information signal rapidly increases;

means having an addition function and an integration function to provide a correction error information signal including at least an information identical to an operation information obtained by adding and then integrating said first and second envelope signals;

and means to provide said formation clock signal having a frequency controlled on said correction error information signal.

5,057,706

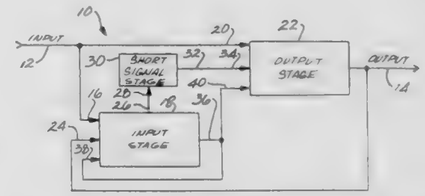
ONE-SHOT PULSE GENERATOR

Mehdi Bathaee, Riverside, Calif., assignor to Western Digital Corporation, Irvine, Calif.

Continuation of Ser. No. 555,816, Jul. 18, 1990, abandoned, which is a continuation of Ser. No. 290,331, Dec. 27, 1988, abandoned. This application Feb. 15, 1991, Ser. No. 656,776

Int. Cl.[5] **H03K** *3/284, 3/017*

U.S. Cl. 307—273 **5 Claims**



1. A one shot pulse generator circuit for receiving an input signal and for asynchronously generating a constant width output pulse independent of the width of the input signal when the input signal is of a predetermined level for at least a predetermined time duration, the combination comprising:

a delay circuit responsive to the input signal at a predetermined level for providing a delayed signal commencing after said predetermined time duration following the beginning of the input signal of predetermined level;

an output stage having first, second and third inputs and an output, the output stage being characterized in that it is responsive to the presence of both the input signal of predetermined level at its first input and the delayed signal at its second input for beginning the output pulse at its output; and

a majority gate comprising an output coupled to the third input of the output stage, a first input coupled to the input signal, a second input coupled to the output of the output stage and a third input coupled to the output of the majority gate, the majority date being characterized by a predetermined delay characteristic and being responsive to the presence of the output pulse for changing the output of the majority gate from a first output signal to a second output signal after the predetermined delay following the presence of the output pulse,

the output stage responding to the second output signal for terminating the presence of the output pulse,

the majority gate being responsive to both the absence of the input signal of predetermined level and the output pulse for changing the signal at the output of the majority gate from the second to the first output signal,

the output stage being responsive to the presence of the second output signal from the majority gate for prevent-

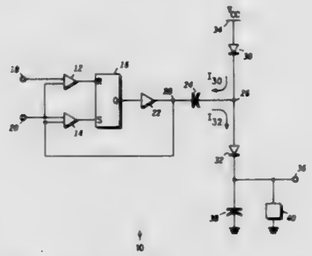
ing the formation of a further output pulse until such second output signal terminates.

5,057,707

CHARGE PUMP INCLUDING FEEDBACK CIRCUITRY FOR ELIMINATING THE REQUIREMENT OF A SEPARATE OSCILLATOR

John M. Pigott, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1989, Ser. No. 375,791
Int. Cl.[5] H03K *3/01, 5/153, 3/26;* **G06G** *7/12*
U.S. Cl. 307—296.1 **18 Claims**



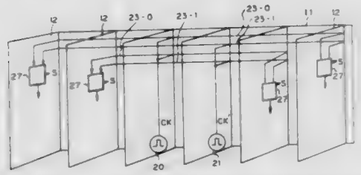
1. A charge pump including first and second switching means serially coupled between a first source of operating potential and an output terminal; first capacitive means having first and second terminals the latter being coupled between the first and second switching means; and a buffer having an input and an output coupled to the first terminal of the first capacitive means at which a dynamic signal is developed; wherein the improvement comprises a feedback circuit coupled between the input and output of the buffer for alternating the drive direction thereof in response to first and second predetermined levels of the dynamic signal.

5,057,708

DUPLEX SYSTEM HAVING A FUNCTION TO SUPPRESS RADIO WAVE RADIATION

Masateru Tagami, Tokyo, and Hirokazu Deguchi, Kawasaki, both of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Jun. 15, 1990, Ser. No. 538,409
Claims priority, application Japan, Jun. 16, 1989, 1-152308
Int. Cl.[5] H03K *3/26, 19/00*
U.S. Cl. 307—303 **21 Claims**



1. A duplex system having a function to suppress radio wave radiation, comprising:

cards, each for mounting electronic devices;

a backboard, having a first end and a second end, for supporting said plurality of cards which stand closely together in parallel;

first and second clock signal sources respectively generating first and second clock signals;

first and second selecting gates, operatively connected to said first and second clock signal sources respectively, having outputs and alternatively selecting one of said first and second clock signals to be output; and

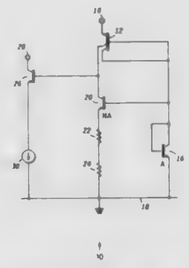
a first and a second group of click signal lines, operatively connected to the outputs of said first and second selecting gates respectively, the clock signal lines in said first and second groups respectively being wired closely in parallel on said backboard and wired on said cards, for respectively conducting said first and second clock signals to said cards.

5,057,709

CURRENT THRESHOLD DETECTOR CIRCUIT

Thomas D. Petty, and Robert L. Vyne, both of Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 1, 1990, Ser. No. 607,961
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—350 **8 Claims**



1. A current threshold detection circuit having an input and an output, comprising:

a first transistor having first, second and third electrodes and a control electrode, said first electrode being coupled to the input of the circuit to which an input current is sourced, said second electrode being coupled to said control electrode wherein said first transistor is rendered conducting responsive to said input current for sourcing first and second currents at said second and third electrodes;

diode means coupled between said second electrode of said first transistor and a terminal to which a supply potential is applied, said diode means developing a potential thereacross as current flows therethrough;

a second transistor having first, second and control electrodes, said second electrode being coupled to said third electrode of said first transistor and said control electrode being coupled to said second electrode of said first transistor, said second transistor being operated at a different current density than said diode means which produces a difference voltage therebetween;

resistive means coupled between said first electrode of said second transistor and said terminal across which said difference voltage is developed to set the current flow therethrough, said second transistor being maintained in a saturated operating condition until such time as said current flow through said resistive means substantially equals said second current; and

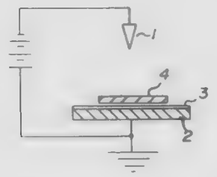
output circuit means coupled between said third electrode of said first transistor and the output of the circuit for providing an output current responsive to said second transistor becoming non-saturated.

5,057,710

ELECTRET MATERIALS AND THE METHOD FOR PREPARING THE ELECTRET MATERIALS

Eiichi Nishiura, and Katsutoshi Ando, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP88/01136, § 371 Date Jan. 11, 1990, § 102(e) Date Jan. 11, 1990, PCT Pub. No. WO89/11156, PCT Pub. Date Nov. 16, 1989
PCT Filed Nov. 11, 1988, Ser. No. 457,781
Claims priority, application Japan, May 13, 1988, 63-117950
Int. Cl.[5] G11C *13/02*
U.S. Cl. 307—400 **11 Claims**



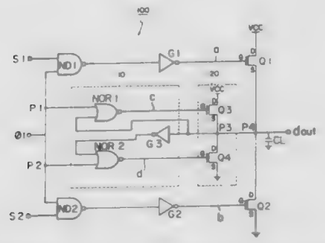
1. Electret materials characterized by compounding 0.01 parts by weight or more and 2 parts by weight or less of at least one stabilizer selected from stabilizers of hindered amines, nitrogen-containing hindered phenols and metal-containing hindered phenols against 100 parts by weight of polypropylene and by using, at least as a part, a polypropylene whose molecular weight distribution is 5.5 or less in the ratio of Mw/Mn (Mw:weight average molecular weight, Mn: number average molecular weight).

5,057,711

NOISE REDUCING OUTPUT BUFFER CIRCUIT FOR AN INTEGRATED CIRCUIT

Jong S. Lee; Seung M. Kim, both of Kyungki, and Joo W. Park, Chonlanam, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyungki, Rep. of Korea

Filed May 30, 1990, Ser. No. 530,819
Claims priority, application Rep. of Korea, May 31, 1989, 89-7378
Int. Cl.[5] H03K *19/094*
U.S. Cl. 307—443 **4 Claims**



1. An output buffer circuit to reduce noise in an integrated circuit for outputting an amplified signal from a sense amplifier which senses information stored in a memory cell of a random access memory, the output buffer circuit comprising:

NAND gates (ND1, ND2) one input of each connected to output of the sense amplifier, respectively, to receive a first and second output signals (S1, S2), and the remaining inputs connected, respectively, to receive a control signal (ϕ1) from the integrated circuit which operates the memory cell to read;

MOSFET (Q1) with a gate electrode connected to the output of the NAND gate (ND1) through an inverting gate (G1), with a drain electrode connected to a voltage source (Vcc), and with source electrode connected to a junction (P4);

MOSFET (Q2) with gate electrode connected to the output of the NAND gate (ND2) through an inverting gate (G2), with drain electrode connected to the junction (P4), and with source electrode connected to ground, both MOSFETs turning on or off depending upon the signals applied to their gates;

an output loading capacitor (CL), one end of which is connected to the junction (P4) and the other end is connected to ground;

a logic combination means (10) for performing a logical combination of the signal from the junction (P4) and the control signal (ϕ1), the inputs of which are connected to the junction (P4) for receiving the output signal and junctions (P1, P2) for receiving the control signal (ϕ1); and,

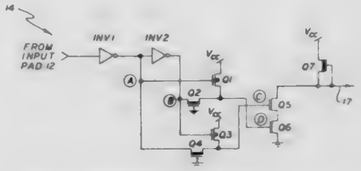
an output means (20) for providing a middle level of the peak of the output level of the junction (P4) in the output buffer circuit in response to the signal from the logic combination means.

5,057,712

ADDRESS TRANSITION DETECTOR FOR PROGRAMMABLE LOGIC ARRAY

Cuong Trinh, Daly City; Vincent K. Z. Win, Milpitas; Behzad Nouban, Mountain View, and Andrew K. Chan, Palo Alto, all of Calif., assignors to Advanced Micro Device, Inc., Sunnyvale, Calif.

Filed Sep. 29, 1989, Ser. No. 414,312
Int. Cl.[5] H03K *17/16;* **G06F** *7/38*
U.S. Cl. 307—465 **9 Claims**



1. An improved address transition detector for use in programmable array logic to provide a transition detection signal when an address input changes state, said address transition detector including:

first means for receiving said address input and providing a first signal in response thereto;

second means for inverting said first signal to provide a second signal in response thereto; and

an exclusive-or comparator connected to compare said first signal and said second signal and to provide a first output signal as said transition detection signal for a first period of time after said first signal and said second signal have changed logic states; and which includes

means for controlling the width of said transition detection signal.

5,057,713

BIPOLAR MOS LOGIC CIRCUIT AND SEMICONDUCTOR INTEGRATED CIRCUIT

Masahiro Iwamura, Hitachi, and Akira Ide, Takasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

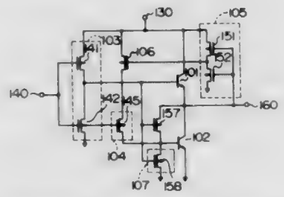
Filed Feb. 28, 1990, Ser. No. 486,419
Claims priority, application Japan, Mar. 2, 1989, 1-050540
Int. Cl.[5] H03K *19/20, 17/16*
U.S. Cl. 307—446 **19 Claims**

1. A bipolar-MOS logic circuit comprising:

a first NPN bipolar transistor having a collector connected to a first potential terminal and an emitter connected with an output terminal of said circuit;

a second NPN bipolar transistor having a collector con-

nected to said output terminal and an emitter connected to a second potential terminal;
logic inverting means having an input connected to one of the emitter and base of said first NPN transistor;
a CMOS logic circuit having an output connected to the base of said first NPN transistor and an input to which an input signal is applied;



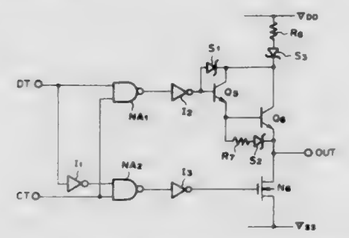
a first P channel MOS transistor having a source connected to said first potential terminal and a gate connected to the output of said logic inverting means;
an NMOS logic circuit connected between the drain of said first P channel MOS transistor and the base of said second NPN transistor; and
discharging means connected between the base of said second NPN transistor and said second potential terminal.

5,057,714

BICMOS INTEGRATED CIRCUIT DEVICE UTILIZING SCHOTTKY DIODES

Tsutomu Hatano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 29, 1990, Ser. No. 530,236
Claims priority, application Japan, May 30, 1989, 1-138671
Int. Cl.[5] H03K *19/02*
U.S. Cl. 307—446 **6 Claims**



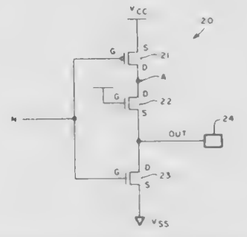
1. A semiconductor integrated circuit device including bipolar transistors and MOS transistors on a semiconductor substrate and having an output circuit formed in a push-pull configuration for performing a level shifting operation with respect to an external circuit, said output circuit comprising:
a first power supply line of a first potential;
a second power supply line of a second potential which is lower than said first potential;
a first output bipolar transistor and a second bipolar transistor connected with each other in a Darlington configuration, said Darlington configuration being disposed at a push-side of said push-pull configuration between said first power supply line and an output node;
a series circuit including a resistor and a Schottky diode, said series circuit being disposed between said first power supply lines and said Darlington-connected bipolar transistors for preventing the flow of currents from said output node;
a Schottky clamping diode connected across a base and a collector of said second bipolar transistor for preventing said first bipolar transistor from becoming saturated;
an output MOS transistor disposed at a pull-side of said push-pull configuration and between said output node and said second power supply line; and
a control circuit for effecting an ON/OFF control of said Darlington-connected bipolar transistors and said output MOS transistor.

5,057,715

CMOS OUTPUT CIRCUIT USING A LOW THRESHOLD DEVICE

Robert E. Larsen, Shingle Springs; Khandker N. Quader, Citrus Heights, and Joseph H. Salmon, Placeville, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 255,361, Oct. 11, 1988, abandoned.
This application Dec. 21, 1989, Ser. No. 456,081
Int. Cl.[5] H03K *19/094, 17/16, 17/687;* **H01H** *37/76*
U.S. Cl. 307—451 **1 Claim**



1. A complementary metal-oxide semicondutor (CMOS) driver circuit for tolerating a high voltage at its output comprising:
a p-channel transistor having its source coupled to a supply voltage and its gate coupled to accept an input signal;
a first n-channel transistor having substantially zero threshold level for preventing a high voltage approaching said supply voltage from being coupled to the drain of said p-channel transistor, wherein said first n-channel transistor has its drain coupled to the drain of said p-channel transistor, its gate coupled to a power voltage and its source coupled to an output terminal;
a second n-channel transistor having its drain coupled to said output terminal and to the source of said first n-channel transistor, its source coupled to a return of said supply voltage, and its gate coupled to accept said input signal;
said p-channel transistor and said second n-channel transistor operating as a CMOS driver, wherein said first n-channel transistor provides for substantially zero volts to be dropped across it when conducting, wherein said first n-channel transistor ceases conduction and disconnects said p-channel transistor from said output terminal in order to prevent destruction of said p-channel transistor when said high voltage approaching said supply voltage is impressed at said output terminal.

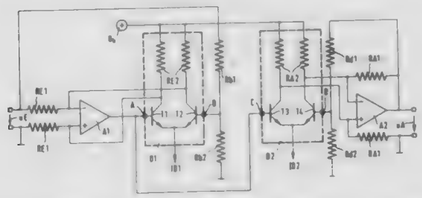
5,057,716

LINEARLY COMPENSATED SLOPE MULTIPLIER

Martin Küng, Judavollastrasse 24, Bürs, Austria 6706

Filed Jul. 21, 1989, Ser. No. 383,183
Int. Cl.[5] G06G *7/12, 7/14;* **H03K** *5/153*
U.S. Cl. 307—491 **6 Claims**

1. Electronic multiplier circuit in which an input signal is applied to input terminals of an input amplifier, a first input of a first differential amplifier is connected to a first input of a second differential amplifier, collectors of the first differential amplifier are connected with said input terminals of the input amplifier and collectors of the second differential amplifier are connected with inputs of an output amplifier, at whose output an output signal is collected, whereby an output of the input amplifier is connected to said first inputs of the first and second differential amplifiers, a proportional portion of the input signal is applied to a second input of the first differential amplifier and a proportional portion of the output signal of said



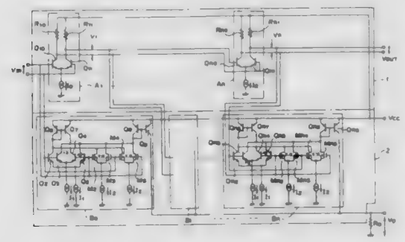
output amplifier is applied to a second input of the second differential amplifier.

5,057,717

LOGARITHMIC AMPLIFIER CIRCUIT

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 647,829
Claims priority, application Japan, Feb. 1, 1990, 2-24074
Int. Cl.[5] G06F *7/556, 7/24*
U.S. Cl. 307—492 **8 Claims**



1. A logarithmic amplifier circuit having a plurality, n stages ($n>1$), of differential amplifiers connected in cascade and a plurality, $n+1$ in number, of rectifying circuits each connected to an input of each stage and an output of a final stage of said differential amplifiers, said rectifying circuits each comprising:
a differential pair of bipolar transistors of which the ratio of emitter sizes is $1/J$ ($J>1$);
a differential pair of MOS transistors of which the ratio of a gate-width and a gate-length W/L is $1/K$ ($K>1$);
said bipolar transistors and said MOS transistors forming an output pair by being arranged such that a collector of one of said bipolar transistors having a larger emitter size and a drain of one of said MOS transistors having a larger W/L ratio are connected together and a collector of the other of said bipolar transistors having a smaller emitter size and a drain of the other of said MOS transistors having a smaller W/L ratio are connected together; and
subtraction circuit for outputting a difference in the currents flowing in each of said output pair;
said rectifying circuits having in common an adding means for adding outputs from all of said subtraction circuits.

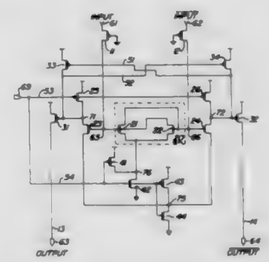
5,057,718

CMOS REGENERATIVE SENSE AMPLIFIER WITH HIGH SPEED LATCHING

Robert J. Proebsting, Los Altos, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Apr. 3, 1990, Ser. No. 504,176
Int. Cl.[5] H03F *3/45;* **H03K** *19/094*
U.S. Cl. 307—530 **21 Claims**

1. A MOS sense amplifier having a pair of differential input terminals and a pair of differential output terminals, comprising:
a pair of cross-coupled transistors, each transistor having a gate electrode connected to a drain electrode of the other transistor, a source electrode connected to the source electrode of the other cross-coupled transistor to form a first common node;
means for connecting one input terminal to the gate electrode of one of the cross-coupled transistors, and for connecting the other input terminal to the gate electrode of the other cross-coupled transistor;
a first latching transistor having a drain electrode connected to the first common node, a source electrode connected to a first voltage reference, and a gate electrode connected to a first control signal node;
a pair of drive transistors, each transistor having a gate electrode connected to the gate electrode of one of the cross-coupled transistors respectively, a source electrode connected to the source electrode of the other drive transistor to form a second common node, and a drain electrode;



a second latching transistor having a drain electrode connected to the second common node, a source electrode connected to the first voltage reference, and a gate electrode connected to a second control signal node;
a pair of precharge transistors, each transistor having a drain electrode connected to the drain electrode of one of the drive transistors respectively, a gate electrode connected to a third control signal node, and a source electrode connected to a second voltage reference; and
a pair of output transistors, each transistor having a source electrode connected to the second voltage reference, a gate electrode connected to the drain electrode of one of the drive transistors respectively, and a drain electrode connected to one of the output terminals respectively;
whereby said sense amplifier generates a high speed output signal at the output terminals upon related sensing operation signals on the first, second and third control signal nodes.

5,057,719

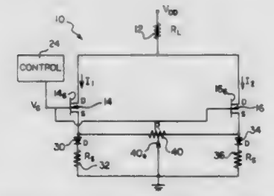
PASSIVELY FORCED CURRENT SHARING AMONG TRANSISTORS

Janis M. Niedra, North Ridgeville, Ohio, assignor to Sverdrup Technology, Inc., Tullahoma, Tenn.

Filed Jun. 27, 1990, Ser. No. 545,387
Int. Cl.[5] H03K *17/60, 17/56;* **H02J** *1/04;* **H03F** *3/26*
U.S. Cl. 307—570 **8 Claims**

1. Circuitry comprising:
a) a plurality of transistors coupled to a load for sharing current in the load, wherein each transistor includes a control electrode for adjusting a conductive state of the transistor and first and second additional electrodes for carrying a load current;
b) control means for coupling a common control signal to the control electrode of each of said plurality of transistors; and
c) biasing circuitry coupled to said plurality of transistors for

applying a biasing voltage to the plurality of transistors to distribute load current among the plurality of transistors;
d) said biasing circuitry comprising i) a series combination of a diode and a resistor coupled between one additional electrode of said first and second additional electrodes of



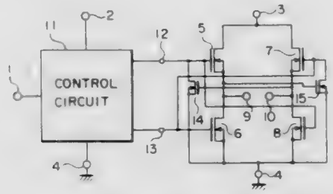
each transistor and a reference voltage connection and ii) variable resistance means coupled between said one additional electrode of each transistor and the reference voltage connection to provide a current path to the reference voltage connection in parallel to the series combination of the diode and the resistor.

5,057,720

OUTPUT BUFFERING H-BRIDGE CIRCUIT

Masayuki Hattori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 5, 1989, Ser. No. 446,159
Claims priority, application Japan, Dec. 5, 1988, 63-308201
Int. Cl.[5] H03K *19/003, 19/017, 19/094, 17/13*
U.S. Cl. 307—571 **5 Claims**



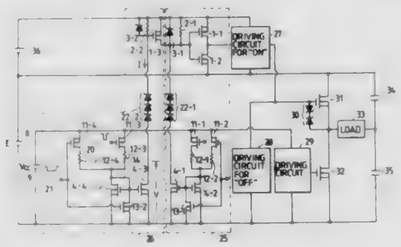
1. An output buffering H-bridge circuit comprising a first MOS transistor having a drain connected to a terminal of power source, a source connected to a first output terminal and a gate connected to a first internal input terminal, a second MOS transistor having a drain connected to the first output terminal, a source connected to a ground terminal and a gate connected to a second internal input terminal, a third MOS transistor having a drain connected to the terminal of power source, a source connected to a second output terminal and a gate connected to the second internal input terminal, a fourth MOS transistor having a drain connected to the second output terminal, a source connected to the ground terminal and a gate connected to the first internal input terminal, a fifth MOS transistor having a drain connected to the first internal input terminal, a source connected to the ground terminal, and a gate connected to the second output terminal, and a sixth MOS transistor having a drain connected to the second internal input terminal, a source connected to the ground terminal and a gate connected to the first output terminal whereby a shoot-through current from the terminal of power source to the ground terminal in said circuit is at least substantially reduced.

5,057,721

LEVEL SHIFT CIRCUIT FOR CONTROLLING A DRIVING CIRCUIT

Hideki Miyazaki; Akihiko Kanouda; Kozo Watanabe; Kenichi Onda, all of Hitachi, Japan, and Yasuo Matsuda, East Chester, N.Y., assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1990, Ser. No. 540,269
Claims priority, application Japan, Jun. 19, 1989, 1-154672
Int. Cl.[5] H03K *19/096, 17/16*
U.S. Cl. 307—571 **23 Claims**



1. A level shift circuit comprising:
a control power supply;
a high voltage power supply having a voltage higher than that of said control power supply and a negative terminal coupled to the negative terminal of said control power supply;
a first transistor coupled in series to said control power supply and formed in a loop circuit arrangement with said control power supply;
a second transistor coupled in series to said high voltage power supply, formed in a different a loop circuit arrangement with said high voltage power supply, and coupled to form a current mirror circuit with said first transistor;
a third transistor coupled between the positive terminal of said high voltage power supply and said second transistor and supplying an output signal to a load in response to an output current from said second transistor;
a first current control means for supplying a first current (I_1) having a first amplitude to said first transistor for a first predetermined period of time (t_1) after application of a driving signal; and
a second current control means for supplying a second current (I_2) having a second amplitude, smaller than that of the current I_1, to said first transistor for another predetermined period of time (t_1+t_2), including the first time period (t_1) plus a second time period (t_2), in accordance with the timing of the driving signal, wherein a resultant current I_1+I_2 flows through said first and second transistors during the predetermined time period t_1+t_2 in accordance with a current mirror effect thereof.

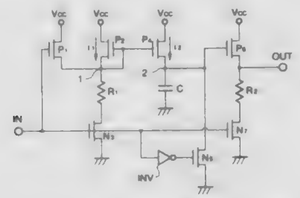
5,057,722

DELAY CIRCUIT HAVING STABLE DELAY TIME

Hiroyuki Kobatake, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 20, 1990, Ser. No. 541,145
Claims priority, application Japan, Jun. 20, 1989, 1-158585
Int. Cl.[5] H03K *5/13, 5/08;* **H03B** *1/04*
U.S. Cl. 307—605 **8 Claims**

1. A delay circuit comprising:
an input terminal and an output terminal;
a first MOSFET having a gate connected to the input terminal, and a drain-source path connected at its one end to a first node and at its other end to a first voltage supply line;
a second MOSFET having a gate connected to the first node and a drain-source path connected at its one end to the first node and at its other end to the first voltage supply line;
a third MOSFET having a gate connected to the input terminal, and a drain-source path connected at its one end through a first resistive element to the first node and at its other end to a second voltage supply line;
a fourth MOSFET having a gate connected to the first node, and a drain-source path connected at its one end to a second node and at its other end to the first voltage supply line;
a capacitive element connected between the second node and one of said first and second voltage supply lines;
a fifth MOSFET having a gate connected to receive an inverted signal of a signal applied on the input terminal,



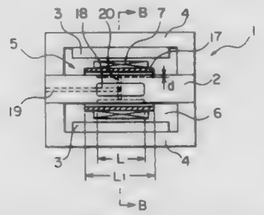
and a drain-source path connected at its one end to the second node and at its other end to the second voltage supply line;
a sixth MOSFET having a gate connected to the second node, and a drain-source path connected at its one end to the output terminal and at its other end to the first voltage supply line; and
a seventh MOSFET having a gate connected to the input terminal, and a drain-source path connected at its one end through a second resistive element to the output terminal and at its other end to the second voltage supply line.

5,057,723

LINEAR MOTOR

Teruo Umehara, Hanyu; Seiki Takedomi, Fukaya; Kuninori Imai, Kanagawa, and Takeji Shiokawa, Fuchu, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 22, 1990, Ser. No. 467,865
Claims priority, application Japan, Jan. 23, 1989, 1-13351
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **3 Claims**



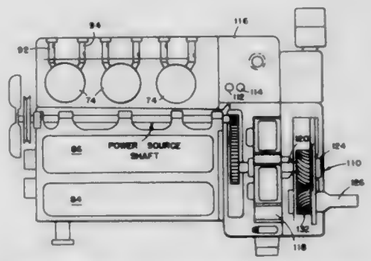
1. A linear motor comprising a center yoke having two ends and made of a ferromagnetic material; outer yokes made of a ferromagnetic material, having permanent magnets, each having magnetic poles on the inner and outer surfaces thereof and fixed to the inside surface of the outer yokes, and disposed outside the center yoke with both ends thereof being magnetically couples; and a movable member having coils wound on the outer circumference thereof and axially movably disposed in a gap between the center yoke and the outer yokes, characterized in that a plurality of recesses having an axial length of L are provided on the outer circumferential surface of said center yoke, an air intake vent connecting to said recesses is provided on said center yoke, and a sleeve facing said recesses and having an axial length of L_1, which is larger than the axial length L of said recesses, is provided on said movable member; said recesses and said sleeve forming a staticpressure gas bearing.

5,057,724

CERAMIC MAGNET MOTOR

James V. Patton, 1202 E. 9th St., No. 1, Gillette, Wyo. 82716

Filed Jan. 16, 1990, Ser. No. 465,474
Int. Cl.[5] H02K *33/12*
U.S. Cl. 310—17 **3 Claims**



1. A positive-displacement pump motor comprising:
A) a block having a plurality of cylinders, each cylinder being a closed chamber with a first end and a second end;
B) a plurality of pistons, each piston being mounted in one cylinder of said plurality of cylinders to reciprocate back and forth in that cylinder from adjacent to said first end to adjacent to said second end and visa versa, and each including
(1) a core of magnetizable material,
(2) a first face on one end of said core,
(3) a second face on another end of said core, and
(4) a magnetic molded ceramic magnet surrounding said core and extending between said faces;
C) a first electromagnet mounted on said block adjacent to each cylinder first end and having a first polarity when energized in a first manner and a second polarity when energized in a second manner with said first polarity being opposite to said second polarity;
D) a second electromagnet mounted on said block adjacent to each cylinder second end and having a first polarity when energized in a first manner and a second polarity when energized in a second manner with said first polarity being opposite to said second polarity, said first electromagnet first polarity being opposite to said second electromagnet first polarity, and said first electromagnet second polarity being opposite to said second electromagnet second polarity so that when both said first and said second electromagnets associated with one piston are simultaneously energized in a first manner, the one piston is simultaneously attracted to one of said electromagnets and repelled by the other of said electromagnets and visa versa for said second manner;
E) a power source;
F) electric circuit means for sequentially connecting all of said first and second electromagnets to said power source to sequentially operate all of said pistons, said electric circuit means including
(1) a step-up transformer connected to said power source,
(2) a rheostat connected to said step-up transformer,
(3) a second transformer connected to said rheostat, and
(4) a distributor connecting said second transformer to each of said electromagnets to sequentially connect each of said electromagnets to said power source;
G) a fluid circuit system which includes
(1) a low pressure hydraulic fluid source,
(2) a high pressure hydraulic fluid storage tank,
(3) a first inlet valve on each cylinder first end,
(4) a second inlet valve on each cylinder second end,
(5) a first return valve on each cylinder first end,

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(6) a second return valve on each cylinder second end,

H) a power take off mechanism which includes

(1) a high pressure fluid conduit fluidically connected to said high pressure hydraulic fluid storage tank,

(2) a hydraulic regulator fluidically connected to said high pressure conduit,

(3) a rotor turbine mounted on said block and fluidically connected to said hydraulic regulator to be operated by fluid from said hydraulic regulator,

(4) a drive shaft mounted on said block and connected to said rotor turbine to be rotatably driven by said rotor turbine,

(5) a gear assembly connected to said drive shaft to be operated by rotation of said drive shaft, and

(6) a power output connection element connected to said gear assembly.

5,057,725

ROTARY ELECTRIC MACHINE

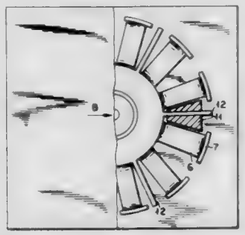
Shigeru Kasai; Susumu Kobayashi, and Makoto Fujishima, all of Komagane, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

Filed Dec. 26, 1989, Ser. No. 456,301

Claims priority, application Japan, Dec. 27, 1988, 63-168805[U]

Int. Cl.[5] H02K *5/24*

U.S. Cl. 310—51 **5 Claims**



1. In a rotary electric machine having a stator and a rotor arranged opposed to each other and rotated by magnetic action between the stator and the rotor, the improvement comprising: magnet means provided at a fixed position in relation to the stator and magnetically coupled to a ferromagnetic portion of said rotor for constantly biasing said rotor in a predetermined radial direction, said magnet means being positioned to avoid substantially affecting magnetic coupling between the stator and rotor, whereby any wobble associated with rotation of said rotor is stabilized at a repeatable angular position.

5,057,726

STRUCTUREBORNE VIBRATION-COMPENSATED MOTOR ARRANGEMENT HAVING BACK-TO-BACK TWIN AC MOTORS

Cecil J. Mole, Monroeville, and Dexter V. Wright, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 10, 1990, Ser. No. 597,943

Int. Cl.[5] H02K *16/00*

U.S. Cl. 310—67 R **18 Claims**

1. A structureborne vibration-compensated motor arrangement, comprising:

(a) a rotatable shaft structure;

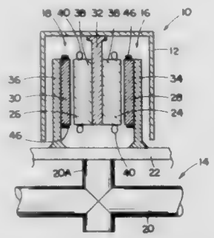
(b) an outer support housing; and

(c) a pair of twin AC motors;

(d) each said motor including an annular stator core structure and an annular stator support member mounting said stator core structure and, in turn, stationarily supported by said outer support housing;

(e) each said motor further including an annular rotor field structure spaced from said stator core structure and an annular rotor support member mounting said rotor field structure and, in turn, mounted to said shaft structure for rotation therewith such that said rotor field structure rotates relative to said stator core structure;

(f) said twin AC motors being mounted with said stator core structures located adjacent opposite sides of said stator



support member and said rotor field structures located adjacent said respective stator core structures opposite from said stator support member such that said twin AC motors are arranged back-to-back as mirror images of one another for cancelling out axial and radial vibrations of said stator core and rotor field structures at respectively said outer housing and shaft structure.

5,057,727

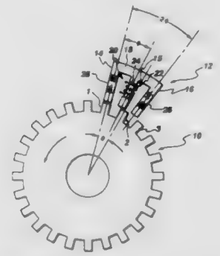
SHAFT POSITION SENSOR EMPLOYING A WIEGAND-EFFECT DEVICE

Donald W. Jones, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1990, Ser. No. 611,567

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—68 B **7 Claims**



1. A shaft position sensor for a motor including a rotor having multiple poles mounted to a motor shaft, comprising:

a toothed wheel of magnetic material attached to said motor shaft and having a plurality of poles;

a set of three stationary poles situated proximate to said toothed wheel, pole pitch θ of said toothed wheel being related to pole pitch ϕ of said set of three stationary poles according to the expression:

$$2\phi \quad \left(N + \frac{1}{2}\right)\theta, \text{ where } N \text{ is an integer;}$$

a Wiegand-effect device, including a coil wrapped around a Wiegand wire, coupled to a central pole of said set of three stationary poles; and

means for generating a changing magnetic field in said Wiegand wire, said Wiegand-effect device generating rotor position feedback signals across said coil in response to said changing magnetic field.

5,057,728

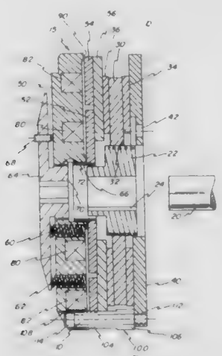
THREE STEP ELECTRIC BRAKE

Ned E. Dammeyer, New Bremen; Nicholas J. Sherman, Minster, and Nicholas D. Thobe, Celina, all of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio

Filed Nov. 29, 1990, Ser. No. 622,052

Int. Cl.[5] H02K *7/106*

U.S. Cl. 310—77 **8 Claims**



2. A variable braking force electric brake for attachment to a rotating shaft,

said brake including a brake rotor supported for rotation with the shaft, a housing fixed against rotation, brake pads associated with said housing and positioned on opposite sides of said rotor for engaging and stopping the rotation of said rotor when applied thereto, means for urging said pads against said rotor, and means for controlling said brake,

wherein said urging means includes inner and outer armatures cooperating with said brake pad support elements,

a first plurality of springs placed between said housing and said inner armature for applying a first level of force against said rotor,

a second plurality of springs placed between said housing and said outer armature for applying a second level of force against said rotor,

and wherein said means for controlling said brake includes first and second electromagnetic means mounted to said housing for interacting with said inner and outer armatures, respectively, to move said pads away from said rotor against the force of said springs, and

means for selectively actuating said first and second electromagnetic means for providing a first level of braking force when said first electromagnetic means is released, a second level of braking force when said second electromagnetic means is released, and a third level of braking force when both said electromagnetic means are released, and wherein no braking force is applied when both said electromagnetic means are energized.

5,057,729

RESIN-SEALED ROTARY ACTUATOR FOR VARIABLE SHOCK ABSORBER

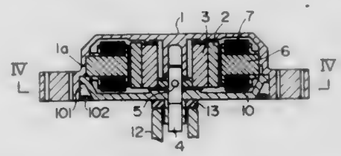
Tsutomu Tominaga, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1990, Ser. No. 572,655

Claims priority, application Japan, Aug. 29, 1989, 1-100629[U]

Int. Cl.[5] H02K *5/10;* **F16F** *9/36*

U.S. Cl. 310—89 **2 Claims**



1. An actuator comprising:

a housing provided at one side thereof with an opening;

an annular permanent magnet rotatably mounted in said housing;

an output shaft connected to said permanent magnet;

a stator fixed in said housing with a radial gap from said permanent magnet and provided with projected poles;

coils wound on said stator; and

a cover closing said opening of said housing and cooperating with said housing in clamping therebetween said stator, the outer peripheral portion of said cover being recessed in a tapered form so that a groove is formed between the outer peripheral portion of said cover and the edge of the opening of said housing, the lead wires leading from said coils being led externally through said groove, said groove being charged with a bonding resin.

5,057,730

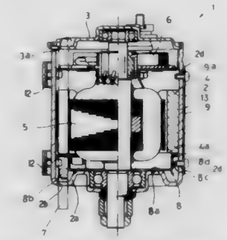
STRUCTURE FOR LOCATING PERMANENT MAGNETS IN DYNAMIC ELECTRIC MACHINE

Yasushi Yoshida, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed May 22, 1990, Ser. No. 526,591

Int. Cl.[5] H02K *5/00*

U.S. Cl. 310—91 **11 Claims**



1. A dynamic electric machine comprising:

a yoke with a bottom surface having at least one tie bolt hole;

at least one tie bolt extending through said yoke and into said tie bolt hole;

at least one permanent magnet held against an inner surface of said yoke;

a guide plate disposed within said yoke and including at least one guide tab, inclined toward said bottom surface of the yoke, for guiding said tie bolt into said tie bolt hole; and

means on said guide plate for locating said permanent magnet on said yoke.

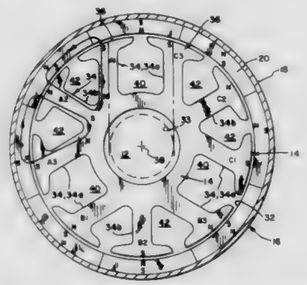
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5,057,731

SIMPLIFIED SPINDLE MOTOR FOR DISC DRIVE

Clyde J. Hancock, Fort Wayne, Ill., assignor to Xolox Corportion, Fort Wayne, Ind.

Filed Aug. 15, 1990, Ser. No. 567,961
Int. Cl.[5] H02K *1/00, 3/18, 19/26, 1/12*
U.S. Cl. 310—180 **6 Claims**



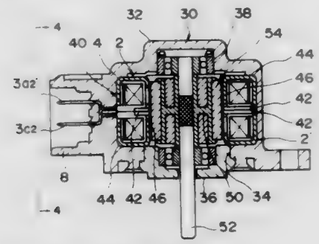
1. For use in a three-phase dynamoelectric machine,
a rotor or stator comprising a plurality of circularly arranged magnetic poles on a common ferromagnetic core and separated by slots, the number of poles and slots being nine, said poles and slots being further arranged into three discrete sets of three adjacent poles and slots corresponding to three electric phases, respectively, the slots between sets being larger than the slots within the sets, the adjacent poles of adjacent sets having coils thereon, the intermediate pole of each set having no coil thereon, said larger slots of adjacent sets thereby receiving the conductors of two coils, the slots within said sets thereby receiving the conductors of only single coils, respectively, and said poles having tips which are evenly circumferentially spaced.

5,057,732

ELECTRIC MOTOR HAVING A MOLDED HOUSING AND CONNECTOR PLATES PROJECTED THEREON

Katsuyoshi Fukaya, Aichi, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 24, 1990, Ser. No. 587,115
Claims priority, application Japan, Sep. 28, 1989, 1-114088[U]
Int. Cl.[5] H02K *3/04*
U.S. Cl. 310—208 **9 Claims**



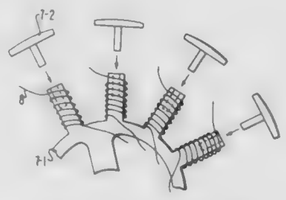
5. A stepping motor comprising:
a housing;
a stator disposed fixedly in said housing including, a coil bobbin formed in a hollow cylindrical shape by insulating material, an exciting coil wound on said coil bobbin, at least two connector plates made of conductive material and fixed to said coil bobbin at one end thereof at a position apart from said exciting coil and extended in parallel with each other, and a case made of soft magnetic material covering outer and inner circumferences of said bobbin and provided with pawl-type magnetic poles formed at the portion opposed to the inner circumferential surface of said exciting coil;
a rotor rotatably supported in said housing and positioned concentrically to said stator and provided with a multipolarly magnetized permanent magnet positioned oppositely to pawl-type magnetic poles of said stator on an outer circumferential plane thereof, wherein
both ends of a coil wire which forms said exciting coil wound on said coil bobbin of said stator are conductively fixed to respective one of said connector plates fixed to said coil bobbin, respectively;
said housing is molded by insulating hard synthetic resin on the outer circumference of said case; and
free end portions of said connector plates are made to project outside the outer surface of said housing and insulatingly held by said housing, respectively, to form a male connector for being supplied with a current from an electric power source.

5,057,733

MODULAR COIL CORES FOR ELECTRIC MOTOR

Takashi Sonoda, Moriguchi, and Takafumi Asada, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 8, 1989, Ser. No. 433,210
Claims priority, application Japan, Nov. 10, 1988, 63-284527
Int. Cl.[5] H02K *3/52;* **H01F** *3/10*
U.S. Cl. 310—269 **1 Claim**



1. Modular coil cores for an electric motor comprising: a ring-shaped rotor magnet; a shaft; a stator having pole members, said stator being in the manner of opposing itself to an inner circumference of said ring-shaped rotor magnet; coiled wires which are wound onto an external circumference of said pole members of said stator; a housing which secures said stator in position and supports shaft bearings surrounding said shaft; and a hub which is connected to said shaft and which supports said ring-shaped rotor magnet;
wherein said pole members of said stator have respective pole caps which are inserted tad into apertures in said pole members.

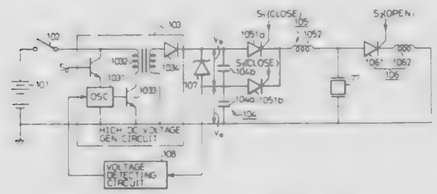
5,057,734

APPARATUS FOR DRIVING PIEZOELECTRIC ELEMENT FOR CLOSING AND OPENING VALVE MEMBER

Naoyuki Tsuzuki; Masaki Mitsuyasu, both of Susono, and Takeshi Takahashi, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 29, 1989, Ser. No. 443,220
Claims priority, application Japan, Nov. 30, 1988, 63-154887[U]; Jan. 11, 1989, 1-2876
Int. Cl.[5] H01L *41/08;* **B05B** *3/14*
U.S. Cl. 310—317 **14 Claims**

1. An apparatus for driving a piezoelectric element to transmit a displacement of said piezoelectric element via a liquid to a valve member, for closing and opening said valve member, comprising:
a high DC voltage generating means; a charging switching means, connected to said high DC voltage generating means and said piezoelectric element, for generating a first voltage and applying said first voltage to said piezoelectric element for a predetermined time so that said valve member reaches a position near to a valve seat, and thereafter, increasing a voltage applied to said piezoelectric element from said first voltage to a second voltage higher than said first voltage so that said valve member is seated on said valve seat, to thereby close said valve; and
a discharging switching means, connected to said piezoelectric element, for discharging charges stored in said piezoelectric element to open said valve.

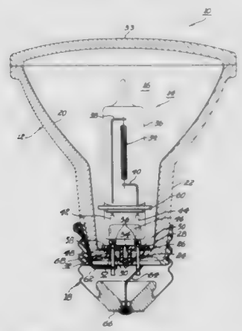


5,057,735

REFLECTOR LAMP UNIT WITH INDEPENDENTLY ADJUSTABLE LAMP MOUNT

Frank E. Zalar, Euclid; Richard G. Lynce, Chesterland, and Vito J. Arsena, Highland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 13, 1989, Ser. No. 421,439
Int. Cl.[5] H01J *5/48, 5/50;* **H01K** *1/42*
U.S. Cl. 313—318 **12 Claims**



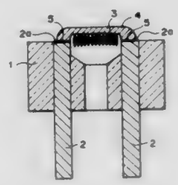
1. A reflector lamp unit comprising:
(a) a reflector having an internal electrically conductive reflective surface and a longitudinally extending bottom portion affixed to an electrically conductive screw base, the reflector bottom portion terminating at its lower end in a central opening,
(b) a tungsten-halogen lamp disposed within the reflector having an elongated sealed envelope of light transmissive material containing an inert gas fill and a halogen substance together with a tungsten filament being suspended therein from a first pair of refractory metal electrical conductors, and a second pair of larger diameter electrical conductors exhibiting thermal expansion characteristics greater than said first pair of electrical conductors and being joined to respective opposite ends of each of said first pair of refractory metal electrical conductors in a pinch seal region of the envelope with respective opposite ends of the larger diameter electrical conductors both protruding from the sealed end of said envelope such that substantially all physical support of the lamp is provided thereby,
(c) electrically non-conductive refractory closure means affixed to the central opening of the reflector bottom portion which include a closure member of electrically non-conductive refractory inorganic material having physical dimensions and a shape larger than the central opening together with an electrically non-conductive refractory inorganic cement bonding the closure member to the central opening, the closure member further having at least one pair of openings accommodating passage of the electrical conductors which protrude therethrough,
(d) means for electrically connecting both electrical conductors to the screw base, and
(e) positioning means which cooperate with the closure member to position the filament of the tungsten-halogen lamp approximately at the optical focal point of the reflector, said positioning means and said closure member being adjustable independently of each other.

5,057,736

DIRECTLY-HEATED CATHODE STRUCTURE

Makoto Noda, and Hiroaki Takenaka, both of Shiga, Japan, assignors to NEC Corporation, Japan

Filed Mar. 27, 1990, Ser. No. 499,700
Claims priority, application Japan, Apr. 7, 1989, 1-41446[U]
Int. Cl.[5] H01J *19/08, 1/15*
U.S. Cl. 313—345 **8 Claims**



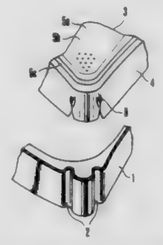
1. A directly-heated cathode structure comprising:
an insulating support body:
a pair of cathode lead pins fixedly carried in said insulating support body, each pin having a leading end;
a filament extending between the leading ends of said cathode lead pins and having two ends joined to the leading ends of the cathode lead pins; and
an electron emitting material coated on said filament over its entire length including its two ends.

5,057,737

COLOR PICTURE TUBE MASK FRAME

Tsuneo Hotta, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 8, 1989, Ser. No. 363,536
Claims priority, application Japan, Jun. 24, 1988, 63-83573[U]
Int. Cl.[5] H01J *29/81*
U.S. Cl. 313—407 **4 Claims**



1. A color picture tube mask frame comprising a mask frame body which has a rectangular shape as a whole, a molded

shadow mask having a skirt portion with notches at the corner, said skirt portion becomes thicker at the notches thereof during the formation thereof, said skirt portion of said molded shadow mask being fitted over said mask frame body from one side thereof,

said skirt portion corresponding to a shape of said mask frame and being molded to surround an apertured portion having a large number of apertures at a central portion of said shadow mask and to extend in a direction substantially perpendicular to said apertured portion, and said mask frame body having a groove formed on each side of each corner on a skirt portion so as to receive said thicker wall portion having contours complementary to said grooves formed at corresponding corners of said shadow mask.

5,057,738

SOFT MAGNETIC MGMNZN-FERRITE MATERIAL, DEFLECTION RING MANUFACTURED FROM SAID MATERIAL, AND AS A CATHODE-RAY TUBE COMPRISING A DEFLECTION COIL HAVING SUCH A DEFLECTION RING

Jacobus G. Boerekamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1990, Ser. No. 529,003

Claims priority, application Netherlands, May 26, 1989, 8901320

Int. Cl.[5] C04B *35/26*

U.S. Cl. 313—440 **4 Claims**

1. A soft magnetic MgMnZn-ferrite material which is suitable for use in deflection rings, characterized in that the material corresponds to the formula:

$$(Li_{0.5}Fe_{0.5})_pMg_qZn_xMn_yFe_zO_{3/2(y+z)+1},$$

wherein

$0.03 \leqq p \leqq 0.25$

$0.30 \leqq q \leqq 0.60$

$0.35 \leqq x \leqq 0.50$

$0.03 \leqq y \leqq 0.18$

$1.70 \leqq z \leqq 1.90$

$y+z \leqq 2.00$ and,

$p+q+x=1.00$.

4. A cathode-ray tube comprising a deflection coil having a deflection ring comprising the soft magnetic MgMnZn-ferrite material as claimed in claim 1 or 2.

5,057,739

MATRIX ARRAY OF CATHODE RAY TUBES DISPLAY DEVICE

Satoshi Shimada; Ryuichi Kawakami; Takehisa Natori, all of Kanagawa, and Koji Kanbayashi, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,456

Claims priority, application Japan, Dec. 29, 1988, 63-331505; Jan. 31, 1989, 1-21183

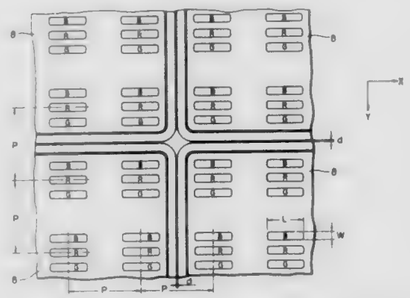
Int. Cl.[5] H01J *31/00*

U.S. Cl. 313—477 R **9 Claims**

1. A display apparatus comprising:

(a) a display panel having a plurality of picture cells arranged in a XY matrix-fashion; and

(b) a plurality of groups of luminous pixel elements, each having a stripe configuration and comprising three individual luminous elements, said plurality of luminous pixel elements arranged on the inner surface of a front panel of each of said picture cells with a predetermined pitch and with their longitudinal directions aligned in the horizontal direction, and with said groups of luminous pixel elements arranged in an XY matrix form, and wherein each of said picture cells is a cathode ray tube which is formed of a tube envelope, formed by bonding a front panel to a funnel, and with an electron gun and a deflection yoke mounted in said tube envelope.



5,057,740

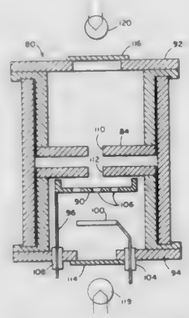
PHOTOEMISSIVE TRIGGER FOR BACKLIGHTED THYRATRON SWITCHES

George F. Kirkman-Amemiya, Los Angeles, Calif., assignor to Integrated Applied Physics, Inc., Pasadena, Calif.

Filed May 31, 1990, Ser. No. 531,127

Int. Cl.[5] H01J *40/00, 40/06*

U.S. Cl. 313—542 **14 Claims**



1. A high power electronic backlighted thyratron switch, comprising:

an evacuated envelope back filled with a selected elemental gas at a predetermined pressure;

an anode located within the envelope having a first aperture;

a cathode located within the envelope at a predetermined distance from the anode and having a second aperture, said anode and cathode being disposed opposite each other, with said first and second apertures in alignment;

means for supplying electrical power to the anode and cathode to provide main discharge current therebetween;

light source means located externally of the envelope, said envelope having a third aperture formed therein;

a window sealed in said third aperture and aligned with said light source means to permit light from said light source means to enter said envelope;

photosensitive means located within the envelope such that light is incident thereon to cause the production of electrons therefrom and their injection through one of said first and second apertures into the space between said anode and cathode to initiate a main discharge; and

a sweep electrode disposed adjacent said photosensitive means to prevent said main discharge from impinging directly on said photosensitive means.

5,057,741

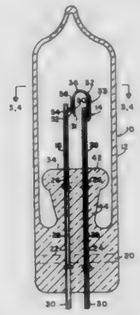
GLOW DISCHARGE STARTER HAVING DUAL GAPS

Nikolaos Barakitis, Salem, Mass.; Marvin S. Corrales, Gravilias San Jose, and Jorge C. Rodrigues, San Jose, both of Costa Rica, assignors to GTE Products Corporation, Danvers, Mass.

Filed Nov. 30, 1990, Ser. No. 620,165

Int. Cl.[5] H01J *7/44*

U.S. Cl. 313—619 **7 Claims**



1. A glow discharge starter comprising an hermetically sealed envelope containing an ionizable medium, a bimetallic electrode and a counter electrode, said bimetallic electrode including a bimetallic element having a free end adapted to form first and second discharge gaps with said counter electrode, said first discharge gap having a variable spacing during operation of said glow discharge starter, said second discharge gap having a substantially constant spacing during operation of said glow discharge starter.

5,057,742

DISCHARGE TUBE

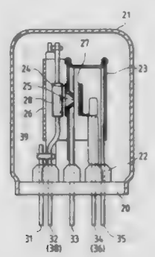
Koji Kawai; Yuji Shimazu, and Koji Takeuchi, all of Shizuoka, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Feb. 21, 1990, Ser. No. 482,485

Claims priority, application Japan, Feb. 21, 1989, 1-41002

Int. Cl.[5] H01J *17/18, 1/52, 1/88*

U.S. Cl. 313—623 **5 Claims**



1. A discharge tube comprising: a sealed envelope filled with a gas; an anode, a cathode and a shielding electrode built in said sealed envelope; and electrode pins for holding said electrodes, wherein at least three of said electrode holding pins penetrating a stem formed in the bottom of said sealed envelope, are used for holding said cathode, and two of said at least three electrode holding pins for holding said cathode are connected with a bridging pin, wherein said bridging pin diverts thermal stress from the two electrode holding pins connected thereto.

5,057,743

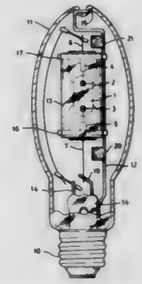
METAL HALIDE DISCHARGE LAMP WITH IMPROVED COLOR RENDERING PROPERTIES

Zeya K. Krasko, Beverly, and William M. Keeffe, Rockport, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 243,370, Sep. 12, 1988, abandoned. This application Apr. 4, 1991, Ser. No. 682,396

Int. Cl.[5] H01J *17/20, 61/20*

U.S. Cl. 313—639 **17 Claims**



1. A low wattage metal halide discharge lamp comprising:

an outer sealed glass envelope;

a pair of electrical conductors sealed into and passing through the glass envelope;

an arc tube disposed within the outer glass envelope, the arc tube including a pair of spaced electrodes therein with the electrodes being electrically connected to the electrical conductors such that one electrode is electrically connected to one electrical conductor;

a chemical fill disposed within the arc tube, the chemical fill comprising mercury, scandium metal, sodium iodide, scandium iodide, lithium iodide, and a starting gas; and

a support structure disposed within the outer glass envelope to support the arc tube therein, the support structure being electrically isolated from the electrical circuit of the lamp.

5,057,744

SYSTEM FOR THE DISPLAY OF LUMINOUS DATA WITH IMPROVED READABILITY

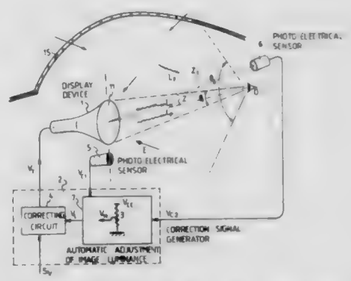
Bruno Barbier, Le Bouscat; Serge Ediar, St. Medar en Jalles, and Jean Brun, Garches, all of France, assignors to Thomson CSF, Paris, France

Continuation of Ser. No. 176,339, Mar. 31, 1988, abandoned. This application May 30, 1989, Ser. No. 361,781

Claims priority, application France, Apr. 3, 1987, 87 04722

Int. Cl.[5] H01J *31/26*

U.S. Cl. 315—10 **8 Claims**



1. A luminous data image display system comprising:

a device to display said image on a screen; and

adjustment means for manual and automatic adjustment of a

luminosity of the image, said adjustment means comprising:

means for manual adjustment of the luminosity of the image,

a first photoelectric sensor fixedly mounted in the vicinity of the luminous image and oriented to pick up an ambient illumination to provide a first detected signal representing the luminance reflected by the screen, and

a second photoelectric sensor attached to the observer's head, and located at a distance from the luminous image and in a vicinity of an observer's head, to pick up an ambient illumination in said vicinity and to provide a second detected signal representing background luminance received in the observer's total field of vision.

5,057,745

LOW-PRESSURE DISCHARGE LAMP DRIVING CIRCUIT

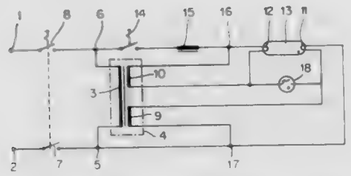
Steffen Oppawsky, Bad Homburg, Fed. Rep. of Germany, assignor to Heraeus Kulzer GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 337,147

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1988, 3826234

Int. Cl.[5] H05B *41/18*

U.S. Cl. 315—98 **4 Claims**



1. A driving circuit for a low-pressure discharge lamp adapted for use in photo-polymerization with two pre-heatable electrodes (**11,12**) each directly connected to a secondary winding (**9,10**) of a heating transformer (**4**), said heating transformer having a primary winding (**3**) connected for power supply purposes through a power switch means (**7,8**) to an AC voltage source, wherein,

there is provided, parallel to the primary winding (**3**), a series circuit of a ballast inductor (**15**), and a discharge path formed between said electrodes (**11,12**), and

said electrodes (**11,12**) are connected to each other by a starter device (**18**) connected in parallel to said discharge path, and wherein

an operating switch (**14**) is provided, connected in series with said ballast inductor (**15**), and adapted to switch ON and OFF discharge current of said lamp (**13**), thereby completely suppressing radiation generation during a readiness operating state.

5,057,746

CURRENT SENSING RELAY

Lawrence P. Kleven, South Attleboro, Mass., and Mark C. Carlos, North Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 12, 1990, Ser. No. 596,892

Int. Cl.[5] H05B *41/00*; H01H *1/28*

U.S. Cl. 315—106 **13 Claims**

1. A relay for disconnecting fluorescent lamp filaments from an associated filament circuit comprising;

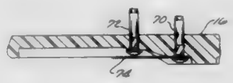
(a) a generally cup shaped housing having a bottom wall and a depending cylindrical side wall, the side wall having a free distal end portion formed with an annular ledge lying in a plane parallel with the bottom wall;

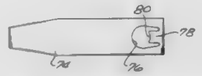
(b) a magnetic flux producing means disposed within the housing, the flux producing means having a center post extending essentially from the bottom wall upwardly to a point slightly below said plane;

(c) actuator means including a coin member of relatively high magnetic permeability disposed within the housing and movable toward the magnetic flux producing means;

(d) spring means mounted within the housing to place an upward bias on the actuator means; and

(e) switch means including a cover member composed of electrically insulative resinous material received on top of the cup shaped housing, a plurality of switches mounted on the cover member, each switch comprising first and second contact terminal members received in respective bores extending through the cover member, the contact members each having a contact portion at one end, a terminal portion at an opposite end joined by an intermediate shaft portion, the shaft portion having a plurality of splines which extend at an angle to the longitudinal axis of the shaft, the shafts having a diameter selected to form an interference fit with its respective bore, an elongated contact blade formed of electrically conductive, flexible material having an aperture adjacent one end thereof, a tab portion of the blade projecting into the aperture, the first contact terminal member received through the aperture forcing the tab into the respective bore in the cover member forming an interference fit in the bore along with the splines, the blade being movable into and out of engagement with the second contact terminal member, the actuator means normally biasing each movable contact blade into engagement with its associated contact terminal to maintain each of the switches in the normally closed state.





5,057,747

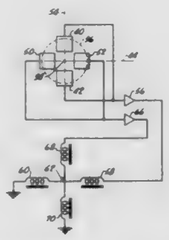
ARC LAMP STABILIZATION

Alan R. Henderson, Carlsbad, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 21, 1988, Ser. No. 274,213

Int. Cl.[5] H05B *31/22, 31/28*

U.S. Cl. 315—158 **10 Claims**



5. An arc lamp comprising:

a cathode and an anode defining a pair of arc forming electrodes;

a first reflector positioned adjacent the electrodes;

means for energizing said cathode and anode to generate an energy radiating electric arc extending from a tip of the cathode to the anode, said cathode tip being relatively blunt, whereby cathode burn back is decreased and tendency of the arc to wander over the blunt cathode tip is increased;

a second reflector for reflecting energy from said first reflector to an area to be illuminated, said second reflector being transparent to energy emitted by the arc in selected wavelengths, an image forming surface, image forming means positioned between the second reflector and said surface and responsive to energy in said selected wavelengths for forming an image on said surface on said first reflector, said arc and said electrodes;

detector means for sensing position of the image relative to said surface; and

means responsive to said detector means for deflecting the arc in a sense to decrease wander of the arc over said blunt tip.

5,057,748

POWER SUPPLY CIRCUIT FOR GAS DISCHARGE TUBE

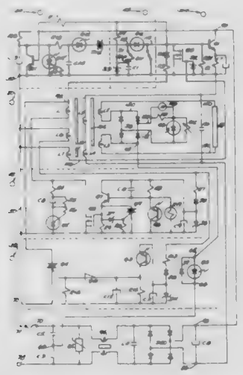
David Doss, Overland Park, Kans., assignor to Everbrite, Inc., Milwaukee, Wis.

Filed Oct. 16, 1989, Ser. No. 422,001

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—224 **8 Claims**



1. A power supply for gas discharge tubes and including oscillating means having first switching circuit means and transformer means, said first switching circuit means having first gate means and being operative to become conductive when the first gate means receives a predetermined first gate signal or a starting gate signal,

said transformer means having primary winding means in circuit with said first switching circuit means, secondary winding means connected to said gas discharge tube, and feedback winding means connected to the primary winding means and to the first gate means to provide a gate signal thereto,

second switching circuit means in circuit with the first gate means and having a second gate means, said second switching circuit means being operative upon the receipt of a second gate signal to disable said first switching circuit means,

first circuit means in circuit with the primary winding means and the second gate means and being responsive to a predetermined current condition in the primary winding means of the transformer means to provide the second gate signal to the second gate means,

second circuit means connected to the first gate means and operative to provide the starting gate signal thereto,

rectifier means connected to an alternating current source for providing a rectified current, first energy storage means coupled to said rectifier means for receiving said recitified current and for providing a DC voltage source,

third circuit means including second energy storage means connected to said DC voltage source for providing a low voltage signal,

and manually operable low voltage switch means for connecting said second energy storage means to said first gate means for providing the starting gate signal.

5,057,749

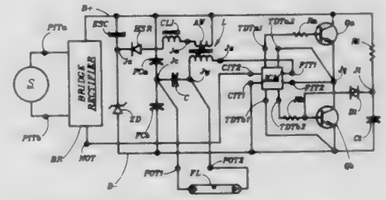
ELECTRONIC POWER FACTOR CORRECTION FOR BALLASTS

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 60,027, Jun. 9, 1987. This application Jul. 10, 1989, Ser. No. 377,225

Int. Cl.[5] H05B *41/00*

U.S. Cl. 315—247 **12 Claims**



1. An arrangement comprising:

a source of substantially sinusoidal AC voltage;

full-wave rectifier connected with the source of AC voltage and operative to provide periodic pulses of unidirectional current to a pair of DC terminals across which there exists a main DC voltage;

load means connected with the DC terminals; the load means including inverter means and gas discharge lighting means; and

auxiliary DC supply means connected in circuit between the inverter means and the DC terminals; the auxiliary DC supply means being operative to supply an auxiliary DC voltage and to cause the instantaneous magnitude of the main DC voltage to be: (i) substantially equal to the absolute instantaneous magnitude of the AC voltage as long as this absolute instantaneous magnitude is larger than a pre-determined substantially fixed magnitude not larger than about 40% of the absolute peak magnitude of the AC voltage; and (ii) substantially equal to the instantaneous magnitude of the auxiliary DC voltage whenever the absolute instantaneous magnitude of the AC voltage is not higher than said predetermined substantially fixed magnitude;

such that: (i) the gas discharge lightinq means is operative to provide light in an uninterrupted manner; and (ii) the current drawn from the source by the full-wave rectifier is characterized by having harmonic distortion of not more than about 20%.

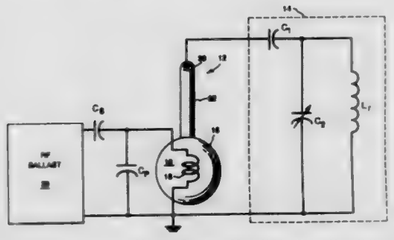
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5,057,750

TWO-STAGE RESONANT STARTING CIRCUIT FOR AN ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP

George A. Farrall, Rexford, and John P. Cocoma, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1990, Ser. No. 622,246
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—248 21 Claims



1. An electrodeless high intensity discharge lamp system, comprising:

a light-transmissive arc tube for containing a fill;

an excitation coil disposed about said arc tube and coupled to a radio frequency power supply for exciting an arc discharge in said fill;

a gas probe starter disposed proximate to said arc tube and establishing a parasitic capacitance between said excitation coil and said gas probe starter, said gas probe starter including a starting chamber for containing a gas, said starting chamber being attached to the outer wall of said arc tube; and

resonant circuit means for receiving a radio frequency signal from said radio frequency power supply and providing a first resonant starting voltage to said gas probe starter of sufficient magnitude to initiate a glow discharge in said starting chamber, said resonant circuit means having a variable impedance and including a parallel combination of a resonant inductor and a resonant capacitor, the impedance of said parallel combination being tunable, said parallel combination further being coupled in series with the parasitic capacitance between said excitation coil and said gas probe starter, said resonant circuit means further including returning means for retuning said resonant circuit means after initiation of said glow discharge in said starting chamber in order to provide a second resonant starting voltage of sufficient magnitude to initiate the arc discharge in said arc tube.

5,057,751

PROTECTIVE COATING FOR HIGH-INTENSITY METAL HALIDE DISCHARGE LAMPS

Harald L. Witting, Burnt Hills; Svante Prochazka, Ballston Lake; Thomas B. Gorczyca, Schenectady, and Jennifer L. Myers, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1990, Ser. No. 553,304
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—248 12 Claims

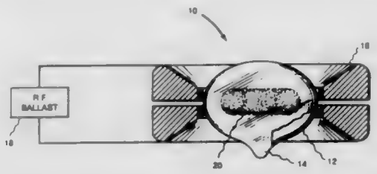
1. A high intensity discharge lamp, comprising:

a light-transmissive arc tube for containing a plasma arc discharge;

a fill disposed in said arc tube, said fill including at least one metal halide;

excitation means for coupling electrical power to said fill for exciting said arc discharge therein; and

a protective silicon coating disposed on the inner surface of said arc tube of sufficient thickness to prevent a substantial



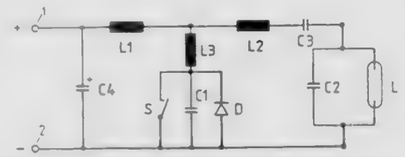
loss of the metal component of said fill and a corresponding substantial buildup of free halogen in said arc tube.

5,057,752

CIRCUIT ARRANGEMENT FOR IGNITING AND OPERATING GAS-DISCHARGE LAMPS

Wolfgang Grabner, and Otmar Bitsche, both of Graz, Austria, assignors to Stylux-Gesellschaft fur Lichtelektronik M.B.H., Graz, Austria

PCT No. PCT/AT88/00113, § 371 Date Jun. 15, 1990, § 102(e) Date Jun. 15, 1990, PCT Pub. No. WO89/06085, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 16, 1988, Ser. No. 474,802
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—289 20 Claims



1. A circuit arrangement for igniting and operating a gas-discharge lamp, comprising a buffer capacitor that is connected to a rectified voltage, a choke-capacitor series circuit that is connected in parallel with said buffer capacitor, whereby an electronic switch and a fast recovery diode forming part of said electronic switch are connected in parallel with said capacitor of said choke-capacitor series circuit, said gas-discharge lamp being provided with a parallel capacitor that is connected by means of a further choke-capacitor series circuit to said capacitor, electronic switch and fast recovery diode.

5,057,753

PHASE COMMUTATION CIRCUIT FOR BRUSHLESS DC MOTORS USING A SPIKE INSENSITIVE BACK EMF DETECTION METHOD

Hans M. Leuthold, and Felix De Herrera, both of Santa Cruz, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 29, 1990, Ser. No. 546,512
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 12 Claims

1. In a brushless DC motor comprising a plurality of windings to define m phases of said motor, a permanent magnet or DC current excitation winding positioned relative to said windings and rotatable relative to said windings and comprising means for establishing fixed first magnetic fields, commutation apparatus comprising;

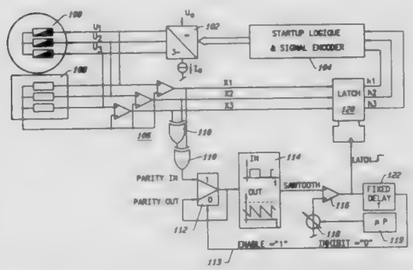
driver means connected to said plurality of windings for applying a current pulse to at least one phase thereof inducing at least one second, controlled magnetic field, which interacts with said fixed first magnetic fields causing rotation of said permanent magnet;

commutation means for controlling said driver means to apply said current pulse to said phase in a timed and orderly manner, maintaining said rotation of said permanent magnet;

detection means for detecting back EMF signals from said plurality of windings and generating detected back EMF signals;

latching means for latching said detected back EMF signals;

parity checking means for combining said detected back EMF signals into a single digital bit stream having a transition representing each detected back EMF zero crossing;

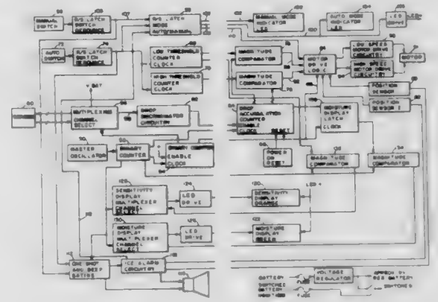


gating means for inhibiting passage of said single digital bit stream during periods of commutation noise and for enabling passage of single digital bit stream at all other times;

first delay means for delaying said transitions of said single bit stream which occur during said gating enablement, said delayed transitions causing said latching means to latch; and

second delay means for delaying said transitions of said single bit stream to provide delayed signal for enabling said gating means.

tion means is connected to said second element of the same pair; and



means for adapting said output signal of said current detection means to control the operation of said electrically actuated device.

5,057,754

MOISTURE-SENSING WINDOW CLEANING CONTROL SYSTEM

Marl J. Bell, Valley Center, Calif., assignor to Mist-Defy'R, Inc., Encinitas, Calif.

Continuation-in-part of Ser. No. 258,159, Oct. 14, 1988, Pat. No. 4,942,349. This application Jul. 3, 1990, Ser. No. 547,946
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—483 30 Claims

1. A automatic control system for operating an electrically actuated device in response to the presence of water moisture, said control system comprising, in combination:

a moisture sensor having a plurality of spaced-apart, exposed conductive sensor elements, said elements being arranged as in a plurality of adjacent pairs;

a voltage source;

current detection means, having an input and an output, for indicating, by a signal at said output, when the current flow at said input exceeds a prescribed threshold;

first connection means for connecting said voltage source to a first element of each of said plurality of adjacent pairs;

second connection means for connecting said input of said current detector means to a second element of each of said plurality of adjacent pairs;

means for incrementing said first and second connection means in synchronism, such that said voltage source is connected to said first element when said current detec-

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5,057,755

NUMERICAL CONTROL MACHINING SYSTEM

Shigeaki Naka, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Nov. 24, 1989, Ser. No. 441,488
Claims priority, application Japan, Nov. 25, 1988, 63-296273
Int. Cl.[5] G05B *19/417*; B25J *19/00*
U.S. Cl. 318—568.10 12 Claims

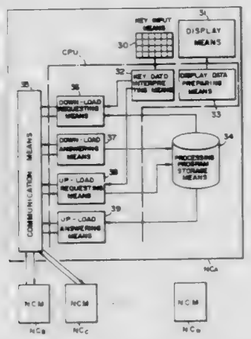
1. A numerical control (NC) machining system including a plurality of NC machines each connected to a communication circuit, a first of said NC machines comprising:

(a) a processing program storage means for reading and storing an optional processing program;

(b) a communication means connected to the remaining NC machines via the communication circuit for down-loading and up-loading a processing program between the NC machines, said communication means including a down-load requesting means for outputting a down-load request, and for reading and transmitting a processing program from said storage means to a second of the NC machines;

a down-load answering means for answering a down-load request transmitted from the second NC machine and then

storing in said storage means a processing program transmitted from the second NC machine; wherein said second NC machine includes key input means for allowing an user to initiate the down-load request from said second NC machine;



(c) a key input means to be operated by an operator for giving a down-load or an up-load command to said communication means.

5,057,756

ACCELERATION/DECELERATION CONTROL APPARATUS FOR SERVO CONTROL

Ryuichi Hara, Yamanashi, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP89/00738, § 371 Date Mar. 23, 1990, § 102(e) Date Mar. 23, 1990, PCT Pub. No. WO90/01187, PCT Pub. Date Feb. 8, 1990
PCT Filed Jul. 24, 1989, Ser. No. 474,751
Claims priority, application Japan, Jul. 24, 1988, 63-186893
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—569 8 Claims



1. An acceleration/deceleration control apparatus for servo control, comprising:

at least one acceleration/deceleration control section, including:

first acceleration/deceleration control means for receiving a servo control command signal, for executing a first acceleration/deceleration process using the servo control command signal and for providing a first output based on the first acceleration/deceleration process;

second acceleration/deceleration control means for executing a second acceleration/deceleration process using the first output and for providing a second output based on the second acceleration/deceleration process; and

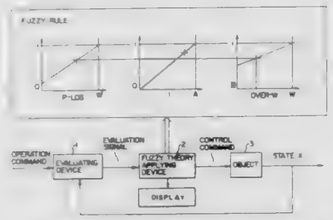
third acceleration/deceleration control means for executing a third acceleration/deceleration process using the second output and for providing a third output based on the third acceleration/deceleration process.

5,057,757

DC MOTOR CONTROL IN ELECTRONIC SEWING MACHINE

Akira Orii, Hachioji, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1990, Ser. No. 495,832
Claims priority, application Japan, Mar. 17, 1989, 1-63523
Int. Cl.[5] H02P *5/06;* D05B *69/26*
U.S. Cl. 318—599 1 Claim



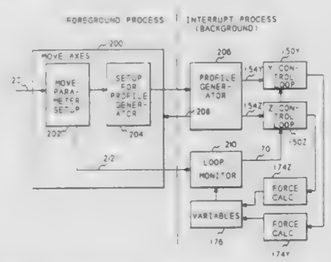
1. An electronic sewing machine having upper and lower shaft driven by a DC motor mounted therein, which comprises means for detecting a voltage applied to the DC motor and a rotating speed of the DC motor; means for estimating from said detected values a power loss incurred in the DC motor and a current inputted to the DC motor; means for applying a predetermined fuzzy rule to said estimated values to determine if the DC motor operates with an excess of the rated loss; and display means for quantitatively representing the excess of the rated loss.

5,057,758

PASSIVE PAYLOAD FOR A CARTRIDGE HANDLING SYSTEM

Thomas C. Oliver; Mark E. Wanger; Donald J. Stavely, and Jennifer L. Methlie, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 20, 1989, Ser. No. 325,592
Int. Cl.[5] G05B *11/26;* G11B *17/22*
U.S. Cl. 318—603 1 Claim



1. A servo control system comprising:

means for calculating a force being exerted by a motor of the control system comprising

means for measuring an electrical voltage being supplied to said motor of the control system,

means for measuring motor speed of said motor of the control system, and

means responsive to the voltage measuring means and the motor speed measuring means for calculating the force being exerted by said motor;

force comparing means for comparing the force to a predetermined force value;

counting means for counting a number of revolutions of the motor and saving a resulting count;

count comparing means for comparing the resulting count to a predetermined count value; and

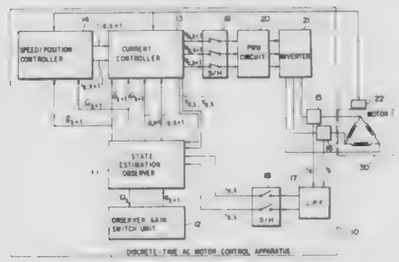
means responsive to the force comparing means and the count comparing means for activating the motor until either the force exceeds the predetermined force value or the resulting count exceeds the predetermined count value.

5,057,759

DISCRETE-TIME AC MOTOR CONTROL APPARATUS

Yoshihiro Ueda, and Takaaki Yamada, both of Tsukuba, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Jun. 27, 1990, Ser. No. 544,427
Claims priority, application Japan, Jul. 14, 1989, 1-180407
Int. Cl.[5] G05B *5/01;* H02P *5/40*
U.S. Cl. 318—616 4 Claims



1. A discrete-time alternating-current motor control apparatus comprising:

state estimation observer means for receiving as inputs thereto winding voltages and winding currents of an alternating-current motor and for estimating based on a model of the alternating-current motor a rotor angle and a rotor angular velocity of the alternating-current motor; and

observer gain switch means for setting an optimal gain to said state estimation observer means according to the estimated angular velocity.

5,057,760

TORQUE DETERMINATION FOR CONTROL OF AN INDUCTION MOTOR APPARATUS

Habib Dadpey, Atlanta, Ga.; David J. Shero, South Park Township, Allegheny County, and Lalan G. Miller, Forest Hills, both of Pa., assignors to AEG Westinghouse Transportation Systems, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 696,832, Jan. 31, 1985, abandoned. This application Nov. 3, 1986, Ser. No. 926,825
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—807 8 Claims

1. In apparatus for determining the output torque of an AC motor in a transit vehicle energized by an inverter operative with a DC power supply, the combination of

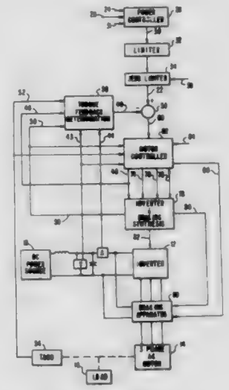
first means connected with said power supply for establishing the input DC power provided to the inverter by said power supply,

second means connected with said motor for establishing the motor speed,

third means for establishing the inverter losses as a predetermined function of motor current with the motor current being determined from an expression equal to a motor current versus constant slip frequency relationship as a factor multiplied by the ratio of the voltage across the motor when divided by the desired voltage across the motor for a constant volts per hertz operation of the motor,

fourth means for establishing motor losses as a predetermined function of said determined motor current, inverter frequency and determined harmonic losses,

fifth means for establishing friction and windage losses as a predetermined function of motor speed,



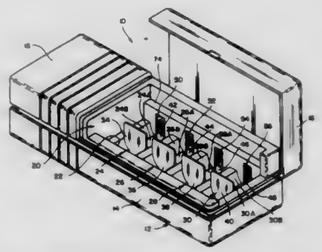
sixth means for establishing the output torque in relation to the difference between said input DC power minute the sum of the inverter losses, the motor losses and the friction and windage losses when divided by said inverter frequency.

5,057,761

MEANS FOR DISTINGUISHING BETWEEN BATTERIES CAPABLE OF BEING FAST CHARGED AND OTHER BATTERIES AND FOR CHARGING SAME ACCORDINGLY

William B. Felegyhazi, Sr., North Olmsted, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Jan. 11, 1990, Ser. No. 463,546
Int. Cl.[5] H02J *7/02*
U.S. Cl. 320—2 15 Claims



1. A battery charger having means to distinguish between batteries capable of being fast charged and batteries that should be slower charged comprising a housing having a compartment portion for installing a dry cell battery having a cylindrical body with terminals at both ends, one terminal being centrally located and extending outwardly from the body, said batteries being fast charged having central terminals of smaller diameter than other batteries, the compartment portion including an elongated channel having opposite ends, a contact at one end for engagement bby the central terminal of the one end of said battery, and spring biased plate means in the channel for engaging the terminal at the opposite end of the battery urging the central terminal against the contact, said contact having an opening therethrough in position to be aligned with the central

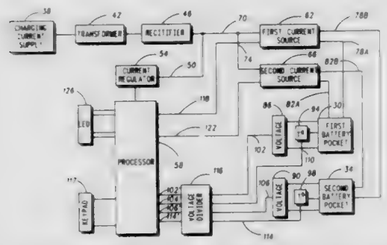
battery terminal, said opening being large enough to admit the central terminals of said fast charge batteries but not of said other batteries therethrough, switch means having a switch actuator positioned adjacent to the contact on the opposite side thereof from the battery, said fast charge batteries having said central terminals that are small enough to move into the opening moving against the switch actuator and moving the switch actuator far enough to actuate the switch means associated therewith.

5,057,762

SYSTEM FOR DETERMINING BATTERY CHARGE STATES AND CHARGING SEQUENCE FOR A BATTERY CHARGER

Terrance J. Goedken, Schaumburg, Ill., and James F. Goedken, Dubuque, Iowa, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1990, Ser. No. 559,763
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—15 **36 Claims**



1. A battery charging system for determining battery charge states of a plurality of batteries positioned in a battery charger, said system comprising:

means for applying a fast charging current to selected ones of the batteries positioned in the battery charger, wherein said charging current is applied to each of the selected ones of the batteries during at least a portion of a charge state determination period; and

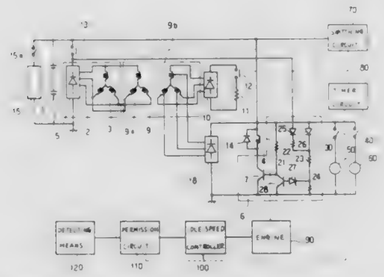
means for determining battery charge states of each of the selected ones of the batteries after application of said charging current thereto.

5,057,763

HIGH POWER SUPPLY FOR MOTOR VEHICLE

Koshi Torii, Iwakura; Seiji Hayashi, Oobu; Shigenori Sonobe, Toyota, and Shigeru Senoo, Ichikawa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 11, 1989, Ser. No. 408,186
Claims priority, application Japan, Sep. 12, 1988, 63-228127
Int. Cl.[5] H02J *7/14*
U.S. Cl. 322—8 **7 Claims**



1. A high power supply apparatus comprising:

an alternator driven by an internal combustion engine and including a stator coil producing an AC output voltage, a rotor coil and a rectifier for rectifying the AC output voltage of said stator coil,

a battery connected to said rectifier to be charged by an output of said rectifier,

high-voltage converter means for converting the output voltage of said stator coil to a high voltage higher than a voltage of said battery,

a high-power load connected to said high-voltage converter means to receive said high voltage of said high-voltage converter means,

a first switch electrically connected between said high-voltage converter means and said high-power load in such a manner that said high-voltage converter means is connected to said high-power load by closing said first switch and disconnected by opening said first switch,

a second switch electrically connected between said rectifier of said alternator and said battery in such a manner that a connection between said rectifier and said battery is disconnected by opening said second switch, and

an idle speed controller for raising a rotating speed of said engine in order to raise a rotating speed of said alternator when said first switch turns on,

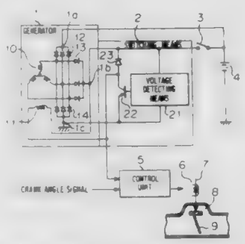
wherein said high-voltage converter means converts the output voltage of said alternator when the rotating speed of said alternator is raised by said idle speed controller to cause said alternator to output substantially a maximum output electric power.

5,057,764

IDLING ENGINE SPEED CONTROLLING APPARATUS FOR AN ENGINE

Takanori Fujimoto, and Toshiro Hara, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1989, Ser. No. 407,172
Claims priority, application Japan, Oct. 4, 1988, 63-251095
Int. Cl.[5] F02D *41/16;* **H02J** *7/14*
U.S. Cl. 322—14 **5 Claims**



1. An idling engine speed controlling apparatus for an engine comprising:

an electrical generator (**1**) driven by an engine to charge a battery (**4**),

variable electrical load means for drawing current from said battery,

an on-off switching means (**2**) for controlling the supply and interruption of an exciting current to a field winding (**11**) of said generator so that a voltage generated by said generator or a voltage of said battery is at a predetermined level,

means (**54**) for continuously detecting a total excitation of said field winding during each 360° rotational time period of said engine, said total excitation being proportional to an instantaneous magnitude of said variable load means, and

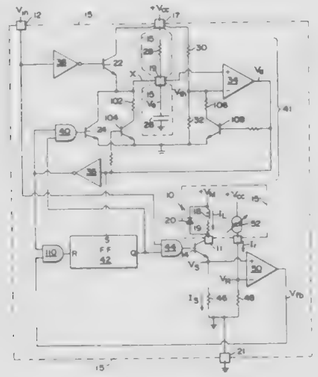
means (**5–9**) for regulating a quantity of intake air, supplied to said engine to attendantly adjust a speed of said engine and prevent an inordinate speed reduction or the stalling thereof, said regulating means including a control unit (**5**) responsive to an output of said continuous detecting means (**54**) during said 360° rotational time period of said engine.

5,057,765

CURRENT REGULATION CIRCUIT FOR INDUCTIVE LOADS

Andrew W. Clark, Worcester, and Brett A. Zacher, Holden, both of Mass., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Feb. 5, 1991, Ser. No. 650,510
Int. Cl.[5] G05F *1/40*
U.S. Cl. 323—288 **9 Claims**



1. A current regulator circuit for inductive loads comprising:

a driver transistor to which an inductive load may be connected;

a logic memory element having a set terminal, having a reset terminal and having an output terminal connected to the input of said driver transistor for when set to an "on" state turning on said driver transistor and when reset to the "off" state turning off said driver transistor;

a detector comparator means connected to said driver transistor for sensing the load current flowing through said driver transistor and connected to said memory element for producing a reset signal only when the driver-transistor current exceeds a predetermined amplitude;

an AND gate having an output connected to said reset terminal of said memory element and having one input connected to said output of the detector comparator means;

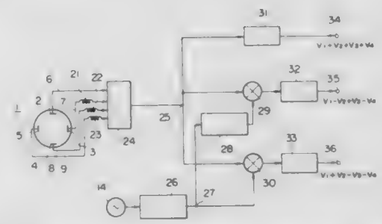
a memory-element setting means connected to another input of said AND gate, to said set terminal and to said output terminal of said memory element, said memory-element setting means including a capacitor and a charge-discharge resistor connected to each other at a circuit point X, said memory-setting means being for setting said memory element to the "on" state at the end of an interval of time that begins at each turning off of said driver transistor, which interval of time is a function of the product of the capacitance of said capacitor and the resistance of said charge-discharge resistor, said memory-setting means also including a time-delay resistor and being additionally for blocking the resetting of said memory element for a time delay interval, after each turning on of said driver transistor, which time delay interval is a function of the capacitance of said capacitor and resistance of said delay resistor.

5,057,766

APPARATUS FOR DETECTING POSITION OF CHARGED PARTICLE

Shuhei Nakata; Takafumi Nakagawa, and Takashi Hifumi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 5, 1990, Ser. No. 533,451
Claims priority, application Japan, Jun. 6, 1989, 1-142065; Jun. 8, 1989, 1-144091; Sep. 11, 1989, 1-236354; May 14, 1990, 2-121126
Int. Cl.[5] G01N *27/00*
U.S. Cl. 324—71.3 **11 Claims**



1. An apparatus for detecting the position of a charged particle comprising:

position detecting means including a plurality of electrodes secured to a vacuum duct in which said charged particle passes, said electrodes being capable of picking up the position of said charged particle passing through said vacuum duct as charges induced in said electrodes and delivering these charges as detection signals;

transmission means including a plurality of transmission lines connected to said electrodes, said transmission means being capable of transmitting said detection signals from said electrodes sequentially with phase delays by predetermined amounts;

adding means for adding the output signals from said transmission means so as to form an integral signal; and

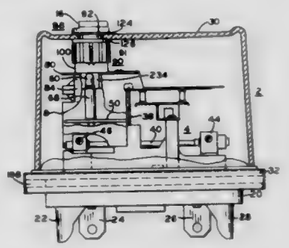
component detection means for detecting, from the output of said adding means, the D.C. component, the fundamental waveform component and a phase-shifted fundamental waveform component of the waveform indicative of the passage of said charged particle through a region where said electrodes are disposed.

5,057,767

OPTICAL COMMUNICATIONS LIGHT SHIELD FOR ENERGY METER

Andrius A. Keturakis, Portsmouth, and Scott D. Velte, Rochester, both of N.H., assignors to General Electric Company, Somersworth, N.H.

Filed Apr. 5, 1990, Ser. No. 505,970
Int. Cl.[5] G01R *13/04*
U.S. Cl. 324—96 **53 Claims**



18. In an electronic energy meter having a cover and including means for external access to the interior of said energy

meter through the cover by means of an optical communication link, an optical communications assembly interconnecting the exterior and interior of the energy meter, said optical communications assembly comprising:

an optical shroud assembly positioned on the interior of said cover of said energy meter;

an optical coupler positioned on the exterior of said cover of said energy meter opposite said optical shroud assembly;

a light emitter and a light detector positioned within an opening in said energy meter adjacent said optical shroud assembly;

said optical shroud assembly including a moveable shroud sliding within an annular groove in said optical shroud assembly;

means for urging said moveable shroud toward said light emitter and light detector to seal the open end of said opening within said energy meter against the entry of ambient light;

said cover including positioning means to position said optical communications assembly;

said means urging said sleeve including a resilient member positioned to exert pressure against said moveable shroud tending to move said moveable shroud toward said light emitter and light detector; and

said moveable shroud including one or more guides cooperating with one or more axial slots in said optical shroud assembly.

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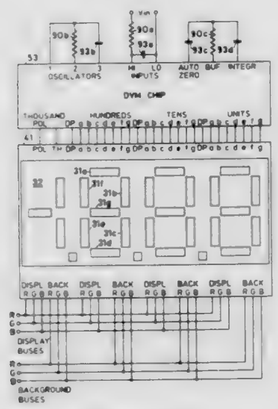
MEASURING DEVICE WITH VARIABLE COLOR DISPLAY

Karel Havel, 15 Kensington Road, Apt. 190 704, Bramalea, ON, Canada L6T 3W2

Division of Ser. No. 337,410, Apr. 13, 1989, which is a division of Ser. No. 940,100, Dec. 10, 1986, Pat. No. 4,831,326, which is a continuation-in-part of Ser. No. 882,430, Jul. 7, 1986, Pat. No. 4,734,619. This application May 24, 1990, Ser. No. 528,229

Int. Cl.[5] G01R *15/08;* **G01F** *23/24*

U.S. Cl. 324—115 **15 Claims**



1. A measuring device comprising:

means for measuring a signal and for developing output data indicative of the measured value of the signal;

variable color digital display means responsive to said output data for providing a digital indication of said measured value;

comparator means for comparing said measured value with a predetermined low limit and a predetermined high limit and for developing a first comparison signal when said measured value is lower than said low limit, a second comparison signal when said measured value is higher than said high limit, and a third comparison signal when said measured value lies within the bounds of said low limit and said high limit; and

color control means for illuminating said digital indication in a first color in response to said first comparison signal, in a second color in response to said second comparison signal, and in a third color in response to said third comparison signal.

5,057,769

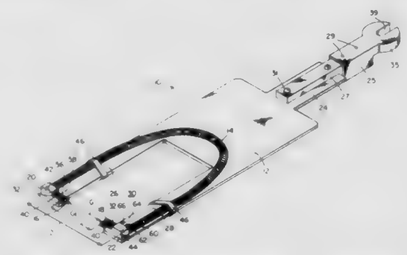
AC CURRENT SENSOR

Gerald L. Edwards, Seattle, Wash., assignor to Sensorlink Corporation, Bellingham, Wash.

Filed Jul. 27, 1989, Ser. No. 386,788

Int. Cl.[5] G01R *33/00*

U.S. Cl. 324—127 **35 Claims**



1. An AC current sensor for sensing an AC current in an AC current carrying conductor, wherein said AC current sensor comprises:

a main coil having a pair of main coil ends; wherein each of said main coil ends has a center; wherein a fixed main coil gap is defined between said centers of said main coil ends; wherein said main coil gap is sized to permit said AC current carrying conductor to pass therethrough; wherein said main coil is arranged to define a measuring recess; and wherein said measuring recess is sized to permit said AC current carrying conductor to pass therethrough;

a pair of compensating coils; and

mounting means for holding said main coil ends and said compensating coils in a predetermined geometrical relationship with respect to each other;

wherein when said AC current carrying conductor is located in said main coil's measuring recess, said AC current induces voltages in said main coil and in said compensating coils as a function of said AC current; wherein each of said compensating coils has a compensating coil longitudinal axis; wherein each said compensating coil longitudinal axis lies at least generally on an imaginary straight line which extends between said centers of said main coil ends; wherein each said compensating coil has an end which at least generally faces an end of the other of said compensating coils; wherein a fixed conductor gap is defined between said facing ends of said compensating coils; and wherein said conductor gap is sized to permit said AC current carrying conductor to pass therethrough.

5,057,770

ELECTRICAL PROBE

Calvin Kalishman, 7034 Arbor View La., Newport Richey, Fla. 34653

Filed Nov. 22, 1989, Ser. No. 440,989

Int. Cl.[5] G01R *1/06*

U.S. Cl. 324—149 **1 Claim**

1. An elongated electrical probe comprising:

an elongated hollow handle;

a hollow housing secured to the forward end of said handle;

an electrically conductive housing secured to and extending forwardly from said housing, the rear end of said probe being disposed within said housing;

said handle and said housing having cylindrical cross-sectional configurations, said housing, handle and probe being arranged on a common longitudinal axis, said housing being of a larger cross-sectional diameter than that of said handle;

a voltmeter mounted within said housing and having a scale thereof, said housing including a window to enable said scale to be read through;

a lamp means mounted to the rear of said handle;

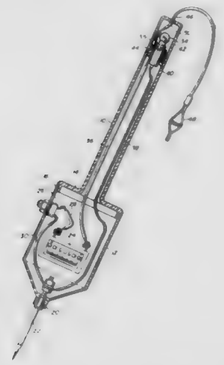
said lamp means includes a lamp;

said lamp means including a socket secured to the rear end of said handle and opening rearwardly therefrom;

wire means connecting said rear end of said probe to said voltmeter and said lamp means, said voltmeter and said lamp means being connected in parallel;

said probe has a first concentric fastener disposed on the forward side thereof, said first concentric fastener contacting said housing for securing said probe to said housing;

said probe having a set of concentric fasteners axially spaced apart on the rear side thereof, said wire means sandwiched therebetween for physically securing and electrically connecting said probe to said wire means;



said wire means including an isolated wire having a segment thereof that is exposed for contact with the lamp socket;

a ground lead wire connected to said lamp, the free end of said ground wire including a ground clip attached thereto;

a normally open switch secured to a side wall of said housing at a relatively close position to said handle and being operable for outside of said housing, said switch being connected in series between said rear end of said probe and said voltmeter for enabling closing of the circuit between said probe and said voltmeter for enabling detection of a voltage;

means securing said normally open switch to said housing at a position within finger distance of the end of said handle that attaches to said housing;

a transparent plastic cap connectable to the rear end of said handle and defining a lamp chamber to protect said lamp and enable operation of said lamp to be viewed, said cap having a hole therein to enable said ground wire to pass rearward therethrough;

two inwardly directed flanges defining shoulders located within said hollow handle in the rear side thereof,

said shoulders for receiving said socket and supporting said plastic cap; and

said handle being at least as long as the combined length of said housing and said electrically conductive probe.

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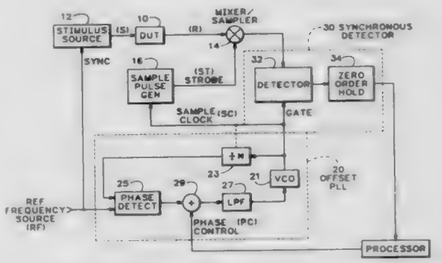
PHASE-LOCKED TIMEBASE FOR ELECTRO-OPTIC SAMPLING

Steven H. Pepper, Portland, Oreg., assignor to Tetronix, Inc., Beaverton, Oreg.

Filed Jun. 18, 1990, Ser. No. 539,260

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158 R **14 Claims**



1. A time base for sampling a response signal from a device under test, comprising:

stimulus means for receiving a periodic reference signal and generating a stimulus signal in response thereto, and for applying the stimulus signal to the device under

a phase-locked loop for receiving the periodic reference signal and generating a sample clock in response thereto, the sample clock being offset in phase by a controllable amount with respect to the periodic reference signal, and

sampling means for receiving a repetitive response signal provided by the device under test and sampling the repetitive response signal as a function of the sample clock, whereby the response signal is sampled at sample points that depend on said controllable amount.

5,057,772

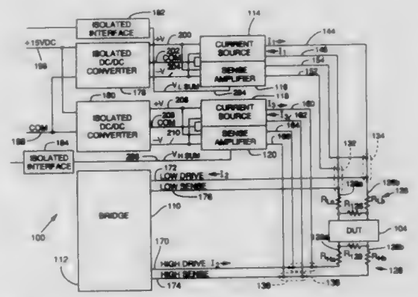
METHOD AND SYSTEM FOR CONCURRENT ELECTRONIC COMPONENT TESTING AND LEAD VERIFICATION

David A. Bruno, and John T. Gross, both of San Diego, Calif., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Filed May 29, 1990, Ser. No. 531,077

Int. Cl.[5] G01R *27/04*

U.S. Cl. 324—158 P **22 Claims**



21. A system for concurrent testing and lead verification of an electronic component, the system comprising:

first and second electrical probes;

contact resistance determining means electrically connected to the first and second probes for determining a sum of amounts of contact resistances between the first probe and a lead of the component and between the second probe

and the lead of he component, the contact resistance determining means including first current driving means for producing a current I_1 that passes through the first probe, the lead of the component, and the second probe;

component testing means electrically connected to the first and second probes for determining a value of a parameter of the component while the contact resistance determining mean determines the sum of the amounts of contact resistances, the component testing means including second current driving means for producing a current I_2 that passes through the component, the currents I_1 and I_2 having frequencies such that the frequency of the current I_1 is substantially different from the frequency of the current I_2; and

first frequency blocking means for blocking the current I_1 from entering the component testing means and second frequency blocking means included in the contact resistance determining means for blocking the current I_2 from entering the contact resistance determining means.

5,057,773

METHOD FOR OPENS/SHORTS TESTING OF CAPACITIVELY COUPLED NETWORKS IN SUBSTRATES USING ELECTRON BEAMS

Steven D. Golladay, Hopewell Junction; Fritz J. Hohn, Somers; David J. Hutson, Apalachin, all of N.Y.; William D. Meisburger, San Jose, Calif., and Juergen Rasch, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 326,772, Mar. 21, 1989, Pat. No. 4,943,769. This application Jun. 1, 1990, Ser. No. 522,007

Int. Cl.[5] G01R *31/28, 31/02*

U.S. Cl. 324—158 R **3 Claims**



1. A method of testing electrical connections and short circuits of conductor networks comprising nets on a body of insulating material without physical contact comprising the steps of:

(a) applying an unfocused flood electron beam with a low current to a broad surface of said body to be probed including a plurality of said nets, simultaneously applying a focused probe electron beam having an energy predetermined to provide one of said nets a charge of opposite polarity from the flood beam to other areas of said body to be probed,

(b) generating an electron beam to cause secondary electron emission from said conductors; and

(c) detecting the presence of connections not at a given potential,

whereby the effects of capacitive coupling are minimized in producing a charge at any given point.

5,057,774

APPARATUS FOR MEASURING THE QUIESCENT CURRENT OF AN INTEGRATED MONOLITHIC DIGITAL CIRCUIT

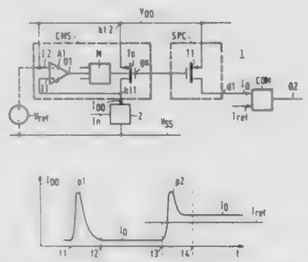
Sebastiaan C. Verhelst; Evert Seevinck, and Keith Baker, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 9, 1990, Ser. No. 462,663

Claims priority, application Netherlands, Jan. 10, 1989, [illegible]

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158 R **21 Claims**



1. An arrangement for measuring a quiescent current of an integrated monolithic digital circuit comprising a transistor current sensor for receiving the IC quiescent current and which includes a first connection terminal for coupling to a supply terminal of the integrated monolithic circuit and with a voltage second connection terminal for coupling to a supply, characterized in that the arrangement comprises voltage stabilization means for stabilizing a voltage at the first connection terminal and signal processing means coupled to the voltage stabilization means for signal processing of the quiescent current.

5,057,775

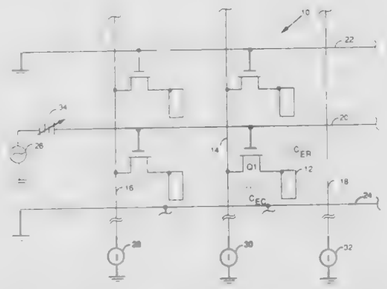
METHOD OF TESTING CONTROL MATRICES FOR FLAT-PANEL DISPLAYS

Henry P. Hall, Concord, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed May 4, 1990, Ser. No. 518,453

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 R **15 Claims**



1. A method of testing a flat-panel display drive matrix comprising the steps of:

A) providing a flat panel-display drive matrix of the type that includes a plurality of transistors arranged in rows and columns, a column line associated with each column, and a row line associated with each row, each transistor including source and drain terminals, one of which is an open terminal adapted to serve as an LCD electrode and the other of which is connected to the column line associated with its transistor's column, each transistor further including a gate terminal connected to the row line associated with its transistor's row; and

B) before connecting the drive matrix to liquid-crystal material to produce a flat-panel display,

i) measuring a quantity indicative of AC-signal transmittances between a first port, of which one terminal is a node on one of the lines, and a second port, of which one terminal is a node on another of the lines, while first and second DC levels are applied between row and column lines;

ii) determining whether the relationship between the transimmittances that result from the first and second DC levels meets predetermined criteria representative of various possible defects in the matrix; and

iii) generating an indication of the result of that determination.

5,057,776

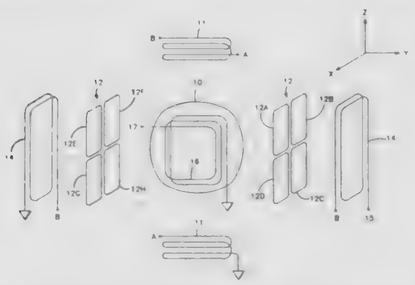
PULSED FIELD MRI SYSTEM WITH NON-RESONANT EXCITATION

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Dec. 8, 1989, Ser. No. 447,800

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **55 Claims**



1. In a method for imaging an object using magnetic resonance without radio-frequency excitation the steps of:

applying a magnetic pulse through the object producing a distribution of magnetic moments in a first direction;

applying a plurality of orthogonal magnetic gradients through the object whose magnetic field points substantially normal to the first direction;

receiving signals, following the magnetic pulse, resulting from the precessing magnetic moments in the object normal to the gradient field; and

processing the received signals to form an image representing the magnetic moment distribution in the object.

5,057,777

QUADRATURE COIL CONSTRUCTION

Richard V. Kurczewski, Monroe, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 26, 1990, Ser. No. 514,906

Int. Cl.[5] G01R *33/20*

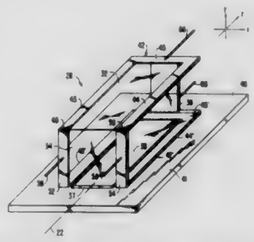
U.S. Cl. 324—318 **19 Claims**

1. A quadrature coil construction for use in an NMR imaging apparatus comprising:

first and second spaced U-shaped electrically conductive conductors each lying in respective first planes, the conductors each comprising a pair of spaced legs joined at one end by a transverse base member and having substantially the same orientation;

a pair of electrically conductive interconnect conductors, each connecting said first and second conductors at leg ends opposing the one end forming with said legs third and fourth U-shaped conductors lying in second planes oriented orthogonal to said first planes; and

signal applying means connected to the base members and



interconnect conductors for respectively forming with said members and interconnect conductors first and second sets of magnetically responsive coils having orthogonal orientations for operation in quadrature.

5,057,778

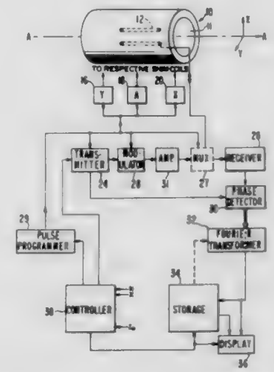
DOUBLE TUNED NMR COILS

Alan R. Rath, Fremont, Calif., assignor to Spectroscopy Imaging Systems Corporation, Fremont, Calif.

Filed Mar. 29, 1990, Ser. No. 501,681

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—322 **3 Claims**



1. A double resonant segmented coil circuit comprising:

(a) a pair of spaced-apart closed loop portions, each loop portion comprising four loop link members, each loop link member comprising an inductive loop element in series relationship with a capacitive loop element, four said loop link members joined in pairs in series relationship to form each said closed loop portion, said closed loop portion thereby comprising four function points,

(b) four leg portions each disposed electrically to join respective loop link members of said closed loop portions at corresponding junction points, each said leg portion comprising two inductive leg elements and a capacitive leg element electrically disposed in series relationship therebetween said inductive leg elements,

(c) a first driven leg comprising a first leg portion adapted to receive a first AC signal in parallel across the capacitive leg element thereof, and a second driven leg portion comprising a second leg portion adapted to receive a second AC signal in parallel across the capacitive leg element of said second leg portion through second AC coupling means,

values of said inductive loop elements, inductive leg elements, capacitive loop elements, and capacitive leg elements se-

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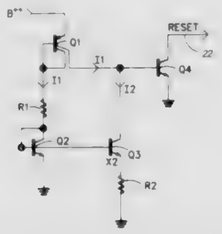
lected whereby the potential difference between the nearest junction point of a loop portion symmetrically disposed to either side of said first driven leg portion due to said first AC signal vanishes and whereby the potential difference between the nearest junction points of symmetrically disposed to either side of said second driven leg portion due to said second AC signal vanishes.

5,057,779

TEMPERATURE INDEPENDENT VOLTAGE MONITOR FOR USE IN A BATTERY OPERATED ELECTRONIC DEVICE

James G. Mittel, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 5, 1990, Ser. No. 505,218
Int. Cl.[5] G01N *27/46*
U.S. Cl. 324—431 **15 Claims**



1. A battery-operated electronic device operational over an ambient temperature range and including a battery derived source of power for generating a voltage potential suitable for energizing at least a controlling circuit portion of said electronic device which is sensitive to the voltage potential for valid operation, said electronic device comprising:

means for monitoring said voltage potential, said monitoring means for setting a voltage potential threshold substantially independent of ambient temperature variation including:

first circuit means for generating a first current proportional to the voltage potential being monitored;

second circuit means coupled to the first circuit means and responsive to said first current for generating a second current in the second circuit means, said voltage potential threshold being set at a level where said first and second currents are substantially equal; and

means responsive to said first and second currents for generating an undervoltage signal when the monitored voltage potential falls below the set voltage potential threshold, said undervoltage signal being coupled to said controlling circuit portion or suspending the operation thereof.

5,057,780

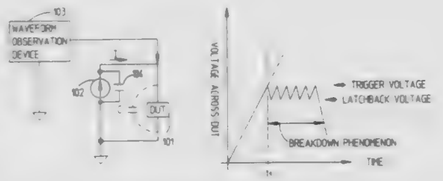
METHOD AND APPARATUS FOR MEASURING TRIGGER AND LATCHBACK VOLTAGE OF A SEMICONDUCTOR DEVICE

Hideo Akama, Hachiojishi, and Norio Sone, Tachikawashi, both of Japan, assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 373,849, Jun. 29, 1989, abandoned.
This application Feb. 22, 1991, Ser. No. 659,532
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—537 **6 Claims**

1. A method for measuring the trigger voltage and latchback voltage of a semiconductor device-under-test having a given breakdown current, comprising the steps of:

applying a constant current to the device-under-test of a magnitude so that an oscillating voltage is sustained across the device-under-test, wherein said oscillating voltage is in response to the flow of breakdown current in said device-under-test, said constant current being less than said breakdown current; and



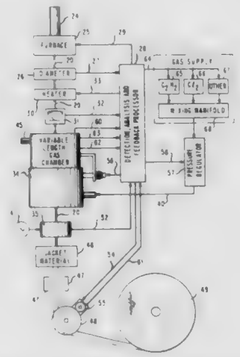
observing the voltage across the device-under-test for measuring at least one of a trigger voltage and a latchback voltage.

5,057,781

MEASURING AND CONTROLLING THE THICKNESS OF A CONDUCTIVE COATING ON AN OPTICAL FIBER

Robert M. Atkins, Millington; George E. Peterson, Warren, and Raymond D. Tuminaro, Livingston, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 31, 1989, Ser. No. 387,260
Int. Cl.[5] G01N *22/00*
U.S. Cl. 324—635 **5 Claims**



1. A method for determining the thickness of a conductive coating on an elongated body of a dielectric material, which includes the steps of

(a) establishing an electromagnetic field in a section of a hollow metallic waveguide,

(i) said waveguide section being terminated by matched terminations on opposite ends thereof,

(ii) said electromagnetic field being established by said matched terminations, and having a frequency of oscillation in the radio frequency range of from 10 MHz to 150 GHz,

(iii) said waveguide section having an opening in each of the opposite broad walls thereof permitting passage of an elongated body transverse of the waveguide section in substantial alignment with the electric field component of the electromagnetic field and without any physical contact with the walls of the waveguide section,

(b) moving a conductively coated elongated dielectric body through said openings so that it passes through the electromagnetic field, and

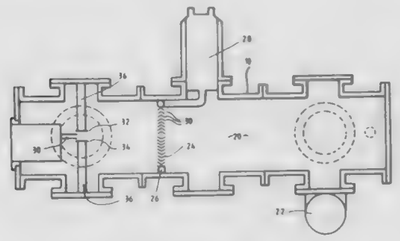
(c) in response to a change in the electromagnetic field, generating a signal representative of the thickness of the conductive coating.

5,057,782

MICROWAVE SPECTROMETER

Ronald D. Brown, Mount Waverley; Peter D. Godfrey, Clayton, and Jonathan G. Crofts, Vermont South, all of Australia, assignors to Monash University, Clayton, Australia

PCT No. PCT/AU89/00070, § 371 Date Aug. 16, 1990, § 102(e) Date Aug. 16, 1990, PCT Pub. No. WO89/08248, PCT Pub. Date Sep. 8, 1989
PCT Filed Feb. 21, 1989, Ser. No. 555,391
Claims priority, application Australia, Feb. 26, 1988, PI6983
Int. Cl.[5] G01N *22/00*
U.S. Cl. 324—639 **5 Claims**



1. A spectrometer for analyzing a sample substance, said spectrometer including:

(a) means for supporting the sample substance,

(b) means for providing a flow of gas through or over said substance such that molecules of said substance are entrained in said gas flow,

(c) nozzle means for receiving said gas flow entraining said molecules of the substance and for ejecting said flow of gas as a supersonic beam seeded with said molecules,

(d) means for creating an electric field in the vicinity of said beam which is ejected by said nozzle means,

(e) means for providing a source of electromagnetic radiation which passes through said beam in the vicinity of said electric field, and

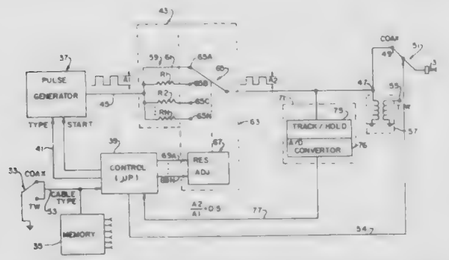
(f) means for detecting said electromagnetic radiation to thereby detect an absorption signal of the molecules which has been modulated in frequency by said electric field.

5,057,783

AUTOMATIC IMPEDANCE MATCHING

Andrew Gubisch, Lexington, Mass., assignor to Beckman Industrial Corporation, San Diego, Calif.

Filed Feb. 16, 1990, Ser. No. 480,783
Int. Cl.[5] G01R *27/00*; H03H *7/40*
U.S. Cl. 324—710 **9 Claims**



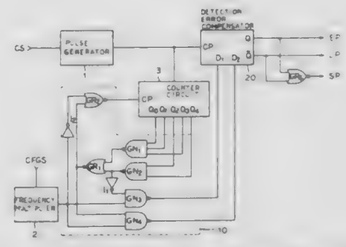
1. Apparatus for performing an electrical test on a cable utilized in local area networks (LAN's) to determine the suitability of installed network transmission media to conduct network based data communications comprising:

5,057,784

AUTOMATIC READING APPARATUS FOR CAPSTAN REPRODUCING SPEED MODE

Seong B. Park, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 24, 1989, Ser. No. 383,432
Claims priority, application Rep. of Korea, Jul. 25, 1988, 9355/1988
Int. Cl.[5] G01P *3/56, 3/48*
U.S. Cl. 328—134 **2 Claims**



1. An automatic reading apparatus for determining a capstan reproducing speed mode, comprising:

pulse generator means for receiving a control clock signal and for generating a signal of pulses corresponding to a period of said control clock signal;

frequency multiplier means for multiplying a frequency of a capstan frequency generator signal and for generating an output signal of pulses therefrom;

counter means, operative connected to said pulse generator means and said frequency multiplier means, for counting said output signal of pulses from said frequency multiplier means;

processing means for preventing said output signal of pulses from frequency multiplier means from being applied to said counter means when said counter means has counted to a maximum value and for outputting reproducing speed discrimination control signals in response to a count value received from said counter means; and

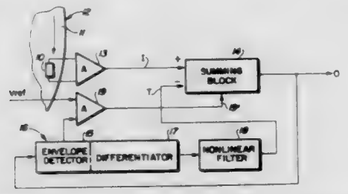
detection error compensating means, responsive to said output signal of pulses from said pulse generator means, for outputting an extended playing mode discrimination signal and a long playing mode discrimination signal according to said reproducing speed discrimination control signals from said processing means and for outputting a standard playing mode discrimination signal according to a logic combination of said extended playing mode discrimination signal and said long playing mode discrimination signal.

5,057,785

METHOD AND CIRCUITRY TO SUPPRESS ADDITIVE DISTURBANCES IN DATA CHANNELS

Paul W. Chung; Michael O. Jenkins, both of San Jose; Stephen A. Jove, Watsonville; Klaas B. Klaassen, San Jose; Paik Saber, San Jose, and Jacobus C. L. van Peppen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1990, Ser. No. 468,526
Int. Cl.[5] H03B *1/00, 1/04*
U.S. Cl. 328—162 13 Claims



1. Circuitry for suppressing additive transient disturbances in an analog input data signal, comprising:

summing means for algebraically summing the input data signal with a corrective feedback signal for providing an output signal;

means responsive to a feedback of said output signal for providing a control parameter that is the derivative of a voltage amplitude envelope corresponding to an envelope of said output signal; and

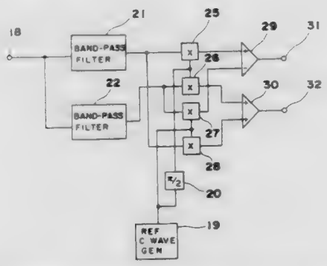
nonlinear signal-adaptive filter means for converting said control parameter into the corrective feedback signal, said feedback signal substantially replicating each additive transient disturbance for subtraction from the input data signal by said summing means to render the output signal substantially free of the additive disturbance.

5,057,786

QUADRATURE AMPLITUDE MODULATION WAVE DEMODULATOR PROVIDED WITH BAND-PASS FILTERS FOR FIXED EQUALIZER

Syuuichi Yoshikawa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 20, 1990, Ser. No. 540,788
Claims priority, application Japan, Jun. 22, 1989, 1-160502
Int. Cl.[5] H03D *3/00*
U.S. Cl. 329—304 7 Claims



1. A quadrature amplitude modulation wave demodulator comprising:

a fixed equalizer having a first band-pass filter for receiving a quadrature amplitude modulation wave reception signal and for outputting an in-phase component with respect to a carrier wave for the reception signal;

a second band-pass filter for receiving said reception signal and for outputting a quadrature component with respect to the carrier wave for the reception signal; and

each of said first and second band-pass filters having an impulse response, including an impulse response in which an impulse response of a filter for compensating for the characteristics of communication lines and an impulse response of a reception filter are folded; and

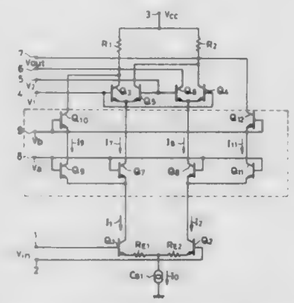
a vector multiplication section for performing vector multiplication between one vector having outputs of said first and second band-pass filters as two components, and another vector having two reference carrier waves in quadrature to each other as two components.

5,057,787

VARIABLE GAIN DIFFERENTIAL AMPLIFIER

Minoru Arai, Hachioji, and Yukihiro Kato, Hino, both of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed May 14, 1990, Ser. No. 523,222
Claims priority, application Japan, May 16, 1989, 1-122047
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—254 5 Claims



1. A variable gain differential amplifier comprising:

(a) a first (**1**) and a second (**2**) input terminal;

(b) a first transistor (Q_1) having a base connected to the first input terminal;

(c) a second transistor (Q_2) having a base connected to the second input terminal;

(d) a source (C_{s1}) of electric current connected to emitters of both first and second transistors;

(e) a supply terminal (**3**);

(f) a first (**6**) and a second (**7**) output terminal;

(g) a first load resistor (R_1) connected between the supply terminal; and the first output terminal;

(h) a second load resistor (R_2) connected between the supply terminal and the second output terminal;

(i) a first (**4**) and a second (**5**) gain control terminal;

(j) a third transistor (Q_3) having a collector connected to the supply terminal via the first load resistor, and a base connected to the first gain control terminal;

(k) a fourth transistor (Q_4) having a collector connected to the supply terminal via the second load resistor, and a base connected to the first gain control terminal;

(l) a fifth transistor (Q_5) having an emitter connected to an emitter of the third transistor, a collector connected to the collector of the fourth transistor, and a base connected to the second gain control terminal;

(m) a sixth transistor (Q_6) having an emitter connected to an emitter of the fourth transistor, a collector connected to the collector of the third transistor, and a base connected to the second gain control terminal;

(n) a bias terminal (**8**) for inputting a bias voltage;

(o) a seventh transistor (Q_7) having an emitter connected to a collector of the first transistor, a collector connected to the emitters of the third and fifth transistors, and a base connected to the bias terminal;

(p) an eighth transistor (Q_8) having an emitter connected to a collector of the second transistor, a collector connected to the emitters of the fourth and sixth transistors, and a base connected to the bias terminal;

(q) a first current dividing circuit connected between the emitter of the seventh transistor and the collector of the third transistor; and

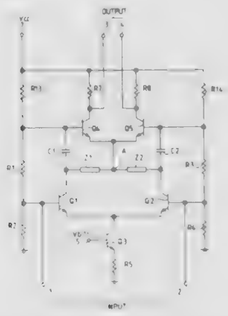
(r) a second current dividing circuit connected between the emitter of the eighth transistor and the collector of the fourth transistor.

5,057,788

2-STAGE DIFFERENTIAL AMPLIFIER CONNECTED IN CASCADE

Susumu Ushida, and Sadao Igarashi, both of Souma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1990, Ser. No. 573,951
Claims priority, application Japan, Oct. 6, 1989, 1-261477
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—261 1 Claim



1. A 2-stage differential amplifier connected in cascade comprising:

a first and a second transistor constituting a preceding stage differential amplifier, whose emitters are connected in common;

a third and a fourth transistor constituting a succeeding stage differential amplifier, whose emitters are connected in common;

a first capacitor connected between the collector of said first transistor and the base of said third transistor;

a second capacitor connected between the collector of said second transistor and the base of said fourth transistor;

a constant current source circuit connected between the common emitters of said first and said second transistors and ground; and

a first and a second impedance circuit connected in series between the collectors of said first and said second transistor, the common emitter of said third and said fourth transistor being connected with the connecting point of said first and said second impedance circuit.

5,057,789

CLASS AB CMOS AMPLIFIER

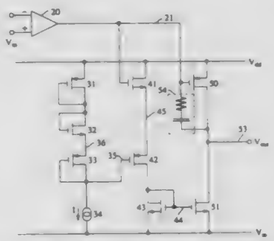
Krishnaswamy Nagaraj, Piscataway, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 31, 1990, Ser. No. 560,513
Int. Cl.[5] H03F *3/26, 3/16*
U.S. Cl. 330—264 8 Claims

1. A class AB CMOS amplifier having an output stage comprising a first output FET connected between a first terminal of a power supply and an output terminal, a second output FET connected between said output terminal and a second terminal of said power supply, the input signal to said amplifier being connected to an input terminal and referenced to said first power-supply terminal, said input terminal being connected to the gate of said first output FET and to means for shifting said input-signal reference to said second power-supply terminal, the output of such shifting means being connected to the gate of said second output FET

characterized in that

said shifting means is a level-shifting stage comprising a source-follower FET, a current-control FET and a diode-connected load FET, said source-follower FET is connected between said first power-supply terminal and the source of said current-control FET, said load FET is



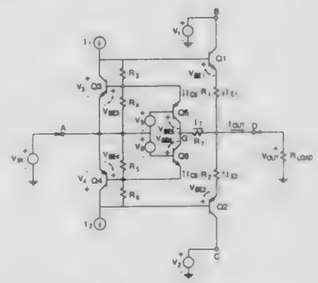
connected between the drain of said current-control FET and said second power-supply terminal, said input terminal is connected to the gate of said source-follower FET, the gate of said current-control FET is connected to the output terminal of a reference voltage generator having its output voltage referenced to said first power-supply terminal and the drain of said current-control FET is connected to the gate of said second output FET, whereby the magnitude of said reference voltage controls the magnitude of the quiescent current in said level-shifting stage and in said output stage.

5,057,790

HIGH EFFICIENCY CLASS A AMPLIFIER

Ernest D. Landi, 1794 Rocky Mountain Ave., Milpitas, Calif. 94035

Filed Jul. 16, 1990, Ser. No. 553,921
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—268 10 Claims



1. An amplifier circuit comprising:

a signal input terminal for receiving an input signal;

a signal output terminal for providing an output signal;

a first amplifier having a control terminal, an input terminal, and an output terminal connected to the signal output terminal;

a second amplifier having a control terminal, an input terminal, and an output terminal connected to the signal output terminal;

first multiplier means for providing a voltage to the control terminal of the first amplifier more positive than a voltage at the signal input terminal;

second multiplier means for providing a voltage to the control terminal of the second amplifier more negative than a voltage at the signal input terminal;

feedback means for providing a first current to the first multiplier means and a second current to the second multiplier means, said first and second currents each being predetermined functions of a difference of a voltage at the signal input terminal and a voltage at the signal output terminal;

means for connecting the signal input terminal to the feedback means, and to the first and second multiplier means; and

wherein the voltage provided by the first multiplier means varies in response to the voltage at the signal input terminal and to the first current, and wherein the voltage provided by the second multiplier means varies in response to the voltage at the signal input terminal and to the second current.

5,057,791

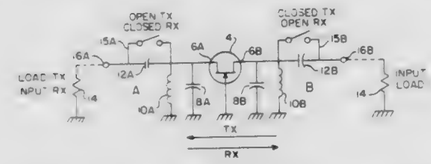
DEVICE AND METHOD FOR BI-DIRECTIONAL AMPLIFICATION WITH A JFET

Mark W. Thompson, Fairport; Donald R. Martz, Webster, and George D. Helm, Fairport, all of N.Y., assignors to Harris Corporation, Rochester, N.Y.

Filed Apr. 27, 1990, Ser. No. 515,450

Int. Cl.[5] H03F *3/16*

U.S. Cl. 330—277 **15 Claims**



6. A bi-directional amplifier comprising:

a JFET having a gate and two junctions for amplifying a voltage related to a signal alternatively received at each of said two junctions; and

means for varying the impedance at each of said two junctions, the means comprising first capacitor means and parallel inductor means connected to said junctions, the impedance being relatively low at the one of said two junctions receiving the signal and the impedance being relatively high at the other of said two junctions,

so that said amplifier is able to operate bi-directionally.

5,057,792

CURRENT MIRROR

Michael J. Gay, Vaud, Switzerland, assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 23, 1990, Ser. No. 556,637

Claims priority, application United Kingdom, Sep. 27, 1989, 8921799

Int. Cl.[5] H03F *3/04*

U.S. Cl. 330—288 **6 Claims**

1. A current mirror circuit comprising:

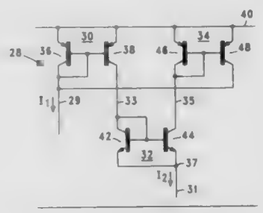
an input node;

a first simple current mirror of a first semiconductor type having an input coupled to said input node and an output;

a second simple current mirror of a second semiconductor type having an input coupled to said output of said first simple current mirror and an output;

a third simple current mirror of said first semiconductor type having an input coupled to said output of said second simple current mirror and an output coupled to said input node; and

an output node coupled to said second simple current mirror so as to receive the sum of the input and output currents of



said second simple current mirror flowing in a common terminal thereof.

5,057,793

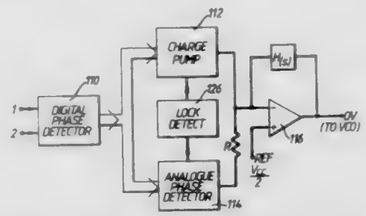
FREQUENCY SYNTHESIZER PLL HAVING DIGITAL AND ANALOG PHASE DETECTORS

Nicholas P. Cowley, 10 Summerhouse Road, Wroughton, Wiltshire, England, and Thomas D. Stephen, 11 Lackey Road, Upper Ballindery, Lisburn, County Antrim, Ireland

Continuation-in-part of Ser. No. 7/435,402, Nov. 13, 1989, abandoned. This application Oct. 29, 1990, Ser. No. 604,153

Int. Cl.[5] H03L *7/087, 7/091, 7/095*

U.S. Cl. 331—1 A **5 Claims**



1. A frequency synthesiser having a phase locked loop circuit including a voltage controlled oscillator (VCO) having a control input for receiving a frequency control signal and providing a variable frequency signal, a reference frequency oscillator providing a reference frequency signal, phase comparison means for comparing the phases of the variable frequency and reference frequency signals and providing an output signal to a loop filter, the output of the loop filter providing said frequency control signal to the VCO;

and wherein said phase detector means comprises :

a digital phase detector providing an output signal on an output line means, said output line means being coupled to charge pump means for providing a first output signal to said loop filter;

an analogue phase detector including sample and hold means, and control means responsive to the variable frequency and reference frequency signals for providing a signal for sampling to the sample and hold means, the sample and hold means providing a second output signal to said loop filter, and including voltage detection means for detecting the voltage level of the signal held by said sample and hold means as within predetermined limits, for selectively inhibiting said first output signal.

5,057,794

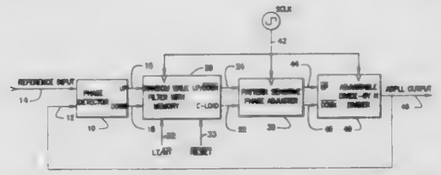
PHASE-LOCKED LOOP WITH PATTERN CONTROLLED BANDWIDTH CIRCUIT

Cheng C. Shih, Rancho Cordova, Calif., assignor to Level One Communications, Inc., Folsom, Calif.

Filed Feb. 26, 1991, Ser. No. 661,496

Int. Cl.[5] H03L *7/089*

U.S. Cl. 331—1 A **5 Claims**



1. A phase-locked loop having a pattern controlled bandwidth circuit, a phase detector with an output and a digitally controlled oscillator having an input and an output, the pattern controlled bandwidth circuit comprising:

a) an up/down counting random walk filter with memory having an input and an output, the input coupled to the phase detector output, the random walk filter with memory, in response to a first overflow count, producing a count up pulse on the output and presetting to a first biased count biased towards a second overflow count, and in response to a first underflow count, the random walk filter with memory producing a count down pulse on the output and presetting to a second biased count biased towards a second underflow count; and

b) a pattern sensitive phase adjuster circuit having an input, an output, and first and second counter means coupled therebetween, the input coupled to the output of the random walk filter with memory, the output coupled to the digitally controlled oscillator input, the pattern sensitive phase adjuster circuit providing a series of pulses for controlling the digitally controlled oscillator frequency in response to stimulus from the random walk filter with memory, wherein first counter means provides a time interval value between pulses in the series and second counter means provides a quantity value for a number of pulses within the time interval.

5,057,795

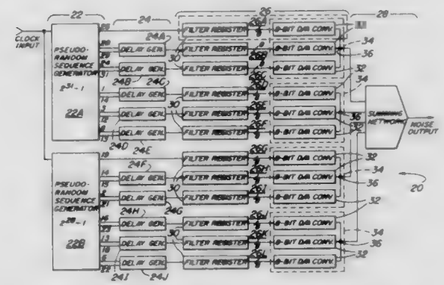
DIGITAL GAUSSIAN WHITE NOISE GENERATION SYSTEM AND METHOD OF USE

Thomas M. Napier, North Wales, Pa., assignor to Aydin Corporation, Horsham, Pa.

Filed Oct. 25, 1990, Ser. No. 603,573

Int. Cl.[5] H03B *29/00;* **H03K** *3/84*

U.S. Cl. 331—78 **34 Claims**



1. Apparatus for digitally synthesizing substantially Gaussian white noise of an adjustable, wide bandwidth but of substantially constant amplitude, said apparatus comprising pseudorandom sequence generation means, delay generation means, finite impulse response filter means, and summing means, said pseudorandom sequence generation means having a large plurality of output stages and being arranged for providing first digital electrical signals representing a pseudorandom number sequence of a long repetition rate at said output stages, said delay generation means being coupled to selected output stages of said pseudorandom sequence generation means for providing second respective digital electrical signals representing respective uncorrelated pseudorandom number sequences whose spectrum is a predetermined function, said finite impulse response filter means being weighted and coupled to respective ones of said delay generation means for altering the predetermined function spectrum of the pseudorandom number sequences of said second electrical signals to produce respective first analog electrical signals of substantially uniform amplitude distribution, said summing means being coupled to said finite impulse response filter means for summing said first analog electrical signals to produce an analog white noise signal of substantially Gaussian distribution.

5,057,796

DIGITAL FREQUENCY MODULATION SYSTEM IN WHICH HIGH AND LOW FREQUENCY PORTIONS ARE PROCESSED SEPARATELY

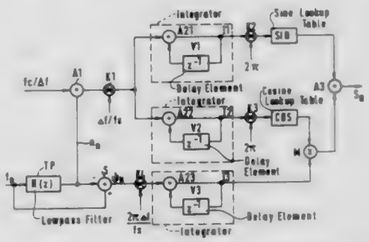
Martin Winterer, Gundelfingen, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Nov. 8, 1990, Ser. No. 610,634

Claims priority, application European Pat. Off., Nov. 18, 1989, 89121402

Int. Cl.[5] H03C *3/00;* **H04N** *5/92*

U.S. Cl. 332—119 **23 Claims**



1. A system for modulating a carrier signal with a modulating signal, comprising:

first adding means for adding the frequency of said carrier signal to the frequency of said modulating signal;

determining means, responsive to an output of said first adding means, for determining the phase angles of the low-frequency and high-frequency components of said output of said adding means;

sine means, responsive to a first output of said determining means, for determining the sine of the phase angle of said low-frequency component;

cosine means, responsive to said first output of said determining means, for determining the cosine of the phase angle of said low-frequency component;

multiplying means, responsive to a second output of said determining means and to an output of said cosine means, for multiplying the phase angle of said high-frequency component by the cosine of said phase angle of said low-frequency component; and

second adding means, responsive to respective outputs of said sine means and said multiplying means, for adding said outputs of said sine means and said multiplying means.

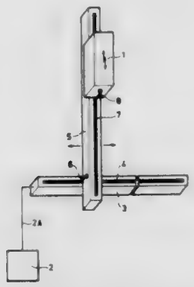
VOL 1131 ISS 3 OCT 15 1991 UMI

5,057,797

SYSTEM FOR TRANSMITTING BROADBAND DATA AND/OR INSTRUCTIONS BETWEEN AN ELEMENT MOVING IN ONE PLANE AND A CONTROL STATION

Marc Heddebaut, Sainghin en Melantois, France, assignor to Alsthom, Cedex, France

Filed Jul. 12, 1989, Ser. No. 378,683
Claims priority, application France, Jul. 12, 1988, 88 09471
Int. Cl.[5] H01P 5/00
U.S. Cl. 333—24 4 Claims



1. A system for transmitting broadband data signals between a mobile element and a fixed control station using a microwave radiation, said system comprising:

a) a fixed elongated hollow tube forming a fixed waveguide for microwaves and linked with said fixed control station to transmit the microwave radiation, said fixed hollow tube having a longitudinal axis and a continuous longitudinal center slot;

b) a movable elongated hollow tube, having a longitudinal axis, carrying the mobile element and forming a moving waveguide for microwaves, the longitudinal axis of said movable hollow tube forming an angle with the longitudinal axis of the fixed hollow tube and being in juxtaposition thereto, said moving waveguide moving along the center slot of the fixed hollow tube and being equipped with a first antenna and including a coaxial cable-to-waveguide transition plunging into said center slot of said fixed hollow tube, and means for transmitting the microwave radiation to the mobile element, said movable hollow tube being provided with a continuous longitudinal center slot and means for transmitting the microwave radiation from said movable hollow tube to the mobile element including a second antenna associated with the mobile element and said continuous center slot of said movable hollow tube, and wherein said second antenna includes a second, coaxial cable to waveguide transition plunging in said continuous center slot of said movable hollow tube, and said mobile element moving along the center slot of said movable hollow tube.

5,057,798

SPACE-SAVING TWO-SIDED MICROWAVE CIRCUITRY FOR HYBRID CIRCUITS

Christopher A. Moye, Marina Del Rey, and Joseph N. Owens, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

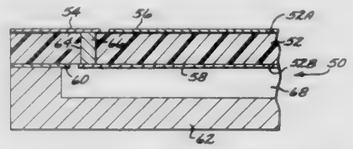
Filed Jun. 22, 1990, Ser. No. 542,239
Int. Cl.[5] H01P 5/00
U.S. Cl. 333—33 25 Claims

1. A space-saving two-sided microwave transmission line for a hybrid circuit having RF circuits and dc circuits mounted on a common substrate, comprising:

a substrate comprising an insulating layer having first and second substantially planar surfaces;

a first coplanar waveguide having a first characteristic impedance and comprising a first transmission line conductor formed on said first surface of said substrate and further characterized by corresponding first planar conductive areas formed on said first surface and spaced from said first line conductor;

a second coplanar waveguide having a second characteristic impedance equal to said first characteristic impedance and comprising a second transmission line conductor formed on said second surface of said substrate and further characterized by corresponding second planar conductive



areas formed on said second surface and spaced from said second line conductor;

a line-connecting via opening formed through said substrate and comprising means for electrically connecting said first transmission line conductor to said second transmission line conductor through said via opening; and

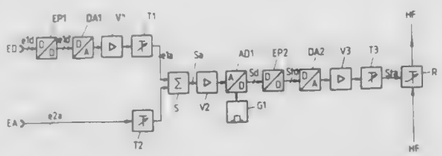
matching means for substantially matching the via opening impedance to said characteristic impedances of said first and second coplanar waveguides.

5,057,799

DAMPING DEVICE

Frank Heitjohann, Weissenhorn; Bernhard Wagner, Senden, and Alfred Koreis, Erbach, all of Fed. Rep. of Germany, assignors to Telefunken Systemtechnik GmbH, Ulm, Fed. Rep. of Germany

Filed Jul. 3, 1990, Ser. No. 547,289
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1989, 3921908
Int. Cl.[5] H03H 7/24
U.S. Cl. 333—81 R 8 Claims



1. A damping device for high frequency signals including an analog-energizable attenuator and a control signal generator for generating an analog control signal for the attenuator, the control signal generator comprising:

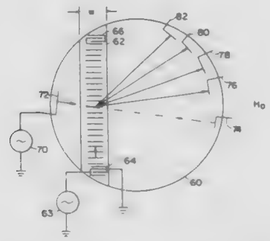
a control signal generator first input, for a first, digital, input signal; a control signal generator second input for a second, analog, input signal; digital to analog conversion means for deriving a first, analog, input signal from said first, digital, input signal; analog summing means for forming an analog aggregate signal from the first and second, analog, input signals; and assignment means for deriving the analog control signal as a function of said analog aggregate signal.

5,057,800

APPARATUS AND METHOD FOR DIFFRACTING MSW IN A GARNET FILM USING SAW

Samy M. Hanna, Farmingdale, N.Y., assignor to Polytechnic University, Brooklyn, N.Y.

Filed Jul. 12, 1989, Ser. No. 379,322
Int. Cl.[5] H03H 9/00
U.S. Cl. 333—133 11 Claims



1. A method for diffracting magnetostatic waves in a garnet film by varying the characteristics of the film with spatial and time periodicity, a portion of the garnet film having a piezoelectric layer with an interdigital transducer, the method comprising the steps:

inputting a first signal to the interdigital transducer to propagate surface acoustic waves in the garnet film;

exposing the garnet film to a magnetic biasing field; and

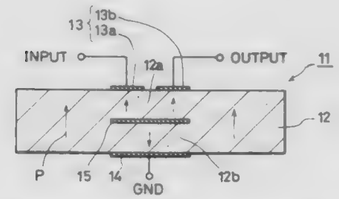
exciting magnetostatic waves (MSW) in said garnet film whereby the surface acoustic waves cause a space and time modulation of the properties of the film so as to form an effective Bragg cell for diffracting the magnetostatic waves supplied thereto.

5,057,801

FILTER DEVICE OF PIEZO-ELECTRIC TYPE INCLUDING DIVIDED CO-PLANAR ELECTRODES

Toshihiko Kittaka; Akira Ando, and Hiroshi Tamura, all of Nagaokakyo, Japan, assignors to Murata Mfg. Co. Ltd., Japan

Filed Feb. 20, 1990, Ser. No. 482,172
Claims priority, application Japan, Feb. 20, 1989, 1-40661
Int. Cl.[5] H03H 9/54
U.S. Cl. 333—187 7 Claims



1. A piezoelectric filter device of an energy-trapping-by-frequency-lowering type utilizing a higher harmonic in a thickness-extensional vibration mode, comprising:

a plate-shaped body made of a piezoelectric material; and

at least three electrodes arranged in said filter device so as to be overlapped with each other while being separated by layers of the piezoelectric material in a direction of thickness of said plate-shaped body;

at least one of said electrodes comprising a plurality of substantially coplanar divided electrodes, at least one of said divided electrodes constituting an input terminal of said filter device and at least one of the remaining divided electrodes constituting an output terminal of said filter device, and

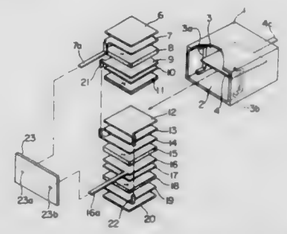
a region of said plate-shaped body, where the electrodes are overlapped with each other, defining an energy trapping-by-frequency lowering vibrating region; and a region of said body adjacent to said vibrating region comprising said piezoelectric material which has been subjected to polarization by electric potentials applied uniformly in the direction of thickness to reduce the sporious response of said vibration mode.

5,057,802

LADDER-TYPE ELECTRIC FILTER APPARATUS AND HOUSING THEREFOR

Eiji Ozeki, and Kenji Kawakami, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Japan

Filed Feb. 13, 1990, Ser. No. 479,536
Claims priority, application Japan, Feb. 14, 1989, 1-16047[U]
Int. Cl.[5] H03H 9/10, 9/58
U.S. Cl. 333—189 4 Claims



1. A ladder-type electric filter apparatus comprising input and output terminal plates and a ground terminal plate, at least one electric filter unit, said at least one filter unit including at least one piezoelectric resonator element forming a series branch between the input and output terminal plates and at least one piezoelectric resonator element forming a parallel branch between the input and output terminal plates and said ground terminal plate, each of said input and output terminal plates and said ground terminal plate having a connecting leg forming an external connecting terminal and mechanically supporting said piezoelectric resonator elements, said input terminal plate, said output terminal plate and said ground terminal plate, at least one of said terminal plates being integral with said casing, said casing including an opening in one wall through which each of the terminal plates, except for elements are mounted, the connecting leg of the at least one integral terminal plate extending from a portion of said casing which is opposite said opening in said one wall, and the connecting leg of each said other terminal plate extending from said opening.

5,057,803

STRIPLINE SPLIT RING RESONATOR BANDPASS FILTER

Leng H. Ooi; Peter J. Yeh, both of Sunrise, and Branko Avanic, Coral Gables, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1990, Ser. No. 561,117
Int. Cl.[5] H01P 1/203, 7/08
U.S. Cl. 333—204 6 Claims

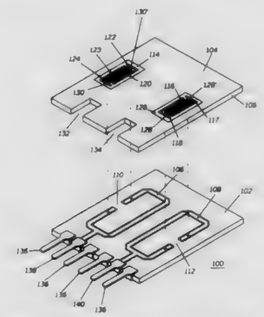
1. A stripline bandpass filter, having an input port and an output port, comprising:

a first conducting layer;

a first nonconducting substrate, having a top side and a bottom side, the top side being attached to the first conducting layer, the first nonconducting substrate also having at least first, second, third, and fourth holes therein;

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a second nonconducting substrate, having a top side and a bottom side, the top side being attached to the bottom side of the first nonconducting substrate;
a first stripline ring resonator, located on the top side of the second nonconducting substrate and coupled to the input port, the first stripline ring resonator having a gap located therein;
a second stripline ring resonator, located on the top side of the second nonconducting substrate and coupled to the



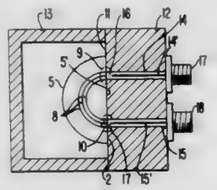
first stripline ring resonator and to the output port, the second stripline ring resonator having a gap located therein;
a first distributed capacitance located on the first nonconducting substrate, the first capacitance being connected across the first gap through the first and second holes; and
a second distributed capacitance located on the first nonconducting substrate, the second capacitance having being connected across the second gap through the third and fourth holes.

5,057,804

DIELECTRIC RESONATOR CIRCUIT

Hiroyuki Sogo; Hideo Ashida; Hideo Sugawara, all of Otawara, and Yasuyuki Kondo, Nishinasunomachi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1990, Ser. No. 492,830
Claims priority, application Japan, Mar. 14, 1989, 1-61593; Jul. 21, 1989, 1-189600
Int. Cl.[5] H01P *7/10*
U.S. Cl. 333—219.1 **24 Claims**



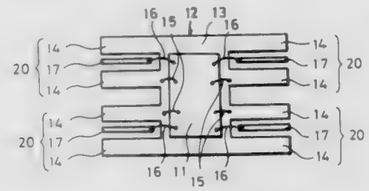
1. A dielectric resonator comprising:
a resonator element formed of a dielectric cylinder portion, the dielectric cylinder portion having an axis, a radial side lying in a plane containing the axis of the dielectric cylinder portion and two sides orthogonal to the axis;
an electrically conductive plane having a first surface in contact with the radial side of said resonator element, said resonator element resonating with a radio frequency signal equivalently in TE_{018}-mode, said electrically conductive plane having at least one opening, the radial side of said resonator element facing the at least one opening; and
a transmission line located opposite from said resonator element with respect to said electrically conductive plane, said transmission line operatively connected to the at least one opening, coupling an electromagnetic wave carried on said transmission line via the at least one opening to said resonator element.

5,057,805

MICROWAVE SEMICONDUCTOR DEVICE

Yoshinobu Kadowaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 29, 1990, Ser. No. 574,118
Claims priority, application Japan, May 16, 1990, 2-127677
Int. Cl.[5] H01P *1/00;* **H01L** *29/52*
U.S. Cl. 333—247 **3 Claims**



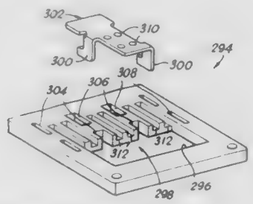
1. A microwave semiconductor device comprising:
a unitary lead frame including a die pad and a plurality of pairs of ground leads extending from said die pad, the ground leads in each pair having substantially equal widths;
a microwave semiconductor element mounted on said die pad; and
a plurality of signal leads, each signal lead being disposed between and substantially equally spaced from each of the ground leads of a respective pair of ground leads, said signal lead being coplanar with said pair of ground leads whereby each pair of ground leads and the respective signal lead disposed therebetween form a coplanar high frequency transmission path.

5,057,806

CROSSBAR ASSEMBLY

Jere L. McKee, New Sewickley; Lance Gula, Aliquippa, and Glenn R. Thomas, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 1, 1988, Ser. No. 226,503
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—9 **14 Claims**



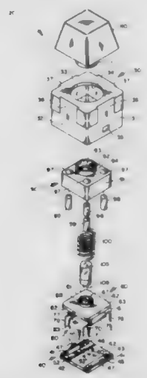
1. A circuit breaker comprising:
a housing;
one or more pairs of separable contacts each including a stationary contact and a movable contact carried by a carrier;
an operating mechanism operatively coupled to contact carrier arms for actuating said movable contacts;
an elongated shaft disposed adjacent said one or more pairs of separable contacts;
a plurality of contact carrier arms rigidly attached to said elongated shaft, disposed adjacent said pairs of separable contacts; and
a cam roll pin assembly for mechanically coupling said carrier to said contact carrier arms in a first position and allowing the carrier to operate independently of said contact carrier arms in a second position; and
a pair of insulating sleeves received on the ends of said elongated shaft.

5,057,807

KEYBOARD SWITCH

James M. Longly, Lexington, and David G. Knapp, Cozad, both of Nebr., assignors to Veetronix, Inc., Lexington, Nebr.

Filed Mar. 19, 1990, Ser. No. 495,898
Int. Cl.[5] H01H *9/00*
U.S. Cl. 335—207 **29 Claims**



1. A keyboard switch for mounting on a PC board comprising a housing, an elongated magnetically actuated switch, switch mounting means including a base plate and a cover plate assembled together in stacked relationship and mounted on said housing, at least one of said plates having an elongated cavity therein, said elongated magnetically actuated switch being located in said elongated cavity and being operable between first and second states, said plates having mating surface portions in engagement, frictionally securing said plates together in said stacked relationship to maintain said magnetically actuated switch in said cavity, a plunger slidably carried by said housing and movable normal to the axis of said cavity in said first and second predetermined directions respectively toward and away from said plates, magnet means carried by said plunger and movable therewith, means biasing said plunger in one of said predetermined directions, said magnetically actuated switch being normally in one of said states, said elongated magnetically actuated switching being placed in the other of said states in response to movement of said plunger in one of said predetermined directions and being placed in said one state in response to movement of said plunger in the other of said predetermined directions.

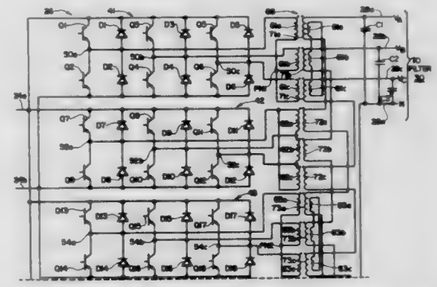
5,057,808

TRANSFORMER WITH VOLTAGE BALANCING TERTIARY WINDING

P. John Dhyanchand, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 27, 1989, Ser. No. 457,944
Int. Cl.[5] H01F *33/00*
U.S. Cl. 336—12 **9 Claims**

1. A summing transformer, comprising:
a first set of primary windings receiving a first set of polyphase currents;
a second set of primary windings receiving a second set of polyphase currents;
a first set of N secondary windings inductively linked with the first set of primary windings and developing a first set of secondary polyphase voltages;
a second set of N secondary windings inductively linked with the second set of primary windings and developing a second set of secondary polyphase voltages, each winding of the second set of secondary windings being coupled in series with a corresponding winding of the first set of



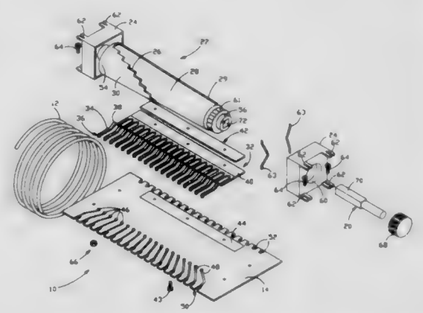
secondary winding to form N series-connected pairs of secondary windings across which N output voltages are produced; and
a set of N tertiary windings inductively linked with one of the first and second sets of N secondary windings, the tertiary windings being connected together in a delta configuration and permitting zero sequence currents to flow during a period of unbalanced load currents in the N series-connected pairs of secondary windings whereby the output voltages are maintained in a substantially balanced condition during such period.

5,057,809

VARIABLE INDUCTANCE RF COIL ASSEMBLY

Alan S. Chandler, Redmond, and Emile F. Alline, Jr., Lynwood, both of Wash., assignors to Advanced Electronics, Inc., Lynnwood, Wash.

Filed Dec. 26, 1989, Ser. No. 456,337
Int. Cl.[5] H01F *29/02*
U.S. Cl. 336—144 **18 Claims**



1. A variable inductor assembly for radio frequency energy comprising:
a multi-turn substantially helical coil comprising a plurality of turns, successive turns of the coil having a tap terminating in a fixed switch contact, there being a plurality of fixed switch contacts;
a mounting substrate means of dielectric material for mount-

ing the turns of the coil and for mounting the fixed switch contacts; and

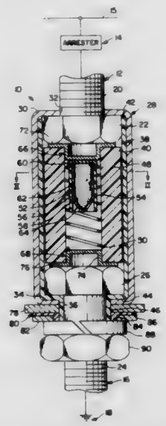
a cam and follower switching assembly mounted to the mounting substrate means, the switching assembly including a rotatable non-conductive cam and a follower having conductive fingers which are biased mechanically to follow the cam and which are electrically connected in parallel, and further including moving contacts which are carried by the fingers, the moving contacts being aligned and adapted to make progressive contact with aligned corresponding ones of said fixed contacts as the cam is rotated thereby progressively to short out the successive turns connected to said ones of said fixed contacts actually contacted by said moving contacts.

5,057,810

ARRESTER ISOLATOR-DISCONNECTOR

Donald E. Raudabaugh, Wadsworth, Ohio, assignor to Hubbell Incorporated, Orange, Conn.

Filed Feb. 14, 1991, Ser. No. 655,026
Int. Cl.[5] H01H *39/00;* **H02H** *3/22*
U.S. Cl. 337—30 **21 Claims**



1. A device for connecting and then isolating and disconnecting an arrester, comprising:

a first electrical terminal;

a second electrical terminal;

a first circuit means for electrically connecting said first and second terminals, said first circuit means including

an electrically conductive, unitary casing mechanically coupled to said first and second terminals, and

gap means for defining a spark gap coupled between said casing and said second terminal; and

second circuit means for electrically connecting said first and second terminals, said second circuit means including

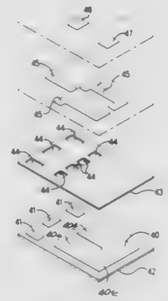
interrupting means for automatically interrupting the electrical connection of said second circuit means between said first and second terminals.

5,057,811

ELECTROTHERMAL SENSOR

Douglas B. Strott; Timothy White, both of Attleboro; Keith W. Kawate, Attleboro Falls, all of Mass.; Thomas Wiecek, Somerset, N.J.; Carleton M. Cobb, III, East Walpole, and Sepideh H. Nott, Fall River, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 22, 1988, Ser. No. 289,294
The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—22 R **13 Claims**



1. An electrothermal sensor particularly useful as a thermal analog to wires to be protected against overtemperature conditions comprising:

(a) an electrically conductive substrate;

(b) an electrically insulating layer disposed on said substrate;

(c) a first thermistor disposed on a central region of said electrically insulating layer;

(d) a second thermistor disposed adjacent an edge of said electrically insulating layer, said second thermistor comprising first and second electrically interconnected thermistor sections spaced from each other and disposed on opposite sides of said first thermistor;

(e) means on said electrically insulating layer for coupling said first and said second thermistors externally of said electrically insulating layer; and

(f) a pair of electrical connecting means coupled to said substrate and passing through said electrically insulating layer;

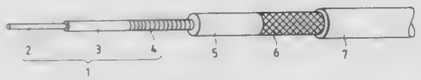
(g) said first thermistor being disposed between said pair of electrical connecting means.

5,057,812

NOISE-SUPPRESSING HIGH-TENSION RESISTANCE CABLE

Yoshimi Yukawa; Toshio Inada, and Akira Ikegaya, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 15, 1990, Ser. No. 597,238
Claims priority, application Japan, Nov. 16, 1989, 1-296175
Int. Cl.[5] H01B *7/00;* **H01C** *7/00*
U.S. Cl. 338—66 **9 Claims**



1. A noise suppressing high-tension resistance cable comprising:

a resistance conductor having an outer diameter not greater than 0.8 mm, a resistivity of substantially 16 kΩ/m and a capacitance of not more than 80 pF/m, said resistance conductor including a reinforcement core, a ferrite core layer formed on said reinforcement core, and a metal winding layer, said metal winding layer being formed of a plurality of wires helically wound at a predetermined pitch around said ferrite core layer, wherein said ferrite core layer contains a base material made of silicone rubber and fluororubber blended together in a weight ratio of 4:6 to 1:9, 200 to 400 parts by weight of one or more kinds of Mn-Zn type ferrite powder being added to 100 parts by weight of said base material;

an insulator layer formed on said resistance conductor;

a reinforcement layer formed on said insulator layer; and

a sheath layer formed on said reinforcement layer;

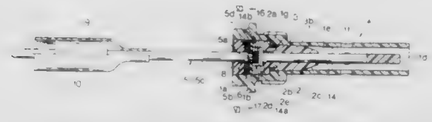
wherein an overall outer diameter of said cable is not greater than 5 mm.

5,057,813

OIL LEVEL SENSOR FOR AN INTERNAL COMBUSTION ENGINE

Asao Sasaki, Noda, and Yousuke Kubota, Kita, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1990, Ser. No. 518,804
Claims priority, application Japan, May 25, 1989, 1-32087; May 25, 1989, 1-60569[U]; May 25, 1989, 1-60570[U]; May 25, 1989, 1-132088; Jul. 4, 1989, 1-79348[U]
Int. Cl.[5] G01F *23/22*
U.S. Cl. 340—450.3 **3 Claims**



1. An oil level sensor for detecting a level of fluid in a container, comprising:

a cylindrical hollow sensor body made by injection molding of conductive, resin material;

an inner electrode guide made of an insulating material and secured to an inner wall of said cylindrical hollow sensor body;

an elongated inner electrode made of conductive, resin material and securely mounted in said inner electrode guide so as to be kept a predetermined distance from said inner wall of said cylindrical hollow sensor body;

means for electrically connecting said cylindrical hollow sensor body and said elongated inner electrode with control means for indicating shortage of said fluid; and wherein

said electrically connecting means is a shielded wire comprising a lead wire connected with said elongated inner electrode and a wire shield connected with said cylindrical hollow sensor body; and

said elongated inner electrode has a flange at a base portion thereof so as to be firmly secured in said inner electrode guide and an insulator sleeve plugged into said cylindrical hollow sensor body, whereby said flange is held between said inner electrode guide and said insulator sleeve.

5,057,814

ELECTRICAL MALFUNCTION DETECTION SYSTEM

Lance C. Onan, Wauwatosa; James Scholler, Brookfield; Douglas E. Stehr, Hales Corners, and Hugh R. Putnam, Milwaukee, all of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.

Filed Jul. 24, 1989, Ser. No. 383,728
Int. Cl.[5] B60Q *11/00*
U.S. Cl. 340—458 **23 Claims**

1. A detection system comprising:

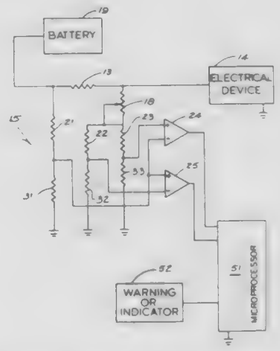
a) a power source supplying electricity to a device;

b) a first resistor in series between said source and said device, said first resistor being connected to said source at a first junction and being connected to said device at a second junction;

c) voltage divider means connected across said first resistor;

d) comparator means, connected to said voltage divider means, for continuously comparing the current flow through said first resistor to a preselected range of current flows, said comparator means comprising

a first comparator having one input connected via said voltage divider means to said first junction and having another input connected via said voltage divider means to said second junction and wherein said first comparator generates a first output signal indicative of whether the current flow through said first resistor is below the minimum of said range, and



a second comparator having one input connected via said voltage divider means to said first junction and having another input connected via said voltage divider means to said second junction and wherein said second comparator generates a second output signal indicative of whether the current flow through said first resistor is above the maximum of said range; and

e) means for indicating when the current flow through said first resistor is outside said preselected range of current flow values.

5,057,815

COMBAT VEHICLE LIGHT SIGNALING SYSTEM

Wayne A. Smoot, Woodbridge, Va.; Bruce E. Amrein, Bel Air, Md.; Curtis L. McCoy, Aberdeen Proving Ground, and Robert C. Brucksch, Street, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 18, 1990, Ser. No. 510,633
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 340—468 **7 Claims**

1. A multipurpose combat vehicle light signaling system for use in identifying the operational status of said vehicle, said system comprised of:

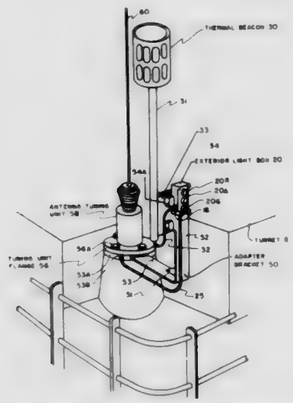
a plurality of different color signal lights mounted on a mounting means on the exterior of said combat vehicle;

light control means, inside said vehicle wherein an operator may selectively illuminate each of said plurality of signal lights individually to provide an identifiable pattern indicating the operational status of said combat vehicle; and

means for attaching rotatable warning light means on said combat vehicle wherein said rotatable warning light means is comprised of interchangable warning lights in

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which a first warning light is chosen to indicate that said combat vehicle is a live target in a target practice area and



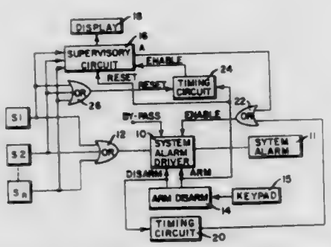
a second warning light is chosen to indicate said combat vehicle is on a road march.

5,057,816

MULTIZONE INTRUDER DETECTION SYSTEM WITH FORCED WALK-TEST

Karl H. Kostusiak, Rochester, and James E. Berube, Farmington, both of N.Y., assignors to Detection System, Fairport, N.Y.

Filed Aug. 31, 1990, Ser. No. 576,013
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—506 7 Claims



1. A multizone intruder detection system for detecting intrusion in any one of a plurality of zones of protection in a region under surveillance, said system comprising:

(a) a plurality of intrusion sensors, each providing discrete zones of protection and being adapted to produce a sensor alarm signal in response to sensing a characteristic of intrusion occurring in its associated zone of protection;

(b) system-alarm means selectively responsive to a sensor alarm signal being produced by any one or more of said intrusion sensors to produce a system alarm, said system-alarm means being responsive to an arm-enable signal and an arming signal applied thereto in order to be responsive to a sensor alarm;

(c) system arming/disarming means for selectively applying arming and disarming signals to said system-alarm means, said disarming signal rendering said system-alarm means non-responsive to said sensor alarms;

(d) supervisory means, selectively responsive to an applied supervisory-enable signal, for monitoring the operability of at least some of said intrusion sensors by detecting the production of sensor alarm signals from each of the monitored intrusion sensors, said supervisory means being adapted to produce said arm-enable signal in the event that all of the monitored intrusion sensors produces a sensor alarm while said supervisory-enable signal is applied thereto; and

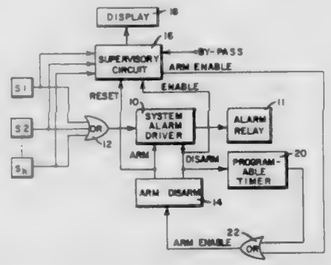
(e) timing means, responsive to the application of an arm signal to said system-alarm means, for continuously applying said supervisory-enable signal to said supervisory means for a predetermined time interval.

5,057,817

INTRUDER DETECTION SYSTEM WITH PASSIVE SELF-SUPERVISION

James E. Berube, Farmington, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.

Filed Aug. 31, 1990, Ser. No. 576,055
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—506 5 Claims



1. A multizone intruder detection system for detecting intrusion in any one of a plurality of zones of protection in a region under surveillance, said system comprising:

(a) a plurality of intrusion sensors, each providing discrete zones of protection and being adapted to produce a sensor alarm signal in response to sensing a characteristic of intrusion occurring in its associated zone of protection;

(b) system-alarm means selectively responsive to a sensor alarm signal being produced by any one or more of said intrusion sensors to produce a system alarm;

(c) system arming-disarming means for selectively arming and disarming said system by rendering said system-alarm means responsive and non-responsive, respectively, to a sensor alarm signal, said system arming/disarming means being responsive to an arm-enable signal applied thereto to enable arming of said system;

(d) passive supervisory means for monitoring the operating status of at least some of said intrusion sensors during a period in which said system is disarmed by detecting the production of sensor alarm signals from each of the monitored intrusion sensors, said passive supervisory means being adapted to produce a first arm-enable signal in the event that each of the monitored intrusion sensors produces a sensor alarm during said disarm period;

(e) timing means, operatively connected to said system arming/disarming means, for producing a second arm-enable signal for a predetermined time interval immediately after said system is disarmed; and

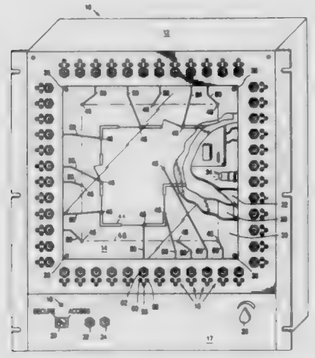
(f) logic circuit means for applying either of said first and second arm-enable signals to said system arming/disarming means, whereby said system is, upon being disarmed, re-armable in response to the production of either said first or second arm-enable signals.

5,057,818

SECURITY MAP DISPLAY AND ALARM MONITOR

Michael R. Tennefoss, San Francisco, Calif., assignor to Stellar Systems Incorporated, Santa Clara, Calif.

Filed Apr. 29, 1991, Ser. No. 693,084
Int. Cl.[5] G08B *25/00*
U.S. Cl. 340—525 10 Claims



1. An alarm monitor for displaying a site map showing placement of security devices throughout a site, said alarm monitor comprising:

a housing;

a map display panel mounted to the housing and including a transparent cover panel behind which a site map can be displayed;

multiple indicator clusters mounted to the housing at the periphery of the map display panel, wherein each indicator cluster may be functionally associated with a security device and includes one or more indicator lights and a switch; and

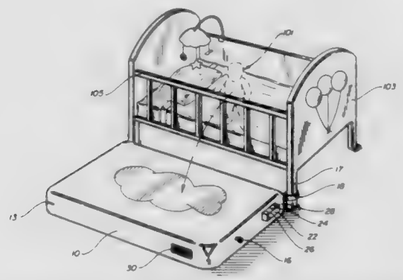
means for visually associating security devices shown on the site map with their associated indicator clusters by connecting lines visible when the site map is displayed in the map display panel, wherein each connecting line extends between the map location of a security device and the periphery of the map display panel adjacent to the associated indicator cluster.

5,057,819

ALARMED SAFETY CUSHION

James J. Valenti, 806 Sussex Rd., Franklin Lakes, N.J. 07417

Filed Apr. 27, 1990, Ser. No. 516,065
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—573 8 Claims



1. A safety device for signaling the location of a child and preventing injury to the child comprising:

air holding cushioning means comprising:

bladder means for holding a quantity of air under pressure;

inflation means for placing air under pressure into the bladder means and retaining the air in the bladder means;

pressure actuated signaling means comprising:

pressure sensing means disposed on the upper surface of the cushioning means;

low pressure setting means for indicating when insufficient air pressure is located in the air holding cushioning means, the low pressure indicating means including means for disconnecting the electrical circuit from a power means;

high pressure actuated means for indicating the presence of high pressure on the cushioning means;

electric circuit means operatively associated with the pressure activated signaling means;

transmitting means for transmitting a signal to a remote location;

receiver means for receiving signal remotely from the location of the cushioning means; and

means for attaching said cushioning means to furniture legs comprising:

straps extending from the sides of the cushioning means;

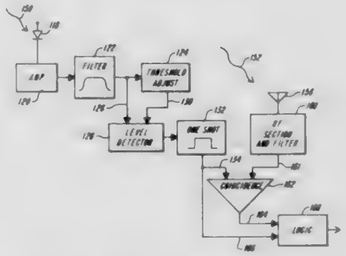
said straps having hook and pile fabric to enable the fastening of the straps to themselves.

5,057,820

OPTICAL WARNING SYSTEM

Ralph J. Markson, Weston, and Johan A. Govaert, Peabody, both of Mass., assignors to Airborne Research Associates, Inc., Weston, Mass.

Filed May 1, 1989, Ser. No. 345,720
Int. Cl.[5] G08B *17/12*
U.S. Cl. 340—600 13 Claims



1. A lightning and strobe light detection system comprising:

an optical detector for producing a first electrical output signal in response to a lightning flash and light from a strobe lamp, and

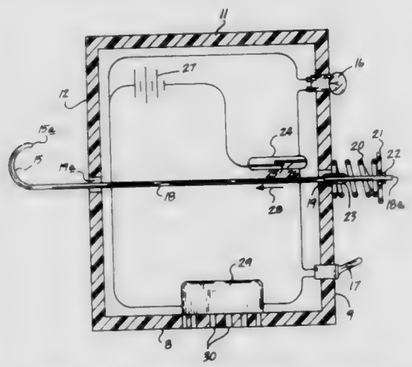
a signal discrimination circuit operative to determine whether said electrical output signal has been produced in response to lightning and whether said electrical output signal has been produced in response to light from a strobe lamp and operative to provide a first indication of lightning if said electrical output signal has been produced in response to lightning and operative to provide a second indication of light from a strobe lamp if said electrical output signal has been produced in response to light from a strobe lamp.

5,057,821

FILTER SENTRY APPARATUS

Gary C. Card, 12114 Big Blue Rd., Nevada City, Calif. 95959

Filed Feb. 19, 1991, Ser. No. 657,404
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—610 5 Claims



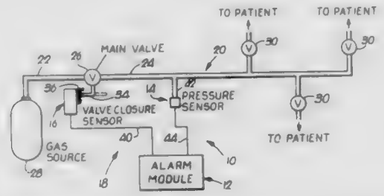
1. A filter sentry apparatus comprising, in combination,
a housing, the housing including a forward wall, a rear wall, a top wall, and a bottom wall, and
a bottom wall, and
a first elastomeric strap mounted to a first intersection between the top wall and rear wall, and a second elastomeric strap mounted to a second intersection between the bottom wall and the rear wall, and
the first elastomeric strap including a first hook mounted at a free terminal end thereof, and the second elastomeric strap including a second hook mounted at a free terminal end thereof, and
the housing including a visual indicator member mounted in the housing, and
an audible indicator mounted through the housing, and
the rear wall including a rear wall opening, and the forward wall including a forward wall opening, wherein the forward and rear wall openings are aligned relative to one another, and
an actuator rod extending through the housing through the forward wall opening and the rear wall opening, and
the actuator rod including a forward terminal end extending forwardly and orthogonally relative to the forward wall, and
a rear terminal end extending rearwardly of the rear wall of the housing, and
the rear terminal end defining a hook member spaced from the rear wall defined by a first spacing in a first position of the actuator rod, and the actuator rod including actuating means mounted in surrounding relationship relative to the actuator rod when the actuator means are positioned within the forward wall opening in the first position, and
an actuator switch mounted within the housing, and
a battery mounted within the housing, wherein the battery and the actuator switch are in electrical communication between the indicator light member and the audible signal member, and
the actuator rod displaceable to a second position positioning the hook member to a second spacing relative to the rear wall, wherein the second spacing is greater than the first spacing to effect retraction of the actuator means within the housing adjacent the actuator switch to effect actuation of the indicator light member and the audible signal member.

5,057,822

MEDICAL GAS ALARM SYSTEM

Richard E. Hoffman, Overland Park, Kans., assignor to Puritan-Bennett Corporation, Lenexa, Kans.

Filed Sep. 7, 1990, Ser. No. 578,625
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—611 9 Claims



1. A hospital medical gas delivery system for delivering gas to a plurality of physically separated delivery locations and for providing a perceptible alarm upon the occurrence of conditions leading to delivery system failure, said gas delivery system comprising:
a main supply line adapted for coupling to a source of medical gas and including a main valve interposed therein, said main valve being shiftable through a range of positions between a first open position and a second, closed position;
a distribution system downstream of and operatively coupled with said main valve, said distribution system including a plurality of distribution conduits respectively leading to said separated delivery locations, there being a distribution valve interposed in each of said distribution conduits;
a sensor unit operatively connected with said distribution system downstream of said main valve and upstream of at least certain of said distribution valves, said sensor unit including structure for detecting pressure conditions within the distribution system, and for transmitting a first alarm condition signal when an improper pressure condition is sensed therein;
switch means operatively coupled with said main valve for transmitting a second alarm condition signal when the valve is in other than said first position;
alarm generating means for transmitting a humanly perceptible alarm warning; and
signal processing means operatively coupling said sensor unit and switch means with said alarm generating means for receiving the respective first and second alarm condition signals from said switch means and sensor unit, and for actuating said alarm generating means upon sensing of improper pressure conditions within said distribution system or upon sensing of the position of said main valve in other than said first, open condition,
whereby a humanly perceptible alarm is generated at a time after the onset of conditions leading to failure of the delivery system, but prior to actual failure thereof.

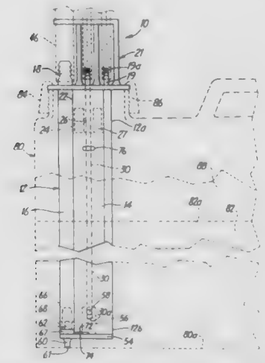
5,057,823

PROBE FOR SENSING THE PRESENCE OF LIQUID IN A CONTAINER

John J. Dyer, Shoreview, and Burt N. Shackle, Jr., Coon Rapids, both of Minn., assignors to IMI Cornelius Inc., Anoka, Minn.

Filed Mar. 12, 1990, Ser. No. 491,879
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—620 17 Claims

5. A probe device for insertion into a container for use in indicating the presence of a liquid held within the container, the probe device, comprising:
an elongate conductive body portion having a proximal end and a distal end and the body portion defining a probe channel extending therethrough from the proximal end to a distal end opening of the distal end,
non-conductive proximal end means for sealing of the probe channel at the proximal end of the body portion,
conductive probe means secured to the non-conductive sealing means and extending through the probe channel and terminating therein adjacent the body portion distal end,
a relief hole on the conductive body portion extending therethrough into the probe channel and located on the body portion at a point there along towards the proximal end,
means for covering of the probe channel distal end opening for preventing any foam fraction and the like of the liquid from entering the probe channel when the probe device is



inserted into the container, and an inlet port at the body portion distal end for providing fluid communication into the probe channel of the liquid to the substantial exclusion of any foam fraction or the like thereof when the distal end covering means is covering the distal end opening,
the body portion including a suction channel extending there along and fluidly separate from the probe channel, the suction channel for connecting to a pumping means for providing removing of the sensed liquid from the container through the suction channel,
and the probe means and the body portion including means for providing electrical connection thereof to a source of electrical power and to conductivity sensing means.

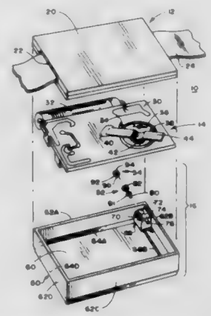
5,057,824

ELECTRONIC APPARATUS WITH ON-SWITCH TO CONSERVE BATTERY BEFORE CLOSING SWITCH

John H. Stokes, Lincoln, Nebr., assignor to Wanderguard, Inc., Lincoln, Nebr.

Filed Jul. 30, 1990, Ser. No. 559,642
Int. Cl.[5] H01H *27/04*
U.S. Cl. 340—693 5 Claims

1. Electronic apparatus adapted to withstand moisture conditions and adapted to contain a battery for power, comprising:
a watertight casing;
a battery;
closable switch means for closing a circuit means including electrical circuitry connected to said battery, whereby said electrical circuitry may be energized by said battery upon closing of said closable switch means; and
means for causing closing of said closable switch means to apply energy from said battery to said circuit means without permanently permitting the entrance of moisture within said casing;
said closable switch means including at least one movable electrical contact and one insertable member;
said insertable member including means for causing said movable electrical contact to move at least in one of two



directions; wherein motion in said one of said two directions closes said switch and the other opens said switch.

5,057,825

WINDOW DISPLAY CONTROL DEVICE

Naoki Fujii, Hachiouji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1989, Ser. No. 413,534
Claims priority, application Japan, Sep. 29, 1988, 63-242510
Int. Cl.[5] G09G *1/06*
U.S. Cl. 340—721 1 Claim

1. A window display control device for retrieving and displaying display data in a virtual window region designated in output data from an external device, said window display control device comprising:
(a) a buffer memory to store the output data from the external device;
(b) data process means for converting the output data stored in the buffer memory into display data;
(c) a virtual image plane memory to store display data converted by the data process means;
(d) window control means for separately distinguishing and retrieving only display data localized in a designated virtual window region from the virtual image plane memory in accordance with a display start signal;
(e) a view port memory to store display data, retrieved by the window control means, to be displayed on an image plane; and
(f) window display acceleration means for preferentially feeding only a portion of the output data which is located in the virtual window region as output data to the data process means, in accordance with positional information received from the window control means which indicates

a position of the virtual window region, for generating and immediately feeding the display start signal to the window control means upon completion of feeding of the portion of the output data, and for thereafter feeding a remaining portion of the output data which is located outside of the virtual window region as output data to the data process means.

5,057,826

DIGITAL TV RASTER SCAN WAVEFORM DISPLAY DEVICE WITH IMAGES OF SELECTABLE SIZE AND POSITION

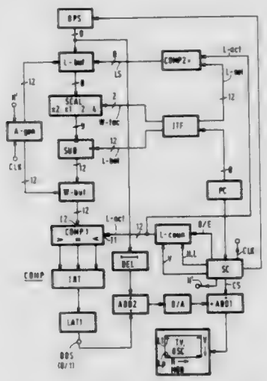
Adrianus Soethout, Hoofddorp, and Marinus J. G. Verdult, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 11, 1989, Ser. No. 405,489

Claims priority, application Netherlands, Sep. 22, 1988, 8802345

Int. Cl.[5] G09G *1/00*

U.S. Cl. 340—728 **20 Claims**



1. In a picture display device for displaying an oscilloscopic image on a display screen on which a picture is formed line and field-sequentially, in which the picture is composed of pixels in a given number of picture lines and a location-dependent, determined brightness drive of pixels during line periods and field or frame periods covering said line periods results in the oscilloscopic image, the improvement comprising: a signal comparison circuit having a first input for receiving a signal which determines the location during a field or frame period, a second input for receiving a signal occurring at the line frequency and having a waveform profile to be displayed, and an output supplying a brightness drive signal, characterized in that the lines in the frame scan direction are enumerated in an ascending or descending sequence with respect to said picture line number in the picture display device which operates on a digital basis, a line buffer circuit which stores the signal to be displayed as digital values after a write signal associated with a selected line having a selectable first line number is applied to said line buffer circuit, outputs of the line buffer circuit supplying a digital display signal to inputs of a scaling circuit operating with selectable multiplication or dividing factors, outputs of the scaling circuit being coupled to inputs of a level shift circuit having other inputs which receive a selectable second line number for addition, means coupling outputs of the level shift circuit to inputs of a further line buffer circuit for storing the waveform profile to be displayed as a difference or sum result, and means coupling outputs of said further line buffer circuit to second inputs of said signal comparison circuit, first inputs of which are coupled to outputs of a line counting circuit for counting the lines of the line numbers ascending or descending in the frame scan direction, which outputs thereby convey an actual line number.

5,057,827

MEANS AND METHOD FOR PRODUCING AN OPTICAL ILLUSION

Fred E. Nobile, 4126 Palisades Rd., San Diego, Calif. 92116, and Richard V. Baxter, Jr., 600 E. Washington St., Appleton, Wis. 54911

Filed Oct. 17, 1988, Ser. No. 258,853

Int. Cl.[5] G09G *3/00*

U.S. Cl. 340—755 **7 Claims**



1. An apparatus for producing an optical illusion of an image, comprising:

a) light image means for producing a series of light images, said light image means comprising a surface of liquid crystal material having a three-dimensional characteristic and an energy emitting device, said liquid crystal material being addressable by said energy emitting device such that said surface acts as a light valve;

b) rotary means for carrying and rotating said energy emitting device; and

c) drive circuit means coupled to said light energy emitting device for driving said light image means in time or position division multiplexed fashion in accordance with the rotational position of said energy emitting device relative to a fixed point.

5,057,828

DISPLAY DEVICE COMPRISING ROTATING DISPLAY ELEMENTS HAVING A PLURALITY OF FACES, AND DISPLAY PANEL COMPOSED OF SUCH DEVICES

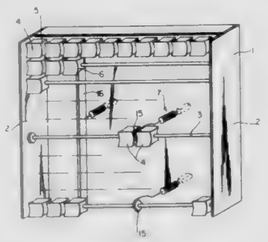
Jacques Rousseau, 22, Chemin du Golf, 76200 Dieppe, France

Filed Oct. 10, 1989, Ser. No. 419,614

Claims priority, application France, Oct. 12, 1988, 88 13433

Int. Cl.[5] G09G *3/16*

U.S. Cl. 340—764 **16 Claims**



1. A display device, comprising:

an array of rotatable display elements, each display element having at least two faces of different color, the display elements being arranged in rows and columns;

first and second means for determining rotation of the rotatable elements to change which face of each rotating element is displayed by the display device;

means for controlling the first and second means for determining rotation, so as to form an image to be displayed by the display device;

at least one common shaft on which the rotatable display elements of each row or column rotate, the common shaft mounted in a frame of the display device;

friction couplings for connecting respective rotating elements to one of the common shafts; and

retractable members for inhibiting rotation of all rotating elements of respective columns or rows;

wherein each first means for determining rotation includes only one device for rotating in a step-by-step manner each common shaft; and

wherein each second means for determining rotation corresponds to only one retractable member.

5,057,829

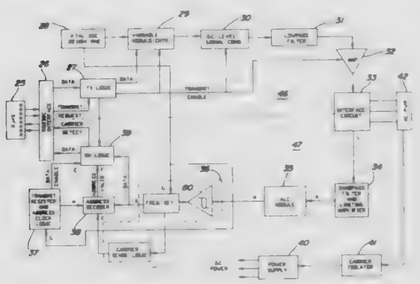
COMPUTER NETWORKING APPARATUS

Juan F. Velazquez, Saline, Mich., assignor to Secom Information Products Company, Romulus, Mich.

Filed Mar. 2, 1989, Ser. No. 318,123

Int. Cl.[5] G05B *23/02*

U.S. Cl. 340—825.06 **6 Claims**



1. A computer networking apparatus including, in combination:

(a) means to connect to a computer comprising an RJ45 interface;

(b) means to accept data from a computer comprising an RS232C interface;

(c) means to transmit said data over an AC power line including a transmit logic connected to said means to accept, a variable module counter connected to said transmit logic, a crystal oscillator connected to said variable module counter, a DC level signal conditioner connected to said variable module counter and said transmit logic, a low pass filter connected to said DC level signal conditioner, a transmit amplifier connected to said low pass filter and said transmit logic, and an interface circuit connected to said AC power line and said transmit amplifier;

(d) means to receive data from an AC power line including an interface circuit connected to said AC power line, a band pass filter and limiting amplifier connected to said interface circuit, and an automatic level control module connected to said band pass filter and limiting amplifier;

(e) means to process said data received including a Schmitt trigger connected to said to automatic gain control module, a frequency detector connected to said crystal oscillator and said Schmitt trigger, a carrier sense logic connected to said frequency detector, an address decoder connected to said frequency detector and said carrier sense logic, and a transmit register and address clock logic connected to said address decoder and said frequency detector;

(f) means to decode said data received; and

(g) means to transfer said decoded data to said computer.

5,057,830

LOCKING DEVICE OPERATIVE WITH SEQUENCE OF ELECTRIC SIGNALS

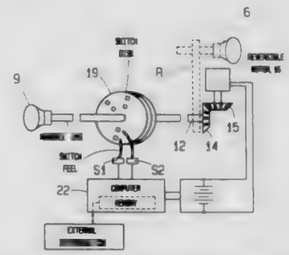
Armin Eisermann, Velbert, Fed. Rep. of Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Fed. Rep. of Germany

Filed Oct. 18, 1989, Ser. No. 423,149

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835913

Int. Cl.[5] E05B *47/00*

U.S. Cl. 340—825.31 **9 Claims**



1. A locking device on a door provided with inner and outer escutcheons comprising

a locking which is arranged between the two escutcheons and which is actuatable from inside the door and from outside the door;

a rotatable actuating mandrel extending through a first of said escutcheons toward a second of said escutcheons, rotation of the mandrel operating the lock to permit an opening of the door;

a swtich, and at least one switch disk which is entrained with said mandrel to move upon rotation of the mandrel during actuation of the lock, the switch disk having recesses arranged in predetermined locations for engagement with the switch, the recesses engaging sequentially with the switch in response to rotation of the mandrel; and

wherein the switch is operatively coupled to a source of electric power and to said switch disk for producing a sequence of electric pulses upon a succession of openings and closings of the switch produced by engagement of the switch with said recesses during movement of the switch disk, th sequence of electric pulses depending on an arrangement of said predetermined locations for constituting electrical recording signals describing activation of the lock.

5,057,831

VEHICLE SIMULATION CIRCUIT FOR LOOP TRAFFIC SIGNAL CONTROL SYSTEM

Clifford B. Strang, Rockford, Ill., and John R. Frus, Jacksonville, Fla., assignors to Signalmatic International, Inc., Stillman Valley, Ill.

Filed May 29, 1990, Ser. No. 529,881

Int. Cl.[5] G08G *1/01*

U.S. Cl. 340—941 **28 Claims**

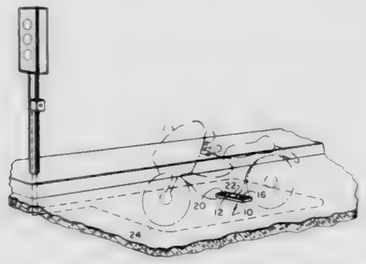
1. For use in conjunction with a traffic signal control system for selectively governing the operation of an associated traffic signal of the type having an A.C. energized sensing loop buried in or otherwise positioned relative to a roadway so as to detect predetermined changes in the characteristics of its electromagnetic field due to activation thereof by a detectable vehicle, a simulator for inducing said predetermined changes upon said system when transported aboard an otherwise undetectable vehicle, said simulator comprising:

a) means for deriving an electrical signal from said field,

b) means for amplifying said electrical signal,

c) means for impressing upon said field a representation of said amplified signal,

whereby the activation by said simulator aboard said undetectable vehicle serves to modify the characteristics of said field in



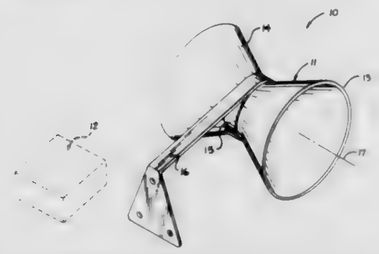
a manner substantially simulating that produced by a detectable vehicle.

5,057,832

AUDIBLE GLIDE SPEED INDICATOR APPARATUS

Samuel G. England, Box 112, R.R. 1, Clearfield, Iowa 50840

Filed Apr. 9, 1991, Ser. No. 682,339
Int. Cl.[5] G08B *23/00*; G01P *5/00*
U.S. Cl. 340—966 1 Claim



1. An audible glide speed indicator apparatus, comprising in combination,

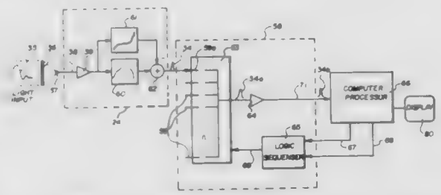
a first electronic stall speed indicator device arranged to effect electronic signaling of stall speed at approximately sixty-five to seventy-five knots of air speed, a second, backup, stall speed device, the second device being an audible device spaced from the electronic stall speed indicator device and arranged to effect audible signaling of stall speed in a range defined between fifty to sixty-five knots of air speed, said audible device includes a conical outwardly flared entrance tube coaxially aligned and mounted to a forward terminal end of a cylindrical central tube, and a conical rearwardly flared exit tube fixedly mounted to a rear terminal end of the cylindrical central tube, wherein the conical entrance tube, the conical exit tube, and the cylindrical central tube are coaxially aligned relative to one another along a central axis, and a mounting flange integrally mounted to the cylindrical tube orthogonally oriented relative to the central axis, and the conical entrance tube, the conical exit tube, and the cylindrical central tube are formed of a semi-rigid polymeric material to dampen vibration, and the cylindrical central tube includes a cylindrical interior surface, and the cylindrical interior surface includes a support leg fixedly mounted to the interior surface orthogonally oriented relative to the central axis, and an elongated whistle member orthogonally mounted to an upper terminal end of the support leg, wherein the whistle member is arranged parallel relative to the central axis.

5,057,833

PASSIVE OPTICAL AIR TRAFFIC ALERT SYSTEM

Randolph S. Carlson, Carson City, Nev., assignor to OTL, Inc., Carson City, N.Y.

Filed Nov. 7, 1989, Ser. No. 432,624
Int. Cl.[5] G08G *5/00*
U.S. Cl. 340—961 3 Claims



1. A method for detecting the presence of nearby aircraft which have a strobe-like anti-collision signaling device with respect to a monitoring aircraft, said method comprising the steps of:

(1.1) repeatedly sensing with a detector radiation form the strobe-like signalling device in combination with (i) background radiation and (ii) pulse-like radiation occurring in random manner and being comparable in amplitude and pulse width with radiation of the signalling device;

(1.2) repeatedly generating an electromagnetic signal representing the cumulative radiation of each sensing event of step 1.1;

(1.3) filtering out that portion of the signal corresponding to background radiation, thereby generating a pulse signal which substantially represents only (i) the pulse-like radiation occurring in random manner and (ii) the pulsed radiation emitted from the strobe device; (1.4) identifying successive pulse signals from step 21.3 by assigning a unique time factor to each signal establishing its relative time of sensing as part of radiation received in step 21.1;

(1.5) identifying sequentially paired signals from step 1.4 by determining which signals have equal sequential separating time intervals based on differences between assigned time factors for the sequential signals and which fall within a general range of time intervals assigned to stobe-like anti-collision devices;

(1.6) comparing separating time intervals between subsequent, sequential signals identified under repeated application of step 1.4 and identifying additional paired signals having the same separating time interval and matching the additional paired signals with the paired signals of step 1.5 having the same separating time interval to thereby create a sequential train of pulse signals representing a single separating time interval corresponding to a single periodic signaling device;

(1.7) assigning each train of pulse signals an azimuth orientation factor with respect to the monitoring air craft;

(1.8) identifying sequentially paired signals from among signals of step 1.7 which have (i) common orientation and (ii) the same respective separating time intervals which fall within a general range of time intervals assigned to strobe-lie anti-collision devices;

(1.9) maintaining an ongoing list of unmatched pulses identified in accordance with step 1.4;

(1.10) forming a new list of pulse pairs between each unmatched pulse of the previous step and each new pulse of common orientation, each pulse pair having a time interval corresponding to the time lapse between the identified time factors between the unmatched pulse and the new pulse;

(1.11) aging all identified signals under the previous step and maintaining the most current pulse pairs of signals in an active status for a period up to 5 seconds while deleting out signals aged beyond 5 seconds;

(1.12) comparing and matching with the current pulse pairs or the previous step each subsequent signal and associated separating time interval which does not form an extension of an ongoing train of pulse signals of common orientation, to thereby form a new train or pulses corresponding to a new signaling device; and

(1.13) generating an alarm upon occurrence of the train of successive pulse signals by matching with subsequent signals of the same separating time interval and orientation to give notice of azimuth orientation of the nearby aircraft.

5,057,834

METHOD AND DEVICE FOR MONITORING THE STEERING PERFORMANCE OF VEHICLE OPERATOR

Knut L. Nordstrom, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Oct. 31, 1989, Ser. No. 429,586
Claims priority, application Sweden, Mar. 9, 1989, PCT SE89/00113
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—963 20 Claims

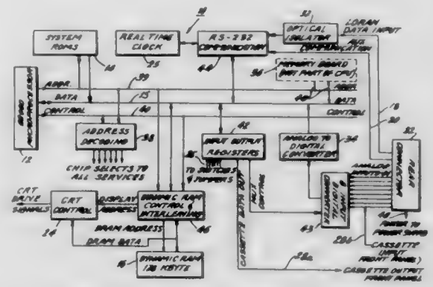
1. A method of monitoring in the control system of an aircraft the steering performance of the aircraft operator, wherein the system comprises a steering control (9) which is maneuvered by the operator when steering the aircraft through steering deflections in two opposite directions, whereby a steering signal (DP) indicating the size and direction of the steering deflections is produced; such method comprising an analysis of the deflections to detect an abnormal steering performance, in order that if the analysis shows an abnormal steering performance, in order that if the caused by a lowered degree of operator consciousness, the system is caused to activate means to initiate action to cause a switch to an automatic steering mode in which the operator's assistance is not required, characterized in that a time dependent signal (CPT) is produced every time that the steering signal (DP) indicates that a new steering deflection is effected in the opposite direction to that immediately preceding, which time dependent signal (CPT) corresponds to the time elapsing in the intervals commencing from the moment when the new steering deflections are begun, and further characterized in that the value of the time dependent signal is compared continuously with at least one predetermined time limit value (CPTW, CPTA), the reaching of which constitutes a condition for the activation of said means to initiate the switching to the automatic steering mode.

5,057,835

MAP AND TEXT DISPLAY SYSTEM FOR VEHICLE NAVIGATION

Richard C. Factor, Kinnelon; Terry L. Pearsall, Wayne; John A. Strowe, Irvington, and Laura A. Nass, Piscataway, all of N.J., assignors to Eventide, Inc., Little Ferry, N.J.

Division of Ser. No. 114,300, Oct. 28, 1987, Pat. No. 4,896,154.
This application Dec. 4, 1989, Ser. No. 445,985
Int. Cl.[5] G08G *1/12*
U.S. Cl. 340—995 18 Claims



1. Map display system for navigation of an aircraft showing map features, the system comprising:

first memory means to store first map data of an area in which the aircraft may travel, such first map data including reference points comprising general map features;

first means to selectively collect and display map data from the first memory means which selected map data is effective for composing a first image component showing general features of the geographical area over which the aircraft is currently flying;

second means to compose a second image component showing a symbol of the aircraft;

means for repeatedly receiving position and direction of travel data for the aircraft from an external device and for repeatedly determining placement of the second image component relative to first image component;

display means for collectively displaying the first and second image components on said display means; and

means for generating an emergency display of nearest suitable landing sites, said means for producing said emergency display comprising:

(a) second memory means for storing therein second map data essentially relating to emergency landing sites and defining graphical and textual matter concerning landing sites and navigational aids located at or near said area in which the aircraft may travel;

(b) means for selectively collecting from said second map data information which relates to at least a predetermined number of suitable landing sites within the area over which the aircraft is currently flying, on the basis of user-selected criteria;

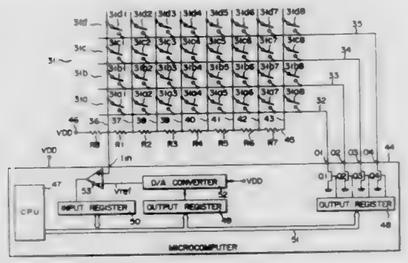
(c) means for composing a third image component showing emergency landing sites;

(d) means for replacing, on said display means, said first image component with said third image component and for continuously displaying and updating the position of said second image component relative to said third image component.

5,057,836
DATA INPUT APPARATUS HAVING A MICROCOMPUTER

Hitoshi Inaba, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 298,750, Jan. 19, 1989, abandoned. This application Aug. 10, 1990, Ser. No. 565,889
Claims priority, application Japan, Jan. 22, 1988, 63-12008
Int. Cl.[5] H03M *11/20*
U.S. Cl. 341—26 7 Claims



1. A data input apparatus comprising:
(a) a key switch device, including:
a first group of lines extending parallel to one another;
a second group of lines extending parallel to one another and intersecting with the lines of the first group;
a plurality of key switches for connecting the lines of the first group to the lines of the second group, each of said key switches being located at a respective intersection of a line of the first group and a line of the second group;
a serial circuit comprising a plurality of first resistors connected in series, each of said first resistors being connected in parallel between adjacent lines of the second group; and
a second resistor, and a constant-voltage source connected through said second resistor to one end of said serial circuit at a connecting point; and
(b) a processing apparatus, including:
pulse-supplying means for supplying a periodic pulse to each line of said first group, the pulses being supplied to different lines at different times; and
detector means coupled to said pulse-supplying means and to the connecting point for detecting a potential at the connecting point and, in accordance with said potential and with the times at which pulses have been supplied to the lines of said first group from said pulse supplying means, for determining which key switch has been operated.

5,057,837
INSTRUCTION STORAGE METHOD WITH A COMPRESSED FORMAT USING A MASK WORD

Robert P. Colwell; John O'Donnell; David B. Papworth, all of Guilford, and Paul K. Rodman, Madison, all of Conn., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 41,047, Apr. 20, 1987, abandoned. This application Jan. 30, 1990, Ser. No. 476,108
Int. Cl.[5] H03M *5/00*
U.S. Cl. 341—55 9 Claims

1. A method for storing instruction words in a compressed format in a storage element of a data processor, each of the instruction words having N instruction fields, the method comprising the steps, performed by the data processor, of:
designating a plurality of mask words, one mask word corresponding to each of the instruction words, wherein each mask word has a length at least equal to N bits;
assigning each of the N instruction fields in each of the instruction words to one of the N bits of the corresponding mask word;
setting each of the N bits of each corresponding mask word to a first designation when its assigned instruction field is a non-zero instruction field;

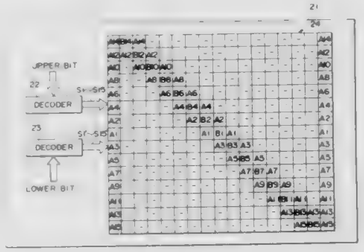


setting each of the N bits of each corresponding mask word to a second designation when its assigned instruction field is a zero instruction field; and
storing each mask word and each corresponding non-zero instruction field in the storage element as a representation of the instruction words.

5,057,838
D/A CONVERTER HAVING CENTERED SWITCHING SEQUENCE AND CENTERED ARRANGEMENT OF CONVERTER SEGMENT GROUPS

Kazuhiro Tsuji; Tetsuya Iida, and Takayuki Satoh, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1990, Ser. No. 526,904
Claims priority, application Japan, May 22, 1989, 1-128301
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—133 20 Claims

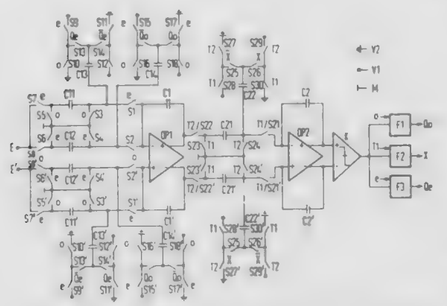


1. A digital/analog converter for converting a digital signal into an analog signal, comprising:
a semiconductor substrate;
a plurality of (m) decoders on said substrate for decoding a plurality of (m) digital signals; and
a plurality of (m) digital/analog converter sections each including a plurality of groups of segments on said semiconductor substrate, each segment comprising a switch and a value-determining element subject to value distortion attributable to relative position on said substrate, each section being coupled to a respective decoder which selects said groups therein and segments in each group in accordance with the respective decoded signal to produce analog signals, the physical locations on the substrate of groups within different sections being interspersed and being interspersed with respect to other groups of the same section, the positions of the centers of gravity of all of said groups within a section being substantially matched with the center of gravity of all of the segments of a plurality of said sections.

5,057,839
INTEGRATABLE SWITCHED-CAPACITOR SIGMA-DELTA MODULATOR

Rudolf Koch, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 7, 1990, Ser. No. 520,521
Claims priority, application European Pat. Off., May 8, 1989, 89108256.2
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 3 Claims



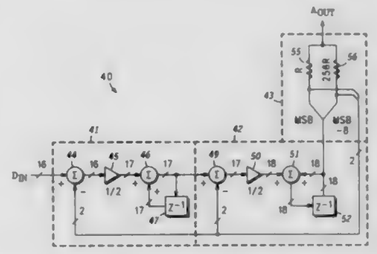
1. Switched-capacitor sigma-delta modulator, comprising at least one memory element; at least one comparator connected to said at least one memory element; and at least one integrator connected to said at least one comparator; said at least one integrator having a first input stage including a series circuit of a first switch, a first capacitor with two terminals and a second switch, a third switch for connecting one of the two terminals of said first capacitor to ground potential, and a fourth switch for connecting the other of the two terminals of said first capacitor to ground potential; and said at least one integrator having a second input stage connected parallel to said first input stage including a series circuit of a first switch, a second capacitor having two terminals and a sixth switch, a seventh switch for connecting one of the two terminals of said second capacitor to ground potential, and an eighth switch for connecting the other of the two terminals of said second capacitor to ground potential, said first and second switches having switching phases opposed to said third and fourth switches, said fifth and sixth switches having switching phases equivalent to the switching phases of said third and fourth switches, and said seventh and eighth switches having switching phases equivalent to the switching phases of said first and second switches.

5,057,840
Σ-ΔMODULATOR FOR DIGITAL-TO-ANALOG CONVERTER

Robert C. Ledzius, Austin, and James S. Irwin, Paige, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1990, Ser. No. 633,829
Int. Cl.[5] H03M *1/66, 1/78, 1/06*
U.S. Cl. 341—144 11 Claims

1. A method for converting a digital signal to an analog signal in a digital-to-analog converter comprising the steps of:
receiving a digital signal at an input of said digital-to-analog converter, said digital signal having at least three bits;
subtracting a feedback signal from said digital signal forming a digital error signal having at least three bits including a most significant bit and a second most significant bit;
generating a plurality of output energy signals, each of said plurality of output energy signals representing one of said at least three bits of said digital error signal;
forming a digital output representation of said digital error signal using said most significant bit of said at least three bits and a second bit of said at least three bits wherein said second bit is not said most significant bit or said second most significant bit, said most significant and second bits of said digital output representation forming said feedback signal; and

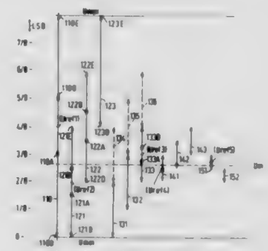


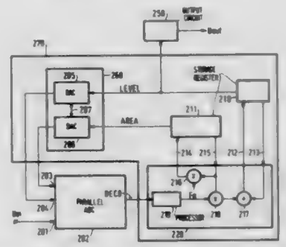
forming an analog signal of said digital output representation.

5,057,841
ANALOG-TO-DIGITAL CONVERTER

Jacob J. Veerhoek; Adrianus J. M. Van Tuijl, and Han M. Schuurmans, all of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1990, Ser. No. 548,347
Claims priority, application Netherlands, Jul. 7, 1989, 8901740
Int. Cl.[5] H03M *1/36, 1/38*
U.S. Cl. 341—156 14 Claims





1. An analog-to-digital converter for converting an analog input signal into a digital output signal in a series of successive conversion steps, comprising:
comparison means for comparing, in a plurality of conversion steps, the analog input signal with at least two reference signals defining at least three sub-ranges of a fraction of an input-signal range,
output means for generating the digital output signal as a function of comparison signals generated by the comparison means in the successive conversion steps,
generator means for generating as a function of the comparison signal generated in a conversion step new reference

signals for the next conversion step, the new reference signals defining a new fraction of the input signal range for the next conversion step, which new fraction overlaps at both sides one of the sub-ranges of a relevant conversion step.

5,057,842

OUTER WALL OF A STRUCTURE LOCATED NEAR A RADAR STATION

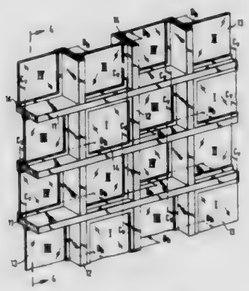
Erhard Möller, Aachen, and Lutz Bernstein, Übach-Palenberg, both of Fed. Rep. of Germany, assignors to Vegla Vereinigte Glaswerke GmbH, Aachen, Fed. Rep. of Germany

Filed Apr. 20, 1990, Ser. No. 512,781

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1989, 3913421

Int. Cl.[5] H01Q *17/00*

U.S. Cl. 342—4 **7 Claims**



1. A wall structure for use in proximity to a stationary radar installation which emits impulses of radar radiation of a particular wavelength comprising

a plurality of individual construction elements, each of said construction elements having a planar surface with a high reflection capability for the radar radiation of said particular wavelength for reflecting said impulses of radar radiation,

each of said construction elements having surface dimensions greater than the particular wavelength of the radar radiation but an area smaller than the surface area irradiated by said impulses of radar radiation,

said individual construction elements being positioned alternately in a staggered manner in first and second planes separated by a distance determined by the angle of incidence of the radar radiation at the particular wavelength so that the phase difference between the radar radiation reflected from the construction elements in the two planes results substantially in the destruction of the reflected radar radiation at said particular wavelength via destructive interference.

5,057,843

METHOD FOR PROVIDING A POLARIZATION FILTER FOR PROCESSING SYNTHETIC APERTURE RADAR IMAGE DATA

Pascale C. Dubois, and Jakob J. vanZyl, both of Pasadena, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1990, Ser. No. 544,293

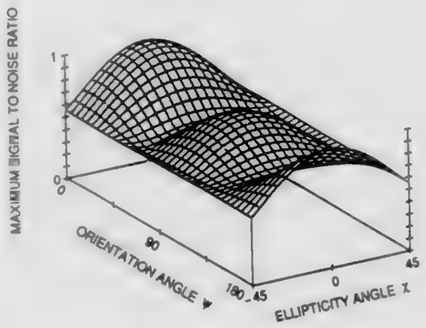
Int. Cl.[5] G01S *13/90, 7/295*

U.S. Cl. 342—25 **7 Claims**

1. In a polarimetric synthetic aperture radar imaging system, a method for polarization filtering in order to maximize the signal-to-noise ratio comprising the steps of

assuming a constant gain of said transmit and receive antennas and assuming uncorrelated noise as a first step,

then maximizing $S_r^T A S_t$, as a second step where S_t and S_r^T are the Stokes vectors characterizing some arbitrary polarization configuration of said transmit and receive antennas, and A is the average Stokes 4×4 real matrix



$$A = \begin{vmatrix} m & u \\ v & Q \end{vmatrix}$$

where

u denotes the transpose of û,

u and are 3-element real vectors, and

Q is a 3×3 real matrix,

by maximizing the expression

$$S_r^T A S_t = m + u \cdot s_t + v \cdot s_r + s_r \cdot Q s_t$$

using the Lagrangian multiplier method to produce the equations

$$u + Q s_r = \lambda_1 s_t$$

$$v + Q s_t = \lambda_2 s_r$$

where λ_1 and λ_2 are the Lagrangian multipliers, and s_t and s_r are Stokes vectors characterizing transmit and receive antennas, and

having a known Stokes vector for the transmit antenna determining the receive antenna polarization which maximizes the signal-to-noise ratio as a third step from the equation

$$s_r = \frac{v + Q s_t}{||v + Q s_t||}$$

where | | denotes the norm, thereby effectively maximizing received power by matching the polarization of the scattered wave incident upon the receive antenna with polarization of the receive antenna such that power P is maximized under the constraints of assumptions set forth in the first step above in accordance with the equation

$$P_{max} = S_r^T A S_t = m + u \cdot s_t + v \cdot s_r + s_r \cdot Q s_t.$$

5,057,844

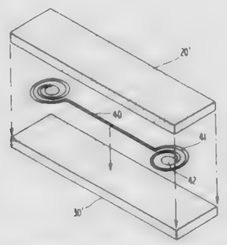
INSULATED UNDERGROUND ANTENNA AND METHOD FOR UTILIZING SAME

Mark B. Rothstein, c/o Philadelphia Electric Co. 2301 Market St. P.O. Box 8699, Philadelphia, Pa. 19101

Filed Mar. 19, 1990, Ser. No. 495,473

Int. Cl.[5] G01S *13/80;* **G01V** *3/12;* **H01Q** *1/04*

U.S. Cl. 342—51 **4 Claims**



1. A device for reflecting radar comprising a passive antenna means retained within a water and soil resistant enclosure means, wherein said antenna means is inductively loaded by coil means.

5,057,845

RADAR APPARATUS EMPLOYING DIFFERENT KINDS OF PULSES

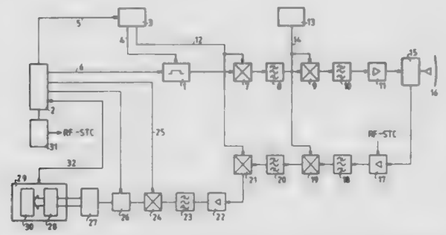
Bernard Gellekink, Ootmarsum, Netherlands, assignor to Hollandse Signaalapparten, B.V., Hengelo, Netherlands

Continuation of Ser. No. 497,811, Mar. 22, 1990, abandoned, which is a continuation of Ser. No. 289,649, Dec. 22, 1988, abandoned. This application Oct. 18, 1990, Ser. No. 601,591

Claims priority, application United Kingdom, Dec. 23, 1987, 8730007

Int. Cl.[5] G01S *9/10*

U.S. Cl. 342—137 **30 Claims**



1. A radar apparatus for detecting objects, said apparatus comprising:

a. a transmitter channel for transmitting successive groups of n pulses, all pulses in each group having an identical discriminating characteristic, and the respective discriminating characteristics of successive groups being dissimilar from each other;

b. a receiver channel for receiving returns of said groups of pulses from the object, said receiver channel being continually adaptable to discriminably receive each of said groups of return pulses; and

c. a signal processor connected to the receiver channel for adaptively processing the grups of return pulses in a way which depends on the type of groups of pulses received, said signal processor including an n-pulse programmable FIR filter.

5,057,846

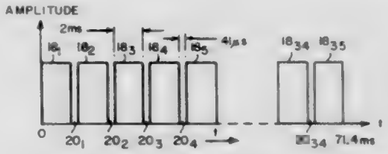
EFFICIENT OPERATION OF PROBING RADAR IN ABSORBING MEDIA

Henning F. Harmuth, Sydney, Australia, assignor to Geophysical Survey Systems, Inc., North Salem, N.H.

Filed Mar. 26, 1990, Ser. No. 498,857

Int. Cl.[5] G01S *13/10*

U.S. Cl. 342—204 **10 Claims**



1. A method for probing an absorptive medium to establish a range to a target using a radar pulse that is long relative to the arrival of echo information from the target, comprising the steps of:

a. using a radar transmitter, radiating a radar signal into the medium for a duration T;

b. interrupting said radiation for a multiplicity of intervals of interruption with a total time that is short relative to the duration T of the radiated signal; and

c. using a radar receiver, receiving samples of a returned signal during these intervals.

5,057,847

RF CONNECTOR FOR CONNECTING A MOBILE RADIOTELEPHONE TO A RACK

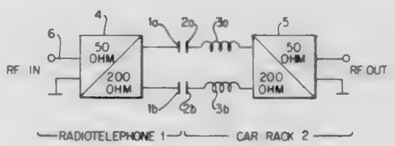
Risto Väisänen, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed May 22, 1990, Ser. No. 526,825

Claims priority, application Finland, May 22, 1989, 892480

Int. Cl.[5] H01Q *1/24;* **H01P** *5/00*

U.S. Cl. 343—702 **5 Claims**



1. An RF connector for connecting a mobile device to a corresponding device rack for releasably receiving the mobile device, comprising:

an external antenna connected to the rack;

a first pair of metal plates on the mobile device;

the corresponding device rack having a second pair or metal plates;

said first and second pairs of metal plates forming a capacitative two-wire connector-interface when the mobile device is received in the rack, each connector-interface including a capacitor formed from one of said first pair of metal plates and one of said second pair of metal plates;

said capacitor having a coil in serial connection therewith, each said coil and capacitor connection forming a resonant circuit at a desired transmission frequency;

a first balancing transformer in said mobile device for transforming an unbalanced signal received from an input cable into a balanced signal and for sending said balanced signal to an input of said resonant circuit; and

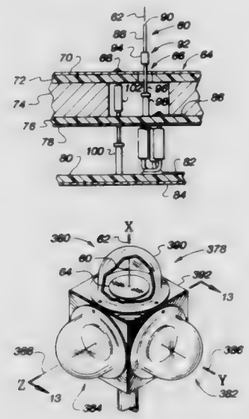
a second balancing transformer in said rack for receiving said balanced signal from an output of said resonant circuit and transforming said balanced signal into an unbalanced signal and for sending said unbalanced signal to an output cable.

5,057,848

BROADBAND FREQUENCY METER PROBE

William J. Rankin, Burnsville, Minn., and Reed E. Holaday, Tuscon, Ariz., assignors to Holaday Industries, Inc., Minneapolis, Minn.

Filed May 30, 1989, Ser. No. 358,681
Int. Cl.[5] G01R 31/020; H01Q 21/290, 21/300; H04B 17/000
U.S. Cl. 343—703 20 Claims



1. Apparatus for detection of electric fields over a broadband frequency range comprising:

a) monopole antenna means having a principal axis for receiving electro-magnetic energy in a relatively high frequency band; and

b) displacement current antenna means located concentric with the monopole antenna means for receiving electro-magnetic energy in a relatively low frequency band; and

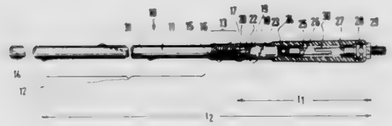
wherein the monopole antenna means comprises a conductive portion extending from a fixed end of the monopole antenna and stopping at a mediate region thereof and a resistive portion extending axially beyond the conductive portion from the mediate region to a free end thereof and wherein the resistive portion provides an antenna resistance in addition to a radiation resistance the monopole antenna would have in the absence of the resistive portion.

5,057,849

ROD ANTENNA FOR MULTI-BAND TELEVISION RECEPTION

Horst Dörrie, and Uwe Militz, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 11, 1989, Ser. No. 448,750
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1988, 3842854
Int. Cl.[5] H01Q 5/01, 9/32
U.S. Cl. 343—722 19 Claims



1. Rod antenna for multi-band television (TV) reception comprising

connection means (**29**) for coupling output wave energy received by the antenna, said connection means forming one end of said antenna;

a core support rod (**11**) of insulating material;

resilient means (**26**) mechanically coupling the connection means (**29**) to the support rod (**11**);

a first winding (**12**) and a second winding (**13**) wound about said core support rod, said first and second windings being connected together and at least said second winding (**13**) having at least three turns thereon axially spaced along said core support rod (**11**)

capacitive coupling means (**15**, **16**, **17**) coupled to said windings,

wherein said capacitive coupling means (**15**, **16**, **17**) comprises a third winding (**18**) having a turn (**17**) positioned between the axially last turn (**16**) of the second winding (**13**) remote from the first winding (**12**) and the axially next-to-last turn (**15**) of the second winding

said turn (**17**) of the third winding being galvanically insulated with respect to the second winding (**13**); and

connecting means (**26**, **30**) coupling said capacitive coupling means to said connection means (**29**).

wherein said capacitive coupling means (**15**, **16**, **17**) is spaced from the connection means (**29**) by a spacing (l_1) of about $\lambda_u/4$;

an end portion of the first winding (**12**) remote from the connection means is spaced from said connection means (**29**) by a spacing (l_2) of about $\lambda_u/4$; and

wherein λ_u is the median operating wave length of the ultra high frequency (UHF) television signal band, and

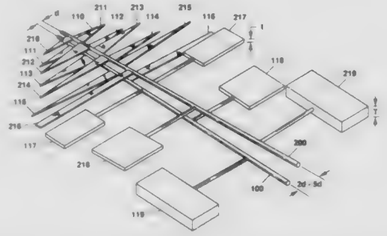
λ_v is the median operating wave length of the very high frequency (VHF) television signal band.

5,057,850

FORESHORTENED LOG-PERIODIC DIPOLE ANTENNA

Samuel C. Kuo, Saratoga, Calif., assignor to GTE Government Systems Corporation, Stamford, Conn.

Filed Sep. 24, 1990, Ser. No. 587,930
Int. Cl.[5] H01Q 11/10
U.S. Cl. 343—792.5 6 Claims



1. In a log periodic antenna having an axis and a pair of axially extending feed lines, a plurality of axially spaced dipoles connected to said feed lines and extending in directions transversely of said axis, certain of said dipoles having lengths $<<\lambda/2$ where λ is the wavelength at the resonant frequency of the respective dipole, each of said certain of said dipoles having two identical elements on opposite sides of said axis, each of said elements having a stem connected at one end to one of said feed lines and a rectangular perimetered body spaced in a first direction from one of said feedlines and connected to the end of said stem opposite said one end thereof, the improvement in which

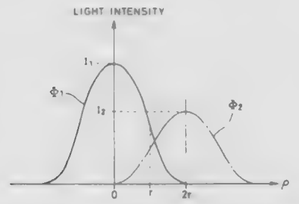
the rectangular bodies of at least one of said certain of said dipoles have thicknesses substantially greater than the thicknesses of the rectangular bodies of the remainder of said certain of said dipoles.

5,057,851

METHOD OF EXPOSING PHOTOSENSITIVE MEDIUM FOR OPTIMUM DENSITY OF REPRODUCED IMAGE

Yutaka Hattori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 28, 1989, Ser. No. 458,508
Claims priority, application Japan, Jan. 13, 1989, 1-6588
Int. Cl.[5] H04N 1/21
U.S. Cl. 346—1.1 11 Claims



1. A method of imagewise exposing a photosensitive medium to a laser radiation according to image signals representative of nominal densities of original images to be reproduced, such that the photosensitive medium is scanned by the laser radiation in a first direction at a first scanning interval by deflecting said laser radiation over a predetermined angular range, and in a second direction perpendicular to the first direction at a second scanning interval, comprising the steps of:

receiving said image signals representative of said nominal densities of the original images; and

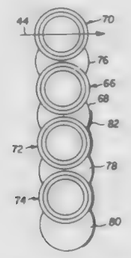
determining an intensity of a laser beam assigned to expose a given local spot on the photosensitive medium, which local spot has a size equal to said second scanning interval, depending upon at least one of intensities of laser beams assigned to expose two local spots which are adjacent to said given local spot in said second direction, so that an average density of an image reproduced by exposure of said given local spot to said laser beam substantially coincides with the nominal density of the corresponding original image represented by the corresponding image signal.

5,057,852

PRINTHEAD FOR COLOR PRINTER PROVIDING IMAGE EDGE ENHANCEMENT

Joseph F. Formica; William E. Hunt, both of Rochester; Thomas R. Knapp, Penfield, and Thomas L. Kowalczyk, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1989, Ser. No. 451,852
Int. Cl.[5] B41J 2/145, 2/21
U.S. Cl. 346—1.1 6 Claims



1. A printhead for producing edge-enhanced images on a print medium during relative movement between said printhead and print medium in a printing operation, said printhead comprising:

a) a first plurality of pixel-forming means for selectively producing true black pixels along a linear image line extending transverse to a direction of said relative movement; and

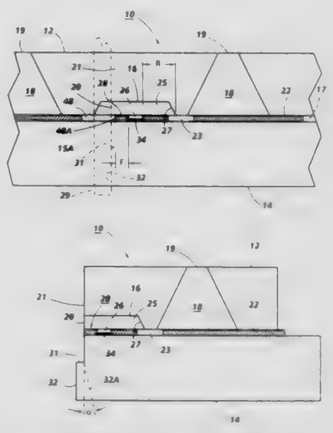
b) a second plurality of pixel-forming means for selectively producing process black pixels along said linear image line, said first and second plurality of pixel-forming means being interleaved to provide alternating true black and process black pixels along said linear image line.

5,057,853

THERMAL INK JET PRINTHEAD WITH STEPPED NOZZLE FACE AND METHOD OF FABRICATION THEREFOR

Almon P. Fisher, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1990, Ser. No. 577,244
Int. Cl.[5] B41J 2/05
U.S. Cl. 346—140 R 10 Claims



1. An improved ink jet printhead of the type having a linear array of droplet ejecting nozzles and a silicon upper substrate in which one surface thereof is anisotropically etched to form both a set of parallel grooves for subsequent use as ink channels and an anisotropically etched recess for subsequent use as a manifold, and further having a lower substrate in which one surface thereof has an array of heating elements and addressing electrodes formed thereon, the upper and lower substrates being aligned, mated, and bonded together to form the printhead with a thick film insulative layer sandwiched therebetween, the thick film insulative layer having been deposited on the surface of the lower substrate and over the heating elements and addressing electrodes and patterned to form recesses therethrough to expose the heating elements and terminal ends of the addressing electrodes prior to said mating and bonding of the substrates, wherein the improvement comprises:

(a) an elongated slot being formed in the thick film layer on the lower substrate concurrently with the heating elements and electrode terminal exposing recesses and at a location which is parallel to the heating elements array and spaced therefrom a predetermined distance, the slot having parallel sidewalls with the sidewall nearer the heating elements subsequently becoming a portion of the printhead nozzles;

(b) said upper and lower substrates being aligned and mated so that the upper substrate is aligned with the slot in the thick film layer on the lower substrate forming said ink channels and manifold with one of the closed ends of the grooves extending perpendicularly beyond the slot in the thick film layer film sidewall nearer the heating elements;

(c) said etched channel grooves in the upper substrate each

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being opened at the ends opposite the ones adjacent the manifold recess to produce portions of said nozzles after mating with the lower substrate by dicing a kerf with a resinoid dicing blade that perpendicularly intersects the grooves and forms a trench of predetermined depth having parallel sidewalls, so that only one of the trench sidewalls intersect the grooves to define a subsequent portion of a nozzle face for the printheads containing the groove open ends which form a portion of the printhead nozzles, the other ends of the grooves being placed into communication with the manifold recess, the kerf severing the upper substrate and notching the lower substrate without having to dice the thick film layer, thus avoiding yield reducing burrs and increasing the resinoid dicing blade lifetime; and

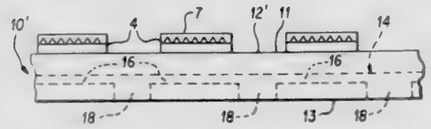
(d) a stepped nozzle face is formed by dicing along a plane parallel to and through the kerf to separate the bonded substrates into individual printheads without contacting the nozzle face.

5,057,854

MODULAR PARTIAL BARS AND FULL WIDTH ARRAY PRINTHEADS FABRICATED FROM MODULAR PARTIAL BARS

Stephen F. Pond, Pittsford; Donald J. Drake, Rochester; Robert P. Altavela, Pittsford; Gary A. Kneezel, Webster, and Ivan Rezanka, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1990, Ser. No. 543,550
Int. Cl.[5] B41J *2/155*
U.S. Cl. 346—140 R **25 Claims**



1. A modular partial bar which can be used to form a staggered array printhead, comprising:

a substrate bar having a length, a first planar side, and a second side opposite from said first planar side, said substrate bar being made from a heat sink material; and

a plurality of printhead subunits attached to only said one planar side of said substrate bar, each printhead subunit being spaced from an adjacent printhead subunit by a distance greater than zero, each of said printhead subunits including: a heater plate subunit having a first planar surface bonded to said one planar side of said substrate bar, and a second surface opposite from said first planar surface and having a plurality of resistive heater elements thereon; and a channel plate subunit having a first surface which includes a plurality of channels therein corresponding in number and location to said plurality of resistive heater elements in said heater plate subunit, said first surface of said channel plate subunit being bonded to said second surface of said heater plate subunit so that a resistive heater element is located in each channel, each channel plate subunit also including communication means for fluid communicating the channels on each channel plate subunit with a supply of ink;

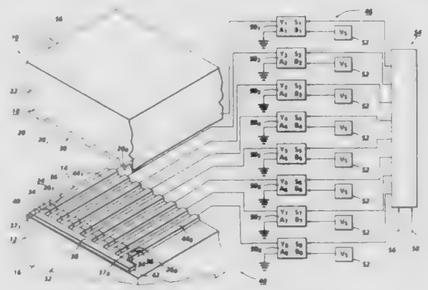
wherein no heater plate subunits are directly attached to said second side of said substrate bar so that said substrate bar functions as a support for said plurality of printhead subunits attached to said first planar side of said substrate bar.

5,057,855

THERMAL INK JET PRINTHEAD AND CONTROL ARRANGEMENT THEREFOR

David E. Damouth, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 12, 1990, Ser. No. 464,485
Int. Cl.[5] G01D *15/18*; **B41J** *2/355*
U.S. Cl. 346—140 R **14 Claims**



1. A thermal ink jet printhead, comprising:

a housing defining a plurality of ink receiving and emitting chambers with each chamber extending from an aperture in an edge portion of the housing into the interior thereof;

a plurality of heating elements each including first and second terminals and positioned within said housing, at least one of said heating elements in communication with at least one of said chambers;

electrical connector means for connecting the first terminal of each of said heating elements with one another, wherein said electrical connector means is positioned within said housing adjacent to said edge portion, and having a reduced size so that said electrical connector means is insufficient to provide a sole means to electrical ground and thereby enabling the heating elements to be placed a predetermined distance from said apertures;

a power source; and

control means for connecting the second terminal of a selected one of said heating elements with said power source while simultaneously connecting the second terminals of the remaining heating elements with an electrical ground so that current from said power source flows through a selected one of said heating elements and, thereafter, through said electrical connector means and said remaining heating elements to electrical ground, thereby providing a path to electrical ground through both the electrical connector means and the remaining heating elements.

5,057,856

LIQUID JET HEAD, SUBSTRATE OF (TIZRHFNB) FENICR AND LIQUID JET HEAD AND APPARATUS USING THE SAME

Hiroshi Takagi, Yokohama, and Atsushi Shiozaki, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 519,307, May 8, 1990, abandoned, which is a continuation of Ser. No. 278,491, Dec. 1, 1988, abandoned. This application Feb. 7, 1991, Ser. No. 652,364
Claims priority, application Japan, Dec. 1, 1987, 62-303713
Int. Cl.[5] B41J *2/05*
U.S. Cl. 346—140 R **133 Claims**

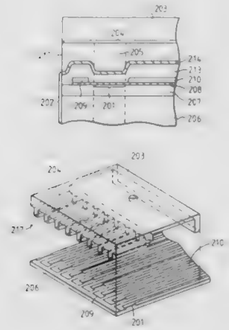
1. An ink jet head, comprising:

an electrothermal transducer having a heat-generating resistor and a pair of electrodes electrically connected to said heat-generating resistor;

a base plate supporting said electrothermal transducer;

a protective layer on said electrothermal transducer of an amorphous alloy containing at least one material selected from the group consisting of Ti, Zr, Hf, Nb, Ta, W, Fe, Ni and Cr; said amorphous alloy being represented by the formula

$$M_x(Fe_{100-y-z}Ni_yCr_z)_{100-x}$$



wherein M is at least one element selected from the group consisting of Ti, Zr, Hf, Nb, Ta and W, and x is 10–70; and

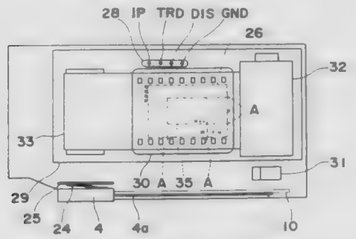
a liquid path corresponding to the heat generating portion of said electrothermal transducer communicating with a discharge opening for discharging liquid.

5,057,857

PHOTOGRAPHIC CAMERA SYSTEM HAVING A PSEUDO FOCAL LENGTH MODE

Yoshiaki Hata; Nobuyuki Taniguchi, both of Nishinomiya; Takeo Hoda, Kawachinagano; Manabu Inoue, Kobe; Yoshinobu Kudo, Sakai, and Hiroshi Ueda, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 293,082, Jan. 3, 1989, Pat. No. 4,926,203, which is a division of Ser. No. 924,425, Oct. 29, 1986, Pat. No. 4,860,039. This application Feb. 7, 1990, Ser. No. 476,610
Claims priority, application Japan, Oct. 31, 1985, 60-242736; Oct. 31, 1985, 60-242738; Nov. 11, 1985, 60-252472; Nov. 27, 1985, 60-265008; Nov. 27, 1985, 60-265009
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 **24 Claims**



1. A photographic camera system comprising:

a mode setting means for selectively setting said photographic camera system to a real focal length photographing mode for printing an ordinary photographic zone and a pseudo focal length photographing mode for printing a zone narrower than the ordinary photographic zone;

a recording means for recording a signal corresponding to the pseudo focal length photographing mode when the pseudo focal length photographing mode is selected;

a data imprinting means for selectively imprinting data such as a date at one of a plurality of different positions on a photographing portion of the film; and

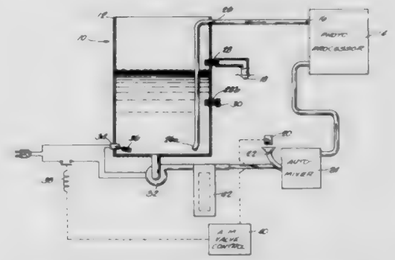
a selector means for selecting said one of the plurality of different positions in according with the settings of the real focal length photographing mode and the pseudo focal length photographing mode.

5,057,858

DEVELOPER RECYCLER IN CONNECTION WITH PHOTO PROCESSING MACHINE

Gunter Woog, 5435 Bauers Dr., West Bend, Wis. 53095

Filed Nov. 23, 1990, Ser. No. 617,522
Int. Cl.[5] G03D *3/06*
U.S. Cl. 354—324 **6 Claims**



1. A device for recycling developer into a photo processing machine, said photo processing machine having a developer overflow outlet and an automixer, having an automixer developer tank, for mixing photographic chemicals and inputting them into the photo processing machine, said device comprising:

a container for containing developer;

an inlet into said container, connected to the developer overflow outlet, for permitting developer to flow from the developer overflow outlet into said container;

said container having at least one overflow outlet therein, positioned so as to permit the outflow of developer from said container when the level of the developer reaches a predetermined level in the container;

a pump for pumping the developer from the container into the automixer developer tank, said pump being energized by the same control that controls pumping of fresh developer into the automixer developer tank; and

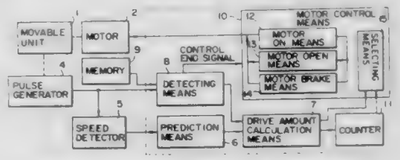
means for shutting off the pump when there has been a predetermined amount of developer pumped from the container into the automixer developer tank.

5,057,859

CAMERA HAVING HIGH-PRECISION STOP FUNCTION FOR MOVABLE UNIT

Toshiaki Ishimaru, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1990, Ser. No. 617,351
Int. Cl.[5] G03B *3/10*
U.S. Cl. 354—400 **38 Claims**



1. A camera having a movable unit, comprising:

motor means for driving said movable unit;

target position storage means for storing a drive target position of said movable unit;

pulse generation means for generating pulses according to a movement of said movable unit;

remaining moving amount detection means for detecting the remaining number of pulses to the target position on the basis of the pulses and the target position stored in said target position storage means;

moving speed detection means for detecting a moving speed of said movable unit on the basis of an interval of the pulses;

prediction means for predicting the number of pulses, which will be generated by said pulse generation means until said movable unit is stopped when said motor means is opened, on the basis of the moving speed detected by said moving speed detection means;

means for calculating a difference between the predicted number of pulses and the remaining number of pulses; and

motor control means for controlling said motor means by selecting, on the basis of the difference, one of motor ON means for applying a power supply voltage to said motor means, motor open means for driving said motor means by inertia without applying the power supply voltage, and motor brake means for short-circuiting said motor means to brake said motor means.

5,057,860

PRESSURE DEVELOPING DEVICE PROVIDED IN AN IMAGE RECORDING APPARATUS

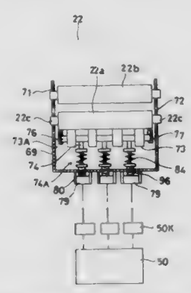
Tsuyoshi Suzuki, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 3, 1990, Ser. No. 592,959

Claims priority, application Japan, Oct. 11, 1989, 1-119023[U]; Oct. 11, 1989, 1-119024[U]

Int. Cl.[5] G03B *27/32*

U.S. Cl. 352—27 **15 Claims**



1. A pressure developing device in an image recording apparatus for recording an image on a recording medium, comprising:

a pair of pressure developing rollers to be separated from and contacted with each other in a separation mode and a contact mode, respectively, the pair of pressure developing rollers each defining an axial length and being axially aligned;

pressurizing means disposed against at least one of the pressure developing rollers for pressurizing the at least one of the pressure developing rollers against another of the pressure developing rollers in the contact mode and separating the at least one of the pressure developing rollers from the other of the pressure developing rollers in the separation mode; and

pressure control means for controlling the pressurizing means in the contact mode to pressurize the at least one of the pressure developing rollers against the other of the pressure developing rollers under a plurality of pressure conditions by the pressurizing means by varying pressure strength between the pair of pressure developing rollers along the axial length of the rollers, and for controlling the pressurizing means in the separation mode to separate the at least one of the pressure developing rollers from the other of the pressure developing rollers

wherein the pressurizing means comprises a plurality of backup bearings arranged at predetermined intervals in parallel with the at least one roller and a plurality of pressure rod units each disposed between a pair of the backup bearings; and

wherein the backup bearings are mounted on a shaft aligned with the at least one roller, and each pressure rod unit comprises a rod contacting the shaft, a first spring shoe installed on one end of the rod, a guide portion located under the first spring shoe, a coil spring surrounding the guide portion, a second spring shoe located under the coil spring, a screw stick located under the second spring shoe, and an actuator located under the screw stick.

5,057,861

COLOR IMAGE RECORDER AND IMAGE PROJECTOR USEFUL THEREFOR

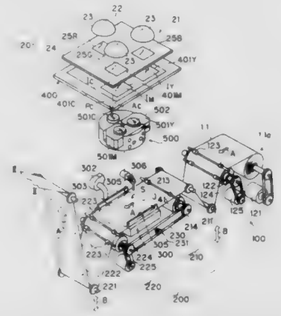
Kiyoshi Maeda; Sadahiko Nishide, both of Hikone; Mamoru Yoshiyama, Kyoto; Seiichi Matsuguchi, Kyoto; Masahiko Kurosaki, Kyoto; Takao Oura, Kyoto; Tetsuya Hayashi, Kyoto; Yoshikazu Kobayashi, and Yoshiaki Handa, both of Tokyo, all of Japan, assignors to Dainippon Screen Mfg. Co. Ltd., Japan

Filed Nov. 23, 1988, Ser. No. 275,722

Claims priority, application Japan, Nov. 28, 1987, 62-300897; Nov. 28, 1987, 62-300898; Nov. 28, 1987, 62-300899; Dec. 2, 1987, 62-184796[U]; Dec. 2, 1987, 62-306248; Dec. 2, 1987, 62-306249

Int. Cl.[5] G03B *27/52, 27/60*

U.S. Cl. 355—27 **14 Claims**



1. A recorder for recording a color image, said recorder comprising:

A) a photosensitive sheet feeder for feeding a photosensitive sheet in a downstream direction;

B) a stage for receiving said photosensitive sheet thereon;

C) a projector for simultaneously projecting a plurality of color separated image lights onto a common area of said photosensitive sheet when said photosensitive sheet is received on said stage to expose and photoharden microcapsules distributed on a surface of said photosensitive sheet, said microcapsules including groups of different color dyes; said projector including:

1) a generator for generating colored lights;

2) an original holder for holding original plates on which color separated images are recorded and for forming said color separated image lights when said colored lights from said generator pass through said original plates, said original holder being located between said generator and said stage; and

3) a lens unit located between said original holder and said stage, said lens unit including projection lenses for projecting said color separated image lights onto said common area of said photosensitive sheet;

D) a receiver paper feeder for feeding a receiver paper onto said photosensitive sheet so that said receiver paper contacts said microcapsules, said receiver paper feeder being downstream from said stage;

E) a press for pressing said receiver paper and said photosensitive sheet toward each other to destroy microcapsules which are not photohardened so that dyes from said destroyed microcapsules form a color image on said receiver paper, said press being downstream from said receiver paper feeder; and

F) separating means for separating said receiver paper from said photosensitive sheet.

5,057,862

ALIGNMENT TECHNIQUE FOR A PHOTOGRAPHIC ENLARGER

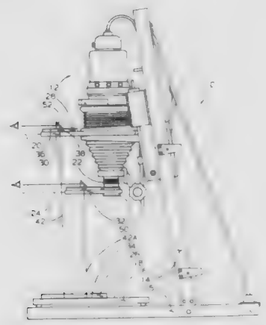
William R. Ziegler, 417 Shirley Way, Menlo Park, Calif. 94025

Continuation of Ser. No. 228,991, Aug. 5, 1988, Pat. No. 4,951,087. This application Apr. 18, 1990, Ser. No. 510,436

The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—43 **14 Claims**



1. An alignment arrangement for use with a photographic enlarger apparatus which includes an enlarger head assembly having a lens defining a lens plane and which also includes an enlarger easel below said lens plane and means for supporting said enlarger head assembly above said easel so that said lens plane can be adjustably positioned in parallel relationship with said easel, said alignment arrangement comprising:

(a) a first mirror member having a mirror body including a mirrored surface, said first mirror member being configured to lie on said enlarger easel such that its mirrored surface faces said lens plane;

(b) means including a second mirror member having a mirror body including a mirrored surface, said means being configured to place said second mirror member in said lens plane so that said second mirrored surface faces said easel and said first mirrored surface;

(c) means for allowing a viewer to simultaneously view both of said mirrored surfaces along a viewing axis perpendicular to the mirrored surfaces; and

(d) indicia on at least one of said mirrored surfaces such that when said mirrored surfaces are simultaneously viewed along said perpendicular axis, said indicia will take only one of many different forms if the two mirrored surfaces are parallel, whereby said means including said second mirror member an/or said easel, said first mirror member can be adjusted to provide said one form in order to insure that said lens plane is parallel with said easel.

5,057,863

VARIABLE MAGNIFICATION OPTICS FOR AN IMAGE FORMING APPARATUS

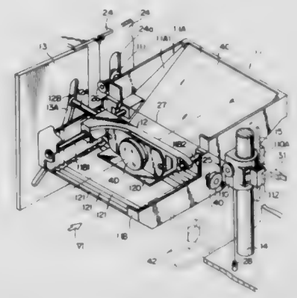
Yuji Yasuda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 9, 1989, Ser. No. 434,020

Claims priority, application Japan, Nov. 9, 1988, 63-283391; Nov. 9, 1988, 63-283393; Apr. 28, 1989, 1-111637

Int. Cl.[5] G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **13 Claims**



1. Optics for an image forming apparatus having optical members for projecting a reflection from an image surface of a document onto a photoconductive element and comprising a plurality of mirrors and a lens interposed between said plurality of mirrors, said optical members being displaceable in response to a change of magnification, said optics comprising:

a first mirror for reflecting the reflection from the document prior to the other mirrors;

a first mirror support member for supporting said first mirror;

a lens support member for supporting said lens, said lens support member being located rearwardly of said first mirror support member;

a second mirror located adjacent to the photoconductive element with respect to said lens support member;

a second mirror support member for supporting said second mirror; and

first means for moving said first mirror support member and said first mirror supported thereon in a direction parallel to an optical axis of the reflection and moving said lens support member and said lens supported thereon in a direction of movement of said first mirror support member by an amount associated with a ratio which is produced from an amount of movement of said first mirror support member;

said first mirror support member comprising second means for moving said second mirror support member and said second mirror supported thereon in a direction perpendicular to a surface of said second mirror in response to the movement of said first mirror support member.

5,057,864

APPARATUS FOR CONTROLLING THE QUANTITY OF LIGHT OF A COPYING APPARATUS

Hiromitsu Kijima, Ageo; Susumu Usami, and Masatoshi Ishiwata, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha TOPCON, Japan

Filed Dec. 14, 1990, Ser. No. 627,306

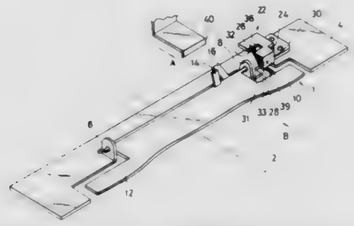
Claims priority, application Japan, Dec. 15, 1989, 1-325438

Int. Cl.[5] G03B *27/72*

U.S. Cl. 355—71 **1 Claim**

1. An apparatus for controlling the quantity of light of a copying apparatus wherein the magnification of projection can be varied by the motion of a projection lens comprising;

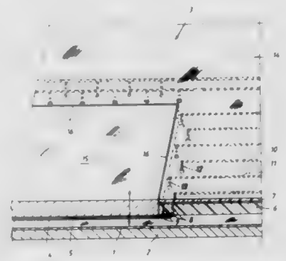
a driving member (**40**) mounted integrally on said projection lens;
a base plate (**4**) forming a part of a body of said copying apparatus;
a douser (**1**) supported on said base plate (**4**) around a pivotal shaft arranged at a position offset from an optical axis (**2**) of said projection lens and orthogonally intersecting the optical axis (**2**);
a first tab (**14**) adapted to be engaged with said driving member (**40**) when said driving member (**40**) is moved toward said douser (**1**) located in a non-light interruption position and a second tab (**16**) adapted to be engaged with said driving member (**40**) when said driving member (**40**) is moved toward said douser (**1**) located in a light interruption position, said tabs (**14** and **16**) being formed integrally with said douser (**1**) on an opposite side of said pivotal shaft of said douser (**1**) from a side on which light interrupting projections (**10** and **12**) are formed;
a tension spring (**39**) one end of which is secured on one of



said light interrupting projections (**10** and **12**) of said douser (**1**) and the other end of which is secured on said base plate (**4**) at a position substantially opposite of said pivotal shaft of said douser (**1**) from the mid point of the swing angle of said douser (**1**);
a positioning portion (**31**) formed on said base plate (**4**) adapted to be abutted by said tension spring (**39**) for holding said douser (**1**) at said light interruption position;
a positioning portion (**28**) formed on said base plate (**4**) adapted to be abutted by said tension spring (**39**) for holding said douser (**1**) at said light non-interruption position; and
said tab (**14**) projecting from said side of said douser (**1**) by a height so that said driving member (**40**) cannot engage the tab (**14**) when said douser (**1**) is swung slightly beyond said light interruption position and said tab (**16**) projecting from said side of said douser (**1**) by a height so that said driving member (**40**) cannot engage the tab (**16**) when said douser (**1**) is returned slightly beyond said non-light interruption position.

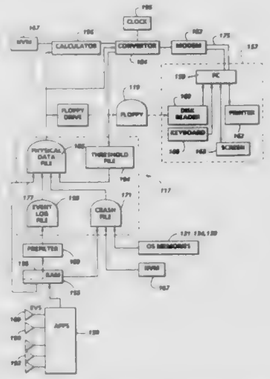
5,057,865
BURNOUT FRAME WITH UV-ABSORPTION
Lars-Åke Rosén, Sollentuna, and Dan J. Lundberg, Solna, both of Sweden, assignors to Misomex Aktiebolag, Hagersten, Sweden and Misomex Aktiebolag, Hagersten, Sweden
Filed Oct. 30, 1990, Ser. No. 605,967
Claims priority, application Sweden, Jan. 29, 1990, 9000297
Int. Cl.[5] G03B *27/20*
U.S. Cl. 355—91 **10 Claims**

1. A burnout frame of the type, which is used when producing collecting films, printing plates etc. by printing with a light of short wavelength, particularly through a so called positive printing, i.e. such a light printing, in which the printing is done through a positive master, usually a transparent original film (**4**) and down to a positive film or plate (**1**), the light of short wavelength providing a "burnout" of non-image-carrying areas in and often also outside the original film, the burnout frame comprising a transparent printing glalss (**6,7**), which is larger than the largest original film considered to be printed and which has a clear, central part (**15**), designed to send light through the original film (**4**), and a diffused part (**14**), located outside said part, and the printing glass on its underside having one or two arrays of vacuum grooves (**8,9**), designed to hold by suction an original film (**4**) and possibly also a masking film (**5**), which vacuum grooves via ducts (**10-13**) in the diffused part (**14**) of the glass lead to a source of negative pressure, characterized:



in that the clear, central part of the printing glass is made of an optical glass (**15**), whereas the diffused part (**14**) can be some plastic material;
the central glass being of a type, which absorbs a part of the printing light radiation, within the ultraviolet wavelength range.

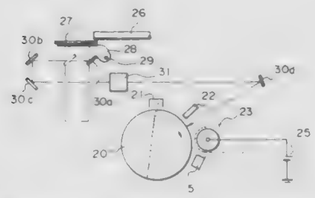
5,057,866
REMOTELY ACCESSIBLE COPIER CALCULATOR
John R. Hill, Jr., W. Brighton, and Jeff C. Carter, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 4, 1990, Ser. No. 519,511
Int. Cl.[5] G03L *15/00*
U.S. Cl. 355—200 **10 Claims**



1. In a printing system having a host computer and a machine with a plurality of operating components, a control, and a calculator, the control cooperating with the operating components to produce images on copy sheets, the calculator monitoring predetermined status conditions of the machine for communication to the host computer, the machine being remotely interconnected to the host computer, the method of the machine monitoring the status conditions and initiating communication with the host computer relative to the status conditions of the machine comprising the steps of:
monitoring with the calculator said predetermined status conditions relative to the operation of the machine,
recognizing the deviation of the machine operation from said predetermined status conditions,

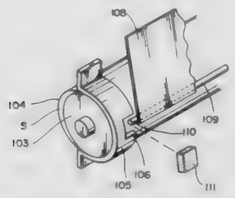
responding to the deviation of the machine operation from said predetermined status conditions,
automatically initiating the communication of a message to the remote computer regarding said deviation of the machine from the predetermined status conditions and
remotely altering the predetermined status conditions by which to monitor the machine.

5,057,867
IMAGE FORMING APPARATUS WHICH CORRECTS THE IMAGE FORMING FACTORS IN RESPONSE TO DENSITY SENSING MEANS AND DURATION OF INACTIVE STATE
Kouji Ishigaki, Yokohama, and Yasuji Takagi, Matsudo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 4, 1989, Ser. No. 416,989
Claims priority, application Japan, Oct. 5, 1988, 63-249897
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **6 Claims**



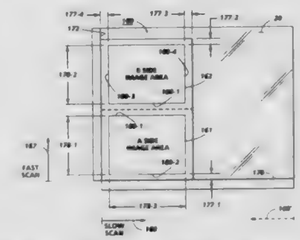
1. An image forming apparatus having an image carrier for carrying a latent image, comprising:
state sensing means for sensing the duration of an inactive state of the image carrier;
density sensing means for sensing a density of a predetermined density sensing portion of the image carrier; and
control means for correcting an image forming factor in response to an output signal of said state sensing means and an output signal of said density sensing means which are representative of a sensed inactive state and a sensed density, respectively.

5,057,868
DEVELOPING APPARATUS HAVING A SEALING CONSTRUCTION FOR PREVENTING A TONER LEAKAGE
Hitoshi Sekino; Hirofumi Hasegawa; Shuichi Nakagawa, and Yuji Enoguchi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 7, 1990, Ser. No. 476,609
Claims priority, application Japan, Feb. 10, 1989, 1-31825; Feb. 10, 1989, 1-31830; Feb. 10, 1989, 1-31831
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—215 **14 Claims**



1. A developing apparatus having a sealing construction for preventing a toner leakage, comprising:
a rotating member for holding toner on a peripheral surface thereof;
a regulating means for adjusting an amount of toner supplied to said peripheral surface at a predetermined position in an outer peripheral direction of said rotating member, said regulating means including a scraper member to be pressed against said rotating member along an axial direction thereof so as to scrape part of a toner supplied to said peripheral surface of said rotating member so that a thin uniform toner layer is formed on said peripheral surface of said rotating member;
a pair of sealing members disposed on both ends of said rotating member and pressed against said rotating member so that a width of said thin toner layer to be formed on said peripheral surface of said rotating member is regulated, said sealing members each having a recess for receiving an end of said scraper member, respectively; and
a pair of elastic sealing plates mounted in said recesses in said sealing members, said elastic sealing plates elastically pressing said ends of said scraper member against said peripheral surface of said rotating member and sealing said recess.

5,057,869
SYSTEM FOR SCANNING SIGNATURE PAGES
James R. Graves, Ontario; Gerald L. Coy, Rochester; William A. Blitz, Webster, and David E. Crocker, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 30, 1990, Ser. No. 620,519
Int. Cl.[5] G03G *15/28*
U.S. Cl. 355—233 **4 Claims**



1. A process for scanning signature documents in which each signature document has two discrete images separated by a gutter, with a scanner having a platen for supporting documents for scanning and at least one scanning array movable relative to the platen and the document thereon in the slow scan direction, the array scanning the document on the platen line by line in the fast scan direction to convert the images scanned to image signals, comprising the steps of:
a) positioning said signature document on said platen for scanning with said document oriented so that said two images are side by side one another in the fast scan direction to enable said array to view both said images concurrently on relative movement between said array and said platen in the slow scan direction;
b) setting the inside margins of said images in the fast scan direction to provide said gutter;
c) setting the outside margins of said images in the fast scan direction to establish in cooperation with said inside margins the size of said images in the fast scan direction;
d) actuating said scanner to move said array relative to said platen in one scan direction to scan the image area of said signature document delineated by one of said inside and outside margin pair whereby to provide image signals representative of one image;
reversing said scan direction to scan the area of said signature document delineated by the other of said inside and outside margin pair whereby to provide image signals representative of the other image.

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5,057,870

TONER DENSITY CONTROL DEVICE FOR AN IMAGE FORMING APPARATUS

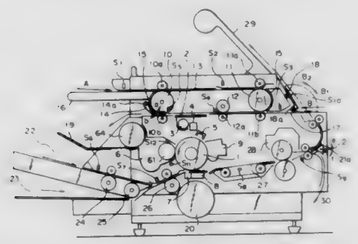
Minoru Aoki, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 344,960, Apr. 28, 1989, Pat. No. 4,980,726. This application Jan. 31, 1990, Ser. No. 472,802

Claims priority, application Japan, May 2, 1988, 63-107545; Feb. 17, 1989, 1-36261

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 7 Claims



1. A toner density control device for an image forming apparatus in which developing means develops an electrostatic latent image on an image carrier by using a developer containing a toner, said device comprising:

toner density sensing means for sensing a density of the toner contained in the developer;

image density sensing means for optically sensing a density of a test pattern image produced by developing a latent image representative of a test pattern by the toner;

toner supplying means for supplying a predetermined amount of toner to the developing means in response to at least one of a toner density and an image density sensed by said toner density sensing means and said image density sensing means, respectively; and

control means for controlling said toner supplying means such that in a first image region image density is controlled using said image density sensing means, and in a second image region which is spaced apart by a substantial distance from said test pattern image density is controlled using said toner density sensing means, wherein in said second image region the toner is supplied on the basis of a toner density signal produced during the image density control in the first image region using said image density sensing means.

5,057,871

DEVELOPING DEVICE HAVING A CONDUCTIVE POROUS TONER-REMOVING ROLLER

Kazunori Hirose, Hiratsuka, and Yukio Nishio, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 14, 1990, Ser. No. 493,260

Claims priority, application Japan, Mar. 16, 1989, 01-062001; Jul. 7, 1989, 01-176539

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—259 64 Claims

1. A developing device using a one-component developer, comprising:

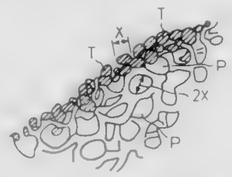
a vessel for holding a one-component developer composed of toner particles;

a developing roller rotatably provided within said vessel in such a manner that a portion of said developing roller is exposed therefrom and faces a surface of an electrostatic latent image carrying body;

said developing roller being formed of a conductive rubber material by which the toner particles are entrained to form a developer layer therearound and are carried to the surface of said electrostatic latent image carrying body for development of an electrostatic latent image formed thereon;

a toner-removing roller rotatably provided within said vessel to be in contact with said developing roller for mechanically removing remaining toner particles not used for the development of the electrostatic latent image from said developing roller;

said toner-removing roller being formed of a conductive



open-cell foam rubber material so that pore openings appear over a surface of said toner-removing roller, and that a bias voltage is applied thereto to electrostatically remove said remaining toner particles from said developing roller; and

said pore openings having a diameter which is less than twice an average diameter of 10 μm of the toner particles, whereby a penetration of the toner particles into said toner-removing roller is prevented.

5,057,872

DEVELOPER SUPPLYING DEVICE FOR SUPPLYING APPROXIMATELY CONSTANT AMOUNTS OF DEVELOPER

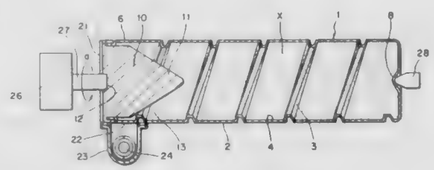
Hiromitsu Saijo; Shunji Yamamoto, and Akio Kimura, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1990, Ser. No. 530,962

Claims priority, application Japan, May 31, 1989, 1-138531; May 31, 1989, 1-138532; May 31, 1989, 1-138533

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 26 Claims



1. A developer supplying device comprising:

a developer container of substantially cylindrical form and having on its peripheral surface a spiral groove extending therearound in an axial direction thereof, said container being rotatable to transport a developer therein by the spiral groove;

supplying means in a form of an opening provided at the peripheral surface of said container to supply the developer therethrough; and

regulating means provided in said container and regulating an amount of the developer supplied from said supplying means, said regulating means being so formed to reduce a sectional area between said regulating means and an inner surface of said container in the vicinity of said supplying means.

5,057,873

METHOD OF CLEANING A TRANSFER DRUM OF AN ELECTROPHOTOGRAPHIC APPARATUS

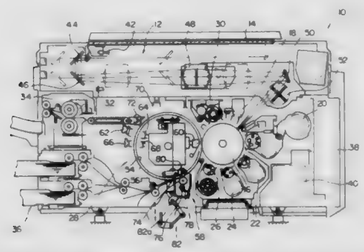
Yuji Sawai, and Toshio Nakahara, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 3, 1990, Ser. No. 460,627

Claims priority, application Japan, Jan. 9, 1989, 1-3341; Jan. 9, 1989, 1-3342; Jan. 9, 1989, 1-3343; Jan. 9, 1989, 1-3344; Dec. 15, 1989, 1-325633

Int. Cl.[5] G03G *15/16, 15/01*

U.S. Cl. 355—271 10 Claims



5. A method of cleaning a transfer drum device in an electrophotographic apparatus comprising a movable image carrier for forming a toner image thereon and a transfer drum device located to face said image carrier, said transfer drum device comprising a transfer film wound around said transfer drum device, a clamping section for clamping a paper sheet to which said toner image is to be transferred and a fur brush rotatable in contact with said transfer film of said transfer drum for removing toner left untransferred on said transfer film, said method comprising the steps of:

(a) starting cleaning said transfer film of said transfer drum device at said clamping section; and

(b) ending cleaning said transfer film at a point ahead of said clamping section such that said fur brush smeared by cleaning said transfer film is released from said transfer film before said clamping section reaches said fur brush in order to prevent said fur brush rubbing against said clamping section.

5,057,874

PAPER CONVEYING APPARATUS

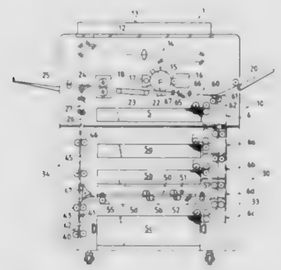
Mikio Miyazaki; Kyoji Kamei; Yoshio Kogure; Masahito Takeshita, and Tsutomu Furusawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 481,992, Feb. 20, 1990, abandoned. This application Jan. 16, 1991, Ser. No. 641,802

Claims priority, application Japan, Mar. 3, 1989, 1-51560

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—316 6 Claims



1. A paper feeding apparatus for use in an image forming apparatus which transfers a toner image onto a paper, said paper feeding apparatus comprising:

paper feed means for feeding paper into a paper feed path;

paper sensor means provided adjacent to said paper feed path for detecting paper on said paper feed path to produce a detection information signal;

wait station means disposed upstream of an image transfer portion in a paper feed path for temporarily stopping the movement of the paper before the paper reaches a gate member, said wait station means including a pair of feed rollers disposed upstream of said gate member;

control means responsive to said detection information signal from said paper sensor means and connected to said wait station means for controlling movement of the paper wherein the paper is fed into said image transfer portion of the image forming apparatus in proper timing with the operation of an image carrying body of the image forming apparatus and wherein the feeding of paper into said image transfer portion is temporarily stopped at said wait station means until the proper timing occurs with the operation of said image carrying body.

5,057,875

IMAGE FORMING APPARATUS PROVIDED WITH AN IMAGE BEARING FILM AND A MOVABLE TRANSFIXING STATION

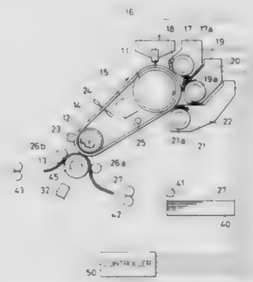
Shinichi Itoh, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,169

Claims priority, application Japan, Jan. 27, 1989, 1-16309; Jan. 27, 1989, 1-16310; Jan. 27, 1989, 1-16311; Jan. 27, 1989, 1-16312

Int. Cl.[5] G03G *15/01, 15/14, 15/20*

U.S. Cl. 355—326 22 Claims



11. A color electrophotography apparatus, comprising:

a photosensitive member;

an electrifying device facing said photosensitive member for uniformly electrifying the photosensitive member;

an exposure device for exposing the photosensitive member, successively, to a plurality of light images, each light image corresponding to a color image signal, thereby forming a plurality of electrostatic latent images of said respective colors on the photosensitive member;

an endless toner image bearing film passing around said photosensitive member;

development devices for successively developing a plurality of color toner images by adhering color toner corresponding to said respective color image signals onto said toner image bearing film, each toner image corresponding to a respective electrostatic latent images;

a transfer device for transferring said plurality of color toner images from the toner image bearing film onto recording paper, said transfer device comprises a heating roller and a pressure roller juxtaposed with said heating roller, said pressure roller being selectively movable between a

contact position in which it is pressed against the heating roller and a release position separated from the heating roller, said toner image bearing film passing around said heating roller and being interposed between said heating and pressure rollers, whereby said pressure roller is separated from said heating roller when the toner image bearing film bearing the toner images of the respective colors passes between the heating roller and the pressure roller until all the toner images have been formed;

means for moving said toner image bearing film past said development devices and said transfer device, each of the plurality of color toner images being successively formed on the toner image bearing film and superimposed on each other, and each of the plurality of color toner images except the last one formed being temporarily fixed on said toner image bearing film by the heat from said heating roller; and

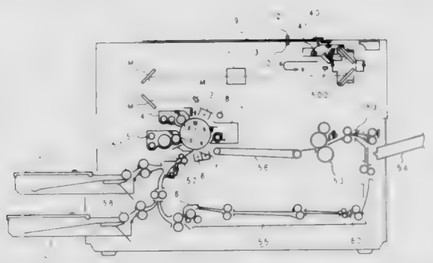
means for feeding a recording paper to the transfer device after the plurality of color toner images have been formed on said toner image bearing film, whereby the plurality of color toner images are simultaneously transferred to and fixed on the recording paper.

5,057,876

IMAGE FORMING APPARATUS WITH AN IMAGE EDITING FUNCTION

Yasuhiro Ohno, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1990, Ser. No. 488,227
Claims priority, application Japan, Mar. 6, 1989, 1-54685
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—328 **32 Claims**



20 An image forming apparatus which forms an image on the both sides of a copy sheet, comprising:

image forming means which can form an image at least in a first color and a second color; and

controlling means for controlling said image forming means so as to start the image forming operation in the first color and changing the image forming color to said second color in forming an image on a first side of the copy sheet, and to start the image forming operation in the second color and changing the image forming color to said first color in forming an image on a second side of the copy sheet.

5,057,877

SUPERCONDUCTOR INTERCONNECTION APPARATUS

Bruce E. Briley, Countryside; Mikiel L. Larson, St. Charles, and John Montsma, Wheaton, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

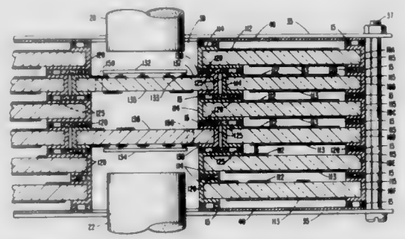
Continuation of Ser. No. 402,390, Aug. 31, 1989, abandoned.
This application Oct. 26, 1990, Ser. No. 602,898
Int. Cl.[5] H01L *27/12, 39/22, 23/48, 25/04*
U.S. Cl. 357—5 **18 Claims**

1. Electrical interconnection apparatus comprising:

a first substrate, a plurality of contact areas consisting of metallic electrically conductive material affixed to said first substrate, and superconducting material deposited on said first substrate for forming a signal transmission path and making electrical contact with said contact areas;

a second substrate, a plurality of contact areas consisting of a metallic electrically conductive material affixed to said second substrate, and superconducting material deposited on said second substrate for forming a signal transmission path and making electrical contact with said contact areas on said second substrate; and

retaining means for applying mechanical force to said substrates for maintaining said contact areas of said first substrate and said second substrate in electrical contact;



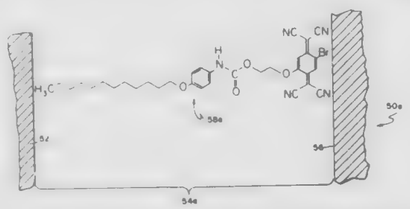
said apparatus further comprising spacer means consisting of electrically insulating material disposed between said first and said second substrates and having apertures in said spacer means in registration with said contact areas of said first and said second substrates, and electrically conducting contact devices selectively inserted in certain of said apertures for making electrical contact between contact areas of said first and said second substrates to selectively establish electrical contact between predetermined ones of said contact areas of said first and said second substrates.

5,057,878

M-I-M' DEVICE AND FABRICATION METHOD

Norman J. Geddes, San Jose, Calif., and Daniel J. Sandman, Acton, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 29, 1989, Ser. No. 459,165
Int. Cl.[5] H01L *49/02*
U.S. Cl. 357—6 **7 Claims**



1. A microelectronic device of the metal/insulator/metal' type wherein metal layers are separated by a film of organic material, said device comprising:

a conductive substrate;

a monomolecular layer of highly pure p-dodecyloxyphenylcarbamate of 2-(2'-hydroxyethoxy)-5-bromo-7,7,8,8-tetracyanoquinodimethan deposited on a surface of a first portion of said conductive substrate to form an organic film on said first portion surface, wherein molecules of said monomolecular layer are generally disposed normal to said first portion surface with their dodecyl terminal moieties adjacent said first portion surface;

an essentially oxide-free contiguous layer of magnesium deposited on said organic material in such a way as to form an integral device exhibiting no short circuits when current is applied to said device;

a layer of silver deposited on, substantially covering, and conductively adhering to said magnesium layer without contacting said organic film, said silver layer being sufficiently thick to provide electrical contact to said magnesium layer; and

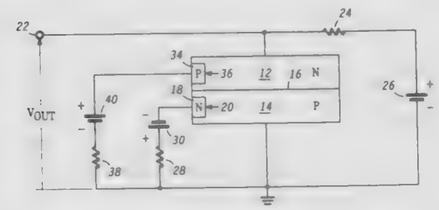
first electrically conductive lead means conductively adhered to said silver layer by means of a gallium-indium eutectic alloy.

5,057,879

NOISE REDUCTION TECHNIQUE FOR BREAKDOWN DIODES

John M. Pigott, Phoenix, and Randall T. Wollschlager, Chandler, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 24, 1990, Ser. No. 632,834
Int. Cl.[5] H01L *29/90*
U.S. Cl. 357—13 **18 Claims**



1. A semiconductor device, comprising:

a first semiconductor region having a first conductivity type;

a second semiconductor region having a second conductivity type, said first and second semiconductor regions forming a first semiconductor junction, said first semiconductor junction being reversed biased to operate in an avalanche breakdown mode; and

a third semiconductor region having said first conductivity type, said second and third semiconductor regions forming a second semiconductor junction, said second semiconductor junction being forward biased such that said third semiconductor region injects carriers into said second semiconductor region and said carriers subsequently diffuse to said first semiconductor junction wherein noise associated with said first semiconductor junction operating in said avalanche breakdown mode is substantially reduced.

5,057,880

SEMICONDUCTOR DEVICE HAVING A HETEROEPITAXIAL SUBSTRATE

Takashi Eshita, Tokyo; Toshikazu Inoue, Yokohama, and Kanetake Takasaki, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 23, 1990, Ser. No. 601,427
Claims priority, application Japan, Oct. 23, 1989, 1-275350
Int. Cl.[5] H01L *29/161, 27/12*
U.S. Cl. 357—16 **12 Claims**

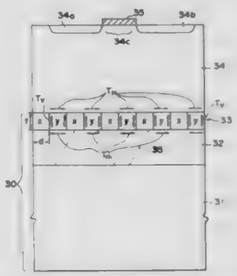
1. A semiconductor device comprising:

a substrate having an upper major surface, said substrate comprising:

a first semiconductor layer having an upper major surface and a lower major surface and comprising a first semiconductor material,

a second semiconductor layer having an upper major surface and a lower major surface and provided on the upper major surface of the first semiconductor layer, said second semiconductor layer comprising a second semiconductor material that is different from the first semiconductor material, and

a third semiconductor layer having an upper major surface and a lower major surface and provided on the upper major surface of the second semiconductor layer, said third semiconductor layer comprising a plurality of segments each defined by a pair of side walls that extend substantially perpendicular to the lower major surface of the third semiconductor layer, said plurality of segments comprising a plurality of first-type segments of a first material and a plurality of second-type segments of a second material wherein said first- and second-type segments are arranged alternately, when viewed in a direction parallel to the lower major surface of the third semiconductor layer, such that each first-type segment shares a first side wall with a neighboring second-type segment



and a second side wall opposing the first side wall with another neighboring second-type segment that opposes the first mentioned second-type segment, and such that each second-type segment shares a first side wall with a neighboring first-type segment and a second side wall opposing the first side wall with another neighboring first-type segment that opposes the first mentioned first-type segment, said first and second materials having respective lattice constants that differ with each other such that a stress field acting substantially perpendicular to the lower major surface of the third semiconductor layer is induced at each side wall of the first and second segments;

a fourth semiconductor layer having an upper major surface and a lower major surface and provided on the upper major surface of said substrate; and

an active region formed at least in the fourth semiconductor layer.

5,057,881

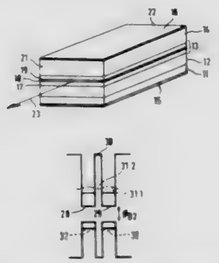
LIGHT EMITTING COMPOSITIONAL SEMICONDUCTOR DEVICE

Hans Lobentanzer, Munich; Wolfgang Stolz, Ammerbusch; Klaus Ploog, Stuttgart, all of Fed. Rep. of Germany, and Julien Nagle, Hackensack, N.J., assignors to Max-Planck Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 444,194
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1988, 3840717
Int. Cl.[5] H01L *33/00, 27/12, 29/161*
U.S. Cl. 357—17 **13 Claims**

1. A light emitting compositional semiconductor device having an operating wavelength greater than 1.2 μm, the device being grown by epitaxy and having an active region comprising an alternating sequence of layers of material of a first composition having a first bandgap and of material of a second composition having a second bandgap larger than said first bandgap, with the thickness of said layers of first and second composition material being chosen such that quantum confinement of charge carriers occurs, with the first composition material forming quantum wells and the second composi-

tion material forming a barrier between each adjacent pair of quantum wells, there being at least two layers of first composition material with at least layer of second composition material disposed between said at least two layers of first composition material, thus forming two quantum wells with one barrier between said quantum wells, wherein the thickness of said at least one layer of second composition material and of the adjacent layers of first composition material is chosen such that



for a first type of charge carrier a relatively high probability exists for such charge carriers to be present in the barrier region whereas charge carriers of a second type are localized in the potential wells, wherein charge carriers of said first type comprise electrons distributed in accordance with an electron wave function and charge carriers of said second type comprise holes distributed in accordance with a hole wave function, wherein said electron and hole wave functions have an overlap.

5,057,882

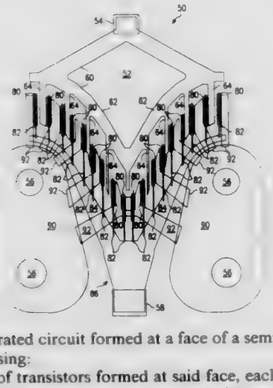
THERMALLY OPTIMIZED INTERDIGITATED TRANSISTOR

Samuel D. Pritchett, Flower Mound, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 374,422, Jun. 30, 1989, abandoned. This application Nov. 5, 1990, Ser. No. 611,393

Int. Cl.[5] H01L *29/80, 23/58, 27/10, 23/48*

U.S. Cl. 357—22 **13 Claims**



6. An integrated circuit formed at a face of a semiconductor layer, comprising:

a plurality of transistors formed at said face, each transistor having a heat-generating region which generates heat during operation of said integrated circuit;

said heat-generating regions disposed along an arcuate path and spaced from one another in an x-direction, each heat-generating region offset in a y-direction perpendicular to the x-direction from adjacent heat-generating regions such that heat originating from each said heat-generating region may be more effectively dissipated.

5,057,883

PERMEABLE BASE TRANSISTOR WITH GATE FINGERS

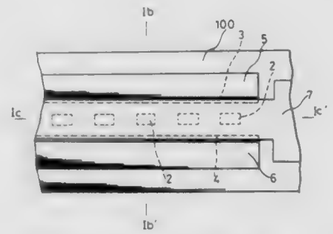
Minoru Noda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 11, 1990, Ser. No. 463,478

Claims priority, application Japan, May 10, 1989, 1-117694

Int. Cl.[5] H01L *29/80, 29/06*

U.S. Cl. 357—22 **15 Claims**



1. A permeable base transistor comprising:

a semi-insulating semiconductor layer having a thickness;

doped source and drain regions highly doped relative to said layer spaced from and opposite each other in said semi-insulating semiconductor layer; and

a buried metal gate electrode including at least one current permeable aperture disposed between said source and drain regions within said layer so that a channel current flowing between said source and drain regions flows through the aperture and transverse to the thickness of said semi-insulating semiconductor layer wherein said buried metal gate electrode includes a plurality of buried metal gate electrode fingers disposed along a circle in said semi-insulating semiconductor layer with predetermined intervals therebetween, and one of said drain and source regions comprises a cylindrical region disposed inwardly from said buried metal gate electrode fingers and the other of said source and drain regions comprises an annular region disposed outwardly from and surrounding said buried metal gate electrode fingers.

5,057,884

SEMICONDUCTOR DEVICE HAVING A STRUCTURE WHICH MAKES PARASITIC TRANSISTOR HARD TO OPERATE

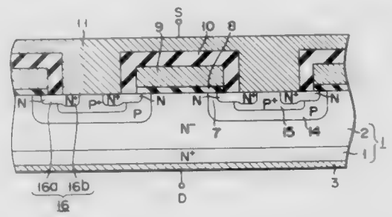
Kenji Suzuki, Kawasaki, and Hirohito Tanabe, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 3, 1989, Ser. No. 332,324

Claims priority, application Japan, Apr. 5, 1988, 63-82340

Int. Cl.[5] H01L *29/78*

U.S. Cl. 357—23.4 **9 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a first region of one conductivity type on a major surface thereof;

a drain electrode formed on another major surface of said semiconductor substrate electrically connected to said first region;

a first base region of opposite conductivity type formed selectively within said first region of one conductivity type and having a first impurity concentration;

a second base region of opposite conductivity type formed selectively within said first base region and having a second impurity concentration which is higher than said first impurity concentration;

a first source region of one conductivity type formed selectively within said first base region and having a third impurity concentration;

a second source region of one conductivity type contiguous with the first source region formed within said second base region, said second source region having a fourth impurity concentration which is higher than the third impurity concentration;

a source electrode formed in ohmic contact with both said second base region and said second source region; and

a gate electrode opposed to a channel region with a gate insulating layer interposed therebetween, said channel region being a portion of said first base region that is sandwiched between said first region and said first source region and exposed to the major surface of said semiconductor substrate.

5,057,885

MEMORY CELL SYSTEM WITH FIRST AND SECOND GATES

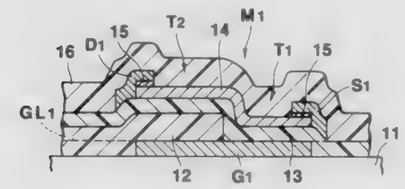
Hiroshi Matsumoto, Tokyo; Nobuyuki Yamamura, Hanno, and Makoto Sasaki, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1990, Ser. No. 556,908

Claims priority, application Japan, Jul. 28, 1989, 1-19432; Jul. 28, 1989, 1-194034; Jul. 28, 1989, 1-194035; Jul. 28, 1989, 1-194036

Int. Cl.[5] H01L *29/68, 29/34;* **G11C** *11/34*

U.S. Cl. 357—23.5 **13 Claims**



1. A memory cell system, comprising:

a substrate;

a thin film memory element formed on said substrate and including

a semiconductor layer,

a source electrode and a drain electrode electrically coupled to said semiconductor layer and separated from one another so as to form a channel region,

a first gate insulating layer and a second gate insulating layer formed on said semiconductor layer, and

a first gate electrode and a second gate electrode electrically coupled to said first and said second gate insulating layers respectively, said first gate insulating layer having charge-trapping means for trapping charges when a write/erase voltage +Vp/−Vp is applied between said first gate electrode and said source electrode, said second gate insulating layer having no charge-trapping means;

write/erase means for applying the write/erase voltage +Vp/−Vp between said first gate electrode and said source electrode; and

read means for applying a read voltage between said second gate electrode and said source electrode while no voltage is applied between said first gate electrode and said source electrode.

5,057,886

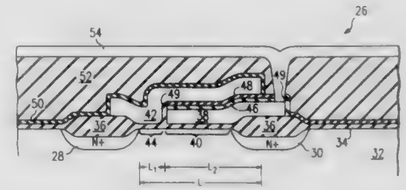
NON-VOLATILE MEMORY WITH IMPROVED COUPLING BETWEEN GATES

Bert R. Riemenschneider, Murphy, and Howard L. Tigelaar, Allen, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1988, Ser. No. 288,542

Int. Cl.[5] H01L *29/68, 29/34;* **G11C** *11/34*

U.S. Cl. 357—23.5 **34 Claims**



1. A non-volatile memory cell comprising:

a semiconductive substrate having a first conductivity type;

first and second doped regions formed in the surface of said substrate having a second conductivity type, said first and second doped regions being separated by a channel region;

a first dielectric layer formed on said channel region;

a first conductive layer formed on said first dielectric layer, said first conductive layer being formed over a first portion of said channel region;

a second dielectric layer formed on said first conductive layer, said second dielectric having an opening exposing said first conductive layer;

a second conductive layer formed on the portion of said first dielectric layer not covered by said first conductive layer, and said second conductive layer extending onto said second dielectric layer, but not extending to said opening;

a third dielectric layer formed on said second conductive layer, said third dielectric layer covering said second conductive layer; and

a third conductive layer formed on said third dielectric layer, said third conductive layer extending into said opening in said second dielectric layer to make conductive contact with said first conductive layer.

5,057,887

HIGH DENSITY DYNAMIC RAM CELL

Masaaki Yashiro, Plano, Tex.; Shigeki Morinaga, Tsuchiura, Japan, and Clarence W. Teng, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 14, 1989, Ser. No. 366,801

Int. Cl.[5] H01L *29/68, 29/06, 29/40*

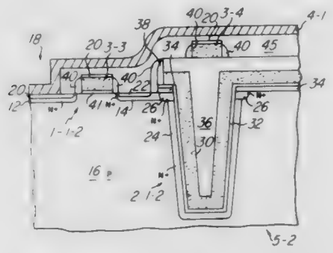
U.S. Cl. 357—23.6 **10 Claims**

1. A device comprising:

a trench formed in a substrate;

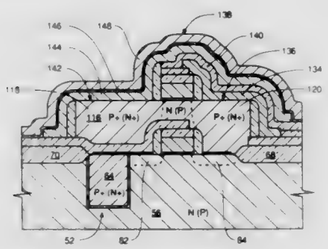
an information storage region doped into the substrate;

a first insulating layer formed on the walls of said trench and above the surface of said substrate on an intermediate layer in areas of said substrate between said device and other devices formed in said substrate;
a conductive layer formed on said first insulating layer;
a thick silicon dioxide region interposed at a corner between the information storage region and the conductive layer;



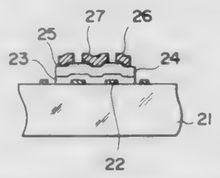
a drain region formed in said substrate, said drain region being separated from the portion of said substrate adjacent to said conductive layer by a channel region;
a gate insulating layer formed on said substrate adjacent said channel region;
a gate formed on said gate insulating layer; and
a heavily doped region having a conductivity type opposite to said substrate, said heavily doped region being formed in the face of said substrate, surrounding said trench.

5,057,888
DOUBLE DRAM CELL
Pierre C. Fazan; Hiang C. Chan; Yauh-Ching Liu; Gurtej S. Sandhu, and Howard E. Rhodes, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Jan. 28, 1991, Ser. No. 646,261
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 357—23.6 **16 Claims**



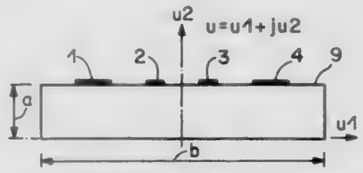
1. A double DRAM cell comprising:
a first transistor (T1) formed on a substrate;
a first storage capacitor (C1) connected to the first transistor (T1);
a first word line (WL1) for the first transistor (T1);
a first insulating layer covering the first transistor (T1);
a seed contact formed through the first insulating layer to the first transistor (T1);
an intermediate substrate formed by a selective epitaxial growth (SEG) epitaxial lateral overgrowth (ELO) process on the seed contact over the first transistor (T1);
a second transistor (T2) formed on the intermediate substrate;
a common insulated buried bit line deposited over and connected to the first (T1) and second (T2) transistors;
a second word line (WL2) for the second transistor (T2); and
a second storage capacitor (C2) for the second transistor (T2).

5,057,889
ELECTRONIC DEVICE INCLUDING THIN FILM TRANSISTOR
Katsuhiko Yamada, and Toshihiro Saika, both of c/o Canon Kabushiki Kaisha: 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan
Continuation of Ser. No. 214,435, Jul. 1, 1988, abandoned. This application Nov. 14, 1989, Ser. No. 436,132
Claims priority, application Japan, Jul. 6, 1987, 62-169381
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.7 **23 Claims**



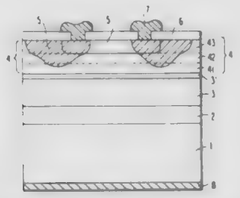
1. An electronic device comprising a thin film transistor comprising:
a substrate;
a thin semiconductor film provided on said substrate;
a gate electrode comprising at least two sections disposed in parallel and being electrically interconnected to each other;
a gate insulative film arranged between said thin semiconductor film and said gate electrode; and source electrode or a drain electrode, said second electrode being arranged on both sides of said gate electrode; and
a third electrode comprising the other of said source electrode or said drain electrode, said third electrode being arranged between said two sections of said gate electrode, wherein at least a portion of one of said second electrode and said third electrode are overlapped with a portion of said gate electrode with respect to a plan view.

5,057,890
HALL ELEMENT
Urs Falk, Cham, and Radivoje Popovic, Zug, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland
Continuation of Ser. No. 397,384, Aug. 23, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 613,936
Claims priority, application Switzerland, Sep. 21, 1988, 3512/88
Int. Cl.[5] H01L *27/22*
U.S. Cl. 357—27 **7 Claims**



1. A Hall element comprising a single zone of homogenous semiconductor material having a cross-sectional plane and comprising a plurality of electrodes arranged in groups of four, wherein each group of four electrodes has first and second current electrodes and first and second sensor electrodes, wherein each group of four electrodes has cross-sections arranged point asymmetrically in the cross-sectional plane in relation to the center of the polygon along at least one side of said polygon, wherein the positions of said electrode cross-sections on a side of said polygon are approximately determined by conformal mappings of a fictitious group of non-overlapping cross-sections of fictitious electrodes equal in number to said plurality of electrodes and which are located in a fictitious plane on the circumference or a unit circle symmetrically with respect to the center of the unit circle, said fictitious electrodes being divided into groups of four equally spaced fictitious electrodes.

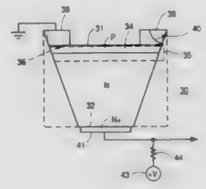
5,057,891
PLANAR HETEROJUNCTION AVALANCHE PHOTODIODE
Toshitaka Torikai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 302,132, Jan. 26, 1989, abandoned, which is a continuation of Ser. No. 863,908, May 16, 1986, abandoned. This application Feb. 12, 1991, Ser. No. 653,487
Claims priority, application Japan, May 20, 1985, 60-108634; May 21, 1985, 60-108661
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 357—30 **9 Claims**



1. A planar heterojunction avalanche photodiode (APD) including:
a first semiconductor layer of a first conductivity type for generating carriers by absorbing light;
a first semiconductor region of the first conductivity type overlying said first semiconductor layer for avalanche-multiplying the carriers injected from said first semiconductor layer, said first semiconductor region having at least a lower semiconductor layer, an intermediate semiconductor layer formed on said lower semiconductor layer and an upper semiconductor layer formed on said intermediate semiconductor layer wherein the impurity concentration of said upper semiconductor layer is lower than that of said intermediate semiconductor layer whose impurity concentration is lower than that of said lower semiconductor layer said intermediate semiconductor layer has a thickness of about 1 micron providing a substantially constant impurity concentration region and the bandgap of said first semiconductor region is greater than that of said first semiconductor layer;
a second semiconductor region of a second conductivity type, diffused in said first semiconductor region at a prescribed depth from the upper face of said first semiconductor region and forming a stepwise p-n junction on the interface with said first semiconductor region; and
a guard-ring of said second conductivity type, formed in said first semiconductor region by ion implantation from the upper face of said first semiconductor region and forming a linearly graded p-n junction with said first semiconductor region and reaching said lower semiconductor layer by extending through said upper and intermediate semiconductor layers.

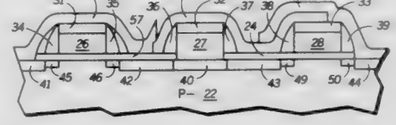
5,057,892
LIGHT RESPONSIVE AVALANCHE DIODE
Jan S. Iwanczyk, Los Angeles, Calif., assignor to Xsirius Photonics, Inc., Los Angeles, Calif.
Filed Sep. 14, 1990, Ser. No. 583,021
Int. Cl.[5] H01L *29/90, 27/14, 29/44*
U.S. Cl. 357—30 **7 Claims**

1. A semiconductor avalanche photodiode including a first large area surface and an edge surface, said photodiode including a rectifying PN junction in a plane parallel to said first surface, means for impressing a voltage across said PN junction to generate a space charge region, said photodiode also including a ring structure integral with said first surface and



defining an aperture for incident light wherein said edge surface and at least a portion of the edge of said ring structure form an angle with said first surface, said angle being between about five and fifteen degrees.

5,057,893
STATIC RAM CELL WITH SOFT ERROR IMMUNITY
David Sheng, and Yasunobu Kosa, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 28, 1990, Ser. No. 589,247
Int. Cl.[5] H01L *27/02;* **G11C** *11/00, 11/34*
U.S. Cl. 357—41 **3 Claims**



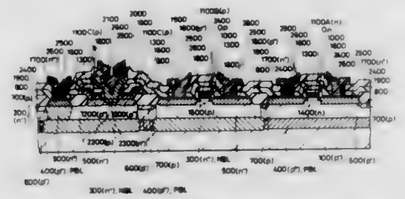
1. An integrated circuit having a semiconductor device structure formed in a substrate for use in a static random access memory cell in which a storage node of the static random access memory cell is formed in a first doped region in the substrate, comprising:
a first transistor having a source formed in a second doped region in the substrate, a drain formed in a third doped region in the substrate and connected to the first doped region, a gate formed over the substrate and between the second and third doped regions;
a second transistor having a first source/drain region formed in a fourth doped region, a second source/drain region formed in a fifth doped region connected to the first doped region, and a gate formed over the substrate and between the fourth and fifth doped regions;
a thin insulating layer over at least a first portion of the first doped region, wherein the thin insulating layer is of a thicknes less than 500 Angstroms; and
a first layer of conductive material connected to the source of the first transistor and overlying at least the portion of the thin insulating layer which is over the first portion of the first doped region.

5,057,894

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Takahide Ikeda, Tokorozawa; Kouichirou Yamada, Mitaka; Osamu Saito, Tokyo; Masanori Odaka, Kodaira; Nobuo Tamba, Ohme; Katsumi Ogiue, Hinode; Atsushi Hiraishi, Hitachi; Atsuo Watanabe, Hitachiohta; Mitsuru Hirao, Tohkai; Akira Fukami; Masayuki Ohayashi, both of Hitachi, and Tadashi Kuramoto, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 192,696, May 10, 1988, abandoned.
This application May 23, 1990, Ser. No. 526,696
Claims priority, application Japan, May 13, 1987, 62-116089; Aug. 31, 1987, 62-217095
Int. Cl.[5] H01L *27/02, 29/04, 29/10, 29/72*
U.S. Cl. 357—43 **14 Claims**



1. A semiconductor integrated circuit device having an NPN bipolar transistor and at least a P-channel MOSFET comprising:

a semiconductor body having a main surface and including active regions formed at said main surface;

an isolation region selectively formed on said main surface, which surrounds and separates said active regions from each other;

an intrinsic base region of the NPN bipolar transistor formed in a first active region;

an extrinsic base region of the NPN bipolar transistor formed in said first active region, which surrounds and is electrically connected to said intrinsic base region;

a base lead-out electrode of the NPN bipolar transistor formed on said extrinsic base region, which extends from said first active region to said isolation region, and which is made of a stacked conductor layer which includes a portion of a highly condutive p-type polycrystalline silicon layer and a portion of either a refractory metal layer or refractory metal silicide layer provided on an upper surface of said polycrystalline silicon layer;

a side wall made of an insulator provided on a side surface of said base lead-out electrode;

an emitter region of said NPN bipolar transistor formed in said intrinsic base region, which is provided in self-alignment to said side wall;

an emitter lead-out electrode of said NPN bipolar transistor formed on said emitter region, which is electrically connected to said emitter region and which extends over an insulating film formed on an upper surface of said base lead-out electrode;

a gate electrode of the P-channel MOSFET formed on a second active region through a gate insulating film, wherein said gate electrode is made of a stacked conductor layer which includes a different portion of said p-type polycrystalline silicon layer and a different portion of either said refractory metal layer or said refractory metal silicide layer provided thereon;

source and drain regions of the p-channel MOSFET formed in said second active region on both sides of said gate electrode; and

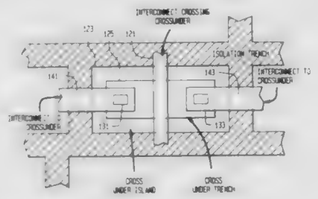
wherein said emitter lead-out electrode is electrically separated from said base lead-out electrode by said side wall, and wherein said highly conductive p-type polycrystalline silicon layer portion of said base lead-out electrode is electrically connected to said extrinsic base region.

5,057,895

TRENCH CONDUCTOR AND CROSSUNDER ARCHITECTURE

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 6, 1990, Ser. No. 563,276
Int. Cl.[5] H01L *27/12, 29/06, 29/04, 23/48*
U.S. Cl. 357—49 **55 Claims**



1. A semiconductor device comprising:

a semiconductor substrate subdivided by a trench pattern into a plurality of spaced-apart islands, such that respective ones of spaced-apart islands are surrounded laterally by respective continuous portions of said trench pattern, said spaced-apart islands being electrically isolated from one another, a first of said islands having a first contact region to be electrically connected to a second contact region of a second of said islands;

a first conductive layer overlying the surface of said substrate between said first and second regions;

conductive material formed in at least a first potion of said trench pattern underlying said first conductive layer and extending to first and second locations in said trench pattern; and

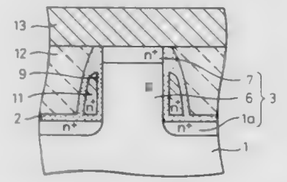
second and third conductive layers providing respective electrical connections between said first region and said first location in said trench and between said second region and said second location in said trench.

5,057,896

SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING SAME

Hiroshi Gotou, Saitama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 30, 1989, Ser. No. 357,809
Claims priority, application Japan, May 28, 1988, 63-129463
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—49 **11 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having an upper, major surface and a pillar-like portion, the pillar-like portion extending upwardly from said upper, major surface to a first height, said pillar-like portion having circumferential side wall surfaces of said first height, generally transverse to and forming corresponding junctures with said upper major surface, and a flat, top surface at said first height and generally parallel to said upper, major surface;

a first insulating layer of uniform thickness comprising integral, upper major, sidewall and juncture portions of uniform thickness and respectively formed on and covering said upper major surfaces of said substrate, said circumferential side wall surfaces of said pillar-like portion, and said corresponding junctures therebetween;

a first conductor formed on the first insulating layer in surrounding relationship relative to the pillar-like portion, the first conductor including integral and continuous base and upper portions extending, in succession, from the juncture portions and upwardly along said sidewall portions of said first insulating layer to a second height, less than the first height and defining an upper edge of said first conductor at the second height and remaining, exposed sidewall portions of the first insulating layer extending upwardly from said upper edge of said first conductor to said flat top surface of said pillar-like portion, and said base portion of said first conductor extending outwardly from each of said juncture portions of said first insulating layer and along said upper, major surface portion of said first insulating layer by a third distance and defining a bottom, outer edge of said first conductor and remaining, exposed upper major portions of said first insulating layer, said first conductor correspondingly having integral, upper and lower exposed surface portions respectively corresponding to said upper and base portions and extending from said upper edge and to said bottom, outer edge of said first conductor;

a second insulating layer of integral, upper and lower portions respectively formed on and covering the upper and lower exposed surface portions of said first conductor, said second insulating layer lower portion having a second, lower edge, at said bottom, outer edge of said first conductor, connected to said upper major portion of said first insulating layer and said second insulating layer upper portion having a second, upper edge, at said upper edge of said first conductor, connected to said remaining, exposed sidewall portions of said first insulating layer, said second insulating layer upper portion being of greater thickness than the thickness of said second insulating layer lower portion, and said second insulating layer having an exposed, outer surface;

a third insulating layer formed on said exposed, outer surface of said second insulating layer, said remaining, exposed sidewall and upper major portions of said first insulating layer said third insulating layer having an exposed, upper surface substantially coplanar with said flat, top surface of said pillar-like portion; and

a second, elongated conductor including a first portion aligned with and formed on said top, flat surface of said pillar-like portion and electrically connected thereto, and a second portion formed on and extending along said upper, exposed surface of said third insulating layer.

5,057,897

CHARGE NEUTRALIZATION USING SILICON-ENRICHED OXIDE LAYER

Subhash R. Nariani, Tracy, and Dipankar Pramanik, Union City, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 5, 1990, Ser. No. 476,089
Int. Cl.[5] H01L *29/34*
U.S. Cl. 357—54 **8 Claims**

4. An integrated circuit structure comprising:

a substrate having active regions defined therein and field oxides grown thereon for electrically isolating said active regions;

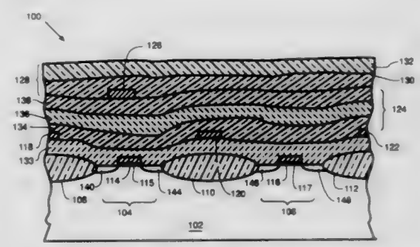
first-level conductive elements formed on said substrate;

a intermetal dielectric formed over said substrate and said first-level conductive elements, said intermetal dielectric including

a silicon-enriched first intermetal oxide layer,

an organic-glass planarization layer formed on said silicon-enriched oxide layer;

second level conductive elements formed on said multilayer dielectric; and



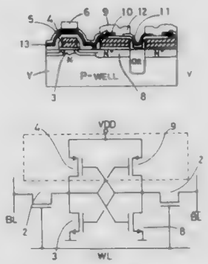
a passivation structure formed over said second level conductive elements and said intermetal dielectric, said passivation structure including a nitride passivation layer.

5,057,898

DOUBLE-GATED SEMICONDUCTOR MEMORY DEVICE

Alberto O. Adan, Tenri; Koji Fujimoto, Sakurai, and Jun Kudo, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Nov. 20, 1990, Ser. No. 616,242
Claims priority, application Japan, Nov. 24, 1989, 1-306214
Int. Cl.[5] H01L *29/04, 27/02, 27/01;* **G11C** *11/00*
U.S. Cl. 357—59 **9 Claims**



1. A semiconductor memory device which comprises a static random access memory cell comprising a flip flop circuit composed of a pair of inverters connected with each other and each having a node, and a pair of MOS access transistors each connecting the nodes of the inverters with a pair of bit lines,

the pair of inverters each comprising a bulk MOS transistor formed in a semiconductor substrate and having a first gate electrode on the substrate, and a complementary type MOS transistor stacked over and connected with the bulk MOS transistor, and forming the inverter load,

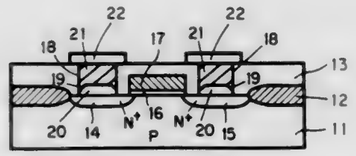
the complementary type MOS transistor being composed of a first insulating film, a semiconductor active layer, a second insulating film and a second gate electrode, laminated upwardly in this order on the first gate electrode of the bulk MOS transistor.

5,057,899

SEMICONDUCTOR DEVICE WITH IMPROVED WIRING CONTACT PORTION

Shuichi Samata, and Yoshiaki Matsushita, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 13, 1990, Ser. No. 552,056
Claims priority, application Japan, Aug. 29, 1989, 1-222678
Int. Cl.[5] H01L *21/40*
U.S. Cl. 357—68 6 Claims



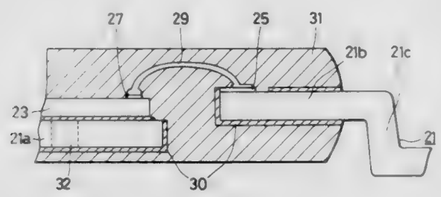
1. A semiconductor device having a wring contact portion comprising:
- a semiconductor layer of first conductivity type, including a surface area;
- an impurity layer of second conductivity type in the surface area of the semiconductor layer;
- an insulating layer on the semiconductor layer including a discontinuity therein at a location corresponding to at least a part of the impurity layer;
- a monocrystalline silicon layer on a portion of the impurity layer defined by the discontinuity;
- a non-monocrystalline silicon layer on the monocrystalline silicon layer;
- a facet on an upper surface of said monocrystalline layer with the facet extending within said discontinuity to a depth less than a depth of said discontinuity; and
- a wiring layer on the non-monocrystalline silicon layer.

5,057,900

ELECTRONIC DEVICE AND A MANUFACTURING METHOD FOR THE SAME

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1989, Ser. No. 417,319
Claims priority, application Japan, Oct. 17, 1988, 63-261963; Oct. 17, 1988, 63-261964
Int. Cl.[5] H01L *23/48*
U.S. Cl. 357—70 4 Claims



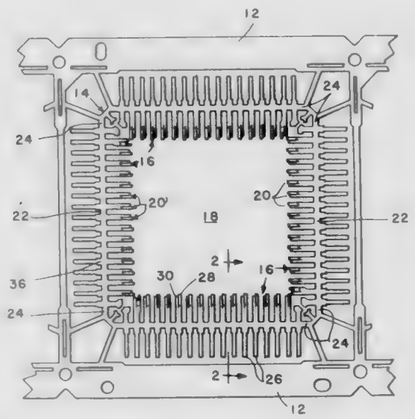
1. An electronic device comprising:
- a lead frame;
- a device proper mounted on the lead frame;
- wiring for making electrical contacts between said device proper and lead frame; and
- a package enclosing the lead frame and the device proper, said lead frame being coated with an inorganic film except for said device proper and said wiring electric contacts.

5,057,901

LEAD FRAME FOR SEMI-CONDUCTOR DEVICE

Baron E. Abel, Wrightsville, and David L. Archer, Harrisburg, both of Pa., assignors to Die Tech, Inc., York Haven, Pa.

Continuation of Ser. No. 413,192, Sep. 27, 1989, abandoned. This application Oct. 19, 1990, Ser. No. 599,262
Int. Cl.[5] H01L *23/48*
U.S. Cl. 357—70 9 Claims



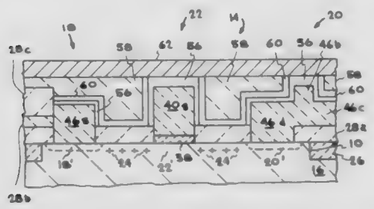
1. An integral normally flat lead frame for forming connections on opposite sides of a flat substrate; the lead frame including a pair of opposed parallel strips having ends opposite each other; integral strip means for joining the adjacent ends of the strips; a first row of elongate parallel leads integrally joined to one strip by hinge connections and extending toward the other strip and a second row of parallel leads integrally joined to the other strip by hinge connections and extending toward the first strip, the rows of leads being spaced apart to define a central opening; a clip on the end of each lead, each clip including a first arm on one side of the frame and a second arm on the other side of the frame spaced a distance apart from the first arm to define a mouth facing the central opening, each first arm including a free end adjacent the central opening, an initial substrate contact surface and a convex final substrate contact surface with the final substrate contact surface being located between the initial substrate contact surface and the free end of the arm, each second arm including a free end adjacent the central opening, an initial contact surface and a final contact surface with the initial contact surface being located between the free end and the final contact surface; such leads being rotatable relative to the remainder of the frame to position the clips in an initial substrate insertion position on said one side of the frame above the remainder of the frame, an intermediate substrate insertion position located below the initial position and a final substrate insertion position in the plane of the frame so that when in the initial substrate insertion position the clips open upwardly at an angle above the frame and the initial contact surfaces of the second arms in the rows of leads are spaced closer together than the first arms in the rows of leads to permit free movement of a substrate located above the frame down past the first arms and onto the support surfaces of the second arms, when in the intermediate insertion position the initial contact surfaces of the first arms of both rows engage the upper corners of the substrate and the final contact surfaces are free of and above the substrate, and when in the final insertion position the final contact surfaces of both arms engage the top and bottom surfaces of the substrate inwardly of the substrate corners.

5,057,902

SELF-ALIGNED SEMICONDUCTOR DEVICES

Jacob D. Haskell, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 127,820, Dec. 2, 1987, abandoned. This application May 11, 1989, Ser. No. 352,708
The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.
Int. Cl.[5] H01L *27/04*
U.S. Cl. 357—71 19 Claims



1. A field effect transistor comprising source, drain, and gate regions formed in a major surface of a semiconductor substrate, said semiconductor substrate provided with (1) source and drain contacts to said source and drain regions, respectively, and (2) a gate electrode overlying a gate oxide overlying said gate region, characterized by
- (a) said source, gate, and drain contacts comprising vertically-disposed plugs comprising a conducting material, disposed in openings formed in insulating material formed on said substrate, said openings defined by substantially perpendicular walls, said conducting material contacting said semiconductor surface in the case of said source and drain contacts and contacting said gate oxide in the case of said gate contact, at least some of which plugs terminate to form a coplanar surface in an area above said substrate surface and substantially parallel to said substrate, at least one of said plugs contacted by a planar contact;
- (b) at least two of said plurality of plugs having a similar lateral dimension in at least one direction parallel to said substrate at said major surface; and
- (c) said insulating layer comprising a multilayer structure comprising
  - (1) a first layer consisting essentially of an oxide,
  - (2) a second layer consisting essentially of an etch-stop material having a significantly different etch rate than said oxide of said first layer, and
  - (3) a third layer consisting essentially of an oxide.

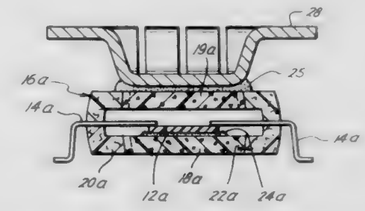
5,057,903

THERMAL HEAT SINK ENCAPSULATED INTEGRATED CIRCUIT

Michael A. Olla, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 380,968, Jul. 17, 1989, abandoned. This application Nov. 8, 1990, Ser. No. 611,391
Int. Cl.[5] H01L *11/00, 23/30*
U.S. Cl. 357—72 3 Claims

1. An encapsulated integrated circuit comprising,
- an integrated circuit die having a plurality of electrical leads extending from the die,
- a thermal heat sink positioned adjacent the die, but out of contact from the leads, said heat sink including a thermoplastic material having a plurality of thermoconductive particles molded therein wherein the heat sink is filled approximately 40 to 60 percent with metal particles,
- a non-electrically conductive thermoplastic material sealably bonded to the heat sink, said plastic material forming a housing enclosing the die and said leads sealably extending through the thermoplastic material, and



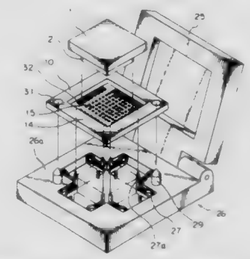
wherein the heat sink and the second thermoplastic material have coacting interlocking mating interfaces for mechanically locking the heat sink to the thermoplastic material.

5,057,904

SOCKET UNIT FOR PACKAGE HAVING PINS AND PADS

Mitsuki Nagato, Kawasaki, and Thutomu Yoshizaki, Yokosuka, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

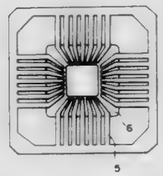
Filed Mar. 7, 1989, Ser. No. 319,713
Claims priority, application Japan, Mar. 18, 1988, 63-063621
Int. Cl.[5] H01L *23/12, 23/14, 23/04*
U.S. Cl. 357—74 6 Claims



1. A package and socket unit for testing a pin grid array package comprising:
- a pin grid array package having an array of pins and a plurality of pads electrically connected to certain of said pins, said pads surrounding an area in which said pins are arranged; and
- a socket having contact elements adapted to be electrically connected to said pads and a chamber in which said pins are received without contact between said pins and the inside walls of said chamber when said package is mated with said socket; said chamber having a depth which is greater than the length of said pins.

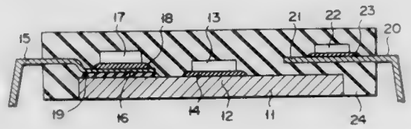
5,057,905
CONTAINER PACKAGE FOR SEMICONDUCTOR ELEMENT
Hiroshi Matsumoto, and Hiroaki Inokuchi, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan
Filed Aug. 24, 1990, Ser. No. 573,406
Claims priority, application Japan, Aug. 25, 1989, 1-219228; Nov. 27, 1989, 1-308595; Nov. 27, 1989, 1-308596; Nov. 27, 1989, 1-308597; Nov. 27, 1989, 1-308598; Nov. 27, 1989, 1-308599; Nov. 27, 1989, 1-308600; Nov. 27, 1989, 1-308602; Nov. 27, 1989, 1-308608; Nov. 27, 1989, 1-308609; Nov. 27, 1989, 1-308613; Nov. 27, 1989, 1-308614; Nov. 30, 1989, 1-312725; Nov. 30, 1989, 1-312728; Nov. 30, 1989, 1-312729; Nov. 30, 1989, 1-312730; Nov. 30, 1989, 1-312726
Int. Cl.[5] H01L *23/54, 23/10*
U.S. Cl. 357—74 **31 Claims**





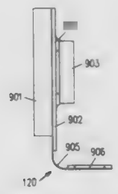
1. A container package for a semiconductor element, which comprises an insulating vessel having in the interior thereof a space for containing a semiconductor element, which comprises an insulating substrate and a lid member, an external lead terminal for connecting the semiconductor element contained in the vessel to an electric circuit and a sealing agent for sealing the vessel and external lead terminal, wherein the external lead terminal is composed of an electroconductive material having a permeability less than 210 (CGS), a thermal expansion coefficient of from 5×10^{-6} to 12×10^{-6}/°C., and an electroconductivity of at least 10%.

5,057,906
PLASTIC MOLDED TYPE SEMICONDUCTOR DEVICE
Toshio Ishigami, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 18, 1990, Ser. No. 524,883
Claims priority, application Japan, May 22, 1989, 1-128313
Int. Cl.[5] H01L *23/36, 23/50*
U.S. Cl. 357—80 **4 Claims**



1. A plastic molded type semiconductor device comprising:
a first semiconductor chip mounting region formed on a radiation fin;
a first semiconductor chip mounted on said first semiconductor chip mounting region by an adhesive member;
a first lead frame with an end portion located on said radiation fin;
a second semiconductor chip mounting region formed of a part of said first lead frame, said part being bent toward the first semiconductor chip mounting region;
a second semiconductor chip mounted on said second semiconductor chip mounting region via a first conductive adhesive member;
an insulating member provided between and thermally bonded to a lower surface of said second semiconductor chip mounting region and an upper surface of said first semiconductor chip mounting region;
a second lead frame distinct from said radiation fin;
a third semiconductor chip mounted on said second lead frame via a second conductive adhesive member; and
a plastic molded member for housing said first, second, and third semiconductor chips therein.

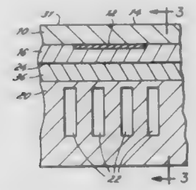
5,057,907
METHOD AND STRUCTURE FOR FORMING VERTICAL SEMICONDUCTOR INTERCONNECTION
Boon K. Ooi, Cupertino; Shiann-Ming Liou, Campbell; Ka-Heng The, Los Altos, and Norman L. Gould, San Jose, all of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.
Filed Jun. 11, 1990, Ser. No. 535,838
Int. Cl.[5] H01L *39/02, 23/28, 23/48*
U.S. Cl. 357—80 **6 Claims**



1. A semiconductor device package comprising:
a substrate including a first surface; and
a plurality of individual integrated circuit tape assemblies electrically and physically mounted on said substrate, each of said individual integrated circuit tape assemblies comprising:
a first tape portion having a first surface including metallic interconnects to which is inner lead bonded an integrated circuit, said first tape portion being disposed such that said first surface is at a selected non zero angle from said first surface of said substrate;
a second tape portion having a first surface including metallic interconnects which are outer lead bonded to said first surface of said substrate; and
a formed portion connecting said first and second tape portions, said formed portion serving to cause said first tape portion to be disposed at said selected non zero angle from said second tape portion, said formed portion comprising metallic interconnects and being substantially devoid of said tape.

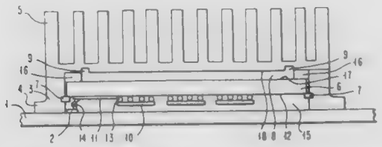
5,057,908
HIGH POWER SEMICONDUCTOR DEVICE WITH INTEGRAL HEAT SINK
Robert J. Weber, Boone, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Jul. 10, 1990, Ser. No. 550,863
Int. Cl.[5] H01L *39/02*
U.S. Cl. 357—81 **8 Claims**

1. A high power semiconductor device with integral heat sink comprising, in combination:
an integrated circuit having a substrate and an active semiconductor region formed on one surface of the substrate;
an AlN monolithic thin film grown on the said one surface overlying the active semiconductor region, the AlN thin film having a sufficiently low impurity content to cause said thin film to function as a low thermal resistance heat conductor removing heat from the active semiconductor region with which said thin film is in contact; and



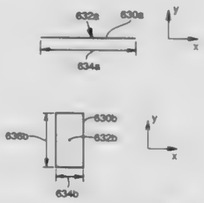
a microchannel heat sink in thermal contact with the AlN thin film, the microchannel heat sink being supplied with a source of cooling fluid for conducting heat away from the microchannel heat sink.

5,057,909
ELECTRONIC DEVICE AND HEAT SINK ASSEMBLY
Lawrence S. Mok, Yorktown Heights, N.Y.; Robert E. Schwall, Ridgefield, Conn., and Ho-Ming Tong, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 472,501, Jan. 29, 1990, abandoned. This application Jan. 28, 1991, Ser. No. 646,489
Int. Cl.[5] H01L *23/02, 23/16;* **H02B** *1/00;* **H05K** *7/20*
U.S. Cl. 357—81 **8 Claims**



1. A structure comprising:
a wafer member having essentially parallel first and second faces,
at least one semiconductor electronic device chip mounted on said first face of said wafer member,
a heat dissipation means having a portion thereof essentially parallel to and essentially coextensive with said second face of said wafer member,
a spacer member disposed along the edge portions of said second face of said wafer member,
said wafer member, said heat dissipation means and said spacer being so positioned that a closed cavity is formed between said second face of said wafer member and said essentially parallel portion of said heat dissipation means, said cavity being bounded by said spacer,
a thermally conductive and flowable material filling said cavity, and,
a reservoir means into which said thermally conductive and flowable material can flow on expansion.

5,057,910
METHOD OF DISPLAYING VIDEO SIGNAL PHASE CHARACTERISTICS
John L. Judge, Hillsboro, Oreg., assignor to Magni Systems, Inc., Beaverton, Oreg.
Division of Ser. No. 285,775, Dec. 16, 1988, Pat. No. 4,941,035, which is a continuation-in-part of Ser. No. 17,314, Feb. 20, 1987, Pat. No. 4,792,845. This application Mar. 1, 1990, Ser. No. 487,463
Int. Cl.[5] H04N *17/02*
U.S. Cl. 358—10 **13 Claims**



1. In a system that measures the phase angle between the horizontal synchronization pulse and the color synchronization burst signal of a color video signal, a method of displaying the value of the phase angle on a video monitor display screen, comprising:
selecting on the display screen of the video monitor an image location at which the value of the phase angle is displayed; and
forming on the display screen an image that has a length along a first axis passing through the image location and that has a light intensity, the length and the light intensity being proportional to the value of the phase angle.

8. In a system that measures the phase angle between the horizontal synchronization pulse and the color synchronization burst signal of a color video signal, the system being capable of detecting a mismatch between the color frame sequences of a color video signal and a color video reference signal, a method of displaying the value of the phase angle on a video monitor display screen, comprising:
selecting on the display screen of the video monitor an image location at which the value of the phase angle is displayed;
forming on the display screen an image that has a length along a first axis passing through the image location and that has a light intensity, wherein one of the length or the light intensity is proportional to the value of the phase angle; and
providing a time-dependent variation in the length or light intensity of the image whenever a color frame mismatch is detected.

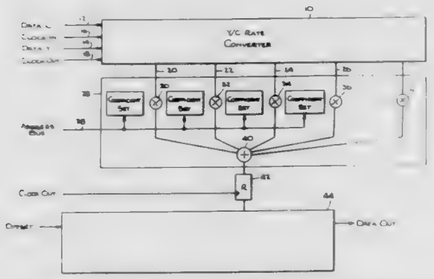
5,057,911
SYSTEM AND METHOD FOR CONVERSION OF DIGITAL VIDEO SIGNALS
Kevin Stec, Medford, and Jerome D. Shields, Atco, both of N.J., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 19, 1989, Ser. No. 424,829
Int. Cl.[5] H04N *11/20*
U.S. Cl. 358—11 **3 Claims**

1. A system for converting a digital video signal from a first signal format to a second signal format comprising:
(a) a plurality of first registers for receiving the chroma components of the digital video signal in the first signal format applied thereto at the clock frequency of the first signal format;
(b) a plurality of second registers for receiving the luminance components of the digital video signal in the first signal format applied thereto at the clock frequency of the first signal format;
(c) means coupled to receive alternately the outputs of said

first and second sets of registers to produce at the output thereof data samples of the chroma and luminance components of the digital video signal at the clock frequency of said second signal format;

(d) means for providing coefficient data signals;

(e) means for receiving coefficient data signals and said data samples of the chroma and luminance components of the



digital video signal at the clock frequency of said second signal format to produce alternately coefficient modified chroma and luminance components for said video signal in said second signal format; and

(f) means for combining said coefficient modified chroma and luminance components to produce chroma and luminance signals in said second signal format.

5,057,912

CATHODE-RAY TUBE WITH INTERFERENCE FILTER AND PROJECTION TELEVISION SYSTEM EMPLOYING SAME

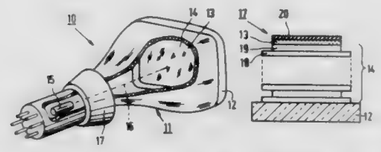
Dagobert M. De Leeuw; Dirk B. M. Klaassen, and Cornelis A. H. A. Mutsaers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 10, 1990, Ser. No. 550,595

Claims priority, application Netherlands, Jul. 10, 1989, 8901752

Int. Cl.[5] H04N *9/160, 9/18*

U.S. Cl. 358—64 **22 Claims**



1. A projection television system comprising at least one cathode-ray tube, a lens system and a screen, the tube having a face plate, a display screen coated with a blue cathodoluminescent phosphor containing ZnS:Ag, and an interference filter arranged between the face plate and the display screen, characterized in that the radiation emitted by the phosphor has a chromaticity having a y-coordinate located in the range between approximately 0.065 and 0.11.

5,057,913

HARD COPY SIMULATOR WITH STORED DATA TO CORRECT FOR LIGHTING CONDITIONS

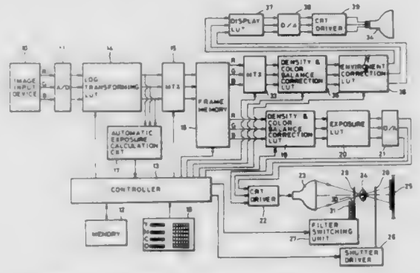
Yoshikatsu Nagata, and Kazuo Shiota, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 20, 1989, Ser. No. 368,639

Claims priority, application Japan, Jun. 20, 1988, 63-151834

Int. Cl.[5] H04N *1/21, 1/23, 1/46*

U.S. Cl. 358—302 **13 Claims**



1. A hard copy simulator comprising:

means for simulating a hard copy to be made;

a color monitor for displaying a simulated image simulating said hard copy; and

correction means for correcting said simulated image, said correction means comprising:

first means for storing a first look-up table containing data on lighting conditions where said color monitor is installed;

second means for storing a second look-up table containing data on density and color balance for said simulated image; and

means for correcting said simulated image in accordance with said lighting conditions where said color monitor is installed based on a content of said first means independently of said second means.

5,057,914

METHOD OF PROCESSING COLORED IMAGE IN MULTILEVEL GRADATIONS

Katsuhisa Tsuji, and Masaaki Kogure, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1988, Ser. No. 267,372

Claims priority, application Japan, Nov. 5, 1987, 62-279860

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—78 **10 Claims**



1. A method of processing of colored image in multilevel gradations in a digital image forming system for producing a halftone image using a plurality of colors through a multilevel area gradation process, said method comprising the steps of:

producing multilevel gradation process data for data of different colors derived from said colored image;

employing fewer multilevels for the process data of one of the colors than those for the other colors so as to reduce the capacity required of a delay memory; and

storing the multilevel data of said colorant data in said delay memory.

5,057,915

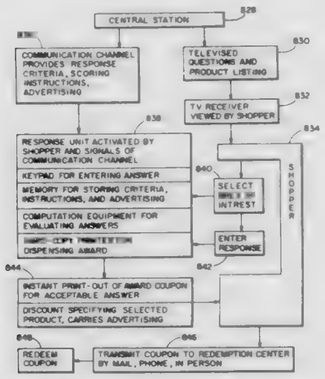
SYSTEM AND METHOD FOR ATTRACTING SHOPPERS TO SALES OUTLETS

Henry Von Kohorn, 945 Treasure La., Vero Beach, Fla. 32963

Continuation-in-part of Ser. No. 424,089, Oct. 19, 1989, which is a continuation-in-part of Ser. No. 192,355, May 10, 1988, Pat. No. 4,926,255, which is a continuation-in-part of Ser. No. 837,827, Mar. 10, 1986, Pat. No. 4,745,468. This application Oct. 25, 1990, Ser. No. 603,882

Int. Cl.[5] H04H *9/00*

U.S. Cl. 358—84 **36 Claims**



1. A method for attracting shoppers to sales outlets comprising the steps of:

a first transmitting step for transmitting electronic signals coveying a task-setting message from a central location to shoppers' remote locations;

receiving said task-setting message at shoppers' remote locations;

presenting said task-setting message at shoppers' remote locations;

entering of a response to a task-setting message by a shopper at a remote location;

formulating response criteria defining a prize-winning response to a task, said response criteria including a period of time allowed for entering a response ans a basis for scoring a prize-winning response;

a second transmitting step for transmitting electronic signals conveying response criteria from a central location to shoppers' remote locations;

comparing shoppers' responses with said response criteria;

identifying a shopper's prize-winning response meeting said response criteria;

scoring a prize-winning response in accordance with said scoring basis;

compiling at a central location information relative to products available to prize-winning shoppers at a sales outlet;

transmitting electronic signals conveying said product information from a central location to shoppers' remote locations;

receiving said product information signals at shoppers' remote locations;

presenting said product information at shopper's remote locations;

selecting a product by said shopper from said available products;

generating a hard copy record bearing an indication of a scored prize and of a selected product, said prize being available to a prize-winning shopper upon purchase of said selected product at a sales outlet; and

dispensing said record to a prize-winning shopper.

5,057,916

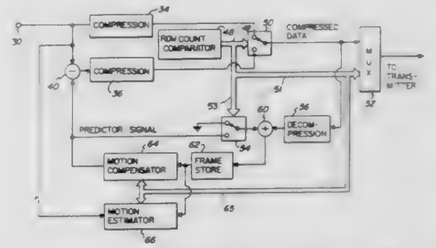
METHOD AND APPARATUS FOR REFRESHING MOTION COMPENSATED SEQUENTIAL VIDEO IMAGES

Edward Krause, San Diego; Woo H. Paik, Encinitas; Vincent C. Liu, San Diego; Jerrold A. Heller, Del Mar; Paul Shen, and James N. Esserman, both of San Diego, all of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

Filed Nov. 16, 1990, Ser. No. 614,939

Int. Cl.[5] H04N *7/18, 7/12*

U.S. Cl. 358—105 **20 Claims**



1. A method for refreshing motion compensated video images comprising the steps of:

obtaining a set of successive video images to be refreshed;

processing said video images using motion compensation to reduce the amount of data required to transmit the images to a receiver;

processing different regions in a plurality of said video images without motion compensation during a refresh cycle, whereby an image area defined by the aggregate of said regions is progressively refreshed by the non-motion compensated processing during said refresh cycle; and

controlling the motion compensation process of said video images to prevent data contained in regions not yet refreshed during a current refresh cycle from corrupting data contained in regions that have been refreshed during the current refresh cycle.

5,057,917

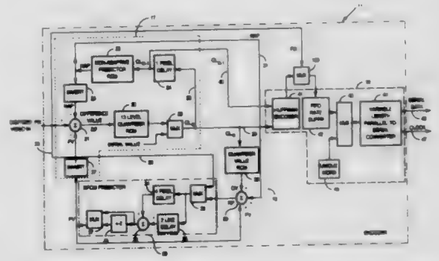
REAL-TIME DATA COMPRESSION OF BROADCAST VIDEO SIGNALS

Mary Jo W. Shalkauser, North Olmstead; Wayne A. Whyte, Jr., Olmstead Township, both of Ohio, and Scott P. Barnes, Santa Monica, Calif., assignors to The United States of America as represented by the administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 540,976, Jun. 20, 1990. This application Nov. 9, 1990, Ser. No. 611,214

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—135 **19 Claims**



1. An improved differential pulse code modulation system

for data compression of a digitized video signal (PIX) comprising:

means for generating QL_N and QL_{N-1} signals and a non-adaptive predicator value NAP signal;

means for combining and value quantizing the QL_N signal and the NAP signal to produce a reconstructed pixel RP signal;

means for operating on the RP signal and the PIX signal to produce a PV predicted value PV signal for said means for producing QL_N and QL_{N-1} signals and a NAP signal; and,

multilevel Huffman encoder means for operating on the QL_N and QL_{N-1} signals to produce coded serial data and clock pulses;

5,057,918

ARRANGEMENT FOR ENCODING TWO-DIMENSIONAL INFORMATION, GROUPED IN PERIODICAL INFORMATION CLUSTERS USING MOTION VECTOR PROCESSING IN A HYBRID DPCM ENCODER

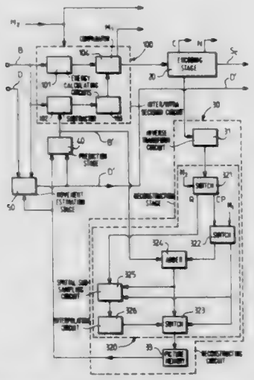
Pascal Denoyelle, Creteil, and Mohammad-Rèza Haghiri, Sceaux, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 6, 1990, Ser. No. 578,984

Claims priority, application France, Sep. 15, 1989, 89 12115; Sep. 15, 1989, 89 12116; Sep. 15, 1989, 89 12117

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—135 **8 Claims**



1. An arrangement for encoding two-dimensional information grouped in periodical information clusters of the picture type, which arrangement comprises

(a) a variable length encoding stage;

(b) a reconstruction stage coupled to said encoding stage and adapted to carry out on the signals present at its junction point with said encoding stage the inverse operations of those already carried out at said junction point on the input signals of said encoding stage;

(c) a stage for estimating the movement per block bounded within said information clusters;

(d) a stage for prediction based on the output signals of said reconstruction and movement estimation stages; said encoding arrangement being characterized in that:

(A) the movement estimation stage is adapted to receive a series of input signals of a specific row from said arrangement and first information components relating to the movement between said signals and, with respect to said input signals, being representative of non-transmitted complementary signals of the opposite row, and adapted to supply from said signals and information components second movement information components which in said series of input signals are representative of an input signal which follows a previous input signal and is supplied to said prediction stage;

(B) the prediction stage is followed by a selection stage for selecting signals to be encoded in said encoding stage from the input signals of the arrangement on the one hand and the output signals of said prediction stage on the other hand;

(C) the reconstruction stage comprises a path for additional processing when the input signals of the arrangement are accompanied by additional information components.

5,057,919

PICTURE SIGNAL INTERPOLATION CIRCUIT WITH GAMMA COMPENSATION

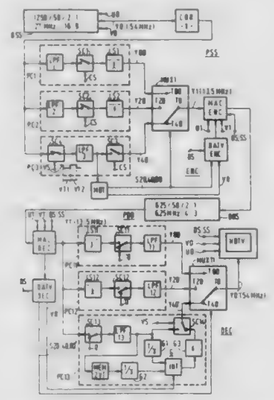
Gerard de Haan; Gerrit F. M. de Poortere, and Johannes P. J. Tielemans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1990, Ser. No. 505,209

Claims priority, application Netherlands, Apr. 12, 1989, 8901009

Int. Cl.[5] H04N *7/12, 9/69, 5/202, 9/79*

U.S. Cl. 358—136 **10 Claims**



1. Picture signal interpolation circuit, comprising:

means for receiving a picture signal encoded in accordance with a field skipping method, and

means coupled to said receiving means for interpolating said picture signal to obtain interpolated fields between a plurality of received fields of said picture signal, wherein said picture signal interpolation circuit is provided with a gamma compensation circuit.

5,057,920

VIDEO SIGNAL CLAMPING CIRCUIT OPERATING IN THE DIGITAL DOMAIN FOR REMOVING EXCESS NOISE ON THE BLACK LEVEL AND FOR PROVIDING D C RESTORATION

James H. Wilkinson, Tadley, England, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 31, 1990, Ser. No. 472,839

Claims priority, application United Kingdom, Feb. 28, 1989, 8904508

Int. Cl.[5] H04N *5/16, 5/18, 5/14*

U.S. Cl. 358—171 **7 Claims**

1. A video signal clamping circuit comprising:

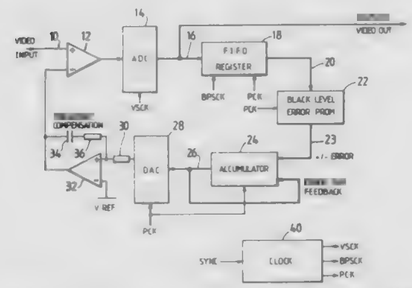
analog-to-digital converter means for converting an analog input video signal to a plurality of digital samples taken at a sampling frequency;

storage means for storing at least some of said plurality of digital samples during a portion of a horizontal blanking interval of the input video signal during which the signal is at a black level;

an error signal generator operative to generate a digital error signal representing any deviation between one of said plurality of digital samples supplied thereto from said storage means and a reference black level;

an accumulator operative to accumulate digital error signals supplied thereto by said error signal generator to produce an accumulated digital error signal;

a digital-to-analog converter for converting said accumulated digital error signal to an analog error signal;



clock means for controlling the supply of said stored plurality of digital samples in sequence from said storage means to said error signal generator such that said stored plurality of digital samples are supplied, during a line-active period that follows said horizontal blanking interval, at a clock frequency which is less than said sampling frequency; and

combining means for combining said analog error signal with said input video signal such that the black level of said input video signal approaches said reference black level.

5,057,921

PROCESS AND DEVICE FOR TEMPORAL IMAGE INTERPOLATION, WITH CORRECTED MOVEMENT COMPENSATION

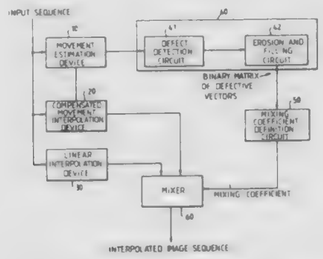
Philippe Robert, and Pascal Basset, both of Rennes, France, assignors to Thomson Consumer Electronics, Courbevoie, France

Filed Mar. 21, 1990, Ser. No. 496,930

Claims priority, application France, Mar. 31, 1989, 89 04256

Int. Cl.[5] H04N *7/01*

U.S. Cl. 358—140 **15 Claims**



1. Process for temporal image interpolation, with corrected movement compensation, comprising the steps of:

forming an interpolated image by compensated movement interpolation of parent images using a movement vector field for points of the image to be interpolated, movement characteristics of a current point of the image to be interpolated being determined from movement characteristics of respective corresponding points in the parent images, wherein the movement characteristic of the current point is represent by a movement vector, assigned to the current point, which supplies addresses of the corresponding points in the parent images,

performing consistency analysis of the movement vector field of the image to be interpolated to detect inconsistencies in the movement vector field for points of the image to be interpolated, and

correcting the compensated movement interpolation for points of the image to be interpolated for which inconsistencies have been detected in the movement vector field.

5,057,922

BLACK LEVEL CLAMPING CIRCUIT INCLUDING VIDEO OUTPUT STAGE

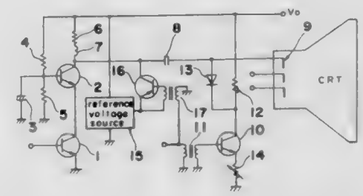
Toshio Kanai, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1990, Ser. No. 581,752

Claims priority, application Japan, Sep. 13, 1989, 1-237776

Int. Cl.[5] H04N *5/18*

U.S. Cl. 358—172 **4 Claims**



1. A black level clamping circuit for use in a video output stage of a cathode-ray tube (CRT) comprising:

an output transistor of a video output circuit;

an coupling capacitor for capacitively coupling a collector of said output transistor to a cathode of the CRT;

a keyed clamping circuit connected to an output of said coupling capacitor so as to change a DC component of a cathode voltage of said CRT, and

a reference voltage source having an electrical potential equal to the potential of a black level of an output signal of said output transistor;

wherein said coupling capacitor is charged by said reference voltage source during at least a clamping period of said keyed clamping circuit.

5,057,923

IMAGE PICKUP DEVICE CAPABLE OF PICKING UP IMAGES WHILE ELECTRONICALLY ENLARGING THE SAME

Noboru Matsuda, Tochigi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1990, Ser. No. 503,153

Claims priority, application Japan, Apr. 4, 1989, 1-86179

Int. Cl.[5] H04N *3/223, 9/64*

U.S. Cl. 358—180 **9 Claims**

1. An image pickup device capable of picking up images of an object while electronically enlarging the same in an enlarging image pickup mode, relative to that of a normal image pickup mode, comprising:

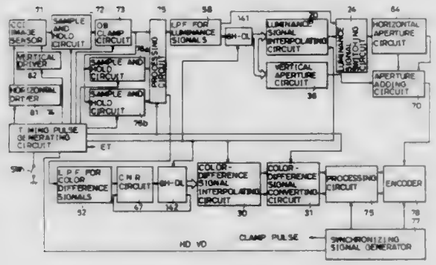
image pickup means for picking up images of the object and for producing video signals; and

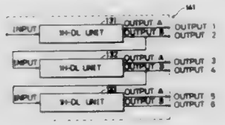
a plurality of horizontal scanning period delay means for delaying said produced video signals by n horizontal scanning periods, connected in series to sequentially delay the produced video signals by 0 to n, n being an integer corresponding to the number of horizontal scanning period delay means, and individually output the delayed video signals,

each of said plurality of horizontal scanning period delay means including,

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switching means for switching between a first and second input, to receive the produced video signals, the switching means being set to the first input and outputting said received video signals, in the normal image pickup mode, and being alternately set to the first input and to a second input, for every one horizontal scanning period, and outputting, received the video signals, in the enlarging image pickup mode,





one horizontal scanning period delay means for delaying the output video signals of said switching means by only one horizontal scanning period, and

gain control means for controlling gain of the delayed output video signals of said one horizontal scanning period delay means and applying the gain controlled delayed output video signals to the second input of said switching means.

5,057,924

ELECTRONIC STILL CAMERA FOR CONVERTING AND RECORDING STILL IMAGE SIGNAL INTO A PLURALITY OF STREAMS

Hidetoshi Yamada, Tokyo, and Tatsuo Nagasaki, Yokohama, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 508,932

Claims priority, application Japan, Apr. 26, 1989, 1-106679

Int. Cl.[5] H04N *5/30*

U.S. Cl. 358—209 **4 Claims**

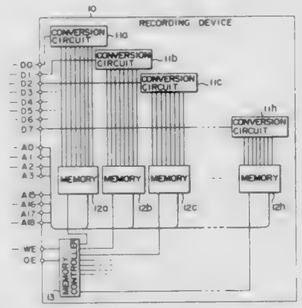
1. An electronic still camera, comprising: image pick-up means for generating an electronic still image signal;

analog-to-digital (A/D) conversion means for converting the electronic still image signal generated by said image pick-up means into a corresponding digital signal;

conversion means for converting the digital signal converted by said A/D conversion means into a plurality of streams of signals;

recording means including a plurality of memories for respectively recording the plurality of streams of signals converted by said conversion means; and

control means including means for sequentially controlling at least said plurality of memories of said recording means in a write enable state,



wherein said conversion means includes a predetermined number of conversion circuits integrated in said plurality of memories, respectively.

5,057,925

STILL PICTURE RECORDER UTILIZING A SWITCH CONTROLLED TIMER

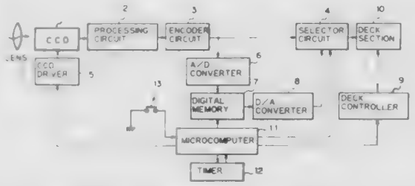
Satoru Tsutsui; Katsuhiko Nuno; Takao Inoue, and Takashi Ohkuma, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 9, 1990, Ser. No. 549,917

Claims priority, application Japan, Jul. 11, 1989, 1-178838

Int. Cl.[5] H04N *5/30*

U.S. Cl. 358—209 **4 Claims**



1. A video recording apparatus comprising:

a video signal producing circuit for converting a picked-up image into a video signal;

a memory section for storing one still video information corresponding to one still video on the basis of the video signal produced from said video signal producing circuit and for transmitting repeatedly the one still video information stored therein for a predetermined interval of time, the storing and the transmission of the one still video information being respectively performed in accordance with a control signal supplied to the memory section;

a recording means for recording the one still video information transmitted repeatedly from said memory section to a recording medium in accordance with a control signal supplied to the recording means for the predetermined interval of time;

a switch for indicating the recording of the one still video information to said recording means;

a timer for setting the predetermined interval of time; and

a control section for transmitting the control signal to said memory section and said recording means by operation of said switch.

5,057,926

DRIVING METHOD FOR DISCHARGING OVERFLOW CHARGES IN A SOLID STATE IMAGING DEVICE

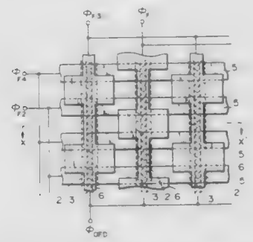
Tohru Watanabe, Ohgaki, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 7, 1990, Ser. No. 534,236

Claims priority, application Japan, Jun. 20, 1989, 1-157369; Jul. 17, 1989, 1-183976

Int. Cl.[5] H04N *5/232*

U.S. Cl. 358—213.11 **14 Claims**



1. A method of driving a solid-state imaging device having a horizontal-type overflow drain structure including an overflow drain formed along a channel area through which electric charges are transferred, the method comprising the steps of:

discharging, from said channel area to said overflow drain area, optical charges stored in said channel area by having extinguished a potential barrier present between said channel area and said overflow drain area, and transferring said optical charge which is stored in said channel area in a direction opposite to a reading direction during said discharging period; and

transferring the optical charge stored in said channel area in the reading direction after said discharging step.

5,057,927

IMAGE SENSING APPARATUS

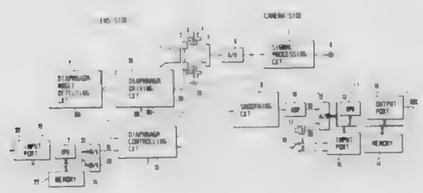
Teruo Hieda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1989, Ser. No. 391,128

Claims priority, application Japan, Aug. 31, 1988, 63-216918

Int. Cl.[5] H04N *5/238, 5/225;* **G03B** *7/08, 7/10*

U.S. Cl. 358—228 **17 Claims**



1. An image sensing apparatus comprising:

a diaphragm for an imaging optical system;

switching means for switching automatic control and manual control of said diaphragm; and

controlling means for switching operating speeds of said diaphragm in accordance with a switching operation of said switching means.

5,057,928

DRIVE APPARATUS FOR LIQUID CRYSTAL DISPLAY DEVICE UTILIZING A FIELD DISCRIMINATING APPARATUS

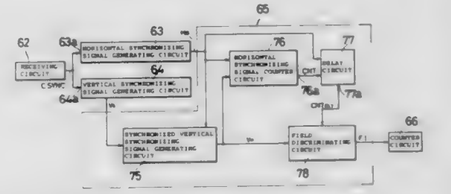
Nobuyoshi Nagashima; Toshio Matsumoto, both of Tenri; Shuhei Yasuda, Nara; Takafumi Kawaguchi, Nara, and Makoto Takeda, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1988, Ser. No. 291,766

Claims priority, application Japan, Dec. 29, 1987, 62-333972; Dec. 29, 1987, 62-333973; Sep. 5, 1988, 63-223020

Int. Cl.[5] H04N *5/70*

U.S. Cl. 338—236 **6 Claims**



1. A display drive system for driving a liquid crystal display device having a plurality of scanning and data electrodes arranged in a matrix format which utilizes interlaced scanning for a plurality of fields to achieve video display, said system comprising:

receiving means for receiving input video signals;

horizontal synchronizing means for generating a horizontal synchronizing signal (Hs) from said input video signals;

vertical synchronizing means for generating a vertical synchronizing signal (Vs) from said input video signals;

field discriminating means for generating a field discriminating signal which discriminates input video signals of a first field from input video signals of a second field;

first driving means for applying a driving voltage of a first polarity to drive a plurality of the scanning electrodes of said liquid crystal display in response to said input video signals of a first field, as discriminated by said field discriminating signal; and

second driving means for inverting said driving voltage and applying a driving voltage of a second polarity to drive a plurality of the scanning electrodes of said liquid crystal display in response to said input video signals of a second field to thereby achieve video display of said input video signals, as discriminated by said field discriminating signal;

said field discriminating means including,

synchronized vertical synchronizing signal means for generating a vertical signal (V_H) in synchronism with said horizontal synchronizing signal from an input of Vs and Hs,

counting means, responsive to Hs, for counting the number of pulses in said horizontal synchronizing signal,

delay means for delaying said horizontal counted number of pulses of said horizontal synchronizing signal by one pulse to generate CNT_{DLY}, and

field discriminating circuit means for generating said field discriminating signal in response to an input of V_H and CNT_{DLY}.

5,057,929

CATHODE RAY TUBE HAVING IMPLOSION BAND WITH RAISED TABS AND METHOD

Kenneth W. Hermann, Rochester, N.Y., assignor to North American Philips Corporatioon, New York, N.Y.

Filed Sep. 30, 1988, Ser. No. 252,953

Int. Cl.[5] H04N *5/65*

U.S. Cl. 358—246 **15 Claims**

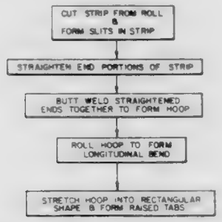
1. A method of forming a metal shrink band for a cathode ray tube, the tube comprising an evacuated glass envelope, the

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envelope comprising a face panel portion having a peripheral sidewall portion and a funnel portion sealed to the sidewall portion, the band having at least one raised tab to accommodate the attachment of tube components, the method comprising the steps of:

a) cutting a length of metal strip from a supply roll,

b) forming at least one slot in the strip near one longitudinal edge of the strip while it is being cut from the roll,



c) straightening end portions of the slotted strip,

d) butt welding the end portions to form a hoop,

e) forming the hoop into a rectangular band having an outline corresponding to that of the face panel of the tube, and

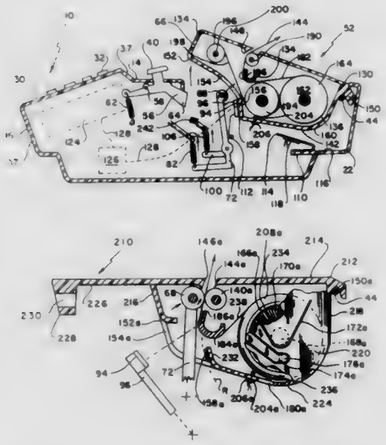
f) displacing a portion of the band material adjacent the at least one slot to form a raised tab.

5,057,930

PLAIN PAPER CARTRIDGE FOR FACSIMILE MACHINE

Charles M. Curley, Ithaca, N.Y., assignor to Smith Corona Corporation

Filed Feb. 8, 1990, Ser. No. 476,994
Int. Cl.[5] H04N *1/23;* **G01D** *15/00;* **B41F** *35/00*
U.S. Cl. 358—296 **34 Claims**



1. A plain paper cartridge for a facsimile machine having a recess and a print head projectable into the recess, comprising:

a cartridge housing configured for releasable disposition in the recess and having an access opening for accommodating the print head for operational engagement in said cartridge;

a paper supply roll having a supply of plain paper adapted to be drawn from said roll as a web and being located within said cartridge housing;

a ribbon supply roll provided with a supply of thermal transfer ribbon adapted to be drawn from said ribbon supply roll as a web and being located within said cartridge housing;

a paper guide secured within said housing for receiving said webs of paper and ribbon; and

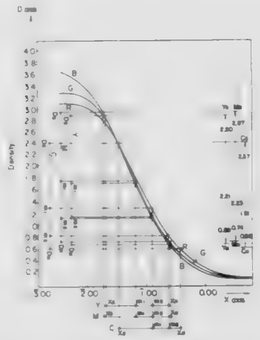
said paper and ribbon supply rolls being disposed in said cartridge housing and said paper and ribbon webs are drawn across said paper guide so that the print head may transfer a facsimile message through the web of said ribbon upon a corresponding portion of said web of said paper.

5,057,931

TONAL CONVERSION METHOD OF PICTURES FOR PRODUCING REPRODUCED PICTURES FREE OF COLOR-FOG

Takashi Numakura, and Iwao Numakura, both of Tokyo, Japan, assignors to Yamatoya & Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1990, Ser. No. 481,055
Claims priority, application Japan, Aug. 19, 1989, 212118
Int. Cl.[5] H04N *1/23, 1/387, 1/46*
U.S. Cl. 358—298 **4 Claims**



1. A method for conducting a tonal conversion of a picture upon producing a reproduced picture, said reproduced picture being free of color-fog, from an original color picture of continuous tone having color-fog thereon, which comprises the steps of:

(a) preparing density characteristic curves of respective red (R), green (G) and blue (B) photosensitive emulsion layers of a photosensitive color film material used for photographing the original color picture, each of said density characteristic curves being expressed in a coordinate system in which an axis of ordinates designated as D axis represents density values and an axis of abscissas designated as X axis represents pictorial information values on light exposure;

(b) designating a brightest area (H) and a darkest area (S) on the original color picture to measure the density values (D_H) of the brightest area (H) and the density values (D_S) of the darkest area (S) on the red (R), green (G) and blue (B) photosensitive emulsion layers respectively, by means of red (R), green (G) and blue (B) filters for cyan (C), magenta (M) and yellow (Y) color plates respectively and plotting the so-obtained density values (D_H) and (D_S) of the respective emulsion layers along the D axis;

(c) determining, from the density values (D_n) of the respective red (R), green (G) and blue (B) photosensitive emulsion layers in a range from the brightest area (D_H) to the darkest area (D_S) on the D axis, picture information values (X_n) ranging from the brightest area (X_H) to the darkest area (X_S) on the X axis for producing the cyan (C), magenta (M) and yellow (Y) color plates in accordance with the corresponding density characteristic curves of the red (R), green (G) and blue (B) photosensitive emulsion layers;

(d) obtaining pictorial information values at a desired number of control points out of the pictorial information values (X_n) of the respective color plates in the range from the brightest area (X_H) to the darkest area (X_S) on the X axis for controlling the tonal conversion of the original picture, and defining relative relations of the individual control points;

(e) determining, from the pictorial information values at the control points on the X axis, corresponding density values at a like number of control points on the D axis in the range from the brightest area (D_H) to the darkest area (D_S) in accordance with the corresponding density characteristic curves, and defining relative relations of the individual control points on the D axis;

(f) comparing the relative relations of the control points for the respective color plates in the range from the brightest area (X_H) to the darkest area (X_S) on the X axis with the relative relations of the corresponding control points in the range from the brightest area (D_H) to the darkest area (D_S) on the D axis, and obtaining objective data on the color-fog;

(g) converting the pictorial information values (X_n) for the respective color plates obtained in step (c) into halftone intensities (y) such as dot percentage values in accordance with the following formula:

$$y = y_H + \frac{\alpha(1 - 10^{-kx})}{\alpha \quad \beta} \cdot (y_S - y_H)$$

where

x: a basic density value ($X_n - X_H$) obtained by measuring a density value (D_n), of a desired picture element on a color original having color-fog thereon, on the D axis by means of one of the color filters, projecting the measured density value (D_n) on the X axis in accordance with the density characteristic curve of a photosensitive emulsion layer corresponding to the color filter, determining a pictorial information value (X_n) on the X axis, determining, in a same manner, a pictorial information value (X_H) on the X axis for producing a corresponding color plate, said pictorial information value (X_H) corresponding to a density value (D_H) on the D axis of the brightest area on the color original picture, and subtracting said pictorial information value (X_H) from said pictorial information value (X_n);

y: a halftone intensity such as a dot area percentage of a picture element on a reproduced picture free of color-fog corresponding to a desired picture element on each of the color plates of the color original picture having color-fog thereon;

y_H: a halftone intensity such as a dot area percentage preset to either a density value (D_H) of the brightest area (H) or a corresponding pictorial information value (X_H) on the X axis upon measuring the color original picture by means of each of the color filters;

y_S: a halftone intensity such as a dot area percentage preset to either a density value (D_S) of the darkest area (S) on the D axis or a corresponding pictorial information value (X_S) on the X axis upon measuring the color original by means of each of the color filters;

α: a surface reflectance of a base material used for expressing the reproduced picture thereon;

β: a value determined by $\beta = 10^{-\gamma}$;

k: a value determined by $\gamma/(X_S - X_H)$, where X_S represents the pictorial information value on the X axis corresponding to a density value (D_S) on the D axis of the darkest area (S) obtained by measuring the color original picture by means of each of the color filters; and

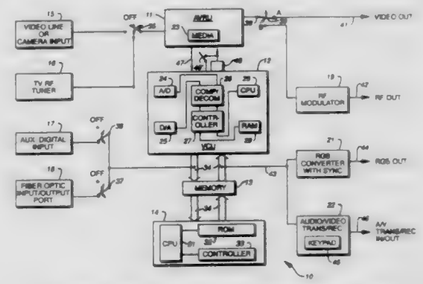
γ: a desired optional factor determined on the basis of the objective data obtained in step (f).

5,057,932

AUDIO/VIDEO TRANSCEIVER APPARATUS INCLUDING COMPRESSION MEANS, RANDOM ACCESS STORAGE MEANS, AND MICROWAVE TRANSCEIVER MEANS

Richard A. Lang, Cave Creek, Ariz., assignor to Explore Technology, Inc., Scottsdale, Ariz.

Continuation-in-part of Ser. No. 289,776, Dec. 27, 1988, Pat. No. 4,963,995. This application May 5, 1989, Ser. No. 347,629
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **5 Claims**



1. An audio/video transceiver apparatus comprising:

input means for receiving audio/video source information, said audio/video source information comprising a multiplicity of video frames in the form of one or more full motion video programs;

compression means, coupled to said input means, for compressing said audio/video source information into a time compressed representation thereof having an associated time period that is shorter than a time period associated with a real time representation of said audio/video source information;

random access storage means, coupled to said compression means, for storing the time compressed representation of said audio/video source information; and

output means, coupled to said random access storage means, for receiving the time compressed audio/video source information stored in said random access storage means for transmission away from said audio/video transceiver apparatus;

said input and output means comprising microwave transceiver means, coupled to a microwave link, for receiving said audio/video source information over said microwave link and for transmitting said time compressed audio/video source information stored in said random access storage means over said microwave link.

5,057,933

DEVICE FOR PROVIDING AN IMAGE FOR VIDEO RECORDING

Keizo Takahashi, Tokyo, Japan, assignor to Yorica Koki Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1988, Ser. No. 168,480
Claims priority, application Japan, Mar. 3, 1988, 63-27573[U]
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **5 Claims**

1. A device for providing an image for making a video recording which comprises:

a box for providing the image,

a lens attached to one end of the box,

a light source mounted in the box,

a first holder secured to the other end of the box and for holding a photograph or a picture, said holder comprising a glass plate fixed to a frame,

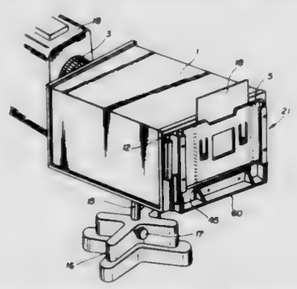
a plate detachably attached to the frame adapted to hold the

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photograph or the picture between the plate and the glass plate and

a second holder slidably engaged with the frame for holding an explanation of characters and

screen means comprising a first member having a glass and a second member having a mirror surface, said second member being pivotally attached to said first member at one end thereof along an axis so that the members can be opened or closed relative to each other, a surface of the glass being disposed inside for displaying an image projected from a movie projector, said screen means adapted to be detachably engaged in the frame instead of the plate.



5,057,934

CIRCUIT FOR TAPE DUPLICATION IN VIDEO TAPE RECORDER

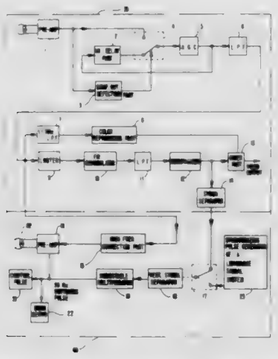
Jong-Kyung Yun, and Oh-Kwang Kwon, both of Suwon-city, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 5, 1989, Ser. No. 375,472

Claims priority, application Rep. of Korea, Apr. 7, 1988, 885067[U]

Int. Cl.[5] H04N *5/782*

U.S. Cl. 1358—335 21 Claims



1. A circuit for tape duplication in a video tape receiver, comprising:

a reproduction set comprising:

a low pass filter for filtering a radio frequency signal; and

synchronizing signal separating means for separating a synchronizing signal, from the radio frequency signal filtered by said low pass filter, to generate a first signal; and

a record set comprising:

a pre-amp for receiving the radio frequency signal from said low pass filter through a high frequency compensation circuit; and

a switch for receiving the first signal from said synchronization-separating part and passing the first signal through a vertical synchronizing signal separating means and a monostable multivibrator to generate a switching pulse for synchronizing a control pulse means and a drum servo.

5,057,935

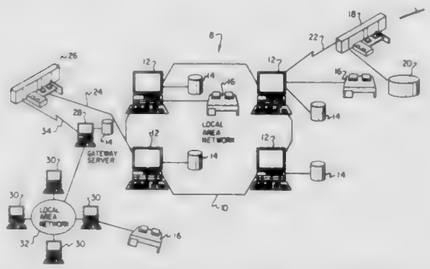
METHOD FOR CONFIRMATION OF DOCUMENT RECIPIENT IN A DATA PROCESSING SYSTEM

Marvin L. Williams, Lewisville, Tex., assignor to IBM Corporation, Armonk, N.Y.

Filed Jun. 7, 1990, Ser. No. 534,813

Int. Cl.[5] H04M *11/00*

U.S. Cl. 358—402 14 Claims



1. A method for efficiently managing the distribution of multiple documents in a data processing system wherein an intended recipient user may permit an alternate user to receive a transmitted document, said method comprising the steps of:

transmitting a selected document within said data processing system from an originator to an intended recipient, wherein said intended recipient may designate an alternate user to receive said selected document;

determining the actual identity of the recipient of said selected document; and

automatically transmitting a confirmation of delivery message to said originator of said selected document which uniquely identifies said actual recipient.

5,057,936

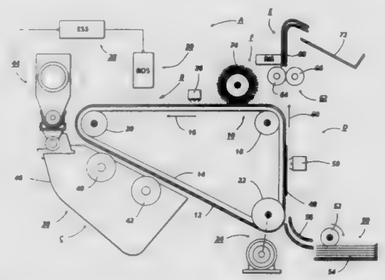
COPY QUALITY MONITORING

Jan Bares, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 21, 1989, Ser. No. 396,400

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—405 8 Claims



1. An apparatus for monitoring the quality of copies reproduced by a printing machine, including:

means for transmitting a signal of an image to be reproduced to the printing machine, and, in response thereto, the printing machine reproduces the image on a copy sheet;

means for sensing the image reproduced on the copy sheet and generating a signal indicative thereof; and

means for comparing the signal from said sensing means with the signal from said transmitting means to determine if the image reproduced on the copy sheet is at an acceptable quality level, said comparing means providing a count of the number of copy sheets having images reproduced thereon by the printing machine and a count of the number of copy sheets having images reproduced thereon which are beneath the acceptable quality level wherein said comparing means counts a plurality of copy sheets having images reproduced thereon by the printing machine and a plurality of copy sheets having images reproduced thereon which are beneath the acceptable quality level.

5,057,937

FACSIMILE DEVICE ENABLING EFFICIENT OUTPUT TO RECORD SHEET

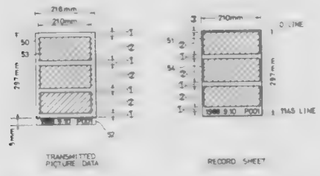
Hideo Muramatsu; Munehiro Nakatani; Hiroaki Hamano; Shigenobu Fukushima; Toshio Tsuboi; Kanako Hamano; Yoshiyuki Kurahashi, and Masanori Yamamoto, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1990, Ser. No. 476,625

Claims priority, application Japan, Feb. 9, 1989, 1-30387

Int. Cl.[5] H04N *1/40, 1/04, 1/38*

U.S. Cl. 358—405 9 Claims



1. A facsimile device for receiving picture data of an original document, which is constituted by a plurality of data lines, through a telephone line and recording the received picture data onto a record sheet, comprising:

counting means for counting a number of the received data lines;

operation means for comparing the number of received data lines with a predetermined value and evaluating a number of received data lines exceeding said predetermined value as an excess number;

determining means for determining whether each of the received data lines is valid or invalid data lines;

data processing means for removing the received invalid data lines, a number of which correspond to said excess number, in accordance with a result of the determination by said determining means; and

recording means for recording the remaining received data lines from said data processing means onto the record sheet.

5,057,938

FACSIMILE APPARATUS WITH ERROR CORRECTION AND IMPROVED SWITCHING MEANS

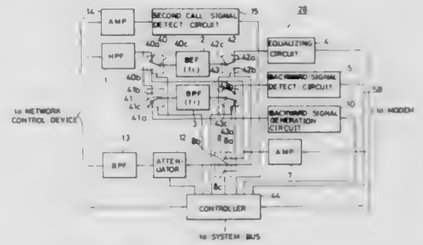
Toshiaki Edamura, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 12, 1990, Ser. No. 478,962

Claims priority, application Japan, Feb. 16, 1989, 1-35017

Int. Cl.[5] H04N *1/32;* H04L *1/18, 25/02;* H01P *1/10*

U.S. Cl. 358—406 7 Claims



1. A facsimile apparatus comprising:

a transmission system for transmitting with respect to a line, an image signal from a modem and which has been divided into predetermined blocks units;

a receiving system for receiving signals from the line;

transmission error detect means for detecting a presence of transmission errors of image signal blocks that have been received by said receiving system;

backward signal generation means for generating a backward signal for, on a basis of detection results of said transmission error detect means, notifying a party at the transmission system of the presence of transmission errors;

retransmission means for retransmitting image signal blocks by said transmission system when the backward signal is received by said receiving system, said retransmission means having a backward signal detection means for detecting the backward signal in received signals;

a band pass filter passing signals in a predetermined frequency band including a frequency of said backward signal;

a band elimination filter passing signals in a frequency band other than a predetermined frequency band including the frequency of said backward signal;

image communication control switching means for switching between an image transmission control to transmit image signals from a modem, by way of said band elimination filter and from said transmission system to the line, and an image receiving control to transfer image signals received by said receiving system to the modem by way of said band elimination filter;

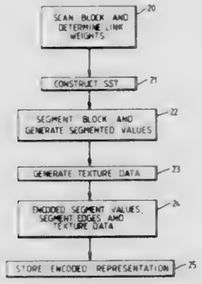
retransmission request switching means for switching between a retransmission control to supply image signals received by said receiving system to said backward signal detection means by way of said band pass filter, and a response control to send the backward signal from said backward signal generation means to the line by way of said band pass filter; and

control means for controlling said image communication control switching means and said retransmission request switching means so that said image communication control switching means is switched to the image transmission control and said retransmission request switching means is switched to the retransmission control when the image signals are transmitted, and said image communication control switching means is switched to the image receiving control and said retransmission request switching means is switched to the response control when the image signals are received.

5,057,939
DATA COMPRESSION

Richard A. Kirk, Hertfordshire, England, assignor to Crosfield Electronics Ltd., England

Filed Nov. 15, 1989, Ser. No. 436,589
Claims priority, application United Kingdom, Nov. 25, 1988, 8827556
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—426 **11 Claims**



1. A method of compressing digital image or image-like pixel data of an image, said pixel data comprising a plurality of pixels, the method comprising carrying out the following steps on small blocks of said pixels, said small blocks containing fewer of said pixels than does said image:

(a) determining the differences between digital values of adjacent pixels in each of said small blocks to define respective link weights;

(b) determining a tree connecting all said pixels in said each of said small blocks such that the sum of said link weights in said tree is a minimum;

(c) dividing said tree into segments by removing links with weights greater than a threshold value, so dividing said each of said small blocks into segments of linked pixels;

(d) generating a segmented representation of said each of said small blocks by setting the values of all pixels in each segment to a single respective, representational value; and

(e) compressing said segmented representation to generate compressed data.

5,057,940
IMAGE SIGNAL ENCODING/DECODING SYSTEM

Tokumichi Murakami, and Takahiro Fukuhara, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1990, Ser. No. 592,582
Claims priority, application Japan, Apr. 10, 1989, 1-259476
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—426 **11 Claims**

1. An encoding/decoding system for encoding image signals to be transmitted from a transmission apparatus to a receiver apparatus, and for decoding the received encoded image signals, wherein said transmission apparatus comprises:

object image extracting means for separating input image signals into background image information and object image information;

first encoding means for encoding said object image information provided from said extracting means;

second encoding means for encoding said background image information provided from said extracting means;

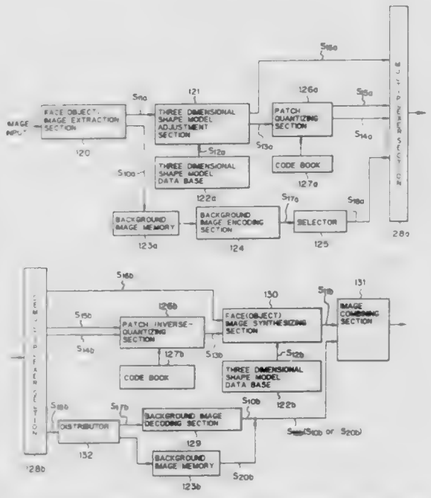
selector means for selectively outputting as background picture information either said encoded background image information from said second encoding means or instruction information representing that no background image information is being transmitted; and

multiplexer means for multiplexing said encoded object image information from said first encoding means and said background picture information from said selector means and for transmitting the multiplexed information to said receiver apparatus; and

said receiver apparatus comprises:

demultiplexer means for demultiplexing the received information into said encoded object image information and said background picture information which is either said encoded background image information or said instruction information;

distributor means for detecting whether said background picture information from said demultiplexer means is said encoded background image information or said instruction information and for outputting the detected information;



background image memory means for storing predetermined background image information and for reading out said predetermined background image information when said instruction information is received from said distributor means;

second decoding means for decoding said encoded background image information when it is received from said distributor means; and

image combining means for providing a final image signal by combining said decoded object image information from said first decoding means and either said decoded background image information from said second decoding means or said predetermined background image information from said image memory means.

5,057,941
FACSIMILE DEVICE

Daisuke Moriya, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1990, Ser. No. 534,044
Claims priority, application Japan, Jun. 7, 1989, 1-145959
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—440 **7 Claims**

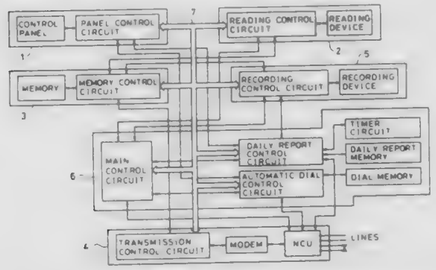
1. A facsimile device comprising:

designating means for designating a transmitting time of information and a call number of a remote receiver,

transmitting means for calling the call number of said remote receiver at said designated transmitting time and receiving a reference response signal from said remote receiver when a line is connected thereto, for automatically transmitting the information to said remote receiver,

judging means for judging, if a reference response signal is not received from said remote receiver although the line is connected thereto without receipt of a busy signal, that said remote receiver is a non-facsimile device;

storing means for storing the call number of a remote receiver when said remote receiver has been judged by said judging means to be a non-facsimile device, and

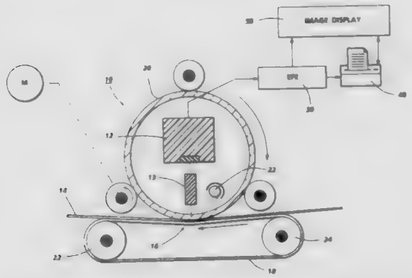


warning means for outputting an alarm to inform impossibility of transmission when the call number of said remote receiver judged to be a non-facsimile device and stored in said storing means is redesignated by said designating means.

5,057,942
ELECTRONIC DOCUMENT SCANNER WITH A TRANSPARENT IMAGING & DRIVE ROLLER

Jane M. Kanehl; Steven R. Moore, and Maurice F. Holmes, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1990, Ser. No. 506,643
Int. Cl.[5] H04N *1/06*
U.S. Cl. 358—490 **1 Claim**



1. An electronic document imaging scanning apparatus with a fixed, stationary, full document width, electronic document scanning bar for electronically scanning documents by feeding a documents past said fixed electronic document scanning bar at a controlled velocity while imaging only a minor transverse scanning strip area of the document at a time with said fixed electronic document scanning bar, further comprising:

a rotatable transparent thin walled hollow cylindrical document drive roll;

drive means for accurately rotating said transparent hollow cylindrical document drive roll at a controlled rotational velocity about the axis of the cylinder during said scanning,

document transport belt means for transporting a document to be imaged in a substantially planar document transport path to and from a very minor area of the rotating outer surface of said cylindrical document drive roll during said scanning to provide rapid directly sequential imaging,

said document transport belt means forming a small document holding nip with only said very minor area of the outer surface of said cylindrical document drive roll,

said document transport belt means comprising an idler belt entrained around idler pulleys mounted at opposite sides of said rotating transparent cylindrical drive roller, said idler pulleys being substantially spaced from said roller, and positioned so that one flight of said idler belt is substantially tangential to said outer surface of said cylindrical document drive roll to form said small document holding nip therewith,

said small document holding nip between said idler belt flight and said very minor area of the outer surface of said cylindrical document drive roll being approximately coextensive in area with said minor transverse scanning strip area of said electronic document scanning bar,

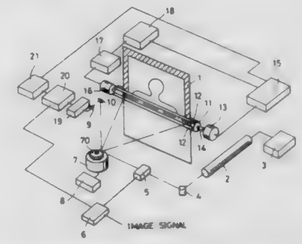
said idler belt flight being driven by said rotation of said cylindrical document drive roll, at the same surface velocity,

and said electronic document scanning bar being non-rotatably independently stationarily mounted inside of said transparent cylindrical document drive roll to image the document through said thin wall of said transparent document drive roll in said minor area thereof, by scanning and digitizing information on the document being transported by said transparent document drive roll through said small document holding nip at said controlled rotational velocity while said document transport belt means transports the document in said substantially planar document transport path.

5,057,943
IMAGE SCANNING APPARATUS

Kazuhisa Takahashi, deceased, late of Yokohama, Japan by Reiko Takahashi, legal representative , assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1990, Ser. No. 534,240
Claims priority, application Japan, Jun. 9, 1989, 1-148001
Int. Cl.[5] H04N *1/10*
U.S. Cl. 358—496 **14 Claims**



1. A light beam scanning type recording apparatus comprising:

main scanning means having a light beam scanning optical system including a mirror means and capable of performing main scanning of a recording member with a light beam;

sub-scanning means for moving the recording member relative to said main scanning means in a direction which crosses a direction of the main scanning, thereby performing a sub-scanning;

period setting means for setting a recording period in which a recording region on the recording member is scanned by the light beam from said light beam scanning optical system, and a non-recording period in which the light beam scans a non-recording region of the recording member other than said recording region; and

control means for maintaining said sub-scanning means inoperative in the recording period to enable recording and for allowing said sub-scanning means to operate in the non-

recording period thereby effecting the sub-scanning in the non-recording period.

5,057,944

MULTIPLEX ROTATING MAGNETIC HEAD SYSTEM FOR MULTIPLY RECORDING AND ERASING AUDIO AND VIDEO SIGNALS

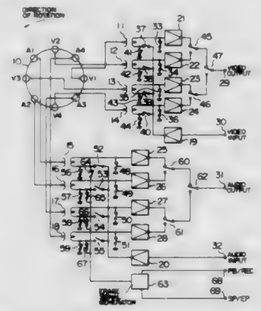
Shinji Ozaki, Funabashi; Juichi Morikawa, Katsuta; Hideo Zama, Katsuta; Mashanori Kochi, Katsuta, and Makoto Ibe, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1988, Ser. No. 232,935

Claims priority, application Japan, Aug. 19, 1987, 62-204145

Int. Cl.[5] H04N *5/782*

U.S. Cl. 360—19.1 **12 Claims**



1. A multiplex recording/ reproducing system comprising at least four video magnetic heads mounted on a rotating body with a predetermined interval in a direction of rotation of the rotating body for recording/reproducing a video signal on a magnetic tape; at least four audio magnetic heads mounted on the rotating body alternately with the video magnetic heads; means for forwarding the magnetic tape while wrapping it on the rotating body over its region extending at least a multiple of the predetermined interval; means for switching over the video magnetic heads and the audio magnetic heads, receptively, so that the video magnetic heads and the audio magnetic head are alternately and successively in a predetermined order made active and inactive for recording/reproducing the respective signals; and means for selectively supplying an erase signal through an erase signal supply circuit to the audio magnetic heads while the audio magnetic heads are inactive, timings at which the erase signal is supplied to the inactive audio magnetic heads including a timing for supplying the erase signal to one audio magnetic head which is disposed preceding to the video magnetic head to which the video signal is supplied, and to another one of the audio magnetic heads which is disposed succeeding thereto, both by 90° on said rotating cylinder.

5,057,945

SIGNAL RECORDING/REPRODUCING APPARATUS

Toshiyuki Shimada; Kazuhiro Aoki, both of Osaka; Akira Kurahashi, Kyoto, and Noboru Kikuchi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 31, 1990, Ser. No. 531,430

Claims priority, application Japan, Jun. 2, 1989, 1-141673

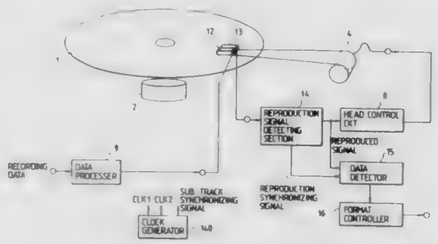
Int. Cl.[5] G11B *5/02, 15/12*

U.S. Cl. 360—22 **13 Claims**

1. A signal recording/reproducing apparatus comprising:

a recording head section having recording sub-heads for recording signals inputted from an external circuit to simultaneously form a recording track comprising recording sub-tracks, whose number is N, on a recording medium;

a reproducing head section for simultaneously tracing, for reproduction, said recording sub-tracks formed on said recording medium, said reproducing head section having reproducing sub-heads whose number is M and whose pitch is equal to a pitch of said recording sub-tracks, the



number M of said reproducing sub-heads being greater than the number N of said recording sub-tracks; and

a reproduction signal detecting section for detecting the recorded signals from the reproduced signals due to said M reproducing sub-heads.

5,057,946

MAGNETIC DISK DRIVE APPARATUS

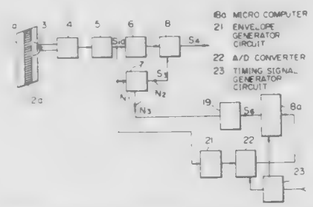
Tokuji Sugiyama, Kawasaki, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 20, 1989, Ser. No. 454,724

Claims priority, application Japan, Dec. 20, 1988, 63-321835

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—46 **5 Claims**



1. A magnetic disk drive apparatus for reading data recorded on a magnetic disk, the apparatus comprising:

(a) at least one magnetic disk on which first reference data and second reference data are recorded together with ordinary data;

(b) read-out means for reading the ordinary data, the first reference data and the second reference data on the magnetic disk;

(c) threshold value setting means for setting and varying temporarily a dynamic threshold value based on a signal read out of the first reference data and a signal read out of the second reference data; and

(d) read data generation means for generating read data based on a signal read out of the ordinary data, when the signal read out of the ordinary data exceeds the dynamic threshold value.

5,057,947

RECORDING AND REPRODUCING APPARATUS WITH LIMITED DIGITAL COPYING

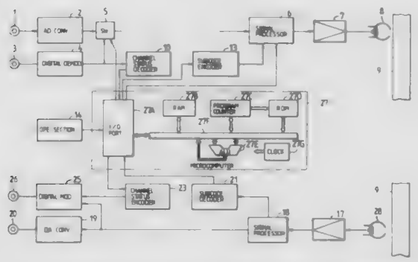
Hiromichi Shimada, Amagasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 8, 1989, Ser. No. 307,446

Claims priority, application Japan, Feb. 10, 1988, 63-29241; Mar. 8, 1988, 63-54269; Mar. 11, 1988, 63-58756; Mar. 31, 1988, 63-80844; May 31, 1988, 63-133339; May 31, 1988, 63-133340; Jun. 29, 1988, 63-161744

Int. Cl.[5] G11B *15/04, 5/02*

U.S. Cl. 360—60 **6 Claims**



1. A recording and reproducing apparatus for a digital signal transmitted between reproducing and recording devices, the apparatus comprising:

judgment means for judging whether a direct copy of an input digital signal is allowed or inhibited on the basis of a copy control signal, wherein the copy control signal has a plurality of bits and represents whether a direct copy of a digital signal is allowed or inhibited;

generation means, responsive to detection by the judgment means that a direct copy of the input digital signal is allowed, for generating a copy control subcode signal in accordance with the copy control signal, wherein the copy control subcode signal has a plurality of bits and representing whether a direct copy of an output digital signal, which occurs upon a next reproduction of a copied digital signal, is allowed or inhibited;

said generation means being operative, when an analog signal transmitted between the devices is converted into a digital signal and is then recorded, to generate a copy control subcode signal having a given sequence of bits;

signal conversion means, responsive to reproduction and detection of a digital signal from a recording medium, for outputting a copy control signal on the basis of the copy control subcode signal; and

means responsive to the copy control signal for limiting a number of times of execution of a copying process.

5,057,948

RECORDING OF DIGITAL SIGNALS ON D.C.-ERASED MAGNETIC TAPE

Jorn Lutzeler, Zwingenberg, Fed. Rep. of Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 27, 1989, Ser. No. 386,281

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1988, 3827370

Int. Cl.[5] G11B *5/03, 15/04, 5/09*

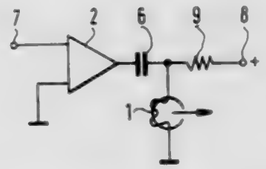
U.S. Cl. 360—66 **5 Claims**

1. A circuit apparatus for recording a digital signal on a d.c.-erased magnetic tape, comprising:

a recording magnetic head disposed for scanning oblique tracks on said d.c.-erased magnetic tape,

means for providing a recording digital signal current, which current corresponds to the digital signal to be recorded, and

means for superimposing a d.c. current on said recording digital signal current in such a way that said d.c. current is effective, at the time said digital signal is recorded by said



magnetic head, for compensating a d.c. field resulting from the d.c. erasing of said tape.

5,057,949

DIGITAL MAGNETIC REPRODUCING APPARATUS WITH VARIABLE TAPE SPEED

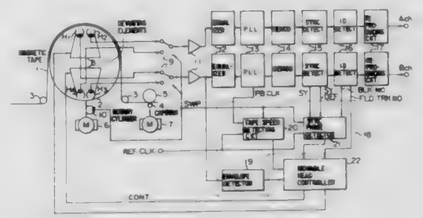
Atsuo Suga, Katsuta; Shigemitsu Higuchi, Fujisawa; Hideo Nishijima; Kaneyuki Okamoto, both of Katsuta, and Masataka Sekiya, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 13, 1989, Ser. No. 421,358

Claims priority, application Japan, Oct. 17, 1988, 63-259453

Int. Cl.[5] G11B *5/592*

U.S. Cl. 360—70 **16 Claims**



1. A magnetic reproducing apparatus comprising:

a rotary cylinder having a rotary axis;

a plurality of rotary magnetic heads disposed on the rotary cylinder for reproducing a digital signal recorded on a magnetic tape;

rotary magnetic head position deviating means disposed on the rotary cylinder and responsive to position deviation control signals for deviating positions of the rotary magnetic heads in the direction of the rotary axis of the rotary cylinder by deviations corresponding to the position deviation control signals;

digital signal processing means for processing the digital signal reproduced by the rotary magnetic heads to produce a reproduction clock signal;

reference clock signal generating means for generating a reference clock signal;

tape speed detecting means for comparing the reproduction clock signal with the reference clock signal and for producing a speed signal corresponding to a running speed of the magnetic ape on the basis of the comparison; and

rotary magnetic head position deviation control means for producing the position deviation control signals on the basis of the speed signal produced by the tape speed detecting means.

5,057,950

DATA STORAGE METHOD

Shinya Ozaki; Masaki Yamada, both of Tokyo, Japan; Brian A. Milthorp, Bristol, United Kingdom, and Bruce A. Thompson, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 6, 1989, Ser. No. 295,174

Claims priority, application United Kingdom, Jan. 8, 1988, 8800353

Int. Cl.[5] G11B *27/10, 15/18, 5/02*

U.S. Cl. 360—72.2 **9 Claims**



1. A method of storing data on a recording tape, the method comprising:

writing data-to-be-stored downstream from a beginning-of-recording position (BOR) the location of which along the tape is determined in terms of displacement of the tape from a fully-rewound beginning-of-media position (BOM);

using a section of tape in a test phase that is upstream of BOR and its expected location to carry out read and/or write tests, this test section of tape being spaced from BOM and being accessed by displacement of the tape through a predetermined distance from BOM and a point on the tape where the position relative to BOM is known.

5,057,951

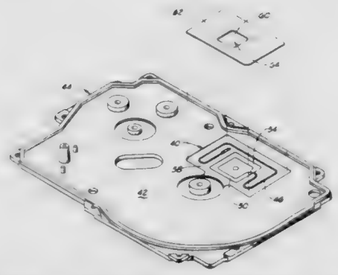
BREATHER VENT ASSEMBLY FORMED IN A SEALED DISK DRIVE HOUSING

Steve S. Eckerd, Oklahoma City, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed May 31, 1989, Ser. No. 359,731

Int. Cl.[5] G11B *33/14*

U.S. Cl. 360—97.02 **15 Claims**



1. A breather vent assembly for communicating air between an interior and an exterior of a disk drive housing wherein the disk drive housing includes a housing wall adapted to support the breather vent assembly so that air communication is provided between the interior and the exterior of the disk drive housing while reducing communication of water vapor between the interior and the exterior of the disk drive housing, the breather vent assembly comprising:

vent means for providing air communications between the interior and the exterior of the disk drive housing, the vent means comprising at least one vent passageway extending through the housing wall; and

air passage means supported by the housing wall for reducing communication of water vapor through the vent passageway and into the interior of the disk drive housing, the air passage means comprising:

a long, narrow groove formed within one surface of the housing wall, the groove having a first end and a second end, the first end openly communicating with the vent passageway and the second end openly communicating with the interior of the disk drive housing;

sealant means supported by the housing wall for covering a portion of the groove and thereby form a long, narrow air passage communicating with the vent means and the interior of the disk drive housing, the air passage having a length and minimum cross section sufficient to provide air-pressure equalization and reduced water vapor communication between the interior and the exterior of the housing, the minimum cross section of the air passage determined by the length of the air passage and a predetermined minimum pressure differential across the air passage at a predetermined air flow rate where laminar flow is essentially effected.

5,057,952

MAGNETIC FLUID SEALING APPARATUS FOR A MAGNETIC DISK DRIVE

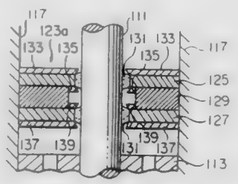
Atsushi Takahashi, Iruma, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 26, 1989, Ser. No. 457,109

Claims priority, application Japan, Dec. 28, 1988, 63-332523

Int. Cl.[5] G11B *33/14*

U.S. Cl. 360—97.02 **10 Claims**



1. A magnetic fluid apparatus for sealing an area between a shaft member provided at a rotation center and an external member concentrically arranged outside said shaft member, comprising:

magnetic circuit forming means, fixed to said external member, for forming a magnetic circuit between said magnetic circuit forming means and said shaft member;

magnetic fluid held between said shaft member and said magnetic circuit forming means by said magnetic circuit; and

scattering preventing means for preventing scattering of said magnetic fluid to surrounding areas, said scattering preventing means arranged close to said magnetic fluid and having a distal edge with a tapered surface projecting from said magnetic circuit forming means toward said shaft member, said edge being spaced from said shaft member.

5,057,953

HEAD SLIDER SUSPENSION ASSEMBLY LOAD BEAM HAVING A FUNDAMENTAL MODE VIBRATION CHARACTERISTIC IN THE RANGE OF ABOUT 2000 HERTZ TO ABOUT 4000 HERTZ

Dana T. Wanlass, Santa Barbara, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.

Division of Ser. No. 176,037, Mar. 31, 1988, Pat. No. 4,992,898.

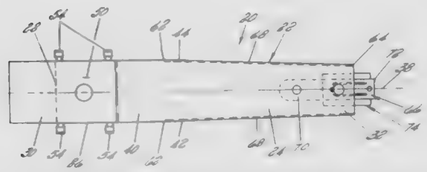
This application Aug. 31, 1990, Ser. No. 576,281

Int. Cl.[5] G11B *5/48, 21/16*

U.S. Cl. 360—104 **20 Claims**

1. A load beam adapted for use in a head slider suspension assembly comprising

a load beam having a generally rectangular shape and including means for defining a support arm end and a head/slider loading end, said load beam having a torsional vibration mode characteristic which, upon said load beam being excited by a driving force, produces a fundamental



mode vibration in the range of about 2,000 hertz to about 4,000 hertz and higher order mode vibrations above about 6,000 hertz.

5,057,954

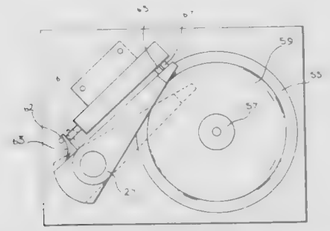
DISK DRIVE HEAD LIFT MECHANISM

William O'Sullivan, Milpitas, Calif., and Robert D. Freeman, Erie, Colo., assignors to Maxtor Corporation, San Jose, Calif.

Filed Feb. 13, 1989, Ser. No. 310,292

Int. Cl.[5] G11B *5/54*

U.S. Cl. 360—105 **31 Claims**



1. In a disk drive assembly comprising:

a rotating disk, the disk having a first surface with a storage area for storing data and a parking area;

a first actuator arm movable over the surface of the disk;

a first read/write head flexibly attached to the actuator arm;

an actuator for positioning the actuator arm;

a head-loading mechanism for automatically placing the head adjacent to and removing it away from the disk surface comprising:

actuator arm actuating means separate from said actuator for moving the actuator arm so as to position the head in the parking zone;

head lift means coupled to the actuator arm actuating means for lifting the head away from the disk after the head is positioned in the parking zone;

power storage means for activating the actuator arm actuating means and the head lift means when power to the disk drive assembly is interrupted; and

retraction means for disengaging the actuator arm actuating means and head lift means when power to the disk drive assembly is restored such that the head lift means releases the head adjacent to the parking zone and the actuator arm actuating means disengages from the actuator arm, allowing the free movement of the actuator across the disk surface.

5,057,955

COMPOSITE MAGNETIC HEAD

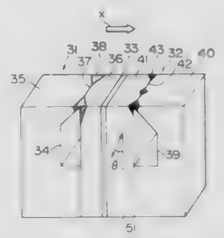
Osamu Inagoya; Takeshi Tottori, both of Ibaraki; Kazunari Nakagawa, Toride; Hirosuke Mikami, Tsukuba, and Hideo Fujiwara, Ibaraki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 10, 1989, Ser. No. 419,104

Claims priority, application Japan, Oct. 11, 1988, 63-253724

Int. Cl.[5] G11B *5/265*

U.S. Cl. 360—121 **11 Claims**



1. A composite magnetic head having a recording/ playback head and an erasing head combined in one unit through a nonmagnetic material, comprising:

first and second core halves constituting the erasing head, at least a first core half adjacent the recording/playback head being made of single crystal ferrite,

a plane (**100**) of said single crystal ferrite of said first core half being substantially parallel to a principal magnetic path-forming plane of magnetic flux passing through said first core half, and

an angle θ between an orientation <**100**> existing in said plane (**100**) of said first core half and a magnetic gap-forming plane between said first and second core halves being in a range of 10°–40°or 80°–120°.

5,057,956

MAGNETIC HEAD HAVING GAP DEPTH SIGHING APERTURE

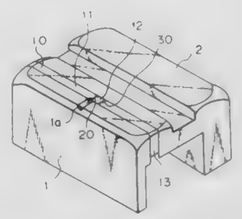
Yoichi Muratomi, Hyogo, and Hirofumi Oouchi, Fukushima, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1989, Ser. No. 407,528

Claims priority, application Japan, Sep. 19, 1988, 63-234090

Int. Cl.[5] G11B *5/187*

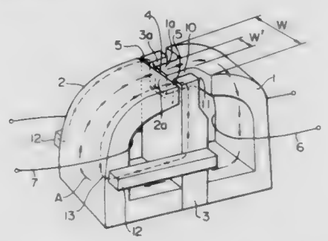
U.S. Cl. 360—122 **29 Claims**



1. A magnetic head having a sliding surface for contact with a magnetic recording medium, and including a head core having at least one gap and a pair of non-magnetic reinforcing members bonded so as to clamp said head core therebetween, wherein the improvement comprises:

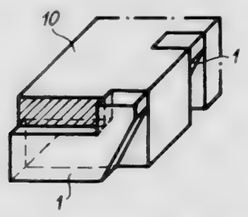
a notch formed in at least one of said non-magnetic reinforcing members, said notch extending from said gap to an end of said non-magnetic reinforcing member in the direction in which said gap extends, so that the depth of said gap can be observed through said notch.

5,057,957
MAGNETIC READ/WRITE HEAD HAVING A MAGNETIC SHORT CIRCUIT
Tomio Ito; Hideyuki Miyazaki, both of Kofu; Hideyuki Moriya, Yamanashi, and Kazuhito Wakabayashi, Yamanashi, all of Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Mar. 2, 1990, Ser. No. 487,304
Claims priority, application Japan, Mar. 3, 1989, 1-51500; May 5, 1989, 1-127257
Int. Cl.[5] G11B *5/17, 5/265, 5/187*
U.S. Cl. 360—123 **4 Claims**



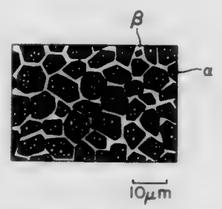
1. A magnetic head comprising a closure core having a recessed portion at the center tip end thereof, a first core and a second core which are shaped like a letter C provided on both sides of said closure core, the first core having a projection at the center end thereof, said projection of said first C-shaped core being inserted into the recessed end portion of said closure core, magnetic gaps formed respectively between said closure core and said second C-shaped core and between said first C-shaped core and said second C-shaped core, and a first coil and a second coil wound on said first and second C-shaped cores respectively, and a magnetic short circuit means on the side of said closure core and said second C-shaped core to shorten the magnetic path length between said closure core and said second C-shaped core.

5,057,958
MAGNETIC HEAD FOR MAGNETIC TRACKS WITH STRONG FIELD
Jacques Chabrolle, Beaune, France, assignor to Compagnie Europeenne de Composants Electroniques LCC, Courbevoie, France
PCT No. PCT/FR87/00455, § 371 Date Jul. 17, 1989, § 102(e) Date Jul. 17, 1989, PCT Pub. No. WO88/04093, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 18, 1987, Ser. No. 368,339
Claims priority, application France, Nov. 18, 1986, 86 15998
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—125 **10 Claims**



1. A single-track or multiple-track reading/writing magnetic head for magnetic tracks with strong coercive field comprising:
a non-magnetic mounting having a machined cavity; two pole pieces, each made of a solid metallic material, and which are separated by a gap, each of said pole pieces being housed in said cavity in said non-magnetic mounting wherein the pole pieces and the mounting having a common plane that defines the active face of the magnetic head;
an element for closing a magnetic circuit, said magnetic circuit encompassing said pole pieces,
at least one coil set on said closing element; wherein each pole piece is formed having a first and a second arm and further wherein said pole pieces are in the general shape of an L with one arm being tapered toward the meeting point to demarcate a contact face and a gap and are fixed in said cavity which has a corresponding shape, machined in mounting, the combined sets of pole pieces formed by the mounting/pole piece associations being arranged symmetrically with respect to said gap so that each of the pole pieces presented a contact face with the gap formed with their first arm, a contact face with said closing element (26) formed with their second branch, the ends of the first branches and the adjacent part of the mountings providing the common plane defining the active face of the magnetic head; and further wherein
the unit formed by the mountings and the pole pieces is joined by an adhesive.

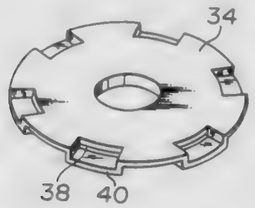
5,057,959
THIN-FILM MAGNETIC HEAD HAVING SUBSTRATE FORMED OF CRYSTALLIZED GLASS
Shinichi Inoue; Kenji Makino; Tooru Matuda, all of Kanagawa; Fujihiro Itoh, Saitama, and Yutaka Kusano, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1990, Ser. No. 499,653
Claims priority, application Japan, Mar. 30, 1989, 1-076432
Int. Cl.[5] G11B *5/147;* **B32B** *17/06*
U.S. Cl. 360—126 **7 Claims**



1. A thin-film magnetic head comprising:
(a) a substrate; and
(b) a magnetic core formed on said substrate, said magnetic core being constituted by magnetic thin films,
wherein said substrate is formed of crystallized glass containing a multiplicity of microcrystalline aggregation particles having an average particle size of 1 to 10 μm and each being formed of an aggregation of microcrystalline grains having an average grain size of about 0.5 μm or smaller.

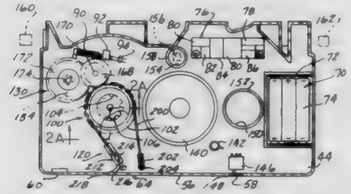
5,057,960
HUB FOR A DISK TYPE RECORDING MEDIUM
Haruo Shiba; Masaru Ikebe, and Toshihiko Ishida, all of Komoro, Japan, assignors to TDK Corporation, Tokyo, Japan
Continuation of Ser. No. 279,090, Dec. 2, 1988, Pat. No. 5,010,435. This application Nov. 6, 1990, Ser. No. 609,621
Claims priority, application Japan, Dec. 3, 1987, 52-184643
Int. Cl.[5] G11B *23/03, 3/70*
U.S. Cl. 360—133 **6 Claims**

1. A hub to be attached to the central portion of a recording medium which comprises:
a flat plate-like body made of a metallic material and including upper and lower surfaces and at least one indentation having a depth sufficiently so large that the upper surface of the body at the intended area is positioned below the lower surface of the body at the non-intended areas to form an aperture between the lower surface of the flat plate-like body and an upper surface of the indentation, the aperture forming an open area having an outer peripheral edge positioned substantially transversely to at least one of the upper and lower surfaces of the flat plate-like body so that the open area of the aperture permits passage



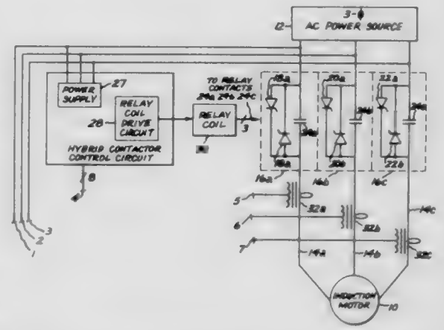
through the aperture in a radial direction of the flat plate-like body, and
an annular resinous body firmly attached to said flat plate-like body by insertion-molding such that at least a portion of the annular resinous body extends through the apertures for connecting said annular resinous body to said flat plate-like body.

5,057,961
VCR TAPE DRIVE TEST CASSETTE
Yousif I. Rayis, 1720 Westwood, Madison Heights, Mich. 48071
Filed Apr. 13, 1990, Ser. No. 509,011
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—137 **29 Claims**



1. A test cassette for helping determine whether a tape drive system within a conventional video cassette recorder is in acceptable condition for playing tape without damage in which the video cassette recorder includes a supply reel drive member which rotates when the video cassette recorder enters a tape unload mode of operation to rewind any video tape disposed around the record/play head of the video cassette recorder into a video tape cassette, the test cassette comprising:
a generally rectangular housing having an exterior size and shape generally corresponding to that of a conventional video tape cassette;
socket means, rotatably mounted in the housing, for positively engaging the supply reel drive member in a video cassette recorder when the housing is inserted into the video cassette recorder;
means mounted within the housing and connected to the socket means, for providing a controlled resistance to rotation of the socket means and the supply reel drive member engaged therewith;
means, mounted within the housing, for sensing rotation of at least a portion of the socket means; and
means, mounted within the housing, for communicating the sensed rotation of the socket means externally of the housing.

5,057,962
MICROPROCESSOR-BASED PROTECTIVE RELAY SYSTEM
Robert P. Alley, Clifton Park, and William H. Bicknell, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 22, 1990, Ser. No. 468,320
Int. Cl.[5] H02H *7/08*
U.S. Cl. 361—24 **27 Claims**



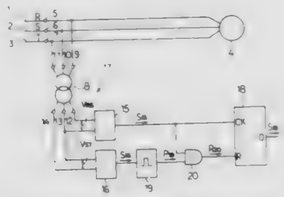
1. In an electric motor system having at least one phase and a main conductor connecting each phase of an electric motor to an ac power source, a protective relay system comprising:
a plurality of current sensing means for sensing currents through the main conductors, each respective one of said current sensing means providing a separate respective phase current feedback signal representative of current through the corresponding main conductor;
switching means coupled to each said current sensing means for controlling flow of current through said main conductors to said motor; and
overload sensing means for detecting any overload condition of said motor and turning off said switching means to prevent flow of current through said main conductors if an overload condition occurs, said overload sensing means comprising:
(a) means for averaging each respective phase current feedback signal over a predetermined time interval to provide separate respective phase current averages corresponding thereto;
(b) means for computing an average motor current from said phase current averages;
(c) means for calculating a thermal sum corresponding to said average motor current, said thermal sum being initially set to zero before starting said motor, said thermal sum being increased at a predetermined heating rate as long as said average motor current is greater than a predetermined overload current value, and said thermal sum being decreased at a predetermined cooling rate as long as said average motor current is less than said predetermined overload value; and
(d) means for comparing said thermal sum with a thermal limit determined by a thermal model of said motor and indicating an overload condition if said thermal sum exceeds the corresponding thermal limit for a predetermined time interval.

5,057,963

OPPOSITE PHASE DETECTING DEVICE FOR ALTERNATING CURRENT ELECTRICAL EQUIPMENT

Yukihiko Hatano, Ichinomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Feb. 21, 1990, Ser. No. 482,787
Claims priority, application Japan, Mar. 30, 1989, 1-76511
Int. Cl.[5] H02H *3/26*
U.S. Cl. 361—85 **1 Claim**



1. An opposite phase detecting device for alternating current electrical equipments, comprising:

a) a synchronous circuit generating first and second synchronizing pulses synchronizing a positive or negative half wave of first and second line voltages or phase voltages of a three-phase AC power supply supplied to an alternating current electrical equipment, respectively and having pulse widths approximately same as those of the first and second phase voltages or line voltages, respectively;

b) a pulse generating circuit triggered by the second synchronizing pulse to thereby generate a reset pulse having a time interval shorter than the time interval of each of the first and second synchronizing pulses generated by said synchronous circuit;

c) a reset circuit generating a reset signal based on a logical multiplication of the reset pulse generated by said pulse generating circuit and the first synchronizing pulse generated by said synchronous circuit; and

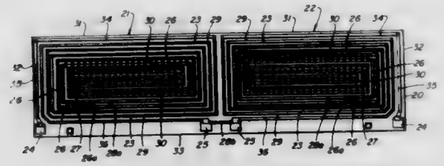
d) a counter circuit counting the first synchronizing pulses generated by said synchronous circuit, said counter circuit being reset when supplied with the reset signal from said reset circuit, said counter circuit generating an opposite phase detection signal when a count value thereof reaches a predetermined value.

5,057,964

SURGE PROTECTOR FOR TELECOMMUNICATIONS TERMINALS

David K. Bender, Tequesta, and Richard R. Lathrop, Jr., Royal Palm Beach, both of Fla., assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 942,771, Dec. 17, 1986, abandoned.
This application May 14, 1990, Ser. No. 522,510
The portion of the term of this patent subsequent to Mar. 2, 2008, has been disclaimed.
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—118 **29 Claims**



1. A surge protector having substantially even distribution of surge effects, including heat distribution, over the area carrying the surge, comprising:

a ceramic substrate;

a spiral electrically resistive pattern formed on one surface of the ceramic substrate, the pattern being in the form of a double spiral having first and second physically parallel resistor paths, joined in series, the first of the paths having path lengths located between path lengths of the second path;

the width of the path and the distance between adjacent path lengths being relatively narrow; and

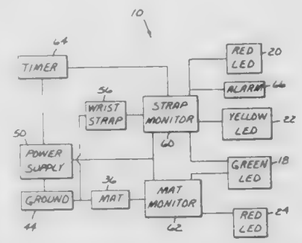
trimming means located at a central portion of the double spiral for increasing the length of a resistive path, the trimming means comprising shorting links extending between the first and second physically parallel paths, the first and second paths as adjusted by the trimming means providing a path for substantially uniform heat dissipation from the central portion of the spiral path to edge portions of the substrate.

5,057,965

WORK STATION MONITOR

Robert W. Wilson, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 6, 1989, Ser. No. 376,113
Int. Cl.[5] G01R *31/02*; **H05F** *3/02*
U.S. Cl. 361—212 **18 Claims**



18. A device for indicating the grounding ability of a conductive strap having a ground tether, comprising:

housing means;

jack means located in said housing means for receiving the grounding tether;

means for monitoring the ground path resistance of the conductive strap and grounding tether, said means performing said monitoring periodically on a continual basis in response to timing means which pulses an input to said means, said input also being connected to the tether and strap; and

means for electrically connecting said monitoring means to an external power supply and an external ground.

5,057,966

APPARATUS FOR REMOVING STATIC ELECTRICITY FROM CHARGED ARTICLES EXISTING IN CLEAN SPACE

Soichiro Sakata; Takanori Yoshida, both of Kanagawa, and Takao Okada, Tokyo, all of Japan, assignors to Takasago Thermal Engineering Co., Ltd., Tokyo, Japan

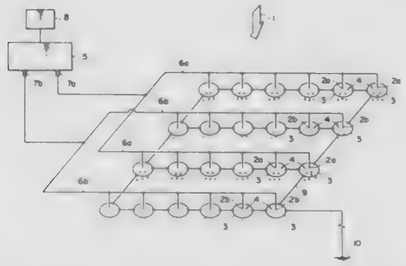
Filed Oct. 13, 1989, Ser. No. 427,686
Claims priority, application Japan, Mar. 7, 1989, 1-52867; Mar. 8, 1989, 1-55813
Int. Cl.[5] H05F *3/00*
U.S. Cl. 361—213 **16 Claims**

1. An apparatus for removing static electricity from charged articles existing in a clean space comprising an Ac ionizer having a plurality of needle-like emitters disposed in a flow of filtered clean air, wherein an AC high voltage is applied to said emitters to effect corona discharge for ionizing air, whereby a flow of thus ionized air is supplied onto said charged articles to neutralize static electricity thereon, said apparatus characterized in that:

a discharge end of each of said needle-like emitters is coated with a dielectric ceramic material;

each of said emitters is disposed with its discharge end spaced apart at a predetermined distance from a grounded grid-like or loop-like opposite conductor, each emitter and associated opposite conductor forming a discharge pair;

a plurality of such discharge pairs are arranged in a two dimensional expanse in a direction transversing a flow direction of said flow of filtered clean air; and



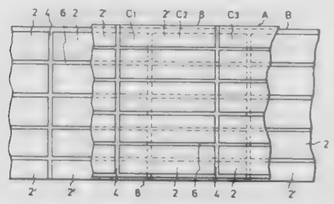
emitters of some of said discharge pairs are connected to a high voltage AC source having added thereto a negative voltage bias to thereby form pseudo negative pole emitters, and emitters of the other discharge pairs are connected to a high voltage AC source having added thereto a more positive voltage bias relative to said negative voltage bias to thereby form pseudo positive pole emitters, said pseudo negative pole emitters and pseudo positive pole emitters being discretely arranged in said two dimensional expanse.

5,057,967

ROLLED FILM CAPACITOR

Minoru Den, Shiga; Hirokazu Sakaguchi, Kusatsu; Moribiko Hasebe, Omihachiman; Shigeyoshi Nishikawa, Shiga; Masayoshi Kakine, Kusatsu, and Shusaku Tsujio, Otsu, all of Japan, assignors to Nichicon Corporation, Kyoto, Japan

Filed Jul. 10, 1990, Ser. No. 550,488
Claims priority, application Japan, Jul. 26, 1989, 1-193000; Mar. 28, 1990, 2-82596
Int. Cl.[5] H01G *4/38*
U.S. Cl. 361—328 **4 Claims**



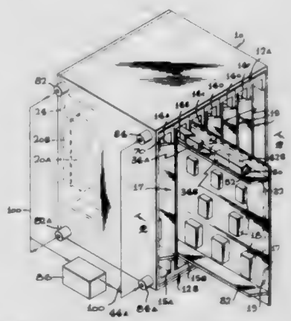
1. A rolled film capacitor comprising first and second dielectric film strips which are piled one upon another and wound into a roll, each said strip having a metal layer deposited on one surface thereof, said metal layer being divided into a plurality of island electrodes which are mutually separated by a plurality of insulating gaps extending in the lateral and longitudinal directions and regularly arrayed in both said directions, said island electrodes on said strips facing each other to form a plurality of capacitor elements and shifted both laterally and longitudinally one from another in a generally overlapping fashion so as to electrically connect said capacitor elements in series in both said directions, said roll having a first end face formed with said one side edge of said first strip, a second end face formed with said one side edge of said second strip, a first electrode terminal formed on said first end face in contact with all of said island electrodes lying along said one side edge of said first strip, and a second electrode terminal formed on said second end face in contact with all of said island electrodes lying along said one side edge of said second strip.

5,057,968

COOLING SYSTEM FOR ELECTRONIC MODULES

Robert A. Morrison, Long Beach, Calif., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Oct. 16, 1989, Ser. No. 422,181
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—385 **2 Claims**



1. A modular electronic system comprising:

a housing assembly having first and second opposed plates, said opposed plates having a plurality of spaced guide rails thereon;

a plurality of electronic modules, each of said modules having a metallic frame, each said metallic frame being slidably mounted to said opposed guide rails and detachably (clampable) clamped thereto;

a cooling system comprising:

each of said guide rails having internal serpentine cooling passages extending substantially the entire length thereof, said internal cooling passages having first and second ends;

each of said opposed plates having a cooling inlet passage coupling said first end of said internal passages in parallel and a cooling outlet passage coupling said second ends of said internal passages in parallel; and

means for circulating cooling fluid through said plate and rail passages so as to maintain a nucleate boiling phase change of the coolant within said rail passages.

5,057,969

THIN FILM ELECTRONIC DEVICE

Joseph G. Ameen, Apalachin; Joseph Funari, Vestal, and John A. Goldfuss, Jr., Port Crane, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1990, Ser. No. 578,711
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **8 Claims**

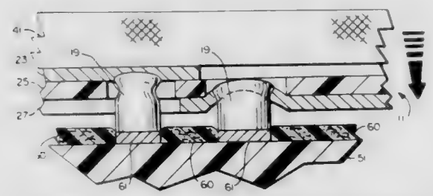
1. An electronic package comprising:

a circuitized substrate;

a flexible film carrier electrically coupled to said substrate and including a dielectric layer having a first plurality of apertures therein, a first circuit layer located on one side of said dielectric layer and a second circuit layer located on a second side of said dielectric layer opposite said first side and electrically connected to said first layer at selected locations through said dielectric layer, said first circuit layer including a first plurality of conductive leads

each having a portion thereof bridging a respective one of said apertures within said dielectric layer;

an electronic device including a plurality of contact locations thereon electrically connected to respective ones of said portions of said conductive leads of said first circuit layer which bridge said apertures within said dielectric layer; and



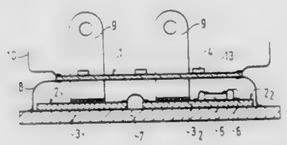
a plurality of solder elements, each of said elements providing electrical connection between said contact locations of said electronic device and said respective ones of said portions of said conductive leads of said first circuit layer which bridge said apertures within said dielectric layer.

5,057,970

ELECTRONIC POWER COMPONENT CIRCUIT

Jacques Chave, Lyons, France, assignor to GEC Alsthom SA, Paris, France

Filed Oct. 11, 1990, Ser. No. 596,126
Claims priority, application France, Oct. 11, 1989, 89 13278
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **3 Claims**



1. An electronic power component circuit comprising:

at least one electronic power circuit, said at least one electronic power circuit constituting a hybrid power circuit;

a platform including an aluminum nitride substrate;

a heat dissipating slab;

means fixedly mounting said platform in overlying position relative to said electronic power circuit, said hybrid power circuit being fixed directly to said heat dissipating slab, and said aluminum nitride substrate being connected to said heat dissipating slab via heat drains constituting said means fixedly mounting said platform in overlying position relative to said electronic power circuit; and

low level electronic control circuits fixed to said substrate of aluminum nitride.

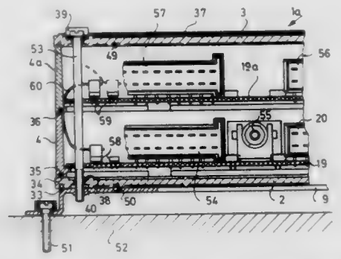
5,057,971

MODULAR STOCKABLE HOUSING FOR ELECTRONIC DEVICE

Heinz-Josef Hautvast, Brigachtal; Heinz Kelch, Königsfeld, and Siegfried Koch, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Mannesmann Kienzle GmbH, Villingen, Fed. Rep. of Germany

Filed Aug. 3, 1989, Ser. No. 388,993
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1938, 3826382
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—395 **8 Claims**

1. An expandable housing for an electronic device comprising at least one empty, rectangular, open-ended frame having flat side walls and at one end a rectangular first connection means and at the other end a rectangular second connection means which is complementary to and configured to interfit with the first connection means, a base member and a substantially similarly configured cover member, said base member having at one side rectangular third connecting means engaging and interfitting with one of said first and second connection means to for a first substantially sealed rectangular joint, said cover member having at one side rectangular fourth connection means engaging and interfitting with the other of said first



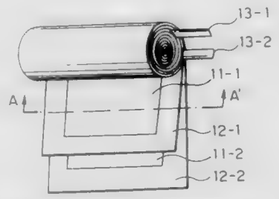
and second connection means to form a second substantially sealed rectangular joint whereby a closed housing is formed, means on the inside of the frame receiving and supporting a printed circuit board, a flat side wall of said frame having an opening, an electrical connector inside the housing and accessible for receiving a complementary connector engaging said side wall opening, and fastening means passing entirely through the frame member, cover and base members and fastening together said cover member, frame and base members.

5,057,972

ELECTROLYTIC CAPACITOR

Kazuo Ishii, Tokyo, Japan, assignor to Jelmax Co. Ltd., Shinbashi, Japan

Filed Mar. 25, 1991, Ser. No. 674,100
Int. Cl.[5] H01G *9/02*
U.S. Cl. 361—512 **5 Claims**



1. An electrolytic capacitor comprising:

a pair of electrode foils;

an oxide layer provided on the surface of at least one of said electrode foils;

an ion permeable capacitor paper interposed between said pair of electrode foils;

an electrolyte being impregnated into said capacitor paper;

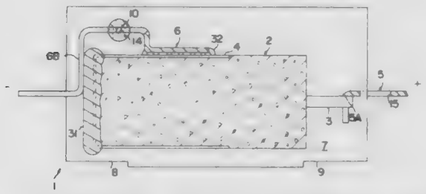
said capacitor paper containing hydrogen reducing fine particles consisting of palladium, platinum or an alloy of both, distributed therein in an amount between 0.1 and 1% by weight based on the weight of said capacitor paper.

5,057,973

SOLID ELECTROLYTE CAPACITOR WITH INTEGRAL STAMPED FUZE

Didier Gouvernelle, Semblancay, and Michel Andrepierre, Parcay-Meslay, both of France, assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 474,572, Feb. 2, 1990, Pat. No. 4,989,119. This application Sep. 28, 1990, Ser. No. 589,240
Claims priority, application France, May 29, 1990, 9006655
Int. Cl.[5] H01G *9/06*
U.S. Cl. 361—534 **15 Claims**



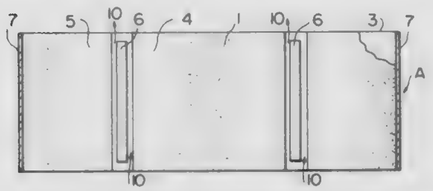
1. A solid electrolyte capacitor (1) comprising a capacitor body (2) embedded in a block (7) of electrically insulative resin, said body (2) provided with two electrodes (3,4) respectively electrically connected to two connecting tangs (5,6) projecting from said block (7) to constitute the output leads (+,−) a fuzible member (10) of predetermined useful length being disposed in series between the capacitor body (2) and a selected of said output leads: characterized in that said connecting tang (6) incorporating said selected output lead is formed by a first section (6B) fixed to one electrode (4) of the capacitor body (2) and projecting out of the block to form a test lead (B) and a second section (6A) projecting out of the block (7) to form said output lead (−), the second section being electrically connected to the first section (6B) and to the capacitor body (2) only by an elongate strip (10) in one piece with said sections and constituting said fuzible member, which is embedded in a supporting mass of rigid or flexible thermally insulative resin (14) extending between the two sections, said supporting mass (14) being embedded in the resin of the block (7).

5,057,974

SYSTEM FOR UNIFORMLY ILLUMINATING LIQUID CRYSTAL DISPLAY BOARD FROM REAR SIDE

Tatsuji Mizobe, 1-21-3, Sugano, Ichikawa-Shi, Chiba-Ken, Japan

Filed Jun. 22, 1990, Ser. No. 541,944
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—26 **8 Claims**



1. A system for uniformly illuminating a rectangular liquid crystal display board from the rear side, wherein said system includes a rectangular main body located behind said liquid crystal display board in a spaced relationship, said main body having a configuration substantially identical to that of the liquid crystal display board and including:

a single rectangular transparent substrate made of transparent resin,

a first coated layer deposited on the front surface of said transparent substrate with transparent resin, said first coated layer having a refractive index different from that of the transparent substrate,

a second coated layer deposited on the rear surface of the transparent substrate with transparent resin, said second coated layer having a refractive index different from that of the transparent substrate,

a rugged layer deposited on the second coated layer with transparent resin suitably employable for forming an underlying layer, said rugged layer including a number of light reflecting means in the form of concavities and convexities on the front surface of said rugged layer for irregularly reflecting light from each light source, said light reflecting means being distributed with a density per unit area which increases in inverse proportion to a square of the distance as measured from each light source to keep brightness substantially uniform over the whole surface of the transparent substrate, and

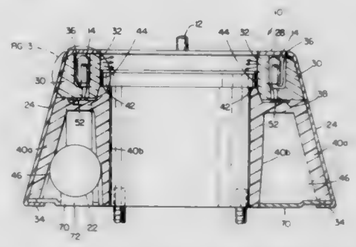
a plurality of light sources for generating light to be irradiated in the interior of the transparent substrate.

5,057,975

APPARATUS FOR ILLUMINATING A KEYHOLE

Gregory R. Evigan, 19818 Ventura Blvd., Woodland Hills, Calif. 91364

Filed Feb. 19, 1991, Ser. No. 657,068
Int. Cl.[5] E05B *17/10*
U.S. Cl. 362—100 **6 Claims**



1. A conversion apparatus to adapt an unlighted lock having a cylinder with a flange and a front face to a lock selectively illuminable using a battery, said apparatus comprising:

an annular outer housing having a housing front wall and an aperture dimensioned to accept the lock cylinder therein such that the cylinder front face locates within said outer housing, said outer housing further having a rear wall positionable to contact a door;

an annular body positioned within said outer housing and held in place therein by said front and rear walls, said body having an aperture dimensioned to accept the lock cylinder therein and a shoulder to engage the flange of the lock cylinder and hold the cylinder front face recessed from the housing front wall, said body further having a chamber dimensioned to accept the battery;

illumination means positioned within said outer housing for illuminating the cylinder front face; and

switch means supported by said outer housing for selectively energizing said illumination means from the battery.

5,057,976

CHRISTMAS TREE LIGHT ASSEMBLY

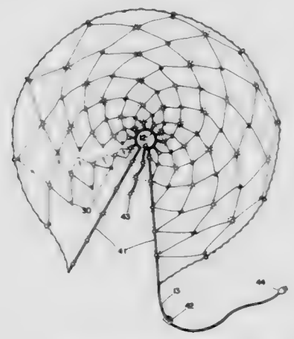
Sheila DuMong, 1403 S. Jameson La., Montecito, Calif. 93108

Filed Apr. 10, 1990, Ser. No. 507,169
Int. Cl.[5] F21P *1/02*
U.S. Cl. 362—123 **1 Claim**

1. A decorative light assembly of web-like unitary construction for removably and adjustably arranging an array of electrical lights upon the surface of a Christmas tree wherein said array of electrical lights comprises:

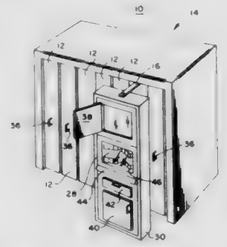
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(a) a flexible apical support member, said flexible apical support member having fastening means thereon for the removable encircling attachment of said apical support member around the top of a Christmas tree;
(b) a primary electrical conductor, said conductor having one end terminating in a wall plug and the other end terminating in said apical support member;
(c) a plurality of secondary strings of electrical lights radiating outward and depending substantially vertically down-



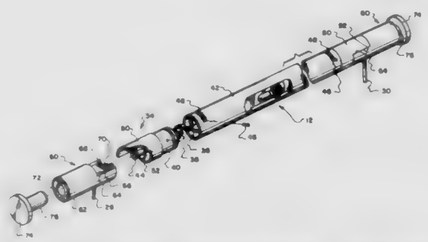
ward from said apical support member, each of said secondary strings being in electrical communication with said primary electrical conductor and each of said strings having two adjacent secondary strings extending in a direction substantially parallel to each said secondary string, each such secondary string having an apical end and a base end; and
(d) interconnecting clips, said interconnecting clips slideably holding together adjacent secondary strings of lights.

5,057,977
PULL-OUT LIGHTED DISPLAY
Alan M. Kurzman, Dallas, Tex., assignor to Triangle Pacific Corp., Dallas, Tex.
Filed Apr. 17, 1990, Ser. No. 510,099
Int. Cl.[5] A47F *3/06, 11/10*
U.S. Cl. 362—125 **18 Claims**



1. A display device, comprising:
a housing;
at least one vertically oriented module being removable from and retractable into said housing;
said module including first and second opposed panels connected to define a substantially enclosed casing, each of said panels for displaying a phototransparency depicting selected merchandise; and
means disposed within said enclosed casing and behind said phototransparency for illuminating and backlighting said phototransparency upon removal of said at least one module from said housing.

5,057,978
SHOWCASE LIGHTING FIXTURE
Mario W. Conti, 7044 Estrella Del Mar Rd., Carlsbad, Calif. 92009
Filed Nov. 20, 1989, Ser. No. 439,350
Int. Cl.[5] A47F *11/10*
U.S. Cl. 362—125 **4 Claims**

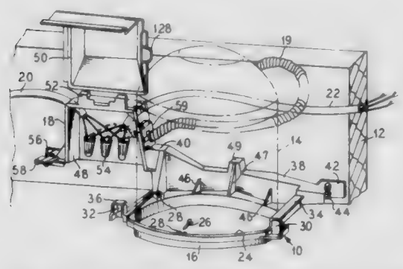


1. A showcase lighting fixture comprising in combination:
a. a lighting strip including a first conductor, a second conductor and a plurality of lamps connected in parallel therebetween;
b. housing means for enclosing said lighting strip, including a plurality of apertures each aligned with one of said plurality of lamps for transmitting the illumination therefrom, said housing means further including shaped end portions said housing means shaped portions being semi-cylindrical and said complementary shaped portions being semi-cylindrical;
c. first terminal means coupled to one of said conductors and located at one end of said housing means; and
d. second terminal mans coupled to the other of said conductors and located at the other end of said housing means;
e. first and second socket receptacles, each having means to engage said first and second terminal means, each of said socket receptacles being adapted to be connected to a source of energy of different polarity, said socket receptacles each including complementary shaped portions to receive said housing means shaped end portions whereby the mating of said housing means and said socket receptacles result in a cylindrical shape;
whereby energy of a first polarity is applied to said first terminal means and energy of a second polarity is applied to said second terminal means for energizing said lamps.

5,057,979
RECESSED LIGHTING FIXTURE
Douglas W. Carson, Downey, and Raymond J. Kusmar, LaHabra, both of Calif., assignors to Thomas Industries, Inc., Los Angeles, Calif.
Filed Dec. 12, 1989, Ser. No. 448,951
Int. Cl.[5] F21V *21/04*
U.S. Cl. 362—147 **19 Claims**

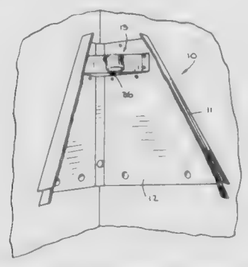
1. A support frame for holding a lamp housing of a recessed lighting fixture in a ceiling, comprising:
a molded recessed lighting frame member of a plastic material having an opening in which a lamp housing is mounted so that light from the lamp mounting is projected through said opening;
a molded junction box having at least one portion formed in one piece with said frame member, said at least one portion being of the plastic material; and

means for affixing said molded recessed lighting frame member abutting a lateral face of a joist in the ceiling, said



means for affixing being commonly molded with said molded lighting frame member.

5,057,980
CORNER LIGHTING FIXTURE WITH SELF-CONTAINED JUNCTION BOX
James P. Russell, Claridge House II - Apt. 2IW, Verona, N.J. 07044
Filed Feb. 26, 1990, Ser. No. 484,822
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—147 **14 Claims**



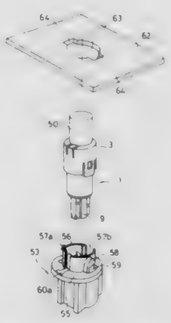
1. A lighting fixture for permanent installation in a corner of a room between two intersecting walls comprising in combination a junction box with rear walls shaped to fit snugly in said corner while positioning the junction box symmetrically about the corner bisecting plane, means for enabling said junction box to be fastened symmetrically about said bisecting plane to said intersecting walls in said corner, entry means on said junction box for admitting electric branch circuit wiring and securing such wiring against separating from said junction box, a screw socket for receiving a bulb, said socket being mounted on another wall of said junction box with wiring passing therethrough into said box for electrical connection to said branch circuit wiring, at least one wall of said junction box other than said rear walls thereof being separable and removable from said junction box to permit access to the interior of said junction box, all of said removable junction box walls being joined to the rear walls of a shade-like lamp housing constructed and arranged with a rear opening for receiving said junction box therethrough, all of said removable junction box walls being located for assembly to said junction box when said lamp housing is positioned over said junction box, means for fastening said removable junction box walls to said junction box for closing said junction box while simultaneously mounting said lamp housing.

5,057,981
DECORATIVE LIGHTED CONFIGURATIONS
Richard D. Bowen, 519 W. Corunna Ave., and David B. DeNard, 555 W. Corunna Ave., both of, Corunna, Mich. 48817
Filed Jul. 16, 1990, Ser. No. 553,858
Int. Cl.[5] F21S *1/14*
U.S. Cl. 362—219 **13 Claims**



1. A decorative lighted configuration having decorative articles, comprising:
light source means for emitting light; and
frame means substantially surrounding said light source means for forming a predetermined configuration, said frame means receiving one or more decorative articles;
said frame means comprising a plurality of conduits, said conduits extending longitudinally and being flexible to permit formation of said predetermined configuration, and at least one coupling for coupling an adjacent pair of said conduits together in substantially an end to end relationship;
said at least one coupling comprising a tubular member having an interior surface defining a passage adapted to receive the ends of the adjacent pair of said conduits for joining the adjacent pair of said conduits together; and
said light source means comprising one or more strings of lights having one or more bulbs spaced longitudinally therealong, said strings of lights being independent of said conduits and extending through the longitudinal interior of said conduits.

5,057,982
INDICATOR LAMP
Chiyoki Hanami, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Oct. 16, 1990, Ser. No. 598,439
Claims priority, application Japan, Oct. 16, 1989, 1-119694[U]
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—226 **1 Claim**



1. An indicator lamp employing a light emitting diode with a pair of leads, comprising:
a PCB socket to be mounted on a printed circuit board;

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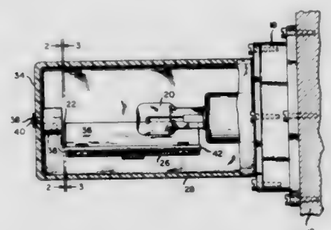
a removable socket having an insert portion to be fitted into said PCB socket;
a first lead terminal provided in said removable socket and having a resistor contact and a first lead contact for contact with one of said leads;
a second lead terminal provided in said removable socket and having a first contact portion and a second lead contact for contact with the other lead;
a contact terminal provided within said removable socket and having a second contact portion and a second resistor contact; and
a resistor provided within said removable socket so that said resistor is held between said first and second resistor contacts.

5,057,983

EMERGENCY LIGHTING APPARATUS WITH MOVABLE PROTECTIVE SHIELD ADAPTED FOR USE WITH MOVABLE ENVIRONMENTAL STRUCTURE

Ray R. Ulrich, Sr., Trenton, N.J., assignor to Rudy's Armature Service, Inc., Rahway, N.J.

Filed Jul. 16, 1990, Ser. No. 553,049
Int. Cl.[5] F21V *1/00, 17/02*
U.S. Cl. 362—276 **16 Claims**



1. An emergency lighting apparatus with movable shielding means for use with movable environmental structure, said emergency lighting apparatus comprising:
a) a light housing means fixedly secured with respect to the environmental structure to be movable therewith;
b) a lighting means detachably secured with respect to said light housing means to be movable therewith, said lighting means adapted to generate light emanating from said light housing means as desired; and
c) a movable light shielding means being pivotally movable with respect to said light housing means responsive to movement of said light housing means, movement of said light shielding means responsive to movement of said light housing means being powered by gravitational force exerted downwardly directly upon said movable light shielding means itself, said light shielding means being at least partially opaque to facilitate shading of light passing therethrough, said movable light shielding means comprising a weighting means to facilitate pivotal movement thereof for preventing the transmission of light as desired.

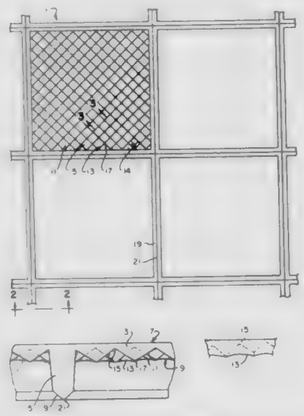
5,057,984

LIGHT WEIGHT LIGHTING PANEL

David M. Kelley, Fenton, Mo., assignor to K-S-H, Inc., St. Louis, Mo.

Continuation of Ser. No. 545,105, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 821,220, Jan. 21, 1986, abandoned, which is a continuation of Ser. No. 525,054, Aug. 22, 1983, abandoned. This application Mar. 13, 1991, Ser. No. 668,391
Int. Cl.[5] F21V *5/00, 5/02*
U.S. Cl. 362—330 **3 Claims**

1. A light-weight, substantially flat lighting panel for use under a light source, the panel being made of light-transmitting thermoplastic material and having an upper face and a lower face, said upper face having a transparent surface, said panel comprising a thin web portion having on its lower face pattern means for breaking up images, said web portion being so thin that a two-by-four foot panel formed entirely of the web portion would sag in a lighting fixture, and means for stiffening said panel sufficiently that a two-by-four foot panel resists



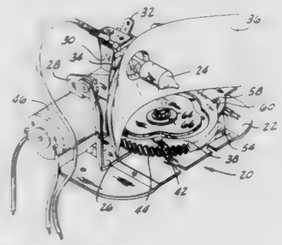
sagging and may be used in a lighting fixture, said stiffening means consisting essentially of a grid of depending thin ribs on the lower face of the panel and formed integrally with the web portion of the panel, the ribs having transparent downwardly converging side walls for providing bright strips when the panel is lighted from above.

5,057,985

BI-DIRECTIONAL OSCILLABLE SIGNAL LIGHT

Robert E. Kreutzer, Jr., Columbia, Ill.; John S. Davis, Town & Country, and Andrew G. Smith, Chesterfield, both of Mo., assignors to Public Safety Equipment, Inc., St. Louis, Mo.

Filed Aug. 6, 1990, Ser. No. 563,293
Int. Cl.[5] F21M *3/18*
U.S. Cl. 362—425 **25 Claims**



1. A signal light comprising:
a base;
a light source;
means for pivotally mounting the light source on the base to pivot about a first axis;
means for pivotally mounting the light source to pivot about a second axis, substantially perpendicular to the first axis; and
said means for pivoting the light source about the first and second axes, comprising:
moving unitary cam means having a first cam surface defined therein and a second cam surface defined therein;

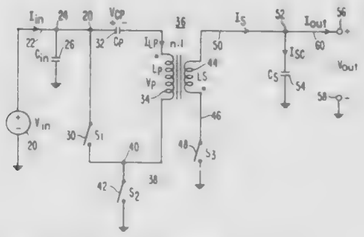
means following the first cam surface for pivoting the light source about the first axis; and
means following the second cam surface for pivoting the light source about the second axis.

5,057,986

ZERO-VOLTAGE RESONANT TRANSITION SWITCHING POWER CONVERTER

Christopher P. Henze, Lakeville; David S. Lo, Burnsville, both of Minn., and Hubert C. Martin, Jr., Temecula, Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 12, 1990, Ser. No. 492,708
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **15 Claims**



1. A power converter, comprising:
an input coupleable to a source of DC potential,
an output coupleable to a DC load,
an electrical transformer having a primary winding coupled to said input and a secondary winding coupled to said output,
a first capacitor coupled to said input and said primary winding,
a second capacitor coupled to said secondary winding and said output,
first switch means for coupling said first capacitor to said primary winding for exchanging stored energy between said first capacitor and said primary winding,
second switch means operable in synchronization with said first switch means and coupled to said secondary winding for applying at least a portion of said exchanged energy to said DC load,
third switch means operable for coupling said primary winding to said source of DC potential alternately and sequentially with the operation of said first and second switch means, so that said first capacitor exchanges energy with said primary winding when said first switch means is activated, and said second capacitor exchanges energy with said secondary winding when said second switch means is activated, and
control means for selectively activating said first, second and third switch means, such that said switches are operated when the voltage drop therethrough is substantially zero, said third switch means being operable in opposition to said first and second switch means.

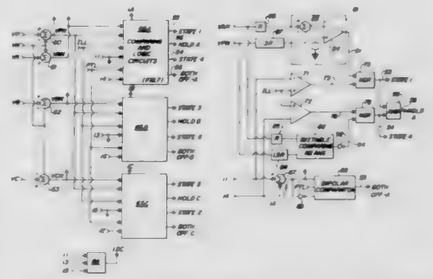
5,057,987

FAULT DETECTION AND PROTECTION STRATEGY FOR A PAIR OF COMPLEMENTARY GTO THYRISTORS

Ajith K. Kumar, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Nov. 27, 1990, Ser. No. 618,783
Int. Cl.[5] H02H *7/122*
U.S. Cl. 363—58 **12 Claims**

1. Improved means for detecting the conducting state of at least one electric value in an electric power converter having first and second alternately conducting controllable electric valves connected in series with one another between relatively positive and negative d-c conductors that are adapted to be connected to a source of electric power, the juncture of the valves forming an a-c terminal adapted to be connected to an alternating current load circuit, each valve having a control electrode to which alternative turn-on and turn-off signals are periodically applied and being respectively switched by such signals between turned-on and turned-off states, the first valve when turned on being arranged to freely conduct load current from the positive d-c conductor to said a-c terminal, and the second valve when turned-on being arranged to freely conduct load current from the a-c terminal to the negative d-c conductor, wherein the improvement comprises:
(a) voltage sensing means coupled to the a-c terminal and to both of the d-c conductors for deriving two voltage feedback values respectively representative of the potential difference between said d-c conductors and the potential difference between said a-c terminal and said negative d-c conductor;
(b) first bistable value comparing means responsive to said voltage feedback values and having alternative first and



second operating states, said first state occurring if the potential difference between said a-c terminal and said negative d-c conductor exceeds a predetermined first fraction of the potential difference between said d-c conductors and said second state occurring otherwise, said first fraction being greater than approximately ¼ but less than ½, whereby said first state occurs when said first valve is turned on;
(c) current sensing means for deriving a first current feedback value representative of the magnitude of current conducted by said first valve;
(d) second bistable means for comparing said first current feedback value with a constant value representative of a predetermined level of current and having alternative first and second operating states, said first state of said second means occurring if the magnitude of current conducted by said first valve exceeds said predetermined level, and said second state of said second means occurring otherwise,

whereby said first state of said second means occurs when said first valve is turned on; and

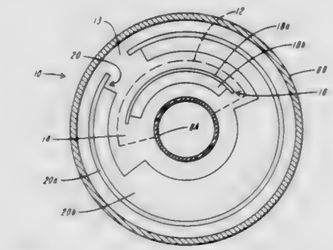
(e) logic means responsive to the states of both said first means and said second means for providing a signal indicative of whether or not said first valve is in a turned-on state.

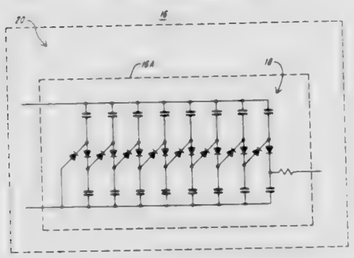
5,057,988

MODULAR POWER SUPPLY

Robert L. Theroux, Holyoke, and Fatemeh Abnoosi, East Longmeadow, both of Mass., assignors to K and M Electronics, Inc., West Springfield, Mass.

Filed Nov. 16, 1989, Ser. No. 437,986
Int. Cl.[5] H02M *7/10*
U.S. Cl. 363—59 **10 Claims**





1. A system comprising:

an encasement including walls which define an interior region; and

an integer (n) number of networks, where n is larger than one, each of said networks being positioned within said interior region, each of said networks being encapsulated in a substantially electrically non-conductive material, said encapsulation material for said networks being characterized by a non-friction based bonding affinity, wherein one outer surface of at least one of said encapsulated networks is complementary to, adjacent to, and in physical contact with an outer surface of at least one other of said encapsulated networks.

5,057,989

PWM CONTROLLED DC/AC POWER CONVERTER

Syun-ichi Hirose, Tokyo; Toshiaki Kudor, Hachioji, and Takeichi Kawakami, Fuchu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 280,814, Dec. 7, 1988, abandoned. This application Aug. 31, 1990, Ser. No. 575,613
Claims priority, application Japan, Dec. 9, 1987, 62-311239
Int. Cl.[5] H02M *7/44*
U.S. Cl. 363—95 **6 Claims**

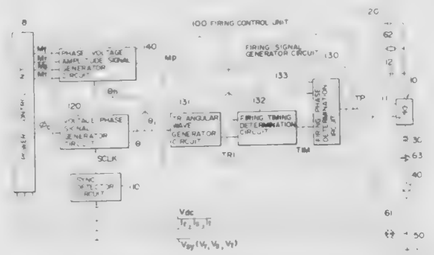
1. An apparatus for controlling a power converter, which is adapted to control, in accordance with the PWM control system, a power converter for system interconnection interposed between a d.c. power source and an a.c. system to interchange power therebetween,

said apparatus for controlling power converter comprising:

synchronous detector means for detecting a phase of an a.c. system voltage to output it as a synchronization signal;

voltage phase-signal generator means for determining a phase of an output a.c. voltage of said power converter from a phase difference angle adjustment signal for determination of a phase difference between said a.c. system voltage and said output a.c. voltage of said power converter and said synchronization signal from said synchronous detector means to output it as an output voltage phase signal;

phase voltage amplitude signal generator means responsive



to a voltage amplitude adjustment signal for determining an amplitude per phase of said output a.c. voltage to switch voltage amplitude adjustment signals of at least two phases in accordance with said output voltage phase signal from said voltage phase-signal generator means to output a signal obtained by switching as a phase voltage amplitude signal; and

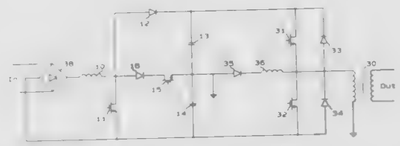
firing signal generator means for determining energization periods of respective controllable rectifier elements constituting said power converter on the basis of said output voltage phase signal from said voltage phase-signal generator means and said phase voltage amplitude signal from said phase voltage amplitude signal generator means.

5,057,990

BIDIRECTIONAL SWITCHING POWER APPARATUS WITH AC OR DC OUTPUT

Zdzislaw Gulczynski, P.O. Box 11633, Costa Mesa, Calif. 92627

Filed May 2, 1990, Ser. No. 518,080
Int. Cl.[5] H02M *7/537*
U.S. Cl. 363—131 **20 Claims**



1. Switching power apparatus, comprising:

a pair of inputs with a DC input voltage appearing thereacross;

a first and second capacitive means coupled to ground for storing a first and second voltages respectively;

an inductive means coupled to one input for attaining a current;

a first switching means coupled to the other input for selectively applying the DC input voltage across the inductive means;

a second switching means for selectively applying the current to ground;

a diode means for applying the current to the first capacitive means; and

an amplifier means for converting the first and second voltages into an output signals,

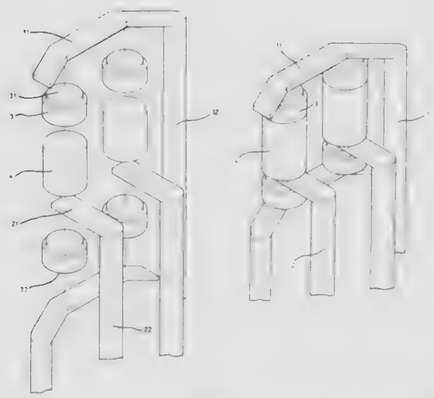
wherein the DC input voltage is referenced to the second voltage.

5,057,991

STRUCTURE OF BRIDGE RECTIFIER

C. G. Sheen, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Jan. 24, 1991, Ser. No. 645,444
Int. Cl.[5] H02M *7/06*
U.S. Cl. 363—144 **1 Claim**



1. A bridge rectifier, comprising two outer leads, two inner leads, two pairs of silicon chips and two conductive blocks respectively connected into a rectifier circuit, wherein:

said outer leads have each a curved silicon chip contact portion at the front end, and a lead wire vertically connected to said curved silicon chip contact portion at one end;

said inner leads have each a silicon chip contact portion, and a lead wire connected to said silicon chip contact portion at the bottom end thereof and arranged into a L-shaped configuration;

said two pairs of silicon chips have each a positive pole at one end and a negative pole at an opposite end;

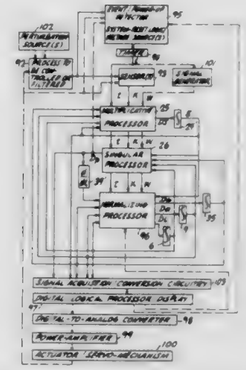
said conductive blocks are each made of an electric conductor in cylindrical shape; and characterized in that the assembly of the bridge rectifier is made by inserting a first outer lead in a mold and fastening a first pair of silicon chips to said first outer lead with the negative pole thereof respectively soldered to the top edge of the curved silicon contact portion of said first outer lead, then, inserting said two inner leads in said mold with the silicon chip contact portion thereof disposed above said first pair of silicon chips and respectively connected to the positive pole of said first pair of silicon chips through tin soldering connection, and then, connecting said two conductive blocks to the top edge of the silicon chip contact portion of said first pair of silicon chips through tin soldering process, and then, fastening a second pair of silicon chips to said two conductive blocks with the positive pole thereof respectively connected to the top edge of said two conductive blocks through tin soldering process permitting the negative pole thereof to be disposed upward, and at last, inserting a second outer lead in said mold with the bottom edge of the curved silicon chip contact portion thereof respectively connected to the negative pole of said second pair of silicon chips through tin soldering process permitting the lead wire thereof to be guided out through an opposite side.

5,057,992

METHOD AND APPARATUS FOR CONTROLLING OR PROCESSING OPERATIONS OF VARYING CHARACTERISTICS

Mark Traiger, Riverdale, N.Y., assignor to Dentonaut Labs Ltd., Riverdale, N.Y.

Filed Apr. 12, 1989, Ser. No. 336,769
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—148 **28 Claims**



22. Apparatus for controlling a physical process to compensate for uncertain perturbations therein, comprising,

sensing means for measuring values K representing input values to the physical process,

measuring means for measuring output values W which include uncertain perturbations D_p occurring in the physical process,

timing means for measuring elapsed time t of said measuring from a base time,

multiplicative processing means for producing values of S represented by the expression

$$S = t^{LK/Wa}$$

wherein:

S=synthesizing state variable,

t=elapsed time from base time,

L=coupling parameter, and

a=characterizing process parameter,

reduced order processing means for producing a perturbation signal D_p representative of perturbations occurring in the physical process, and

normalizing processing means for receiving values of S from the multiplicative processing means and the values of D_p from the reduced order processing means for producing a set of adjustment signals to cause parameter signals a, b

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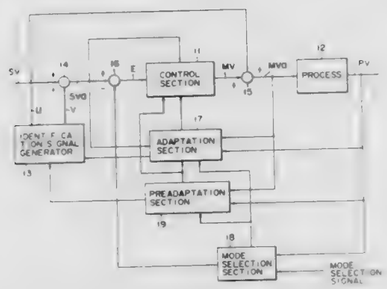
and L to characteristically vary in accordance with inputs to the multiplicative processing means in order to adjust input values K to reduce said perturbation signals and compensate for said perturbations.

5,057,993

METHOD AND SYSTEM FOR ACQUIRING PARAMETERS IN PROCESS CONTROL

Masae Kanda, Kawagoe, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 12, 1990, Ser. No. 464,194
Claims priority, application Japan, Jan. 13, 1989, 1-6216
Int. Cl.[5] G05B *13/04*
U.S. Cl. 364—162 **9 Claims**



4. A system for acquiring parameters in process control, the system comprising:

a process to be controlled;

mode selecting means for selecting one of an opened loop mode and a closed loop mode;

generating means for generating an identification signal;

subtracting means for subtracting a controlled variable outputted from the process from a set value to obtain a difference value, the controlled variable supplied to the subtracting means when the closed loop mode is selected;

controlling means for controlling a manipulated variable in accordance with the difference value;

adding means for adding the identification signal to the manipulated variable so as to supply an added value to the process;

sampling means for sampling the added value and the controlled variable outputted from the process in response to the added value during a desired period to obtain sampling values;

first acquiring means for acquiring primary control parameters by detecting characteristic parameters representing a state of the process from the sampling values, when the opened loop mode is selected; and

second acquiring means for acquiring process control parameters by matching a characteristic model of the process estimated from the sampling values.

5,057,994

CONTROL SYSTEM FOR INDUSTRIAL PLANT

Christopher R. L. Spiller, Derby, England, assignor to Rolls-Royce and Associates Limited, Derby, England

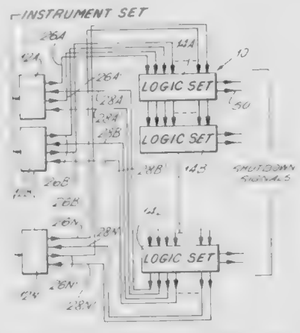
Filed Jun. 23, 1989, Ser. No. 370,796
Claims priority, application United Kingdom, Jul. 4, 1988, 8815897
Int. Cl.[5] G06F *11/16*
U.S. Cl. 364—184 **15 Claims**

1. A control system for an industrial plant comprising a plurality of instrument sets and a plurality of logic sets,

each instrument set comprising: a plurality of sensors to detect parameters of the industrial plant, each instrument set also comprising a plurality of serial link controllers, each sensor being arranged to supply an output signal to each of the plurality of serial link controllers,

each logic set comprising: a plurality of auto select logic circuits, a synchronizer, a voting logic circuit, a serial-to-parallel converter and a control logic circuit,

each of the plurality of serial link controllers in each instrument set being arranged to supply the output signals from each of the sensors in the instrument set sequentially to a respective one of the auto select logic circuits in each of the logic sets serially via respective independent transmission lines, each of the auto select logic circuits in each logic set being arranged to select data form the plurality of sensors from the respective one of the instrument sets and being arranged to supply the data to the synchronizer, each of the auto select logic circuits in each logic set being arranged to detect any of the respective independent transmission lines transmitting erroneous serial signals and being arranged to select one of the independent transmis-



sion lines not transmitting erroneous serial signals, the synchronizer of each logic set being arranged to supply the data from each of the auto select logic circuits to the voting logic circuit of the logic set such that the output signals from the sensors in each instrument set detecting the same parameter are supplied to the voting logic circuit at substantially the same time, each voting logic circuit being arranged to perform a voting function on the output signals from the sensors in all the instrument sets detecting the same parameter to produce a series of single high reliability signals which are arranged to be supplied to the serial-to-parallel converter of the logic set, each serial-to-parallel converter being arranged to convert the series of high reliability signals to parallel high reliability signals which are supplied to the control logic circuit of the logic set, each control logic circuit being arranged to control the operation of the industrial plant in response to the high reliability signals.

5,057,995

ROBOT CONTROL APPARATUS

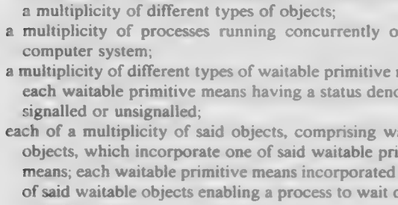
Tohru Mizuno, Tama, and Tetsuya Kosaka, Minamitsuru, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCR/JP88/00374, § 371 Date Oct. 28, 1988, § 102(e) Date Oct. 28, 1988, PCT Pub. No. WO88/08158, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 15, 1988, Ser. No. 269,149
Claims priority, application Japan, Apr. 15, 1987, 62-092866
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—192 **4 Claims**

1. A robot control apparatus for programmably controlling a taught/playback-type robot, comprising:

teaching panel means for teaching robot command data including motion target position and motion velocity;

data converting means for converting a position data group contained within the robot command data from said teaching panel into set-type command data in which the robot command data corresponding to position data in the position data group are grouped together as a set, said data converting means effects the conversion into the set-type command data from the motion target position, the motion velocity, and the other robot command data taught to the robot;



data memory means for storing the set-type command data; and

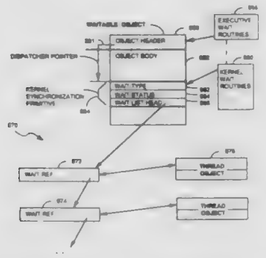
processing control means for creating robot motion data by editing the set-type command data stored in said data memory means.

5,057,996

WAITABLE OBJECT CREATION SYSTEM AND METHOD IN AN OBJECT BASED COMPUTER OPERATING SYSTEM

David N. Cutler, Bellevue; James W. Kelly, Jr., and Frank L. Perazzoli, Sr., both of Redmond, all of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1989, Ser. No. 373,880
Int. Cl.[5] G06F *9/46*
U.S. Cl. 364—200 **15 Claims**



1. In a multitasking computer system having a central processing unit and memory means for storing data and data structures, an operating system comprising:

a multiplicity of objects comprising data structures stored in said memory means; said multiplicity of objects including a multiplicity of different types of objects;

a multiplicity of processes running concurrently on said computer system;

a multiplicity of different types of waitable primitive means; each waitable primitive means having a status denoted as signalled or unsignalled;

each of a multiplicity of said objects, comprising waitable objects, which incorporate one of said waitable primitive means; each waitable primitive means incorporated in one of said waitable objects enabling a process to wait on said waitable object;

waitable object generating means, responsive to requests from said processes, for creating additional ones of said waitable objects;

wait requesting means, responsive to commands from said processes, for suspending a specified process until said status of a specified one of said waitable objects is signalled;

wait service means, responsive to commands from said processes, for changing the status of a specified one of said waitable objects to signalled;

a multiplicity of object type descriptor means, each object type descriptor means having means for specifying a data storage format for a distinct one of said different types of said objects;

a multiplicity of object service means, including an object service means for each said object type for performing predefined operations on objects of said object type; each said object type descriptor means denoting one of said object service means corresponding to one of said object types; and

means for generating additional object type descriptor means corresponding to additional types of waitable objects, said additional object type descriptor denoting one of said object service means for said additional waitable object type and denoting one of said different types of waitable primitive means to be incorporated in waitable objects of said additional waitable object type;

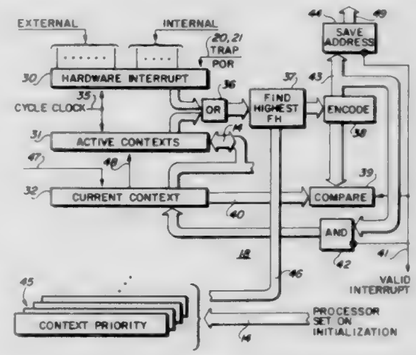
whereby additional waitable object types can be added to said system by adding a corresponding object type descriptor means.

5,057,997

INTERRUPTION SYSTEMS FOR EXTERNALLY CHANGING A CONTEXT OF PROGRAM EXECUTION OF A PROGRAMMED PROCESSOR

Tai-Lin Chang; Paul W. Hunter, both of San Jose; Donald J. Lang, Cupertino, and Stephen G. Luning, San Jose, all of Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 13, 1989, Ser. No. 310,409
Int. Cl.[5] G06F *9/46*
U.S. Cl. 364—200 **7 Claims**



1. In apparatus for controlling a programmed processor using context control means external to the programmed processor for indicating to the programmed processor which stream of a plurality of streams of instructions is to be executed, including, in combination:

interrupt means external of the programmed processor for storing indications of interruption signals which respectively indicate requests for possible changes of operating context for the programmed processor;

said context control means having active context means external of and being connected to the programmed processor for addressably storing indications of all contexts that are currently active for the programmed processor;

said context control means having a current context means external to and being connected to the programmed pro-

cessor and for storing an identification of a current context in which the programmed processor is executing a stream of program instructions;

priority means in said active context means for storing context priorities;

said context control means having find means being operatively connected to said priority means for receiving the context priorities for finding a one of said indications which indicates a context having a highest priority;

interrupt validating means external of the programmed processor and being connected to the find means, to the priority means and to the current context means for comparing the priorities between the highest priority context indicated by said find means with the priority of the current context means for indicating a valid interrupt signal if the find means indicated priority is higher than the current context priority;

said context control means having responding means external of the programmed processor and being connected to the interrupt validating means for responding to the valid interrupt indication for changing the current context in the current context means to be a one of the active contexts having said highest priority whereby the programmed processor begins executing instructions in said one of the active contexts; and

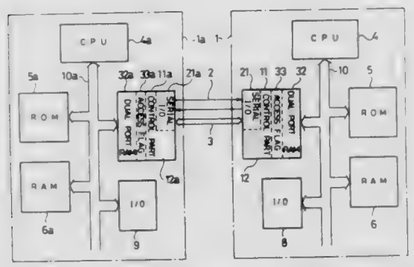
activating means external of the programmed processor and being connected to said programmed processor for receiving timing signals therefrom and connected to all of the above recited means for actuating all of said means to determine whether any one of the stored indications of the interruption signals represents a valid interrupt for changing the current context in synchronism with operation of the programmed processor.

5,057,998

DATA TRANSFER CONTROL UNIT

Masayuki Hirokawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1990, Ser. No. 593,600
Claims priority, application Japan, Apr. 14, 1987, 62-91195
Int. Cl.[5] G06F *13/14, 15/16*
U.S. Cl. 364—200 **5 Claims**



1. In a data processing system including a CPU and an I/O unit for transferring data between data processing systems, an improved data transfer control unit for transferring data via an outside bus with an outside source comprising:

a dedicated controller;

an internal system bus, coupled to said dedicated controller, for transferring address information, data, and control information;

a dual ported RAM having a first data port coupled to said internal system bus and a second data port coupled to the CPU and divided into a plurality of storage locations;

an I/O interface, coupled to the outside data bus and said internal system bus, for transferring data between said internal system bus and the outside data bus under control of said dedicated controller; and

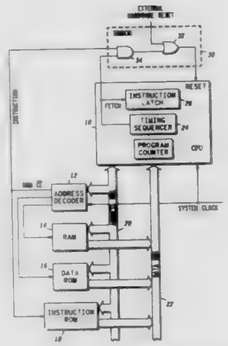
flag storage means for storing a plurality of flags, each flag corresponding to a storage location in said dual ported RAM, where each flag is set by the CPU when the CPU has written data to each flag's corresponding storage location, and where each flag is reset by said dedicated controller when said dedicated controller transfers said written data from said corresponding storage location to the outside bus via said I/O interface.

5,057,999

MICROPROCESSOR HAVING A PROTECTION CIRCUIT TO INSURE PROPER INSTRUCTION FETCHING

Kiyoshi Kase, Chiba, and Minoru Suzuki, Tokyo, both of Japan, assignors to Nippon Motorola, Ltd., Tokyo, Japan

Filed Jun. 26, 1989, Ser. No. 370,980
Claims priority, application Japan, Aug. 5, 1988, 63-194382
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—200 **6 Claims**



1. A microprocessor with protective instruction fetch apparatus comprising:

a central processing unit (CPU) including means for fetching selected instructions from a memory and providing a first signal each time an instruction is to be fetched;

a memory coupled to said CPU for storing a plurality of instructions and supplying selected instructions to said CPU in response to predetermined signals;

signal circuitry coupled to said memory for providing a second signal when a selected instruction is available for fetching from said memory by said CPU; and

logic circuitry connected to receive the first and second signals and further connected to said CPU for supplying signals to said CPU which stops the operation of said CPU when the first and second signals are not both present causing said CPU to be reset to an initial instruction.

5,058,000

SYSTEM FOR ACCESSING REMOTE HETEROGENEOUS DATABASE INCLUDING FORMATTING RETRIEVED DATA INTO APPLICATIONS PROGRAM FORMAT

Landon Cox, Del-Mar, Calif.; Wayne Kovsky, Millis, and Marie Mastaj, Milford, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Continuation of Ser. No. 68,849, Jun. 30, 1987, abandoned. This application Jun. 15, 1989, Ser. No. 368,159
Int. Cl.[5] G06F *12/06, 13/38, 15/16, 15/40*
U.S. Cl. 364—200 **2 Claims**

1. In a general purpose computer system including a first computer having at least a central processing unit and associated memory, a local applications database stored in files having a first file structure in the associated memory of the first computer, and a local applications program executing on the first computer for processing data stored in the local applications database, the local applications program being responsive to keyboard entered applications commands;

a second host computer having at least a central processing unit and associated memory, said second host computer configured to access data stored in remote files in the associated memory of the second host computer;

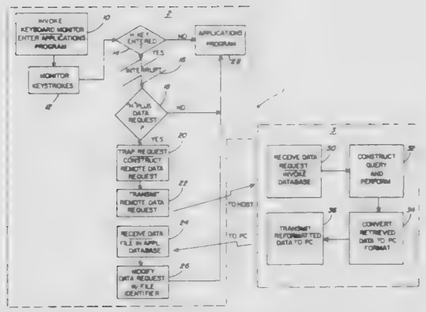
communications means for transmitting and receiving data and commands between the first computer and the second host computer;

a method for importing remote file data to the first computer from the second host computer during execution of the applications program on the first computer, comprising the steps of:

providing a preselected command of the first computer indicating a request for remote data;

requesting remote data by actuating the preselected command in combination with an applications program data request command and a remote file identifier to initiate an interrupt;

translating, upon entry of the preselected command, the applications program data request command to a remote data request;



transmitting the remote data request to the second host computer;

receiving the remote data request by the second host computer;

converting the remote data request to a host computer data request command by the second host computer;

retrieving a requested data from the remote files of the second host computer;

converting, in the second host computer, the retrieved data to a format useful to the applications program;

transmitting the retrieved converted data to the first computer;

storing the converted data in the local applications database indexed by an applications file identifier and terminating the interrupt;

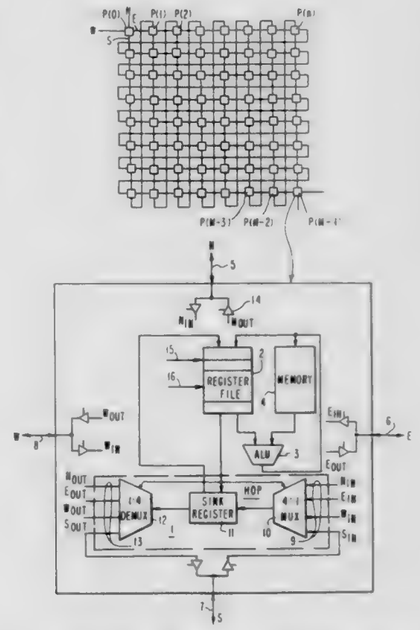
whereby the first computer responds to the preselected keystroke to import requested data from the second computer to the first computer and to process a data request for remote data while the applications program continues execution on the first computer so that the data accession is transparent to a user.

5,058,001

TWO-DIMENSIONAL ARRAY OF PROCESSING ELEMENTS FOR EMULATING A MULTI-DIMENSIONAL NETWORK

Hungwen Li, Pleasantville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 22,194, Mar. 5, 1987, abandoned. This application Sep. 14, 1989, Ser. No. 407,678
Int. Cl.[5] G06E *15/80*
U.S. Cl. 364—200 **6 Claims**



1. two-dimensional mesh array of processing elements for emulating a multi-dimensional network, each said processing element being interconnected with immediately adjacent processing elements for transmitting data between adjacent and remote processing elements, each said processing element comprising:

a plurality of connection means for coupling said processing element to immediately adjacent processing elements in the mesh array;

register file means for providing local HOP command instructions each having a direction parameter and a step parameter for implementing HOP (direction) (step) operation by selecting one of said plurality of connection means of the processing element in accordance with said direction parameter to thereby transmit data content from one of said immediately adjacent processing elements to another one of said immediately adjacent processing elements in the specified direction and repeating the transmission a quantity of times specified by said step parameter, and

a hopping circuit coupled to said register file means for transmitting data from a selected one of said plurality of connection means to another selected one of said plurality of connection means responsive to said local HOP command instruction for emulating a multi-dimensional network.

VOL 1131 ISS 3 OCT 15 1991 UMI

5,058,002

PAGE SPLITTING METHOD AND APPARATUS FOR A DATABASE STORED IN A PLURALITY OF MEMORY STORAGE UNITS

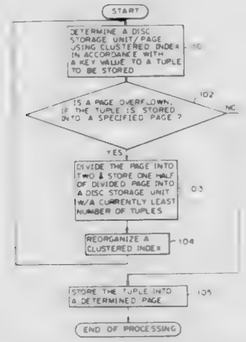
Shunichiro Nakamura; Harumi Minemura, and Tatsuo Minohara, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1988, Ser. No. 206,324

Claims priority, application Japan, Jun. 23, 1987, 62-155731; Sep. 24, 1987, 62-239371

Int. Cl.[5] **G06F** *15/40, 12/02*

U.S. Cl. 364—200 **10 Claims**



1. A method of storing a relation of a data base in pages of memory in a plurality of memory storage units by horizontally partitioning tuples of the relation, comprising the steps of:

indexing said pages of memory with a cluster index stored in one of the memory storage units;

determining when one of said pages of memory is filled with tuples;

allocating at least one new page in at least one of the memory storage units;

transferring a portion of the tuples from the memory of the full page to the at least one new page in the at least one memory storage unit; and

reorganizing the cluster index to correspond to the at least one new page after the full page is partitioned.

5,058,003

VIRTUAL STORAGE DYNAMIC ADDRESS TRANSLATION MECHANISM FOR MULTIPLE-SIZED PAGES

Steven W. White, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1988, Ser. No. 285,176

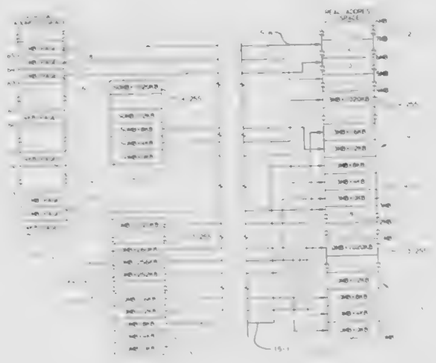
Int. Cl.[5] **G06F** *12/06, 12/08, 12/10, 9/26*

U.S. Cl. 364—200 **9 Claims**

1. A dynamic storage address translation system connected between a central processing unit and a storage system for translating virtual addresses supplied by said central processing unit to real addresses and for accessing blocks of data in said storage system, each said block of data being one of a plurality of different block sizes, said dynamic storage address translation system comprising:

a plurality of dynamic address translation means, one for each block size, and each said dynamic address translation means including a set-associative table with a plurality of congruence class locations;

at least one entry in each congruence class location for storing high order tag bits of a predetermined virtual page, a real block address of the predetermined virtual page and a page valid bit, each said dynamic address translation means responsive to a respective, unique congruence class selection field and a unique tag bit field of a supplied virtual address for determining whether or not the real block address corresponding to the supplied virtual address is stored in a congruence class entry of its set-associative table addressed by its unique congruence class selection field of the supplied virtual address.



5,058,004

COMPUTER GATE CONTROL CIRCUITRY AND APPARATUS TO ENABLE A SINGLE COMPUTER TO SIMULTANEOUSLY AND SELECTIVELY CONTROL A MULTIPLICITY OF HARD DISK DRIVES

Gonen Ravid, 29034 Acanthus Ct., Agoura Hills, Calif. 91301

Filed Jan. 19, 1990, Ser. No. 599,755

Int. Cl.[5] **G06F** *3/00*

U.S. Cl. 364—200 **12 Claims**

1. A gate control circuitry and apparatus for using a single computer to control a multiplicity of hard disk drives simultaneously and selectively, the single computer having a multiplicity of control lines, a multiplicity of data lines, and a multiplicity of input/output address lines including a hard disk drive address line and a primary and secondary hard disk drive addresses switching line, the gate control circuitry and apparatus comprising:

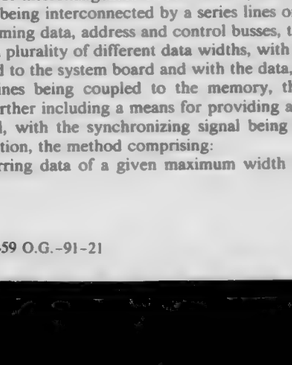
a. a latch means connected to said single computer by said multiplicity of data lines;

b. a multiplicity of gate means each connected to said latch means and corresponding to a respective one of said multiplicity of data lines;

c. a multiplicity of hard disk dive controller means each connected to a respective one of said multiplicity of gate means;

d. each of said multiplicity of control lines and said multiplicity of input/output address lines, except said hard disk drive address line and said primary and secondary hard disk drive addresses switching line, connected to a decoder means and then branched off into each of said multiplicity of hard disk drive controller means;

e. said hard disk drive address line connected to said decoder means and then branched off into each of said multiplicity of gate means;



f. said primary and secondary hard disk drive addresses switching line connected to an invertor means and then branched off into each of said multiplicity of hard disk drive controller means; and

g. said latch means also connected to said decoder means;

h. whereby said decoder means can decode a latch control signal received from said single computer and send a decoded latch control signal to said latch means, which in turn will control said multiplicity of gate means to be opened or closed individually for said hard disk drive address line, so that said multiplicity of hard disk drive controller means can be activated or deactivated individually, to thereby enable said single computer to control said multiplicity of hard disk drives simultaneously and selectively for operations such as preparation, diagnosis or data storage.

5,058,005

COMPUTER SYSTEM WITH HIGH SPEED DATA TRANSFER CAPABILITIES

Paul R. Culley, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 9, 1988, Ser. No. 243,480

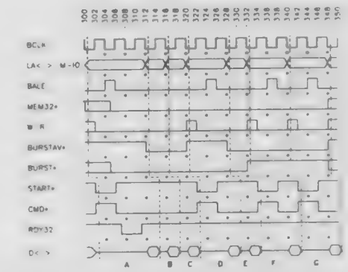
Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 364—200 **18 Claims**

1. A method of transferring data between a memory and a circuit board in a computer system at a first standard transfer rate and a second standard transfer rate, the computer system including a system board having a plurality of locations for inclusion of interchangeable circuit boards, the circuit board locations being interconnected by a series lines on the system board forming data, address and control busses, the data lines forming a plurality of different data widths, with the memory connected to the system board and with the data, address and control lines being coupled to the memory, the computer system further including a means for providing a synchronizing signal, with the synchronizing signal being provided to each location, the method comprising:

transferring data of a given maximum width between the memory and an interchangeable circuit board in a circuit board location at the first standard transfer rate and sequence defining a cycle, wherein first address values are provided by the circuit board on a first given direction edge of the synchronizing signal and the first address values are removed by the circuit board on said same synchronizing signal direction edge following at least two synchronizing signal cycles, with the first data values being provided after the providing of the first address values and being removed at approximately the opposite direction edge of the synchronizing signal following the removal of the first address values;

the circuit board indicating that transfer according to the second standard transfer rate and sequence is desired prior to or contemporaneous with commencing the second standard transfer rate transfers; and



transferring data of the same given maximum width between the memory and the circuit board at the second standard transfer rate and sequence defining a cycle after completion of a cycle at the first standard transfer rate and sequence or a cycle at the second standard transfer rate and sequence, said address values for said second standard transfer rate cycle being within a defined range of the first address value of said first standard transfer rate cycle, wherein the address values are provided by the circuit board for a single synchronizing signal cycle, said address values changing on the same direction edge as the providing of the first address value of the first standard transfer rate cycle, with the data values being removed at approximately the opposite direction edge of the synchronizing signal following a full synchronizing signal cycle after the providing of the second address values.

5,058,006

METHOD AND APPARATUS FOR FILTERING INVALIDATE REQUESTS

W. Hugh Durdan, Waban; Rebecca L. Stamm, Newton, and G. Michael Uhler, Marlboro, all of Mass., assignors to Digital Equipment Corporation, Hudson, Mass.

Filed Jun. 27, 1988, Ser. No. 212,416

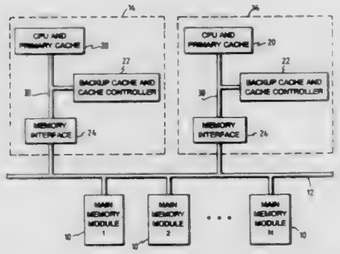
Int. Cl.[5] **G06F** *13/38*

U.S. Cl. 364—200 **6 Claims**

1. A method of operating a computer system, the computer system having a main memory for storing blocks of data, said compute system further having a plurality of processors capable of issuing write transactions defining invalidate requests, said computer system further having a system bus for intercoupling said main memory and said processors, each of said processors having an associated primary cache memory for storing a subset of the data stored in said main memory and a primary cache tag store for identifying blocks of memory addresses resident in said primary cache memory, each of said processors further having a memory interface for detecting write transactions on said system bus, each of said processors further having a cache controller coupled to said memory interface by an invalidate bus, said cache controller including

a secondary cache memory for storing a subset of the data stored in said main memory and a secondary cache tag store for identifying blocks of memory addresses resident in said secondary cache memory, said cache controller further including a copy of the primary cache tag store, said method of operating including filtering invalidate requests by the steps of:

a. detecting a write transaction on the system bus by a memory interface, said write transaction defining a memory location in said main memory;



b. forwarding the memory address so defined by the memory interface to the cache controller by way of said invalidate bus;

c. comparing said memory address to memory addresses indicated in said secondary cache tag store and in said copy of the primary cache tag store; and

d. if said memory address is indicated in either said secondary cache tag store or said copy of the primary cache tag store, issuing an invalidate request on said processor bus, otherwise ignoring said write transaction by the memory interface detecting the write transaction.

5,058,007

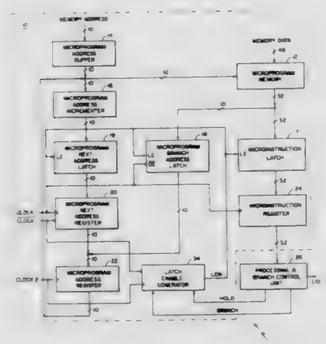
NEXT MICROINSTRUCTION GENERATOR IN A MICROPROGRAM CONTROL UNIT

Peter J. Feil, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 117,108, Nov. 5, 1987, abandoned. This application Apr. 13, 1990, Ser. No. 515,774

Int. Cl.[5] G06F *12/00*

U.S. Cl. 364—200 **22 Claims**



1. A microprogram control unit for generating microinstructions to control a data processing system comprising:

memory means for storing a plurality of microinstructions;

means coupled to address inputs of said memory means for providing to said memory means both a branch address from a current microinstruction being executed and a no-branch address for accessing said memory means sequentially during a current microinstruction cycle;

means for selectively generating a first and a second enable signals in response to said current microinstruction;

means coupled to said address providing means for incrementing the address coupled to said memory means in order to generate a next sequential address following a microinstruction being accessed by said address during said current microinstruction cycle;

means coupled between an output of said incrementing means and an input of said address providing means for storing a next microinstruction address at the end of said current microinstruction cycle in response to said first and said second enable signals generated during said microinstruction cycle;

means coupled to said memory means output for selecting a branch microinstruction or a no-branch microinstruction produced by said branch address and said no-branch address respectively, in response to said first and said second enable signals generated during said current microinstruction cycle; and

means coupled to said selecting means for storing said selected microinstruction at the end of said current microinstruction cycle.

5,058,008

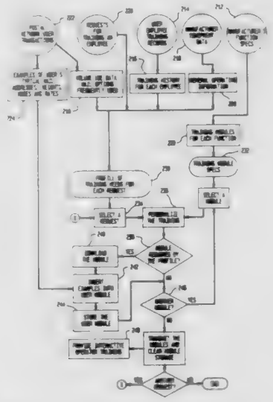
MAIL SYSTEM WITH PERSONALIZED TRAINING FOR USERS

Karl H. Schumacher, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 3, 1989, Ser. No. 416,746

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—401 **14 Claims**



1. Apparatus for training a postal system user to perform postal functions, said apparatus comprising:

a user station having a plurality of means for performing postal functions for postal transactions initiated by the user;

means remote from and in communication with said user station for:

storing data representing postal transactions initiated by said user;

storing training modules; and

providing to said user a personalized training module in accordance with said user's postal transactions.

5,058,009

FINANCIAL CALCULATOR FOR CALCULATING, GRAPHICALLY DISPLAYING AND CONFIRMING RESULTS OF LOAN AMORTIZATION CALCULATION

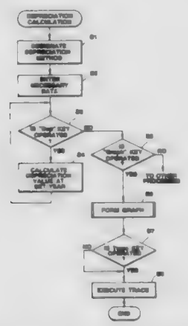
Hiroyuki Yoshino, Fussa, and Yoshinori Tomidokoro, Higashimurayama, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1989, Ser. No. 321,975

Claims priority, application Japan, Mar. 15, 1988, 63-33809[U]; Mar. 15, 1988, 63-33810[U]

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—408 **8 Claims**



1. A financial calculator having a dot matrix-type liquid-crystal display means, comprising:

first key input means for entering financial data including principal data, interest data and number of payments data related to calculation of amortization of a loan;

memory means for storing said financial data input through said first key input means;

calculation means for performing calculation of amortization of a loan by calculating an amount of each payment on the basis of said financial data stored in said memory means;

graph forming means for plotting on said display means the amount of each payment and the interest payment amount included in each payment calculated by said calculation means, wherein the amounts are represented on a vertical axis and time is represented on a horizontal axis;

second key input means for entering numeral data which designates at least one payment;

third key input means for designating an interest information mode;

fourth key input means for designating a principal information mode;

confirmation means including:

means responsive to said third key input means for displaying on said display means a numerical representation and graphical representation o the interest payment amount of the at least one payment designated by said second key input means; and

means responsive to said fourth key input means for displaying on said display means a numerical representation and graphical representation of a principal payment amount of the at least one payment designated by said second key input means; and

judging means for judging whether or not numeral data is entered from said second key input means before said third key input means or said fourth key input means is operated; and wherein

said confirmation means further includes means for designating a first payment when said judging means judges that there is no numeral data entered from said second input means.

5,058,010

Patent Not Issued For This Number

5,058,011

RADIANT RAY CT WITH VIEW DATA INTERPOLATION

Hideo Nagai, Tokyo, Japan, assignor to Yokogawa Medical Systems, Limited, Tokyo, Japan

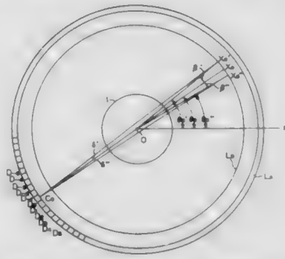
PCT No. PCT/JP87/00712, § 371 Date Mar. 27, 1989, § 102(e) Date Mar. 27, 1989, PCT Pub. No. WO88/02239, PCT Pub. Date Apr. 7, 1988

PCT Filed Sep. 30, 1987, Ser. No. 335,665

Claims priority, application Japan, Sep. 30, 1986, 61-232645; Oct. 27, 1986, 61-255340

Int. Cl.[5] A61B *6/03;* **G01N** *23/04;* **G06F** *15/42*

U.S. Cl. 364—413.18 **18 Claims**



1. In a radiant ray CT apparatus comprising a source for generating radiant rays from one or more positions and directed in one or more transmitting paths, and a group of detectors, with a reconstructing region therebetween for accommodating a body to be examined therein; the improvement comprising

means for performing a scan of the body according to spacing and timing controls of the radiant ray positions so that each of the one or more transmitting paths resulting from alternate adjacent or alternate neighboring view data group is interpolated with one another at substantially the center of the reconstructing region and without any offset.

5,058,012

METHOD OF EXTRAPOLATING RESERVOIR PERFORMANCE

Steven B. Hinchman, Houston, Tex.; Raymond T. Brickey, Anchorage, Ak., and Michael J. Heymans, Highlands Ranch, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 307,551, Feb. 7, 1989, abandoned. This application Nov. 5, 1990, Ser. No. 609,039

Int. Cl.[5] E21B *49/00*

U.S. Cl. 364—420 **9 Claims**

1. A method of extrapolating oil field reservoir computer simulation results from a portion of the reservoir to the entire reservoir, comprising the steps of:

obtaining core data from a plurality of oil wells in and/or near the portion of the reservoir which has been simulated;

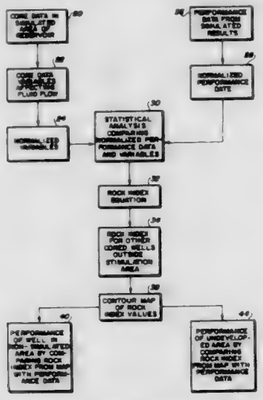
selecting variables of the core data which affect fluid flow in the reservoir; normalizing the variables and performance data from the reservoir computer simulation so as to permit comparison of the variables to the performance data;

comparing through statistical analysis the normalized core data variables to the normalized performance data to thereby create an equation based on the sum of the normalized core data variables;

the numerical value resulting from the sum of the normalized core data variables comprising an index for each cored well which substantially corresponds to the performance data from the reservoir computer simulation;

obtaining core data from a plurality of additional oil wells in the reservoir outside the area which has been simulated;

normalizing the additional core data and using the equation to computer a numerical index for each additional oil well; constructing an iso-index map of the reservoir area; and checking the performance of a well in the reservoir outside



the area which has been simulated by determining the numerical index of the well from the iso-index map and comparing the performance of the well against the performance indicated by the numerical index.

5,058,013

CONTROL OF ENGINE OUTPUT TORQUE IN COORDINATION WITH CHANGE-OVER OF SPEED STAGES OF AUTOMATIC TRANSMISSION

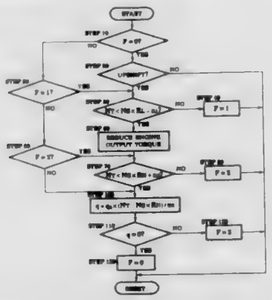
Kunihiro Iwatsuki; Tooru Matsubara, and Hideaki Ootsubo, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 23, 1990, Ser. No. 527,326

Claims priority, application Japan, May 25, 1989, 1-131986; Mar. 7, 1990, 2-55993

Int. Cl.[5] B06K *41/06*

U.S. Cl. 364—424.1 **8 Claims**



1 A method of controlling output torque of an engine in coordination with change-over of speed stages of an automatic transmission from a certain first speed stage to a certain second speed stage in a vehicle, comprising the steps of:

reducing the engine output torque for said change-over of speed stages,

monitoring a rotational speed of at least one rotary member of said automatic transmission during progress of said change-over of speed stages to detect a moment at which the monitored rotational speed of said rotary member crosses a predetermined value of said rotational speed of said at least one rotary member and approaches a final value therefor which is attained after the completion of said change-over of speed stages, wherein the predetermined value differs from said final value, and

initiating a step of recovering the reduced engine output torque during a time beginning at said moment, said recovering step comprising periodically adjusting the reduction of engine output torque in accordance with a difference between a current monitored rotational speed of said rotary member and said final value therefor such that a current amount of the reduction of engine output torque is decreased in correspondence with a decrease of said difference.

5,058,014

ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION

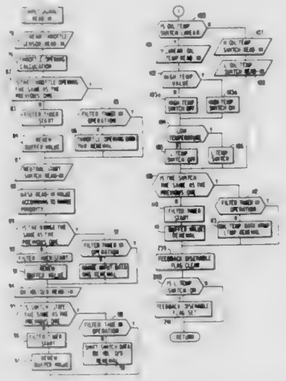
Yoshitami Saitou; Nobuyuki Isono, and Nobuyasu Suzumura, all of Aichi, Japan, assignors to Aisin Seiki K.K., Aichi, Japan

Filed Oct. 2, 1989, Ser. No. 415,733

Claims priority, application Japan, Sep. 30, 1988, 63-248364

Int. Cl.[5] B60K *41/18*

U.S. Cl. 364—424.1 **5 Claims**



1. An electronically controlled automatic transmission for a vehicle comprising:

automatic gear shift means, having a clutch and a brake driven by hydraulic pressure, for changing the gear ratio in accordance with the coupling/decoupling of said clutch and brake;

hydraulic switching means for controlling the hydraulic pressure exerted on said clutch and brake;

timing means for setting during a shifting period a coupling-/decoupling time of said clutch and brake;

vehicle information detecting means for detecting, during the shifting period, vehicle information;

time correction means for correcting the time set by said timing means in accordance with vehicle information from said vehicle information detecting means;

electronic control means for driving said hydraulic pressure switching means in accordance with said corrected set time, and for changing the state of coupling and decoupling of said clutch and brake; temperature detecting means for detecting the temperature of a working fluid of said hydraulic pressure switching means; and feedback stop means for stopping, when said temperature detecting means detects that the temperature of the working fluid is below a predetermined temperature, the correction of the set time of coupling/releasing by said time correction means.

5,058,015

PROCESS OF MODULATION CONTROL OF THE TORQUE OF A HEAT ENGINE ASSOCIATED WITH AN AUTOMATIC TRANSMISSION

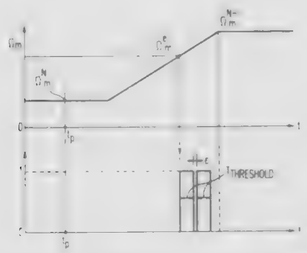
Francois Leorat, Versailles, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Aug. 18, 1989, Ser. No. 395,523

Claims priority, application France, Aug. 18, 1988, 88 10980

Int. Cl.[5] B60K *41/10*

U.S. Cl. 364—424.1 **1 Claim**



1. A process of modulation control of a heat engine associated with an automatic transmission having an electronic control unit, comprising the steps of:

initiating a gear shift of said automatic transmission by said electronic control unit, wherein said gear shift is one of an upshift and a downshift; and

immediately after said step of initiating a gear shift, delivering a torque modulation signal to an engine torque control means of the heat engine for reducing engine torque during said shift,

wherein said signal is an on-off, time modulated, signal, and wherein, for downshifting from a gear N to a gear N-i, where i—1,2, the modulation signal is a dual signal with each of the two dual signals having a duration equal to a threshold time $T_{threshold}$, the two signals being separated by a constant time ϵ, the modulation signal being triggered when the engine speed Ω_m is equal to a value $\Omega_m{}^e$; $\Omega_m{}^e$ being defined by the relation:

$$\Omega_m{}^e = k_5 \cdot \Omega_{Vh}{}^N$$

where:

$\Omega_{Vh}{}^N$ is the speed of the vehicle in gear N at the beginning of shifting, and

k_5 is a constant.

5,058,016

COMPUTERIZED ELECTRICAL VEHICLE

Jecheskel Davidovitch, 22 Avtalion Street, Ramat Gan 52424, Israel

Continuation of Ser. No. 267,021, Nov. 4, 1988, abandoned. This application Aug. 9, 1990, Ser. No. 565,891

Claims priority, application Israel, Nov. 5, 1987, 84382

Int. Cl.[5] G06F *15/50;* **B62D** *11/04*

U.S. Cl. 364—424.01 **8 Claims**

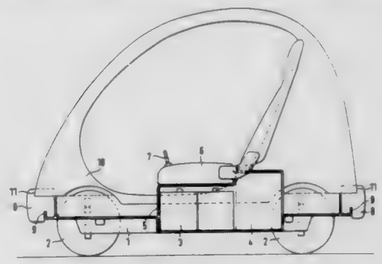
1. An electrical vehicle with steering-by-driving for road or internal transportation, comprising:

at least one pair of driven wheels, each wheel of said pair of driven wheels being tiltable about a substantially vertical pivot which is excentrical to the vertical center of said wheel and steerable by means for imparting and varying relative rotational speeds between said pair of driven wheels;

a programmable control system for imparting and varying said relative rotational speeds to said pair of driven wheels;

a chassis to which said tiltable driven wheels are attached; and,

means for transferring a driving torque from at least one pair of said tiltable driven wheels to said chassis of said electrical vehicle, said means for transferring including at least one pair of arms, each of said arms being attached to



each wheel of said pair of driven wheels, and at least one connecting rod pivotedly interconnecting each said pair of arms at a trapezoidal formation.

5,058,017

SYSTEM FOR CONTROL OF VEHICLE SUSPENSION

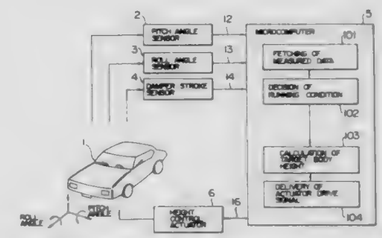
Masao Adachi, and Motohisa Funabashi, all of Sagamihara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1988, Ser. No. 266,074

Claims priority, application Japan, Nov. 5, 1987, 62-279875

Int. Cl.[5] B60G *17/00*

U.S. Cl. 364—424.05 **6 Claims**



1. A control system for a vehicle suspension system having a combination of a spring and a damper which is associated with each wheel, said control system comprising:

first means for detecting at least one of a pitching angle and a rolling angle of said vehicle;

second means, associated with each wheel, for detecting a relative displacement in the distance between each wheel and a body of said vehicle;

means for discriminating a cause of pitching and rolling from among a plurality of predetermined sorted causes on the basis of the detected pitching angle, rolling angle and distance displacement;

means for determining a target value of the distance between each wheel and the body on the basis of said discriminated cause and said distance displacement;

means for adjusting the distance between each wheel and the body to said target value;

means for receiving said at least one of the pitching angle and the rolling angle detected by said detecting means;

said discriminating means including means for determining a plurality of regions corresponding to said sorted causes including a first region determined by a predetermined range of combinations of values of the pitching angle and said distance displacement, a second region determined by a predetermined range of combinations of values of the rolling angle of said vehicle and said distance displacement, and a third region determined by a predetermined range of combinations of values of one of the pitching angle and the rolling angle of said vehicle and said dis-

tance displacement that is not within the predetermined ranges of said first and second regions;

means for determining whether a combination of the detected values of said pitching angle and said rolling angle detected by said first detected means and said distance displacement detected by said second detecting means is within one of said regions, wherein one of said sorted causes corresponding to said one of said regions is said discriminated cause;

said first region corresponding to a first one of said sorted causes that relates to a motion change in the running of said vehicle and said second region corresponding to a second one of said sorted causes that relates to changes in a road surface encountered by said vehicle; and

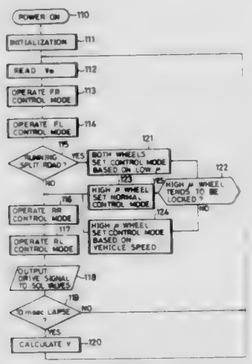
said target value determining means calculating target values in accordance with different target value determination equations.

5,058,018

ANTI-SKID CONTROL SYSTEM FOR A ROAD SURFACE HAVING A SPLIT COEFFICIENT OF FRICTION

Kazutaka Kuwana, Toyota; Tsuyoshi Yoshida, Obu, and Kenji Tozu, Kariya, all of Japan, assignors to Aisin Seiki K.K., Aichi, Japan

Filed Mar. 26, 1990, Ser. No. 498,658
Claims priority, application Japan, Mar. 27, 1989, 1-74704
Int. Cl.[5] G06F *15/50;* **B60T** *8/58, 8/64*
U.S. Cl. 364—426.02 **9 Claims**



1. An anti-skid control system for controlling a braking force applied to road wheels of an automotive vehicle, comprising:

wheel brake cylinders operatively connected to right and left road wheels, respectively, of said vehicle for applying braking force thereto;

a hydraulic pressure generator for supplying a hydraulic braking pressure to each of said wheel brake cylinders;

actuating means disposed in each hydraulic circuit communicating said hydraulic pressure generator with each of said wheel brake cylinders for individually controlling said hydraulic braking pressure supplied to each of said wheel brake cylinders;

wheel speed detecting means for detecting a rotational wheel speed of each of said road wheels and providing an output signal corresponding to said wheel speed; and

braking force control means for controlling said actuating means in response to said output signal of said wheel speed detecting means, said braking force control means including first detecting means and second detecting means for detecting each braking condition of said road wheels respectively on the basis of said output signal of said wheel speed detecting means,

first driving means for producing driving signals fed to said actuating means on the basis of an output signal fed from one of said first and second detecting means for detecting a braking condition of one of said road wheels having a tendency to be locked firstly, said first driving means including split determination means for determining if said vehicle is running on a split road surface having a different coefficient of friction where one of said road wheels is on a road surface of the higher coefficient of friction and the other of said road wheels is on a road surface of the lower coefficient of friction; and

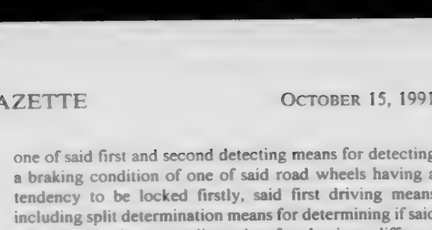
second driving means for receiving said driving signals from said first driving means and modifying the driving signal fed to one of said actuating means provided for one of said road wheels on said road surface of the higher coefficient of friction in response to a value representing a vehicle speed immediately after said split determination means determines that said vehicle is running on said split road surface.

5,058,019

VEHICLE SPEED ESTIMATION USING WHEEL SPEED MEASUREMENTS

Bakhtiar Litkouhi, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1990, Ser. No. 470,186
Int. Cl.[5] B60T *8/60*
U.S. Cl. 364—426.02 **5 Claims**



1. A method of estimating vehicle speed during braking of a wheel of a vehicle traveling over a road surface, the wheel being braked by application of brake pressure to a wheel brake, the method comprising the steps of:

sensing the speed of the wheel;

determining the occurrence of an incipient wheel lock condition of the wheel in response to excessive slip between the wheel and the road surface;

estimating vehicle speed prior to the determined occurrence of an incipient wheel lock condition based on the sensed wheel speed;

determining a wheel deceleration value at a point in time preceding the determined occurrence of the incipient wheel lock condition whereat the wheel deceleration is a measure of the vehicle deceleration; and

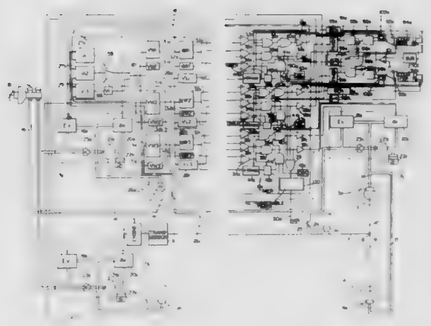
estimating the vehicle speed after the determined occurrence of an incipient wheel lock condition in accord with (a) the vehicle speed estimated prior to the determined occurrence of an incipient wheel lock condition and (b) the determined wheel deceleration value.

5,058,020

ANTI-SKID BRAKE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE WITH FEATURE OF VARIABLE TIMING OF DERIVATION OF WHEEL ACCELERATION DATA

Toshiro Matsuda, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 28, 1989, Ser. No. 329,842
Claims priority, application Japan, Mar. 29, 1988, 63-73452
Int. Cl.[5] B60T *8/34*
U.S. Cl. 364—426.02 **18 Claims**



1. An anti-skid brake control system for an automotive vehicle, comprising:

a braking circuit including a wheel cylinder for generating a braking force for declaring a vehicular wheel in response to a manual braking operation;

a pressure control valve disposed within said braking circuit for controlling said braking force to be generated in said wheel cylinder depending upon the vehicular braking condition, said pressure control valve increasing said braking force in said wheel cylinder in a first mode and decreasing said braking force in said wheel cylinder in a second mode;

a sensor means for monitoring rotation speed of said vehicular wheel to produce a wheel speed indicative signal;

first means for deriving a wheel speed data on the basis of said wheel speed indicative signal;

second means for periodically deriving a first wheel acceleration data having a first precision level and a first lag time based on said wheel speed data;

third means for periodically deriving a second wheel acceleration data having a second precision level and a second lag time based on said wheel speed data, where said second precision level is lower than said first precision level and said second lag time is shorter than said first lag time; and

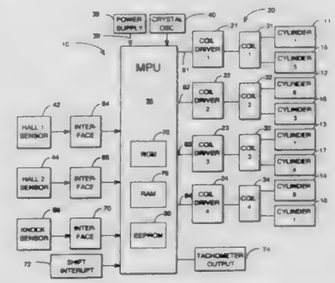
fourth means responsive to said first wheel acceleration data indicative of wheel deceleration greater than a predetermined wheel deceleration threshold, for initiating skid control cycle in which operation mode of said pressure control valve is selectively controlled between said first mode and said second mode so as to maintain wheel slippage at a predetermined optimum value according to a predetermined schedule, said fourth means further detecting a peak value of said second wheel acceleration data and causing braking pressure to increase in said first mode in said pressure control valve.

5,058,021

DISTRIBUTORLESS IGNITION SYSTEM WITH DWELL CONTROL

Kimberly Scott, Toledo, Ohio, assignor to Prestolite Electric Incorporated, Toledo, Ohio

Filed Feb. 22, 1990, Ser. No. 484,049
Int. Cl.[5] F02P *5/00, 9/00;* **G06F** *15/48;* **G06G** *7/70*
U.S. Cl. 364—431.04 **27 Claims**



1. In a marine craft distributorless ignition system with an engine having a plurality of cylinders and a plurality of ignition coils, each cylinder being coupled to an ignition coil and drive means coupled to said ignition coils for initiating for each cylinder in a firing order a dwell period in response to a first control signal to pull current through said cylinder's coil creating a field, said drive means collapsing said field in response to a second control signal to generate a spark firing said cylinder, a controller for controlling the timing of firing of said cylinders comprising:

means for sensing when each of said cylinders reaches top dead center to provide a signal representative thereof;

means responsive to said sensing means for determining the speed of said engine;

means responsive to said determined engine speed for determining advance;

a battery for providing power to said systems;

means responsive to the voltage of said battery for determining a dwell time;

means responsive to said sensing means for determining the interval between a first cylinder reaching top dead center and a preceding cylinder reaching top dead center; and

firing time determining means being responsive to said interval and said advance for determining a delay time until said spark should be generated to fire said subsequent cylinder and being responsive to said delay time to spark

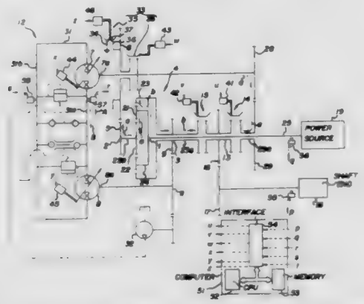
and said dwell time for determining a delay time until said dwell period should be initiated.

5,058,022

DEVICE FOR DETECTING ENGINE BRAKE

Yasuo Kita; Hiroyuki Fujii, and Hiroshi Uzawa, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 30, 1989, Ser. No. 330,704
Claims priority, application Japan, Apr. 30, 1988, 63-108041
Int. Cl.[5] F02M *51/00*
U.S. Cl. 364—431.07 **3 Claims**



1. A device for detecting an engine brake state, comprising:
a memory for storing a plurality of rotating speeds of the engine under a no-load condition as a function of a degree of opening of the throttle valve;
throttle valve opening detecting means for detecting an actual degree of opening of the throttle valve;
rotation speed detecting means for detecting an actual rotating speed of the engine; and
determining means for determining whether the engine is in an engine brake state by comparison of a detected actual speed of the engine with an engine speed stored in said memory corresponding to the detected actual degree of opening of the throttle valve, an engine braking state existing when said detected actual speed of the engine exceeds the speed of the engine retrieved from said memory, and for outputting an engine brake signal as a result of the comparison.

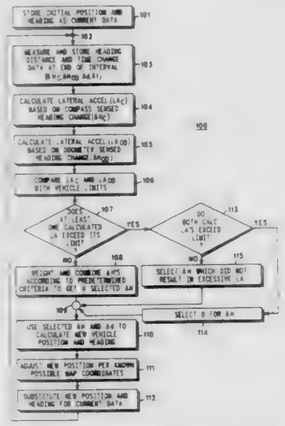
5,058,023

VEHICLE POSITION DETERMINING APPARATUS

Elisha M. Kozikaro, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1990, Ser. No. 559,814
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—450 **20 Claims**

1. Vehicle position determining apparatus comprising a dead reckoning position system including:
differential wheel sensing apparatus for determining a sensed change in vehicle heading (ΔHod) by sensing the difference in travel between two different wheels of a vehicle;
means for calculating a vehicle's new position and heading by using the vehicle's prior position and prior directional heading and calculating said new vehicle position and heading based on sensed distance traveled (Δd) and said sensed change in heading (ΔHod) over a time (Δt);
means for providing vehicle navigation/position information based on said calculated new position;
means for providing a first signal indicative of at least one of the quantities of sensed vehicle rate of turn and sensed vehicle lateral acceleration during said time by using said sensed change in heading (ΔHod),
means for comparing said first indicative signal with a predetermined first limit value, and
wherein said calculating means includes means for calculating said new vehicle position based on said sensed distance traveled and said sensed change in heading (ΔHod) over said time if said first indicative signal is less than said limit



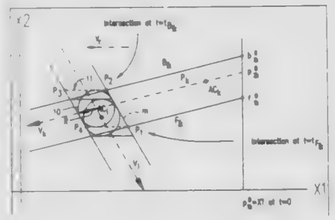
value, otherwise calculating said new vehicle position using a change of heading value other than said sensed change of heading (ΔHod).

5,058,024

CONFLICT DETECTION AND RESOLUTION BETWEEN MOVING OBJECTS

Alfred Inselberg, Los Angeles, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1989, Ser. No. 299,854
Int. Cl.[5] G06F *15/48*
U.S. Cl. 364—461 **13 Claims**



1. A processor-implemented method of detecting and resolving conflict between a plurality of objects on trajectories in space, comprising the steps of
preselecting an airspace of specified shape and size that contains one of said objects and is to be protected from penetration;
calculating front and back limiting trajectories for another of said objects by enclosing said protected airspace in an imaginary parallelogram having one set of sides parallel to the trajectory of said one object and the other set of sides parallel to the relative velocity of said other object with respect to said one object;
generating an output which indicates the trajectory of said one object and the times remaining until conflict of said cone object with the front and back limiting trajectories, respectively, of said other object;
indicating potential conflict when the trajectory of said one object is between the front and back limiting trajectories of said other object; and

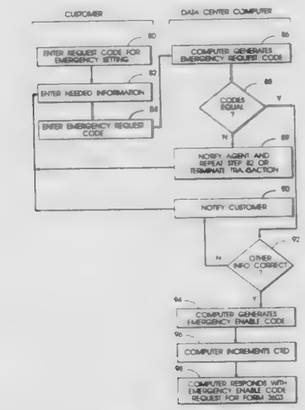
resolving conflict by diverting said one object by an appropriate maneuver to a conflict-free path in which the trajectory of said one object no longer lies between the front and back limiting trajectories of said other object.

5,058,025

EMERGENCY POST OFFICE SETTING FOR REMOTE SETTING METER

John G. Haines, Oakland; Tracy F. Slaughter, Grass Valley, and Charles P. Barker, Pleasanton, all of Calif., assignors to F.M.E. Corporation, Hayward, Calif.

Filed Mar. 23, 1989, Ser. No. 327,487
Int. Cl.[5] G07B *17/00*
U.S. Cl. 364—464.02 **9 Claims**



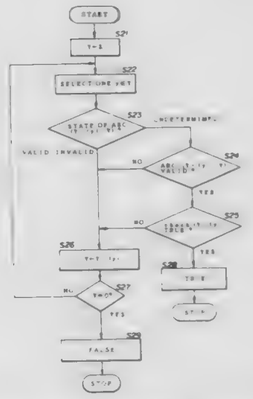
1. A method of operating an electronic remotely settable postage meter, the meter having a value representative of available postage, a flag, and meter identifying data stored in memory, being remote form a data center computer, and having a first mode of operation for printing postage if the value representative of available postage is greater than zero, a second mode of operation for manually adjusting the value representative of available postage, and a third mode of operation for communicating a manual adjustment to the data center computer, the method comprising the steps of:
(a) placing the meter in the second mode if the flag is clear;
(b) entering into the meter a manual adjustment, thereby increasing the value representative of available postage by the manual adjustment amount and causing the flag to be set;
(c) placing the meter in the third mode if the flag is set;
(d) calculating at the meter a meter generated emergency enable code that depends on the identifying data;
(e) establishing communication with the data center computer;
(f) entering into the data center computer the identifying data and the manual adjustment;
(g) calculating at the data center computer a computer generated emergency enable code that depends on the identifying data;
(h) entering the computer generated emergency enable code into the meter;
(i) comparing at the meter the meter generated and computer generated emergency enable codes; and
(j) clearing the flag if the codes are equal.

5,058,026

ASSEMBLABILITY DISCRIMINATING METHOD AND ASSEMBLING SEQUENCE GENERATING METHOD

Toshiyasu L. Kunii, Tokyo; Tsukasa Noma, Higashiyamato, and Kyujae Lee, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Apr. 21, 1989, Ser. No. 341,202
Claims priority, application Japan, Apr. 27, 1988, 63-105333
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **24 Claims**



1. An industrial process including a computer-automated assemblability determination method for determining an assemblability of a completed product which is made up of a plurality of parts, the process comprising the steps of:
(a) producing information defining physical shapes of the parts using a computer aided design (CAD) system, the parts being part of a set P;
(b) inputting the information from the CAD system;
(c) making an assembly process structure G=(N,A) which satisfies conditions (1) and (2) from the set P of the parts of the completed product, where N denotes a set of nodes and A denotes a set of arcs,

$$N=\{\{P1, \ldots, Pm\};\ Pi \in P,\ m \geq 1\} \quad (1)$$

$$A=(\{P1, \ldots, Pk\},\{P1, \ldots, Pk, Pk+1\}) \quad (2)$$

each node corresponding to any of: (1) one part, (2) a semi-completed product which is made up of a plurality of parts, or (3) the completed product, each arc connecting two nodes;
(d) determining validity of each arc by starting from an arc which is connected to a node which corresponds to the completed product and continuing in a sequence with priority on a depth of the assembly process structure G, each arc ({P1, . . . , Pk}, {P1, . . . , Pk, Pk+1}) being determined to be a valid arc when a part Pk+1 is assemblable on a semi-completed product made up of parts P1, . . . , Pk under a predetermined assembling environment and otherwise being determined to be an invalid arc;
(e) determining the assemblability of the completed product when there exists at least one path of valid arcs connecting a node which corresponds to one part to the node which corresponds to the completed product and otherwise determining the non-assemblability of the completed product; and
(f) when the completed product is determined to be assemblable:
(1) outputting an assemblability decision to a device for generating an assembly sequence for use in a computer integrated manufacturing (CIM) device; and

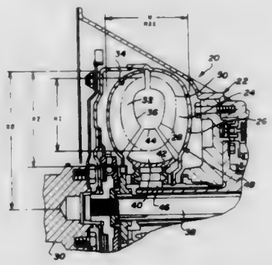
(2) assembling the product according to the assembly sequence, using the CIM device.

5,058,027

HYDRAULIC TORQUE CONVERTER

Gene R. Becraft, Riverview, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 22, 1989, Ser. No. 411,442
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 **14 Claims**



1. A process for forming a torque converter with an impeller, a turbine and a stator defining a generally toroidal flow path with a fixed axial offset, comprising:

representing an initial meanline design path for the toroidal flow path with a fixed axial dimension less than its radial dimension, said initial meanline design path having an outer radius and an inner radius,

wherein said outer radius is initially set equal to said inner radius;

generating an outer dimensional representation of the outermost dimensional boundary of said flow path by equalizing the torus flow area exteriorly of said initial meanline design path with the torus flow area interiorly of said initial design path along a plurality of incrementally spaced element lines;

generating a second outer dimensional representation by simultaneously reducing said inner and outer radii until a single axis component of said second outer dimensional representation corresponds with said fixed axial offset;

generating a third dimensional representation by gradually increasing said outer radius relative to said inner radius until said third outer dimensional representation generates a second maximum axial component corresponding to the first maximum axial component;

generating a fourth outer dimensional representation by reducing said outer radius so that said second maximum axial component is retracted from said fixed axial offset to a tapering contour; and

constructing the physical interior and exterior boundaries of said flow path in accordance with said fourth dimensional representation.

5,058,028

ACTIVATING METHOD AND SYSTEM FOR CONTROLLING MULTIPLE ELECTRICALLY-ENERGIZED FACTORY TOOLS

George M. Meyerle, 15 Lakeview Dr., Brookfield, Conn. 06804

Filed Dec. 6, 1989, Ser. No. 447,107
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.11 **11 Claims**

1. An activating method for controlling the electrical power input to a plural number of electrical tools in a manufacturing plant where such machine tools are of the type having a relatively brief duty cycle involving a large usage of electrical power during the performance of the brief duty cycle and where such tools require an insignificant usage of electrical power during standby while each tool is being readied for performance of its next duty cycle, said method preventing the performance of more than one duty cycle at the same time for limiting peak electrical load demand caused by said tools, said method comprising the steps of:

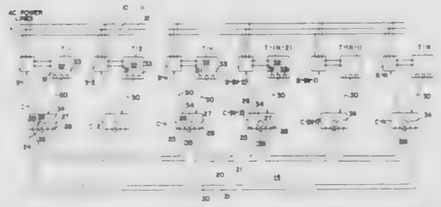
providing a plurality of controllers equal in number to said plural number of electrical tools, wherein respective controllers monitor and control respective electrical tools and wherein each controller has a pair of input terminals and a pair of output terminals,

connecting the pair of output terminals of each: respective controller to the pair of input terminals of another controller for arranging said controllers in an electrical permission signal passing ring,

choosing one of said controllers as a first controller with a last controller in said ring having its output terminals connected to the input terminals of said first controller,

transmitting an electrical permission signal of predetermined character from the output terminals of said first controller,

automatically transmitting from the output terminals of any controller in said ring, except said first controller, an electrical permission signal of the same character as received at its input terminals whenever the electrical tool being monitored by that controller is not ready to perform its duty cycle,



automatically transmitting from the output terminals of said first controller an electrical permission signal of character inverted from the character of the electrical permission signal as transmitted from the output terminals of said last controller, whenever the electrical tool being monitored by said first controller is not ready to perform its duty cycle,

shifting a controller into a ready state whenever its controlled electrical tool is ready to perform its duty cycle,

allowing any controller in a ready state to trigger its controlled electrical tool into performance of a duty cycle whenever the character of the electrical permission signal received at its input terminals is inverted in character from the character of the permission signal most recently transmitted from its output terminals,

after an electrical tool has been triggered into performance of a duty cycle by its controller, restraining transmission of a permission signal from the output terminals of said controller until its controlled tool has completed its duty cycle, and

transmitting from the output terminals of any controller except the first controller a permission signal of the same character as received after its controlled tool has completed performance of its duty cycle.

5,058,029

SETTING CONTROL METHOD OF MACHINING COORDINATE SYSTEM IN A MACHINE TOOL

Kazuki Uemura, Keseel-Lo, Belgium, assignor to Yamazaki Mazak Kabushiki Kaisha, Ooguchi, Japan

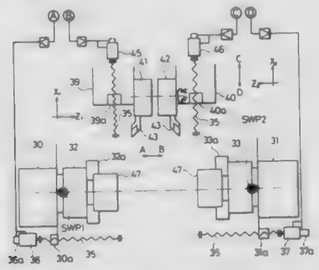
Filed Mar. 28, 1989, Ser. No. 329,633
Claims priority, application Japan, Mar. 28, 1988, 63-73646
Int. Cl.[5] G05B *19/18;* **B23B** *3/30*
U.S. Cl. 364—474.18 **7 Claims**

1. A method for setting a machining coordinate system in a machine tool having first and second spaced opposed spindle stocks which are relatively movable toward and away from each other in a first direction and having rotatable workpiece spindles by which a workpiece can be held on the respective spindle stocks, comprising:

composing a machining program on the basis of a workpiece origin established for a workpiece;

setting a standard origin which moves together with one spindle stock in said first direction at least between the two spindle stocks;

setting a distance between said standard origin and said workpiece origin as a first offset value;



setting a first machining coordinate system for said first spindle stock on the basis of said first offset value and using said first machining coordinate system for performing machining of the workpiece in the first spindle stock according to said machining program; and

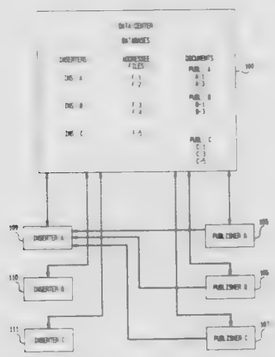
setting a second machining coordinate system for the second spindle stock on the basis of said first offset value and an amount of movement of said second spindle stock toward a mechanical origin, and using said second machining coordinate system for performing machining on the workpiece in the second spindle stock according to said machining program.

5,058,030

OPTIMIZING MAIL PROCESSING BY MATCHING PUBLISHER AND INSERTER ENTITIES

Karl H. Schumacher, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 3, 1989, Ser. No. 416,735
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—478 **9 Claims**



1. Apparatus for performing mail processing functions for postal system users, said apparatus comprising:

a data center having a data processor and means for receiving via a data communications link and storing data representative of:

(a) activity profiles of plural inserter entities having intelligent inserter equipment,

(b) current or planned mail documents to be generated by a plurality of publishers;

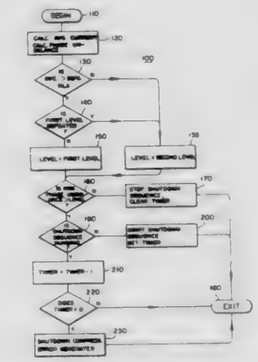
means for processing said data to determine which of said mail documents should be forwarded to which of said inserter entities to reduce costs or expedite distributing of said documents to addressees.

5,058,031

MULTILEVEL PHASE UNBALANCE COMPRESSOR MOTOR PROTECTION SYSTEM

Robert M. Swanson; Paul C. Rentmeester, and David M. Foye, all of La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Mar. 30, 1990, Ser. No. 502,355
Int. Cl.[5] G01R *25/00;* **G06F** *15/20*
U.S. Cl. 364—483 **17 Claims**



1. A method of protecting a compressor motor of a refrigeration system using a multiphase AC power supply comprising the steps of:

monitoring each current or voltage phase of the power supply to the compressor motor;

calculating an average phase for the current or voltage phases of the AC power supply;

determining a maximum phase unbalance deviation from the average phase;

determining if a first level of phase unbalance protection is active;

setting a system protection level as the first level of phase unbalance protection if the first level is active;

setting the system protection level as a second higher level of phase unbalance protection if the first level is not active; and

initiating a compressor motor shutdown if the system protection level is exceeded by the maximum unbalance phase deviation.

5,058,032

APPARATUS AND METHOD FOR MONITORING A WATER TREATMENT SYSTEM

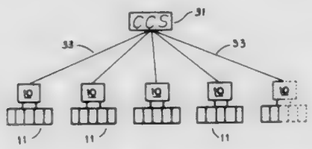
Michael D. Farrell, Brookfield; Terry F. Teach, New Berlin, both of Wis., and John N. Evers, Fridley, Minn., assignors to Autotrol Corporation, Milwaukee, Wis.

Filed Oct. 23, 1989, Ser. No. 425,239
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—510 **17 Claims**

1. An apparatus connectable by a telephone line to a central computer system for monitoring a water treatment system including:

a first input port for receiving a first signal representing a

volumetric flow rate at which water is flowing through the system;
a second input port for receiving a second signal representing an unacceptable physical characteristic of the water;
a processing circuit including a microprocessor programmable for receiving the first signal and totaling system subsequent to a defined event;
the processing circuit further including a read time clock for continuously computing time;

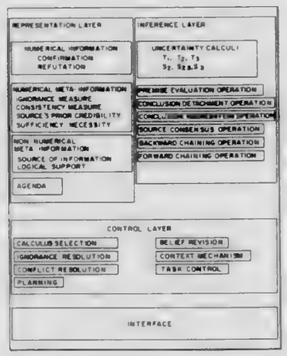


a power supply for providing electrical power to the apparatus;
the apparatus being arranged for initiating a call to the computer system upon the occurrence of either a first condition or a second condition;
the first condition including the flow of a predetermined total volume of water through the treatment system subsequent to the defined event;
the second condition including the co-existence of said first signal and said second signal.

5,058,033
REAL-TIME SYSTEM FOR REASONING WITH UNCERTAINTY

Piero P. Bonissone, Schenectady, N.Y., and Lise M. Pfau, Baden, Switzerland, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 18, 1989, Ser. No. 396,407
Int. Cl.[5] G06F *15/36*
U.S. Cl. 364—513 **99 Claims**



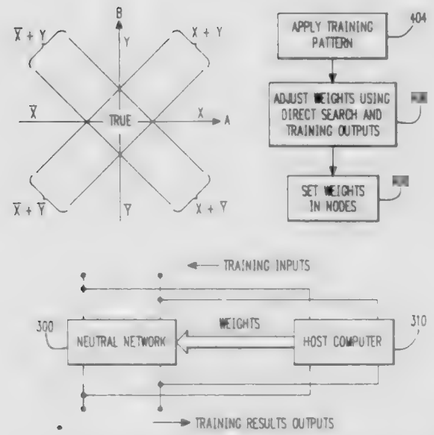
1. A method, for practice on a computer, for time-constrained reasoning with uncertainty in a rule-based reasoning system comprising a directed acyclic graph stored in memory and comprising nodes representing a plurality of variable to which respective values can be assigned, a plurality of rule premises, a plurality of rules, and a plurality of conclusions, each of said rule premises comprising at least one clause including at least one of said variables to which respective values can be assigned, said method comprising the steps of:
selecting a node representing a conclusion to be determined;
determing alternative plans for executing said directed acyclic graph within a predetermined time deadline each alternative plan comprising a plurality of nodes forming a path through said directed acyclic graph, each path resulting in execution of said selected node;
executing said selected node by utilizing default values for each of said nodes if no alternative plan provides for execution of the selected node within the predetermined time deadline; and
if an alternative plan provides for execution of the selected node within the predetermined time deadline, executing the selected node by first executing one alternative plan which provides for execution of the selected node within the predetermined time deadline and in the earliest absolute time, execution of each of said alternative plans comprising the steps of associating a value certainty interval with each value assigned to one of said variables of said one plan, said value certainty interval having a lower and an upper bound respectively representative of amounts of confirmation and failure of refutation of the assigned value, associating a sufficiency factor and a necessity factor with each rule node of said plan, said sufficiency factor representing a strength of belief that the rule is true given the rule premise is true, said necessity factor representing a strength of belief that the rule is false given the rule premise is false, computing a premise certainty interval from the value certainty intervals respectively associated with the values assigned to the premise variables, a lower bound of said premise certainty interval being a first predetermined function of the respective value certainty interval lower bounds, an upper bound of said premise certainty interval being said first function of the respective value certainty interval upper bounds, and executing one of said rules by computing a conclusion detachment certainty interval having a lower and an upper bound, said conclusion detachment interval lower bound being a second predetermined function of both said rule sufficiency factor and said premise certainty interval lower bound, the conclusion detachment upper bound being a third predetermined function of both said rule necessity factor and said premise certainty interval upper bound, said conclusion detachment interval lower and upper bounds respectively representing the amounts of confirmation and failure of refutation of the rule conclusion.

5,058,034
DIGITAL NEURAL NETWORK WITH DISCRETE POINT RULE SPACE

John H. Murphy, and Terry A. Jeeves, both of Penn Hills Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 364,475, Jun. 12, 1989. This application Oct. 3, 1989, Ser. No. 416,563
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 **2 Claims**

1. An optimizing adaptive reasoning system, comprising:
a discrete point digital neural network having digital neural nodes; and
digital training menas for determinign discrete points in a weight space for each digital neural node, applying a training pattern, searching the discrete points for a rule as

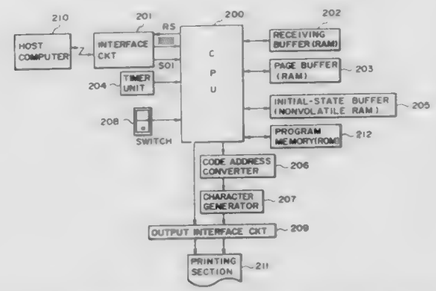


the training pattern is applied and setting the rule in the corresponding digital neural node when a match occurs.

5,058,035
APPARATUS WHICH RECORDS DATA ON THE BASIS OF STORED FORMAT INFORMATION

Satoshi Nagata, Tama, and Masaru Igarashi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 89,339, Aug. 25, 1987, abandoned. This application May 2, 1990, Ser. No. 517,405
Claims priority, application Japan, Aug. 30, 1986, 61-202715; Aug. 30, 1986, 61-202720
Int. Cl.[5] G06F *3/12*
U.S. Cl. 364—518 **26 Claims**

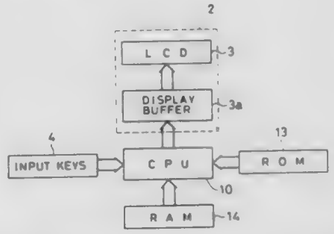


1. A recording apparatus for recording information based on recording information generated by a generating apparatus which generates information to be recorded, said recording apparatus comprising:
setting means for setting a recording format at a time when the recording information generated by the generating apparatus is recorded on a recording medium;
a non-volatile memory for storing recording format information, if any, generated by the generating apparatus, said non-volatile memory being capable of clearing data stored therein; and
recording means for recording on the recording medium the recording information generated by the generating apparatus, based on the recording format set by said setting means,
wherein said setting means sets different recording formats in response to whether or not recording format information has been stored in said non-volatile memory and wherein said setting means sets recording format based on recording format information stored in said non-volatile memory when recording format information generated by the generating apparatus has been stored in said non-volatile memory, and said setting means sets a default value of recording format when recording format information has not been stored in said non-volatile memory.

5,058,036
DEVICE FOR SECRET REGISTRATION OF DISPLAY DATA

Masataka Nakasuji, Yamatokoriyama, and Shigeru Shindoh, Nara, both of Japan, assignors to Sharp Kabyshiki Kaisha, Osaka, Japan

Filed Jan. 25, 1989, Ser. No. 301,642
Claims priority, application Japan, Jan. 30, 1988, 63-11403[U]
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—518 **5 Claims**



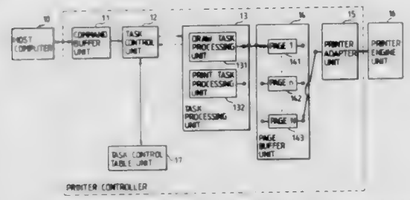
1. A device including a display for the secret registration of display data, comprising:
key input means operable for entering data;
memory means for storing data entered by said key input means, said data comprising a plurality of
data items arranged in row and column format as a plurality of rows of data and a plurality of columns of data thereby defining table data;
addition means for adding secret registration data to a portion of the table data less than the whole of said table data is response to an instruction from said key input means; and
discrimination means for discriminating said data portion having the secret registration data added thereto from other portions of the table data stored in said memory means and not having the secret registration data added thereto to show on the display only said other portions of the table data not having the secret registration data added thereto.

5,058,037

METHOD AND APPARATUS FOR CONTROLLING PRINTER

Seiji Kageyama, Fuchuu; Keiichi Nakane, Yokohama, and Hironki Kambayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 373,262, Jun. 27, 1989, Pat. No. 4,992,958. This application Feb. 4, 1991, Ser. No. 650,013
Claims priority, application Japan, Jun. 27, 1988, 63-158481
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 34 Claims



1. A method for printing an image data in a printing system including a printer engine unit, a buffer unit having a plurality of page buffers for storing the image data to be printed, a printer adapter means for outputting the image data stored in the buffer unit to the print engine unit, and a central processing unit for controlling to print the image data in response to a drawing command and a printing command, the method comprising the steps of:

creating a drawing task in response to the drawing command;

acquiring an empty one of page buffers by said drawing task;

starting to draw the image data corresponding to said drawing task into said acquired page buffer; and

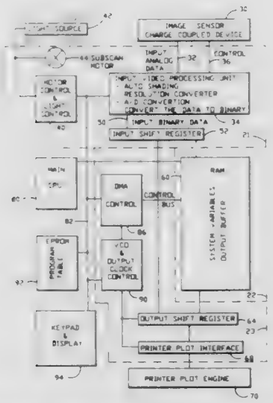
initializing a printing task corresponding to the printing command by said drawing task after said drawing task executes the drawing of the image data of one page in said one of page buffers.

5,058,038

METHOD TO CONNECT WIDE SIZE SCANNER TO LASER PRINTER ENGINE FOR COPYING WITH SIZE REDUCTION

Tetsuro Motoyama, San Jose, and Hershow Chang, Los Altos, both of Calif., assignors to Ricoh Corporation, San Jose, Calif.

Filed Dec. 13, 1989, Ser. No. 451,512
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 8 Claims



1. A method for connecting a wide size document scanner to a laser printer engine for copying said document with size reduction, said method comprising the steps of

scanning said document to generate input binary data representative of the information on said document and of the size of said document,

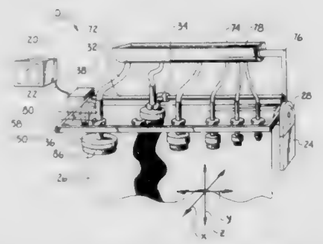
determining the reduction ratio of the size of the scanned document to the size of the copied document, including matching the input resolution of the scanned document to the output format of said laser printer engine.

5,058,039

SYSTEM OF OPERATING AN AUTOMATIC PLOTTER USING DIFFERENT SIZE MARKING DEVICES

Jay Markoff, 1940 Third Ave., #403, San Diego, Calif. 92101, and John R. Deubert, 1040 S. Coast Blvd., #202, La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 291,537, Dec. 28, 1988, Pat. No. 4,933,876. This application Aug. 18, 1989, Ser. No. 395,745
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—520 7 Claims



1. A system for automatically applying marking fluid using plotter driven marking devices to fill in images on a sheet with a minimal amount of strokes, with the aid of a computer, comprising:

a plurality of marking instruments having different diameter tips corresponding to a specified set of different size strokes;

computer means which includes means for storing images to be drawn onto said sheet, and means for storing data representing said specified set of different size strokes;

means for matching appropriately sized diameter tips with appropriately sized areas to be filled in, and means for supplying control signals representing coordinates for filling in said appropriate areas within said images using said appropriate one of said plurality of different diameter tips;

means for selectively grasping and moving each said marking instrument to various positions in response to said control signals to fill in said images on said sheet with said marking fluid using said different diameter tips;

a container for holding said marking fluid; and

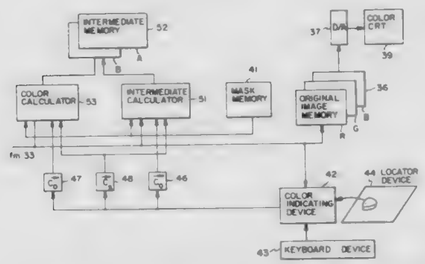
means for flexibly connecting each said marking instrument in fluid communication with said container to continuously supply said marking fluid to each said different diameter tip for filling in said images.

5,058,040

SIMULATION OF A CHANGE IN THREE-COMPONENT COLOR VALUES BY USING TWO-COMPONENT COLOR VALUES

Joji Tajima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 173,164, Mar. 25, 1988, abandoned. This application Oct. 11, 1990, Ser. No. 596,425
Claims priority, application Japan, Mar. 25, 1987, 62-72056; Mar. 31, 1987, 62-80236
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—521 4 Claims



1. A method for displaying colored pictures simulating changes in the color of an object from a first color to a second color, comprising the steps of:

producing image signals representing an image of said object while said object is illuminated by an optical beam of a source color;

storing said image signals in an image memory as a plurality of picture elements forming an original image, said picture elements and a mask stored in a mask image memory defining a plurality of domain elements representing a color domain of said object, said domain elements representing an original color value in a color space defined by three primary colors with an origin of said color space corresponding to the color black, a first color distribution of said object represented in said image memory by original color values of domain elements on a first color plane defined by said origin, said source color, and said first color;

generating intermediate color local values for each domain element based on said original color values stored in said image memory;

storing said intermediate color values in an intermediate memory;

generating new color values of said domain elements based on said intermediate color values stored in said intermediate memory, said new color values represented as domain elements on a second color plane defined by said origin, said source color, and said second color, said new color values defining a second color distribution of said object; and

displaying a colored picture of said object having said second color distribution on a display, based on said new color values.

5,058,041

SEMAPHORE CONTROLLED VIDEO CHIP LOADING IN A COMPUTER VIDEO GRAPHICS SYSTEM

Robert C. Rose, 38 Old North Rd., Hudson, Mass. 01749; Larry D. Seiler, 198 Linden St., Boylston, Mass. 01505, and James L. Pappas, 23 Barry La., Leominster, Mass. 01453

Filed Jun. 13, 1988, Ser. No. 206,203
Int. Cl.[5] G06F *15/72*
U.S. Cl. 364—521 16 Claims

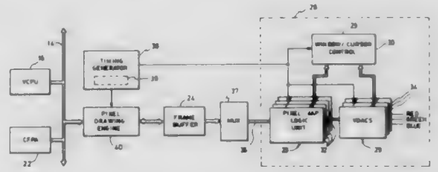
10. A video graphics system comprising:

a. a first memory for storing pixel values;

b. a second memory for storing state table values;

c. a central processing unit for loading pixel values into the first memory and for loading state table values into the second memory;

d. a video output logic section having state tables, the video output logic section providing means for reading the state table values from the second memory into the state tables of the video output logic section and for processing pixel values for display; and



e. an arbitration device which precludes the loading of the state table values into the second memory simultaneously with the reading of the state table values from the second memory into the state tables of the video output logic section.

5,058,042

METHOD FOR EMPLOYING A HIERARCHICAL DISPLAY LIST IN GLOBAL RENDERING

Samir L. Hanna; Louise M. Watson; John R. Wallace, all of Ithaca; Kells A. Elmquist, Lansing; Eric A. Haines, Ithaca, all of N.Y., and Kent M. Montgomery, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 3, 1989, Ser. No. 332,748
Int. Cl.[5] G06F *15/72*
U.S. Cl. 364—522 18 Claims



1. Method comprising the steps of:

a) providing a hierarchical display list defining a plurality of primitives and attributes of primitives for a three dimensional rendering of a scene, the display list including primitives corresponding to both two dimensional entities and three dimensional surfaces in the scene, as well as attributes associated with the primitives;

b) traversing the display list and selecting only the primitives and associated attributes corresponding to the three dimensional surfaces in the scene;

c) storing data indicative of only the selected primitives and attributes associated with the selected primitives in a global database; and,

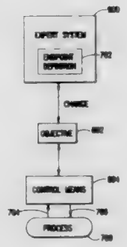
d) rendering the scene by a global illumination technique based upon the data stored in the global database.

5,058,043

BATCH PROCESS CONTROL USING EXPERT SYSTEMS

Richard D. Skeirik, Newark, Del., assignor to E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Del.

Filed Apr. 5, 1989, Ser. No. 333,536
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—550 **101 Claims**



1. An expert system based batch process control method, comprising the steps of:

(a) initiating the batch process;

(b) monitoring, using knowledge in the expert system which defines an endpoint condition in the batch process, for said endpoint condition; and

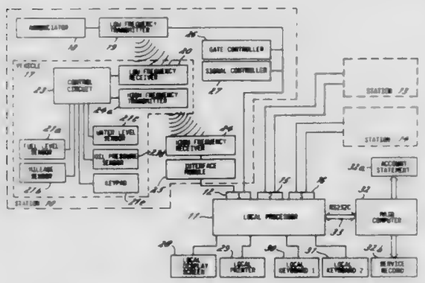
(c) changing, using the expert system, a control objective of the batch process when the expert system detects said endpoint condition.

5,058,044

AUTOMATED MAINTENANCE CHECKING SYSTEM

Stedman J. Stewart, Littleton; Charles A. Barbour, Jr., Thornton; Howard E. Breeden, Oak Brook, all of Ill., assignors to Auto I.D. Inc., Lakewood, Colo.

Filed Mar. 30, 1989, Ser. No. 331,278
Int. Cl.[5] G06F *15/20;* **G01D** *3/00*
U.S. Cl. 364—551.01 **13 Claims**



1. At a site for processing vehicles, a system for automatically identifying vehicles, assimilating data from an identified vehicle, correlating said data with predetermined data and providing a hard copy indicative of a transaction between an operator of the vehicle and another party, said system comprising in combination:

an annunciator for automatically detecting the presence of a vehicle at said site;

radio frequency transmitter means at said site responsive to said annunciator for transmitting an interrogation signal to said vehicle;

means on-board said vehicle for sensing data indicative of operation conditions of said vehicle and a memory containing data identifying said vehicle;

radio frequency transmitter and receiver means on-board said vehicle;

said means on-board said vehicle being responsive to said interrogation signal detected by said transmitter and receiver means for downloading via said transmitter and receiver means said vehicle identification data and said sensed data to processor means within said site;

said processor means including means for receiving said downloaded data from said vehicle; and

means associated with said processor means for correlating said downloaded data with predetermined other data and providing printouts to a worker indicative of 1) a transaction between an operator of said vehicle and another party and 2) service requirements of said vehicle.

5,058,045

BATTERY AND EXPANSION SLOT CHANGEABLE COMPUTER

Hsi K. Ma, Chia Hsin Bldg. 2, No. 96, Rm. 813, Chung Shan N. Rd., Taipai, Taiwan, Taiwan

Filed Mar. 9, 1990, Ser. No. 491,321
Int. Cl.[5] G06F *1/00;* **H05K** *7/00*
U.S. Cl. 364—708 **3 Claims**



1. A battery and expansion slot changeable computer, including a main body comprising two receiving chambers at the back side for the setting therein of one or more battery sets and one or more expansion cards alternatively, said receiving chambers having each a contact for the connection thereto of the contact of said battery sets and one of said receiving chambers having internally a connector for the connection thereto of the connecting end of either of said expansion cards to connect to the main line of the computer.

5,058,046

CURSOR SELECTED KEYBOARD KEYS DISPLAYED ON THE COMPUTER SCREEN FOR ENTERING ALPHANUMERIC CHARACTERS AND INSTRUCTIONS, PARTICULARLY FOR CREATING COMPUTER AIDED DESIGN AND DRAFTING PATTERNS

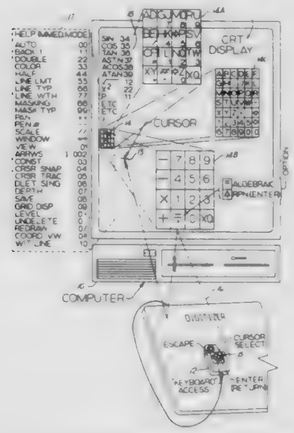
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 60,225, Jun. 10, 1987, Pat. No. 5,008,847, Continuation-in-part of Ser. No. 844,872, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 729,559, May 2, 1985, abandoned, which is a continuation-in-part of Ser. No. 459,998, Jan. 21, 1983, Pat. No. 4,547,860. This application Sep. 20, 1990, Ser. No. 598,010
Int. Cl.[5] G06F *3/023*
U.S. Cl. 364—709.16 **2 Claims**

1. In a graphic design and drafting system operated by a multi-function alpha-numeric data processing computer wherein a computer generated display screen exhibits graphic patterns selected by manually operated analog cursor positioning input means, the improved data processing system for displaying on the computer display screen and inputting with the analog cursor positioning input means both a wide range of preformed patterns including alphabetic character patterns and a set of manually selected computer command signals such as generally selected with external keyboards, comprising in combination:

computer operated pattern generating means for presenting visually on the computer display screen along with said graphic patterns a temporary display of a virtual keyboard chart identifying a set of keys and corresponding indicia representative of said pre-formed patterns and computer command signals including a set of alphabetic characters for manual selection from keys in the set,

keyboard key selection means for entering selections from said virtual keyboard comprising analog cursor positioning means for making individual selections respectively of keys on the virtual keyboard by movement of a cursor to locate a designated key on said virtual keyboard chart in response to manual operation of said analog cursor positioning means to position the cursor for selection of different keys in the set exhibited on said virtual keyboard chart for designating by the cursor position a desired keystroke



entry on said virtual keyboard chart activated for computer entry,

keystroke switching means for entering into said data processing system a computer input signal to make a computer input selection designated by the cursor position within said virtual keyboard chart thereby to activate computer functions including processing of commands and alphabetic characters by the data processing system, and

means in said computer system configurating the second successively presented virtual keyboard configuration in an alphabetic selection mode to locate the most frequently used alphabetic characters selectable from the second virtual keyboard configuration at the same virtual key location as for those characters in the first keystroke location on the first successive virtual keyboard configuration for a two-stroke entry cycle.

5,058,047

SYSTEM AND METHOD FOR PROVIDING DIGITAL FILTER COEFFICIENTS

Sanguoon Chung, Salinas, Calif., assignor to Advanced Micro Devices, Inc., Austin, Tex.

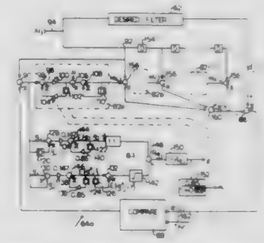
Filed May 30, 1989, Ser. No. 359,022
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.19 **20 Claims**

1. A system for generating coefficients for use in a digital filter, said system comprising:

means for providing data indicative of a desired filter characteristic;

iterative processing means for generating at least one filter coefficient and a gradient for each said iteration, said iterative processing means including means for generating the stochastic average of said gradients and means for varying said at least one coefficient during each said iterating by an amount relative to said stochastic average of said gradients;

means for generating an error signal from said desired filter characteristic and said at least open filter coefficient;



comparing means for comparing said error signal to a predetermined threshold; and

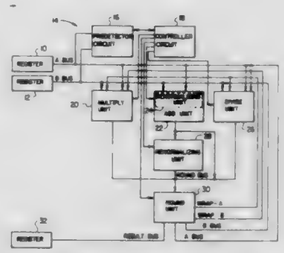
means for terminating said iterative processing means when said error signal is within a given range of said predetermined threshold.

5,058,048

NORMALIZING PIPELINED FLOATING POINT PROCESSING UNIT

Smeeta Gupta, Saratoga; Robert M. Perlman, San Jose, both of Calif.; Thomas W. Lynch, and Brian D. McMinn, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 2, 1990, Ser. No. 503,819
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **42 Claims**



1. A floating point processor for performing arithmetic operations on floating point numbers having a mantissa portion and an exponent portion, comprising:

a first arithmetic operation unit having first and second inputs for receiving first and second operands, respectively, and an output;

a second arithmetic operation unit having first and second inputs for receiving said first and second operands, respectively, and an output, said second arithmetic operation unit including a denormalizer and a normalizer;

means for providing said first and second operands to said first and second arithmetic operation unit inputs, respectively;

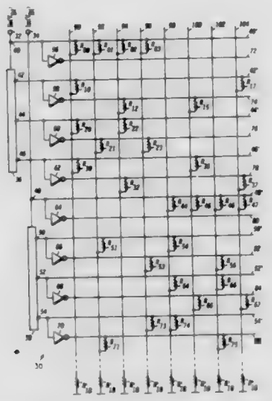
means for determining whether said first and second operands are normalized or denormalized;

means for propagating said first and second operands determined to be denormalized through said second arithmetic operation unit for normalization; and

means for providing said first and second operands normalized by said second arithmetic operation unit to said first arithmetic operation unit, said first arithmetic operation unit per-

forming an arithmetic operation on said first and second normalized operands to produce results for output.

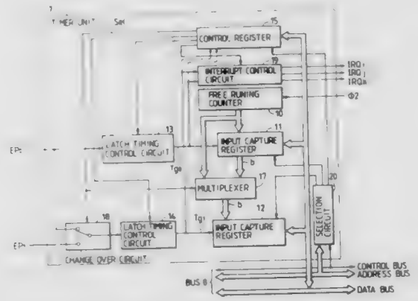
5,058,049
COMPLEX SIGNAL TRANSFORMATION USING A RESISTIVE NETWORK
Howard C. Anderson, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.
Filed Sep. 6, 1989, Ser. No. 403,540
Int. Cl.[5] G06G *7/02*
U.S. Cl. 364—826 **11 Claims**



1. An apparatus responsive to a spatial vector input signal applied at a plurality of inputs for providing a complex signal transformation thereof at a plurality of outputs, comprising:
a plurality of first conductors respectively coupled to the plurality of inputs of the apparatus for conducting elements of the spatial vector input signal in a positive sense;
a plurality of inverters each having an input and an output, said inputs of said plurality of inverters being respectively coupled to the plurality of inputs of the apparatus;
a plurality of second conductors respectively coupled to said outputs of said plurality of inverters for conducting said elements of the spatial vector input signal in a negative sense;
a plurality of third conductor respectively coupled to the plurality of outputs of the apparatus; and
a plurality of resistors having predetermined values and a predetermined connection scheme between said plurality of first conductors and said plurality of third conductors and between said plurality of second conductors and said plurality of third conductors, wherein said predetermined connection scheme and said predetermined values of said plurality of resistors are determined from a matrix representation of the sum of the products coefficients of the complex signal transformation.

5,058,050
TIMER UNIT AND DATA PROCESSING APPARATUS INCLUDING THE SAME
Kiyoshi Ogita, Musashino, Japan, assignor to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan
Filed Jul. 24, 1989, Ser. No. 384,307
Claims priority, application Japan, Jul. 29, 1988, 63-189927
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—900 **11 Claims**

1. A data processing apparatus comprising:
a first bus;
a central processing unit;
clock means for providing a clock signal;
counter means, coupled to receive said clock signal, for counting said clock signal to provide count data;
an external terminal for receiving an externally generated input signal which has first and second states;
first register means, coupled to said counter means and responsive to a first event where said externally generated input signal changes from said first state to said second state, for storing first count data representative of an occurrence of said first event which is provided from said counter means, wherein said first register means is accessible from said central processing unit via said first bus;
second register means for storing said first count data, wherein said first register means is accessible from said central processing unit via said first bus; and
a second bus, responsive to a second event where said externally generated input signal changes from said second

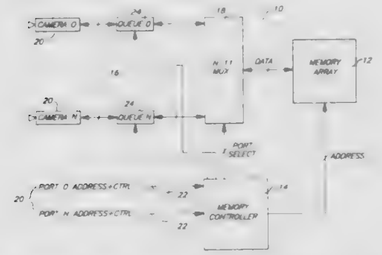


state to said first state, for coupling output nodes of said first register means to input nodes of said second register means, where said second bus transfers said first count data of said first register means to said second register means while said first register means is responsive to said second event and stores a second count data representative of an occurrence of said second event which is provided from said counter means, whereby said first count data in said first register means is saved in said second register means before said first count data in said first register means is renewed to said second count data, and said first count data is thereby saved without need to access said central processing unit, and said central processing unit accesses said first and second register means to obtain said first and second count data, so that said central processing unit measures interval between said first and second events from said first and second count data.

5,058,051
ADDRESS REGISTER PROCESSOR SYSTEM
Timothy K. Brooks, Austin, Tex., assignor to Texas Medical Instruments, Inc., Shertz, Tex.
Filed Jul. 29, 1988, Ser. No. 225,742
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—900 **14 Claims**

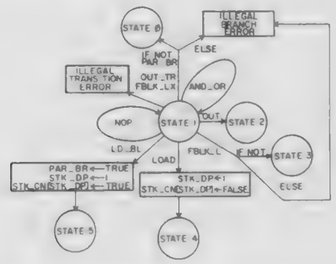
1. A digital processing system comprising:
data input means for producing digital information;
data queue means connected to said data input means by a data bus, said data queue means for providing a parallel queue of digital data from the input data from said data input means;
memory array means for storing digital data from said data queue means said memory array means being in controllable asynchronous communication with said data queue means, said memory array means further having a data path width equivalent to the data path width of said data queue means;

memory controller means connected to said data queue means and said memory array means for timing the read/-write cycles of said memory array means in response to the sequential state of the addresses of said parallel queue of digital data in said data queue means; and



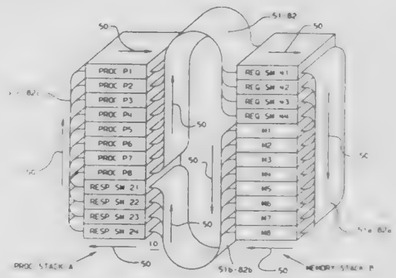
data output means connected by a data bus to said data queue means, said data output means preforming parallel to serial conversion on the output data passing from said parallel data queue.

5,058,052
METHOD FOR CHECKING THE SYNTAX OF AN INSTRUCTION LIST PROGRAM TO DETERMINE IF THE PROGRAM IS EXPRESSIBLE AS A RELAY LADDER DIAGRAM BY A PROGRAMMABLE LOGIC CONTROLLER
Daniel W. Sexton; Kenneth B. Hall, and Alan H. Bailey, all of Charlottesville, Va., assignors to GE Fanuc Automation North America, Inc., Charlottesville, Va.
Filed Oct. 16, 1989, Ser. No. 422,188
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—900 **8 Claims**



1. A method for determining if an instruction list (IL) program is representable as a relay ladder diagram, said program being provided to a programmable logic controller including a memory for storing the program, said method comprising the steps of:
providing the controller with a predetermined set of rules of which a violation by a statement or the order of the statement in the program indicates that the program is not accurately representable as a relay ladder diagram;
processing in the controller each statement of the program to determine if any of the statements or the order of the statements violate a rule in the set of rules; and
generating in the controller an error indication if any statement or order thereof of the program violates one of the set of rules.

5,058,053
HIGH PERFORMANCE COMPUTER SYSTEM WITH UNIDIRECTIONAL INFORMATION FLOW
John B. Gillett, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 176,495, Mar. 31, 1988, abandoned. This application Aug. 7, 1990, Ser. No. 564,661
Int. Cl.[5] G06F *1/00;* **H05K** *7/00*
U.S. Cl. 364—900 **19 Claims**



1. A computer system comprising:
a plurality of processors stacked one above the other in a first stack, each of said processors providing memory addresses and data and receiving data,
a first matrix switch module stacked on said first stack with said switch module either below or above said processors,
a plurality of memory modules stacked one above the other on a second stack, said memory modules including an array of chips and separate input and output terminals on a board being arranged such that input of said addresses and data is applied at said input terminals along one edge of said board and output data is provided at an output terminal along the opposite edge of said board so that signal processing is in one direction through the said memory modules,
a second matrix switch module stacked on said second stack with said switch module either being above or below respectively said memory modules,
said first and second stacks being arranged adjacent to each other and with said first switch module and said second switch module being arranged such that said first switch module and said second switch module are diagonally opposed to each other,
and means including interconnecting parallel bus lines coupling said processors to said memory modules through said first switch module and said memory modules back to said processors through said second switch module.

5,058,054
DATA TRANSMISSION DEVICE FOR INTERFACING BETWEEN A FIRST RATE DATA ACQUISITION SYSTEM AND A SECOND RATE DATA PROCESSING SYSTEM
Stuart M. Feldman, Beverly, Mass., assignor to Analogic Corporation, Peabody, Mass.
Filed Feb. 6, 1990, Ser. No. 475,784
Int. Cl.[5] G06F *3/00, 13/00, 5/06*
U.S. Cl. 364—900 **6 Claims**

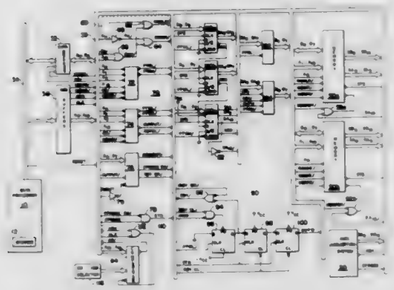
1. A device for interfacing between a data acquisition system comprising means for acquiring data in first sets, each of a first predetermined number of parallel bits at a first rate and a data processing system comprising means for processing data in second sets, each of a second predetermined number of parallel bits different from said first predetermined number at a second rate different from said first rate so that sets of data can be transferred from said data acquisition system at said first rate and accepted by said data processing system at said second rate, said device comprising:
receiving means for receiving in parallel each of said first

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sets of data from said data acquisition system at said first rate;

transmission means for transmitting in parallel each of said second sets of data to said data processing system at said second rate;

data storage memory, coupled to said receiving means and said transmission means, said storage memory including a first port for receiving in parallel each of said first sets of data from said data acquisition system through said receiving means at said first rate, means for storing each said first set of data, and a second port for transmitting said stored



first set of data to said data processing system through said transmission means at said second rate; and

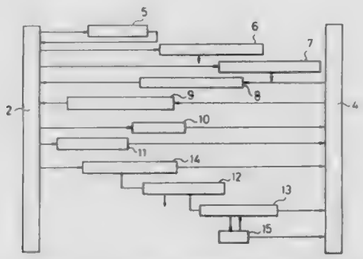
means, responsive to a first signal from said data acquisition system indicating that said data acquisition system is ready to transmit a first set of data and a second signal from said data processing system indicating that said data processing system is ready to receive a second set of data, for enabling said data storage means so that said data storage memory can receive and store a first set of data from said data acquisition system through said receiving means only in response to both of said first and second signals.

5,058,055

SYSTEM FOR PRINTING LABELS AND TAGS, AND A CONVERTER USED THEREIN

Shigetoshi Takemoto, Chiba, and Osamu Takeuchi, Tokyo, both of Japan, assignors to Naigai Clothes Co., Ltd., Osaka and Nihon Systex Ltd., Tokyo, both of, Japan

Filed Jun. 23, 1988, Ser. No. 210,746
Claims priority, application Japan, Dec. 28, 1987, 62-329569
Int. Cl.[5] G06F *3/12*
U.S. Cl. 364—900 **3 Claims**



1. A converter for being electrically connected between a computer and a label printer used for printing price tags and labels, said converter comprising a signal loop-back means coupled to said computer for looping back to said computer any meaningless or unsuitable signals picked up by the label printer; a print control command discard means coupled to said computer for discarding print control commands from said computer which are not required by the label printer; a fault-select signal conversion means coupled between said computer and printer for converting fault signs from said label printer to select signals for said computer; a paper-end or carbon-end to busy signal conversion means coupled between said computer and printer for converting a paper-end or carbon-end signal from the label printer to a busy signal for said computer; a logic reversal means coupled between said computer and said printer for converting select signals from said computer to positive logic for output to the label printer; a control code conversion means coupled between said computer and printer which presets a special character string in said computer which when outputted is converted to a control code for sending to the label printer; an image data-standard code conversion means coupled between said computer and printer which converts character and numeric image data sent from said computer to standard codes for said printer; a common-use kanji code discriminating means coupled to said computer for identifying common-use kanji character codes; a special character pattern conversion means coupled to said computer for converting second level kanji codes to special character patterns; and a ROM coupled to said special character pattern conversion means for matching the image data input using said image data and standard code conversion means with standard codes, storing it as font image data, and recording said special character patterns.

5,058,056

WORKSTATION TAKEOVER CONTROL

William E. Hammer, and Harold F. Kossman, both of Rochester, Minn., assignors to International Business Machines Corporation

Continuation of Ser. No. 861,660, May 5, 1986, abandoned, which is a continuation of Ser. No. 531,114, Sep. 12, 1983, abandoned. This application Apr. 8, 1991, Ser. No. 681,653
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—900 **12 Claims**



1. A computer system comprising:

a primary host computer, a secondary host computer, a primary workstation controller, a secondary workstation controller, a plurality of workstations where said primary and secondary workstation controllers are coupled to said primary and secondary host computers respectively;

connecting means for connecting said primary and secondary workstation controllers to said plurality of workstations to enable said primary and secondary work station controllers to poll said plurality of workstations and each other,

control means in each of said primary and secondary workstation controllers coupled to the connecting means for operating the primary and secondary workstation controllers in a standby mode and in a control mode in response to commands from said primary and secondary host computers, where operation in the standby mode includes responding to polls in the same manner as the workstations and generating a mode switch request message upon failure of being polled within a predetermined period of time and where operation in the control mode includes said control means polling said plurality of workstations and the workstation controller in the standby mode, and switching to the standby mode upon receiving a mode switch request message; and

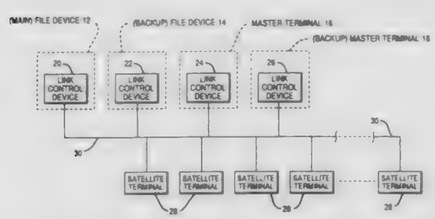
an auxiliary communication link connected between said primary and secondary host computer enabling each to communicate thereon to determine if the other is operational to control the connected workstation controllers, said auxiliary communication link is used by the primary and secondary computers to determine which one will command the connected workstation controller to be in the control mode and which one will command the connected workstation controller to be in the standby mode.

5,058,057

LINK CONTROL SYSTEM COMMUNICATING BETWEEN TERMINALS

Sadao Morita, Fujisawa; Haruo Shimasaki, Chigasaki, and Kiyohiko Tsutsumi, Isehara, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 27, 1989, Ser. No. 316,270
Claims priority, application Japan, Mar. 25, 1988, 63-69963
Int. Cl.[5] G06F *13/36, 13/26, 11/20*
U.S. Cl. 364—900 **10 Claims**



1. A link control system for use in communicating over a line with a plurality of point of sale terminals comprising a

plurality of link control devices having a predetermined ranking of priority, each of said devices including

line controlling means for controlling transmitting and receiving of data from other link control devices in accordance with requests for data from at least one of said terminals,

line monitoring means for continually monitoring the state of the line in accordance with data appearing on the line within a predetermined period of time and for sending an out-of-order detecting signal upon detecting abnormalities on said line,

confirmation requesting means coupled with said line monitoring means for sending a request signal to other link control devices to confirm priority in response to receipt of said out-of-order detecting signal from said line monitoring means, and

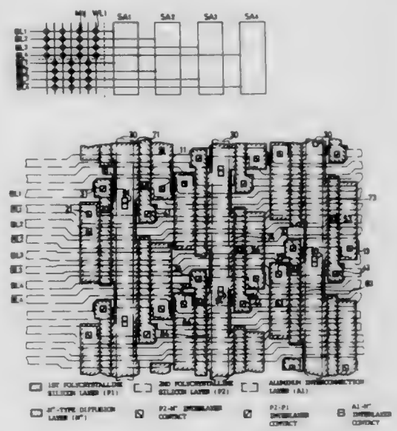
priority judging means coupled with said line monitoring means and with said line controlling means for judging and for confirming ranking of priority in response to receipt of the out-of-order detecting signal from said line monitoring means or the request to confirm the priority signal from other link control devices to send a link control signal to said line controlling means of the respective link control device when said line controlling means is given the highest priority, said line controlling means being constructed to control the line over the entire system in response to said link control signal from said priority judging means.

5,058,058

STRUCTURE FOR SENSE AMPLIFIER ARRANGEMENT IN SEMICONDUCTOR MEMORY DEVICE

Kenichi Yasuda, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1989, Ser. No. 446,366
Claims priority, application Japan, Dec. 20, 1988, 63-322527
Int. Cl.[5] G11C *5/06*
U.S. Cl. 365—51 **18 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate having a major surface;

a plurality of bit line pairs and a plurality of word lines provided on said major surface of said semiconductor substrate and crossing each other, each said bit line pair being formed by a first bit line and a second bit line;

a memory cell array region formed by a plurality of memory cells arranged on crossover points of said bit lines and said word lines; and

a plurality of sense amplifier means, each connected to a corresponding bit line pair extending from said memory cell array region for sensing and amplifying voltage difference between said bit line pair, said plurality of sense amplifier means being arranged along the longitudinal direction of said bit line pairs,

at least either said first bit line or said second bit line forming each said bit line pair connected to its corresponding sense amplifier means being arranged to cross but not intersect with a region occupied by at least one other sense amplifier means when said at least one other sense amplifier means is positioned between said memory cell array region and said corresponding sense amplifier means;

one of said plurality of sense amplifiers crossing with at least four bit lines.

5,058,059

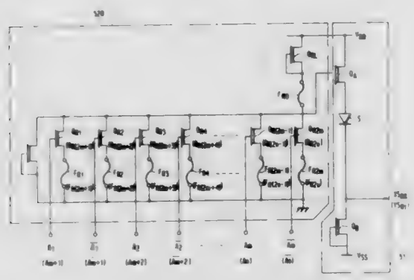
MEMORY CIRCUIT HAVING A REDUNDANT MEMORY CELL ARRAY FOR REPLACING FAULTY CELLS

Masahiko Matsuo, and Kazuo Nakaizumi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 25, 1990, Ser. No. 528,986
Claims priority, application Japan, May 25, 1989, 1-132109
Int. Cl.[5] G11C *17/16*
U.S. Cl. 365—96 **4 Claims**

1. A memory circuit including regular memory and redundant memory, and said memory circuit receiving memory address signals, said memory circuit comprising a plurality of regular memory cell groups; a plurality of redundant memory

cell groups; a plurality of regular decoder unit circuits each provided for each of said regular memory cell groups; and a plurality of redundant decoder unit circuits each provided for each of said redundant memory cell groups; each of said regular decoder unit circuits having a first program element taking one of first and second states, said regular decoder unit circuit being operative when said first program element takes said first state and inoperative when said first program element takes said second state; each of said redundant decoder unit circuits including a first series circuit of a load element and a first fusible link connected directly between a first voltage terminal



and an output node, first resistor means coupled between said output node and a second voltage terminal, a plurality of second series circuits coupled in parallel between said output node and said second voltage terminal, each of said second series circuits having a decoding transistor and a second fusible link connected in series between said output node and said second voltage terminal, the decoding transistor having a gate for receiving one of the memory address signals, each of said redundant decoder unit circuits being operative when said second fusible links are selectively cut and said first fusible link remains uncut, and inoperative when said first fusible link is cut.

5,058,060

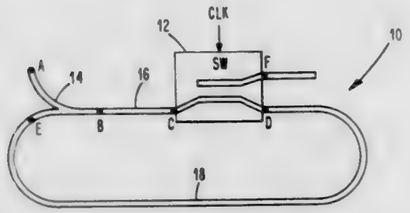
OPTICAL MEMORY CELL

Shing-Fong Su, Southboro, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 280,396, Dec. 5, 1988, abandoned. This application Apr. 19, 1990, Ser. No. 511,888

Int. Cl.[5] G11C *19/30, 13/04*

U.S. Cl. 365—106 **16 Claims**



1. An optical memory cell, comprising:

an optical switch means having an input end adapted to receive an optical pulse, a first output end, a second output end and a switch control means, said switch means being adapted in response to control signals from said switch control means to switchably couple an optical pulse from said input end to said first output end in a straight-through state and to switchably couple an optical pulse from said input end to said second output end in a cross-over state;

an optical combiner having a first and a second input ends and an output end, adapted to receive an optical pulse on either input end and output said optical pulse on said output end;

a first optical fiber connecting said output end of said optical combiner to said input end of said optical switch means;

a second optical fiber connecting said first output end of said optical switch means to said second input end of said optical combiner;

said optical combiner, said optical switch means in said straight-through state, and said optical fibers forming a closed optical loop capable of storing a recirculating optical pulse in said closed loop;

said first input end of said optical combiner serving as an input means to said optical loop;

said second output end of said optical switch means serving as an output means from said optical loop when said optical switch means is in said cross-over state; and

means responsive to said control signals for controlling the input of an optical pulse through the input means of said memory cell and for controlling the output of said pulse from the output means of said cell; and

wherein said optical switch means is in said straight-through state during the input and storage of an optical pulse, and is in said cross-over state during the output of said pulse.

5,058,061

METHOD FOR RECORDING INFORMATION IN AN OPTICAL INFORMATION MEMORY MEDIUM INCLUDING INDIUM (IN) AND ANTIMONY (SB)

Nagaaki Koshino, Yokohama; Miyozo Maeda; Yasuyuki Goto, both of Atsugi; Itaru Shibata, Tokyo; Kenichi Utsumi, Sagamihara; Akira Ushioda, Atsugi; Ken-ichi Itoh, Yamato, and Kozo Sueishi, Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

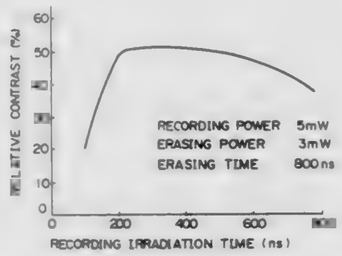
Continuation of Ser. No. 101,367, Sep. 25, 1987, abandoned, which is a continuation of Ser. No. 803,294, Dec. 2, 1985, abandoned. This application Aug. 31, 1989, Ser. No. 401,499

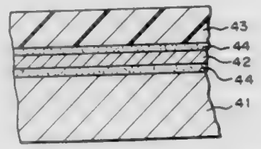
Claims priority, application Japan, Dec. 5, 1984, 59-255672; Dec. 5, 1984, 59-255673; Dec. 28, 1984, 59-274502; Dec. 28, 1984, 59-274537; Jan. 19, 1985, 60-006669; Jan. 19, 1985, 60-006670; Jan. 19, 1985, 60-006671; Mar. 30, 1985, 60-067983

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] G11C *13/04*

U.S. Cl. 365—106 **5 Claims**





1. A method for recording information in a memory film of an optical information memory medium including a substrate and a thin memory film formed on the substrate capable of selectively forming two stable crystalline states, the memory film having a first crystalline state when information has been recorded and a second crystalline state when information has been erased said method comprising the steps of:

(a) irradiating a first portion of the memory film with an optical energy beam having a first intensity for a first period of time such that the entire thickness of the memory film is fused at the irradiated portion for forming the first crystalline state having a first reflectivity; and

(b) irradiating a second portion of the memory film with an optical energy beam having a second intensity less than or equal to the first intensity for a second period of time longer than the first period of time for forming the second crystalline state having a second reflectivity lower than the first reflectivity, whereby information is recorded at one of the first and second portions of the memory film, the memory film comprising a multi-component system including:

35–45 atom % of Indium (In) and 55–65 atom % of antimony (Sb).

5,058,062

NONVOLATILE SEMICONDUCTOR MEMORY CIRCUIT INCLUDING A RELIABLE SENSE AMPLIFIER

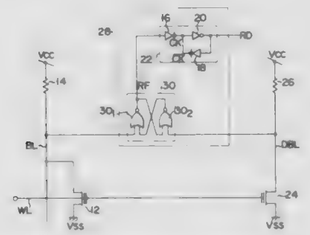
Yukio Wada; Tadashi Maruyama, and Toshimasa Nakamura, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 6, 1989, Ser. No. 431,845

Claims priority, application Japan, Nov. 9, 1988, 63-283198

Int. Cl.[5] G11C *11/34, 7/02*

U.S. Cl. 365—185 **17 Claims**



1. A nonvolatile memory device comprising:

a first data read line having an end connected to a first power supply for providing a first predetermined power supply voltage;

a first nonvolatile semiconductor memory cell having a current path and a control electrode, an end of said current path being connected to said first data read line and the other end of said current path being connected to a second power supply for providing a second predetermined power supply voltage;

a second data read line having an end connected to said first power supply;

a second nonvolatile semiconductor memory cell having a current path and a control electrode, an end of said current path being connected to said second data read line and the other end of said current path being connected to said second power supply;

a word line connected to said control electrodes of said first and second nonvolatile semiconductor memory cells; and

sense amplifier circuit means having first and second input sections connected to said first and second nonvolatile semiconductor memory cells and an output section for outputting read data from said output section at a predetermined time in accordance with the relative timing of the potentials on said first and second read lines applied to said first and second input sections.

5,058,063

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE INCORPORATING LEVEL SHIFTING CIRCUITS

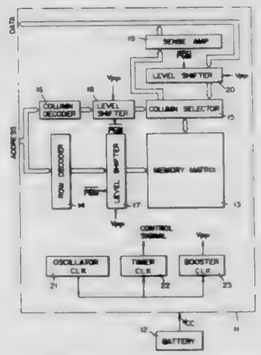
Yukio Wada; Tadashi Maruyama, and Yasoji Suzuki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1989, Ser. No. 454,740

Claims priority, application Japan, Dec. 22, 1988, 63-324593

Int. Cl.[5] G11C *16/02*

U.S. Cl. 365—185 **20 Claims**



1. A nonvolatile semiconductor memory system comprising a memory chip and a battery for driving said memory chip, said memory chip comprising:

a memory-cell matrix comprising a plurality of memory cells arranged in rows and columns;

a row decoder for selecting one of a plurality of rows of said memory cells;

a first level-shifting circuit provided between said row decoder and said memory-cell matrix, for level-shifting an amplitude of an output voltage of said row decoder and applying the voltage to said memory-cell matrix;

a column-selecting circuit for selecting one of a plurality of columns of said memory cells;

a column decoder for controlling said column-selecting circuit;

a second level-shifting circuit provided between said column decoder and said column-selecting circuit, for level-shifting an amplitude of an output voltage of said column decoder and applying the voltage to said column-selecting circuit;

a sense amplifier for detecting data stored in the memory cell selected by said row decoder and said column-selecting circuit;

a third level-shifting circuit provided between an input data receiving means and said column-selecting circuit, for level-shifting an amplitude of the voltage of an input data in order to write the input data into the memory cell selected by said column decoder and said column-selecting circuit, and applying the voltage to said column-selecting circuit;

a voltage booster circuit for generating a high voltage required for writing the input data into the memory cell, and applying the high voltage to said first, second and third level-shifting circuits;

a timer circuit for setting data-writing time for writing data into the memory cells incorporated in said memory-cell matrix, and generating various control signals in accordance with the data-writing time thus set;

an oscillator circuit for generating a clock signal for driving said voltage booster circuit and said timer circuit; and

wherein each of said first, second and third level-shifting circuits comprises:

a CMOS inverter circuit for inverting a signal supplied to a first input node:

a first MOS transistor of depletion type having a source, gate and drain, one of said source and drain thereof being connected to an output terminal of said CMOS inverter circuit and the other of said source and drain being connected to an output node for supplying a level-shifting signal, and said gate to receive a control signal;

a second MOS transistor and a third MOS transistor of depletion type each having a source, gate and drain, one of said source and drain of said second MOS transistors being connected to said output node for supplying a level-shifting signal, the other of said source and drain of said second MOS transistor being connected to one of a source and drain of said third depletion MOS transistor, the other of said source and drain of said third depletion MOS transistor being connected to a second input node, the gate of said second MOS transistor being connected to said first input node, and the gate of said third depletion MOS transistor being connected to said output node for supplying a level-shifted signal.

5,058,064

MEMORY DEVICE HAVING ADDRESS CONTROL FUNCTION

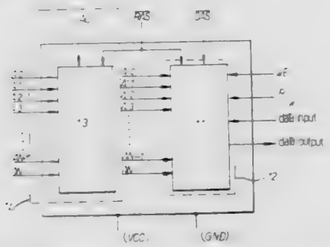
Jin H. Hahm, Daeduk, and Sang J. Kim, Yusung, both of Rep. of Korea, assignors to Electronics and Tekcommunications Research Institute, Rep. of Korea

Filed Dec. 22, 1989, Ser. No. 455,277

Claims priority, application Rep. of Korea, Dec. 23, 1988, 1988-17365

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—189.01 **3 Claims**



1. A memory device including a memory (**9**) having address input ports, data input and output ports, a R/W input port for indicating the reading and writing conditions of data, a WE input port enabling data to be written into the memory (**9**), and a power input port, said device further comprising:

means (**10**) for performing an address control function of the memory (**9**), comprising:

an address control input (AC) port;

address input ports; and

an address arithmetic unit (**8**) for summing up a value of address inputs and a value of an address control input (AC) and for applying the summing result value to the memory (**9**) as an address signal.

5,058,065

MEMORY BASED LINE-DELAY ARCHITECTURE

Lionel J. D'Luna, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1990, Ser. No. 488,824

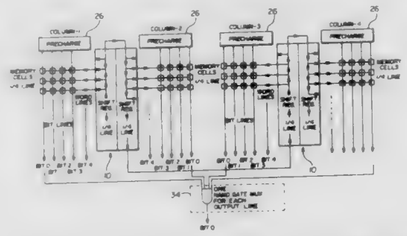
Int. Cl.[5] G11C *7/00, 19/00*

U.S. Cl. 365—189.02 **9 Claims**

1. An apparatus comprising:

a storage unit including a plurality of line stores each having a plurality of word storage locations (n), each of said word storage locations including a plurality of memory cells, wherein corresponding memory cells from each of said word storage locations are connected to common input lines of said line stores and common output lines of said line stores and each of said word storage locations includes a corresponding write enable line and a corresponding read enable line connected to the memory cells within that word storage location, and wherein the read and write enable lines of corresponding word storage locations in each of said line stores are commonly coupled, and the common output lines of a given line store are coupled to the common input lines of a successive line store; and

a point unit including a plurality of shift-registers (N+1) having input lines and output lines, wherein the input line of a first shift-register of said plurality of shift-registers is connected to a control input line and the output of said first shift-register is connected to the read enable line of a first word storage location of said plurality of word storage locations, the output line of a last shift-register of said plurality of shift-registers is connected to the write enable



line of a last word storage location, and shift-registers intermediate between said first shift-register and said last shift-register are connected such that the output line of a preceding shift register is connected to the input line of a successive shift-register and the output of each intermediate shift register (i) is connected to the read enable line of a corresponding word storage location (i) and to the write enable line of a word storage location (i−1) preceding said corresponding word storage location;

wherein said plurality of word storage locations are arranged in a plurality of columns, corresponding memory cells from word storage locations within a given column are connected to common column output lines, and corresponding column output lines from each of said plurality of columns are connected to a corresponding multi-input NAND gate that selectively couples data presented on one of the corresponding column output lines connected thereto to a data output line soley in response to data stored in said plurality words storage locations.

5,058,066

OUTPUT BUFFER PRECHARGE CIRCUIT FOR DRAM

Jaiwhan Yu, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Feb. 27, 1990, Ser. No. 485,914

Claims priority, application Rep. of Korea, Jun. 15, 1989, 89-8263

Int. Cl.[5] G11C *7/00*

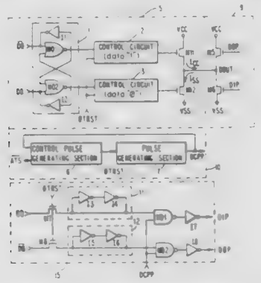
U.S. Cl. 365—189.05 **1 Claim**

1. An output buffer precharge circuit for dynamic random access memory (DRAM) cells, including an output buffer **5** having a latch **1**; control circuits **2, 3** for outputting data after receipt of outputs of said latch **1** and a control signal ØTRST; MOS transistors driven by outputs of said control circuits **2, 3**; a precharge pulse generating section **10** for outputting control precharge pulses DCPP in response to address transition signals $\overline{ATS}$; and a precharge section **9** for receiving outputs DOUT of said output buffer **5**;

characterized in that said output buffer precharge circuit

further comprises a data transition signal generating section **15** comprising:

MOS transistors M7, M8 for receiving said control signal ØTRST at respective gates thereon and for selectively transmitting data signals DB, $\overline{DB}$ as data signals D1P, DØP respectively to be supplied to said precharge section **9**; latches **11, 12** connected to said MOS transistors M7, M8; NAND gates ND1, ND2 for receiving said control



precharge pulse DCPP from said precharge pulse generating section **10**, and inverters **17, 18**, outputs of said NAND gates being respectively connected to inputs of said inverters;

and wherein said precharge section **9** comprises MOS transistors M5, M6, the gates of which respectively receive said data signals DØP, D1P from said transition signal generating section **15**.

5,058,067

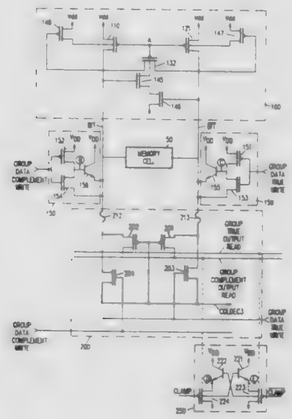
INDIVIDUAL BIT LINE RECOVERY CIRCUITS

Robert A. Kertis, Puyallup, Wash., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 6, 1990, Ser. No. 533,978

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—190 **6 Claims**



1. In a memory system comprised of a plurality of memory cells, the memory cells being arranged in a plurality of columns, each column having a true output line and a complement output line, each memory cell in the column being coupled to the true output line and the complement output line, the memory cells having information written to and read from them, a writing recovery circuit comprising:

write recovery circuit means, each column of memory cells having a first write recovery circuit means coupled to the true output line and a second write recovery circuit means coupled to the complement output line;

switching means coupled to both the true column output line and the complement output line, for turning the first and second write recovery circuit means off and on in response to the information being written to the memory cell.

5,058,068

REDUNDANCY CIRCUIT WITH MEMORIZATION OF OUTPUT CONTACT PAD POSITION

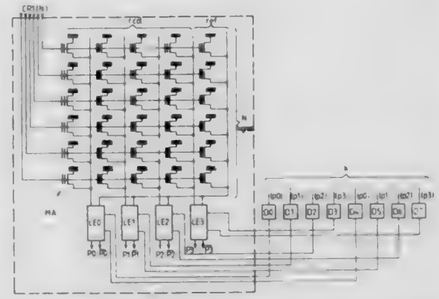
Claude Costabello, Marseille, France, assignor to SGS-Thomson Microelectronics, Gentilly, France

Filed Nov. 21, 1990, Ser. No. 616,634

Claims priority, application France, Nov. 24, 1989, 89 15508

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **6 Claims**



1. An integrated memory comprising a main memory having a plurality of normal columns and a plurality of redundancy columns, k input/output pads, and a redundancy circuit; said redundancy circuit including pad position memorizing elements, each of said pad position memorizing elements being for memorizing a position of an input/output pad corresponding to a normal column in said main memory where such normal column is defective, wherein the pad position memorizing elements are electrically programmable memory cells, said pad position memorizing elements being equal in number to the number N of possible repairs multiplied by the number r of possible pad positions, said pad position memorizing elements being organized in an auxiliary memory of N lines and r columns, each column of this auxiliary memory corresponding to a determined pad position.

5,058,069

DEVICE FOR ADDRESSING OF REDUNDANT ELEMENTS OF AN INTEGRATED CIRCUIT MEMORY

Jean Marie Gaultier, Rousset Sur Arc, and Jean Devin, Aix en Provence, both of France, assignors to Thomson Semiconducteurs, Paris, France

Continuation of Ser. No. 163,270, Mar. 2, 1988, Pat. No. 4,947,375. This application Jan. 17, 1990, Ser. No. 466,620

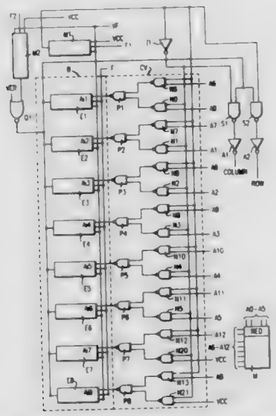
Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **4 Claims**

1. An integrated circuit memory comprising an array of memory cells addressable by means of a row address and each column of memory cells addressable by means of a column address, said memory further comprising at least one redundant group of cells comprising a redundant row of cells and a redundant column of cells, with means for connecting said redundant row in replacement of a defective row of the array and means for connecting said redundant column in replacement of a defective column of the array, said memory further comprising for each group of a redundant row and column one storing means capable of storing either an address of a defec-

tive row or an address of a defective column but not both, said memory further comprising enabling means for

either enabling memorization in said storing means of the address of a given row and enabling selection of a first connecting path allowing replacement of said given row by said redundant line,



or enabling memorization in said storing means of the address of a given column and enabling selection of a second connecting path allowing replacement of said given column by said redundant column.

5,058,070

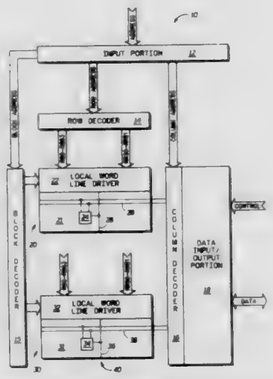
HIGH SPEED MEMORY WITH ROW REDUNDANCY

Allen B. Faber, Vancouver, Wash., and Thomas N. Mathes, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 12, 1990, Ser. No. 478,907

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **12 Claims**



9. In a memory having a plurality of rows, said plurality of rows comprising at least one redundant row, including predecoding means for providing a plurality of predecoded signals in response to a row address, and a row decoder coupled to the predecoding means, the row decoder comprising:

a first decoder portion for receiving first and second predecoded signals and for performing a first portion of a predetermined logic operation between said first and second predecoded signals;

a second decoder portion for receiving said first and second predecoded signals, and for performing a second portion of said predetermined logic operation between said first and second predecoded signals;

a node predisposed between said first decoder portion and said second decoder portion;

fuse means coupled to said node, for selectively coupling together said first decoder portion and said second decoder portion; and

an output portion coupled to said node, for providing a row select signal in response to a predetermined logic operation if said fuse means couples said first decoder portion to said second decoder portion.

5,058,071

SEMICONDUCTOR MEMORY DEVICE HAVING MEANS FOR REPAIRING THE MEMORY DEVICE WITH RESPECT TO POSSIBLE DEFECTIVE MEMORY PORTIONS

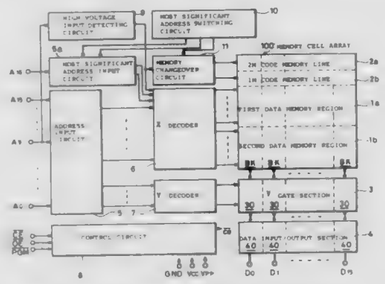
Kenji Kohda; Yasuhiro Kouro; Hiroyasu Makihara, and Tsuyoshi Toyama, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 354,596, May 22, 1989, abandoned. This application Jan. 24, 1991, Ser. No. 646,508

Claims priority, application Japan, Nov. 21, 1988, 63-293964

Int. Cl.[5] G11C *29/00*

U.S. Cl. 365—200 **21 Claims**



1. A semiconductor memory device, comprising:

a memory cell array including a first data storage region, a second data storage region, a first discrimination code storage region and a second discrimination code storage region, each of said regions including a plurality of memory cells,

said first discrimination code storage region for storing a discrimination code indicating that both said first and second data storage regions are normal, said second discrimination code storage region storing a discriminating code indicating that one of said first and second data storage regions is normal,

first selection means responsive to externally applied address signals for selecting any of the memory cells in said first or second data storage regions when both said first and second data storage regions are normal, and responsive to externally applied address signals for selecting, when only one of the first and second data storage regions is normal, any of the memory cells only in the normal one of said first and second data storage regions, and

second selection means for selecting and reading out externally from said memory device

(i) said first discrimination code when both said first and second data storage regions are normal, and

(ii) said second discrimination code when only one of said first and second data storage regions is normal.

5,058,072

SEMICONDUCTOR MEMORY DEVICE WITH HIGH SPEED SENSING FACILITY

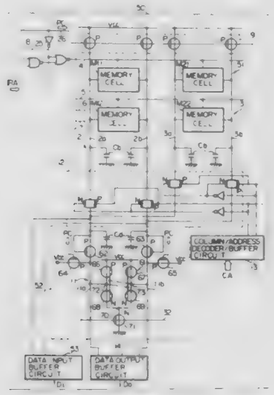
Masahiko Kashimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 359,907

Claims priority, application Japan, Jun. 1, 1988, 63-135862

Int. Cl.[5] G11C *11/409*

U.S. Cl. 365—203 **3 Claims**



1. A semiconductor memory device comprising

a) a plurality of memory cells arranged in rows and columns and respectively storing data bits each in the form of a difference in voltage level,

b) a plurality of bit line pairs respectively coupled to the memory cells of said columns and propagating the data bits stored therein each in the form of the difference in voltage level,

c) a plurality of word lines respectively coupled to the memory cells of said rows,

d) a word line selecting circuit responsive to a row address signal and activate one of said word lines for allowing said data bits to be read out from or writted into said memory cells of one of said rows,

e) a main precharging circuit coupled between a source of constant voltage level and said bit line pairs for precharging the bit line pairs,

f) a data line pair capable of propagating one of said data bits, said data line pair comprising of two data lines,

g) a bit line selecting circuit responsive to a column address signal and operative to coupled one of said bit line pairs to said data line pair, and

h) a sensing facility coupled to said data line pair and operative to increase the difference in voltage level for a data output facility, wherein said sensing facility comprises a sense amplifier circuit with two nodes respectively associated with said data lines, and blocking means having first and second field effect transistors respectively coupled between said nodes and said data lines and operative to transfer the difference in voltage level to the nodes, said first and second field effect transistors having respective gate electrodes coupled to drain nodes thereof, said drain nodes being coupled to said data lines, respectively, said blocking means further being operative to electrically isolate one of the nodes from one of the data lines when said one of the nodes is different in voltage level from said one of the data lines of the data line pair, said sensing facility further comprising auxiliary precharging means coupled between said source of constant voltage level and the nodes, said main precharging circuit and said auxiliary precharging means being simultaneously activated in the presence of a precharging signal.

5,058,073

CMOS RAM HAVING A COMPLEMENTARY CHANNEL SENSE AMPLIFIER

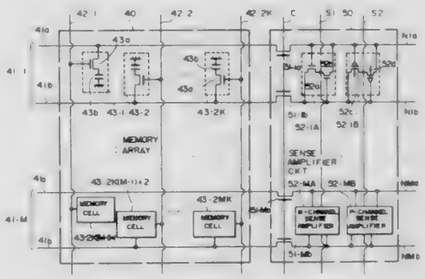
Shizuo Cho, and Masaru Uesugi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Japan

Continuation of Ser. No. 318,234, Mar. 3, 1989, abandoned. This application Oct. 30, 1990, Ser. No. 608,035

Claims priority, application Japan, Mar. 10, 1988, 63-56930

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—205 **7 Claims**



1. A semiconductor memory comprising:

a plurality of bit line pairs each comprising first and second complementary bit lines for transferring data;

a plurality of word lines extending across said plurality of bit line pairs;

a plurality of memory cells located at intersections of said bit line pairs and said word lines and coupled thereto for storing data;

a plurality of first field effect transistors ("FETs"), each having a control electrode to which a gate signal is applied and a source-drain path which interconnects a first node to said first bit line of a respective one of said plurality of bit line pairs, the control electrodes of said first FETs being interconnected in common with each other;

a plurality of second FETs, each having a control electrode to which the gate signal is applied, the control electrodes of said second FETs being interconnected in common with each other and to the control electrodes of said first FETs, each of said second FET's having a source-drain path which interconnects a second node to said second bit line of a respective one of said plurality of bit line pairs;

a plurality of sense amplifier circuits each connected across the first and second nodes associated with a respective one of said plurality of bit line pairs for sensing potentials on the first and second nodes and amplifying the sensed potentials thereon, each of said sense amplifier circuit comprising a first and a second sense amplifier of opposite polarity; and

a plurality of transfer gate means, each connected between a corresponding one of the first and second nodes of a respective sense amplifier circuit and a data bus and operative in response to a signal associated with an address designating one of said plurality of bit line pairs for transferring the amplified potentials on the first and second nodes to the data bus;

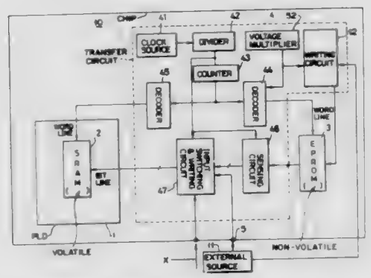
said plurality of first and second FETs being complementarily controlled in response to a predetermined potential of the gate signal to connect said first and second bit lines to the first and second nodes, respectively, said predetermined potential being selected between a threshold voltage of said plurality of first and second FETs and a voltage equal to the threshold voltage plus a reference voltage at which said first and second bit lines are precharged prior to application of the gate signal to the control electrodes.

5,058,074

INTEGRATED CIRCUIT INCLUDING PROGRAMMABLE CIRCUIT

Makoto Sakamoto, Chiba, Japan, assignor to Kawasaki Steel Corporation, Japan

Filed Feb. 16, 1990, Ser. No. 480,890
Claims priority, application Japan, Jun. 21, 1989, 1-159293
Int. Cl.[5] G11C *14/00*
U.S. Cl. 365—228 **4 Claims**



1. An integrated circuit comprising:

(a) a volatile memory device disposed in a programmable circuit on a chip for storing program data concerning said programmable circuit;

(b) a non-volatile memory device disposed externally of said programmable circuit on said chip, said non-volatile memory device permitting said program data to be written therein from a write source external to said chip, and;

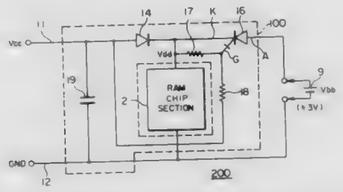
means for selectively transferring to said volatile memory device either program data written in said non-volatile memory device, or program data supplied from a terminal connectable to a data source external to said chip.

5,058,075

BATTERY CIRCUIT FOR AN INTEGRATED CIRCUIT (IC) MEMORY CARD

Masaharu Mizuta, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 6, 1988, Ser. No. 280,423
Claims priority, application Japan, Aug. 12, 1988, 63-199995
Int. Cl.[5] G11C *5/14*
U.S. Cl. 365—229 **4 Claims**



1. A battery circuit incorporated in an integrated circuit (IC) memory card comprising:

a power control circuit having a ground input, first and second power inputs, and a power output for connection to a power input of a memory chip;

an external power supply line and a ground line connected to the first power input and the ground input of said power control circuit, respectively, for supplying power from outside of said card to said power control circuit; and

a data backup battery having negative and positive terminals connected to the ground input and the second power input of said power control circuit, respectively, said battery producing a voltage at the positive terminal,

said power control circuit including an active switching device connected between the second power input and the power output

and coupled to the first power input, said active switching device preventing a current flowing into the first power input from flowing out of the second power input into said data backup battery when the voltage applied to said external power supply line is higher than the voltage of said battery,

electrically connecting said battery for supplying the voltage of said battery to said power output in response to a voltage greater than the voltage of said battery applied to said power output via said external power supply line and electrically connecting said battery to said power output when the battery is connected for supplying the voltage of said battery to said power output and the voltage of said battery is higher than the voltage of said external power supply line, and

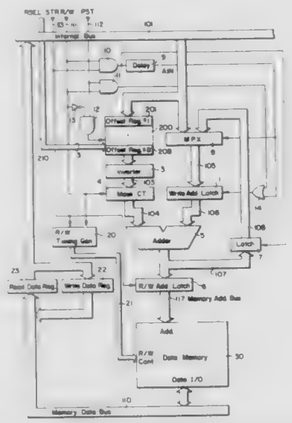
electrically disconnecting said battery from said power output in response to a control signal supplied from outside of said card via said external power supply line.

5,058,076

ADDRESS CONTROL CIRCUIT FOR DATA MEMORY EMPLOYED IN SIGNAL DELAY CIRCUIT

Toyoo Kiuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 20, 1989, Ser. No. 424,557
Claims priority, application Japan, Oct. 20, 1988, 63-265399
Int. Cl.[5] G11C *8/00, 7/00*
U.S. Cl. 365—230.01 **7 Claims**



7. An address control circuit for supplying a data memory with write address information in a data write operation and with read address information in a data red operation, comprising:

first storage means coupled to said data memory for supplying said write or read address information to said data memory;

second storage means for temporarily storing first address information;

third storage means for temporarily storing second address information; and

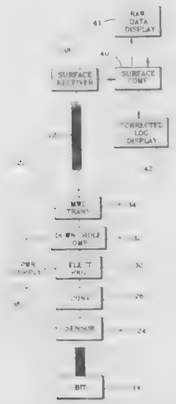
arithmetic means coupled to said first, second and third storage means for writing third address information relative to said first address information into said first storage means and for renewing said first address information of said second storage means in said data write operation, said arithmetic means producing fourth address information corresponding to a difference between said first address information of said second storage means and said second address information of said third storage means and writing said fourth address information into said first storage means in said data read operation, said arithmetic means including means for incrementing said first address information by a predetermined value to produce said third address information and means for subtracting said second address information from said first address information of said second storage means to produce said fourth address information, said subtracting means including means of inverting said second address information to produce inverted address information, means for adding said inverted address information and said first address information of said second storage means to produce added address information and means for incrementing said added address information by one.

5,058,077

COMPENSATION TECHNIQUE FOR ECCENTERED MWD SENSORS

James R. Twist, Humble, Tex., assignor to Baroid Technology, Inc., Houston, Tex.

Filed Oct. 9, 1990, Ser. No. 594,367
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—25 **26 Claims**



1. A method of generating a corrected well log based on erroneous signals from a downhole sensor on a drill collar rotating in a borehole, the signal error being attributable at least in part to periodic movement of the drill collar axis with respect to the borehole axis or eccentric rotation of the drill collar with respect to the borehole, the method comprising:

generating a plurality of discrete sensor signals at time intervals of less than one-half of the period of the highest presumed frequency of the period movement of either the drill collar axis with respect to the borehole axis or the eccentric rotation of the drill collar with respect to the borehole;

averaging the plurality of discrete sensor signals to generate an average sensor signal as a function of borehole depth;

recording the plurality of discrete sensor signals as a function of time to generate a time-varying sensor signal profile;

determining the magnitude of frequency components of the time-varying sensor signal profile;

correcting the average sensor signal as a function of the determined magnitude of the frequency components; and

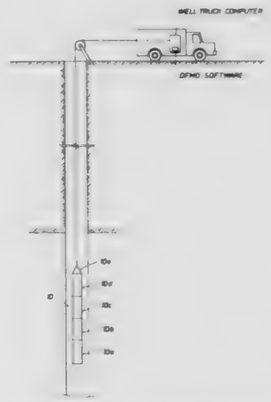
recording the corrected sensor signal as a function of borehole depth to generate a corrected well log.

5,058,078

METHOD AND APPARATUS FOR DETERMINING COMPRESSIONAL FIRST ARRIVAL TIMES FROM WAVEFORM THRESHOLD CROSSING PROVIDED BY APPARATUS DISPOSED IN A SONIC WELL TOOL

Kevin A. Eyl, Boulogne; Andrew L. Kurkjian, Saint Cloud, both of France; David J. Lineman, Edward A. Pierce, Joseph M. Steiner, Jr., all of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 425,661, Oct. 20, 1989, Pat. No. 4,985,873. This application Aug. 13, 1990, Ser. No. 566,740
The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—26 **17 Claims**



8. A method of producing compressional wave first arrival time data from threshold data generated by a well tool adapted to be disposed in a borehole, the well tool including at least one receiver, the first arrival time data representing a time when said compressional wave propagating in a formation of said borehole first arrives at said receiver of said well tool, comprising the steps of:

(a) in response to said threshold data, developing a first arrival time;

(b) in response to said threshold data, developing a second arrival time;

(c) defining a boundary of times which are defined to be acceptable and determining if the first arrival time or the second arrival time lies outside said boundary;

(d) selecting, from among the first arrival time and the second arrival time, the arrival time which lies within said boundary when one of the arrival times are outside said boundary; and

(e) selecting one of the arrival times when both of the arrival times are inside said boundary.

5,058,079

GEOPHYSICAL EXPLORATION USING VELOCITY PICKING FROM TRIAL VELOCITY FUNCTION SORTED TIME-COHERENCY TRACES

James H. Wright; Richard C. Heiser, both of Tulsa, Okla., and John H. Caldwell, Katy, Tex., assignors to Amoco Corporation, Chicago, Ill.

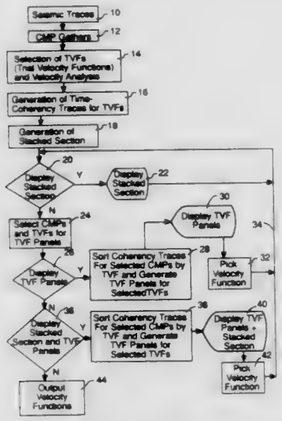
Filed Nov. 27, 1990, Ser. No. 618,544
Int. Cl.[5] G01V *1/34, 1/30*
U.S. Cl. 367—59 **16 Claims**

1. A method for generating a time-velocity function for CMP (common midpoint) gathers comprising:

for each of a plurality of CMP gathers along a seismic line of

exploration generating a plurality of time-coherency traces, each time-coherency trace representing variation in coherency as a function of time for a respective selected TVF (trial velocity function);

sorting the plurality of time-coherency traces by TVF, and generating sets of time-coherency traces, each set representing a plurality of CMPs for each selected TVF;



displaying a plurality of the resulting TVF sorted sets of time-coherency traces as TVF panels;

selecting points representative of time and velocity values using the resulting TVF panels; and

generating a time-velocity function from the thus selected points.

5,058,080

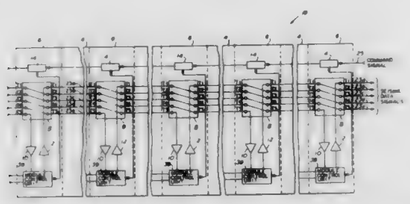
MULTIPLE TRANSMISSION PATH SEISMIC TELEMETERING SYSTEM

Lee E. Siems, Richmond; Marvin K. Amerine, Lake Jackson; Loring C. Chien, and William P. Vorheier, both of Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Dec. 5, 1988, Ser. No. 280,097

Int. Cl.[5] G01V *1/22*

U.S. Cl. 367—79 **32 Claims**



10. Apparatus for assembling data in a section of a seismic cable comprising:

a data formatting and transmission module;

a plurality of remote units distributed along said section;

said module including means for generating a module clock synchronized to a first clock signal received from a central recording unit, and for transmitting a second clock signal to said remote units synchronized to said module clock;

each of said plurality of remote units including means for generating a remote unit clock synchronized to said second clock signal; an analog to digital converter means for converting detected seismic signals to digital data; and at least one storage register for receiving the digital data from the analog to digital converter means; and

said storage registers being interconnected to form a single shift register extending through said plurality of remote units and having an output connected to said module for transferring digital data from each of said plurality of remote units to said module, with the storage registers in each individual remote unit being clocked by the remote unit clock generated in the individual remote unit.

5,058,081

METHOD OF FORMATION OF CHANNELS FOR A SONAR, IN PARTICULAR FOR A TOWED-ARRAY SONAR

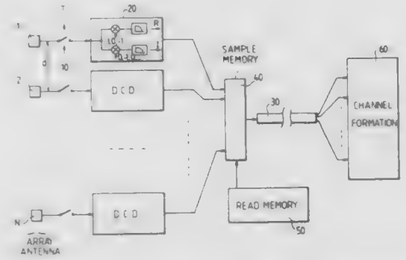
Christian Gulli, Landunvez-Porspoder; Jean Le Gall, and Georges Grall, both of Conquet, France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 14, 1990, Ser. No. 582,330

Claims priority, application France, Sep. 15, 1989, 89 12107

Int. Cl.[5] G01S *3/80*

U.S. Cl. 367—123 **4 Claims**



1. A method of formation of channels for a sonar device for monitoring a sector of observation, in particular for a towed-array sonar device, said sonar device including an array of hydrophones delivering received signals, wherein said received signals are delayed to divide said sector of observation into a central sector and several separate sectors adjacent to said central sector, then the signals thus delayed are phase-shifted to form in each sector a set of channels, which method comprises:

sampling said signals from the hydrophones with a period T which is a function of the center frequency of reception f_0 of the sonar device and equal to the delay between two consecutive hydrophones, said delay corresponding to said two sectors adjacent to the central sector;

translating to baseband the signals thus sampled;

subsampling the signals thus translated with a period $T_{SE}=kT$ (where k is an integer) which is a function of the reception bandwidth B of the sonar device and selecting a set of N signals with the same rank determining said central sector, and shifting the sets of signals with respect to each other by a delay multiple of T determining said adjacent sectors;

serially transmitting the subsampled signals;

separating the transmitted signals corresponding to each sector; and

forming in each sector a set of channels covering said sector.

5,058,082

LINEAR HYDROPHONIC ANTENNA AND ELECTRONIC DEVICE TO REMOVE RIGHT/LEFT AMBIGUITY, ASSOCIATED WITH THIS ANTENNA

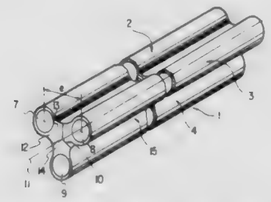
Jean Bertheas, Villeneuve Loubet; Gilles Moresco, Cagnes S/Mer, and Philippe Dufourco, Peymeinade, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Aug. 23, 1990, Ser. No. 571,217

Claims priority, application France, Sep. 8, 1989, 89 11749

Int. Cl.[5] G01S *3/80*

U.S. Cl. 367—130 **16 Claims**



1. A linear hydrophonic antenna that is made up of three streamers, each having a string of hydrophonic sensors, these hydrophonic sensors being omnidirectional and acoustically transparent, wherein these three streamers are structurally identical, parallel to one another offset and connected to one another by a central core that is rigid at least in the plane orthogonal to the axis of the antenna so that the three streamers form, sectionally in this orthogonal plane, an isosceles triangle, the densities of two of these three streamers being identical and the density of the third streamer being notably different, so that said third streamer is designed to point, during navigation, either upwards or downwards and the other two streamers are designed to navigate at the same horizontal level, barring rolling.

5,058,083

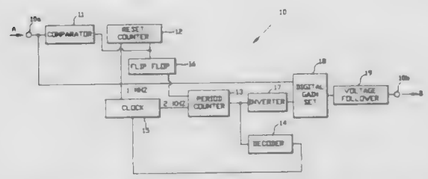
FLEXDUCER PREAMPLIFIER POWER CONTROLLER

Robert E. Page, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1990, Ser. No. 624,362

Int. Cl.[5] H04B *1/02*

U.S. Cl. 367—137 **10 Claims**



1. An apparatus for gradually increasing an actuation signal to a full level signal to prevent the creation of excessive initial signal levels comprising:

means for comparing said actuation signal with a threshold level to provide a RUN signal whenever said actuation signal is present;

means coupled to receive the RUN signal from the comparing means for generating a START signal;

means coupled to receive said START signal from the generating means for creating a predetermined amount of incrementing output signals;

means coupled to receive said actuation signal and coupled to the creating means to receive said predetermined amount of said incrementing output signals therefrom for digitally controlling the gain of said actuation signal with an OUT signal in accordance with the accumulation of said predetermined amount of said incrementing output signals to gradually increase said actuation signal to said full level signal;

means coupled to said creating means for inhibiting said creating means to provide only said predetermined amount of said incrementing output signals which correspond to the magnitude of said full level signal for the duration of said actuation signal; and

means coupled to said comparing means and said generating means for resetting said generating means with a STOP signal in the absence of RUN signal from said comparing means.

5,058,084

CLOCK HAVING A DEVICE FOR PLANNING THE SEX OF A CHILD ACCORDING TO THE TIME SELECTION METHOD

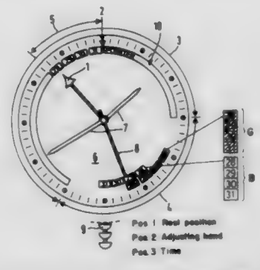
Heinz Riesen, Büsserach, Switzerland, assignor to B-Line AG, Heimenhausen, Switzerland

Filed Aug. 21, 1990, Ser. No. 570,862

Claims priority, application Switzerland, Aug. 21, 1989, 3024/89

Int. Cl.[5] G04B *47/00, 19/24;* **A61B** *10/00*

U.S. Cl. 368—10 **12 Claims**



1. A clock having a device for planning the sex of a child according to the time selection method, having an adjustable display element (**1, 11**) driven by the clock movement, which display element designates each predetermined day position within a display area (**10**) in a similar way to a date display, the display area, relative to a display starting position (**2**), comprising differently marked display sections (**3, 4** and **5**) to label the days of fertility and the days of infertility in a cycle and a limited cycle variation range, wherein clearly distinguishably marked day position fields (G and B) are provided within the display section for the days of fertility (**4**) at different intervals of days—stipulated according to the time selection method—from the starting position (**2**), which day position fields, for cycle lengths of 27 to 30 days, serve as an indication of the days of probability for conceiving a boy or a girl, it being possible for the display element (**1, 11**) to be adjusted to the starting position (**2**) for the counting and display, always occurring from the first day of a new cycle, of the days of probability.

5,058,085

RESETTABLE CHRONOMETER HAVING BIOLOGICALLY PERSONAL UTILITY

Marvin Lawler, 1240 Granville Ave. #5, West Los Angeles, Calif. 90025

Filed Nov. 28, 1989, Ser. No. 445,264

Int. Cl.[5] G04B *19/24;* **G04C** *19/00*

U.S. Cl. 368—28 **5 Claims**

1. A chronometer which operates independently of any reference on going time keeping system, comprising:

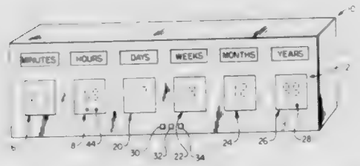
a housing;

a clock oscillator;

a clock generator for converting output of said clock oscillator into a minute pulse signal output;

a display panel having a minutes display indicator, an hour display indicator, a day display indicator, a weeks display indicator, a fifth time division display indicator, and a sixth time division display indicator for numerically displaying elapsed time;

a microprocessor having a ROM which includes a software program which in response to the minute pulse output incrementally advances the minute indicator until reaching a count of sixty at which count the program reverts the minute indicator to zero and incrementally advances the hour indicator, the program in response to further minute pulse output advancing the hour indicator until reaching a count of twenty four at which count the program reverts the hour indicator to zero and incrementally advances the day indicator, the program in response to further minute pulse output advancing the day indicator until reaching a count of seven at which count the program reverts the day indicator to zero and incrementally



advances the week indicator, the program in response to further minute signal output incrementally advancing the week indicator until reaching a count of four at which count the program reverts the week indicator to zero and incrementally advances the fifth time division indicator, the program in response to further minute signal output incrementally advancing the fifth time division indicator each time said week indicator reverts to zero until reaching a desired whole integer at which count the program reverts the fifth time division indicator to zero and incrementally advances the sixth time division indicator, so that the program provides the elapsed time generally in conformance with a selected calendar time division arrangement in which the time divisions are selected so that division of each of smaller time divisions thereof into successively larger time divisions thereof yields a quotient which is a whole integer;

a control for controlling said counter.

5,058,086

RECREATIONAL TIMING APPARATUS

Gordon A. Barlow, Highland Park, Ill., assignor to Rapid Mounting and Finishing Company, Cadaco Division, Chicago, Ill.

Filed Mar. 21, 1991, Ser. No. 674,070
Int. Cl.[5] G04F *1/00*; G04B *37/00*
U.S. Cl. 368—98 **20 Claims**

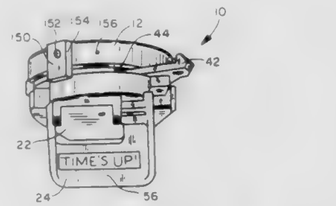
1. A timing apparatus for giving an indication of the passage of a preselected time interval, said apparatus comprising:

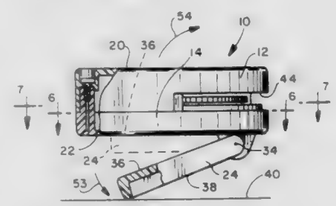
a body to be supported on a surface;

a timer mechanism on said body including a trigger that is movable between (a) a set position and (b) a return position;

means on the timer mechanism for moving the trigger from its set position to its return position within a preselected time interval; and

means for repositioning the body relative to a support surface for said body as an incident of the trigger moving from its set position into its return position with the body in an operative position on a support surface for the body





to give a visual indication of the passage of a preselected time interval

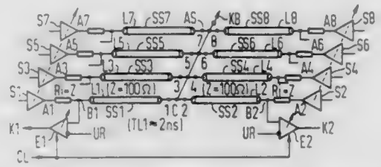
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5,058,087

PROCESS FOR DETERMINING THE ELECTRICAL DURATION OF SIGNAL PATHS

Klaus Welzhofer, Graefelfing, and Antun Vuksic, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

PCT No. PCT/DE88/00274, § 371 Date Jan. 25, 1990, § 102(e) Date Jan. 25, 1990, PCT Pub. No. WO88/09511, PCT Pub. Date Dec. 1, 1988
PCT Filed May 5, 1987, Ser. No. 445,700
Claims priority, application Fed. Rep. of Germany, May 29, 1987, 3718113
Int. Cl.[5] G04F *8/00*; G01R *15/12*; G06F *11/14*
U.S. Cl. 368—113 **20 Claims**



1. A method for determining the electric transit time of signal runs which are in each instance connected at one end to a connecting point and which have at the other end a transmitter and a receiver comprising the steps of:

a) short circuiting the connecting points (AS) of all signal runs (SS),

b) turning off all receivers (E) except the receiver of the signal run to be measured,

c) turning on all transmitters (S) except the transmitter of the signal run to be measured and simultaneously delivering a transmission pulse which is transmitted to the associated connecting point,

d) superposing the transmission pulses at the shortcircuited connecting points (AS) to form a central pulse (ZI), and transmitting said central pulse over the signal run to be measured to the associated receiver,

e) establishing the time of occurrence of a pulse triggered by the central pulse at the output of the receiver of the signal run to be measured and entering that time in a table as a measured value characterizing the transit time,

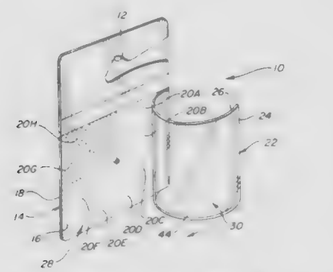
f) repeating steps a) to e) for all signal runs.

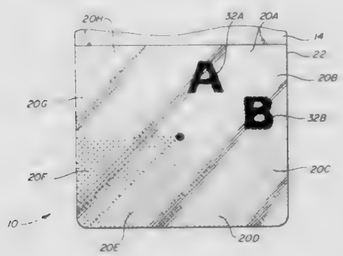
5,058,088

TIME INDICATOR

Sandra F. Haas, and David J. Haas, both of 9 Margret Ann La., Suffern, N.Y. 10901

Filed Jan. 4, 1990, Ser. No. 460,753
Int. Cl.[5] G04B *17/00*; G01N *31/32*
U.S. Cl. 368—327 **26 Claims**





1. A time indicator comprising:

a first substrate having first and second surfaces and at least two indicia areas on the first surface;

a second substrate having first and second surfaces;

a first chemical agent on each of the indicia areas;

a second chemical agent on the first surface of the second substrate;

wherein the first surfaces of each substrate overlay and are in contact with each other, the first and second chemical agents coacting to cause a visually perceptible change at one of the second surfaces overlaying the first indicia area in a first selected time interval and a visually perceptible change in said second surface overlaying the second indicia area in a second selected time interval, the first selected time interval differing from the second selected time interval.

5,058,089

MEMORY DISK AND APPARATUS FOR RECORDING INFORMATION ON MEMORY DISK

Tomohisa Yoshimaru; Tsuneshi Yokota, both of Kanagawa, and Hideo Kumagai, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 1, 1990, Ser. No. 486,847
Claims priority, application Japan, Mar. 1, 1989, 1-49419
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 **22 Claims**

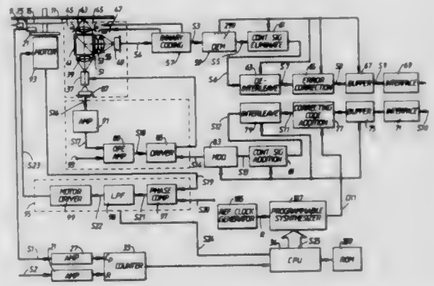
1. An optical memory device for recording information to an optical memory having first and second radii defined from a center thereof, the optical memory device recording information in response to light irradiated thereon, said device comprising:

motor means for rotating the optical memory at a predetermined constant speed;

head means for recording information on the optical memory;

position detecting means for detecting a radial position of said head means facing the optical memory;

control means for controlling said head means to record information at a predetermined constant spacing when the radial position of said head means detected by said position detecting means is between a first and second predetermined radius from the center of the optical memory



and to record information at a spacing which increases with increasing radius as the position of said head means detected by said position detecting means is further from the center of the optical memory when the radial position of said head means detected by said position detecting means is greater than the second predetermined radius from the center of the optical memory;

defect detecting means for detecting a defective memory portion on the optical memory; and

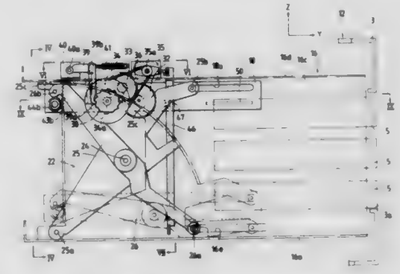
substitute means for recording information to be recorded on the defective memory portion detected by said defect detecting means in a predetermined substitute recording area of the optical memory.

5,058,090

MAGAZINE LOADING DISK PLAYER

Hitoshi Ueno, and Keiichi Takagi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 3, 1990, Ser. No. 503,644
Claims priority, application Japan, Sep. 11, 1989, 1-234946
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—36 **4 Claims**



1. A magazine loading disk player comprising:

a magazine mount portion for removably mounting a magazine, said magazine including a housing and a plurality of plate-like trays for carrying disks on main surfaces thereof,

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respectively, said plate-like trays being arranged within said housing so as to be projected from and retracted into said housing;

a playing means provided so as to be movable in a direction of arrangement of said trays for receiving a selected one of said disks from said magazine and for playing said selected disk;

a supporting member for supporting said playing means;

a positioning means for performing a positioning of said playing means through said supporting member;

a disk moving means for feeding said selected disk from said magazine to said playing means after the positioning of said playing means and for retracting said selected disk into said magazine after the playing of said disk;

said positioning means including a pair of cross-links for movably supporting said playing means through said supporting member, each of said cross-links having a fixed pivot side link and a movable pivot side link pivoted to each other through a pin, wherein said fixed pivot side link of at least one of said cross-links has a sector gear provided at a swingable end side thereof, and a link driving means for transmitting a driving force to said sector gear to swingably move said fixed pivot side link,

in which said link driving means includes a rotary gear and a motor for rotating said rotary gear, said motor being supported by a frame provided above said pair of cross-links and having supporting portions for supporting said frame, and in which a pair of interlocking racks parallel with each other are formed in said supporting portions and are respectively engaged with a pair of pinions concentrically provided on said supporting member.

5,058,091

OPTICAL PICKUP DEVICE

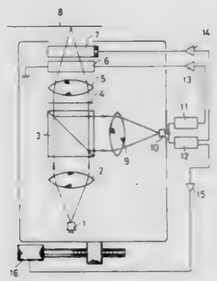
Yugo Murao, Osaka; Masao Nakamura, Nara, and Tsutomu Nakamura, Akashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1989, Ser. No. 341,422

Claims priority, application Japan, Apr. 25, 1988, 63-101948

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—44.21 **7 Claims**



1. An optical pickup device comprising;

a light source for emitting a light beam onto a recording medium having a track in which information is recorded;

lens means, provided in an optical path between said light source and said recording medium, for converging said light beam to create a focusing spot having a predetermined diameter on said recording medium;

reading means for receiving the light beam reflected from said recording medium and for reading information recorded on said track according to the received light beam;

tracking error detecting means for receiving the light beam reflected from said recording medium and for detecting a tracking error caused by a deviation between a position of said light beam spot formed on said recording medium and said track, said deviation being in a transverse direction relative to said track;

focusing error detecting means for receiving the reflected light beam and for detecting a focusing error caused by a distance variation between said lens means and said recording medium;

control means, responsive to said tracking error detecting means and said focusing error detecting means, for generating a tracking error correction signal and a focusing error correction signal;

deflection angle adjusting means, provided in said optical path and responsive to said tracking error correction signal, for adjusting a deflection angle of said light beam; and

refractive index adjusting means, provided in said optical path and responsive to said focusing error correction signal, for adjusting a refractive index of said light beam.

5,058,092

METHOD FOR ACCESSING A CONTROL TRACK BY POSITIONING AN OPTICAL HEAD AT THE CENTER OF THE CONTROL TRACK

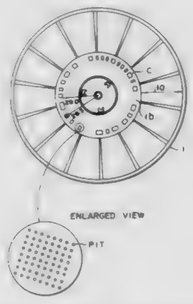
Toshiyuki Miyasaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 242,383, Sep. 8, 1988, abandoned. This application Sep. 17, 1990, Ser. No. 584,509

Claims priority, application Japan, Sep. 9, 1987, 62-225527

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.27 **14 Claims**



1. An apparatus for accessing a control track having a predetermined width on an optical disk, said control track having characteristic data relating to physical and operative characteristics of said optical disk, comprising:

optical pickup means for directing a light beam onto said optical disk and for receiving a light beam reflected from said optical disk;

means for positioning said optical pickup means at an initial position;

means for moving said optical pickup means along a radius of said optical disk from said initial position;

means for detecting a predetermined distance along the radius of said optical disk from said initial position to a center of the predetermined width of said control track; and

means for stopping said optical pickup means when said optical pickup means has been moved said predetermined distance to the center of the predetermined width of said control track as detected by said detecting means.

5,058,093

SIGNAL LEVEL DEVIATION DETECTING APPARATUS

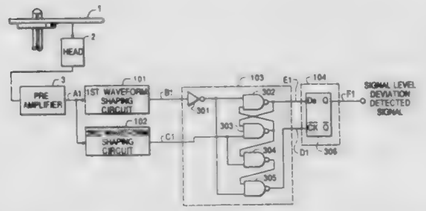
Toshiharu Mukai, Sennan, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 7,114, Jan. 27, 1987, abandoned. This application Dec. 21, 1989, Ser. No. 453,085

Claims priority, application Japan, Jan. 27, 1986, 61-15123; Aug. 19, 1986, 61-193226

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—58 **10 Claims**



1. A signal level deviation detecting apparatus comprising:

at least two waveform shaping means having different threshold values for converting an input alternating signal into at least two rectangular waveform signals;

a pulse conversion means for converting said rectangular waveform signals into at least two pulses signal logic states,

wherein said logic states change in a first specific repeating pattern when said input alternating signal maintains a normal amplitude, and

wherein said logic states change in a second specific repeating pattern when said alternating signal maintains an amplitude below one of said threshold values; and

a state transition discrimination means, which receives said at least two pulse signal logic states, for inverting an output logic state in response to a change from said first specific repeating pattern to said second specific repeating pattern or from said second specific repeating pattern to said first specific repeating pattern,

wherein said output logic state is a signal level deviation detected signal indicative of a deviation in said amplitude of said input alternating signal.

5,058,094

DISC LOADING APPARATUS

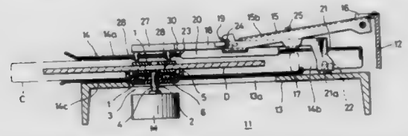
Masayuki Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 7, 1990, Ser. No. 536,314

Claims priority, application Japan, Jul. 7, 1989, 1-176155

Int. Cl.[5] G11B *33/02, 5/016, 17/04*

U.S. Cl. 369—77.1 **10 Claims**



1. A disc loading mechanism for a disc having a hub with a central spindle hole and formed of magnetizable metal attached to a central portion of the disc, the mechanism comprising:

disc rotating means having a spindle shaft and clamping means for clamping the disc hub by a magnetic attracting force;

loading means for loading said disc on said disc rotating means; and

pushing means for contacting and pushing the hub during said loading, so that when said disc is loaded on said disc rotating means by said loading means, the central spindle hole of said disc hub is engaged with the spindle shaft of said disc rotating means, said pushing means comprising at least one pin having a length such that when said disc hub is engaged with the spindle shaft said at least one pin is out of contact with said hub.

5,058,095

AUTOMATIC LOADING AND DRIVING RECORD MEDIUM PLAYER

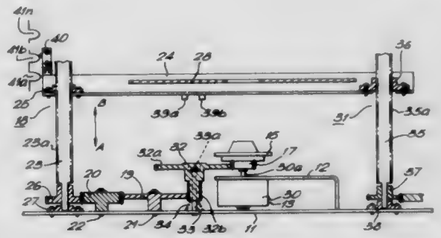
Hiroshi Kawakami, and Hiroshi Ebata, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 5, 1988, Ser. No. 228,901

Claims priority, application Japan, Aug. 7, 1987, 62-121172[U]

Int. Cl.[5] G11B *3/58, 17/04, 5/016*

U.S. Cl. 369—77.1 **10 Claims**



1. An automatic record medium player for automatically playing a record medium comprising:

a motor means which rotates in a first direction and in a second direction, opposite to that of the first direction;

a first drive member coupled to the motor means for driving a record medium supplied thereto;

a second drive member coupled to the motor means;

a movable automatic operation member for automatically supplying and/or withdrawing the record medium to and/or from the first drive member in response to the first direction rotation of the motor means and/or the second direction rotation of the motor means, the automatic operation member including a carriage member for loading and/or unloading the record medium to and/or from the first drive member and a guide member for guiding the loading and/or unloading movement of the carriage member;

a clutch member for selectively supplying the second drive member to the automatic operation member; and

a control member for controlling the clutch member in response to movement of the automatic operation member, the control member being mounted on the carriage member and being movable together with the carriage member to a position engaging the clutch member.

5,058,096

DISK RECORDING/REPRODUCING APPARATUS AND DISK RECORDING/REPRODUCING METHOD

Ryo Ando, Tokyo, and Tadao Yoshida, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP88/00253, § 371 Date Nov. 9, 1988, § 102(e) Date Nov. 9, 1988, PCT Pub. No. WO88/07254, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 10, 1988, Ser. No. 274,940

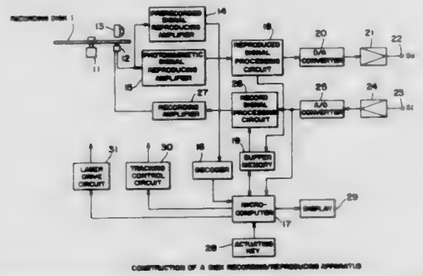
Claims priority, application Japan, Mar. 13, 1987, 62-56909

Int. Cl.[5] G11B *15/04, 7/00*

U.S. Cl. 369—100 **9 Claims**

1. A disk recovering/reproducing apparatus in which a program region and a lead-in region are provided on a record-

ing disk to which absolute addresses are imparted in advance, data such as play information are recorded in the program region, start address data and end address data of each unit information region in the program region having data recorded therein are recorded as catalog data in the lead-in region and in which recording and/or reproduction in or from the program region is performed on the basis of the catalog data in the lead-in region, wherein the improvement resides in that it



comprises erasure inhibit control means for performing inhibit control of an erasure operation for data previously recorded in the program region on the recording disk, in that an erasure inhibit flag is provided on an information unit basis in the catalog data and in that an erasure inhibit control for data previously recorded in the program region on the recording disk is performed on an information unit basis by the erasure inhibit control means in response to the erasure inhibit flag.

5,058,097

SLIDER CONTROLLER FOR DISK PLAYER INCLUDING A SLIDER WHICH IS DRIVEN BY A LINEAR MOTOR

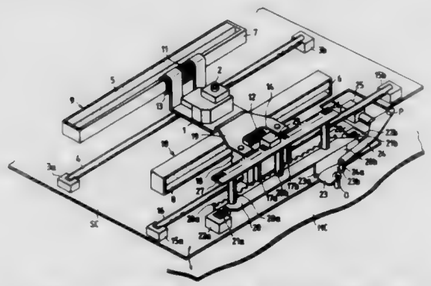
Takashi Suzuki, and Kyoichi Kato, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 426,267

Claims priority, application Japan, Feb. 27, 1989, 1-48309; Mar. 7, 1989, 1-54197

Int. Cl.[5] G11B *17/30, 17/00*

U.S. Cl. 369—215 **6 Claims**



1. A slider controller for a disk player, the disk player including a pickup for reading recorded information from an information record disk and being mounted on a slider, the slider being movable in the radial direction of said disk by a drive motor, the drive motor being supported on an auxiliary chassis which is swingable relative to a main chassis of the disk player, said slider controller comprising:

locking means movably supported on said auxiliary chassis and including a locking portion for being engaged with or disengaged from said slider, and a contact surface;

a movable member supported on said main chassis for movement and being in contact with said contact surface of said locking means; and

drive means supported on said main chassis for moving said movable member, such that upon operation of said drive means during a stoppage mode of said disk player said movable member is moved to push said contact surface of said locking means thereby engaging said locking portion with said slider.

5,058,098

OPTICAL RECORD MEDIUM HAVING AN IMPROVED REFLECTION THIN FILM

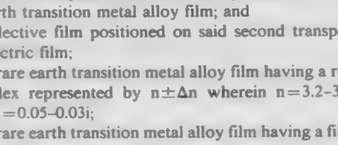
Mami Sakaue, Yokohama, and Noriyuki Iida, Atsugi, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Feb. 9, 1989, Ser. No. 308,080

Claims priority, application Japan, Feb. 17, 1988, 63-34873

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—284 **5 Claims**



1. An optical information signal record medium comprising a resin substrate having information signals encoded on at least one side thereof, a reflection thin film formed on the at least one side, and a protective layer formed on the reflection thin film, said reflection thin film being made of a Cu-Ni alloy consisting essentially of from 3 to 22 atomic percent of Ni and the balance of Cu.

5,058,099

MAGNETO-OPTICAL MEMORY ELEMENT

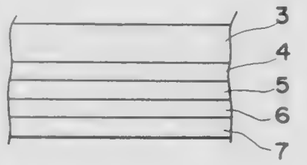
Yoshiteru Murakami, Nishinomiya; Akira Takahashi, Nara; Kazuo Van, Nara; Junichiro Nakayama, Nara; Hiroyuki Katayama, Nara, and Kouji Ohta, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 9, 1989, Ser. No. 391,249

Claims priority, application Japan, Aug. 12, 1988, 63-202359

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—288 **1 Claim**



1. A magneto-optical memory element having a multi-layer construction and a magnetic material to produce a circular dichroism effect, comprising:

a first transparent dielectric film;

a rare earth transition metal alloy film positioned on said first transparent dielectric film;

a second transparent dielectric film positioned on said rare earth transition metal alloy film; and

a reflective film positioned on said second transparent dielectric film;

said rare earth transition metal alloy film having a refractive index represented by $n \pm \Delta n$ wherein $n = 3.2\text{–}3.55i$ and $\Delta n = 0.05\text{–}0.03i$;

said rare earth transition metal alloy film having a film thickness of 18 to 46 nm;

said second transparent dielectric film having a refractive index of 2.0 ± 0.2 and a film thickness of 80 to 108 nm.

5,058,100

DISC MAGAZINE

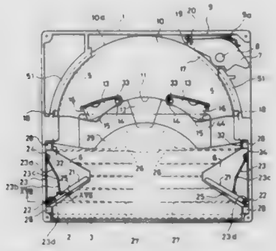
Tetsuji Yoshii, Neyagawa City, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 9, 1989, Ser. No. 391,281

Claims priority, application Japan, May 18, 1988, 63-205175; Jun. 22, 1988, 1-160378; Aug. 10, 1988, 63-199662; Aug. 10, 1988, 63-199663; Aug. 10, 1988, 63-199664; Aug. 18, 1988, 63-205173; Aug. 18, 1988, 63-205174; Sep. 30, 1988, 63-248209; Oct. 21, 1988, 63-266406

Int. Cl.[5] G11B *7/26, 17/22;* **B65D** *85/30*

U.S. Cl. 369—291 **37 Claims**



1. A disc magazine comprising:

a magazine case having a front opening,

plural partition plates which are held horizontally in said magazine case so that a substantially straight formed horizontal front edge of each said partition plate extends across a substantial portion of a width of said front opening thereby defining plural horizontal slots between said substantially straight formed horizontal front edges of said plural partition plates for receiving a respective disc inserted from said front opening of said magazine case,

plural disc carrier means which are held horizontally and slidably on and at a rear side of said plural partition plates in said magazine case and each of which has a stopping means having a substantially vertical face for abutting an inserted edge of a small disc, and

plural disc supporter means provided on said plural disc carrier means for supporting rear edges of small discs, said plural disc supporter means having an inclined guide-face section for guiding inserted rear edges of large discs to override said plural disc supporter means and said stopping means so as to be received on said plural disc carrier means.

5,058,101

COHERENT DETECTION LOOP DISTRIBUTION SYSTEM

Andres Albanese, Morristown, and Ronald C. Menendez, Chatham, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation of Ser. No. 284,653, Dec. 15, 1988, abandoned. This application Jan. 16, 1991, Ser. No. 641,627

Int. Cl.[5] H04J *1/00*

U.S. Cl. 359—127 **16 Claims**

1. An optical fiber communications network comprising:

a main optical bus having two ends;

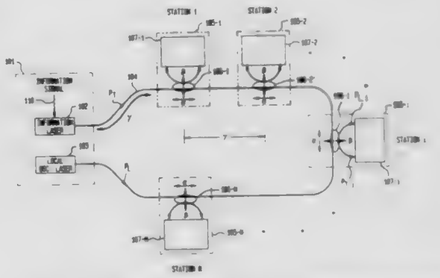
a broadcasting terminal comprising an information transmitting laser and a local oscillator laser;

means connecting said information transmitting laser to one end of said main optical bus and said local oscillator laser to the other end of said main optical bus so that the output signal of said information laser propagates in one direction on said main bus and the output of said local oscillator laser propagates in an opposite direction on said main bus;

a plurality of ring-shaped optical subbuses;

means for coupling portions of the counter-propagating information laser and local oscillator laser signals on said main bus to each of said ring-shaped optical subbuses so that said coupled information laser signal and local oscillator laser signal counter-propagate in opposite directions on each of said subbuses; and

a plurality of stations connected to each of said subbuses, each of said stations on each of said subbuses comprising



means for tapping portions of the counter-propagating signals off the subbus, and receiver means for detecting the transmitted information signal by mixing the tapped counter-propagating local oscillator laser signal and information laser signal.

5,058,102

BROADBAND OPTICAL COMMUNICATION SYSTEM, PARTICULARLY FOR THE SUBSCRIBER AREA

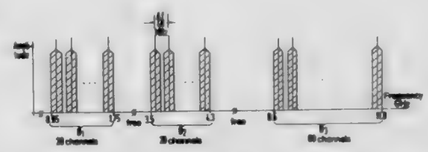
Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to Alcatel N. V., Amsterdam, Netherlands

Filed Jan. 29, 1990, Ser. No. 471,436

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1989, 3902746

Int. Cl.[5] H04J *14/00*

U.S. Cl. 359—125 **6 Claims**



1. System for optically transmitting a plurality of different broadband signals, the system comprising

a plurality of modulators which respectively modulate each of said broadband signals onto a corresponding carrier frequency within a corresponding one of at least two different carrier frequency bands wherein each said carrier frequency band is not more than one octave wide and is at least one octave apart from all the other said carrier frequency bands, and

a ;combiner circuit which combines all said carrier frequencies in all said carrier frequency bands into a single frequency-multiplexed signal to be transmitted.

5,058,103

BIDIRECTIONAL OPTICAL TRANSMISSION SYSTEM HAVING A LIGHT-INTERRUPTION DETECTING FUNCTION

Kazuyoshi Shimizu, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 8, 1989, Ser. No. 433,120

Claims priority, application Japan, Nov. 8, 1988, 63-281586

Int. Cl.[5] H04J *1/00;* **H04B** *10/00*

U.S. Cl. 359—124 **23 Claims**

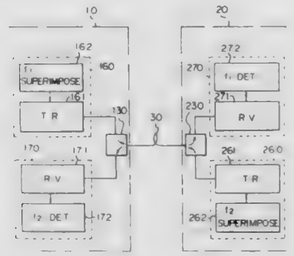
1. A bidirectional optical transmission system having a light-

interruption detecting function, said bidirectional optical transmission system effecting bidirectional optical transmission between offices through an upward channel and a downward channel by utilizing a common optical transmission line, each of said offices comprising:

light transmitting means for generating a transmission signal having a high level and a low level to be transmitted from a first office through said upward channel of said common optical transmission line to another office;

light receiving means for receiving at said first office a receiving signal from said other office through said downward channel of said common optical transmission line; and

light passing means for passing said transmission signal from said light transmitting means to said upward channel and



for passing said receiving signal from said downward channel to said light receiving means;

said light transmitting means comprising light-interruption detecting signal generating means for generating a light-interruption detecting signal, the frequencies of the light-interruption detecting signals from said first office and from said other office being different from each other, said light-interruption detecting signal and said transmission signal being superimposed by a direct modification of said transmission signal; and

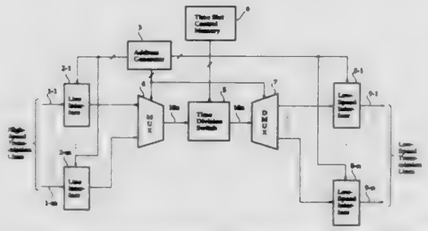
said light receiving means comprising light interruption detecting signal detecting means for detecting said light-interruption detecting signal from said other office by identifying said frequency of the light-interruption detecting signal from said other office.

5,058,104

TDM DEMULTIPLEXER WITH DEDICATED MAINTENANCE CHANNELS TO INDICATE HIGH-SPEED LINE FAULTS TO LOW SPEED CIRCUITS

Akifumi Yonehara, and Yoshio Yokose, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,864
Claims priority, application Japan, Jul. 26, 1988, 63-184727
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—14 **2 Claims**



2. A TDM demultiplexer for a channel bank at one of several TDM hierarchical levels, comprising:

a plurality of high-speed interfaces connected respectively to high-speed digital transmission lines, each of said high-speed interfaces receiving TDM digital signals from the transmission line, detecting a line fault in said transmission line and appending an alarm signal having a time-slot duration indicating the line fault to time slots of said digital signals;

time division multiplexer means for multiplexing output signals from said high-speed interfaces into time slots of a first TDM frame sequence;

time slot interchanging means for interchanging the time slots of said first TDM frame sequence to produce a second TDM frame sequence according to prescribed relationships between the time slots of said high-speed transmission lines and those of low-speed transmission lines;

time division demultiplexer means for demultiplexing said second TDM frame sequence into a plurality of TDM signals which are greater in number than the number of said high-speed interfaces; and

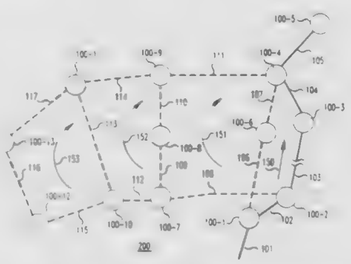
a plurality of low-speed interfaces for respectively receiving the demultiplexed TDM signals from said time division demultiplexer means, each of said low-speed interfaces detecting the time slot in which said alarm signal is contained and transmitting a line fault signal to a respective one of said low-speed transmission lines.

5,058,105

NETWORK ALTERNATE ROUTING ARRANGEMENT

M. Omar Mansour, West Long Branch, and Liem T. Nguyen, Colts Neck, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 4, 1990, Ser. No. 504,359
Int. Cl.[5] H04J *1/16, 3/14*
U.S. Cl. 370—16 **2 Claims**



2. An arrangement for use in a network comprising

a plurality of nodes interconnected by a plurality of links, and

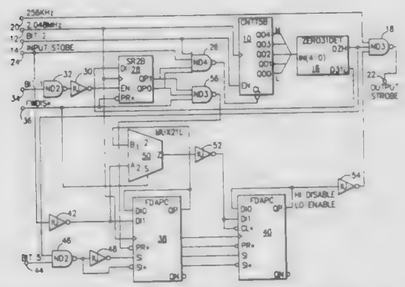
means, responsive to a disruption of traffic flowing from one of said nodes to another one of said nodes via a respective one of said links, for locating and establishing a number of higher-orders of connectivity each formed from spare capacity contained in respective individual ones of said links so that said traffic may be divided among said higher-orders of connectivity as a function of their respective spare capacities, wherein said means for locating and establishing includes means for identifying for each of said higher-orders of connectivity respective intermediate and transfer-end nodes, and wherein each of said higher-orders of connectivity is established by interconnecting its respective intermediate and transfer-end nodes using the spare capacity of respective ones of said individual ones of said links connected to those nodes.

5,058,106

FLYWHEEL CIRCUIT

Gary B. Cole, Knightdale, N.C., assignor to Alcatel NA Network Systems Corp., Raleigh, N.C.

Filed Dec. 15, 1989, Ser. No. 451,414
The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—47 **17 Claims**



1. A flywheel circuit for use in a system that provides an output signal that occurs in an assigned time slot of a multi-time slot repetitive frame, the assigned time slot being determined by input data to said system, said flywheel circuit comprising:

means for generating said output signal during the assigned time slot in each frame;

means for receiving an input signal from said system during a time slot determined by said input data; and

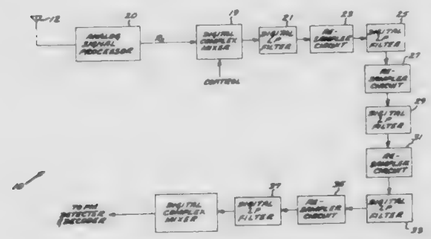
means for comparing the timing of the output signal with the timing of the input signal and for initiating synchronization of the generating means with the input signal, when the relative timing does not correspond in a predetermined manner for a predetermined number, greater than one, of consecutive frames.

5,058,107

EFFICIENT DIGITAL FREQUENCY DIVISION MULTIPLEXED SIGNAL RECEIVER

Wade J. Stone, Los Angeles; Kikuo Ichiroku, Santa Monica; Edwin A. Kelley, and Don C. Devendorf, both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 5, 1989, Ser. No. 293,894
Int. Cl.[5] H04J *1/00*
U.S. Cl. 370—69.1 **16 Claims**



1. A frequency division multiplex receiver for isolating a frequency division multiplex channel contained within a predetermined frequency division multiplex (FDM) band, comprising:

an RF amplifier;

an RF bandpass anti-alias filter having a pass-band for passing substantially the entire predetermined FDM band and having a skirt width F_{trans}, said passband including frequencies above a sample frequency F_s at which the output of the filter is sampled;

analog-to-digital conversion means for sampling the analog output of said anti-alias filter to provide an aliased frequency down converted digital version of the received frequency division multiplexed electromagnetic signals within the predetermined frequency division multiplex band, said analog to digital conversion means having a sample rate F_s that is less than the lowest frequency in the predetermined FDM band and is equal to $4NF_{BW}+F_L$, where F_{BW} is the bandwidth of the predetermined FDM band, N is equal to 1, and F_L is the lower band edge of the aliased image resulting from the digital conversion sampling process and is subject to the following limits relative to the skirt width F_{trans} of the bandpass anti-alias filter:

$$\tfrac{1}{4}F_{trans} \leqq F_L \leqq \tfrac{1}{4}F_s - (F_{BW}+\tfrac{1}{4}F_{trans})$$

whereby the output of the analog to digital conversion means includes a non-distorted aliased image of the predetermined frequency division multiplex band;

a gain controlled amplifier responsive to the output of said analog to digital conversion mean for controlling the gain of the analog received RF signal provided to said analog to digital conversion means;

digital complex frequency translation means for frequency translating said aliased frequency down converted digital signal to provide a frequency translated digital signal having the center of the selected channel at zero frequency; and

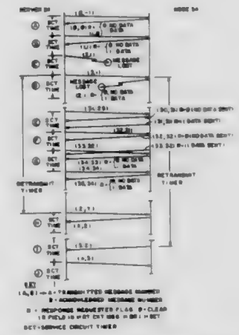
means for filtering said translated sampled digital received signal to isolate said selected channel.

5,058,108

LOCAL AREA NETWORK FOR DIGITAL DATA PROCESSING SYSTEM

Bruce Mann, Mason; Darrell Duffy, Windham, both of N.H.; Anthony Lauck, Wellesley, and William Strecker, Harvard, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 338,485, Apr. 13, 1989, abandoned, which is a continuation of Ser. No. 178,430, Apr. 6, 1988, abandoned, which is a division of Ser. No. 88,063, Aug. 21, 1987, Pat. No. 4,823,122, which is a division of Ser. No. 27,033, Mar. 19, 1987, abandoned, which is a continuation of Ser. No. 616,553, Jun. 1, 1984, abandoned. This application Sep. 25, 1989, Ser. No. 412,576
Int. Cl.[5] H04J *3/02, 3/24*
U.S. Cl. 370—85.1 **32 Claims**



1. A local area network (**10**) including a server (**24**) and a node (**34**) interconnected by a communications link (**16**),

A. said node (**34**) transmitting node messages each including a data field (**140, 162**) for containing data to be transferred

to said server and a response requested flag field (80) having a set condition and a clear condition;

B. said server (24) including:

i. timing means (92) for performing a timing operation to assert a timing signal at the end of a predetermined timing interval;

ii. data storage means (106) for storing data for transmission to said node;

iii. data waiting flag means (86 108), having a set condition and a clear condition;

iv. message transmission means (60, 66, 100) for generating server messages for transmission over the communications link (16), each said server message being generated only when said timing signal (92) is asserted and the data waiting flag means (86) is in said set condition, said message transmission means (60, 66, 100) further resetting said timing means (92) and enabling said timing means 92 to begin said timing operation in response to the transmission of each said server message;

v. server message receiving means (60, 66, 100) for connection to said communications link 16 for receiving node messages; and

vi. first data waiting flag condition establishment means connected (108) to said data storage means for setting said data waiting flag means (86) into said set condition, in response to said data storage means (106) containing data to be transmitted

vii. second data waiting flag condition establishment means (60, 62, 66, 80) for setting said data waiting flag means (86) into said set condition, in response to receipt by said server message receiving means of a node message in which said response requested flag field has said set condition,

and said timing means (92) and said data waiting flag means (86) together regulate transmission of messages onto said communications link both from said server (24) and from said node (34).

5,058,109

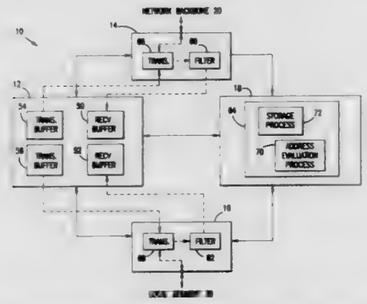
EXCLUSIONARY NETWORK ADAPTER APPARATUS AND RELATED METHOD

Marshall R. Goldberg; Bruce E. Mann, both of Mason, N.H., and Jesse B. Lipton, Wayland, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1989, Ser. No. 373,108

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—85.13 **28 Claims**



1. An apparatus connected between a first network and a second network for selectively transferring data packets between the first and second networks, each of the first and second networks connecting a different plurality of nodes and each of the data packets containing a destination address corresponding to at least one of the nodes, the apparatus comprising:

storage means for storing data packets transferred over the first and second networks, said storage means including

a first data buffer area containing data packets to be transferred from the second network to the first network, and

a second data buffer area containing data packets to be transferred from the first network to the second network;

evaluating means, coupled to the storage means, for storing in the first data buffer area data packets transferred over the second network which do not contain a destination address corresponding only to one of the nodes connected to the second network, and for storing in the second data buffer area data packets transferred over the first network which contain a destination address corresponding to the nodes connected to the second network and at least some data packets transferred over the first network which contain a destination address not corresponding to the nodes connected to the second network;

first transceiver means, connected to the first network and coupled to the evaluating means, for receiving data packets transferred over the first network and for transmitting data packets from the first data buffer area to the first network; and

second transceiver means, connected to the second network and coupled to the evaluating means, for receiving data packets transferred over the second network and for transmitting data packets from the second data buffer area to the second network.

5,058,110

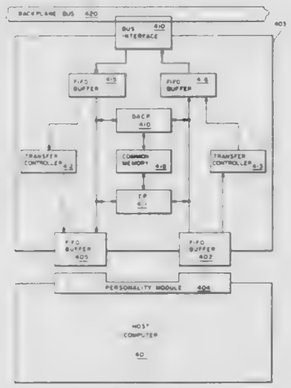
PROTOCOL PROCESSOR

Robert Beach, Los Altos; Mark Bryers, San Jose; Casey Cox; Richard Fall, both of Palo Alto; Norman Finn, and Douglas Laird, both of San Jose, all of Calif., assignors to Ultra Network Technologies, San Jose, Calif.

Filed May 3, 1989, Ser. No. 346,648

Int. Cl.[5] H04J *3/02, 3/24*

U.S. Cl. 370—85.6 **45 Claims**



1. A network for allowing communication between a plurality of computing devices comprising:

a central communication means for communicating information; and

adapter means coupled with said central communication means, said adapter means further coupled to a first of said computing devices, said adapter means for allowing communication of information between said central communication means and said first of said computing devices, said adapter means comprising:

(a) means for determining type of information communicated from said first of said computing devices, said means for determining type of information coupled to receive non-time-critical commands from said first of said computing devices;

(b) means for processing said non-time-critical commands received from said first of said computing devices, said non-time-critical commands being directed to said means for processing non-time-critical commands by said means for determining type of information; and

(c) means for transferring information to be communicated to a second of said computing devices, said information being directed to said means for transferring information by said means for determining type of information.

5,058,111

SUBSCRIBER LINE INTERFACE CIRCUIT IN A SWITCHING SYSTEM

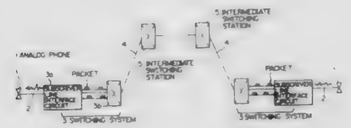
Kouichi Kihara, and Kazushige Yamamoto, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1990, Ser. No. 537,565

Claims priority, application Japan, Jun. 19, 1989, 1-156292; Nov. 20, 1989, 1-299551

Int. Cl.[5] H04J *03/24*

U.S. Cl. 370—94.1 **6 Claims**



1. A subscriber line interface circuit in a switching system for a communication network, comprising:

a plurality of line terminal circuit means for subjecting subscriber lines to terminal processing;

a switch interface circuit connected to a switch circuit of the switching system;

a plurality of digital signal processor means, each corresponding to a respective one of the line terminal circuit means, for assembling and disassembling packets, processing voice signals, controlling the corresponding line terminal circuit means, and effecting contention control of the transmission and reception of packet data in synchronism with the communication network, each of the digital signal processor means including

memory means for storing data from the corresponding line terminal circuit means and for storing receiving packet data in order to assemble or disassemble a packet,

address generating circuit means for generating address signals for the memory means,

serial receiving interface means for converting serial receiving packet data supplied by the switch interface circuit to parallel data which is supplied to the memory means,

serial sending interface circuit means for converting parallel sending packet data stored in the memory means to serial data which is supplied to the switch interface circuit, and

parallel port interface circuit means connected with the corresponding line terminal circuit means for supplying a control signal to the corresponding line terminal circuit means and receiving information from the corresponding line terminal circuit means; and

central processing unit means for controlling the plurality of digital signal processor means.

5,058,112

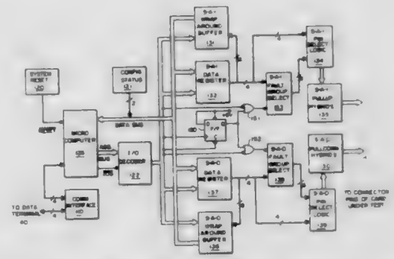
PROGRAMMABLE FAULT INSERTION CIRCUIT

Walter J. Namitz, Phoenix, Ariz., and Charles S. Chang, Sunnyvale, Calif., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Jul. 31, 1989, Ser. No. 387,037

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—3 **3 Claims**



1. A fault insertion circuit arranged to generate and apply a fault signal to a digital circuit under test, said digital circuit under test including an input connector having a plurality of input pins, said fault insertion circuit comprising:

fault insertion hardware connected to said digital circuit under test, said fault insertion hardware including at least one output connector having a plurality of output pins, said fault insertion hardware output connector connected to said digital circuit under test input connector with each pin of said output connector pin mated to respective pin of said input connector, said fault insertion hardware further including a plurality of fault signal generating circuits, each fault signal generating circuit connected to a respective output connector pin, and selection logic circuits for selecting and enabling a respective one of said plurality of fault signal generating circuits;

a microcomputer circuit connected to said selection logic circuits, said microcomputer circuit under direction of an operating program is arranged to control said selection logic circuits;

a communication circuit connected to said microcomputer circuit and to a source of commands and instructions, said communication circuit arranged to receive commands and instructions from said source of commands and instructions and to transmit said commands and instruction to said microcomputer circuit, and said microcomputer circuit in response to said received commands and instructions and under direction of said operating program interprets said commands and instructions and transmits control signals to said selection logic circuits, enabling a respective one of said plurality of fault signal generating circuits and applying the fault signal generated therefrom to said digital circuit under test;

said microcomputer circuit, under direction of said operating program transmits to said selection logic circuits control signals disabling said enabled signal generating circuit, and responsive to the disabling of the enabled signal generating circuit said microcomputer transmits a completion signal to said communication circuit, whereby, said completion signal is transmitted to said source of commands and instructions;

said microcomputer circuit comprising a microcomputer;

maintenance control means connected between said microcomputer and said selection logic circuits;

data transfer storage means connected between said microcomputer and said selection logic circuits; and

data return storage means connected to said microcomputer and further connected to said data transfer storage means;

said microcomputer being operated to provide a maintenance enable signal and a maintenance disable signal, and

further operated to provide data signals for control of said selection logic circuits;

said maintenance control means being operated in response to said maintenance enable signal to provide a selection logic disable signal, and further operated in response to said maintenance disable signal to provide a selection logic enable signal;

said data transfer storage means being operated to store said data signals and provide stored data signals;

said selection logic circuits being operated in response to said selection logic enable signal and a particular arrangement of said stored data signals to select and enable said respective one of said plurality of fault signal generating circuits;

said selection logic circuits being further operated in response to said selection logic disable signal to inhibit said selection and enabling of said fault signal generating circuits;

said data return storage means being operated to store said stored data signals and to provide data return storage signals; and

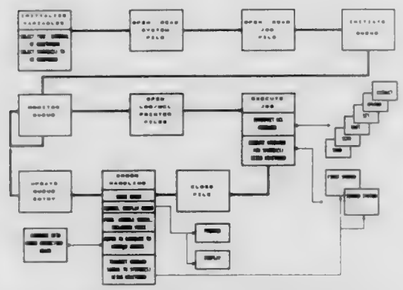
said microcomputer being further operated to retrieve said data return storage signals and to compare them with said data signals.

5,058,113

METHOD AND APPARATUS FOR CORRECTING ERRORS IN A SYSTEM

Dana Burnham, Reston, and Lewis Ray, Midland, both of Va., assignors to Sprint International Communications Corporation, Reston, Va.

Filed Dec. 16, 1988, Ser. No. 285,441
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—15.1 **15 Claims**



1. A computer based method, comprising the steps of:

(a) selecting a first system to be monitored using a computer method, said first system having a number of specific variables having preselected values corresponding to said first system;

(b) selecting, using computer methods, the time at which the monitoring of the selected system will be commenced;

(c) selecting discrete intervals during the monitoring of the system at which the selected system will be monitored;

(d) recording said system selected, said time and said interval;

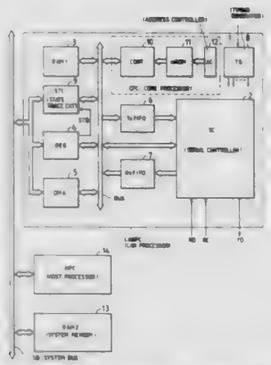
(e) recording and visually displaying warnings of errors when said variables are other than the preselected values.

5,058,114

PROGRAM CONTROL APPARATUS INCORPORATING A TRACE FUNCTION

Shigeo Kuboki, Nukaminato; Norihiko Sugimoto, Katsuta; Syunji Inada; Masahiro Ueno, both of Hitachi; Takeshi Harakawa, Hadano; Kazuhisa Inada, Hitachi; Toshihiko Tominaga, Katsuta, and Yasushi Nakamura, Hitachiohta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Mar. 14, 1989, Ser. No. 324,214
Claims priority, application Japan, Mar. 15, 1988, 63-60970
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—19 **30 Claims**



1. A digital data communication processor formed on a semiconductor substrate comprising:

sequence control means for storing programs that generate sequence control signals to perform various control actions according to specified state and event codes; and

memory means operatively associated with said sequence control means for successively storing state and event information corresponding to the specified state and event codes and time information concerning the time spent in an operation sequence depending on the specified state code.

5,058,115

FAULT TOLERANT COMPUTER MEMORY SYSTEMS AND COMPONENTS EMPLOYING DUAL LEVEL ERROR CORRECTION AND DETECTION WITH LOCK-UP FEATURE

Robert M. Blake, Wappinger Falls; Douglas C. Bossen, Poughkeepsie; Chin-Long Chen, Wappinger Falls, all of N.Y.; John A. Fifield, Underhill; Howard L. Kalter, Colchester, both of Vt., and Tin-Chee Lo, Fishkill, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 10, 1989, Ser. No. 322,255
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—401 **7 Claims**

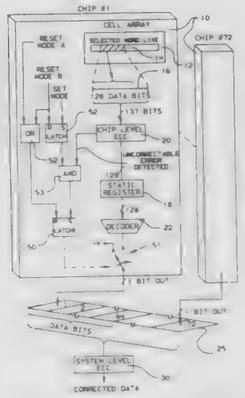
1. A fault tolerant computer memory system which receives address information and which supplies data information in response thereto, said memory system comprising:

a plurality of digital memory units;

a plurality of unit level error correction and detection means, said means being associated with distinct ones of said memory units, for correcting and detecting errors in data read from memory cells within said memory units and for generating an uncorrectable error signal;

a plurality of unit level error correction and detection means, said means being associated with distinct ones of said memory units, for correcting and detecting errors in data read from memory cells within said memory units and for generating an uncorrectable error signal;

a plurality of unit level lock-up means associated with distinct ones of said memory units and operating to set at least one output bit, from their associated memory units, to a fixed value upon the receipt of said uncorrectable error signal from their associated unit level error correction and detection means; and



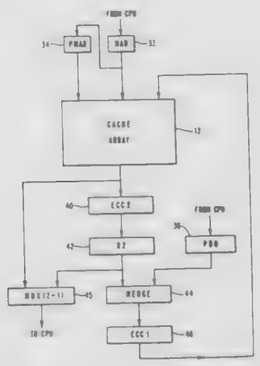
system level error correction and detection means receiving data from said memory units, said system level correction and detection means being operable to correct hard errors by operation of said lock-up means.

5,058,116

PIPELINED ERROR CHECKING AND CORRECTION FOR CACHE MEMORIES

Hu H. Chao, Pleasantville, N.Y., and Jung-Herng Chang, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1989, Ser. No. 409,362
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.2 **4 Claims**



1. A pipelined error checking and correcting cache memory for a central processing unit comprising:

cache array means for reading out data during a first half of a memory cycle and writing in data during a second half of memory cycle, said cache array means providing an effective two port memory array with the density of a single port array;

first, second, third, fourth, fifth, sixth, and seventh pipelined register means, said first register means storing a mask, said second register means being connected to said first register means and storing a previous mask, said third register means storing a memory address, said fourth register means being connected to said third register means and storing a previous memory address, said fifth register means storing data output from said central processing unit, said sixth register means being connected to said fifth register means and storing a previous data output, and said seventh register means storing an output from said cache array means;

first address means responsive to said third register means for addressing said cache array means during said first half of said memory cycle and second address means responsive to said fourth register means for addressing said cache array means during said second half of said memory cycle;

first error checking and correcting means connected between an output of said cache array means and said seventh register means for generating error flags and corrected data, said corrected data being latched in said seventh register means;

merge circuit means responsive to said second register means for merging data latched in said seventh register means with data from said central processing unit; and

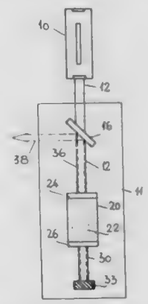
second error checking and correcting means connected between said merge circuit means and an input to said cache array means for generating check bits for an output of said merge circuit means before writing said output with the check bits in the cache array means at an address corresponding to a content of said fourth register means during said second half of said memory cycle.

5,058,117

RAMAN SHIFTING DEVICE

Itamar Shoshan, 29 Argaman Street, Ramat-Efal, Israel, and Gad Ravnitzki, Beit Oved, Israel

Filed Sep. 11, 1989, Ser. No. 405,192
Claims priority, application Israel, Apr. 19, 1989, 90034
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—3 **19 Claims**



1. A Raman converter for converting a laser beam, at a first wavelength, generated in a separate laser module, into a Raman-shifted beam at a second wavelength, said Raman converter being external to said laser module and comprising a sequence of a dichroic coupler, a Raman medium and reflection means positioned optically aligned after the laser module, so that the laser beam passes first through the dichroic coupler directing beams into said Raman medium, thus scattering Raman shifted radiation in a forward and a backward direction, said reflecting means returning the forward scattered radiation to the Raman medium, thus increasing the intensity of the backward scattered Raman-shifted radiation, which is coupled out by the dichroic coupler.

5,058,118

SELF-FREQUENCY-DOUBLING MINILASER DEVICE WITH NYAB CRYSTAL AS LASER MATERIALS

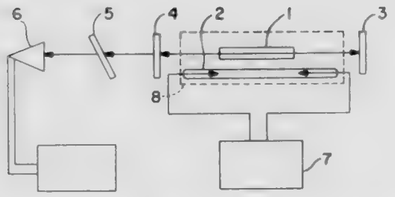
Miawang Qui; Yichuan Huang; Aidong Jiang, and Zundu Luo, all of Fujian, China, assignors to Fujian Institute of Research on the Structure of Matter, Chinese Academy of Science, Fujian, China

Filed Apr. 5, 1990, Ser. No. 505,022

Claims priority, application China, Apr. 15, 1989, 89 1 02343.7; Jun. 1, 1989, 89 1 03818.3

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—21 13 Claims



1. A minilaser device with both laser and non-linear optical effects comprising:

a single crystal-bar of $Nd_xY_{1-x}Al_3(BO_3)_4$ where $(x=0.03\rightarrow0.08)$ and serves as a self-frequency-doubling crystal capable of performing a frequency conversion process within the crystal; and

a pumping source for optically pumping said single crystal bar of said device to generate a laser light output from said single crystal bar of 0.532 μm and 0.660 μm, said pumping source being selected from one of a coherent pumping source and an incoherent pumping source.

5,058,119

LASER MEASURING APPARATUS

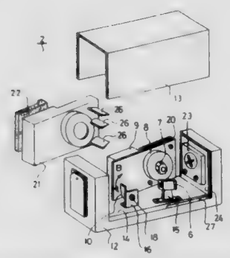
Masamichi Suzuki, Yokohama; Masaki Tomiya, Kawasaki, and Yoshiharu Kuwabara, Machida, all of Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Jan. 12, 1990, Ser. No. 464,382

Claims priority, application Japan, Jan. 30, 1989, 1-10601[U]

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—34 5 Claims



1. A laser measuring apparatus for measuring a workpiece, comprising:

a workpiece holding section;

a laser light emitting section including a casing located on one side of the workpiece holding section for emitting laser light toward the workpiece; and

a laser light receiving section located on an opposite side of the workpiece holding section from the laser light emitting section, the laser light receiving section receiving laser light emitted from the laser light emitting section and unintercepted by the workpiece;

wherein the casing includes:

a laser light emitting element for emitting laser light;

internal air distinct from ambient air outside the casing; and

an air stirring means for stirring air in said casing without inducing a flow of the ambient air into the casing.

5,058,120

VISIBLE LIGHT EMITTING SEMICONDUCTOR LASER WITH INVERSE MESA-SHAPED GROOVE SECTION

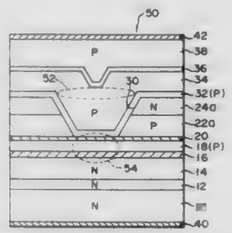
Koichi Nitta, Kawasaki; Yukio Watanabe, Yokohama; Yukie Nishikawa, Narashino; Masaki Okajima, Kawasaki, and Genichi Hatakoshi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1990, Ser. No. 634,546

Claims priority, application Japan, Feb. 28, 1990, 2-45964; Mar. 30, 1990, 2-84668; Mar. 30, 1990, 2-84669

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 16 Claims



1. A semiconductor laser device comprising:

a semiconductive substrate of a first conductivity type;

a double-heterostructure section provided above said substrate and having a first cladding layer of a first conductivity type, an active layer provided on said first cladding layer, and a second cladding layer of a second conductivity type provided on said active layer;

a third cladding layer provided above said second cladding layer;

a current-blocking layer provided on or above said third cladding layer;

said third cladding layer and said current-blocking layer having in a preselected region a groove section which is crossectionally arranged so that an optical confinement region of said laser device is smaller in width than a current injection region thereof;

an optical waveguide layer of the second conductivity type provided on said third cladding layer and said current-blocking layer so as to cover said groove section; and

a fourth cladding layer of the second conductivity type provided on said optical waveguide layer.

5,058,121

COUPLING STRUCTURES FOR A PHASE-LOCKED LASER ARRAY

Thomas L. Paoli, Los Altos, Calif., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jun. 13, 1990, Ser. No. 537,382

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—50 29 Claims

1. A semiconductor laser array comprising:

a monolithic semiconductor structure, divided into first, second, and third parts with the first and second parts separated by a first boundary and the second and third parts separated by a second boundary, each of said parts having a plurality of semiconductor heterostructure layers disposed over a substrate, at least one of said layers of each said part being an active region for light amplification and propagation under lasing conditions;

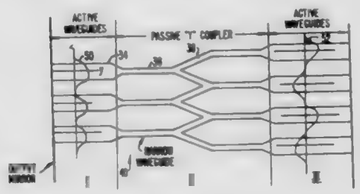
means, electrically coupled only to said first and third parts,

for applying an electrical forward bias to said layers in said first and third parts;

a first plurality of substantially parallel, spaced apart, two-dimensional index-guided amplification waveguides, disposed in the active region of said first part, oriented parallel to a first axis in said active layer, with each of said amplification waveguides having a predetermined width, and having a first end terminating at said first boundary, for generating and amplifying light waves at a given wavelength in response to said electrical forward bias;

a second plurality, equal to one more than said first plurality, of substantially parallel, spaced apart, two-dimensional index-guided amplification waveguides, disposed in the active region region of said third part, oriented parallel to said first axis in said active layer, with each of said amplification waveguides having a predetermined width, and having a first end terminating at said second boundary, for generating and amplifying light waves at a given wavelength in response to said electrical forward bias;

a first plurality of substantially parallel, spaced apart, low-loss two-dimensional index-guided passive waveguides



disposed in the active region of said second part, each passive waveguide oriented co-axially to a corresponding amplification waveguide in said first part and co-extensively coupled thereto at said first boundary, with each passive waveguide of width S, for guiding said amplified lightwaves generated in said corresponding coupled amplification waveguide;

a second plurality of substantially parallel, spaced apart, low-loss, two-dimensional index-guided passive waveguides disposed inn the active region of said second part, each passive waveguide oriented coo-axially to a corresponding amplification waveguide in said third part and coo-extensively coupled thereto at said second boundary, for guiding said amplified lightwaves generated in said corresponding coupled amplification waveguide; and

a first plurality of low-loss, two-dimensional index-guided y-shaped couplers, disposed in the active region of said second part, for interconnecting each passive waveguide in said first plurality with two adjacent waveguides in said second plurality to radiate out-of-phase modes so that the laser operates in the in-phase mode.

5,058,122

MICROWAVE-EXCITED HIGH-POWER LASER

Frank Gekat, Korb, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Fed. Rep. of Germany

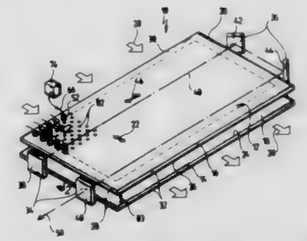
Filed Nov. 6, 1990, Ser. No. 609,936

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1989, 3937490

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—82 20 Claims

1. A high-power laser comprising a resonator having mirrors arranged in spaced, opposite relation to each other in the direction of a resonator axis and a beam path extending in both the direction of said resonator axis and a transverse direction perpendicular thereto, a gas-discharge volume permeated by said beam path and containing laser gas, and two facing wall surfaces extending substantially parallel to said resonator axis and to said transverse direction and enclosing between them and thereby delimiting said gas-discharge volume, characterized in that at least one wall surface (**24**, **26**) is formed by a dielectric wall (**14**, **16**), in that a microwave resonance structure (**52**) separate from said laser gas in said gas-discharge volume (**18**) is placed on said dielectric wall (**14**, **16**), said



microwave resonance structure having an opening facing said dielectric wall (**14**, **16**) and bringing about in an area of volume (**80**) of said gas-discharge volume (**18**) opposite said opening a microwave excitation of said laser gas, and in that microwaves can be introduced into said microwave resonance structure (**52**) from a microwave source (**76**).

5,058,123

LASER APPARATUS

Koji Yasui; Masaaki Tanaka; Shigenori Yagi, and Masaki Kuzumoto, all of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

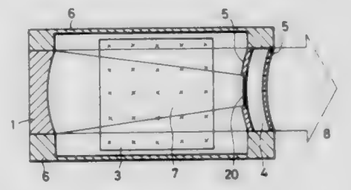
Continuation-in-part of Ser. No. 130,128, Dec. 8, 1987, abandoned. This application Nov. 8, 1989, Ser. No. 432,357

Claims priority, application Japan, Dec. 8, 1986, 61-29186; Apr. 23, 1987, 62-100782; Apr. 23, 1987, 62-100783; Sep. 3, 1987, 62-220772; Sep. 14, 1987, 62-230715

The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—99 29 Claims



1. A laser apparatus comprising:

means for producing a laser beam; and

an unstable resonator including a beam expanding mirror formed on a convex or concave window mirror,

said beam expanding mirror having a partial transmissivity of at least 5%,

a collimating mirror disposed in facing relation to said expanding mirror, said expanding mirror enlarging said laser beam and reflecting said enlarged beam to said collimating mirror thereafter,

said collimating mirror reflecting said beam back to said expanding mirror and an annular area of said window mirror surrounding said expanding mirror; and

means for allowing portions of said laser beam to transmit through said expanding mirror and said annular area,

said allowing means also cancelling out phase differences between said portions of said laser beam.

5,058,124

SEMICONDUCTOR DEVICE AND PIEZOELECTRIC STACK OPTICAL MOUNTING ASSEMBLY

Keith H. Cameron; Richard Wyatt, both of Felixstowe; John Mellis, Colchester; Salah A. Al-Chalabi, and Michael C. Brain, both of Ipswich, all of England, assignors to British Telecommunications public limited company, England

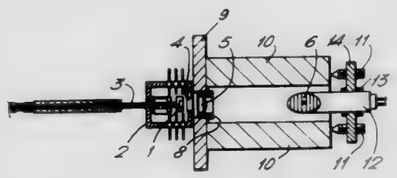
PCT No. PCT/GB89/00324, § 371 Date Oct. 23, 1989, § 102(e) Date Oct. 23, 1989, PCT Pub. No. WO89/09503, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 29, 1989, Ser. No. 424,284

Claims priority, application United Kingdom, Mar. 29, 1988, 8807385

Int. Cl.[5] H01S *3/101*

U.S. Cl. 372—107 **15 Claims**



1. A device assembly comprising:

a light emitting element emitting a light,

an optical processing element, and

means for mounting the optical processing element in a spaced relationship to the light emitting element so as to intercept said beam,

the light emitting element being disposed within a hermetically sealed package having a transparent portion for the passage of light to said optical processing element disposed outside the hermetically sealed package,

wherein said mounting means comprises a plurality of piezoelectric stacks arranged between said light emitting element and said optical processing element such that selective elongation and/or contraction of the piezoelectric stacks provides rotational and translational movement of the optical processing element thereby modifying said spaced relationship.

5,058,125

LASER OSCILLATOR

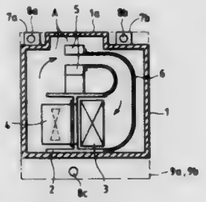
Akihiro Otani, and Shuji Ogawa, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Aug. 28, 1990, Ser. No. 573,757

Claims priority, application Japan, Sep. 1, 1989, 1-226737

Int. Cl.[5] H01S *3/03*

U.S. Cl. 372—109 **2 Claims**



1. A laser oscillator comprising:

a pair of spaced apart supporting members to which a total reflection mirror and a half reflection mirror are respectively disposed such that said reflection mirrors are arranged in parallel with each other;

a plurality of guide bars extending between and supporting said pair of spaced apart supporting members; and

a vacuum vessel, in which a laser medium gas is sealed, disposed between said pair of spaced apart supporting members, said vacuum vessel including an upper plate having a plurality of brackets fixed to an outer surface thereof, each of said brackets being attached to a corresponding guide bar;

wherein said vacuum vessel contains first and second electrodes facing to each other and means for circulating said laser medium gas flowing through a gap between said first and second electrodes, said upper plate of said vacuum vessel having a projected portion thereby forming a space to accommodate one of said first and second electrodes therein at a prescribed insulation distance from an inner surface of said projected portion, said projected portion being disposed between said brackets fixed to the outer surface of said upper plate.

5,058,126

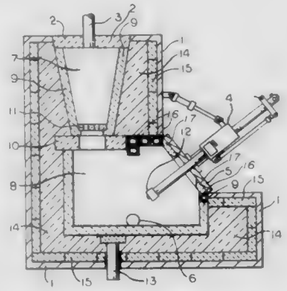
SILICON CARBIDE BEAM AS REFRACTORY IN AN OPEN-ARC FURNACE

Vishu D. Dosaj, 705 Sylvan La., Midland, Mich. 48640

Filed Aug. 31, 1989, Ser. No. 401,601

Int. Cl.[5] F27D *1/00*

U.S. Cl. 373—18 **18 Claims**



10. A two-stage, open-arc, furnace for the carbothermic production of silicon metal, the furnace comprising:

(A) a furnace body, the furnace body being a substantially closed vessel, defining a reaction zone for containing solid reactants and molten silicon;

(B) an energy source, the energy source being fit into the furnace body through a first opening in the furnace body;

(C) an anode for the energy source, the anode being positioned within the furnace body;

(D) a shaft suitable for containing solid particulates and suitable for passing gases from the furnace body through the shaft, the shaft being attached to the top of the furnace body at a second opening in the furnace body;

(E) means for supporting solid particulates, the means for supporting solid particulates being positioned at the bottom of the shaft, the means for supporting solid particulates being capable of allowing gas to pass from the furnace body up through the shaft;

(F) a silicon carbide beam, the silicon carbide beam being used as a first refractory material in high temperature exposed areas of the furnace body, said exposed areas requiring resistance to reductive and oxidative processes, and sufficient electrical resistance to prevent arcing from the energy source; and

(G) means for collecting molten silicon, the means being implemented at a third opening in the furnace body, the opening being in the lower portion of the furnace body.

5,058,127

BOTTOM DISCHARGE COLD CRUCIBLE

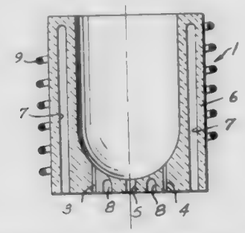
Marcel Garnier, St. Martin d'Uriage; Isabelle Gleizes, St. Martin d'Hères; Patrick Paillere, Ugine, and Pierre Vernay, Meylan, all of France, assignors to Compagnie Europeenne du Zirconium Cezus, Courbevoie, France

Filed Apr. 16, 1990, Ser. No. 509,189

Claims priority, application France, May 19, 1989, 89 07027

Int. Cl.[5] H05B *6/22*

U.S. Cl. 373—157 **3 Claims**



1. A bottom discharge induction heated crucible formed by a conductive wall (6) consisting of a plurality of longitudinal hollow segments which are at least partially insulated electrically from one another, transversed internally by a cooling fluid and adapted to be placed inside an inductor and in which the said wall is provided in its bottom part with an aperture (3) wherein inside the said aperture is positioned a downwardly removable segmental and cooled occluding means (4) said removable segmental and cooled occluding means including upwardly conical walls and the said plurality of longitudinal hollow segments being upwardly conical.

5,058,128

SPREAD SPECTRUM COMMUNICATION RECEIVER

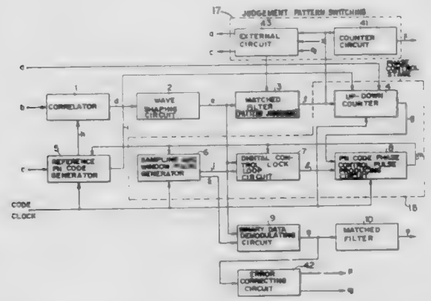
Takao Kurihara, and Masahiro Hamatsu, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1990, Ser. No. 485,471

Claims priority, application Japan, Feb. 28, 1989, 1-46855; Feb. 28, 1989, 1-46856; Mar. 1, 1989, 1-49510

Int. Cl.[5] H04L *27/30, 7/00*

U.S. Cl. 375—1 **20 Claims**



1. A spread spectrum communication receiver, comprising:

a reference pseudo noise code generator generating a reference pseudo noise code;

correlating means for obtaining the correlation between a received pseudo noise code included in a received signal and said reference pseudo noise code;

a demodulator responsive to an output of said correlating means for restoring information embodied in said received signal;

pattern judging means for comparing the output of said correlating means with a predetermined first judgment pattern and for producing a detection output when they are in accordance with each other;

means for switching from said first judgment pattern to a second judgment pattern different from said first judgment pattern when said detection output is not obtained in a predetermined period of time; and

phase control means for controlling the phase of said reference pseudo noise code on the basis of said detection output to set correctly the phase thereof at which said received pseudo noise code and said reference pseudo noise code are in accordance with each other.

5,058,129

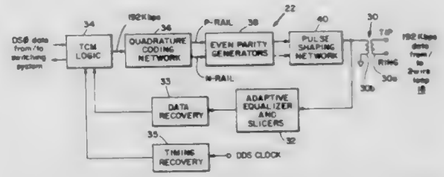
TWO-WIRE DIGITAL TRANSMISSION LOOP

Dev V. Gupta, Flemington, and Kyung-Yeop Hong, Somerville, both of N.J., assignors to Integrated Network Corporation, Bridgewater, N.J.

Filed Oct. 11, 1989, Ser. No. 419,839

Int. Cl.[5] H04B *1/48*

U.S. Cl. 375—7 **15 Claims**



4. A method of data communication between a four-wire service customer location with a slave interface circuit and a two-wire service central office location with a master interface circuit coupled by said two-wire service to said slave circuit, comprising the steps of:

a) encoding an original bit stream of baseband PCM data for transmission from said master circuit to said slave circuit over said two wires during a first time interval T1 by:

(i) dividing said original bit stream into a P-Rail bit stream and an N-rail bit stream in which the P-Rail bit stream comprises every other bit from said original bit stream and the N-rail bit stream comprises the remaining bits from said original bit stream and wherein one of said rail bit streams is phase shifted by $n\theta$ degrees wherein θ equals 90° and n is an odd integer;

(ii) linearly combining the N-rail stream and P-Rail stream;

(iii) transmitting the combined stream to the slave interface circuit during said time interval T1;

(b) receiving said combined bit stream at said slave circuit during time interval T1; and

(iv) sampling the transmitted combined stream at sample points wherein components of said N-rail stream are at a minimum value when said P-Rail stream is sampled and wherein components of said P-Rail stream are at a minimum value when said N-Rail stream is sampled;

(c) after a predetermined time interval T2, encoding an original bit stream of baseband PCM data for transmission from said slave circuit to said master circuit over said two wires during a third time interval T3 by:

(i) dividing said bit stream into a P-Rail bit stream and an N-rail bit stream in which the P-Rail bit stream comprises every other bit from the original bit stream and N-rail bit stream comprises the remaining bits from said original bit stream and wherein one of said rail bit streams is phase shifted by $n\theta$ degrees wherein n is an odd integer and θ equals 90°;

(ii) linearly combining the N-rail stream and P-Rail stream; and

(iii) transmitting the combined stream to the master interface circuit during said third time interval T3.

5,058,130

JITTER EQUALIZER FOR DIGITAL TRANSMISSION FILTER

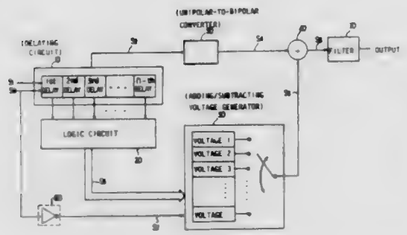
Il-Kun Park, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyung, Rep. of Korea

Filed Dec. 27, 1989, Ser. No. 457,568

Claims priority, application Rep. of Korea, Jul. 31, 1989, 10858/1989

Int. Cl.[5] H04B *3/04*

U.S. Cl. 375—12 **14 Claims**



1. An equalizer for equalizing jitter, overshoot and undershoot in the amplitude of a transmission signal input for a digital transmission filter, comprising:

delay means having a plurality of delay elements, for synchronizing a random non-return-to-zero (NRZ) input data signal input thereto with a basic clock signal input thereto to produce a delayed input data signal which is delayed by a predetermined number of data bits, and for outputting a plurality of data bits of a data stream, each of said data bits respectively corresponding to one of said plurality of delay elements;

logic circuit means coupled with outputs of said delay means and receiving said output data stream therefrom, for producing a plurality of control voltage signals corresponding to patterns of logic symbols of said input data signal from said plurality of bits of said data stream, said plurality of voltage control signals designating information as to how much said delayed input data signal will be distorted by data signals adjacent thereto upon passing through a digital transmission filter;

adding and subtracting voltage generator means coupled to an output of said logic circuit means, for outputting a given level of an adding or subtracting voltage in response to said plurality of voltage control signals from said logic circuit means under the control of a time control signal applied thereto;

unipolar-to-bipolar converter means coupled to said delay means, for converting said delayed input data signal from a unipolar input data signal to a bipolar input data signal; and

adder means coupled to respective outputs of said unipolar-to-bipolar converter means and said adding and subtracting voltage generator means, for adding said bipolar input data signal to said given level of adding or subtracting voltage, the added output of said adder means compensating for an amount of signal distortion which will arise in an output waveform of a digital transmission filter due to the influence of pulse tails of data signals adjacent to said input data signal when said bipolar input data signal passes through said filter.

5,058,131

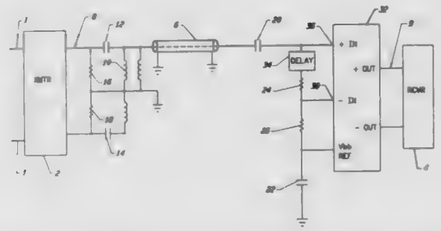
TRANSMITTING HIGH-BANDWIDTH SIGNALS ON COAXIAL CABLE

Charles P. Thacker, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 306,332, Feb. 3, 1989, abandoned. This application Mar. 27, 1990, Ser. No. 500,214

Int. Cl.[5] H04L *25/02*

U.S. Cl. 375—36 **12 Claims**



1. Apparatus for accurately transmitting binary data over a high speed serial link having a receiving terminal and a sending terminal, wherein said binary data comprises a sequence of bits representing a value selected from a set of values consisting of a first value and a second value, said apparatus comprising:

means for encoding said binary data into a serial pulse signals, wherein bits in said binary data representing said first value are encoded as a voltage transition in said serial pulse signals and bits in said binary data representing said second value are encoded as a stable voltage level in said serial pulse signals;

means for transmitting said serial pulse signals;

means for coupling said transmitted serial pulse signals to said receiving terminal of said link so that said transmitted serial pulse signals can be received at said sending terminal of said link;

delay means for delaying received serial signal pulses at said sending terminal of said link for a fixed period of time in such a way so that, corresponding to each transition of said encoded binary data, there is a signal crossing point between said received serial pulse signals and said time delayed received serial pulse signals; and

detecting means for detecting said signal crossing point between said received serial pulse signals and said time delayed received serial pulse signals.

5,058,132

CLOCK DISTRIBUTION SYSTEM AND TECHNIQUE

Gabriel M. Li, San Francisco, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 26, 1989, Ser. No. 427,794

Int. Cl.[5] H04L *27/28, 5/12*

U.S. Cl. 375—38 **68 Claims**

1. A system for sequentially distributing multiple bits of data in parallel to a plurality of receivers comprising:

master clock means for generating a master clock signal having a first frequency;

means for transmitting the master clock signal to at least first and second receivers;

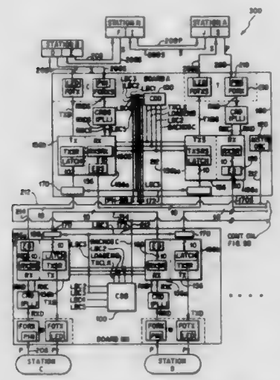
means at the first and second receivers for generating a second clock signal having a second frequency using the master clock signal transmitted to the first and second receivers;

means at the first and the second receivers for generating a plurality of phase separated clock signals using the second clock signal wherein each of the phase separated clock signals has a frequency associated therewith;

means for receiving multiple serial data bits at the first receiver and for storing the serial data bits in a first storage means;

means for transferring the serial data bits stored in the first storage means in parallel to the second receiver;

means for storing the transferred data bits in a second storage means; and



means for reading out the data bits stored in the second storage means in series using the second clock signal generated on the second receiver.

5,058,133

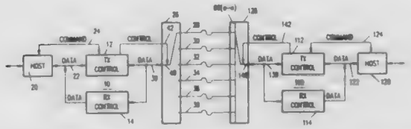
METHOD AND APPARATUS FOR DIGITAL COMMUNICATION

Jay P. Duncanson, San Francisco, and Stephen J. Speckenbach, Oakland, both of Calif., assignors to Ascend Communications, Inc., San Francisco, Calif.

Filed Aug. 10, 1990, Ser. No. 566,221

Int. Cl.[5] H04L *29/04*

U.S. Cl. 375—38 **7 Claims**



1. In a digital data communication system for transmitting and receiving a single digital data stream between a first unit at a first location and a substantially like second unit at a second location, separated by a plurality of channels, wherein said first unit has means for receiving the single digital data stream, means for transmitting said single digital data stream by cyclically distributing the single digital data stream along the plurality of channels in the same order in each cycle, with each of said plurality of channels subject to different delays, and wherein said second unit has means for receiving the data from each of said channels, means for reconstituting the data received from said plurality of channels into the transmitted single digital data stream, wherein said reconstituting means further comprising:

means for cyclically recombining the plurality of said data streams, in the same order in each cycle, into a single receiving data stream, but without regard to the order of the initial cycle of recombination;

a first counter means for cyclically generating a first counter output signal;

a first memory means having a plurality of storage locations, address input, data input, and data output;

means for supplying said single receiving data stream to the address input of said first memory means;

means for supplying said first counter output signal to the data input of said first memory means for storage therein;

a second counter means for generating a second counter output signal;

a second memory means having a plurality of storage locations, address input, data input and data output;

means for supplying said first counter output signal to the address input of said second memory means;

means for supplying the single receiving data stream to the data input of said second memory means for storage therein;

means for supplying said second counter output signal to the address input of said first memory means; and

means for supplying the data from said first memory means along its data output to the address input of said second memory means with the data from the data output of the second memory means being the output of said apparatus in the same order as the data of the single transmitting data stream.

5,058,134

PROCESS OF SYNCHRONIZING A RECEIVING MODEM AFTER A TRAINING ON DATA

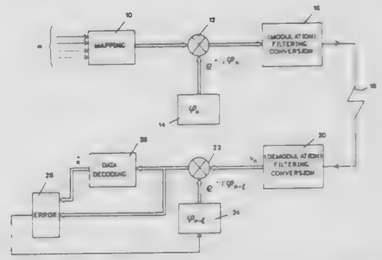
Pierre R. Chevillat, Kilchberg; Evangelos Eleftheriou, Zurich; Dietrich G. U. Maidwald, Wädenswil, all of Switzerland, and Michel Quintin, La Gaude, France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 24, 1989, Ser. No. 397,949

Claims priority, application France, Jul. 12, 1989, 89 480107

Int. Cl.[5] H03C *5/00;* **H03D** *5/00*

U.S. Cl. 375—39 **2 Claims**



2. In a data transmission system wherein a transmitting modem transmits data signals to a receiving modem via a telephone line, said transmitting modem including mapping means for transforming at each baud time a group of data bits into a point of a constellation defined by an amplitude and a phase in the complex plane, and analog transforming means for transforming the coordinates of said point to analog signals to be transmitted over said telephone line, said receiving modem including digital transforming means or transforming the analog signals from the telephone line into a point defined by an amplitude and a phase in the complex plane, and decoding means for determining an estimated point in said constellation corresponding to the point provided by said digital transforming means, a synchronization system characterized in that it comprises:

enphasing means in said transmitting modem, for adding, at said each baud time, a predetermined phase value supplied by a predetermined sequence of phase values, to the phase of said point of a constellation as provided by said mapping means;

dephasing means in said receiving modem for subtracting, at said each baud time, said predetermined phase value supplied by a predetermined sequence of phase values from said phase of said point provided by said digital transforming means;

error calculation means for determining the mean-squared difference error between said point resulting from said

dephasing predetermined, and said estimated point of said constellation; and

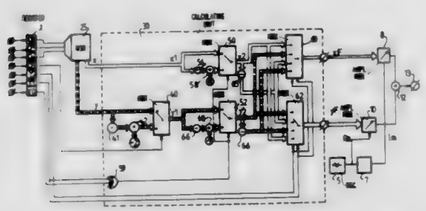
control means responsive to said mean-squared error, said control means being connected to said dephasing means values to reduce subsequent said errors to a minimum compatible with the modem operation, thereby synchronizing the data received by said receiving modem with respect to the data transmitted by said transmitting modem.

5,058,135

MODULATING ARRANGEMENT FOR PHASE AND AMPLITUDE MODULATION OF A WAVE

Khamphoc Daulasim, Longjumeau, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Jul. 19, 1989, Ser. No. 382,608
Claims priority, application France, Jul. 22, 1988, 88 09952
Int. Cl.[5] H03D *5/00;* **H03K** *7/10*
U.S. Cl. 375—42 **9 Claims**



1. An arrangement for phase and amplitude modulation of a wave comprising an input for receiving groups of n bits, a phase-shifting circuit for producing two components of said wave shifted in phase with respect to each other, a modulating means for modulating the amplitude of the two components, respectively, with a pair of final amplitude values (xF,yF) corresponding to coordinates of a point selected from a transmission constellation of spaced apart points as a function of the values of bits of said groups and means for combining said two amplitude modulated components, wherein the modulating means comprises storage means for storing initial amplitude values corresponding to coordinates of points in a stored constellation, said storage means being addressed by k of the n bits of the bit groups, where $k<n$, for reading from said storage means an initial pair of amplitude values (x,y), and calculating means for producing the final pair of amplitude values from the initial pair of amplitude values as a function of the values of the other $n-k$ of the n bits of the bit groups, said calculating means comprising a plurality of sequential calculating blocks, at least one of said calculating blocks comprising means for selectively arithmetically combining, by addition or subtraction, an amplitude value input to said calculating block with a constant having an absolute value equal to a component, along a coordinate, of a distance between said initial point and another point in the transmission constellation not coinciding with the initial point to form an amplitude value output from said calculating block.

5,058,136

COHERENT DETECTION FOR QPSK MODULATION

Henry L. Kazecki, Arlington Heights; Donald W. Dennis, Schaumburg, and Steven H. Goode, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1990, Ser. No. 628,977
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—86 **12 Claims**

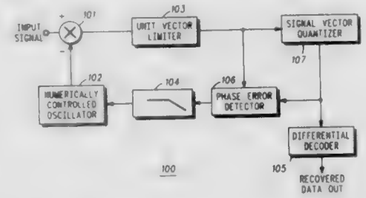
1. A coherent detector apparatus having a vector input that has been data modulated and a recovered data output, the apparatus comprising:

a) multiplying means having an output and a first and second input, the vector input coupled to the first input;

b) vector limiting means, coupled to the output of the multiplying means, for limiting the vector input to unity;

c) signal vector quantizing means, coupled to the output of the vector limiting means, for generating a quantized received signal vector;

d) phase error detection means, coupled to the vector limiting means and the signal vector quantizing means, for generating a phase error signal;



e) controllable oscillator means, having an input coupled to the phase error detection means and an output coupled to the second input of the multiplying means, the controllable oscillator means generating a variable frequency signal in response to the phase error signal; and

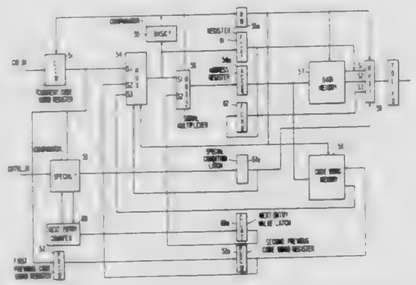
f) decoding means, having an input coupled to the signal vector quantizing means and an output coupled to the recovered data output, for decoding the quantized received signal vector into data bits.

5,058,137

LEMPEL-ZIV DECODER

Imran A. Shah, North White Plains, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jul. 31, 1989, Ser. No. 388,283
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **6 Claims**



1. A decoder for decoding Lempel-Ziv encoded data, comprising;

memory means for storing code words and data corresponding to the stored code words;

means for receiving and for storing a code word to be decoded;

means for storing data elements read out from said memory means during decoding; and

means for applying said code word to be decoded to said memory means for reading out a data element, and a prefix coded as another code word, and supplying said data element to said means for storing; and for applying said another code word to said memory means, for reading out a further data element and a successive code word, supplying said further data element to said means for storing, and applying each successive code word read out from said memory means to said memory means until the stored code word is decoded,

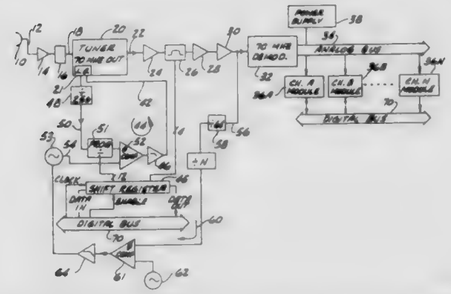
said means for applying comprising a multiplexer having an input for receiving the stored code word to be decoded and having another input for receiving a latest code word read out from said memory means.

5,058,138

MODULAR RECEIVER FOR SIGNALS HAVING MULTIPLE CHANNELS AND MULTIPLE FORMATS

John A. Figura, St. Peters, Harry Eidelman, St. Louis, both of Mo., assignor to Pacesetter Electronics, Inc., St. Louis, Mo.

Filed Jan. 16, 1990, Ser. No. 464,968
Int. Cl.[5] H04B *1/16, 1/50*
U.S. Cl. 375—88 **34 Claims**



16. An apparatus for receiving a selected channel of a signal having a plurality of channels, each channel having a plurality of subchannels, the apparatus comprising:

means for receiving the signal;

means for detecting the selected channel in the received signal and providing a detected signal corresponding to the selected channel;

means for demodulating the detected signal into a baseband signal corresponding to the selected channel, the baseband signal being modulated with the subchannels of the selected channel;

an analog bus connected to the demodulating means for providing the baseband signal; and

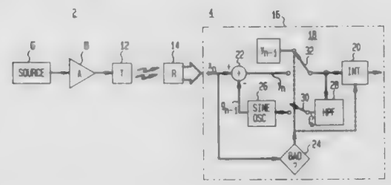
a chassis connected to the analog bus and having a plurality of slots, each slot for receiving a module to which the baseband signal is supplied, each module for demodulating a subchannel of the baseband signal and providing a signal representative of the subchannel.

5,058,139

NOTCH FILTER FOR DIGITAL TRANSMISSION SYSTEM

Mark S. Egler, Cambridge, Mass., assignor to Siemens Medical Electronics, Inc., Danvers, Mass.

Filed Aug. 10, 1990, Ser. No. 565,546
Int. Cl.[5] H04B *1/10*
U.S. Cl. 375—103 **16 Claims**



15. A receiver for receiving an information signal including digital information samples which are contaminated with an interference component having known frequency characteristics, comprising:

receiving means for receiving and processing said information signal and providing a received signal including digital information samples contaminated with said interference component;

identification means responsive to said received signal for analyzing said received signal and providing an identification signal in response to identification of an incorrect sample in said received signal;

filter means responsive to said received signal for filtering said interference component from said received signal, said filter means including a generator means controlled in response to at least a portion of said received signal for generating an output signal having the known frequency characteristics of said interference component and an amplitude and phase controlled by said portion of the received signal so as to track the amplitude and phase of interference component, control of said generator in response to at least a portion of said received signal being disabled by said identification signal, and means for combining said generator output signal with said received signal for generating a filtered output signal; and

interpolator means responsive to said filtered output signal for generating interpolated digital information samples as replacements in said filtered output signal for digital information samples identified as incorrect.

5,058,140

SELF-CORRECTING SERIAL BAUD/BIT ALIGNMENT

Mark A. Johnson, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1990, Ser. No. 491,918
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—110 **9 Claims**



1. In a serial data communications system wherein a data record is transmitted as a serial data stream from a transmitting device through a communications medium to a receiving device which includes a universal asynchronous/synchronous receiver/transmitter (USART) unit that receives said serial data stream and change it into a parallel data stream and change it into a parallel data stream and forward said data to a subsystem of said receiving device, a circuit arrangement positioned in said USART for synchronizing said receiver to the bit cell boundaries of received data streams comprising:

a first circuit means for generating clock pulses with a predetermined frequency;

a second circuit means responsive to the clock pulses for aligning said clock pulses with the serial data record and outputting pulses D_R;

delay means for delaying D_R and generating pulses B_R;

a third circuit means for correlating D_R and B_R and outputting a control signal;

a synchronizing latch means having an input signal terminal,

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a clocked terminal coupled to the first circuit means, a positive and a negative output; and

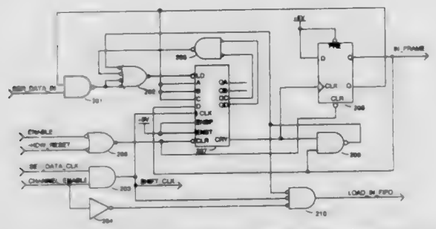
a fourth circuit means having an output coupled to the signal terminal, a first input coupled to the third circuit means and a second input coupled to the negative output of the synchronizing latch means.

5,058,141

SINGLE CIRCUIT FOR DETECTING A FRAME SYNCHRONIZATION PATTERN AND GENERATING CONTROL SIGNALS

Han Kem, Glendale, and John S. Young, Scottsdale, both of Ariz., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Mar. 1, 1990, Ser. No. 486,680
Int. Cl.[5] H04L *7/04*
U.S. Cl. 375—116 **11 Claims**



1. A single circuit for detecting a synchronization pattern in a serial data stream, subsequent to detecting said synchronization pattern, said single circuit generates a plurality of signals, said plurality of signals includes a SHIFT_CLOCK signal for shifting data from said serial data stream in into a serial-to-parallel converter, an IN_FRAME signal for signalling that said single circuit detected said synchronization pattern, and LOAD signal for transferring data from said serial-to-parallel converter to a memory means, said LOAD signal is generated each time said serial-to-parallel converter has captured a predetermined number of data bit from said serial data stream, said single circuit receives a reset signal, said single circuit comprising:

control means arranged to receive said serial data stream, said control means generates said SHIFT_CLOCK signal;

detector means connected to said control means, said detector means arranged to detect said synchronization pattern, subsequent to detecting said synchronization pattern said detector means generates said LOAD signal; and

indicator means connected to said detector means, said indicator means arranged to generate said IN_FRAME signal after said detector means detects said synchronization pattern.

5,058,142

CLOCK EXTRACTING CIRCUIT IN DIGITAL-LINE SIGNAL RECEIVER

Eiji Otsuka, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

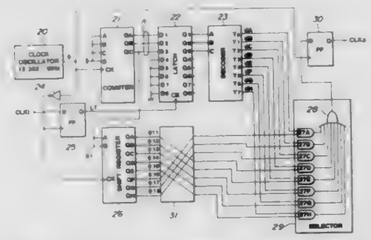
Filed Mar. 30, 1990, Ser. No. 501,925
Claims priority, application Japan, Mar. 31, 1989, 1-82779
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—118 **10 Claims**

1. A clock extractor in a digital line signal receiving circuit for generating a clock signal for sampling of a data signal received from a digital line on the basis of a separation clock having a period corresponding to a data communication rate of a data to be separated from the received data signal, said clock extractor comprising:

oscillation means for generating an original clock signal having a period corresponding to n times the period corresponding to said data communication rate, where n is an integer satisfying $n \geqq 2$;

frequency division means for dividing said original clock signal generated at said oscillation means to generate a clock signal having a period corresponding to the data communication rate;

delay means for sequentially delaying the clock signal generated at said frequency division means on the basis of said original clock signal to generate a plurality of delay clock



signals having phases mutually different by an amount corresponding to one period of said original clock signal;

detection means for detecting whether the separation clock has risen from a "low" level to a "high" level upon a falling edge of said original clock signal; and

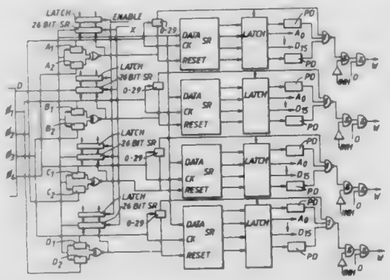
selection means for selecting one of said plurality of delay clock signals generated at said delay means in accordance with detection timing of said detection means and for outputting the selected delay clock signal as the clock signal for sampling of the data of the received data signal.

5,058,143

DIGITAL COMMUNICATIONS SYSTEMS

Alan Messenger, Cumbria, England, assignor to British Aerospace Public Limited Company, London, England

Filed Oct. 5, 1989, Ser. No. 416,789
Claims priority, application United Kingdom, Oct. 5, 1988, 8823336
Int. Cl.[5] H04L *7/02*
U.S. Cl. 375—118 **2 Claims**



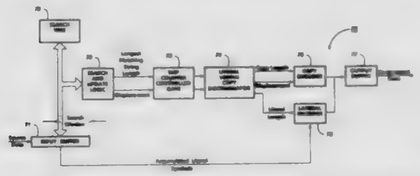
1. An asynchronous communications device including a dual port memory, means for inputting data into the dual port memory, means for outputting data from the dual port memory, clock means, having a clock frequency of 80 MHz used for the operation of the device, wherein a 40 MHz clock signal is used to derive the 80 MHz clock frequency, the 80 MHz frequency being formed by four 20 MHz clock frequencies arranged with their rising edges 90° out of phase, the device being configured to operate in a receive mode in which it receives information, or a transmit mode, in which it transmits information, according to its connection in a communications system.

5,058,144

SEARCH TREE DATA STRUCTURE ENCODING FOR TEXTUAL SUBSTITUTION DATA COMPRESSION SYSTEMS

Edward R. Fiala, and Daniel H. Greene, both of Sunnyvale, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 187,699, Apr. 29, 1988, abandoned. This application Aug. 16, 1989, Ser. No. 395,163
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **3 Claims**



1. In a textual substitution data compression system having a compressor and an expander, the improvement in said compressor comprising

buffer memory means for serially receiving source symbols and for providing first in/first out storage for a finite number of said source symbols, a portion of said buffer memory means defining a finite length search window;

logic means coupled to said buffer memory means for constructing and maintaining a search tree organized data structure which links the source symbols within said search window in accordance with their order of occurrence to produce symbol strings and for tracking displacements of said symbol strings within said search window in accordance with a most recent occurrence criterion; said logic means having a test mode for testing source symbols just prior to their entry into said search window against said data structure to determine whether said search window contains any matching symbols and an extend mode for evaluating the displacement and length of the longest symbol string within said search window which matches any matched symbol and the symbols following it;

encoding means coupled to said logic means for encoding matched symbol strings composed of at least a minimum plural number of source symbols as copy codewords specifying the displacement and the length of the matching symbol string and for encoding all other symbols as literal codewords specifying the symbols, thereby enabling said expander to maintain an updated replica of said search tree organized data structure; said minimum number of source symbols varying as a function of a predefined state of said encoding means.

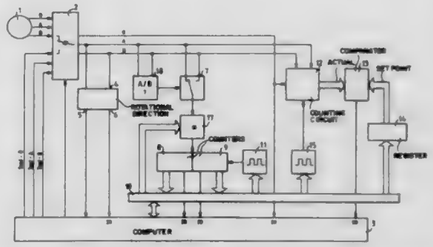
5,058,145

SYSTEM FOR DETERMINING THE POSITION OF MOVABLE MACHINE PARTS

Dieter Hauck, Eberbach; Karl-Heniz May, Viernheim; Hans Müller, Sandhausen, and Jürgen Rehberger, Dossenheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed May 8, 1989, Ser. No. 348,986
Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815534
Int. Cl.[5] H03K *21/40, 21/02;* **H03M** *1/30;* **G01P** *3/44*
U.S. Cl. 377—17 **7 Claims**

1. System for determining the position of movable machine parts, including an incremental pulse generator for generating two concurrent trains of angular-speed pulses shifted 90° out of phase with one another and a pulse per revolution, comprising a computer, and at least one counting circuit via which the incremental pulse generator is connected to said computer for counting the generated angular-speed pulses, including a comparator having respective inputs connected to an output of said counting circuit for receiving a count signal therefrom, and to an output of said computer for receiving a given value signal therefrom, said comparator having an output connected to



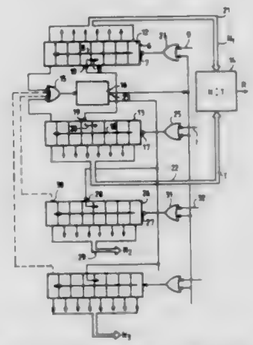
another input of said computer for feeding a program-interrupt signal thereto.

5,058,146

DIGITAL COMPARATOR, DIGITAL RATIOMETER AND AMPLITUDE ANALYZER INCORPORATING SUCH RATIOMETERS

Marc Dupoy, Paris, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 24, 1989, Ser. No. 301,323
Claims priority, application France, Feb. 2, 1988, 88 01192
Int. Cl.[5] H03K *21/38;* **G11C** *15/00*
U.S. Cl. 377—39 **11 Claims**

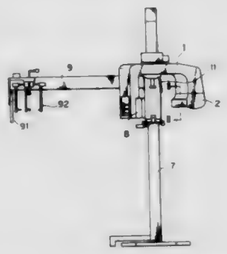


1. A digital comparator including a first register having a counting input adapted to receive and to count the pulses of a first pulse-type signal representing a fixed or evolutionary quantity and a shift to the right input for carrying out a division of the number (N) of counted pulses, comprising a second register, identical to the first, for receiving a second pulse-type signal representing a second fixed or evolutionary quantity, means for detecting the filling of one of the two registers, said means for detecting being connected to said two registers and means for at the same time carrying out the shift to the right of said two registers at the moment that said registers are filled, said means for carrying out being connected to said means for detecting.

5,058,147
DENTAL PANORAMIC/CEPHALO X-RAY PHOTOGRAPHING DEVICE

Kazuo Nishikawa; Kozo Nakano; Keisuke Mori, and Takahiro Yoshimura, all of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation-in-part of Ser. No. 404,673, Sep. 8, 1989, abandoned. This application Jun. 25, 1990, Ser. No. 543,154
Claims priority, application Japan, Sep. 13, 1988, 63-119939
Int. Cl.[5] A61B *6/14*
U.S. Cl. 378—38 **8 Claims**



1. A dental panoramic/cephalo X-ray photographing device comprising:
- a stay,
- an arm support member disposed on the stay,
- a horizontal rotary arm supported rotatably in the horizontal direction by the support arm,
- an X-ray generator,
- a means for supporting said X-ray generator at one end of said rotary arm such that said X-ray generator is rotatable in a direction suitable for panoramic or cephalo photographing,
- a panoramic film cassette supported at the other end of said rotary arm,
- a support horizontally extended from the stay,
- a cephalo photographing film cassette disposed at the front end of the support, and
- a photographing mode selection means for generating photographing mode selection signals to selectively overlap irradiation openings of an X-ray iris means and change the direction of said X-ray generator,

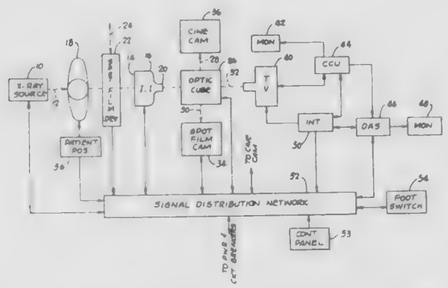
said dental panoramic/cephalo X-ray photographing device being characterized in that:
- the X-ray irradiation axis of said X-ray generator can be rotated horizontally by an electric drive means so that said X-ray generator can be directed to the panoramic photographing film cassette or the cephalo photographing film cassette, and
- the direction change of said X-ray generator, the position setting of said horizontal rotary arm and the movement of said X-ray irradiation openings are done automatically in response to said photographing mode selection signals.

5,058,148
TELEVISION CAMERA CONTROL IN RADIATION IMAGING

Leonard F. Plut, Willowick, and David Nicolay, Fairview Park, both of Ohio, assignors to Picker International, Inc., Cleveland, Ohio

Continuation of Ser. No. 50,727, May 15, 1987, Pat. No. 4,802,002. This application Jul. 18, 1988, Ser. No. 220,508
The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.
Int. Cl.[5] H05G *1/64*
U.S. Cl. 378—99 **3 Claims**

1. A medical diagnostic x-ray television imaging system employing a television chain, said system comprising:
- a) a source for propagating x-rays along a path;
- means being responsive to x-radiation incident thereon to produce a visible light image corresponding to said incident x-radiation;
- c) a video camera positionable to view said visible light image and having a target and means for scanning said target for producing a video signal representing a viewed portion of said visible light image along with synchronization signals;
- d) a monitor coupled to receive said video and synchronization signals for producing a television image corresponding to said visible right image;

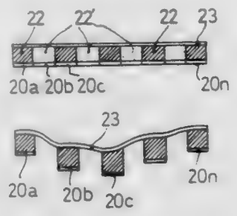


- e) circuitry associated with said video camera for controlling said video camera scan at a selected one of a plurality of scan line rates, and
- f) circuitry coupled to said camera and to said scanning rate control means for suppressing transmission of said video signal from said camera to said monitor subsequent to generation of said video signal in response to the selection of at least one of said predetermined scan line rates, and for transmitting said video signals from said camera to said monitor in response to selection of another of said plurality of scan line rates.

5,058,149
EQUIPMENT FOR SLIT RADIOGRAPHY

Hugo Vlasbloem, Maasland, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", Delft, Netherlands

PCT No. PCT/EP88/00784, § 371 Date Feb. 27, 1990, § 102(e) Date Feb. 27, 1990, PCT Pub. No. WO89/02645, PCT Pub. Date Mar. 23, 1989
PCT Filed Aug. 24, 1988, Ser. No. 466,343
Claims priority, application Netherlands, Sep. 7, 1987, 8702113
Int. Cl.[5] G21K *1/02, 1/04*
U.S. Cl. 378—146 **20 Claims**

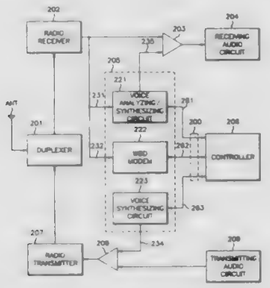


1. A slit radiographic assembly comprising:
- an X-ray source for scanning a body under examination with a fan-shaped X-ray beam via a slit of a slit-type diaphragm to form an X-ray shadow image;
- an X-ray detector for receiving X-ray radiation transmitted through said body;
- detection means for delivering continuously, per sector of the fan-shaped X-ray beam, a signal measuring quantity of X-ray radiation instantaneously transmitted per sector through said body under examination;
- control means forming control signals based on said signals from said detection means; and
- an attenuation device operating in conjuction with said slit-type diaphragm for regulating the quantity of X-ray radiation transmitted under the control of the control signals per sector of said fan-shaped X-ray beam, said attenuation device comprising absorption elements and an elastic strip of X-ray radiation-absorbing material extending in a rest position parallel to said slit of said slit diaphragm and mounted on drive members.

5,058,150
AUTOMATIC ANSWERING METHOD FOR A VEHICLE RADIO-TELEPHONE AND DEVICE THEREFOR

Seo-Won Kang, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 25, 1989, Ser. No. 356,699
Claims priority, application Rep. of Korea, Feb. 28, 1989, 1989-2473
Int. Cl.[5] H04M *1/64, 11/00*
U.S. Cl. 379—58 **11 Claims**

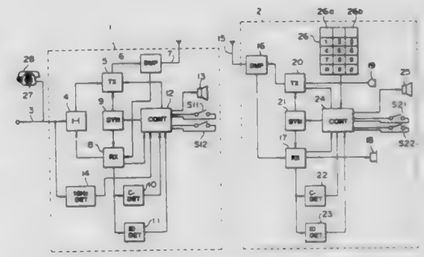


10. In an automatic answering device for a vehicle radiotelephone, said automatic answering device having a user-operable controller means for selecting one of a selectable first answering message mode for informing a caller of a called party's absence and of a telephone number at which the called party may be called, a selectable second answering message mode for informing the caller of the called party's absence and requesting the caller to successively input dual-tone multifrequency (DTMF) key signals representing the caller's telephone number followed by a first DTMF key signal for recording the caller's telephone number, and a third selectable answering message mode for informing the caller of the called party's absence and requesting the caller to input a second DTMF key signal for permitting the caller to leave a voice message, the control method for establishing one of said first through third selectable answering message modes, comprising the steps of:
- checking for the presence of a command for establishing any of said first through third answering message modes;
- in the presence of a command for establishing an answering message mode, inputting to said controller means a message mode selection key signal for identifying one of said first through third answering message modes;
- when said message mode selection key signal identifies said first answering message mode, checking for the presence of a recorded called party telephone number and, if same is present, establishing said first answering message mode;
- when said message mode selection key signal identifies said second answering message mode, establishing said second answering message mode; and
- when said message mode selection key signal identifies said third answering message mode, establishing said third answering message mode.

5,058,151
MULTI-USER CORDLESS TELEPHONE CAPABLE OF DISCERNIBLY NOTIFYING EACH USER

Masayuki Tanaka, Kokubunji, and Koichi Ito, Hino, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 1, 1989, Ser. No. 388,036
Claims priority, application Japan, Aug. 4, 1988, 63-194849
Int. Cl.[5] H04M *11/02*
U.S. Cl. 379—61 **15 Claims**



1. A cordless telephone system comprising:
- a base unit connected to a subscriber line;
- a radio telephone to be directly connected to the base unit via a radio link;
- radio-link establishing means for establishing the radio link between said base unit and said radio telephone;
- a plurality of operator activated switches provided at said base unit for generating a plurality of switch-on signals in response to the activation of the switches;
- transmitting means provided at said base unit for transmitting the switch-on signals to said radio telephone via the radio link in response to the generation of the switch-on signals;
- receiving means provided at said radio telephone for receiving one of said switch-on signals transmitted via the radio link; and
- identifying means responsive to said receiving means for providing a plurality of identifications corresponding to the switch-on signals to users of said radio telephone.

5,058,152
ANONYMOUS INTERACTIVE TELEPHONE SYSTEM HAVING DIRECT CONNECT FEATURE

Merrill Solomon, Washington, D.C., and John Kimball, Germantown, Md., assignors to The Telephone Connection, Washington, D.C.

Filed Dec. 12, 1989, Ser. No. 448,110
Int. Cl.[5] H04M *1/64, 1/66, 3/50*
U.S. Cl. 379—67 **41 Claims**

1. A telephone communication method for anonymously enabling a subscriber at a subscriber station to communicate with a caller at a caller station, said method allowing said caller to communicate with said subscriber without said caller knowing the identity of the subscriber prior to establishing communication with said subscriber, but knowing a particular subscriber with whom communication is desired, and allowing the identity of the particular subscriber and the caller to be kept anonymous during communication between said particular subscriber and said caller unless voluntarily revealed by either said particular subscriber or said caller, said method including the steps of:
- storing data at a system controller station that is received from a plurality of subscribers at a plurality of subscriber stations, such data including the telephone number of each

of said subscriber stations and a corresponding reference number for each of said subscriber stations;

publishing the telephone number of said system controller station and said reference numbers for each of said subscriber stations;

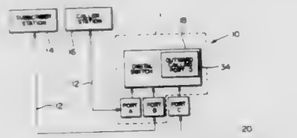
receiving a call from a caller station to said system controller station and a particular reference number corresponding to said particular subscriber at a particular subscriber station included within said published telephone number;

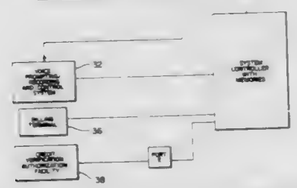
matching said particular reference number with the corresponding telephone number of said particular subscriber station; and

automatically routing said call received from said caller station at said system controller station to said particular subscriber station by calling said telephone number of said particular subscriber station.

15. A telephone communication method for anonymously connecting a subscriber having an unpublished telephone number with a caller, said method including the steps of:

storing data at a system controller station that is received





from a plurality of subscribers at a plurality of subscriber stations, such data including the telephone number of each subscriber station;

publishing the telephone number of said system controller station in advertisements;

receiving a call from a caller at a caller station to said system controller station, and receiving identifier information for identifying a particular subscriber at a particular subscriber station for which communication is desired;

recording a message from said caller, said message including information such as name, purpose for the call, and the telephone number of said caller;

matching said identifier information with the telephone number of said particular subscriber at said particular subscriber station;

calling said particular subscriber at said particular subscriber station;

playing said recorded message to said particular subscriber; and

connecting said caller to said particular subscriber upon authorization of said particular subscriber.

5,058,153

NOISE MITIGATION AND MODE SWITCHING IN COMMUNICATIONS TERMINALS SUCH AS TELEPHONES

Edward C. Carew, R.R. #1, Carleton Place, Ont., Canada K1Y 3P1; Roland T. Lockhart, 307-1300 Richmond, Ottawa, Canada K2B 8L2, and Sean G. Brophy, 988 Memorial Dr., Apt. 688, Cambridge, Mass. 02138

Filed Dec. 27, 1989, Ser. No. 457,345

Int. Cl.[5] H04M *9/08*

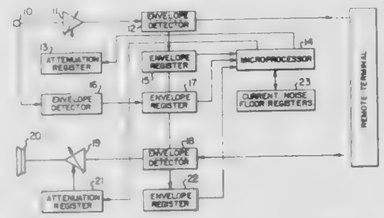
U.S. Cl. 379—390 **10 Claims**

1. A circuit for controlling a telecommunications terminal between three states: a transmit state, a receive state, and a quiescent state, wherein voice signals are transmitted and received to and from a remote terminal, comprising;

an acousto-electric transducer providing signals for transmission to said remote terminal through a transmit variolosser;

an electro-acoustic transducer providing audible signals received from said remote terminal through a receive variolosser;

first envelope detection means for detecting the signals from



said acousto-electric transducer for providing a microphone signal value;

second envelope detection means at the output of said transmit variolosser;

storage means registering a current noise signal value; and

means for substituting said microphone signal value into said storage means in response to a comparison indicating said microphone signal value being less than said current noise signal value, whereby said microphone signal value becomes a new, lower, current noise signal value.

5,058,154

TELEPHONE HANDSET HAVING A PURE ACOUSTIC RESISTANCE CONNECTION

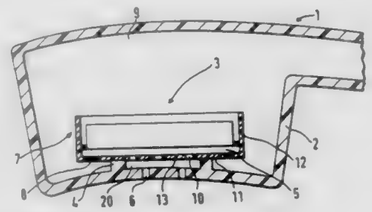
Morten K. Andersen, Odder, Denmark, assignor to Alcatel Kirk A/S, Horsens, Denmark

Filed Oct. 20, 1989, Ser. No. 424,664

Claims priority, application Denmark, Oct. 21, 1988, 5879/88

Int. Cl.[5] H04M *1/00;* **H04R** *25/00*

U.S. Cl. 379—433 **10 Claims**



1. Telephone handset comprising

a housing having at least one external aperture;

a receiver transducer including a diaphragm having a front surface; and

a front cover between said front surface and said external aperture for providing

a first acoustic connection having a pure acoustic ohmic resistance between the front diaphragm surface and an interior space within the housing, and

a second acoustic connection between the front diaphragm surface and the external aperture.

5,058,155

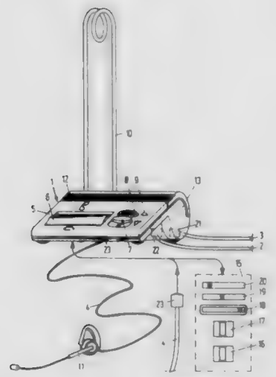
MULTIPURPOSE HEADSET AMPLIFIER

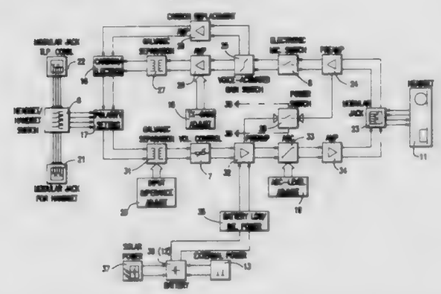
Leo Larsen, Kokkedal, Denmark, assignor to GN Netcom A/S, Copenhagen, Denmark

Filed Dec. 1, 1989, Ser. No. 444,752

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—442 **1 Claim**





1. A multipurpose headset amplifier device for the connection of a headset to be attached to a telephone instrument and comprising a housing with an ascending, thready holder for a headset and connection jacks for the headset, said housing having at the upper side comprises manual operating members for the adjustment of the device, and which housing at the underside comprises manual controls for the adaption of a headset to the impedance and signal level of any telephone instrument, and wherein the amplifier device comprises amplifier and adjustment circuits for the headset and an internal power supply source and a jack for an external power supply source, in that the amplifier circuit from the headset microphone to the telephone instrument comprises a preamplifier, an electronic microphone switch circuit, a voice-activated gain switch, a manually adjustable amplifier and a galvanic separation circuit comprising a transformer, and a carbon microphone amplifier circuit for the shunt coupling of the adjustable amplifier and the galvanic separation circuit, and in that the amplifier circuit from the telephone instrument to the headset sound reproducer comprises a galvanic separation circuit having impedance control members, a volume control circuit, a preamplifier circuit, a threshold value-adjustable adjustment circuit and an output amplifier.

5,058,156

NETWORK INTERFACE AND COMMUNICATION TERMINAL

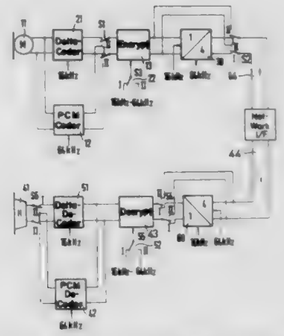
Wolfgang Dietze, Korntal, Fed. Rep. of Germany, assignor to Standard Electrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1989, Ser. No. 405,345

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1988, 3831215

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—9 **3 Claims**



1. A terminal, for encrypted digital communication, the terminal comprising:

an encryption device;

a decryption device;

a network interface for changing an incoming digital transmission from a first bit rate to a second bit rate lower than said first bit rate and for changing an outgoing digital transmission from said second bit rate to said first bit rate;

first means for directly connecting the encryption and decryption devices to a digital communication channel having a predetermined first capacity and a bit rate equal to said first bit rate and for operating said encryption and decryption devices at said first bit rate;

second means for indirectly connecting said devices to said digital communication channel via said network interface so as to produce a terminal output that is also compatible with a second capacity and bit rate less than the first capacity and bit rate and for operating said encryption and decryption devices at said second bit rate; and

switch means for alternating control between said first means and said second means.

5,058,157

METHOD AND APPARATUS FOR ENCRYPTING AND DECRYPTING TIME DOMAIN SIGNALS

John O. Ryan, Cupertino, Calif., assignor to Macrovision Corporation, Mountain View, Calif.

Filed Sep. 6, 1989, Ser. No. 403,514

Int. Cl.[5] H04N *7/167*

U.S. Cl. 380—11 **18 Claims**

1. A method of decrypting previously encrypted information signals to permit use thereof, said encrypted information signals comprising encrypted versions of original information signals arranged as a succession of lines of active information, each line having a line timing reference, said encrypted signals having been produced by time shifting at least some of the lines of the original information signals with respect to the line timing reference in a predetermined manner with the amount of time shifting in each line in the succession being different than that of the previous line, said decrypting method comprising the steps of:

(a) providing an indication of the amount of time shifting performed on a given line; and
(b) restoring the original time relationship for each line between the line timing reference and the line of informa-



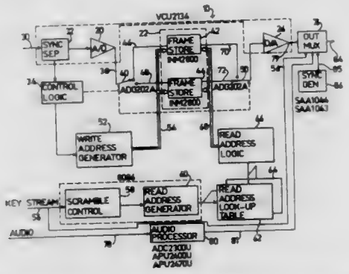
tion using the indication of the time shifting by generating deliberately temporally misaligned line timing reference for each line and combining said deliberately temporally misaligned line timing reference with the line of information.

5,058,158

VIDEO SCRAMBLING APPARATUS AND METHOD BASED ON SPACE FILLING CURVES

Yossi Matias, 1 Shturman Street, Herzlia, Israel, and Adi Shamir, Rehovot, Israel, assignors to Yossi Matias, Tel Aviv, Israel

Continuation of Ser. No. 231,801, Aug. 12, 1988, Pat. No. 4,910,772. This application Mar. 19, 1990, Ser. No. 495,476
Claims priority, application Israel, Aug. 16, 1987, 83549
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—14 **27 Claims**



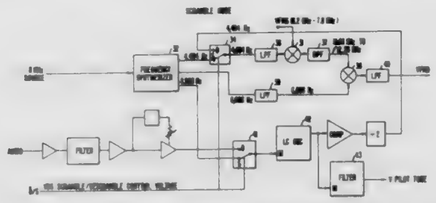
1. A method of encoding a video signal comprising the steps of:
storing in the locations of a frame buffer the pixel values of a group of video information lines representing at least a portion of a video picture container in the video signal;
defining a pseudo-random Space Filling Curve (SFC) providing a sequence corresponding to locations of the frame buffer mapping random directions of movement between adjacent pixels of the video picture portion; and
addressing the locations of the frame buffer in accordance with the defined sequence to read the pixel values thereof for encoded transmission of the video signal.

5,058,159

METHOD AND SYSTEM FOR SCRAMBLING AND DESCRAMBLING AUDIO INFORMATION SIGNALS

Ronald Quan, Cupertino, Calif., assignor to Macrovision Corporation, Mountain View, Calif.

Filed Jun. 15, 1989, Ser. No. 366,575
Int. Cl.[5] H04N *7/16, 7/167*
U.S. Cl. 380—19 **22 Claims**



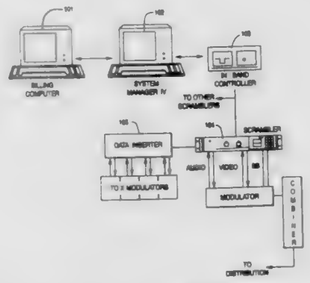
1. A method of scrambling audio information signals having frequency components lying within an original frequency spectrum, said method comprising the steps of:
(a) frequency shifting original time domain audio information signals to produce scrambled audio information signals;
(b) generating a pilot signal of a preselected frequency; and
(c) recording both the scrambled audio information signals and the pilot signal on a common recording medium so that any frequency variations introduced in the scrambled audio signals upon playback are tracked by the pilot signal.

5,058,160

IN-BAND CONTROLLER

Robert O. Banker, Cumming; Randolph Schaubs, Stone Mountain; Michael Harney, Atlanta; Jay C. McMullan, Jr., Doraville; anthony J. Wasilewski, Lawrenceville; Gregory S. Durden, Jonesboro; Rdy T. Haman, Jr., Duluth; David Naddor, Doraville, and William B. Thatcher, Jr., Alpharetta, all of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 188,481, Apr. 29, 1988, abandoned.
This application Oct. 1, 1990, Ser. No. 593,329
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—20 **12 Claims**



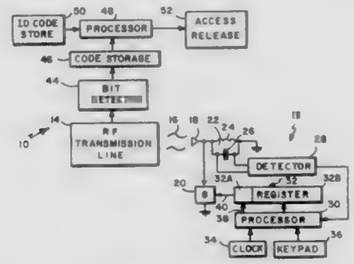
1. In a cable television system comprising means for generating data capable of being transmitted over a transmission path, transmission means for transmitting at least one television channel, scrambler means for selectively scrambling said generated data, in-band type set top receiving means at a first predetermined location for receiving said at least one television channel and receiving and descrambling said selectively scrambled data transmitted within said at least one television channel and out-of-band type set top receiving means at a second predetermined location for receiving said at least one television channel and receiving and descrambling said selectively scrambled data transmitted outside of said at least one television channel and any other television channel transmitted by said cable system, an apparatus for manipulating said generated data comprising:
control means operatively connected between said means for generating data and said scrambler means for receiving and analyzing data received by said means for generating data to determine whether said data is to be transmitted to said in-band type set top receiving means or said out-of-band type set top receiving means to control the transmission path said data is transmitted over.

5,058,161

METHOD AND APPARATUS FOR SECURE IDENTIFICATION AND VERIFICATION

Kenneth Weiss, 7 Park Ave., Newton, Mass. 02158

Continuation-in-part of Ser. No. 802,579, Nov. 27, 1985, Pat. No. 4,885,778, which is a continuation-in-part of Ser. No. 676,626, Nov. 30, 1984, Pat. No. 4,720,860. This application Oct. 31, 1989, Ser. No. 429,326
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **22 Claims**



1. A personal identification system comprising:
means for transmitting a predetermined radiation;
a unit to be carried by a person to be identified, said unit containing means for detecting said predetermined radiation, means for storing a predetermined coded value, means for changing at least a predetermined portion of the coded value at predetermined time intervals in accordance with a predetermined algorithm, the algorithm being such that the value of said predetermined portion of the stored coded value at any given time is nonpredictable, and means responsive to detection of the predetermined radiation for causing an indication of a current stored coded value, which value is independent of the detected radiation, to be automatically produced in a predetermined sequence; and
means automatically responsive to the produced coded value sequence for identifying the person who is to be carrying the unit.

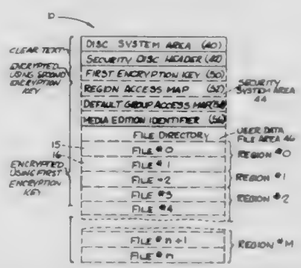
5,058,162

METHOD OF DISTRIBUTING COMPUTER DATA FILES

John C. Santon, Johnstown; Kenneth R. Nielsen, Loveland, both of Colo.; Christen M. Armbrust, Boulder Creek, Calif.; Pankaj B. Shah, Santa Clara, Calif., and Steven J. Hand, San Jose, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 9, 1990, Ser. No. 564,911
Int. Cl.[5] H04K *1/00, 9/00;* **H04L** *9/00*
U.S. Cl. 380—25 **17 Claims**

1. A method of distributing a plurality of data files to a plurality of recipients comprising the steps of:
a) placing encrypted copies of the data files to be distributed on a plurality of identical media and providing the recipients with media reading devices having data file decryption capability;
b) logically arranging the data files into data file groups;
c) in response to a recipient's request for access to selected file groups providing the recipient with a group access map indicative of the file groups to which access is requested;
d) in further response to a recipient's request for access to selected file groups providing the recipient with a password to be used for access verification;



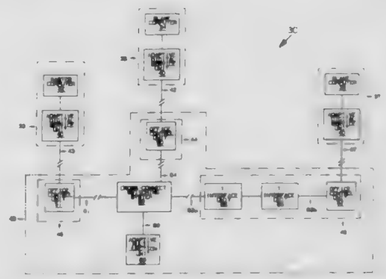
e) completing an access verification operation using the group access map and the password and data indicative of the media being read and data indicative of the reading device being used;
f) providing access to the data files in the file groups to which access is requested by use of the group access map; and
g) decrypting the accessed data files.

5,058,163

INTERFACE UNIT FOR TRANSFERRING DIGITAL DATA BETWEEN TIME-DOMAIN MULTIPLEXED COMMUNICATION LINKS

Daniel P. Lubarsky, San Jose; George A. Weigt, Livermore, and Mark E. Haisch, Freemont, all of Calif., assignors to Pacific Bell, San Francisco, Calif.

Filed Oct. 12, 1988, Ser. No. 256,908
Int. Cl.[5] H04L *9/02;* **H04J** *3/22;* **G06F** *7/34*
U.S. Cl. 380—49 **13 Claims**



1. An interface unit for transferring digital data between a first channel having incoming and outgoing lines on a first time-domain multiplexed communication link and a channel having incoming and outgoing lines on a central office time-domain multiplexed communication link of a multipoint communication network which includes a plurality of network units with at least two of said network units comprising said interface units, said network units coupled to telephone system communication links and communicating with each other on said communication links, each said network unit comprising means for transmitting and receiving digital data in a frame mode in which said data is organized into frames on said communication links, each said frame including synchronization

data, command data, error correcting data, and user data, each said network unit further comprising:

means for storing an address identifying said network unit;

means for receiving commands from other network units in said computer network, said commands being specified by command data in one of said frames received by said network unit;

means for generating command data in response to a received command included in said command data;

means for transmitting commands to other network units in said computer network, said transmitting means comprising means for inserting command data generated by said command data generating means into one of said frames transmitted by said network unit; and

means for executing a command specifying said stored address as the target thereof, said command being specified by said command data received in one of said frames received by said receiving means;

said interface unit comprising:

control means including means for storing an address identifying said interface unit;

means for receiving commands from other network units including means for receiving frames generated by one of said network units in said computer network, said commands being specified by command data in one of said frames received by said interface unit;

means for generating command data in response to a received command included in said command data;

means for transmitting commands to other network units in said computer network, said transmitting means comprising means for inserting command data generated by said command data generating means into one of said frames and means for transmitting said frame; and

means for executing a command specifying said stored address as the target thereof, said command being specified by said command data received in one of said frames received by said receiving means;

decryptor means including first input port means coupled to the incoming line of said first channel for receiving a primary channel word, said decryptor means further comprising first decrypting means for generating a data word corresponding to each said received primary channel word, each said generated data word comprising a portion of one of said received frames;

encryptor means including first output port means coupled to said outgoing line of said first channel for receiving a said data word, said encryptor means further comprising first encrypting means for generating a said primary channel word from said received data word and for transmitting said generated primary channel word on the said outgoing line of said first channel, wherein

said decryptor means further comprises second output port means, coupled to the outgoing line of said central office time-domain multiplex communication link, for transmitting each said data word generated by said first decrypting means on said outgoing line of said central office communication link, and

wherein said encryptor means further comprises second input port means for receiving a data word on said incoming line of said central office communication link and coupling said data word to said first output port means.

5,058,164

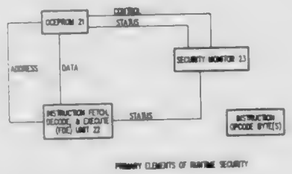
ENCRYPTION OF STREAMS OF ADDRESSED INFORMATION TO BE USED FOR PROGRAM CODE PROTECTION

Thomas I. Elmer, Sunnyvale; Tuan T. Nguyen, Milpitas, and Rung-Pan Lin, San Jose, all of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Filed May 3, 1990, Ser. No. 518,117

Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—50 **20 Claims**



PRIMARY ELEMENTS OF RUNTIME SECURITY

7. A data device comprising:

memory means for storing data;

an address bus for receiving a data address defining a location within said memory means;

a data bus for carrying data related to the data stored within said memory means at a location defined by said data address;

means for providing a key address based upon said data address, said key address defining a location within said memory means, the contents of which will serve as an encryption key associated with said address; and

means for encrypting said data with said encryption key in order to provide encrypted data on said data bus.

5,058,165

SPEECH EXCITATION SOURCE CODER WITH CODED AMPLITUDES MULTIPLIED BY FACTORS DEPENDENT ON PULSE POSITION

Martin R. L. Hodges, Ipswich, England, assignor to British Telecommunications public limited company, Great Britain

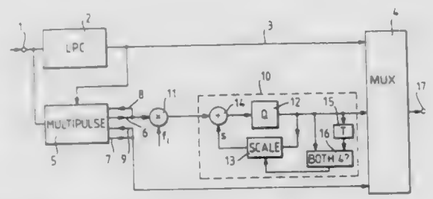
PCT No. PCT/GB88/01152, § 371 Date Aug. 14, 1989, § 102(e) Date Aug. 14, 1989, PCT Pub. No. WO89/06418, PCT Pub. Date Jul. 13, 1989

PCT Filed Dec. 29, 1988, Ser. No. 382,687

Claims priority, application United Kingdom, Jan. 5, 1988, 8800120; Jan. 29, 1988, 8801998

Int. Cl.[5] G10L *3/02, 9/14*

U.S. Cl. 381—38 **7 Claims**



1. A speech coder comprising:

means for deriving, from an input speech signal, parameters of a synthesis filter;

means for generating coded output signals representing an excitation for said synthesis filter, said output coded signal defining a plurality of pulses having respectively corresponding pulse amplitudes and times of occurrence within a time frame corresponding to a larger plurality of speech samples, the amplitudes and timing of said plurality of pulses being selected so as to reduce the difference between the input speech signal and the response of said synthesis filter to the excitation by:

deriving the amplitude and timing of a first pulse, which alone represents an excitation tending to reduce the said difference, and

successively deriving one or more further pulses which in combination with the first and any intervening pulses represent an excitation tending to reduce the same difference;

means for multiplying the pulse amplitudes by factors which depend only on their position in the derivation sequence; and

a backward adaptive quantizer for quantizing the resulting products to produce said coded output signals.

5,058,166

METHOD OF RECOGNIZING COHERENTLY SPOKEN WORDS

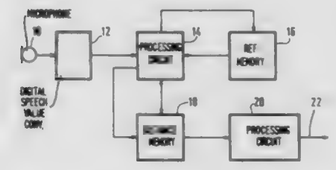
Hermann Ney, and Andreas Noll, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 175,976, Mar. 31, 1988, abandoned. This application May 11, 1990, Ser. No. 523,305

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1987, 3711342

Int. Cl.[5] G10L *5/04*

U.S. Cl. 381—43 **14 Claims**



1. A method of recognizing words, composed of phonemes, from a speech signal divided into successive sections, the speech signal in each section being converted to a speech value, said method comprising:

storing reference values for comparison with successive speech values and storing distance sums for said reference values attained by comparisons of said reference values with preceding speech values;

comparing each stored reference value within a given neighborhood to a current speech value to determine a comparison result; and

determining a new distance sum to be stored for each compared reference value, by adding the comparison result to a quantity determined by considering a position of the compared reference value within a sequence of equal reference values in a current phoneme, utilizing a relationship between phonemes and sequences of numbers of equal reference values, predetermined with the aid of learning speech values, in accordance with the following rules:

a) if the compared reference value is at the end of a sequence of reference values which is in number greater than unity and less than the number of sequential equal reference values predetermined within a phoneme, said quantity is equal to the distance sum stored for the preceding reference value in the sequence;

b) if the compared reference value is at the end of a sequence of equal reference values greater in number than the number of sequential equal reference values predetermined within a phoneme, said quantity is formed by adding a time distortion value to the distance sum previously stored for said reference value;

c) if the compared reference value is the first reference value beginning a sequence of reference values in a new current current phoneme, said quantity is formed by selecting the minimum of sums of time distortion values and the distance sums stored for each reference value in the sequence of reference values in the phoneme preceding the new current phoneme.

5,058,167

SPEECH RECOGNITION DEVICE

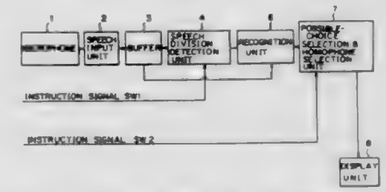
Shinta Kimura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 219,490, Jul. 15, 1988, abandoned. This application May 2, 1990, Ser. No. 520,853

Claims priority, application Japan, Jul. 16, 1987, 62-177775

Int. Cl.[5] G10L *5/00* .

U.S. Cl. 381—43 **7 Claims**



1. A speech recognition device for recognizing only correct input speech from an input speech waveform by extracting a speech characteristic portion from the input speech waveform of input speech and comparing the speech characteristic portion with speech templates, said device comprising:

speech holding means for receiving and storing input acoustic signals corresponding to the input speech;

instruction signal supply means for supplying a nearest past speech instruction signal after an input of speech to be recognized, the nearest past speech instruction signal is input from a user of said device;

speech division detection means, connected to said speech holding means and said instruction signal supply means, for receiving the input acoustic signals corresponding to the input speech and for detecting divisions of the input speech read from said speech holding means to determine a nearest past speech stored in said speech holding means based upon the nearest past instruction signal and for extracting the speech characteristic portion corresponding to the nearest past speech; and

recognition means for comparing the speech characteristic portion corresponding to the nearest past speech with the speech templates to produce a recognized result.

5,058,168

OVERFLOW SPEECH DETECTING APPARATUS FOR SPEECH RECOGNITION

Motoaki Koyama, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 371,000, Jun. 26, 1989, abandoned. This application Jul. 13, 1990, Ser. No. 552,325

Claims priority, application Japan, Jun. 27, 1988, 63-158707

Int. Cl.[5] G10L *5/00*

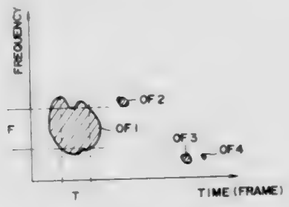
U.S. Cl. 381—46 **10 Claims**

1. An overflow speech detecting apparatus comprising:

extracting means for extracting feature parameters from speech, yielding feature parameters for a plurality of successive time frames; and

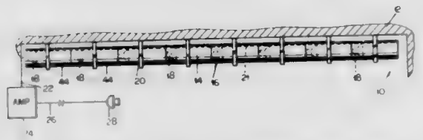
means for detecting speech overflow when said feature parameters have a width in excess of a predetermined width in a domain other than a time domain and exceed a

predetermined value for at least a predetermined period of time over a predetermined number of successive time



frames, said predetermined number being greater than one.

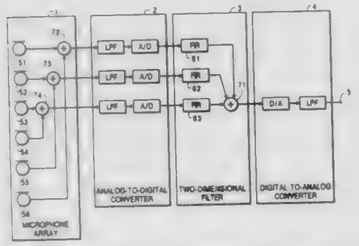
5,058,169
PUBLIC ADDRESS SYSTEM
Stephen F. Temmer, 767 Greenwich St., New York, N.Y. 12834
Filed Nov. 1, 1989, Ser. No. 430,018
Int. Cl.[5] H04R *1/02*
U.S. Cl. 381—82 **25 Claims**



1. A public address system for emitting audio signals in a large area, comprising:
a. a tubular member disposed along said area, and having opening means extending substantially along the length of said tubular member; and
b. a plurality of acoustically coupled speakers mounted coaxially within said tubular member generally parallel to said tubular member axis at preselected intervals within said tubular member for generating audio signals, said speakers and opening means being arranged and constructed for emitting said audio signals through said opening means.

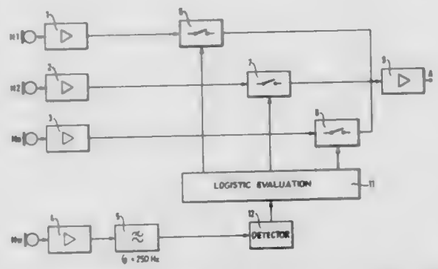
5,058,170
ARRAY MICROPHONE
Takeo Kanamori, Takatsuki; Hiroki Furukawa, Osaka; Satoru Ibaraki, Higashiosaka, and Michio Matsumoto, Sennan, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 1, 1990, Ser. No. 473,398
Claims priority, application Japan, Feb. 3, 1989, 1-25012
Int. Cl.[5] H04R *3/00*
U.S. Cl. 381—92 **12 Claims**

1. An array microphone comprising:
a microphone array including a plurality of microphone units, and
a two-dimensional filter for filtering an output of said microphone array in the dimensions of both time and space at one time;
wherein said microphone array comprises an even n-number of microphone units linearly arranged at equal intervals and an adder circuit for summing up outputs of i-th and (n−i+1)-th microphone units, wherein $1 \leqq i \leqq n/2$.
5. An array microphone comprising:
a microphone array including a plurality of microphone units;
an analog-to-digital converter circuit for converting an analog output of said microphone array into a digital signal;



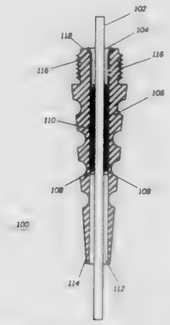
a two-dimensional filter for filtering the digital signal from said analog-to-digital converter circuit in the dimensions of both time and space at one time;
a digital-to-analog converter circuit for converting a digital output of said two-dimensional filter into an analog signal; and
a sampling frequency control circuit for varying sampling frequencies of said analog-to-digital converter circuit, said two-dimensional filter, and said digital-to-analog converter circuit.

5,058,171
MICROPHONE ARRANGEMENT
Josef Wurzer, Vienna, and Konrad Wolf, Bad Vöslau, both of Austria, assignors to AKG Akustische u. Kino-Geräte Gesellschaft m.b.H
Filed Jul. 26, 1990, Ser. No. 557,939
Claims priority, application Austria, Jul. 26, 1989, 1803/89
Int. Cl.[5] H04R *3/00*
U.S. Cl. 381—92 **4 Claims**



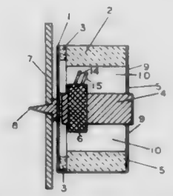
1. A microphone arrangement comprising at least two individual microphones arranged in proximity to each other, said individual microphones depending on the recording angle desired for sound recording are at least one of a pressure, a pressure gradient receiver, or a directional line microphone, characterized in that the wind pressure is continuously measured during the sound recording by means of a microphone (Mw) with a downstream switched electronic circuit (5, 11, 12) and depending upon the respectively prevailing wind pressure one microphone of said at least two microphones always remains connected by means of an instantaneously controlled switch (6, 7, 8) to an amplifier (9) and said microphone corresponding to a conversion principle, frequency response and directionality is least sensitive to wind noises at the prevailing wind intensity.

5,058,172
ELECTROMAGNETIC INTERFERENCE SUPPRESSANT ASSEMBLY
Bruce W. Ross; John C. Dzung, both of Sunrise, and Harold J. Sanderson, Lauderdale Lakes, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 31, 1990, Ser. No. 607,190
Int. Cl.[5] H01R *13/56;* **H04R** *1/06*
U.S. Cl. 381—122 **15 Claims**



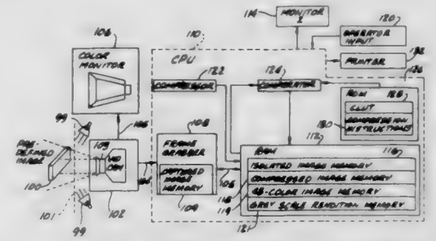
1. A cable assembly with electromagnetic interference suppression capability, comprising:
an electrical cable;
a cable strain relief disposed about the electrical cable; and
a flexible tubular electromagnetic interference suppressor located within the cable strain relief and about the cable.

5,058,173
COMBINATION INERTIA TYPE AUDIO TRANSDUCER AND LOUDSPEAKER
William J. Ashworth, 1012 Ashworth Cove, Altamonte Springs, Fla. 32714
Filed Jan. 5, 1990, Ser. No. 461,302
Int. Cl.[5] H04R *3/02, 25/00*
U.S. Cl. 381—152 **5 Claims**



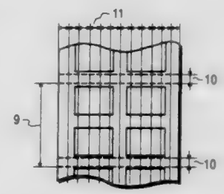
1. A single structure comprising an audio transducer attached to and wholly supported by a sounding board with said sounding board being activated by a vibratile diaphragm attached to and facing said sounding board, said audio transducer comprising an integral loudspeaker that is embodied in said transducer and is activated by said vibratile diaphragm, said loudspeaker of said transducer being created by an air cavity at least 0.5 cubic inches in volume inside said transducer, with said air cavity being adjacent to the side of said vibratile diaphragm opposite the side of said vibratile diaphragm facing said sounding board where said air cavity that is adjacent to said vibratile diaphragm having a contact area of at least one square inch with said diaphragm and extends away from said vibratile diaphragm and terminates at an air venting means attached to a venting end of said transducer that is opposite to an end of said transducer to which said vibratile diaphragm is attached, whereby said air venting means has an open space therein with an area of at least five percent of the size of the area of contact of said air cavity with said venting end of said transducer.

5,058,174
SYSTEM AND METHOD FOR GENERATING A PATTERN FROM AN IMAGE
Thomas M. Carroll, 1920 S. Broadway, St. Louis, Mo. 63104
Filed Sep. 14, 1989, Ser. No. 407,059
Int. Cl.[5] G06K *9/00;* **G06F** *15/46*
U.S. Cl. 382—1 **35 Claims**



1. A system for generating a rug pattern corresponding to a predefined image comprising:
means for scanning the predefined image and generating a video image corresponding to the predefined image;
means for compressing the video image into a compressed image corresponding to the video image;
means for creating from the compressed image said rug pattern corresponding to the predefined image; and
means for specifying an inventory of individual rug yarns needed for attachment to a rug canvas in order to make a rug corresponding to said rug pattern.

5,058,175
QUALITY INSPECTION METHOD FOR A PRINTED MATTER
Itsuo Aso, Mihara, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 11, 1990, Ser. No. 463,515
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **4 Claims**



1. A method of inspecting printed matter as the matter is being printed by a printing apparatus, said method comprising:
conveying the printed matter past an image detection system having photosensitive elements;
optically imaging the printed matter onto the photosensitive elements of the image detection system by reflecting light off of the printed matter and onto the photosensitive elements as the printed matter travels past the detection system;
producing detection signals, corresponding to the depth of

print of the printed matter, as soon as the printed matter travels past the detection system immediately after the commencement of printing by converting the intensities of light incident on the photosensitive elements to electrical quantities;

storing the detection signals derived from a particular area of the printed matter as a reference signal;

comparing the reference signal with the detection signals subsequently produced thereto; and

analyzing the comparison of the reference signal with the subsequently produced detection signals to detect anomalies occurring in the printed matter.

5,058,176
IMAGE DIAGNOSIS APPARATUS

Toru Shimazaki; Keiki Yamaguchi; Yoshihiko Watanabe, and Noriaki Yamada, all of Tokyo, Japan, assignors to Yokogawa Medical Systems, Limited, Tokyo, Japan

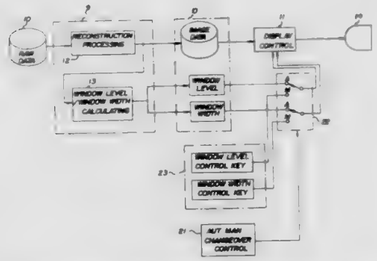
PCT No. PCT/JP87/00462, § 371 Date Dec. 28, 1988, § 102(e) Date Dec. 28, 1988, PCT Pub. No. WO88/00026, PCT Pub. Date Jan. 14, 1988

PCT Filed Jul. 2, 1987, Ser. No. 295,038

Claims priority, application Japan, Jul. 2, 1986, 61-155853

Int. Cl.[5] G06K *9/00;* **H05G** *1/64;* **G06F** *15/00;* **H04N** *5/32*

U.S. Cl. 382—6 **23 Claims**



1. In an image diagnosis apparatus comprising

means for collecting data pertaining to tissue configuration or biochemical functions of a subject to be examined;

means for converting said data into two-dimensional image data by reconstruction processing;

means for storing said two-dimensional image data in a memory means;

means for manually setting a window level and a window width; and

means for generating an image based on said two-dimensional image data;

the improvement comprising

calculating means for calculating a window level and a window width peculiar to each two-dimensional image data in accordance with a predetermined calculation method;

memory means for storing the values calculated by said calculating means in annexed form to each two dimensional image data; and

switching means for selectively switching to said means for generating an image any of the following:

(1) said set window level and said set window width,

(2) said calculated window level and said calculated window width,

(3) said set window level and said calculated window width, or

(4) said calculated window level and said set window width.

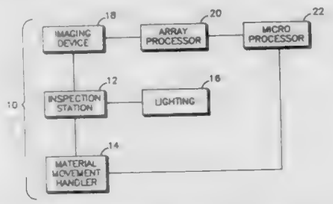
5,058,177
METHOD FOR INSPECTION OF PROTRUDING FEATURES

Ephrem A. Chemaly, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 140,705, Jan. 4, 1988, abandoned. This application Aug. 31, 1990, Ser. No. 577,845

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **8 Claims**



1. A method for inspecting a plurality of similar protruding features on objects to determine whether the object is "good", or "bad", comprising:

providing a plurality of objects individually at an inspection station, where each object has a plurality of protruding features having tips as a terminal end thereof;

illuminating only the tips of the features of a single object with a light source to generate a pattern of tip images corresponding to the package;

perceiving the pattern of tip images by means of a computer imaging system that receives a digital array of gray scale pixels and sets a brightness threshold for pixels corresponding to the lead tip images;

determining from the pattern of resolved tip images an array of calculated (x,y) image space coordinates corresponding to the package by grouping the pixels above the threshold together in a cluster for each tip and mathematically calculating the centroid of each cluster of pixels;

translating the array of ideal (x,y) coordinates to minimize the means squared error of the (x) coordinate deviation between the ideal array and the calculated array;

computing the difference in the (x) coordinates between the ideal array and the calculated array and computing the best fitting straight line through the (y) coordinates of the calculated array and determining the difference of each (y) value from the best fitting line;

deciding (1) whether the array of calculated (x,y) image space coordinates is within a predetermined acceptable deviation range from the array of ideal (x,y) image space coordinates and denoting the corresponding objects as "good" or (2) whether the array of calculated (x,y) image space coordinates is outside the predetermined acceptable deviation range and then denoting the objects as "bad"; and

sorting the "good" objects from the "bad" objects.

5,058,178
METHOD AND APPARATUS FOR INSPECTION OF SPECULAR, THREE-DIMENSIONAL FEATURES

Rajarshi Ray, Princeton, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.Y.

Filed Dec. 21, 1989, Ser. No. 454,210

Int. Cl.[5] G06K *9/00, 9/03*

U.S. Cl. 382—8 **13 Claims**

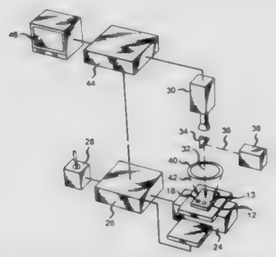
1. A method for inspecting an article to detect missing and defective specular, topographical features on its surface and deformations in the topology of such features comprising the steps of:

(a) illuminating the surface of the article with a first light directed at an acute angle to the surface from all of the sides thereof;

(b) capturing the image of the surface;

(c) creating a window within the image about each group of specular, topographical features and subsequently creating a bounding box about each topographical feature within each window;

(d) measuring the value of each of a first predetermined set of attributes associated with the windows, the boxes within the windows, and the feature inside each box;



(e) comparing the measured value of each first attribute to a separate one of a set of reference values, each representing the value of the corresponding first attribute when no defect, such as a missing or deformed feature, is present, and identifying the existence of a particular type of defect when the established value of a separate one of the first attributes differs from its associated reference value by more than a predetermined tolerance.

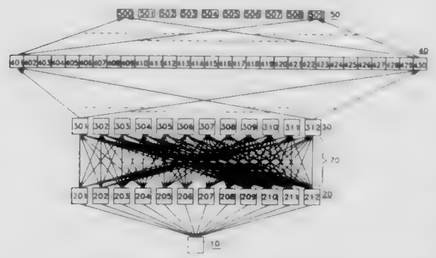
5,058,179
HIERARCHICAL CONSTRAINED AUTOMATIC LEARNING NETWORK FOR CHARACTER RECOGNITION

John S. Denker, Leonardo; Richard E. Howard, Highland Park; Lawrence D. Jackel, Holmdel, and Yann LeCun, Middletown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 31, 1990, Ser. No. 472,991

Int. Cl.[5] G06K *9/66*

U.S. Cl. 382—14 **14 Claims**



1. A massively parallel computation network for recognition of a character included in an image map, said network including a first constrained feature detection layer for extracting features from said image map and for undersampling said image, a second constrained feature detection layer for extracting features from said first constrained feature detection layer and for undersampling said first feature detection layer, first dimensionality reduction layer substantially fully connected to and responsive to said second constrained feature detection layer, and second dimensionality reduction layer substantially fully connected to and responsive to said first dimensionality reduction layer for classifying the character recognized by the network and generating an indication representative of the character recognized by the network.

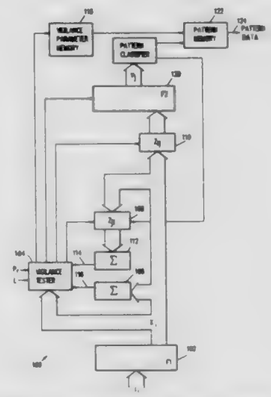
5,058,180
NEURAL NETWORK APPARATUS AND METHOD FOR PATTERN RECOGNITION

Emdadur R. Khan, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 30, 1990, Ser. No. 516,753

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—14 **33 Claims**



1. An improved self-organizing neural network coupled to perform adaptive pattern recognition in accordance with adaptive resonance theory, said neural network comprising a plurality of input neurons coupled to accept input pattern data representing a pattern, a plurality of output neurons, a bottom-up adaptive weight matrix coupling said input neurons to said output neurons, a top-down adaptive weight matrix coupling said output neurons to said input neurons, and vigilance parameter computing means for computing a plurality of vigilance parameters based substantially upon said input pattern data, said improvement comprising:

memory means for storing said plurality of computed vigilance parameters; and

pattern classification means for classifying said pattern according to the maximum computed vigilance parameter among said plurality of computed vigilance parameters.

5,058,181
HARDWARE AND SOFTWARE IMAGE PROCESSING SYSTEM

Hideshi Ishihara; Satoshi Yoneda, both of Takatsuki; Hiroshi Nakamoto, Mukou; Hidenori Kurioka, and Hitosi Naitoh, both of Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jan. 24, 1990, Ser. No. 469,351

Claims priority, application Japan, Jan. 25, 1989, 1-15578; Jan. 27, 1989, 1-19266; Jan. 27, 1989, 1-19267; Jan. 27, 1989, 1-19268; Feb. 17, 1989, 1-38045; Mar. 1, 1989, 1-49384; Mar. 27, 1989, 1-74576

Int. Cl.[5] G06K *9/48*

U.S. Cl. 382—22 **14 Claims**

1. An image processing system, comprising:

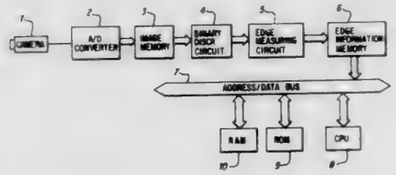
camera means for taking a picture image of an object and producing a corresponding picture image signal;

a binary discrimination means for converting said picture image signal into a binary signal;

storage means for storing said binary signal; and

feature extracting means for extracting a geometric feature

of said picture image by first processing said binary signal to produce edge information of said picture image and



then processing said edge information to extract said geometric feature of said picture image.

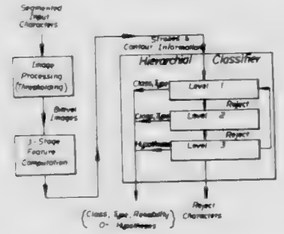
5,058,182

METHOD AND APPARATUS FOR HANDWRITTEN CHARACTER RECOGNITION

Chih-Chau Kuan, Buffalo; Jonathan J. Hull, Amherst, and Sargur N. Srihari, Williamsville, all of N.Y., assignors to The Research Foundation of State Univ. of New York, Albany, N.Y.

Filed May 2, 1988, Ser. No. 189,365
Int. Cl.[5] G06K *9/62*
U.S. Cl. 382—25 **4 Claims**

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 46 Pages)



1. A method for extracting features of a written character, comprising:

raster scanning said written character to determine stroke-based features, including contour profiles;

extracting vertical strokes of said character; and

extracting horizontal strokes of said character, wherein said stroke-based features include a run length segment distribution spectrum which is used to estimate the character stroke width.

5,058,183

REAL VIDEO TIME SIZE SELECTION MODE

Karl-Heinz Schmidt, Aying, and Wilhelm Waidelich, München, both of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung GmbH, Neuherberg/München, Fed. Rep. of Germany

Continuation of Ser. No. 170,246, Mar. 18, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 515,349
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708795
Int. Cl.[5] G06K *9/62, 9/00*
U.S. Cl. 382—30 **3 Claims**

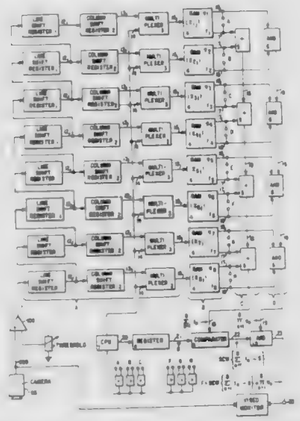
1. A method for real video time size selection for objects represented as video images which are to be filtered out so as to be classified as to their shape, comprising:

recording the video image with a scanning recording beam;

digitalizing the video image;

providing at least one selected mask representing a selected object image shape;

during each pixel clock period of the video image, comparing a k×L pixel section of the digitalized image, pixel for pixel, with the selected mask, using comparison elements in the form of random access memories programmed as look-up tables, while displacing the selected mask over the video image in synchronism with the recording beam, with said step of comparing including separately comparing k packets of L pixels at a time with the respective pixel values of the mask, with the product of k×L being the total number of pixels to be compared during each pixel



clock period, assigning a desired comparison value to each pixel packet, determining the deviation of the actual comparison value from the desired comparison value for each pixel packet and providing a respective deviation value corresponding to each deviation, adding the resulting deviation values for the k packets, comparing the addition result with a threshold value, and checking each pixel packet for validity; and,

indicating detection of the object on the recorded video image when, during said step of comparing a k×L pixel section, all of said k pixel packets which are being compared at the same time are determined to be valid and said threshold value is exceeded.

5,058,184

HIERACHICAL INFORMATION PROCESSING SYSTEM

Kunihiko Fukushima, Tokyo, Japan, assignor to Nippon Hoso Kyokai, Japan

Continuation-in-part of Ser. No. 75,840, Jun. 26, 1987, abandoned. This application Jan. 23, 1989, Ser. No. 299,539
Claims priority, application Japan, Nov. 2, 1985, 60-245298
Int. Cl.[5] G06K *9/58*
U.S. Cl. 382—37 **8 Claims**

1. A hierarchial information processing system for processing information in parallel over a plurality of cell layers comprising:

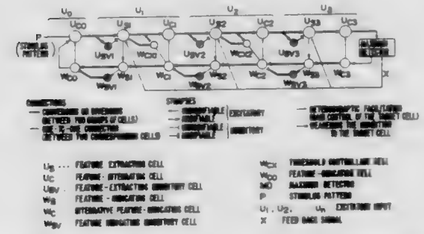
a plurality of afferent signal paths extending from lower order cell-layers to higher order cell-layers for processing information signals, wherein said afferent signals are processed by a plurality of feature-extracting cells u_s and feature-integrating cells u_c alternatively and convergingly;

a plurality of efferent information paths extending from higher order cell-layers to lower order cell-layers for transmitting an efferent signal, wherein said efferent signals are processed by a plurality of integrative feature-indicating cells w_c and feature-indicating cell w_s alternatively and divergingly;

cell layers in each stage, except input-cell layer U_o of the lowest stage and the cell layer in the highest stage, having converging afferent connections from feature-extracting cells u_s to feature-integrating cells u_c, and diverging efferent connections from an integrative feature-indicating cell w_c to feature-indicating cell w_s;

a threshold controlling cell w_{cx} for receiving signals from the cell w_c via unmodifiable excitatory connections and receiving converging signals form the cells u_s in the same stage and controlling the selectivity for extracting particular features by said feature-extracting cells u_s;

wherein each feature-extracting cell u_s is connected to send an unmodifiable excitatory signal or gate signal to each



feature-indicating cell w_s, and each integrative feature-indicating cell w_c is connected to send a gain control or heterosynaptic facilitation signal to a feature-integrating cell u_c, and the transmission of efferent signals is gated by the afferent signals in the cell w_s, and simultaneously, the transmission of afferent signals is facilitated by the presence of the efferent signals in the cell w_c;

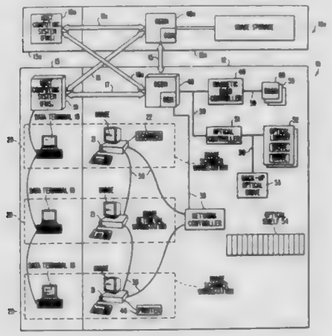
whereby a pattern corresponding to the cell which is yielding the largest output among the feature-integrating cells u_c of the highest stage is interpreted as recognized; and the output of the cell layer w_{co} of integrative feature-indicating cells of the lowest stage being interpreted as the output of associative recall or as the result of segmentation of a signal pattern which is now being recognized.

5,058,185

OBJECT MANAGEMENT AND DELIVERY SYSTEM HAVING MULTIPLE OBJECT-RESOLUTION CAPABILITY

Hugh M. Morris, Gaithersburg; Carol A. Parks, Monrovia; Doraiswamy Rajagopal, Rockville, and Gary L. Youngs, Gaithersburg, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1988, Ser. No. 211,722
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—41 **24 Claims**



1. In a data processing system for storing a plurality of electronic object data records, and displaying and reproducing a desired object using said data records, said data processing system comprising host computing means including data terminal means, and an object management and delivery system having object management means, memory storage means image terminal means and scanner means, a method which allows said data processing system to perform a desired object-related operation with only a modicum of interaction between the operations of said host computing means and said object management and delivery system, said method comprising the steps of:

providing an object-related request from one of said data terminal means and said image terminal means; and

transferring said object-related request to said object management means of said data processing system and performing an object-related operation in conjunction with at least one of said image terminal means, said memory storage means and said scanner means;

wherein an operation to be performed is a capture operation, and wherein said providing and transferring steps further comprise the steps of:

retrieving temporary object identification characters from said host computing means, and posting said characters onto an object which is to be scanned;

generating a permanent object name in said host computing means and transferring said name together with said temporary object identification characters from said host computing means to said object management and delivery system to flag a capture authorization;

entering temporary object identification characters at image terminal means for an object to be scanned, and sending the entered characters to said object management means to verify storage authorization;

scanning said object with said scanning means, once a storage authorization has been verified, to produce object data corresponding to said object; and

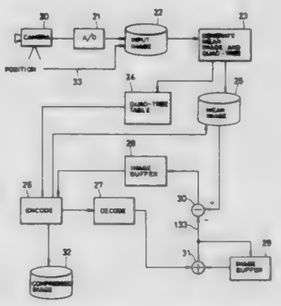
sending said object data to said object management and delivery systems and storing said object data in said memory storage means as an object data record, said object data record being associated with said permanent object name.

5,058,186

METHOD AND APPARATUS FOR IMAGE COMPRESSION

Shinichiro Miyaoka, Kawasaki; Motohisa Funabashi, Sagamihara, and Ryoichi Sasaki, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 152,269, Feb. 4, 1988, abandoned. This application Oct. 19, 1990, Ser. No. 600,291
Claims priority, application Japan, Feb. 18, 1987, 62-33253
Int. Cl.[5] G66K *9/36*
U.S. Cl. 382—56 **7 Claims**



1. A method of compressing an amount of data required to

represent a plurality of viewpoint image projections of a three-dimensional body or scene comprising the steps of:

producing a plurality of images of a three-dimensional body or a scene, each from a corresponding one of a plurality of viewpoints;

generating a mean image by averaging a set of said images produced from a respective set of spatially neighboring viewpoints; and

generating a plurality of difference images, each of said difference images being in unique correspondence to the difference between an image from one of said spatially neighboring viewpoints and said mean image,

whereby data from the group consisting of said difference images and said mean image constitutes a compressed representation of, and basis for, reconstructing at least on of said spatially neighboring viewpoints.

5,058,187

METHOD FOR COMPRESSING CHARACTER IMAGE DATA

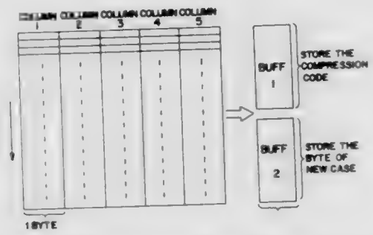
Jeong Y. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 29, 1989, Ser. No. 330,181

Claims priority, application Rep. of Korea, Mar. 29, 1988, 3453/1988[U]

Int. Cl.[5] G06K *9/36;* **H04N** *1/415*

U.S. Cl. 382—56 **8 Claims**



1. A method for compressing character image data, comprising the steps of:

(a) dividing a character image data into a plurality of column units;

(b) scanning from a top byte of each column unit toward a bottom byte of said each column unit;

(c) comparing a present byte with a comparative byte, the comparative byte being a previous byte before the present byte;

(d) assigning a predetermined compression code according to the result of said comparing step; and

(e) storing the result of said assigning step in at least one memory means.

5,058,188

MANUAL SCAN TYPE IMAGE READER FOR CORRECTING READ IMAGE DATA TO FAITHFULLY REPRODUCE READ IMAGE

Shigeo Yoneda, Yamatokouriyama, Japan, assignor to Kabushiki Kaisha, Osaka, Japan

Filed Nov. 5, 1990, Ser. No. 609,517

Claims priority, application Japan, Nov. 10, 1989, 1-293388

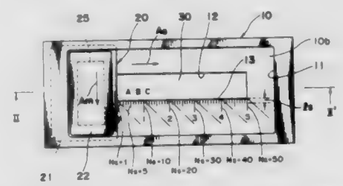
Int. Cl.[5] G06K *9/22*

U.S. Cl. 382—59 **9 Claims**

1. An image reader for reading a document image by manually moving an image sensor for optically reading said document image in a manual scan direction, converting said read document image into document image data, and outputting said converted document image data to an external unit, said image reader comprising:

a ruler body having a bottom surface and a top surface and including an image reading window for viewing said document image therethrough, said image reading window being formed on said bottom surface so as to be opened to said top surface, said image reading window having plural scale lines printed with predetermined equal pitches in said manual scan direction on said bottom surface, some of said scale lines being adjacent to one another;

a scanner mounted on said ruler body for movement in said manual scan direction, said scanner including said image sensor for and converting reading said document image and said plural scale lines into document image data and



scale image data, respectively, said image sensor being mounted on said scanner so as to receive light reflected from said image reading window and said plural scale lines; and

image correction means, coupled to said scanner, for correcting said document image data converted by said image sensor according to said scale image data so as to provide further document image data corresponding to said document image with predetermined equal pitches between adjacent ones of said scale lines of said converted scale image data.

5,058,189

APPARATUS AND METHOD FOR AREA DESIGNATION ON A DOCUMENT

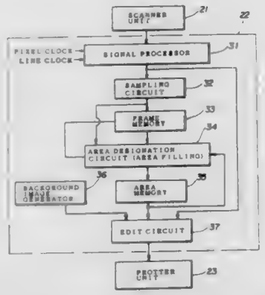
Hiroshi Kanno, Shiroishi, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 13, 1989, Ser. No. 310,520

Claims priority, application Japan, Feb. 16, 1988, 63-31951

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—61 **22 Claims**



1. A method for forming a rectangular area having a pre-existing figure inscribed therein, the rectangular area having exactly four sides regardless of the shape of the pre-existing figure, the method comprising the steps of:

a) scanning a sheet on which is inscribed the pre-existing figure, and outputting pixel data representing the figure, each pixel datum of the pixel data being one binary digit;

b) storing the pixel data in a first memory;

c) scanning the pixel data in the first memory in accordance with each of four combinations of directions defined by main and sub scanning directions and, for each of the four

combinations, reading out a pixel datum relating to a pixel of concern and pixel data relating to at least two pixels adjacent thereto;

d) performing, for each of the combinations, a first logic operation on the pixel datum relating to the pixel of concern and the pixel data relating to at least the two pixels adjacent thereto, and outputting results of the first logic operation obtained for the four combinations;

e) storing the results of the first logic operation in a second memory; and

f) performing a second logic operation on the results of the first logic operation obtained for the four combinations, and outputting a result of the second logic operation which forms the rectangular area in which the figure is inscribed, wherein the rectangular area may have pixels other than the pixels of the pre-existing figure.

5,058,190

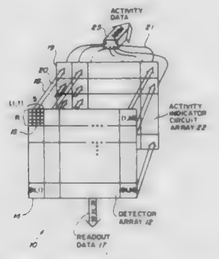
SELECTIVE READOUT OF A DETECTOR ARRAY

Hal L. Levitt, Baltimore, Md.; Gordon W. Anderson, Washington, D.C., and Anthony E. Spezio, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 14, 1990, Ser. No. 582,275

Int. Cl.[5] G06K *9/12*

U.S. Cl. 382—68 **13 Claims**



1. A detector system comprising:

a detector array for detecting a spatial pattern, said detector array comprising a plurality of subarrays each having a plurality of detector elements;

activity determination means connected to said detector array for determining whether any of said subarrays have detected a portion of said spatial pattern; and

a data readout means, responsive to said activity determination means, for selectively reading out data from said subarrays determined to have detected a portion of said spatial pattern.

5,058,191

MOTOR ROTATION SPEED CONTROL CIRCUIT

Hiroshi Tsurumi, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 22, 1989, Ser. No. 354,822

Claims priority, application Japan, May 26, 1988, 63-129069

Int. Cl.[5] H02P *5/17*

U.S. Cl. 388—811 **17 Claims**

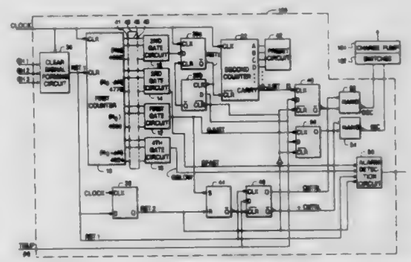
1. A circuit for controlling a motor, said circuit being coupled to receive clock pulses, and a first reset signal which is generated by each single rotation of the motor, said circuit comprising:

a first counter, coupled to receive the clock pulses and the first reset signal, for counting the number of the clock pulses input thereto between occurrences of the first reset signal;

a first gate circuit, coupled to said first counter, for detecting when said first counter has counted to a target count-number which corresponds to a predetermined target motor speed, and for providing a first target speed detection signal;

a second gate circuit, coupled to said first counter, for detecting when said first counter has counted to a first count-number and for providing a first count-number detection signal having a first pulse;

a reset signal generator, coupled to said second gate circuit, for outputting a second reset signal when the first pulse of the first count-number detection signal is received; and



a second counter coupled to receive the clock pulses and to said reset signal generator, and preset with a second count-number which is a difference between the target count-number and the first count-number, for counting the clock pulses input thereto after being reset by the second reset signal, said second counter outputting a second target speed detection signal upon counting the second count-number.

5,058,192

METHOD OF AND APPARATUS FOR PREPARING FOODS BY UTILIZING ELECTRIC HEATING

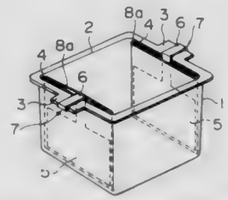
Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Division of Ser. No. 467,433, Jan. 19, 1990. This application May 31, 1990, Ser. No. 531,241

Claims priority, application Japan, Jan. 19, 1989, 01-010432

Int. Cl.[5] H05B *3/60*

U.S. Cl. 392—311 **13 Claims**



1. An apparatus for preparing foods by utilizing electric heating comprising:

a container having an open upper end and two mutually opposing inner surfaces;

a moisture permeable film member having a configuration substantially corresponding to that of said container, said film member being disposed inside said container and having two outer surfaces facing said two mutually opposing inner surfaces of said container; and

a pair of electrodes mutually opposed to each other and disposed in the gaps formed between one of said two mutually opposing inner surfaces of said container and corresponding one of said two outer surfaces of said moisture permeable film member, one end of each of said electrodes extending to the edge around the upper open end of said container to form a pair of electrical contact portions wherein food placed in said container onto said

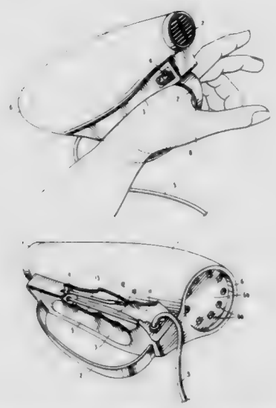
moisture permeable film member is prevented from mixing with any materials developed by electrolytic corrosion of said electrodes.

5,058,193

ELECTRIC HAIR-DRYER ADAPTED TO BE MOUNTED ON THE BACK OF A HAND

Anna N. Appierto, Via Pieve di Cadore, 30, 00135 Rome, Italy

Filed Apr. 12, 1990, Ser. No. 507,816
Claims priority, application Italy, Apr. 13, 1989, 53023/89[U]
Int. Cl.[5] A45D *20/10*; F24H *3/04*
U.S. Cl. 392—384 **6 Claims**



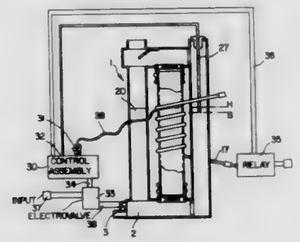
1. An electric hair dryer adapted to be mounted on the back of a hand, comprising an elongated rigid casing having a front end, a rear end and a bottom surface, an air inlet located in said rear end, an air outlet located in said front end and an elongated hand grip secured to and spaced from the bottom surface of said casing and extending lengthwise of said elongated casing with said bottom surface of said casing facing said hand grip being shaped anatomically so as to fit the shape of the back of a hand whereby upon insertion of a hand between said hand grip and said bottom surface so as to hold the hair dryer said casing will be supported on the back of said hand.

5,058,194

STEAM GENERATOR FOR COOKING APPLIANCES

Raymond Violi, Faverges, France, assignor to Societe Cooperative De Production Bourgeois, Faverges, France

Filed Jan. 3, 1989, Ser. No. 292,939
Claims priority, application France, Jan. 8, 1988, 88 00513
Int. Cl.[5] F22B *5/02*, *1/28*
U.S. Cl. 392—400 **13 Claims**



1. A steam generator comprising:
a lower transverse duct having a water intake orifice,
an upper transverse duct with a steam discharge orifice, disposed above the lower duct,
at least one heating riser tube with axial cavity a first end of which is sealingly connected to a first orifice of the lower duct, said first orifice of the lower duct disposed on the top of the lower duct, and a second end of which is sealingly connected to a first orifice of the upper duct, said first orifice of the upper duct disposed on the bottom of the upper duct, to ensure the passage of fluid between the lower duct and the upper duct, the heating tube having on its external face an electric resistance spirally wound about the heating tube substantially below the upper transverse duct, the electric resistance being connectable to a source of electric energy for heating the tube,
a return tube, a first end of which is connected sealingly to a second corresponding orifice or the lower duct and the second end of which is connected sealingly to a second corresponding orifice of the upper duct,
water level detection means for detecting the level of the water present in the generator,
an electrovalve disposed upstream of the intake orifice of the lower duct in the water intake flow direction, the electrovalve closing and opening the duct for intake of water coming from a water supply source, a control assembly connected to the water level detection means for controlling the electrovalve for opening of the valve after said water level detection means has indicated that the water level in the heating tube is less than a predetermined low intermediate level in the heating tube,
the control assembly adapted to cause closure of the valve when the water level in the heating tube is greater than a predetermined high intermediate level in the heating tube, so that the steam produced in the heating tube escapes directly into the upper transverse duct and the steam discharge orifice, without passing through the liquid layer, and so that the liquid phase water projected out of the heating tube into the upper transverse duct is separated from the steam and flows into the return tube.

5,058,195

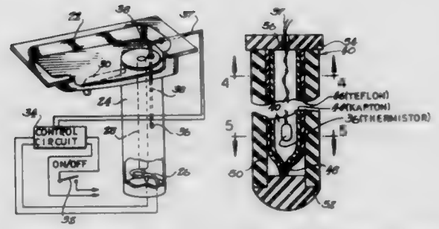
THERMISTOR MOUNTING ARRANGEMENT

John T. Knepler, Chatham, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Jun. 7, 1990, Ser. No. 534,723
Int. Cl.[5] H01C *7/13*; H05B *1/02*; E24H *1/20*
U.S. Cl. 392—442 **8 Claims**

1. In apparatus for heating a liquid and having a heated liquid reservoir and a temperature sensing element to be disposed in a reservoir for sensing the temperature of the liquid therein, an improved mounting arrangement for mounting said temperature sensing element in a reservoir comprising:
an elongate hollow tubular assembly defining a lumen for receiving said temperature sensing element therewithin;
said tubular assembly comprising an inner tubular member member constructed of a thin, light-weight electrically insulating and thermally conducting a polyamide film material, an intermediate tubular member constructed of a thin, heat-sealable dielectric polytetrafluoroethylene material and having a heat-sealed end which is adapted to extend into a reservoir; and an outer tubular member

constructed of a moldable, water-impervious, heat-resistant, durable silicone rubber material;



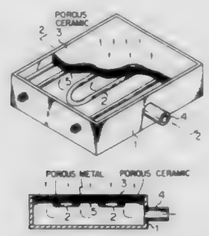
and means for sealing an end of said outer tubular member which is adapted to extend into a reservoir.

5,058,196

ELECTRIC INFRARED HEATER HAVING A GAS PERMEABLE ELECTROFORMED POROUS METALLIC PANEL COATED WITH A POROUS CERAMIC FAR-INFRARED RADIATING LAYER

Kisaku Nakamura, Funabashi; Shigeru Okuyama, Kashiwa; Eiji Owada, Tsuchiura, and Yoshihiro Nishibori, Funabashi, all of Japan, assignors to Senju Metal Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 156,632, Feb. 17, 1988, abandoned.
This application May 15, 1989, Ser. No. 352,227
Claims priority, application Japan, Feb. 17, 1987, 62-20683[U]; Dec. 23, 1987, 62-195583[U]
Int. Cl.[5] F28F *13/18*; H05B *3/00*
U.S. Cl. 392—435 **7 Claims**



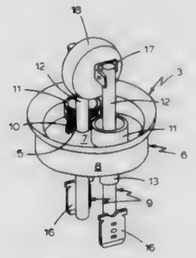
1. A far-infared heater which comprises an electric heating element installed in a box-type housing having an open side, a porous far-infared-radiating layer in contact with and supported by a plate-like porous metallic supporting member manufactured by an electroforming process, positioned over said heating element and covering said open side of said housing, said far-infared-radiating layer emitting far-infared rays having a wavelength of at least 3 μm when heated and being capable of passing a stream of gas through said layer, and a gas-supplying means provided in said housing through which a gas stream is supplied to the inside of the housing, the gas supplied through said gas-supplying means into the housing being discharged through the porous supporting member and the far-infared-radiating layer.

5,058,197

HEATER APPARATUS FOR FLUID MEDIUM IN A HERMETICALLY SEALED CHAMBER

Glenn A. Honkomp, Warren; Thomas O. McNay, Clermont; Larry G. Burrows, Hamilton; James M. Brown, Shelby, all of Ohio, and Benjamin Bowsky, St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 2, 1990, Ser. No. 503,286
Int. Cl.[5] H05B *3/78*; F24H *1/20*
U.S. Cl. 392—455 **3 Claims**



1. A heating apparatus for a confined chamber comprising: a refrigerating fluid medium containing chamber defined by outer walls of a hermetically sealed compressor housing, one of said walls having an aperture in the lower portion thereof; and,
a unitary heating assembly including a cup-shaped body member having a base and a perpendicular rim extending therefrom, said rim extending through and being sealed directly to said aperture in the lower portion of said outer wall of said compressor housing, said base of said cup-shaped body member in turn having a pair of spaced apertures therein to accommodate a pair of spaced terminal pins each embedded in a seal extending between said terminal pin and one of said spaced apertures in said base of said body member in sealed relation therewith to provide a pair of spaced inner pin segments to be connected to a heating element and a pair of spaced outer pin segments to be connected to an electrical power source with each of said inner pin segments extending into direct contact with the fluid medium of said fluid chamber and being surrounded by an insulating sleeve with one end of said sleeve embedded in one of said aperture seals, said unitary assembly having a heating element comprising an electrically conductive PTC thermistor disc electrically and supportively connected across said inner pin segments to extend into the lower portion of said chamber and directly into said refrigerating fluid medium in heat transfer relation therewith.

5,058,198

RADIO FREQUENCY TAP UNIT WHICH CAN BE RECONFIGURED WITH MINIMAL DISRUPTION OF SERVICE

Joseph D. Rocci, Lansdale; Michael Quelly, Quakertown; Robert Hallett, Phoenixville, and Norman W. Moore, Willow Grove, all of Pa., assignors to AM Communications, Inc., Quakertown, Pa.

Filed Mar. 31, 1989, Ser. No. 331,687
Int. Cl.[5] H01P *5/18*; H04H *7/48*
U.S. Cl. 455—3 **10 Claims**

1. In a system for distributing a signal having a radio fre-

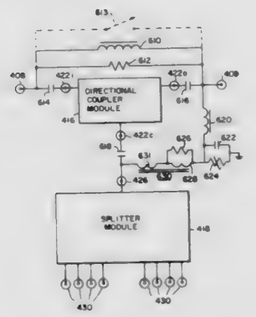
quency component and an operational power signal component over a network of radio frequency cables, a signal tap unit comprising:

base means, including:

an input port coupled to receive the distributed signal from a first one of said radio frequency cables;

an output port, coupled to a second one of said radio frequency cables;

means for separating the radio frequency signal component and the operational power signal component from said distributed signal; and



means for coupling the operational power signal component to said output port; and

signal coupling means, mechanically removably coupled to said base means, for receiving, when coupled to said base means, said separated radio frequency signal component to the substantial exclusion of the operational power signal component, and for providing said separated radio frequency signal component at an output terminal;

wherein, said base means further includes means for coupling the radio frequency signal component to said output port when said signal coupling means is removed from said base unit.

5,058,199

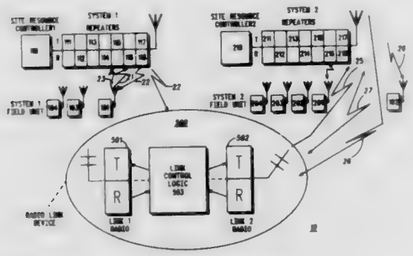
INTER-TRUNCKED RADIO SYSTEMS BRIDGE PROTOCOL

Gary W. Grube, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1990, Ser. No. 517,094

Int. Cl.[5] H04B *7/155, 7/26*

U.S. Cl. 455—15 **6 Claims**



1. A communication system comprising:

A. a plurality of communication units;

B. at least a first and a second base site each with a service coverage area, each base site further comprising a resource controller, with a control resource;

C. a requesting communication unit within the coverage area of the first base site;

D. at least one target communication unit in the coverage area of the second base site;

E. at least one radio link device comprising:

i. means for identifying a resource allocation for a specific talk-group over the control resource from the first base site;

ii. means for requesting a resource allocation over the control resource from the resource controller in the second base site;

iii. means for receiving a resource allocation over the control resource from the resource controller in the second base site;

iv. means for receiving and, upon occasion, transmitting a communicated message over the allocated resource in the first base site and means for transmitting and, upon occasion, receiving the communicated message over the allocated resource in the second base site, and;

v. means for routing the communicated message from the receiving means for communicated messages from the first base site to the transmitting means for communicated messages to the second base site and visa versa.

5,058,200

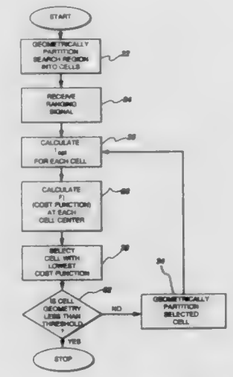
TRANSMITTER LOCATION SEARCHING SYSTEM

Chia-Chi Huang, Yorktown Heights, and Charles M. Puckette, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 4, 1990, Ser. No. 533,264

Int. Cl.[5] H04B *1/00, 7/00*

U.S. Cl. 455—33 **13 Claims**



1. A transmitter location searching method useable in a multipath transmission environment, comprising the steps of:

(a) geometrically partitioning a monitored area into a plurality of cells;

(b) receiving at the base stations a burst transmission from a transmitter to be located;

(c) determining minima of a total cost function at the center of each cell in response to receipt of said burst transmission;

(d) choosing the cell with the smallest of the plurality of total cost functions as a new candidate cell for locating said transmitter;

(e) dividing the new candidate cell into smaller cells;

(f) determining minimum costs for each corner of the smaller cells; and

(g) iterating the process of steps (c)–(f) until a dimension of a new candidate cell is smaller than a selected geometric threshold.

5,058,201

MOBILE TELECOMMUNICATIONS SYSTEM USING DISTRIBUTED MINIATURE ZONES

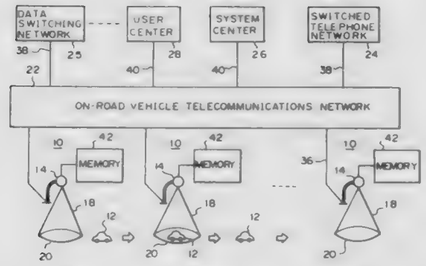
Yasuhiro Ishii; Tetsuji Isogai; Tatsuhiko Okazaki; Fumikazu Sato; Hiroto Yoneyama; Yukio Inotsume, and Toshiyuki Kodama, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Japan

Filed May 24, 1989, Ser. No. 357,010

Claims priority, application Japan, Jun. 7, 1988, 63-138407; Jun. 9, 1988, 63-140374; Jun. 9, 1988, 63-140375; Jun. 9, 1988, 63-140376; Jun. 9, 1988, 63-140377; Jun. 9, 1988, 63-140378; Jun. 9, 1988, 63-140379; Jun. 10, 1988, 63-141550; Jun. 10, 1988, 63-141551; Jun. 10, 1988, 63-141553

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33 **25 Claims**



1. A mobile telecommunications system comprising:

a plurality of base stations each being communicable with a mobile station over a radio link using a single frequency of an electromagnetic wave between geographically adjoining base stations, said plurality of base stations transmitting and receiving data with which the single frequency is modulated; and

a communication network interconnected to said plurality of base stations for switching to said plurality of base stations communications of the data which have been received and are to be transmitted by said plurality of base stations;

geographically adjoining ones of said plurality of base stations being spaced apart from each other with an area intervening in between in which the mobile station is substantially not responsive to the electromagnetic wave on the radio link;

each of said plurality of base stations establishing a miniature zone in which the single frequency of the electromagnetic wave is available to the mobile station, said miniature zone being of such a size that part of the data is transmitted between one of said plurality of base stations and the mobile station while the mobile station is in the miniature zone established by said one base station;

whereby said adjoining base stations are allowed to share the single frequency of the electromagnetic wave to transmit a series of data to the mobile station intermittently while the mobile station moves across the miniature zones established by adjoining ones of said plurality of base stations with said area intervening in between in which the mobile station is substantially not responsive to the electromagnetic wave on the radio link.

5,058,202

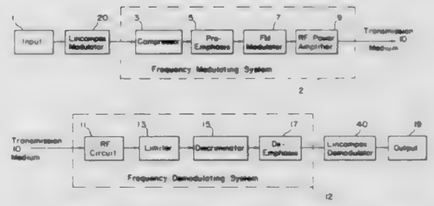
SYSTEM AND METHOD OF TRANSMITTING AND RECEIVING A LICOMPEX MODULATED SIGNAL OVER A COMMUNICATION CHANNEL UTILIZING FREQUENCY MODULATION TECHNIQUES

Howard Leveque, Columbia, Md., assignor to AMAF Industries, Inc., Columbia, Md.

Filed Aug. 25, 1989, Ser. No. 398,707

Int. Cl.[5] H04B *1/00, 1/64*

U.S. Cl. 455—43 **22 Claims**



1. A transmitter for transmitting a frequency modulated signal over a communication channel, comprising:

compressing means for compressing an input signal into a compressed signal;

control tone generating means, operatively connected to said compressing means, for producing a control tone representing an envelope of said input signal;

compression means, operatively connected to said compressing means and said control tone generating means, for providing further compression of said compressed signal and for compressing said control tone to produce a modified compressed signal and a modified control tone; and

frequency modulating means, operatively connected to said compression means, for frequency modulating said modified compressed signal and said modified control tone and for transmitting the frequency modulated signal.

5,058,203

MOBILE TELEPHONE TERMINAL HAVING SELECTIVELY USED PROCESSOR UNIT FOR LOW POWER CONSUMPTION

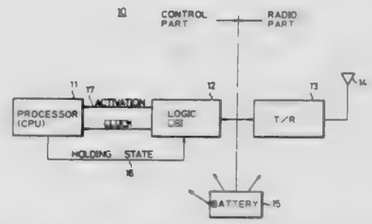
Fujio Inagami, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 22, 1989, Ser. No. 354,989

Claims priority, application Japan, May 21, 1988, 63-123006

Int. Cl.[5] H04B *1/38, 1/16*

U.S. Cl. 455—89 **18 Claims**



1. A mobile telephone terminal powered by a battery, comprising:

radio means for transmitting and receiving radio frequency signals; and

control means for performing first and second control functions, said control means including

processor means for processing said first control functions in response to an activation signal, said processor means includes means for placing said processor means into a holding state when said processor means finishes processing said first control functions; and

logic means for processing said second control functions and for providing said activation signal to said processor means when first control functions need to be processed, said logic means includes clock providing means for selectively providing a high speed clock signal to said processor means based on said holding state and blocking means for blocking said high speed clock signal from said processor means when said processor means is in said holding state.

5,058,204

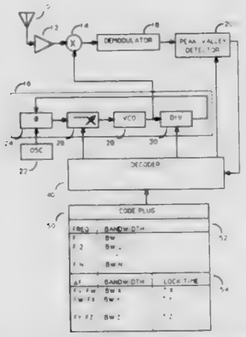
SYNTHESIZED SELECTIVE CALL RECEIVER HAVING VARIABLE CHARACTERISTICS

Omid Tabernia, Coconut Creek; Walter L. Davis, Coral Springs, and Barry W. Herold, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 388,459, Aug. 2, 1989, abandoned. This application Jul. 13, 1990, Ser. No. 551,669

Int. Cl.[5] H04B *17/02, 1/06*

U.S. Cl. 455—183 **14 Claims**



1. A selective call receiver cable of switching from a first receiver frequency to a second receive frequency comprising:

receiving means for receiving and demodulating a selective call signal, said receiving means having a plurality of selectable characteristics and said receiving means including a phase lock loop (PLL) for programmably generating an injection frequency used to select the first or second receive frequency for receiving the selective call signal, said PLL comprising a loop filter having a multiplicity of selectable characteristics of the receiving means results from the selection of one of said multiplicity of selectable bandwidths;

determining means for determining the difference between a first injection frequency corresponding to the first receive frequency and a second injection frequency corresponding to the second receive frequency, the determining means generating a difference signal in response thereof;

memory means for storing at least one delta bandwidth signal corresponding to the difference signal; and

decoding means for processing the demodulated selective call signal and for programming the PLL to produce a programmed frequency and for selecting a first one of the multiplicity of selectable bandwidths of the loop filter in response to the programmed frequency and the delta bandwidth signal and for switching the PLL from generating the first to generating the second injection frequency.

5,058,205

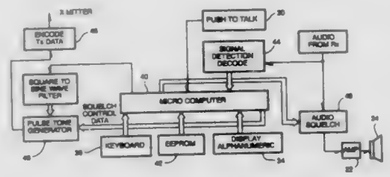
TRANSCEIVER SQUELCH CONTROL METHOD AND APPARATUS

Michael R. Roehrs, 20331 Bluffside, #115, Huntington Beach, Calif. 92646, and Robert E. Gorney, 5710 Felspar, Riverside, Calif. 92509

Continuation-in-part of Ser. No. 152,769, Feb. 5, 1988, abandoned. This application Jul. 26, 1989, Ser. No. 386,023

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—35 **23 Claims**



1. A squelch control circuit for use within a modulated radio transceiver used as an origination radio transceiver to communicate with at least one destination radio transceiver which also includes a squelch control circuit, each such radio transceiver respectively having a transmitted audio signal output, a received audio signal output, an audio amplifier, and a squelch which may be made to connect the received signal output to the audio amplifier of such radio transceiver, the squelch control circuit comprising:

tone generation means, electronically coupled to the origination radio transceiver, for generating a modulated signal encoded with a unique destination address of the destination radio transceiver; and

computer means, electronically coupled to the tone generation means and to the origination radio transceiver, for

(1) causing a first control message, containing the unique address of the destination radio transceiver and an associated flag bit that is set, and a unique origination address associated with the origination radio transceiver and an associated flag bit that is set, to be communicated to the destination radio transceiver from the origination radio transceiver,

which first control message is to cause the destination radio transceiver, upon receipt thereof, to thereafter communicate to the origination radio transceiver a second control message containing the origination address and an associated flag bit that is set,

(2) causing the origination radio transceiver, upon receipt of the second control message, to communicate a combination of a third control message and the transmitted audio signal output of the origination radio transceiver to the destination radio transceiver, the third control message containing the unique destination address and an associated flag bit that is reset,

which third control message is to cause the destination radio transceiver to communicate a combination of a fourth control message and a transmitted audio signal output of the destination radio transceiver to the origination radio transceiver, the fourth control message containing the unique address of the origination radio transceiver and an associated flag bit which is reset, and

(3) causing the squelch circuit of the origination radio transceiver to connect its received signal output to its audio amplifier only in response to the receipt of the fourth control message by the origination radio transceiver.

thereby enabling the origination radio transceiver to establish exclusive communications with the destination radio transceiver by squelching unwanted transmissions from other radio transceivers which do not include as a part thereof the fourth control message.

5,058,206

OPTICAL NETWORK IN WHICH THE TRANSMISSION, THE JOINING AND SEPARATION, AS WELL AS THE ROUTING OF INFORMATION AND CONTROL SIGNALS TAKE PLACE IN THE OPTICAL DOMAIN

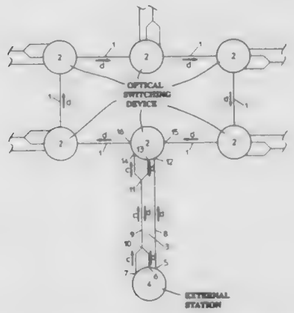
Sijtze Born, The Hague, and Johannes H. Herlaar, Leidschendam, both of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Continuation of Ser. No. 368,050, Jun. 16, 1989, abandoned. This application Apr. 4, 1991, Ser. No. 681,413

Claims priority, application Netherlands, Jun. 22, 1988, 8801590

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—164 **16 Claims**



1. A network for transmitting information signals between stations connected to that network, said network containing a plurality of switching devices and further comprising:

a plurality of first transmission means (1), each having an optical conductor and each connecting together two of said switching devices (2) by said optical conductor, for transmitting said information signals, each of said switching devices being thereby connected either by at least one said first transmission means to each of two other said switching devices or else by at least two said first transmission means in each case to at least one other said switching device;

a plurality of second transmission means (8,9), each having an optical conductor and each connecting a single said station (4) with a said switching device (2) by its said optical conductor for transmitting said information signals and each belonging to a pair (8, 9) of said second transmission means connecting the same one of said switching devices (2) with the same one of said stations (4);

all of said first and second transmission means having means for transmitting signals entirely by transmission that takes place in the optical domain;

means in each of said stations (4) for generating control signals for controlling said switching devices and for transmitting said control signals over a said second transmission means (9) to a said switching device (2) to which the station is thereby connected;

means in each of said switching devices (2), responsive to said control signals, from a said station for in the alternative (a) connecting a pair of said first transmission means (1) respectively to a said pair (8,9) of said second transmission means of (b) connecting said pair of first transmission lines to each other while at the same time connecting to each other at said switching device said pair (8,9) of second transmission means, each of said switching devices also constituting means for selectively switching optically transmitted signals between a first selected optical conductor and a second selected optical conductor wherein the switching takes place in the optical domain;

said second transmitting means of each said pair (8,9) connected to the same one of said stations (4) including in each case at least one second transmitting means of a first kind (9) having means at one end thereof for separating said control signals from said information signals, means for differently transmitting, respectively, said control and information signals in said optical conductor of said second transmission means of the first kind and means at another end of said second transmission means of the first kind for injecting said control signals into said optical conductor thereof, others of said second transmission means being of a second kind having no said signal separating means and no said control signal injecting means, all said signal separating means and control signal injecting means being means in which the respective separating and combining of control and information signals take place in the optical domain.

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OC
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DESIGN PATENTS

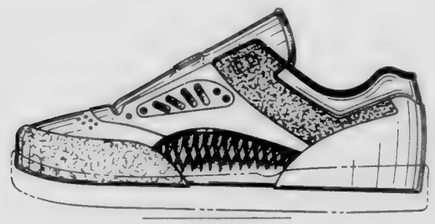
GRANTED OCT. 15, 1991

ERRATA

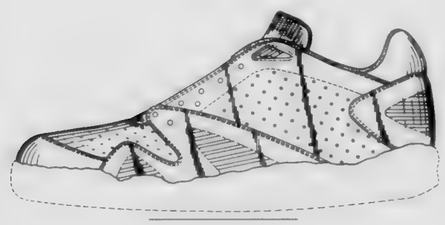
For CLASS	See PATENT NO.
D006-553	320,719
D006-569	320,720

VOL
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1991
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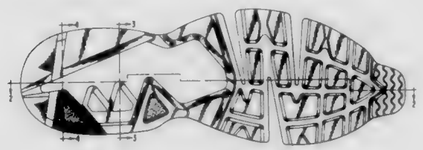
320,688
SHOE UPPER
Kimberly A. McKinstry, Redondo Beach, Calif., assignor to L.A. Gear, Inc., Los Angeles, Calif.
Filed Jan. 9, 1990, Ser. No. 463,676
Term of patent 14 years
U.S. Cl. D2—314



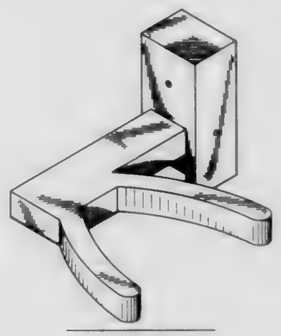
320,689
SHOE UPPER
Wilson Smith, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Ohio
Filed Feb. 1, 1991, Ser. No. 654,362
Term of patent 14 years
U.S. Cl. D2—314



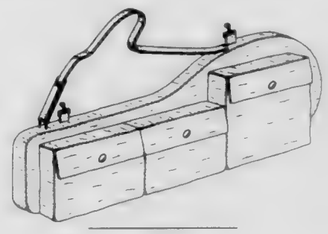
320,690
OUTSOLE
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Oreg.
Filed Dec. 7, 1990, Ser. No. 624,666
Term of patent 14 years
U.S. Cl. D2—320



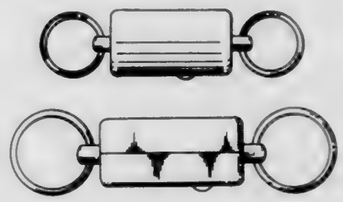
320,691
BOOT REMOVER
Charles A. Rose, 3107 Cumberland Dr., San Angelo, Tex. 76904
Filed May 27, 1987, Ser. No. 54,670
Term of patent 14 years
U.S. Cl. D2—642



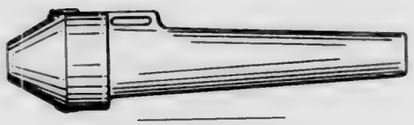
320,692
SPORT BAG
Walter Killer, Zurich, Switzerland, assignor to TSM Anstalt, Vaduz, Liechtenstein
Filed Dec. 14, 1987, Ser. No. 132,559
Claims priority, application Switzerland, Jun. 15, 1987, DM/008 785
Term of patent 14 years
U.S. Cl. D3—36



320,693
KEY HOLDER
James R. Stillwagon, 890 Gatehouse La., Worthington, Ohio 43235, and Scott H. Lee, R.R. #2, Putnam, Conn. 06260
Filed Aug. 2, 1990, Ser. No. 565,757
Term of patent 14 years
U.S. Cl. D3—61



320,694
CASE FOR FISHING RODS
Charles R. Brant, 2679 Brad Pl., Brighton, Mich. 48116
Filed Mar. 23, 1987, Ser. No. 29,410
Term of patent 14 years
U.S. Cl. D3—38

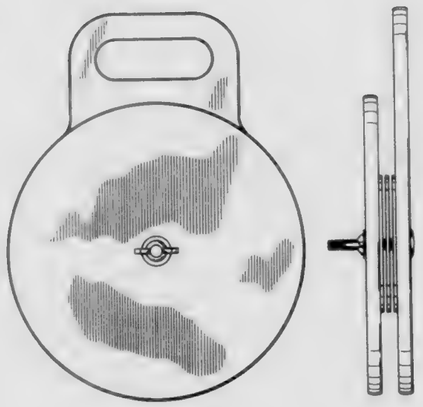


320,695
CARRYING CASE FOR A VIDEO CASSETTE RECORDER
Kue S. Shim, 85-690 Ahyun-1 Dong, Mapo-Ku, Seoul, Rep. of Korea
Filed Dec. 14, 1988, Ser. No. 284,467
Claims priority, application Rep. of Korea, Jun. 14, 1988, 8156/1988
Term of patent 14 years
U.S. Cl. D3—33



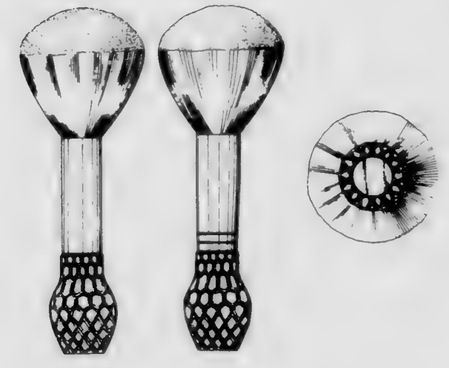
320,696
CARRIER FOR SKIS OR THE LIKE
Gregory P. Butler, 26731 Magdalena La., Mission Viejo, Calif. 92691
Filed Apr. 28, 1989, Ser. No. 344,982
Term of patent 14 years
U.S. Cl. D3—36



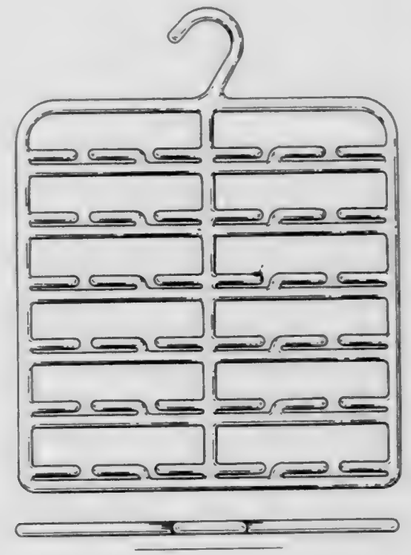


320,697
CIRCULAR SAW BLADE CARRIER
Conrad M. Eggan, 6500 Peaceful La., Chanhassan, Minn. 55317
Filed Aug. 29, 1988, Ser. No. 237,555
Term of patent 14 years
U.S. Cl. D3—73

320,698
BRUSH
Steven H. Reich, 59 Farrand Dr., Parsippany, N.J. 07054
Filed Oct. 19, 1989, Ser. No. 424,145
Term of patent 14 years
U.S. Cl. D4—135



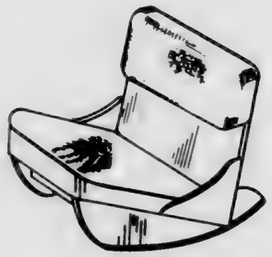
320,699
HANGER
Allen R. Beloe, Ryde, Australia, assignor to Antipex Pty Limited, Erskinville, Australia
Filed Oct. 12, 1989, Ser. No. 420,228
Claims priority, application Australia, Apr. 12, 1989, 1139/89
Term of patent 14 years
U.S. Cl. D6—317



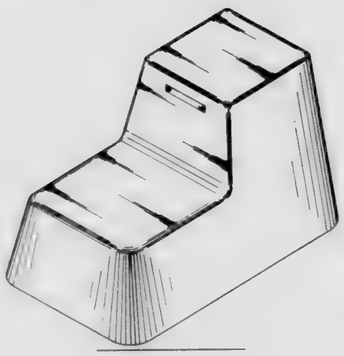
320,700
PANTS HANGER
Emily Testa, Burnaby, Canada, assignor to Emily Testa Marketing Ltd., Burnaby, Canada
Filed Oct. 30, 1989, Ser. No. 428,665
Claims priority, application Canada, Jul. 7, 1989, 07-07-89-6
Term of patent 14 years
U.S. Cl. D6—317



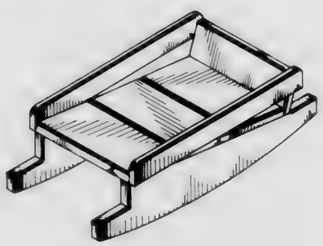
320,701
ROCKING CHAIR
Richard Hoff, 1187 Delaware St., Berkeley, Calif. 94702
Filed Apr. 15, 1988, Ser. No. 182,046
Term of patent 14 years
U.S. Cl. D6—348



320,702
STEP STOOL
Kenneth M. Dewing, Anaheim, Calif., assignor to Endurequest Corporation, Porterville, Calif.
Filed Aug. 27, 1987, Ser. No. 90,038
Term of patent 14 years
U.S. Cl. D6—349



320,703
ROCKABLE FOOT STOOL
Emily R. Burkhart, 11 S. Richmond Ave., Atlantic City, N.J. 08401
Filed May 30, 1989, Ser. No. 360,701
Term of patent 14 years
U.S. Cl. D6—349

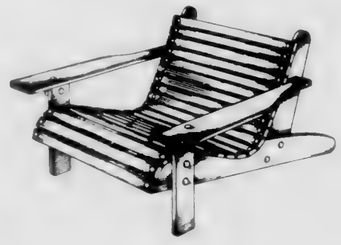


320,704
CHAIR
Mauro Monesi, San Lazzaro di Savena, Italy, assignor to Castelli S.p.A., Bologna, Italy
Filed Dec. 8, 1987, Ser. No. 130,340
Claims priority, application Italy, Jun. 8, 1987, 53385/87[U]
Term of patent 14 years
U.S. Cl. D6—366

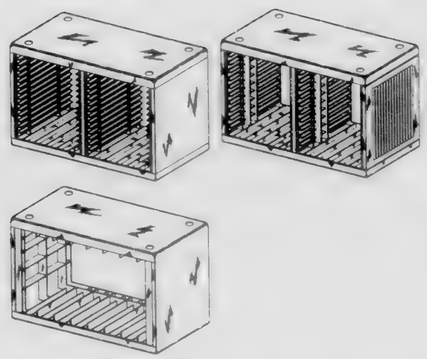


320,705
CHAIR
Edward G. Novotny, P.O. Box 1537, Rock Springs, Wyo. 82902
Filed May 13, 1988, Ser. No. 193,573
Term of patent 14 years
U.S. Cl. D6—366

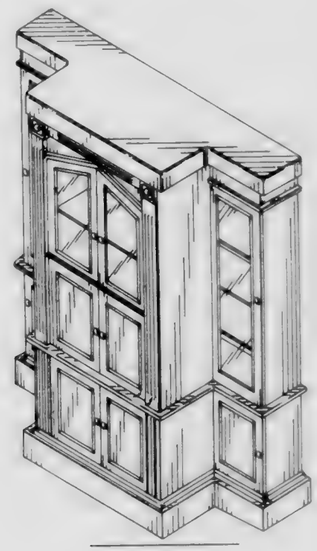
320,706
CHAIR
Edward R. McInerny, 1279 S. Barksdale, Mt. Pleasant, S.C. 29464
Filed Dec. 15, 1988, Ser. No. 284,485
Term of patent 14 years
U.S. Cl. D6—370



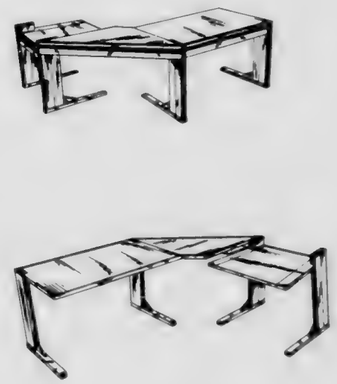
320,707
DISPLAY MODULE FOR AUDIO/VIDEO CASSETTES AND THE LIKE
Sandor A. Garfinkle, Franklin Lakes, N.J., assignor to Gemini Industries, Inc., Clifton, N.J.
Filed Oct. 11, 1988, Ser. No. 256,364
Term of patent 14 years
U.S. Cl. D6—407



320,708
CABINET
Henry Martinez, Sr., 95 Court St., Brooklyn, N.Y. 11201
Filed Sep. 23, 1988, Ser. No. 249,072
Term of patent 14 years
U.S. Cl. D6—438



320,709
OFFICE WORKSTATION
Friedemann Lotsch, and Helmut Thiele, both of Dortmund, Fed. Rep. of Germany, assignors to Willy Fleischer Metallwarenfabrik GmbH & Co. KG
Filed Aug. 18, 1988, Ser. No. 233,665
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1988, 653
Term of patent 14 years
U.S. Cl. D6—474

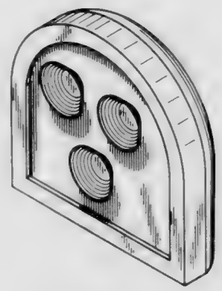


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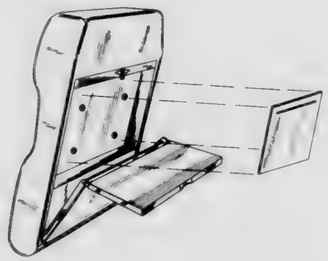
320,710
SIDEWALL FOR A DRAWER
Erich Röck, Höchst; Helmut Hollenstein, Lustenau, and Josef Brunner, Höchst, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Hochst, Austria
Filed Jul. 21, 1987, Ser. No. 75,882
Claims priority, application Austria, Jan. 21, 1987, 27399/447; Jan. 21, 1987, 27427/447
Term of patent 14 years
U.S. Cl. D6—492



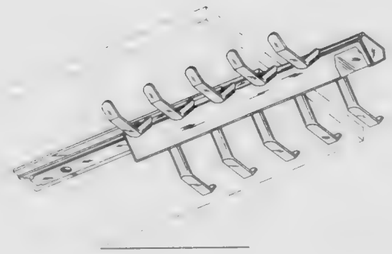
320,711
HEAD REST
Roger L. Olsen, 53 Chase Ave., Springfield, Mass. 01108
Filed Jun. 22, 1988, Ser. No. 210,708
Term of patent 14 years
U.S. Cl. D6—501



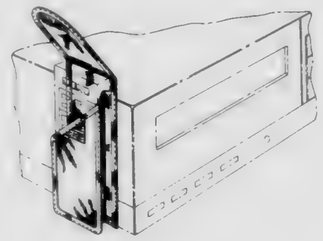
320,712
COMBINED CHAIR BACK, ADJUSTABLE TRAY TABLE, AND DETACHABLE POCKET
Aegir Bjornsson, Vallgatan 17, 450 43 Smogen, Sweden
Filed Apr. 26, 1988, Ser. No. 186,210
Claims priority, application Sweden, Oct. 26, 1987, 87 2437
Term of patent 14 years
U.S. Cl. D6—502



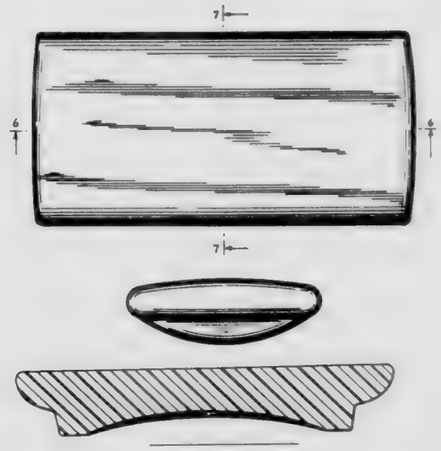
320,713
SLIDING ORGANIZER RACK
Steven E. Greenhut, 21646 Club Villa Ter., Boca Raton, Fla. 33433, and Sheldon H. Goodman, 4079 Princeton Blvd., South Euclid, Ohio 44121
Filed Sep. 13, 1989, Ser. No. 406,742
Term of patent 14 years
U.S. Cl. D6—513



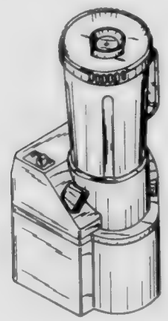
320,714
REMOTE CONTROL HOLDER
William P. Singley, 1504 Poinsettia Ave., Manhattan Beach, Calif. 90266
Filed Oct. 6, 1989, Ser. No. 417,848
Term of patent 14 years
U.S. Cl. D6—553



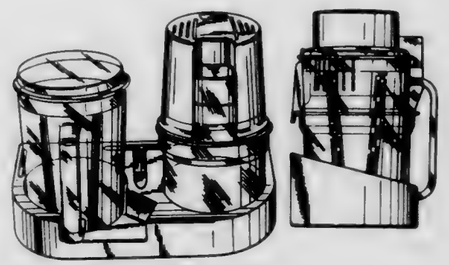
320,715
SEAT CUSHION FOR USE IN A BATHTUB OR THE LIKE
Maurice Y. Magnin, Par Bornel, France, and Mary J. Reid, Sheboygan, Wis., assignors to Jacob Delafon, Paris, France
Filed Oct. 31, 1989, Ser. No. 429,909
Term of patent 14 years
U.S. Cl. D6—601



320,716
BLENDER
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG, Solingen, Fed. Rep. of Germany
Filed Nov. 22, 1988, Ser. No. 275,221
Claims priority, application Fed. Rep. of Germany, May 26, 1988, 5 MR 9861
Term of patent 14 years
U.S. Cl. D7—378



320,717
COMBINED FOOD PROCESSOR, BLENDER JAR AND HOLDER THEREFOR
William J. O'Brien, Sydney, Australia, assignor to Breville R & D PTY Limited, Australia
Filed Nov. 15, 1988, Ser. No. 272,021
Term of patent 14 years
U.S. Cl. D7—384



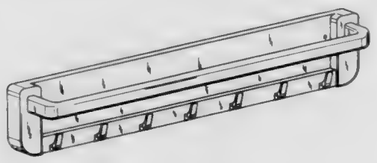
320,718
TEACUP OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 10, 1989, Ser. No. 321,552
Term of patent 14 years
U.S. Cl. D7—536



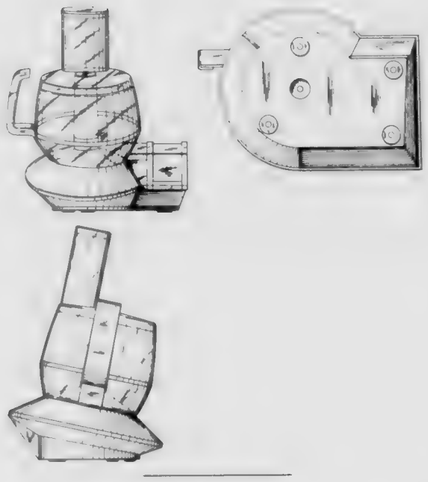
320,719
WALL MOUNTABLE REVOLVING PEGBOARD DISPLAY UNIT
Gary F. Kolsrud, Waterville, Iowa, and John H. Swon, 12 Sixth St. S., M135, Minneapolis, Minn. 55402, assignors to John H. Swon, Minneapolis, Minn.
Filed Jan. 29, 1988, Ser. No. 149,870
Term of patent 14 years
U.S. Cl. D6—553



320,720
COMBINATION TOWEL BAR AND HOOK UNIT
Sheldon H. Goodman, 4079 Princeton Blvd., South Euclid, Ohio 44121, and Steven E. Greenhut, 21646 Club Villa Ter., Boca Raton, Fla. 33433
Filed Aug. 23, 1989, Ser. No. 397,296
Term of patent 14 years
U.S. Cl. D6—569



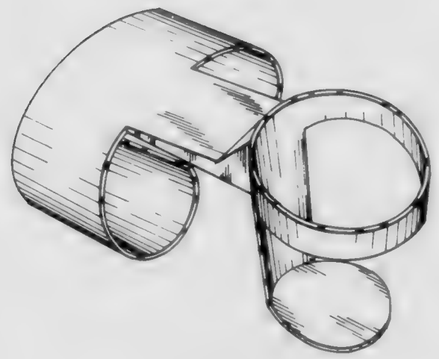
320,721
FOOD PROCESSOR
Robert M. Machuron, 37, rue Louis Desantels, 71230 Saint Vallier, France
Filed Jul. 8, 1988, Ser. No. 219,708
Claims priority, application France, Mar. 1, 1988, 88 1371
Term of patent 14 years
U.S. Cl. D7—384



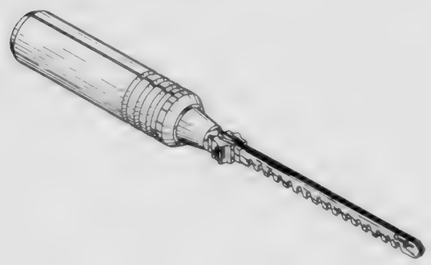
320,722
CONTAINER HOLDER
Richard Sanford, R.D. #1, Box 24, Nineveh, N.Y. 13813
Filed Jan. 19, 1989, Ser. No. 298,668
The portion of the term of this patent subsequent to Jul. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—616



320,723
MOVIE THEATER CADDY
Patricia J. White, and Anne Paone, both of Chicago, Ill., assignors to Paone/Barron Joint Venture, Chicago, Ill.
Filed Apr. 25, 1989, Ser. No. 342,916
Term of patent 14 years
U.S. Cl. D7—620



320,724
KNIFE
Edgar Rixen, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG, Solingen, Fed. Rep. of Germany
Filed Nov. 22, 1988, Ser. No. 275,263
Claims priority, application Fed. Rep. of Germany, May 26, 1988, 5 MR 9858
Term of patent 14 years
U.S. Cl. D7—646



320,725
OPEN END RATCHET WRENCH
Greg Rubesh, P.O. Box 213, Palmer, Nebr. 68864
Filed Jan. 4, 1989, Ser. No. 293,493
Term of patent 14 years
U.S. Cl. D8—25



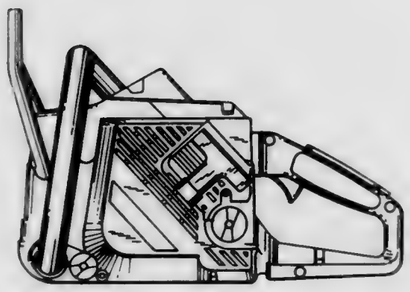
320,726
FLEXIBLE TORCH TIP
Dean E. Gartin, 4505 - 35th W., Seattle, Wash. 98199
Continuation of Ser. No. 259,415, Apr. 25, 1988, abandoned. This application Dec. 11, 1990, Ser. No. 625,601
Term of patent 14 years
U.S. Cl. D8—41



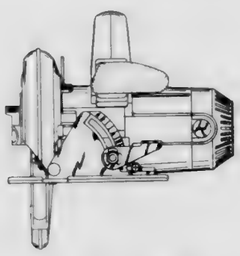
320,727
PORTABLE ELECTRIC GRINDER
Fusao Fushiya, and Yoshio Yokoyama, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Feb. 16, 1989, Ser. No. 311,878
Claims priority, application Japan, Oct. 17, 1988, 63-40634
Term of patent 14 years
U.S. Cl. D8—62

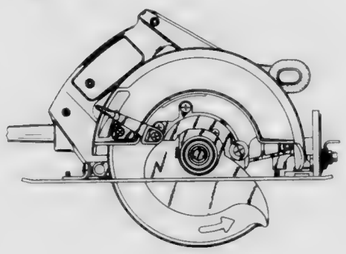


320,728
POWER CHAINSAW DRIVE UNIT
Bengt A. J. Arvidsson, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Oct. 31, 1988, Ser. No. 264,672
Term of patent 14 years
U.S. Cl. D8—65

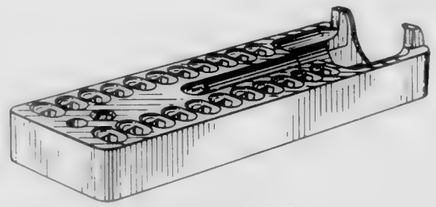


320,729
CIRCULAR SAW OR SIMILAR ARTICLE
Donald W. Zurwelle, Lutherville, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 17, 1989, Ser. No. 326,208
Term of patent 14 years
U.S. Cl. D8—66

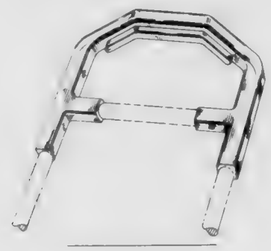




320,730
TOOL HOLDER
Glen W. Ediger, Newton, and Gary P. Israel, Wichita, both of Kans., assignors to Wescon Products Company, Wichita, Kans.
Filed Nov. 22, 1988, Ser. No. 274,951
Term of patent 14 years
U.S. Cl. D8—71



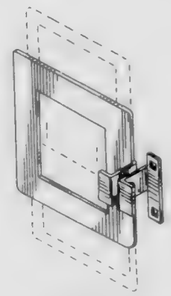
320,731
APPLIANCE HANDLE
Anthony Fink, Shakopee, and Randall Beihoffer, Bloomington, both of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Jan. 6, 1989, Ser. No. 294,137
Term of patent 14 years
U.S. Cl. D8—107



320,732
CABINET HANDLE OR SIMILAR ARTICLE
Chris R. Peters, 12 Graceland Ct., Chico, Calif. 95926
Filed Dec. 1, 1989, Ser. No. 444,362
Term of patent 14 years
U.S. Cl. D8—320



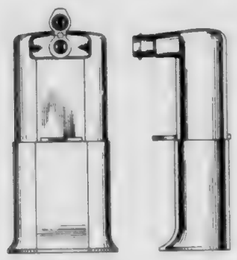
320,733
ANTI-THEFT ASSEMBLY FOR VIDEO GAME CABINET ACCESS DOOR
Stanley W. Pearson, 1601 Cambridge Dr., Kinston, N.C. 28501
Filed Jul. 14, 1988, Ser. No. 219,245
Term of patent 14 years
U.S. Cl. D8—331



320,734
BOLT FOR EXHAUST MANIFOLD
Roy L. Gallagher, 13294 E. Harney La., Lodi, Calif. 95240
Filed Sep. 12, 1988, Ser. No. 243,013
Term of patent 14 years
U.S. Cl. D8—387



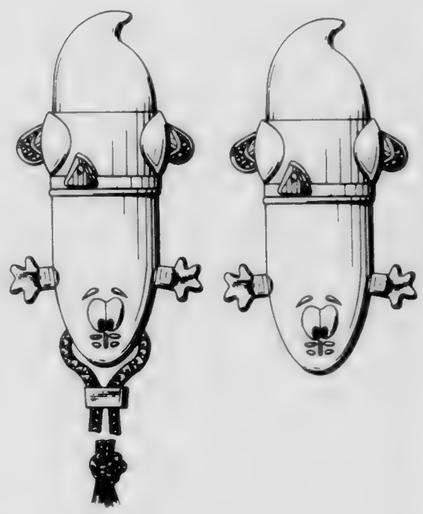
320,735
DISPENSING CONTAINER
Edwin R. Pettengill, Stratford, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.
Continuation-in-part of Ser. No. 280,739, Dec. 6, 1988, Pat. No. D. 315,496. This application May 23, 1989, Ser. No. 354,366
Term of patent 14 years
U.S. Cl. D9—373



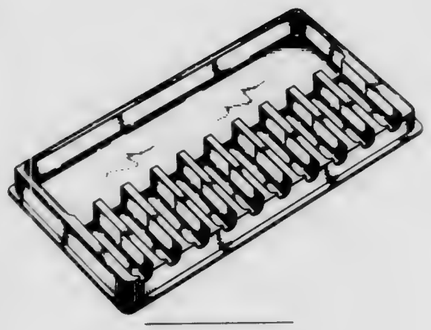
320,736
BOTTLE
Lenora Combes, 721 Leinster, Rochester Hills, Mich. 48309
Filed May 3, 1989, Ser. No. 347,237
Term of patent 14 years
U.S. Cl. D9—311



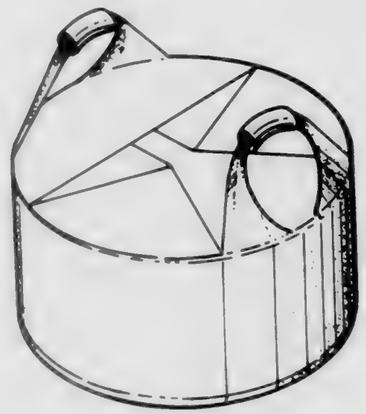
320,737
CONTAINER
Ronald Silvestre, 1221-B Kona St., Honolulu, Hi. 96814
Filed Jan. 25, 1990, Ser. No. 471,119
Term of patent 14 years
U.S. Cl. D9—318



320,738
TRAY FOR CHEMICAL CONTAINERS
Zencho Kanda, Yamanashi; Shinzo Honda, Ichikawa, and Kazunori Hirose, Yamanashi, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1989, Ser. No. 455,746
Claims priority, application Japan, Jul. 3, 1989, 1-24297; Jul. 3, 1989, 1-24298
Term of patent 14 years
U.S. Cl. D9—341



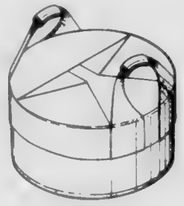
320,740
BULK CONTAINER
Michael Willis, Billingham, and David Fielding, Yarm, both of England, assignors to Imperial Chemical Industries plc, London, England
Filed Apr. 27, 1989, Ser. No. 344,094
Claims priority, application United Kingdom, Oct. 27, 1988, 1054750
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—414



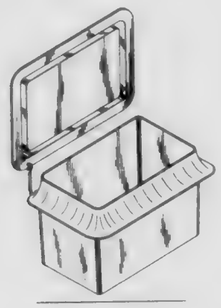
320,739
COMBINED DETERGENT CONTAINER AND DISPENSER
Manuel B. Camus, Barcelona, Spain, assignor to Henkel Iberica, S.A., Barcelona, Spain
Filed May 31, 1988, Ser. No. 200,309
Claims priority, application Spain, Nov. 30, 1987, 114 553-A
Term of patent 14 years
U.S. Cl. D9—366



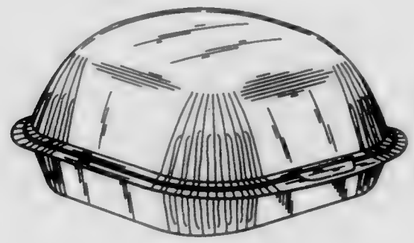
320,741
BULK CONTAINER
Michael J. Willis, Billingham, and David Fielding, Yarm, both of England, assignors to Imperial Chemical Industries plc, London, England
Filed Apr. 27, 1989, Ser. No. 344,832
Claims priority, application United Kingdom, Oct. 27, 1988, 1054749
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—414



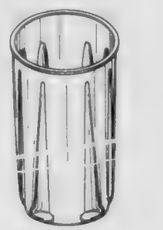
320,742
NUT SAVER BOX
My Phan, R.R. #2, Ilderton, Canada N0M 2A0
Filed Oct. 11, 1989, Ser. No. 429,348
Claims priority, application Canada, Jun. 28, 1989, 2806897
Term of patent 14 years
U.S. Cl. D9—423



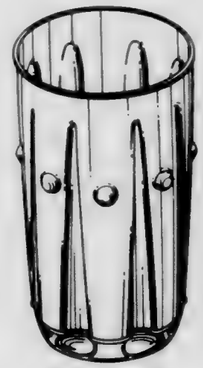
320,743
CLAMSHELL SANDWICH CONTAINER
Garold W. Alexander; David J. Bulcher, both of Powell, and Jeffrey C. Reasinger, Hilliard, all of Ohio, assignors to Pressware International, Inc., Columbus, Ohio
Filed Jul. 14, 1989, Ser. No. 379,904
Term of patent 14 years
U.S. Cl. D9—425



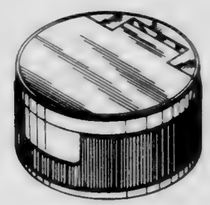
320,744
STACKABLE CONTAINER LINER
Stephen P. Palisin, Jr., South Euclid, Ohio, assignor to Berwick Manufacturing, Inc., Cleveland, Ohio
Filed Nov. 14, 1988, Ser. No. 270,122
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—429



320,745
STACKABLE CONTAINER
Stephen P. Palisin, Jr., South Euclid, Ohio, assignor to Berwick Manufacturing, Inc., Cleveland, Ohio
Continuation-in-part of Ser. No. 270,123, Nov. 14, 1988. This application Jan. 23, 1989, Ser. No. 299,957
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—429

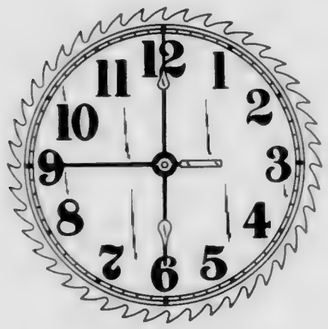


320,746
CLOSURE
Robert J. Bolen, Jr., 10 Gwynn Ct., Closter, N.J. 07624, and Thomas R. Bolen, 64 Wheeler Ave., Westwood, N.J. 07675
Filed Jul. 1, 1988, Ser. No. 215,437
Term of patent 14 years
U.S. Cl. D9—446

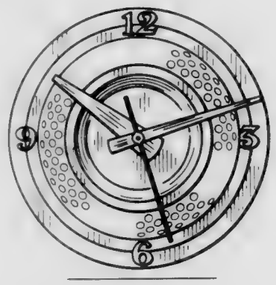




320,747
CLOCK
James M. Luebbers, Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Filed Jul. 21, 1988, Ser. No. 222,229
Term of patent 14 years
U.S. Cl. D10—6



320,748
CLOCK OR SIMILAR ARTICLE
Carl D. Thompson, 4318 SE. Kentucky St., Bartlesville, Okla. 74006
Filed Oct. 21, 1988, Ser. No. 260,824
Term of patent 14 years
U.S. Cl. D10—22



320,749
WRIST WATCH
Kaoru Tsukahara, Kodaira, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1989, Ser. No. 343,920
Term of patent 14 years
U.S. Cl. D10—39



320,750
WRIST WATCH
Kazuyo Kawashima, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 2, 1989, Ser. No. 360,729
Term of patent 14 years
U.S. Cl. D10—39



320,751
WRIST WATCH
Atsushi Goto, Ohme, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 28, 1989, Ser. No. 372,943
Term of patent 14 years
U.S. Cl. D10—39



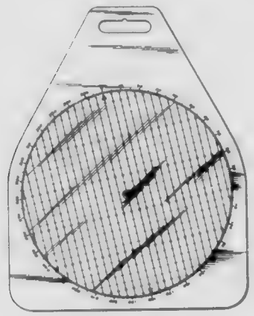
320,752
COMBINED TIMER AND HANDLE
Walter Koziol, Antioch, Ill., assignor to Modern Home Products Corp., Antioch, Ill.
Division of Ser. No. 121,571, Nov. 16, 1987, Pat. No. Des. 316,678. This application Jan. 4, 1991, Ser. No. 637,389
Term of patent 14 years
U.S. Cl. D10—40



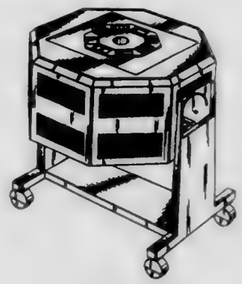
320,753
ADJUSTABLE CIRCLE CUTTING ATTACHMENT
Nathaniel G. McCormick, 10137 Filbert La., SW., Tacoma, Wash. 98499
Filed Nov. 14, 1988, Ser. No. 270,507
Term of patent 14 years
U.S. Cl. D10—64



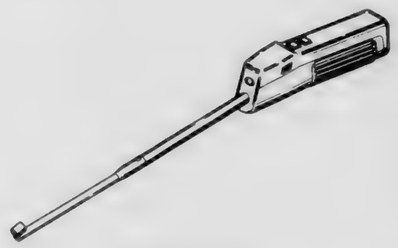
320,754
CHART FOR PLOTTING NAVIGATIONAL COURSE
Frank P. Tucker, P.O. Box 3098, Sea Bright, N.J. 07760
Filed Dec. 4, 1989, Ser. No. 445,334
Term of patent 14 years
U.S. Cl. D10—65



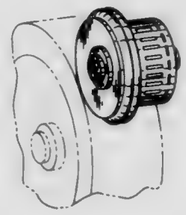
320,755
INTERGRATED CIRCUIT TESTER
Bjorn M. Dahlberg; Charles H. Schwar, both of Irvine, and Mauro V. Tegethoff, Mission Viejo, all of Calif., assignors to Hilevel Technology, Irvine, Calif.
Filed Jan. 11, 1989, Ser. No. 296,185
Term of patent 14 years
U.S. Cl. D10—75



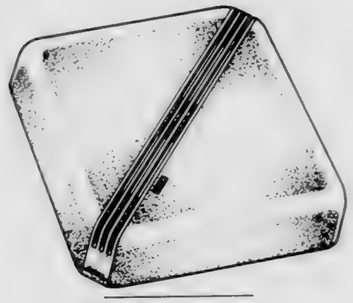
320,756
TIRE PRESSURE GAUGE
Kiyoshi Ohno, and Shuji Kobayashi, both of c/o Bridgestone Corporation, 10-1, Kyobashi 1-chome, Chuo-ku, Tokyo, Japan
Filed Jun. 27, 1989, Ser. No. 371,970
Claims priority, application Japan, Dec. 29, 1988, 63-51471
Term of patent 14 years
U.S. Cl. D10—86



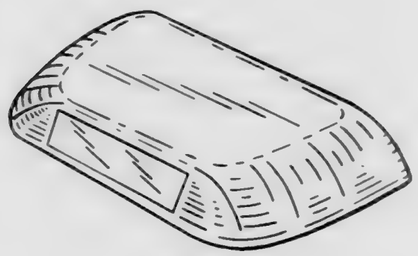
320,757
SPEED INDICATOR
Thomas J. Smrt, Cary, Ill., assignor to Fox Valley Systems, Inc., Cary, Ill.
Filed Mar. 30, 1989, Ser. No. 330,718
Term of patent 14 years
U.S. Cl. D10—96



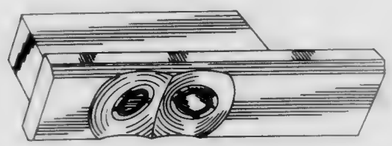
320,758
OCCUPANCY SENSOR COVER
William R. Lutz, Tucker, Ga., and William C. Onsrud, Troutman, N.C., assignors to National Service Industries, Inc., Atlanta, Ga.
Filed Dec. 18, 1989, Ser. No. 451,556
Term of patent 14 years
U.S. Cl. D10—104



320,759
PAVEMENT MARKER
Michael W. Sakko, P.O. Box 2501, Winter Haven, Fla. 33883
Filed Mar. 15, 1989, Ser. No. 323,987
The portion of the term of this patent subsequent to May 23, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—113



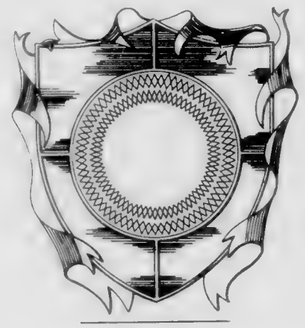
320,760
SONIC WEB BREAK DETECTOR FOR PRINTING PRESSES
Herman C. Gnuechtel, Arlington Heights, Ill., assignor to Web Printing Controls Co., Inc., Lake Barrington, Ill.
Filed Aug. 8, 1989, Ser. No. 390,913
Term of patent 14 years
U.S. Cl. D10—121



320,761
CHRISTMAS TREE ORNAMENT
Nicholas C. Titone, 82 Boyd Ave., East Providence, R.I. 02914
Filed Oct. 18, 1989, Ser. No. 423,101
Term of patent 14 years
U.S. Cl. D11—121



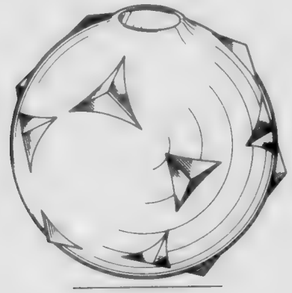
320,762
GENEALOGY PLAQUE
Richard E. Cone, 232 Clark St., Cambridge, Ohio 43725
Filed Jul. 20, 1987, Ser. No. 75,755
Term of patent 14 years
U.S. Cl. D11—140



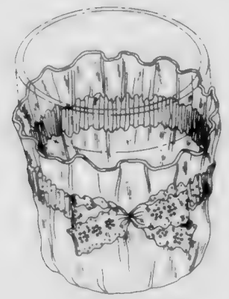
320,763
PLANTER
Candelario Lomeli, 2955 S. Eldorado, Stockton, Calif. 95206
Filed Mar. 28, 1989, Ser. No. 329,505
Term of patent 14 years
U.S. Cl. D11—148



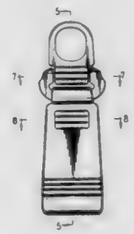
320,764
VASE OR SIMILAR ARTICLE
Anthony R. Harvey, 3 Hampton Ave., #34, Northampton, Mass.
Filed Mar. 22, 1988, Ser. No. 172,905
Term of patent 14 years
U.S. Cl. D11—153



320,765
PLANT POT COVER
Charlene Sypien, 8502 Parkview Ave., Brookfield, Ill. 60573
Filed Apr. 11, 1988, Ser. No. 178,517
Term of patent 14 years
U.S. Cl. D11—164



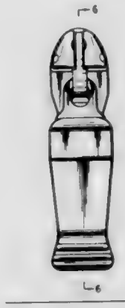
320,766
PULL TAB FOR SLIDE FASTENER
Yasuharu Terada, Uozu, and Chiharu Takemura, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Apr. 24, 1989, Ser. No. 342,563
Claims priority, application Japan, Oct. 24, 1988, 63-41714
Term of patent 14 years
U.S. Cl. D11—221



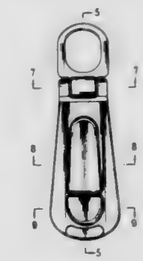
320,767
PULL TAB FOR SLIDE FASTENER
Yasuharu Terada, Uozu, and Yoshiyuki Horita, Toyama, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed May 30, 1989, Ser. No. 357,859
Term of patent 14 years
U.S. Cl. D11—221



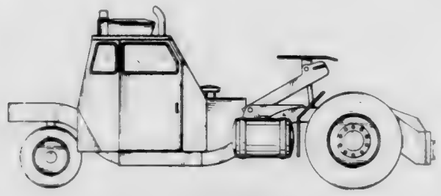
320,768
SLIDER FOR SLIDE FASTENER
Kiyoshi Oda, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jun. 5, 1989, Ser. No. 361,114
Claims priority, application Japan, Dec. 22, 1988, 63-49889
Term of patent 14 years
U.S. Cl. D11—221



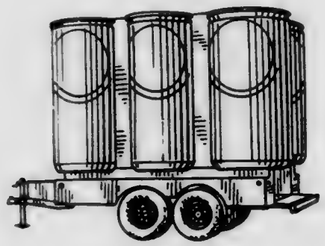
320,769
PULL TAB FOR SLIDE FASTENER
Susumu Komuro, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Oct. 16, 1989, Ser. No. 421,709
Claims priority, application Japan, Apr. 17, 1989, 1-14182
Term of patent 14 years
U.S. Cl. D11—221



320,770
TRACTOR WITH FIFTH WHEEL PLATE FOR MOVING TRAILERS
Stanley E. Beck, Lufkin, Tex., assignor to Lufkin Industries, Inc., Lufkin, Tex.
Filed Oct. 10, 1989, Ser. No. 418,457
Term of patent 14 years
U.S. Cl. D12—1



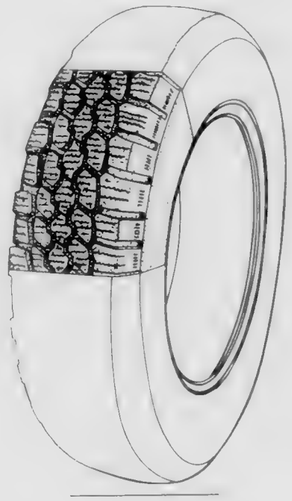
320,771
PROMOTIONAL CONCESSION TRAILER
Douglas D. Crawford, R.R. 1, Box 366B, Colona, Ill. 61241-9373
Continuation of Ser. No. 193,983, May 13, 1988, abandoned, which is a continuation of Ser. No. 905,057, Oct. 31, 1986, abandoned. This application Sep. 13, 1989, Ser. No. 406,858
Term of patent 14 years
U.S. Cl. D12—102



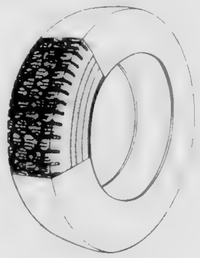
320,772
AUTOMOBILE TIRE
Hirotsugu Hasegawa, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Mar. 4, 1987, Ser. No. 21,429
Claims priority, application Japan, Nov. 17, 1986, 61-45375
Term of patent 14 years
U.S. Cl. D12—147



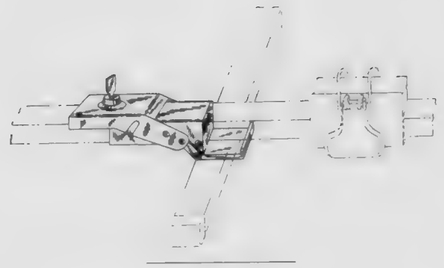
320,773
VEHICLE TIRE
Karl Gebert, and Ernst Ott, both of Hanau, Fed. Rep. of Germany, assignors to SP Reifenwerke GmbH, Hanau am Main, Fed. Rep. of Germany
Filed Feb. 2, 1989, Ser. No. 306,006
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1988, M 88 00 801.0
Term of patent 14 years
U.S. Cl. D12—147



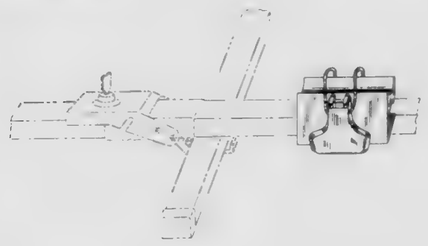
320,774
VEHICLE TIRE
Karl Gebert, and Ernst Ott, both of Hanau, Fed. Rep. of Germany, assignors to SP Reifenwerke GmbH, Hanau am Main, Fed. Rep. of Germany
Filed Jan. 27, 1989, Ser. No. 303,775
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1988, M 88 00 603.4
Term of patent 14 years
U.S. Cl. D12—151



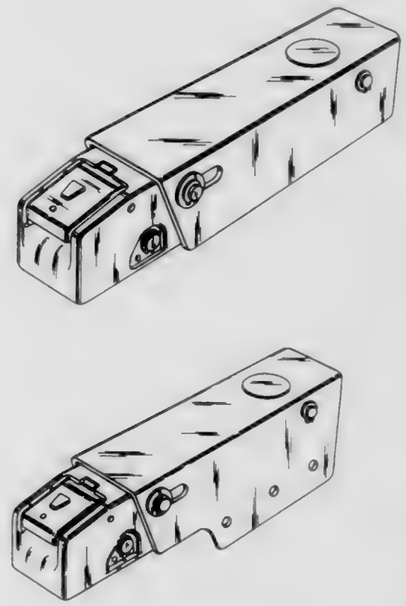
320,775
BICYCLE HOLDER AND LOAD LATCH FOR USE ON A VEHICLE LUGGAGE RACK
Uno Johansson, Dalsjöfors, Sweden, assignor to JS Products AB, Dalsjofors, Sweden
Filed Mar. 1, 1988, Ser. No. 162,581
Claims priority, application Sweden, Sep. 2, 1987, 87-1936
Term of patent 14 years
U.S. Cl. D12—157



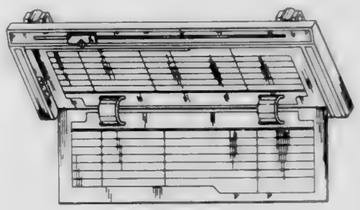
320,776
LATCH CONNECTOR FOR A VEHICLE ROOF MOUNTED BIKE CARRIER
Uno Johansson, Dalsjöfors, Sweden, assignor to JS Products AB, Dalsjofors, Sweden
Filed Mar. 1, 1988, Ser. No. 162,582
Claims priority, application Sweden, Sep. 2, 1987, 87-1936
Term of patent 14 years
U.S. Cl. D12—157



320,777
TRAILER COUPLER
Bernhardt P. Goettker, Escondido, Calif., assignor to Unique Functional Products, San Marcos, Calif.
Division of Ser. No. 82,189, Aug. 6, 1987, Pat. No. Des. 305,319.
This application Sep. 22, 1989, Ser. No. 411,000
Term of patent 14 years
U.S. Cl. D12—162

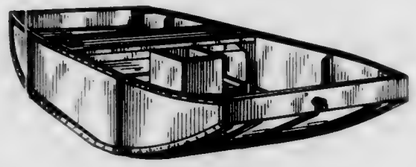


320,778
VISOR-MOUNTABLE TELEPHONE INDEX
Anthony P. Palett, 31458 Hunters Cir., Farmington Hills, Mich. 48018
Filed Apr. 8, 1988, Ser. No. 179,909
Term of patent 14 years
U.S. Cl. D12—191



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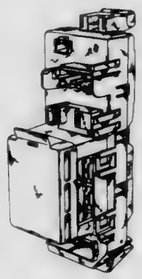
320,779
TROLLING BOAT
Gerald Wheeler, Rte. 3 Box 605, Blytheville, Ark. 72313
Filed Mar. 30, 1990, Ser. No. 501,512
Term of patent 14 years
U.S. Cl. D12—300



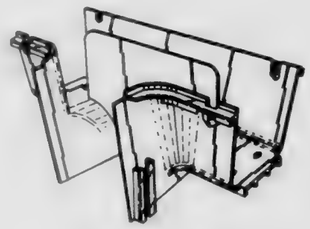
320,780
HOUSING FOR A BATTERY OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 11, 1989, Ser. No. 405,507
Term of patent 14 years
U.S. Cl. D13—103



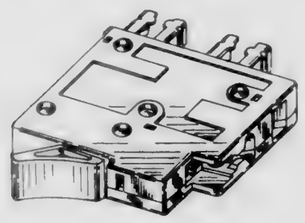
320,781
ELECTRICAL CONNECTING BOARD FOR USE IN AN AUTOMOBILE
Yoshihisa Natsume, Kosai, Japan, assignor to Yazaki Corporation, Japan
Filed Mar. 9, 1988, Ser. No. 165,966
Claims priority, application Japan, Sep. 10, 1987, 62-36780
Term of patent 14 years
U.S. Cl. D13—146



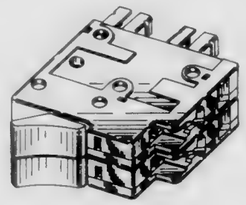
320,782
GUIDING TROUGH DOWNSPOUT FOR OPTICAL FIBERS
Roy Henneberger, 1596 Clemson Dr., Eagan, Minn. 55122
Filed Jul. 31, 1989, Ser. No. 387,648
Term of patent 14 years
U.S. Cl. D13—155



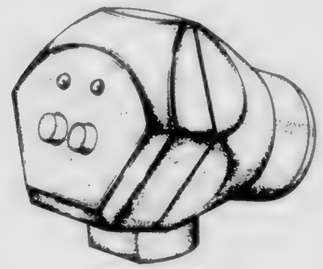
320,783
ONE POLE CIRCUIT BREAKER
Jeffrey O. Sharp, Lexington, Ky.; Edward P. Dessert, Lincoln, Nebr., and Michael R. Harris, Winchester, Ky., assignors to Square D Company, Palatine, Ill.
Filed Jul. 19, 1989, Ser. No. 384,935
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—160



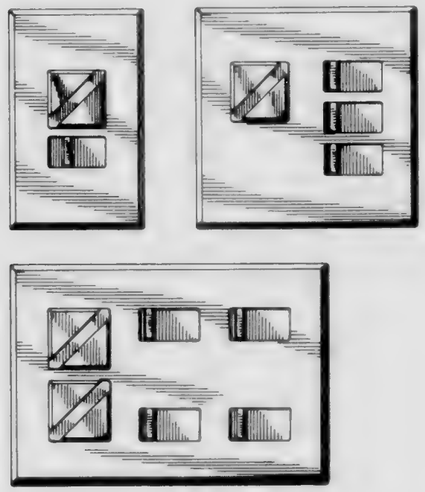
320,784
TWO POLE CIRCUIT BREAKER
Jeffrey O. Sharp, Lexington; Michael R. Harris, Winchester, both of Ky., and Edward P. Dessert, Lincoln, Nebr., assignors to Square D Company, Palatine, Ill.
Filed Jul. 19, 1989, Ser. No. 384,936
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—160



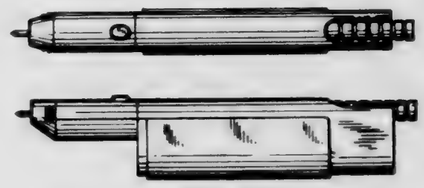
320,785
AUTOMOBILE CONTROL SYSTEM RESETTER
Werner Rüttgerodt, Staufenberg, Fed. Rep. of Germany, assignor to Monika Rutterodt, Fed. Rep. of Germany
Filed Nov. 8, 1989, Ser. No. 433,192
Claims priority, application Fed. Rep. of Germany, May 9, 1989, M 89 03 366.1
Term of patent 14 years
U.S. Cl. D13—168



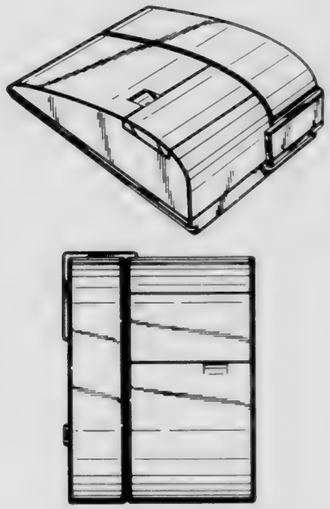
320,786
DIMMING SWITCH
Charles J. Darnell, Lithonia, and William R. Lutz, Tucker, both of Ga., assignors to National Service Industries, Inc., Atlanta, Ga.
Filed Dec. 18, 1989, Ser. No. 451,550
Term of patent 14 years
U.S. Cl. D13—171



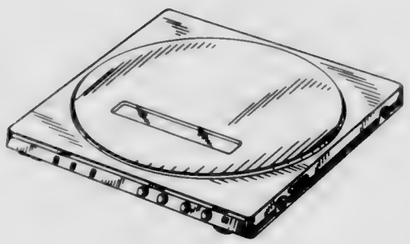
320,787
DIGITIZING STYLUS
William Valls, Harwinton, and Charles Merritt, Southport, both of Conn., assignors to Summagraphics Corporation, Seymour, Conn.
Filed Feb. 13, 1989, Ser. No. 309,545
Term of patent 14 years
U.S. Cl. D14—114



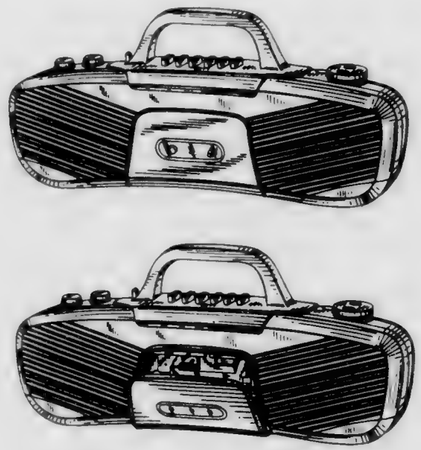
320,788
COMBINED TELEPHONE SET AND ANSWERING MACHINE
Clive Grinyer, London, England, assignor to Commtel Consumer Electronics plc, England
Filed Aug. 23, 1990, Ser. No. 571,275
Term of patent 14 years
U.S. Cl. D14—141



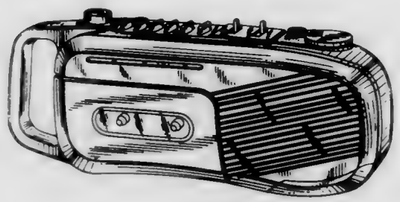
320,789
COMPACT DISC PLAYER
Takashi Sogabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1989, Ser. No. 397,310
Claims priority, application Japan, Feb. 23, 1989, 1-06828
Term of patent 14 years
U.S. Cl. D14—156



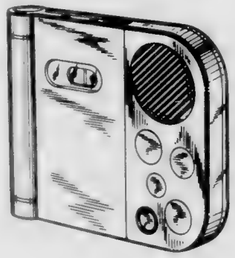
320,791
COMBINED TAPE PLAYER AND RADIO TUNER
Ryo Kashiwagi, Kunitachi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1989, Ser. No. 397,309
Claims priority, application Japan, Feb. 23, 1989, 1-06824
Term of patent 14 years
U.S. Cl. D14—163



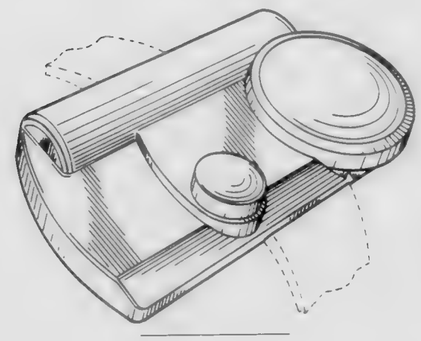
320,790
COMBINED TAPE PLAYER AND RADIO TUNER
Ryo Kashiwagi, Kunitachi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1989, Ser. No. 397,308
Claims priority, application Japan, Feb. 23, 1989, 1-06825
Term of patent 14 years
U.S. Cl. D14—163



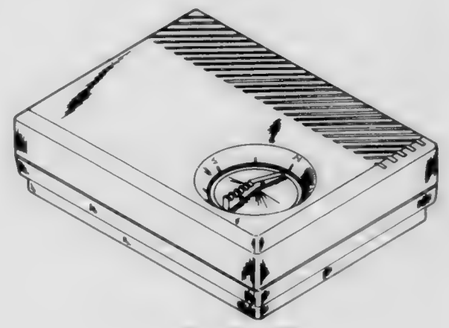
320,792
TAPE PLAYER
Akiyoshi Okada, Tokyo, and Ichiro Hino, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 13, 1989, Ser. No. 421,385
Claims priority, application Japan, Jul. 27, 1989, 1-27858
Term of patent 14 years
U.S. Cl. D14—165



320,793
WRIST RECORDER
Barry Wingate, San Jose, Calif., assignor to Chatter Box, Inc., Santa Clara, Calif.
Filed May 31, 1990, Ser. No. 532,973
Term of patent 14 years
U.S. Cl. D14—167



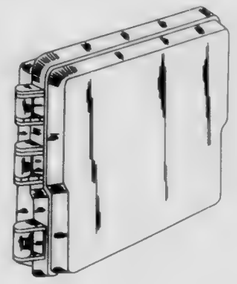
320,795
ANTENNA ROTATOR CONTROL
Vincent L. Haley, and Gregory S. Breiding, both of Columbus, Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio
Filed May 11, 1989, Ser. No. 350,412
Term of patent 14 years
U.S. Cl. D14—237



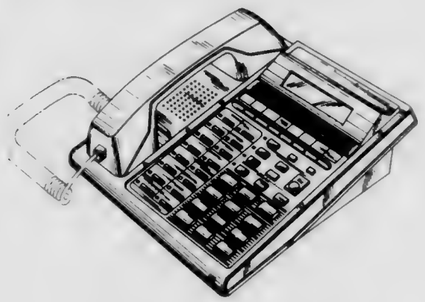
320,794
CELLULAR ANTENNA
James T. Konishi, Willowick, Ohio, assignor to Orion Industries, Inc., Solon, Ohio
Filed Mar. 27, 1989, Ser. No. 329,484
Term of patent 14 years
U.S. Cl. D14—234

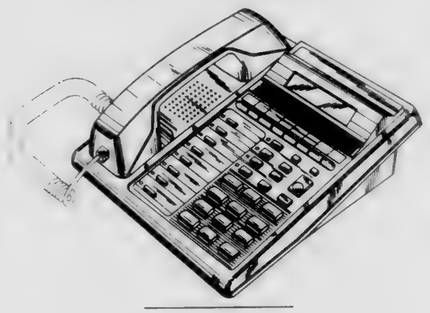


320,796
MULTIPLE TELEPHONE NETWORK INTERFACE HOUSING
Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.
Filed Oct. 6, 1989, Ser. No. 418,473
Term of patent 14 years
U.S. Cl. D14—240

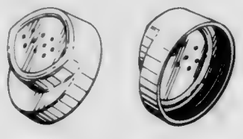


320,797
TELEPHONE INSTRUMENT SET
Shigeaki Kido, and Sadao Isozaki, both of Tokyo, Japan, assignors to Meisei Electric Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1989, Ser. No. 458,536
Claims priority, application Japan, Jul. 13, 1989, 1-25999; Jul. 13, 1989, 1-26000; Jul. 13, 1989, 1-26001; Jul. 13, 1989, 1-26002
Term of patent 14 years
U.S. Cl. D14—241

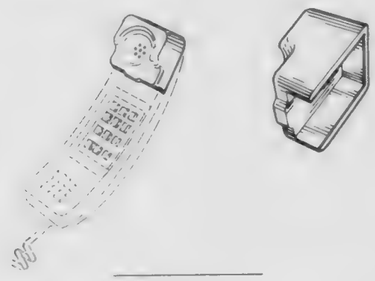




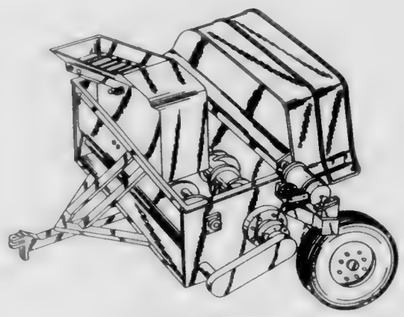
320,798
EARRING CLEARANCE TELEPHONE HANDSET EARPIECE OR SIMILAR ARTICLE
Richard A. Holt, 19501 E. Lake Dr., Miami, Fla. 33015
Filed Apr. 23, 1990, Ser. No. 513,192
Term of patent 14 years
U.S. Cl. D14—249



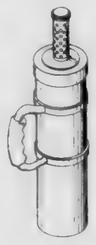
320,799
EARRING CLEARANCE TELEPHONE HANDSET EARPIECE OR SIMILAR ARTICLE
Richard A. Holt, 19301 E. Lake Dr., Miami, Fla. 33015
Filed Apr. 23, 1990, Ser. No. 513,193
Term of patent 14 years
U.S. Cl. D14—249



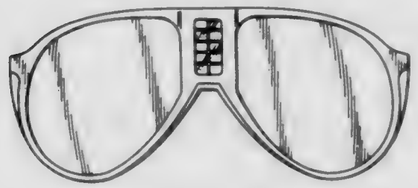
320,800
AGRICULTURAL BAG FILLING MACHINE
William C. Johnson, Omaha, Nebr., and Mervin E. Aurand, Adrian, Mo., assignors to Rand Farm Systems, Inc., Adrian, Mo.
Filed Sep. 26, 1988, Ser. No. 248,565
Term of patent 14 years
U.S. Cl. D15—27



320,801
BEVERAGE CAN CRUSHER
Roger D. McIntosh, Yelm, Wash., assignor to American Eco-Tech Corporation, Shelton, Wash.
Filed Jul. 25, 1988, Ser. No. 223,994
Term of patent 14 years
U.S. Cl. D15—123



320,802
SUNGLASSES
Yorimitsu Ishii, 2-8, Maegou, azashimo sanmaibashi, Yokoteshi, Akita, Japan
Filed May 15, 1989, Ser. No. 352,035
Term of patent 14 years
U.S. Cl. D16—102



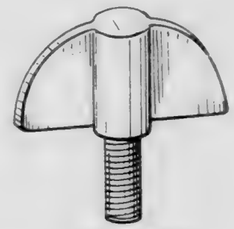
320,803
EYEGLASSES
Tyng F. Gau, No. 3, Lane 380, Shi-Men Road Sec. 4, Tainan City, Taiwan
Filed Oct. 4, 1989, Ser. No. 417,661
Term of patent 14 years
U.S. Cl. D16—102



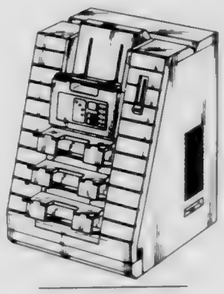
320,804
ELECTRONIC MUSICAL KEYBOARD
Yuji Ohki, Ohme, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 28, 1989, Ser. No. 372,938
Term of patent 14 years
U.S. Cl. D17—1



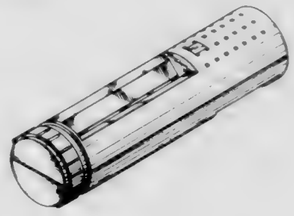
320,805
THUMBSCREW FOR DRUMS OR THE LIKE
Werner Sassmannshausen, and Werner Sassmannshausen, both of Bad Berleburg, Fed. Rep. of Germany, assignors to Johs. Link GmbH & Co. KG, Bad Berleburg, Fed. Rep. of Germany
Filed Dec. 19, 1989, Ser. No. 452,957
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, M8904320.0; Jun. 19, 1989, M8904321.9
Term of patent 14 years
U.S. Cl. D17—22



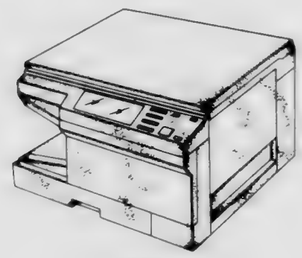
320,806
BANK NOTE SORTING MACHINE
Masahiro Inoue, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 22, 1989, Ser. No. 440,282
Claims priority, application Japan, Jun. 16, 1989, 1-22086
Term of patent 14 years
U.S. Cl. D18—3



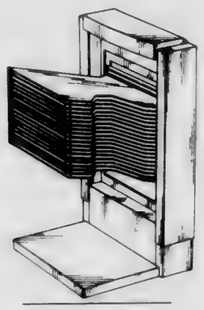
320,807
DOCUMENT SHREDDER
Klaus-Diether Krause, Dietenhofen, and Florian Stolzenberger, Altenthann, both of Fed. Rep. of Germany, assignors to TA Triumph-Adler AG, Nuremberg, Fed. Rep. of Germany
Filed Apr. 14, 1989, Ser. No. 338,063
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1988, DM/012040
Term of patent 14 years
U.S. Cl. D18—34



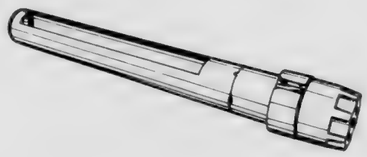
320,808
ELECTROSTATIC COPYING MACHINE
Akira Ishida, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 27, 1989, Ser. No. 344,043
Claims priority, application Japan, Oct. 31, 1988, 63-042799
Term of patent 14 years
U.S. Cl. D18—37



320,809
SORTER ATTACHMENT FOR COPYING MACHINE
Shin-ichi Hiroki, Machiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 18, 1990, Ser. No. 466,732
Claims priority, application Japan, Jul. 18, 1989, 1-26321
Term of patent 14 years
U.S. Cl. D18—42



320,810
TONER CARTRIDGE FOR COPIER
Jun-ichi Koiso, and Atsuo Omura, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Jan. 5, 1990, Ser. No. 461,456
Claims priority, application Japan, Jul. 17, 1989, 1-26185
Term of patent 14 years
U.S. Cl. D18—43

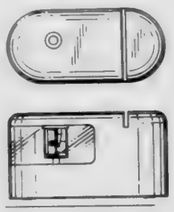


320,811
ELECTRIC ERASER
Richard W. Fuchs, Simsbury, Conn., assignor to Blu-Ray Incorporated, Essex, Conn.
Filed Apr. 10, 1989, Ser. No. 335,974
Term of patent 14 years
U.S. Cl. D19—53

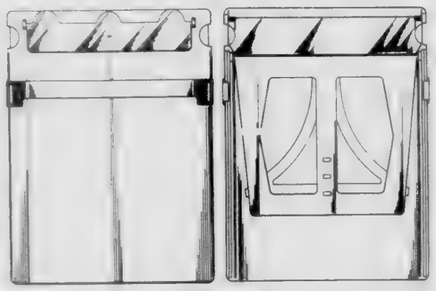




320,812
COMBINED PENCIL SHARPENER AND LETTER OPENER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Mar. 15, 1989, Ser. No. 323,983
Claims priority, application United Kingdom, Sep. 22, 1988, 1053688
Term of patent 14 years
U.S. Cl. D19—73



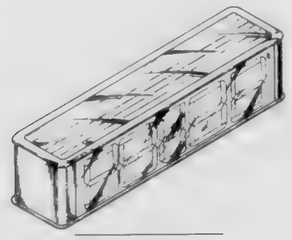
320,813
COMBINED BOOKSTAND AND CLIPBOARD
Bogdan Ostapowicz, and Tomasz Ostapowicz, both of 8601 Glenoaks Blvd., Apt. #112, Sun Valley, Calif. 91352
Filed Jan. 25, 1988, Ser. No. 147,924
Term of patent 14 years
U.S. Cl. D19—91



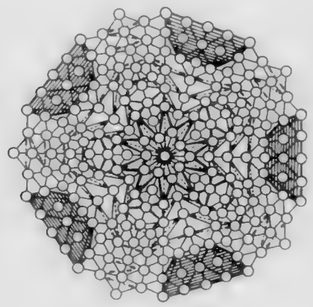
320,814
COMBINED REGULATOR AND COIN SELECTOR FOR AN AUTOMATIC VENDOR
Koji Yukimoto, Sakado; Mitsugu Mikami, Kawagoe; Yukio Ito, Niiza, and Kenji Nishiumi, Sakado, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan
Filed Dec. 23, 1988, Ser. No. 289,577
Claims priority, application Japan, Oct. 29, 1988, 63-42573
Term of patent 14 years
U.S. Cl. D20—9



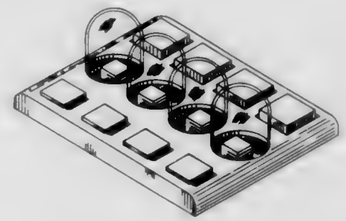
320,815
SOLAR POWERED ADDRESS SIGN
John S. Frost, Thousand Oaks, Calif., assignor to Siemens Solar Industries, L.P., Camarillo, Calif.
Filed May 30, 1989, Ser. No. 344,153
Term of patent 14 years
U.S. Cl. D20—17

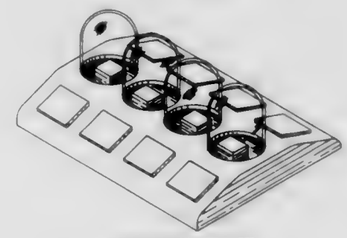


320,816
PLAYING SURFACE FOR CHINESE CHECKERBOARD
Heman Jih, No.8, Lane 46, Song Chiang Road, Taipei, Taiwan
Filed Dec. 2, 1987, Ser. No. 127,675
Term of patent 14 years
U.S. Cl. D21—20

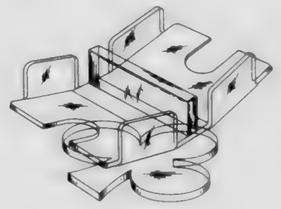


320,817
DICE DISPLAY UNIT
Martin T. Darchiville, 26 Bowyers Mews, Neath Hill, Milton Keynes MK146HP, Bucks, England
Filed Jan. 6, 1988, Ser. No. 99,214
Term of patent 14 years
U.S. Cl. D21—41





320,818
PLAYING CARD HOLDER
Frederick Anderson, 25011 Kerilyn La., Hemet, Calif. 92344
Filed Jan. 30, 1989, Ser. No. 304,821
Term of patent 14 years
U.S. Cl. D21—54

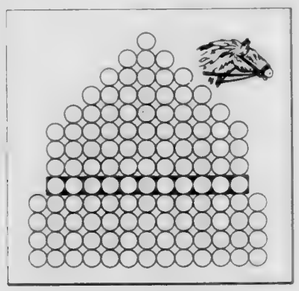


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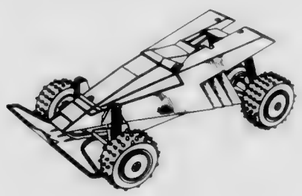
320,819
BALANCING TOY OR SIMILAR ARTICLE
Tomio Negishi, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed Jan. 31, 1989, Ser. No. 304,111
Term of patent 14 years
U.S. Cl. D21—102



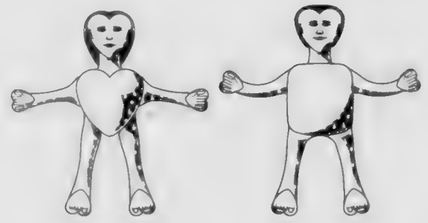
320,820
GAME BOARD
Robert R. Gravel, Box 14, Dubreuilville, Ontario, Canada P0S 1B0
Filed Aug. 25, 1988, Ser. No. 236,122
Term of patent 14 years
U.S. Cl. D21—25



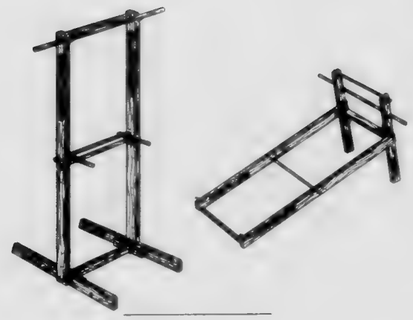
320,821
TOY RACING CAR
Takashi Mochizuki, Shimizu, Japan, assignor to Kabushiki Kaisha Tamiya Mokei, Shizuoka, Japan
Filed Jul. 5, 1989, Ser. No. 375,523
Claims priority, application Japan, Mar. 6, 1989, 1-7928
Term of patent 14 years
U.S. Cl. D21—137



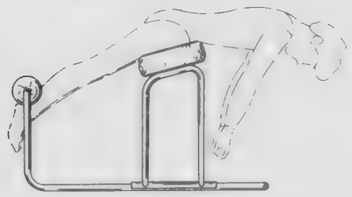
320,822
DOLL OR SIMILAR ARTICLE
Marilyn D. Mintz, P.O. Box 1411, Los Gatos, Calif. 95032
Filed Dec. 15, 1989, Ser. No. 451,025
Term of patent 14 years
U.S. Cl. D21—166



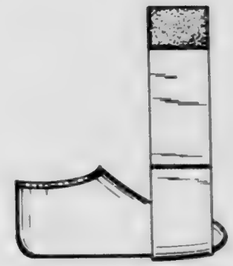
320,823
PHYSICAL EXERCISE STAND
Mitchell Tanner, 7 Greene St., Mahwah, N.J. 07430
Filed Oct. 20, 1988, Ser. No. 260,652
Term of patent 14 years
U.S. Cl. D21—191



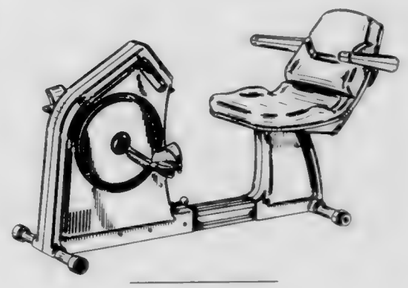
320,824
PHYSICAL EXERCISE FRAME
Manuel F. A. Cordon, 41 calle, 6-31 zona 8, Guatemala City, Guatemala
Filed Jun. 9, 1989, Ser. No. 364,248
Term of patent 14 years
U.S. Cl. D21—191



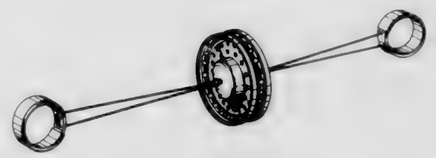
320,825
CALF EXERCISER
James W. Scott, P.O. Box 7630, Tifton, Ga. 31793
Filed Dec. 12, 1989, Ser. No. 448,820
Term of patent 14 years
U.S. Cl. D21—191



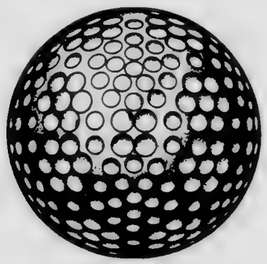
320,826
EXERCISE BICYCLE
Mark D. Hildebrandt; Richard N. Sarns, both of Ann Arbor, and Miles A. Conklin, Battle Creek, all of Mich., assignors to Life Plus, Inc., Ann Arbor, Mich.
Filed May 1, 1989, Ser. No. 346,007
Term of patent 14 years
U.S. Cl. D21—194



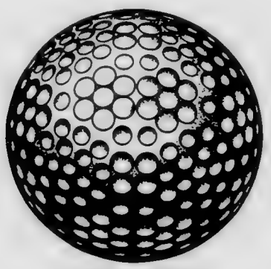
320,827
SPINNING EXERCISER
Rocco Centafanti, 925 Shore Crest Ave., Deltona, Fla. 32725
Filed Sep. 14, 1989, Ser. No. 407,015
Term of patent 14 years
U.S. Cl. D21—198



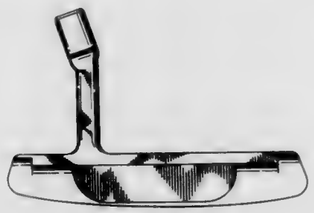
320,828
GOLF BALL
William Gobush, No. Dartmouth, and Diane Pelletier, Fairhaven, both of Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Sep. 23, 1987, Ser. No. 100,073
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—205



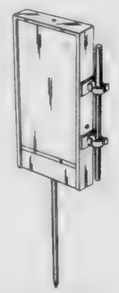
320,829
GOLF BALL
William Gobush, Dartmouth, and Diane Pelletier, Fairhaven, both of Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Sep. 23, 1987, Ser. No. 100,074
The portion of the term of this patent subsequent Oct. 15, 2005 has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—205



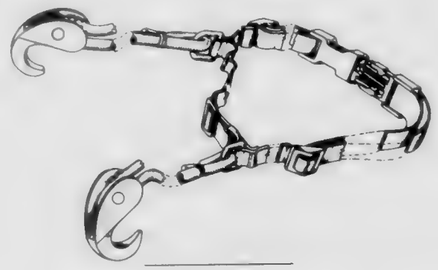
320,830
GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Feb. 8, 1989, Ser. No. 307,601
Term of patent 14 years
U.S. Cl. D21—217



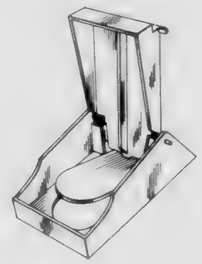
320,831
GOLF COURSE HOLE MARKER
Willie H. Stephens, 4420 Point Degada, Oceanside, Calif. 92054
Filed Mar. 21, 1989, Ser. No. 326,264
Term of patent 14 years
U.S. Cl. D21—234



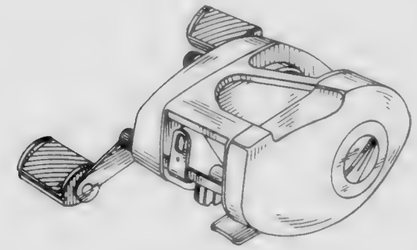
320,832
SWIMMER'S EXERCISE BAND
John H. Dennesen, 24 Marion Ave., Beverly, Mass. 01915
Filed Oct. 28, 1988, Ser. No. 265,121
Term of patent 14 years
U.S. Cl. D21—237



320,833
MOUSE TRAP
Dennis Lumsden, Auckland, New Zealand, assignor to Podbore PTY Limited, Southport, Australia
Continuation of Ser. No. 162,584, Mar. 1, 1988, abandoned. This application Aug. 27, 1990, Ser. No. 576,186
Claims priority, application New Zealand, Sep. 1, 1987, 21421
Term of patent 14 years
U.S. Cl. D22—119

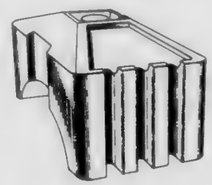


320,834
BAITCAST FISHING REEL
Richard J. Robbins, Derby, Kans., and Steven W. Vogts, Broken Arrow, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Jan. 31, 1989, Ser. No. 304,334
Term of patent 14 years
U.S. Cl. D22—140

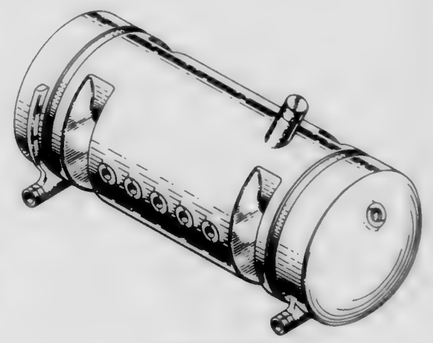


320,835
ASSAULT RIFLE
Daniel A. Ferrara, Jr., Looking Glass Hill Rd., Bantam, Conn. 06750
Continuation of Ser. No. 250,141, Sep. 28, 1988, abandoned. This application Jan. 14, 1991, Ser. No. 639,750
Term of patent 14 years
U.S. Cl. D22—103

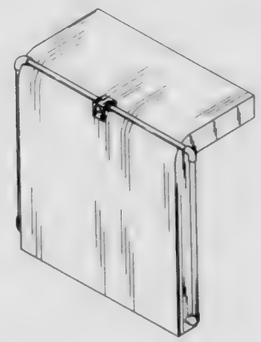
320,836
CHEMICAL TRUCK MOUNTED LIQUID TANK
Harry E. Ahrenholtz, and Jan A. Denney, both of Salina, Kans., assignors to Tri-Star of Salina, Inc., Salina, Kans.
Filed Jan. 2, 1990, Ser. No. 460,591
Term of patent 14 years
U.S. Cl. D23—202



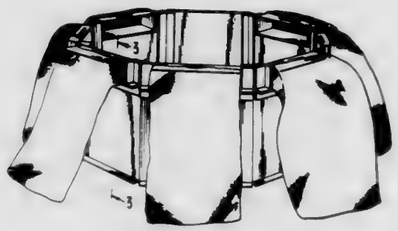
320,837
HYDRAULIC OIL TANK FOR USE IN CEMENT TRUCKS
William L. Loefke, Kasson, and Terry D. Grabow, Red Wing, both of Minn., assignors to McNeilus Truck & Manufacturing, Inc., Dodge Center, Minn.
Filed Jan. 26, 1990, Ser. No. 471,130
Term of patent 14 years
U.S. Cl. D23—205



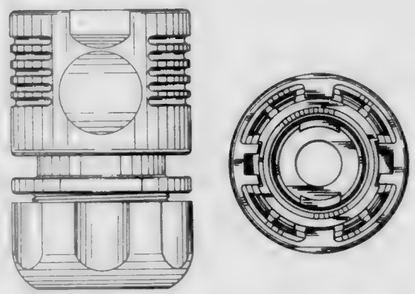
320,838
COMBINED AIR SUPPLY LINE AND MANIFOLD FOR AERATING A POND OR LAKE ON FISH FARMS
Hilbert F. Carlson, P.O. Box 476, Cantonment, Fla. 32533
Filed Jan. 9, 1989, Ser. No. 295,029
Term of patent 14 years
U.S. Cl. D23—207



320,839
COMBINED FILTER HOUSING AND FILTERS FOR SEWAGE
David P. Froud, Marden, England, assignor to Copa Products Limited, Kent, England
Filed Apr. 11, 1989, Ser. No. 336,312
Claims priority, application United Kingdom, Oct. 12, 1988, 1 054 213; Mar. 13, 1989, 1 057 820
Term of patent 14 years
U.S. Cl. D23—209

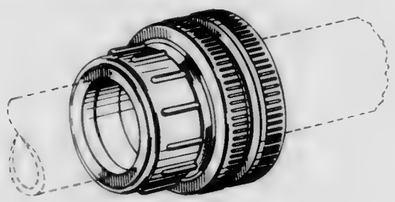


320,840
PLUMBING FIXTURE HANDLE
Philippe Chretien, Dietlikon, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed Jul. 14, 1988, Ser. No. 219,701
Claims priority, application Int'l Pat. Institute, Jan. 18, 1988, DM/010080
Term of patent 14 years
U.S. Cl. D23—250





320,841
THROUGH TANK WALL PIPE FITTING
William T. Breadmont, Bakersfield, Calif., assignor to James P. Peel, Bakersfield, Calif., A part interest
Filed Jul. 6, 1988, Ser. No. 216,248
Term of patent 14 years
U.S. Cl. D23—262

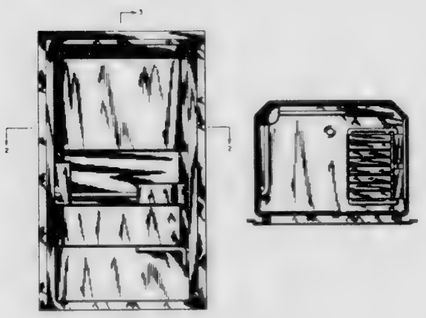


320,842
QUICK-CONNECT COUPLING
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Italy
Filed Jan. 26, 1989, Ser. No. 303,381
The portion of the term of this patent subsequent to Jan. 3, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—262

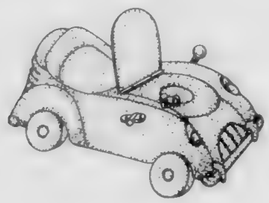
320,843
SHOWER ENCLOSURE OR THE LIKE
Bruce M. Sauter, Schaumburg, Ill.; Robert C. Giese, Sheboygan, Wis., and Iain M. Smith, Vernon, Canada, assignors to Kohler Co., Kohler, Wis.
Filed Sep. 7, 1988, Ser. No. 241,280
Term of patent 14 years
U.S. Cl. D23—283



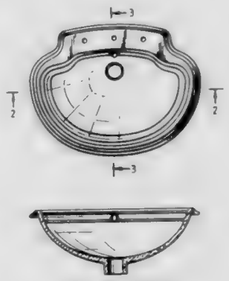
320,844
SHOWER STALL
Bruce M. Sauter, Schaumburg, Ill.; Robert C. Giese, Sheboygan, Wis., and Iain M. Smith, Vernon, Canada, assignors to Kohler Co., Kohler, Wis.
Filed May 21, 1991, Ser. No. 705,254
Term of patent 14 years
U.S. Cl. D23—283



320,845
TOILET TRAINER FOR CHILDREN
Margaret G. Lambdin, 1117 Elbank Ave., Baltimore, Md. 21239
Filed Jan. 10, 1990, Ser. No. 463,658
Term of patent 14 years
U.S. Cl. D23—297



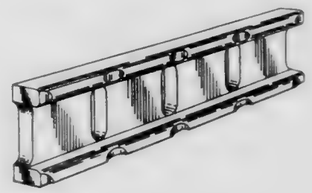
320,846
WASH BASIN
Jonathan G. Waldren, Ealing, England, assignor to B. C. Sanitan Limited, Berkshire, England
Filed Jan. 19, 1990, Ser. No. 467,222
Claims priority, application United Kingdom, Jul. 21, 1989, 1060990
Term of patent 14 years
U.S. Cl. D23—294



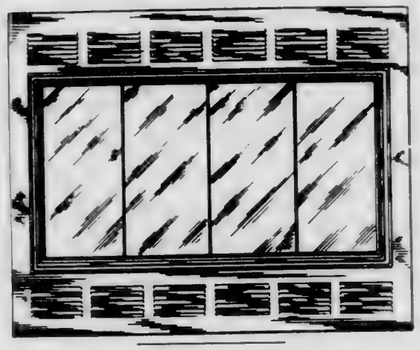
320,847
LOUVERED VENT CAP COVER
Robert Lanigan, 9084 Vicksburg La., Springhill, Fla. 34606
Filed May 31, 1990, Ser. No. 530,981
Term of patent 14 years
U.S. Cl. D23—371



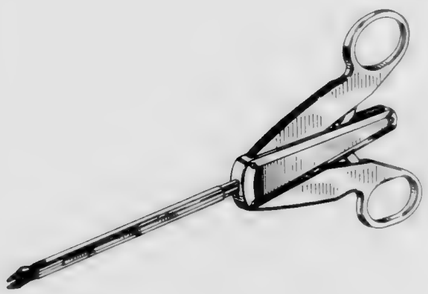
320,848
SINGLE BAFFLE TILE FOR FIXED HEATER FOR OIL REFINERIES
Ronald L. Cutshall, Chicago Heights; Frank L. Groenewold, South Holland, and Martin F. Brennan, Calumet City, all of Ill., assignors to Amoco Corporation, Chicago, Ill.
Filed Jun. 17, 1988, Ser. No. 208,397
The portion of the term of this patent subsequent to Jul. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—393



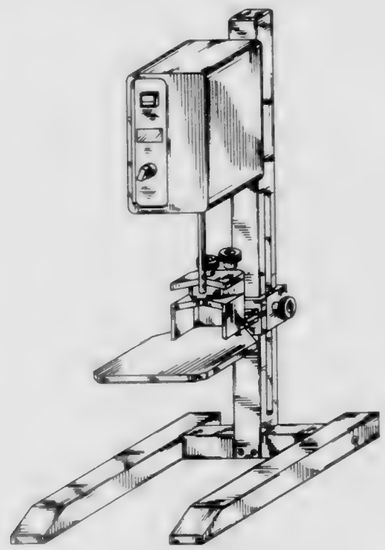
320,849
FIREPLACE DOOR
Robert J. Ehmke, Germantown, Wis., assignor to Design Specialties, Inc., Milwaukee, Wis.
Filed May 8, 1989, Ser. No. 348,655
Term of patent 14 years
U.S. Cl. D23—405



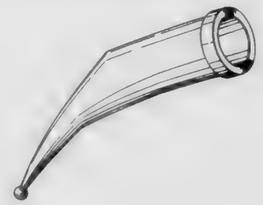
320,850
SURGICAL CLIP APPLICATOR
David T. Green, Westport; Richard A. McGarry, Norwalk, and Paul O. Rawson, Easton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 264,162, Oct. 28, 1988, abandoned.
This application Apr. 23, 1990, Ser. No. 512,553
The portion of the term of this patent subsequent to Oct. 8, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—145



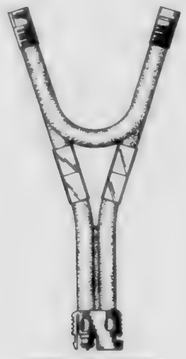
320,851
LABORATORY MIXER FOR MIXING MEDICAL AND CHEMICAL TEST SAMPLES
Wolfram Störzbach, Lucerne, Switzerland, assignor to Kinematica AG, Littau, Switzerland
Filed Dec. 2, 1988, Ser. No. 280,183
Claims priority, application Switzerland, Jun. 3, 1988, 116,754
Term of patent 14 years
U.S. Cl. D24—99



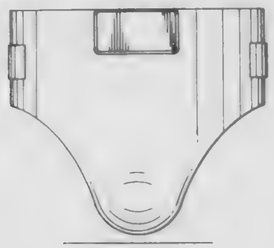
320,852
DENTAL SYRINGE TIP
Melvin Drumm, Orange, Conn., assignor to Centrix, Inc., Milford, Conn.
Filed May 15, 1989, Ser. No. 351,817
Term of patent 14 years
U.S. Cl. D24—114



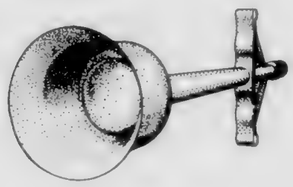
320,853
Y CONNECTOR FOR POST-OPERATIVE TREATMENT IN HEATING OR COOLING BODY PART
Barry L. Schneider, Deerfield, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Filed Feb. 9, 1989, Ser. No. 308,751
Term of patent 14 years
U.S. Cl. D24—129



320,854
DIAPER FOR INCONTINENT PERSONS
Otakar Jonas, 1113 Faun Rd., Wilmington, Del. 19803
Filed Mar. 23, 1989, Ser. No. 327,583
Term of patent 14 years
U.S. Cl. D24—126



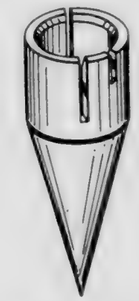
320,855
BIRTHING-ASSISTANCE VACUUM BELL
Lawrence M. Smith, P.O. Box 5877, Bend, Oreg. 97708, and Richard N. Cooper, Lake Oswego, Oreg., assignors to Lawrence Smith and Emily Smith, both of Bend, Oreg.
Filed Mar. 27, 1989, Ser. No. 329,420
Term of patent 14 years
U.S. Cl. D24—133



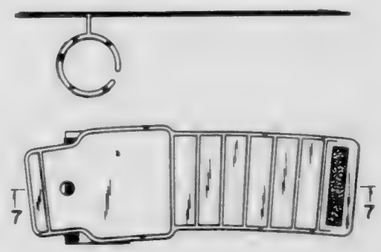
320,856
BIPOLAR PEN COAGULATOR
Gregg D. Scheller, Ballwin, Mo., assignor to Surgical Technologies Inc., Chesterfield, Mo.
Filed Jan. 4, 1989, Ser. No. 293,479
Term of patent 14 years
U.S. Cl. D24—144



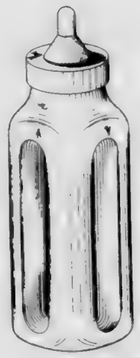
320,857
SURGICAL BARIATRIC TROCAR TIP
Thomas M. Tompkins, Trumbull, Conn.; Richard L. Goodman, White Plains, N.Y., and Roland L. Bescher, Easton, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Apr. 7, 1989, Ser. No. 334,993
Term of patent 14 years
U.S. Cl. D24—146



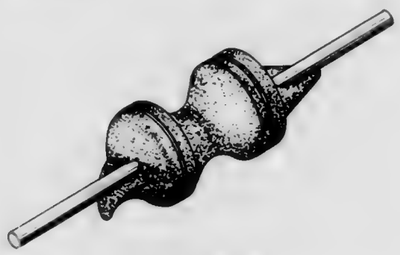
320,858
BLOOD PRESSURE CUFF
Kenichi Kida, Tokyo, and Hiroshi Mochizuki, Fuji, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 14, 1989, Ser. No. 323,601
Claims priority, application Japan, Sep. 21, 1988, 63-36868[U]
Term of patent 14 years
U.S. Cl. D24—165



320,859
BOTTLE FOR USE BY INFANTS, CHILDREN OR THE LIKE
Alexander R. Malcolm, Dudley, Mass., assignor to Kinder-Grip International, Inc., Dudley, Mass.
Filed Jan. 23, 1989, Ser. No. 300,374
Term of patent 14 years
U.S. Cl. D24—197



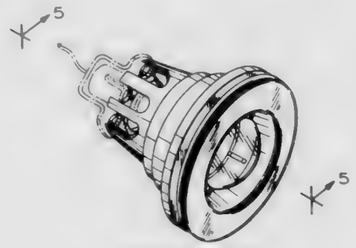
320,860
MASSAGER
Harold Sue, 45-923 Lilipuna Rd., Kaneohe, Hi. 96744
Filed May 18, 1989, Ser. No. 353,513
Term of patent 14 years
U.S. Cl. D24—214



320,861
STAGGERED STRIP-LIGHTING CEILING HAVING INCLINED CEILING-WALL JUNCTIONS
Tobia Scarpa, and Afra Binachin-Scarpr, both of Trevignano, Italy, assignors to Centro Studi E Servizi Moda S.R.L., Villorba, Italy
Filed Oct. 30, 1986, Ser. No. 925,889
Claims priority, application Italy, Apr. 30, 1986, 21693/86[U]
Term of patent 14 years
U.S. Cl. D25—58



320,862
RECESSED UNDERWATER LIGHT FOR BATHTUB
William L. Moeller, Allentown; Karl G. Ohaus, Chatham, and Drew J. Yuhas, Pennington, all of N.J., assignors to American Standard Inc., New York, N.Y.
Filed Apr. 7, 1989, Ser. No. 335,155
Term of patent 14 years
U.S. Cl. D26—24



320,863
COMBINED COURTESY AND ADJUSTABLE READING LIGHT
Anthony Macaluso, 6833 Rosecrans Ave., Unit D, Paramount, Calif. 90723
Filed Aug. 17, 1989, Ser. No. 395,941
Term of patent 14 years
U.S. Cl. D26—29

320,864
WINDOW MOUNTED ELECTRIC CANDLE OR SIMILAR ARTICLE
Andrew A. Boschetto, 39 Wagon La., Cherry Hill, N.J. 08002
Filed Dec. 8, 1989, Ser. No. 447,710
Term of patent 14 years
U.S. Cl. D26—73



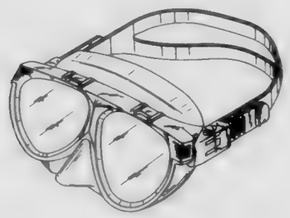
320,865
HALOGEN DESK LAMP
Ko A. Chang, 8, Alley 12, Lane 483 Tsing Yun Rd., Tu Cheng Hsiang, Taipei Hsien, Taiwan
Filed Oct. 6, 1989, Ser. No. 418,410
Term of patent 14 years
U.S. Cl. D26—108



320,866
COMBINED CONNECTOR AND STEM FOR A TRACK LIGHT
Ralph S. Stringer, Gardena, and Horace L. Green, Jr., Lynwood, both of Calif., assignors to Marco/Marvin Electric Manufacturing Co., Los Angeles, Calif.
Filed Aug. 7, 1989, Ser. No. 390,343
Term of patent 14 years
U.S. Cl. D26—138



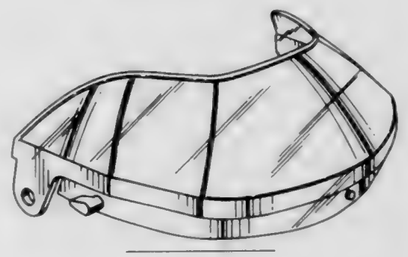
320,867
DIVING MASK
Masatoshi Kasama, 1-21-404, Hanamigawa, Chiba-shi, Chiba, Japan
Filed Aug. 8, 1989, Ser. No. 390,921
Term of patent 14 years
U.S. Cl. D29—9



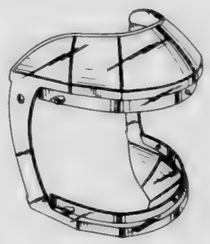
320,868
GAS MASK
Akira Kumagai, 4-21-24-101, Irifune, Urayasu-shi, Chiba-ken, and Hitoshi Kumagai, 4-25-21, Okudo, Katsushika-ku, Tokyo, both of Japan
Filed Nov. 16, 1989, Ser. No. 437,499
Term of patent 14 years
U.S. Cl. D29—9



320,869
HEADGEAR FOR FACESHIELD
Gary D. Asbury, Kansas City, Kans., and John W. Lewman, Kansas City, Mo., assignors to Parmelee Industries, Inc., Kansas City, Mo.
Filed Aug. 29, 1989, Ser. No. 400,038
Term of patent 14 years
U.S. Cl. D29—16

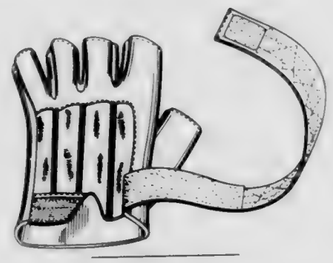


320,870
HEADGEAR FOR FACESHIELD
Gary D. Asbury, Kansas City, Kans., and John W. Lewman, Kansas City, Mo., assignors to Parmelee Industries, Inc., Kansas City, Mo.
Filed Aug. 29, 1989, Ser. No. 400,048
Term of patent 14 years
U.S. Cl. D29—16



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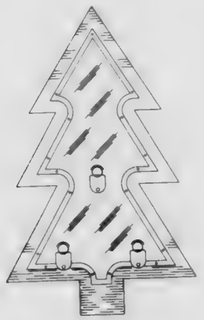
320,871
WEIGHT LIFTER GLOVE
Anthony C. Bothof, III, 1048 Johnson Ave., San Diego, Calif. 92103, and Henk Bothof, 1604 Summit La., Escondido, Calif. 92025
Filed Aug. 26, 1988, Ser. No. 237,008
Term of patent 14 years
U.S. Cl. D29—22



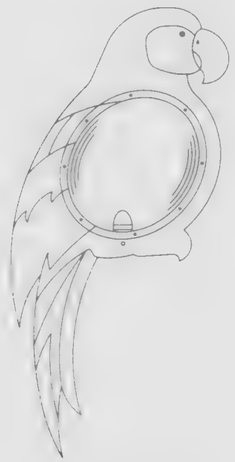
320,872
SPORTS GLOVE
David P. McCrane, 1740 Main St., St. Helena, Calif. 94574
Filed Oct. 19, 1988, Ser. No. 259,615
Term of patent 14 years
U.S. Cl. D29—22



320,873
BIRD FEEDER
David E. Emmons, R.D. #1, Box 1431, Lake George, N.Y. 12845
Filed Mar. 20, 1989, Ser. No. 325,462
Term of patent 14 years
U.S. Cl. D30—125



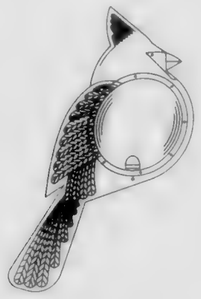
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David E. Emmons, R.D. #1, Box 1431, Lake George, N.Y. 12845
Filed Mar. 20, 1989, Ser. No. 325,463
Term of patent 14 years
U.S. Cl. D30—125



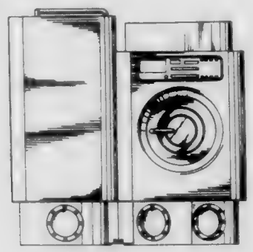
320,875
DOUBLE DECKER SELECTIVE BIRD FEEDER
Peter Kilham, Mill Rd., Foster, R.I. 02825
Filed Nov. 16, 1989, Ser. No. 437,211
Term of patent 14 years
U.S. Cl. D30—127



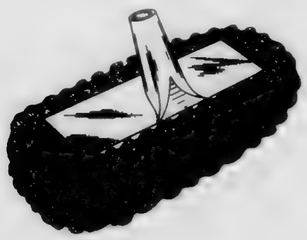
320,876
BIRD FEEDER
David E. Emmons, R.D. #1, Box 1431, Lake George, N.Y. 12845
Filed Mar. 20, 1989, Ser. No. 325,461
Term of patent 14 years
U.S. Cl. D30—125



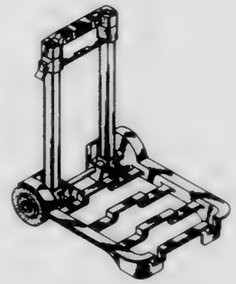
320,877
FACADE FOR A DRY CLEANING MACHINE
Gabrio Renzacci, Città di Castello (PG), Italy, assignor to Renzacci S.p.A. Industria Lavatrici, Città di Castello (PG), Italy
Filed Jun. 6, 1988, Ser. No. 202,252
Claims priority, application Italy, Dec. 4, 1987, 11815/87[U]
Term of patent 14 years
U.S. Cl. D32—6



320,878
MOP HEAD
Maxine Linder, 109 W. Main, Kenedy, Tex. 78119
Filed Feb. 14, 1990, Ser. No. 479,747
Term of patent 14 years
U.S. Cl. D32—50

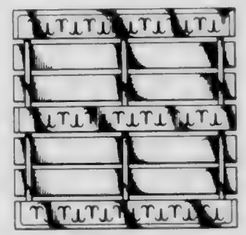


320,879
LUGGAGE CART OR THE LIKE
Cheng-Hsien Tsai, No. 103, Ta Ming 1 Rd., Tan Tzu Hsiang, Taichung Hsien, Taiwan
Filed Aug. 23, 1989, Ser. No. 397,307
Term of patent 14 years
U.S. Cl. D34—26



320,880
PALLET FOR STACKING SPOOLS
Jean M. Brunin, Mont de l'Enclus, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
Filed Dec. 18, 1989, Ser. No. 450,660
Claims priority, application Benelux, Jun. 16, 1989, 64451-00
Term of patent 14 years
U.S. Cl. D34—38

320,881
PLASTIC PALLET
William J. Straw, and Richard A. Taylor, both of 43729 Gadsden Ave., Lancaster, Calif.
Filed Jul. 27, 1990, Ser. No. 558,408
Term of patent 14 years
U.S. Cl. D34—38



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF OCTOBER, 1991

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company Incorporated: *See—*
Taylor, Chandler R., Jr.; Stauffer, Harold F., Jr.; and Tomczuk, Bruce E., 5,057,534, Cl. 514-404.000.
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Abbey, Sylvia. Convenient emptying or urinary leg bag. 5,057,094, Cl. 604-351.000.

Abbott Laboratories: *See—*
Chu, Daniel T.; and Hallas, Robert, 5,057,520, Cl. 514-300.000.
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Johnson, David K.; and Kline, Steven J., 5,057,302, Cl. 424-1.100.

Abbott, Vaughan: *See—*
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Abe, Akiharu: *See—*
Asada, Toshiyuki; Higashiyama, Yasuhiko; Nakawaki, Yasunori; Suzuki, Toshitake; Abe, Akiharu; and Moriguchi, Naoki, 5,057,063, Cl. 475-278.000.

Abe, Kazunobu; and Fukunaga, Takeshi, to Sakai Chemical Industry Co., Ltd. Method of producing a composite material comprising a perovskite complex compound having an α-olefin polymer deposited thereon. 5,057,478, Cl. 502-159.000

Abel, Baron E.; and Archer, David L., to Die Tech, Inc. Lead frame for semi-conductor device. 5,057,901, Cl. 357-70.000.

Abel, Elaine R. Tracheostomy tube assembly. 5,056,515, Cl. 128-207.150.

Aberg, Torwald, to Dentab, Inc. Tooth cleaning tablet. 5,057,305, Cl. 424-44.000.

Abnoosi, Fatemeh: *See—*
Theroux, Robert L.; and Abnoosi, Fatemeh, 5,057,988, Cl. 363-59.000

Abramson, Kevin G. Product and process for highlighting hair 5,056,539, Cl. 132-270.000.

AC Corporation: *See—*
Alexander, Jack L.; and Bledsoe, Michael G., 5,056,290, Cl. 52-584.000.

Actel Corporation: *See—*
McCollum, John L., 5,057,451, Cl. 437-69.000.

Action Industries, Inc.: *See—*
May, Teddy J.; and Robison, Steve R., 5,056,862, Cl. 297-85.000.

Adachi, Etsushi; Adachi, Hiroshi; Hayashi, Osamu; and Okahashi, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Method of forming high purity SiO_2 thin film. 5,057,336, Cl. 427-44.000.

Adachi, Hiroshi: *See—*
Adachi, Etsushi; Adachi, Hiroshi; Hayashi, Osamu; and Okahashi, Kazuo, 5,057,336, Cl. 427-44.000.

Adachi, Masao; and Funabashi, Motohisa, to Hitachi, Ltd. System for control of vehicle suspension. 5,058,017, Cl. 364-424.050

Adachi, Masato: *See—*
Osaka, Shigemi; Hata, Kazuo; Aikawa, Norikazu; and Adachi, Masato, 5,057,360, Cl. 428-220.000

Adams, John R., to Chemical Research & Licensing Company. Catalytic distillation structure. 5,057,468, Cl. 502-1.000

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ADC Telecommunications, Inc.: *See—*
Gustason, Robert J., 5,057,675, Cl. 235-70.00A

ADE, Inc.: *See—*
Boecker, Mark E.; McGrath, Michael T.; and Grygny, Joseph, 5,056,665, Cl. 206-583.000.

Adelman, Herbert B., to Crowell Corporation, The. Process of protecting a surface using a foam laminate. 5,057,169, Cl. 156-71.000.

Advanced Electronics, Inc.: *See—*
Chandler, Alan S.; and Alline, Emile F., Jr., 5,057,809, Cl. 336-144.000.

Advanced Golf Concepts, Inc.: *See—*
Cohen, Wilburt, 5,057,670, Cl. 219-521.000

Advanced Machine & Tool Corporation: *See—*
Scherer, Mark A., 5,056,212, Cl. 29-564.500

Advanced Micro Device, Inc.: *See—*
Trinh, Cuong; Win, Vincent K. Z.; Nouban, Behzad; and Chan, Andrew K., 5,057,712, Cl. 307-465.000.

Advanced Micro Devices, Inc.: *See—*
Chung, Sanguoon, 5,058,047, Cl. 364-724.190.
Gupta, Smeeta; Perlman, Robert M.; Lynch, Thomas W.; and McMinn, Brian D., 5,058,048, Cl. 364-748.000
Haskell, Jacob D., 5,057,902, Cl. 357-71.000.

Advanced Products, Inc.: *See—*
Frentzel, Richard L.; and Oakdale, Warren R., 5,057,245, Cl 252-511.000.

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Dadpey, Habib; Shero, David J.; and Miller, Lalan G., 5,057,760, Cl. 318-807.000.

AG Communication Systems Corporation: *See—*
Kem, Han; and Young, John S., 5,058,141, Cl. 375-116.000
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Matsuda, Hiroo; Okada, Shuji; Nakanishi, Hachiro; and Kato, Masao, 5,057,248, Cl. 252-582.000.
Oka, Kunihiko; and Unoki, Hiromi, 5,057,492, Cl. 505-1.000.

AgMaster, Inc.: *See—*
Ball, Dean M., 5,057,436, Cl. 436-113.000.

Agou, Tokinori; Sakashita, Takeshi; Shimoda, Tomoaki; Sudo, Masaru; Kuwabara, Masahiro; and Tanaka, Masahide, to Mitsui Petrochemical Industries, Ltd. Oxygen-permeable article of fluorinated hydrocarbon group-grafted (meth)acrylate polymers. 5,057,585, Cl. 526-246.000.

Agudelo-Silva, Fernando: *See—*
Gunner, Haim B.; Agudelo-Silva, Fernando; and Johnson, Carol A., 5,057,315, Cl. 424-93.000.
Gunner, Haim B.; Agudelo-Silva, Fernando; and Miller, David W., 5,057,316, Cl. 424-93.000.

Ahart, James: *See—*
Furtak, Hans; and Ahart, James, 5,056,195, Cl. 19-304.000

Ahlman, S. Robert; Dunn, William E.; and Magazian, Harry, to Torrington Company, The. Track roller bearing floating sleeve system. 5,056,938, Cl. 384-286.000.

Ahonen, Robert G.; Malenick, John; and Meyerhoff, Hans P., to Honeywell Inc. Low cost ring laser angular rate sensor including thin fiber glass bonding of components to a laser block. 5,056,920, Cl 356-350.000.

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AIL Corporation: *See—*
Kimberley, John A., 5,056,469, Cl. 123-23.000.
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Aime, Michel, to Inventio AG. Apparatus and method for processing calls entered in elevator cars. 5,056,628, Cl. 187-127.000

Aimone, Michael G.; LoRusso, Julian A.; and Tobler, William E., to Ford Motor Company. Engine valve control during transmission shifts. 5,056,378, Cl. 74-858.000.

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Airborne Research Associates, Inc.: *See—*
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Aisan Kogyo Kabushiki Kaisha: *See—*
Fukaya, Katsuyoshi, 5,057,732, Cl. 310-208.000.
Iwase, Satoru, 5,056,219, Cl. 29-888.451.

Aisin AW Co., Ltd.: *See—*
Moroto, Shuzo; Sakakibara, Shiro; Kondo, Hidehiro; Inuzuka, Takesi; and Hasebe, Masahiro, 5,056,376, Cl. 74-335.000.

Aisin AW Kabushiki Kaisha: *See—*
Sakakibara, Shiro; Hasebe, Masahiro; Hattori, Masashi; and Kuroyanagi, Akihiro, 5,057,061, Cl. 475-210.000.

Aisin Seiki K.K.: *See—*
Kuwana, Kazutaka; Okamoto, Kuniaki; Yoshida, Tsuyoshi; Ichikawa, Hiroyuki; Kamikado, Masaru; Nakanishi, Nobuyasu; Sugitani, Tatsuo; and Sakai, Kazunori, 5,056,354, Cl. 73-9.000
Kuwana, Kazutaka; Yoshida, Tsuyoshi; and Tozu, Kenji, 5,058,018, Cl. 364-426.020.
Saitou, Yoshitami; Isono, Nobuyuki; and Suzumura, Nobuyasu, 5,058,014, Cl. 364-424.100.

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Watanabe, Tetsumi; Mizuno, Tomokimi; Katsuda, Hiroyuki; and Momose, Yutaka, 5,056,419, Cl. 92-80.000

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Akama, Hideo; and Sone, Norio, to Hewlett-Packard Co. Method and apparatus for measuring trigger and latchback voltage of a semiconductor device. 5,057,780, Cl. 324-537.000.

Akatsu, Yohsuke: *See—*
Fukunaga, Yukio; Fukushima, Naoto; Akatsu, Yohsuke; and Hano, Sunao, 5,056,811, Cl. 280-707.000.

AKG Akustische u. Kino-Gerate Gesellschaft m.b.H: *See—*
Wurzer, Josef; and Wolf, Konrad, 5,058,171, Cl. 381-92.000.

Akins, Vaughn E., to Motorola, Inc. Container for use within a clean environment. 5,056,875, Cl. 312-1.000.

Akiyama, Koji; Tsutsu, Hiroshi; Ogawa, Tetsu; and Tsutsui, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Spatial light modulating element and neural network circuit. 5,056,897, Cl. 359-72.000

Akiyoshi, Min. Prescription lens attachment for sunglasses. 5,056,906, Cl. 351-57.000

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Al-Chalabi, Salah A.: *See—*
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Albanese, Andres; and Menendez, Ronald C., to Bell Communications Research, Inc. Coherent detection loop distribution system. 5,058,101, Cl. 359-127.000.

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McKay, Alexander S.; and Nasr, Tawfik N., 5,056,596, Cl. 166-272.000

Albonetti, Adriano: *See—*
Prodi, Paolo; and Albonetti, Adriano, 5,056,724, Cl. 242-18.100.

Albrecht, Raymond E.; and Gray, Charles R., to Robertson-Ceco Corporation. Method of making a profiled sheet metal building unit 5,056,348, Cl. 72-177.000

Alcan International Limited: *See—*
Reeve, Martin R.; Bamji, Pervez J.; Chamberlain, Barrie; and Sulzer, John, 5,057,150, Cl. 75-671.000.

Alcatal N.V.: *See—*
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Alcatel Kirk A/S: *See—*
Andersen, Morten K., 5,058,154, Cl. 379-433.000

Alcatel NA Network Systems Corp.: *See—*
Cole, Gary B., 5,058,106, Cl. 370-47.000.

Alexander, Jack L.; and Bledsoe, Michael G., to AC Corporation Method, assembly and apparatus for joining panels. 5,056,290, Cl 52-584.000

Alexander Manufacturing Company: *See—*
Gordy, Dennis J., 5,057,386, Cl. 429-174.000.

Alexander, Samuel A.: *See—*
Papastavros, Theodore G.; Alexander, Samuel A.; Benedict, Michael D.; Cioffi, Vincent; Hodgdon, Russell B.; Richard, Emery; and Tinkham, Winslow F., 5,056,996, Cl. 425-110.000

ALFA Wassermann S.p.A.: *See—*
Cannata, Vincenzo; Tamerlani, Giancarlo; and Zagnoni, Graziano, 5,057,624, Cl. 564-375.000

Alig, Bernd; Stendel, Wilhelm; and Londershausen, Michael, to Bayer Aktiengesellschaft. Method of preventing infestation of fleas 5,057,527, Cl. 514-345.000.

Allais, Jean-Philippe P. B.; Guillermond, Alain R.; and Rouyer, Pascal G., to Societe Anonyme dite Hispano Suiza. Lightweight deployable turret. 5,056,409, Cl. 89-37.010.

Allegro Microsystems, Inc.: *See—*
Clark, Andrew W.; and Zacher, Brett A., 5,057,765, Cl 323-288.000

Allen, Herbert, deceased; and by Bedford, Virginia D., executrix. Bottle cap for repeatable airtight sealing. 5,056,676, Cl. 215-284.000.

Allen, Lewis E. Apparatus for compacting used tires. 5,056,428, Cl. 100-200.000

Allen, William M. Solar greenhouse for growing plants. 5,056,259, Cl 47-17.000

Alley, Robert P.; and Bicknell, William H., to General Electric Company. Microprocessor-based protective relay system. 5,057,962, Cl 361-24.000

Allied-Signal: *See—*
Largman, Theodore; Gefri, Fred J.; and Mares, Frank, 5,057,368, Cl. 428-397.000

Allied-Signal Inc: *See—*
Rateick, Richard G., Jr.; and Hall, Douglas A. 5,056,950, Cl 403-24.000

Allied-Signal Inc.: *See—*
Spence, James W., 5,057,699, Cl. 307-98.000.
Tervo, John N., 5,056,557, Cl. 137-527.800.

Alline, Emile F., Jr.: *See—*
Chandler, Alan S.; and Alline, Emile F., Jr., 5,057,809, Cl. 336-144.000

Allway Tools, Inc.: *See—*
Gringer, Donald, 5,056,226, Cl. 30-169.000.
Gringer, Donald, 5,056,952, Cl. 403-96.000.

Alpern, Marvin: *See—*
Sobel, Martin; George, Stephen; Esteves, Anthony; Cerwin, Robert J.; Alpern, Marvin; and Daniele, Robert A., 5,056,658, Cl 206-63.300

Alpert, Robert S.: *See—*
Bell, Mark; and Alpert, Robert S., 5,057,667, Cl. 392-458.000.

Alpine Polyvision, Inc.: *See—*
Warszawski, Bernard, 5,056,899, Cl. 350-357.000.

Alps Electric Co., Ltd.: *See—*
Ushida, Susumu; and Igarashi, Sadao, 5,057,788, Cl. 330-261.000.

Alsthom: *See—*
Heddebaut, Marc, 5,057,797, Cl. 333-24.000.

Altavela, Robert P.: *See—*
Pond, Stephen F.; Drake, Donald J.; Altavela, Robert P.; Kneezel, Gary A.; and Rezanka, Ivan, 5,057,854, Cl. 346-140.00R

Altschuler, Lili W.: *See—*
White, Donald A.; Barsotti, Robert J.; Corcoran, Patrick H.; and Altschuler, Lili W., 5,057,555, Cl. 523-400.000

Aluminum Company of America: *See—*
Stewart, Donald L.; Van Linden, Jan H. L.; LaCamera, Alfred F.; Pierce, Thomas V.; Parkhill, James O.; Urbanic, John M.; and Hornack, Thomas R., 5,057,194, Cl. 204-67.000.

Alusick, Michael P.; and Surwillo, John M., to Bear Automotive Service Equipment Co. Apparatus for locking wheel unit in automotive wheel alignment system. 5,056,231, Cl. 33-203.180

Alvin, William R. Apparatus and tape for splicing data processing webs and mounting material thereon. 5,057,347, Cl. 428-43.000.

ALZA Corporation: *See—*
Edgren, David E.; Bhatti, Gurdish K.; and Carpenter, Howard A., 5,057,321, Cl. 424-413.000.
Magruder, Judy A.; Eckenhoff, James B.; Cortese, Richard; Wright, Jeremy C.; and Perry, John R., 5,057,318, Cl. 424-438.000

AM Communications, Inc.: *See—*
Rocci, Joseph D.; Quelly, Michael; Hallett, Robert; and Moore, Norman W., 5,058,198, Cl. 455-3.000.

AMAF Industries, Inc.: *See—*
Leveque, Howard, 5,058,202, Cl. 455-43.000.

Amana Refrigeration Inc.: *See—*
Goetz, Glenn E.; Towle, Brian D.; and Eveland, Michael J., 5,056,688, Cl. 222-146.600.

Amano, Tetsuro: *See—*
Masuda, Yoshitomo; Ogawa, Masao; Arai, Katsuhiko; Suzuki, Kinya; Fuse, Tadashi; and Amano, Tetsuro, 5,057,387, Cl 429-194.000

Ameen, Joseph G.; Funari, Joseph; and Goldfuss, John A., Jr., to International Business Machines Corporation. Thin film electronic device. 5,057,969, Cl. 361-386.000.

American Cyanamid Company: *See—*
Dawson, Michael J.; Noble, David; Lawrence, Gordon C.; Fletton, Richard A.; Lane, Stephen J.; Ramsay, Michael V. J.; Pereira, Oswy Z.; Sutherland, Derek R.; and Tiley, Edward P., 5,057,536, Cl. 514-450.000
Maranci, Artun; Peake, Steven L.; and Kaminski, Stanley S., 5,057,353, Cl. 428-147.000.

American Dental Association - Health Foundation: *See—*
Bowen, Rafael L., 5,057,018, Cl. 433-228.100.

American Standard Inc.: *See—*
Harrison, Mark W., 5,056,336, Cl. 62-498.000.
Kraay, Michael L., 5,056,594, Cl. 165-151.000.
Swanson, Robert M.; Rentmeester, Paul C.; and Foye, David M., 5,058,031, Cl. 364-483.000.

Americhem, Inc.: *See—*
Becker, Anton, 5,056,800, Cl. 277-68.000.

Amerine, Marvin K.: *See—*
Siems, Lee E.; Amerine, Marvin K.; Chien, Loring C.; and Vorheier, William P., 5,058,080, Cl. 367-79.000.

Amistar Corporation: *See—*
Takabayashi, Susumu, 5,056,844, Cl. 294-106.000.

Ammermann, Eberhard: *See—*
Seele, Rainer; Karbach, Stefan; Goetz, Norbert; Lorenz, Gisela; and Ammermann, Eberhard, 5,057,531, Cl. 514-383.000.
Seele, Rainer; Kober, Reiner; Ammermann, Eberhard; Lorenz, Gisela; Jung, Johann; and Rademacher, Wilhelm, 5,057,532, Cl. 514-383.000
Wenderoth, Bernd; Sauter, Hubert; Harreus, Albrecht; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,057,537, Cl. 514-510.000.

Amoco Corporation: *See—*
Wright, James H.; Heiser, Richard C.; and Caldwell, John H., 5,058,079, Cl. 367-59.000.

AMP Incorporated: *See—*
Bowen, Terry P.; and Rowlette, John R., 5,056,881, Cl. 359-19.000.
Kaufman, John W.; and Summers, Donald J., 5,057,032, Cl. 439-326.000

Amrein, Bruce E.: *See—*
Smoot, Wayne A.; Amrein, Bruce E.; McCoy, Curtis L.; and Brucksch, Robert C., 5,057,815, Cl. 340-468.000.

Amvac Chemical Corporation: *See—*
Braden, Gary A., 5,057,222, Cl. 210-634.000.

Analogic Corporation: *See—*
Feldman, Stuart M., 5,058,054, Cl. 364-900.000

Anazawa, Norimichi: *See—*
Nomura, Noboru; Nakagawa, Hideo; Koizumi, Taichi; Harafuji, Kenji; Okuni, Mitsuhiro; and Anazawa, Norimichi, 5,057,689, Cl. 250-310.000

Andersen, Erik, to Corpak, Inc. Enteral feeding tube with a flexible bolus and feeding bolus. 5,057,091, Cl. 604-270.000

Andersen, Morten K., to Alcatel Kirk A/S. Telephone handset having a pure acoustic resistance connection. 5,058,154, Cl. 379-433.000.

Anderson, Gordon W.: *See—*
Levitt, Hal L.; Anderson, Gordon W.; and Spezio, Anthony E., 5,058,190, Cl. 382-68.000.

Anderson, Harlan U.: *See—*
Schroeder, James E.; and Anderson, Harlan U., 5,057,362, Cl. 428-312.200.

Anderson, Howard C., to Motorola Inc. Complex signal transformation using a resistive network. 5,058,049, Cl. 364-826.000.

Anderson, Robert E.; and Poveromo, Leonard M., to Grumman Aerospace Corporation. Foam tooling removal method. 5,057,174, Cl. 156-155.000.

Ando, Akira: *See—*
Kittaka, Toshihiko; Ando, Akira; and Tamura, Hiroshi, 5,057,801, Cl. 333-187.000.

Ando, Katsutoshi: *See—*
Nishiura, Eiichi; and Ando, Katsutoshi, 5,057,710, Cl. 307-400.000.

Ando, Ryo; and Yoshida, Tadao, to Sony Corporation. Disk recording-/reproducing apparatus and disk recording/reproducing method. 5,058,096, Cl. 369-100.000.

Ando, Tsuneo, to TRW Steering & Industrial Products (Japan) Co. Ltd. Elastically compressible conical lock washer. 5,056,975, Cl. 411-155.000.

Ando, Yasuo; and Nishikawa, Takuo, to Konica Corporation. Magnetic recording medium. 5,057,352, Cl. 428-141.000.

Andreas, Janisch: *See—*
Klaus, Holzl; Roland, Erdei; Andreas, Janisch; Helmut, Wladar; Hubert, Wurthner; Hans, Hatvan; and Klaus, Damborsky, 5,056,808, Cl. 280-617.000.

Andrepierre, Michel: *See—*
Gouvernelle, Didier; and Andrepierre, Michel, 5,057,973, Cl. 361-534.000.

Andrews, James C.: *See—*
Ensminger, William D.; Knol, James A.; and Andrews, James C., 5,057,084, Cl. 604-167.000.

Andringa, Willem W.; Devlin, Terence A.; and Meuleman, Hermanus J., to Remeha Fabrieken. Low NO_x atmospheric gas burner. 5,057,007, Cl. 431-328.000.

Andrus, Milton H., Jr.: *See—*
Kumar, Ramesh C.; Andrus, Milton H., Jr.; and Mazurek, Mieczyslaw H., 5,057,619, Cl. 556-420.000.

Ang, Leoncio T.; and Cook, Charles R., Jr., to Siemens Automotive L.P. Strengthening a silicon micromachined mass air flow sensor in the region of its hot element. 5,056,362, Cl. 73-204.260.

Angeion Corporation: *See—*
Zytkovicz, Duane; and McEvoy, Thomas J., 5,056,528, Cl. 128-741.000

Anthony, Vivienne M.; Clough, John M.; DeFraine, Paul; Godfrey, Christopher R. A.; Ferguson, Ian; Crowley, Patrick J.; and Hutchings, Michael G., to Imperial Chemical Industries PLC. Certain 2-pyridyl oxy-phenyl acrylates having fungicidal, insecticidal, nematocidal and plant growth regulating activity. 5,057,146, Cl. 71-94.000.

Anton/Bauer, Inc: *See—*
Sokira, Thomas J., 5,057,383, Cl. 429-92.000.

Anton Steinecker Maschinenfabrik GmbH: *See—*
Redl, Simon, 5,056,980, Cl. 414-412.000.

Antos, John M.: *See—*
Sargent, Charles L.; and Antos, John M., 5,056,166, Cl. 4-321.000.

Antwiler, Glen D., to Cobe Laboratories, Inc. Treatment of liquid including blood components. 5,057,226, Cl. 210-641.000.

Aoki, Hiroshi: *See—*
Maruyama, Osamu; and Aoki, Hiroshi, 5,057,135, Cl. 65-30.130.

Aoki, Kazuhiro: *See—*
Shimada, Toshiyuki; Aoki, Kazuhiro; Kurahashi, Akira; and Kikuchi, Noboru, 5,057,945, Cl. 360-22.000.

Aoki, Kazuichi; Saiki, Yukihiro; Tanno, Katushtoshi; Shiinoki, Yasuhiko; Hori, Tomoshige; Itoh, Kensuke; Nakamura, Tetsuo; and Miyawaki, Osato, to Snow Brand Milk Products Co., Ltd. Method and apparatus for measuring a change in state of a subject fluid. 5,056,928, Cl. 374-16.000.

Aoki, Kunimitsu: *See—*
Iino, Tadashi; Aoki, Kunimitsu; and Suzuki, Yoshiyuki, 5,056,890, Cl. 359-630.000.

Aoki, Minoru, to Ricoh Company, Ltd. Toner density control device for an image forming apparatus. 5,057,870, Cl. 355-246.000.

Aoyagi, Yukio: *See—*
Hirata, Toichi; Sugiyama, Genroku; Kajita, Yusuke; Aoyagi, Yukio; Yasudi, Tomohiko; Yasuda, Gen; Watanabe, Hiroshi; Izumi, Eiki; Tanaka, Yasuo; Onoue, Hiroshi; and Nakamura, Shigetaka, 5,056,312, Cl. 60-426.000.

Apffel, Fred. Recovery apparatus. 5,057,189, Cl. 202-113.000.

Appalachian Electronic Instruments, Inc.: *See—*
Nickell, Lawrence C.; and Perkins, Curtis L., 5,056,442, Cl. 112-80.180.

Apparte und Heizwiderstande GmbH: *See—*
Bohlender, Franz; and David, Josef, 5,057,672, Cl. 219-540.000.

Appierto, Anna N. Electric hair-dryer adapted to be mounted on the back of a hand. 5,058,193, Cl. 392-384.000

Applied Magnetics Corporation: *See—*
Wanlass, Dana T., 5,057,953, Cl. 360-104.000.

Applied Medical Technology, Inc.: *See—*
Picha, George J., 5,057,118, Cl. 606-158.000.

APV Crepaco, Inc.: *See—*
Deadmond, Richard S., 5,056,298, Cl. 53-534.000.

Arai, Katsuhiko: *See—*
Masuda, Yoshitomo; Ogawa, Masao; Arai, Katsuhiko; Suzuki, Kinya; Fuse, Tadashi; and Amano, Tetsuro, 5,057,387, Cl. 429-194.000.

Arai, Minoru; and Kato, Yukihiro, to Teac Corporation. Variable gain differential amplifier. 5,057,787, Cl. 330-254.000.

Arai, Tsutomu: *See—*
Yamada, Katsuyoshi; and Arai, Tsutomu, 5,057,660, Cl. 219-10.55M.

Arbo, John C.: *See—*
Ray, William G.; Arbo, John C.; and Gryka, George E., 5,057,298, Cl. 423-574.00L.

Archer, David L.: *See—*
Abel, Baron E.; and Archer, David L., 5,057,901, Cl. 357-70.000.

Arditty, Herve J.; Puech, Claude; and Papuchon, Michel, to Thomson CSF. Device for measuring a phase shift which is not reciprocal produced in a ring interferometer. 5,056,919, Cl. 356-350.000.

Arekapudi, Anil K.; Bryan, Donald G., Jr.; and Holden, Thomas, to Industrial Engineering and Equipment Company, Inc. Integral temperature and liquid level sensor and control. 5,056,363, Cl. 73-292.000.

Arendt, Ronald H.; and Garbauskas, Mary F., to General Electric Company. Synthesis of Bi-Pb-Ca-Sr-Cu-O oriented polycrystal superconductor. 5,057,486, Cl. 505-1.000.

Arendt, Ronald H.; and Garbauskas, Mary F., to General Electric Company. Synthesis of Bi-Pb-Ca-Sr-Cu-O superconductive material. 5,057,488, Cl. 505-1.000.

Aries Electronics, Inc.: *See—*
Sinclair, William Y., 5,057,031, Cl. 439-261.000.

Ariki, Yutaka: *See—*
Shiraishi, Tadayoshi; Kameyama, Keiji; Domoto, Takeshi; Imai, Naohiro; Shimada, Yoshio; Ariki, Yutaka; Hosoe, Kazunoro; Kawatsu, Masaji; Katsumi, Ikuo; Hidaka, Takayoshi; and Watanabe, Kiyoshi, 5,057,538, Cl. 514-521.000.

Arimoto, Kazutami: *See—*
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Arison, Byron H.: *See—*
Wyvratt, Matthew J., Jr.; Beattie, Thomas R.; Ok, Hyun O.; Arison, Byron H.; and Fisher, Michael H., 5,057,608, Cl. >40-456.000.

Armbrust, Christen M.: *See—*
Santon, John C.; Nielsen, Kenneth R.; Armbrust, Christen M.; Shah, Pankaj B.; and Hand, Steven J., 5,058,162, Cl. 380-25.000.

Armstrong International, Inc.: *See—*
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Arnold, Raymond M.: *See—*
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Arold, Klaus: *See—*
Koukal, Heinz; Arold, Klaus; Trube, Hans; and Karioth, Gernoth, 5,056,423, Cl. 98-2.170.

Arsena, Vito J.: *See—*
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Asada, Takafumi: *See—*
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Asada, Toshiyuki; Higashiyama, Yasuhiko; Nakawaki, Yasunori; Suzuki, Toshitake; Abe, Akiharu; and Moriguchi, Naoki, to Toyota Jidosha Kabushiki Kaisha. Automatic transmission. 5,057,063, Cl. 475-278.000.

Asahi Glass Company Ltd.: *See—*
Matsuo, Masashi; Maekawa, Takashige; and Ito, Katsuji, 5,057,577, Cl. 525-276.000.
Sunahara, Kazuo; Irisawa, Naosi; Nakahara, Katumasa; Watanabe, Kazunari; and Takabatake, Mitsuo, 5,057,376, Cl. 428-432.000.

Asahi, Kazuhiko: *See—*
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Asahi, Yasuhiko: *See—*
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Asai, Naohito, to Brother Kogyo Kabushiki Kaisha. Yarn positioning controller for flat-bed knitting machines. 5,056,338, Cl. 66-127.000.

Asaki, Yasuaki; Hiratani, Masaaki; and Kitami, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Intake device for multi-cylinder internal combustion engine. 5,056,473, Cl. 123-52.0MB.

Asami, Masahiro: *See—*
Shiba, Keisuke; Hasebe, Kazunori; and Asami, Masahiro, 5,057,402, Cl. 430-377.000.

Asano, Hiroaki: *See—*
Tomita, Tamaki; Asano, Hiroaki; Nakamura, Keiichi; Yamamoto, Masaji; Tanooka, Shigeo; Sakai, Toshifumi; Nakano, Tetsuya; and Morishita, Nobunao, 5,056,640, Cl. 192-85.0AA

Ascend Communications, Inc.: *See—*
Duncanson, Jay P.; and Speckenbach, Stephen J., 5,058,133, Cl. 375-38.000.

Ascom Audiosys AG: *See—*
Bartschi, Anton, 5,056,204, Cl. 29-169.500.

Ashida, Hideo: *See—*
Sogo, Hiroyuki; Ashida, Hideo; Sugawara, Hideo; and Kondo, Yasuyuki, 5,057,804, Cl. 333-219.100.

Ashton, John W., to H.R. Smith (Technical Developments, Ltd.). Method and apparatus for making continuous lengths of thermoplastic fiber reinforced laminates. 5,057,175, Cl. 156-202.000.

Ashworth, William J. Combination inertia type audio transducer and loudspeaker. 5,058,173, Cl. 381-152.000.
Askeland, David R. Painting sheild. 5,056,458, Cl. 118-505.000
Aso, Itsuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Quality inspection method for a printed matter. 5,058,175, Cl. 382-1.000.
Aso, Koichi: *See—*
Hayashi, Kazuhiko; Hayakawa, Masatoshi; Katori, Kenji; and Aso, Koichi, 5,057,380, Cl. 428-692.000.
Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S.: *See—*
Fayeulle, Dominique M. M.; Henon, Jean-Paul; and Morbioli, Rene J., 5,057,379, Cl. 428-632.000.
Ast, Gunther: *See—*
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Astex Co., Ltd.: *See—*
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Astrom, Thomas. Loudspeaker. 5,056,616, Cl. 181-156.000
AstroPower, Inc.: *See—*
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AT&T Bell Laboratories: *See—*
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Briley, Bruce E.; Larson, Mikiel L.; and Montsma, John, 5,057,877, Cl. 357-5.000.
Chew, Hongzong; Fieber, Catherine A.; Hills, Graham W.; and Martin, Edward P., Jr., 5,057,186, Cl. 156-643.000.
Denker, John S.; Howard, Richard E.; Jackel, Lawrence D.; and LeCun, Yann, 5,058,179, Cl. 382-14.000.
Eisenberg, Juli H.; Fritzinger, Larry B.; Fu, Chong-Cheng; Kook, Taeho; and Wolf, Thomas M., 5,057,462, Cl. 437-229.000
Foo, Pang-Dow; Lynch, William T.; and Pai, Chien-Shing, 5,057,455, Cl. 437-193.000.
Gutt, Gregory M.; Kamgar, Avid; Knoell, Robert V.; and Schutz, Ronald J., 5,057,441, Cl. 437-8.000.
Mansour, M. Omar; and Nguyen, Liem T., 5,058,105, Cl 370-16.000.
Morgan, Robert A., 5,056,889, Cl. 359-572.000.
Nagaraj, Krishnaswamy, 5,057,789, Cl. 330-264.000.
Ray, Rajarshi, 5,058,178, Cl. 382-8.000.
Atkins, Robert M.; Peterson, George E.; and Tuminaro, Raymond D., to AT&T Bell Laboratories. Measuring and controlling the thickness of a conductive coating on an optical fiber. 5,057,781, Cl. 324-635.000
Atsugi Unidia Corporation: *See—*
Suga, Seiji, 5,056,479, Cl. 123-90.170.
Atsukawa, Masumi, to K & M Enterprise Co., Ltd. Extension support unit. 5,056,278, Cl. 52-108.000.
Atweh, Nabil A., to Research Foundation of State University of New York, The. Method and apparatus for hemostasis and compartmentalization of a bleeding internal bodily organ. 5,057,117, Cl. 606-151.000
Auburn Research Foundation: *See—*
Worley, Shelby D.; Tsao, Techen; and Williams, Delbert E., 5,057,612, Cl. 548-301.000.
Audic, Bernard; and Bugeia, Christian, to Schlumberger Industries Technique for attaching an electronic module to a card body to form an electronic memory card. 5,057,679, Cl. 235-492.000.
Aurik, Erik A.: *See—*
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Austria Metall Aktiengesellschaft: *See—*
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Auto I.D. Inc.: *See—*
Stewart, Stedman J.; Barbour, Charles A., Jr.; Breeden, Howard E.; and Stewart, Stedman J., 5,058,044, Cl. 364-551.010
Automatic Toll Systems, Inc.: *See—*
Quinlan, Thomas J., Jr., 5,056,884, Cl. 385-13.000.
Automatic Truck Door, Inc.: *See—*
Stillwell, Richard L.; Bohn, Christopher G.; and Boerman, Daniel W., 5,056,847, Cl. 296-50.000.
Autotrol Corporation: *See—*
Farrell, Michael D.; Teach, Terry F.; and Evers, John N., 5,058,032, Cl. 364-510.000.
Avanic, Branko: *See—*
Ooi, Leng H.; Yeh, Peter J.; and Avanic, Branko, 5,057,803, Cl 333-204.000.
Aversa & Martin, Inc.: *See—*
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AVL Gesellschaft fur Verbrennungskraft-maschinen und Messtechnik mbH., Prof. Dr. Dr. h.c. Hans List: *See—*
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Aydin Corporation: *See—*
Napier, Thomas M., 5,057,795, Cl. 331-78.000.
Ayres, Barry E.: *See—*
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Ayton, Ian F.: *See—*
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B-Line AG: *See—*
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Baas, Michael M.: *See—*
Miller, Gerald D.; and Baas, Michael M., 5,057,570, Cl. 524-503.000
Baasner, Bernd; Schwamborn, Michael; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal thiazolecarboxamide derivatives. 5,057,142, Cl. 71-90.000.
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Babicz, Amy H. Night light toy apparatus. 5,057,051, Cl. 446-227.000
Babish, John G.: *See—*
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Bailey, Alan H.: *See—*
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Bainbridge, William, to Manville Corporation. Method of forming corrugated paperboard automotive liner. 5,057,176, Cl. 156-222.000
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Baker Hughes Incorporated: *See—*
Bland, Ronald G.; and Clapper, Dennis K., 5,057,234, Cl. 252-8.510.
Breen, Patrick J.; Downs, Hartley H.; and Diel, Bruce N., 5,057,228, Cl. 210-700.000.
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Bakish Materials Corporation: *See—*
von Ardenne, Alexander; Madler, Eckehard; Wehner, Bernd; Richter, Kurt; Schiller, Nicolas; Tobisch, Josef; and Hahnel, Gunter, 5,057,688, Cl. 250-307.000.
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Ball, Dean M., to AgMaster, Inc. Method and apparatus for detecting toxic gases. 5,057,436, Cl. 436-113.000
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Balloni, Ricardo; and Nahmias, A. Michael, to Mobil Oil Corporation. Laminated packaging film. 5,057,177, Cl. 156-244.110
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Baltz, Gene F.; Dayenian, Paul M.; and Stanley, John E., to Outboard Marine Corporation. Carburetor float chamber drain device. 5,057,249, Cl. 261-72.100.
Balzano, Alfiero. Tool caddy. 5,056,661, Cl. 206-372.000
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Banner, Alvin C., to Globe Products Inc. Process for terminating insulated conductor wires. 5,057,661, Cl. 219-56.220
Banse, Permjit S., to Ford Motor Company. Fuel tank. 5,056,492, Cl. 123-509.000.
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Barbanell, Joseph, to DZ Company. Holographic wallpaper. 5,056,880, Cl. 359-29.000
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Barbier, Bruno; Ediar, Serge; and Brun, Jean, to Thomson CSF. System for the display of luminous data with improved readability. 5,057,744, Cl. 315-10.000.

Barbour, Charles A., Jr.: *See—*
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Barlow, Gordon A., to Rapid Mounting and Finishing Company, Cadaco Division. Recreational timing apparatus. 5,058,086, Cl. 368-98.000.
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, to Hoffmann-La Roche Inc. Glycerol derivatives. 5,057,530, Cl. 514-365.000.
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Barnett, Allen M.; Hall, Robert B.; Rand, James A.; and Ford, David H., to AstroPower, Inc. Deposited-silicon film solar cell. 5,057,163, Cl. 136-258.000.
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Barthomeuf, Jean-Claude, to Eimco-Secoma (Societe Anonyme). Damped hammer drill. 5,056,606, Cl. 173-13.000.
Barton, Arthur E. M., to British Aerospace PLC. Information transmission system. 5,056,736, Cl. 244-3.301.
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Basler, Fritz, to Geut AG. Process for reducing halogen impurities in oil products. 5,057,207, Cl. 208-262.100.
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Baucom, Robert M.; Snoha, John J.; and Marchello, Joseph M., to United States of America, National Aeronautics and Space Administration. Process for application of powder particles to filamentary materials. 5,057,338, Cl. 427-185.000.
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Baummer, George P. Benefication apparatus and process for land and seabed mining. 5,057,211, Cl. 209-448.000.
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Baasner, Bernd; Schwamborn, Michael; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,057,142, Cl. 71-90.000.
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Bayerlein, Friedrich K.; and Leuerer, Dietrich R. K., to Koening & Bauer Aktingesellschaft. Method of positioning plate cylinders in a multi-color rotary printing machine. 5,056,430, Cl. 101-211.000
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Beach, John R.; and Hasan, Syed R., to Illinois Tool Works Inc. Roofing washer-dispensing machine. 5,056,684, Cl. 221-197.000
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Beasom, James D., to Harris Corporation. Trench conductor and crossunder architecture. 5,057,895, Cl. 357-49.000
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Beck, Henry N.; and Lundgard, Richard A., to Dow Chemical Company, The. Process for forming an article comprising poly(etheretherketone) (PEEK) type polymers. 5,057,600, Cl. 528-480.000
Beck, James L.; and Dyer, Stanley, to Lexmark International, Inc. Apparatus for controlling interpage gaps in printers and method of interpage gap control. 5,056,771, Cl. 271-114.000.
Beck, Jeffrey S., to Mobil Oil Corp. Method for synthesizing mesoporous crystalline material. 5,057,296, Cl. 423-277.000.
Beck, Stephen, to Global Glass Inc. Chair arm rest mounting bracket and insert. 5,056,868, Cl. 297-417.000
Becker, Anton, to Americhem, Inc. Seal assembly for internal mixers 5,056,800, Cl. 277-68.000.
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DiGianfilippo, Aleandro; Hitchcock, James R.; Lewis, Robert E.; Zielsdorf, Randall A.; Vos, James P.; Starai, Rudolph; Becker, Michael J.; Warner, Donald W.; and Huang, Leon, 5,056,568, Cl 141-1.000
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Beckman Instruments, Inc.: *See—*
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Belcher, Walter C. Cutter assembly for rotary drain cleaner. 5,056,176, Cl. 15-104.10R.
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Bellettini, Richard J.; and Bellettini, Arturo G. Tennis ball retriever 5,056,786, Cl. 273-29.00R.
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Belt, William E.; Avery, C. Frederick; and Klein, Vernon W., to Marion Laboratories, Inc. Gas generator/indicator unit adapted for use in an upright position. 5,057,285, Cl. 422-236.000.
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Bereiter, Rolf, to Hilti Aktiengesellschaft. Explosive powder charge operated fastening element setting tool. 5,056,701, Cl. 227-10.000
Berger, Barry D., to R.N. Koch, Inc. Display tray. 5,056,668, Cl 211-13.000
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Bertheas, Jean; Moresco, Gilles; and Dufourco, Philippe, to Thomson-CSF. Linear hydrophonic antenna and electronic device to remove right/left ambiguity, associated with this antenna. 5,058,082, Cl 367-130.000
Bertho, Annette; Charpin, Daniel; Heusele, Catherine; and Moireau, Patrick, to Cotelle S.A.; and Henkel Entretien. Viscous detergent composition capable of being diluted and process for producing it. 5,057,246, Cl. 252-545.000.
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Bertling, Johannes-Gerhard; Hess, Jurgen; Lentz, Gerd; and Heier, Christoph, to Robert Bosch GmbH. Heating system for the passenger compartment of a motor vehicle having a liquid-cooled internal combustion engine. 5,056,713, Cl. 237-2.00A.
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Bessman, Edward S. Drip metering apparatus with selectable drop sizes and coupling arrangement therein. 5,057,090, Cl. 604-251.000.
Bhasin, Madan M., to Union Carbide Chemicals and Plastics Technology Corporation. Catalyst composition for oxidation of ethylene to ethylene oxide. 5,057,481, Cl. 502-208.000
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Bies, Sylvester W., to Stanley Works, The. Self-positioning and self-locking door sweep and door assembly therewith. 5,056,263, Cl. 49-488.000.
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Birkle, Siegfried; Feucht, Hans-Dieter; Kamps, Rainer; and Rissel, Eva, to Siemens Aktiengesellschaft. Radiation-curable liquid resin for secondary coating of lightwave guides. 5,057,587, Cl. 526-273.000.
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Blain, David A.; and Cardis, Angeline B., to Mobil Oil Corp. Diisocyanate derivatives as lubricant and fuel additives and compositions containing same. 5,057,122, Cl. 44-387.000.
Blake, Robert M.; Bossen, Douglas C.; Chen, Chin-Long; Fifield, John A.; Kalter, Howard L.; and Lo, Tin-Chee, to International Business Machines Corp. Fault tolerant computer memory systems and components employing dual level error correction and detection with lock-up feature. 5,058,115, Cl. 371-401.000.
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Bland, Ronald G.; and Clapper, Dennis K., to Baker Hughes Incorporated. Non-hydrocarbon invert emulsions for use in well drilling operations. 5,057,234, Cl. 252-8.510.
Blanton, James A., to Delco Electronics Corporation. Method of providing standoff pillars. 5,056,215, Cl. 29-840.000.
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Blitz, William A.: *See—*
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Blough, David N.; and Nguyen, Ngon B., to Westinghouse Electric Corp. High voltage hybrid package. 5,057,648, Cl. 174-52.400.
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Bocson, David A.: *See—*
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Sakurai, Seiya, 5,056,742, Cl. 244-235.000.
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Stillwell, Richard L.; Bohn, Christopher G.; and Boerman, Daniel W., 5,056,847, Cl. 296-50.000.
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Bond, William R.; and Markley, Daniel L. Multipurpose cutting means 5,056,605, Cl. 172-111.000
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Detlefsen, William D.; Creel, Lewis D.; and Johnson, Lee R., 5,057,591, Cl. 528-140.000
Lee, Yanien; Merritt, Carleton G.; Gillmore, Stephen R.; and Dermody, Nancy E., 5,057,330, Cl. 426-120.000.
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Persing, Brian J.; Banas, Philip C.; Wiersma, Timothy J.; Connor, John P.; and Bouse, James R., 5,057,039, Cl. 439-574.000.
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Breen, John J., to Bose Corporation. Headset having reduced width nested bands which are grasped by earcup supporting block 5,056,161, Cl. 2-209.000
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Masuda, Yoshitomo; Ogawa, Masao; Arai, Katsuhiko; Suzuki, Kinya; Fuse, Tadashi; and Amano, Tetsuro, 5,057,387, Cl. 429-194.000.

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Honkomp, Glenn A.; McNay, Thomas O.; Burrows, Larry G.; Brown, James M.; and Bowsky, Benjamin, 5,058,197, Cl. 392-455.000.

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Eucker, James L.; Ruhl, Robert C.; and Ruppel, Irving B., Jr., 5,057,001, Cl. 425-315.000

Card, Gary C. Filter sentry apparatus. 5,057,821, Cl. 340-610.000

Cardis, Angeline B.: *See—*
Blain, David A.; and Cardis, Angeline B., 5,057,122, Cl. 44-387.000

Carew, Edward C.; Lockhart, Roland T.; and Brophy, Sean G. Noise mitigation and mode switching in communications terminals such as telephones. 5,058,153, Cl. 379-390.000

Cargile, John W., Jr., to Khklok Corporation. Multiple compartment paperboard carton. 5,056,709, Cl. 229-120.170

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Carlson, Randolph S., to OTL, Inc. Passive optical air traffic alert system. 5,057,833, Cl. 340-961.000

Carmein, Joseph A. Replacement tool handle, hand tool and method 5,056,381, Cl. 76-103.000.

Carossino, Andre: *See—*
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Carpenter, Howard A.: *See—*
Edgren, David E.; Bhatti, Gurdish K.; and Carpenter, Howard A., 5,057,321, Cl. 424-413.000.

Carr, Peter, to Instatherm Company. Evaporative cooling enhanced cold storage system. 5,056,588, Cl. 165-10.000

Carroll, Thomas M. System and method for generating a pattern from an image. 5,058,174, Cl. 382-1.000

Carson, Douglas W.; and Kusmar, Raymond J., to Thomas Industries, Inc. Recessed lighting fixture. 5,057,979, Cl. 362-147.000

Carswell, Robert, to Dow Chemical Company, The. Blends of alkylene glycols and relatively high equivalent weight active hydrogen compounds containing additives. 5,057,543, Cl. 521-51.000

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Conville, David J., 5,056,796, Cl. 273-402.000

Casey, Irene. Cleaner and disinfectant with dye. 5,057,303, Cl. 424-7.100

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Yoshino, Hiroyuki; and Tomidokoro, Yoshinori, 5,058,009, Cl 364-408.000

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Oliver, Michael S.; Cawthorne, Chris E.; and Erpenbeck, Gary, 5,056,610, Cl. 175-371.000.

Cazaillon, Jean-Mary: *See—*
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Center for Molecular Medicine and Immunology, The: *See—*
Shih, Lisa B.; Primus, Frederick J.; and Goldenberg, Milton D., 5,057,313, Cl. 424-85.910.

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Pollack, Matthew; and Hunter, Kenneth W., 5,057,598, Cl 530-387.000

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Cerwin, Robert J.: *See—*
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Chabot, John S.: *See—*
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Chabrolle, Jacques, to Compagnie Europeenne de Composants Electroniques LCC. Magnetic head for magnetic tracks with strong field 5,057,958, Cl. 360-125.000.

Chaconas, Peter C., to Black & Decker Inc. Screwdriver bit and finder system. 5,056,386, Cl. 81-451.000.

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Sasso, Theodore S., 5,056,827, Cl. 283-105.000.
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Reeve, Martin R.; Bamji, Pervez J.; Chamberlain, Barrie; and Sulzer, John, 5,057,150, Cl. 75-671.000.
Chamberlain Group, Inc., The: *See—*
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Chan, Andrew K.: *See—*
Trinh, Cuong; Win, Vincent K. Z.; Nouban, Behzad; and Chan, Andrew K., 5,057,712, Cl. 307-465.000.
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Fazan, Pierre C.; Chan, Hiang C.; Liu, Yauh-Ching; Sandhu, Gurtej S.; and Rhodes, Howard E., 5,057,888, Cl. 357-23.600
Chandler, Alan S.; and Alline, Emile F., Jr., to Advanced Electronics, Inc. Variable inductance RF coil assembly. 5,057,809, Cl 336-144.000.
Chaney, Raymond J., to Renishaw plc. Optical apparatus for use with inteferometric measuring devices. 5,056,921, Cl. 356-351.000.
Chang, Charles S.: *See—*
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Chang, Clarence D.; and Rodewald, Paul G., to Mobil Oil Corp. Propylene oligomerization over silica modified zeolites. 5,057,640, Cl 585-533.000.
Chang, Hershow: *See—*
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Chang, Tai-Lin; Hunter, Paul W.; Lang, Donald J.; and Luning, Stephen G., to International Business Machines Corp. Interruption systems for externally changing a context of program execution of a programmed processor. 5,057,997, Cl. 364-200.000.
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Charpin, Daniel: *See—*
Bertho, Annette; Charpin, Daniel; Heusele, Catherine; and Moreau, Patrick, 5,057,246, Cl. 252-545.000.
Chave, Jacques, to GEC Alsthom SA. Electronic power component circuit. 5,057,970, Cl. 361-386.000.
Chemaly, Ephrem A., to Motorola, Inc. Method for inspection of protruding features. 5,058,177, Cl. 382-8.000
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Adams, John R., 5,057,468, Cl. 502-1.000.
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Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; and Glaspie, Don, to Glitsch, Inc. Tower packing with small louvers. 5,057,250, Cl. 261-112.200.
Chen, Michael S.; Painter, Corning F.; Pastore, Steven P.; Roth, Gary S.; and Winchester, David C., to Air Products and Chemicals, Inc Thermally efficient melting and fuel reforming for glass making 5,057,133, Cl. 65-27.000.
Chen, Shieh-Shung T.; and Doss, George, to Merck & Co., Inc. Antihypersensitive N2-tetrazole-β-glucuronide analog. 5,057,522, Cl. 514-303.000.
Cheng, Chen J., to Petrus Imports, Inc. Baby walker chair and desk assembly. 5,056,776, Cl. 272-70.300.
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Cherry-Burrell Corporation, The: *See—*
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Cherry, Peter C.; Foxton, Michael W.; Ayres, Barry E.; and Searle, Andrew D., to Glaxo Group Limited. Dipeptide compounds containing histidine or N-methyl histidine processes for their preparation and compositions containing them. 5,057,496, Cl. 514-19.000
Cherukuri, Subraman R.; Mansukhani, Gul; and Faust, Steven M., to Warner-Lambert Company. Food acid delivery systems containing polyvinyl acetate. 5,057,328, Cl. 426-5.000.
Chervet, Jean-Pierre, to Kontron Instruments Holding NV. Capillary flow cell. 5,057,216, Cl. 210-198.200.
Chess, Cyrus. Method and apparatus for treating cutaneous vascular lesions. 5,057,104, Cl. 606-9.000.
Chevereau, Gerard, to Framatome. Instrumentation arrangement for a pressurized water nuclear reactor. 5,057,270, Cl. 376-254.000.
Chevillat, Pierre R.; Eleftheriou, Evangelos; Maidwald, Dietrich G. U.; and Quintin, Michel, to International Business Machines Corp. Process of synchronizing a receiving modem after a training on data. 5,058,134, Cl. 375-39.000.
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Sweeney, William A., 5,057,636, Cl. 585-324.000.
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Chew, Hongzong; Fieber, Catherine A.; Hills, Graham W.; and Martin, Edward P., Jr., to AT&T Bell Laboratories. Method of taper-etching with photoresist adhesion layer. 5,057,186, Cl. 156-643.000
Chi, Yi C. Pair of vernier calipers having a protractor. 5,056,238, Cl. 33-810.000
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Chien, Loring C.: *See—*
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Chikaoka, Yasuji: *See—*
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Chin, Arthur A.; Sapre, Ajit V.; and Sarli, Michael S., to Mobil Oil Corporation. Additive for vanadium and sulfur oxide capture in catalytic cracking. 5,057,205, Cl. 208-121.000
Chinn, Stephen R., to General Electric Company. Fiber optic switch. 5,056,885, Cl. 350-96.130.
Chinnock, Randal B.; and Dionne, Norman J., to Smith & Nephew Dyonics, Inc. Magnetically coupled lens actuator. 5,056,902, Cl. 359-503.000
Chiolle, Antonio: *See—*
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Chipkin, Lawrence I.: *See—*
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Chisholm, Daniel R.; Fisch, Michael H.; Flanagan, Mark E.; and Pevleer, Richard D., to Witco Corporation. 3-alkylthiopropionic acids and derivatives. 5,057,622, Cl. 560-152.000.
Chiuminatta, Alan R.: *See—*
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Chmielewski, Andrzej G.: *See—*
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Cho, Jun-Kuk, to Samsung Electronics Co., Ltd. Air conditioner with ventilating means. 5,056,333, Cl. 62-262.000.
Cho, Shizuo; and Uesugi, Masaru, to Oki Electric Industry Co., Ltd. CMOS RAM having a complementary channel sense amplifier. 5,058,073, Cl. 365-205.000.
Choi, Yong H., to Goldstar Co., Ltd. Light control circuit for camcorder. 5,057,700, Cl. 307-125.000.
Cholley, Andre. Modular assembly for swimming pools. 5,056,167, Cl. 4-492.000.
Chonan, Misugi; and Yuzuriha, Yoshiki, to Fuji Heavy Industries Ltd.; and Japan Electronic Control Systems Co., Ltd. Engine protecting system. 5,056,482, Cl. 123-331.000.
Chou, Chih T. Sweat-absorbing strip for sport goggles. 5,056,163, Cl. 2-453.000.
Christenson, Ronald E., to McNeilus Truck and Manufacturing, Inc. System for mixing and dispensing concrete. 5,056,924, Cl. 366-59.000.
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Chrobaczek, Harald; and Tschida, Gunther, to Ciba-Geigy Corporation. Aqueous, finely divided to optically clear, thermally and mechanically stable silicone emulsions, a process for their preparation and their use. 5,057,572, Cl. 524-588.000.
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Chu, Cynthia T.; Partridge, Randall D.; and Schramm, Suzanne E., to Mobil Oil Corporation. Ultrastable Y containing framework gallium. 5,057,203, Cl. 208-46.000
Chu, Daniel T.; and Hallas, Robert, to Abbott Laboratories. 7-(peptidylpyrolidinyl)naphthyridine antibacterial compounds. 5,057,520, Cl. 514-300.000
Chu, Daniel T.; and Hallas, Robert, to Abbott Laboratories. Dipeptide quinolone derivatives. 5,057,523, Cl. 514-312.000
Chua, Joseph: *See—*
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Iida, Yoshimitsu, 5,057,317, Cl. 424-423.000
Chung, Ding Y.; and Debroy, Tapan K., to Du Pont de Nemours, E. I., and Company. Polyol extended cathodic electrodeposition resins. 5,057,558, Cl. 523-414.000
Chung, Paul W.; Jenkins, Michael O.; Jove, Stephen A.; Klaassen, Klaas B.; Saber, Paik; and van Peppen, Jacobus C. L., to International Business Machines Corporation. Method and circuitry to suppress additive disturbances in data channels. 5,057,785, Cl. 328-162.000
Chung, Sanguoon, to Advanced Micro Devices, Inc. System and method for providing digital filter coefficients. 5,058,047, Cl 364-724.190.
Chung, Woo S., to Goldstar Co. Ltd. Cooling system for stirling engine. 5,056,316, Cl. 62-3.200.
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Hausler, Albert; and Bhatnagar, Ajay, 5,057,521, Cl. 514-300.000.
Heyl, Barbara L.; Winterton, Lynn C.; Su, Kai C.; and White, Jack C., 5,056,689, Cl. 222-189.000
Karydas, Athanasios; and Rodgers, Juliana, 5,057,377, Cl. 428-447.000.
Mosch, Franz, 5,057,589, Cl. 528-24.000.
Mueller, Karl F., 5,057,560, Cl. 524-22.000
Neukom, Alfred J.; Reinehr, Dieter; and Schmid, Werner, 5,057,539, Cl. 514-531.000
Pastor, Stephen D.; Hessell, Edward T.; and Ravichandran, Ramanathan, 5,057,610, Cl. 544-196.000.
Ravichandran, Ramanathan, 5,057,563, Cl. 524-98.000.
Reinert, Gerhard, 5,057,562, Cl. 524-87.000
Shaw, Kenneth R.; Shaw, Knneth R.; and Schneider, Josef A., 5,057,506, Cl. 514-91.000.
Widler, Leo; and Jaeggi, Knut, 5,057,505, Cl. 514-80.000.
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Citizen Watch Co., Ltd.: *See—*
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Claassen, Henning J., to Nordson Corporation. Slit nozzle. 5,056,687, Cl. 222-146.500.
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Kurihara, Takao; and Hamatsu, Masahiro, 5,058,128, Cl. 375-1.000.
Clark, Andrew W.; and Zacher, Brett A., to Allegro Microsystems, Inc. Current regulation circuit for inductive loads. 5,057,765, Cl. 323-288.000.
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Petrin, Michael; and van Buskirk, Gregory, 5,057,236, Cl. 252-79.100
Clough, John M.: *See—*
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Coates, Clarence A., Jr.: *See—*
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Cohen, Allen L. Optic zone phase channels. 5,056,908, Cl. 351-161.000.
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Cohen, Joel. Clip of extruded plastic material. 5,056,197, Cl. 24-304.000
Cohen, Theodore. Low cost high efficiency steam heating system 5,056,714, Cl. 237-9.00R.
Cohen, Wilburt, to Advanced Golf Concepts, Inc. Golf ball heating device. 5,057,670, Cl. 219-521.000
Colamussi, Dominic J., to Stanley Works, The. Non-handed shock arrestor door pivot. 5,056,193, Cl. 16-262.000.
Cole, Francisco J. Tool for separating chain links. 5,056,305, Cl 59-7.000
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Colen, William J. Wall construction and spacer for use therewith. 5,056,289, Cl. 52-564.000.
Colgate-Palmolive Co.: *See—*
Broze, Guy; and Ouhadi, Trazollah, 5,057,238, Cl. 252-99.000
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Colli, Luigi; Badiali, Roberto; and Bertoli, Luciano, to Savio S.p.A. Device for preventing yarn loop formation and for saving suctioned yarn on winding units. 5,056,727, Cl. 242-35.60R
Colpan, Metin: *See—*
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Colson, Charles R. Solution warming unit. 5,057,671, Cl. 219-521.000.
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Comert, Ahmet; Ladang, Michel; and Petit, Dominique, to Norton Company. Ski construction. 5,056,807, Cl. 280-610.000
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Lazaro Munoz, Jesus J.; Corma Canos, Avelino; and Frontela Delgado, Juana M., 5,057,471, Cl. 502-66.000.
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Wood, Charles W., 5,056,757, Cl. 251-214.000.

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Panzica, Nicholas J.; Gustavsson, Lennart; Josefsson, Leif; and Lannefors, Hans O., 5,057,128, Cl. 55-181.000.

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Lawrence, Terence M., 5,056,303, Cl. 56-14.500

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Becraft, Gene R., 5,058,027, Cl. 364-468.000.
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Ma, Thomas T., 5,056,478, Cl. 123-90.170.
Macdonald, Fraser J., 5,056,631, Cl. 192-3.290
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Foxton, Michael W.: *See—*
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Hornstein, Richard, to Watts, Mark. Audio reactive light display. 5,056,399, Cl. 84-464.00R
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Housley, Robert M., to California Institute of Technology. High current density tunnel junction fabrication from high temperature superconducting oxides. 5,057,491, Cl. 505-1.000.
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Huber, Thomas, to Romay AG. Hinge for use in serving carts and the like. 5,056,194, Cl. 16-366.000
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Moye, Christopher A.; and Owens, Joseph N., 5,057,798, Cl. 333-33.000
Schotter, Daniel K., 5,056,185, Cl. 15-302.000.
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Hutter, Louis N., to Texas Instruments Incorporated. Method for fabricating a trench bipolar transistor. 5,057,443, Cl. 437-31.000
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Ige, Frank T. Receptacle and coaster assembly. 5,056,749, Cl 248-346.100
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Ihrman, Kryn G., to Ethyl Corporation. Selective alkylation process 5,057,625, Cl. 564-409.000
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Blake, Robert M.; Bossen, Douglas C.; Chen, Chin-Long; Fifield, John A.; Kalter, Howard L.; and Lo, Tin-Chee, 5,058,115, Cl. 371-401.000
Bronner, Gary B.; Fahey, Paul M.; Meyerson, Bernard S.; and Pricer, Wilbur D., 5,057,450, Cl. 437-62.000.
Chang, Tai-Lin; Hunter, Paul W.; Lang, Donald J.; and Luning, Stephen G., 5,057,997, Cl. 364-200.000.
Chao, Hu H.; and Chang, Jung-Herng, 5,058,116, Cl. 371-40.200.
Chevillat, Pierre R.; Eleftheriou, Evangelos; Maidwald, Dietrich G. U.; and Quintin, Michel, 5,058,134, Cl. 375-39.000
Chung, Paul W.; Jenkins, Michael O.; Jove, Stephen A.; Klaassen, Klaas B.; Saber, Paik; and van Peppen, Jacobus C. L., 5,057,785, Cl. 328-162.000
Gillett, John B., 5,058,053, Cl. 364-900.000.
Golladay, Steven D.; Hohn, Fritz J.; Hutson, David J.; Meisburger, William D.; and Rasch, Juergen, 5,057,773, Cl. 324-158.00R
Gupta, Arunava; Haba, Belgacem; Hussey, Brian W.; and Romankiw, Lubomyr T., 5,057,184, Cl. 156-637.000.
Hammer, William E.; and Kossman, Harold F., 5,058,056, Cl. 364-900.000
Inselberg, Alfred, 5,058,024, Cl. 364-461.000.
Johnson, Mark A., 5,058,140, Cl. 375-110.000.
Li, Hungwen, 5,058,001, Cl. 364-200.000
Mok, Lawrence S.; Schwall, Robert E.; and Tong, Ho-Ming, 5,057,909, Cl. 357-81.000.
Morris, Hugh M.; Parks, Carol A.; Rajagopal, Doraiswamy; and Youngs, Gary L., 5,058,185, Cl. 382-41.000
White, Steven W., 5,058,003, Cl. 364-200.000
Williams, Marvin L., 5,057,935, Cl. 358-402.000
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Stypula, Richard J.; and Buckholz, Lawrence, Jr., 5,057,329, Cl. 426-92.000
Inuzuka, Takayuki: *See*—
Sugiyama, Masaaki; Inuzuka, Takayuki; and Kubo, Hiroshi, 5,057,466, Cl. 501-135.000
Inuzuka, Takesi: *See*—
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Aime, Michel, 5,056,628, Cl. 187-127.000
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Papastavros, Theodore G.; Alexander, Samuel A.; Benedict, Michael D.; Cioffi, Vincent; Hodgdon, Russell B.; Richard, Emery; and Tinkham, Winslow F., 5,056,996, Cl. 425-110.000
Iori, Werter, to Werther International S.r.l. Apparatus for quickly positioning a tube tire on a corresponding wheel rim. 5,056,576, Cl. 157-1.170.
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Weber, Robert J., 5,057,908, Cl. 357-81.000.
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Sunahara, Kazuo; Irisawa, Naosi; Nakahara, Katumasa; Watanabe, Kazunari; and Takabatake, Mitsuo, 5,057,376, Cl. 428-432.000.
Irland, Terri J.: *See*—
Johnson, Joel C.; Lo, Ho W.; Rowley, David; and Irland, Terri J., 5,057,664, Cl. 219-121.690
Irwin, James S.: *See*—
Ledzius, Robert C.; and Irwin, James S., 5,057,840, Cl. 341-144.000.
Ishibashi, Wataru: *See*—
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Ishida, Akihiro: *See*—
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Ishida, Toshihiko: *See*—
Shiba, Haruo; Ikebe, Masaru; and Ishida, Toshihiko, 5,057,960, Cl 360-133.000
Ishigaki, Kouji; and Takagi, Yasuji, to Ricoh Company, Ltd. Image forming apparatus which corrects the image forming factors in response to density sensing means and duration of inactive state 5,057,867, Cl. 355-208.000
Ishigami, Toshio, to Kabushiki Kaisha Toshiba. Plastic molded type semiconductor device. 5,057,906, Cl. 357-80.000.
Ishihara, Hideshi; Yoneda, Satoshi; Nakamoto, Hiroshi; Kurioka, Hidenori; and Naitoh, Hitosi, to Omron Tateisi Electronics Co. Hardware and software image processing system. 5,058,181, Cl. 382-22.000
Ishii, Kazuo, to Jelmax Co. Ltd. Electrolytic capacitor. 5,057,972, Cl. 361-512.000
Ishii, Yasuhiro; Isogai, Tetsuji; Okazaki, Tatsuhiko; Sato, Fumikazu; Yoneyama, Hiroto; Inotsume, Yukio; and Kodama, Toshiyuki, to Oki Electric Industry Co., Ltd. Mobile telecommunications system using distributed miniature zones. 5,058,201, Cl. 455-33.000.
Ishikawa, Kiyomitsu: *See*—
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Ishikawa, Michio: *See*—
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Ishimaru, Toshiaki, to Olympus Optical Co., Ltd. Camera having high-precision stop function for movable unit. 5,057,859, Cl 354-400.000.
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Ishizaki, Naoki: *See*—
Karakama, Tadao; Ishizaki, Naoki; and Oda, Yosuke, 5,056,415, Cl 91-454.000
Ishizaki, Shogo: *See*—
Nakayama, Susumu; Ishizaki, Shogo; and Iwaki, Toru, 5,057,155, Cl. 106-35.000.
Isobe, Toshimi; and Sakano, Riichi, to Sanden Corporation. Refrigerating system for use in vehicle with engine which enables selective use of commercial AC power and a generator driven by the engine for driving the refrigerant compressor. 5,056,330, Cl. 62-236.000
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Furtak, Hans; and Ahart, James, 5,056,195, Cl. 19-304.000.
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Issel, Wolfgang; Knoch, Werner; and Ramm, Hartmut, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Process for the separation of uranium from a radioactive feed solution containing technetium. 5,057,289, Cl. 423-10.000.
Ito, Hirokazu: *See*—
Kubo, Shinji; Tajiri, Noriyuki; Takyu, Masayuki; Funato, Ryo; and Ito, Hirokazu, 5,057,596, Cl. 528-272.000.
Ito, Katsuji: *See*—
Matsuo, Masashi; Maekawa, Takashige; and Ito, Katsuji, 5,057,577, Cl. 525-276.000.
Ito, Koichi: *See*—
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Ito, Masayoshi: *See*—
Yoshimura, Shoji; Matsuzaki, Yuzi; Sugimoto, Mamoru; Ito, Masayoshi; Shitori, Yoshiyasu; and Ogawa, Tomoya, 5,057,605, Cl. 536-4.100
Ito, Tatsuo: *See*—
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Ito, Tomio; Miyazaki, Hideyuki; Moriya, Hideyuki; and Wakabayashi, Kazuhito, to TDK Corporation. Magnetic read/write head having a magnetic short circuit. 5,057,957, Cl. 360-123.000.
Ito, Yoji: *See*—
Niwa, Toshiyuki; Kawashima, Yoshiaki; Takeuchi, Hirofumi; and Ito, Yoji, 5,057,323, Cl. 424-497.000.
Itoh, Fujihiro: *See*—
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Itoh, Hiroyuki: *See*—
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Itoh, Ken-ichi: *See*—
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Itozaki, Hideo: *See*—
Fujita, Nobuhiko; Fujimori, Naoji; Itozaki, Hideo; Tanaka, Saburo; Harada, Keizo; and Jodai, Tetsuji, 5,057,201, Cl. 204-192.240
ITT Corporation: *See*—
Hutson, Russell W.; Buhro, Dennis W.; Hodgman, Nicholas S.; and Wright, Brian T., 5,057,030, Cl. 439-247.000
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Iwamoto, Miyoshi: *See*—
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Iwamura, Masahiro; and Ide, Akira, to Hitachi, Ltd. Bipolar MOS logic circuit and semiconductor integrated circuit. 5,057,713, Cl 307-446.000
Iwanczyk, Jan S., to Xsirius Photonics, Inc. Light responsive avalanche diode. 5,057,892, Cl. 357-30.000
Iwase, Satoru, to Aisan Kogyo Kabushiki Kaisha. Method of manufacturing hollow engine valve. 5,056,219, Cl. 29-888.451
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Iwata, Hiroshi: *See*—
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Iwatsuki, Kunihiro; Matsubara, Tooru; and Ootsubo, Hideaki, to Toyota Jidosha Kabushiki Kaisha. Control of engine output torque in coordination with change-over of speed stages of automatic transmission. 5,058,013, Cl. 364-424.100
Iyer, Natraj C.; and Gettliffe, Eleanor, to Westinghouse Electric Corp. Method of forming a coating on a reactor coolant pump sealing surface. 5,057,340, Cl. 427-367.000
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Izumi, Eiki: *See*—
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Izumi, Giichi: *See*—
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Jacobitz, Jochen: *See*—
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Jacobsen, Arne, to Spragelse Maskinfabrik AS. Apparatus for mowing grass or similar vegetation. 5,056,304, Cl. 56-251.000
Jacobsen, Poul; Nielsen, Flemming E.; Honore, Tage; and Drejer, J rgen, to Novo Nordisk A/S. 7,8-dihydroxy-1H-pyrazolo[3,4-f]quinoxalines. 5,057,516, Cl. 514-250.000
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Jager, Horst; and Wolff, Joachim, to Bayer Aktiengesellschaft. Triphendioxazine dyestuffs. 5,057,609, Cl. 544-75.000
James, David F.: *See*—
Reid, John M. C.; Nason, Robert B.; and James, David F., 5,057,213, Cl. 210-94.000.
James, John V.: *See*—
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James, Robert B., Jr.: *See*—
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Jane, Jay-lin; and Seib, Paul A., to Kansas State University Research Foundation. Preparation of granular cold water swelling/soluble starches by alcoholic-alkali treatments. 5,057,157, Cl. 127-70.000
Jang, Young H.; and Francisco, Joseph A. Gate valve. 5,056,755, Cl 251-148.000.
Janome Sewing Machine Industry Co., Ltd.: *See*—
Orii, Akira, 5,056,445, Cl. 112-275.000.

Orii, Akira, 5,057,757, Cl. 318-599.000.
Janssen Pharmaceutica N.V.: *See*—
Van Daele, Georges, 5,057,525, Cl. 514-318.000.
Janssens Industries Limited: *See*—
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Janssens, Werner J., to Janssens Industries Limited Pallets. 5,056,666, Cl. 206-600.000
Janusz, Michael J.: *See*—
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Japan Capsular Products Inc.: *See*—
Nakanishi, Masayuki, 5,057,363, Cl. 428-321.500
Japan Electronic Control Systems Co., Ltd.: *See*—
Chonan, Misugi; and Yuzuriha, Yoshiki, 5,056,482, Cl. 123-331.000
Japan Steel Works, Ltd., The: *See*—
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Jarrett, Charles C., to Nutri-Fruit, Inc. Beverage dispensing system 5,056,686, Cl. 222-129.200
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Jaster, Heinz; and Bessler, Warren F., to General Electric Company Apparatus for controlling a dual evaporator, dual fan refrigerator with independent temperature controls. 5,056,328, Cl. 62-180.000
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Jelmax Co. Ltd.: *See*—
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Jenkins, James H.: *See*—
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Jenkins, Peter E. Compounded turbocharged rotary internal combustion engine fueled with natural gas. 5,056,315, Cl. 60-614.000.
Jenkins, Stephen L.; and Jenkins, Stephen L., Jr. Snow remover 5,056,245, Cl. 37-265.000
Jenkins, Stephen L., Jr.: *See*—
Jenkins, Stephen L.; and Jenkins, Stephen L., Jr., 5,056,245, Cl 37-265.000
Jennings, Alfred R., Jr., to Mobil Oil Corporation. Method of protecting casing during high pressure well stimulation. 5,056,598, Cl 166-308.000
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Jennings, Rex A.; and Stearns, Jay F., to Oclassen Pharmaceuticals, Inc. Podophyllotoxin purification process. 5,057,616, Cl. 549-298.000.
Jenoptik Jena G.m.b.H.: *See*—
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Jensen, Kaj B., to Jensen, Kaj B.; Pedersen, Bent; and Pedersen, Inge, a part interest to each. Control system for automatic adjustment of the rearview mirror of a vehicle. 5,056,905, Cl. 359-843.000
Jenson, A. Bennett: *See*—
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Jewell, John H., II; and Sasamura, Ross S., to Paccar Inc. Motor vehicle door assembly with reinforcement panel. 5,056,264, Cl. 49-502.000
Jiam-Fa, Weng. Cleaner. 5,056,186, Cl. 15-328.000
Jiang, Aidong: *See*—
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Jodai, Tetsuji: *See*—
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Johannes, Nicholas J. Combustion engine. 5,056,486, Cl. 123-432.000
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Johns Hopkins University, The: *See*—
Roth, Michael W.; and Mitzel, Glenn E., 5,056,740, Cl. 244-158.00R
Johnson, Carol A.: *See*—
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Johnson, David K.; and Kline, Steven J., to Abbott Laboratories Bifunctional chelating agents. 5,057,302, Cl. 424-1.100
Johnson, Gary E.; Schneider, John T.; and Sundquist, Nils E., to Mate Punch & Die Co. Punch assembly. 5,056,392, Cl. 83-140.000
Johnson, Harlan F. Trailer with axle. 5,056,806, Cl. 280-143.000.
Johnson, Joel C.; Lo, Ho W.; Rowley, David; and Irland, Terri J., to Electro Scientific Industries, Inc. Method and apparatus for laser processing a target material to provide a uniformly smooth, continuous trim profile. 5,057,664, Cl. 219-121.690
Johnson & Johnson: *See*—
Kranz, Curt; and Seiler, Hanns, 5,057,110, Cl. 606-62.000
Johnson, Larry: *See*—
Comeaux, Walter B.; and Johnson, Larry, 5,056,599, Cl 166-310.000
Johnson, Lee R.: *See*—
Detlefsen, William D.; Creel, Lewis D.; and Johnson, Lee R., 5,057,591, Cl. 528-140.000
Johnson, Mark A., to International Business Machines Corporation Self-correcting serial baud/bit alignment. 5,058,140, Cl. 375-110.000.
Johnson, Marvin M.; Nowack, Gerhard P.; and Rezac, Mary E., to Phillips Petroleum Company. Removal of basic impurities from olefin streams. 5,057,642, Cl. 585-823.000.
Johnson, Raymond A., to Chamberlain Group, Inc., The. Latching mechanism for a closure with a disconnectable handle and a sliding catch. 5,056,835, Cl. 292-207.000
Johnson, Russell I.; Ball, Garry L.; and Steinkamp, John O., to Ford New Holland, Inc. Backhoe control mechanism. 5,056,985, Cl. 414-694.000
Johnstead, Park L. Portable open turning lathe. 5,056,389, Cl 82-128.000
Johnston, Al. Safe-t-box carrier. 5,056,843, Cl. 294-27.100
Johnston, David B. R.; MacCoss, Malcolm; Marburg, Stephen; Meurer, Laura C.; and Tolman, Richard L., to Merck & Co., Inc. Piperazinyl derivatives of purines and isosteres thereof as hypoglycemic agents. 5,057,517, Cl. 514-254.000
Johnston Engineering Limited: *See*—
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Joner, Bruno; and Williams, John W., to TechTeam, Inc. Self-retracting, drag-free lug for bombs. 5,056,408, Cl. 89-1.510
Jones, David C.; and Lee, Chi-Chang, to Du Pont de Nemours, E. I., and Company. Metallized polyethylene plexifilamentary film-fibril sheet. 5,057,351, Cl. 428-138.000.
Jones, Donald W., to General Electric Company. Shaft position sensor employing a wiegand-effect device. 5,057,727, Cl. 310-68.00B
Jones, Leon L.; and Nielson, Daniel B. Infrared illuminant and pressing method. 5,056,435, Cl. 102-336.000
Jones, Linza J.; and Willis, Richard N., to Halliburton Company; and Jet Research Center, Inc. Method for deslagging a boiler. 5,056,587, Cl. 165-1.000
Jones, Robert E.: *See*—
Canty, George; and Jones, Robert E., 5,057,371, Cl. 428-411.100.
Jorgensen, Eldon N., to United States of America, Navy. T-slot sheave. 5,056,760, Cl. 254-406.000
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Josten, Marvin H.; Utter, Robert P.; Schneider, Kenneth W.; and Utter, Robert P., to Cornelius Company, The. Ice cube maker with new freeze and harvest control. 5,056,325, Cl. 62-126.000
Jove, Stephen A.: *See*—
Chung, Paul W.; Jenkins, Michael O.; Jove, Stephen A.; Klaassen, Klaas B.; Saber, Paik; and van Peppen, Jacobus C. L., 5,057,785, Cl. 328-162.000
Jubran, William; and Carossino, Andre, to Vargus Ltd. Flat scraper tool. 5,056,225, Cl. 30-169.000.
Judge, John L., to Magni Systems, Inc. Method of displaying video signal phase characteristics. 5,057,910, Cl. 358-10.000
Julian, Randall K., to Sunbeam Plastics Corporation. Tether web ratchet drive tamper indicating band closure. 5,056,675, Cl. 215-252.000
Julius Blum Gesellschaft m.b.H.: *See*—
Brustle, Klaus; Rupprechter, Helmut; and Prager, Lother, 5,056,189, Cl. 16-235.000
Rock, Erich; and Brustle, Klaus, 5,056,190, Cl. 16-240.000
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Julius, Jorg, to Lindemann Maschinenfabrik GmbH. Apparatus for separating non-magnetizable metals from a solid mixture. 5,057,210, Cl. 209-212.000
Jung, Frederic H.; and Olivier, Annie, to ICI Pharma. 3-heterocyclic thiomethyl cephalosporins. 5,057,511, Cl. 514-206.000
Jung, Johann: *See*—
Rheinheimer, Joachim; Eicken, Karl; Plath, Peter; Paul, Gerhard; Harreus, Albrecht; Westphalen, Karl-Otto; Wuerzer, Bruno; Grossmann, Klaus; Rademacher, Wilhelm; and Jung, Johann, 5,057,143, Cl. 71-92.000
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Kawashima, Yoshiaki: *See—*
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Kayanuma, Nobuaki, to Toyota Jidosha Kabushiki Kaisha. System for treating vaporized fuel in an internal combustion engine. 5,056,494, Cl. 123-519.000.
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Kelley, David M., to K-S-H, Inc. Light weight lighting panel. 5,057,984, Cl. 362-330.000.
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Kellner, Carl S., to Du Pont de Nemours, E. I., and Company. Regeneration of noble metal catalysts used in hydrodehalogenation of halogen-substituted hydrocarbons containing fluorine and at least one other halogen. 5,057,470, Cl. 502-35.000
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Kellum, Wilbur J., III, to EMF Corporation. Paper rotating table. 5,056,772, Cl. 271-184.000.
Kelly, James W., Jr.: *See—*
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Kensil, Charlotte A.; Marciani, Dante J.; Beltz, Gerald; and Hung, Chung-Ho, to Cambridge Biotech Corporation. Saponin adjuvant 5,057,540, Cl. 514-25.000.
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Kersusan, Jean-Pierre; Filiputti, Hugues; Pennucci, Victor; and Malkin, Peter, to Merlin Gerin. Electrical circuit breaker with self-extinguishing expansion and insulating gas. 5,057,655, Cl. 200-148.00B
Kertis, Robert A., to National Semiconductor Corporation. Individual bit line recovery circuits. 5,058,067, Cl. 365-190.000.
Kesling, Christopher K., to TP Orthodontics, Inc. Molar tube appliance for a lip bumper or a face bow. 5,057,012, Cl. 433-17.000.
Keturakis, Andrius A.; and Velte, Scott D., to General Electric Company. Optical communications light shield for energy meter. 5,057,767, Cl. 324-96.000.
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Khalil, Hassan H. Device for global evaluation of the left ventricular ejection fraction by thermodilution. 5,056,526, Cl. 128-692.000
Khan, Emdadur R., to National Semiconductor Corporation. Neural network apparatus and method for pattern recognition. 5,058,180, Cl 382-14.000
Kibchner, Marcel: *See—*
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Kida, Yasuhiko, to Mita Industrial Co., Ltd. Document feeder which properly positions a document on the platen. 5,056,775, Cl. 271-227.000
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Kierzkowski, Frank J.; and Cornwell, Dudley R., to Peerless Manufacturing Company. Moisture separator. 5,057,129, Cl. 55-213.000
Kihara, Kouichi; and Yamamoto, Kazushige, to Oki Electric Industry Co., Ltd. Subscriber line interface circuit in a switching system 5,058,111, Cl. 370-94.100.
Kijima, Hiromitsu; Usami, Susumu; and Ishiwata, Masatoshi, to Kabushiki Kaisha Topcon. Apparatus for controlling the quantity of light of a copying apparatus. 5,057,864, Cl. 355-71.000
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Kikuchi, Yoichi; and Iwamoto, Miyoshi, to Nissan Motor Co., Ltd Optical axis adjusting system for lighting unit of vehicle. 5,056,916, Cl. 356-121.000
Killguss, Heinz; Mirlieb, Bernd; and Quanz, Gerhard, to Eastman Kodak Company. Device for releasing a film sheet adhering to the inner surface of the upper cassette portion of an x-ray film cassette 5,056,770, Cl. 271-97.000.
Kim, Jeong Y., to Goldstar Co., Ltd. Method for compressing character image data. 5,058,187, Cl. 382-56.000
Kim, Sang J.: *See—*
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Kim, Seung M.: *See—*
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Kimberley, John A., to AIL Corporation; and AIL Corporation. Fuel injection system. 5,056,469, Cl. 123-23.000.
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Sayovitz, John J.; and Perkins, Cheryl A., 5,057,361, Cl 428-290.000.
Kimmel, Edward R.: *See—*
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Kimura, Katsuji, to NEC Corporation. Logarithmic amplifier circuit 5,057,717, Cl. 307-492.000
Kimura, Shinta, to Fujitsu Limited. Speech recognition device 5,058,167, Cl. 381-43.000

Kinderworks Corporation: *See—*
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King, Brian T. Variable valve duration and lift for an internal combustion engine. 5,056,476, Cl. 123-90.160.
King, Howard W., Jr., to Dow Chemical Company, The. Method of radially flaring a resilient pipe liner. 5,056,210, Cl. 29-523.000.
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Kirberg, Bernd, to Scheidt & Bachmann Gesellschaft mit beschrankter Haftung. Method for recording the placement of replaceable, self-filling coin-storing units. 5,056,643, Cl. 194-202.000.
Kireta, Andrew G. Biasable bracket device for mounting a decorative light in multiple locations. 5,056,747, Cl. 248-231.800.
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Kirk, Richard A., to Crosfield Electronics Ltd. Data compression. 5,057,939, Cl. 358-426.000.
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Kisler, Semyon, to Polaroid Corporation. Electrostatic-type registration system. 5,056,646, Cl. 198-341.000.
Kita, Yasuo; Fujii, Hiroyuki; and Uzawa, Hiroshi, to Shimadzu Corporation. Device for detecting engine brake. 5,058,022, Cl. 364-431.070
Kitagawa, Masahiko: *See—*
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Kitagawa, Nobutaka; Muroga, Hiroki; and Saito, Tomotaka, to Kabushiki Kaisha Toshiba. Duty radio control circuit apparatus. 5,057,702, Cl. 307-268.000
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Kitamura, Kazuaki: *See—*
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Kitazawa, Makoto, to Toril Winding Machine Co., Ltd. Mechanism for guiding shuttles in a circular loom. 5,056,567, Cl. 139-457.000
Kittaka, Toshihiko; Ando, Akira; and Tamura, Hiroshi, to Murata Mfg Co. Ltd. Filter device of piezo-electric type including divided co-planar electrodes. 5,057,801, Cl. 333-187.000.
Kiuchi, Toyoo, to NEC Corporation. Address control circuit for data memory employed in signal delay circuit. 5,058,076, Cl. 365-230.010
Klaassen, Dirk B. M.: *See—*
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Klatt, Dieter; and Pellizari, Dirk, to Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co. Display contacts. 5,057,025, Cl 439-71.000
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Kleefeldt, Frank; and Schuler, Rolf, to Kiekert GmbH & Co. Kommanditgesellschaft. Actuator for power door latch. 5,056,343, Cl 70-264.000
Klein, Bernhard: *See—*
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Klein, Imrich, to Scientific Process & Research, Inc. Extruder screws and method for accelerating melting in plasticating extruders 5,056,925, Cl. 366-90.000.
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Klimpel, Richard R.; Leonard, Donald E.; Hansen, Robert D.; and Fee, Basil S., to Dow Chemical Company, The. Depression of the flotation of silica or siliceous gangue in mineral flotation. 5,057,209, Cl. 209-167.000
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Klingelhofer, Ulrich; Mengeringhausen, Max, deceased; and by Klose, Horst, legal representative. Composite plate, especially for raised floors. 5,057,355, Cl. 428-192.000.
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Kobayashi, Susumu: *See—*
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Lutz, John F., to Liberty Bell Sports Equipment, Inc. Baseball catcher's hand protector. 5,056,158, Cl. 2-22.000.
Lutz, John H.; Manniso, James L.; Rinschler, Craig R.; and Smith, Gordon R. S., to W. L. Gore & Associates, Inc. Integral supported filter medium assembly. 5,057,217, Cl. 210-346.000.
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Lutze, Hans; Ast, Gunther; and Gerber, Ulrich, to Daimler-Benz AG. Head restraint for rear seats. 5,056,816, Cl. 280-751.000.
Lutzeler, Jorn, to BTS Broadcast Television Systems GmbH. Recording of digital signals on d.c.-erased magnetic tape. 5,057,948, Cl 360-66.000.
Lyle, Terry A.: *See*—
Nutt. Ruth F.; Williams, Theresa M.; Veber, Daniel F.; and Lyle, Terry A., 5,057,603, Cl. 530-324.000.
Lynce, Richard G.: *See*—
Zalar, Frank E.; Lynce, Richard G.; and Arsena, Vito J., 5,057,735, Cl. 313-318.000.
Lynch, Thomas W.: *See*—
Gupta, Smeeta; Perlman, Robert M.; Lynch, Thomas W.; and McMinn, Brian D., 5,058,048, Cl. 364-748.000.
Lynch, William T.: *See*—
Foo, Pang-Dow; Lynch, William T.; and Pai, Chien-Shing, 5,057,455, Cl. 437-193.000.
Ma, Hsi K. Battery and expansion slot changeable computer. 5,058,045, Cl. 364-708.000.
Ma, Thomas T., to Ford Motor Company. Variable camshaft phasing mechanism. 5,056,478, Cl. 123-90.170.
Ma, Yao-Dong; and Wu, Bao-Gong, to Polytronix, Inc. Reverse mode microdroplet liquid crystal light shutter displays. 5,056,898, Cl 359-94.000
MacCoss, Malcolm: *See*—
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Macdonald, Fraser J., to Ford Motor Company. Slipping bypass clutch construction for a hydrokinetic torque converter. 5,056,631, Cl. 192-3.290
MacDonald, J. Gavin: *See*—
Nohr, Ronald S.; and MacDonald, J. Gavin, 5,057,262, Cl 264-211.000
Machoczek, Horst M.: *See*—
Gottwald, Eberhard F.; Osterwald, Hermann P.; Machoczek, Horst M.; and Mayron, David, 5,057,319, Cl. 424-441.000
Mackay, Colin A.: *See*—
Dolbear, Thomas P.; Mackay, Colin A.; and Nelson, Richard D., 5,056,706, Cl. 228-180.200.
Macovski, Albert. Pulsed field MRI system with non-resonant excitation. 5,057,776, Cl. 324-309.000.
Macrovision Corporation: *See*—
Quan, Ronald, 5,058,159, Cl. 380-19.000.
Ryan, John O., 5,058,157, Cl. 380-11.000.
Maddock, John C., to Republic Storage Systems Company, Inc. Device for initializing an automated warehousing system. 5,056,437, Cl. 104-88.000.
Madler, Eckehard: *See*—
von Ardenne, Alexander; Madler, Eckehard; Wehner, Bernd; Richter, Kurt; Schiller, Nicolas; Tobisch, Josef; and Hahnel, Gunter, 5,057,688, Cl. 250-307.000.
Madore, Linda M.; and Donkers, Annemieke C. M., to Dow Corning Corporation. Liquid detergent fabric softening laundering composition. 5,057,240, Cl. 252-174.150.
Madou, Marc J.; and Gaisford, Scott, to SRI International. Method of forming a plurality of solder connections. 5,056,216, Cl. 29-843.000.
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Yamaguchi, Shinji; Maeda, Katsura; Ohta, Masami; and Kawamoto, Masao, 5,057,369, Cl. 428-400.000.
Maeda, Kiyoshi; Nishide, Sadahiko; Yoshiyama, Mamoru; Matsuguchi, Seiichi; Kurosaki, Masahiko; Oura, Takao; Hayashi, Tetsuya; Kobayashi, Yoshikazu; and Handa, Yoshiaki, to Dainippon Screen Mfg. Co. Ltd. Color image recorder and image projector useful therefor. 5,057,861, Cl. 355-27.000.
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Koshino, Nagaaki; Maeda, Miyozo; Goto, Yasuyuki; Shibata, Itaru; Utsumi, Kenichi; Ushioda, Akira; Itoh, Ken-ichi; and Sueishi, Kozo, 5,058,061, Cl. 365-106.000.
Maeda, Ryoichi: *See*—
Yamakado, Makoto; Kadomukai, Yuzo; Maeda, Ryoichi; Fukushima, Masao; and Murakami, Kei, 5,056,487, Cl. 123-436.000.
Maekawa, Takashige: *See*—
Matsuo, Masashi; Maekawa, Takashige; and Ito, Katsuji, 5,057,577, Cl. 525-276.000.
Magazian, Harry: *See*—
Ahlman, S. Robert; Dunn, William E.; and Magazian, Harry, 5,056,938, Cl. 384-286.000.
Magnavox Government and Industrial Electronics Company: *See*—
Patel, Chiman R.; and Webb, George, 5,056,434, Cl. 102-238.000.
Magni Systems, Inc.: *See*—
Judge, John L., 5,057,910, Cl. 358-10.000.
Magruder, Judy A.; Eckenhoff, James B.; Cortese, Richard; Wright, Jeremy C.; and Perry, John R., to ALZA Corporation. Delivery system for beneficial agent over a broad range of rates. 5,057,318, Cl. 424-438.000.
Mahrus, Duraid; and Carubelli, Ademir, to Metal Leve S. A. Industria E Comercio. Multilayer plain bearing. 5,056,936, Cl. 384-276.000.
Maidwald, Dietrich G. U.: *See*—
Chevillat, Pierre R.; Eleftheriou, Evangelos; Maidwald, Dietrich G. U.; and Quintin, Michel, 5,058,134, Cl. 375-39.000.
Maier, Anton: *See*—
Schuster, Johann; Muller, Horst; Vorbuchner, Helmut; Maier, Anton; and Pradl, Ferdinand, 5,057,151, Cl. 106-2.000
Maier, Wolfgang. Method and apparatus for testing a test piece. 5,056,370, Cl. 73-794.000
Maitino, Eugene J.: *See*—
Maitino, Phillip M.; and Maitino, Eugene J., 5,057,202, Cl. 204-212.000.
Maitino, Phillip M.; and Maitino, Eugene J. Electrolytic recovery unit. 5,057,202, Cl. 204-212.000
Makihara, Hiroyasu: *See*—
Kohda, Kenji; Kouro, Yasuhiro; Makihara, Hiroyasu; and Toyama, Tsuyoshi, 5,058,071, Cl. 365-200.000
Makino, Kenji: *See*—
Inoue, Shinichi; Makino, Kenji; Matuda, Tooru; Itoh, Fujihiro; and Kusano, Yutaka, 5,057,959, Cl. 360-126.000
Makino, Shinichi; and Kojima, Naokatsu, to Fuji Seiki Machine Works, Ltd. Method and apparatus for solder coating of leads. 5,057,337, Cl. 427-96.000
Malcolm, David B.; and Bunnelle, William L., to H. B. Fuller Licensing & Financing Inc. Disposable article construction adhesive. 5,057,571, Cl. 524-505.000
Malenick, John: *See*—
Ahonen, Robert G.; Malenick, John; and Meyerhoff, Hans P., 5,056,920, Cl. 356-350.000.
Malkin, Peter: *See*—
Kersusan, Jean-Pierre; Filiputti, Hugues; Pennucci, Victor; and Malkin, Peter, 5,057,655, Cl. 200-148.00B.
Mally, Timothy G., to Oscar Mayer Foods Corporation. Forming casingless sausage and the like. 5,056,425, Cl. 99-483.000.
Malone, David G.; Vacek, James L.; and Smith, G. Scott, to University of Kansas Med Center, The. Hot tip catheter assembly. 5,057,105, Cl. 606-28.000
Malone, Kevin C.: *See*—
Sprott, Glenn C.; Sprott, Ruth J.; and Malone, Kevin C., 5,057,024, Cl. 434-146.000.
Maltoni, Gian P.: *See*—
Manica, Michele; Chiolle, Antonio; and Maltoni, Gian P., 5,057,561, Cl. 524-68.000.
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Mangone, Peter G., Jr. Apparatus for molding sequentially identified products. 5,057,000, Cl. 425-190.000.
Manica, Michele; Chiolle, Antonio; and Maltoni, Gian P. Hot melt adhesive compositions based on polyesters. 5,057,561, Cl. 524-68.000.
Mann, Bruce; Duffy, Darrell; Lauck, Anthony; and Strecker, William, to Digital Equipment Corporation. Local area network for digital data processing system. 5,058,108, Cl. 370-85.100.
Mann, Bruce E.: *See*—
Goldberg, Marshall R.; Mann, Bruce E.; and Lipton, Jesse B., 5,058,109, Cl. 370-85.130.
Mann, Donaerl B., to D'mannco, Inc. Inflatable ball hand splint. 5,056,504, Cl. 128-26.000.
Mannesmann Kienzle GmbH: *See*—
Hautvast, Heinz-Josef; Kelch, Heinz; and Koch, Siegfried, 5,057,971, Cl. 361-395.000.
Manniso, James L.: *See*—
Lutz, John H.; Manniso, James L.; Rinschler, Craig R.; and Smith, Gordon R. S., 5,057,217, Cl. 210-346.000.
Mannl, Reinhard: *See*—
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Manno, Joseph J.: *See*—
Meyst, Richard P.; Manno, Joseph J.; Carlock, Jimmy J.; Ayton, Ian F.; Gregory, Thomas K.; and Suszynski, Edward D., 5,056,682, Cl. 221-25.000.

Manogue, William H.: *See*—
Webster, James L.; McCann, Elrey L.; Bruhnke, Douglas W.; Lerou, Jan J.; Manogue, William H.; Manzer, Leo E.; Swearingen, Steven H.; Trofimenko, Swiatoslaw; and Bonifaz, Cristobal, 5,057,634, Cl. 570-157.000.
Manschwetus, Helmut, to Thyssen Industrie AG. Blade holding device of a blade slide for a scrap cutter. 5,056,394, Cl. 83-694.000.
Mansour, M. Omar; and Nguyen, Liem T., to AT&T Bell Laboratories. Network alternate routing arrangement. 5,058,105, Cl. 370-16.000.
Mansukhani, Gul: *See*—
Cherukuri, Subraman R.; Mansukhani, Gul; and Faust, Steven M., 5,057,328, Cl. 426-5.000.
Manville Corporation: *See*—
Bainbridge, William, 5,057,176, Cl. 156-222.000.
Manzer, Leo E.: *See*—
Webster, James L.; McCann, Elrey L.; Bruhnke, Douglas W.; Lerou, Jan J.; Manogue, William H.; Manzer, Leo E.; Swearingen, Steven H.; Trofimenko, Swiatoslaw; and Bonifaz, Cristobal, 5,057,634, Cl. 570-157.000.
Maranci, Artun; Peake, Steven L.; and Kaminski, Stanley S., to American Cyanamid Company. Advance composites with thermoplastic particles at the interface between layers. 5,057,353, Cl. 428-147.000.
Marathon Oil Company: *See*—
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Marburg, Stephen: *See*—
Johnston, David B. R.; MacCoss, Malcolm; Marburg, Stephen; Meurer, Laura C.; and Tolman, Richard L., 5,057,517, Cl. 514-254.000
Marchello, Joseph M.: *See*—
Baucom, Robert M.; Snoha, John J.; and Marchello, Joseph M., 5,057,338, Cl. 427-185.000.
Marciani, Dante J.: *See*—
Kensil, Charlotte A.; Marciani, Dante J.; Beltz, Gerald; and Hung, Chung-Ho, 5,057,540, Cl. 514-25.000.
Marcus, Bonita K.; Gioffre, Anthony J.; and Elliott, Marianne, to UOP. Surface cleaner/polish compositions and a process for the preparation thereof. 5,057,152, Cl. 106-3.000.
Mardikian, Albert A. Personal watercraft with extendable handlebar. 5,056,450, Cl. 114-144.00R.
Mares, Frank: *See*—
Largman, Theodore; Gefri, Fred J.; and Mares, Frank, 5,057,368, Cl. 428-397.000.
Maresh, Joseph D.; Martinelli, Rene J.; Griffith, Daniel B.; Burns, Jack H.; and Dehne, Steven A., to Burns Bros., Inc. Tire chain with cross members forming a zig-zag pattern. 5,056,574, Cl. 152-241.000.
Maria van der Tol, Johannes J. G.: *See*—
Diemeer, Martinus B. J.; and Maria van der Tol, Johannes J. G., 5,056,883, Cl. 385-8.000.
Mariani, Roberto, to Ditta Mariani Enrico. Device for the rotatable and adjustable connection of an arm to a fastening plate. 5,056,951, Cl 403-90.000.
Marienfeld, Mark L., to Phillips Petroleum Company. Layered geosystem and method. 5,056,960, Cl. 405-270.000.
Marion Laboratories, Inc.: *See*—
Belt, William E.; Avery, C. Frederick; and Klein, Vernon W., 5,057,285, Cl. 422-236.000
Marion, Louis. Process and device to fold strips of swabs. 5,057,069, Cl. 493-395.000.
Mark IV Industries, Inc: *See*—
Holt, Gary E., 5,056,214, Cl. 29-602.100.
Markley, Daniel L.: *See*—
Bond, William R.; and Markley, Daniel L., 5,056,605, Cl. 172-111.000.
Markoff, Jay; and Deubert, John R. System of operating an automatic plotter using different size marking devices. 5,058,039, Cl. 364-520.000.
Markson, Ralph J.; and Govaert, Johan A., to Airborne Research Associates, Inc. Optical warning system. 5,057,820, Cl. 340-600.000.
Marmol, Pierre: *See*—
Bouilloux, Christian; Marmol, Pierre; and Richard, Jean, 5,056,549, Cl. 137-218.000.
Maron, Stanislav. Camera shutter. 5,056,911, Cl. 352-208.000
Marot, Jacques; and Boue, Jean-Claude, to Societe de Design et d'Agencement. Assembly device for assembling dismountable or modular elements. 5,056,953, Cl. 403-194.000
Marshall, Donald R.; Statz, Robert J.; and White, James D., to Du Pont de Nemours, E. I., and Company. Free radical copolymerization of ethylene and CO with acetone. 5,057,593, Cl. 528-271.000.
Marshall, Scot H., to Martin Marietta Corporation. Ultrasonic linear measurement system. 5,056,367, Cl. 73-597.000.
Martel, Richard I.; and Brown, Gerald G. Abrasive device with replaceable multi-pack inserts. 5,056,273, Cl. 51-392.000.
Martin, Charles E.; and Johnston, Robert M., to Rutgers University. Genetically engineered plasmid and organisms for the production of specialized oils. 5,057,419, Cl. 435-134.000.
Martin, D. W., Jr.: *See*—
Hammonds, R. G.; Leung, David W.; Martin, D. W., Jr.; Spencer, Steven A.; and Wood, William I., 5,057,417, Cl. 435-69.100.
Martin, Edward P., Jr.: *See*—
Chew, Hongzong; Fieber, Catherine A.; Hills, Graham W.; and Martin, Edward P., Jr., 5,057,186, Cl. 156-643.000.
Martin, Geoffrey S., to Vas-Cath Incorporated. Dual lumen catheter. 5,057,073, Cl. 604-43.000.
Martin, Hubert C., Jr.: *See*—
Henze, Christopher P.; Lo, David S.; and Martin, Hubert C., Jr., 5,057,986, Cl. 363-20.000.
Martin Marietta Corporation: *See*—
Marshall, Scot H., 5,056,367, Cl. 73-597.000
Martin, Richard B.: *See*—
Martin, Robert E.; and Martin, Richard B., 5,056,704, Cl 228-173.400.
Martin, Robert E.; and Martin, Richard B., to Tube Forming, Inc. Tube fitting having a saddle bead with conforming pilot. 5,056,704, Cl. 228-173.400.
Martinelli, Rene J.: *See*—
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Martz, Donald R.: *See*—
Thompson, Mark W.; Martz, Donald R.; and Helm, George D., 5,057,791, Cl. 330-277.000.
Maruman Golf Kabushiki Kaisha: *See*—
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Maruyama, Osamu; and Aoki, Hiroshi, to Hoya Corporation. Method of quickly manufacturing an optical waveguide. 5,057,135, Cl. 65-30.130.
Maruyama, Shigeo: *See*—
Matsumura, Isao; Masuda, Takashi; Hamano, Yoshimasa; Maruyama, Shigeo; Nakamura, Yukitsugu; and Kobayashi, Kazunobu, 5,056,522, Cl. 128-645.000.
Maruyama, Tadashi: *See*—
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Wada, Yukio; Maruyama, Tadashi; and Suzuki, Yasoji, 5,058,063, Cl. 365-185.000.
Maser, Reinhard: *See*—
Rock, Erich; and Maser, Reinhard, 5,056,879, Cl. 312-348.000.
Massey, Joseph M., to Granada Biosciences, Inc. Bovine nuclear transplantation. 5,057,420, Cl. 435-172.200.
Mastaj, Marie: *See*—
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Master Pitching Machine, Inc.: *See*—
Giovagnoli, Paul S., 5,056,782, Cl. 273-26.00R.
Masuda, Takashi: *See*—
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Masuda, Yoshitomo; Ogawa, Masao; Arai, Katsuhiko; Suzuki, Kinya; Fuse, Tadashi; and Amano, Tetsuro, to Bridgestone Corporation Lithium cells. 5,057,387, Cl. 429-194.000.
Masunaga, Yoshifumi, to Pioneer Electronic Corporation. Method of preparing information reading apparatus and objective lens suspension body. 5,056,891, Cl. 359-813.000.
Matcovich, John J.: *See*—
Matcovich, Robert R.; Matcovich, Thomas J.; Matcovich, John J.; and Paist, Kenneth W., 5,056,783, Cl. 273-26.00R
Matcovich, Robert R.; Matcovich, Thomas J.; Matcovich, John J.; and Paist, Kenneth W., to Batronics, Inc. Sports implement swing analyzer. 5,056,783, Cl. 273-26.00R.
Matcovich, Thomas J.: *See*—
Matcovich, Robert R.; Matcovich, Thomas J.; Matcovich, John J.; and Paist, Kenneth W., 5,056,783, Cl. 273-26.00R
Mate Punch & Die Co.: *See*—
Johnson, Gary E.; Schneider, John T.; and Sundquist, Nils E., 5,056,392, Cl. 83-140.000
Materniak, Joyce M.: *See*—
Fitzgerald, Patrick H.; Materniak, Joyce M.; Moores, Mead S.; Openstone, Ella D.; and Rivet, Ernest, 5,057,121, Cl. 8-133.000
Mathes, Thomas N.: *See*—
Faber, Allen B.; and Mathes, Thomas N., 5,058,070, Cl 365-200.000.
Mathey, Christoph, to Dynamit Nobel AG. Rocket retainer in a launching device. 5,056,407, Cl. 89-1.806.
Matias, Yossi; and Shamir, Adi, to Matias, Yossi. Video scrambling apparatus and method based on space filling curves. 5,058,158, Cl 380-14.000.
Matono, Naoto, to Sanyo Electric Co., Ltd. Marker for detecting amount of working and process for producing thin film magnetic head. 5,056,353, Cl. 73-7.000.
Matrix Technologies Corporation: *See*—
Torti, Victor A.; Nelson, Gary E.; Keene, R. Laurence; and Kalmakis, George P., 5,057,281, Cl. 422-100.000.
Matson, Stephen L.: *See*—
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Matsubara, Tooru: *See*—
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Matsuda, Hiroo; Okada, Shuji; Nakanishi, Hachiro; and Kato, Masao, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Method for production of polymeric nonlinear optical material. 5,057,248, Cl. 252-582.000.
Matsuda, Mikihiko: *See*—
Tamai, Mitsuru; Yuhara, Tadanori; Nakamura, Kimihiro; Kitamura, Kazuaki; Takano, Toshiyuki; Takahama, Teizo; Matsuda, Mikihiko; and Souma, Shinichi, 5,056,369, Cl. 73-718.000
Matsuda, Noboru, to Sharp Kabushiki Kaisha. Image pickup device capable of picking up images while electronically enlarging the same. 5,057,923, Cl. 358-180.000.

Matsuda, Shoichi: *See—*
Mizutani, Satoru; Matsuda, Shoichi, and Kunitake, Ryoichi, 5,057,428, Cl. 435-285.000.
Matsuda, Tatsuo: *See—*
Urushibata, Kenichi; Sugawara, Kiyoto; Matsuda, Tatsuo; Saen, Haruo; Kojima, Keiichi; Kawasaki, Syusaku; Hatase, Hiroshi; Saito, Katsuya; Yumoto, Tetsuo; Yoshizawa, Norio; and Kanno, Tooru, 5,057,650, Cl. 174-88.00R
Matsuda, Toshiro, to Nissan Motor Company, Limited. Anti-skid brake control system for automotive vehicle with feature of variable timing of derivation of wheel acceleration data. 5,058,020, Cl. 364-426.020
Matsuda, Yasuo: *See—*
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Matsuguchi, Seiichi: *See—*
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Matsuki, Masaya: *See—*
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Matsumoto, Hiroshi; Yamamura, Nobuyuki; and Sasaki, Makoto, to Casio Computer Co., Ltd. Memory cell system with first and second gates. 5,057,885, Cl. 357-23.500.
Matsumoto, Hiroshi; and Inokuchi, Hiroaki, to Kyocera Corporation Container package for semiconductor element. 5,057,905, Cl 357-74.000
Matsumoto, Ikuo: *See—*
Fukuda, Hiroshi; Matsumoto, Ikuo; and Tabata, Kenji, 5,057,482, Cl. 502-303.000
Matsumoto, Michio: *See—*
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Matsumoto, Takeshi: *See—*
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Matsumoto, Toshio: *See—*
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Matsumura, Isao; Masuda, Takashi; Hamano, Yoshimasa; Maruyama, Shigeo; Nakamura, Yukitsugu; and Kobayashi, Kazunobu, to Canon Kabushiki Kaisha. Supersonic ophthalmic measuring apparatus 5,056,522, Cl. 128-645.000
Matsuo, Masahiko; and Nakaizumi, Kazuo, to NEC Corporation. Memory circuit having a redundant memory cell array for replacing faulty cells. 5,058,059, Cl. 365-96.000
Matsuo, Masashi; Maekawa, Takashige; and Ito, Katsuji, to Asahi Glass Company Ltd. Water and oil repellant. 5,057,577, Cl. 525-276.000
Matsuoka, Tohru: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Fuse, Genshu; and Ohzone, Takashi, 5,057,444, Cl. 437-35.000
Kai, Yoshiaki; and Suzuki, Takashi, 5,057,623, Cl. 564-82.000
Kanai, Toshio, 5,057,922, Cl. 358-172.000
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Mukai, Toshiharu, 5,058,093, Cl. 369-58.000.
Nishino, Atsushi; Mizuno, Yasuo; Ikeda, Masaki; and Hiraka, Masahiro, 5,057,378, Cl. 428-457.000
Nomura, Noboru; Nakagawa, Hideo; Koizumi, Taichi; Harafuji, Kenji; Okuni, Mitsuhiro; and Anazawa, Norimichi, 5,057,689, Cl. 250-310.000.
Ogawa, Kazufumi, 5,057,339, Cl. 427-340.000.
Shimada, Hiromichi, 5,057,947, Cl. 360-60.000.
Shimada, Toshiyuki; Aoki, Kazuhiro; Kurahashi, Akira; and Kikuchi, Noboru, 5,057,945, Cl. 360-22.000.
Sonoda, Takashi; and Asada, Takafumi, 5,057,733, Cl. 310-269.000
Stec, Kevin; and Shields, Jerome D., 5,057,911, Cl. 358-11.000
Urushibata, Kenichi; Sugawara, Kiyoto; Matsuda, Tatsuo; Saen, Haruo; Kojima, Keiichi; Kawasaki, Syusaku; Hatase, Hiroshi; Saito, Katsuya; Yumoto, Tetsuo; Yoshizawa, Norio; and Kanno, Tooru, 5,057,650, Cl. 174-88.00R.
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Matsushita Electric Works, Ltd.: *See—*
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Nakamura, Shunichiro; Minemura, Harumi; and Minohara, Tatsuo, 5,058,002, Cl. 364-200.000.
Minohata, Masanori: *See*—
Fujii, Masaki; and Minohata, Masanori, 5,057,297, Cl. 423-448.000.
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Hata, Yoshiaki; Taniguchi, Nobuyuki; Hoda, Takeo; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 5,057,857, Cl. 354-106.000
Ikenoue, Yoshikazu; and Yamaguchi, Ikunori, 5,056,769, Cl. 271-9.000
Muramatsu, Hideo; Nakatani, Munehiro; Hamano, Hiroaki; Fukushima, Shigenobu; Tsuboi, Toshio; Hamano, Kanako; Kurahashi, Yoshiyuki; and Yamamoto, Masanori, 5,057,937, Cl. 358-405.000.
Nakamura, Ikushi; and Nagata, Shigeru, 5,056,903, Cl. 359-513.000.
Ohno, Yasuhiro, 5,057,876, Cl. 355-328.000.
Saijo, Hiromitsu; Yamamoto, Shunji; and Kimura, Akio, 5,057,872, Cl. 355-260.000.
Sekino, Hitoshi; Hasegawa, Hirofumi; Nakagawa, Shuichi; and Enoguchi, Yuji, 5,057,868, Cl. 355-215.000.
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Davidson, Peter G.; and Clark, Robert H., III, 5,057,332, Cl. 426-281.000
Miotti, Giouse, to Finic, B. V. Underground wall construction method and apparatus. 5,056,242, Cl. 37-94.000.
Mirlieb, Bernd: *See*—
Killguss, Heinz; Mirlieb, Bernd; and Quanz, Gerhard, 5,056,770, Cl. 271-97.000.

Mishima, Masaaki: *See*—
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Misomex Aktiebolag: *See*—
Rosen, Lars-Ake; and Lundberg, Dan J., 5,057,865, Cl. 355-91.000.
Rosen, Lars-Ake; and Lundberg, Dan J., 5,057,865, Cl. 355-91.000.
Misoo, Kunio: *See*—
Koshoji, Toshinobu; Honda, Hironari; Okamura, Kiyonobu; Misoo, Kunio; and Nishimura, Osamu, 5,057,218, Cl. 210-500.350.
Missier, Gabriele: *See*—
Urban, Lino; Moscardini, Gian F.; and Missier, Gabriele, 5,056,459, Cl. 118-634.000.
Mist-Defy'R, Inc.: *See*—
Bell, Marl J., 5,057,754, Cl. 318-483.000.
Mita Industrial Co., Ltd.: *See*—
Kida, Yasuhiko, 5,056,775, Cl. 271-227.000.
Koyama, Shigeo, 5,056,768, Cl. 271-3.000.
Mitre Corporation, The: *See*—
Muller, Richard A., 5,057,268, Cl. 376-157.000.
Mitsuba Electric Manufacturing Co., Ltd.: *See*—
Yoshida, Yasushi, 5,057,730, Cl. 310-91.000
Mitsubishi Denki K.K.: *See*—
Naka, Shigeaki, 5,057,755, Cl. 318-568.100.
Otani, Akihiro; and Ogawa, Shuji, 5,058,125, Cl. 372-109.000.
Yasui, Koji; Tanaka, Masaaki; Yagi, Shigenori; and Kuzumoto, Masaki, 5,058,123, Cl. 372-99.000
Mitsubishi Denki Kabushiki Kaisha: *See*—
Adachi, Etsushi; Adachi, Hiroshi; Hayashi, Osamu; and Okahashi, Kazuo, 5,057,336, Cl. 427-44.000.
Fujimoto, Takanori; and Hara, Toshiro, 5,057,764, Cl. 322-14.000.
Hirokawa, Masayuki, 5,057,998, Cl. 364-200.000
Kadowaki, Yoshinobu, 5,057,805, Cl. 333-247.000
Kohda, Kenji; Kouro, Yasuhiro; Makihara, Hiroyasu; and Toyama, Tsuyoshi, 5,058,071, Cl. 365-200.000.
Mizuta, Masaharu, 5,058,075, Cl. 365-229.000.
Murakami, Tokumichi; and Fukuhara, Takahiro, 5,057,940, Cl. 358-426.000.
Muratomi, Yoichi; and Oouchi, Hirofumi, 5,057,956, Cl. 360-122.000
Nakamura, Shunichiro; Minemura, Harumi; and Minohara, Tatsuo, 5,058,002, Cl. 364-200.000.
Nakata, Shuhei; Nakagawa, Takafumi; and Hifumi, Takashi, 5,057,766, Cl. 324-71.300.
Noda, Minoru, 5,057,883, Cl. 357-22.000.
Ohuchi, Hirofumi, 5,056,483, Cl. 123-339.000.
Tominaga, Tsutomu, 5,057,729, Cl. 310-89.000.
Tsuji, Shintaro; and Nagata, Yasuhiro, 5,056,629, Cl. 187-139.000
Yamada, Katsuyoshi; and Arai, Tsutomu, 5,057,660, Cl. 219-10.55M.
Yasuda, Kenichi; and Arimoto, Kazutami, 5,058,058, Cl. 365-51.000
Mitsubishi Electric Home Appliance Co., Ltd.: *See*—
Yamada, Katsuyoshi; and Arai, Tsutomu, 5,057,660, Cl. 219-10.55M.
Mitsubishi Gas Chemical Company, Incorporated: *See*—
Hayashi, Hiromi; Ichinose, Yasuaki; Harada, Hiroshi; and Kaneishi, Akimasa, 5,056,997, Cl. 425-130.000
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kume, Tateo; Yoshida, Michiyasu; Kodama, Yoshiaki; and Koga, Kazuo, 5,056,308, Cl. 60-276.000.
Mitsubishi Jukogyo K.K.: *See*—
Hagiwara, Haruo, 5,056,174, Cl. 8-158.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
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Wada, Hirokazu; Minami, Nagio; and Oka, Tamotsu, 5,056,275, Cl. 51-437.000.
Mitsubishi Kasei Corporation: *See*—
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Mitsubishi Materials Corporation: *See*—
Komabayashi, Masashi; and Hijikata, Kenichi, 5,057,161, Cl 136-240.000
Mitsubishi Metal Corporation: *See*—
Wakita, Saburo; Hoshi, Junji; Miyamoto, Shinich; and Kawabata, Hideo, 5,056,705, Cl. 228-176.000.
Mitsubishi Paper Mills Limited: *See*—
Tsubai, Yasuo; Baba, Susumu; and Yoshida, Akio, 5,057,395, Cl. 430-248.000
Mitsubishi Rayon Co., Ltd.: *See*—
Koshoji, Toshinobu; Honda, Hironari; Okamura, Kiyonobu; Misoo, Kunio; and Nishimura, Osamu, 5,057,218, Cl. 210-500.350
Kubo, Shinji; Tajiri, Noriyuki; Takyu, Masayuki; Funato, Ryo; and Ito, Hirokazu, 5,057,596, Cl. 528-272.000.
Uchida, Makoto; Toyooka, Yutaka; Kishida, Kazuo; Nakata, Akira; and Yamamoto, Naoki, 5,057,574, Cl. 525-85.000
Mitsui Petrochemical Industries, Ltd.: *See*—
Agou, Tokinori; Sakashita, Takeshi; Shimoda, Tomoaki; Sudo, Masaru; Kuwabara, Masahiro; and Tanaka, Masahide, 5,057,585, Cl. 526-246.000.
Yoshiji, Ohori; and Hirofumi, Harazoe, 5,057,261, Cl. 264-210.600.
Mitsui Toatsu Chamicals, Inc.: *See*—
Kono, Yoshitsugu; Itoh, Hiroyuki; Taneda, Ryoichi; and Watanabe, Tsugio, 5,057,615, Cl. 548-497.000.
Mitsunari, Tomoharu: *See*—
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Mitsuya, Yoshihide: *See*—
Kubota, Masuo; Kageyama, Hidehei; Kobayashi, Saburo; Mitsuya, Yoshihide; and Ebinuma, Tadayoshi, 5,056,947, Cl. 401-29.000.
Mitsuyasu, Masaki: *See*—
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Mitsuyoshi, Ishida, to Taito Corporation. Steering apparatus for game machine. 5,056,787, Cl. 273-148.00B.
Mittel, James G., to Motorola, Inc. Temperature independent voltage monitor for use in a battery operated electronic device. 5,057,779, Cl 324-431.000
Mitutoyo Corporation: *See*—
Hikawa, Norihito; and Ishibashi, Wataru, 5,057,686, Cl 250-231.160.
Suzuki, Masamichi; Tomiya, Masaki; and Kuwabara, Yoshiharu, 5,058,119, Cl. 372-34.000.
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Roth, Michael W.; and Mitzel, Glenn E., 5,056,740, Cl. 244-158.00R
Miwa, Yoshiharu; and Asahi, Kazuhiko, to Nippon Electric Glass Co., Ltd. Radiation shielding glass having an improved gamma irradiation browning and dielectric breakdown. 5,057,464, Cl. 501-53.000
Miyabe, Masanori; Kohara, Hidekatsu; and Nakayama, Toshimasa, to Tokyo Ohka Kogyo Co., Ltd. Electron beam-curable resist composition and method for fine patterning using the same. 5,057,397, Cl 430-270.000.
Miyabi, Seiji: *See*—
Tatsuoka, Toshio; Suzuki, Kenji; Satoh, Fumio; Miyabi, Seiji; and Sumoto, Kunihiro, 5,057,514, Cl. 514-227.500
Miyahara, Kingo, to Dowa Co., Ltd. Method of and apparatus for preparing foods by utilizing electric heating. 5,058,192, Cl. 392-311.000.
Miyahara, Syouichi; Kamasaki, Keiji; and Higashi, Michiya, to Kabushiki Kaisha Toshiba. Multimold semiconductor device and the manufacturing method therefor. 5,057,457, Cl. 437-207.000
Miyakawa, Shigeru: *See*—
Nakahashi, Masako; Shirokane, Makoto; Takeda, Hiromitsu; Yamazaki, Tatsuo; Okutomi, Tsutomu; Niwa, Shozi; Okawa, Mikio; Homma, Mitsutaka; Suenaga, Seiichi; and Miyakawa, Shigeru, 5,056,702, Cl. 228-123.000.
Miyama, Shuji: *See*—
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Miyamoto, Shinich: *See*—
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Miyaoka, Shinichiro; Funabashi, Motohisa; and Sasaki, Ryoichi, to Hitachi, Ltd. Method and apparatus for image compression 5,058,186, Cl. 382-56.000.
Miyasaka, Toshiyuki, to Kabushiki Kaisha Toshiba. Method for accessing a control track by positioning an optical head at the center of the control track. 5,058,092, Cl. 369-44.270
Miyawaki, Motohisa; and Tanaka, Hiroshi, to Fuji Jukogyo Kabushiki Kaisha. System for controlling speed of an engine for a motor vehicle having a continuously variable transmission. 5,056,637, Cl. 192-0.058.
Miyawaki, Osato: *See*—
Aoki, Kazuichi; Saiki, Yukihiro; Tanno, Katushitoshi; Shinoki, Yasuhiko; Hori, Tomoshige; Itoh, Kensuke; Nakamura, Tetsuo; and Miyawaki, Osato, 5,056,928, Cl. 374-16.000.
Miyazaki, Hideki; Kanouda, Akihiko; Watanabe, Kozo; Onda, Kenichi; and Matsuda, Yasuo, to Hitachi, Ltd. Level shift circuit for controlling a driving circuit. 5,057,721, Cl. 307-571.000
Miyazaki, Hideyuki: *See*—
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Miyazaki, Mikio; Kamei, Kyoji; Kogure, Yoshio; Takeshita, Masahito; and Furusawa, Tsutomu, to Fuji Xerox Co., Ltd. Paper conveying apparatus. 5,057,874, Cl. 355-316.000.
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Sakamoto, Hiroshi; and Miyoshi, Tadahiko, 5,057,465, Cl. 501-90.000.
Mizobe, Tatsuji. System for uniformly illuminating liquid crystal display board from rear side. 5,057,974, Cl. 362-26.000
Mizumoto, Yoshihiro: *See*—
Yokoe, Masaaki; Yokoyama, Hiroshi; and Mizumoto, Yoshihiro, 5,057,053, Cl. 446-394.000
Mizumura, Yumi: *See*—
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Tanaka, Kenichi; Nishimura, Shinji; Kawada, Hiroshi; Yamaguchi, Katsuya; Mizumura, Yumi; and Nomura, Chieko, 5,057,533, Cl 514-396.000.
Mizuno, Tohru; and Kosaka, Tetsuya, to Fanuc Ltd. Robot control apparatus. 5,057,995, Cl. 364-192.000.
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Mizuno, Yasuo: *See*—
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Mizuta, Masaharu, to Mitsubishi Denki Kabushiki Kaisha. Battery circuit for an integrated circuit (IC) memory card. 5,058,075, Cl. 365-229.000.

Mizutani, Satoru; Matsuda, Shoichi; and Kunitake, Ryoichi, to Kirin Beer Kabushiki Kaisha. Bioreactor. 5,057,428, Cl. 435-285.000.
Mobay Corporation: *See—*
Doerge, Herman P., 5,057,547, Cl. 521-131.000.
Mobil Oil Corporation: *See—*
Balloni, Ricardo; and Nahmias, A. Michael, 5,057,177, Cl 156-244.110.
Beck, Jeffrey S., 5,057,296, Cl. 423-277.000.
Blain, David A.; and Cardis, Angeline B., 5,057,122, Cl. 44-387.000.
Chang, Clarence D.; and Rodewald, Paul G., 5,057,640, Cl 585-533.000.
Chin, Arthur A.; Sapre, Ajit V.; and Sarli, Michael S., 5,057,205, Cl. 208-121.000.
Chu, Cynthia T.; Partridge, Randall D.; and Schramm, Suzanne E., 5,057,203, Cl. 208-46.000.
Farng, Liehpao O.; Horodysky, Andrew G.; and Law, Derek A., 5,057,235, Cl. 252-46.600.
Jennings, Alfred R., Jr., 5,056,598, Cl. 166-308.000.
Yan, Tsoung Y., 5,057,204, Cl. 208-108.000.
Mochizuki, Takashi, to Kabushiki Kaisha Tamiya Mokei. Shock absorber for use in toys. 5,056,764, Cl. 267-291.000.
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Bemisderfer, Charles H., 5,056,586, Cl. 165-1.000.
Moen, Bruce A.; Williams, Warren R.; Johansson, Bert E.; and Mayer, Leo W., to Coors Brewing Company. Apparatus and method for stripping a workpiece from a supporting device. 5,056,350, Cl 72-345.000.
Mogen International N.V.: *See—*
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Moghaddassi, Majid N.: *See—*
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Mohammadi, Narvoz: *See—*
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Moireau, Patrick: *See—*
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Mok, Lawrence S.; Schwall, Robert E.; and Tong, Ho-Ming, to International Business Machines Corporation. Electronic device and heat sink assembly. 5,057,999, Cl. 357-81.000.
Mole, Cecil J.; and Wright, Dexter V., to Westinghouse Electric Corp. Structureborne vibration-compensated motor arrangement having back-to-back twin AC motors. 5,057,726, Cl. 310-67.00R.
Molex Incorporated: *See—*
Bowen, David C.; Dambach, Philip J.; Nelligan, Joseph W., Jr.; and Triner, Irvin R., 5,057,038, Cl. 439-497.000.
Yamada, Shoji; and Sasao, Masami, 5,057,027, Cl. 439-83.000
Mollenkamp, Daniel L., to Stork Amsterdam B.V. Device for sterilizing products packed in cylindrical containers. 5,057,288, Cl 422-310.000.
Moller, Erhard; and Bernstein, Lutz, to Vegla Vereinigte Glaswerke GmbH. Outer wall of a structure located near a radar station 5,057,842, Cl. 342-4.000
Momose, Yutaka: *See—*
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Moncrief, Jack W.; and Popovich, Robert P. Method for implanting a catheter. 5,057,075, Cl. 604-49.000.
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Mondet, Jean: *See—*
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Monticelli, Frank R., Jr. Hydrogen sulfide abating cooling toner. 5,057,292, Cl. 423-226.000.
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Moore, Norman W.: *See—*
Rocci, Joseph D.; Quelly, Michael; Hallett, Robert; and Moore, Norman W., 5,058,198, Cl. 455-3.000.
Moore, Robert L.; and Moore, Kevin L., to Hoenstine, James M Recreational water sled and towing method. 5,057,044, Cl. 441-67.000
Moore, Steven R.: *See—*
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Moores, Mead S.: *See—*
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Moravsky, Andrew. Vehicle bed cover assembly. 5,056,855, Cl. 296-98.000
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Morgan, John P.; and Piper, Thomas C., to United States of America, Energy. Battery driven 8 channel pulse height analyzer with compact, single gamma-peak display. 5,057,690, Cl. 250-336.100
Morgan, Robert A., to AT&T Bell Laboratories. Optical device including a grating. 5,056,889, Cl. 359-572.000.
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Mori, Koichi; and Kawaguchi, Tomonari, to Sanyo Electric Co., Ltd. Washing machine. 5,056,341, Cl. 68-3.00R.
Mori, Takayuki: *See—*
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Morii, Akira; Fujimura, Shunichi; and Nakayama, Kiyoshi, to Furukawa Electric Co., Ltd., The; and Ube Chemical Industries, Co., Ltd. Flame retardant and a flame-retardant resin composition containing the same. 5,057,367, Cl. 428-389.000.
Morii, Kiyoshi; Kumura, Shuzo; Hayakawa, Shyzunori; and Inagaki, Yoshio, to Daido Tokushuko Kabushiki Kaisha. Continuously and concurrently casting different alloys. 5,056,583, Cl. 164-453.000.
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Morimoto, Kiyoshi; Iwamoto, Akikazu; Watanabe, Katsuya; Shimizu, Masahiko; and Moriyama, Masuo, to Kyowa Hakko Kogyo Co., Ltd. Kabushiki Kaisha Matsui Seisakusho. Method of sampling solid materials and sampling system to execute the method. 5,056,962, Cl 406-49.000
Morimoto, Miyuki: *See—*
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Morino, Seiji; Takasu, Yasuhito; Takamura, Kozo; and Somiya, Masato, to Nippondenso Co., Ltd. Ignition system of multispark type. 5,056,496, Cl. 123-604.000.
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Morita, Sadao; Shimasaki, Haruo; and Tsutsumi, Kiyohiko, to NCR Corporation. Link control system communicating between terminals. 5,058,057, Cl. 364-900.000.
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Takehara, Shin; and Morita, Toshiki, 5,056,812, Cl. 280-707.000.
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Moroto, Shuzo; Sakakibara, Shiro; Kondo, Hidehiro; Inuzuka, Takesi; and Hasebe, Masahiro, to Aisin AW Co., Ltd. Manual speed selector of automatic vehicle transmission. 5,056,376, Cl. 74-335.000.
Morris, Carl F. Filtration and backwash control system for water filters associated with spigot faucets. 5,057,214, Cl. 210-136.000.
Morris, Hugh M.; Parks, Carol A.; Rajagopal, Doraiswamy; and Youngs, Gary L., to International Business Machines Corporation. Object management and delivery system having multiple object-resolution capability. 5,058,185, Cl. 382-41.000.
Morris, John C.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Copolyesters from 4,4'-biphenyldicarboxylic acid, 1,4-cyclohexanedimethanol and ethylene glycol. 5,057,595, Cl. 528-272.000

Morrison, Donald L.: *See—*
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Morrison, George A., to Morrison, George A. Restraining harness to hold child in highchair. 5,056,869, Cl. 297-485.000.
Morrison, Robert A., to Lockheed Corporation. Cooling system for electronic modules. 5,057,968, Cl. 361-385.000.
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Li, Gabriel M., 5,058,132, Cl. 375-38.000.
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Morita, Sadao; Shimasaki, Haruo; and Tsutsumi, Kiyohiko, 5,058,057, Cl. 364-900.000.

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Hatano, Tsutomu, 5,057,714, Cl. 307-446.000.
Hattori, Masayuki, 5,057,720, Cl. 307-571.000.
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Kashimura, Masahiko, 5,058,072, Cl. 365-203.000
Kimura, Katsuji, 5,057,717, Cl. 307-492.000.
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Matsuo, Masahiko; and Nakaizumi, Kazuo, 5,058,059, Cl 365-96.000.
Noda, Makoto; and Takenaka, Hiroaki, 5,057,736, Cl. 313-345.000
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Torti, Victor A.; Nelson, Gary E.; Keene, R. Laurence; and Kalmakis, George P., 5,057,281, Cl. 422-100.000

Nelson, Michael A.: *See—*
Burwell, George E.; and Nelson, Michael A., 5,056,972, Cl. 409-299.000.

Nelson, Richard D.: *See—*
Dolbear, Thomas P.; Mackay, Colin A.; and Nelson, Richard D., 5,056,706, Cl. 228-180.200

Nelson, Robert E., to TPV Energy Systems, Inc. Thermophotovoltaic technology. 5,057,162, Cl. 136-253.000

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Neogi, Amar N.: *See—*
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Krafutler, Bernard, 5,056,579, Cl. 160-271.000

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Leuba, Jean-Louis; Link, Harriet; Stoessel, Peter; and Viret, Jean-Louis, 5,057,542, Cl. 514-844.000.

Neukom, Alfred J.; Reinehr, Dieter; and Schmid, Werner, to Ciba-Geigy Corporation. Moth- and beetle-proofing agents. 5,057,539, Cl 514-531.000.

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Kawasaki, Keiji; and Fushimi, Koji, 5,056,368, Cl. 73-642.000

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Nguyen, Ngon B.: *See—*
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Gonzalez, Rene-Andres A.; Nicolaisen, Heinz-Christian; and Kammer, Lothar, 5,057,551, Cl. 522-170.000

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Niedra, Janis M., to Sverdrup Technology, Inc. Passively forced current sharing among transistors. 5,057,719, Cl. 307-570.000

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Nippon Kayaku Kabushiki Kaisha: *See—*
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Nippon Motorola, Ltd.: *See—*
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Nippon Petrochemical Co., Ltd.: *See—*
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Nippon Seiko Kabushiki Kaisha: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
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Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Nippon Telegraph and Telephone Corporation: *See—*
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Nippon Zeon Co., Ltd.: *See—*
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Nippon Zoki Pharmaceutical Co., Ltd.: *See—*
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Nippondenso Co., Ltd.: *See—*
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Torii, Koshi; Hayashi, Seiji; Sonobe, Shigenori; and Senoo, Shigeru, 5,057,763, Cl. 322-8.000

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Nishibori, Yoshihiro: *See—*
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Nishide, Sadahiko: *See—*
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Nishijima, Hideo: *See—*
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Nishijima, Kazuhiro: *See—*
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Nishijima, Tomio: *See—*
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Nishikawa, Takuo: *See—*
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Nishikawa, Yukie: *See—*
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Yamazaki, Nobuto; and Nishimura, Akihiro, 5,056,217, Cl. 29-860.000

Nishimura, Osamu: *See—*
Koshoji, Toshinobu; Honda, Hironari; Okamura, Kiyonobu; Misoo, Kunio; and Nishimura, Osamu, 5,057,218, Cl. 210-500.350

Nishimura, Shinji: *See—*
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Mukaiya, Hitoshi; Horiuchi, Akihisa; Murata, Yasunori; and Nishio, Akihiro, 5,056,900, Cl. 359-676.000.

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Nissan Motor Company, Limited: *See—*
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Kikuchi, Yoichi; and Iwamoto, Miyoshi, 5,056,916, Cl. 356-121.000.
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Nixon, John S., to Pilkington plc. Apparatus for melting glass batch material. 5,057,140, Cl. 65-335.000.

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Noel, Jean P., to Rockwell-CIM. Centrifugal clutch for a motor vehicle doorlock actuator. 5,056,633, Cl. 192-35.000.

Nogawa, Makoto: *See—*
Sato, Kan-ichi; Nogawa, Makoto; Fujimoto, Satoshi; Sasaki, Yosuke; and Higuchi, Makoto, 5,057,255, Cl. 264-40.500.

Noguchi, Mitsuaki: *See—*
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Nokia Mobile Phones Ltd.: *See—*
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Noll, Andreas: *See—*
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Noma, Tsukasa: *See—*
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Nomura, Chieko: *See—*
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Nomura, Shinichiro: *See—*
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Nonini, Geremia, to Danieli & C. Officine Meccaniche S.p.A. Rolling stand with rolling rings supported as a cantilever and having their axes at an angle to each other. 5,056,345, Cl. 72-21.000.

Noorily, Peter, to Thomas & Betts Corporation. Electrical eject header 5,057,029, Cl. 439-160.000.

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Crum, Gerald W.; and Traylor, John C. A., 5,056,720, Cl. 239-698.000
Perkins, Jeffrey A.; and Redilla, Jack A., 5,056,462, Cl. 118-683.000

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Norigoe, Takashi, to Tokyo Electric Co., Ltd. Dot printer head 5,056,942, Cl. 400-124.000

Norkey, Phillip J.; and Bocson, David A., to U.S. Plastics Corporation. Fluid connector. 5,056,756, Cl. 251-149.600.

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Brown, Thomas W.; Creamer, Glenn E.; Cook, William R.; Norman, Alan B.; Lawson, Jerry W.; and Saintsing, Barry L., 5,056,537, Cl. 131-352.000.

Norris, Bobby D. Rotary brake rotor resurfacer. 5,056,266, Cl. 51-111.00R.

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Carlson, Randolph S., 5,057,833, Cl. 340-961.000
Otsu, Kenichiro: *See—*
Futamura, Kenichiro; and Otsu, Kenichiro, 5,057,274, Cl 420-534.000
Otsuka, Eiji, to Kabushiki Kaisha Toshiba. Clock extracting circuit in digital-line signal receiver. 5,058,142, Cl. 375-118.000.
Otsuka Electronics Co., Ltd.: *See—*
Hirao, Konomu; and Inamoto, Naoki, 5,057,695, Cl. 250-575.000
Ott, Franz; and Mannl, Reinhard, to Schott Glaswerke. Method and apparatus for manufacturing profiled glass tubing. 5,057,136, Cl 65-87.000
Oughton, George W.: *See—*
Widener, Steven R.; and Oughton, George W., 5,057,698, Cl 307-66.000.
Ouhadi, Trazollah: *See—*
Broze, Guy; and Ouhadi, Trazollah, 5,057,238, Cl. 252-99.000.
Oura, Takao: *See—*
Maeda, Kiyoshi; Nishide, Sadahiko; Yoshiyama, Mamoru; Matsuguchi, Seiichi; Kurosaki, Masahiko; Oura, Takao; Hayashi, Tetsuya; Kobayashi, Yoshikazu; and Handa, Yoshiaki, 5,057,861, Cl. 355-27.000.
Outboard Marine Corporation: *See—*
Baltz, Gene F.; Dayenian, Paul M.; and Stanley, John E., 5,057,249, Cl. 261-72.100.
Outlaw, Charles E.: *See—*
Zoeller, Joseph R.; Cook, Steven L.; Outlaw, Charles E.; and Schisla, Robert M., Jr., 5,057,192, Cl. 203-46.000
Owada, Eiji: *See—*
Nakamura, Kisaku; Okuyama, Shigeru; Owada, Eiji; and Nishibori, Yoshihiro, 5,058,196, Cl. 392-435.000
Owens, John N., to General Motors Corporation. Additives for enhanced dielectric curing. 5,057,554, Cl. 523-300.000
Owens, Joseph N.: *See—*
Moye, Christopher A.; and Owens, Joseph N., 5,057,798, Cl 333-33.000.

Ozaki, Kenichi: *See—*
Sawai, Mamoru; Watanabe, Mitsugu; Suzuki, Hiroshi; and Ozaki, Kenichi, 5,057,026, Cl. 439-76.000.

Ozaki, Shinji; Morikawa, Juichi; Zama, Hideo; Kochi, Mashanori; and Ibe, Makoto, to Hitachi, Ltd. Multiplex rotating magnetic head system for multiply recording and erasing audio and video signals. 5,057,944, Cl. 360-19.100.

Ozaki, Shinya; Yamada, Masaki; Milthorp, Brian A.; and Thompson, Bruce A., to Hewlett-Packard Company. Data storage method 5,057,950, Cl. 360-72.200.

Ozeki, Eiji; and Kawakami, Kenji, to NGK Spark Plug Co., Ltd Ladder-type electric filter apparatus and housing therefor. 5,057,802, Cl. 333-189.000.

Paar, Willibald; and Schipfer, Rudolf, to Vianova Kunstharz, A.G. Cationic paint binders containing the reaction product of epoxides and substituted carbamic acid derivatives. 5,057,559, Cl. 523-414.000.

Paccar Inc.: *See—*
Jewell, John H., II; and Sasamura, Ross S., 5,056,264, Cl 49-502.000

Pacesetter Electronics, Inc.: *See—*
Figura, John A., 5,058,138, Cl. 375-88.000.

Pacific Bell: *See—*
Lubarsky, Daniel P.; Weigt, George A.; and Haisch, Mark E., 5,058,163, Cl. 380-49.000

Pacific Scientific Company: *See—*
LeVay, Robert C., 5,056,739, Cl. 244-122.0AG

Pacific Trinetics Corporation: *See—*
Horner, James W.; and Zablotny, Gordon O., 5,057,171, Cl 156-89.000.

Padilla, William: *See—*
Foote, Jerrold L.; Gill, Darla R.; Lampropolous, Fred P.; and Padilla, William, 5,057,078, Cl. 604-99.000

Page, Daniel A. Tooth flosser. 5,056,540, Cl. 132-323.000.

Page, Robert E., to United States of America, Navy. Flexducer preamplifier power controller. 5,058,083, Cl. 367-137.000.

Pai, Chien-Shing: *See—*
Foo, Pang-Dow; Lynch, William T.; and Pai, Chien-Shing, 5,057,455, Cl. 437-193.000.

Paige Manufacturing Inc.: *See—*
Dickie, Robert G., 5,057,036, Cl. 439-484.000.

Paik, Woo H.: *See—*
Krause, Edward; Paik, Woo H.; Liu, Vincent C.; Heller, Jerrold A.; Shen, Paul; and Esserman, James N., 5,057,916, Cl. 358-105.000.

Paillere, Patrick: *See—*
Garnier, Marcel; Gleizes, Isabelle; Paillere, Patrick; and Vernay, Pierre, 5,058,127, Cl. 373-157.000.

Paint Line Supply Co., Inc., The: *See—*
Rice, Rene R., 5,056,461, Cl. 118-663.000.

Painter, Corning F.: *See—*
Chen, Michael S.; Painter, Corning F.; Pastore, Steven P.; Roth, Gary S.; and Winchester, David C., 5,057,133, Cl. 65-27.000.

Paist, Kenneth W.: *See—*
Matcovich, Robert R.; Matcovich, Thomas J.; Matcovich, John J.; and Paist, Kenneth W., 5,056,783, Cl. 273-26.00R.

Palmer, Christopher J.: *See—*
Casida, John E.; Palmer, Christopher J.; Larkin, John P.; and Smith, Ian H., 5,057,508, Cl. 514-149.000.

Pan American Diamond Corporation: *See—*
Nhaissi, Eric, 5,056,337, Cl. 63-26.000.

Panzica, Nicholas J.; Gustavsson, Lennart; Josefsson, Leif; and Lannefors, Hans O., to Flakt, Inc. Rotary adsorption assembly. 5,057,128, Cl. 55-181.000.

Paoli, Thomas L., to Xerox Corporation. Coupling structures for a phase-locked laser array. 5,058,121, Cl. 372-50.000.

Papantoniou, Christos: *See—*
Langla, Bernard; Mondet, Jean; and Papantoniou, Christos, 5,057,312, Cl. 424-81.000.

Papastavros, Theodore G.; Alexander, Samuel A.; Benedict, Michael D.; Cioffi, Vincent; Hodgdon, Russell B.; Richard, Emery; and Tinkham, Winslow F., to Ionics, Incorporated. Apparatus for manufacturing continuous, supported polymeric sheets from polymerizable liquid starting materials. 5,056,996, Cl. 425-110.000

Pappas, James L.: *See—*
Rose, Robert C.; Seiler, Larry D.; and Pappas, James L., 5,058,041, Cl. 364-521.000

Papuchon, Michel: *See—*
Arditty, Herve J.; Puech, Claude; and Papuchon, Michel, 5,056,919, Cl. 356-350.000.

Papworth, David B.: *See—*
Colwell, Robert P.; O'Donnell, John; Papworth, David B.; and Rodman, Paul K., 5,057,837, Cl. 341-55.000.

Papyrus, Inc.: *See—*
Ibrahim, Ahmed A.; and Crawford, Juan H., 5,057,188, Cl. 162-199.000.

Paradies, Henrich H., to Medice Hem.-Pharm. Fabrik Putter GmbH & Co. KG. Pharmaceutical preparations. 5,057,518, Cl. 514-274.000.

Parham, William W.: *See—*
Krutak, James J.; Weaver, Max A.; Coates, Clarence A., Jr.; Hilbert, Samuel D.; Oldfield, Terry A.; Parham, William W.; and Pruett, Wayne P., 5,057,594, Cl. 528-272.000.

Parins, David J.; Rydell, Mark A.; and Stasz, Peter, to Everest Medical Corporation. Ablation catheter with selectively deployable electrodes. 5,057,107, Cl. 606-48.000.

Park, Il-Kun, to SamSung Electronics Co., Ltd. Jitter equalizer for digital transmission filter. 5,058,130, Cl. 375-12.000.

Park, Joo W.: *See—*
Lee, Jong S.; Kim, Seung M.; and Park, Joo W., 5,057,711, Cl. 307-443.000.

Park, Joon B. Non-stress-shielding bone fracture healing device. 5,057,111, Cl. 606-69.000.

Park, Seong B., to Goldstar Co., Ltd. Automatic reading apparatus for capstan reproducing speed mode. 5,057,784, Cl. 328-134.000.

Park, Young K. Motion conversion mechanism for converting between rotating and reciprocating motion and an internal combustion engine using the same mechanism. 5,056,475, Cl. 123-55.00R.

Parker, Donald O. Coin analyzer system and apparatus. 5,056,644, Cl 194-318.000.

Parker, Sidney G.; and Walker, Sam R., to Texas Instruments Incorporated. Crystal growth method for Y-Ba-Cu-O compounds. 5,057,487, Cl. 505-1.000.

Parkhill, James O.: *See—*
Stewart, Donald L.; Van Linden, Jan H. L.; LaCamera, Alfred F.; Pierce, Thomas V.; Parkhill, James O.; Urbanic, John M.; and Hornack, Thomas R., 5,057,194, Cl. 204-67.000.

Parkinson, William R., to W.R. Parkinson Co., Inc. Fire resistant container having both active and passive protection. 5,056,603, Cl. 169-48.000

Parks, Carol A.: *See—*
Morris, Hugh M.; Parks, Carol A.; Rajagopal, Doraiswamy; and Youngs, Gary L., 5,058,185, Cl. 382-41.000.

Parmelee, G. Kendall, to Erblok Associates. Method and apparatus for injection molding continuous products. 5,057,259, Cl. 264-166.000.

Parsons, J. Stuart; and Booher, Jon, to Health Craft International, Inc. Method for monitoring glucose level. 5,056,521, Cl. 128-635.000

Parsons, Kermit; Chabot, John S.; and Bomgaars, Roger, to Mid America Sales Company, Inc. Table leg lock. 5,056,746, Cl. 248-188.000.

Partridge, John J.: *See—*
Lackey, John W.; Mook, Robert A., Jr.; and Partridge, John J., 5,057,630, Cl. 568-838.000.

Partridge, Randall D.: *See—*
Chu, Cynthia T.; Partridge, Randall D.; and Schramm, Suzanne E., 5,057,203, Cl. 208-46.000.

Partridge, Susan J.: *See—*
Laskowski, Janusz S.; Klein, Bernhard; and Partridge, Susan J., 5,056,358, Cl. 73-6.000.

Pascault, Jean Pierre; and Cuve, Leon, to Societe Industrielle d'Applications Nouvelles de Procedes de Moulages Industriels (SAMI). Urethane polymer composition and preparation of articles from these polymers. 5,057,573, Cl. 524-871.000.

Pasquale, Gary M.: *See—*
Hertzengerg, Elliot P.; Murray, Brendan D.; Pasquale, Gary M.; and Winquist, Bruce H. C., 5,057,472, Cl. 502-66.000.

Pastor, Stephen D.; Hessell, Edward T.; and Ravichandran, Ramanathan, to Ciba-Geigy Corporation. Compositions stabilized with substituted amino carbamates. 5,057,610, Cl. 544-196.000

Pastore, Steven P.: *See—*
Chen, Michael S.; Painter, Corning F.; Pastore, Steven P.; Roth, Gary S.; and Winchester, David C., 5,057,133, Cl. 65-27.000.

Patel, Chiman R.; and Webb, George, to Magnavox Government and Industrial Electronics Company. Spin integrating safe and arm device for spinning munitions. 5,056,434, Cl. 102-238.000

Paterson, James L., to Texas Instruments Incorporated. Silicide/metal floating gate process. 5,057,447, Cl. 437-43.000.

Patrick, Kenneth H., to Mid-South Industries, Inc. Half crescent shaped ice piece maker. 5,056,321, Cl. 62-73.000.

Patrick, Kenneth H., to Mid-South Industries, Inc. Half crescent shaped ice piece maker. 5,056,322, Cl. 62-73.000.

Patton, James V. Ceramic magnet motor. 5,057,724, Cl. 310-17.000.

Patton, Robert L.: *See—*
Flanigen, Edith M.; Gajek, Richard T.; Lok, Brent M. T.; Patton, Robert L.; and Wilson, Stephen T., 5,057,295, Cl. 423-277.000.

Paul, Ana: *See—*
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Paul, Gerhard: *See—*
Rheinheimer, Joachim; Eicken, Karl; Plath, Peter; Paul, Gerhard; Harreus, Albrecht; Westphalen, Karl-Otto; Wuerzer, Bruno; Grossmann, Klaus; Rademacher, Wilhelm; and Jung, Johann, 5,057,143, Cl. 71-92.000.

Paul, Marius A.; and Paul, Ana. Internal combustion engine with compound air compression. 5,056,314, Cl. 60-609.000.

Paul Wurth S.A.: *See—*
Metz, Jean; and Venturini, Severino, 5,056,968, Cl. 408-239.00R.

Pawelzik, Manfred; and Haufe, Rudolf, to Friedrich Grohe Armaturenfabrik GmbH & Co. Convertible faucet/hand-shower fitting. 5,056,562, Cl. 137-801.000.

Peake, Steven L.: *See—*
Maranci, Artun; Peake, Steven L.; and Kaminski, Stanley S., 5,057,353, Cl. 428-147.000.

Pearl, Fred: *See—*
Tsui, Gary; Heimbigner, Thomas; and Pearl, Fred, 5,056,965, Cl. 408-72.00B.

Pearsall, Terry L.: *See—*
Factor, Richard C.; Pearsall, Terry L.; Strowe, John A.; and Nass, Laura A., 5,057,835, Cl. 340-995.000

Pearson, Charles S.: *See—*
Stiver, C. Edward; Teti, George J.; Pearson, Charles S.; and Brown, Kenneth R., 5,056,351, Cl. 72-402.000

Pedersen, Bent: *See—*
Jensen, Kaj B., 5,056,905, Cl. 359-843.000

Pedersen, Inge: *See—*
Jensen, Kaj B., 5,056,905, Cl. 359-843.000.

Pederson, Merle L. Protective covering attachment for cargo holds having a fifth-wheel trailering device. 5,056,856, Cl. 296-100.000.

Peerless Manufacturing Company: *See—*
Kierzkowski, Frank J.; and Cornwell, Dudley R., 5,057,129, Cl 55-213.000.

Pegasus Sewing Machine Mfg., Co., Ltd.: *See—*
Nakano, Minoru; and Yamazaki, Toru, 5,056,446, Cl. 112-302.000.

Pellicciari, Roberto; Roda, Aldo; and Frigerio, Giuliano, to Giuliani S.p.A. Bile acid derivatives, processes for the preparation thereof and pharmaceutical compositions containing them. 5,057,509, Cl 514-182.000.

Pellizari, Dirk: *See—*
Klatt, Dieter; and Pellizari, Dirk, 5,057,025, Cl. 439-71.000.

Pelto-Huikko, Raimo, to Kone Elevator GmbH. Hydraulic elevator 5,056,627, Cl. 187-20.000.

Pennucci, Victor: *See—*
Kersusan, Jean-Pierre; Filiputti, Hugues; Pennucci, Victor; and Malkin, Peter, 5,057,655, Cl. 200-148.00B.

Pepper, Steven H., to Tetronix, Inc. Phase-locked timebase for electro-optic sampling. 5,057,771, Cl. 324-158.00R.

Peppler, Henry J.: *See—*
Evans, Gary W.; and Peppler, Henry J., 5,057,320, Cl. 424-447.000.

Perazzoli, Frank L., Sr.: *See—*
Cutler, David N.; Kelly, James W., Jr.; and Perazzoli, Frank L., Sr., 5,057,996, Cl. 364-200.000.

Pereira, Oswy Z.: *See—*
Dawson, Michael J.; Noble, David; Lawrence, Gordon C.; Fletton, Richard A.; Lane, Stephen J.; Ramsay, Michael V. J.; Pereira, Oswy Z.; Sutherland, Derek R.; and Tiley, Edward P., 5,057,536, Cl. 514-450.000

Perkin-Elmer Corporation: *See—*
Hoult, Robert A., 5,056,886, Cl. 385-20.000.

Perkins, Cheryl A.: *See—*
Sayovitz, John J.; and Perkins, Cheryl A., 5,057,361, Cl. 428-290.000

Perkins, Curtis L.: *See—*
Nickell, Lawrence C.; and Perkins, Curtis L., 5,056,442, Cl 112-80.180.

Perkins, Jeffrey A.; and Redilla, Jack A., to Nordson Corporation. Coating system with correction for non-linear dispensing characteristics. 5,056,462, Cl. 118-683.000.

Perlman, Robert M.: *See—*
Gupta, Smeeta; Perlman, Robert M.; Lynch, Thomas W.; and McMinn, Brian D., 5,058,048, Cl. 364-748.000.

Perner, Matthias: *See—*
Haug, Heinz; and Perner, Matthias, 5,057,653, Cl. 200-19.00R.

Perry, John R.: *See—*
Magruder, Judy A.; Eckenhoff, James B.; Cortese, Richard; Wright, Jeremy C.; and Perry, John R., 5,057,318, Cl. 424-438.000.

Perry, Mordechai; Katraro, Reuven; and Linder, Charles, to Membrane Products Kiryat Weizmann Ltd. Process and apparatus for the removal of undesired components from aqueous feedstocks. 5,057,197, Cl. 204-182.400.

Perry, William. Insert for use in fabric-painting. 5,057,349, Cl. 428-81.000

Persen, David. Satellite rechargeable battery and recharger system. 5,057,381, Cl. 429-7.000.

Persing, Brian J.; Banas, Philip C.; Wiersma, Timothy J.; Connor, John P.; and Bouse, James R., to Westinghouse Electric Corp. Electrical or communications monument for mounting along an edge of a work surface. 5,057,039, Cl. 439-574.000.

Persson, Hans W.: *See—*
Dymling, Stephan; Hertz, Tomas; Lindstrom, Kjell; and Persson, Hans W., 5,056,357, Cl. 73-54.000.

Perstorp AB: *See—*
Siren, Matti, 5,057,507, Cl. 514-103.000

Peschka, Walter; and Schneider, Gottfried, to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.v. Cryogas pump. 5,056,991, Cl. 417-439.000

Peter-Hoblyn, Jeremy D.: *See—*
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Peters, Petrus J. M.: *See—*
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Petersen Manufacturing Co., Inc.: *See—*
Petersen, Ralph, 5,056,385, Cl. 81-370.000.

Petersen, Ralph, to Petersen Manufacturing Co., Inc. Compound toggle link. 5,056,385, Cl. 81-370.000.

Peterson, George E.: *See—*
Atkins, Robert M.; Peterson, George E.; and Tuminaro, Raymond D., 5,057,781, Cl. 324-635.000.

Peterson, Joseph C.; and Salof, George A. Process and apparatus for the low temperature recovery of ferrous chloride from spent hydrochloric acid pickle liquors. 5,057,290, Cl. 423-140.000.

Pethica, Brian A.; Devine, James M.; and Varrichio, Anthony J., to Electro-Biology, Inc. Optimization of bone formation at cathodes 5,056,518, Cl. 128-419.00F

Petit, Dominique: *See—*
Comert, Ahmet; Ladang, Michel; and Petit, Dominique, 5,056,807, Cl. 280-610.000.

Petrella, Robert G., to Air Products and Chemicals, Inc. Blowing reaction catalyst composition that provides cell opening of the resulting polyurethane foam. 5,057,480, Cl. 502-167.000.

Petrillo, Richard J., to Gillette Company, The. Correction fluid dispenser with ball valve. 5,056,949, Cl. 401-214.000.

Petrin, Michael; and van Buskirk, Gregory, to Clorox Company, The Surfactant ion pair fluorescent whitener compositions. 5,057,236, Cl 252-79.100

Petrus Imports, Inc.: *See—*
Cheng, Chen J., 5,056,776, Cl. 272-70.300

Petty, Thomas D.; and Vyne, Robert L., to Motorola Inc. Current threshold detector circuit. 5,057,709, Cl. 307-350.000

Petzold, Rainer; and Wiencek, Norbert, to Zahnradfabrik Friedrichshafen AG. Device and method for the control of an automatic vehicle clutch. 5,056,639, Cl. 192-0.076.

Petzold, Rainer: *See—*
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Peuschel, Gerd: *See—*
Hagedorn, Fritz; Peuschel, Gerd; and Singewald, Arno, 5,057,208, Cl. 209-166.000.

Peveler, Richard D.: *See—*
Chisholm, Daniel R.; Fisch, Michael H.; Flanagan, Mark E.; and Peveler, Richard D., 5,057,622, Cl. 560-152.000
Fisch, Michael H.; and Peveler, Richard D., 5,057,567, Cl 524-302.000

Pfau, Lise M.: *See—*
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Pfizer Inc.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 5,057,528, Cl. 514-352.000.
Dutton, Christopher J.; Gibson, Stephen P.; and Walshe, Nigel D A., 5,057,498, Cl. 514-30.000
Korsmeyer, Richard W., 5,056,715, Cl. 239-214.000
McCarthy, Peter A., 5,057,626, Cl. 568-322.000.

Pflieger, Lieselotte. Injection hose for joints to be sealed in concrete works. 5,056,282, Cl. 52-173.00R.

Phelan, Thomas A.: *See—*
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Philippbar, Jay E.: *See—*
Hettel, Bernd R.; and Philippbar, Jay E., 5,056,589, Cl. 165-10.000

Phillips, Dennis R.: *See—*
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Phillips Petroleum Company: *See—*
Bobsein, Rex L., 5,057,592, Cl. 528-174.000
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Johnson, Marvin M.; Nowack, Gerhard P.; and Rezac, Mary E., 5,057,642, Cl. 585-823.000
Marienfeld, Mark L., 5,056,960, Cl. 405-270.000

Phipps, Joseph B., to Medtronic, Inc. Iontophoresis electrode. 5,057,072, Cl. 604-20.000.

Picanol N.V. naamloze vennootschap: *See—*
Salomez, Herman, 5,056,566, Cl. 139-452.000

Picha, George J., to Applied Medical Technology, Inc. Vessel occlusion device. 5,057,118, Cl. 606-158.000.

Picker International, Inc.: *See—*
Plut, Leonard F.; and Nicolay, David, 5,058,148, Cl. 378-99.000

Pidcock, Ralph. Apparatus for folding and compacting a large dimension document. 5,057,070, Cl. 493-405.000.

Pierce, Edward A.: *See—*
Eyl, Kevin A.; Kurkjian, Andrew L.; Lineman, David J.; Pierce, Edward A.; and Steiner, Joseph M., Jr., 5,058,078, Cl. 367-26.000

Pierce, Thomas V.: *See—*
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Burgkhardt, Bertram; Piesch, Ernst; Vilgis, Michael; Ikegami, Toru; and Sato, Motoyuki, 5,057,693, Cl. 250-484.100

Pigott, John M., to Motorola, Inc. Charge pump including feedback circuitry for eliminating the requirement of a separate oscillator 5,057,707, Cl. 307-296.100

Pigott, John M.; and Wollschlager, Randall T., to Motorola Inc. Noise reduction technique for breakdown diodes. 5,057,879, Cl. 357-13.000

Pilkington plc: *See—*
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Pinson, George T., to Boeing Company, The. Fiber optic mortar projectile. 5,056,406, Cl. 89-1.816.

Pioneer Electronic Corporation: *See—*
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Suzuki, Takashi; and Kato, Kyoichi, 5,058,097, Cl. 369-215.000
Ueno, Hitoshi; and Takagi, Kenichi, 5,058,090, Cl. 369-36.000.

Piotrowski, Zygmunt. Step action wheel skate. 5,056,802, Cl 280-11.115.

Pipco, Inc.: *See—*
Ray, William G.; Arbo, John C.; and Gryka, George E., 5,057,298, Cl. 423-574.00L.

Piper, Thomas C.: *See—*
Morgan, John P.; and Piper, Thomas C., 5,057,690, Cl. 250-336.100

Piramoon, Alireza, to Beckman Instruments, Inc. Hybrid centrifuge rotor. 5,057,071, Cl. 494-16.000

Pitchford, George H. Blind cleaning rack apparatus. 5,056,184, Cl. 15-268.000

Pitney Bowes Inc.: *See—*
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Schumacher, Karl H., 5,058,008, Cl. 364-401.000
Schumacher, Karl H., 5,058,030, Cl. 364-478.000

Pitts, Homer E., to Zero Coil, Inc. Firearm recoil absorber. 5,056,410, Cl. 89-37.040.
Plasta Fiber Industries, Inc.: *See*—
Miller, Douglas C., 5,056,852, Cl. 296-97.100.
Plastic Injectors, Inc.: *See*—
Burchette, Robert L., Jr., 5,057,082, Cl. 604-164.000.
Plath, Peter: *See*—
Rheinheimer, Joachim; Eicken, Karl; Plath, Peter; Paul, Gerhard; Harreus, Albrecht; Westphalen, Karl-Otto; Wuerzer, Bruno; Grossmann, Klaus; Rademacher, Wilhelm; and Jung, Johann, 5,057,143, Cl. 71-92.000.
Ploog, Klaus: *See*—
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Ploog, Uwe: *See*—
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Plumer, Mark J. Wheel nut assembly. 5,056,870, Cl. 301-9.0DN
Plut, Leonard F.; and Nicolay, David, to Picker International, Inc. Television camera control in radiation imaging. 5,058,148, Cl. 378-99.000.
Podrapsky, Jiri; and Orova, Josef, to Robert Bosch GmbH. Magneto-semiconductor ignition system. 5,056,481, Cl. 123-149.00D.
Poillon, Nannette; Melzer, Roland; and Sienko, Ronald F., to Poillon, Nannette. Golf simulator and analyzer system. 5,056,791, Cl. 273-185.00B
Polan, Ned W.: *See*—
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Polaroid Corporation: *See*—
—Kisler, Semyon, 5,056,646, Cl. 198-341.000.
Polaschegg, Hans D., to Fresenius AG. Infusion apparatus. 5,057,076, Cl. 604-67.000.
Polecat Enterprises, Inc.: *See*—
Hayes, Bernard, 5,056,819, Cl. 280-809.000.
Poll, Martin, to D. Swarovski & Co. Storage strip for gems or other small pieces. 5,056,656, Cl. 206-6.100.
Pollack, Matthew; and Hunter, Kenneth W., to Centocor, Inc. Monoclonal antibodies reactive with endotoxin core. 5,057,598, Cl 530-387.000
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Ma, Yao-Dong; and Wu, Bao-Gong, 5,056,898, Cl. 359-94.000.
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Porter, David L.; Weber, Charles F.; and Oo, Kah S., to Ford Motor Company. Vehicular speed control system with reduced gear chatter 5,056,613, Cl. 180-178.000.
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Emigh, Jonathan D.; and Porter, Raymond P., 5,056,767, Cl. 270-58.000.
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Capjon, Jan; and Nygaardsvik, Atle, 5,056,777, Cl. 272-117.000.
Poulsen, Thomas E. Method for securing a tire chain to a tire. 5,056,206, Cl. 29-428.000
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Pradl, Ferdinand: *See*—
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Pratt, John D.; and Zermeno, Mario A., to Textron Inc. Bulb fastener 5,056,973, Cl. 411-43.000
Prazisions-Werkzeug AG: *See*—
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Hageman, David C., 5,056,967, Cl. 408-230.000.
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Priester, Donnan E.: *See*—
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Primus, Frederick J.: *See*—
Shih, Lisa B.; Primus, Frederick J.; and Goldenberg, Milton D., 5,057,313, Cl. 424-85.910.
Prince Corporation: *See*—
Van Order, Kim L., 5,056,853, Cl. 296-97.900.
Prinz, Robert E. Security container for mounting to an undersurface. 5,056,342, Cl. 70-63.000.
Pritchett, Samuel D., to Texas Instruments Incorporated. Thermally optimized interdigitated transistor. 5,057,882, Cl. 357-22.000.
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Becker, Martin J.; and Gill, James G., 5,057,243, Cl. 252-305.000.
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Prodan, Hans-Joachim. Loudspeaker housing. 5,056,618, Cl. 181-199.000.
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Proebsting, Robert J., to National Semiconductor Corp. CMOS regenerative sense amplifier with high speed latching. 5,057,718, Cl. 307-530.000
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Pryor, Linda D. Solar radiation protecting device and method. 5,056,157, Cl. 2-16.000.
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Quakenbush, Allan B.: *See*—
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Quan, Ronald, to Macrovision Corporation. Method and system for scrambling and descrambling audio information signals. 5,058,159, Cl. 380-19.000.
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Quinlan, Thomas J., Jr., to Automatic Toll Systems, Inc. Fiber optic load sensing device. 5,056,884, Cl. 385-13.000.
Quinn, Robert V., to Wootton, John W., a part interest. Tree trunk smoothing device. 5,056,258, Cl. 47-1.010.
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Rabin, Brian R.; Hollaway, Michael R.; and Taylorson, Christopher J., to London Biotechnology Limited. Enzymic method of detecting analytes and novel substrates therefor. 5,057,412, Cl. 435-6.000.
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Beder, Douglas S.; Cornwall, Gordon E.; Dieno, David A.; Lang, Curtis E.; and Sloan, David S., 5,057,681, Cl. 250-208.200.
Rankin, William J.; and Holaday, Reed E., to Holaday Industries, Inc Broadband frequency meter probe. 5,057,848, Cl. 343-703.000
Rapid Mounting and Finishing Company, Cadaco Division: *See*—
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Rasch, Juergen: *See*—
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Rateick, Richard G., Jr.; and Hall, Douglas A., to Allied-Signal Inc. Thermally activated joint. 5,056,950, Cl. 403-24.000.
Rath, Alan R., to Spectroscopy Imaging Systems Corporation. Double tuned NMR coils. 5,057,778, Cl. 324-322.000
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Raudabaugh, Donald E., to Hubbell Incorporated. Arrester isolator-disconnector. 5,057,810, Cl. 337-30.000
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Ravid, Gonen. Computer gate control circuitry and apparatus to enable a single computer to simultaneously and selectively control a multiplicity of hard disk drives. 5,058,004, Cl. 364-200.000
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Ray, Rajarshi, to AT&T Bell Laboratories. Method and apparatus for inspection of specular, three-dimensional features. 5,058,178, Cl 382-8.000.
Ray, William G.; Arbo, John C.; and Gryka, George E., to Pipco, Inc Process for recovery of sulfur values from a gas stream. 5,057,298, Cl 423-574.00L
Raychem Corporation: *See*—
—Barrett, Leonard, 5,057,345, Cl. 428-35.100.
Rayis, Yousif I. VCR tape drive test cassette. 5,057,961, Cl. 360-137.000.
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Rear, Ian G. Valve assembly for a downhole to remove bore hole subsidence. 5,056,609, Cl. 175-296.000
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Rempel, Garry L.; McManus, Neil T.; and Mohammadi, Narvoz, to University of Waterloo. Polymer hydrogenation process. 5,057,581, Cl. 525-338.000.
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Iimura, Haruo; Takiguchi, Yasuyuki; Kanemoto, Akihiko; Yokoi, Kenya; and Enomoto, Takamichi, 5,056,896, Cl. 359-63.000.
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Rieche, Gerd; and Risch, Gerhard, to Jenoptik Jena G.m.b.H. Wide-angle objective. 5,056,901, Cl. 359-737.000
Riedner, Robert J.: *See—*
Greskovich, Charles D.; Minnear, William P.; Chernoch, Joseph P.; Hoffman, David M.; and Riedner, Robert J., 5,057,692, Cl. 250-361.00R.
Riegebauer, Josef: *See—*
Muhrer, Gerhard; and Riegebauer, Josef, 5,056,352, Cl. 73-4.00D
Riemenschneider, Bert R.; and Tigelaar, Howard L., to Texas Instruments Incorporated. Non-volatile memory with improved coupling between gates. 5,057,886, Cl. 357-23.500.
Riemscheid, Helmut; Cremerius, Rolf; and Bentz, Hans-Joachim, to GKN Automotive AG. Continuously controllable drive. 5,057,057, Cl. 474-69.000
Riepl, Herbert: *See—*
Herrmann, Wolfgang A.; Kulpe, Jurgen; Kellner, Jurgen; and Riepl, Herbert, 5,057,618, Cl. 556-21.000.
Riesen, Heinz, to B-Line AG. Clock having a device for planning the sex of a child according to the time selection method. 5,058,084, Cl 368-10.000.
Rigal, Jean-Pierre, to Salomon S.A. Safety ski binding. 5,056,810, Cl. 280-625.000
Rijksuniversiteit Leiden: *See—*
Bol, John F.; Cornelissen, Bernardus J. C.; and van Kan, Johannes A. L., 5,057,422, Cl. 435-240.400.
Ring, Gerard W. Electrical wiring box. 5,057,649, Cl. 174-53.000.
Rink, John L., to Xintec Corporation. Method for laser surgery. 5,057,099, Cl. 606-12.000.
Rinke, Donald F.: *See—*
Katcherian, Ricky V.; Rinke, Donald F.; Price, Raymond D.; and Hunt, Daniel R., 5,056,850, Cl. 296-93.000
Rinschler, Craig R.: *See—*
Lutz, John H.; Manniso, James L.; Rinschler, Craig R.; and Smith, Gordon R. S., 5,057,217, Cl. 210-346.000
Risch, Gerhard: *See—*
Rieche, Gerd; and Risch, Gerhard, 5,056,901, Cl. 359-737.000.
Rissel, Eva. *See—*
Birkle, Siegfried; Feucht, Hans-Dieter; Kamps, Rainer; and Rissel, Eva, 5,057,587, Cl. 526-273.000.
Ritter, Karl M., to Container Corporation of America. Box with self-locking hinged cover sections. 5,056,710, Cl. 229-143.000
Ritz, Paul, to Stein, Inc. Breading machine. 5,056,455, Cl. 118-17.000.
Rivet, Ernest: *See—*
Fitzgerald, Patrick H.; Materniak, Joyce M.; Moores, Mead S.; Openstone, Ella D.; and Rivet, Ernest, 5,057,121, Cl. 8-133.000.
Robbins & Myers/Electro-Craft, a wholly owned sub. of Robbins & Myers, Inc.: *See—*
Service, Gregg R., 5,057,684, Cl. 250-231.130
Robert Bosch GmbH: *See—*
Bertling, Johannes-Gerhard; Hess, Jurgen; Lentz, Gerd; and Heier, Christoph, 5,056,713, Cl. 237-2.00A.
Denz, Helmut; and Wild, Ernst, 5,056,484, Cl. 123-399.000
Denz, Helmut; and Wild, Ernst, 5,056,484, Cl. 123-399.000
Dorrie, Horst; and Militz, Uwe, 5,057,849, Cl. 343-722.000.
Eckert, Konrad, 5,056,488, Cl. 123-446.000.
Graner, Juergen; Kibchner, Marcel; and Kubach, Hans, 5,056,754, Cl. 251-129.160.
Haug, Heinz; and Perner, Matthias, 5,057,653, Cl. 200-19.00R.
Linder, Ernst; Hertfelder, Wilhelm; Lenz, Hans; Breuser, Erich; Moser, Winfried; and Schlembach, Hans, 5,056,309, Cl. 60-278.000.
Linder, Ernst; and Rembold, Helmut, 5,056,477, Cl. 123-90.170
Podrapsky, Jiri; and Orova, Josef, 5,056,481, Cl. 123-149.00D.
Robert, Philippe; and Basset, Pascal, to Thomson Consumer Electronics. Process and device for temporal image interpolation, with corrected movement compensation. 5,057,921, Cl. 358-140.000
Roberts, Joseph W.: *See—*
Wittich, Gerhard R.; Boatman, Scott E.; and Roberts, Joseph W., 5,057,114, Cl. 606-127.000.
Roberts, Paul W., to United States of America, National Aeronautics and Space Administration. Dual strain gage balance system for measuring light loads. 5,056,361, Cl. 73-147.000
Robertson-Ceco Corporation: *See—*
Albrecht, Raymond E.; and Gray, Charles R., 5,056,348, Cl. 72-177.000.
Robey, David M., to Lasker, R. J. Tennis stroke practice apparatus. 5,056,785, Cl. 273-29.00A.
Robinson, Michael, to Breconcherry Limited. Tank washer. 5,056,716, Cl. 239-227.000.
Robison, Steve R.: *See—*
May, Teddy J.; and Robison, Steve R., 5,056,862, Cl. 297-85.000
Roca, Alain: *See—*
Spinner, Bernard; Mauran, Sylvain; Roca, Alain; and Balat, Marianne, 5,056,591, Cl. 165-104.160

Rocci, Joseph D.; Quelly, Michael; Hallett, Robert; and Moore, Norman W., to AM Communications, Inc. Radio frequency tap unit which can be reconfigured with minimal disruption of service. 5,058,198, Cl. 455-3.000.
Rock, David A.: *See—*
Farkas, Richard W.; Rock, David A.; Miller, Louis A.; and Hilston, Eric G., 5,057,673, Cl. 219-549.000
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Hinge with hinge arm releasably connected to mounting plate. 5,056,190, Cl. 16-240.000
Rock, Erich; and Maser, Reinhard, to Julius Blum Gesellschaft m.b.H. Pull-out guide assembly for drawers or the like. 5,056,879, Cl 312-348.000.
Rockwell-CIM: *See—*
Noel, Jean P., 5,056,633, Cl. 192-35.000.
Rockwell, Ronald C.: *See—*
Lowry, Robert G.; and Rockwell, Ronald C., 5,056,444, Cl. 112-221.000.
Roda, Aldo: *See—*
Pellicciari, Roberto; Roda, Aldo; and Frigerio, Giuliano, 5,057,509, Cl. 514-182.000
Rodewald, Paul G.: *See—*
Chang, Clarence D.; and Rodewald, Paul G., 5,057,640, Cl. 585-533.000
Rodgers, Charles A. Dunnage airbag pressure controller. 5,056,558, Cl. 137-552.000
Rodgers, Juliana: *See—*
Karydas, Athanasios; and Rodgers, Juliana, 5,057,377, Cl 428-447.000
Rodman, Paul K.: *See—*
Colwell, Robert P.; O'Donnell, John; Papworth, David B.; and Rodman, Paul K., 5,057,837, Cl. 341-55.000.
Rodrigues, Jorge C.: *See—*
Barakitis, Nikolaos; Corrales, Marvin S.; and Rodrigues, Jorge C., 5,057,741, Cl. 313-619.000.
Rodriquez-Kabana, R.; and Milch, Robert A., to Igene Biotechnology Inc. Compositions for biological control of plant pathogenic nematodes. 5,057,141, Cl. 71-28.000.
Roehl, Franz: *See—*
Wenderoth, Bernd; Sauter, Hubert; Harreus, Albrecht; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, 5,057,537, Cl. 514-510.000
Roehrs, Michael R.; and Gorney, Robert E. Transceiver squelch control method and apparatus. 5,058,205, Cl. 455-35.000.
Rogers, Edward J.: *See—*
Meyer, Peter J.; Chabala, Leonard V.; and Rogers, Edward J., 5,057,654, Cl. 200-146.00R.
Roggwiller, Peter, to BBC Brown Boveri AG. Manufacturing gate turn-off thyristor having the cathode produced in two diffusion steps. 5,057,440, Cl. 437-6.000.
Roguebrune, Joseph P. A. Bathing apparatus for handicapped people and the like. 5,056,169, Cl. 4-556.000.
Rohm GmbH Chemische Fabrik: *See—*
Krieg, Manfred; Meyer, Armin; Wunderlich, Winfried; and Friederich, Rainer, 5,057,370, Cl. 428-403.000.
Rohr, Martin; and Flynn, Cormack, to Givaudan Corporation. Ethyl campholenates and dihydro derivatives thereof as flavorants and odorants. 5,057,158, Cl. 131-276.000
Roland, Erdei: *See—*
Klaus, Holzl; Roland, Erdei; Andreas, Janisch; Helmut, Wladar; Hubert, Wurthner; Hans, Hatvan; and Klaus, Damborsky, 5,056,808, Cl. 280-617.000.
Rolfe, Dick: *See—*
Gelardi, John; Rolfe, Dick; Lowry, Alan; and Lovecky, Craig, 5,056,735, Cl. 242-198.000
Rolls-Royce and Associates Limited: *See—*
Spiller, Christopher R. L., 5,057,994, Cl. 364-184.000
Romankiw, Lubomyr T.: *See—*
Gupta, Arunava; Haba, Belgacem; Hussey, Brian W.; and Romankiw, Lubomyr T., 5,057,184, Cl. 156-637.000
Romay AG: *See—*
Huber, Thomas, 5,056,194, Cl. 16-366.000.
Ronge, Georg, to Fischer, Juergen L.; and Buesselmann, Manfred. Method and apparatus for compressing, atomizing, and spraying liquid substances. 5,056,511, Cl. 128-200.140.
Roodenburg, Pieter J.: *See—*
Dessing, Jacobus P. M.; Roodenburg, Pieter J.; Aurik, Erik A.; and Borgman, Folcko P., 5,056,466, Cl. 119-28.000
Rose, James L., to Thomas, E. B. Method for cleaning pipe. 5,056,271, Cl. 51-319.000
Rose, Rene , to Schlumberger Industries. Method of making an electronic module, for insertion into an electronic memory-card body. 5,057,460, Cl. 437-217.000
Rose, Robert C.; Seiler, Larry D.; and Pappas, James L. Semaphore controlled video chip loading in a computer video graphics system 5,058,041, Cl. 364-521.000
Rosen, John B. Sun visor system. 5,056,854, Cl. 296-97.110.
Rosen, Lars-Ake; and Lundberg, Dan J., to Misomex Aktiebolag; and Misomex Aktiebolag. Burnout frame with UV-absorption. 5,057,865, Cl. 355-91.000
Rosenbalm, Allan W.; and Walters, James C., to Deere & Company. Mower-conditioner drive system. 5,056,302, Cl. 56-10.300
Rosenbaum, Werner, to London & Egazarian Associates, Inc. High-speed conveyor baggage handling system. 5,056,647, Cl. 198-460.000.
Ross, Bruce W.; Dzung, John C.; and Sanderson, Harold J., to Motorola, Inc. Electromagnetic interference suppressant assembly. 5,058,172, Cl. 381-122.000.
Ross, Eugene D.: *See—*
Narayanan, Krishna; and Ross, Eugene D., 5,057,088, Cl 604-198.000
Ross, Richard J.; and Campbell, Jerry E., to R. J. R. Polymers, Inc. Iso-thermal seal process for electronic devices. 5,056,296, Cl. 53-478.000.
Roth, Gary S.: *See—*
Chen, Michael S.; Painter, Corning F.; Pastore, Steven P.; Roth, Gary S.; and Winchester, David C., 5,057,133, Cl. 65-27.000.
Roth, Klaus, to Isover Saint-Gobain. Insulating mat for bodies of which at least portions of the surface are curved, and in particular for pipes, and the use of such a mat. 5,056,564, Cl. 138-149.000
Roth, Michael W.; and Mitzel, Glenn E., to Johns Hopkins University, The. Over-the-horizon targeting system and method. 5,056,740, Cl. 244-158.00R.
Rothfuss, Hans; Bruckner, Raimund; Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred; and Metzger, Herbert, to Didier-Werke AG. Apparatus for mounting a gas washing sink in a centered manner in a perforated brick. 5,056,762, Cl. 266-217.000.
Rothstein, Mark B. Insulated underground antenna and method for utilizing same. 5,057,844, Cl. 342-51.000
Roumagnac, Max. Device for guiding the movement on the ground of a self-driven machine. 5,056,612, Cl. 180-131.000
Rousseau, Jacques. Display device comprising rotating display elements having a plurality of faces, and display panel composed of such devices. 5,057,828, Cl. 340-764.000.
Rouyer, Pascal G.: *See—*
Allais, Jean-Philippe P. B.; Guillermond, Alain R.; and Rouyer, Pascal G., 5,056,409, Cl. 89-37.010.
Rover Group Limited: *See—*
Beadle, David E., 5,056,801, Cl. 277-178.000
Rowlette, John R.: *See—*
Bowen, Terry P.; and Rowlette, John R., 5,056,881, Cl. 359-19.000
Rowley, David: *See—*
Johnson, Joel C.; Lo, Ho W.; Rowley, David; and Irland, Terri J., 5,057,664, Cl. 219-121.690.
Ruckdeschel, Franz; Klockner, Reinhard; Jungwirth, Dieter; and Herrmann, Gero, to Dyckerhoff & Widmann AG. Bundled tensioning member for prestressing a tall structural member and method of installing same. 5,056,284, Cl. 52-230.000.
Rudy's Armature Service, Inc.: *See—*
Ulrich, Ray R., Sr., 5,057,983, Cl. 362-276.000
Ruggiero, Murray A., to Olin Corporation. Paint containing high levels of a pyrithione salt plus a copper salt. 5,057,153, Cl. 106-18.330
Ruhl, Robert C.: *See—*
Eucker, James L.; Ruhl, Robert C.; and Ruppel, Irving B., Jr., 5,057,001, Cl. 425-315.000.
Ruppel, Irving B., Jr.: *See—*
Eucker, James L.; Ruhl, Robert C.; and Ruppel, Irving B., Jr., 5,057,001, Cl. 425-315.000.
Rupprechter, Helmut: *See—*
Brustle, Klaus; Rupprechter, Helmut; and Prager, Lother, 5,056,189, Cl. 16-235.000.
Russell, James P. Corner lighting fixture with self-contained junction box. 5,057,980, Cl. 362-147.000.
Russell, Neil W. Golf practice device. 5,056,790, Cl. 273-184.00B.
Rutgers University: *See—*
Martin, Charles E.; and Johnston, Robert M., 5,057,419, Cl. 435-134.000.
Rutten, Wilhelmus P. M.: *See—*
Theunissen, Matthias J. J.; Mulder, Johanna M. L.; Haisma, Jan; and Rutten, Wilhelmus P. M., 5,057,452, Cl. 437-109.000
Ryan, John O., to Macrovision Corporation. Method and apparatus for encrypting and decrypting time domain signals. 5,058,157, Cl 380-11.000.
Rydell, Mark A.: *See—*
Parins, David J.; Rydell, Mark A.; and Stasz, Peter, 5,057,107, Cl. 606-48.000.
S&C Electric Company: *See—*
Meyer, Peter J.; Chabala, Leonard V.; and Rogers, Edward J., 5,057,654, Cl. 200-146.00R.
S. C. Johnson & Son, Inc.: *See—*
Merritt, Colleen M.; Newman, Jerry L.; Shelton, David L.; and Tsaur, Sheng-Liang, 5,057,241, Cl. 252-174.170.
S. Soga & Co.: *See—*
Wolters, Gerd-Michael; Reifenscheid, Otto; and Groddeck, Michael, 5,056,470, Cl. 123-41.840
SA Martin: *See—*
Capdebosco, Bernard, 5,057,068, Cl. 493-355.000
Saab-Scania Aktiebolag: *See—*
Nordstrom, Knut L., 5,057,834, Cl. 340-963.000
Sabel Plastechs, Inc.: *See—*
Belcher, Samuel L., 5,057,266, Cl. 264-513.000
Saber, Paik: *See—*
Chung, Paul W.; Jenkins, Michael O.; Jove, Stephen A.; Klaassen, Klaas B.; Saber, Paik; and van Peppen, Jacobus C. L., 5,057,785, Cl. 328-162.000
Sadakata, Kiyoshi, to Nippon Seiko Kabushiki Kaisha. Steering column mounting apparatus. 5,056,818, Cl. 280-777.000.
Saen, Haruo: *See—*
Urushibata, Kenichi; Sugawara, Kiyoto; Matsuda, Tatsuo; Saen, Haruo; Kojima, Keiichi; Kawasaki, Syusaku; Hatase, Hiroshi;

Saito, Katsuya; Yumoto, Tetsuo; Yoshizawa, Norio; and Kanno, Tooru. 5,057,650, Cl. 174-88.00R.

Sahai, Om P.: *See*—
Knuth, Mark E.; and Sahai, Om P., 5,057,424, Cl. 435-240.480

Saijo, Hiromitsu; Yamamoto, Shunji; and Kimura, Akio, to Minolta Camera Kabushiki Kaisha. Developer supplying device for supplying approximately constant amounts of developer. 5,057,872, Cl 355-260.000

Saika, Toshihiro: *See*—
Yamada, Katsuhiko; and Saika, Toshihiro, 5,057,889, Cl 357-23.700

Saiki, Yukihiro: *See*—
Aoki, Kazuichi; Saiki, Yukihiro; Tanno, Katushtoshi; Shiinoki, Yasuhiko; Hori, Tomoshige; Itoh, Kensuke; Nakamura, Tetsuo; and Miyawaki, Osato, 5,056,928, Cl. 374-16.000

Saimio, Jeffrey W., to Quad/Tech, Inc. Bernoulli-effect web stabilizer 5,056,431, Cl. 101-219.000

Saint Gobain Vitrage International: *See*—
Kunert, Heinz; Cornils, Gerd; and Schnitter, Heinrich, 5,057,265, Cl. 264-511.000.
Kunert, Heinz; Ohlenforst, Hans; and Cornils, Gerd, 5,057,354, Cl. 428-192.000

Saintsing, Barry L.: *See*—
Brown, Thomas W.; Creamer, Glenn E.; Cook, William R.; Norman, Alan B.; Lawson, Jerry W.; and Saintsing, Barry L., 5,056,537, Cl. 131-352.000

Saito, Katsuya: *See*—
Urushibata, Kenichi; Sugawara, Kiyoto; Matsuda, Tatsuo; Saen, Haruo; Kojima, Keiichi; Kawasaki, Syusaku; Hatase, Hiroshi; Saito, Katsuya; Yumoto, Tetsuo; Yoshizawa, Norio; and Kanno, Tooru, 5,057,650, Cl. 174-88.00R.

Saito, Osamu: *See*—
Ikeda, Takahide; Yamada, Kouichirou; Saito, Osamu; Odaka, Masanori; Tamba, Nobuo; Ogiue, Katsumi; Hiraishi, Atsushi; Watanabe, Atsuo; Hirao, Mitsuru; Fukami, Akira; Ohayashi, Masayuki; and Kuramoto, Tadashi, 5,057,894, Cl. 357-43.000.

Saito, Shinji; and Ogawa, Hiroshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,057,364, Cl. 428-323.000.

Saito, Tomotaka: *See*—
Kitagawa, Nobutaka; Muroga, Hiroki; and Saito, Tomotaka, 5,057,702, Cl. 307-268.000.

Saitou, Yoshitami; Isono, Nobuyuki; and Suzumura, Nobuyasu, to Aisin Seiki K.K. Electronically controlled automatic transmission. 5,058,014, Cl. 364-424.100

Sakabe, Munechika; and Segawa, Osamu, to Seiko Instruments Inc Sealing of cavity on reagent tray. 5,056,427, Cl. 100-211.000.

Sakaguchi, Hirokazu: *See*—
Den, Minoru; Sakaguchi, Hirokazu; Hasebe, Morihiko; Nishikawa, Shigeyoshi; Kakine, Masayoshi; and Tsujio, Shusaku, 5,057,967, Cl. 361-328.000

Sakai Chemical Industry Co., Ltd.: *See*—
Abe, Kazunobu; and Fukunaga, Takeshi, 5,057,478, Cl 502-159.000

Sakai, Kazunori: *See*—
Kuwana, Kazutaka; Okamoto, Kuniaki; Yoshida, Tsuyoshi; Ichikawa, Hiroyuki; Kamikado, Masaru; Nakanishi, Nobuyasu; Sugitani, Tatsuo; and Sakai, Kazunori, 5,056,354, Cl. 73-9.000

Sakai, Toshifumi: *See*—
Tomita, Tamaki; Asano, Hiroaki; Nakamura, Keiichi; Yamamoto, Masaji; Tanooka, Shigeo; Sakai, Toshifumi; Nakano, Tetsuya; and Morishita, Nobunao, 5,056,640, Cl. 192-85.0AA

Sakakibara, Shiro; Hasebe, Masahiro; Hattori, Masashi; and Kuroyanagi, Akihiro, to Aisin AW Kabushiki Kaisha. Continuously variable speed transmission. 5,057,061, Cl. 475-210.000

Sakakibara, Shiro: *See*—
Moroto, Shuzo; Sakakibara, Shiro; Kondo, Hidehiro; Inuzuka, Takesi; and Hasebe, Masahiro, 5,056,376, Cl. 74-335.000

Sakamoto, Hiroshi; and Miyoshi, Tadahiko, to Hitachi, Ltd. Ceramic matrices reinforced with SiC, Si_3N_4 or SiAlON fibers having a coating of C, B or BN containing SiC or Si_3N_4. 5,057,465, Cl 501-90.000

Sakamoto, Makoto, to Kawasaki Steel Corporation. Integrated circuit including programmable circuit. 5,058,074, Cl. 365-228.000

Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Kidokoro, Hideyuki; and Nagai, Yoji, 5,056,937, Cl. 384-278.000

Sakano, Riichi: *See*—
Isobe, Toshimi; and Sakano, Riichi, 5,056,330, Cl. 62-236.000.

Sakasai, Takeji: *See*—
Shiozawa, Akira; Ishikawa, Michio; Izumi, Giichi; Sakitama, Katsuhiko; Narita, Kazuhisa; Kurashige, Shuji; Sakasai, Takeji; Ohtsuki, Kazuo; Sugimura, Hideo; and Yamamoto, Hirotaka, 5,057,535, Cl. 514-428.000

Sakashita, Takeshi: *See*—
Agou, Tokinori; Sakashita, Takeshi; Shimoda, Tomoaki; Sudo, Masaru; Kuwabara, Masahiro; and Tanaka, Masahide, 5,057,585, Cl. 526-246.000

Sakata, Futoshi: *See*—
Kato, Masafumi; Sawa, Takenori; Sakata, Futoshi; and Kato, Yoshifumi, 5,056,417, Cl. 92-71.000.

Sakata, Soichiro; Yoshida, Takanori; and Okada, Takao, to Takasago Thermal Engineering Co., Ltd. Apparatus for removing static electricity from charged articles existing in clean space. 5,057,966, Cl. 361-213.000.

Sakaue, Mami; and Iida, Noriyuki, to Victor Company of Japan, Ltd Optical record medium having an improved reflection thin film 5,058,098, Cl. 369-284.000.

Sakitama, Katsuhiko: *See*—
Shiozawa, Akira; Ishikawa, Michio; Izumi, Giichi; Sakitama, Katsuhiko; Narita, Kazuhisa; Kurashige, Shuji; Sakasai, Takeji; Ohtsuki, Kazuo; Sugimura, Hideo; and Yamamoto, Hirotaka, 5,057,535, Cl. 514-428.000.

Sakurai, Koichi, to Sakuraya Corporation. Sound-sensitive dancing toy. 5,056,249, Cl. 40-414.000.

Sakurai, Seiya, to Boeing Company, The. Modular rudder pedal and brake control assembly for aircraft. 5,056,742, Cl. 244-235.000

Sakuraya Corporation: *See*—
Sakurai, Koichi, 5,056,249, Cl. 40-414.000.

Saletan, David I.: *See*—
Diaz, Zaida; and Saletan, David I., 5,057,629, Cl. 568-699.000.

Salmon, Joseph H.: *See*—
Larsen, Robert E.; Quader, Khandker N.; and Salmon, Joseph H., 5,057,715, Cl. 307-451.000

Salof, George A.: *See*—
Peterson, Joseph C.; and Salof, George A., 5,057,290, Cl. 423-140.000.

Salomez, Herman, to Picanol N.V. naamloze vennootschap. Control of weft insertion timing as a function of shed opening. 5,056,566, Cl 139-452.000

Salomon S.A. *See*—
Brischoux, Jean-Claude; and Renaud-Goud, Gilles, 5,056,809, Cl 280-617.000
Legrand, Maurice; Recher, Gilles; and Cazaillon, Jean-Mary, 5,057,170, Cl. 156-73.500
Rigal, Jean-Pierre, 5,056,810, Cl. 280-625.000.

Salzmann, Rolf: *See*—
Holz, Hermann; Salzmann, Rolf; and Wiemer, Wolfram, 5,056,893, Cl. 359-54.000

Samata, Shuichi; and Matsushita, Yoshiaki, to Kabushiki Kaisha Toshiba. Semiconductor device with improved wiring contact portion. 5,057,899, Cl. 357-68.000.

Sampson, Michael J. Fungicides. 5,057,326, Cl. 424-711.000.

Samsung Electronics Co., Ltd.: *See*—
Cho, Jun-Kuk, 5,056,333, Cl. 62-262.000.
Kang, Seo-Won, 5,058,150, Cl. 379-58.000.
Park, Il-Kun, 5,058,130, Cl. 375-12.000
Yu, Jaiwhan, 5,058,066, Cl. 365-189.050
Yun, Jong-Kyung; and Kwon, Oh-Kwang, 5,057,934, Cl 1358-335.000

Sanchez, Joseph J.: *See*—
Whitehead, Stephen P.; and Sanchez, Joseph J., 5,056,553, Cl. 137-355.270.

Sanden Corporation: *See*—
Isobe, Toshimi; and Sakano, Riichi, 5,056,330, Cl. 62-236.000.

Sanders, Anthony J., to Black & Decker Inc. Mode change mechanism for power tools. 5,056,607, Cl. 173-48.000.

Sanders, Kenneth H., to Milliken Research Corporation. Tricot knitting machine improvement. 5,056,340, Cl. 66-203.000.

Sanderson, Harold J.: *See*—
Ross, Bruce W.; Dzung, John C.; and Sanderson, Harold J., 5,058,172, Cl. 381-122.000.

Sandhu, Gurtej S.: *See*—
Fazan, Pierre C.; Chan, Hiang C.; Liu, Yauh-Ching; Sandhu, Gurtej S.; and Rhodes, Howard E., 5,057,888, Cl. 357-23.600

Sandman, Daniel J.: *See*—
Geddes, Norman J.; and Sandman, Daniel J., 5,057,878, Cl. 357-6.000.

Sankyo Kasei Co., Ltd.: *See*—
Urushibata, Kenichi; Sugawara, Kiyoto; Matsuda, Tatsuo; Saen, Haruo; Kojima, Keiichi; Kawasaki, Syusaku; Hatase, Hiroshi; Saito, Katsuya; Yumoto, Tetsuo; Yoshizawa, Norio; and Kanno, Tooru, 5,057,650, Cl. 174-88.00R

Sankyo Seiki Mfg. Co., Ltd.: *See*—
Kasai, Shigeru; Kobayashi, Susumu; and Fujishima, Makoto, 5,057,725, Cl. 310-51.000.

Sano, Tomohiko; Suzuki, Yuji; and Iwata, Kayoto, to Kao Corporation. Composition for external application. 5,057,541, Cl. 514-772.000.

Santel, Hans-Joachim: *See*—
Baasner, Bernd; Schwamborn, Michael; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,057,142, Cl. 71-90.000
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Santon, John C.; Nielsen, Kenneth R.; Armbrust, Christen M.; Shah, Pankaj B.; and Hand, Steven J., to Hewlett-Packard Company. Method of distributing computer data files. 5,058,162, Cl. 380-25.000.

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Matono, Naoto, 5,056,353, Cl. 73-7.000.
Mori, Koichi; and Kawaguchi, Tomonari, 5,056,341, Cl. 68-3.00R.
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Watanabe, Tohru, 5,057,926, Cl. 358-213.110
Yonesaki, Takahiro; Furukawa, Akio; Fujitani, Shin; Nasako, Kenji; and Yonezu, Ikuo, 5,056,318, Cl. 62-48.300.

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Yabe, Norio; Sasaki, Hideaki; and Monden, Kuniaki, 5,057,394, Cl. 430-145.000

Sapinski, Thomas A., to Visador Company. Adjustable stair rail. 5,056,283, Cl. 52-184.000

Sapre, Ajit V.: *See*—
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Sargent, Charles L.; and Antos, John M., to Thetford Corporation Self-contained RV sanitary systems. 5,056,166, Cl. 4-321.000

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Sartori, Marco, to JOBS S.p.A. Operating head chuck unit for automatic machine tools. 5,056,971, Cl. 409-201.000

Saruyama, Toshio; Takeda, Hideko; and Togashi, Atshushi, to Dow Corning Toray Silicone Company, Ltd. Platinum catalyst composition, method for its preparation and curable organopolysiloxane compositions containing same. 5,057,476, Cl. 502-158.000.

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Sasaki, Yosuke: *See*—
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Sasamura, Ross S.: *See*—
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Sasao, Masami: *See*—
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Sasso, Theodore S., to Challenge Printing Company. Pharmaceutical label. 5,056,827, Cl. 283-105.000.

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Saunders, Paul R., to SPM Instrument Inc. Electronic indicating device for coaxially aligning a pair of rotary members. 5,056,237, Cl 33-645.000.

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Sawai, Mamoru; Watanabe, Mitsugu; Suzuki, Hiroshi; and Ozaki, Keiichi, to Yazaki Corporation. Electric junction box. 5,057,026, Cl. 439-76.000.

Sawai, Yuji; and Nakahara, Toshio, to Ricoh Company, Ltd. Method of cleaning a transfer drum of an electrophotographic apparatus. 5,057,873, Cl. 355-271.000

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Wilson, John R. H.; and Sawhney, Indu, 5,057,529, Cl. 514-365.000.

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Grills, Laurence M.; Morrison, Donald L.; Saxton, Charles, Jr.; and Stein, Reuven, 5,056,678, Cl. 220-238.000.

Sayovitz, John J.; and Perkins, Cheryl A., to Kimberly-Clark Corporation. Wettable polymeric fabrics. 5,057,361, Cl. 428-290.000

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Scaglia, Enzo. Method and device to seize the end of a roving or sliver and move it to a predetermined position. 5,056,728, Cl. 242-35.60E.

Scannell, Robert F., Jr. Flotation device peripheral system. 5,057,046, Cl. 441-106.000.

Schade, Horst; and Werner, Wilko. Method and apparatus for removing pollutants from contaminated soil. 5,056,541, Cl. 134-25.100

Schaefer, Alan. Swinging feeder for livestock with insecticide application apparatus. 5,056,467, Cl. 119-159.000.

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Fock, Jurgen; Schaefer, Dietmar; and Esselborn, Eberhard, 5,057,579, Cl. 525-329.500.
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Schaus, John M., to Eli Lilly and Company. Method for agonizing a dopamine receptor. 5,057,515, Cl. 514-232.800.

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Scherer, Mark A., to Advanced Machine & Tool Corporation. Apparatus for preforming and final forming of stator coil end turns 5,056,212, Cl. 29-564.500.

Scherz, Patrick L. Archery bow peep sight. 5,056,498, Cl. 124-87.000.

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Schiller, Nicolas: *See*—
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Schipfer, Rudolf: *See*—
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Schisla, Robert M., Jr.: *See*—
Zoeller, Joseph R.; Cook, Steven L.; Outlaw, Charles E.; and Schisla, Robert M., Jr., 5,057,192, Cl. 203-46.000

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Schlick, Erich: *See*—
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Schlumberger Technology Corporation: *See*—
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Schuler, Rolf: *See—*
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Schumacher, Ivo; Stahl, Werner; Stocker, Walter; and Muller, Patrick A., to DrM, Dr.Muller AG. Filter element and method of filtration 5,057,232, Cl. 210-806.000.

Schumacher, Karl H., to Pitney Bowes Inc. Mail system with personalized training for users. 5,058,008, Cl. 364-401.000.

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Scientific-Atlanta, Inc.: *See—*
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Scott, Barbara A., executrix: *See—*
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Scuri, Vicki B. Method for manufacturing elastomeric form liners using segments of tire tread. 5,057,258, Cl. 264-138.000.

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Leuthold, Hans M.; and De Herrera, Felix, 5,057,753, Cl. 318-254.000.

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Seaton, Williams W., to CMI International, Inc. Method of and apparatus for pouring molds on a continuously moving conveyor. 5,056,584, Cl. 164-457.000

Secom Information Products Company: *See—*
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Shah, Virendra O.: *See—*
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Tanaka, Akinobu; and Hasegawa, Masazumi, to Tosoh Corporation; and Nippon Telegraph and Telephone Corporation. Photosensitive material having a silicon-containing polymer. 5,057,396, Cl 430-270.000.

Tanaka, Hirokazu; Ishikawa, Kiyomitsu; and Ogawa, Fumio, to Stanley Electric Corporation. Optical gauging apparatus. 5,056,913, Cl. 356-4.000.

Tanaka, Hiroshi: *See—*
Miyawaki, Motohisa; and Tanaka, Hiroshi, 5,056,637, Cl. 192-0.058.

Tanaka, Kenichi; Nishimura, Shinji; Kawada, Hiroshi; Yamaguchi, Katsuya; Tazaki, Yumi; Mizumura, Yumi; and Nomura, Chieko, to Hodogaya Chemical Co., Ltd. Phenylalkylimidazole compounds as fungicides. 5,057,145, Cl. 71-92.000.

Tanaka, Kenichi; Nishimura, Shinji; Kawada, Hiroshi; Yamaguchi, Katsuya; Mizumura, Yumi; and Nomura, Chieko, to Hodogaya Chemical Co., Ltd. Agricultural or horticultural fungicide. 5,057,533, Cl. 514-396.000.

Tanaka, Kuniji: *See—*
Uchiyama, Takao; Tanaka, Kuniji; and Kawamura, Mishio, 5,057,418, Cl. 435-99.000.

Tanaka, Masaaki: *See—*
Yasui, Koji; Tanaka, Masaaki; Yagi, Shigenori; and Kuzumoto, Masaki, 5,058,123, Cl. 372-99.000.

Tanaka, Masahide: *See—*
Agou, Tokinori; Sakashita, Takeshi; Shimoda, Tomoaki; Sudo, Masaru; Kuwabara, Masahiro; and Tanaka, Masahide, 5,057,585, Cl. 526-246.000.

Tanaka, Masayuki; and Ito, Koichi, to Kabushiki Kaisha Toshiba. Multi-user cordless telephone capable of discernibly notifying each user. 5,058,151, Cl. 379-61.000.

Tanaka, Saburo: *See—*
Fujita, Nobuhiko; Fujimori, Naoji; Itozaki, Hideo; Tanaka, Saburo; Harada, Keizo; and Jodai, Tetsuji, 5,057,201, Cl. 204-192.240.

Tanaka, Syozo; and Shinobu, Yoshiharu, to Sharp Kabushiki Kaisha. Cross flow fan system. 5,056,987, Cl. 415-53.100.

Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Kidokoro, Hideyuki; and Nagai, Yoji, to Daido Metal Company Ltd. Sliding bearing. 5,056,937, Cl. 384-278.000.

Tanaka, Yasuo, to Ikeda Bussan Co., Ltd. Partition plate for automotive vehicle. 5,056,846, Cl. 296-37.100.

Tanaka, Yasuo, to Ikeda Bussan Co., Ltd. Partition plate for automotive vehicle. 5,056,858, Cl. 296-146.000.

Tanaka, Yasuo: *See—*
Hirata, Toichi; Sugiyama, Genroku; Kajita, Yusuke; Aoyagi, Yukio; Yasudi, Tomohiko; Yasuda, Gen; Watanabe, Hiroshi; Izumi, Eiki; Tanaka, Yasuo; Onoue, Hiroshi; and Nakamura, Shigetaka, 5,056,312, Cl. 60-426.000.

Taneda, Ryoichi: *See—*
Kono, Yoshitsugu; Itoh, Hiroyuki; Taneda, Ryoichi; and Watanabe, Tsugio, 5,057,615, Cl. 548-497.000.

Taniguchi, Nobuyuki: *See—*
Hata, Yoshiaki; Taniguchi, Nobuyuki; Hoda, Takeo; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 5,057,857, Cl. 354-106.000.

Tanno, Katushtoshi: *See—*
Aoki, Kazuichi; Saiki, Yukihiro; Tanno, Katushtoshi; Shiinoki, Yasuhiko; Hori, Tomoshige; Itoh, Kensuke; Nakamura, Tetsuo; and Miyawaki, Osato, 5,056,928, Cl. 374-16.000.

Tanooka, Shigeo: *See—*
Tomita, Tamaki; Asano, Hiroaki; Nakamura, Keiichi; Yamamoto, Masaji; Tanooka, Shigeo; Sakai, Toshifumi; Nakano, Tetsuya; and Morishita, Nobunao, 5,056,640, Cl. 192-85.0AA.

Tapscott, Robert E.; and Levcun, Gregory A., to University of New Mexico. Copper powder fire extinguishant. 5,056,602, Cl. 169-46.000.

Tatsuoka, Toshio; Suzuki, Kenji; Satoh, Fumio; Miyabi, Seiji; and Sumoto, Kunihiro, to Suntory Limited. Compounds effective as cerebral schemia treating agents. 5,057,514, Cl. 514-227.500.

Tawara, Yoshio: *See—*
Nagata, Hiroaki; Ohashi, Ken; Tawara, Yoshio; and Uesaka, Kenichi, 5,057,165, Cl. 148-102.000.

Taylor, Chandler R., Jr.; Stauffer, Harold F., Jr.; and Tomczuk, Bruce E., to A. H. Robins Company Incorporated. 3-amino-5-arylpyrazole-4-acetic acid derivatives exhibiting therapeutic effects. 5,057,534, Cl. 514-404.000.

Taylor, Douglas R., to Gec-Marconi Limited. VTOL aircraft with movable undercarriage. 5,056,737, Cl. 244-7.00B.

Taylor Kerr (Couplings) Limited: *See—*
Webb, Ian R.; Taylor, William; and Taylor, Neil J. T., 5,056,833, Cl. 285-112.000.

Taylor, Neil J. T.: *See—*
Webb, Ian R.; Taylor, William; and Taylor, Neil J. T., 5,056,833, Cl. 285-112.000.

Taylor, William: *See—*
Webb, Ian R.; Taylor, William; and Taylor, Neil J. T., 5,056,833, Cl. 285-112.000.

Taylorson, Christopher J.: *See—*
Rabin, Brian R.; Hollaway, Michael R.; and Taylorson, Christopher J., 5,057,412, Cl. 435-6.000.

Tazaki, Yumi: *See—*
Tanaka, Kenichi; Nishimura, Shinji; Kawada, Hiroshi; Yamaguchi, Katsuya; Tazaki, Yumi; Mizumura, Yumi; and Nomura, Chieko, 5,057,145, Cl. 71-92.000

TDK Corporation: *See—*
Ito, Tomio; Miyazaki, Hideyuki; Moriya, Hideyuki; and Wakabayashi, Kazuhito, 5,057,957, Cl. 360-123.000.
Shiba, Haruo; Ikebe, Masaru; and Ishida, Toshihiko, 5,057,960, Cl. 360-133.000.

Teac Corporation: *See—*
Arai, Minoru; and Kato, Yukihiro, 5,057,787, Cl. 330-254.000.

Teach, Terry F.: *See—*
Farrell, Michael D.; Teach, Terry F.; and Evers, John N., 5,058,032, Cl. 364-510.000.

Technion Research and Development Foundation Ltd.: *See—*
Yahalom, Joseph, 5,057,388, Cl. 430-5.000.

TechTeam, Inc.: *See—*
Joner, Bruno; and Williams, John W., 5,056,408, Cl. 89-1.510.

Tecnomare S.p.A.: *See—*
Falbo, Dario; Garbuglia, Emanuele; Da Prat, Felice; and Belleli, Riccardo, 5,056,828, Cl. 285-12.000

Teems, Van L.: *See—*
May, Benjamin J., 5,056,977, Cl. 414-12.000.

Teeter, Roger C.; and Smith, Lawrence C., to STL International, Incorporated. Automatically releasing ski binding. 5,056,803, Cl. 280-14.200

Telama, Ari, to Valmet Paper Machinery Inc. Method of making a paper machine roll. 5,056,220, Cl. 29-895.320.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Daulasim, Khamphuc, 5,058,135, Cl. 375-42.000.

Telefunken Systemtechnik GmbH: *See—*
Heitjohann, Frank; Wagner, Bernhard; and Koreis, Alfred, 5,057,799, Cl. 333-81.00R.

Telephone Connection, The: *See—*
Solomon, Merrill; and Kimball, John, 5,058,152, Cl. 379-67.000.

Temmer, Stephan F. Public address system. 5,058,169, Cl. 381-82.000.

Templet, Vicki, to Wallace Computer Services, Inc. Referencing device. 5,056,825, Cl. 283-36.000.

Teng, Clarence W.: *See—*
Yashiro, Masaaki; Morinaga, Shigeki; and Teng, Clarence W., 5,057,887, Cl. 357-23.600

Tennefoss, Michael R., to Stellar Systems Incorporated. Security map display and alarm monitor. 5,057,818, Cl. 340-525.000.

Terabayashi, Gosaku: *See—*
Fukumoto, Ryoichi; Yamamoto, Tokihiko; Terabayashi, Gosaku; and Hamada, Eiichi, 5,056,182, Cl. 15-250.200.

Terstappen, Leon W. M. M.; Loken, Michael R.; and Shah, Virendra O., to Becton, Dickinson and Company. Method for discriminating between intact and damaged cells in a sample. 5,057,413, Cl. 435-6.000

Terumo Kabushiki Kaisha: *See—*
Go, Takafumi; and Fujii, Tadashi, 5,056,527, Cl. 128-702.000.
Suzuki, Kensuke; and Kira, Norisuke, 5,057,074, Cl. 604-49.000.

Tervo, John N., to Allied-Signal Inc. Butterfly-type check valve. 5,056,557, Cl. 137-527.800.

Tessier, Paul A.: *See—*
Simons, Tad D.; Stawitcke, Frederick A.; Reed, William M.; and Tessier, Paul A., 5,056,992, Cl. 417-474.000.

Tetherton, Cyril F., to Cubic Automatic Revenue Collection Group. Turnstile system. 5,056,261, Cl. 49-47.000

Teti, George J.: *See—*
Stiver, C. Edward; Teti, George J.; Pearson, Charles S.; and Brown, Kenneth R., 5,056,351, Cl. 72-402.000.

Tetronix, Inc.: *See—*
Pepper, Steven H., 5,057,771, Cl. 324-158.00R.

Texaco Inc.: *See—*
Herbstman, Sheldon; and Nalesnik, Theodore E., 5,057,123, Cl. 44-334.000.

Texas Instruments Incorporated: *See—*
Fritz, Galen F., 5,057,461, Cl. 437-220.000.
Gill, Manzur; and McElroy, David J., 5,057,446, Cl. 437-43.000
Hutter, Louis N., 5,057,443, Cl. 437-31.000.
Kleven, Lawrence P.; and Carlos, Mark C., 5,057,746, Cl. 315-106.000.
Parker, Sidney G.; and Walker, Sam R., 5,057,487, Cl. 505-1.000.
Paterson, James L., 5,057,447, Cl. 437-43.000.
Pritchett, Samuel D., 5,057,882, Cl. 357-22.000.
Riemenschneider, Bert R.; and Tigelaar, Howard L., 5,057,886, Cl. 357-23.500.
Strott, Douglas B.; White, Timothy; Kawate, Keith W.; Wiecek, Thomas; Cobb, Carleton M., III; and Nott, Sepideh H., 5,057,811, Cl. 338-22.00R.
Yamashita, Takahisa; and Kayanuma, Kazuo, 5,056,495, Cl. 123-549.000.
Yashiro, Masaaki; Morinaga, Shigeki; and Teng, Clarence W., 5,057,887, Cl. 357-23.600.

Texas Medical Instruments, Inc.: *See—*
Brooks, Timothy K., 5,058,051, Cl. 364-900.000.

Textron Inc.: *See—*
Pratt, John D.; and Zermeno, Mario A., 5,056,973, Cl. 411-43.000.

Textured Yarn Company, Inc.: *See—*
Schwartz, Nathan G.; and Prosceno, Harry A., 5,056,200, Cl. 28-258.000

Tezuka, Etsuhiro; Kaji, Koichiro; and Ichinose, Toru, to Yamaha Hatsudoki Kabushiki Kaisha. Internal combustion engine having multiple carburetors and a starting mixture. 5,056,474, Cl. 123-52.0MB.

Th. Goldschmidt AG: *See—*
Fock, Jurgen; Schaefer, Dietmar; and Esselborn, Eberhard, 5,057,579, Cl. 525-329.500.
Fock, Jurgen; Schaefer, Dietmar; and Esselborn, Eberhard, 5,057,580, Cl. 525-329.500.

Thacker, Charles P., to Digital Equipment Corporation. Transmitting high-bandwidth signals on coaxial cable. 5,058,131, Cl. 375-36.000.

Thames Water PLC: *See—*
Reid, John M. C.; Nason, Robert B.; and James, David F., 5,057,213, Cl. 210-94.000.

Thatcher, William B., Jr.: *See—*
Banker, Robert O.; Schaubs, Randolph; Harney, Michael; McMullan, Jay C., Jr.; Wasilewski, Anthony; Durden, Gregory S.; Haman, Rdy T., Jr.; Naddor, David; and Thatcher, William B., Jr., 5,058,160, Cl. 380-20.000.

The, Ka-Heng: *See—*
Ooi, Boon K.; Liou, Shiann-Ming; The, Ka-Heng; and Gould, Norman L., 5,057,907, Cl. 357-80.000.

Thermo King Corporation: *See—*
Haley, James H., 5,056,324, Cl. 62-115.000

Theroux, Robert L.; and Abnoosi, Fatemeh, to K and M Electronics, Inc. Modular power supply. 5,057,988, Cl. 363-59.000.

Thetford Corporation: *See—*
Sargent, Charles L.; and Antos, John M., 5,056,166, Cl. 4-321.000.

Theunissen, Matthias J. J.; Mulder, Johanna M. L.; Haisma, Jan; and Rutten, Wilhelmus P. M., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 5,057,452, Cl. 437-109.000.

Thobe, Nicholas D.: *See—*
Dammeyer, Ned E.; Sherman, Nicholas J.; and Thobe, Nicholas D., 5,057,728, Cl. 310-77.000

Thoene, Jochen, to Wilkinson Sword GmbH. Razor and process for manufacturing a surface of low frictional resistance on a razor. 5,056,221, Cl. 30-41.000.

Thoma, John A.: *See—*
Whitfill, Craig E.; Gyles, Nicholas R.; and Thoma, John A., 5,057,314, Cl. 424-89.000.

Thomas, Alan E.: *See—*
Clark, Richard J.; and Thomas, Alan E., 5,057,119, Cl. 606-169.000.

Thomas & Betts Corporation: *See—*
Noorily, Peter, 5,057,029, Cl. 439-160.000.

Thomas, David K., to Renishaw plc. Signal transmission system for machine tools, inspection machines, and the like. 5,056,235, Cl. 33-503.000.

Thomas, E. B.: *See—*
Rose, James L., 5,056,271, Cl. 51-319.000.

Thomas, Glenn R.: *See—*
McKee, Jere L.; Gula, Lance; and Thomas, Glenn R., 5,057,806, Cl. 335-9.000.

Thomas Industries, Inc.: *See—*
Carson, Douglas W.; and Kusmar, Raymond J., 5,057,979, Cl. 362-147.000

Thomas, John Henry, III; and Singh, Bawa, to Consortium for Surface Processing, Inc. Triode plasma reactor with phase modulated plasma control. 5,057,185, Cl. 156-643.000.

Thomas, Patrick S.: *See—*
Eyzaguirre, Ramon C.; and Thomas, Patrick S., 5,056,502, Cl. 126-247.000.

Thomas, Robert N., to Wind Harvest Co., Inc. Vertical windmill with omnidirectional diffusion. 5,057,696, Cl. 290-44.000.

Thompson, Bruce A.: *See—*
Ozaki, Shinya; Yamada, Masaki; Milthorp, Brian A.; and Thompson, Bruce A., 5,057,950, Cl. 360-72.200.

Thompson, Mark W.; Martz, Donald R.; and Helm, George D., to Harris Corporation. Device and method for bi-directional amplification with a JFET. 5,057,791, Cl. 330-277.000.

Thomson Consumer Electronics: *See—*
Robert, Philippe; and Basset, Pascal, 5,057,921, Cl. 358-140.000.

Thomson CSF: *See—*
Arditty, Herve J.; Puech, Claude; and Papuchon, Michel, 5,056,919, Cl. 356-350.000.
Barbier, Bruno; Ediar, Serge; and Brun, Jean, 5,057,744, Cl. 315-10.000.
Bertheas, Jean; Moresco, Gilles; and Dufourco, Philippe, 5,058,082, Cl. 367-130.000.
Gulli, Christian; Le Gall, Jean; and Grall, Georges, 5,058,081, Cl. 367-123.000.

Thomson Semiconducteurs: *See—*
Gaultier, Jean Marie; and Devin, Jean, 5,058,069, Cl. 365-200.000.

Thornfeldt, Carl R., to Dermatologic Research Corporation. Treatment of pruritis with esters and amides. 5,057,500, Cl. 514-53.000.

Thornfeldt, Carl R., to Dermatologic Research Corporation. Methods for treatment of papulosquamous and eczematous diseases. 5,057,501, Cl. 514-53.000.

Thorsen, George B., to Harnischfeger Corporation. Apparatus and method for straightening crane rails. 5,056,671, Cl. 212-147.000.

Thyssen Industrie AG: *See—*
Manschwetus, Helmut, 5,056,394, Cl. 83-694.000.

Tielemans, Johannes P. J.: *See—*
de Haan, Gerard; de Poortere, Gerrit F. M.; and Tielemans, Johannes P. J., 5,057,919, Cl. 358-136.000.

Tiemann, Roland; and Churchill, Kevin. Sheathing device for after use protection from a syringe needle. 5,057,079, Cl. 604-110.000.

Tiesler, Roy F.; and Kaski, Mark L., to General Motors Corporation. Soft touch door handle. 5,056,838, Cl. 292-336.300.

Tigelaar, Howard L.: *See—*
Riemenschneider, Bert R.; and Tigelaar, Howard L., 5,057,886, Cl. 357-23.500.

Tiley, Edward P.: *See—*
Dawson, Michael J.; Noble, David; Lawrence, Gordon C.; Fletton, Richard A.; Lane, Stephen J.; Ramsay, Michael V. J.; Pereira, Oswy Z.; Sutherland, Derek R.; and Tiley, Edward P., 5,057,536, Cl. 514-450.000.

Tinkham, Winslow F.: *See—*
Papastavros, Theodore G.; Alexander, Samuel A.; Benedict, Michael D.; Cioffi, Vincent; Hodgdon, Russell B.; Richard, Emery; and Tinkham, Winslow F., 5,056,996, Cl. 425-110.000.

Tirums, Andrew T., to Kaiser Aerospace & Electronics Corporation. Form-fitting, energy-absorbing material and method for making the same. 5,056,162, Cl. 2-412.000.

Tischer, Werner, to Zahnradfabrik Friedrichschafen, AG. Hydrostatic steering device. 5,056,311, Cl. 60-384.000.

TMC Corporation: *See—*
Klaus, Holzl; Roland, Erdei; Andreas, Janisch; Helmut, Wladar; Hubert, Wurthner; Hans, Hatvan; and Klaus, Damborsky, 5,056,808, Cl. 280-617.000.

Tobisch, Josef: *See—*
von Ardenne, Alexander; Madler, Eckehard; Wehner, Bernd; Richter, Kurt; Schiller, Nicolas; Tobisch, Josef; and Hahnel, Gunter, 5,057,688, Cl. 250-307.000.

Tobler, Peter, to Sitag AG. Rocking chair, particularly office chair construction. 5,056,866, Cl. 297-302.000.

Tobler, William E.: *See—*
Aimone, Michael G.; LoRusso, Julian A.; and Tobler, William E., 5,056,378, Cl. 74-858.000.

Toda, Hideaki: *See—*
Kagawa, Seiji; Toda, Hideaki; and Nomura, Shinichiro, 5,057,252, Cl. 264-22.000.

Togashi, Atshushi: *See—*
Saruyama, Toshio; Takeda, Hideko; and Togashi, Atshushi, 5,057,476, Cl. 502-158.000.

Tokai Rubber Industries, Ltd.: *See—*
Hamada, Masaaki; and Mishima, Masaaki, 5,056,763, Cl. 267-141.000

Tokinaga, Daizo: *See—*
Imai, Kazumichi; Tokinaga, Daizo; Kobayashi, Teruaki; Yasuda, Kenji; Nagai, Keiichi; and Takahashi, Satoshi, 5,057,438, Cl. 436-516.000.

Tokitoh, Yasuo; and Yoshimura, Noriaki, to Kuraray Co., Ltd. Process for continuous production of octa-2,7-dien-1-ol. 5,057,631, Cl. 568-909.500.

Tokunaga, Fumihiro; Nakagawa, Jun; Okita, Tsutomu; and Kawamata, Toshio, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,057,373, Cl. 428-413.000.

Tokushima, Shyoji; and Watanabe, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for controlling the distribution of drive power for motor vehicles. 5,056,614, Cl. 180-248.000.

Tokushima, Takashiga: *See—*
Kurokawa, Toshikazu; Sumimoto, Hiroshi; Tokushima, Takashiga; and Suemori, Tadao, 5,056,472, Cl. 123-52.0MV.

Tokyo Automatic Machinery Works, Ltd.: *See—*
Nagahashi, Toshio; Kobayashi, Hisafumi; and Sato, Minoru, 5,057,066, Cl. 493-317.000.

Tokyo Electric Co., Ltd.: *See—*
Hirosaki, Yukihiro, 5,056,429, Cl. 101-93.010.
Norigoe, Takashi, 5,056,942, Cl. 400-124.000.
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,056,432, Cl. 101-227.000.

Tokyo Ohka Kogyo Co., Ltd.: *See—*
Miyabe, Masanori; Kohara, Hidekatsu; and Nakayama, Toshimasa, 5,057,397, Cl. 430-270.000.

Tolbert, Douglas. Valved fuel dispensing container. 5,056,691, Cl. 222-466.000.

Tolman, Richard L.: *See—*
Johnston, David B. R.; MacCoss, Malcolm; Marburg, Stephen; Meurer, Laura C.; and Tolman, Richard L., 5,057,517, Cl. 514-254.000.

Tom, Glenn M.; and McManus, James V., to Novapure Corporation. Composition, process, and apparatus, for removal of water and silicon mu-oxides from chlorosilanes. 5,057,242, Cl. 252-194.000.

Tomczuk, Bruce E.: *See—*
Taylor, Chandler R., Jr.; Stauffer, Harold F., Jr.; and Tomczuk, Bruce E., 5,057,534, Cl. 514-404.000.

Tomidokoro, Yoshinori: *See—*
Yoshino, Hiroyuki; and Tomidokoro, Yoshinori, 5,058,009, Cl 364-408.000.

Tominaga, Toshihiko: *See—*
Kuboki, Shigeo; Sugimoto, Norihiko; Inada, Syunji; Ueno, Masahiro; Harakawa, Takeshi; Inada, Kazuhisa; Tominaga, Toshihiko; and Nakamura, Yasushi, 5,058,114, Cl. 371-19.000

Tominaga, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Resin-sealed rotary actuator for variable shock absorber. 5,057,729, Cl. 310-89.000.

Tomioka, Yuko; Koizumi, Hiroshi; and Kijima, Masatsugu, to Kabushiki Kaisha Topcon. Contrast adjustor for aiming laser. 5,057,102, Cl. 606-004.000.

Tomisaka, Dennis M.; and Toomey, John C., to Medex, Inc. Probe for blood gas sensing. 5,056,520, Cl. 128-634.000.

Tomishima, Hiroshi: *See—*
Tsuchiya, Kazuhiro; Nishiyama, Toshikazu; and Tomishima, Hiroshi, 5,057,374, Cl. 428-426.000.

Tomita, Tamaki; Asano, Hiroaki; Nakamura, Keiichi; Yamamoto, Masaji; Tanooka, Shigeo; Sakai, Toshifumi; Nakano, Tetsuya; and Morishita, Nobunao, to Toyota Motor Corporation; and Toyoda Koki Kabushiki Kaisha. Torque transmission device for a four-wheel drive vehicle. 5,056,640, Cl. 192-85.0AA.

Tomiya, Masaki: *See—*
Suzuki, Masamichi; Tomiya, Masaki; and Kuwabara, Yoshiharu, 5,058,119, Cl. 372-34.000.

Tomochika, Yasuhito: *See—*
Kameno, Ryoki; Tomochika, Yasuhito; Tamagawa, Takao; and Fujimoto, Yoshiki, 5,056,963, Cl. 407-1.000.

Tomomura, Yoshitaka; and Kitagawa, Masahiko, to Sharp Kabushiki Kaisha. Process for preparing epitaxial II-VI compound semiconductor. 5,057,183, Cl. 156-610.000.

Tonen Sekiyukagaku Kabushiki Kaisha: *See—*
Kagawa, Seiji; Toda, Hideaki; and Nomura, Shinichiro, 5,057,252, Cl. 264-22.000.

Tong, Ho-Ming: *See—*
Mok, Lawrence S.; Schwall, Robert E.; and Tong, Ho-Ming, 5,057,909, Cl. 357-81.000.

Toomey, John C.: *See—*
Tomisaka, Dennis M.; and Toomey, John C., 5,056,520, Cl 128-634.000.

Toray Industries, Inc.: *See—*
Nishiura, Eiichi; and Ando, Katsutoshi, 5,057,710, Cl. 307-400.000.

Torii, Koshi; Hayashi, Seiji; Sonobe, Shigenori; and Senoo, Shigeru, to Nippondenso Co., Ltd. High power supply for motor vehicle. 5,057,763, Cl. 322-8.000.

Torikai, Toshitaka, to NEC Corporation. Planar heterojunction avalanche photodiode. 5,057,891, Cl. 357-30.000.

Toril Winding Machine Co., Ltd.: *See—*
Kitazawa, Makoto, 5,056,567, Cl. 139-457.000.

Torrington Company, The: *See—*
Ahlman, S. Robert; Dunn, William E.; and Magazian, Harry, 5,056,938, Cl. 384-286.000.

Torti, Victor A.; Nelson, Gary E.; Keene, R. Laurence; and Kalmakis, George P., to Matrix Technologies Corporation. Adjustable multichannel pipetter. 5,057,281, Cl. 422-100.000.

Toshiba Glass Co. Ltd.: *See—*
Burgkhardt, Bertram; Piesch, Ernst; Vilgis, Michael; Ikegami, Toru; and Sato, Motoyuki, 5,057,693, Cl. 250-484.100.

Tosoh Corporation: *See—*
Tanaka, Akinobu; and Hasegawa, Masazumi, 5,057,396, Cl 430-270.000.

Toter, Inc.: *See—*
Niederer, Kurt W.; and Prout, John T., 5,056,979, Cl. 414-408.000

Tottori, Takeshi: *See—*
Inagoya, Osamu; Tottori, Takeshi; Nakagawa, Kazunari; Mikami, Hirosuke; and Fujiwara, Hideo, 5,057,955, Cl. 360-121.000.

Towle, Brian D.: *See—*
Goetz, Glenn E.; Towle, Brian D.; and Eveland, Michael J., 5,056,688, Cl. 222-146.600.

Toyama, Tsuyoshi: *See—*
Kohda, Kenji; Kouro, Yasuhiro; Makihara, Hiroyasu; and Toyama, Tsuyoshi, 5,058,071, Cl. 365-200.000.

Toyoda Gosei Co., Ltd.: *See—*
Komori, Takahiro; Fujihara, Kazuo; and Iwata, Hiroshi, 5,056,420, Cl. 98-2.000.
Shiraki, Kouji; Yamamoto, Tadashi; and Shinto, Hiroaki, 5,056,814, Cl. 280-731.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Tomita, Tamaki; Asano, Hiroaki; Nakamura, Keiichi; Yamamoto, Masaji; Tanooka, Shigeo; Sakai, Toshifumi; Nakano, Tetsuya; and Morishita, Nobunao, 5,056,640, Cl. 192-85.0AA.

Toyomaki, Yoshio: *See—*
Shibayama, Yoji; and Toyomaki, Yoshio, 5,057,324, Cl 424-520.000.

Toyooka, Yutaka: *See—*
Uchida, Makoto; Toyooka, Yutaka; Kishida, Kazuo; Nakata, Akira; and Yamamoto, Naoki, 5,057,574, Cl. 525-85.000.

Toyosawa, Manabu, to Daiya Sangyo Co., Ltd. Small article holders. 5,056,677, Cl. 220-4.210.

Toyota Jidosha K.K.: *See—*
Kuwana, Kazutaka; Okamoto, Kuniaki; Yoshida, Tsuyoshi; Ichikawa, Hiroyuki; Kamikado, Masaru; Nakanishi, Nobuyasu; Sugitani, Tatsuo; and Sakai, Kazunori, 5,056,354, Cl. 73-9.000

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Asada, Toshiyuki; Higashiyama, Yasuhiko; Nakawaki, Yasunori; Suzuki, Toshitake; Abe, Akiharu; and Moriguchi, Naoki, 5,057,063, Cl. 475-278.000.
Fukumoto, Ryoichi; Yamamoto, Tokihiko; Terabayashi, Gosaku; and Hamada, Eiichi, 5,056,182, Cl. 15-250.200.
Iwatsuki, Kunihiro; Matsubara, Tooru; and Ootsubo, Hideaki, 5,058,013, Cl. 364-424.100.
Kayanuma, Nobuaki, 5,056,494, Cl. 123-519.000.
Tsukamoto, Keisuke, 5,056,491, Cl. 123-492.000.
Tsuzuki, Naoyuki; Mitsuyasu, Masaki; and Takahashi, Takeshi, 5,057,734, Cl. 310-317.000.

Toyota Motor Corporation: *See—*
Tomita, Tamaki; Asano, Hiroaki; Nakamura, Keiichi; Yamamoto, Masaji; Tanooka, Shigeo; Sakai, Toshifumi; Nakano, Tetsuya; and Morishita, Nobunao, 5,056,640, Cl. 192-85.0AA.

Tozu, Kenji: *See—*
Kuwana, Kazutaka; Yoshida, Tsuyoshi; and Tozu, Kenji, 5,058,018, Cl. 364-426.020

TP Orthodontics, Inc.: *See—*
Kesling, Christopher K., 5,057,012, Cl. 433-17.000.

TPV Energy Systems, Inc.: *See—*
Nelson, Robert E., 5,057,162, Cl. 136-253.000.

Trahan, Albert J.: *See—*
Stankosky, Michael J.; Abbott, Vaughan; and Trahan, Albert J., 5,057,139, Cl. 65-319.000.

Traiger, Mark, to Dentonaut Labs Ltd. Method and apparatus for controlling or processing operations of varying characteristics. 5,057,992, Cl. 364-148.000.

Trasmetal di Gabriele Missier: *See—*
Urban, Lino; Moscardini, Gian F.; and Missier, Gabriele, 5,056,459, Cl. 118-634.000

Travis, Charles L.: *See—*
Norris, Frank W., Jr.; Travis, Charles L.; and Benedict, Ronald, 5,056,849, Cl. 296-65.100.

Traylor, John C. A.: *See—*
Crum, Gerald W.; and Traylor, John C. A., 5,056,720, Cl. 239-698.000.

Tresper, Ernhard: *See—*
Bier, Peter; Reinking, Klaus; Bottenbruch, Ludwig; and Tresper, Ernhard, 5,057,264, Cl. 264-328.100.

Trevino, Arnold G. Fluid transfer apparatus and method. 5,056,621, Cl. 184-1.500.

Treybig, Duane S.; Sheih, Pong S.; and McIntyre, John M., to Dow Chemical Company, The. Modified epoxy resin compositions. 5,057,557, Cl. 523-404.000.

Triangle Pacific Corp.: *See—*
Kurzman, Alan M., 5,057,977, Cl. 362-125.000.

Triner, Irvin R.: *See—*
Bowen, David C.; Dambach, Philip J.; Nelligan, Joseph W., Jr.; and Triner, Irvin R., 5,057,038, Cl. 439-497.000

Trinh, Cuong; Win, Vincent K. Z.; Nouban, Behzad; and Chan, Andrew K., to Advanced Micro Device, Inc. Address transition detector for programmable logic array. 5,057,712, Cl. 307-465.000.

Tripp, Fred D.: *See—*
Sherman, Randy G.; Vreede, Marc; and Tripp, Fred D., 5,057,112, Cl. 606-79.000

Trofimenko, Swiatoslaw: *See—*
Webster, James L.; McCann, Elrey L.; Bruhnke, Douglas W.; Lerou, Jan J.; Manogue, William H.; Manzer, Leo E.; Swearingen, Steven H.; Trofimenko, Swiatoslaw; and Bonifaz, Cristobal, 5,057,634, Cl. 570-157.000.

Trotta, Robert A.: *See—*
Miller, Gary R.; Jacobson, Chester F.; and Trotta, Robert A., 5,056,222, Cl. 30-77.000

Truax, Alfred J. Rod-mountable fishing tackle holder. 5,056,256, Cl. 43-25.200

Trube, Hans: *See—*
Koukal, Heinz; Arold, Klaus; Trube, Hans; and Karioth, Gernoth, 5,056,423, Cl. 98-2.170

Truxell, Leland C. Buckler/shield for melee fighting. 5,056,155, Cl. 2-2.000

TRW Steering & Industrial Products (Japan) Co. Ltd.: *See—*
Ando, Tsuneo, 5,056,975, Cl. 411-155.000.

Tsai, Frank W. Furnace for heating process fluid and method of operation thereof. 5,057,010, Cl. 432-179.000.

Tsang, Wu S. Folding billiard table. 5,056,780, Cl. 273-3.00R.

Tsao, Techen: *See—*
Worley, Shelby D.; Tsao, Techen; and Williams, Delbert E., 5,057,612, Cl. 548-301.000.

Tsaur, Sheng-Liang: *See—*
Merritt, Colleen M.; Newman, Jerry L.; Shelton, David L.; and Tsaur, Sheng-Liang, 5,057,241, Cl. 252-174.170.

Tschida, Gunther: *See—*
Chrobaczek, Harald; and Tschida, Gunther, 5,057,572, Cl. 524-588.000

Tseng, Wu-Yang: *See—*
Corsmeier, Robert J.; and Tseng, Wu-Yang, 5,056,988, Cl. 415-173.200.

Tsubai, Yasuo; Baba, Susumu; and Yoshida, Akio, to Mitsubishi Paper Mills Limited. Silver complex diffusion transfer process. 5,057,395, Cl. 430-248.000.

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Muramatsu, Hideo; Nakatani, Munehiro; Hamano, Hiroaki; Fukushima, Shigenobu; Tsuboi, Toshio; Hamano, Kanako; Kurahashi, Yoshiyuki; and Yamamoto, Masanori, 5,057,937, Cl. 358-405.000.

Tsuchiya, Kazuhiro; Nishiyama, Toshikazu; and Tomishima, Hiroshi, to Hitachi Metals, Ltd. MnO/NiO-based nonmagnetic substrate material. 5,057,374, Cl. 428-426.000.

Tsuchiya, Toshihiro; Mitsunari, Tomoharu; and Noguchi, Mitsuaki, to Kabushiki Kaisha Hoky. Rotary brush. 5,056,181, Cl. 15-230.160.

Tsui, Gary; Heimbigner, Thomas; and Pearl, Fred, to CBC Industries, Inc. Method of controlled inventory for bushings. 5,056,965, Cl. 408-72.00B.

Tsuji, Katsuhisa; and Kogure, Masaaki, to Ricoh Company, Ltd. Method of processing colored image in multilevel gradations. 5,057,914, Cl. 358-78.000

Tsuji, Kazuhiro; Iida, Tetsuya; and Satoh, Takayuki, to Kabushiki Kaisha Toshiba. D/A converter having centered switching sequence and centered arrangement of converter segment groups. 5,057,838, Cl. 341-133.000.

Tsuji, Kazuwo: *See—*
Yoshida, Katsuhito; and Tsuji, Kazuwo, 5,057,454, Cl. 437-184.000

Tsuji, Shintaro; and Nagata, Yasuhiro, to Mitsubishi Denki Kabushiki Kaisha. Display apparatus for elevator. 5,056,629, Cl. 187-139.000

Tsujimoto, Yoshiharu: *See—*
Hayakawa, Takashi; Narikawa, Shiro; Ohashi, Kunio; and Tsujimoto, Yoshiharu, 5,057,391, Cl. 430-66.000.

Tsujio, Shusaku: *See—*
Den, Minoru; Sakaguchi, Hirokazu; Hasebe, Morihiko; Nishikawa, Shigeyoshi; Kakine, Masayoshi; and Tsujio, Shusaku, 5,057,967, Cl. 361-328.000

Tsukada, Nobuo: *See—*
Kasuga, Masao; Mori, Takayuki; and Tsukada, Nobuo, 5,056,201, Cl. 29-25.350

Tsukamoto, Keisuke, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling an air-fuel ratio in an internal combustion engine 5,056,491, Cl. 123-492.000.

Tsurumi, Hiroshi, to Fujitsu Limited. Motor rotation speed control circuit. 5,058,191, Cl. 388-811.000

Tsutomu, Hasegawa: *See—*
Yamaguchi, Yorihisa; and Tsutomu, Hasegawa, 5,056,401, Cl. 84-635.000.

Tsutsu, Hiroshi: *See—*
Akiyama, Koji; Tsutsu, Hiroshi; Ogawa, Tetsu; and Tsutsui, Hiroshi, 5,056,897, Cl. 359-72.000.

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Tsutsui, Satoru; Nuno, Katsuhiko; Inoue, Takao; and Ohkuma, Takashi, to Ricoh Company, Ltd. Still picture recorder utilizing a switch controlled timer. 5,057,925, Cl. 358-209.000.

Tsutsumi, Kiyohiko: *See—*
Morita, Sadao; Shimasaki, Haruo; and Tsutsumi, Kiyohiko, 5,058,057, Cl. 364-900.000.

Tsuzuki, Naoyuki; Mitsuyasu, Masaki; and Takahashi, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Apparatus for driving piezoelectric element for closing and opening valve member. 5,057,734, Cl 310-317.000.

Tube Forming, Inc.: *See—*
Martin, Robert E.; and Martin, Richard B., 5,056,704, Cl. 228-173.400.

Tucholski, Gary R., to Eveready Battery Co., Inc. Circuit interrupter for a galvanic cell. 5,057,382, Cl. 429-61.000

Tulac, John W.: *See—*
Preston, George D.; Kearney, Timothy E.; Phelan, Thomas A.; and Tulac, John W., 5,056,781, Cl. 273-26.00E.

Tumey, Michael L.: *See—*
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 5,057,366, Cl. 428-355.000.

Tuminaro, Raymond D.: *See—*
Atkins, Robert M.; Peterson, George E.; and Tuminaro, Raymond D., 5,057,781, Cl. 324-635.000.

Tung, Lu H.; and Griggs, Jerald A., to Dow Chemical Company, The. Polymerization process and initiator system therefor. 5,057,583, Cl. 526-175.000.

Tupper, Alan W.: *See—*
Flux, Peter R.; and Tupper, Alan W., 5,056,954, Cl. 403-330.000.

Turner, John J.; Turner, Mary J. A.; and Watt, Peter, to National Research Development Corporation. Feeding apparatus. 5,057,077, Cl. 604-77.000.

Turner, Joseph T.; Ganci, Anthony F.; Musko, Vernon J.; and Silvestri, George J., Jr., to Westinghouse Electric Corp. Stage replacement blade ring flow guide. 5,056,989, Cl. 415-189.000.

Turner, Lance H. Utility locator. 5,056,454, Cl. 116-209.000.

Turner, Leonard O.: *See—*
Kabadi, Ashok N.; Turner, Leonard O.; and Flamm, Ronald C., 5,057,023, Cl. 439-67.000.

Turner, Mary J. A.: *See—*
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Twerdochlib, Michael: *See—*
Silvestri, George J., Jr.; Stock, Alvin L.; and Twerdochlib, Michael, 5,056,986, Cl. 415-14.000.

Twist, James R., to Baroid Technology, Inc. Compensation technique for eccentered MWD sensors. 5,058,077, Cl. 367-25.000.

Ube Chemical Industries, Co., Ltd.: *See—*
Morii, Akira; Fujimura, Shunichi; and Nakayama, Kiyoshi, 5,057,367, Cl. 428-389.000

Ublacker, Peter: *See—*
Garnweidner, Peter; and Ublacker, Peter, 5,056,861, Cl. 296-188.000.

Uchida, Hideto: *See—*
Ogiso, Osamu; and Uchida, Hideto, 5,057,341, Cl. 427-387.000.

Uchida, Hiroshi; Yamauchi, Toshio; and Ichiba, Yoshiyuki, to Murata Kikai Kabushiki Kaisha. Automatic winder. 5,056,734, Cl. 242-147.00R.

Uchida, Katsuhisa: *See—*
Takesako, Kazutoh; Ikai, Katsushige; Shimanaka, Kazuo; Yamamoto, Junko; Haruna, Fumiyo; Nakamura, Teruya; Yamaguchi, Hideyo; and Uchida, Katsuhisa, 5,057,493, Cl. 514-11.000.

Uchida, Makoto; Toyooka, Yutaka; Kishida, Kazuo; Nakata, Akira; and Yamamoto, Naoki, to Mitsubishi Rayon Company, Ltd. Process for producing an α-alkyl-substituted aromatic vinyl copolymer and a thermoplastic resin composition comprising the copolymer 5,057,574, Cl. 525-85.000.

Uchida, Mikio: *See—*
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Uchikoshi, Gohji, to Nakamichi Corporation. Clock formation circuit with phase locked loop control. 5,057,705, Cl. 307-269.000.

Uchiyama, Takao; Tanaka, Kuniji; and Kawamura, Mishio, to Mitsubishi Kasei Corporation. Process for the preparation of difructose dianhydride III. 5,057,418, Cl. 435-99.000.

Uclaf, Roussel: *See—*
Heymes, Rene; and Bonnet, Alain, 5,057,512, Cl. 514-210.000.

Ueda, Hiroshi: *See—*
Hata, Yoshiaki; Taniguchi, Nobuyuki; Hoda, Takeo; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 5,057,857, Cl 354-106.000.
Yamaguchi, Hiroshi; Kishinami, Shigehito; Ueda, Hiroshi; and Bamba, Fumio, 5,056,575, Cl. 152-541.000.

Ueda, Tetsuo; Takasaki, Haruhiko; and Kurokawa, Shigeru, to Nippon Paint Co., Ltd. Electrodeposition coating method and an electropaint to be used therein. 5,057,195, Cl. 204-181.400.

Ueda, Yoshihiro; and Yamada, Takaaki, to Omron Corporation. Discrete-time AC motor control apparatus. 5,057,759, Cl. 318-616.000

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Ueno, Hitoshi; and Takagi, Keiichi, to Pioneer Electronic Corporation Magazine loading disk player. 5,058,090, Cl. 369-36.000.

Ueno, Masahiro: *See—*
Kuboki, Shigeo; Sugimoto, Norihiko; Inada, Syunji; Ueno, Masahiro; Harakawa, Takeshi; Inada, Kazuhisa; Tominaga, Toshihiko; and Nakamura, Yasushi, 5,058,114, Cl. 371-19.000

Uesaka, Kenichi: *See—*
Nagata, Hiroaki; Ohashi, Ken; Tawara, Yoshio; and Uesaka, Kenichi, 5,057,165, Cl. 148-102.000

Uesugi, Masaru: *See—*
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Uhler, G. Michael: *See—*
Durdan, W. Hugh; Stamm, Rebecca L.; and Uhler, G. Michael, 5,058,006, Cl. 364-200.000.

Ulrich, Ray R., Sr., to Rudy's Armature Service, Inc. Emergency lighting apparatus with movable protective shield adapted for use with movable environmental structure. 5,057,983, Cl. 362-276.000.

Ultra Network Technologies: *See—*
Beach, Robert; Bryers, Mark; Cox, Casey; Fall, Richard; Finn, Norman; and Laird, Douglas, 5,058,110, Cl. 370-85.600

Ultracision Inc.: *See—*
Clark, Richard J.; and Thomas, Alan E., 5,057,119, Cl. 606-169.000.

Umehara, Teruo; Takedomi, Seiki; Imai, Kuninori; and Shiokawa, Takeji, to Hitachi Metals, Ltd. Linear motor. 5,057,723, Cl. 310-12.000.

Unarco Industries, Inc.: *See—*
Highsmith, Charles E., 5,056,642, Cl. 193-35.00R

Union Carbide Chemicals and Plastics Technology Corporation: *See—*
Bhasin, Madan M., 5,057,481, Cl. 502-208.000
Hoy, Kenneth L.; Nielsen, Kenneth A.; and Bok, Hendrik F., 5,057,342, Cl. 427-422.000.

Union Oil Company of California: *See—*
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Young, Donald C., 5,057,584, Cl. 526-220.000

Unisys Corporation: *See—*
Henze, Christopher P.; Lo, David S.; and Martin, Hubert C., Jr., 5,057,986, Cl. 363-20.000.

U.S. Computer Services: *See—*
Emigh, Jonathan D.; and Porter, Raymond P., 5,056,767, Cl 270-58.000.

United States of America
Administrator National Aeronautics and Space Administration: *See—*
Kosmo, Joseph J.; and Dawn, Frederic S., 5,056,156, Cl. 2-2.10A
Agriculture: *See—*
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Air Force: *See—*
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Army: *See—*
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Energy: *See—*
Morgan, John P.; and Piper, Thomas C., 5,057,690, Cl 250-336.100.
Steinkruger, Fred J.; and Phillips, Dennis R., 5,057,269, Cl 376-192.000.
National Aeronautics and Space Administration: *See—*
Baucom, Robert M.; Snoha, John J.; and Marchello, Joseph M., 5,057,338, Cl. 427-185.000.
Dubois, Pascale C.; and vanZyl, Jakob J., 5,057,843, Cl. 342-25.000.
Kosmo, Joseph J.; and Dawn, Frederic S., 5,056,156, Cl. 2-2.10A
Roberts, Paul W., 5,056,361, Cl. 73-147.000
Shalkauser, Mary Jo W.; Whyte, Wayne A., Jr.; and Barnes, Scott P., 5,057,917, Cl. 358-135.000
Voecks, Gerald E.; and Sharma, Pramod K., 5,057,473, Cl. 502-73.000.
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Greene, Richard F.; and Gray, Henry F., 5,057,047, Cl 445-24.000.
Hammond, Russell E.; Northup, Robert L.; and Shimp, Alan G., 5,057,697, Cl. 307-66.000.
Inman, Scott M.; Lieberman, Stephen H.; and Stromvall, Erik J., 5,057,279, Cl. 422-82.070.
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Levitt, Hal L.; Anderson, Gordon W.; and Spezio, Anthony E., 5,058,190, Cl. 382-68.000.
Miller, James E., 5,057,343, Cl. 427-435.000.
Page, Robert E., 5,058,083, Cl. 367-137.000.
Sikes, Allison M.; and Brady, Robert F., Jr., 5,057,590, Cl. 528-116.000.

U.S. Philips Corporation: *See—*
Boerekamp, Jacobus G., 5,057,738, Cl. 313-440.000
de Haan, Gerard; de Poortere, Gerrit F. M.; and Tielemans, Johannes P. J., 5,057,919, Cl. 358-136.000.
De Leeuw, Dagobert M.; Klaassen, Dirk B. M.; and Mutsaers, Cornelis A. H. A., 5,057,912, Cl. 358-64.000
Denoyelle, Pascal; and Haghiri, Mohammad-Reza, 5,057,918, Cl. 358-135.000.
Frijlink, Peter, 5,056,555, Cl. 137-522.000.
Hoeberechts, Arthur M. E.; and Peters, Petrus J. M., 5,057,458, Cl 437-209.000.
Kuijk, Karel E.; and Huisman, Frederikus R. J., 5,056,894, Cl. 350-58.000.
Ney, Hermann; and Noll, Andreas, 5,058,166, Cl. 381-43.000.
Soethout, Adrianus; and Verdult, Marinus J. G., 5,057,826, Cl 340-728.000.
Theunissen, Matthias J. J.; Mulder, Johanna M. L.; Haisma, Jan; and Rutten, Wilhelmus P. M., 5,057,452, Cl. 437-109.000.
Veerhoek, Jacob J.; Van Tuijl, Adrianus J. M.; and Schuurmans, Han M., 5,057,841, Cl. 341-156.000.
Verhelst, Sebastiaan C.; Seevinck, Evert; and Baker, Keith, 5,057,774, Cl. 324-158.00R.

U.S. Plastics Corporation: *See—*
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University of British Columbia: *See—*
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University of California, The Regents of the: *See—*
Casida, John E.; Palmer, Christopher J.; Larkin, John P.; and Smith, Ian H., 5,057,508, Cl. 514-149.000.

University of Cincinnati: *See—*
Butler, David L.; Grood, Edward S.; Stouffer, Donald C.; and Glos, David L., 5,056,530, Cl. 128-774.000.

University of Kansas Med Center, The: *See—*
Malone, David G.; Vacek, James L.; and Smith, G. Scott, 5,057,105, Cl. 606-28.000.

University of Michigan, The Regents of the: *See—*
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University of Minnesota, Regents of the: *See—*
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University of New Mexico: *See—*
Tapscott, Robert E.; and Levcun, Gregory A., 5,056,602, Cl 169-46.000.

University of Pittsburgh: *See—*
Hiserodt, John C.; and Vujanovic, Nikola L., 5,057,423, Cl 435-240.230.

University of South Carolina: *See—*
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University of Tennessee Research Corporation, The: *See—*
Sheth, Atul C.; Holt, Jeffrey K.; Rasnake, Darryll G.; Solomon, Robert L.; Wilson, Gregory L.; and Herrigel, Howard R., 5,057,294, Cl. 423-244.000
van Hook, W. Alexander; Chmielewski, Andrzej G.; Zakrzewska-Trznadel, Grazyna; and Miljevic, Nada, 5,057,225, Cl. 210-640.000.

University of Waterloo: *See—*
Rempel, Garry L.; McManus, Neil T.; and Mohammadi, Narvoz, 5,057,581, Cl. 525-338.000.

Unoki, Hiromi: *See—*
Oka, Kunihiko; and Unoki, Hiromi, 5,057,492, Cl. 505-1.000.

UOP: *See—*
Engel, Dusan J.; and Vora, Bipin V., 5,057,206, Cl. 208-143.000.
Flanigen, Edith M.; Gajek, Richard T.; Lok, Brent M. T.; Patton, Robert L.; and Wilson, Stephen T., 5,057,295, Cl. 423-277.000.
Gajda, Gregory J., 5,057,635, Cl. 585-259.000
Lankton, Steven P.; Maurer, Richard T.; and James, Robert B., Jr., 5,057,125, Cl. 55-23.000.
Marcus, Bonita K.; Gioffre, Anthony J.; and Elliott, Marianne, 5,057,152, Cl. 106-3.000.
Zinnen, Hermann A., 5,057,643, Cl. 585-828.000.

Urban, Franz; and Bauer, Adolf, to Krauss-Maffei A.G. Impingement mixing apparatus. 5,057,548, Cl. 521-170.000.
Urban, Lino; Moscardini, Gian F.; and Missier, Gabriele, to Trasmetal di Gabriele Missier. Cabinet for electrostatic painting. 5,056,459, Cl. 118-634.000

Urbanic, John M.: *See—*
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Urushibata, Kenichi; Sugawara, Kiyoto; Matsuda, Tatsuo; Saen, Haruo; Kojima, Keiichi; Kawasaki, Syusaku; Hatase, Hiroshi; Saito, Katsuya; Yumoto, Tetsuo; Yoshizawa, Norio; and Kanno, Tooru, to Sumitomo Electric Industries, Ltd.; Matsushita Electric Industrial Co., Ltd.; and Sankyo Kasei Co., Ltd. Molded circuit component unit for connecting lead wires. 5,057,650, Cl. 174-88.00R.

Usagawa, Yasushi; Kagawa, Nobuaki; and Yoshida, Kazuhiro, to Konica Corporation. Silver halide photographic material. 5,057,406, Cl. 430-522.000

Usami, Susumu: *See—*
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Ushida, Susumu; and Igarashi, Sadao, to Alps Electric Co., Ltd. 2-stage differential amplifier connected in cascade. 5,057,788, Cl. 330-261.000.

Ushioda, Akira: *See—*
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Usui Kikusai Sangyo Kaisha, Limited: *See—*
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Utsumi, Kenichi: *See—*
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Dubach, Werner F., to Alfatechnic AG. Single-piece snap hinge closure. B1 4,854,473, 10-15-91, Cl. 220-335.000

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100 5,056,595
272 5,056,596
303 5,056,597
308 5,056,598
310 5,056,599
373 5,056,600

CLASS 169

46 5,056,602
48 5,056,603

CLASS 172

111 5,056,605

CLASS 173

13 5,056,606
48 5,056,607

CLASS 174

15.4 5,057,645
36 5,057,646
48 5,057,647
52.4 5,057,648
53 5,057,649
88 R 5,057,650
107 5,057,651

CLASS 175

19 5,056,608
296 5,056,609
371 5,056,610
415 5,056,611

CLASS 180

131 5,056,612
178 5,056,613
248 5,056,614
306 5,056,615

CLASS 181

156 5,056,616
173 5,056,617
199 5,056,618

CLASS 182

5 5,056,619
120 5,056,620

CLASS 184

1.5 5,056,621
6.4 5,056,622
7.4 5,056,623

CLASS 187

8.71 5,056,624
9 R 5,056,625
18 5,056,626
20 5,056,627
127 5,056,628
139 5,056,629

CLASS 188

24.13 5,056,630
322.17 Re 33,715

CLASS 192

0.058 5,056,637
0.076 5,056,639
3.29 5,056,631
3.63 5,056,632
35 5,056,633
40 5,056,634
43.2 5,056,635
45 5,056,636
85 AA 5,056,640

CLASS 193

2 R 5,056,641
35 R 5,056,642

CLASS 194

202 5,056,643
318 5,056,644
346 5,056,645

CLASS 198

341 5,056,646
460 5,056,647
468.01 5,056,648
706 5,056,649
723 5,056,650
725 5,056,651
760 5,056,652
790 5,056,653
803.6 5,056,654
812 5,056,655

CLASS 200

19 DC 5,057,652
19 R 5,057,653
146 R 5,057,654
148 B 5,057,655
517 5,057,657

CLASS 202

113 5,057,189
153 5,057,190

CLASS 203

3 5,057,191
46 5,057,192

CLASS 204

27 5,057,193
67 5,057,194
181.4 5,057,195
181.5 5,057,196
182.4 5,057,197
186 5,057,198
192.15 5,057,199
5,057,200
5,057,201
192.24 5,057,202
212

CLASS 206

6.1 5,056,656
45.34 5,056,657
63.3 5,056,658
217 5,056,659
232 5,056,660
366 5,057,656
372 5,056,661
395 5,056,662
424 5,056,663
453 5,056,664
583 5,056,665
600 5,056,666
5,056,667

CLASS 208

46 5,057,203
108 5,057,204
121 5,057,205
143 5,057,206
262.1 5,057,207

CLASS 209

166 5,057,208
167 5,057,209
212 5,057,210
448 5,057,211

CLASS 210

85 5,057,212
94 5,057,213
136 5,057,214
137 5,057,215
168 5,057,658
198.2 5,057,216
346 5,057,217
500.35 5,057,218
525 5,057,219
605 5,057,220
610 5,057,221
634 5,057,222
635 5,057,223
5,057,224
640 5,057,225
641 5,057,226
680 5,057,227
700 5,057,228
743 5,057,229
758 5,057,230
761 5,057,231
806 5,057,232

CLASS 211

13 5,056,668
40 5,056,669
87 5,056,670
149 5,056,672

CLASS 212

147 5,056,671
179 5,056,673

CLASS 215

31 5,056,674
252 5,056,675
284 5,056,676

CLASS 219

10.55 E 5,057,659
10.55 M 5,057,660
56.22 5,057,661
69.12 5,057,662
5,057,663
121.69 5,057,664
130.21 5,057,665
203 5,057,666
390 5,057,668
501 5,057,669
521 5,057,670
5,057,671
540 5,057,672
541 Re 33,716
549 5,057,673
553 5,057,674

CLASS 220

4.21 5,056,677
238 5,056,678
335 B1 4,854,473
404 5,056,679
465 5,056,680
522 5,056,681

CLASS 221

25 5,056,682
64 5,056,683
197 5,056,684

CLASS 222

82 5,056,685
129.2 5,056,686
146.5 5,056,687
146.6 5,056,688
189 5,056,689
386 5,056,690
466 5,056,691
590 5,056,692

CLASS 223

88 5,056,693
98 5,056,694

CLASS 224

42.01 5,056,695
148 5,056,696
253 5,056,697
273 5,056,698
314 5,056,699
324 5,056,700

CLASS 227

10 5,056,701

CLASS 228

123 5,056,702
158 5,056,703
173.4 5,056,704
176 5,056,705
180.2 5,056,706

CLASS 229

104 5,056,707
120.03 5,056,708
120.17 5,056,709
143 5,056,710

CLASS 232

17 5,056,711

CLASS 235

70 A 5,057,675
375 5,057,676
381 5,057,677
449 5,057,678
492 5,057,679

CLASS 236

20 R 5,056,712

CLASS 237

2 A 5,056,713
9 R 5,056,714

CLASS 239

214 5,056,715
227 5,056,716
332 5,056,717
338 Re 33,717
441 5,056,718
526 5,056,719
698 5,056,720

CLASS 241

9 5,056,721
181 5,056,722

CLASS 242

18 EW 5,056,723
18.1 5,056,724
35.5 A 5,056,726
35.50 A 5,056,725
35.6 E 5,056,728
35.6 R 5,056,727
56.2 5,056,729
75.2 5,056,730
96 5,056,731
106 5,056,732
118.32 5,056,733
147 R 5,056,734
198 5,056,735

CLASS 244

3.13 5,056,736
7 B 5,056,737
54 5,056,738
122 AG 5,056,739
158 R 5,056,740
214 5,056,741
235 5,056,742

CLASS 248

118 5,056,743
154 5,056,744
183 5,056,745
188 5,056,746
231.8 5,056,747
316.7 5,056,748
346.1 5,056,749
354.3 5,056,750
479 5,056,751
500 5,056,752
542 5,056,753

CLASS 250

207 5,057,680
208.2 5,057,681
214 B 5,057,683
214 C 5,057,682
227.25 5,056,915
231.13 5,057,684
231.14 5,057,685
231.16 5,057,686
239 5,057,687
307 5,057,688
310 5,057,689
336.1 5,057,690
339 5,057,691
361 R 5,057,692
484.1 5,057,693
551 5,057,694
575 5,057,695

CLASS 251

129.16 5,056,754
148 5,056,755
149.6 5,056,756
214 5,056,757
5,056,758
330 5,056,759

CLASS 252

8.51 5,057,234
8.551 5,057,233
46.6 5,057,235
56.S 5,057,247
79.1 5,057,236
97 5,057,237
99 5,057,238
174.11 5,057,239
174.15 5,057,240
174.17 5,057,241
194 5,057,242
305 5,057,243
501.1 5,057,244
511 5,057,245
545 5,057,246
582 5,057,248

CLASS 254

406 5,056,760

CLASS 256

34 5,056,761

CLASS 261

72.1 5,057,249
112.2 5,057,250
5,057,251

CLASS 264

22 5,057,252
24 5,057,253
29.2 5,057,254
40.5 5,057,255
113 5,057,256
138 5,057,257
5,057,258
5,057,259
166 5,057,260
205 5,057,261
210.6 5,057,262
211 5,057,263
249 5,057,264
328.1 5,057,265
511 5,057,266
513 5,057,267
541

CLASS 266

217 5,056,762

CLASS 267

141 5,056,763
291 5,056,764

CLASS 269

20 5,056,765
136 5,056,766

CLASS 270

58 5,056,767

CLASS 271

3 5,056,768
5,056,769
97 5,056,770
113 5,056,604
114 5,056,771
184 5,056,772
204 5,056,773
213 5,056,774
227 5,056,775

CLASS 272

70.3 5,056,776
117 5,056,777
122 5,056,778
134 5,056,779

CLASS 273

3 R 5,056,780
26 E 5,056,781
26 R 5,056,782
5,056,783
5,056,784
29 A 5,056,785
29 R 5,056,786
77 A 5,056,788
148 B 5,056,787
153 R 5,056,789
184 B 5,056,790
185 B 5,056,791
278 5,056,792
282 5,056,793
298 5,056,794
400 5,056,795
402 5,056,796
5,056,797
460 5,056,798

CLASS 277

47 5,056,799
68 5,056,800
178 5,056,801
231 B1 4,799,695

CLASS 280

11.115 5,056,802
14.2 5,056,803
30 5,056,804
47.36 5,056,805
143 5,056,806
610 5,056,807
617 5,056,808
5,056,809
625 5,056,810
707 5,056,811
5,056,812
5,056,813
731 5,056,814
736 5,056,815
751 5,056,816
770 5,056,817
777 5,056,818
809 5,056,819
814 5,056,820
816 5,056,821

CLASS 281

44 5,056,822
49 5,056,823

CLASS 283

36 5,056,824
5,056,825
67 5,056,826
105 5,056,827

CLASS 285

12 5,056,828
5,056,829
15 5,056,830
93 5,056,831
112 5,056,833
138 5,056,832
325 5,056,834

CLASS 290

44 5,057,696

CLASS 292

207 5,056,835
288 5,056,836
307 R 5,056,837
336.3 5,056,838

CLASS 293

117 5,056,839
120 5,056,840

CLASS 294

1.1 5,056,841
1.4 5,056,842
27.1 5,056,843
106 5,056,844
118 5,056,845

CLASS 296

37.1 5,056,846
50 5,056,847
63 5,056,848
65.1 5,056,849
93 5,056,850
95.1 5,056,851
97.1 5,056,852
97.11 5,056,854
97.9 5,056,853
98 5,056,855
100 5,056,856
107 5,056,857
146 5,056,858
180 5,056,859
180.5 5,056,860
188 5,056,861

CLASS 297

85 5,056,862
188 5,056,864
250 5,056,865
302 5,056,866
410 5,056,867
411 5,056,863
417 5,056,868
485 5,056,869

CLASS 301

9 DN 5,056,870
36 R 5,056,871
37 SS 5,056,872

CLASS 303

33 5,056,873
50 5,056,874

CLASS 307

66 5,057,697
5,057,698
98 5,057,699
125 5,057,700
262 5,057,701
268 5,057,702
269 5,057,703
5,057,705
273 5,057,706
296.1 5,057,707
296.2 5,057,704
303 5,057,708
350 5,057,709
400 5,057,710
443 5,057,711
446 5,057,713
5,057,714
451 5,057,715
465 5,057,712
491 5,057,716
492 5,057,717
530 5,057,718
570 5,057,719
571 5,057,720
5,057,721
605 5,057,722

CLASS 310

12 5,057,723
17 5,057,724
51 5,057,725
67 R 5,057,726
68 B 5,057,727
77 5,057,728
89 5,057,729
91 5,057,730
180 5,057,731
208 5,057,732
269 5,057,733
317 5,057,734

CLASS 312

1 5,056,875
221 5,056,876
5,056,877
255 5,056,878
348 5,056,879

CLASS 313

318 5,057,735
345 5,057,736
407 5,057,737
440 5,057,738
477 R 5,057,739
542 5,057,740
619 5,057,741
623 5,057,742
639 5,057,743

CLASS 315

10 5,057,744
98 5,057,745
106 5,057,746
158 5,057,747
224 5,057,748
247 5,057,749
248 5,057,750
5,057,751
289 5,057,752

CLASS 318

254 5,057,753
483 5,057,754
568.10 5,057,755
569 5,057,756
599 5,057,757
603 5,057,758
616 5,057,759
807 5,057,760

CLASS 320

2 5,057,761
15 5,057,762

CLASS 322

8 5,057,763
14 5,057,764

CLASS 323

288 5,057,765

CLASS 324

71.3 5,057,766
96 5,057,767
115 5,057,768
127 5,057,769
149 5,057,770
158 P 5,057,772
158 R 5,057,771
5,057,773
5,057,774
5,057,775
309 5,057,776
318 5,057,777
322 5,057,778
431 5,057,779
537 5,057,780
635 5,057,781
639 5,057,782
710 5,057,783

CLASS 328

134 5,057,784
162 5,057,785

CLASS 329

304 5,057,786

CLASS 330

254 5,057,787
261 5,057,788
264 5,057,789
5,057,790
277 5,057,791
288 5,057,792

CLASS 331

1 A 5,057,793
5,057,794
78 5,057,795

CLASS 332

119 5,057,796

CLASS 333

24 5,057,797
33 5,057,798
81 R 5,057,799
133 5,057,800
187 5,057,801
189 5,057,802
204 5,057,803
219.1 5,057,804
247 5,057,805

CLASS 335

9 5,057,806
207 5,057,807

CLASS 336

12 5,057,808
144 5,057,809

CLASS 337

30 5,057,810

CLASS 338

22 R 5,057,811
66 5,057,812
236 5,057,928

CLASS 340

450.3 5,057,813
458 5,057,814
468 5,057,815
506 5,057,816
5,057,817
525 5,057,818
573 5,057,819
600 5,057,820
610 5,057,821
611 5,057,822
620 5,057,823
693 5,057,824
721 5,057,825
728 5,057,826
755 5,057,827
764 5,057,828
825.06 5,057,829
825.31 5,057,830
941 5,057,831
961 5,057,833
963 5,057,834
966 5,057,832
995 5,057,835

CLASS 341

26 5,057,836
55 5,057,837
133 5,057,838
143 5,057,839
144 5,057,840
156 5,057,841

CLASS 342

4 5,057,842
25 5,057,843
51 5,057,844
137 5,057,845
204 5,057,846

CLASS 343

702 5,057,847
703 5,057,848
722 5,057,849
792.5 5,057,850

CLASS 346

1.1 5,057,851
5,057,852
140 R 5,057,853
5,057,854
5,057,855
5,057,856

CLASS 350

58 5,056,894
96.13 5,056,885
357 5,056,899

CLASS 351

57 5,056,906
118 5,056,907
161 5,056,908
177 5,056,909

CLASS 352

27 5,057,860
208 5,056,911

CLASS 353

38 5,056,912

CLASS 354

106 5,057,857
324 5,057,858
400 5,057,859

CLASS 355

27 5,057,861
43 5,057,862
57 5,057,863
71 5,057,864
91 5,057,865
200 5,057,866
208 5,057,867
215 5,057,868
233 5,057,869
246 5,057,870
259 5,057,871
260 5,057,872
271 5,057,873
316 5,057,874
326 5,057,875
328 5,057,876

CLASS 356

4 5,056,913
5 5,056,914
121 5,056,916
124 5,056,917
336 5,056,918
350 5,056,919
5,056,920
351 5,056,921
376 5,056,922
382 5,056,923

CLASS 357

5 5,057,877
8 5,057,878
13 5,057,879
16 5,057,880
17 5,057,881
22 5,057,882
5,057,883
23.4 5,057,884
23.5 5,057,885
5,057,886
23.6 5,057,887
5,057,888
23.7 5,057,889
27 5,057,890
30 5,057,891
41 5,057,893
43 5,057,894
49 5,057,895
5,057,896
54 5,057,897
59 5,057,898
68 5,057,899
70 5,057,900
5,057,901
71 5,057,902
72 5,057,903
74 5,057,904
5,057,905
80 5,057,906
5,057,907
8 5,057,908
5,057,909

CLASS 358

8 5,057,910
11 5,057,911
64 5,057,912
78 5,057,914
8 5,057,915
105 5,057,916
135 5,057,917
5,057,918
136 5,057,919
140 5,057,921
171 5,057,920
172 5,057,922
180 5,057,923
209 5,057,924
5,057,925
213.11 5,057,926
228 5,057,927
246 5,057,929
296 5,057,930
298 5,057,931
302 5,057,913
335 5,057,932
5,057,933
5,057,934
402 5,057,935
405 5,057,936
5,057,937
406 5,057,938
426 5,057,939
5,057,940
440 5,057,941
490 5,057,942
496 5,057,943

CLASS 359

19 5,056,881
29 5,056,880
54 5,056,893
63 5,056,896
72 5,056,897
87 5,056,895
94 5,056,898
124 5,058,103
125 5,058,102
127 5,058,101
164 5,058,206
212 5,056,882
503 5,056,902
513 5,056,903
572 5,056,889
630 5,056,890
676 5,056,900
737 5,056,901
813 5,056,891
831 5,056,892
841 5,056,904
843 5,056,905

CLASS 360

19.1 5,057,944
22 5,057,945
46 5,057,946
60 5,057,947
66 5,057,948
70 5,057,949
72.2 5,057,950
97.02 5,057,951
5,057,952
104 5,057,953
105 5,057,954
121 5,057,955
122 5,057,956
123 5,057,957
125 5,057,958
126 5,057,959
133 5,057,960
137 5,057,961

CLASS 361

24 5,057,962
85 5,057,963
118 5,057,964
212 5,057,965
213 5,057,966
328 5,057,967
385 5,057,968
386 5,057,969
5,057,970
395 5,057,971
512 5,057,972
534 5,057,973

CLASS 362

26 5,057,974
100 5,057,975
123 5,057,976
125 5,057,977
5,057,978
147 5,057,979
5,057,980
219 5,057,981
226 5,057,982
276 5,057,983
330 5,057,984
425 5,057,985

CLASS 363

20 5,057,986
58 5,057,987
59 5,057,988
95 5,057,989
131 5,057,990
144 5,057,991

CLASS 364

148 5,057,992
162 5,057,993
184 5,057,994
192 5,057,995
200 5,057,996
5,057,997
5,057,998
5,057,999
5,058,000
5,058,001
5,058,002
5,058,003
5,058,004
5,058,005
5,058,006
5,058,007
401 5,058,008
408 5,058,009
413.18 5,058,011
420 5,058,012
424.01 5,058,016
424.05 5,058,017
424.1 5,058,013
5,058,014
5,058,015
426.02 5,058,018
5,058,019
5,058,020
431.04 5,058,021
431.07 5,058,022
450 5,058,023
461 5,058,024
464.02 5,058,025
468 5,058,026
5,058,027
474.11 5,058,028
474.18 5,058,029
478 5,058,030
483 5,058,031
510 5,058,032
513 5,058,033
5,058,034
518 5,058,035
5,058,036
519 5,058,037
5,058,038
520 5,058,039
521 5,058,040
5,058,041
522 5,058,042
550 5,058,043
551.01 5,058,044
708 5,058,045
709.16 5,058,046
724.19 5,058,047
748 5,058,048
826 5,058,049
900 5,058,050
5,058,051
5,058,052
5,058,053
5,058,054
5,058,055
5,058,056
5,058,057

CLASS 365

51 5,058,058
96 5,058,059
106 5,058,060
5,058,061
185 5,058,062
5,058,063
189.01 5,058,064
189.02 5,058,065
189.05 5,058,066
190 5,058,067
200 5,058,068
5,058,069
5,058,070
5,058,071
203 5,058,072
205 5,058,073
228 5,058,074
229 5,058,075
230.01 5,058,076

CLASS 366

2 B1 4,830,505
59 5,056,924
90 5,056,925
102 5,056,926

CLASS 367

25 5,058,077
26 5,058,078
59 5,058,079
79 5,058,080
123 5,058,081
130 5,058,082
137 5,058,083
181 Re 33,718

CLASS 368

10 5,058,084
28 5,058,085
98 5,058,086
113 5,058,087
327 5,058,088

CLASS 369

32 5,058,089
36 5,058,090
44.21 5,058,091
44.27 5,058,092
58 5,058,093
77.1 5,058,094
5,058,095
100 5,058,096
215 5,058,097
284 5,058,098
288 5,058,099
291 5,058,100

CLASS 370

14 5,058,104
16 5,058,105
47 5,058,106
69.1 5,058,107
85.1 5,058,108
85.13 5,058,109
85.6 5,058,110
94.1 5,058,111

CLASS 371

8 5,058,112
15.1 5,058,113
19 5,058,114
40.2 5,058,116
401 5,058,115

CLASS 372

3 5,058,117
21 5,058,118
34 5,058,119
46 5,058,120
50 5,058,121
82 5,058,122
5,058,123
107 5,058,124
109 5,058,125

CLASS 373

5,058,126
157 5,058,127

CLASS 374

16 5,056,928
181 5,056,929

CLASS 375

1 5,058,128
7 5,058,129
12 5,058,130
36 5,058,131
38 5,058,132
5,058,133
39 5,058,134
42 5,058,135
5,058,136
88 5,058,138
94 5,058,137
103 5,058,139
110 5,058,140
116 5,058,141
118 5,058,142
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124 5,056,941
5,056,942
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29 5,056,947
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330 5,056,954

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201.1 5,056,995
259 5,056,993

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166 5,057,060

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278 5,057,063

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355 5,057,068
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365 5,057,529
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450 5,057,536
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505 5,057,571
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871 5,057,573

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278 5,057,578
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338 5,057,581
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247 5,057,586
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300 5,057,588

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5,056,321	5,056,447	5,057,099	5,057,712	5,058,159	5,057,217
5,056,322	5,056,450	5,057,101	5,057,715	5,058,163	5,057,470
5,056,406	5,056,458	5,057,114	5,057,718	5,058,164	5,057,472
5,056,408	5,056,499	5,057,171	5,057,740	5,058,180	5,057,576
5,056,864	5,056,515	5,057,200	5,057,747	5,058,205	5,057,578
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1126 O.G. 2, on May 7, 1991.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on July 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the German mark, and was announced in the *Official Gazette* at 1126 O.G. 76 on May 28, 1991.

International fees were changed on August 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss franc, and were announced in the *Official Gazette* at 1128 O.G. 46, on July 23, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1320.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	490.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region for the first 10 national or regional offices	119.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	150.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

June 27, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 18, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,777,665 through 4,779,287
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 16, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,476,587 through 4,477,926
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$830.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 11, 1991
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,397,044	06/279,662	8/09/83
4,397,047	06/281,696	8/09/83
4,397,049	06/302,597	8/09/83
4,397,052	06/216,769	8/09/83
4,397,059	06/293,593	8/09/83
4,397,064	06/281,307	8/09/83
4,397,072	06/295,631	8/09/83
4,397,074	06/231,340	8/09/83
4,397,078	06/289,199	8/09/83
4,397,081	06/257,094	8/09/83
4,397,086	06/228,492	8/09/83
4,397,088	06/232,450	8/09/83
4,397,091	06/313,990	8/09/83
4,397,092	06/275,852	8/09/83
4,397,098	06/294,571	8/09/83
4,397,099	06/300,211	8/09/83
4,397,100	06/327,610	8/09/83
4,397,103	06/287,164	8/09/83
4,397,105	06/314,367	8/09/83
4,397,110	06/333,990	8/09/83
4,397,112	06/246,406	8/09/83
4,397,117	06/322,772	8/09/83
4,397,118	06/224,201	8/09/83
4,397,141	06/254,303	8/09/83
4,397,143	06/321,072	8/09/83
4,397,146	06/268,066	8/09/83
4,397,158	06/298,306	8/09/83
4,397,159	06/321,852	8/09/83
4,397,162	06/282,603	8/09/83
4,397,165	06/223,897	8/09/83
4,397,175	06/257,100	8/09/83
4,397,177	06/242,159	8/09/83
4,397,180	06/241,632	8/09/83
4,397,181	06/295,058	8/09/83
4,397,182	06/249,307	8/09/83
4,397,187	06/293,550	8/09/83
4,397,200	06/285,167	8/09/83
4,397,205	06/268,241	8/09/83
4,397,209	06/275,986	8/09/83
4,397,212	06/340,773	8/09/83
4,397,219	06/231,691	8/09/83
4,397,224	06/234,865	8/09/83
4,397,225	06/277,178	8/09/83
4,397,227	06/277,337	8/09/83
4,397,230	06/347,439	8/09/83
4,397,231	06/368,719	8/09/83
4,397,233	06/243,807	8/09/83
4,397,235	06/360,065	8/09/83
4,397,238	06/311,941	8/09/83
4,397,251	06/268,845	8/09/83
4,397,265	06/299,632	8/09/83
4,397,266	06/232,302	8/09/83
4,397,267	06/289,542	8/09/83
4,397,273	06/255,302	8/09/83
4,397,281	06/304,051	8/09/83
4,397,293	06/266,079	8/09/83
4,397,294	06/291,281	8/09/83
4,397,301	06/296,118	8/09/83
4,397,305	06/311,196	8/09/83
4,397,313	06/289,126	8/09/83
4,397,314	06/289,127	8/09/83
4,397,319	06/249,582	8/09/83
4,397,324	06/314,026	8/09/83
4,397,325	06/375,454	8/09/83
4,397,328	06/308,823	8/09/83
4,397,334	06/270,473	8/09/83
4,397,335	06/267,335	8/09/83
4,397,336	06/227,211	8/09/83
4,397,337	06/324,967	8/09/83
4,397,340	06/315,516	8/09/83
4,397,344	06/369,381	8/09/83
4,397,348	06/244,353	8/09/83
4,307,349	06/350,016	8/09/83
4,307,352	06/260,521	8/09/83
4,397,353	06/387,325	8/09/83
4,397,354	06/389,349	8/09/83
4,397,357	06/255,972	8/09/83
4,397,361	06/269,285	8/09/83
4,397,364	06/277,617	8/09/83
4,397,367	06/265,584	8/09/83
4,397,372	06/241,699	8/09/83
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4,397,391	06/257,607	8/09/83
4,397,406	06/277,970	8/09/83
4,397,410	06/244,753	8/09/83
4,397,416	06/324,160	8/09/83
4,397,432	06/269,179	8/09/83
4,397,433	06/243,403	8/09/83
4,397,447	06/250,167	8/09/83
4,397,448	06/365,075	8/09/83
4,397,457	06/268,926	8/09/83
4,397,461	06/313,602	8/09/83
4,397,464	06/299,295	8/09/83
4,397,473	06/293,972	8/09/83
4,397,484	06/369,329	8/09/83
4,397,485	06/226,376	8/09/83
4,397,491	06/288,561	8/09/83
4,397,494	06/288,356	8/09/83
4,397,512	06/235,638	8/09/83
4,397,516	06/267,159	8/09/83
4,397,526	06/280,825	8/09/83
4,397,536	06/289,409	8/09/83
4,397,579	06/271,259	8/09/83
4,397,584	06/294,667	8/09/83
4,397,586	06/322,628	8/09/83
4,397,602	06/308,777	8/09/83
4,397,609	06/304,013	8/09/83
4,397,621	06/301,945	8/09/83
4,397,623	06/239,262	8/09/83
4,397,624	06/315,702	8/09/83
4,397,633	06/296,673	8/09/83
4,397,640	06/288,437	8/09/83
4,397,651	06/291,500	8/09/83
4,397,652	06/340,176	8/09/83
4,397,653	06/321,346	8/09/83
4,397,667	06/328,630	8/09/83
4,397,668	06/266,259	8/09/83
4,397,681	06/271,526	8/09/83
4,397,682	06/319,956	8/09/83
4,397,684	06/354,912	8/09/83
4,397,693	06/273,795	8/09/83
4,397,694	06/220,802	8/09/83
4,397,703	06/307,417	8/09/83
4,397,709	06/411,652	8/09/83
4,397,720	06/426,336	8/09/83
4,397,747	06/283,227	8/09/83
4,397,751	06/260,440	8/09/83
4,397,779	06/267,952	8/09/83
4,397,780	06/348,396	8/09/83
4,397,784	06/336,808	8/09/83
4,397,796	06/264,735	8/09/83
4,397,811	06/291,678	8/09/83
4,397,819	06/221,557	8/09/83
4,397,821	06/337,558	8/09/83
4,397,822	06/424,703	8/09/83
4,397,833	06/346,957	8/09/83
4,397,843	06/341,572	8/09/83
4,397,846	06/263,942	8/09/83
4,397,847	06/379,334	8/09/83
4,397,848	06/236,375	8/09/83
4,397,852	06/332,058	8/09/83
4,397,854	06/325,719	8/09/83
4,397,855	06/277,578	8/09/83
4,397,860	06/340,461	8/09/83
4,397,861	06/321,497	8/09/83
4,397,863	06/366,652	8/09/83
4,397,867	06/388,573	8/09/83
4,397,869	06/290,899	8/09/83
4,397,892	06/372,039	8/09/83
4,397,893	06/299,724	8/09/83
4,397,906	06/258,557	8/09/83
4,397,909	06/269,127	8/09/83
4,397,912	06/278,700	8/09/83
4,397,921	06/292,486	8/09/83
4,397,922	06/305,810	8/09/83
4,397,928	06/399,080	8/09/83
4,397,932	06/314,976	8/09/83
4,397,940	06/392,647	8/09/83
4,397,946	06/267,242	8/09/83
4,397,962	06/342,395	8/09/83
4,397,963	06/308,738	8/09/83
4,397,965	06/334,787	8/09/83
4,397,971	06/362,999	8/09/83
4,397,972	06/454,773	8/09/83
4,397,984	06/338,487	8/09/83
4,397,985	06/360,153	8/09/83
4,397,988	06/370,773	8/09/83
4,398,008	06/327,871	8/09/83
4,398,010	06/328,162	8/09/83
4,398,020	06/367,618	8/09/83
4,398,024	06/321,067	8/09/83
4,398,026	06/383,526	8/09/83
4,398,039	06/264,755	8/09/83
4,398,042	06/252,608	8/09/83
4,398,044	06/366,881	8/09/83
4,398,056	06/285,953	8/09/83
4,398,061	06/304,839	8/09/83
4,398,070	06/333,786	8/09/83
4,398,071	06/363,633	8/09/83
4,398,073	06/305,543	8/09/83
4,398,075	06/279,616	8/09/83
4,398,079	06/232,159	8/09/83
4,398,083	06/277,518	8/09/83
4,398,087	06/390,515	8/09/83
4,398,101	06/222,936	8/09/83
4,398,112	06/217,218	8/09/83
4,398,115	06/265,928	8/09/83
4,398,116	06/258,883	8/09/83
4,398,122	06/254,128	8/09/83
4,398,127	06/235,631	8/09/83
4,398,128	06/340,747	8/09/83
4,398,135	06/264,664	8/09/83
4,398,136	06/333,377	8/09/83
4,398,141	06/303,299	8/09/83
4,398,143	06/283,741	8/09/83
4,398,144	06/225,972	8/09/83
4,398,149	06/230,226	8/09/83
4,398,153	06/260,868	8/09/83
4,398,155	06/273,815	8/09/83
4,398,165	06/315,267	8/09/83
4,398,167	06/429,331	8/09/83
4,398,171	06/236,991	8/09/83
4,398,173	06/309,648	8/09/83
4,398,180	06/274,895	8/09/83
4,398,182	06/243,478	8/09/83
4,398,186	06/267,709	8/09/83
4,398,187	06/267,331	8/09/83
4,398,191	06/283,247	8/09/83
4,398,192	06/327,308	8/09/93
4,398,200	06/319,389	8/09/83
4,398,202	06/339,639	8/09/83
4,398,213	06/252,299	8/09/83
4,398,221	06/296,034	8/09/83
4,398,226	06/241,301	8/09/83
4,398,229	06/289,845	8/09/83
4,398,253	06/260,091	8/09/83
4,398,255	06/277,789	8/09/83
4,398,274	06/232,220	8/09/83
4,398,275	06/307,923	8/09/83
4,398,281	06/311,839	8/09/83
4,398,282	06/261,793	8/09/83
4,398,285	06/231,678	8/09/83
4,398,287	06/298,381	8/09/83
4,685,152	06/664,046	8/11/87
4,685,153	06/866,900	8/11/87
4,685,156	06/872,801	8/11/87
4,685,157	06/876,424	8/11/87
4,685,160	06/726,810	8/11/87
4,685,161	06/840,507	8/11/87
4,685,168	06/845,454	8/11/87
4,685,170	06/841,177	8/11/87
4,685,171	06/860,912	8/11/87
4,685,173	06/832,650	8/11/87
4,685,176	06/886,909	8/11/87
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4,685,192	06/788,472	8/11/87
4,685,193	06/859,704	8/11/87
4,685,200	06/340,279	8/11/87
4,685,213	06/763,233	8/11/87
4,685,215	06/825,633	8/11/87
4,685,216	06/881,284	8/11/87
4,685,217	06/780,992	8/11/87
4,685,218	06/901,384	8/11/87
4,685,219	06/765,701	8/11/87
4,685,223	06/787,786	8/11/87
4,685,227	06/880,284	8/11/87
4,685,231	06/776,566	8/11/87
4,685,233	06/715,406	8/11/87
4,685,236	06/615,234	8/11/87
4,685,240	06/753,601	8/11/87
4,685,243	06/935,965	8/11/87
4,685,247	06/862,283	8/11/87
4,685,249	06/854,167	8/11/87
4,685,251	06/879,266	8/11/87
4,685,252	06/757,452	8/11/87
4,635,258	06/804,295	8/11/87
4,685,261	06/718,551	8/11/87
4,685,263	06/866,271	8/11/87
4,685,274	06/717,235	8/11/87
4,685,277	06/915,674	8/11/87
4,685,278	06/770,279	8/11/87
4,685,279	06/819,637	8/11/87
4,685,285	06/897,420	8/11/87
4,685,300	06/835,833	8/11/87
4,685,301	06/910,287	8/11/87
4,685,316	06/843,036	8/11/87
4,685,323	06/808,669	8/11/87
4,685,330	06/841,380	8/11/87
4,685,333	06/651,176	8/11/87
4,685,337	06/833,428	8/11/87
4,685,351	06/743,864	8/11/87
4,685,360	06/703,141	8/11/87
4,685,369	06/852,335	8/11/87
4,685,371	06/744,134	8/11/87
4,685,373	06/849,262	8/11/87
4,685,374	06/704,473	8/11/87
4,685,378	06/798,863	8/11/87
4,685,380	06/429,649	8/11/87
4,685,381	06/778,041	8/11/87
4,685,383	06/765,268	8/11/87
4,685,385	06/684,287	8/11/87
4,685,399	06/740,060	8/11/87
4,685,400	06/841,163	8/11/87
4,685,401	06/801,411	8/11/87
4,685,409	06/737,447	8/11/87
4,685,410	06/720,958	8/11/87
4,685,411	06/803,138	8/11/87
4,685,413	06/843,122	8/11/87
4,685,418	06/839,846	8/11/87
4,685,421	06/843,289	8/11/87
4,685,430	06/841,423	8/11/87
4,685,443	07/004,093	8/11/87
4,685,450	06/898,737	8/11/87
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)

4,710,500, Re. S.N. 07/759,517, Filed Sept. 13, 1991, Cl. 514/254, 1-(4'-FLOUROPHENYL)-3,5-SUBSTITUTED INDOLES USEFUL IN THE TREATMENT OF PSYCHIC DISORDERS AND PHARMACEUTICAL COMPOSITIONS THEREOF, Jens K. Perregaard, Owner of Record: *H. Lundbeck A/S, Copenhagen-Valby, Denmark*, Attorney or Agent: Martin L. Katz, Ex. Gp.: 125

4,730,089, Re. S.N. 07/762,591, Filed Sept. 19, 1991, Cl. 191/124, REMOTELY CONTROLLABLE CABLE ASSEMBLY, Donald F. Pepper, Owner of Record: *Wyle Laboratories, El Segundo, Calif.*, Attorney or Agent: Leon D. Rosen, Ex. Gp.: 317

4,797,840, Re. S.N. 07/738,095, Filed July 30, 1991, Cl. 364/557, INFRARED ELECTRONIC THERMOMETER AND METHOD FOR MEASURING TEMPERATURE, Jacob Fraden, Owner of Record: *Thermoscan, Inc., Tucker, Ga.*, Attorney or Agent: Hugh H. Drake, Ex. Gp.: 234

4,813,674, Re. S.N. 07/738,048, Filed Mar. 21, 1991, Cl. 273/58B, TAKRAW BALL, Boonchai Lorhpipat, Owner of Record: *Inventor*, Attorney or Agent: William R. Hinds, Ex. Gp.: 334

4,849,501, Re. S.N. 07/733,049, Filed July 18, 1991, Cl. 528/353, POLYMIDE COATING COMPOSITIONS BASED ON METADIALKYLAIHYDROGEN PYROMELLITATE AND AROMATIC DIAMINES, Richard D. Diller (deceased), et. al., Owner of Record: *Inventors*, Attorney or Agent: John A. Stemweded, Ex. Gp.: 153

4,861,622, Re. S.N. 07/757,657, Filed Aug. 16, 1991, Cl. 427/54.1, METHOD FOR FORMING A FILM COAT ON THE INSIDE OF A DEPRESSION, Shumpei Yamazaki, et. al., Owner of Record: *Semiconductor Energy Laboratory Co. Ltd., Kanagawa, Japan*, Attorney or Agent: Donald R. Stodebaker, Ex. Gp.: 139

4,865,748, Re. S.N. 07/757,677, Filed Sept. 10, 1991, Cl. 210/739, METHOD AND SYSTEM FOR VARIABLE FREQUENCY ELECTROMAGNETIC WATER TREATMENT, Dwain E. Morse, Owner of Record: *Aqua Dynamics Group Corp., Wilmington, Del.*, Attorney or Agent: John C. Cooper III, Ex. Gp.: 138

4,866,756, Re. S.N. 07/761,170, Filed Sept. 11, 1991, Cl. 379/88, INTERACTIVE COMPUTERIZED COMMUNICATIONS SYSTEM WITH VOICE INPUT AND OUTPUT, Michael B. Crane and Neil W. Sullivan (deceased), Owner of Record: *Call-IT Co., Davenport, Iowa*, Attorney or Agent: Wayne M. Kennard, Ex. Gp.: 261

4,867,323, Re. S.N. 07/761,405, Filed Sept. 17, 1991, Cl. 215/1C, BLOW MOLDED BOTTLE WITH IMPROVED SELF SUPPORTING BASE, Thomas F. Powers, Owner of Record: *Hoover Universal Inc., Ann Arbor, Mich.*, Attorney or Agent: James E. Stephenson, Ex. Gp.: 241

4,867,766, Re. S.N. 07/761,696, Filed Sept. 12, 1991, Cl. 55/161, OXYGEN ENRICHED AIR SYSTEM, Michael Joseph Campbell, Owner of Record: *Union Carbide Industrial Gases Technology Corp., Danbury, Conn.*, Attorney or Agent: Alvin H. Fritschler, Ex. Gp.: 135

4,868,764, Re. S.N. 07/758,878, Filed Sept. 10, 1991, Cl. 364/518, IMAGE ENCODING AND DECODING METHOD AND APPARATUS, Norman D. Richards, Owner of Record: *U. S. Phillips Corp., New York, N.Y.*, Attorney or Agent: Michael E. Marion, Ex. Gp.: 231

4,869,220, Re. S.N. 07/758,983, Filed Sept. 10, 1991, Cl. 123/399, ACCELERATOR CONTROL APPARATUS, William J. Imoehl, Owner of Record: *Siemens-Bendix Automotive L. P., Troy, Mich.*, Attorney or Agent: George L. Boller, Ex. Gp.: 342

4,878,230, Re. S.N. 07/761,501, Filed Sept. 18, 1991, Cl. 375/27, AMPLITUDE-ADAPTIVE VECTOR QUANTIZATION SYSTEM, Tokumichi Murakami, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Vincent M. Deluca, Ex. Gp.: 263

4,878,651, Re. S.N. 07/758,568, Filed Sept. 12, 1991, Cl. 251/172, VALVE SEAT ASSEMBLY, Frank W. Meyer, Jr., Owner of Record: *Worldwide Oilfield Machine, Inc., Houston, Tex.*, Attorney or Agent: Eugene N. Riddle, Ex. Gp.: 347

4,889,988, Re. S.N. 07/761,171, Filed Aug. 30, 1991, Cl. 250/306, FEEDBACK CONTROL FOR SCANNING TUNNEL MICROSCOPES, Virgil B. Elings, Owner of Record: *Digital Instruments, Inc., Santa Barbara, Calif.*, Attorney or Agent: William B. Walker, Ex. Gp.: 256

4,905,003, Re. S.N. 07/761,172, Filed Aug. 30, 1991, Cl. 341/110, ANALOG/DIGITAL DATA STORAGE SYSTEM, Richard J. Helferich, Owner of Record: *Schwartz, Martin, A Minilec Service, Chatsworth, Calif.*, Attorney or Agent: Charles L. Gholz, Ex. Gp.: 214

4,936,947, Re. S.N. 07/758,559, Filed Sept. 12, 1991, Cl. 156/601, SYSTEM FOR CONTROLLING APPARATUS FOR GROWING TUBULAR CRYSTALLINE BODIES, Brian H. MacKintosh, Owner of Record: *Mobil Solar Energy Corp., Billerica, Mass.*, Attorney or Agent: Milton E. Gilbert, Ex. Gp.: 117

4,944,269, Re. S.N. 07/757,098, Filed Sept. 10, 1991, Cl. 123/399, ACCELERATION PEDAL FOR ELECTRONIC THROTTLE ACTUATION SYSTEM, William I. Imoehl, Owner of Record: *Siemens-Bendix Automotive Electronics L. P., Troy Mich.*, Attorney or Agent: George L. Boller, Ex. Gp.: 342

4,945,678, Re. S.N. 07/739,530, Filed Aug. 2, 1991, Cl. 049/322, WINDOW OPERATOR, John C. Berner, et. al., Owner of Record: *SPX Corp., Owatonna, Minn.*, Attorney or Agent: Jeffrey L. Clark, Ex. Gp.: 358

4,958,406, Re. S.N. 07/757,580, Filed Sept. 11, 1991, Cl. 15/319, METHOD AND APPARATUS FOR OPERATING VACUUM CLEANER, Hisanori Tayoshima, et. al., Owner of Record: *Inventors*, Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 242

4,958,965, Re. S.N. 07/760,991, Filed Sept. 17, 1991, Cl. 428/226, TOOL FOR METAL CUTTING, Bengt N. G. Strand, et. al., Owner of Record: *Seco Tools AB, Fagersta, Sweden*, Attorney or Agent: Alan E. Kopecki, Ex. Gp.: 322

4,976,731, Re. S.N. 07/695,607, Filed May 3, 1991, Cl. 623/4, DEVICE FOR ORBITAL IMPLANT, Arthur C. Perry, Owner of Record: *Inventor*, Attorney or Agent: William L. Respess, Ex. Gp.: 338

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 32,905, Reexam. No. 90/002,442, Requested Sept. 18, 1991, Cl. 370/104.1, SATELLITE COMMUNICATIONS SYSTEM AND APPARATUS, Paul Baran, Owner of Record: *Inventor, Menlo Park Calif.*, Attorney or Agent: Thomas A. Gallagher, San Francisco, Calif., Ex. Gp.: 263, Requester: GTE Satellite Services, McLean, Va.

4,217,901, Reexam. No. 90/002,443, Requested Sept. 18, 1991, Cl. 604/368, CRUSH-RESISTANT ADHESIVELY ATTACHED ABSORBENT PRODUCT, James A. Bradstreet, et. al., Owner of Record: *McNeil PPC, Inc., Milltown, N.J.*, Attorney or Agent: Robert L. Minier, Johnson & Johnson, New Brunswick, N.J., Ex. Gp.: 338, Requester: The Proctor & Gamble Corp., Cincinnatti, Ohio.

4,224,415, Reexam. No. 90/002,439, Requested Sept. 13, 1991, Cl. 521/038, POLYMERIZATION PROCESS AND PRODUCTS THEREFROM, Erich F. Meitzner, et. al., Owner of Record: *Rohm & Haas Corp., Philadelphia, Pa.*, Attorney or Agent: Louis F. Kline, Jr., Rohm & Haas Corp., Philadelphia, Pa., Ex. Gp.: 155, Requester: George M. Cooper, Jones, Tullar & Cooper, Arlington, Va.

4,396,806, Reexam. No. 90/002,440, Requested Sept. 16, 1991, Cl. 381/103, HEARING AID AMPLIFYER, Jared A. Anderson, Owner of Record: *Inventor, Woodside, Calif.*, Attorney or Agent: Kenneth R. Allen, Townsend & Townsend, San Francisco, Calif., Ex. Gp.: 261, Requester: Resound Corp., Redwood City, Calif.

4,445,114, Reexam. No. 90/002,441, Requested Sept. 17, 1991, Cl. 340/726, APPARATUS FOR SCROLLING A VIDEO DISPLAY, David R. Stubben, Owner of Record: *Atari Corp., Sunnyvale, Calif.*, Attorney or Agent: Ciotti & Murashige, Menlo Park, Calif., Ex. Gp.: 269, Requester: Mark E. Nusbaum, Nixon & Vanderhye, Arlington, Va.

4,887,813, Reexam. No. 90/002,444, Requested Sept. 20, 1991, Cl. 273/054C, BOWLING SCORING DISPLAY SYSTEM, Robert E. Chiles, III., et. al., Owner of Record: *AMF Bowling Companies, Inc., Richmond, Va.*, Attorney or Agent: David E. Dougherty, Bacon & Thomas, Alexandria, Va., Ex. Gp.: 334, Requester: Brunswick Corp., Skokie, Ill.

4,959,378, Reexam. No. 90/002,445, Requested Sept. 23, 1991, Cl. 514/352, AMINOPYRIDINYLAMINOPHENOL COMPOUNDS USEFUL AS TOPICAL ANTIINFLAMMATORY AGENTS FOR THE TREATMENT OF SKIN DISORDERS, Richard C. Allen, et. al., Owner of Record: *Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.*, Attorney or Agent: Kenneth A. Genoni, Hoechst-Celanese Corp., Somerville, N.J., Ex. Gp.: 125, Requester: Owner

5,006,360, Reexam. No. 90/002,423, Requested Aug. 29, 1991, Cl. 426/601, LOW CALORIE FAT SUBSTITUTE COMPOSITIONS RESISTANT TO LAXATIVE SIDE EFFECT, Norman B. Howard, et. al., Owner of Record: *The Proctor & Gamble Corp., Cincinnati, Ohio*, Attorney or Agent: Eric W. Guttag, Proctor & Gamble, Cincinnati, Ohio, Ex. Gp.: 132, Requester: Owner

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

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Patent No. 4,373,071, Keiichi Itakura, SOLID-PHASE SYNTHESIS OF POLYNUCLEOTIDES, Interference No. 101,724, decided June 11, 1991, claims 1-44.

Patent No. 4,401,796, Keiichi Itakura, SOLID-PHASE SYNTHESIS OF POLYNUCLEOTIDES, Interference No. 101,725, decided June 11, 1991, claims 1, 2, 5-10, 12-15, 17-28, 30-43, 45-48, 50 and 51.

Patent No. 4,476,526, P. David Dodd, CACHE BUFFERED MEMORY SUBSYSTEM, Interference No. 101,447, decided April 5, 1991, claims 1-3, 6, 8 and 10-14.

Patent No. 4,556,966, Claude Bricot, Pierre Berthet, Bruno Mertz, Jean L. Gerard, INFORMATION CARRIER DISK WITH ANGULAR CODING MEANS AND A SYSTEM FOR DRIVING SAID DISK IN ROTATION, Interference No. 101,736, decided Feb. 22, 1989, claims 1-4.

Patent No. 4,628,001, Hideharu Sasaki, Toru Sawaki, Yoshiaki Yoshioika, PITCH-BASED CARBON OR GRAPHITE FIBER AND PROCESS FOR PREPARATION THEREOF, Interference No. 101,691, decided Sept. 5, 1991, claims 1-9.

Patent No. 4,827,121, Warren D. Vidrine Jr., Mark S. Roth, SYSTEM FOR DETECTING CHEMICAL CHANGES IN MATERIALS BY EMBEDDING IN MATERIALS AN UNCLAD FIBER OPTIC SENSOR SECTION, Interference No. 102,521, decided Aug. 5, 1991, claims1-37.

Patent No. 4,838,018, Werner G. Hoeber, PROCESS AND DEVICE TO START A NEW STAPLE FIBER SLIVER AUTOMATICALLY, Interference No. 102,580, decided July 31, 1991, claims 5 and 12.

Patent No. 4,839,293, Charles R. Cantor, Richard Axel, Carlos Argarana, DNA ENCODING STREPTAVIDIN, STREPTAVIDIN PRODUCED THEREFROM, FUSED POLYPEPTIDES WHICH INCLUDE AMINO ACID, SEQUENCES PRESENT IN STREPTAVIDIN AND USES THEREOF, Interference No. 102,477, decided Aug. 23, 1991, claims 1-25.

Patent No. 4,850,009, Ronald E. Zook, Peter P. Gombrich, PORTABLE HANDHELD TERMINAL INCLUDING OPTICAL BAR CODE READER AND ELECTROMAGNETIC TRANSCEIVER MEANS FOR INTERACTIVE WIRELESS COMMUNICATION WITH A BASE COMMUNICATIONS STATION, Interference No. 102,391, decided May 1, 1991, claims 1-18.

Patent No. 4,874,602, Paul Calabrest, Michael C. Wiemann, Ming Y. W. Chu, REDUCTION OF THE SEVERITY OF 3'-AZIDO-3'-DEOXYTHYMIDINE-INDUCED ANEMIA USING BENZYLACYCLOURIDINE, Interference No. 102,448, decided Aug. 16, 1991, claims 1-5.

Patent No. 4,906,289, Ryo Yoshida, Yoshihiro Mano, Hideyuki Shibata, HERBICIDAL COMPOSITION, interference No. 102,511, decided Aug. 15, 1991, claims 1-13.

NANNIE B. HENRY, *Deputy Clerk*
Board of Patent Appeals & Interferences
(703) 557-4005

Patent and Trademark Office
37 CFR Part 2
[Docket No. 910364-1196]
[RIN: 0651-AA47]
Amendment to Interrogatory Practices

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.
Summary: The Patent and Trademark Office (PTO) is amending § 2.120(d)(1) of the rules of practice in trademark cases, which limits the total number of interrogatories that may be served by one party upon another in a trademark interference, concurrent use, opposition, or cancellation proceeding. The amendment shifts, from the responding party to the inquiring party, the burden of filing a motion to determine whether an assertion of an excessive number of interrogatories is well taken; and clarifies the paragraph.
Effective Date: Nov. 12, 1991. The amendment shall be applicable to all inter partes proceedings pending before the Trademark Trial and Appeal Board on or after the effective date.
For Further Information Contact: Janet E. Rice by telephone at (703) 308-9300 or by mail marked to her attention and addressed to Box 5, Trademark Trial and Appeal Board, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: In a notice of proposed rulemaking published in the *Federal Register* on March 7, 1989, at 54 FR 9514, and in the Patent and Trademark Office *Official Gazette* of March 28, 1989, at 1100 TMOG 137, the PTO proposed amendments to a number of the rules of practice in trademark cases. One of the proposed amendments pertained to § 2.120(d), which then consisted of a single paragraph relating to document production. It was proposed that the section be amended to include a new paragraph (designated "(1)" limiting the number of interrogatories that might be served by one party upon another in a trademark interference, concurrent use, opposition, or cancellation proceeding.

In response to the notice of proposed rulemaking the PTO received numerous written comments pertaining to proposed § 2.120(d)(1). One individual commented that a party served with excessive interrogatories might make its own count of the questions, answer as many as were allowed under the proposed rule, and not answer the remainder on the ground that supernumerary questions were not authorized. To remedy this problem, the individual suggested that if the proposed rule were adopted, it might be advisable to add "a provision prescribing that relief for an excessive number of interrogatories is a protective order rather than an incomplete response to the interrogatories."

This suggestion, among others, was adopted in the final rule notice published in the *Federal Register* on Aug. 22, 1989, at 54 FR 34886, and in the Patent and Trademark Office *Official Gazette* of Sept. 12, 1989, at 1106 TMOG 26. Thus, final § 2.120(d)(1) included, as its last sentence, the following provision: "If a party upon which interrogatories have been served believes that the number of interrogatories served exceeds the limitation specified in this paragraph, and is not willing to waive this basis for objection, the party shall, within the time for (and instead of) serving answers and objections to the interrogatories, file a motion for a protective order, accompanied by a copy of the interrogatories which together are said to exceed the limitation."

In addition, the final rule notice indicated that the PTO would monitor the impact of § 2.120(d)(1) carefully and further amend the rule if necessary.

The effective date of the rule amendments specified in the final rule notice was Nov. 16, 1989. Since that time, many attorneys have expressed the opinion, in public meetings relating to trademarks, that it is unfair for a party served with excessive interrogatories to have the burden of filing a motion for a protective order. These attorneys have suggested that the better practice would be to allow the responding party simply to object to the interrogatories on the ground of their excessive number, and leave the propounding party with the burden of filing a motion to compel, if it believes that the objection is not well taken.

Accordingly, in a notice of proposed rulemaking published in the *Federal Register* on April 15, 1991, at 56 FR 15059, and in the Patent and Trademark Office *Official Gazette* of May 21, 1991, at 1126 TMOG 40, § 2.120(d)(1) was proposed to be revised to substitute a motion to compel for the motion for a protective order.

Written comments were submitted by one firm and ten individuals, three of whom stated their complete approval of the proposed amendment. In addition, the relevant committee of one organization, and the relevant subcommittee of another organization, submitted letters expressing their complete approval of the proposed amendment.

Discussion of Specific Section Being Changed:

In this discussion, "Trademark Trial and Appeal Board" is abbreviated as "Board."

Section 2.120(d)(1) now provides that the total number of written interrogatories which a party may serve upon another party pursuant to Rule 33 of the Federal Rules of Civil Procedure, in a proceeding, shall not exceed seventy-five, counting subparts, except that the Board, in its discretion, may allow additional interrogatories upon motion therefor showing good cause, or upon stipulation of the parties. A motion for leave to serve additional interrogatories must be accompanied by a copy of the interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories proposed to be served. If a party upon which interrogatories have been served believes that the number of interrogatories served exceeds the limitation specified in the paragraph, and is not willing to waive this basis for objection, the party shall, within the time for (and instead of) serving answers and objections to the interrogatories, file a motion for a protective order, accompanied by a copy of the interrogatories which together are said to exceed the limitation.

The paragraph is being revised to provide instead that if a party upon which interrogatories have been served believes that the number of interrogatories served exceeds the limitation specified in the paragraph, and is not willing to waive this basis for objection, the party shall, within the time for (and instead of) serving answers and specific objections to the interrogatories, serve a general objection on the ground of their excessive number.

The paragraph is being further revised to add a requirement that if a party serving the interrogatories, in turn, files a motion to compel discovery, the motion must be accompanied by a copy of the set(s) of interrogatories which together are said to exceed the limitation, and must otherwise comply with the requirements of paragraph (e) of the section. Paragraph (e) governs motions to compel discovery in inter partes proceedings before the Board, and requires, inter alia, that a motion to compel be supported by a written statement from the moving party that such party or its attorney has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement.

The final paragraph includes one revision that was not included in the proposed paragraph. The present paragraph provides, in part, that "A motion for leave to serve additional interrogatories must be accompanied by a copy of the interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories *proposed to be served*" (emphasis added). Thus, the paragraph clearly contemplates, but does not explicitly state, that a motion for leave to serve additional interrogatories must be filed prior to the service of the additional interrogatories. As the result of a written comment filed in response to the notice of proposed rulemaking (*see* "Response to Comments on the Rule"), and in order to further clarify the paragraph, the foregoing sentence is being revised to read, "A motion for leave to serve additional interrogatories *must be filed and granted prior to the service of the proposed additional interrogatories*; and must be accompanied by a copy of the interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories proposed to be served" (emphasis added).

Response to Comments on the Rule

Comment: Three individuals and the firm objected to the proposed amendment of § 2.120(d)(1).

Two of these individuals asserted their belief that the proposed rule would provide responding parties with a vehicle for abuse and delay. In particular, one of the individuals commented that under the proposed rule, a party served with interrogatories believed to be excessive would be able to assert a general objection thereto, thus delaying its responses to the interrogatories until the propounding party made its required attempt to resolve the matter in good faith; that a party asserting a general objection based on excessive number would not only get to shift the burden of going forward to the propounding party, but also would be able, as a matter of course, to engage in dilatory conduct; and that the party which "wishes to deviate from the norm (i.e., to object to responding to the interrogatories) should be the party to undertake the burden." In the same vein, the second individual asserted that under the proposed rule, a responding party served with interrogatories even remotely close to 75 would merely object to them on the basis of their number; that the objection would cost the responding party nothing and result in none of the interrogatories being answered; that the responding party could delay making its objection until the last day of the 30- or 45-day period for serving a response to the interrogatories; and that if a motion to compel was filed, the propounding party would have to bear the cost thereof, and there would be further delay while the Board considered the motion.

The firm commented that the proposed rule "would almost assuredly result in the need to seek the intervention of the Board in close cases or in cases where insufficient time remains for serving further interrogatories because of the close of discovery." The firm expressed its belief that the proposed rule would result in delay, "avoidable encroachments upon the Board's attention and time, additional expense to the parties and the USPTO and the introduction of further uncertainties relating to the timing of testimony periods. . ."

The third individual commented that the proposed rule seems to contemplate repetitive motions to compel. Specifically, the individual expressed his belief that a motion to compel filed in response to a blanket objection based on excessive number "would seem to require an order either (1) restricting the number of interrogatories or (2) requiring answers and objections to be served;" and that to the extent that specific objections, or insufficient answers, were then served, there might be need for a further motion to compel. This individual suggested that a party served with an excessive number of interrogatories should be required to serve answers or specific objections to the first 75 of them, but should be permitted to assert a blanket objection, on the basis of excessive number, to the remainder.

Response: while there is a possibility that the proposed rule may be used by responding parties as a vehicle for abuse and delay, the present rule provides a similar vehicle for propounding parties. That is, if a propounding party serves an excessive number of interrogatories, the responding party must either serve answers and specific objections, even though the interrogatories are excessive in number, or be put to the trouble and expense of filing a motion for a protective order. In essence, both the present rule, and the proposed rule, require the filing of a motion to determine whether an assertion of an excessive number of interrogatories is well taken; the two rules differ in that the present rule places the burden of filing the motion on the responding party, while the proposed rule would place that burden on the propounding party. In addition, the proposed rule does involve some extra delay, since it provides for an intervening blanket objection on the ground of excessive number prior to the filing of the motion to determine whether the assertion of excessive number is well taken. Nevertheless, it appears that the fairer, and preferable, practice is that embodied in the proposed rule. Moreover, a propounding party may avoid the problems envisioned in the comments by fashioning its interrogatories in such a manner that they clearly do not exceed the numerical limitation of § 2.120(d)(1).

It is true that, under the proposed rule, two motions to compel may be necessary. However, two motions may also be necessary under the present rule, namely, the motion for a protective order, and, after that motion has been determined and answers and specific objections have eventually been served (either to the original interrogatories, if the Board finds that they are not excessive, or to reformulated interrogatories not exceeding the limitation), a motion to compel, if the propounding party is dissatisfied with the answers and/or specific objections. Again, the essential difference between the two rules is that under the present rule, the burden of filing the initial motion lies with the responding party, while under the proposed rule, that burden would lie with the propounding party.

The suggestion that a responding party, served with what it believes to be an excessive number of interrogatories, be required to serve answers or specific objections to the first 75 of them, but be permitted to assert a blanket objection, on the basis of excessive number, to the remainder, has not been adopted. Such an approach would simply open up a new area for dispute, that is, a dispute as to whether the responding party has, in fact, answered the first 75 (rather than only the first 74, or whatever). Further, this type of approach might encourage propounding parties to routinely serve an excessive number of interrogatories,

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in the belief that the responding party may answer all of them, and at least will answer the first 75. Finally, it is believed that the purposes of discovery are better served if a party which has propounded excessive interrogatories is allowed an opportunity to serve reformulated interrogatories not exceeding the limitation, so that the propounding party may, in effect, decide which of the interrogatories, within the numerical limitation, it most wants to have answered.

Comment: One individual expressed approval of the proposed amendment to the rule but suggested a further amendment. The individual commented that the practice under the current rule is that if a party serves more than 75 interrogatories, and the responding party files a motion for a protective order, the propounding party "no longer is permitted to file a motion for leave to file more than 75 interrogatories." The individual suggested that the rule be further amended to explicitly so provide, in order to discourage propounding parties which have served assertedly excessive interrogatories from coupling their motion to compel with a motion for leave to serve additional interrogatories.

Response: The present rule provides, in part, that a motion for leave to serve additional interrogatories must be accompanied by a copy of the interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories *proposed to be served*. It is clear therefrom that a motion for leave to serve additional interrogatories is to be filed *prior* to service of the additional interrogatories, not after the fact, and the Board has so held in a number of cases, declining to entertain such a motion when the motion is filed in response to a motion for a protective order. *See Chicago Corp. v. North American Chicago Corp.*, 16 USPQ2d 1479 (TTAB 1990); *Baron Phillippe De Rothschild S.A. v. S. Rothschild & Co. Inc.*, 16 USPQ2d 1466 (TTAB 1990); *Towers, Perrin, Forster & Crosby Inc. v. Circle Consulting Group Inc.*, 16 USPQ2d 1398 (TTAB 1990); and *Brawn of California Inc. v. Bonnie Sportswear Ltd.*, 15 USPQ2d 1572 (TTAB 1990).

However, in order to further clarify the rule, the suggestion has been adopted to the extent that the portion of the paragraph which presently reads, "A motion for leave to serve additional interrogatories must be accompanied by a copy of the interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories proposed to be served.", is being revised to read, "A motion for leave to serve additional interrogatories must be filed and granted prior to the service of the proposed additional interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories proposed to be served."

Comment: One individual expressed approval of the proposed rule. However, the individual commented that there might be a problem in those cases where a blanket objection on the basis of excessive number is not asserted until after the discovery period has closed; that in those cases, if the propounding party, in response to the objection, voluntarily serves revised interrogatories (rather than filing a motion to compel), the responding party may object to them as untimely, with the result that a motion to compel may be filed. The individual suggested that "to avoid this result, it may be helpful if there is discussion, but not necessarily within the rule, explaining that the service of revised interrogatories, within the scope of the first set, is acceptable."

Response: When a party which has not previously used up its allotted 75 interrogatories serves a set of interrogatories which are excessive in number, and the responding party, in turn, raises the issue of their excessiveness in the manner prescribed in § 2.120(d)(1), it is the practice of the Board to allow the propounding party an opportunity to serve a revised set of interrogatories not exceeding the numerical limitation. *See Pyttronic Industries Inc. v. Terk Technologies Corp.*, 16 USPQ2d 2055 (TTAB 1990); *Kellogg Co. v. Nugget Distributors' Cooperative of America Inc.*, 16 USPQ2d 1468 (TTAB 1990); *Baron Phillippe De Rothschild, supra; Towers, Perrin, supra;* and *Brawn of California, supra*. This is so even if the discovery period has closed, since the revised set of interrogatories serves as a substitute for the excessive (but timely) set. However, if the revised set of interrogatories is not served until after the close of the discovery period, the scope of the interrogatories included therin may not exceed that of the original interrogatories, that is, the revised set of interrogatories may not request information not sought in the original interrogatories. *See Kellogg Co., supra*. Litigants before the Board are strongly encouraged to follow a similar practice voluntarily, without resort to the Board.

The suggestion of the individual has been adopted to the extent that the preceding paragraph explaining the practice of the Board has been included in this final rule notice.

Comment: Two individuals expressed their general approval of the proposed rule, but suggested further modifications thereof. Each of these individuals indicated a preference for the proposed rule, even if not further modified, over the present rule.

One of the individuals stated that a 30-day period for a responding party to serve a blanket objection on the basis of excessive number is too long; that it is a simple objection to write, requiring no supporting statement, let alone argument; and that the proposed 30-day period would thus needlessly delay discovery, and "might impede or prejudice the inquiring party's discovery if the objection were made near the end of the discovery period." The individual suggested that the proposed rule be modified to require that any objection to interrogatories on the basis of excessive number be served within 15 days of the date of service of the interrogatories.

The second individual suggested that a responding party objecting on the basis of an excessive number of interrogatories be required to include in its objection a brief statement explaining how it believes the total number of interrogatories exceeds 75, if the numbered interrogatories and identified parts and subparts do not exceed 75. Then the propounding party should be required, if it files a motion to compel, to explain how its interrogatories are within the limits of the rule. The rule should also provide that the party objecting to the number of interrogatories may, but need not, respond to the motion to compel. The individual noted that if this suggestion were adopted, a response to the motion to compel would be unnecessary because the objection and the motion to compel would present the total picture for the Board's consideration.

Response: The PTO does not believe that the suggested modifications are necessary at this time. However, the PTO will continue to monitor the impact of § 2.120(d)(1) carefully, and will propose further amendments if circumstances warrant.

Other Considerations

The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et. seq.*), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The rule change includes no additional or increased fees Substantive rights to use trademarks are not adversely affected.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers; individual industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, or innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The rule change will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

List of Subjects in 37 CFR Part 2

Administration practice and procedure, Courts, Lawyers, Trademarks.

For the reasons set forth in the preamble and pursuant to the authority contained in section 41 of the Trademark Act of July 5, 1946, 15 U.S.C. 1123, as amended, 37 CFR part 2 is amended as follows:

PART 2--RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for 37 CFR part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.120 is amended by revising paragraph (d)(1) to read as follows:

§ 2.120 Discovery.

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(d) *Interrogatories; request for production.*

(1) The total number of written interrogatories which a party may serve upon another party pursuant to Rule 33 of the Federal Rules of Civil Procedure, in a proceeding, shall not exceed seventy-five, counting subparts, except that the Trademark Trial and Appeal Board, in its discretion, may allow additional interrogatories upon motion therefor showing good cause, or upon stipulation of the parties. A motion for leave to serve additional interrogatories must be filed and granted prior to the service of the proposed additional interrogatories and must be accompanied by a copy of the interrogatories, if any, which have already been served by the moving party, and by a copy of the interrogatories proposed to be served. If a party upon which interrogatories have been served believes that the number of interrogatories served exceeds the limitation specified in this paragraph, and is not willing to waive this basis for objection, the party shall, within the time for (and instead of) serving answers and specific objections to the interrogatories, serve a general objection on the ground of their excessive number. If the inquiring party, in turn, files a motion to compel discovery, the motion must be accompanied by a copy of the set(s) of the interrogatories which together are said to exceed the limitation, and must otherwise comply with the requirements of paragraph(e) of this section.

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Sept. 5, 1991

HARRY F. MANBECK, JR.
Assistant Secretary and Commissioner of Patents and Trademarks

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Trademark Trial and Apperal Board "Brown Bag Lunch" Seminar

The Trademark Trial and Appeal Board will hold its next "brown bag lunch" seminar on Tuesday, October 29, 1991, from 12:00-1:30 p.m., in the Alexandria/Arlington conference room (lobby level) of the South Tower Building, 2900 Crystal Drive, Arlington, Virginia. The seminars are informal discussions with Trademark Trial and Appeal Board members and attorney advisors concerning particular areas of Board practice and procedure.

On October 29, the Board will discuss potentially dispositive motions and tips for avoiding pitfalls in Trademark Trial and Appeal Board practice. Seating is limited to approximately fifty (50). Please call Paula Hairston or Terry Holtzman, after October 8, at (703) 308-9300 to reserve a place; and bring a brown bag lunch.

Sept. 20, 1991

J. DAVID SAMS
Chairman, Trademark Trial and Appeal Board

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PATENT NOTICES

Certificates of Correction For Week of October 22, 1991

D. 309,784	4,870,434	4,911,781	4,932,072
4,708,398	4,872,698	4,912,050	4,932,245
4,713,477	4,873,092	4,912,104	4,933,278
4,721,736	4,876,064	4,912,197	4,933,715
4,727,409	4,877,641	4,912,567	4,934,044
4,737,350	4,878,515	4,914,018	4,934,253
4,745,374	4,882,727	4,914,276	4,934,989
4,760,264	4,883,573	4,915,434	4,935,072
4,778,984	4,887,202	4,925,534	4,935,234
4,786,188	4,887,245	4,916,543	4,935,255
4,795,677	4,889,541	4,916,558	4,936,006
4,796,622	4,890,133	4,917,501	4,936,382
4,798,290	4,890,883	4,917,687	4,936,825
4,802,436	4,892,675	4,917,917	4,936,877
4,808,303	4,893,405	4,918,107	4,936,928
4,819,023	4,893,830	4,918,288	4,937,057
4,820,215	4,894,146	4,918,542	4,937,466
4,822,470	4,894,223	4,918,657	4,937,598
4,824,842	4,894,824	4,919,266	4,937,745
4,828,350	4,896,851	4,919,544	4,938,177
4,833,673	4,897,472	4,919,660	4,938,809
4,833,761	4,898,611	4,919,749	4,939,300
4,837,225	4,898,624	4,919,842	4,939,502
4,849,341	4,899,015	4,920,562	4,939,700
4,851,882	4,899,375	4,920,718	4,940,495
4,852,837	4,900,670	4,920,862	4,940,805
4,854,051	4,901,604	4,921,527	4,942,130
4,854,925	4,902,439	4,921,706	4,943,039
4,855,234	4,902,479	4,922,019	4,943,773
4,855,524	4,903,984	4,922,303	4,943,821
4,857,880	4,905,072	4,922,830	4,944,333
4,859,328	4,905,294	4,922,850	4,944,570
4,859,687	4,905,594	4,923,110	4,945,206
4,860,601	4,905,700	4,923,976	4,946,726
4,861,464	4,907,691	4,925,122	4,946,938
4,861,869	4,908,280	4,926,410	4,947,126
4,861,870	4,908,573	4,927,333	4,954,462
4,862,196	4,909,380	4,928,283	4,978,597
4,862,419	4,909,658	4,928,457	4,994,286
4,862,992	4,909,818	4,928,729	4,995,738
4,864,482	4,909,827	4,928,841	5,034,423
4,868,293	4,909,828	4,929,440	
4,869,099	4,911,290	4,929,804	
4,869,655	4,911,746	4,930,896	

SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

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Washington, D.C. 20231

Box 3	Mail for the Office of personel for NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and Internal Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Va. 22215
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents except: trademark registrations and assignments.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
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Box 14	Invoices directed to the Office of Finance.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 171	Vacancy Announcement Applications.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions to revive, petitions to accept late payment of fees, petitions to defer issue, and petitions to withdraw an application from issue.
Box Assignment	All assignment documents except those filed with new applications.
Box DD	Mail related to Disclosure Documents.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All Communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK	New trademark application and associated papers and APPLICATION fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to libary, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public, in gaining effctive access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

1 Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage: Z. J. Loussac Public Library	(907) 261-2916
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 451-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	Not Yet Operational
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada-Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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	Buffalo and Erie County Public Library	(716) 858-7101
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
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	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331

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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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PATENT EXAMINING CORPS

JAMES E. DENNY, Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110 — D. E. TALBERT, Director	308-0661	5/31/90
ORGANIC CHEMISTRY, GROUP 120 — JOHN F. TERAPANE, JR., Director	308-1235	10/1/90
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130 — BARRY S. RICHMAN, Director	308-0651	2/1/91
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150 — J. O. THOMAS, Director	308-2351	6/1/90
BIOTECHNOLOGY, GROUP 180 — EDWARD E. KUBASIEWICZ, Director	308-0196	1/1/90
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210 — D. G. KELLY, Director	308-1782	3/1/90
SPECIAL LAWS ADMINISTRATION, GROUP 220 — ROBERT E. GARRETT, Director	308-0511	1/15/90
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230 — GERALD GOLDBERG, Director	308-0754	7/1/89
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 240 — CARLTON CROYLE, Director	308-0771	9/1/90
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250 — JOSEPH J. ROLLA, Director	308-0956	12/1/90
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 — BOBBY R. GRAY, Director	308-0962	6/1/90
DESIGN, GROUP 290 — ROBERT E. GARRETT, Director	308-0511	1/15/89
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 310 — D. G. KELLY, Director	308-1113	10/1/90
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320 — N. GODICI, Director	308-1148	1/1/91
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330 — J. J. LOVE, Director	308-0858	10/1/90
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340 — JOHN KITTLE, Director	308-0861	12/7/90
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 350 — A. L. SMITH, Director	308-0651	10/1/90

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

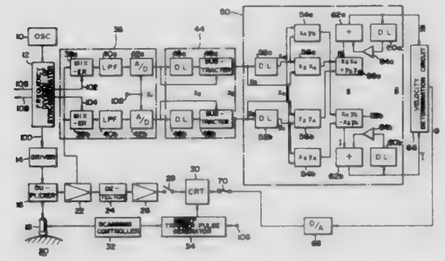
Patents ..... Numbers 3,832,735 to 3,838,465 inclusive
Plant Patents ..... 3,604 to 3,627

REEXAMINATIONS

OCTOBER 22, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,573,477 (1578th)
ULTRASONIC DIAGNOSTIC APPARATUS
Koroku Namekawa; Akira Koyano, and Chihiro Kasai, all of Tokyo, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan
Reexamination Request No. 90/002,290, Feb. 28, 1991.
Reexamination Certificate for Patent No. 4,573,477, issued Mar. 4, 1986, Ser. No. 487,147, Apr. 21, 1983.
Claims priority, application Japan, Apr. 28, 1982, 57-70479
Int. Cl.[5] **A61B** *8/06*
U.S. Cl. 128—661.09



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1 and 2 is confirmed.

1. An improved ultrasonic diagnostic apparatus including an ultrasonic probe means adapted to repeatedly transmit ultrasonic pulse beams into a living organism at a fixed pulse rate and means adapted to provide for reflected echoes to be received, amplified and displayed as the velocity of movement within the organism, the improvement comprising a complex signal converter means for converting a received high frequency signal into complex signals by mixing the received high frequency signal with a pair of complex reference signals which have frequencies that are integer multiples of the pulse rate and which are complexly related to one another, an autocorrelator means for determining the autocorrelation of said complex signal, said autocorrelator means having a time delay equal to an integer multiple of the period of the pulse rate, and a velocity determination circuit for determining the velocity utilizing said autocorrelation, whereby the velocity distribution of a moving member in the living organism is measured and displayed.

B1 Des. 273,544 (1577th)
TOOL RACK
Steven J. Sheftel, Hingham, Mass., assignor to Crawford Products, Inc., Hanover, Mass.
Reexamination Request No. 90/002,310, Mar. 29, 1991.
Reexamination Certificate for Patent No. Des. 273,544, issued Apr. 24, 1984, Ser. No. 440,941, Nov. 12, 1982.
U.S. Cl. D8—376

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

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REISSUES

OCTOBER 22, 1991

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue

Re. 33,720

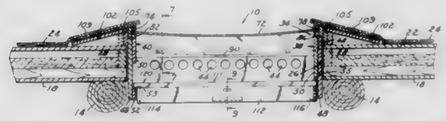
SKYLIGHT ASSEMBLY

Peter A. Cummings, 655 Pine St., Harbor Springs, Mich. 49740

Original No. 4,589,239, dated May 20, 1986, Ser. No. 728,842, Apr. 30, 1985. Application for reissue Apr. 5, 1988, Ser. No. 177,958

Int. Cl.[5] E04D *13/03;* E04B *7/18*

U.S. Cl. 52—200 19 Claims



1. A skylight assembly for a sloping roof comprising in combination:

a rectangular casing having a header, side and bottom rails, to be received in a complementary-shaped hole in a roof;

a translucent outside skylight panel mounted in said casing and bridging the space between the rails and extending over and beyond the bottom rail; [and]

an inside translucent skylight panel disposed within the casing spaced from the outside skylight panel and bridging between the rails to form an air space between the panels;

means on said casing for supporting the *outside skylight* panel beneath the roof covering along the header and side rails while supporting the panel to overhang the roof covering along the bottom rail.

Re. 33,721

LIGHT BEAM SCANNING APPARATUS

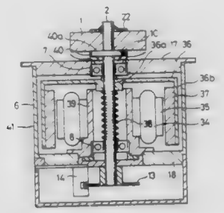
Hideki Sato, and Yoshinori Sugiura, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Original No. 4,623,216, dated Nov. 18, 1986, Ser. No. 577,209, Feb. 6, 1984. Application for reissue Sep. 19, 1988, Ser. No. 246,274

Claims priority, application Japan, Feb. 10, 1983, 58-18625[U]; Feb. 10, 1983, 58-18626[U]

Int. Cl.[5] G02B *26/10*

U.S. Cl. 359—198 48 Claims



38. A light beam scanning apparatus comprising:

a rotating member which is rotatable in one direction including a rotary shaft, a rotating mirror member for scanning a light beam, said rotating mirror member being disposed at a distal end of the rotary shaft, and a rotor member for rotating said rotating member, the rotor member being disposed adjacent to said rotating mirror member; and

bearing means for rotatably bearing said rotary shaft said bearing means being lubricated by oil and being provided at an opposite side to said rotating mirror member with respect to said rotor member.

Re. 33,722

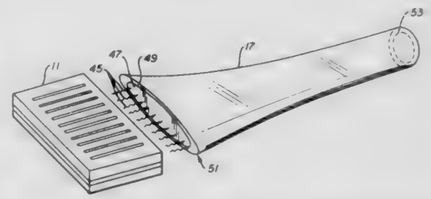
OPTICAL SYSTEM WITH BRIGHT LIGHT OUTPUT

Donald R. Scifres, and D. Philip Worland, both of San Jose, Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.

Original No. 4,763,975, dated Aug. 16, 1988, Ser. No. 43,612, Apr. 28, 1987. Application for reissue Aug. 15, 1990, Ser. No. 568,587

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—33 34 Claims



27. An optical system for producing a bright light output comprising:

a plurality of light sources, each of said light sources emitting light from a given emissive area with given lateral and transverse divergences,

a plurality of fiberoptic waveguides, each of said waveguides having an oblong input end and an output end, each oblong input end positioned relative to one of said light sources for accepting light therefrom, each oblong input end having core dimensions corresponding to said emissive area and a numerical aperture capable of guiding most of said light emitted by said light source, said fiberoptic waveguides being arranged at said output ends to form a bundle.

Re. 33,723

LIQUID FILTERING APPARATUS

Philip J. Hartley, 24 Ardoyne House, Pembroke Park, Ballsbridge, Dublin, Ireland

Original No. 4,816,154, dated Mar. 28, 1989, Ser. No. 19,035, Feb. 26, 1987. Application for reissue Jun. 5, 1989, Ser. No. 361,951

Claims priority, application Ireland, Apr. 25, 1986, 1103/86

Int. Cl.[5] B01D *29/13*

U.S. Cl. 210—448 6 Claims



1. An apparatus for filtering milk, comprising an elongated

substantially tubular casing formed as a single integral piece having an inlet at one end and an outlet at the other end, first connection means at the inlet for connection of the inlet to a source of milk to be filtered, second connection means at the outlet for connection for the outlet to a receptacle for filtering milk, and an elongated filter sock made of a boiling cloth and removably disposed in the casing and having an open end at the inlet and a closed end remote from the inlet, in which the internal diameter of the casing along at least the major part of the length of the casing occupied by the filter sock is greater than the internal diameter of the casing adjacent to the inlet, and in which the cross-sectional area of the filter sock decreases in the direction from the open end thereof to the closed end.

Re. 33,724

PHOTORECEPTOR HAVING POLYCARBONATE LAYERS AND PROCESS FOR THE PREPARATION THEREOF

Yoshiaki Takei; Hiroyuki Nomori, and Katumi Matuura, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Original No. 4,637,971, dated Jan. 20, 1987, Ser. No. 700,671, Feb. 11, 1985. Continuation of Ser. No. 377,819, Jul. 11, 1989, abandoned, which is a continuation of Ser. No. 204,096, Jun. 3, 1988, abandoned. Application for reissue Apr. 13, 1990, Ser. No. 511,981

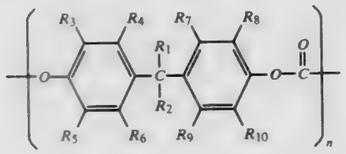
Claims priority, application Japan, Feb. 16, 1984, 59-28309

Int. Cl.[5] G03G *5/04*

U.S. Cl. 430—59 **62 Claims**

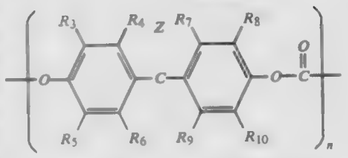
33. A photoreceptor comprising a photosensitive layer on a support, said photosensitive layer comprising a carrier generation layer and a carrier transport layer, said carrier generation layer containing a carrier generating material and a first binder, said carrier transport layer being formed by immersion coating and said carrier transport layer containing a carrier transporting material and a second binder which is a polycarbonate compound of at least one of the formulas

Formula [A]



-continued

Formula [B]



wherein R_1 and R_2 are each independently a hydrogen atom, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted hydrocarbon ring provided that at least one of R_1 and R_2 has at least 3 carbon atoms;

wherein Z represents a group of atoms necessary to form a substituted or unsubstituted carbon ring or a substituted or unsubstituted heterocyclic ring, R_3 to R_{10} are each independently a hydrogen atom, a halogen atom, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted hydrocarbon ring, and n is a number from 10 to 1000.

Re. 33,725

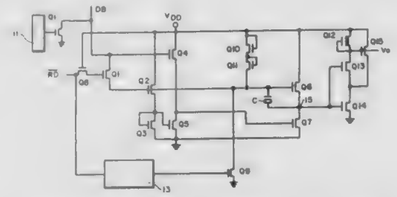
SELF REFERENCED SENSE AMPLIFIER

Donald T. Y. Lee, Santa Clara, Calif., assignor to North American Philips Corporation, New York, N.Y.

Original No. 4,584,493, dated Apr. 22, 1986, Ser. No. 658,000, Oct. 5, 1984. Application for reissue Apr. 11, 1988, Ser. No. 179,609

Int. Cl.[5] H03K *5/19, 3/013;* **G01R** *19/165;* **G11C** *7/06*

U.S. Cl. 307—530 **16 Claims**



9. A sense amplifier for use in connection with a signal line to read information appearing as binary signals on said signal line during READ operations, said signal line having a precharge voltage on it before each READ operation, said sense amplifier comprising sensing means connectable to said signal line and switching means connected to said sensing means, said switching means switching from a first condition to a second condition at the beginning of a READ operation to cause to be applied to said sensing means during said READ operation a predetermined voltage which is prescribed by the precharge voltage appearing on said signal line prior to said READ operation, said sensing means switching from a first to a second condition or not during said READ operation depending on the state of the binary signal appearing on said signal line during said READ operation, and wherein said sensing means comprises a first control means and a second means connected to each other, said first means being connected to said signal line through said switching means before a READ operation and disconnected from it during a READ operation, said second means being connected to said signal line both before and during a READ operation.

PLANT PATENTS

GRANTED OCTOBER 22, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,681

ALSTROEMERIA PLANT NAMED MARGARITA

Erwin Mojonnier, 237 Quail Dr., Encinitas, Calif. 92024

Filed Jul. 24, 1990, Ser. No. 556,403

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Alstroemeria plant named Margarita, as illustrated and described.

7,682

CHRYSANTHEMUM PLANT NAMED PENSACOLA

Leonard H. Shoesmith, deceased, late of Woking, England by May Victoria Shoesmith, executrix ; May V. Shoesmith, Woking, both of England, and Peter S. Hesse, Nipoma, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 3, 1990, Ser. No. 562,379

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Pensacola, as described and illustrated.

7,683

CHRYSANTHEMUM PLANT NAMED DAYTONA

Leonard H. Shoesmith, deceased, late of Woking, England by May V. Shoesmith, executrix ; May V. Shoesmith, Woking, England, and Peter S. Hesse, Nipoma, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 3, 1990, Ser. No. 562,380

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Daytona, as described and illustrated.

7,684

AFRICAN VIOLET PLANT NAMED ROSE

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,312

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Rose, as described and illustrated, and particularly characterized by its small, double pink flowers; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; large, dark green, oval to spear-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,685

AFRICAN VIOLET PLANT NAMED IMPROVED MONTANA

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,313

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Improved Montana, as described and illustrated, and particularly characterized by its single, violet-shaped shiny white flowers; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; bright green, oval to spear-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,686

AFRICAN VIOLET PLANT NAMED IMPROVED INDIANA

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,314

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Improved Indiana, as described and illustrated, and particularly characterized by its single pink flowers with darker center; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, round to heart-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,687

AFRICAN VIOLET PLANT NAMED IMPROVED MARGIT

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,317

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Improved Margit, as described and illustrated, and particularly characterized by its single violet-shaped, deep blue flowers; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; bright green, oval to spear-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

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385-147	5,058,969
359-328	5,058,970
385-011	5,058,971
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359-140	5,060,305
359-173	5,060,306
359-173	5,060,307
359-154	5,060,308
359-154	5,060,309
359-188	5,060,310
359-192	5,060,311
359-192	5,060,312

PATENTS

GRANTED OCTOBER 22, 1991

GENERAL AND MECHANICAL

5,058,207
VIEWING WINDOW FOR HEAT PROTECTIVE CLOTHING

Winfried Altinger, Holderlinstrasse 39, 7530 Pforzheim-8, Fed. Rep. of Germany

Filed Nov. 15, 1990, Ser. No. 613,047
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 8913474
Int. Cl.[5] A42B *1/00, 3/18*
U.S. Cl. 2—8 **5 Claims**

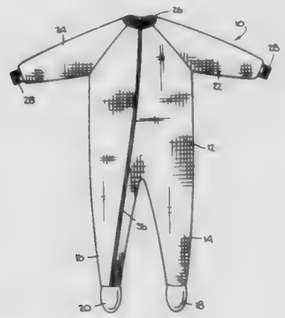


1. In a transparent face shield suitable for exposure to high temperatures, which shield is composed of a pane of polycarbonate having an exterior surface and an interior surface and a layer of gold deposited as a coating in the exterior surface by vapor deposition, the improvement wherein said shield further comprises: a plastic inner pane; and a PTFE foil interposed between said plastic inner pane and said interior surface of said polycarbonate.

5,058,208
GARMENT HAVING SEAMLESS BODY

Marvin Adams, Sylva, N.C., assignor to Meltzer Industries Corporation, New York, N.Y.

Division of Ser. No. 339,529, Apr. 18, 1989, Pat. No. 4,956,879. This application Jun. 6, 1990, Ser. No. 534,168
Int. Cl.[5] A41D *11/00*
U.S. Cl. 2—80 **5 Claims**

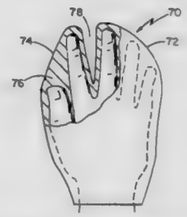


1. A garment,
a. having a one-piece body part,
b. an opening extending lengthwise of said body part for putting the garment on and taking it off a wearer, and
c. a slide fastener secured to said body part along said lengthwise opening for closing and opening said garment,
d. said body part including leg portions extending from the body part integrally therewith,
e. the lengthwise opening in the body part extending into one leg portion,
f. the slide fastener extending into and along the opening in said leg portion and being secured to said leg portion,
g. both leg portions having lengthwise extending seams that close them,
h. said body part and said leg portions being seamless except for said lengthwise extending seams that close the leg portions.

5,058,209
GLOVE FOR PROTECTING THE ULNAR COLLATERAL LIGAMENT

Joel H. Eisenberg, 410 Morehouse Rd., Easton, Conn. 06612

Continuation of Ser. No. 145,621, Jan. 19, 1988, which is a continuation of Ser. No. 727,815, Apr. 26, 1985. This application Apr. 23, 1990, Ser. No. 512,854
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161 A **1 Claim**

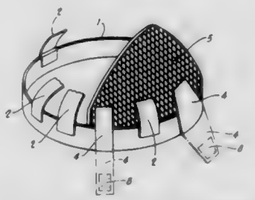


1. A protective glove for preventing injury to the thumb's ulnar collateral ligament comprising:
a hand covering having a first pocket and a second pocket, said first pocket adapted to receive the thumb and at least the forefinger of the hand and said second pocket adapted to receive the remaining fingers, whereby during use, radial movement of the thumb away from the remaining fingers, which movement might injure the ulnar collateral ligament of the thumb, is prevented.

5,058,210
DISPOSABLE SWEAT LINER FOR SAFETY HATS

Victor L. Tivis, 253 Oklahoma Dr., Portales, N. Mex. 88130

Filed Feb. 6, 1990, Ser. No. 475,452
Int. Cl.[5] A42B *1/00*
U.S. Cl. 2—181 **10 Claims**



1. In a safety hat having an annular headband and having crown webbing, the improvement which comprises:

a disposable sweat liner adapted for detachable attachment to said annular headband carried in said safety hat, and for placement against the crown webbing of said safety hat for absorbing perspiration of the wearer of the safety hat, the sweat liner comprising:

a first, inner panel of moisture-retaining fabric having an inner side, an outer side and a peripheral edge, said peripheral edge including a generally curved portion adapted to mate with a first part of said annular sweat band of the safety hat, said first inner panel being fabricated to transfer moisture in one direction through said first inner panel from the outer side thereof to the inner side thereof, while resisting movement of moisture through the first inner panel in the opposite direction;

a second, outer panel having a peripheral edge connected to the peripheral edge of said first, inner panel, the peripheral edge of said second panel including a generally curved portion adapted to contact and mate with said part of said annular sweat band of said safety hat, said peripheral edges of said first and second panels being interconnected to define an enclosure between said first and second panels with the inner side of said first inner panel facing inwardly into the interior of the enclosure;

absorbent padding positioned between the inner and outer panels and in contact with the inner side of the inner panel; and

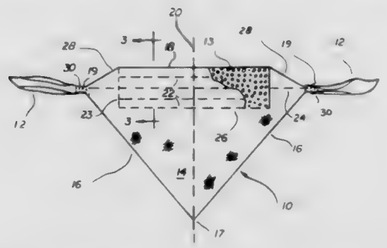
flexible securement tabs connected to said inner and outer panels at spaced intervals along the portions of said first and second panels which are interconnected peripheral edges of said first and second panels and projecting outwardly therefrom to facilitate detachable securement to said annular headband.

5,058,211

BANDANNA-TYPE ARTICLE OF WEARING APPAREL

Darrell L. Hanks, 5718 Purdue, Amarillo, Tex. 79109

Filed Oct. 22, 1990, Ser. No. 600,694
Int. Cl.[5] A41D *23/00*
U.S. Cl. 2—206 **6 Claims**



1. A bandanna-type article of wearing apparel comprising:

a) an integral piece of fabric having:

1) a forward panel of substantially triangular shape having front and rear surfaces, convergent side edges that meet in a downwardly directed apex, and a substantially straight base edge having opposed extremities from which short angled edges extend downwardly to meet said side edges to form lateral apices, said base edge disposed opposite said downwardly directed apex in a manner causing said forward panel to have a line of symmetry that intersects said downwardly directed apex and perpendicularly bisects said base edge,

2) a back panel disposed upon the rear surface of said forward panel adjacent said base edge and formed as a continuous integral extension of said forward panel by virtue of the rearward folding of said piece of fabric, said back panel being disposed in parallel relationship to said forward panel and defining therewith a pocket region, and

3) elongated tying ears outwardly emergent from said lateral apices as continuous integral extensions of said forward panel and formed by the gathering and sewing of said piece of fabric, and

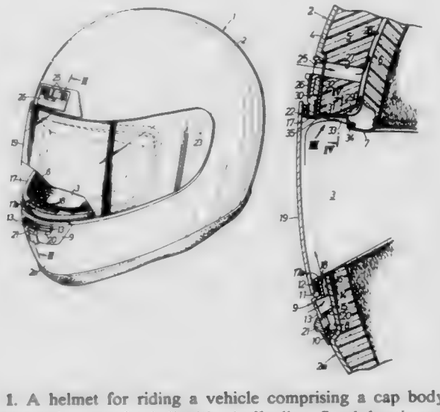
b) a sheet of compliant thermally insulative material disposed within said pocket region and elongated upon a center axis parallel to said base edge and intersecting said lateral apices.

5,058,212

HELMET FOR RIDING VEHICLE

Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1990, Ser. No. 628,048
Claims priority, application Japan, Sep. 14, 1990, 2-244875
Int. Cl.[5] A42B *1/08*
U.S. Cl. 2—424 **4 Claims**



1. A helmet for riding a vehicle comprising a cap body which is formed of a shell with a buffer liner fitted therein and which includes a chin cover portion located directly below a window opening, and a shield plate attached to said cap body for closing the window opening, said chin cover portion comprising a distribution chamber, an air intake hole for introducing a travelling wind into the distribution chamber, and a plurality of jet holes for blowing out the air in said distribution chamber toward an inner surface of said shield plate, wherein

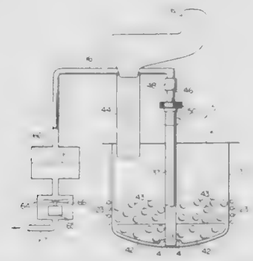
said cap body further comprises an air introducing member covering said buffer liner at an upper edge of the window opening, said air introducing member being provided at a lower surface thereof with a plurality of guide grooves formed in a rearward direction and with outlets disposed at rear ends of said guide grooves and opened toward the shield plate to communicate with a ventilation passage in said cap body.

5,058,213

RAW SEWAGE DRYING APPARATUS

Mitsuhiro Kishi, and Toyohiko Sunaoka, both of Ashikaga, Japan, assignors to Kabushiki Kaisha Hikoma Seisakusho, Tochigi, Japan

Division of Ser. No. 351,028, May 12, 1989, Pat. No. 4,999,930. This application Nov. 5, 1990, Ser. No. 609,378
Claims priority, application Japan, May 21, 1988, 63-124150; Jul. 12, 1988, 63-172852; Jul. 29, 1988, 63-190857; Jul. 29, 1988, 63-190858; Nov. 19, 1988, 63-292789
Int. Cl.[5] A47K *11/02*
U.S. Cl. 4—111.1 **3 Claims**



1. In a portable toilet having a tank defining therein a chamber for collecting raw sewage, and a stool communicating with said tank for supplying raw sewage thereto, the improvement comprising:

a heating device for heating the raw sewage contained within said tank;

a stirring shaft rotatably supported on said tank and projecting into the interior thereof, said stirring shaft having a plurality of stirring blades thereon within the interior of said tank; and

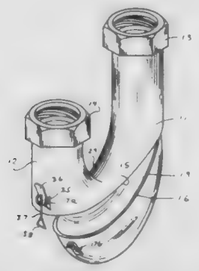
a plurality of heat-transfer balls contained in the interior of said tank.

5,058,214

DRAIN TRAP APPARATUS

Dennis M. Shinn, P.O. Box 30008, Central, Ak. 99730

Filed Jul. 16, 1990, Ser. No. 553,186
Int. Cl.[5] E03C *1/00, 1/24*
U.S. Cl. 4—191 **5 Claims**



1. A drain trap apparatus comprising, in combination,

a "U" shaped conduit including first and second pipe members including a concave dip portion securing the first and second pipe members together by a continuous web defining a top assembly, the top assembly further including a continuous top edge cooperative with a bottom assembly, wherein the bottom assembly includes a bottom edge, wherein the bottom and top edges are of a complementary configuration relative to one another, and

a top seal mounted to the top edge cooperative with a bottom seal mounted to the bottom edge, and

wherein the top seal includes a continuous "V" shaped groove, and the bottom seal includes a continuous "V" shaped projection receivable within the "V" shaped groove, and

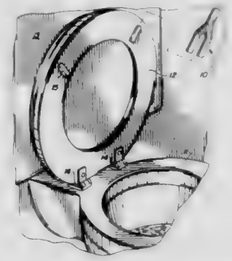
wherein the top assembly and the bottom assembly includes a hinge securing the top assembly to the bottom assembly at a rear terminal end of the top and bottom assemblies, and a latch means for selectively securing the top assembly to the bottom assembly, wherein the latch means is positioned at an opposed end of the top and bottom assembly relative to the hinge.

5,058,215

TOILET SEAT LIFTER

Charles C. Sims, 4214 E. Windsong Dr., Phoenix, Ariz. 85044

Filed Dec. 26, 1990, Ser. No. 634,035
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—251 **10 Claims**



1. A toilet seat handle lifting device comprising:

a unitary rigid planar substantially Y-shaped member having a handle protrusion extending in one direction and having a pair of leg protrusions extending in an opposing direction, said leg protrusions defining an open slot therebetween adapted to receive a toilet seat spacer bumper common therein, whereby said handle protrusion extends beyond an outer peripheral edge of the toilet seat; and

attachment means for securely attaching said device to the bottom side of the toilet seat.

5,058,216

APPARATUS FOR LOWERING TOILET SEAT

Jane S. Trayer, and Frank C. Trayer, both of 25690 La Lanne Ct., Los Altos Hills, Calif. 94022

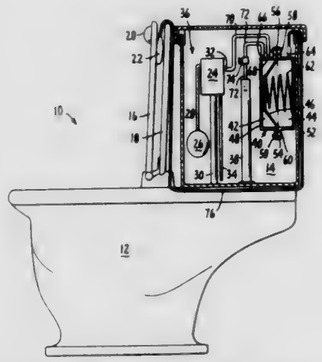
Continuation-in-part of Ser. No. 229,123, Aug. 5, 1988, abandoned. This application Nov. 7, 1989, Ser. No. 434,529
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—251 **18 Claims**

1. Apparatus for lowering the manually raised seat of a flush toilet in response to the flushing of the toilet, comprising

toilet seat actuator means for impelling said toilet seat from its stable upright position in response to an air impulse;

impulse converter means for converting water impulses resulting from the flushing of said toilet to corresponding air impulses; and

conduit means for conveying said air impulses from said impulse converter means to said seat actuator means;



said impulse converter means comprising an air chamber and a water chamber, said chambers being separated by a displaceable diaphragm.

5,058,217

WATER CLOSET BLOWING WARM AIR AND WATER CLOSET UNIT ATTACHABLE TO TOILET ROOM

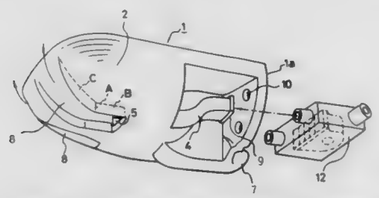
Yasuhisa Taguchi; Makoto Endo; Ryuichi Kawamoto; Shiro Saito, all of Tokoname; Reigi Zaizen; Hiroshi Komachi, both of Anjyo; Naomasa Narita, Toyota, and Kenichi Fujiwara, Kariya, all of Japan, assignors to Inax Corporation and Nippondenso Co., Ltd., both of Aichi, Japan

Filed Apr. 24, 1989, Ser. No. 342,031

Claims priority, application Japan, Apr. 22, 1988, 63-100945; Apr. 28, 1988, 63-107235; Apr. 29, 1988, 63-108064; May 10, 1988, 63-60609; May 10, 1988, 63-60610; May 10, 1988, 63-60612; May 10, 1988, 63-60618

Int. Cl.[5] E03D *11/00*

U.S. Cl. 4—420 **2 Claims**



1. A sitting type water closet adapted to be mounted in a toilet room comprising: a toilet bowl having a rear portion, a front portion and interior and exterior surfaces; a warm air path extending through said bowl between said interior and exterior surfaces from a warm air inlet defined in a rear surface of said bowl to a warm air outlet disposed in a front portion of said bowl; a warm air generator comprising a blower and a positive thermistor cell connected to said warm air inlet to provide a flow of warm air through said warm air path and into said toilet room; and an intake vent connected between said warm air generator and a location outside of said toilet room.

5,058,218

WATERLESS TOILET

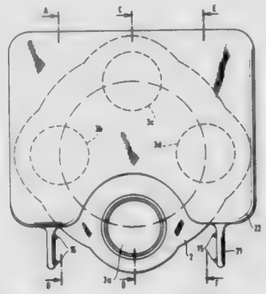
Johannes Löbbert, Industriestrasse 1, 4405 Nottuln 2, Fed. Rep. of Germany

Filed Dec. 13, 1990, Ser. No. 628,077

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1989, 3941304

Int. Cl.[5] A47K *11/02, 11/04, 11/06*

U.S. Cl. 4—479 **8 Claims**



1. A waterless toilet for use with containers that accommodate the waste and can be sealed tight, comprising a seat having n depressions, each accommodating one container, whereby n is at least 4, and means for rotating the seat about a vertical axis in increments of $360/n^{\circ}$ such that the depressions assume, in sequence, a plurality of positions as follows:

a first position at which are disposed a magazine that accommodates a supply of unused containers and a mechanism for dispensing an individual container to each depression;

a second position at which the toilet can be used;

a third position at which are disposed a magazine that accommodates a supply of lids for sealing the used containers and a mechanism for dispensing an individual lids to each depression; and

a fourth position at which are disposed means for removing a container from each depression once a lid has been placed over it and for forwarding the extracted container to a depot.

5,058,219

CIRCULATING WATER POOL

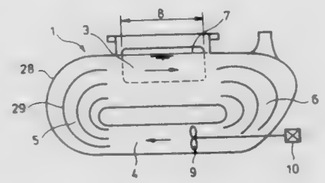
Osamu Teratsuji, Ichikawa; Keiichi Nishimura, Urawa; Yoshiro Moriya, Matsudo, and Yukihiko Ueda, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 540,456, Jun. 18, 1990, Pat. No. 4,979,243, which is a continuation of Ser. No. 311,597, Feb. 15, 1989, abandoned. This application Aug. 30, 1990, Ser. No. 575,228

Claims priority, application Japan, Aug. 22, 1988, 63-207939; Aug. 23, 1988, 63-209134

Int. Cl.[5] E04H *4/12*

U.S. Cl. 4—488 **1 Claim**



1. In a vertical type circulating water pool with a pool main body having an upper water passage having an observation section, a lower water passage with means for producing water flow and front and rear curved water passages intercommunicating said upper and lower water passages, said front passage having an inner wall and an outer wall, an improvement comprising at least a plurality of arcuate guide vanes extending from an inlet to an outlet of said front curved water passage said at least a plurality of arcuate guide vanes in cooperation with the outer wall and the inner wall form a plurality of water channels, the distance between said guide vanes is increased radially outwardly from said inner wall to said outer wall and an outlet of each of the water channels is greater in size than an inlet thereof while an intermediate section is greater than said inlet or said outlet thereof.

5,058,220

JET NOZZLE APPARATUS

Toshio Mikiya, Tokyo, Japan, assignor to Nikki Co., Ltd., Tokyo, Japan

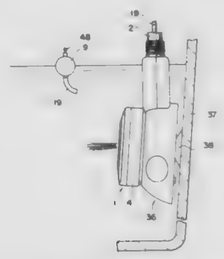
Filed Sep. 14, 1989, Ser. No. 407,423

Claims priority, application Japan, Sep. 19, 1988, 63-122508[U]

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] A61H *33/02;* **B05B** *15/00*

U.S. Cl. 4—542 **7 Claims**



1. A jet nozzle apparatus comprising:

(a) a hose adapted to being connected a hot-water supply system;

(b) nozzle means including:

jet means defining at least one jet hole for forming a relatively high pressure jet stream of hot water supplied to said jet means through the hose;

means defining a plurality of shower holes in surrounding relationship to said jet hole defined by said jet means, each said shower hole for forming a relatively low pressure shower stream of hot water;

means defining a flow path for establishing fluid communication between the hose and each of said jet means and shower holes; and

means defining an air-introducing hole for supplying air to the hot water immediately before the hot water is formed into said relatively high pressure jet stream by said jet means; and

(c) change-over means for selectively switching the hot water flow from said hot water supply system through said defined flow path between said jet means and said plurality of shower holes, and wherein

said air-introducing means includes an air hose having one end connected to said defined air-introducing hole for supplying air thereto.

5,058,221

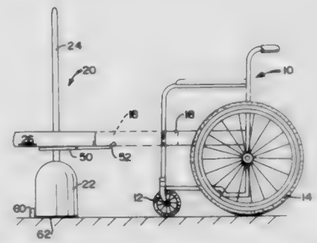
COMBINATION OF A WHEELCHAIR AND A TRANSPORT DEVICE FOR TRANSPORTING A PATIENT

Aleyamma Abraham, 277 Washington St., Carteret, N.J. 07008

Filed Jan. 18, 1991, Ser. No. 643,240

Int. Cl.[5] A61G *5/00, 5/10, 7/10*

U.S. Cl. 5—81 R **6 Claims**



1. A combination of a wheelchair and a transport device for transporting patients from a wheelchair to a second location, comprising:

a) a wheelchair having a generally horizontally movable seat movable between a first retracted position in which the patient is normally seated in said wheelchair and a second extended position in which said movable seat is in contact with said transport device, so that the patient may be moved from said movable seat to said transport device;

b) said transport device including a movable base for moving said transport device into contact with said movable wheelchair seat, vertical support means supported on said movable base, and a movable platform surrounding said vertical support means sized for supporting a seated patient and moving said patient to said second location.

5,058,222

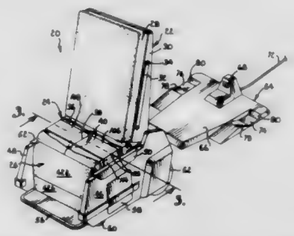
SUPPORT STRUCTURE CONTAINING CLOSED SYSTEM FOR COLLECTION OF HUMAN WASTES

James P. Workman, 25530 W. 199th St., Spring Hill, Kans. 66083, and Thomas S. Hargest, Townhouse 4, 330 Concord St., Charleston, S.C. 29401

Filed Feb. 23, 1989, Ser. No. 314,716

Int. Cl.[5] A61G *7/02*

U.S. Cl. 5—90 **31 Claims**



1. A patient support and waste collection system comprising:

a bed presenting a support surface for placing a patient in a generally prone position; and

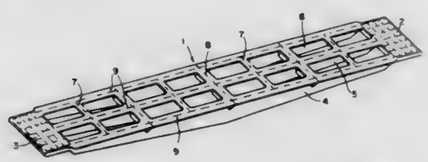
means associated with said bed to provide for the closed collection of wastes excreted by the patient, sad means including a sealable and disposable receptacle located remotely from the patient.

5,058,223

SPRING MATTRESS STRIP

Vicente G. Vasquez, Madrid, Spain, assignor to Comercial Distribuidora De Medios Audiovisuales, S.A., San Fernando De Hernares, Spain

Continuation of Ser. No. 112,074, Oct. 26, 1987, abandoned.
This application Jun. 19, 1989, Ser. No. 368,101
Claims priority, application Spain, Oct. 29, 1986, 8602819
Int. Cl.[5] A47C 23/06
U.S. Cl. 5—237 5 Claims



1. A spring strip for use in spring mattresses comprising:

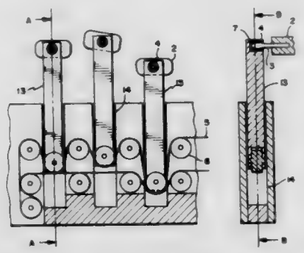
a one piece elongated body having an upper surface with an intrinsic camber, opposite end portions for coupling to a support, a lower surface, three longitudinal beam portions extending longitudinally along the lower surface and having edges and being stiffened between each other by a plurality of transverse and longitudinal diaphragms forming a grating of junctions and bars, which are disposed in an area of load support, the edges of the longitudinal beam portions having a width which varies longitudinally between a maximum at the transverse center line of the strip to a minimum near said support end portions; said spring strip being made of flexible plastic material which deflects under a normal load so that the upper surface becomes substantially planar.

5,058,224

UNDERMATTRESS LATHS HAVING SPRING TYPE CONNECTIONS

Franz Aschwanden, and M. Eberhart, both of Gersau, Switzerland, assignors to HCM AG, Switzerland

Filed Aug. 11, 1989, Ser. No. 392,860
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1988, 3827476
Int. Cl.[5] A47C 23/06, 23/30
U.S. Cl. 5—238 26 Claims



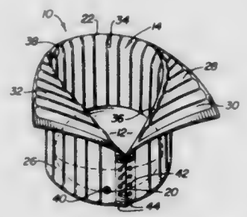
1. Undermattress comprising a frame which is spanned in a transverse direction by a plurality of laths which are supported on the frame at each end by a respective joint and by a yieldable means for supporting said laths in conjunction with said joints so as to be yieldable in a direction of loading of the undermattress, wherein each joint is formed from a joint pin having a rounded joint head and a guide bush, each joint head being fitted into a respective guide bush, without engaging an opposite side thereof, and being shaped for enabling movement of the joint pin relative to the guide bush in every direction.

5,058,225

INFLATABLE MATTRESS, CHANGEABLE TO CHAIR

Brian S. Annand, Alhambra, Calif., assignor to International Leisure Products, Inc., Van Nuys, Calif.

Filed Jun. 20, 1990, Ser. No. 540,903
Int. Cl.[5] A47C 27/08, 27/10
U.S. Cl. 5—449 7 Claims



1. An inflatable cushion which can be configured as either a chair or a mattress, said cushion comprising:

an inflatable backing member, said backing member being generally rectangular and having a top edge, a bottom edge, first and second ends, a first arm portion associated with the first end and a second arm portion associated with the second end;

coupling means for releasably coupling the first and second ends to one another to form an enclosure, said first and second ends being adjacent one another along at least a portion of their length when coupled; and

an inflatable pillow sized to fit snugly within the enclosure;

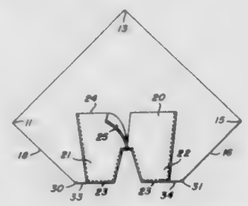
wherein in a coupled position the enclosure is a chair back and sides and the inflatable pillow is positionable within the enclosure to form a chair seat, the first and second ends being separable in the region of the first and second arm portions to allow access to the chair seat, and wherein in an uncoupled position the backing member is generally planar to form a mattress.

5,058,226

NEWBORN CAR SEAT BLANKET

Catherine Crosby, 1080 Calkins Rd., Rochester, N.Y. 14623

Filed Oct. 9, 1990, Ser. No. 594,119
Int. Cl.[5] A47G 9/02
U.S. Cl. 5—494 2 Claims



1. A receiving blanket for an infant, said blanket including a back panel and a front panel;

said back panel being a generally square piece truncated by a diagonal cut from an intermediate point on one edge thereof to an intermediate point on an adjacent edge thereof; said diagonal cut forming the bottom edge of said back piece, said back panel being further cut upward from the bottom edge thereof to form separate leg portions of said back panel;

said front panel being cut upward from the bottom edge thereof to form separate leg portions of said front panel, said front panel being further cut downward from the top edge thereof to form a fly adapted to open and close;

said front and back panels, with their leg portions contraposed, together forming a two-legged pouch for the legs and body of an infant;

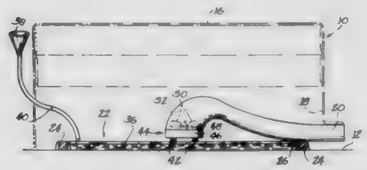
said back panel being larger than said front panel, the side and top corner portions of said back panel adapted to enfold an infant positioned in said pouch.

5,058,227

UNDER-BED HUMIDIFIER

George Schoenfelder, 2S965 Shagbark, Batavia, Ill. 60510

Filed Dec. 11, 1990, Ser. No. 625,433
Int. Cl.[5] A47C 21/04; B01D 47/02
U.S. Cl. 5—508 13 Claims



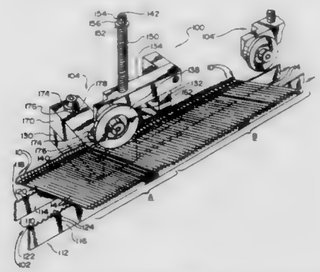
1. The combination for humidifying air comprising an article of furniture such as a bed resting on a floor and having a bottom spaced above the floor with an open space beneath said bottom, and a humidifier disposed beneath said bed and having a body with a length, width, and depth, said depth being small relative to said length and said width, such humidifier being adapted to contain an open-topped pool of water therein, and a fan disposed above and supported from said body for moving air across said body to evaporate water from an open-topped shallow pool of water therein, said humidifier body comprising a peripheral frame with a flexible water-proof sheet laid over it.

5,058,228

MACHINE AND METHODS FOR COLLATING WIRE NAILS HAVING SHANK KEYWAYS

Robert W. Wright, Buffalo Grove; William L. Gabriel, Barrington, both of Ill.; Donald E. Bergstrom, Bartlett, Tenn.; Reinhold Meditz, Lake Zurich, and Henry A. Sygnator, Arlington Heights, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Oct. 15, 1990, Ser. No. 597,022
Int. Cl.[5] B21G 3/32
U.S. Cl. 10—162 A 20 Claims



1. In a machine for collating similar wire nails wherein each nail has a head and a shank, and wherein said shank has a longitudinal axis, a tip spaced axially from said head, and a keyway located between said head and said tip upon a predetermined peripheral portion of said shank, a combination comprising:

conveying means for conveying said nails through an orienting zone in such a manner that said shanks of said nails are disposed in parallel relation with respect to one another, that the axes of said shanks of said nails define a plane, and that said tips of said shanks of said nails tend to be generally aligned with respect to one another; and

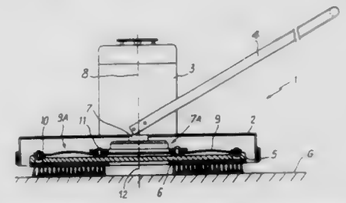
rotary engaging means for rotatably engaging said keyways as said nails are conveyed through said orienting zone and for rotating each nail about the axis of said shank of such nail to such an extent as may be necessary so as to cause the keyway of the shank of such nail and said keyways of said shanks of the other nails conveyed through said oriented zone to be similarly oriented in a rotational sense about said longitudinal axes of said shanks, said engaging means being disengage from said keyways after engaging said keyways.

5,058,229

MACHINE AND DRIVE DISK FOR THE REPAIR AND/OR MAINTENANCE OF FLOORS

Maurice P. Plazanet, 34, avenue Jean Racine, 92330 Sceaux, France

Filed Mar. 9, 1990, Ser. No. 491,083
Claims priority, application France, Mar. 17, 1989, 89 03546
Int. Cl.[5] A47L 11/283
U.S. Cl. 15—49.1 12 Claims



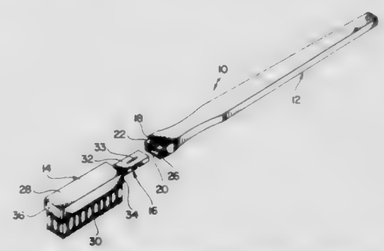
12. A drive disk intended for a machine for the repair and/or maintenance of floors, of the type comprising a motor which rotates at least one rotary tool via a drive shaft at least substantially orthogonal to said tool, said tool being connected to said drive shaft by said drive disk which is connected, in the vicinity of its external periphery, to the tool and, in the in the vicinity of its center, to the drive shaft and permitting inclination of limited amplitude of the axis of rotation of the tool with respect to said drive shaft, wherein said drive disk is made from a material which is supple perpendicularly to its plane but which is rigid in its plane, so as to form radially at least one undulation about said axis of the tool when the machine rests on said tool and when the axis of said tool is coaxial with that of said drive shaft.

5,058,230

TOOTHBRUSH WITH REPLACEABLE TIP PORTION

Milton Hodosh; Alex J. Hodosh, and Steven H. Hodosh, all of 243 Elmwood Ave., Providence, R.I. 02907

Filed Jun. 4, 1990, Ser. No. 532,732
Int. Cl.[5] A46B 7/04
U.S. Cl. 15—167.1 11 Claims



1. A toothbrush comprising an elongated handle portion

having a brushing end and a tip portion detachably received on said brushing end, said handle portion having a cavity therein which extends longitudinally inwardly from said brushing end, said cavity having a non-circular cross section, said tip portion including a base having an end, dental instrument means on said base for treating the teeth of a user and a projection extending outwardly from the end of said base, said projection being of non-circular cross section and being adapted to be snugly received in said cavity the end of said base also having a recessed channel formed therein, said channel extending completely around the perimeter of said projection on said end of said base, said handle portion having a rim on the brushing end thereof, said rim extending longitudinally outwardly around the perimeter of said cavity, said rim being of substantially the same dimension and configuration as said recessed channel and being releasably received therein to effect a seal between said handle portion and said tip portion around said projection in order to minimize the penetration of moisture into said cavity and means for releasably retaining said projection in said cavity to secure said tip portion on the brushing end of said handle portion.

5,058,231

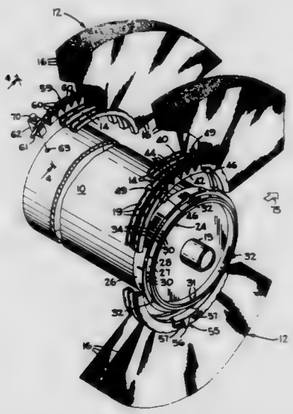
STREET SWEEPER MAIN BROOM ASSEMBLY

James T. Lowe, Fontana, Calif., assignor to Industrial Brush Corporation, Pomona, Calif.

Continuation of Ser. No. 775,894, Sep. 12, 1985, abandoned. This application Jun. 6, 1988, Ser. No. 204,935

Int. Cl.[5] A46B *9/02, 9/08*

U.S. Cl. 15—182 **2 Claims**



1. In a rotary broom including a generally cylindrical core, a helical brush strip wound about the core, a ring member secured to one end of the core, a series of stops on the ring member spaced circumferentially thereabout, and tightening means positioned at the end of the brush strip adjacent to the ring member for engagement with the ring member so that unidirectional relative circumferential movement only is allowed between the tightening means and the ring member, the improvement wherein the tightening means comprises

a guide member configured to contact and move upon the ring member;

means on said guide member for engaging the stops on the ring member so that only the unidirectional movement occurs;

means on said guide member for securing thereto substantially the first full turn of the helical brush strip at the end thereof adjacent the ring member;

a rod fixed to the end of the helical brush remote from said first full turn thereof; and

clamping means attached to the other end of the core for fixing said rod thereto, wherein said clamping means has a laterally disposed opening therein for accepting said rod laterally.

5,058,232

SCRAPING ARRANGEMENT FOR TELESCOPIC STEEL COVERS

Albert Stöhr, Schwaben, Fed. Rep. of Germany, assignor to Gebr. Hennig GmbH, Fed. Rep. of Germany

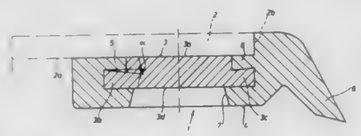
PCT No. PCT/EP87/00250, § 371 Date Oct. 19, 1990, § 102(e) Date Oct. 19, 1990, PCT Pub. No. WO87/06866, PCT Pub. Date Nov. 19, 1987

PCT Filed May 13, 1987, Ser. No. 150,656

Claims priority, application Fed. Rep. of Germany, May 13, 1986, 8613005.6[U]

Int. Cl.[5] B23Q *11/08;* **F16C** *17/00*

U.S. Cl. 15—236.01 **8 Claims**



1. A scraper construction adapted to be secured to a support, said scraper construction comprising a carrier T-shaped in cross-section and having a central body presenting uninterrupted underside and topside planar surfaces, the topside surface of which is adapted to confront said support, said carrier having two arms extending in opposite directions from said central body; and a scraper body having opposite sides between which is a T-shaped groove, said groove comprising a central portion from which two recesses extend in opposite directions toward the respective opposite sides to form retaining limbs on opposite sides of said groove, one of said sides of said scraper body terminating in a scraper lip, said carrier being snugly accommodated in said groove with the central body of said carrier occupying said central portion of said groove, the topside surface of the central body of said carrier being exposed via said groove, and the arms of said carrier being accommodated in said recesses, the arms of said carrier terminating in free ends and being of varying thickness with their maximum thickness at said free ends, said recesses corresponding to the cross-sectional configuration of said arms, said scraper body having an opening extending therethrough in communication with said groove and exposing a portion of said underside planar surface of said central body of said carrier to permit access to said carrier for fixing said topside planar surface of said central body of said carrier to said support, thereby to effect clamping of the limbs of said scraper body between the arms of said carrier and said support, said scraper body carrying projections on that side of said scraper body opposite said one of said sides.

5,058,233

CLEANING DEVICE

Charles F. Davis, III, 2325 Seashell Rd., No. 305, Virginia Beach, Va. 23451

Continuation-in-part of Ser. No. 407,957, Sep. 15, 1989, Pat. No. 4,970,750. This application Sep. 18, 1990, Ser. No. 584,142

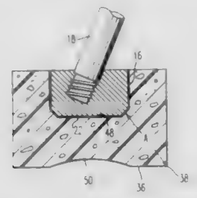
Int. Cl.[5] A47L *13/16*

U.S. Cl. 15—244.1 **11 Claims**

1. A cleaning device comprising:

a rigid support block having a support-block outer surface including a support-block bottom surface and a support-block sidewall surface, said support-block bottom surface being substantially flat and said support-block sidewall surface extending upwardly from said support-block bottom surface when said support-block bottom surface is horizontal but including a substantial transition portion adjacent said support-block bottom surface which is substantially beveled inwardly toward said support-block bottom surface;

a sponge block having a sponge outer surface including a sponge sidewall outer surface and a sponge-bottom outer surface, said sponge sidewall outer surface extending upwardly from said sponge bottom outer surface when said sponge bottom outer surface is horizontal and these two surfaces intersecting at a bottom edge area, said sponge block being constructed of a sponge-like material having a cavity formed in said top outer surface thereof and extending a substantial distance into said sponge block, said cavity having a cavity surface with a cavity sidewall surface and a cavity bottom surface, said cavity



surface having a size and shape that is close to the size and shape of the support-block outer surface for receiving said support block in said cavity;

a means for attaching the cavity sidewall and bottom surfaces to said support-block sidewall and bottom surfaces;

an elongated handle attached at the said top surface of said support block;

wherein said sponge bottom outer surface is substantially flat and is approximately parallel to said support-block bottom surface and wherein the bottom edge area of said sponge outer surface is spaced a distance from said support-block outer surface which is greater than distances other portions of said sponge outer surface are spaced from said support block outer surface.

5,058,234

DEVICE FOR APPLYING HYGIENIC AND MEDICINAL SUBSTANCE

John C. Humenay, 3206 Hirschfield Rd., Spring, Tex. 77373

Filed Jan. 23, 1990, Ser. No. 468,925

Int. Cl.[5] A47L *13/16*

U.S. Cl. 15—231 **13 Claims**



1. An implement comprising:

a curved handle having a radius of curvature of between 14 inches and 16 inches, said curved handle having a grip portion fastened to one end of said curved handle;

a washing pad holder connected to said curved handle opposite said grip portion, said washing pad holder releasably receiving a cloth, said washing pad holder having a generally flat working surface, said grip portion being angularly offset between eight and ten degrees inwardly from said curved handle toward said flat working surface; and

a cloth fastened to said washing pad holder such that said working surface is positioned adjacent to said cloth.

5,058,235

MOBILE VACUUM TRASH COLLECTOR

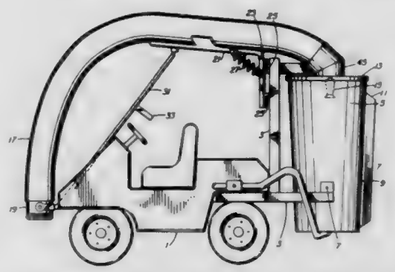
Gabriel Charky, 2214 Girouard Avenue, Montreal, Quebec, Canada H4A 3C3

Continuation-in-part of Ser. No. 92,718, Aug. 25, 1987, abandoned. This application Nov. 16, 1989, Ser. No. 437,159

Claims priority, application Canada, Aug. 27, 1986, 516976

Int. Cl.[5] A47L *9/00*

U.S. Cl. 15—340.1 **32 Claims**



1. A vehicular vacuum trash collector comprising a motorized cart for carrying a human operator, a bin connected to the rear of said cart, a hose connected at one end to said bin and having an inlet at the other end thereof, means for maneuvering said hose and nozzle independently of said cart, means for emptying said bin, a vacuum blower disposed within and at an opposite end of said bin from said hose for drawing debris via suction into said nozzle, through said hose and into said bin, further including air permeable means within said bin intermediate said one end and said vacuum blower for trapping said debris within the bin, said vacuum blower further comprising at least one fan for drawing airborne debris into said bin, said debris being trapped in said air permeable means.

5,058,236

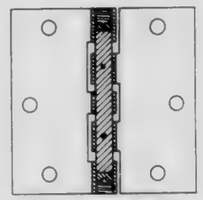
ADJUSTABLE HINGE

Ormel W. Henson, 1310 Wales St., Jasper, Tex. 75951

Filed Feb. 6, 1990, Ser. No. 475,918

Int. Cl.[5] E05D *7/04, 5/00*

U.S. Cl. 16—222 **1 Claim**



1. A hinge for performing a controlled adjustment of a door or the like, comprising:

a hinge pin;

a first half having one or more holes therethrough for mounting to said door or the like and a first plurality of receptacles for receiving said hinge pin;

a second half having one or more holes therethrough for mounting to said door or the like and a second plurality of receptacles for receiving said hinge pin;

an adjusting screw received in one of said second plurality of receptacles at an end of said hinge;

another adjusting screw received in another of said second plurality of receptacles at an opposite end of said hinge;

the hinge being adjustable by rotating the adjusting screws in opposite directions;

a plurality of stop pin means, each stop pin means passing

through both said hinge pin and a first receptacle at a 90 degree angle relative thereto for preventing movement of said hinge pin relative to said first hinge leaf and also to said first and second plurality of receptacles in the length dimension of said hinge pin;

said first and second halves each having at least one substantially square corner with rounded perforation means for allowing each said corner to form an arcuate shape.

5,058,237

SNAP-ON HINGE FOR A REMOVABLE LOAD PLATFORM IN MOTOR VEHICLES

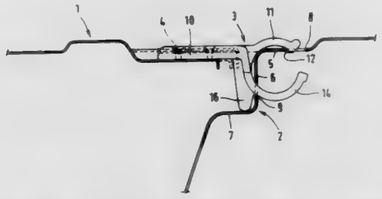
Josef Mahr, Cologne, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 27, 1990, Ser. No. 589,105

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1989, 3932128

Int. Cl.[5] E05D *1/00*

U.S. Cl. 16—225 **5 Claims**



1. A hinge assembly for pivotally mounting a load platform on the body of a vehicle for movement to and from a load position, the assembly comprising:

a vehicle body frame receiving unitary molded hinge member for pivotal movement with respect thereto, the frame including a vertical wall, an upper horizontal wall, and a lower horizontal shoulder;

means defining at least one opening in each of said vertical wall and said upper horizontal wall; and

said unitary molded hinge member fixedly secured to said load platform and including upper tongue means and lower tongue means engageable in snap-fit relationship with said vehicle body frame through the upper horizontal wall opening and the vertical wall opening, respectively.

5,058,238

CROSSLINK HINGE WITH CLOSING MECHANISM

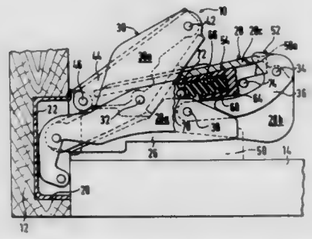
Reinhard Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Apr. 19, 1990, Ser. No. 511,071

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1989, 3914100

Int. Cl.[5] E05D *5/00*

U.S. Cl. 16—278 **8 Claims**



1. A crosslink hinge for hanging a door on a carcase of a piece of furniture, comprising: a door-related hinge part configured as a cup to be set in a mortise in the door, and a carcase-related hinge part to be fastened on a mounting plate on the piece of furniture, said crosslink hinge having a first and a second crosslink arm, a first pivot joining said arms to each other at central portions thereof, said first arm having a first end articulated directly to said cup and a second end articulated indirectly to said carcase-related hinge part by a first link, a second pivot connecting said second end to said first link, said second arm having a first end articulated directly to said carcase-related hinge part and having a second end articulated indirectly to said cup via a second link, said first cross link arm being formed by two flanges disposed parallel to each other in spaced relationship and joined to each other at least in sections b a web so as to form a profile arm of an inverted U-shaped cross section, a closing mechanism for forcing said hinge to a closed position, said closing mechanism including a displaceable thruster disposed between the flanges under the web, and spring means for resiliently biasing said thruster toward said second pivot, said thruster having a thruster surface engaging a cam face of a cam element formed on said first link at said second pivot, said cam face having such a shape in relation to the thruster surface of said thruster that a torque acting in closing direction on said first link develops only upon approaching the closed position, wherein the cam face provided on said cam element is divided in its width into a central cam section and two externally adjoining outer cam sections, one on each side of the central cam section, the thruster surface of the thruster being divided in width into corresponding thruster surface sections, said central cam section of the cam element having in side elevation an arcuate shape concentric with respect to said second pivot and being in engagement with the associated thruster surface section during a first section of the turning movement of the hinge from an open position toward the closed position, the outer cam sections cooperating with the two associated thruster surface sections during a second, succeeding section of the turning movement to the closed position, and being formed on cam sections projecting on both sides beyond the central cam section toward said thruster.

5,058,239

FIXING KNUCKLES IN FOLDABLE ALUMINUM LADDER

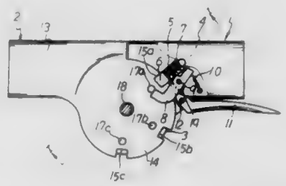
Dickey Lee, Taipei, Taiwan, assignor to Alfa Metal Corp., Taipei, Taiwan

Filed Apr. 14, 1986, Ser. No. 851,495

The portion of the term of this patent subsequent to Oct. 22, 2006, has been disclaimed.

Int. Cl.[5] E05D *11/10*; **F16C** *11/00*

U.S. Cl. 16—324 **5 Claims**



4. An improved locking mechanism for use with the fixing knuckle of an aluminum folding ladder comprising:

an outer casing;

an inner disk member pivotally housed within said outer casing;

said inner disk member comprising at least one wall member, a plurality of dents on the peripheral edge of said wall member, and a plurality of guide pins, each guide pin being adjacent to the bottom of a corresponding one of said dents, said guide pins projecting laterally beyond both sides of said wall;

locking block means, spring-biased and slideably mounted on said outer casing, for selectively engaging said dents; and

spring-biased retaining and release means, pivotally mounted on said locking block means, for retaining said locking block means when disengaged from said dents and during rotation of said outer casing in relation to said inner disk member in one direction and thereafter for selectively releasing said locking block means into another said dent by engagement of said retaining and release means with a selected guide pin when rotating said outer casing in relation to said inner disk member in an opposite direction.

5,058,240

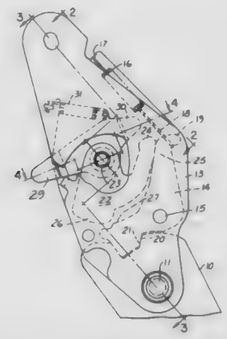
COMPOSITE INERTIA LATCH FOR VEHICLE SEAT BACK

Rudolph C. Barda, and Berno Engels, both of Battle Creek, Mich., assignors to Keiper Recaro, Inc., Battle Creek, Mich.

Filed Jun. 19, 1989, Ser. No. 367,978

Int. Cl.[5] E05D *11/10*

U.S. Cl. 16—325 **7 Claims**



1. In a motor vehicle seat having a seat part and a back part, a hinge comprising, a lower hinge element fixed to said seat part, an upper hinge element fixed to said back part, first pivot means for pivotally connecting said upper hinge element to said lower hinge element including an engageable stop means, a first element (**14**) pivotally mounted on said upper hinge element normally engaged with said stop means in a first position capable of preventing forward seat back pivotal movement and including biasing means associated therewith for yieldable disengagement from said stop means through forward pressure on the seat back to permit forward seat back pivotal movement, an inertia element pivotally mounted on second pivot means on said upper hinge element with outer surface means (**24**) interengaging outer surface means (**25**) on said first element along respective first ends in said first position (FIG. **1**) permitting said yieldable disengagement of said first element in response to said forward pressure on said seat back, said inertia element having a center of gravity offset from said second pivot means defining a blocking means responsive to gravity to pivotally move said inertia element in a first direction away from engagement with said first element during initial forward seat back movement with said vehicle stationary permitting unrestrained additional pivotal movement of said seat back (FIG. 1A), said blocking means also being responsive to inertia to overcome gravity and pivotally move said inertia element in a second opposite direction into blocking engagement with said first element along their outer surfaces at respective second ends (FIG. 1B) upon sudden deceleration of said vehicle wherein further pivotal movement of said seat back is substantially eliminated.

5,058,241

METHOD AND APPARATUS FOR COMBINING FIBRES FORMED INTO SLIVERS FOR SUPPLY TO TEXTILE MACHINERY

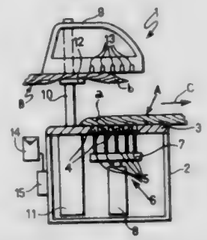
John S. Haigh, Addingham, United Kingdom, and Gian M. Nelva, Andorno Micca, Italy, assignors to Caipo Engineering System S.r.l., Campore-Biella, Italy and Iws Nominee Co. Limited, London, England

Filed May 31, 1990, Ser. No. 531,357

Claims priority, application Italy, May 31, 1989, 67423 A/89

Int. Cl.[5] D01G *21/00*

U.S. Cl. 19—150 **9 Claims**



1. A method of joining the tail end portion of a first sliver of textile fibres to the leading end portion of a second sliver of said textile fibres, comprising superposing and clamping together said tail end portion and said leading end portion and reciprocating a plurality of needles through said superposed end portions in a direction transverse the planes of said end portions in order to join said end portions together.

5,058,242

PEN HOLDER FOR A CLIP-BOARD

David Liu, and Jane Keo, both of No. 95, Kung Cheng Rd., Taichung, Taiwan

Filed Aug. 14, 1990, Ser. No. 567,070

Int. Cl.[5] B42F *1/00*

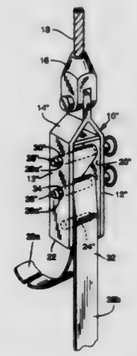
U.S. Cl. 24—67.7 **1 Claim**



1. A clip-board comprising a clip pivotally coupled to said clip-board about a pivot axle and biased by a spring member which has a substantially U-shaped portion; a pen holder including a base portion and a retaining portion integrally formed together, a notch and a pair of grooves being formed in said base portion of said pen holder, said notch being provided for receiving said pivot axle and said grooves being provided for receiving two legs of said U-shaped portion of said spring member; a recess being formed in said retaining portion of said pen holder for holding a pen, and a width of said base portion being provided such that said pen holder can be retained in

position by an engagement between said notch and said pivot axle and by another engagement between said grooves and said legs of said U-shaped portion of said spring member.

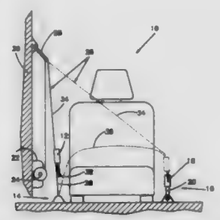
5,058,243
STRAP CONNECTOR
Donald D. Rasmussen, P.O. Box 250, Tualatin, Oreg. 97062
Filed Aug. 29, 1990, Ser. No. 574,601
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—68 R **2 Claims**



1. A strap connector for use with a strap having a pair of free ends, said connector comprising:
a body portion having a strap receiving area therein with opposite defining side walls and also having opposite ends, one of said ends comprising an attaching end for powered tension means and the other of said ends being open into the strap receiving area,
first, second and third anchor bars extending across said strap receiving area and being mounted in said side walls, said anchor bars receiving looped portions of the strap with the free ends of the strap comprising a strap excess end portion and a load connected end portion,
said anchor bars being positioned such that one of then pinches the strap excess end portion between said one bar and the load connected end portion by a pulling tension on the load connected end portion and with the strap excess portion extending freely from said anchor bars and from said body portion to allow either of said free ends of the strap to be the strap excess portion or the load connected end portion,
at least two of said anchor bars being removably mounted in said side walls for insertion thereof laterally in looped portions of the strap for holding the latter in a secured position on said body portion with the free end of the strap pinched between said one anchor bar and the load connected end portion of the strap and for removal from the strap receiving area to release the strap from said body portion.

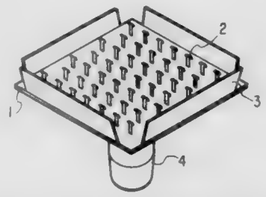
5,058,244
FREE FALLING CINCH TONGUE
Angel Fernandez, Mount Clemens, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Jul. 5, 1990, Ser. No. 548,109
Int. Cl.[5] A44B *11/12;* **B60R** *21/00;* **F16G** *11/00*
U.S. Cl. 24—170 **22 Claims**

1. A cinch tongue for a vehicle occupant seat belt system, said cinch tongue comprising:
a metal frame having a first end portion including a first clamping surface, said first clamping surface being formed on a plastic insert supported on said frame, said frame having a second end portion including a latch plate portion of said frame receivable for locking in a seat belt buckle;
a lock bar having a second clamping surface, a first end portion including said second clamping surface, a second end portion, and an axis extending across said lock bar at a position between said end portions;
a pair of spaced apart flanges extending from said frame; and
means for supporting said lock bar between said flanges with said axis being fixed with respect to said frame and with said axis extending transversely to said frame at a position



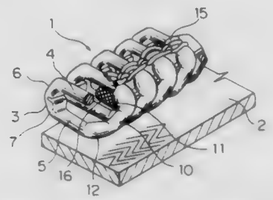
located between said first clamping surface and said latch plate portion of said frame, said lock bar being rotatable about said axis, said second clamping surface being movable in an arcuate path toward and away from said first clamping surface with rotation of said lock bar about said axis, said lock bar having a locking position wherein said second clamping surface is spaced from said first clamping surface an amount to clamp a seat belt against movement between said clamping surfaces, said lock bar being freely rotatable into and out of said locking position when a seat belt extends between said clamping surfaces.

5,058,245
FASTENING DEVICE AND METHOD FOR FIXING ADHEREND BY USING THE SAME
Sanpei Saito, Tokyo, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan
Filed Oct. 31, 1989, Ser. No. 429,456
Int. Cl.[5] A44B *18/00*
U.S. Cl. 24—306 **5 Claims**



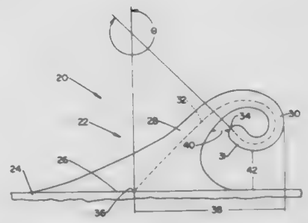
1. A fastening device for securely fixing an adherend mounted with one component of a loop and hook fastener on a predetermined position on the surface of a base, said device comprising:
a flat member having on one surface thereof interior to its peripheral edge the other component of the loop and hook fastener which will engage with the loop and hook fastener component mounted on the adherend;
a plurality of spacing members in the form of flat side plates for preventing the engagement of said two fastener components when said spacing members are in a generally vertical position and allowing the engagement of said two fastener components when said spacing members are in a substantially flat position, each said spacing member being connected by an edge to the peripheral edge of said one surface of the flat member having the other component of the loop and hook fastener and projecting upward from said one surface, said spacing members having a larger height than that of the loop and hook fastener component provided on the flat member so that it can, when the loop and hook fastener component mounted on the flat member is faced with the other loop and hook fastener component mounted on the adherend, keep the two fastener components in a spaced relationship with each other to prevent the engagement of said two fastener components and to allow the alignment of the adherend with respect to said predetermined position on the surface of the base, and being capable of, when the adherend is properly aligned with respect to said predetermined position and when the adherend is pressed against the flat member, deforming to said substantially flat position so that the two fastener components engage with each other; and
a fixing means which fixes the flat member on the surface of the base.

5,058,246
SLIDE FASTENER ELEMENTS MADE OF HELICALLY WOUND MONOFILAMENT AND METHOD OF FORMING THE SAME
Yoshinori Fujisaki, and Sakae Aimono, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Dec. 28, 1990, Ser. No. 635,913
Claims priority, application Japan, Dec. 29, 1989, 1-342756
Int. Cl.[5] A44B *19/40*
U.S. Cl. 24—394 **6 Claims**



1. Slide fastener elements made of a helically wound synthetic resin monofilament with each slide fastener element comprising:
an interengaging head, which is formed to be arranged on oneline in the longitudinal direction of said slide fastener elements by pressing a monofilament to be widened at its portion corresponding to said interengaging head;
a pair of interengaging head-side widened portions, which are formed at the both upper and lower sides of said interengaging head respectively by pressing said monofilament at its portions adjacent to said interengaging head;
upper and lower legs, which extend from the both ends of said interengaging head through said pair of interengaging head-side widened portions respectively so as to transverse the longitudinal direction of said slide fastener elements;
a turn, which extends between an upper leg of one slide fastener element and a lower leg of an adjacent slide fastener element through pair of connecting portions; and
said pair of connecting portions, which are formed at the both upper and lower sides of said turn respectively by pressing said monofilament to be widened at its portions adjacent to said turn.

5,058,247
MECHANICAL FASTENING PRONG
Dennis A. Thomas, Cincinnati, and Ted L. Blaney, West Chester, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 304,986, Jan. 31, 1989, abandoned. This application May 1, 1990, Ser. No. 564,672
Int. Cl.[5] A44B *18/00*
U.S. Cl. 24—448 **12 Claims**



1. A fastening system for attaching to a complementary receiving surface, said fastening system comprising:
a substrate comprising a sheet of flexible material; and
a multiplicity of prongs joined to said substrate, each of said prongs being made of thermoplastic hot melt adhesive deposited onto said substrate, each of said prongs comprising
(a) a base comprising the plane of attachment of said prong to said substrate such that said prong is joined at said base to said substrate;
(b) a shank having a proximal end and a distal end, said proximal end being contiguous with said base, said shank projecting longitudinally outwardly from said base and said substrate; and
(c) an engaging means for securing the fastening system to a complementary receiving surface so as to cause mechanical interference between said engaging means and the receiving surface, said engaging means being joined to said distal end of said shank such that said engaging means laterally projects radially outwardly beyond the periphery of said shank and away from said substrate, said engaging means having a reentrant segment, said reentrant segment having a distal end terminating at a tip, said reentrant segment being laterally directed towards said shank such that said engaging means defines a free space and forms an included angle greater than about 270° and less than about 360°;
wherein said prong has a longitudinal axis comprising an imaginary line generally centered at said base at an origin and laterally and longitudinally extending through said distal end of said shank to said tip of said engaging means, a profile projection of said longitudinal axis being formed beyond said tip;
wherein said substrate has a perpendicular which passes through said origin of said longitudinal axis; and
wherein said included angle is measured as the angle between said profile projection of said longitudinal axis through said tip of said reentrant segment and said perpendicular to said substrate which passes through said origin of said longitudinal axis.

5,058,248
COFFIN
Werner Sedlak, Waldbach 75, Walbach, Austria A-8253
Filed May 4, 1990, Ser. No. 519,049
Claims priority, application Austria, Dec. 6, 1989, 2780/89
Int. Cl.[5] A61G *17/00*
U.S. Cl. 27—4 **8 Claims**

1. A coffin, having a trough for a dead body and a lid for closing said trough, said trough having at least five trough

components including at least one bottom wall member with a perimeter contacting region, at least one head wall member with a first edge, at least one foot wall member with a first edge and at least two side wall members, each with a first edge, said lid having at least five lid components, including at least one upper wall member with a perimeter contacting region, at least one head wall member with a first edge, at least one foot wall member with a first edge and at least two side wall members, each with a first edge, comprising:

first hinge means for pivotally connecting the bottom wall member of the trough with the head wall member of the trough, the foot wall member of the trough and the side wall members of the trough, so that said head wall, foot wall, and two side wall members of the trough can be swivelled into a common plane with said bottom wall to form a flat configuration of said trough;

second hinge means for pivotally connecting said upper wall member with the head wall member of the lid, the foot wall member of the lid and the side wall members of the lid, so that said head wall, foot wall, and two side wall members of the lid can be swivelled into a common plane with said upper wall to form a flat configuration of said lid;

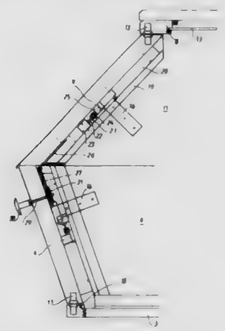
said first hinge means including a first plurality of hinges permitting movement of said head wall member, foot wall member and side wall members of said trough from said flat configuration of said trough to a position-of-use configuration wherein said edges of said head wall, foot wall and two side wall members of said trough are contacting regions, in contact with said perimeter contacting region of said bottom wall member and each of said first plurality of hinges is positioned between said edges of said trough components and said perimeter contacting region of said bottom wall member so that said first plurality of hinges are not visible when said trough is in said position-of-use configuration;

said second hinge means including a second plurality of hinges permitting movement of said head wall member, said foot wall member and said side wall members of said lid from said flat configuration of said lid to a position-of-use configuration wherein said edges of said head wall, foot wall and two side wall members of said lid are contacting regions, in contact with said perimeter contacting region of said upper wall member, and each of said second plurality of hinges is positioned between said edges of said lid components and said perimeter contacting region of said upper wall member so that said second plurality of hinges are not visible when said lid is in said position-of-use configuration;

first clamping means affixed to the inner side of said trough components for connecting said head wall member of the trough and said foot wall member of the trough with the two side wall members of the trough to maintain said trough in said position-of-use configuration;

second clamping means affixed to the inner side of said lid components for connecting said head wall member of the lid and said foot wall member of the lid with the two side wall members of the lid to maintain said lid in said position-of-use configuration; and

first sealing elements provided at said contacting regions between said trough components and second sealing elements provided at said contacting regions between said lid components, said first and second sealing elements being anchored in one of two said components contacting each other and sealingly engaging the other of said components when said trough and said lid are in said position-of-use configuration.



5,058,249

APPARATUS FOR NEEDLING A NONWOVEN WEB

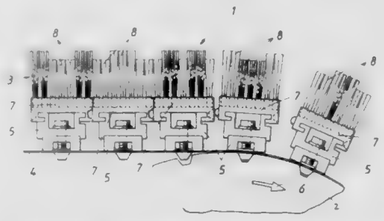
Rudolf Leuchtenmüller, Schwertberg, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed Jul. 16, 1990, Ser. No. 553,882

Claims priority, application Austria, Aug. 22, 1989, 1982/89

Int. Cl.[5] D04H *18/00*

U.S. Cl. 28—109 **8 Claims**



1. An apparatus for needling a non-woven web, comprising

(a) reversing pulleys and

(b) a brush-like piercable support comprising an endless backing trained around the pulleys and an outside covering of bristles spaced from each other protruding from the backing to an elevation thereabove, wherein

(c) the spacing of the bristles in said covering varies according to a desired pattern of the non-woven web.

5,058,250

MANUFACTURE OF ELECTRICAL TRANSDUCER DEVICES, PARTICULARLY INFRARED DETECTOR ARRAYS

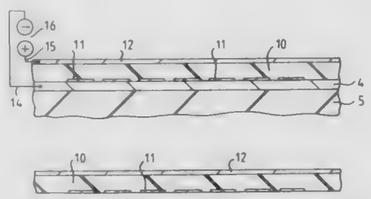
Andrew A. Turnbull, Reigate, England, assignor to U.S. Philips Corp., New York, N.Y.

Filed May 29, 1990, Ser. No. 530,128

Claims priority, application United Kingdom, Jun. 12, 1989, 8913450; Oct. 11, 1989, 8922913

Int. Cl.[5] H04R *17/00*

U.S. Cl. 29—25.35 **15 Claims**



1. A method of manufacturing an electrical transducer device comprising an electrically active film of polymer material whereby electric charges are generated at first and second opposite faces of the film in operation of the transducer device,

a pattern of first electrodes at the first face of the film, and at least one second electrode at the second face, which first and second electrodes form electrical connections to the film for detecting the generated charges and so define with the intermediate areas of the film a group of transducer elements, which method comprises the steps of:

(a) forming the first electrodes on a support by depositing electrode material on a major surface of the support and by using a photo-lithographic process to form a mask pattern which defines the pattern of the first electrodes formed from the electrode material and which is removed before providing the film,

(b) depositing the polymer material for the film, on the major surface of the support and over the first electrodes thereon, to a thickness larger than that of the first electrodes and so forming the film on the support and that the pattern of first electrodes is embedded in contact with the first face of the film adjacent to the support whereby the embedded first electrodes provide the electrical connections for detecting the generated charges at the first face of the film,

(c) removing the support at least in the area of the first electrodes to free that area of the first face of the film which now supports the embedded first electrodes,

and (d) providing at least one second electrode at the second face of the film opposite the embedded first electrodes so as to form with the intermediate areas of the film, the group of the transducer elements.

5,058,251

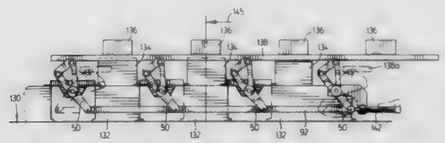
TWO-STAGE TRANSFER BAR LIFT ARM

Joel W. Jones, Windsor, Canada, assignor to Tri-Way Machine Ltd., Windsor, Canada

Filed Jan. 14, 1991, Ser. No. 640,828

Int. Cl.[5] B23Q *7/00*

U.S. Cl. 29—33 P **18 Claims**



1. For use in a multi-station machining assembly in which a workpiece to be machined is transported on at least one transfer bar from one station to another, wherein said at least one transfer bar must be raised to a top position for transportation of the workpiece and lowered to a bottom position when the workpiece reaches a station, the improvement which comprises:

a plurality of two-stage lift arms mounted to raise and lower said at least one transfer bar, each lift arm having a central pivot location at which it is mounted for rotation in a vertical plane about a horizontal axis, a primary lift roller spaced a first distance from said central pivot location, a secondary lift roller spaced a second distance from said central pivot location, the two lift rollers subtending an acute angle at said central pivot location, said second distance being greater than said first distance; and means for positively rotating the lift arms in tandem between (1) a first position in which only the primary lift rollers contact the respective transfer bar with the latter in its bottom position, (2) a second position in which both lift rollers contact the respective transfer bar with the latter in a position intermediate its bottom and top positions, and (3) a third position in which only the second lift rollers contact the respective transfer bar with the latter in its top position.

5,058,252

APPARATUS AND METHOD FOR FINISHING CHAIN ASSEMBLY

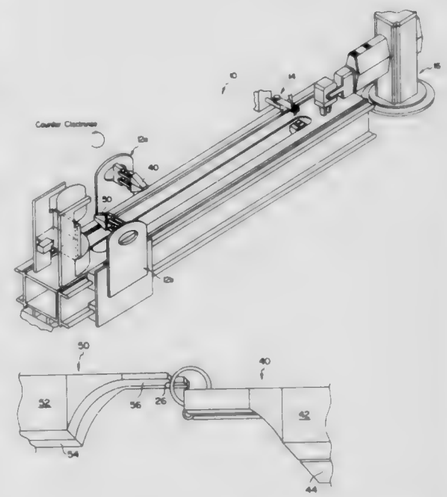
Albert F. Wiesner, III, 424 Sherman Farm Rd., Harrisville, R.I. 02830, and Philip Datseris, 79 Linden Dr., Kingston, R.I. 02881

Filed Aug. 22, 1989, Ser. No. 396,905

The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.

Int. Cl.[5] B23P *23/04*

U.S. Cl. 29—33 K **15 Claims**



1. In an apparatus for securing fasteners to the ends of a chain or strand which has first and second clamps each adapted to move through at least three degrees of freedom, two in translation and one in rotation and a robot gripper adapted to function in cooperation with the clamps and wherein a fastener is held in one clamp and the bolt knob of the fastener is opened by the other clamp, the improvement which comprises:

means to move the first and second clamps through the three degrees of freedom to move the bolt knob, the forces acting on the knob being substantially parallel to the direction of travel of the bolt in the fastener to open the bolt; and

means to control the means to move the clamps in communication with said means to move.

5,058,253

MACHINE TOOL

Hans-Henning Winkler, Tuttlingen, and Eugen Rütschle, Mühlheim, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Filed Oct. 11, 1988, Ser. No. 256,821

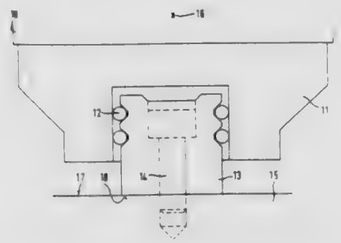
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734720

Int. Cl.[5] B23Q *1/26;* **F16C** *29/00*

U.S. Cl. 29—57 **6 Claims**

1. A machine tool, comprising a first displacement unit, a second displacement unit, and guiding means for enabling relative displacement of said first displacement unit relative to said second displacement unit along an axis, said guiding means including a guideway being bolted with a first surface thereof

in engagement with a second surface of said first unit, one of said surfaces being roughened to a depth of several μ such that



mating of said surfaces does not affect alignment of said displacement units relative to each other.

5,058,254

BACKER-ROD INSTALLATION TOOL

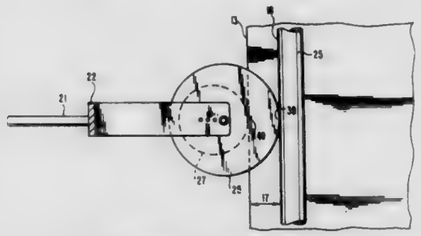
John T. Vlahogeorge, Lafayette, Ind., assignor to Control Tool Company, Inc., Lafayette, Ind.

Continuation-in-part of Ser. No. 383,000, Jul. 20, 1989, Pat. No. 4,916,790. This application Jan. 26, 1990, Ser. No. 470,980

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—235 **17 Claims**



1. A tool for installing a sealant backer-rod to a desired depth in a joint between building surfaces comprising:

a frame for a worker to hold;

first contact means mounted to said frame and having a width sized to fit into said joint with an outer surface to contact a sealant backer-rod in said joint as said frame is moved along said joint;

backer-rod depth control means on said frame and adjacent said first contact means having a first contact surface spaced inwardly from said outer surface a distance equal to the desired depth of said backer-rod, said control means with said first contact surface operable to contact and move along one of said building surfaces limiting inward movement of said first contact means in said joint when said frame is forced toward and along the length of said joint forcing said backer-rod to said desired depth; and,

adjustment means on said frame operable to adjust the inward spacing between said first contact surface and said outer surface equal to said desired depth.

5,058,255

CAM SHAFT BUSHING PULLER

Jack D. Qualkenbush, 1422 Perry St., Vincennes, Ind. 47591

Filed Aug. 17, 1990, Ser. No. 569,408

Int. Cl.[5] B23P *19/04*

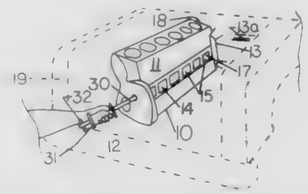
U.S. Cl. 29—255 **1 Claim**

1. A camshaft end bushing puller which requires no contact with the inner end wall of the associated engine block, comprising:

first and second hemi-annular collars, each having a semi-cylindrical outer side surface and flat, inner surfaces, the flat, inner surfaces of each collar being bisected by an axial, semi-cylindrical, threaded passage which extends through the respective collar, the semi-cylindrical outer surfaces each having a peripheral lip extending around one end thereof;

a pin-receiving opening disposed centrally in each of the flat inner surfaces of the hemi-annular collars;

resiliently biased pins extending between the opposed pin-



receiving openings so that said first and second hemi-annular collars are disposed with their flat, inner surfaces opposed to define a compressible, annular collar; and

an elongated shaft having an inner, threaded end and an outer end having a slide hammer mounted thereon, said inner threaded end of the elongated shaft being threadably received int he aligned axial, semi-cylindrical, threaded passages of the compressible, annular collar when disposed inside an end bushing with the peripheral lips of the collar against the outer end of the bushing so that a pulling force may be applied against the bushing by means of the slide hammer to remove the end bushing towards the direction of the slide hammer.

5,058,256

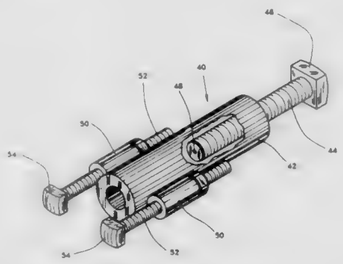
BEARING CARRIER PULLER TOOL

Bud Taylor, P.O. Box 716, Boulder City, Nev. 89005, and Thomas J. Edelman, 4310 Verona Ave., Las Vegas, Nev. 89120

Filed Feb. 28, 1991, Ser. No. 663,364

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—260 **3 Claims**



1. A bearing carrier puller tool comprising:

a) a generally cylindrical central body member having a threaded interior cavity,

b) a puller bolt threadably received in the interior cavity of the central body member,

c) at least a pair of arm mounting members attached to the central body member on diametrically opposed sides thereof,

d) each arm mounting member having a threaded interior cavity and a puller arm threadably received in the interior cavity thereof,

e) each puller arm having a foot portion on one end thereof, the axis of each foot portion being coincident with the axis of each puller arm,

f) each foot portion being generally square in cross section and sized to fit into a space between an outer ring member and a central shaft on a bearing carrier and to hook onto a flat ridge that is adjacent to the central shaft

whereby when the foot portion is attached to the bearing carrier, the foot portion will secure the puller tool to the bearing carrier to prevent premature disengagement of the puller tool from the bearing carrier when the puller tool is activated to remove the bearing carrier from a housing in which the bearing carrier is mounted.

5,058,257

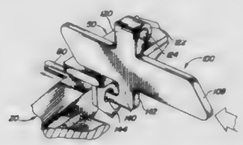
TOOL FOR INSERTING AND REMOVING PIN FOR BUCKET TOOTH

David W. Freestone, 725 S. Oracle, Mesa, Ariz. 85204, and Thomas W. Borter, 8626 E. Montebello Ave., Scottsdale, Ariz. 85253

Continuation of Ser. No. 307,767, Feb. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 172,810, Mar. 28, 1988, abandoned. This application Jan. 16, 1990, Ser. No. 447,624

Int. Cl.[5] B25B *27/14*

U.S. Cl. 29—275 **19 Claims**



1. Tool apparatus for inserting and extracting a pin securing a tooth to a shank, comprising, in combination:

main block means, including

a main block,

a bottom surface,

a top surface,

a first striking face comprising a first end of the main block and adapted to be struck when setting a pin, and

a second striking face comprising a second end of the main block and adapted to be struck when extracting a pin;

holder means secured to the main block means, including

a holder block secured to and extending downwardly from the bottom surface,

a socket for holding a pin for the initial setting of the pin secured to the holder block and spaced apart from the bottom surface a first predetermined distance, and

a setting face laterally adjacent to the socket and adapted to be disposed against the pin after the initial setting of the pin for completing the setting of the pin, and

extractor means secured to the main block means for extracting a pin, including

an extractor block secured to and extending upwardly from the top surface, and

an extractor pin secured to the extractor block and extending outwardly therefrom generally parallel to the top surface of the main block means and spaced apart from the top surface a second predetermined distance, which distance is substantially the same as the first predetermined distance.

5,058,258

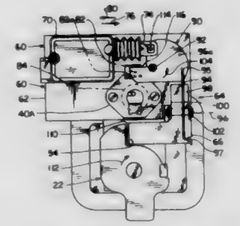
RETROFIT ELECTRIC TRUCK DOOR LOCK

Steve M. Harvey, 4548 Gilbert Ave., Corona, Calif. 91719

Filed Feb. 16, 1990, Ser. No. 480,820

Int. Cl.[5] E05B *47/06*

U.S. Cl. 29—401.1 **1 Claim**



1. A method for converting a door lock of the type that has a door lock frame with an inside and an outside, a door latch mounted on the door lock frame to move between open and closed positions, a handle on the outside of the frame and coupled to the latch to manually move it, and an original key-operated lock device with an original key cylinder and a lock member that can prevent turning of the latch, wherein said lock frame has a key lock mount portion which holds said lock device and wherein said lock frame has a cylinder-receiving hole which holds said original lock key cylinder with a keyhole thereof accessible from the outside of the lock frame, wherein the method allows for remote electrical control of the door lock comprising:

removing said original lock device;

mounting a power frame on said door lock frame, wherein said power frame has a latch-engaging mechanism that is operable between a closed position wherein it prevents opening said door latch and an open position wherein it allows opening of said door latch, an electrically energizable action motor for operating said mechanism, and a key operated power pack lock device which can be key operated to operate said mechanism, wherein said power pack lock device has a key cylinder with a keyhole;

said mounting a power frame including projecting said key cylinder of said power pack lock device through said cylinder-receiving hole, with the keyhole accessible from the outside of said door lock frame;

installing a lock device on said power frame to serve as said key operated power pack lock device, by using a lock which is substantially identical to said original lock which was removed, with said lock being installed in an orientation wherein it is rotated about an axis of said original lock cylinder from the position of the original lock device, whereby to enable use of a lock removed from the same or a similar door lock.

5,058,259

METHOD AND APPARATUS FOR PASSING THREADLIKE PIECES THROUGH TUBULAR PRODUCTS

Nobuo Araki; Kazufumi Tabata; Kiyomi Yokoi; Tadami Ashidate, and Osamu Hattori, all of Tokyo, Japan, assignors to Nippon Steel Welding Products & Engineering Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1989, Ser. No. 334,205

Claims priority, application Japan, Mar. 25, 1988, 63-69752; Mar. 25, 1988, 63-69753; Mar. 25, 1988, 63-69754; Mar. 31, 1988, 63-76486; Jan. 23, 1989, 1-11837; Feb. 9, 1989, 1-28704

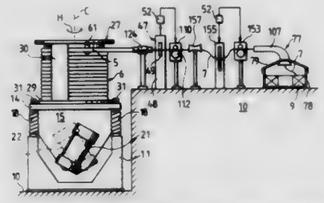
Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—433 **61 Claims**

1. A method of passing a threadlike piece through a tubular product which comprises the steps of:

forming a coil of a tube having an inlet end; and

vibrating the coil of the tube while feeding a threadlike piece through the inlet end of the tube so that a given point of the tube reciprocates along a helical path, said feeding of



the threadlike piece being made in such a manner that the inlet end of the tube does not diametrically move a portion of the threadlike piece upstream of and close to the inlet end of the tube.

5,058,260

WIRE PROCESSING APPARATUS

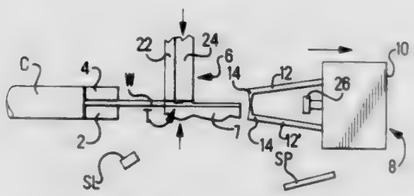
Karl-Heinz Gloe, Reichelsheim; Helmut Kruezer, Munster, and Harald Biehl, Bensheim, all of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 10, 1990, Ser. No. 580,053

Claims priority, application United Kingdom, Sep. 18, 1989, 8921114; May 30, 1990, 9012061

Int. Cl.[5] H01R *43/05, 43/055*

U.S. Cl. 29—564.4 **20 Claims**



1. Apparatus for stripping the insulation from an end portion of an insulated wire and crimping an electrical terminal to the stripped end portion of the wire, the apparatus comprising a wire gripper unit having a pair of wire gripper jaws for gripping the wire at a position back from said end portion, a wire stripper unit for stripping the insulation from said end portion when the wire is gripped by said jaws, a crimping die and a crimping anvil which are relatively movable to crimp a terminal on the anvil to the stripped end portion of the wire, and a terminal feed unit for feeding the terminal onto the anvil, characterized in that the crimping die and the crimping anvil are both movable towards each other to crimp the terminal to the stripped end portion of the wire, the wire gripper unit being fixed and the terminal feed unit being movable towards the crimping die with the anvil, the crimping die being mounted on a first tool holder and the anvil being mounted on a second tool holder, said tool holders being slidable towards and away from each other by means of a first rotary cam acting upon a cam follower connected to toggle links each pivoted to a respective one of said tool holders, said feed unit being fixed to the second tool holder.

5,058,261

MACHINE TOOL

Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Toyama, Japan

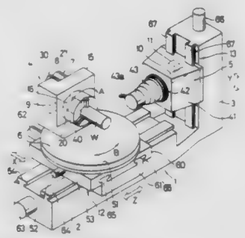
PCT No. PCT/JP89/00382, § 371 Date Jan. 9, 1990, § 102(e) Date Jan. 9, 1990, PCT Pub. No. WO89/09675, PCT Pub. Date Oct. 19, 1989

PCT Filed Apr. 10, 1989, Ser. No. 445,656

Claims priority, application Japan, Apr. 12, 1988, 63-88316

Int. Cl.[5] B23Q *3/155;* **B23B** *3/22*

U.S. Cl. 29—568 **13 Claims**



1. A machine tool comprising:
a workhead (**4**) having a spindle (**16**), for detachably supporting a workpiece (W);
a toolhead (**5**) having a spindle (**42**) for detachably supporting a tool;
a body (**1**) provided with the workhead (**4**) and the toolhead (**5**);
a first indexing means (**6**) for indexing the axis of the spindle (**16**) of the workhead (**4**) with respect to the axis of the spindle (**42**) of the toolhead (**5**);
a first driving means (**7**) for continuously rotating the spindle (**16**) of the workhead (**4**) in a first direction (A);
a second indexing means (**8**) for indexing the spindle (**16**) of the workhead (**4**) in the first direction (A);
a first stopping means (**9**) for stopping rotation of the spindle (**16**) of the workhead (**4**) if necessary;
a second driving means (**10**) for continuously rotating the spindle (**42**) of the toolhead (**5**);
a second stopping means (**11**) for stopping rotation of the spindle (**42**) of the toolhead (**5**) if necessary;
driving means (**12, 13**) provided on the body (**1**) to move the workhead (**4**) and the toolhead (**5**) relative to each other in a three dimensional manner; and
a sensor (**47**) for monitoring the position of the tool spindle (**42**) so as to perform a turning operation of the workpiece (W).

5,058,262

ATTACHMENT OF A HARD BEARING RING TO THE BORE SURFACE OF A HOUSING OR TO THE LATERAL SURFACE OF A JOURNAL

Uwe Brockmüller, Oberwerrn, and Hans Freund, Schwebheim, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

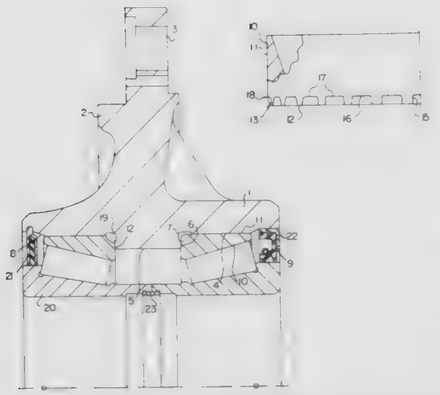
Filed Nov. 28, 1989, Ser. No. 441,976

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1988, 3840869

Int. Cl.[5] B21D *53/10;* **F16C** *19/38*

U.S. Cl. 29—725 **6 Claims**

1. A device for securing a bearing rolling element, comprising, in combination:
a first annular member having a first seating surface which has a plurality of recesses formed therein, said first annular member being made of a material having a predetermined hardness;
a second member having a second seating surface for mating with said first seating surface and a contact shoulder disposed angularly to said second seating surface, said second member being made of a material having a hardness that is softer than said predetermined hardness of said first annular member, said second seating surface and said contact shoulder forming a fillet surface defining at least one narrow intermediate space;
said first annular member having a peripheral edge relief surface between its internal end surface and its seating surface so that the intermediate space is formed in the shape of a ring between said relief surface and the fillet surface;
said plurality of recesses having a closed end facing away from said intermediate space and an open end facing toward said intermediate space, whereby said recesses collect any of said second seating surface material displaced by mating with said first seating surface.



5,058,263

MANIPULATION DEVICE

Peter H. J. Corbeij, and Joseph J. H. M. Bongers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

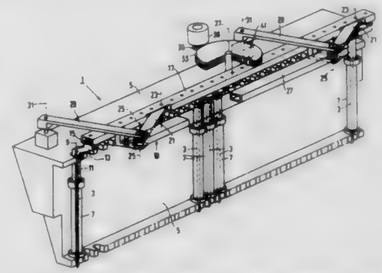
Filed Aug. 29, 1990, Ser. No. 576,321

Claims priority, application Netherlands, Dec. 21, 1989, 8903131

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—740 **6 Claims**

1. A component manipulation device comprising:
a support;
at least two component manipulators, each rotatably secured to the support for rotation about a separate corresponding first axis, said first axes being spaced in parallel relation;
a coupling member; and
a crank arm secured to each manipulator and pivotably connected to said coupling member for rotation about a second axis, said arms for rotating the manipulators about their respective first axes, the arms having the same length, each arm enclosing an obtuse angle with the first axis of the manipulator to which that arm is secured, each said arms enclosing an acute angle with a plane normal to said first axes, said acute angle being included in said obtuse angle, each arm having a given point with the same relative location on that arm, said arms being spaced so that when rotated about their corresponding second axes the given points of the arms of two adjacent manipulators



describe paths, which, when viewed parallel to said first axes in a projection plane, intersect each other in said projection plane.

5,058,264

INTEGRATED CIRCUIT INSERTOR/EXTRACTOR

Tom Quach, 2F1., No. 3, Lane 5, Tien Mu W. Rd., Taipei, Taiwan

Continuation of Ser. No. 209,981, Jun. 22, 1988, abandoned. This application Apr. 13, 1990, Ser. No. 515,773

Int. Cl.[5] H05K *13/04*

U.S. Cl. 29—741 **1 Claim**



1. An integrated circuit insertor/extractor for inserting or extracting an integrated circuit from a printed circuit board, comprising:
(a) an elongated handgrip element (**1**) having axial bores of various radii;
(b) a cap (**3**) having a stem (**31**) on a bottom end thereof, said stem (**31**) encompassed by said elongated handgrip element (**1**) with a first spring (**32**) lodged in one of said bores, and having a groove (**33**) at a lower portion thereof receiving a first C-ring (**34**) to prevent said stem (**31**) from slipping out of said elongated handgrip element (**1**); and,
(c) a clipping element (**2**) comprising a clipping housing (**20**) with a cylindrical protrusion (**21**) being secured in said elongated handgrip element (**1**); a spring-loaded rivet (**24**) being retained within said cylindrical protrusion (**21**) by a second C-ring (**27**); a pair of pinching elements (**41**), with an inwardly extending means for placement (**46**) on a bottom integrated circuit, said pinching elements (**41**) being disposed under said rivet (**24**); and a plate (**47**) below said pinching elements (**41**) having a central hole (**470**) receiving said rivet (**24**), said spring-loaded rivet (**24**) having an end portion (**25**) for fastening said second C-ring (**27**), pinching elements (**41**) and plate (**47**) together.

5,058,265

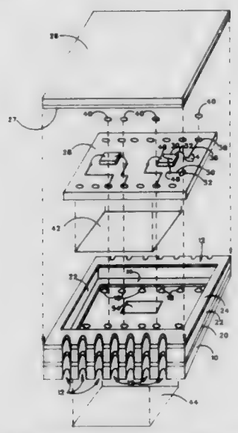
METHOD FOR PACKAGING A BOARD OF ELECTRONIC COMPONENTS

Harold Goldfarb, Irvine, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 521,783, May 10, 1990. This application Sep. 10, 1990, Ser. No. 580,042

Int. Cl.[5] H01K *3/10*

U.S. Cl. 29—852 **6 Claims**



1. A method for packaging a board of electronic components, comprising:

(a) providing a package comprising:

(1) a base having a perimeter and a plurality of electrically conductive castellations around the perimeter;

(2) a plurality of leads, each lead extending on an upper surface of the base to a pad on the upper surface of the base; and

(3) a wall extending upward from the perimeter of the base over the leads, the pads remaining exposed, and an upper surface of the wall being adapted to receive a lid;

(b) providing a plurality of conductive vias in the board, each via being in registration with a respective pad;

(c) placing a ball of solder in each via;

(d) placing a lid on the upper surface of the wall, a layer or ring of solder lying between the lid and the upper surface of the wall;

(e) melting the solder; and

(f) cooling the solder.

5,058,266

METHOD OF MAKING INTERNALLY FINNED HOLLOW HEAT EXCHANGER

Richard Knoll, Cocoa Beach, Fla., assignor to Norsk Hydro A.S., Oslo, Norway

Continuation of Ser. No. 241,575, Sep. 8, 1988, abandoned. This application Oct. 17, 1990, Ser. No. 598,792

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1987, 3730117

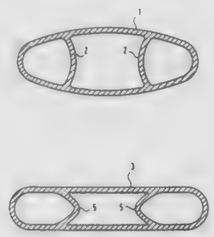
Int. Cl.[5] B21D *53/06;* **B23P** *15/26*

U.S. Cl. 29—890.049 **13 Claims**

1. A method of forming heat exchanger structure, said method comprising:

extruding a plurality of longitudinally extending hollow sections of tubing each of which sections includes an outer peripheral portion having a substantially oval cross section in which first sides of the outer peripheral portion disposed opposite one another along the larger, major transverse axis defined by the oval cross section have predetermined radii of curvature and in which second sides of the outer peripheral portion disposed opposite one another along the smaller, minor axis defined by the oval cross section are outwardly convex as extending between said first sides, respectively, and at least one internal longitudinal web extending inwardly from said outer peripheral portion in a direction transverse to the larger, major transverse axis;

flattening the convex second sides of each of said sections of



tubing in a radially inward direction until at least one internal partition is formed by said web that establishes a predetermined transverse width between said second sides and the second sides extend parallel to one another so that said sections are reshaped into flattened hollow tubes having accurate, predetermined dimensions; and

assembling the flattened hollow tubes to external cooling fins thereby forming a heat exchanger core.

5,058,267

PROCESS OF PRODUCING A TORSIONAL VIBRATION DAMPER WITH A LOOSELY EMBEDDED GUIDING RING

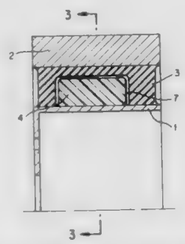
Rainer Andrä, Limburg, and Günter Engemann, Rimbach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Continuation of Ser. No. 50,235, May 15, 1987, abandoned. This application Oct. 5, 1989, Ser. No. 417,723

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3638097

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—897.2 **11 Claims**



1. A process of producing a torsional vibration damper, comprising (a) a hub ring; (b) a flywheel ring coaxially surrounding the hub ring, said hub ring and said flywheel ring defining the inside and outside, respectively, of an annular space between them; (c) an elastic body of annular configuration disposed in said annular space and attached to said hub ring and flywheel ring, respectively, said elastic body being made of a heat vulcanizable rubber material; and (d) a separate guiding ring enclosed within said elastic body, said guiding ring being made of a rigid material which does not bond to the elastic body during vulcanization, said process comprising the steps of:

(1) assembling said hub ring, flywheel ring, elastic body and guiding ring in their relative respective positions in the vibration damper;

(2) heating the assembly to the vulcanization temperature to bond said elastic body to said hub ring and flywheel ring; and

(3) cooling the assembly to ambient temperature, whereby a gap is formed by shrinkage between said elastic body and said guiding ring.

5,058,268

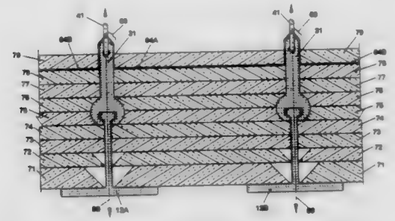
METHOD OF MAKING AND REPAIRING A FURNACE CROWN

John D. Smagner, 109 South Ave., Watkins Glen, N.Y. 14891

Division of Ser. No. 382,987, Jul. 20, 1989. This application Jan. 30, 1990, Ser. No. 472,084

Int. Cl.[5] B21D *47/00*

U.S. Cl. 29—897.31 **5 Claims**



1. A method of crown insulation for a kiln including a door and front, back and side walls, for suspension on an ultimate support system that includes pipes, hangers hanging upon said pipes, bones hanging from said hangers, and T-rails attached to said bones such that T-rail rows are formed, wherein the method of crown insulation comprises:

a. placing at least two boards of high grade insulation on top of each other and supporting said boards on, and evenly separating, said T-rails, such that said boards are positioned a small distance from said front wall or said door of said kiln;

b. continuing board layers by placing said boards end to end on said T-rails until said board layers abut said back wall of said kiln;

c. placing on top of said board layers, a first layer of high grade insulation blanket which overhangs in front and down below said board layers, and continuing said first layer until said back wall is reached, at which point said first layer is draped up and over said back wall, wherein a front blanket overhanging portion and back blanket overhanging portion are formed;

d. placing on top of said first layer of high grade insulation blanket, a second layer of high grade insulation blanket followed by multiple layers of lower grade insulation blanket, where said second layer of high grade insulation blanket and said multiple layers of lower insulation are equal in length to said board layers;

e. continuing said second layer of high grade insulation blanket and said multiple layers of low grade insulation until said second layer and said multiple layers abut said back blanket overhanging portion which has been positioned along said back wall;

f. repositioning said front blanket overhanging portion and said back blanket overhanging portion of said first layer of high grade insulation blanket by placing said front blanket overhanging portion and said back blanket overhanging portion on top of said multiple layers of low grade insulation blanket thereby forming a front and back heat seal and forming both a beginning and an end of a last layer of low grade insulation.

g. placing and abutting up to said front blanket overhanging portion, an upper layer of low grade insulation blanket and continuing said upper layer until said upper layer abuts said back blanket overhanging portion; and

h. repeating steps a–g for each row until said crown is insulated.

5,058,269

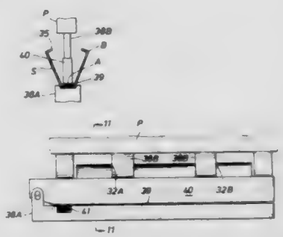
METHOD OF FORMING RECTANGULAR METAL TUBES

Robert A. May, Beeville, Tex., assignor to May Fabricating Company, Inc., Houston, Tex.

Filed Aug. 30, 1990, Ser. No. 575,555

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—897.35 **4 Claims**



1. In a method of forming a rectangular metal tube having an opening in a side thereof, comprising the steps of

cutting slots in opposite longitudinal side edges of a metal sheet which are generally laterally aligned with one another and of such size and shape as to form the opening when arranged opposite one another,

bending the sheet into a shape having longitudinally extending, inwardly turned flanges,

arranging the sheet with a longitudinally extending mid portion thereof intermediate a longitudinally extending die and one face of an elongate punch and with its slots on opposite lateral sides of a ram on the opposite face of the punch which is of a size to fit within the opening, and

moving the ram in a direction to force the one face of the punch against the mid portion of the sheet and thereby cause the sides of the sheet and the longitudinal edges of its flanges to swing inwardly toward one another and the slots to move around the rams to form the opening in the tube.

5,058,270

DRY SHAVING APPARATUS INTERRUPTING MOTOR CIRCUIT AS SHEAR FOIL AND SHAVING HEAD ARE EXPOSED

Hans Deubler; Ingo Müller, and Arno Wolfger, all of Kalgenfurt, Austria, assignors to U.S. Philips Corp., New York, N.Y.

Filed Oct. 15, 1990, Ser. No. 598,475

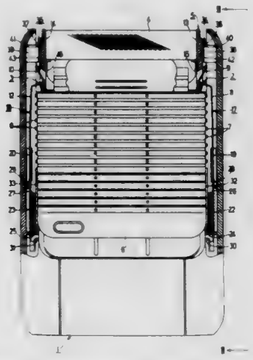
Claims priority, application Austria, Oct. 13, 1989, 2365/89

Int. Cl.[5] B26B *19/38, 19/02*

U.S. Cl. 30—34.05 **20 Claims**

1. A dry shaving apparatus comprising a shaving head frame detachably held to the basic apparatus by at least one resilient latch element and carrying an apertured shear foil and a slidable shutter, which serves to optionally cover or expose the apertured shear foil and, when displaced in the direction away from the apertured shear foil is actuated and lock by a latch to switch on a motor in which position the apertured shear foil is exposed for shaving which upon further displacement in the direction away from the apertured shear foil, the shaving head frame is exposed by the shutter and the motor is switch off with the switch locked in that position by the latch, characterized in that the latch cooperating with the shaving head frame is connected to a slide, which is displaceable parallel to the direction of displacement of the shutter and cooperates with a spring, and that the shutter, where it is displaced from the switching-on position into the further displacement, is positively coupled with the slide and the slide can be taken along

against the action of the spring cooperating with it by the shutter, the latch elements being moved out of the latched



position holding the shaving head frame and the shaving head frame being disengaged.

5,058,271

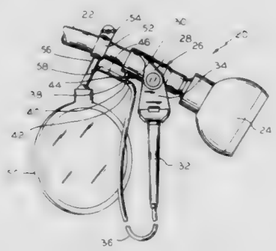
SHOWER SHAVER WITH STEAM FREE MIRROR

Donald N. Jursich, Chicago, and Jefferson L. Gentry, Deerfield, both of Ill., assignors to Associated Mills Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 501,029, Mar. 29, 1990, Pat. No. 4,995,155. This application Oct. 18, 1990, Ser. No. 599,629

Int. Cl.[5] **B25F** *3/00;* **B26B** *19/06, 19/44*

U.S. Cl. 30—123 **17 Claims**



1. Shower shaving equipment comprising:

a shower shaver,

a mirror having at least one mirror with a cavity behind it,

a nipple adapted to be fitted between a plumbing pipe and a shower head, said nipple having a freely rotatable hanger dependent therefrom,

a diverter port formed in said nipple for expelling a stream of water bled off of the connection between the plumbing pipe and the shower head,

a T-fitting attached to said diverter port,

means for coupling one side of said T-fitting to a shower shaver, and

means for coupling the other side of said T-fitting to said cavity behind said mirror for heating said mirror to ambient temperatures.

5,058,272

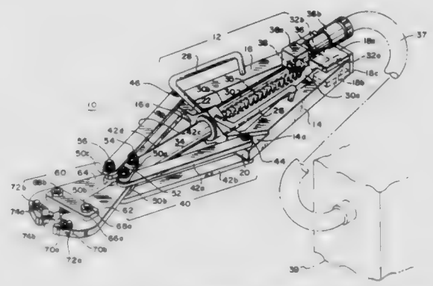
TOOL APPARATUS FOR APPLYING LARGE FORCES

Gary J. Steube, Pass Christin, Miss., assignor to Mississippi Power Company, Gulfport, Miss.

Filed Apr. 18, 1990, Ser. No. 510,887

Int. Cl.[5] **B26B** *17/00;* **B25F** *3/00;* **B26D** *17/00*

U.S. Cl. 30—134 **14 Claims**



1. A tool apparatus for applying a closing force to an object, said tool apparatus comprising:

a) first and second jaw means;

b) means for interconnecting said first and second jaw means and for providing a pivoting point for each of said first and second jaw means, each pivoting point dividing its jaw means into first and second portions, whereby said first portions rotate from a closed position to an open position and said second portions rotate from an open to a closed position, each first portion having a length greater than that of said second portion and having a linking end remote from said pivoting point;

c) drive means for driving a rod linearly along a drive axis from a first position to a second position with a drive force;

d) scissor means for connecting said drop to said linking end of said first jaw means and to said linking end of said second jaw means, for translating and multiplying said drive force to apply an opening force to each of said linking ends whereby said first portions rotate from their closed position to their open position and said second portions rotate from their open position and said second portions rotate forms their open position to their closed position to apply said closing force to the object, said scissor means comprises a first and second linking means, each o said first and second linking means has a first and a second end, said second end of said first linking means is connected to said linking end of said first jaw means, said second end of said second linking means is connected to said linking end of said second jaw means, and said first ends of said first and second linking means are connected to said rod; and

e) adjusting means for connecting said first ends of said first and second linking means to said rod, whereby a maximum angle formed by an intersection of said drive axis and a linking axis formed by said first and second ends of said first linking means when said rod is in its second position may be varied.

5,058,273

VIBRATORY CARVING TOOL KIT

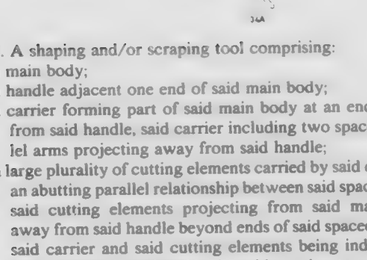
Howell B. Streger, 790 White Birch Rd., Westwood, N.J. 07675

Filed Apr. 29, 1991, Ser. No. 693,152

Int. Cl.[5] **B26B** *3/00*

U.S. Cl. 30—164.9 **3 Claims**

1. A vibratory carving tool kit, comprising in combination, an elongate longitudinally aligned housing, the housing including a drive motor mounted therewithin, the drive motor operative through a switch, and the drive motor including an eccentric in operative association with the drive motor, the eccentric mounted about a shaft to effect vibration to the shaft, and the shaft extending through a forward end of the housing and terminating in a wedge-shaped projection, and



a clamp cylinder securable to the wedge-shaped projection, and

a plurality of cutter blades, each of the cutter blades including a cutter blade shank, and the shank receivable within the clamp member coaxially aligned with the wedge-shaped projection.

5,058,274

SHAPING AND SCRAPING TOOL

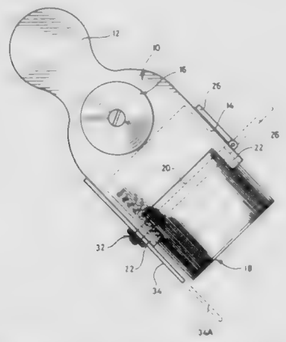
Neville J. Smith, 164B Calle Aralar, Las Fuentes, Alcoceber, Alcala de Chivert, Castellon, Spain

Filed Oct. 1, 1990, Ser. No. 591,434

Claims priority, application United Kingdom, Oct. 27, 1989, 8924239

Int. Cl.[5] **B26B** *29/00, 5/00, 3/04*

U.S. Cl. 30—169 **8 Claims**



1. A shaping and/or scraping tool comprising:

a main body;

a handle adjacent one end of said main body;

a carrier forming part of said main body at an end remote from said handle, said carrier including two spaced parallel arms projecting away from said handle;

a large plurality of cutting elements carried by said carrier in an abutting parallel relationship between said spaced arms, said cutting elements projecting from said main body away from said handle beyond ends of said spaced arms of said carrier and said cutting elements being individually and selectively adjustable in said carrier towards and away from said handle together to define a cutting edge of chosen shape at their free ends; and,

means for locking said cutting elements in said carrier, each in its selected position of adjustment, said means for locking comprising:

a mounting rod extending between said spaced arms of said carrier through elongate apertures in said cutting elements when said means for locking is released; and,

means cooperating with said mounting rod for urging together said two spaced parallel arms of said carrier for pressing and squeezing said cutting elements into a friction-locking relationship with one another for locking said cutting elements in the selected position of adjustment.

5,058,275

CHISEL

Jurg G. Staubli, 12 Chapel Lane, Wilmslow, Cheshire, United Kingdom SK9 5HX

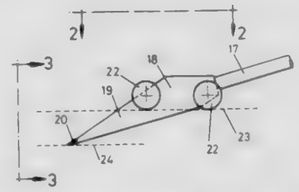
PCT No. PCT/GB88/00583, § 371 Date Mar. 16, 1990, § 102(e) Date Mar. 16, 1990, PCT Pub. No. WO89/00484, PCT Pub. Date Jan. 26, 1989

PCT Filed Jul. 20, 1988, Ser. No. 460,159

Claims priority, application United Kingdom, Jul. 21, 1987, 8717200; Aug. 18, 1987, 8719504; Feb. 17, 1988, 8803632

Int. Cl.[5] **B26B** *3/00, 3/08;* **E04F** *21/00;* **E04G** *21/20*

U.S. Cl. 30—170 **12 Claims**



1. A chisel for removing material from a gap defined between two adjacent surfaces, comprising:

a central body portion,

a shaft and a working tip extending from opposite ends of the central body portion, the shaft having a free end and being connected to the working tip such that the working tip may be driven into a surface against which it bears by striking the free end of the shaft,

at least one roller supported by the central body portion, the roller being rotatable about an axis perpendicular to a line defined by the free end of the shaft and the working tip,

the roller having a circumference and the working tip having a length such that the working tip projects beyond the circumference of the roller on the side of the roller remote from the shaft,

the roller being disposed such that the chisel can be supported by the roller on the two adjacent surfaces with the working tip extending into the gap, wherein the at least one roller comprises:

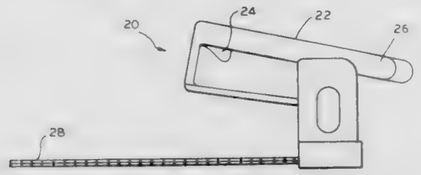
a first roller supported by the central body portion and rotatable about a front axis,

a second roller supported by the central body portion and rotatable about a rear axis, the front and rear axes being parallel,

the tip projecting from adjacent the front axis to a point on the side of the front axis remote from the shaft,

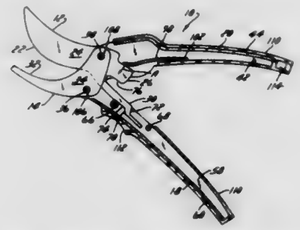
the shaft projecting from adjacent the rear axis to a point on the side of the rear axis remote from the tip, and the rollers being arranged such that the tip projects into the gap through a plane defined by the two adjacent surfaces when the first and second rollers are placed in contact with the two adjacent surfaces.

5,058,276
HEDGE TRIMMER
William H. Parker, 2813 Hurstview Dr., Hurst, Tex. 76054
Filed Apr. 16, 1990, Ser. No. 509,134
Int. Cl.[5] B26B *15/00, 13/00*
U.S. Cl. 30—228 13 Claims



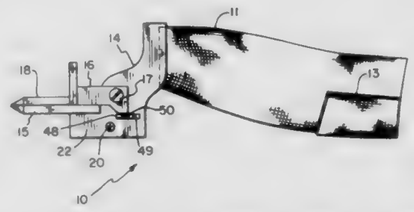
1. A drive for intermittently translating circular motion into reciprocal linear motion, said drive comprising a pair of rotary gears which are driven by a common pinion gear, spring biased means associated with said drive for cyclically stopping said pair of gears in at least one point in their rotation, spring means for continuously storing energy while said pair of gears is stopped, means responsive to said storage of said energy in said spring means overcoming the spring bias of said stopping means for releasing said stopped gears, said released gears being driven via said pinion gear by said energy stored in said spring means, until said stopping means again stops said pair of gears after said energy stored in said spring means is expended.

5,058,277
COMPOUND ACTION CUTTING TOOL
Ikuo Kishimoto, Kakogawa, Japan, assignor to Fiskars OY AB, Helsinki, Finland
Continuation of Ser. No. 461,018, Jan. 4, 1990, abandoned. This application Mar. 29, 1991, Ser. No. 680,595
Int. Cl.[5] B26B *13/16, 13/00, 13/12, 13/06*
U.S. Cl. 30—252 5 Claims



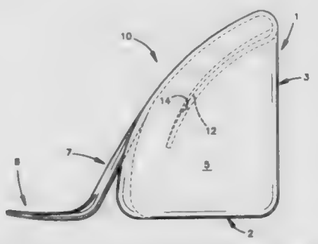
1. A cutting tool having respective first and second cutting members cooperating to effect a cutting stroke between an open position and a closed position, said cutting tool comprising:
- a first handle rigidly connected to said first cutting member;
- a pivot connection configured to effect pivotal motion between said first and second cutting members;
- a spring rigidly mounted to said first handle;
- a second handle cooperating with said second cutting member to effect said cutting stroke;
- a shank rigidly attached to said second cutting member;
- a tab rigidly attached to said second cutting member, said tab and said shank being configured to define a channel therebetween, wherein said spring is configured to cooperate with said tab to urge said handles toward said open position; and
- a locking member slideably mounted in a longitudinally extending slot formed in said first handle, said locking member being slideable within said slot from a locked position in which it is received within said channel to an unlocked position in which it is located outside of said channel.

5,058,278
SELF DEFENSE WEAPON
Thomas C. Colvin, 17703 Bremer Rd., Fort Wayne, Ind. 46774
Filed Jul. 24, 1990, Ser. No. 557,368
Int. Cl.[5] B26B *29/00, 27/00, 3/00*
U.S. Cl. 30—298 8 Claims



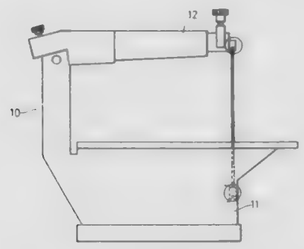
1. A self defense weapon comprising a glove type mechanism to fit on a users hand, a first plurality of spikes secured to said mechanism to extend in a direction generally forward from the users hand, a second plurality of spikes secured to said mechanism to pivot between a first position substantially parallel to said first spikes and a second position, substantially perpendicular to said first spikes, and a third plurality of spikesextending in a direction lateral to said first and second spikes.

5,058,279
WEDGED HANDLE EATING UTENSIL FOR THE PHYSICALLY DISABLED
Suzanne P. Mars, 23649 Duffield Rd., Shaker Hts., Ohio 44122
Filed Apr. 17, 1990, Ser. No. 510,127
Int. Cl.[5] A47J *43/00, 43/28*
U.S. Cl. 30—327 12 Claims



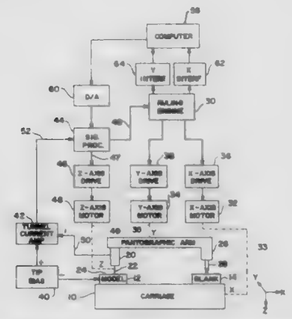
1. An eating utensil for use by persons with limited wrist movement, comprising:
- a handle, the handle including a base adapted to rest upon a horizontal surface, the base having a front edge, a back edge, and opposed side edge, the handle being in the shape of a geometric solid, the handle including a back surface, opposed side surfaces, and a front surface, the handle having a vertical dimension when the base is resting on the horizontal surface adequate to permit the handle to be grasped by the fingers of a user's hand;
- a shaft connected to the handle, the shaft projecting from the front surface of the handle at a location in the vicinity of the base; and
- a utensil head connected to the shaft, the utensil head projecting laterally from the shaft to lie in a generally horizontal plane when the base is resting on the horizontal surface.

5,058,280
SCROLL SAW BLADE HOLDER
Henry Pollak, Pottstown, and Gordon V. Wells, Spring City, both of Pa., assignors to American Machine & Tool Company, Inc., Royersford, Pa.
Filed Aug. 13, 1990, Ser. No. 566,599
Int. Cl.[5] B23D *49/04;* B27B *3/10*
U.S. Cl. 30—392 13 Claims



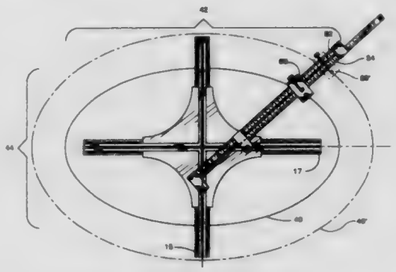
1. A scroll saw blade holder comprising:
- a one-piece, generally U-shaped body having a base, a pair of arms extending transversely from a base and an open end between the pair of arms, the body further including a slot extending completely through the base in a direction generally parallel to the arms, the slot extending only partially through the base in a direction perpendicular to a plane defined by the body whereby the body remains integral through the base;
- pin means across the open end of the body for mounting the holder on a reciprocating arm of the scroll saw;
- positioning means located in the slot for distributing a compressive force over substantially an entire end portion of the scroll saw blade located within the slot; and
- securing means on the body for applying a compressive force against the positioning means to clamp the scroll saw blade end portion in the-slot between the positioning means and the body.

5,058,281
CONTROL SYSTEM FOR RULING BLAZED, ABERRATION CORRECTED DIFFRACTION GRATINGS
Douglas B. Leviton, Dunkirk, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.
Filed Aug. 23, 1990, Ser. No. 571,344
Int. Cl.[5] B43L *13/24*
U.S. Cl. 33—19.2 20 Claims



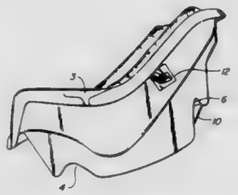
11. Apparatus for ruling a diffraction grating, comprising:
- a model diffraction grating including a pattern of holographic grating grooves on a surface thereof;
- a diffraction grating blank having a surface which is to be ruled with diffraction grating grooves;
- means for sensing the grooved surface of the holographic model diffraction grating and generating electrical signals representative of the spatial characteristics of the grooved surface thereof;
- means for replicating the grooves of the model grating in the surface of the diffraction grating blank in response to said electrical signals; and
- means for scanning the sensing means in a predetermined pattern over the surface of the model diffraction together with said means for replicating.

5,058,282
ELLIPSOGRAPH
Albert G. Coll, Rte. 3, Box 3724 Adam West Rd., Morrison, Tenn. 37357
Filed Apr. 8, 1991, Ser. No. 681,749
Int. Cl.[5] B43L *11/04*
U.S. Cl. 33—31 4 Claims



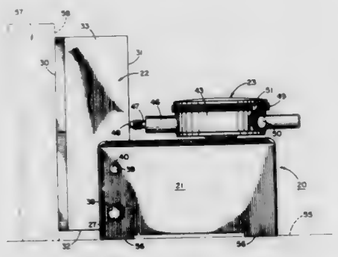
1. A trammel beam ellipsograph comprising:
- a first slide slidably engaging a first track and a second slide slidably engaging a second track, said first and second tracks being mutually perpendicular and each said track comprising two separate track sections extending in opposite directions from a central point at which said tracks cross;
- a beam comprising a first beam element slidably joined to a second beam element in a parallel relationship thereto, said first beam element having, preferably at one end thereof, a first pivotable connection connecting it to said first slide, said second beam element having, preferably at one end thereof, a second pivotable connection connecting it to said second slide, said first beam element bearing a scale comprising indicia indicating distance from said first pivotable connection and said second beam element bearing a scale comprising indicia indicating distance from said second pivotable connection;
- and a cursor riding on said two beam elements along said two scales and carrying a scribing means in linear alignment with said two pivotable connections, whereby the ellipsograph so described may be quickly and accurately set to scribe an ellipse of desired dimensions by setting the cursor to said desired dimensions, said dimensions being directly proportional to the lengths of the major axis and the minor axis of said ellipse, as indicated by said indicia on said first and second scales, and said ellipsograph may then be used to scribe said ellipse in the usual manner.

5,058,283
CAR SEAT LEVEL INDICATOR
Robert D. Wise, Akron, and Mark A. Sedlack, Cuyahoga Falls, both of Ohio, assignors to Century Products Company, Macedonia, Ohio
Filed Nov. 19, 1990, Ser. No. 615,565
Int. Cl.[5] G01C *9/02*
U.S. Cl. 33—371 5 Claims



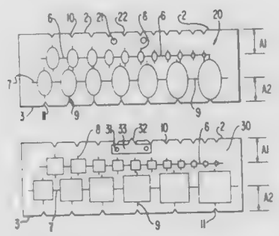
1. A positioning device for a child's car seat comprising:
a backing material;
a housing which encapsulates said backing material;
an arc-like relief projection contained on said housing;
a ball, contained within said arc-like relief projection and disposed between said housing and said backing material, which is free to move under the influence of gravity;
means, located on a rear portion of said housing, for adhering said positioning device to said car seat in a fixed position relative to said car seat; and
means, located on said backing material, for indicating, according to a position of said ball, when said car seat is properly positioned.

5,058,284
PRECISION GAUGE ASSEMBLY
James T. Stevenson, Cottage Street, Meriden, Conn. 06450
Filed Nov. 15, 1990, Ser. No. 613,059
Int. Cl.[5] G01B *3/56*
U.S. Cl. 33—535 6 Claims



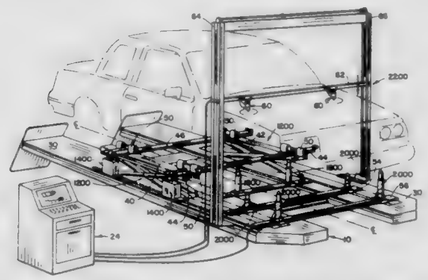
1. A precision gauge assembly for measuring the angular relationship of one surface to another surface, said gauge assembly comprising:
A. a mounting block comprising:
a. a blade receiving slot formed in a first surface thereof,
b. a first pin receiving passageway
1. formed in a second surface of the mounting block adjacent to the first surface, and
2. extending through said receiving slot, and
c. a second pin receiving passageway
1. positioned in juxtaposed, spaced relationship to the first pin receiving passageway, and
2. having a central axis substantially parallel to the central axis of the first pin receiving passageway;
B. an elongated measuring blade comprising
a. a substantially flat elongated member incorporating a component contacting edge and a rear edge, and
b. a pair of pin receiving holes formed therein substantially perpendicular to the planar surface thereof, said holes being spaced for cooperative alignment with the pin receiving passageways of the mounting block;
C. first pin means constructed for mounted engagement in the first pin receiving passageway of the mounting block and the first pin receiving hole of the blade for supportingly mounting and maintaining the elongated measuring blade in pivotal engagement with the mounting block;
D. second pin means
a. comprising at least two separate and distinct axially elongated zones,
1. the first zone comprising a first diameter substantially equal to the diameter of the pin receiving hole of the measuring blade, and
2. the second zone comprising a diameter smaller than the first diameter, and
b. positioned in sliding, axially movable mounted engagement in the second pin receiving passageway of the mounting block and the second hole of the elongated measuring blade with the second pin means being alternately axially movable for aligning each of said zones within the pin receiving hole of the measuring blade, whereby the second pin means is axially movable between at least a first blade locking position and a second position for controlling and defining the arcuate movement of the elongated measuring blade relative to the mounting block; and
E. a meter for obtaining and displaying accurate measurements
a. securely affixed to the mounting block adjacent the rear edge of the measuring blade, and
b. incorporating an axially movable, spring-biased arm member
1. constructed for providing accurate measurements to the meter,
2. positioned in contacting, following, measuring engagement with the rear edge of the measuring blade,
3. biasingly forcing the measuring blade to pivot in a first direction, and
4. being responsive to the movement of the measuring blade for continuously following and accurately measuring said pivotal movement.

5,058,285
TEMPLATE
Shiro Morita, Sakura, and Kazuo Yoshitake, Tokyo, both of Japan, assignors to Yoshitake Seisakujo Co., Inc., Tokyo, Japan
Filed Jul. 18, 1990, Ser. No. 553,662
Claims priority, application Japan, Jul. 18, 1989, 1-83616
Int. Cl.[5] B43I *13/20*
U.S. Cl. 33—563 6 Claims



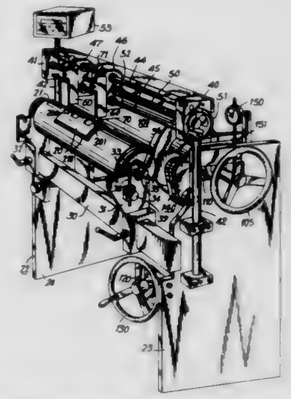
1. A template comprising:
a figure panel having at least one straight edge extending on a periphery thereof and a plurality of figure holes defined therein and having respective centers positioned on a first imaginary line parallel to said straight edge, said figure panel having first positioning means disposed in positions where second imgaginary lines which pass through the centers of said figure holes and extend perpendicularly to said first imaginary line cross said straight edge;
a reference panel having at least one straight edge extending on a periphery thereof for contact with said straight edge of the figure panel;
and second positioning means disposed on said straight edge of the reference panel for interfitting engagement with said first positioning means to determine a position to draw a figure with one of said figure holes, said second positioning means being detachably mounted on said straight edge of the reference panel.

5,058,286
METHOD AND APPARATUS FOR REPAIRING AND STRAIGHTENING VEHICLE BODY AND FRAME MISALIGNMENT
Finis L. Chisum, Rte. 5, Box 267, Claremore, Okla. 74017
Filed Nov. 1, 1989, Ser. No. 431,471
Int. Cl.[5] G01B *5/25;* G01C *15/12*
U.S. Cl. 33—608 61 Claims



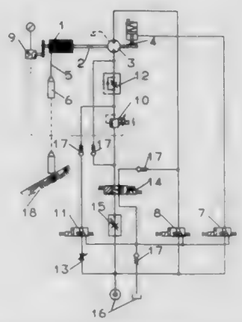
1. Apparatus for straightening and/or aligning a misaligned vehicle body and/or frame back to its manufacturer's specifications, said vehicle having a plurality of alignment datum check points, comprising
an alignment machine having a longitudinal centerline axis and having a frame which includes a platform with an upper datum surface for said vehicle to be positioned upon and having at least one force means for correcting said misalignment;
a lift means supported by said machine, means to raise said lift means above said upper datum surface, vehicle connection means separately supported on said lift means;
means to move said lift means longitudinally along said platform to a position wherein said lift means and said attached vehicle is coincident with and parallel to said longitudinal axis;
a plurality of vehicle support crossbars transversely positionable on said upper datum surface, a plurality of vertically adjustable vehicle supports transversely positionable on said cross-bars;
anchor means to attach said vehicle connection means to said platform, said anchor means having a jack means to level said vehicle relative to said upper datum surface; and
a plurality of measuring crossbars transversely positionable on said datum surface and a plurality of vehicle frame reference pointers, each of said pointers being vertically movable and pivotally connected to a slide bar that is transversely positionable on said crossbars.

5,058,287
REGISTER SYSTEM AND METHOD FOR FLEXOGRAPHIC PRINTING PLATES
Richard Harley, 200 East 74th Street, New York, N.Y. 10021
Filed Aug. 21, 1990, Ser. No. 570,572
Int. Cl.[5] B41B *11/00*
U.S. Cl. 33—618 14 Claims



1. A system for registering a flexographic printing plate on a printing cylinder, comprising frame means for rotatably mounting a printing cylinder, first and second registration pins, means for mounting said registration pins for movement longitudinally of a printing cylinder mounted in said system, means for displaying the longitudinal position of at least one of said registration pins, said mounting means comprising means for adjusting said pins to a first position abutting said cylinder and a second position spaced from said cylinder.

5,058,288
PLUMB BOB DEVICE FOR DETERMINING THE BED HEIGHT OF BULK MATERIAL IN A SHAFT FURNACE
Ingo Herzog, Schermbeck, and Bruno Kammerling, Dinslaken, both of Fed. Rep. of Germany, assignors to Man Gutehoffnungshutte Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Apr. 18, 1991, Ser. No. 687,441
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1990, 4012816
Int. Cl.[5] G01F *23/04*
U.S. Cl. 33—720 2 Claims



1. A plumb bob device for determining the bed height of a bulk material in a shaft furnace comprising:

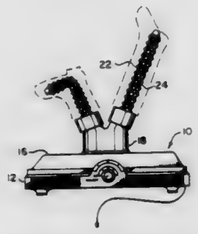
hydraulic drive connected to a winding drum arranged in a gas- tight housing for unwinding and rewinding a cable or chain with a plumb bob arranged at its end; a displacement transducer attached to a shaft of said winding drum for generating a signal associated with the actual depth of the plumb bob; said hydraulic drive including drive means for driving said driving drum without intercalation of a reducing gear and includes a low-speed hydraulic motor; a pressure proportional valve connected to said low-speed hydraulic motor, said pressure proportional valve receiving said signal associated with the actual depth of the plumb bob, directly from the displacement transducer without an electrical control device, for actuating said pressure proportional valve to maintain the torque of the hydraulic motor slightly below a torque of the winding drum, said pressure proportional valve presetting a plumb bob holding pressure associated with the actual depth of the plumb bob, for the hydraulic motor.

5,058,289

GARMENT DRYING APPARATUS

Alain Guindon, R.R. #1 Kitigan, Kapuskasing, Ontario, Canada P5N 2X7

Filed Mar. 27, 1990, Ser. No. 500,042
Claims priority, application Canada, Mar. 29, 1989, 594984
Int. Cl.[5] F26B *25/00*
U.S. Cl. 34—104 **3 Claims**



1. In a device for drying garments of the type including support means for said garments and means for transmitting a heated medium to said support means, the improvement wherein said support means comprises an elongated, tubular, flexible member having a circumferential wall area of bellows-like construction, said support means having a plurality of apertures substantially throughout its length and its circumferential wall area, said apertures constituting means for providing passage of said heated medium therethrough to an inner surface of said garment supported thereon.

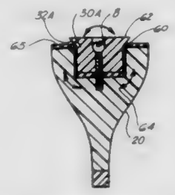
5,058,290

SHOE CONSTRUCTION WITH SELF SEATING REMOVABLE HEEL

Timothy Koehl, 4817 Taft Park, Metairie, La. 70002, and Joseph Mackenroth, 8117 McArthur Dr., Harahan, La. 70123

Filed Aug 28, 1989, Ser. No. 399,247
Int. Cl.[5] A43B *21/36*
U.S. Cl. 36—42 **1 Claim**

1. A high heel shoe with self seating removable heel portion comprising:
(a) a shoe body having a sole with a toe and a heel area, the heel area being elevated substantially above the toe area so that the shoe sole is inclined between the toe and heel and at the heel area;
(b) the heel portion of the shoe sole having a socket with a forwardly facing open end and a closed rear end, the socket having a beveled side wall forming a dove-tail joint portion;
(c) a removable high heel having an enlarged upper end portion with an inclined upper surface;
(d) a locking member extending upwardly form the high heel upper end portion inclined surface, the locking member including a pedestal with a beveled, dove-tail side wall that corresponds to and registers with the socket so that the heel can be attached to the socket by moving the heel pedestal into the socket in a fore to aft direction;
(e) the pedestal and socket being correspondingly sized and hidden within the heel upon assembly and loaded during walking to continuously force the pedestal into the socket; and



(f) the connection of the heel to the shoe body forming an unbroken exterior line defining a plane generally parallel to the upper surface of the high heel;
(g) wherein the pedestal is removably affixed to the high heel; and
(h) wherein there are two layers of shock absorbing material including a first layer that is disposed beneath the pedestal and a second layer that is disposed peripherally about the pedestal.

5,058,291

PADDING DEVICE

Chris A. Hanson, Boulder, Colo., assignor to Alden Laboratories, Inc., Boulder, Colo.

Division of Ser. No. 257,955, Oct. 14, 1988, Pat. No. 4,952,439.
This application Aug. 27, 1990, Ser. No. 573,365
Int. Cl.[5] B32B *1/06;* **A43B** *5/04*
U.S. Cl. 36—117 **2 Claims**

1. A ski boot having a padding device in the interior, said padding device comprising:
a) a first layer of flowable material which is resistant to flow in response to instantaneously applied pressure and flows in response to continuously applied pressure, said first layer of flowable material being further characterized in that it is capable of deforming into an irregular shape in response to said continuously applied pressure and is capable of substantially retaining said irregular shape after all applied pressure is removed, said first layer of said flowable material located at selected portions of said padding device; and
b) a second layer of flowable material which is resistant to flow in response to instantaneously applied pressure and which flows in response to continuously applied pressure, said second layer of flowable material being further characterized in that it is capable of deforming into an irregular shape in response to said continuously applied pressure and is capable of substantially retaining said irregular shape after all applied pressure is removed, said second layer of flowable material located substantially adjacent to at least selected portions of said first layer of flowable material

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5,058,292

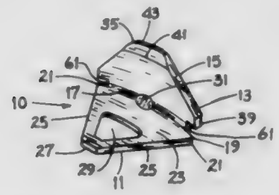
CLEAT FOR AN ATHLETIC SHOE

Michael L. Tanel, Milwaukee, Wis., assignor to Tanel Corporation, Milwaukee, Wis.

Filed Sep. 15, 1989, Ser. No. 407,620
Int. Cl.[5] A43B *5/00;* **A43C** *15/02*
U.S. Cl. 36—126 **12 Claims**

1. In a blade-like individual cleat for an athletic shoe of the integral angled-plate type, the improvement comprising:

a base plate for attachment to an athletic shoe sole, the base plate including an outer portion with base extremities of first width and a tongue portion extending from the outer portion;
a base substantially normal to the base plate, the blade including a ground-engagement portion extending to a blade distal end and further including a support portion joining the ground-engagement portion to the base plate;
the ground-engagement portion having opposed diverging edges extending from the blade distal end to shoulder extremities near the support portion; and



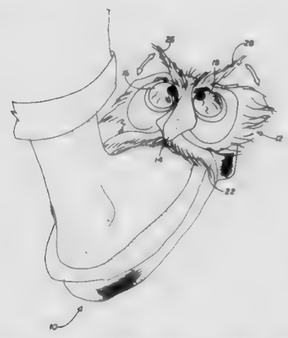
the support portion having a width less than the first width to form a notch between the shoulder extremities and the base plate, the shoulder extremities being vertically spaced from the aligned with the base extremities, thereby to facilitate cleat attachment to the sole,
whereby, when attached to the athletic shoe sole with a plurality of similar individual cleats arranged such that their ground-engagement portions extend along a circle, said cleat provides improved angular turf cutting and pivotability for said shoe.

5,058,293

FOOTWEAR WITH ANIMATED FACE

Anthony F. Villar, Westbury, N.Y., assignor to Felix Benitez and Shirley Benitez, both of Altamonte Springs, Fla., part interest to each

Filed Oct. 9, 1990, Ser. No. 594,560
Int. Cl.[5] A43B *3/00, 9/00*
U.S. Cl. 36—136 **25 Claims**



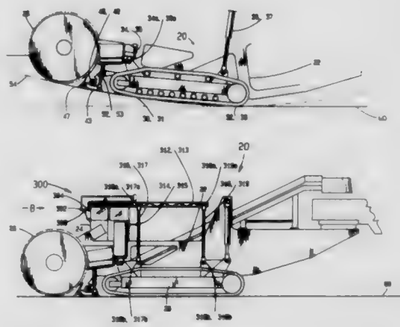
1. Footwear having an upper front portion upon which an animated face with movable eyes is mounted, said footwear comprising an upper shoe surface, a sole, and a support member located in a forward interior portion of the footwear, in contact with the interior of said upper shoe surface, and with the lower portion of said support member affixed to said sole, a treadle member operatively disposed in the interior portion of said footwear, at a location generally corresponding to the location of said support member, with a forward part of the foot of the user normally resting on said treadle member, said treadle member being arranged to move downwardly upon weight being placed thereon, an upper portion of said support member serving as means for supporting simulated eye members, displayed on the exterior of said upper shoe surface, said eye members being pivotally mounted in spaced apart locations on said support member, and movable between first and second positions, and means mechanically interconnecting said eye members and said treadle member, said eye members being rotated from first to second positions each time the foot of the user presses down upon said treadle member, and bias means serving to rotate said eyes back to said first positions when the user's weight is removed from said treadle member.

5,058,294

GRADE CONTROL SYSTEM FOR CONTINUOUS BUCKET EXCAVATORS

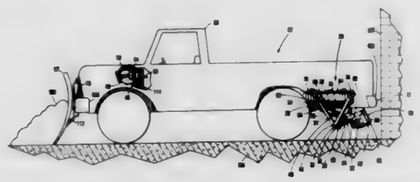
John F. Bryan, Jr., 4250 Lovers La. West, Dallas, Tex. 75209

Continuation of Ser. No. 445,928, Dec. 5, 1989, abandoned, which is a continuation of Ser. No. 313,447, Feb. 22, 1989, abandoned. This application May 14, 1990, Ser. No. 522,467
Int. Cl.[5] E02F *3/24*
U.S. Cl. 37—190 **58 Claims**



1. An excavating and loading system comprising:
a main frame;
a surface contacting undercarriage having first and second ends;
connecting means for supporting said main frame on said undercarriage;
a bucket wheel wider than any other party of said excavating and loading system;
structure extending from one end of said main frame supporting said bucket wheel for rotational movement;
drive means for continuously rotating said bucket wheel;
undercarriage drive means for advancing said continuously rotating bucket wheel so as to cut the surface contacted by said undercarriage;
adjustment means for varying the elevation of said bucket wheel relative to said undercarriage so that the surface contacting portions thereof, in conjunction with the periphery of said bucket wheel, determine a cylindrical surface of consequently adjusted radius; and
positioning means for holding the surface contacting portion of said smoothing means inherently proximate to said cylindrical surface.

5,058,295
REAR-MOUNTED SCRAPER
William H. Holland, W6791 Pond View Rd., Monroe, Wis. 53566
Filed Nov. 29, 1990, Ser. No. 620,524
Int. Cl.[5] E01H 5/06; E02F 3/815
U.S. Cl. 37—268 9 Claims



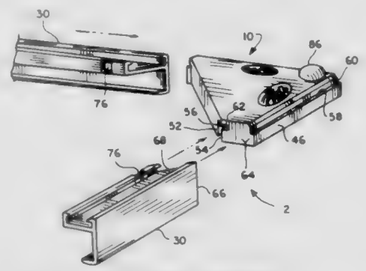
1. A scraper for attachment to the rear of a vehicle having a rear with a rear bumper, a bottom, and a rear axle; comprising:
a) a hitch having portions attached to the bottom of the vehicle and portions defining pivotal attachment points which define a horizontal pivot axis, wherein the pivot axis of the attached hitch is spaced between the rear axle and the rear of the vehicle and is beneath the bottom of the vehicle;
b) a scraper assembly having a blade and an extension which extends forward from the blade and is pivotally mounted at the hitch pivot points to enable the scraper assembly to pivot about the horizontal pivot axis wherein the extension and the blade attached thereto are substantially overlaid by the vehicle in the raised position; and
c) a linear actuator pivotally attached to the scraper assembly and to the hitch at a position near the bottom of the vehicle rear between the pivot axis and the vehicle rear axle such that operation of the linear actuator causes the scraper assembly to pivot about the pivotal attachment points on the hitch and thus move the blade from a lowered, ground-engaging, snowscraping position to a raised position beneath the vehicle and substantially forward of the rear bumper.

5,058,296
CALENDAR
Wolfgang Nötzel, Munich, Fed. Rep. of Germany, assignor to Wohlfahrt GmbH, Rothenburg ob der Tauber, Fed. Rep. of Germany
Filed Nov. 27, 1989, Ser. No. 441,164
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1988, 8814723[U]
Int. Cl.[5] G09D 3/00
U.S. Cl. 40—107 12 Claims



1. An Advent calendar, comprising a calendar part provided with a stair edge having stair steps which form respective day regions; a marking arranged to mark respective days, said stair steps and said markings being formed so that said marking can be consecutively arranged on said stair steps; orienting means for orienting said calendar part so that said stair steps extend each in a substantially horizontal direction and are spaced from one another horizontally and upwardly; a plurality of step plates arranged on said stair steps, said step plates being formed as plug parts which are releasably connectable with said calendar part.

5,058,297
PICTURE FRAME ASSEMBLY
Michael J. McGinnis, 887 Boyd St., Santa Rosa, Calif. 95407
Filed Jun. 21, 1990, Ser. No. 541,834
Int. Cl.[5] G09F 1/12; A47G 1/06
U.S. Cl. 40—155 8 Claims

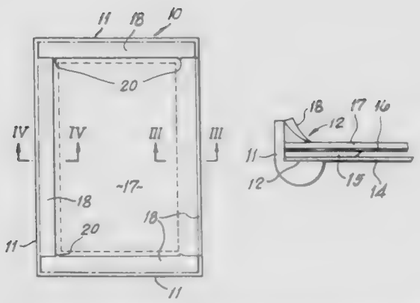


1. A picture frame assembly comprising:
a plurality of corner fittings and interfitted frame channels,
each said fitting having a rear surface and including a pair of tongue areas,
each said tongue area bounded by an outside wall and an inner vertical groove,
said outside walls conjoined at a corner edge,
said fitting rear surface forming a substantially triangular plane defined by said outside walls and said corner edge,
a horizontal groove extending from each said vertical groove and a horizontal ledge extending from each said outside wall,
resilient lock means disposed within said tongue area and normally projecting into a respective one said vertical groove,
said frame channels each including opposed vertical outer and inner walls each terminating in opposing flanges,
said channel opposing flanges disposed in a plane vertically offset from said plane of said fitting rear surface,
a pair of said channels attachable to respective ones of said fitting tongue areas attachable to respective ones of said fitting tongue areas by insertion of each said channel inner wall within said fitting vertical groove as said channel outer wall slidably engages said fitting outside wall with said channel flanges respectively engaging said fitting horizontal groove and ledge, and
catch means on each said channel engageable with said lock means and retaining each said channel interfitted with said corner fitting when said channel outer wall fully overlies said fitting outside wall.

5,058,298
REAR-LOADED PICTURE FRAME SIDE MEMBER
William Burns, 14 Mill Lane, North Reddish, Stockport SK5 GUU, England
Filed Dec. 1, 1989, Ser. No. 444,722
Claims priority, application United Kingdom, Dec. 21, 1988, 8829785
Int. Cl.[5] G09F 1/12; A47G 1/06
U.S. Cl. 40—156 1 Claim

1. In a rear loaded rectangular picture frame wherein four side members are joined end-to-end and each side member is formed with a rearwardly facing rebate to receive at least one element to be framed, the improvement which comprises

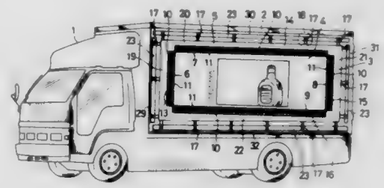
(a) the side members each being of unitary plastic material and being joined integrally with one another,
(b) at least one resilient flap of the same plastic material as the side members extending integrally from and being hingedly connected to the rear of each of the side members,
(c) each of said flaps being movable between a first position in which it lies outside the rebate to allow rear loading of the element to be framed and a second position resiliently

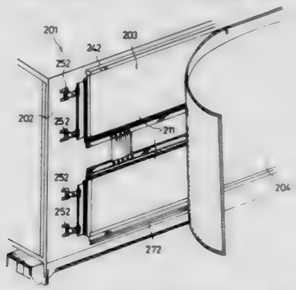


biased against the rear of the element after loading to hold said element in place within the rebate, and
(d) the flaps on a first pair of opposed side members in said second position latching behind means on the flaps on the second pair of side members to hold the flaps on the second pair of opposed side members against displacement when the flaps on the second pair are first moved into the second position followed by movement into said second position of the flaps on said first pair of side members.

5,058,299
ADVERTISING DEVICE
Teruo Suzuki, Urayasu, Japan, assignor to SCS Promotion Company Limited, Chiba, Japan
Filed Feb. 2, 1990, Ser. No. 473,670
Claims priority, application Japan, Feb. 7, 1989, 1-13271; Oct. 25, 1989, 1-278290; Dec. 26, 1989, 1-337497[U]
Int. Cl.[5] G09F 17/00
U.S. Cl. 40—603 4 Claims

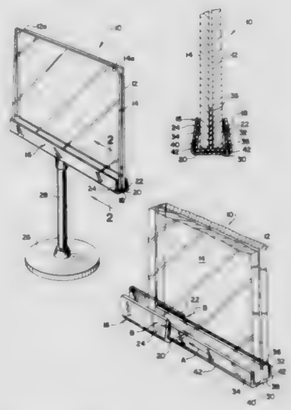
1. An advertising device comprising:
a flexible sheet-like advertising bill having at least two edges spaced one from the other;
a flexible sheet-like member on which said advertising bill is disposed;
a pair of fasteners for detachably fastening said advertising bill and said sheet-like member one to the other, whereby said advertising bill overlays said sheet-like member, said fasteners comprising first fastening elements disposed along said two edges of said bill and second fastening elements provided on said sheet-like member for cooperation with said first fastening elements;
an expansible means provided on said sheet-like member for adding elasticity to said sheet-like member;
said second fastening elements being spaced one from the other along said sheet-like member in registration with said two edges, respectively, of said advertising bill and said first fastening elements thereof, said expansible means being disposed between said second fastening elements and said opposed two edges; and wherein said sheet-like member comprises a pair of sheet member portions spaced one from the other, said expansible means including an elastic member disposed on an intermediate portion of said





sheet-like member and connecting said sheet member portions one to the other.

5,058,300
SIGNHOLDER
Richard C. Ernest, Lake Forest, Ill., and P. Paul Retzinger, Cupertino, Calif., assignors to Crown Metal Manufacturing Company, Chicago, Ill.
Filed Nov. 2, 1989, Ser. No. 430,628
Int. Cl.[5] G09F 15/00
U.S. Cl. 40—606 4 Claims



1. A signholder subassembly for use with a retaining bracket and a pair of clear, relatively flexible plastic planar pieces, each of said pieces having a face surface and being substantially identical to one another and adapted to be mated to one another and mounted along a bottom edge in said retaining bracket by said subassembly, said subassembly comprising:
an insert formed as a channel member having a substantially

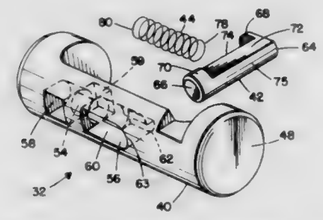
U-shaped cross-sectional configuration formed by a base and first and second wall members upstanding from said base and at least one interior longitudinal wall member upstanding from said base between said first and second wall members thereby forming two longitudinal channels within said U-shaped channel member, each of said channels capable of accepting a respective planar piece therein, each of said first and second wall members including an outwardly projecting rib on its exterior surface proximate said base and extending along the length of said first and second wall members for engagement with said retaining bracket so that when said planar pieces and said channel member are mounted within said retaining bracket said retaining bracket biases said first and second wall members and said planar pieces within said channels toward each other to form a bearing surface between said first and second wall members and said ribs restrain said channel member within said retaining bracket.

5,058,301

REVERSIBLE MAGAZINE CATCH ASSEMBLY AND METHOD OF MAKING THE SAME

Bryant L. Lishness, Bristol, and Paul A. Scirica, East Hampton, both of Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.

Filed Dec. 14, 1990, Ser. No. 627,320
Int. Cl.[5] F41A *9/61*
U.S. Cl. 42—7 **20 Claims**



1. A magazine catch assembly comprising:
a housing having a pin hole, a spring channel generally perpendicular to and intersecting said pin hole, and a magazine locking rib, said spring channel being formed from at least three interconnected holes transverse to a path of said channel;
a mounting pin movably located in said pin hole in two perpendicular paths; and
a coiled spring located in said spring channel with a first end adjacent a portion of said housing and a second end adjacent said pin wherein said spring channel provides lateral support for said spring, said spring is adapted to friction hold said pin relative to said housing, and said housing and pin can be moved relative to each other without substantial risk of disassembly of the assembly.

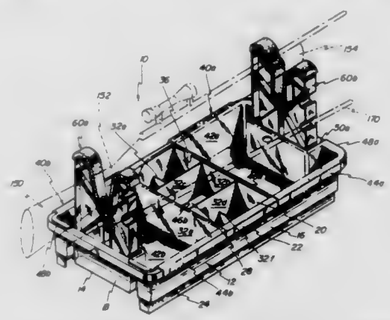
5,058,302

SHOOTER'S PORTABLE MAINTENANCE CENTER

William J. Minneman, c/o MTM Molded Products Company, 5680 Webster St., Dayton, Ohio 45414, assignor to William J. Minneman, Clayton, Ohio

Filed Jul. 24, 1990, Ser. No. 557,277
Int. Cl.[5] F41A *23/18;* **B65D** *85/00*
U.S. Cl. 42—94 **20 Claims**

1. A long barreled gun holder, comprising:
a rectangular box including a bottom, two opposed long sides, and two opposed short sides,
a pair of gun support forks each including a base portion and a top portion, said top portions having open top slots for receiving a section of a gun barrel, said base portions being insertable into said box, said gun support forks including open slots along their sides for receiving an accessory barrel cleaning rod therein,
wall members in said box located at said short sides providing sockets dimensioned to receive said base portions of said forks,
the remainder of said box providing storage for gun maintenance accessories.

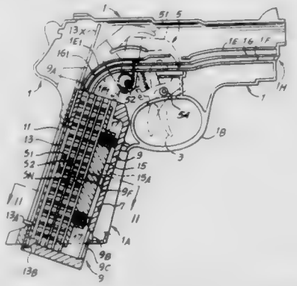


5,058,303

TOY FIRE-ARM FOR STRIP AMMUNITION

Giampiero Ferri, Via Vecchia Fiesolana No. 74, Frazione S. Domenico, Fiesole, Firenze, Italy

Filed Aug. 20, 1990, Ser. No. 569,826
Claims priority, application Italy, Aug. 30, 1989, 11680/89[U]
Int. Cl.[5] F41C *3/12*
U.S. Cl. 42—57 **6 Claims**



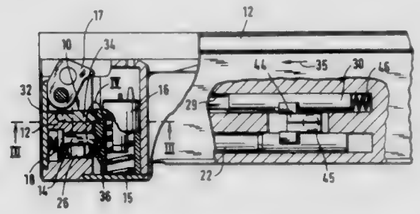
1. A toy fire-arm comprising a hollow, butt-shaped handle connected to a trigger and barrel assembly, including percussion means for firing strip ammunition fed thereto,
said handle having a seat **7** for receiving and supporting a magazine therein,
a magazine insertable in said handle against said seat (7),
said magazine including means for supporting strip ammunition (S) arranged side-by-side, including means for maintaining said plurality of strips (S) against one side of said magazine to enable the sequential feeding of each of said strips from said magazine to and through strip guide means to said trigger and barrel assembly,
and a slider means **13** disposed along said one side of said magazine for slidingly feeding strip ammunition containing firing charges **C1** from said magazine in steps through said guide means to said trigger and firing assembly, for firing by said percussion means.

5,058,304

DUAL-CATCH TRIGGER MECHANISM

Rolf Bartolles, Korschenbroich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 19, 1990, Ser. No. 554,723
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1989, 3924042
Int. Cl.[5] F41A *17/64*
U.S. Cl. 42—69.01 **18 Claims**



1. A trigger mechanism comprising
(a) a firing pin having a cocked position and a firing position into which the firing pin is adapted to be accelerated along a path of motion from the cocked position;
(b) a catch having a locking position for engaging the firing pin in the cocked position to hold the firing pin in the cocked position; said catch having a withdrawn position for allowing the firing pin to be moved into the firing position;
(c) a spring operatively connected to said catch for urging said catch into the locking position;
(d) a first actuating bar;
(e) first coupling means for connecting said first actuating bar with said catch for transferring movements of said first actuating bar to said catch;
(f) a standby catch having a locking position in which the standby catch is situated in the path of motion of and out of contact with the firing pin for preventing the firing pin from moving from the cocked positioned into the firing position; said standby catch having a withdrawn position for allowing the firing pin to be moved into the firing position;
(g) a second actuating bar; said first and second actuating bars being longitudinally displaceable and oriented parallel to one another;
(h) second coupling means for connecting said second actuating bar with said standby catch for transferring movements of said second actuating bar to said standby catch; and
(i) force-transmitting means for simultaneously applying a triggering force to said first and second actuating bars for simultaneously displacing said first and second actuating bars to simultaneously move said catch and said standby catch from respective said locking positions to respective said withdrawn positions.

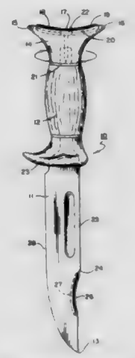
5,058,305

VERSATILE SHOOTING REST

Russell F. Majesty, 8 Pintail Rd., Sheridan, Wyo. 82801

Filed Jun. 28, 1990, Ser. No. 544,974
Int. Cl.[5] F41A *23/04*
U.S. Cl. 42—94 **10 Claims**

1. A shooting rest that is light in weight, easily carried, and readily attachable to a horizontal surface or to a vertical surface for steading a firearm during aiming and firing, comprising:
blade means having a predetermined length and having a predetermined width and thickness, with said predetermined width being greater than said thickness, and with a point at one end;
handle means affixed to said blade means at an end of said predetermined length opposite said point, for grasping in the hand of a user to plunge said point into a predetermined surface;



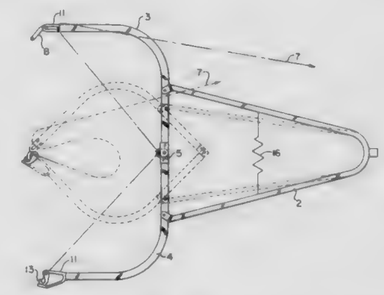
enlarged butt means attached pivotally to said handle means at an end furthermost from said blade means, and having a curved, concave area for resting a firearm during aiming.

5,058,306

DEVICE FOR ROPING FISH

Hans N. Sienel, 154 Toledo St., Farmingdale, N.Y. 11735

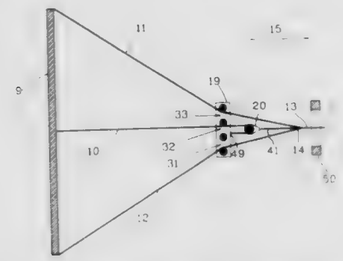
Filed Sep. 20, 1990, Ser. No. 585,391
Int. Cl.[5] A01K *97/14*
U.S. Cl. 43—5 **12 Claims**



1. A roping device, comprising: a relatively U-shaped spring member having two arms connected by a base section; a rigid handle connected to the base section of the U-shaped spring member; a first arcuate member having a first end and a second end, said first arcuate member being pivotably connected near said second end to one arm of said spring member; a second arcuate member having a first end and a second end, said second arcuate member being pivotably connected near said second end to another arm of said spring member; hinge means for connecting together the second ends of the first and second arcuate members so that the arcuate members pivot relative to one another, said first and second arcuate members being movable between an open position in which the arms of the U-shaped member are pushed apart from a rest position, and a closed position which is entered when an impact is imparted on said hinge means so that said arms of said U-shaped spring member return to said rest position; a rope having one end releasably connected to the first end of the first arcuate member and running therefrom through the hinge means, the first end of the second arcuate member, to the handle; and means provided at the first ends of the first and second arcuate mem-

bers for forming a loop in said rope which is tightenable by pulling on said rope when said arcuate members are in said closed position.

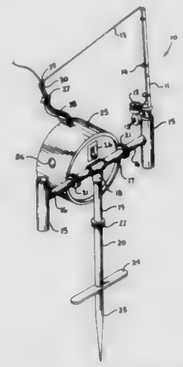
5,058,307
BEAN TRAWL PICKUP DEVICE
Michael J. Garrett, 203 Hickory La., Lutz, Fla. 33549
Filed Jul. 16, 1990, Ser. No. 552,478
Int. Cl.[5] A01K *73/02*
U.S. Cl. 43—9.1 1 Claim



1. A beam trawl pickup device to be used in conjunction with a beam trawl on a fishing boat and comprising:
(a) a pickup block consisting of two parallel plates separated by fixed spacers at each end and forming a frame of rectangular cross section wherein four grooved rollers are rotatably supported by four shafts rotatably fixed between the parallel plates, said rollers being spaced equally and forming three cable guides, with a point of rigid attachment provided near the center of one plate for a cable; and
(b) a pickup block pulley consisting of two parallel plates separated by two pins rigidly attached to the plates where one pin is a shaft which rotatably supports a grooved roller which forms a single cable guide and the second pin forms a rigid attachment point for a cable; and
(c) four cables, two of which are attached at one end to the outer ends of a beam trawl, pass through the outer two cable guides on the pickup block and are attached at the other ends to the end of the fishing boat cable, while the third cable is attached at one end to the center of the beam trawl, passes through the center cable guide of the pickup block, passes around the cable guide in the pickup block pulley and is attached at the other end to the pickup block, while the fourth cable is attached at one end to the pickup block pulley and attached at the other end to the main boat cable at the same point as the outer cables, whereby when the main boat cable is pulled in over the block, the pickup block pulley will pass over the block and the pickup block will not pass over the block, and the full weight of the trawl is picked up by said third cable.

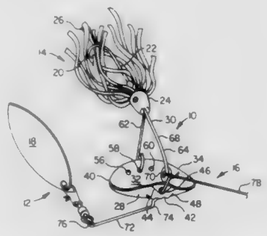
5,058,308
FISH ALARM APPARATUS
Charles J. Girard, 27 Elaine Ave., Peabody, Mass. 01960
Filed Feb. 19, 1991, Ser. No. 657,419
Int. Cl.[5] A01K *97/10, 97/12*
U.S. Cl. 43—17 11 Claims

1. A fish alarm apparatus comprising,
at least one fishing pole holding socket vertically arranged, with a socket support bar fixedly mounted orthogonally to the holding socket, the socket support bar telescopingly received within a central horizontal mount, and
the horizontal mount including a support post orthogonally mounted to the horizontal mount, and
the support post telescopingly received within a base post, and the base post including a spike member mounted at a lower terminal end thereof for projecting of the spike member into an underlying ground support, and
a housing mounted fixedly to the central horizontal mount and the support post, the housing including a spring support post mounted therethrough, with the spring support post including an upper terminal end, with the upper terminal end arranged for releasably securing a fishing line therethrough, and



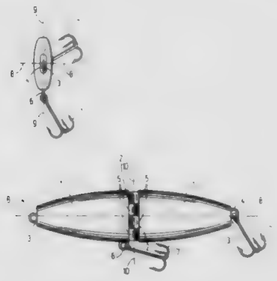
a first switch member mounted within the spring support post, and
the first switch member operatively associated with an audible alarm to effect actuation of the audible alarm upon a fish strike.

5,058,309
STEERABLE FISHING LURE
Herman P. Firmin, Baton Rouge, La., assignor to Knight Manufacturing Company, Inc., Tyler, Tex.
Filed May 21, 1990, Ser. No. 526,281
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—42.13 6 Claims



1. A steerable fishing lure, comprising:
a bait assembly including a fish hook;
an adjustable rudder dish for providing a rudder force, said rudder dish including a concave face for directing movement of water past said rudder dish, a steering adjustment hinge and a plurality of bias points;
a harness connected to said bait assembly and rudder dish for permitting adjustment of said rudder dish to adjust the direction of said rudder force, said harness firmly engaging said rudder dish and comprising a tension wire for engaging said steering adjustment hinge and a fastening wire for engaging said bias points.

5,058,310
FISHING LURE
Kent Andersen, Havnegade 100, Odense C, Denmark 5000
Filed Oct. 2, 1989, Ser. No. 415,883
Claims priority, application Denmark, Sep. 30, 1988, 5452/88
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.15 9 Claims

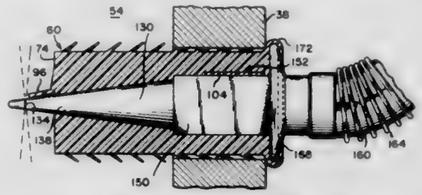


1. A fishing lure suggestive of a fish, comprising:
a body having a length, width and height generally corresponding to the profile of a fish and including a first section and a second section, said sections being joined to each order to comprise a hinge having a pivot axis, the hinge axis bisecting said body and extending in the height directions, said body being substantially symmetrical to a first plane in which that hinge axis lies, said body sections being identical, said first plane extending in the height and width directions, said body being substantially symmetrical to a second plane perpendicular to said axis and passing through the axis midpoint, said second plane extending in the length and width directions, the height of said sections diminishing as the distance from said axis increases, each said identical body section includes similar elements for one side of said hinge, said elements on each said body section being spaced apart, elements of one said body section nesting between the elements of the other said body section, each said element having a bore therethrough, said bores being aligned when said elements are nested, and a pintle extending through said aligned bores to complete said hinge with overlap of said hinge elements.

5,058,311
METHOD FOR DESTROYING BURROWING ANIMALS
Erik E. Erickson, 1020 33rd Ave., NE., Olympia, Wash. 98506
Filed Nov. 21, 1990, Ser. No. 616,797
Int. Cl.[5] A01M *23/00*
U.S. Cl. 43—58 5 Claims

1. A method for destroying underground tunnelling animals such as moles, voles and gophers, including the steps of:
a. locating the point of joinder of an exit passageway from a tunnel and an adjacent portion of the tunnel;
b. removing the soil overlying the point of joinder and from an adjacent portion of the tunnel thereby exposing the bottom surface of the tunnel;
c. laying netting along the bottom surface of the tunnel; and
d. covering the exposed portion of the tunnel with loosely packed soil in order to encourage burrowing animals to move through the tunnel and become entangled in the netting.

5,058,312
EXTERMINATION SYSTEM
John C. Jackson, 313 So. Lakeside Dr., Lake Worth, Fla. 33460
Continuation-in-part of Ser. No. 52,290, May 21, 1987, Pat. No. 4,823,505. This application Apr. 25, 1989, Ser. No. 343,009
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] A01M *1/20, 7/20*
U.S. Cl. 43—124 22 Claims

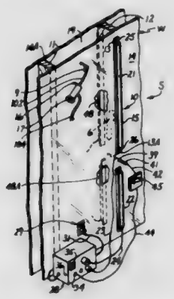


8. An extermination system for installation into the walls of buildings, said walls comprising opposing wall surfaces defining an interior wall cavity, said surfaces having at least one aperture for accessing said wall cavity, said extermination system comprising:
a fitting installed and mated in said aperture, said fitting having an open interior fitting passage adapted for the introduction of an insecticide into said wall cavity through said fitting passage, said fitting comprising an interior end and an exterior end, said interior end being positioned substantially at an end of said aperture adjacent to said wall cavity, and said exterior end being positioned substantially at an opposite end of said aperture, said exterior end comprising means adapted to engage a portion of said wall surface surrounding said aperture to prevent passage of said fitting through said aperture;
an insecticide supply device, said device including an outlet portion adapted to introduce insecticide into said wall cavity through said fitting passage, and an insecticide supply portion connected to said outlet portion, said exterior end of said fitting further comprising means for sealably engaging a portion of said outlet of said insecticide supply device to seal the insecticide supply device against the fitting, said sealable engagement means comprising a circumferential flange substantially J-shaped in cross section, said outlet comprising a circumferential protrusion, said circumferential J-shaped flange being adapted to snap-fit over said circumferential protrusion to sealably engage said outlet to said fitting to prevent the return flow of insecticide, whereby insecticide can be introduced into said wall cavities to exterminate insects therein, said insecticide will be separated by said wall surfaces from occupants of said building, and return flow of insecticide through the fitting and around the outlet will be substantially prevented.

5,058,313
METHOD AND APPARATUS FOR EXTERMINATING STRUCTURE INFESTATIONS
Joseph C. Tallon, 5702 Pioneer Dr., Bakersfield, Calif. 93306
Continuation-in-part of Ser. No. 1,871, Jan. 9, 1987, abandoned. This application May 22, 1989, Ser. No. 356,001
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—124 23 Claims

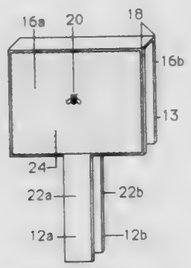
1. A method for exterminating insects in a plurality of wooden members of a structure, comprising the steps of:
(a) inspecting the wooden members of the structure;
(b) isolating individual ones of the wooden members containing the insects;
(c) using heat producing means;
(d) positioning said heat producing means adjacent to an individual one of the isolated wooden members;

(e) activating the positioned means;
(f) causing alterations to be produced by said activated heat producing means, within the adjacent isolated member to increase the temperature sufficiently to kill a sufficiently large number of the insects contained therewithin to eradi-



cate substantially the entire infestation contained therewithin;
(g) de-activating said heat producing means after said temperature has been attained; and
(h) repeating steps (c) through (g) for the remaining individual ones of the isolated wooden members.

5,058,314
FOLDING ADHESIVE INSECT CATCHER
Gerald L. Frascone, 3125 182nd Ave. N.E., Wyoming, Minn. 55092
Filed Mar. 19, 1990, Ser. No. 495,844
Int. Cl.[5] A01M *3/04*
U.S. Cl. 43—136 **1 Claim**



1. An insect catcher comprising, a head portion having two handle portions extending perpendicularly from said head portion, said handle portions forming a longitudinal axis,
said head portion having a coating of adhesive material on one side,
said head portion having two fold lines substantially at the center of said head portion perpendicular to said longitudinal axis,
whereby said head portion maybe folded in half along said fold lines with said handle portions overlapping such that said coating forms an insect trapping surface.

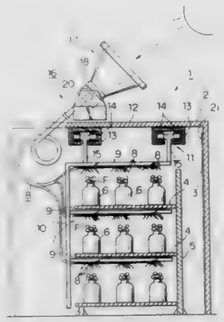
5,058,315
TURF ANCHOR
John W. Wagner, 2211 N. 56th St., Seattle, Wash. 98103
Filed Aug. 1, 1989, Ser. No. 388,192
Int. Cl.[5] A01C *17/06*
U.S. Cl. 47—1.01 **4 Claims**

1. A turf anchor comprising a stake made principally of peat material for impaling loose turf with its tip embedded in the soil beneath the turf, having a flat shaft to deter turning of the loose turf about an upright axis and having a projection extending laterally from the lower end portion of said stake shaft for



embedment in the soil to deter upward withdrawal of the stake, and the peat material of which the stake is make will disintegrate readily when subjected to water.

5,058,316
METHOD AND APPARATUS FOR CULTIVATING MUSHROOMS
Shigenobu Watari, 868-77, Imasato, Kawanakajima-machi, Nagano-shi, Japan
PCT No. PCT/JP88/00148, § 371 Date Aug. 15, 1989, § 102(e) Date Aug. 15, 1989, PCT Pub. No. WO89/07390, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 15, 1988, Ser. No. 397,500
Int. Cl.[5] A01G *1/04*
U.S. Cl. 47—1.1 **3 Claims**



1. An apparatus for cultivating mushrooms in prepared cultivation containers containing mushroom spawn which have been subjected to a scrambling operation, comprising a cultivation chamber, a plurality of cultivation shelves disposed in a vertical array on a support within said chamber to hold the prepared cultivation containers in rows in spaced relationship, a sunlight introducing device being disposed outside said chamber, said sunlight introducing device including a sunlight concentration device for collecting sunlight, and an intermittently irradiating device, said irradiating device including a mounting plate assembly, said assembly including support plate and a plurality of mounting plates, said mounting plates being disposed generally horizontally and being connected to said support plate, one of said mounting plates being disposed above each of said cultivation shelves, said assembly being movable in a reciprocating manner in the horizontal direction, a plurality of optical fibers, each of said fibers having a first end and a second end, said optical fibers extending from said first ends located to receive light at said sunlight introducing device through a wall of said chamber to be mounted from said mounting plates such that said second ends extend from said mounting plates in correspondence above a row of cultivation containers placed on said cultivation shelves, said optical fibers transmitting sunlight from said sunlight introducing device for irradiation of the mushrooms, and a movement controller to move said assembly in a reciprocating manner to irradiate the sunlight introduced through said optical fibers onto the mushrooms intermittently, wherein said cultivation chamber is sealed in a heat insulated state after the prepared cultivation containers are disposed on said cultivation shelves.

5,058,317
MULCH COLLAR
Lawrence J. McMurtrey, 12122 196th NE., Redmond, Wash. 98053
Filed May 1, 1990, Ser. No. 517,573
Int. Cl.[5] A01G *13/02*
U.S. Cl. 47—25 **18 Claims**

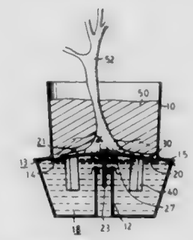


1. A mulch collar for installation around a stem of a plant, said collar comprising:
a thin, pliable web having an opening therethrough for accommodating said stem of said plant and a slit having first and second edges therethrough extending from said opening to a peripheral edge of said web for providing a gap to receive said stem of said plant, said pliable web having insufficient elasticity to return the edges of said slit to positions adjacent one another to close said gap after said edges have been moved apart from one another to open said gap; and
an elongate resilient member formed into a ring and having first and second ends adjacent to one another, said ring being attached to said web with said opening through said web located within said ring, and with said first edge of said slit meeting said ring proximate said first end of said resilient member and said second edge of said slit meeting said ring proximate said second end of said resilient member, so that said resilient member biases said edges of said slit from a first position in which said ends of said resilient member are spread apart from one another to selectively open said gap to a second position in which said first and second edges of said slit are adjacent to one another so as to close said gap.

5,058,318
PROCESS FOR THE PRODUCTION OF LILIUM SPECIES
James F. Tammen, 109 Norle St., State College, Pa. 16802
Filed Jul. 17, 1990, Ser. No. 554,220
Int. Cl.[5] A01C *1/00*
U.S. Cl. 47—58 **3 Claims**

1. A method for producing Lilium bulbs of a size suitable for flower production in less than a one-year period, said method comprising:
(a) producing bulbils of about 0.5 to 1.0 cm diameter by dissecting scale pieces from a mother bulb and growing said scale pieces on tissue culture media at about 21° C. with an about 16 hour daylength for about 10 to 12 weeks;
(b) keeping the bulbils produced in step (a) at about 5° C. for about 2 to 4 weeks;
(c) growing said bulbils vegetatively for about 10 to 12 weeks with the temperature at or above about 21° C. and/or the dark period at or above 13 hours, said vegetative growth producing a young plant and continuing until about 6 to 8 scale leaves are produced; and
(d) growing said young plant in a vegetative state for about 16 to 24 weeks until a bulb of a size suitable for flower production is obtained.

5,058,319
FLOWERPOT HAVING A WATER RESERVOIR
Wan M. Liao, No. 200, Heng Chun Rd., Ta Chia Chen, Taichung Hsien, Taiwan
Filed Sep. 14, 1990, Ser. No. 582,743
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—81 **2 Claims**



1. A flowerpot comprising:
a) a body including an inner surface and a bottom;
b) a tube extending upwardly from the bottom of the body, the tube including an open top and defining an annular space with the inner surface of the body for storing water flowing into the body;
c) a plurality of stops peripherally secured to the inner surface of the body and positioned above the open top of the tube;
d) a partition plate supported on the stops, the partition plate including a lower surface, a plurality of apertures and at least one first notch formed therein, the lower surface being positioned above the open top of the tube;
e) a screen supported on the partition plate, at least one second notch formed in the screen, and the second notch being disposed in alignment with the first notch;
f) a sponge member engaged in the aligned first and second notches, the sponge member including an upper half extending upwardly above the screen and a lower half extending downwardly into the annular space, the sponge member for absorbing the water stored in the annular space and supplying the water to the space above the screen;
g) a bolt including an upper end and a lower portion, the upper end of the bolt being connected to the partition plate and the screen at central portions thereof, the lower portion of the bolt extending into the tube; and
h) a float, the lower portion of the bolt extending through the float whereby the float is guided by the bolt to move upwardly and downwardly therealong, the float being movable downwardly by gravity to close the open end of the tube when the water level in the body is lower than the open top of the tube, and the float being movable, upwardly by water when the water level is higher than the open top of the tube for permitting excess water to flow out through the open top of the tube.

5,058,320

MULTIPLE POT FOR RAISING AND TRANSPLANTING SEEDLINGS AND METHOD OF FABRICATING THE SAME

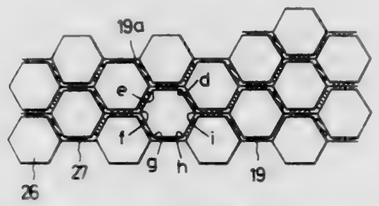
Ryuzo Tsuru; Michinori Sakaki; Masashi Tanimura; Sumio Ito, and Hidekazu Terasawa, all of Obihiro, Japan, assignors to Nihon Tensaiseito Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 268,275, Nov. 7, 1988. This application Feb. 16, 1990, Ser. No. 480,862

Claims priority, application Japan, Nov. 16, 1987, 62-287524; Nov. 17, 1987, 62-174470[U]; Dec. 1, 1987, 62-301433

Int. Cl.[5] A01G *9/02*

U.S. Cl. 47—86 **10 Claims**



1. A multiple pot having a multiplicity of individual pots stacked in layers and interconnected by connector portions, for raising and transplanting seedlings, the multiple pot comprising first and second thin films each having a given width and a given length, said first and second films each comprising (1) walls of individual pots which pots are defined between said first and second films, and (2) connector portions, respective said connector portions of said first and second films being stuck together with rows of waterproof paste, each of said rows of waterproof paste being substantially perpendicular to said length of said two films, said rows each having a plurality of stick portions separated by non-stick portions arranged along said rows, said stick portions having said waterproof paste which sticks said two films together, said non-stick portions providing intervals between said stick portions, said intervals being from about 2 to about 5 mm.

5,058,321

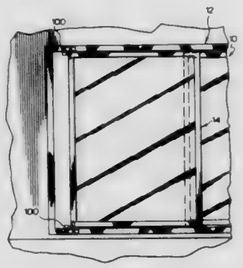
PIVOTING & LOCKING DEVICE FOR A WINDOW OR DOOR SASH

John Harbom, Bolton, and Allan Skjodt, Caledon East, both of Canada, assignors to Plastmo Ltd., Brampton, Canada

Filed Apr. 5, 1991, Ser. No. 680,875

Int. Cl.[5] E05D *15/22*

U.S. Cl. 49—177 **14 Claims**



1. A pivoting and lock engaging device for use in cooperation with the sash and frame of a horizontally slidable window or door, said device comprising:

a) a slide block slidably mounted within said frame;

b) pivoting means interconnecting said slide block and sash for pivoting said sash away from planar alignment with said frame;

c) a vertical opening through said slide block and spaced from said sash, with a lock engaging rod axially aligned therein, said lock engaging rod being spring biased within said opening whereby the leading end of said rod is engagable within a predetermined aperture located along said frame; and

d) a gripping tab at the opposite end of said rod for retracting and axially disengaging the rod from said aperture and a support pillar on said slide block for receiving said tab and retaining said retracted rod in such disengagement.

5,058,322

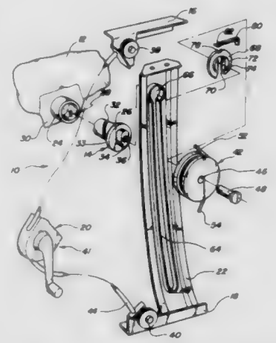
MOVABLE WINDOW ASSEMBLY

Stephen P. Sambor, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1990, Ser. No. 563,016

Int. Cl.[5] E05F *11/48*

U.S. Cl. 49—352 **11 Claims**



1. A window assembly for an automobile body of the type vertically movable between lowered and raised positions and having an actuator assembly for moving the window laterally with respect to the automobile body when the window is moved to its raised position in response to a rotary movement input to the actuator assembly, the window assembly comprising:

a guideway track assembly fixedly secured to said body adjacent said window and having a guideway formed therethrough as a straight slot extending vertically between positions for responding to said raised and lowered window positions;

means defining an enlarged circular end portion in said guideway at the end of said slot corresponding to said raised window position;

means defining a generally cylindrical slide portion on said actuator assembly rotatably drivingly engageable to effect said rotary movement input and having a pair of diametrically opposed flattened sides slidingly engageable with said guideway slot and rotatably engageable with respect to said circular end portion; and

pulley means operative to both move said slide portion from said lowered window position to said raised window position and thereupon to directly rotatably engage said slide portion to effect said lateral window movement.

5,058,323

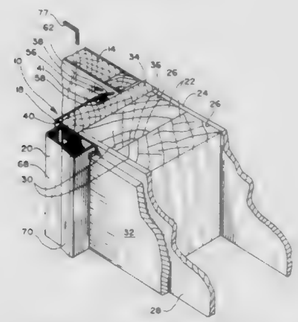
EXTERIOR JAMB CLADDING AND BRICK MOLD ASSEMBLY

John Gerritsen, Wauconda, Ill., assignor to Jarrow Products, Inc., Chicago, Ill.

Filed Sep. 11, 1990, Ser. No. 580,855

Int. Cl.[5] E06B *1/04, 3/30*

U.S. Cl. 49—504 **25 Claims**



1. A jamb cladding and brick mold assembly for enclosing the exterior surfaces of a jamb surrounding an opening in a building such as a door, garage door or window and providing a maintenance free protective cover for the jamb as well as a decorative molding between the jamb and an exterior surface of a building, the assembly comprising:

a jamb cladding member for enclosing the exposed exterior surfaces of the jamb, said cladding member having a first end connected to said jamb;

a brick mold member positioned overlying the interface between the jamb and the exterior surface of the building; and

first means for connecting said brick mold member to said first end of said cladding member so that said brick mold member overlies and conceals said first means for connecting and the interface between said cladding member and said brick mold member from the exterior thereof.

5,058,324

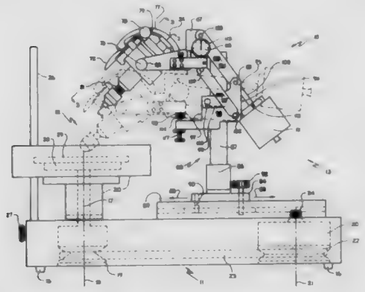
GEM STONE FACET FORMING APPARATUS

Paul F. Snellen, deceased, late of 1358 Neece Ave., Norton Shores, Mich. 49441 by Phyllis Daugherty executrix

Filed Jan. 24, 1990, Ser. No. 469,202

Int. Cl.[5] B24B *19/16, 9/16*

U.S. Cl. 51—124 R **13 Claims**



1. A facet cutting apparatus for cutting facets on a work affixed in a desired orientation to an end of a dop, comprising:

a base portion;

a turntable assembly, mounted on said base portion such that a horizontal cutting surface of said turntable assembly is rotatable in a substantially horizontal plane about a substantially vertical axis of rotation through a centroid of said cutting surface;

means for rotating said turntable at a controllably variable angular velocity, said means being disposed substantially within said base portion;

a support column, having a vertical extent, relocatably coupled to said base portion to extend substantially vertically upward therefrom, said support column being translatable relocatable along a guideway formed in said base portion, said guideway and said translatability of said support column extending in a substantially horizontal direction oriented radially relative to the axis of rotation of said cutting surface;

means for releasably locking said support column in a horizontally translated position appropriately selected from among a bonded continuum of such positions along said guideway;

a supporting bracket, coupled to said support column so as to be vertically relocatably positionable along the vertical extend of said support column;

means for releasably locking said supporting bracket to said support column in a selected vertically translated position from among a bounded continuum of such positions along said vertical extent of said support column;

a pantographic mechanism, comprised of a pair of upper beam members, a pair of lower beam members, and a spacer block, pivotably cantilevered, at respective first ends of each of said upper and said lower beam members, from said supporting bracket by a first pair of vertically spaced apart parallel pivot axes passing substantially horizontally through said supporting bracket, said first ends of said pair of upper beam members being pivotably coupled to respectively obverse ends of an upper one of said first pair of pivot axes and said first ends of said lower beam members being pivotably coupled to respectively obverse ends of a lower one of said first pair of pivot axes, said upper and said lower beam members being disposed to extend in mutually parallel directions, through all allowable pivoted positions thereof, from their respective first ends through mutually equal distances to respective distal second ends of each beam member, which second ends are each pivotably coupled to an appropriate end of an appropriate one of a second pair of vertically spaced apart pivot axes passing substantially horizontally through said spacer block, said second pair of pivot axes being parallel with respect to said first pair of pivot axes, said vertical spacing of said second pair of pivot axes being equal to said vertical spacing of said first pair of pivot axes, said cantilevering of said pantographic mechanism extending substantially radially toward said turntable from said supporting bracket such that said vertical alignment of said second pair of pivot axes is maintained throughout all allowable pivoting of said pantographic mechanism about said first pair of pivot axes;

a support arm rigidly coupled to, and substantially horizontally cantilevered from, said spacer black to extend to a distal end thereof in a generally radial direction toward said turntable from said support column;

a sleeve, pivotably coupled to said distal end of said support arm by a trunnion pivot axis extending substantially horizontally transverse to the extend of said support arm, said sleeve having a generally right circular cylindrical hole formed therethrough in a direction perpendicular to said trunnion pivot axis;

means for releasably locking said sleeve relative to said support arm in a desired selectable pivoted orientation of a longitudinal axis of said cylindrical hole, about said trunnion pivot axis, said selectable pivoted orientations all residing in a substantially vertical plane disposed orthogonally with respect to said trunnion pivot axis and including at least all pivoted orientations of said longitudinal axis

between a substantially horizontal orientation thereof and a substantially vertical orientation thereof;

a dop holder, configured generally to be supported within said cylindrical hole through said sleeve, in a constant longitudinal position, said dop holder being journaled within said sleeve to be capable of rotating about said longitudinal axis of said hole through any whole or fractional number of revolutions of said dop holder about said axis, said dop holder providing, at a first end thereof, means for axially supporting and retaining a work or a work holding dop, said first end of said dop holder being generally directed to be the end of said dop holder most proximate to said turntable when said longitudinal axis is substantially horizontal and to be the lowest end of the dop holder when said longitudinal axis is substantially vertical;

means for releasably locking said dop holder in a desired rotational orientation about said longitudinal axis;

means for adjustably substantially counterbalancing the mass of all structure and work cantilevered from said supporting bracket;

means for limiting cutting of said work to preclude excessive removal of material therefrom; and

means for substantially continuously measuring the thickness of material cut from a work, as measurable from an initial surface of contact of said work on said cutting surface to a current, parallel planar, surface of contact of said work, after removal of material, on said cutting surface;

said facet cutting apparatus being appropriately adjusted in the horizontal translation of said support column relative to said turntable and along said base portion, the vertical translation of the supporting bracket on said support column, the pivoted orientation of the longitudinal axis of said sleeve, and the rotational orientation of said dop holder about said longitudinal axis relative to said sleeve, such that, when said pantographic mechanism is pivoted about said first pair of pivot axes, at said supporting bracket, to substantially its most lowered position, said work will proximately contact the desired cutting region of said cutting surface of said turntable at a desired facet surface forming angle.

5,058,325

MACHINE FOR THE ABRASIVE MACHINING OF CYLINDRICAL JOURNALS ON COMPONENTS, IN PARTICULAR FOR MACHINING JOURNALS AND CRANK PINS ON CRANKSHAFTS USING ABRASIVE MATERIAL

Jean C. Pineau, Chailly-en-Bière, France, assignor to Societe Procedes Machines Speciales, S.P.M.S., Evry Cedex, France

Filed Sep. 20, 1989, Ser. No. 409,794
Claims priority, application France, Sep. 27, 1988, 88 12622
Int. Cl.[5] B24B *5/00, 21/16, 19/12*
U.S. Cl. 51—154 **11 Claims**

1. A machine for abrasive machining cylindrical journals on workpieces having an axis of rotation by means of abrasive strips applied against the journals to be machined while the workpiece is rotated about said axis extending horizontally, comprising:

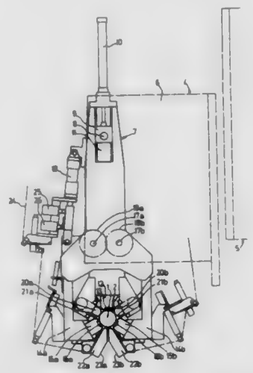
a frame;

a main slide vertically movable on said frame;

a plurality of elongated floating arms having two opposed ends, each of said arms comprising near a first of said ends a longitudinal extending guideway for a slide hinged about a horizontal pin on said main slide so that each arm can freely pivot about said pin, each said arm carrying near its other end two jaws hinged about horizontal axes on said arm and coupled together in such a way that they can pivot with respect to said arm synchronously in opposition one to another, each of said floating arms hanging freely under gravity in a vertical direction from said horizontal pin and being pivotally displaceable from a vertical orientation by contact of a portion of said other end of each arm with a workpiece when said arm is lowered by the main slide, whereby an off-centered journal of the workpiece to be machined can be located within said two jaws without requiring an adjustment of an angular orientation of the workpiece;

a fluid-operated jack between each of said arms and each of said slides, each said jack having a controlled supply pressure such that the weight of said arm is substantially balanced;

operating means comprising a fluid-operated jack having a



controlled supply pressure for closing said two jaws of each said arm with a controlled clamping effect; and

three abrasive applying means for applying an abrasive strip extending between said two jaws against each of said journals to be machined while the workpiece is rotated;

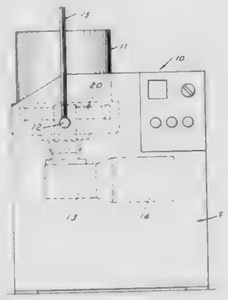
whereby said three means apply said abrasive strip with uniform pressure against the journal to be machined by rotation of said workpiece about its axis of rotation, even if said journal is off-centered with respect to said axis of rotation.

5,058,326

TILTING SYSTEM FOR CENTRIFUGAL FINISHING MACHINE

Richard S. Davidson, Sturgis, Mich., assignor to The Grav-I-Flo Corporation, Sturgis, Mich.

Filed Aug. 21, 1990, Ser. No. 570,321
Int. Cl.[5] B24B *31/023, 31/00, 49/08*
U.S. Cl. 51—163.1 **5 Claims**



1. A tilting system for a centrifugal finishing machine which include a finishing chamber or tub which is in upright position and is rotated about a vertical axis treatment of parts or work pieces and which is pivoted about a horizontal axis for tilting to a tilted position to remove the parts, said machine having drive means thereon the weight of which tends to return the tub to upright position, and means for moving the tub from upright to tilted position, said tilting system comprising

a hydro-mechanical system which functions to permit free movement from an upright position to a tilted position under the action of said means for moving the tub from upright to tilted position and to retard movement from a tilted position to an upright position against the action of the weight of the drive means,

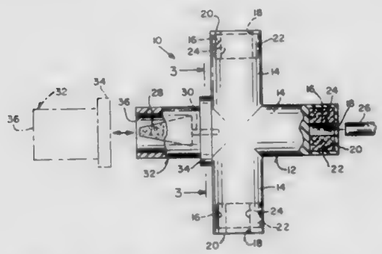
said hydro-mechanical system comprises a hydraulic actuator connected to the tub, a line extending from one end of the actuator to the other and a one way flow control valve in the line oriented to retard the flow of hydraulic fluid when the tub is moved from a tilted position to an upright position.

5,058,327

TUBING AND FITTING STRIPPER

John Buchanan, 78 Annuskemunnica Rd., Babylon, N.Y. 11702

Filed Jul. 25, 1990, Ser. No. 557,465
Int. Cl.[5] B25F *1/00*
U.S. Cl. 51—181 NT **4 Claims**



1. A tubing and fitting stripper comprising:

a) a housing having three leg portions with the first and second leg portions having a common central axis and the third leg portion having a central axis extending at a right angle to the common central axis of the first and second leg portion, the central axis of the third leg portion being coplanar with the common central axis of the first and second leg portions, in which each leg of said housing has a chamber with a bore at its distal end being of a different diameter size from the other said bores;

b) three wire bristles sleeves, each carried in one of the chambers and having an aperture which matches with the respective bore so that an end of a copper tubing of a matching size can fit therein allowing the outer surface of the end of the copper tubing to be cleaned when said respective leg portion rotates thereabout;

c) a cone shaped wire brush having a spine extending from said housing opposite from said third leg portion so that said cone shaped wire brush can fit into a recessed opening allowing the recessed opening to be cleaned when said housing rotates thereabout; and

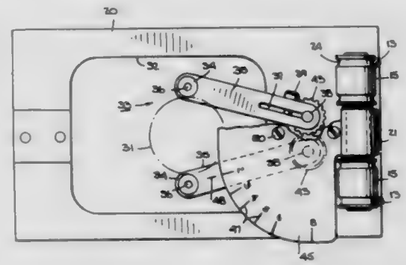
d) a protective sleeve having a central axis colinear with the central axis of the third leg portion which substantially prevents inadvertent contact between foreign objects and said cone shaped wire brush.

5,058,328

WAFER CENTERING ASSEMBLY

Robert E. Steere, III, Boonton, N.J., and Thomas E. Leonard, Vernon, Conn., assignors to Silicon Technology Corporation, Oakland, N.J.

Filed Jan. 10, 1990, Ser. No. 463,244
Int. Cl.[5] B24B *47/02*
U.S. Cl. 51—215 E **13 Claims**



1. In a wafer centering assembly the combination comprising

a pair of stops for arresting movement of a moving wafer thereagainst;

means for moving said stops simultaneously towards and away from each other to adapt to different diameters of arrested wafers; and

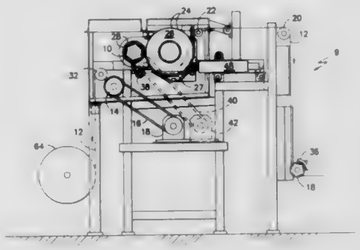
sizing means for selective setting of said stops at predetermined points corresponding to a diameter of a wafer.

5,058,329

MACHINE AND METHOD TO ENHANCE FABRIC

Franklin S. Love, Columbus, N.C., and Joseph E. Rumler, Chesnee, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 461,687, Jan. 8, 1990. This application Apr. 30, 1990, Ser. No. 516,574
Int. Cl.[5] B32B *27/02*
U.S. Cl. 51—323 **4 Claims**



1. The method of treating one surface of a substantially all synthetic woven fabric comprising the steps thereof:

supplying a web of synthetic fabric, passing the synthetic fabric through a bath of a swelling agent, controlling the width of the synthetic fabric and passing it into contact with an abrading roll coated with tungsten carbine, rotating the abrading roll to fibrillate the surface of the synthetic fabric and passing the fabric to a point to be collected.

5,058,330

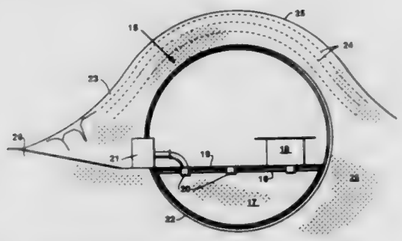
SELF-SUPPORTING MEMBRANE STRUCTURE FOR USE ON THE MOON

Philip Y. Chow, Orinda, Calif., assignor to T. Y. Lin International, San Francisco, Calif.

Continuation-in-part of Ser. No. 123,268, Nov. 20, 1987, abandoned. This application May 5, 1989, Ser. No. 348,203

Int. Cl.[5] E04G *11/04*

U.S. Cl. 52—2.11 **16 Claims**



1. A self-supporting membrane structure adapted for habitation and operation in an environment of essentially zero atmospheric pressure, comprising:

an inflated, pressurized, leak-proof fabric spherical structure having upper and lower portions and capable of withstanding temperatures of about −190° C. to about +140° C.,

a quantity of soil overlaying and supporting the lower portions of said spherical structure, and

a soil cover of up to ten feet extending over the upper portion of said spherical structure.

5,058,331

HEXO-MODULAR OFFICE FURNITURE SYSTEM

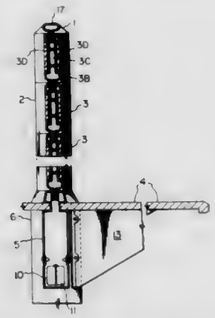
Alan L. Epps, Ottawa, Canada, assignor to Dynamic Custom Equipment Limited, Brampton, Canada

Continuation-in-part of Ser. No. 313,739, Feb. 22, 1989. This application Dec. 28, 1989, Ser. No. 458,451

Claims priority, application Canada, Feb. 13, 1989, 590861

Int. Cl.[5] E04B *2/78*; **A47B** *5/02*

U.S. Cl. 52—36 **13 Claims**



1. A partitioning system providing one or more clusters of hexagonally shaped adjoining work defined areas each with its own entry from a passage, said partitioning system comprising a plurality of lower horizontally spaced, vertical posts, at least one upper post detachably secured to respective selected ones of said lower posts and projecting upwardly therefrom, said upper posts including grooves therein receiving an end portion of a respective one of opposite end edge portions of a removable filler panel, said upper and lower posts being hexagonally shaped in cross-sectional view with the upper posts being of smaller outer cross-sectional dimension than the lower posts, a plurality of horizontal beams with each beam being detachably connected at its opposite ends to a respective one of a pair of spaced apart ones of said lower posts and at a position adjacent on upper end thereof, a first groove in a side face of said beams, platforms having an edge thereof in an associated one of said grooves and projecting therefrom into a defined work area providing an upper work surface therein and a second groove in an upper edge of said beams for receiving a bottom edge portion of a respective one of the filler panels and adjustably mounted feet under said lower posts for fine tuning the horizontal attitude of the assembled system.

5,058,332

DOMED STRUCTURES HAVING RETRACTABLE ROOFS

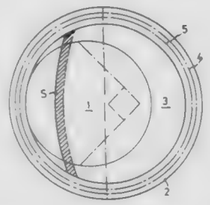
Joe Masuyama; Koji Mikuriya; Tsuneo Takai; Shinji Chiba; Kiyoshi Hotta; Yoshinori Hamano; Katsuyuki Onishi; Koji Funahashi; Yuji Takahashi, and Junichi Sugawara, all of Tokyo, Japan, assignors to Tobishima Corporation, Tokyo, Japan

Filed Oct. 10, 1989, Ser. No. 418,638

Claims priority, application Japan, Feb. 9, 1989, 1-30527

Int. Cl.[5] E04B *1/346*

U.S. Cl. 52—66 **11 Claims**



1. A structure having a retractable roof, comprising:

a substantially circular vertically extending wall structure;

a substantially horizontal field area inside said wall structure;

a first circular track on top of said wall structure;

a second circular track on top of said wall structure, said second circular track having a smaller diameter than said first circular track and being disposed inside of said first circular track;

a first semi-vault roof element disposed on said first circular track for movement thereon; and

a second semi-vault roof element disposed on said second circular track for movement thereon;

wherein said semi-vault roof elements can be moved to a position whereat said roof elements together form a vaulted roof over said horizontal field area.

5,058,333

FOAM PANEL ROOF MOUNTING SYSTEM

Seymour L. Schwartz, Redondo Beach, Calif., assignor to Airflo Aluminum Awning Company, Gardena, Calif.

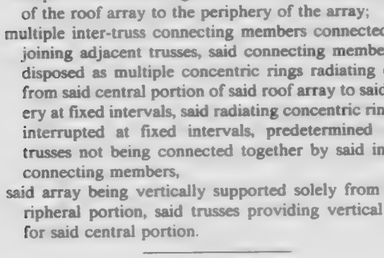
Filed Apr. 2, 1990, Ser. No. 503,428

Int. Cl.[5] E04D *13/08*

U.S. Cl. 52—73 **17 Claims**

1. A universal beam for joining upper and lower edges of foam roof panels comprising;

a generally I-shaped beam having a planar longitudinal flange along a first end of a center web and a pair of wing shaped flanges along the opposite end of said center web, said wing shaped flanges forming a pair of troughs substantially along the entire length of said beam between said center web and said flanges on one side and a concave channel on the other side; said planar longitudinal flange and said wing-shaped flanges being spaced apart to receive a tongue along an edge of a foam roof panel, said universal beam being reversible to join upper and lower edges of a foam roof panel; whereby a universal beam joining an upper edge of a foam roof panel will cooperate



with a reversed universal beam joining a lower edge of a foam roof panel to provide a series of water dispersing channels.

5,058,334

RADIATING TRUSS ROOF SUPPORT ARRAY AND CONSTRUCTION METHOD THEREFOR

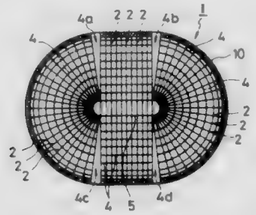
Toshiyuki Yamada; Yoshihiro Takahama; Hajime Nakajima, and Takayuki Nishiya, all of Tokyo, Japan, assignors to Shimizu Construction Co., Ltd., Tokyo, Japan

Filed May 19, 1989, Ser. No. 354,452

Claims priority, application Japan, May 20, 1988, 63-123353

Int. Cl.[5] E04B *1/32*

U.S. Cl. 52—80 **11 Claims**



1. A radiating truss roof support array, comprising:

a central portion;

a peripheral portion defining the periphery of the array;

multiple trusses radiating outward from the central portion of the roof array to the periphery of the array;

multiple inter-truss connecting members connected to and joining adjacent trusses, said connecting members being disposed as multiple concentric rings radiating outward from said central portion of said roof array to said periphery at fixed intervals, said radiating concentric rings being interrupted at fixed intervals, predetermined adjacent trusses not being connected together by said inter-truss connecting members,

said array being vertically supported solely from said peripheral portion, said trusses providing vertical support for said central portion.

5,058,335

ANTI-ROOSTING DEVICE AND METHOD

Alan J. Richter, 3130 N. 34 St., Hollywood, Fla. 33021

Filed Oct. 18, 1989, Ser. No. 423,776

Int. Cl.[5] A01M *29/00*

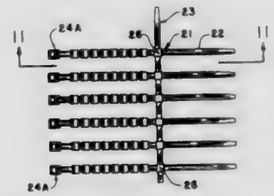
U.S. Cl. 52—101 **25 Claims**

1. Apparatus for preventing roosting of birds on a wire or cable-like structure, comprising an array of flexible plastic fingers extending away from the wire or cable-like structure and disposed in a predetermined pattern, each finger having sufficient flexibility to enable the finger to flex relative to the wire or cable-like structure when a bird seeks to land thereon;

wherein each flexible finger has sufficient flexibility to enable the finger to flex relative to the wire or cable-like structure when subjected to forces such as wind, motion or vibration of the wire or cable-like structure;

wherein the cross section of the wire or cable-like structure has an outer periphery which enables the wire and cable-like structure to be circumscribed by said array of said flexible, plastic fingers, and wherein said array of flexible plastic fingers circumscribes the outer periphery of the wire or cable-like structure;

wherein said array of flexible, plastic fingers comprises a plurality of annular subassemblies of flexible plastic fingers connected to said wire or cable-like structure at predetermined spaced apart locations, each subassembly extending about the outer periphery of the wire or cable-like structure, and each subassembly including a plurality of flexible plastic fingers;



wherein the flexible plastic fingers of each subassembly extend radially away from the wire or cable-like structure and are spaced from each other about the outer periphery of the wire or cable-like structure, the fingers of each assembly being angularly offset from the fingers of the adjacent subassembly;

wherein a base strand connected with the wire or cable-like structure and a plurality of flexible plastic fingers secured to said base strand, each flexible plastic finger having an integral loop part for enabling the finger to be threaded onto said base strand, so that the subassembly can be formed by threading the loop parts of each of the flexible, plastic fingers onto the base strand; and,

wherein said base strand comprises a longitudinally extending shaft with a tongue at one end and a buckle at the other end, the tongue and the shaft being adapted to mate with the buckle in a manner which enables the base strand to be tightened about the wire or cable-like structure.

5,058,336

HINGED FLANGE POLE

Alan J. Jenvey, Kirby in Ashfield, England, assignor to Abacus Holdings Ltd., Sutton in Ashfield, England

Filed May 5, 1988, Ser. No. 190,696

Claims priority, application United Kingdom, Aug. 5, 1987, 8710919; Sep. 30, 1987, 8723005

Int. Cl.[5] E04H *12/34*

U.S. Cl. 52—115 **10 Claims**

1. A column unit for mounting an appliance at an elevated location with respect to ground level, comprising:

a column,

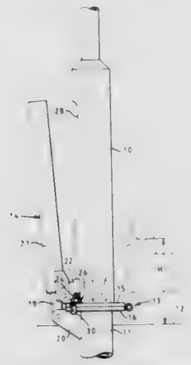
a base member,

a generally horizontal pivot connecting said column to said base member, said pivot being offset to one side of said column and disposed substantially at ground level,

a fluid operated device connectible between said column and said base member and operative pivotally to raise and lower said column relative to said base member about said pivot, and

locking means operable to lock said column relative to said base member in an upright position, whereby said fluid

operated device extends as said column is pivotally lowered and contracts as the column is pivotally raised, wherein said base member includes a plate, said column



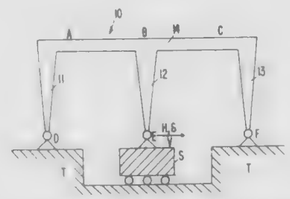
includes a base flange which lies against said plate when said column is in its upright position, and said pivot interconnects said plate and said base flange.

5,058,337
GROUND ANCHOR
Michael P. O'Connor, 9040 Sterling Creek Rd., Jacksonville, Oreg. 97530
Continuation-in-part of Ser. No. 523,352, May 14, 1990. This application Dec. 20, 1990, Ser. No. 631,168
Int. Cl.[5] E02D *5/74*
U.S. Cl. 52—162 4 Claims



1. An anchor for ground installation comprising,
a post for partial burial in earthen material, said post having a frontal face,
plate means having one end carried by the post for burial, said plate means of non-uniform thickness and having bendable portions and a rigid portion, said rigid portion offset from said one end, a surface inclined to the post axis,
a limit stop plate secured to said frontal face of the post and having an upper edge for contact with said plate means during upward movement of the post during anchor installation, and
said surface of the plate means acted upon by the earthen material during upward movement of the post during setting of the post to cause deployment of said rigid portion and bending of the bendable portions resulting in said plate means being deformed into an irregular shape to prevent further upward post movement.

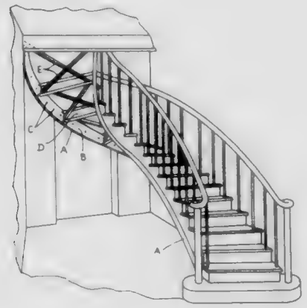
5,058,338
ENERGY DISSIPATING DEVICE FOR RENDERING A STRUCTURE IMPERVIOUS TO SEISMIC OCCURRENCES
Vincenzo Ciampi, Roma, Italy, assignor to FIMA S.p.A., Milan, Italy
Filed Mar. 26, 1990, Ser. No. 498,745
Claims priority, application Italy, Apr. 11, 1989, 20102 A/89
Int. Cl.[5] E02D *27/34*; E04H *9/02*
U.S. Cl. 52—167 DF 4 Claims



1. An energy dissipating device in a structure for dissipating energy imparted to the structure by the effects of seismic occurrences, said device comprising a side pier disposed to one side of the device and having a first end and a second end, the first end of said side pier being fastened to one portion of said structure; another side pier disposed to the other side of the device and having a first end and a second end, the first end of said another side pier being fastened to another one portion of said structure; at least one third pier extending between said side piers and arranged symmetrically thereof, each said at least one third pier having a first end and a second end, and said at least one third pier including a pier which has the first end thereof fastened to a third portion of said structure which is movable relative to said one portions of the structure under the effects of a seismic occurrence; and a girder spanning said side piers and rigidly connected with said at least one third pier and with said side piers at the second ends of said piers, respectively; said piers and said girder all being of a metal having high ductility wherein said piers and said girder together constitute an integral metal element which is asymmetrically deformable in the elastic field or beyond the elastic limit, whereby when said one portions of the structure are moved relative to said third portion of the structure during a seismic occurrence, said metal element is deformed in the elasto-plastic region and the energy of the seismic occurrence required to deform said metal element is dissipated by hysterisis of the metal principally in the form of heat.

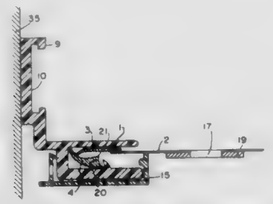
5,058,339
CURVED STAIRWAY AND METHOD
Alexander P. Krstovic, P.O. Box 2353, Easley, S.C. 29641
Filed Oct. 11, 1990, Ser. No. 595,989
Int. Cl.[5] E04F *11/10*
U.S. Cl. 52—187 3 Claims

1. A curved stairway extending between a floor and a balcony comprising:
spaced opposed upright curved wooden stringers extending vertically along and forming marginal portions of said stairway;
flat metal bars forming metal stringers extending along an inside surface of said wooden stringers conforming to the curvature of said wooden stringers;
a fastener securing said flat metal bar stringers to said wooden stringers causing the stringers to function as a structural unit;
a plurality of first spaced structural sections extending transversely across said stairway between said metal stringers;
means fixing said first structural sections to said metal stringers adjacent respective ends thereof; and
a plurality of second structural sections extending between next adjacent first structural sections forming cross bracing extending between opposite corners of said first structural sections;



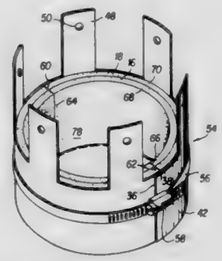
whereby rigidity and structural integrity is imparted to said curved stairway with minimal reinforcing.

5,058,340
CUSTOM STRETCHED CEILINGS
Jurgen H. Muller, P.O. Box 4178, Fort Pierce, Fla. 34948
Filed Mar. 16, 1990, Ser. No. 494,623
Int. Cl.[5] E04B *5/60*
U.S. Cl. 52—222 7 Claims



1. A custom interior room surface covering for a room having a plurality of walls comprising:
a) a plastic film sheet having a shape and a perimeter corresponding to a surface of said room and having dimensions proportionately reduced from the dimensions of said surface;
b) resilient elongate edge connector means for removably connecting said film sheet to said walls of said room, said connector means being attached to said perimeter of said film sheet;
c) elongate connector-engaging strip means for removably holding said connector means against a surface, said strip means having a surface attaching portion for fixedly attaching to surfaces, said surfaces including walls and ceilings and a connector-engaging portion for removably engaging said edge connector means for holding said film sheet against said surface;
d) said edge connector means having a cross section comprising a first limb to which said film sheet is attached; a second limb thicker than said first limb and arranged beside said first limb; a joining member joining said first and second limbs together at one end with said limbs spaced apart from one another at a second end by a space adapted for receiving a tool for pushing against said joining member to force said edge connector means into said connector-engaging portion of said strip means; said second end of said second limb provided with both latching means for latching engagement of said strip means and releasing means for releasing said latching engagement, said joining member provided with an extension projecting transversely to the plane of said first limb and away from said second limb;
e) said connector-engaging portion of said strip means comprising two spaced apart arms joined together at a base defining a channel space for receiving said edge connector means therein, said arms comprising a first arm having a smooth face bordering said channel space to facilitate sliding passage of said extension thereupon during installation and removal and a second arm having a latching ridge means extending into said channel space and sloping away from the open end for latching engagement of said latching means of said edge connector means as said edge connector means is forced into said connector-engaging portion of said strip means;
f) audible indicator means for emitting an audible signal upon latching of said latching means as said connector means is latched within said channel, said extension cooperating with said first arm to force said second end of said second limb elastically against said second arm to produce said signal upon latching; and
g) said releasing means including a projecting lip on said second end of said second limb, said lip arranged to project beyond said latching ridge means sufficiently to be accessed through said open end of said channel when said connector means is latched, whereby forcing said lip toward said first limb releases said latching means of said second limb to thereby release said connector means from said channel while said extension slides unobstructed along said smooth face of said first arm.

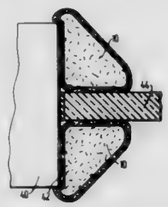
5,058,341
METHOD FOR CONSTRUCTING FIRE-STOP COLLAR ASSEMBLY AND APPARATUS THEREOF
Jerry R. Harbeke, Jr., Arlington, Va., assignor to MSP Products, Inc., N. Lake Worth, Fla.
Division of Ser. No. 401,111, Aug. 31, 1989, Pat. No. 4,951,442.
This application Apr. 17, 1990, Ser. No. 509,816
Int. Cl.[5] E04C *2/00*
U.S. Cl. 52—232 6 Claims



1. A fire-stop collar assembly laterally mountable on a pipe comprising:
a broken ring-shaped intumescent collar having a selectively openable, bendable metallic band with first and second ends extending thereabout and being attached thereto so that these members remain attached even when said metallic band is bent open for mounting the fire-stop collar assembly laterally on a pipe, the ring-shaped intumescent collar having at least one longitudinal break line positioned adjacent ends of the metallic band, said metallic band being bendable;
a fastening means for selectively compressing the metallic band into a tight ring with said first and second ends close together, and for allowing said ends of the metallic band to be separated for opening said fire stop collar assembly for mounting it on a pipe;
whereby the fire-stop collar assembly can be hinged open as a unit, with said intumescent collar remaining attached to

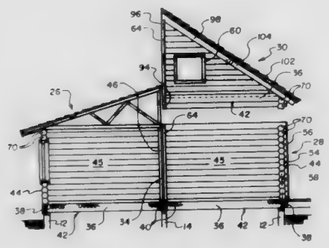
said metallic band, placed about a pipe, and then closed again by the fastening means.

5,058,342
MOULDED COMPONENTS AND THEIR MANUFACTURE
Geoffrey Crompton, 55 Arbour Street, Southport, Merseyside, United Kingdom
Filed Feb. 11, 1988, Ser. No. 154,922
Claims priority, application United Kingdom, Feb. 11, 1987, 8703084
The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.
Int. Cl.[5] B32B *5/30, 7/02, 33/00;* **E06B** *5/16*
U.S. Cl. 52—232 **11 Claims**



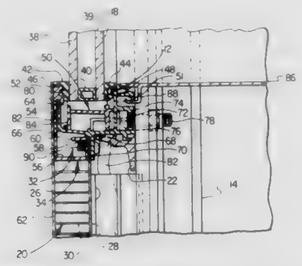
1. A configured fire-retardant element comprising:
a molded outer skin layer; and
a layer filling in the molded outer skin layer comprising a resin binder or sodium silicate binder, at least two frits capable of melting progressively when heated in a fire situation and additive solid material selected from the group consisting of ceramic fibers, glass fibers, basalt fibers, ceramic powders, and mixtures thereof.

5,058,343
MODULAR LOG STRUCTURES AND METHODS OF CONSTRUCTING SAME
John A. Nipko, 3615 N. Wolf Creek Dr., Eden, Utah 84310
Filed Jul. 3, 1989, Ser. No. 375,368
Int. Cl.[5] E04B *1/12*
U.S. Cl. 52—233 **26 Claims**



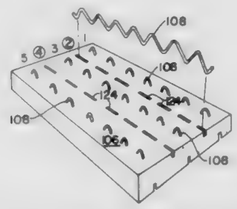
1. A modular structure, comprising:
a substantially rigid, rectangular, planar floor assembly;
at least one wall comprising horizontally oriented courses of elongated structural elements disposed in a substantially vertical stack, said element wall being secured to and aligned with one side of said rectangular floor assembly, and each of said element courses being secured to those above and below;
tension and shear support means associted with at least one element course of said element wall;
brace wall means aligned with the two sides of said floor assembly perpendicular to said one side and secured to said floor assembly and to said element wall at two points for maintaining said element wall on substantially perpendicular relationship to said floor assembly; and
a marriage wall aligned with and secured to the fourth side of said floor assembly in parallel relationship to said one element wall, said marriage wall also being secured to said brace all means.

5,058,344
WALL PANEL SYSTEM
Lawrence Biebuyck, Garland, Tex., assignor to Butler Manufacturing Corporation, Kansas City, Mo.
Filed Mar. 13, 1990, Ser. No. 492,980
Int. Cl.[5] E06B *7/14*
U.S. Cl. 52—235 **13 Claims**



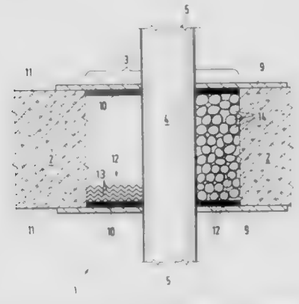
1. An improved panel mounting system for curtain wall construction of the type wherein a plurality of transparent and non-transparent panels are secured to structural mullions and disposed adjacent one another, the improvement comprising said non-transparent panels being constructed with outer and inner plates sandwiching a structural filler therebetween and being formed with an outer hollow region along at least one side thereof defined by said outer and inner plates and said outer hollow region being integrally formed during manufacturer of said panels with structural interconnection means for securing said transparent and non-transparent panels one to the other and to said mullions comprising said curtain wall, said interconnection means including structural web sections integrally formed within said outer hollow region for facilitating the direct structural mounting of said non-transparent panel to said structural mullions and the receipt of said transparent panel therein.

5,058,345
REINFORCED STRUCTURAL PANEL AND METHOD OF MAKING SAME
Manuel J. Martinez, Fernando Calder 483, Urb. Roosevelt Hato Rey, P.R. 00918
Filed Jul. 17, 1990, Ser. No. 554,274
Int. Cl.[5] B23P *11/00;* **E04C** *2/26*
U.S. Cl. 52—309.11 **35 Claims**



1. A method of making a reinforced structural member comprising providing a rigid panel of synthetic material having two opposing major surfaces, piercing both of said major surfaces to provide a plurality of slits extending through said panel, inserting serpentine shaped members into said slits, a portion of said members extending outwardly from each of said major surfaces, superimposing a grid on each of said major surfaces, and securing said portions of said members to said grid on each of said major surfaces.

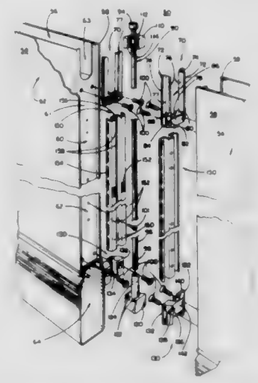
5,058,346
FIRE PROTECTION COLLAR
Michael M. Spaeth, Lindwurmstrasse 10/VII, D-8000 Munich 2, Fed. Rep. of Germany
Filed Jun. 29, 1989, Ser. No. 373,221
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1988, 3821969
Int. Cl.[5] E04B *1/94*
U.S. Cl. 52—317 **13 Claims**



1. A fire control collar for conduits penetrating through openings in fireproof partitions such as walls or ceilings, comprising:
at least two stable, smoke tight, fireproof coverings of a thermally insulating material;
said coverings sealing a space between outer surfaces of the partition and an exterior surface of the conduit; and
a filling of expanded material being able to conduct heat away from the conduit, said filling essentially filling up the space between said coverings.

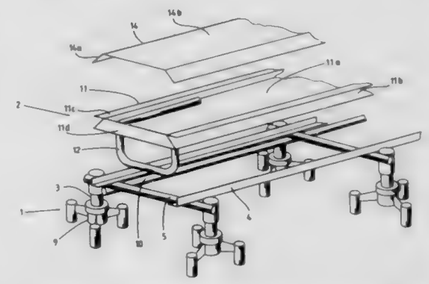
5,058,347
PANEL CONNECTOR SYSTEM
David J. Schuelke, Grand Rapids, and James A. Looman, Holland, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Sep. 18, 1990, Ser. No. 584,453
Int. Cl.[5] E04H *6/00*
U.S. Cl. 52—339 **50 Claims**

1. A panel connector for office partition panels having rectangular panel frames at the edges thereof and a wire management channel formed in an upper portion of the panel, a connector assembly for rigidly connecting the rectangular panel frames together at the side edges thereof, said connector assembly including upper and lower wedge blocks on the panel side edges and draw block assemblies adapted to grip the wedge blocks and draw the wedge blocks of adjacent frames together;
the improvement which comprises:
at least one upper wedge block having a U-shaped configuration with a wedge surface formed at a bight portion of the U, the legs of the upper wedge block extending



up along upper side edges of a panel in register with the wire management channel thereof.

5,058,348
METHOD AND APPARATUS FOR FORMING A PATH FOR A SCREEDING MEANS
Pell Sune Westhed, Dalagatan 10, Rättvik, Sweden S-795 00
PCT No. PCT/SE88/00292, § 371 Date Nov. 21, 1989, § 102(e) Date Nov. 21, 1989, PCT Pub. No. WO88/09853, PCT Pub. Date Dec. 15, 1988
PCT Filed May 30, 1988, Ser. No. 435,453
Claims priority, application Sweden, Jun. 1, 1987, 8702270; Oct. 29, 1987, 8704229
Int. Cl.[5] E04C *3/16*
U.S. Cl. 52—365 **1 Claim**



1. A method of forming a screed guide for use with a vibrating-type screed and the like in connection with casting and direct smoothing of such structure as a single-course structural floor, and at locations where walls of a next story are to be cast, comprising the steps of:
disposing an elongated support frame, which is intended to be cast into said structural floor, at a location spanning both sides of a wall of said additional story;
providing a screeding profile in the shape of a channel-like profiled plate at an upper portion of said elongated support frame, whereby reinforcement bars, intended to be cast into said wall, are introduced into said profiled plate with first portions of said bars extended downwardly in order to be cast into said structural floor and with second portions of said bars being bent downwardly to a horizontal position in said profiled plate;
positioning a cover, which serves as a screeding guide,

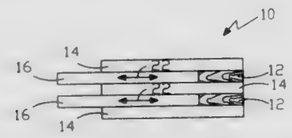
on said screening profile so that said cover covers said second portions of said reinforcement bars, said cover being employed together with portions of side walls of said screeding profile as a screeding guide for a screed;
guiding said screed upon said cover and said side walls and screeding said structural floor on both sides of said wall of said next story;
removing said cover after screeding, in order to expose said reinforcement bars, and bending said reinforcement bars upwardly.

5,058,349

SURFACE TILE FOR FLOORING AND THE LIKE

Michael J. Conrad, 4747 Farnsworth Rd., Marion, N.Y. 14505

Filed Mar. 19, 1990, Ser. No. 495,403
Int. Cl.[5] E04F *13/08*
U.S. Cl. 52—392 **7 Claims**



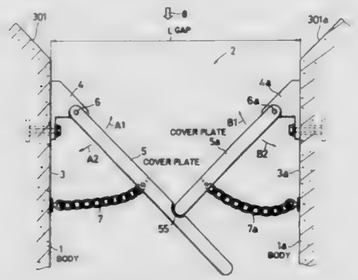
1. A tile for flooring or the like, including a backing board, a spaced plurality of parallel stationary slats fixed to said backing board, and a longitudinally movable slat in each space between successive stationary slats;
each said movable slat being in engagement with the stationary slats on each side thereof to restrain said movable slat in place on said backing board;
said movable slats being movable to stagger the ends thereof relative to the ends of said stationary slats, and to extend from one tile to the next to interengage said tiles.

5,058,350

EXPANSION JOINT APPARATUS

Yuuichi Mochiki, Nara, and Muneo Kamoto, Osaka, both of Japan, assignors to Nippon Aluminium Mfg., Co., Ltd., Osaka and Nippon Aluminium Kenzai Co., Ltd., Aichi, both of, Japan

Filed Aug. 14, 1989, Ser. No. 393,764
Claims priority, application Japan, Aug. 13, 1988, 63-107330[U]
Int. Cl.[5] E04B *1/62*
U.S. Cl. 52—396 **16 Claims**



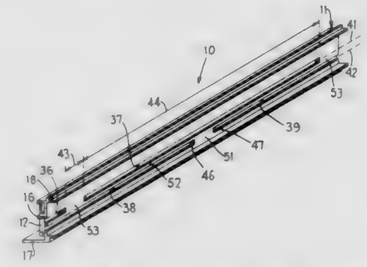
1. A joint for mounting on vertical surface of structural bodies for filling a gap between said structural bodies, said joint apparatus comprising:
a pair of cover plates disposed on vertical surfaces of respective said structural bodies, said structural bodies having a gap therebetween and said cover plates extending across said gap, wherein each said cover plates is mounted on a respective hinge for pivotal movement thereabout and each said cover plate is inclined such that said cover plates together form a substantially V-shaped configuration in section in a contact position;
a spring on each said cover plate for pivotally biasing its respective said cover plate toward the other said cover plate about the respective said hinge such that the ends of said cover plates can approach each other; and
means for limiting the amount of angular pivotal movement of each said cover plate about its respective said hinge.

5,058,351

THERMAL FRAME SECTION WITH OFFSET DUAL SKIP DEBRIDGINGS

James M. Dunstan, Shelbyville, Mich., assignor to Azon Systems, Inc., Kalamazoo, Mich.

Filed Oct. 22, 1990, Ser. No. 602,943
Int. Cl.[5] E04B *2/28*
U.S. Cl. 52—403 **11 Claims**



7. An architectural thermal break section, comprising an elongate heat-conductive component extending in a lengthwise direction, said component including elongate first and second side portions which extend in said lengthwise direction and are spaced from each other in a transverse direction substantially perpendicular to said lengthwise direction, including a central strip disposed between and spaced in said transverse direction from each of said first and second side portions, said central strip extending in said lengthwise direction, including a first connecting portion extending in said transverse direction between said first side portion and said central strip, and including a second connecting portion extending between said second side portion and said central strip, said first and second connecting portions being spaced from each other in said lengthwise direction; said break section further including a strip of a thermal barrier material which extends between and is rigidly coupled to each of said first and second side portions, and which contacts said central strip and said first and second connecting portions.

5,058,352

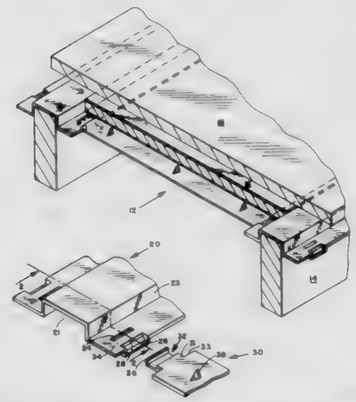
BARRIER SYSTEM

Scot D. Loiselle, 8380 Tamar Dr., Columbia, Md. 21045; Michael W. Riffle, 13 Sonata Ct., Silver Spring, Md. 20901, and Patrick K. Burke, 3174 Westdale Ct., Waldorf, Md. 20601

Filed Oct. 1, 1990, Ser. No. 591,212
Int. Cl.[5] E04B *2/00, 1/62*
U.S. Cl. 52—406 **11 Claims**

1. Means adapted to be mounted on trusses and the like, in a building structure, for supporting barrier sheeting, especially fire-rated board, and with said sheeting forming a continuous barrier; said means comprising:
a plurality of elongatedly channeled cap members adapted to be mounted on, and receive therein, the longitudinal edge section of a respective truss;
a flange element extending outwardly from, normal to and coextensive with the longitudinally open end of each sidewall of each said channel;
each said flange element is configured to have a plurality of hanger support means spaced along the

length thereof;
each said hanger support means is comprised of a uniformly and outwardly depressed flange section that forms a shelf means which extends inwardly from the flange edge and the shelf of which is parallel to the general flange structure and open at each transverse end;
a plurality of hanger means that are each of a length to span the distance between consecutively mounted cap members and have end structures configured to be each received in and supported on respective ones of said shelf means;



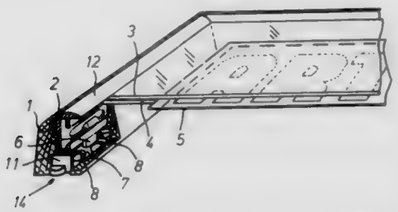
said flange and hanger means being dimensionally and operationally related whereby in assembly a generally planar barrier sheet support surface is presented;
means removably locking and substantially stabilizing the assembled cap and hanger means; and
means spaced along the length of said hanger means for positionally retaining said barrier sheeting.

5,058,353

MULTIFUNCTIONAL FRAME ELEMENT

Ernst Gärtner, c/o Treuhandvereinigung HB&B, Freie Str. 81, 4001 Basel, Switzerland

Filed Aug. 26, 1988, Ser. No. 236,894
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1987, 3728967; Sep. 24, 1987, 8712860[U]
Int. Cl.[5] E04B *5/52;* **A47B** *83/00*
U.S. Cl. 52—476 **18 Claims**



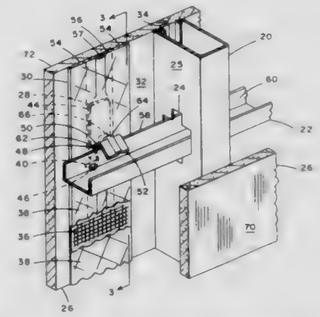
12. A multifunctional object frame element which comprises: two support elements having a first and second surface, said support elements for retaining an object therebetween; a base having a top for said support elements spaced from said support elements and a retaining strip located at the top of said base, wherein the support base and retaining strip are of a one piece construction, said retaining strip having a projection thereof extending perpendicularly to at least a portion of said base and over the support elements and engaging a first surface of the support elements; a locking element engaging said base having a fastening web and two opposed ends, a locking flap projecting vertically from said fastening web of the locking element, and a member on each of the two opposed ends of said fastening web serving as a step bearing for engaging a second surface of the support elements opposed to the first surface of the support elements; wherein the support elements are secured between the perpendicularly extending projection of the retaining strip and the step bearing.

5,058,354

PANELS WITH LAMINATED STRIPS FOR CLIPS

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Division of Ser. No. 410,449, Sep. 21, 1989, Pat. No. 4,995,215, which is a continuation-in-part of Ser. No. 299,200, Jan. 23, 1989, Pat. No. 4,976,083. This application Oct. 1, 1990, Ser. No. 590,736
The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.
Int. Cl.[5] E04B *2/58*
U.S. Cl. 52—486 **13 Claims**



1. A wallboard comprising a flat, rectangular, rigid board, said board having a front face, a back face, two side edges and two ends, said board having thin, strong, tear-resistant material partially adhered to said back face, said tear-resistant material being disposed in at least a plurality of spaced-apart areas throughout said back face, suitable to support and retain said wallboard in place when fastening means are affixed to said material in each of said areas, said material being adhered to said back face at least in said spaced-apart areas with unadhered portions forming pockets positioned between adhered portions, whereby an upwardly extending leg of a suspension clip can be caused to pass through said material at one of said unadhered portions and to extend upward into said unadhered pocket, to support and retain said wallboard in place, wherein said thin, strong, tear-resistant material comprises a layer of non-woven synthetic fibers.

5,058,355

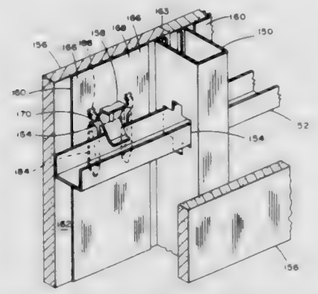
PANELS WITH LAMINATED STRIPS FOR CLIPS

Robert J. Menchetti, Buffalo; Robert M. Chapman, Tonawanda, and Matthew J. Kessler, Lancaster, all of N.Y., assignors to National Gypsum Company, Dallas, Tex.

Continuation-in-part of Ser. No. 410,449, Sep. 21, 1989, Pat. No. 4,995,215, which is a continuation-in-part of Ser. No. 299,200, Jan. 23, 1989, Pat. No. 4,976,083. This application Jul. 9, 1990, Ser. No. 550,262
The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.
Int. Cl.[5] E04B *2/58*
U.S. Cl. 52—486 **15 Claims**

1. In combination, a wallboard comprising at least one piece of thin, strong, tear-resistant material partially adhered to a

back face of said wallboard, and at least one suspension clip, said piece of tear-resistant material having at least one pair of laterally spaced openings, said tear-resistant material being firmly adhered to said back face in areas closely adjacent said openings, said tear-resistant material being unadhered to said back face in areas located behind and immediately above said openings, forming pockets in said areas located behind and



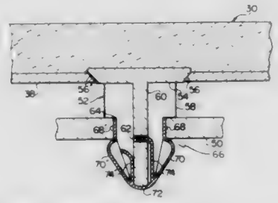
immediately above said openings, said suspension clip having a pair of spaced, parallel legs extending vertically upwardly respectively through each of said pair of laterally spaced openings in said tear-resistant material and upwardly into said pockets between said unadhered areas and said back face, said suspension clip further having an outwardly and downwardly extending hanger leg for suspending said wallboard from a horizontal member of a wall framing structure.

5,058,356

DECORATIVE STRUCTURE

Masaharu Yamamoto, and Taichi Ikeya, both of Shizuoka, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 24, 1989, Ser. No. 314,973
Claims priority, application Japan, Feb. 25, 1988, 63-44716
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—511 **2 Claims**



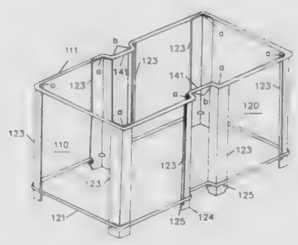
1. A decorative structure comprising
a) a structural member,
b) a decorative member composed of a plurality of layers laminated on one another and including a reinforcing layer, and
c) coupling means for coupling said structural member and said decorative member to each other, said coupling means comprising a portion of said structural member and a portion of said decorative member, the portion of the structural member and the portion of the decorative member being held in engagement with each other, said portion of the decorative member being at least formed by a portion of said reinforcing layer, and said structural member being formed with an opening defined by said portion of the structural member, said decorative member further being formed with a groove defined by said portion of the decorative member, said groove extending throughout the thickness of said reinforcing layer, said coupling means further comprising:
a coupling member having a generally flat panel portion received in said groove in said decorative member, a pair of spaced parallel leg portions projecting from said panel portion, an intermediate wall portion projecting from said panel portion and intervening between said leg portions, said intermediate wall portion being formed with a slot, each of said leg portions and said intermediate wall portion being in part passed through said opening in said structural member, and
an elastic retaining member having a pair of skirt portions which are spaced apart substantially in parallel from each other and which are elastically received in said opening in said structural member, a pair of outer side portions merging out of said intermediate wall portion of said coupling member, and an end portion merging out of said outer side portions and received on the end face of the intermediate wall portion of said coupling member, and two tag portions having said intermediate wall portion of the coupling member received therebetween, one of said tag portions having its end portion bent and received in said slot in said intermediate wall portion of the coupling member.

5,058,357

CONSTRUCTION BLOCKS

Bob G. Newsom, Etty, Ky., assignor to Advanced Building Technologies, Olive Hill, Ky.

Continuation-in-part of Ser. No. 246,261, Sep. 20, 1988, Pat. No. 4,903,453. This application Feb. 26, 1990, Ser. No. 484,401
Int. Cl.[5] E04H *12/00*
U.S. Cl. 52—648 **48 Claims**



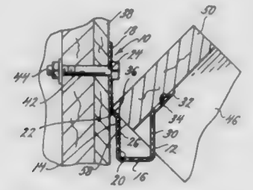
1. A construction block, comprising:
first and second identical wire frames, each forming a closed shape comprised of a first geometric shape joined to a second geometric shape formed as a mirror image of said first geometric shape;
said closed shape including a plurality of bends forming angles;
a plurality of braces for connecting said first and second wire frames together in a superposed, spaced apart orientation;
each of said braces comprising first and second sides joined along a common edge forming an angle equal to an angle of a bend in said closed shape;
each of said braces including latching means for securing one end of said brace to the wire frame of an adjacent block; and
said braces are secured to said first and second frames on the inside of said frames within a bend having an angle corresponding to the angle of said brace with the hypotenuse of said brace angle facing the interior of said closed shape.

5,058,358

HANGER BRACKET APPARATUS FOR SECURING A JOIST MEMBER TO AN ELEVATED VERTICAL SUPPORT SURFACE

Paul A. Stratton, Villa Ridge, Mo., assignor to Midwest Industries Ltd., Villa Ridge, Mo.

Filed Aug. 10, 1990, Ser. No. 566,606
Int. Cl.[5] E04B *1/24*
U.S. Cl. 52—702 **20 Claims**



1. A hanger apparatus for erecting and securing a joist member to a support surface, the apparatus comprising:
a hanger bracket having a general U-shaped configuration, the bracket having a bottom plate and spaced front and back plates interconnected by the bottom plate, the back plate being adapted to be secured to the support surface and the space between the front and back plates enabling insertion of the joist member therebetween to support the joist member on the bottom plate of the hanger bracket in a substantially parallel orientation relative to the support surface; and
an angled plate connected to the front plate and extending at an angle therefrom, the angled plate including means for supporting the joist member in an angled orientation relative to the support surface, and the angled plate including means for directing he joist member into a position between the front and back plates as the joist member is moved from the angled orientation relative to the support surface to a parallel orientation relative to the support surface.

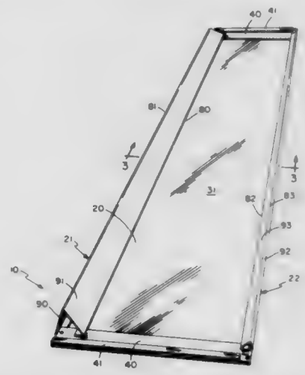
5,058,359

LIGHTWEIGHT OVERHEAD BEAM FOR PORTABLE DISPLAY STRUCTURE

Curtis H. Lindblom, Burnsville, Minn., assignor to Skyline Displays, Inc., Burnsville, Minn.

Continuation-in-part of Ser. No. 309,417, Feb. 10, 1989, Pat. No. 4,945,706. This application May 14, 1990, Ser. No. 522,655
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[5] E04C *2/30*
U.S. Cl. 52—731 **18 Claims**

1. A lightweight portable beam adapted for attachment to a display panel, comprising:
a) a header section made from relatively thin flexible plastic material adapted for displaying graphics, said header section having a longitudinal dimension with respective elongate edges which is at least five times its transverse dimension with respective shorter edges;
b) means for attaching said header section to a display panel;
c) a first elongate edge section having means for edgewise attachment to one of said header section elongate edges, said first edge section having longitudinal fold lines and means for attachment to form a closed three-dimensional channel along one of said header section elongate edges; and
d) a second elongate edge section having means for edgewise attachment to the other of said header section elongate edges, said second edge section having longitudinal fold lines and means for attachment to form a closed



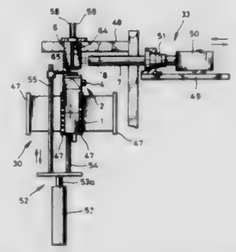
three-dimensional channel along the other of said header section elongate edges.

5,058,360

FILLING AND SEALING APPARATUS FOR FLUID CONTAINING PACKAGE

Yasuo Yamazaki, Kanagawa; Toshiaki Nomura; Takashi Maruyama, both of Tokyo, and Shigenobu Sato, Kanagawa, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1990, Ser. No. 586,759
Claims priority, application Japan, Apr. 4, 1990, 2-89983; Apr. 13, 1990, 2-39970; Jul. 31, 1990, 2-203388
Int. Cl.[5] B65B *61/00*
U.S. Cl. 53—133.2 **8 Claims**



1. A filling and sealing apparatus for a fluid containing package, comprising:
spout attaching means for temporarily attaching a spout having a flange onto an inside of a wall of said package, said package having one end open and the other end closed;
spout fusing means for fusing said flange to said inside of said package after said spout is temporarily attached to said inside of said package, said spout fusing means comprising an anvil around which said package having said temporarily attached spout is adapted to be fitted;
filling means for filling said package with a fluid through said open end;
package sealing means for sealing said open end after said package is filled with said fluid;
ultrasonic fusing means arranged in facing relation to said anvil for pressing said flange or said temporarily attached spout against said anvil; and

temperature regulation means for regulating a temperature of said anvil by supplying a temperature regulation fluid through said anvil;

wherein said spout can be fixedly fused to said inside of said package by said ultrasonic fusing means while regulating said temperature of said anvil by said temperature regulation means.

5,058,361

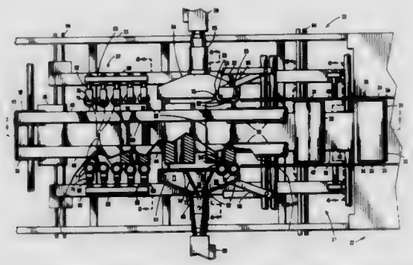
PACKAGE END FOLD SEALER AND METHOD

Roland W. Schmacher, 2322 Henry Street, Sheboygan, Wis. 53081

Filed Mar. 14, 1990, Ser. No. 493,518

Int. Cl.[5] B65B *51/20, 51/32*

U.S. Cl. 53—370.9 **12 Claims**



1. An apparatus for sealing the folded end flaps of a plastic film package, comprising:

a) means for transporting the package along a path;

b) air heating and blowing means;

c) a rotatable air-heated cylindrical spot-weld roller having a plurality of spaced surface protrusions for heating and tacking limited areas of the plastic flaps, rotatably mounted in spring-loaded relation to the path such that the end flaps of a package moving on the path will be pressed against the protrusions of the cylinders and spot-welded to one another at spaced locations;

d) means for blowing hot air against the spot-weld roller;

e) means for directing the heated air from the air heating and blowing means onto the exposed spot-welded end flaps of a package traveling along the path to cause portions of the end flaps to become molten, wherein the air directing means is located along the path subsequent to the spot-weld roller; and

f) a cylindrical compression roller rotatably mounted and maintained in spring-mounted relation to the path subsequent to the air-direction means such that the molten end flap portions of a package moving along the path will be pressed against and cooled by the compression roller to seal the end flaps to one another.

5,058,362

APPARATUS FOR SEALING PACKAGING FOR FOODSTUFFS

William M. Michelotti, 184 Jonathan Dr., Stamford, Conn. 06903

Filed Nov. 6, 1990, Ser. No. 609,819

Int. Cl.[5] B65B *51/16*

U.S. Cl. 53—387.3 **20 Claims**

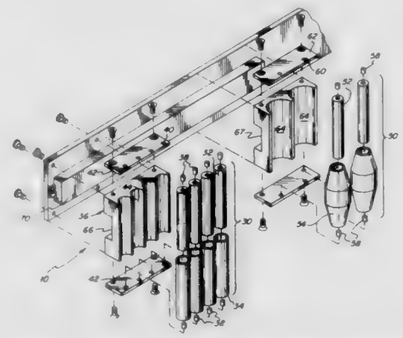
1. Apparatus for sealing packaging for foodstuffs comprising:

means for conveying foodstuff wrapped in a packaging thereon and having two lateral sides;

means for heating disposed on at least one lateral side of said conveying means;

a first plurality of uniform diameter generally cylindrical first rollers disposed on said at least one lateral side of said conveying means and operably connected to said heating means such that said first rollers are sufficiently heated to seal the packaging of the foodstuff;

a second plurality of second rollers disposed on said at least one lateral side of said conveying means, at least a portion of said second rollers having a diameter which is larger



than the diameter of said first rollers whereby said second rollers have a varying diameter and are generally ellipsoidal, said second rollers being operably connected to said heating means such that said second rollers are sufficiently heated to seal the packaging of the foodstuff.

5,058,363

PACKAGE FOR A PLURALITY OF CIGARETTE PACKS OR THE LIKE (CIGARETTE CARTON)

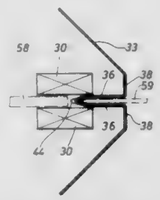
Heinz Focke, Verden, and Bernhard Focke, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Division of Ser. No. 906,637, Sep. 10, 1986, Pat. No. 4,932,534, which is a continuation of Ser. No. 599,157, Apr. 11, 1984, abandoned. This application Nov. 14, 1989, Ser. No. 436,003

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313462

Int. Cl.[5] B65B *11/08*

U.S. Cl. 53—443 **15 Claims**



1. A method for forming a package from a blank for receiving a plurality of cigarette packs that have first and second oppositely positioned front faces, first and second oppositely positioned side faces and first and second oppositely positioned end faces, said blank including two first covering walls that are connected to each other along a severing line, a longitudinal side wall connected to each first covering wall, a second covering wall connected to each longitudinal side wall and a closing tab connected to each second covering wall, the method comprising the steps of:

folding the blank with a folding member along the severing line such that outer surfaces of the first covering walls face toward each other and face the folding member;

maintaining a space between the rows of cigarette packs;

inserting the facing folded first covering walls of the blank between the spaced apart rows of cigarette packs so that an inner surface of the one first covering wall faces the first front face of the cigarette packs in one row of cigarette packs, and an inner surface of the other first covering wall faces the first front face of the cigarette packs in the other row of cigarette packs;

folding the blank so that the longitudinal side walls of the blank cover the first end faces of the cigarette packs and so that the second covering walls of the blank cover the second front faces of the cigarette packs.

5,058,364

PACKAGING MACHINE ADAPTED TO CONVERT POUCHES FROM EDGEWISE ADVANCE TO BROADWISE ADVANCE

Frederick C. Seiden; Jack E. Plahm; Scott J. Veix, all of Bradenton, and Jerald R. Wiles, Sarasota, all of Fla., assignors to Klockner-Bartelt, Inc., Sarasota, Fla.

Filed Jul. 27, 1990, Ser. No. 560,861

Int. Cl.[5] B65B *43/04, 43/26*

U.S. Cl. 53—455 **19 Claims**



9. A method for cutting pouches from an elongated strip of interconnected pouches and for subsequently advancing the severed pouches, said method comprising the steps of, intermittently advancing the strip horizontally and edgewise along a first predetermined path and in an upright plane to a cut-off station, gripping one portion of the leading pouch of the strip when the strip dwells with the leading pouch disposed in the cut-off station, severing the gripped pouch from the strip at the cut-off station, raising the gripped pouch substantially vertically and edgewise from the cut-off station to a vertically spaced level, gripping the raised pouch along its side margins and then releasing the grip at said one portion of the pouch, and thereafter advancing the pouch broadwise along a generally horizontal path located at said level and extending transversely of said first path while the pouch is gripped along its side margins.

5,058,365

TENSIONING AND SEALING APPARATUS FOR A STRAP MADE OF PLASTIC

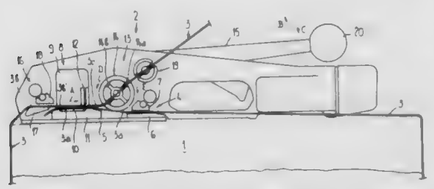
Bruno Kägi, Uezwil, Switzerland, assignor to Strapex AG, Wohlen, Switzerland

Filed Sep. 8, 1989, Ser. No. 404,848

Claims priority, application Switzerland, Sep. 8, 1988, 03364/88

Int. Cl.[5] B65B *13/22*

U.S. Cl. 53—582 **23 Claims**



1. Apparatus for tensioning and sealing a strap made of a plastic material around a packaged item, comprising:

a clamping device for securing a lower starting section of the strap;

a tensioning device being adjacent said clamping device and including a tensioning wheel for acting upon an upper section of the strap for a tensioning operation of the strap, the tensioning operation providing a first tensile stress value for the strap;

a second clamping device which is capable of being activated after the tensioning operation for securing the upper section of the strap;

releasing means for releasing said tensioning wheel after activation of said second clamping device;

braking means for acting upon said tensioning wheel, said braking means being activated after a predetermined counter clockwise rotation of said tensioning wheel, following release of said tensioning wheel, in order to prevent said tensioning wheel from undergoing a backward clockwise rotation;

a friction welding device being provided upstream of said tensioning device, said friction welding device having a plurality of welding dies movable relative to one another for joining overlapping regions of the strap;

a cutting member arranged between said friction welding device and said tensioning device for cutting through the upper section of the strap after welding of the strap by said friction welding device; and

a strap tension holding device acting upon said tensioning wheel following the tensioning operation for reducing the tensile stress value in the section of the strap downstream of said friction welding device, said second tensile stress value being less than the first tensile stress value determined after the tensioning operation.

5,058,366

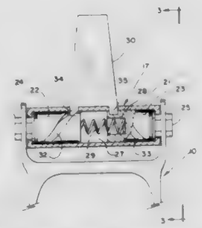
SAFETY RELEASE ATTACHMENT FOR STIRRUP

Michael J. McCoy, 2629 Red Bridge Rd., Laurel, Mont. 59044

Filed Oct. 5, 1990, Ser. No. 594,636

Int. Cl.[5] B68C *3/00*

U.S. Cl. 54—49 **3 Claims**



1. An automatic safety release attachment for a stirrup having a bottom foot-supporting member, side members attached at one end to the ends of the foot-supporting member and extending upward therefrom generally parallel to one another with an open space between the side members at their upper ends, said stirrup used in combination with a horse saddle fender and a stirrup strap extending downward from said fender with said stirrup strap folded back on itself forming a loop at its lower end, said stirrup extending downward from the stirrup strap, said quick release safety attachment comprising:

a recess in each of the stirrup side members near their upper ends;

cylindrical piston means in the loop at the lower end of the stirrup strap extending axially across the space between the stirrup side members;

spring means for urging the ends of said piston means into engagement with the recesses for holding the stirrup coupled to the stirrup strap; and

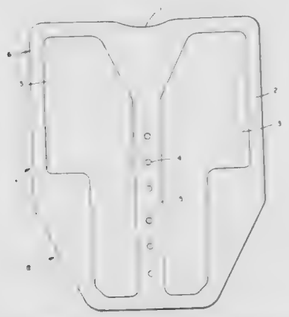
means for applying a force on said piston means opposite the

force of said spring means as the stirrup swings in an arc of a predetermined angle for disengaging the ends of said piston means from said recesses to uncouple the stirrup from the stirrup strap.

5,058,367
MOLDED SADDLE PAD

Sarah K. Evertson, Ipswich, Mass., assignor to Equine Innovations, Urbana, Ill.

Filed Jan. 13, 1989, Ser. No. 297,411
Int. Cl.[5] B68C *1/12*
U.S. Cl. 54—66 **14 Claims**

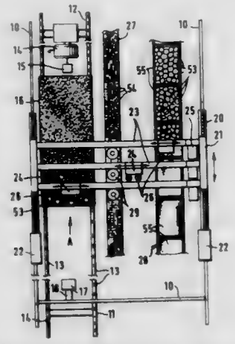


14. In a back pad for use under a saddle on horses having substantially the contour of the saddle wherein the pad is formed from a flexible, shock-absorbing polymeric material having laterally placed cushioning portions the improvement comprising a unitary, single-layer compress-molded pad formed from cross-linked polyethylene, having a raised portion over the withers area of the horse, a centrally located channel running longitudinally from the withers area to the rear of the pad and a plurality of openings located in said channel area.

5,058,368
HARVESTING OF DELICATE PRODUCE

Geoffrey C. Wheeler, Brook Vale, Trolver Hill, Penpol, Feock, Truro, England

Filed Nov. 2, 1990, Ser. No. 608,213
Claims priority, application United Kingdom, Nov. 3, 1989, 8924798
Int. Cl.[5] A01D *45/00*
U.S. Cl. 56—13.1 **14 Claims**



1. A method of harvesting produce using a video camera to scan a growing area for the produce to yield an image of that area and controlling a harvesting head on the basis of an analysis of the image, comprising:

(a) analysing the image to determine the co-ordinates relative to a pre-set datum of each item of produce assessed to be suitable for harvesting on the basis of a characteristic analysed from said image;

(b) controlling a harvesting head including a suction gripper for holding an item of produce so as to be positioned over the growing area with its line of action intersecting the co-ordinates of an item of produce selected for harvesting;

(c) moving the gripper towards the item until the gripper makes contact with and holds by suction the item of produce;

(d) twisting the gripper whilst maintaining the hold of the gripper on the item, and substantially simultaneously moving the gripper away from the engagement position, so as to pick said item from the growing site;

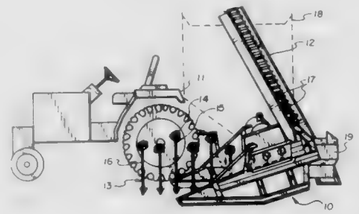
(e) moving the harvesting head to a discharge position; and

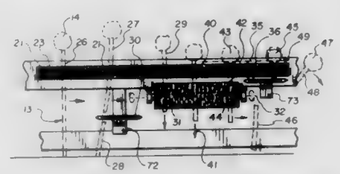
(f) releasing the item by removing the suction from the gripper.

5,058,369
AUTOMATED DEVICE AND METHOD FOR HARVESTING PLANTS WITH UNIFORM STEM LENGTH

Frank D. Garner, Rte. 4, Box 92, Rupert, Id. 83350

Filed Oct. 3, 1990, Ser. No. 592,361
Int. Cl.[5] A01D *23/04, 34/66, 45/30*
U.S. Cl. 56—13.9 **33 Claims**





1. A method for automated, mechanical harvesting of plants having differing heights and stem lengths, wherein a stem portion of the plant must be severed at a uniform, predetermined length from the top of the plant, said method comprising the steps of:

(1.1) guiding the stems of the plants into a first severing means;

(1.2) severing a lower portion of the stems at an excess length at the first severing means to free the plant from its root yet leave a precut stem length greater than the predetermined length of the harvested plant;

(1.3) guiding the precut stem along a guide track toward a second severing means which is positioned at a separation distance below a top level of the guide track which will cause severance of the stem at the predetermined length of the stem from the top of the plant as the precut stem passes along the guide track;

(1.4) vertically positioning the precut stem within the guide track such that the top of the plant is at a predetermined elevation with respect to the second severing means prior to severance of the stem at the predetermined length; and

(1.5) severing an additional portion of the stem from the plant by advancing the vertically positioned, precut stem to the second severing means to yield a harvested plant having a uniform, predetermined stem length.

11. A device for automated, mechanical harvesting of plants having differing heights and stem lengths, wherein a stem portion of the plant must be severed at a uniform, predetermined length from the top of the plant, said device comprising:

(11.1) guide means for guiding the stems of the plants into a first severing means;

(11.2) first severing means positioned behind the guide means for severing a lower portion of the stems at an excess length at the first severing means to free the plant from its root yet leave a precut stem length greater than the predetermined length of the harvested plant;

(11.3) a guide track extending from the guide means and operable to guide the stems toward a second severing means which is positioned at a separation distance below the guide track which will cause severance of the stem at the predetermined length of the stem from the top of the plant as the precut stem passes along the guide track;

(11.4) positioning means disposed below the track guide and being operable to vertically position the precut stem within the guide track such that the top of the plant is at a predetermined elevation with respect to the second severing means prior to severance of the stem at the predetermined length; and

(11.5) second severing means coupled below the guide track and being operable to sever an additional portion of the stem from the plant by advancing the vertically positioned, precut stem to the second severing means to yield a harvested plant having a uniform, predetermined stem length.

5,058,370
YARD RAKE WITH PICK-UP HEAD

Elsie M. K. Russell, Rte. 2, P.O. Box 198 R, Franklinton, La. 70438

Filed Aug. 6, 1990, Ser. No. 562,848
Int. Cl.[5] A01D *7/06*
U.S. Cl. 56—400.12 **3 Claims**



1. A lawn-working device comprising:

a. a main rake head with a plurality of tines,

b. an elongated rake handle, said main rake head connected to said rake handle to permit normal raking,

c. an auxiliary pick-up rake head having a rear edge hingedly attached to the rear edge of the main head and carried by the same handle,

d. an elongated arm connected to the auxiliary head on the edge opposite the hinge and used as a means to activate the auxiliary head into a pick-up position adjacent the rear edge of the main head, thus, with selective manual force enclosing debris between the two heads, and

e. a stationary clamp attached to the rear of said handle used as a means to secure the elongated arm and auxiliary head in a stable, upright, storage position during normal raking.

5,058,371
CONTINUOUS FILAMENT YARN FOR TRACKLESS CARPET

Jing-peir Yu, Pensacola, Fla.; Thomas C. Pursley, Loxley, Ala., and John H. Southern, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 30, 1989, Ser. No. 443,284
Int. Cl.[5] D02G *3/04, 3/24*
U.S. Cl. 57—239 **12 Claims**

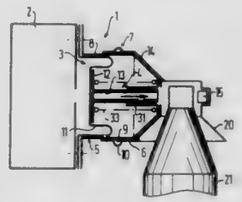


1. A yarn having a total denier in the range of 1000 to 2000 and consisting of two continuous filament singles yarns cabled together with from 3.5 to 6.0 turns of twist per inch (2.54 cm) of cabled yarn length, wherein each of said singles yarns is tangled, contains less than one turn of twist per inch (2.54 cm) of singles yarn length and comprises high shrinkage filaments having no crimp and carpet filaments having crimp and a denier per filament in the range of 10 to 25, wherein the Shrinkage Value of said high shrinkage filaments is at least 5 units higher than the Contraction Value of said rimped carpet filaments and wherein the Shrinkage Value and quantities of said high shrinkage filaments are selected such that after heat-setting of said cabled yarn the tracklessness of a cut pile test carpet having tufts made therefrom is better, as determined by Test A, than if the tufts were made entirely from said crimped carpet filaments.

5,058,372
APPARATUS FOR RELEASABLY GRIPPING THE TUBE OF A YARN PACKAGE OF A TEXTILE MACHINE

Norbert Staedele, Goeppingen, and Martin Hoffman, Nuertingen, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Apr. 16, 1990, Ser. No. 509,898
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912332
Int. Cl.[5] D01H *9/00*; B66C *1/42*
U.S. Cl. 57—274 **9 Claims**



1. An apparatus for selectively gripping the tube of a yarn package, comprising:

a support frame;

a tube engaging assembly including a pair of gripping members, at least one gripping member being movable between

a gripping position in which it cooperates with the other gripping member to compressively grip the tube of a yarn package therebetween and a non-gripping position in which said at least one movable gripping member and the other gripping member are out of gripping engagement with the tube of a yarn package, and means for movably supporting said at least one gripping member for movement between its gripping and non-gripping positions;

an extendable member selectively extendable into an extended position in which it maintains said at least one gripping member in its gripping position;

means for mounting said extendable member to said support frame for extending movement of said extendable member into its extended position; and

means for releasably mounting a selected portion of said tube engaging assembly to said support frame in a mounted position, said releasably mounting means being operable to non-destructively release said selected portion of said tube engaging assembly from said mounted position for movement of said selected portion out of interference with said extendable member to a release position in response to the application of a predetermined force against said selected portion of said tube engaging assembly, whereby the energy of said predetermined force is substantially converted into movement of said selected portion from said mounted position to said release position so as to avoid the undesired transmission to said extendable member of said predetermined force which may tend to displace said extendable member from its extended position.

5,058,373

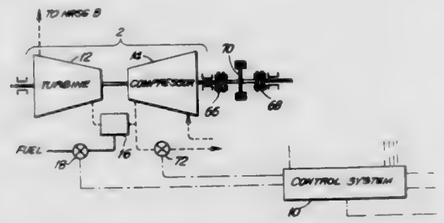
OVERSPEED PROTECTION FOR A GAS TURBINE/STEAM TURBINE COMBINED CYCLE

James H. Moore, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 302,169, Jan. 26, 1989, abandoned. This application Oct. 1, 1990, Ser. No. 590,820

Int. Cl.[5] F02C *6/18*

U.S. Cl. 60—39.27 **7 Claims**



1. An improved combined cycle power plant and overspeed protection system of the type having a reheat steam turbine including a high pressure steam turbine section with at least one control valve, and a lower pressure steam turbine section; a gas turbine including a turbine section, a combustor, a fuel valve supplying said combustor, and an air compressor with a discharge end leading to said combustor; a load driven by said reheat steam turbine and said gas turbine; said reheat steam turbine, said gas turbine and said load all having rotating members; a heat recovery steam generator heated by said gas turbine, including a high pressure steam generating section supplying steam to said high pressure steam turbine section through said control valve, and a steam reheater section receiving steam exhausted from said high pressure steam turbine section; the improvement comprising:

a valveless steam conduit connected between the outlet of said steam reheater section and the inlet of said lower pressure steam turbine section,

a plurality of solid couplings serving to solidly couple said rotating members together as a single rotor, said rotor having a single thrust bearing,

control means for sensing a potential overspeed condition operatively connected to said control valve to prevent overspeed, whereby the steam in said steam reheater and in said valveless steam conduit may freely expand through said lower pressure steam turbine and potential overspeed of said rotor is resisted by the combined inertia of said coupled rotating members and by the braking torque of said air compressor; and

a dump valve interposed between said air compressor discharge end and said combustor, and responsive to a potential overspeed condition, whereby upon opening of said dump valve, compressor air flow is increased and air flow to the combustor is reduced, to increase the compressor braking torque on said rotor.

5,058,374

INJECTOR

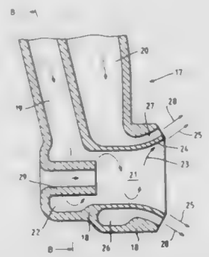
Bryan L. Bechlher, Leamington Spa, and Arthur B. Griffin, Leicester, both of England, assignors to Rolls-Royce plc, London, England

Filed Apr. 11, 1990, Ser. No. 507,483

Claims priority, application United Kingdom, May 18, 1989, 8911455

Int. Cl.[5] F02C *3/30*

U.S. Cl. 60—39.55 **4 Claims**



1. An injector suitable for the injection of both fuel and steam into combustion apparatus comprising a body adapted to receive separate flows of fuel and steam and direct those flows of fuel and steam into said combustion apparatus, said injector defining a substantially circular cross-section first chamber through which steam operationally flows and an annular second chamber defined around said first chamber, said first chamber having a longitudinal axis and upstream and downstream ends with respect to the flow of steam therethrough, said injector being so configured that said steam flow is directed into the upstream end of said first chamber at a location off-set from the longitudinal axis of said first chamber in such a manner as to be urged through a duct which is so positioned as to direct the steam flow generally tangentially into the first chamber so as to generally follow a vortex path through said first chamber, the axis of said vortex being generally coaxial with the longitudinal axis of said chamber, the downstream end of said first chamber being outwardly flared so that said steam flow exhausted into combustion apparatus is of substantially conical form, said second chamber being adapted to receive said fuel flow and to exhaust the fuel flow into said combustion apparatus.

5,058,375

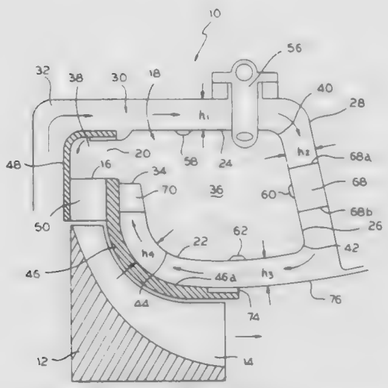
GAS TURBINE ANNULAR COMBUSTOR WITH RADIAL DILUTION AIR INJECTION

Jack R. Shekelton, San Diego, and Douglas C. Johnson, Corona, both of Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 291,041, Dec. 28, 1988, abandoned. This application Jun. 21, 1990, Ser. No. 541,489

Int. Cl.[5] F02C *3/05*

U.S. Cl. 60—39.36 **9 Claims**



1. A radial flow gas turbine, comprising:

a rotor including turbine blades and a nozzle adjacent said turbine blades, said nozzle being adapted to direct hot gases at said turbine blades to cause rotation of said rotor;

an annular combustor about said rotor and having a combustor outlet leading to said nozzle, said annular combustor having spaced inner and outer walls connected by a generally radially extending wall, said annular combustor including a combustion annulus defined by said inner, outer and radially extending walls upstream of said outlet;

a dilution air annulus disposed downstream of said combustion annulus and immediately radially outwardly of said nozzle axially adjacent to and immediately downstream of said combustor outlet of said annular combustion; and

a housing substantially surrounding said annular combustor in spaced relation to said inner, outer and radially extending walls thereof, said housing and walls together defining at least a portion of a dilution air flow path having a compressed air inlet in communication with a compressor for supplying dilution air at one end thereof, a turbine nozzle shroud and said inner wall defining the remainder of said dilution air flow path, said turbine nozzle shroud and said inner wall having axially spaced apart ends adjacent said nozzle defining a compressed air outlet, said compressed air outlet being in communication with said annular combustor axially adjacent to and immediately upstream of said combustor outlet at the other end of said dilution air flow path, said dilution air flow path extending substantially entirely about said annular combustor in a nearly closed loop to cool said inner, outer and radially extending walls;

said compressed air outlet injecting dilution air directly a ross said combustor outlet toward said compressed air inlet, said illusion air being injected into said hot gases at generally a right angle thereto assist hot gases approach said combustor outlet, said compressed air outlet being in communication with said dilution air annulus directly through said combustor outlet of said annular combustor downstream of said combustion annulus.

5,058,376

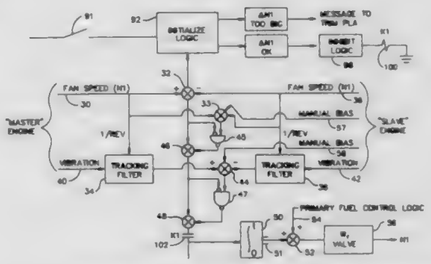
TURBOFAN SYNCHROPHASER

Barton H. Snow, Wyoming, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 21, 1988, Ser. No. 274,511

Int. Cl.[5] F02K *3/04*; **F02C** *6/00*

U.S. Cl. 60—204 **2 Claims**



1. In an aircraft having a master turbofan engine and at least one slave turbofan engine, each of said engines having a fan rotor which rotates independently from a core rotor, a method for synchronizing the operation of said slave engine with said master engine, the steps comprising:

modulating the fuel flow rate to said slave engine to synchronize the operation of said fan rotors; and

modulating the position of variable stator vanes within said slave engine to synchronize the operation of said core rotors;

wherein, said step of modulating the fuel flow to said slave engine includes the step of modulating the fuel flow rate in response to a fan rotor speed error signal indicative of the difference in the fan rotor rotational speeds of said master engine and said slave engine until the difference in the fan rotor rotational speeds is less than one revolution per minutes; and

said step of modulating the position of variable stator vanes within said slave engine includes the step of modulating the position of variable stator vanes in response to a core rotor vibrational error signal indicative of the difference in the core rotor vibration of said master engine and said slave engine until a predetermined phase relationship between said core rotors is obtained.

5,058,377

TURBORAMJET ENGINE

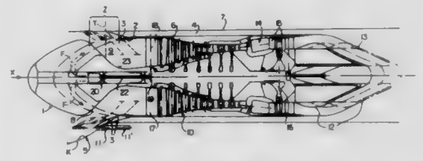
Walter Wildner, Munich, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Munchen GmbH, Fed. Rep. of Germany

Filed Apr. 5, 1990, Ser. No. 505,049

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912392

Int. Cl.[5] F02K *3/00*; **F02C** *1/02*

U.S. Cl. 60—224 **23 Claims**



1. A turbine ramjet engine having a ramjet and turbo operation comprising:

a turbo engine, having an air intake cross-section of an air

inlet, including a compressor means, a combustion chamber means and a turbine means operatively arranged together;

an annular ram pressure air duct, having a circular end section, coaxially shrouding said turbo engine, said ram pressure air duct being blocked from a supply of ram pressure air when the ramjet operation is disconnected while intake air is simultaneously released into said compressor means;

a flow divider, located between said turbo engine and said ram pressure air duct, having a lip;

a central body, arranged in the turbine-ramjet engine having an upstream portion which diverges and then converges in a downstream direction, and being axially adjustable relative to the flow divider to block and unblock the air intake cross-section of the turbo engine;

a tapering ring slide, widened in the upstream direction, being axially controllable to position itself opposite said central body, wherein said ring slide is adapted to block said ram pressure air duct between said lip and said circular end section when the air intake cross-section is unblocked and to unblock said ram pressure air duct when the air intake cross-section is blocked,

wherein said annular ram pressure air duct includes an outer cylindrical wall member which widens in the upstream direction from a circular cross-section at said circular end section to a polygonal cross-section having corner zones, such that at a blocking zone level resulting from mutual overtraveling of said ring slide and said central body, free flow through passages remain between said ring slide and the corner zones of said polygonal cross-section of said outer cylindrical wall.

5,058,378

INTEGRATED TURBORAMJET ENGINE

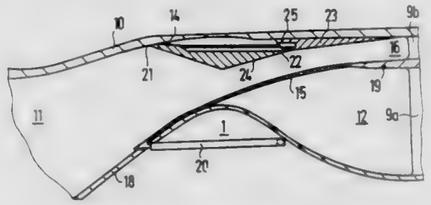
Heinrich Enderle, Gröbenzell, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Munich GmbH, Fed. Rep. of Germany

Filed Apr. 5, 1990, Ser. No. 505,043

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912330

Int. Cl.[5] F02C *7/042*; **F02K** *7/16*

U.S. Cl. 60—224 **14 Claims**



1. An integrated turboramjet engine for a hypersonic airplane having a common air inlet with a total flow through a total common inlet cross-section for the turbo-circuit and the ramjet circuit comprising:

an annular turbo-inlet duct;

a ram air inlet duct which concentrically surrounds this turbo-inlet duct and which, on its exterior side, is delimited by an engine casing;

an inlet cone; and

movable devices for the deflecting of the air current from the common air inlet into one of the two inlet ducts, said turbo-inlet duct and said ram air inlet duct receiving the total flow through the total common inlet cross-section;

wherein the devices for the deflecting of the air current comprise a guide ring which can be displaced in the axial direction between an upstream and downstream position along the engine casing for the closing-off of the ram air duct as well as an annular cone having upstream and downstream ends, which is disposed radially inward with respect to the guide ring and can be displaced in the axial direction between an upstream and downstream position for the closing-off of the turbo-inlet duct, the contour of the guide ring forming the duct wall;

wherein the engine casing, the annular cone and the inlet cone are coordinated with one another along their axial length such that the air-flow in the cross-sections from the engine casing to the annular cone and from the annular cone to the inlet cone are the same at both ends of the annular cone when the annular cone is in the upstream position.

5,058,379

HIGH BY-PASS RATIO TURBOJET ENGINE WITH COUNTERROTATING UPSTREAM AND DOWNSTREAM FANS

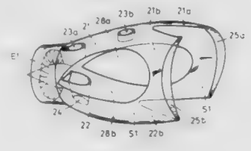
Alain M. J. Lardellier, Melun, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

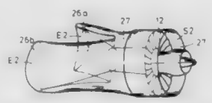
Filed Apr. 5, 1990, Ser. No. 504,839

Claims priority, application France, Apr. 18, 1989, 8905144

Int. Cl.[5] F02K *3/077*

U.S. Cl. 60—226.1 **9 Claims**





1. A turbojet engine having a bypass ratio, said engine including a low pressure unit comprising:

an upstream fan,

a low pressure compressor coupled to said upstream fan,

a gas generator comprising a high pressure compressor, a combustion chamber and a high pressure turbine driving said high pressure compressor, a low pressure turbine driven by said gas generator and itself driving said low pressure unit, a rear fan, and a counterrotating turbine interleaved with said low pressure turbine and driving said rear fan,

separate first and second cold air flow paths respectively including said upstream fan and said rear fan, said first cold air flow path having a frontal air intake in common with the air flow to said gas generator, and said second cold air flow path comprising two crescent shaped air intakes disposed laterally outwardly of said intake of said first flow path, and passages leading from said crescent shaped intakes and merging to form an annular passage in which said rear fan is disposed, sad annular passage surrounding the hot gas flow from said gas generator and defining an annular outlet from said second flow path, said first flow path further comprising two crescent shaped outlets disposed laterally outwardly of said annular outlet of said second flow path, and passages leading from said intake of said first flow path to said crescent shaped outlets.

5,058,380

EXHAUST SYSTEM OF AN INTERNAL-COMBUSTION ENGINE

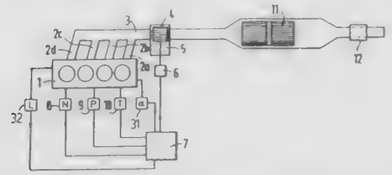
Stephan Pelters, Tiefenbronn, and Horst Klink, Weissach, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Feb. 16, 1990, Ser. No. 480,962

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907776

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—288 **17 Claims**



1. An exhaust system of an internal-combustion engine, having a catalyst arranged in its exhaust pipe;

wherein the catalyst is movably disposed at the exhaust pipe;

wherein there is a control means to move the catalyst at least partially out of exhaust gas flow current in the exhaust pipe;

wherein the catalyst is transversely guided into and out of the exhaust pipe with respect to an axis of the exhaust pipe; and

wherein the catalyst is moved out of the exhaust pipe into a latera! chamber adjacent the exhaust pipe by the control means.

5,058,381

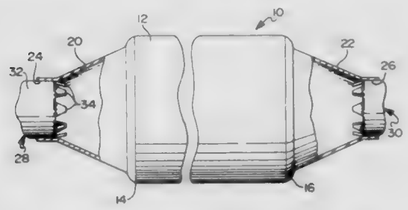
LOW RESTRICTION EXHAUST TREATMENT APPARATUS

Barry O. Christenson, Fargo, N. Dak., and Albert H. Mayfield, Lennon, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 24, 1990, Ser. No. 469,613

Int. Cl.[5] F01N *3/02, 3/28*

U.S. Cl. 60—299 **5 Claims**



1. An end tube for use in an exhaust treatment apparatus of an exhaust system for an internal combustion engine comprising:

an axially extending, hollow conduit having first and second ends;

a plurality of axially inwardly extending serrations disposed about the circumference of said first end, said serrated portions angled radially inwardly to form a lead-in portion of a reduced diameter thereabout;

said inwardly tapered serrated portion facilitating insertion of said end tube into the exhaust treatment apparatus without an undesirable increase in exhaust system back pressure.

5,058,382

HYDROSTATICALLY OPERATED CONTINUOUSLY VARIABLE TRANSMISSION

Kazuo Inoue, Tokyo, and Tsutomu Hayashi, Hohya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

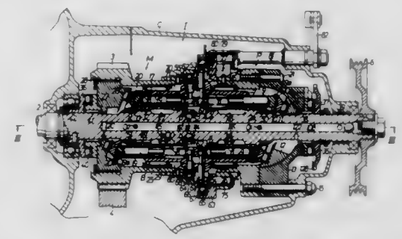
Continuation of Ser. No. 118,293, Nov. 6, 1987, abandoned. This application Sep. 8, 1988, Ser. No. 243,189

Claims priority, application Japan, Nov. 11, 1986, 61-264603

The portion of the term of this patent subsequent to Nov. 22, 2006, has been disclaimed.

Int. Cl.[5] F16D *39/00*

U.S. Cl. 60—488 **3 Claims**



1. A hydrostatically operated continuously variable transmission for use with an engine, comprising:

a swash-plate-type axial-piston hydraulic pump having a pump cylinder and a pump swash plate;

a swash-plate-type axial-piston hydraulic motor having a motor cylinder and a motor swash plate, at least one of said pump and motor swash plates being tiltable;

a closed hydraulic circuit interconnecting said hydraulic pump and said hydraulic motor;

said pump cylinder and said motor cylinder being disposed coaxially with each other and integrally coupled to each other into a cylinder block;

an input shaft adapted to be connected to the engine and coupled centrally to said cylinder block;

an output tubular shaft adapted to be connected to a load and relatively rotatably disposed on an outer periphery of said cylinder block; and

said pump swash plate being supported by a stationary machine frame, said motor swash plate being supported by said output tubular shaft.

5,058,383

HYDRAULIC MOTOR CONTROL CIRCUIT

Masahiro Tsunemi, Miki; Yuji Kondo, Akashi, and Kenichi Shimoura, Kobe, all of Japan, assignors to Nippon Air Brake Kabushiki Kaisha, Kobe, Japan

Filed Dec. 5, 1990, Ser. No. 622,474

Claims priority, application Japan, Dec. 14, 1989, 1-325378; Dec. 14, 1989, 1-325379

Int. Cl.[5] F16D *39/00*

U.S. Cl. 60—493 **2 Claims**

2. A hydraulic motor control circuit for a construction equipment driving device comprising a hydraulic driving motor, a pump for feeding pressurized oil to said hydraulic motor, and a tank for receiving the pressurized oil discharged from said hydraulic motor; said circuit comprising

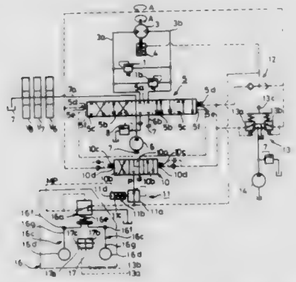
a main valve of pilot operation type including mutually opposing first and second pilot chambers, having a first position for driving said hydraulic motor and a second position for confining a speed of rotation of said hydraulic motor, and being inserted between said hydraulic motor and said pump,

a remote control valve for feeding a pilot oil pressure to said first pilot chamber of said main valve,

pilot pressure feeding means driven by a driving pressure of

said hydraulic motor for feeding an output oil pressure corresponding to a slanting angle of a road surface being traveled by said equipment to the second pilot chamber of said main valve,

means for turning said main valve from said first position to said second position when said pilot oil pressure and said



output oil pressure are applied, respectively and generally simultaneously, to said first and second pilot chambers of said main valve, and

means for making an aperture between said pump and said hydraulic motor less than an aperture between said hydraulic motor and said tank in said second position of said main valve.

5,058,384

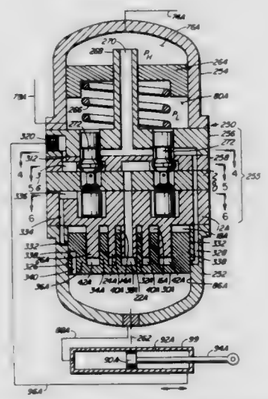
DIGITAL ACTUATOR

Andrew B. Dunwoody, Richmond, Canada, assignor to University of British Columbia, Canada

Continuation-in-part of Ser. No. 585,524, Sep. 20, 1990, which is a continuation-in-part of Ser. No. 473,748, Feb. 2, 1990, Pat. No. 5,011,180. This application Dec. 24, 1990, Ser. No. 632,944

Int. Cl.[5] F15B *7/00*

U.S. Cl. 60—533 **5 Claims**



1. A digital hydraulic actuator assembly comprising a cylinder, a body portion having a first element, and a chamber integrally interconnected, said first element cooperating with a second element that forms a piston in said cylinder, said first and second elements having sets of cooperating pairs of pistons and cavities adapted to cooperate to form a digital hydraulic actuator, a piston dividing said chamber into a high pressure reservoir and a low pressure reservoir, means for urging said piston toward said high pressure reservoir to generate a differential in pressure in hydraulic fluid filling said high and said low pressure reservoirs, set of valves in said body portion, said set of valves including one valve for each of said cavities, a first passage means through said body portion connecting each of said valves to said high pressure reservoir, a second passage means in said body portion connecting said low pressure reservoir to each of said valves, individual passages through said body portion connecting each of said cavities with its respective valve of said set of valves.

5,058,385

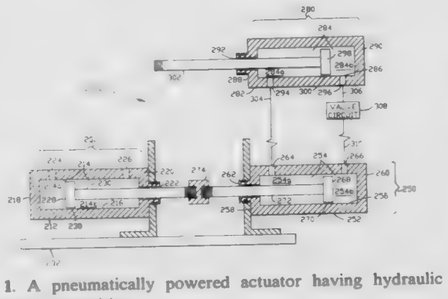
PNEUMATIC ACTUATOR WITH HYDRAULIC CONTROL

Hobart R. Everett, Jr., San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1989, Ser. No. 456,023

Int. Cl.[5] F15B *7/00*

U.S. Cl. 60—571 **5 Claims**



1. A pneumatically powered actuator having hydraulic control, comprising:

a frame;

a double-acting pneumatic actuator having a bore, a piston slidably engaged within said bore, and a control rod connected to said piston, said double-acting pneumatic actuator mounted to said frame;

a first double-acting hydraulic actuator having a bore, a piston slidably engaged within said bore, a follower rod mounted to said piston, and first and second fluid ports, said first double-acting hydraulic actuator mounted to said frame, said follower rod fixedly connected to said control rod, the maximum translation of said piston within said bore of said first double-acting hydraulic actuator providing a volumetric displacement V_1;

a second double-acting hydraulic actuator having a bore, a piston slidably engaged within said bore, an output rod mounted to said piston, and third and fourth fluid ports, the maximum translation of said piston within said bore of said second double-acting hydraulic actuator providing a volumetric displacement V_2, where $V_2=V_1$;

a first fluid conduit operably coupled between said first and third fluid ports;

a second fluid conduit;

a valve circuit operably coupled in series with said second fluid conduit to form a fluid control conduit operably coupled between said second and fourth fluid ports; and

a volume of hydraulic fluid filling said bore of said first double-acting hydraulic actuator, said second double-acting hydraulic actuator, said first and second fluid conduits, and said valve circuit.

5,058,386

POWER GENERATION PLANT

Daya R. Senanayake, 9 Ecrin Place, Colombo 8, Sri Lanka

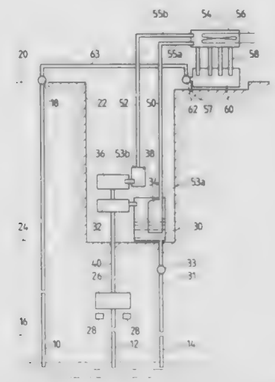
PCT No. PCT/LK88/00004, § 371 Date Jul. 9, 1990, § 102(e) Date Jul. 9, 1990, PCT Pub. No. WO89/04913, PCT Pub. Date Jun. 1, 1989

PCT Filed Nov. 21, 1988, Ser. No. 476,451

Claims priority, application Sri Lanka, Nov. 26, 1987, 9835

Int. Cl.[5] F01K *9/00*

U.S. Cl. 60—692 **9 Claims**



1. An electrical power generation plant comprising

a turbine (**36**, **136**, **236**) and a condenser (**54**, **154**, **254**), the turbine being of the steam-driven type and having a steam exhaust (**137**, **237**, the condenser having a vapor inlet (**55***b*, **155**) and a liquid outlet (**55***a*, **157**), the steam exhaust of the steam turbine being at a level below the vapor inlet of the condenser and being connected to the vapor inlet of the condenser by a vapor transfer shaft (**52**, **150**, **252**), wherein the vapor transfer shaft is an upwardly-extending vacuum-tight shaft having a vertical height in the range 0.2 kilometer to 30 kilometers and a minimum cross-section dimension of 2.75 meters, wherein means (**54**, **154**, **254**) are provided adapted to maintain a sub-atmospheric pressure in the shaft during turbine operation,

and further comprising a water boiler (**26**, **126**, **259**) having a water inlet conduit and a steam outlet conduit, wherein the steam-driven turbine (**36**, **136**, **236**) has a steam inlet, the steam inlet of the turbine being connected to the steam outlet of the boiler, and

wherein the liquid outlet of the condenser is connected to the water inlet conduit of the boiler.

5,058,387

PROCESS TO ULTRAPURIFY LIQUID NITROGEN IMPORTED AS BACK-UP FOR NITROGEN GENERATING PLANTS

David J. Kamrath, Asbury, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

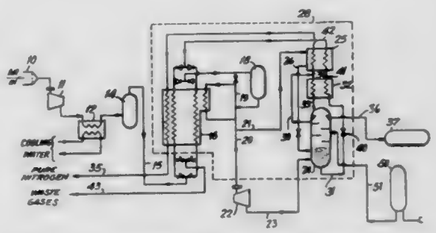
Filed Jul. 5, 1989, Ser. No. 376,058

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—11 **32 Claims**

1. An improved nitrogen generator having a distillation column operated at low tem for separating oxygen and nitrogen, the column having a top and a bottom, and a rising vapor stream and a descending liquid stream in countercurrent contact with each other, the improvement comprising:

means for introducing an amount of merchant liquid nitrogen into the column at an intermediate point in the column wherein the liquid stream composition at said point is substantially equivalent to the liquid nitrogen composition; and



a means for withdrawing a substantially equivalent amount of purified liquid nitrogen from the top of the column.

5,058,388

METHOD AND MEANS OF AIR CONDITIONING

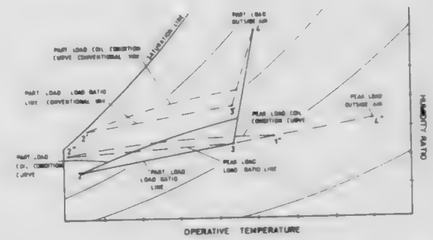
Allan Shaw, and Russell E. Luxton, both of 5th Floor, Security House, 233 North Terrace, Adelaide, State of South Australia, Australia, assignors to Allan Shaw; Russell Estcourt Luxton and Luminus Pty., Ltd., all of, Australia

Filed Aug. 27, 1990, Ser. No. 573,233

Claims priority, application Australia, Aug. 30, 1989, PJ 6035

Int. Cl.[5] F25D *17/06*

U.S. Cl. 62—93 **25 Claims**



12. A method of controlling an air conditioning system, comprising receiving information defining occupant activity, and including:

(a) supply and return air dry bulb temperature,

(b) at least one of globe temperature and operative temperature,

(c) at least one of a measure and estimate of relative humidity,

(d) at least one of supply air volume flow rate and air velocity and available air flow area and a pressure difference,

(e) time of day and day of year and date defining:

(f) the most probable range of clothing worn by occupants of the conditioned space for representative seasonal and ambient conditions,

(g) the range of insulation values of clothing types,

(h) the metabolic energy release rate and the external work done for a representative range of activities,

and selecting appropriate values of metabolic energy release rate, external work output and clothing insulation, computing, from a balance between net metabolic heat generation by the occupant and the rate at which it is exchanged with the surroundings within said conditioned space, the change in dry bulb air temperature and relative humidity in said conditioned space necessary to make said rate of heat exchange with the surroundings equal to said net metabolic heat generation by the occupant within a small tolerance range defined by reference to the statistical results of studies of human responses to thermal environments, and

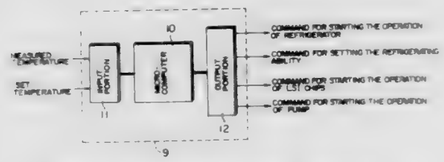
initiating action to change said air temperature and relative humidity by changing at least one of supply air flow rate and active size of dehumidifier, coolant flow rate, and supply air temperature to maintain the conditioned space within said tolerance range.

5,058,389

FLUID TEMPERATURE CONTROL SYSTEM AND COMPUTER SYSTEM USING SAME

Hiromu Yasuda, Shizuoka; Takahiro Daikoku, Ushiku; Kenji Takahashi, Abiko; Shizuo Zushi, Hadano; Tetsuji Yamashita, Shizuoka; Tomio Yoshikawa, and Kyoshiro Murakami, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 507,871
Claims priority, application Japan, Apr. 17, 1989, 1-095138
Int. Cl.[5] H02B *1/00*
U.S. Cl. 62—99 **23 Claims**



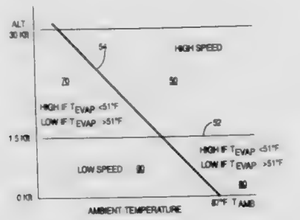
1. A fluid temperature control system comprising
a flow path for circulating fluid to a heat generating portion,
means for feeding the fluid,
means for measuring the temperature of the fluid,
a refrigerator for cooling the fluid,
means for measuring the temperature of the fluid at the time of starting of said system, and for comparing said measured fluid temperature with a set temperature, and for controlling the start of the operation of said refrigerator in accordance with result of said comparison, and
means for starting the operation of said heat generating portion after the fluid temperature reaches said set temperature.

5,058,390

AIRCRAFT VAPOR CYCLE COOLING SYSTEM WITH TWO SPEED CONTROL OF A CONDENSER FAN AND METHOD OF OPERATION

Frederick L. Sindermann, and Dam C. Nguyen, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 25, 1990, Ser. No. 528,613
Int. Cl.[5] F25B *39/04*; F25D *17/00*
U.S. Cl. 62—181 **40 Claims**



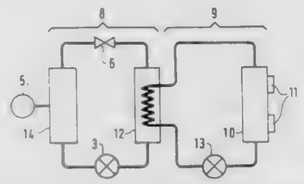
1. A vapor cycle cooling system comprising:
a compressor for compressing refrigerant vapor;
a condenser receiving compressed refrigerant vapor from the compressor;
a fan having at least two controllable speeds for blowing a fluid in contact with the condenser to remove heat from the compressed refrigerant at the condenser to cause the refrigerant vapor to liquify, the speeds of the fan being controlled by a control signal;
an expansion valve receiving liquid refrigerant from the condenser which expands the liquid refrigerant;
an evaporator receiving the expanded refrigerant which exchanges heat with a fluid stream coupled to a heat load; and
a controller for generating the control signal, responsive to a sensed evaporator temperature, a sensed ambient temperature and a sensed altitude, which controls two speeds of the fan as a function of the sensed temperatures and altitude by generating the control signal.

5,058,391

METHOD OF COOLING ELECTRICAL COMPONENTS, DEVICE FOR IMPLEMENTING SAME AND APPLICATION TO VEHICLE-BORNE COMPONENTS

Robert Périot, Trevoux, France, assignor to GEC Alsthom SA, Paris, France

Filed Apr. 27, 1990, Ser. No. 515,916
Claims priority, application France, Apr. 27, 1989, 89 05603
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—238.6 **6 Claims**



1. A method for cooling electrical components within an automotive vehicle including an internal combustion engine cooled by a liquid coolant, said electrical components carrying substantial electrical power and generating large amounts of heat, said method comprising the following steps:
transferring heat produced by said components (2), in a direct or indirect manner, to the refrigerant of a refrigerating loop (8) by means of a first heat exchanger (1, 12) provided with an evaporator, and
transferring the heat previously yielded to said refrigerant to the coolant of the internal combustion engine (30) by means of a second heat exchanger (4, 14, 25) provided with a condenser in contact with the internal combustion engine liquid coolant; whereby said automotive vehicle electrical components are cooled by extracting heat therefrom to the liquid coolant of the internal combustion engine at a higher temperature, and wherein said cooling method operates irrespective of the ambient temperature outside of the automotive vehicle.

5,058,392

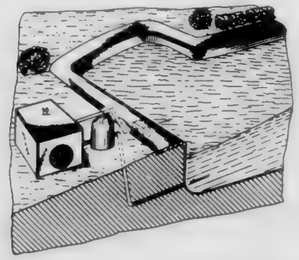
AIR CONDITIONER HEATBOX

Cynthia Jouan, and Marcel Jouan, both of 3530 Pansy Dr., Calabasas, Calif. 91302

Filed Dec. 4, 1989, Ser. No. 445,358
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—238.6 **6 Claims**

1. A heatbox, comprising:
a) a compressor having a discharge valve and a suction valve;
b) a housing having a top and a bottom on to which said compressor is disposed;
c) an evaporizer is disposed having a bottom and a middle and being vertically disposed next to said compressor in said housing and having a first loop pipe connecting said evaporizer to said suction valve of said compressor;
d) a fan disposed in said housing opposite said evaporizer;

e) a heat exchanger having an input valve and being disposed near said top of said housing and above said compressor, said heat exchanger having a second loop pipe connecting said discharge valve of said compressor to said input valve of said heat exchanger;
f) one expansion valve; and



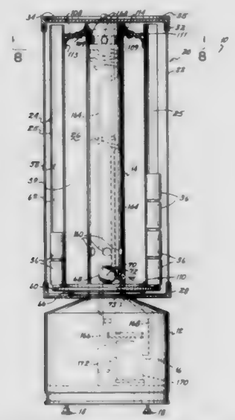
g) a dryer having a top and a bottom to which a third pipe runs while a fourth pipe runs from said top of said dryer to said one expansion valve and a pair of fifth and sixth pipes connecting to said bottom and said middle of said evaporizer.

5,058,393

DISPLAY APPARATUS FOR INDIRECTLY REFRIGERATING FOOD AND BEVERAGE ITEMS

Floyd R. Callon, Punta Gorda, Fla., and Harvey W. Benison, Cincinnati, Ohio, assignors to Dyment Limited, Toronto, Canada

Filed Feb. 22, 1990, Ser. No. 507,140
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—255 **26 Claims**



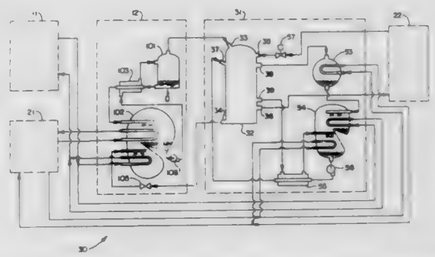
1. An article display apparatus, comprising:
a base support;
a housing having an outer wall and a hollow interior, said housing being mounted to said base support;
door means mounted over an opening formed in said outer wall of said housing for permitting access to said hollow interior of said housing;
an article support carriage mounted to said base support at the bottom of said housing;
an article support assembly mounted atop said article support carriage within said hollow interior of said housing, said article support assembly comprising a wall having an inner surface which defines a substantially enclosed interior space for substantially preventing the escape of refrigerated air therefrom and an outer surface which defines a displaying space between said wall and said outer wall of said housing, said outer surface of said wall including a plurality of food support means for carrying articles of food and/or beverages in said displaying space;
means for rotating said article support carriage when said door means is closed so that said article support assembly and said plurality of food support means are rotated simultaneously within said housing; and
means for supporting refrigerated air into said substantially enclosed interior space of said article support assembly, so that the refrigerated air is brought into heat exchange relationship with respect to at least a portion of said inner surface of said wall of said article support assembly whereby said food support means of said article support assembly is chilled by the refrigerated air in within said substantially enclosed interior space for indirectly refrigerating articles of food and/or beverages carried thereon in said displaying space.

5,058,394

HYBRID AIR CONDITIONING SYSTEM SUBSYSTEM INTEGRATION

William H. Wilkinson, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Feb. 6, 1990, Ser. No. 475,811
Int. Cl.[5] F25D *23/00*
U.S. Cl. 62—271 **31 Claims**



1. A hybrid air conditioning system subjected to a combined and proportionally variable sensible heat load and latent heat load, and comprising:
a. an absorption refrigeration subsystem handling the system sensible heat load and having an absorption refrigeration cycle loop with cooperating desorber means, condenser means, evaporator means, absorber means, and fluid circulating means flowing refrigerant vapor, liquid refrigerant, relatively concentrated refrigeration solution, and relatively dilute refrigeration solution;
b. a liquid desiccant dehumidification subsystem handling the system latent heat load and having cooperating desiccant dehumidifier means, desiccant regenerator means, and fluid circulating means flowing desiccant solution sequentially through said desiccant dehumidifier means and said desiccant regenerator means; and
c. modulator means cooperably connected to said refrigeration subsystem and to said dehumidification subsystem and having a modulator absorption refrigeration cycle loop separate from said refrigeration subsystem absorption refrigeration cycle loop with cooperating desorber means, condenser means, evaporator means, absorber means and fluid circulating means flowing refrigerant vapor, liquid refrigerant, concentrated refrigeration solution, and dilute refrigeration solution,
said modulator means transferring available heat between said refrigeration subsystem absorption refrigeration cycle loop,

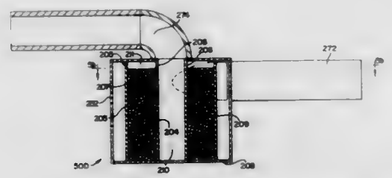
said dehumidification subsystem desiccant solution, and said modulator absorption refrigeration cycle loop in controlled proportions to thereby improve the system coefficient of performance.

5,058,395

SLUG SURGE SUPPRESSOR FOR REFRIGERATION AND AIR CONDITIONING SYSTEMS

Shimao Ni, Elmhurst, and Phillip C. Heitz, South Elgin, both of Ill., assignors to H. A. Phillips & Co., St. Charles, Ill.

Filed Mar. 2, 1990, Ser. No. 487,682
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—278 **4 Claims**



1. An improved refrigeration and defrost system wherein shock damage to system components due to rapid passage of a slug through the system is prevented, the slug generally comprising a mixture of liquid and gas, the system comprising:

a) a refrigerant compressor connected in closed circuit with a condensor and an evaporator by a pipe assembly;

b) said pipe assembly including a first pipe segment connecting the compressor and the condenser, a second pipe segment connecting the condenser and the evaporator, and a third pipe segment connecting the evaporator and the compressor;

c) a hot gas defrost pipe segment connected to said first pipe segment and the second pipe segment of said pipe assembly;

d) a hot gas defrost valve disposed in said hot gas defrost pipe segment, said hot gas defrost valve including means for opening said hot gas defrost pipe segment to a maximum extent to permit hot gas to flow therethrough during a hot gas defrost cycle; and

e) a first slug surge suppressor disposed in said hot gas defrost pipe segment and downstream from said hot gas defrost valve, said slug surge suppressor including:

1) a body having an inlet port, an outlet port, outer walls and an interior center portion;

2) tangential velocity means located downstream of said inlet port for imparting tangential velocity to the slug entering said inlet port, such that the different densities of the gas and liquid components of the slug cause the liquid and gas components to separate, the liquid flowing downstream through a path oriented toward said outer wall and the gas flowing downstream through a path oriented toward said interior center portion;

3) a first passage located downstream of said tangential velocity means and leading to said outer port, said first passage oriented toward said outer wall in such a way that liquid passing through said tangential velocity means will tend to flow through said first passage;

4) said first passage further including a plurality of capillary passages; and

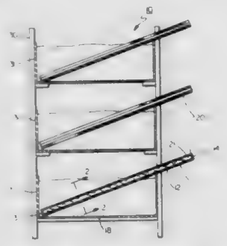
5) a second passage located downstream of said tangential velocity means and leading to said outlet port, said second passage oriented toward said interior center portion in such a way that gas passing through said tangential velocity means will end to flow through said second passage.

5,058,396

RAPID CHILLING SYSTEM

Norman A. Faiola, Ithaca, N.Y., assignor to Syracuse University, Syracuse, N.Y.

Filed Feb. 20, 1991, Ser. No. 658,401
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.2 **30 Claims**



1. A sealed hollow elongated chilling utensil for rapidly chilling liquids and semisolids that are retained in closely spaced vertical tiers of shallow trays,

said chilling utensil formed of a material which has a high thermal conductance and completely enclosing a reservoir, said chilling utensil having an immersible section with a distal end and a dry section with a proximal end,

said reservoir extending from the proximal end to the distal end and partially filled with a refrigerant that can circulate freely throughout the reservoir when said refrigerant is in a liquid state,

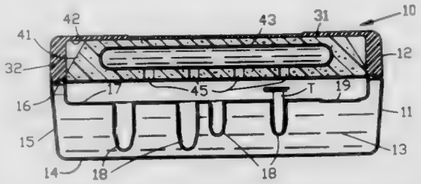
said immersible section further having a plurality of spaced axially disposed grooves and having ridges intermediate said grooves for increasing the surface area in thermal contact with the material to be chilled and to promote mixing of the material when said chilling utensil is manipulated.

5,058,397

CRYOGENIC STORAGE BOX FOR MICROCENTRIFUGE TUBES

Richard E. MacDonald, Lexington, Mass., assignor to USA/-Scientific Plastics, Inc., Ocala, Fla.

Filed Aug. 29, 1990, Ser. No. 574,065
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.2 **5 Claims**



1. A portable storage box for tubes containing heat sensitive biological specimens and the like, comprising

a housing having spaced upper and lower walls, respectively,

said upper wall of said housing having formed therein a plurality of spaced receptacles extending downwardly into the space between said walls for removably supporting therein a plurality of specimen containing tubes in said upper wall of said housing with the lower, closed ends of said tubes extending downwardly into said receptacles from said upper wall and into the space between said walls,

a cover hingedly connected along one edge thereof to one edge of said upper wall of said housing for movement selectively into and out of a closed position over the tubes supported in said upper wall,

a block of resilient material mounted in and substantially filling a recess in said cover, and disposed to be supported thereby over the upper ends of said tubes, when said cover is in its closed position

a flexible envelope enclosed in said resilient block and containing a first supply of coolant gel, and

a second supply of coolant gel substantially filling the space in said housing between said upper and lower walls thereof and disposed to surround said closed ends of said tubes which extend downwardly from said upper wall,

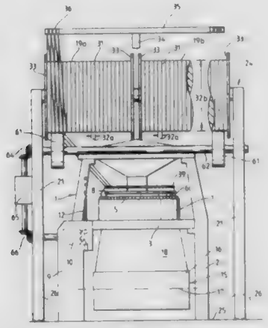
said block of resilient material projecting downwardly in said recess far enough to form a resilient buffer which prevent said tubes from becoming dislodged from said receptacles when said cover is closed.

5,058,398

THREAD SUPPLY DEVICE FOR A CIRCULAR KNITTING MACHINE

Gustav Memminger, Freudenstadt; Falk Kühn, Rottenburg, and Heinze Fabschitz, Westerham, all of Fed. Rep. of Germany, assignors to Sipra Patententwicklungs-und Beteiligungsgesellschaft, Albstadt, Fed. Rep. of Germany

Continuation of Ser. No. 231,509, Aug. 12, 1988, abandoned. This application Jul. 30, 1990, Ser. No. 559,988
Claims priority, application Fed. Rep. of Germany, Aug. 15, 1987, 3727249
Int. Cl.[5] D04B *15/48, 15/62, 27/20*
U.S. Cl. 66—132 R **16 Claims**



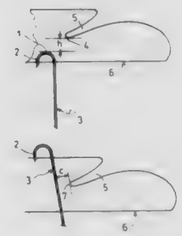
1. A thread supply device for a circular weft knitting machine having a needle carrier for knitting needles, cam means forming a plurality of knitting systems along said needle carrier, and a drive for producing a continuous relative rotary motion between the needle carrier and the cam means for moving said needles past said systems, said needles receiving threads at said systems for knitting purposes such that the same average quantities of thread are consumed at said systems during said relative rotary motion; a receiving frame; at least one warp beam rotatably mounted in said receiving frame; a plurality of adjacent thread winding areas provided on said warp beam, said thread winding areas having the same axial length and the same diameters and on each thread winding area being wound one of said threads, each thread being associated with one of said systems; thread guide means for guiding said threads from said thread winding areas on predetermined thread paths to said associated systems; and drive means, said drive means having drive wheel means coupled to said warp beam to positively drive the latter in such a way that the thread winding areas, irrespective of their momentary diameters, always supply to said systems the average thread quantities consumed thereby.

5,058,399

CHAIN KNITTED FABRIC WITH A PLUSHED LOOP ON BOTH SIDES AND ITS PRODUCTION METHOD

Luc Watisse, St. Quentin; Christian Plaskowski, Urvillers, and Jean-Francois Forest, St. Quentin, all of France, assignors to Le Textile Delcer, France

Filed Sep. 25, 1989, Ser. No. 411,858
Claims priority, application France, Sep. 27, 1988, 88 13057
Int. Cl.[5] D04B *21/02*
U.S. Cl. 66—203 **9 Claims**



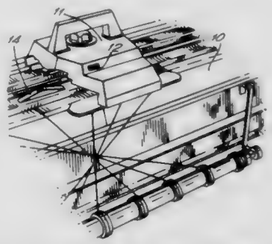
1. Method for producing a knitted fabric of the type having a plushed loop effect, said method comprising: embodying a knitted fabric on a chain loom having at least two guide bars, one of said bars feeding a yarn for forming a plushed loop and the other said bar feeding a foundation yarn, with a yield of the yarn forming the plushed loop being 40 to 50% greater than a normal yield of the yarn which does not form any plushed loop and with a yield of the foundation yarn being about 4 to 6% greater than the normal yield, and adjusting devices of the loom for forming stiches so that the plushed loop forming yarn loops alternately and irregularly on face and back sides of the knitted fabric.

5,058,400

INTARSIA CARRIAGE INCORPORATING ROW COUNTER

Trevor E. Wilson, and Joan A. M. Wilson, both of Bargate, Parsonage Hill, Somerton Somerset, England TA11 7PF

Filed Feb. 14, 1990, Ser. No. 481,984
Claims priority, application United Kingdom, Feb. 21, 1989, 8903850; Dec. 6, 1989, 8927543
Int. Cl.[5] D04B *37/00*
U.S. Cl. 66—60 H **10 Claims**



1. An intarsia carriage for a knitting machine comprising a row counter integral with said carriage, said row counter including a plurality of drums mounted to rotate on a shaft and moveable by internal click levers, the tip of each click lever being marginally further radially outward than its adjoining click lever in sequence from one end of a secondary shaft on which the click levers are mounted.

5,058,401

WASHING, DEHYDRATING AND DRYING MACHINE

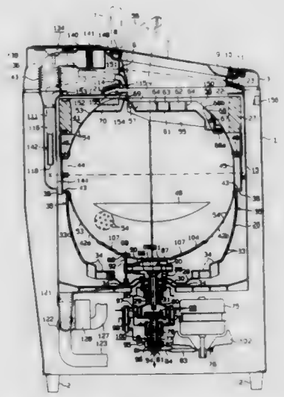
Fumio Nakamura, Toyokawa; Masayoshi Shimano, Okazaki; Kaoru Sakakibara, Nagoya, and Masayuki Arakawa, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 22, 1989, Ser. No. 456,167

Claims priority, application Japan, Dec. 22, 1988, 63-325444; Mar. 31, 1989, 1-83289; Apr. 6, 1989, 1-89148; Apr. 6, 1989, 1-89149; Aug. 3, 1989, 1-201970

Int. Cl.[5] D06F *23/00*

U.S. Cl. 68—19.2 **25 Claims**



1. A machine for washing, removing water from and drying laundry, where the laundry is damp after the water is removed, comprising:

an outer tub;

a water supply and drain means for supplying water to and draining water out of the outer tub;

a rotation-support member rotatably supported about a vertical axis in the outer tub;

an inner tub, having multiple pores in its periphery and being rotatably supported about a horizontal axis by the rotation-support member, for containing the laundry;

an inner-tub rotating means for rotating the inner tub;

a rotation drive means connected to the inner-tub rotating means for driving the inner-tub rotating means;

a rotation-support member rotating means detachably attached to the rotation drive means; and

a heating means for raising the temperature of air in the inner tub, said heating means comprising:

a warm-air supply passage having an opening in the periphery of the outer tub for guiding air heated by the heating means into the outer tub at least during the drying process of an inner tub;

warm-air inlets provided in the periphery of the inner tub for guiding into the inner tub warm air discharged from the opening into the outer tub; and

an exhaust-air passage provided far from the warm-air supply passage in the periphery of the outer tub for exhausting air out of the outer tub, the air having been used for drying the laundry and scattered from the inner tub into the outer tub; wherein:

the rotation-support member rotating means controls the rotation of the rotation-support member and allows the inner tub to rotate about the horizontal axis when the rotation-support member rotating means is detached from the rotation drive means;

the rotation-support member rotating means rotates the rotation-support member and the inner tub at the same speed in the same direction about the vertical axis and controls the rotation of the inner tub relative to the rotation-support member when the rotation-support member rotating means is connected to the rotation drive means;

the machine washes and rinses the laundry by rotating the inner tub about the horizontal axis when the water supply and drain means supplies water into the outer tub so that the water reaches a predetermined level (L1, L2) inside the inner tub, the inner tub is loaded with the laundry, and the rotation-support member rotating means is detached from the rotation drive means;

the machine removes water from the laundry, after washing and rinsing the laundry, in the inner tub by rotating the rotation-support member about the vertical axis when the water supply and drain means drains water from the outer tub and the rotation-support member rotating means is connected to the rotation drive means; and

the machine dries the laundry, after water is removed from the laundry, in the inner tub when the rotation-support member rotating means is disconnected from the rotation drive means, the inner tub is rotated about the horizontal axis, and the heating means raises the temperature of air in the inner tub.

5,058,402

APPARATUS FOR THE CONTINUOUS WET TREATMENT OF WOVEN FABRIC AND KNITTED FABRICS

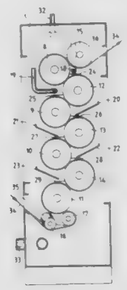
Gino D. Vecchia, Santorso, Italy, assignor to Sperotto Rimar S.p.A., Thiene, Italy

Filed Jun. 26, 1990, Ser. No. 543,374

Claims priority, application Italy, Jun. 27, 1989, 21111 A/89

Int. Cl.[5] D06B *1/04*

U.S. Cl. 68—22 R **7 Claims**



1. An apparatus for continuous wet treatment of woven fabrics and knitted fabrics comprising a parallelepiped casing provided with an entry slot and an exit slot for the fabric under treatment; a curved widening cylinder positioned in proximity to said entry slot; a series of rollers covered with a rubber layer and rotating about mutually parallel axes transverse to the fabric feed path and arranged in zig-zag formation in a vertical plane one in contact with the next, said series of rollers comprising in succession at least one idle roller, at least one presser roller and a motorized roller; a squeezing roller identical to the rollers of said series and positioned in proximity to said exit slot in contact with said motorized roller; devices for adjusting the contact pressure between said at least one presser roller and its adjacent rollers and between said squeezing roller and its adjacent roller; pairs of scraper seals positioned against the side ends of each mutually contacting roller pair of said series; two treatment liquid feed pipes in positions corresponding with two contact regions between said rollers of said series, said contact regions being different and oppositely positioned in said casing, and finally a treatment liquid discharge pipe.

5,058,403

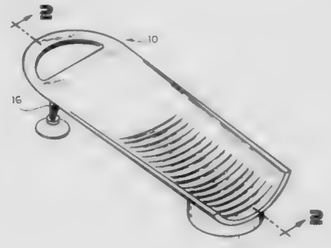
SPOT AND COLLAR SCRUBBER

Albert T. Barnes, P.O. Box 5860 Rte. #5, Pottsville, Pa. 17901

Filed Aug. 30, 1990, Ser. No. 554,562

Int. Cl.[5] D06F *3/02*

U.S. Cl. 68—229 **2 Claims**



1. A washboard attachment made of a rigid, non-rusting material for use with a top loading automatic clothes washer with a hinged lid and an upwardly disposed rotor with a hub comprising:

(a) a working superior surface and an inferior surface, a flat portion beginning at a first end and adjacent to the flat portion a tapered curved portion gradually increasing in curvature to a second or discharge end to form a sluice, the flat portion having projecting from the inferior surface;

(b) support means at an acute angle to the flat portion and of a defined length and having

(c) projecting from the inferior surface, adjacent the discharge end at the acute angle, a cylindrical sleeve for installation over the clothes washer's hub and having

(d) a multiplicity of transverse ribs formed in the superior surface in the curved portion.

5,058,404

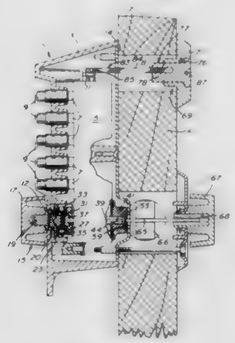
PUSH-BUTTON LOCK ARRANGEMENT

Aaron M. Fish, Hampstead, and Abraham Toledano, Laval, both of Canada, assignors to Ilco Unican Inc., Montreal, Canada

Filed Jul. 24, 1990, Ser. No. 558,601

Int. Cl.[5] E05B *37/00*

U.S. Cl. 70—315 **9 Claims**



1. A push-button lock arrangement for mounting on a door having a front side and a rear side;

said arrangement comprising:

a housing mounted on the front side of said door;

a permutation chamber mounted in said housing, said permutation chamber having an internal lock-out slide, said lock-out slide having an external end section whereby, when said end section is moved towards said permutation chamber, the combination of said permutation chamber can be reset;

a combination resetting means mounted on said rear side of said door and extending, through said door into said housing, and including cam means in said housing to engage said end section to move said end section towards said permutation chamber when said cam means is moved towards said end section and, means for moving said cam means towards said end section.

5,058,405

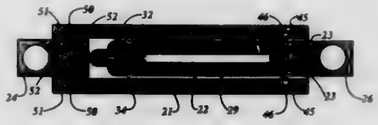
KEY CHAIN WITH STORAGE COMPARTMENT

Woodrow C. Stillwagon, Fulton, Ga., assignor to Stillwagon Applied Technology Incorporated, Columbus, Ohio

Filed Aug. 6, 1990, Ser. No. 562,638

Int. Cl.[5] A47G *29/10*

U.S. Cl. 70—456 R **21 Claims**



1. A key chain, comprising:

a body member, said body member having a first end and a second end;

key retention means connected to said body member second end for attaching keys to said body member;

a cavity within said body member, accessible from said body member first end;

a cap;

cap retention means for holding said cap at a position which seals said cavity;

a hollow vial for insertion into said body member cavity, said hollow vial including an opening at one end and a bead around said vial opening; and

said cap comprising, at least, a protrusion for insertion into said hollow vial, and a ridge around said cap protrusion which positively engages with said bead to seal said vial opening.

5,058,406

PLATE BENDING MACHINE EQUIPPED WITH A PLATE CLAMPING MANIPULATOR AND A PLATE POSITION DETECTING DEVICE

Franco Sartorio; Gianpaolo Prunotto; Francesco Sgandurra, and Salvatore Arghiracopulos, all of Turin, Italy, assignors to Amada Company, Limited, Japan

Continuation of Ser. No. 302,668, Jan. 27, 1989, abandoned. This application Mar. 6, 1990, Ser. No. 489,875

Claims priority, application Italy, Jan. 29, 1988, 67058 A/88; Jan. 29, 1988, 67059 A/88

Int. Cl.[5] B21D *43/11;* **B21J** *13/12*

U.S. Cl. 72—9 **14 Claims**

1. A press brake comprising:

a pair of dies which can act in mutual cooperation to bend a workpiece having edges;

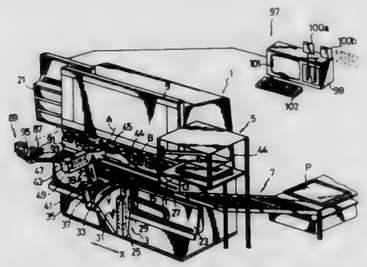
a manipulator for grasping and moving the workpiece which is to be placed in an object position with respect to the dies; and

detector means, mounted in a frame of the press brake in a specified positional relationship with respect to the dies, for detecting a plurality of points along the edges of the workpiece provided by the manipulator, thereby detecting a current position; and

means for controlling the manipulator in response to a signal from the workpiece position detector means by adjusting the workpiece edges relative to the detector means so that

the workpiece is positioned in the object position with respect to the dies;

said means for controlling including means for calculating a spacing between the current position of the workpiece and the object position of the workpiece for at least two of said



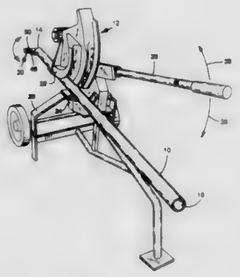
plurality of points along the edges of the workpiece and means for moving the workpiece so that each of said plurality of points moves toward each object position by a predetermined distance, the predetermined distance being determined by multiplying each of the calculated spacings by a factor which is smaller than one.

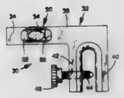
5,058,407

LEVEL FOR USE IN BENDING CONDUIT

Charles H. Parker, Portland, Oreg., assignor to Duit Level Co., Portland, Oreg.

Filed Apr. 7, 1989, Ser. No. 334,894
Int. Cl.[5] B21C *51/00*
U.S. Cl. 72—37 **12 Claims**





5. A method of bending a conduit comprising the steps of:

providing a cylindrical bobble level indicator defining an indicator axis for visually indicating a reference plane;

connecting the bubble level indicator to the conduit laterally spaced apart from a first end portion of the conduit for visually observing an indication of the reference plane from an operator's position alongside the conduit and remote from the first end portion;

oriented the bubble level so that the indicator axis extends radially of the conduit;

exposing a central portion of the level to allow viewing the bubble level from the operator's position;

moving to an operator's position alongside the conduit and remote from the first end portion;

while observing the bubble level indicator along the first end portion from the operator's position, rotating the conduit about its central axis to a rotational position such that the bubble level indicator indicates the reference plane;

bending the conduit while maintaining said rotational positioning;

repositioning the conduit for a second desired bend; and

repeating said rotating and bending steps from the operator's position to form the second bend so that the entire conduit remains substantially within a second plane perpendicular to the reference plane.

5,058,408

METHOD FOR PARTIALLY ANNEALING THE SIDEWALL OF A CONTAINER

Charles J. Leftault, Jr., Murrysville; Ronald W. Gunkel, Lower Burrell; Robert A. Cargnel, Export, and E. Scott Douds, Plum Borough, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 472,025, Jan. 30, 1990, abandoned. This application Mar. 27, 1991, Ser. No. 677,610
Int. Cl.[5] B21D *26/14*
U.S. Cl. 72—56 **12 Claims**

1. A method of bulging at least a portion of a sidewall of a drawn aluminum container body having a bottom end wall, an open top, and generally cylindrical sidewalls, the sidewalls having a substantially uniform wall thickness and having a yield strength greater than about 30 ksi, comprising the steps of

thermally treating a circumferential portion of the sidewall of the container that is to be bulged uniformly about the circumferential portion, at a temperature of at least 450° F. for a sufficient time to reduce the yield strength of the portion of the sidewall by at least 20% without substantially adversely affecting the yield strength of a top wall and a bottom circumferential portion of the container; and

electromagnetically bulging at least a portion of the thermally treated sidewall of the container outwardly in a single operation at a circumferential strain of greater than about 5% by disposing a coil of electrically conductive material inside the container body and energizing the coil to create sufficient electromagnetic force to outwardly bulge the container without altering the diameter of the top circumferential portion of the container body.

5,058,409

APPARATUS FOR MANUFACTURING WRINKLED PIPES

Katsushi Washizu, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Limited, Japan

Filed Oct. 5, 1990, Ser. No. 593,804
Claims priority, application Japan, Oct. 13, 1989, 1-267105
Int. Cl.[5] B21D *15/06*
U.S. Cl. 72—59 **1 Claim**

1. A wrinkled pipe manufacturing apparatus in which an elastic member is inserted into a pipe to be worked and is pushed from at least one side so that it may be radially bulged to form an annular bulge on the circumference of said pipe and in which a punch and a chuck disposed around the circumference of said pipe are axially moved relative to each other to form an annular wrinkle from said annular bulge, the annular

wrinkle defining an external diameter and an axial length, wherein the improvement comprising:

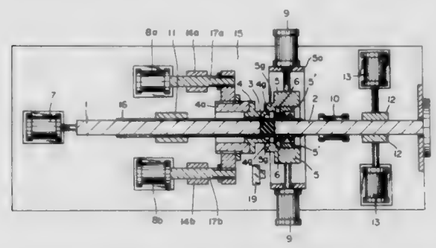
first and second mandrels held over a bed to move freely in axial directions along an upper face of said bed, said mandrels having outer circumferences dimensioned to be inserted into the pipe for supporting the pipe;

first drive means for driving said mandrels in said axial directions;

an elastic member arranged in said pipe and between opposed leading end faces of said first and second mandrels;

second drive means for moving at least one of the punch and the chuck toward one another; and

a chuck guide sleeve and a punch guide sleeve projecting axially toward one another from the chuck and the punch



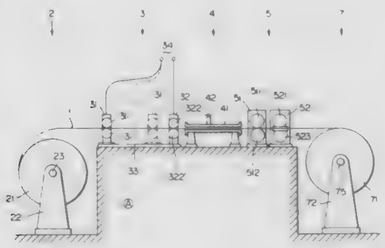
respectively, the punch guide sleeve defining an internal diameter substantially equal to the external diameter of the annular wrinkle to be formed and defining an axial length substantially equal to the axial length of the annular wrinkle to be formed for controlling said external diameter and axial length of each wrinkle to be formed, the punch guide sleeve further having an external surface defining an external diameter, the chuck guide sleeve having an internal surface defining an internal diameter substantially equal to the external diameter of the punch guide sleeve, the internal surface of the chuck guide sleeve and the external surface of the punch guide sleeve being in abutting sliding relationship with one another for accurately guiding said chuck and said punch in said axial directions.

5,058,410

METHOD AND APPARATUS FO PRODUCING THIN WIRE, ROD, TUBE, AND PROFILES, FROM STEELS AND ALLOYS WITH LOW DEFORMABILITY, PARTICULARLY HARDENABLE STEELS

Hans Losch, Kapfenberg; Johann Eilmer, and Franz Rischka, both of Bruck an der Mur, all of Austria, assignors to Boehler Gesellschaft M.B.H., Vienna, Austria

Filed Mar. 14, 1989, Ser. No. 323,395
Int. Cl.[5] B21B *45/02, 3/02*
U.S. Cl. 72—201 **1 Claim**



1. A method of forming steels, metals, and alloys with low deformability and/or high resistance to deformation at room temperature from workpiece stock materials of particularly hardenable steels having a thickness less than 10 mm comprising:

heating the stock material to a temperature within the range of 400° C. to AC-1 temperature, said heating comprising,

continuous rapid heating by passing alternating or direct current through a segment of said stock material and varying the length of said heated segment of said stock material,

regulating the power required to heat the material, as a function of the cross-sectional area, the average specific heat and the density of the material, to be proportional to the feeding speed of the material and inversely proportional to the length of said heated segment,

carrying out the heating of the stock material prior to the start of the forming operation over a heating segment which is short, and

feeding said stock material through a temperature equalization operation for a time period of at least 0.5 seconds;

feeding said heated stock material at a speed of at least 0.2 m/sec. to a multi-roll rolling mill;

rolling said stock material in said rolling mill in a plurality of stages wherein the reduction in cross-section in each stage comprises at least 10% and the reduction in height comprises at least 20%, and the overall reduction in cross-section comprises at least 40%;

cooling in cooling stages at least one of the surfaces of the rolls and the rolled stock material after each roll forming stage; and

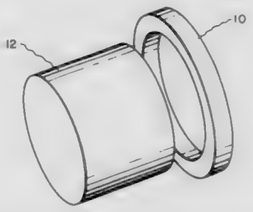
regulating said cooling in each cooling stage so that the energy removed substantially corresponds to the deformation energy converted to heat in the preceding roll forming stage.

5,058,411

METHOD FOR SHAPING FILAMENT REINFORCED ANNULAR OBJECTS

Paul A. Siemers, and Stephen F. Rutkowski, both of New York, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 15, 1990, Ser. No. 493,651
Int. Cl.[5] B21D *37/16*
U.S. Cl. 72—342.4 **1 Claim**



1. A method for rendering the internal shape of a filament reinforced metal matrix ring structure non-round which comprises,

providing a ceramic filament reinforced metal matrix ring structure which is essentially round,

preparing a cylinder of a metal having a greater thermal coefficient of expansion than that of the ring in a selected non-round configuration,

said cylinder having a diameter slightly smaller than that of the ring interior,

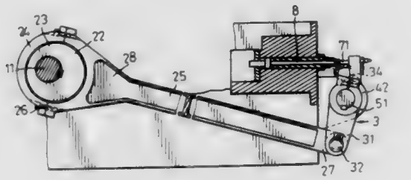
forcing the non-round cylinder into the ring,

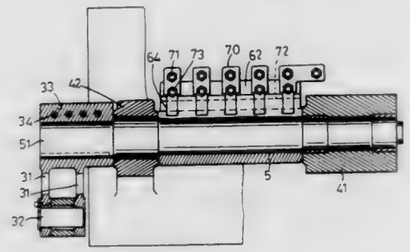
heating the ring and contained cylinder to a temperature which makes its diameter larger than the internal diameter of the ring,

cooling the ring and cylinder, and

removing the cylinder from the ring.

5,058,412
DRIVING APPARATUS FOR ACTIVATING A WORKPIECE IMPELLING MECHANISM IN A NUT FORMER
Sheng-Yau Wang, Tainan City, Taiwan, assignor to Chun Zu Machinery Industry Co., Ltd., Kaohsiung Hsien, Taiwan
Filed Apr. 24, 1990, Ser. No. 513,754
Int. Cl.[5] B21D *45/02, 45/04*
U.S. Cl. 72—345 **2 Claims**

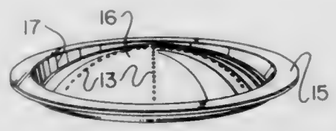




1. A nut former comprising:
(a) a driving shaft journaled in the nut former;
(b) a hollow cylinder having an axially extending bore formed eccentrically therethrough and sleeved rigidly on the driving shaft such that the driving shaft extends through the bore of the cylinder.
(c) a link, one end of which is removably and rotatably sleeved on the cylinder;
(d) a rotating shaft journaled in the nut former;
(e) a crank having a first crank arm connected pivotally to the other end of the link and a second crank arm sleeved rigidly on the rotating shaft;
(f) a coupling body sleeved rigidly on the rotating shaft;
(g) an impelling rod secured to the coupling body;
(h) a die fixed on the nut former;
(i) a push rod connected to the impelling rod and having an end extending into the die so as to impel a workpiece out of the die along a straight path; whereby, when the driving shaft rotates, swinging movement of the crank is transferred to the impelling rod through the rotating shaft and the coupling body so as to reciprocate the push rod.

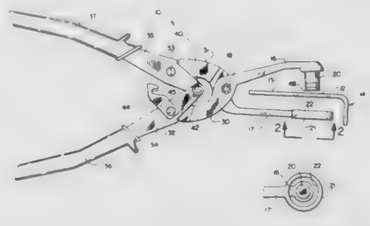
5,058,413
RUPTURE DISC
Robert Muddiman, 487 Speers Road, Oakville, Ontario, Canada
Filed Nov. 7, 1989, Ser. No. 432,860
Int. Cl.[5] F22B *1/28*
U.S. Cl. 72—379.2 **1 Claim**

1. In a method of forming a rupture disc, the improvement comprising the steps of:
deforming a sheet of material to provide a pre-bulged rupture disc having a central dome shaped member;
forming a series of individually aligned holes extending interiorly from the edge of said disc across said dome shaped member by subjecting said disc to a series of laser cutting operations to form said individual holes wherein said laser cutting operations comprise rotating a laser, generating a laser beam to burn a hole in said rupture disc, ceasing generation of the laser beam, rotating the laser, generating a further laser beam at a location spaced apart



from the hole previously formed, and repeating such sequence until a desired pattern of holes have been formed in said rupture disc.

5,058,414
ELECTRICAL KNOCK-OUT METHOD AND TOOL
Fred M. Hayes, 106 Nedra Ave., Steubenville, Ohio 43952
Filed Sep. 25, 1990, Ser. No. 588,061
Int. Cl.[5] B21D *53/00, 5/00*
U.S. Cl. 72—379.2 **18 Claims**

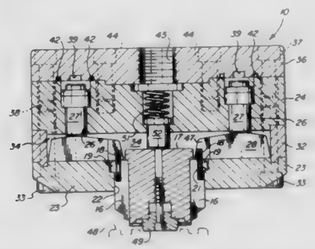


1. A method of removing electrical knock-outs from electrical box walls comprising the steps of placing a ring on one side of the electrical box in surrounding relationship to the electrical knock-out and a punch on the other side of the box wall in opposition to the knock-out, driving the punch and ring toward each other by single-hand gripping action to engage the box wall engaging the knock-out and deflecting the knock-out through the ring whereby the knock-out may be grasped by a pair of pliers.

12. A tool for removing or straightening electrical box wall knock-outs within electrical box walls comprising a pair of elongated pivotal jaws, one terminating in a continuous ring having an internal diameter sized to engage an electrical box wall and surround the electrical box wall knock-out and the other in a blunt punch of substantially lesser diameter than the ring directed toward the center of the ring, said punch and ring being positioned on said jaws at a distance from the pivot so that the punch or ring can be positioned within the electrical box walls in operative orientation with the electrical box knock-out, handle means operable by a single hand to open and close said jaws wherein said jaws may, when opened, be positioned on opposite sides of the wall, aligned with the knock-out, and driven toward each other to deflect the knock-out through the ring.

5,058,415
ROLLING BEARING SEAL RING CRIMP TOOLING
John G. Blase, 4 Pond View Rd., Monroe, Conn. 06468, and Robert Blase, 1009 Round Hill Rd., Fairfield, Conn. 06430
Filed Jun. 25, 1990, Ser. No. 542,713
Int. Cl.[5] B21J *7/16*
U.S. Cl. 72—400 **8 Claims**

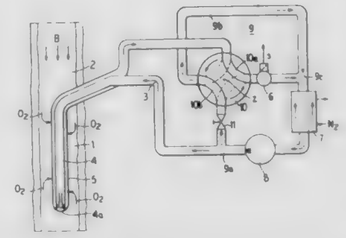
1. A stamping press tooling assembly for delivering parallel forces to a plurality of points angularly spaced around a ring-shaped workpiece, comprising
a housing removably mountable on the ram of a stamping press and having a bottom plate with a central aperture therein,
means forming a hollow lever chamber in said housing, overlying and communicating with said central bottom plate aperture,
said aperture having an upper portion of larger inside diameter and a lower portion of smaller inside diameter, with means forming a laterally extending shelf joining the aperture portions,
a shouldered hub centered inside and spaced away from the inside diameter of said aperture,
a plurality of substantially identical shouldered sector rams arrayed peripherally between said hub and said bottom plate, extending through and beyond the aperture, each with a radially extending shoulder overlying said shelf,
said hub being provided with a radially extending shoulder flange overlying the inner upper portion of all of said sector rams,



a corresponding plurality of radially extending levers angularly arrayed in the lever chamber, each having an inner end riding on the outer upper portion of one sector ram and an outer end resting on said bottom plate,
means forming a corresponding plurality of hydraulic pressure cylinders in said housing each having an axis intersecting a central upper portion of one said lever,
a plurality of pistons each slidably mounted in one said cylinder and having a lower end abutting said lever,
said sector rams and said pistons being reciprocable relative to said housing between upper and lower positions,
and hydraulic pressure conduit means formed in said housing delivering pressurized hydraulic fluid to said cylinders above said pistons upon command, and disconnecting the same,
whereby a ring-shaped workpiece positioned beneath said hub receives independent and substantially equal force at the same plurality of angularly spaced points, providing custom stamping deformation of the workpiece in a uniform manner.

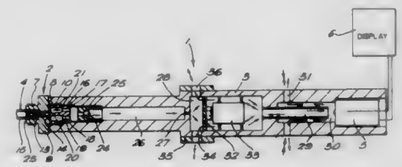
5,058,416
APPARATUS FOR THE DETERMINATION OF THE PARTIAL PRESSURE OF GASES DISSOLVED IN A FLUID
Harald Engelhardt; Guenter Rau, both of Aachen, and Helmut Reul, Dueren, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 64,014, Jun. 19, 1987, abandoned. This application Jan. 5, 1989, Ser. No. 293,620
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1986, 3620873
The portion of the term of this patent subsequent to Feb. 22, 2006, has been disclaimed.
Int. Cl.[5] A61B *5/00*
U.S. Cl. 73—19.01 **18 Claims**

1. An apparatus for determining the partial pressure of a gas dissolved in a fluid which comprises:
a catheter comprising a double bored coaxial catheter having an outer tube and a spaced coaxial inner tube, said outer tube being permeable to said gas,
fluid circulating means for delivering a continuous flow of a carrier fluid into the space between said inner tube and said outer tube,
a measuring means downstream of said catheter for determining the partial pressure of said gas in said carrier fluid, and



a mass transfer unit receiving the gas after said measuring means and arranged to bring the partial pressure of the gas in said carrier fluid to a predetermined value.

5,058,418
REVERSIBLE ADAPTOR AND GAS ANALYZER FOR TIRES
John M. Knotts, Norton, England, assignor to Newbow Engineering Industries Limited, Worcestershire, England
Division of Ser. No. 353,470, May 18, 1989, Pat. No. 4,970,904. This application Sep. 6, 1990, Ser. No. 578,245
Claims priority, application United Kingdom, May 18, 1988, 8811859
Int. Cl.[5] G01N *31/00*
U.S. Cl. 73—31.01 **10 Claims**

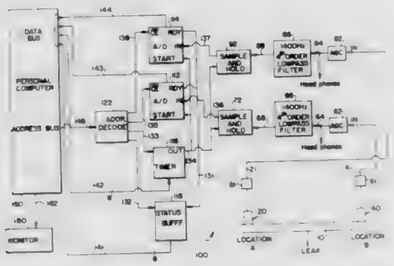


1. A device for testing the inflation gas of a pneumatic tyre, said device comprising connector means for operative engagement with a tyre valve to open the valve and release inflation gas into the device, sensor means, coupled to said connector means, for detecting the oxygen content of the inflation gas, and display means responsive to an output signal generated by said sensor means to provide an indication of the oxygen content.

5,058,419
METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF A SOUND SOURCE
Kari N. Nordstrom, and Ronald C. Rothman, both of Duluth, Minn., assignors to Earl H. Ruble and Earl Ruble and Associates, Inc., both of Duluth, Minn.
Filed Apr. 10, 1990, Ser. No. 506,786
Int. Cl.[5] G01M *3/24*
U.S. Cl. 73—40.50 A **37 Claims**

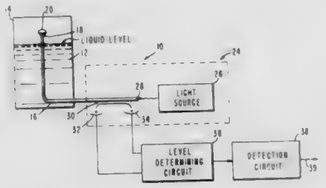
1. An apparatus for determining the location of a sound source, said apparatus comprising:
a first detector, located at a first location remote from said sound source, converting sound from said sound source into a first signal;
a second detector, located at a second location remote from

said sound source, converting sound from said sound source into a second signal;
a first transform means for calculating first phase angles of a plurality of frequency components of said first signal;
a second transform means for calculating second phase angles of a plurality of frequency components of said second signal;
a phase difference calculating means for calculating phase differences between said first phase angles and said second phase angles at each of a plurality of frequencies and for converting said phase differences into a plurality of time lags;



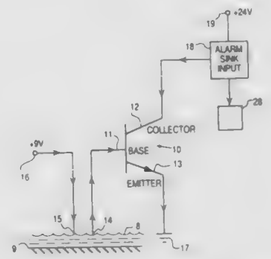
a multiple means for adding to each time lag of said plurality of time lags integer multiples of one of a plurality of periods to form a plurality of potential time delays at each of said plurality of frequencies;
selection means for determining which time delay occurs most frequently among said plurality of potential time delays at said plurality of frequencies; and
location calculating means for calculating said location of said sound source utilizing said most frequency occurring time delay.

5,058,420
FIBER OPTIC LIQUID LEAK DETECTOR
Victor Vali, Laguna Hills; David B. Chang, Tustin, and Patrick C. Brownrigg, Long Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Apr. 20, 1990, Ser. No. 511,618
Int. Cl.[5] G01M *3/38*; G01F *23/28*; G02B *27/12*
U.S. Cl. 73—49.2 **3 Claims**



1. A liquid leak detector for measuring the rate of change of the volume of a first liquid within a container, comprising:
an optical fiber having a first end and a second end, said fiber being disposed within said container and at least partially immersed in said liquid wherein said fiber includes a fiber core circumscribed by a fiber cladding selected such that evanescent wave loss occurs as a result of immersion of said cladding in said liquid;
a fiber end reflector attached to said first end of said optical fiber;
light source means for injecting light into said second end of said optical fiber;
beamsplitter means for coupling off a first portion of said injected light and for coupling off a second portion of the light which has traversed said fiber and been reflected by said reflector; and
comparator means for comparing the intensity of said first portion of light with the rate of change of the intensity of said second portion of light and for determining the rate of change of the volume of said first liquid in response thereto.

5,058,421
WATER LEAK AND WATER LEVEL DETECTOR
David V. Alexander, Elk Groove; Stephen W. Toy, Alta, and Marvin March, Lincoln, all of Calif., assignors to NEC Electronics Inc., Mountain View, Calif.
Filed Jun. 8, 1990, Ser. No. 535,072
Int. Cl.[5] G01M *3/40*
U.S. Cl. 73—49.2 **4 Claims**



1. A combined water leak and water level detector comprising:
an electrically insulating housing;
a transistor having a base, a collector and a ground-connected emitter, positioned in said housing;
a pair of base contacts connectible in series to said base, end portions of each of said base contacts being in spaced juxtaposition to each other;
a power source connected to one of said base contacts;
access means in said housing for permitting a predetermined level of conductive liquid to bridge across said end portions to form a resistive contact between said base contact end portions and a resultant forward bias of said transistor;
means connected to said collector and being actuatable by said resistive contact for indicating said liquid level; and
in which said base contacts are adjustable in length such that they can detect various depth levels of a liquid leak.

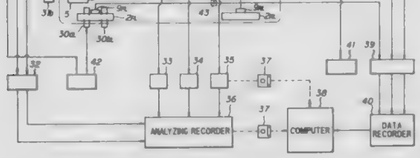
5,058,422
ELECTRONIC BALANCE
Kunio Shimauchi, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan
Filed Jul. 12, 1990, Ser. No. 551,311
Claims priority, application Japan, Jul. 24, 1989, 1-190781
Int. Cl.[5] G01G *7/00*
U.S. Cl. 73—1 B **6 Claims**

1. A method of calibrating the sensitivity and linearity of the weighing means of an electronic balance, comprising the steps of:
automatically conducting a sensitivity calibration when the ambient temperature has changed a first predetermined amount since the previous sensitivity calibration was conducted or when a predetermined period of time has passed since the previous sensitivity calibration was conducted;
determining whether said ambient temperature has changed at least a second predetermined amount since the previous linearity calibration was conducted, said second predetermined amount being greater than said first predetermined amount; and



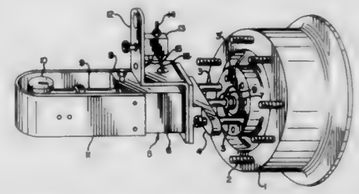
conducting a linearity calibration only when said ambient temperature has changed by at least said second predetermined amount.

5,058,423
METHOD OF CHECKING THE FUNCTIONING OF A DRIVING WHEEL SLIP CONTROL SYSTEM
Masaaki Ozaki, Sayama, and Yoh Kojima, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 10, 1990, Ser. No. 551,240
Claims priority, application Japan, Jul. 11, 1989, 1-178393
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117 **8 Claims**



1. A method of checking the functioning of a driving wheel slip control system which is installed in a vehicle having driving wheels and trailing wheels, said driving wheel slip control system having a prime mover for driving said driving wheels, at least one driving wheel speed sensor for detecting the rotational speed of at least one of said driving wheels and generating at least one signal indicative of the rotational speed of said at least one driving wheel, at least one trailing wheel speed sensor for detecting the rotational speed of at least one of said trailing wheels and generating at least one signal indicative of the rotational speed of said at least one trailing wheel, and control means responsive to said signals indicative of the rotational speeds of said at least one driving wheel and said at least one trailing wheel for outputting a control signal for controlling the output of said prime mover;
the method comprising the steps of:
(1) placing said driving wheels on support means for rotatably supporting said driving wheels by said support means;
(2) causing said prime mover to rotatively drive said driving wheels;
(3) supplying at least one false signal indicative of the rotational speed of said at least one trailing wheel to said control means in place of said at least one signal indicative of the rotational speed of said at least one trailing wheel:
(4) taking out predetermined monitoring signals including at least said control signal outputted from said control means, from said driving wheel slip control system; and
(5) determining whether said predetermined monitoring signals show values falling within respective predetermined allowable ranges.

5,058,424
WHEEL END PLAY SETTING DEVICE
Douglas J. O'Hara, Chatham, Canada, assignor to Navistar International Transportation Corp., Chicago, Ill.
Filed Oct. 25, 1990, Ser. No. 603,578
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—118.1 **11 Claims**

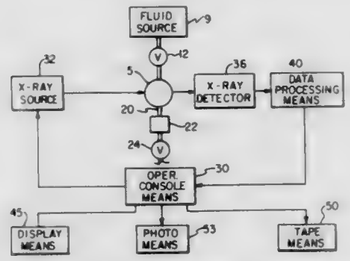


8. In combination with a vehicle wheel mounted by a pair of bearings on a vehicle axle, said axle including a wheel end play adjusting means, a wheel end play take-up and setting device comprising:
a base plate mounted on said wheel;
a pneumatic actuator mounted on said base plate and having a movable rod disposed in an engaging position with said axle, said actuator being disposed upon actuation to continuously and automatically maintain the position of said wheel at the outboardmost position on said axle permitted by said end play adjusting means; and
an indicator means for measuring relative position of said wheel on said axle, whereupon the measurement of said wheel in a no-end-play position and in an adjusted-end-play position can be read on said indicator and differenced to indicate the actual end play provided in said adjusted-end-play position.

5,058,425
EARTHEN CORE ANALYZING MEANS AND METHOD FOR DETERMINING THE METHANE STORAGE CAPACITY OF THE CORE
Lorne A. Davis, Jr., Houston; Gregory P. Pepin, Sugar Land, and Robert M. Moss, Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Jan. 3, 1991, Ser. No. 637,025
Int. Cl.[5] E21B *49/02*
U.S. Cl. 73—153 **16 Claims**

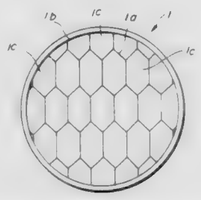
1. A system for analyzing a core from an earthen methane reservoir, comprising:
test cell means for containing the core of earthen material,
tomographic means for testing the core at different times and providing signals corresponding thereto,

means for providing a fluid to the core as part of the testing of the core, and



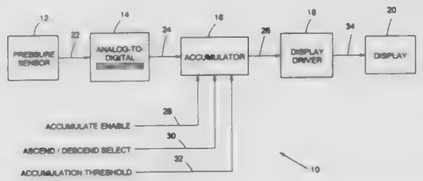
storage capacity means for utilizing the signals from the tomographic means to determine a storage capacity of the core for methane.

5,058,426
FLOW RATE SENSOR
Hiroshi Kobayashi, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan
Filed May 15, 1989, Ser. No. 352,317
Claims priority, application Japan, May 16, 1988, 63-119041
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 **8 Claims**



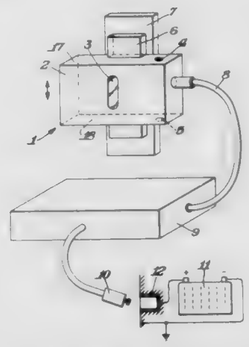
1. An apparatus for measuring the flow rate of a medium within a passage, comprising:
- a temperature sensor for detecting a temperature of the medium flowing within the passage to provide a signal indicative thereof;
- first means including a single flow rate element made of an electrical resistance film which is arranged so as to allow the medium to flow therethrough for radiating heat energy to the medium uniformly over the entire stream area of a diameter section of the passage so as to maintain a difference in temperature between the medium detected by said temperature sensor and the heat energy radiated by the resistance film at a constant level, said flow rate element being formed in a honeycomb, the edges of which are disposed transversely to the flow direction within said passage;
- second means for determining the heat quantity transferred from said first means to the medium to provide a signal indicative thereof; and
- third means for determining the flow rate of the medium flowing within the passage based on the signal output from said second means.

5,058,427
ACCUMULATING ALTIMETER WITH ASCENT/DESCENT ACCUMULATION THRESHOLDS
Jobst Brandt, Palo Alto, Calif., assignor to Avocet, Inc., Menlo Park, Calif.
Filed Sep. 28, 1990, Ser. No. 590,472
Int. Cl.[5] G01C *21/20*
U.S. Cl. 73—384 **20 Claims**



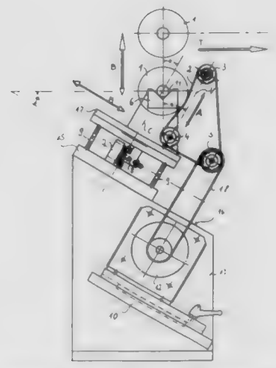
9. An accumulating altimeter for selectively accumulating altitude changes, comprising:
- pressure sensor means for sensing atmospheric pressure and providing a pressure signal proportional thereto;
- computer means for receiving said pressure signal and computing altitude based thereon, and further for selectively accumulating and providing an accumulated altitude signal representing accumulated altitude changes which reach a first accumulation threshold in a first direction from a reference altitude, said altitude changes being based upon said computed altitude, wherein altitude changes in a second direction which do not reach a second accumulation threshold offset subsequent altitude changes in said first direction, and further wherein altitude changes in said second direction which do reach said second accumulation threshold cause said reference altitude to change in accordance therewith; and
- display means for receiving said accumulated altitude signal and for displaying said accumulated altitude changes.

5,058,428
PROCESS FOR THE DETERMINATION OF UNBALANCE
Volker Guyot, Buttelborn, Fed. Rep. of Germany, assignor to Schenck Auto-Service-Gerate GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 187,529, Nov. 30, 1987, abandoned.
This application Nov. 6, 1989, Ser. No. 432,058
Int. Cl.[5] G01M *1/28*
U.S. Cl. 73—457 **3 Claims**



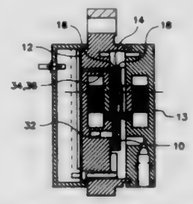
1. A method of determining the out-of-balance effects of the wheels of a motor vehicle under test by means of out-of-balance measuring devices, oscillation converters and reference-mark scanning devices, the method comprising the steps of providing an out-of-balance measuring device, an oscillation converter and a reference-mark scanning device for each driven wheel of the vehicle under test, operating the out-of-balance measuring devices, oscillation converters and reference-mark sensors with a d.c. voltage supply and utilizing the battery of the vehicle under test as the sole source of that supply, rotating the driven wheels of the vehicle under test by accelerating the vehicle engine until a constant wheel speed is obtained within a given range, and determining that out-of-balance values of the driven wheels at the constant wheel speed.

5,058,429
APPARATUS FOR MEASURING AN UNBALANCE OF A ROTARY MEMBER
Günter Fietzke, Forest, and Richard Müller, Lynchburg, both of Va., assignors to Gebruder Hofmann GmbH & Co. KG Maschinenfabrik, Pfungstadt, Fed. Rep. of Germany
Filed Feb. 13, 1990, Ser. No. 479,244
Int. Cl.[5] G01M *1/02*
U.S. Cl. 73—475 **13 Claims**



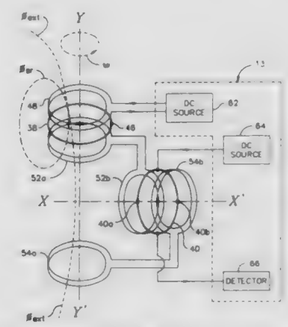
1. An apparatus for measuring an unbalance of a rotary member, comprising:
- a rotary member mounting means for rotatably mounting the rotary member during a measurement operation, the mounting means being adapted to perform oscillating movements in a measurement direction;
- a transducer means for outputting a signal indicative of oscillating forces in said measurement direction produced by said rotary member upon rotation of the rotary member during said measurement operation; and
- a belt drive means for driving the rotary member in rotation during the measurement operation, the belt drive means having a portion which moves substantially in a drive direction, the drive direction being substantially normal to said measurement direction, the rotary member bearing against the drive portion in a generally tangential relationship with the rotary member during the measurement operation,
- wherein said measurement direction is inclined relative to the horizontal direction at an acute angle and wherein said drive direction is offset from the vertical direction so that said rotary member can be moved into and out of said mounting means in substantially the vertical direction unimpeded by the belt drive means.

5,058,430
SENSOR CAPSULE MOUNTING
Vernon H. Aske, Minneonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 29, 1989, Ser. No. 458,853
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—497 **5 Claims**



1. A mounting means for a sensor capsule of a precision integrated silicon accelerometer comprising:
- a sensor capsule located in said accelerometer;
- an alignment pin for mounting said capsule and providing large torsional stiffness so that a natural frequency of said capsule about a major axis of said alignment is greater than 2000 Hertz; and
- two flex pins for mounting said capsule and providing stiffness in a vertical plane while allowing flexibility in two horizontal directions.

5,058,431
SUPERCONDUCTING JOSEPHSON JUNCTION GYROSCOPE APPARATUS
Francis A. Karwacki, Lansdale, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 23, 1990, Ser. No. 527,963
Int. Cl.[5] G01P *3/44*
U.S. Cl. 73—505 **15 Claims**



1. Gyroscope apparatus suitable for use in navigation comprising, in combination:
- a chamber mounted on a platform;
- a superconductive toroid disposed in said chamber and having a Josephson junction radially interposed therein;
- a coolant communicating with said chamber for maintaining said toroid below the superconducting transition temperature thereof;
- starting means disposed in proximity to said toroid for initiating a persistent current therein;
- first detecting means disposed in close proximity to said toroid for detecting the ambient magnetic field and the magnetic field generated by the persistent current in said toroid and producing a signal indicative of the sum of said fields;

second detecting means disposed in a region remote from said toroid for detecting the ambient magnetic field and producing a signal indicative of said ambient magnetic field; and

subtracting means connected to said first and second detecting means for producing an output signal indicative of the rate of rotation of the platform about the symmetry axis of said toroid.

5,058,432

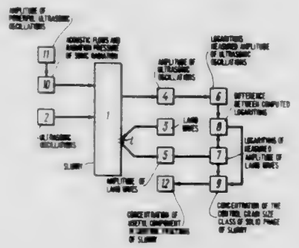
METHOD AND APPARATUS FOR MEASURING PARAMETERS OF SOLID PHASE OF SLURRIES

Vladimir S. Morkun, prospekt Karla Marxa, 43, kv. 6; Valentin P. Khorolsky, ulitsa Pushkina, II, kv. 32, both of Krivoi Rog; Vladimir S. Protsuto, ulitsa Nalichnaya, 36, kv. 90, Leningrad, and Viktor N. Potapov, ulitsa Bljukhera, 5, kv. 57, Krivoi Rog, all of U.S.S.R.

Continuation of Ser. No. 130,535, Sep. 23, 1987, abandoned. This application Mar. 16, 1989, Ser. No. 324,173

Int. Cl.[5] G01N *9/24*

U.S. Cl. 73—599 **23 Claims**



1. A method for measuring parameters of solid phase slurries, comprising:

forming ultrasonic oscillation pulses;

passing the ultrasonic oscillation pulses through a fluid under study containing the slurry, said fluid and slurry being contained in a vessel;

measuring a first amplitude of the pulses of the ultrasonic oscillations that pass through the fluid;

using the value of the amplitude to assess the concentration of the solid phase of the fluid;

forming Lamb waves;

passing the Lamb waves along a wall of the vessel containing the fluid;

measuring a second amplitude of the Lamb waves that pass through a predetermined distance along the wall of the vessel containing the fluid, the value of this amplitude characterizing the concentration of the solid phase of the slurries;

computing the difference between first and second logarithms of the first and second amplitudes of the ultrasonic oscillations that pass through the fluid and of the Lamb waves that pass through a predetermined distance along the wall of the vessel containing the fluid; and computing the ratio of said difference to said first logarithm which corresponds to the concentration of a critical particle size fraction of the solid phase of the slurries.

5,058,433

WORKPIECE INSPECTION

David Wilson, Stonehouse, and Peter G. Lloyd, Coalpit Heath, both of United Kingdom, assignors to Renishaw, plc, United Kingdom

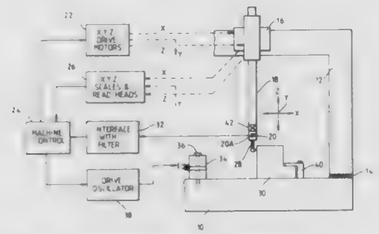
PCT No. PCT/GB88/01133, § 371 Date Aug. 7, 1989, § 102(e) Date Aug. 7, 1989, PCT Pub. No. WO89/05959, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 19, 1988, Ser. No. 382,627

Claims priority, application United Kingdom, Dec. 18, 1987, 8729632

Int. Cl.[5] G01B *15/04*

U.S. Cl. 73—651 **20 Claims**



1. Position-determining apparatus comprising:

a probe;

a support for a workpiece;

means for providing relative movement between the probe and the workpiece support;

means for determining a position of the probe relative to the workpiece support;

vibration-sensitive means associated with the probe for determining contact between the prove and a workpiece on the workpiece support;

means for vibrating the workpiece; whereby upon contact between the probe and the workpiece, vibrations are transmitted from the workpiece to the probe for detection by the vibration-sensitive means; and

decoupling means in a path between the workpiece support and the vibration-sensitive means, for preventing transmission of vibrations from the vibrating means to the vibration-sensitive means along said path, said decoupling means comprising a sound-insulating material.

5,058,434

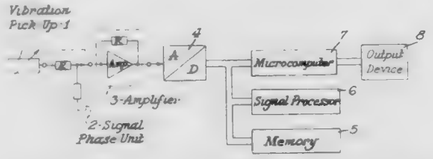
PROCESS FOR EARLY DETECTION OF DAMAGE TO MACHINE PARTS

Jorg Zaschel, Reuflingen, Fed. Rep. of Germany, assignor to Carl Schenck AG, Fed. Rep. of Germany

Filed Feb. 27, 1990, Ser. No. 485,586

Int. Cl.[5] G01N *29/04*

U.S. Cl. 73—659 **9 Claims**



1. A process for early detection of damage to a machine part comprising the steps of detecting vibrations of the machine part by means of a vibration pickup which picks up vibrations of the machine part and transforms them into corresponding picked up signals, breaking down the picked up signals into periodically determined signal components, and periodically recurring components having stochastic amplitudes, examining the signal components for determining the parameters for stress of the machine part as a function of frequency, and using the parameters for stress of the machine part for determining type of damage and/or comparing the parameters for stress of the machine part with characteristic values for permissible stress of the machine part for purposes of determining extent of damage of the machine part.

5,058,435

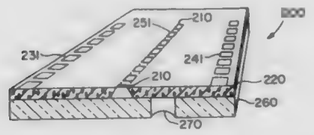
SINGLE DIAPHRAGM TRANSDUCER WITH MULTIPLE SENSING ELEMENTS

Stephen C. Terry, and John H. Jerman, both of Palo Alto, Calif., assignors to IC Sensors, Inc., Milpitas, Calif.

Filed Jun. 22, 1989, Ser. No. 369,899

Int. Cl.[5] G01L *9/06*

U.S. Cl. 73—727 **7 Claims**



1. A transducer, comprising:

at least one rectangular frame having bonding pads disposed thereon for receiving a plurality of conductors and the like;

at least one rectangular diaphragm having an aspect ratio greater than or equal to 5, formed from said frame and disposed along the major axis of said frame and having a thickness substantially less than that of said frame;

a plurality of pressure sensing elements each including first, second, third, and fourth piezoresistors, said sensing elements being disposed in said diaphragm so that each said sensing element is spaced at least one diaphragm width apart from every other of said sensing elements so as to achieve localized pressure measurement by said sensing elements;

said first, second, third, and fourth piezoresistors being disposed in said diaphragm such that said first piezoresistor is proximate and parallel to one long edge of said diaphragm, said second piezoresistor as proximate and parallel to the other long edge of said diaphragm, said third piezoresistor is proximate and parallel to the major axis of said diaphragm, and said fourth piezoresistor is proximate and parallel to said third piezoresistor, and said piezoresistors are connected in a Wheatstone bridge configuration;

said first, second, third, and fourth piezoresistors being coupled in a balanced Wheatstone bridge configuration having one of said piezoresistors in each leg of said bridge; and

a base for supporting said frame.

5,058,436

STRAIN-CONCENTRATING, MEMBRANE-TYPE TRANSDUCER

Gérard Bellec, St-Medard-en-Jalles, and René Goutti, Le Taillan Medoc, both of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Jun. 20, 1990, Ser. No. 541,277

Claims priority, application France, Jun. 21, 1989, 89 08292

Int. Cl.[5] G01L *7/08, 9/06*

U.S. Cl. 73—727 **3 Claims**

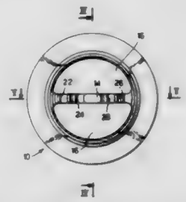
1. A transducer comprising:

a membrane which is deformable under the effect of a magnitude to be measured;

a beam detecting stresses transmitted by said membrane, said beam and said membrane being formed as a unitary element in which a part forming said beam has a thickness substantially greater than a part forming said membrane and extends between two oppositely lying peripheral zones of said membrane;

a first pair and a second pair of strain gauges producing signals indicative of strains suffered by said beam, said first pair and said second pair of strain gauges being affixed onto one face of said beam at locations of strain concentration zones created at bottoms of a plurality of V-shaped grooves formed in said beam opposite said one face; and

a first strain gauge and a second strain gauge comprising



each of said first pair and said second pair of strain gauges, said first strain gauge underlying tensile forces and said second strain gauge underlying compressive forces, said first strain gauge and said second strain gauge each being located at an apex of a respective one of said plurality of V-shaped grooves and said plurality of V-shaped grooves being located in pairs forming substantially W-shaped depressed portions in said beam,

wherein each of said first pair and said second pair of strain gauges corresponds with a respective one of said substantially W-shaped depressed portions.

5,058,437

DETERMINING THE QUANTITY YIELD OF A COMPRESSIBLE FLUID FLOWING THROUGH A PRESSURE REDUCING VALVE

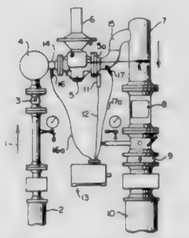
Claude Chaumont, Villetaneuse; Denis W. Waroux, Saint Martin du Tertre; Paul Bonneric, Aubervilliers, and Jannin Bernard, Tournan en Brie, all of France, assignors to Gaz de France, Paris, France

Filed Sep. 22, 1989, Ser. No. 411,139

Claims priority, application France, Sep. 23, 1988, 88 12490

Int. Cl.[5] G01F *1/66*

U.S. Cl. 73—861.21 **8 Claims**



1. A device for determining the flow of a compressible fluid through a conduit, said conduit being provided with a pressure reducing valve, said valve emitting vibrations when said fluid circulates therethrough, said device comprising:

vibration sensor means for sensing the vibrations emitted by said valve;

piezoelectric transducer means for transforming said sensed vibrations into an electrical signal;

pressure sensor means connected to said conduit for sensing the fluid pressure upstream said pressure reducing valve and for transforming said sensed pressure into an electrical signal;

converter means for receiving said respective electrical signals from said piezoelectric transducer means and said pressure sensor means, and for converting said respective electrical signals to digital data;

memory means for storing reference data corresponding to a predetermined assumed constant pressure downstream said pressure reducing valve and values of electrical signals representative of vibrations emitted from said pressure reducing valve as a function of predetermined values of fluid flow and differences of fluid pressure upstream said pressure reducing valve; and

computer means electrically connected to said memory means and receiving said data from said converter means, for outputting data corresponding to the flow of fluid to be determined, as a function of said reference data stored in said memory means.

5,058,438

TORQUE MEASURING INSTRUMENT

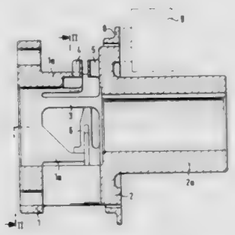
Karlheinz Timtner, Bad Homburg, Fed. Rep. of Germany, assignor to Ringspann GmbH, Homburg, Fed. Rep. of Germany

Filed Feb. 21, 1990, Ser. No. 482,582

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907707

Int. Cl.[5] G01L *3/04*

U.S. Cl. 73—862.32 **21 Claims**



1. A unitary measuring instrument for measuring torque, which comprises first and second disk-like parts (**1**, **2**) which are rotatable about a common axis spaced from each other and connected together by extending integral beams (**3**), a plurality of fork-like elements (**6**) each including two tines (**4**, **5**) and a fork shaft (**7**), and a cylindrical transducer ring **8**; one tine (**4**) of each fork-like element being connected to said first disk-like part (**1**), the other tine (**5**) of each fork-like element being connected to said second disk-like part (**2**), and each of said fork shanks (**7**) of each of said fork-like elements being connected at an end thereof to said transducer ring (**8**), wherein a relative rotation about said common axis between said first and second disk-like parts (**1**, **2**) caused by the passage of a torque through said measuring instrument is translated by means of said plurality of fork-like elements (**6**) distributed along a circumference of said transducer ring into an amplified axial motion of said transducer ring (**8**), and this axial motion is measured as a standard for the transmitted torque, said first and second disk-like parts (**1**, **2**) and said integral beams (**3**) are embodied along with said two tines (**4**, **5**), and said fork shanks (7) of the fork-like elements (**6**) as a one-piece shaped part.

5,058,439

UT SOCKET ASSEMBLY

Michael S. Carpenter, Forest, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 6, 1990, Ser. No. 534,104

Int. Cl.[5] G01L *5/24*; **G01N** *29/00*

U.S. Cl. 73—862.21 **11 Claims**

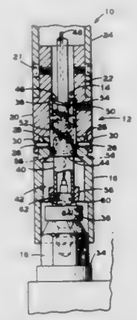
8. An ultrasonic transducer socket assembly for simultaneously tightening a bolt and measuring bolt load, comprising:

a. a pole adaptor having a longitudinal bore therethrough;

b. a socket for engaging and driving a bolt with the socket being rigidly attached to said pole adaptor and having a longitudinal bore therethrough;

c. a stationary cylinder mounted in the longitudinal bore of said pole adaptor;

d. a rotating cylinder slidably and rotatably received within said stationary cylinder so as to be movable between a first



normal extended position and a second retracted position; and

e. an ultrasonic transducer mounted at one end of said rotating cylinder such that said transducer is in contact with the bolt to be tightened when said socket is engaged with the bolt.

5,058,440

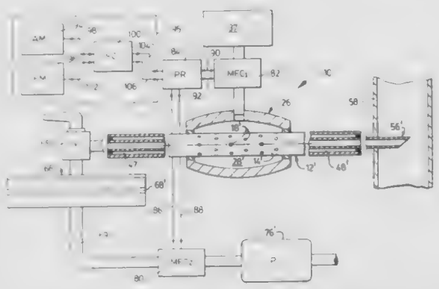
GAS SAMPLING DEVICE AND DILUTION TUNNEL USED THEREWITH

Russell R. Graze, Jr., Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 4, 1990, Ser. No. 577,226

Int. Cl.[5] G01N *1/00*

U.S. Cl. 73—863.83 **10 Claims**



1. A dilution tunnel adapted for use in a gas sampling device including a sampling probe disposed in an exhaust gas stream, a source of clean and pressurized diluent air, and a filter assembly, comprising:

an air distribution tube having a plurality of distribution holes therethrough;

housing means for forming a first chamber peripherially about the air distribution tube, the chamber being connectable to the clean air source; and

center tube means for defining a second chamber within the air distribution tube, the center tube means including a porous center tube having a plurality of micron-sized pores and an internal passage serially connected between the sampling probe and the filter assembly.

5,058,441

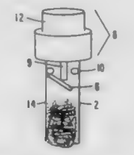
SAFETY PIPETTE AND ADAPTOR TIP

James P. Whelan, Damascus, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 18, 1989, Ser. No. 451,689

Int. Cl.[5] G01N *1/14*; **B01L** *3/02*

U.S. Cl. 73—864.15 **19 Claims**



1. A disposable pipette, comprising

a translucent tube provided with first and second ends, the first end being an elongated passageway and the second end positioned opposite the first end being vented to permit the passage of air in and out of the tube;

a porous barrier plug mounted in the tube at a position close to the second end thereof;

sealing means operably mounted in the tube at a position between the second end thereof and the barrier plug, said sealing means being capable of adopting at least a closed position and an open position into which the sealing means must be forced; and

means for closing the sealing means, said closing means being mounted in the tube at a position between the second end thereof and the sealing means, wherein when (a) the first end of the pipette is immersed in a fluid, (b) the sealing means is forced to the open position and (c) the second end is connected to a suction means, the fluid is suctioned into the pipette.

5,058,442

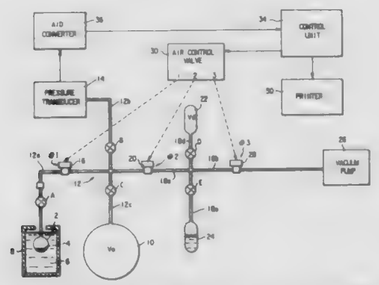
APPARATUS FOR MEASURING LIQUID VAPOR ADSORPTION AND DESORPTION CHARACTERISTICS OF A SAMPLE

Shoji Yamanaka, Hiroshima, Japan, and Sridhar Komarneni, Altoona, Pa., assignors to Gas Research Institute, Chicago, Ill.

Filed Feb. 15, 1989, Ser. No. 310,640

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—865.5 **13 Claims**



1. An apparatus for measuring liquid vapor adsorption and desorption characteristics of a sample, comprising:

a fluid tight sample holding volume;

a sealed volume;

pressure sensing means;

first fluid tight conduit means for fluidically communicating said sample holding volume, said sealed volume and said pressure sensing means;

a liquid holding volume;

an evacuatable volume;

second fluid tight conduit means for fluidically communicating said liquid holding volume and said evacuatable volume;

vacuum forming means;

first automatically controllable valve means in said first conduit means, selectively actuatable for isolating said sample holding volume from said sealed volume and said pressure sensing means;

second automatically controllable valve means, selectively actuatable for fluidically communicating said first and second conduit means;

means for selectively isolating at least one of said liquid holding volume and said evacuatable volume from said second conduit means;

third automatically controllable valve means selectively actuatable for fluidically communicating said vacuum forming means with said second conduit means; and

control means including:

(a) means for receiving pressure signals from said pressure sensing means,

(b) means for storing a program, and

(c) means responsive to said pressure signals for selectively controlling said first, second and third valve means in accordance with a program stored in said program storing means.

5,058,443

PROCESS FOR TESTING OPERATIONAL COMPONENTS IN HEATERS AND TESTING DEVICE FOR THIS PURPOSE

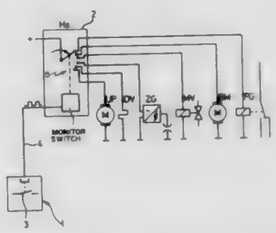
Josef Riedmaier, Pentenried, Fed. Rep. of Germany, assignor to Webasto AG Fahrzeugtechnik, Fed. Rep. of Germany

Filed Nov. 28, 1988, Ser. No. 276,523

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1987, 3741901

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—865.9 **24 Claims**



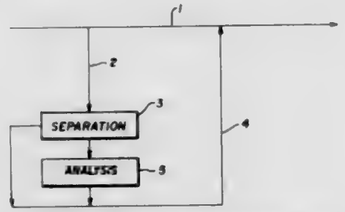
1. Process for testing operational components in heaters of the type including a circulating pump, burner nozzle preheater device, ignition spark generator solenoid valve, burner motor, and a vehicle blower, the process, comprising the steps of individually, sequentially actuating the operational components for operational testing, and evaluating the existence of a component malfunction on the basis of the result of the actuation of the respective individual component.

5,058,444

SYSTEM FOR ANALYZING ENTRAINED SOLIDS SUCH AS COTTON OR SEED

William S. Anthony, Greenville, and Oliver L. McCaskill, Leland, both of Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 25, 1990, Ser. No. 514,478
Int. Cl.[5] G01N *1/00*
U.S. Cl. 73—866 **19 Claims**



1. Apparatus for analyzing fluid-entrained solids passing through a duct comprising

a. a by-pass conduit connected to said duct to remove a fluid stream containing a small part of the solids in said duct;

b. separating means connected to said by-pass conduit to separate said fluid stream into a solids fraction and a fluid stream that is essentially free of said solids;

c. a return conduit connected to said separating means to direct said essentially solids-free fluid stream back to said duct downstream from said by-pass means;

d. analyzing means connected to said separating means to analyze said solids fraction; and

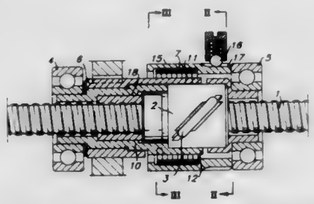
e. dispersing means connected to said return conduit and said analyzing means to disperse solids, after analysis, into said fluid stream in said return conduit.

5,058,445

IRREVERSIBLE SCREW AND NUT DRIVING DEVICE

Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Sweden

Continuation of Ser. No. 76,760, Jul. 23, 1987, abandoned. This application Feb. 27, 1989, Ser. No. 301,924
Claims priority, application Sweden, Aug. 11, 1986, 8603372
Int. Cl.[5] F16H *57/06*
U.S. Cl. 74—89.15 **3 Claims**



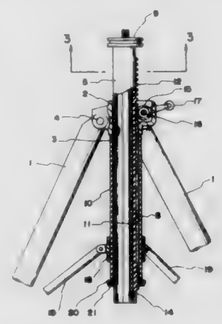
1. The combination comprising an elongated threaded rod member (1) and a nut member (2) adapted for axial movement upon relative rotation of said threaded rod member (1) and said nut member (2), first and second sleeve members (6, 10) in circumscribing overlying relation to one another and said threaded rod member (1), said first and second sleeve members (6, 10) mounted for limited rotational movement relative to one another, an outer braking sleeve member (15) spaced radially from said first and second sleeve members (6, 10) to define an annular space for a helical spring (7) having radially directed ends (8, 9), said first sleeve member (6) rotatable by an external drive means and said second sleeve member (10) driveably connected to said nut member (2), said first and second sleeve members (6, 10) having respective first and second axially projecting portions (11, 12) which cooperatively circumscribe said nut member (2) and having confronting edges defining a pair of slots (13, 14) within which the radially directed ends (8, 9) of said helical spring (7) project, a first rotation of said first sleeve member (6) by said drive means causing contraction of said helical spring (7) by engagement of said first portion (11) with said radially directed ends (8, 9) of said helical spring (7) thereby permitting rotation of said nut member (2) through said second portion (12), disengagement of the drive means and an axial load on said nut member (2) tending to cause a second rotation of said second sleeve member (10) through said nut member (2), said second rotation causing said second portion (12) to engage one of said radially directed ends (8, 9) expanding said helical spring (7) into braking contact with said braking sleeve (15) thereby preventing relative rotation of said nut member (2) and said threaded rod member (1).

5,058,446

ELEVATION MECHANISM OF TRIPOD

Lee S. Guey, Tokyo, Japan, assignor to Asanuma & Company Ltd., Tokyo, Japan

Filed Nov. 27, 1989, Ser. No. 441,484
Int. Cl.[5] F16M *11/04*; F16H *1/12, 29/20*
U.S. Cl. 74—89.17 **5 Claims**



1. An elevation mechanism for a tripod, comprising:

a metal fitting base;

three support legs pivotably mounted upon said metal fitting base so as to form said tripod;

an axial bore formed within said metal fitting base so as to have a substantially circular configuration defined about an inner peripheral wall surface thereof;

a vertical metal column vertically movable within said axial bore of said metal fitting base, said vertical metal column having a substantially circular configuration defined about an outer peripheral wall surface thereof, except for a predetermined side wall portion thereof, for mating movable engagement along said inner peripheral wall surface of said metal fitting base;

recess means formed within said side wall portion of said vertical metal column;

a rack member, fabricated from a synthetic resin, having a base section thereof fixedly mounted within said recess means of said vertical metal column, and a plurality of rack teeth extending outwardly from said recess means of said vertical metal column and having an arcuately shaped configuration which matches with and continues said substantially circular configuration defined about said outer peripheral wall surface of said vertical metal column within the region of said side wall portion thereof such that said vertical metal column and said rack teeth of said rack member together define a substantially circular configuration about the entire outer peripheral wall surface of said vertical metal column, including said predetermined side wall portion thereof; and

a pinion gear, fabricated from a synthetic resin, rotatably mounted upon said metal fitting base and enmeshed with said teeth of said rack member,

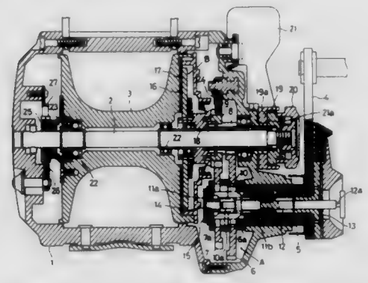
whereby when said pinion gear is rotated, said rack member will be linearly moved in either one of two directions without abrasive wear being developed between said rack member and said pinion gear in view of the fabrication of both of said pinion gear and said rack member from a synthetic resin material.

5,058,447

CHANGE-SPEED CONSTRUCTION FOR FISHING REEL

Takeshi Ikuta, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 30, 1990, Ser. No. 619,909
Int. Cl.[5] F16H *3/08*; A01K *89/01*
U.S. Cl. 74—371 **7 Claims**



1. A change-speed construction for a fishing reel, the construction comprising:

a cylindrical shaft for transmitting force from a handle arranged at an outer end position;

a first gear rotatably fitted on said cylindrical shaft for high-speed winding;

a second gear rotatably fitted on said cylindrical shaft for low-speed winding;

an engaging element for engaging either said first gear or said second gear for transmitting power from said cylindrical shaft, said engaging element being slidable along an axis of said cylindrical shaft;

an anti-slant portion having a slanting motion thereof restricted relative to said cylindrical shaft; and

posture maintaining means including a portion attached to said anti-slant portion and a further portion attached to said engaging element, said portions coming into sliding contact with either each other for preventing slant of said engaging element.

5,058,448

RACK AND PINION STEERING DEVICE

Masanori Kiyooka; Etsuro Kitami; Shigehiko Sakaguchi, and Katsuya Takeuchi, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

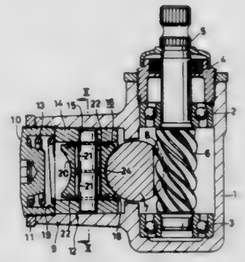
Filed Oct. 25, 1989, Ser. No. 426,353
Claims priority, application Japan, Oct. 27, 1988, 63-140886[U]; Oct. 27, 1988, 63-140887[U]; Apr. 10, 1989, 1-42244[U]
Int. Cl.[5] B62D *3/12*
U.S. Cl. 74—422 **4 Claims**

1. A rack and pinion steering device having a support yoke housing, a rotatable pinion provided inside said housing and rotated by rotation of a steering wheel, a rack bar meshing with said pinion inside said housing and moving axially according to the rotation of said pinion, a hollow cylindrical portion formed perpendicular to said rack bar and disposed on the opposite side of said rack bar from said pinion, and a support yoke provided so as to be pressed against said rack bar for prestressing said rack bar against said pinion inside said hollow cylindrical portion, said rack and pinion steering device characterized in that said support yoke comprises:

a hollow metallic cylindrical case having a rectangular hollow portion;

a fixed pin extending to a direction perpendicular to an axial direction of said rack bar and interposed between opposed side walls of said rectangular hollow portion;

a metallic roller supported by said pin with needle roller bearings therebetween and guiding said rack bar with an outer surface thereof; and



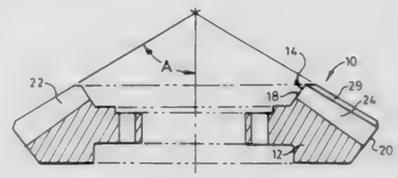
a synthetic resin plate between each of the opposite end faces of said metallic roller and each of said opposite side walls of said metallic case, one side of each said plate contacting an end face of said metallic roller and the other side of said plate contacting a side wall of said metallic case, said resin plate, at each of opposite end faces of said metallic roller, having a cylindrical portion formed integrally along the outer periphery of said resin plate and fixed in an annular groove formed in an opposing face of one of said rectangular portion of said hollow case or said roller.

5,058,449

TIP-RELIEVED SPIRAL BEVEL GEAR

Charles E. Lindsey, Middletown, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1990, Ser. No. 576,034
Int. Cl.[5] F16H *55/17*
U.S. Cl. 74—459.5 **3 Claims**



1. A tip-relieved spiral bevel gear adapted to be manufactured with a rotary tool on a gear generating machine, comprising:

a gear body having a plurality of modified gear teeth spaced uniformly therearound, each one of the teeth having a preselected face angle (A) and a curved profile from a toe portion to a heel portion thereof, the curved profile defining a concave tooth face and a convex tooth face from an outer tip surface to an inner root surface, and wherein at least one of the tooth faces is modified to have a relatively uniform tip-relieved surface from the toe portion to the heel portion substantially parallel to the face angle (A) at the outer tip surface.

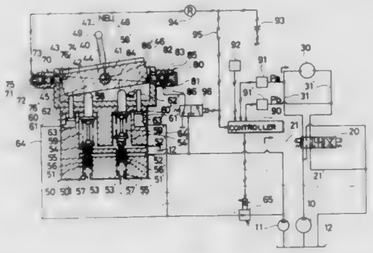
5,058,450
DEVICE FOR ADJUSTING A RETURN SPRING IN A BICYCLE BRAKE ASSEMBLY
Kenichi Yoshigai, Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Co., Ltd., Osaka, Japan
Filed Apr. 20, 1990, Ser. No. 512,161
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.2 **3 Claims**



1. In a cycle brake wherein a pair of arms provided with brake shoes is mounted onto a cycle body via a mounting plate so as to be freely rotatable and said arms are constantly energized in fanning direction so that said brake shoes are sepearated apart from each other by means of a return spring which is installed between a shaft of the mounting plate and a bossed section of the arm; wherein an adjustment disk is rotatably mounted, at least on one arm, in engagement with an end of the return spring for rotatably adjusting the retrun spring, said adjustment disk being fitted onto a flanged sleeve which is connected to the shaft; wherein a stop ring is fitted onto the flanged sleeve and is positioned between said adjustment disk and the flange of the flanged sleeve in a manner so as to be movable only in an axial direction; wherein one of said stop ring and said adjustment disk has ratchets that engage onto clamping protrusions provided on the other of said stop ring and the adjustment disk; and wherein a spring washer is disposed between the flange of the flanged sleeve and the stop ring and applies a force that constantly presses the stop ring against the adjustment disk, whereby rotation of the adjustment disk produces axial displacement of the stop ring against and by the force of the spring washer as the clamping protrusions move over the ratchets.

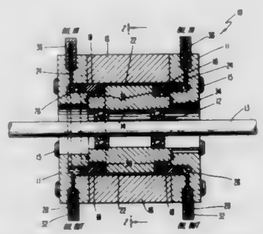
5,058,451
CONTROL LEVER APPARATUS AND ACTUATOR OPERATION APPARATUS
Yoshiaki Fujimoto, Himeji, and Sachio Hidaka, Kakogawa, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Nov. 8, 1989, Ser. No. 433,170
Claims priority, application Japan, Nov. 11, 1988, 63-147955[U]; Nov. 17, 1988, 63-290640
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] G05G *5/06;* **G08B** *21/00*
U.S. Cl. 74—527 **10 Claims**

1. A control lever apparatus comprising:
a control lever rotatably supported on a stationary member through a pivot shaft;
a rotary member connected to said lever and rotatable as a unit with said lever;
a switch mechanism for making a selection as to whether said lever is being held in a detent position;
a working fluid source;
a detent device acting between said stationary member and said rotary member and which is operable by pressurized working fluid so as to hold said lever in said detent position; and
a control device for supplying, when said switch mechanism has been positioned to hold said lever in said detent position, said pressurized fluid from said fluid source to said



detent device thereby to enable said detent device to hold said lever in said detent position.

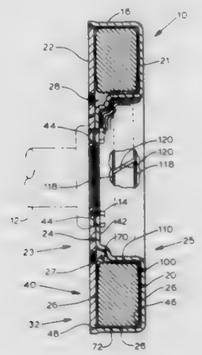
5,058,452
HYBRID SQUEEZE FILM DAMPER FOR ACTIVE CONTROL OF ROTORS
Aly El-Shafei, Tampa, Fla., assignor to University of South Florida, Tampa, Fla.
Filed May 8, 1990, Ser. No. 520,474
Int. Cl.[5] G05G *1/00*
U.S. Cl. 74—573 F **4 Claims**



1. A device for controlling rotor vibration, comprising:
a rotatably mounted shaft;
a stationary housing of tubular construction that axially receives said shaft;
a bearing support member positioned within said hollow housing in radiaily outward relation to said shaft and in radially inward relation to said housing;
said housing and said bearing support member being concentrically disposed with respect to said shaft;
an annular cavity formed between said bearing support member and said housing;
a pair of centrally apertured end caps fixedly secured to opposite ends of said housing, said end caps receiving said shaft;
an annular groove formed in each of said end caps;
an annular sealing ring slidably disposed in each of said annular grooves between an outermost position and an innermost position;
each of said sealing rings adapted to sealingly abut opposite walls of said bearing support member when said sealing rings are in said innermost position;
said sealing rings being disposed in sealing relation to said annular cavity when disposed in said innermost position and in open relation thereto when disposed in said outermost position;
means for selectively introducing fluid into each of said annular grooves;
means for selectively draining fluid from each of said annular grooves;

means for selectively introducing fluid into said annular cavity; and
means for selectively draining fluid from said annular cavity;
whereby movement of said sealing rings into and out of sealing relation to said annular cavity is effected by controlling fluid pressures on opposite sides of said sealing rings; and
whereby said device operates as a long damper when said sealing rings are in said innermost position and as a short damper when in said outermost position.

5,058,453
TORSIONAL VIBRATION DAMPER
Lawrence F. Graham, and Victor E. Swanson, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed May 5, 1989, Ser. No. 348,229
Int. Cl.[5] F16F *15/10*
U.S. Cl. 74—574 **14 Claims**



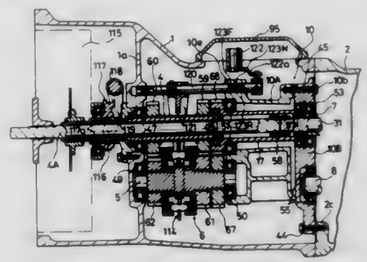
1. A torsional vibration damper includes a two-piece housing defining an annular closed chamber and an annular weight of a generally rectangular cross section mounted within the annular closed chamber and being free for relative rotational movement therein comprising:
said two-piece housing including an annular formed plate and a relative flat circular cover plate sealingly secured to the formed plate;
said formed plate having a plurality of internal walls including a radially cylindrical inner and outer wall connected together by a transverse end wall spaced from and parallel to the cover plate, said radially cylindrical outer wall extending from the end wall to the cover plate, and said cylindrical inner wall extending from the end wall toward the cover plate, an annular flange disposed in abutment with and sealingly connected to the cover plate and an annular contoured structure extending between the cylindrical inner wall and the annular flange and being integrally connected thereto by the contoured structure, a portion of the weight, the contoured structure and the cover plate generally define a fully annular supply chamber, said contoured structure generally including a blending portion interposed between the annular flange and the cylindrical inner wall;
bearing means for radially and axially positioning the weight within the annular closed chamber so that a plurality of preselected operation spaces are defined between the weight and the two-piece housing;
means for sealingly attaching the cover plate to the annular formed plate; and
a viscous fluid disposed within the supply chamber and at least a portion of the operating spaces.

5,058,454
POLISHED ROD SPACER SYSTEM
Harold W. Head, 213 E. 3rd, Cameron, Tex. 76520
Filed Sep. 11, 1989, Ser. No. 405,567
Int. Cl.[5] E21B *12/00*
U.S. Cl. 74—586 **12 Claims**



1. A spacer for changing the stroke of a polished rod of a sub-surface oil well pump which comprises:
a U-shaped body composed of two spaced segments connected by a connecting segment, said U-shaped body having a plurality of splines projecting inside and outside said U-shaped body;
tips of said inside projecting splines on said connecting segment terminating at the perimeter of a circle having a first radius; and
one of said splines located at a mid-point around the length of said U-shaped body, said mid-point spline having an aperture in its outside projection.

5,058,455
TRANSMISSION ASSEMBLY FOR TRACTOR
Shusuke Nemoto, Yao; Keisaku Hikishima, Kobe, and Yoshiyuki Kirihata, Itami, all of Japan, assignors to Kanzaki Kokyukoki Mfg., Ltd., Amagasaki, Japan
Filed Aug. 20, 1990, Ser. No. 569,563
Claims priority, application Japan, Aug. 31, 1989, 1-102410[U]; Mar. 4, 1990, 2-22068[U]
Int. Cl.[5] F16H *57/02, 3/02*
U.S. Cl. 74—606 R **4 Claims**



1. In a tractor having a front housing and a transmission casing which are arranged in series in a longitudinal direction of the tractor and are fastened together the front housing including an open rear end and a first intermediate wall, an improved transmission assembly comprising:
an additional speed change mechanism (6) disposed within said front housing (1) and behind said first intermediate wall (1a) so as to perform a first speed-change transmission between a primary shaft (4) and a first speed change shaft (5),

a main speed change mechanism (**9**) disposed within a front half of said transmission casing (**2**) so as to perform a second speed-change transmission between a drive shaft (**7**), driven by said first speed change shaft (**5**), and a second speed change shaft (**8**),

said transmission casing (**2**) comprising an open front end for permitting therethrough an assembly of said main speed change mechanism (**9**) into said front half of said transmission casing, a second intermediate wall (**2***a*) located behind said main speed change mechanism (**9**), integral boss means (**2***c*) disposed within and around said open front end, and a bearing support frame (**10**) disposed within said open rear end of said front housing (**1**) and secured directly to said boss means;

said primary shaft (**4**) and said first speed change shaft (**5**) being directly supported respectively by said first intermediate wall (**1***a*) and by a front end portion of said bearing support frame (**10**), and said drive shaft (**7**) and said second speed change shaft (**8**) being directly supported respectively by a rear end portion of said bearing support frame (**10**) and by said second intermediate wall (**2***a*); and

an intermediate shaft (**17**) supported directly by said bearing support frame (**10**) for drivingly connecting said first speed change shaft (**5**) to said drive shaft (**7**).

5,058,456

SPEED REDUCER

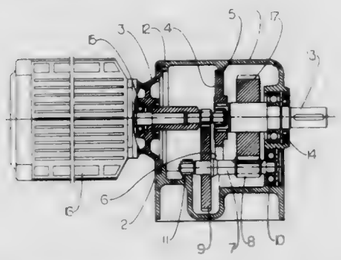
Francisco F. Manrique, and Helenio F. Manrique, both of Polig. Ind. Fuente del Jarro Villa de Bilbao, 66, 46980 Paterna, Spain

Continuation of Ser. No. 324,201, Mar. 15, 1989, abandoned. This application Nov. 16, 1990, Ser. No. 616,830

Claims priority, application Spain, Mar. 6, 1989, 8900801

Int. Cl.[5] **F16H** *57/02*

U.S. Cl. 74—606 R **2 Claims**



1. A speed reducer comprising,

a casing cast in a single piece and having a front surface and an inside,

a plurality of protrusion elements on said casing and extending inwardly into said inside of said casing,

a plurality of shaft support flanges secured to said protrusion elements,

a plurality of shafts inside said casing with each shaft having opposite ends rotatably mounted on said shaft support flanges,

at least two of said shafts being coaxially aligned within said inside of said casing, and having adjacent ends rotatably supported on the same one of said shaft support flanges,

a plurality of reduction gears mounted on said shafts,

said front surface of said casing having an opening of sufficient size to permit installation and assembly of said gears through said opening and inside said casing,

a cover on said opening, and

a bearing means on said cover for supporting one end of one of said shaft.

5,058,457

ANVIL

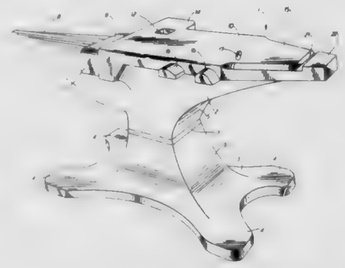
Jean Deroulou, Roux; Claude Van Dorpe, Bousval, and Philippe Van Scheepdael, Tournay, all of Belgium, assignors to Forges de Courcelles-Centre S.A., Courcelles, Belgium

Filed Jun. 5, 1990, Ser. No. 533,492

Claims priority, application Belgium, Jun. 14, 1989, 8900640

Int. Cl.[5] **B21J** *19/04*

U.S. Cl. 76—101.1 **16 Claims**



1. A steel anvil extending along a substantially horizontal longitudinal axis and along a vertical axis and comprising a base (**3**), a body (**2**) possessing a round horn (**8**) and square horn (**15**) arranged on either side of a face (**10**), in the direction of the longitudinal axis, and a post (**5**, **6**) connecting the body (**2**) to the base (**3**) in the direction of the vertical axis,

the base (**3**) being in the form of a plate having a substantially planar undersurface whose length, in the direction of the longitudinal axis, is greater than its width in a direction perpendicular to that axis,

wherein the post (**5**, **6**) widens towards the top and towards the bottom from an intermediate zone of narrower section,

the anvil (**1**) as a whole being formed by a first part comprising the body (**2**) and a post section (**5**) defined by a plane substantially parallel to the undersurface of the base (**3**) and situated in said zone of narrower section, and of a second part comprising the base (**3**) and a post section (**6**) defined by this same plane,

these two parts, mutually connected by a weld (**7**) having high compressive strength and fatigue strength, each having been shaped by forging, in a manner such that the steel which forms them possesses a fibrous structure wherein the fibers are preferably oriented in the direction of the longitudinal axis in the body (**2**) and in the base (**3**), and in the direction of the vertical axis in each of the two post sections.

5,058,458

CAMSHAFT DRIVING MECHANISM

Nobuhiro Odai, Sakato, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

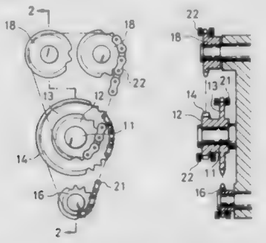
Filed Apr. 27, 1990, Ser. No. 514,378

Claims priority, application Japan, Apr. 28, 1989, 1-49671[U]

Int. Cl.[5] **F01L** *1/04*

U.S. Cl. 74—665 GE **9 Claims**

1. In a camshaft driving mechanism comprising a crank sprocket, a cam sprocket and idler means disposed therebetween, said idler means comprising first and second idler sprockets fixed on a common shaft, a first timing chain entrained on said crank sprocket and said first idler sprocket, and a second timing chain entrained on said second idler sprocket and said cam sprocket, in which each timing chain comprises elements in the categories of link plates extending lengthwise of the chain and transverse pins connecting the link plates, an improvement characterized in that the link plates and pins of said first timing chain are all of a size equal to or smaller than the size of the corresponding elements of the second timing chain, and the elements of said first timing chain, in at least one



of said categories, are smaller than the elements, in said same category, of said second timing chain.

5,058,459

TRANSMISSION ASSEMBLY FOR TRACTORS

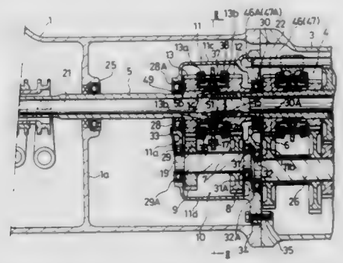
Shusuke Nemoto, Yao; Yoshiyuki Kirihata, Itami, and Keisaku Hikishima, Kobe, all of Japan, assignors to Kanzaki Kokyukoki Mfg., Ltd., Inadera, Japan

Filed Apr. 23, 1991, Ser. No. 690,812

Claims priority, application Japan, Feb. 5, 1990, 2-47089[U]

Int. Cl.[5] **F16H** *3/02, 57/02*

U.S. Cl. 74—745 **2 Claims**



1. In a transmission assembly for tractors, in which a clutch housing (**1**) and a transmission casing (**3**) are arranged in series in a longitudinal direction of a tractor and are fastened together, said clutch housing including in its front end portion a main clutch (**2**) and said transmission casing including in it a speed change mechanism (**4**); in which an input shaft (**6**) for said transmission casing is disposed co-axially with a drive shaft (**5**) of the driven side of said main clutch; and in which an auxiliary speed change mechanism (**10**) is disposed within a rear portion of said clutch housing, said auxiliary speed-change mechanism including a counter shaft (**7**), arranged parallel to said drive and input shafts, and a first set of axially spaced two gears (**8**, **9**) mounted on said counter shaft and being operable to perform a two-stage speed change transmission between said drive shaft and said input shaft, the improvement comprising:

a support frame (**11**) disposed within said rear portion of said clutch housing (**1**) for supporting said auxiliary speed-change mechanism (**10**), said support frame comprising axially spaced front and rear bearing support plate members (**11***a*, **11***b*), which are connected with each other by upper and lower connecting plate members (**11***c*, **11***d*), and being secured at said rear bearing support plate member onto a front of said transmission casing (**3**);

a second set of axially spaced two gears (**12**, **13**) disposed co-axially with said drive and input shafts (**5**, **6**), said second set of two gears meshing respectively with said first set of two gears (**8**, **9**) so as to provide two gear trains of said auxiliary speed-change mechanism (**10**);

a collar member (**14**) disposed between one of said first and second sets of two gears (**8**, **9**; **12**, **13**) and being fixedly mounted on one of said drive shaft (**5**) and said counter shaft (**7**) using a splined connection;

a shifter sleeve (**15**) slidably but non-rotatably mounted on said collar member (**14**), said shifter sleeve being operable to couple said two gears (**8**, **9**; **12**, **13**) of said one set one at a time to said collar member;

a guide shaft (**16**) extending between and supported by said front and rear bearing support plate members (**11***a*, **11***b*);

a shifter fork (**17**) slidably mounted on said guide shaft (**16**) for shifting said shifter sleeve (**15**); and

an internal partition wall (**1***a*) disposed in said clutch housing (**1**) at a location before said auxiliary speed change mechanism (**10**), said partition wall being formed integral with said clutch housing.

5,058,460

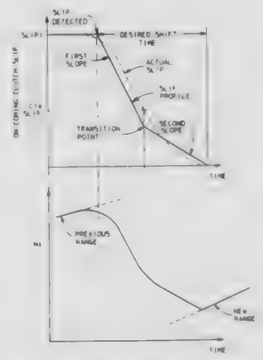
CLUTCH-TO-CLUTCH CONTROL IN AN AUTOMATIC TRANSMISSION

John A. Hibner, Coldwater, Ohio, and Carl A. Lentz, Mooresville, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1990, Ser. No. 463,717

Int. Cl.[5] **B60K** *41/22*

U.S. Cl. 74—867 **3 Claims**



1. In a vehicular automatic transmission having an input and an output, a turbine connected to the input to couple driving torque thereto, wherein a shift from a first speed ratio to a second speed ratio is carried out through concurrent disengagement of off-going fluid pressure operated torque transmitting means associated with the first of such speed ratios and engagement of on-coming fluid pressure operated torque transmitting means associated with the second of such speed ratios, and further having turbine and output speed sensing means, a method of controlling the torque transmitting means to effect a shifting from the first speed ratio to the second speed ratio comprising the steps of:

commanding a progressively decreasing hydraulic pressure on the off-going torque transmitting means,

preparing the on-coming torque transmitting means to assume torque capacity by commanding a sufficient pressure on the on-coming torque transmitting means,

then initiating a closed-loop control period of the on-coming torque transmitting means,

during the closed-loop control period, establishing a slip speed profile including a ramp beginning at an initial slip speed and having a first slope and a second slope, the first slope being sufficiently steep to quickly reduce the slip speed and the second slope being less steep to effect smooth synchronization of the on-coming torque transmitting means, measuring the slip speed of the on-coming torque transmitting means, and progressively changing

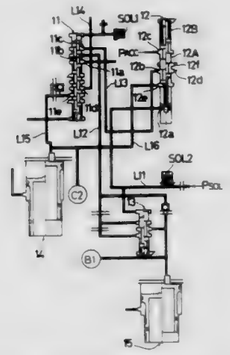
the pressure on one of the torque transmitting means to control the measured slip speed in accord with the profile, whereby slip speed is controlled toward zero slip.

5,058,461

AUTOMATIC TRANSMISSION CONTROL DEVICE

Masato Shimei, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 25, 1990, Ser. No. 587,847
Claims priority, application Japan, Sep. 30, 1989, 1-253748
Int. Cl.[5] F16H *61/06, 61/08*
U.S. Cl. 74—866 **2 Claims**



1. An automatic transmission shift control system, comprising.

a first multiple element friction engaging device,

a second multiple element friction engaging device engaged for the purpose of the up-shaft when said first multiple element friction engaging is disengaged,

a shift timing valve having a return spring and a port for underlap control of the transmission shift, the port permitting an engaging oil pressure of said first multiple element friction engaging device to be quickly reduced when force transmitted by an engaging oil pressure of said second multiple element friction engaging device supplied to said timing valve is greater than the force transmitted by an accumulator back pressure modulated by said return spring and a throttle pressure provided from a throttle valve,

an oil pressure supplied to the port acting in the same direction as said engaging oil pressure of said second multiple frictional engaging element,

a timing solenoid valve in communication with a passage connected to said port,

throttle opening sensor means,

automobile speed sensor means,

control means for operating said timing solenoid valve by signals from said throttle opening sensor means and said automobile speed sensor means,

a shift map having a boundary fixed in a range, in which the sensed automobile speed is greater than a predetermined shift line, said throttle opening sensor determining a degree of throttle opening which increases with increasing automobile speed, and an overlap range being fixed between said boundary and said shift line, and an underlap area being fixed in the range where said automobile speed is greater than said boundary, and

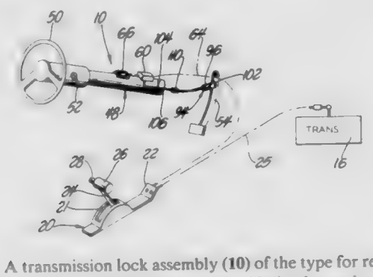
said control means changing said shift timing valve according to said shift map to open said passage by said timing solenoid valve when a point defined by said degree of throttle opening and said automobile speed is in said overlap area, and to close said passage by said timing solenoid valve and supple an oil pressure to said port when said point is in said underlap area.

5,058,462

PARKLOCK CABLE LOCK BOX

Andrew W. Killiany, Birmingham, and Arthur L. Spease, Bloomfield Hills, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Jan. 22, 1990, Ser. No. 468,080
Int. Cl.[5] B60K *41/26*
U.S. Cl. 74—878 **41 Claims**



1. A transmission lock assembly (**10**) of the type for retaining a vehicle gear selector mechanism (**20**) in the park position until a vehicle brake pedal (**54**) is actuated comprising:

first conduit means (**56**) for fixed attachment to the vehicle (12).

first core element means (**64**) slideably disposed in said first conduit means (**56**) and adapted for connection with the gear selector mechanism (**20**) for movement in said first conduit means (**56**);

locking means (**68**) engageable with said first core element means (**64**) and movable between locked and unlocked conditions for preventing movement of said first core element means (**64**) when in said locked condition, said locking means (**68**) including traveling catch means comprising a block cam (**70**) for fixed attachment to said first core element means (**64**) and pawl means (**75**) comprising a locking lever (**76**) movably disposed in said first conduit means (**56**) for moving between said locked and unlocked conditions, said locking lever (**76**) engaging said block cam (**70**) to prevent movement of said first core element means (**64**) in said locked condition to thereby prevent movement of the gear selector mechanism (**20**) from the parked position;

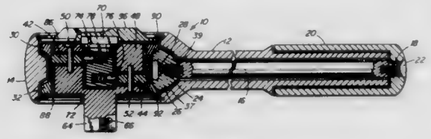
said assembly (**10**) characterized by release means (**84**) comprising second core element means (**88**) extending from a primary position adjacent said locking means (**68**) to a secondary position remote from said locking means (**68**) for operatively interconnecting said locking means (**68**) at said primary position and the brake pedal (**54**) at said secondary position for moving said locking means (**68**) between said locked and said unlocked conditions in response to a force applied by the brake pedal (**54**), said release means (**84**) further comprising a release lever (**86**) secured to said primary end of said second core element means (**88**) engaging said locking lever (**76**) and for moving same in response to a force applied at said secondary end of said second core element (**88**) by the brake pedal to move said locking lever (**76**) to said unlocked position and thereby allow movement of the gear selector mechanism (**20**) from the park position.

5,058,463

RATCHET WRENCH WITH DUAL-ROTATING CONSTANT DRIVE HANDLE

George Wannop, Kelowna, Canada, assignor to Midland Design Inc., Kelowna, Canada

Filed Oct. 29, 1990, Ser. No. 605,236
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.29 **17 Claims**



1. A ratchet wrench, comprising:

(a) a handle;

(b) a rotatable shaft extending through said handle;

(c) first drive means coupled to said shaft for rotation by said shaft about an input drive axis;

(d) second and third drive means coupled to said first drive means for counter rotation of said second and third drive means, by said first drive means, about an output drive axis perpendicular to said input drive axis;

(e) a drive member rotatable about said output drive axis; and,

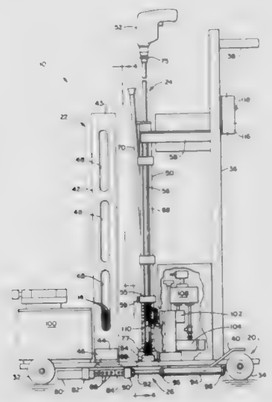
(f) ratchet means for coupling said second and third drive means to said drive member such that, for either direction of rotation of said first drive means, one of said second and third drive means is coupled to said drive member and the other of said second and third drive means is decoupled from said drive member.

5,058,464

ROOF FASTENER INSTALLATION MACHINE

Hubert T. McGovern, 98 Christopher Dr., Westfield, Mass. 01085; Stanley W. Choiniere, 13 Partridge La., Southwick, Mass. 01077, and Joseph F. McGovern, Jr., 54 Briarcliff Dr., Westfield, Mass. 01085

Filed Sep. 28, 1989, Ser. No. 414,100
Int. Cl.[5] B25B *23/06*
U.S. Cl. 81—57.41 **17 Claims**



1. A machine for installing roofing plate/fasteners on a roof deck comprising:

carrier means comprising a frame and front and rear wheels for moving said frame across a roof;

power driver means mounted to said frame for receiving a fastener and torqueably driving said fastener into said roof;

plate feed means for feeding a plate for alignment with a fastener received in said power driver means, said plate feed means comprising:

chute means mounted to said frame for receiving a stack of plates;

shuttle means for receiving a bottom plate from said chute means stack and transferring said plate to a position aligned with a received fastener, said shuttle means comprising a shuttle member defining an opening having a diameter approximately equal to the diameter of a plate received in said chute means and a plurality of angularly spaced spring loaded fingers mounted to said shuttle means and projectable into said opening for releasably supporting a plate in said shuttle member;

control means responsive to the actuation of said driver means for reciprocating said shuttle means in coordinated relationship with said driver means,

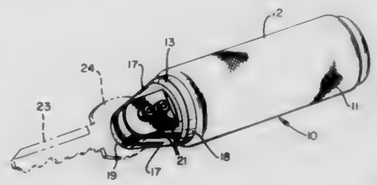
so that a plate may be automatically positioned in alignment with a fastener and said driver means is activatable to drive said fastener through said positioned plate and into the roof.

5,058,465

KEY HOLDING TOOL FOR IMPRESSIONING

Robert C. Womack, P.O. Box 35027, Dallas, Tex. 75235

Filed May 8, 1989, Ser. No. 348,873
Int. Cl.[5] B25H *3/00*
U.S. Cl. 81—487 **4 Claims**



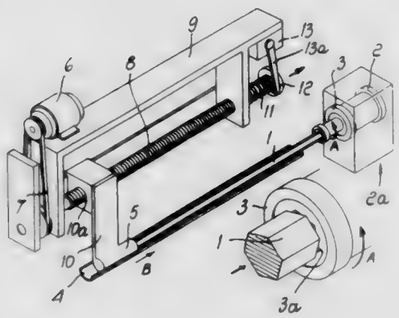
1. A keyholding tool for key impressioning comprising: a tool having a cross slotted taper sided nose, and handle means sized and shaped for convenient holding by the hand being generally round and mounting said cross slotted taper sided nose on one end; and a plurality of set screws mounted in and extending through one side of said cross slotted taper sided nose for being tightened down to tightly grip the head of a key form inserted and held in said cross slot; wherein said plurality of set screws are cup pointed set screws, when tightened, bits into the head of a key form inserted and held in said cross slot of said cross slotted taper sided nose; said set screws are threadable in and out of threaded openings through said one side of said cross slotted taper sided nose at right angles to the plane of said cross slot through said cross slotted taper sided nose; said handle means is formed internally with an in place friction wedge shaped opening holder for a hex set screw wrench used for tightening and loosening said cup point screws used for clamping key forms; wherein an end of said hex set screw wrench is a press friction hold fit in said wedge opening holder; with said wedge opening holder within a thickened portion of said hollow handle means.

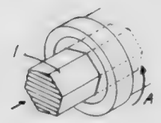
5,058,466

DEVICE FOR INSERTING POLYGONAL AND SHAPED BARS IN THE COLLET OF A CHUCK OF MACHINE TOOLS

Vladimiro Fabbri, Faenza, Italy, assignor to I.E.M.C.A. S.p.A. Industria Elettromeccanica Complessi Automatici, Faenza, Italy

Filed Jun. 7, 1989, Ser. No. 362,739
Claims priority, application Italy, Jun. 22, 1988, 3518 A/88
Int. Cl.[5] B23B *13/02*
U.S. Cl. 82—126 **3 Claims**





1. In a device for inserting a polygonal bar into a collet of a rotating chuck, said collet having an opening complementary to the cross-section of the bar, the device comprising a guiding channel for the bar axially aligned with said chuck, a bar pusher slidable along said channel, means for advancing and retracting said bar pusher along said channel, said means comprising a frame, a worm screw rotatably supported on said frame and extending parallel to said channel, a motor for driving said worm screw, and a slider in engagement on said screw and connected to said bar pusher, the improvement comprising means for slidingly supporting said worm screw, an abutting ring fixed to said worm screw, spring means mounted on said worm screw and abutting against said frame and said ring, said spring means being compressed when the bar acts frontally on said collet, and switch means operatively connected to said ring and controlling said motor so as to cause the opening of said collet to be brought in angular matching with said bar to permit said bar to enter said opening of said collet owing to said compressed spring means.

5,058,467

QUICK CHANGE COLLET STOP

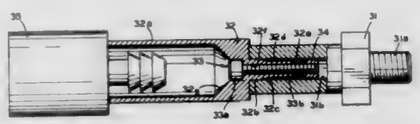
Steven R. Hoff, New Haven, Ind., and Norman M. Fuller, Antwerp, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 19, 1990, Ser. No. 495,848
Int. Cl.[5] B23B *31/20, 13/12*
U.S. Cl. 82—153 **15 Claims**

1. A workpiece positioning means for use with a spindle in a spindle lathe, the spindle including an adapter block having a counterbore formed therein, the workpiece positioning means comprising:

a collet stop including a body portion adapted to be engaged by a workpiece to position it within the spindle and a neck portion sized to be received within the adapter block counterbore, said neck portion including a plurality of flexible fingers; and

means for selectively moving said fingers radially outwardly when said neck portion is disposed within said counterbore such that said fingers frictionally engage said adapter block to secure said collet stop thereto; said neck portion being fixed in position relative to said body portion during the selective movement of said fingers.

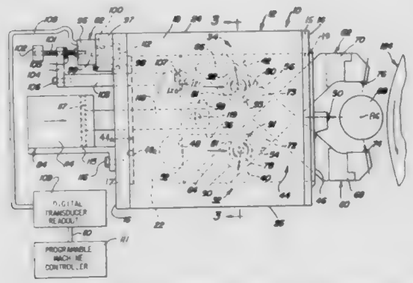


5,058,468

REMOTE GAGE STEADY REST HEAD

Richard J. Lessway, Farmington Hills, Mich., assignor to Arobotech Systems, Inc., Warren, Mich.

Filed Sep. 19, 1990, Ser. No. 585,242
Int. Cl.[5] B23B *25/00*
U.S. Cl. 82—157 **8 Claims**



1. An automatic true centering steady rest apparatus, comprising:

(a) a housing having a longitudinal axis and a transverse axis, said housing having a working end at one end of said longitudinal axis, said housing having camming surface means parallel to the plane of said longitudinal axis and said transverse axis;

(b) an operator body disposed within said housing, said operator body being slidable longitudinally along said camming surface means of said housing, said operator body having a center workpiece contact member disposed adjacent said working end of said housing;

(c) a pair of gripper arms operatively associated with said operator body, each of said pair of gripper arms having a sliding end and a gripping end, said gripping ends extending longitudinally from said working end of said housing, each of said pair of gripper arms having a sliding portion adjacent said sliding end, each of said sliding portions being slidable with said operator body, each of said pair of gripper arms having a side workpiece contact member disposed at said gripping end;

(d) roller means rotatably attached to the sliding portion of each of said pair of gripper arms;

(e) a set of guide pins attached to the sliding portion of each of said pair of gripper arms;

(f) a pair of camming means formed in said camming surface means of said housing, each of said pair of camming means being disposed on opposite sides of the operator body and having a longitudinal portion and a narrower transverse portion;

(g) each of said pair of camming means transverse portions

camming with a respective one of said roller means to provide low friction camming between said pair of gripper arms and said pair of camming means transverse portions;

(h) each of said pair of camming means longitudinal portions camming with a respective one of said guide pin sets; and,

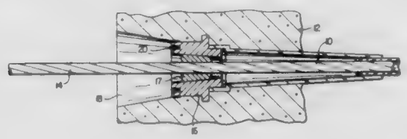
(i) stroking means for slidably displacing said operator body longitudinally along said camming surface means, said stroking means having an extension stroke and a retraction stroke, each of said sets of guide pins slidably engaging said longitudinal portion during said extension stroke to provide longitudinal extension of said center workpiece contact member and said gripper arms toward a workpiece, each of said roller means sequentially rollably engaging its respective transverse portion during said extension stroke to provide further longitudinal extension of of said center workpiece contact member while providing for convergence of said gripping ends of said gripper arms for engaging said workpiece with said side workpiece contact members, said center workpiece contact member and said side workpiece contact members providing three-point true centering engagement with said workpiece, each of said roller means and said sets of guide pins following a respective one of said transverse and longitudinal portions of said pair of camming means in a sequentially reverse manner during said retraction stroke.

5,058,469

CABLE SHEAR AND CLAMP SYSTEM

Alan Rodriguez, 2218 Crown Rd., Dallas, Tex. 75229

Continuation of Ser. No. 396,341, Aug. 21, 1989. This application Nov. 6, 1990, Ser. No. 609,831
Int. Cl.[5] B26D *1/00*
U.S. Cl. 83—13 **20 Claims**



1. A shear block and clamp assembly for the controlled termination of a cable extending outwardly of a formation, said assembly comprising:

a shear block housing having an eccentrically positioned recess formed therein, said recess having a generally cylindrical cross-sectional configuration;

a generally cylindrical block adapted for being received within said cylindrical, eccentric recess formed within said housing;

said housing being constructed with a central aperture formed therethrough, said aperture opening into said eccentric recess at an off-centered position therein;

said cylindrical block being constructed with an aperture formed therethrough, said aperture being formed in an off-centered position therein for alignment with said aperture opening into said recess of said housing in a first positionable mode whereby a cable may be received therethrough;

means for positioning said housing adjacent said formation in receipt of said cable extending outwardly thereof;

means for imparting relative rotation between said block and said housing whereby said aperture of said block may be positioned out of registry with said recess of said housing for terminating said cable at a select location therealong;

a clamp adapted for receipt of said cable therein and positioning relative to said shear block housing; and

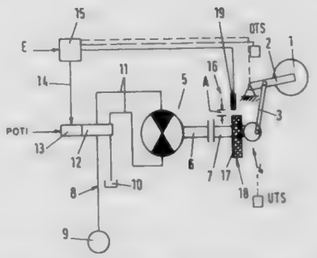
means associated with said clamp for engaging said cable and providing pressure thereagainst for securing said cable during the termination of said cable.

5,058,470

SAWING CYCLE CONTROL SYSTEM FOR AN UNDERCUT SWING SAW

Adolf Fröhlich, Altenstadt Filzingen, Fed. Rep. of Germany, assignor to Firma Dimter GmbH Maschinenfabrik, Illertissen, Fed. Rep. of Germany

Continuation of Ser. No. 340,990, Apr. 20, 1989, abandoned. This application Jan. 4, 1991, Ser. No. 636,024
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1988, 3813896
Int. Cl.[5] B27B *7/00*
U.S. Cl. 83—72 **9 Claims**



1. Apparatus for controlling a sawing cycle of an undercut swing saw, said saw comprising,

a lever arm having a first end portion and a second end portion,

said lever arm first end portion rotatably supporting an undercut swing saw,

a frame,

said lever arm second end portion connected to said frame for angular movement of said lever arm relative to said frame,

a hydraulic motor mounted on said frame and having a drive shaft,

regulator means connected to said motor for rotating said drive shaft at preselected rotational speeds through preselected angles of movement of said lever arm,

crank gear means connected to said drive shaft of said motor,

said drive shaft being in direct engagement with said crank gear means,

said crank gear means being directly connected to said lever arm for converting rotation of said drive shaft to angular movement of said lever arm in relation to said frame,

a connecting rod being connected between said crank gear means and said lever arm, said connecting rod for driving said lever arm,

control means connected to and controlling said regulator means,

said control means comprising means for sensing the relative angular position of said lever arm with respect to said frame to change the rotational speed of said drive shaft and said crank gear means and for selectively adjusting the angular velocity of said lever arm and said crank gear means as said lever arm swings through the sawing cycle,

said control means comprising means for setting a control value corresponding to the tangent value of an angle β,

said control value of tangent β corresponding to a rate of change of angular velocity of said crank gear means relative to the angular displacement of said crank gear means,

said angular displacement of said crank gear means defining a phase angle, α, of the sawing cycle, said phase angle being

zero at a lower dead center position of said crank gear means,

π at an upper dead center position of said crank gear means, and

2π at the lower dead center position of said crank gear means,

said control means comprising means for selectively maintaining said crank gear means at zero angular velocity in said lower dead center position of $\alpha=0$,

said control means comprising means for predetermining said control value of tangent β,

control means comprising means for changing the angular velocity of said crank gear means from zero, at $\alpha=0$at the lower dead center position, to one of a range predetermined angular velocities ($\omega_1 \ldots \omega_n$) at a rate corresponding to said control value of tangent β,

said control means comprising means for, subsequently to the changing of the angular velocity from zero to said one of a range of predetermined angular velocities ($\omega_1 \ldots \omega_n$), displacing said crank gear means at said one of a range of predetermined angular velocities ($\omega_1 \ldots \omega_n$) during sawing, wherein said crank gear means rotates up to a maximum phase angle,

said maximum phase angle being less than a total angular displacement of π radians at the upper dead center position,

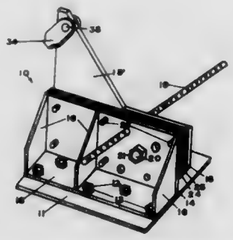
said control means comprising means for increasing said angular velocity, subsequent to sawing, of said crank gear means to a predetermined higher angular velocity ω_R, during rapid resetting of the saw, wherein said crank gear means further rotates up to a total angular displacement which is α_2,

said predetermined higher angular velocity ω_R being greater than any one of the velocities in the range of predetermined angular velocities ($\omega_1 \ldots \omega_n$),

said total angular displacement α_2 being less than a total angular placement of 2π radians at the lower dead center position, and

said control means further comprising program control means for controlling deceleration of the angular velocity of said crank gear means, program-controlled, to zero angular velocity at the end of the rapid resetting of the saw, wherein said crank gear means further rotates up to the lower dead center position, at a total angular displacement of 2π radians.

5,058,471
ROD SHEARING MACHINE
John W. Dieckman, 3120 8½ St., Monroe, Wis. 53562
Filed Aug. 9, 1990, Ser. No. 564,648
Int. Cl.[5] B23D *17/06*
U.S. Cl. 83—200 **4 Claims**



1. A machine for shearing steel reinforcing rods comprising

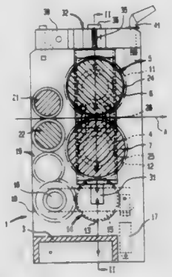
a) a stationary shear block mounting blade configured with a pattern of apertures extending therethrough,

b) a pivotally rotatable shear block mounting plate configured with a pattern of apertures extending therethrough identical to that of said mounting blade,

c) two shear blocks each comprising a pattern of apertures extending therethrough identical to those of said mounting blade and said mounting plate, wherein each said shear block is configured to be mounted on one of said mounting blade and said mounting plate with the apertures in said pattern of apertures aligned between said shear block and one of said mounting blade and mounting plate,

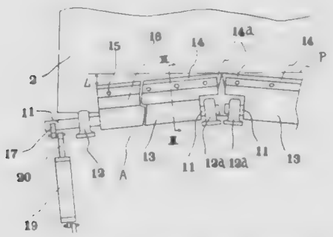
d) a pivot interconnecting said stationary mounting blade and said rotatable mounting plate disposed to enable said rotatable mounting plate to be operably rotatively driven relative to said stationary mounting blade, wherein said pattern of apertures in each said mounting plate, said shear blocks and said mounting blade are aligned when said mounting plate is in an unrotated position to enable a reinforcing rod to be inserted through said mounting blade, said shear blocks and said mounting plate, the shear blocks affixed to said mounting blade and to said mounting plate being disposed in near-contacting facing adjacency for causing said reinforcing rod to be sectioned therebetween by operable actuation of a means for rotatively driving said movable mounting plate and said shear block affixed thereto.

5,058,472
ROTARY CUTTING APPARATUS
Nicolas Kakko-Chiloff, Olivet, France, assignor to Usinage Montage et Assistance Technique (U.M.A.T.), Loiret, France
Filed Mar. 30, 1990, Ser. No. 501,935
Claims priority, application France, Mar. 30, 1990, 89 04153
Int. Cl.[5] B26D *1/62*
U.S. Cl. 83—344 **8 Claims**



1. A rotary cutting apparatus comprising a frame with two parallel and vertical uprights (**1**, **2**) for supporting therebetween an upper cutting cylinder (**6**) and a lower cutting cylinder (**7**) having parallel axes, a removable cassette (**5**) made of two pairs of blocks vertically slideable in two rectangular apertures (**4**) formed respectively in the upper portions of the two uprights (**1**, **2**) and opening into the upper horizontal faces of these uprights, said two pairs of blocks comprising two opposite upper sliding blocks (**24**) in which are respectively mounted two opposite coaxial spindles (**6***a*, **6***b*) for the upper cutting cylinder (**6**) and two opposite lower sliding blocks (**25**) in which are respectively rotatably mounted opposite coaxial spindles (**7***a*, **7***b*) for the lower cutting cylinder (**7**), and wherein a resilient coupling device is provided on each side of the removable cassette for connecting together the upper (**24**) and lower (**25**) sliding blocks whereby said resilient coupling device has a tendency to lift the upper sliding block (**24**) with respect to the lower block (**25**) and permits a limited adjustment of a space between the upper sliding block (**24**) with respect to the lower sliding block (**25**).

5,058,473
VENEER CLIPPER
Yoshiaki Yamada, Obu, Japan, assignor to Meinan Machinery Works, Inc., Obu, Japan
Filed Jul. 27, 1990, Ser. No. 558,570
Claims priority, application Japan, Aug. 11, 1989, 1-209132
Int. Cl.[5] B26D *5/38*
U.S. Cl. 83—371 **9 Claims**



1. A clipper for cutting a sheet of wood veneer comprising:

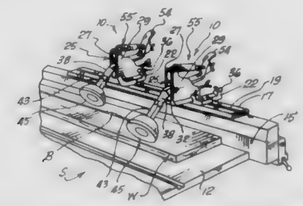
a conveyor for feeding veneer sheets successively in forward direction through the clipper;

a pair of rotatable cylindrical anvil rolls having anvil surfaces on peripheries thereof, disposed with the axes thereof extending in parallel to each other across said forward direction of the veneer sheets, and positioned so as to provide a nip between said anvil rolls through which the veneer sheet is held while said sheet is being advanced by rotation of said anvil rolls;

knife means disposed on a feed-out side of said anvil rolls, including at least two knife blades having straight cutting edges, respectively, disposed so closely to each other that the cutting edges thereof form a substantially continuous line of cutting edge presented along said nip, and adapted to pivot about separate axes together in alternating directions between two extreme positions where the cutting edge of each said knife blade is placed in engagement with the peripheries of the respective anvil rolls, whereby the veneer sheet is cut on said anvil rolls by the knife means while the sheet is being advanced through said nip;

said separate axes for any two adjacent knife blades extending symmetrically obliquely at such an angle with respect to an imaginary line, which lies in a horizontal plane defined by said sheet and transverse to the direction in which said sheet is advanced, that an obtuse angle is formed between the cutting edges of said two adjacent knife blades, whereby cutting into the veneer sheet by the cutting edge takes place progressively from one end of the cutting edge toward the other end thereof.

5,058,474
HEIGHT ADJUSTMENT MEANS FOR BIASING WHEEL
Gerardo Herrera, P.O. Box 1202, Tulare, Calif. 93275
Filed Feb. 14, 1991, Ser. No. 655,762
Int. Cl.[5] B27B *27/02*
U.S. Cl. 83—447 **6 Claims**



1. An improved biasing guide for safely controlling a work piece disposed on a deck of a machine tool by urging it toward a stationary fence, said biasing guide including a bias wheel disposed at one end of an elongated arm:

a housing having parallel vertical walls, and including means for pivotally mounting said elongated arm between the walls intermediate the ends of said arm;

means for adjusting the initial height of the bias wheel to conform to the height of the work piece, said adjustment means comprising a cam disposed in the housing so as to be movable fore and aft along a path between said parallel vertical walls: said cam having a camming surface thereon:

a cam follower disposed intermediate the bias wheel and said pivot means, and depending from said elongated arm so as to be in the path of said cam for contact with said camming surface; and means connected to said cam and protruding from said housing for moving said cam fore and aft such that said cam follower is moved by said camming surface in an arc about said pivot means thereby adjusting the initial height of said bias wheel.

5,058,475
CANT ANGLE ADJUSTMENT FOR A WEB SLITTING MACHINE
John W. Tidland, Vancouver; Reinhold A. Schable, Washougal, both of Wash.; Casey M. Vander Bom, Hillsboro, Oreg.; Borendra K. Biswas, Vancouver, Wash., and William R. Miller, Portland, Oreg., assignors to Tidland Corporation, Camas, Wash.
Continuation of Ser. No. 293,298, Jan. 3, 1989, abandoned. This application May 29, 1990, Ser. No. 529,776
Int. Cl.[5] B26D *1/24, 7/26*
U.S. Cl. 83—481 **10 Claims**

1. A web slitter for cutting a continuous web of material comprising:

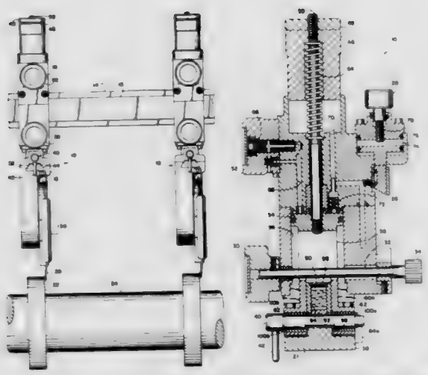
(a) a carriage portion connected to support means for holding said carriage portion;

(b) a blade holder portion for holding a cutting blade; and

(c) selectively removable connection means interacting between the carriage portion and the blade holder portion for joining said portions together at a predetermined cant angle, said selectively removable connection means comprising guide key means selectively coupled to said carriage portion and having a shape for slidably engaging a correspondingly-shaped channel in the blade holder por-

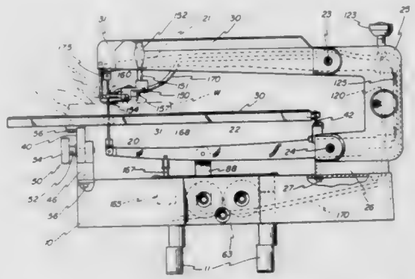
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tion wherein said guide key means is milled to provide said predetermined cant angle and includes an outwardly flaring portion for bearing the weight of said blade holder portion.



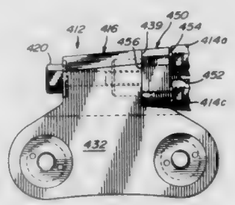
5,058,476
SCROLL SAW
John G. Legler, Huber Heights; Robert L. Bartlett, Dayton, and David D. Flora, Arcanum, all of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Continuation of Ser. No. 226,172, Jul. 29, 1988, abandoned. This application Jan. 22, 1990, Ser. No. 471,015
Int. Cl.[5] B23D *49/00*
U.S. Cl. 83—782 **5 Claims**

1. In a scroll saw comprising a base, upper and lower arms, pivot means mounting said arms above said base for conjoint oscillating movement about vertically spaced horizontal axes, a saw blade extending between and attached to said arms in spaced relation with said pivot means for vertical reciprocating movement in response to oscillating movement of said arms, and means including gear drive means for effecting said oscillating movement of said arms, the improvement comprising:
(a) said base including integral wall portions cooperating to form end, side and bottom walls of a gear casing enclosing said gear means,
(b) supporting means for said gear means including shafts journalled in at least one of said wall portions and having portions within said gear casing; and
(c) means mounting said gear means on said shaft portions within said gear casing, wherein said base includes an outer side wall in laterally spaced relation with said side wall of said gear casing, and further characterized in that said gear means comprise a plurality of intermeshing gears each mounted on a separate shaft, each of said shafts is



journalled in said side walls of said base and said gear casing, one end of each said shaft extends into said gear casing from said side wall of said gear casing thereof, and each of said gears is mounted on said extending end of one of said shafts.

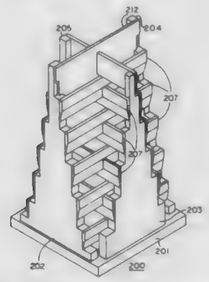
5,058,477
SAW TOOTH AND HOLDER
Charles D. MacLennan, 153 Cote St-Charles, Hudson Height, Quebec, Canada J0P 1J0
Continuation-in-part of Ser. No. 578,165, Sep. 6, 1990, which is a continuation-in-part of Ser. No. 469,853, Jan. 23, 1990, abandoned. This application Dec. 6, 1990, Ser. No. 623,321
Int. Cl.[5] B27B *33/08*
U.S. Cl. 83—839 **2 Claims**



1. A tooth assembly for a cutting saw, wherein the tooth assembly includes a tooth holder to be releasably mounted on the periphery of the substrate, wherein the holder has a body, a bore extending through the body, a tooth seat including an abutment surface and a platform at an angle thereto with the bore extending to the abutment surface, and the axis of the bore being adapted to be at a tangent to the substrate, a tooth carrier including a tooth carrier head adapted to sit in the tooth seat on the holder, and a shank extending through the bore for retaining the tooth carrier on the holder, the tooth carrier including a frusto-pyramidal head having a small end abutting against the abutment surface, and a divergent side engaged against the platform, and a base surface, two pairs of bores extending through the head from the base surface, and a median platform member extending centrally of the base surface between the two rows of bores, small identical teeth with each tooth having a tooth head of a frusto-pyramid shape having a polygonal outline as a multiple of two, and a shank extending through the bore to engage each individual tooth to the tooth carrier against the abutting surface and a respective bore, each tooth having a concave recess intersecting the divergent side walls of the frusto-pyramid head to form cutting edges and cutting tips with adjacent sides of the head, and at least one divergent side

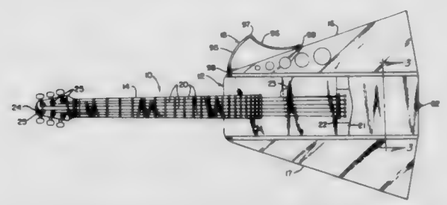
of each head engaging the intermediate platform so as to prevent the teeth from rotation.

5,058,478
CUTTER BLADE ASSEMBLY FOR HYDRAULIC FOOD CUTTING APPARATUS
George A. Mendenhall, 4252 S. Eagleson Rd., Boise, Id. 83705
Filed Apr. 13, 1988, Ser. No. 181,099
Int. Cl.[5] B26D *1/03, 7/20*
U.S. Cl. 83—857 **4 Claims**



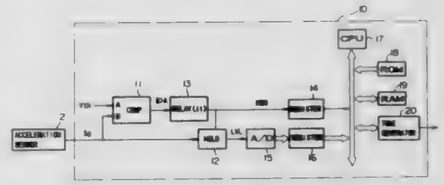
1. A cutter blade assembly for use in a hydraulic food cutting apparatus which comprises:
a frame defining a longitudinal passageway for passage of food product and carrier medium therethrough;
a plurality of strip knives removably attached to said frame and defining a plurality of cross-sectional cutting arrays across said passageway for sequential engagement with segments of food product, as it passes through the longitudinal passageway;
said cutting arrays being in sequential and perpendicular orientation one to another;
a planar stabilizer blade attached to the frame and disposed substantially along the centerline axis of said longitudinal passageway for bisecting the passageway, said planar stabilizer blade having a plurality of engagement slots disposed for perpendicular engagement with the plurality of strip knives.

5,058,479
COLLAPSIBLE GUITAR
Eric D. Shaw, 1126 Lincoln Ave., Steamboat Springs, Colo. 80477
Filed Aug. 16, 1990, Ser. No. 568,075
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—291 **18 Claims**



1. In a stringed musical instrument having a soundboard and an elongated fingerboard extending from one end of said soundboard, the improvement comprising:
a hollow body having a top panel containing said soundboard, a bottom panel, end walls joining opposite ends of said top and bottom panels together with opposite sides of said body being left open;
side wing portions of generally triangular configuration disposed on said opposite sides of said body, each said wing portion having top and bottom wing panels, a sidewall and end wall joining said top and bottom wing panels and one side of each said wing portion opposite to said sidewall being left open and disposed in facing relation to one of said opposite sides of said body; and
releasable connector means traversing opposite free edges of said top and bottom panels and said top and bottom wing panels for slidably and releasably connecting said wing portions to said opposite sides of said body whereby to define a common sound chamber with said sidewalls of said wing panel portions diverging from said one end of said body, said side wing portions slidable in a direction substantially parallel to said fingerboard into and away from connected relation to said body.

5,058,480
SWING ACTIVATED MUSICAL TONE CONTROL APPARATUS
Hideo Suzuki, and Masao Sakama, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Apr. 24, 1989, Ser. No. 342,487
Claims priority, application Japan, Apr. 28, 1988, 63-106698
Int. Cl.[5] G10H *1/18, 1/32, 1/46*
U.S. Cl. 84—600 **10 Claims**

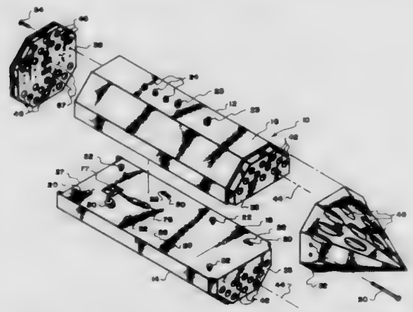


1. A musical-tone-control apparatus comprising:
a swing member adapted to be swung by a performer's hand;
acceleration-measuring means, provided in said swing member, for measuring acceleration produced by a swing;
start-point-detecting means for detecting the start point of a swing of said swing member;
timing-signal-generating means for producing a generation-timing signal after a predetermined interval has elapsed from said start point;
holding means for maintaining an output signal of said acceleration-measuring means when said generation-timing signal occurs; and
musical-tone-control-signal-generating means for generating a musical-tone-control signal to control musical tones according to the content of said holding means.

5,058,481
DUAL MODULAR ROCKET LAUNCHER
Lanny D. Drummond, and Joseph E. Williams, II, both of Camarillo, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 15, 1990, Ser. No. 597,134
Int. Cl.[5] F41F *3/042*
U.S. Cl. 89—1.816 **8 Claims**

1. A lightweight composite rocket launcher for use with helicopters and aircraft, said lightweight composite rocket launcher comprising first and second identically shaped elongated casings, each of said elongated casings having a mating surface and a plurality of elongated launch tubes formed therein, with the axis of each of the launch tubes being substantially parallel to the axis of each of the other launch tubes of said casing, said launch tubes and said casings being fabricated from a lightweight composite material with each elongated casing and the launch tubes formed therein comprising a unitary structure, the mating surfaces of each of said casings having at least four mating members extending therefrom and

at least four slots disposed therein, each of the mating members of one of said casings aligning with one of the slots of the other of said casings when the mating surfaces of said first and second casings are juxtaposed, each of said mating members having a minor diameter portion and a major diameter portion and each of said slots having at one end thereof an aperture for



receiving the major diameter portion of the aligned mating member, the width of said slot being narrower than the major diameter portion of the aligned mating member such that when the minor diameter portion of said mating member is positioned within said slot the first casing of said rocket launcher is secured to the second casing of said rocket launcher.

5,058,482

BLOCKING DEVICE FOR THE BREECHBLOCK IN A GUN

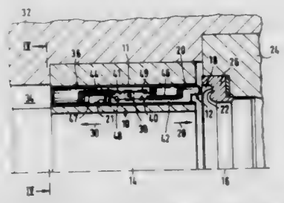
Rolf Bartolies, Korschenbroich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 17, 1990, Ser. No. 553,320

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1989, 3923714

Int. Cl.[5] F41A *3/74*

U.S. Cl. 89—26 **10 Claims**



1. A blocking device, for use with a gun which includes a gun barrel with a base and a bore axis, a base ring at the base of the gun barrel, the base ring having a recess to accommodate an obturating ring, a breech ring having a recess opposite the base ring, and a wedge-type breechblock which is movable adjacent the base ring and the breech ring and which carries the blocking device, to block the wedge-type breechblock if the obturating ring is absent from the recess in the base ring, said blocking device being disposed parallel to the bore axis of the gun barrel and comprising:

a detector;

a spring to urge the detector toward the base ring, the spring moving the detector so that the detector enters the recess in the base ring if the recess in the base ring is not occupied by an obturating ring;

a blocking member; and

synchronous movement means for moving the blocking member simultaneously with the movement of the detector and in a direction opposite to the movement of the detector if the recess in the base ring is not occupied by an obturating ring, the blocking member entering the recess in the breech ring.

5,058,483

CARTRIDGE FEED MECHANISM FOR AN AUTOMATIC FIREARM

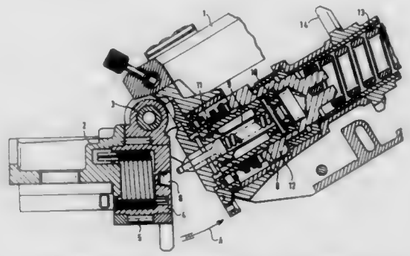
Helmut Mäder, Schramberg, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Obernodorf, Fed. Rep. of Germany

Filed Mar. 9, 1990, Ser. No. 491,347

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907759

Int. Cl.[5] F41A *9/30*

U.S. Cl. 89—33.25 **5 Claims**



1. A cartridge feed arrangement for an automatic firearm, comprising: a drive housing having a drive sleeve with a coupling groove; a cartridge feed mechanism mounted pivotally on said drive housing; a transmission shaft and coupling tongue mounted to said cartridge feed mechanism, said cartridge feed mechanism pivoting into a pivoted-up wherein said coupling tongue engages said coupling groove and pivoting into a pivoted-down position wherein the coupling tongue is disconnected from the coupling groove; and, slide locking means mounted on said cartridge feed mechansim for locking said transmission shaft in a locking position in the pivoted-down position and releasing said transmission shaft in a releasing position in the pivoted-up position, said locking means including a slide member engaging said drive housing to be pushed by said drive housing for establishing said releasing position of said locking means and disengaging from said drive housing for establishing said locking position of said slide locking means.

5,058,484

ELECTROHYDRAULIC CONTROL ARRANGEMENT FOR CONTROLLING A HYDRAULIC DRIVE

Werner Kuttruf, Scottweg, Fed. Rep. of Germany, assignor to BW Hydraulik GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 29, 1989, Ser. No. 458,781

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1989, 3900949

Int. Cl.[5] F15B *11/08*

U.S. Cl. 91—461 **1 Claim**

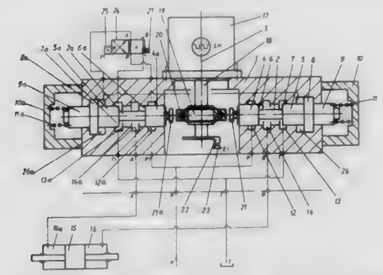
1. In an electrohydraulic control arrangement for controlling a hydraulic drive means, such as a hydraulic cylinder in which each of the opposed sides of a double-acting working piston delimits a pressure chamber, with said arrangement including at least one control valve that is provided with a control slide unit that is spring-loaded at one end and can be shifted out of a rest position against the spring force, and with said arrangement also including a servomotor for controlling said control slide unit, the improvement comprising:

a valve housing having at least one section provided with at least one respective control valve for alliance with each of said pressure chambers of said hydraulic cylinder, with said control slide units of said control valves being spaced from one another and being coaxially disposed in a mirror symmetrical manner relative to one another;

a common control element connected to said servometer and disposed between facing, non-spring loaded inner ends of said control slide units for moving same in the same direction via mechanical pressure contact;

for each of said control slide units, a pressure chamber that contains an auxiliary piston;

at least one switching valve for connecting said pressure chambers of said control slide units with pressure medium for moving said control slide units in a direction counter to said spring force to thereby move said control slide units into an inactive position that avoids the effect of said



control element of said servomotor, whereby in said inactive position both of said pressure chambers of said hydraulic cylinder are connected to a first line that leads to a tank, while a second line coming from a supply of pressure medium is cut off by said control slide units;

said control element of said servomotor being embodied as an eccentric lifting ring having an outer surface that serves as a support surface for each of said inner ends of said control slide units, which are disposed on diametrically opposite sides of said lifting ring; and

each of said inner ends of said control slide units being provided with a screw-type component having a threaded portion with which an axial length of said component is adjustable.

5,058,485

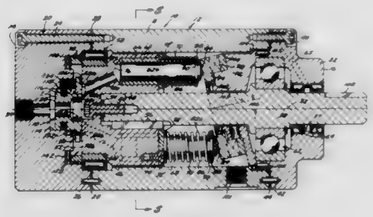
RING VALVE PUMP

Joseph S. Cardillo, 4109 Via Picaposte, Palos Verdes Estates, Calif. 90274

Continuation of Ser. No. 483,330, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 372,151, Jun. 27, 1989, abandoned, which is a continuation of Ser. No. 926,664, Nov. 4, 1986, abandoned. This application Oct. 19, 1990, Ser. No. 598,829

Int. Cl.[5] F01B *3/10*

U.S. Cl. 91—485 **16 Claims**



1. A hydraulic pump which comprises:

a body having generally opposite first and second ends;

a drive shaft entering said body through said first end;

inlet and output flow passage defined by said body proximate said second end;

a cylinder block rotatable within said body and operatively connected to said shaft so as to be rotatably driven by said shaft, said cylinder block having an annular array of regularly spaced cylinders and a piston axially slideable in each of said cylinder;

means within said body engageable with said pistons for moving said pistons in regular succession through compression strokes and suction strokes in their respective cylinders, with the pistons orbiting through a first 180° sector of the body moving in compression strokes and the pistons orbiting through a second 180° sector of the body moving in suction strokes;

a cylinder port face on said cylinder block which is generally radially oriented relative to the axis of rotation of said cylinder block;

a plurality of regularly spaced cylinder ports in said cylinder port face, said cylinder ports corresponding in number to said cylinders and being annularly arrayed about said axis of rotation, each of said cylinder ports communicating with a respective one of said cylinders,

a valve element in said body having a generally ring-shaped, substantially annular valve seat surface which is complementary to and seats against said cylinder port face, the axis of said seat being eccentrically offset toward one of said 180° sectors of the body relative to said axis of rotation;

said valve seat surface having a substantially circular inner edge defining an inner port which communicates with one of said body passages and a substantially circular outer edge defining an outer port which communicates with the other of said body passages;

said cylinder ports which communicate with the cylinders orbiting through said one 180° sector of the body toward which said seat axis is offset being exposed to said inner port, and said cylinder ports which communicate with the cylinders orbiting through the other said 180° sector of said body being exposed to said outer port.

5,058,486

DIAPHRAGM-HOUSING CONNECTION IN A PNEUMATIC BOOSTER

Mitsuhiro Endo, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Jul. 18, 1990, Ser. No. 553,958

Claims priority, application Japan, Jul. 20, 1989, 1-85279[U]

Int. Cl.[5] F01B *19/00*

U.S. Cl. 92—48 **7 Claims**

1. A pneumatic booster, comprising:

a housing which includes a first shell and a second shell; and

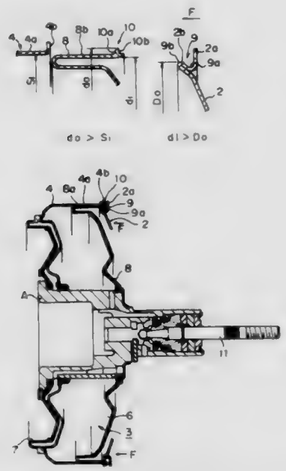
a diaphragm inside said housing and secured at the outer peripheral portion thereof to said housing, said diaphragm having a bead formed on the outer peripheral portion thereof;

said second shell having a bead retaining portion which has an annular bead retaining groove that is generally U-shaped in section and opens radially outwardly, said U-shaped groove having side wall portions generally opposing each other and a bottom portion;

said first shell having an outer peripheral portion;

said bead being received into said bead retaining groove over one of said side wall portions and clamped between said groove and said outer peripheral portion of said first shell, said bead being forced into said groove by said outer peripheral portion of said first shell and clamped between said groove of said second shell and said outer peripheral portion of said first shell when said first shell is assembled with said second shell; and

wherein said diaphragm is formed such that the inner diameter of said bead in a free condition is larger than the diameter of said one of said wall portions of the annular groove of the rearward shell.

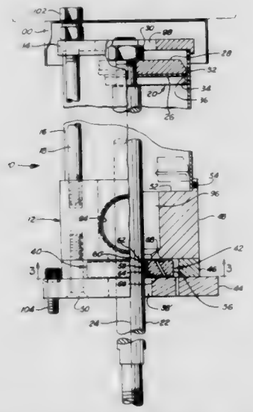


5,058,487

CYLINDER WITH RADIALLY MOVABLE ROD

William M. Faitel, Oxford, Mich., assignor to Litton Industrial Automation Systems, Inc., Florence, Ky.

Filed May 1, 1990, Ser. No. 517,260
Int. Cl.[5] F16J *15/18*
U.S. Cl. 92—167 **16 Claims**



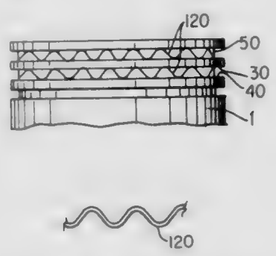
1. A fluid actuated device comprising, a barrel, a piston slidably received in said barrel, an elongated rod connected to said piston for movement therewith, and extending generally axially through one end of said barrel, a cap sealingly connected to said one end of said barrel and having a central hole through which said rod extends, said central hole being larger than the diameter of said rod so that said rod can be shifted generally radially in all directions within predetermined limits relative to said cap, a recess in said cap which opens into said hole and extends generally radially outwardly thereof around the entire periphery of said hole, a gland disposed in said recess and having a hole through which said rod extends, said gland having a maximum radial extent less than the maximum radial extent of said recess so that said gland can shift generally radially in said cap relative to said central hole through said cap, a first seal disposed between said rod and said gland to provide a fluid tight seal therebetween while permitting said rod to move generally axially relative to said gland, a second seal disposed in said recess between said top and said gland and constructed and arranged to provide a seal preventing fluid under pressure within said cylinder from flowing by said gland while permitting said gland to move generally radially in said recess relative to said cap, whereby said rod can move both generally axially and generally radially within predetermined limits relative to said cap to facilitate alignment of the end of said rod distal from said piston with the path of travel of a load operably connected to said distal end of said rod, said first and second seals being annular, having differing diameters and defining a first annular area on a first side of said gland which communicates with the interior of said barrel, third and fourth annular seals of differing diameters which define a second annular area on a second side of said gland which is generally opposed to said first side thereof, and at least one passage through said gland communicating said second area with the interior of said barrel.

5,058,488

MEANS FOR PREVENTING THE BUILD-UP OF CARBON DEPOSITS ON PISTONS

Joao A. Cullen, Ann Arbor, Mich., and Miguel N. D. Azevedo, Osasco, Brazil, assignors to Metal Leve S.A., San Paolo, Brazil

Filed Oct. 19, 1989, Ser. No. 423,117
Claims priority, application Brazil, Oct. 26, 1988, P1880571-8[U]
Int. Cl.[5] F16J *1/04*
U.S. Cl. 92—208 **8 Claims**



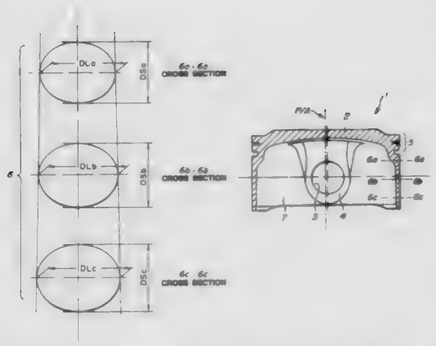
1. A carbon build-up prevention means for a piston of an internal combustion engine having a compression ring groove in the outer wall thereof, the ring groove having an upper and lower and a rear wall and a compression ring in the compression groove at its rear wall, the buildup prevention means comprising an annular ring having a profile along the piston longitudinal axis which alternates around its circumference in up and down directions relative to the upper and lower walls of the compression ring groove, the distance of the height between the extremities of the annular ring profile being less than the distance between the compression ring groove upper and lower walls and the annular ring inner surface normally being spaced from the outer face of the compression ring, movement of and force applied on the piston moving the annular ring and causing it to be displaced so that the extremities of its profile engage the compression ring groove walls.

5,058,489

PISTON STRUCTURE FOR INTERNAL COMBUSTION ENGINE

Naohiro Iwaya, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Kanagawa, Japan

Filed Jun. 18, 1990, Ser. No. 539,335
Claims priority, application Japan, Jun. 20, 1989, 1-71197[U]
Int. Cl.[5] F16J *1/04*
U.S. Cl. 92—233 **4 Claims**



1. A piston for an internal combustion engine comprising:
a piston head portion; and
an oval slipper skirt portion extending from said piston head portion in an axial direction along an axis of the piston, said skirt portion including first and second segments diametrically opposed to each other with respect to the piston axis with a profile defined by a portion of an elliptical cone having preselected major and minor axes increasing toward the bottom of the skirt portion in a relation whereby a difference between the major and minor axes increases nearing the bottom of the skirt portion.

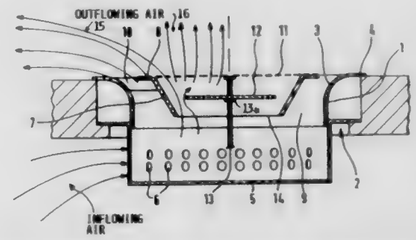
5,058,490

BOTTOM SOURCE AIR OUTLET

Franc Sodec, Wuerselen-Broichweiden, and Wolfgang Schweikert, Stolberg, both of Fed. Rep. of Germany, assignors to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Aug. 20, 1990, Ser. No. 570,145
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1989, 3928621
Int. Cl.[5] F24F *13/062*
U.S. Cl. 98—40.01 **10 Claims**

1. A bottom source air outlet for installation in an opening in a floor, comprising pot-shaped air inlet means with radially facing air inlet holes for introducing diffused air into said outlet, and air guide collar having a cylindrical section connected to said air inlet means, an outwardly curving section and a first flange section, said outwardly curving section connecting said cylindrical section to said first flange section, a funnel-shaped air guide insert converging downwardly and concentrically in said air guide collar, said air guide insert having an upper end second flange section extending radially outwardly toward said first flange section for forming a first annular air flow passage between an outer surface of said air guide insert and an inner surface of said air guide collar, and baffle means operatively arranged inside said air guide insert for closing an upper open end of said air guide insert to form a second annular air flow passage between an inner surface of said air guide insert and a radially outer edge of said baffle means in said air guide insert, and wherein said first flange section of said air guide collar and said second flange section of said air guide insert extend substantially in the same horizontal plane defined by a surface of said floor, so that an outlet plane of said air outlet extends substantially flush with said floor surface, whereby an incoming air volume is divided into a radially outer flow that curves out horizontally over said floor surface and a radially inner flow that is diverted to flow substantially horizontally.

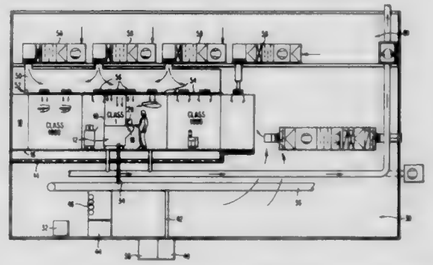


5,058,491

BUILDING AND METHOD FOR MANUFACTURE OF INTEGRATED CIRCUITS

Klaus C. Wiemer, Shih-Lin; James E. Bühler, Taipei, both of Taiwan; Rudolf O. Simon, Korntal, and Helmut A. Laub, Stuttgart, both of Fed. Rep. of Germany, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Taiwan

Filed Aug. 27, 1990, Ser. No. 572,880
Int. Cl.[5] B01L *1/04*; F24F *7/07*
U.S. Cl. 98—115.3 **20 Claims**



1. A building for the manufacture of integrated circuits comprising:
a manufacturing equipment floor with processing equipment for the manufacture of said integrated circuits supported thereon;
a lower floor under said manufacturing equipment floor with supporting equipment associated with each of said processing equipment;
a ceilling over the top of said manufacturing equipment floor for supporting a plenum system that provides at least two classes of clean air circulation to said manufacturing floor;
means for enclosing from surrounding areas each piece of said processing equipment and for providing said enclosure with a clean air input of said highest class of clean air

purity from said plenum system and an air/gas exhaust to an air/gas handling system;

means for providing the said surrounding areas a clean air input of a lower class of clean air purity from said plenum system and an air/gas exhaust to said air/gas handling system;

means in said air/gas handling system for separately handling said air/gas exhaust from within said processing equipment; and

interchangeable means associated with said plenum system which quickly allow the change of location of the input of clean air from one class of clean air purity to another class of clean air purity whereby said processing equipment can be removed, replaced with another processing equipment or a new piece of processing equipment inserted without undue down time of the manufacturing of said integrated circuits.

5,058,492

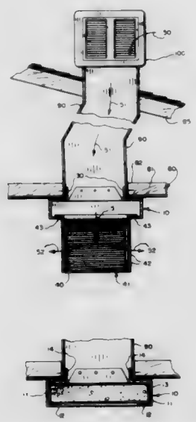
INSULATED DIFFUSER FOR EVAPORATIVE AIR COOLING SYSTEM

Doug Norton, 9224 Jana Lee Dr., West Jordan, Utah 84088

Filed Mar. 2, 1990, Ser. No. 488,735

Int. Cl.[5] **F24F** *13/20*

U.S. Cl. 98—119 **5 Claims**



1. A device for use in an evaporative cooling system for a building structure having a ventilation duct opening into said structure that permits rapid selective modification between; a diffuser means, for permitting the free inward flow of cool air into said structure during use, and an insulated dampening means, for preventing heat loss through said ventilation duct during non-use comprising: a frame means, an insulated dampening means, and a diffusing means where said frame means extends beneath the ceiling of said structures and has at least one open end and is channel shaped having an upper flange slightly larger than a lower flange, said lower flange for alternately supporting said diffuser means or said insulated dampening means, said frame means having a hinged flange capable of closing said at least one open side to secure said insulated dampening means or diffusing means within said frame means.

5,058,493

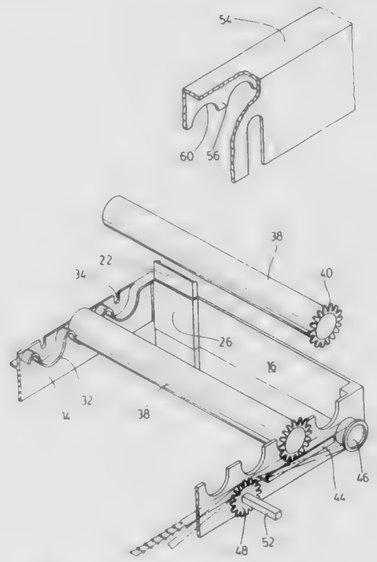
COOKING DEVICE

Charles Basek, 1218 Old Colony Road, Oakville, Ontario; Phil Mathews, 1 Manison Street, Bramalea, Ontario, and Terry L. Newcombe, 7 Duern Street, Toronto, Ontario, all of Canada

Filed Oct. 17, 1989, Ser. No. 422,529

Int. Cl.[5] **A47J** *37/04, 43/18*

U.S. Cl. 99—339 **4 Claims**



1. A cooking device for rotating foods on a barbeque of the type adapted to co-operate with motor drive means and comprising:

frame means of generally rectangular shape, defining front and rear wall means said rear wall means defining inner and outer sides;

a plurality of generally U-shaped front bearing recess means formed in said front wall means;

an equal number of generally U-shaped rear bearing flange means formed on said inner side of said rear wall means and extending towards said front wall means, respective said front bearing recess means and rear bearing flange means being arranged in pairs on common axes, in registration with one another;

rear bearing recess means formed in said rear wall means, being located coaxial with said common axes of said front bearing recess means and said rear bearing flange means;

a plurality of cylindrical roller members, said roller members being dimensioned to be received in respective pairs of said generally U-shaped front bearing recess means and rear bearing flange means, and to be supported thereby for rotation on said common axes;

drive portions on said roller members extending outwardly of said front wall means and defining sprocket means;

chain drive means interengageable with respective sprocket means on respective said roller members said chain drive means being supported on said front wall means, beneath said sprocket means, whereby said sprocket means may be disengaged therefrom the upward movement relative thereof;

chain movement means engageable with said chain drive means for moving the same whereby to rotate all of said roller members simultaneously;

drive transmission means connected to said chain movement means, and being releaseably and supportively interengageable with said motor drive means, said roller members being disengagable from said front and rear bearing means and said chain drive means, by lifting said roller members therefrom, and whereby they may be reengaged by placing them downwardly thereon;

skewer means adapted to be received in said rear bearing recess means;

collar means on said skewer means adapted to be received in said front bearing recess means for rotation of said skewer means on said common axes, and,

sprocket means formed on said collar means for engagement with said chain drive means.

5,058,494

APPARATUS FOR PROCESSING BEAN CURD

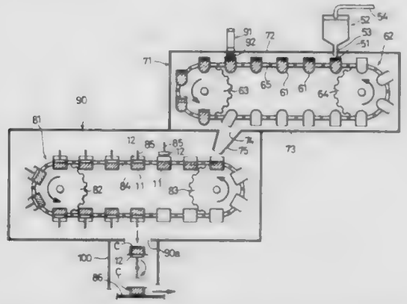
Kojiro Hayashi; Yoshihito Kondo; Takahiro Miyawaki, and Michihiro Mashiba, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Continuation of Ser. No. 328,387, Mar. 24, 1989, abandoned. This application Dec. 12, 1990, Ser. No. 626,241

Claims priority, application Japan, Mar. 25, 1988, 63-72868

Int. Cl.[5] **A23C** *3/02;* **A23J** *1/00;* **A23L** *1/20*

U.S. Cl. 99—453 **4 Claims**



1. An apparatus for producing bean curd, by coagulating a mixture of soybean milk and bittern producing coagulated soy bean milk, comprising:

an intermittently driven bucket conveyor having buckets stoppable one after another at a filling station;

a filling device having a delivery opening directed downward to oppose each of the buckets from above when the bucket is at rest at the filling station,

a steam chamber enclosing at least the delivery opening of the filling device and the entire bucket conveyor,

a forming conveyor disposed outside the steam chamber and having a multiplicity of mold boxes movable along a predetermined path and pressing closures each movable with the mold box, the mold boxes and the pressing closures each having in a required portion a multiplicity of holes for selectively removing water contained in the coagulated soybean milk but preventing the passage of the coagulated soybean milk, and

means for transferring coagulated soybean milk from the bucket conveyor to the forming conveyor.

5,058,495

KNOTTER TRIP MECHANISM WITH LOCKING DEVICE

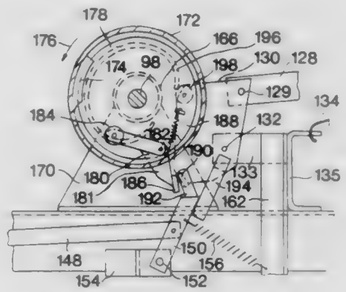
Bart Van Den Bossche, and Adrianus Naaktgeboren, both of Zedelgem, Belgium, assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Oct. 31, 1990, Ser. No. 607,173

Claims priority, application European Pat. Off., Nov. 6, 1989, 89202792.1

Int. Cl.[5] **B65B** *13/20, 13/28*

U.S. Cl. 100—4 **12 Claims**



1. A baler comprising:

a bale case;

a plunger reciprocable in the bale case for compressing crop material into bales;

a tying mechanism mounted on the bale case for tying a strand of binding material around a bale;

drive means for driving the tying mechanism and including a clutch mechanism, said clutch mechanism having a pawl assembly movable between a drive interrupting position and a drive engaging position;

bale length metering means;

first trip means operatively associated with the bale length metering means and cooperable with said pawl assembly, said metering means being operable to locate said first trip means in a pawl assembly holding position maintaining the pawl assembly in its drive interrupting position until a bale of predetermined length is formed, said metering means also being operable to retract said first trip means to a pawl assembly releasing position permitting the pawl assembly to move to its drive engaging position when a bale of predetermined length is formed;

second trip means movable between a pawl assembly holding position for maintaining the pawl assembly in its drive interrupting position and a pawl assembly releasing position for permitting the pawl assembly to move to its drive engaging position, said second trip means being operatively associated with the plunger in a manner so that the second trip means is positioned in its pawl assembly holding position when the plunger is retracted, characterized in that:

the second trip means is also operatively associated with the plunger in a manner such that said plunger does not prevent movement of said second trip means towards its pawl assembly releasing position when the plunger is in its full compaction position; and

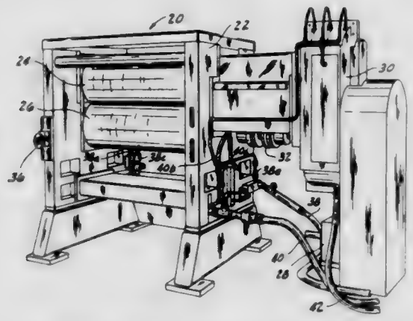
the baler further comprises locking means operatively associated with the first trip means and cooperable with the second trip means for locking said second trip means in its pawl assembly holding position when said first trip means is in its pawl assembly holding position, and for permitting said second trip means to move to its pawl assembly releasing position upon the plunger being located at or adjacent its full compaction position when the first trip means is moved to its pawl assembly releasing position.

5,058,496

ROLL APPARATUS WITH COOLING SYSTEM FOR MAINTAINING CONSTANT GAP SIZE AND METHOD

Eugene W. Wittkopf, Little Suamico, Wis., assignor to Integrated Design Corp., Green Bay, Wis.

Filed Sep. 17, 1990, Ser. No. 583,579
Int. Cl.[5] B30B *13/00, 3/04*
U.S. Cl. 100—35 **10 Claims**



9. A method of stabilizing the size of the gap between two substantially parallel rolls, each having trunnions at its ends journaled for rotation in bearings in a frame, rotation of each trunnion in its bearing tending to generate heat which is transferred to the respective trunnion and to the frame and thereby tends to raise the temperature of the trunnions and frame above the ambient temperature, the method comprising:

sensing the temperature of the frame;

circulating a coolant through each bearing;

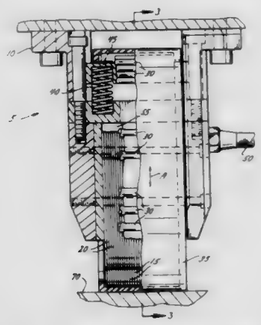
controlling the temperature of the coolant in response to the sensed temperature of the frame to maintain a predetermined temperature differential between the temperature of the frame and the temperature of the coolant, with the coolant temperature lower than the frame temperature, whereby the gap between the rolls is maintained substantially constant.

5,058,497

COMPLIANT PRESSURE ROLLER

James C. Bishop, Columbia, and Richard E. Sharp, Hazelwood, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Dec. 17, 1990, Ser. No. 628,472
Int. Cl.[5] B30B *3/00*
U.S. Cl. 100—155 R **4 Claims**



1. A roller system for compacting the surface of a workpiece, comprising:

(a) a housing having an air chamber;

(b) pressure means for creating pressure within said air chamber;

(c) compacting means, moveably engaged within said housing, for applying an adjustable pressure to the workpiece in response to said pressure means, wherein said compacting means comprises:

(1) a plurality of disk members; and

(2) for each said disk member, a corresponding support member having sides which partially envelop the external peripheries of said disk member such that said disk member does not dislodge from the corresponding support member, but wherein said disk member is rotatable within said support member,

wherein each said disk member in combination with its corresponding support member is independently moveable within said housing, and

wherein said disk members are positioned such that air from said air chamber bleeds between said disk members to internally cool said roller system.

5,058,498

STRUCTURE OF ALUMINUM CAN CRUSHER

John Chen, 142-1, Lane 211, Chung Yang Rd., Lung Ching Hsiang, Taichung Hsien, Taiwan

Filed Nov. 20, 1990, Ser. No. 615,855
Int. Cl.[5] B30B *1/22, 9/32*
U.S. Cl. 100—288 **3 Claims**



1. An aluminum can crusher, comprising:

a handle in a substantially U-shaped configuration, having two opposite side bar portions of which each having at least a through-hole made thereon for fastening a screw bolt;

a housing substantially shaped like a rectangular frame comprised of a base, a top and two opposite side walls, having two circular mounting holes respectively made on said two opposite side walls and axially aligned with each other, a stop wall upstanding from said base at an inner side, of said housing, two pairs of parallel rails respectively longitudinally located on said two opposite side of said housing walls at an inner side, said parallel rails of each pair of said two pairs of parallel rails being spaced from each other at a constant range;

a movable axle having two symmetrical journals at two opposite ends and a polygonal collar at the middle of said axle, said symmetrical journals being respectively inserted in said two circular mounting holes and having each at least a bolt hole corresponding to said through-hole for mounting said handle, said polygonal collar having a polygonal driving gear mounted thereon;

a crushing plate having a crushing surface portion transversely extending from a vertical surface portion, said vertical surface portion having two opposite side edges with a two guide slot in each edge and a gear rack aback with thereon, said crushing surface portion having two projecting strips transversely disposed at two opposite sides of said crushing surface and defining therewith two opposite notches; and

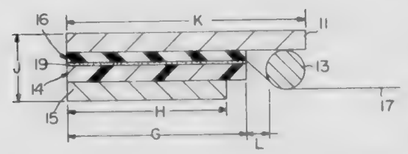
wherein said handle is connected to the two opposite ends of said movable axle after said movable axle is fastened inside said housing and suspended between said two opposite circular mounting holes, and said crushing plate is mounted in said housing with said two opposite notches and said two opposite guide slots respectively slidably engaged with said two opposite pairs of parallel rails permitting said gear rack to engage with said driving gear, so that said crushing surface portion of said crushing plate can be driven by said handle, via said driving gear, to press against said base of said housing for crushing an interposed aluminum can.

5,058,499

IMPARTING AN IMAGE ON A SUBSTRATE

Vivan A. Christman, Clemmons, N.C., assignor to XPRES Corporation, Winston-Salem, N.C.

Filed May 31, 1990, Ser. No. 531,205
The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.
Int. Cl.[5] B41M *1/12*
U.S. Cl. 101—129 **9 Claims**



1. A method to impart an image on a substrate comprising

(a) placing a heat sensitive thermoplastic resin film supported on an ink pervious porous screen on a surface of a self-adhesive frame,

(b) placing a sheet containing the desired image in a carbon base on the resultant assembly from (a) with the image side in close contact with the resin film surface of the resultant assembly from (a),

(c) irradiating the resultant assembly formed in (b) with a high intensity light having a radiation intensity for wavelengths of 0.7 microns or more concentrated at 60% or more in terms of quantity of light within the wavelength range of from 0.7 to 1.2 microns, said radiation being effective for a time interval of 10^{-4} to 10^{-3} seconds, said radiation being absorbed by the image to generate absorptive heat thereat, wherein openings in the resin film are produced by said absorptive heat in corresponding portions of said resin film which are opposed to said image,

(d) peeling the sheet off of the resultant assembly from (c),

(e) stretching taut the resultant assembly from (d) by placing the resultant assembly from (d) in a sheet stretching holding frame, said holding frame comprising

(1) a first planar frame having a first circumferential portion having a given first width, a given first axial depth, a first outer edge and a first inner edge,

(2) a second planar frame having a second circumferential portion having a given second width, a given second axial depth, a second outer edge and a second inner edge,

(3) a third planar frame having a third circumferential portion having a given third radial width, a given third axial depth, a third outer edge and a third inner edge, wherein the third inner edge extends radially inwardly of the first inner edge and the second inner edge,

(4) a spongy gasket means disposed between said third planar frame and said first planar frame,

(5) means for adhering a flexible sheet to one surface of the first planar frame,

(6) a stretching member attached to one surface of the third planar frame, the stretching member adjacent to the third inner edge and disposed radially inwardly of the first and second inner edges, the stretching member extending along the circumference of the third planar frame, and

(7) means for connecting the first, second and third frames together in a superposed relationship with the first frame disposed between the second frame and the third frame and the one surface of first frame facing the one surface of the third frame, said means for connecting comprising a plurality of spring clips or spring clamps, wherein the stretching means has an axial depth such that when the three frames are connected together by the connecting means, the sheet is stretched and held taut,

(f) placing the resultant assembly from (e) onto a screen printer means and

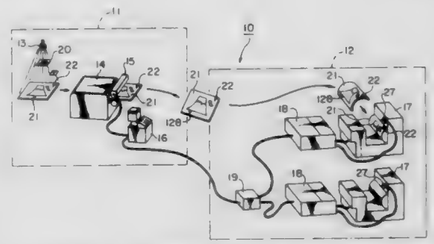
(g) applying ink on the resultant assembly from (a) containing the openings produced in (c) to force the ink through the openings onto the substrate.

5,058,500

APPARATUS AND PRINTING SYSTEM FOR DEVELOPING LITHOGRAPHIC PLATE FOR PRINTING AND MEASURING ITS IMAGE AREA RATES

Kenichi Mizuno, Ebina, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Mar. 15, 1989, Ser. No. 323,849
Claims priority, application Japan, Mar. 15, 1988, 63-59337; Mar. 15, 1988, 63-59338; Sep. 14, 1988, 63-228442; Sep. 14, 1988, 63-228443
Int. Cl.[5] B41F *7/00;* **B41C** *1/10*
U.S. Cl. 101—142 **13 Claims**



1. A system for developing a lithographic plate and measuring image area rates of the lithographic plate, comprising:

a developing apparatus for developing and fixing the lithographic plate on which an image of an original picture film and an identification mark have been printed, the identification mark having information including job number, color and printing press number;

an image area rate measuring apparatus comprising a detecting head for optically detecting a surface of the lithographic plate on which the image has been printed, means for detecting edges of an image area of the lithographic plate, means for reading the identification mark, and an encoder for producing a signal which represents a change in position of the lithographic plate due to movement thereof so as to measure image area rates of the lithographic plate developed and fixed by the developing apparatus; and

means for automatically transporting the lithographic plate from the developing apparatus to the image area rate measuring apparatus.

5,058,501

SELF-INKING TUMBLE TYPE HAND STAMP

Karl Skopek, Dr. Franz Arming Str. 5, A-4600 Wels, Austria

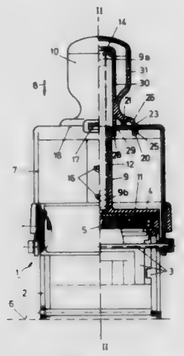
PCT No. PCT/AT89/00085, § 371 Date May 10, 1990, § 102(e) Date May 10, 1990, PCT Pub. No. WO90/02657, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 14, 1989, Ser. No. 474,789

Claims priority, application Austria, Sep. 14, 1988, 2259/89

Int. Cl.[5] B41K *1/42*

U.S. Cl. 101—334 **7 Claims**



1. A self-inking tumble type hand stamp comprising

(a) a stamp housing including

(1) a crosspiece and

(2) a sleeve having a circumference and projecting upwardly from the crosspiece, the sleeve circumference defining at least one recess,

(b) an ink pad mounted in an upper portion of the stamp housing,

(c) printing characters reversibly mounted in the stamp housing, the characters having an upwardly facing rest position adjacent the ink pad and a downwardly facing printing position,

(d) a reversing mechanism for reversing the printing characters between the rest and printing positions,

(e) a reciprocable metallic actuator yoke for operating the reversing mechanism to reverse the position of the printing characters, the actuator yoke being displaceably mounted on the upper portion of the stamp housing and having an upper and a lower position and reciprocable in a direction of the stamp axis between said upper and lower positions,

(f) a hollow handle of rigid plastic material, the handle having a circumferential edge surrounding the stamp axis and having a side facing the actuator yoke and the actuator yoke defining a plurality of holes extending in the direction of the stamp axis and in alignment with the circumferential handle edge,

(g) fastening elements passing through the holes and extending in the direction of the stamp axis for affixing the handle to the yoke,

(h) a return spring surrounded by the upwardly projecting sleeve and having one end engaging the crosspiece and an opposite end extending into the hollow handle for support therein, the return spring biasing the actuator yoke into the upper position and the actuator yoke being reciprocable into the lower position against the spring bias, in which position the sleeve extends into the hollow handle, and

(i) a sliding catch arranged to engage a respective recess in the sleeve for holding the actuator yoke in a defined position, the hollow handle further comprising a displacement guide in which the sliding catch is arranged.

5,058,502

SHORT INKING UNIT

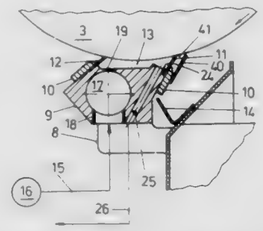
Norbert Köbler, Beindersheim; Pirmin Göbel, Erpolzheim, and Rudolf Herb, Bobenheim, all of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 147,758, Jan. 25, 1988, abandoned. This application Oct. 31, 1990, Ser. No. 607,836

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704433

Int. Cl.[5] B41F *31/04, 31/06*

U.S. Cl. 101—363 **11 Claims**



1. A short inking unit for a printing press designed to operate with an ink having approximately the viscosity of offset printing ink:

at least one pitted roll;

means for supplying ink to said pitted roll;

at least two doctor blades for said at least one pitted roll, said doctor blades engaging said pitted roll with a negatively inclined angle so that said negatively inclined doctor blades form an obtuse angle with a downward-lying segment of the circumference of said pitted roll in the rotational direction of said pitted roll, at least one of said doctor blades being deemed frontal in terms of direction of rotation of said pitted roll and another of said doctor blades being deemed rear in terms of the direction of rotation, said doctor blades further defining an ink chamber in a peripheral direction of said pitted roll, with said doctor blade which is rear in the direction of rotation being provided with a sloping drain gutter outside the ink chamber and said rear doctor blade being further provided with at least one overflow port spaced from an edge of said doctor blade, said rear doctor blade being capable of acting as means for stripping residue ink and dirt particles from said pitted roll;

sealing cheekpieces delimiting ends of the ink chamber; and,

a doctor blade holder having at least one inlet port for a connection in a pressure-tight manner with a source of ink and also having at least one overflow port.

5,058,503

AERODYNAMIC PROJECTILE

John Q. Adams III, 3385 John Adams Rd., Willow Spring, N.C. 27592

Continuation-in-part of Ser. No. 40,025, Apr. 20, 1987, abandoned. This application Jun. 9, 1988, Ser. No. 204,532

Int. Cl.[5] F42B *10/00*

U.S. Cl. 102—501 **8 Claims**

1. A projectile which is expandable within the barrel of a firearm in response to firing, comprising:

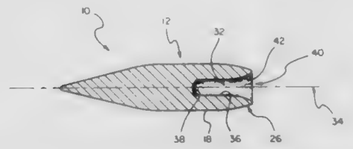
a) a cylindrical central section having an outer surface and a generally constant diameter throughout its length;

b) a leading section integrally formed with the central section and projecting forwardly therefrom, the leading section having a forward point an outer tapered surface that tapers uniformly over a substantial area of the section from the cylindrical section to the point;

c) a trailing section integrally formed with the central section and projecting rearwardly therefrom, the trailing section having an outer surface that uniformly tapers inwardly from the central section;

d) an open expansion cavity extending completely through the trailing section and substantially into the central section, and having a rear cavity opening found in the trailing section and a closed surrounding wall extending through both the trailing and the central section, and a closed end wall disposed within the central section, and wherein the expansion cavity is coaxial with respect to the projectile; and

e) wherein the firing of the projectile results in the explosive



gases moving into the open cavity and into and around the area defined by the barrel and the outer surface of the trailing section, and wherein the trailing section resists expansion due to the existence of substantially equal pressure within the cavity and about the outer surface of the trailing section, but wherein the central section expands due to the pressure on the surrounding walls in that portion of the cavity and the lack of substantial counter gas pressure on the central section surface, thus causing the outer surface of the central section to be forced outwardly against the barrel as the projectile moves through the same, resulting in improved accuracy.

5,058,504

APPARATUS FOR CONTROLLING THE LATERAL DISPOSITION OF A TRAVELING SERVICE UNIT OF A TEXTILE MACHINE

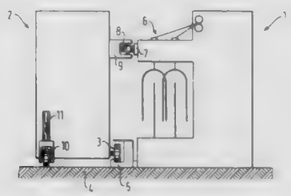
Uwe Lenkeit, Göppingen-Faurndau, and Hans-Peter Weeger, Hattenhofen, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Mar. 23, 1990, Ser. No. 498,228

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1989, 3909724

Int. Cl.[5] D01H *9/10*

U.S. Cl. 104—243 **12 Claims**



1. In a textile machine of a type having a number of stations arranged in series with one another in a longitudinal direction, a longitudinally extending, laterally facing guide surface and a traveling service unit movable longitudinally along the textile machine at a lateral spacing therefrom for individually servicing the stations, the traveling service unit including a vertical axis guide roller supported thereon for travel along the guide surface in a longitudinal direction, an apparatus for controlling lateral disposition pressure of the guide roller against the guide surface, comprising:

a first support wheel rotatably mounted on the traveling service unit for rolling travel on a floor along a path to support the traveling service unit thereon, said first support wheel being at a predetermined vertical displacement relative to the traveling service unit; and

an adjustable wheel assembly including a second support wheel laterally spaced from said first support wheel, means for rotatably mounting said second wheel to the traveling service unit at a selected vertical displacement relative thereto for rolling travel on the floor along a path to support the traveling service unit thereon, the lateral disposition pressure of the guide roller against the guide surface varying in proportion to the ratio of the vertical displacements of said first and second support wheels to one another, and means for selectively adjusting the vertical displacement of said second support wheel relative to the traveling service unit and relative to said first support wheel to achieve a selected vertical displacement ratio at which the guide roller is maintained at a predetermined lateral disposition pressure against the guide surface, whereby the traveling service unit is maintained in a desired operating position laterally of the textile machine.

5,058,505

CARRYING APPARATUS DRIVEN BY LINEAR MOTOR WITH WEIGHT CALCULATION TO CONTROL DRIVING FORCE OF MOTOR

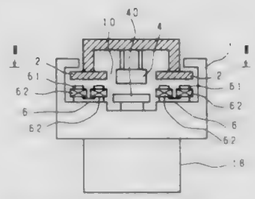
Makoto Uehira, Takatsuki, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

Filed Jan. 26, 1990, Ser. No. 470,828

Claims priority, application Japan, Feb. 2, 1989, 1-25442

Int. Cl.[5] B06L *13/06*

U.S. Cl. 104—284 **5 Claims**



1. A carrying apparatus driven by a linear motor comprising:

a carrying vehicle which runs along a track by a driving force from the linear motor and has an electromagnet for making a gap between the track and the electromagnet, gap detecting means for detecting the magnitude of said gap, electric current detecting means for detecting an electric current flowing through a coil of said electromagnet, signal outputting means for outputting signals related to the detected magnitude of the gap and electric current and to weight information of the vehicle, in which said weight information is based on the detected magnitude of said gap and electric current, and transmitting means for transmitting the outputted signals; and

running control means which is provided with receiving means for receiving the transmitted signals by said transmitting means and driving force adjusting means for adjusting the driving force of said linear motor on the basis of the received signals.

5,058,506

BIDIRECTIONAL DRIVE AND BRAKE MECHANISM

Scott A. Swan, Friendswood, Tex., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed May 23, 1990, Ser. No. 527,508

Int. Cl.[5] B61D *15/08*

U.S. Cl. 105—87 **19 Claims**

1. A space transport vehicle comprising:

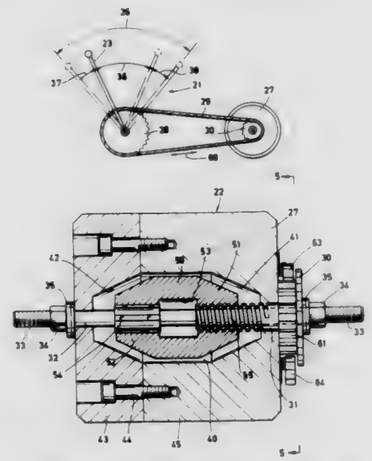
a body arranged to be movably carried by a guide member and moved thereon along a selected travel axis;

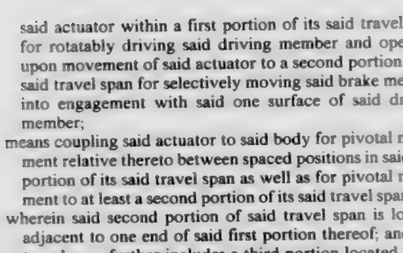
an actuator cooperatively mounted on said body for moving back-and-forth relative thereto in a predetermined travel span;

a cylindrical driving member cooperatively arranged on said body for rotation about an axis of rotation transversely oriented in relation to said travel axis and positioned on said body for engaging the outer cylindrical surface of said driving member with a guide member carrying said body;

brake means including a brake member cooperatively arranged on said driving member for moving into and out of engagement with at least one surface of said driving member;

motion-translating means on said body cooperatively coupling said actuator to said driving member and said brake member and operable upon back-and-forth movement of





said actuator within a first portion of its said travel span for rotatably driving said driving member and operable upon movement of said actuator to a second portion of its said travel span for selectively moving said brake member into engagement with said one surface of said driving member;

means coupling said actuator to said body for pivotal movement relative thereto between spaced positions in said first portion of its said travel span as well as for pivotal movement to at least a second portion of its said travel span; and

wherein said second portion of said travel span is located adjacent to one end of said first portion thereof; and said travel span further includes a third portion located at the opposite end of said first portion of said travel span so that said brake member can be selectively engaged with said drive member by moving said actuator beyond either end of said first portion of said travel span.

5,058,507

CARRIAGE DRIVE FOR MOBILE STORAGE SYSTEM WITH DRIVE CHAIN TENSIONER

James C. Muth, Eagle, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Feb. 26, 1990, Ser. No. 484,830

Int. Cl.[5] B61C *9/00*

U.S. Cl. 105—105 **4 Claims**

1. A carriage for a mobile storage system including rails embedded in a building floor, said carriage comprising:

a frame member, having two sides which run the length of the frame member;

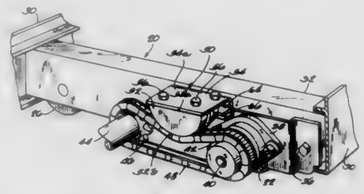
a drive shaft and a driven shaft, both journaled to said frame member and spaced apart from each other in substantially parallel relation, said drive shaft connected to a prime mover;

a drive sprocket affixed to said drive shaft;

a driven sprocket affixed to said driven shaft, substantially aligned with said drive sprocket and connected to said drive sprocket by a drive chain;

at least one of said drive shaft and said driven shaft being journaled to said frame member by means of flangette bearings, each said bearing being affixed to a respective offset bracket, each respective offset bracket being affixed to a respective one of said sides of said frame by means of bracket bolts; and

tensioning means for providing and adjusting tension in said drive chain, including:



a tensioning bracket slidably connected to said offset bracket so as to permit sliding movement of said tensioning bracket relative to said frame member in a direction transverse to said drive chain;

a resilient tensioning block affixed to said bracket and oriented so as to resiliently bear upon said drive chain; and

a tension adjusting bolt rotatably connected to said tensioning bracket and threadedly connected to a tab protruding generally perpendicularly from said offset bracket for causing sliding movement of said tensioning means and thus said resilient means toward and away from said drive chain by turning said bolt;

at least one of said bracket bolts passing through a slot in said tensioning bracket and thereby slidably connecting said tensioning bracket to said offset bracket.

5,058,508

CONVEYOR SYSTEM WITH CANTILEVER CARRIERS

Shelden M. Kavieff, and Clarence A. Dehne, both of Farmington Hills, Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation of Ser. No. 377,189, Jul. 10, 1989, abandoned. This application Nov. 28, 1990, Ser. No. 619,660

Int. Cl.[5] B61B *3/00*

U.S. Cl. 105—149 **10 Claims**

1. A conveyor system comprising a power and free track assembly including a carrier track, carriers supported thereby, and propelling means associated with said track assembly for moving the carriers longitudinally along said carrier track;

each carrier having a pair of trolleys spaced longitudinally of said carrier track, frame structure, and suspension means connecting said frame structure to said pair of trolleys for articulation on vertical axes spaced longitudinally a distance corresponding to the spacing between said pair of trolleys;

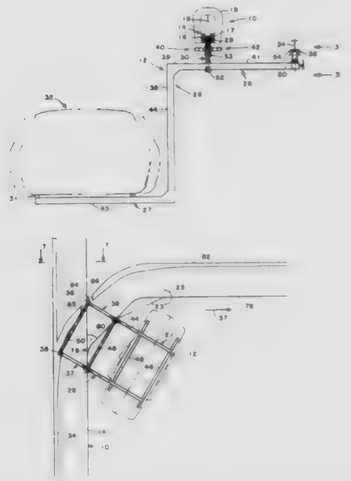
said frame structure having an article supporting portion disposed to one side of said carrier track and having a stabilizing portion disposed to the opposite side thereof;

an auxiliary track extending parallel to and located in transversely spaced relation with said carrier track at the said opposite side thereof, a pair of auxiliary track engaging means mounted on the stabilizing portion of said frame structure at a longitudinal spacing substantially corresponding to the longitudinal spacing between said pair of trolleys;

said carrier track including a main track, a branch track and a junction between said main and branch carrier tracks;

said auxiliary track including a main auxiliary track extending parallel to said main carrier track, a branch auxiliary track connected to said main auxiliary track adjacent to said junction and extending parallel to said branch carrier track;

one of said main and branch auxiliary tracks crossing one of



said main and branch carrier tracks and having at said crossing spaced apart ends defining a gap having a length less than the longitudinal spacing between said pair of auxiliary track engaging means, said crossing one of said main and branch auxiliary tracks being arranged vertically spaced from the one of the main and branch carrier tracks crossed thereby such that vertical clearance is provided at said crossing between said auxiliary track engaging means and the crossed one of the main and branch carrier tracks.

5,058,509

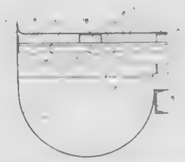
RAILWAY CAR WITH VENTED BOLSTER TO FACILITATE THE THAWING OF LADING

William E. Kurtz, Johnstown, Pa., assignor to Bethlehem Steel Corp., Bethlehem, Pa.

Continuation of Ser. No. 514,810, Apr. 26, 1990, abandoned. This application Jun. 6, 1991, Ser. No. 710,874

Int. Cl.[5] B61F *5/00*

U.S. Cl. 105—226 **4 Claims**



1. A railway car for carrying bulk materials having a pair of sidewalls and a pair of end walls, each of said end walls having a vertical upper portion and a sloping lower portion, supported on spaced trucks by a pair of body bolsters, each of said bolsters having a solid lower vertical plate portion and an upper flange portion spaced from but adjacent and parallel to said sloping lower portion of said end wall, said upper flange portion having a plurality of channel-like spacer members secured between said upper flange portion and the exterior surface of said sloping lower portion of said end wall to allow the free flow of air against the exterior surface of said sloping lower portion of said end wall while said car is moving in a train and also during lading thawing operations.

5,058,510
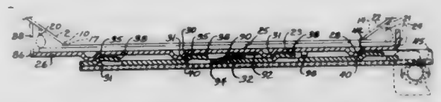
GRAVITY DISCHARGE HOPPER GATE ASSEMBLY

Richard J. Vanderlinden, Rochester Hills, Mich., assignor to Trinity Industries, Inc., Dallas, Tex.

Filed May 11, 1990, Ser. No. 522,165

Int. Cl.[5] B67D *5/60*

U.S. Cl. 105—282.2 **16 Claims**



2. A hopper for a railway car comprising a discharge chute having downwardly converging interconnected walls defining a discharge opening,

a gate comprising a pair of superposed plates comprising upper and lower plates with intervening cooperating wedge means on said plates, and means for motivating the lower plate for movement in a wedging and closing direction to close said gate, and

in which said wedging means comprises a plurality of wedge members on said top plate and corresponding wedge members on the lower plate posted about the entire area of each plate for essentially uniformly lifting and lowering the top plate without warping into closed and open positions.

5,058,511

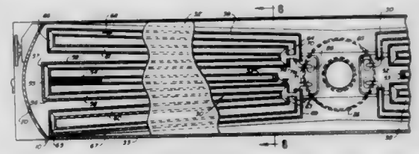
HEATED TANK CAR WITH DISCHARGE VALVE AND PRESSURE EQUALIZER

Richard P. Loevinger, 216 Oak Ridge Rd., Brandon, S. Dak. 57005

Continuation of Ser. No. 380,096, Jul. 14, 1989, abandoned. This application Nov. 7, 1990, Ser. No. 610,091

Int. Cl.[5] B61D *5/00*

U.S. Cl. 105—451 **2 Claims**



1. In a heated railway tank ar having a bottom, means providing closed chambers at opposite ends of the car along said bottom,

heating coils in each chamber, each coil having interconnected center, intermediate and outer portions,

a drain means at the bottom of the tank car, discharge means for discharging said coils comprising conduit means providing outlets separately connecting said intermediate portions and outer portions of said coils with the drain means,

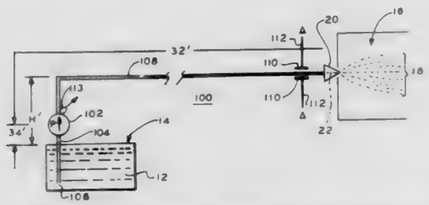
and passage means connecting said center portions to associated heating medium supply means.

5,058,512

WASTE OIL DELIVERY SYSTEM

Werner O. Specht, Sharpsville, Pa., assignor to FL Industries, Inc., Livingston, N.J.

Filed Mar. 19, 1990, Ser. No. 495,478
Int. Cl.[5] F23G 7/04
U.S. Cl. 110—238 10 Claims



1. An improved oil delivery system of the type which delivers fuel oil from a resevoir thereof to a combustion zone into which atomized oil is introduced through a orifice in a nozzle, the orifice receiving the oil at a predetermined flow rate; wherein the improvement comprises:

a non-pressure-regulated, positive displacement, metering pump located physically close to the reservoir and remote from the nozzle for removing the oil from the reservoir and for pushing the oil towards the nozzle to deliver the oil to the orifice at a constant flow rate notwithstanding the pressure of the oil in the orifice or the size of the orifice, there being no pressure regulator located between the metering pump and the orifice, and the vertical distance between the pump and the nozzle being greater than fourteen feet.

5,058,513

ENERGY RECOVERY FROM CONTAINERIZED WASTE

Michael R. Benoit, 2172 Plainfield Pk., Greene, R.I. 02827; Eric R. Hansen, 17604 W. 67 Ter., Shawnee, Kans. 66217, and Theodore J. Reese, 2622 Oriole Trail, Michigan City, Ind. 46360

Continuation of Ser. No. 412,287, Sep. 25, 1989, Pat. No. 4,974,529, which is a continuation of Ser. No. 347,075, May 16, 1989, abandoned, which is a division of Ser. No. 275,402, Nov. 23, 1988, Pat. No. 4,850,290. This application Nov. 9, 1990, Ser. No. 613,238
The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.
Int. Cl.[5] F23G 7/04
U.S. Cl. 110—346 14 Claims



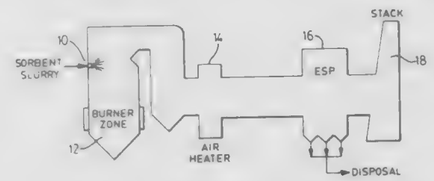
1. A method for achieving environmentally sound disposal of solid waste in an operating rotary kiln comprising a heated, rotated cylinder containing in-process mineral material, said method comprising the steps of packaging said waste in containers and charging the containerized waste into the kiln to contact the mineral material at a point along the length of the kiln cylinder where the kiln gas temperature is sufficient to decompose volatile components of the waste released upon contact of the waste with the in-process mineral material.

5,058,514

PROCESS FOR CONTROLLING ACID GAS EMISSIONS IN POWER PLANT FLUE GASES

Miriam S. Mozes, 58 Clarinda Drive, Willowdale, Ontario, Canada M2K 2W3 ; Rene Mangal, 793 Shaw Street, Toronto, Ontario, Canada M6G 3L9 , and Raja Thampi, 6049 Grossbeak Drive, Mississauga, Ontario, Canada L5N 5W9

Continuation-in-part of Ser. No. 423,782, Oct. 18, 1989
Filed Sep. 17, 1990, Ser. No. 583,210
Int. Cl.[5] F23J 11/00, 15/00
U.S. Cl. 110—345 10 Claims



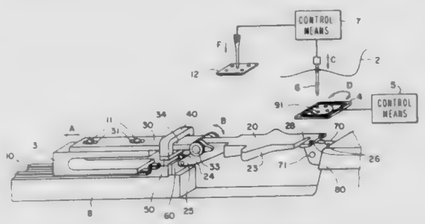
1. A process for the simultaneous reduction of the SO_2 and NO_x content of flue gas from a fossil fuel fired combustion installation, comprising the step of injecting an atomized aqueous slurry composition into the combustion chamber of the installation at a location having a temperature of between about 900° C. and about 1350° C., said aqueous slurry composition comprising a dispersion in water of a finely particulate, calcium-based sorbent for SO_2 and a nitrogenous progenitor compound which produces species reactive with NO_x at said temperature, the concentrations of sorbent and said compound in the slurry composition being respectively selected to provide calcium in the amount of between 1.5 and 3.0 moles Ca per mole of SO_2 and said compound in an amount to give a stoichiometric ratio of at least 1.5 moles of nitrogenous progenitor per mole of NO_x.

5,058,515

BUTTON STITCHING APPARATUS

Walter F. Chapman, Chesterfield, Va., and Marc R. M. Arijs, Leeds, England, assignors to Automated Machinery Systems, Inc., Richmond, Va.

Filed Jun. 6, 1989, Ser. No. 362,244
Int. Cl.[5] D05B 3/12
U.S. Cl. 112—112 7 Claims



1. An arrangement for adjusting an operative position of a tongue of a button stitcher comprising:

means including an elongated tongue member for positioning a piece of fabric in respect to a stitching needle;

a movable member and means for mounting the movable member for movement along an axis;

means for pivotally connecting said tongue member to said movable member such that said tongue member is pivotal between a first position and one of a plurality of second positions; and

adjustment means for selecting one of said plurality of said second positions, thereby defining an operative position of said tongue member in respect to said axis, wherein said adjustment means comprises:

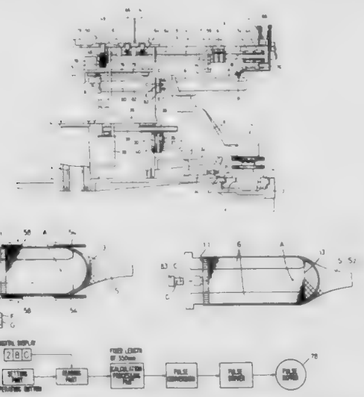
an adjustment member mounted on said movable member for movement between a plurality of detented positions, one for each of said plurality of second positions; a projection connected to and pivotal with said tongue member; and means including surfaces on said adjustment member for defining the operative position by engaging said projection when said tongue member is in a position substantially parallel to said axis, movement of the adjustment member between said detented positions causing different surfaces to be presented for engagement with said projection, and the engagement between the projection and one of said surfaces occurring when said tongue member is in one of said plurality of said second positions corresponding to one of said surfaces, there being one surface for each second position.

5,058,516

APPARATUS FOR AUTOMATICALLY POSITIONING PANTYHOSE MATERIALS IN A PANTY PART SEWING MACHINE

Hiroji Maegawa, Kashihara; Tatsurou Omuta, Kitakatsuragi; Hiroshi Ogita, and Takanori Imai, both of Yosbino, all of Japan, assignors to Takatori Corporation and Takatori Hitech Co., Ltd., both of Nara, Japan

Filed Nov. 30, 1990, Ser. No. 620,192
Claims priority, application Japan, Nov. 30, 1989, 1-312410
Int. Cl.[5] D05B 21/00
U.S. Cl. 112—121.12 1 Claim



1. An apparatus for automatically positioning pantyhose materials in a panty part sewing machine in which a template unit comprising a pair of upper and lower template assemblies is so disposed as to travel along a circular track and a panty part of pantyhose materials fitted to each of said upper and lower template assemblies is sewn into seams, characterized in:

a unit base which is located behind positions for fitting pantyhose materials by the template assemblies and above the template unit and which synchronously travels over a certain range with the template unit at equal speed, comprising:

positioning plates of upper and lower template assemblies for welt portions, each of which freely moves toward and away from each side of the upper and lower template assemblies and along the length of the template assemblies to make welt portions held from both sides move deeply onto the template assemblies;

positioning plates of upper and lower template assemblies for garter lines, each of which freely moves toward and away from each side of the upper and lower template assemblies along the length of the template assemblies to make a panty part held from both sides move deeply onto the template assemblies prior to the move of the positioning plates for welt portions;

detection sensors for detecting pantyhose materials roughly fitted to each upper and lower template assembly and actuating the positioning plates for garter lines and welt portions in a delayed manner;

sensors for positioning garter lines, which detect garter lines of the materials having been fitted by the plates for positioning garter lines at locations above and below each pantyhose material fitted to the upper and lower template assemblies to make the plates for positioning garter lines stop; and

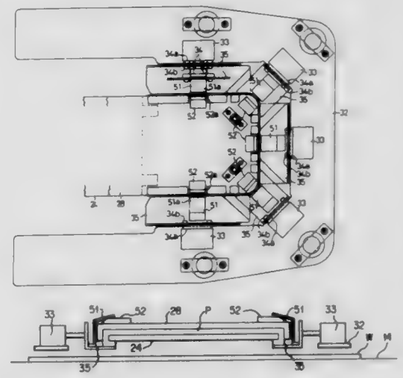
sensors for positioning welt portions, which detect welt portions having been moved by the plates for positioning welt portions at front positions to make the plates for positioning welt portions stop.

5,058,517

WORKPIECE FOLDING DEVICE FOR A SEWING MACHINE

Satoshi Morii, Nagoya; Kunihiko Murata, Tsushima; Hiroyuki Mitsui, Kasugai, and Toshiaki Iwasaki, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Mar. 9, 1990, Ser. No. 490,997
Claims priority, application Japan, Mar. 14, 1989, 1-28621[U]
Int. Cl.[5] D05B 21/00, 35/00
U.S. Cl. 112—121.15 8 Claims



1. A cloth folding device for a sewing machine, comprising:

cloth holding means for holding a cloth;

cloth turning means for turning an edge of the cloth over an edge of the cloth holding means to form a turned edge;

cloth folding means for folding the turned edge of the cloth underneath the edge of the cloth holding means to form a folded edge; and

pinching means for applying a pinching force that holds the folded edge of the cloth around the edge of the cloth holding means, where the pinching means moves between a preparatory position away from the cloth and an operational position in which the cloth is held around the edge of the cloth holding means, and wherein additionally means are provided to increase the pinching force as the pinching means moves towards the operational position and to decrease the pinching force as the pinching means moves towards the preparatory position.

5,058,518

METHOD AND APPARATUS FOR PRODUCING ENHANCED GRAPHIC APPEARANCES IN A TUFTED PRODUCT AND A PRODUCT PRODUCED THEREFROM

Roy T. Card, Chattanooga, and Brooks E. Taylor, Lookout Mountain, both of Tenn., assignors to Card-Monroe Corporation, Chattanooga, Tenn.

Filed Jan. 13, 1989, Ser. No. 297,184

Int. Cl.[5] D05C *15/30, 15/32, 15/34, 17/02*

U.S. Cl. 112—266.2 **16 Claims**

12. Process of producing a tufted product containing pin dots comprising the steps of:

(a) progressively passing a backing material in a linear path of travel;

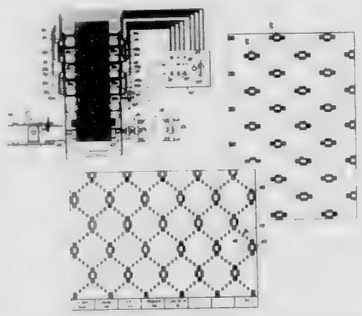
(b) disposing two rows of needles adjacent to and transversely of the path of travel of said backing material;

(c) feeding prescribed amounts of background yarns to selected ones of said needles for producing background tufts;

(d) feeding accent yarns which contrast from said background yarns to other ones of said needles for producing accent yarn loops in both rows;

(e) moving said rows of needles laterally with respect to said backing material while reciprocating said needles for producing background loops and accent loops in said backing material; and

(f) controlling the feed of said accent yarns to provide low accent loops which are hidden by said background loops and high accent loops which appear as longitudinally and



transversely spaced pin dots against the background of said background loops.

5,058,519

EMERGENCY DAMAGE PATCH AND METHOD FOR BOATS OR THE LIKE

Denny L. Collins, 935 Marine Drive, Bellingham, Wash. 98225

Filed Apr. 2, 1990, Ser. No. 502,832

Int. Cl.[5] B63B *43/16*

U.S. Cl. 114—227 **21 Claims**

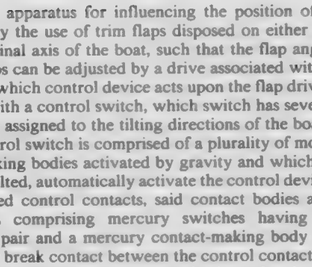
1. An apparatus for covering breaks, cracks, holes, and other breaches, in a wall means of a container such as a ship hull, comprising:

a. a plate means adapted to be pressed against said wall means and to cover over said breach in a manner to form a seal against a containable fluid;

b. a substantially flexible strap means a first free end portion of which is able to be pulled through a strap securing means included in said plate means;

c. an anchor means being fixed to a second end of said strap means and comprising one or more arm means which are able to be collapsed into a first collapsed position or extended into a second operating position where said arm means extend from a hub means of said anchor means and a spring means of said anchor means urges said arm means into said operating position; whereby

said anchor means may pass through said breach when said arm means are in the collapsed position and said spring means urges said arms into said operating position on the other side of said breach;



said plate means has substantial freedom of movement relative to said anchor means and is able to be positioned to cover said breach; and

said strap means is able to be pulled through said strap securing means so as to tighten said plate means against said wall means with said plate means forming said seal against said containable fluid.

5,058,520

APPARATUS FOR INFLUENCING THE POSITION OF A BOAT IN WATER

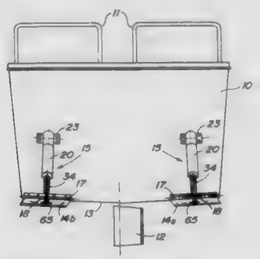
Volker A. Fahrney, Wuppertal, Fed. Rep. of Germany, assignor to elTGrim Hugo Kruger KG, Ennepetal, Fed. Rep. of Germany

Filed Feb. 8, 1989, Ser. No. 308,209

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1988, 3803942

Int. Cl.[5] H01H *29/22*

U.S. Cl. 114—285 **9 Claims**



1. An apparatus for influencing the position of a boat in water, by the use of trim flaps disposed on either side of the longitudinal axis of the boat, such that the flap angles of said trim flaps can be adjusted by a drive associated with a control device, which control device acts upon the flap drive in accordance with a control switch, which switch has several control contacts assigned to the tilting directions of the boat, wherein the control switch is comprised of a plurality of movable contact-making bodies activated by gravity and which, when the boat is tilted, automatically activate the control device through associated control contacts, said contact bodies and control contacts comprising mercury switches having a control contact pair and a mercury contact-making body which will make or break contact between the control contacts with a tilt of about one angular degree from horizontal and wherein two separate mercury switches are assigned to each of the longitudinal tilt axis and the transverse tilt axis of the boat and have a construction such that one of each two separate pairs responds by establishing electrical contact between its associated control contacts when the boat tilts along one or more of its longitudinal tilt axis and transverse tilt axis and wherein each of the two mercury switches assigned to the boat tilting axes are connected by one of their two contacts to a dc pole and by the other contact to a terminal of a voltage divider, the tap of which is connected to a comparator circuit, which generates control signals to be applied to the drives.

5,058,521

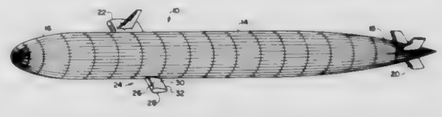
SUBMARINE WITH KEEL WING FOR EFFECTIVELY COUNTERING TENDENCY TO SNAP ROLL IN HIGH SPEED TURNS WHILE FULLY SUBMERGED

Henry E. Payne III, Palm Bay, Fla., assignor to Payne Engineering Company, Scott Depot, W. Va.

Continuation of Ser. No. 356,887, May 25, 1989, abandoned. This application Sep. 28, 1990, Ser. No. 590,057

Int. Cl.[5] B63G *8/06*

U.S. Cl. 114—339 **14 Claims**



1. A submarine having a decreased tendency to roll in turns while submerged, comprising:

an elongated hull having a bow, a stern and a generally cylindrical intermediate portion extending between the bow and stern;

said stern being provided with rudder means which can be actuated for steering the hull laterally to the left and to the right relative to an imaginary vertical centerline plane of the hull;

actuator means for actuating said rudder means;

a conning tower externally provided on the top of said hull in said intermediate portion; and

keel-wing means for countering a rolling movement caused by said conning tower when the submarine is executing a turn, said keel-wing means being externally provided on the bottom of said hull at least generally opposite said conning tower, and having at least one portion which is pivotable leftwardly and rightwardly about a respective vertical axis, relative to said vertical centerline plane, for movement in a direction effectively opposite to said rudder when said rudder, as actuated by said actuator means is causing the submarine, while submerged and moving forwardly, to execute a turn.

5,058,522

PORTABLE PERSONAL FLOATATION DEVICE

Martin G. Bauer, 3039 State St., Bismarck, N. Dak. 58501

Continuation of Ser. No. 234,898, Aug. 22, 1988, Pat. No. 4,926,781. This application May 21, 1990, Ser. No. 526,294

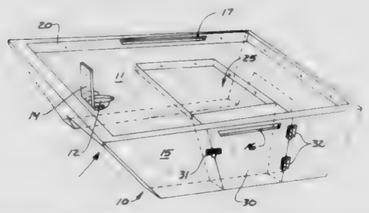
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] B63C *9/10*

U.S. Cl. 114—351 **8 Claims**

1. A portable personal floatation device comprising a floating boat structure having a pair of spaced apart sides, and front and rear ends, cross panels between the sides adjacent to the front and rear ends at a first level immediately below upper edges of the sides, a seat member formed in said personal floatation device below the first level in the center portions of the personal floatation device and spaced from both the front and rear ends a selected amount, and an opening having access

from a door formed on one of the sides, the opening defined in the personal floatation device for an operator's legs to extend

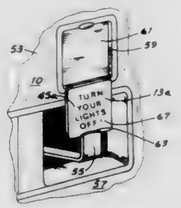


therethrough while seated on the seat portion, the seat portion being adjacent to the rear end of the personal floatation device.

5,058,523
WARNING DEVICE

John W. Mikkonen, 5916 Sunset Blvd., Racine, Wis. 53406, and Frederick C. Hansen, 19022 - 58th Rd., Union Grove, Wis. 53182

Continuation-in-part of Ser. No. 374,764, Jul. 3, 1989, Pat. No. 4,936,244. This application Apr. 4, 1990, Ser. No. 504,632
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.
Int. Cl.[5] B60Q *11/00;* **G09B** *11/10*
U.S. Cl. 116—28 R **7 Claims**



1. In a motor vehicle, a warning device for preventing inadvertent headlight illumination by selectively interfering with access to an interior door handle of the vehicle and comprising:
- a motor vehicle door including an interior door handle for opening the door from within the vehicle and further including an interior surface visible from within the vehicle;
- a cavity formed in the interior surface and positioned generally adjacent the door handle;
- a panel received in the cavity and pivotably movable from a first repose position within the cavity to a second position for exposing a warning legend, the legend being exposed to the view of an operator of the vehicle only when the panel is in the second position;
- the panel also interfering with access to the door handle when the panel is in the second position;

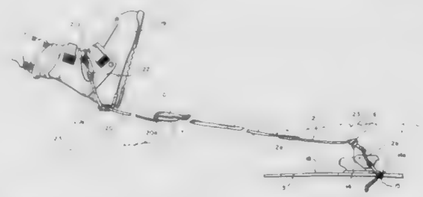
the device thereby preventing inadvertent headlight illumination.

5,058,524
DEVICE FOR LOCATING LOST SKIS IN POWDER SNOW

John T. Guthrie, Jr., 3673 Atlas Way, West Valley City, Utah 84120

Filed Jan. 17, 1991, Ser. No. 642,513
Int. Cl.[5] G08B *5/00;* **A63C** *11/00*
U.S. Cl. 116—209 **7 Claims**

1. A device for locating a lost ski in powdered snow while skiing, comprising an envelope open at one end and containing therewithin an elongate, colored streamer freely bundled in compact condition; means for releasably fastening said envelope to a ski worn by a skier with his or her ski boot held by a fall-releasable ski boot binding; and a first length of cord or rope having one end secured to an end of said streamer at the open end of said envelope and its other end adapted to be

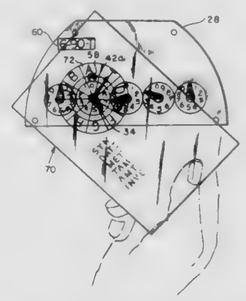


readily detachably secured to a part of said ski or ski boot binding; a second length of cord or rope having an end secured to said envelope and its other end adapted to be readily detachably secured to said ski boot.

5,058,525
DIAL TAMPERING DETECTOR

John F. Rilling, Norcross, Ga., assignor to Universal Protection Corporation, Norcross, Ga.

Filed Jul. 19, 1990, Ser. No. 555,045
Int. Cl.[5] G01D *13/00;* **G09F** *11/02*
U.S. Cl. 116—284 **16 Claims**

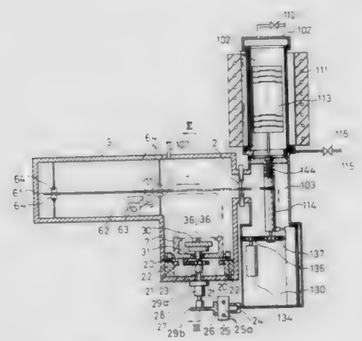


1. Apparatus for use in detecting tampering with a dial of a utility meter of the type including at least one rotary dial having angularly spaced, circumferentially arranged indicia and an indicator, one of said indicia and said indicator being rotatable by a gear train having at least one gear which rotates in unison therewith in operation, said apparatus comprising:
- encoding means for superimposing upon said gear a code which corresponds in a predetermined fashion with said indicia of said dial;
- means for annotating upon a visible surface of the meter a predetermined key to a given initial correspondence of the code with the relative position of the indicator and indicia of the dial;
- means on said meter for permitting viewing of at least a predetermined portion of the code on said gear sufficient to ascertain the correspondence or non-correspondence of said viewed portion of said code with the observed relative position of said dial indicator and indicia in accordance with said key.

5,058,526
VERTICAL LOAD-LOCK REDUCED-PRESSURE TYPE CHEMICAL VAPOR DEPOSITION APPARATUS

Yoshinari Matsushita; Kenji Fukumoto, both of Hirakata, and Satoshi Takeda, Arai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 3, 1989, Ser. No. 318,315
Claims priority, application Japan, Mar. 4, 1988, 63-51923
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 **12 Claims**

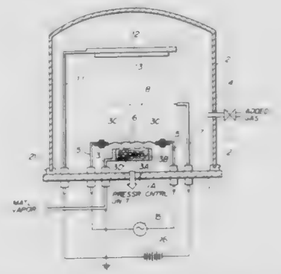


1. A CVD apparatus comprising:
- a reaction chamber including an evacuation port connected to an evacuation means, a reaction gas inlet port connected to a reaction gas supply, and a heater for heating object wafers within said reaction chamber,
- an auxiliary chamber vertically connected with said reaction chamber, said auxiliary chamber having an elevator for bringing up a boat, for holding said object wafers, to said reaction chamber and bringing down the boat to said auxiliary chamber,
- a loading-unloading chamber for gas-tightly and provisionally storing object wafers before being loaded into said auxiliary chamber, after being unloaded from said auxiliary chamber following completion of chemical vapor deposition, and before being taken out to ambient atmosphere, said loading-unloading chamber being connected to said auxiliary chamber with a gate valve and to an inert gas introducing means, said loading-unloading chamber having a loading part in a first end for receiving said object wafers from an ambient atmosphere part and loading said object wafers into said auxiliary chamber, an unloading part in a second end for receiving said object wafers from the auxiliary chamber and discharging said object wafers to another ambient atmosphere part, and a loading/unloading part at a center position between said first and second ends for at one time provisionally storing said object wafers having been transferred from said loading part and to be transferred into said auxiliary chamber, and at another time provisionally storing said object wafers having been transferred from said auxiliary chamber and to be transferred to said unloading part, said loading-/unloading part being disposed in front of said auxiliary chamber, with said loading part, said loading/unloading part and said unloading part being disposed on a line which is substantially perpendicular to a line connecting the center of said auxiliary chamber and the center of said loading/unloading part, and
- slide means for slidingly transferring two cassettes, each for carrying a plurality of wafers, between a loading position consisting of said loading part and said loading/unloading part and an unloading position consisting of said loading-/unloading part and said unloading part.

5,058,527
THIN FILM FORMING APPARATUS

Wasaburo Ohta, and Masashi Nakazawa, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 24, 1990, Ser. No. 557,375
Int. Cl.[5] C23C *8/36, 14/32, 16/48, 16/50*
U.S. Cl. 118—723 **7 Claims**



1. A thin film forming apparatus for forming a thin film on a substrate with a vaporized source material being supplied from an external material supplying unit, said thin film forming apparatus comprising:
- a vacuum chamber for providing a vacuum pressure at which the vaporized source material is deposited on the substrate;
- material supplying means for supplying particles constituting the vaporized source material to the vacuum chamber;
- electrode means for holding the substrate when the source material is deposited on the substrate, said electrode means having a surface on which the substrate is held, said surface facing the material supplying means;
- grid means provided between the material supplying means and the electrode means, said grid means allowing said particles to travel from said material supplying means to the substrate through the grid means;
- filament means provided between the grid means and the material supplying means for carrying out thermionic emission, said filament means supplying thermions that ionize said particles to emit the thus ionized particles from the material supplying means;
- electrical means for applying a voltage to the grid means so that the grid means has a positive potential when measured with respect to the electrode means and with respect to the filament means;
- a surface of said material supplying means having a plurality of openings confronting said electrode means, said plurality of openings serving to direct said emitted particles from said material supplying means toward the substrate; and
- emission uniforming means provided within said material supplying means, said emission uniforming means being made of a glass wool and uniforming the quantity of said particles emitted from said material supplying means through said plurality of openings.

5,058,528
CAT LITTER BOX APPARATUS AND METHOD

Erika R. Counseller, 6261 E. 20th St., Tucson, Ariz. 85711, and Susan M. Rinard, 4675 S. Harrison, #246, Tucson, Ariz. 85730

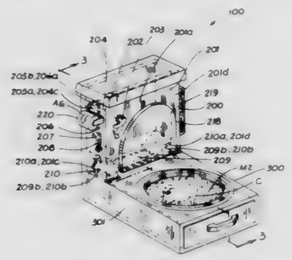
Filed Dec. 13, 1989, Ser. No. 450,239
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—165 **4 Claims**

1. A pet animal litter box apparatus, said apparatus comprising:
(a) tank means for storing litter material;
(b) base means for interfacing with said tank means; and
(c) drawer means removably enclosed within said base

means for receiving said litter material from said tank means and for being used by a pet animal, such as a cat, for going to the toilet,

said base means having an entry way for allowing said animal to access said litter material,

said tank means including dispensing means disposed within said tank means for controllably dispensing said cat litter material into said drawer means, said dispensing means including: lever means externally protruding from said tank means for initiating dispensing of said cat litter material, first shaft means coupled to said lever means for transferring actuating action from said lever means, second shaft means coupled to said first shaft means for translating said actuating action, a swivel dispensing plate



means interconnected to said second shaft means for responding to said actuating action to dispense said litter material into said drawer means and spring means for maintaining said swivel dispensing plate in a closed position by providing an opposing force to said actuating action.

said tank means being shaped in a substantially rectangular form and having a top cover and a side appendage cover member, said form being substantially similar to a tank member of a human toilet facility having a rectangular shape, said side appendage cover member being fixedly attached to said tank member for simulating a raised lid for said human toilet facility, and

said base means having a fixedly attached, ring-like seat appendage member encircling said entry way.

5,058,529

AIR MIXING WATER PUMP SYSTEM FOR NATURAL AQUARIUM

Te-Long Chiu, 1188 Spring Hill Way, San Jose, Calif. 95120

Filed Mar. 28, 1990, Ser. No. 500,566

Int. Cl.[5] A01K *63/00*

U.S. Cl. 119—3 **6 Claims**

4. An aquagarden comprising:

an air-water switching unit comprising:

an air-water switching chamber having an air inlet at one side of said chamber, a water inlet at the other side of said chamber separated from said air inlet by a movable piston, and an air-water outlet between said air inlet and said water inlet;

said piston residing inside said air-water switching chamber and attached to a piston bar;

whereby, said piston is moved by a pressure difference between air on one side and water on the opposite side of the piston;

an aquarium with a bottom drain and an air-water inlet at higher level than the water level in said aquarium;

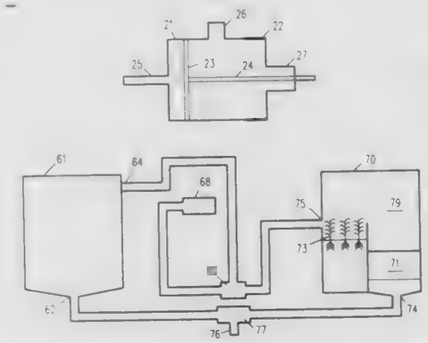
a water tank having a bottom water inlet connected to a filter compartment, a clean water outlet, and a water plants growing area;

a reverse-flush, two-way valve connecting said bottom drain of said aquarium and said bottom inlet of said water tank;

an air pump connected to said air inlet of said air-water switching unit;

said air-water outlet of said air-water switching unit connected to said air-water inlet of said aquarium;

said water inlet of said air-water switching unit connected to said clean water outlet of said water tank;



whereby, aquarium water flows through said reverse-flush, two-way valve, through said bottom water inlet and said filter compartment of said water tank, and then through said clean water outlet of said water tank into said water inlet of said air-water switching unit, and is then pumped through said air-water outlet of said air-water switching unit to said air-water inlet of said aquarium.

5,058,530

DEVICE FOR COLLECTING EGGS

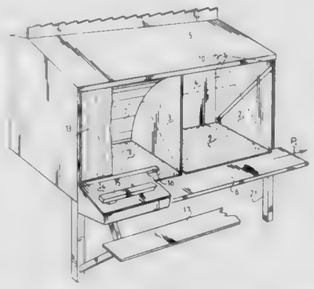
Cornelis A. W. Van De Ven, Stokkelen 10, NL-5521 NB, Eersel, Netherlands

Filed Jun. 14, 1989, Ser. No. 365,896

Claims priority, application Netherlands, Nov. 6, 1987, 8702668

Int. Cl.[5] A01K *31/16*

U.S. Cl. 119—48 **20 Claims**



1. An egg collecting device comprising a housing means including housing portions defining an area for receiving egg-laying animals, said portions defining a side opening in communication with said area, said portions including a bottom portion having an upper surface on which eggs are laid, said bottom portion being mounted for swinging movement about an axis disposed adjacent a lower part of said side opening so that the bottom portion can swing from a laying position to a further position which substantially closes said side opening, manually-controllable operating means for moving said bottom portion from said laying position to said further position to force an egg-laying animal out of said housing, and conveying means disposed adjacent said side opening for receiving eggs from said upper surface.

5,058,531

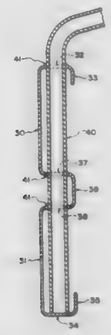
FEEDER FOR ANIMALS

Edward A. Akins, Box 158, Winnipeg, Manitoba, Canada R2H 3B4

Continuation-in-part of Ser. No. 375,262, Jun. 3, 1989, Pat. No. 4,957,067. This application May 23, 1990, Ser. No. 527,209

Int. Cl.[5] A01K *1/10, 5/00*

U.S. Cl. 119—60 **4 Claims**



1. A feeder for receiving bale for distributing the bale to a number of animals, the feeder comprising a skirt portion which is of generally cylindrical shape for surrounding the bale with a longitudinal axis of the cylindrical shape extending vertically, one axial end of the skirt portion having means thereon for resting on the ground such that the skirt portion is generally upstanding from the ground to a second axial end thereof, and a plurality of bars having lower portions thereof fastened to the skirt portion so that the bars extend generally upwardly from the second axial end of the skirt portion for confining the animal on an exterior of the cylindrical skirt portion, the skirt portion comprising a single integral sheet of metal curved about vertical lines therein to follow the cylindrical shape and bent about spaced horizontal lines therein to define an upper sheet portion and a lower sheet portion with both sheet portions lying in a common imaginary cylindrical surface surrounding said vertical longitudinal axis, an upper flange portion about the upper sheet portion and bent relative to the upper sheet portion out of the cylindrical surface to lie at an angle thereto, an intermediate flange portion bent relative to both the upper and lower sheet portions to lie out of the cylindrical surface and a lower flange portion below the lower sheet portion and bent relative to the lower skirt portion to lie out of the cylindrical surface, said lower portions being connected to the skirt portion so as to extend from a portion at least aligned with the lower sheet portion to a position above the upper sheet portion.

5,058,532

DEVICE FOR OPERATING AN ANIMAL SQUEEZE CHUTE

George K. Lamb, Box 340, Gruver, Tex. 79040

Filed Dec. 17, 1990, Ser. No. 628,446

Int. Cl.[5] A61D *3/00*

U.S. Cl. 119—98 **4 Claims**

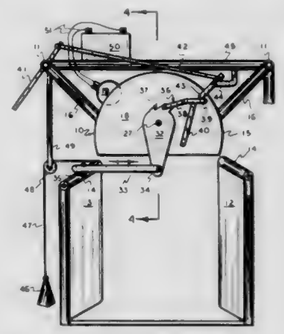
1. A device adapted for use with an animal squeeze chute having fixed and pivotable vertical walls in facing juxtaposition, said device serving to rapidly and controllably swing said pivotable wall between open and closed positions, and comprising of:

a) a high-torque electric motor having an output shaft equipped with a toothed gear drive wheel,

b) a flywheel having a toothed circular rim that engages said drive wheel, said flywheel being orthogonally centered upon drive shaft means having forward and rearward extremities,

c) a housing that accommodates said flywheel and has apertured front and rear panels equipped with bushings which rotatively support the forward and rearward extremities respectively, of said drive shaft means,

d) a ratchet arm having upper and lower extremities and orthogonally mounted upon the rearward extremity of said drive shaft means exterior to said housing, said upper extremity having a series of unidirectionally oriented teeth, said ratchet arm being adapted to rotate less than a half revolution about said drive shaft means from a starting position to a stop position when activated by the motor,



e) an elongated action arm having a proximal extremity pivotably joined to the lower extremity of said ratchet arm, and a distal extremity adapted to engage said pivotable wall, said action arm being adapted to move substantially horizontally and thereby swing said wall to its closed position when said ratchet arm is in its stop position, and allow said wall to go to its open position when said ratchet arm is in its starting position,

f) a latching arm pivotably mounted upon the rear panel of said housing and having a forward extremity that engages said teeth and thereby retains the ratchet arm in its stop position, and a rearward extremity which is spring-biased in a manner to urge said forward extremity toward said teeth,

g) release means for pressing against the rearward extremity of said latching arm in opposition to said spring-biasing to cause the latching arm to disengage said teeth, and

h) counterbalance weight means which, when said teeth are disengaged, cause said ratchet arm to be restored to its starting position, with attendant movement of said pivotable wall to its open position.

5,058,533

ANIMAL ATTRACTING LITTER

Thomas E. Nelson, 3614 Montrose, Suite 906, Houston, Tex. 77006

Continuation-in-part of Ser. No. 224,426, Jul. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 940,902, Dec. 10, 1986, abandoned. This application Jan. 11, 1990, Ser. No. 464,657

Int. Cl.[5] A01K *1/015*

U.S. Cl. 119—173 **21 Claims**

1. An animal litter capable of attracting animals, comprising:

litter material; and

a rosin oil, the amount of the rosin oil being one part of rosin oil per 900 to 1400 parts of animal litter by weight.

5,058,534

PIPE WALL OF HOT REACTION CHAMBERS

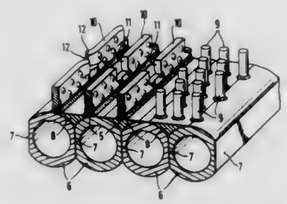
Hans-Christoph Pohl, Witten, and Klaus Köhnen, Mülheim/-Ruhr, both of Fed. Rep. of Germany, assignors to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Aug. 17, 1990, Ser. No. 571,294

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1989, 3928371

Int. Cl.[5] F22B *21/34*

U.S. Cl. 122—6 A **11 Claims**



1. A pipe wall for hot reaction chambers, comprising a plurality of pipes welded with one another to form a substantially flat surface defining a heat-loaded side of said pipe wall; and a plurality of metallic holding elements welded to said substantially flat surfaces for retaining a ceramic coating thereon.

5,058,535

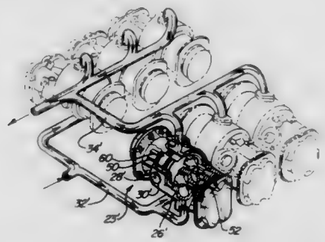
PARALLEL FLOW COOLANT CIRCUIT FOR INTERNAL COMBUSTION AIRCRAFT ENGINES

Ronald E. Wilkinson, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 187,086, Apr. 28, 1988, abandoned. This application Aug. 10, 1990, Ser. No. 565,908

Int. Cl.[5] F02B *75/18*

U.S. Cl. 123—41.28 **7 Claims**



1. A reciprocating internal combustion engine comprising:

at least two horizontally opposing cylinders, each cylinder having a cylinder head and an engine block end;

an engine block;

a piston reciprocally slidably mounted in each of said cylinders delivering power through said engine block;

a coolant jacket radially provided about each of said cylinders defining the same coolant passage, said engine block end such that said coolant jacket does not extend over said cylinder head, thereby saving weight for each cylinder from a coolant inlet aperture in said jacket adjacent the head end of said cylinder to a coolant outlet aperture in said jacket at said engine block end of said cylinder;

means for delivering the same amount of coolant to each of said inlet apertures and for eliminating said coolant from said outlet apertures;

said means including an inlet manifold and an outlet manifold;

said inlet manifold having an inlet line of the same capacity to each of said inlet apertures in parallel flow; and

said outlet manifold having an outlet line to each of said outlet apertures in parallel flow;

whereby coolant is delivered through each jacket in parallel flow to provide engine cooling of each cylinder with the lowest temperature coolant delivered to the hotter head end of the cylinder and removed at the cooler engine block end of the cylinder.

5,058,536

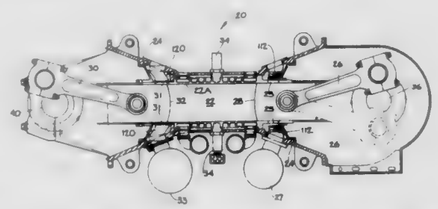
VARIABLE-CYCLE RECIPROCATING INTERNAL COMBUSTION ENGINE

Richard P. Johnston, 3044 Middleboro Rd., Morrow, Ohio 45152

Continuation of Ser. No. 148,286, Jan. 29, 1988, Pat. No. 4,856,463, which is a continuation-in-part of Ser. No. 7,951, Jan 28, 1987, abandoned. This application Jul. 13, 1989, Ser. No. 380,560

Int. Cl.[5] F02B *25/08*

U.S. Cl. 123—51 BA **2 Claims**



1. A variable cycle internal combustion engine having a pair of opposed, spaced-apart reciprocating pistons mounted in a cylinder, each piston connected to a respective crankshaft, comprising:

(a) a gear train mated with the crankshafts, for synchronizing the relative angular relationship between the crankshafts, said gear train including a plurality of gear member; and

(b) timing actuator means connected to said gear train for selectively and continually adjusting the angular relationship between the crankshafts, said timing actuator means including

(i) splines carried by one end of one of said crankshafts, said splines having a first spline pitch;

(ii) internal splines formed through the center of a first gear member, said splines having a second spline pitch, said second spline pitch being different from said first spline pitch;

(iii) a gear insert, said gear insert including internal splines which slidably and complimentarily engage said splines of said of one said crankshafts, said gear insert including external splines which slidably and complimentarily engage said internal splines of said first gear member;

(iv) an inner yoke connected to said gear insert;

(v) an outer yoke connected to said inner yoke by a bearing; and

(vi) means for linearly actuating said outer yoke parallel to the axis of said one of said crankshafts, whereby the differential between the spline pitch of said gear member and the spline pitch of said one of said crankshafts produces an angular phase change between said crankshafts.

5,058,537

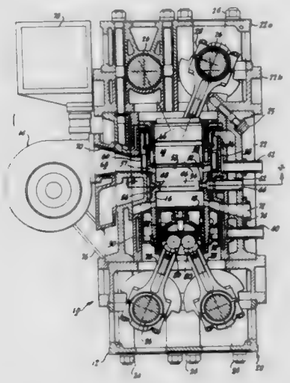
OPTIMIZED HIGH PRESSURE INTERNAL COMBUSTION ENGINES

Marius A. Paul, and Ana Paul, both of 1100 E. Orangethorpe Ave., Ste. 140, Anaheim, Calif. 92801

Filed Apr. 21, 1989, Ser. No. 341,533

Int. Cl.[5] F02B *25/08*

U.S. Cl. 123—51 BA **30 Claims**



1. An internal combustion engine comprising an engine housing including a cylinder with a circular cross section with opposed pistons reciprocal in the cylinder, and at least one fuel injector for injecting fuel into the cylinder, the cylinder having:

a central regional combustion chamber comprising a constricted portion of the cylinder with a central bore open to the opposed pistons for concentrating and mixing air compressed by the pistons and fuel injected by the injector,

wherein the constricted portion of the cylinder is formed with a constriction collar having side faces, wherein the pistons each have a piston head with a top face portion that positions opposite and proximate one of the side faces when the pistons are at top dead center, wherein a squish of compressed air is forced from between the side face of the collar and the top face of the piston to improve turbulent mixing of fuel injected into the central regional combustion chamber, and wherein the collar forms a central bore having a cross sectional area that is non-circular such that the squish of compressed air forced from between the side face of the collar and the top face of the piston is not uniformly radially directed.

5,058,538

HYDRAULICALLY PROPELLED PHNEUMATICALLY RETURNED VALVE ACTUATOR

Frederick L. Erickson, and William E. Richeson, both of Fort Wayne, Ind., assignors to North American Philips Corporation, New York, N.Y.

Filed Jul. 24, 1990, Ser. No. 557,369

Int. Cl.[5] F01L *9/02*

U.S. Cl. 123—90.12 **13 Claims**

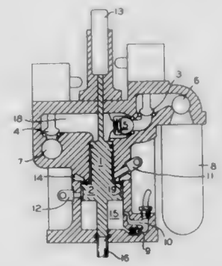
1. An asymmetrical bistable hydraulically powered actuator mechanism comprising:

a replenishable source of high pressure hydraulic fluid for causing translation of a portion of the mechanism in one direction;

an opening damping chamber in which air is compressed during translation of the mechanism portion in said one direction, compression of the air slowing the mechanism portion translation in said one direction;

means for temporarily preventing reversal of the direction of translation of the mechanism portion when the motion of that portion slows to a stop; and

means operable on command to disable the temporarily



preventing means freeing the portion of the mechanism to move under the urging of the air compressed in the opening damping chamber in a direction opposite said one direction.

5,058,539

VALVE TIMING ADJUSTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

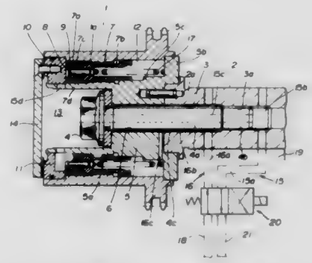
Masaharu Saito; Seiji Tsuruta; Katsuhiko Uchida, and Seiji Suga, all of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Kanagawa, Japan

Filed Sep. 20, 1990, Ser. No. 585,735

Claims priority, application Japan, Sep. 20, 1989, 1-109815[U]; Feb. 28, 1990, 2-19539[U]; Feb. 28, 1990, 2-19540[U]

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **13 Claims**



1. A valve timing adjusting system comprising:

an engine revolution synchronous rotary element driven by an output of an internal combustion engine;

a camshaft assembly including a driven member secured to a camshaft by means of a fastening bolt engaged with an axial bore formed in said camshaft;

an intermediate member disposed between the rotary element and said driven member for transmitting rotating torque from said rotary element to said driven member with a given phase relationship between said rotary element and said driven member, said intermediate member being thrustingly movable for adjusting said phase relationship;

first and second pressure chambers formed at one and the other side of said intermediate member, respectively, for positioning said intermediate member at a position where pressure balance is established;

a first fluid path defined through said fastening bolt for fluid communication between said first pressure chamber and a pressure source;

a second fluid path defined between said fastening bolt and the inner periphery of said axial bore for establishing fluid

communication between said second pressure chamber and said pressure source; and

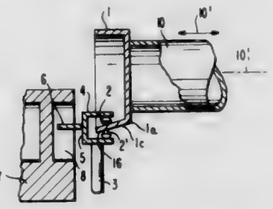
a flow control valve means responsive to a control signal commanding desired phase relationship between said rotary element and said driven member establishing and blocking said first and second fluid paths.

5,058,540

ENGINE VALVE DRIVING DEVICE

Takuya Matsumoto, 228, Kuroda 2-chome, Kanazawa-shi, Ishikawa-ken, Japan

Filed Nov. 26, 1990, Ser. No. 617,818
Claims priority, application Japan, Nov. 24, 1989, 1-305869
Int. Cl.[5] F01L *1/34, 1/30*
U.S. Cl. 123—90.17 **8 Claims**



1. An engine valve driving device, comprising:

a tubular cam means rotatable about a horizontal axis, said cam means incorporating a peripheral wall surrounding said axis; and

a pivoting ball assembly mounted on a valve stem for vertical motion therewith, said assembly including contact means engaging inner and outer surfaces of the peripheral wall of said cam means said peripheral wall is generally tubular and has an inner end and an outer end along said axis, and wherein the inner and outer ends of said wall are shaped to produce different patterns of motion in said valve stem, whereby said valve stem is driven by rotation of said cam means.

5,058,541

VALVE OPERATING SYSTEM OF INTERNAL COMBUSTION ENGINE

Mitsuhiro Shibata, and Toshiyasu Komatsu, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1990, Ser. No. 513,795
Claims priority, application Japan, Apr. 26, 1989, 1-106594
Int. Cl.[5] F01M *9/10*
U.S. Cl. 123—90.37 **7 Claims**

1. A valve operating system of an internal combustion engine, comprising:

an engine valve having a valve shaft and a valve body at a tip end of the valve shaft;

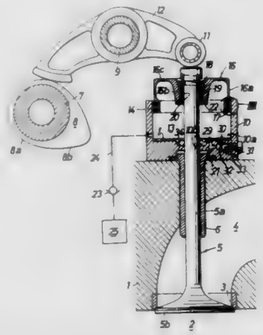
said engine valve being supported on an engine body for opening and closing operations while resiliently biased in a valve-closing direction;

a driving member for driving said engine valve in a valve-opening direction operatively connected to a rear end of said valve shaft;

a sleeve fixed to the engine body having a sliding bore with a bottom portion, and a guide hole through which said valve shaft is air-tightly and movably passed;

a double cylindrical piston including inner and outer cylindrical portions fixed at its inner cylindrical portion to the valve shaft adjacent the rear end thereof and slidably fitted at its outer cylindrical portion in said sliding bore through a seal member to form an air pressure chamber between the piston and the bottom portion of the sliding bore;

said seal member positioned in a lower portion of the outer cylindrical portion of the piston; and



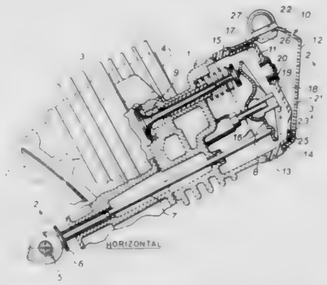
a cylindrical lifter slidably fitted in said sliding bore above said seal member.

5,058,542

ROCKER BOX COVER ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

James M. Grayson, Pewaukee, and Thomas L. Barnhardt, Menomonee Falls, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Jan. 28, 1991, Ser. No. 647,301
Int. Cl.[5] F01M *9/10*
U.S. Cl. 123—90.38 **8 Claims**



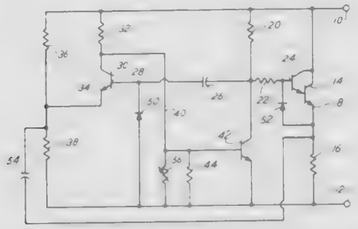
1. A rocker arm cover assembly for an internal combustion engine, said engine having a cylinder having one end enclosed by a cylinder head and having the opposite end communicating with a crankcase, said engine also including a valve disposed in said head and valve actuating means for operating said valve, said cover assembly constituting a pre-assembled unit including an inner cover section and an outer cover section, said inner cover section being secured to said cylinder head and defining a first chamber to house said valve actuating mechanism, said inner cover section and said outer cover section defining a second chamber, aperture means in said inner cover section and providing communication between said chambers, check valve means disposed in said aperture means for permitting flow of oil mist from said first chamber to said second chamber, and for preventing flow in the opposite direction, said second chamber having a low end and drain means in said inner cover section and communicating with said low end for draining oil separated from said mist from said second chamber to said first chamber.

5,058,543

ELECTRONIC IGNITION MODULE

Gary Eck, Otwell, Ind., assignor to Sten's Lawnmower Parts, Inc., Jasper, Ind.

Filed Oct. 23, 1990, Ser. No. 602,130
Int. Cl.[5] F02P *1/08*
U.S. Cl. 123—149 C **14 Claims**



1. An electronic ignition module for an internal-combustion engine having a magneto ignition, the module applying to a pair of terminals a short circuit at a time determined by the voltage across the terminals, the module comprising:

(a) a switchable semiconductor device connected between the two terminals to establish and remove the short circuit;

(b) a maximum-sensing first transistor connected to the terminals and to the switchable semiconductor device to sense a maximum value of the voltage across the terminals and produce a signal causing a switch of the switchable semiconductor device to an open circuit, the first transistor switched on by a rising voltage and switched off by a constant voltage, the first transistor coupled by a second transistor to the switchable semiconductor device to switch the switchable semiconductor device out of conduction, the second transistor further connected to the first transistor to supply positive feedback when the first transistor is switched off; and

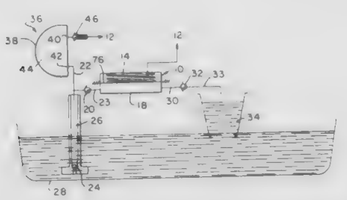
(c) a voltage-sensitive circuit connected to the terminals and to the maximum-sensing circuit and responsive to the voltage across the terminals to advance a time at which the maximum-sensing circuit produces the signal at higher engine speeds.

5,058,544

FLOATLESS CARBURETOR WITH INTEGRAL PRIMER SYSTEM

Thomas G. Guntly, Hartford; Jerome L. Rasmussen, Germantown, and Richard T. Anderson, Menomonee Falls, all of Wis., assignors to Briggs & Stratton Corp., Milwaukee, Wis.

Filed Sep. 28, 1990, Ser. No. 590,014
Int. Cl.[5] F02M *1/16*
U.S. Cl. 123—187.5 R **11 Claims**



1. A primer circuit for a carburetor for an internal combustion engine, the carburetor of the type having an air intake, a throttle chamber, an induction chamber, and a fuel reservoir from which fuel is drawn into the throttle chamber where it is mixed with air introduced at the air intake and released into the induction chamber to support combustion in the engine, the fuel reservoir of the carburetor being in direct communication with a fuel tank, the primer circuit comprising:

a. an expandable/contractable primer chamber;

b. means communicating the primer chamber with the fuel tank;

c. means communicating the primer chamber with both the throttle chamber and the fuel reservoir of the carburetor;

d. first valve means between the fuel tank and the primer chamber and selectively movable between an open position when the primer chamber is expanded and a closed position when the primer chamber is contracted;

e. second valve means between the throttle chamber and the primer chamber and selectively movable between an open position when the primer chamber is contracted and a closed positon when the primer chamber is expanded; and

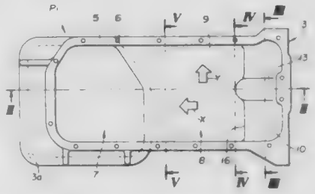
f. third valve means between the fuel reservoir and the primer chamber and selectively movable between an open position when the primer chamber is contracted and a closed position when the primer chamber is expanded.

5,058,545

OIL PAN FOR INTERNAL COMBUSTION ENGINE

Toshihiro Hirai, Yokohama; Shuji Kurosaka, Kawasaki, and Kazuo Furukawa, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 31, 1990, Ser. No. 575,480
Claims priority, application Japan, Sep. 7, 1989, 1-105013[U]
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 C **13 Claims**



1. An oil pan for an internal combustion engine, comprising:

means defining a sump located under a cylinder block of the engine, said sump storing lubrication oil therein; and

a shallow bottom section fixedly disposed under a cylinder block of the engine, and sealingly connected with said sump defining means, said shallow bottom section being located higher in level than a bottom of said sump and including an inclined surface which gradually becomes lower in level toward said sump and toward a downstream side of an oil flow caused by rotation of a crankshaft of the engine and adjacent an oil pan side wall so as to form an oil return path to the sump, said shallow bottom section being fluidly communicated with said sump.

5,058,546

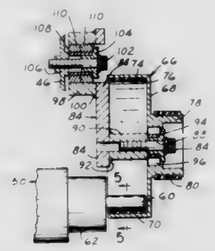
ENGINE AIR PUMP WITH SPEED DRUM DRIVE

Thomas G. Lawrence, Clarkston, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 11, 1991, Ser. No. 667,145
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 C **10 Claims**

1. In association with an internal combustion engine with a crankshaft, a high speed drive mechanism for rotating an air pump, the drive mechanism being operatively connected to the crankshaft for rotation therewith during engine operation, the air pump including a rotatable shaft with an exposed end portion adapted to be rotatively driven for operation of the air pump at relatively high speeds relative to the speed of the engine crankshaft, the drive mechanism including a drum member having an end wall portion and a cylindrically tubular outer wall portion supported for rotation about an axis central

to the cylindrically tubular outer wall portion, the outer wall portion forming a circular track with a diameter several times larger than the diameter of end portion of the pump shaft, the drum member and the end of the pump shaft positioned rela-



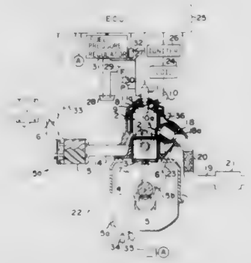
tive to one another with the end of the shaft engaging the circular track in frictional driving relation, whereby rotation of the drum member by the crankshaft rotates the pump shaft at a higher speed determined by the ratio of drum diameter to shaft diameter.

5,058,547

WARNING SYSTEM FOR NOZZLE CLOG OF A FUEL INJECTOR

Koji Morikawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1991, Ser. No. 660,438
Claims priority, application Japan, Feb. 28, 1990, 2-19616[U]
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 D **5 Claims**



1. A warning system for nozzle clog of a fuel injector provided in an engine, the system having detector means for detecting engine operating conditions, engine speed detector means for detecting engine speed and for producing an engine speed signal, desired idle setting means for providing a desired idle speed, first calculator means responsive to the engine operating conditions for calculating quantity of fuel injected from the fuel injector and for producing a basic fuel injection pulse width based on the calculated quantity, first comparator means for comparing idle engine speed with the desired idle speed and for producing a correcting pulse width for idling, second calculator means for correcting said basic fuel injection pulse width with the correcting pulse width so as to converge the idle speed on the desired idle speed, an improvement of the system which comprises:

second comparator means for comparing the correcting pulse width with a reference pulse width and for producing an alarm signal when the correcting pulse width is larger than the reference pulse width; and

alarm means responsive to the alarm signal for warning nozzle clog.

5,058,548

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Koji Morikawa, Musashino, and Akira Furuya, Fuchu, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1990, Ser. No. 531,133
Claims priority, application Japan, Jun. 26, 1989, 1-168936; Jun. 29, 1989, 1-168935
Int. Cl.[5] F02B *3/00*
U.S. Cl. 123—298 **2 Claims**



1. A combustion chamber of an engine having at least one cylinder, which has a piston, a combustion chamber defined in the cylinder by the piston, a fuel injector provided for injecting fuel directly in the combustion chamber, and a spark plug, wherein:

said fuel injector is a type for injecting fuel in a form of a cone and is located at a position close to an axis of said cylinder,

said spark plug is located at a position such that a gap of the spark plug is positioned around said axis, and disposed apart from the injector by a predetermined distance for igniting the fuel injected from the injector and passing said gap,

said distance is between a first position where a speed of fuel spray at middle and low loads on said engine becomes low and a second position where a dispersion of the fuel spray becomes a predetermined spread.

5,058,549

FUEL SWIRL GENERATION TYPE FUEL INJECTION VALVE AND DIRECT FUEL INJECTION TYPE SPARK IGNITION INTERNAL COMBUSTION ENGINE

Eiji Hashimoto, Susono; Daisaku Sawada, Gotenba; Shizuo Sasaki, Susono; Yoshiyuki Tamaki, Susono, and Masaki Mitsuyasu, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 313,484, Feb. 22, 1989, Pat. No. 4,974,565. This application Sep. 19, 1990, Ser. No. 584,645
Claims priority, application Japan, Feb. 26, 1988, 63-23724[U]; Mar. 9, 1988, 63-30391[U]; Apr. 25, 1988, 63-100127
Int. Cl.[5] F02M *61/00*; **B05B** *1/00*
U.S. Cl. 123—298 **10 Claims**

1. A direct fuel injection type spark ignition internal combustion engine mounted with fuel injection valve, comprising:

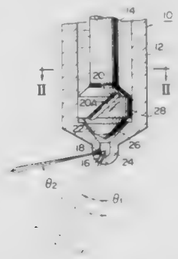
a piston, cylinder and cylinder head structure including a cylinder, a piston reciprocally movable in the cylinder between a top dead center position and a bottom dead center position, and a cylinder head; the cylinder, the piston and the cylinder defining a combustion chamber therein, the cylinder head including a projection protruding into the combustion chamber;

a spark plug, coupled to the cylinder head, for igniting fuel; and

a fuel injection valve, coupled to the cylinder head and located on an opposite side of the projection of the cylinder head with respect to the spark plug, for directly injecting the fuel into the combustion chamber, the fuel injection valve including:

an injector assembly defining an injector axis and including an injector body and a valve member movable along the injector axis relative to the injector body;

first orifice means formed in the injector body for injecting fuel therethrough, the first orifice fuel injecting means comprising a main fuel injection hole having a comparatively large diameter and extending at a comparatively small first inclination angle including 0° with respect to the injector axis, the main fuel injection hole being directed so as to inject fuel in the direction toward the piston;



second orifice means formed in the injector body for injecting fuel therethrough, the second orifice fuel injecting means comprising a subsidiary fuel injection hole having a comparably small diameter smaller than the diameter of the main fuel injection hole and extending at a comparably large inclination angle larger than the first inclination angle of the main fuel injection hole with respect to the injector axis, the subsidiary fuel injection hole being directed so as to inject fuel in a direction toward the spark plug and onto a contact surface of the projection of the cylinder head, said first and second orifices being operated simultaneously; and

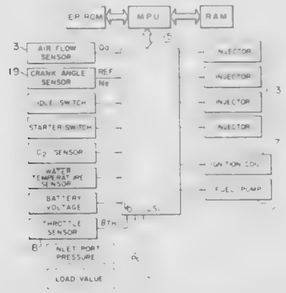
means for causing fuel injected through the main fuel injection hole to widely spread when the fuel flows from the main fuel injection hole toward the piston.

5,058,550

METHOD FOR DETERMINING THE CONTROL VALUES OF A MULTICYLINDER INTERNAL COMBUSTION ENGINE AND APPARATUS THEREFOR

Masami Nagano, and Takeshi Atago, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 12, 1990, Ser. No. 537,076
Claims priority, application Japan, Jun. 12, 1989, 1-146598
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—422 **5 Claims**



1. A method for determining controlled variables of each cylinder in a control system of a multicylinder internal combustion engine wherein the control variables are determined independently for each cylinder according to data representing the operating condition of the engine, while said data is being detected at predetermined timing, said method comprising the steps of:

detecting data representing the condition of the engine, including at least intake air quantity and engine speed;

storing said data in memory means;

detecting that said engine has been accelerated when a throttle valve opening variation per unit time of said engine exceeds a predetermined value;

determining as a first controlled variable a basic fuel flow rate at which the fuel is supplied to the cylinders of said engine at a certain time of a certain stroke of each said cylinder according to the data in said memory means;

determining as a second controlled variable the ignition timing of each cylinder at a time after said certain time in said stroke according to the same data of said memory means;

determining an acceleration increment of the fuel flow in response to detection of said acceleration by determining an increment of supplied fuel according to the value of said throttle valve opening variation; and

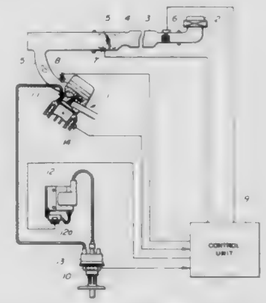
determining a first correction value for the ignition timing according to the increment of said supplied fuel.

5,058,551

SYSTEM FOR IDENTIFYING MISFIRE CYLINDER IN INTERNAL COMBUSTION ENGINE

Shinpei Nakaniwa, Gunma, Japan, assignor to Japan Electronic Control Systems Company, Limited, Isezaki, Japan

Filed Oct. 24, 1990, Ser. No. 602,775
Int. Cl.[5] F02P *5/14*
U.S. Cl. 123—425 **13 Claims**



1. A system for detecting a misfired cylinder of a multiple cylinder internal combustion engine comprising:

sensor means for monitoring variation of an engine operating condition during each engine revolutional cycle to provide a signal indicative thereof;

first means for determining a first parameter associated with a variation in an average effective pressure of the cylinder based on the variation monitored by said sensor means and providing a signal indicative thereof;

second means responsive to the first parameter determined by said first means less than a preselected level which represents reduction in the average effective pressure in the cylinder to correct the first parameter by a preselected correction factor for compensating a factor of variation of engine revolutional speed after misfire occurs to provide a second parameter; and

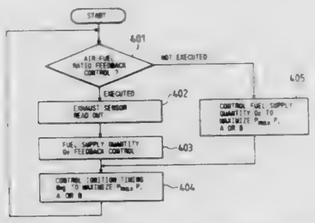
third means responsive to the second parameter less than a preselected slice level which represents occurrence of misfire for identifying the misfired cylinder.

5,058,552

ENGINE CONTROL APPARATUS

Setsuhiro Shimomura; Seiji Wataya; Yukinobu Nishimura, and Satoru Okubo, all of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Division of Ser. No. 363,661, Jun. 8, 1989, Pat. No. 4,984,546.
This application Mar. 21, 1990, Ser. No. 497,056
Claims priority, application Japan, Jun. 8, 1988, 63-140996; Jul. 8, 1988, 63-171508
Int. Cl.[5] F02P *5/14*; F02M *7/00*
U.S. Cl. 123—425 3 Claims



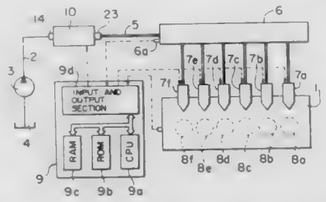
1. An internal combustion engine control apparatus for an individual engine comprising:
an air-flow meter for measuring a suction air quantity Q_a of an engine;
a suction pipe pressure sensor for detecting suction pipe pressure P_b of said engine;
a crank angle sensor for detecting the revolution angle θ_c of said engine;
at least one cylinder internal pressure sensor for detecting combustion chamber pressure P_c of said engine; and
a control unit which comprises:
means for obtaining a fuel supply quantity Q_f and an ignition timing θ_i from an engine speed N and one of said suction air quantity Q_a and said suction pipe pressure P_b;
means for obtaining at least one of maximum pressure value P_{MAX} for said individual engine, a mean effective pressure P_i, a first evaluation parameter $A=P_i/(Q_a/N)$ and a second evaluation parameter $B=P_i/P_b$, said maximum pressure P_{MAX} and said mean effective pressure P_i being calculated from said combustion chamber pressure P_c and said revolution angle θ_c for every combustion cycle, said first evaluation parameter A being calculated from said suction air quantity Q_a, said engine speed N and said mean effective pressure P_i, said second evaluation parameter B being calculated from said suction pipe pressure P_b and said mean effective pressure P_i; and
means for correcting at least one of said fuel supply quantity l_f and said ignition timing θ_i to maximize said at least one of said maximum pressure value P_{MAX}, said mean effective pressure P_i, and said first and second evaluation parameters A and B for said individual engine;
said apparatus further comprising:
means for controlling one of a fuel supply quantity and an ignition timing on the basis of a corrected value obtained from said correcting means; and
an exhaust sensor for detecting the component concentration of a combustion gas;
wherein said control unit further comprises means for obtaining an air-fuel ratio based on the component concentration of the combustion gas detected by said exhaust sensor, and means for performing a feedback control of said fuel supply quantity l_f to set said air-fuel ratio to a predetermined value; and wherein said correcting means corrects said ignition timing θ_i to maximize said at least one of said maximum pressure value P_{MAX}, said mean effective pressure P_i, and said first and second evaluation parameters A and B.

5,058,553

VARIABLE-DISCHARGE HIGH PRESSURE PUMP

Shigeyuki Kondo, Aichi, and Yoshihisa Yamamoto, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 462,870, Jan. 8, 1990, which is a continuation of Ser. No. 244,823, Sep. 15, 1988, abandoned.
This application Nov. 22, 1989, Ser. No. 439,669
Claims priority, application Japan, Nov. 24, 1988, 63-296990; Dec. 28, 1988, 63-329371
Int. Cl.[5] F02M *41/00*
U.S. Cl. 123—456 11 Claims



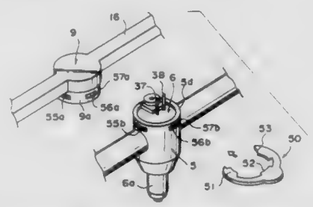
1. A variable-discharge high pressure pump for pressurizing and pressure-feeding fuel to a common rail of a diesel engine, said pump comprising:
a plunger;
a plunger chamber in which said plunger is movably accommodated;
a cam for reciprocally moving said plunger;
an electromagnetic valve capable of opening out to the interior of said plunger chamber;
a fuel reservoir communicating with said plunger chamber through said electromagnetic valve;
a check valve communicating with said plunger chamber and capable of opening at a predetermined pressure; and
an inlet pipe for supplying a low pressure fuel to said fuel reservoir;
wherein said plunger chamber and said inlet pipe communicate with each other through said fuel reservoir and said electromagnetic valve, and both the introduction of the low pressure fuel into said plunger chamber and the return of the low pressure fuel from said plunger chamber to said fuel reservoir are effected through said electromagnetic valve; and
wherein a discharge of fuel from said plunger chamber into said common rail is finished when a forward stroking motion of the plunger is finished.

5,058,554

FUEL INJECTION SYSTEM FOR ENGINE

Masahiro Takeda, and Hideo Shiraishi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 27, 1989, Ser. No. 427,646
Claims priority, application Japan, Oct. 31, 1988, 63-277032
Int. Cl.[5] F02M *41/00*
U.S. Cl. 123—456 10 Claims



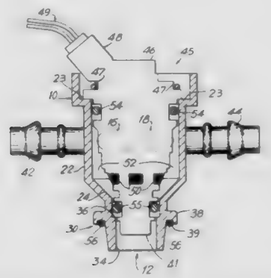
1. A fuel injection system for an engine comprising:
a plurality of bottom-feed type fuel injection valve assemblies each having an outer casing and an injector main body which is accommodated in the outer casing and is electrically operated, the outer casing being provided with a fuel inlet and a fuel outlet in communication with each other;
a fuel supply pipe connected to the fuel inlet of the upstream-most fuel injection valve assembly;
a fuel return pipe connected to the fuel outlet of the down-streammost fuel injection valve assembly;
a plurality of connection pipes each connecting the fuel outlet of each injection valve assembly to the fuel inlet of the next fuel injection valve assembly, said connection pipes being disposed in a plane closer to an injection nozzle portion of the main body than an upper portion of the outer casing; and
a harness member through which a wire harness for supplying power to the injector main body extends and which has a plurality of valve holders, each being formed integrally with the harness member and fixed to the upper portion of the outer casing by a fastener means;
wherein said fastener means is connected in a region between said connection pipes and the upper portion of the outer casing so that said fastener means may be fastened or loosened without affecting the connection pipes.

5,058,555

MODULAR FUEL INJECTOR POD AND FUEL INJECTION SYSTEM

William P. Haboush, II, Pontiac, and John G. Schramm, Ann Arbor, both of Mich., assignors to Handy & Harman Automotive Group, Inc., Auburn Hills, Mich.

Filed Apr. 23, 1990, Ser. No. 513,150
Int. Cl.[5] F02M *55/02*
U.S. Cl. 123—470 7 Claims



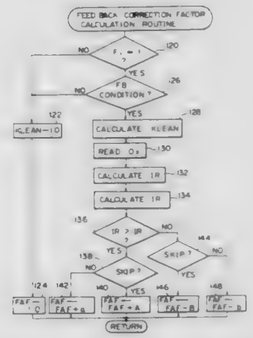
1. A modular fuel injection system for combustion engines comprising:
a support surface associated with a plurality of induction chambers;
a plurality of modular fuel injector assemblies mounted on said support surface, each assembly being associated with an induction chamber and comprising a hollow body having a central longitudinal axis and an outside wall, said hollow body adapted to contain a fuel injector and define a void between said wall and the fuel injector, said hollow body further defining a first outlet at one end concentric with the hollow body and communicating with an associated induction chamber, said hollow body further having:
a first internal cylindrical portion positioned along the longitudinal axis;
a second internal cylindrical portion adjacent said first portion, having a reduced inside diameter relative to said first portion with a first internal shoulder formed thereby, and said second portion having an inlet and a second outlet disposed therein;
a third internal frustoconical portion adjacent said second portion having a base and an upper end, with the base diameter matching the diameter of said second portion; and
a fourth inter cylindrical portion adjacent said frustoconical portion, having an inside diameter matching the upper end diameter of the frustoconical portion and provided with a raised external shoulder on the outside wall;
a fuel injector placed inside said modular injector pod and abutting against said pod at least at one point, said injector having an injector nozzle aligned to spray through said first outlet;
retaining means for retaining the fuel injector in the modular injector pod;
means for sealing the void defined between the fuel injector and modular injector pod to prevent fuel leakage;
means for sealing the modular injector pod against said support surface having an aperture to receive therein said injector pod first outlet;
a plurality of individual fuel lines communicating with the inlets and second outlets of each respective modular fuel injector pod of each of said assemblies; and
a fuel supply communicating with said fuel lines, thereby providing continuous regulated supply of fuel to each respective fuel injector.

5,058,556

DEVICE FOR DETERMINING ACTIVATED CONDITION OF AN OXYGEN SENSOR

Takao Fukuma; Keisuke Tsukamoto; Toshio Takaoka, and Hirofumi Yamasaki, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 8, 1991, Ser. No. 638,844
Claims priority, application Japan, Jan. 23, 1990, 2-14193
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—489 3 Claims



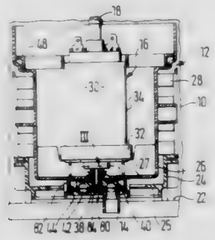
1. A device for determining an activated condition of an oxygen sensor for an internal combustion engine when a fuel cut operation is carried out under a predetermined condition of the engine, comprising:
means for detecting a state in which the fuel cut operation is carried out;
first comparing means for comparing a detected level of the sensor means with a predetermined first value when the engine is under a fuel cut condition;
second comparing means for comparing a detected level of the sensor means with a predetermined second value which is lower than said first value when the engine is under a fuel cut condition;
first determining means for determining an activated condition of the oxygen sensor when the first comparing means determines that the detected level once exceeds the first value, and;
second determination means for determining an activated condition of the oxygen sensor when the second comparing means determines that the detected level consecutively exceeds the second value at least twice.

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5,058,557
APPARATUS FOR DELIVERY OF FUEL FROM A STORAGE TANK TO AN INTERNAL COMBUSTION ENGINE OF A VEHICLE

Kurt Frank, Schorndorf-Haubersbronn; Hermann Nusser, Markgroeningen, and Willi Strohl, Beilstein, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 29, 1990, Ser. No. 606,057
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1989, 3941147
Int. Cl.[5] F02M *39/00*
U.S. Cl. 123—509 **17 Claims**

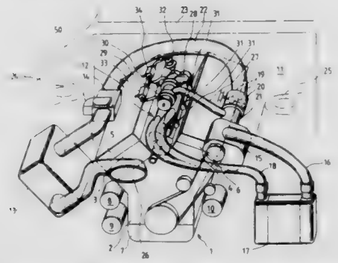


1. An apparatus for delivery of fuel from a storage tank to an internal combustion engine of a motor vehicle, said apparatus comprising a pot-shaped container secured in the storage tank and having a bottom; a first pump for delivering fluid from the storage tank into said container; an electric motor for driving said first pump; a second pump driven by said electric motor for delivering fluid from said container to the internal combustion engine and located with said electric motor in a common housing; and a pumping chamber formed at an outer side of said bottom of said container, said first pump having a delivery member located in said pumping chamber and driven by said electric motor.

5,058,558
AIR FEEDING SYSTEM FOR A VEHICLE ENGINE EQUIPPED WITH A SUPERCHARGER

Kazuhiko Ueda, Higashihiroshima; Hiroyuki Oda, Hiroshima; Kazuhiko Hashimoto, Hiroshima; Kouichi Hatamura, Hiroshima; Tsuyoshi Goto, Hiroshima; Takashi Ohtsuru, Higashihiroshima, and Shigeo Tabata, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 4, 1989, Ser. No. 416,777
Claims priority, application Japan, Oct. 7, 1988, 63-254467; Mar. 31, 1989, 1-83159
Int. Cl.[5] F02B *33/44;* **B60K** *13/02*
U.S. Cl. 123—559.1 **15 Claims**



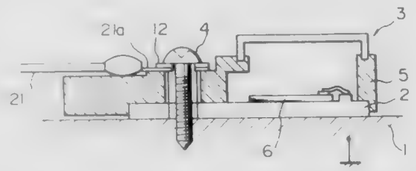
1. An air feeding system for a vehicle engine equipped with a supercharger with the engine disposed in an engine room, said engine room having front portions which are leading when the vehicle is traveling in a forward direction, said engine room having side halves extending from a substantially central portion of the engine room in directions perpendicular to forward movement of the vehicle, the air feeding system comprising:

an inlet passage provided in an engine room with its first section interconnecting an air cleaner and a throttle valve, its second section interconnecting the throttle valve and the supercharger, and its third section interconnecting the supercharger and an engine body of the vehicle engine for feeding a cylinder in the engine body with intake air introduced through the air cleaner into the first section, wherein said air cleaner is disposed at a front portion of one side of the engine room, said supercharger is disposed in the other side half of the engine room, and a part of said inlet passage including said first and second sections is arranged to extend backward or away from the forward vehicle direction from the air cleaner and then to extend further along a dash panel forming a rear end of the engine room from said one side half to said other side half of the engine room so as to reach the supercharger, wherein said rear end is trailing with respect to said front portion when the vehicle is moving in the forward direction.

5,058,559
APPARATUS FOR IGNITING FUEL FOR INTERNAL COMBUSTION ENGINE

Mitsuru Koiwa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1990, Ser. No. 533,552
Claims priority, application Japan, Jun. 13, 1989, 1-68121[U]; Jun. 19, 1989, 1-70833[U]
Int. Cl.[5] F02P *7/06*
U.S. Cl. 123—612 **7 Claims**



1. In an apparatus for igniting fuel for an internal combustion engine wherein a rotor **(13)** for a signal generator, a signal pickup **(14)** located opposite said rotor and a controlling section **(3)** for an igniter are accommodated in a housing **(1)** for a distributor, said housing being made of electrically conductive material and earthed, and said controlling section including a heat sink **(2)** arranged in a heat-transmitting relationship relative to said housing and a hybrid IC **(6)** placed on said heat sink in a frame **(5)** for said controlling section, said frame being made of non-electrically conductive material, the improvement wherein a signal lead wire **(21)** extending from said signal pickup and said frame for said controlling section are firmly secured to said housing by a plurality of tightening screws **(4)**, and said lead wire is earthed via one of said tightening screws and said housing.

5,058,560
CONTACTLESS IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

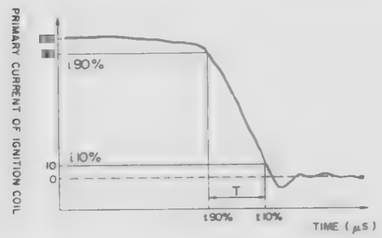
Hideo Asakura, Toyohashi, and Motokazu Momiyama, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 17, 1990, Ser. No. 583,699
Claims priority, application Japan, Sep. 19, 1989, 1-243098; Jul. 3, 1990, 2-177142
Int. Cl.[5] F02P *3/04*
U.S. Cl. 123—633 **4 Claims**

1. A contactless ignition apparatus for an internal combustion engine, comprising:

a resin molded closed magnetic circuit type ignition coil including an iron core constituting a closed magnetic circuit, a primary winding and a secondary winding wound around said iron core, respectively, and mold resin for insulating said primary and secondary windings;

semiconductor switching means for interrupting a current flowing to said primary winding; and



an ignition plug to which a high voltage generated in said secondary winding is applied upon interruption of the primary current flow to said primary winding by said semiconductor switch means;

wherein falling rate dI/dt of the primary current upon interruption thereof by said semiconductor switching means is set at a value in a range of 0.2 to 0.4 A/μs.

5,058,561
POPGUN FOR CYLINDRICAL PROJECTILES

Harvey Starr, 1717 Fifth Ave., San Diego, Calif. 92101

Filed Apr. 20, 1990, Ser. No. 512,170
Int. Cl.[5] F41B *11/12, 11/34*
U.S. Cl. 124—65 **16 Claims**



1. A manually operated air gun for launching projectiles therefrom comprising:

a hollow cylinder having a piston insertable end and a distal end;

a piston with a plurality of spaced apart ribs therearound extending longitudinally thereof for translation within said hollow cylinder, said piston being insertable into said piston insertable end of said cylinder, said piston having a first end within said cylinder and a second end extending external of said insertable end of said cylinder;

a first sealing means for continually pressure sealing said first end of said piston to the said cylinder as said piston is translated relative thereto;

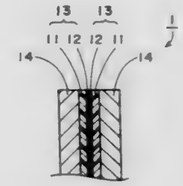
a cylindrical projectile for insertion into said distal end of said cylinder for launching from said cylinder; and

a second sealing means to seal said projectile to the second end of said cylinder when inserted therein.

5,058,562
ROTARY DIAMOND TOOL FOR TRUING GRINDING WHEEL

Toshihiro Tsutsui, Nishio, and Shinji Soma, Handa, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 20, 1990, Ser. No. 554,862
Claims priority, application Japan, Jul. 28, 1989, 1-197865
Int. Cl.[5] B24B *53/14*
U.S. Cl. 125—11.03 **6 Claims**



1. A rotary diamond tool for truing a grinding wheel, comprising:

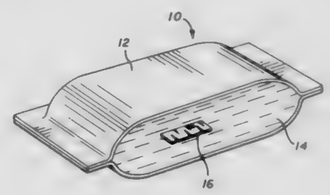
a circular base portion comprising a pair of base plates each of which has a vapor-deposited diamond layer formed on a first side surface thereof, said diamond layers extending in a plane perpendicular to a rotational axis of said circular base portion, wherein said pair of base plates are united with each other in such a way that diamond layers of respective vapor-deposited base plates face each other; and

a pair of circular plates made of metal having a hardness lower than that of said circular base portion, said pair of circular plates being united with a second side surface of each of said pair of base plates, respectively.

5,058,563
REUSABLE WARMERS OF THE TYPE EMPLOYING A SUPER-COOLED SOLUTION AND AN ACTIVATOR

Charles F. Manker, Chicago, Ill., assignor to Prism Technologies, Inc., Chicago, Ill.

Filed Jun. 15, 1990, Ser. No. 538,838
Int. Cl.[5] F24J *1/00*
U.S. Cl. 126—263 **1 Claim**



1. In a reusable warmer employing a flexible bag-like container, a super-cooled salt solution and an activator for initiating the crystallization of said super-cooled salt solution, the improvement comprising incorporating into said super-cooled salt solution an effective amount less than about 5% by weight of a viscosity increasing agent sufficient to form a gel and substantially inhibit the flow of said super-cooled salt solution, wherein the viscosity increasing agent is a non-ionic, water-soluble hydroxyethyl cellulose polymer.

5,058,564

SOLAR COLLECTOR

John Delacretaz, 15 Mortimer Street, Heidelberg, Victoria 3084, Australia, and Terence L. Johnson, 9 Rydon Street, Islington, London N1 7AL, United Kingdom

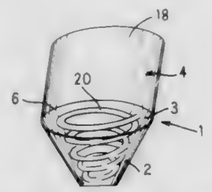
PCT No. PCT/GB88/00811, § 371 Date Mar. 23, 1990, § 102(e) Date Mar. 23, 1990, PCT Pub. No. WO89/03007, PCT Pub. Date Apr. 6, 1989

PCT Filed Oct. 4, 1988, Ser. No. 469,412

Claims priority, application United Kingdom, Oct. 5, 1987, 8723318

Int. Cl.[5] F24J *2/10*

U.S. Cl. 126—438 **7 Claims**



1. A solar collector, comprising an upwardly opening cup-like and substantially conical collector means having a substantially curved collector surface, and a reflective device projecting from the collector means and adapted to reflect incident solar energy onto the collector surface, said curved collector surface being an interior surface of said cup-like collector means, said cup-like collector means having an upper rim which defines an upper opening for permitting solar energy to enter the interior of said collector means, the reflective device being secured to and projecting upwardly and exteriorly from the collector means, said reflective device having a fixed end which is fixed to said collector means, said reflective device projecting inwardly from said rim and having an upper free end disposed above and inwardly of said fixed end, said reflective device having an inwardly concavely curved major surface which connects said fixed and free ends and has a curvature corresponding to an arc of a circle, said major surface facing generally toward said collector surface and vertically overlying a portion thereof for reflecting incident solar energy onto a shaded portion of the collector surface to permit collection of incident solar energy over substantially the entire collector surface.

5,058,565

SOLAR CONCENTRATOR DEVICE AND SUPPORT STRUCTURE THEREFOR

Randy C. Gee, Golden, and Edmund K. May, Lakewood, both of Colo., assignors to Industrial Solar Technology

Filed Nov. 22, 1988, Ser. No. 274,990

Int. Cl.[5] F24J *2/10*

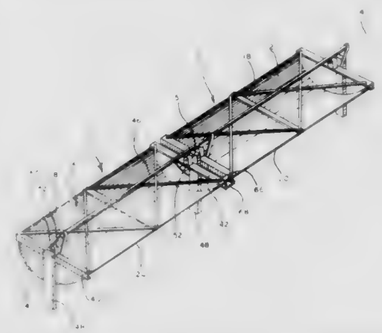
U.S. Cl. 126—438 **24 Claims**

1. Solar concentrator device, comprising:

a solar concentrating panel having a longitudinal axis and defining a parabolic surface having a focal line substantially parallel to said longitudinal axis, said surface terminating in opposed longitudinal side edges;

means for rotating said panel about said axis; and

frame means for providing rigid torsional support for said panel including at least one pair of crossed, rigid structural support braces, each said brace extending obliquely relative to said longitudinal axis between opposed longitudinal side edges of said parabolic surface.



5,058,566

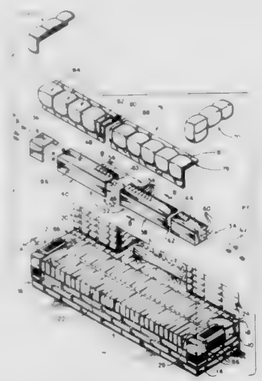
FIREPLACE HEARTH PAD SYSTEM

Stephen L. Dabbs, 916 Elderberry, and Clay B. Bowen, Rte. 7, Box 66-S, both of Tupelo, Miss. 38801

Filed Feb. 5, 1991, Ser. No. 650,601

Int. Cl.[5] F24B *1/18*

U.S. Cl. 126—500 **15 Claims**



1. A padding system for the peripheral edges and corners of a raised fireplace hearth having a top surface bounded by front and opposite side walls, comprising:

a fire retardant padded frame assembly providing concussive and abrasive protection for the exposed peripheral edges and corners of a raised fireplace hearth having vertical and horizontal walls disposed to enclose said hearth exposed peripheral edges and corner, and opposing outer edges disposed to juxtapose said hearth opposite side walls, said opposing outer edges having a length no greater than the depth of the hearth, and said padded frame assembly having a length between said opposite outer edges no less than the width of the hearth, and

tensioning means connectably disposed at said outer edges of the padded frame assembly and displaceable to contact said hearth opposite side walls,

whereby, adjusting the tensioning means imparts sufficient tension, directionally imparted from the hearth opposite side walls to the padded frame assembly, to urge the padded frame assembly into a tight gripping relationship with the fireplace hearth.

5,058,567

FLEXIBLE TUBE OF ENDOSCOPE AND METHOD OF AND APPARATUS FOR PRODUCING THE SAME

Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabusbiki Kaisha, Tokyo, Japan

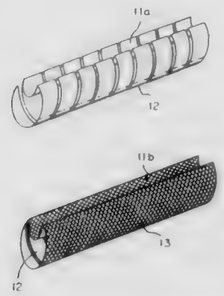
Continuation of Ser. No. 328,542, Mar. 24, 1989, Pat. No. 4,944,287. This application Mar. 30, 1990, Ser. No. 501,834

Claims priority, application Japan, Mar. 29, 1988, 63-77817; Mar. 29, 1988, 63-77818; Apr. 8, 1988, 63-87739

The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **5 Claims**

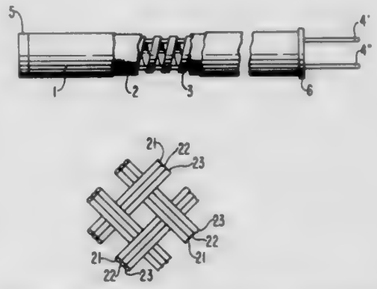


1. An elongated flexible tube that constitutes an insert part of an endoscope, comprising:

a spiral rube having an outer surface with a periphery, and being made of a precipitation hardening metal and including a discontinuous portion in the periphery of the outer surface of said tube, said discontinuous portion extending along the axis of said tube, said spiral tube having been subjected to age hardening after a solid solution treatment;

a braided-wire tube formed by weaving fine metal wires into a braid, said braided-wire tube being closely fitted over the outer surface of said spiral tube.

a series of electrically separate connecting lines for conducting a plurality of data and energy signals to the connection



element, wherein said connecting lines compose said protective mesh.

5,058,568

FLEXIBLE ENDOSCOPE

Klaus Irion, Emmingen-Liptingen; Horst Dittrich, Immendingen, and Hans-Peter Schwarz, St. Ingbert, all of Fed. Rep. of Germany, assignors to Karl Storz GmbH & Co., Fed. Rep. of Germany

PCT No. PCT/DE89/00328, § 371 Date Jan. 26, 1990, § 102(e) Date Jan. 26, 1990, PCT Pub. No. WO89/11242, PCT Pub. Date Nov. 30, 1989

PCT Filed May 28, 1989, Ser. No. 459,719

Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817915

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **16 Claims**

1. A flexible endoscope comprising:

at least one outer protective casing,

at least one protective mesh,

elements arranged at a distal region of the endoscope,

a connection element arranged at an opposite end of the endoscope, and

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5,058,569

APPARATUS FOR GENERATING FOCUSED SHOCKWAVES HAVING A CYLINDRICAL COIL AND A PARABOLOID OF REVOLUTION REFLECTOR

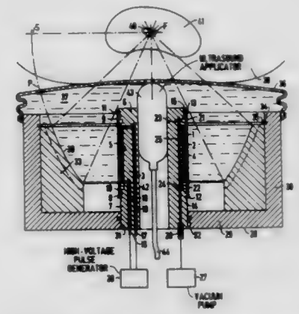
Dietrich Hassler, Uttenreuth; Helmut Reichenberger, Eckental; Hubert Schwark, Buckenhof, and Erhard Schmidt, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 26, 1990, Ser. No. 558,095

Claims priority, application European Pat. Off., Aug. 11, 1989, 89114925.4

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—24 OEL **14 Claims**



1. An apparatus for generating focused shockwaves comprising:

a hollow-cylindrical, thin-walled smooth tubular membrane consisting of electrically conductive material, said membrane having a longitudinal center axis;

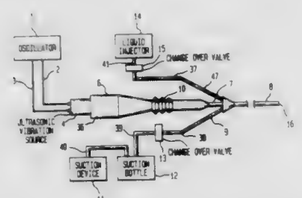
an electrically conductive coil arrangement including at least one coil wound in the shape of a cylindrical helix inside said membrane;

a concave reflector surrounding said membrane and having a reflecting surface facing said membrane substantially in the shape of a paraboloid of revolution and having a center axis substantially coincident with said longitudinal center axis of said membrane;

an acoustic propagation medium filling at least the space between said membrane and said reflecting surface; and

means for supplying said coil arrangement with high voltage pulses to rapidly repel said membrane from said coil to generate shockwaves which are focused by said reflecting surface.

5,058,570
ULTRASONIC SURGICAL APPARATUS
Morito Idemoto, and Yasuo Noguchi, both of Yokohama, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan
PCT No. PCT/JP86/00606, § 371 Date Jul. 21, 1988, § 102(e) Date Jul. 21, 1988, PCT Pub. No. WO88/03783, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 27, 1986, Ser. No. 245,401
Int. Cl.[5] A61B *17/22*
U.S. Cl. 128—24 AA **5 Claims**



1. In a ultrasonic surgical apparatus comprising an ultrasonic vibration source (**4**) for generating ultrasonic vibrations, an oscillator means (**1**) connected to said ultrasonic vibration source for supplying high-frequency electric energy to said ultrasonic vibration source, a horn (**5**) connected to said ultrasonic vibration source and adapted to transmit and amplify mechanical vibrations of an ultrasonic frequency, and a suction means (**11**) for sucking and removing an undesirable substance from an operated part, the improvement comprising,

an ultrasonic probe (**17**) constituted by a flexible elongated transmitting member secured at one end to a tip of said horn and having at the other end a working portion adapted to effect mechanical vibration of said ultrasonic frequency,

a horn cover (**6**) at least a portion of which is made of a flexible material,

a flexible tube (**8**) having three inner nonconcentric, parallel, axially extending bores and three branch tubes each communicating with one of said inner bores, and connected to said horn cover,

said ultrasonic probe extending through one of said inner bore and said suction means connected to one of said branch tubes,

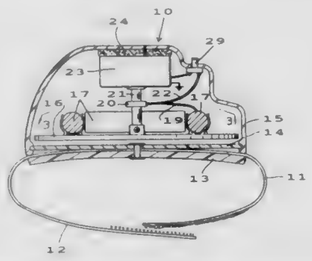
wherein a bellows-like portion of flexible material ia provided to a portion of said horn cover (**6**) to make said horn cover flexible.

5,058,571
HAND-HELD GYROSCOPIC DEVICE
William D. Hall, 10850 Stanmore Dr., Potomac, Md. 20854
Filed Jan. 22, 1990, Ser. No. 468,156
Int. Cl.[5] A61H *1/00, 7/00*
U.S. Cl. 128—46 **20 Claims**

1. Apparatus for reducing the effects of a tremor on a human hand, comprising:

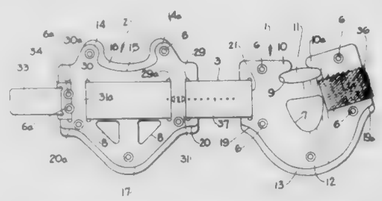
means tending to hold said hand steady, said means including a gyroscope,

a gyroscopic supporting means for said gyroscope, and attachment means for firmly attaching said supporting



means to a human hand and for tending to hold said hand steady so that any tremor in said hand is reduced.

5,058,572
ADJUSTABLE CERVICAL COLLAR
K. Stephen Schmid, New Vienna, Ohio, and Richard A. Brault, Toronto, Canada, assignors to Ferno-Washington, Inc., Wilmington, Ohio
Filed Jan. 12, 1988, Ser. No. 143,362
Int. Cl.[5] A61H *1/02*
U.S. Cl. 128—75 **19 Claims**



1. An adjustable essentially planar cervical collar of unitary construction consisting essentially of an anterior section and a posterior section interconnected by an elongated strap extending between and slidably interconnecting said sections, said sections and said strap each being flat and essentially rigid, but sufficiently flexible so that, in use, they may be conformed to the contours of the wearer's head, neck and shoulders, attachment means slidably connecting said strap to one of said sections with one end of said strap projecting freely outwardly beyond said last named section, stop means on said strap to prevent its detachment from the section to which it is slidably connected, fastener means fixedly connecting the opposite end of said strap to the other of said sections, whereby to adjust the position of the sections relative to each other and to the anatomy of the wearer, and securement means on the free end of said strap for securing said collar around the neck of the wearer.

5,058,573
ELASTIC WRIST BANDAGE
Heinrich Hess, Saarlouis; Wolfgang Krause, Kassel, and Hans B. Bauerfeind, Kempen, all of Fed. Rep. of Germany, assignors to Bauerfeind GmbH and Co., Kempen, Fed. Rep. of Germany
Filed Nov. 9, 1989, Ser. No. 434,998
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1988, 3838564
Int. Cl.[5] A61F *5/10*
U.S. Cl. 128—77 **8 Claims**

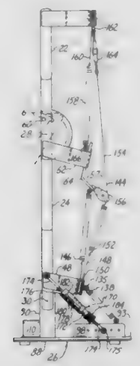
1. An elastic wrist bandage (**4**) formed of an elastic textile material in tubular form with a thumb opening (**8**), characterized by profiled padding means (**5,6**) disposed oppositely to

each other which leaves out the middle region of the back of the hand and the palm of the hand (**7**) including the adjacent parts of the lower arm, the profile of the padding means (**5,6**) merging into unpadded portions in regions between the pro-



filed padding means (**5,6**) so that only the bandage material bears against the portions of the back of the hand and the palm under only slight pressure in the region of the unpadded portions.

5,058,574
THERAPEUTIC LIMB BRACE
Lucinda L. Anderson, 2396 Mountain Woods, Colton, Calif. 92324, and Christopher D. Anderson, 1250 Root Rd., Modesto, Calif. 95351
Filed Jun. 22, 1990, Ser. No. 542,162
Int. Cl.[5] A61F *5/01, 5/00, 5/04*
U.S. Cl. 128—80 F **35 Claims**



29. An adjustable therapeutic brace comprising:

(a) an upper frame comprising:

(i) right and left upper frame portions; and

(ii) means for connecting the upper frame portions in spaced relation to opposite sides of an upper limb portion of a user;

(b) a middle frame comprising:

(i) right and left middle frame portions; and

(ii) means for connecting the middle frame portions in spaced relation to opposite sides of a middle limb portion of the user;

(c) right and left first hinge means for pivotally connecting the upper frame to the middle frame relative to a first hinge axis, the middle frame being movable from a flexion position to an extension position relative to the upper frame; and

(d) first limiting means for selectively limiting movement of the middle frame about the first hinge axis relative to the upper frame, the first limiting means comprising means for selectively connecting extension biasing means between the upper frame and the middle frame for urging the middle frame toward the extension position, the means for selectively connecting extension biasing means comprising:

(i) first sheave means mounted in fixed relation to one of the upper and middle frames and the axis of which is offset from the first hinge axis;

(ii) a flexible tension member movably engaging the sheave means;

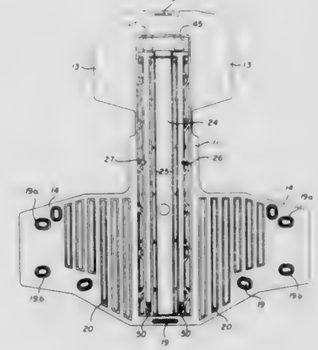
(iii) a first biasing member connected between the tension member and one of the upper and middle frames;

(iv) means for connecting the tension member to the other of the upper and middle frames;

(v) second sheave means fixedly located on the other of the upper and middle frames and spaced from the first sheave means, the tension member movably engaging the second sheave means; and

(vi) a second biasing member connected between the tension member and the one of the upper and middle frames.

5,058,575
SPLINT DEVICE
John P. Anderson, Norco, Calif., assignor to Hartwell Medical Corporation, San Marcos, Calif.
Filed Jan. 4, 1991, Ser. No. 637,642
Int. Cl.[5] A61F *5/04, 5/37;* **A61G** *1/00*
U.S. Cl. 128—87 R **9 Claims**



1. In a splint device for immobilizing the spine of a patient, the combination of:

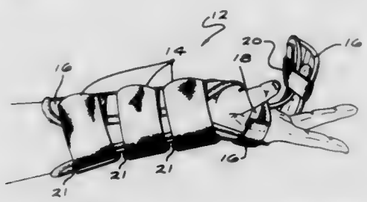
a frame having a central support, first wing means for fixing the head of the patient to the central support, second wing means for fixing teh trunk of the patient to the central support, and attachment means for joining the respective wing means together about the patient,

said frame central support including means defining an open central channel and right and left channels on each side of and parallel to said central channel;

a cover fixed to said frame and overlying said central support enclosing said channels, with each of said right and left channels having an open end; and

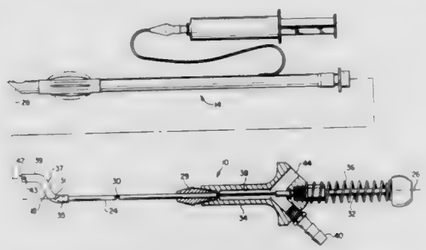
stiffener bars slidably insertable into said enclosed right and left channels through said open ends thereof.

5,058,576
ADJUSTABLE WRIST AND HAND SPLINT
Tracy E. Grim, Tulsa, Okla., and Fritz F. Gamble, Memphis, Tenn., assignors to Royce Medical Company, Westlake Village, Calif.
Filed Jul. 12, 1988, Ser. No. 217,988
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—87 R **20 Claims**



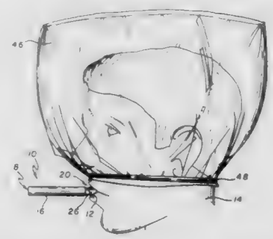
15. An ulna gutter orthopaedic soft goods splint assembly for immobilizing the wrist, the fourth and fifth fingers and the outer portion of the hand comprising:
splint means for substantially immobilizing the wrist, hands, and fourth and fifth fingers, while leaving the thumb and index and middle fingers free, said splint means comprising rigid stays and providing support for the forearm, fourth and fifth fingers and the outer portion of the hand;
a flexible soft goods sleeve for at least partially enclosing the forearm and the fourth and fifth fingers;
fastening means for securely and adjustably fastening said splint to the wrist, hand and fingers, said fastening means contributing to the immobilization of the wrist, fourth and fifth fingers and the outer portion of the hand; and
means for securing said rigid stays to said sleeve, and for providing padding between said stays and the forearm and fingers.

5,058,577
FLEXIBLE TIP STYLET FOR USE WITH AN ENDOTRACHEAL INTUBATION DEVICE
Gary Six, 710 E. McHarg, Stamford, Tex. 79553
Filed May 9, 1989, Ser. No. 349,444
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **8 Claims**



1. An improved intubation stylet, comprising:
a handle having a first and second end;
a flexible tube affixed to said first end of said handle, said tube having a remotely adjustable preshaped tip distal said handle, said preshaped tip comprising a first portion extending along a linear axis of said stylet, a second portion extending from said first potion and bent at an angle therefrom, and a third portion extending from said second portion and approximately parallel to said linear axis, said first, second and third portions forming a general Z-shape, said preshaped tip extending beyond an insertion end of an intubation tube such that said intubation tube does not conform to said general Z-shape during an intubation procedure;
a rod slidable received within said flexible tube, said rod terminating prior to said preshaped tip;
a plunger affixed to said rod through said handle, said plunger extending from said second end of said handle, such that as said plunger is pushed into said handle said rod passes through said flexible tube into said preshaped tip to deform said preshaped tip;
said handle having a Y-shaped channel passing therethrough, said Y-shaped channel being interconnected to said preshaped tip by said flexible tube to allow suction therethrough;
said handle further having a first opening in communication with said Y-Shape channel and arranged for connection to an external suction line; and
said handle further having a second opening opposite said first opening and in communication with said Y-Shape channel to allow suction to be applied by covering said second opening.

5,058,578
RESPIRATORY DEVICE
Alvin H. Weiss, 26 Oakland Ave., Shrewsbury, Mass. 01545
Continuation of Ser. No. 919,806, Oct. 16, 1988, abandoned, which is a continuation of Ser. No. 726,410, Apr. 24, 1985, abandoned. This application Oct. 18, 1988, Ser. No. 259,209
Int. Cl.[5] A62B *7/10*
U.S. Cl. 128—205.27 **3 Claims**



1. A respiratory protection kit for protection against airborne toxic material and comprising:
(a) an elongated rigid tube having an inlet end and an inlet opening at said inlet end, an outlet end, and outlet opening at said outlet end, said outlet end being adapted to be held in the mouth of a user,
(b) a filter for particulate material which is located across said inlet opening,
(c) a first layer of impregnated active carbon adjacent said inlet opening for water absorption, said first layer being impregnated with metal oxides which react with HCN,
(d) a second layer of an oxidation catalyst material between said first layer of impregnated active carbon and said outlet opening for oxidation of CO to CO_2,
(e) a transparent bag having an open end which is adapted to fit over a user's head so that the user's nose and eyes are enclosed within the bag, and
(f) means for sealing the open end of the bag about the user's head, wherein the elongated rigid tube is adapted to be stored within said transparent bag prior to being used and said bag is sealed to prevent moisture from entering the bag to maintain the effectiveness of said first and second layers, and wherein a visually discernable moisture indicator is located on the outside of said tube for indicating whether or not moisture has entered the bag.

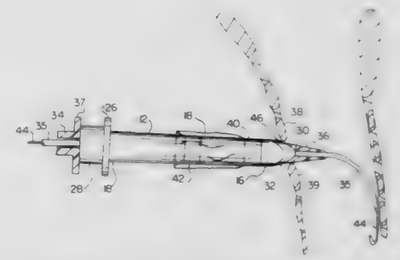
5,058,579
TRACHEOSTOMY DRESSING
Deborah A. Terry, and John T. Terry, both of 11975 W. 155th St., Orland Park, Ill. 60462
Filed Aug. 9, 1990, Ser. No. 564,793
Int. Cl.[5] A61F *13/00*; **A61L** *15/00*; **A61M** *16/00*
U.S. Cl. 128—207.14 **10 Claims**



1. A tracheostomy dressing comprising:
an adhesive-backed impermeable membrane occlusive to air and water defining an outer periphery, said membrane having a centrally located key-hole shaped opening, which opening consists of a centrally located circular portion and, continuous therewith, a portion of the opening extending downwardly and widening outwardly from said circular portion of the opening to a portion of the periphery of said tracheostomy dressing, said key-hole shaped opening sized to allow for a tracheostomy tube to extend through the circular portion of the tracheostomy dressing, and
a means for securing a tracheostomy tube to the dressing which consists of a two-sided strip having a first side and a second side and which has an adhesive means on part of the first side of said strip for securing part of the first side to said membrane and a self fastening means on the second side for securing said tracheostomy tube to said dressing.

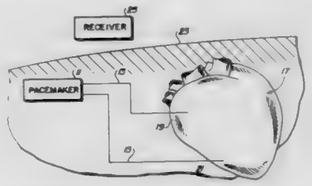
6. A method of dressing a patient who has had a tracheostomy tube inserted through a tracheal incision comprising:
pressing an impermeable adhesive-backed membrane, defining an outer periphery of a tracheostomy dressing, having a centrally located circular opening and, extending downwardly and widening outwardly from said circular opening and continuous therewith, an opening which extends to a portion of the periphery of said impermeable membrane, and which contains a skin-sensitive adhesive applicable to the neck of the patient such that the centrally located circular opening of said impermeable membrane is placed around the tracheal incision through which the tracheostomy tube passes, said tracheostomy tube having two flanges which extend out from opposite sides of the tracheostomy tube, each flange containing a slot,
securing the tracheostomy tube to the impermeable membrane by passing a first strip having a first side and a second side, and which has an adhesive means on part of the first side of said first strip and a self-fastening means on the second side of said first strip, through the slot on one of said flanges, attaching the first strip to the impermeable membrane by said adhesive means and folding said second side of said strip back on itself so as to secure one side of the tracheostomy tube to the impermeable membrane and passing a second strip having a first side and a second side, and which has an adhesive means on part of the first side and a self-fastening means on the second side, through the slot on the other of said flanges, attaching the second strip to the impermeable membrane by said adhesive means and folding said second side of said second strip back on itself so as to secure the other side of the tracheostomy tube to the impermeable membrane, and
attaching a moisture absorbing pad to the impermeable membrane at a portion of the periphery of said impermeable membrane.

5,058,580
PERCUTANEOUS TRACHEOSTOMY TUBE
Patrick B. Hazard, 910 Madison Ave., Suite 825, Memphis, Tenn. 38103
Filed May 11, 1988, Ser. No. 193,301
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.15 **22 Claims**



1. A tracheostomy tube for use with an obturator for percutaneous insertion into a patient's trachea through a stoma in the neck between adjacent cartilages to assist breathing comprising:
a tubular cannula having a central longitudinal axis, a distal portion for percutaneous insertion within the trachea, and a proximal end remaining outside the trachea;
said cannula formed of relatively soft flexible plastic material and curved downwardly so as to position said distal portion within the trachea;
said distal portion having an end which is gradually tapered for forming a smooth transition with the obturator and which is beveled to one side relative to the longitudinal axis so that the most distal tip of said beveled end is narrow, angled and tapered and is introduced generally midway between the adjacent cartilages and the remaining angled and tapered distal end is readily eased between the cartilages free of interference to facilitate insertion of said tube.

5,058,581
TELEMETRY APPARATUS AND METHOD FOR IMPLANTABLE TISSUE STIMULATOR
Sergiu Silvian, La Crescenta, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.
Filed Feb. 20, 1990, Ser. No. 483,162
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 PG **23 Claims**



1. A living tissue stimulator apparatus comprising:
implantable stimulator means for selectively producing electrical stimulus signals;

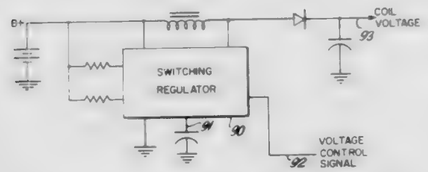
an electrical lead adapted to carry the stimulus signals from the stimulator means to the tissue;
telemetry means mounted with implantable means for producing a telemetry signal and for transmitting it therefrom; and
external receiver means for receiving the telemetry signal transmitted by the telemetry means;
wherein the telemetry means includes means for coupling the telemetry signal onto the electrical lead, for radiation outwardly to the receiver means.

5,058,582

APPARATUS FOR REACTIVELY APPLYING ELECTRICAL ENERGY PULSES TO A LIVING BODY

Sheldon Thaler, 307 Wendover Dr., Princeton, Mercer County, N.J. 08540

Division of Ser. No. 277,422, Nov. 25, 1988, Pat. No. 4,911,686, which is a continuation-in-part of Ser. No. 943,542, Dec. 17, 1986, abandoned, which is a division of Ser. No. 591,476, Mar. 20, 1984, Pat. No. 4,654,574, which is a division of Ser. No. 509,830, Jun. 29, 1983, abandoned. This application Jul. 5, 1989, Ser. No. 375,697
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 F **6 Claims**



5. In a device for reactively applying to a body site a varying electrical energy field developed from an originating battery source for stimulating repair or growth of tissue or bone structure in the body:
a core;
first electrical coil means wound around said core coupled to the originating energy source for developing said varying field from energy supplied by said originating source;
second coil means wound around said core for extracting energy from said varying field during the declining portion of the varying field cycle;
a capacitor coupled to said second coil means for recovering a portion of said extracted energy;
switch means connected to both said second means and said capacitor; and
rectifying means connected between said battery source and said first coil means.

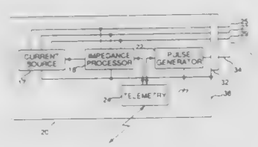
5,058,583

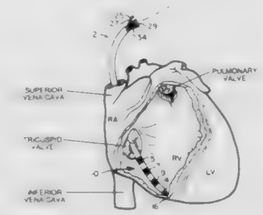
MULTIPLE MONOPOLAR SYSTEM AND METHOD OF MEASURING STROKE VOLUME OF THE HEART

Leslie A. Geddes, 400 N. River Rd., #1724; Neal E. Fearnot, 3051 Hamilton St., both of West Lafayette, Ind. 47907, and Jerry L. Wessale, 2268 Federal Pkwy., Lindenhurst, Ill. 60046

Filed Jul. 13, 1990, Ser. No. 553,434
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—419 D **27 Claims**

1. A multiple monopolar system for measuring the stroke volume of a patient's heart, comprising:
an intracardiac impedance catheter having a distal end and a proximal end;
a plurality of same-polarity-monopolar electrodes axially spaced along the surface of said distal end of said impedance catheter;
a reference electrode adapted for positioning distant from said monopolar electrodes in the patient's body; and





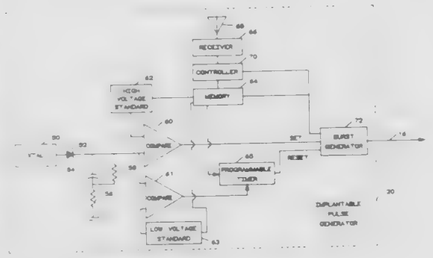
monopolar means for supplying a drive signal and measuring impedance between each of said monopolar electrodes and said distant reference electrode.

5,058,584

METHOD AND APPARATUS FOR EPIDURAL BURST STIMULATION FOR ANGINA PECTORIS

Ivan Bourgeois, Verviers, Belgium, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 30, 1990, Ser. No. 574,739
Int. Cl.[5] A61N *1/36*
U.S. Cl. 128—421 **7 Claims**



1. An apparatus comprising:
a. a spinal cord electrode;
b. a pulse generator electrically coupled to said spinal cord electrode;
c. means coupled to said pulse generator for measuring cardiac requirements; and
d. means coupled to said measuring means and said pulse generator for causing said pulse generator to produce stimulation signals whenever said cardiac requirements exceed a given threshold.

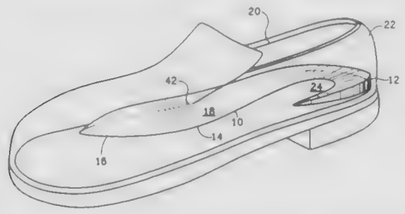
5,058,585

ORTHOTIC SHOE INSERT

Michael Kendall, 4325 Cleveland Ave., San Diego, Calif. 92103, and Thomas L. Chadbourne, San Diego, Calif., assignors to Michael Kendall, San Diego, Calif.

Filed Jan. 29, 1990, Ser. No. 471,860
Int. Cl.[5] A61F *5/14*
U.S. Cl. 128—581 **13 Claims**

1. A curved, unitary functional orthotic device, comprising:
(a) a substantially U-shaped, wedged heel portion adapted to engage the sides of a user's heel while allowing the plantar side of the heel to rest on the inside of a shoe into which the orthotic device is inserted;
(b) a wedged middle portion connecting to the heel portion and adapted to engage the plantar side of the medial portion of the user's longitudinal arch; and



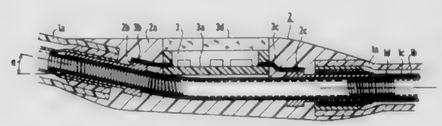
(c) a front portion connecting to the middle portion and adapted to engage the plantar side of the user's forefoot to a level just distal to the first and second metatarsal heads;
wherein each portion consists essentially of self-adjusting material to provide functional control of the user's foot and wherein each portion includes a top surface for engaging the user's foot.

5,058,586

CATHETER FOR IMPLANTATION IN THE HEART, HAVING AN INTEGRATED MEASURING PROBE

Roland Heinze, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 22, 1988, Ser. No. 223,027
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1987, 3724845
Int. Cl.[5] A61B *5/14*
U.S. Cl. 128—634 **1 Claim**



1. A device for implantation in a human heart comprising:
a catheter having a tip;
means forming a preset curvature in said catheter spaced from said tip; and
a measuring probe integrated in said catheter between said means for forming a preset curvature and said tip and disposed respective distances from said means for forming a preset curvature and from said tip so that said measuring probe is disposed between the right wall of the heart and the level of the heart valves upon implantation of said catheter in said heart, said measuring probe having a probe axis and said means for forming said preset curvature having mechanical connections for said measuring probe disposed at an angle relative to said probe axis.

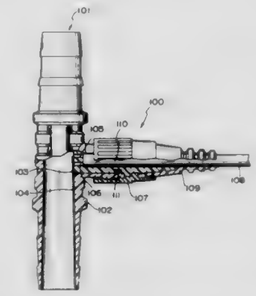
5,058,587

PROBE FOR OPTICAL SENSOR

Hiromasa Kohno, and Masahiro Nudeshima, both of Fuji, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1989, Ser. No. 396,901
Claims priority, application Japan, Aug. 23, 1988, 63-207360
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **6 Claims**

1. An optical sensor probe for emitting light into blood and for transmitting reflected light thereby obtained to an optical sensor, said optical sensor probe comprising:
a conduit through which blood flows;
a first optical fiber having its one end adapted to be in contact with blood and connected to a side wall of said conduit so as to be flush with the inner surface of the side wall in said conduit, said first optical fiber having means for being supplied at its other end with light and emitting the light into the blood from said one end;
a second optical fiber having its one end disposed so as to be flush with the inner surface of the side wall of said conduit



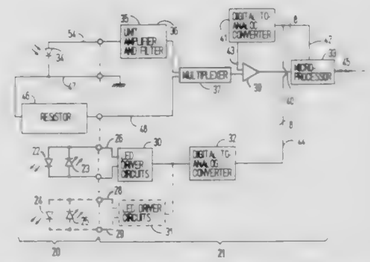
at a predetermined distance from said one end of said first optical fiber in the direction in which the blood flows through said conduit, said second optical fiber receiving at its said one end reflected part of the light emitted into the blood by said first optical fiber, and transmitting the received reflected light to said optical sensor;
a cable accommodating said first and second optical fibers; and
connection means for connecting said cable to a side surface of said conduit.

5,058,588

OXIMETER AND MEDICAL SENSOR THEREFOR

Siegfried Kaestle, Nufringen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 19, 1989, Ser. No. 409,547
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **3 Claims**



1. An oximeter for use with a sensor that has means for emitting light when energized, means for producing identification signals uniquely representing the location on a patient's body at which the sensor is to be applied and means for producing information signals from which the oxygenization of blood may be determined in response to light impinging thereon, said oximeter comprising:
means for supplying energy for said means for emitting light,
means for supplying energy for said means for producing identification signals,
means for receiving said information signals,
means for receiving said identification signals,
control means including means for processing received

information signals in accordance with an algorithm selected in response to received identification signals, and said control means including means for carrying out an algorithm for determining whether or not said information signals result from a number of light emitting sources indicated by said sensor identification signals.

5,058,589

ELECTRODE FOR MEASURING BODY CURRENTS

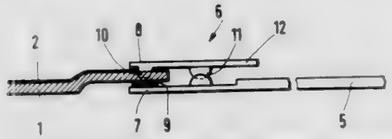
Wolfgang Dirg, Braunschweig, and Werner Arnold, Juechen, both of Fed. Rep. of Germany, assignors to Arbo Medizin-Technologie GmbH, Braunschweig, Fed. Rep. of Germany

Filed Mar. 20, 1986, Ser. No. 841,774

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1985, 3509976

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—640 **6 Claims**



1. An electrode for measuring body currents, comprising an electrically conductive and adhesive contact layer intended for placement in direct contact on a patient's skin and a preformed and dimensionally stable cover layer covering the contact layer, the cover layer and contact layer being substantially flat along a first portion to be placed in contact with a patient'skin and having a second portion raised above the first portion and a metallic sensor, which is connected to a transmission cable, for receiving and transmitting the currents, wherein an opening is provided at an edge of the cover layer and a clamp is provided which, through the opening, grips the underside of the contact layer with a first cheek and the top with a second cheek and which is provided with the metallic sensor that is connected to the transmission cable.

5,058,590

APPARATUS FOR DISPERSING FLUIDS FOR DISSOLUTION OR CONCRETIONS IN A BODILY CAVITY

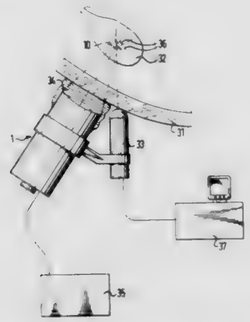
Helmut Wurster, Oberderdingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed May 1, 1989, Ser. No. 345,439

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1988, 3814743

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—660.03 **6 Claims**



1. Apparatus for dissolving concretions within a bodily cavity of a patient to be treated, under the action of a solvent fluid in contact with bodily cavity fluid within said cavity, the apparatus comprising means for introducing a solvent fluid into said bodily cavity for mixture with said bodily cavity fluid, an ultrasonic transducer adapted for coupling to the exterior of the patient's body, and being provided with means for emitting ultrasonic waves focussed on at least one of said fluids in said cavity, within a frequency range of from 20 to 40 kHz and having sufficient power to produce cavitation in at least one of said fluids to cause dispersion therebetween.

5,058,591

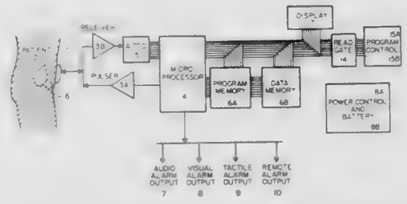
RAPIDLY QUANTIFYING THE RELATIVE DISTENTION OF A HUMAN BLADDER

John A. Companion, Hampton; Joseph S. Heyman, Williamsburg, both of Va.; Beth A. Mineo; Albert R. Cavalier, both of Arlington, Tex., and Travis N. Blalock, Knoxville, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 118,993, Nov. 10, 1987, Pat. No. 4,852,578, which is a continuation-in-part of Ser. No. 929,869, Nov. 13, 1986, abandoned. This application May 26, 1989, Ser. No. 358,213

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.03 **20 Claims**



1. A process for measuring the fullness of a bladder in an animal body, comprising transmitting a pulse of energy to and through the bladder, receiving reflections of said pulse of energy over a selected period of time, identifying a set of segments of time over said period of time, measuring the levels of the reflected energy received in each of said segments of time, and computing a measure of bladder fullness from both the respective levels of energy in said segments of time and the location of said respective levels of energy in said period of time.

5,058,592

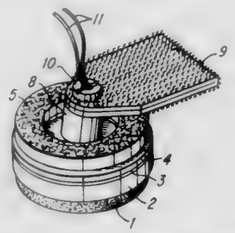
ADJUSTABLE MOUNTABLE DOPPLER ULTRASOUND TRANSDUCER DEVICE

G. Douglas Whisler, 17026 33rd Ave. S.W., Seattle, Wash. 98166

Filed Nov. 2, 1990, Ser. No. 608,247

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.07 **6 Claims**



1. An adjustable, mountable Doppler ultrasound transducer device, comprising:

a ring segment for placement on a patient; and

a transducer segment that is movably mounted on said ring segment and is provided with electrical leads for connecting said transducer segment to a Doppler instrument, with said ring segment and said transducer segment having cooperating adjusting means for selective adjustment of the position of said transducer segment relative to said ring segment, with said cooperating adjusting means comprising hook and loop type fastening means that includes a first fastener element connected to said ring segment, and a second fastener element connected to said transducer segment, and whereby said ring segment comprises: a first ring for placement on said patient; said first fastener element in the form of a Velcro ring; and a flexible membrane that is disposed between said first ring and said Velcro ring, with said transducer segment being mounted on said flexible membrane.

5,058,593

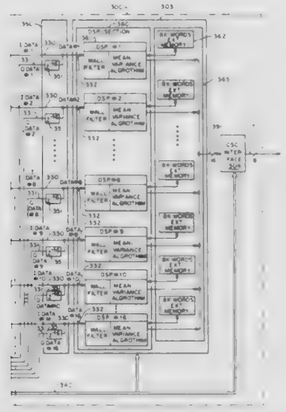
APPARATUS FOR PROCESSING AND DISPLAYING ULTRASONIC DATA

Steven F. Forestieri; Sheng T. Lin, both of Santa Clara; John J. Lum, San Francisco; William A. Rains, Aptos, and Steven A. McNerney, Sunnyvale, all of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Filed Sep. 18, 1990, Ser. No. 584,191

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.07 **12 Claims**



1. An apparatus for processing Doppler signal data in real time for an ultrasonic imaging apparatus comprising:

a. a receiver for receiving reflected Doppler signals produced by reflecting a reference pulsed acoustic signal;

b. a plurality of integrators coupled to the receiver for integrating the reflected Doppler signals over a first period of time to maximize the signal-to-noise ratio of the reflected Doppler signals;

c. a plurality of analog-to-digital converters coupled to the integrators for digitizing the reflected Doppler signals each of the analog-to-digital converters outputting a plurality of digitized Doppler signals;

d. a plurality of digital signal processors, each of the plurality of digital signal processors coupled to each of the plurality of analog-to-digital converters for processing the plurality of digitized Doppler signals, each of the digital signal processors outputting a plurality of processed digital signals; and

e. a controller coupled to the receiver, the integrators, the analog-to-digital converters and the digital signal processors, for controlling the operation of the integrators, analog-to-digital converters and digital signal processors, controlling the receipt of the processed digital signals, and compressing each of the plurality of processed digital signals output from the plurality of digital signal processors into a plurality of signals suitable for display.

5,058,594

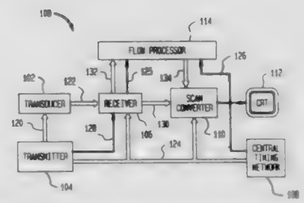
DIRECT VELOCITY ESTIMATOR FOR ULTRASOUND BLOOD FLOW IMAGING

John C. Lazenby, Unincorporated Area, Wash., assignor to Quantum Medical Systems, Incorporated, Issaquah, Wash.

Filed Aug. 29, 1990, Ser. No. 574,669

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.08 **3 Claims**



1. A method of estimating blood flow velocity using echoes, comprising the steps of:

radiating a plurality of successive beams having known phase relationships with a reference frequency;

receiving said beams as successive echo beam from a blood volume; and

evaluating the phase shift changes, relative to said reference frequency, between said successive echo beams to determine an estimate of the blood flow velocity, including the steps of:

commuting an N element interim vector, I having complex entries I_j determined by,

$$I_j = \sum_{k=1}^{N} (P_{jk})\,(s_k)$$

where P_{jk} represents a complex entry of an N×N matrix jP, and s_k represents a complex entry of an N dimensioned vector s with each s_k being an echo having an magnitude and phase relative to said reference frequency; and

determining the estimate of the blood flow velocity by applying the equation;

$$BFVE = \sum_{k=1}^{N} (s_k^*)\,(I_j)$$

where BFVE is the blood flow velocity estimate, s_k^* is the complex conjugate of s_k, and I_j is the jth entry of the interim vector I.

5,058,595

JUDKINS-TYPE ANGIOGRAPHIC CATHETER WITH DOPPLER CRYSTAL, AND METHOD OF USE

Morton J. Kern, St. Louis, Mo., assignor to St. Louis University, St. Louis, Mo.

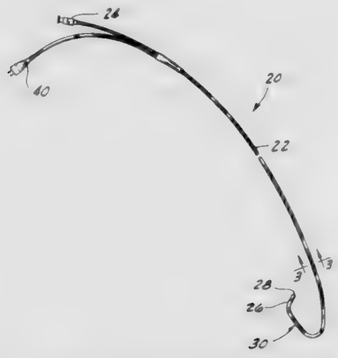
Filed Jan. 31, 1990, Ser. No. 472,767

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **6 Claims**

1. A Judkins-type angiographic catheter adapted to be inserted in a coronary artery for measuring the velocity of coronary blood flow, comprising a tube of flexible relatively soft material having a proximal end and a distal end terminating in a tip, a first lumen in the tube extending lengthwise of the tube for passage of an X-ray contrast media therethrough, a Doppler crystal affixed to the tube at the tip of the tube, conductor

means connected to the Doppler crystal extending lengthwise of the tube, and means adjacent the proximal end of the catheter for connecting said conductor means to a source of energy to cause the Doppler crystal to emit pulses at predetermined frequency for measuring the velocity of coronary blood flow, said tube having a distal end portion preformed into a bent



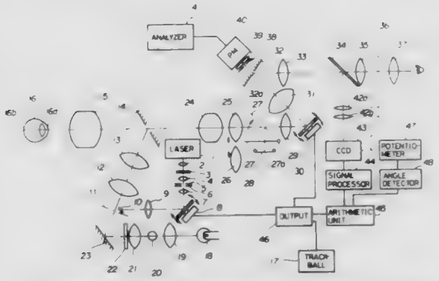
configuration, said distal end portion being flexibly resilient for enabling the distal end portion to straighten during insertion of the catheter into the body and to spring back to its preformed bent configuration once inside the heart to permit the tip of the tube to be inserted to a position inside a patient's coronary artery.

5,058,596

OPHTHALMOLOGICAL MEASUREMENT METHOD AND APPARATUS

Misao Makino, Hachiouji; Kiyoshi Hashimoto, and Toshiaki Sugita, both of Hino, all of Japan, assignors to Kowa Company Ltd., Japan

Filed Apr. 9, 1990, Ser. No. 507,355
Claims priority, application Japan, Apr. 10, 1989, 1-87858
Int. Cl.[5] A61B *3/10, 3/14*
U.S. Cl. 128—665 **15 Claims**



6. An ophthalmological measurement apparatus in which an eye fundus is illuminated by a laser beam having a predetermined diameter and motion of a laser speckle pattern formed by laser light scattered and reflected from the eye fundus is detected at an observation point as fluctuations in the speckle light intensity to produce a speckle signal which is evaluated for ophthalmological measurement, comprising: a laser for producing a laser beam;

an optical system for projecting the laser beam to a region of the eye fundus including a blood vessel concerned;

means for detecting movement of a laser speckle pattern formed by light scattered by the eye fundus as fluctuations in the light intensity of the speckles at an observation point; and

means for processing a speckle signal obtained from the detecting means to derive therefrom a center of gravity;

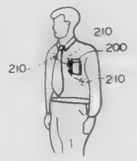
wherein the thus obtained center of gravity is taken as a center of a blood vessel to identify the blood vessel.

5,058,597

LONG-TERM ELECTROCARDIOGRAPH FOR SCREENING

Masahiro Onoda, and Tadashi Fujii, both of Nakai, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 510,184
Claims priority, application Japan, Apr. 27, 1989, 1-105927
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—696 **9 Claims**



1. A long-term electrocardiograph for screening, comprising:

input means for collecting an electrocardiogram signal from a subject;

detector means for determining an R wave included in the electrocardiogram signal;

processing means for processing the electrocardiogram signal in dependence upon the determining of the R wave by said detector means, to produce first data, representative of a momentary heart rate trendgram and a momentary ST trendgram, associated with the electrocardiogram signal; and

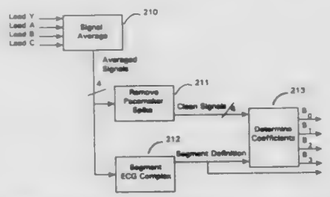
first storage means for storing therein the first data time-serially under control of said processing means.

5,058,598

METHOD AND APPARATUS FOR SYNTHESIZING LEADS OF AN ELECTROCARDIOGRAM

John M. Nicklas, 2086 Mershon, Ann Arbor, Mich. 48103, and Julie A. Scherer, 1681 Broadway, Apt. 401, Ann Arbor, Mich. 48105

Filed Aug. 3, 1990, Ser. No. 562,872
Int. Cl.[5] A61B *5/0428*
U.S. Cl. 128—699 **29 Claims**



1. A method for synthesizing data for a given lead for an electrocardiogram for a patient, comprising the steps of:

selecting a plurality of base leads;

gathering a first set of electrocardiographic data from the patient for the base leads and for the given lead for an interval corresponding to at least one electrocardiographic complex;

generating a transformation based on the first set of electrocardiographic data;

gathering a second set of electrocardiographic data from the patient for the base leads for an interval corresponding to at least one electrocardiographic complex; and

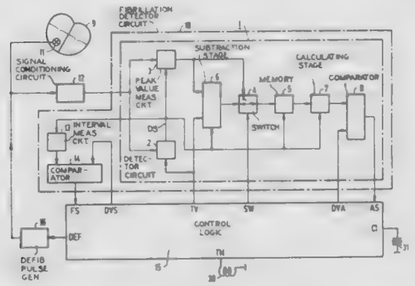
applying the transformation to the second set of electrocardiographic data to effect the synthesis of data for the given lead.

5,058,599

METHOD AND APPARATUS FOR DETECTING A SEQUENCE OF ABNORMAL EVENTS IN AN ELECTRICAL SIGNAL, PARTICULARLY IN THE DEPOLARIZATION SIGNAL OF A HEART

Hans Andersen, Voellingby, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 14, 1990, Ser. No. 538,107
Claims priority, application European Pat. Off., Jun. 15, 1989, 89110885.4
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—705 **12 Claims**



1. A method for detecting a sequence of events indicating fibrillation among a plurality of normal events in the depolarization signal of a pathologically functioning heart, said method comprising the steps of:

acquiring the depolarization signa from the heart, said depolarization signal including a plurality of events, each event having a duration exceeding a minimum chronological duration and consisting of a plurality of successive instantaneous values, and said depolarization signal having a slope associated with each instantaneous value;

identifying, for each event a beginning time at which the absolute value of said slope of said depolarization signal exceeds the absolute value of a defined slope;

forming, for each event, a product of said defined slope and time elapsed since said beginning time;

measuring, for each event, the overall chronological duration for which the absolute value of said depolarization signal exceeds the absolute value of said product;

calculating a characteristic quantity corresponding to the statistical distribution of the overall chronological durations respectively measured for a most recently occurring event and a for a defined plurality of events appearing in succession immediately preceding said most recently occurring event; and

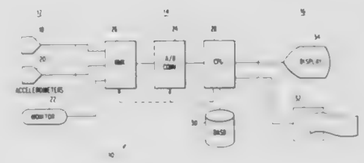
comparing the calculated characteristic quantity to a defined rated value to obtain a comparison result identifying the presence of a sequence of events indicating fibrillation in said depolarization signal.

5,058,600

GRAPHICAL READOUT OF LARYNGOTRACHEAL SPECTRA AND AIRWAY MONITOR

Gary L. Schechter, Norfolk, and Robert F. Coleman, Virginia Beach, both of Va., assignors to Center for Innovative Technology, Herndon and Eastern Virginia Medical School of the Medical College, Norfolk, both of, Va.

Filed Jan. 8, 1990, Ser. No. 461,675
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—716 **11 Claims**



1. A laryngotracheal airway spectra readout comprising:

accelerometer means adapted to be placed on the outside of the neck of a patient, said accelerometer means generating a first electrical signal corresponding to the physical vibration of breathing noise;

pulmonary monitor means adapted to be attached to said patient for generating a second electrical signal corresponding to a phase of the patient's breathing; and

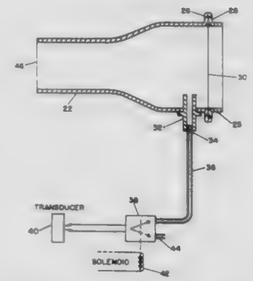
frequency spectrum analyzer means connected to said accelerometer means and said pulmonary monitor means for analyzing said first and second electrical signals and generating a calibrated and normalized graphic readout.

5,058,601

PULMONARY FUNCTION TESTER

Douglas M. Riker, Pembroke, Mass., assignor to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 341,275, Apr. 19, 1989, abandoned, which is a continuation of Ser. No. 154,793, Feb. 10, 1988, abandoned. This application Apr. 12, 1990, Ser. No. 512,052
Int. Cl.[5] A61B *5/087*
U.S. Cl. 128—725 **5 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 111 Pages)



1. A pulmonary function tester for measurement of a patient's pulmonary function, comprising:

a mouthpiece for placement in the patient's mouth;

transducer means for sensing a pressure level and means for connecting said mouthpiece to said transducer means, said transducer means, connected to and in fluid communication with said mouthpiece through said means for connecting said mouthpiece to said transducer means, said transducer means sensing a pressure level in said means for connecting, said transducer means producing an output signal indicative of the sensed pressure level, said sensed

pressure level being indicative of a rate of airflow in said mouthpiece;

valve means, connected with said means for connecting said mouthpiece to said transducer means, for venting said transducer means to ambient atmosphere; and

dynamic calibration means for

(a) opening said valve means to the ambient atmosphere for a time interval sufficient for said transducer means to accurately sense an initial pressure level, when said valve means is open;

(b) storing an initial zero level signal indicative of the initial sensed pressure level;

(c) detecting a decrease in the sensed pressure level, after beginning the pulmonary function measurement, below a selected pressure level, the selected pressure level being greater than the initial sensed pressure level;

(d) opening said valve means to the ambient atmosphere for a time interval sufficient for said transducer means to accurately sense a second pressure level when said valve means is open;

(d) storing a second zero level signal indicative of the second sensed pressure level; and

(e) calibrating sensed pressure levels of said transducer means, previously obtained during the pulmonary function measurement, in view of a difference between the initial zero level signal and the second zero level signal.

5,058,602

PARASPINAL ELECTROMYOGRAPHY SCANNING

Stanley R. Brody, R.F.D. #1, Wurtsboro, N.Y. 12790

Continuation-in-part of Ser. No. 252,270, Sep. 30, 1988, abandoned. This application Oct. 4, 1989, Ser. No. 418,751

Int. Cl.[5] A61B *5/0488*

U.S. Cl. 128—733 **15 Claims**

1. A method of electromyographic scanning of paravertabral muscles comprising:

measuring electrical potential with surface electrodes bilaterally across a first segment of a person'spinous process;

progressing along the spinous process to a second segment of the spinous process; and

measuring electrical potential with surface electrodes bilaterally across the second segment of the spinous process.

5,058,603

LENGTH-MEASURING DEVICE AND REFERENCE COLOR DISPLAY DEVICE FOR COLOR TONE ADJUSTMENT FOR USE IN COMBINATION WITH ENDOSCOPE

Yuzuru Doi; Hiroshi Shirahata, and Kunio Takahashi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Jul. 28, 1989, Ser. No. 386,477

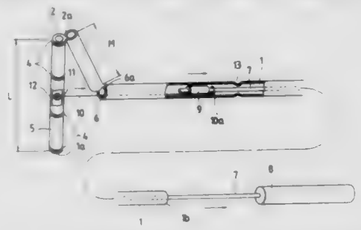
Claims priority, application Japan, Aug. 9, 1988, 63-199193; Aug. 29, 1988, 63-215863; Sep. 19, 1988, 63-235780; Sep. 19, 1988, 63-235781; Sep. 19, 1988, 63-235782; Oct. 24, 1988, 63-269092; Nov. 21, 1988, 63-294014; Nov. 21, 1988, 63-294015; Apr. 27, 1989, 63-50485; May 18, 1989, 63-125441

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—774 **77 Claims**

1. A length-measuring device for use with an endoscope, comprising:

(a) a tube having a first slit formed therein and a second slit formed therein and disposed rearwardly of said first slit, said tube being bendable at each of said first and second slits, and said tube further having a length-measuring



portion extending forwardly from said first slit to a distal end of said tube; and

(b) means for bending said tube at said first and second slits.

5,058,604

Patent Not Issued For This Number

5,058,605

METHOD AND DEVICE FOR THE CONTROLLED LOCAL, NON-INVASIVE APPLICATION OF DC PULSES TO HUMAN AND ANIMAL TISSUES

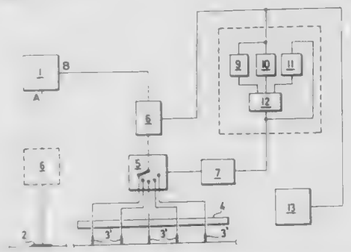
Petr Slovak, Praha, Czechoslovakia, assignor to Ceske vysoke uceni technicke, Praha, Czechoslovakia

Filed Feb. 21, 1990, Ser. No. 483,061

Claims priority, application Czechoslovakia, Feb. 22, 1989, PV1132-89

Int. Cl.[5] A61N *1/18*

U.S. Cl. 128—783 **19 Claims**



1. In a method for the controlled local non-invasive application of DC pulses to human and animal tissue where pulses are generated by a pulse generator and applied by means of two electrodes, a fixed large surface electrode and a movable point electrode, where the point electrode is moved from one point to another after a controlled duration, the improvement comprising

said DC pulses being rectangular pulses having a frequency of from 10 Hz to 10 kHz, a pulse width of from 50 μs to 250 μs and a amplitude less than or equal to 25 V;

substituting a multipoint electrode for said point electrode, said multipoint electrode comprising a plurality of point electrodes mounted in a support and being electrically isolated from each other;

applying said multipoint electrode so that substantially all of said plurality of point electrodes simultaneously contact a treated region;

providing switching means in series between said pulse generator and said multipoint electrode so that one or more of said plurality of point electrodes are sequentially selectable for connection to said pulse generator;

switching said switching means according to a controlled duration.

5,058,606

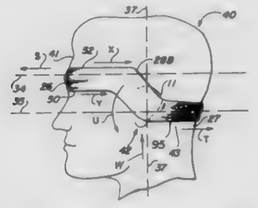
METHOD FOR SEALING EXTERNAL AUDITORY EAR CANAL

Jack Malkoff, 9810 N. 24th Pl., Phoenix, Ariz. 85028

Filed Oct. 31, 1989, Ser. No. 429,660

Int. Cl.[5] A61F *11/08, 11/12*

U.S. Cl. 128—864 **2 Claims**



1. A method for preventing water from entering the ear of an individual, said ear including an auricle, a tympanic membrane, and an external auditory canal leading to the tympanic membrane, said auricle including an outer rim and a tragus, said tragus having a normal upright position in said ear adjacent said auditory canal, said method comprising:

(a) rolling a soft pliable silicone plug into a ball having a diameter of about three quarters of an inch;

(b) placing said silicone ball in the ear over the external auditory canal;

(c) gently pressing said silicone ball against the ear to force a portion of said silicone ball a short distance into said auditory canal and to flatten and laterally sealingly spread said ball against the auricle away from the auditory canal and against the tragus, said lateral spreading of said ball covering and sealing the auditory canal, said flattened silicone plug supporting said tragus in said normal upright position;

(d) placing an earplug retaining member around the head of the individual, said member including

(i) a first upper elongate band extending across the forehead of the individual and having first and second ends,

(ii) a pliable patch portion

extending over said auditory canal and said tragus and at least a portion of the rim of the auricle of the ear, contacting and pressing the tragus against the flattened silicone plug,

slidably contacting the silicone plug, and

connected to said first end of said first band,

(iii) a second lower elongate band extending around the nape of the head and having first and second ends, said first end of said second band being connected to said patch portion, and

(iv) means for interconnecting said second ends of said first and second elongate bands;

said patch portion, when laterally displaced over the ear in a direction of travel generally parallel to the head, sliding over said silicone plug while maintaining said flattened silicone plug in sealing contact with said auricle of said ear.

5,058,607

USE OF REACTIVE HOT MELT ADHESIVE FOR MANUFACTURE OF CIGARETTE FILTERS

David G. Carter, Chorleywood; Derek J. Green, Langley, and Michael C. Collins, High Wycombe, all of England, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Feb. 23, 1990, Ser. No. 485,006

Int. Cl.[5] A24D *1/02, 3/02*

U.S. Cl. 131—58 **7 Claims**

1. In a process for manufacturing cigarette filters wherein adhesive is applied to at least one longitudinal edge of the plug wrap paper, a bond is made while the adhesive is molten and the resultant bond is held in compression for sufficient time to prevent bond movement, the improvement which comprises, using as the adhesive, a solvent- free hot melt polyurethane adhesive composition which is solid at room temperature, said adhesive consisting essentially of:

a) 5 to 90% by weight of a urethane prepolymer having an isocyanate content of 0.25 to 15% and an isocyanate index greater than 1 and no more than about 2;

b) 10 to 95% by weight of a low molecular weight polymer of ethylenically unsaturated monomers containing no active hydrogen; said hot melt adhesive formulation being characterized, in the absence of tackifiers and/or plasticizers, by a viscosity of 3000 to 50,000 cps. at 120° C.

5,058,608

FILTER CIGARETTE

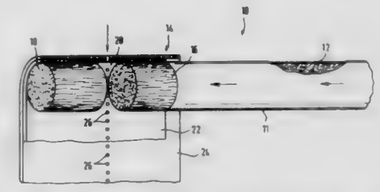
Paul-Georg Henning, and Werner Schneider, both of Quickborn, Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 10, 1990, Ser. No. 463,059

Claims priority, application Greece, Jul. 21, 1989, 89.0100471

Int. Cl.[5] A24D *3/04, 3/18*

U.S. Cl. 131—336 **6 Claims**



1. A filter cigarette having a maximum nicotine-to-condensate-ratio of 1.3, comprising:

a tobacco rod having a nicotine-to-condensate-yield ratio of between 0.5 and 1.2 and a packing density, of the tobacco mixture composing the tobacco rod, of between 190 and 230 mg/ml, the draw resistance of the tobacco rod is between 40 and 65 mm water column, measured under closed conditions;

a cigarette paper surrounding the tobacco rod, said paper having a an air permeability in the range of 15 to 40 Coresta units;

a first filter element facing the tobacco rod consisting of a cellulose acetate fibrous tow having a Y-cross section and a low single denier of 1.5 to 2.5 dpf and a total denier greater than 50,000, said first filter element having a retention capacity of 40 to 80%;

a second filter element facing the mouth of the smoker having maximum retention capacity of 15%; and

a filter comprising the first and second filter elements and a hollow chamber having a length of 3 to 7 mm disposed between the two filter elements, an air-impermeable tipping paper attaching the two filter elements to the tobacco rod, a filter ventilation zone in the tipping paper in the region of the hollow chamber circumferentially positioned on the tipping paper, and said filter has an overall length of between 18 and 30 mm, and a filter ventilation degree of 50 to 85%.

5,058,609

HAIR HIGHLIGHTING APPARATUS

William J. Sandoz, and Maria A. Sandoz, both of Delran, New Jersey 08054, assignors to William J. Sandoz

Filed Feb. 20, 1990, Ser. No. 481,931

Int. Cl.[5] A45D *19/18*

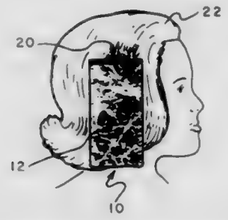
U.S. Cl. 132—270 **11 Claims**

1. A hair color treating device suitable for use in highlight-

ing and the like of selected strands of hair consisting essentially of:

a) a sheet of flexible liquid-impermeable material of sufficient lateral width to extend laterally outwardly from opposite sides of selected strands of hair to be treated which are isolated from a head of hair;

b) a sheet of non-woven fibrous textile material of a size substantially co-extensive with said sheet of liquid-impermeable material, said sheet of non-woven fibrous textile material having self-adhering surface characteristics which are sufficiently operative to releasably maintain opposing contacting surfaces of sheets of said fibrous textile material in liquid sealed relation; and



c) an adhesive substantially uniformly bonding said sheet of liquid-impermeable material and said sheet of non-woven textile material together in substantially co-extensive overlying relationship;

wherein said device is adapted to isolate selected strands of hair from a head of hair during hair highlighting treatment thereof with said selected strands of hair being enclosed between opposing contacting surfaces of overlying sheets of said non-woven fibrous textile material the self-adhering surface characteristics of which are operative to maintain them in liquid sealed relation therebetween during a treatment process with the sheet of liquid-impermeable material serving to provide a liquid-permeable covering therefor.

5,058,610

FLUID SUPPLYING AND PROCESSING DEVICE

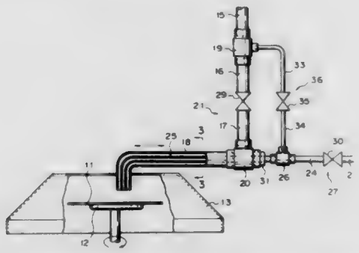
Kazumi Kuriyama, Yamanashi, Japan, assignor to Pioneer Electronic Corporation, Tokyo and Pioneer Video Corporation, Yamanashi, both of, Japan

Continuation of Ser. No. 379,603, Jul. 14, 1989. This application Feb. 25, 1991, Ser. No. 662,330

Claims priority, application Japan, Dec. 15, 1988, 63-317710

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—98 **7 Claims**



7. A fluid supplying and processing device comprising:

carrier means for carrying a workpiece;

a housing surrounding said carrier means;

a plurality of fluid supply sources;

a plurality of fluid guide pipes each having distal ends open to a cavity within said housing at a place above said carrier means; and

communication means for selectively communicating said fluid guide pipes with said fluid sources;

at least one of said fluid guide pipes has a distal end portion inserted in a distal end of another of said fluid guide pipes so that both distal ends of said one and another of said fluid guide pipes are open to said cavity separately from each other,

one of said fluid supply sources supplying a cleaning fluid,

said communication means including a first open-close valve means for selectively communicating said another of said fluid supply sources with said one of the fluid guide pipes, a second open-close valve means for selectively communicating a different one than said one of said fluid supply sources with said one of the fluid guide pipes, and a third open-close valve means for communicating said one of the fluid supply sources with said one of the fluid guide pipes when said second open-close valve means is closed.

5,058,611

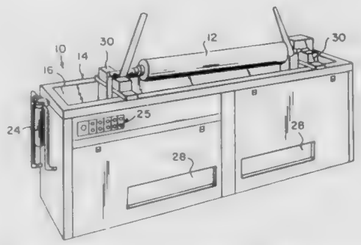
PROCESS AND APPARATUS FOR THE ULTRASONIC CLEANING OF A PRINTING CYLINDER

Arthur H. Liers, Smithtown; Louis J. Principe, Deer Park; Nikita Zekulin, Locust Valley, and Asgarali Hosein, Far Rockaway, all of N.Y., assignors to Sonicor Instrument Corporation, Copiague, N.Y.

Filed Mar. 27, 1989, Ser. No. 328,953

Int. Cl.[5] B08B *3/10*

U.S. Cl. 134—105 **18 Claims**



1. An apparatus for cleaning a printing cylinder with a cleaning fluid using ultrasonic waves, comprising:

a cleaning tank capable of containing therein the printing cylinder to be cleaned, and for receiving the cleaning liquid into which the printing cylinder is immersed during cleaning, said printing cylinder having an outer face;

means for heating the cleaning liquid to be contained within said cleaning tank when the printing cylinder is being cleaned;

means for generating the ultrasonic waves, said means for generating being a distance of, a least, approximately three inches from the outer face of the printing cylinder to be cleaned; and,

a transducer coupled to said tank for radiating the ultrasonic waves generated by said means for generating into the cleaning liquid when the printing cylinder is being cleaned.

5,058,612

PORTABLE SPRAY CLEANING APPARATUS

Billy C. Winsted, 569 Lafayette Ave., Cincinnati, Ohio 45246

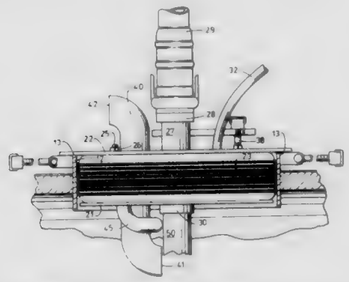
Filed Apr. 16, 1990, Ser. No. 509,343

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—167 R **15 Claims**

1. A manhole sealing component for use with a tank spray cleaning apparatus and adapted for mounting in a manhole of a tank to seal said manhole during a tank cleaning operation, said manhole sealing component comprising:

(a) a cylindrical-shaped core with a set of threaded studs extending therefrom and further having a base plate and a cover plate with a set of aligned holes in the cover plate to receive the threaded studs so as to be removably attached to the core, said base plate dimensioned to fit through the manhole and said cover plate dimensioned to completely cover the manhole and to rest on a lip thereof so as to steady the manhole sealing component during use;



(b) a connecting tube passing through the base plate with attachment means at one end to receive a cleaning solution delivery hose and attachment means at a second end to receive a spinner spray component;

(c) an inflatable tube positioned on the core with valve means extending therefrom for inflating the tube to form a seal with sidewalls of the manhole; and

(d) retaining means operably associated with the cover plate of the core to secure the manhole sealing component to the tank during the cleaning operation.

5,058,613

ONE HAND OPERATED UMBRELLA CAPABLE OF SELF-CLOSING

Tseng Su, No. 434-2, Chung Sen Road, and Yun c. Pon, No 43, Alley 18, Lane 150, Suay Tan Street, both of, Hsinchu, Taiwan, Taiwan

Filed Oct. 10, 1990, Ser. No. 596,204

Int. Cl.[5] A45B *11/00*

U.S. Cl. 135—20.3 **1 Claim**



1. A one hand operated umbrella capable of self-closing including an inner tube and an outer tube defining a center shaft; a connector inside the center shaft having an upper link and a lower link, wherein the two links are slidable relating to the connector but can not be separated; a ring connected to the top of the upper link; a key connected to the bottom of the lower link; a slider slidably mounted on the outer tube and having a stopper adapted to engage with a hole on the outer tube to maintain an opened state of the umbrella; and a crown being connected with the top of the outer tube and adapted to pivotally connect with ribs; characterized in that

a spring pawl being connected within the inner tube and having a protrusion on its top end, the top end of the inner tube having a side hole being inserted into the bottom end of the outer tube having a side hole, and the protrusion engaging with the two holes to make an extended state of the center shaft;

a second rib being relatively connected with one of the ribs, wherein a hole is formed on the second rib and adapted to make a slidable connection with the one rib, and a supporting rod being pivotally connected at one end to the slider, and at the other end to an end rib, the folded end of the rib being extendedly connected with the middle of the supporting rod;

a spring connecting its lower end with the top of the upper link and its upper end with a pin which is laterally fixed on an upper portion of the outer tube, and the ring being fixed at the place between a ring-shaped top and a widened flange of the upper link, and a second spring connecting its upper end with the ring and its lower end with a hook on the connector;

a handle being connected with the bottom of the inner tube and having a side aperture; the inner tube having a side slot; a button having two pairs of flanges on both sides and positioned within the aperture of the handle, the botton also having an inner triangular chamber opposite the slot of the inner tube; and the key being connected with the bottom of the lower link and having an inclined portion adapted to pass through the slot and to be received in the triangular chamber.

5,058,614

DEVICE FOR CONTROLLING THE LIFT OF A HYDRAULICALLY OPERATED VALVE

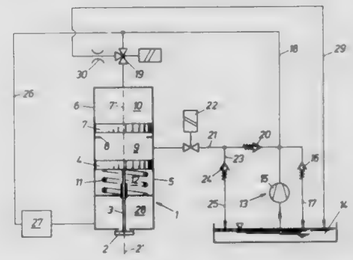
Diethard Plohberger; Volker Pichl, both of Graz, and Herwig Ofner, Stübing, all of Austria, assignors to Avl Gesellschaft Für Verbrennungskraftmaschinen Und Messtechnik M.B.H. Prof. Dr. Dr. h.c. Hans List, Graz, Austria

Filed May 21, 1990, Ser. No. 525,712

Claims priority, application Austria, May 24, 1989, A1267/89

Int. Cl.[5] F16K *31/12*

U.S. Cl. 137—1 **8 Claims**

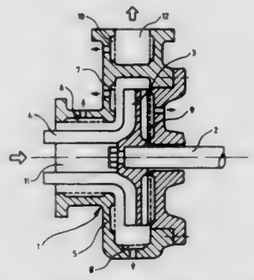


1. A device for controlling the lift of a hydraulically operated valve comprising an actuating element situated in a cylinder, bounding an actuating chamber in said cylinder, which actuating element is biased in a closing direction, and comprising a flying setting plunger guided in said cylinder, which bounds a pressure chamber in said cylinder and separates said pressure chamber from said actuating chamber, and further comprising a pressure-generating unit having a high-pressure line controlled by a first valve and leading into said pressure chamber, as well as a low-pressure line controlled by a second valve and leading into said actuating chamber, and wherein said setting plunger is pressed against a stop in said cylinder at maximum lift of said hydraulically operated valve.

5,058,615
METHOD AND APPARATUS FOR PUMPING HIGH CONSISTENCY PULP

Jukka Timperi; Reijo Vesala, both of Kotka, and Vesa Vikman, Kymi, all of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Jul. 1, 1988, Ser. No. 214,328
Claims priority, application Finland, Jul. 2, 1987, 872918
Int. Cl.[5] E03B *3/18*
U.S. Cl. 137—1 **29 Claims**

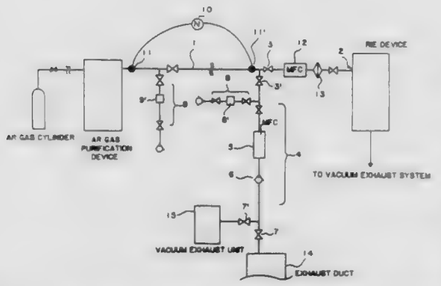


1. A method of pumping a liquid-fiber suspension with a pump having a housing with an inlet and outlet comprising the steps of:
(a) moving said suspension into said pump;
(b) separating a portion of the liquid part of said suspension from said suspension through a filter surface by the pumping action; and
(c) directing said separated liquid to said suspension at a point somewhere between a situs in advance of said pump inlet and said pump outlet so as to increase the amount of the liquid in the suspension to be moved into the pump and thereby facilitating the movement of said suspension through said pump.

5,058,616
METHOD OF SUPPLYING ULTRAHIGH PURITY GAS

Tadahiro Ohmi, 1-17-301 Komegabukuro, 2-chome, Sendai-shi, Miyagi-ken 980, Japan

Division of Ser. No. 194,569, Mar. 1, 1988, abandoned. This application Jul. 18, 1990, Ser. No. 554,732
Claims priority, application Japan, Jul. 3, 1986, 86-157387
Int. Cl.[5] C23F *1/00*
U.S. Cl. 137—13 **12 Claims**

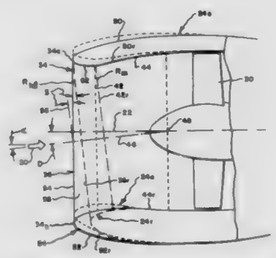


1. A method for supplying ultrahigh purity gas from a source for said ultrahigh purity gas through a piping system to process equipment of the type used for film making or etching under reduced pressure, said piping system extending between the source for said ultrahigh purity gas and an inlet to said process equipment, and including exhaust means for selectively discharging said gas from said system comprising:
heating at least a portion of said piping system for a predetermined length of time;
passing a purge gas through at least a portion of said piping system for a predetermined length of time, and discharging said purge gas from the piping system;
eliminating the heat from the system; and
passing a process gas through said piping system to said process equipment.

5,058,617
NACELLE INLET FOR AN AIRCRAFT GAS TURBINE ENGINE

Norbert O. Stockman, Batavia; David E. Yates, Cincinnati, and Timothy S. Crum, Fairfield, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 23, 1990, Ser. No. 557,426
Int. Cl.[5] B64D *33/02*
U.S. Cl. 137—15.1 **13 Claims**



1. A scroop nacelle inlet for channeling freestream airflow to a gas turbine engine having a longitudinal centerline axis comprising:
an annular forward nacelle having a leading edge defining an inlet face for receiving said airflow and a diffuser disposed in flow communication with said inlet face, said diffuser being defined about a droop axis inclined relative to said engine centerline axis; and
said forward nacelle having a radially upper crown including a portion of said leading edge and a radially lower keel including a portion of said leading edge, said keel leading edge portion and said crown leading edge portion defining therebetween a scarf axis, said keel leading edge portion extending axially forward of said crown leading edge portion so that said scarf axis forms an acute scarf angle greater than zero relative to a reference line perpendicular to said droop axis.

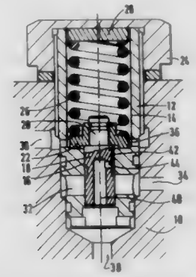
5,058,618
RELIEF VALVE FOR HYDRAULIC FLUID

Joan S. Bacardit, Barcelona, Spain, assignor to Bendix Espana, Barcelona, Spain

Filed Dec. 14, 1990, Ser. No. 627,532
Claims priority, application Spain, Jan. 22, 1990, 9000175
Int. Cl.[5] G05D *16/10*
U.S. Cl. 137—116 **3 Claims**

1. A relief valve for controlling the pressure of a hydraulic fluid within a first duct opening into a bore provided in a body, a communication between said first duct and a second duct being provided at a rest position of a valve member of the relief valve when pressure within the first duct is lower than a threshold determined by the preload of resilient means urging said valve member in the rest position, the second duct connecting a primary hydraulic circuit under pressure to said bore, said communication being interrupted when said pressure in said first duct pressure reaches said threshold, wherein an increase of said pressure in said first duct beyond said threshold

results in providing a communication between said first duct and a third duct connected to a low pressure circuit, the relief valve comprising a housing received within said bore in the body and the housing having an axial stepped bore with the resilient means and valve member located within the stepped bore, said valve member being a piston formed with a blind bore communicating at one end with said first duct and at another end with an external piston groove by way of a radial

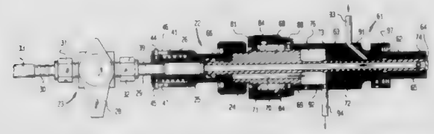


piston bore, an axial length of said external piston groove being a little less than the distance between axially spaced apart edges of said second and third ducts, the piston having associated therewith a radially extending head which acts as a seat for one end of said resilient means and engages a shoulder of the stepped bore, the communication provided between said first duct and one of said second and third ducts being by means of said blind bore, radial piston bore, and external piston groove.

5,058,619
CONNECTOR FOR COUPLING A FLUID LINE TO A RESTERILIZABLE PORT

Zhen B. Zheng, Edison, N.J., assignor to New Brunswick Scientific Co., Inc., Edison, N.J.

Filed Oct. 1, 1990, Ser. No. 591,461
Int. Cl.[5] F16K *51/00*
U.S. Cl. 137—240 **21 Claims**



1. A resterilizable connector-valve combination comprising:
a resterilizable valve having a first fluid conduit means extending therethrough and a sterilization means for passing a sterilizing medium through said first fluid conduit means, wherein said first fluid conduit means has an inside surface and an outside surface;
an outer tube;
an inner tube having first and second orifices an a second fluid conduit means extending between said orifices, said inner tube being telescopically mounted in said outer tube with said first orifice located within said outer tube;
coupling means on said outer tube for coupling said outer tube to said resterilizable valve with one end of the first fluid conduit means extending into said outer tube; and,
positioning means capable of selectively holding said inner tube and said outer tube in a first stable position or in a second stable position wherein in said first stable position, said first orifice is spaced from said one end of the first fluid conduit means such that said sterilization medium sterilizes said inside and said outside surfaces of said first fluid conduit means, and wherein in said second stable position, said first orifice is coupled to said one end of the first fluid conduit means such that said sterilizing medium sterilizes said inside surface of said first fluid conduit means and does not sterilize said outside surface of said first fluid conduit means.

5,058,620
INSERTION ASSEMBLY FOR BORING A HOLE IN A PIPE

Stephen L. Jiles, 1513 Dogwood Ave., Anaheim, Calif. 92801

Division of Ser. No. 513,599, Apr. 24, 1990. This application Oct. 29, 1990, Ser. No. 605,968
Int. Cl.[5] F16L *41/04;* **F16K** *43/00;* **B23B** *41/08*
U.S. Cl. 137—318 **6 Claims**



1. An insertion assembly for boring a hole through the wall of a pipe having a branching saddle thereon, with a pipe stub extending from the branching saddle comprising:
a) shaft;
b) a shell cutter mounted on and extending axially from one end of said shaft;
c) a threaded lead hub, rockably and non-rotatably mounted on said shaft coaxially therewith, spaced apart from said cutter and restricted against axial movement along said shaft toward said cutter, said lead hub having a bore through which said shaft extends, said bore being slightly larger than the shaft so as to enable the shaft to swing within the hub enough to facilitate entry of the cutter into the pipe stub; and
d) a threaded sealing plug slidably mounted coaxially on, and sealed against, said shaft between said cutter and said lead hub and adapted to receive said lead hub when said shaft is slid through said sealing plug so that said lead hub may be screwed into said sealing plug by rotating said shaft, and the shaft and the cutter thereon may be axially advanced relative to said sealing plug.

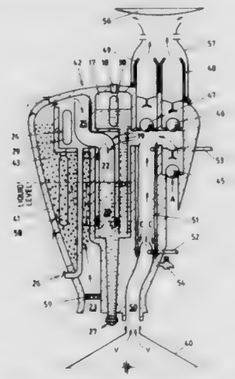
5,058,621
TANK BREATHER

Hein R. Thumm, Gomersal Road, Lyndoch, Australia

Filed Jun. 12, 1990, Ser. No. 536,506
Claims priority, application Australia, Jun. 15, 1989, PJ4752
Int. Cl.[5] F16K *49/00*
U.S. Cl. 137—340 **10 Claims**

1. A tank breather comprising a container, a reservoir above the container, a conduit depending from the reservoir and having an opening into the container between upper and lower ends thereof, a filler opening above the reservoir, closure means closing the filler opening and co-operating with walls

defining the reservoir to inhibit air flow access into the reservoir except through said conduit, such that a normal level of liquid in the container is determined by the position of said opening and maintained from the reservoir, a breather passage and an air inlet passage both in communication with the con-



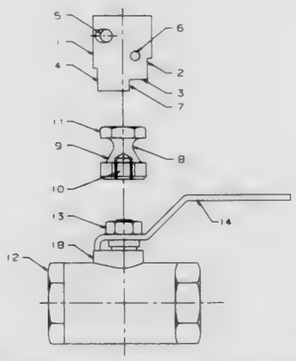
tainer but one of the passages opening into the container above the normal liquid level and the other below the normal liquid level, such that flow between the passages is inhibited by liquid in the container until differential pressures in the passages vary liquid level in the container.

5,058,622

VALVE LOCK ASSEMBLY

Gordon W. Chitty, Jr., Trussville, and Jerry L. Nichols, Birmingham, both of Ala., assignors to Stockham Valves & Fittings, Inc., Birmingham, Ala.

Filed Jan. 12, 1990, Ser. No. 464,459
Int. Cl.[5] F16K *35/00*
U.S. Cl. 137—385 83 Claims



1. A valve lock assembly for a rotary ball valve having a ball chamber, a rotatable control handle attached to the chamber so as to cause the chamber to rotate between fully open and fully closed positions, a handle extension rotatable in an arc of rotation between two stops which restrict movement of the handle and handle extension as the handle rotates the chamber between open and closed positions, and a threaded valve stem, which said assembly comprises a substantially rigid post member and a substantially rigid slide member slidable about the post member between an upward first position in which the slide member does not abut either of said stops and a lower second position in which a portion of the slide member abuts at least one stop, wherein:

a. said post member is attachable to said valve stem so that it can form the inner component of said valve lock assembly when the assembly is positioned about the valve stem; and

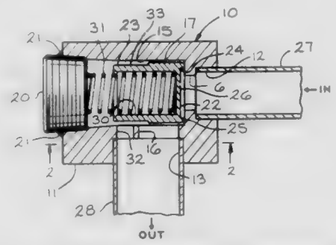
b. said slide member is hollow with inside dimensions sized to permit it to slide down around said post member from the upward first position to the lower second position without substantial clearance and is configured as follows: (i) said slide member in the lower second position having sufficient length alternately to abut one of the stops in the arc of rotation while the handle extension abuts the second stop in the arc of rotation preventing movement of the handle and chamber in any direction of rotation when the stops are thus abutted by the handle extension at one extreme and the slide member at the other extreme; and (ii) said slide member having an opening with (A) a width at least equal to the width of the handle so that the slide member can straddle the handle and with (B) a height high enough to permit the slide member to abut the stops when the slide member is in the lower second position the post member and slide member in assembled relationship about the valve, with post member rigidly attached to the valve stem and with slide member in the lower second position in abutment with a stop, forming a rigid valve lock assembly which can be unlocked in normal operation only by lifting the slide member from the lower second position toward the upward first position so that the slide member no longer abuts a stop.

5,058,623

VALVE ASSEMBLY

Gerald R. Beagle, Blissfield, and Christopher L. Schultz, Onsted, both of Mich., assignors to Blissfield Manufacturing Company, Blissfield, Mich.

Filed Sep. 19, 1990, Ser. No. 585,296
Int. Cl.[5] F16K *15/02*
U.S. Cl. 137—540 5 Claims



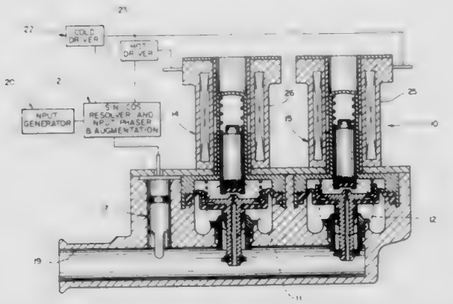
1. A valve assembly comprising, in combination, a valve body having an inlet opening and a discharge opening, a liquid passageway extending between said inlet opening and said discharge opening, said body defining a central cavity in communication with said inlet opening and said discharge opening, a poppet having a front end and a rear end slideably mounted within said central cavity, said poppet being movable between an open position whereby liquid may pass through said valve and a closed position wherein the liquid flow through said valve is retarded, a fixed plug attached to said valve body for closing said central cavity, a compression spring extending between said fixed plug and said rear end of said poppet, said front end of said poppet defining a recess having a diameter greater than the diameter of said liquid passageway adjacent said inlet opening, and a drain opening defined by said valve body for draining fluid and pressure from said central cavity, said rear end of said poppet defining an exterior cylindrical recess, said cylindrical recess providing a liquid passage to said drain opening when said poppet is in either the open position or the closed position.

5,058,624

FLOW CONTROL VALVE WITH STABLE MODULATION

Lawrence A. Kolze, 437 S. Addison St., Bensenville, Ill. 60106

Filed Jul. 19, 1990, Ser. No. 554,431
Int. Cl.[5] F16K *11/24*
U.S. Cl. 137—607 23 Claims



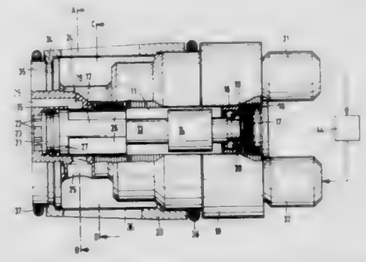
23. A mixing valve assembly for appliances requiring a mixture of hot and cold fluids, comprising: a first control valve assembly connected to a source of cold fluid including a valve housing having an inlet and an outlet, and valve means movably mounted in the housing between a valve closed position blocking flow from the inlet to the outlet, a valve maximum flow position communicating the inlet and the outlet and modulating positions variably controlling flow between the inlet and outlet at values equal to and less than maximum flow, said valve means being constructed so the maximum flow position is between the closed position and the modulating position so that the force required to move the valve means from its closed position to the maximum flow position is less than the force required to move it to its modulating positions, a second control valve assembly connected to a source of hot fluid including a valve housing having an inlet and an outlet, and valve means movably mounted in the housing between a valve closed position blocking flow from the inlet to the outlet, a valve maximum flow position communicating the inlet and the outlet and modulating positions variably controlling flow between the inlet and outlet at values equal to and less than maximum flow, said valve means being constructed so the maximum flow position is between the closed position and the modulating positions so that the force required to move the valve means from its closed position to the maximum flow position is less than the force required to move it to its modulating positions, each of the first and second control valves including a valve member having a closure valve at one end that blocks flow from the inlet to the outlet and a modulating valve at its other end so that as the valve member moves in one direction the closure valve opens and the modulating valve reduces flow from the inlet to the outlet, and as the valve member moves in the opposite direction the closure valve moves toward its closed position and the modulating valve increases flow from the inlet to the outlet, each of the first and second control valve housings having an intermediate chamber between the inlet and the outlet defined by the closure valve, means for controlling pressure in the intermediate chamber to variably control the position of the valve member including a pilot passage in the closure valve communicating the intermediate chamber with one of the inlet and outlet in the housing, and an electromagnetic coil driven actuator having a pilot valve seal at one end for modulating flow through the pilot passage to control movement of the valve member.

5,058,625

VALVE FOR INTERMITTENT INTRODUCTION OF FUEL

Klaus Kaiser, Markgroeningen, and Hans Kubach, Hemmingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1990, Ser. No. 478,387
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1989, 3904480
Int. Cl.[5] F16K *31/04, 5/10;* F02M *51/08*
U.S. Cl. 137—624.15 25 Claims



1. A valve for an intermittent introduction of a fuel quantity, in particular gaseous fuel, said fuel quantity increases and deceases successively as a function of time defining a first periodical course and is introduced into an intake tube of an internal combustion engine through which an aspirated air quantity flows and thereby increases and decreases successively as a function of the time defining a second periodical course, said valve having an electrically actuatable valve member disposed in a valve housing, in which said valve member is embodied as a rotary slide valve provided with a substantially cosine-like metering motion and said valve member is further provided with a metering conduit (25, 26, 28, 29, 42, 43, 41) adapted to open only after a predetermined portion of the metering motion is provided beyond a position of repose of the valve member (12, 40) which is assigned a maximum rotational angle that limits the metering motion, so that said first periodical course of said fuel quantity corresponds to said second periodical course of said aspirated air quantity.

5,058,626

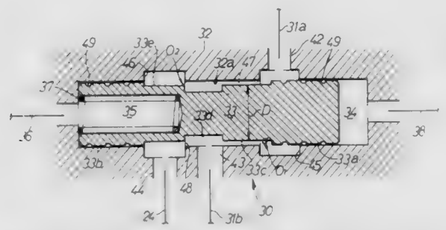
HYDRAULIC PRESSURE CONTROL VALVE

Tokuro Takaoka; Tsuto Sasaki; Yukio Kobayashi, all of Saitama; Kouichi Saitoh, Shizuoka; Satoshi Hamano, Kanagawa, and Toshiya Tatumoto, Shizuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Seiki Giken Kogyo Kabushiki Kaisha, Hadano, both of, Japan

Continuation of Ser. No. 406,671, Sep. 13, 1989, abandoned. This application Dec. 17, 1990, Ser. No. 627,909
Claims priority, application Japan, Sep. 14, 1988, 63-120796
Int. Cl.[5] F15B *13/02*
U.S. Cl. 137—625.66 3 Claims

1. A hydraulic pressure control valve comprising a valve body having a slide bore with a circular cross-section, an inlet port, a control pressure port and an outlet port which are opened in an inner surface of the slide bore at axially spaced-apart distances in this sequence; a valve spool axially slidably fitted in the valve body; and a first variable orifice and a second variable orifice both formed between the valve body and the valve spool, the first variable orifice controlling the degree of communication between the inlet port and the control pressure port, and the second variable orifice controlling the degree of communication between the control pressure port and the outlet port, wherein the valve spool has smaller diameter portions coaxially formed therein to define annular oil passages between the inner surface of the slide bore and the valve spool so as to cooperatively form the first and second variable ori-

fices with the valve body wherein said smaller diameter portions have outer diameters set uniformly over the entire axial length thereof and wherein sad outer diameters are set equal to each other, said smaller diameter portions being connected to



each other through an annular recess located between said smaller diameter portions, wherein an outer diameter of said annular recess is smaller than said outer diameters of said smaller diameter portions.

5,058,627

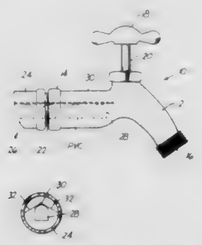
FREEZE PROTECTION SYSTEM FOR WATER PIPES

Wiley W. Brannen, P.O. Box 253, Statesboro, Ga. 30458

Continuation-in-part of Ser. No. 335,495, Apr. 10, 1989, abandoned. This application Apr. 16, 1990, Ser. No. 509,294

Int. Cl.[5] E03B *7/12*

U.S. Cl. 138—27 **4 Claims**



1. In a substantially horizontally oriented or disposed water pipe, a water pipe anti-rupture system for preventing freeze damage, comprising in combination, an assembly of a string of spaced hollow cups, each cup having a closed top portion and open bottom portion to provide a hollow chamber enclosed by continuous intermediate sidewall portions extending from the top portion to the bottom portion, said cups being aligned and fastened together with a connecting rod fastened from cup to cup so that said open bottom portion of each cup is oriented in a single direction, and periodically spaced resilient stabilizing leg members extending outwardly from the rod beyond the cups in a plane substantially perpendicular thereto, said leg members having a length greater than the diameter of said water pipe to frictionally grasp the interior surface of said water pipe and hold the spaced cups in residence along the pipe with the open hollow portions of each cup extending downwardly along the length of the pipe towards the interior bottom of the pipe and constituting a means to prevent pipe rupture of water in the pipe by entrapping sufficient air in the hollow chamber to absorb the expansion of freezing water.

5,058,628

TERRY LOOM HAVING PROGRAMMABLE PILE FORMING ELEMENTS

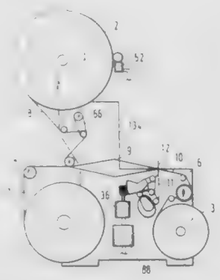
Peter Spiller, Hinwill; Theo Thalmann, St. Gallen, and Rudolf Vogel, Grut, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 10, 1989, Ser. No. 377,717

Claims priority, application Switzerland, Jul. 8, 1988, 02622/88

Int. Cl.[5] D03D *49/10, 39/22*

U.S. Cl. 139—25 **25 Claims**



3. A terry loom comprising

at least one pile-forming element for moving in a path of a warp yarn to form a loop in the warp yarn;

a servomotor;

a transmission coupling said servomotor to said element for selective movement of said element; and

a circuit arrangement having a control connected to said servomotor for driving said servomotor in programmed manner to effect movement of said element and a control input connected to said control to deliver programmable signals to said control for selectively actuating said servomotor independently for individual picks.

5,058,629

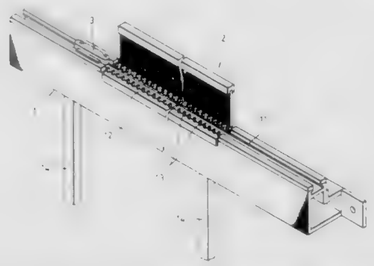
SLEY FOR A MAGNETIC SHUTTLE

Chi-Shuang Huang, No. 23, Lane 235, Kai-San Rd., Tainan, Taiwan

Filed May 30, 1990, Ser. No. 530,262

Int. Cl.[5] D03D *49/44*

U.S. Cl. 139—134 **2 Claims**



1. A sley for a loom, said loom including a reed assembly fixed on said sley, means for swinging said reed assembly to bite a strand of weft yarn into the shed of warp yarns, a raceway formed in the upper surface of said sley in front of said reed assembly, means for generating a magnetic force which moves along said raceway, and a shuttle with-side wings attractable by said magnetic force to fly along said raceway, said sley being fixed on said swinging means, said magnetic force-generating means being disposed under said raceway, characterized in that a slot is formed in said sley, in such a manner that the bottom portion of said shuttle and/or the top portion of said magnetic forcegenerating means can extend partially into said slot, so as to minimize the distance therebetween, thereby increasing said magnetic force and a separate recess is provided in said sley on each side of the slot in front of said reed assembly with each said slot having spaced apart protrusions which extend to a location flush with the upper surface of the sley and over which said wings slide.

5,058,630

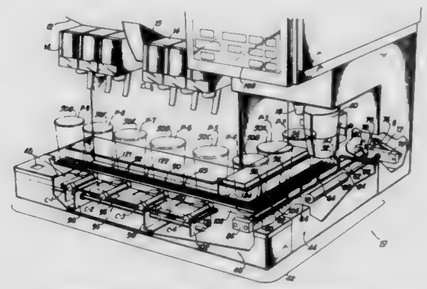
AUTOMATIC BEVERAGE DISPENSING SYSTEM WITH PROGRAMMABLE CUP DROP

Ronald L. Wiley, Marietta, Ga.; Benjamin D. Miller, Chicago, Ill., and Phillip B. Groover, Woodstock, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 316,010, Feb. 27, 1989, Pat. No. 4,951,719. This application May 18, 1990, Ser. No. 525,932

Int. Cl.[5] B65B *3/04, 57/00*

U.S. Cl. 141—1 **6 Claims**



1. An automatic beverage dispenser comprising:

(a) cup conveyor means for advancing cups along a plurality of cup stations including a cup drop station, an ice drop station, a beverage dispense station, and a plurality of separate, spaced-apart, cup pick-up stations;

(b) a multiflavor valve positioned above said conveyor means at said beverage dispense station for dispensing any one of a number of different selected beverages into a cup of the selected size dropped at said beverage dispense station;

(c) a plurality of separate cup supply tubes for holding a mix of different cup sizes;

(d) cup sensor means associated with each of said plurality of supply tubes for sensing when a particular supply tube is deplenished;

(e) means for dropping a cup of the selected cup size at said beverage dispense station; and

(f) said cup dropping means including means for sequentially searching said plurality of supply tubes to locate one that both contains the selected cup size and that is not empty.

5,058,631

FLEXIBLE GAS SALVAGE CONTAINERS AND PROCESS FOR USE

David C. H. Grant, Selbyville, Del., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 16, 1989, Ser. No. 394,594

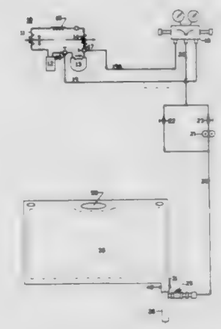
Int. Cl.[5] F25B *45/00*

U.S. Cl. 141—10 **3 Claims**

1. A process for the recovery of refrigerant from refrigeration systems comprising in combination:

a. filling a bag which is substantially impervious to said refrigerant and to air with said refrigerant through an opening connected to said refrigeration system;

b. transporting said bag to a central recovery system for recovering said refrigerant;



c. expelling said refrigerant from said bag at said central recovery system and condensing said refrigerant to a liquid and thereafter purifying said refrigerant for reuse.

5,058,632

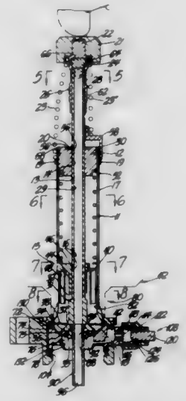
FILLING VALVE APPARATUS

Robert W. Lawarre, Sr., Cocoa, and Robert W. Lawarre, Jr., Titusville, both of Fla., assignors to Precision Metalcraft Corporation, Titusville, Fla.

Division of Ser. No. 383,880, Jul. 20, 1989. This application May 7, 1990, Ser. No. 519,655

Int. Cl.[5] B65B *31/00*

U.S. Cl. 141—39 **8 Claims**



1. A filling valve assembly for filling containers with a liquid, said assembly comprising:

housing means **(11)** having a passage **(40)** and including an inlet **(48)** for allowing liquid to flow into said housing and said passage **(40)** and an outlet **(70)** to allow liquid to flow out of said housing means **(11)** and said passage **(40)**;

said housing means **(11)** including cylindrical portion **(80)** with an inner surface **(82)** establishing a vertical cylinder having apertures **(48)** establishing said inlet **(48)**, valve portion **(72)** connected to said cylindrical portion **(80)** with an inner surface **(74)** bowing outwardly from said cylinder, venturi portion **(76)** connected to said valve portion **(72)** having an inner surface **(78)** funneling inwardly, and expansion portion **(70)** connected to said venturi portion **(76)** with an inner surface **(84)** flaring

outwardly to a base portion (86) establishing a horizontal shoulder for receiving a container (50) wherein the liquid flowing along said expansion portion (70) is directed to the inside surface of the container (50);

valve means extending through said housing means (11) wherein liquid flows along said inner surfaces (74, 78, 82, 84) between said housing means (11) and said valve means;

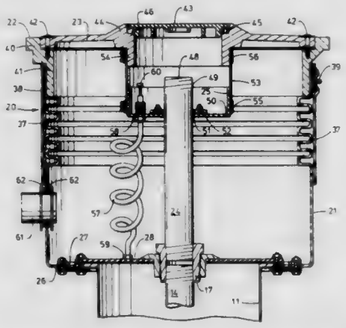
said valve means including sealing means (36) for moving between an open and closed position and having an external contour substantially complementing said inner surface (74) of said valve portion (72) such that the liquid flowing therethrough is compressed between said cylindrical portion (80) and said valve portion (72) and said venturi portion (76).

5,058,633

CONTAINMENT ASSEMBLY FOR FILL PIPE OF UNDERGROUND STORAGE TANKS

Bruce R. Sharp, 7685 Fields-Ertel Rd., Cincinnati, Ohio 45241

Filed Sep. 5, 1989, Ser. No. 403,135
Int. Cl.[5] B65B *3/06*; B65G *5/00*
U.S. Cl. 141—86 **9 Claims**



1. An assembly for direct attachment in a liquid tight fashion to a manway on an underground storage tank, wherein said assembly provides ready access to a fill pipe from ground level while serving as a secondary containment means and spill containment means for the fill pipe, said assembly comprising:

(a) a secondary containment chamber having a sidewall which is cylindrical-shaped with an inwardly extending lower flange at its bottom and further having a plate which is dimensioned for attachment to the secondary containment chamber's sidewall to serve as a bottom wall of the containment chamber and to serve as a cover for the manway of the storage tank;

(b) an anchor ring which acts as a permanent ground base for the assembly, said anchor ring attached to an upper open end of the containment chamber's sidewall;

(c) a bridging surface cover within the anchor ring to close off the secondary containment chamber's interior, said surface cover having a fill pipe lid which is readily removed to gain access to the chamber's interior for a filling operation;

(d) a fill pipe for delivering liquid to the storage tank, said fill pipe positioned within the secondary containment chamber with a discharging end extending through a bottom of the chamber directly into the storage tank and a receiving end terminating near the bridging surface cover;

(e) an open top spill compartment positioned within the secondary containment chamber and at the receiving end of the fill pipe so as to encompass the receiving end of the fill pipe to catch any spilled liquid from the filling operation and prevent said spilled liquid and vapors from entering the secondary containment chamber; and

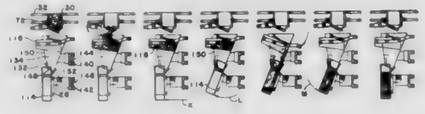
(f) an attachment system for attaching the assembly directly to the manway of the storage tank, said attachment system comprising (i) a split ring with two sets of bolt holes, a first set used to bolt the split ring to a flange on the manway and a second set used to bolt the split ring to the chamber's inwardly extending lower flange, (ii) a second ring to sit on a top surface of the chamber's lower flange, said second ring having a set of bolt holes which align with the second set of bolt holes on the split ring and (iii) a set of bolts, wherein tightening of the bolts achieves a secure attachment of the assembly to the manway of the storage tank.

5,058,634

AUTOMATIC PACKAGING MACHINE FOR PARTICULATE MATTER

Steven Tisma, Chicago, Ill., assignor to Tisma Machine Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 349,224, May 9, 1989, Pat. No. 5,010,929, which is a continuation-in-part of Ser. No. 164,010, Mar. 4, 1988, Pat. No. 4,856,566. This application Jan. 11, 1990, Ser. No. 463,116
Int. Cl.[5] B65B *3/16*
U.S. Cl. 141—129 **20 Claims**



1. An automatic packaging system for loading a particulate product into a box, said system comprising at least three conveyor means stacked vertically with respect to each other, an uppermost one of said three conveyor means carrying a plurality of fill cups for measuring predetermined portions of particulate product, each of said fill cups having a slanting bottom extending over a portion thereof, each of said fill cups having a bottom gate which moves from a closed position against said slanting bottom to an inclined position so that said product slides off said slanting bottom and onto said gate and thereafter slides off said inclined position of said gate, a central one of said three conveyor means carrying means for guiding and directing said portions sliding off said gate during a transfer of said portions from said fill cups to packaging containers, a lower one of said three conveyor means carrying said packaging containers to positions where they receive said transferred portions via said guiding and directing means, and means for transferring said product in at least two distinct steps from said fill cups to said guiding and directing means and then on to said packaging containers, each of said transfer steps being carried out via an inclined plane.

5,058,635

GAS CARTRIDGE INFLATOR HAVING HOLLOW PIN OF TRUNCATE EXTENT

Glenn H. Mackal, 4923 59th Ave., St. Petersburg, Fla. 33715

Filed May 14, 1990, Ser. No. 523,154
Int. Cl.[5] B63C *9/24*
U.S. Cl. 141—329 **9 Claims**

1. An apparatus for quickly introducing gaseous fluid into the inflation manifold of an inflatable device, said apparatus including an inflator adapted to receive a gas cartridge, and said apparatus further including a means for puncturing the gas cartridge when a lanyard is pulled, comprising:

a first bore, having a first predetermined diameter, formed in said inflator, substantially centrally thereof;

a second bore formed in said inflator, said second bore having a second predetermined diameter greater than said first predetermined diameter, said second bore having a first, inner end in open fluid communication with said first bore and a second, outer end in open communication with an external surface of said inflator so that said gas cartridge is insertable into said second bore;

a pin member slidably disposed within said first bore;

said pin member having a head at a first end thereof;

said pin member having a tubular member, adapted to pierce said gas cartridge, at a second end thereof;

said pin member having a longitudinal extent greater than the longitudinal extent of said first bore and said head protruding at least partially out of said first bore when said pin member is disposed in said first bore;

driving means for driving said head of said pin member into said first bore and thereby driving said pointed second end of said pin member into said second bore so that said gas cartridge disposed within said second bore is punctured;

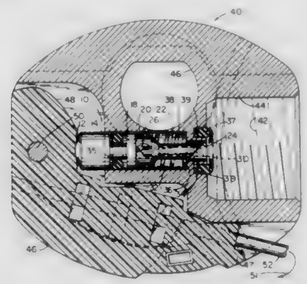
a fluid passageway being formed internally of said pin member;

a third bore formed in said inflator;

said third bore being confluent with said first bore and being confluent with said inflation manifold of said inflatable device;

said driving means being a bell crank pivotally connected to said inflator, said bell crank having a first part adapted to abuttingly engage said head of said pin member when said head is protruding from said first bore and when said bell crank is in an equilibrium position;

a pivot shaft about which said bell crank pivots;



said pivot shaft being positioned in longitudinal alignment with said first and second bores;

said pin member having a diameter only slightly less than the first predetermined diameter of said first bore;

said tubular member being round in section to produce a round hole in said cartridge;

said tubular member being of reduced predetermined diameter relative to said head;

a fourth bore, of predetermined diameter less than said first predetermined diameter, that slidably receives said tubular member, said fourth bore being confluent with said second bore inner end;

an annular shoulder formed where said first bore and said fourth bore meet;

said pin member further including a boss member;

said boss member having a diameter greater than the predetermined diameter of said tubular member and less than the diameter of said head;

said boss member supporting a base part of said tubular member to enhance the structural integrity of said pin member; and

said fluid passageway formed internally of said pin member including a longitudinally extending first part defined by said tubular member and a radially extending second part formed in said boss member so that gaseous fluid exiting said gas cartridge follows a path of travel into said inflatable device that includes a ninety degree bend;

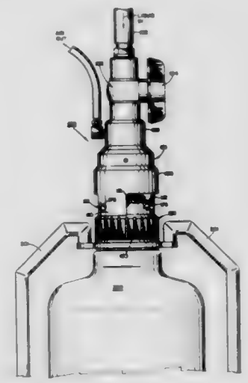
whereby gas escaping from said punctured gas cartridge enters into said fluid passageway formed in said pin member and thence into said third bore and thence into the inflatable device.

5,058,636

LIQUID FLOW CONTROLLING SYSTEM

Thomas L. Simmel, and Craig A. Baker, both of Milford, Conn., assignors to Link Research & Development, Inc., Milford, Conn.

Continuation-in-part of Ser. No. 211,811, Jun. 27, 1988, Pat. No. 4,924,921. This application May 8, 1990, Ser. No. 520,518
Int. Cl.[5] B67C *3/00*; B65B *39/04*
U.S. Cl. 141—346 **11 Claims**



1. An integrated, cooperating liquid flow controlling system for delivering a desired liquid from a first storage reservoir to a second active reservoir and also for providing trouble-free refilling of the first storage reservoir whenever required, with all liquid transfer being achieved in a controlled manner with over-filling, spillage, and pressure build up virtually eliminated, said flow controlling system comprising

A. a liquid delivery/filling assembly comprising

a. a first flow channel;

b. a second, separate and independent flow channel positioned for cooperative association with said first flow channel; and

c. actuation control means cooperatively associated with said first flow channel and said second flow channel for sequentially opening the flow channels whenever said control means is activated; and

B. a liquid transfer assembly constructed for mating, cooperating mounted engagement with the liquid delivery/filling assembly and comprising

a. a valve assembly

1. connectable at one end thereof to a source of said liquid, and

2. movable between a first flow stopping position and a second flow permitting position, and

b. a housing constructed for cooperating, mating, telescopic overlying interengagement with the liquid delivery/filling system assembly and incorporating

1. a central section having a liquid delivery flow channel, with one end thereof connected to the valve assembly, and

2. a wall section extending from the end of said central section opposite the valve assembly and comprising

i. means for engaging and activating the control means of the liquid delivery/filling assembly, thereby causing the first and second flow channels thereof to be opened, and

ii. means for securely locking and engaging the housing with the liquid delivery/filling assembly and

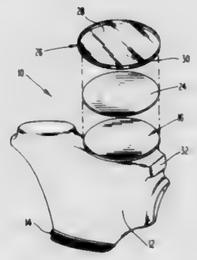
for maintaining said locked interengagement until removal thereof is desired.

5,058,637

MESSAGE DISPLAY SADDLE FOR FUEL DISPENSING NOZZLE

Michael J. Fell, Bryn Mawr, Pa., assignor to M&M Displays, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 397,774, Aug. 23, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 511,866
Int. Cl.[5] B67D *5/00*
U.S. Cl. 141—392 **12 Claims**



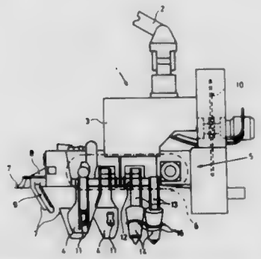
1. A message display device for a fuel dispensing nozzle, comprising:
(a) a flexible boot adapted for close conforming fit over at least a front portion of the nozzle;
(b) a substantially flat message display platform mounted on a top surface of the boot with respect to the nozzle;
(c) a message placard resting upon the platform, and;
(d) an optically clear cover having a skirted edge depending in close conforming fit along the contour of the platform, such that the cover will hold the placard on the platform but may be pried away from the platform to allow the placard to be changed.

5,058,638

APPARATUS FOR CROSS-CUTTING TREETRUNKS, COMPRISING A DEVICE FOR MEASURING LENGTHS

Gerold Hacker, and Walter Strzygowski, both of Vienna, Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Nov. 27, 1990, Ser. No. 618,471
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1990, 9011682[U]
Int. Cl.[5] A01G *23/08*; **B27L** *1/00*; **B27B** *1/00*
U.S. Cl. 144—3 D **7 Claims**



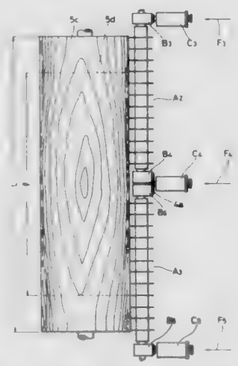
1. An apparatus for cross-cutting treetrunks, comprising:
a frame;
a plurality of gripping member means movably mounted in said frame for engaging a treetrunk, wherein at least one of said gripper member means comprises a gripper arm, on which an exposed roller is rotatably mounted, said exposed roller having an outside peripheral surface provided with peripherally spaced apart teeth for engaging said treetrunk;
feeding means mounted in said frame for engaging and longitudinally moving said treetrunk in a predetermined longitudinal direction relative to said frame when said treetrunk is thus engaged by said gripper member means;
cross-cutting tool means mounted in said frame and movable at right angles to said longitudinal direction for crosscutting said treetrunk thus engaged by said gripping member means; and
displacement pickup means associated with said roller and located within said at least one gripper member means for detecting the number of rotations of said roller as said treetrunk moves in said longitudinal direction thereby detecting the displacement of said treetrunk relative to said frame in said longitudinal direction;
said at least one gripping member means comprising shielding means for shielding said displacement pickup means from outside influences.

5,058,639

METHOD FOR APPLYING PRESSURE TO A DRIVING ROLLER FOR A VENEER LATHE

Yukio Takagi, Obu, Japan, assignor to 501 Meinan Machinery Works, Inc., Obu, Japan

Filed Nov. 13, 1990, Ser. No. 612,024
Claims priority, application Japan, Nov. 15, 1989, 1-297000
Int. Cl.[5] B27L *5/02*
U.S. Cl. 144—357 **29 Claims**



27. A method for lathing a bolt, which comprises:
rotating a bolt to be lathed;
applying pressure to said bolt at a plurality of spaced locations;
selectively and independently controlling the pressure applied to said bolt at one or more of said spaced locations; and
automatically sensing the hardness of the bolt to selectively control said pressure.

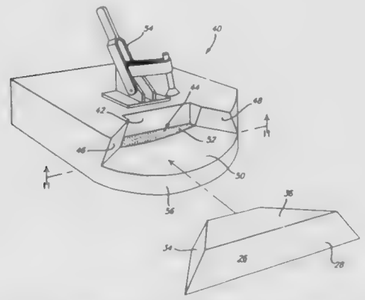
5,058,640

METHOD AND APPARATUS FOR FORMING RADIUS CORNERS

Henry G. Rasmussen, 23430 Margarita, Detroit, Mich. 48219

Continuation of Ser. No. 470,070, Jan. 25, 1990, Pat. No. 5,002,107. This application Feb. 1, 1991, Ser. No. 649,023
Int. Cl.[5] B27M *1/08, 3/00*
U.S. Cl. 144—367 **25 Claims**

1. A fixture for positioning and supporting bulkstock during the formation of radius corner moldings, said bulkstock including first, second, third, fourth, fifth, and sixth surfaces, said third and fourth surfaces of said bulkstock forming compound angles with respect to said first, second, fifth and sixth surfaces of said bulkstock, said fixture comprising:
a front surface formed in a predetermined radius configuration;
a back support surface operable to engage said second surface of said bulkstock;



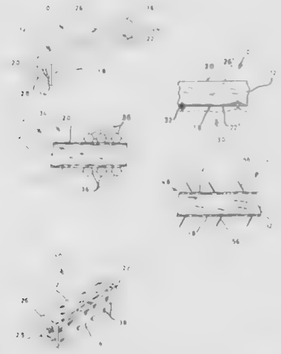
a first side support surface operable to engage said third surface of said bulkstock; and
a second side support surface operable to engage said fourth surface of said bulkstock.

5,058,641

LOG SURFACE HEWING PROCESS

Randy K. Giles, Jefferson County, Tenn., assignor to Hearthstone Builders, Inc., Dandridge, Tenn.

Filed Jul. 20, 1990, Ser. No. 555,110
The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.
Int. Cl.[5] B27L *5/02*
U.S. Cl. 144—369 **13 Claims**



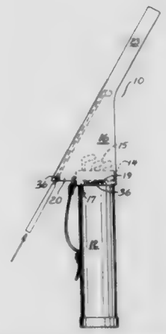
1. A log surface hewing process for reconfiguring the surfaces of a construction log used in the construction of log structures to produce a log having the appearance of a hand-hewn log, said process being applied to a construction log comprising an elongated body defining a substantially rectangular cross-section, and including first and second end portions and a longitudinal axis extending therebetween, said body further defining front and rear oppositely disposed surfaces and longitudinally extending upper and lower forward edge portions and longitudinally extending upper and lower rearward edge portions, said process comprising the steps of:
chamfering at least said upper and lower forward edge portions of said body using a first power driven rotary cutting means to produce irregularly beveled upper and lower forward corners; and
cutting a plurality of indentations in at least said front surface of said body using a second power driven rotary cutting means.

5,058,642

GOLF BAG COVER

Martell F. Tuntland, 9059 103rd Ave., Sun City, Ariz. 85351

Filed Oct. 18, 1990, Ser. No. 599,643
Int. Cl.[5] A63B *55/00, 57/00*
U.S. Cl. 150—159 **20 Claims**



1. An elongated rain cover for protecting the interior of a golf bag and its clubs while permitting access thereto, comprising:
a closed end upper tubular portion, said closed end upper portion being fabricated of a flexible, transparent and moisture impermeable material and having the form when expanded to its full capacity of a hollow cylinder;
a lower bottom portion comprised of an attachment portion and an access portion, said lower bottom portion fabricated of a flexible, transparent and moisture impermeable material and having the form, when expanded to full capacity of a hollow truncated shaped cone, with said closed end upper portion and said lower bottom portion being integral with one another; and
a golf bag fastening means secured to said attachment portion of said lower bottom portion for mounting said cover to the golf bag, with said access portion permitting access to the clubs in the bag.

5,058,643

ATV TIRE WITH ZIG ZAG LUGS

Eiji Nakasaki, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, LTD, Hyogo, Japan

Filed Nov. 8, 1989, Ser. No. 433,799
Claims priority, application Japan, Nov. 9, 1988, 63-283286
Int. Cl.[5] B60C *11/08*
U.S. Cl. 152—209 B **16 Claims**

1. An all terrain vehicle tire having a tread provided with a plurality of lugs arranged circumferentially of the tire;
each lug symmetrical with respect to the tire equator extending continuously from one axial edge to the other axial edge of the tread in a zigzag manner;
each lug comprising:
a pair of axially inner oblique portions located one on each side of the tire equator,
a pair of axially outer oblique portions each located axially outward of each inner oblique portion,
a central portion located in the center of the tread between said inner oblique portions, and

for maintaining said locked interengagement until removal thereof is desired.

5,058,637

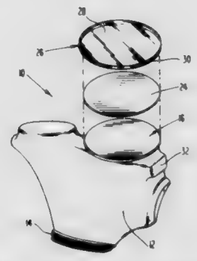
MESSAGE DISPLAY SADDLE FOR FUEL DISPENSING NOZZLE

Michael J. Fell, Bryn Mawr, Pa., assignor to M&M Displays, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 397,774, Aug. 23, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 511,866

Int. Cl.[5] B67D *5/00*

U.S. Cl. 141—392 **12 Claims**



1. A message display device for a fuel dispensing nozzle, comprising:

(a) a flexible boot adapted for close conforming fit over at least a front portion of the nozzle;

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(c) a message placard resting upon the platform, and;

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APPARATUS FOR CROSS-CUTTING TREETRUNKS, COMPRISING A DEVICE FOR MEASURING LENGTHS

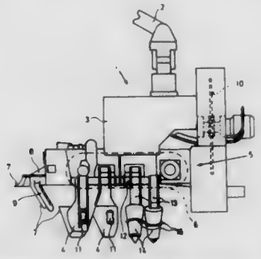
Gerold Hacker, and Walter Strzygowski, both of Vienna, Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Nov. 27, 1990, Ser. No. 618,471

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1990, 9011682[U]

Int. Cl.[5] A01G *23/08*; **B27L** *1/00*; **B27B** *1/00*

U.S. Cl. 144—3 D **7 Claims**



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feeding means mounted in said frame for engaging and longitudinally moving said treetrunk in a predetermined longitudinal direction relative to said frame when said treetrunk is thus engaged by said gripper member means;

cross-cutting tool means mounted in said frame and movable at right angles to said longitudinal direction for crosscutting said treetrunk thus engaged by said gripping member means; and

displacement pickup means associated with said roller and located within said at least one gripper member means for detecting the number of rotations of said roller as said treetrunk moves in said longitudinal direction thereby detecting the displacement of said treetrunk relative to said frame in said longitudinal direction;

said at least one gripping member means comprising shielding means for shielding said displacement pickup means from outside influences.

5,058,639

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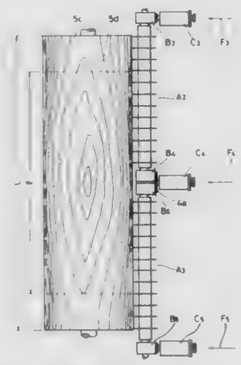
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Claims priority, application Japan, Nov. 15, 1989, 1-297000

Int. Cl.[5] B27L *5/02*

U.S. Cl. 144—357 **29 Claims**



27. A method for lathing a bolt, which comprises:

rotating a bolt to be lathed;

applying pressure to said bolt at a plurality of spaced locations;

selectively and independently controlling the pressure applied to said bolt at one or more of said spaced locations; and

automatically sensing the hardness of the bolt to selectively control said pressure.

5,058,640

METHOD AND APPARATUS FOR FORMING RADIUS CORNERS

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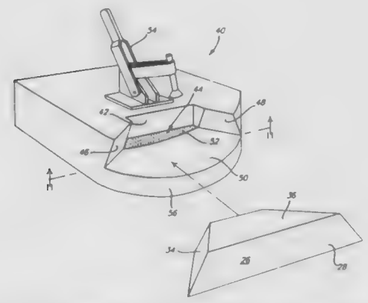
Int. Cl.[5] B27M *1/08, 3/00*

U.S. Cl. 144—367 **25 Claims**

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5,058,641

LOG SURFACE HEWING PROCESS

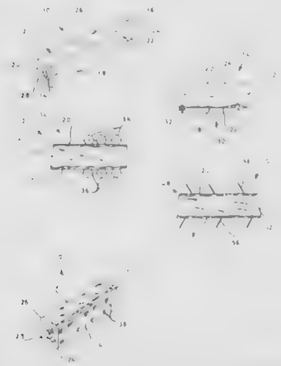
Randy K. Giles, Jefferson County, Tenn., assignor to Hearthstone Builders, Inc., Dandridge, Tenn.

Filed Jul. 20, 1990, Ser. No. 555,110

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

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U.S. Cl. 144—369 **13 Claims**



1. A log surface hewing process for reconfiguring the surfaces of a construction log used in the construction of log structures to produce a log having the appearance of a hand-hewn log, said process being applied to a construction log comprising an elongated body defining a substantially rectangular cross-section, and including first and second end portions and a longitudinal axis extending therebetween, said body further defining front and rear oppositely disposed surfaces and longitudinally extending upper and lower forward edge portions and longitudinally extending upper and lower rearward edge portions, said process comprising the steps of:

chamfering at least said upper and lower forward edge portions of said body using a first power driven rotary cutting means to produce irregularly beveled upper and lower forward corners; and

cutting a plurality of indentations in at least said front surface of said body using a second power driven rotary cutting means.

5,058,642

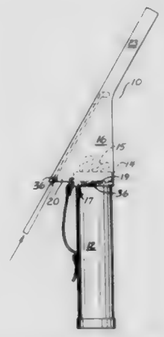
GOLF BAG COVER

Martell F. Tuntland, 9059 103rd Ave., Sun City, Ariz. 85351

Filed Oct. 18, 1990, Ser. No. 599,643

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U.S. Cl. 150—159 **20 Claims**



1. An elongated rain cover for protecting the interior of a golf bag and its clubs while permitting access thereto, comprising:

a closed end upper tubular portion, said closed end upper portion being fabricated of a flexible, transparent and moisture impermeable material and having the form when expanded to its full capacity of a hollow cylinder;

a lower bottom portion comprised of an attachment portion and an access portion, said lower bottom portion fabricated of a flexible, transparent and moisture impermeable material and having the form, when expanded to full capacity of a hollow truncated shaped cone, with said closed end upper portion and said lower bottom portion being integral with one another; and

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5,058,643

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Claims priority, application Japan, Nov. 9, 1988, 63-283286

Int. Cl.[5] B60C *11/08*

U.S. Cl. 152—209 B **16 Claims**

1. An all terrain vehicle tire having a tread provided with a plurality of lugs arranged circumferentially of the tire;

each lug symmetrical with respect to the tire equator extending continuously from one axial edge to the other axial edge of the tread in a zigzag manner;

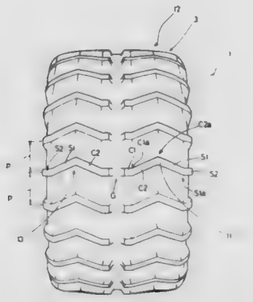
each lug comprising:

a pair of axially inner oblique portions located one on each side of the tire equator,

a pair of axially outer oblique portions each located axially outward of each inner oblique portion,

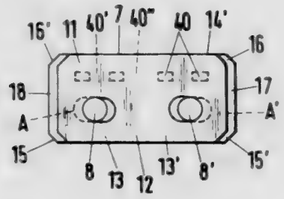
a central portion located in the center of the tread between said inner oblique portions, and

a pair of shoulder portions each located axially outward of each outer oblique portion;
each inner oblique portion extending from each of the axially outer ends of the central portion in a direction at an angle of from 20 to 80 degrees with respect to the tire equator;
each outer oblique portion extending from the axially outer end of the inner oblique portion in a reverse direction, to that of the inner oblique portion, at an angle of from 20 to 80 degrees with respect to the tire equator;
each shoulder portion extending in the axial direction of the tire from the axially outer end of each outer oblique portion to the tread edge;
said central portion extending in the axial direction of the tire and provided with a cut-out portion in the middle thereof;



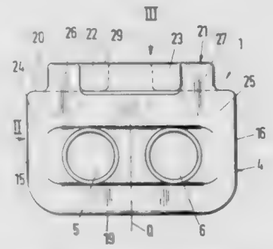
the first axial width (WC2) between the axially outer ends of the inner oblique portions being in the range of 25 to 65% of the second axial width (WT) of the ground contacting region of the tread when the tire is mounted on a standard rim and inflated to a standard pressure and loaded with a normal load;
the third axial width (WC1) of the central portion being in the range of 25 to 65% of said first axial width (WC2);
the fourth axial width (WG) of said cut-out portion being in the range of 40 to 60% of said third axial width (WC1); and
the radial depth (d) of the cut-out portion being in the range of 80 to 100% of the height (HC1) of the central portion.

5,058,644
V-SHAPE STUD LINK FOR A TIRE CHAIN AND TIRE CHAINS USING SAME
Anton Müller, Aalen, Fed. Rep. of Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Fed. Rep. of Germany
Filed Oct. 5, 1989, Ser. No. 417,530
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1988, 3833871
Int. Cl.[5] B60C *27/20*
U.S. Cl. 152—243 **21 Claims**



1. A V-shaped stud link for a tire chain comprising a link body which has provided two mounting openings for further chain links between a tire contact surface and a ground contact surface and consists of two link portions that extend at an angle to one another, with said link portions each having a rectangular contour, being of equal length and being provided with chamfered corners that have a height, as measured perpendicular to a longitudinal direction of said link body, of less than 1/6 of the height of said link body.

5,058,645
STUD LINK FOR TIRE CHAINS HAVING A PROFILED ELEMENT PROJECTING FROM A WEAR SURFACE
Anton Müller, Aalen, Fed. Rep. of Germany, assignor to Eisen- und Drahtwerk Aktiengesellschaft, Aalen, Fed. Rep. of Germany
Filed Mar. 14, 1990, Ser. No. 494,178
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910390
Int. Cl.[5] B60C *27/20, 27/08*
U.S. Cl. 152—244 **16 Claims**



1. A stud link for a tire chain, comprising:
a plate-shaped link body that has at least one attachment opening for further links of said chain, with a longitudinal central plane of said link body, when said stud link is part of said chain on a tire surface, extending essentially perpendicular to said tire surface, with said link body having a tire contact surface that extends essentially perpendicular to said longitudinal central plane of said link body, and also having a wear surface on a side of said link body opposite said tire contact surface thereof; and
at least one continuous profiled element that is integrally disposed on said wear surface of said link body and projects beyond said wear surface away from said tire, whereby at least a portion of said profiled element extends at an angle to said longitudinal central plane of said link body, with said continuous profiled element extending over nearly the entire length of said wear surface and comprising at least two legs, which extend at an angle to one another and also at an angle to said longitudinal central plane of said link body.

5,058,646
PNEUMATIC SAFETY TIRE
Akira Kajikawa, Kobe; Yoshihide Kojima, Takarazuka, and Hiroshi Itho, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed Nov. 27, 1989, Ser. No. 441,556
Claims priority, application Japan, Nov. 30, 1988, 63-302977
Int. Cl.[5] B60C *17/08*
U.S. Cl. 152—454 **5 Claims**

1. A pneumatic safety tire comprising:
a pair of bead portions with a bead core;
sidewall portions extending radially outward one from each of said bead portions;
a tread portion extending between the sidewall portions, said portions disposed outward of the carcass;
a toroidal carcass extending through the tread and sidewall portions and turned up at the both edges around the bead cores;
a belt disposed between the carcass and the tread and having cords laid at a relatively small angle relative to the equator of the tire; and
a sidewall reinforcing layer disposed inward of the carcass in each sidewall portion,
each sidewall portion provided with a minimum thickness at a position (E) between an outer edge point (A) and a 65% height point (B) both located on each side of the tire equator,
the thickness of each sidewall gradually increased from the minimum thickness position (E) toward the 65% height point (B), wherein
the outer edge points (A) are defined as the axially outer edges of a ground contacting region on the tread surface in a standard loaded state in which the tire mounted on a normal rim and inflated to a normal pressure is loaded with a regular load, and
the 65% height points (B) are defined as the positions at 65% height of the tire section height (H) from the bead base in a standard unloaded state in which the tire mounted on the regular rim and inflated to said normal pressure is maintained free of load,

the difference between the thickness (TB) at the 65% height point and the minimum thickness (TE) being in the range of 2.0 to 5.0 mm,
each sidewall portion gradually increasing in thickness from the 65% height point (B) toward the maximum width position (C) where the axial section width of the tire is maximum in the standard unloaded state,
each sidewall portion gradually increasing in thickness from the maximum width position (C) toward a contact position (D) where the bead portion contacts with a flange of the rim,
the thickness (TD) at the contact position (D) being larger than the thickness (TC) at the maximum width position (C),
the difference between the thickness (TD) at the contacting position (D) and the thickness (TC) at the maximum width position (C) being in the range of 2.0 to 5.0 mm
the sidewall reinforcing layer is a cresent-shaped three-layered structure in which a hard rubber strip having a Shore A hardness of 70 to 90 and a 100% modulus of 30 to 70 kgf/cm^2 is sandwiched between soft rubber strips each having a Shore A hardness of 50 to 70 and a 100% modulus of 10 to 30 kgf/cm^2.

5,058,647
TIRE HAVING DECORATIVE APPLIQUE ON SIDEWALL AND METHOD FOR PREPARING SAME
Robert J. Gartland, Youngstown; Anthony F. Finelli, Akron, and Anthony J. Bell, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 255,699, Oct. 11, 1988, Pat. No. 4,967,818. This application Aug. 16, 1990, Ser. No. 568,119
The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.
Int. Cl.[5] B60C *13/04;* **B29B** *17/00;* **C08L** *47/00*
U.S. Cl. 152—524 **20 Claims**

1. A pneumatic tire having a decorative applique on the sidewall thereof, comprising an outer circumferential tread, a supporting carcass therefor, two-spaced beads and two rubber sidewalls connecting said beads; wherein at least one of said sidewalls has a decorative applique thereon; wherein the decorative applique has a thickness which is within the range of about 10 mils to about 125 mils; and wherein said decorative applique is comprised of from about 25 weight percent to about 75 weight percent syndiotactic 1,2-polybutadiene having a melting point of less than about 160° C. and from about 25 weight percent to about 75 weight percent of at least one polydiene rubber which is cocured with said syndiotactic 1,2-polybutadiene, and at least one pigment or colorant.

5,058,648
COATING COMPOSITION AND TIRE COATED THEREWITH
Bharat K. Kansupada, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 5, 1990, Ser. No. 489,115
Int. Cl.[5] B60C *13/00*
U.S. Cl. 152—524 **5 Claims**

1. A rubber tire having at least one surface coated with a composition comprised of (A) 100 parts by weight polyvinylalcohol (PVA) coating comprised of about 70 to about 90 percent PVA and, correspondingly, about 10 to about 30 percent of at least one of polyglycerol, diglycerol and glycerin plasticizer therefor; and (B) about 2.5 to about 10 parts by weight of at least one water soluble ultraviolet absorber selected from at least one of (i) a reaction product of beta-(3(2H-benzotriazol-2-yl)-4-hydroxy-5-tert-butylphenyl)-propionic acid, methylester thereof and polyethyleneglycol having a molecular weight in the range of about 200 to about 400, (ii) poly(oxy-1,2-ethanediyl) alpha(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl-1-oxopropyl)-omega-hydroxy and (iii) poly (oxy-1,2-ethanediyl), alpha-3-(3-(2H-benzotriazole-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropyl)-omega-(3-(3-(2H-benzo-triazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxy-phenyl)-1-oxopropoxy) and having an ultraviolet light reflective label affixed on said coated surface.

5,058,649
PNEUMATIC TIRE COMPRISING A PENTAGONAL BEAD CORE
Andy N. Hoang; Keith C. Trares, both of Akron, and Jeffrey W. Kahrs, Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 25, 1990, Ser. No. 556,596
Int. Cl.[5] B60C *15/04*
U.S. Cl. 152—540 **20 Claims**

1. A pneumatic tire comprising:
(a) a pair of axially spaced apart annular bead cores, each bead core comprising a plurality of wraps of a single metallic filament, each bead core having a radial cross-sectional shape which is substantially pentagonal with the greatest axial width of the bead core being located radially outwardly of the radially innermost edge of the bead core, and with the radially outermost extent of the bead core being the vertex of two of the sides of said pentagon;
(b) a carcass ply which is folded about each said bead core.

said carcass ply having a main portion that extends between the bead cores and turn-up portions that are folded around the bead cores, a radially outer edge of each said turn-up portion being in contact with said main portion, wherein no bead filler or apex is interposed between the turn-up portion of the carcass ply and the main portion of the carcass ply radially outwardly of said bead core;

(c) each said bead core having a clamping member folded thereabout, said clamping members each comprising a strip of side-by-side cords of a nonmetallic heat shrinkable material which has a permanent thermal shrinkage of at lest 2%, said cords being oriented in the range of 0° to 75° with respect to a plane perpendicular to the axis of rotation of the tire, each said clamping member being disposed directly adjacent to said carcass ply on the side of the carcass ply distal from said bead core from a location axially inwardly of the bead core to a location radially outwardly of the bead core and the turn-up portion of the carcass ply such that the respective turn-up portion of the carcass ply is radially interposed between and directly adjacent to both the clamping member and the bead core; each said turn-up portion of the carcass ply and each said



clamping member being disposed radially inwardly of the specified outermost radius of the flange height of a rim which is specified for use with the tire in the *Year Book of the Tire and Rim Association Inc* for the year in which the tire is manufactured, said clamping members securing the turn-up portions of the carcass ply in position and protecting the carcass ply from damage; and

(d) first and second elastomeric stiffening members associated with each bead core, one of said stiffening members being disposed axially inwardly of the carcass ply and clamping member and extending from a radially inner end located radially inwardly of the bead core to a radially outer end disposed radially outwardly of the bead core, the other elastomeric stiffening member being disposed axially outwardly of the carcass ply and clamping member and extending from a radially inner end located radially inwardly of the radially outermost extent of the bead core to a radially outer end which is disposed radially outwardly of the other stiffening member, each of said stiffening members comprising an elastomeric compound having a Shore D hardness of 40 or greater and a Young's Modulus of 3,400 pounds per square inch or greater.

5,058,650

CORD EQUALIZER FOR WINDOW SHADE LIFT CORDS

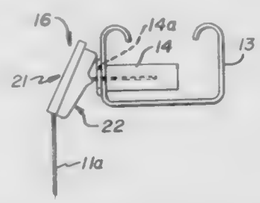
John E. Morris, Lake Mills, Wis., assignor to Graber Industries, Inc., Middleton, Wis.

Filed Mar. 25, 1991, Ser. No. 674,139

Int. Cl.[5] E06B *9/38*

U.S. Cl. 160—168.1 **6 Claims**

1. A cord equalizer for gripping a plurality of lift cords of a window shade comprising, molded first and second body members each having upper and lower ends, the first body member having an elongated open channel extending from the lower to the upper end thereof, the second body member overlying the channel in the first body member and having rib means spaced from the upper end of the second body and extending crosswise of the channel, the first and second body members having guide means outside the channel along opposite sides thereof slidably interconnecting the body members for relative movement in a direction lengthwise of the channel,



at least a portion of the bottom wall of the channel being shaped to decrease the spacing betweeen the rib means and the bottom of the channel to a distance for gripping the lift cords when the second body member is moved toward the upper end of the first body member, the second body member having a notch extending inwardly from the upper end thereof and registering with the channel to provide a passage for lift cords opening laterally of the second body member.

5,058,651

ROLLER DOOR ASSEMBLIES

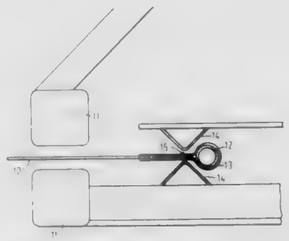
Paul Ashley, and John U. Chapman, both of Carlisle, England, assignors to Clark Door Limited, Carlisle, England

Continuation of Ser. No. 61,697, Jun. 12, 1987, abandoned. This application Dec. 22, 1989, Ser. No. 462,314

Claims priority, application United Kingdom, Oct. 15, 1986, 8624735

Int. Cl.[5] E06B *9/17*

U.S. Cl. 160—271 **14 Claims**



1. A roller door assembly comprising:

a roller door having opposed generally vertical edges;

a plurality of spaced restraining means disposed on each of said opposed vertical edges and spaced at longitudinal intervals along the edge of said door; and

guide means at each edge of the door, including opposing members forming a gap therebetween, said restraining means being on one side of the gap and said door being on the other side thereof, whereby below a desired force on the door, said restraining means cannot pass through said gap but at and above said desired force said restraining means can pass through said gap to release the door.

5,058,652

TONNEAU COVER

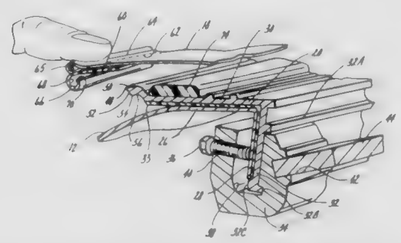
Donald G. Wheatley, and Patricia A. Wheatley, both of 2298 S. Industrial Hwy., Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 324, Jan. 5, 1987, abandoned, which is a continuation of Ser. No. 650,275, Sep. 14, 1984, abandoned. This application Apr. 17, 1989, Ser. No. 339,223

The portion of the term of this patent subsequent to Jan. 27, 2004, has been disclaimed.

Int. Cl.[5] B60J *7/10*

U.S. Cl. 160—327 **4 Claims**



1. A cover structure for a cargo box that comprises an upwardly extending side wall that has an upper edge and defines a boundary of the cargo area of the box, the cover structure comprising:

a flexible, substantially non-resilient cover to fit the cargo box and comprising upper and lower surfaces and a plurality of edges around a central region;

a rail rigidly attached to the side wall and comprising a base portion that extends longitudinally along the upper edge of the side wall and a longitudinal flange having a surface that extends upwardly and outwardly away from the cargo area to a longitudinal edge; and

resilient fastener means extending longitudinally along and joined to a first edge of the cover, a surface of a longitudinal edge portion of the fastener means being formed so that it extends away from the lower surface of the cover and then back generally toward the central region of the cover and terminates in a free edge defining a bight having a concave surface having opposite sides resiliently movable with respect to one another and dimensioned to fit around the longitudinal edge of the flange but to have only limited contact therewith, whereby the edge portion of the fastener means is free to unfurl to allow the resilient fastener means to maintain pressure between the surface of the longitudinal flange and the concave surface of the bight as the edge portion is being unwound from the rail by a motion in a direction at right angles to the rail, and also when the cover expands or contracts due to temperature conditions.

5,058,653

PROCESS FOR LOST FOAM CASTING OF METAL PARTS

Michel Garat, Voiron, France, assignor to Aluminium Pechiney, Paris, France

Continuation-in-part of Ser. No. 334,530, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 116,213, Nov. 3, 1987, abandoned. This application Jul. 10, 1990, Ser. No. 550,499

Claims priority, application France, Nov. 17, 1986, 86 16415

Int. Cl.[5] B22C *9/02;* **B22D** *18/04*

U.S. Cl. 164—34 **6 Claims**

1. In a process for lost foam casting of a metal part of different thicknesses comprising the steps of:

obtaining a pattern of the part to be cast formed by a foam of organic material coated with a film of refractory material,

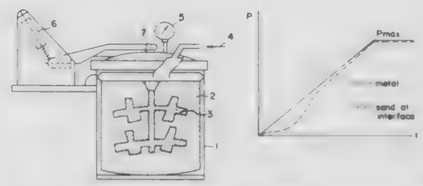
immersing said pattern in a mold formed by dry sand without binder,

filling the mold with metal in the molten state to burn said pattern,

evacuating the vapors and the liquid residues emitted by the burned pattern, and

causing the molten metal to solidify to produce said part,

the improvement which comprises applying to the mold after filling and before the solidified fraction of metal exceeds 40% by weight, an isostatic gas pressure, increasing said isostatic gas pressure to a predetermined maximum value at a predetermined and substantially constant



rate determined, as a function of the granulometry of the sand and depth of immersion of the pattern, to cause due to a temporary lag in pressure transmitted through the sand, a rapid and temporary overpressure on the molten metal relative to the sand at the sand/metal interface, said overpressure reaching a maximum value of 0.001 to 0.030 MPa at the beginning of the pressure application and then declining as the applied pressure further increases, and maintaining said pressure at said maximum value until solidification occurs.

5,058,654

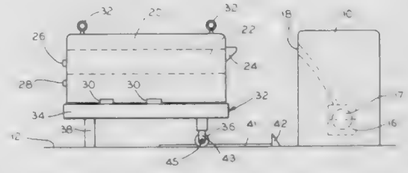
METHODS AND APPARATUS FOR TRANSPORTING PORTABLE FURNACES

Wyman D. Simmons, Coker, Ala., and Eugene C. Mitchell, Stone Lake, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 6, 1990, Ser. No. 549,230

Int. Cl.[5] B22D *41/01*

U.S. Cl. 164—47 **6 Claims**



1. A method for transporting a portable furnace in a common area and locating the furnace among at least two die cast machines located on a floor outside of and adjacent to the common area, the furnace being selectively placed in a predetermined location with respect to each of the machines, the predetermined locations also being outside and adjacent the common area, comprising the steps of

placing a movable platform adjacent to each of the machines,
securing rail means to the floor for guiding each of said platforms,
securing stop means relative to each of the machines for precisely positioning said platforms with respect to the machines,
each of said platforms having at least one wheel which is guided by said rail means, and at least one fixed leg for securing the platform in place,
said platforms further having means for abutting against said stop means, stopping said platforms in the predetermined locations,
moving a selected platform into the common area,
placing the furnace on said selected platform, and
pushing said selected platform out of the common area to its predetermined location, said selected platform being guided by said rail means until said abutting means abuts against said stop means for proper placement of said selected platform with respect to its respective die cast machine

3. Apparatus for transporting a portable furnace to a die cast machine and placing the furnace in a predetermined position with respect to the machine comprising
platform means for supporting the furnace,
means for placing the furnace on said platform means and removing the furnace from said platform means,
said platform means having wheel means at one end and position fixing means at the other end,
means for guiding said wheel means end of said platform means to the predetermined position, and
means for lifting said position fixing means end of said platform means to move said platform means to and from the predetermined position

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5,058,655

METHOD AND APPARATUS FOR MANUFACTURING OF A THICK-WALLED HOLLOW CASTING OF CAST IRON

Helmut Derp, Mulheim; Horst Keese, Rodenbach, and Elmar Schlich, Gründau, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG and Transnuklear GmbH, both of, Fed. Rep. of Germany

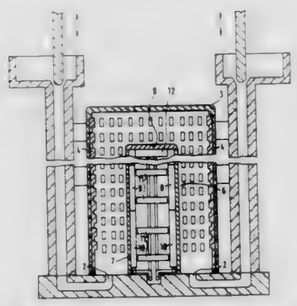
Continuation-in-part of Ser. No. 604,825, Apr. 27, 1984, abandoned, which is a continuation of Ser. No. 376,157, May 7, 1982, abandoned. This application Mar. 19, 1986, Ser. No. 841,167

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118928

The portion of the term of this patent subsequent to Aug. 22, 2004, has been disclaimed.

Int. Cl.[5] B22D *27/04*

U.S. Cl. 164—128 **3 Claims**



1. A method of manufacturing a thick-walled container casting of cast iron with spheroidal graphite, comprising: forming an inflexible closed mold of an inner closed cylindrical dead mold core arranged within an outer closed old part spaced outwardly and upwardly of the mold core to form a closed mold space; filling the mold space between the inner mold core and the outer part through a gate: actively cooling an inner mold surface of the mold space on the dead mold core by cooling an inner surface of the mold core: dimensioning the gate so that cast iron solidifies in the gate before a eutectic solidification of the casting in the mold space begins; and after the casting completely solidifies in the mold space, cutting out the mold core from the casting.

5,058,656

INSTALLATION FOR THE PRODUCTION OF A STEEL STRIP

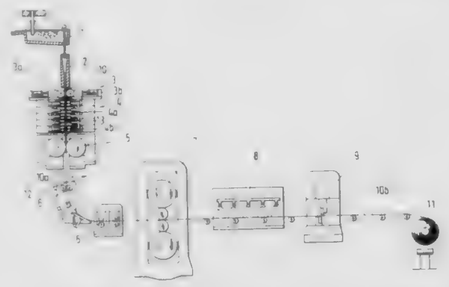
Erich Hoffken, Dinslaken; Hermann Lax, Dusseldorf, and Günter Pietzko, Essen, all of Fed. Rep. of Germany, assignors to Thyssen Stahl AG, Duisburg, Fed. Rep. of Germany

Division of Ser. No. 173,847, Mar. 28, 1988, Pat. No. 4,951,734. This application May 11, 1990, Ser. No. 522,295

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1987, 3712537; Jul. 16, 1987, 3723543

Int. Cl.[5] B22D *11/04, 11/12*

U.S. Cl. 164—416 **6 Claims**



1. An installation for the production of a steel strip having a thickness of less than 25 mm comprising a continuous casting installation having:
a) a funnel-shaped oscillating mold having cooled walls to produce a steel strip having a thickness of 40 to 50 mm; and
b) a deforming device disposed at a distance of at most 0.5 m from the mold outlet to squeeze the steel strip to a thickness of not more than 25 mm.

5,058,657

APPARATUS FOR CONTINUOUS CASTING OF METAL STRIP

Morihiro Hasegawa, Tokuyama, and Takashi Yamauchi, Kudamatsu, both of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

PCT No. PCT/JP89/00733, § 371 Date Mar. 20, 1990, § 102(e) Date Mar. 20, 1990, PCT Pub. No. WO90/00947, PCT Pub. Date Feb. 8, 1990

PCT Filed Jul. 21, 1989, Ser. No. 488,081

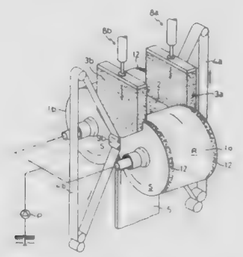
Claims priority, application Japan, Jul. 22, 1988, 183256

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—428 **2 Claims**

1. An apparatus for continuously casting a metal strip comprising a pair of internally cooled rolls rotating in the opposite direction to each other and disposed parallel to each other and a pair of side dams disposed on both sides of the pair of rolls for forming a pool of molten metal on the circumferential surfaces of the pair of rolls, thereby continuously casting the molten metal in the pool into a metal strip through a gap between the pair of rolls, characterized in that each of said side dams is constituted from a combination of an upper dam which is made

of a refractory material capable of being well abraded with a lower dam which is an endless metal belt; the upper dams are disposed so that at least a portion of the bottoms may contact the circumferential surfaces of the pair of rolls so as to allow at least a portion of a thickness of each upper dam to be located on the circumferential surfaces of the rolls; mechanisms are provided for feeding the upper dams in the casting direction at



a predetermined speed; at least a portion of circumferential surfaces of the rolls contacting the upper dams are formed into rough surfaces having an abrading ability; the lower dams which are endless metal belts are disposed on portions of side surfaces of the rolls including the narrowest position of the rolls; and mechanisms are provided for circularly moving the lower dams at a speed substantially synchronized with the casting speed.

5,058,658

INSTALLATION FOR THE CONTINUOUS CASTING OF THIN METAL PRODUCTS BETWEEN TWO ROLLS

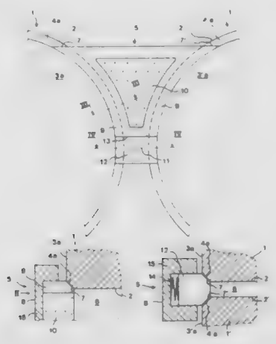
Jean-Bernard Veyret, Metz, France, assignor to Usinor Sacilor, Puteaux, France

Filed Nov. 21, 1990, Ser. No. 616,347

Claims priority, application France, Dec. 7, 1989, 89 16320

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—428 **10 Claims**



1. Apparatus for the continuous casting of thin metal products, in particular steel, comprising an ingot mold, said ingot mold, including:
two substantially horizontal and parallel rolls rotatable in opposite directions, each of said rolls having first and second end portions each having a frustoconical shape, and a cooled lateral surface;
first and second lateral closing plates respectively forming first and second side dams, said first side dam being in contact with said first end portions of said rolls, and said second side dam being in contact with said second end portions of said rolls;
said side dams and said cooled lateral surfaces of said rolls together defining a predetermined substantially constant size and shape casting space;
said side dams having beveled contact portions which have a frustoconical shapes where said first and second end portions of said rolls contact said side dams;
the frustoconical shape of said first and second end portions of said rolls matching the frustoconical shape of said beveled contact portions of said side dams where said beveled portions contact said rolls to maintain said rolls in relative position and to maintain said predetermined substantially constant size and shape of said casting space.

5,058,659

PROCESS FOR THE PRODUCTION OF STEEL HAVING A VARYING CHEMICAL COMPOSITION IN THE CROSS-SECTION

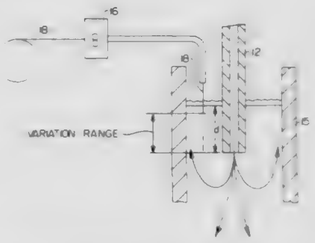
Horst Abratis, Hagen; Hans-Joachim Selenz, Bad Iburg, and Friedrich Höfer, Sulzbach-Rosenberg, all of Fed. Rep. of Germany, assignors to Klöckner Stahl GmbH, Duisburg, Fed. Rep. of Germany

Filed Oct. 12, 1989, Ser. No. 420,307

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834666

Int. Cl.[5] B22D *11/10*

U.S. Cl. 164—473 **8 Claims**



1. Process for continuously casting steel to produce a bloom exhibiting varying chemical composition in its cross-section, comprising the steps of:
directing a flow of molten steel into a casting chill form via a pouring pipe;
introducing an alloy wire to the casting chill form into the surface of the molten steel from above; and
completely melting the introduced alloy wire in the molten steel from the upper surface of the molten steel in the form to a maximum depth corresponding to the lower edge of the pouring pipe, whereby a higher concentration of the alloy is formed in the outer zone of the bloom as compared to the center area and a substantially constant gradual decrease in alloy concentration is exhibited from the outer surface of the bloom to the bloom's center area.

5,058,660

SHARED COOLANT SYSTEM FOR MARINE GENERATOR

Randall J. Hedstrom, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Division of Ser. No. 491,044, Mar. 9, 1990, Pat. No. 4,987,953. This application Oct. 1, 1990, Ser. No. 591,188

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

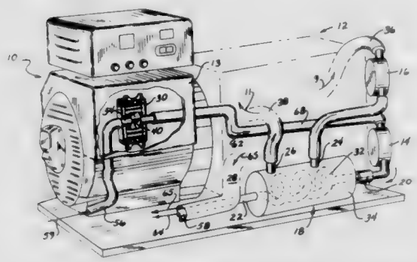
Int. Cl.[5] H02P *9/04;* **H02K** *5/20, 9/00*

U.S. Cl. 165—47 **4 Claims**

1. An electrical regulator for use with a generator powered by an internal combustion engine for producing an electrical current, the internal combustion engine having a separate coolant system exchanging heat with an external reservoir of water at ambient temperature, the regulator comprising:
a heat conductive tube for receiving a stream of water from

the external reservoir prior to that stream of water exchanging with the separate cooling system;

a solid state device having means for controlling the field current to the generator; and



a support means for attaching the solid state device to the heat conductive tube permitting the conduction of heat between the solid state device and the stream of water.

5,058,661

HEAT EXCHANGER WITH LEAKAGE COLLECTOR

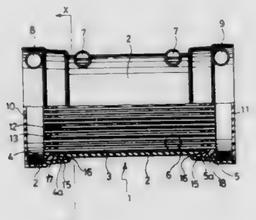
Hiroaki Oshiyama, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

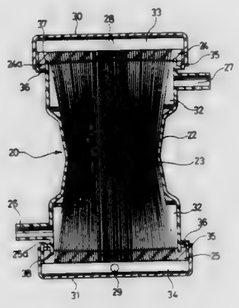
Filed Jun. 21, 1988, Ser. No. 209,532

Claims priority, application Japan, Jun. 29, 1987, 62-161905

Int. Cl.[5] F28F *21/06, 9/02;* **A61M** *1/16, 1/36*

U.S. Cl. 165—70 **3 Claims**





1. A heat exchanger comprising:

a generally cylindrical housing having:

a interior;

a circumference;

first and second end portions;

a blood inlet;

a blood outlet: and

a pair of annular extensions, which respectively extend inside a different one of said first and second end portions of said housing;

heat exchange tubular means positioned in said housing, said heat exchange tubular means having first and second end portions;

a pair of partitions formed from a potting composition securing said first and said second end portions, respectively, of said heat exchange tubular means to said housing in a fluid tight seal, said partitions partitioning said interior of said housing into:

a blood chamber which is in fluid communication with said blood inlet and said blood outlet; and

a heat exchange fluid chamber defined in said heat exchange tubular means;

said annular extension having ends which extend, respectively, into said first and second end portions, said ends being embedded in said potting compound forming said partitions;

a heat exchange fluid inlet;

a heat exchange fluid outlet;

said heat exchange fluid inlet and said heat exchange fluid outlet being in fluid communication with said heat exchange fluid chamber;

first and second cavities formed respectively at each of said first and second end portions of said housing, each cavity being defined by one of said pair of annular extensions, one of said first and second end portions of said housing, and one of said pair of partitions;

each of said cavities extending around said circumference of said housing out of fluid communication with said blood and heat exchange fluid chambers; and

apertures formed in said housing for venting each of said first and second cavities to ambient atmospheric pressure.

5,058,662

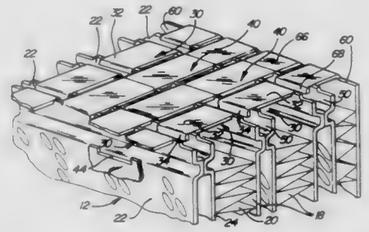
MULTI TUBE HEAT EXCHANGER WITH INTEGRAL TUBE SPACERS AND INTERLOCKS

Hung P. Nguyen, E. Amherst, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1990, Ser. No. 588,393

Int. Cl.[5] F28D *1/02;* **F28F** *3/14*

U.S. Cl. 165—76 **9 Claims**



1. A heat exchanger core having a series of flattened fluid plates joined together in pairs to provide a plurality of flow tubes operatively interconnected with one another to transmit pressurized fluid therethrough from an intake to a discharge respectively operatively connected to the first and last of said tubes, each of said tubes having a tank portion at one end thereof, each said tank portion having an inlet and an outlet, said outlet of each said tubes being operatively connected to the inlet of the next adjacent tube, each of said tubes having a main body portion defining a fluid flow path from said inlet to the outlet thereof, the improvement comprising a locking and spacing end forming the other end of each of said tubes, discrete spacing tab means integral with said locking and spacing end of each said tubes and extending laterally therewith in a column to directly contact an aligned surface of an adjacent tube on said locking and spacing end of each said tubes to space said tubes at a predetermined distance from one another and

discrete locking tab means on said locking and spacing end of each of said tubes and extending laterally therefrom in a direction opposite to that of said spacing tab means to the next adjacent tube and terminating at a predetermined upwardly extending retainer end for directly contacting and connecting adjacent tubes to one another so that said tubes are tightly interlocked together and are spaced at a predetermined distance from one another to prevent core damage by compressive forces applied to said tubes and to prevent said core from being pulled apart.

5,058,663

CURVED TUBES OF A HEAT EXCHANGER

Klaus Hagemeister, Munich, Fed. Rep. of Germany, assignor to MTU-Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 9, 1990, Ser. No. 478,210

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1989, 3904140

Int. Cl.[5] F28D *7/08*

U.S. Cl. 165—162 **11 Claims**



1. A tube matrix for a heat exchanger having two spaced ducts to which the tube matrix is connected for conveying a fluid from one duct to the other, said tube matrix comprising at least one row of spaced heat exchange tubes, each of said tubes having first and second ends at which the tubes are respectively fixedly secured to the two ducts so that said row of tubes lies in a common plane, each said tube being bent to form a generally S-shape in said plane, each said tube having two peaks with points of maximum offset and an intermediate point between said peaks, and successive spacer means at each said point of maximum offset and at said intermediate point for keeping adjacent tubes spaced from one another and fixedly secured at said points, each said tube including respective contiguous sections between said spacer means at said two points of maximum offset and said first and second tube ends, each said section being free and unsupported between respective spacer means and including two bent portions of opposite but the same curvature, said two bent portions of each contiguous section of the tube being substantially equal in length, and defining a point of inflection midway of said contiguous section, each said tube having tangents at said first and second ends and at said points, said tangents extending substantially parallel to one another.

5,058,664

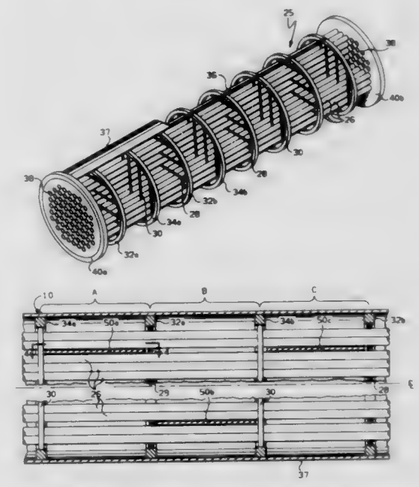
RODBAFFLE HEAT EXCHANGER

Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 13, 1990, Ser. No. 552,045

Int. Cl.[5] F28D *7/00*

U.S. Cl. 165—162 **13 Claims**



1. A rodbaffle heat exchanger having an axial centerline and comprising a plurality of rodbaffle means spaced along the axial, longitudinal length of said heat exchanger and defining a plurality of sections of said heat exchanger therebetween along its axial, longitudinal length, a plurality of tubes supported by said rodbaffle means, and a plurality of separate acoustical detuning plate means, positioned in said plurality of heat exchanger sections for preventing damage to said heat exchanger from the formation of acoustical stading waves is said heat exchanger, and wherein said plurality of separate acoustical detuning plate means are alternately positioned to extend along different chords of said heat exchanger in different heat exchanger sections thereof.

5,058,665

STACKED-PLATE TYPE HEAT EXCHANGER

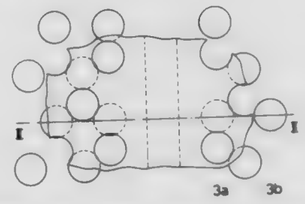
Shintaro Harada, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 26, 1990, Ser. No. 498,688

Claims priority, application Japan, Mar. 28, 1989, 1-035652[U]; Mar. 29, 1989, 1-035811[U]

Int. Cl.[5] F28F *7/00, 3/08*

U.S. Cl. 165—164 **8 Claims**



1. A stacked-plate type heat exchanger comprising:

plate means including a plurality of stacked plates in adjacent relationship, at least a first plate provided with a first

plurality of openings and at least a second plate provided with a second plurality of openings;
a plurality of spacers interposed between the first and second plates; and
a pair of fluid passages defined with respect to the spacers in the plate means;
wherein a first distance between the centerlines of any two of the first plurality of openings is a constant value, a second distance between the centerlines of any two of the second plurality of openings is a constant value, a distance between any one of the first plurality of openings and each of the second plurality of openings closest to the first plurality of openings is also a constant value and each distance between any one of the first plurality of openings and each of the second plurality of openings closest to the first plurality of openings is the same as the diameter of the openings of each plate.

5,058,666

CUTTING TOOL FOR REMOVING MATERIALS FROM WELL BORE

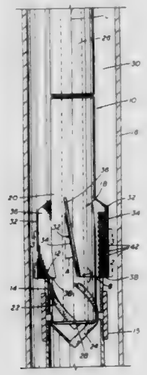
Gerald D. Lynde, and Harold H. Harvey, Jr., both of Bossier City, La., assignors to Tri-State Oil Tools, Inc., Bossier City, La.

Continuation of Ser. No. 181,812, Apr. 15, 1988, Pat. No. 4,978,260, which is a continuation-in-part of Ser. No. 816,287, Jan. 6, 1986, Pat. No. 4,796,709. This application Dec. 3, 1990, Ser. No. 621,063

The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.

Int. Cl.[5] E21B *10/26*

U.S. Cl. 166—55.6 **22 Claims**



1. In a cutting tool adapted to be positioned downhole in a well bore for removing a metal member from the well bore;
a tool body adapted to be received within said well bore and to be supported at its upper end for rotation about a longitudinal axis;
a plurality of blades at spaced intervals on the body and extending outwardly therefrom, each of the blades having a base with a leading surface relative to the direction of rotation;
a plurality of closely spaced cutting elements of hard cutting material secured to said leading surface of the base in a plurality of transversely extending rows, each cutting element being of a predetermined size and shape and arranged in a predetermined generally symmetrical pattern on the base relative to the other elements, each of said cutting elements having an exposed front cutting face forming a cutting surface, a rear face secured to the leading surface of said base, a peripheral surface extending between said faces, and a relatively sharp edge formed at the juncture of the front face and peripheral surface;
the front cutting face of each cutting element being arranged and constructed for directing an extending end portion of a turning cut form said member to effect a breaking of said turning from the member being cut in a predetermined manner to minimize internesting of the turnings.

5,058,667

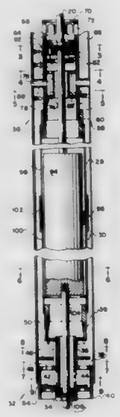
RECIPROCATING WATER WELL PUMP

Vernon O. Ramsower, 1402 Ebeling Dr., Plainview, Tex. 79072

Filed Nov. 20, 1990, Ser. No. 616,172

Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—68 **5 Claims**



1. A pump comprising:
an upright cylindrical housing,
a connection on top of the housing for connecting the housing to an eduction pipe,
a cylinder having a top and bottom telescoped within the housing,
a cylindrical annulus between the cylinder and the housing,
a bottom valve assembly having a top thereof connected to the housing below the cylinder,
a bottom tube connected to the bottom of the cylinder coaxial therewith,
said tube connected to the top of said bottom valve assembly,
a bottom inlet valve plate on said bottom valve assembly,
inlets through said bottom inlet valve plate terminating with bottom inlet valve seats on the top of the bottom inlet valve plate,
a washer valve seated upon all of said bottom inlet valve seats,
a top outlet valve plate on the top of said bottom valve assembly,
outlet opening through said top plate terminating in bottom outlet valve seats on the top of the top outlet valve plate,
a washer valve seated upon all of the bottom outlet valve seats,
a bottom valve annulus within the bottom valve assembly between the bottom plate and the top plate,
a top valve assembly attached to said housing above the cylinder,
a top tube connected to the top valve assembly and the top of the cylinder,
a top inlet valve plate,
inlets through said top inlet valve plate, terminating with top inlet valve seats on the top of the plate,
a washer valve seated upon all of said top inlet valve seats,
a top outlet valve plate connected to said top valve assembly above said top inlet valve plate,
a top valve annulus between the top inlet valve plate and the top outlet valve plate,
openings through said top outlet valve plates, terminating in top outlet valve seats on the top thereof,
a washer valve seated upon the top outlet valve seats,
an inlet valve annulus below the top inlet valve plate,
inlet passageways from outside the housing into the top inlet valve annulus,
a plunger having a top and bottom telescoped within said cylinder,
a seal between the plunger and the cylinder connected to said cylinder about half way between the top and bottom of said cylinder,
a sucker shaft attached to the top of the plunger and
a sucker rod seal on the top outlet valve plate between the sucker shaft and said top outlet valve plate.

5,058,668

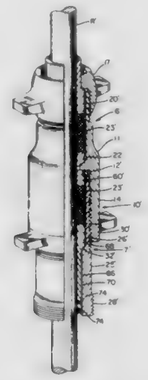
ROD GUIDE BEARING ASSEMBLY FOR OIL WELL PUMPING APPARATUS

Hille Newton, P.O. Box 6204, Bonnyville, Alberta, Canada TN9 2G8

Continuation-in-part of Ser. No. 428,215, Oct. 27, 1989, abandoned. This application Aug. 1, 1990, Ser. No. 561,334

Int. Cl.[5] E21B *33/02, 33/08;* F16J *15/00*

U.S. Cl. 166—84 **5 Claims**



1. In well pumping apparatus wherein a stuffing box is mounted at the upper end of a wellhead and a polished rod is reciprocal along a vertical path through said stuffing box, the improvement comprising:
a bearing assembly disposed in an annular cavity in said stuffing box, said bearing assembly having rod guide members at opposite ends of said stuffing box, packing coils in said stuffing box interposed between said rod guide members, said rod guide members being of annular configuration and including a rod guide member at least on one of said opposite ends of said stuffing box having an enlarged external shoulder portion and a reduced diameter, elongated rigid liner interposed in an annular space between an end of said stuffing box and said polished rod, force-exerting means bearing against said shoulder portion for exerting compressive force on said packing coils, and at least one scraper ring mounted under radial compression in an internal groove in said liner, each said scraper ring being in the form of a spiral coil completely encircling said polished rod, and said liner having a uniform internal diameter completely encircling said scraper ring and said polished rod.

5,058,669

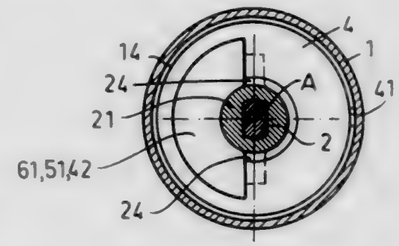
EXTRACTION SYSTEM WITH A PUMP HAVING AN ELASTIC REBOUND INNER TUBE

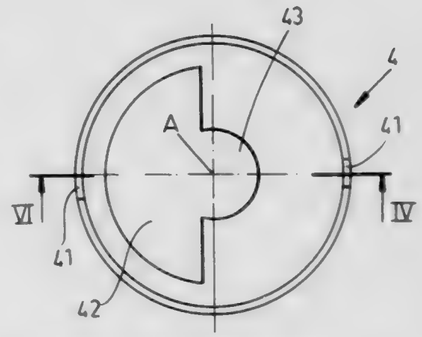
Samuel L. Wells, Lilburn, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 326,368, Mar. 21, 1989, Pat. No. 4,974,674. This application Sep. 13, 1990, Ser. No. 581,939

Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—107 **20 Claims**





5. Apparatus for pumping liquid comprising:
a flexible inner tube having a substantial elastic rebound defining an inner chamber having an inlet opening and an outlet opening;
a pump housing surrounding the inner tube in spaced relation to the inner tube defining an outer chamber for confining pump fluid;
first means for permitting liquid flow unidirectionally through the inlet opening of the inner tube into the inner chamber;
second means for permitting liquid flow unidirectionally through the outlet opening of the inner tube from the inner chamber; and
means for selectively allowing the pump fluid into the outer chamber, the pump fluid having a high pressure sufficient to collapse the inner tube from a full configuration to a collapsed configuration, whereby liquid in the inner chamber is discharged from the inner chamber through the second flow permitting means, and alternately, releasing pump fluid from the outer chamber to restore atmospheric pressure therein, thereby allowing the inner tube to rebound from the collapsed configuration to the full configuration, whereby liquid is drawn into the inner chamber through the first flow permitting means, and wherein the elastic rebound of the inner tube is sufficient to create a vacuum pressure at the first flow permitting means of greater than 5 feet of water.

5,058,670

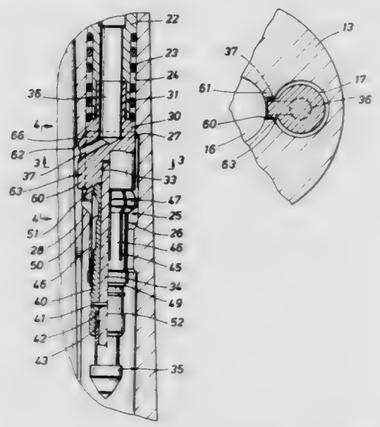
ORIENTED VALVE AND LATCH FOR SIDE POCKET MANDREL

Douglas W. Crawford, P.O. Box 91177, Lafayette, La. 70509; William B. Crawford, and Mark S. Crawford, both of P.O. Box 1509, Houston, Tex. 77383

Continuation of Ser. No. 352,119, May 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 126,347, Nov. 30, 1987, abandoned. This application Nov. 26, 1990, Ser. No. 617,385

Int. Cl.[5] E21B *23/03*

U.S. Cl. 166—117.6 **16 Claims**



1. A gas lift valve apparatus for use with a side pocket mandrel having a main bore, a seating bore laterally offset from said main bore, and a longitudinal slot formed in a wall of said mandrel between said man and seating bores, said valve apparatus comprising: a body section having guide means thereon adapted to enter said slot and maintain rotational orientation of said body section in a predetermined position, said body section having a gas flow passage; and outlet port means in said body section communicating with said passage and opening through an outer wall of said guide means, whereby lift gas emanating from said port means is directed only toward the main bore of the mandrel.

5,058,671

PIPE INSERT ASSEMBLY

Chudleigh B. Cochran, Houston, Tex., assignor to Lindsey Completion Systems, Inc., Houston, Tex.

Filed Aug. 13, 1990, Ser. No. 566,113

Int. Cl.[5] E21B *23/00, 33/129, 34/10*

U.S. Cl. 166—124 **17 Claims**

1. A setting tool and valve unit assembly for installing a valve unit in the end of a joint of casing or liner for use of the casing or liner with the installed valve unit in a downhole pressure environment where a borehole traverses earth formation,

said valve unit comprising:

a tubular body member constructed from a light weight drillable material;

an annular elastomer packer member disposed on said body member, said packer member having a hollow annular interior between the outer wall surface of the body member and an inner wall surface of said packer member, said packer member having access openings communicating the exterior of said packermember to the interior wall surface, said access openings being disposed circumferentially around said packer member and located midway of the length of the packer member, said packer member being sized for an interference fit in a liner or casing;

valve means disposed within the bore of said body member;

said body member having an annularly shaped expander member received on said body member, said expander member having an outer tapered surface;

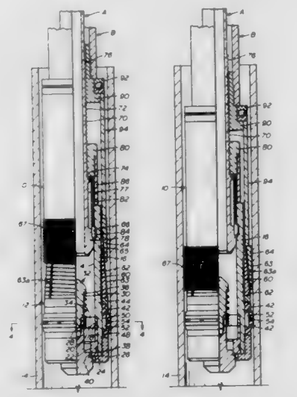
an annularly shaped split ring slip member having an internal tapered surface engageable with said expander member, said slip member being movable between a first retracted position and a second extended position and in said extended position providing a wedging engagement with the wall of a well pipe and the expander member;

latching means on said body member for latching to a setting tool member;

said setting tool including:

a tubular setting tool mandrel having an external thread extending between first and second longitudinally spaced locations;

a tubular latching member having an internally threaded nut member at a first longitudinal position on said tool mandrel when said first longitudinal position is located adjacent to the end of said tool mandrel, said nut member having a tubular latching collet with retaining lugs for cooperation with said latching means where said latching means is an internal annular recess and said retaining lugs



are retained in said internal annular recess by an enlarged diametrical portion on said setting tool mandrel, said nut member having a tubular sleeve member for engaging with an end of said valve body member;

a tubular slip actuating slip member rotatively coupled to a second internally threaded nut member where said second nut member is at said second location whereby rotation of said second nut member relative to said setting tool mandrel produces longitudinal movement of said slip member from said first position toward said first position for urging said slip member into wedging engagement with the internal wall of a pipe member and whereby subsequent rotation of said setting tool mandrel relative to said second nut member produces a longitudinal motion of said setting tool mandrel from said first location for moving a recessed diametrical portion on said setting tool mandrel adjacent to said retaining lugs for releasing said retaining lugs from said internal annular recess.

14. An insert assembly for installation in the end of a joint of casing or liner for use of the casing or liner in a downhole environment where a borehole traverses earth formation, said insert assembly comprising

a tubular body member constructed from a light weight drillable material;

an annular elastomer packer member disposed on said body member, said packer member having a hollow annular interior between the outer wall surface of the body member and an inner wall surface of said packer member, said packer member having access openings communicating the exterior of said packer member to the interior wall surface, said access openings being disposed circumferentially around said packer member and located midway of the length of the packer member;

said body member having an annularly shaped split ring expander member received on said body member, said expander member having an outer tapered surface where said outer tapered surface located between said expander member and said slip member is serrated;

an annularly shaped split ring slip member having an internal tapered surface engageable with said expander member, said slip member being movable between a first retracted position and a second extended position and in said extended position providing a wedging engagement with the wall of a well pipe and the expander member; and

said body member having an internal annular recess for receiving a latching member of a setting tool.

5,058,672

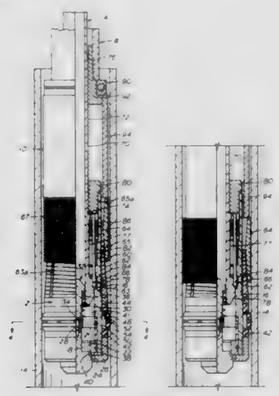
LANDING COLLAR AND FLOAT VALVE ASSEMBLY

Chudleigh B. Cochran, Houston, Tex., assignor to Lindsey Completion Systems, Inc., Houston, Tex.

Filed Aug. 13, 1990, Ser. No. 566,064

Int. Cl.[5] E21B *23/00, 33/125, 34/10*

U.S. Cl. 166—124 **15 Claims**



11. A setting tool and insert assembly for installation of the insert in the end of a joint of casing or liner for use of the casing or liner in a downhole environment where a borehole traverses earth formation, said insert comprising

a tubular body member constructed from a light weight drillable material;

an annular elastomer packer member disposed on said body member between an expander member and a shoulder on said body member for sealing with a pipe wall;

said expander member being an annularly shaped split ring received on said body member, said expander member having an outer tapered surface;

an annularly shaped split ring slip member having internal upper and lower tapered surfaces diverging outwardly from a central location, said lower surface being engageable with said expander member, said slip member being movable between a first retracted position and a second extended position and in said extended position providing a wedging engagement with the wall of a well pipe and the expander member, an annular nut expander member threadedly attachable to the upper end of said body member, said expander member having a tapered surface for engaging said upper tapered surface of said slip member for locking said slip member in a set position;

latching means on said body member for latching to a setting tool member;

said setting tool including

a tubular setting tool mandrel having an external thread extending between first and second longitudinally spaced locations;

a tubular latching member having an internally threaded nut member at a first longitudinal position on said tool mandrel when said first longitudinal position is located adjacent to the end of said tool mandrel, said nut member having a tubular latching collet with retaining lugs for cooperation with said latching means where said latching means is an internal annular recess and said retaining lugs are retained in said internal annular recess by an enlarged diametrical portion on said setting tool mandrel, said nut member having a tubular sleeve member for engaging with an end of said valve body member;

a second internally threaded nut member located at said second location whereby rotation of said second nut member relative to said setting tool mandrel produces longitudinal movement of said slip member from said first position toward said second positron for urging said slip member into wedging engagement with the internal wall of a pipe member and whereby subsequent rotation of said setting tool mandrel relative to said second nut member produces a longitudinal motion of said setting tool mandrel from said first location for moving a recessed diametrical portion on said setting tool mandrel adjacent to said retaining lugs for releasing said retaining lugs from said internal annular recess.

5,058,673

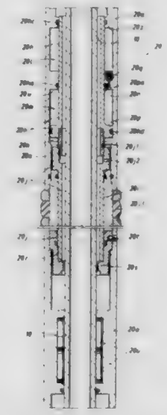
HYDRAULICALLY SET PACKER USEFUL WITH INDEPENDENTLY SET STRADDLE PACKERS INCLUDING AN INFLATE/DEFLATE VALVE AND A HYDRAULIC RATCHET ASSOCIATED WITH THE STRADDLE PACKERS

Laurent E. Muller, Houston; Ervin Randermann, Jr., Beasley, and James M. Upchurch, deceased, late of Sugar Land, all of Tex. by Marilyn Upchurch, executrix , assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 28, 1990, Ser. No. 576,327

Int. Cl.[5] E21B *33/127*

U.S. Cl. 166—187 **24 Claims**



1. Apparatus adapted for placement between a first packer and a second packer in a borehole for enabling said first packer

to be set only when said second packer is already set, comprising:

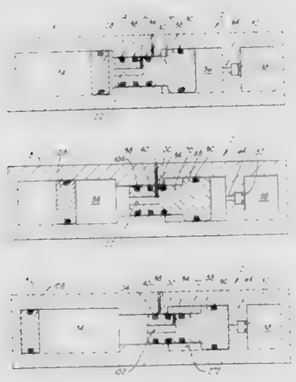
ratchet means disposed between said first packer and said second packer for placing by hydraulic means an upward pressure force on said first packer thereby compressing said first packer but only when said second packer is already set.

5,058,674

WELLBORE FLUID SAMPLER AND METHOD

Roger L. Schultz, Plano; Kevin R. Manke, Flower Mound, and H. Kent Beck, Copper Canyon, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 24, 1990, Ser. No. 602,840
Int. Cl.[5] E21B *49/08*
U.S. Cl. 166—264 42 Claims



20. A method of sampling a well, comprising:

(a) running a fluid sampling tool into said well to a depth at which said well is to be sampled, said fluid sampling tool including:

a housing having a first chamber, a second chamber, and a third chamber defined therein and having a sample port defined therein, said sample port being communicated with said well outside said housing;

a sample valve disposed in said housing between said sample port and said first chamber;

an actuating piston connected to said sample valve, said actuating piston having a first side communicated with said well and a second side communicated with said second chamber; and

a fluid flow restriction disposed in said housing between said second and third chambers; and

(b) initially preventing said actuating piston from moving said sample valve toward an open position wherein said sample port is communicated with said first chamber by isolating said second chamber from said third chamber and hydraulically blocking said actuating piston.

35. A downhole tool apparatus, comprising:

a body having a low pressure chamber defined therein, and having a first port defined therein communicated with an outside zone outside of said body;

a pressure responsive operating mechanism disposed in said body and having a first side communicated with said outside zone through said first port and a second side communicated with said low pressure chamber; and

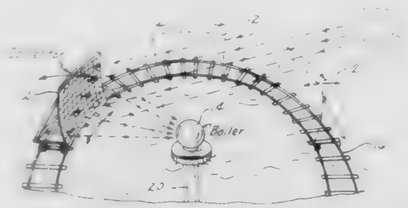
disabling means for disabling said apparatus when fluid pressure in said outside zone exceeds a predetermined level.

5,058,675

METHOD AND APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF KEROGEN IN SITU

Elmer E. Travis, 10804 Central S.E., #23, Albuquerque, N. Mex. 87123

Filed Oct. 29, 1990, Ser. No. 604,219
Int. Cl.[5] E21B *43/24*; F24J *3/02*
U.S. Cl. 166—272 10 Claims



1. An in situ method for the extraction of oil from the impermeable shales by destructive distillation of the kerogen therein comprising the following steps:

boring at least one injection well in said oil shale;

boring an extraction well in said oil shale;

injecting super heated steam or air into said injection well;

heating said oil shale to a temperature sufficient to cause the kerogen in said oil shale to breakdown into oil and gas, said super heated steam being heated using a high pressure boiler and focusing the sun on said boiler, said focusing of the sun being accomplished by a solar collector connected to an arc of track wherein said solar collector is selectively positioned between the two ends of said track and wherein said high pressure boiler is located at the center of said arc; and

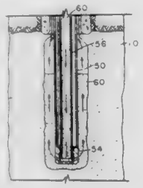
extracting the oil and gas through said extraction well.

5,058,676

METHOD FOR SETTING WELL CASING USING A RESIN COATED PARTICULATE

Harvey J. Fitzpatrick, Lafayette, La.; Jimmie D. Weaver, and J. Michael Wilson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 30, 1989, Ser. No. 429,748
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] E21B *43/04, 43/11, 43/26*
U.S. Cl. 166—278 19 Claims



1. An improved method for well completion comprising the steps of:

injecting a consolidatable resin coated particulate slurry through unperforated production casing set in the production zone of a producing formation such that said slurry flows into an annulus formed between the casing and the wellbore to form a zone of high conductivity substantially surrounding said casing and communicating with said casing and said formation and concurrently with such injection creating at least one fracture in said formation with said slurry;

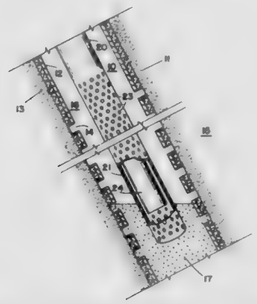
said formation with said slurry; permitting said consolidatable resin to harden; and perforating the casing and consolidated zone.

5,058,677

TWO-STEP METHOD FOR HORIZONTAL GRAVEL PACKING

James K. Forrest, Lafayette, La., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Sep. 20, 1990, Ser. No. 585,424
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 3 Claims



1. A method for placing gravel within an annulus formed in a non-vertical borehole by the placement of a screen within the borehole comprising:

(a) injecting into said annulus a slurry of gravel and a medium viscosity carrier fluid to pack from 50% to 75% of the screen-borehole annulus; and

(b) injecting into said annulus a slurry of gravel and a low viscosity carrier fluid until the annulus is completely packed.

5,058,678

METHOD FOR PREVENTING THE FORMATION OF SLUDGE IN CRUDE OIL

Walter R. Dill, and James L. Lane, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 28, 1990, Ser. No. 589,568
Int. Cl.[5] E21B *43/27*
U.S. Cl. 166—279 14 Claims

8. A method of increasing the permeability of a subterranean calcareous formation containing a sludging crude oil while preventing the precipitation in said formation of sludge, ferric compounds and calcium compounds said method being comprised of:

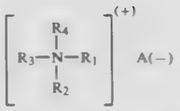
conducting an aqueous acidic composition to said formation through tubing disposed in a borehole penetrating said formation;

forcing said acidic composition into contact with said formation; and

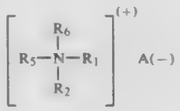
permitting said acidic composition to react with and dissolve materials contained therein to thereby increase the permeability of said formation;

wherein said aqueous acidic composition is comprised of acetic acid, formic acid, a first quaternary ammonium salt, a second quaternary ammonium salt and an iron control agent selected from the group consisting of ascorbic acid, erythorbic acid, the alkali metal and ammonium salts of said acids, γ-lactones of said acids and mixtures thereof;

said first quaternary ammonium salt being defined by the first formula



and said second quaternary ammonium salt being defined by the second formula



wherein:

N is nitrogen;

A is selected from halides, sulfate, formate and acetate;

R_1 is an alkyl group having 1 to 3 carbon atoms;

R_2 is an alkyl group having 1 to 3 carbon atoms;

R_3 is a straight chain hydrocarbon group having in the range of 8 to 18 carbon atoms;

R_4 is a straight chain hydrocarbon group having in the range of 8 to 18 carbon atoms;

R_5 is a straight chain hydrocarbon group having in the range of 12 to 18 carbon atoms; and

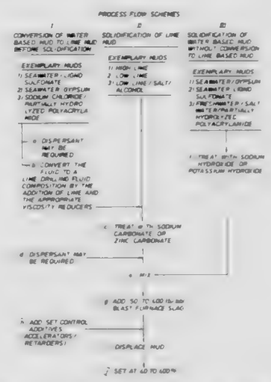
R_6 is an aralkyl group having in the range of 7 to 10 carbons atoms.

5,058,679

SOLIDIFICATION OF WATER BASED MUDS

Arthur H. Hale, Houston, and Kenneth M. Cowan, Sugarland, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 641,794, Jan. 16, 1991, abandoned, which is a continuation of Ser. No. 457,429, Dec. 27, 1989, abandoned. This application Mar. 19, 1991, Ser. No. 671,627
Int. Cl.[5] E21B *33/13, 33/14*
U.S. Cl. 166—293 14 Claims



1. A method for solidifying an aqueous drilling fluid in a borehole comprising:

admixing blast furnace slag with the drilling fluid;

displacing the drilling fluid to a preselected location in the borehole; and

allowing the drilling fluid to solidify in-situ.

5,058,680

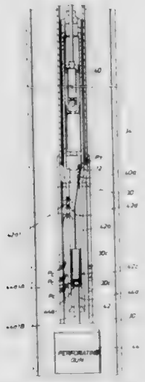
METHOD OF DETONATING A PERFORATING APPARATUS ON A TUBING INCLUDING LOWERING ONE END OF A PUMP AND A FIRING HEAD INTO SAID TUBING

Klaus B. Huber, Missouri City; A. Glen Edwards, Hockley; William M. Hill, Pearland, and Antoni Miszewski, Missouri City, all of Tex., assignors to Schlumberger Technology Corportion, Houston, Tex.

Division of Ser. No. 353,988, Jun. 23, 1989. This application Jul. 26, 1990, Ser. No. 559,128

Int. Cl.[5] E21B *43/00, 43/1185*

U.S. Cl. 166—297 **15 Claims**



1. A method of perforating a well, comprising the steps of:
(a) attaching a perforating gun, devoid of a firing head, to a tubing string and lowering said tubing string, including said perforating gun, into a wellbore;
(b) attaching a firing head to one end of a pipe section and a pump to the other end of said pipe section and lowering said one end of said pipe section, including said firing head, into said tubing string; and
(c) detonating said firing head, said perforating gun perforating said well in response to detonation of said firing head.

5,058,681

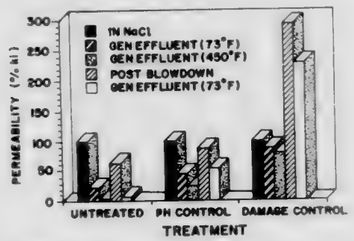
METHOD OF IMPROVING PREMEABILITY OF FINES-CONTAINING HYDROCARBON FORMATIONS BY STEAM INJECTION

Marion G. Reed, Hacienda Heights, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 453,652, Dec. 20, 1989. This application Sep. 13, 1990, Ser. No. 582,449

Int. Cl.[5] E21B *43/24*

U.S. Cl. 166—303 **6 Claims**



1. A method for injecting a wet steam into a hydrocarbon formation comprising:
(a) adding potassium chloride to a feedwater;
(b) generating wet steam from said feedwater containing said potassium chloride;
(c) adding an amount of anhydrous ammonia into said wet steam sufficient to produce a concentration of ammonium ions in the vapor phase condensate of the wet steam effective to inhibit permeability damage of the formation in the vicinity of said vapor phase; and
(d) adding an amount of carbon dioxide into said wet steam effective to keep the pH of the vapor phase condensate of the wet steam within the range of about 7.5 to about 10.5; and
(e) injecting said carbon dioxide-containing wet steam into said formation.

2. A method for increasing the permeability of a portion of a fines-containing earthen formation comprising removing liquid water from said portion by:
(a) injecting a wet steam into a well within said formation, wherein said wet steam comprises:
(i) an amount of ammonia in the vapor phase of said wet steam sufficient to produce a concentration of ammonium ions in the vapor phase condensate of the wet steam effective to inhibit permeability damage of the formation in the vicinity of said vapor phase; and
(ii) an amount of carbon dioxide in the vapor phase of said wet steam effective to keep the pH of the vapor phase condensate of the wet steam within the range of about 7.5 to about 10.5; and
(b) abruptly lowering of the pressure on said steam to vaporize substantially all of said liquid water and to cause said vaporized water to leave said portion, thereby increasing the permeability of said portion of said formation.

5,058,682

EQUALIZING MEANS FOR A SUBSURFACE WELL SAFETY VALVE

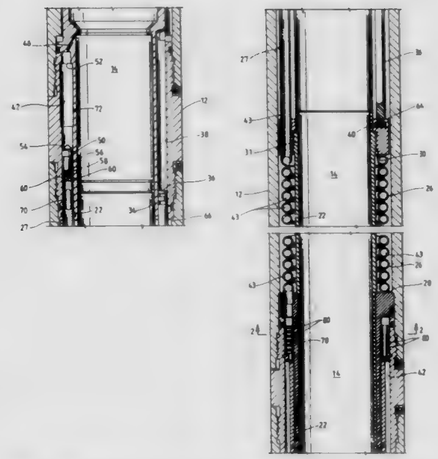
Ronald E. Pringle, Houston, Tex., assignor to Camco International Inc., Houston, Tex.

Filed Aug. 29, 1990, Ser. No. 574,982

Int. Cl.[5] E21B *34/10, 43/12;* **F16K** *31/163*

U.S. Cl. 166—324 **13 Claims**

1. A subsurface well safety valve for controlling the fluid flow through a well conduit comprising,
a housing having a bore and a valve closure member in the bore moving between open and closed positions for controlling fluid flow through the bore,
a flow tube telescopically movable in the housing for controlling the movement of the valve closure member,
a piston and a cylinder assembly in the housing contacting and moving the flow tube,
spring biasing means in the housing for moving the flow tube in a direction to close the valve,
a fluid control port positioned in the housing in communication with the piston and cylinder assembly and adapted to be in communication with fluid pressure at the well surface,
an equalizing line in communication with the bore of the housing between points below and above the valve closure member,
an equalizing valve in the equalizing line, and



said equalizing line includes a passageway through the interior of the spring biasing means.

5,058,683

WET CONNECTOR

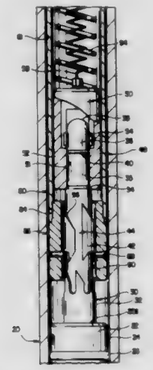
Craig W. Godfrey, Richardson; Mark A. Schnatzmeyer, Lewisville, and Henry P. Arendt, Dallas, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Division of Ser. No. 479,056, Feb. 12, 1990, Pat. No. 4,997,384, which is a division of Ser. No. 340,450, Apr. 17, 1989, Pat. No. 4,921,438. This application Nov. 1, 1990, Ser. No. 607,561

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—381 **3 Claims**

1. The method of emplacing an object, such as a well tool or the like, in a well, said object having a downwardly facing shoulder adjacent its upper end, said method including the steps of:
(a) providing an electric cable having an upper and a lower end;
(b) connecting the lower end of said electric cable to an electrically powered running tool having latch means for releasably engaging said downwardly facing shoulder to latch said running tool to said object, said running tool including actuator means therein for actuating said latch means to release position responsive to electric current transmitted thereto through said electric cable;
(c) lowering said object into said well by means of said cable and said running tool until it reaches setting depth;
(d) connecting the upper end of said electric cable to a source of electric energy and transmitting electric current through said electric cable to release said running tool



from said object and retrieving said electric cable and said running tool from said well, leaving said object therein.

5,058,684

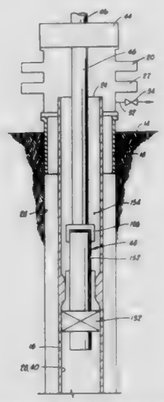
DRILL PIPE BRIDGE PLUG

Donald W. Winslow, and David P. Brisco, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 533,307, Jun. 4, 1990. This application Jan. 30, 1991, Ser. No. 647,938

Int. Cl.[5] E21B *33/13*

U.S. Cl. 166—386 **10 Claims**



1. A method of stopping flow of fluid up through a pipe bore of a pipe string in a well, said method comprising the steps of:
(a) lowering a bridge plug apparatus on a work string into said pipe string to a position where said pipe bore is to be closed;
(b) communicating said pipe bore below a packer of said bridge plug apparatus through said bridge plug apparatus with a low pressure zone above said packer to permit said fluid to flow up through said bridge plug apparatus;
(c) engaging said bridge plug apparatus with an internal upset of said pipe string;
(d) while said fluid is flowing up through said bridge plug apparatus, pulling upward on said work string and said bridge plug apparatus and thereby sealing said packer against said pipe bore;

(e) after step (d), isolating said pipe bore below said packer from said low pressure zone above said packer and thereby stopping flow of said fluid up through said pipe bore;

(f) after step (e), disconnecting said work string from said bridge plug apparatus; and

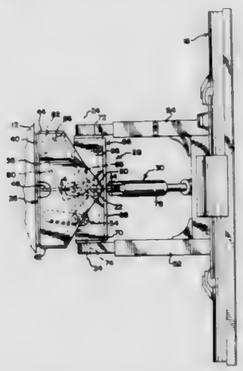
(g) after step (f), maintaining said bridge plug apparatus in engagement with said internal upset and sealed against said pipe bore due to an upward pressure differential applied to said bridge plug apparatus by the fluid contained therebelow.

5,058,685

DOZER BLADE MOUNTING APPARATUS

John M. Moffitt, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 17, 1990, Ser. No. 554,243
Int. Cl.[5] E02F *3/76*
U.S. Cl. 172—820 **10 Claims**



10. An apparatus for mounting a dozer blade on a frame of an implement for angular movement relative to said frame, said mounting apparatus comprising:

mounting means for connecting said dozer blade to said implement frame in a manner permitting angular movement of said dozer blade about a fixed generally vertical axis,

driver means operable along a generally linear path of travel between extended and retracted positions for selectively imparting angular movement to said dozer blade, said driver means extending generally laterally across said implement frame to minimize the distance said dozer blade is spaced from said mounting means; and

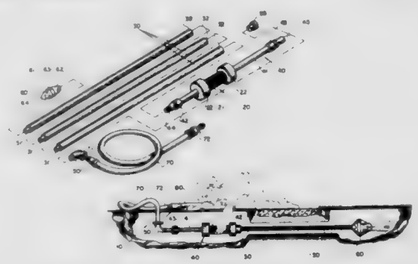
linkage means for connecting said dozer blade to said driver means and for transmitting loads placed on said dozer blade to said driver means, said linkage means including first linkage connected to said implement frame at a first connection and second linkage connected to said mounting means at a second connection, said first and second linkages being connected to each other and to said driver means at a third connection, with said second and third connections being generally aligned with the path of travel of said driver means to maximize the effectiveness of said driver means in moving said dozer blade.

5,058,686

SLIDING-WEIGHT OPERATED HOLE BORING TOOL

Mickey Redwine, Rte. 3, Box 3253, Ben Wheeler, Tex. 75754

Continuation of Ser. No. 923,227, Oct. 27, 1986, Pat. No. 4,775,015. This application Apr. 25, 1988, Ser. No. 186,035
Claims priority, application World Int. Prop. O., Oct. 27, 1986, 923227
The portion of the term of this patent subsequent to Oct. 4, 2005, has been disclaimed.
Int. Cl.[5] B25D *9/00*
U.S. Cl. 173—90 **18 Claims**



1. A sliding-weight operated tool, said tool comprising:

a tool drive means comprising a shaft and a sliding weight, said shaft comprising means for limiting movement of said sliding weight relative to said shaft;

a tool bit adjacent an end of said tool, said tool bit comprising means for forming a bore having compacted walls and means for compacting dirt against the walls of a bore when said tool is retrieved from a bore; and

means to vary length of said tool.

5,058,687

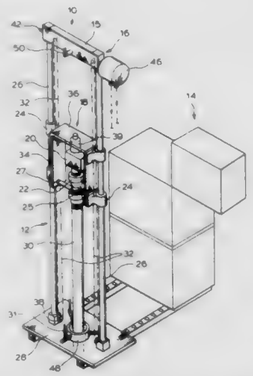
Patent Not Issued For This Number

5,058,688

CONVERTIBLE VIBRATORY OR ROTARY CORE DRILL APPARATUS

Hugh Scott, Wellington, and John Porritt, Picton, both of Canada, assignors to Meta-Probe Inc., Picton, Canada

Continuation-in-part of Ser. No. 338,716, Apr. 14, 1989, Pat. No. 5,004,055. This application Nov. 14, 1990, Ser. No. 612,439
Int. Cl.[5] E21B *7/00, 7/24*
U.S. Cl. 175—20 **14 Claims**



1. Drill apparatus convertible between a vibrational drilling mode in which the apparatus is adapted to apply a vibrational force to a first drill probe and a rotary drilling mode in which the apparatus is adapted to apply a torsional force to a second drill probe comprising:

a) a drill stand;

b) a carriage assembly mounted to the stand in a vertically sliding fashion;

c) carriage drive means for driving the carriage assembly up and down by application of vertical force thereto;

d) vibratory drive means mountable within the carriage assembly for applying a vertical vibratory force to the first probe when the vibratory drive means is mounted within the carriage assembly;

e) rotary drive means mountable within the carriage assembly for applying a torsional force to the second probe when the rotary drive means is mounted within the carriage assembly;

f) vibratory drive probe coupling means mounted to the vibratory drive means for coupling and decoupling the first probe to the vibratory drive;

g) rotary drive probe coupling means mounted to the rotary drive means for coupling and decoupling the second probe to the rotary drive means;

h) the rotary drive means and the vibratory drive means being interchangeable to permit the apparatus to be converted between a rotary drilling mode and a vibrational drilling mode; and

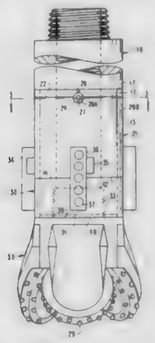
i) support means mounted within the carriage assembly for supporting the vibratory drive probe coupling means within the carriage assembly when the vibratory drive means is mounted therein and for supporting the rotary drive probe coupling means within the carriage assembly when the rotary drive means is mounted therein.

5,058,689

WEAR PROTECTIVE MEANS FOR A DRILLING TOOL

Stephen M. Collinsworth, P.O. Box 358, Stanton, Ky. 40380

Filed Oct. 19, 1990, Ser. No. 599,721
Int. Cl.[5] E21B *17/10*
U.S. Cl. 175—325 **18 Claims**



1. A drilling tool for drilling a hole in the ground including:

a drill bit sub having a lower reduced portion of substantially constant diameter;

removably mounted means removably mounted on said lower reduced portion of said drill bit sub, said removably mounted means having a substantially constant inner diameter;

said removably mounted means having a plurality of wear strips thereon;

a drill bit releasably attached to the bottom of said drill bit sub for rotation therewith, said drill bit being adjacent said removably mounted means and engaging the bottom of said removably mounted means;

said drill bit having a plurality of cutters;

causing means for causing rotation of said removably mounted means with said drill bit sub and said drill bit;

said wear strips being equal in number to said cutters on said drill bit;

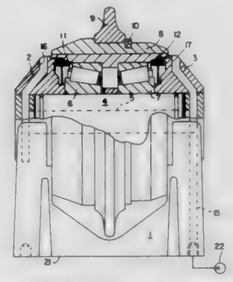
and each of said wear trips on said removably mounted means being aligned with one of said cutters on said drill but at least during rotation of said drill bit sub.

5,058,690

ROCK WORKING TOOL

Carl S. M. Hartwig, Täby, and Ove V. E. Nilsson, Örebro, both of Sweden, assignors to Atlas Copco Construction and Mining Technique AB, Stockholm, Sweden

Filed Apr. 27, 1990, Ser. No. 515,834
Claims priority, application Sweden, May 9, 1989, 8901625
Int. Cl.[5] E21B *10/18*
U.S. Cl. 175—339 **1 Claim**



1. Rock working tool for a tunnel boring machine comprising a saddle (**31**), a shaft (**34**) mounted to said saddle, two end pieces (**32, 33**), mounted to opposed ends of said shaft for securing said shaft to said saddle, and a tool part (**8, 9**) journalled on said shaft, characterized in that said shaft (**34**) comprises a central hole (**35**), that said saddle (**31**) comprises channels (**40, 41, 42**) which communicate with said central hole (**35**) and that at least one (**40**) of said channels is in fluid communication between said central hole and a pressure liquid source (**22**) of cooling medium and at least one other of said channels (**42**) is in fluid communication between said central hole and a flushing exit, such that the rock working tool is cooled by the flow of said cooling medium through the central hole (**35**) and said at least one of said channels, and the tool part (**8, 9**) is cooled by said liquid cooling medium which is flushed out from said flushing exit through said at least one other (**42**) of said channels in fluid communication between said central hole and said flushing exit.

5,058,691

INFRARED DETECTOR FOR ENSURING CORRECT WEIGHING

Rafi Sela, North Potomac, Md., assignor to W. G. Associates, Bethedsa, Md.

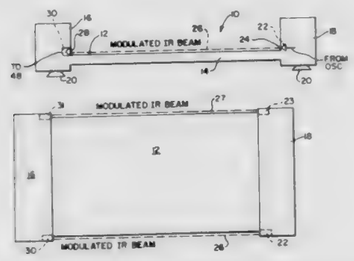
Filed Apr. 2, 1990, Ser. No. 502,747
Int. Cl.[5] G01G *19/52, 21/22*
U.S. Cl. 177—50 **6 Claims**

1. A system for ensuring accurate weighing with an electronic scale, the system comprising:

means for simultaneously transmitting light beams along at least two opposite edges of the scale weighing platform;

receiving means for simultaneously detecting the transmit-

ted light beams when objects being weighed are located entirely within the beam;



the receiving means detecting an interruption of one or more light beams by an object overhanding the scale weighing platform.

5,058,692

BALANCE WITH MOTOR-DRIVEN WIND GUARD

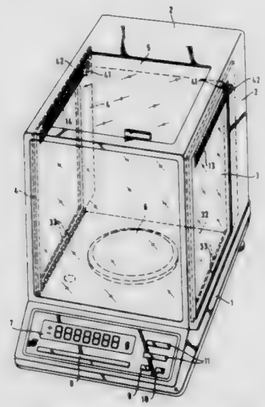
Franz-Josef Melcher, Hardegsen; Christian Oldendorf, and Dieter Berthel, both of Göttingen, all of Fed. Rep. of Germany, assignors to Sartorius AG, Göttingen, Fed. Rep. of Germany

Filed Jun. 18, 1990, Ser. No. 539,268

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919870

Int. Cl.[5] G01G *23/18, 21/28*

U.S. Cl. 177—181 **12 Claims**



1. In a balance with a balance scale (**6,60**), with a weighing area which surrounds the balance scale (**6,60**) on all sides and which can be opened and closed at least one position by shifting a movable wall means (**3,4,53,54**), with a drive motor (**39**) for shifting the movable wall element (**3,4,53,54**) and with control electronics (**36**) for the drive motor (**39**), comprising a sensor (**13/41/42, 14, 71/72/73, 80, 81**) which monitors the position of the movable wall means (**3,4,53,54**) whereby the output signal of the sensor (**13/41/42, 14, 71/72/73, 80, 81**) is fed to control electronics (**36**) for the drive motor (**39**) and storage means (**46,80,81**) in which a desired end position for the movable wall element (**3,4,53,54**) is stored.

5,058,693

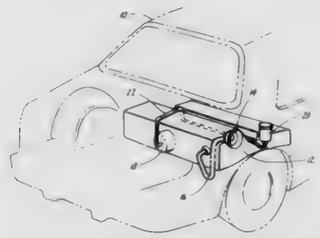
REMOTE FILTER ASSEMBLY FOR VAPOR RECOVERY SYSTEM

Thomas G. Murdock, Northville, and Steven G. Mixter, Howell, both of Mich., assignors to Industrial Strainer Co., Plymouth, Mich.

Filed May 7, 1990, Ser. No. 520,028

Int. Cl.[5] B60K *15/00*

U.S. Cl. 180—69.4 **12 Claims**



1. In combination with an automotive vehicle having a gas tank for receiving a liquid fuel, a charcoal canister connected to the gas tank for receiving gasoline vapors and having an opening for receiving atmospheric air as the charcoal canister is being purged, said canister being located in near proximity to the gas tank, the improvement comprising:

an air filtration means located in spaced relation to the charcoal canister; and a conduit means extending between the air filtration means and the canister;

said air filtration means comprising an upright tubular housing located alongside the gas tank at a point that is at least partially protected from mud splashing off the road surface; said tubular housing having a raw air inlet opening therein near its uppermost extremity; said tubular housing having a clean air discharge duct extending from its lowermost extremity; said tubular housing having an internal space, and a filter packing within said internal space so that air flows downwardly through the packing as it moves from the inlet opening to the discharge duct; said conduit means comprising a hose extending between the discharge duct and the opening in the charcoal canister.

5,058,694

RESERVOIR TANK SUPPORT STRUCTURE

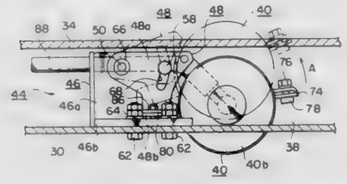
Yoshihisa Iwanaga, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 21, 1990, Ser. No. 526,309

Claims priority, application Japan, May 22, 1989, 1-58976

Int. Cl.[5] B62D *25/10*

U.S. Cl. 180—90 **5 Claims**



1. A structure in a forklift for supporting a reservoir tank for brake fluid, comprising:

a front protector disposed in front of a driver's seat;

a front panel removably mounted on a front surface of said front protector to define a housing for the reservoir tank between said front protector and said front panel;

a support bracket located in said housing and secured on the front surface of said front protector, said support bracket having a vertical support spindle mounted thereon; and

a tank plate for supporting the reservoir tank, said tank plate being mounted on said vertical support spindle on said support bracket for horizontal pivotal movement between a retracted position adjacent to said front surface of said front protector and a projected position away from said front surface towards and beyond said front panel.

5,058,695

POWER STEERING APPARATUS

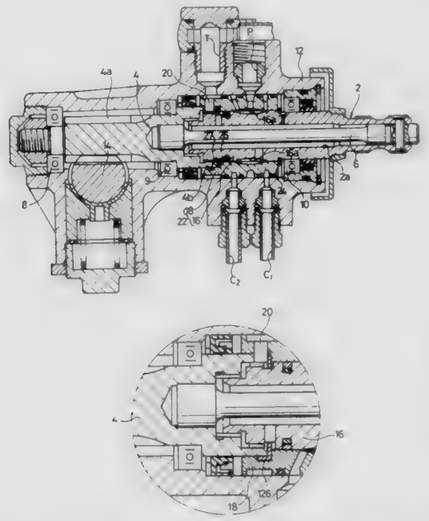
Tohru Terada, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1990, Ser. No. 482,276

Claims priority, application Japan, Feb. 20, 1989, 1-18847[U]

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—132 **5 Claims**



1. In a power steering apparatus including an input shaft which is driven for rotation by a turning operation of a steering wheel, an output shaft connected to the input shaft in coaxial relationship by a torsion bar, a valve rotor formed around the outer surface of the input shaft, and a valve sleeve fitted in surrounding relationship with the valve rotor and disposed between an end face of the output shaft and a retainer mounted on the input shaft, the sleeve being connected to the output shaft by a pin for integral rotation;

the improvement wherein a buffering member is interposed between mutually axially facing surfaces on the output shaft and the valve sleeve to thereby suppress any vibration of the valve sleeve which may be caused by the flow of driven oil and to thereby diminish the transmission of vibrations to the input shaft through the output shaft and the torsion bar, wherein an inner surface of the valve sleeve has a greater diameter portion at its one end into which a cylindrical portion formed at one end of the output shaft is fitted, the mutually facing surfaces being defined by the cylindrical portion having an axially facing end face which opposes an axially facing step defined between the greater diameter portion and a smaller diameter portion of the inner surface of the valve sleeve, and wherein said buffering member is an annular unitary member which is L-shaped in cross section and comprises an annular axially extending portion and a radially extending portion extending radially inwardly from the axially extending portion, the axially extending portion being interposed between the axially facing end face of the cylindrical portion of the output shaft and the step in the valve sleeve, the radially extending portion being interposed between the inner surface of the valve sleeve and the outer surface of the cylindrical portion of the output shaft.

5,058,696

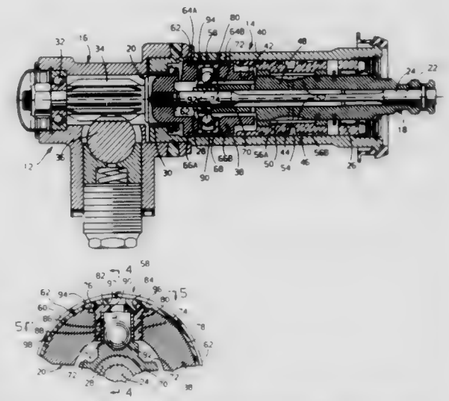
VARIABLE EFFORT AUTOMOTIVE POWER STEERING GEAR AND METHOD

Richard J. Prebay; John C. Whelton, both of Saginaw, and David E. Witucki, Bay City, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1990, Ser. No. 608,922

Int. Cl.[5] B62D *5/083*

U.S. Cl. 180—141 **12 Claims**



7. In a variable effort automotive power steering gear, the combination comprising:

an output member having a cylindrical wall with a radial socket therein,

an input member having a stem concentric with said cylindrical wall and a longitudinal detent groove in said stem aligned with said radial socket,

a detent element having a spherical end adapted for seating in said detent groove,

an insert rotatably mounted in said radial socket and including an interlock means thereon and a cylindrical eccentric bore therein the centerline of which is offset from the centerline of said radial socket,

means slidably mounting said detent element in said cylindrical eccentric bore, and

an in-situ injection molded plastic retainer on said output member engageable with said interlock means to permanently capture the angular position of said insert relative to said output member

5,058,697

MODULATOR AND POWER-ASSISTED STEERING CIRCUIT CONTAINING SUCH A MODULATOR

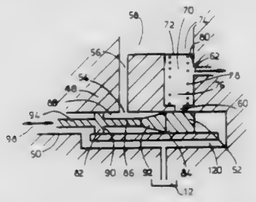
Gilbert Kervagoret, Argenteuil, France, assignor to Bendix Europe Services Techniques, Drancy, France

Filed Mar. 21, 1990, Ser. No. 497,043

Claims priority, application France, Mar. 31, 1989, 89 04330

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—143 **5 Claims**



1. A modulator intended for diverting a specific quantity of fluid under high pressre from a supply circuit of a hydraulic motor, comprising a body, a bore in said body, a first inlet orifice and a fluid outlet port opening into said bore, a modulator slide movable axially in said bore under the action of a control member and having first and second bearing surfaces substantially of the diameter of the bore and separated by means of a narrow section opposite which said first inlet orifice opens, said second bearing surface controlling said outlet port, said slide further defining a first chamber arranged between said first and second bearing surfaces and second and third chambers arranged on either side of said slide and communicating with one another, the outlet port communicating with an intermediate chamber having a side wall in which an outlet orifice of said modulator opens and the intermediate chamber containing a regulator slide controlling said outlet orifice and moving counter to a spring under the effect of a difference between pressure prevailing in said first chamber and pressure prevailing in said intermediate chamber, said second and third chambers being connected to a low-pressure fluid reservoir, the modulator further comprising an exhaust orifice controlled by said first bearing surface and connected with said low-pressure fluid reservoir, and a second inlet orifice opening into said bore between the first inlet orifice and said exhaust orifice.

5,058,698

CRUISE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Kiyoshi Yoshida; Isao Yamamoto; Hiroshi Inoue; Kazuyuki Mori; Koichi Suzuki; Kinichiro Nakano; Hiroyuki Nomura, and Yoshiyuki Etoh, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 259,820, Oct. 19, 1988, abandoned. This application Jul. 26, 1990, Ser. No. 559,377

Claims priority, application Japan, Oct. 20, 1987, 62-160076; Oct. 20, 1987, 62-160078

Int. Cl.[5] B60K *31/04*

U.S. Cl. 180—179 **6 Claims**

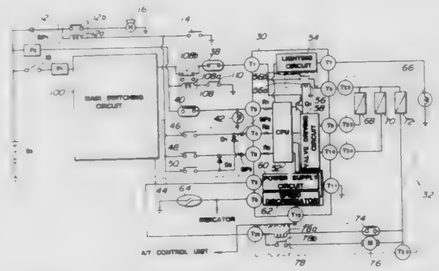
3. A cruise control system for an automotive vehicle with an automatic transmission which transmission is selectively operable between first, second, third and fourth gear while a shift lever is set in a drive range position, said system comprising:

sensor means for monitoring the actual speed of the vehicle to produce a first signal indicative of the detected vehicle speed;

speed setting means for allowing manual setting of a desired speed of the vehicle to produce a second signal indicative of the set speed;

actuator means for actuating a mechanism which varies the vehicle speed;

control means for controlling said actuator means on the basis of said first and second signals so as to adjust the vehicle speed to said set speed; and



inhibiting means for inhibiting said control means from controlling said actuator means when said automatic transmission is in either said first or second gear while said shift lever is set in said drive range position.

5,058,699

PROCESS AND CIRCUIT CONFIGURATION FOR CONTROLLING A TSC-SYSTEM WITH BRAKE AND MOTOR MANAGEMENT

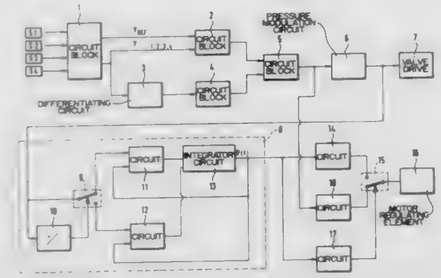
Helmut Fennel, Bad Soden; Hans Wupper, Friedrichsdorf; Gunther Buschmann, Griesheim; Lothar Keller, Bad Homburg, and Rainer Klusemann, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 13, 1989, Ser. No. 322,756

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3809101

Int. Cl.[5] B60K *41/20*

U.S. Cl. 180—197 **7 Claims**



1. A process for controlling a traction slip control system of a brake system having rotating wheels, and with brake and motor management, said process comprising the steps of: measuring the rotating pattern of the wheels to provide measuring signals, obtaining from the measuring signals brake pressure control signals and motor regulating signals as control signals for a motor regulating element, and deriving the motor regulating signals from separate electrical signals respectively indicative of pressure build-up and pressure decrease brake pressure (P wheel) which electrical signals control the brake pressure and wherein a brake pressure pattern is formed from control signals by integration of the pressure build-up and pressure decrease characteristics of wheel brakes of the system and wherein said pattern is used for determining and computing the motor regulating signals.

5,058,700

DRIVE FORCE DISTRIBUTION CONTROL SYSTEM FOR MOTOR VEHICLE

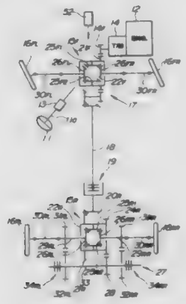
Yasuji Shibahata, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 337,809

Claims priority, application Japan, Apr. 15, 1988, 63-51053

Int. Cl.[5] B60K *17/354*

U.S. Cl. 180—245 **10 Claims**



1. A drive force distribution control system for a motor vehicle having a pair of laterally spaced drive road wheels, comprising:

a drive force distribution mechanism for varying a distribution ratio between drive forces to be applied to each of the laterally spaced drive wheels of said pair of drive road wheels;

steering force detecting means for detecting the magnitude and direction of a steering force manually applied to steer the motor vehicle;

lateral acceleration detecting means for detecting a lateral acceleration applied to the motor vehicle;

distribution ratio determining means for determining a target distribution ratio between drive forces to be applied to each of the laterally spaced drive wheels of said pair of drive road wheels based on the steering force detected by said steering force detecting means and the lateral acceleration detected by said lateral acceleration detecting means; and

drive means for actuating said drive force distribution mechanism so that the drive force distribution ratio between the drive force to be applied to each of the drive wheels of said pair of laterally spaced drive road wheels will be equalized to said target distribution ratio determined by said distribution ratio determining means.

5,058,701

PASSIVE RESTRAINT SYSTEM WITH MANUAL LAP BELT INTERLOCK

Michael C. Graf, Allen Park, and David R. Tengler, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1990, Ser. No. 592,003

Int. Cl.[5] B60R *21/10*

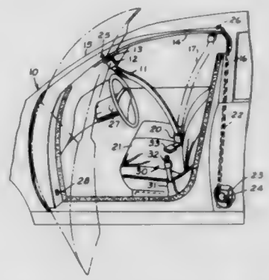
U.S. Cl. 180—268 **5 Claims**

1. A carrier motor control for a passive restraint system in a vehicle, said restraint system having a manual lap belt and having a torso belt carrier movable along a track between a forward position and a rearward position by energizing a carrier motor, said control comprising:

lap belt sensing means for providing a lap belt signal indicating whether said manual lap belt is engaged;

door sensing means for providing a door signal indicating whether a door of said vehicle is open; and

logic means coupled to said lap belt sensing means, said door sensing means, and said carrier motor for selecting the direction of movement of said carrier toward one of said positions depending on said door signal but preventing movement of said carrier from said rearward position to



said forward position if said lap belt signal indicates that said lap belt is engaged.

5,058,702

SILENCER DEVICE FOR EXHAUSTS OF MOTORS AND SIMILAR, WITH ACOUSTIC INTERFERENCE

Mascioli Alesssandro, Via Pio Foá, 45, Rome, Italy

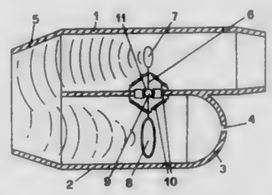
PCT No. PCT/IT88/00072, § 371 Date May 22, 1989, § 102(e) Date May 22, 1989, PCT Pub. No. WO89/03472, PCT Pub. Date Apr. 20, 1989

PCT Filed Oct. 11, 1988, Ser. No. 362,391

Claims priority, application Italy, Oct. 12, 1987, 48488 A/87

Int. Cl.[5] F01N *1/06*

U.S. Cl. 181—206 **9 Claims**



1. A silencer for reducing the noise of exhaust gases, comprising,

a first pipe for carrying exhaust gases which generate a sound having acoustic waves of one phase,

a second pipe,

outlet section means for receiving and combining gases from said first and second pipes and for releasing said gases from a common outlet;

a first blade located in said first pipe,

a second blade located in said second pipe,

a connector connecting said first and second blades together, said connector being movable about an axis which is between said blades so that the first and second blades move in opposite directions,

elastic means for supporting the blades and the connector for vibrating movement in response to acoustic waves applied to the first blade in the first pipe, to vibrate the second blade and gases in the second pipe to produce acoustic waves at a phase which is opposite to the phase of the acoustic waves in the first pipe, whereby the gases from the first and second pipes will have a reduced noise at said common outlet.

5,058,703

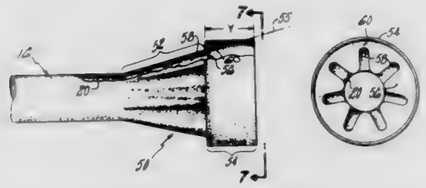
AUTOMOTIVE EXHAUST NOISE ATTENUATOR

Robert H. Ealba, Grosse Pointe Farms, Mich.; Robert W. Paterson, Simsbury; Michael J. Werle, West Hartford, both of Conn., and Walter M. Presz, Jr., Wilbraham, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 124,325, Nov. 23, 1987, Ser. No. 132,395, Dec. 15, 1987, and Ser. No. 857,908, Apr. 30, 1986. This application Dec. 27, 1988, Ser. No. 289,866

Int. Cl.[5] F01N *1/14*

U.S. Cl. 181—228 **24 Claims**



1. An automotive exhaust system tailpipe having a central flow axis and an outlet end for exhausting products of combustion to atmosphere comprising wall means for generating a plurality of pairs of adjacent large scale vortices rotating in opposite directions about respective axes extending downstream in the directions of said flow axis at said outlet end, said wall means comprising an internal surface which defines a flow path along which exhaust products are adapted to flow, said surface including a plurality of adjoining, alternating, U-shaped lobes and troughs extending downstream in the direction of the flow axis, each of said troughs having an inlet end and an outlet end, said trough outlet ends being upstream of said tailpipe outlet end, wherein trough depth increases gradually in said downstream direction, wherein the cross-sectional flow area of said tailpipe increases gradually from said trough inlet ends to said trough outlet ends to reduce the velocity of the exhaust products from a first velocity within said tailpipe at said trough inlets to a second velocity at said trough outlets, and at said trough outlet ends said tailpipe internal surface extends substantially radially outwardly away from said flow axis to create a substantially stepwise increase in cross-sectional flow area at said trough outlet ends.

5,058,704

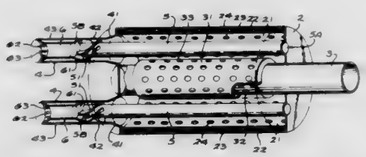
TURBO JET MUFFLER

Chuen-Huan Yu, 26 Alley 7, Lane 100 Tun Hua S. Road, Taipei, Taiwan

Filed Nov. 21, 1988, Ser. No. 274,313

Int. Cl.[5] F01N *1/14*

U.S. Cl. 181—262 **20 Claims**



1. A muffler for processing exhaust gases and releasing said gases comprising:

a hollow body defining a chamber with an inlet and with an inlet port for receiving exhaust gases at one end thereof and an outlet end with an exhaust port for releasing the exhaust gases;

means coupled to said inlet for diffusing exhaust gases into said chamber including a first pipe having a porous section with the porous section within said chamber;

means including a series of helically arranged vanes for swirling said diffused exhaust gases in said chamber;

a second pipe having an inlet end open to the atmosphere at the inlet end of said hollow body and having an open discharge end adjacent said vanes for mixing the swirled exhaust gases with ambient air;

venturi means coupled to receive the mixed ambient air and swirled exhaust gases and for introducing the mixed ambient air and swirled exhaust gasses to said outlet end; and

means including said exhaust port for discharging the swirled exhaust gases and mixed ambient air to the atmosphere.

5,058,705

SOUND-ABSORBING COVER ELEMENT AS A COMPONENT IN A GAP-FREE ACOUSTIC COVER

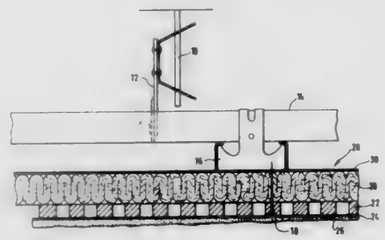
Heinz Rheinländer, Wiesenweg, Fed. Rep. of Germany, assignor to Sto AG, Stuhlingen, Fed. Rep. of Germany

Filed Dec. 6, 1988, Ser. No. 280,376

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1987, 8716596[U]

Int. Cl.[5] E04B *1/343*

U.S. Cl. 181—287 **15 Claims**



1. A sound absorbing cover element, comprising:

a perforated plate having a first side facing an enclosed space and a second side facing oppositely to said first side;

a layer of nonwoven fiber material covering perforations in said plate and said first side of said plate;

a layer of plaster permeable to sound on the side of said layer of nonwoven material facing the enclosed space;

a sound-inhibiting layer having a first surface lining said second side of said plate and a second surface facing oppositely to said first surface, said sound inhibiting layer being made of material selected from the group consisting of glass fibers and mineral wool; and

a cover of film impermeable to air covering said second surface of said sound-inhibiting layer.

5,058,706

SAFETY CONTROLLER FOR HIGH-BUILDING ESCAPEE

Yang-Kwan Pai, 2Fl, No. 15, Lane 509, Sec. 3, Ho Peing E. Rd., Taipei, Taiwan

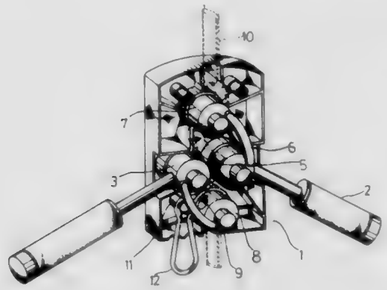
Filed Jan. 8, 1990, Ser. No. 461,615

Int. Cl.[5] A62B *1/14*

U.S. Cl. 182—5 **3 Claims**

1. A safety controller for enabling a person to escape from a high building by descending downwardly along a suspended rope; said controller comprising a housing attachable to the person, said housing having an upper rope passage opening and a lower rope passage opening, said openings being vertically aligned to form a central vertical axis through the housing; two rotary clamping blocks (3) mounted within said housing equidistant from said central vertical axis on opposite sides thereof; said rotary clamping blocks having their respective rotation axes located on a transverse horizontal axis of the housing so that the facing surface of the blocks spaced apart to define a central rope grip zone; elongated hand grips (2) extending

from respective ones of said clamping blocks in opposite directions away from the central rope grip zone; each hand grip having a first position extending generally horizontally from the associated clamping block along the aforementioned transverse axis, and a second position angling outwardly and downwardly away from the central rope grip zone; at least a third clamping block pivotably mounted within the housing with its pivot axis located on the central vertical axis of the housing; a connector means (6) interconnecting one of the rotary clamping blocks to the pivotable clamping block so that rotation of said one rotary clamping block by the associated hand grip produces a pivotal motion of the third pivotable clamping



block; said third pivotably clamping block having a rope passage therethrough in intersecting relation with the pivot axis of said pivotable block; and a rope extending downwardly through the housing so that it passes through the central grip zone formed by the rotary clamping blocks and through the passage in the pivotable clamping block; said connector means being oriented to the attached clamping blocks so that manual movement of the hand grips from their first positions to their second positions causes the rope passage to be shifted from a first vertical orientation toward a second orientation extending generally transverse to the central vertical axis of the associated pivotable block.

5,058,707

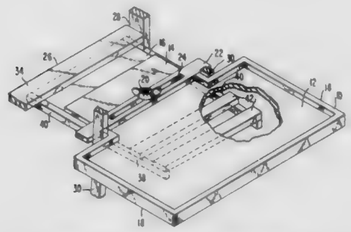
WORK SHELF FOR A FOLDING STEPLADDER

Calvin R. Waid, 1619 Bradford Ave., Shillington, Pa. 19607

Filed Nov. 14, 1990, Ser. No. 612,450

Int. Cl.[5] E06C *7/14*

U.S. Cl. 182—120 **6 Claims**



1. A work shelf for removable installation and use on a, stepladder having a pair of front legs, a pair of rear legs, a plurality of steps supported by the front legs, and a ladder shelf extending from the rear legs, said work shelf comprising:

a substantially rectangular platform member having a width greater than the spacing between the ladder rear legs;

a neck member extending from said platform member and having a width less than the spacing between the ladder rear legs;

a brace member extending from said neck member in the direction opposite said platform member and having a width less than the spacing between the ladder front legs;

clamp means movably secured to said neck member for movement between a clamping position, in which, when said platform member overlies the ladder shelf, and said neck member and said bracing member extend between the ladder legs with said bracing member braced beneath a step of the ladder, said clamp means cooperates with legs of the ladder to securely retain the work shelf on the ladder, and a release position, in which the clamp means is free of the ladder legs, permitting the work shelf to be installed on and removed from the ladder.

5,058,708

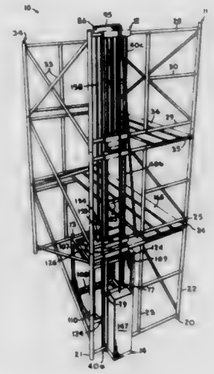
SCAFFOLD AND HOIST STRUCTURE

Hilbert J. Herrman, 1401 Jefferson, Great Bend, Kans. 67530

Filed Apr. 2, 1990, Ser. No. 502,860

Int. Cl.[5] B66B *1/20;* **E04G** *1/18, 21/00*

U.S. Cl. 182—129 **22 Claims**



1. A hoist, which includes:

(a) a track assembly including:

(1) an upper end;

(2) a lower end;

(3) a vertical rail extending between said upper and lower ends; and

(4) a suspension subframe cantilevering from said track assembly upper end;

(b) a carriage assembly including guide means adapted for engaging said rail and guiding said carriage vertically therealong between raised and lowered positions; and

(c) winch means mounted on said track assembly and including a tensile member connected to said suspension subframe and said carriage, said winch means being adapted for raising and lowering said carriage between its raised and lowered positions.

5,058,709

DEVICE FOR THE DOSING OF LUBRICANTS

Werner Saam, Oberhausen-Rheinhausen, Fed. Rep. of Germany, assignor to Joseph Vogele AG, Mannheim, Fed. Rep. of Germany

Filed Jun. 8, 1990, Ser. No. 535,151

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1989, 3918925

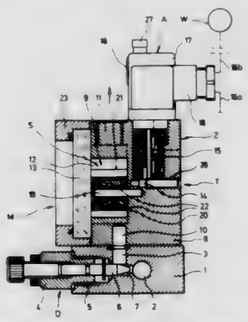
Int. Cl.[5] F01M *1/18*

U.S. Cl. 184—108 **12 Claims**

1. A device for dosing lubricant to at least one lubricating point connected to a lubricating line, the device comprising a constructional unit having at least one adjustable manual throttling element for adjustment of the volume flow of lubricant to

the lubricating point, and a flow metering device being located downstream of said throttling element, said flow metering device further comprising at least one sensor element being moveable by the volume flow through said flow metering device,

a) wherein said flow metering device in a dynamic flow metering device including a gear wheel motor having a housing defining a measurement chamber with an engagement area, two spur wheels enclosed by said housing and permanently engagingly meshing in said engagement area,



a flow path for the volume flow extending in tangential direction of both spur wheels throughout the engagement area so that both spur wheels are caused to rotate by the lubricant even in the case of a constant volume flow, and

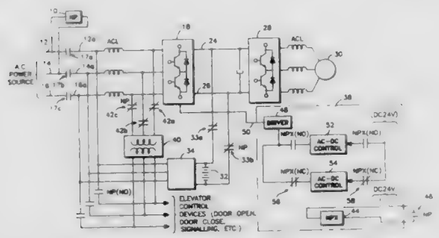
b) wherein at said flow metering device within said constructional unit a display means is provided for showing the measured lubricant volume flow rate, said constructional device further including means interconnected to said display means for sensing the rotation of said spur wheels, said volume flow rate being derived from the sensed rotation of said spur wheels.

5,058,710

ELEVATOR POWER SOURCE DEVICE

Masao Iwasa, Ichikawa, Japan, assignor to Otis Elevator Company, Farmington, Conn.

Filed Aug. 14, 1990, Ser. No. 567,422
Int. Cl.[5] B66B *1/30*
U.S. Cl. 187—114 **3 Claims**



1. An elevator power source device comprising:

a power source monitoring relay connected to power lines supplying AC power from a commercial power source;

an AC-DC converter which has its input side connected to said power lines;

a DC-AC inverter which has its input side connected to an output side of said AC-DC converter and is used to control a motor;

a battery connected to said output side of said AC-DC converter via contacts (in the case of power failure) of said power source monitoring relay;

a battery charger which is connected to said power lines via contacts (in the case of power failure) of said power source monitoring relay;

a step-up transformer which is connected to the input side of said AC-DC converter via contacts (in the case of power failure) of said power source monitoring relay, and which generates an elevator control voltage; and

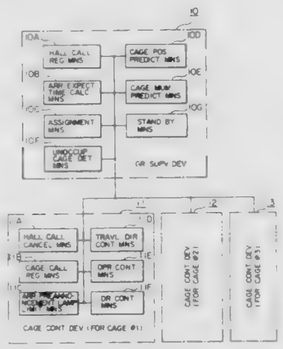
a converter switch circuit which is connected to said power source monitoring relay and said AC-DC converter, which controls the transistors of said AC-DC converter without power failure so that said AC-DC converter operates as an AC-DC converter, and which controls the transistors of said AC-DC converter during power failure so that said AC-DC converter operates as a DC-AC inverter.

5,058,711

GROUP-SUPERVISING AN ELEVATOR SYSTEM

Shintaro Tsuji, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 23, 1990, Ser. No. 497,909
Claims priority, application Japan, Apr. 6, 1989, 1-87547
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—124 **7 Claims**



1. A method of group supervision for an elevator system where building floors are grouped into zones, comprising the steps of:

(a) detecting unoccupied cages having no registered cage calls and no allotted hall calls;

(b) predicting cage positions of said unoccupied cages after a predetermined period of time;

(c) predicting a total number of cages which will be present in specified floor zones after a predetermined period of time on the basis of the predicted positions of the unoccupied cages; and

(d) selecting a floor zone in which said unoccupied cages are to stand-by according to the total number of cages predicted to be present in specified floor zones.

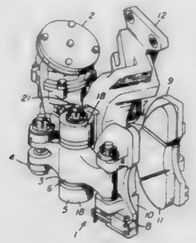
5,058,712

PRE-LOADING PIVOTAL PIN CONNECTION FOR A DISC BRAKE ASSEMBLY

Lewis R. Noah, Greer, S.C., assignor to American Standard Inc., Spartanburg, S.C.

Filed Jul. 7, 1989, Ser. No. 377,022
Int. Cl.[5] B61H *13/38*; F16D *65/95*
U.S. Cl. 188—59 **18 Claims**

1. A pivotal connection for joining an H-shaped swivel bracket to a two-legged support bracket of a caliper disc brake assembly for railway vehicles comprising, said H-shaped swivel bracket positioned between the two legs of the support bracket and having a through hole which is aligned with through holes formed in the two legs of the support bracket, a pivot bolt passing through the through holes and having a head engaging the outer surface of one of the two legs of the support bracket, a fastening nut screw-threaded onto the free end of the pivot bolt and being sufficiently torqued to preload the two legs of the support bracket, a locking member cooperatively associated with the fastening nut, the pivot bolt having an



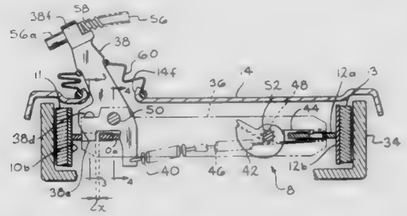
enlarged shoulder portion tightly engaging the through hole in the one leg of the support bracket, the fastening nut having a sleeve portion tightly engaging the through hole in the other leg of the support bracket, and the through hole in the swivel bracket having a press fit metal bushing which loosely fits the intermediate portion of the pivot bolt to allow pivotal movement between the swivel bracket and the support bracket.

5,058,713

HYDRAULIC DRUM BRAKE ASSEMBLY

Anthony C. Evans, Northville, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 386,913, Jul. 31, 1989, abandoned. This application Feb. 19, 1991, Ser. No. 657,877
Int. Cl.[5] F16D *65/52*
U.S. Cl. 188—79.54 **11 Claims**



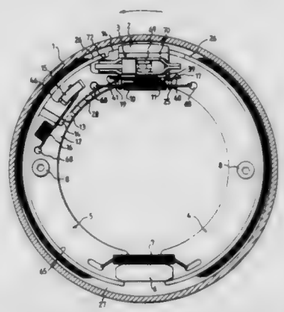
1. A hydraulically and mechanically actuated drum brake assembly for a rear wheel of an automotive vehicle, said assembly comprising a cylindrical brake drum, a pair of oppositely disposed brake shoes of generally T-shaped cross section mounted in the drum and each including a flat web forming a trunk of the T-shape and having an arcuate outer edge, an arcuate rim forming a head of the T-shape and being secured to the outer edge of the web, and an arcuate friction pad mounted on an outer surface of the rim and operatively engageable with an inner surface of the drum, a double-acting hydraulic actuator mounted in the drum and operatively connected adjacent opposite ends respectively to a pair of adjacent end portions of said webs, an elongate operating link mounted in the drum adjacent said actuator and disposed in loose cooperative engagement adjacent opposite ends respectively with said webs, an operating lever for mechanically actuating said brake assembly, said lever pivotally mounted on said link adjacent one end thereof, said operating lever having a stop engageable with an edge of said operating link, having an arm adjacent an inner end normally engaged with one of said webs, and having a projection adjacent said inner end normally extending with clearance into a hole in said one web, a cam pivotally mounted on said link adjacent an opposite end thereof and having a toothed cam surface, a bearing mounted on the other of said webs and having a toothed bearing surface normally in interlocking engagement with said toothed cam surface, a first tension spring operatively connected adjacent one end to said other web and adjacent an opposite end to said operating link and normally biasing said bearing into engagement with said cam, a torsion spring angularly biasing said cam in a radius-increasing direction with respect to said bearing, and a second tension spring operatively connected adjacent one end to said operating link and adjacent an opposite end to said arm of said operating lever and normally biasing said operating lever in an angular direction to engage said stop with said operating link, said second torsion spring being stronger than said first tension spring, whereby when said hydraulic cylinder is actuated after a predetermined amount of wear of said friction pads has occurred and said brake shoes are moved apart, said second tension spring maintains said stop on said operating lever in engagement with said operating link and maintains said projection of said operating lever in said hole in said one web, said projection engages said one web at an edge of said hole closer to said other web as a normal running clearance between said friction pads and said brake drum is taken up, and additional movement of said brake shoes apart from each other due to said predetermined amount of wear of said friction pads stretches said first tension spring and enables said torsion spring to adjust said cam to a larger radius with respect to said bearing.

5,058,714

APPARATUS FOR A DRUM BRAKE, IN PARTICULAR FOR MECHANICALLY ACTUATABLE SELF-ENERGIZING INTERNAL SHOE-TYPE DRUM BRAKES FOR AUTOMOTIVE VEHICLES

Rolf Weiler, Eppstein; Claus-Peter Panek, Steinbach; Wolfgang Endler, Hofheim, and Uwe Hendrich, Mainz, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

Filed Jan. 9, 1990, Ser. No. 462,516
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1989, 3900740
Int. Cl.[5] F16D *65/52*
U.S. Cl. 188—196 P **30 Claims**



1. An apparatus for a drum brake for mechanically actuatable self-energizing internal shoe-type drum brakes for automotive vehicles, comprising a pair of brake shoes arranged on a brake carrier plate at a thrust member and furnished with tension springs, a mechanical actuating apparatus acting between a pair of brake shoe ends disposed opposite each other and prestressed by springs, said mechanical actuating apparatus pressing the brake shoes for braking against a brake drum enclosing them and the drum brake comprising a clearance compensating adjusting device arranged between the brake shoe ends, at least one brake shoe web supporting the brake shoe, wherein said adjusting device consists of a first adjusting apparatus with a multiple-part, self-adjusting, variable-length

pressure strut (39) arranged between the brake shoes (4, 5) and wherein a second adjusting apparatus is provided between the at least one brake shoe web (12) and a brake shoe web portion supporting said brake shoe (5) with a self-adjusting adjustment member which interacts in the circumferential direction both with said mechanical actuating apparatus (3) and with a cooperating supporting bracket (2) wherein said brake shoe web (12) is automatically lengthened so that said mechanical actuating apparatus (3) consistently assumes a substantially constant starting point.

5,058,715

SHOCK ABSORBER

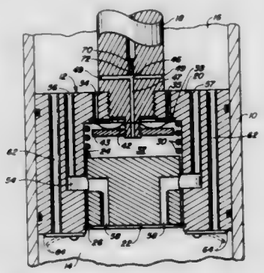
Ilan Silberstein, 28 Meadowhill Dr., Tiburon, Calif. 94920

Filed Nov. 20, 1989, Ser. No. 438,184

Claims priority, application Israel, Nov. 28, 1988, 88523

Int. Cl.[5] F16F *9/49, 9/46*

U.S. Cl. 188—280 **9 Claims**



1. A shock absorber comprising, in combination:
a cylinder having an interior with fluid therein;
a piston rod;
a piston mounted within said cylinder interior defining first and second chambers in said cylinder and a primary passageway permitting the flow of fluid from said first chamber into said second chamber as fluid is pressurized in said first chamber by movement of said piston, said piston including relatively moveable first and second piston elements defining variable-sized fluid-filled space in continuous communication with said second chamber through a fluid-flow restricting vent spaced from said primary passageway, formed in said shock absorber, and providing communication between said space and said second chamber, said first piston element being fixedly mounted relative to said piston rod, movable with said piston rod, and defining a recess, and said second piston element having a peripheral wall at least partially disposed within said recess and said second piston element being gradually displaceable relative to said first piston element toward said piston rod within said recess responsive to pressurization of fluid in said first chamber to force the fluid in said space through said fluid-flow restricting vent and into said second chamber whereby the size of said space is gradually reduced as a function of the amount of fluid forced through said fluid-flow restricting vent, said primary passageway including at least one flow path defined by said first piston element and communicating with said recess and at least one aperture defined by said second piston element in the peripheral wall thereof in communication with said flow path, relative movement of said piston elements gradually displacing said aperture relative to said flow path to gradually modify the effective size of said primary passageway in response to the gradual reduction of said space size caused by fluid pressure within said first chamber exceeding fluid pressure within said second chamber and fluid flowing through said fluid-flow restricting vent, said flow path including a groove defined by said first piston element about the periphery of said recess, said groove and said aperture being so configured as to be in continuous at least partial registry during gradual displacement of said aperture; and
means for selectively changing the effective size of said vent to control both the rate of fluid flow through said vent and the rate of space size reduction whereby the rate of change of the dampening characteristics of said shock absorber can be selectively varied, said means for selectively changing the effective size of said vent including adjustable valve means including a valve element selectively positionable in said vent.

5,058,716

CONTROL SYSTEM FOR A HYDROKINETIC TORQUE CONVERTER LOCK-UP CLUTCH

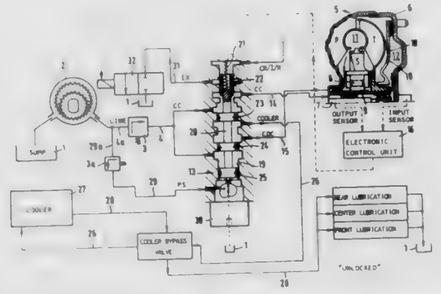
Wolfgang V. D. Lippe, Konigswinter; Sieghart Biederman; Winfried Schulz, both of Pulheim; Hans-Peter Wirtz, and Johann Kirchhoffer, both of Cologne, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 22, 1990, Ser. No. 570,757

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3828048

Int. Cl.[5] F16D *33/12*

U.S. Cl. 192—3.33 **18 Claims**



1. A system for controlling operation of a torque converter clutch, comprising:
torque converter means for hydrodynamically driveably connecting an input member and an output member, including clutch means for mechanically driveably connecting and disconnecting said input member and output member, an apply chamber pressurized to urge the clutch toward a disengaged state, a release chamber pressurized to urge the clutch toward an engaged state, clutch slip being controlled by the difference in pressure between the apply chamber and release chamber;
a source of line pressure;
an outlet;
a clutch pressure control valve connected to the source of line pressure, the apply chamber and the release chamber, said valve including a spool located in a cylinder supported for sliding movement along the cylinder biased by a spring toward a first position where line pressure is connected to the release chamber and the apply chamber is connected to sump to disengage the clutch, the spool being urged by pressure against the effect of the spring to a second position where line pressure is connected to the apply chamber and the release chamber is connected to the outlet to engage the clutch;
a lock-up clutch control valve located in the outlet, actuated by a first solenoid;
means for producing signals representing speed of the torque converter input and speed of the torque converter output; and
control means for actuating the first solenoid to open and close the outlet to sump in response to a desired magnitude of clutch slip corresponding to the speed difference between the torque converter input and output speeds, thereby controlling the difference in pressure between the release chamber and apply chamber to produce the desired clutch slip.

5,058,717

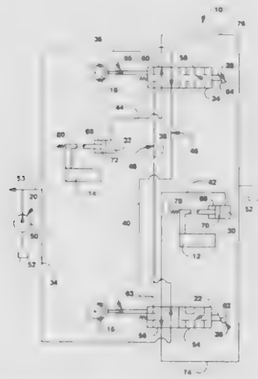
CLUTCH AND BRAKE CONTROL CIRCUIT FOR A VEHICLE

Sam N. Haglund, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 21, 1990, Ser. No. 586,121

Int. Cl.[5] F16D *67/02*

U.S. Cl. 192—12 C **10 Claims**



1. A fluid control circuit for controlling the disengagement of a drive mechanism and the engagement of a brake mechanism, comprising:
a single source of pressurized fluid;
first and second control valves, each having first and second control positions;
first and second means for actuating respectively said first and second control valves;
first and second drive mechanisms;
first and second drive disengaging mechanisms;
first and second drive mechanisms;
first and second drive disengaging mechanisms;
first and second brake mechanisms;
first and second fluid lines connecting said fluid source respectively to said first and second control valves, third and fourth fluid lines connecting said first control valve to said second control valve, and fifth and sixth fluid lines connecting said first and second drive disengaging mechanisms respectively to said first and second control valves;
first means for activating said first drive disengaging mechanism, including pressurized fluid routed to said first drive disengaging mechanism sequentially through said second control valve and said first control valve; and
second means for activating said second drive disengaging mechanism, including pressurized fluid routed to said second drive disengaging mechanism sequentially through said first control valve and said second control valve.

5,058,718

CLUTCH FACING ABRASION INDICATOR

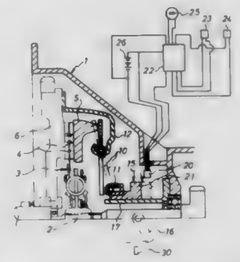
Hiromi Tojima, and Masaaki Asada, both of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Nevagawa, Japan

Filed May 10, 1990, Ser. No. 521,484

Claims priority, application Japan, May 12, 1989, 1-54909[U]

Int. Cl.[5] B60Q *1/00;* **F16D** *13/58*

U.S. Cl. 192—30 W **3 Claims**



1. A clutch facing abrasion indicator for a clutch system having a clutch disc with a friction facing, a flywheel and a pressure plate for pressing the friction facing against the flywheel, the clutch facing abrasion indicator comprising:
a detection element operatively connected to the pressure plate such that movement of the pressure plate generates a corresponding, predetermined movement in said detection element, the predetermined movement of said detection element being related to an amount of wear on the friction facing of the clutch disc;
a contact-free sensor stationarily mounted within the clutch system for measuring the predetermined movement of said detection element and for generating a signal corresponding to the amount of wear on the friction facing;
signal control means for receiving the signal for the contact-free sensor and for generating an output signal to signal at least one of a condition of the friction facing still being able to operate and a condition of the friction facing no longer being able to operate; and
display means for receiving the output signal of said signal control means and for displaying the condition of the friction facing, said display means including a pilot lamp for indicating the active operation of said signal control means and said contact-free sensor, and
an alarm lamp for indicating the condition of the friction facing, said pilot lamp and said alarm lamp being operatively connected such that said pilot lamp is in an OFF state when said alarm lamp is in an ON state.

5,058,719

DRIVE ASSEMBLY FOR CLUTCH PLATE

Richard A. Flotow, Butler, and Martin E. Kummer, Auburn, both of Ind., assignors to Dana Corporation, Toledo, Ohio

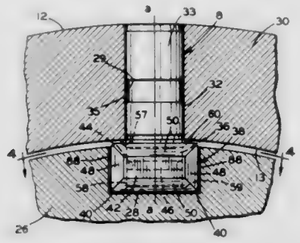
Filed Mar. 25, 1991, Ser. No. 675,608

Int. Cl.[5] F16D *13/70, 3/06*

U.S. Cl. 192—70.19 **12 Claims**

11. A clutch drive pin assembly comprising an elongate drive pin having first and second ends and a shoulder positioned intermediate said ends, a drive head rotatable on said first end said head having a pair of sides adapted to drivingly engage walls of a clutch plate drive slot, said second end of said pin adapted for insertion into a bore of a flywheel said

shoulder comprising (a) first stop means for limiting depth of insertion of said second end into a flywheel, and (b) second



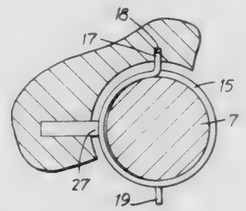
stop means for limiting axial position of said head on said first end of said pin.

5,058,720

METHODS FOR REDUCING LOST MOTION AND WIRE DISTORTION IN SPRING CLUTCHES

Edward T. Rude, Fairfield, and Martin Waine, Riverside, both of Conn., assignors to General Clutch Corporation, Stamford, Conn.

Filed Mar. 21, 1990, Ser. No. 496,990
Int. Cl.[5] F16D *13/02*
U.S. Cl. 192—41 S **22 Claims**



1. A spring clutch comprising:
a shaft;
a helically wound coaxially mounted spring for making frictional contact with the shaft;
means for selectively applying a loosening force to at least one end of the spring for rotation thereof with respect to the shaft; and
means for urging the spring toward the shaft when the spring is rotatably loosened for substantially preventing radial movement of the spring away from the shaft comprising means for bearing radially against a single location along said spring.

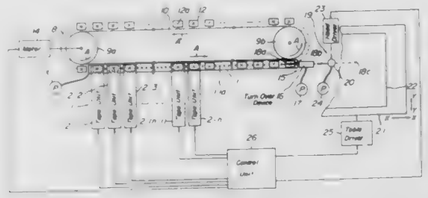
5,058,721

APPARATUS FOR MOUNTING CHIP DEVICE ON PRINTED CIRCUIT BOARD

Masaaki Koibuchi, Naka, Japan, assignor to Ikegami Tsushinki Co., Ltd., Naka, Japan

Continuation of Ser. No. 146,010, Jan. 20, 1988, Pat. No. 4,908,092. This application Oct. 13, 1989, Ser. No. 421,406
Claims priority, application Japan, Jan. 20, 1987, 62-10225; Jun. 6, 1987, 62-141914
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—345.1 **9 Claims**

1. An apparatus for transporting articles comprising:
a vacuum chamber having an upper surface in which are formed a plurality of air suction holes at a given pitch;
an article supply means having at least one article discharging port arranged along a part of said vacuum chamber;
a plurality of carriers, each of said carriers having an upper surface, at least one air sucking hole in said upper surface, and a buffer formed in a rear surface of the carrier;
driving means for transporting said carriers along said upper surface of said vacuum chamber; and



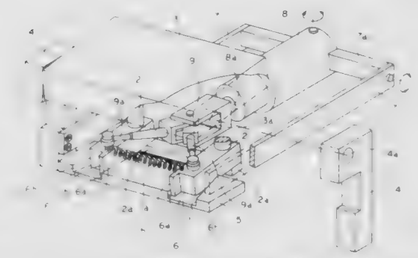
an air suction pump for sucking air through said air suction holes and said air sucking holes whereby a length of said buffer formed in the rear surface of the carrier is larger than said given pitch so that at least one suction hole is always communicated with the buffer and an article being transported is held on the upper surface of said carrier.

5,058,722

DEVICE FOR ADJUSTING THE STOP POSITION OF CONVEYOR BELTS USED ON OVERHEAD CONVEYOR SYSTEMS

Augusto Santicchi, 06100-Perugia Fraz., San Sisto, Via Albinoni, 151, Italy

Filed Mar. 1, 1991, Ser. No. 663,263
Claims priority, application Italy, Mar. 14, 1990, 612 A/90
Int. Cl.[5] B65E *15/64*
U.S. Cl. 198—345.2 **2 Claims**



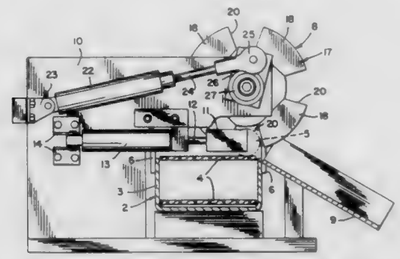
1. A device for adjusting the stop position of the conveyor belts used on overhead conveyors, characterized by a support consisting of a pair of identical sides (**4**)—having holes with a horizontal axis (**4***a*) at the top—and connected to a horizontal base plate (**5**) having two symmetrical housings (**6**) whose internal walls (**6***a*) are parallel, while the external walls (**6***b*) diverge forwards; in the holes (**4***a*) at the top of the sides (**4**), idle running pins (**3***a*) are housed which support an oscillating base (**3**) at the bottom of which two adjacent pins having a vertical axis (**2**) are fixed—connected to the base by a transverse base—around which two identical branches (**1**), fitted at the front with respective teeth (**1***b*) and drawn constantly to each other by a prestretched spring (**1***a*) hooked to the same, can rotate freely; inside the sides (**4**) of the support, are firmly secured two horizontal battens (**7**) of a supporting "C" shaped structure, whose upper crosspiece (**7***a*) supports, in the middle, a pneumatic cylinder (**8**) having a horizontal axis whose rod (**8***a*) is connected at the front with a double toggle joint (**9**) including two articulated rods (**9***a*) hinged at the front on the front ends of the branches (**1**).

5,058,723

APPARATUS FOR SELECTIVELY DISCHARGING ARTICLES FROM A CONVEYOR SYSTEM

Michael A. Hosch, Oconomowoc, Wis., assignor to Dorner Mfg. Corp., Hartland, Wis.

Filed Jan. 16, 1990, Ser. No. 466,062
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—372 **8 Claims**



1. A mechanism for selectively discharging articles from a conveyor system, comprising a conveyor to convey a plurality of articles in a path of travel, a rotatable discharge member mounted for rotation with respect to said conveyor and having a plurality of grooves extending longitudinally of the direction of movement of said conveyor, a reciprocating first drive means operably connected to said discharge member and constructed and arranged to move from a primary position to a secondary position and rotate the discharge member from a first indexed position where a first groove is aligned with said path of travel to an intermediate position where a next succeeding second groove is positioned short of said path of travel, and second drive means operably connected to said discharge member for rotating said discharge member from said intermediate position to a second indexed position while said first drive means is returned from said secondary position to said primary position, said second drive means including cam means connected to said discharge member and a driving member engaged with said cam means, said cam means comprising a cam surface and said driving member comprising a follower engaged with said cam surface, said second drive means also including means for exerting a force through said follower against said cam surface to thereby rotate said discharge member.

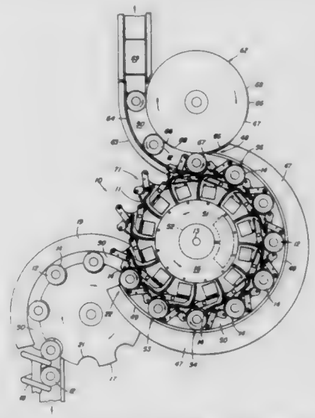
5,058,724

APPARATUS AND METHOD FOR ORIENTING ARTICLES AND CONTAINERS

Gaylen R. Hinton, 4316 Buckeye La., Merced, Calif. 95348

Filed Nov. 8, 1990, Ser. No. 610,656
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—376 **20 Claims**

1. An apparatus for orienting rotationally symmetrical containers having a reference index thereon into a predetermined orientation, comprising:
a. means for rotating a container about its axis of symmetry until it reaches a stabilized rotational velocity;
b. a detector for sensing the index after the container reaches said velocity, and producing a control signal in response thereto;
c. tachometer means to determine the rotational velocity of the container;
d. means responsive to said control signal, for arresting the container with its reference index in the predetermined orientation; and
e. delay means responsive to said tachometer means, for delaying said control signal delivered to said arresting means by an amount of time inversely proportional to said rotational velocity, and for decreasing said amount of time by an increment directly proportional to said rotational



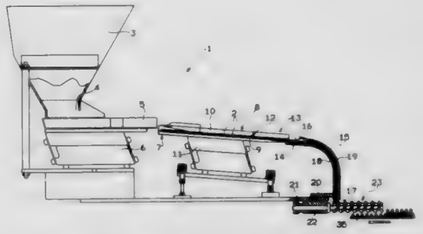
velocity, to compensate for slippage between the container and said arresting means.

5,058,725

METHOD AND DEVICE FOR SUCCESSIVELY CONVEYING FLAT-SHAPED ITEMS

Antonio Gamberini, and Mario Spatafora, both of Bologna, Italy, assignors to G.D Società per Azioni, Pomponia, Italy

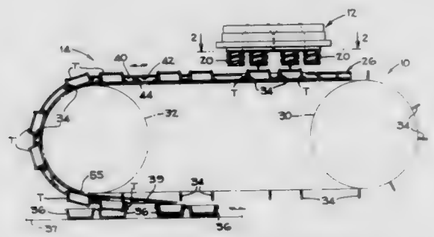
Continuation of Ser. No. 357,359, May 26, 1989, abandoned. This application Feb. 18, 1991, Ser. No. 657,359
Claims priority, application Italy, May 30, 1988, 3481 A/88
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—406 **12 Claims**



1. A method for successively conveying flat-shaped items, for forming groups consisting of a number of said items positioned on edge, said items initially being laid flat on a supporting surface, comprising:
feeding said items (**2**), laid flat, along said supporting surface (**9**) and towards an outlet of the same, via a first conveyor means (**8**);
turning said items (**2**) on to one edge by feeding them along a curved rigid channel (**15**) in a stationary position and extending downwards from said outlet over a substantially 90° arc;
the channel (**15**) including two opposing spaced apart curved plates (**18,19**) in stationary position;
the items (**2**) dropping along said curved rigid channel (**15**) while contacting one another edge to edge;
withdrawing said items (**2**) successively, and at a predetermined rate, from the bottom end of said curved rigid channel (**15**), via a second conveyor means (**23**), and feed-

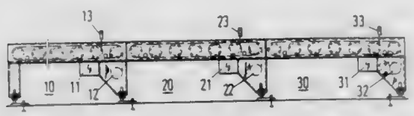
ing said items (2) successively and separately to a user device (35 or 37).

5,058,726
TRAY FEED ARRANGEMENT
Robert D. Merritt, Rossville, Ill., assignor to FMC Corporation, Chicago, Ill.
Filed Dec. 15, 1989, Ser. No. 451,221
Int. Cl.[5] B65G *57/00*
U.S. Cl. 198—418.3 2 Claims



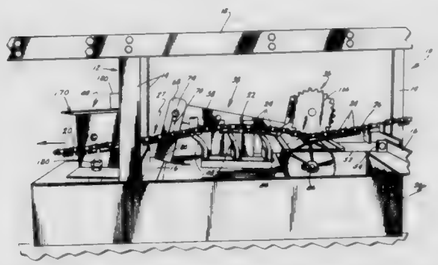
1. An arrangement for depositing a container into one of a plurality of nest moving at a given speed, comprising:
an intermediate chain driven at substantially the same speed as said given speed;
means for depositing a container in an inverted position on said chain;
a lug attached to said chain and projecting into said container to move said container;
guide means for directing said container toward an upright position and releasing said container into said nest before said container is in its fully upright position.

5,058,727
CONVEYOR APPARATUS
Werner Jahns, Seligenstadt, and Heinz Uecker, Offenbach, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Düsseldorf, Fed. Rep. of Germany
Filed Jul. 7, 1989, Ser. No. 376,821
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 3823657
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—460 1 Claim



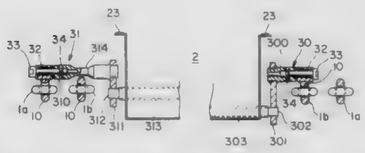
1. A conveyor apparatus for transporting articles, said conveyor apparatus comprising:
a plurality of conveyor stations disposed serially, one after the other for transporting articles from an upstream one of said plurality of conveyor stations to a downstream one of said plurality of conveyor stations;
each of said downstream conveyor stations having an upstream conveyor station immediately adjacent thereto;
each of said plurality of conveyor stations having an associated conveyor, an associated motor for advancing said conveyor, and associated control means for operating its associated motor;
each of said associated control means of said plurality of conveyor stations including sensing means for sensing a predetermined condition of an article relative to its associated conveyor;
said associated control means of each said upstream conveyor station having means for operating the associated motor of said upstream conveyor station in response to said sensing means of said upstream conveyor station sensing said predetermined condition of an article relative to said associated conveyor of said upstream conveyor station;
said associated control means of each said downstream conveyor station having means for operating the associated motor of said downstream conveyor station in response to said sensing means of said downstream conveyor station sensing said predetermined condition of an article relative to said associated conveyor of said downstream conveyor station; and
means for interconnecting said associated control means of each said downstream conveyor station to the associated control means of its immediately adjacent upstream conveyor station; and
said control means of each said upstream conveyor station having additional means, through said means for interconnecting, for operating said motor of said upstream conveyor station in response to said sensing means of said downstream conveyor station sensing said predetermined condition of an article relative to the associated conveyor of said downstream conveyor station;
each of said control means of each of said downstream conveyor stations comprising limited control means for controlling solely both of the following:
its own associated conveyor; and
the associated conveyor of the upstream conveyor station immediately adjacent thereto;
each of said control means of each of said downstream conveyor station further having logic means for operating both said associated motor of said downstream conveyor station and the associated motor of said upstream conveyor station immediately adjacent to the downstream conveyor in response to the sensing of both the predetermined condition of an article on said associated conveyor of said downstream conveyor station and the predetermined condition of an article on said associated conveyor of said upstream conveyor station immediately adjacent its associated downstream conveyor;
each of said sensing means for sensing said predetermined condition of an article including means for indicating if an article is on the associated conveyor;
each of said sensing means for sensing said predetermined condition of an article including means for indicating that an article has been discharged from the associated conveyor and that the associated conveyor is free of an article;
said logic means being for providing a first signal from said sensing means of said upstream conveyor station indicating said predetermined condition thereof and being for providing a second signal from said sensing means of said downstream conveyor station indicating said predetermined condition thereof; and
the control means of each of said downstream conveyor stations including means for running the associated conveyor of the upstream conveyor of two immediately adjacent conveyors stations if the immediately downstream conveyor of the two immediately adjacent conveyor stations is free of an article, and
said each of said control means are identical and includes a switchgear unit, said means for interconnecting includes at least a power cable means and at least one control cable means, said switchgear unit includes motor cable means for connecting to said motor, and said switchgear unit includes at least one sensor cable means for connecting to said sensing means; and
each of said switchgear units are preassembled, said preassembled units including said power cable means, said control cable means, said motor cable means and said sensor cable means connected thereto.

5,058,728
CLEANING APPARATUS FOR WRAPPING MACHINE CONVEYOR
Michael E. Leiweke, Arnold, and Jon H. Holler, St. Louis, both of Mo., assignors to Continental Baking Company, St. Louis, Mo.
Filed Jul. 28, 1989, Ser. No. 387,214
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—495 13 Claims



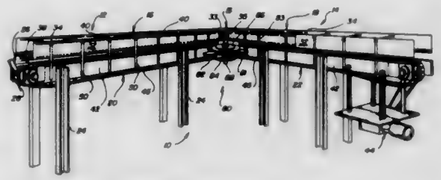
1. A conveyor chain cleaning apparatus adapted for use on a food wrapping machine, said apparatus comprising:
a frame;
a pan supported on said frame, said pan adapted to contain a cleaning fluid;
brush means on said frame for brushing a conveyor chain, said brush means including a fender subassembly including a frame and a pair of flexible flaps on said frame, said flaps resting on said brush and defining an aperture through which a portion of said brush extends;
fluid removal means on said frame for removing cleaning fluid from said chain after the chain is engaged by said brush means, said fluid removal means including squeegee means on said frame for wiping cleaning fluid from the conveyor chain; and
drive means operatively connected to said brush and the chain for rotating said brush as the chain passes over said brush.

5,058,729
CONTINUOUS CONVEYOR APPARATUS
Katsuaki Shibata, 845-38, Ogoori-shi, Tsuko, Fukuoka, Japan
Continuation-in-part of Ser. No. 93,881, Sep. 8, 1987, Pat. No. 4,883,167. This application Oct. 25, 1989, Ser. No. 426,883
Claims priority, application Japan, Sep. 19, 1986, 61-221643; Jun. 17, 1987, 62-149058
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] B65G *17/36*
U.S. Cl. 198—712 12 Claims



1. A continuous conveyor apparatus having at least one zone or horizontal movement and at least one zone of vertical movement, comprising, in combination, a pair of inner link chains and a pair of outer link chains, a plurality of carrying vessels each having a front end and a rear end, front connecting means mounting the front ends of said carrying vessels between said inner link chains, rear connecting means mounting the rear ends of said carrying vessels between said outer link chains, said chains being mounted upon a plurality of tandem wheel means and coaxial wheel means in such a manner that at least one tandem wheel means is mounted at the junction between a horizontal zone and a vertical zone; each said tandem wheel comprising a pair of inner wheels each wheel mounted in cantilever on an inner shaft, said inner shafts being coaxially aligned, a pair of out wheels each wheel mounted in cantilever on an outer shaft, said outer shafts being coaxially aligned with each other and horizontally aligned with and spaced from said inner shafts, each said coaxial wheel means comprising a pair of inner wheels and a pair of outer wheels all mounted on a common shaft, said link chains being of simple construction, through which lubricant generally sufficiently penetrates to provide better abrasion resistance than roller chains, and adapted to high speed, compactness, and twisting in three dimensions, each of said link chains comprising an endless sequence of alternating vertical links and horizontal links, said front connecting means and said rear connecting means each being connected with the outer side of the straight portion of a vertical link, such wheels of said coaxial and tandem wheels that are engaged with the link chain from above having teeth having a space and height therebetween to receive the connecting means, wherein said coaxial and tandem wheel means have a grooved wheel in place having a circumferential groove for receiving a vertical link of said link chain therein.

5,058,730
AUTOMATIC DUMP ACTUATOR CONVEYOR SYSTEM
Keith G. Opperthauser, Linden, Mich., assignor to Automated Systems, Inc., Pontiac, Mich.
Division of Ser. No. 230,497, Aug. 10, 1988, Pat. No. 4,960,201. This application Aug. 3, 1990, Ser. No. 562,583
Int. Cl.[5] B65G *19/26*
U.S. Cl. 198—732 10 Claims



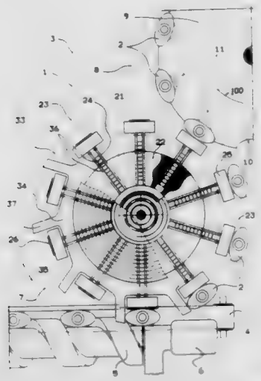
1. A conveyor system comprising:
means for supporting workpieces along the conveyor system, said workpiece supporting means having two rigid sections joined together;
means for driving workpieces along said workpiece transporting means, said driving means including an endless belt in a spaced relationship with said workpiece transporting means; and
means coupled with said workpiece transporting means and said drive means for enabling angular movement of one of said rigid sections with respect to the other of said rigid sections, said movement means comprises members projecting from each of said rigid sections, said member meshing with one another, means for enabling movement of said endless belt for driving workpieces as said rigid sections of said conveyor are moved with respect to one another, and flexible means coupled with said rigid sections of said workpiece supporting means to enable said rigid sections to be moved with respect to one another, said flexible means including means for supporting the workpieces.

5,058,731

APPARATUS FOR CONVEYING PRODUCTS

Carlo Corniani, Marmirolo, and Claudio Sogliani, Cerese Di Virgilio, both of Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed May 23, 1990, Ser. No. 527,400
Claims priority, application Italy, Jun. 7, 1989, 3504 A/89
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—803.01 **7 Claims**



1. Apparatus for conveying products comprising conveyor means constituted by a rotary conveyor having a plurality of mutually angularly equidistant holder means, each adapted to accommodate a related product, wherein each of said holder means is mounted so as to be slidable along a substantially radial direction on said rotary conveyor, adjustment means being provided for modifying the position of said holder means in a substantially radial direction with respect to said rotary conveyor, said holder means comprising sucker means which are supported by related slider elements which are radially slidable with respect to said radial conveyor, said slider elements having engagement means for said adjustment means, said adjustment means comprising actuation means which are coupled to said engagement means and are adapted to cause radial movements of said slider elements with respect to said rotary conveyor, and wherein said adjustment means comprise a disk-like element which is coaxial to said rotary conveyor and comprises a planar spiral thread which is a part of said actuation means and grips said engagement means, said engagement means comprising grooves which are provided on a surface of said slider elements and grip said planar spiral thread.

5,058,732

APPARATUS TO ALLOW NON-DESTRUCTIVE REMOVAL OF PIVOT RODS IN MODULAR PLASTIC CONVEYOR BELTS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 302,542, Jan. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 270,101, Nov. 14, 1988, Pat. No. 4,934,517. This application Sep. 20, 1990, Ser. No. 586,389
The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.
Int. Cl.[5] B65G *17/06*
U.S. Cl. 198—852 **15 Claims**

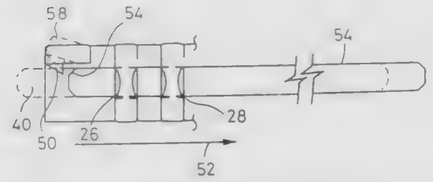
1. An integrally molded conveyor belt edge module suitable for being pivotally connected end-to-end with similar modules by pivot rods to construct a side portion of a conveyor belt which can move along a predetermined path, said edge module comprising

first and second pluralities of link ends, each of said first and second pluralities defining at least two spaces for receiving link ends of pivotally connected modules;

said link ends of said first plurality defining pivotal apertures arranged along a first pivot axis and said link ends of said second plurality defining pivotal apertures aligned along a second pivot axis; each plurality of link ends including structure for being intermeshed such that said first and second pivot axes are aligned to be pivotally connected by pivot rods, with link ends of a similar module to form at least one of the side portions of a conveyor belt;

an integrally molded connecting structure for joining said first and second pluralities of link ends, and for maintaining the relative positions of said link ends with each other;

stop means integrally molded with said edge module end spaced along said first pivot axis away from the aperture



of an outermost link end of said first plurality on at least one side of said module, said stop means being positioned so as to at least partially obstruct the insertion of a pivot rod into the aperture defined in said outermost link with such structure requiring that one of said stop means and pivot rod must be deformed in shape by force to allow said pivot rod to be inserted past said stop to extend through said first plurality of link ends of one module of said multiplicity intermeshed with said second plurality of link ends of another module of said multiplicity into alignment with said pivot axis to pivotally connect said intermeshed modules; and

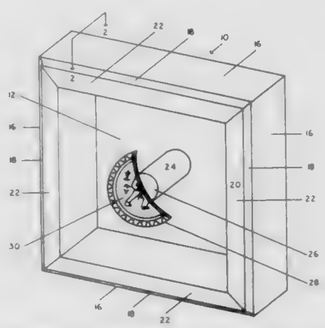
structure including said stop means to restrict the movement of a pivot rod in alignment with said first pivot axis and connecting said intermeshed link ends after insertion from moving out of pivotal connection.

5,058,733

DISPLAY CASE FOR A MARSHALL ART BELT

Kelley M. Lowe, 10356 Vera Cruz Ct., San Diego, Calif. 92124

Filed Apr. 26, 1990, Ser. No. 514,548
Int. Cl.[5] B65D *25/00, 85/18*
U.S. Cl. 206—45.34 **4 Claims**



1. A marshall art display case for removably containing a buckle less belt denoting a level of expertise in a particular marshall art sport comprising:

a substantially square housing having a front and back surface, said back surface being enclosed and said front surface being open;

a cylindrical post within said house fixedly attached to and extending from the closed back surface toward the open front surface; and

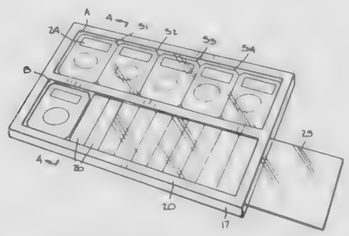
a medallion with a greater diameter than said cylindrical post having a front and back surface, said front surface denoting said particular marshal sport centrally positioned on and fixedly attached to the distal end of the cylindrical post whereby said buckle less belt can be wound around the cylindrical post and then upon itself between said closed back surface and said back surface of said medallion and is removably retained within said housing.

5,058,734

STORAGE AND DISPLAY DEVICE FOR COIN CASSETTES

Wayne Scheible, 3800 Dewey Ave., Rochester, N.Y. 14616

Filed Jan. 22, 1991, Ser. No. 644,208
Int. Cl.[5] B65D *25/64;* A45C *1/00*
U.S. Cl. 206—0.83 **14 Claims**



1. A storage and display device for a group of generally rectangular transparent cassettes that may vary somewhat in their sizes, each cassette housing a coin or medal whose head and tail are visible through opposite sides of the cassette, said device comprising:

(a) a board having elongated parallel wells formed therein dimensioned to accommodate the group of cassettes in side-by-side relation therein, said board having a transparent backing to define the base of the wells, the tails of the coins in the cassettes being visible through the backing; and

(b) transparent windows overlying the respective wells and slidable on the board from an open position in which cassettes may be loaded in the wells or withdrawn therefrom to a close position in which the cassettes loaded in the wells are entrapped therein to a closed position in which the heads of the coins are visible through the windows.

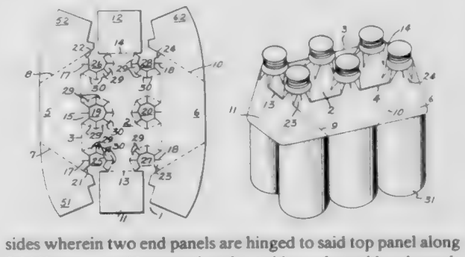
5,058,735

CARRY PACK FOR BOTTLES

Patrick Bienaimé, Troissereux, France, assignor to Unilever Patent Holdings B.V., Netherlands

Continuation of Ser. No. 366,189, Jun. 15, 1989, abandoned. This application Jan. 22, 1991, Ser. No. 643,700
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1988, 3820370
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—145 **2 Claims**

1. Cowl-shaped carry pack for at least two bottles comprising a single-piece board blank including a top panel provided with holes for the tops of bottles to be engaged with projections on the bottles bracing themselves against the holes, said top panel having two opposite long sides, wherein a pair of side panels is provided each of which is divided into three sections by folding lines which extend obliquely from one of the holes and towards each other, each said side panel being hinged to one of said opposite long sides of said top panel, said top panel having two opposite short sides extending between said long sides wherein two end panels are hinged to said top panel along fold lines on a said respective short side so that said end panels can be connected to portions of said side panels when the pack is erected.

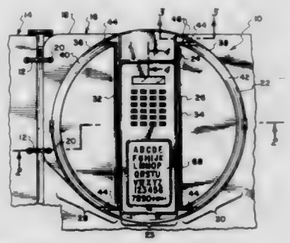


5,058,736

NOTEBOOK ORGANIZER INCLUDING SLIDABLE ELEMENT

Mark A. Bedol, 6980 Fabriano Pl., Rancho Cucamonga, Calif. 91701

Filed Jul. 13, 1990, Ser. No. 553,247
Int. Cl.[5] A45C *11/34;* G06F *1/00*
U.S. Cl. 206—214 **16 Claims**

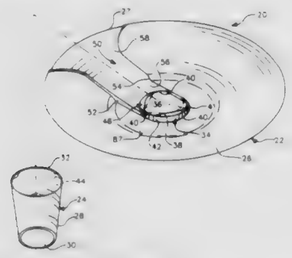


1. A notebook organizer, comprising:

(a) a base having a substantially flat bottom surface, said base having a border with a plurality of holes therethrough, said holes being adapted for engagement with the rings of a ringed notebook, said base including a plurality of partitions dividing said base into a plurality of compartments, said partitions having longitudinal slots formed on opposing partition surfaces thereon;

(b) at least one functional element having a longitudinal extension thereon being slideably engageable with, and supported between, said opposing partition surfaces; and,
(c) a lid being associated with at least one of said compartments, including means for connecting said lid to said base, and locking means for releasably securing said lid in a closed position, said lid having a substantially flat upper surface, the organizer being sufficiently thin for convenient use in a ringed notebook.

5,058,737
PLATE AND GLASS ASSEMBLY
Ronald Patterson, 11 Bd. Albert IER, Monte Carlo, Monaco; John W. Patterson, 20819–229th Ave. SE., Maple Valley, Wash. 98038
Filed Sep. 26, 1990, Ser. No. 588,444
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—217 **12 Claims**



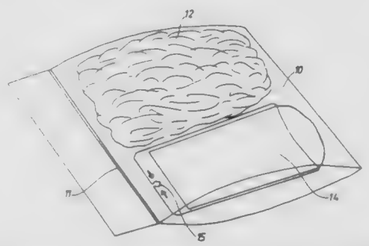
1. A plate assembly comprising:
a plate having a generally horizontal upper surface for food and a lower side, said assembly having a longitudinal axis normal to said upper surface;
at least one glass for holding a liquid, said glass having an open upper end which forms a mouth, and said glass and plate having complementary components; and
means allowing relative displacement of the plate and the glass in a plane normal to the longitudinal axis of the assembly and means responsive to said relative displacement for interengaging complementary components of said glass and said plate and thereby so detachably connecting said upper end of said glass to the lower side of said plate that said mouth of said glass is covered by said plate and said glass is positioned in an upright orientation when said plate is horizontally positioned.

2. A plate assembly comprising:
a plate having a generally horizontal upper surface for food and a lower side;
at least one glass for holding a liquid, said glass having an open upper end which forms a mouth; and
means for so detachably connecting said upper end of said glass to the lower side of said plate that said mouth of said glass is positioned in an upright orientation when said plate is horizontally positioned,
the means for detachably connecting said glass to said plate comprising:
first lug means on the lower side of said plate; and
second, complementary lug means on said upper end of said glass, said second lug means being releasably engageable with said first lug means in response to manual rotation of said glass relative to said plate.

11. A plate assembly comprising:
a plate having a generally horizontal upper surface for food and a lower side;
at least one glass for holding a liquid, said glass having an open upper end which forms a mouth; and
means for so detachably connecting said upper end of said glass to the lower side of said plate that said mouth of said glass is covered by said plate and said glass is positioned in an upright orientation when said plate is horizontally positioned;
the means for detachably connecting said glass to said plate comprising:
means extending downwardly from said lower side of said plate and defining a U-shaped channel having an open end at the periphery of said plate and a closed end proximate a central portion of said plate, said U-shaped channel being configured to slidably receive said upper end of said glass from said open end of said channel to said closed end of said channel and said channel defining means having a longitudinally extending groove formed therein; and
a radial flange extending outwardly from said upper and of said glass, said flange being configured to fit in said groove to detachably connect said glass to said plate as a result of positioning said flange in said groove at said open end of said channel and then sliding said flange in said groove to said closed end of said channel.

12. A plate assembly comprising:
a plate having a generally horizontal upper surface for food and a lower side;
a plurality of glasses for holding a liquid, each of said glasses having an open upper end which forms a mouth;
means for so detachably connecting the upper end of each said glass to the lower side of said plate that the mouth of the glass is covered by said plate and the glass is positioned in an upright orientation when said plate is horizontally positioned; and
a pedestal for so supporting said plate above a surface that said glasses are suspended above said surface.

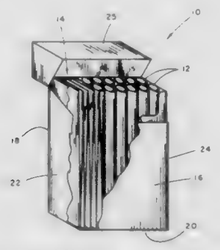
5,058,738
PACKAGE FOR A CLEANING ARTICLE SUCH AS A MOP
Leif R. Svensson, Viskafors, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Jan. 30, 1990, Ser. No. 472,610
Claims priority, application Sweden, Feb. 7, 1989, 8900406
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—229 **10 Claims**



1. A package for a cleaning article, wherein said package comprises a hermetically-sealed cover (**10**), which cover surrounds said cleaning article (**12**) and a liquid consisting of a cleaning agent, which liquid is enclosed in a hermetically-sealed receptacle (**14**) so that said liquid is separated from said cleaning article, said receptacle (**14**) being provided with means by which said receptacle can be opened without rupturing said cover so that said liquid flows out into said cover (**10**) and impregnates said cleaning article (**12**), wherein said means consists of a tear-off edge (**15**).

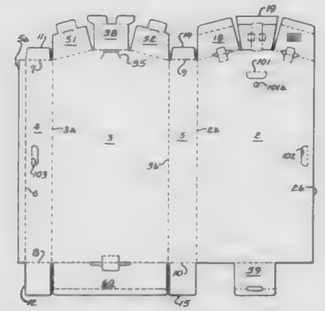
5,058,739
CIGARETTE SPACER
Arthur W. Sainsbury, 103 Pine St., S. Easton, Mass. 02375
Filed Jan. 28, 1991, Ser. No. 646,428
Int. Cl.[5] A24F *15/00*; **B65D** *85/10*
U.S. Cl. 206—252 **5 Claims**

1. The combination of a cigarette package, cigarettes and a cigarette spacer, the cigarette package comprising a first short side and a second short side, the first and second short sides in spaced parallel relation with each other, the cigarettes positioned between the first and second short sides, the cigarette



spacer formed of a parchment material and positioned between the first short side and the cigarettes whereby removal of some cigarettes will cause the cigarette spacer to expand.

5,058,740
GARMENT BOX
David D. Coursen, Garland, Tex., assignor to Gaylord Container Corporation, Deerfield, Ill.
Continuation-in-part of Ser. No. 248,681, Sep. 23, 1988. This application Jan. 23, 1990, Ser. No. 468,571
The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.
Int. Cl.[5] B65D *5/08, 85/18*
U.S. Cl. 206—288 **12 Claims**



1. A garment box formed from a unitary blank of corrugated paper board including a hanger apparatus for holding hangers comprising:
a. a hexagonal front wall and a hexagonal back wall disposed parallel to each other;
b. a first side wall extending parallel to a second side wall, said first and second side walls disposed perpendicularly between said front wall and said back wall;
c. a foldable first slap extending from the top of said front wall, said first flap rotable inwardly toward said back wall along a first fold line located at the tope of said front wall to form said hanger apparatus, said first flap comprising:
i) an engaging portion for securing said first flap to said back wall;
ii) a hanger bar portion, having a first score line and a second score line both extending perpendicularly from said first fold line to said engaging portion and dividing said hanger bar portion into three segments; and
iii) a third score line parallel to said first fold line between said engaging portion and said hanger bar portion;
d. means on the back wall for receiving and supporting said engaging portion of said first flap;
e. a foldable second flap extending from the top of said back wall, said second flap being rotable inwardly toward said front wall along a second fold line location at the top of said back wall; and
f. means for securing said second flap, whereby said first slap forming said hanger apparatus is folded inwardly along said first fold line and downwardly along said first, second and third score lines to form said hanger bar for supporting hangers, said engaging portion is secured in the means for receiving and supporting on said back wall, and said second flap is folded inwardly along said second fold line and over said first flap and secured to said front wall so that any hangers placed on said hanger bar portion are secured between said flaps.

5,058,741
CARTON CONSTRUCTION FOR FLEXIBLE DUCT
Charles B. Anderson, Jacksonville, Tex., assignor to Atco Rubber Products, Inc., Fort Wayne, Tex.
Filed Sep. 10, 1990, Ser. No. 580,175
Int. Cl.[5] B65D *85/14*
U.S. Cl. 206—321 **8 Claims**



1. A combination carton and compressed flexible duct comprising:
four side walls including a first pair of opposite parallel side walls and a second pair of opposite parallel side walls normal to and joined to said first pair, said walls together defining top and bottom openings;
a bottom end to cover said bottom opening and a top end to cover said top opening;
said top end having a first pair of opposite flaps joined to said first pair of side walls about creased junctures and foldable about said creased junctures toward each other, and a second pair of opposite flaps joined to said second pair of said walls about creased junctures;
said flaps each having a distal edge opposite said creased juncture;
said first pair of flaps each having a length from its said creased juncture to its said opposite distal edge greater than one-half the length of said top opening, and being foldable sequentially through said top open to enable said distal edges to be in inwardly projecting abutment with said other;
said second flaps having angular crease means for forming stops on said second flaps for said inwardly projecting first flaps to thereby retain said first flaps in abutment therewith for restraining said first pair of flaps from opening; and
a compressed flexible duct in said carton, applying a bias on said flaps toward said top end.

3. A carton comprising:
four side walls including a first pair of opposite parallel side walls and a second pair of opposite parallel side walls normal to and joined to said first pair, said walls together defining top and bottom openings;
a bottom end to cover said bottom opening and a top end to cover said top opening;
said top end having a first pair of opposite flaps joined to said first pair of side walls about creased junctures and folded

about said creased junctures toward each other, and a second pair of opposite flaps joined to said second pair of side walls about creased junctures;

said flaps each having a distal edge opposite said creased juncture;

said first pair of flaps each having a length from its said creased juncture to its said opposite distal edge greater than one-half the length of said top opening, and being folded through said top opening to cause said distal edges to be in inwardly projecting abutment with each other;

said second flaps having angular crease means for forming stops on said second flaps for said inwardly projecting first flaps to thereby retain said first flaps in abutment therewith for restraining said first pair of flaps from opening;

said angular crease means comprising a pair of angular creases on each flap of said second pair, portions of said second pair of flaps being folded about said creases, forming a pair of stops on each flap;

each flap of said second pair having opposite end edges parallel to said first side walls, and a distal edge parallel to said second side walls;

said angular crease means comprising two creases extending from said opposite end edges to said distal edge to define a pair of triangles folded along said angular creases and abutted by said first pair of inwardly projecting flaps.

4. A combination carton and compressed flexible duct comprising:

four side walls including a first pair of opposite parallel side walls and a second pair of opposite parallel side walls normal to and joined to said first pair, said walls together defining top and bottom openings;

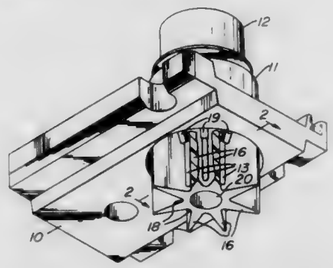
a bottom end to cover said bottom opening and a top end to cover said top opening;

said top end having a first pair of opposite flaps foldable about creased junctures with said first pair of side walls;

said first pair of flaps each having a length from said creased juncture to the opposite distal edge of the flap greater than one-half the length of said top opening, and being foldable sequentially through said top opening into inwardly projecting abutment with each other, inhibiting outward movement of said first flaps for keeping said top end closed; and

a compressed flexible duct in said carton applying a bias on said flaps toward said top end.

5,058,742
ELECTRONIC CIRCUIT CARRIER
Milton I. Ross, 400 College Ave., Haverford, Pa. 19041
Filed Apr. 25, 1988, Ser. No. 185,988
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—331 **7 Claims**



1. An electronic circuit package carrier for carrying a circuit package of the type having circuit leads extending therefrom in a substantially parallel array, comprising in combination,

a) a carrier body having a plurality of apertures therethrough through which the leads of a circuit package to be carried are freely projectable, the number of said apertures being at least equal to the number of circuit package leads to be projected therethrough, and each such aperture being located in the carrier body so that it is positioned to receive a circuit package lead without deflecting the lead from its intended position, said carrier body comprising a cylindrical formation in which said plurality of apertures therethrough are angularly spaced at distances radially outward from the cylindrical axis in a projection on a plane orthogonal to the cylindrical axis,

b) said carrier body further including a circuit package leads backing formation against which at least one lead is positionable in its intended undeflected position, said leads backing formation being located radially inward of said apertures,

c) at least one deflectable finger carried by said carrier body and so positioned that when the leads of a circuit package are projected through said apertures at least one lead is engageable by said deflectabe finger to press the said lead against the said leads backing formation, said at least one deflectable finger being a cantilever formation having a fixed end and a free end, said fixed end being located radially outwardly on said carrier body with respect to said leads backing formation, and said finger projecting radially inward toward said leads backing formation so that the space between the free end of said finger and said leads backing formation is less than the cross section of the circuit package lead which is intended to pass therethrough,

whereby said finger is deflectable by passage of a circuit package lead so that the lead is pressed between said finger and said leads backing formation and the circuit package is removably retainable to said carrier.

6. An electronics circuit package carrier for carrying a circuit package of the TO type having circuit leads extending therefrom in a substantially cylindrical parallel array, comprising in combination,

a) a generally rectangular main body and a cylindrical tower formation extending orthogonally above and below the plane of the main body, said cylindrical tower formation having a plurality of apertures therethrough each of such size that the leads of a circuit package to be carried are freely projectable therethrough, said apertures being equiangularly spaced about the cylindrical axis at the same radius and the number of said apertures being at least equal to the number of circuit package leads to be projected therethrough, said apertures being located in the cylindrical tower so that they are positioned to receive circuit package leads without deflecting the leads from their intended positions,

b) said cylindrical tower further including a circuit package leads backing formation disposed radially inward of and adjacent to each of said apertures and against which the circuit package leads are positionable in their intended undeflected positions, and

c) a plurality of resiliently deflectable fingers formed integrally with said cylindrical formation and so positioned relative to said apertures that when the leads of a circuit package are projected through said apertures each lead is engageable by a separate one of said plurality of fingers which press the said lead against the said leads backing formation,

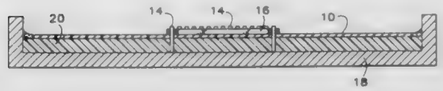
whereby the circuit package is removably retainable to said carrier.

5,058,743
ANTISTATIC, LOW PARTICULATE SHIPPING CONTAINER FOR ELECTRONIC COMPONENTS
Harry H. Marsh, Beaverton, and Terry L. Whalen, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Sep. 24, 1990, Ser. No. 586,665
Int. Cl.[5] B65D *81/24*
U.S. Cl. 206—331 **3 Claims**

1. A shipping container for an open package electronic component having an exposed surface and contact pins comprising:

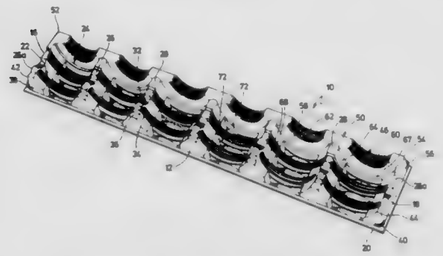
a conductive box; and

a conductivity plated circuit board having press fitted conductive socket pins mounted thereon, the circuit board



being securely mounted within the conductive box so that the conductive socket pins contact the conductive box to provide antistatic protection to the electronic component when mounted on the circuit board with the contact pins inserted into the conductive socket pins.

5,058,744
MINIMUM LENGTH FLUOROESCENT TUBE DUNNAGE ELEMENT
David E. Creaden, Lawrence, Kans., assignor to The Lawrence Paper Company, Lawrence, Kans.
Filed Aug. 17, 1990, Ser. No. 568,754
Int. Cl.[5] B65D *85/42*
U.S. Cl. 206—419 **7 Claims**

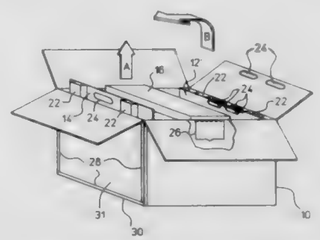


1. In a fluorescent tube support of the type adapted for insertion between respective rows of fluorescent tubes to simultaneously engage a pair of such rows, said support being formed of synthetic resin material and presenting an integral body having concave-convex walls defining a number of elongated, open-top, parallel, juxtaposed concave tube-receiving regions each having a first fluorescent tube end cap-engaging area adjacent the forward end thereof and a second tube body-engaging area rearward of said first area, said region-defining walls including a plurality of axially spaced apart, downwardly opening and diverging arcuate wall sections, the improvement which comprises first wall sections adjacent said first areas of said tube-receiving regions having widths which are less than the widths of said wall sections adjacent said second areas, said widths being measured in a direction parallel with the longitudinal axis of said tube-receiving regions.

3. In a fluorescent tube support of the type adapted for insertion between respective rows of fluorescent tubes to simultaneously engage a pair of such rows, said support being formed of synthetic resin material and presenting an integral body having concavo-convex walls defining a number of elongated, open-top, parallel, juxtaposed concave tube-receiving regions each having a first fluorescent tube end cap-engaging area adjacent the forward end thereof and a second tube body-engaging area rearward of said first area, said region-defining walls including a plurality of axially spaced apart, downwardly opening and diverging arcuate wall sections, the improvement which comprises first wall sections adjacent said first areas of said tube-receiving regions which present radii different than the radii of the wall sections adjacent said second areas.

6. In a fluorescent tube support of the type adapted for insertion between respective rows of fluorescent tubes to simultaneously engage a pair of such rows, said support being formed of synthetic resin material and presenting an integral body having concavo-convex walls defining a number of elongated, open-top, parallel, juxtaposed concave tube-receiving regions each having a first fluorescent tube end cap-engaging area adjacent the forward end thereof and a second tube body-engaging area rearward of said first area, said region-defining walls including a plurality of axially spaced apart, downwardly opening and diverging arcuate wall sections, the improvement which comprises first wall sections adjacent said first areas of said tube-receiving regions which are located vertically below the wall sections adjacent the wall sections adjacent said second area.

5,058,745
PRODUCT ADAPTABLE, PROCESS COMPATIBLE, ERGONOMIC MEANS AND METHOD FOR SAFE HANDLING, TRANSPORTING AND UNPACKING OF ARTICLES OF MANUFACTURE
Gary J. Warner, Weimar, and Douglas S. Smith, Sacramento, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 1, 1990, Ser. No. 517,279
Int. Cl.[5] B65D *81/02, 85/30*
U.S. Cl. 206—523 **30 Claims**



1. A package assembly for protecting a product during shipping which enables ready, convenient, ergonomically safe, and product protective entry thereinto and removal therefrom, said package assembly comprising:

an outer carton having a first plurality of sides connected sequentially to each other along their vertical edges, a polygonally shaped bottom portion connected to a first set of horizontal contiguous edges of each of said plurality of sides, and a second plurality of flaps selectively in communication with a second set of horizontal contiguous edges of each of said first plurality of sides which when folded toward each other form a polygonally shaped top of said outer carton; and

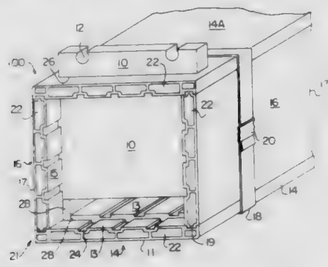
inner package means having:

inner carton means locatable within said outer carton in contact with the inner surface of at least two of said first plurality of sides and the bottom of said outer carton for cradling said product for shipment; and

blocking means locatable between the sides of said first plurality of sides of said outer carton that are not in contact with said inner carton and at least the bottom of said product within said inner carton means for passively holding said product during shipment and when said blocking means is removed from said outer carton for permitting the active relocation of said product in said outer carton to a position wherein the bottom of said product comes into contact with the inner surface of one of the sides adjacent to the former position of said blocking means as said outer carton is rotated about the bottom edge of that side to bring that side to rest on the surface supporting said outer carton.

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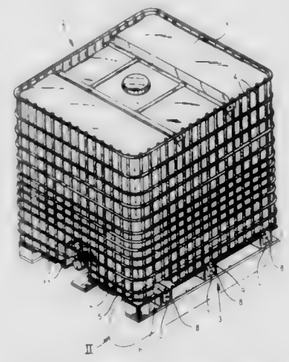
5,058,746
PALLET CONTAINER STRUCTURE II
Robert L. Morgan, IV, 12450 E. 'O' Ave., Climax, Mich. 49034
Filed Oct. 4, 1989, Ser. No. 417,000
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] B65D *19/18*
U.S. Cl. 206—597 63 Claims



1. A knockdown pallet container formed of
extruded pallet members, comprising a bottom-forming pallet member,
a top pallet member,
and side pallet members,
a combination of the bottom, side and top pallet members providing a pallet container of rectangular configuration, at least the top and bottom-forming pallet members being honeycombed so as to provide entryways in the extruded member for insertion of the prongs of a lift truck thereinto, the rectangular pallet container being adapted to be banded together if necessary or desirable by external strapping which holds complementary dovetail means at sides of the various pallet members in mating engagement with each other where they meet to form corners of said container, comprising also entryways for the entry of forklift prongs in at least one of the side pallet members, thereby to permit entry of prongs of a forklift whether the pallet container is resting upon one member or another.

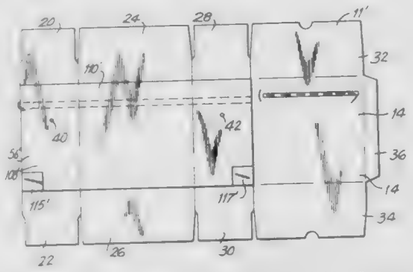
5,058,747
TRANSPORT/STORAGE CONTAINER WITH WOODEN PALLET FEET
Claude Decroix, Saverne, and Andre Hamm, Drulingen, both of France, assignors to Sotralentz S.A., Drulingen, France
Filed Jan. 16, 1991, Ser. No. 641,749
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1990, 9000453[U]
Int. Cl.[5] B65D *19/00, 90/20*
U.S. Cl. 206—599 8 Claims

1. A transport and storage container for flowable materials comprising:
an annular and erect outer wall in the form of a gridwork of bars having a lower edge and provided at the edge with an annular stiffening bar;
a pallet-like floor downwardly closing the wall, forming therewith an outer vessel, and provided with a plurality of wooden foot beams each having a ground-engaging lower surface, an upper surface, and a pair of ends;
respective steel plates on the upper surfaces of the foot beams and each having bent-down ends overlying the respective beam ends;
fasteners engaged through the steel-plate ends into the respective beam ends;
integral connections between each of the plates and the annular stiffening bar at the lower edge of the wall; and



an inner vessel composed of flexible plastic material enclosed by the outer wall and supported on the floor.

5,058,748
DETERGENT CARTON
Edward J. Giblin, Finksburg, Md., and Jeannine D. Griffiths, Tannersville, Pa., assignors to Lever Brothers Company, Division of Conopco Inc., New York, N.Y.
Filed Dec. 29, 1989, Ser. No. 458,859
Int. Cl.[5] B65D *5/42*
U.S. Cl. 206—624 33 Claims

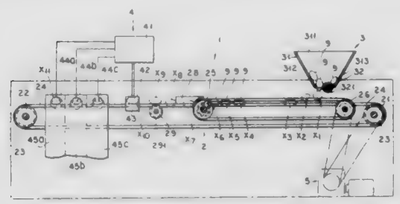


1. A carton comprising a) a first side panel, b) a front panel adjacent thereto, c) a second side panel adjacent to said front panel on the side opposite said first side panel, d) a rear panel between said first and second side panels, e) bottom closure flaps, f) top closure flaps, g) a handle having two ends attached at one of said ends to said first side panel and attached at the other of said ends to the second side panel and spacing means to increase the thickness of the carton in areas remote from the plane extending through said handle perpendicular to said front panel when the carton is in a flattened tubular form to prevent an imbalance in the tubular cartons when they are stacked.

5,058,749
APPARATUS FOR SORTING ARTICLES ACCORDING TO SIZE
Jiunn-Neng Jong, Pingtung Hsien, Taiwan, assignor to Jung-Mei Jong Chiu, Pingtung Hsien, Taiwan
Filed Jun. 19, 1990, Ser. No. 540,475
Int. Cl.[5] B07C *1/04, 5/04*
U.S. Cl. 209—539 7 Claims

1. An apparatus for sorting articles according to size, comprising:

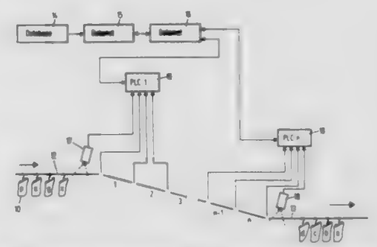
a moving belt assembly, said moving belt assembly comprising a first main roller having a pair of spaced first annular grooves; a first secondary roller having a pair of spaced annular grooves; a pair of first endless belts rotatably interconnecting said first main roller and said first secondary roller, said first endless belts being received in said first and second annular grooves; and a driving means for rotating said first main roller;
means for feeding a plurality of articles to said moving belt assembly, said feeding means being provided above said moving belt assembly;
means for aligning said fed articles on said moving belt assembly;
means for detecting the size of each said aligned article and transmitting electrical signals corresponding to said detected size;
means for spacing articles upstream of said detecting means, said spacing means comprising a second secondary roller



provided upstream of said detecting means and having a first and second annular flange which confine a first annular depression therebetween for receiving said first endless belts, said second secondary roller further having an annular projection protruding from said first annular depression and separating said first endless belts in said first annular depression, said annular projection moving at a velocity slower than that of said first endless belts so that said annular projection instantaneously slows down said articles transported by said first endless belts;
a control means for receiving said electrical signals and classifying said detected articles according to said electrical signals;
a plurality of collector members; and
means actuated by said control means for discharging said articles into one of said collector members in accordance with how said articles were classified by said control means.

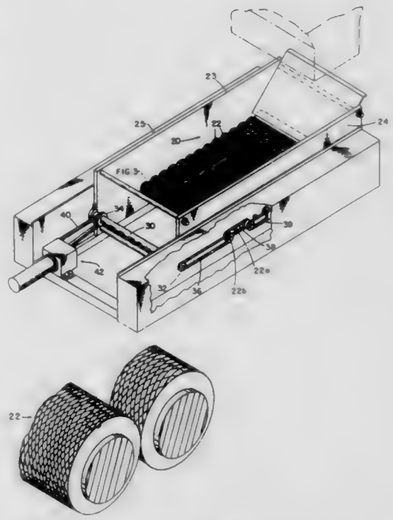
5,058,750
PLANT FOR THE SORTING OF SUSPENDED ARTICLES AND THE USE HEREOF
Steen S. Graese, Søborg, Denmark, assignor to Dansk Vaskeri Teknik A/S, Herley, Denmark
Filed Jan. 3, 1990, Ser. No. 460,369
Claims priority, application Denmark, Jan. 4, 1989, 25/89
Int. Cl.[5] B07C *3/10;* B05G *47/49*
U.S. Cl. 209—583 9 Claims

1. Plant for sorting of articles suspended from a hanger at least one of the articles or the hanger is provided with an identification, said suspended articles being introduced into a programmable electronic control system in the plant through a lead in conveyor means, the plant comprising:
a plurality of individual sorting sections connected in series, with each sorting section including at least one conveyor and at least one intermediate store disposed in parallel with the respective sorting sections,
a track switchpoint provided at a forward end of each of said individual sorting sections for enabling a selective switching of the suspended articles to a further sorting section or an intermediate store,
wherein each section is provided with stop elements, scanning elements through which the suspended articles are passed, and separation elements, and



wherein said stop elements and said separation elements are controlled by the programmable electronic control system in response to a scanning of the identification by said scanning elements.

5,058,751
MACHINE FOR SORTING OUT OVER-THICK WOOD CHIPS
Adrian Artiano, Mukilteo, Wash., assignor to Acrowood Corporation, Everett, Wash.
Continuation of Ser. No. 296,756, Jan. 17, 1989, Pat. No. 5,012,933, which is a continuation-in-part of Ser. No. 155,270, Feb. 12, 1988, Pat. No. 4,903,845. This application Jul. 30, 1990, Ser. No. 559,275
The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.
Int. Cl.[5] B07B *13/07*
U.S. Cl. 209—673 8 Claims



1. A machine for separating over-thick chips having a thickness exceeding a preset thickness limit from chip material containing acceptable chips of lesser thickness, said machine comprising:
a plurality of side-by-side, rollers collectively providing a bed with a discharge end, said rollers having an outer circumferential surface area at a maximum outer radius which extends across said bed, and at least alternate ones

of said rollers having a minimum outer radius and pyramidal, chip-agitating protuberances separated by valleys which extend radially from said minimum outer radius to said maximum outer radius and which are defined by continuous grooves extending generally lengthwise of the rollers, said rollers being spaced apart at the outer ends of said protuberances in accordance with said thickness limit;

feed means for feeding chip material to said bed; and

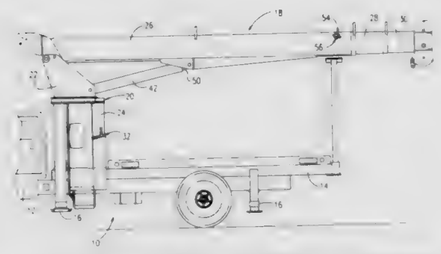
drive means for turning said rollers in the same direction of rotation about parallel rotary axes, whereby acceptable chips in the chip material fed to said bed will normally pass through said bed between said rollers while the chip material is tumbled and conveyed by the rotating rollers along said bed, and the over-thick chips will discharge from said bed at its said discharge end.

5,058,752

BOOM OVERLOAD WARNING AND CONTROL SYSTEM

Raymond J. Wacht, Overland Park, and Arthur D. Stukey, Olathe, both of Kans., assignors to Simon-R.O. Corporation, Olathe, Kans.

Filed Mar. 20, 1990, Ser. No. 501,245
Int. Cl.[5] B66C *13/18*
U.S. Cl. 212—150 **9 Claims**



9. A boom apparatus for use in lifting and transporting a payload, the boom apparatus comprising:

a support structure;

a boom pivotally mounted on the support structure and including a base boom section and an outer boom section, the outer boom section being telescopically received within the base boom section and being movable axially relative to the base boom section;

telescoping means for moving the outer boom section axially relative to the base boom section;

boom extension sensing means for sensing the total length of the boom, the boom extension sensing means including a boom-mounted switch that is actuated when the total boom length is greater than a predetermined length, the boom-mounted switch including a pivotally mounted limit arm supported on one of either the base or outer boom section and a cam strip fixed on the other of either the base or outer boom section, the arm engaging the cam strip when the outer boom section is extended relative to the base boom section by said telescoping means to at least a position in which the total length of the boom is equal to the predetermined length;

hoisting means for pivoting the boom relative to the support structure;

load sensing means including a hydraulic circuit and an electrical circuit with a pair of switches actuated in response to respective high and low pressure conditions in said hydraulic circuit for sensing the total moment load experienced by the boom; and

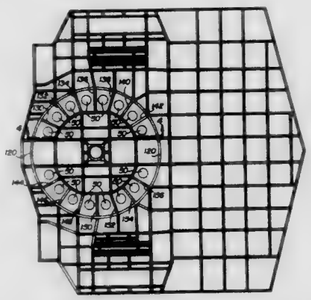
overload warning and control means for generating a warning signal in response to the boom extension sensing means and actuation of one of the switches of the load sensing means either when the load as sensed by the load sensing means is greater than a first predetermined value and the total length of the boom is less than a predetermined length, or when the load as sensed by the other one of said pair of switches of the load sensing means is greater than a second predetermined value and the total length of the boom is greater than the predetermined length, the second predetermined value of the load being less than the first predetermined value.

5,058,753

DRAGLINE ROTATING FRAME STRUCTURE

Dev R. Malik, Marion; James A. Ehret; Richard E. Blair, both of Prospect; Shrishailesh R. Iyengar, and Allan E. Geyer, both of Marion, all of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 469,295, Jan. 24, 1990. This application Aug. 31, 1990, Ser. No. 576,797
Int. Cl.[5] B66C *23/84*
U.S. Cl. 212—247 **3 Claims**



1. In an excavating machine having a roller circle supporting a rotating frame assembly, a ring gear disposed interiorly of and substantially coplanar with the roller circle and disposed below the rotating frame assembly, the rotating frame assembly disposed for rotation on the roller circle and including spaced top and bottom plates and a vertical roller circle support bulkhead positioned between and secured to the plates, the vertical roller circle support bulkhead being located substantially above the roller circle, and the excavating machine having drive units, an improved rotating frame assembly comprising:

a plurality of support bulkheads positioned between and secured to the plates, said plurality of support bulkheads being radially disposed and being located interiorly of the vertical roller circle support bulkhead to form a plurality of compartments receiving the drive units said plurality of compartments being circular disposed with respect to the ring gear and at least one of said compartments having a drive unit located therein and said drive unit being drivingly connected with said ring gear.

5,058,754

CHILD RESISTANT CONTAINER AND SAFETY CLOSURE

Frederick R. Hickerson, R.D. 6, P.O. Box 530, Newton, N.J. 07860

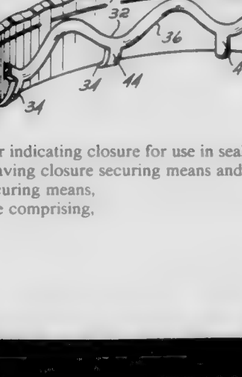
Filed Dec. 6, 1990, Ser. No. 623,018
Int. Cl.[5] B65D *50/00*
U.S. Cl. 215—201 **10 Claims**

1. A child resistant container and safety closure comprising:

(a) a container for storing a hazardous product including a safety closure engagement means for attaching a safety closure to said container, wherein said closure engagement means defines a central axis, and an extending neck portion having an offset axis displaced a given distance from said central axis;

(b) a lock ring plated around said container extended neck portion including an inner peripheral wall portion defining an offset axis displaced said given distance from said central axis, an alignment bar extending downwardly from said lock ring, and a tab portion which extends outwardly from the bottom portion of said alignment bar;

(c) a safety closure having a downwardly depending cylindrical skirt for sealing said container, said closure positioned over said lock ring and said container and including a container engaging means for attaching said closure to said container;



(d) an alignment slot positioned below said extended neck portion of said container for aligning said offset axis of said extending neck portion into a concentric relationship with said offset axis of said locking inner peripheral wall and;

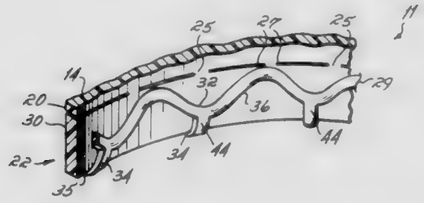
(e) a grip locking means positioned on said lock ring and said closure said grip locking means of said lock ring and said closure cooperating to prevent said closure removal when said lock ring inner peripheral wall is rotated into an out-of-concentric relationship with said extending neck portion of said container rotates out of alignment with said container.

5,058,755

TAMPER INDICATING CLOSURE HAVING RETAINING HOOP WITH RELIEF WINDOWS

Thomas H. Hayes, Lancaster, Ohio, assignor to Anchor Hocking Packaging Company, Lancaster, Ohio

Continuation-in-part of Ser. No. 401,966, Sep. 1, 1989, Pat. No. 4,978,016. This application Aug. 20, 1990, Ser. No. 568,575
The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **26 Claims**



1. A tamper indicating closure for use in sealing a container of the type having closure securing means and a locking bead below the securing means,

said closure comprising,

a top,

a skirt depending from said top,

means on said skirt for engaging the closure securing means of the container,

a tamper indicating band frangibly attached to and depending from said skirt,

a retainer around a lower edge of said band for engaging the container below the locking bead thereof,

a series of spaced integral hinges connecting said retainer to said band along said lower edge of said band,

said retainer having an essentially continuous distal edge,

a plurality of relief windows in said retainer, said windows being between said hangers and commencing adjacent said lower edge, said windows extending toward but not to said distal edge,

said retainer being movable from a first position in which it projects angularly inward in a direction away from said top, to a second position in which it projects angularly inward and toward said top, for engagement with the locking bead of the container,

said windows extending at least one-third the distance between said lower edge and said distal edge,

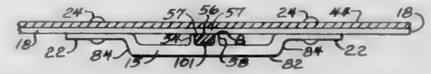
the portions of said retainer which extend across or between said windows being sufficiently narrow so that they can deform in a direction which is inwardly, outwardly, or in the plane of the retainer, thereby to relieve compression stress as said retainer is being moved from said first position to said second position.

5,058,756

STRESSED SIDE PLAT VEHICLE BODY

Stephen Green, Charleston, Ill., assignor to Trailmobile, Inc., Chicago, Ill.

Filed Aug. 17, 1990, Ser. No. 568,849
Int. Cl.[5] B62D *33/04*
U.S. Cl. 220—1.5 **12 Claims**



1. A cargo carrying body having walls, floor, roof and end portions comprising:

a plurality of rectangular side plates having top, bottom and side edges;

the side edges of adjacent plates having portions butted together to form a vertical butt joint;

vertical posts having portions joining said plates together, each post having a center web and curved shoulders extending from opposite edges of the web terminating as securement flanges projecting from said shoulders, said web having beads extending substantially normally inwardly therefrom toward said portions of the plates and in the assembled position with the plates flanking the butt joint therebetween and loaded toward adjacent portions of the plates; and

top and bottom rails having flanges sandwiching said plates between the flanges thereof and the posts, thereby forming a unitary stress-distributing side-reinforcing structure,

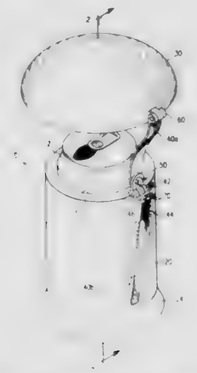
said securement flanges in unstressed position diverging away from adjacent plates and in stressed position being drawn against the associated plate portions.

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5,058,757
BEVERAGE INSULATOR WITH RETRACTABLE SHADER

Pedro O. Proa, 10951 Stone Canyon Rd., #382, Dallas, Tex. 75230

Filed Aug. 28, 1990, Ser. No. 573,690
Int. Cl.[5] A47G *19/00*
U.S. Cl. 220—85 H **31 Claims**

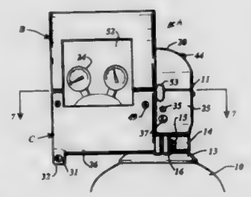


2. An apparatus for insulating a beverage can comprising:
(a) an insulator for receiving a beverage can; and
(b) means to shade said beverage can attached to said insulator wherein said means to shade said beverage can is comprised of:
(i) a shader, wherein said shader is dimensioned to shade the entire can surface; and
(ii) a shaft connecting said shader to said insulator in spaced relationship above said beverage can.

5,058,758
COMPRESSED GAS CYLINDER VALVE AND GAUGE PROTECTOR

Bucky D. Suddeth, 1318 St. Pauls Church Rd., Salisbury, N.C. 28146

Filed Jan. 7, 1991, Ser. No. 637,670
Int. Cl.[5] F16K *35/00*
U.S. Cl. 220—85 P **7 Claims**

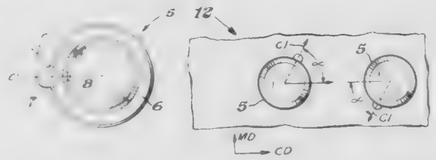


1. A gauge and valve protector for use with compressed gas cylinders, comprising:
a) a rigid guard releasably attachable to the neck of a standard compressed gas cylinder and being divided into an upper half and a mating lower half, releasably secured together to form an integral unit when assembled and facilitating installation of the lower half on said cylinder neck when disassembled;
b) separate compartments to house and protect valve, gauge, and regulator assemblies while said assemblies remain attached to said cylinder, without the necessity to remove said assemblies;
c) means to releasably secure said guard to the neck of said cylinder comprising a cylindrical clamp sized to surround the said cylindrical neck;
d) a shatter-proof, transparent window configuration located on the side of said protector and being of such configuration so as to expose such gauge configuration as may be used in order that the gauges might be read while the protector is in place; and
e) a "T" handle with an extended stem which may be substituted for the standard valve handle and which may be utilized by extension through an aperture in the top of the valve protector, directly above the standard valve stem.

5,058,759
PLASTIC DAIRY PRODUCT CONTAINER HAVING TAMPER EVIDENT LID AND METHOD OF PRODUCTION

Rodolfo Salmang, Bogota, Colombia, assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 26, 1990, Ser. No. 603,360
Int. Cl.[5] B65D *17/34*
U.S. Cl. 220—270 **5 Claims**

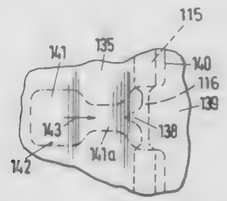


1. A thermoplastic container comprising cup and lid portions;
1) said cup portion comprising a base and sidewall, said sidewall terminating in a plane spatially removed from the base in a lip edge which describes an opening; and
2) said lid being of a size and shape corresponding to the size and shape of the cup opening and being adapted for covering the cup opening by frictionally engaging the lip edge by means of a peripheral groove, and further comprising a tab extending from said peripheral groove;
wherein the container is characterized by the fact that the lid is thermoformed from a relatively thin, extruded sheet of thermoplastic resin and undergoes fracture propagation and tearing due to orientation of the tab centerline in a direction between the machine direction and cross direction of the extruded sheet upon removal from the container by application of a lifting force to the tab sufficient to remove the lid.

5,058,760
EASY-OPEN PACKAGE AND METHOD OF MAKING SAME

Georg Bolte, Vechelde; Dieter Heinecke, Wendeburg, and Günter Hexel, Braunschweig, all of Fed. Rep. of Germany, assignors to Firma Schmalbach-Lubeca Ag, Braunschweig, Fed. Rep. of Germany

Filed Jan. 11, 1990, Ser. No. 463,363
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1989, 3901489
Int. Cl.[5] B65D *17/40*
U.S. Cl. 220—276 **14 Claims**

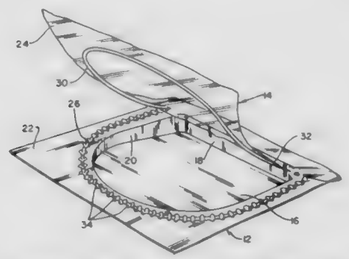


1. In an easy-open package comprising:
a vessel forming an upwardly open compartment and having an annular rim surrounding the compartment; and
a foil engaging the rim of the vessel part all around the compartment, having an open tab which projects laterally past the rim, and formed with a tear line extending around the compartment within the rim except at the tab and crossing the rim to both sides of the tab; the improvement wherein
the tab is unitarily formed with the foil;
the tab is connected to the foil by an integral web that overlies and is bonded to the rim and that is delimited by the tear line; and
the bond between the foil and the vessel is substantially weaker at the web than elsewhere.

5,058,761
RECLOSABLE PACKAGE AND A BASE PORTION OF THE PACKAGE

Roger S. Williams, Calhoun, Ga., assignor to Bryan Foods, Inc., West Point, Miss.

Filed Sep. 10, 1990, Ser. No. 580,137
Int. Cl.[5] B65D *41/18*
U.S. Cl. 220—306 **14 Claims**



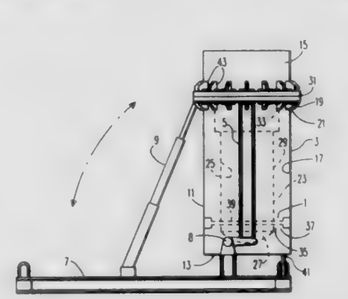
1. A reclosable sealed package for food products comprising a semi-rigid base formed from thermoplastic material having a recess for containing said products, said recess being surrounded by a peripheral flange at the top of said base extending from an inner edge in juxtaposition with a surface of said recess to an outer edge, an elongated groove formed intermediate said inner and outer edges in all but a minor portion of said flange, a rib disposed in said groove, and a flexible lid formed from a thermoplastic material peelably sealed to the top surface of said flange and fusion bonded to said rib, said rib and at least the surface of said lid facing said flange being formed from a first thermoplastic material, at least the surface of said flange facing said lid including said groove being formed from a second thermoplastic material having a fusion seal inhibitor relative to said first thermoplastic material such that said lid together with said rib may be peeled from all but said minor portion of said flange with said minor portion acting as a hinge for opening said package and affording access to products within said recess and permitting said lid to be reclosed upon said base when said rib is pushed back into said groove.

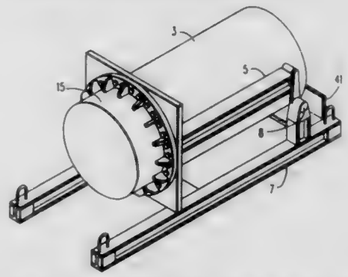
8. A base for use in a reclosable sealed package for food products, said base comprising a semi-rigid formed thermoplastic material having a recess for containing said products, said recess being surrounded by a peripheral flange at the top of said base extending from an inner edge in juxtaposition with a surface of said recess to an outer edge, an elongated groove formed intermediate said inner and outer edges in at least all but a minor portion of said flange, a rib formed from a first thermoplastic material peelably sealed within said groove, at least the upper surface of said flange including said groove being formed from a second thermoplastic material having a fusion seal inhibitor relative to said first thermoplastic material such that said rib may be peeled from said groove.

5,058,762
SHIPPING DEVICE FOR HEATER UNIT ASSEMBLY

Ronald M. Blaushild, Export; Stephan L. Abbott, Monroeville; Phillip E. Miller, Greensburg, and Robert Shaffer, Swissvale, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 19, 1989, Ser. No. 368,498
Int. Cl.[5] B65D *53/00*
U.S. Cl. 220—378 **9 Claims**





1. In a shipping device for a heater unit assembly, the heater unit assembly including a cylindrical wall having an outer surface and a top plate secured to the cylindrical wall and having a flange portion which projects radially outwardly beyond the outer surface of the cylindrical wall, and the shipping device including: a cylindrical container having an inner side surface, an open top and a closed bottom; a support member secured to the container and having a radially inwardly

directed flange for supporting the flange portion of the top plate; a supplemental supporting system for positioning the heater unit assembly in the container at a spaced relation from the inner surface and bottom wall of the container; a cover for closing the top of the container; and container supporting means supporting the container in a manner to permit the container to be moved, relative to the supporting means, between a vertical position for loading and unloading the assembly and a horizontal position for transport of the assembly, the improvement comprising seal means interposed between said container and said cover for sealing the interior of said container from the environment, wherein said seal means comprise an O-ring of resilient material and said cover has a radially outwardly extending flange which is supported by said support member when said cover closes the top of said container and said support member has a groove receiving said O-ring at a location facing said cover flange.

5,058,763

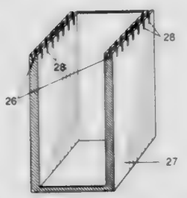
WASTE SEPARATION APPARATUS

Addison M. Dickinson, 22 W. Shields St., Newark, Ohio 43055

Continuation-in-part of Ser. No. 515,073, Apr. 26, 1990, Pat. No. 4,974,746, which is a continuation-in-part of Ser. No. 324,578, Mar. 16, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 612,211

Int. Cl.[5] B65D *1/24*

U.S. Cl. 220—404 **13 Claims**



13. In a waste separation receptacle assembly including a container with a generally rectangular open mouth defined by upper edge surfaces of said container and a plurality of thin-walled plastic bags to be mounted in said container, the improvement comprising a channel opening upwardly through and along at least two upper edge surfaces of said side wall, said channels being defined by two parallel walls; a multiplicity of slots opening upwardly in said parallel channel walls, said slots in facing parallel walls being aligned with their counterparts, and a frame with a peripheral, downwardly projecting tongue dimensioned and configured to be received in said channel between said parallel walls, whereby parts of bags can be received in said channels and sandwiched between said parallel walls and said tongue when said frame is mounted.

5,058,764

MOUNTING BRACKET HAVING A HIDDEN LOCK FOR A SHARPS COLLECTION SYSTEM

Rodolfo Gaba, Simi Valley, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.

Filed Jan. 4, 1991, Ser. No. 638,362

Int. Cl.[5] F16N *13/00*

U.S. Cl. 220—481 **9 Claims**

6. A hidden and locked mounting bracket for a container, comprising:

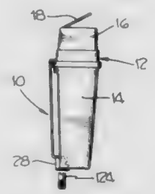
a container having an upper flange, front, side, and rear walls extending from said flange, and a bottom closing said walls;

said container having a container recess in said rear wall and said bottom with a closed aperture therein;

a mounting bracket having an upper flange and a lower housing adapted to be received in said container recess;

said upper flange of said container and said upper flange of said bracket including slot and flange means for engagement therebetween;

said lower housing including a latch bar and a spring for urging said latch bar into an extended position for engaging said closed aperture in said container recess, wherein said latch bar locks said container into said slot and flange means and said container hides said mounting bracket behind said rear wall with said lower housing hidden in said container recess.



5,058,765

MONEY CASE

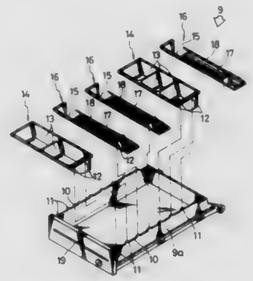
Yoshiaki Gomi, Shizuoka; Mitsugu Okawa, Izunagaoka, and Norihisa Taniuchi, Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 472,812, Jan. 31, 1990, abandoned. This application Apr. 3, 1991, Ser. No. 680,793

Claims priority, application Japan, Feb. 17, 1989, 1-37943

Int. Cl.[5] A47B *88/00*

U.S. Cl. 220—528 **6 Claims**



1. A money case which comprises;

a box-like body,

a drawer body adapted to slide into and out of said body in the horizontal direction,

a coin case with a first and second coin container formed therein,

a bank note case with a bank note holding surface formed therein, said bank note holding surface horizontally along their longitudinal direction; and

setting means for allowing said coin case and said bank note case to be selectively stationarily positioned with respect to said drawer body and set therein.

5,058,766

SEED METER FOR ROW CROP PLANTER UNIT

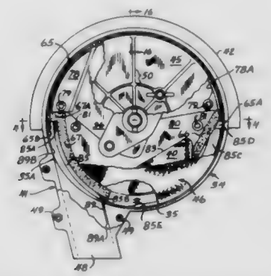
Harry C. Deckler, Williamsburg, Iowa, assignor to Kinze Manufacturing, Inc., Williamsburg, Iowa

Filed May 25, 1990, Ser. No. 528,760

Int. Cl.[5] A01C *7/00*

U.S. Cl. 221—254 **13 Claims**

12. In a seed meter for an agricultural planter having a housing receiving seeds from a storage hopper and at least partially defining a reservoir of seed, a disc mounted for rotation in a generally vertical plane and partially defining said reservoir of seeds, said disc having a plurality of seed cells, each cell sized to hold a seed, said cells being spaced about the periphery of the disc, and retainer means for retaining said seeds in said cells from a location at which the seeds leave said reservoir to a location adjacent a discharge chute, the improvement comprising: an isolator brush mounted to said housing and extending along said disc to a location adjacent the portion of said retainer means where said seed cells begin to pass beneath said retainer means and defining a progressively narrowing space between said isolator brush and the side wall of said housing for urging seeds outwardly of said disc and into the seed cells as said disc is rotated through said reservoir of seeds.



5,058,767

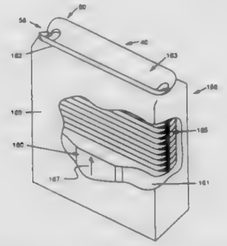
DISPENSING APPARATUS AND METHOD OF DISPENSING BAG HOLDERS

Peter D. Dieterich, Jr., 88C Belvedere, San Rafael, Calif. 94901

Division of Ser. No. 399,763, Aug. 28, 1989. This application Feb. 12, 1990, Ser. No. 654,360

Int. Cl.[5] B65G *59/00*

U.S. Cl. 221—279 **12 Claims**



1. In combination a dispensing means and a plurality of stackable bag holders comprising:

(a) a plurality of bag holders each having an elongated body terminating in opposed ends with a substantially U-shaped transverse cross section providing an upwardly facing channel receiving a second holder of substantially the same configuration in nested relation thereto, and a downwardly facing gripping surface, said plurality of bag holders being mounted in nested relation in a stack; and

(b) dispensing means including a stack guideway and a dispensing station proximate an end of said guideway, said stack of bag holders being mounted in said guideway, biasing means biasing said stack for movement in said guideway toward said dispensing station, and detent means at said dispensing station for releasably retaining bag holders in said stack in said guideway against said biasing means.

11. A process for dispensing bag holders formed for attachment to at least one carrying loop of a bag, said holders each including loop retention means for attachably receiving and entrapping said carrying loop against removal, and said holders being mounted in a holder dispenser in stacked and nested relation and being biased toward a dispensing station having detent means restraining said holders in said dispenser with said retention means of the outermost holder exposed for attachment of a bag thereto, comprising the steps of:

attaching said holder to said bag by inserting at least one loop of said bag into said retention means while said bag is in said dispenser; and

pulling said loop away from said dispenser to urge said holder past said detent means while said retention means prevents removal of said loop from said holder.

5,058,768

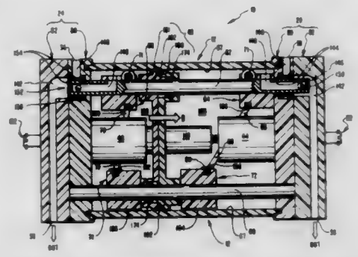
METHODS AND APPARATUS FOR DISPENSING PLURAL FLUIDS IN A PRECISE PROPORTION

William H. Lichfield, Corinne, Utah, assignor to Fountain Technologies, Inc., Utah

Continuation of Ser. No. 332,230, Mar. 31, 1989, abandoned. This application Nov. 13, 1990, Ser. No. 598,127

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—1 **59 Claims**



1. A method for dispensing a drive fluid and a first and second constituent fluid in a precise, predetermined ratio, said method comprising the steps of:

(a) valving a pressurized drive fluid alternately to opposite sides of a drive piston in a drive cylinder using valving within said cylinder;

(b) venting the side of the piston not provided with the pressurized drive fluid to enable reciprocating motion of the piston and the positive displacement of drive fluid from said side of the piston not provided with the pressurized drive fluid;

(c) securing within the drive cylinder on each side thereof a pair of proportioning pistons which extend parallel to the axis of the drive cylinder into individual corresponding proportioning cylinders that open into said drive cylinder facing said drive piston, said proportioning pistons advancing into and receding within said corresponding proportioning pistons with said reciprocating motion of said drive piston;

(d) supplying constituent fluids to said proportioning cylinders as said proportioning pistons recede therein; and

(e) venting said proportioning cylinders as said proportioning pistons advance thereinto to enable the positive displacement of constituent fluid therefrom.

2. An apparatus for dispensing in a precise predetermined ratio quantities of a first fluid that is externally pressurized and a second fluid, said apparatus comprising:

(a) reciprocating means for continuously dispensing the first fluid, said reciprocating means comprising a stationary portion enclosing opposed first and second fluid chambers and an active portion housed within said stationary portion, said stationary portion comprising a drive cylinder closed at the end thereof adjacent said first fluid chamber by a first plate assembly and at said end thereof adjacent said second fluid chamber by a second plate assembly, said

active portion being driven by the first fluid in a reciprocating motion comprising successive strokes in opposite directions alternately toward said first and toward said second fluid chambers, said active portion comprising:

(i) a drive piston disposed in said drive cylinder between said first and second fluid chambers, said drive piston being driven in a reciprocating motion by said externally pressurized first fluid; and

(ii) drive reversal means for admitting the pressurized first fluid alternately into said first and said second fluid chambers to propel said drive piston and thereby to positively displace first fluid alternately from said second and first fluid chambers, respectively, said drive reversal means comprising:

(A) a pressurized first fluid passageway formed in each of said plate assemblies;

(B) a first fluid exit passageway formed in each of said plate assemblies;

(C) a first valve bore extending from said first fluid chamber into said first plate assembly, said first valve bore communicating with said pressurized first fluid passageway and said first fluid exit passageway formed therein;

(D) a second valve bore extending from said second fluid chamber into said second plate assembly, said second valve bore communicating with said pressurized first fluid passageway and said first fluid exit passageway formed therein;

(E) a first valve stem slidably mounted in said first valve bore and extending therefrom into said first fluid chamber, said first valve stem having formed longitudinally therethrough a first valving passageway opening at one end thereof into said first fluid chamber, the other end of said first valving passageway opening within said first valve bore at a location that alternatively communicates with said pressurized first fluid passageway and with said first fluid exit passageway in said first plate assembly;

(F) a second valve stem slidably mounted in said second valve bore and extending therefrom into said second fluid cylinder, said second valve stem having formed longitudinally therethrough a second valving passageway opening at one end thereof into said second fluid chamber, the other end of said second valving passageway opening within said second valve bore at a location that alternatively communicates with said first fluid exit passageway and said pressurized first fluid passageway in said second plate assembly;

(G) a valve shaft connecting said first and second valve stems to slide said valve stems longitudinally alternately between a first and a second operative mode, in said first operative mode said first fluid chamber being in communication with said pressurized first fluid passageway formed in said first plate assembly and said second drive fluid chamber being in communication with said first fluid exit passageway formed in said second plate assembly, and in said second operative mode said first fluid chamber being in communication with said first fluid exit passageway formed in said first plate assembly and said second first fluid chamber being in communication with said pressurized first fluid passageway formed in said second plate assembly;

(b) first and second reservoir means for holding a predetermined quantity of the second fluid, said first and second reservoir means being located individually in said first and second fluid chambers, respectively; and

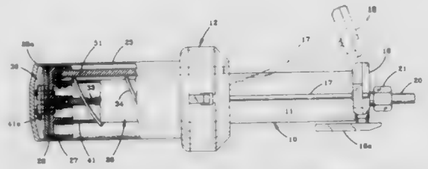
(c) fluid advancement means for continuously dispensing the second fluid, said fluid advancement means being operably connected to said active portion of said reciprocating means to draw a predetermined quantity of the second fluid into one of said first and second reservoir means and to positively displace a predetermined quantity of the second fluid from the other of said first and second reservoir means during each of said strokes in said motion of said reciprocating means.

5,058,769

SELF-CONTAINED PNEUMATIC GUN FOR DISPENSING FLOWABLE MATERIALS

Robert H. Kurtz, Canton, Ohio, assignor to Liquid Control Corporation, North Canton, Ohio

Filed Mar. 5, 1990, Ser. No. 487,848
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—47 **17 Claims**



1. A self-contained pneumatic gun for dispensing one or more flowable materials in precise amount to a point of use comprising:

(a) a body member;

(b) a first hollow chamber attached to said body member for retaining a package containing one or more flowable materials to be delivered at one end therefrom in precise amount to a point of use;

(c) retention means for retaining said package in said first hollow chamber;

(d) a second hollow chamber attached to said body member in axial alignment with said first hollow chamber, said second chamber containing an axially-movable hollow inner piston member adapted to applying compressive pressure to said package at the opposite end of said package from its delivery end;

(e) a quick-release valve means mounted interiorly of said second hollow chamber on an end of said inner piston member oppositely-disposed from said first hollow chamber and said package, said valve means having inlet and outlet ports, the latter permitting rapid exhaust discharge of pressurized gas into the interior of said hollow piston member;

(f) a source of pressurized gas connected to said valve means through a flexible collapsible tubular member for applying compressive gas force to said inner piston member and therethrough, compressive force to said package; and

(g) operating means connected to source of gas and said flexible tubular member to deliver pressurized gas to said valve means for axial movement of said inner piston.

5,058,770

CONTAINER FOR SUBSTANCES PREPARED BY MIXING COMPONENTS

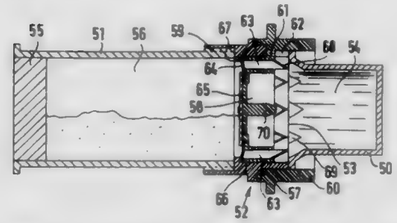
Wolf-Dietrich Herold, Seefeld; Peter Koran, Weilheim, and Helmut Pauser, Diessen, all of Fed. Rep. of Germany, assignors to THERA Patent GmbH & Co. KG Gesellschaft fuer industrielle Schutzrechte, Seefeld, Fed. Rep. of Germany

Filed Jun. 15, 1990, Ser. No. 538,329
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1989, 8907336[U]
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—80 **9 Claims**

1. A container for substances to be prepared by mixing components, comprising

a first chamber for holding a first component, a second chamber for holding a second component and forming a mixing chamber,

a partitioning means disposed between said chambers for sealing the chambers against each other in a storage condition of the container, the partitioning means being operable for initiating a mixing phase so as to permit said first component to be transferred to said mixing chamber, and valve means disposed in a wall of said mixing chamber, said valve means being resiliently biased in its closing direction



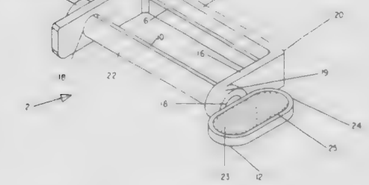
opposite to the direction of transfer of said first component from said first chamber to said second chamber, said valve means including a resilient gasket clamped to said partitioning means and having a free peripheral portion for engaging a sealing seat.

5,058,771

TUBE ROLLUP

William Curtis, 11020 N. 60th St., Stillwater, Minn. 55082

Filed Dec. 14, 1989, Ser. No. 450,427
Int. Cl.[5] B65D *35/32*
U.S. Cl. 222—99 **9 Claims**



1. Apparatus for evacuating a collapsible tube storage container comprising:

a) a bracket including a body portion having a through slot sized to receive a flattened end of said storage container and presenting a progressively inwardly tapering bore to the passage of the container and further including a par of integral arm portions orthogonally extending from opposite ends of said body portion in parallel relation to one another and wherein each arm portion includes a transverse cylindrical bore and one of said arm portions provides a hand hold extension;

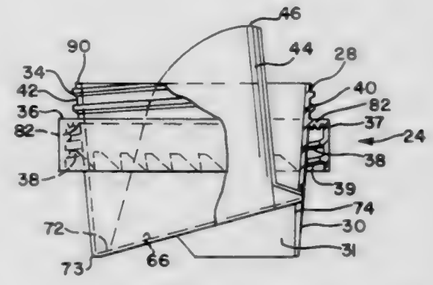
b) a key including a cylindrical body portion mountable in coaxial rotative relation to the transverse bore of each of said arm portions and having a lengthwise slot extending from a distal end of the body portion and bisecting the body portion for receiving said flattened tube end one passed through the bracket slot and further including a hand graspable end portion containing projecting wing portions having finger depressions for rotating said body portion whereby the spent tube may be wound onto said key.

5,058,772

DISPENSER CLOSURE WITH DRAIN BACK FEATURE

David N. Moore, Plainfield; Richard J. Petro, Mokena, and Jeffrey F. Ullrich, Western Springs, all of Ill., assignors to Phoenix Closures, Inc., Naperville, Ill.

Filed Nov. 13, 1989, Ser. No. 435,030
Int. Cl.[5] B67D *1/16*
U.S. Cl. 222—109 **20 Claims**



1. A combination dispenser closure and container comprising:

a container having a neck with a threaded exterior surface;

a generally frusto-conically shaped spout portion having an annular wall provided with a lower end, an interior surface, a central part and an upper end, said lower end dimensioned for insertion into said neck, being generally inclined, and being provided with at least one depending leveling leg, said central part having a radially projecting peripheral shoulder with a depending skirt, said skirt being threaded on an interior surface and having a lower edge, said threaded surface configured to threadably engage said threaded neck, said upper end of said annular wall being threaded on an exterior surface, and said should provided with at least one integral annular sealing rib on the underside thereof;

a spout formation being integral with said spout portion and disposed within said interior of said annular wall, said spout formation having a lip projecting above said upper end of said wall, said spout formation being open along a vertical line to form a slot and being located opposite a drainage opening, said drainage opening being integral with said annular wall and located on said wall to be diametrically opposed to said slot, said opening being in communication with said spout formation and the interior of the container and having an upper end which is substantially coextensive with the lower edge of said skirt, so that when the container is inverted for pouring, any residual liquid will flow through said opening and out said spout formation; and

a cap portion having a top, a generally tubular wall with a lower end, said lower end being provided with a radially projecting annular shoulder having a depending collar, said collar having a lower edge, said collar being threaded on an interior surface so as to engage said threaded exterior surface of said upper end of said annular wall of said spout portion, said lower end of said tubular wall projecting vertically downward below said lower edge of said collar.

5,058,773

BEVERAGE AND ICE DISPENSING METHOD AND APPARATUS

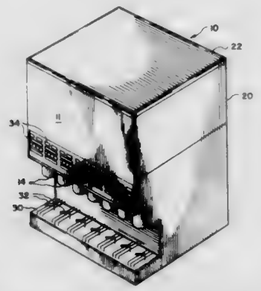
Frank D. Brill, Fox Lake; Benjamin D. Miller, Chicago; Thaddeus M. Jablonski, Palatine, all of Ill., and Douglas F. Marsh, Raymond, Me., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Division of Ser. No. 176,491, Apr. 1, 1988, Pat. No. 4,946,073. This application May 15, 1990, Ser. No. 523,619

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] B65B *3/04*

U.S. Cl. 227—129.4 **55 Claims**



54. A dispensing apparatus for dispensing ice bodies and beverage into a cup at a single cup location, comprising:

a plurality of spouts for dispensing beverages, each said spout capable of dispensing at least one type of beverage;

a storage hopper for ice bodies located above said spouts;

a plurality of vertical chutes equal to the number of spouts, said chutes aligned substantially parallel to each other in a linear array, each chute having an upper end which communicates with said hopper for receiving ice bodies from said hopper and a lower end for dispensing a predetermined quantity of ice bodies from said chute, said lower end being associated with one of said spouts to allow both beverage and ice bodies to be dispensed at a single cup location, said chute comprising a front panel and a semi-cylindrically shaped element which is removably mounted to said front panel;

delivery means located in said hopper for delivering ice bodies into said chutes;

dispensing means associated with said chutes for dispensing a desired amount of ice bodies from said chutes; and

a control system for controlling the dispensing of said predetermined quantity of ice bodies from each chute corresponding to said predetermined quantity of beverage being dispensed from each spout.

5,058,774

METHOD OF AND APPARATUS FOR DETECTING AND COLLECTING SPILLED FUEL PRODUCTS

Earl D. Hartman, 8354 Gresham Ave., Richmond, Va. 23237, and Walter F. Atkins, 4003 Dubet La., Richmond, Va. 23234

Filed May 4, 1990, Ser. No. 518,995

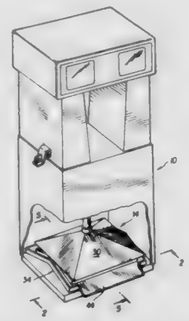
Int. Cl.[5] B67D *5/32*

U.S. Cl. 222—140 **9 Claims**

1. An apparatus for detecting spilled fuel products wherein a casing for a fuel dispenser is mounted on a raised island or other foundation on which said fuel dispenser is mounted, said casing having at least one inlet fuel pipe and at least one electrical conduit pipe therein, said apparatus comprising:

a. deflector means mounted within said casing at an elevation higher than said raised island,

i. said inlet fuel pipe and said electrical conduit pipe extending through said deflector means,



ii. said deflector means serving to redirect spilled fuel products onto said raised island thereby detecting the existence of a spilled fuel product within said casing.

5,058,775

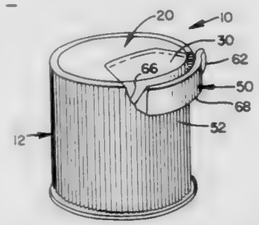
TOGGLE-ACTING DISPENSING CLOSURE WITH PREMATURE ACTUATION PREVENTION MEANS

Richard A. Gross, Crystal Lake, and Dieter F. Lay, Hawthorn Woods, both of Ill., assignors to Seaquist Closures, a Division of Pittway Corporation, Crystal Lake, Ill.

Continuation of Ser. No. 345,998, May 2, 1989, abandoned. This application Dec. 19, 1990, Ser. No. 630,402

Int. Cl.[5] B67B *5/00*

U.S. Cl. 222—153 **7 Claims**



1. A toggle-acting dispensing closure for securance to a container, and which is resistant to premature actuation during shipping and handling prior to purchase and which evidences access to the contents of the container comprising:

a body having a rear wall portion defining a fingerwell that is open upwardly and outwardly at the top of the body, said rear wall portion having an outwardly downwardly inclined upper surface, said fingerwell accommodating an inwardly extending finger during actuation of said closure;

an actuator defining a discharge passage located opposite said fingerwell, said actuator being mounted on said body for pivotal movement of the actuator on the body normally in response to a force applied to a finger pad portion of said actuator at a first location on said actuator adjacent said fingerwell for movement of the actuator between a closed, non-dispensing position and an open dispensing position; and

removable tear tab means joined integrally via severable frangible bridging means with said actuator and located oppositely from said discharge passage, said tear tab means being positioned adjacent said finger pad portion and between said body and said actuator to prevent pivotal movement of said actuator on said body prior to removal of said tear tab means, said tear tab means including a peripherally oriented segment extending along said actuator in the closed position adjacent said fingerwell and a tear tab portion which overlies said rear wall portion upper surface, said tear tab portion having a generally complementary downwardly inclined lower surface, whereby when said tear tab means is removed by severing said frangible means, said actuator may be pivoted to said open dispensing position in response to the application of said force to said finger pad portion.

5,058,776

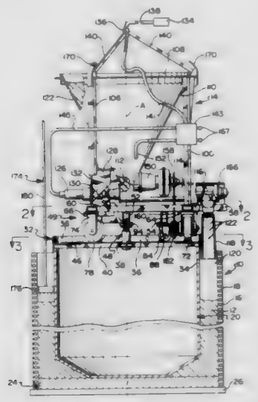
APPARATUS FOR DISPENSING PARTICULATE MATERIAL FOR FOUNDRY FURNACE RELINING

Michael L. Courtney, Welland; Joseph S. Hockey, Pelham, and Ayton J. Grady, Niagara Falls, all of Canada, assignors to General Motors of Canada Limited, Oshawa, Canada

Filed Mar. 9, 1990, Ser. No. 491,479

Int. Cl.[5] B67D *5/64*

U.S. Cl. 222—168 **4 Claims**



1. A self-contained, portable, rotary particulate dispensing apparatus for lining a foundry furnace with particulate refractory material, said furnace in the unlined state comprising a self-sustaining expendable metal form, an outer wall surrounding said form and an annular space between said form and said wall, said form and said annular space being substantially concentric about a common axis, said apparatus comprising:

a platform removably engaging the top of said form, said platform having a pivot means and supporting a carriage rotatable about said pivot means;

means for locating said platform on said form such that said pivot means is aligned with said common axis;

an annular track on said platform circumscribing said pivot means radially inboard of, and concentric with, said space;

at least one wheel supporting said carriage upon said track during rotation of said carriage about said pivot means;

a hopper carried by said carriage for containing a charge of particulate refractory material, said hopper having an opening in the lower end thereof for discharging said particulate material therefrom;

a radially extending rotatable feeder communicating with said opening, said feeder having an input end for receiving said particulate material from said hopper and a discharge end remote from said input end and overlying said space for dispensing said material into said space as said carriage rotates;

means for conveying material from said input end to said discharge end of said feeder; and

motor means supported by the platform for rotating said carriage about said pivot concurrent with the discharge of said material to dispense said material in an annular pattern into said space.

5,058,777

AUTOMATIC METHOD AND APPARATUS FOR SCATTERING WOOD PIECES IN PRODUCTION OF A DECORATIVE BOARD

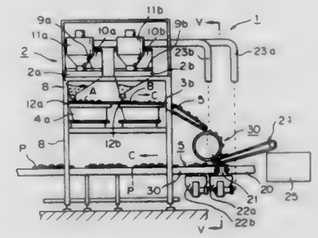
Kaneo Omoto; Hironao Nagasima; Tomohide Ogata, and Ritsuo Iwata, all of Shizuoka, Japan, assignors to Yamaha Corporation, Shizuoka, Japan

Filed May 25, 1989, Ser. No. 356,847

Claims priority, application Japan, May 31, 1988, 63-133217; May 31, 1988, 63-133218

Int. Cl.[5] A45D *24/22*

U.S. Cl. 222—200 **6 Claims**



1. Automatic apparatus for scattering wood pieces in production of a decorative board comprising

at least one hopper for supplying wood pieces,

at least one vibrating feeder arranged below said hopper for dispersing said wood pieces supplied from said hopper,

a transfer conveyer arranged below said feeder for successively transporting base boards,

an inclined conveyer belt arranged next to said feeder with its lower level end facing said transfer conveyer,

an overlap remover unit disposed below and between the end of said inclined conveyer belt and said transfer conveyer, said remover unit including a porous drum whose interior space is connected to a suction source, said inclined conveyer belt having one end thereof disposed beneath said overlap remover unit, and

means for collecting wood pieces fed from said porous drum before transfer to said base boards,

whereby said wood pieces from said feeder are transferred in a dispersed state onto said base boards.

5,058,778

SQUEEZE TYPE DISPENSER HAVING AN AXIALLY ROTATABLE TOP ELEMENT CONTAINING A FLOW CLOSURE AND A VENT

Jack Weinstein, Manchester Township, Ocean County, N.J., assignor to Primary Deivery Systems, Inc., Annandale, N.J.

Filed Apr. 27, 1990, Ser. No. 516,700

Int. Cl.[5] B65D *37/00, 47/00;* **B67D** *3/00*

U.S. Cl. 222—209 **10 Claims**

1. A squeeze bottle pumpless nozzle dispenser, which comprises:

(a) a first lid having a top, bottom and wall, and having a dispensing orifice upper portion and a venting orifice upper portion located thereon and having means thereon for rotatable attachment to a second lid;

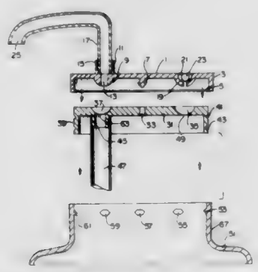
(b) a dispensing nozzle connected to the top of said lid at the dispensing orifice upper portion;

(c) a second lid having a top, bottom and wall with said first lid rotatably connected thereto atop thereof, said second lid having a dispensing orifice lower portion located so as to be alignable with said dispensing orifice upper portion of said first lid and a venting orifice lower portion located so as to be alignable with said venting orifice upper por-

tion of said first lid, and having means for fixed attachment to an open top of a container;

(d) a first track and a first track follower in alignment with one another and movably connected to one another and connected to said dispensing orifice upper portion and said dispensing orifice lower portion;

(e) a second track and a second track follower in alignment with one another and movably connected to one another and connected to said venting orifice upper portion and said venting orifice lower portion;



(f) a shut off valve which closes in response to pressure, located within either the lower portion or the upper portion of said venting orifice;

(g) a squeezable container having an open top and having said second lid fixedly attached to said open top; and,

(h) a dip tube connected to said second lid at its bottom at said dispensing orifice lower portion and extending into said squeezable container.

5,058,779

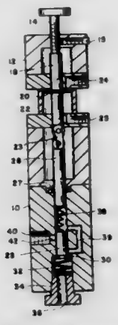
POSITIVE DISPLACEMENT PISTON METERING PUMP

Silverio B. Surdilla, 32400 Lois Way, Union City, Calif. 94587

Filed Feb. 20, 1990, Ser. No. 481,946

Int. Cl.[5] B65D *88/54*

U.S. Cl. 222—309 **6 Claims**



1. A fluid dispensing pump comprising;

a pump body having first and second ends and an axial hole therethrough;

a first piston axially movable in said axial hole, said first piston having first and second ends;

a second piston axially movable in said axial hole, said second piston having first and second ends, the first end of said second piston facing the second end of said first piston;

power means coupled to said first piston for axially moving said first piston toward the first and second ends of said body;

spring means acting on the second end of said second piston for urging said second end from the second end of said body;

a fluid inlet port for admitting fluid in the second end of said body and into said axial hole in the second end;

conduit means including first and second interconnected radial holes opening into said axial hole in said body, the axial center line spacing between said radial holes being equal to the the length of said second piston, the first radial hole intercepting said axial hole at a point where it may be sealed by a side surface of the second end of said second piston, the second radial hole intercepting said axial hole at a point adjacent the first end of said second piston where it may be sealed by a side surface of the second end of said first piston in its normal position; and

a radial fluid discharge port through the wall of said body, said discharge port intercepting said axial hole at a point adjacent said first end of said second piston and sealable by the side surface of said second piston.

5,058,780

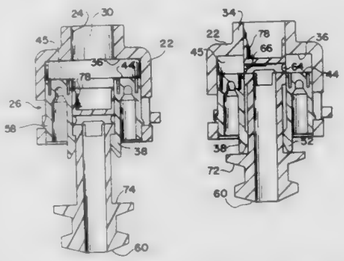
DOSING SYSTEM FOR AN UNVENTED CONTAINER

George Plester, Essen, Fed. Rep. of Germany; Frederick D. Schorr, Decatur, Ga., and Georg Troska, Herten, Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Sep. 22, 1989, Ser. No. 410,882

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—321 **12 Claims**



1. An apparatus for dispensing metered quantities of liquid from an unvented container through a discharge opening thereof comprising:

a pump housing having an inlet port in liquid communication with said discharge opening and an outlet port through which the liquid is dispensed, said inlet port being formed in a housing wall disposed across the discharge opening of the container;

piston means disposed for reciprocating movement within said housing through a suction stroke and a compression stroke, said piston means having a drive face opposite to said inlet port and housing wall, said drive face and wall defining a pump chamber therebetween for receiving a metered quantity of liquid to be pumped from the container, said outlet port communicating with said pump chamber, the movement of the drive face of the piston drawing liquid from the container through the inlet port into the pump chamber during the suction stroke and discharging liquid for the pump chamber through the outlet port during the compression stroke; and

valve means operatively connected to said inlet and outlet ports for opening said inlet port and closing said outlet port of the pump housing during said suction stroke, and closing the inlet port and opening the outlet port during said compression stroke;

whereby no ambient air may pass through the pump chamber into said container.

5,058,781

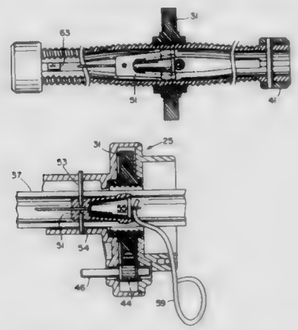
CAULKING GUN WITH DRIVE MEANS WHICH FACILITATE THE IMMEDIATE RELEASE OF PRESSURE FROM THE PISTON

Alan B. Aronie, 27 Seymour St., Concord, Mass. 01742, and Joel Aronie, 175 N. Main St., West Hartford, Conn. 06107

Filed Oct. 29, 1990, Ser. No. 604,928

Int. Cl.[5] B67D *5/46*

U.S. Cl. 222—326 **10 Claims**



1. In a caulking gun, an apparatus for driving a piston thereby to expel caulking material in a controllable manner, said apparatus comprising:

a housing;

in said housing, a ring gear having a central aperture which is interiorly threaded;

means for rotating said ring gear;

a tube which is exteriorly threaded to mate with the central aperture of said ring gear and is longitudinally split so as to permit collapse of the tube out of engagement with the central aperture of said ring gear, one end of said tube being adapted to engage a piston for driving the piston in response to axial movement of the tube;

a laterally expandable bushing which is within said tube and is maintained in axial position relative said housing in alignment with said ring gear;

a plug which is axially movable relative to said bushing between first and second positions and which, in said first position, cooperates with said bushing to expand the bushing to maintain said tube in engagement with the threaded aperture in said ring gear and, in said second position, allows said tube to collapse; and

means enabling the operator of the caulking gun to move said plug between said first and second positions whereby rotation of said ring gear effects expelling of caulking material when said plug is in said first position and movement of said plug to said second position releases pressure from the piston.

5,058,782

SYRUP DISPENSING SYSTEM

Joseph W. Shannon, Kent, Ohio, assignor to ABC/Sebrn Techcorp., Akron, Ohio

Filed Mar. 26, 1990, Ser. No. 498,438

Int. Cl.[5] B65D *11/00*

U.S. Cl. 222—330 **5 Claims**

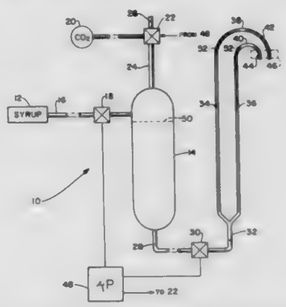
1. A syrup dispensing system for a soft drink dispenser, comprising:

a pump receiving a supply of syrup to a first level;

a first dispensing line having a first end thereof in communication with said pump, and a second end thereof maintained at a pour head, said first dispensing line having an apex defining a second level in said dispensing line, said second level being above said first level;

a first valve interposed between said first dispensing line and said pump, selectively enabling and inhibiting a flow of syrup from said pump and through said first dispensing line;

first means associated with said pump for selectively applying a pressure head to said syrup, said first means comprising a second valve selectively applying said pressure head to said syrup and venting said pump to the atmosphere to release such pressure; and



control means interconnected between said first and second valves for controlling said first and second valves for dispensing syrup during a dispensing cycle, wherein said control means actuates said second valve to apply said pressure head to said syrup, opens said first valve to dispense said syrup, closes said first valve to terminate said dispensing, actuates said second valve to remove said pressure head, and thence opens said first valve for a period of time to allow syrup to withdraw from said second end of said dispensing line to a third level.

5,058,783

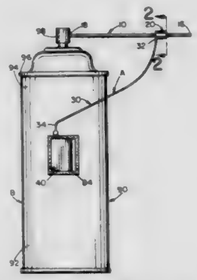
SPRAY TUBE SUPPORT ASSEMBLY

Ken Antonelli, 10039 Concord Ct., Parma Heights, Ohio 44130

Filed Feb. 21, 1990, Ser. No. 482,641

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—538 **20 Claims**



1. A spray tube support assembly for use with a spray container having a spray nozzle unit for outward discharge of fluid from the spray container, comprising:

an elongated spray tube having a size and shape adapted for mounting onto the spray nozzle unit for in-line passage of fluid discharged from the spray container; and,

a support construction for retaining said spray tube adjacent the spray container, said support construction comprising:

a support member,

a holding means for holding said spray tube,

a securing means for affixing said support member to the spray container, and

an elongated flexible tether for affixing said holding

means, and hence said spray tube, to said support member.

5,058,784

CLOSING AND/OR REGULATING APPARATUS FOR TAPPING MOLTEN METAL FROM A METALLURGICAL VESSEL

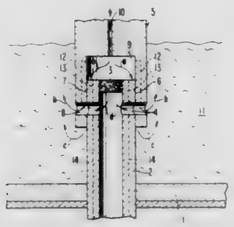
Ulrich Hintzen, Taunusstein-Watzhahn; Ernst Lührsen, Bad Schwalbach, and Andreas Schuler, Taunusstein, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 17, 1990, Ser. No. 597,662

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1989, 3934601

Int. Cl.[5] **B22D** *41/08*

U.S. Cl. 222—598 **8 Claims**



1. In a closing and regulating apparatus for tapping molten metal from the interior of a metallurgical vessel, said apparatus including an inner pipe having extending through a wall thereof at least one opening and an outer pipe fitted over said inner pipe and having extending through a wall thereof at least one opening, outer and inner surfaces of said inner and outer pipes, respectively, defining mating sealing surfaces, one of said pipes to be fixedly mounted with respect to a metallurgical vessel, and the other of said pipes being movable relative to said one pipe to thereby selectively bring said openings of the two pipes relatively into and out of alignment, the improvement comprising:

said inner pipe having adjacent an inner end thereof at a position inwardly of said opening therein a closure closing the interior of said inner pipe;

said outer pipe defining therein a space forming a gas distribution chamber at a location confronting said closure; and

means for introducing gas into said gas distribution chamber such that said gas passes therefrom between said sealing surfaces into said openings.

5,058,785

APPARATUS AND METHODS FOR DONNING AND REMOVING GLOVES

Clayton E. Rich; Jesse D. Dye, both of Shelley, Id., and Robert Bremers, Louisville, Colo., assignors to Successs Builders International, Idaho Falls, Id.

Filed Jun. 29, 1990, Ser. No. 546,301

Int. Cl.[5] **A47G** *25/80, 25/90*

U.S. Cl. 223—111 **16 Claims**

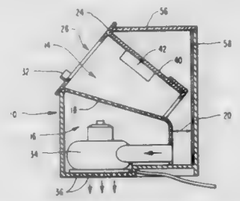
16. An apparatus for donning and removing gloves comprising:

a housing defining a vacuum chamber and a vacuum pump chamber therein, said vacuum chamber having a size sufficient to accommodate an outstretched hand and having an opening sufficiently large to pass a hand therethrough, said vacuum pump chamber in gaseous communication with said vacuum chamber, and said housing having a top portion constructed of clear material;

an electrically operated vacuum pump within said vacuum pump chamber for creating a vacuum within the vacuum chamber:

means for positioning an elastomeric glove through the vacuum chamber opening such that the hand portion of the glove is inside the vacuum chamber and such that the wrist portion of the glove is outside the vacuum chamber, said elastomeric glove having a plastic stiffening ring about the wrist portion of the glove, said stiffening ring having a diameter greater than the diameter of said opening;

an electrical control knob for manually adjusting the vac-



uum pump speed such that the vacuum pressure created within the vacuum chamber can be adjusted to both higher and lower settings;

a baffle located within the vacuum chamber for directing airflow to the vacuum pump, said baffle being removable;

a foot-operated electrical switch for controlling the operation of the vacuum pump; and

a mirror positioned against the rear wall of the vacuum chamber.

5,058,786

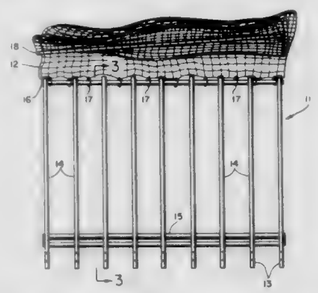
PORTABLE LOAD SECURING DEVICE

Albert H. Politi, 66 Planters Row, Hilton Head Island, S.C. 29928

Filed May 25, 1990, Ser. No. 529,214

Int. Cl.[5] **B60R** *11/00*

U.S. Cl. 224—42.32 **10 Claims**



1. A portable device for securing loads, in motor vehicles comprising, generally rectangular platform means having a length defined by a rear edge and a front edge spaced therefrom, said front edge of said platform means being provided along its width with a series of spaced apart hook-like elements over which meshes of a net may be hooked, net means having a rear edge and a front edge, the length of said net means from said rear edge to said front edge being greater than the spacing between said rear and front edges of said platform means, said net means having a width substantially equal to the width of said platform means, and anchoring means irrremovably attaching said rear edge of said net means to said rear edge of said platform means, the arrangement being such that said net means can be draped over a load placed on said platform means, pulled taut to restrain the load, and secured in the restraining position by engaging meshes of of said net means with said hook-like elements provided along the front edge of said platform means.

5,058,787

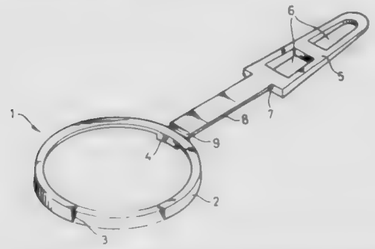
CANNED BEVERAGE FIXTURE ATTACHED IN AN AUTOMOBILE

Ching Y. Chou, No. 7, Alley 11, Lane 382, Sec.3, Ho Ping W. Rd., Taipei, Taiwan

Filed Oct. 25, 1990, Ser. No. 604,079

Int. Cl.[5] **B60R** *7/00*

U.S. Cl. 224—42.46 R **1 Claim**



1. A fixture engageable with the upper edge lip portion of a beverage can to suspend the can within an automobile, comprising:

a circular ring (2) extending in a plane normal to the ring axis; said ring having a channel cross-section that includes a web wall extending normal to the ring plane, an upper flange extending radially inwardly from said web wall parallel to the ring plane, and a lower flange extending radially inwardly from said web wall below the upper flange; said lower flange having a lower face that is inclined upwardly and radially inward to form a cam surface that can slide over the upper edge of a beverage can when said ring is pressed downwardly onto and around the can whereby a lip portion of the can is positioned between the upper and lower flanges of the ring;

said fixture further comprising a flat plastic strip (8) formed integrally with said circular ring; said plastic strip extending radially outwardly from said circular ring as a planar continuation of the ring upper flange; said flat strip having a generally flat upper face and a flat lower face; said flat upper face having an upwardly-facing transverse groove (9) at the connection point between the strip and the ring; said upwardly-facing groove having a width dimension that is appreciably greater than its depth dimension whereby said flat strip can undergo a hinge motion to a position extending substantially directly upward from the ring plane when the ring is oriented in a horizontal plane;

said fixture further comprising an elongated plastic handle portion (5) formed integrally with said plastic strip; said plastic handle portion having a flat upper face formed as a planar continuation of the strip upper face, said handle portion having a wedge-shaped cross section wherein the lower face of the handle portion converges at a slight angle to the upper handle portion upper face when measure in a direction going away from said plastic strip (8);

the lower face of said plastic strip (8) having a downwardly-facing transverse groove (7) at the connection point between the strip and the handle portion; said downwardly-facing groove having a width dimension that is appreciably greater than its depth dimension, whereby said handle portion can undergo a hinge motion to a position extending substantially directly downward from the plane of said strip (8) when said strip is oriented in a horizontal plane; said handle portion being adapted for insertion downwardly into a vertical gap between a window glass and a window frame of an automobile, with the associated strip (8) lying against an exposed interior surface of the automobile and the circular ring (2) extending in a horizontal plane at a substantial angel to said strip (8).

5,058,788

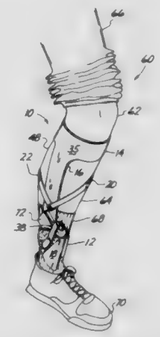
LEG HOLSTER ASSEMBLY

Don B. Newmark, 1740 W. Cameron Ave., Suite 106, West Covina, Calif. 91790

Filed Mar. 9, 1989, Ser. No. 321,974

Int. Cl.[5] **F41C** *33/02*

U.S. Cl. 224—222 **15 Claims**



1. A holster assembly adapted for detachably securing a holster and a firearm proximate a lower leg of a person, comprising:

a. holding means for holding the holster close relative to said lower leg of a person;

b. suspension means for bearing the weight of said assembly and of a holster and of a firearm held within said holster, said suspension means substantially being separate from said stabilizing means and comprising a suspension column connected to said stabilizing means and transferring the weight from said stabilizing means to said suspension means, said suspension means substantially resting on and transferring the weight from the holster assembly to a location other than the malleoli of the lower leg; and,

c. said suspension means further comprising a wrap adaptable for wrapping around the lower leg approximately on the upper portion of a gastrocnemius of the lower leg, wherein said wrap comprises a flange extending downwardly and adapted to substantially cover a head of a fibula of the lower leg.

5,058,789

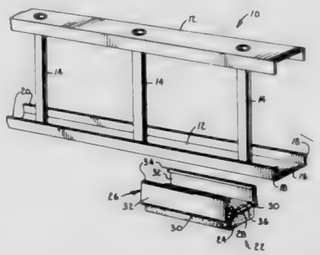
SHOULDER CUSHION ATTACHMENT FOR LADDERS

William D. Piper, 1003 Lakecrest Rd., Lawrence, Kans. 66049

Filed Jul. 24, 1990, Ser. No. 557,576

Int. Cl.[5] **B65G** *7/00*

U.S. Cl. 224—265 **8 Claims**



1. An attachment for a ladder having a plurality of rungs extending between a pair of rails each formed by a channel presenting a web and a pair of flanges each terminating in a free edge, said attachment comprising:

a mounting base having a flat base plate and a pair of sides extending from said base plate, each side terminating in a curved lip;

a cushion secured to said base plate;

said base being applicable to either channel with said base plate spanning the web and said sides extending along the flanges, said curved lips being hooked onto and spanning the free edges of the flanges to secure the base on the channel at a location wherein the cushion is applicable to a shoulder of a person carrying the ladder on said shoulder.

5,058,790

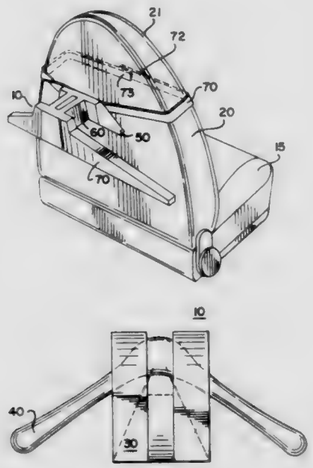
SEAT-MOUNTED CLOTHING VALET

Thomas P. LaVelle, 648 W. Oakdale, Suite 2R, Chicago, Ill. 60657

Continuation-in-part of Ser. No. 380,084, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 126,243, Nov. 27, 1987, abandoned. This application Jul. 2, 1990, Ser. No. 547,855

Int. Cl.[5] B60R *7/04;* **A47C** *7/64*

U.S. Cl. 224—275 **28 Claims**



1. A clothing valet particularly adapted for hanging one or more garments behind the backrest of an automobile seat, said clothing valet comprising:

hanger means for draping and supporting clothing in a substantially vertical plane and in a substantially wrinkle-free condition, said hanger means having a base member and two wing members extending outwardly from and centrally supported by said base member; and

bracket means for supporting said hanger means behind said backrest and at a distance from said backrest, at least a portion of said bracket means being substantially S-shaped, wherein a first inverted U-shaped segment of said bracket means is adapted to be removably attached to and positioned over the top of said backrest, and wherein a second upright U-shaped segment of said bracket means is fixedly attached to said base member and adapted to support said hanger means behind and at a distance from said backrest, such that said backrest does not normally touch clothing draped on said hanger means.

5,058,791

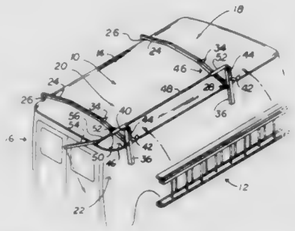
VEHICULAR LADDER RACK

Kenneth R. Henriquez, and Richard F. Arens, both of Hillsborough County, Fla., assignors to Slide-Out, Inc., Tampa, Fla.

Filed Feb. 9, 1990, Ser. No. 477,536

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—310 **40 Claims**



1. A vehicular ladder rack for use with a vehicle comprising a stationary mounting frame including a pair of transverse frame members each including an end portion affixed to a roof of a vehicle, a positioning assembly including a pair of positioning members affixed to opposite end portions of an elongated longitudinal positioning element including a rear portion rotatable between a first and second position coupled to said pair of transverse frame member and a ladder support frame including a pair of ladder support members each including an inner end movable between a first and second position to support a ladder thereon operatively coupled between said pair of transverse frame members and said corresponding positioning members such that a ladder is supported above the roof of the vehicle for storage and transportation when said elongated longitudinal positioning element and said ladder support frame are each in said first position and when said ladder support frame is moved from said first to said second position as said elongated longitudinal positioning element is rotated from said first to said second position said ladder support frame is disposed adjacent a side of the vehicle to permit a ladder to be mounted on said ladder support frame or removed from said ladder support frame, said stationary mounting frame further includes a directional control device attached to said corresponding end portion of each of said pair of transverse frame members to engage and control the direction of travel of said pair of ladder support members, each of said pair of ladder support members comprises a C-shaped ladder support member including a pair of channels and each said directional control device comprises a pair of rollers rotatable coupled to opposite sides of each said transverse frame member wherein each said roller of each of said pair of rollers is disposed within one of said pair of channels of each said pair of ladder support members.

5,058,792

BATHROOM TISSUE DISPENSER (LARGE ROLL)

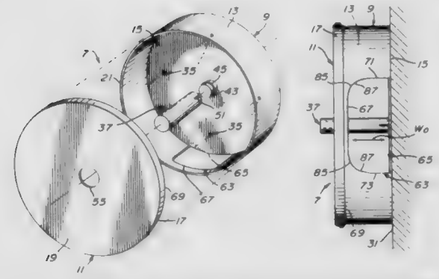
Michel Morand, Montreal, Canada, assignor to Wyant & Company Limited, Lachine, Canada

Filed Apr. 3, 1990, Ser. No. 503,866

Int. Cl.[5] B65H *35/10*

U.S. Cl. 225—42 **14 Claims**

1. A dispenser for a roll of toilet paper having a housing with parallel endwalls and a sidewall joining the endwalls together, means on one endwall for use in mounting the housing on a vertical surface, a spindle within the housing mounted on one endwall, means on the housing permitting a roll of toilet paper to be mounted within the housing on the spindle, an outlet opening in the sidewall located at the bottom of the housing when it is mounted on the vertical surface, the opening large enough to receive a hand and having a width less than the width of the toilet paper, one side edge of the opening being parallel to, but spaced inwardly from the other endwall to cause the toilet paper to be at least partly folded over on itself by the one side edge as it is dispensed from the housing through the opening.



5,058,793

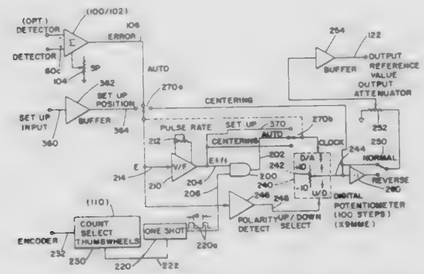
APPARATUS FOR GUIDING A MOVING STRIP

Harvey E. Neville, Shaker Hts., and Chib P. Hung, Strongsville, both of Ohio, assignors to The North American Manufacturing Company, Cleveland, Ohio

Filed Jan. 16, 1990, Ser. No. 465,373

Int. Cl.[5] B65H *23/02*

U.S. Cl. 226—15 **6 Claims**



1. An apparatus for guiding a strip traveling along a selected path, said apparatus comprising: a strip position correcting means engaged with said strip at a first location for changing the position of said strip as it moves from said first position, said strip correcting means including an actuator for moving said strip position and a feedback control device with a signal indicative of the actual position of said strip adjacent said actuator and an adjustable reference value whereby said feedback control device adjusts said actual position indicating signal toward said reference value; an edge sensor at a control point on said strip path remote to said first position generating an output error signal generally proportional to the deviation of the edge strip from a selected position at said control point; control means for periodically changing said reference value in accordance with said output error signal, said control means including means for creating a series of counting bursts having a number of count pulses of a given frequency component and with a selected duration component, means for changing at least one of said component of said control bursts in accordance with the magnitude of said output error signal wherein at least one of said components is the frequency component having a means for causing said frequency component to vary as a non-linear function of the magnitude of said output error signal, and at least one of said components also includes the duration component; and counter means for accumulating said series of counting pulses to control the magnitude of said reference value.

5,058,794

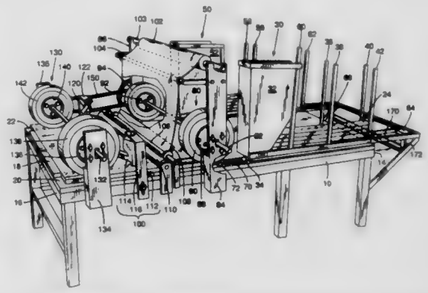
APPARATUS TO ATTACH A FLEXIBLE MEMBER

Norman C. Stanton, P.O. Box 809, Tualatin, Oreg. 97062

Filed May 14, 1990, Ser. No. 523,324

Int. Cl.[5] B27F *7/02*

U.S. Cl. 227—7 **4 Claims**



1. An apparatus for attaching flexible material to a pair of rigid members comprising:

a magazine means to contain a plurality of elongated rigid members;

an advancement means to sequentially advance pairs of the rigid members from said magazine means;

a first drive means to propel one of said pair of rigid members in a first direction, said first drive means including at least one pneumatic tire for contact with one of said pair of rigid members;

a support means for holding a roll of flexible material;

a guide means to guide said flexible material from said support means into contact with said advancing pair of rigid members;

an attachment means to attach said flexible material onto said pair of rigid members to form an assembly; and

a second drive means to propel said assembly in said first direction, said second drive means including at least one pneumatic tire for contact with said assembly.

5,058,795

MACHINE AND METHOD FOR MAKING PALLETS

Egidio L. Tonus, 10904 Oak St., Castroville, Calif. 95012

Filed Sep. 6, 1989, Ser. No. 403,413

Int. Cl.[5] B27F *7/09*

U.S. Cl. 227—7 **21 Claims**

1. A machine for making pallets from a number of pre-cut wood boards comprising:

a support;

means on the support for clamping a number of pre-cut wood boards together with the boards being arranged in the shape of a pallet to be made;

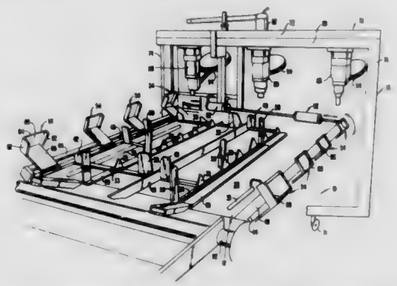
a carriage mounted on the support for movement past the support in opposed directions;

means coupled with the carriage for moving the carriage in opposed directions; and

a plurality of actuatable nailing heads mounted on the carriage for movement therewith, said nailing heads having means for selectively actuating the nailing heads to cause nailing of adjacent boards together at specific locations on

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the boards as the carriage moves in one direction and as the boards are arranged in the shape of a pallet, and a



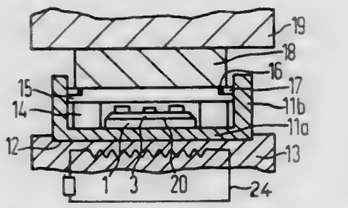
shock absorbing device permitting the carriage to move relative to said moving means through a limited distance.

5,058,796

APPARATUS FOR FASTENING ELECTRONIC COMPONENTS TO SUBSTRATES

Herbert Schwarzbauer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 317,558, Mar. 1, 1989, Pat. No. 4,903,885.
This application Dec. 5, 1989, Ser. No. 446,413
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1988, 3806979
Int. Cl.[5] H01L *21/58*
U.S. Cl. 228—44.3 **2 Claims**



1. An apparatus for fastening an underside of an electronic component having a structured upper side to a substrate, comprising:

a receptacle into which the component is put in place onto the substrate, the receptacle having

a floor part,

a lateral wall part, and

a die movable in a direction of said floor parts to form a closed receptacle chamber;

a press into which said receptacle chamber is introduced to exert sintering pressure, said press including a first press ram on which said floor part is supported and a second press ram on which said die part is supported. said die being moveable toward said floor part;

a deformable member in said receptacle member; and

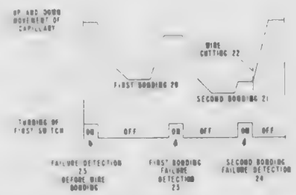
a sealing ring pressing against an inside of said lateral wall part, said sealing ring being supported against an edge of said die.

5,058,797

DETECTION METHOD FOR WIRE BONDING FAILURES

Yoshimitsu Terakado; Tohru Mochida, and Nobuto Yamazaki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed May 14, 1990, Ser. No. 523,668
Claims priority, application Japan, May 15, 1989, 1-118598
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—104 **2 Claims**



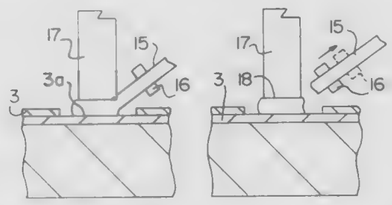
1. A method for detecting failures in wire bonding characterized by the application of a minimal voltage to a bonding wire between the end of first bonding step and beginning of a second bonding step, between the end of the second bonding step and the bonding wire cutting step, and between said bonding wire cutting step and a beginning of a next first bonding step so as to detect a first bonding failure, a second bonding failure, or a failure occurring before the next first bonding step.

5,058,798

METHOD FOR FORMING BUMP ON SEMICONDUCTOR ELEMENTS

Nobuto Yamazaki, Tachikawa, and Akihiro Nishimura, Hachioji, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Apr. 16, 1990, Ser. No. 510,152
Claims priority, application Japan, Apr. 17, 1989, 1-96947
Int. Cl.[5] H01L *21/607*
U.S. Cl. 228—110 **2 Claims**



1. A method for forming a bump on an electrode of a semiconductor element comprising the steps of:

setting a tip end of a wire, from which said bump is formed, under a vertically movable wedge;

lowering said wedge to press said tip end of said wire against said electrode;

applying ultrasonic vibrations to said wedge to connect said tip end to said electrode; and

pulling said wire diagonally away from said electrode so as to cut said wire while said wedge presses said tip end against said electrode, leaving said tip end on said electrode to form said bump.

5,058,799

METALLIZED CERAMIC SUBSTRATE AND METHOD THEREFOR

Kalman F. Zsamboky, 245 East St. - Apt. 616, Honeoye Falls, N.Y. 14472

Continuation-in-part of Ser. No. 319,413, Mar. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 148,143, Jan. 25, 1988, abandoned, which is a continuation of Ser. No. 945,351, Dec. 22, 1986, abandoned, said Ser. No. 319,413, Continuation-in-part of Ser. No. 205,534, Jun. 10, 1988, abandoned, which is a continuation of Ser. No. 889,678, Jul. 24, 1986, abandoned. This application Apr. 23, 1990, Ser. No. 512,893
Int. Cl.[5] B23K *1/20;* **B05D** *3/04*
U.S. Cl. 228—124 **22 Claims**



1. In a method for the manufacture of a metal-ceramic composite by electroless deposition of a conductive metal layer onto a ceramic substrate, the improvement which comprises the step of acid etching grain boundaries of the working surface of the substrate, prior to electroless deposition of the conductive metal thereon, to a depth equal to at least about the diameter of an average grain at the working surface while maintaining a monolithic working surface of the substrate.

9. In a method for the manufacture of a metalceramic composite by a sensitizer/activator electroless metal deposition process, the improvement which comprises the steps of (a) acid etching a working surface of said ceramic, (b) contacting the resulting, acid-etched ceramic surface with an alkaline, palladium ion-containing activator solution wherein the palladium ion concentration is less than about 200 parts per million for a time period sufficient to deposit palladium ions thereon, (c) reducing the deposited palladium ions to palladium metal on said surface, (d) depositing by electroless deposition a layer of conductive metal onto said palladium metal-bearing surface, and (e) thereafter firing the produced metal-ceramic composite at a temperature sufficient to melt a portion of the metallic composition present at the interface of the deposited metal layer and the acid-etched surface.

5,058,800

METHOD OF MAKING ELECTRIC CIRCUIT DEVICE

Tetsuo Yoshizawa; Hiroshi Kondo, both of Yokohama; Takashi Sakaki; Masaaki Imaizumi, both of Tokyo; Hideyuki Nishida, Kawasaki; Yasuteru Ichida, Tokyo, and Masaki Konishi, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1989, Ser. No. 358,639
Claims priority, application Japan, May 30, 1988, 63-133131; May 30, 1988, 63-133132; May 30, 1988, 63-133133
Int. Cl.[5] H01L *21/58*
U.S. Cl. 228—180.2 **21 Claims**

1. A method of producing an electrical circuit device, comprising the steps of:

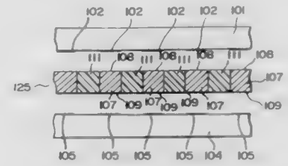
preparing an electrical connecting member including a holding body made of an electrically insulating material and a plurality of electrically conductive members embedded in the holding body, each electrically conductive member having a first end exposed through one side of the holding body and a second end exposed through the other side of the holding body;

preparing a first electrical circuit component having connecting portions to which the first ends of the electrically conductive members of the electrical connecting member are to be bonded;

providing a stainless steel plate proximate to the first electrical circuit component;

preparing a second electrical circuit component having connecting portions to which the second ends of the electrically conductive members of the electrical connecting member are to be bonded;

sealing the electrical connecting member and the electric circuit components in a cap of resin molding material; and



effecting an internal heating at at least one of a first connecting region located between the connecting portions of the first electrical circuit component and the first ends of the electrically conductive members of the electrical connecting member and a second connecting region located between the connecting portions of the second electrical circuit component and the second ends of the electrically conductive members of the electrical connecting member, thereby causing alloying in at least one of the first and second connecting regions so as to connect at least one of the first and second electrical circuit components to the electrical connecting member.

5,058,801

COMPOSITE CAN

Robert E. Frey, Villa Hills, Ky., and John C. Whitaker, Cincinnati, Ohio, assignors to Cin-Made Corporation, Cincinnati, Ohio

Filed Apr. 16, 1990, Ser. No. 509,579
Int. Cl.[5] B65D *3/28*
U.S. Cl. 229—3.5 MF **6 Claims**



1. A container comprising:

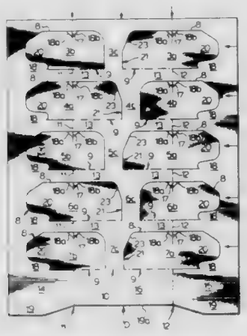
lateral walls composed of laminate composite sheet material, said composite sheet material having at least one lamina consisting essentially of paper, said composite sheet being joined along at least one seam to produce said lateral walls having a cylindrical or polyhedral configuration;

wherein the composite sheet material comprises "poly/foil paper", consisting essentially of lamina of 33 pound kraft paper, nine pound polyethylene film, 0.0035 inch metal foil, nine pound polyethylene film, 0.0035 inch metal foil, nine pound polyethylene film and 30 pound bleached paper;

a separately formed top member composed of thermoplastic material, said top member having a truncated conical or pyramidal shape tapering from a basal portion adjacent to the said lateral walls to an apical portion bearing a pouring

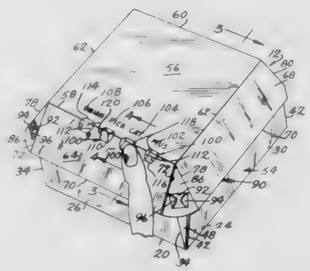
spout with an orifice, said orifice having a closure means, said basal portion bearing a flange extending medially and parallel to the said lateral walls;
adhesive means for securing said top member to said lateral walls along the said flange; and
a bottom member with means securing said bottom member to said lateral walls.

5,058,802
CARTON DIVIDERS
Thomas S. Rutledge, 2012 Richmond Street, Arva, Ontario, Canada N0M 1C0
Filed Mar. 1, 1991, Ser. No. 663,027
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.26 **27 Claims**



1. A carton divider blank made of self-supporting packaging material, and comprising:
a structural web lying in a horizontal plane and surrounding a plurality of preformed lateral flaps each circumscribed by a readily frangible line of weakness extending from one end to another end of a laterally extending hinge line;
said plurality being arranged as laterally extending flap pairs, each pair comprising a laterally elongated first flap in laterally spaced relation across an intermediate isthmus of said web, from a laterally shorter second flap;
said pairs being arranged in a longitudinal array with longitudinally adjacent pairs having a mutually laterally reversed symmetry with laterally offset isthmuses arranged in a contiguous series forming a serpentine spine running along a central longitudinal axis of said web; and,
a pair of generally parallel, laterally spaced apart and longitudinally extending, intermittent fold lines
traversing portions of said web that extend laterally between adjacent pairs of said longitudinal array of flaps, to define three panels in said web, two outer, and one intermediate,
wherein said flaps are adapted to be broken away along said lines of weakness and rotated about said hinge line into an upstanding orientation out of said horizontal plane of said web; and,
wherein said two outer panels are adapted to be rotated along said fold lines into a corresponding upstanding orientation in mutually engaged relation with said upstanding flaps, to define a plurality of upright partitions above said horizontal plane.

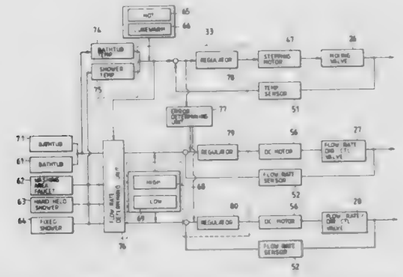
5,058,803
CARTON WITH OVER CENTER TOGGLE ACTION INDICATING TAB
Richard F. Gulliver, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.
Filed Dec. 27, 1990, Ser. No. 634,713
Int. Cl.[5] B65D *5/08*
U.S. Cl. 229—148 **19 Claims**



1. In a sheet material structure having two wall portions integrally interconnected by a common fold line and disposed so as to extend from said common fold line in angular relation with respect to one another to thereby define an interior included angle therebetween of less than 180°, the improvement which comprises
means defining the peripheral edges of an over center toggle action tab which extends into said two wall portions and contains predetermined length of said common fold line which serves to divide the tab into two tab sections,
said tab edge defining means including cuts and edge lines formed in said wall portions enabling the peripheral edge portion of said tab defined by said cuts to move toward and away from the adjacent cut panel portions while the peripheral edge portion of the tab defined by said edge lines hinge with respect to the adjacent wall portions,
said over center toggle action tab being self-retained in a normal position wherein said two tab sections are coplanar with said two wall portions so as to define an interior included angle therebetween which is the same as the interior included angle between said two wall portions and being movable from said normal position by inward digital pressure on the predetermined length of said common fold line into a self-retained deflected position wherein the interior included angle between the two tab sections is greater than 180°,
one of said tab sections being of a lesser size than the other such that said one tab section is relatively rigid and the other tab section is relatively flexible whereby during the movement thereof between said normal and deflected positions the other relatively flexible tab section is flexed by the relatively rigid one tab section.

5,058,804
AUTOMATIC HOT WATER SUPPLY APPARATUS
Hiroaki Yonekubo, Kyoto; Risho Miyoshi; Katsumi Hirata, both of Nara; Munehiko Tokumoto, Nara, and Takashi Iwasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Sep. 6, 1989, Ser. No. 403,522
Claims priority, application Japan, Sep. 6, 1988, 63-222725; Sep. 12, 1988, 63-228237; Sep. 13, 1988, 63-229104; Sep. 14, 1988, 63-230437
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—12.12 **7 Claims**

1. An automatic hot water supply apparatus comprising:
a cold water/hot water mixing valve for mixing cold water supplied through a cold water supply pipe and hot water supplied from an instantaneous water heater unit through a hot water supply pipe, to form temperature-regulated hot water;
a temperature-regulated hot water supply pipe for supplying the temperature-regulated hot water from said cold water/hot water mixing valve to a tap location;
a temperature-regulated hot water temperature setting unit for setting a temperature for the temperature-regulated hot water;
a temperature-regulated hot water temperature detector disposed in said temperature-regulated hot water supply pipe, for detecting the temperature of the temperature-regulated hot water;
a flow rate control valve for controlling the rate of flow of the temperature regulated hot water;

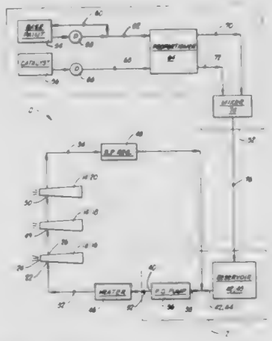


electric actuator means for actuating said flow rate control valve; and
a controller for comparing signals from said temperature-regulated hot water temperature detector and said temperature-regulated hot water temperature setting unit for controlling said cold water/hot water mixing valve, and for detecting a reduction in the temperature of the temperature-regulated hot water temperature detector and controlling said flow rate control valve to reduce the rate of flow to the temperature-regulated hot water when the temperature set by said temperature-regulated hot water temperature setting unit cannot be achieved by said cold water/hot water mixing valve.

5,058,805
PAINT SPRAYING SYSTEM
Jerry L. Anderson, Perkins, and Thomas R. Boyington, Stillwater, both of Okla., assignors to Brunswick Corporation, Skokie, Ill.
Filed Jul. 12, 1990, Ser. No. 551,921
Int. Cl.[5] B05B *5/08*
U.S. Cl. 239—3 **52 Claims**

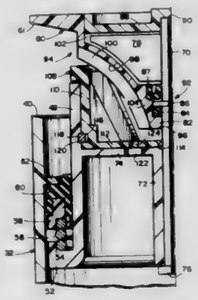
1. A paint spraying system comprising:
a source of pressurized paint;
a paint spray means including at least a first and a second spray gun, each spray gun having a gun inlet means for receiving paint, a gun spray outlet means or spraying paint on an article to be painted, and a gun bypass means or passing through said gun an unused portion of paint;
unregulated paint feed conduit means for feeding paint from said source to said spray guns;
paint recycle conduit means for recycling unused paint from said paint spray means; and
wherein each of said spray guns includes a separate adjustment means or adjusting an amount of paint sprayed by said gun independent of any adjustment of the other of said guns.

29. A method of spraying a quick drying paint mixture of a base paint and a catalyst, comprising:
(a) mixing said base paint and said catalyst to form said paint mixture;
(b) providing a plurality of spray guns, each gun having an inlet, a spray outlet, and a supply passage between said inlet and said spray outlet;
(c) feeding said paint mixture to said spray guns through a feed conduit free of any substantial restrictions to flow of said paint mixture therethrough;



(d) adjusting an amount of paint mixture sprayed by each of said guns independently of any adjustment of the other of said guns; and
(e) recycling unused paint mixture from said guns through a recycle conduit.

5,058,806
STREAM PROPELLED ROTARY POP-UP SPRINKLER WITH ADJUSTABLE SPRINKLING PATTERN
Robert L. Rupar, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.
Filed Jan. 16, 1990, Ser. No. 466,020
Int. Cl.[5] B05B *3/04, 15/10*
U.S. Cl. 239—205 **30 Claims**



1. A pop-up, rotating stream sprinkler device comprising:
an outer housing having a first longitudinal axis, and an inlet end adapted for connection to a source of liquid under pressure;
a first inner housing telescopically mounted within said outer housing for movement between retracted and extended positions, and having a second longitudinal axis coincident with the first longitudinal axis, and an outlet end adapted to discharge a stream of liquid under pressure to atmosphere;
a non-rotatable shaft, one end of said shaft supporting a rotary distributor assembly for rotation thereon downstream of said outlet end, and the other end of said shaft mounted in said first inner housing, and wherein said distributor assembly is operatively associated with a brake

for retarding rotation of said distributor; and further wherein said distributor assembly includes a substantially hollow portion defining an interior chamber, and said brake includes a stator mounted on said shaft and enclosed within said chamber, and further wherein said chamber contains a viscous fluid.

5,058,807

HIGH VOLUME, LOW PRESSURE SPRAYING SYSTEM

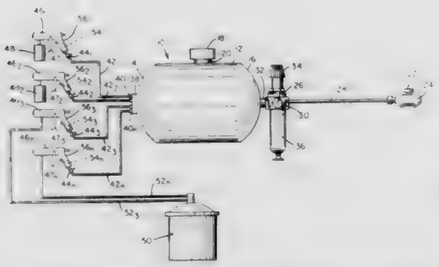
William C. Smith, 7701 Whiterim Ter., Potomac, Md. 20854

Continuation-in-part of Ser. No. 450,474, Dec. 14, 1989, Pat. No. 4,991,776. This application Oct. 31, 1990, Ser. No. 606,321

The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

Int. Cl.[5] B05B *7/24, 7/06*

U.S. Cl. 239—302 **20 Claims**



1. A high volume, low pressure atomization system, coupled to a compressed air source, for atomizing a fluid, comprising:

at least one atomizer including means for being coupled to a source of fluid to be atomized;

a jet venturi induction pump including a nozzle and a venturi section, said venturi section having an input end, an output end, and induction port means located at said input end adjacent said nozzle;

means for coupling the nozzle of said induction pump to said compressed air source;

an enclosure;

air line means for coupling low pressure air from the output end of said venturi section to said at least one atomizer for powering said atomizer;

an ambient air inlet assembly secured to said enclosure and including a closed air induction chamber for supporting said induction pump therein and having ambient air intake means for receiving ambient air in the vicinity of said enclosure, said induction port means being located inside of said air induction chamber for receiving ambient air from said intake means, and said output end being located outside of said air induction chamber for feeding low pressure air to said air line means; and

means for supplying low pressure air to said atomizer in addition to that generated by said jet venturi induction pump to boost the volume of low pressure air utilizable by said atomizer,

said enclosure being located apart from and at a predetermined distance away from said at least one atomizer so that overspray produced thereby and present in the ambient air in the vicinity thereof is prevented from being fed into said air intake means and said venturi induction pump along with compressed air from said compressed air source.

5,058,808

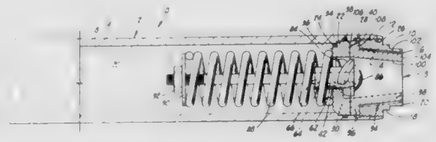
BURNER NOZZLE

Timothy M. Young, Coppell, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 24, 1990, Ser. No. 573,094

Int. Cl.[5] B05B *1/34, 1/30*

U.S. Cl. 239—464 **16 Claims**



1. A burner nozzle comprising:

a first disc defining a port therethrough and having a substantially helical first ramp thereon, an end of said ramp being in communication with said port;

a second disc adjacent to said first disc and having a substantially helical second ramp thereon, said first and second ramps generally facing one another and defining an orifice therebetween; and

a swirl chamber adjacent to said first disc and adapted for directing fluid discharged from said orifice.

5,058,809

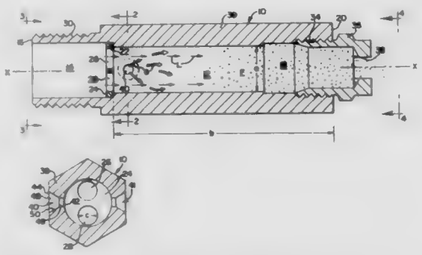
FOAM GENERATING ASPIRATING NOZZLE

Daniel L. Carroll, Ankeny, Iowa, and Timothy C. Shannon, Lexington, Tenn., assignors to Delavan Inc., West Des Moines, Iowa

Filed Sep. 7, 1990, Ser. No. 579,852

Int. Cl.[5] E03C *1/084;* **A62C** *31/12*

U.S. Cl. 239—428.5 **26 Claims**



1. A foam generating nozzle comprising:

a nozzle body having an exterior and an elongate passage therein having ends spaced from each other;

a liquid inlet adjacent one end of said elongate passage for introducing a liquid foam producing agent to flow axially through said elongate passage;

at least one gas inlet passage through said nozzle body between said liquid inlet and the other end of said elongate passage for aspirating a gas into said passage when said liquid foam producing agent is flowing through said elongate passage, said gas inlet passage extending in a plane substantially perpendicular to the axis of the axially flowing liquid foam production agent and having a first width adjacent said elongate passage, a second width greater than said first width adjacent the exterior of said body, and a wall extending between said widths; and

foam discharge means adjacent said other end of said elongate passage for discharging the foam therefrom.

5,058,810

FUEL METERING AND ATOMIZING VALVE FOR AN INTERNAL COMBUSTION ENGINE FUEL SUPPLY DEVICE

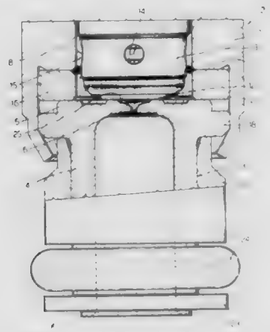
Silverio Bonfiglioli, Zola Predosa, and Francesco Morini, Bologna, both of Italy, assignors to Weber S.r.l., Turin, Italy

Continuation of Ser. No. 370,345, Jun. 22, 1989, abandoned. This application Dec. 14, 1990, Ser. No. 629,062

Claims priority, application Italy, Jun. 23, 1988, 53244/88[U]

Int. Cl.[5] B05B *1/34;* **F02M** *61/16*

U.S. Cl. 239—489 **10 Claims**



1. A fuel metering and atomizing valve for an internal combustion engine fuel supply device, comprising a plugging member and a nozzle including an injection hole and an upstream chamber with an interior having an interior surface said plugging member spaced away from said interior wherein said chamber is substantially in the form of a truncated cone having a narrower end, said injection hole being substantially constant in cross-sectional area and defining a mouth, said interior surface including ribs, said chamber gradually decreasing in cross-sectional area towards said mouth of said injection hole, wherein said narrower end abuts said injection hole substantially tangent to said injection hole, said ribs being substantially tangent to the outer circumference of said mouth so as to impart a tangential velocity on and separate a fuel jet issuing from said chamber when said fuel jet is released by said plugging member.

5,058,811

DEVICE FOR DISSEMINATION OF A SPREADABLE MATERIAL

Herbert J. Vissers, Hillegom, Netherlands, assignor to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed Oct. 2, 1989, Ser. No. 416,222

Claims priority, application Netherlands, Oct. 3, 1988, 8802420

Int. Cl.[5] A01C *15/00*

U.S. Cl. 239—659 **6 Claims**

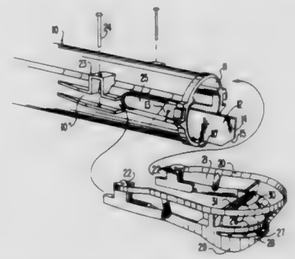
1. A device for the dissemination of spreadable material, such as fertilizer in powder of granule form, comprising:

a supported frame with a storage holder for the material for spreading with an outlet opening disposed therein;

a spreader pipe connected at a proximal end to said holder which pipe cooperates with said outlet opening, said spreader pipe being driven for reciprocal substantially horizontal swinging, and said pipe comprises top, bottom and side walls and an outflow opening at a distal end of said pipe with a given diameter and;

a spread pattern influencing means disposed at said distal end of said pipe comprising, a partition connected to the bottom wall of said pipe and extending vertically upwardly therefrom and which protrudes down stream from the outflow opening of said pipe over a determined length, said partition comprising top, front, rear and bottom edges, characterized in that said front edge is upstream from the rear edge, and said front edge is downstream from said proximal end and;

a bracket disposed at the distal end of said spreader pipe, said bracket having ends fixed to said side walls of said pipe, said bracket extending laterally from side wall to side wall at a distance downstream from said outflow opening and



said partition, which bracket comprises upper and lower edges displaced at a distance from each other to form passage openings and;

a rebound surface disposed in said bracket downstream from the outflow opening of said pipe and extending transversely of and above said partition at an incline to a longitudinal axis of said spreader pipe for directing at least a portion of the spreadable material in a upward direction.

5,058,812

SYSTEM FOR DISPENSING OF BOTH WATER BASE AND ORGANIC SOLVENT BASE COATINGS

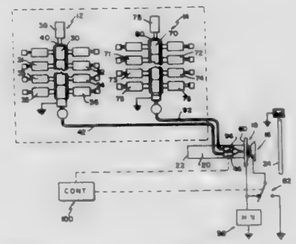
Jack L. Cox, Thorntown, and James A. Scharfenberger, Indianapolis, both of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

PCT No. PCT/US89/02444, § 371 Date Oct. 9, 1990, § 102(e) Date Oct. 9, 1990

PCT Filed Jun. 5, 1989, Ser. No. 582,895

Int. Cl.[5] B05B *5/04*

U.S. Cl. 239—691 **7 Claims**



1. In combination, a coating material dispensing device, an electrode for electrically charging dispensed coating material, the electrode being electrically substantially isolated from the coating material dispensing device, a source of first and second coating materials, the first coating material being electrically substantially more conductive and the second coating material being electrically substantially less conductive, first means for alternately supplying either the first coating material or the second coating material to the coating material dispensing device, means providing electrostatic high potential, second means for coupling the electrostatic high potential providing means to the electrode and for selectively coupling the electrostatic high potential providing means to the coating material dispensing device, the second means operating to couple the

electrostatic high potential providing means to the coating material dispensing device when the first means supplies the second coating material to the coating material dispensing device and to uncouple the electrostatic high potential providing means from the coating material dispensing device when the first means supplies the first coating material to the coating material dispensing device.

5,058,813

METHOD FOR COMMINUTING BRITTLE MATERIAL TO BE GROUND

Franz Thomas, Oelde-Stromberg, and Herbert Weit, Beckum, both of Fed. Rep. of Germany, assignors to Christian Pfeiffer Maschinenfabrik GmbH & Co. KG, Beckum, Fed. Rep. of Germany

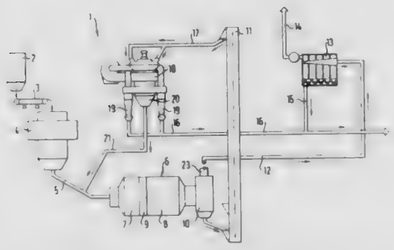
PCT No. PCT/EP89/00487, § 371 Date Feb. 28, 1990, § 102(e) Date Feb. 28, 1990, PCT Pub. No. WO89/10790, PCT Pub. Date Nov. 16, 1989

PCT Filed May 3, 1989, Ser. No. 455,356

Claims priority, application Fed. Rep. of Germany, May 4, 1988, 3815217

Int. Cl.[5] B02C *23/10, 23/12*

U.S. Cl. 241—19 **19 Claims**



1. A method for the comminution of brittle material comprising the steps of:

precrushing the brittle material in a first comminuting stage by means of a centrifugal crusher, screening material received from the crusher to provide oversize and undersize particles, comminuting the undersize particles in a second comminuting stage by means of a multistage tube mill so as to provide coarse and fine particles, supplying the course particles to a classifying stage in which the coarse particles are processed to provide further coarse and further fine particles, and mixing the further fine particles from the classifying stage with the fine particles from the second comminuting stage.

5,058,814

COFFEE GRINDER

Daniel R. Ephraim, Glencoe, and Philip C. Ephraim, Evanston, both of Ill., assignors to Modern Process Equipment, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 394,553, Aug. 16, 1989, Pat. No. 4,967,649. This application Aug. 8, 1990, Ser. No. 564,388

Int. Cl.[5] A47J *42/16*

U.S. Cl. 241—152 A **11 Claims**

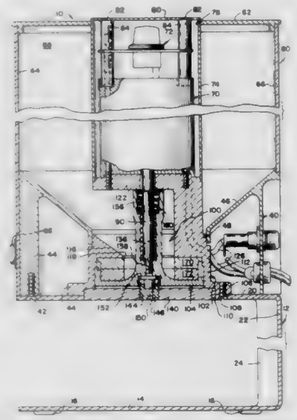
1. A grinder for grinding coffee beans into smaller grounds, the grinder comprising:

(a) a hopper adapted to hold a supply of coffee beans, the hopper having an outlet for such beans;

(b) a pair of grinding burrs mounted beneath the outlet of the hopper, in axially spaced relation to each other, for relative rotation of said burrs about a vertical axis, said burrs being arranged to grind beans received from the outlet of the hopper into smaller grounds and to expel such grounds radially and horizontally between said burrs;

(c) means defining a chamber, which includes an outer wall surrounding said burrs, a lower plate, and at least one outlet, for receiving such expelled grounds;

(d) outlet-closing means, which includes a blade mounted to the chamber-defining means and flexible between a normal position wherein the blade closes the outlet and flexed positions wherein the blade is flexed sufficiently to permit grounds to pass from the chamber through the chamber



outlet, for closing the chamber outlet until grounds in the chamber are pressed against the blade with sufficient force to flex the blades from the normal position to such a flexed position; and

(e) sweeping means, which includes a rotor arranged to rotate about said vertical axis and to sweep in the chamber when rotated, for sweeping grounds in the chamber in such manner that the swept grounds are against the blade.

5,058,815

HAMMER MILL FOR CRUSHING ORE AND THE LIKE MATERIALS

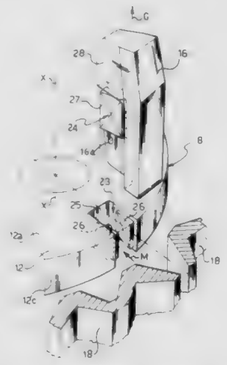
Alberto Pozzato, Via Sant'Eurosia, 10, Breganze, and Mariano Pozzato, Via del Rovere, 2, Sandrigo, both of Italy

Filed Mar. 29, 1989, Ser. No. 330,261

Claims priority, application Italy, Apr. 14, 1988, 20201 A/88

Int. Cl.[5] B02C *13/26*

U.S. Cl. 241—192 **5 Claims**



1. A hammer mill for crushing materials, comprising:

a cylindrical case clad with armor plates on its inside,

a rotor journalled on the case and carrying a plurality of hammers, and

anchor means for holding each hammer on the rotor at a position to confront the armor plates, said anchor means comprising a mortise formed at the rotor periphery and having opposed walls arranged to converge outwardly in a dovetail-like manner, the opposed walls of the mortise forming an angle therebetween within the range of 5° to 20°,

the hammer including an integrally-formed tenon having a cross-sectional shape matching that of the mortise and engaging with the walls thereof, the tenon being urged to wedge itself in a stable fashion between said mortise walls by centrifugal force applied to the hammer by the rotating rotor.

5,058,816

COPS PREPARATION STATION

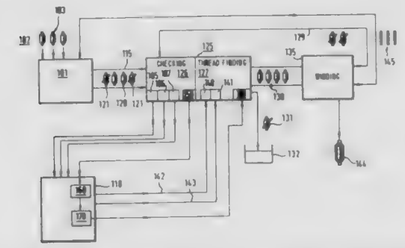
Manfred Schreiber, Horgen, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Sep. 15, 1989, Ser. No. 407,745

Claims priority, application Switzerland, Sep. 23, 1988, 03545/88; Nov. 7, 1988, 4126/88

Int. Cl.[5] B65H *54/00*

U.S. Cl. 242—18 R **21 Claims**



1. A method of locating a thread end of a cop during cop preparation comprising the steps of:

identifying a shape of the cop using at least one shape detector;

activating at least one thread detector included in a cop preparation station, the at least one thread detector being selected in response to the shape of the cop.

5,058,817

APPARATUS FOR CONTROLLING ROTATION OF DRUM

Shoichi Tone, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 299,752, Jan. 23, 1989, abandoned. This application Jun. 13, 1990, Ser. No. 536,997

Claims priority, application Japan, Jan. 25, 1988, 63-7046[U]

Int. Cl.[5] B65H *54/22*

U.S. Cl. 242—36 **3 Claims**

1. In an automatic winder having a plurality of winding units for winding a plurality of yarn packages, at least one of the winding units having a rotatable drum adapted to contact and rotate the yarn package, an apparatus for controlling the rotational speed of the drum during winding of the yarn package and during doffing of the yarn package, the apparatus comprising:

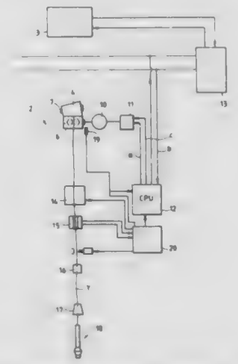
a travelling bogie for doffing the yarn package, the travelling bogie having a signal means for providing a signal,

a motor for driving the drum,

control means associated with the winding unit for generating first and second rotation controlling signals,

invertor means for selectively controlling the speed of the motor in response to the first or second rotation controlling signal to thereby control the rotational speed of the drum,

wherein the control means supplies the first rotation controlling signal to the invertor to control the rotational speed



of the drum during winding, and the control means, responsive to the signal from the travelling bogie, supplies the second rotation controlling signal to the invertor to control the rotational speed of the drum during doffing of the yarn package.

5,058,818

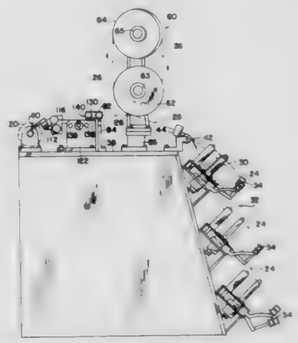
MULTI-STRAND BOBBIN WINDING APPARATUS

Rudolf H. Haehnel, and Ronald S. Schartel, both of Reading, Pa., assignors to Magnatech International, Inc., Sinking Spring, Pa.

Filed Feb. 8, 1990, Ser. No. 477,337

Int. Cl.[5] B65H *54/02, 54/28, 63/00*

U.S. Cl. 242—42 **16 Claims**



1. An apparatus for winding multiple strand ends on a bobbin, strands of the ends forming a band, the apparatus comprising:

means for delivering a plurality of individual strand ends to a supply port;

a pair of metering wheels disposed to accept said plurality of strand ends from the supply port, the strands of said ends being parallel and laterally spaced to define the band, said metering wheels including a first metering wheel rotatable on an axis perpendicular to the band and positioned to receive the band adjacent one lateral edge of said first metering wheel, and a second metering wheel rotatable on an axis parallel to a plane including the first metering wheel and angularly canted relative to the first metering

wheel, whereby the band proceeds on an at least partly helical path around said pair of metering wheels to a band pickup mounted on a fixed support;

a traversing mechanism and bobbin drive operable to wind the band on the bobbin, the traversing mechanism operating on the band downstream of the metering wheels along a band path;

the means for delivering the plurality of individual strand ends to the supply port including a supply spool station having spool holders for separate single end supply spools, the spool holders having adjustable strand tensioners, strands of the single ends extending from the supply spools to the supply port and from the supply port to the metering wheels; and,

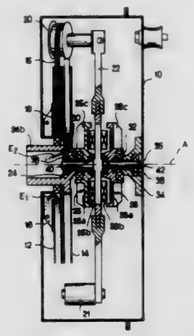
means for sensing rotation of the metering wheels, and a processor connected to the means for sensing rotation of the metering wheels and to an operator interface including a manually operable data input means, the processor being operable to receive from the data input means information respecting an available length on each of said separate individual supply spools and to register an available length during at least one bobbin winding operation by decrementing said available length as a function of rotation of the metering wheels.

5,058,819

PAYING OUT/WINDING IN DEVICE FOR ELIMINATING TORSION IN A LINE IN A ROTARY CONNECTION

Gilles Lacour, Lechaud, France, assignor to L'Enrouleur Electrique Moderne, Belley, France

Filed Feb. 21, 1990, Ser. No. 482,700
Claims priority, application France, Feb. 24, 1989, 89 02397
Int. Cl.[5] B65H *75/38*
U.S. Cl. 242—54 R **9 Claims**



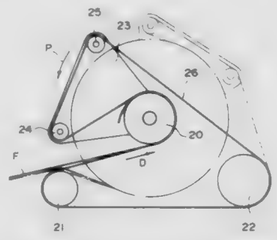
1. Paying out/winding in device for eliminating torsion in a line in a rotary connection between a fixed member and a mobile member to which respective ends of said line are fixed, the device comprising a narrow fixed spool fastened to the fixed member, a narrow mobile spool located adjacent to and coaxial with the fixed spool and fastened to the mobile member, an arm rotatable about the axis of the fixed and mobile spools, a satellite pulley at a free end of the arm rotatable about an axis inclined at a relatively small angle to the axis fo the fixed and mobile pulleys, and said satellite pulley, when rotating more slowly than the mobile spool, transferring the line from the mobile spool to the fixed spool or vice-versa, and drive means for rotating the arm comprising at least one sliding coupling having a primary member, a secondary member fastened to the arm, a first one-way clutch coupling the primary member to the mobile spool and a second one-way clutch coupling the secondary member to the fixed spool.

5,058,820

STRIP-LIKE MEMBER TAKE-UP DEVICE

Masahiko Ito, Yokohama, and Shinji Murata, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 148,751, Jan. 26, 1988, abandoned. This application Sep. 28, 1989, Ser. No. 415,392
Claims priority, application Japan, Jan. 30, 1987, 62-018540; Jan. 30, 1987, 62-018541; Feb. 27, 1987, 62-42730; Feb. 27, 1987, 62-42731
Int. Cl.[5] B65H *18/14, 18/26*
U.S. Cl. 242—67.1 R **26 Claims**



1. A strip-like member take-up device comprising:

take-up means for taking up the strip-like member being fed thereto, said taken up means including a take-up shaft and a pivot arm;

a belt member for applying an urging force to a surface area of the strip-like member against said take-up shaft;

a first pulley for movably supporting said belt member;

a second pulley for movably supporting said belt member and guiding said belt member so that it is wound around said take-up shaft, and said second pulley being movable in accordance with an amount of the strip-like member taken up by said take-up shaft; and

a third pulley for movably supporting a part of said belt member between said first and second pulleys, wherein said second and third pulleys are supported on said pivot arm and movable together so that a first portion of said belt member located between said second pulley and said third pulley is separated from said take up shaft by a first radial distance, a second portion of said belt member located between said first pulley and said third pulley is separated from said take-up shaft by a second radial distance, and said second radial distance increases as the amount of the strip-like member taken up by the take-up shaft increases.

5,058,821

COIL BOBBIN

Takehiko Yamashita, Chiryu, Japan, assignor to Daiwa Electricity Plant Co., Ltd., Chiryu, Japan

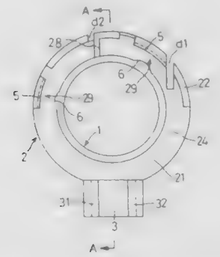
Filed Dec. 20, 1990, Ser. No. 630,493
Claims priority, application Japan, Dec. 29, 1989, 1-341880
Int. Cl.[5] B65H *75/08, 75/28;* **H01F** *15/10*
U.S. Cl. 242—118.4 **5 Claims**

1. A coil bobbin comprising:

a main cylinder portion opened at both ends thereof and made of a thin-walled resin around which a coil is wound; and

a leader cable accommodating groove portion for accommodating a leader cable, said leader cable accommodating groove portion made of a thin-walled resin, disposed in a manner surrounding said main cylinder portion at one end of said main cylinder portion on an outer peripheral surface of said main cylinder portion, and including a bottom plate portion disposed in a manner projecting from said outer peripheral surface of said main cylinder portion outward in a radial direction, a side wall portion projecting from a front end of said bottom plate portion, disposed away from said main cylinder portion by a predetermined distance and extending in an axial direction, and a groove opening opened in an axial direction;

wherein said leader cable accommodating groove portion further includes a leader cable front end accommodating portion for accommodating a front end of said leader



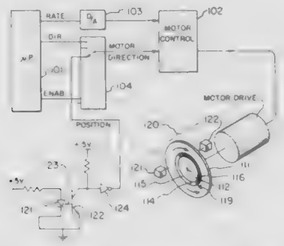
cable, said leader cable front end accommodating portion having a radialwise width, being smaller than a radialwise width of an inner portion of said leader cable accommodating groove portion, at a portion adjacent to said groove opening.

5,058,822

TAKEUP REEL POSITIONING APPARATUS FOR TAPE THREADING IN A TAPE DRIVE SYSTEM

Thai Nguyen, Thornton, and George Reichenberg, Lafayette, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Aug. 24, 1990, Ser. No. 573,079
Int. Cl.[5] G11B *15/32*
U.S. Cl. 242—195 **7 Claims**



7. In a tape drive having a tape threading arm for threading a leader block attached to one end of a magnetic tape mounted on said tape drive into a take-up reel which is driven by a take-up reel motor and a processor controlled motor winding drive circuit for controlling the rotation of said take-up reel motor where a processor transmits both take-up reel motor shaft rotation direction control signals and take-up reel motor shaft rate of rotation control signals to a take-up reel motor winding drive system, an apparatus for positioning said take-up reel motor shaft in a predetermined rotational position and for oscillating said take-up reel motor shaft around said predetermined rotational position to facilitate the threading of said leader block into a slot located in said take-up reel, comprising:

interrupter means, having a transmitter and a receiver for producing a beam extending therebetween, which beam is substantially parallel to said take-up reel motor shaft and located in proximity thereto;

a disk connected to said take-up reel motor shaft, having an axis aligned with the axis of said take-up reel motor shaft and rotating in synchronization therewith, said disk positioned to bisect said transmitted beam and including an annular ring on said disk, one segment of said annular ring being transmissive of said beam and the remainder of said annular ring being not transmissive of said beam such that when the boundary of said annular ring, where said annular ring changes from transmissive to not transmissive is in the path of said beam, said slot is positioned opposite said tape threading arm to receive said leader block;

disk position control means interposed between said processor and said takeup reel motor winding drive circuit and responsive to a disk position activation signal from said processor indicative of the substantial cessation of rotation of said motor shaft for positioning said boundary of said annular ring in said beam, said disk position control means including:

means responsive to said disk position activation signal for blocking the transmission of said take-up reel motor shaft rotation direction control signals from said processor to said take-up reel motor winding drive circuit to prevent said processor from interfering with said disk position control means regulating the operation of said take-up reel motor, and

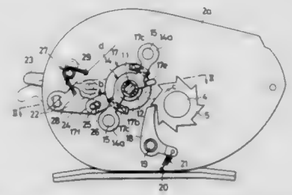
means connected to said interrupter means and responsive to a change from reception to non-reception of said beam and from non-reception to reception of said beam by said receiver for transmitting control signals to said take-up reel motor winding drive circuit to reverse the direction of rotation of said take-up reel motor shaft, such that said slot oscillates around said predetermined rotational position opposite said tape threading arm to receive said leader block.

5,058,823

FISHING REEL CLUTCH MECHANISM

Masaharu Emura, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Continuation of Ser. No. 77,318, Jul. 24, 1987, abandoned. This application Sep. 25, 1989, Ser. No. 411,258
Claims priority, application Japan, Jul. 25, 1986, 61-114912[U]
Int. Cl.[5] A01K *89/015*
U.S. Cl. 242—261 **3 Claims**



1. A clutch mechanism for a fishing reel having a spool shaft supported at both ends thereof, said mechanism comprising:

a pair of side plates supporting opposite ends of said spool shaft;

a handle for rotating said spool shaft;

a drive gear connected to said handle;

a pinion gear engaged with said drive gear, said pinion gear being slidably mounted on said spool shaft;

means on said spool shaft for engaging said pinion gear; and

clutch means on said spool shaft to selectively engage and disengage said pinion gear from said engaging means on said spool shaft in response to said pinion gear being moved axially on said spool shaft, said clutch means including a clutch cam concentric with said spool shaft for moving said pinion gear axially, a cam arm for actuating said clutch cam, a clutch operating layer linked to said clutch cam for disengaging said pinion gear from said engaging means, means for causing said pinion gear to engage said spool shaft in response to forward rotation of the handle, a lever shaft affixed to said operating lever, a lever plate affixed to one end of said lever shaft and pin means connecting said lever plate and said cam arm to transmit rotary motion of said operating lever to said cam

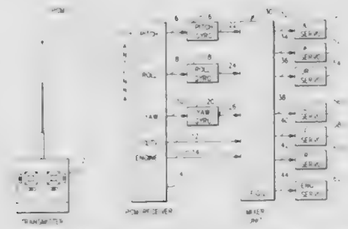
arm, said operating lever being rotatably supported by said lever shaft affixed to said operating lever, said lever shaft extending between said pair of side plates and being supported thereby, a dead point spring for urging said lever plate to move in either of two directions from a dead point of said spring, wherein said dead point spring is a hairpin type spring, and a flipping lever rotationally mounted to one of said side plates, and means for limiting the rotation of said flipping lever, one end of said spring being engaged to said lever plate, and an opposite end of said spring being engaged to said flipping lever.

5,058,824

SERVO CONTROL SYSTEM FOR A CO-AXIAL ROTARY WINGED AIRCRAFT

James P. Cycon, Orange; George S. Schneider, Hamden, and Gregory P. Tenerowicz, Seymour, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1989, Ser. No. 454,488
Int. Cl.[5] B64C *11/34*
U.S. Cl. 244—17.13 **5 Claims**



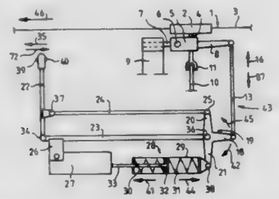
1. A servo control system for a co-axial rotary winged aircraft having an upper and lower rotor comprising:
command means for providing electronic command signals indicative of operator control commands in the pitch, yaw, roll, and collective axes of the aircraft;
electronic mixing means for providing at least three upper, and three lower, rotor electrical servo control signals in response to said command signals;
a plurality of upper swash plate servo means for controlling the pitch of the upper rotor blades of the aircraft in response to said upper rotor electrical servo control signals; and
a plurality of lower swash plate servo means for controlling the pitch of the lower rotor blades of the aircraft in response to said lower rotor electrical servo control signals.

5,058,825

STEERING AID FOR ROTOR AIRCRAFT

Denis Rabouyt, 90ter, rue Pierre Brossolette, 92140 Clamart, France

Continuation of Ser. No. 328,196, Feb. 9, 1989, abandoned. This application May 7, 1990, Ser. No. 520,993
Int. Cl.[5] B64C *27/52, 27/58, 27/02*
U.S. Cl. 244—17.25 **8 Claims**



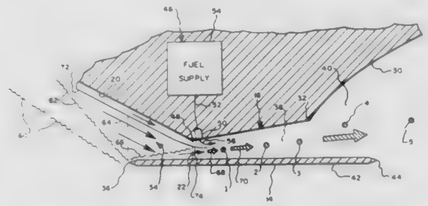
1. An autogyro, comprising a body, a rotor head mounted for pivoting about a pitch axis and a rolling axis, an articulated parallelogram linkage having first and second rods having upper and lower ends, a rigid lower bar articulated at the lower ends of said rods, linking means connecting the upper ends to said rotor head, a pilot control column, a rolling member having an axis, said rolling member being fixedly mounted in translation along said axis, with respect to said body and rotatably mounted about said axis, said rolling member being articulated at one end thereof on said column and at the opposite end thereof on a bell crank lever in turn rigidly connected to said lower bar, a link articulated at one end to said column and at the opposite end to said bell crank lever, a cylinder mounted for translation in both directions with respect to said body; means hingedly connecting one end of said cylinder to said articulated parallelogram linkage; a sliding member slidably mounted within said cylinder; spring means actuated by said sliding member; motor means coupled to said sliding member for translating said sliding member in any of said directions, from a reference position, and manual control means for controlling operation of said motor means during the flight.

5,058,826

SCRAMJET ENGINE HAVING A LOW PRESSURE COMBUSTION CYCLE

George A. Coffinberry, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 29, 1990, Ser. No. 471,332
Int. Cl.[5] B64D *27/16, 33/02*
U.S. Cl. 244—53 R **43 Claims**



1. A method of operating a scramjet engine for powering an aircraft, said engine including in series flow communication an inlet, combustor, and exhaust nozzle, comprising the steps of:
providing supersonic compressed airflow from said inlet to said combustor;
supplying fuel to said compressed airflow in said combustor and generating a fuel/air mixture having a predetermined temperature less than a temperature required for spontaneous ignition of said fuel/air mixture;
igniting said fuel/air mixture for sustaining recombination reactions of said fuel/air mixture for generating combustion gases; and
discharging said combustion gases from said combustor and through said exhaust nozzle for generating thrust.

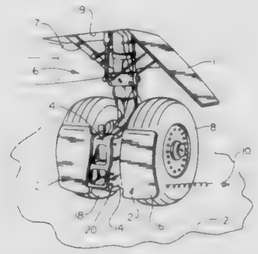
22. A scramjet engine for powering an aircraft at hypersonic speeds comprising:
an inlet effective for channeling supersonic compressed airflow;
a combustor disposed in flow communication with said inlet;
means for supplying fuel to said supersonic compressed airflow in said combustor for generating a fuel/air mixture having a predetermined temperature less than a temperature required for spontaneous ignition of said fuel/air mixture;
means for igniting said fuel/air mixture for sustaining recombination reactions of said fuel/air mixture for generating combustion gases in said combustor; and
an exhaust nozzle for discharging said combustion gases from said combustor for generating thrust for powering said aircraft.

5,058,827

SUPER DEBRIS DEFLECTOR

Michel Dansereau, Redondo Beach, and Lawrence S. McBee, Torrance, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 7, 1989, Ser. No. 447,438
Int. Cl.[5] B64C *25/32*
U.S. Cl. 244—103 R **2 Claims**



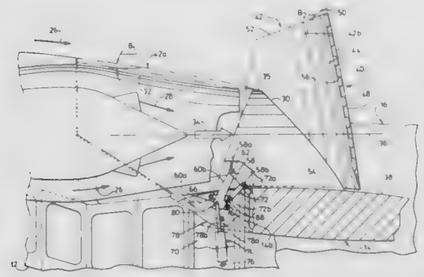
1. A debris deflector for an aircraft landing gear, wherein said landing gear includes a housing attached thereto and has wheels that can discharge debris from a runway, said deflector comprising:
a) at least one plate mounted to said housing aft of said wheels, in a position essentially vertical to said runway, said plate being S-shaped such that it conforms closely to the contour of said wheels;
b) said plate having a surface which faces said wheels, said surface having a plurality of steps extending thereacross at an angle oblique to said runway for ensuring that said debris is discharged laterally from said deflector;
c) said plate having a full profile and being substantially as wide as or wider than the width of the wheel, and said full profile being maintained when said plate and said landing gear are fully retracted into a wheel well.

5,058,828

OVERWING THRUST REVERSER

Anthony Pillari, Mason, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 30, 1990, Ser. No. 559,815
Int. Cl.[5] B64D *33/04*
U.S. Cl. 244—110 B **18 Claims**



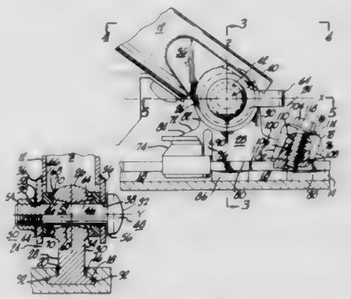
1. For an exhaust nozzle of a gas turbine engine having an axial centerline axis and supported by a wing for discharging exhaust gases from an exhaust fairing outlet thereof over a surface of said wing, a thrust reverser assembly comprising:
a generally U-shaped deflector having first and second spaced-apart sides joined together by a base, and spaced-apart open forward and aft ends, said sides including first and second intermediate ends, respectively, disposed between said forward and aft ends, spaced from said base and positioned adjacent to said wing surface in said deflector stowed position, said deflector being positionable in a stowed position around said exhaust nozzle so that said first and second intermediate ends are disposed adjacent to said wing surface and said aft end is disposed forward of said nozzle outlet for allowing substantially unobstructed discharge of said exhaust gases from said nozzle outlet, and in a deployed position for changing direction of said exhaust gases for thrust reversal;
a pair of first bellcranks each positioned adjacent to a respective one of said first and second deflector sides, each first bellcrank including a distal end pivotally joined to a forward pivot of a respective deflector side intermediate end, a proximal end pivotally supported below said wing surface, and an intermediate end disposed between said distal and proximal ends;
means for rotating each of said first bellcranks about said proximal end from a first position wherein said deflector is in said stowed position to a second position wherein said deflector is in said deployed position; and
a pair of second bellcranks each positioned adjacent to a respective one of said first and second deflector sides, each second bellcrank including a distal end pivotally joined to an aft pivot of a respective deflector intermediate end, and a proximal end pivotally supported below said wing surface; and wherein said first and second bellcranks are positioned and configured for controlling angular orientation of said deflector and for positioning said deflector from said stowed position to said deployed position so that said aft end is disposed against said wing surface and said base extends outwardly from said wing surface for deflecting said exhaust gases upwardly and out from said forward end.

5,058,829

SEAT TRACK FITTING

Paul R. Bentley, Valley View, Tex., assignor to Weber Aircraft, Gainesville, Tex.

Filed Jan. 12, 1990, Ser. No. 464,158
Int. Cl.[5] B64D *11/06*
U.S. Cl. 244—122 R **16 Claims**



1. An anchor fitting for anchoring a leg member having a pair of spaced branches with facing vertical surfaces to a track having a slot comprising:
a body member having means for anchoring engagement with the track slot and a vertical post at a distal end of said body member, said vertical post for positioning between the spaced branches of the leg member and having a horizontal bolt-receiving channel therethrough with a rest portion for rocking engagement with a bolt extending through the bolt-receiving channel and the spaced branches.
said bolt-receiving channel having a first inwardly tapered section on one end and a second inwardly tapered section on the other end such that said first and second sections

contain respective outside diameters larger than a shared inside diameter at the rest portion,

said vertical post having a substantially spherical outer surface surrounding each tapered section of said bolt-receiving channel for positioning between the facing vertical surfaces on the spaced branches of said leg member with a small gap between each said vertical surface and the adjacent spherical outer surface of the vertical post,

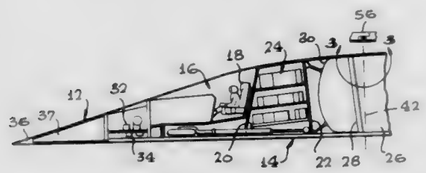
a bushing provided at each end of said bolt-receiving channel in and filling said gap for engaging a said vertical surface and slidably engaging the spherical outer surface surrounding that tapered section on the vertical post for allowing pivotal movement of the leg member relative to the vertical post in all directions without linear movement therebetween.

5,058,830

ESCAPE MECHANISM FOR CREW OF AIRCRAFT

Stephen G. Wurst, Orange, and Harry A. Scott, Hawthorne, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 8, 1990, Ser. No. 476,849
Int. Cl.[5] B64C 1/00
U.S. Cl. 244—140 **12 Claims**



1. In an aerospace vehicle comprised of a main vehicle having a fuel tank adapted to contain a fuel and a forebody coupled to said main vehicle, said forebody containing a crew compartment; a crew protection system in the event of a catastrophic failure of said fuel tank by combustion of fuel therein, which comprises

a system of baffles within the aft end of the forebody between the crew compartment and the fuel tank, to protect a crew member and cushion the blast of a fuel tank failure, and

means provided on said aerospace vehicle between said main vehicle and said forebody, whereby in the event of an uncommanded catastrophic failure of said fuel tank, a substantially circumferential structural break occurs between said forebody and said main vehicle, separating said forebody and crew compartment from said main vehicle.

5,058,831

EMERGENCY ESCAPE UNIT

Shigeki Takahashi, 8-2 Higashihagoromo 1-chome, Takaishi-shi, Osaka-Fu, Japan

Filed Jan. 3, 1990, Ser. No. 460,493
Claims priority, application Japan, May 19, 1989, 1-127441
Int. Cl.[5] B64D 17/00, 17/02, 17/30
U.S. Cl. 244—142 **4 Claims**

1. An emergency escape unit adapted to present, upon descent, a drag factor D sufficient to slow descent of a falling person, such drag factor being represented by the following formula:

$$D = C_D \cdot \tfrac{1}{2} \cdot \rho \cdot U^2 \cdot S$$

where

C_D: Drag coefficient

ρ: Air density

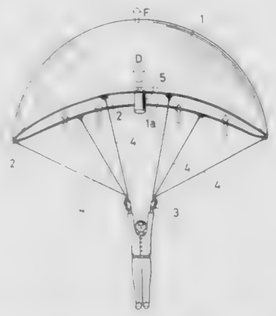
U: Falling speed

S: Projected area of a sack-like canopy on the plane at a right angle to the falling direction

and comprising:

a sack-like canopy adapted to receive a gas in an underside portion thereof to inflate same so that said drag coefficient C_D becomes greater than 1;

a plurality of strings connected to a plurality of string securing means attached to a peripheral edge of said sack-like canopy, said plurality of strings being bundled into two groups;



two strap members into one each of which a wrist of a user is adapted to be received, each said strap member being connected to one of said groups of said plurality of strings; and

a gas bomb containing light-weight gas adapted to be released into said sack-like canopy,

whereby said canopy may be deployed and inflated for safe descent by a user jumping from a building in which he is trapped.

5,058,832

PARACHUTE TRIGGER MECHANISM

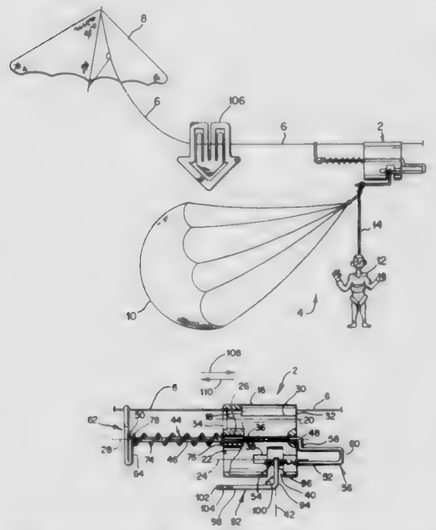
Kevin J. Buckman, 5937 Cumberland Pl., Stockton, Calif. 95209, and Thomas P. Buckman, 14093 Glenn Pines Rd., Grass Valley, Calif. 95945

Filed Feb. 7, 1991, Ser. No. 651,942
Int. Cl.[5] B64C 31/06
U.S. Cl. 244—155 R **23 Claims**

1. A trigger mechanism for an aerial device, comprising:

a housing comprising an upper bore extending therethrough along a first axis for attachment of said housing to a kite string; a lower bore extending into said housing along a second axis, and a central bore positioned between said upper and lower bore and extending through said housing along a third axis, said first, second and third axes being parallel to each other, a first slot extending through said housing to said upper bore, said first slot extending from one end of said housing to an opposite second end of said housing, a second slot extending through said housing to said central bore, said second slot extending from said one end to said opposite second end, a third slot extending through said housing to said lower bore, said third slot extending from said one end toward said opposite second end, and a fourth slot extending through said housing to said lower bore, said fourth slot being aligned with said third slot;

a rod having a first portion which extends through said central bore, a second portion which is parallel to said first portion and which extends into said lower bore from said one end and into said fourth slot, said first and second portions being free to reciprocate within said central bore and said lower bore, respectively, said second portion being oriented for rotational movement through said third slot, said second portion being bridged to said first portion at a first end of said first portion by a third portion, and a fourth portion extending from an opposite second end of said first portion and including means for attachment of said rod to said line; and



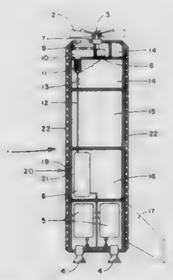
spring means for urging said fourth portion away from said housing and for urging said second portion into said lower bore.

5,058,833

SPACESHIP TO HARNESS RADIATIONS IN INTERSTELLAR FLIGHTS

William J. Carmouche, 353 Stanford Ave., Baton Rouge, La. 70808

Filed Mar. 6, 1990, Ser. No. 489,349
Int. Cl.[5] B64G 1/40
U.S. Cl. 244—158 R **12 Claims**



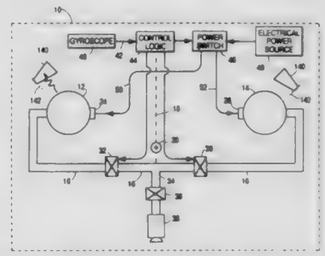
1. A craft for flight in the atmosphere or space, comprising a cylindrical body having a front end and a rear end, propulsion means positioned in said rear end, and a propeller mounted about a shaft extending from said front end, said propeller being rotatable about and independent of said shaft.

5,058,834

LIQUID BALANCE CONTROL FOR SPINNING SPACECRAFT

Carl H. Hubert, Cranbury Township, Middlesex County, N.J., assignor to General Electric Company, East Windsor, N.J.

Filed Dec. 11, 1989, Ser. No. 448,461
Int. Cl.[5] B64G 1/24
U.S. Cl. 244—164 **12 Claims**



1. A spacecraft adapted to be spun about an axis during operation, comprising:

propellant utilization means;

first and second containers for fluid propellant;

propellant distribution means coupled to said propellant utilization means and to said first and second containers for enabling liquid propellant flow among said propellant utilization means, said first container and said second container;

balance sensing means adapted for generating signals indicative of an unbalanced condition of said spin; and

differential pressure generating means coupled to said first and second containers and to said balance sensing means, and responsive to said signals for generating a pressure differential between said first and second containers, for thereby causing liquid fluid propellant to flow through said propellant distribution means in a manner tending to reduce said unbalanced condition, said differential pressure generating means comprising means for creating a temperature differential between at least portions of said first and second containers.

12. A method for balancing a spinning spacecraft, which spacecraft includes thruster means and also includes plural fluid propellant containers interconnected with said thruster means by a manifold, said manifold being interconnected with each of said containers at a location remote from the spacecraft spin axes so that the manifold is coupled for transfer of a liquid component of said fluid propellant,

said method comprising the steps of:

sensing an unbalanced condition of said satellite;

generating a temperature difference between at least a portion of said fluid propellant in two of said containers, for thereby generating a differential pressure;

in response to said differential pressure, moving a portion of said liquid portion of said propellant from one of said containers to another of said containers in a manner selected to reduce said imbalance.

5,058,835

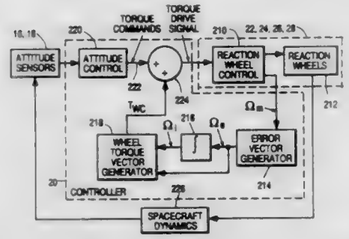
WHEEL SPEED MANAGEMENT CONTROL SYSTEM FOR SPACECRAFT

Neil E. Goodzeit, East Windsor, N.J., and David M. Linder, Doylestown, Pa., assignors to General Electric Company, East Windsor, N.J.

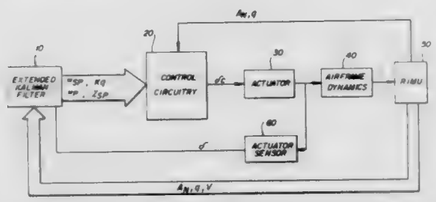
Filed Jun. 11, 1990, Ser. No. 535,675
Int. Cl.[5] B64G 1/28
U.S. Cl. 244—165 **6 Claims**

3. A method for controlling spacecraft attitude, comprising the steps of:

sensing the attitude of said spacecraft to produce attitude signals;
processing said attitude signals to produce torque control signals representative of the torques required to maintain said spacecraft 3-axis stabilized;
spinning at least four mutually skewed reaction wheels mounted on said spacecraft in response to said torque control signals;
sensing the speed of said wheels to produce wheel speed signals;
processing said wheel speed signals to generate wheel speed management control signals representative of the deviation of said wheel speeds from power optimal values, wherein said wheel speed signals processing step comprises the further steps of (a) generating wheel speed error vector signals from said wheel speed signals and information relating to the dimension and orientation of said wheels, (b) integrating said wheel speed error vector signals to produce integrated signals and (c) processing said wheel speed error vector signals and said integrated signals together to generate said wheel speed management signals; and
summing said wheel speed management signals with said torque control signals whereby said wheel speeds are maintained near said power optimal values.

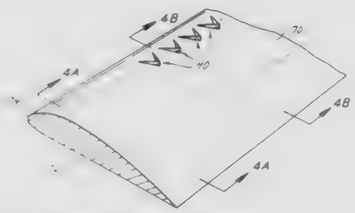


5,058,836
ADAPTIVE AUTOPILOT
Charles I. Nobel, Newtown Square, Pa., assignor to General Electric Company, Philadephia, Pa.
Filed Dec. 27, 1989, Ser. No. 457,877
Int. Cl.[5] G01C *21/24;* **G05D** *1/06*
U.S. Cl. 244—176 **14 Claims**



1. A control system for the reentry phase of a reentry type vehicle, the vehicle having aerodynamic control surfaces for controlling the attitude of the vehicle during the reentry phase, comprising:
estimating means for estimating dynamic aerodynamic operational parameters of the vehicle in response to status parameters of the vehicle and to an actuator indication signal;
sensing means coupled to the vehicle and to the estimating means, the sensing means for supplying the status parameters to the estimating means;
autopilot means coupled to the estimating means, the autopilot means for generating a drive command signal in response to the dynamic aerodynamic operational parameters; and
actuator means having a response characteristic ω_a and coupled to the autopilot means, the actuator means for controlling the aerodynamic control surfaces in response to the drive command signal and for generating the actuator control signal indicative of the orientation of the aerodynamic control surfaces.

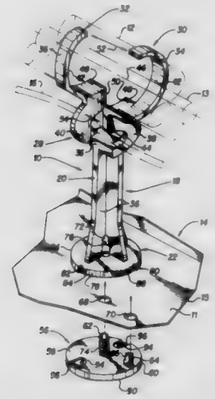
5,058,837
LOW DRAG VORTEX GENERATORS
Gary O. Wheeler, 2715 185th Ave. E., Sumner, Wash. 98390
Filed Apr. 7, 1989, Ser. No. 335,204
Int. Cl.[5] B64C *23/06*
U.S. Cl. 244—199 **33 Claims**



12. Vortex generator means including:
a flow control surface over which a medium flows from upstream to downstream; and
at least two vortex generators positioned on said flow control surface in a cross-stream array, each of said vortex generators being spaced from any adjacent vortex generator and having first and second sidewalls positioned upstanding from said flow control surface, each of said sidewalls having:
a tip portion positioned upstream in said flowing medium;
an apex portion positioned downstream in said flowing medium;
a sidewall first side surface; and
a sidewall second side surface spaced from said sidewall first side surface and facing generally the opposite direction therefrom, said apex portions of said sidewalls intersecting to form an apex at which flowing medium is ejected away from said flow control surface, said sidewall first side surfaces intersecting at said apex.

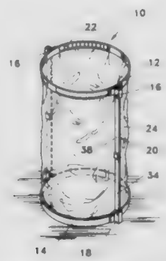
5,058,838
SUPPORT FOR VARIABLY SIZED ELECTRICALLY ENERGIZED TUBING
David C. Velke, Sr., 3305 Aldie Rd., Catharpin, Va. 22018; George P. Marsden, 7621 Mary Cassatt Dr., Potomac, Md. 20854, and Burton C. Leffingwell, 242 Meadows La., N.E., Leesburg, Va. 22075
Filed Oct. 9, 1990, Ser. No. 593,974
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—50 **12 Claims**

1. A support assembly for elongated tubing and adapted to be affixed to a relatively stationary member comprising;
a support member including an elevated post having a central longitudinal axis and joined at opposite ends to a bottom base and a top clamp assembly,
retainer means adapted to be affixed in a stationary disposition and having attachment means adapted to mount said bottom base thereto for arcuate displacement of said support member about said central longitudinal axis between an open position and a closed position,
said clamp assembly including a pair of oppositely facing and adjacent arcuate upper clamp arms, said upper clamp arms laterally spaced from one another along a common axis a distance no less than the diameter of a length of tubing to be retained thereby, said distance defining a tubing insertion and removal space,
said bottom base provided with catch means including open and closed catch means, and
latch means on said retainer means engageable with said bottom base catch means to secure said support member in either said open or closed position, whereby



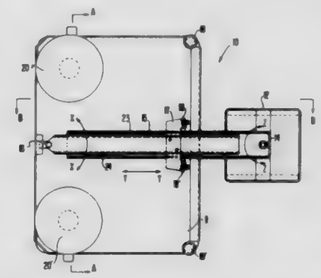
following placement of a length of tubing within said tubing insertion and removal space, said support member is angularly displaceable about said central longitudinal axis as said bottom base catch means is shifted from said open catch means to said closed catch means with a simultaneous displacement of said upper clamp arms to a position engageable with the tubing.

5,058,839
TRASH BAG HOLDER
Harry C. Stevens, Box 128, Almena, Kans. 67622
Filed Jan. 27, 1988, Ser. No. 149,007
Int. Cl.[5] B65B *67/00*
U.S. Cl. 248—97 **5 Claims**



1. A trash bag holder comprising a top circular support member; a bottom circular support member; a first and a second upper hinge means secured to said top circular support member; a first and second lower hinge means secured to said bottom circular support member; a first leg means pivotally connected to said first upper hinge means and to said first lower hinge means; and a second leg means pivotally connected to said second upper hinge means and to said second lower hinge means; said first leg means comprises a first lower leg section and a first upper leg section pivotally secured to said first lower leg section; said second leg means comprises a second lower leg section and a second upper leg section pivotally secured to said second lower leg section; said first lower leg section terminates in a first lower head having a structure defining a first lower head channel wherein a lower part of said first upper leg section slidably lodges; said first lower head additionally comprises a first lower lug means extending partially over the first lower head channel; said second lower leg section terminates in a second lower head having a structure defining a second lower head channel wherein a lower part of said second upper leg section slidably lodges; and said second lower head additionally comprises a second lower lug means extending partially over said second lower head channel; and additionally comprising at least one arcuate clamp means slidably disposed over said top circular support member, said arcuate clamp means having an outside wall and an inside wall integrally bound to said outside wall, said inside wall having a structure defining a plurality of trapezoidal shaped wall members with an upturned edge.

5,058,840
APPARATUS AND METHOD FOR REDUCING REPETITIVE OR MAINTAINED STRESS INJURIES
Thomas J. Moss, Cocoa; Marilyn Moss, and James R. Moss, both of Satellite Beach, all of Fla., assignors to Product Innovation, Inc., Satellite Beach, Fla.
Filed Jul. 10, 1990, Ser. No. 550,442
Int. Cl.[5] A47B *21/00*
U.S. Cl. 248—118.5 **20 Claims**

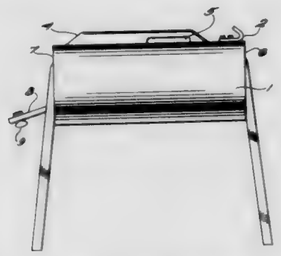


1. An arm rest assembly for use with computer peripherals, comprising
a thin profile platen;
means for clamping the platen to a mounting surface;
at least one slide comprising a plurality of parts, one of which is detachably pivoted to the platen and the other of which is linearly movable relative to the one part;
at least one cradle swivelably associated with the other part of the at least one slide and having an outer surface configured to a shape of a user's forearm; and
a bracket operatively connected with the one part of the at least one slide and being provided with at least one roller adapted to roll on the mounting surface for allowing support and pivotal movement of the at least one slide.

5,058,841
SADDLE SUPPORT
James B. Fernbaugh, and Bonnie J. Fernbaugh, both of 7992 Soquel Dr., Aptos, Calif. 95003
Filed Dec. 11, 1989, Ser. No. 448,279
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—126 **2 Claims**

1. A saddle holder for holding horse saddles for wall mounting and floor mounting comprising: a hollow support tube capable of supporting the weight of said saddle and capable of storing objects in the interior of said tube, said tube having a contoured shape, said shape being elliptical in nature with the width of said tube longer than the height of said tube so that said shape of said tube can conform to the shape of said saddle, spine means on the top surface of said tube and running about the length of said tube so that said saddle can be secured in

place, hook located on the top surface of said tube an at one end of said tube, said hook capable of supporting said holder from a wall mounted eyelet, vertical support means attached to



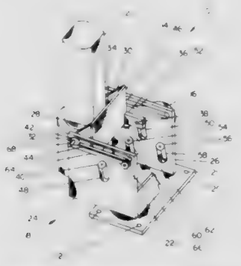
said tube and capable of being detached form said tube, wherein said saddle holder is made substantially of polyvinyl choride.

5,058,842

LOW TORQUE TILTING PLATFORM

Karl E. Zemlin, Greensboro, and Ronald G. Sergeant, Lewisville, both of N.C., assignors to Burle Technologies, Inc., Wilmington, Del.

Filed Aug. 17, 1990, Ser. No. 569,184
Int. Cl.[5] F16M *11/02*
U.S. Cl. 248—178 **8 Claims**



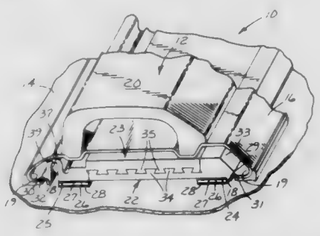
1. A tilting platform apparatus comprising:
a base plate;
a first vertical side plate attached to the base plate and extending transversely from the base plate, the first vertical side plate including at least one essentially horizontal slot;
a second vertical side plate, parallel to the first vertical side plate, attached to the base plate and extending from the base plate in the same direction as the first vertical side plate, the second vertical side plate including at least one essentially horizontal slot and a first essentially vertical slot;
a tilting platform to which are attached two hangers extending transverse to the platform, with each hanger attached to a pivot connection at a location a distance from the platform, and each pivot connection being attached to a pivot support, the platform being located between the first and second vertical side plates and being pivotably and slideably attached to the two vertical side plates at the pivot connections by the pivot supports being located within the essentially horizontal slots within the two vertical side plates;
a first leg attached to the platform and extending transversely from the platform in a direction opposite from the direction of the hangers;
a motor, with a shaft, slideably attached to the second vertical side plate so that the motor may move in an essentially vertical direction, with the shaft of the motor attached to the first leg of the platform, thus permitting the motor shaft to rotate the first leg and the platform around the motor shaft.

5,058,843

ADJUSTABLE TRIM STRIP MOUNTING ASSEMBLY

Brian L. Koster, Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 11, 1989, Ser. No. 406,956
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—221.4 **6 Claims**



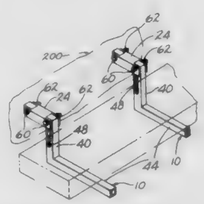
1. A mounting assembly adaptable for attaching elongate trim strips of different widths to a generally planar surface of a panel, said trim strips each having a wall defining an elongate recess opening along a back side of the trim strip with the recess having an inlet opening with opposite sides defined by distal edges of parallel converging portions of said wall spaced by predetermined distances at said inlet opening, said mounting assembly including
first and second parts, said parts each comprising an anchor surface adapted to be positioned adjacent the planar surface on a said panel, an elongate ridge flanking said anchor surface and adapted to be received in the recess of a said trim strip along a different one of said wall portions, said ridge having a holding surface disposed at an obtuse angle with respect to said anchor surface;
means for releasably attaching said parts together with said anchor surfaces generally aligned and said ridges projecting in opposite directions and with said ridges spaced by one of several predetermined distances to afford engagement of the distal edges of the parallel converging wall portions of trim strips of one of several predetermined widths with the holding surfaces of said ridges; and
means for attaching the anchor surfaces of the parts to the planar surface on a said panel.

5,058,844

PIVOTAL MOUNTING BRACKET

Lloyd Webb, Akron, Ohio, assignor to Frank Hotlosz, Akron, Ohio, a part interest

Filed Jul. 2, 1990, Ser. No. 547,471
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—286 **4 Claims**



1. A bracket for pivotally mounting an object to a rigid surface, said bracket comprising:

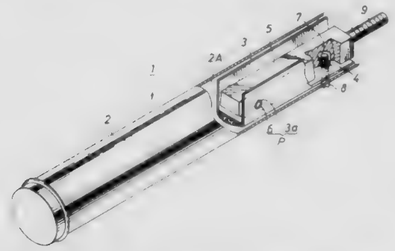
an essentially hollow tubular first member having two mirror-image side plates connected in a parallel manner by a bottom plate and a top plate and having first and second ends, said first end being adapted for mounting to said rigid structure, and said second end being a clevis wherein said side plates comprise the forks of said clevis, each said fork having an aperture colinearly disposed therethrough, the essentially hollow interior of said first member comprising a channel at said second end;
an essentially hollow tubular second member having an essentially "Z"-shape comprising first, second and third straight sections, each said straight section having first and second ends, said sections connected sequentially in essentially perpendicular manner so that the second end of said first section is attached to the first end of said second section and the first end of said third section is attached to the second end of said second section, an elongate slot is disposed longitudinally on said second section co-planar to the "Z"-shape, said first an second sections being of proper dimension so that said first section will fit within said clevis forks at said second end of said first member when said elongate slot is positioned colinearly with the apertures at said second end of said first member;
a means for fastening said first member to said second member when said elongate slot and said apertures at the second end of the first member are aligned colinearly;
a means for mounting said first end of said first member to said rigid surface; and
a means for mounting said object to the third section of said second member.

5,058,845

INCLINATION ANGLE-ADJUSTABLE SUPPORTING DEVICE FOR DISPLAY

Takafumi Itagaki, Chiba, Japan, assignor to Tamatoshi Industries Limited, Tokyo, Japan

Filed Mar. 1, 1990, Ser. No. 486,820
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—291 **15 Claims**



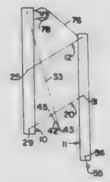
1. A supporting device comprising:
a basic rod member having a connecting portion adapted to be detachably connected to a display apparatus; an outer cylindrical having a hollow housing portion for receiving said basic rod member therein, said basic rod member comprising a distal end portion which is pivotally connected to an adaptor provided in the hollow housing portion of said outer cylindrical member, said adaptor being fixed to said outer cylindrical member and having a channel-like cross section;
wherein a space is preserved between said hollow housing portion and said basic rod member so as to allow a pivotal movement of said basic rod member in said hollow housing portion; and wherein and adjustment screw is inserted into a through hole provided in said outer cylindrical member and engages with a screw hole provided in a bottom surface of said adaptor in such a manner that a distal end portion of said screw is adapted to be brought into contact with said basic rod member so as to adjust an angle of inclination defined between said basic rod member and said outer cylindrical member.

5,058,846

PULL DOWN DISPLAY AND STORAGE APPARATUS

James G. Close, Malikoff, Tex., assignor to Hoyt-Close Products, Inc., Lafayette, La.

Filed Feb. 23, 1990, Ser. No. 485,153
Int. Cl.[5] E04G *3/00*
U.S. Cl. 248—292.1 **4 Claims**



1. A movable frame for connection to and movement with respect to a fixed support, the movable frame comprising
a movable frame member,
pivot means interconnected between the movable frame member and the fixed support for combined pivoting movement of the frame member from a first position adjacent the fixed support to a second position outwardly from and downwardly with respect to the fixed support,
the pivot means comprising
an upper pivot arm having two ends, one end pivotally coupled to the fixed support relatively near a middle of the fixed support and the other end pivotally coupled to the movable frame relatively near a top of the movable frame member,
a lower pivot arm having two ends, one end pivotally coupled to the fixed support relatively near a bottom of the fixed support and the other end pivotally coupled to the movable frame member relatively near a middle of the movable frame member,
said upper and lower pivot arms supporting the movable frame member and permitting the movable frame member to swing vertically downward from a first retracted position adjacent the fixed support to an extended position below the fixed support and to return to said retracted position,
a retractable device comprising
a cylinder mounted to the fixed support relatively near a top of the fixed support, and a flexible screen having two ends, one end attached to the cylinder and the opposite end attached to the movable frame member relatively near a top of the movable frame,
said screen retracted around the cylinder when the movable frame member is in said retracted position, and
said screen stretched between the fixed support and the movable frame member when the movable frame member is in said extended position.

5,058,847

HANGING HOLDER AND HANGING STRUCTURE INCLUDING SAME

Hideo Arakawa, Tokyo, Japan, assignor to Arakawa & Co., Ltd., Japan

Filed Jun. 19, 1990, Ser. No. 540,579
Int. Cl.[5] A47H *1/10*
U.S. Cl. 248—328 **30 Claims**

1. A hanging holder comprising:
a holder body forming a central portion thereof with a vertical through-hole and including a tapered section of which the inner diameter is upwardly gradually decreased;

a slide lock sleeve formed at the central portion thereof with a vertical through-hole and including a sleeve body slidably arranged in said holder body and a projection section mounted on the upper end of said sleeve body so as to upwardly project from said holder body;

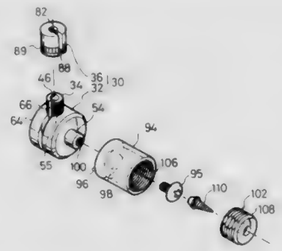
said sleeve body including a tapered section of which the outer diameter is upwardly gradually decreased so as to correspond to said tapered section of said holder body;

said slide lock sleeve being provided with a chuck mechanism for selectively clamping a wire inserted through said vertical through-hole of said slide lock sleeve to hold said hanging holder with respect to the wire;

said slide lock sleeve being constantly upwardly urged by a spring means;

said projection section of said slide lock sleeve being formed on the outer periphery thereof with a thread;

a lock member formed at the central portion thereof with a vertical threaded through-hole via which it is threadedly



fitted on said outer periphery of said projection section of said slide lock sleeve;

a bottom cover arranged on the bottom of said holder body for closing it and formed at the central portion thereof with a vertical through-hole;

said holder body, slide lock sleeve, bottom cover and lock member being formed with slits so as to vertically extend therethrough and laterally extend to said vertical through-holes, respectively;

said slits of said holder body, slide lock sleeve and bottom cover being arranged in a manner to be aligned with one another and communicate with one another;

said slit of said lock member being arranged so as not to be aligned with said slits of said holder body, slide lock sleeve and bottom cover when said lock member is threadedly fitted on said slide lock sleeve for hanging operation;

at least one support provided on said holder body for supporting an article to be hung therethrough on said holder body.

5,058,848

READING MATERIAL HOLDER

James A. Ferraro, 1851 Marsh Rd., Wilmington, Del. 19810

Filed Dec. 17, 1990, Ser. No. 627,977

Int. Cl.[5] A47B *5/04*

U.S. Cl. 248—441.1 **11 Claims**

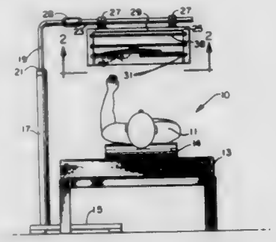
1. A device for positioning reading material for use by a person in a horizontal position, comprising:

a frame, including a base portion, a vertical portion extending above said base, and a horizontal portion for extension over the location of the person;

a housing including means for mounting said housing on said horizontal portion of said frame, said housing including a back plate extending horizontally in said frame;

a reader plate frame for housing a reader plate and mounted on said frame below said back plate and spaced therefrom to position reading material in an open orientation facing said person;

first and second clear reader plates mounted horizontally in said reader plate frame to enclose both sides of reading material while leaving a spaced region between said plates for access to said reading material by said person in a horizontal position; and



bias means on the exterior of one of said reader plates for receiving pages of reading material moved from under the other of said plates through said spaced region to thereby hold said pages on said exterior of said first reader plate.

5,058,849

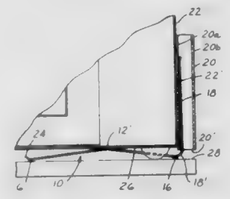
RETENTION DEVICE

Louis A. Harvey, Sr, 15107 Ilene, Detroit, Mich. 48238

Filed Jun. 25, 1990, Ser. No. 542,913

Int. Cl.[5] A47B *97/02*

U.S. Cl. 248—442.2 **2 Claims**



1. A retention device for retaining a secondary object relative to a primary object, wherein said primary object includes slot means, said retention device comprising:

a retention spring constructed of a resilient material having a first end, a second end, a first side and a second side, said retention spring having a first foot located at said first end and a second foot located at said second end, each said first and second feet being located on said first side of said retention spring, said retention spring having a hump located between said first foot and said second foot, said hump having an apex, said apex being located on said second side of said retention spring, said first and second feet being covered by a pad of soft, resilient material; and

a retention member interconnected with said second end of said retention spring, said retention member being oriented substantially perpendicular with respect to said second foot in a direction substantially normal to said second side of said retention spring at said second foot thereof;

wherein said retention spring may be inserted with said first end first into the slot means of the primary object such that said apex and said first and second feet will biasably press thereagainst so as to retain said retention spring in a fixed location relative to the primary object and the secondary object may be connected with the retention member so as to retain the secondary object relative to the primary object;

wherein further said retention member is integral with said retention spring, said retention member being constructed of said resilient material; wherein said retention member may biasably press against the secondary object so as to retain the secondary object adjacent the primary object.

5,058,850

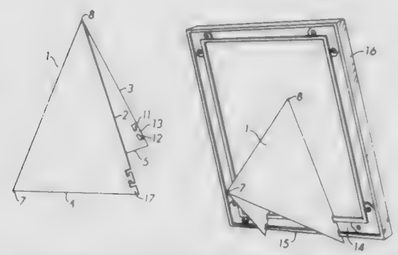
EASEL FOR PICTURE FRAME

Ike N. Glick, 7103 - 111 Street, Edmonton, Alberta, Canada T6G 1G9

Filed Jun. 2, 1989, Ser. No. 360,598

Int. Cl.[5] A47G *29/00*

U.S. Cl. 248—450 **1 Claim**



1. An easel, for use with a generally flat supported member having a horizontal channel at its lower end, comprising:

a generally diamond-shaped and flat first member formed of stiff resilient material, said first member having a line of weakness extending transversely thereof between its oblique points, whereby the first member may be bent along the line of weakness to adopt a generally conical configuration wherein the first member has, in such operative conical mode, load-supporting edges along one open side of the first member and bottom edges along the other open side of the member, said load-supporting edges being rearwardly inclined;

each load-supporting edge having means, spaced above but close to the adjacent bottom edge, for disengageably and frictionally interlocking with the channel, said conical member forming a pair of generally L-shaped slots spaced apart along the length of each load-supporting edge and extending inwardly from the edge to form a generally T-shaped member, whereby the slots and T-shaped member provide the interlocking means;

whereby in the operative conical mode the first member can interlock with the channel to suspend and support the channel and its supported member, the load-supporting edges are rearwardly inclined to support the supported member in a correspondingly upstanding and inclined position, and the side walls of the first member may be adjusted laterally to alter the inclination of the load-supporting edges while the frictional interlock will maintain the selected spacing of said walls.

5,058,851

MOUNTING ASSEMBLY FOR REARVIEW MIRROR

Patrick J. Lawlor, Dublin; John J. McCormack, and John P. Desmond, both of Newbridge, all of Ireland, assignors to Donnelly Mirrors Limited, Naas, Ireland

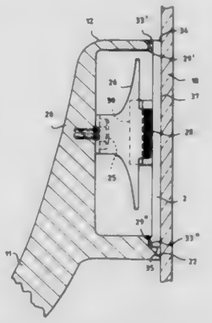
Filed Apr. 11, 1990, Ser. No. 508,055

Claims priority, application Ireland, Apr. 14, 1989, 1211/89

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—549 **7 Claims**

1. In a mounting assembly for a vehicle interior rearview mirror, the assembly comprising a base part for attaching directly to the inside surface of a vehicle windscreen, a mirror case support bracket having at one end means for mounting a mirror case and at the other end means for sliding engagement with said base part to mount said bracket onto said base part, and abutment means on one of said bracket and base part for engaging a portion of the other of said bracket and base part to define a fully engaged position of said bracket on said base part, one of said base part and bracket having a resilient clip and the other of said base part and bracket having flange means, said clip and flange means being brought into contact during said sliding engagement and being effective to retain said bracket on said base part by resilient engagement of said clip with said flange means, said bracket further being blow-releasable from said base part in the fully engaged position, the improvement wherein bearing surfaces are provided on said base pat and bracket respectively which come to bear against one another just as said bracket nears said fully engaged position during said sliding engagement and, when said abutment means bracket slightly away from said base paret against the resilient bias of said clip, compared to the position of said bracket during the prior part of said sliding engagement o as to increase the force exerted by said clip on said flange means when in said fully engaged position.



5,058,852

VEHICLE SEAT WHICH IS ADJUSTABLE IN HEIGHT AND WITH AUTOMATIC WEIGHT ADJUSTMENT

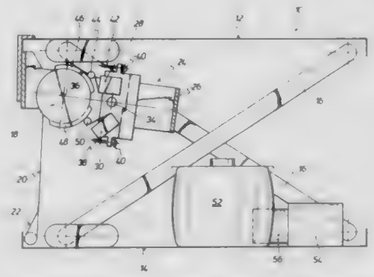
Johann Meier, Fensterbach/Wolfring; Johann Grassl, Pittersberg, and Josef Dotzler, Amberg, all of Fed. Rep. of Germany, assignors to Grammer AG, Amberg, Fed. Rep. of Germany

Filed Oct. 12, 1990, Ser. No. 596,362

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 4025183

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—588 **5 Claims**



1. A vehicle seat including a seat frame; a base frame; a gas spring operatively arranged between the seat frame and the base frame; a valve means for adjusting the pressure in the gas spring in response to the weight of the seat occupant; an actuating member for actuating the valve means; a means for adjusting a desired seat height; a belt reel means disposed between the seat frame and the base frame, said belt reel means including a coupling means, said coupling means and said gas spring adapted to be subjected to the action of a pressure gas; a pressure source for supplying said pressure gas, said pressure source including a compressor and a drive motor for the compressor, said compressor and said drive motor being located on the vehicle seat, wherein said valve means comprises:

an electromagnetically actuable 2/2-way valve, which serves only for the release of gas from the gas spring and an electromagnetically actuable 3/2-way valve located between said pressure source and the coupling means of the belt reel means; and

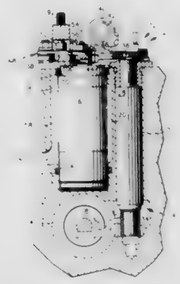
an electronic control circuit having outputs for connection to respective ones of said valves, inputs for a seat level switch, an up/down setting switch and a seat contact switch respectively, an output for connection to the drive motor for the compressor, a microprocessor, an input circuit means between the microprocessor and said inputs of the control circuit and output stages between the microprocessor and respective ones of said valves.

5,058,853

VIBRATION ISOLATION MOUNT SYSTEM

Scott J. Beloncik, Windsor; Kenneth P. Hansen, and Michael A. Gillott, both of Somers, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 26, 1989, Ser. No. 358,293
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—634 **4 Claims**



1. An improved fuel control assembly of the type having a housing, a metering valve mounted in the housing for regulating fuel flow, and position feedback apparatus, including a resolver assembly having a rotor coupled at one shaft end thereof to the metering valve, to provide a signal indication of the metering valve position, the improvement comprising:

a mounting cavity formed in the fuel control housing for receiving the resolver therein, said mounting cavity having a volume larger than the displacement of the resolver body to permit placement of the resolver therein with a spatial void therebetween;

plurality of vibration isolators, each comprising a resilient material and each adapted to compress within the spatial void, between the resolver body and the cavity inner wall, to positionally fix the resolver in spaced relation to the cavity inner wall surface; and

mounting apparatus for engaging a first end of the resolver body with the fuel control housing in a manner to provide compressive loading of the resolver body against the vibration isolators, within the cavity.

5,058,854

CONTAINMENT BOX INSTALLATION TOOL

Sergio M. Bravo, 2872 Tigertail Dr., Los Alamitos, Calif. 90720

Filed Feb. 16, 1990, Ser. No. 481,497
Int. Cl.[5] E01C *19/50*
U.S. Cl. 249—2 **4 Claims**

4. A tool for positioning an object in a form, in combination with the form, the combination comprising:

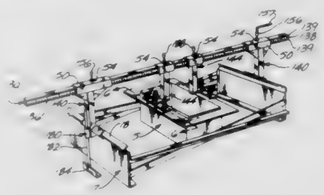
a form for concrete;

a single elongated rod extending in a longitudinal direction from one end of the form to an opposite end;

two outer support assemblies connected to the elongated rod for movement in the longitudinal direction with respect to the rod, the two outer support assemblies each having means for supporting the elongated rod above the form; and

two inner assemblies connected to the elongated rod for movement in the longitudinal direction with respect to the rod, the two inner assemblies each having means for fastening to and supporting the object;

wherein the two outer and inner assemblies are connected to the elongated rod by hollow sections of rods having inner dimensions slightly greater than outer dimensions of the elongated rod, and



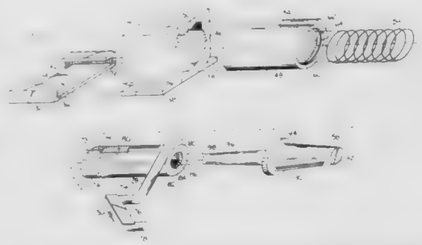
wherein the means for fastening to and supporting comprises first means for adjusting a position of the object in a first vertical plane encompassing the longitudinal direction of the rod to adjust level, and second means for adjusting the position of the object in a second vertical plane encompassing a direction transverse to the longitudinal direction, the first means comprising means for adjustably tilting the object in the first vertical plane, and the second means comprising means for adjustably tilting the object in the second vertical plane, so as to provide bi-directional adjustment of the level of the object.

5,058,855

LATCHING BOLT MECHANISM FOR CONCRETE FORMING SYSTEM

Philip T. Ward, Leawood, Kans., assignor to Western Forms, Inc., Kansas City, Mo.

Filed Jan. 18, 1990, Ser. No. 466,967
Int. Cl.[5] E04G *17/04, 17/14*
U.S. Cl. 249—47 **15 Claims**



1. A latching mechanism for concrete form panels comprising:

(a) latching means for connecting concrete form panels together; and

(b) mounting means for attaching said latching means including:

(i) a mounting bracket fixed to a form panel;

(ii) said mounting bracket having opposed slide channels;

(iii) a latching means housing block being slidably received in said channels; and

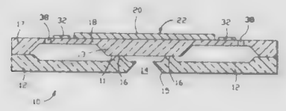
(iv) means for retaining said housing block in said mounting bracket.

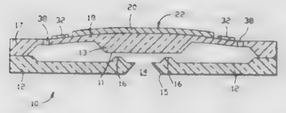
5,058,856

THERMALLY-ACTUATED MICROMINIATURE VALVE

Gary B. Gordon, Saratoga, and Phillip W. Barth, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 8, 1991, Ser. No. 697,149
Int. Cl.[5] F16K *31/70*
U.S. Cl. 251—11 **19 Claims**





1. A microminiature valve for controlling the flow of a fluid comprising,

a seat substrate having a flow orifice defined therethrough,

a flexural member coupled to said seat substrate to selectively block said flow orifice, said flexural member having a central flap in alignment with said flow orifice and having a plurality of spaced, layered regions extending from said central flap to a peripheral region, first and second layers of said layered regions having substantially different coefficients of thermal expansion, and

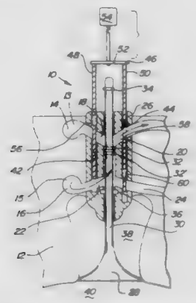
heating means thermally coupled to said layered regions for selectively flexing said layered regions by differential expansions of said first and second layers, wherein said flexing causes displacement of said central flap relative to said flow orifice.

5,058,857

SOLENOID OPERATED VALVE ASSEMBLY

Mark Hudson, Rte. 4, Box 154, Theodore, Ala. 36582

Filed Feb. 22, 1990, Ser. No. 484,698
Int. Cl.[5] F16K *31/124*
U.S. Cl. 251—30.05 **1 Claim**



1. A valve assembly mountable within the head of an internal combustion device, said assembly comprising:

a valve guide having a valve guide bore, an upper pressurized fluid input line, a lower pressurized fluid input line, an upper output line, and a lower output line;

a valve member reciprocally fitted in said bore; a first sleeve slot intersecting said upper and lower input lines;

a second sleeve slot intersecting said upper and lower output line;

a first sleeve half portion slidably disposed in said first sleeve slot, said first sleeve in a first position blocking a fluid flow in said upper input line and allowing a fluid flow in said lower input line, said first sleeve in a second position blocking a fluid flow in said lower input line and allowing a fluid flow in said upper input line;

a second sleeve half portion slidably disposed in said second slot, said second sleeve in a first position blocking a fluid flow in said lower output line and allowing a fluid flow in said upper output line, said second sleeve in a second position blocking a fluid flow in said upper output line and allowing a fluid flow in said lower output line; and

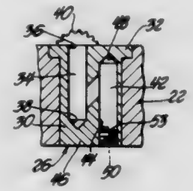
a solenoid for displacing said first and second sleeves from said first and second positions concurrently.

5,058,858

SECURITY DRAIN PLUG FOR ARMOR AND THE LIKE

John G. Korpi, Livonia, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1991, Ser. No. 637,241
Int. Cl.[5] F16K *51/00;* **F16L** *55/11*
U.S. Cl. 251—127 **3 Claims**



1. A security drain plug, suitable for use in structures having an enclosed cavity, to allow the drainage of fluid therefrom while preventing the intrusion of an examination device into the interior of the cavity comprising: a plug having a first vertical blind cavity in fluid communication with the interior of the cavity to be drained said first vertical blind cavity having a blind end terminating within the body of the plug; a second vertical blind cavity having its opening extending to the exterior face of said plug to allow passage of fluid from said enclosed cavity to the exterior of the enclosed cavity being drained and having its terminal end within the body of the plug; and a fluid connecting channel connecting the terminal ends of the first and second cavities, said fluid communication channel being disposed at an angle between the blind ends of the first and second cavities such that a device inserted into the second cavity along its longitudinal axis must make an acute bend back upon its direction of travel away from the enclosed cavity with respect to the longitudinal axis of the second cavity in order to traverse the fluid channel and the fluid communication channel being disposed at an angle to the first chamber so that an intrusion device must also make a acute angle to the longitudinal axis of the fluid channel and first blind cavity in order to travel along the longitudinal axis of the first blind cavity.

5,058,859

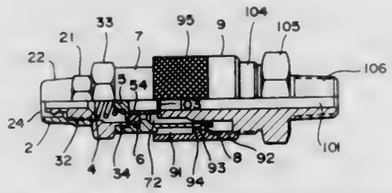
SCREW-JOINT TYPE PNEUMATIC TOOL CONNECTOR

Chuen-Nan Chen, No. 34, Lane 666, Chung Shan Road, Sec. 2, Changhua, Taiwan

Filed May 3, 1990, Ser. No. 518,474
Int. Cl.[5] F16L *15/04*
U.S. Cl. 251—149.4 **2 Claims**

1. A screw-joint type pneumatic tool connector, comprising: an air inlet coupling having received therein a conical spring

and a valve, said valve having a plurality of through-holes around its periphery;
a lock nut connected to the front end of said air inlet coupling by means of screw joint;
a stepped control bush having a circular groove on its outer wall at its rear end for the fastening therein of a C-shaped retainer ring, said stepped control bush being connected to the rear end of said air inlet coupling with a seal ring set therebetween;
a socket sleeved on said control bush and having an inner thread portion at its rear end;



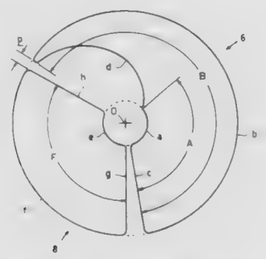
an air outlet coupling having an outer thread portion threadingly engaged with the inner thread portion of said socket and having a recessed portion and its inner wall surface at the front end;
a seal ring located in the air inlet coupling and operatively interposed between the air inlet coupling and the stepped control bush to prevent air from leaking through the connection between the air inlet coupling and the stepped control bush; and
wherein said conical spring biases said valve to a position inside said seal ring such that said seal ring blocks said through-holes of said valve.

5,058,860

PAIR OF HARD MATERIAL PLATES FOR A FAUCET OF THE SCREW TYPE, HAVING AN EXTENDED CONTROL FIELD

Roland Grassberger, Brussels, Belgium, assignor to Studio Tecnico Sviluppo e Ricerche S.T.S.R. S.r.l., Milan, Italy

Filed May 18, 1990, Ser. No. 524,963
Claims priority, application Italy, Jun. 9, 1989, 67464 A/89
Int. Cl.[5] F16K *3/06, 3/32*
U.S. Cl. 251—208 **5 Claims**



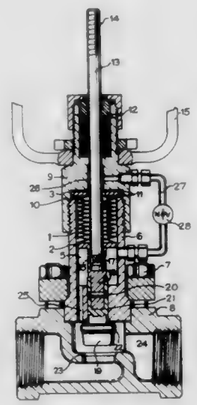
1. A pair of plates of a hard material that form the flow control means of a faucet of the screw type, said pair of plates comprising a fixed plate and a movable plate, each said plate having a single passage opening traversing the plate and each passage opening comprising sides which define the outline of the passage opening, wherein at least one of the sides which define the outline of the passage opening of at least one of said plates has substantially the shape of an arc of linear spiral, said passage opening having at least one side in the shape of an arc of linear spiral having first and second end portions, the first end portion having a width smaller than the second end portion, and said first end portion of smaller width being located near the plate periphery.

5,058,861

BELLOWS SEAL AND METHOD FOR ASSEMBLING

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

Filed Feb. 26, 1990, Ser. No. 484,815
Int. Cl.[5] F16K *41/10*
U.S. Cl. 251—335.3 **3 Claims**



1. Bellows seal assembly comprising:
a. convoluted expandable or compressible bellows whose external periphery is pressurized having a circular interior non-pressurized passage throughout with one terminating end of said bellows connected to a plate having a diameter that extends over said interior passage of the bellows, the other end welded to a lower fitting having an interior bore followed by a cylindrical extension said cylindrical extension and said interior bore extending beyond the terminating end of said bellows and where a portion of the fitting having the interior bore is tubular in shape;
b. a valve stem having a radially grooved lower terminating tip passing through said interior passage of the bellows and slidingly engaging said grooved tip within the interior bore of said fitting but not extending through the complete length of said fitting, and wherein part of the tubular section of said fitting is crimped towards the center in order to displace a portion of the tubular wall towards and inside the stem groove for securing said fitting to said valve stem within the non-pressurized interior of said bellows and securing said fitting to a valve sealing means to allow reciprocating movement of said valve sealing means and thereby preventing said stem from disengaging from said fitting while allowing a free rotational movement of said stem within the interior bore of said fitting by the stem groove and the crimped section thereby preventing breakage of said bellows when the valve stem is improperly rotated.

5,058,862

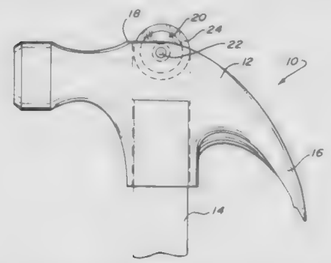
NAIL REMOVING TOOL

Thomas K. Schlegel, 19 Snow Ct., Dearborn, Mich. 48124

Continuation of Ser. No. 407,326, Sep. 14, 1989, abandoned. This application Oct. 1, 1990, Ser. No. 593,317
Int. Cl.[5] B66F *15/00*
U.S. Cl. 254—26 R **5 Claims**

1. A hammer comprising:
an elongated handle having opposed ends and a longitudinal axis extending between said opposed ends;

a hammer head mounted transversely to one end of said handle;
said hammer head having opposed ends and a longitudinal axis perpendicular to and intersecting the longitudinal axis of said handle;
a head portion formed at one end of said hammer head and a claw portion formed at the opposite end;
a recess formed in said head portion of said hammer head;



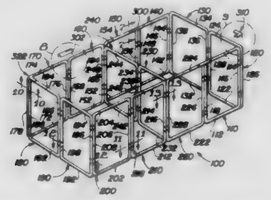
a roller rotatably carried in said recess, said midpoint of said roller being positioned at a point beneath the surface of said hammer head so that only a portion of said roller protrudes from said hammer head; said roller having an axis of rotation perpendicular to said longitudinal axis of said handle, said roller axis further intersecting said longitudinal axis of said elongated handle; and
said claw portion terminating in opposed and inwardly-facing bevelled surfaces, said bevelled surfaces having inclined ledges at an interior end thereof.

5,058,863

PANEL APPARATUS AND ELEMENTS FOR SECURING A PLURALITY OF PANELS TOGETHER

Harold C. Maffet, 20 Kiji Dava, Prescott, Ariz. 86301

Continuation-in-part of Ser. No. 245,015, Sep. 15, 1988, abandoned. This application Jul. 27, 1990, Ser. No. 558,592
Int. Cl.[5] F16B *7/00*
U.S. Cl. 256—26 **7 Claims**



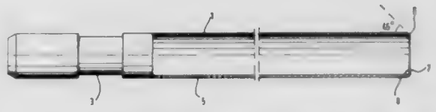
1. Panel apparatus, comprising, on combination:
panel means, including
a plurality of panels, each of which includes an outer frame having a pair of side frame members and a top and a bottom frame member, and a plurality of inner members secured to the outer frame; and
clamp means for securing the plurality of panels together, including
top clamp means removable secured to adjacent top frame members, and
side clamp means removable secured to adjacent side frame members, and
at least one of the top clamp means and the side clamp means includes a major loop extending for an arcuate distance of about 270 degrees and a minor loop adjacent to the major loop and eextending for an arcuate distance of slightly more than about 180 degrees.

5,058,864

METHOD OF MANUFACTURE OF PIG IRON USING HOLLOW TUBE TO RESEAL TAP ROLE

Ronald N. Molenaar, Heemskerk, and Rienk M. Nijholt, Noord-Scharwoude, both of Netherlands, assignors to Hoogovens Groep BV, Ijmuiden, Netherlands

Filed Mar. 6, 1991, Ser. No. 665,475
Claims priority, application Netherlands, Mar. 12, 1990, 9000556
Int. Cl.[5] C21B *7/12*
U.S. Cl. 266—45 **6 Claims**



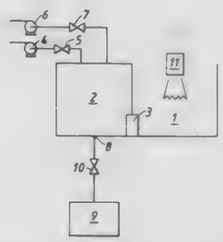
1. A method of manufacture of pig-iron in a shaft furnace having at least one taphole which is closed with hardened plugging compound during making of the iron and is opened for the tapping of the iron and then resealed, comprising the steps of (a) resealing of the taphole by (i) inserting hardenable plugging compound into the taphole and (ii) before hardening of said plugging compound, driving a hollow tube having an open end as its leading end into the plugging compound, and (b) at the opening of the taphole pulling said tube out from the hardened plugging compound.

5,058,865

LIQUID METAL PROCESSING

Thomas Robertson, Eaglescliffe; David P. Jackaman, Yarm, and Richard J. Hawkins, Great Ayton, all of England, assignors to British Steel plc, London, England

Filed Jul. 24, 1990, Ser. No. 556,465
Claims priority, application United Kingdom, Jul. 26, 1989, 8917052
Int. Cl.[5] C21C *7/10*
U.S. Cl. 266—209 **9 Claims**



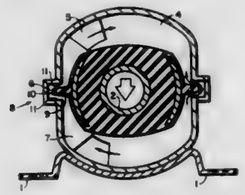
1. A vessel having a first chamber open to atmospheric pressure for receiving liquid metal and a second chamber having an exit from which the metal is dispensed interconnected with the first chamber, the second chamber being sealed and coupled to pump means for reducing the pressure therein to subatmospheric whereby to create a higher level of metal in said second than said first chamber, wherein the first and second chambers are interconnected by a wall including one or more apertures each being disposed at substantially constant gravitational height so that liquid metal can pass from said first chamber to said second chamber and through said exit from the second chamber under the force of gravity.

5,058,866

HYDRAULICALLY DAMPED MOUNT

Arno Hamaekers, Gorxheimertal, and Axel Rudolph, Darmstadt, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Aug. 1, 1990, Ser. No. 561,728
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1989, 3928862
Int. Cl.[5] F16F *13/00*
U.S. Cl. 267—140.1 **6 Claims**



1. A hydraulically damped mount comprising, in combination:
(a) a mounting member;
(b) a support member;
(c) a resilient body, made of elastomeric material and disposed between said mounting member and said support member, for supporting said mounting and support members with respect to each other, said mounting member, support member and said resilient body bounding and defining a working chamber and an equalizing chamber and providing at least one damping opening and at least one overflow opening between said working chamber and said equalizing chamber;
(d) a liquid disposed in and substantially filling said working chamber, said equalizing chamber, said damping opening and said overflow opening; and
(e) a pressure relief valve arranged in said overflow opening for controlling the flow of liquid therethrough in dependence upon the differential pressure between said working chamber and said equalizing chamber, said pressure relief valve comprising stop means forming a valve seat and valve control element means arranged to cooperate with said stop means, said valve control element means being configured and arranged:
(1) to fit tightly against said stop means to prevent the flow of liquid through said overflow opening when said differential pressure is less than a prescribed value;
(2) to pass by said stop means to permit the flow of liquid through said overflow opening when said differential pressure exceeds said prescribed value; and
(3) to remain spaced apart from said stop means, in its inactive, rest position, to permit the flow of liquid through said overflow opening when said differential pressure consists of small amplitude acoustic vibrations having a frequency greater than 30 Hz.

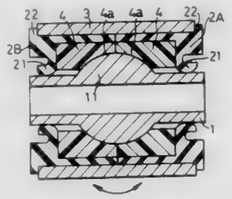
5,058,867

CYLINDRICAL VIBRATION DAMPING BUSHING

Katsuya Hadano, Kasugai, and Masato Ueno, Komaki, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 418,266, Oct. 6, 1989, abandoned. This application Apr. 1, 1991, Ser. No. 679,996
Claims priority, application Japan, Oct. 27, 1988, 63-140187[U]; Jun. 29, 1989, 1-76841[U]
Int. Cl.[5] F16F *1/38*
U.S. Cl. 267—141.3 **11 Claims**

1. A cylindrical vibration damping bushing comprising:
an outer cylinder having first and second longitudinal ends;
an inner cylinder coaxially disposed within said outer cylinder, and having an expanded portion at an axially central portion thereof; said expanded portion expanding radially outwardly to define a spherical outer surface;
a pair of cylindrical vibration damping rubber members press fitted between said outer cylinder and said inner cylinder from each longitudinal end of said outer cylinder so as to be joined with said outer cylinder, each said vibration damping rubber member having an inside half portion and an outside half portion; and
a pair of ring-shaped inserts, each formed from a resin material having good slidability, embedded in said inside half portion of each of said cylindrical vibration damping rubber members, whereby an outer surface of each of said pair of ring-shaped inserts is in close contact with said



inside half portion of each of said cylindrical vibration damping rubber members;
each of said ring-shaped inserts having a concave surface for sliding on said spherical outer surface of said expanded portion; each of said cylindrical vibration damping rubber members being integrally provided with a projecting portion which projects radially outwardly from said outside half portion, an inside axial surface of each said projecting portion abutting a respective longitudinal end of said outer cylinder, and a seal portion extending from said outside half portion towards an outer surface of a respective end of said inner cylinder; a projecting end of each said seal portion being in airtight contact with said respective outer surface of said inner cylinder end.

5,058,868

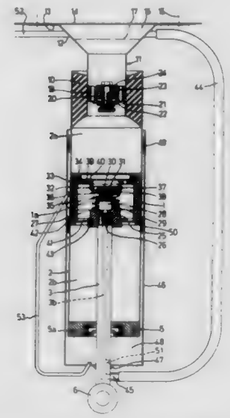
SHOCK ABSORBER WITH LOAD COMPENSATION

Jacques Sirven, 34, Rue de l'Orangerie, F-78000 Versailles, France

Continuation of Ser. No. 136,783, Dec. 22, 1987, abandoned. This application Dec. 4, 1989, Ser. No. 445,142
Claims priority, application France, Dec. 30, 1986, 86 18371
Int. Cl.[5] B60G *11/32*
U.S. Cl. 267—259 **43 Claims**

1. A shock absorber device for an automotive vehicle comprising a cylinder containing a hydraulic fluid;
a piston located in and dividing said cylinder into a first chamber and a second chamber;
a rod connected to said piston and extending through said second chamber for actuating said piston in said cylinder;
means defining a hydraulic fluid reservoir;
flow restriction means providing fluid communication between said hydraulic fluid reservoir and said first chamber and causing the pressure in the first chamber to increase in response to piston movement toward the first chamber;
a spring biased control valve on said piston, coupling said first and second chambers;
means defining a reference chamber containing a reference fluid, including a movable wall member integrally connected to said control valve such that movement of said wall member causes a corresponding opening of said control valve in response to a rapid compression movement of the shock absorber;
means defining an elastic member for mounting said cylinder, said elastic member comprising a first portion defining a limit surface of said first chamber and subjected to the pressure of said first chamber and a second portion outside of said first chamber;

means providing an external casing integrally connected with said rod and sealingly enclosing said cylinder for sliding movements within said casing;
and means for communicating said external casing, said reference chamber and said fluid reservoir with a common source of variable pressure so a pressure variation in said



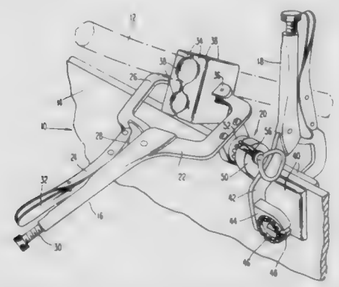
external casing results in a corresponding pressure variation in said first chamber during rapid compression movement of the shock absorber, acting on said first portion of the elastic member, such that said elastic member is deformed depending on the ratio between the cross section of the cylinder and the cross section of the first portion of the elastic member.

5,058,869

CABLE VISE

Ronald L. Ruthven, 45 E. Valleybrook Rd., Long Valley, N.J. 07853

Filed Oct. 30, 1990, Ser. No. 605,924
Int. Cl.[5] B25B *1/20*
U.S. Cl. 269—45 **1 Claim**



1. An adjustable angle vise for clamping a cable to a fixed structure, said vise comprising:
(a) a first plier means having pincers adapted to clamp said plier means to a fixed structure;
(b) a second plier means having pincers adapted to grip a cable;
(c) adjustable angle connector means for connecting the second plier means to the first plier means at selected angles between the two plier means, said adjustable angle connector means comprising toothed hubs mounted on each plier means, each of said hubs having a plurality of teeth spaced evenly apart in a circular pattern, said hubs being adapted to be locked together such that the teeth of one hub are meshed with the teeth of another hub, and
(d) wherein two of said toothed hubs are mounted on the first plier means, and the circular pattern of teeth on one of the two hubs is oriented in a plane which is perpendicular to the plane in which the circular pattern of teeth on the other hub is oriented.

5,058,870

CLAMPING APPARATUS

Raymond P. Cetnar, 32 Stella La., Amsterdam, N.Y. 12010

Filed Aug. 7, 1990, Ser. No. 563,422
Int. Cl.[5] B25B *1/00*
U.S. Cl. 269—118 **15 Claims**



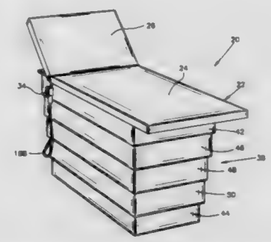
1. A clamping apparatus comprising:
a first clamping means having a first end portion, a second end portion, a body portion and two clamping jaws mounted on said body portion wherein a workpiece can be clamped between said jaws and thereby experience a compressive force in a first direction;
a second clamping means having a beam member and two adjustable attachment means located at first and second end portions thereof which attach said beam member to the first and second end portions of said first clamping means wherein adjustment of said attachment means causes said beam member to move in a direction which can cause a workpiece located between itself and said first clamping means to be compressed in a second direction nonparallel to said first direction and;
wherein each of said first and second clamping means is independently operable.

5,058,871

EXAMINATION TABLE ASSEMBLY

James V. Congin, Solon, and William F. Meditz, Mayfield Village, both of Ohio, assignors to Waygo Incorporated, Cleveland, Ohio

Filed May 25, 1989, Ser. No. 357,325
Int. Cl.[5] A61G *13/00*
U.S. Cl. 269—323 **8 Claims**



1. An examination table assembly for use during the examination of an individual, said examination table assembly comprising a base, a table top for receiving the individual to be examined, drive means connected with said base and table top for raising and lowering said table top relative to said base, housing means connected with said base and said table top for enclosing said drive means, said housing means including a plurality of relatively movable sections disposed in a telescopic

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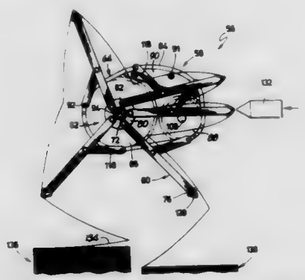
relationship relative to each other, said housing sections being movable between a telescopically retracted condition when said table top is in a fully lowered position and a telescopically extended condition when said table top is in a fully raised position, said housing sections overlapping each other to a first extent when said table top is in the fully lowered position and overlapping each other to a second extent which is less than said first extent when said table top is in the fully raised position, said plurality of housing sections including a lower housing section fixedly connected to said base, an upper housing section fixedly connected to said table top and a plurality of intermediate housing sections which are at least partially disposed between said upper and lower housing sections when said table top is in the fully lowered position, said housing means having a generally rectangular configuration and tapering inwardly and downwardly from said table top to said base when said table top is in the fully raised position, each of said plurality of housing sections including a plurality of flat rectangular panel sections interconnected in a rectangular array which extends around said drive means, said flat rectangular panel sections of said upper and intermediate housing sections having straight lower edge portions which extend parallel to and are spaced apart from flat rectangular panel sections of said intermediate and lower housing sections during raising and lowering of said table top, said housing means further including a plurality of guide means which are connected with upper portions of said intermediate and lower housing sections for engaging the flat rectangular panel sections of said intermediate and upper housing sections and for guiding relative movement between said housing sections during raising and lowering of said table top, said lower edge portions of said flat rectangular panel sections of said upper and at least one of said intermediate housing sections including a plurality of lift surface means for engaging surfaces connected with adjacent housing sections and for transmitting force to pull said intermediate housing sections upwardly with said table top during movement of said table top from the fully lowered position to the fully raised position.

5,058,872

CHAIN CAM

Dean E. Gladow, Emporia, Kans., assignor to Didde Web Press Corp., Emporia, Kans.

Filed Aug. 8, 1989, Ser. No. 390,830
Int. Cl.[5] B65H *29/46*
U.S. Cl. 270—30 **36 Claims**



26. Apparatus for handling an elongated, continuous web which is zigzag-folded to present a web stack having a plurality of facially opposed sheets interconnected by alternating fold lines respectively located along opposite side margins of the stack, said apparatus comprising:

a plurality of elongated web-engaging structures;

means for successively and repeatedly moving said structures along a closed-loop working path of travel for, sequentially;

(1) passing a structure between a separated pair of said sheets and into engagement with the web at a fold region adjacent the fold line interconnecting the sheets while said separated sheets are in an opened pickup configuration wherein the vertical distance between the sheets at the edges thereof remote from the fold line interconnecting the same is less than the length of the sheets between alternating fold lines; and

(2) thereafter further moving the element to pick up and lift the engaged fold region away from the stack in a manner to orient the next succeeding pair of sheets in said opened pickup configuration for entry therebetween of another web-engaging structure,

said structure moving means comprising:

first and said second motion-imparting members each being shiftable along a corresponding, continuous, closed loop path of travel, at least one of said members comprising an elongated, endless, flexible component;

an elongated mounting element for each web-engaging structure respectively;

means for operably coupling said first and second members to said elements at corresponding spaced apart first and second attachment locations along the length of the elements, including structure for pivotally coupling at least one of the members to the elements; and

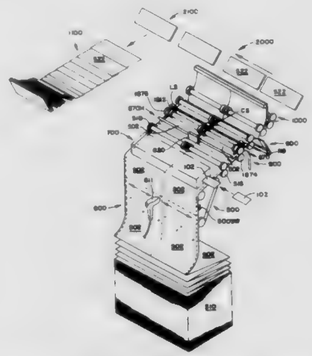
apparatus for shifting said members along said paths of travel thereof for shifting of said coupled working portions along said paths of travel thereof.

5,058,873

DATA CARD AND MAILER INSERTER SYSTEM

Donald W. Hewitt, Roseville, and David D. Seibel, Bloomington, both of Minn., assignors to Datacard Corporation, Minneapolis, Minn.

Division of Ser. No. 866,941, Jan. 4, 1978, abandoned. This application Feb. 13, 1980, Ser. No. 121,044
Int. Cl.[5] B65H *39/00*
U.S. Cl. 270—52 **13 Claims**



1. A transport apparatus for transporting forms of a serial, continuous supply thereof, comprising:

means for engaging said serial form supply for feeding thereof in simultaneous, serial succession,

motor means for driving said engaging means,

encoding means associated with said motor means and driven thereby for establishing in each rotation thereof a basic timing cycle of said apparatus,

further encoder means driven by said motor and having a predetermined ratio of rotation with respect to said first encoder means and producing an output in each complete rotation thereof corresponding to transport of said serial forms by a distance corresponding to an individual one of said serial forms, and

form alignment means associated with said transport apparatus for initial alignment of a top edge of a first form of said serial supply thereby to establish initial alignment of said serial form supply in synchronism with said further encoder means associated with said motor means, and

control means for initializing said transport apparatus to drive said motor for positioning said further encoder means at a top of form position, corresponding to initial alignment of a top of a first form of said serial supply with said top of form alignment position of said transport apparatus and engaging means.

5,058,874

AUTOMATIC DOCUMENT CONVEYING DEVICE

Jun Miyoshi; Hiroyuki Nagai, both of Osaka; Mitsugu Shibanaka, Sakai; Nobukazu Otsuka, Osaka; Yasuhiko Kida, Sakai; Haruo Yamamoto, Osaka, and Toshikazu Matsui, Kishiwada, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Mar. 14, 1989, Ser. No. 322,914
Claims priority, application Japan, Mar. 12, 1988, 63-174135; Mar. 15, 1988, 63-61333
Int. Cl.[5] B65H *5/22*
U.S. Cl. 271—4 **41 Claims**



1. An automatic document conveying device for use with an image processing machine having a housing, with a transparent plate, on which to place documents, disposed on the upper surface of the housing, said device comprising:

an opening-closing frame adapted to be mounted on the housing so that the opening-closing frame is free to pivot around a pivot axis extending along one edge of the transparent plate between a closed position at which the opening-closing frame covers the transparent plate and an open position at which the transparent plate is exposed to view,

conveyor roller means rotatably mounted within the opening-closing frame to be brought into intimate contact with the transparent plate when the opening-closing frame is in the closed position,

a document table adapted to be mounted on the housing adjacent to the opening-closing frame,

document delivery means for delivering sheet-like documents on the document table one by one in a document delivery direction toward the transparent plate, and

control means for controlling actuation of the conveyor roller means and the document delivery means, and, in an inoperative state of the conveyor roller means, operative to initiate actuation of the document delivery means to deliver the document in the document delivery direction from the document table toward the transparent plate, said control means responsive to the leading edge of the delivered document abutting the site of intimate contact between the transparent plate and the conveyor roller means in the inoperative state of the conveyor roller means for stopping actuation of the document delivery means and rotating the conveyor roller means in a document delivery direction to move the delivered document in the document delivery direction to a required position on the transparent plate

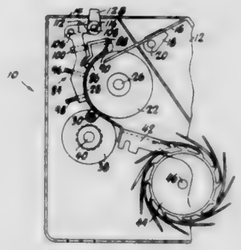
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5,058,875

CURRENCY COUNTER

Robert M. Stewart, Langhore, Pa., assignor to Brandt, Inc., Bensalem, Pa.

Filed Jun. 28, 1990, Ser. No. 545,372
Int. Cl.[5] B65H *3/34*
U.S. Cl. 271—10 **29 Claims**



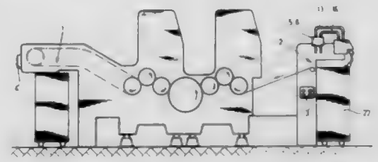
1. Apparatus for advancing sheets from a stack at an input one at a time to an output including in combination means at said input for holding a stack of said sheets, a feed roller, a stripper forming a first nip with said feed roller, means for feeding sheets from said stack to said first nip, a curved guide, means mounting said curved guide adjacent to said feed roller to form a curved path extending from said first nip toward said output, means for driving said feed roller to move sheets through said first nip and along said path, accelerating means forming a second nip for receiving sheets moving along said path and for advancing sheets toward said output, the distance between said nips being less than the smallest dimension in the direction of said path of any sheet being fed whereby the leading edges of sheets being fed enter said second nip before the trailing edges leave the first nip and means extending along said path from a location relatively adjacent to said first nip toward said output for inhibiting snapping of said sheets against said feed roller as the sheets are picked up by said second nip.

5,058,876

DEVICE FOR CONTROLLING FEEDER BLOWING AIR AND FEEDER SUCTION AIR IN A SHEET FEEDER OF A PRINTING MACHINE

Dieter Grossmann, Sinsheim-Reihen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 26, 1990, Ser. No. 588,563
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1989, 3931995
Int. Cl.[5] B65H *3/14*
U.S. Cl. 271—98 **8 Claims**



1. Device for controlling feeder blowing air and feeder suction air in a sheet feeder of a printing machine having a sheet delivery, comprising a first control unit for controlling feeder blowing air, and a second control unit for controlling feeder suction air, manual operating controls located both at the sheet feeder and the sheet delivery of the printing machine for separately actuating said first and said second control units by remote control, said first and said second control units,

respectively, comprising a rotary valve with a valve housing and a valve member turnable in said valve housing and formed with a main opening for passing main air through said housing as well as with at least one auxiliary opening for residual air.

5,058,877

AUTOMATIC CUT-SHEET FEEDING APPARATUS

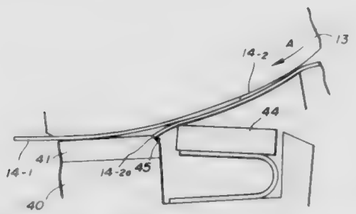
Hidehiko Fujiwara; Hideyo Watanabe, both of Yokohama, and Hiroyuki Idenawa, Hiratsuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 18, 1990, Ser. No. 525,750

Claims priority, application Japan, May 19, 1989, 1-126155; Nov. 20, 1989, 1-301416

Int. Cl.[5] B65H *3/52*

U.S. Cl. 271—124 **9 Claims**



1. An automatic cut-sheet feeding apparatus having a feed roller with which an uppermost cut-sheet of a stack of cut-sheets is brought into contact and which rotates in a direction so as to feed in and feed out the uppermost cut-sheet, and means for stopping the feeding of excessive cut-sheets which should not be fed out together with the uppermost cut-sheet when a plurality of cut-sheets are fed in together by said feed roller, and thereby automatically feeding out only the uppermost cut-sheet of the stack of cut-sheets one by one, said stopping means comprising:

a holder disposed to confront and contact said feed roller, said holder having a groove at a position preceding the position where said holder comes into contact with said feed roller along a direction in which said cut-sheet is transported;

a first spring member for pressing said holder against said feed roller at a first force;

a second spring member provided inside said groove of said holder and having a free end;

a push-piece supported on the free end of said second spring member, said push-piece being disposed at a position preceding the position where said holder makes contact with said feed roller along the direction in which said cut-sheet is transported, and being pressed against said feed roller by means of said second spring member at a second force which is less than said first force, said push-piece causing excessive cut-sheets to curve downwards when a plurality of cut-sheets have passed between said feed roller and said push-piece,

and a stop surface disposed to confront a leading edge of said curved excessive cut-sheets and engage said leading edge of said curved excessive cut-sheets.

5,058,878

CASSETTE STRUCTURE

David E. Hochbein, Sarver, Pa., and Ronald F. Pastuszak, Skillman, N.J., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 14, 1989, Ser. No. 450,476

Int. Cl.[5] B65H *1/00*

U.S. Cl. 271—145 **2 Claims**

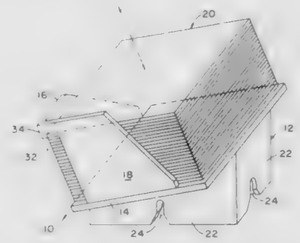
1. An inclined cassette for holding and indexing a stack of planar items at a known, repeatable datum location and coordinates in space so that a blind end-effector can repeatably find said planar items, said cassette comprising:

base means for supporting the cassette in an inclined manner,

a floor supported on said base means in said inclined manner,

at least two upstanding wall portions intersecting each other at a lower corner of the inclined floor,

an elongated opening provided at the location of intersection of the wall portions,



said opening extending upwardly from the location of the floor at the lower corner thereof, said opening in combination with the incline of the cassette permitting foreign material in the cassette or on the planar items to leave the cassette through said opening, and

said base means including four walls located beneath the inclined floor, with each of said walls having slotted openings for receiving pins that accurately position the cassette.

5,058,879

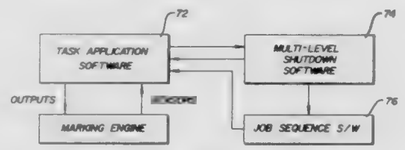
DOCUMENT PRODUCTION HAVING JAM SHUTDOWN AND CLEARING STRATEGY

David L. Dunaway, New York, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 5, 1990, Ser. No. 548,693

Int. Cl.[5] B65H *7/02*

U.S. Cl. 271—259 **3 Claims**



1. Document production apparatus having a receiver sheet source, an output to which a plurality of completed production documents are supplied in a predetermined sequence, and a path between the source and the output for in-process receiver sheets, the improvement comprising:

means for detecting receiver sheet jam conditions;

means for inhibiting delivery during a jam condition, to the output, of only those in-process receiver sheets which (1) can not be completed due to the jam condition or (2) could be completed regardless of the jam condition but which if completed would be supplied to the output out of sequence because of the inability to complete at least one other receiver sheet due to the jam condition; and

means for continuing production and delivery, to the output, of all other in-process receiver sheets.

5,058,880

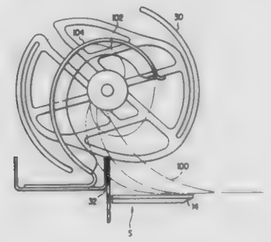
DISK STACKER INCLUDING WIPING MEMBER FOR REGISTRATION ASSIST

Thomas C. McGraw, Macedon, and Craig S. Prucha, Batavia, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 17, 1990, Ser. No. 568,736

Int. Cl.[5] B65H *31/36, 31/38*

U.S. Cl. 271—315 **18 Claims**



1. A disk stacker for receiving and inverting sheets comprising:

a rotatable disk including at least one slot for receiving a sheet therein;

rotating means for rotating said rotatable disk;

feeding means for feeding a sheet from a sheet supply to said slot of said rotatable disk, said rotatable disk being capable of receiving a sheet in said slot when locate at an input position and inverting said sheet by rotating;

a shaft, said rotatable disk being attached to said shaft to rotate therewith, said rotating means being attached to said shaft so that said rotating means rotates said disk by rotating said shaft;

registration means, located adjacent an output position of said rotatable disk, for stripping the sheet from said slot of said disk after the sheet has been inverted and for registering a lead edge of the sheet in a final position;

wiper means, which moves in timed relation to said rotatable disk, for engaging the sheet near said output position and forcing the sheet to contact said registration means, said wiper means including an elongated flexible wiping member attached at one end to said shaft, a second end of said elongated flexible wiping member being free to engage a sheet near the output position, said elongated flexible wiping member having a length so that said second end is capable of extending radially outward beyond the slot of said disk; and

constraining means for constraining the wiping member within a diameter of said disk for a portion of rotation of said wiping member so that said wiping member does not interfere with the inputting of sheets into the slot of said disk.

5,058,881

EXERCISE MACHINE HEIGHT ADJUSTMENT FOOT

S. Ty Measom, Logan, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah

Filed Feb. 20, 1990, Ser. No. 482,209

Int. Cl.[5] A63B *23/06*

U.S. Cl. 272—69 **9 Claims**

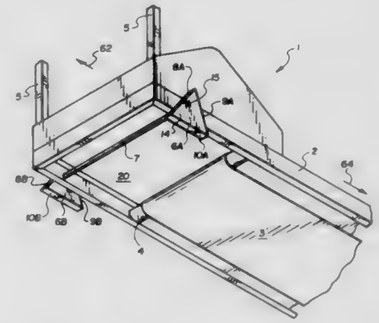
1. Apparatus for elevating an object, said apparatus comprising:

foot means for supporting an object on a surface, said foot means having an axle aperture formed therein and surface means for contact with said surface, said surface means having portions thereof each spaced at a different distance from said axle apertures, said portions of said surface means forming an arcuate surface which in projection is a locus, each point of which has a different radius from said axle aperture;

an axle attached to said object and mechanically associated with said axle aperture for rotation of said surface means relative to said surface; and

locking means associated with said foot means and said object for locking said foot means relative to said object with a selected portion of said surface means in contact with said surface, said locking means including:

a stationary aperture formed in said object,





a plurality of foot means apertures formed in said foot means for positioning in alignment with said stationary aperture, said foot means apertures and said stationary aperture equidistant from said axle aperture, and

pin means for insertion into selected apertures of said foot means apertures and said stationary aperture.

5,058,882

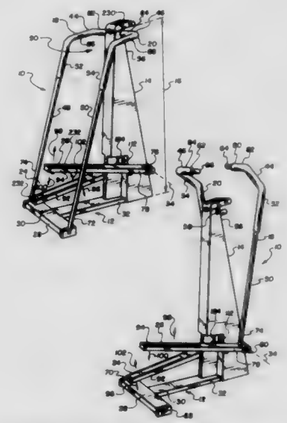
STEPPER EXERCISER

William T. Dalebout; Kim B. Liechty, both of Logan, and Scott R. Watterson, River Heights, all of Utah, assignors to Proform Fitness Products, Inc., Logan, Utah

Filed Feb. 20, 1990, Ser. No. 482,224

Int. Cl.[5] A63B *23/04*

U.S. Cl. 272—70 **27 Claims**



1. An exercising device comprising:

frame means for positioning on a support surface;

first lever means pivotably mounted to said frame means for movement by one foot of a user;

second lever means pivotably mounted to said frame means and spaced from said first lever means for movement by the other foot of a user in an upright position on said first lever means and second lever means;

resistance means connected to the frame means and to said first lever means and said second lever means to resist movement of each of said lever means; and

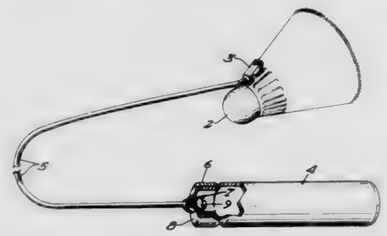
first handle means for grasping by said user in said upright position, said first handle means being positionable in a first configuration in which said first handle means is attached to said frame means and in a second configuration in which said first handle means is attached to said first lever means for movement therewith.

5,058,883

TETHERED SHUTTLECOCK

Burnett C. Dybvik, 301 Meadowlark Rd., St. Michael, Minn. 55376

Filed Mar. 21, 1990, Ser. No. 496,588
Int. Cl.[5] A63B *5/20*
U.S. Cl. 272—93 **1 Claim**



1. An exercising device comprising:

A. a rubberized plastic cord approximately four feet in length,

B. a plastic clip approximately three inches in length and 1 inch wide,

C. a shuttle-cock attached to one end of the cord by said plastic clip,

D. a plastic handle with a hole on one end to allow attachment to the other end of the cord for gripping by a user's hands,

E. a screwable end of the handle for opening to adjust cord length,

F. a small plastic cone shaped stopper approximately one inch in length which is inside said handle to allow a swivel type axis,

G. a small soft metal clip around the cord inside the handle to enable cord length adjustment by cutting cord and refitting the clip which restrains the cord from slipping out of said cone shaped stopper.

5,058,884

EXERCISE MACHINE FOR CONDITIONING FOOTBALL PLAYERS

Barney R. Fuller, Sr., 15605 Singapore La., Houston, Tex. 77040

Filed Mar. 29, 1990, Ser. No. 503,460
Int. Cl.[5] A63B *21/06*
U.S. Cl. 272—117 **12 Claims**

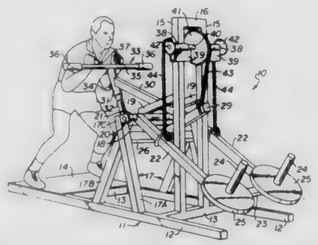
1. An exercise machine for conditioning athletes comprising;

a frame having a generally rectangular base portion for supporting the frame on a flat surface and having forward and rearward ends, a foot platform at the rearward end of the base portion upon which the athlete stands, a pair of parallel laterally spaced vertical members near the forward end of said base portion, and a pair of laterally spaced upright members on said base portion between the foot platform and the vertical members,

a weight lever pivotally mounted at one end to said upright members on a horizontal axis and extending forwardly therefrom and having weight receiving means at its outer end for receiving a selected number of weights to be lifted,

a pivot arm pivotally connected at one end to said upright members on a horizontal axis and extending forwardly between said vertical members and having an elongate lift arm secured thereto intermediate its ends which extends angularly upward and rearward between said vertical members toward said foot platform,

rotating means rotatably mounted at the upper end of said vertical members and extending horizontally thereacross including first connecting means having a first end connected to said rotating means and a second end connected to said pivot arm near its outer end and a pair of second connecting means each having a first end connected to



said rotating means at each side of said first connecting means and a second end connected to said weight lever, said first ends of said first and said second connecting means connected to said rotating means to rotate therewith in opposite directions respectively about the horizontal axis of said rotating means, and

a horizontal hand grip bar adjustably mounted at the outer end of said lift arm and positionable a selective distance above and parallel to said platform and having hand grips thereon,

said lift arm when raised by an upward force on said hand grip bar causes said pivot arm to pivot downward pulling said first connecting means downward causing rotation of said rotating means and simultaneously causing said second connecting means to pull upward on said weight lever to pivot it upward with the weights at the outer ends thereof resisting the upward force applied to said hand grip bar.

5,058,885

WARMUP AID BALL

William A. Brant, 827 Arizona Ash, San Antonio, Tex. 78232

Filed Jul. 9, 1990, Ser. No. 549,908
Int. Cl.[5] A63B *11/00*
U.S. Cl. 272—122 **5 Claims**

1. A warmup aid ball having a substantially continuously curved outer surface comprising:

an outer curved shell of a size to allow a user to grip and manipulate said ball with one hand;

a means for weighting an inner portion of said ball;

a multiplicity of contiguous finger relating loops extending above the peripheral surface of said ball for securing said ball to a user's hand when said user intentionally releases his grip from said ball during a throwing motion and follow through, said loops in a lateral, side-by-side arrangement along said curved surface, each separate loop



of said multiplicity of contiguous finger retaining loops attached at a base portion to said outer shell.

5,058,886

ACCESSORY FOR POSITIONING THE BAR OF A FREE WEIGHT ONTO THE LEGS OF A USER

Richard Jackson, 126 Wilcox, #302, Rochester, Mich. 48063

Filed Feb. 22, 1990, Ser. No. 484,699
Int. Cl.[5] A63B *21/072*
U.S. Cl. 272—123 **17 Claims**



1. A free weight accessory for positioning the bar of a bar bell and the like on the ventral side of the upper leg regions of a user, said accessory comprising:

an accessory body;

said body including a pair of spaced apart channelled regions situated substantially in a side-by-side parallel relationship to one another said channel regions having an upper side and a complementary bottom side removably receiving said legs of said user;

said body further including means for positioning said bar thereon provided on said upper side of said channelled region;

said means for positioning being defined by two sets of two dimples, each of said sets of dimples being substantially situated axially with respect to each of said user's legs, and elevated sufficiently above said channelled regions for positioning a bar bell thereon.

5,058,887

HYDRAULIC EXERCISE APPARATUS

Gary W. Patterson, 1446 C.R. 234, Durango, Colo. 81301

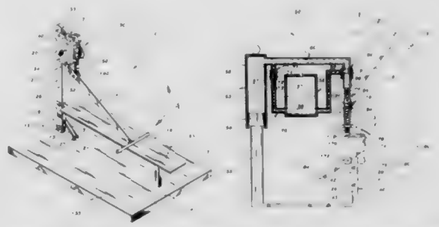
Filed Dec. 14, 1989, Ser. No. 450,317
Int. Cl.[5] A63B *21/008*
U.S. Cl. 272—130 **34 Claims**

1. A hydraulic exercise apparatus comprising:

hydraulic pump means including an actuator for pumping fluid through a fluid circuit in response to a pumping movement of said actuator in such a manner that a force required to cause said pumping movement of said actuator is dependent upon a pressure of the fluid pumped;

a fluid circuit in fluid communication with said pump including first fluid valve means for allowing fluid to flow through a first flow passage of said circuit only when a fluid pressure at an upstream side of said valve means exceeds a selected pressure;

an exercise member upon which a user of the exercise apparatus may exert an exercising force to cause said member to move along an exercise stroke;



linking means for linking said exercise member to said actuator in such a manner that said exercise member may move along said exercise stroke only by causing pumping movement of said actuator such that said exercise member may move along said exercise stroke only when said exercising force exceeds a threshold force corresponding to said selected pressure; and

pressure selection means for determining said selected pressure in accordance with the position of said exercise member along said exercise stroke.

5,058,888

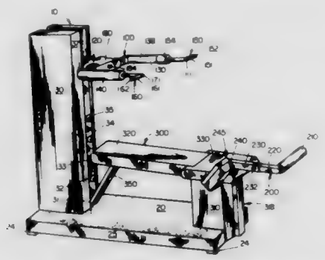
AUTOMATIC FORCE GENERATING AND CONTROL SYSTEM

Christopher W. Walker, Middleburg; Michael M. Szafranski, Fairfax, both of Va.; Sung H. Kim, Palo alto; Howell F. Hsiao, Mountain Beach, both of Calif., and Steven R. Frank, Golden, Colo., assignors to Walker Fitness Systems, Inc., Reston, Va.

Filed Nov. 13, 1989, Ser. No. 436,191
Int. Cl.[5] A63B *21/008*
U.S. Cl. 272—130 **37 Claims**

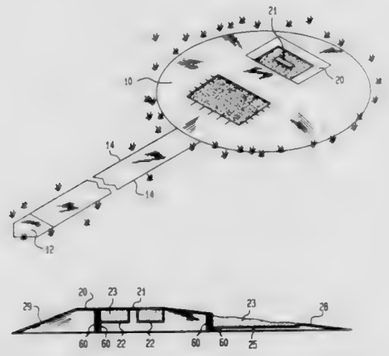
1. An exercise machine, comprising:

a base adapted to remain essentially stationary during use of the exercise machine;
a lever including a head and at least one arm;
said head having an arm end and a base end, and being pivotally connected at its base end to the base;
said at least one arm having a first end and a second end, and being pivotally connected at its first end to the arm end of the head;
said head and said at least one arm being sized for said at least one arm to be forced by the user of the exercise machine to pivot the lever with respect to the base;



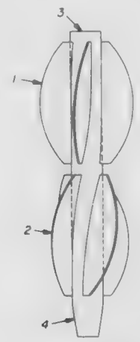
said lever further including first locking means for releasably locking said head and said at least one arm in a selected one of a plurality of fixed positions with respect to one another, so that the user of the exercise machine may initially pivot the head and said at least one arm to positions appropriate for the physique of the user and an exercise to be performed and may then lock the head and said at least one arm with respect to each other to maintain such positions during the exercise; and
resistance means for resisting the force of the user of the exercise machine to pivot the lever with respect to the base.

5,058,889
MOLDED FIBERGLASS PITCHER'S PORTABLE INDOOR/OUTDOOR MOUND, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Frank I. Burton, 6872 N. Park La., Shreveport, La. 71107
Filed Mar. 26, 1991, Ser. No. 674,979
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—25 **18 Claims**



1. A portable pitcher's mound assembly, comprising;
a generally circular, convex-shaped mound body to be supported on a playfield surface, said body having a substantially planar lower support portion and an upper surface portion substantially parallel to said lower support portion, said upper surface portion being at the highest point of said mound body;
a pitching rubber positioned in said upper surface portion;
a first depression surrounding said pitching rubber and within said upper surface portion, said depression being filled with flowable soil-like material to the level of said upper surface portion said mound further having a forward facing shaped area adjacent said upper surface portion and
a second depression in said forwardly facing sloped area filled with flowable soil-like material sloped to conform with said forwardly facing sloped area.

5,058,890
POWERSWING BAT SPEED ENHANCER
Gerald S. Szabo, 806 Broadfield Dr., Newark, Del. 19713
Filed Jul. 30, 1990, Ser. No. 560,793
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—26 R **2 Claims**



1. A bat swing training apparatus comprising, an elongated cylindrical sleeve member having a length and inside diameter substantially equal to the respective length and outside diameter of the barrel or ball contact surface of a conventional baseball bat, one end of said cylindrical member having a conical tapered section for engaging the tapered portion of a bat between its handle and ball contact portion when said cylindrical member is properly placed on the bat, said cylindrical member having two sets of elongated wings attached and extending outwards from its outer surface, each set of wings being spaced longitudinally on said cylindrical member surface, the wings of each set being spaced about the longitudinal axis of said cylindrical member and each being an equal distance from a pair of adjacent wing, each of said wings of each set further being attach to said cylindrical member at a predetermined angle relative to said longitudinal axis whereby said angular attachment serve to cause each said wing to have a curved configuration along its length, the wings of one set being angularly oriented in an opposite direction relative to the orientation of said wings in the other set and each wing in said one set being aligned substantially midway the distance between a pair of wings in said other set.

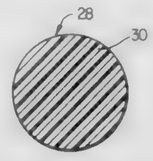
5,058,891
FITTING-ANGLE ADJUSTMENT MARK FOR GRIP OF GOLF CLUB
Mikio Takeuchi, c/o Yuugenkaisha Takeuchi Mikio Design Office, No. 3-17, Minamiaoyma 3-chome, Tokyo-to, Japan
Filed Apr. 25, 1990, Ser. No. 514,262
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—81 B **6 Claims**

1. A fitting-angle adjustment mark for a grip of a golf club, the grip being in the form of a bottomed hollow cylinder and fitting on the rear end of the golf club, wherein the rear end surface of the grip has indices or graduations at predetermined



angular intervals with reference to a back line of the grip, and wherein radially extending grooves defined in the rear end surface of the grip constitute the graduations.

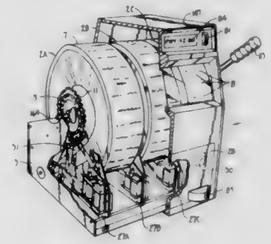
5,058,892
TABLE SOCCER OR FUSSBALL GAME PLAYING BALL
Calvin E. McCloud, 4959 Rendon Rd., Fort Worth, Tex. 76140
Filed Jan. 15, 1991, Ser. No. 641,582
Int. Cl.[5] A63B *71/04, 37/00*
U.S. Cl. 273—128 A **2 Claims**



1. A table soccer or fussball game playing ball for use of a horizontal soccer or fussball game playing surface, said ball being made entirely from a single thermoplastic urethane material having a hardness within the range of from about 50 Shore D to about 60 Shore D, said playing ball having a smooth, machined outer surface, and a sphericity which does not vary by more than about 0.001" on any external surface portion thereon, to thereby enhance the trueness of roll of said ball along said table soccer or fussball playing surface.

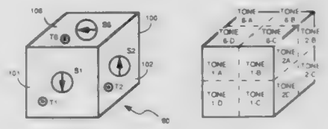
5,058,893
REEL MONITORING DEVICE FOR AN AMUSEMENT MACHINE
Peter D. Dickinson, and William K. Bertram, both of Reno, Nev., assignors to IGT, Reno, Nev.
Continuation of Ser. No. 688,295, Jan. 2, 1985, Pat. No. 4,911,449. This application Mar. 21, 1990, Ser. No. 497,059
The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.
Int. Cl.[5] A63F *5/04*
U.S. Cl. 273—143 R **79 Claims**

1. An amusement machine comprising:
a reel mounted in a frame for rotation about an axis, the reel having a plurality of indicia disposed thereabout;
said reel comprising a single track positioned on a circumferential path about said axis, for monitoring the rotational position of the reel relative to a fixed reference point;
said track comprising a plurality of fields corresponding to said plurality of indicia, each field spanning a unique arcuate path at a fixed radial distance from said axis;
a sensor positioned so as to directly detect movement of said fields past a single point at said fixed radial distance;
means responsive to said sensor for detecting the passage of a home field; and



reel position counting means for directly counting the number of fields that pass the sensor after said home field.

5,058,894
MUSICAL PUZZLE TOY
Mitchell D. Levinn, R.D. 1, Box 66A, East Nassau, N.Y. 12062; Donald B. Faatz, 2 Boltwood Ave., Castleton, N.Y. 12033, and Mukkai S. Krishnamoorthy, 5 24th St., Troy, N.Y. 12180
Filed Feb. 11, 1991, Ser. No. 653,296
Int. Cl.[5] A63F *9/06*
U.S. Cl. 273—153 R **4 Claims**



1. A musical toy, comprising:
a cubical housing having six faces,
six pushbutton means, one on each of said six faces, for generating a face selection signal for each of said six faces;
six rotary switch means, one on each of said six faces, for generating rotary positioning signals for each of said six faces;
speaker means for playing musical tones; and
control means, coupled to said six pushbutton means, said six rotary switch means and said speaker means, for denoting a set of musical tones associated with each of said six faces and for playing via said speaker means a corresponding one of said sets of musical tones whenever one of said pushbutton means generates a face selection signal;
said control means including means for reading said rotary positioning signals and determining whenever one of said rotary switch means has been rotated clockwise or counterclockwise, and for interchanging said denoted tones in accordance with a predefined algorithm whenever one of said rotary switch means is rotated.

5,058,895
GOLF CLUB WITH IMPROVED MOMENT OF INERTIA
Lawrence Y. Igarashi, 25532 Rapid Falls Rd., Laguna Hills, Calif. 92653
Continuation-in-part of Ser. No. 301,634, Jan. 25, 1989, abandoned. This application Sep. 1, 1989, Ser. No. 402,061
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 F **5 Claims**

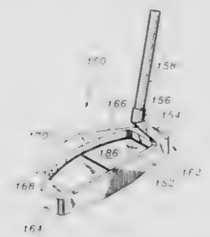
1. A golf putter with an increased moment of inertia resulting from three dimensional weighting, comprising:
a club shaft; and
a putter head secured to said shaft, comprising:
a head face terminating in a toe portion and a heel portion,

the toe and heel portions tapering backwardly in the form of two angular portions to a rear portion;

means for increasing the peripheral weighting of the putter head to increase the club head moment of inertia, comprising heel and toe weighting means at the toe and heel portions for increasing the weighting at these portions, and rear peripheral weighting means for increasing the peripheral weight at said rear portion; and

wherein said heel, toe and rear portion weighting means comprises fixed, non-removable means so that the putter head weighting is fixed and not adjustable by the club user, and wherein said heel, toe and rear portion weighting means are provided as built-up portions around a pocket extending between the front face and the respective heel, toe and rear portion weighted areas, and said heel, toe and rear portion weighting means are joined by a web therebetween forming the base of said pocket; and

wherein said heel, toe and rear portion weighting means are disposed to position the center of gravity of the putter head above the midpoint of the putter head.



5,058,896

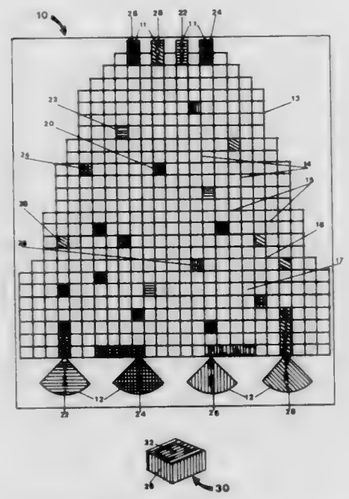
BOARD GAME

Jacques R. Bez, 7227 Deborah Dr., Falls Church, Va. 22046

Continuation of Ser. No. 324,731, Jun. 5, 1990, abandoned. This application Jul. 5, 1990, Ser. No. 549,249

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—272 **3 Claims**



1. A board game, comprising:

a plurality of coded sets of playing pieces, each of said coded sets of playing pieces having a coding means, definite configuration and indicia means on at least one surface thereof for distinguishing them from other sets of coded playing pieces and for forming a word when positioned adjacent other of similarly coded playing pieces;

a game board having a flat surface for receiving thereon said coded playing pieces;

a grid of plurality of essentially equal spaces formed of intersecting lines conforming substantially to the configuration of said playing pieces, with said grid defining a boundary of a playing surface of said flat surface;

at least two coded starting points corresponding to the coding means of the sets of coded playing pieces and positioned adjacent the boundary and at least two corresponding coded finishing points corresponding to the coded starting points and positioned adjacent the boundary; and

a plurality of randomly spaced obstacle means positioned about said grid, said obstacle means being coded spaces and are obstacles for dissimilar coded playing pieces of each set.

5,058,897

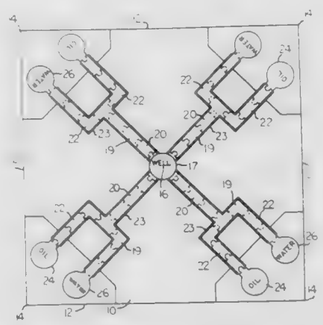
OIL COMMODITY BOARD GAME

Ray E. Roberts, and Joshua B. Roberts, both of 500 W. Oak, El Reno, Okla. 73036

Filed Sep. 13, 1990, Ser. No. 581,912

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—278 **3 Claims**



1. Game apparatus comprising a flat surfaced game board having a central axis and a peripheral edge; markings on the board surface centered on said central axis to represent an oil well; markings at the peripheral edge of the board defining at least four equidistant player stations, each station including markings denoting an oil storage tank and a water storage tank; means defining a flow-line between the oil well and each player station; each flow line means including a main section extending from the well, and two branch sections extending between the main section and the respective storage tanks; and a number of separate miniature flow line section pieces installable on each flow line; each piece having a width dimension corresponding to the width dimension of the flow line and a length dimension at least twice the width dimension; some of said pieces being straight linear pieces representing straight flow line sections; some of said pieces being L-shaped pieces representing pipe elbows; some of said pieces being T-shaped pieces representing pipe T sections; said pieces having predetermined lengths whereby the pieces can be placed in a predetermined order in each defined channel to form a continuous simulated flow line between the central well and the respective storage tanks.

5,058,898

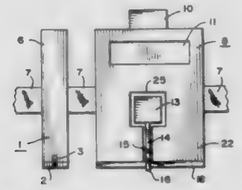
BALL GAME DEVICE

Pan B. S. Chen, P.O. Box 15316, Arlington, Va. 22215

Filed Dec. 27, 1990, Ser. No. 632,453

Int. Cl.[5] A63B *67/00*

U.S. Cl. 273—401 **5 Claims**



1. A ball game device comprising:

(A) a ball storing means which is hollow, which has at least one opening so that a ball can enter the means, and which has at least a wall which is normally closed and can be opened so that a ball in the means can exit;

(B) a ball receiving means which is hollow, which has at least one opening so that a ball can enter the means, and which has at least a wall which is normally closed and can be opened so that a ball in the means can exit; and

(C) a fastening means for removably attaching the ball storing means and the ball receiving means to a player.

5,058,899

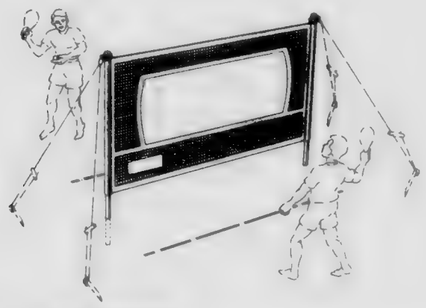
PADDLE BALL GAME WITH NET LIKE SHEET WITH COMPLETELY SURROUNDED OPENING

Jeffrey D. Jackson, and Kenneth J. Avance, both of Long Beach, Calif., assignors to Suncepts Inc., Long Beach, Calif.

Filed Mar. 8, 1990, Ser. No. 490,749

Int. Cl.[5] A63B *61/00, 63/00*

U.S. Cl. 273—411 **18 Claims**



1. A game comprising:

a sheet of desired height and width, positionable in a substantially flat upright position on a plane surface, with said sheet having a completely surrounded inner opening, which determines and establishes the playing zone by creating and defining the vertical playing zone;

a projectile;

a plurality of paddles for use by players on opposite sides of said sheet as a means of hitting the projectile back and forth through said completely surrounded inner opening; and

opposing horizontal markers, which are structures on said playing surface substantially parallel to said sheet disposed at substantially equidistant locations on respective sides of said sheet delineating the playing area from the "Dead Zone", where the playing area is the area in which the players on both sides of said sheet are allowed to stand and play from in order to return the projectile back through the completely surrounded inner opening of said sheet and the "Dead Zone" is the area between the horizontal markers, divided by said sheet, which is considered the non-play region where no player can stand or hit the projectile from nor can the projectile land after being hit;

whereby completely surrounded inner opening is disposed within said sheet so that said sheet and the vertical field said sheet defines, creates the games boundaries preventing the projectile from going back and forth to either side of said sheet unless it is in the field of play, which is determined by said sheet, said completely surrounded inner opening, and opposing horizontal markers.

5,058,900

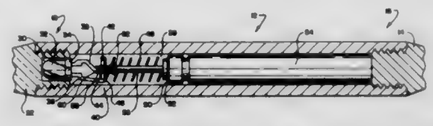
GENERAL PURPOSE ILLUMINATOR ASSEMBLY

Dennis J. Denen, Columbus, Ohio, assignor to Progenics Corporation, Columbus, Ohio

Filed Oct. 31, 1990, Ser. No. 606,119

Int. Cl.[5] F21L *11/00;* **A63B** *65/02*

U.S. Cl. 273—416 **18 Claims**



1. An illuminator assembly for use with a battery of given outer diameter and having a centrally disposed rod shaped electrode extending outwardly from the forward face thereof a predetermined length, comprising:

a light emitting diode having first and second metal electrode pins extending from a back surface thereof, said first pin extending rearwardly from said back surface to a base position and being configured thereat to define a spring support base disposed generally along a plane parallel with said back surface and having a base opening therein, said second electrode pin being configured to extend to and provide a mounting portion located at the center of said base opening;

a compressible coil switching spring of predetermined inner and outer diameter, having a base end fixed to said spring support base and extending outwardly therefrom to a switching end; and

a compressible coil capture spring of generally conical configuration having a constricted connecting end of first predetermined inner diameter connected to and extending from said diode second electrode pin mounting portion and extending within said switching spring to a wider capture end of second inner and outer diameter selected for receiving said battery rod shaped electrode.

5,058,901

SPIN AXIS WEIGHTED BOWLING BALL

Carmen M. Salvino, 2658 N. New England, Chicago, Ill. 60635

Filed Jun. 20, 1990, Ser. No. 540,838

Int. Cl.[5] A63B *37/10*

U.S. Cl. 273—63 E **4 Claims**

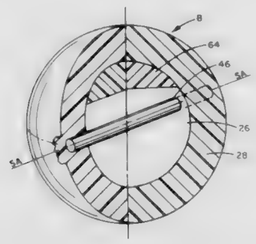
1. A bowling ball, the bowling ball having thumb and finger holes for gripping the bowling ball, the bowling ball having a center and when thrown consistently having a ball track plane and a spin axis, the spin axis being perpendicular to the ball track plane, the bowling ball comprising:

a core;

a cover surrounding the core and having an outer surface; and

a rod having a length substantially greater than its diameter and extending through and on opposite sides of the center

of the ball, the centerline of said rod being coincident with the spin axis, the rod having a homogeneous weight den-



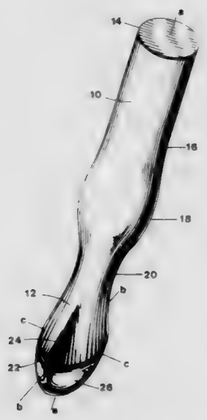
sity distribution so that one half of the rod weighs substantially the same as the other half of the rod.

5,058,902

ELLIPSOIDAL FLARED RACQUET HANDLE WITH DISTAL BUTT WEIGHT

Wilmot H. McCutchen, P.O. Box 701129, Houston, Tex. 77270

Filed Jul. 23, 1990, Ser. No. 556,007
Int. Cl.[5] A63B *49/08, 49/04*
U.S. Cl. 273—73 J **10 Claims**



1. An improved tennis racquet, comprising a face defining a generally planar striking surface for striking a ball and a handle for engaging the striking hand of a player, one end of the handle being attached to the face and the other end being the distal end, and having a longitudinal axis extending along the centerlines of the face and the length of the handle,

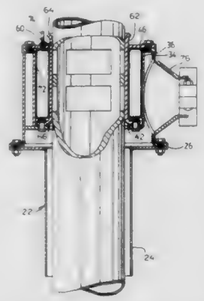
wherein the handle comprises ellipsoidal cross sections with coplanar ellipsoidal major axes decreasing as a function of distance along the longitudinal axis from said distal end to a point less than 6 cm from said distal end, at approximately where the middle finger and center of the palm of the striking hand of a player is located when the racquet is gripped normally with one hand for striking a ball, at which point the dimension of the major axis equals the dimension of the minor axis of the cross section of the handle, and the circumference of the handle is at its minimum.

5,058,903

DRILL ROD SEAL

Michael J. Kelly, North Bay, and Kevin J. Hummel, Powassan, both of Canada, assignors to Redpath Raiseboring Limited, Ontario, Canada

Filed Jun. 16, 1989, Ser. No. 367,056
Int. Cl.[5] F16J *15/46*
U.S. Cl. 277—34 **3 Claims**



1. A fixed seal for cooperation with a drill rod of a rotary earth or rock drill, said seal comprising:

a housing having an inner generally cylindrical surface;

means for fixing said housing at a proximal end of a shaft;

a flexible generally cylindrical seal having an outer cylindrical surface and a radially inner face sealingly engageable with a drill rod, said inner cylindrical surface of said housing and said outer cylindrical surface of said seal defining a toroidal space;

an inflatable bladder disposed in said toroidal space, said bladder by reaction with said cylindrical surface of said housing pressing said seal into sealing engagement with a drill rod;

an outlet provided in said housing communicating with a space beyond the distal end of said seal and in close proximity with said seal;

means for connecting said outlet to an outlet conduit; and

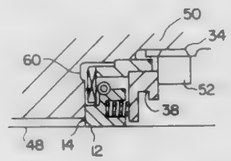
means for fixing said seal and said housing to prevent rotation of said seal as the drill rod rotates.

5,058,904

SELF-CONTAINED SEALING RING ASSEMBLY

Charles Nevola, Cranston, R.I., assignor to EG&G Sealol Inc., Providence, R.I.

Filed Feb. 21, 1990, Ser. No. 482,486
Int. Cl.[5] F16J *15/54*
U.S. Cl. 277—44 **6 Claims**



1. A seal assembly for mounting into a housing around an application runner, the assembly comprising:

a segmented seal ring having a radially-outer surface, a primary sealing face in the form of a radially-inner surface, a secondary sealing face at one axial end of said seal ring for sealing against the housing, and a plurality of holes formed in the other axial end of said seal ring;

an annular outer shell surrounding said seal ring, said shell having at least one drive lug formed in an outer surface thereof, said drive lug adapted for slidably engaging said machine housing so that said shell will not rotate;

an annular retaining plate fit within said outer shell and having a plate surface adjacent said holes formed in said seal ring; and

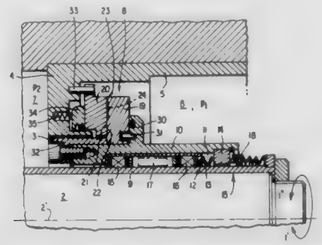
a plurality of coil springs located in aid holes, said springs extending toward and resting against said plate surface.

5,058,905

SEAL

Josef Nosowicz, Richard-Wagner-Strasse 1, D-8192 Geretsried, and Rudolf Kollinger, Richard-Wagner-Strasse 10, D-8034 Germering, both of Fed. Rep. of Germany

Filed Oct. 5, 1989, Ser. No. 417,471
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1988, 3834214
Int. Cl.[5] F16J *15/38*
U.S. Cl. 277—65 **11 Claims**



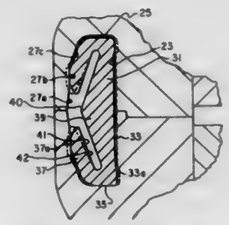
1. In a seal for a shaft (2) rotating, in regular operation, in a first direction of rotation (1') and passing through a wall (4; 4') separating a higher pressure chamber from a lower pressure chamber, the seal comprising at lest one seal component group (8; 8') performing a sealing function in the first direction of rotation (1') and including a first sealing member (19; 19') supported radially and in at least one axial direction at one of the shaft (2) and a component (9) fixed thereto and connected with one of the shaft (2) and the component (9) by way of a first torque transmitting device while being sealed against the shaft (2) by means of a first auxiliary sealing arrangement; said seal component group further including a second sealing member (20; 20') supported at one of the wall (4; 4') and a component fixed to the wall in the radial direction and in at least one axial direction and being connected with one of the wall (4; 4') and the component fixed to the wall by way of a second torque transmitting device while being sealed against one of the wall (4; 4') and the component fixed to the wall by means of a second auxiliary sealing arrangement, the two sealing members (19, 20; 19', 20') lying against one another at a sealing gap (23; 23') absorbing a relative rotational movement, the improvement wherein at least one of the sealing members (19; 19'; 37) is arranged to be rotatable on a bearing (16) coaxial with the shaft (2); the torque transmitting device of each sealing member comprising a free-wheeling coupling (17; 17') which, when the shaft (2) rotates in the first direction of rotation (1'), couples in the sense of transmitting torque and in the second direction of rotation (1'') uncouples; and each auxiliary seal arrangement associated with a sealing member (19; 19'; 37) having a free-wheeling coupling (17; 17') including a dynamic sealing device (15; 15'; 15'') arranged to absorb a relative rotational movement at least for a limited period of time and sealing a leakage path created by the free-wheeling coupling (17; 17') and the bearing (16).

5,058,906

INTEGRALLY REDUNDANT SEAL

Frank C. Adamek, Pasadena, and Rick C. Hunter, Sugar Land, both of Tex., assignors to Vetco Gray Inc., Houston, Tex.

Filed Jan. 19, 1989, Ser. No. 299,724
Int. Cl.[5] F16J *15/06*
U.S. Cl. 277—167.5 **4 Claims**



2. In an apparatus for sealing two conduits, each conduit having a face which abuts the other conduit, each face having an annular groove containing radial inner and outer walls which mate with each other to define a seal cavity, the improvement comprising in combination:

a metal seal ring located in the cavity, having an outer wall which has outer sealing surfaces that seal against the outer walls of the grooves, a pair of legs extending inward from the outer wall, each leg having an inner sealing surface for sealing against an inner wall of one of the grooves;

the outer sealing surfaces having relaxed condition diameters, the outer walls of the grooves having diameters at the points where the outer sealing surfaces seal against the outer walls that are less than the relaxed condition diameters of the outer sealing surfaces;

the seal ring having an axial extent and the cavity having an axial extent, the axial extent of the seal ring being less than the axial extent of the cavity, avoiding any substantial axial compression when the seal ring is located in the cavity;

the seal ring having radial widths from the outer sealing surfaces to the inner sealing surfaces when the seal ring is in a relaxed condition that are greater than the radial widths of the grooves from the inner wall of each groove to the outer wall of each groove at the point where the seal ring seals against the inner and outer walls of the groove, by an amount selected so that when the seal ring is forced into the groove, it will contract elastically to an amount less than an amount required to permanently deform the seal ring; and

the outer sealing surfaces comprising a pair of separate cylindrical sections which protrude radially from the outer wall of the seal ring and which are spaced apart from each other axially, the outer sealing surfaces being positioned on the seal ring so that each outer sealing surface locates axially deeper within its respective groove than the inner sealing surfaces for causing radial reaction forces at the outer sealing surfaces that are staggered axially relative to radial reaction forces created by the inner sealing surfaces.

5,058,907

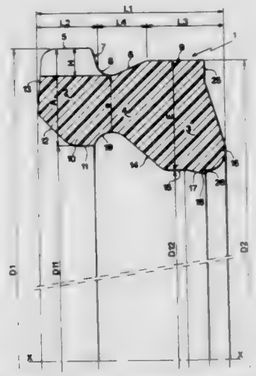
PIPE JOINT GASKET WITH ANNULAR ANCHORING HEEL

Alain Percebois; Andre Remy, and Jean-Pierre Vitel, all of Blenod les Pont-A-Mousson, France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Jun. 28, 1990, Ser. No. 545,151
Claims priority, application France, Jun. 28, 1989, 89 08858
Int. Cl.[5] F16L *21/04*
U.S. Cl. 277—207 A **5 Claims**

1. An annular elastomeric gasket (1) adapted to be mounted

in a female end socket (30) of a pipe, comprising, in radial cross-section: an anchoring structure (2), a radially compressible sealing body (3) axially spaced from and integrally connected to the anchoring structure by an intermediate joining structure (4), the anchoring structure having an integral anchoring heel (5) defining a radially outermost face of the gasket and forming a radial projection thereof, said projection extending outwardly from a level corresponding to an outer peripheral surface of said intermediate joining structure and a plurality of circumferentially spaced, deformation implementing recesses (27) provided on said radial outermost face of the gasket and extending axially therethrough to facilitate a cardioid deformation of the gasket to enable its insertion in a female pipe socket.



5,058,908

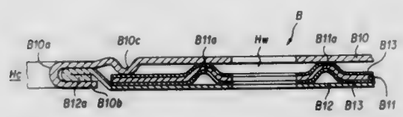
STEEL LAMINATE GASKET

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 231,303, Aug. 11, 1988, Pat. No. 4,898,396. This application Jan. 30, 1990, Ser. No. 472,572

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—235 B 18 Claims



1. A steel laminate gasket for an internal combustion engine having at least one cylinder hole and at least one through hole therein, comprising:

a first plate having at least one first hole substantially corresponding to the cylinder hole of the engine,

a second plate situated under the first plate, said second plate having at least one second hole substantially corresponding to the cylinder hole of the engine,

at least one third plate situated between the first and second plates, said third plate including at least one third hole having a diameter larger than a diameter of the cylinder hole,

first means for incompressibly sealing around the cylinder hole of the engine to securely seal around the same,

second means for covering at least said first means for sealing around the first hole to securely seal therearound, said second means forming a solid portion around the cylinder hole together with the first means, and

third means for incompressibly sealing around the cylinder hole, said third means being formed on at least one of the first, second and third plates outside the second means relative to the cylinder hole so that when the gasket is tightened, the first and second means seal incompressibly around the cylinder hole and the third means compressibly seals around the cylinder hole.

5,058,909

ADAPTER FOR ATTACHMENT OF A SUPPLEMENTARY TOOL

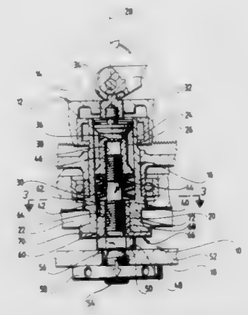
Boris E. Rudolf, and Walter Blutharsch, both of Stuttgart, Fed. Rep. of Germany, assignors to C. & E. Fein GmbH & Co., Fed. Rep. of Germany

Filed Jan. 24, 1990, Ser. No. 470,120

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902874

Int. Cl.[5] B24B *45/00, 23/02*

U.S. Cl. 279—8 11 Claims



1. An adapter for holding a grinding tool in a portable grinding machine of the type having:

a gear head;

a hollow spindle arranged within said gear head and being drivingly connected to a drive motor and having

a central recess, defining a longitudinal axis and having an upper section and a lower section, said lower section being designed as a positive-connection part, and

a counterflange situated at a lower end of said lower section;

spring means arranged within said bore and supported thereby;

a draw spindle being axially displaceable within said upper section of said hollow spindle and resting above said spring means, said draw spindle further having receiving means facing said spring means;

manual actuating means, arranged on said gear head, for axially displacing said draw spindle against a compression force of said spring means;

said adapter having a threaded pin for securing a grinding tool thereon by means of an attachment nut, said adapter further comprising:

a flange being axially displaceable within said lower section of said hollow spindle, and having a positive-connection counterpart, said positive-connection counterpart engageable with said positive-connection part of said lower section of said hollow spindle, said flange further having a flange plate facing said counterflange of said hollow spindle lower section, and having an axial opening, and

a bolt having an upper portion designed as a holding element to be received within said receiving means for axially holding said bolt with respect to said draw spindle, an intermediate portion extending through said opening of said flange, and a lower portion comprising said threaded pin for receiving said grinding tool attachment nut;

wherein said draw spindle is displaceable by said manual actuating device between an assembly position for assembly or detachment of said adapter, and a secured position for securing said adapter; and wherein said flange in said secured position is pressed by said spring means against said counterflange, thereby securing said bolt against rotation and against axial movement in the direction of said receiving means.

5,058,910

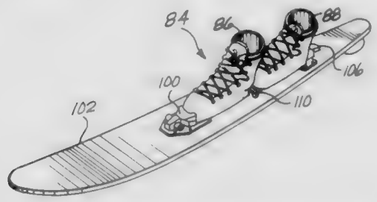
AUTOMATICALLY RELEASING SKI BINDING

Roger C. Teeter, and Larry C. Smith, both of Sumner, Wash., assignors to STL International, Incorporated, Tacoma, Wash.

Filed Mar. 18, 1988, Ser. No. 169,789

Int. Cl.[5] A63C *9/08*

U.S. Cl. 280—14.2 12 Claims



1. A releasable ski binding for holding a skier's front foot and rear foot in tandem arrangement on a single ski, comprising a forward boot, rear foot-engaging means rearward of said forward boot, holding means releasably attaching the toe of said forward boot to the ski, a keeper, pivot means held against translation lengthwise of the ski pivotally mounting said keeper adjacent to the heel of said forward boot, said keeper when in position swung forwardly about said pivot means releasably holding the heel of said forward boot to the ski, and means controlled by said rear foot-engaging means for releasing said keeper for rearward swinging away from its forwardly swung position to release said forward boot heel from the ski automatically in response to separation of the rear foot from the ski.

5,058,911

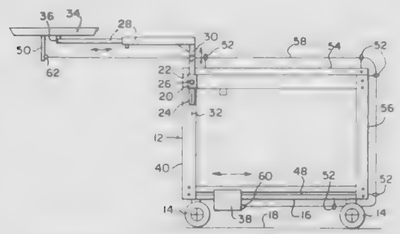
SWIVEL TOOL TRAY

Rudolph Hunter, 3362 Toledo Ter. H2, Hyattsville, Md. 20782, and George Spector, 233 Broadway Rm 3815, New York City, N.Y. 10007

Filed Mar. 29, 1990, Ser. No. 501,010

Int. Cl.[5] B62B *3/02*

U.S. Cl. 280—47.35 1 Claim



1. A swivel tool tray comprising:

a) a cart having a generally rectangular box shaped configuration;

b) a plurality of wheels mounted to the underside of said cart so that said cart is movable along a flat surface;

c) a sleeve vertically affixed to an upper outside corner of said cart;

d) an arm adjustably retained within said sleeve;

e) a horizontal extendable member swivably attached at one end to the top portion of said arm so that said extension member swivels 360 degrees about an axis of said arm;

f) a pan removably attached at a right angle to a distal end of said horizontal extendable member whereby said pan is horizontally extendable with said extendable member; further including a counterweight on the underside of said cart to prevent said cart from tipping over when said horizontal extendable member is horizontally adjusted away from the side of said cart;

g) a horizontal track formed at the underside of said cart so that said counterweight is slidable therealong;

h) a vertical rod extending downwardly from the bottom of said pan;

i) a plurality of eyelet rods spaced apart and fixed to the underside, the top and one side of said cart remote from said pan; and

j) an elongated cord extending through said eyelet rods, with one end of said cord affixed to said counterweight and another end of said cord affixed to said vertical rod whereby adjustment of said pan on said horizontal extendable member will cause said counterweight to slide on said track to stabilize the balance of said cart.

5,058,912

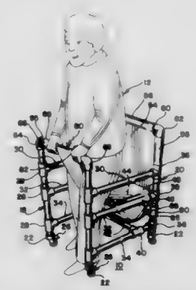
COMBINATION CHAIR/WALKER

Mary M. Harroun, 2460 Dundee Rd., Northbrook, Ill. 60062

Filed Aug. 17, 1990, Ser. No. 568,847

Int. Cl.[5] A61H *3/04*

U.S. Cl. 280—87.021 16 Claims



7. A combination chair and walker for use by elderly and disabled persons for movement over a floor surface while walking erect and while standing and sitting, comprising:

frame means defining a structure for supportively surrounding all sides of a person while in a standing, walking and sitting position within said structure;

roller means for supporting said structure for rolling movement over said floor surface;

seat means occupying only a rearward portion of an enclosed space defined within said structure and leaving an open leg space forward of said seat means;

said frame means including a front rail, a plurality of side rails and back support means at levels above said seat means for use in supporting said person, said frame means further including a pair of laterally spaced apart front legs extending upwardly of said side rails at forward ends thereof, said front rail comprising an elongated assembly having one end portion pivotally secured to an upper end portion of one of said front legs and movable between an open position extending outwardly of said frame means ready for ingress and egress of a person into and out of said enclosed space, and said front rail having an opposite end portion detachably interconnectable to an upper end portion of an opposite one of said front legs when said front rail is in a closed position extending laterally with respect to said side rails for providing a hand rail for

manually guiding said combination chair and walker adjacent a forward end of said enclosed space;

manually operable lock means above the level of said side rails for securing said front rail against unwanted pivotal and unwanted vertical movement when locked in said closed position; and wherein

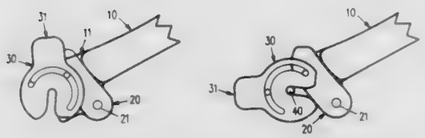
said lock means included a member slidably relative to said front rail when said front rail is in a position extended transversely between said upper ends of said front legs for locking said front rail in said closed position.

5,058,913

SELF-LOCKING BICYCLE WHEEL SAFETY RETAINER MOUNT

Alexander La Riviere, 1565 Mackey Ave., San Jose, Calif. 95125, and Jorge Sousa, 130 Cheltenham Way, San Jose, Calif. 95139

Filed Aug. 17, 1990, Ser. No. 568,931
Int. Cl.[5] B62K *19/30*
U.S. Cl. 280—281.1 **8 Claims**



1. A pair of mounting devices for receiving each end of the axle of a bicycle wheel having quick-release mounting hubs in cooperation with the open-ended axle receiving slot in the ends of each leg of the front fork of a bicycle, each of said mounting devices comprising:

a mounting means having an open-ended axle slot and a mounting aperture therethrough for mounting said mounting means to said end of said leg and for aligning said axle slot with the open-ended axle receiving slot in the end of said fork leg;

latching means having an open-ended axle slot and an arcuate aperture therethrough said open-ended axle slot of said latching means positioned to align with said open-ended axle receiving slot in the end of said fork leg; and

fastening means passing through said arcuate aperture in said latching means for securing said latching means to said mounting means.

5,058,914

FIFTH WHEEL SLIP COVER

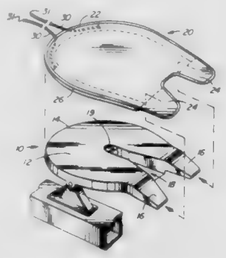
Gordon S. Murcheson, 613 6th St., Nanaimo, British Columbia, Canada V9R 1J7

Filed Nov. 30, 1990, Ser. No. 621,302
Int. Cl.[5] B62D *53/08*; **B60J** *7/10*
U.S. Cl. 280—433 **8 Claims**

1. A fifth wheel cover for overlying a fifth wheel bearing plate having an arcuate forward end and a pair of opposed rearwardly and downwardly extending ramps remote from said forward end, said cover comprising:

(a) a substantially impervious sheet substantially conforming to the shape of said bearing plate, said sheet having an arcuate forward end and a pair of opposed, rearwardly extending sleeves defining a pair of compartments on an undersurface of said sheet for receiving and retaining said ramps; and

(b) a skirt extending substantially along an arcuate perimeter of said sheet and depending therefrom, said skirt being



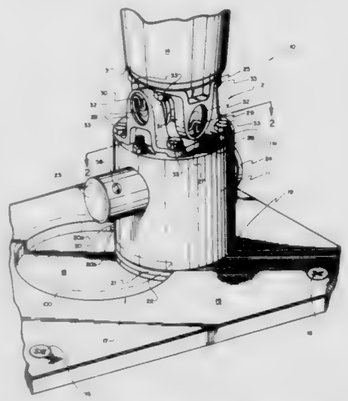
adapted for releasably fastening said cover to said bearing plate.

5,058,915

TRAILER HITCH

Darrel J. Burns, 8885 N. Redden Rd., Park City, Utah 84060

Filed Sep. 7, 1990, Ser. No. 580,173
Int. Cl.[5] B60D *1/01*
U.S. Cl. 280—441.2 **17 Claims**



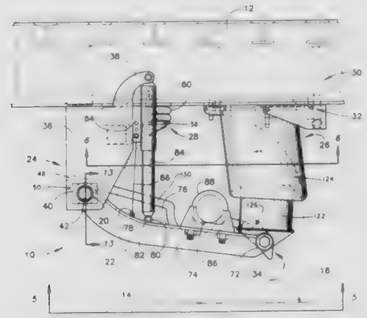
1. A trailer hitch comprising, a pin means that is coupled axially through a pivot means to an end of a trailer towbar; a mounting plate means for attachment to a truck bed that includes a keyway formed therein for receiving the end of said pin means to slide therein from a wide portion to a forward keyway end that is configured to receive said pin means; means for locking said pin means in said forward keyway end so as to prohibit it from lifting therefrom; means for prohibiting said pin means from sliding from said forward keyway end consisting of a hole or depression that is formed in said mounting plate means at the center of said forward keyway end and a plug means which is arranged to slide vertically within a center longitudinal cavity formed in said pin means; and means for extending said plug means axially from the center of said pin means end into said mounting plate hole or depression.

5,058,916

APPARATUS FOR PROVIDING ADDITIONAL LIFT IN A RETRACTABLE SUSPENSION

William J. Hicks, Muskegon, Mich., assignor to Lear Siegler Truck Products Corp., Muskegon, Mich.

Filed Jun. 18, 1990, Ser. No. 540,489
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—704 **28 Claims**



1. In a suspension for a vehicle comprising a frame, said suspension including a pair of control arms pivotally mounted to the frame for swinging movement relative thereto, an axle rigidly mounted to and between the control arms for carrying wheels, a collapsible spring between the control arms and the frame for cushioning the swinging movement of the control arms relative to the frame, and lift means for moving the control arms and the wheels away from a ground-engaging position toward a retracted position relative to the frame, the improvement comprising:

a member mounted to the frame for movement relative thereto between an upper limit and a lower limit;

said spring having a first portion connected to the control arms and a second portion connected to the member;

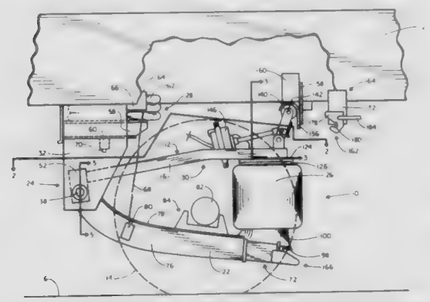
whereby the wheels can be moved a greater degree away from the ground-engaging position when the lift means is energized and the member is moved toward the upper limit than by collapsing the spring.

5,058,917

TWO-STAGE RETRACTABLE SUSPENSION

Gregory A. Richardson, Holton, Mich., assignor to Neway Corp., Muskegon, Mich.

Filed Oct. 1, 1990, Ser. No. 591,397
Int. Cl.[5] B60G *9/02*
U.S. Cl. 280—704 **20 Claims**



1. In a suspension for a vehicle, said vehicle having a frame, and said suspension comprising a pair of control arms pivotally mounted to the frame for swinging movement relative thereto, said control arms carrying ground engaging wheels, spring means between the control arms and the frame for cushioning the swinging movement of the control arms relative to the frame, and lift means for moving the control arms and the wheels to a retracted position relative to the frame, the improvement comprising:

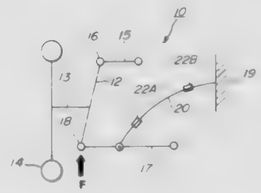
a carriage pivotally mounted to the frame for swinging movement of the free end thereof between a first position adjacent to the frame and a second position adjacent to a plane defined by the longitudinal axes of the control arms, said carriage supporting an upper portion of the spring means so that the spring means is disposed between the control arms and the carriage, whereby the wheels can be moved a greater degree toward the frame when the lift means moves the control arms and the wheels to the retracted position than by collapsing the spring means.

5,058,918

SUSPENSION SYSTEM FOR MOTOR VEHICLE

Katsunori Nakaya, and Masashi Kitagawa, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1990, Ser. No. 490,075
Claims priority, application Japan, Mar. 8, 1989, 1-55716; Mar. 8, 1989, 1-55717; Mar. 8, 1989, 1-55718; Mar. 8, 1989, 1-55719; Mar. 8, 1989, 1-55720
Int. Cl.[5] B60G *11/08, 17/02*
U.S. Cl. 280—718 **32 Claims**



1. A suspension system for use on a motor vehicle, comprising:

suspension means including a resilient member;

a plurality of strain detecting means mounted on said resilient member, for detecting strains of said resilient member;

strain estimating means for estimating the value of a strain of said resilient member in a particular position thereon based on a measured value of a strain which is detected by at least one of said strain detecting means, said one strain detecting means being located in a position other than said particular position; and

means for determining a deteriorated condition of said resilient member based on the detected strains, said determining means having means for comparing a measured value of a strain which is detected by another of said strain detecting means that is located in said particular position with said estimated value of the strain in said particular position.

5,058,919

AIR BAG MODULE CONSTRUCTION AND ASSEMBLY TECHNIQUE

Scott L. Paquette, Auburn Hills; Jeffrey C. Synor, Utica, and John W. Wiers, Romeo, all of Mich., assignors to TRW Vehicle Safety Systems, Inc, Cleveland, Ohio

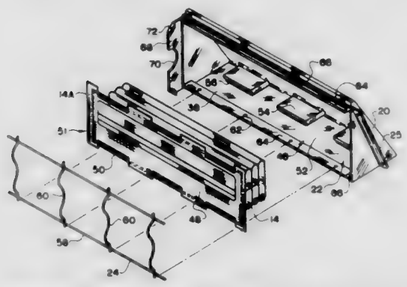
Filed Jun. 15, 1990, Ser. No. 539,023
Int. Cl.[5] B60R *21/08*
U.S. Cl. 280—732 **31 Claims**

1. Apparatus comprising:

an air bag/cover subassembly and an inflator/reaction de-

vice subassembly adapted to be coupled to said air bag/cover subassembly to form an air bag module;

said air bag/cover subassembly comprising a cover defining an air bag cavity and an access opening, a folded air bag disposed within said air bag cavity, and a retaining device adapted to maintain said air bag in said cavity, said retaining device directly engaging a portion of said cover to couple said retaining device with said cover and to maintain said air bag in said cavity, said cover having portions adapted to separate to create a deployment opening



through which the major portion of said air bag can be forced under pressure out of said cavity;

said inflator/reaction device subassembly comprising an inflator and a reaction device coupled to said inflator;

each of said inflator/reaction device subassembly and said air bag/cover subassembly having respective integral coupling means adapted for directly coupling with each other to couple said inflator/reaction device subassembly with said air bag/cover subassembly to form the air bag module.

5,058,920

METHOD FOR ACTUATING A SAFETY DEVICE FOR VEHICLE OCCUPANTS

Wilfried Burger, Hemmingen; Werner Nitschke, Ditzingen; Peter Taufer, Renningen, and Hugo Weller, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

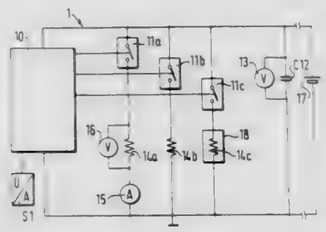
PCT No. PCT/DE88/00378, § 371 Date Mar. 1, 1990, § 102(e) Date Mar. 1, 1990, PCT Pub. No. WO89/02377, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 5, 1987, Ser. No. 490,651

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1987, 3729785

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—735 **22 Claims**



1. A method of actuating a passenger restraint device mounted on a motor vehicle, comprising the following steps:

directing electric current from a voltage source to an actuating device to actuate the restraint device;

storing energy from the voltage source in a storage device, and if the voltage source is disconnected from the actuating device, directing electric current from the storage device to the actuating device to actuate the restraint device; and

measuring the energy stored within the storage device, and if the energy level of the storage device falls below a predetermined level, interrupting the flow of electric current to the actuating device to maintain a substantially predetermined amount of energy stored within the storage device to actuate other actuating devices.

5,058,921

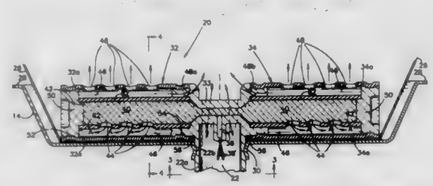
LINEAR BILATERAL INFLATOR MODULE

Jess Cuevas, Scottsdale, Ariz., assignor to Talley Automotive Products, Inc., Phoenix, Ariz.

Filed Dec. 4, 1989, Ser. No. 445,231

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—741 **30 Claims**



1. A motor vehicle passenger passive restraint module comprising:

(a) means for mounting a pyrotechnic gas inflator device within a dashboard portion of said vehicle, said inflator device capable of producing a sufficient amount of a gaseous combustion product within a sufficient time to substantially deploy an inflatable passenger air cushion located in contact relation therewith within an interval between a primary collision involving said motor vehicle and an object external thereto and a secondary collision between at least one passenger within said motor vehicle and an interior portion thereof;

(b) a pyrotechnic gas inflator device installed within said mounting means and secured thereto by a first structural seal formed therebetween, said inflator device comprising

i) first and second combustion chambers positioned substantially horizontally at, respectively, a first end and a second end of said inflator; and

ii) a T-shaped central support member located between said first and said second combustion chambers and secured, at a first side thereof, to said first combustion chamber and, at a second side thereof, to said second combustion chamber, by structural seals formed between said support member and a corresponding first inner end of each said combustion chamber, said support member further comprising a tubular stem portion projecting substantially perpendicularly to a longitudinal axis of said first and said second combustion chambers, said stem portion containing ignition means for initiating combustion of a pyrotechnic gas-generating composition stored in both said first and said second combustion chambers; and

(c) an expandable passenger air bag positioned in surrounding relation to said inflator device, said air bag secured, at a mouth portion thereof, between said inflator device and said mounting means,

wherein said first and said second combustion chambers are each adapted to supply differing amounts of a gaseous product, produced due to the combustion of said pyrotechnic gas-generating composition stored therein, so as to create at least two zones of differential pressure within said expandable passenger air bag.

5,058,922

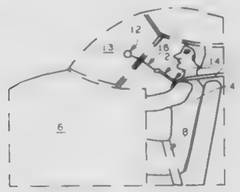
MOTOR VEHICLE SAFETY BELT COMFORT DEVICE

S. Craig Long, 603 Tulip La., Vero Beach, Fla. 32963

Filed Oct. 16, 1989, Ser. No. 422,082

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—808 **3 Claims**



1. A device for improving comfort of a person seated in a motor vehicle and using a safety belt assembly provided therein that includes a shoulder strap, said device comprising:

suction cup means that may be releasably adhered to the windshield, side window or other part of said motor vehicle,

clip means that may be releasably attached to a part of said shoulder strap,

a cord attached at one end to said suction cup means and slidably looped through said clip means creating a first section of said cord that extends from said suction cup means to said clip means and a second section of said cord that leads away from said clip means but does not connect with said suction cup means, and

means for adjusting the length of said first section of said cord which comprises:

a disc shaped body member having front and back faces and, at least three circular bores extending through said body member from said front face to said back face,

said first section of said cord passing through two of said bores and said second section of said cord being knotted through another of said bores.

5,058,923

OSTEOLOGICALLY CORRECT SKI POLE

Hal J. Dale, 7 South Arizona, Dillon, Mont. 59725

Filed Feb. 22, 1991, Ser. No. 659,828

Int. Cl.[5] A63C *11/22*

U.S. Cl. 280—821 **6 Claims**



1. An osteologically correct skiing aid for use by a skier in alpine skiing, comprising:

a tapered, elongated rod with a substantially straight lower portion having a basket attached thereto and terminating at a lowermost snow or ice engaging tip, a substantially straight intermediate portion having a central longitudinal axis, and a substantially straight upper portion having a handgrip;

said upper portion being canted forwardly relative to the longitudinal axis of said intermediate portion and said lower portion being canted rearwardly relative to the longitudinal axis of said intermediate portion with said lowermost tip being located rearwardly of said longitudinal axis when said handgrip is held by a skier during skiing with said upper portion being angled in a forward direction of travel so as to provide an osteologically correct alignment of the skier's wrist;

said upper portion, said intermediate portion, and said lower portion of said rod all lying in the same plane.

5,058,924

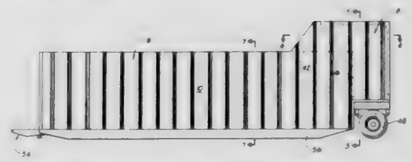
LIQUID STORAGE TANK WITH EQUIPMENT STORAGE COMPARTMENT

Lonnie B. Whatley, Jr., Ardmore, Okla., assignor to Spade Leasing, Inc., Springer, Okla.

Filed Feb. 22, 1990, Ser. No. 482,861

Int. Cl.[5] B60P *3/22*

U.S. Cl. 280—837 **3 Claims**



1. A liquid storage tank structure having a forward end and a rear end and further comprising:

a generally rectangular parallelepiped liquid compartment at the forward end of said tank structure, said liquid compartment including:

two opposed, substantially vertically extending parallel side walls;

a forward wall having a top;

a rear partition wall extending substantially parallel to said forward wall;

a forward liquid compartment floor; and

a forward liquid compartment ceiling extending rearwardly from said forward wall and secured to the top of said forward wall, and extending substantially parallel to said forward liquid compartment floor;

an equipment storage compartment adjacent the rear end of said storage tank structure, and located rearwardly from said liquid compartment, said equipment storage compartment being of substantially inverted L-shaped configuration and including:

a vertically extending equipment storage compartment rear wall at the rear of said storage tank structure having a top and extending substantially parallel to said forward wall and to the rear partition wall of said liquid compartment;

at least one access door in said equipment storage compartment rear wall;

a top wall projecting forwardly from the top of said storage compartment rear wall in a plane extending substantially parallel to, and spaced above, said forward liquid compartment ceiling;

a downwardly and forwardly sloping break wall extending between said forward liquid compartment ceiling and said storage compartment top wall and forming a part of the forward side of said equipment storage compartment, the line of intersection of said break wall and said storage compartment top wall being positioned at a height which is not higher than the height at which the

top of said forward wall is located during over-the-road transport of said storage tank structure;

a substantially horizontally extending shelf floor spaced upwardly from the level of said forward liquid compartment floor and extending from said rear partition wall to said break wall; and

a substantially horizontally extending storage compartment floor extending from said partition wall to said storage compartment rear wall at a level below said shelf floor and located at a higher vertical level than said forward liquid compartment floor, said storage compartment floor forming the upper side of an inset open well immediately adjacent, and rearwardly from the rear end of said liquid storage tank structure;

ground enabling wheels adapted to support said tank structure during over-the-road transport and secured to said storage tank structure in said inset open well at a location directly below said storage compartment floor at the rear end of said storage tank structure;

means for engaging a towing vehicle, with said engaging means secured to the forward wall of said storage tank structure at about the horizontal level of said forward liquid compartment floor; and

skid beams secured below said storage tank structure on the lower side of said forward liquid compartment floor, said skid beams extending downwardly to a horizontal level which is at least as low as the lower side of said ground engaging wheels whereby said storage tank is primarily supported on said skid beams when said tank is not being towed in over-the-road transport.

5,058,925

LEACH RESISTANT INK FOR PROTECTING DOCUMENTS FROM ALTERATION AND DOCUMENT PROTECTED THEREBY

Mark Dotson, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed Dec. 13, 1989, Ser. No. 450,214
Int. Cl.[5] B42D *15/00*; **C09D** *11/00*; **B44F** *1/12*
U.S. Cl. 283—95 **8 Claims**

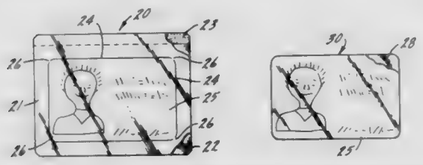
1. A leach-resistant ink for protecting documents from alteration by oxidizing agents comprising diphenyl guanidine which becomes colored upon contact with an oxidizing agent and a complexing agent selected from the group consisting of glucose, sucrose, sorbitol, methyl glucoside, and mixtures thereof, which forms a complex with said diphenyl guanidine.

5,058,926

LAMINATION PRODUCT FOR MANUFACTURE OF IDENTIFICATION CARD

Herbert M. Drower, Wilmette, Ill., assignor to Transilwrap Company, Inc., Chicago, Ill.

Filed Mar. 26, 1990, Ser. No. 498,610
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—109 **26 Claims**



1. A lamination product for manufacture of a secure identification card of given dimensions that requires no insert, comprising:

a first sheet and a second sheet, each having surfaces of resin and each sheet being substantially larger than the identification card dimensions;

the first and second sheets being joined to each other, along one edge of each sheet, in fixed alignment so that the two sheets can be folded together in surface-to-surface contact;

the contacting surfaces of the two sheets, when folded together, being heat-and-pressure sealable to each other;

the first and second sheets being precision cut to define first and second matching identification card panels each having the predetermined identification card dimensions, the first and second identification card panels being accurately aligned with each other and in surface-to-surface contact when the two sheets are folded together;

each card panel being joined to the remainder of its sheet by a plurality of frangible bridges;

at least a given data viewing portion of the first card panel being transparent and a matching data display portion of the second card panel being opaque, the data display portion of the second card panel having an image-receptive surface facing the viewing portion of the first card panel;

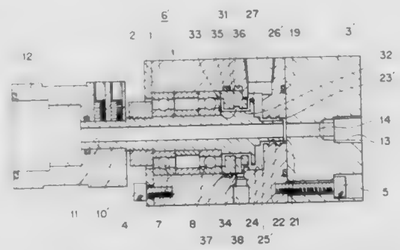
and the first and second sheets being adjustable, relative to each other, to expose the image-receptive surface of the data display portion of the second card panel for application of image data thereto without disruption of the alignment of the two sheets.

5,058,927

FLUID COUPLING DEVICE

Yuji Miwa, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 18, 1990, Ser. No. 539,206
Claims priority, application Japan, Jun. 22, 1989, 1-73166[U]
Int. Cl.[5] F16L *17/10*
U.S. Cl. 285—11 **7 Claims**



1. A fluid coupling device including a stationary main coupling body which has a cylindrical wall portion, means for retaining a rotary shaft to be rotatably supported in the main coupling body by at least one bearing, the rotary shaft extending through a cavity within the main coupling body and being formed with an internal fluid passage, a fluid being supplied from a fluid inlet in a first end of the main coupling body to a rear end of the fluid passage of the rotary shaft, the rotary shaft having an outer peripheral surface, and the main coupling body having an inner peripheral surface defining the cavity therein, the device comprising:

the inner peripheral surface of the main coupling body having first, second and third internal portions arranged in order from the first end thereof, a rear end portion of the outer peripheral surface of the rotary shaft and the first internal portion of the inner surface of the main coupling body defining a first minute space therebetween, said first minute space in communication with the fluid inlet in the first end of the main coupling body;

the outer peripheral surface of the rotary shaft and the second internal portion of the main coupling body defining a pressure reduction chamber in fluid communication with the first minute space;

a drain hole formed through a wall portion of the main coupling body in fluid communication with the pressure reduction chamber;

the outer peripheral surface of the rotary shaft and the third internal portion of the main coupling body defining a second minute space in communication with the pressure reduction chamber, the second minute space being positioned between the pressure reduction chamber and the bearing; and

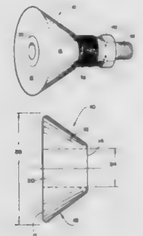
a pneumatic pressure inlet formed through the wall portion of the main coupling body in fluid communication with the second minute space.

5,058,928

AUXILIARY DEVICE FOR A PNEUMATIC QUICK-RELEASE COUPLING

Richard W. Watson, Lakeside, Calif., assignor to Richard Wayne Watson, Lakeside, Calif.

Continuation-in-part of Ser. No. 528,369, May 25, 1990, abandoned. This application Apr. 19, 1991, Ser. No. 687,612
Int. Cl.[5] F16L *37/02*
U.S. Cl. 285—38 **2 Claims**



1. The combination of a quick-disconnect coupling for an air hose and an auxiliary device detachably mounted thereon for providing assistance when connecting and disconnecting the end of an air hose comprising:

a conventional quick-disconnect coupling having an elongated cylindrical body having a front end and a rear end, said front end having a radially extending flange having an outer diameter D1, said rear end having externally threaded grooves, a tubular sleeve mounted on said cylindrical body intermediate its ends for connecting and disconnecting the end of the air hose from the coupling, said tubular sleeve having an outer diameter D2 and an inner diameter D3 so that said tubular sleeve can travel axially back and forth over said cylindrical body; and

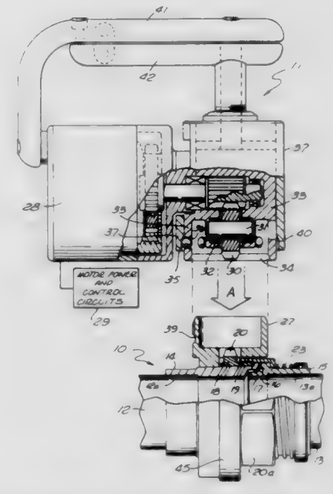
said auxiliary device consisting of a disk-shaped body consisting of a front face, a rear face and lateral side wall surfaces, said auxiliary device having a frusto-conical shape with the diameter D5 of its front face being at least twice as large as the diameter of its rear face, the diameter D5 of said front face being at least 50% greater than the axial length of said auxiliary device, a cylindrical bore hole extends through said body from its front face to its rear face and it has a substantially constant diameter D4 that is slightly smaller than D2, said auxiliary device being manually slid on over the tubular sleeve of said quick-disconnect coupling and being held on only by friction, said auxiliary device being made of plastic material, the longitudinal cross-section of said disk-shaped body being in the form of a trapezoid, said lateral wall and said front face forming an intersection at an acute angle, said intersection being rounded, said front face being planar and formed of solid material extending from its outer rounded edges to its cylindrical bore hole.

5,058,929

MECHANIZED FLUID CONNECTOR AND ASSEMBLY TOOL SYSTEM WITH BALL DETENTS

Ronald C. Zentner, Bellevue, and Steven A. Smith, Enumclaw, both of Wash., assignors to The United States of America as represeted by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 9, 1989, Ser. No. 433,881
Int. Cl.[5] F16L *15/00*
U.S. Cl. 285—39 **10 Claims**



1. A fluid pipe connector system comprising:

a connector assembly including a plumbing union having first and second members connected to a corresponding first and second pipe segments to be joined in a fluid-tight relationship, said union having a rotatable member arranged to draw said first and second members together in a fluid-tight relationship;

a peripheral gear integral with the perimeter of said rotatable member;

a one-hand operated drive tool comprising an electric motor and a gear reduction train associated with said motor, said gear train providing an output gear meshable with said peripheral gear;

hand operated latching means associated with said drive tool for selectively connecting said drive tool to said connector assembly and disconnecting said drive tool from said connector assembly, and, while connected, for maintaining said drive tool output gear into mesh with said peripheral gear, wherein said latching means comprises a plurality of circumferentially spaced balls axially constrained within the structure of said drive tool, but free to assume radially varying positions, an interface housing member of circular shell form extending from said first pipe segment of said connector assembly, a socket member attached to said drive tool structure and coaxial with said interface housing member, said interface housing member fitting within said socket member when said drive tool is mated to said connector assembly, and hand operated means for forcing said balls radially inward against said interface housing member to align and retain said drive tool with its output gear meshed with said connector assembly peripheral gear; and

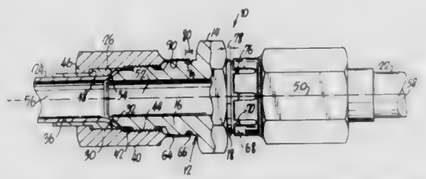
means for energizing said drive tool to rotate said output gear and therefore to rotate said rotatable member.

5,058,930

HIGH PRESSURE COUPLING WITH PROVISION FOR PREVENTING SEPARATION OF PARTS AND WITH ANTI-GALLING PROVISION

Alvin L. Schlosser, Melville, N.Y., assignor to Lourdes Industries, Hauppauge, N.Y.

Filed Mar. 9, 1990, Ser. No. 491,119
Int. Cl.[5] F16L 55/00
U.S. Cl. 285—92 25 Claims



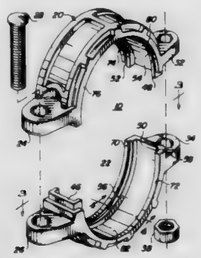
1. A coupling comprising first and second axially displaceable parts, said first part including an exterior thread encircling the same, coupling means encircling said parts and including an interior thread to engage said exterior thread, said coupling means forcing said parts together responsive to adjustment of the engagement between the threads, said first part including a ramp, said coupling means including cantilever means adapted for riding up the ramp; the cantilever means being positioned for pressing against said ramp to urge the threads together, said first part being provided with a depression adjacent the ramp, said cantilever means including a tip adapted for riding up the ramp and being received in loose relationship in said depression.

5,058,931

CLAMP WITH TEETH FOR GROOVED PIPES

Mark A. Bowsher, Flint, Tex., assignor to Gustin-Bacon Division, a division of Tyler Pipe, North Swan, Tex.

Continuation of Ser. No. 277,005, Nov. 28, 1988. This application Jun. 21, 1990, Ser. No. 542,257
Int. Cl.[5] F16L 17/04
U.S. Cl. 285—112 3 Claims



1. A pipe clamp for drawing the ends of a pair of aligned pipes toward one another and for joining them with one another, each of the pipes including an annular groove having an annular base and opposed radially oriented side walls formed proximate the end of the pipe and extending inwardly from the surface of the pipe, said pipe clamp comprising in combination:

(a) a first clamp half for encircling approximately one half of the joined pipes and extending across the junction therebetween;

(b) a second clamp half for encircling approximately the other half of the joined pipes and extending across the junction therebetween;

(c) means for securing said first and second clamp halves to one another and about the joined pipe ends;

(d) a pair of arcuate ridges formed in axially opposed halves of each of said first and second clamp halves extending radially inwardly therefrom for engaging the grooves in the respective pipe ends, each of said ridges including a extending radially with respect to the longitudinal axis of the respective clamp half facing inwardly toward the axial center of the respective clamp half and an annular shoulder extending perpendicularly from said inwardly facing side wall; and

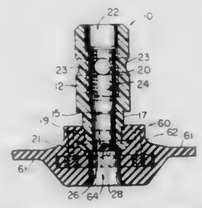
(e) teeth means extending from each of said ridges for penetrably engaging simultaneously one of the side walls of the groove in the pipe and the surface of the pipe adjacent the engaged side wall, each of said teeth means including an apex extending from said side wall of said ridge to said adjacent annular shoulder extending from said ridge inwardly toward the axial center of the respective clamp half, each of said teeth means having a triangular cross section in a plane transverse to said apex; whereby, upon penetration of said apex simultaneously into the side wall of the pipe groove and the surface of the pipe, each of said teeth means urges the engaged pipe axially toward the junction of the pair of pipes and simultaneously exerts a radial inward force upon the engaged pipe commensurate with securing said first and second clamp having to one another and about the joined pipe ends.

5,058,932

ANNULAR CLIP FOR INFLATION MANIFOLD

Glenn H. Mackal, 4923 59th Ave. S., St. Petersburg, Fla. 33715

Filed May 14, 1990, Ser. No. 523,156
Int. Cl.[5] F16L 5/00
U.S. Cl. 285—200 9 Claims



1. An inflation manifold and a retaining clip attachable thereto, comprising:

a generally tubular manifold main body having a distal free end, a proximal end, and a longitudinal axis of symmetry;

a generally disc-shaped, frusto-conical in configuration base member integral to said manifold main body at the proximal end thereof;

said frusto-conical configuration providing an annular beveled surface on a proximal side of said base member;

a clip member having a flat, annular base part at its proximal end, having a first predetermined diameter, and an integral longitudinally extending cylindrical part at its distal end, having a second diameter less than said first diameter, and said second diameter being uniform along it extent;

a radially inwardly extending flange being formed on a distal end of said cylindrical part;

said cylindrical part being divided into a plurality of separately formed, circumferentially extending segments, said segments being formed of a resilient material;

said annular beveled surface of said base member transiently displacing each of said segments in a radially outward direction, relative to said axis of symmetry, when said base member and segments are axially aligned with respect to one another and displaced toward one another, said segments resuming their equilibrium position upon said base member passing beyond said inwardly extending flanges thereof, thereby capturing said base member therebehind and preventing axial retraction of said manifold main body therefrom;

a plurality of apertures formed about a peripheral edge of said flat, annular base part of said clip member; and

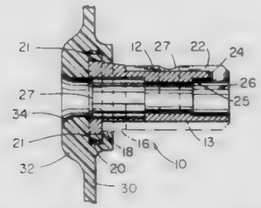
at least one longitudinally extending bore formed in each of said segments, each of said at least one bores being formed radially outwardly of said radially inwardly extending flanges.

5,058,933

ROTATION AND RETRACTION-RESISTANT MANIFOLD HAVING INTEGRAL FLANGE

Glenn H. Mackal, 4923 59th Ave. S., St. Petersburg, Fla. 33715

Filed May 14, 1990, Ser. No. 523,155
Int. Cl.[5] F16L 5/00
U.S. Cl. 285—200 8 Claims



1. A manifold apparatus for use with inflatable articles, comprising:

an elongate cylindrical sleeve member having an unthreaded proximal end and a screw threaded distal end;

a central passageway being defined by said sleeve member;

a radially extending flange member being integrally formed with said proximal end of said sleeve member, said flange member circumscribing said sleeve member at said proximal end;

a plurality of spaced aperture being formed in said flange member; and

a plurality of spaced apart spline members of predetermined geometrical configuration formed in said extending along said central passageway so that elastomeric material enters into said splines to further lock said manifold against rotation when said material hardens;

whereby said proximal end of said sleeve member and said flange member are pre-positioned in a mold so that elastomeric material introduced thereinto surrounds said proximal end and said flange member and fills said apertures and said spline members to make said flange member and said proximal end an integral part of an inflatable article formed by said elastomeric material.

5,058,934

FLEXIBLE AND EXTENDIBLE PIPE SECTION

Duane A. Brannon, 17268 Dos Hermanos Rd., Poway, Calif. 92064

Continuation-in-part of Ser. No. 458,518, Dec. 28, 1989, abandoned. This application Jan. 28, 1991, Ser. No. 646,289
Int. Cl.[5] F16L 11/11
U.S. Cl. 285—226 20 Claims

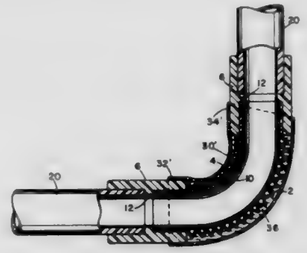
1. A flexible, extendible and contractible pipe coupling section for plastic pipe which comprises:

a generally cylindrical central hollow elongated conduit in the form of a tubular bellows, said bellows being capable of being axially expanded and contracted and of being configured in a straight or curved axial configuration;

substantially rigid hollow conduit end members connected respectively to the opposite axial ends of said central conduit, said end portions being adapted to be sealably joined to other pipe sections;

a generally cylindrical, continuous, elastic, flexible fluid impervious liner extending entirely through the interior of said central conduit and being joined at each end thereof to the interior surfaces of said end members in a fluid impervious manner, said liner having sufficient elasticity that a smooth inner surface of said liner is maintained without significant folding or protrusions at every position of flexure, extension and contraction of said central conduit; and

a hollow elongated sleeve fitted over the outer surface of said central conduit in sealable contact with the outer surface of at least one of said end members, the inner surface of said sleeve and said outer surface of said conduit being spaced apart to form an annular chamber extending for at least part of the length of said central conduit, with



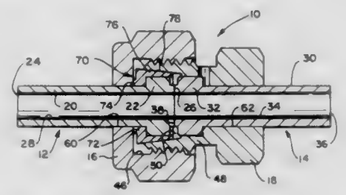
said chamber capable of being filled with a settable material which will conform to the outer surfaces of the corrugations of said bellows and extend radially outwardly therebeyond to form a continuous body of settable material extending along at least said portion of the outer surface of said central conduit, and which upon setting forms a rigid body which maintains at least said portion of said central conduit in the configuration it had at the time of said setting of said settable material.

5,058,935

FLUID FITTING WITH TORQUE SUPPRESSION ARRANGEMENT

Paul G. Eidsmore, 2 Blue Hill Ct., Scotts Valley, Calif. 95066

Filed Jan. 23, 1990, Ser. No. 468,583
Int. Cl.[5] F16L 35/00
U.S. Cl. 285—330 9 Claims



1. A tube coupling comprising:

first and second annular coupling components having axial openings and end portions with transversely extending sealing end faces;

said first and second annular coupling components being positioned with said sealing end faces in aligned face-to-face relationship and adapted to move into sealing engagement;

threaded means including a first nut member and a cooperating threaded portion associated with said second coupling member arranged such that rotation of said first nut member in a first direction produces movement of said sealing end face of said first coupling member axially toward said sealing end face of second coupling member;

said first nut member and said cooperating threaded portion defining a closed chamber which encloses said sealing end faces of said first and second coupling components;

drive means in said chamber, said drive means including an annular drive member having a drive surface for transmit-

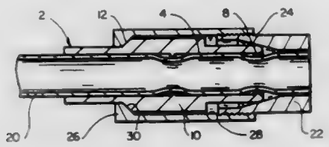
ting axial movement from said first nut member to said first coupling member, and a wedge surface located radially outwardly of said drive surface and engaged with said cooperating threaded portion for locking said drive member against rotational movement relative to said cooperating threaded portion.

5,058,936

METHOD OF FORMING A MECHANICAL

Michael I. Kapgan, Foster City, and Richard H. Kosarczuk, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 23, 1989, Ser. No. 315,005
Int. Cl.[5] F16L *19/00*
U.S. Cl. 285—382 **15 Claims**



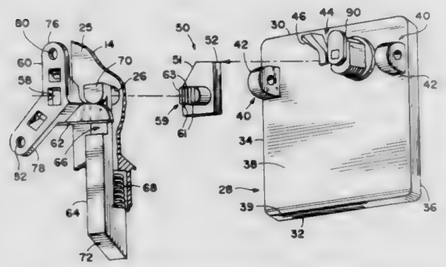
10. An assembly for forming a mechanical connection to an object which comprises:
(a) a collar formed from a shape memory alloy and having a groove formed in its internal surface, the groove being defined longitudinally by two radially extending circumferential formations;
(b) means for mechanically deforming at least a portion of the collar radially inwardly.

5,058,937

FLUSH DOOR LATCH ASSEMBLY

Donald R. Miehe, Waterloo, and Marvin L. Larsen, New Hampton, both of Iowa, assignors to Tri/Mark Corporation, New Hampton, Iowa

Filed Feb. 14, 1991, Ser. No. 655,115
Int. Cl.[5] E05C *9/06*
U.S. Cl. 292—34 **16 Claims**



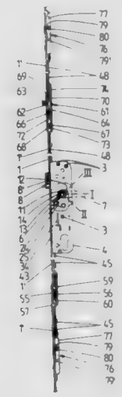
1. A flush door latch assembly suitable for use in a door for maintaining the door in a closed position and permitting the door to be opened, the latch assembly comprising:
a latch housing having a front panel, an edge that forms a perimeter of a centrally located opening in the front panel, walls turned inwardly from the edge, and a back panel having an exterior side and an interior side, the walls terminating at the exterior side of the back panel, the walls and back panel defining a recess, the back panel having an opening therethrough;
a paddle associated with the housing within the recess, the paddle having a rear surface adjacent to the back panel and a cam on the rear surface, the cam having a cam face;
a cam follower having a stud extending therefrom through the back panel opening and a cam follower edge, the cam follower being on the exterior side of the back panel, the cam follower edge being operatively associated with the cam face;
a pivot plate on the interior side of the back panel, the pivot plate having an opening therethrough receiving the stud and means for securing the pivot plate, back panel and cam follower together; and
a plunger bolt on the interior side, the plunger bolt having a recess therein that receives the pivot plate, wherein rotation of the paddle causes the cam face to act upon the cam follower edge to rotate the cam follower and thereby rotate the pivot plate to retract the plunger bolt.

5,058,938

DRIVE-ROD LOCK

Ralf Döring, Heiligenhaus, and Klaus Korb, Ratingen, both of Fed. Rep. of Germany, assignors to Carl Fuhr GmbH & Co., Heiligenhaus, Fed. Rep. of Germany

Filed Mar. 23, 1990, Ser. No. 498,001
Int. Cl.[5] E05C *9/12*
U.S. Cl. 292—45 **13 Claims**



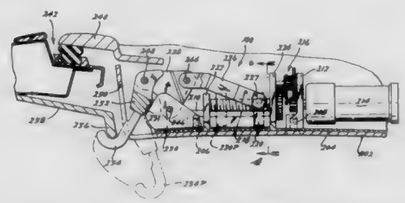
1. A drive-rod lock for use with a door in a door frame, the lock comprising
drive rods, a door handle, means including a nut operatively engaged with the door handle for displacing the drive rods by a turning of the door handle, the nut being operative with the door handle wherein the nut, upon being held in its basic central position, is rotatable out of said position against an opposed spring action upon the turning of said door handle;
a lock case carrying a cuff rail which continues beyond the lock case into freely extending cuff-rail sections;
said drive rods being guided behind the cuff-rail sections;
means comprising at least one force accumulator acting on said drive rods, additional locking members and mating locking parts, the locking parts being disposed on a frame side of the lock, the additional locking members being arranged and controlled by said drive rods so as to enter into said mating locking parts both as a result of said turning of the door handle and as a result of a releasing of said at least one force accumulator;
means comprising a release actuated by a closing of the door for releasing the force accumulator; and
wherein said release and/or the force accumulator are arranged behind the freely extending cuff-rail sections.

5,058,939

POWER LATCH SYSTEM

Dean R. Miilu, Canton, Mich., assignor to ASC Incorporated, Southgate, Mich.

Filed Nov. 28, 1990, Ser. No. 618,871
Int. Cl.[5] E05C *5/02*
U.S. Cl. 292—110 **22 Claims**



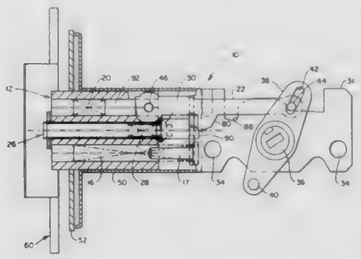
1. Apparatus for effecting powered latching engagement and disengagement between relatively movable first and second members, the apparatus comprising:
reversible drive means coupled to one of the first and second members;
latch means having a substantially J-shaped keeper;
latch engaging means associated with the other one of the first and second members and shaped for latching receipt of at least a portion of the J-shaped keeper; and
linking means comprising a drive link having a first end coupled to the drive means, a rotating element pivotally attached to a second end of the drive link and to the latch means, and a guide block coupled to and providing a pivot point for the rotating element, the drive link operative in cooperation with the drive means to rotate the rotating element about the guide block to move the keeper into and out of latching engagement with the latch engaging means.

5,058,940

AUTOMATIC DEAD LOCKING BOLT ASSEMBLY

Leroy Hart, 20 Cope Farms Rd., Farmington, Conn. 06032

Filed Jul. 31, 1990, Ser. No. 560,423
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—167 **20 Claims**



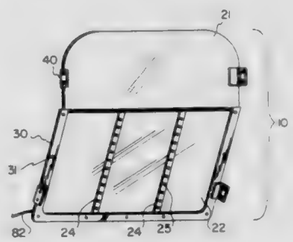
1. In a lock, the lock having at least a first actuator and cooperating with a strike, an improved bolt subassembly comprising:
housing means, said housing means including a tubular receptacle;
a main bolt member mounted in said tubular receptacle for reciprocal movement in first and second opposite directions, said main bolt member extending from a first end of said receptacle and the amount of such extension being varied during said reciprocal movement;
first means for resiliently biasing said main bolt member in the first of said directions, said first direction being commensurate with the extension of said main bolt member from said tubular receptacle;
catch means on said housing means;
cam follower means for cooperating with said catch means to define a partly extended position of said main bolt member;
bolt arm means pivotally coupled to said main bolt member, said bolt arm means connecting said main bolt member to said cam follower means;
means coupling said cam follower means to the lock first actuator, said coupling means permitting movement of said cam follower means in two directions relative to said catch means, movement of said cam follower means in a first of said directions of movement thereof being in response to movement of said main bolt member in the said second direction of movement thereof;
an auxiliary bolt member, said auxiliary bolt member being supported on and movable with said main bolt member, said auxiliary bolt member being capable of limited motion relative to said main bolt member in the directions of main bolt member reciprocation, said auxiliary bolt member cooperating with said bolt arm means to cause pivotal motion of said bolt arm means whereby said cam follower means will move in its second direction of motion in response to movement of said auxiliary bolt member relative to said main bolt member;
second resilient biasing means for resiliently biasing said auxiliary bolt member to cause said auxiliary bolt member to extend from said main bolt member, movement of said auxiliary bolt member relative to said main bolt member in a direction opposite to the direction of the bias provided by said second biasing means repositioning said cam follower means to a location where said cam follower means is out of alignment with said catch means whereby said main bolt member may move to the fully extended position; and
means for engaging said cam follower means when said main bolt member is in the fully extended position to thereby dead lock said main bolt member.

5,058,941

VEHICLE INTERIOR BARRIER

Tony J. Solomon, 439 Frood Road, Suite 1, Sudbury, Ontario, Canada P3C 4Z9 , and Eric W. Johnstone, 80 Edward Street, P.O. Box 540, Coniston, Ontario, Canada P0M 1M0

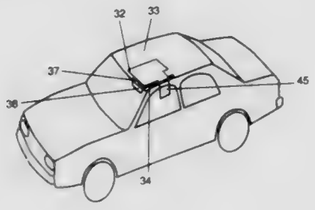
Filed Jan. 31, 1990, Ser. No. 472,977
Int. Cl.[5] B60R *27/00*
U.S. Cl. 296—24.1 **12 Claims**

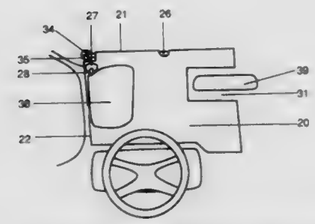


1. A barrier for partitioning the front and rear seat compartments in a motor vehicle, comprising:
(a) a transparent wall comprising a first sheet of transparent material dimensioned so as to approximate the cross-sectional area of the interior of the vehicle at a location between the two compartments, and a second sheet of transparent material dimensioned to correspond to the lower half of said first sheet, said second sheet overlying the corresponding part of said first sheet;
(b) a substantially U-shaped frame of channel section extending along corresponding edges of said first and second

sheets for holding said first and second sheets in spaced relationship;
(c) said frame and said first and second sheets forming a pocket between said first and second sheets and which is accessible at the top of said second sheet; and
(d) means for connecting said barrier to the interior of said vehicle.

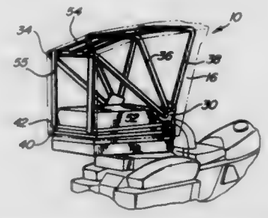
5,058,942
PERMANENT SUNSHIELDS FULLY COVER AUTOMOBILE WINDOWS
Do L. Minh, 17231 Regulus Dr., Yorba Linda, Calif. 92686
Continuation of Ser. No. 413,166, Sep. 27, 1989, abandoned. This application Aug. 27, 1990, Ser. No. 574,395
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.4 **8 Claims**





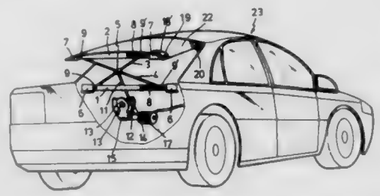
1. A sunshield, for an automobile having a front windshield, comprising:
a generally rigid panel having an outside surface and an inside surface;
attachment means for attaching said panel adjacent said windshield and within a passenger interior of the automobile; and
pivot means for pivoting said panel into a first position and for pivoting said panel into a second position
wherein:
said panel has a length which is approximately equal to an approximately vertical length of said windshield;
said panel is generally horizontal when said panel is in said first position;
said panel is generally parallel with said front windshield when said panel is in said second position; and
said outside surface always faces away from said interior, and said inside surface always faces toward said interior, when said pivot means pivots said panel between said first position and said second position.

5,058,943
FOLDABLE CANOPY ASSEMBLY FOR MOTORIZED VEHICLES
Lawrence E. Louderback, Lansing, Mich., assignor to Clyde McKee, Taylor, Mich.
Filed Feb. 9, 1990, Ser. No. 477,779
Int. Cl.[5] B60J *7/08*
U.S. Cl. 296—107 **12 Claims**



1. A foldable canopy assembly for motorized vehicles having a trunk comprising:
a foldable frame portion having at least one pivotable bow and an upper and a lower fixed bow;
a cover portion removably fitted to said foldable frame portion;
said cover portion having a top and sides;
said foldable frame portion having said cover portion fitted thereon being reversibly foldable from an upright covering position to a collapsed storage position, said foldable frame portion having said cover portion fitted thereon when in said upright covering position, substantially forming and enveloping an inner passenger compartment;
opposing fixed bracket assemblies mounted to said storage trunk on said motorized vehicle;
said at least one pivotable bow, and said upper and lower fixed bows being secured to said opposing fixed bracket assemblies; and
said opposing fixed bracket assemblies further comprising upper and lower fixed bow sockets for receiving said upper and lower fixed bows, said upper and lower fixed bows being longitudinally inserted into said upper and lower fixed bow sockets.

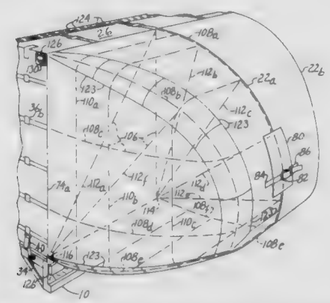
5,058,944
DEVICE FOR OPENING AND CLOSING THE REAR WINDOW OF A MOTOR VEHICLE
Deuk S. Kim, 825-10 Manduck 1-Dong, Apt. 379, Book-Ku, Pusan, Rep. of Korea
Filed Aug. 16, 1990, Ser. No. 568,227
Claims priority, application Rep. of Korea, Jun. 21, 1990, 90-9394
Int. Cl.[5] B60J *1/18*
U.S. Cl. 296—146 **6 Claims**



1. A device for opening and closing the rear window of a motor vehicle, the rear window having a lower side and an upper side, the device comprising:
an upper horizontal support having a upper longitudinal channel disposed in one end thereof, said upper horizontal support mounted to said lower side of the rear window,

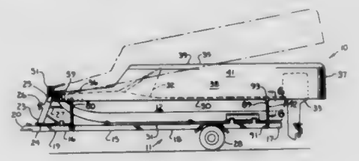
a lower horizontal support disposed in substantial parallel relationship with said upper horizontal support, said lower horizontal support having a lower longitudinal channel disposed in one end thereof, said lower horizontal support mounted to back seat portions of a vehicle body of said motor vehicle,
a pair of connecting rods pivotally cross-linked with each other for forming a cross-point, said pair of connecting rods being pivotally connected to first end portions of said upper and lower horizontal supports and movably connected to second end portions of said upper and lower horizontal supports through said upper and lower longitudinal channels,
a driving gear provided with a moving rod, said moving rod operatively connected to said cross point at one end thereof and connected to said driving gear at the other end thereof,
a worm gear being in gearing relationship with said driving gear, and
a two-way motor connected to said worm gear, whereby upon operating the two-way motor, the worm gear and driving gear rotate in the clockwise and counterclockwise directions, and the moving rod moves in the up and down direction, whereby the rear window of the motor vehicle is smoothly opened and closed.

5,058,945
LONG-HAUL VEHICLE STREAMLINE APPARATUS
Morris C. Elliott, Sr., 11723 Norino Dr., Whittier, Calif. 90601, and Mark W. Elliott, 521 Vittorio, Coral Gables, Fla. 33146
Filed Jun. 8, 1990, Ser. No. 535,090
Int. Cl.[5] B62D *35/00*
U.S. Cl. 296—180.5 **21 Claims**



1. Apparatus for streamlining a vehicle body having at least one end member face area comprising a substantially plane surface perpendicular to a travel axis of the vehicle, and a perimeter surface, the perimeter surface orthogonally intersecting the face area along a major portion of a perimeter extremity of the face area, the apparatus comprising:
(a) a belt member for covering a portion of the perimeter surface;
(b) means for supporting the belt member in close conformity with the perimeter surface, comprising means for tensioning a tension member about a major portion of the perimeter surface;
(c) collapsible bag means connected to the belt member by mounting for support against the face area and having a smooth aerodynamic convex portion facing away from the face area, the bag means comprising:
(i) a flexible outer member;
(ii) a plurality of stiffener poles;
(iii) a plurality of elongate stiffener pockets formed along the outer member for receiving respective ones of the stiffener poles; and
(iv) means for compressingly loading at least some of the stiffener poles by the outer member for forming a desired aerodynamic shape of the bag means.

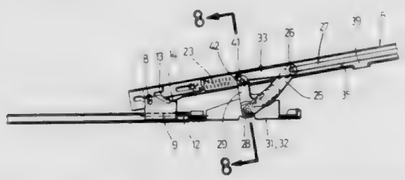
5,058,946
HINGED TRAILER AND BOAT COVER
Robert G. Faber, Rte. 1, Arkansas City, Kans. 67005
Filed Jun. 29, 1989, Ser. No. 372,920
Int. Cl.[5] B60P *7/02, 3/10*
U.S. Cl. 296—181 **4 Claims**



1. A cover, for a trailer having a frame with a front end, a back end, opposite sides, and a post extending generally upwardly at the trailer frame front end, which includes:
(a) a cover body having:
(1) an outer shell comprising multiple panels;
(2) an inner shell comprising multiple panels and generally conforming to said outer shell;
(3) a rigid framework mounting said outer and inner shell panels;
(4) a front end associated with the trailer frame front end;
(5) a back end associated with the trailer frame back end;
(6) opposite sides each associated with a respective trailer frame side;
(7) a generally upwardly-convex configuration defining a downwardly-open interior;
(8) a lower rim; and
(9) a top;
(b) a hinge assembly comprising:
(1) a top strap having proximate and distal ends; said top strap proximate end is fastened to said cover body top;
(2) a front strap having proximate and distal ends; said front strap proximate end is fastened to said cover body front end;
(3) a transverse hinge pin mounted on said top and front strap distal ends in spaced relation from said cover body front end and having opposite ends; and
(4) a pair of plate members each mountable on an upper end of said trailer frame post in parallel, spaced relation, each said plate member having a generally vertical slot receiving each respective hinge pin end; said slot defines a lost motion linkage slot with upper and lower ends;
(c) a pair of jack assemblies each comprising a piston-and-cylinder unit with a lower end connected to each respective trailer frame side and an upper end connected to each cover body side adjacent said lower rim in proximity to said cover body and frame front ends;
(d) a pair of supports each having a lower end connected to each respective trailer frame side adjacent said trailer frame rear end and a bifurcated upper end with a transverse receiver extending therethrough;
(e) each said body cover side having a receiver positioned in closely-spaced relation above said rim and in proximity to said cover body back end;
(f) a raised position and a lowered position; said cover being movable between the raised position with said hinge pin at said lost motion linkage slot upper ends and said cover body back end raised substantially above said trailer frame back end whereby said cover slopes upwardly from front-to-back and the lowered position with said hinge pin at said lost motion linkage slot lower ends and said cover body rim positioned on said support bifurcated ends; and
(g) a pair of locking pins each positionable in respective

aligned support and cover body receivers; said support upper end receivers being aligned with respective cover body side receivers with said cover in the lowered positioned thereof.

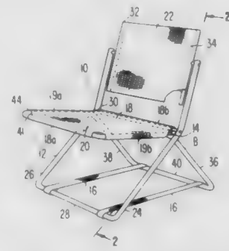
5,058,947
SLIDING ROOF FOR A VEHICLE
Johannes N. Huyer, Velserbroek, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., Netherlands
Filed Dec. 1, 1989, Ser. No. 444,376
Claims priority, application Netherlands, Dec. 8, 1988, 8803010
Int. Cl.[5] B60J *7/047*
U.S. Cl. 296—216 **10 Claims**



1. A sliding roof for a vehicle having a fixed roof (**1**) with an opening (**2**) therein, comprising:
a frame (**3**) adapted to be fitted to the fixed roof (**1**) of the vehicle and carrying a longitudinal guide rail (**11**);
a panel (**4**) having front and rear edges and being adapted to move between a foremost closed position closing the opening (**2**) in the fixed roof (**1**) of the vehicle and opened positions in which the panel, with its rear edge lifted, is partially outside the roof opening and partially overlapping the fixed roof;
a driving means (**12**) provided in the frame (**3**) and being operatively connected to the panel (**4**) in order to move it;
front support means movable to and fro in the longitudinal guide rail (**11**) and carrying horizontal transverse stud means (**8**) pivotally supporting the panel near its front edge; and
adjustment means (**24**) including:
a main lever (**25**) to lift the panel (**4**), said lever being supported at its lower end in a manner pivotable about a horizontal transverse pivot axis (**28**), the main lever (**25**) carrying a first guide element (**26**) pivotally connected to the panel (**4**) in a point spaced rearward of the stud means (**8**) of the front support means; and
an auxiliary lever (**29**) pivotable relative to the main lever (**25**) and cooperating with it and having connecting means connected to the panel (**4**) at a point spaced in longitudinal direction from the first guide element (**26**) of the main lever (**25**) at least in positions of the panel (**4**) in which the rear edge of the panel (**4**) is lifted in order to additionally support the panel (**4**) in these positions.

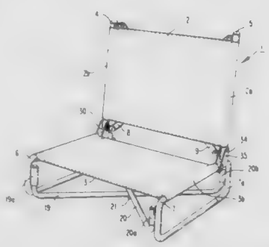
5,058,948
FOLDABLE CHAIR
Mark A. Singer, 1150 Oroile Rd., Santa Barbara, Calif. 93108
Filed Jan. 2, 1990, Ser. No. 459,514
Int. Cl.[5] A47C *4/44*
U.S. Cl. 297—18 **21 Claims**

1. A chair comprising:
a. a pair of transversely spaced, substantially straight front support members inclined from the horizontal, each front support member having a longitudinal axis and the axes of said front support members defining a planar surface;
b. a pair of transversely spaced rear support members each having a lower portion, which is oppositely inclined from the front support members, and an upper portion joined to, and angled from, the lower portion so as to extend forward in a generally horizontal direction defining a seat frame provided with a seating surface, said rear support members intersecting said planar surface adjacent the location where said lower portion is joined to said upper portion;
c. a lower tension member connected to the front support members and to the rear support members near the lower ends thereof defining a base; and



d. a flexible upper tension member connected to the front and rear support members adjacent the intersection of the planar surface by said rear support members such that both pairs of support members are movable in a limited and controlled forward and rearward direction with respect to one another.

5,058,949
FOLDABLE BEACH CHAIR
Brant Von Hoffman, 352 Huntley Dr., Los Angeles, Calif. 90048
Filed Aug. 17, 1990, Ser. No. 568,973
Int. Cl.[5] A47C *4/28;* **B60W** *2/02*
U.S. Cl. 297—45 **3 Claims**

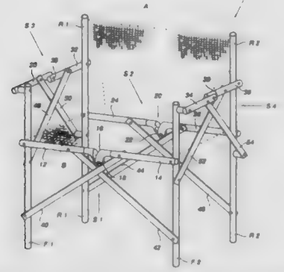


1. A foldable chair or the like comprising in combination:
a flexible seat rest and a flexible backrest;
means comprising a foldable frame having a plurality of rigid members for supporting said seat rest and said backrest substantially taut and disposed in transversely related planes when said chair is set up in fully open position, and said frame being collapsible in closed relation into an elongated configuration substantially narrower than the width of said seat rest and backrest in said open position;
said frame including a pair of telescoping tubular back members supporting between them the opposite lateral edges of said backrest, said telescoping tubular back-supporting members each comprising a fixed tube and a slidable tube assembled in telescopically coalescing relation;
said backrest being further supported in open position by a first pair of X-pivoted braces pivoted at a point substantially equidistant between their ends, wherein one end of each said first X-pivoted braces is connected to the fixed tube of one of said telescoping tubular back supports and the other end of each of said first X-pivoted braces is connected to the slidable tube of the opposite one of said telescoping tubular supports;
said frame including a pair of rigid lateral seat supporting means, each of said seat supports comprising a pair of telescoping tubular members disposed in substantially parallel relation having a slidable portion and fixed portion hingedly connected to a respective one of the fixed tubes of said telescoping back supports;
said seat rest being further supported in open position by a second pair of X-pivoted braces, pivoted at a point substantially equidistant between their ends, wherein one end of each of said second X-pivoted braces is connected to the fixed tube of one of said telescoping seat supports and the other end of each of said X-pivoted braces is connected to the slidable tube of the oppposite one of said telescoping tubular seat supports;
and locking means comprising a detent constructed to be engaged with said tubular telescoping seat support when said back support is in its upright open position for maintaining said back support upright relative to said telescoping seat support and when said telescoping seat support is in closed shortened position, said detent constructed to disengage and release said telescoping seat support to elongate when said back support is rotated toward said seat support.

2. The combination in accordance with claim 1 wherein said telescoping lateral seat supporting means on each side comprises a fixed C-shaped member having its ends telescopically engaged with the ends of a matching slidable C-shaped member to form an elongated trombone-shaped member of variable length.

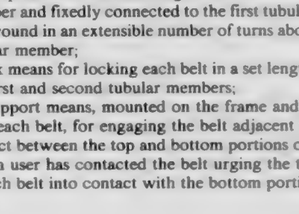
3. The combination in accordance with claim 2 wherein said locking means comprises a boss connected to each of the fixed tubes of said back supports adjacent its hinged connection to said seat supports; and
wherein each of the slidble portions of said seat supports has an opening which accommodates a respective one of said boss when said locking means is closed.

5,058,950
FOLDABLE CHAIR
Amiram Mann, 16 Oppenheimer St., Tel-Aviv, Israel
Filed Nov. 1, 1990, Ser. No. 607,986
Claims priority, application Israel, Nov. 5, 1989, 92213
Int. Cl.[5] A47C *4/28*
U.S. Cl. 297—45 **11 Claims**



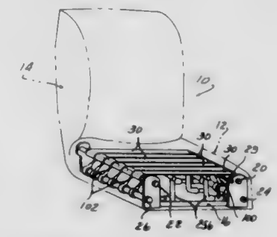
1. A foldable chair including a pair of front legs and a pair of rear legs and a plurality of linkage systems each interconnecting a respective one of the legs and an associated next adjacent leg, wherein the improvement comprises that each linkage system consists essentially of a pair of elongated frame members foldably pivotally connected to one another at respective first ends thereof and each pivotally connected at a second end thereof to a respective one of the associated legs, and a pair of mutually crosswise extending link arms each pivotally connected at a first end thereof to a respective first one of said associated legs and at a second end thereof to an intermediate portion of the respective one of said frame members which is connected to the second one of said associated legs, whereby the chair is foldable into a compact package in which the legs extend in close, parallel relative positions.

5,058,951
RECLINABLE SWING CHAIR
Lawrence A. Thiel, Box 115, Shepardsville, Ind. 47880
Filed Jan. 25, 1991, Ser. No. 645,598
Int. Cl.[5] A47D *13/10;* **A63G** *9/00*
U.S. Cl. 297—278 **3 Claims**



1. In a reclinable swing having a backrest and a seat which is suspended from chain, ropes or cables, a pair of "Z"-shaped brackets, each connected to a side of the backrest, said "Z"-shaped brackets each having a relatively large, upper elbow and a smaller, lower elbow, and a pair of chains, ropes or cables for suspending the reclinable swing, each chain, rope or cable having a pair of lower ends, one of the lower ends being connected to the corresponding side of the swing seat and the other lower end being slidably connected to one of said elbows of the corresponding "Z"-shaped brackets to support the reclinable swing in either an upright or a reclining position.

5,058,952
CONFORMABLE SEAT WITH PIVOTAL BELT SUPPORT
Laurence LaSota, 15745 N. Park, E. Detroit, Mich. 48021
Filed Nov. 29, 1990, Ser. No. 619,502
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—284 A **15 Claims**



1. A conformable member comprising:
a frame;
first and second tubular members mounted on opposite sides of the frame, at least the first tubular member being rotatably mounted on the frame;
a plurality of belts spaced along the frame, each of the belts forming a loop having top and bottom opposed portions, the loop of each belt extending around the second tubular member and fixedly connected to the first tubular member and wound in an extensible number of turns about the first tubular member;
belt lock means for locking each belt in a set length between the first and second tubular members;
outer support means, mounted on the frame and associated with each belt, for engaging the belt adjacent the area of contact between the top and bottom portions of each belt after a user has contacted the belt urging the top portion of each belt into contact with the bottom portion of each belt;

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means for locking the outer support means in a position engaged with the belt; and

means for rotating the outer support means and the belt lock means between positions.

5,058,953

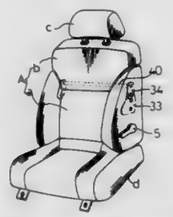
SEAT BACK OF AUTOMOTIVE SEAT

Genjiro Takagi, and Yasuhiko Kamei, both of Akishima, Japan, assignors to Tachi-S Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1989, Ser. No. 373,958

Int. Cl.[5] A47C *3/00*

U.S. Cl. 297—284 B **13 Claims**



1. A seat back of an automotive seat having no slack or gap on an outer surface covering member between an upper seat-back section and a lower seat-back section, comprising:

an upper seat-back section having formed at its lower lateral parts, a pair of arcuate cut-away portions;

a lower seat-back section having formed at its upper part, a pair of spaced-apart projected portions formed in a shape generally conforming to said pair of arcuate cut-away portions, wherein there is formed an elongated hole in inward surfaces of said pair of projected portions to establish a close contact between said cut-away portions of said upper seat-back section and said projected portions of said lower seat-back section;

a shaft disposed within the upper seat-back section such that end parts of the shaft extend from said pair of arcuate cut-away portions;

a pair of connecting means on said end parts of said shaft;

inclination adjustment means disposed within said lower seat-back section for adjusting an inclination angle of said upper seat-back section relative to said lower seat-back section; and

wherein, within said projected portions, lower end parts of said connecting means are coupled with said inclination adjustment means, and said shaft is movably disposed within said elongated holes for forward and backward movement when said upper seat-back section is adjusted in its inclination angle by operating said inclination adjustment means, to incline said upper seat-back section forwardly and backwardly upon said lower seat-back section, without forming slack or a gap between said upper seat-back and said lower seat back.

5,058,954

BODY CONTOUR SUPPORT STRUCTURE FOR TRAVELERS AND AUDIENCES

Lee Kan-Chee, 1939 Greentree Rd., Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 216,227, Jul. 7, 1988, abandoned. This application May 17, 1990, Ser. No. 425,758

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—317 **2 Claims**

1. A body contour support structure supporting a human body in space, said structure rotating and sliding to maximize usable spaces in horizontal and vertical directions, the structure providing a sitting or inclining position, comprising:

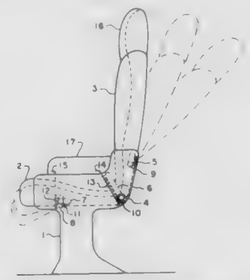
(a) a bottom plate with means of rotating and sliding along a guided direction;

(b) a back plate with means of rotating and sliding along a guided direction;

(c) a hinge means connecting said bottom plate to said back plate in an angular relationship;

(d) a base supporting the bottom plate and back plate;

(e) means locking the bottom plate and back plate in a desired position; and



(f) an angled guide slot means disposed in said base for receiving said hinge means such that the hinge means can simultaneously pivot and slide thereby resulting in an upward and rotating movement of the back plate and a downward and rotating movement of a front end of the bottom plate, wherein said angular relationship can change from 90 degrees to 180 degrees, thereby optimizing comfort to the user.

5,058,955

SKIN COVERED FORMED PLASTIC SEAT

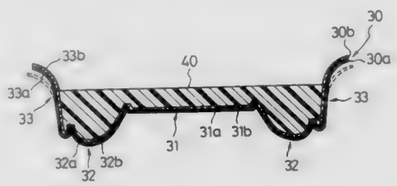
Takashi Sugiura; Ichiro Matsuura, and Norio Yanagishita, all of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Kanagawa, Japan

Filed Sep. 20, 1989, Ser. No. 410,121

Claims priority, application Japan, Apr. 25, 1987, 62-101155

Int. Cl.[5] B32B *3/06*

U.S. Cl. 297—452 **1 Claim**



1. A skin covered foamed plastic seat, comprising:

a skin cover including a surface skin to form an outer surface of the skin covered foamed plastic seat and a wadding laminated with the surface skin, the skin cover having end sections at which the laminated adherence between the wadding and the surface skin is weaker than that in remaining sections of the skin cover so that the skin cover and the wadding can be separated at the end sections while leaving the remaining sections in laminated adherence; and

a pad member made from liquid foam resin and covered by the skin cover.

5,058,956

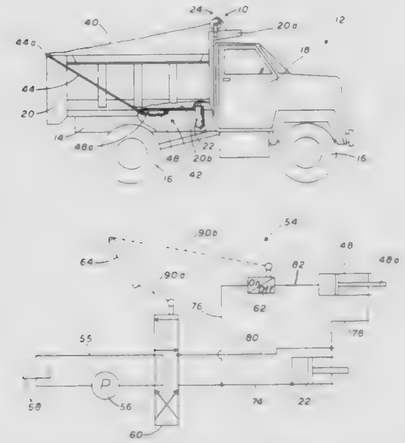
HYDRAULICALLY ACTUATED TARP EXTENSION AND RETRACTION SYSTEM FOR A TRUCK

James P. Godwin, Sr., Rte. 5, P.O. Box 8, Dunn, N.C. 28334

Filed Dec. 13, 1990, Ser. No. 628,849

Int. Cl.[5] B60P *7/04*

U.S. Cl. 298—23 C **17 Claims**



1. A cover assembly for a dump truck having a movable truck bed and actuating means for raising and lowering said truck bed comprising:

(a) a take-up roll having a truck bed cover wound thereon, one end of the cover being attached to the roll and the other end being free;

(b) means for mounting the take-up roll to the truck bed;

(c) means for unreeling the cover from the take-up roll to cover the truck bed, said means for unreeling the cover including:

(1) a pair of swing arms pivotally mounted to the truck bed and movable between a first position in which the cover is wound on the reel and a second position in which the cover is extended across the truck bed;

(2) swing arm actuating means for moving the swing arms between said first and second positions, and

(d) interlock means interconnected between the swing arm actuating means and the truck bed actuating means to prevent operation of the truck bed actuating means unless said pair of swing arms are in the first position.

5,058,957

RECYCLABLE WASTE SORTER COLLECTOR

Donald M. Fell, R.D. #3, Box 23 E, Howard, Pa. 16841

Filed Apr. 9, 1990, Ser. No. 506,252

Int. Cl.[5] B60P *1/00*

U.S. Cl. 298—24 **22 Claims**

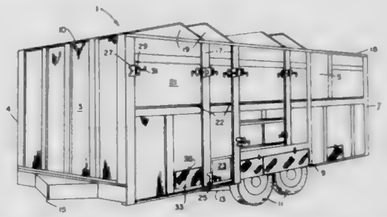
1. A container for collecting and sorting of recyclable waste, comprising a receptacle of substantially rectangular shape having a bottom, forward and rear walls and first and second side walls;

said container having plural fixed partitions transversely connected between the first side wall and the second side wall, thereby prescribing plural compartments within the container;

said compartments incorporating sloped floors, said floors having different angles of inclination;

said compartments also incorporating plural doors in the sides of each compartment of the container wherein the doors are specific to individual compartments to thereby provide intercommunication with the exterior of the container, at least one of said doors positioned adjacent the bottom of the sloped floor of the container for unloading;

said sloped floor of each compartment provided by an inclined plane from the bottom of one side to an elevated portion at the opposite side wherein said unloading door hinged at the bottom of each compartment is located at the lower portion of the inclined plane to thereby provide a means for intercommunication at the lowest port of the inclined plane;



said container further comprising forward and rear remote compartments, at least one of which is intercommunicable with the exterior through an outwardly opening door hinged on a lower end of a wall opposite from the fixed partition above the bottom of the container, wherein an inclined plane floor of said compartment slopes from an apex on the fixed partition downward towards the bottom of the wall adjacent the placement of the door.

5,058,958

MASK FOR RECONDITIONING THE RIMS OF AUTOMOBILE WHEELS

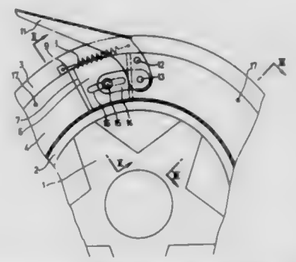
Rene Schartz, 5, rue de la Princesse, Breme D'Or - F-57350 Spicheren, France

Filed Oct. 10, 1989, Ser. No. 418,489

Claims priority, application France, Oct. 10, 1988, 88 13289

Int. Cl.[5] B60B *7/01;* **B05B** *15/04*

U.S. Cl. 301—37 R **11 Claims**



1. Annular mask for protecting a tire mounted on a rim of an automobile wheel during stripping and painting of the rim, said mask comprising:

a frustoconical split ring formed of a metal sheet material, said split ring having two ends that overlap one another in an overlap sector, said ring having an inner edge provided for engaging between a flange of the rim and the base of the tire; and

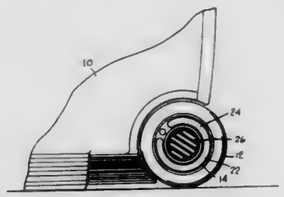
an expansion device connected to said two ends of said split ring for opening said ring to permit installation and removal of said ring, said expansion device comprising a hand-actuable lever hinged on one end of said ring and connected to the other end of said ring by two links located on either side of said ring for acting upon said other end of said ring to separate said two ends against the elasticity of said ring.

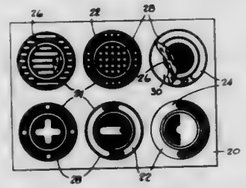
5,058,959

IDENTIFICATION SYSTEM FOR WHEELED SUITCASES

Richard Miles, London, and Ian Ferris, Surrey, both of England, assignors to Samsonite Corporation, Denver, Colo.

Filed Apr. 17, 1990, Ser. No. 510,383
Int. Cl.[5] B42D *15/00*
U.S. Cl. 301—108 TW 11 Claims





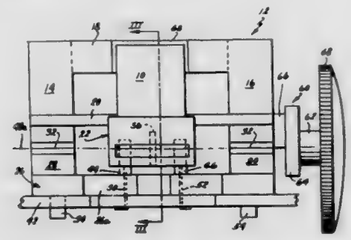
1. In a wheeled suitcase, including at least one ground engaging wheel mounted to a shell of said case for rotation about an axis, an improved identification system, intended to permit the user of the suitcase to distinguish that user's case from a group of otherwise identical or similar such suitcases comprising at least one identifying indicia sized to be positioned on said wheel, and means for holding said identifying indicia on said wheel, wherein said wheel includes an end face co-axial with its axis and said identifying indicia is sized to fit within the periphery of said end face, and further comprising a sheet of labels arrayed on a sheet of release paper, said labels including a series of annular shaped labels and a series of circular shaped labels sized to fit within said annular labels, whereby a user of said luggage may select up to one circular and up to one annular label for placement on said face of said wheel.

5,058,960

PENDULUM-TYPE ACCELLEROMETER FOR ELECTRICALLY-ACTUATED BRAKING SYSTEMS

Larry Eccleston, and Barry G. Austin, both of Marshall, Mich., assignors to Tekonsha Engineering Company, Tekonsha, Mich.

Filed Aug. 7, 1989, Ser. No. 390,280
Int. Cl.[5] B60T *8/18*
U.S. Cl. 303—24.1 33 Claims



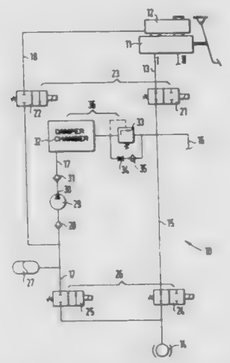
1. A freely-flexing multi-layer cantilever-type inertial sensor, comprising in combination: a flexible multi-layer beam having first and second sides; a generally rigid support structure for said beam, said support structure having a beam-mounting surface disposed laterally adjacent said beam at a predetermined location along the length of the beam; and means for securing said beam to said support structure at said beam-mounting surface, said securing means extending between and connecting a selected one of said beam sides and said beam-mounting surface while not directly connecting the other such beam side to said support structure, such that different layers of said beam may shift longitudinally with respect to one another at said predetermined location upon lateral flexure of said beam in response to inertial forces.

5,058,961

APPARATUS FOR DAMPING PRESSURE FLUCTUATIONS

Robert Mergenthaler, Markgroeningen, and Heinz Siegel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 25, 1990, Ser. No. 528,983
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923282
Int. Cl.[5] B60T *8/32, 13/12, 17/02*; F15B *1/02*
U.S. Cl. 303—115 42 Claims



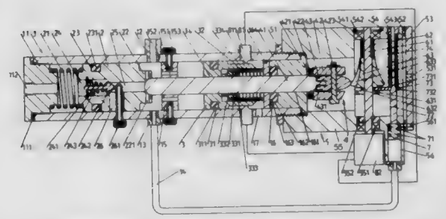
1. An apparatus (36) for damping pressure fluctuations in a hydraulic vehicle brake system (10) comprising at least a single-circuit master brake cylinder (11) for generating brake pressure in at least one wheel brake (14), a pressure control valve assembly (26) between the master brake cylinder and the wheel brake, a pump (29) for drawing pressure fluid out of the wheel brake to avoid wheel locking during braking, wherein the pump is connected by its outlet (30) to the master brake cylinder, via a damper chamber (32) and a throttle (34) with a pressure limiting valve (33) having a spring-loaded, cylindrically embodied closing element (52) disposed to bypass the throttle, further in which the throttle (34) and the pressure limiting valve (33) have a common sleevelike housing (42) with a cylindrical interior and with an inflow opening (45) disposed on a housing bottom (44) of said housing (42), the cylindrically embodied closing element (52) is longitudinally movably guided in the housing (42) and on an end face of the housing (42) has a hollow collar (59) fitting over the inflow opening (45) and supported on the housing bottom (44), the collar (59) forms a closing valve with the housing bottom (44), and the collar (59) of the closing element (52) and a valve seat (60) of the housing bottom (44) forms the throttle (34), with at least one aperture (61, 61') open toward an end face of the collar.

5,058,962

INTERMITTENT BOOSTING TYPE AUXILIARY MECHANISM FOR AUTO BRAKE SYSTEM

Chrang-Chuan Hwang, 2F, No. 108-1, Fu-Hsing Street, Baan-Chyau City, Taipei Hsien, Taiwan

Filed Aug. 31, 1989, Ser. No. 401,109
Int. Cl.[5] B60T *8/28*
U.S. Cl. 303—116 PC 16 Claims



1. An intermittent boosting type auxiliary mechanism for an auto brake system, comprising:
a power cylinder formed resembling a long cylinder;
a power piston located within said power cylinder, the interior of the power piston having a vacant chamber and an oil link formed therein for transmitting oil, whereby the power piston moves in a reciprocating manner within said power cylinder;
an inductive piston located within said power cylinder for axial shifting in order to conduct a circuit;
a drive unit located at the rear end of the power cylinder for pushing-up the power piston;
a case body resembling a hollow rectangle and screwed joining the rear end of the power cylinder, the exterior of the case body being connected to an oil pipe through the power cylinder;
a cam unit pivotally located within the case body with power supply from a power box for pushing up the drive unit;
a thrust piston located within the case body for holding and pushing the cam unit; and
an inductive unit having on/off switches therefor fixed to the cylindrical wall of the power cylinder and further having a power box shifting joint with the cam unit;
the inductive piston provided for depressing each on/off switch to conduct the circuit and offering power supply to the power box in order to drive the cam unit and to permit the cam unit to rotate to push-up the drive unit, thereby producing a boosting, pressure retaining cyclic brake effect.

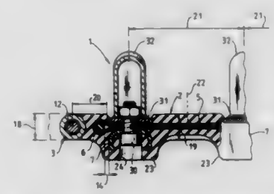
5,058,963

BELT-TYPE CATERPILLAR FOR TRACK-LAYING VEHICLES AND SNOWMOBILES

Hagen H. Wiesner, Solingen; Klaus Spies, Remscheid, and Ekkehard Oertgen, Radevormwald, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jul. 9, 1990, Ser. No. 549,750
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1989, 3924893
Int. Cl.[5] B62D *55/24*
U.S. Cl. 305—35 EB 7 Claims

1. A belt track for track-laying vehicles and snowmobiles, comprising a plurality of individual replaceable track belt segments, connecting locations between each of said track belt segments, each said track belt segment including a base member consisting of rubber, tensile-loadable fabric band inserts being vulcanized into the rubber, a pin-shaped tie anchor which is encompassed by said fabric inserts in the region of the connecting locations for the track belt segments, said tie anchor being transversely supported within the rubber base member, said connecting locations including hinge members which are vulcanized into the rubber track belt segments, said hinge members each including tubular sections for the insertion of tubes or track pins therein; externally extending arms arranged at lateral spacings from each other and extending from the sides of tubular hinge member sections for supporting



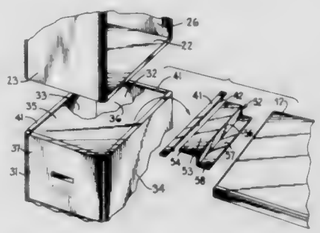
said tie anchor therein, said arms terminating proximate a nonelastic bending region of a track dog or a transversely stiff traverse, said arms supporting said fabric insert therebetween each other and the diameter of the tubular hinge sections and height of the hinge members being generally in conformance with the thickness of said base member.

5,058,964

STORAGE CABINET-WORKSURFACE ARRANGEMENT

Jeffrey Reuschel, Hamilton; Charles R. Newell, Grand Haven, and Alan R. Wright, Wyoming, all of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 7, 1990, Ser. No. 534,290
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—111 10 Claims



1. A storage cabinet and worktop arrangement, comprising:
an upright storage cabinet arrangement being defined by separate and independent unitized upper and lower boxlike cabinets disposed in vertically stacked relationship one above the other;
said upper and lower cabinets having substantially identical horizontal rectangular cross sections, and each of said cabinets being defined by a pair of generally parallel first sides which extend in a widthwise direction and being additionally defined by a pair of parallel second sides which extend in a depthwise direction of the cabinet and extend generally perpendicularly between the first sides;
one of the sides of each of the upper and lower cabinets being defined by a vertically enlarged access opening for providing access to a respective storage compartment defined within the interior of the respective boxlike cabinet, the remaining sides of each of said cabinets being defined by generally vertical upright walls;
removable reveal strip means positioned between upper ends of the side walls of the lower cabinet and lower ends of the side walls of the upper cabinet for supporting the upper cabinet on but slightly vertically above the lower cabinet, said removably reveal strip means including a plurality of separate reveal strips, each said reveal strip comprising a vertically thin but horizontally elongate platelike strip adapted to be removably positioned in direct supportive

engagement with an upper edge of each side wall of said lower cabinet;

a horizontally enlarged and substantially planar worktop positioned adjacent said cabinet arrangement and disposed at an elevation which closely approximates the height of the lower cabinet, said worktop having one end thereof position directly adjacent one said side wall of said lower cabinet substantially adjacent the upper edge thereof; and

support bracket means for vertically supporting said one end of said worktop from said cabinet arrangement without physically defacing exposed vertical sides of said cabinet arrangement, said support bracket means having a first horizontal support flange which project horizontally over the upper edge of said one side wall and replaces the reveal strip which is normally positioned on the upper edge of said one side wall, said support flange having a thickness which substantially corresponds to the thickness of the reveal strip, said support flange also having means associated therewith for securing the support bracket means to the lower cabinet in load bearing relationship therewith, said bracket means also having a second substantially horizontal support flange which is fixedly coupled to said worktop in the vicinity of said one end.

5,058,965

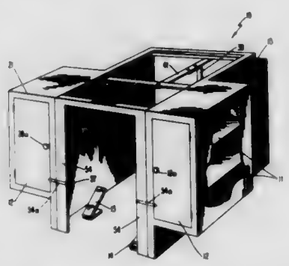
COMBINATION DRAFTING TABLE AND OFFICE DESK

Everett Thorn, 3818 15th Ave., SE., Largo, Fla. 34640

Filed Jun. 26, 1990, Ser. No. 543,992

Int. Cl.[5] A47B *27/00*

U.S. Cl. 312—231 **8 Claims**



1. An article of furniture, comprising:

a two pedestal desk;

a platform member hingedly mounted at its bottom to a leading edge of said desk;

a platform tilting means;

said platform tilting means including an elongate, rigid platform support member hingedly mounted to a rear side of said platform member, at the top thereof;

said platform support member having a distal free end;

a vertically disposed base member fixedly secured to a back wall of a kneehole area of said desk;

a plurality of vertically spaced teeth members formed in said base member;

a cover member hingedly secured to said base member;

said cover member having an open position and a closed position, said teeth members being releasably engageable by said distal free end of said platform support member only when said cover member is open, said cover member barring engagement between said teeth members and said distal free end of said platform support member when said cover member is closed;

said cover member being biased into said open position;

a first pedal means;

a first cable means disposed in interconnecting relation between said cover member and said first pedal means, said first cable means operative to swing said cover member about its hinges into said closed position, thereby covering said teeth members, when said first pedal means is activated;

said platform member being manually tiltable when said teeth members are covered by said cover member; and

said platform member having a closed position where it is coplanar with a top surface of said desk.

5,058,966

VAULT LINER FOR USE IN COIN TELEPHONES

Gerald B. McGough, Huntsville, Ala., assignor to Quadrum Telecommunications, Inc., Arab, Ala.

Filed Jan. 11, 1991, Ser. No. 640,267

Int. Cl.[5] H04M *17/00*; A47B *88/00*; G07B *17/00*

U.S. Cl. 312—319 **11 Claims**



1. A liner for use in the vault portion of a coin telephone, said liner comprising:

a substantially rectangular platform including a generally horizontally disposed top member presenting an upwardly facing flexible convex top surface;

a plurality of integrally formed vertical support members depending from said top member;

said liner operable to facilitate the manual placement of a coin receptacle into said vault portion and for applying pressure to said receptacle forcing it in an upward direction.

5,058,967

APPARATUS FOR MANIPULATING LASER BEAMS, PARTICULARLY POWER LASER BEAMS FOR USE BY ROBOTS

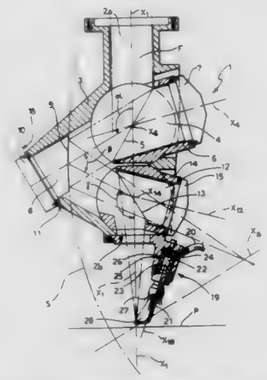
Bartolomeo Pairetti, and Giorgio Marinoni, both of Turin, Italy, assignors to Comau S.p.A., Italy

Filed Apr. 30, 1990, Ser. No. 516,869

Claims priority, application Italy, Jun. 16, 1989, 67490 A/89

Int. Cl.[5] G02B *5/10*

U.S. Cl. 359—861 **20 Claims**



1. Apparatus for manipulating laser beams, intended to receive a laser beam which is propagated in a given direction and to transmit it substantially in alignment with that direction, wherein it comprises:

first reflective means, whose position is adjustable, arranged to receive said laser beam and to deflect it for a first time through a first given angle away from said given direction,

second reflective means arranged to receive said beam deflected by said first reflective means and to deflect it for a second time through a second given angle towards said given direction, and

third reflective means, whose position is adjustable, arranged to receive said laser beam deflected by said second reflective means and to deflect it for a third time through a third given angle to a condition in which it is aligned with said given direction.

5,058,968

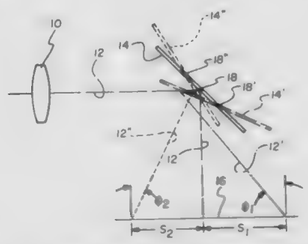
OPTICAL SCANNER FOR MAINTAINING FOCUS OVER A FLAT IMAGE PLANE

Richard A. Stark, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 13, 1990, Ser. No. 566,194

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—213 **4 Claims**



1. Optical scanning apparatus for scanning a substantially flat image plane, comprising:

a. a focusing lens defining an optical axis;

b. a scanning mirror located between said focusing lens and said image plane; and

c. means for rotating said scanning mirror about a pivot axis parallel with the scanning mirror to scan said image plane, and for translating said mirror during said rotation such that said pivot axis is translated along a path lying at an angle of 45° to said optical axis.

5,058,969

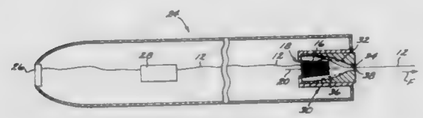
OPTICAL FIBER DISPENSING SYSTEM

Stanley P. D. Peterson, and Gary R. Redford, both of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 9, 1990, Ser. No. 521,197

Int. Cl.[5] G02B *6/02*

U.S. Cl. 385—147 **11 Claims**



10. An optically guided missile, comprising:

an elongated, generally cylindrical missile body;

a sensor in one end of the missile body;

a missile guidance unit within the body of the missile that receives sensor signals from the sensor and introduces message signals into an optical fiber;

a canister having a length of the optical fiber wound therein at the other end of the missile body, the optical fiber being arranged to pay out from the canister along a payout axis thereof; and

a helix dampener disposed overlying the canister and extending beyond the canister in the direction parallel to the payout axis, the interior surface of the helix dampener defining a locus of points whose distance from the payout axis decreases with increasing distance from the canister to an opening through which the optical fiber is dispensed.

5,058,970

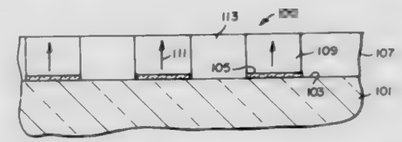
QUASI-PHASE MATCHING OPTICAL WAVEGUIDE

Jay S. Schildkraut; Joseph F. Revelli, both of Rochester, and Eric T. Prince, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1990, Ser. No. 583,118

Int. Cl.[5] G02F *1/37*

U.S. Cl. 359—328 **11 Claims**



1. A quasi-phase matching optical waveguide for producing a second harmonic of an internally propagated polarized laser beam having a wavelength in the range of from 700 to 1300 nm comprised of

means for providing at least a first array of electrodes with next adjacent electrodes being laterally spaced in the direction of propagation of the laser beam and

organic layer means for propagating the laser beam containing organic molecular dipoles exhibiting a first polar alignment in areas overlying the electrodes of the first array to provide a second order polarization susceptibility in excess of 10^{-9} electrostatic units,

characterized in that

the electrodes of the first array are in direct contact with the organic layer means and are chosen to exhibit a refractive index with an imaginary component of less than 0.1 and a conductivity at least 5 orders of magnitude higher than that of the organic layer means and

the electrodes of the first array and the areas of the organic layer means exhibiting the first polar alignment each have the same width and spacing.

5,058,971

PLANAR OPTICAL ISOLATOR

Hans-Jürgen Schmitt; Jürgen Seidenberg; Norbert Thorweihe, all of Aachen; Hans Dammann, Tangstedt; Volker Doormann, and Jens-Peter Kramme, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Feb. 16, 1990, Ser. No. 482,142

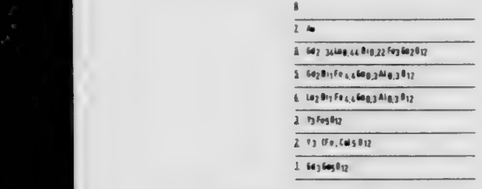
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1989, 3904660

Int. Cl.[5] G02F *1/025, 1/095*

U.S. Cl. 385—11 **12 Claims**

1. A planar optical isolator having a waveguiding core layer with neighboring coating layers, wherein the refractive index of the core layer is larger than the refractive indexes of the coating layers and the core layer comprises a magnetooptical gyrotropic layer and an anisotropic birefringent layer which are proportioned so that the non-reciprocal rotation of the polarization of the light (Faraday rotation) resulting from the action of a magnetic field in the forward direction of the isolator is at least substantially negatively equal to the reciprocal rotation of polarization as a result of the birefringence, so that a TE-mode wave in the forward direction is guided with low damping, and means for the intensive attenuation of at least one

TM-mode, wherein the improvement comprises: the wave-guiding core layer consists of two rare earth-iron garnet (YIG) layers which are differently doped so as to obtain different



specific birefringences and that at least one layer with a higher optical damping is provided, said higher optical damping layer being parallel to the core layer.

5,058,972

INTEGRATED SEMICONDUCTOR DEVICE INCLUDING AN OPTOELECTRONIC SWITCHING ELEMENT

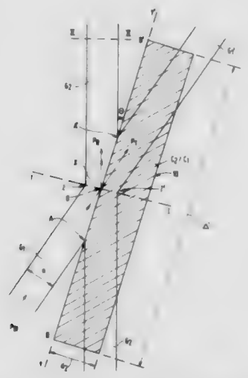
Marko Erman, and Philippe Autier, both of Paris, France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Nov. 17, 1989, Ser. No. 439,140

Claims priority, application France, Nov. 25, 1988, 88 15426; Japan, Dec. 30, 1988, 88 17497

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—17 **21 Claims**



1. An integrated semiconductor device including at least one optoelectronic switching element, this element comprising:

two rectilinear monomode optical guides crossing each other at a predetermined angle composed of at least one heterostructure of III-V material, which comprises a substrate S of a confinement material, a guiding layer C_G and a guiding strip RB,

a p-n junction formed in the crossing region asymmetrically with respect to the bi-secting longitudinal plane of the crossing angle,

wherein the longitudinal dimension of the p-n junction is substantially larger than that of the crossing region, and in that the p-n junction is arranged so as to project symmetrically on either side of the crossing region in the longitudinal direction.

5,058,973

DEVICE FOR READING BY OPTICAL SENSOR COHERENCE

Philippe Refregier, Gif-sur-Yvette; Dominique Rojas, Arcueil, and Marc Turpin, Bure-sur-Yvette, all of France, assignors to Thomson-CSF, Puteaux, France

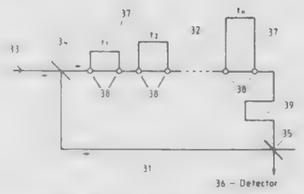
PCT No. PCT/FR89/00353, § 371 Date Feb. 27, 1990, § 102(e) Date Feb. 27, 1990, PCT Pub. No. WO90/00721, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 6, 1989, Ser. No. 477,810

Claims priority, application France, Jul. 8, 1988, 88 09300

Int. Cl.[5] G01B *9/02*

U.S. Cl. 385—27 **18 Claims**



1. Device for reading by optical sensor coherence, of the type supplying a signal to be processed which can be analysed as at least one fundamental wave train associated with a set of secondary wave trains which emanate from said fundamental wave train and exhibiting a set of corresponding delays in relation to said fundamental wave train, said device being intended to bring said fundamental wave train into interference with each one of said secondary wave trains,

the device comprising an interferometer, a delay branch of which is traversed by at least said fundamental wave train, and a second branch of which is traversed by at least said secondary wave trains,

and in that said delay branch is equipped with variable delay means for the generation of variable delays of said fundamental wave train and quantified delay means for the generation of quantified delays of said fundamental wave train, said quantified delay means being selectively switchable into said delay branch by switching means.

5,058,974

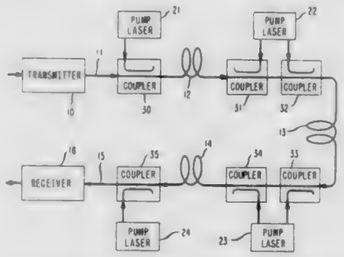
DISTRIBUTED AMPLIFICATION FOR LIGHTWAVE TRANSMISSION SYSTEM

Linn F. Mollenauer, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 6, 1989, Ser. No. 418,000

Int. Cl.[5] G02B *6/26, 6/42*

U.S. Cl. 385—27 **17 Claims**



1. An optical system for amplifying a first lightwave signal at a first wavelength, said system comprising,

an optical fiber having first and second ends, said optical fiber including a dilute concentration of rare-earth dopant ions, said optical fiber having a length greater than 1 km,

a source of a first pump signal at a second wavelength for exciting the state of said dopant ions to cause stimulated emission therefrom at said first wavelength, and

means for optically coupling said first pump signal into the first end of said optical fiber.

5,058,975

FIBER OPTIC MIXING DEVICE

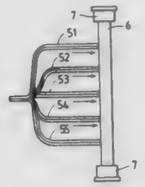
Haruo Sudo, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Filed Nov. 3, 1989, Ser. No. 431,063

Claims priority, application Japan, May 16, 1989, 1-121793

Int. Cl.[5] G02B *6/28*

U.S. Cl. 385—24 **6 Claims**



1. A fiber optic mixing device for summing a plurality of optical input signals and generating a mixed output signal, comprising:

a fluorescent optical fiber;

a plurality of optical fibers connected to a side surface of said fluorescent optical fiber, wherein said optical input signals, emitted from the respective optical fibers, are made incident on the fluorescent optical fiber in a direction substantially perpendicular to an axis between one end face and the other end face of said fluorescent optical fiber;

wherein said fluorescent optical fiber generates fluorescent light in response to said optical input signals, wherein an amount of said fluorescent light is proportional to an amount of said optical input signals, wherein said fluorescent optical fiber transmits said fluorescent light to said end faces of the fluorescent optical fiber; and

a photodetector disposed on at least one of said end faces of said fluorescent optical fiber to detect said fluorescent light transmitted through said fluorescent optical fiber and to output said mixed output signal.

5,058,976

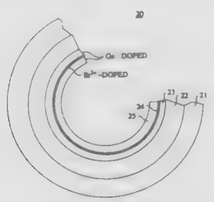
SYSTEM COMPRISING ER-DOPED OPTICAL FIBER

David J. DiGiovanni, Scotch Plains, and Kenneth L. Walker, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1990, Ser. No. 562,770

Int. Cl.[5] G02B *6/28;* **H01S** *3/091;* **H04J** *3/00;* **G02F** *1/00*

U.S. Cl. 359—173 **14 Claims**



1. Optical fiber communication system comprising a length of optical fiber signal-transmissively connecting signal-generating means at a first location to signal-detecting means at a second location spaced from the first location; the length of optical fiber comprising a length of transmission fiber and a length of Er-doped amplifier fiber; the communication system further comprising means for generating pump radiation and means for coupling pump radiation into the length of optical fiber at a location intermediate the first and second locations; the signal-generating means adapted for generating signal radiation of wavelength λ_s ($\lambda_s \sim 1.5$ μm), the means for generating pump radiation adapted for generating radiation of wavelength λ_p less than λ_s; the amplifier fiber comprising a first region of relatively high refractive index and a second region, contactingly surrounding the first region, of relatively low refractive index; the first region comprising Ge and Al, and further comprising Er, associated with the amplifier fiber being refractive index difference $\Delta n = (n_c - n_{cl})$, where n_c is an effective refractive index associated with the first region and n_{cl} is a refractive index associated with the second region, an effective core diameter a, a mode field diameter at wavelength λ_p, an Er distribution, an Al distribution, and a Ge distribution, with each of said distributions being associated an effective diameter;

CHARACTERIZED IN THAT

a) $\Delta n > 0.03$ and a is less than 3.5 μm;

b) the maximum Al concentration in the first region is at least 6 mole %;

c) Δn and a are chosen such that the mode field diameter for the pump radiation is less than 5 μm, such that the V-number at λ_p is in the range 1.4–2.0, and such that the amplifier fiber has a cut-off wavelength (λ_{co}) that is less than 1.4 μm; and

d) the effective diameter associated with the Er distribution is less than that associated with the Ge distribution, and the effective diameter associated with the Al distribution is not substantially larger than that associated with the Er distribution.

5,058,977

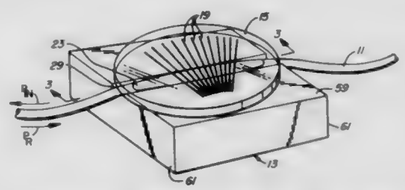
BROADBAND TUNABLE IN-LINE FILTER FOR FIBER OPTICS

Wayne V. Sorin, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 355,144, May 15, 1989, Pat. No. 4,986,623, and a continuation-in-part of Ser. No. 4,997, Jan. 20, 1987, abandoned. This application Jan. 18, 1991, Ser. No. 643,395

Int. Cl.[5] G02B *6/26, 6/34*

U.S. Cl. 385—30 **4 Claims**



1. A filter for use with optical fibers, said filter comprising:

a grating including plural elongated regions and plural ridges,

said elongated regions sharing a common predetermined width, said elongated regions sharing a common predetermined length,

each region intersecting plural of said ridges to define a series of ridge segments, each series so defined extending lengthwise of the defining region, each ridge segment of each said series extending substantially width-wise across the region, each region being characterized by a substantially constant ridge-segment pitch, with a first region having a different pitch from at least a second region;

coupling means for arranging said grating with respect to an optical fiber so that the evanescent filed of light being transmitted through said fiber can substantially interact

with said grating, and so that the intersection of said grating and such an evanescent field can be substantially contained within at least one of said regions;

positioning means for moving said grating relative to said fiber so that at one position said first region can substantially contain the intersection of said grating and the evanescent field of light being transmitted through said fiber, and so that at another position said second region can substantially contain the intersection of said grating and the evanescent field of light being transmitted through said fiber; and

an optical fiber segment coupled to said grating by said coupling means,

said optical fiber including a single core and supporting a single mode in a given wavelength band, said grating being arranged to interact with the evanescent field of light being transmitted in a first direction along said core so that a portion of said light is reflected back along said core in the opposite direction.

5,058,978

OPTICAL DIVIDER FOR MULTIMODE OPTICAL FIBER SYSTEMS

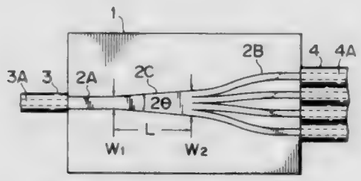
Osamu Kondoh; Mitsuzo Arii; Tohru Nakajima, and Yasunari Kawabata, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Oct. 22, 1990, Ser. No. 600,939

Claims priority, application Japan, Oct. 25, 1989, 1-275903

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—43 **9 Claims**



1. An optical divider comprising:

a flat light transmissible plate member having first and second ends and an optical waveguide formed therein;

an input optical fiber closely contacting and joining said first end of said flat light transmissible plate member in which said optical waveguide is formed; and

a plurality of output optical fibers closely contacting and joining said second end of said plate member for distributing input light from said input optical fiber to said plurality of output optical fibers, wherein

said optical waveguide has a tapered structure that expands towards an output side and is formed of a main waveguide portion coupled with said input optical fiber and branching optical waveguide portions contiguous to said main optical waveguide portion and coupled to said plurality of output optical fibers; and

wherein said optical waveguide is formed so as to satisfy the following conditions when a core diameter and a numerical aperture of said input and output optical fibers are represented by D and N.A. respectively,

(1) a width of a portion of said main optical waveguide where said portion is coupled with said input optical fiber is greater than D while each width of portions of said branching optical waveguide where said portions of said branching optical waveguide are coupled with said output optical fibers is smaller than 0.85 D, and

(2) the range of the taper angle θ of the optical waveguide is given by:

$$2\times10^{-4}<\theta(\text{rad})<(\sin^{-1}\text{N.A.})/4.$$

5,058,979

OPTICAL FIBER COUPLER AND A FABRICATION METHOD FOR THE SAME

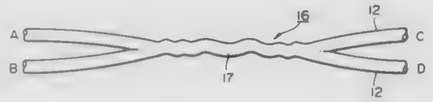
Ryozo Yamauchi, Sakura; Noboru Kawakami, Chiba, and Fumio Suzuki, Sanbu, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed Jun. 21, 1990, Ser. No. 542,469

Claims priority, application Japan, Jun. 22, 1989, 1-159969; Jul. 25, 1989, 1-191908

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—28 **13 Claims**



1. An optical fiber coupler formed by fusing a section of each of at least two component single mode optical fibers, and then elongating the fused section to form a fused-elongated region, wherein at least two permutations are introduced into said fused-elongated region so that a mode coupling state between said at least two component single mode optical fibers in said fused-elongated region is a multiple mode coupling state.

5,058,980

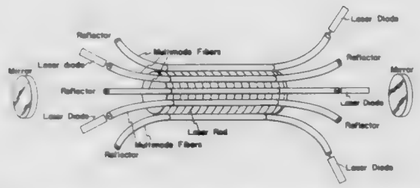
MULTIMODE OPTICAL FIBER INTERCONNECT FOR PUMPING ND:YAG ROD WITH SEMICONDUCTOR LASERS

Phillip H. Howerton, Bowie, Md., assignor to SFA, Inc., Landover, Md.

Filed Feb. 21, 1990, Ser. No. 482,778

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—31 **25 Claims**



1. A method of coupling light energy to a laser rod comprising the steps of:

contacting the laser rod in a direction parallel to a resonating mode of the rod with a core portion of at least one section of a multimode fiber, the section being stripped of a cladding of the fiber to exposed the core; and

injecting light energy into at least one of two ends of the fiber thereby propagating light through the fiber and coupling at least a portion of the light energy to the laser rod through the exposed core of the section.

5,058,981

LIGHT SOURCE DEVICE

Shinsuke Umegaki, Kanagawa; Takafumi Uemiya, Osaka; Naota Uenishi, Osaka, and Yo Shimizu, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 4, 1989, Ser. No. 444,934

Claims priority, application Japan, Dec. 5, 1988, 63-307611

Int. Cl.[5] G02B *6/32, 6/34*

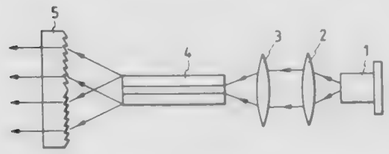
U.S. Cl. 359—328 **7 Claims**

1. A light source device comprising:

a laser light source;

an optical fiber type secondary higher harmonic wave generating element for generating secondary higher harmonic waves from an admitted incident laser beam emitted from said laser light source; and

a collimator lens for converting said secondary higher harmonic waves emerging from said secondary higher harmonic wave generating element into parallel beams of



light, said collimator lens having an annular diffraction lattice pattern arranged such that respective oblique surfaces of diffraction lattices formed in concentric circles at equal spacings partially constitute side surfaces of a plurality of conical bodies concentric with said concentric circles.

5,058,982

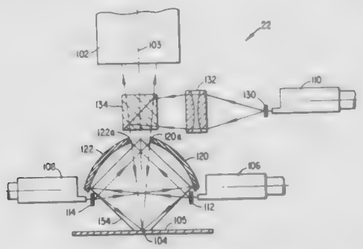
ILLUMINATION SYSTEM AND INSPECTION APPARATUS INCLUDING SAME

Yigal Katzir, Holon, Israel, assignor to Orbot Systems Ltd., Israel

Continuation-in-part of Ser. No. 370,064, Jun. 21, 1989, which is a continuation of Ser. No. 150,332, Jan. 29, 1988, abandoned. This application Aug. 10, 1990, Ser. No. 565,489

Int. Cl.[5] G02B *6/32*

U.S. Cl. 385—33 **20 Claims**



1. An illumination system for an optic scanner particularly useful for illuminating a line to be scanned on the surface of a workpiece and aligned with the scanner optic axis, comprising:

darkfield illumination means and brightfield illumination means for illuminating the line to be scanned;

said darkfield illumination means comprising first and second light guides producing, at their output ends, elongate, narrow light sources extending parallel to and on opposite sides of the line to be scanned; and a beam concentrator for each of said light guides located to produce an approximate image of its respective light source on the line to be scanned on the surface of the workpiece;

each of said beam concentrators including a reflector focussing member and a lenticular lens sheet between its respective light source and reflector focussing member effective to spread the light over its respective reflector focussing member.

5,058,983

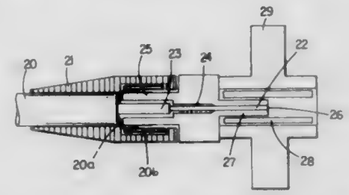
FIBER OPTIC CONNECTOR TERMINATOR

Michael C. Corke, Mendon; Frederick J. Gillham, Westboro; Andong Hu, Whitinsville, and Wayne Moore, Marlboro, all of Mass., assignors to Aster Corporation, Milford, Mass.

Filed Jul. 6, 1990, Ser. No. 549,377

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—78 **14 Claims**



1. A terminator for use with an optical fiber access port structure, said access port structure supporting an optical fiber having an optical end face exposed for the purpose of communicating with a like end face of another fiber,

said terminator comprising;

a. A supporting body providing means to removably interfit said terminator with said access port structure;

b. A means contained within said supporting body for transferring optical power from said access port exposed optical face to a light absorbing means;

c. A light absorbing means contained within said supporting body said light absorbing means effectively terminating said means of transferring optical power in manner to absorb incident light from said fiber end face and prevent back-reflection;

wherein optical power is conducted from said access port exposed optical face, through said means of transferring optical power, to said means of absorbing said optical power.

5,058,984

METHOD AND APPARATUS FOR COUPLING OPTICAL FIBER CABLES

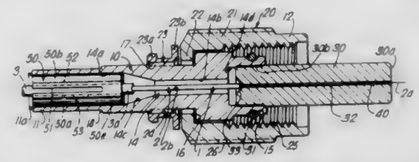
Jonathan M. Bulman, London; Glenton P. McFarlane, Northolt, and Sean Maguire, London, all of England, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 28, 1990, Ser. No. 547,572

Claims priority, application United Kingdom, Jun. 30, 1989, 8915064

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—80 **18 Claims**



1. A method of enabling an optical fibre cable having a plastics outer sleeve to be optically coupled to another optical fibre cable or active device, which method comprises providing a tubular connector body having one end for receiving an optical fibre cable and carrying at the other end connection means for coupling to another connector body, mounting a ferrule for supporting an optical fibre within the other end of the connector body, inserting a deformable tubular gripping member into the one end of the connector body, injecting a settable adhesive material into the ferrule, removing the plastics outer sleeve from an end portion of the optical fibre cable, inserting the optical fibre cable into the other end of the con-

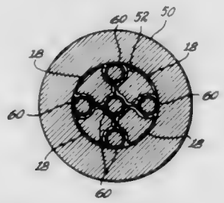
nector body until the exposed end portion of the optical fibre passes through the ferrule, and an end portion of the plastics outer sleeve is received within the deformable gripping member, applying a force to the one end of the connector body causing the gripping member to deform so as to grip the end portion of the plastics outer sleeve, and irradiating the connector body to cause the adhesive material to set to secure the end portion of the optical fibre within the ferrule.

5,058,985

COUPLING MEANS BETWEEN A LIGHT SOURCE AND A BUNDLE OF OPTICAL FIBERS AND METHOD OF MAKING SUCH COUPLING MEANS

John M. Davenport, Lyndurst; William W. Finch, University Heights; Richard L. Hansler, Pepper Pike, all of Ohio; John L. Henkes, Latham, N.Y., and Jeffrey D. Johnson, Mentor, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 23, 1990, Ser. No. 556,134
Int. Cl.[5] G02B *6/04, 6/26;* **F21V** *7/04*
U.S. Cl. 385—115 **17 Claims**



1. A lighting subsystem comprising:

(a) a bundle of optical fibers each having an input end for receiving light from a light source, the input ends of said fibers being located substantially in a predetermined plane, said bundle of fibers including a combination of a first group of fibers which are made of non-compression deformable material and a second group of fibers being of compression-deformable material and each of said second group of fibers have a normal transverse cross-section when in an uncompressed state, and

(b) a coupling device positioned about said bundle adjacent said predetermined plane and comprising a member containing a bore for receiving said bundle, said bore tapering from a relatively large diameter at a location spaced from said predetermined plane to a relatively small diameter at said predetermined plane, said bore in a second plane parallel to and spaced from said predetermined plane having a circumference just large enough to surround said bundle without laterally compressing the fibers in said second plane, and in which:

(c) said tapered bore is of such a size that the second group of optical fibers therein are laterally compressed and said compression-deformable fibers are so deformed in transverse cross-section relative to their normal transverse cross-sections that the optical fibers more completely fill said bore in the relatively small diameter region of the bore than in said second plane.

12. A method of making a coupling for the input end of a bundle of optical fibers that are adapted to transmit light received through said input end, the method comprising: (a) at least some of said bundle of optical fibers each comprising a group of fibers made of compression deformable material and a group of fibers made of non compression deformable material,

(b) providing a sleeve having a passage that is tapered so that the passage has a relatively large cross-sectional area at one end of the sleeve and a relatively small cross-sectional area at the opposite end of the sleeve,

(c) inserting a leading end of said bundle of fibers into the end of said sleeve containing the large cross-sectional area passage,

(d) forcing said leading end of the bundle to move relative to said sleeve so that said leading end passes axially along said tapered passage to said opposite end of said sleeve, and

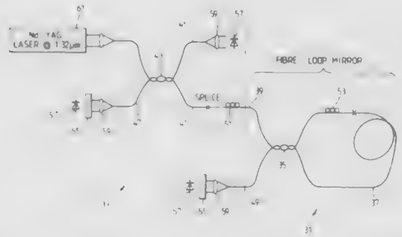
(e) laterally compressing said bundle adjacent said leading end as the leading end is passed along said tapered passage to such an extent that the optical fibers at the small cross-sectional area end of said passage are deformed in such a manner that they more completely fill the passage at said small cross-sectional area end than they fill the passage in the smallest cross-sectional region of the passage where there is no lateral compression of the bundle.

5,058,986

NON-LINEAR INFERFEROMETER

Bimal K. Nayar; Keith J. Blow, and Nicholas J. Doran, all of Suffolk, England, assignors to British Telecommunications public limited company, United Kingdom

Filed Dec. 11, 1989, Ser. No. 447,125
Claims priority, application United Kingdom, Dec. 19, 1988, 8829546
Int. Cl.[5] G02B *6/02, 6/16*
U.S. Cl. 385—27 **7 Claims**



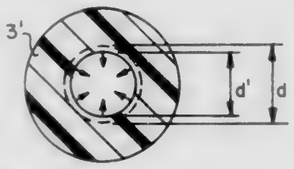
1. A non-linear interferometer having an output and an input and including an optically non-linear transmission medium producing an intensity dependent, relative phase shift between portions of an input optical signal, said transmission medium having an intensity dependent optical scattering above a predetermined non-zero intensity threshold such that the output intensity is at most a single period function of the intensity of the input signal.

5,058,987

COATED OPTICAL FIBER

Toshifumi Hosoya, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 27, 1990, Ser. No. 543,958
Claims priority, application Japan, Jun. 28, 1989, 1-163824
Int. Cl.[5] G02B *6/16*
U.S. Cl. 385—128 **5 Claims**



1. An optical fiber comprising:

a glass optical fiber; and

a rigid protective layer coated directly on the glass fiber; wherein a constricting force F generated by the protective layer is from −0.05 kg to 0.05 kg where the force F is defined by the following equation:

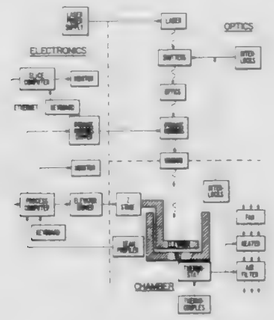
F = (Cross sectional area of protective layer) × (Young's modulus of the protective layer) × (Shrinkage factor of inner diameter of protective layer).

5,058,988

APPARATUS AND METHOD FOR PROFILING A BEAM

Stuart T. Spence, South Pasadena, Calif., assignor to 3D Systems, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 182,830, Apr. 18, 1988. This application Nov. 8, 1988, Ser. No. 268,816
Int. Cl.[5] G01J *1/00*
U.S. Cl. 356—121 **22 Claims**



1. An apparatus for determining a cure parameter in a stereolithography device for producing a three-dimensional object from a medium solidifiable to varying depths upon varying exposure to a reaction means having portions of varying intensity, said reaction means operating and moving in a prescribed pattern onto the medium comprising:

a sensor for sensing the intensity of a portion of the reaction means when that portion of the reaction means is incident on the sensor;

means for relatively displacing the sensor and the reaction means such that substantially all portions of the reaction means may be sensed by the sensor;

means for determining net exposure of the medium based on the sensing of intensity by the sensor and movement of the reaction means; and

means for calculating the cure parameter of the medium based upon the determined net exposure and known properties of the medium.

5,058,989

TRANSMISSION TYPE SCREEN AND METHOD OF MANUFACTURING THE SAME

Kenichi Sakunaga, Toyama, and Mizuo Okada, Yokohama, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Division of Ser. No. 441,385, Nov. 27, 1989. This application Mar. 28, 1991, Ser. No. 676,789
Claims priority, application Japan, Nov. 28, 1988, 63-300064; Nov. 29, 1988, 63-301690
Int. Cl.[5] G03B *21/60*
U.S. Cl. 359—455 **8 Claims**

1. A transmission type screen comprising a screen body constituted by at least one plastic sheet formed of a multiplicity of transparent plastic strands arranged Parallel in a shape of a



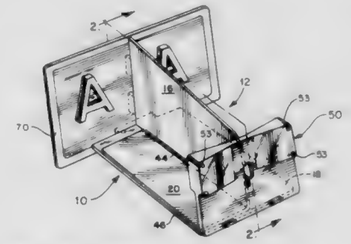
sheet, each adjustment ones of said strands being welded to each other at outer surfaces thereof.

5,058,990

STEREOSCOPIC VIEWER AND VIEW PANELS THEREFOR

Timothy H. Bush, 29 Blodgett St., Clarendon Hills, Ill. 60514

Filed Nov. 21, 1989, Ser. No. 439,484
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—474 **34 Claims**



1. A stereoscope comprising:

a body comprising a septum panel connected to a base panel, both panels having respective front and rear edge portions;

a lens assembly comprising a lens panel and a pair of lenses fixedly positioned on the lens panel;

a view panel comprising a pair of stereoscopic views fixedly positioned on the view panel in a predetermined position;

means for securing the lens panel to the front edge portions of both the septum panel and the base panel to secure the septum panel in a predetermined position with respect to the base panel and form a substantially rigid assembly therewith;

first means for releasably mechanically interlocking the view panel with the rear edge portion of the septum panel to positively position the septum panel in a predetermined location between the views;

second means for releasably mechanically interlocking the view panel with the rear edge portion of the base panel, said second means cooperating with the first means to form a substantially rigid assembly of the septum panel, the base panel, and the view panel.

5,058,991

MAILABLE 3-D VIEWERS OF POST CARD SIZE

James J. Curtin, 3300 Cove Cay, #7E, Clearwater, Fla. 34620

Continuation-in-part of Ser. No. 334,957, Apr. 10, 1989, abandoned. This application Oct. 24, 1990, Ser. No. 602,534
Int. Cl.[5] G02B *27/22, 27/04*
U.S. Cl. 359—474 **2 Claims**

1. A stereoscopic viewer, comprising:

a flat, rectangular sheet material means of predetermined length, width, and thickness, said length being greater than said width;

said sheet material means having only two transversely disposed, parallel fold lines formed therein, said fold lines being a first fold line and a second fold line and said first

and second fold lines being formed transverse to a longitudinal axis of symmetry of said sheet material means;

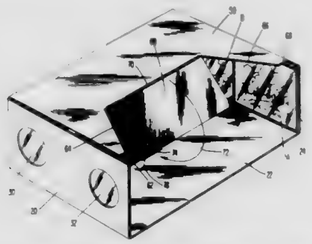
said first and second fold lines dividing said sheet material means into a first, second and third section only, said first and second sections being contiguous to one another and separated by said first fold line and said second and third sections being contiguous to one another and separated by said second fold line;

a pair of scenes that produce a single image with a 3-D effect, when viewed through a 3-D lens, being positioned on said third section of said sheet material means;

a pair of laterally spaced aperture means formed in said first section;

a pair of 3-D lens means having a predetermined power being positioned in said aperture means;

said second section having a length substantially equal to the focal length of said lens means;



said first, second and third sections having a common width and thickness;

a fourth section having the same length, width and thickness as said second section, said fourth section being disposed in interconnecting relation to free ends of said first and third sections;

a third and a fourth fold line being formed opposite ends of said fourth section meet said first and third sections, respectively;

a foldable flap member being at least in part cut out from said fourth section;

a longitudinally-extending fold line formed in said fourth section, substantially mid-width thereof so that said flap member is foldable thereabout; and

holding means holding said flap member in its folded position when said flap member is folded into substantially orthogonal relation to said second and fourth sections.

5,058,992

METHOD FOR PRODUCING A DISPLAY WITH A DIFFRACTION GRATING PATTERN AND A DISPLAY PRODUCED BY THE METHOD

Susumu Takahashi, Kashiwa, Japan, assignor to Toppan Printing Co., Ltd., Japan

Filed Nov. 25, 1988, Ser. No. 276,469

Claims priority, application Japan, Sep. 7, 1988, 63-222477; Sep. 7, 1988, 63-222478

Int. Cl.[5] G02B *5/18;* **G03H** *1/08*

U.S. Cl. 359—567 **5 Claims**

2. A method for producing a display with a diffraction grating pattern, comprising the steps of:

reading image data;

inputting visual field data to a computer;

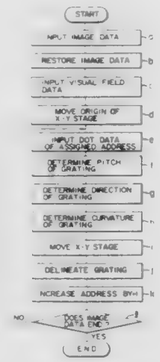
moving an origin of an X-Y stage;

inputting an initial value of dot data;

determining a pitch, direction and curvature of a diffraction grating based on said dot data;

moving said X-Y stage to a position corresponding to said dot data based on the dot data;

delineating said diffraction grating using an electron beam exposing device; and



increasing an address corresponding to said dot data by one and repeating the above sequence of steps starting from said initial-value inputting step.

5,058,993

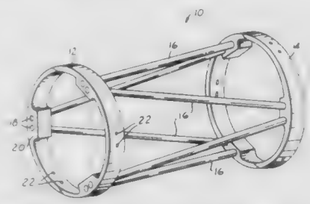
LIGHTWEIGHT OPTICAL BENCH AND METHOD OF FABRICATING SAME

Jason M. Wakugawa, Rolling Hills Estates, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 1, 1990, Ser. No. 590,708

Int. Cl.[5] G02B *5/00, 7/18*

U.S. Cl. 359—896 **36 Claims**



1. A lightweight optical bench for holding one or more optical elements, comprising:

a pair of spaced apart end pieces upon which said optical elements may be mounted; and

a plurality of elongate connecting members rigidly connecting said end pieces in fixed relationship to each other,

at least certain of said end pieces or said connecting members being formed of silicon carbide.

5,058,994

LIQUID CRYSTAL APPARATUS

Tadashi Mihara, Kawasaki; Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa; Akira Tsuboyama, Sagamihara; Osamu Taniguchi, Chigasaki, and Yoshihiro Onitsuka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1988, Ser. No. 271,240

Claims priority, application Japan, Nov. 12, 1987, 62-287172; Jan. 6, 1988, 63-001531; Oct. 21, 1988, 63-266715
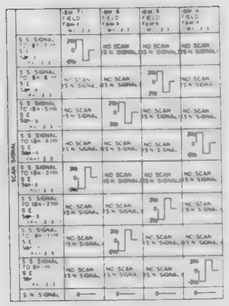
Int. Cl.[5] G02F *1/133;* **G09G** *3/36*

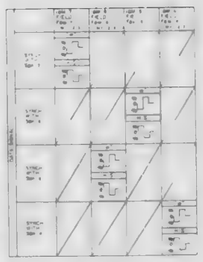
U.S. Cl. 359—56 **13 Claims**

1. A liquid crystal apparatus, comprising:

a) a liquid crystal device comprising an electrode matrix comprising a plurality of substantially parallel scanning electrodes and data electrodes intersecting said scanning electrodes, and a liquid crystal; and

b) drive means including first drive means for sequentially applying a scanning selection signal to said scanning electrodes two or more scanning electrodes apart between successively selected scanning electrodes in one vertical scanning and for effecting one picture scanning by scanning said scanning electrodes in at least two vertical scannings, wherein during a latter one of two consecutive





vertical scannings of the at least two vertical scannings in one picture scanning, the scanning selection signal is applied to scanning electrodes which are not adjacent to scanning electrodes to which the scanning signal is applied in a former one of the two consecutive vertical scannings, and second drive means for applying data signals in synchronism with the scanning selection signal.

5,058,995

PIXEL ELECTRODE STRUCTURE FOR LIQUID CRYSTAL DISPLAY DEVICES

Dora Plus, S. Bound Brook, N.J., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 15, 1990, Ser. No. 493,604

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—59 **14 Claims**

1. A liquid crystal pixel electrode structure comprising:

an insulative substrate;

a select line supported on said substrate;

an insulative material coating said select line;

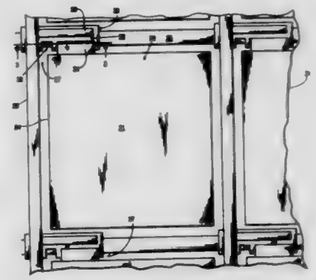
a region of undoped solid state material on said insulative material coating and overlaying a length of said select line;

a source area of doped solid state material overlaying a first portion of said region and extending beyond said select line;

a drain area of doped solid state material overlaying a second portion of said region and spaced from said source area to form a channel between said source and drain areas;

a data line in electrical contact with said source area and extending substantially perpendicular to said select line;

a pixel electrode having a first continuous uniterrupted side in electrical contact with said drain area and having a



second continuous uninterrupted side spaced from said data line; and

a notch passing through said doped and undoped solid state material and positioned between said data line and said drain area for preventing leakage between said data line and said drain area.

5,058,996

LIQUID CRYSTAL DISPLAY

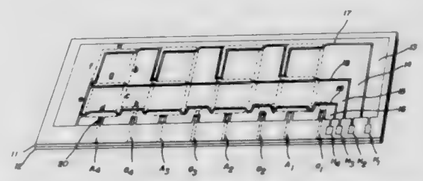
Isamu Washizuka, Soraku, and Yoshio Takeda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 870,210, Jan. 17, 1979, Pat. No. 4,533,213, which is a continuation of Ser. No. 582,079, Sep. 3, 1975, abandoned. This application Nov. 30, 1984, Ser. No. 676,873

Claims priority, application Japan, May 31, 1974, 49-62088

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—89 **29 Claims**



1. A plural digit liquid crystal display device comprising:

a plural digit liquid crystal display panel inlcuding a liquid crystal;

a plurality of first electrode groups disposed on one side of said display panel, each of said first electrode groups corresponding to and at least partially defining a respective digit of said plural digit display device and each of said first electrode groups including a plurality of segment electrodes;

a plurality of second electrode groups disposed on the side of the display panel opposite to the side on which said first electrode group is disposed, each of said second electrode groups corresponding to and at least partially defining a respective digit of said plural digit display device and each of said electrode groups including a plurality of segmental electrode portions;

said electrodes of said first electrodes groups being in exact correspondence with said electrode portions of said second electrode groups;

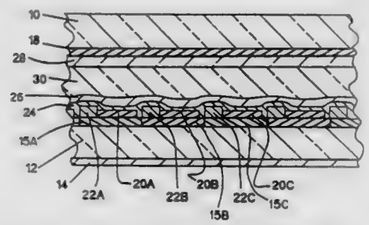
each of said first electrode groups being grouped into a plurality of said first sub-groups of segment electrodes,

said segment electrodes of said first sub-group of segment electrodes being commonly connected together;
each of said second electrode groups being grouped into a plurality of second sub-groups of segmental electrode portions which are different in configuration from said first sub-groups of segment electrodes, said segmental electrode portions of each second sub-group of segmental electrode portions being commonly connected together and corresponding second sub-groups of electrode portions of each of said second electrode groups foe each digit being commonly connected together;
means for sequentially applying phase-shifted drive signals of a predetermined cycle to the respective commonly connected segmental electrode portion sub-groups of said second electrode groups; and
means for applying segment drive signals, corresponding to data to be displayed, simultaneously to a selected segment electrpde sub-group of selected ones of said first electrode groups in synchronisim with and concurrently with said application of a respective phase-shifted drive signal to effect a data display.

5,058,997
TFT LCD WITH OPTICAL INTERFERENCE COLOR FILTERS

Jack A. Dickerson, Raleigh, and Neil M. Poley, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1989, Ser. No. 392,818
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—59 **18 Claims**



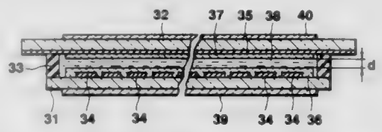
1. A color liquid crystal display device comprising:
two transparent plates defining a cavity, said cavity having a layer of liquid crystal material interposed between a common electrode layer and a plurality of pel electrodes;
each of said plurality of pel electrodes having a corresponding thin film transistor and an inorganic color filter element; and
said inorganic color filter element having a spacer layer interposed between two reflecting layers.

5,058,998
LIQUID CRYSTAL DISPLAY DEVIDE WITH A TWISTED ALIGNMENT STATE

Tetsushi Yoshida, Hachiooji; Tetsuo Muto, Tama; Toshiyuki Matsuda, Fussa, and Naoshige Sugimoto, Hino, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1989, Ser. No. 405,466
Claims priority, application Japan, Sep. 16, 1988, 63-231766
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—63 **18 Claims**

1. A liquid crystal device comprising:
a first substrate having a plurality of first electrodes arranged thereon;
a second substrate having at least one second electrode arranged thereon, said second electrode facing said first electrodes, said second substrate being connected to said first substrate by means of a seal member to face said first substrate with a predetermined gap therebetween;
first aligning means for covering at least parts of surfaces of said first electrodes and at least a part of a surface of said first substrate and aligning molecules of a liquid crystal homogeneously in a first direction;
second aligning means for covering at least a part of a surface of said at least one second electrode and at least a part of a surface of said second substrate and aligning molecules of said liquid crystal homogeneously in a second direction differing 0° to 90° from said first direction toward a predetermined first rotational direction, as viewed in a traveling direction of transmitting light;
a nematic liquid crystal disposed between said first and second substrates, and having an optical anisotropy Δn,

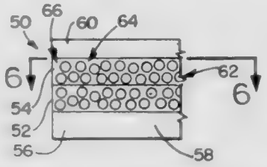


with respect to light having a wavelength of 540–550 nm, of 0.12 or below, a positive dielectric anisotropy Δε, a dielectric ratio Δε/ε⊥ of 1.0 or below, expressed by ratio of a dielectric anisotropy Δε to a dielectric constant ε⊥ normal to a molecular axis, and a retardation Δn·d of greater than 0.4 μm and less than 1.0 μm, expressed by a product of said optical anisotropy Δn and a liquid crystal thickness d, said nematic liquid crystal being twisted 180° to 270° between said first and second aligning means in said first rotational direction as viewed in said traveling direction of said transmitting light; and
a pair of polarizing plates disposed outside a layer of said nematic liquid crystal.

5,058,999
LIQUID CRYSTAL DEVICE HAVING DISTINGUISHING MEANS

Frederick Davis, 1253 Arlington Rd., Livermore, Calif. 94550

Continuation-in-part of Ser. No. 72,360, Jul. 18, 1987, Pat. No. 4,952,033. This application Jul. 24, 1989, Ser. No. 384,252
The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—43 **14 Claims**



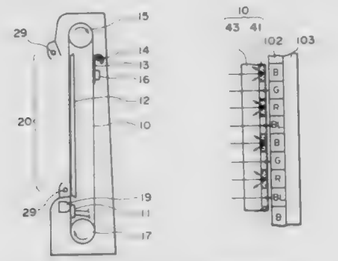
1. A liquid crystal device comprising at least two thermochromic means for providing an optical response with respect to temperature, at least part of a plurality of said thermochromic means being positioned in overlying relationship, and wherein the temperature ranges of optical response of said at least two thermochromic means being different, and distinguishing means for distinguishing the temperature range in which the device is operational, said distinguishing means comprising a patterned arrangement of at least one of said thermochromic means.

8. A device for providing an optical response indicative of the temperature of an object, comprising:
first and second thermochromic layers having different optically responsive temperature ranges and being superimposed over one another and located proximate such object; wherein said layers are optically cooperative to form different respective visual images over different temperature ranges.

5,059,000
IMAGE FORMING MEDIUM AND IMAGE FORMING APPARATUS USING SAME

Shuzo Kaneko, Yokohama; Akihiro Mouri, Atsugi; Kazuo Isaka, Tokyo; Kazuo Yoshinaga, Machida; Toshikazu Ohnishi, Atsugi; Yomishi Toshida; Yutaka Kurabayashi, both of Yokohama, and Takeo Eguchi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 281,760, Dec. 9, 1988, abandoned. This application Jun. 11, 1990, Ser. No. 535,978
Claims priority, application Japan, Dec. 10, 1987, 62-310848; Dec. 11, 1987, 62-312146; Dec. 11, 1987, 62-312147; Dec. 11, 1987, 62-312148; Dec. 24, 1987, 62-325392; Dec. 28, 1987, 62-329917; Dec. 29, 1987, 62-336125
Int. Cl.[5] G02F *1/13*; G09G *3/18*; G01D *15/10*
U.S. Cl. 350—351 **10 Claims**

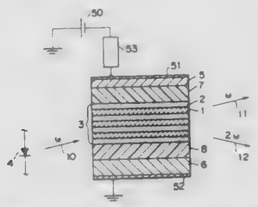


1. An image display apparatus, comprising:
a planar color filter comprising a plurality of color filter elements with at least two colors disposed in a layer, at least one surface of said layer being uncovered.
an image forming medium having an image forming layer comprising a polymer liquid crystal capable of forming an image comprising a transparent part and an opaque part depending on a change of temperature thereof, at least one surface of the image forming layer being uncovered, and
a moving means for moving the image forming medium relative to the color filter to a display position where the uncovered surface of the image forming layer and the uncovered surface of the layer of the color filter elements are opposite to each other with an air layer disposed therebetween.

5,059,001
NON-LINEAR OPTICAL DEVICE WITH QUANTUM MICRO HETERO STRUCTURE

Akira Shimizu, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 295,882, Jan. 12, 1989, abandoned. This application Nov. 28, 1990, Ser. No. 618,585
Claims priority, application Japan, Jan. 14, 1988, 63-7299
Int. Cl.[5] G02F *1/01*; H03F *7/00*; H01L *27/12*
U.S. Cl. 359—245 **16 Claims**



1. A non-linear optical device for generating light of an angular frequency 2ω from incident light of an angular frequency ω by means of a non-linear optical effect, comprising:
a substrate body comprising a material selected from the group consisting of a semiconductive material and an insulating material;
an embedded member embedded in said substrate body and comprising a direct-transition type material, selected from the group consisting of a semiconductive material and an insulating material, different from the material comprising said substrate body, wherein said embedded member has a band gap Eg satisfying a relation $Eg \approx 2h\omega$ in which $h = h/2\pi$ and h is Planck's constant, and has a size comparable to that of the Bohr radius of an exciton; and
means for providing each of an electron and a positive hole in said embedded member with an asymmetric potential in such a manner that the wave functions of said electron and said positive hole have mutually different centers of gravity from each other.

5,059,002
SECOND HARMONIC GENERATION WITH ACHIRAL, STRAIGHT-CHAIN CARBAMIC ACID DERIVATIVES

Cecil V. Francis, and George V. D. Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 21, 1989, Ser. No. 454,755
Int. Cl.[5] G02F *1/01*
U.S. Cl. 359—328 **8 Claims**



1. A second harmonic generator comprising a laser source of coherent light radiation at a fixed fundamental frequency, an acentrically crystalline, achiral, organic compound, means for directing the output radiation of the laser onto said compound, and output means for utilizing the second harmonic frequency, said compound being a straight-chain N-nitrophenyl carbamyl compound crystallized in a non-centrosymmetric configuration, said crystalline compound being transparent to radiation at said fixed fundamental frequency and said second harmonic frequency, and said crystalline compound being a derivative of an N-nitrophenyl carbamic acid such that the straight chain is linked to the carbamyl carbon atom by an oxygen atom or nitrogen atom.

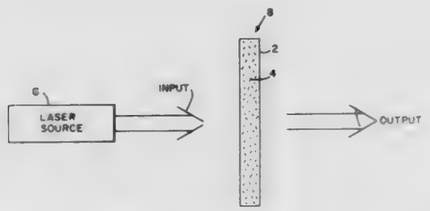
5,059,003
FAST OPTICAL SWITCH AND LIMITER USING QUANTUM SIZE EFFECT IN METAL GRAIN COMPOSITES

Joseph W. Haus, Schenectady; Nauzer Kalyaniwalla, Troy, both of N.Y.; Ramarao Inguva, and Charles M. Bowden, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1989, Ser. No. 392,866
Int. Cl.[5] G02F *1/01*
U.S. Cl. 359—243 **1 Claim**

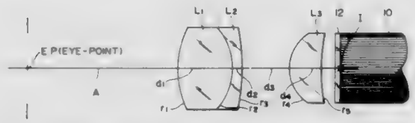
1. An optical switch and limiter for controlling the transmittance therethrough of laser radiation of wavelength of about 500 nanometers incident thereon, the transmittance being dependent on the level of intensity of the incident radiation, said switch and limiter comprising: a block of optically bistable dielectric host material, host material being of silica glass and at least 4 microcmeters thick and further positioned to receive the variable intensity radiation from a suitable laser source and

having randomly distributed therein silver particles of about 5



nanometers in radius, the distribution of said particles being in accordance with a ratio of particle volume to host material volume of approximately 10^{-3}.

5,059,004
EYEPIECE SYSTEM
Takeshi Matsumura, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Jun. 25, 1990, Ser. No. 542,925
Claims priority, application Japan, Jul. 28, 1989, 1-193998
Int. Cl.[5] G02B *9/18*
U.S. Cl. 359—646 **9 Claims**

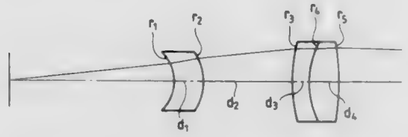


1. An eyepiece lens system having an eye point distance at least greater than the focal length f of the whole eyepiece lens system, said eyepiece lens system comprising;

a doublet consisting of a biconvex lens L_1 and a negative meniscus lens L_2 having a concave surface facing the eye point side in this order when viewed from the eye point side, and

a positive meniscus lens L_3 spaced a certain air space from said doublet and having a convex surface facing the eye point side, said air space being longer than the thickness of the center of said positive meniscus lens L_3.

5,059,005
OBJECTIVE LENS SYSTEM FOR MICROSCOPES
Yoshihiro Kawano, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Aug. 23, 1990, Ser. No. 571,407
Claims priority, application Japan, Aug. 24, 1989, 1-216141
Int. Cl.[5] G02B *3/00*
U.S. Cl. 359—654 **16 Claims**



1. An objective lens system for microscopes comprising a plurality of lens units including a first lens unit arranged at the foremost location and having a positive refractive power, and using at least one radial GRIN lens satisfying the following condition (1):

$$0<\nu_{1d} \quad (1)$$

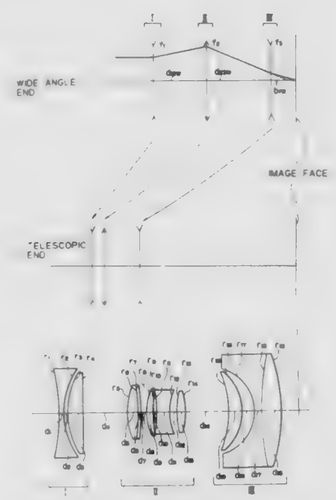
wherein the reference symbol $\nu_{1d}=N_{1d}/(N_{1F}-N_{1C})$, N_{1d}, N_{1F} and N_{1C} being the coefficients of the second order of the refractive index distribution formula for the d-line, F-line and C-line respectively shown below:

$$n_d(r)=N_{0d}+N_{1d}r^2+N_{2d}r^4+$$

$$n_C(r)=N_{0C}+N_{1C}r^2+N_{2C}r^4+$$

$$n_F(r)=N_{0F}+N_{1F}r^2+N_{2F}r^4+$$

5,059,006
COMPACT ZOOM LENS
Shuichi Kikuchi, Yokohama, and Masami Itoh, Tokyo, both of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan
Filed Dec. 19, 1990, Ser. No. 630,286
Claims priority, application Japan, Dec. 22, 1989, 1-333653; Dec. 25, 1989, 1-336029; Oct. 11, 1990, 2-272937
Int. Cl.[5] G02B *15/177*
U.S. Cl. 350—426 **10 Claims**



1. A compact zoom lens comprising:

a first lens group having a negative focal length f_1;

a second lens group having a positive focal length f_2; and

a third lens group having a negative focal length f_3;

the first, second and third lens groups being sequentially arranged from an object side of the zoom lens to an image side thereof;

the first to third lens groups being moved on the object side while the mutual distances between the first, second and third lens groups are changed to perform a zooming operation from a wide angle side to a telescopic side;

said third lens group being constructed by positive, negative and positive lenses sequentially arranged from the object side to the image side such that the negative and positive lenses respectively constituting the second and third lenses are joined to each other; and

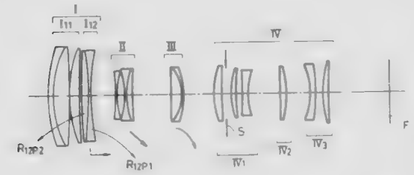
said focal lengths f_1, f_2, f_3 and a focal length f_w of an entire lens system at a wide angle end of the zoom lens satisfying the following conditions,

$$0.3<|f_3|/|f_1|<1.0 \quad (i)$$

$$1.2<|f_1|/f_w<2.3 \quad (ii)$$

$$0.9<|f_3|/f_w<1.4 \quad (iii)$$

5,059,007
INTERNALLY FOCUSING ZOOM LENS
Tsunefumi Tanaka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 13, 1990, Ser. No. 492,589
Claims priority, application Japan, Mar. 17, 1989, 1-65633
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—676 **8 Claims**



1. An internally focusing zoom lens having an optical axis comprising:

a first lens group having a positive refractive power, said first lens group consisting of a front lens sub-group that has a positive refractive power and a rear lens sub-group that has a negative refractive power and is disposed on an image plane side of said front lens sub-group, said rear lens sub-group further comprising a positive lens with one convex surface that is located on the image plane side thereof and a negative lens with two concave surfaces, said rear lens sub-group being adapted to move along the optical axis of said zoom lens for focusing;

a second lens group having a negative refractive power, said second lens group being moved along the optical axis of said zoom lens for zooming;

a third lens group which is moved along the optical axis for zooming; and

a fourth lens group having a positive refractive power,

wherein said first, second, third and fourth lens groups are disposed on the optical axis in that order with said first lens group being disposed closest to an object.

5,059,008
WIDE ANGLE BEAM STEERER USING TRANSLATION OF PLURAL LENS ARRAYS
Kevin M. Flood, East Pikeland Township, Chester County, and William J. Cassarly, Upper Merion Township, Montgomery County, both of Pa., assignors to General Electric Company, King of Prussia, Pa.
Filed Mar. 26, 1990, Ser. No. 498,525
Int. Cl.[5] G02B *26/08, 3/10*
U.S. Cl. 359—196 **17 Claims**

1. A beam steering arrangement for a plurality of sources of beams of electromagnetic radiation arrayed with a preselected source-to-source spacing, comprising:

a first lens array, said first lens array including a first plurality of lenses, said lenses of said first lens array being arrayed with a lens-to-lens spacing which corresponds to said preselected source-to-source spacing, the lenses of said first lens array being selected to be one of converging and diverging lenses, for generating output beams from the lenses of said first lens array, which output beams include diverging beam portions;

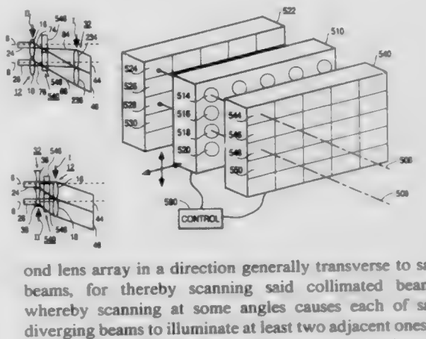
a second lens array, said second lens array including a plurality of lenses, which plurality may equal said first plurality, said lenses of said second lens array being converging lenses, for, when illuminated by diverging beams, collimating said diverging beams to produce collimated output beams;

first mounting means coupled to said first lens array for holding said first lens array to intercept said beams from said sources, for thereby generating said diverging beam portions from said first lens array;

second mounting means coupled to said second lens array for holding said second lens array to intercept said diverging beam portions for thereby generating said collimated output beams from said second lens array;

first translating means coupled to said second mounting means and said second lens array for translating said second lens array in a direction generally transverse to said beams, for thereby scanning said collimated beams, whereby scanning at some angles causes each of said diverging beams to illuminate at least two adjacent ones of said output lenses, thereby resulting in reduction in peak amplitude of said collimated beams; and

second translating means coupled to said first mounting means for translating said first mounting means and said first lens array in a direction generally parallel to said transverse direction, for scanning said output beams of said first lens array so that each of said output beams of said first lens array substantially illuminates only one of said lenses of said second lens array.



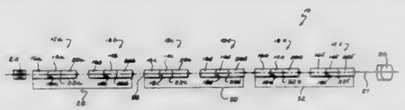
5,059,009
ENDOSCOPE RELAY LENS
Harry R. McKinley, Southampton, Mass., assignor to McKinley Optics, Incorporated, Southampton, Mass.
Filed Apr. 12, 1990, Ser. No. 507,877
Int. Cl.[5] G02B *17/00, 3/04*
U.S. Cl. 359—435 **11 Claims**

1. A relay lens for transmitting an optical image, that comprises:

(a) a center lens that is spherical, so that radii of curvature of the opposed ends of the center lens are one-half of the axial length of the center lens;

(b) two identical end lenses affixed to opposed ends of the center lens, the end lenses and center lens forming a cylinder, each of said end lenses having an axial length that is

equal to or greater than one-half its diameter, so that the relay lens is symmetrical about a plane passing through the



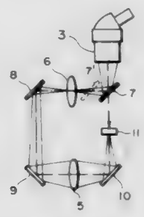
center of the center lens perpendicular to an axis passing through the centers of the opposed end lenses.

5,059,010

OPTICAL SYSTEM AND AN OPTICAL ATTACHMENT FOR A MICROSCOPE INCLUDING A FIELD LENS, A RELAY LENS, AND FOUR MIRRORS

Kazuo Yomoda, Kamisato, Japan, assignor to Nissho Optical Co., Ltd., Saitama, Japan

Continuation of Ser. No. 417,414, Oct. 5, 1989, abandoned. This application Aug. 20, 1990, Ser. No. 569,482
Claims priority, application Japan, Oct. 5, 1988, 63-251533
Int. Cl.[5] G02B *21/18*
U.S. Cl. 359—372 **2 Claims**



1. A microscope system comprising a microscope having an objective and an optical attachment in combination with said microscope, said optical attachment comprising:
a relay lens (**5**);
a field lens (**6**); and
at least first through fourth mirrors forming a square, the first mirror (**7**) being disposed on an optical path between said microscope (**3**) and an object (**11**), said first mirror being displaceable to a position outside of the optical path between said microscope and the object, said relay lens being disposed between the third mirror (**9**) and the fourth mirror (**10**), said field lens being disposed between the first mirror (**7**) and the second mirror (**8**), said field lens further being set on an image erected by said relay lens, and wherein the objective of said microscope is set so as to focus on an image erected by said field lens.

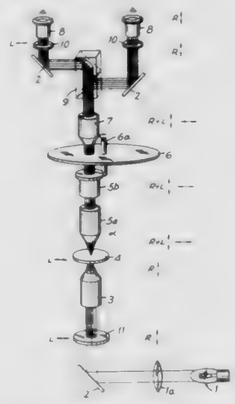
5,059,011

APPARATUS FOR THE RELATIVE INCREASE OF DEPTH SHARPNESS AND IMPROVEMENT OF RESOLVING POWER OF MAGNIFYING SYSTEMS, PARTICULARLY MICROSCOPES

Istvan Stuber, Nagyenyed u. 16, H-1123 Budapest; Geza Nagy, Jozseg Attila u. 135, H-1195 Budapest, and Peter Petrak, Istenhegyi ut 20/c, H-1126 Budapest, all of Hungary

Continuation of Ser. No. 140,387, Jan. 4, 1988, Pat. No. 4,927,253. This application Mar. 15, 1990, Ser. No. 493,972
Int. Cl.[5] G02B *21/06, 21/14, 21/20*
U.S. Cl. 359—375 **12 Claims**

1. Apparatus for increasing the depth sharpness and resolving power of magnifying systems, comprising:
a first primary magnifier;
a first secondary magnifier;
an illuminating system for producing the image of an object to be viewed, wherein said illuminating system emits electromagnetic radiation with a wavelength corresponding to that of visible light;
an image-forming layer disposed in the optical path between the first primary magnifier and the first secondary magnifier in the image plane of the first primary magnifier and in the object plane of the firs secondary magnifier, said layer being formed by independent particles dispersed in a medium having an index of refraction different from that of said particles, said image-forming layer being displaceable in said image plane;



a second primary magnifier, where said first and second primary magnifiers produce, at different angles on said image-forming layer, first and second images of the object to be viewed; and
a second secondary magnifier, where said first secondary magnifier projects said first image for viewing by a first eye of a viewer, and said second secondary magnifier projects said second image for viewing by a second eye of said viewer.

5,059,012

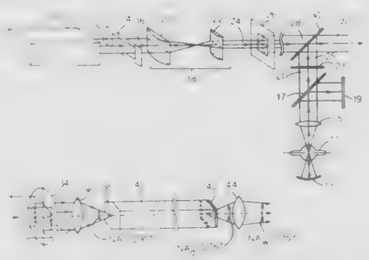
Patent Not Issued For This Number

5,059,013

ILLUMINATION SYSTEM TO PRODUCE SELF-LUMINOUS LIGHT BEAM OF SELECTED CROSS-SECTION, UNIFORM INTENSITY AND SELECTED NUMERICAL APERTURE

Kantilal Jain, 18 Algonquian Trail, Briarcliff Manor, N.Y. 10510

Filed Aug. 29, 1988, Ser. No. 237,347
Int. Cl.[5] G02B *7/00, 6/00*
U.S. Cl. 359—503 **22 Claims**



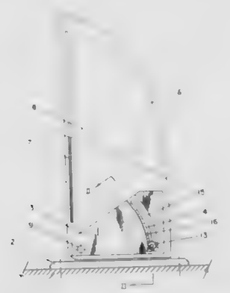
1. An illumination system for producing a light beam having selected characteristics of cross-section, uniform intensity distribution, self-luminance and numerical aperture, having a light beam source subsystem (**10–32**, FIG. 1A) for providing a light beam having characteristics differing from the characteristics selected and having a light beam characterization subsystem (**34,36,38,40,42,44**) for altering the characteristics of the light beam for selected cross-section shape, uniform intensity, and self-luminous emission into the selected numerical aperture, said light beam characterization subsystem comprising:
(a) beam shaping means (**34**, FIG. 1B), optically related to the selected cross-section shape, optically associated with said primary light source subsystem;
(b) focusing means (**36**) related to the selected numerical aperture, optically associated with said beam shaping means (**34**); and
(c) beam-shaper-uniformizer means (**40**), optically associated with said focusing means (**36**), of polygon-cylindrical configuration having internally reflecting surfaces, having input and exit planes, having its length related to its index of refraction and to the selected number of internal reflections to accomplish the selected uniformization.

5,059,014

EXTERNAL REARVIEW MIRROR FOR MOTOR VEHICLES

Bernhard Mittelhäuser, Am Krähenberg, 3002 Wedemark 2, and Jan Schubert, Wedemark, both of Fed. Rep. of Germany, assignors to Bernhard Mittelhäuser, Wedemark, Fed. Rep. of Germany

Filed Aug. 15, 1990, Ser. No. 568,274
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1989, 3926892
Int. Cl.[5] G02B *5/08;* **B60R** *1/06*
U.S. Cl. 359—841 **6 Claims**



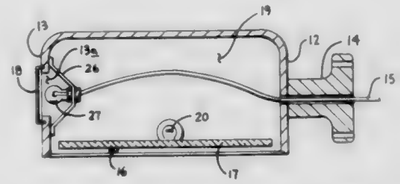
1. In an external rearview mirror for a motor vehicle, including a mirror housing that is open on one side to receive a mirror pane, and also includes a mounting that is secured on a side wall of said vehicle, with said mirror housing being pivotably mounted on said mounting in such a way as to be pivotable about an approximately vertical axis, and with said mirror housing, in a region thereof remote from said pivot axis, being provided with curved guide means, the improvement wherein:
said curved guide means includes teeth;
at least one driveable gear wheel is provided that meshes with said teeth in such a way that rotation of said gear wheel effects the pivoting of said mirror housing;
said mounting is provided with two pieces having respective inner faces that are disposed parallel to one another, with said curved guide means and said teeth thereof being provided on said inner faces;
said mirror housing is provided with a projection that, with little play, is disposed between said inner faces, with said at least one gear wheel being disposed on said projection; and
said projection accommodates an electric motor for driving said at least one gear wheel.

5,059,015

VEHICULAR SIGNAL MIRROR APPARATUS

Donald Q. Tran, 10629 Orr and Day Rd., Sante Fe Springs, Calif. 90670

Filed Jul. 20, 1990, Ser. No. 555,187
Int. Cl.[5] B60Q *1/00, 1/26;* **B60R** *1/06;* **G02B** *7/18*
U.S. Cl. 359—844 **3 Claims**



1. A vehicular signal mirror apparatus comprising:
a housing, the housing including a central cavity with a first side wall spaced from a second side wall;
a top wall overlying a bottom wall;
a support boss integrally mounted to the first side wall, the support boss including a through-extending aperture directed through the support boss with the aperture in communication with the central cavity;
a translucent lens mounted on the second side wall;
a concave reflective lens mounted within the housing and positioned interiorly of the second side wall in alignment with the translucent lens;
a second side wall opening defined between the translucent lens and the reflective lens;
a signal bulb mounted within the reflective lens;
an electrically conductive signal wire directed from the signal bulb in electrical communication therewith through the first side wall and the support boss;
the central cavity including an entrance opening;
a reflective mirror overlying the entrance opening, the reflective mirror adjustably mounted relative to the entrance opening;
wherein the entrance opening is defined by a continuous entrance edge, a forward framework overlies the entrance edge, the entrance edge is defined by a predetermined configuration, and the forward framework defines a configuration substantially equal to the predetermined configuration, and wherein the reflective mirror is mounted within the forward framework,
the forward framework includes an elongate hinge, the elongate is hinge mounted to a lower leg of the forward frame and to the bottom wall of the housing and further including a latch member mounted to an upper leg of the forward framework cooperative with a latch flange mounted to interior surface of the top wall of the housing, and wherein the mirror includes a pivot connection, the pivot connection includes a support rod mounted to the pivot connection and the support rod is mounted to the lower leg of the forward framework.

5,059,016

VANITY MIRROR ASSEMBLY

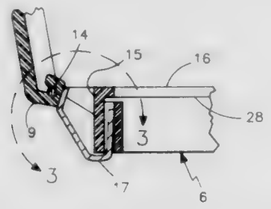
Abdi Lawassani, Pontiac, and Robert C. Feliks, Troy, both of Mich., assignors to United Technologies Automotive, Dearborne, Mich.

Filed Aug. 9, 1990, Ser. No. 564,904
Int. Cl.[5] G02B *7/18*
U.S. Cl. 359—871 **6 Claims**

5. A vanity mirror assembly comprising:
a mirror frame, including a plurality of circular pivot axles secured to one side of said frame wherein the central axis of said axles is parallel to the one side of said frame, and a plurality of cored bosses secured to the one side and located coincident with the axles, said mirror frame further

including a means for attaching the mirror to said mirror frame including a plurality of fixed exterior tabs extending out from a first interior mirror frame wall and a plurality of spaced pliable tabs extending out from a second interior wall opposite the first interior wall;

a protective cover, including a plurality of pivot arms at-



tached to one edge of said cover, wherein said arms each include a semi-circular open socket for receiving a corresponding axle therein, and a cam surface; and

a plurality of "U" shaped band-type springs, one arm of each spring being received in one of said cored bosses, and wherein the other arm of each spring presses against the cam surface of the corresponding pivot arm

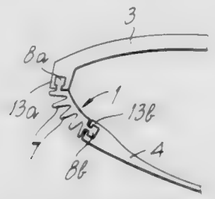
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5,059,017

HINGE STRUCTURE, PARTICULARLY FOR SPECTACLE FRAMES

Antonio Bennato, Feltre Di Alano Di Piave, Italy, assignor to Moda Solaris S.p.A., Pederobba, Italy

Filed May 31, 1990, Ser. No. 531,271
Claims priority, application Italy, Dec. 21, 1989, 82628 A/89
Int. Cl.[5] G02C *5/22*
U.S. Cl. 351—121 **8 Claims**



8. Hinge for spectacle frames which comprise a lens holding front frame portion (**2**) and a temple (**4**) and which define an outwardly facing surface and an inwardly facing surface, said hinge being constituted by at least one spring-loadable elastically compressible bellows-like element (**1**), said bellows-like element having a first end and a second end, said first end being at least temporarily connectable to said front frame portion and said second end being at least temporarily connectable to said temple, said bellows-like element defining a ribbing (**6**) from which a plurality of wings (**7**) extend substantially perpendicular thereto, said ribbing being arrangeable at the inwardly facing surface of said spectacle frames and thereby said wings extend to the outwardly facing surface thereof, and in an uncompressed condition of said elastically compressible bellows-like element, said ribbing having a substantially curved configuration, said ends of said bellows-like element being provided with substantially T-shaped lugs (**8***a*,**8***b*) for slide-fitting into correspondingly shaped longitudinal seats (**11**,**12**) provided at respective ends of said front frame portion and said temple.

5,059,018

COLORED CONTACT LENS

Shinji Kanome, Kawana, and Masuji Ichihara, Aichi, both of Japan, assignors to Menicon Co., Ltd., Nagoya, Japan

Filed Jun. 14, 1990, Ser. No. 537,952
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—162 **15 Claims**



1. A contact lens, comprising:

a contact lens body having a substantially circular colored area at a central portion, and an annular transparent portion surrounding said substantially circular colored area, said substantially circular colored area being sufficiently large to completely cover a pupil of an eye and to extend at least partially over an iris of the eye; and

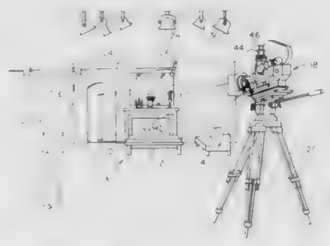
indicia disposed in said substantially circular colored area.

5,059,019

LASER FRAMEFINDER

Greg R. McCullough, 1113 Poinsettia Dr., West Hollywood, Calif. 90046

Filed May 21, 1990, Ser. No. 526,287
Int. Cl.[5] G03B *29/00*
U.S. Cl. 352—131 **31 Claims**



1. A photographic apparatus for indicating a field of view of an image recording device comprises the combination of:

a) a camera

b) a light emitter having a light source mounted therein for enabling the projection of a beam of light and means for attaching said light emitter to said camera;

c) a pattern generating means for altering said beam of light attached to the recording apparatus and disposed between said light emitter and said camera so as to generate a light pattern;

d) means for aligning the projected light pattern with said field of view of said image recording device so as to indicate objects lying within an image recorded by the device;

whereby said pattern generating means provides a projection of said light pattern along an optical axis independent of the axis of said image recording device; yet aligned with said field of view;

e) a collimating lens assembly mating with an aperture in said pattern generating means and having means for aligning said beam of light with the pattern generator;

f) a fiber-optic cable interposed between two connectors

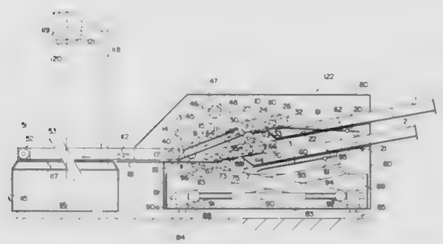
thereon for propagating said beam of light along the full length of the fiber and means for attaching a first end of said fiber-optic cable to said light emitter and attaching an opposing second end thereof to said collimating lens.

5,059,020

DEVICES FOR AUTOMATICALLY FEEDING AN IMAGE PROJECTOR

Jean A. Géniès, Quartier St Clair - Lieu dit Peigros, 83640 St Zacharie, France

Filed Dec. 10, 1990, Ser. No. 625,312
Claims priority, application France, Dec. 22, 1989, 89 17400
Int. Cl.[5] G03B *23/02*
U.S. Cl. 353—122 **10 Claims**



1. A device for automatically feeding an image projector including a horizontal platform on which document sheets to be projected are to be placed one after another, the device comprising:

a top cassette and a bottom cassette which are superposed and parallel, each cassette being capable of containing a stack of sheets, each cassette being fitted with electrically controlled means for lifting the stack of sheets contained in the cassette;

forwards and reverse motorized means situated above the front end of each cassette for driving a sheet out from said cassette and for returning a sheet into said cassette;

a fixed horizontal plate which is positioned in line with said platform of the projector and which is fitted with both-way motorized drive means situated above said fixed horizontal plate and extending over said platform; and

a motor-driven switching plate whose rear edge is fixed on a transverse hinge shaft situated slightly in front of the leading edge of the top cassette, which switching plate normally occupies a first position where its leading edge is situated slightly above said fixed horizontal plate so that a sheet coming from said fixed horizontal plate passes beneath the switching plate and goes towards the bottom cassette, and is capable of occupying a second position where its leading edge penetrates into openings in said fixed horizontal plate such that a sheet coming from said fixed horizontal plate moves onto said switching plate and goes towards the top cassette.

5,059,021

APPARATUS AND METHOD FOR CORRECTING FOR DRIFT IN PRODUCTION OF OBJECTS BY STEREOLITHOGRAPHY

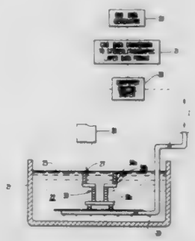
Stuart T. Spence, South Pasadena, and Harry L. Tarnoff, Van Nuys, both of Calif., assignors to 3D Systems, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 182,830, Apr. 18, 1988. This application Nov. 8, 1988, Ser. No. 268,907
Int. Cl.[5] G01J *1/00*
U.S. Cl. 356—121 **20 Claims**

1. An apparatus for compensating for drift in position in a production of a three-dimensional object by stereolithography from a medium capable of solidification when exposed to a reaction means operating in a prescribed manner upon a working surface of the medium to provide successive adjacent solid laminae for forming the object including selective exposure of the medium to the reaction means between a first time and a second time, comprising:

(a) a sensor capable of detecting the reaction means and mounted at a predetermined location fixed with respect to a point on the working surface of the medium;

(b) positioning means for directing the reaction means based on use of positioning means information so that the sensor detects the reaction means, and selected positioning means information corresponding to the location of the sensor is determined;



(c) means for comparing the selected positioning means information at the second time to reference positioning means information obtained from directing the reaction means at the sensor at the first time occurring before the second time in order to determine drift of the positioning means between the first and second times; and

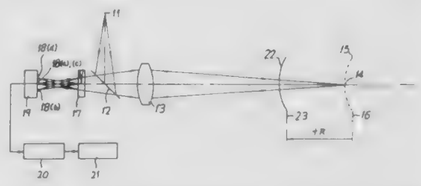
(d) means for compensating the positioning means for drift in position after the second time so that selective exposure of the medium after the second time occurs in registration with the selective exposure of the medium between the first and second times.

5,059,022

DEVICE FOR MEASURING RADIUS OF CURVATURE AND A METHOD THEREOF

Kaneyasu Ookawa, Kanagawa, Japan, assignor to Olympus Optical Company Limited, Japan

Filed Nov. 13, 1989, Ser. No. 435,716
Claims priority, application Japan, Nov. 11, 1988, 63-285357
Int. Cl.[5] G01B *9/00*
U.S. Cl. 356—124 **8 Claims**



1. A device for measuring radius of curvature of a surface, comprising a point light source, a beam splitter, an imaging optical system for forming a point image, an attaching member for a surface to be tested, a light receiving element disposed behind the beam splitter for detecting the point image formed by light reflected from the surface, a prism for splitting a pupil by four comprising four wedge prisms each having wholly different directions and arranged between the light receiving element and the beam splitter, an image instrumentation section for detecting respective barycenter or center position of four point images formed on the light receiving element by split light flux with the pupil splitting prism and for calculating the displaced amount or the amount proportional to a dis-

VOL 1131 ISS 4 OCT 22 1991 UMI

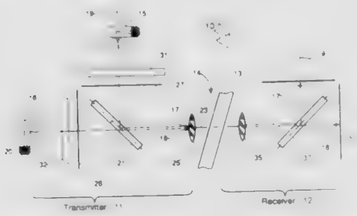
placed difference of the point image from the reference image plane, and a display section for displaying the calculated result.

5,059,023

ANGULAR DEVIATION MEASUREMENT SYSTEM

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 23, 1989, Ser. No. 374,121
Int. Cl.[5] G01N *21/88*; G01B *11/30*
U.S. Cl. 356—239 **6 Claims**



1. A system for measuring angular deviation in a transparency, comprising:

(a) a source of incoherent light;

(b) means for projecting first and second light beams from said source, and spatial filter means for defining said first and second light beams as crossed respective first and second line images of said source, and for directing said first and second beams along an optical axis through a sample region;

(c) encoding means disposed along said optical axis between said source and said sample region for encoding said first and second light beams with respective different optical characteristics;

(d) collimating means disposed along said optical axis between said encoding means and said sample region for collimating said first and second light beams for projection thereof through said sample region as respective first and second projected sample beams;

(e) first and second optical detectors;

(f) means for receiving said first and second projected sample beams and for focusing said first and second projected sample beams onto respective said first and second optical detectors; and

(g) decoding means disposed between said focusing means and said respective first and second optical detectors for separating the projected first beam from the projected second beam for projection onto respective said first and second optical detectors, for detecting shifts in positions of respective said first and second line images resulting from angular deviation characteristic of a specific area of a transparency disposed in said sample region.

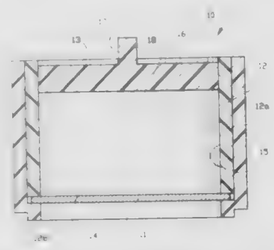
5,059,024

TRISTIMULUS COLOR EVALUATION SAMPLE CUP

J. Benjamin Esquivel H., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 4, 1990, Ser. No. 504,521
Int. Cl.[5] G01N *21/03*; G01J *3/46*
U.S. Cl. 356—246 **14 Claims**

1. An improved tristimulus sample cup generally comprising an optically transparent bottom portion, a side wall portion and an open mouth top, the bottom portion and the side wall portion defining a cavity suitable for holding a granular or pelletized sample within the cavity, the side wall portion having a surface exposed to cavity, wherein the improvement comprises that the side wall surface exposed to the cavity has



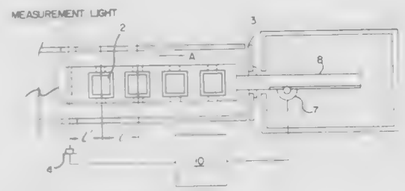
a diffuse reflectance at 580 nanometers of more than twenty percent.

5,059,025

SPECTROPHOTOMETER

Osamu Ando, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 29, 1990, Ser. No. 500,972
Claims priority, application Japan, Mar. 31, 1989, 1-82461
Int. Cl.[5] G01J *3/02*; G01N *21/13*
U.S. Cl. 356—319 **2 Claims**



1. A spectrophotometer, comprising:

a shielded sample chamber;

a plurality of sample cells;

a movable sample holder for supporting said plurality of sample cells, wherein said holder has a plurality of sampling through-holes, corresponding to said sample cells and spaced apart from one another in the direction of movement at a predetermined interval, to allow light to flow into and out of said sample cells, and at least one position detecting through-holes, having a diameter significantly less than said sampling through-holes, wherein said position detecting through-hole is spaced from one of said sampling through-holes at said predetermined interval;

a light source means for projecting light through said sampling and position detecting through-holes;

a detecting means for detecting light projected through said sampling through-holes and said detecting through-holes; and

a control means, receiving an output of said detecting means, for controlling movement of said holder in response to said detecting means.

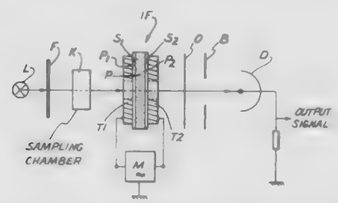
5,059,026

INTERFEROMETRIC DEVICE HAVING A CONTROLLABLE FABRY-PEROT

Michael Zoechbauer, Oberursel, Austria, assignor to Hartmann & Braun AG, Frankfurt, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 551,419
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1989, 3923831
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 **6 Claims**

1. Interferometric device for the detection of substances having a periodic or quasiperiodic absorption structure of their absorption spectrum including a source of radiation, a chamber containing the material to be investigated and interference filter means with a thickness that determines the spacing of interference transmission lines and a downstream detector, the improvement comprising,



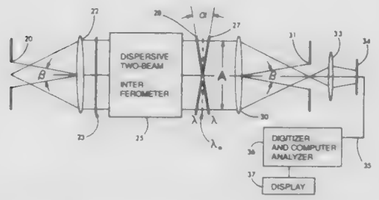
the filter being a thermooptically tunable filter including a plate made of thermooptical active material, and semi-transparent mirror surfaces in the said radiation path; and means for variably controlling the temperature of said filter.

5,059,027

SPATIAL HETERODYNE SPECTROMETER AND METHOD

Fred L. Roesler, and John Harlander, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 11, 1989, Ser. No. 336,068
Int. Cl.[5] G01B *9/02*; G01J *3/45*
U.S. Cl. 356—346 **33 Claims**



1. A spatial heterodyne spectrometer for analyzing electromagnetic radiation from a source of such radiation, comprising:

(a) a dispersive two beam interferometer constructed to receive a single input beam and produce an output beam composed of two beams formed from the input beam and recombined such that the angle between the wavefronts of the two beams for each wavelength in the beams is directly related to the deviation of the wavelength from a selected null wavelength λ_o at which there is zero angle between the recombined wavefronts;

(b) input means for receiving the radiation from the source and producing a collimated beam which is provided as the input beam to the interferometer;

(c) an imaging detector;

(d) means for imaging the output beam from the interferometer onto the imaging detector; and

(e) means for taking the Fourier transform of the intensity of the image across the imaging detector to determine the spatial frequency content in the image,

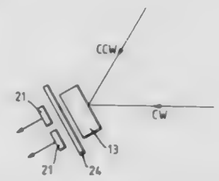
wherein the interferometer, the input means and the means for imaging are all formed of reflective elements.

5,059,028

RING LASER GYROSCOPE HAVING MEANS FOR MAINTAINING THE BEAM INTENSITY

Roger Hill, Midlothian, Scotland, assignor to GEC Ferranti Defence Systems Limited, Stanmore, United Kingdom

Filed Feb. 1, 1990, Ser. No. 472,372
Claims priority, application United Kingdom, Feb. 3, 1989, 8902381
Int. Cl.[5] G01C *19/66*
U.S. Cl. 356—350 **2 Claims**



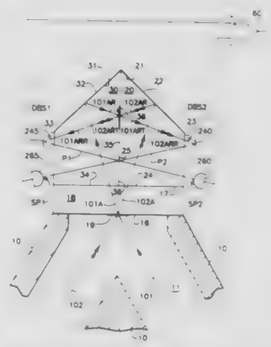
1. A ring laser gyroscope of the gas discharge type which includes means for producing two counter-rotating beams of laser radiation around a closed path defined by at least three mirrors, a first one of said mirrors being partially transmissive of the radiation in each beam, first detector means responsive to the laser radiation passing through such first mirror to derive electrical signals dependent upon the rotational forces acting upon the ring laser gyroscopes about a predetermined axis, a second one of said mirrors being totally reflecting and being associated with transducer means operable to vary continuously the position of said second mirror, second detector means responsive to laser radiation in each of said beams to derive alternating-current signals to control the transducer means, control means responsive to the direct-current component of the output of said second detector means to maintain the intensity of the laser beams at a constant value, and an optical filter placed in the path of radiation directed onto said second detector means and arranged to filter out radiation generated by the gas discharge.

5,059,029

RADIATION-HARDENED RLG READOUT

James W. Bergstrom, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1988, Ser. No. 260,089
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **7 Claims**



1. A readout apparatus for a ring laser gyro wherein a laser gain medium in combination with a plurality of wave reflecting means are positioned to form an optical ring path with pro-

vides at least two counter-propagating waves traveling about said ring path, the readout apparatus comprising:

one of said wave reflecting means being partially transmissive and capable of transmitting a first wave which is a portion of one of said counter-propagating waves impinging thereon, and transmitting a second wave which is a portion of the other one of said counter-propagating waves also impinging thereon;

first optical means for receiving said first and second waves, and optically combining said first and second waves for establishing a first light beam exiting from a first surface of said first optical means, said first light beam exiting from said first optical means having a first beam size and having electromagnetic characteristics representative of a first selected function of said two counter-propagating waves;

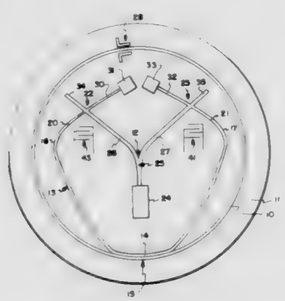
first concave mirror means having a selected radius of curvature and focal point, said first concave mirror (i) being positioned to receive said first light beam impinging thereon, and (ii) causing said first light beam to be redirected along a first light path through said first optical means and exiting therefrom reduced in beam size relative to said first beam size at a first selected point outside said first optical means.

5,059,030

PASSIVE RING RESONATOR LASER ANGULAR RATE SENSOR

Steven M. Arnold, 5929 Dupont Ave., South, Minneapolis, Minn. 55419

Filed Dec. 13, 1984, Ser. No. 681,399
Int. Cl.[5] G01C *19/64;* **G01B** *9/02*
U.S. Cl. 356—350 **10 Claims**



1. A passive ring resonator laser angular rate sensor comprising:

ring resonator means including a first thin film waveguide for providing a closed loop propagation path;

coupling means having first and second end ports for

(i) receiving first and second coherent waves injected into said first and second end ports, respectively,

(ii) coupling a first portion of said first wave into said ring resonator in a first direction, and passing out of said second end port substantially the remaining portion of said first wave, and

(iii) coupling a first portion of said second wave into said ring resonator in a second direction, and passing out of said first end port substantially the remaining portion of said second wave;

a first thin film crossed-channel waveguide having first and second channels which cross at an angle to define a first crossed-channel area, said first channel including first and second channel ends, and said second channel including first and second channel ends;

means for injecting a third coherent wave of frequency f_a into said first end of said first channel;

first frequency shifting means for launching a first acoustic wave of a first frequency f_1 across said first cross-channel-area to produced said first wave having a frequency f_a+f_1 exiting from said second end of said second channel; and

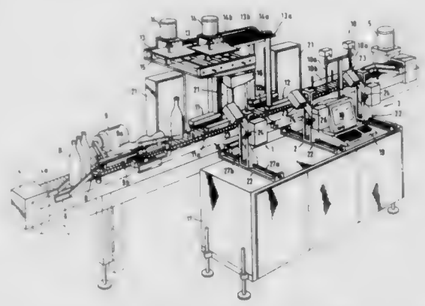
first detector means for providing a first output signal representative of the intensity of said remaining second wave portion following a path exiting from said first end port, through said second end of said second channel, and emerging from said first end of said second channel.

5,059,031

HIGH-SPEED OPTICAL TESTING OF OBJECTS

Jean-Pierre Hamel, Maisons-Laffitte, and Pierre Lamborot, Paris, both of France, assignors to Saint-Gobain Cinematique et Controle, Gennevilliers, France

Filed Jan. 23, 1990, Ser. No. 468,532
Claims priority, application France, Jan. 26, 1989, 89 00936
Int. Cl.[5] G01N *21/90;* **B07C** *5/342*
U.S. Cl. 356—428 **43 Claims**



1. A method of optically testing objects that are at least partially transparent comprising the steps of:

translating a line of the objects in a first direction through a first inspection station comprising a source of optical radiation on one side of the line of objects and an optical receiver on the other side of the line of objects, said source providing a substantially luminous intensity over an area greater than that of one of said objects;

directing onto a photosensitive means in said optical receiver radiation from said source that has passed through an object in said line, said photosensitive means extending in a second direction substantially parallel to said first direction;

generating from the radiation incident on said photosensitive means an electric signal representative of the radiation incident thereon by repetitively and rapidly scanning the photosensitive means electronically in said second direction and by more slowly sweeping the radiation that passed through the object across the photosensitive means in a third direction at an angle to the first direction.

5,059,032

FREE STANDING FLUXMETER FIXTURE WITH DUAL INFRARED PYROMETERS

Russel T. Mack, Lake Jackson, and Ronald W. Rieger, Waco, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 16, 1990, Ser. No. 569,108
The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.
Int. Cl.[5] G01K *17/00, 7/00;* **G01J** *5/10*
U.S. Cl. 374—29 **28 Claims**

1. An apparatus for measuring heat flow from a surface comprising:

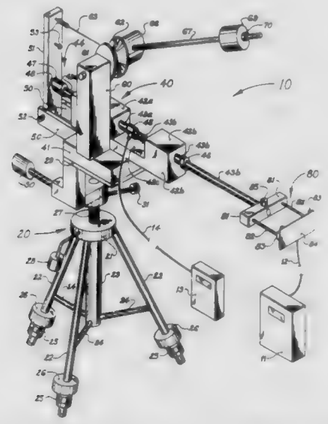
a. a means for measuring heat flow from a surface;

b. a means for contacting the heat flow measuring means to the surface;

c. a means for applying a relatively constant and repeatable force on the heat flow measuring means in contact with the surface;

d. instrumentation means remote from a test site for monitoring and reading an applied force;

e. a first infrared pyrometer for measuring the surface temperature;



f. a second infrared pyrometer for measuring surrounding atmospheric temperature; and

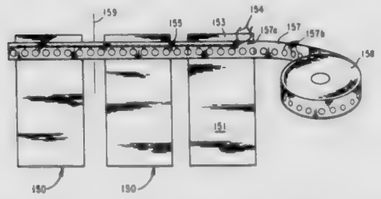
g. a free standing support means for supporting elements a, b, c, d, e and f.

5,059,033

DETACHABLE HANDLE FOR SHIPPING SACKS

Mark E. Branson, Shelbyville, Ind., assignor to KCL Corporation, Shelbyville, Ind.

Continuation-in-part of Ser. No. 334,696, Apr. 6, 1989, Pat. No. 4,902,140. This application Dec. 15, 1989, Ser. No. 450,948
The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.
Int. Cl.[5] B65D *33/06, 33/16*
U.S. Cl. 383—13 **5 Claims**



1. A shipping sack having side walls defining a mouth through which the contents of the sack may be removed, comprising:

a non-reclosable stitched separable closure fastener across and closing the mouth of the sack andd adapted for manual separation to remove said stitched fastener and open the mouth of the sack; and

a rip tape for facilitating removal of said stitched fastener, said rip tape being removably joined to the sack by said stitched fastener and including a plurality of spaced apart holes therethrough sized for receiving the fingers of a user and manually graspable to carry the sack when said rip tape is joined to the sack;

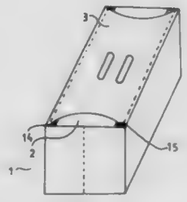
said rip tape having a manually accessible free end which is adapted to be manually pulled to remove said rip tape, whereby said stitched fastener is separated from the shipping sack as said rip tape is removed.

5,059,034

CARRIER BAG

Günter Schulz, Untere Kellerstr. 64a, and Theo Schmidt, Kiefernstr. 7, both of D-8550 Forchheim, Fed. Rep. of Germany

Filed Feb. 8, 1989, Ser. No. 308,344
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3805012
Int. Cl.[5] B65D *33/10*
U.S. Cl. 383—21 **1 Claim**



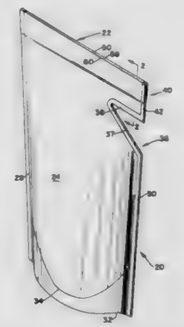
1. A carrier bag comprising a closed top surface having an outside surface and an inside surface, a handle in the area of said closed top surface, said handle being of a single-piece construction having outside and inside surfaces and two opposite long ends, the two opposite long ends being folded inwardly and the outside surface of said handle in the area of the long edges being sealed directly to the outside of the top surface, the inside surface of the handle being made from a material which does not seal to itself at a temperature required for sealing the outer surface of the handle to the top surface, while the outside surface of the handle is made from a material that seals to the top surface at said temperature.

5,059,035

FLEXIBLE POUCH WITH FOLDED SPOUT

Knud N. Kristensen, Fair Haven, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

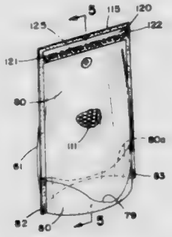
Filed Feb. 12, 1990, Ser. No. 478,882
Int. Cl.[5] B65D *33/38*
U.S. Cl. 383—33 **17 Claims**



1. A flexible pouch comprising first and second opposed wall means joined at a top edge and closed together around their periphery to define a chamber for storing a product, said wall means having wall portions thereof forming spout means by which the product may be poured from said chamber, seal means normally closing said spout means, at least one of said wall portions forming said spout means and including a fold assembly adjacent said top edge extending transversely the

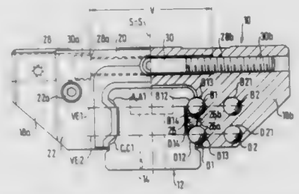
length of said spout means and maintained in a substantially folded condition when said spout means is sealed, said fold assembly expanding and causing said spout means to open upon removal of said seal means.

5,059,036
VENTED POUCH ARRANGEMENT AND METHOD
Cecil Richison, Hudson, Wis., and Gary M. Bell, Crystal, Minn., assignors to Kapak Corporation, St. Louis Park, Minn.
Filed Apr. 27, 1990, Ser. No. 516,111
Int. Cl.[5] B65D *33/01*
U.S. Cl. 383—61 **7 Claims**



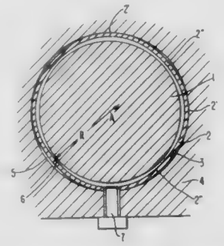
1. A pouch arrangement comprising:
(a) first and second, opposed, panel sections;
(i) each of said panel sections having a first end edge, a second end edge and opposite side edge portions extending between said first and second end edges;
(ii) said panel sections being sealingly secured to one another along at least a portion of said panel section side edge portions, to form a pouch construction having an interior and side seals;
(b) a base gusset member;
(i) said base gusset member being oriented in extension between said first and second panel sections, along said second end edges thereof, to close an end of said pouch construction interior;
(ii) said base gusset member being constructed and arranged to support said pouch arrangement in a standing orientation, upon said base gusset member, at least when said pouch arrangement is partially filled with material;
(c) a gas filter arrangement oriented in one of said panel sections; said gas filter arrangement being constructed and arranged for gas flow outwardly therethrough, in response to a greater than ambient gas pressure within said pouch arrangement when closed; said gas filter arrangement comprising a pore in said first panel section having a porous member mounted thereover; and,
(d) closure means comprising a rib and trough closure arrangement extending between said opposite side edge portions of said panel sections;
(i) said gas filter arrangement pore being positioned a first distance from said rib and trough closure arrangement and toward said panel section second end edges; said first distance being about 2% to about 30% of a distance between said rib and trough closure arrangement and said panel section second end edges, and in a portion of first panel section slanted toward said second panel section, when said pouch arrangement is partially filled and oriented in the standing orientation; and,
(ii) said gas filter arrangement being oriented for communication with said pouch construction interior, when same is closed by said closure means.

5,059,037
ANTI-FRICTION BEARING FOR LINEAR MOVEMENTS
Ernst Albert, Sand, Fed. Rep. of Germany, assignor to Deutsche Star GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Sep. 10, 1990, Ser. No. 580,193
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1989, 3931397
Int. Cl.[5] F16C *31/06*
U.S. Cl. 384—45 **15 Claims**



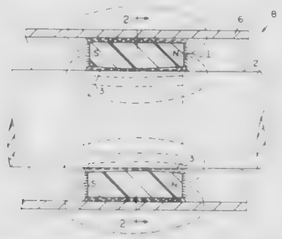
1. An anti-friction bearing for linear movements comprising a bearing body (**10**) which is guided movable on a rail (**12**) in a longitudinal direction thereof, the bearing body (**10**) having legs (**18***a*, *b*) accommodating at least a part of the rail (**12**) between them and a web (**20**) connecting these legs (**18***a*, *b*) integrally to one another, at least one rolling body cycle (A–D) being allocated to each of the legs (**18***a*, *b*), each of the rolling body cycles (A–D) having a load-transmitting rolling body row (**A1–D1**) in engagement with a load-receiving running path (**B13**, **D13**) of the respective leg (**18***a*, *b*) and with a running path (**A12**, **B12**, **C12**, **D12**) at a side face of the rail (**12**), said side face being adjacent to said leg (**18***a*, *b*), the load-transmitting rolling body rows (**A1–D1**) being preloadable between the respective allocated running paths (**B13**, **D13**; **A12–D12**) and this preload being adjustable by preloading means (**30**), characterized in that the preloading means (**30**) are disposed in the range of the web (**20**) with a direction of effect substantially perpendicular to the longitudinal direction of the rail (**12**) and substantially parallel to a connecting plane (**VE1**, **VE2**) of two load-transmitting rolling body rows (**A1–D1**) lying at either side of the rail (**12**), and which are designed to upset the web (**20**) in the direction of effect.

5,059,038
AERODYNAMIC PLAIN BEARING
Bernd Domes, Wehrheim, Fed. Rep. of Germany, assignor to BMW Rolls-Royce GmbH, Fed. Rep. of Germany
Filed Jun. 29, 1990, Ser. No. 546,294
Int. Cl.[5] F16C *17/02*
U.S. Cl. 384—104 **7 Claims**



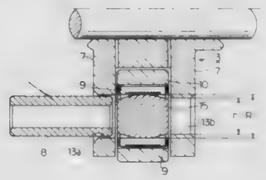
1. An aerodynamic plain bearing for a shaft (**1**) rotating at a high rotation speed, with a bearing housing (**4**) having a cylindrical bore (**3**) and with a tangentially attached elastic damping structure (**2**), said damping structure (**2**), comprising a single piece, thin-walled, resilient sleeve of polygonal section with a substantially uniform wall thickness and a low coefficient of friction, which simultaneously acts as a damping element and as a spring element, said resilient sleeve being supported at a plurality of circumferentially spaced points (**2'**) in said bore (**3**) of said bearing housing (**4**) thereby forming a plurality of running gaps (**6**) with said shaft (**1**) and a plurality of damping gaps (**5**) with the bore (**3**) of said bearing housing (**4**).

5,059,039
MAGNETIC BEARING BUSHING
Rune Adolfsson, Varberg, Sweden, assignor to SKF Nova AB, Goteborg, Sweden
Filed Jun. 19, 1990, Ser. No. 540,148
Claims priority, application Sweden, Jun. 21, 1989, 8902244
Int. Cl.[5] F16C *33/10, 27/02*
U.S. Cl. 384—133 **5 Claims**



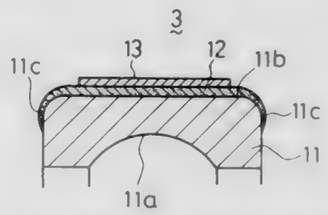
1. A bearing bushing incorporating a sleeve (**1**) of elastic material forming the sliding surface of the bearing, a shaft (**2**) mounted in said sleeve (**1**) and a lubricant in the form of a magnetic fluid (**3**) between the sliding surface of the sleeve (**1**) and the shaft (**2**), whereby the sleeve (**1**) on the inner side has axial channels (**7**), characterized therein, that the sleeve (**1**) consists of a magnetized material with recesses (**9**) on the outer side for circulation of oil and that the lubricant (**3**) is a magnetic oil.

5,059,040
UNIT FOR INSTALLING A ROLLER BEARING
Satoshi Kadokawa, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1990, Ser. No. 577,542
Claims priority, application Japan, Sep. 5, 1989, 1-228209
Int. Cl.[5] F16C *41/04*
U.S. Cl. 384—448 **2 Claims**



1. A unit for installing a roller bearing, comprising:
an outer race for said roller bearing being of a cylindrical shape and having an inner peripheral surface;
a plurality of bearing rollers for said roller bearing positioned within said outer race along said inner peripheral surface thereof to define a space therebetween; and
a resilient spacer having an axial length which is inserted under compression into said space to support said plurality of rollers;
said spacer including a roller support section for spacer attitude stabilization and a guide surface section with an axial end provided at at least one side of said roller support section, and being shaped in a free condition such that said guide surface section has an axial length equal to or greater than 1/6 of said axial length of said spacer and an outer diameter which becomes gradually smaller toward said axial end and that said roller support section has a length equal to or greater than 1/6 of said axial length of said spacer for spacer attitude stabilization to support each of said plurality of rollers at least at opposite ends of said roller support section.

5,059,041
ELECTRICAL INSULATING BEARING
Tomoki Watanabe; Yukio Nitta; Kouichi Sato, all of Kokubunji; Yoshiya Fuse, and Koji Kinoshita, both of Kobe, all of Japan, assignors to Railway Technical Research Institute, Tokyo and Bando Chemical Industries, Ltd., Kobe, both of, Japan
Filed Sep. 11, 1990, Ser. No. 580,289
Claims priority, application Japan, Sep. 12, 1989, 1-236384
Int. Cl.[5] F16C *19/50, 27/06*
U.S. Cl. 384—476 **4 Claims**



1. An electrically insulating bearing having an outer ring, an inner ring and a plurality of roller elements therebetween, said outer ring comprising:
a metallic outer ring body made of a conductive material and having a path for said rolling elements and an outer surface;
an insulating thin film made of an elastic polymer material having electrical insulation properties, said insulating thin film covering said outer surface of said outer ring body; and
a thin metallic plate made of an electrically conductive material, said thin metallic plate being disposed on said insulating thin film, having a width narrower than the width of said insulating thin film so as to expose side portions of said insulating thin film on opposite sides of said thin metallic plate, and having a fixed outer diameter such that said outer ring has a fixed outer diameter.

5,059,042
BEARING RETAINER FOR A VACUUM CLEANER MOTOR
Keith J. Grierson, Lexington, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 2, 1990, Ser. No. 459,680
Int. Cl.[5] F16C *43/00*
U.S. Cl. 384—537 **15 Claims**

1. A bearing retainer for retaining a bearing assembly within a housing comprising:
an annular body for insertion within said housing,
said annular body including an upstanding wall defining an interior area for receiving said bearing assembly and for spacing said bearing assembly from said housing,
said upstanding wall having a plurality of raised portions for retaining said bearing assembly within said housing,
said upstanding wall having a distal edge for engaging an interior wall of said housing, and

said upstanding wall including at least one retainer tab projecting from said upstanding wall to maintain said



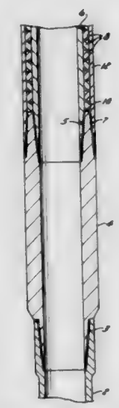
annular body in a predetermined location within said housing.

5,059,043

BLAST JOINT FOR SNUBBING UNIT

Karl F. Kuhne, Spring, Tex., assignor to Vermont American Corporation, Louisville, Ky.

Filed Apr. 24, 1989, Ser. No. 342,242
Int. Cl.[5] F16L *11/12*
U.S. Cl. 285—45 **5 Claims**



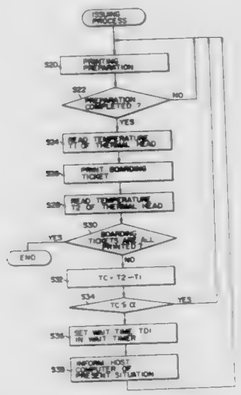
1. A blast joint, comprising:
a lower tubing member;
an upper tubing member;
a plurality of wear-resistant rings concentrically located around the upper tubing member, the rings abutting each other;
an outer casing surrounding at least some of the rings;
a substantially cylindrical adapter for providing a seal between the outer casing and the lower tubing member below the rings, the substantially cylindrical adapter being in threaded, sealing engagement with the lower tubing member and defining inner threads and outer threads at its upper end;
wherein the inner threads of the adapter sealingly engage the lower portion of the upper tubing member; the outer threads of the adapter sealingly engage the lower portion of the outer casing; and the rings are supported by the adapter between the upper tubing member and the casing.

5,059,044

THERMAL PRINTER THAT DETECTS RATE OF TEMPERATURE INCREASE

Kazuaki Takaishi, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1989, Ser. No. 365,089
Claims priority, application Japan, Jun. 15, 1988, 63-147381
Int. Cl.[5] B41J *2/375*
U.S. Cl. 400—120 **7 Claims**



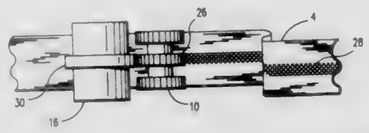
1. A ticket issuing device comprising:
a thermal printing head;
detecting means for detecting the temperature of said thermal head; and
print control means including:
means for driving said thermal head to repeatedly print ticket information on paper a number of times, corresponding to the number of tickets to be issued;
means for issuing the printed paper as tickets; and
means for deriving the rate of temperature increase of said thermal head corresponding to a temperature difference between temperatures detected by said detecting means before and after each printing operation, and for delaying the start of a next printing operation, and for delaying the start of a next printing operation, to allow said thermal head to cool, when it is detected that the derived rate of temperature increase has exceeded a reference value which is higher than a rate of temperature increase which will be attained in the printing operation at normal printing density.

5,059,045

RIBBON CARTRIDGE HAVING HYBRID INK RE-INKING

James M. Mrvos; Jeffrey H. Paterra, and Agnes K. Zimmer, all of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Jun. 25, 1990, Ser. No. 542,616
Int. Cl.[5] B41J *32/00*
U.S. Cl. 400—197 **6 Claims**



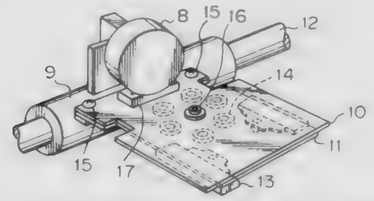
1. A cartridge ribbon for impact printing comprising an endless ribbon carrying an ink having dye as its only coloring matter, a source of ink having pigment as its primary coloring matter, and means to re-ink said ribbon within said cartridge during normal by applying said ink from said source to a band of said ribbon less in width than the width of said ribbon, said band constituting an area directly impacted for impact printing, said ribbon having initial amounts of said ink having dye as its only coloring matter in sufficient loading to print bar code detectable by infrared sensing.

5,059,046

PRINTER CARRIAGE ASSEMBLY HAVING THERMAL DISSIPATING MEANS

Jiro Tanuma, and Shinichi Katakura, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 862,799, May 13, 1986, abandoned. This application Feb. 12, 1990, Ser. No. 478,563
Claims priority, application Japan, May 16, 1985, 60-102751
Int. Cl.[5] B41J *25/304*
U.S. Cl. 400—320 **8 Claims**



1. A carriage assembly for a printer, said carriage assembly comprising:
a printed circuit board having opposite first and second planar surfaces;
a thermally conducting plate having opposite first and second planar surfaces, said first planar surface of said thermally conducting plate being disposed along said first planar surface of said printed circuit board;
drive elements disposed on said second planar surface of said thermally conducting plate and electrically connected to said printed circuit board;
a plurality of space motor coils disposed on said second planar surface of said thermally conducting plate and electrically connected to said printed circuit board; and,
a print head mounting means for mounting a print head thereon, said print head mounting means being fixedly mounted to said second planar surface of said printed circuit board.

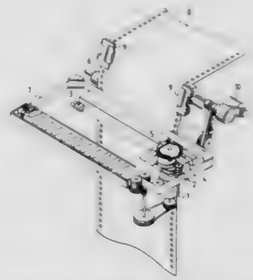
5,059,047

APPARATUS FOR CONTROLLING REVERSING DURATION OF HAMMER BANK IN SHUTTLE PRINTER

Takashi Nakamura; Masao Miyasaka; Toshio Hiki; Youichi Hujita, and Kazunari Kodama, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1990, Ser. No. 478,854
Claims priority, application Japan, Feb. 10, 1989, 1-32243
Int. Cl.[5] B41J *19/30, 3/00*
U.S. Cl. 400—322 **10 Claims**

1. A shuttle printer comprising:
a hammer bank accommodating therein a plurality of dot hammers juxtaposed along a print line and carrying out printing on a printing sheet while shuttling back and forth along the print line;
a shuttle motor rotatable at a predetermined rotational speed;
a cam having a predetermined configuration and being driven by said shuttle motor, said cam imparting a shutting motion to said hammer bank;
sheet feeding means for feeding a printing paper in a direction perpendicular to the print line, the printing paper being fed a predetermined amount during reversal of said hammer bank, the hammer bank reversing duration being preset to Tx which is determined by the configuration of said cam, the hammer reversing duration being changed to Ts for feeding the printing paper the predetermined amount within Ts, wherein Ts is longer than Tx;



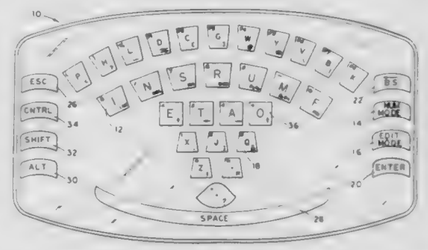
means for exerting a braking force to said shuttle motor at the beginning of the hammer bank reversing duration; and
means for exerting an acceleration force to said shuttle motor immediately after said hammer bank turns around, the braking force and the acceleration force being exerted to said shuttle motor so that Tx is substantially equal to Ts.

5,059,048

KEYBOARD FOR USE WITH ONE HAND HAVING CURVILINEAR AND LINEAR ROWS OF KEYS

Mark J. Sirkin, 362 Clinton St., Apt. 3, Brooklyn, N.Y. 11231

Filed Oct. 17, 1989, Ser. No. 422,590
Int. Cl.[5] B41J *5/10*
U.S. Cl. 400—486 **14 Claims**



1. A keyboard allowing data input with only one hand, wherein said keyboard is comprised of at least five rows of keys, and wherein:
(A) said keyboard is comprised of at least about 26 data entry keys suitable for inputting at least one kind of alphanumeric information, wherein:
a. said data entry keys comprise keys of at least three different shapes,
b. each of said rows of keys consists of data entry keys of the same shape, and
c. said data entry keys are arranged in non-alphabetic order;
(B) said keyboard is comprised of at least 11 multiple-function data entry keys suitable for inputting at least two kinds of alphanumeric information,
(C) said keyboard is comprised of at least 3 command keys,
(D) said keyboard is comprised of an upper section and a lower section, wherein:
a. said upper section is comprised of a top, curvilinear row of keys, and a second, curvilinear row of keys,
b. said top, curvilinear row is comprised of more keys than said second, curvilinear row,

c. said lower section is comprised of a top, substantially linear row of keys, a second, substantially linear row of keys, and a third, substantially linear row of keys,
d. said top, substantially linear row is comprised of more keys than said second, substantially linear row,
e. said second, substantially linear row is comprised of more keys than said third substantially linear row, and
f. said second, curvilinear row is comprised of more keys than said top, substantially linear row, and
(E) said lower section is comprised of a bottom row which consists of one key.

5,059,049

DEVICE FOR ADJUSTMENT OF A PRINTER

Manfred Rosenthal, Kirchen-Freusburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1990, Ser. No. 487,674
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1989, 3906611
Int. Cl.[5] B41J *11/48*
U.S. Cl. 400—605 **25 Claims**



1. A device for adjusting a printer comprising a printer head, a paper feed tractor, a paper path switch and a plurality of pressure/friction paper feed roller pairs, each pair having pressed and unpressed states, from a paper sheet transport mode to an endless paper transport mode, and conversely, said device comprising a separate adjustment assembly detachably connected to the printer head and arranged so that upon external actuation acts upon the tractor, the paper path switch and at least one pair of rollers to place the printer in a selected paper sheet and endless paper transport mode.

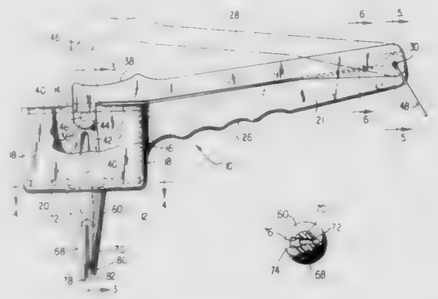
5,059,050

DISPENSER FOR HAIR TREATMENT SOLUTIONS

Michael E. Guglielmo, 28 Cressida Dr., Old Bridge, N.J. 08857

Continuation of Ser. No. 192,149, May 10, 1988, abandoned.
This application Jul. 31, 1990, Ser. No. 560,817
Int. Cl.[5] B05C *17/01, 17/015;* **B43K** *5/06;* **A45D** *24/22*
U.S. Cl. 401—171 **17 Claims**

1. A device for applying treatment solution to strands of hair comprising:
an open top reservoir for holding a supply of treatment solution, said reservoir having straight side walls, the upper ends of which terminate in a common plane, and a bottom wall joining the lower ends of said walls, an opening being provided in said bottom wall;
a handle projecting laterally from one side of said side walls of said reservoir adjacent said upper end thereof, said handle being angled relative to said side wall whereby the free end of said handle is located above the common plane, said handle having a series of concave finger rests on the lower surface thereof;
a pin carried by said handle adjacent the free end thereof;
a lever arm pivotally connected at one end to said handle at the free end thereof by means of said pin, the opposite end of said lever arm being located above said reservoir, said lever arm having a thumb rest on the upper surface thereof adjacent said opposite end;
a flat piston connected to said opposite end of said lever arm and slidably receivable in said reservoir; and



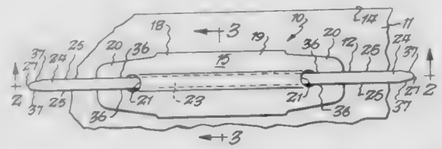
a dispensing nozzle detachably connected to the bottom wall of said reservoir, said nozzle having at least two tines defining therebetween a slot for reception of a group of hair strands and a through bore extending from the base of said slot communicating with said opening in said reservoir.

5,059,051

FASTENER DEVICE

Joseph T. Corey, Eggertsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Continuation of Ser. No. 276,872, Nov. 28, 1988, abandoned.
This application Dec. 17, 1990, Ser. No. 626,427
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—75 **15 Claims**



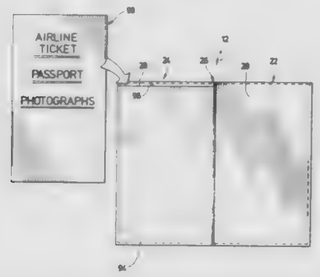
1. A unitary assembled fastener device adapted to be adhesively secured to a backing member comprising an overlay member of sheet material having an overlay central portion and overlay opposite end portions and an overlay upper surface and an overlay undersurface, an elongated strip-like prong member having a prong upper surface and a prong undersurface and a prong central portion and opposite prong end portions, said prong member being fabricated of metal wherein the metal itself has rounded side edges on both said prong central portion and on said opposite prong end portions, bonding means for securing said prong central portion in contiguous relationship to said overlay undersurface with said prong end portions extending beyond said overlay central portion and with said prong end portions being exposed, and adhesive means on said overlay undersurface for securing said overlay member to the backing member.

5,059,052

PORTFOLIO SYSTEM

Chester W. Casper, Greenwood, Ind., assignor to T.H.E. Business Products Corporation, Greenwood, Ind.

Filed Sep. 18, 1989, Ser. No. 408,565
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—80 R **15 Claims**



1. A pocket portfolio for holding materials in an organized manner, comprising
a wallet means including a first portion, a second portion, and a hinge portion, the first, second, and hinge portions including an interior and an exterior, and the hinge portion positioned for hingedly coupling the first and second portions, the wallet means being sized for being received in a suit coat interior pocket,
the first portion including a first flap member having three side edges coupled to the wallet to define a side-opening first pocket, a generally transparent second flap member disposed interiorly adjacent to the first flap member, the second flap member having two side edges coupled to the first flap member to define a top and side opening second pocket,
the second portion including a third flap member having three side edges coupled to the wallet to define a side opening third pocket, generally transparent fourth, fifth, and sixth flap members disposed interiorly of the third flap member, each of the fourth, fifth, and sixth flap members having three side edges attached to the third flap member to define, respectively, top opening fourth, fifth, and sixth pockets disposed in a top-to-bottom relation, and, a generally transparent seventh flap member disposed on the exterior of the second portion, the seventh flap portion having three side edges attached to the second portion for defining a seventh pocket,
a first tri-folded, information card having two series of perforations to define first, second, and third information card segments including a series of apertures for being received by a ringed information card binder separate from the wallet means, wherein the first pocket is sized for receiving the first tri-folded information card.

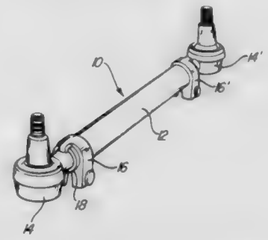
5,059,053

TUBE CLAMP WITH LOCATOR TAB

John A. Rose, Brighton, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.

Filed Jun. 28, 1989, Ser. No. 372,888
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—24 **5 Claims**

1. A tube clamp with a locator tab, comprising:
a cross tube having first and second internally threaded ends;
first and second threaded tie rod ends, said tie rod ends threadably engageable within said first and second threaded ends;
first and second clamps, said clamps coaxially positioned around said first and second threaded ends so as to frictionally engage said tie rod ends positioned therewithin, said clamps also having bolt-receiving apertures for mounting on said threaded ends; and
said clamps each further comprising opposed terminal ends each having inwardly-directed ears and a downwardly depending flange joined to the clamp body at a point diametrically opposed to a slot defined by a pair of opposed ears, said ears providing additional frictional engagement of said tie rod ends, said flange abutting an edge



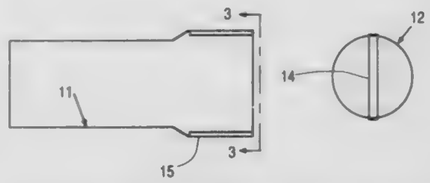
of said threaded ends to prevent said clamp from travelling axially along said cross tube, and slots defined in said threaded ends, said slots being frictionally compressed and in turn frictionally engaging said corresponding tie rod end, said slots further being of limited width to prevent axial slippage of said depending flanges, and a cantilevered locator tab, said tab connecting said downward flange with said clamp.

5,059,054

PROCESS FOR BONDING TUBING WITH POLYTETRAFLUOROETHYLENE GLASS REINFORCED TAPE

Daniel A. Del Campo, Thousand Oaks, Calif., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 15, 1989, Ser. No. 366,833
Int. Cl.[5] B29C *65/48;* **B62K** *19/22*
U.S. Cl. 403—13 **16 Claims**



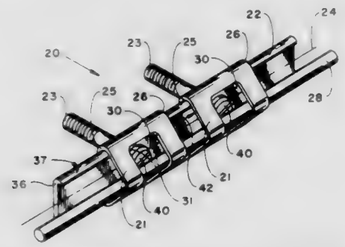
1. In a process for adhesively bonding a male tubular member to a hollow tubular female member which comprises slip-fitting said male member into said female member, wherein a portion of the interior of said female member is coated with a curable adhesive capable of forming a bond, and subsequently heating the resultant assembly to cure the adhesive, the improvement comprising placing a piece of polytetrafluoroethylene glass reinforced tape over one end of said male member prior to the slip fitting, which tape extends along sides of said male member, and subsequently slip-fitting said end into said

female member such that members are maintained in a desired alignment during the heating to cure the adhesive and forming a bond between the two members.

5,059,055
MECHANICALLY ATTACHED LINER HANGER ASSEMBLY

Peter B. DeGress, Jupiter, and Kenneth E. Harmon, North Palm Beach, both of Fla., assignors to United Technologies Corporaton, Hartford, Conn.

Filed Oct. 19, 1990, Ser. No. 600,634
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—24 **9 Claims**

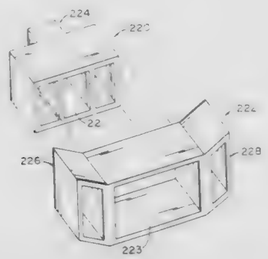


1. A hanger assembly for attaching a first component to a second component, the second component having a row of connecting tabs extending therefrom, each tab having a pin hole and each of the pin holes aligned with the other pin holes, said hanger assembly comprising:
a rail,
a plurality of hanger straps, each hanger strap encircling and contacting the rail,
means for fastening the rail to the first component, and,
means for attaching the straps to the second component.

5,059,056
EXTRUDED NODE

Vinod K. Banthia, Monroeville; Russell S. Long, Elizabeth Township, Allegheny County, and James D. Klingensmith, Allegheny Township, Armstrong County, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 320,250, Mar. 7, 1989, Pat. No. 4,988,230.
This application Dec. 31, 1990, Ser. No. 636,327
The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.
Int. Cl.[5] F16B *7/00, 1/00*
U.S. Cl. 403—170 **5 Claims**

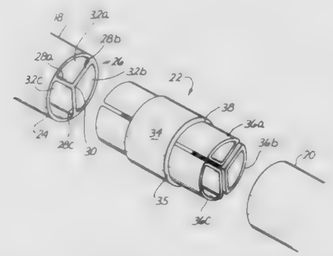


1. In a vehicle frame wherein end portions of a plurality of lineals are interconnected by nodes in a structural vehicular frame construction, the improvement comprising: a multipiece extruded, aluminum alloy node having a substantially hollow body and at least one hollow male member having spaced apart sidewalls extending from the body, said sidewalls integrally connected by an endwall, said sidewalls and endwall having a wall thickness less than about four millimeters, said male member projecting from the body at an oblique angle for assembly and bonding with female ends of said lineals through an interconnecting fit and through an auxiliary assembly means selected from the group consisting of welding, adhesive bonding and combinations thereof, said hollow body and hollow male member having parallel openings through the node in a longitudinal direction.

5,059,057
HIGH STRENGTH, THIN-WALLED, PLASTIC TUBES AND CONNECTOR COMBINATION AND METHOD OF FABRICATION

Andrew Graef, 731 N. Marengo, Pasadena, Calif. 91103

Filed Oct. 5, 1990, Ser. No. 593,098
Int. Cl.[5] F16B *7/00*
U.S. Cl. 403—298 **11 Claims**

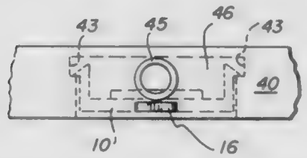


1. A high strength thin walled plastic tube and connector combination, said combination comprising:
A. a pair of thin walled tubular elements, each of said elements being comprised of a high strength linear aromatic polymer, said element having a predetermined external diameter, and a matrix of walls extending internally for the length of the element, each wall of the matrix extending radially inwardly from a predetermined axially extending line along the inside of the tubular element wall and joined with the other matrix walls along the element axis, thereby to provide internal support for the tubular element against bending, said matrix walls and the inside of the tube element wall defining a plurality of similar passageways within the tubular element; and
B. connector means for said tubular elements, said connector means also being formed of a similar high strength aromatic polymer to provide a short tubular section of the same predetermined external diameter as that of the tubular element, but said section having a thicker wall, said section further having a plurality of hollow projections corresponding in number to the number of passageways in the tubular element extending from each end of said section for a predetermined distance, each said projection conforming in its external shape and alignment with, and being of such size as to be insertable into and fit within the end of one of said passagways in one of said tubular elements, whereby said connector means, when brought into co-axial abutment with the end of each tubular element and with each of its projections coaligned with one of the passageways in said element, when each of said elements and said connector means are pushed together axially, all said projections are inserted into and slideably fitted within the correspondingly aligned passageways in the respective element to bring said short tubular section of the connector means into abutment with the ends of the tubular elements, thereby to connect both tubular elements through said connector means.

5,059,058
WIPER ASSEMBLY LATCH

Pierre Charet; Govelio R. Gonzalez, both of Miami, Fla., and John M. White, Dumfries, Va., assignors to Rally Manufacturing, Inc., Miami, Fla.

Filed Jul. 10, 1990, Ser. No. 550,748
Int. Cl.[5] B25G *3/18*
U.S. Cl. 403—322 **2 Claims**

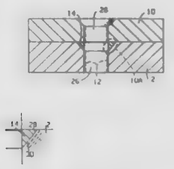


1. A latch assembly for connecting a pin connector to a wiper assembly having a main bridge portion including a longitudinal cavity therein bounded by a pair of sidewalls and connecting endwalls, and a transverse passageway for accommodating said pin connector intersection said cavity, said latch assembly comprising:
a pair of upstanding end portions capped by retainer means for retaining said upstanding ends within said cavity;
a flexible body portion connected between said upstanding end portions and including a centrally positioned pin retainer portion for engaging said pin when said pin is inserted into said transverse passageway, said body portion further including at least one wing portion extending laterally therefrom to a position extending beyond an outer surface of one of said sidewalls of said cavity so that said flexible body portion can be urged by manual manipulation of said wing portion to disengage said pin retainer portion from said pin as necessary.

5,059,059
CONICAL EXPANSION WASHER

Ronald L. Cox, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 348,872, May 5, 1989, Pat. No. 4,984,347.
This application Apr. 27, 1990, Ser. No. 515,583
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—408.1 **4 Claims**

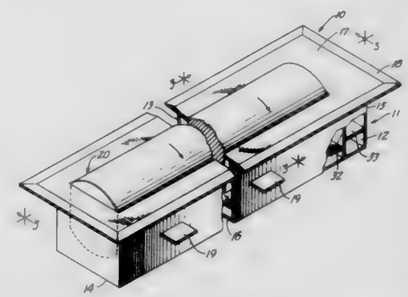


1. A composite structure, comprising:
a) a skin having a countersink in an outer surface thereof and a fastener hole extending through said skin beneath said countersink and in axial alignment therewith;
b) a conical washer which is interference fitted into said countersink in said skin and having an inner diameter in axial alignment with said fastener hole, whereby there are compressive stresses in said skin on a surface of said skin which is in contact with said conical washer;
c) a doubler positioned on top of said skin and said conical washer, said doubler having an additional fastener hole extending therethrough which is in axial alignment with said fastener hole and said inner diameter; and
d) a fastener which is interference fitted into said fastener hole, said conical washer inner diameter, and said additional fastener hole, whereby there are compressive stresses in said doubler, washer and skin on the surface of said skin, conical washer and doubler that are in contact with said fastener.

5,059,060
TRAFFIC CONTROL SYSTEM

Howard Steinhardt, 251 E. 51st St., New York, N.Y. 10022

Filed Jun. 28, 1990, Ser. No. 545,923
Int. Cl.[5] E01F *9/00*
U.S. Cl. 404—11 **9 Claims**



1. A traffic control apparatus for use in combination with a roadway having a paved surface, comprising
(a) an elongated housing structure disposed beneath said roadway; the major axis of said housing being perpendicular to the direction of traffic on said roadway;
(b) said housing having an upper wall disposed generally in the plane of said paved surface;
(c) said upper wall defining a generally rectangular opening;
(d) speed bump means on a shaft disposed in said housing for selective movement relative thereto between predetermined inactive and active positions;
(e) said speed bump means being elongated, and substantially the length of said opening;
(f) said speed bump means having a flat surface portion adapted to close said opening and to bridge the width of said opening in the plane of the paved surface;
(g) said speed bump means having a generally cylindrical portion adapted to close said opening and to bridge the width of said opening with a non-depressible projection above the plane of the paved surface;
(h) actuation means for selectively rotating said speed bump means between said active and inactive positions.

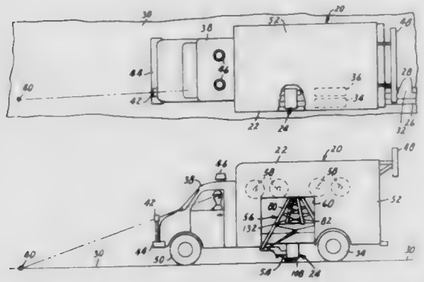
5,059,061
TRUCK MOUNTED PAVEMENT MARKING APPLICATOR

Heinrich F. Stenemann, and Louis F. Keller, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 14, 1990, Ser. No. 538,384
Int. Cl.[5] E01C *23/16*
U.S. Cl. 404—72 **12 Claims**

1. An apparatus for applying pavement-making tape to a roadway surface comprising:
a self-propelled steerable vehicle having a rear wheel mounted to one side of the vehicle for supporting the vehicle;
a first device carried by the vehicle, the first device including:
a plurality of feed mandrels mounted on the device for rotatably supporting and dispensing rolls of tape;
means for accumulating a variable length of tape from one of the mandrels of the plurality; and
a tape deposition mechanism situated adjacent the roadway

surface preceding the rear wheel of the vehicle and aligned with said rear wheel so that the pavement marking



tape is driven against the roadway by the rear wheel during forward motion of the vehicle.

5,059,062

CONCRETE PATH PAVER WITH REMOVEABLE SLIP-FORMING SCREED

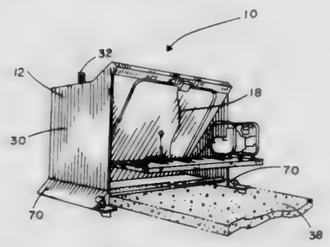
Pat Bresnahan, 3210 W. Woodhurst St., Lecanto, Fla. 32661

The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.

Filed Jun. 14, 1990, Ser. No. 537,690

Int. Cl.[5] E01C *19/42, 19/48*

U.S. Cl. 404—110 **7 Claims**



2. Apparatus for slip-forming concrete to form a path comprising in combination:

a box having a front wall extending downwardly through the box, and a rear wall extending downwardly at an angle through the box to a location above the front wall, and opposing side walls coupling the front and rear walls extending downwardly to define the closed box having an upper opened end for receiving concrete and a lower opened end with a vertically disposed opened mouth defined by the vertical edges of the side walls and the lower edge of the rear wall, with the lower opened end having a smaller cross-sectional area than the upper opened end; and

a screed for slip-forming the concrete, means for removably securing the screed at its edges to the side walls below the rear wall with the forward end of the screed being positioned at the opened mouth of the rear wall.

5,059,063

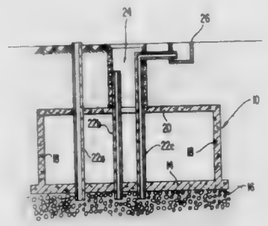
METHOD OF PROTECTING UNDERGROUND STRUCTURES IN GROUND LIABLE TO BE LIQUEFIED

Tadao Sugimoto; Shigeki Tsuchiyama, both of Nagoya; Makoto Hayakawa, Kariya; Yozo Goto, Tokyo; Tadao Koide, Suyama; Tamotsu Endoh, Yokohama; Makoto Toriihara, Iruma, and Joji Ejiri, Tokyo, all of Japan, assignors to Ohbayashi Corporation, Osaka and Chubu Electric Power Company, Incorporated, Aichi, both of, Japan

Filed Nov. 8, 1989, Ser. No. 433,206

Int. Cl.[5] E02B *11/00;* **E21D** *9/14*

U.S. Cl. 405—36 **6 Claims**



1. A method of protecting an underground structure such as an underground tunnel in ground which is liable to be liquefied, said method comprising the steps of:

forming a conglomerate layer of a predetermined thickness horizontally on base ground which easily liquefies;

forming on said conglomerate layer a bottom plate on which the underground structure is constructed;

providing one or more drainpipes, each said drainpipe having opposite first and second open ends, and each said open end having an opening area substantially equal to the cross-sectional area of the respective said drainpipe; and

arranging each of said one or more drainpipes such that said first open end thereof is positioned within said conglomerate layer, said second open end thereof communicates with one of the surface of the ground or the interior of the underground structure, and said drainpipe extends upwardly from said first open end thereof, through said bottom plate, to said second open end thereof;

whereby excessive pore water in the ground first is collected in said conglomerate layer, flows through said first open end of each said drainpipe and discharge through said second open end thereof to the surface of the ground or into said interior of said underground structure.

5,059,064

HORIZONTAL DEWATERING SYSTEM

Donald R. Justice, P.O. Box 458, Matlacha, Fla. 33909

Continuation-in-part of Ser. No. 324,700, Mar. 17, 1989, Pat. No. 4,927,292. This application May 21, 1990, Ser. No. 525,838

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] E02B *11/00, 13/00;* **B05B** *17/08*

U.S. Cl. 405—37 **20 Claims**

1. A water recovery system for maintaining a level of water in a body of water, said system comprising:

a body of water,

a sensor for sensing a level of water in said body of water,

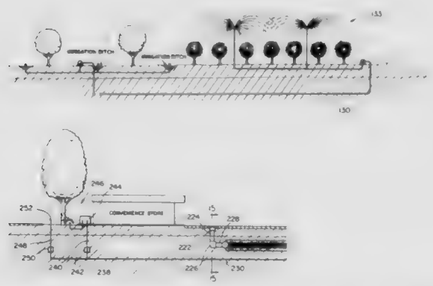
a perforated pipe extending horizontally in a continuous direction for a substantial distance buried in a trench for seepage of water into said perforated pipe, one end of said perforated pipe being sealed and an opposite end of said perforated pipe being open,

an imperforate pipe extending vertically from above ground level and being in communication with said open end of said perforated pipe, said imperforate pipe including a discharge outlet located above ground level,

a submersible pump assembly located within said imperforate pipe, said pump assembly including a pump, said pump having proximal and distal ends, a discharge port being located at said proximal end and a suction port being located at said distal end of said pump,

sealing means for sealing said pump within said imperforate pipe to an inner wall of said imperforate pipe, said sealing means isolating said discharge port and said suction port from each other and said pump assembly creating a vacuum in a portion of said imperforate pipe adjacent to said perforated pipe,

energy means for powering said pump so that a vacuum is



created to draw water into said suction port of said pump from said perforated pipe, discharged out of said discharge port of said pump to said proximal end of said pump, pumped through a portion of said imperforate pipe located above said pump and forced to said discharge outlet of said imperforate pipe above ground level,

control means for activating said pump upon receiving a signal from said sensor means indicative of a water level in said body of water below a predetermined water level, and

a discharge pipe connected to said imperforate pipe for conveyance of water pumped from said perforated pipe to said body of water.

5,059,065

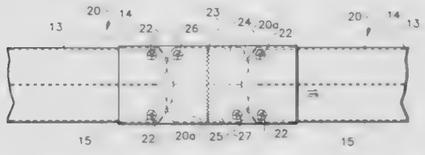
APPARATUS AND A METHOD FOR JOINING WATER STRUCTURE SECTIONS OR THE LIKE

David Doolaege, P.O. Box 206, Carlotta, Calif. 95528

Filed Jan. 25, 1991, Ser. No. 646,170

Int. Cl.[5] E02B *7/00*

U.S. Cl. 405—115 **17 Claims**



1. A water structure coupling arrangement for joining water structure sections in end-to-end or intersecting relationship where each water structure section consists of at least a pair of water filled closed inner sleeves contained within an outer sleeve, comprising a connecting sleeve that is an open cylindrical sleeve of a diameter to receive an end of a water structure section fitted therein formed of a strong flexible material; a plug means arranged within said connecting sleeve for filling with water; and filler spout means for filling said plug means with water.

5,059,066

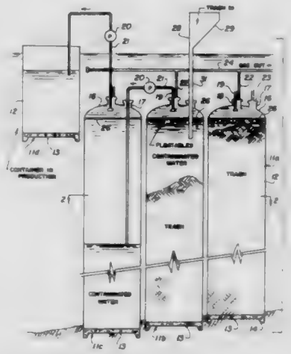
SYSTEM AND METHOD FOR DISPOSAL OF WASTE

Peter V. Schindler, 11615 Amigo Ave., Northridge, Calif. 91326

Filed Apr. 18, 1990, Ser. No. 510,748

Int. Cl.[5] E02D *27/38;* **B09B** *5/00;* **B01D** *21/00*

U.S. Cl. 405—210 **17 Claims**



1. In a system for disposal of solid waste,

a first vertical cylinder resting on the bottom of a body of water, said first cylinder containing water,

said first cylinder have an elongated main chamber, a bottom and a top,

first means for charging solid waste into said first cylinder through its top,

second means for transporting water displaced by said solid waste out of the top of said first cylinder,

a second vertical cylinder similar to said first cylinder resting on said bottom in proximity to said first cylinder, said second cylinder containing water, said second means transporting water displaced by said waste charged into said first cylinder from the top of said first cylinder into the top of said second cylinder and third means for transporting water displaced out of the top of said second cylinder.

5,059,067

METHOD FOR FORMING A CURVED INTERIOR PROFILE TO A CEMENTITIOUS MATERIAL

James M. McCoy, 11249 North Oriole La., Mequon, Wis. 53092

Filed Nov. 1, 1989, Ser. No. 430,521

Int. Cl.[5] B05D *3/12;* **B28B** *19/00;* **B29C** *41/08;* **E04B** *1/16*

U.S. Cl. 405—268 **10 Claims**

1. A method of providing a substantially circular interior shape to a cementitious material placed within an excavation to form an interior structure in the excavation comprising the steps of:

forming an excavation with a bottom and a peripheral side wall extending upwardly therefrom;

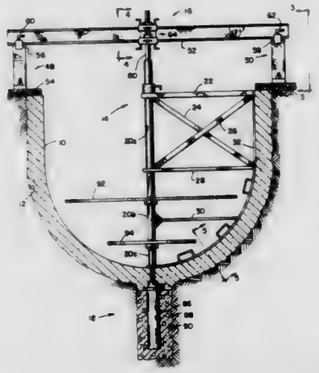
providing an interior forming assembly having an inner end and an outer forming edge corresponding to the desired cross-sectional profile of said interior structure, said outer forming edge having an upper end and a lower end and including an arcuate portion toward said lower end;

placing said forming assembly into said excavation such that said lower end of said forming edge is located adjacent said bottom of said excavation;

fixing said inner end of said forming assembly relative to said excavation such that said inner end of said forming assembly is fixed along a pivot axis substantially coincident with

the center of said excavation in which said interior structure is formed;

applying said cementitious material to said bottom and said peripheral side wall of said excavation such that the outer surface of said cementitious material roughly corresponds to the final desired cross-sectional profile of said cementitious material; and then



pivoting said forming assembly about said pivot axis such that said forming edge of said forming assembly provides said cementitious material with said final desired cross-sectional profile, including an arcuate portion toward said bottom of said excavation, which arcuate portion is formed by said arcuate portion of said forming edge, thereby forming said interior structure in said excavation with said desired cross-sectional profile.

5,059,068

ROTARY SLOT CUTTING TOOLS AND INSERT CLAMPING METHOD

David W. Scott, Ruse, Australia, assignor to A. E. Bishop & Associates Pty., Ltd., New South Wales, Australia

Continuation of Ser. No. 324,050, Mar. 16, 1989, abandoned.
This application Aug. 2, 1990, Ser. No. 561,288
Claims priority, application Australia, Oct. 20, 1988, PJ1055
Int. Cl.[5] B23C *5/08, 5/22*
U.S. Cl. 407—9 3 Claims



1. A method for removing and or inserting inserts in a rotary cutting tool having a substantially annular-shaped body with first and second lateral faces substantially parallel to a plane of rotation and substantially perpendicular to an axis of rotation, an axially centered bore for receipt of an expansion tool,

a plurality of apertures spaced about the periphery of the body, each aperture having opposed insert retaining faces extending from one lateral surface to the other, each said aperture having an opening to the outer periphery of the body, each aperture receiving a cutting insert, comprising the steps of:

applying an expansion force radially outwardly against the circumference of the bore of the body under a respective aperture to cause the opposed faces of the aperture to spread apart to allow free removal and replacement of the insert therein in the axial direction.

2. A rotary slot cutting tool, for rotation in a plane about an axis of rotation, comprising:

a substantially annulus-shaped body defined by the circumference of a large bore on said axis, an outer periphery, and first and second relatively narrowly-spaced lateral surfaces substantially parallel to the plane of rotation and substantially perpendicular to the axis of rotation, the body having a first state when a radial expansion force is applied outwardly against the circumference of said bore and a second state when said radial force is removed;

a plurality of apertures spaced about the outer periphery of the body, each aperture extending substantially parallel to the axis of rotation and including opposed faces extending from one lateral surface to the other and having an opening to the outer periphery of the body; at least one face tapering toward the opposing face as it extends radially outwardly,

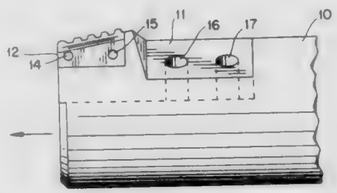
a cutting insert in each aperture, each having faces complementing the faces of its respective aperture, each aperture having its opposed faces tightly engaging mating faces of the insert solely by means of residual elastic forces stored in said body during said first state to prevent movement of the insert relative to the axis of the body when said body is in its second state, the application of an expansion force radially outward on the circumference of the bore of the body causing the body to assume said first state with opposed faces of the respective aperture spread apart permitting removal and replacement of the inserts in the axial direction only.

5,059,069

INSERT FOR THREAD CUTTING

Stig E. V. Lagerberg, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Feb. 9, 1990, Ser. No. 477,415
Int. Cl.[5] B26D *1/00*
U.S. Cl. 407—113 10 Claims



1. A thread-cutting insert for cutting a thread in a tubular metal workpiece, comprising a block having along one edge thereof more than two cutting teeth arranged to successively cut a thread in a workpiece, said teeth being successively larger from a first to a last of said teeth, said first of said teeth having a smoothly convexly curved cutting edge for initially cutting a helical groove of smoothly concavely curved profile, and each of the remaining teeth having a multi-sided cutting edge for reshaping said helical groove.

5,059,070

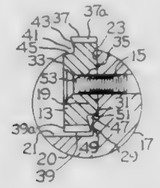
TWO-EDGE THREADING MILLING INSERT

Brian Baker, Lake Orion, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Dec. 20, 1990, Ser. No. 631,123
Int. Cl.[5] B23P *15/28*
U.S. Cl. 407—114 2 Claims

1. A thread cutter milling tool comprising a holder having a

longitudinal axis; said holder having a side portion thereof cut away to define a first flat extending parallel to the longitudinal axis, a second flat extending generally parallel to said first flat, and a transverse surface interconnecting the two flats to form a longitudinally extending shoulder; an elongated cutter body having two flat major faces and two longitudinal edge surfaces interconnecting said major faces; a first longitudinal recess formed in said cutter body at the juncture between one of said major faces and one of said longitudinal edge surfaces; said first recess defining a first cutter surface set back from said one major face, and a first chip breaker surface extending essentially normal to said one major face; said one edge surface being serrated to form first cutter teeth; a second longitudinal



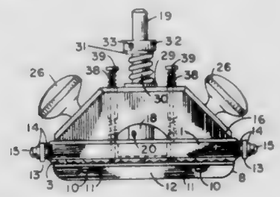
recess formed in said cutter body at the juncture between the other major face and the other longitudinal edge surface; said second recess defining a second cutter surface set back from said other major face, and a second chip breaker surface extending essentially normal to said other major face; said other edge surface being serrated to form second cutter teeth; said cutter body having a first position wherein said one major face has flatwise engagement against said first flat, and said first chip breaker surface has flatwise engagement against said shoulder; said cutter body having a second position wherein said other major face has flatwise engagement against said first flat, and said second chip breaker surface has flatwise engagement against said shoulder.

5,059,071

HINGE INSTALLATION TOOL

Colin W. Ericksen, 13428 The Square, Poway, Calif. 92064

Filed Apr. 17, 1990, Ser. No. 510,864
Int. Cl.[5] B23C *1/20;* B27F *5/12;* B23B *49/04*
U.S. Cl. 409—182 1 Claim



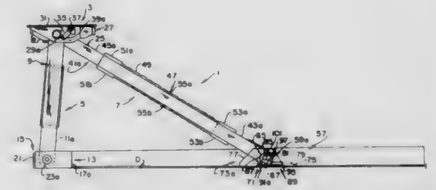
1. A hardware installation fixture adapted to produce recessed areas at predetermined locations in a workpiece, said tool comprising a base having an upper surface, a substantially flat bottom surface, at least two opposed parallel edges and a generally centrally positioned clearance hole for passage of a boring bit and locating pins, a support member spanning said clearance hole and removably and adjustably attached to the upper surface of said base, said member having bearing means for guiding a boring bit holder for rotative and axial movement, said holder comprising a cylindrical shaft, with attachment means to accept a boring or routing bit, forming an abutment means, for adjustable depth stop means and retraction means provided on said bit, said holder having a shank with a reduced diameter, said member having bearing means for guiding locating pins for axial and rotative movement, said pins comprising a cylindrical shaft with a substantially flat head and a tapered point, said pins provided with means for forming an abutment means for depth stop means and retraction means provided on said pins, a guide having a guide surface, said guide having a center reference line viewable through said clearance hole, said guide being adjustably mounted on the bottom surface of said base so that the distance from said guide surface to the center of said bit may be varied, two intermittent stop members being mounted on opposite parallel edges of said base and positioned to be equidistant from said guiding means in said member, means mounting individual of said stop members for independent positioning of each stop member stop surface in an operative position extending below the bottom surface of said base and an inoperative position wherein the stop member may be fixed above said bottom surface; said bit to be rotatably driven by handheld motive means, said intermittent stop members in combination with said guide establishing said tool for right hand or left hand operating postures, said operating postures being congruent so that said tool may be accurately positioned at either end of a workpiece.

5,059,072

CUSHIONED RETRACTABLE HITCH FOR RAILWAY CARS

Jan D. Holt, St. Charles, Mo., assignor to ACF Industries, Incorporated, Earth City, Mo.

Filed Jul. 9, 1990, Ser. No. 550,314
Int. Cl.[5] B60P *3/06;* B61D *3/16*
U.S. Cl. 410—60 9 Claims



1. A trailer hitch for use on a railcar, the hitch being movable between an erect position and a retracted position and comprising:

first support means comprising a first strut one end of which is pivotally mounted to the railcar for movement between the hitch erect and hitch retracted positions;

second support means comprising a second strut having a pair of parallel, spaced apart legs, one end of the second strut being rectilinearly movable in a horizontal direction as the hitch is moved between the hitch erect and the hitch retracted positions, the first strut being inclined with respect to the second strut so that upon unlatching of the hitch, the hitch is gravity biased to move toward the hitch retracted position;

a hitch head supported by said first and second support means for supporting a trailer on the railcar and for holding the trailer in place;

cushioning means carried by said second support means for cushioning the trailer from impacts to which the trailer may be subjected during transport thereof; and,

means for latching the hitch in the hitch erect position and maintaining the hitch there, said latching means including a pair of latching members movable by said second strut, a rod extending transversely of said second strut across the movable end thereof, the respective latching members being attached to said rod for movement thereby, and means for capturing each latching member and holding the latching member in place, the capturing means including a lug having a ramp section and a stop section which is forward of the ramp section in the direction of movement of said second strut, the ramp section having a rear-

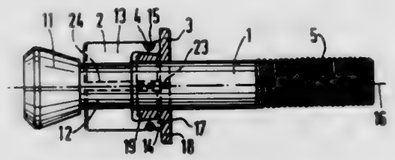
wardly sloping face over which a respective latching member is drawn as the second strut is moved to erect the hitch, and a forwardly sloping ramp face against which the latching member bears when the hitch is erect and which prevents rearward movement of the latching member which would retract the second strut, the stop section including a forwardly extending slot into which the latching member is drawn as the second strut moves forwardly, with the forward end of the slot stopping further forward movement of the second strut as the hitch reaches the hitch erect position.

5,059,073

PEG FOR ANCHORING IN A HOLE WITH AN UNDERCUT PORTION

Gérard Revol, Chateaudouble, and Jean-Paul Barthomeuf, Alixan Village, both of France, assignors to Societe de Prospection et d'Inventions Techniques (S.P.I.T.), Cedex, France

Filed Jun. 4, 1990, Ser. No. 532,535
Claims priority, application France, Jun. 7, 1989, 89 07513
Int. Cl.[5] F16B *13/06, 19/00*
U.S. Cl. 411—65 **13 Claims**



1. A peg for fixing an element upon a support surface by anchoring said peg within a bore, having a predetermined internal diameter, formed within said support surface, and wherein said bore includes an undercut portion having an internal diameter greater than said predetermined internal diameter of said bore, comprising:

a body having a first radially outwardly flared end adapted to be inserted within said bore of said support surface, and a second end adapted to project outwardly of said bore of said support surface so as to support said element to be fixed upon said support surface;

locking ring means pivotably mounted upon said body between a radially contracted non-locking state at which said locking ring means can engage internal wall portions of said bore having said predetermined internal diameter, and a radially expanded locking state for engaging said undercut portion of said bore when said locking ring means is disposed in said radially expanded locking state so as to lock said peg within said bore of said support surface; and

means mounted upon said locking ring means for pivotably moving said locking ring means from said radially contracted non-locking state to said radially expanded locking state when said locking ring means is disposed at an axial position within said bore of said support surface which corresponds to the axial location of said undercut portion of said bore of said support surface;

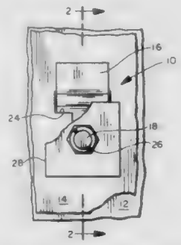
said radially outwardly flared end of said body being engageable with said locking ring means as a result of axial movement of said body outwardly of said bore of said support surface so as to maintain said locking ring means lockingly engaged within said undercut portion of said bore.

5,059,074

FASTENING ARRANGEMENT

Ferdinand A. Guevarra, Chicago, and David H. Devonald, III, Glenview, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Aug. 20, 1990, Ser. No. 570,105
Int. Cl.[5] F16B *37/02, 39/00*
U.S. Cl. 411—107 **23 Claims**



1. A fastener arrangement for clamping a plurality of objects together, the objects having predetermined aligned openings, the fastening arrangement being insertable from either side of the objects, the fastening arrangement comprising:

a first member including means for defining two spaced-apart clamping surfaces for clamping opposite sides of the objects when said first member is assembled to the objects;

a first fastener carried by and extending from said first member; and

a second fastener for cooperation with said first fastener in an assembled relationship,

said first member and said first fastener being dimensioned and relatively arranged along with the dimensions of the predetermined aligned openings such that said first member with said first fastener is insertable from either side of the objects such that when said first fastener is inserted from a first side, said first fastener extends from the first side and said two spaced-apart clamping surfaces engage opposite sides of the objects and clamp the opposite sides when said second fastener is assembled with said first fastener, the predetermined aligned openings having a first defined section, the width of the portion of said first member that is inserted being smaller than the width of the first section, the height of the first section being sufficient to allow passage of said first member during insertion, the openings also including a second defined section extending below the first defined section having a width greater than the thickness dimension of said first fastener as measured adjacent said first member and a height for at least a first of the predetermined aligned openings that is less than the length of said first fastener that extends from said first member, the height for the second defined section also being sufficient to permit the insertion of said first member and movement of said first member to a position wherein said two spaced-apart clamping surfaces are positioned so as to be generally parallel to the opposite sides of the objects.

5,059,075

RETRACTING SCREW ASSEMBLY

Francis J. Kelly, Baldwinsville, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 28, 1989, Ser. No. 331,139
Int. Cl.[5] F16B *21/18, 39/00*
U.S. Cl. 411—107 **7 Claims**

1. A retracting screw assembly for use in explosion-proof enclosures comprising:

a screw having a head, a shank, and a threaded portion on that end opposite said head;

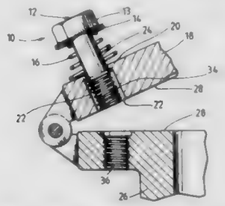
a washer having an aperture for receiving said shank and threaded portion and engaging said head;

a conical spring having coils receiving said shank and being coiled from a minor diameter coil to a major diameter coil, said coils becoming nested within said major diameter coil upon full compression;

a cover on said enclosure having an aperture with a restricted opening adjacent the outer face of said cover, said spring being mounted between said cover and said washer;

a body portion on said enclosure having a threaded aperture adapted for alignment with said cover aperture;

a shoulder formed by said restricted opening on said cover;



retaining means on said threaded portion for engaging said shoulder;

said threaded portion threadingly engaging said threaded aperture and causing said head and washer to compress said spring and cause said coils to nest within said major diameter coil, said washer engaging one side of said nested coils and said cover face engaging an opposite side of said nested coils;

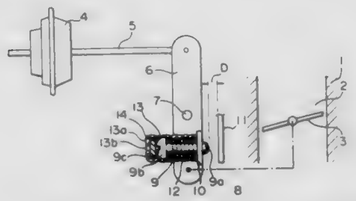
whereby upon said threaded portion being disengaged from said threaded aperture of said body, said retaining means is pulled against said shoulder by said spring.

5,059,076

READJUSTMENT PREVENTING STRUCTURE FOR ADJUSTMENT MEMBER

Yutaka Kondo, Obu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Obbu, Japan

Filed Jun. 28, 1990, Ser. No. 544,959
Int. Cl.[5] F16B *19/00*
U.S. Cl. 411—377 **15 Claims**



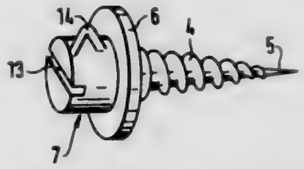
1. A readjustment preventing structure for an adjustment member having a locking spring, the adjustment member for adjusting an extent of operation by rotating it, wherein the readjustment preventing structure includes a hollow tube of a heat shrinkable resin to be fitted around the outer surface of the locking spring and a part of an outer surface in a rotating operation portion of the adjustment member in such a manner that when the hollow tube is heated to be shrunk, it is securely fixed around the outer surface of the locking spring and the part of the outer surface in the adjustment operational portion.

5,059,077

FIXING ELEMENT FOR LOW STRENGTH MATERIALS

Paul M. Schmid, Camarillo, Calif., assignor to Isolink Ltd., Nassau, The Bahamas

Filed Apr. 27, 1990, Ser. No. 515,404
Claims priority, application Switzerland, Nov. 13, 1989, 4092/89
Int. Cl.[5] F16B *23/00, 45/00*
U.S. Cl. 411—400 **20 Claims**



1. A fixing element for connection to materials of relatively low strength, comprising a unitary, one piece plastic body having:

an external thread means formed on said one-piece plastic body for compressing and compacting a low strength material in the thread turns of said external thread means as said unitary one piece plastic body is threaded into the low strength material, said external thread means comprising deep, in comparison with the pitch thereof, external threads, in the shape of a cone, and having a larger diameter end and a smaller diameter end;

an unthreaded conical tip unitary with said external threads at said smaller diameter end thereof for penetration of said unitary one piece plastic body into the low strength material, said external threads in the shape of a cone and said unthreaded conical tip having a common cone axis;

a stop collar unitary with said external threads at said larger diameter end thereof, said stop collar having a larger diameter than said larger diameter end of said external threads, wherein said unitary one piece plastic body has a central axis coincident with said common cone axis, said stop collar being centered on said central axis, and said stop collar having a first surface facing said external threads and said unthreaded conical tip for engagement with the low strength material and a second surface facing away from said external threads and said unthreaded conical tip; and

a head portion unitary with and centrally disposed on said stop collar and extending from said second surface of said stop collar in a direction away from said external threads and said unthreaded conical tip, said head portion having a diameter smaller than said diameter of said stop collar, and said head portion comprising turning means thereon and unitary therewith for turning said unitary one piece body to cause said external thread means to be engaged with the low strength material, said turning means being disposed substantially centrally of said head portion and said stop collar and substantially symmetrically with respect to said central axis.

5,059,078

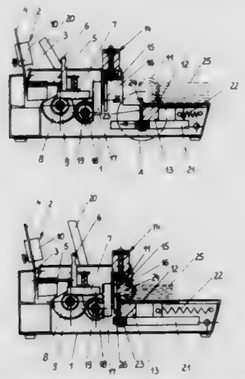
APPARATUS FOR THE COMBING-IN AND BINDING OF PUNCHED SHEETS

Dagobert Schmid, Horn, Fed. Rep. of Germany, assignor to Chr. Renz GmbH & Co., Heubach, Fed. Rep. of Germany

Filed Dec. 11, 1990, Ser. No. 626,098
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1989, 3941648
Int. Cl.[5] B42B *5/10*
U.S. Cl. 412—39 **29 Claims**

1. An apparatus for the combing-in and binding of a plurality of punched single sheets into a prefabricated wire comb which includes a multiplicity of teeth bent into circles which are

inserted into holes in the sheets, comprising: a movable closing beam cooperating with a counter-pressure plate for bending the prefabricated wire comb into the circular shape; a plurality of retaining elements disposed to said counter-pressure plate



such that said retaining elements position the teeth of the wire comb; and wherein said counter-pressure plate with said retaining elements are slidable under said closing beam from a position from which the single sheets are inserted into the wire comb for binding.

5,059,079

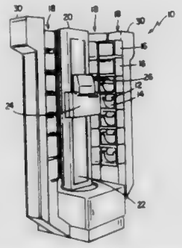
PARTICLE-FREE STORAGE FOR ARTICLES

Richard F. Foulke, Carlisle, and Richard J. Keohane, Braintree, both of Mass., assignors to Proconics International, Inc., Wilmington, Mass.

Continuation of Ser. No. 353,191, May 16, 1989, abandoned, which is a continuation of Ser. No. 143,405, Jan. 13, 1988, abandoned. This application Feb. 15, 1990, Ser. No. 481,749

Int. Cl.[5] B65G *1/133*

U.S. Cl. 414—275 **11 Claims**



1. Apparatus for storing articles comprising

walls defining a bin enclosure having an opening for transporting articles therethrough,

a support for supporting articles in an article storage region in said enclosure,

a transport mechanism for transporting said articles into and out of said storage region, said transport mechanism having two arms that can engage said articles between them and are movable along an axis into and out of said storage region,

an energy beam vision system carried by said transport mechanism that directs an energy beam along a path that is close to but spaced from an outer boundary of a properly located and oriented article in said article storage region, and

means for determining if said beam is blocked by said article.

5,059,080

APPARATUS FOR STORING AND CONVEYING ROLLER PALLETS OR EQUIVALENT

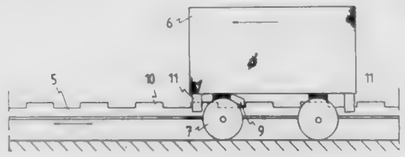
Esko Naumanen, Karhunkatu 19, SF-05460 Hyvinkaa, Finland

Filed May 26, 1989, Ser. No. 358,397

Claims priority, application Finland, Jun. 1, 1988, 882589

Int. Cl.[5] B65G *1/06*

U.S. Cl. 414—276 **16 Claims**



1. An apparatus for the disposition of at least one load which is movable on wheels in a storage area, said storage area comprising at least one storage level provided with at least one collateral flow-through storage channel for said at least one load, said at least one storage level being arranged either horizontally or with a slight downward inclination towards its output end and said at least one storage channel being provided with a conveyor rail mechanism, said conveyor rail mechanism including a reciprocating conveyor rail, to both laterally guide and longitudinally convey at least one load in said at least one channel in cooperation with at least one load guiding and conveying means coupled to the bottom of said at least one load, wherein said at least one load guiding and conveying means receives said conveyor rail and includes surfaces on opposite sides of said conveyor rail to transmit a load conveying force from said reciprocating conveyor rail to said at least one load in one direction and to permit the reciprocating conveyor rail to move relative thereto in the other direction.

5,059,081

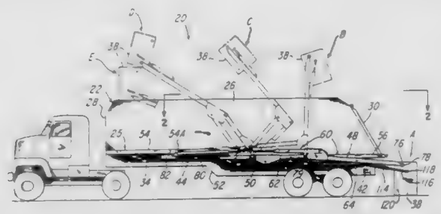
REFUSE TRUCK CONTAINER HANDLING APPARATUS

Christopher D. Brown, Pusheta Township, Auglaize County, and Laverne F. Bown, Botkins, both of Ohio, assignors to Brown Welding Shop Inc., Botkins, Ohio

Filed Nov. 9, 1989, Ser. No. 434,132

Int. Cl.[5] B65F *3/02*

U.S. Cl. 414—408 **15 Claims**



1. Container platform elevating and dumping apparatus for attachment to a refuse truck having a truck bed for receiving refuse, said apparatus moving a refuse container platform from a container loading station substantially at ground level to at least one elevated and inverted station above said truck bed, said apparatus being adapted to lift said container platform from said container loading station upwardly around one end of said truck bed and over the top of said truck bed toward the opposite end of said truck bed, and said apparatus comprising:

cooperating first elevating means connected to one side of said truck bed and to one side of said container platform and second elevating means connected to the other side of said truck bed and to the other side of said container platform for moving said container platform both vertically above said truck bed and, when elevated, generally horizontally along the top of said truck bed;

each of said elevating means comprising:

a vertically swingable arm assembly comprising a first arm having a first end mounted on said truck bed for pivotal movement about a horizontal axis extending transversely of said truck bed and a second end remote from said first end, and a second arm having a first end pivotally connected to said second end of said first arm and a second end connected to said container platform; and drive means connected to said first arm and to said second arm for pivoting said second arm relative to said first arm in a first relative rotary direction to elevate said container platform and for thereafter pivoting said first arm together with said second arm about said horizontal axis while pivoting said second arm relative to said first arm in a second relative rotary direction reversed to said first relative rotary direction to move said container platform in a substantially horizontal path over the top of said truck bed.

5,059,082

METHOD AND APPARATUS FOR EMPTYING A CONTAINER

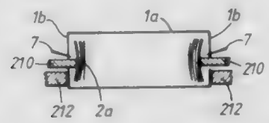
Pekka Tanttu, Espoo, and Osmo E. O. Valkeinen, Vantaa, both of Finland, assignors to Elopak Systems A. G., Glattbrugg, Switzerland

Continuation of Ser. No. 305,749, Feb. 2, 1989, abandoned. This application Oct. 18, 1990, Ser. No. 600,015

Claims priority, application Finland, Feb. 2, 1988, 880476

Int. Cl.[5] B65G *65/04*

U.S. Cl. 414—412 **14 Claims**



8. Apparatus for emptying a closed container with wall means having a first zone including a first wall part which has a wall surface substantially extending in a plane, said container having a compressible load comprised of a plurality of items, said apparatus including pushing means, drive means to product relative movement between said pushing means and said container to cause said pushing means to substantially perpendicularly penetrate said wall surface of said first wall part of said container and to push said load away from said first zone, cutting means to cut through said first zone to form a first cut therethrough whereby said cut constitutes a boundary between two portions of said container, and displacing means serving to produce relative displacement between said two portions of said container to open said container and expose said load.

5,059,083

CAMELBACK PALLET TRAILER

James T. Triplett, Lancaster Rd., Chester, S.C. 29706

Filed Sep. 19, 1989, Ser. No. 409,468

Int. Cl.[5] B60P *1/02*

U.S. Cl. 414—458 **11 Claims**

1. A tractor trailer having a load bed adapted for use as a pallet supporting a load during transportation and/or storage on the ground, the combination comprising:

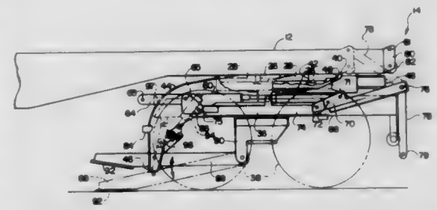
a tractor having a chassis, wheels attached to said chassis for supporting said tractor, and defining a front wheel carriage;

a fifth wheel mechanism carried on said chassis;

a rear wheel carriage;

a load supporting pallet arranged between said wheel carriages having one end adapted for coupling to said fifth wheel mechanism, and the other end adapted to be connected to said rear wheel carriage for movement therewith during transportation; and

hydraulically operated lift mechanism carried by said front



wheel carriage and said rear wheel carriage for raising said load supporting pallet from the ground up on said front wheel and rear wheel carriages; and

guide means carried on said front wheel chassis for guiding said one end of said load supporting pallet up over the wheels onto said fifth wheel.

5,059,084

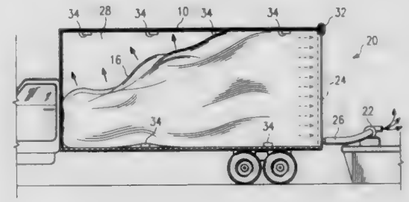
VACUUM APPARATUS FOR INSTALLING A WATER PROOF LINER

Reuben Krein, Fort Smith, Ark., assignor to BJK Industries, Inc., Fort Smith, Ark.

Continuation of Ser. No. 241,770, Sep. 7, 1988, Pat. No. 4,863,339, which is a continuation of Ser. No. 863,093, May 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 733,962, May 14, 1985, Pat. No. 4,671,733, which is a continuation-in-part of Ser. No. 502,696, Jun. 9, 1983, Pat. No. 4,516,906. This application Jul. 25, 1989, Ser. No. 385,243

Int. Cl.[5] B65D *88/12*

U.S. Cl. 414—467 **15 Claims**



1. An apparatus for installing a liner proximate to the interior walls of a container, the container having at least one opening and the liner having at least one opening, comprising:

a sealing device for releasably attaching at least a portion of the peripheral edge of the opening of the liner to the peripheral edge of the opening of the container such that the peripheral edge of the liner will form a substantially airtight seal therewith when a negative air pressure is disposed between the liner and the interior walls of the container to prevent air from moving from the exterior of the container to an intermediate space that is defined between the interior walls of the container and the exterior surface of the liner; and

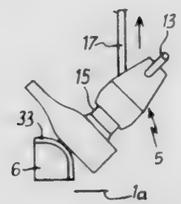
a vacuum device disposed proximate to the peripheral edge of the opening of the liner for creating a vacuum between the interior surfaces of the container and the exterior surfaces of the liner by continuously drawing air outward between the peripheral edge of the opening of the liner and the peripheral edge of the opening of the container to cause the walls of the liner to move toward the interior walls of the container and substantially reduce the volume of said intermediate space.

5,059,085
TRAILER WITH TILTABLE BED(S)
Ernest H. Koller, S. 2721 Post St., Spokane, Wash. 99210
Filed Sep. 14, 1989, Ser. No. 407,438
Int. Cl.[5] B60P *1/28*
U.S. Cl. 414—482 4 Claims



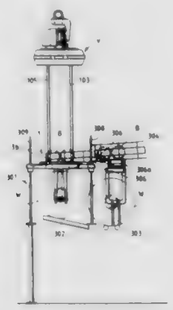
1. A trailer which comprises:
a towbar means attached at its rear end to the rear end of a frame means and attachable at its front end to a towing vehicle;
said frame means is attached to and supported at its rear end by a wheeled undercarriage means and, at its front end, is securely attachable to and detachable from said towbar means from underneath the towbar means, such that when the front end of the frame means is not attached to the towbar means, it can be lowered to the ground; and
one or more platform means attached to said frame means such that each of said platform means can independently be tilted downward at the front end and the rear end of each of said platform means.

5,059,086
DEVICE FOR HANDLING BOTTLES
Michel Thierion, Muizon, France, assignor to G. M. Thierion S.A., Muizon, France
Filed Mar. 8, 1990, Ser. No. 490,435
Claims priority, application France, Mar. 10, 1989, 89 03162
Int. Cl.[5] B66F *11/00*
U.S. Cl. 414—626 7 Claims



1. A bottle handling device comprising a tool for grasping the sides of bottles and for moving a plurality of the bottles from or to a support table on which the bottles are positioned standing vertically in a row and for tilting the bottles with respect to the table, the tool tiltably mounted to one end of a flexible cord having the other end of the cord coupled to balancing means for balancing the tool and developing a balancing force that is adjustable between two values depending on whether the tool is loaded or unloaded, and wherein the device includes a backing piece mounted along the table having a convex surface directed towards the table in order to partially support the bottles when being tilted while the value of the balance force is changing.

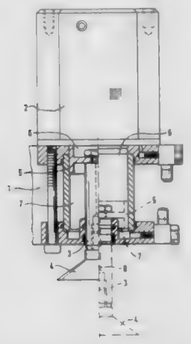
5,059,087
BOBBIN CONVEYING SYSTEM
Yoshio Mitani, Kani, and Takenori Yanai, Inuyama, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed May 15, 1990, Ser. No. 523,664
Claims priority, application Japan, May 15, 1989, 1-55521[U]; May 15, 1989, 1-120649
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—626 3 Claims



1. A bobbin conveying system including:
a travelling car for the conveyance of spinning bobbins and empty bobbins, said travelling car including a bobbin carrier fixed to a lift base, a plurality of depending portions supported by the bobbin carrier and holding pieces which are mounted to the depending portions pivotably through shafts, respectively, so that a spinning bobbin is held by the holding pieces at a holding position between the depending portions;
first means for carrying out a spinning bobbin to said automatic travelling car and for carrying in an empty bobbin from said car; and
second means for carrying in a spinning bobbin from said automatic travelling car and for carrying out an empty bobbin to said car, wherein the carrying in and carrying out of the spinning bobbin and empty bobbins are performed simultaneously by said first and second means, wherein baskets for receiving empty bobbins therein are pivotably provided on an upper face of the bobbin carrier.

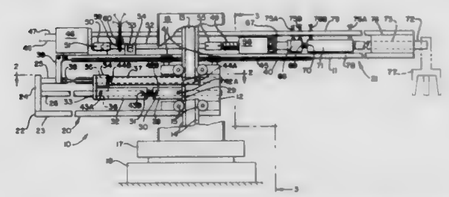
5,059,088
SUCTION LIFTER FOR A MATERIAL HANDLING DEVICE
Manfred Klein, Richard-Wagner Str. 16, D-7255 Ruresheim, Fed. Rep. of Germany
PCT No. PCT/DE88/00375, § 371 Date Mar. 14, 1990, § 102(e) Date Mar. 14, 1990, PCT Pub. No. WO89/00965, PCT Pub. Date Feb. 9, 1989
PCT Filed Jun. 23, 1988, Ser. No. 459,707
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1987, 3724878
Int. Cl.[5] B65G *47/91*
U.S. Cl. 414—627 10 Claims

1. A suction lifter for a material handling device for workpieces with surfaces engageable with a suction element, comprising:
a pneumatic, double-acting working cylinder with a piston rod having a suction cup arranged at a piston rod end, and a piston at the other end of the piston rod, said piston cooperating with said working cylinder to define a first working chamber between said piston and the end of said cylinder spaced away from said suction cup and a second working chamber between said piston and the end of said cylinder adjacent said suction cup, said first working chamber being connected to said suction cup via a throttle line;
directional control means for controlling a connection between a compressed air source and the working cylinder and for venting the working cylinder, including 4/2-way valve means for connecting, in a first switching position,



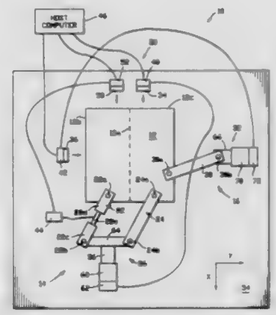
said first working chamber to a vacuum device and connecting said second working chamber to said compressed air source and for connecting, in a second switching position, said first working chamber to said compressed air source and connecting said second working chamber to said vacuum device.

5,059,089
INFINITELY ADJUSTABLE TRAVEL LEAD SCREW AND MULTI-CYLINDER DRIVEN MOVEMENT UNIT
Harutyun A. Kocaoglan, 804 Oakway Ct., Richardson, Tex. 75081
Filed Oct. 17, 1988, Ser. No. 258,594
Int. Cl.[5] B25J *18/04*
U.S. Cl. 414—744.6 12 Claims



1. A multi-cylinder driven movement unit comprising: a first cylinder means having a unitary length drive stroke; a second cylinder means having a drive stroke twice the length of said first cylinder means drive stroke unitary length; a third cylinder means with a drive stroke four times the drive stroke of said first cylinder means; with said cylinders by activation singularly and in combinations providing drive of said driven movement unit in steps of one, two, three, four, five, six and seven unitary length settings in the cylinder drive determined position of said driven movement unit; a lead screw is included along with an internally threaded slider block means mating said lead screw and driven back and forth by said lead screw dependent on the rotational drive direction the lead screw is driven through a stroke of unitary length between travel limits equal in length to the unitary length drive stroke of said first cylinder; and support and guide means for said lead screw driven slider block means; a drive motor including a drive connection is mounted on said support and guide means for said lead screw; all said cylinder means are double acting cylinders power activated alternatively in both directions subject to fluid pressure being applied to one or the other of the two chambers of the respective cylinders and the other chamber opened to relieve pressure; valve means is connected for selectively feeding fluid pressure to one or the other of the two chambers of the respective cylinders and opening the other of the two chambers to relieve pressure; said valve means is a plurality of solenoid valves one for each of said cylinders; programmable logic controller means is connected to said plurality of solenoid valves for selective programmed control of said movement unit; a power source controlled by said programmable logic control is connected to said drive motor; rotation sensing means is mounted on the drive connection to said lead screw; and signal pickup and transmitting means is connected to control means having a switch control output for switch-off of power to said drive motor upon said lead screw having been rotated to a programmed position for finely determined controlled positioning of said slider block means; said movement unit is mounted on a vertically moveable carriage means; drive means for vertically positioning said carriage means; vertically extended mount and guide means positioned on a rotatable base for vertically guiding said carriage means; and drive means for rotating said rotatable base; and wherein said movement unit has a first section and a second section; a plurality of said cylinders on said second section connected for moving said first section through a range of travel; rail guide and mount means on said first section mounted on said carriage means; and said rail guide and mount means being of sufficient length to accomodate the full range of travel of the said first section.

5,059,090
TWO-DIMENSIONAL POSITIONING APPARATUS
Norman Bobroff, Katonah, N.Y., and Rodney A. Kendall, Ridgefield, Conn., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 16, 1990, Ser. No. 466,089
Int. Cl.[5] B23Q *7/00*
U.S. Cl. 414—749 18 Claims



1. A two-dimensional positioning mechanism comprising:
a moveable platform having a given orientation;
first translating means connected to the platform to move the platform in a first direction, and including
i) first and second links, each of the links being pivotally connected to the platform, and wherein the first link has an adjustable length, and includes a link actuator connected to the first link to adjust the length of the first link, and
ii) a first linear actuator pivotally connected to the first and second links, to move the links in said first direction; and
second translating means connected to the platform to move the platform in a second direction orthogonal to the first direction;
wherein the first and second links, the moveable platform and the first linear actuator form a pivotal parallelogram

structure to maintain the orientation of the platform substantially constant during movement thereof;

wherein the positioning mechanism further comprises control means including yaw control means to sense deviation of the platform from the given orientation, and connected to the link actuator to adjust the length of the first link to return the platform to the given orientation during movement thereof.

5,059,091

GAS TURBINE ENGINE COMPRESSOR ASSEMBLY

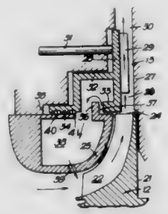
John E. Hatfield, Warwick, England, assignor to Rolls-Royce plc, London, England

Filed Jun. 8, 1990, Ser. No. 534,947

Claims priority, application United Kingdom, Jul. 21, 1989, 8916658

Int. Cl.[5] F01B *25/00*

U.S. Cl. 415—11 **9 Claims**



1. A compressor assembly suitable for a gas turbine engine comprising a fluid flow compressor having upstream and downstream ends with respect to a fluid flow through said fluid flow compressor during operation, and a diffuser located at the downstream end of said compressor, means being provided to vary a cross-sectional flow area of said diffuser, at least at a given location within said diffuser, from a maximum value to a minimum value, to maintain, in operation, a mean fluid flow velocity at the outlet of said diffuser at a substantially constant level, means being provided to direct a proportion of fluid exhausted from the downstream end of said compressor to the upstream end thereof to be recirculated through said compressor, at least when the cross-sectional area at said given location within said diffuser is less than said maximum value, the amount of said fluid so recirculated being directly proportional to said diffuser cross-sectional flow area at said given location.

5,059,092

VACUUM PUMP HAVING EMERGENCY BEARINGS

Hans-Peter Kabelitz, Cologne; Harald Lässig, Rösrath, and Helmut Schneider, Zülpich, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Aug. 16, 1990, Ser. No. 568,037

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1939, 3928047; Sep. 22, 1989, 3931661

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **8 Claims**

1. A vacuum pump comprising:

(a) a housing;

(b) a first, fully permanent magnet bearing disposed in said housing;

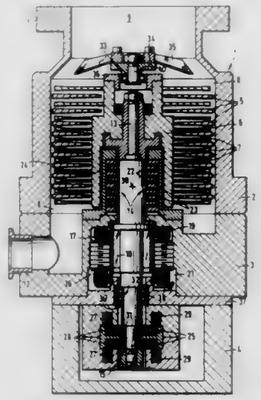
(c) a second, partly permanent magnet and partly electromagnet bearing disposed in said housing;

(d) an upper emergency bearing disposed in said housing;

(e) a lower emergency bearing disposed in said housing and being spaced from said upper emergency bearing;

(f) a pump rotor disposed in said housing and supported for rotation by said first and second magnet bearings; aid pump rotor being supported by said upper and lower emergency bearings when said pump rotor deviates by a predetermined extent from a desired position; said pump rotor further having a rotor shaft; said second magnet bearing being mounted on said rotor shaft; and

(g) a pump motor including stationarily supported motor windings and an armature carried by said rotor shaft and surrounded by said motor windings; said lower emergency bearing being situated between said motor windings



and said second magnet bearing; said pump rotor and said armature being included in a rotary assembly having a center of gravity; said center of gravity being situated between said upper and lower emergency bearings and being spaced approximately equally therefrom and further being located inside said first magnet bearing; said armature being situated between said center of gravity and said lower emergency bearing.

5,059,093

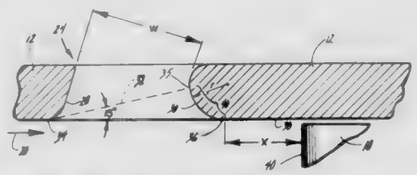
COMPRESSOR BLEED PORT

Syed J. Khalid, and Brian A. Robideau, both of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 7, 1990, Ser. No. 534,226

Int. Cl.[5] F01D *5/14*

U.S. Cl. 415—115 **21 Claims**



1. A bleed port arrangement for an axial flow air compressor comprising:

a compressor case;

a circumferential row of stator vanes in said case;

a circumferential row of rotatable blades located to receive air directly from said vanes, said blades each having a leading edge, and a tip spacing existing between adjacent blades at a periphery of said row of blades;

a plurality of circumferentially arranged bleed port openings in said case downstream of said vanes and upstream of said blades;

each of said openings being substantially rectangular with a length in a circumferential direction and a width in an axial direction;

an imaginary straight flow path extending through each opening from a downstream facing edge at a casing inside surface to a locus on an upstream facing edge of each opening, and defining a reentrance surface of said upstream facing edge from said locus to the inside surface of said casing; and

the upstream facing edge of each opening having a radius greater than 25 percent of said width throughout said reentrant surface.

5,059,094

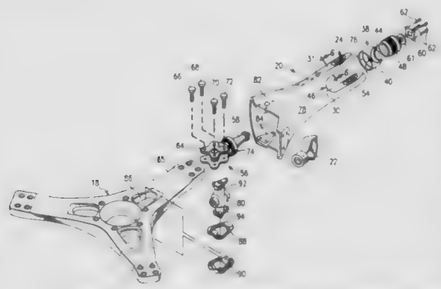
ROTOR REDUNDANT FORCE RETENTION SYSTEM FOR VTOL AND VSTOL AIRCRAFT

Madison K. Robinson, Bedford; Martin H. Lufkin, Hurst, and William D. Neathery, North Richland Hills, all of Tex., assignors to Bell Helicopter Textron, Inc., Forth Worth, Tex.

Filed Oct. 13, 1989, Ser. No. 420,958

Int. Cl.[5] B64C *27/37*

U.S. Cl. 416—134 A **2 Claims**



1. A redundant force retention system for attaching a helicopter rotor blade to the yoke of the helicopter, comprising:

a composite material grip having a clevis, a sleeve connected to said clevis, bolt holes for attaching said blade to said clevis, a clevis throat, and belts and filament windings for directing the centrifugal force created by blade rotation to the clevis throat;

a hollow cylindrical fitting for transmitting centrifugal forces, having a first and second extension for mating with the clevis throat, a first and second shoulder located in the fitting and a bore therethrough;

an elastomeric bearing having a force therethrough for transmitting centrifugal forces;

an elastomeric pitch change bearing having a spindle and bolting clevis for transmitting centrifugal forces;

a means for attaching said spindle to said elastomeric bearing;

a means for attaching said bolting clevis to said yoke;

the fitting is located in the clevis throat, mating the first and second extensions therewith, the elastomeric baring is located in the hollow cylindrical fitting and abuts the first shoulder thereof, the spindle of the pitch change bearing extends through the bore of the fitting and the bore in the elastomeric bearing and is attached to the elastomeric bearing such that the pitch change bearing abuts the second shoulder of the hollow cylindrical fitting; and

centrifugal force is exerted on the grip by the blade, said force is directed by the belts and filament windings to said clevis throat, through the fitting, the elastomeric bearing and pitch change bearing, thereby loading the yoke in tension.

5,059,095

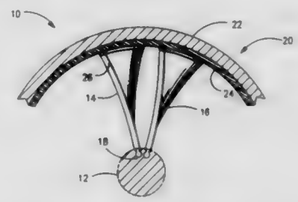
TURBINE ROTOR BLADE TIP COATED WITH ALUMINA-ZIRCONIA CERAMIC

Burton A. Kushner, Old Behtpage; Anthony J. Rotolico, Hauppauge; John E. Nerz, Seldon, and Lawerence A. Sais, Levittown, all of N.Y., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 30, 1989, Ser. No. 429,256

Int. Cl.[5] B64C *11/00, 27/00*

U.S. Cl. 416—241 B **29 Claims**



1. A rotor blade for a gas turbine engine having a plurality of rotor blades and a substantially coaxial shroud encompassing the tips of the blades, comprising a blade member with an inner end adapted for mounting on a rotation hub and with a blade tip located opposite the inner end, and a ceramic layer bonded to the blade tip, the ceramic layer consisting essentially of aluminum oxide and a zirconia-based oxide selected from the group consisting of zirconium oxide and at least partially stabilized zirconium oxide.

17. A method of manufacturing a rotor blade for a gas turbine engine having a plurality of rotor blades and a substantially coaxial shroud encompassing the tips of the blades, the rotor blade having an inner end adapted for mounting on a rotation hub and a blade tip located opposite the inner end, the method comprising thermal spraying a ceramic layer consisting essentially of aluminum oxide and zirconia-based oxide onto the blade tip, the zirconia-based oxide being selected from the group consisting of zirconium oxide and at least partially stabilized zirconium oxide.

5,059,096

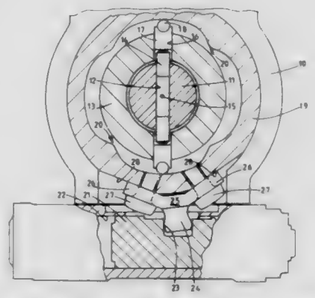
FUEL PUMPING APPARATUS

Kenneth M. Harris, Kent, England, assignor to Lucas Industries Public Limited Company, West Midlands, United Kingdom

Filed Dec. 26, 1990, Ser. No. 638,724

Int. Cl.[5] F04B *1/06*

U.S. Cl. 417—221 **5 Claims**



1. A liquid fuel pumping apparatus comprising a rotary distributor member mounted in a pump body and arranged in use to be driven in timed relationship with an engine with which the apparatus is associated an annular cam ring surrounding the distributor member, the cam ring defining cam lobes on its internal surface for imparting inward movement to

a plunger slidable in a transverse bore in the distributor member, the fuel being displaced from the bore during successive inward movements of the plunger, a fluid pressure operable piston for moving the cam ring angularly about the axis of rotation of the distributor member to adjust the timing of fuel delivery and coupling means connecting the piston with the cam ring characterised in that said coupling means comprises a tooth like member for engagement within a recess in the side wall of the piston, an integral mounting for the tooth like member, said mounting comprising a pair of arms extending in opposite directions relative to the tooth like member, the arms being shaped for engagement with the outer peripheral surface of the cam ring and being individually secured to the cam ring.

5,059,097

VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR

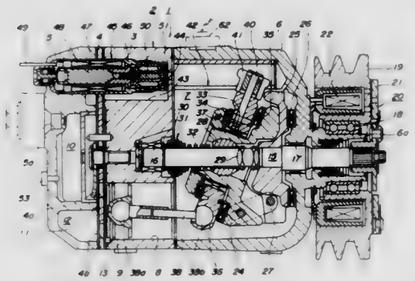
Michio Okazaki; Mototaka Shitara, and Kenji Kosaka, all of Saitama, Japan, assignors to Diesel Kiki Co. Ltd., Tokyo, Japan

Filed Jan. 23, 1990, Ser. No. 469,047

Claims priority, application Japan, Jan. 26, 1989, 1-17063; Feb. 2, 1989, 1-10825[U]; Nov. 30, 1989, 1-311252

Int. Cl.[5] F04B *1/26*

U.S. Cl. 417—222 S **6 Claims**



1. A variable capacity wobble plate compressor comprising:
a wobble plate provided within a crank chamber for adjusting a piston stroke;
a control valve for controlling a chamber pressure within said crank chamber to adjust an angle of said wobble plate, thereby regulating a compression capacity of said compressor;
a vibration sensor for detecting a vibration of said compressor to provide a vibration signal;
a reference selector for selecting a vibration reference value corresponding to an unstable zone;
a comparator for comparing said vibration signal with said vibration reference value; and
a drive circuit for controlling an exciting current to said control valve so that when said vibration signal exceeds said reference value in said comparator, said compressor is brought to a stable zone from said unstable zone.

5,059,098

APPARATUS FOR VARYING CAPACITY OF SCROLL TYPE COMPRESSOR

Shinichi Suzuki; Takashi Ban; Tetsuhiko Fukanuma, and Tetsuo Yoshida, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

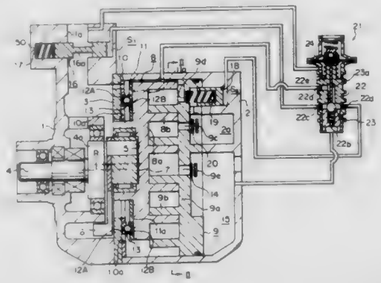
Filed Jan. 25, 1990, Ser. No. 469,940

Claims priority, application Japan, Feb. 2, 1989, 1-24286

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—295 **16 Claims**

1. In a scroll type of compressor having a stationary scroll, a movable scroll opposed to the stationary scroll and rotatable thereabout but not rotatable about its own axis, so that a closed chamber which is reduced in volume during the rotation of the movable scroll is defined by and between the stationary scroll and the movable scroll, and an introduction passage through which a coolant is introduced in the compressor, wherein a capacity varying apparatus comprises a suction restriction mechanism provided in the introduction passage to control the cross sectional area thereof in accordance with a pressure of the coolant, a by-pass passage extending through the stationary scroll to connect the portion of the closed chamber connected to start ends of scroll portions provided on the movable and



stationary scrolls, while being reduced in volume, to a suction pressure area in the compressor, a by-pass opening and closing mechanism provided in the by-pass passage to open and close the by-pass passage in accordance with the pressure of the coolant, and a control valve means actuated in accordance with the pressure of the coolant before being restricted, to control the operation of the suction restriction mechanism and the by-pass opening and closing mechanism in association with each other.

5,059,099

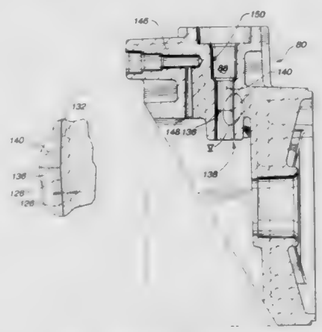
INTEGRAL PUMP HOUSING

Norman A. Cyphers, Rogers, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Continuation of Ser. No. 385,035, Jul. 28, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 566,326

Int. Cl.[5] F04B *9/10;* **B23P** *15/00*

U.S. Cl. 417—311 **8 Claims**



1. A one-piece die-cast aluminum pump housing comprising:
a) a hydraulic piston pump cylinder cast integral with the pump housing and having a hard working surface bore with a finished radius greater than an as-cast radius of said bore and less than a radius of an increased hardness cylindrical region surrounding said as-cast bore, said increased hardness cylindrical region formed solely by the die casting process and wherein said hard working surface bore is formed solely by a reduced depth of said increased hardness cylindrical region; and

b) a pressure control valve housing cast integral with said pump housing.

5,059,100

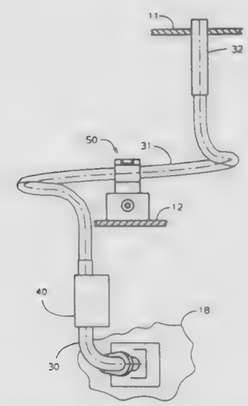
DISCHARGE LINE RESTRAINT

John F. Quesada, Clay; Douglas A. Schrank, Baldwinsville; David K. Haller, North Syracuse; Lin Su, Liverpool; Charles R. Spagnoli, Syracuse, and James S. Laub, Fayetteville, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 16, 1990, Ser. No. 552,661

Int. Cl.[5] F04B *39/00*

U.S. Cl. 417—312 **6 Claims**



1. In a hermetic compressor means including a motor and compressor within a hermetic shell and a discharge means extending from said compressor through said shell and having a helical portion defining a torsional spring for supporting said motor compressor within said shell, the improvement comprising:
clamping means secured to said shell and supporting said helical portion so as to restrict radial and axial movement of said helical portion while permitting circumferential movement of said helical portion.

5,059,101

FLUID END

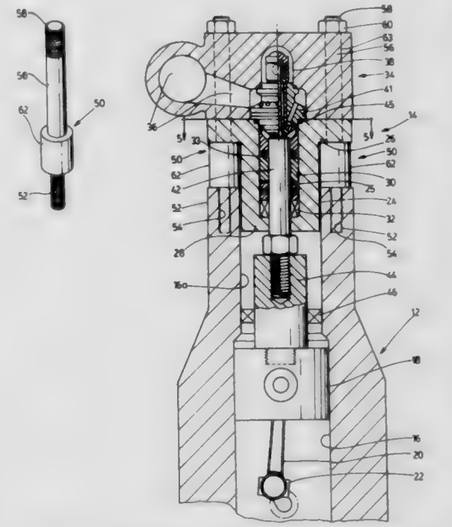
Viljo K. Valavaara, 2797 Battleford Road, Mississauga, Ontario, Canada L5N 2W2

Continuation-in-part of Ser. No. 299,467, Jan. 23, 1989, abandoned. This application Oct. 23, 1989, Ser. No. 424,912

Int. Cl.[5] F04B *21/00*

U.S. Cl. 417—569 **8 Claims**

1. A fluid end assembly for use in a plunger pump apparatus of the type having a power end, and a plurality of plungers and means for reciprocating the plungers, and to which said fluid end assemblies are attached, said power end having a plurality of securement means for receiving fastening means, said fluid end assembly comprising:
a plurality of cylinder body means defining cylinders adapted to receive respective said plungers;
a valve housing adapted to be attached at one end of said cylinder body means and adapted to contain valve means;
clamping means for securing said cylinder body means to said valve housing, said clamping means defining a plurality of spaced-apart opening means;
a plurality of fastening devices, in turn, comprising rod means, first and second fastening means at respective ends of said rod means, a first one of said fastening means being adapted to be attached to said power end, and a second one of said fastening means being adapted to be secured to said valve housing, and,
abutment means formed on said rod means intermediate said ends, said abutment means being located whereby to engage said clamping means, and thereby clamp said cylinder body means to said valve housing, whereby hydraulic stresses developed between said cylinder means and said valve housing are confined between said abutment means and said second one of said fastening means.



5,059,102

FLUID SCROLL MACHINE WITH PERIPHERALLY ATTACHED COUNTER WEIGHTS AND REDUCED THICKNESS SCROLL

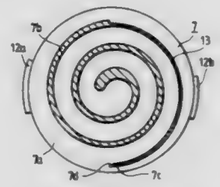
Kiyonori Tokumitsu; Mitsuhiro Nishida, and Yasunobu Ozaki, all of Fukuoka, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Aug. 24, 1989, Ser. No. 397,829

Claims priority, application Japan, Dec. 13, 1988, 63-162169[U]; Jan. 13, 1989, 1-6854

Int. Cl.[5] F01C *1/04*

U.S. Cl. 418—55.2 **4 Claims**



1. A fluid scroll machine comprising:
first and second scrolls mounted for movement relative to each other and engaged with each other;

counterweight members attached to a peripheral portion of at least one of said first and second scrolls and disposed symmetrically about an axis of said at least one scroll; and

a reduced-thickness part formed at an engaging portion of at least one of said first and second scrolls, said reduced-thickness part not participating in the compression of gas.

5,059,103

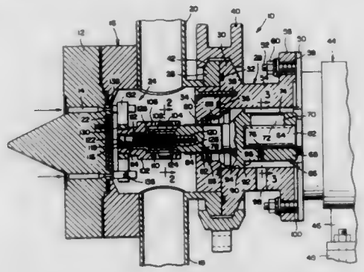
UNDERWATER PELLETIZER

Theodor Bruckmann, Xanten, Fed. Rep. of Germany; Wayne Martin, Buchanan, and Sam Hannah, Eagle Rock, both of Va., assignors to Gala Industries, Inc., Eagle Rock, Va.

Filed Jul. 30, 1990, Ser. No. 558,874

Int. Cl.[5] B29B *9/06*; B29C *47/00*

U.S. Cl. 425—67 **5 Claims**



1. An underwater pelletizer comprising a die face having a plurality of die orifices extending therethrough through which a continuous strand of molten polymer is extruded, a cutter blade assembly facing the die face and including blades for cutting the strands of polymer extruded from the die orifices into pellets, a water box enclosing the die face and cutter blade assembly to entrain the formed pellets in a flow of water, means supporting said cutter blade assembly and means driving the cutter blade assembly from a point exterior of the water box, said means supporting the cutter blade assembly including a flange means on the water box remote from the die face, a pelletizer shaft extending through the flange means, seal means and bearing means supporting the pelletizer shaft from the flange means, the improvement comprising a spring loaded cutter hub mounting the cutter blade assembly on the pelletizer shaft, said spring loaded cutter hub including a headed retaining bolt which enables movement of the cutter blade assembly toward the die face without axial restriction by the bolt head, said means driving the cutter blade assembly including an electric motor having an output shaft, a flange on the electric motor, and means mounting the electric motor from the water box, said mounting means for the electric motor including an adaptor having a flange at each end thereof for engagement with the flange means on the water box and the flange on the electric motor, and a driving connection within the adapter between the output shaft of the motor and the pelletizer shaft for driving the pelletizer shaft, said adaptor including longitudinally spaced drain means to discharge any liquid which leaks past the seal means between the pelletizer shaft and water box flange means.

5,059,104

MELT SPINNING APPARATUS

Bacchini Alberto, Vergiate, Italy, assignor to Filteco S.p.A., Italy

Filed Sep. 29, 1989, Ser. No. 414,290

Claims priority, application Italy, Oct. 3, 1988, 22156 A/88

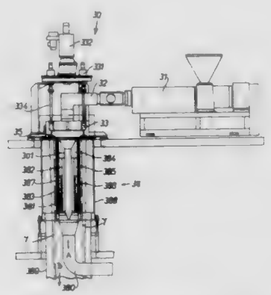
Int. Cl.[5] D01D *5/092*

U.S. Cl. 425—72.2 **20 Claims**

1. A melt-spinning apparatus comprising:

means for feeding a molten polymer composition from at least one extruder to a multiplicity of spinning orifices for producing a multiplicity of discrete continuous extrudates emerging from said orifices in at least one annular array and in a generally downward direction;

quenching means for cooling said extrudates and for solidifying them to form a multiplicity of discrete continuous filaments; said quenching means including means for directing at least one stream of a cooling gas having a quenching temperature onto a portion, at least, of said extrudates; wherein said quenching means further comprises an elongated chamber in an essentially coaxial position relative to said at least one annular array and having at least one essentially tubular inner chamber wall member positioned radially within said annular array; and at least one outer chamber wall member positioned radially outside of said array; wherein said inner chamber wall member is connected to a source of cooling gas and has at least



one wall portion that is permeable to said cooling gas while said outer chamber wall member is connected to an outlet duct for said cooling gas and is substantially impermeable thereto; and wherein said inner chamber wall member includes at least two essentially coaxial ducts having openings through which cooling gas is simultaneously introduced or removed at different axial levels of said elongated chamber means; and

take-up and stretching means provided downstream from said orifices for contacting and stretching said filaments;

wherein a portion, at least, of said orifices is arranged to form an annular array and wherein a portion, at least, of said quenching means is provided to direct said at least one stream of said cooling gas in an essentially radial manner onto said extrudates that emerge from said spinning orifices in said annular array.

5,059,105

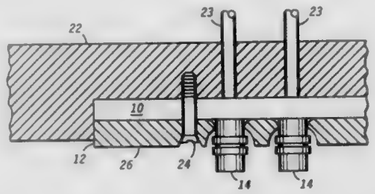
RESILIENT MOLD ASSEMBLY

John Baird, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1989, Ser. No. 425,152

Int. Cl.[5] B29C *39/10*

U.S. Cl. 425—116 **6 Claims**



1. A mold assembly for encapsulating at least a portion of a work piece, comprising: a first mold base and a second mold base; a first cavity plate attached to the first mold base; a second cavity plate attached to the second mold base; a first sheet of rubber material positioned between the first mold base and the first cavity plate; and a second sheet of rubber material positioned between the second mold base and the second cavity plate, wherein the work piece fits in a cavity formed by the first and the second cavity plates and the first sheet of rubber seals a first end of the cavity and the second sheet of rubber seals a second end of the cavity so that when the at least a portion of the work piece is encapsulated the rubber seals prevent encapsulating material from reaching ends of the work piece.

5,059,106

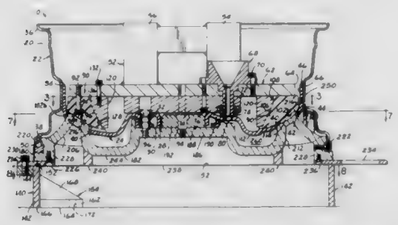
APPARATUS FOR MOLDING COMPOSITE METAL-ELASTOMERIC WHEELS

Jeffrey S. Joseph, Perrysburg, Ohio, assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Nov. 30, 1989, Ser. No. 443,412

Int. Cl.[5] B22C *9/28*; B29C *45/37*

U.S. Cl. 425—125 **10 Claims**



1. Apparatus for molding a composite styled metal and plastic vehicle wheel of the type having a metal disc and rim subassembly operable as a metal street wheel when a pneumatic tire is mounted on said rim and a decorative plastic body affixed and molded to a face surface of said wheel subassembly facing outboard of the vehicle on which said wheel is to be mounted, said metal wheel subassembly serving as a preform in said molding apparatus which is united with the plastic body molding material to form such composite wheel, said disc having a circular row of air venting openings therethrough, and said molding apparatus including a lower mold part having an annular lip disposed to be in sealing engagement against an annular portion of said metal wheel radially outwardly of the center of the disc in the closed condition of said mold apparatus, said lower mold part having a mold cavity surface to provide an ornamental configuration for an outboard face of said plastic body of the composite wheel, said mold cavity surface in said closed condition defining with at least part of such outboard face surface of said wheel subassembly, and an upper mold part comprising a clamp seating in said closed condition against an inboard face of said wheel subassembly urging the same into said sealing engagement with said lower mold part, said mold parts being axially separable from one another to open said mold apparatus and to clear said clamp from said wheel subassembly and said wheel subassembly from said lower mold part, the improvement wherein said lower mold part includes a plurality of outboard body vent-pocket-forming cores disposed in said mold cavity and adapted for individual registry with said disc vent openings so as to protrude therethrough from said mold cavity in the closed condition of said mold with a clearance space remaining between each of said cores and the associated disc vent opening, and said upper mold part includes expansible lid seal means in juxtaposed radially and axially overlapping relation to said disc inboard face and said cores in said mold-closed condition for sealing such core-disc part opening clearance spaces, said lid seal means being radially outwardly expansible in response to clamping pressure of said upper mold part against said wheel subassembly and in turn against said lower mold part duing mold closure to thereby raidally outwardly enlarge the mold cavity sealing engagement area of said lid seal means against the inboard surface of said disc in the mold-closed condition of said apparatus, and being radially inwardly contractible in response to release of such clamping pressure during mold opening, said lid seal means comprising a back-up part made of rigid material and a disc-engagement part made of heat resistant resilient material disposed in radially outwardly surrounding relation to said back-up part, said back-up and disc-engagement parts having axially overlapping juxtaposed engaged surfaces in a closed condition of said mold, said juxtaposed engaged surfaces of said lid seal means back-up and disc-engagement parts sloping radially inwardly in an outboard direction relative to the wheel to provide a wedge-like engagement between said back-up and disc engagement parts at said juxtaposed surfaces to cause radially outwardly expansible flexure of said disc-engagement part upon engagement thereof with said disc as said mold apparatus is closed.

5,059,107

APPARATUS FOR PRODUCING ANNULAR FIBER AGGREGATE

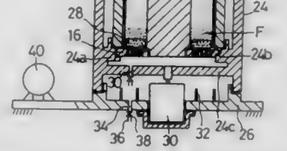
Renichi Isomura; Mitsuyoshi Shirotani; Tomohito Ito, and Hidetoshi Hirai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 6, 1990, Ser. No. 489,200

Claims priority, application Japan, Mar. 9, 1989, 1-57345

Int. Cl.[5] B29C *35/08, 41/16*

U.S. Cl. 425—174.8 R **7 Claims**



1. An apparatus for producing annular fiber aggregate comprising:

a container comprising an inner cylinder and an outer cylinder disposed concentrically, whereby forming an upright cylindrical space between said inner cylinder and said outer cylinder;

at least two positive electrodes and two negative electrodes disposed in pairs with electrodes of similar charge arranged opposite each other and buried in a wall of said outer cylinder and aligned parallel to the axis of said upright cylindrical space;

a filter member disposed at a lower portion of said upright cylindrical space; and

a voltage applicator connected to said positive electrodes and said negative electrodes.

5,059,108

INJECTION MOULD HAVING COOLING PASSAGES

Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Holdings & Finance S.A., Pully, Switzerland

Filed Mar. 13, 1990, Ser. No. 493,037

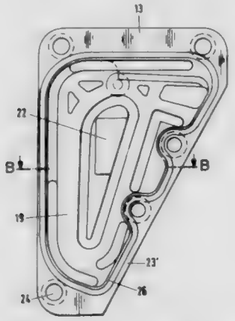
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1989, 3908188

Int. Cl.[5] B29C *45/26*

U.S. Cl. 425—190 **9 Claims**

1. In a tool for injection mouldiag of synthetic plastics material comprising a two part mould, said two part mould formed by two substantially steel mould parts adapted to be applied

against each other in sealing-tight manner along a plane of separation and moved away from each other, the improvement comprising means in at least one of said mould parts defining a recess, at least one insert received in said one mould part recess and fixed therein in a fluid-tight manner, means in an exposed



surface of said at least one insert defining a mould cavity, said at least one being formed of a metal material having a greater heat conductivity coefficient that steel, and cooling spaces disposed in the interface between said at least one insert and said one mould part recess, said cooling spaces being bounded by said at least one insert and said one mould part.

5,059,109

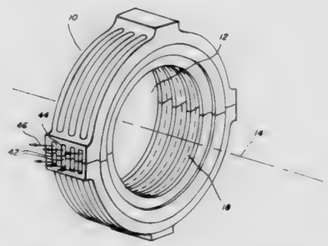
CORRUGATED MOLD BLOCK

Heinrich Dickhut, Charleston, and John S. Berns, Cleveland, both of Tenn., assignors to Cullom Machine Tool & Die, Inc., Cleveland, Tenn.

Filed Dec. 26, 1989, Ser. No. 456,973

Int. Cl.[5] B29C *49/38*

U.S. Cl. 425—233 **6 Claims**



1. A corrugated mold block for a vacuum machine for molding corrugated tubes, said block being movable about an endless path and cooperating with other blocks to define a molding tunnel with a vacuum source along a portion of said path, said block comprising:

a plurality of sub-blocks secured end to end, each sub-block having

a face substantially arcuate about a longitudinal axis and corrugated with not more than one complete wavelength of circumferential grooves and lands for defining a portion of the mold tunnel,

two longitudinally spaced end surfaces wherein additional sub-blocks may be adjoined so as to extend said tunnel in a longitudinal direction;

a vacuum channel about one of said end surfaces and spaced from said face, and

means for defining openings between said face and said channel;

whereby the vacuum channels and defined openings of abutting sub-blocks together define a vacuum passage; and

means for connecting said vacuum passage to the vacuum source when the mold block passes along said mold tunnel.

5,059,110

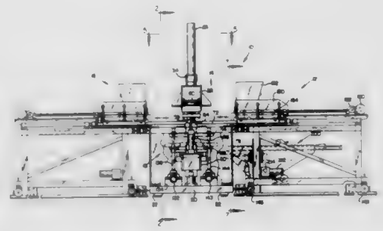
APPARATUS FOR FORMING CONCRETE BLOCKS HAVING PLURAL SEPARATELY DRIVEN VIBRATOR SETS

J. Dennis Allison, Camas, and Robert A. Schmitt, Vancouver, both of Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Jul. 21, 1989, Ser. No. 383,054

Int. Cl.[5] B28B *1/08, 3/06*

U.S. Cl. 424—260 **15 Claims**



1. Apparatus for continuously forming concrete blocks comprising:

frame means for defining a supporting structure;

a mold box having internal cavities contoured to defined preselected block patterns;

means for flexibly mounting said mold box on said frame means comprising a substantially planar plate spring having a first end connected to said mold box and a second end connected to said frame means;

means for fixing the lateral position of said mold box,

feed means for receiving concrete material operable for selective positioning over an upper surface of the mold box for investing concrete material into the cavities;

vibration means defined by first and second sets of vibrators mounted, respectively, generally at opposite ends of the mold box; and

first and second power driven means selectively operable for synchronizing or independently actuating the first and second sets of vibrators, respectively.

5,059,111

APPARATUS FOR PROCESSING UNVULCANIZED RUBBER

Jürgen Mössinger, Burgwedel; Siegfried Stein; Max Stephan, both of Garbsen, and Ralf Feierabend, Seelze, all of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 427,446

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1988, 3837197

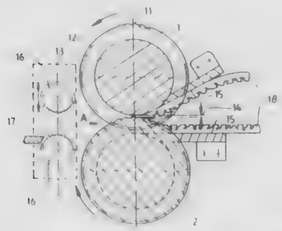
Int. Cl.[5] B29B *11/02;* **B29C** *59/04*

U.S. Cl. 425—294 **1 Claim**

1. An apparatus for processing unvulcanized rubber that after being processed is in the form of strips having a jagged surface for supplying to mixing units, said apparatus including intermeshing grooved rollers, the improvement wherein:

each of said intermeshing grooved rollers is provided with cutting disks, with said cutting disks of a first one of said intermeshing grooved rollers intermeshing with respective grooves of a second one of said intermeshing grooved rollers and with said cutting disks of said second intermeshing grooved roller intermeshing with respective

further grooves of said first intermeshing grooved roller, and with the cutting disks of at least one of said grooved rollers being provided with teeth; and



two feed rollers are disposed upstream of said grooved rollers and are provided with serrations.

5,059,112

MOLD AND DIE OPERATION

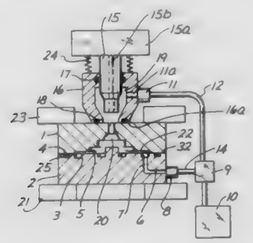
Marianne Wieser, Ruppertschuettener Str. 64, D-8770 Lohr-/Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 117,680, Nov. 5, 1987, abandoned. This application Jun. 15, 1990, Ser. No. 538,918

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3637982

Int. Cl.[5] B29C *45/18*

U.S. Cl. 425—546 **14 Claims**



1. In a mold having a first mold part and a second mold part with a cavity and an interface between said mold parts, the improvement comprising:

a feed opening in said first mold part;

charge feed means for supplying and feeding material to be molded in the mold;

evacuation means for providing a low pressure;

means for alternatingly connecting the charge feed means and the evacuation means to the feed opening, so that upon connection of the evacuation means to the feed opening, a pressure gradient is obtained in the feed opening for obtaining an outflow of air from the mold cavity through the feed opening, while on connecting the feed means to the feed opening, the pressure gradient in the feed opening is reversed for obtaining a flow of said material into the mold cavity;

a channel in said second mold part and extending from the interface and peripherally in relation to the cavity, there being a shallow slot connecting the channel to the cavity;

sealing means circumscribing the channel to seal the cavity and the channel against atmospheric pressure; and

a duct located in said second mold part, the duct leading to the channel, and being connected to the evacuation means, so that the reversed pressure gradient in the feed opening and in the cavity continues to be effective, on account of the cavity and the channel being continued to be evacuated and sealed by the evacuation means and sealing means respectively.

5,059,113

INJECTION MOLDING APPARATUS

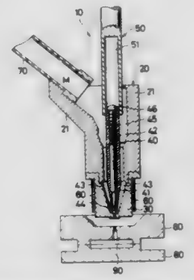
Michio Ito, Uozu, and Hiroshi Yoshida, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 6, 1990, Ser. No. 505,600

Claims priority, application Japan, Apr. 7, 1989, 1-41506

Int. Cl.[5] B29C *45/30*

U.S. Cl. 425—564 **9 Claims**



1. An injection assembly for use in injection molding apparatus, which comprises a heating cylinder, a nozzle unit integral with one end portion of said cylinder, a spreader or torpedo snugly fitted at a tapered end thereof to said nozzle unit and having a needle valve secured to a tip end of said tapered end, and an injection plunger reciprocable in said cylinder, said torpedo having a hollow extension extending from said tapered end and protruding into said cylinder, and said plunger being provided therein with an elongate aperture interfitted in slidably movable relation to said extension of said torpedo.

5,059,114

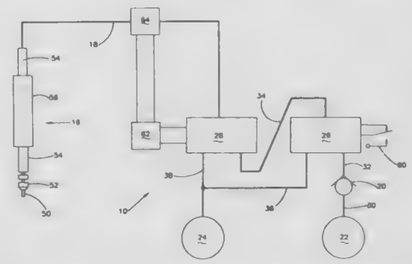
HEATING APPARATUS AND METHOD

Chester H. Stout, Stow, and John Van Domelen, Gates Mills, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation of Ser. No. 283,262, Dec. 9, 1988, abandoned. This application Apr. 9, 1990, Ser. No. 508,501

Int. Cl.[5] F23N *5/24*

U.S. Cl. 431—3 **20 Claims**



17. A process of performing a work operation with a torch comprising:

a) delivering a supply of a combustible gas to a torch;

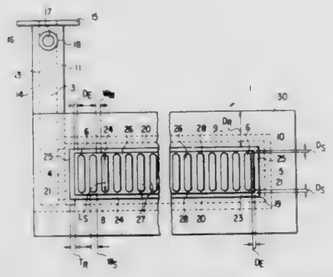
b) igniting the gas to provide a work performing flame jet;

c) monitoring the torch for flashback conditions;

d) upon detection of a flashback condition, signaling a first three-way valve to terminate the delivery of the combustible gas and purge combustible gas from at least a portion of the conduit and the torch;

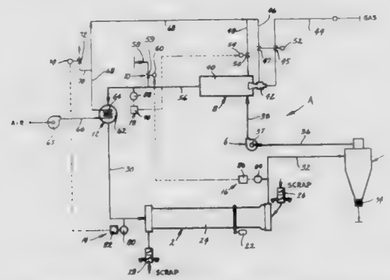
e) upon shut-down of the torch, signaling a second three-way valve to terminate the delivery of the combustible gas and purge combustible gas from at least a portion of the conduit and the torch.

5,059,115
FUEL FIRED BURNER
David M. Sutton, Camberley, England, assignor to British Gas plc, London, England
Continuation of Ser. No. 883,502, Jul. 8, 1986, Pat. No. 4,923,393. This application Feb. 5, 1990, Ser. No. 475,275
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] F23D *14/12*
U.S. Cl. 431—328 8 Claims



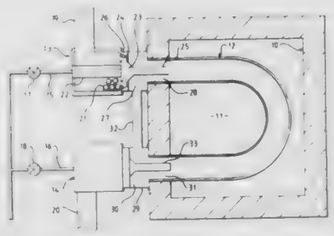
1. A fuel-fired burner comprising a plenum chamber having walls and means for supplying the plenum chamber with fuel and air, one of the walls being generally flat and having a plurality of substantially rectangular slots extending therethrough and serving as combustion ports for the fuel, the wall having an integral rim extending from the wall on a side thereof opposite the plenum chamber.

5,059,116
APPARATUS AND PROCESS FOR REMOVING VOLATILE COATINGS FROM SCRAP METAL
John R. Gillespie, and Charles K. Gillespie, both of St. Louis County, Mo., assignors to Gillespie & Powers, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 285,637, Dec. 16, 1988, abandoned. This application Sep. 1, 1989, Ser. No. 401,795
Int. Cl.[5] F27B *7/02*
U.S. Cl. 432—72 24 Claims



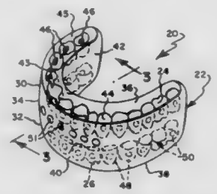
1. An apparatus for removing coatings from metal scrap, said apparatus comprising: a kiln having a product feed end at which scrap is introduced into the kiln and a product discharge end where the scrap leaves the kiln; a duct system opening into the kiln; means for generating an airstream which passes through the duct system and the kiln; first control means for sensing the temperature of the airstream at the entrance to the kiln and maintaining that temperature substantially constant and high enough to volatilize components of the coating; and second control means for varying the mass flow of the airstream through the kiln, without altering the oxygen content of the airstream, to maintain the temperature of the airstream as it leaves the kiln substantially constant so as to compensate for variances in the scrap that passes through the kiln.

5,059,117
RADIANT TUBE FURNACE AND METHOD OF BURNING A FUEL
Brian J. Wills, Kinver, United Kingdom, assignor to Stordy Combustion Engineering Limited, West Midlands, United Kingdom
Continuation of Ser. No. 308,851, Feb. 9, 1989, abandoned. This application Oct. 2, 1990, Ser. No. 593,512
Claims priority, application United Kingdom, Feb. 11, 1988, 8803183
Int. Cl.[5] F27B *3/22*
U.S. Cl. 432—176 5 Claims



1. A method of burning a fuel to supply heat comprising the steps of: directing a burning mixture of the fuel with air through a tube to heat the tube and cause the tube to radiate heat for an indefinite number of cycles, directing the burning mixture of fuel and air into the tube at a first end thereof generating products of combustion, discharging said products of combustion from a second end of the tube and storing heat from said products of combustion during a first part of each cycle; directing a burning mixture of fuel and air into the tube at the second end thereof generating further products of combustion, heating the air with heat stored from said first part of each cycle, discharging said further products of combustion from the tube at the first end thereof, and storing heat from said further products of combustion during a second part of each cycle; and admitting a further gas to the interior of the tube adjacent to the wall thereof to form a shield between the burning mixture and a part of the tube wall.

5,059,118
ORTHODONTIC FINISHING POSITIONER AND METHOD OF CONSTRUCTION
Peter R. Breads, Grand Island; Gerard P. Abbatte, Buffalo, and Stephen P. Warunek, West Seneca, all of N.Y., assignors to Great Lakes Orthodontics, Ltd., Tonawanda, N.Y.
Division of Ser. No. 46,087, May 5, 1987, Pat. No. 4,856,991. This application Jul. 25, 1989, Ser. No. 384,979
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—6 18 Claims



1. A method of constructing an orthodontic positioner for malocclued teeth located in a preselected one of the upper and lower dental arches of a patient for placing in position in the patient's mouth for contact with the patient's teeth and for contact and coaction with teeth-mounted coupling members, of:

said positioner acting against the teeth and coupling members to effectively bias the teeth of the one arch toward a preselected orientation, said method comprising the steps

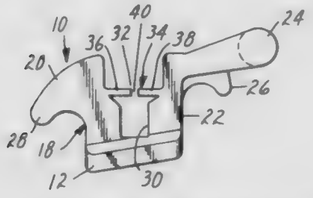
providing a hardened dental facsimile formed from an impression of the preselected dental arch wherein the dental facsimile includes portions simulating the teeth and a portion of the gum tissue adjacent the teeth of the preselected dental arch and the surfaces of the coupling members are defined by the surfaces of either coupling member-simulating portions of the facsimile formed by the impression or coupling members attached to the teeth-simulating portions of the facsimile;

repositioning teeth-simulating portions of the dental facsimile to a preselected orientation so as to provide a first model of the preselected dental arch having teeth-simulating portions oriented in the same manner as the teeth in the preselected arch are desired to be oriented;

providing an amount of elastomer base material; and

forming the positioner out of said elastomer base material so that said positioner assumes a resilient, elastic and flexible body having an arcuate-shaped portion along which is defined a recess having walls of substantial thickness defining teeth-engaging surfaces for receiving the teeth-simulating portions of said first model and a series of indentations disposed across said teeth-engaging surfaces wherein each indentation is shaped to nestingly accept a corresponding coupling member surface defined upon said first model so that when the positioner body is operatively placed in position in the patient's mouth, the positioner body acts against the teeth and coupling members to effectively bias the teeth of the one arch toward the preselected orientation.

5,059,119
ORTHODONTIC BUCCAL TUBE WITH CONVERTIBLE COVER
Wilford A. Snead, San Dimas, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 21, 1991, Ser. No. 673,144
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—17 7 Claims



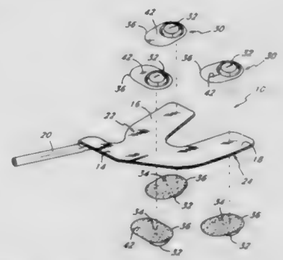
1. A convertible orthodontic buccal tube for mounting on a molar tooth comprising:

a tooth-facing base;

a body extending from the base and having spaced apart occlusal and gingival portions, said body including an arch wire slot located between the occlusal and gingival portions and having a side remote from said base; and

a cover including a first tab integrally connected to said occlusal portion and a second tab integrally connected to said gingival portion, said first tab and said second tab extending toward each other and extending across at least a portion of said slot, said cover being made of an elastically deformable material enabling said first tab to be moved in an arc toward a position facing said occlusal portion and enabling said second tab to be moved apart from said first tab in an arc toward a position facing said gingival portion to thereby open the slot.

5,059,120
DENTAL IMPRESSION PADS AND METHOD OF MANUFACTURE
Robert L. Lee, 22937 Grand Terrace Rd., Colton, Calif. 92324
Filed Dec. 19, 1989, Ser. No. 453,418
Int. Cl.[5] A61C *9/00*
U.S. Cl. 433—37 48 Claims



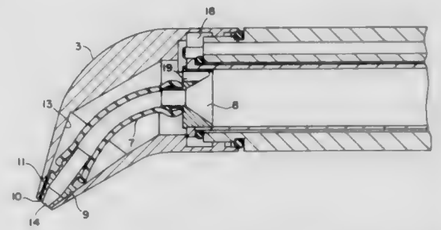
1. A dental impression pad for use with a dental tray for making a dental impression comprising:

a strip of thin material;

an adhesive covering one side of said strip; and

dental impression material attached on a second side of said strip.

5,059,121
DEVICE AND PROCESS FOR SPRAYING DENTAL MOLDING COMPOUND
Hans H. Schulz, Cologne, and Horst Jonischkeit, Tuttlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Aug. 13, 1990, Ser. No. 566,281
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928156
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—88 8 Claims



1. Device for spraying on dental impression compounds, comprising a cylindrical handpiece (1) being capable of storing a cartridge (5) therein for the provision of the impression compound, a curved and conically tapering headpiece (3), which can be mounted on the handpiece (1) by means of a bayonet joint or screw joint (2) the headpiece having a likewise conically tapering internal contour and a spray nozzle (9, 10, 14) which is provided with a supply tube for delivery of the impression compound the said supply tube for delivery of the impression compound consisting of an elastic hosepiece (7), the front (distal) end of which is provided with a conical or pyramidal nozzle member (9) which has air escape openings (11) and the diameter of which is greater than the smallest diameter of the conical tubular cross-section (4), and wherein the length

of the elastic hosepiece (7) is dimensioned in such a manner that it is slightly compressed when the headpiece (3) is mounted, so that the nozzle member base (12) is pressed with its external periphery against the conical internal contour (4) of the headpiece (3).

5,059,122

DENTAL SCALER

Max Hetzel, Deitingen, Switzerland, assignor to Bien-Air S.A., Bienne/Biel, Switzerland

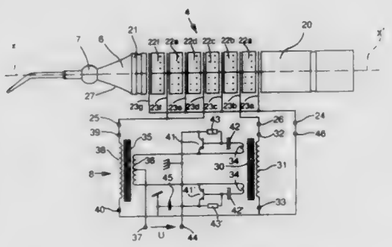
PCT No. PCT/CH88/00144, § 371 Date Apr. 25, 1989, § 102(e) Date Apr. 25, 1989, PCT Pub. No. WO89/01763, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 24, 1988, Ser. No. 358,339

Claims priority, application Switzerland, Aug. 25, 1987, 03259/87

Int. Cl.[5] A61C *1/07*

U.S. Cl. 433—118 **8 Claims**



1. A dental scaler comprising an oblong hollow sleeve that can be held by hand, and arranged inside the sleeve the scaler comprising:

a vibrating piezoelectric transducer having a first extremity as a base, a second extremity as a head, an electric input, and an electric output, said extremities being disposed along a longitudinal axis of the sleeve;

a scraper secured to said transducer by coupling means and having a member protruding from said sleeve, said coupling means having an elastic connecting means fixed to said transducer at an antinode of displacement and a weight attached to said elastic connecting means and bearing said scraper, said weight and said scraper forming with the said elastic connecting means a vibrating system having a resonant frequency essentially equal to a frequency of vibration of said transducer; and

an electronic amplifier having an amplifier input, an amplifier output and two feeder terminals, said feeder terminals receiving, from an external power supply, energy necessary for operation of the scaler, said amplifier input and said amplifier output being connected respectively to said transducer output and said transducer input so as to form an oscillator, said amplifier acting as a sustaining circuit and said transducer as a resonator vibrating along said longitudinal axis, said base and said head being respectively at a node and at an antinode of displacement of said transducer.

5,059,123

PERIODONTAL BARRIER AND METHOD FOR AIDING PERIODONTAL TISSUE REGENERATION

Gary R. Jernberg, 99 Navaho Ave. Suite 102, Mankato, Minn. 56001

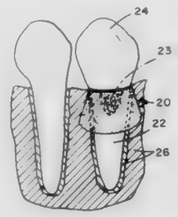
Continuation-in-part of Ser. No. 522,999, May 14, 1990. This application Oct. 18, 1990, Ser. No. 600,191

Int. Cl.[5] A61C *5/00*

U.S. Cl. 433—215 **39 Claims**

1. A method for aiding and guiding periodontal tissue regeneration, comprising the steps of:

incorporating at least one carrier agent and time-release microshapes encapsulating at least one chemotherapeutic agent into a biocompatible periodontal barrier so as to provide for sustained, controlled delivery and improved cellular uptake of said at least one chemotherapeutic agent to a localized periodontal regeneration site in a mammalian body; and



implanting said barrier at said localized periodontal regeneration site, wherein said time-release microshapes will begin to release said at least one chemotherapeutic agent at said localized periodontal regeneration site in a sustained, controlled manner, and further wherein said at least one carrier agent will provide for the improved cellular uptake of said at least one chemotherapeutic agent at the localized periodontal treatment site.

5,059,124

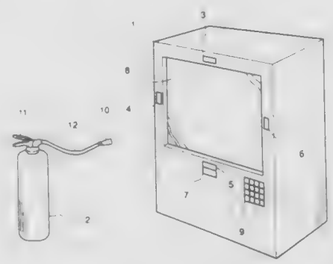
IMITATION APPARATUS FOR FIRE EXTINGUISHING TRAINING

Masahiro Tsujita, 2-8-19, Ebisunishi, Naniwa-ku, Osaka-shi, Osaka-fu, Japan

Filed Aug. 3, 1990, Ser. No. 562,197

Int. Cl.[5] G09B *9/00*

U.S. Cl. 434—226 **8 Claims**



1. An imitation apparatus for fire extinguishing training comprising:

fire video storing means for storing a fire video previously;

video playing back means for playing back the fire video stored in the fire video storing means;

video display means for displaying an output signal of the video playing back means;

imitation fire extinct means having a imitation nozzle and having a capability of imitation operation for extinct material jetting;

imitation operation detecting means for detecting the imitation operation of the imitation fire extinct means;

nozzle direction detecting means for detecting direction of the imitation nozzle when the imitation operation being detected by the imitation operation detecting means;

effect appraisal means for appraising extinct effect based on the direction of the imitation nozzle; and

fire video selecting means for selecting a fire video according to the appraisal of the extinct effect by controlling the video playing back means.

5,059,125

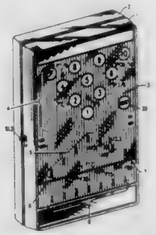
BOWLING TUTOR

William R. Maclay, Sr., Los Gatos, and Franklin G. Fisher, San Jose, both of Calif., assignors to Better Bowling, Inc., San Jose, Calif.

Filed Aug. 14, 1989, Ser. No. 393,290

Int. Cl.[5] A63D *5/00*

U.S. Cl. 434—249 **15 Claims**



1. A hand held portable instructional device for displaying to the user an indication of the ideal path that a bowling ball should follow on a standard bowling alley for a plurality of different standing bowling pin configurations and the user's selected degree of hook, said path beginning at the foul line and ending at one of a plurality of predetermined pin targets, and including reference to at least one standard foul line marker and at least one standard arrow marker, said device comprising in combination,

A) a multi-layered membrane switch having a top layer comprising a static display member illustrating in a scaled plan view, said standard bowling alley showing standard locations of ten bowling pins, standard foul line markers, and standard arrow markers,

B) input means for entering the user's selected degree of hook into said device,

C) means to visually indicate on said display member an ideal path for a bowling ball to follow for one of said plurality of standing pin configurations, including selectively energizable indicators positioned adjacent said markers and said pin targets,

D) input means, comprising said membrane switch and said display member for entering into said device, positional data defining said one standing pin configuration, and

E) electronic digital control means, connected between said input means and said means to visually indicate by simultaneously energizing in response to said positional data, a first selected said indicator disposed adjacent one of said foul line markers, a second selected said indicator disposed adjacent one of said pin targets whereby said ideal path for said one standing pin configuration is indicated to said user.

5,059,126

SOUND ASSOCIATION AND LEARNING SYSTEM

Dan V. Kimball, 1560 San Roque Rd., Santa Barbara, Calif. 93105

Filed May 9, 1990, Ser. No. 520,765

Int. Cl.[5] G11B *7/00*

U.S. Cl. 434—308 **27 Claims**

25. An interactive audio system for performing interactive applications programs comprising:

a) a Compact Disc containing a plurality of soundtracks, each of said plurality of soundtracks containing sounds associated with an applications program and being individually addressable by means of a unique index associated therewith, said Compact Disc further including applications program control information thereon;

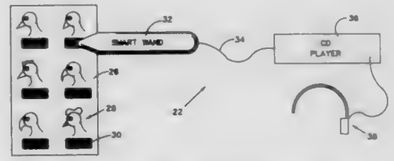
b) Compact Disc player means for playing said Compact Disc to output digital data streams reflecting selected ones of said soundtracks;

c) sound reproduction means connected to said Compact Disc player means for reproducing selected one of said soundtracks from said digital data streams;

d) memory means for receiving and holding applications program control information;

e) read interface means connected to said Compact Disc player means and said memory means for inputting digital applications program control information from said Compact Disc into said memory means;

f) user selection input means for allowing a user to indicate selections of options contained within an applications program; and,



g) logic means for sensing selections of options by a user through said user selection input means, for accessing said memory means, and for selecting and causing a said associated said soundtrack to be reproduced, said logic means including reprogramming logic means for executing logic sequences determined by said applications program control information in said memory means whereby the interactive audio system can be a general system which is specialized by digital applications program control information added to respective ones of a plurality of specialized Compact Discs.

5,059,127

COMPUTERIZED MASTERY TESTING SYSTEM, A COMPUTER ADMINISTERED VARIABLE LENGTH SEQUENTIAL TESTING SYSTEM FOR MAKING PASS/FAIL DECISIONS

Charles Lewis, Montgomery County, Somerset County; Kathleen M. Sheehan, Lambertville; Richard N. DeVore, Stockton, and Leonard C. Swanson, Hopewell, all of N.J., assignors to Educational Testing Service, Princeton, N.J.

Filed Oct. 26, 1989, Ser. No. 428,383

Int. Cl.[5] G09B *7/00*

U.S. Cl. 434—353 **25 Claims**

1. A method of computerized mastery testing for deciding whether an examinee has attained a specified mastery of a given subject by using a computer system means, said method comprising:

a. determining test specifications;

b. creating a pool of test items which meet the test specifications;

c. determining the dimensionally of the pool of test items;

d. obtaining item response theory (IRT) statistics and assessing IRT model fit for each test item;

e. determining mastery ability values;

f. assembling the test items into testlets;

g. verifying all of the testlets meet testing criteria;

h. selecting loss functions and prior probability of mastery;

i. estimating computerized mastery testing (CMT) cutscores which minimize expected posterior loss;

j. estimating expected error rates and average test length;

k. authoring and packaging the test for administration; and

l. administering presentation and scoring of the testlets in a sequential manner to the examinee.

24. A computerized mastery testing system having a computer system means for testing whether an examinee has attained specified mastery of a given subject comprising:

a. means for inputing test specifications and test items into a computer database;

b. means for applying item response theory (IRT) so as to

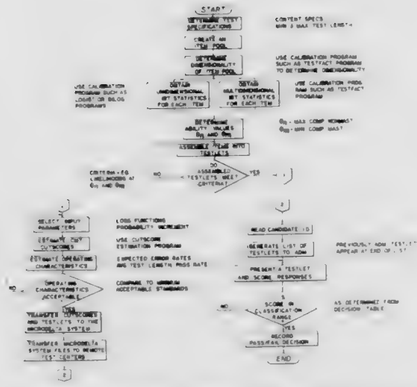
obtain IRT statistics for the test items and determine mastery ability values;

c. means for assembling the test items into testlets;

d. means for verifying the testlets meet testing criteria;

e. means for selecting loss functions and the prior probability of mastery;

f. means for applying Bayesian decision theory so as to



estimate computerized mastery testing (CMT) cutscores which minimize the expected posterior loss and determine the associated operating characteristics;

g. means for authoring and packaging the test for administration; and

h. means for administering presentation and scoring of an examinee response dependent variable number of the testlets in a random, sequential manner to the examinee.

5,059,128

ENGAGER MATRIX

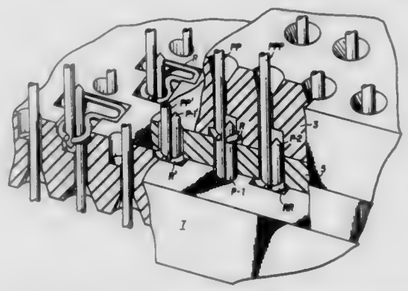
Patrick J. Murphy, Blaine, and John W. Svenkeson, Forest Lake, both of Minn., assignors to Unisys Corporation, Detroit, Mich.

Continuation of Ser. No. 228,895, Aug. 5, 1988, Pat. No. 4,988,305, which is a division of Ser. No. 149,827, Jan. 28, 1988, abandoned. This application Jul. 31, 1990, Ser. No. 561,393

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] **H01R** *9/09, 13/20*

U.S. Cl. 439—65 **24 Claims**



1. Two-faced female connector means adapted for ohmic connection of a number N—1 of first pins P-1, each with a respective one of a set of second pins P-2 projected oppositely from one or more connectable devices D-1, D-2, etc.,

this connector means being characterized by a number N—1 of paired bores, each arranged and adapted for receiving a respective pair of oppositely-projected first and second pins P-1/P-2 in wiping engagement; and a number N-2 of conductive gripper means, each said gripper means being adapted for so engaging a respective pair of said pins, and adjacent gripper means being offset from one another in the thickness direction of the overall connector means;

said connector means comprising a plurality of relatively planar plate means, with at least one of said plate means adapted to receive and retain a first set R-1 of gripper means, plus at least one other of said plate means disposed adjacent said first plate means, each other plate means being adapted to receive and retain a respective further set R-2, etc. of gripper means.

5,059,129

CONNECTOR ASSEMBLY INCLUDING BILAYERED ELASTOMERIC MEMBER

William L. Brodsky, Binghamton; Thomas G. Macek, and John J. Squires, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1991, Ser. No. 674,243

Int. Cl.[5] **H01R** *9/09*

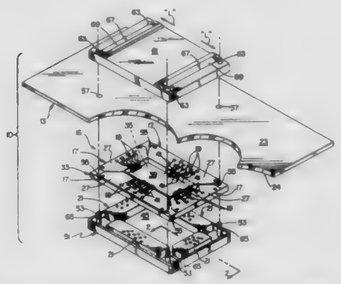
U.S. Cl. 439—67 **12 Claims**

1. An electrical connector assembly comprising:

a first circuit member including a plurality of electrical conductors;

a second circuit member including a plurality of electrical conductors;

a pressure exertion member for exerting a predetermined pressure against said second circuit member to cause each of said electrical conductors of said second circuit member to electrically contact a respective one of said electrical conductors of said first circuit member, said pressure exertion member including a bilayered elastomeric element having a first layer including a plurality of openings spacedly located therein in a predetermined pattern and a second layer adjacent said first layer and including a plurality of upstanding projections located in a pre-established pattern relative to said pattern of openings in said first layer, each of said upstanding projections adapted for aligning with a respective one of said electrical conductors of said second circuit member and for engaging said circuit member to exert said predetermined pressure thereagainst; and



means for retaining said pressure exertion member against said second circuit member to cause said exertion member to exert said pressure against said second circuit member.

5,059,130

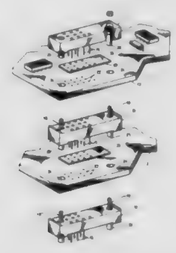
MINIMAL SPACE PRINTED CICUIT BOARD AND ELECTRICAL CONNECTOR SYSTEM

Grady A. Miller, Jr., Grand Prairie, Tex., assignor to LTV Aerospace and Defense Company, Grand Prairie, Tex.

Continuation of Ser. No. 210,751, Mar. 23, 1988, Pat. No. 4,950,170. This application May 11, 1990, Ser. No. 522,258

Int. Cl.[5] **H01R** *9/09*

U.S. Cl. 439—74 **9 Claims**



1. A connector for interconnecting printed circuit boards, said printed circuit boards comprising multiple through apertures and electrical conductors associated therewith wherein the electrical conductors are plated to the boards and extend within the apertures, said connector comprising:

a unitary conductor body having top and bottom surfaces each configured to fit against a corresponding surface of the printed circuit boards to be interconnected thereby, and

at least one electrical connecting element mounted within said connector body and including a pin-type connecting section at one end thereof, and a socket-type connecting section at the other end thereof,

said socket-type section being adapted to receive therein a pin-type connecting section for establishing a sliding electrical contact therebetween,

said pin-type connecting section of said electrical connecting element having a solid cross-section and projecting outwardly from said connector body for a distance sufficient for said pin-type section to project through the apertures in a printed circuit board into a socket-type connecting section of a corresponding connecting element of another such connector thereby establishing a sliding electrical and mechanical connection between the pin-type connecting section of said connector, said circuit board, and said socket-type connecting section of said other connector.

5,059,131

RESILIENT CONNECTOR FOR RADIO FREQUENCY SIGNALS

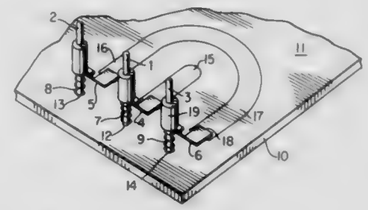
Osmo Kukkonen, and Antero Väyrynen, both of Salo, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Mar. 14, 1990, Ser. No. 495,613

Claims priority, application Finland, Apr. 12, 1989, 891745

Int. Cl.[5] **H01R** *23/72, 9/09*

U.S. Cl. 439—78 **5 Claims**



1. A resilient connector, comprising:

a printed circuit board having a planar surface;

contact means including a ground contact having two legs which extend into contact with each other on said planar surface, and an elongated contact for transmission of radio frequency signals, said elongated contact extending on said planar surface between said legs and being spaced from said ground contact;

resilient means for connecting said contact means with another connector, said resilient means including resilient elements having one end secured in contact respectively with said elongated contact and said ground contact, said resilient elements also having another end which is free for effecting contact resiliently with said another connector arrangement, said another end of said resilient elements extending to a location out of the plane of said planar surface, said printed circuit board having holes;

movable contact pins in said holes; and

means for biasing said pins in a direction away from said board for effecting contact of said pins with contact means of the another connector, said pins being movable against the biasing means further into the holes, said another end of said resilient elements being in contact with said pins, respectively.

5,059,132

ELECTRICAL RACEWAY WITH IMPROVED GROUND CONNECTION METHOD AND APPARATUS

David M. Skowronski; Robert W. DeRoss, both of Naperville; Steven Bogiel, Schaumburg; Joseph Gierut, Tinley Park; Mark M. Data, Bollingbrook; Dennis Stanhibel, Justice, and Ronald Dudek, Orland Park, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

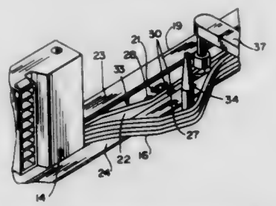
Continuation of Ser. No. 478,891, Feb. 12, 1990, abandoned. This application Aug. 6, 1990, Ser. No. 563,723

Int. Cl.[5] **H01R** *4/66*

U.S. Cl. 439—100 **5 Claims**

1. In a space dividing wall structure formed from a plurality of prefabricated upright panels which are serially connected together said wall structure including a prewired electrical subassembly comprising an elongated metal raceway having opposed longitudinal ends, a bottom wall extending between the opposed longitudinal ends and pair of generally opposed side walls connected to said bottom wall and extending between the opposed ends, said subassembly further comprising at least one power block fastened to said raceway, a plurality of electrical conductors extending from the power block to the

longitudinal ends of said elongated metal raceway, including at least one continuous ground conductor, said conductors being disposed intermediate the side walls of the raceway, and a cover mounted to the side walls for substantially enclosing the conductors in the raceway, wherein the improvement comprises electrical terminating means formed as one piece with



said metal raceway for electrically connecting the continuous ground conductor to the raceway where said electrical terminating means includes crimping means comprising two cantilevered arms having chamfered tips generally perpendicular to the metal raceway and directly opposite one another defining a space into which said continuous ground conductor can be placed before being crimped.

5,059,133

ZERO INSERTION FORCE CONNECTOR ACTUATED BY A STORED SHAPE MEMBER

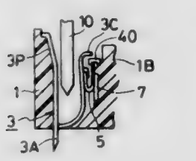
Toshiya Hikami; Koji Yoshida; Yuichi Obara, and Kenichi Fuse, all of Hiratsuka, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

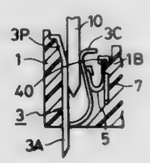
Continuation of Ser. No. 297,327, Jan. 17, 1989, Pat. No. 4,952,162, which is a continuation of Ser. No. 94,756, Sep. 10, 1987, Pat. No. 4,846,729. This application Jun. 11, 1990, Ser. No. 535,652

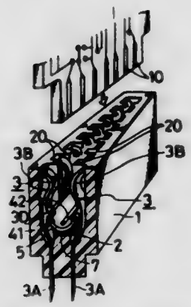
Claims priority, application Japan, Sep. 10, 1986, 61-211491; Sep. 10, 1986, 61-211493; Sep. 17, 1986, 61-219060; Jan. 30, 1987, 62-18652; Feb. 26, 1987, 62-43947; Feb. 26, 1987, 62-43948; Mar. 3, 1987, 62-46766; Mar. 9, 1987, 62-52173; May 15, 1987, 62-71774; Jun. 4, 1987, 62-138936; Jun. 18, 1987, 62-150228

Int. Cl.[5] H01R *13/629*

U.S. Cl. 439—161 **5 Claims**







1. An electronic LIF connector comprising:

a plurality of resilient contacts associated in one or more rows in a connector housing,

a shape memory spring having an initial shape and provided to extend longitudinally with respect to each row in the connector housing for driving the resilient contacts, the shape memory spring, one end of which is associated with an operation transmitting member which is connected to said resilient contacts and which is constructed of electrically insulating material, and which spring drives said resilient contacts through said operation transmitting member, transmitting a recovery force to the resilient contacts, said recovery force being generated when the shape memory spring reaches a transformation temperature or higher, said memory spring recovering a stored shape and returning to the initial shape by the spring force of the resilient contacts when the shape memory spring falls below its transformation temperature; and

a plurality of opposite contacts which are selectively insertable in said connector housing opposite said resilient contacts;

and wherein each of said resilient contacts comprises

a main portion which has a relatively strong spring force and which is capable of contacting the respective one of said opposite contacts only when said resilient contact is deformed under said recovery force and

an auxiliary portion which has a relatively weak spring force and which is capable of contacting the respective one of said opposite contacts whether or not said resilient contact is deformed under said recovery force.

5,059,134

APPARATUS FOR PROVIDING AN ELECTRICAL CONDUCTION PATH BETWEEN TWO CONTACT LOCATIONS WHICH ARE ROTATABLE WITH RESPECT TO EACH OTHER

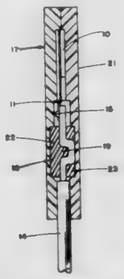
Friedrich Schauer, Heroldsberg; Hans Berthold, Eckental; Manfred Wolff, Schwarzenbruck, and Kurt Wölfel, Nürnberg, all of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 15, 1990, Ser. No. 597,536

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1989, 3935529

Int. Cl.[5] H01R *9/07*

U.S. Cl. 439—164 **4 Claims**



1. In an apparatus for providing an electrical conductive path between a first contact location and a second contact location rotatable one with respect to the other, said electrical conductive path comprising a flat ribbon cable having a plurality of electrical conductors and being wound in the manner of a coiled spring; the improvement comprising each of said electrical conductors having an uninsulated end portion thereof serially connected at a connection location to one of a plurality of connection conductors at an uninsulated end portion thereof; and a connection assembly comprising:

a clamping body of insulating material positioned about and engaging a segment of each of said uninsulated end portions of each of said connection conductors, said engagement being removed from said connection location of each of said serially connected conductors, said clamping body comprising a pair of clamping segments closable one against the other, one of said clamping segments including protrusion means about which each of said uninsulated end portions of said connection conductors axially bend at least twice so as to restrict axial movement thereof; and

a protective sheath of insulating material axially positioned about said connection location of each of said serially connected conductors, and axially positioned about and engaging said clamping body so as to restrict axial movement therebetween.

5,059,135

CONTACT IN A SOCKET FOR AN ELECTRIC PART

Noriyuki Matsuoka, and Kazumi Uratsuji, both of Tokyo, Japan, assignors to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1990, Ser. No. 533,791

Int. Cl.[5] H01R *13/15, 11/22*

U.S. Cl. 439—268 **2 Claims**



1. A contact for insertion into a socket of an electric part and for receiving a terminal therein, comprising:

a first elongated contact element and a second elongated contact element made of a resilient conductive material and disposed in spaced parallel relation in a flat plane, said first and second elongated contact elements being interconnected at respective one ends thereof to form a contact terminal for insertion into a socket, and having at the other ends thereof respective first and second contact portions which are elongated transversely of said elongated contact elements and each extending toward the other elongated contact element, said first contact portion on said first elongated contact element being further from said one ends in the direction of elongation of said elongated contact elements than said second contact portion of said second elongated contact element and being in spaced opposed relation thereto in said flat plane and extending past said second contact portion in the direction of elongation of said first contact portion, the part of said first contact portion extending past said second contact portion being a pressure receiving part, said contact portions being positioned for being elastically displacable in a direction laterally of both the direction of elongation of said elongated contact elements and said elongated contact portions and transversely to said flat plane without interfering with each other, whereby when a force is applied to said pressure receiving part in the lateral direction, said contact portions are separated in the lateral direction to form a terminal receiving opening therebetween into which a terminal can be inserted under no load, and upon release of the force, said contact portions move together to grip the terminal therebetween.

5,059,136

APPARATUS FOR MAKING CONTAINER FIBER TUBES STARTING FROM A SHEET MATERIAL

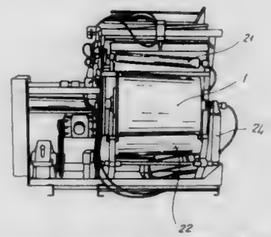
Sergio Visentin, Via IV Novembre, 12 -- 20039 Varedo (Milano), and Romeo Visentin, Via Pastrengo, 39/41 -- 20039 Varedo (Milano), both of Italy

Filed Apr. 14, 1989, Ser. No. 339,210

Claims priority, application Italy, Apr. 28, 1988, 20327 A/88

Int. Cl.[5] B31C *7/02, 1/00*

U.S. Cl. 493—296 **2 Claims**



1. An automatic apparatus for making frustum of cone shaped fibre tubes comprising a substantially frustum of cone shaped drum, means for rotatively driving said drum, a paper sheet supply roller for supplying said drum with a paper sheet, paper sheet pressing means for pressing said paper sheet, on said drum, said paper sheet having on at least a face thereof, an adhesive layer, a cutting assembly arranged between said drum and said paper sheet supply roller for cutting the paper sheet, said drum being provided with a plurality of throughgoing holes, formed substantially along a generatrix and coupled to a vacuum source, said paper sheet supplying roller being provided with a plurality of circumferential slots, tangentially of which there are provided corresponding teeth arranged with a comb arrangement and adapted to detach said paper sheet from said drum.

5,059,137

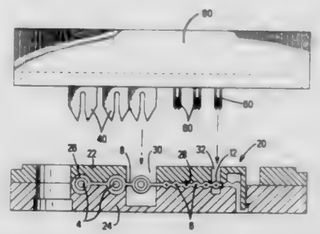
INSULATION DISPLACEMENT CONTACT FOR FLAT CABLE

James L. Dale, Lawrenceville, and Vernon R. Miller, Atlanta, both of Ga., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1990, Ser. No. 571,960

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—395 **6 Claims**



1. An insulation displacement terminal having a slot formed between two members, the slot having side edges parallel to the centerline of the slot for establishing an insulation displacement termination to a wire encased in insulation and inserted laterally of its axis into the slot, each said member having a sharp point defined by converging inner and outer sloped edges at one end for penetrating the insulation surrounding

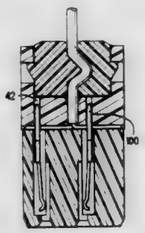
said wire, where the lateral distance between said points is between 1 and 1.5 times the diameter of said wire and the slope of the inner sloping edge relative to the centerline of the slot is less than the slope of the outer sloping edge relative to the centerline of the slot, whereby the resultant force, normal to the centerline of the slot, tending to open the slot as the inner and outer sloping edges engage insulation surrounding the wire is reduced so that the tendency of the two members to spread apart as a result of engagement of the insulation with the inner and outer sloping edges is lessened whereby the slot edges make a more reliable contact with a wire upon insertion therein.

5,059,138

LATCH MECHANISM FOR ELECTRICAL CONNECTORS

Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1991, Ser. No. 660,766
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—460 **21 Claims**



1. An electrical connector comprising:

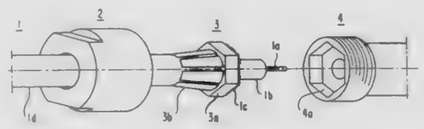
an insulative housing assembly comprised of first and second housing parts, said housing parts being adapted for mating abutment, one against the other, said housing parts having spring latching clips adjacent to ends of said housing parts to maintain said housing parts together and to latch said housing parts to a mateable connector, said first housing part having clip receiving channels at each end which are in alignment with clip receiving slots of said second housing part, said spring latching clips being receivable into and through said channels and slots for latching engagement therewith, for retaining said first and second housing parts in abutment, said spring latching clips being defined as a substantial U-shape, each having a base arm and a clip arm, said base arms being insertable through said clip receiving channels of said first part and into said clip receiving slots of said second part, said base arms having a shear formed tab extending out of the plane of the base arm, and having a latching edge facing said first part, said second housing part having latching shoulders below said slots, said shear formed tabs being engageable with said latching shoulders below said slot to retain said housing parts together, said first and second housing parts having a relief area above said latching shoulder on the opposite side as said shear formed tab, said base arm being resiliently deflectable into said relief area upon insertion of said base arm into said channels and slots, and resiliently movable back when said shear formed tab has cleared said latching shoulder.

5,059,139

COAXIAL CABLE FITTING

Georg Spinner, Am Eichberg 12, 8152 Feldkirchen-Westerham, Fed. Rep. of Germany

Filed Oct. 20, 1989, Ser. No. 424,889
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835995
Int. Cl.[5] H01R *17/18*
U.S. Cl. 439—583 **14 Claims**



1. A coaxial cable fitting, comprising:

a metal bush receiving a cable end of a coaxial cable and adapted for making electric contact with the outer conductor of the coaxial cable;

a contact clamp placed over the cable end of the coaxial cable and defining a cable end near annular end face about which a section of the outer conductor is bent outwardly;

a screw element threadably engageable with said metal bush for urging said contact clamp against said metal bush to thereby press the outwardly bent section of the outer conductor against a radial shoulder of said metal bush; and

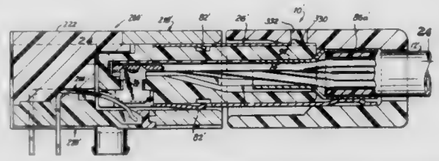
locking means for preventing rotation of said contact clamp relative to said metal bush when being received in its end position in said metal bush, said locking means being defined by radially facing, at least partly complementary profiled surfaces of said contact clamp and said metal bush.

5,059,140

SHIELDED PLUG AND JACK CONNECTOR

Walter M. Philippson, Woodside; Robert J. Brennan, Ossining, and Terrence Meighen, Stormville, all of N.Y., assignors to Stewart Stamping Corporation, Yonkers, N.Y.

Division of Ser. No. 354,999, May 22, 1989, Pat. No. 4,941,848, which is a division of Ser. No. 247,878, Sep. 22, 1988, Pat. No. 4,889,503, which is a division of Ser. No. 800,679, Nov. 22, 1985, Pat. No. 4,781,623, which is a continuation-in-part of Ser. No. 655,696, Sep. 28, 1984, Pat. No. 4,653,837, which is a continuation-in-part of Ser. No. 612,722, May 21, 1984, Pat. No. 4,641,901, which is a continuation-in-part of Ser. No. 570,806, Jan. 16, 1984, Pat. No. 4,537,459. This application Apr. 26, 1990, Ser. No. 514,947
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[5] H01R *23/02, 15/648*
U.S. Cl. 439—607 **5 Claims**



1. A plug, cable and jack connector assembly, comprising:

a plug including a housing assembly having a front housing part defining a front conductor-receiving cavity portion and a rear housing part separate from said front housing part defining a rear cable shield-terminating cavity portion;

a cable including an outer jacket, a plurality of conductors enclosed within said outer jacket and having exposed portions extending beyond an end region of said jacket and a conductive shield sheath situated between said jacket and conductors surrounding the latter, and having an exposed portion in the area of said jacket end region, said exposed conductor portions being situated within said front conductor-receiving cavity portion and said exposed portion of said cable shield sheath being situated within said rear cable shield-terminating cavity portion;

interference shielding means surrounding said plug housing around said conductor-receiving cavity portion thereof for attenuating interference radiation into and out from said plug, said interference shielding means including a part extending into said rear cable shield-terminating cavity portion of said plug housing;

means for electrically coupling said interference shielding means and said cable shield sheath including an electrically conductive ferrule-like member electrically engaging said exposed portion of said cable shield sheath, said part of said interference shielding means that extends into said rear cable shield-terminating cavity portion of said plug being in electrical communication with said ferrule-like member; and

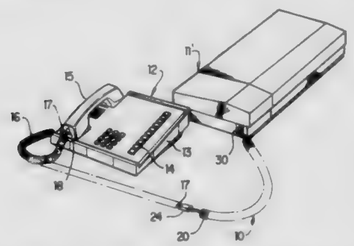
a jack including a housing part formed of electrically conductive material forming a receptacle for receiving said plug, said conductive housing part being electrically groundable and surrounding said plug to provide interference shielding, and wherein said plug interference shielding means is adapted to be in electrical engagement with said conductive jack housing part to thereby couple said cable shield to ground.

5,059,141

MODEM/TELEPHONE HANDSET CORD ADAPTOR

Xenophon C. Scott, 12114 Folkstone Dr., Herndon, Va. 22071

Filed Dec. 8, 1989, Ser. No. 447,861
Int. Cl.[5] H01R *27/00*
U.S. Cl. 439—638 **6 Claims**



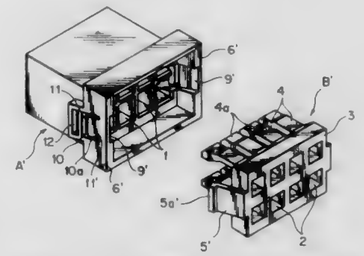
1. An adaptor for connecting a computer modem to a conventional dual tone multiple frequency telephone having a handset cord which includes a pair of transmitter wires and a pair of receiver wires and which also has a modular plug for selectively connecting the handset cord to a telephone handset and which plug includes a pair of first contact elements which are connected to the pair of transmitter wires and wherein the modem includes an input/output jack having a pair of second contact elements therein, the adaptor comprising a first connector means, said first connector means including a first pair of electrical contacts, said first connector means being of a size to cooperatively receive the modular plug of the handset cord therein so that said first pair of electrical contacts of said first connector means are in contact with the pair of first contact elements of the modular plug of the handset cord, a second connector means, said second connector means having a second pair of electrical contacts, first and second conductor means for electrically connecting said first pair of electrical contacts directly to said second pair of electrical contacts, and said second pair of contacts being spaced so as to contact said second pair of contact elements when said second connector means is selectively inserted within the input/output jack of the modem whereby the pair of second contact elements of the modem are connected to the telephone through the pair of transmitter wires of the handset cord.

5,059,142

ELECTRIC CONNECTOR WITH A TERMINAL CONDUCTOR DETAINING MECHANISM

Yukio Ohta; Hiroshi Watanabe; Hideki Ohsumi, and Naoto Taguchi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 26, 1990, Ser. No. 633,921
Claims priority, application Japan, Dec. 27, 1989, 1-336392
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 **5 Claims**



1. An electric connector with a terminal conductor detaining mechanism, comprising:

a connector shell having a plurality of elongate terminal chambers and provided with provisional locking means and final locking means inwardly forwardly of said provisional locking means in said connector shell;

a terminal conductor detaining member provided with a plurality of terminal conductor detaining fingers to be received respectively in the terminal chambers of the connector shell when the terminal conductor detaining member is combined with the connector shell, said terminal conductor detaining member having at least one flexible locking arm to be temporarily arrested by said provisional locking means, said provisional locking means being flexible and capable, when pressed, of deforming said at least one flexible locking arm inwardly to override and snap outwardly past said final locking means while the terminal conductor detaining member is pressed forwardly into the connector shell such that said connector shell and said terminal conductor detaining member are finally locked.

5,059,143

CONNECTOR CONTACT

Dimitry G. Grabbe, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 8, 1988, Ser. No. 241,649
Int. Cl.[5] H01R *9/24*
U.S. Cl. 439—886 **16 Claims**

1. In an electrical connector for separably connecting two electrical conductors together for carrying relatively high current at high frequency in a high temperature environment, including a first contacting surface electrically connected to one of said conductors and a second contacting surface opposed to said first contacting surface and electrically connecting to the other of said electrical conductors,

contact means for providing a current path between said two contacting surfaces comprising a plurality of contacts disposed on a resilient structure, having an arcuate shape and comprising a metal having an annealing temperature substantially above about 300° C., said contacts arranged in pair of proximate contacts so that one contact of one of said pair of contacts is in current carrying engagement

with said first contacting surface and the other contact of said pair of contacts is in current carrying engagement with said second contacting surface and each of said



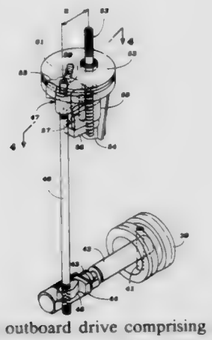
contacts is urged by said resilient structure toward its respective contacting surface independent of adjacent contacts.

5,059,144

AHEAD/ASTERN SHIFTING DEVICE FOR MARINE PROPULSION UNIT

Akihiro Onoue, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 335,804, Apr. 10, 1989, abandoned. This application Dec. 6, 1990, Ser. No. 626,373
Claims priority, application Japan, Apr. 11, 1988, 63-87188
Int. Cl.[5] B63H *21/28*
U.S. Cl. 440—75 **4 Claims**



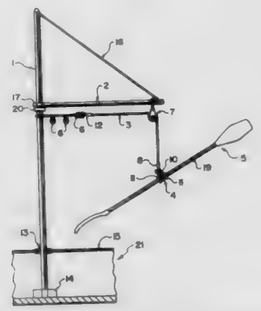
1. In a marine outboard drive comprising an outer casing supported for steering movement about a generally vertically extending steering axis, a drive shaft journaled for rotation about a generally vertically extending axis in said outer casing and spaced from said steering axis, propulsion means supported by the said outer casing for propelling a watercraft to which said outboard drive is mounted, a forward, reverse transmission positioned within a lower unit of said outer casing including a dog clutching element for driving said propulsion means in selected forward and reverse directions from said drive shaft, the improvement comprising shifting means comprising a rotatably journaled lower shift rod for operating said dog clutching element of said forward, reverse transmission upon rotation about an axis disposed forwardly of said steering axis, an upper shift rod journaled about an axis coincident with said steering axis, a pin and a slot, cam and follower arrangement for rotating said lower shift rod upon rotation of said upper shift rod for reciprocating said dog clutching element between its positions, and detent means cooperating with said lower shift rod contiguous to said cam and follower arrangement releasably locking said lower shift rod in tis forward, neutral and reverse position.

5,059,145

PADDLE SUSPENSION DEVICE

Peter Gregg, Box 141, Heriot Bay, B.C., Canada V0P 1H0

Filed Aug. 28, 1989, Ser. No. 399,745
Int. Cl.[5] B63H *16/06*
U.S. Cl. 440—104 **13 Claims**



8. A device for suspending first and second double-ended boat propelling paddles in respect of first and second desired paddle positions relative to a boat having an upwardly projecting mast, said device comprising:

(a) at least one boom connectable to said mast and projecting outwardly therefrom to a position above said first and second desired paddle positions respectively;

(b) first and second paddle suspension means depending from said boom to points near each of said desired paddle positions;

(c) means for connecting said first paddle suspension means to said first paddle near the midpoint of said first paddle; and

(d) means for connecting said second paddle suspension means to said second paddle near the midpoint of said second paddle.

5,059,146

METHOD OF ADJUSTING A LIGHT SOURCE FOR COLOR TEMPERATURE AND CHROMATICITY

Brian J. Thomas, Phoenix; Timothy W. Graham, Union Springs, and Daniel C. Briggs, Camillus, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Feb. 22, 1990, Ser. No. 483,901
Int. Cl.[5] H01J *9/42*
U.S. Cl. 445—4 **13 Claims**

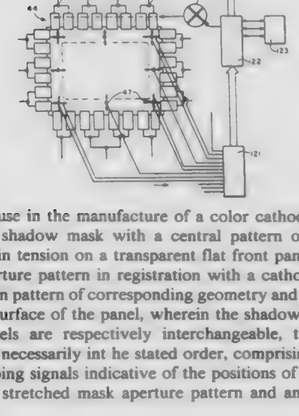
1. A method of producing a light source having predetermined color temperature or chromaticity characteristics using an optical system having a near focus and a far focus disposed along an optical axis, and a radiant energy source that emits radiant energy from at least two spatial emission regions, the method comprising the steps of:

(a) disposing said radiant energy source and the near focus of said optical system in proximity to each other such that a substantial amount of radiant energy emitted from said radiant energy source is directed to the far focus of said optical system;

(b) adjusting the relative position of said radiant energy source and said optical system until a maximum intensity of radiant energy is produced at the far focus of said optical system;

(c) measuring the color temperature or chromaticity characteristics of the radiant energy produced at the far focus of said optical system; and if said characteristics are not as predetermined, then

(d) adjusting the relative position of said radiant energy source and said optical system along a line parallel to the optical axis of said optical system until the color temperature or chromaticity characteristics of the radiant energy



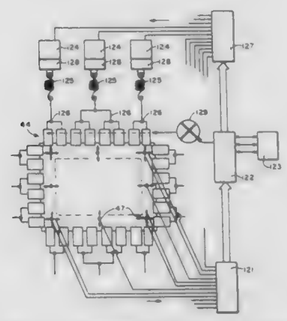
at the far focus of said optical system are as predetermined.

5,059,147

METHOD AND APPARATUS FOR MAKING FLAT TENSION MASK COLOR CATHODE RAY TUBES

Robert Adler, Northfield; James R. Fendley, Arlington Heights; Howard G. Lange, Prospect Heights; Charles J. Prazak, Elmhurst; Johann Steiner, Des Plaines, and Paul Strauss, Chicago, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Division of Ser. No. 370,204, Jun. 22, 1989, Pat. No. 4,973,280, which is a continuation-in-part of Ser. No. 223,475, Jul. 22, 1988, Pat. No. 4,902,257. This application Aug. 3, 1990, Ser. No. 562,523
The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.
Int. Cl.[5] H01J *9/20*
U.S. Cl. 445—4 **14 Claims**



1. For use in the manufacture of a color cathode ray tube having a shadow mask with a central pattern of apertures mounted in tension on a transparent flat front panel with the mask aperture pattern in registration with a cathodoluminescent screen pattern of corresponding geometry and position on an inner surface of the panel, wherein the shadow masks and front panels are respectively interchangeable, the method steps, not necessarily int he stated order, comprising:

developing signals indicative of the positions of a mechanically stretched mask aperture pattern and an associated front panel screen pattern relative to a reference or to each other; and

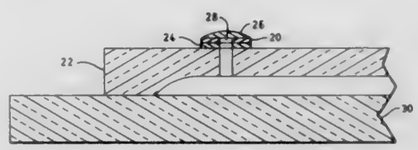
responsive to said signals, effecting a relative positioning of said mask and screen until registration between said patterns is achieved.

5,059,148

THIN FILM FLAT PANEL DISPLAYS AND METHOD OF MANUFACTURE

John F. McKenna, Newburyport, Mass.; Robert E. Brown, Stratham, and Paul E. Gagnon, Farmington, both of N.H., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 21, 1987, Ser. No. 136,222
Int. Cl.[5] H01J *9/26, 9/395*
U.S. Cl. 445—25 **5 Claims**



1. A method of fabricating a thin-film electroluminescent display panel on a transparent substrate comprising;

disposing a cover plate relative to the transparent substrate in such a manner as to define a cavity therebetween, said cavity containing a thin-film electroluminescent composite member;

providing said cover plate with at least one fill hole, said fill hole being peripherally surrounded by an annular washer member, said washer member bearing sufficient solder to close said fill hole; and

introducing a protective liquid into said cavity through said fill hole.

5,059,149

STUFFED ANIMAL WITH BOOK ENCLOSURE APPARATUS

Timothy J. Stone, 6960 W. Turquoise, Peoria, Ariz. 85345

Filed Aug. 6, 1990, Ser. No. 562,688
Int. Cl.[5] A63H *3/00*
U.S. Cl. 446—73 **18 Claims**



1. Stuffed animal apparatus, comprising, in combination;

body means, including

a body,

appendages extending outwardly from the body, and

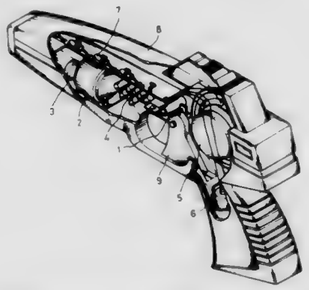
a chest area in the body;

a compartment in the chest area for receiving a book;

flap means secured to the body and covering the compartment; and

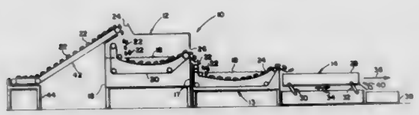
means for securing the book in the compartment and to the flap means whereby the flap means also comprises a cover for the book.

5,059,150
VIBRATING AND SONIC DEVICE FOR TOY GUN
Tien H. Kuo, 14, Lane 616, Chengteh Rd., Taipei, Taiwan
Filed Nov. 26, 1990, Ser. No. 617,682
Int. Cl.[5] A63H 5/04
U.S. Cl. 446—405 1 Claim



1. A simulated toy gun comprising a gun body having a hollow handle and an elongated hollow gun barrel extending forwardly therefrom, said barrel having a longitudinal hollow side wall; a finger-operated trigger located in the gun body at the juncture of the handle and barrel; a rotary electric motor means mounted in the gun barrel remote from the trigger, said motor means having a rotary output shaft extending longitudinally within the barrel; and a weighted cam attached to said shaft so that the cam axis is eccentric to the shaft axis; said cam being attached only to the shaft so that the cam rotates free in space around the shaft axis without physical engagement with any structure other than the shaft; said cam having sufficient size to shake the barrel side wall during rotation of the shaft by the motor means; battery means located in the hollow handle; battery means located in the hollow handle; an electrical switch located within the gun body in near proximity to the trigger, said switch having an actuator operably connected to the trigger whereby hand actuation of the trigger electrically closes the switch; and electric connections between the battery means and switch and motor means, whereby manual finger pressure on the trigger energizes the motor means so that the cam means is rotated freely around the shaft axis to cause the hollow gun barrel to vibrate in directions transverse to the barrel longitudinal dimension.

5,059,151
METHOD AND APPARATUS FOR OPENING A MOLLUSK
Edward F. Kiczek, Long Valley, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Division of Ser. No. 422,845, Oct. 17, 1989, Pat. No. 4,992,289.
This application Nov. 14, 1990, Ser. No. 613,418
Int. Cl.[5] A22C 29/04
U.S. Cl. 452—13 6 Claims



1. An apparatus for opening a mollusk to expose the meat contained therein comprising in combination:
means to rapidly cool said mollusk to a uniform surface temperature of at or below −100° F., and
means to mechanically agitate said mollusk to cause said mollusk to open.

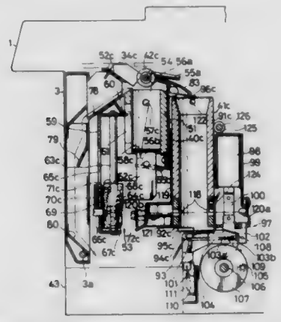
5,059,152
ANIMAL CARCASS INJECTION SYSTEM
Thomas A. Barber, III, Spring, Tex., assignor to The BOC Group, Inc., New Providence, N.J.
Filed Jan. 31, 1991, Ser. No. 648,687
Int. Cl.[5] A22C 25/16
U.S. Cl. 452—135 8 Claims



1. An animal carcass injection system for separating muscle from bone with a pressurized gas supplied by a gas source, said animal carcass injection system comprising:
a hollow needle to inject the pressurized gas between the muscle and bone, the hollow needle having a pointed distal end to puncture the animal carcass and from which the pressurized gas is injected, a proximal end located opposite to the pointed distal end, and aperture means located adjacent the pointed distal end for allowing the pressurized gas to escape from the hollow needle upon blockage of the hollow needle at the pointed distal end thereof;
means for holding the hollow needle at its proximal end and for directing the hollow needle into an operative position, within the animal carcass, in which the pointed distal end of the hollow needle is between the muscle and bone to be separated, said holding and directing means having, actuable valve means for allowing the pressured gas to flow through the hollow needle upon actuation thereof; and
delivery means for delivering pressurized gas from the gas source to the needle holding and directing means.

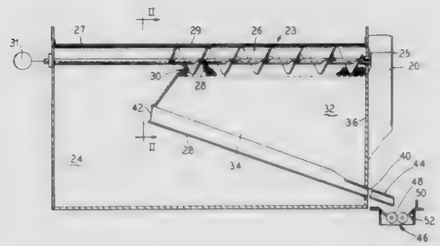
5,059,153
COIN RECEIVING AND DISPENSING MACHINE
Kouichi Goi, Kawasaki, Japan, assignor to Laurel Bank Machines Co., Ltd., Tokyo, Japan
Filed Jul. 18, 1989, Ser. No. 381,314
Claims priority, application Japan, Jul. 22, 1988, 63-183270; Jul. 4, 1989, 1-172645
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] G07D 3/02, 3/16
U.S. Cl. 453—11 8 Claims

1. A coin receiving and dispensing machine comprising discriminating and counting means for discriminating at least the denominations and genuineness of deposited coins and counting their value, coin sorting means for sorting the deposited coins in accordance with their denominations, a plurality of temporary storing means for receiving the coins sorted by said coin sorting means from an upper opening thereof and temporarily storing the received coins as stacked separately in accordance with their denominations and a plurality of dispensing coins storing means for receiving and storing the coins stored in said plurality of temporary storing means as dispensing coins separately in accordance with their denominations, said coin receiving and dispensing machine further comprising coin collecting means for, in the case where it is judged based upon the result of the discrimination and counting made by said discriminating and counting means that at least one of said dispensing coin storing means is full of coins, collecting the coins that would normally be stored in said dispensing coin storing means, said coin collecting means being disposed between said discriminating and counting means and said coin sorting means, and each pair of said temporary storing means



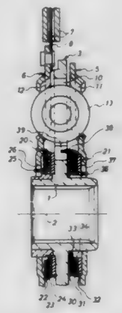
and said dispensing coin storing means which store the same denomination of coins being arranged laterally of each other so that a top of the dispensing coin storing means is positioned above a bottom of the temporary storing means.

5,059,154
GRAIN CLEANER AND DESTRUCTOR OF FOREIGN MATTER IN HARVESTING CROPS
John Reyenga, Prescott, Ark., assignor to The Board of Trustees of The University of Arkansas, Little Rock, Ark.
Filed Oct. 19, 1990, Ser. No. 600,394
Int. Cl.[5] A01F 12/24
U.S. Cl. 460—102 23 Claims



1. A combine including a device for removing foreign matter from grain harvested by the combine, said device comprising:
a conveyor operative to convey the grain and foreign matter along a path of travel;
a screen disposed under the conveyor along the path of travel, said screen having a mesh size selected such that said grain cannot pass through said screen while said foreign matter can pass through said screen, said screen being disposed such that said grain and foreign matter are conveyed by said conveyor along said screen;
a collector operatively disposed beneath said screen to collect said foreign matter as it passes through said screen;
a discharge provided at one end of said screen for discharge of said grain; and
a receptacle operative to receive said grain as it is discharged from said discharge of said screen.

5,059,155
FRICTION DEVICE OF DAMPER DISC
Hiromi Tojima, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
Filed Feb. 20, 1990, Ser. No. 481,278
Claims priority, application Japan, Feb. 21, 1989, 1-19095
Int. Cl.[5] F16D 3/14
U.S. Cl. 464—68 1 Claim



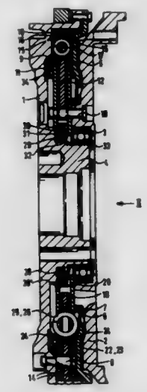
1. The friction device for a damper disc having an output member, with an annular flange and coupled to an output shaft, annular input side plates disposed concentrically and opposingly at the opposite sides of said output flange in the axial direction of said output shaft, said annular output flange and said input side plates being coupled in a circumferential direction of said output shaft by spring means, friction mechanisms disposed between said input side plates and said output flange, one of said friction mechanism disposed between said one of said annular input side plates and said annular output flange comprising a first annular, radially extending friction member having at least one axially extending pawl at its radial inner end extending into a notch at the radial inner end of said one of said side plates and preventing relative rotation between said first friction member and said one of said input side plates, a first friction washer between one annular surface of said first friction member and said annular output flange, a second annular, radially extending friction member having at least one axially extending pawl at its radial outer end and extending into a notch spaced radially outward from the radially inner end of said annular flange, said pawl on said second friction member extending over the radial outer end of said first annular, radially extending friction member and over the radial outer end of said first friction washer and preventing relative rotation between said second friction member and said annular output flange, a second friction washer between one annular surface of said second friction member and said one of said annular input side plates and a third friction washer between another of the annular surfaces of said first friction member and another of the annular surfaces of said second friction member.

5,059,156
DIVIDED FLYWHEEL
Günter Wörner, Kernen, and Ernst Tscheplak, Weinstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 296,143, Jan. 12, 1989, abandoned. This application Sep. 14, 1990, Ser. No. 584,492
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1988, 3802106
Int. Cl.[5] F16D 13/70
U.S. Cl. 464—68 5 Claims

1. A divided flywheel for an internal-combustion engine comprising
two flywheel elements arranged coaxially with one another,

between which flywheel masses are essentially distributed,

a spring arrangement connected between the flywheel elements which has at least two groups of springs connected in parallel, one of the groups having play and the spring constants of the spring groups being sized such that the frequencies of vibrations generated at starting speed and idling speed of the engine lie above a low first critical frequency determined by another of the groups springs without play, and the frequencies of vibrations generated



at operating speed lie above a higher, second critical frequency of the flywheel determined by both groups of springs conjointly, and

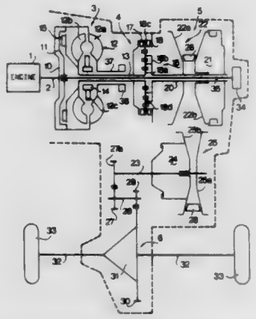
a frictional coupling operative between both flywheel elements in parallel to the groups of springs and having friction elements operatively connected with at least one flywheel element to provide play less than the play of the one spring group having play and to avoid friction coupling when vibration amplitudes are small as under normal operating conditions.

5,059,157

SYSTEM FOR CONTROLLING A CONTINUOUSLY VARIABLE TRANSMISSION HAVING A TORQUE CONVERTER

Keiji Sato, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1990, Ser. No. 608,574
Claims priority, application Japan, Nov. 30, 1989, 1-311609
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—18 **3 Claims**



1. A system for controlling a belt drive continuously variable transmission for transmitting power of an engine to wheels of a motor vehicle, said system having a hydraulic circuit including a transmission ratio control valve, and said transmission having a torque converter with a lockup clutch, the system comprising:

first detector means for detecting engine operating conditions;

second detector means for detecting conditions of said transmission;

said transmission ratio control valve being provided to be operated in accordance with operating conditions of said engine and said conditions of said transmission for controlling a transmission ratio;

a lockup control valve provided to be operated to engage said lockup clutch;

torque converter torque estimating means for estimating torque of said torque converter based on the engine operating conditions and the transmission conditions;

lockup clutch torque estimating means for estimating torque of said lockup clutch based on the engine operating conditions and the transmission conditions;

comparator means for comparing the estimated converter torque and the estimated clutch torque with each other and for determining larger torque; and

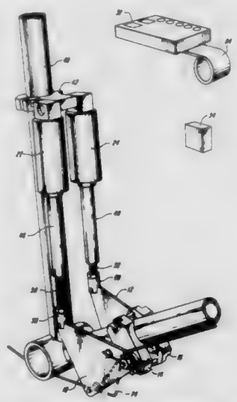
actuating means for actuating said lockup control valve for disengaging the lockup clutch when the comparator means determines that the estimated converter torque is larger than the estimated lockup clutch torque.

5,059,158

ELECTRONIC TRANSMISSION CONTROL SYSTEM FOR A BICYCLE

Stephen Bellio, West Roxbury, and Gerald P. Eidelman, Jamaica Plain, both of Mass., assignors to E.B.T., Inc., Brookline, Mass.

Filed May 8, 1990, Ser. No. 520,627
Int. Cl.[5] F16H *61/00*; B62M *00/00*
U.S. Cl. 474—70 **40 Claims**



1. A bicycle transmission control system, comprising:

generating means responsive to a rider for generating torque;

transmitting means for transmitting torque from the generating means to at least one wheel of the bicycle;

determining means for determining a cadence of the generating means in response to a calculated gear ratio and sensed bicycle speed;

means for indicating if the cadence determined by the determining means is outside a predetermined range for the calculated gear ratio and sensed bicycle speed;

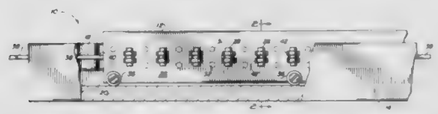
and means for adjusting the transmitting means if the cadence determined by the determining means is outside the predetermined range for the calculated gear ratio and sensed bicycle speed.

5,059,159

WAVE GEAR LINEAR DRIVE

James E. Shaffer, Maitland, Fla., assignor to Consulier Industries, Inc., Riviera Beach, Fla.

Continuation-in-part of Ser. No. 458,149, Dec. 28, 1989. This application Feb. 23, 1990, Ser. No. 483,929
Int. Cl.[5] F16H *13/04*
U.S. Cl. 475—168 **20 Claims**



1. Wave gear motion transmission apparatus, comprising:

a first cam member having a first cyclically undulated wave surface;

a second cam member having a second cyclically undulated wave surface oppositely disposed in facing relationship to said first surface, one of said first and second surfaces being movable in a direction tangential to said other surface;

a carrier including a wall disposed between said first and second surfaces, and a plurality of elongated apertures located in said wall; and

a plurality of roller assemblies respectively captured in said apertures for reciprocation in directions perpendicular to said wall and to said tangential direction; the elongations of said apertures being perpendicular to said tangential direction and to said reciprocation directions; and said roller assemblies comprising shaft pins axially-aligned in parallel with said elongations, and first and second rollers mounted in axially-spaced positions for independent free rotation about said pins, and being dimensioned, configured and adapted so that said first rollers contact said first wave surface and said second rollers simultaneously contact said second wave surface, to cause said roller assemblies to reciprocate in said reciprocation directions in response to movement of said one surface in said tangential direction to drive one of said carrier and other surface in a driven direction.

5,059,160

SELF-LOCKING DIFFERENTIAL GEAR

Antonietto Raniero, Padova, Italy, assignor to Carraro S.p.A., Italy

Filed Nov. 2, 1989, Ser. No. 430,407
Claims priority, application Italy, Nov. 2, 1988, 22484 A/88
Int. Cl.[5] E16H *1/45*
U.S. Cl. 475—234 **9 Claims**

1. A self-locking differential gear comprising:

a housing,

a gear carrier mounted for rotation in the housing,

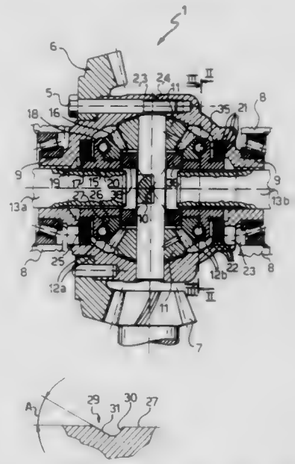
a plurality of planet gears rotatably suppored by the gear carrier,

a pair of aligned axle shafts mounted for rotation on the carrier gear,

a pair of crown wheels each including a ring gear enmeshed with the planet gears and an internally splined ring wheel mounted on a splined end of a respective axle shaft, the ring gear being mounted for rotation on the ring wheel,

a friction clutch disposed between each ring wheel and said gear carrier to connect for rotation the corresponding axle shaft with the gear carrier,

opposite facing ramp means intervening between each ring gear and the corresponding ring wheel, said ramp means including first and second engagement means which are shiftable angularly relative to each other and which are operatively connected for rotation with ring gear and



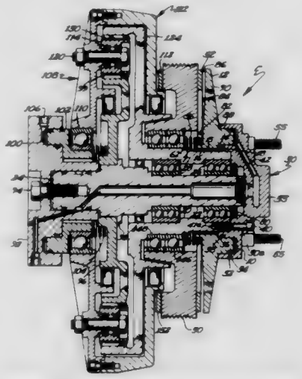
with the corresponding ring wheel, respectively, wherein said engagement means are effective to engage the respective clutch when shifted angularly relative to each other in only one of the two directions of rotation of the corresponding axle shaft.

5,059,161

ROTATIONAL CONTROL APPARATUS

Robert C. Bredt, Minneapolis, Minn., assignor to Horton Industries, Inc., Minneapolis, Minn.

Filed Feb. 2, 1990, Ser. No. 473,874
Int. Cl.[5] F16H *57/10*
U.S. Cl. 475—269 **18 Claims**



1. In a rotational control apparatus including a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted on a shaft and including a first input rotatable relative to the hub and to the shaft at a first rotational speed, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the first input to drive the hub at the

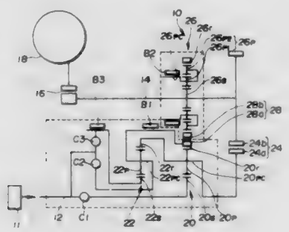
first rotational speed and a second position with the first, friction disc portion being rotatably independent from the first input, the improvement comprising means for rotating the hub on the shaft at a second speed different from the first rotational speed when the first, friction disc portion is in the second position.

5,059,162

PLANETARY GEAR SYSTEM

Kunio Otsuka, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 25, 1990, Ser. No. 587,808
Claims priority, application Japan, Oct. 3, 1989, 1-258287
Int. Cl.[5] F16H *3/62*
U.S. Cl. 475—276 **21 Claims**



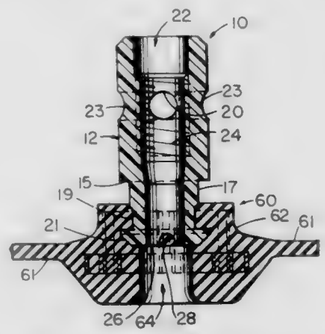
1. A planetary gear system comprising:
an input means for receiving an input rotation;
an output means for delivering an output rotation;
a first planetary gear train comprising first and second planetary gear sets, said first planetary gear train being connected with said input means;
a second planetary gear train comprising a third planetary gear set, said second planetary gear train being connected with said output means;
a first connecting means for connecting said first planetary gear train with said second planetary gear train;
a second connecting means for connecting said first planetary gear train with said second planetary gear train;
a third connecting means for connecting one rotary element of said first planetary gear set with one rotary element of said second planetary gear set, and a fourth connecting means for connecting another rotary element of said first planetary gear set with another rotary element of said second planetary gear set;
wherein said first connecting means drivingly connects one rotary element of said first planetary gear train with one rotary element of said third planetary gear set, and said second connecting means drivingly connects another rotary element of said first planetary gear train with another rotary element of said third planetary gear set; and
wherein said input means comprises an input shaft, said output means comprises an output shaft, and said input and output shafts are arranged in parallel to each other, and wherein said first connecting means comprises a first pair of mating gears of a parallel shaft type for transmitting rotation between two parallel shafts, and said second connecting means comprises a second pair of mating gears of said parallel shaft type.

5,059,163

TRANS-PLANETARY MECHANICAL TORQUE IMPELLER

John W. von Greyerz, 643 Sun Ray Ct., Boynton Beach, Fla. 33436

Filed Oct. 15, 1990, Ser. No. 597,168
Int. Cl.[5] F16H *3/68*
U.S. Cl. 475—296 **10 Claims**



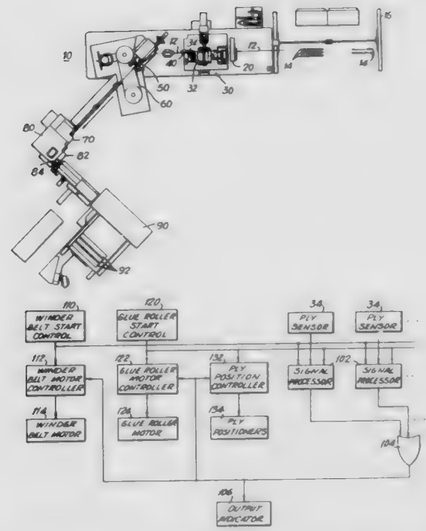
1. A mechanical torque impellor capable of infinitely responding to changing load conditions while providing specific low input to output rations at start-up, said torque impellor comprising:
a rotatable input shaft;
a planetary carrier supported on and rotatable with said input shaft;
at least two sets of joined input planetary pinion gears rotatably supported by said planetary carrier, a first, primary planetary pinion gear in each of said sets of joined input planetary pinion gears being larger in circumference than an adjoining second, secondary planetary pinion gear;
a primary annulus gear supported on and rotatable with respect to said input shaft, said at least two sets of joined input planetary pinion gears revolving in union and when revolved by said input shaft causing said primary planetary pinion gears too mesh and planetarily revolve within said primary annulus gear;
an output shaft rotatably supported in said mechanical torque impellor;
a secondary annulus gear supported by said output shaft and driving said output shaft in response to rotation of said input shaft, said secondary planetary pinion gears in said at least two sets of joined input planetary gears meshing with and planetarily revolving within said secondary annulus gear;
at least a first worm carrier supported by and rotatable with said secondary annulus gear;
at least a first set of a joined pinion worm gear and a secondary worm gear rotatably supported by said worm carrier, said pinion worm gear being in meshing engagement with a primary worm gear secured to said input shaft and said secondary worm gear being in meshing engagement with a control worm gear formed on said primary annular gear whereby for each revolution of said input shaft and said primary planetary pinion gear at start-up, said secondary annulus gear will be pulled the equivalent distance of the difference in circumference between said primary planetary pinion gears and said secondary planetary pinion gears, thereby causing said secondary annulus gear to revolve slower than said input shaft at start-up and under load conditions and to infinitely and continually seek a 1 to 1 ratio as said input shaft speed increases and as the load through speedup decreases.

5,059,164

SPIRAL TUBE WINDING METHODS AND APPARATUS INCLUDING PLY BREAK SENSING

Peter C. Van Davelaar, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 15, 1990, Ser. No. 493,720
Int. Cl.[5] B31C *3/00, 11/04*
U.S. Cl. 493—12 **12 Claims**



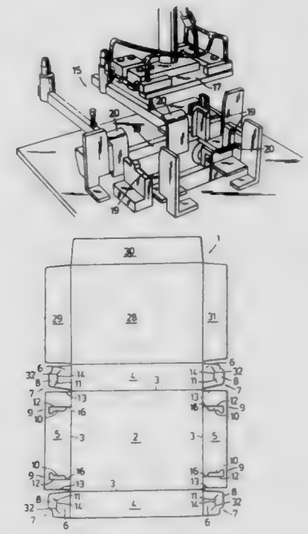
1. In apparatus including means for supplying a plurality of longitudinal plies, a mandrel, means for pulling said plies longitudinally toward said mandrel and winding said plies around said mandrel in a spiral to form a spiral-wound tube, and glue application means disposed intermediate said means for supplying and said means for pulling and winding for applying glue to at least some of said plies, the improvement comprising:
first means disposed between said glue application means and said means for pulling and winding for sensing whether each of said plies to which glue is applied is present at the location of said first means;
second means responsive to said first means for stopping said means for pulling and winding if said first means indicates that any of said plies to which glue is applied is not present at the location of said first means; and
third means responsive to said first means for removing all of said plies to which glue is applied from said glue application means if said first means indicates that any of said plies to which glue is applied is not present at the location of said first means.

5,059,165

METHOD OF ERECTING A CARTON BLANK, A TOOL FOR CARRYING OUT THE METHOD AND A CARTON BLANK USED WITH THE METHOD

Kay Wallin, Halmstad, Sweden, assignor to Sprinter System AB, Stockholm, Sweden

PCT No. PCT/SE89/00101, § 371 Date Nov. 3, 1989, § 102(e) Date Nov. 3, 1989, PCT Pub. No. WO89/08022, PCT Pub. Date Sep. 8, 1989
PCT Filed Mar. 6, 1989, Ser. No. 435,408
Claims priority, application Sweden, Mar. 4, 1988, 8800794
Int. Cl.[5] B31B *1/50*
U.S. Cl. 493—137 **4 Claims**



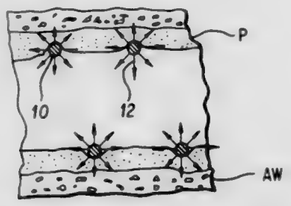
1. Method of erecting a carton blank into a tray including a bottom (2), side walls (4) and end walls (5), where these walls can be folded up along crease lines (3), and which are lockable in an erected state with the aid of projecting extensions in the form of corner flaps (6) on said side walls by locking means (7) in the respective corner flap (6) and the end wall (5) coacting therewith, said erection taking place by a plunger (17) pressing down the blank (1) into a forming space or mould (18), characterized in that as the blank is pressed down by the plunger (17) into the mould, the end walls (5) are erected by solely their corner areas (9) being pressed against opposing guide surfaces (19) in the mould (18), and are restrained between these guide surfaces and bolsters (23, 24) projecting out from the plunger (17), simultaneously as the end walls are curved outwards into a convex shape due to the resilience of the blank while assuming a substantially right-angular relationship to the bottom (2), whereby vertically oriented insertion openings (10) stamped out of the blank in the corner areas (9) of the end walls (5) and having a predetermined least opening width are given an oblique attitude and expanded in a plane at right angles to the plane of the bottom (2), whereafter insertion flaps (8) formed on the corner flaps (6) can be thrust into said insertion openings so far that the respective opposing side wall (4) is in a completely erected position substantially perpendicular to the bottom (2), and in that locking tongues (11) on the insertion flaps (8) are caused by exteriorly acting locking rollers (26) to snap past a vertical edge part (12) in said insertion opening (10) for final positional fixation of the carton blank forming the carton tray.

5,059,166

INTRA-ARTERIAL STENT WITH THE CAPABILITY TO INHIBIT INTIMAL HYPERPLASIA

Robert E. Fischell, Dayton, Md., and Tim A. Fischell, Los Altos, Calif., assignors to Medical Innovative Technologies R & D Limited Partnership, Dayton, Md.

Filed Dec. 11, 1989, Ser. No. 448,691
Int. Cl.[5] A61N 5/00
U.S. Cl. 600—3 11 Claims



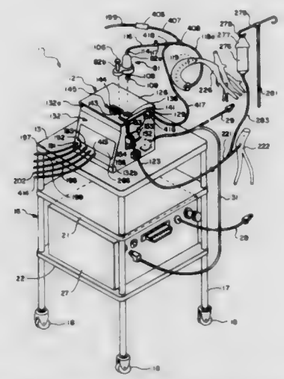
1. An intra-arterial stent comprising a generally tubular structure whose external surface is adapted to engage the arterial wall and which is patent throughout its entire interior length, said stent being formed from a radioactive material which is outwardly, radially expandable after percutaneous insertion into an artery, the radioactive material being adapted to be imbedded into the plaque so that the radioactive material preferentially emits radiation that can reduce the proliferation of cells in the arterial wall that are in close proximity to said stent.

5,059,167

RETROPERFUSION AND RETROINFUSION CONTROL APPARATUS, SYSTEM AND METHOD

Ingemar H. Lundquist, Pebble Beach; Zoltan Tarczy-Hornoch, Berkeley, and Thomas J. Kardos, Laguna Beach, all of Calif., assignors to Retroperfusion Systems, Inc., Costa Mesa, Calif.

Continuation of Ser. No. 120,591, Nov. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 56,401, May 29, 1987, Pat. No. 4,865,581. This application May 14, 1990, Ser. No. 523,173
Int. Cl.[5] A61M 1/00
U.S. Cl. 600—17 16 Claims



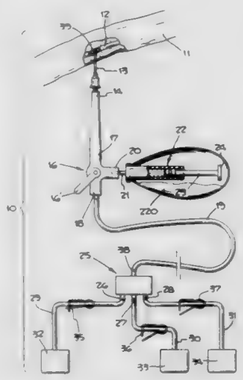
1. Apparatus for supplying arterial blood from an artery of a patient to a vein of the same patient forming a part of the venous side of the patient's heart, a catheter having a proximal and a distal extremity an inflatable balloon carried by the distal extremity, the catheter including a balloon inflation lumen in communication with the balloon, means connecting the proximal extremity of the catheter to the artery of the patient, means connecting the distal extremity of the catheter to the vein of the patient, blood pump means connected into the catheter for pumping blood from the proximal extremity of the catheter to the distal extremity of the catheter, motorized means for cyclically operating the blood pump means, gas pressure generation means the balloon inflation lumen and control means connected to the motorized means for operating the blood pump, said control means including means for establishing an R to R interval for the patient's heart assuming a steady heart beat and for timing the cyclical operation of the blood pump means in accordance with the R to R interval and means connecting the control means to the gas generation means for synchronizing the inflation and deflation of the balloon with the cyclic operation of the pump.

5,059,168

NEONATAL AUTOTRANSFUSION APPARATUS AND METHOD

Joseph J. Stone, 656 Hightree Rd., Santa Monica, Calif. 90402

Filed Oct. 2, 1990, Ser. No. 591,958
Int. Cl.[5] A61M 37/00; A61B 5/00; B65D 81/00
U.S. Cl. 604—4 5 Claims



1. Apparatus for collecting neonatal blood from the umbilical cord of a newborn infant comprising:
a hollow needle having a sharpened end for insertion into the interior of the umbilical vein of said cord;
a stop cock having an inlet fluidly coupled to said needle and a first outlet fluidly coupled to a syringe having a plunger therein, said stop cock also having a second outlet fluidly coupled to a sterile coupler;
at least one blood storage bag fluidly coupled to said sterile coupler; and
a flexible bag encircling said syringe and sealing off said syringe from the atmosphere.

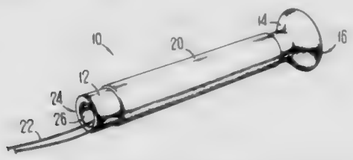
5,059,169

HIGH-FRICTION PROSTATIC STENT

Serge Zilber, Conyers, Ga., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 376,822, Jul. 7, 1989, Pat. No. 4,955,859. This application Jul. 24, 1990, Ser. No. 557,274
The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—8 14 Claims

1. An apparatus for the nonsurgical management of bladder outlet obstruction in a patient having an enlarged prostate, comprising:
an elongated body having an exterior surface, said body having first and second ends and defining a passage therethrough, said body being dimensioned to be received within the patient's prostatic urethra and having a length sufficient to extend only from the patient's bladder neck approximately to the patient's verumontanum;
said body being sufficiently flexible to accommodate an anatomical bend of said prostatic urethra and sufficiently stiff to maintain patency of said passage in response to accommodation of said anatomical bend of said prostatic urethra and in response to constrictive forces exerted by



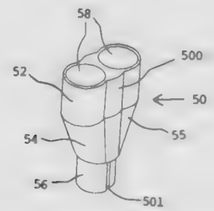
said enlarged prostate surrounding said prostatic urethra; and
high friction means on said exterior surface of said body for frictionally engaging the walls of said prostatic urethra to prevent said apparatus from migrating proximally;
whereby when said apparatus is positioned within said prostatic urethra with said first end disposed at said bladder neck and said body extending approximately to said verumontanum, said body provides support to said prostatic urethra to ensure patency thereof.

5,059,170

CONNECTION ADAPTER FOR CATHETERS

Michael S. Cameron, South Glens Falls, N.Y., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Feb. 2, 1990, Ser. No. 474,971
Int. Cl.[5] A61M 3/00
U.S. Cl. 604—43 16 Claims



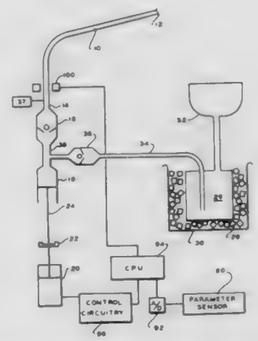
1. An adapter for connecting a multiple lumen catheter to a corresponding number of single lumen supply tubes, the adapter comprising:
a one piece molded body having a distal end and a proximal end; and having a plurality of lumens extending throughout the length of said body, the number of lumens corresponding to the number of lumens in said multiple lumen catheter, said body including;
a first body portion wherein each of said plurality of lumens has a generally circular cross-section and extend for a length sufficient to allow adequate insertion of said supply tubes therein;
a second body portion wherein each of said plurality of lumens has a cross-section generally corresponding to equal sections of a circle and extend for a length sufficient to allow adequate insertion into individual lumens of said multiple lumen catheter; and
a third body portion connecting said first and second body portions wherein each of said plurality of lumens has a cross-section at one end which corresponds with the cross-sections of said plurality of lumens in said first body portion and a cross-section at the other end which corresponds with the cross-sections of said plurality of lumens in said second body portion;
wherein said plurality of lumens are connected along the entire lengths of their respective first and third body portions and are spaced apart along the entire length of their respective second body portions so as to constitute insertion ends for insertion into individual lumens of said multiple lumen catheter, and
wherein said third body portion of said adapter further includes a semi-conical direction orienting section associated with each of said plurality of lumens and extending along at least a part of the length of said third body portion.

5,059,171

BUBBLE DETECTION SYSTEM

Burton E. Bridge, Ventura; William T. Lemons, and John S. Thompson, both of Oxnard, all of Calif., assignors to BOC Health Care, Inc., New Providence, N.J.

Filed Jun. 21, 1990, Ser. No. 541,564
Int. Cl.[5] A61M 31/00
U.S. Cl. 604—67 26 Claims



1. In a fluid delivery system in which a liquid is delivered through a conduit leading to a patient, a bubble detection means comprising:
pump means for delivering liquid through the conduit toward the patient;
control means adapted to control the movement of said pump means;
detector means adapted to monitor a parameter indicating the compressibility of the liquid delivered through the conduit and to produce at least one signal representing said parameter;
comparator means for comparing said at least one signal from said detector means with at least one signal of said same parameter indicative of said pump means delivering a known quantity of an incompressible liquid through the conduit at a specific rate, said comparator means producing a signal when said detected signal indicates that the compressibility of the liquid being delivered is a predetermined amount more than that of said compared signal;
means responsive to said signal from said comparator to discontinue delivering liquid to the patient and to relieve pressure in said conduit.

5,059,172

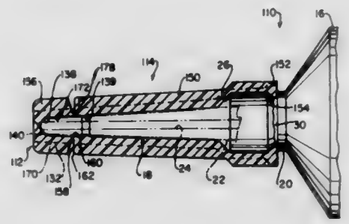
SYRINGE WITH TWO PART MASTITIS CANNULA CAP

Stephen F. Sutherland, Fort Dodge, Iowa, and Jerome Silverstein, North Franklin, Conn., assignors to American Home Products, New York, N.Y.

Continuation-in-part of Ser. No. 212,026, Jun. 23, 1988, Pat. No. 4,850,970, which is a continuation of Ser. No. 30,322, Mar. 26, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 335,893

Int. Cl.[5] A61M *1/06*

U.S. Cl. 604—73 **13 Claims**



1. In combination with a mastitis infusion syringe having a blunt-tipped cannula sized in diameter and length to fit the teat canal portion of a teat of a dairy vow, a two part mastitis cannula cap for facilitating controllable length insertion of the mastitis infusion syringe into the teat canal portion of a teat of a dairy cow said cap comprising:

a hollow inner cap including a rear end having means to removably attach said inner cap to the syringe over the cannula and a forward end portion of which has a diameter size to prevent insertion of said inner cap into a teat canal, said forward end having an aperture dimensioned to receive the cannula in sealing engagement therein, means defining an extension of the cannula forward of said forward end, the length of said extension being substantially less than the full length of the cannula, whereby it is less than the length of a teat canal, and means defining a distal end surface closely surrounding said extension for engaging said teat upon insertion of the extension;

an outer cap for covering the cannula extension removably secured in covering relationship with respect to said extension; and

whereby either the outer cap alone can be removed to expose the extension of the cannula for insertion into a teat canal for a distance less than full cannula length, or the outer and inner caps can be removed to expose the cannula for full insertion.

5,059,173

IV APPARATUS

John J. Sacco, 202 Sedgwick Dr., Syracuse, N.Y. 13203

Continuation-in-part of Ser. No. 503,937, Apr. 4, 1990, abandoned. This application Jul. 28, 1990, Ser. No. 557,388

Int. Cl.[5] A61M *5/14*

U.S. Cl. 604—80 **16 Claims**

1. A gravity flow fluid path for administering fluids intravenously to a patient that includes

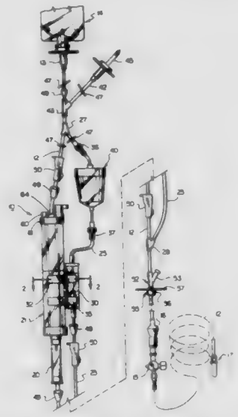
a main flow line having a penetrating means at the top end of said line for coupling said line to a fluid container, and an injection means at the bottom end of said line for intravenously introducing fluid to a patient,

a mini-drip chamber mounted in said main flow line for administering fluids passing through said mini-drip chamber at a medically low flow rate,

a shunt flow line connected into the main flow line by an upper connector located above said first regulating means and by a lower connector located below said first regulating means,

an adult drip chamber mounted in said shunt flow line for administering fluids passing through said adult drip chamber at a medically high flow rate, and

a first control means associated with said lines that is operable to selectively route fluid in transit through said mini-drip chamber and said adult drip chamber, a second control means associated with said lines that is operable to selectively route one fluid or two fluids concurrently through said lines.



5,059,174

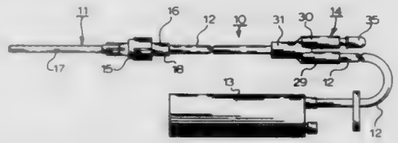
FLUID INFUSION DELIVERY SYSTEM

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Filed Aug. 23, 1990, Ser. No. 572,696

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—82 **15 Claims**



1. A fluid infusion delivery system comprising

an IV catheter including a hub having an inlet port at one end and a hollow catheter attached to said hub and in communication with said port, said catheter being sized for placement into the vein;

a fluid line extending from said hub and being in communication with said inlet port to deliver fluid thereto;

a pump connected to said fluid line for continuously delivering fluid into said line under a continuous positive pressure;

a restrictor in said line for producing a low flow rate in a range of from 0.1 to 5 milliliters per hour at a distal end of said line; and

a Y-site connector in said line having one inlet branch connected to said pump for receiving fluid therefrom, a second inlet branch for intermittently receiving a drug and an outlet branch communicating with said hub.

5,059,175

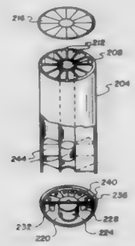
IMPLANTABLE DRUG DELIVERY SYSTEM WITH PISTON ACTUATION

Barry K. Hanover; Stephen C. Jacobsen; Eric M. Simon; Tomasz Petelenz, all of Salt Lake City, and Michael G. Mladejovsky, Murray, all of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Oct. 9, 1990, Ser. No. 594,271

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—891.1 **14 Claims**



1. An implantable drug delivery system comprising

an elongate housing having a plurality of elongate, generally parallel vesicles formed therein, said vesicles having an opening at one end and a bottom wall at the other end,

a plurality of plungers, each disposed in a different one of the vesicles and shaped to fit and slide snugly in the corresponding vesicle, said plungers initially positioned near the bottom walls of the vesicles to allow reception and holding of drug formulation in the vesicles above the plungers,

a plurality of caps, each removably positioned over a respective opening of a vesicle to prevent release of drug formulation from the vesicles, said caps being releasable to release drug formulation when formulation is forced against the caps by the upward movement of the plungers,

a plurality of gas generating means, each disposed at the bottom wall of a different one of the vesicles and each being responsive to an ignition signal for igniting to generate gas and force a corresponding plunger upwardly to push drug formulation against a corresponding cap and out the vesicle, and

means for selectively supplying ignition signals to said gas generating means.

5,059,176

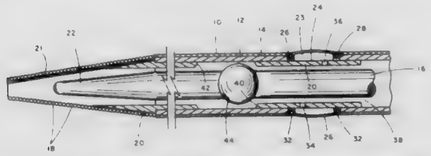
VASCULAR SYSTEM STEERABLE GUIDEWIRE WITH INFLATABLE BALLOON

R. Edward Winters, One Launching Rd., Andover, Mass. 01810

Filed Dec. 21, 1989, Ser. No. 454,411

Int. Cl.[5] A61M *25/10*

U.S. Cl. 604—96 **6 Claims**



1. For use in the vascular system a steerable guidewire/balloon apparatus comprising in combination:

a. a length of flexible tubing having proximal and distal ends and interior and exterior walls and providing torsional, axial and radial rigidity;

b. an inflatable balloon disposed about the exterior circumference of said tubing at said distal end, said tubing having a passageway between said interior and exterior walls for admitting fluid to said balloon;

c. a flexible axially moveable core member disposed within and along the length of said tubing; and

d. valve means disposed within said tubing forward of said passageway comprising a valve seat attached to said tubing and a ball valve member slidably mounted on said moveable core for containing said fluid within said tubing and selectively directing said fluid into said passageway and said balloon by sealing said valve means by fluid pressure.

5,059,177

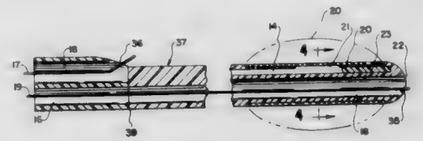
TRIPLE LUMEN BALLOON CATHETER

Randall Towne, Maryville, Tenn.; Raul Alcebo, Wallingford, and Ricardo Cordido, Hamden, both of Conn., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Apr. 19, 1990, Ser. No. 510,970

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **6 Claims**



5. In a balloon catheter of the float-advancement type which defines a catheter shaft, and a balloon carried adjacent the catheter shaft distal end; a first catheter lumen communicating through the shaft between the balloon and a proximal catheter location, the improvement comprising, in combination:

second and third separate catheter lumens extending through the shaft between proximal and distal catheter locations and open at each end, said second and third catheter lumens each carrying a catheter advancement guidewire, each guidewire being free of attachment to said catheter, to permit installation of said guidewires at desired body locations, in which the second and third lumens define distal open ends which are longitudinally spaced from each other.

5,059,178

METHOD OF PERCUTANEOUSLY REMOVING A THROMBUS FROM A BLOOD VESSEL BY USING CATHETERS AND SYSTEM FOR REMOVING A THROMBUS FROM A BLOOD VESSEL BY USING CATHETERS

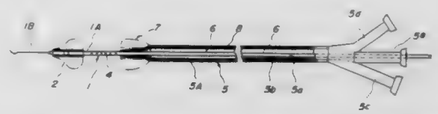
Wang D. Ya, Qian Fo Shan Lu 3 Hao, Ji Nan Shi, Shan Dong Sheng, China

Filed Jan. 18, 1991, Ser. No. 298,547

Claims priority, application Japan, Aug. 3, 1988, 63-194133

Int. Cl.[5] A61M *25/02*

U.S. Cl. 604—101 **1 Claim**



1. A thrombus removing system using catheters, comprising:

a guide wire catheter, said guide wire catheter including a hollow main body including a rear end and a forward end, a guide wire extending from the forward end of the hollow main body, and a first balloon disposed adjacent the forward end of said hollow main body for blocking blood flow in a blood vessel, the first balloon being inflatable under a predetermined internal pressure and deflatable under a pressure less than the predetermined internal

pressure, the hollow main body defining a supply opening for supplying a first fluid to inflate the first balloon, and outflow bores in said hollow main body located at a position rearward of said first balloon for supplying a thrombus dissolving agent to a rear area of said first balloon,

a thrombus suction catheter having a hollow construction for receiving the guide wire catheter, and including a suction passage for collecting the thrombus as dissolved and the thrombus dissolving agent, and a second balloon disposed adjacent a forward end of said thrombus suction catheter toward the rear of said hollow main body from said outflow bores with said forward end of said guide wire catheter extending beyond the forward end of said thrombus suction catheter, the second balloon being formed against inward and outward overexpansion under a predetermined pressure, the second balloon including an inside wall comprised of elastic webs and relatively rigid wall parts alternately arranged and interconnected in the peripheral direction, said inside wall being surrounded by an inelastic film extending so as to interconnect the rigid wall parts to define a substantially bag-like construction together, and further including an outermost wall disposed outwardly of the inelastic film so as to define an expansion space therebetween, the thrombus suction catheter defining a second fluid supply passage for supplying a second fluid to inflate the second balloon, said second fluid supply passage being further defined by an outer tube of the thrombus suction catheter having a double tube construction, and the suction passage comprising a space in the thrombus suction catheter between the guide wire catheter and the thrombus suction catheter remaining after the guide wire catheter is inserted thereinto,

means for supplying the first fluid under pressure to inflate the first balloon,

means for supplying the thrombus dissolving agent under pressure,

means for supplying the second fluid under pressure to inflate the second balloon, and

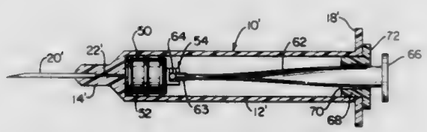
suction means for collecting the thrombus as dissolved and the thrombus dissolving agent.

5,059,179

NON-REUSABLE SYRINGE ASSEMBLY

David Quatrochi, 7474 E. Arkansas, Ste. 2208, Denver, 80231, and John K. Malone, 2955 Glenwood, No. 315, Boulder, Colo. 80301

Filed May 15, 1989, Ser. No. 351,527
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 8 Claims



8. A medical syringe comprising in combination:

an elongated, generally cylindrical barrel provided with a hollow interior and a hypodermic needle at one end of said barrel in sealed communication through an opening with the hollow interior of said barrel:

a plunger disposed in tight-fitting engagement with said interior of said barrel for axial movement between said one end and an opposite end thereof;

a plunger shaft extending axially through the interior of said barrel including means releasably connecting said shaft to one end of said plunger whereby rotation of said shaft with respect to said plunger in one direction will disconnect said shaft from said plunger, said releasable connecting means including a block at one end of said plunger provided with slotted portions on diametrically opposed sides of said shaft, and a cross pin extending transversely of said plunger shaft and disposed at the leading end of said plunger shaft being rotatable into and out of engagement with said slotted portions, said slotted portions extending in a direction aligned with the rotational movement of said cross pin; and

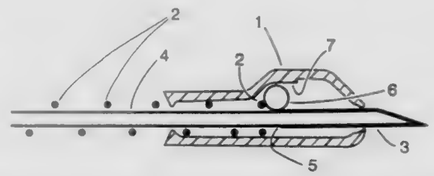
means at said opposite end of said barrel for imparting rotation to said shaft in the one direction in response to axial movement of said shaft toward said one end of said barrel whereby to disconnect said shaft from said plunger, said shaft being of generally oval-shaped configuration and convoluted along its length, said shaft having a major axis at one end disposed at 90° to the major axis at the opposite end thereof.

5,059,180

AUTOMATIC NEEDLE TIP GUARD

Donald J. McLees, 2623 Virginia Ave., Everett, Wash. 98201

Filed Nov. 21, 1989, Ser. No. 439,417
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 1 Claim



1. A hypodermic needle and automatically activated hollow guard for the tip of the needle through which the needle passes comprising:

a hypodermic needle having a pointed distal tip and a standard hub attached to a proximal end, the surface of said needle being raised at a location substantially near the distal needle tip to form a shoulder facing said proximal needle hub; and

a ball inside said guard; and

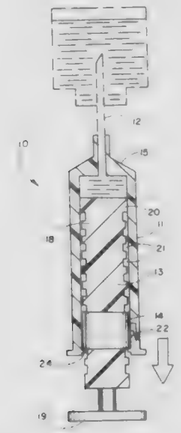
a partially compressed coil spring extending from said needle hub to said ball, the coils of said coil spring being concentric to the axis of said needle, said needle tip guard having an inner chamber, defining an inner wall, of two portions, the proximal portion being nearer the needle hub and the distal portion being nearer the needle tip, said proximal portion having a proximal opening larger than the combined radial size of said spring and said needle on the proximal side of said needle shoulder and thereby allowing said spring and said needle to pass therethrough, said guard being held in its initial position by the force of said partially compressed spring wedging said ball proximal portion of said inner chamber, said proximal opening being smaller than the combined radial size of said spring and said needle on the distal side of said spring and said needle on the distal side of said needle shoulder, said distal portion of said inner chamber having a distal opening through which said needle passes, said distal opening being larger than the needle diameter and smaller than the diameter of said ball, said distal portion of said inner chamber having a clearance between the surface of the needle on the distal side of said needle shoulder and the inner wall of said distal chamber portion greater than said ball diameter and thereby allowing movement of said ball to a position on the distal side of said needle tip and occluding said distal opening, said movement of said ball being initiated by movement of said guard away from said needle tip due to insertion of said needle into a patient.

5,059,181

NON-RECHARGEABLE DISPOSABLE SYRINGE

Robert B. Agran, 909 Quantril Way, Baltimore, Md. 21205

Filed Feb. 2, 1990, Ser. No. 474,544
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 30 Claims



1. A non-rechargeable syringe for use with a needle comprised of:

a barrel for receiving therein a substance to be delivered, the barrel having a forward end and a rearward end remote therefrom;

the needle carried on the forward end of the barrel for delivering the contents of the barrel;

a plunger including a forward end and a rearward end remote therefrom, the plunger being slidably disposed with the forward end thereof received in the barrel for sliding rearward movement towards a rearward position for aspirating the substance into the barrel and further for sliding forward movement towards a forward position, whereby the contents of the barrel are forced through the forward end of the barrel and through the needle carried thereon for delivery of the contents of the barrel, the rearward end of the plunger being located outside of the barrel for being gripped so as to effectuate the sliding movement of the plunger in the barrel;

a retaining ring circumferentially disposed near the rearward end of the barrel between the plunger and the barrel;

means formed between the retaining ring and the plunger for cooperating the forward movement of the retaining ring with the movement of the plunger;

the plunger having at least oen notch formed therein between the first and second ends thereof; and

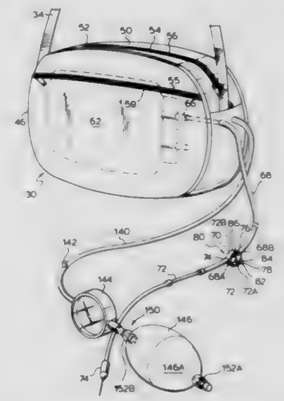
the barrel further having an inernal inwardly-flared tab formed therein oriented towards the forward end of the barrel, the tab being inwardly-biased, the retaining ring forcing the tab outwardly such that during rearward movement of the plunger to aspirate the substance into the barrel, the plunger may slide freely rearwardly, during forward movement of the plunger to deliver the substance, the retaining ring may move forwardly with the plunger permitting the tab to be inwardly biased and further such that during subsequent rearward movement of the plunger, the inwardly biased tab is received in the notch formed in the plunger, thereby preventing the plunger from being further slid rearward into a position wherein the syringe could be recharged for the further use thereof, so that the syringe is non rechargeable.

5,059,182

PORTABLE INFUSION DEVICE

David H. Laing, 16A Henry Street, Toronto, Ontario, Canada M5T 1X1 , assignor to David H. Laing, Toronto, Canada

Filed May 16, 1989, Ser. No. 352,296
Claims priority, application Canada, Apr. 12, 1989, 596541
Int. Cl.[5] A61H *5/00*
U.S. Cl. 604—142 17 Claims



4. A portable infusion device for administration of a solution at a substantially steady flow rate from storage, the device comprising a housing enclosing a predetermined volume, at least one opening through the housing into the volume, the housing of flexible and extendible material, a pressure bladder for being carried within the volume of the housing, the bladder being inflatable within the housing and comprising flexible extendible material, the bladder comprising an inlet for introducing the pressure medium into the bladder for inflating the bladder to a predetermined pressure, pressure release means in communication with the contents of the pressure bladder to ensure the predetermined pressure is maintained and excess pressure is released, the volume of the housing also for receiving a reservoir containing the solution to be administered, the reservoir being made of flexible material, an outlet from the reservoir for administering the solution, the outlet comprising a flow restrictor, the volume cf the bladder being at least about five times the volume of the reservoir.

5,059,183

STOP GUIDE WIRE AND DOUBLE ENDED OBTURATOR-CATHETER-SHEATH SYSTEM AND METHOD OF USE OF SAME

Neal Semrad, 2180 Cedarhurst Dr., Los Angeles, Calif. 90027

Filed Sep. 1, 1989, Ser. No. 402,343
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 8 Claims

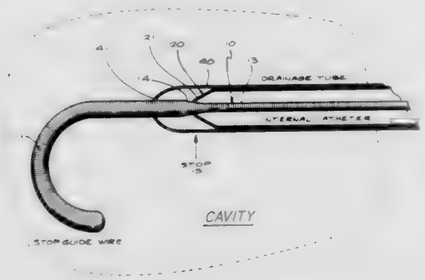
1. A guide wire and obturator-catheter system comprising:

a guide wire comprising flexible helically wound wire including a distal end, an intermediate section and a proximal end and a sufficient length for percutaneous intracorporeal access to a selected body cavity;

said guide wire including a stop integral with said helically wound wire and defined by a tapered enlarging diameter section including progressively larger loops of said helically wound wire transitioning from said intermediate section to said distal end region thereof;

an obturator-catheter including a longitudinally extending opening therethrough and an end opening therein of sufficient size to allow the proximal end and intermediate section of said guide wire up to said stop to pass there-

through but of insufficient size to extend toward said distal end of the guide wire beyond said stop;
whereby said guide wire may be inserted into a body cavity



and an obturator-catheter may be inserted into the body cavity over said guide wire with the limit of entrance of the obturator-catheter into the body cavity being determined by said stop.

5,059,184

HYPODERMIC NEEDLE APPARATUS

Timothy J. Dyke, 17 Minute Man La., Lexington, Mass. 02173

Filed May 3, 1990, Ser. No. 518,603
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **6 Claims**



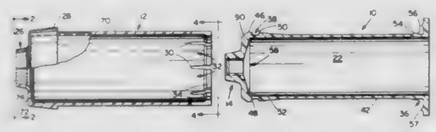
1. A hypodermic needle apparatus including a syringe body having a plunger on the upper end and a needle on the lower end wherein the improvement comprises:
a first sheath member having an upper end secured to the lower end of the syringe body and disposed in a surrounding relationship with respect to said needle; wherein
the first sheath member is provided with a radially disposed aperture proximate its lower end
a second sheath member slidably disposed and spring biased away relative to said first sheath member wherein the combined lengths of said sheath members are greater than the length of said needle; and said second sheath member is provided with an upper and a lower aperture;
means for temporarily immobilizing said second sheath member relative to said first sheath member at a plurality of locations; and,
a latching unit pivotally secured to said syringe body and comprising a latching lever whose upper end forms a lever handle and whose lower end is provided with a catch member which projects inwardly towards said apertures.

5,059,185

SAFETY NEEDLED MEDICAL DEVICES

Dana W. Ryan, Sandy, Utah, assignor to Ryan Medical, Inc., Brentwood, Tenn.

Filed Mar. 1, 1988, Ser. No. 162,569
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **19 Claims**



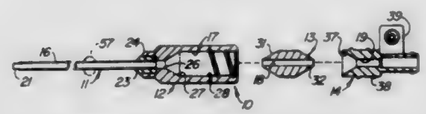
1. A medical device for assembly with a hollow needle comprising:
a) an inner tube member having a substantially cylindrical inner surface, a front end adapted to have the hollow needle secured thereto, an open rear end, and an outer surface having first and second circumferential grooves, said first groove being forward of said second groove, said outer surface having a shoulder adjacently forward of said first groove with said shoulder being slightly larger in diameter than the outer surface of said inner tube member adjacently rearward of said first groove; and
b) a plastic hollow outer shield member having a substantially cylindrical inner surface with an inner diameter at least equal to the outer diameter of said outer surface of said inner tube member, a front end having an opening therein, a substantially open rear end having a plurality of slots extending forward from said rear end and spaced about said shield member rear end, the portions of said shield member between adjacent slots forming a plurality of slightly flexible tabs, and a plurality of inwardly extending lug members attached to at least some of said tabs, the inner diameter of said lug members being at least as great as the outer diameter of at least most of said outer surface of said inner tube member but less than the outer diameter of said inner tube member adjacently rearward of said first groove, adjacently forward of said second groove, and at said shoulder, said lug members engaging said second circumferential groove to maintain said shield member in a first retracted position in which the hollow needle is exposed, and further fixedly engaging said first circumferential groove to maintain said shield member in a second extended position in which the needle is covered by said shield, wherein said lug members are disengageable from said second circumferential groove and said shield member is slidable between said first position and said second position, and wherein in an assembly mode said lug members engage said shoulder of said outer surface of said inner tube member and flex said tabs outwardly as a result of the engagement, and engage said outer surface of said inner tube rearward of said first groove without fixedly engaging said first circumferential groove in response to a longitudinal axial movement of said shield member relative to said inner tube member in a manner opposite to said sliding of said shield member between said first and second positions.

5,059,186

PERCUTANEOUS ACCESS DEVICE

Ronald K. Yamamoto, Atherton; Stanley R. Conston, San Carlos, and Matthew Bootman, Redwood City, all of Calif., assignors to Vitaphore Corporation, San Carlos, Calif.

Continuation-in-part of Ser. No. 166,779, Mar. 7, 1988, abandoned, which is a continuation of Ser. No. 857,647, Apr. 29, 1986, abandoned. This application Mar. 23, 1989, Ser. No. 328,425
Int. Cl.[5] A61M *25/01*
U.S. Cl. 604—280 **23 Claims**



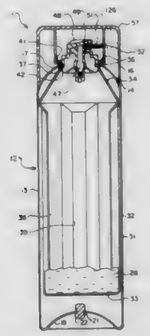
1. In a percutaneous access device having an intracorporeal adapted for aseptic leak-proof insertion therethrough of a tubular device such as a catheter, comprising the improvement: valve means having a bore therein for receiving a tubular device, the valve means comprising a first valve proximally located to the point of insertion of said tubular device into body tissue, adapted for hemostatic sealing against the outside of the tubular device and a second valve impregnated with an antibacterial agent distally located to said point of insertion of said tubular device into body tissue, and adapted for sealing against the outside of the tubular device when said device is positioned within the bore of the valve means and wiping the tubular device during movement thereof along the bore of the valve means; and a valve housing having a bore therein for receiving the tubular device and the valve means.

5,059,187

METHOD FOR THE CLEANSING OF WOUNDS USING AN AEROSOL CONTAINER HAVING LIQUID WOUND CLEANSING SOLUTION

Charles R. Sperry, Springfield, Vt., and Allan M. Raff, Walnut Creek, Calif., assignors to Dey Laboratories, Inc., Napa, Calif.

Continuation of Ser. No. 277,895, Nov. 30, 1988, abandoned. This application May 4, 1990, Ser. No. 518,244
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—290 **6 Claims**



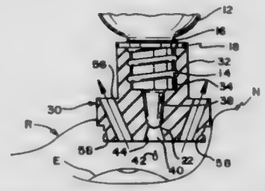
1. In a method for irrigating a wound and/or abrasion with a wound cleansing aqueous saline solution of approximately 0.9% w/v dispensed from a hand-held aerosol container with the liquid wound cleansing solution disposed therein and to be dispensed through a manually operable valve, providing a propellant in the container which provides a pressure for propelling the wound cleansing solution through the valve, sizing the valve and selecting the pressure whereby when the manually actuated valve is activated, it provides a stream of liquid wound cleansing solution which is substantially equivalent in volume and in pressure to that generated by a human hand-held 30 to 60 milliliter syringe having an 18 gauge needle mounted thereon and grasping the container with the hand, actuating the valve with the same hand and positioning the hand with the container therein to direct the stream of wound cleansing solution coming from the valve toward the wound or abrasion to irrigate and cleanse the wound and/or abrasion.

5,059,188

EYE DROPPER ATTACHMENT

Larry C. Goddard, P.O. Box 849, Torrington, Wyo. 82240-0849

Filed Mar. 28, 1990, Ser. No. 500,558
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—300 **15 Claims**



1. A dispensing attachment for use with a fluid-holding container including a dropper having a dispensing opening for eye drops, comprising:
(a) a container positioning means for correct positioning of said container relative to a user's eye and nose prior to dispensing a drop therein;
(b) said container positioning means including means for receiving said dropper;
(c) said means for receiving said dropper including a through passageway for permitting dispensed drops to fall into the user's eye;
(d) said container positioning means including means for accurately positioning said passageway over a user's nasal canthus, including means for contacting a side of a user's nose and orbital rim;
(e) said means for contacting a side of a user's nose and orbital rim extending radially from said passageway forming an oval ring;
(f) said container positioning means having a sighting means forming a hole therein; and
(g) said container positioning means having a planar surface, and said sighting means forming a hole for sighting through located in said planar surface and said passageway forming a hold for eye drops to pass through located in said planar surface.

5,059,189

METHOD OF PREPARING ADHESIVE DRESSINGS CONTAINING A PHARMACEUTICALLY ACTIVE INGREDIENT

Rodolfo D. Cilento, North Brunswick; Margaret A. Frank, Lawrenceville, both of N.J.; John E. Fairbrother, Wales, United Kingdom, and Frank M. Freeman, Lawrenceville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 8, 1987, Ser. No. 94,364
Int. Cl.[5] A61F *13/02*
U.S. Cl. 604—307 **12 Claims**

1. A method of preparing an adhesive dressing containing an pharmaceutically active ingredient comprising:
a) forming a pressure sensitive adhesive mass comprising:
i) one or more low molecular weight polyisobutylenes,
ii) one or more moisture absorbing, moisture transmitting, water soluble and/or water swellable agents, and

iii) various optical ingredients;
b) blending said pressure sensitive adhesive mass from step (a) until homogeneous;
c) layering said blended adhesive mass from step (b) onto a first release coated surface and flattening said mass to form an adhesive layer of desired thickness having a skin contacting surface and an adjacent strata;
d) laminating a flexible backing member to the exposed surface of said adhesive layer from step (c);
e) dispersing a pharmaceutically active ingredient into a mineral oil or thickened mineral oil medium which itself is not an adhesive but is compatible with the composition of said skin contacting adhesion layer;
f) coating or casting said dispersion from step (e) as a uniform layer onto a second release paper; and
g) removing said first release coated surface from said adhesive layer in step (d) and laminating said coated or cast-on second release paper from step (f) to said adhesive layer so that said dispersion of pharmaceutically active ingredient contacts the now exposed surface of said adhesive layer and is absorbed therein to give an adhesive dressing wherein said pharmaceutically active ingredient is present at both said skin contacting surface and said adjacent strata of said adhesive layer.

5,059,190

EXTERNAL MALE URINARY CATHETER AND METHOD AND APPARATUS FOR MANUFACTURING SUCH A CATHETER

Julius Novak, Ringsted, Denmark, assignor to ColoPlast A/S, Denmark

Filed Mar. 30, 1990, Ser. No. 502,180
Claims priority, application United Kingdom, Mar. 31, 1989, 8907253
Int. Cl.[5] A61F *5/44, 6/04*
U.S. Cl. 604—349 **4 Claims**



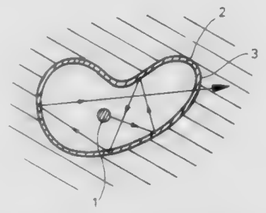
1. An external male urinary catheter comprising a soft thin-walled substantially cylindrical body portion, which is open at one end and merges at another end into a neck portion of increased wall thickness and rigidity compared to said body portion, said neck portion comprising a first part having a maximum diameter corresponding to that of the body portion and a second part joining a narrow drainage tube to be connected to a urine collection bag, wherein said neck portion includes a constriction between said first and second parts of said neck portion, said constriction having axial and radial dimensions to receive and retain the catheter body portion in a rolled-up condition, said second part of said neck portion between the constriction and the drainage tube tapering towards the drainage tube from a maximum diameter exceeding a minimum diameter of said constriction to provide a bulbous surge chamber to prevent kinking of the drainage tube and backflow of urine.

5,059,191

METHOD AND APPARATUS FOR THE IRRADIATION OF CAVITIES

Wolfgang Beyer, Munich; Armin Heinze, Ismaining; Ronald Sroka, Munich, and Eberhard Unsöld, Oberschleissheim, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Unweltforschung mbH (GSF), Neuherberg, Fed. Rep. of Germany

Filed Mar. 16, 1990, Ser. No. 494,662
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909843
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—2 **12 Claims**



7. An irradiation kit for uniformly irradiating the interior of a cavity comprising a layer of a material having a high back-scatter capability, low transmission and low absorption, said layer being adapted to conform to the shape of the interior surface of the cavity to form a lined cavity, and a light source adapted to be placed within the lined cavity.

5,059,192

METHOD OF HAIR DEPILATION

Nardo Zaias, 36 Star Island, Miami Beach, Fla. 33139

Filed Apr. 24, 1990, Ser. No. 513,850
Int. Cl.[5] A61N *5/00*
U.S. Cl. 606—9 **6 Claims**



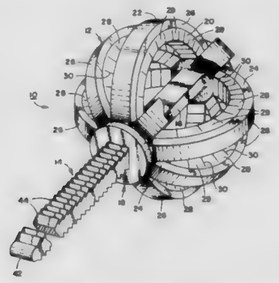
1. A method of hair depilation, comprising the steps of:
a) aligning a laser light applicator substantially vertically over a hair follicle opening, said applicator having an aperture of sufficient area to surround a hair follicle and overlie its papilla;
b) applying through said aperture to the hair follicle a pulse of laser energy of a wavelength which is readily absorbed by the melanin of the papilla and having a radiant exposure dose of sufficient energy and duration to damage its papilla so that hair regrowth is prevented and scarring of the surrounding skin is avoided.

5,059,193

EXPANDABLE SPINAL IMPLANT AND SURGICAL METHOD

Stephen D. Kuslich, Maplewood, Minn., assignor to Spine-Tech, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 439,560, Nov. 20, 1989, abandoned. This application Apr. 19, 1990, Ser. No. 510,952
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—61 **29 Claims**



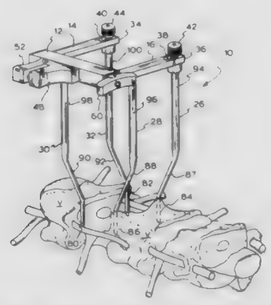
28. An implant for insertion into a bore formed between opposing vertebrae, said implant comprising:
a plurality of ribs each including a plurality of voussoir-shaped blocks with said ribs deformable in response to a deforming force to change from a first shape to a second shape, said ribs in said first shape being generally linear with opposing surfaces of contiguous blocks being spaced apart and said ribs in said second shape being arched with opposing surfaces of said contiguous blocks being in at least partial contact; and
applying means for applying said deforming force to said ribs.

5,059,194

CERVICAL DISTRACTOR

Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291

Filed Feb. 12, 1990, Ser. No. 478,940
Int. Cl.[5] A61B *17/60*
U.S. Cl. 606—61 **8 Claims**



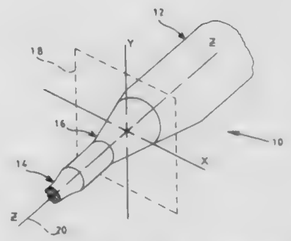
1. A spinal distractor comprising a frame having a support bar and having a pair of arms extending perpendicular from said support bar, one of said arms fixed in relationship to said support bar and the other of arms being movable in relationship to said support bar, a pair of opposing legs dependent from each of said arms, at least one of said legs of each pair of said legs fixed in relationship to said arm, said legs having an upper portion having a central axis and a lower portion having a central axis and an angled portion intermediate said upper and lower portions whereby the central axis of the lower portion of said legs is parallel to the central axis of the upper portion.

5,059,195

SURGICAL INSTRUMENT WITH DETACHABLE TOOL MEMBER

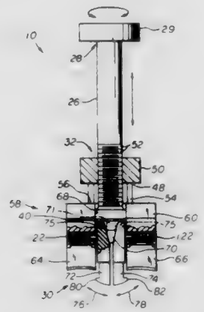
Frank B. Gray, 5104 Lyons View Dr., Knoxville, Tenn. 37919

Continuation-in-part of Ser. No. 226,888, Aug. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 55,029, May 28, 1987, Pat. No. 4,813,413. This application Feb. 12, 1990, Ser. No. 478,931
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—84 **18 Claims**



7. A manual surgical instrument for performing a selected surgical operation by a user, which comprises:
a tool member having a longitudinal axis, a first end portion configured to perform said selected surgical operation, and a second end portion, said second end portion of said tool member defining an external non-deformable surface of a selected configuration, said external surface including at least a conical portion symmetrical around said axis of said tool member and converging toward said second end portion and an axial extension extending from said conical portion, said axial extension having at least one flat surface oriented substantially parallel with said axis of said tool member, said second end portion provided with a threaded receptor aligned on said axis of said tool member;
an elongated handle member for grasp by a hand of said user, said handle member having a longitudinal axis, a first end portion and a second end portion, said handle member provided with a passageway extending along said longitudinal axis from said first end portion to said second end portion, said first end portion being provided with a receptor communicating with said passageway, said receptor defining an interior non-deformable surface configured to be complementary to said external surface of said second end portion of said tool member so as to releasably receive said second end portion of said tool member with said axis of said tool member and said axis of said handle member being coextensive; and
a transfixing rod for being received through said passageway in said handle member, said transfixing rod having a threaded first end for being threadably received in said threaded receptor of said tool member, and a second end extending from said second end portion of said handle member, said second end of said transfixing rod provided with means proximate said second end of said handle member for readily permitting said user to rotate said transfixing rod in a first direction to advance said threaded end into said threaded receptor of said tool member to produce intimate frictional contact between said external surface of said second end portion of said tool member and said internal surface of said receptor of said handle member so as to prevent relative transverse, axial and rotational movement between said tool member and said handle during application of transverse, axial and rotational forces applied to said handle member, and for rotating said transfixing rod in a second direction to disengage said tool member from said handle member.

5,059,196
FEMORAL PROSTHESIS HOLDER/DRIVER TOOL AND METHOD OF IMPLANTATION USING SAME
Brndley J. Coates, Cordova, Tenn., assignor to Dow Corning Wright Corporation, Arlington, Tenn.
Filed Mar. 7, 1991, Ser. No. 666,170
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—99 **13 Claims**



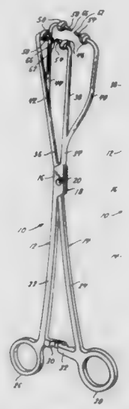
1. A surgical tool for holding and driving an implantable condylar prosthesis of the type having a pair of distal condyles which define an intercondylar notch opening, an anterior condylar flange and a distal internal contact surface extending anteriorly from the notch toward the anterior flange, the tool comprising:
(a) an elongated force-transmitting shaft having opposed ends, including a proximal end adapted for operative contact with the prosthesis and a distal end adapted for driving the shaft to implant the prosthesis into the proximal aspect of a resected femur;
(b) means located on the proximal end of the shaft for gripping the notch along the internal contact surface to securely hold the prosthesis during implantation; and
(c) means for actuating the gripping means to releasably lock the gripping means within the notch, allowing the prosthesis to be manipulated into position on the femur while being driven from the distal end of the tool, and then allowing the tool to be disengaged from implant.

5,059,197
LESION LOCATION DEVICE
Robert G. Urie, 3 Orchard Grove, Flackwell Heath, Buckinghamshire, HP10 9PT, and Ian O. Ellis, Yew Tree House, 2 Kenilworth Road, The Park, Nottingham, NG7 1DD, both of United Kingdom
Filed Apr. 16, 1990, Ser. No. 509,894
Claims priority, application United Kingdom, Apr. 15, 1989, 8908575
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—116 **10 Claims**



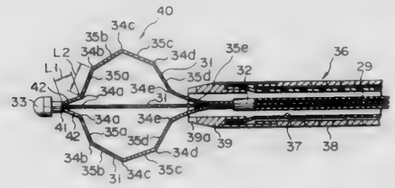
1. A device suitable for marking a site in tissue comprising a barbed wire wherein the wire consists of an elongate first portion, a second portion which forms an angle with the first portion and which is resiliently pivotable about its point of junction with the first portion, and a third portion which extends adjacent the second portion for at least part of the length of the second portion and then continues beyond the said point of junction in a direction substantially opposed to that of the second portion.

5,059,198
GYNECOLOGICAL TENACULUM
Richard J. Gimpelson, 1028 Terracerock Cir., Ballwin, Mo. 63011
Continuation of Ser. No. 854,017, Apr. 21, 1986, abandoned. This application Nov. 23, 1987, Ser. No. 124,354
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—119 **15 Claims**



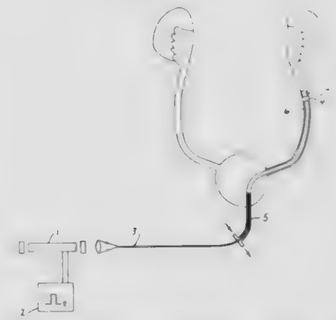
10. A gynecological tenaculum for gripping the exterior of the cervix of the human uterus to press the cervix inwardly against a sheath for a hysteroscope inserted through the cervix canal, to resist refluxing of distension media within the uterus through the cervix canal around the sheath, comprising:
(a) a pair of movable extension members pivotally associated with each other;
(b) each extension member having a trunk and first and second arms branching distally from each trunk, the first arm extending along an axis which is in substantially the same direction as the axis of the trunk, and the second arm being offset relative to the trunk;
(c) the arms having means for gripping the exterior of the cervix to press the cervix inwardly against the sheath to resist the refluxing of distension media through the cervix canal and around the sheath, comprising each arm having an enlarged pressure distribution section near its anterior end, each distribution section having a surface facing inwardly from the distribution section, the surface being positioned for pressing inwardly against the cervix, and a tooth projecting inwardly from each distribution section for engaging the cervix and pressing the cervix inwardly against the sheath.

5,059,199
TREATING DEVICE FOR ENDOSCOPES
Tsutomu Okada, Inagi, and Kazuhiro Inoue, Akigawa, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 4, 1990, Ser. No. 504,539
Claims priority, application Japan, Apr. 12, 1989, 1-42015; Dec. 4, 1989, 1-140556; Mar. 6, 1990, 2-22306[U]
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—127 **9 Claims**



1. A treating device adapted to be inserted into a body cavity of a subject through a channel of an endoscope, comprising:
(1) a sheath having a forward end and a back end, said forward end being adapted to be inserted through said channel into said body cavity;
(2) an operation wire having a forward end and a rear end, said operation wire being inserted into said sheath and adapted to be inserted through said channel such that said operation wire can be moved in both a forward and a backward direction;
(3) operation means connected to said rear end of said operation wire to move said operation wire both in said forward and said backward direction; and
(4) a treating unit having a center axis and connected to said forward end of said operation wire, said treating unit being projected out of said sheath when said operation wire is moved in said forward direction, and being retracted back into said sheath when said operation wire is moved in said backward direction, said treating unit having:
(a) a front end and a back end each respectively positioned on said center axis;
(b) a plurality of elastic wires connected between said front end and said back end, each of said plurality of elastic wires having:
first, second, third, fourth and fifth bent points provided, in order, between said front end and said back end;
first, second, third, and fourth sections respectively positioned, in order, between said first, second, third, fourth and fifth bent points;
a fifth section extending from said fifth bent point toward said back end of said treating unit; and
a sixth section extending from said first bent point toward said front end of said treating unit;
said treating unit upon projection from said sheath having:
said first and fifth bent points projected inwardly towards said center axis of said treating unit;
said second, third and fourth bent points projected outwardly away from said center axis of said treating unit;
said first, second, third and fourth sections being inclined at predetermined angles relative to said center axis of said treating unit;
and said fifth and sixth sections being inclined at given angles relative to said center axis of said treating unit;
said first and fifth bent points being positioned preselected distances away from said center axis;
said first and fifth bent points moving toward and away from said center axis of said treating unit as said treating unit is moved respectively in said backward and said forward directions while substantially maintaining the shape of said treating unit;
holding means for holding said sixth section of each of said plurality of elastic wires together at said front end of said treating unit; and
connecting means for connecting said fifth section of each of said plurality of elastic wires as a bundled unit to said forward end of said operation wire.

5,059,200
LASER LITHOTRIPSY
John Tulip, 11625 Edinboro Rd., Edmonton, Alberta, Canada T6G 1Z7
Filed Apr. 6, 1990, Ser. No. 506,446
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—128 **5 Claims**



1. A laser lithotripter for destroying a human concrement comprising:
light transmission means having a tip end locatable adjacent a concrement, said concrement located in a human body;
a liquid capable of absorbing a chosen frequency of a pulsed laser light;
a source of pulsed laser light having a chosen frequency that at least matches a peak absorption value of said liquid disposed to provide pulsed laser light to the light transmission means, whereby the pulsed laser light exits the light transmission means at the tip end of the light transmission means and is absorbed by said liquid, said source of laser light and liquid defining means creating micro-explosions in the liquid adjacent the concrement, said micro-explosions being the primary source of concrement destruction; and
means for supplying the liquid to the vicinity of the concrement and for removing the liquid from the body.

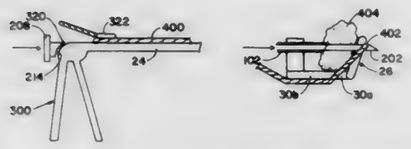
5,059,201
SUTURE THREADING, STITCHING AND WRAPPING DEVICE FOR USE IN OPEN AND CLOSED SURGICAL PROCEDURES
Stanley E. Asnis, 38 Cornwall La., Port Washington, N.Y. 11050
Continuation of Ser. No. 544,042, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 432,138, Nov. 3, 1989, abandoned. This application Jan. 22, 1991, Ser. No. 644,677
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—144 **20 Claims**

1. A suturing device for passing a loop of suture material through a piece of tissue, said suturing device comprising:
(a) clamping means for releasably clamping a piece of tissue, said clamping means comprising:
an outer tube having a first end and a second end;
a bracket including a leg, said bracket being attached to said outer tube so that said leg projects across the longitudinal axis of said outer tube adjacent said first end of

said outer tube and spaced from said first end of said outer tube; and

an inner tube having a first end and a second end, said inner tube being slidably disposed within said outer tube so that said first end of said inner tube can be advanced towards and away from said leg, whereby a piece of tissue can be clamped between said leg and said first end of said inner tube when said tissue is disposed between said leg and said first end of said inner tube and said first end of said inner tube is advanced towards said leg;

(b) actuation means coupled to said clamping means for actuating said clamping means from a location spaced from said tissue;



(c) suture support means for positioning and securing a segment of a loop of suture material having two free ends adjacent a first side of a piece of tissue clamped in said clamping means; and

(d) extraction means for (1) piercing an opening in a piece of tissue clamped in said clamping means and (2) engaging said segment adjacent said first side of said piece of tissue and pulling said segment through said opening to a location remote from said piece of tissue so that said loop of suture material passes through said opening from said first side of said piece of tissue through to a second side of said piece of tissue.

5,059,202

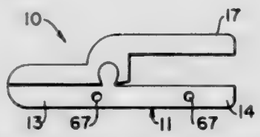
TENDON APPROXIMATOR

Marc D. Liang; Krishna Narayanan, both of Pittsburgh, and Eugene D. Ross, Southampton, all of Pa., assignors to The Montefiore Hospital Association of Western Pennsylvania, Pittsburgh, Pa.

Division of Ser. No. 263,518, Oct. 27, 1989, Pat. No. 4,957,500. This application Jun. 21, 1990, Ser. No. 541,505

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—150 **3 Claims**



1. A tendon approximator including two normally closed clamps, each clamp comprising two connected elements including:

a base element having a base jaw member, a base handle member and a central, non-circular arcuate cam member; a clamping element having a clamping jaw member, a clamping handle member and a non-circular arcuate cam-engaging member; said base element being secured to said clamping element by engagement of at least a portion of said cam-engaging member with said cam member; said base jaw member and said clamping jaw member having confronting surfaces which are in proximity when said cam-engaging member conforms to the surface of said cam member;

each said clamp having two transverse bores; a pair of rods fitting in corresponding ones of said bores to support the said two clamps in generally parallel relation; at least one of said clamps being slideable along the said rods with respect to the other of said clamps.

5,059,203

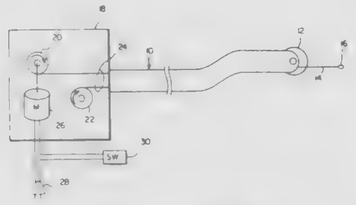
POWERED MICROSURGICAL TOOL

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Filed May 17, 1989, Ser. No. 352,870

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—159 **11 Claims**



1. A powered miniature tool comprising:

work wheel means having an axis of rotation;

a casing member having a proximal end and a distal end;

means supporting said work wheel means for rotation about said axis adjacent said distal end of said casing member;

a flexible filament drive line within said casing member for imparting rotational movement to said work wheel means; and

drive means coupled to said flexible filament drive line adjacent said proximal end of said casing member.

5,059,204

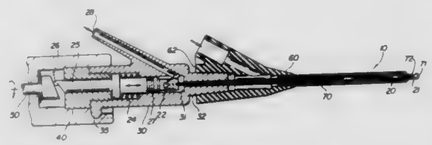
OCULAR CUTTER WITH ENHANCED CUTTING ACTION

William C. Lawson, Willow Grove; Jude V. Paganelli, New Britain, and Perry Sepielli, Richboro, all of Pa., assignors to Site Microsurgical Systems, Inc., Horsham, Pa.

Filed Oct. 26, 1989, Ser. No. 427,284

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—171 **8 Claims**



1. A tissue cutter comprising:

a hollow inner needle with an elongated end and circular cross-section; and

an outer needle with circular cross-section enclosing an open inner portion, said outer needle closed at one end, and said outer needle circular cross-section containing an opening near said one end for the insertion of tissue; said inner needle reciprocable within the inner portion of said outer needle; and

a rotary can means wherein said inner needle reciprocates by motion against said cam means having a dwell at the end of the stroke of said inner needle within said outer needle, said dwell extending at least 15 degrees of angular rotation of said rotary cam means;

wherein the outer circumference of said inner needle is generally smaller than the inner circumference of said outer needle; and wherein the outer circumference of said elongated end gradually increases distally along said inner needle length;

such that at said elongated end, the outer circumference of said inner needle: (a) fits within the inner circumference of said outer needle in an interference fit; and (b) has an arc greater than 120° along it circular cross-section removed.

5,059,205

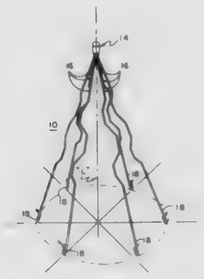
PERCUTANEOUS ANTI-MIGRATION VENA CAVA FILTER

Fozan O. El-Nounou, Billerica; Michael A. Savin, Norwood; Ronald A. Sahatjian, Lexington; Michael Weinreich, Acton, and Thomas F. Kordis, Boston, all of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Filed Sep. 7, 1989, Ser. No. 404,166

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—200 **3 Claims**



1. A filter device positionable within a blood vessel, for trapping blood clots, comprising:

an apical head;

a plurality of divergent legs each secured at one of its ends to said head and each having securement means on its distal end with respect to said head;

said securement means comprising a distalmost portion of each leg having a further leg segment thereadjacent, said further leg segment also defining a hook arranged outwardly from said leg and proximal to said further leg segment, the distal portion of each leg and said further leg segment comprising a pad to prevent extensive penetration of said hook through a wall of a blood vessel; said pad being comprised of a reverse bend in said distalmost portion of said leg, to provide parallel leg segments thereadjacent.

5,059,206

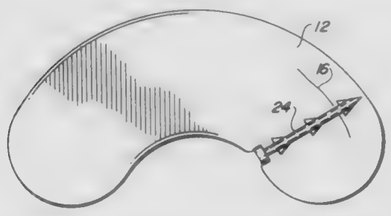
METHOD AND APPARATUS FOR REPAIRING A TEAR IN A KNEE MENISCUS

Thomas F. Winters, 1711 Venetian Way, Winter Park, Fla. 32789

Filed Apr. 12, 1989, Ser. No. 336,803

Int. Cl.[5] A61B *17/04*

U.S. Cl. 606—213 **11 Claims**



1. A method for repairing a tear in a knee meniscus of a patient, comprising the step of:

providing a delivery device having a proximal end and a distal end, the distal end dimensioned to extend into the interior of the patient's knee;

inserting the device into the patient's knee so that the distal end extends centrally into the knee;

fitting a fastener within the device;

manipulating the device through a curved radius so that the distal end is directed outwardly toward the tear in the meniscus; and thereafter

extending and releasing the fastener through the curved radius and out of the distal end of the device outwardly through the meniscus and across the tear to close and bind the tear without passing the fastener out of the meniscus.

5,059,207

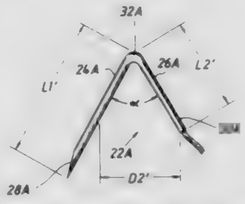
SHAPED NEEDLES FOR SPECIALIZED SURGICAL PROCEDURES

Mrugesh K. Shah, 4314 Montevideo, Pasadena, Tex. 77504

Filed Aug. 27, 1990, Ser. No. 572,866

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—223 **14 Claims**



1. A shaped surgical needle adapted for suturing a wound, the needle comprising:

a body;

a bight in the body;

a first arm and a second arm extending from the bight, each arm having a predetermined length and an end opposite the bight, said first arm having a length no greater than the length of said second arm;

a gap distance between the end of said first arm and a point on said second arm located a distance from the bight corresponding to the length of said first arm, said gap distance being no greater than the length of said first arm;

a sharpened point on the end of one of said arms; and

a device at the end of the other of said arms for securing a suturing material.

5,059,208

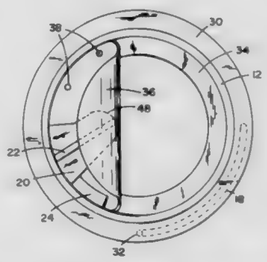
ADJUSTABLE TRACHEOSTOMA VALVE

Frederick L. Coe, and Edmund V. Seder, both of Santa Barbara, Calif., assignors to Helix Medical, Inc., Santa Barbara, Calif.

Filed Feb. 4, 1991, Ser. No. 649,958

Int. Cl.[5] A61F *2/20*

U.S. Cl. 623—9 **14 Claims**



1. An adjustable valve adapted to control the flow of air through a tracheostoma comprising in combination:

a valve seat having a sealing surface thereon and an opening therethrough;

a flexible diaphragm mounted proximate to said opening and shaped to engage said sealing surface and close said opening in response to airflow through said opening at a predetermined rate, said diaphragm normally assuming a position removed from said sealing surface for air flow less than said predetermined rate; and

a valve body movably connected to said seat so as to be movable between first and second positions relative to said seat, including a cam means on said body for engaging to engage said diaphragm and varying the distance between said diaphragm and said sealing surface in accordance with the movement of said body relative to said seat and between said first and second positions.

5,059,209

COMPOSITE MATERIALS FOR ORTHOPAEDICS

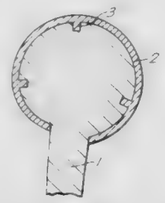
Michael E. B. Jones, Chester, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Apr. 25, 1989, Ser. No. 342,810

Claims priority, application United Kingdom, Apr. 26, 1988, 8809863

Int. Cl.[5] A61F *2/36, 2/28*

U.S. Cl. 623—23 **20 Claims**



1. A prosthetic device comprising a composite wherein the composite has a flexural modulus in the range of values recorded for compact bone and is preparable by curing a curable composition which comprises an intimate mixture of

Component A: an addition polymerisable composition;

Component B: at least one particulate inorganic solid which provides up to about 80% by volume of the composite;

Component C: a stabilising or dispersing agent; and

Component D: a high temperature peroxide.

5,059,210

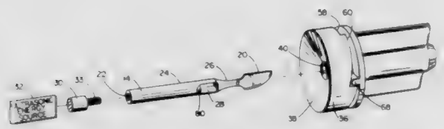
APPARATUS AND METHODS FOR ATTACHING AND DETACHING AN ULTRASONIC ACTUATED BLADE/COUPLER AND AN ACOUSTICAL MOUNT THEREFOR

Richard J. Clark, Norfolk, Mass., and Alan E. Thomas, Ocean City, N.J., assignors to Ultracision Inc., Smithfield, R.I.

Filed Dec. 12, 1989, Ser. No. 448,862

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—169 **19 Claims**



1. Apparatus for attaching a surgical device to a mount wherein the surgical device includes a coupler carrying a surgical tool comprising:

an adaptor including a sleeve for receiving the surgical tool;

first means carried by said adaptor and engageable with the coupler when the surgical tool is received by the adaptor for rotating the coupler upon rotation of said adaptor;

second means carried by said adaptor for rotating said adaptor to rotate the coupler;

means cooperable between said second rotating means and said adaptor, and responsive to rotation of said second rotating means in one rotary direction, for limiting the torque applied by said adaptor to the coupler to a predetermined magnitude thereof when the surgical tool is being attached to the mount; and

means cooperable between said second rotating means and said adaptor, and responsive to rotation of said second rotating means in the opposite rotary direction, for applying substantially unlimited torque to the adaptor and coupler including in excess of said predetermined torque, said second rotating means including a generally cylindrical member disposed on said sleeve, said torque-limiting means including a cam surface carried by one of said adaptor and said cylindrical member and a cam follower carried by the other of said adaptor and said cylindrical member and engageable with said cam surface, said cam follower and said cam surface being cooperable in response to rotation of said cylindrical member to rotate said adaptor and apply a torque thereto,

said adaptor further including a generally radially extending flange adjacent one end, one of said cam surface and said cam follower being carried by said flange on the side thereof from which said sleeve extends, said cylindrical member carrying the other of said cam surface and said cam follower on an end thereof for axial engagement with said one of said cam surface and said cam follower on said flange.

5,059,211

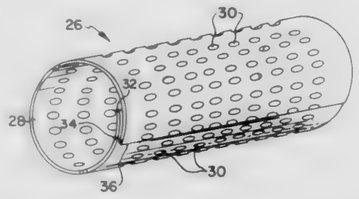
ABSORBABLE VASCULAR STENT

Richard S. Stack, Chapel Hill, and Zemaida P. Klopovic, Durham, both of N.C., assignors to Duke University, Durham, N.C.

Filed Jun. 25, 1987, Ser. No. 66,345

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—198 **7 Claims**



1. A vascular stent comprising:

a tubular main body portion having a first open end and a second open end and a lumen extending therethrough, said main body portion being sized for transluminal placement within a coronary artery, said main body portion comprising a sheet of a bioabsorbable material having at least one of holes and pores defined therein for tissue ingrowth which has been rolled into a cylindrical configuration; said main body portion being expandable from a first reduced diameter allowing intravascular transport to a stenotic portion of a coronary artery to a second expanded diameter at said stenotic portion so as to engage and support the interior wall of the coronary artery in which it is disposed against collapse and restenosis, one longitudinal edge of said sheet including a means for receiving a second longitudinal end of said sheet so as to facilitate rolling of the sheet of material and maintaining same at a predetermined diameter prior to expansion thereof.

5,059,212

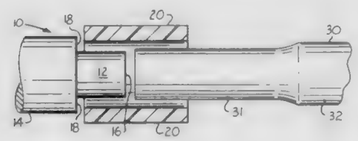
SURGICAL NEEDLE-SUTURE ATTACHMENT FOR CONTROLLED SEPARATION OF THE NEEDLE FROM THE SUTURE

Herbert W. Korthoff, Westport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 413,240, Sep. 27, 1989. This application Jun. 4, 1990, Ser. No. 532,913

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—224 **24 Claims**



1. A method for attaching a surgical needle to a suture to provide a combined surgical needle-suture device exhibiting a predetermined range of average pull-out force for a suture of given size which comprises:

a) providing a surgical needle having a shank end of reduced cross-section and a suture having a region of reduced cross section at its tip;

b) placing a shrinkable tubing around the reduced diameter shank of the needle and the tip of the suture having the region of reduced cross section with a portion of the reduced cross section region extending beyond the shrinkable tubing; and,

c) applying energy to the shrinkable tubing to bring the tubing into engagement with the needle shank and suture thereby providing a combined surgical needle-suture device in which the force required to achieve rupture of the suture at its region of reduced cross section with consequent separation of the needle from the suture falls within a predetermined average value.

5,059,213

SPIROID BRAIDED SUTURE

Michael P. Chesterfield, Norwalk; Ilya Koyfman, Orange, and Matthew R. Hain, New Haven, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 26, 1990, Ser. No. 499,173

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—228 **21 Claims**



1. A suture of solid spiroid braid construction wherein for a given overall suture denier, the number of yarns and denier of individual filaments comprising a yarn are related to each other as follows:

Overall Suture Denier	Number of Yarns	Denier of Individual Filaments
from about 50 to about 125	from about 6 to about 15	from about 0.2 to about 1.8
greater than about 125 to about 200	from about 6 to about 15	from about 0.2 to about 1.8
greater than about 200 to about 300	from about 6 to about 15	from about 0.2 to about 1.8
greater than about 300 to about 500	from about 6 to about 15	from about 0.2 to about 1.8
greater than about 500 to about 800	from about 9 to about 20	from about 0.2 to about 1.8
greater than about 800 to about 1200	from about 12 to about 25	from about 0.2 to about 1.8
greater than about 1200 to about 2000	from about 12 to about 25	from about 0.2 to about 1.8
greater than about 2000 to about 4000.	from about 15 to about 25	from about 0.2 to about 1.8

5,059,214

SURGICAL FORCEPS

Ernest M. Akopov, and Elena N. Kapitanova, both of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky i Ispytatelny Institut Meditsinskoi Tekhniki, Moscow, U.S.S.R.

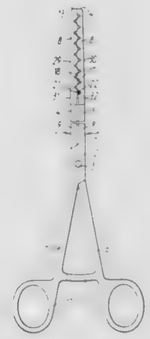
PCT No. PCT/SU88/00123, § 371 Date Feb. 24, 1989, § 102(e) Date Feb. 24, 1989, PCT Pub. No. WO88/10097, PCT Pub. Date Dec. 29, 1988

PCT Filed May 26, 1988, Ser. No. 328,157

Claims priority, application U.S.S.R., Jun. 26, 1987, 4268325

Int. Cl.[5] A61B *17/28*

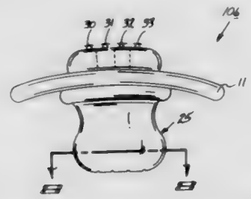
U.S. Cl. 606—207 **16 Claims**



1. Surgical forceps comprising

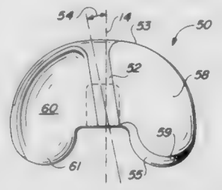
two movably interconnected halves, each of said halves terminating in an oblong jaw having an effective portion with a compressing surface, alternately arranged prongs and recesses aligned along at least one edge of said compressing surface of one jaw corresponding to respective recesses and prongs aligned along at least one edge on the compressing surface of the other jaw, said prongs and recesses being arranged on at least one longitudinal edge of the compressing surface with said recesses open towards a lateral side surface of the effective portion of the jaw.

5,059,215
INFANT RATTLE AND TEETHING KIT
Lydia Giran, Urb. Villa Los Santos, Calle 10 S-3, Arecibo, P.R. 00612
Filed Feb. 6, 1990, Ser. No. 476,561
Int. Cl.[5] A61J *17/00*
U.S. Cl. 606—234 1 Claim



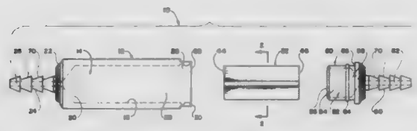
1. An infant rattle and teething kit comprising in combination,
an arcuate base member, including a concave forward surface and a convex rear surface, and
a generally elliptical nipple mounted orthogonally and medially of the forward surface, and
a rear chamber mounted coaxially of the nipple on the rear surface of the arcuate base, and
wherein the nipple includes a multi-compartmented nipple defined by discrete compartments mounted in a side-by-side relationship through the nipple, with at least one opening directed through a forward end of the nipple into each compartment, and the rear chamber including a plurality of fill compartments, each fill compartment in fluid communication with a compartment of the nipple to permit filling of each compartment with a discrete fluid therewithin, and each fill compartment including a fill plug directed through the rear chamber remotely oriented relative to the forward end to permit selective filling of each compartment.

5,059,216
KNEE JOINT REPLACEMENT APPARATUS
Thomas F. Winters, 2031 Venetian Way, Winter Park, Fla. 32789
Filed Sep. 29, 1989, Ser. No. 414,804
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 9 Claims



1. A prosthesis for replacing the knee extremity of a human tibia, the prosthesis comprising a member with an upper low friction and a low surface, the upper surface having a longitudinal prominence for replacing the natural eminence of the tibia across the knee extremity, the longitudinal prominence of the prosthesis rotated by a substantial angle with respect to the direction along a line from the posterior of the lower surface to the interior of the lower surface.

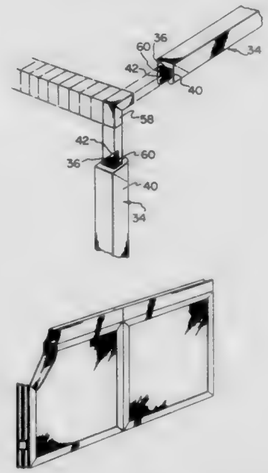
5,059,217
FLUID TREATING DEVICE
Melvin L. Arroyo, 320 Madison St., Gretna, La. 70053, and Leonard Cannizaro, 540 Olive Ave., Harvey, La. 70058
Filed Oct. 10, 1990, Ser. No. 594,990
Int. Cl.[5] C10L *5/00*
U.S. Cl. 44—639 16 Claims



10. A liquid fuel treating device, comprising:
an elongated housing means having a central opening extending therethrough, said housing means having an interior wall provided with an annular groove adjacent a first end thereof;
a pair of liquid line means fixedly attached to opposite ends of the housing means, each liquid fuel line means having an axial passageway in fluid communication with the central opening of the housing means, said central opening having at least one reduced diameter portion formed at one end of the central opening adjacent a liquid fuel line means, so as to create a venturi effect in a liquid fuel flow passing through the treating device; and
an elongated metal bar positioned within said central opening of the housing, said metal bar comprising an alloy which comprises copper, nickel, zinc, tin, magnesium and silicon, said metal bar being sized and shaped to allow contact of the metal bar with the liquid fuel passing through the central opening of the housing means.

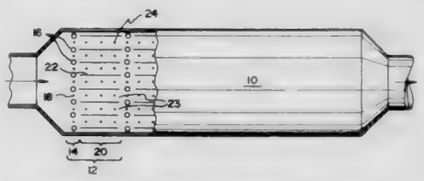
5,059,218
CONSTRUCTION FOR SUPPORTING A FLEXIBLE SHEET
William Pick, Highway 15, R.R. #1, Carleton Place, Ontario, Canada K7C 3P1
Filed Nov. 28, 1989, Ser. No. 442,508
Int. Cl.[5] A44B *21/00*; B03C *3/09, 3/86*
U.S. Cl. 55—131 17 Claims

17. An electrostatic air filter of the charged media type, comprising:
first and second frames for positioning in a stream of air, the frames being in opposing relationship to each other, each frame supporting thereon an electrically conductive, flexible sheet, the frames assembled from channel which include a first and second parallel spaced-apart flange and a connecting web, each said flange having a free edge remote from the web, the first flange including a protruding rounded nose along an inner surface of the free edge thereof, and the second flange including an inclined ramp region along an inner surface of the free edge thereof, the ramp region being wedge-shaped with a thin edge adjacent the free edge of the second flange and including a groove which is parallel with and spaced inwardly from the free edge of the second flange; and a spline member for removable engagement between the rounded nose of the first flange and the ramp region of the second flange to frictionally engage an edge of the flexible sheet between the ramp region of the second flange and a complementary surface of the spline member, the spline member having a substantially rectangular cross-section with a top edge, a bottom edge and opposed front and rear faces, the top edge including a longitudinal groove adjacent the rear face for cooperation with the nose of the first flange, the bottom edge being complementary with the ramp region of the second flange and including a ridge for engaging the groove in the ramp region to inhibit the relative movement of the spline member with respect to the second flange;
hinge members interconnecting said frames to form a hollow, openable and closable box structure;
a pair of fibrous filter pads disposed within said hollow box structure in opposing parallel adjacent relationship;



an inner charging medium disposed between said fibrous filter pads; and
a high voltage power source having one pole in electrical connection with said frames and its other pole in electrical connection with said inner charging medium.

5,059,219
ELECTROPRECIPITATOR WITH ALTERNATING CHARGING AND SHORT COLLECTOR SECTIONS
Norman Plaks, Raleigh, and Leslie E. Sparks, Durham, both of N.C., assignors to The United States Goverment as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.
Filed Sep. 26, 1990, Ser. No. 588,224
Int. Cl.[5] B03C *3/00*
U.S. Cl. 55—138 12 Claims



1. An electrostatic precipitate comprising, in series:
a plurality of collector sections comprising:
a plurality of parallel collection plates, said collection plates being evenly spaced by a distance d to define the plurality of gas flow lanes therebetween, said collection plates defining the length of said collector section as 1–4*d*; and
a least one first corona discharge electrode within each of said gas flow lanes; and
a plurality of charging sections alternating in series with said collector sections, each collector section being immediately preceded by a charging section, each of said charging sections comprising a plurality of second corona dis-

charge electrodes arranged in an array transverse to said gas flow lanes.

5,059,220

COMPOSITE POLYMERIC MEMBRANES FOR THE SEPARATION OF MIXTURES OF GASES AND THE METHOD OF PREPARATION THE SAME

Miroslav Bleha; Jan Schauer; Jan Lokaj, all of Prague, Czechoslovakia; Galina A. Polockaja, Leningrad-Puškin, U.S.S.R.; Jurij P. Kuznĕcov, Leningrad, U.S.S.R., and Kira A. Romaškova, Lenningrad, U.S.S.R., assignors to Ceskoslovenska Akademie ved, Prahu, Czechoslovakia and Akademija nauk SSSR, Moscow, U.S.S.R.

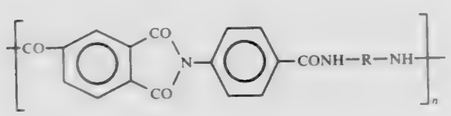
Filed Nov. 15, 1989, Ser. No. 438,330

Claims priority, application U.S.S.R., Nov. 22, 1988, 4638856[I]; Czechoslovakia, Aug. 30, 1989, 5047-89

Int. Cl.[5] B01D *53/22, 71/64*

U.S. Cl. 55—158 **6 Claims**

1. A composite polymeric membrane for the separation of mixtures of gases, wherein said membrane comprises a porous polymeric base of poly-2,6-dimethyl-1,4-phenyleneoxide and a polymeric selective layer formed from a polyamidoimide of the general formula I

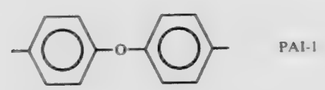


I

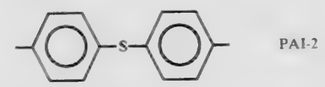
at

n=140 to 220, where

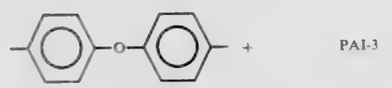
R=



PAI-1

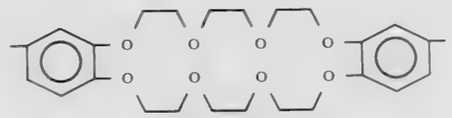


PAI-2



PAI-3

70%



30%

or from the interpolymeric equimolar complex of polyamidoimide with polyvinylpyrrolidone.

5,059,221

INTEGRATED AIR CLEANER ASSEMBLY

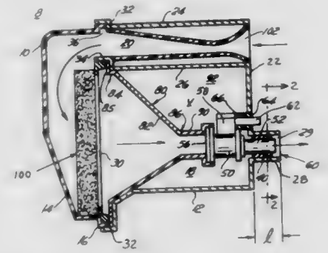
Richard D. McWilliam, West Lorne, Canada, assignor to Siemens-Bendix Automotive Electronics Limited, Chatham, Canada

Continuation of Ser. No. 395,164, Aug. 15, 1989, abandoned, and a continuation of Ser. No. 226,267, Jul. 29, 1988, abandoned.

This application Jul. 5, 1990, Ser. No. 548,448

Int. Cl.[5] B01D *39/18*

U.S. Cl. 55—276 **16 Claims**



1. An assembly comprising:

a first housing member comprising

first and second compartments, the first compartment comprising an exit ,tube and an oppositely situated first open end, the second compartment comprising an air inlet and an oppositely situated second open end, the exit tube comprises a plurality of radial inwardly extending stand-offs;

means for sensing the mass of air exiting the exit tube, including an exit conduit adapted to be received upon and supported by the stand-offs;

the exit conduit and exit tube cooperating to form a tuner inlet passage, the mass airflow sensing means further including an entrance conduit, positioned upstream of the exit conduit;

an insert comprising tapered walls, including first and second ends, the first end defining an opening conformal to the first open end of the first housing member and adapted to be joined thereto, the second end defining a hollow sleeve of substantially the same size as the entrance conduit and adapted to sealingly mate therewith; thereby enclosing, in cooperation with the first compartment a tuner volume, communicated with the tuner inlet passage;

air filter means positioned upon the insert opening for filtering air;

a second housing member sealingly engaging the first housing member and spaced from a portion of the air cleaner means to communicate air received from the inlet to the air cleaner means.

5,059,222

ENGINE AIR PRECLEANER

Daniel R. Smith, 1414 Birch St., Baraboo, Wis. 53913

Filed Sep. 25, 1990, Ser. No. 587,899

Int. Cl.[5] B01D *45/12*

U.S. Cl. 55—309 **10 Claims**

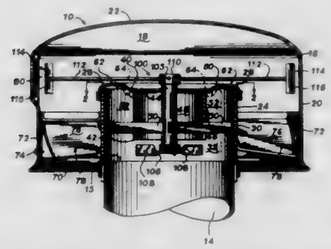
1. An engine precleaner adapted to be mounted on an engine air intake stack for separating unwanted particulates from particulate entrained gas, comprising:

a. a housing having a separation chamber, the housing including a generally tubular and vertical side wall surrounding the chamber, the side wall having a first upper end and a second lower end, the side wall further having at least one discharge opening for providing a passageway for gas and particulates from the separation chamber;

b. first end wall means attached to the side wall chamber;

c. second end wall means attached to the side wall at the other end of the separation chamber, the second end wall means having a vane assembly having at least one inlet passage angularly positioned for directing the gas and particulates into the separation chamber in a circular direction whereby the particulates move outwardly by centrifugal force;

d. an outer tubular sleeve having a first end adapted to be mounted on the air intake stack and a second end extending into the separation chamber to define an outer passage, the outer tubular sleeve located concentrically with the separation chamber and having a side wall defining an outer tube chamber, the outer tube chamber being adapted to carry gas separated from a substantial part of the particulates out of the separation chamber into the air intake stack;



e. an inner tubular sleeve having a diameter smaller than the outer tubular sleeve and mounted concentrically with the outer tubular sleeve and having a side wall defining an inner tube chamber, the inner tube chamber being adapted to carry gas separated from a substantial part of the particulates out of the separation chamber into the outer tube chamber of the outer tubular sleeve, the inner tubular sleeve having a first end extending into the outer tube chamber and a second end extending into and open to the separation chamber;

f. means to seal the outer passage from the separation chamber when the gas flow is below a predefined pressure; and

g. a rotor assembly including a drive fan located in the outer tube chamber and an impeller assembly located in the separation chamber, the rotor assembly being effective to move gas and particulates through the discharge opening.

5,059,223

VACUUM CLEANER FOR SIMPLIFIED DIRT DISPOSAL

Helmut Diebolder, Schöneggweb 17, D8943 Babenhausen, Fed. Rep. of Germany

Filed Jan. 3, 1990, Ser. No. 460,483

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1989, 3900083

Int. Cl.[5] B01D *46/00;* **A47L** *9/00*

U.S. Cl. 55—373 **14 Claims**

1. A vacuum cleaner for simplified dirt disposal, comprising a dirt collector (2) with a cover, a motor, a turbine and a motor and turbine support plate (8) fastened on the cover, said vacuum cleaner in cooperation with a filter (15) and a foil sack (25) extending below the turbine into the dirt collector (2), wherein;

the dirt collector (2) is covered below the turbine by at least one filter support plate (19) inserted into the dirt collector (2);

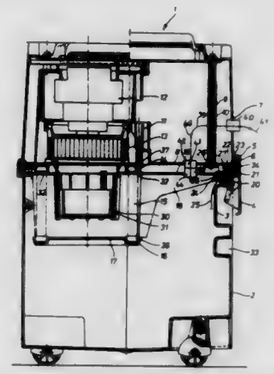
fasteners are disposed on the circumference of said filter support plate (19);

the foil sack (25) is removably connected to said fasteners;

said filter support plate (19) has an annular opening (32);

an upper portion of the filter (15) extends through said annular opening (32);

said filter (15) is sealingly maintained against the motor and turbine support plate (8) by said filter support plate (19);



wherein, the filter (15) and the foil sack (25) are separately removable off said filter support plate (19) after the cover has been removed.

5,059,224

ROOM AIR CLEANER FOR USE IN AUTOMOBILES

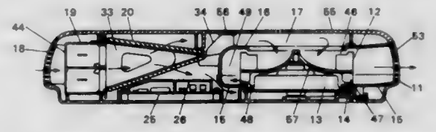
Tatsuo Kikkawa, Omihachiman; Shigeyuki Asanari, Yokaichi, and Masateru Koyama, Moriyama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sep. 4, 1990, Ser. No. 577,419

Claims priority, application Japan, Sep. 6, 1989, 1-230975

Int. Cl.[5] B01D *53/04*

U.S. Cl. 55—385.3 **7 Claims**



1. A room air cleaner with an overall low profile construction for use in automobiles comprising:

a housing and a cover which form a box-like boy,

inlet and outlet openings formed in opposite sides of the box-like body, and

a discharge device, a filter, and a motor-mounted fan shrouded by a swirl chamber serially arranged in the box-like body between the inlet and outlet openings, the fan including a partition plate having an upper surface including upper blades and a lower surface including lower blades, the lower blades encircling the fan motor mounted projectingly into the swirl chamber, the swirl chamber including an upper surface having a suction opening and a lower surface having an air opening whereby air is drawn by the fan into the swirl chamber from above the fan through the suction opening and from below the fan through the air opening.

5,059,225

GAS PURIFYING CYCLONE

Erik V. Heieren, Nolzaus vei 9, N-3506 Royse, Norway

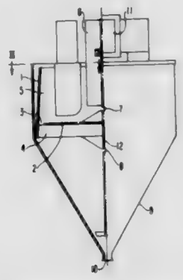
PCT No. PCT/NO88/00039, § 371 Date Apr. 6, 1989, § 102(e) Date Apr. 6, 1989, PCT Pub. No. WO88/08740, PCT Pub. Date Nov. 17, 1988

PCT Filed May 6, 1988, Ser. No. 295,032

Claims priority, application Norway, May 7, 1987, 871895

Int. Cl.[5] B01D *53/24*

U.S. Cl. 55—405 **1 Claim**



1. Gas purifying cyclone comprising at least one inlet nozzle (5) for contaminated gas, an outlet (6) for purified gas, an outlet (10) for contaminations, and a housing surrounding a rotor and comprising a funnel (9) at its lowermost portion for receiving the contaminations, characterized in a truncated cone shaped rotor (1) diverging downwardly, being idly rotateable mounted coaxially with the funnel (9) thereby surrounding the nozzle or nozzles (5), a disc (2) being arranged rotateably with the rotor (1) under the nozzle (5) having a diameter which is smaller than the inner diameter of the rotor (1) at its lower end, thereby leaving open an annular passage (3) through which the contaminations may fall down from the rotating rotor (1) into the funnel (9), the nozzle or nozzles (5) thereby directing the gas flow substantially horizontally and in an acute angle (A) with a tangent in the point on the inner surface of the rotor (1) in which the gas flow impinges the rotor, the inclined direction of the gas flow in relation to the inner surface of the rotor (1) thereby forcing the rotor (1) to rotate by the friction forces between the rotor and the gas flow.

5,059,226

CENTRIFUGAL TWO-PHASE FLOW DISTRIBUTOR

Michael G. Schneider, Rockford, Ill., and William A. Byrd, Minneapolis, Minn., assignors to Sundstrand Corporation, Rockford, Ill.

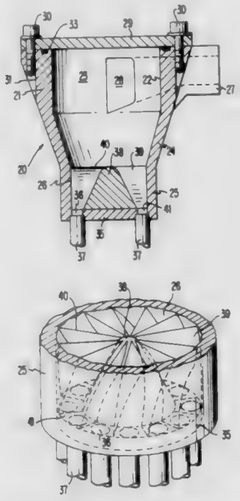
Filed Oct. 27, 1989, Ser. No. 427,374

Int. Cl.[5] B01D *45/12*

U.S. Cl. 55—459.1 **10 Claims**

1. A centrifugal distributor for two-phase flow, comprising a housing having a swirl chamber with an inlet for admitting the two-phase flow into the swirl chamber which centrifugally separates a denser phase of the two-phase flow from another lesser density phase with the denser phase contacting a wall of the swirl chamber as the denser phase swirls in the housing, a plurality of apertures on an end wall of the housing remote from the inlet, and stationary guide vanes dividing the separated phases equally on a mass basis among the apertures and entraining the phase of lesser density with the denser phase as both phases pass into the apertures; and wherein

the housing comprises a distributor chamber having a cylindrical inner wall in which the stationary guide vanes are located, a wall of the swirl chamber having one diameter and a wall of the distribution chamber having a second diameter smaller than the one diameter of the swirl chamber, and a frusto-conical transition section between the swirl chamber and the distribution chamber; and the stationary guide vanes have a leading edge which extends in a plane perpendicular to a longitudinal axis of the



housing and are curved in the direction of the longitudinal axis.

5,059,227

DEVICE FOR FILTERING HOT, DUST-LADEN GASES

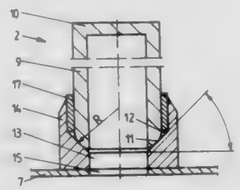
Muharrem Kilicasian, Voerde; Hans-Joachim Meier, Alpen; Heiko Rehwinkel, Bottrop; Wolfgang Raue, Duisburg, and Gerd Ruther, Essen, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Energie- und Umwelttechnik AG, Oberhausen, Fed. Rep. of Germany

Filed Nov. 16, 1990, Ser. No. 615,443

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1989, 3938264

Int. Cl.[5] B01D *46/24*

U.S. Cl. 55—490 **20 Claims**



1. An arrangement for filtering hot, dust-laden gases comprising: a closed housing; filter tubes in said housing; a dirty gas section and a clean-gas section in said housing; said filter tubes comprising closed hollow members having at least one exit communicating with said clean-gas section, said exit having an edge around said exit; said clean-gas section having a counterpart to said edge, said edge being a base resting against said counterpart dependent on weight of a tube so that differences between pressure of gas in said dirty-gas section and gas in said clean-gas section are directed parallel; said filter tubes being hollow ceramic elements having a covering portion and being flowed through by gas to be cleaned from outside to inside of said ceramic elements, pressure of dirty gas being substantially greater than pressure of clean gas and differences of said pressures and weight of said tube pressing said tube against said counterpart, said pressure differences and tube weight acting in the same direction to form a seal between said tube and said counterpart.

5,059,228

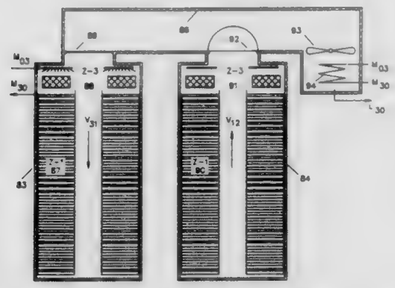
COOL THERMAL STORAGE AND/OR WATER PURIFICATION BY DIRECT CONTACT IN-SITU CRYSTAL FORMATION AND CRYSTAL MELTING OPERATIONS

Chen-Yen Cheng, 9605 La Playa St., NE., Albuquerque, N. Mex. 87111

Filed Apr. 30, 1990, Ser. No. 516,460

Int. Cl.[5] B01D *9/04*

U.S. Cl. 62—532 **21 Claims**



1. A process of subjecting an aqueous liquid to a freezing operation to thereby form a mass of crystals of a first compound that contain water molecules therein and produce a mass of chilled water in a processing system; a first processing zone (zone 1), a second processing zone (zone 2) and a third processing zone (zone 3), the first processing zone containing a crystal holding means provided with openings to provide vapor flow passages and provide an extensive interfacial area between solid and vapor or between solid and liquid, the second processing zone containing heat transfer means for removing heat from a vapor stream, the third processing zone containing means for providing an extensive liquid-vapor interfacial area, characterized in conducting cyclic operations in zone 1 and each cycle comprises a charging period of direct contact in-situ crystal formation operation and a discharging period of direct contact in-situ crystal melting operation; the operations conducted during a charging period comprises the following steps:

step 1: generation of first vapor and in-situ crystal formation: a mass of the aqueous liquid is placed in zone 1, and the pressure in the zone is reduced to thereby form a first vapor and a mass of crystals of the first compound, the pressure in the zone being maintained by removing the first vapor from the zone and the crystal formed being retained by the crystal holding structure;

step 2: transforming the first vapor into a condensed mass: the first vapor formed in step 1 is transformed into a condensed mass by an operation that comprises a heat removal operation;

the operation conducted during a discharging period comprise the following steps;

step 3: production of chilled water and second vapor; a stream of water is introduced into the third processing zone and is provided with an extensive liquid/vapor interfacial area and is thereby flash vaporized to produce a stream of chilled water and form a second vapor;

step 4: in-situ crystal melting: the second vapor formed in step 3 is brought in heat exchange relation with the mass of crystals of the first compound produced in step 1 and being held by the crystal holding structure in zone 1 to thereby transform the second vapor into a mass of liquid and melt the mass of crystals.

5,059,229

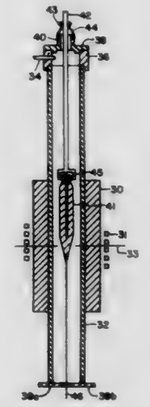
METHOD FOR PRODUCING OPTICAL FIBER IN A HYDROGEN ATMOSPHERE TO PREVENT ATTENUATION

Michael G. Blankenship, Painted Post, and George E. Berkey, Pine City, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Sep. 24, 1990, Ser. No. 586,963

Int. Cl.[5] C03C *21/00*; **C03B** *37/027*

U.S. Cl. 65—2 **15 Claims**



1. A method of manufacturing a silica based optical fiber that is protected at least partially from latent attenuation increase due to hydrogen comprising drawing said optical fiber from a draw blank while a hydrogen (H_2)-containing gas is present in the draw furnace, a tapered root forming a transition between said draw blank and said fiber, said gas flowing over said root and over that portion of said fiber adjacent said root and being exhausted from said furnace, whereby that portion of said fiber over which said gas flows is subjected to draw temperature, said fiber being pulled from an end of said furnace, said gas containing an amount of hydrogen sufficient to form an optical fiber that exhibits an attenuation of less than 8 db/km at 630 nm at the time that it is drawn.

5,059,230

FABRICATION OF DOPED FILAMENT OPTICAL FIBERS

Linn F. Mollenauer, Colts Neck; Jay R. Simpson, Fanwood, and Kenneth L. Walker, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

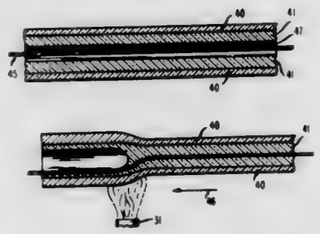
Filed Jan. 22, 1990, Ser. No. 468,433

Int. Cl.[5] C03C *25/02*

U.S. Cl. 65—3.11 **7 Claims**

1. Process for fabrication of a glass fiber optical transmission line, the process comprising the steps of providing a preform workpiece having a cylindrical opening extending from a first end of said preform workpiece to a second end of the preform workpiece, inserting a filament having a central longitudinal axis into said cylindrical opening at said first end at least until the filament emerges from said second end the filament comprising a core region and a cladding region surrounding the core region wherein the core and cladding regions have different refractive indicies, said filament including a predetermined concentration of dopant material within the core region of the filament heating the preform workpiece to collapse around and

engage the filament thereby producing a solid optical fiber preform, and drawing the solid optical fiber preform to produce a doped glass fiber optical transmission line, the dopant



material concentrated substantially along the central longitudinal axis of the filament, the filament having an outside diameter less than or equal to 250 um.

5,059,231

INTERNAL COATING OF A GLASS TUBE BY PLASMA PULSE-INDUCED CHEMICAL VAPOR DEPOSITION

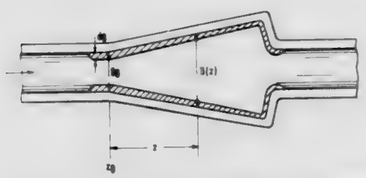
Ulrich Ackermann, Mainz; Hartmut Bauch, Hochheim, and Volker Paquet, Mainz, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Sep. 12, 1989, Ser. No. 406,402

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1988, 3929604; Sep. 12, 1988, 3830988

Int. Cl.[5] C03C *25/02*; **B05D** *3/06, 7/22*

U.S. Cl. 65—3.12 **10 Claims**



1. In a process for producing a fiberoptic waveguide preform by plasma pulse-induced chemical vapor deposition, in which a gas stream is guided through a glass tube and a sequence of layers of a specified thickness and of a specific refractive index profile is deposited from the gas stream within a coating region on the inside of the glass tube, the improvement which comprises passing said gas stream through said glass tube where said tube has an internal diameter that increases continuously to a predetermined extent within the coating region in the direction of flow of the gas stream.

5,059,232

METHOD OF MANUFACTURING GLASS BY USING A FLOAT BATH

Isao Kurashina, and Takeshi Horiguchi, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jun. 25, 1990, Ser. No. 543,123

Claims priority, application Japan, Jul. 4, 1989, 1-172555

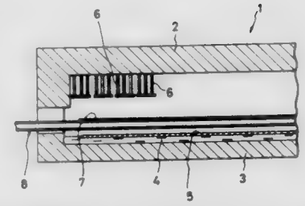
Int. Cl.[5] C03B *18/02*

U.S. Cl. 65—99.2 **4 Claims**

1. A method of manufacturing a sheet glass by floating a glass ribbon on a molten metal, comprising,

providing a float bath having a glass ribbon floated on a molten metal,

disposing a plate having resistance against high temperature and good heat conductivity, between said floated glass ribbon and a ceiling portion of said float bath, said plate being made of a carbon fiber carbon composite material and said plate having the following properties:



apparent specific gravity	1.3–1.6 g/cc
bending strength	7.0–20.0 kg/mm^2
bending modulus	1.5–6.0 × 10^3 kg/mm^2
tensile strength	4.0–16.0 kg/mm^2
shore hardness	45–95
heat expansion coefficient	
parallel with fibers	0.3–0.6 × 10^{-6}/°C.
perpendicular to fibers	4.0–4.4 × 10^{-6}/°C. and

forming a glass sheet in the float bath, with ceiling deposition products, which have been formed by products of said molten metal being deposited on the ceiling portion of the float bath, being prevented from dropping onto the glass ribbon by the plate, while forming the glass sheet.

5,059,233

METHOD AND APPARATUS FOR MANUFACTURING A BENT GLASS SHEET

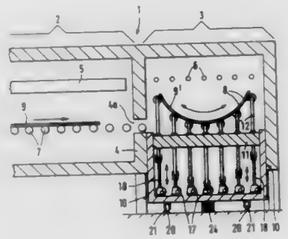
Veijo T. T. Miihkinen, Tampere, and Jorma T. Leppänen, Moisio, both of Finland, assignors to Tamglass Oy, Tampere, Finland

Filed Jul. 24, 1990, Ser. No. 556,526

Claims priority, application Finland, Aug. 11, 1989, 893793

Int. Cl.[5] C03B *23/023*

U.S. Cl. 65—104 **12 Claims**



1. A method for manufacturing a bent glass sheet comprising the steps of:

heating a glass sheet in a furnace, said glass sheet being supported on rotating rollers in said furnace;

positioning said heated glass sheet onto a bending mould, said bending mould being located in said furnace;

bending said heated glass sheet in the furnace by curving a bearing surface of said bending mould, said bearing surface including a plurality of rotating rollers, said curving being achieved by adjusting the position of said rollers in a substantially vertical direction such that ending positions of said rollers give said bearing surface a predetermined curved configuration; and

carrying said bending mould out of said furnace and into a chilling section with said curved glass sheet being supported on said rollers of said bending mould.

5,059,234

SHEET GLASS BENDING APPARATUS

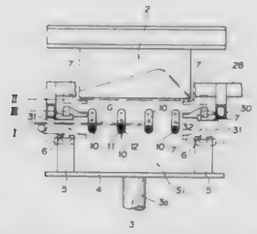
Hideo Yoshizawa, and Mitsuo Tanaka, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed May 11, 1990, Ser. No. 522,249

Claims priority, application Japan, May 11, 1989, 1-118241

Int. Cl.[5] C03B *23/023*

U.S. Cl. 65—273 **5 Claims**



2. An apparatus for bending a glass sheet comprising:

a heating furnace for heating a glass sheet;

a pressing stage disposed downstream of said heating furnace;

a quenching stage disposed downstream of said pressing stage;

a first feed mechanism for horizontally feeding the glass sheet from said heating furnace to said pressing stage;

a ring mold for receiving the glass sheet from said first feed mechanism in said pressing stage such that the ring mold supports a peripheral edge of a lower surface of the glass sheet;

an upper mold operable with said ring mold for pressing the glass sheet to a bent shape;

a second feed mechanism comprising a shuttle including support members for supporting the ring mold from below, the shuttle feeding the ring mold, which supports the glass sheet pressed in said pressing stage, horizontally to said quenching stage from the pressing stage;

a quenching device for quenching and tempering the glass sheet in said quenching stage; and

a third feed mechanism for receiving the glass sheet, which has been tempered in said quenching stage, from said ring mold and for feeding the glass sheet downstream of said quenching stage;

said ring mold being movable horizontally back to said pressing stage by said second feed mechanism after the ring mold has transferred the glass sheet to said third feed mechanism in said quenching stage.

5,059,235

APPARATUS FOR BENDING GLASS PANES

Benoit D'Iribarne, Laidon - Pasildon, England; Luc Vanaschen, Eupen, Belgium; Hans-Josef Promper, and Hans-Werner Kuster, both of Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Aug. 30, 1990, Ser. No. 575,487

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3929042

Int. Cl.[5] C03B *23/03*

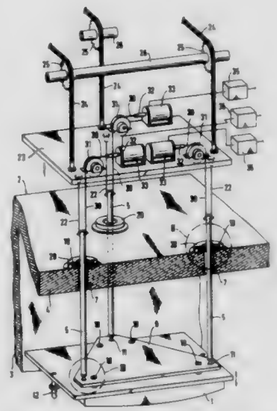
U.S. Cl. 65—287 **10 Claims**

1. Apparatus for bending glass panes in a horizontal position, comprising:

an upper bending mold fixed above a conveying plane of the glass panes to vertical guide rods, said upper bending mold being arranged to be raised and lowered by the guide rods, wherein a bending force of said upper bending mold is determined by the self-weight of the upper bending mold; and

at least one lower bending mold which can be horizontally traversed in a conveying direction of the glass panes; and

means for mounting the upper bending mold on the guide rods so as to be displaceable relative to the guide rods in



a vertical direction and variable in its angular orientation relative to the guide rods.

5,059,236

APPARATUS FOR COOLING A BLANK MOLD IN A GLASS RECEPTACLE FORMING MACHINE WITH MULTIPLE DAMPERS

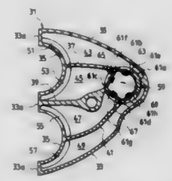
Yoshifumi Ito, Tokyo, Japan, assignor to Toyo Glass Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1990, Ser. No. 594,797

Claims priority, application Japan, Oct. 27, 1989, 1-281166

Int. Cl.[5] C03B *11/12*

U.S. Cl. 65—319 **7 Claims**



7. An apparatus for cooling a blank mold in a glass receptacle forming machine including a blank mold for forming a glass receptacle, a plurality of passages for providing cooling air in a circumferential wall of the blank mold and extending vertically through the circumferential wall, the apparatus comprising:

a plenum chamber provided adjacent to said passages for temporarily storing cooling air to be supplied to said passages, said plenum chamber having at least one inner partition wall therein to define a plurality of cavities; and

a damper device fixed to said plenum chamber for integrally supporting a plurality of dampers, each of said plurality of dampers being respectively provided for adjusting the amount of cooling air supplied to each said cavity, wherein an opening degree of each of said plurality of dampers is variably controllable so that the amount of cooling air to be supplied to said passages through said cavities is adjustable, wherein said damper device is incorporated in said inner partition wall of said plenum chamber.

5,059,237

BUTENOIC ACID DERIVATIVES AND USE AS HERBICIDES

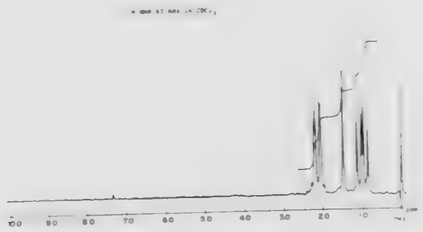
Hideo Kohsaka, and Masayuki Takase, both of Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 13, 1986, Ser. No. 895,998

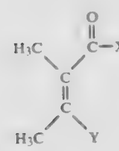
Claims priority, application Japan, Aug. 13, 1985, 60-177978; Aug. 13, 1985, 60-177979; Oct. 15, 1985, 60-230536; Feb. 20, 1986, 61-35570; Mar. 10, 1986, 61-52304; May 20, 1986, 61-115905; May 28, 1986, 61-122924; Jun. 11, 1986, 61-135595; Jun. 17, 1986, 61-142275

Int. Cl.[5] **A01N** *43/48;* **C07D** *233/00, 235/00*

U.S. Cl. 71—92 **25 Claims**



1. A butenoic acid derivative of the formula:



(I)

wherein

X is a hydroxyl group;

a group of the formula: $-OE^1$

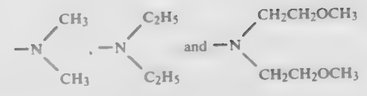
wherein E^1 is a C_1–C_8 alkyl group, a C_3–C_{12} alkenyl group, a C_3–C_{10} alkynyl group, a C_1–C_{12} alkoxy(C_1–C_{12})alkyl group, a halo(C_1–C_{12})alkyl group, a phenyl(C_1–C_{12})alkyl group optionally substituted with one or more C_1–C_{12} alkyl groups on the benzene ring or a phenoxy(C_1–C_{12})alkyl group optionally substituted with one or more C_1–C_{12} alkyl groups on the benzene ring or a salt-forming cation selected from the group consisting of ammonium, organic ammonium, alkali metals, alkaline earth metals, manganese (II), copper (II), iron (II), iron (III), zinc (II), cobalt (II), lead (II), silver (I), aluminium (III) and nickel (II);

a group of the formula:

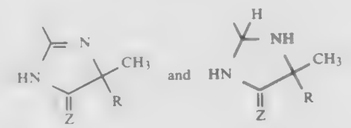


wherein E^2 is a hydrogen atom, a hydroxyl group, a C_1–C_{12} alkyl group, a C_3–C_6 cycloalkyl group, a C_1–C_3 alkoxy(C_1–C_{12})alkyl group, a hydroxy-(C_1–C_{12}) alkyl group, a cyano(C_1–C_{12}) alkyl group, a C_3–C_{12} alkenyl group, a C_3–C_{12} alkynyl group, a carbamoyl(C_1–C_{12}) alkyl group, phenyl(C_1–C_4) alkyl group, a C_1–C_3 alkoxycarbonyl(C_1–C_{12})alkyl group or a tetrahydrofurfuryl group;

or either one of the following groups:

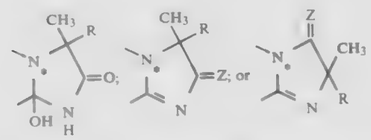


Y is either one of the following formulas:



wherein Z is an oxygen atom or a sulfur atom and R is an ethyl group, an isopropyl group or a cyclopropyl group, or their salt forms;

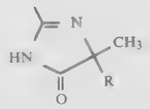
or X and Y may be combined together to represent either one of the following formulas:



wherein Z and R are each as defined above and a nitrogen atom bearing an asterisk (*) is bonded to the carbonyl carbon atom;

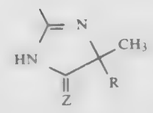
with the provisos that

i) when E^1 is a C_1–C_8 alkyl group, a C_3–C_{12} alkenyl group, a C_3–C_{10} alkynyl group, a C_1–C_{12} alkoxy(C_1–C_{12})alkyl group, a halo(C_1–C_{12})alkyl group, a phenyl(C_1–C_{12})alkyl group optionally substituted with one or more C_1–C_{12} alkyl groups on the benzene ring or a phenoxy(C_1–C_{12})alkyl group optionally substituted with one or more C_1–C_{12} alkyl groups on the benzene ring, Y represents a group of the formula:



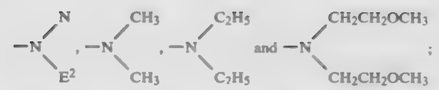
wherein R is as defined above;

ii) when E^1 is the salt-forming cation selected from the group consisting of ammonium, organic ammonium, alkali metals, alkaline earth metals, manganese (II), copper (II), iron (II), iron (III), zinc (II), cobalt (II), lead (II), silver (I), aluminium (III) and nickel (II), Y represents a compound of the formula:

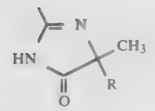


wherein R and Z are each as defined above; and

iii) when X is either one of the following formulas:



wherein D^2 is as defined above, Y represents a compound of the formula:



wherein R is as defined above.

5,059,238

N-SUBSTITUTED-3-(SUBSTITUTED HYDRAZINO)-BENZENESULFONAMIDE DERIVATIVES, AND HERBICIDAL COMPOSITIONS

Hideo Arabori; Shiro Yamazaki; Masato Arahira, and Aiko Murakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

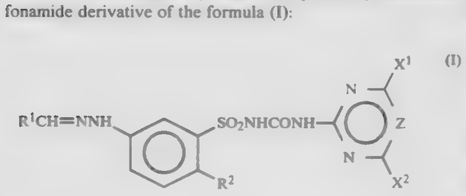
Filed Feb. 2, 1990, Ser. No. 473,768

Claims priority, application Japan, Feb. 8, 1989, 1-27369

Int. Cl.[5] **C07D** *251/42, 251/46;* **A01N** *43/66*

U.S. Cl. 71—93 **8 Claims**

1. An N-substituted-3-(substituted hydrazino)-benzenesulfonamide derivative of the formula (I):



(I)

wherein R^1 is CF_3, COOH or CCl=CClCOOH, R^2 is H, Cl, C_1–C_3 alkyl or C_1–C_4 alkoxycarbonyl; Z is N; X^1 is C_1–C_3 alkyl, C_1–C_3 alkoxyl or Cl; and X^2 is C_1–C_3 alkyl or C_1–C_3 alkoxyl.

7. A herbicidal composition comprising a herbicidally effective amount of an N-substituted-3-(substituted hydrazino)benzenesulfonamide derivative of claim 1 nd an agronomically-acceptable vehicle or diluent.

5,059,239

SELECTIVE HERBICIDAL COMPOSITION

Alfred Seiler, Stein, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 28, 1990, Ser. No. 546,124

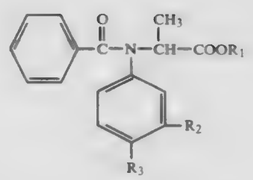
Claims priority, application Switzerland, Jul. 5, 1989, 2494/89

Int. Cl.[5] **A01N** *43/42*

U.S. Cl. 71—94 **12 Claims**

1. A composition for the selective control of weeds in crops of useful plants comprising

a) a herbicidally effective amount of a herbicide of formula I

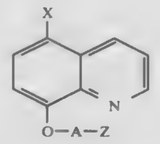


(I)

wherein

R_1 is hydrogen or C_1–C_4alkyl and each of R_2 and R_3, independently of the other, is chlorine or fluorine, or an enantiomer of said herbicide, and

b) a safening-effective, amount of a safener compound of formula II



(II)

wherein X is hydrogen or halogen,

A is one of the groups $—CH_2—$, $—CH_2CH_2—$and $—CH(CH_3)—_2$ and Z is $COOR^{12}$ wherein R^{12} is a C_{1-7} alkyl group together with an inert carrier.

5,059,240

2,3-SUBSTITUTED 1,8-NAPHTHYRIDINES, THEIR PREPARATION AND THEIR USE AS ANTIDOTES

Helmut Hagen, Frankenthal; Juergen Pfister, Speyer; Hans Ziegler, Mutterstadt; Bruno Wuerzer, Otterstadt, and Karl-Otto Westphalen, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

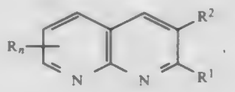
Filed Mar. 1, 1990, Ser. No. 486,867

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1989, 3907938

Int. Cl.[5] **A01N** *43/90;* **C07D** *471/02*

U.S. Cl. 71—94 **5 Claims**

1. A herbicidal composition containing as antidote at least one 2,3-substituted 1,8-naphthyridine of the formula I



I

where:

R is hydrogen or C_1–C_4-alkyl (n = 1 or 2)

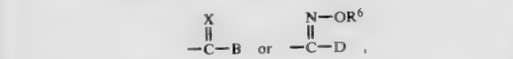
R^1 is amino or NR^3R^4, in which

R^3 is C_1–C_{12}-alkyl, C_3–C_6-alkenyl, C_3–C_8-cycloalkyl, phenyl, phenyl-(C_1–C_3)-alkyl, or phenyl or phenyl-(C_1–C_3-alkyl mono- to trisubstituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, nitro, amino or mono- or dialkylamino where each alkyl radical is of 1 to 6 carbon atoms, or a group

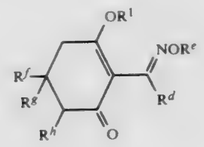


where A is C_1–C_8-alkyl, C_2–C_6-alkenyl or phenyl which is unsubstituted or mono- or trisubstituted by halogen and-/or C_1–C_4-alkyl, or is amino, alkyl- or dialkylamino where each alkyl radical is of 1 to 6 carbon atoms, or phenyl-

amino, and R^4 is hydrogen, C_1–C_{12}-alkyl or C_3–C_8-cycloalkyl;
hydrazino which is unsubstituted or mono- or disubstituted by C_1–C_4-alkyl or monosubstituted by C_1–C_4-acyl;
XR^5, in which X is oxygen or sulfur and R^5 is hydrogen, C_1–C_{12}-alkyl, C_1–C_4-alkoxycarbonyl-(C_1–C_4)-alkyl, C_5–C_8-cycloalkyl, phenyl, phenyl-C_1–C_3-alkyl, or phenyl or phenyl-C_1–C_3-alkyl, each of which is substituted in the ring by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, amino, mono- or dialkylamino where each alkyl radical is of 1 to 6 carbon atoms,
halogen,
isothiorhonium halide,
C_1–C_{12}-alkyl,
C_1–C_4-alkoxycarbonyl-C_1–C_4-alkyl, phenyl or phenyl-(C_1–C_3)-alkyl, where the aromatic radicals may carry from one to three of the following groups: halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, amino, nitro or mono- or dialkylamino where each alkyl radical is of 1 to 4 carbon atoms,
R^2 is C_1–C_4-alkyl, cyano, or a group



X is oxygen or sulfur,
B is C_1–C_6-alkyl, C_1–C_6-alkoxy or alkylthio, amino, mono- or dialkylamino where each alkyl radical is of 1 to 3 carbon atoms, chlorine, bromine or phenyl, which in turn may carry from one to five halogen atoms and/or from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;
D is C_1–C_4-alkyl or NH_2 and
R^6 is hydrogen, C^1–C^8-alkyl or C_2–C_8-alkylcarbonyl, or R^1 and R^2 together are —NH—N=C(NH_2)—,
or a plant-tolerated salt thereof,
and at least one herbicidal active ingredient selected from the group consisting of cyclohexenone derivatives of the formula V



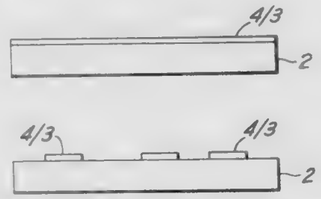
V

where:
R^d is C_1–C_4-alkyl;
R^e is C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkynyl, C_3–C_4-haloalkylene or thenyl which may be substituted by a halogen atom;
R^f is
C_1–C_4-alkyl which may be mono- or disubstituted by C_1–C_4-alkylthio or C_1–C_4-alkoxy;
a 5- or 6-membered saturated or monounsaturated ring system which, in addition to carbon members, may contain an oxygen or sulfur atom or a sulfoxyl or sulfonyl group, and this ring system may carry up to three of the following radicals: hydroxy, halogen, C_1–C_4-alkoxy and/or C_1–C_4-alkylthio;
a 10-membered saturated or monounsaturated heterocyclic structure which contains two oxygen atoms or sulfur atoms and may be substituted by up to three C_1–C_4-alkyl groups and/or methoxy groups;
phenyl, pyridyl, thiazolyl, pyrazolyl, pyrrolyl or isoxazolyl, where these groups may carry up to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_1–C_4-alkoxy, C_1–C_3-alkyl, C_1–C_4-dialkoxy-C_1–C_3-alkyl, formyl, halogen and/or benzoylamino.

5,059,241
PLANT GROWTH REGULATION
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Continuation-in-part of Ser. No. 380,615, Jul. 17, 1989, which is a continuation of Ser. No. 511,161, Jul. 6, 1983, Pat. No. 4,863,506. This application Mar. 20, 1990, Ser. No. 496,365
The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.
Int. Cl.[5] A01N *37/00*
U.S. Cl. 71—106 23 Claims

1. A method for stimulating the productivity of plants, which comprises contacting said plants with a productivity stimulating amount of a composition comprising a compound selected from the group consisting of salts, esters and combinations thereof of lactic acid, wherein the L-isomer constitutes the major portion of said compound.

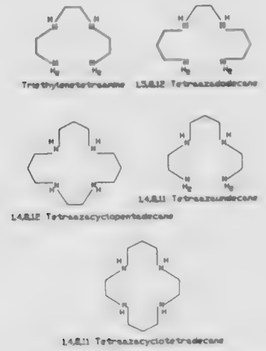
5,059,242
SEED LAYER COMPOSITIONS CONTAINING ORGANOGOLD AND ORGANOSILVER COMPOUNDS
Michael G. Firmstone, and Andrew Lindley, both of Manor Park, Runcorn, Cheshire, England
Filed Apr. 27, 1990, Ser. No. 516,080
Int. Cl.[5] C23C *18/08*
U.S. Cl. 106—1.23 10 Claims

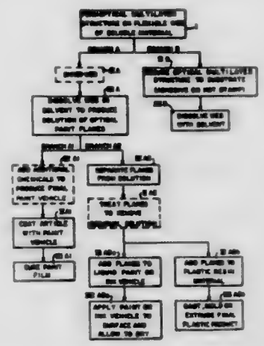


1. A fluid composition suitable for coating a substrate and producing a gold seed layer thereon by firing the coated substrate to thermally decompose the fluid composition said fluid composition comprising an organogold compound, a resin and an organosilver compound present in an amount equal to 0.5 to 10 parts by weight silver per 100 parts by weight gold.

5,059,243
TETRA AZA LIGAND SYSTEMS AS COMPLEXING AGENTS FOR ELECTROLESS DEPOSITION OF COPPER
Rangarajan Jagannathan, Hopewell Junction; Randolph F. Knarr, Troy; Mahadevaiyer Krishnan, Hopewell Junction, and Gregory P. Wandy, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1989, Ser. No. 344,878
Int. Cl.[5] C23C *22/00, 18/00*
U.S. Cl. 106—1.26 41 Claims

1. An electroless copper plating bath comprising:
4 to 15 grams per liter of a copper salt
40 to 200 mM of a tetra-aza ligand
3 to 10G/l of an amine borane
25 to 100 ml/l of a buffer,
wherein said copper salt is selected from the group consisting of copper sulfate, a cetate, nitrate, and fluoroborate, said tetra-aza ligand is selected from the group consisting of 1,5,8,12 tetraazadodecane, 1,4,8,11 tetraazaundecane, 1,4,8,11 tetraazacyclotetradecane and 1,4,8,12 tetraazacyclopentadecane, said amine borane is selected from the group consisting of DMAB, morpholine borane, t-butylamineborane and pyridineborane, said buffer is selected from the group consisting of valine, Tris (hydroxymethyl), aminomethane, borax, triethanolamine, NaOH, triisopropanolamine and ethanolamine wherein the pH of the bath is in the range substantially between 7 and 12.





at least one period disposed on each of said first and second surfaces of the metal reflector, each period being comprised of a dielectric layer with an index of refraction of 1.65 or less and a semi-opaque layer.

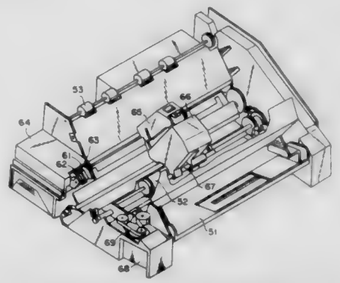
5,059,244
FUGITIVE COLORANT AND WASHABLE INK COMPOSITIONS
Clifford R. King, Taylors, and John B. Hines, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.
Filed Jul. 18, 1990, Ser. No. 554,319
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—21 30 Claims

1. A fugitive colorant solution comprising a chromophore, having at least one sulfonic acid or carboxylic acid functionality, in an amount sufficient to provide coloration of said solution and at least one molar equivalent of triethanolamine ethoxylate per acid functionality of said chromophore, said triethanolamine ethoxylate having greater than 25 moles of —CH_2CH_2O— units.

5,059,245
INK INCORPORATING OPTICALLY VARIABLE THIN FILM FLAKES
Roger W. Phillips, Santa Rosa, Calif.; Thomas Mayer, Boulder, Colo., and Gary S. Ash, Boston, Mass., assignors to Flex Products, Inc., Santa Rosa, Calif.
Continuation of Ser. No. 812,814, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 567,638, Jan. 3, 1984, abandoned, which is a continuation of Ser. No. 314,695, Oct. 26, 1981, Pat. No. 4,434,010, which is a division of Ser. No. 108,004, Dec. 28, 1979, abandoned. This application Sep. 26, 1988, Ser. No. 251,034
Int. Cl.[5] C09D *11/00;* G06K *9/74*
U.S. Cl. 106—22 11 Claims

1. In an optically variable ink for obtaining a color shift between two distinct colors at first and second angles of incident light, an ink vehicle and optically variable flakes disposed in the ink vehicle, the optically variable flakes being comprised of a multilayer thin film interference structure having first and second parallel planar surfaces, the optically variable flakes having physical dimensions such that when the flakes are measured in directions parallel and perpendicular respectively to the planar surfaces an aspect ratio of at least 2 to 1 is provided, the multilayer thin film structure being of symmetrical design and including a metal reflector having first and second surfaces parallel to the first and second parallel planar surfaces

5,059,246
RECORDING LIQUID AND INK JET RECORDING PROCESS EMPLOYING IT
Takao Yamamoto, Isehara, and Katsuhiro Shirota, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 305,547, Feb. 3, 1989, abandoned. This application Oct. 17, 1990, Ser. No. 598,956
Claims priority, application Japan, Feb. 9, 1988, 63-029817; Jan. 24, 1989, 1-14350
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 62 Claims



1. A storage stable recording liquid suitable for use near a heat energy source in an ink-jet printer head comprising 0.5 to 15% by weight of a coloring material, and a liquid medium containing 10 to 95% by weight of water, and 5 to 95% by weight of a water-soluble organic solvent having an ether bond and subject to formation of deposits from peroxides derived from said ether bond, and a pH value of said recording liquid being from 3 to 9, wherein the peroxide concentration of said liquid medium is not more than 4 mmol/l in terms of iodine to suppress formation of said deposits.

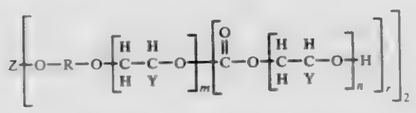
5,059,247

METHOD FOR THE PREPARATION OF FOUNDRY SAND COMPOSITIONS

Wheeler C. Crawford, Houston, and Michael Cuscurida, Austin, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Aug. 20, 1990, Ser. No. 569,896
Int. Cl.[5] B28B *7/34*
U.S. Cl. 106—38.35 **18 Claims**

1. In a method for the preparation of a foundry sand composition wherein a foundry sand is first mixed with a sodium silicate binder having a ratio SiO_2/Na_2O within the range of about 2.2 to 3 and then with a carbonate hardener to provide a foundry sand composition and wherein the foundry sand composition is then molded to form a self-hardening sand core for use in metal casting, the improvement which comprises using, as the carbonate hardner, a carbonate compound having the formula:



wherein Y is H or methyl,
wherein m and n are positive numbers having a value of 1 to about 5,
wherein R is a polyoxyethylene or a polyoxypropylene group having an average molecular weight between about 62 and 600,
wherein r is a positive integer having a value of 1 to 5,
wherein Z is a difunctional group formed by the reaction of an acid anhydride with a polyoxyethylene glycol or a polyoxypropylene glycol, and
wherein the acid anhydride is an anhydride of an organic acid selected from the group consisting of maleic anhydride, succinic anhydride and phthalic anhydride.

5,059,248

STABLE, FLUID, AQUEOUS PIGMENT DISPERSIONS FOR USE IN FILM COATING TABLETS AND THE LIKE

Charles A. Signorino, King of Prussia, Pa., and Harry Meggos, Godfrey, Ill., assignors to Warner-Jenkinson Company, Inc., St. Louis, Mo.

Filed Aug. 11, 1989, Ser. No. 392,589
Int. Cl.[5] C09B *63/00, 67/02*
U.S. Cl. 106—402 **32 Claims**

1. A stable, fluid, aqueous dispersion composition consisting essentially of from approximately 25 to 40 wt. % of a pigment selected from the group consisting of an FD&C lake, a D&C lake and ceramine or a combination of such lakes with titanium dioxide or iron oxide, a stabilizing agent selected from the group consisting of an alkali metal, alkaline earth metal or ammonium salt of a linear aliphatic substituted glycine, said stabilizing agent constituting from approximately 0.5 to 3.5 wt. % of said pigment, and water.

5,059,249

PROCESS FOR DISPERSING ORGANIC PIGMENTS WITH ULTRASONIC RADIATION

Byron G. Hays, Verona, N.J., assignor to BASF Corp., Parsippany, N.J.

Continuation-in-part of Ser. No. 312,870, Feb. 21, 1989, Pat. No. 4,929,279. This application Feb. 8, 1990, Ser. No. 477,336
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] C09B *67/50*
U.S. Cl. 106—412 **26 Claims**

1. A method of dispersing an organic pigment, the method comprising the steps of:
(A) adding a surfactant to an aqueous slurry of an organic pigment, the surfactant being selected from the group consisting of:
1. an acidic salt of N-alkyl-N,N'-trimethyl-1,3-propanediamine, wherein the alkyl group contains from about 12 to about 22 carbon atoms, as well as triethyl and tripropyl derivatives thereof;
2. an acidic salt of N-alkyl-N,N',N'-tris(2-hydroxy propyl)-1,3-propanediamine, wherein the alkyl group contains from about 12 to about 22 carbon atoms, as well as 2-hydroxyethyl and 2-hydroxybutyl derivatives thereof;
3. a quaternary salt of N-alkyl-N,N,N',N',N'-pentamethyl-1,3-propanediamine, wherein the alkyl group contains from about 12 to 22 carbon atoms, as well as pentaethyl and pentapropyl derivatives thereof;
4. an acidic salt of N-alkyl-N'-(3-aminopropane)-1,3-propanediamine, wherein the alkyl group contains from about 12 to about 22 carbon atoms, as well as tetramethyl, tetraethyl, tetrapropyl, tetrakis(2-hydroxy ethyl), tetrakis(2-hydroxy propyl), tetrakis(2-hydroxybutyl), heptamethyl, heptaethyl, and heptapropyl derivatives thereof;
5. an acidic salt of N-alkyl-N-(3-aminopropane)-1,3-propanediamine, wherein the alkyl group contains from about 12 to about 22 carbon atoms, as well as tetramethyl, tetraethyl, tetrapropyl, tetrakis(2-hydroxyethyl), tetrakis(2-hydroxypropyl), tetrakis-(2-hydoxybutyl), heptamethyl, heptaethyl, and heptapropyl derivatives thereof;
6. an acid salt of N-(N-alkyl-3-aminoprpane)-N'-(3-aminopropane)-1,3-propanediamine, wherein the alkyl group contains about 12 to about 22 carbon atoms, as well as pentamethyl, pentaethyl, pentapropyl, pentakis (2-hydroxyethyl), pentakis(2-hydroxypropyl), pentakis (2-hydroxybutyl), nonamethyl, nonaethyl, and nonapropyl derivatives thereof; and
7. a poly(ethyleneoxide) ether of an 18 carbon alcohol having 9 units of ethylene oxide thereon; and
(B) dispersing the pigment by subjecting the slurry to ultrasonic radiation.

5,059,250

RED IRON OXIDE PIGMENTS WITH IMPROVED COLORING PROPERTIES

Wilfried Burow; Horst Brunn; Peter Kresse, and Hans Sander, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 24, 1986, Ser. No. 842,905
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1985, 3512124
Int. Cl.[5] C09C *1/22*
U.S. Cl. 106—459 **6 Claims**

1. Red iron oxide pigments with improved coloring properties having a colorless coating of one or more compounds of magnesium, zinc, aluminum, lanthanum, yttrium, zirconium, tin or calcium wherein the isoelectric point of the pigments is greater than 7.

5,059,251

INJECTION PRODUCT FOR SEALING AND/OR CONSOLIDATING SOILS AND BUILDING MATERIALS, AND A METHOD FOR ITS EMPLOYMENT

Daniel Gouvenot, Clichy, France, assignor to Societe Anonyme dite - Soletanche, Nanterre, France

PCT No. PCT/FR89/00149, § 371 Date Jan. 29, 1990, § 102(e) Date Jan. 29, 1990, PCT Pub. No. WO89/09197, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 31, 1989, Ser. No. 449,960
Claims priority, application France, Apr. 1, 1988, 88 04363
Int. Cl.[5] C04B *12/04*
U.S. Cl. 106—633 **10 Claims**

1. An improved injection product for impermeabilization and/or consolidation of soils and building materials, comprising a mixture of:
(a) a compound of slag in suspension in water; and
(b) a silica liquor which is dissolved silica having an average particle diameter less than 100 microns in soda; having a ratio of SiO_2/Na_2O less than 2 and a silica content greater than about 10% by weight.

5,059,252

METHOD FOR ENHANCING BIOREMEDIATION OF HYDROCARBON CONTAMINATED SOILS

Arthur E. Renfro, Jr., Atascadero, Calif., assignor to Advanced Environmental Technologies, Inc., Atascadero, Calif.

Filed Dec. 12, 1989, Ser. No. 448,937
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—7 **23 Claims**

1. A method for enhancing bioremediation of hydrocarbon contaminated soils comprising the step of mixing a cationic ion exchange resin with hydrocarbon contaminated soil.

5,059,253

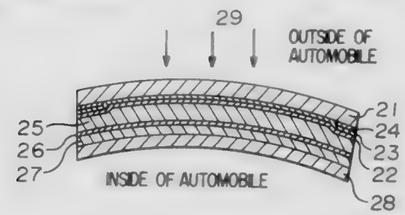
Patent Not Issued For This Number

5,059,254

SOLAR CELL SUBSTRATE AND SOLAR PANEL FOR AUTOMOBILE

Susumu Yaba; Tomoya Takigawa; Kikugawa; Koichi Osada; Katsuhito Sato, all of Yokohama, and Masaru Omae, Kanagawa, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 24, 1989, Ser. No. 356,234
Claims priority, application Japan, May 24, 1988, 63-124890; Apr. 24, 1989, 1-48042
Int. Cl.[5] H01L *31/048*
U.S. Cl. 136—251 **19 Claims**



6. A solar cell-installed window glass panel for an automobile, comprising a transparent glass plate with a light shielding layer formed along the periphery thereof, having a light-transmitting solar cell comprising amorphous silicon as a photoelectric convertion layer formed on the glass plate, and a transparent protective layer formed to cover said amorphous silicon solar cell.

5,059,255

COLORING A GOLD ALLOY

Ludwig Muller, Celigny, Switzerland, assignor to Ludwig Muller S.A., Switzerland

Filed Apr. 17, 1990, Ser. No. 510,168
Claims priority, application Switzerland, Jun. 27, 1989, 2402/89
Int. Cl.[5] C21D *1/44;* **C22C** *5/02*
U.S. Cl. 148—3 **8 Claims**

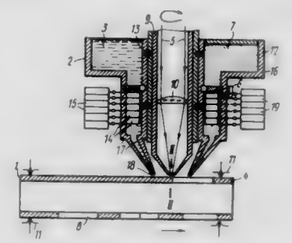
1. A method of preparing a gold-containing object having desired color characteristics, said method comprising the steps of:
(A) melting gold, iron and nickel, to form an alloy consisting essentially of gold, iron and nickel, said gold being present at a concentration between about 74.4 and 94.5 percent by weight of the alloy, said iron being present at a concentration between about 5.0 and about 25.0 percent by weight of the alloy, and said nickel being present at a concentration between about 0.5 and about 0.6 percent by weight of the alloy;
(B) forming said object by pouring said alloy into a mold in the shape of said object;
(C) heating said object at a temperature between 450° C. and 600° C. until a visually observable increase in blue color occurs; and
(D) cooling said object to ambient temperature.

5,059,256

METHOD OF MANUFACTURING FILTERS BY LASER TREATMENT AND DEVICE THEREFOR

Rimantas-Mikolas V. Kanapenas, ulitsa Komunaru, 22, Kv. 6; Mindaugas J. Vaitkyavichjus, ulitsa Arkhitektu, 112, kv. 49; Jurgis K. Vischakas, ulitsa Shviturio, 3, kv. 35; Kyastutis J. Dumchjus, ulitsa Dzerzhinskogo, 160, kv. 335, and Eduardas J. Bendoraitis, ulitsa Eishishkju plyantas, 26, kv. 26, all of Vilnjus, U.S.S.R.

PCT No. PCT/SU88/00176, § 371 Date May 8, 1990, § 102(e) Date May 8, 1990, PCT Pub. No. WO90/02628, PCT Pub. Date Mar. 22, 1990
PCT Filed Sep. 1, 1988, Ser. No. 477,916
Int. Cl.[5] B23K *26/12*
U.S. Cl. 148—9 C **8 Claims**



1. A method of manufacturing filters by laser treatment, comprising the steps of:
directing a laser beam and a gas jet to a work surface of a work piece, thereby forming a cutting cavity;
focusing the laser beam to form a focal point within the work piece at a depth h_1 from the work surface, h_1 being selected to satisfy an equation as follows:

$$0.025 \leq h_1/h < 0.22$$

h being a thickness of the work piece relative to the laser beam; and
periodically introducing pulses of working substance into the gas jet when a volume of molten material in the cutting cavity reaches a maximum value.

5,059,257

HEAT TREATMENT OF PRECIPITATION HARDENABLE NICKEL AND NICKEL-IRON ALLOYS

Edward A. Wanner, Leesport, and Sunil Widge, Dryville, both of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Jun. 9, 1989, Ser. No. 364,795
Int. Cl.[5] C21D *8/00;* **C22F** *1/10*
U.S. Cl. 148—12.3 **41 Claims**

1. In a process for improving the stress rupture life and/or the stress rupture ductility of a precipitation or age hardenable alloy when in the aged condition, said alloy containing nickel, niobium, and silicon for forming a (Ni, Nb, Si)-containing intermetallic phase, said alloy having less than a predetermined level of stress rupture life and/or stress rupture ductility when worked and aged by a primary heat treatment, the step of pre-aging said alloy at a temperature and for a time sufficient to form said (Ni, Nb, Si)-containing intermetallic phase in a quan-

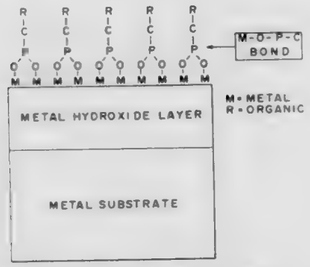
tity sufficient to improve the stress rupture life and/or stress rupture ductility of said alloy to at least said predetermined level when aged.

5,059,258

PHOSPHONIC/PHOSPHINIC ACID BONDED TO ALUMINUM HYDROXIDE LAYER

Karl Wefers, Apollo; Gary A. Nitowski, Natrona, and Larry F. Wieserman, Apollo, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 23, 1989, Ser. No. 397,264
Int. Cl.[5] C23C *22/56*
U.S. Cl. 148—272 **31 Claims**



1. A method of producing a functionalized layer and an aluminum hydroxide layer on an aluminum substrate, the aluminum hydroxide layer between the substrate and the functionalized layer, the method comprising the steps of:

(a) subjecting an aluminum substrate to a treatment at a pH in the range of 2 to 14 to form a layer of aluminum hydroxide on said substrate; and

(b) thereafter treating said aluminum substrate with a phosphorus-containing acid selected from phosphinic and phosphonic acid to form a functionalized layer on said aluminum hydroxide layer, the acid comprising a soluble phosphorus-containing compound selected from the class consisting of:

(i) $R_m[PO(OH)_2]_n$ wherein R may be hydrogen or is one or more organo groups having a total of 1–30 carbons; m is the number of organo groups in the molecule and is in the range of 1–10; n is the number of phosphonic acid groups in the molecule and is in the range of 1–10;

(ii) $R_mR'_o[PO(OH)]_n$ wherein R may be hydrogen or is one or more organo groups having a total of 1–30 carbons; m is the number of R organo groups in the molecule and is in the range of 1–10; R′ may be comprised of 1–30 carbon-containing organo groups; o is the number of R′ organo groups and is in the range of 1–10; n is the number of phosphinic acid groups in the molecule and is in the range of 1–10; and

(iii) mixtures of the same,

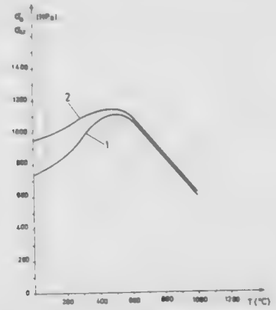
the functionalized layer comprised of the reaction product of said acid and the layer of aluminum hydroxide.

5,059,259

OXIDATION-AND CORROSION-RESISTANT HIGH-TEMPERATURE ALLOY OF HIGH TOUGHNESS AT ROOM TEMPERATURE FOR DIRECTIONAL SOLIDIFICATION, BASED ON AN INTERMETALLIC COMPOUND OF THE NICKEL ALUMINIDE TYPE

Mohamed Nazmy, Fislisbach, and Markus Staubli, Dottikon, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jul. 20, 1990, Ser. No. 554,855
Claims priority, application Switzerland, Jul. 26, 1989, 2789/89
Int. Cl.[5] C22C *19/03*; C22F *1/10*
U.S. Cl. 148—429 **5 Claims**



1. An oxidation- and corrosion-resistant high-temperature alloy of high toughness at room temperature for directional solidification, based on an intermetallic compound of the nickel aluminide type, consists essentially of:

Al=10–20 atom%
Si=0.5–8 atom%
Nb=2–10 atom%
B=0.1–2 atom%
Ni=remainder,

wherein the total of Al, Si, Nb and B is less than or equal to 25 atom%, and which consists of at least 90% by volume of a mixture of the intermetallic phases Ni_3Al, Ni_3Si and Ni_3Nb.

5,059,260

COMPOSITE ROCKET PROPELLANT COMPOSITION WITH A CONTROLLABLE PRESSURE EXPONENT

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 18, 1980, Ser. No. 116,113
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—192 **3 Claims**

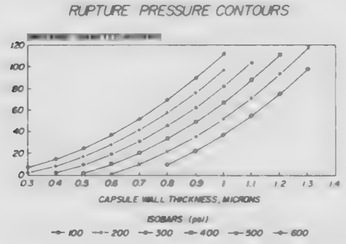
1. A composite rocket propellant composition with a reduced pressure exponent and with an enhanced burning rate, said composite rocket propellant composition comprised of tris-1,2,3-[bis(1,2-difluoroamino)ethoxy] propane in an amount from about 0 to about 22.03 weight percent of said composition; ethyl acrylate in an amount from about 2.5 to about 3.5 weight percent of said composition; 4,5-epoxycyclohexylmethyl 4,5-epoxycyclohexyl carboxylate in an amount from about 1.2 to about 1.6 weight percent of said composition; carboranylmethyl propionate in an amount from about 3.0 to about 5.0 weight percent of said composition; graphite linters of about 100 micrometers length in an amount from about 1.0 to about 3.0 weight percent of said composition; aluminum powder in an amount from about 9.0 to about 12.0 weight percent of said composition; aluminum flake in an amount 0.5 to about 1.5 weight percent of said composition; ammonium perchlorate of about 1.0 micrometers particle size in an amount from about 48.0 to about 52.0 weight percent of said composition; lecithin in an amount from about 0.1 to about 0.2 weight percent of said composition; and a geminal-(1,1-)difluoroamino compound selected from 2,2-bis(difluoroamino)-1,3-bis(-fluorodinitroethoxy)propane and 2,2-bis(difluoroamino)-bis[5-fluoro-5,5-dinitro] pentyl formal in an amount from about 5.51 to about 27.54 weight percent of said composition.

5,059,261

PROCESSING OF MATERIALS USING RUPTURABLE MICROCAPSULATES CONTAINING DETECTION MATERIALS

Albert C. Condo, Newtown Square, and Bernard M. Kosowski, King of Prussia, both of Pa., assignors to Mach I Inc., King of Prussia, Pa.

Filed May 22, 1990, Ser. No. 526,832
Int. Cl.[5] C06B *21/00*; G01N *33/22*
U.S. Cl. 149—19.92 **3 Claims**



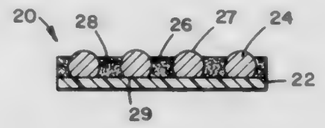
1. The method of mixing materials which comprises incorporating with the materials being mixed microcapsules containing encapsulated detection agent, the walls of said microcapsules being adapted to rupture at predetermined mixing conditions, and mixing the materials while monitoring the material mixture for the presence of said detection agent.

5,059,262

METHOD FOR MAKING ELECTRICAL CONNECTOR TAPE

Clyde D. Calhoun, and David C. Koskenmaki, both of St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 292,050, Dec. 30, 1988, Pat. No. 4,931,598. This application Apr. 26, 1990, Ser. No. 515,178
Int. Cl.[5] H01B *13/00*
U.S. Cl. 156—47 **10 Claims**



1. A method of making a sheet material adapted to make bonded electrical connection to an array of closely spaced conductive terminal pads comprising the steps of:

(a) providing a thin, flexible insulating substrate;

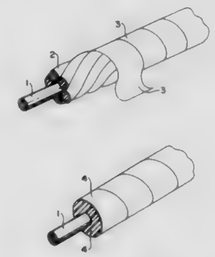
(b) squirting a plurality of fine molten metal strands onto said substrate wherein said metal strands harden to form conductive members, said members individually having a cross-section with an area of about 100 to 100,000 μm^2 said cross-section having a flat portion and an arcuate portion, said flat portion contacting said substrate.

5,059,263

LARGE GAUGE INSULATED CONDUCTOR AND COAXIAL CABLE, AND PROCESS FOR THEIR MANUFACTURE

Jack A. Sahakian, and John C. Hostler, both of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 12, 1988, Ser. No. 231,570
Int. Cl.[5] H01B *13/06*
U.S. Cl. 156—56 **6 Claims**



1. A process for manufacturing an insulated electric conductor comprising the steps:

(a) enclosing a conductor with one or more strands of porous expanded polytetrafluoroethylene;

(b) passing the enclosed conductor through a sizing die to reduce its size and to remove most voids between stands and conductor;

(c) wrapping said conductor with porous expanded polytetrafluoroethylene binder tape;

(d) sintering said bound conductor at or near the sintering point of porous expanded polytetrafluoroethylene for the required length of time to form a unitary construction; and

(e) cooling said unitary construction.

5,059,264

AQUEOUS INPRESS PRIMER SEALER FOR HARDBOARD MANUFACTURING

Harold J. Sheets, Brook Park, Ohio, assignor to The Glidden Company, Cleveland, Ohio

Filed Dec. 26, 1989, Ser. No. 457,094
Int. Cl.[5] B27N *3/00*
U.S. Cl. 156—62.2 **6 Claims**

1. In a process for manufacturing prefinished hardboard products by hot pressing fibrous materials in a hot press mold, the improvement comprising:

applying an aqueous dispersed primer-sealer composition to a surface layer of overlay paper or surface mat to provide a resin impregnated surface layer, where the primer-sealer composition comprises on a weight basis between about 15% and 40% methoxylated melamine resin, between about 30% and 60% acrylic emulsion copolymer having an Acid N. above about 15, between about 5% and 25% vinyl acetate-vinyl versatate copolymer latex containing copolymerized monomers of 40% to 90% vinyl acetate and 10% to 60% vinyl versatate, between about 3% and 15% emulsified fatty acid having 12 to 22 carbon atoms and an Iodine No. above 100, and between about 3% and 15% polyvinyl alcohols, where the primer-sealer composition contains pigment and the pigment-volume-content (PVC) is above about 30%;

drying the resin impregnated surface layer to produce a dried surface layer;

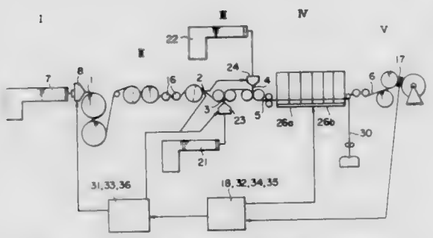
storing the dried surface layer in layered arrangements without sticking between layers;

removing from storage and laminating the dried surface layer to the surface of a fiberboard composite under pressure and heat to form a prefinished hardboard product having a prefinished surface free of sticking in the hot press.

5,059,265
METHOD OF CONTROLLING THICKNESS OF ORIENTED RESIN FILM

Takaaki Asakura, Kashima, Japan, assignor to Oji Yuka Goseishi Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1989, Ser. No. 457,832
Claims priority, application Japan, Dec. 29, 1988, 63-334868
Int. Cl.[5] B29C *47/06, 47/92;* B32B *31/30*
U.S. Cl. 156—64 6 Claims



1. In a method of uniformly controlling a thickness of a biaxially oriented resin film comprising the steps of:

melt-extruding a resin into a sheet through a die;

orienting the sheet in a machine direction by means of circumferential velocity differential among rolls, thereby generating a resulting resin film;

orienting the resulting resin film transversely by means of a tenter and directing the resin film into a tentering oven, thereby generating the biaxially oriented resin film;

controlling the thickness of said biaxially oriented resin film by regulating a degree of tightening of thickness-adjusting die bolts as well as temperatures of a number of heater elements set in the tentering oven,

wherein said thickness of the biaxially oriented resin film is controlled by measuring the thickness of the biaxially oriented resin film along a transverse direction, the results of said measurement being separated into mode components by harmonic analysis of a distribution of said thickness using a computer, wherein the thickness distribution is approximated to a profile of a periodic function with a period of 2π of the formula

$$f(x) \approx \frac{a_0}{2} + \sum_{i=1}^{N} (a_i \cos ix + b_i \sin ix)$$

mode components (1 to N) of the periodic function are then divided into low frequency components (1 to x) and high frequency components (x+1 to N) by border of mode (x) previously specified in a computer, wherein a nonuniform thickness of said biaxially oriented resin film is controlled on a profile of low frequency components by regulating a degree to which the thickness-adjusting die bolt are tightened as well the nonuniform thickness being controlled on a profile of high frequency components by a regulation of temperatures of the heater elements in the tentering oven, wherein,

the term "mode" is a quotient of a width of biaxially oriented resin film divided by a wave length, where, N is at least 5,

X is at least 2, less than N and not more than Y,

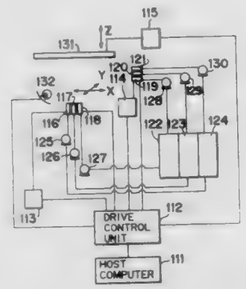
Y is a value calculated according to the formula

$$\frac{\text{[width of biaxially oriented resin film (mm)]}}{\left(\text{distance between thickness adjustment bolts (mm)}\right) \times \text{transverse orientation ratio}}$$

5,059,266
APPARATUS AND METHOD FOR FORMING THREE-DIMENSIONAL ARTICLE

Mitsuo Yamane, Yotsukaichi; Takashi Kawaguchi, Nishikasugai; Shigeru Kagayama, Nagoya; Shunichi Higashiyama, Yotsukaichi; Keiko Suzuki, Okazaki; Jun Sakai, Nagoya; Mikio Imaeda, Bisai, and Kouji Inaishi, Okazaki, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed May 23, 1990, Ser. No. 527,286
Claims priority, application Japan, May 23, 1989, 1-127848; May 23, 1989, 1-127850; May 24, 1989, 1-128686; May 24, 1989, 1-128687; May 24, 1989, 1-128688; May 24, 1989, 1-128689; May 25, 1989, 1-130079; May 25, 1989, 1-130080; Jul. 6, 1989, 1-174777
Int. Cl.[5] B05B *7/24;* B05D *5/06;* B29C *41/52;* B32B *31/28*
U.S. Cl. 156—64 19 Claims



1. An apparatus for forming a three-dimensional article with curable material based on three-dimensional information on the article, comprising:

a stage for mounting thereon the three-dimensional article to be formed;

an ink jet head unit for jetting the curable material in a droplet form along a flight passage of the material to said stage to laminate the curable material on said stage, the flight passage being defined between said stage and said ink jet head unit, said ink jet head unit comprising at least two ink jet heads having different jetting amounts for the material, one of said ink jet heads having a large jetting amount for jetting the material to form a bulky portion of the article and another of said ink jet heads having a small jetting amount for jetting the material to form a fine portion of the article;

an exposure unit for exposing the laminated material on said stage to light to cure the material; and

a control unit for changing at least one of a jetting direction of the material jetted along the flight passage and a jetting amount of the material jetted from said ink jet head unit based on the information to thereby control a jetting operation of the material.

17. A method for forming a three-dimensional article with curable material on the basis of a three-dimensional information on the article, comprising the steps of:

laminating the material on a stage by an ink jet method at each of a plurality of layers;

changing at least one of a jetting direction and a jetting amount of the material jetted from the stage in accordance with the information using at least two ink jet heads having different jetting amounts for the material, thereby controlling a jetting operation of the material;

jetting a large amount of the material to form a bulky portion of the article and jetting a small amount of the material to form a fine portion of the article; and

exposing the laminated material to light to cure the material, thereby forming the article.

5,059,267
METHOD FOR MANUFACTURING A POROUS BODY OF MOLYBDENUM SILICIDE

Hiroshi Nishio, Kawasaki, Japan, assignor to NKK Corporation, Tokyo, Japan

Filed Aug. 29, 1990, Ser. No. 574,478
Claims priority, application Japan, Sep. 12, 1989, 1-234727
Int. Cl.[5] C23C *22/00*
U.S. Cl. 156—89 21 Claims

1. A method for manufacturing a porous body of molybdenum silicide, comprising the steps of:

making a bundle of molybdenum pipes by bundling at least seven molybdenum pipes;

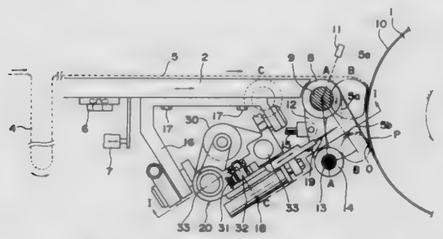
impregnating inorganic polysilazane into voids formed between portions where molybdenum pipes contact each other; and

heating the bundle of molybdenum pipes in a non-oxidizing atmosphere at a temperature of 1000° to 1900° C. such that at least the surfaces of the molybdenum pipes are converted to molybdenum silicide.

5,059,268
METHOD FOR APPLYING THE MATERIAL

Kazuo Satoh, Kobe, and Tsutomu Nosaka, Kako, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 140,753, Jan. 4, 1988, abandoned, which is a division of Ser. No. 829,542, Feb. 10, 1986, Pat. No. 4,738,743, which is a continuation of Ser. No. 413,062, Aug. 30, 1982, abandoned. This application Jun. 6, 1989, Ser. No. 364,569
Claims priority, application Japan, Aug. 31, 1981, 56-136432; Aug. 31, 1981, 56-136433
Int. Cl.[5] B29D *30/08, 30/00;* B65C *9/04*
U.S. Cl. 156—130.3 2 Claims



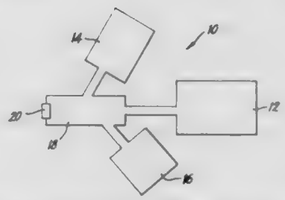
1. In a method for applying a strip of tire material onto a building drum including the steps of feeding a leading end of the tire material toward a surface of the building drum, then winding the tire material onto said building drum surface under the rotation of the building drum in one direction, next cutting the tire material in a predetermined length thereof while the tire material is being wound around the building drum, after temporarily stopping the rotation of the building drum, and then completing the winding of the cut tire material around the building drum upon the resumed rotation of the building drum,

the improvement comprising the steps of, after feeding the leading end of the tire material toward said surface of the building drum and before winding the material around the building drum with the rotation of the building drum, pressing a predetermined portion of the tire material positioned slightly behind a leading edge of said leading end against the building drum by a roller, which is shifted downwardly from a position above the building drum to contact with and press the tire material on the building drum, and causing said leading end of the tire material with a given length from said predetermined portion to said leading edge to be pressed and applied along the building drum by said roller, which is moved a certain distance around said surface of the building drum toward said leading edge while pressing the tire material onto the building drum.

5,059,269
METHOD OF MAKING AN ARTICLE HAVING A HEMOCOMPATIBLE SURFACE

Can B. Hu; Donald D. Solomon, both of Spring Valley, and Stanley C. Wells, Centerville, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 164,948, Mar. 7, 1988, Pat. No. 4,939,007.
This application Mar. 9, 1990, Ser. No. 491,020
Int. Cl.[5] B29C *47/06;* B32B *1/08, 27/40, 31/30*
U.S. Cl. 156—244.11 8 Claims

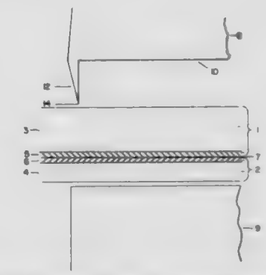


8. A method of preparing an article comprising coextruding a thermoplastic polyurethane of Shore hardness about 50A to 75D and a copolymer having polyurethane segments and hydroxyalkyl-terminated polydimethyl siloxane segments whereby there is formed an article having a layer of said copolymer on said polyurethane, said layer being from about 5 to 50% by weight of said polyurethane, said copolymer providing said article with a surface which is hemocompatible.

5,059,270
PROCESS FOR THE WELDING OF PLASTIC FILMS LYING FLAT ONE ON TOP OF THE OTHER

Edgar Fleischmann, Munich; Maximillian Mayr, Garching/Alz, and Heinrich Heitz, Germering, all of Fed. Rep. of Germany, assignors to Alkor GmbH Kunststoffe, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1989, Ser. No. 324,552
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1988, 3809698
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—251 11 Claims



1. A process for welding composite plastic films, comprising the steps of:

(A) providing

(i) a first composite plastic film that comprises an opaque layer comprising about 50–80 parts by weight of polypropylene, about 5–15 parts by weight of a constituent selected from the group consisting of EPDM and EPM, about 0.5–10 parts by weight of filler, about 1–15 parts by weight of ethylene-vinyl acetate copolymer, about 10–30 parts by weight of polyethylene or ethylene copolymer, about 0–3.5 parts by weight of a processing aid, and about 0–8 parts by weight of at least one dye or pigment, and a transparent sealing layer comprising a

propylene-ethylene copolymer or propylene-ethylene blend, and

(ii) a second composite plastic film that comprises a transparent layer comprising polypropylene and a transparent sealing layer comprising a propylene-ethylene copolymer or propylene-ethylene blend,

wherein each of said first and second composite plastic films has a Shore D hardness of about 25–68,

(B) placing said first composite plastic film in contact with said second composite plastic film, such that said sealing layer of said first composite plastic film directly contacts said sealing layer of said second composite plastic film, forming an interface between said sealing layers,

(C) bringing said first and second composite plastic films into contact, respectively, with a heated tool that comprises a contact surface, contact line or cutting edge, and

(D) hot-tool welding said first and second plastic films at said interface.

5,059,271

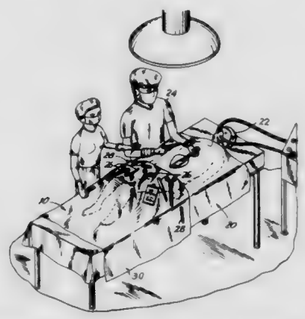
METHOD OF SUPPORTING AND RETAINING SURGICAL INSTRUMENTS ON A NON-SKID SUPPORTING SURFACE

Stanley Taub, 465 W. Broadway, New York, N.Y. 10012

Continuation of Ser. No. 861,121, May 7, 1986, abandoned, which is a continuation of Ser. No. 712,317, Mar. 13, 1985, abandoned, which is a continuation of Ser. No. 403,083, Jul. 29, 1982, abandoned. This application Apr. 27, 1987, Ser. No. 45,764

Int. Cl.[5] C09J *5/00*

U.S. Cl. 156—306.3 **8 Claims**



1. A method of supporting and retaining surgical instruments on a surface which is at least in part not flat or horizontal, comprising:

forming a flexible sheet of predetermined dimensions from methyl vinyl polysiloxane containing small amounts of ground silica filler, said sheet having two sides, one side being smooth, said smooth side having an inherently tacky surface of the type that is formed when the polysiloxane is cured with said smooth side exposed to air, and having relatively high kinetic and static coefficients of friction;

placing said sheet on said surface with said smooth tacky side of said sheet facing upwardly; and

placing a surgical instrument on said smooth tacky surface whereby said instrument is supported thereon and does not slip or slide therefrom.

5,059,272

METHOD FOR THE MANUFACTURE OF ELECTRONIC CIRCUITS UTILIZING A COMPOSITION WITH INSULATING AND ELECTROCONDUCTIVE PROPERTIES

Masanao Kono; Yoshihiro Hasegawa, both of Kakogawa; Yasutaka Nishi, Takasago; Yasuyoshi Sanada, Kakogawa; Tatsuji Mizuta, Kobe; Ryo Inoue, Himeji, and Shinsuke Ohara, Kyoto, all of Japan, assignors to Harima Chemicals, Inc., Hyogo, Japan

Division of Ser. No. 51,524, May 19, 1987, Pat. No. 4,851,153. This application Apr. 27, 1989, Ser. No. 343,722

Claims priority, application Japan, May 19, 1986, 61-114442; Jun. 30, 1986, 61-154812

Int. Cl.[5] C09J *5/10*

U.S. Cl. 156—306.6 **7 Claims**

1. A method for affording electrical conductivity between closely or slightly spaced electronic circuit substrates in a heated state while maintaining the insulating property between said electronic circuit substrates, in the normal state, which comprises interposing an electrically conductive high molecular weight composition in the form of a thin film between said electronic circuit substrates to form laminated substrates and heating said laminated substrates, said conductive high molecular weight composition containing a non-conductive high molecular weight polymer component and at least 0.1% by weight of a metal salt of an acid substance selected from the group consisting of an organic carboxylic acid, rosin and a rosin derivative incorporated therein, wherein the metal of said metal salt is smaller in ionization tendency than a metal from which said electronic circuits are made.

5,059,273

PROCESS FOR PREPARING POLYIMIDE COMPOSITES

Richard J. Boyce, Elkton, and Thomas P. Gannett, Wilmington, both of Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1989, Ser. No. 426,932

Int. Cl.[5] C09J *5/02*

U.S. Cl. 156—307.4 **4 Claims**

1. A process for preparing high quality fiber reinforced polyimide matrix composites having a void content of less than 1%, at moderate melt-consolidation pressures comprising

a) forming a prepreg by combining fiber with a molecular weight limiting polyimide precursor solution of i) at least one aromatic diamine and a molar excess of at least one aromatic dianhydride or functional equivalent thereof; ii) at least one aromatic diamine and at least one aromatic dianhydride or functional equivalent thereof in stoichiometric proportions and an aromatic monoanhydride or functional equivalent thereof; or iii) at least one aromatic dianhydride or functional equivalent thereof and a molar excess of at least one aromatic diamine and an aromatic monoanhydride or functional equivalent thereof in amount sufficient to end-cap the molar excess of diamine;

b) polymerizing the precursors and devolatilizing the product by heating until the volatiles are substantially removed;

c) heating the devolatilized product to a temperature above the glass transition temperature until the melt viscosity of the polymer is sufficiently low to permit melt-consolidating without substantial degradation at a pressure of under 650 pounds per square inch;

d) melt-consolidating the product to reduce void content below 1%; and

e) heating the product until the glass transition temperature of the resulting product is equal to or greater than that of the polymer prepared from stoichiometric proportions of the same polyimide precursors.

5,059,274

TIRE FORMING APPARATUS INCLUDING UPPER AND LOWER CONVEYORS

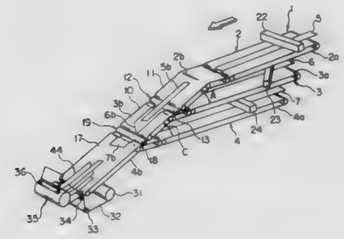
Yuzo Kumagai, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 100,658, Sep. 24, 1987, Pat. No. 4,875,959. This application Sep. 29, 1989, Ser. No. 414,345

Claims priority, application Japan, Sep. 24, 1986, 61-225336

Int. Cl.[5] B29D *30/00*

U.S. Cl. 156—406.4 **7 Claims**



1. A tire forming apparatus comprising: a tire forming drum, conveying means having at least two endless conveyors laid one over another in such a manner that the downstream end portion of the upper conveyor forms an acute angle with a substantially horizontal run of a portion of a lower conveyor; and cutting means for cutting to predetermined lengths different kinds of tire forming members which are conveyed respectively by said conveyors of said conveying means and supplied to said tire forming drum, in which:

said lower conveyor is bent at the intersection of an extension line of the downstream end portion of said upper conveyor and said lower conveyor in such a manner that a conveying surface of said lower conveyor which is on the downstream side of said intersection is aligned and substantially coplanar with the conveying surface of the downstream end portion of said upper conveyor,

an extension conveyor is disposed between the downstream end of said upper conveyor and the bend point of said lower conveyor in such a manner that a conveying surface of said extension conveyor is aligned and substantially coplanar with those of said upper and lower conveyors, and

drive means is provided to forcibly drive said extension conveyor.

5,059,275

PAPER FEED PREPARATORY DEVICE

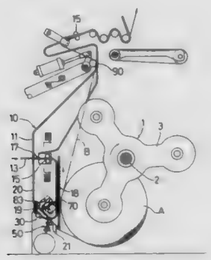
Akira Fukuda, Shiginonishi, Japan, assignor to Hamada Printing Press Co., Ltd., Osaka, Japan

Filed Feb. 13, 1990, Ser. No. 479,528

Claims priority, application Japan, Feb. 13, 1989, 1-33378

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—511 **1 Claim**



1. A paper feed preparatory device of connecting the end of a web of paper drawn out from a paper roll mounted in a paper supply unit to a plate-shaped leader adapted to be moved from said paper supply unit along one side of a paper feed path, said device comprising a suction box provided at the entrance to said paper feed path to attract with a suction force the end of the web of paper from the bottom thereof, a suction conveyor provided downstream of said suction box with respect to the feed direction of the paper so as to attract the paper end with a suction force larger than that produced in said suction box and carry the paper in said feed direction, a cutting assembly provided between said suction conveyor and said suction box and having a paper cutter adapted to move transversely of the web of paper while the paper is being fed, thereby cutting the web of paper obliquely, a tape applicator provided over said suction conveyor so as to be movable toward and away from the top of said suction conveyor, means provided upstream of said tape applicator for inserting the leader between said tape applicator and the web of paper, said tape applicator having a tape reel for carrying an adhesive tape and a presser member for pressing the end of the adhesive tape pulled thereunder against the top surface of the paper along one side thereof with the leader sandwiched between the adhesive tape and the paper when said taper applicator is moved toward the top of said suction conveyor, and a tape cutter secured to the front side with respect to the feed direction of the paper to come into contact with and cut the adhesive tape when said tape applicator is raised.

5,059,276

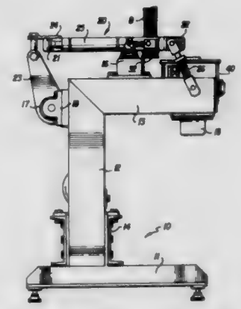
VENEER EDGE GLUE APPLICATOR

John DeLigt, Covington, Va., and Lee E. Veneziale, Tyrone, Pa., assignors to Westvaco Corporation, New York, N.Y.

Filed Jun. 7, 1990, Ser. No. 534,261

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—546 **4 Claims**



1. Apparatus for applying adhesive to the edges of wood veneer strips comprising:

static frame means for supporting clamping frame means and adhesive application wheel carriage track means;

clamping frame means for selectively applying compressive holding force to secure one or more veneer strips in a vertical strip face plane orientation;

linkage means for translating said clamping frame means from a first, veneer strip loading position to a second, adhesive application position without changing the planar orientation of said veneer strips, said linkage means including a first plurality of torsion arm links and a second plurality of adjustable length links, one end of at least two said torsion arm links being non-rotatively secured at longitudinally separated positions to an elongated torque resisting means and another end pivotally secured to said clamping frame means, said torsion arm links and said elongated torque resisting means, as a unitized assembly, being rotatively secured to said static frame means about

an axis of rotation proximate of said torque resisting means length;

alignment means having a horizontal planar surface secured to said static frame means beneath said clamping frame means in said first, veneer strip loading position for supporting a bottom edge alignment of said veneer strips; and,

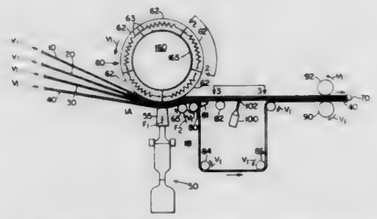
carriage means supported by said track means for translating adhesive application means along the aligned bottom edges of said veneer strips when said clamping frame means is in said second, adhesive application position.

5,059,277

ADHESIVE-FREE BONDING OF CONTINUOUSLY MOVING WEBS TO FORM LAMINATE WEB

William Willhite, Jr., Cincinnati; Gerald M. Weber, Loveland, and Godfrey Retier, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 28, 1986, Ser. No. 835,068
Int. Cl.[5] B32B *31/00, 31/08, 31/20, 31/28*
U.S. Cl. 156—580.1 **40 Claims**



1. A continuous method of bonding moving webs to one another on-the-fly, said method comprising the steps of:

(a) continuosly feeding at least two of said moving webs to be bonded to one another in the machine direction at a first velocity, at least one of said webs being comprised of a polymeric material which is softenable by the input of mechanical energy thereto;

(b) simultaneously feeding a layer of material which is not softenable by the input of mechanical energy thereto and which exhibits a low coefficient of friction in the machine direction at said first velocity;

(c) passing said moving webs and said layer of material exhibiting a low coefficient of friction between the nip formed by a pair of opposed mechanical energy inputting elements, at least one of said mechanical energy inputting elements being substantially stationary in the machine direction, said layer of material exhibiting a low coefficient of friction being positioned between said moving webs and said substantially stationary mechanical energy inputting element;

(d) inputting mechanical energy to discrete, isolated portions of said webs to be bonded through said layer of low friction material by simultaneously ultrasonically vibrating said substantially stationary mechanical element and applying pressure to said discrete, isolated portions of said webs and said layer of low friction material as they pass simultaneously between said opposed mechanical energy inputting elements, whereby said layer of material exhibiting a low coefficient of friction permits the temperature of said web of polymeric material to be at least locally elevated above its softening temperature to facilitate bonding to the adjacent web while substantially preventing damage from occurring to any of said webs during the inputting of mechanical energy and the application of pressure to said discrete, isolated portions of said webs; and

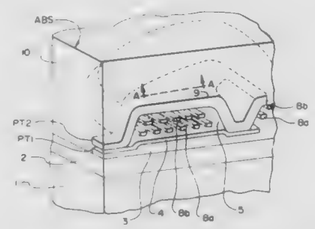
(e) allowing said softened polymeric material to cool and solidify, whereby said locally softened polymeric material upon cooling securely bonds said webs to one another at said discrete isolated portions thereof without bonding said layer of material exhibiting a low coefficient of friction thereto.

5,059,278

SELECTIVE CHEMICAL REMOVAL OF COIL SEED-LAYER IN THIN FILM HEAD MAGNETIC TRANSDUCER

Uri Cohen, Palo Alto, Calif., and Wei C. Hsie, Eden Prairie, Minn., assignors to Seagate Technology, Scotts Valley, Calif.

Filed Sep. 28, 1990, Ser. No. 590,007
Int. Cl.[5] B44C *1/22;* **C23F** *1/02*
U.S. Cl. 156—643 **26 Claims**



1. A process for forming a thin film magnetic transducer head, including the steps of: depositing on a substrate a first metallic conductive seed-layer; forming a mask pattern on the seed-layer defining the shape of a coil winding for the head; and depositing through the mask pattern and onto the exposed seed-layer a second metallic conductive material, chemically distinct from the seed-layer, to form a coil winding, wherein the improvement comprises:

(a) depositing a seed-layer comprising a first metallic conductive material;

(b) after forming the mask pattern of the coil winding on the seed-layer, depositing as defined by the mask pattern a second metallic conductive material, chemically distinct from the seed-layer, to form the coil winding;

(c) after depositing the coil winding, removing substantially all residue of the mask pattern to expose the seed-layer; and

(d) selectively etching the exposed seed-layer by subjecting the seed-layer and coil-winding to a selective etchant, which etchant removes the first metallic conductive seed-layer material at a significantly higher rate than the second metallic conductive coil winding material to thereby remove the seed-layer from between individual coil winding turns while leaving the coil winding essentially intact.

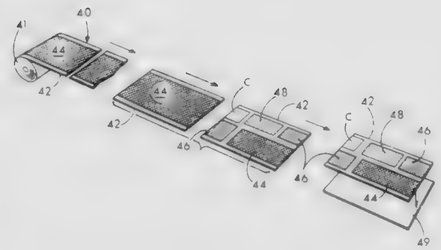
5,059,279

SUSCEPTOR FOR MICROWAVE HEATING

David Wilson, Mississauga, Canada, assignor to Golden Valley Microwave Foods Inc., Edina, Minn.

Continuation of Ser. No. 369,193, Jun. 21, 1989, Pat. No. 4,959,120. This application May 25, 1990, Ser. No. 529,229
The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.
Int. Cl.[5] B44C *1/22;* **C23F** *1/02*
U.S. Cl. 156—651 **40 Claims**

26. A process for producing a microwave susceptor having at least two regions of microwave active metal material, said method including the steps of, providing a substrate having a microwave active film of metallic material thereon, and selectively removing a portion of the microwave active film from the substrate in at least each of first and second areas thereof, said step of removing a portion of the microwave active film from the first area being conducted in a manner leaving a coating of microwave active metallic material therein having a first resistivity and said step of removing a portion of the microwave active film from the second area being conducted in a manner leaving a coating of microwave active metallic



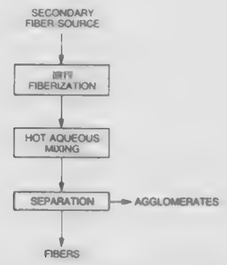
material therein having a second resistivity, the second resistivity being different from the first resistivity.

5,059,280

METHOD FOR REMOVING AGGLOMERATED PARTICLES AFTER DRY FIBERIZING WASTEPAPER

Roger B. Thompson, Neenah, and Christine L. Goulet, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 388,772, Jul. 31, 1989, abandoned. This application Nov. 14, 1990, Ser. No. 612,756
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—4 **6 Claims**



1. A method for deinking wastepaper comprising:

(a) dry fiberizing the wastepaper at a temperature of about 130° F. or greater in a manner sufficient to create ink-containing agglomerated particles having a largest dimension of from about 0.2 to about 1.5 millimeters;

(b) slurrying the fiberized wastepaper with water at a consistency of about 5 weight percent or greater at a temperature of about 130° F. or greater with sufficient agitation to transform the agglomerated particles into a more compact and streamlined form within the size range referred to in step (a) and thereby render them more easily separable; and

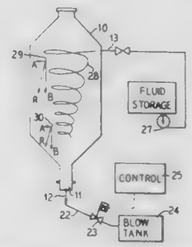
(c) separating the transformed agglomerated particles from the balance of the fiberized wastepaper using one or more centrifugal cleaners.

5,059,281

PROCESS AND MECHANISM TO EMPTY PULPING DIGESTER

Ethan K. Andrews, Lenox, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 25, 1989, Ser. No. 412,079
Int. Cl.[5] D21C *7/08*
U.S. Cl. 162—52 **18 Claims**



1. In a batch process of preparing pulp for papermaking, the steps comprising:

cooking a batch of pulp in a closed digester under elevated temperatures and pressure;

supplying a fluid under pressure into the digester at the top of the digester at the end of the cooking process to empty the batch of pulp from the digester through a pulp outlet; and cyclically opening or closing the pulp outlet while pulp passes therethrough, whereby vortex generation within the digester is prevented.

5,059,282

SOFT TISSUE PAPER

Robert S. Ampulski, Fairfield, Ohio, and Wolfgang U. Spendel, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 206,621, Jun. 14, 1988, abandoned. This application Feb. 21, 1990, Ser. No. 484,036
Int. Cl.[5] D21H *21/14*
U.S. Cl. 162—111 **19 Claims**

1. Tissue paper having a basis weight of from about 10 to about 65 grams per square meter, and density of about 0.6 grams or less per cubic centimeter, said tissue paper comprising cellulosic fibers and an effective amount of a polysiloxane material, said polysiloxane being uniformly disposed on the outwardly facing surfaces of the tissue paper, said effective amount of polysiloxane being from about 0.004% to about 2% polysiloxane based on the dry fiber weight of said tissue paper, said polysiloxane having a viscosity of about 25 centistokes or more, said tissue paper after aging two weeks after its manufacture has a wetting time of 2 minutes or less.

5,059,283

PROCESS FOR SOLVENT DELIVERY OF CHEMICAL COMPOUNDS TO PAPERMAKING BELTS

William H. Hood, Cincinnati, and Paul D. Trokhan, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

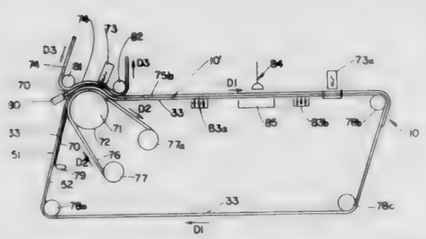
Filed Apr. 12, 1990, Ser. No. 508,872
Int. Cl.[5] D21F *1/00*
U.S. Cl. 162—199 **14 Claims**

1. A process for extending the life of papermaking belts containing a solid polymeric resin which has been rendered solid by exposing a liquid photosensitive resin to light of an activating wavelength, which process comprises the steps of:

a) providing a papermaking belt, said papermaking belt containing a solid polymeric resin which has been rendered solid by exposing a liquid photosensitive resin to light of an activating wavelength.

b) applying a solution comprising a resin-swelling solvent

and an effective amount of a chemical compound, said chemical compound being dissolved in said solvent, to at least a portion of the papermaking belt, said chemical compound being selected from the group consisting of



antioxidant chemicals, chelating agents, and mixtures thereof;

c) allowing sufficient time for the solvent containing the dissolved chemical compound to swell the resin; and

d) evaporating the solvent.

5,059,284

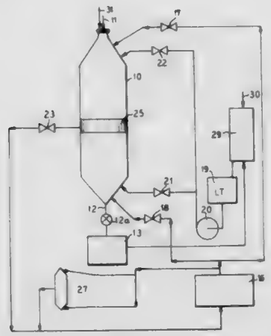
APPARATUS TO DISPLACE A DIGESTER FROM BOTH ENDS

Bertil K. E. Fagerlund, Ponte Vedra, Fla., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 30, 1989, Ser. No. 429,876

Int. Cl.[5] D21C *7/00, 7/08, 7/12*

U.S. Cl. 162—239 **5 Claims**



5. In an apparatus for digesting cellulose material including a digester designed for containing the material and cooking the material at elevated temperature and superatmospheric pressure, the digester including displacement fluid inlet means and displaced fluid outlet means for effecting quantitative displacements of fluid in the digester by non-recirculated external fluids, the improvement comprising:

said displacement fluid inlet means composed of two displacement fluid inlets, one disposed near the top of the digester and one disposed near the bottom of the digester, for separately receiving and directing into the digester displacement fluid volumes;

means for supplying a source of non-recirculated external fluid connected to said displacement fluid inlet means; and

said displaced fluid outlet means being disposed between said displacement fluid inlet means near the top of the digester and said displacement fluid inlet means near the bottom of the digester, said displaced fluid outlet means being designed and positioned for receiving fluid displaced downwardly from the top of the digester and fluid displaced upwardly from the bottom of the digester as displacement fluid enters the digester through said displacement fluid inlet means, and for inhibiting the escape of pulp through said displaced fluid outlet means.

5,059,285

APPARATUS FOR CONTACTING RUNNING WEBS OF FIBROUS MATERIAL WITH FLUIDS

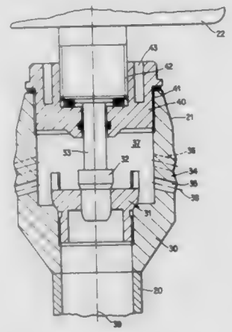
Stefan H. Winheim, Frankfurt am Main, Fed. Rep. of Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Fed. Rep. of Germany

Filed Jan. 15, 1988, Ser. No. 144,934

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1987, 3701407

Int. Cl.[5] D21F *5/18*

U.S. Cl. 162—290 **24 Claims**



1. Apparatus for contacting a running web with a fluid medium, comprising means for guiding the web in a predetermined direction along a predetermined path; a housing including an apertured wall adjacent said path and a plurality of sidewalls defining with said apertured wall a plurality of chambers; and means for supplying fluid into said chambers so that the fluid can penetrate through said apertured wall and contact the running web in said path, said supplying means comprising at least one valve in each of said chambers and means for delivering fluid to each of said valves, each of said valves comprising a body defining an internal space arranged to receive fluid from the respective delivering means and each of said bodies having a plurality of fluid discharging ports connecting the respective internal space with the respective chamber and arranged to direct streams of fluid substantially toward the sidewalls around the respective chamber so that the fluid is distributed in the respective chamber prior to reaching said apertured wall, the ports in each of said bodies forming at least one annulus having a first axis which is substantially normal to said apertured wall, and each of said ports having an axis which is inclined with reference to the respective first axis at an angle of at least 60 degrees and slopes toward said apertured wall.

5,059,286

CYLINDER FOR THE GUIDING OF ENDLESS WEBS OF MATERIAL

Rudolf Beisswanger, Steinheim, and Hans-Peter Sollinger, Heidenheim, both of Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Apr. 23, 1990, Ser. No. 513,595

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1989, 3913292

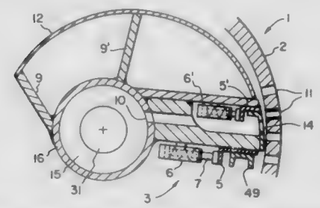
Int. Cl.[5] D21F *3/10, 1/48*

U.S. Cl. 162—369 **14 Claims**

1. A cylinder for guiding an endless web of material wherein the endless web wraps around a defined area of the circumference of the cylinder as the web is guided by the cylinder, comprising:

a hollow outer cylinder, said hollow outer cylinder having an inner radius and having an outer shell surface, said outer shell surface having boreholes therethrough,

an internal body disposed interiorly of said hollow cylinder and having an inner radius, said internal body inner radius being 5 to 30 percent smaller than said outer cylinder inner radius, said internal body having an exterior surface wherein only a portion of said exterior surface is spiral or generally cylindrical and arranged eccentric to said shell surface of the hollow cylinder whereby an intermediate space having a sickle-shaped cross-section is formed between said spiral or generally cylindrical surface and said



hollow outer cylinder, said internal body further having an axial length,

said boreholes being situated in said shell in at least the area of axial length of said internal body, and

sliding plates for partitioning at least a portion of said sickle-shaped intermediate space, means for sliding said sliding plates radially between said shell surface and said internal body so that a partitioned area of said sickle-shaped space is defined therebetween, wherein said boreholes of said shell portion situated adjacent said partitioned area are in communication with a source of compressed air or vacuum by way of duct means extending radially inward from said partitioned area of said internal body and extending therefrom to said source.

5,059,287

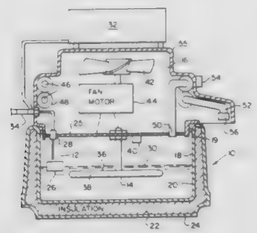
PORTABLE WATER DISTILLER

Charles W. Harkey, Sr., 7155 Roswell Rd., Atlanta, Ga. 30328, assignor to Charles W. Harkey, Sr. and Trac International Corp., both of Atlanta, Ga.

Filed Jun. 16, 1989, Ser. No. 367,305

Int. Cl.[5] B01D *1/02, 3/00, 3/42*

U.S. Cl. 203—1.000 **16 Claims**



1. A water distiller for vaporizing and condensing water comprising:

(a) a container for holding water to be distilled;

(b) water level regulation means for maintaining water in said container at a desired level;

(c) a heating element horizontally disposed below said desired water level and spaced apart from said container for vaporizing water to be distilled, said heating element having an upper heated portion between approximately one-sixteenth and one-half inch from said desired water level,

said heating element including means for heating the heating element only to a temperature sufficient to vaporize the water between said heating element and said desired water level in about five minutes;

(d) a cover disposed atop said container for carrying said heating element and for sealably covering said container; and

(e) a condenser carried by said cover for condensing water vaporized by said heating element,

whereby the water heater is able to operate at a temperature that reduces scaling and thereby improves the efficiency of said distiller.

11. A method for improving the efficiency of a distiller comprising the steps of:

(a) horizontally disposing a heating element between about one-sixteenth and one-half inch below a desired water level in a chamber for vaporizing water, the heating element being spaced from the chamber's water containing sides by at least three-quarters inch;

(b) suspending said heating element from a removable cover disposed atop of the chamber; and

(c) heating the heating element only to a temperature sufficient to vaporize the water between the heating element and the desired water level in about 5 minutes,

whereby scaling may be reduced and the efficiency of the distiller improved.

5,059,288

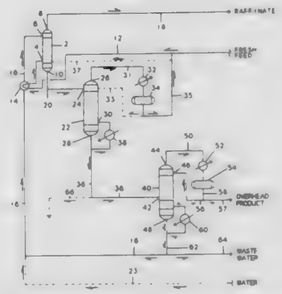
RECOVERY OF ISOPROPYL ACETATE AND ETHANOL FROM AN ISOPROPYL ACETATE, ETHANOL AND WATER-CONTAINING STREAM

William J. Curry, Thornton, Pa., assignor to Harborchem, Cranford, N.J.

Filed Nov. 21, 1989, Ser. No. 439,830

Int. Cl.[5] B01D *3/16;* **C07C** *29/86, 67/58*

U.S. Cl. 203—43 **14 Claims**



1. A process for the recovery of isopropyl acetate and ethanol from a feed mixture comprising isopropyl acetate, ethanol and water comprising:

a) introducing said feed mixture into a solvent extractor in which the solvent comprises water and recovering a high purity isopropyl acetate raffinate stream and an ethanol-rich extract stream,

b) introducing said ethanol-rich extract stream to a first fractional distillation zone and producing an isopropyl acetate-rich stream and a substantially isopropyl acetate-free intermediate stream,

c) recycling said isopropyl acetate-rich stream to said solvent extractor,

d) introducing said substantially isopropyl acetate-free intermediate stream to a second fractional distillation zone and

recovering a substantially azeotropic ethanol-water stream and a high purity water stream, and

e) recycling said high purity water stream to said solvent extractor as solvent.

5,059,289

METHOD AND ELECTRODE FOR FORMING PASSAGES IN WORKPIECES

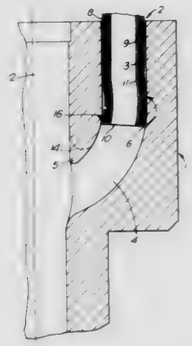
David J. Gaskell, Suffolk, United Kingdom, assignor to Lucas Industries Public Limited Company, Birmingham, United Kingdom

Filed Mar. 30, 1990, Ser. No. 502,412

Claims priority, application United Kingdom, Mar. 31, 1989, 8907252

Int. Cl.[5] B23H *9/14, 3/04*

U.S. Cl. 204—129.55 **14 Claims**



13. A method of using electrochemical machining to form in a workpiece a curved passage section which extends from the end of a pre-existing blind passage section of a different curvature, comprising the steps of:

(a) providing an electrode which comprises:

a thermoplastic, electrically insulating tube means having a first end, an inner surface and an outer surface, said inner surface defining a passage within said tube means, said passage being adapted to carry a flow of electrolyte during electrochemical machining,

electrically conductive electrode tip means disposed at said first end of said tube means, and

electrical conductor means extending from said tip means along said tube means;

(b) providing said workpiece in which said blind passage section has been formed;

(c) heating said electrode to an elevated temperature at which it is plastically deformable, plastically deforming said electrode at said elevated temperature to take a set of the desired curvature of said curved passage section, and cooling said electrode to a temperature at which it is elastically deformable and not readily plastically deformable; and

(d) inserting said electrode into said blind passage section, said inserting step including the step of deforming said electrode elastically to match said curvature of said blind passage section, and electrochemically machining said curved passage section extending from said blind passage section while simultaneously permitting said electrode to elastically regain its set curvature inside said workpiece.

5,059,290

ELECTROANALYTICAL METHOD

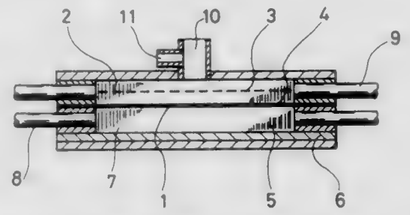
Shunichi Uchiyama, Fukaya, and Shuichi Suzuki, Tokyo, both of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,792

Claims priority, application Japan, Jan. 29, 1988, 63-18696

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.1 **8 Claims**



1. An electroanalytic method comprising the steps of:

providing an electrolytic cell comprising a working electrode chamber and a counter electrode chamber separated by an ion-exchange membrane, the working electrode chamber including a working electrode comprising a circular electroconductive porous body having a non-flowing electrolyte impregnated in the pores of said electroconductive porous body;

feeding a liquid sample directly to the working electrode whereby the liquid sample diffuses into the porous body of the working electrode for determining an identity of a substance within said liquid sample; and

determining the identity of a substance within said liquid sample by measuring at least one of electrical quantity, electrical voltage or electrical current within said working electrode whereby the electrolyte is unmoving.

5,059,291

HUMIDITY CONTROLLER

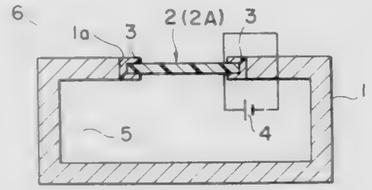
Shiro Yamauchi, and Naotake Rito, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 14, 1989, Ser. No. 365,899

Claims priority, application Japan, Nov. 9, 1988, 63-284411

Int. Cl.[5] G01N *27/26;* **G01W** *1/02;* **C25B** *11/03*

U.S. Cl. 204—153.22 **13 Claims**



1. A humidity controller comprising:

a chamber having an opening;

a dc power source; and

a humidity controlling element disposed in said opening and isolating the interior of said chamber form the outside thereof, said humidity controlling element comprising a hydrogen ion conductor membrane, porous electrodes disposed on two surfaces of said hydrogen ion conductor membrane, and collecting electrodes disposed on opposite surfaces of said porous electrodes and connected to said dc power source, wherein each of said collecting electrodes is a metallic mesh disposed over an area smaller than the whole area of each surface of said hydrogen ion conductor membrane and the current density in said hydrogen ion conductor membrane where no collecting electrode is disposed is at least ½ the current density in said hydrogen ion conductor membrane where said collecting electrodes are disposed.

5,059,292

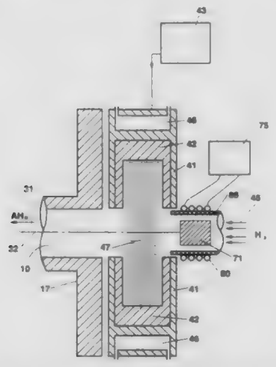
SINGLE-CHAMBER APPARATUS FOR IN-SITU GENERATION OF DANGEROUS POLYATOMIC GASES AND RADICALS FROM A SOURCE MATERIAL CONTAINED WITHIN A POROUS FOAMED STRUCTURE

George J. Collins, 807 West Oak St., Fort Collins, Colo. 80521; John R. McNeil, 13423 Desert Hills, NE., Albuquerque, N. Mex. 87111, and Zeng-gi Yu, 500 W. Prospect Apt. 7C., Fort Collins, Colo. 80526

Division of Ser. No. 317,103, Feb. 28, 1989, Pat. No. 4,952,294, which is a continuation of Ser. No. 168,259, Mar. 15, 1988, abandoned. This application Aug. 27, 1990, Ser. No. 573,891

Int. Cl.[5] C10G *35/00*

U.S. Cl. 204—164 **32 Claims**



31. A method for in-situ generation of dangerous polyatomic gases and radicals for subsequent use, the method comprising:

introducing one or more hydrogen bearing feedstock gases into a discharge chamber;

establishing a plasma discharge in the discharge chamber to produce atomic hydrogen radicals from the one or more hydrogen bearing feedstock gases;

heating a porous foamed structure containing a source material in pores of said porous foamed structure, thereby producing in said discharge chamber one or more dangerous polyatomic gases and radicals having as a component said source material, the porous foamed structure being located inside the discharge chamber, and said heating being substantially accomplished by a selected one of inductive and resistive heating; and

removing the produced one or more dangerous polyatomic gases and radicals from the discharge chamber for subsequent use.

5,059,293

COATING RESIN COMPOSITION

Masami Sugishima, and Haruo Nagaoka, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Dec. 6, 1989, Ser. No. 446,770

Claims priority, application Japan, Dec. 13, 1988, 63-314483

Int. Cl.[5] C25D *13/10;* **B32B** *15/08*

U.S. Cl. 204—181.7 **24 Claims**

1. A coating resin composition comprising as a main component an epoxy-polyamine resin resulting from the addition of (d) an amine compound having active hydrogen to an epoxy resin obtained by reacting (a) a diepoxide compound with less than 1 equivalent, per equivalent of the diepoxide compound (a), of (b) a bisphenol, said diepoxide compound being obtained by reacting a dihydric dimer alcohol derived from an unsaturated fatty acid or aliphatic unsaturated alcohol having 14 to 24 carbon atoms with an epihalohydrin.

24. A method of coating an article, which comprises subjecting the article to cathodic electrodeposition coating with the composition of claim **1** or **2**.

5,059,294

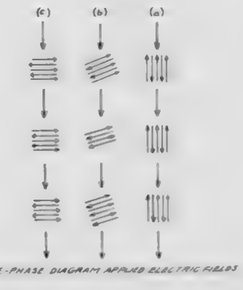
METHOD FOR SEPARATING NUCLEIC ACIDS AND NUCLEIC ACID PROBES

Paul M. Lizardi, Bronx, N.Y., assignor to The University of Puerto Rico, P.R.

Continuation of Ser. No. 813,662, Dec. 26, 1985. This application Nov. 16, 1987, Ser. No. 77,901

Int. Cl.[5] B01D *57/02;* **G01N** *27/26*

U.S. Cl. 204—182.8 **2 Claims**



1. A method of separating nucleic acid from substances to which it is bound non-specifically comprising:

a) contacting said nucleic acid and said substances to which it is bound non-specifically with support medium; and

applying alternate electric field and direct electric field to said support medium; wherein the direction of said direct field is essentially parallel to the direction of said alternating field.

5,059,295

METHOD OF MAKING LOW EMISSIVITY WINDOW

James J. Finley, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 228,428, Aug. 5, 1988, abandoned, which is a division of Ser. No. 947,799, Dec. 29, 1986, Pat. No. 4,806,220. This application Feb. 15, 1990, Ser. No. 481,754

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.27 **1 Claim**

1. A method of making a temperable low emissivity window comprising the steps of

sputtering a first layer of a mixture of tin oxide and zinc oxide onto a glass substrate,

sputtering a second layer of titanium,

sputtering a third layer of silver,

sputtering a fourth layer of titanium,

sputtering a fifth layer of a mixture of tin oxide and zinc oxide,

sputtering a sixth layer of titanium oxide,

then heating and shaping the glass at a temperature where the titanium layers on each side of the silver layer will oxidize but protect the silver from oxidizing.

5,059,296

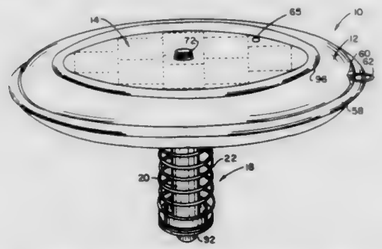
PORTABLE SELF-CONTAINED SOLAR POWERED WATER PURIFIER

Mark Sherman, St. Louis, Mo., assignor to Floatron, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 510,104, May 11, 1990, which is a continuation of Ser. No. 301,177, Feb. 21, 1989, abandoned. This application Sep. 20, 1990, Ser. No. 585,511

Int. Cl.[5] C25B *9/00, 11/02, 15/08*

U.S. Cl. 204—228 **39 Claims**



38. A portable self-contained solar powered water purifier comprising:

housing means for buoyantly supporting the purifier;

solar cell means supported by the housing means above water to be treated;

purification means depending from the housing means so as to be positioned in water to be treated and including sacrificial anode means providing ionized metallic ions for purifying the water and cathode means providing abstraction of electrons to facilitate the release of oxygen into the water;

means for electrically connecting the solar cell means to the electrolytic purification means to enable the electrolytic purification means to purify water when the purifier is placed therein; and

diode means for preventing reverse current flow between the anode means and cathode means.

5,059,297

DURABLE ELECTRODE FOR USE IN ELECTROLYSIS AND PROCESS FOR PRODUCING THE SAME

Kazuhiro Hirao, and Takanobu Hayashi, both of Kanagawa, Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Mar. 20, 1990, Ser. No. 495,957

Claims priority, application Japan, Mar. 20, 1989, 1-66095

Int. Cl.[5] C25B *11/10*

U.S. Cl. 204—290 R **2 Claims**

1. An electrode for use in electrolysis which comprises a metallic substrate having formed on a surface thereof, in sequence, an amorphous metal; layer free of grain boundaries consisting of a metal selected from the group consisting of Ti, Ta, Nb, Zr, and Hf or an alloy of any two or more of said metals and an active electrode material coating containing an oxide of a platinum group metal.

5,059,298

METHOD AND APPARATUS FOR REGULATING TRANSMEMBRANE ION MOVEMENT

Abraham R. Liboff, Birmingham, Mich., assignor to Life Resonances, Inc., Bozeman, Mont.

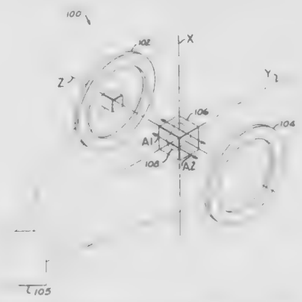
Continuation-in-part of Ser. No. 923,760, Oct. 27, 1986. This application Dec. 1, 1988, Ser. No. 278,688

Int. Cl.[5] B65D *85/18*

U.S. Cl. 204—299 R **6 Claims**

1. An apparatus for enhancing the transfer of a predetermined ion having a predetermined charge-to-mass ratio through a membrane located in a space subjected to a local magnetic field, the space defining at least one reference path passing through the membrane, the reference path extending in a first direction and also extending in a second direction opposite the first direction, said apparatus comprising:

field creating means responsive to signals for creating a magnetic field which, when combined with the local magnetic filed, results in a resultant magnetic field having a flux density with at least one component representable by a component vector having a direction extending in the first direction along the path and having a magnitude that fluctuates at a predetermined rate to create a nonzero average value, the ratio of the predetermined rate to the nonzero average value having a predetermined relationship which is a function of the charge-to-mass ratio of the predetermined ion;



signal generating means for generating said signals, at least some of said signals being generated at the predetermined rate;

magnetic sensing means adapted to measure a magnetic flux density having a nonzero average value for measuring the magnitude of said one component of said resultant magnetic field; and

means in association with said field creating means for automatically adjusting the magnitude of said one component of said resultant magnetic field to maintain said predetermined relationship.

5,059,299

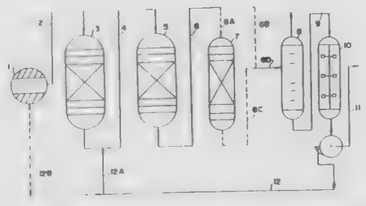
METHOD FOR ISOMERIZING WAX TO LUBE BASE OILS

Ian A. Cody, Clearwater; James D. Bell, Port Moody; Theodore H. West, Sarnia, all of Canada; William A. Wachter, Baton Rouge, La., and Biddanda U. Achia, Clearwater, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 283,664, Dec. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 135,150, Dec. 18, 1987, abandoned. This application May 11, 1990, Ser. No. 522,275

Int. Cl.[5] C10G *73/06*

U.S. Cl. 208—27 **17 Claims**



1. A process for maximizing the yield of lube oil base stocks or blending stocks having a pour point of about −21° C. or lower and a viscosity index of about 130 and higher by the isomerization of wax said process comprising (1) isomerizing the wax in an isomerization unit over an isomerization catalyst, fractionating the total product from the isomerization zone into a lube fraction boiling in the lube boiling range and solvent dewaxing said fraction in a single dewaxing stage to produce a dewaxed oil at a pour/filter ΔT, which is, the difference in temperature between the pour point of the dewaxed oil and the filter temperature, of 9° C. or less wherein the isomerization step is practiced to a level of conversion such that between about 15 to 35% unconverted wax, calculated as (unconverted wax)/(unconverted wax+dewaxed oil)×100, remains in the fraction of the isomerate boiling in the lube boiling range sent to the solvent dewaxing unit, and (2) recovering a dewaxed lube oil product having a VI of at least 130 and a pour point of at least −21° C.

5,059,300

ASPHALTS MODIFIED BY SOLVENT DEASPHALTED BOTTOMS AND PHOSPHORIC ACID

Edgar L. McGinnis, Moraga, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation of Ser. No. 948,211, Dec. 31, 1986, abandoned. This application Sep. 19, 1988, Ser. No. 246,565

Int. Cl.[5] C10G *1/20*

U.S. Cl. 208—44 **9 Claims**

1. A method for modifying the physical properties of a bituminous material whereby the softening point of said bituminous material is increased by 50° to 120° F. and its penetration is decreased by 20 to 80 dmm which comprises heating at an elevated temperature a mixture comprising:

(a) 0.1 to 20.0 percent by weight phosphoric acid;

(b) 1 to 15 percent by weight solvent deasphalted bottoms; and

(c) said bituminous material to make up 100 percent by weight, said bituminous material consisting essentially of vacuum distilled asphalt free of solvent deasphalted bottoms, thereby producing an industrial asphalt having a softening point in the range of 200° F. to 240° F. and a penetration in the range of 12 to 44 dmm at 77° F.

5,059,301

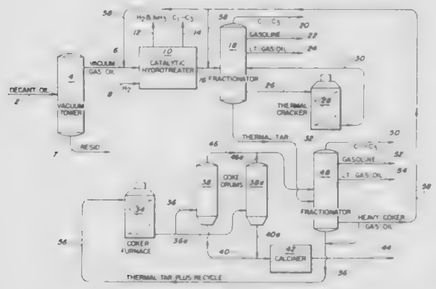
PROCESS FOR THE PREPARATION OF RECARBURIZER COKE

Keith M. Roussel, Ponca City, Okla., and John K. Shigley, Ogden, Utah, assignors to Conoco, Ponca City, Okla.

Continuation-in-part of Ser. No. 277,163, Nov. 29, 1988. This application Mar. 20, 1991, Ser. No. 672,504

Int. Cl.[5] C10G *69/02*

U.S. Cl. 208—50 **15 Claims**



1. A process for the production of low sulfur and low nitrogen coke which comprises:

(a) subjecting a decant oil containing substantial amounts of sulfur and nitrogen to vacuum distillation to obtain a vacuum gas oil fraction in which the sulfur and nitrogen is concentrated, wherein said vacuum gas oil fraction has a boiling point below about 1000° F. and a residuum having a boiling point above about 1000° F.,

(b) subjecting the vacuum gas oil to severe hydrotreating conditions to obtain a product containing reduced sulfur and nitrogen,

(c) subjecting the hydrotreated product to fractionation in a first fractionator to produce a light hydrocarbon fraction, a heavy gas oil fraction and a thermal tar fraction,

(d) combining the thermal tar from step (c) with overhead hydrocarbon vapors from a coke drum to produce a mixture and subjecting said mixture to fractionation in a second fractionator to produce a heavy coker gas oil fraction and a thermal tar fraction; and

(e) subjecting the thermal tar from step (d) to delayed coking to produce a coke product.

5,059,302

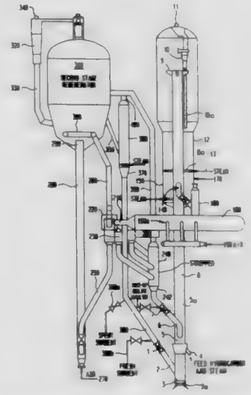
METHOD AND APPARATUS FOR THE FLUID CATALYTIC CRACKING OF HYDROCARBON FEED EMPLOYING A SEPARABLE MIXTURE OF CATALYST AND SORBENT PARTICLES

Harold N. Weinberg, Livingston, N.J.; W. Benedict Johnson, Pebble Beach, Calif.; Michael F. Raterman, Doylestown, Pa.; Barry K. Speronello, Belle Mead, N.J.; William J. Reagan, Naperville, Ill., and Larry G. Sherman, Flemington, N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 352,433, May 16, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 515,540

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—91 **22 Claims**



1. A method for the catalytic cracking of impure hydrocarbon oil which comprises:

(a) contacting an impure hydrocarbon oil feed in a first reaction zone in a riser reactor with particles of hot freshly regenerated noncatalytic sorbent in an amount sufficient to vaporize said oil feed and to result in the depositing of impurities, including asphaltenes and heavy hydrocarbons as well as coke, in said feed on said particles of sorbent;

(b) passing the resulting mixture of vaporized oil feed and particles of sorbent with deposited impurities into a second reaction zone in the same riser reactor and adding particles of hot freshly regenerated cracking catalyst into said secondary zone in an amount to catalytically crack a portion of said vaporized feed, thereby depositing coke on said particles of catalyst and producing cracked oil vapors, said particles of catalyst and said particles of sorbent differing in that said particles of sorbent are one or both of

finer in size and less dense than said particles of catalyst, such as to permit physical separation therebetween;

(c) discharging the resulting mixture of cracked oil vapors, (ii) particles of sorbent with deposit of coke and deposited impurities thereon, and (iii) particles of cracking catalyst with deposit of coke thereon and free of impurities as compared to said sorbent, into a separation zone to separate oil vapors from a mixture of the particles of sorbent and the particles of catalyst and stripping said separated mexture of the particles with gas to remove entrained hydrocarbon therefrom;

(d) passing said mixture of particles of stripped sorbent and stripped catalyst with deposit of coke and impurities to a burning zone to partially oxidize coke, thereby providing a mixture of partially regenerated particles of sorbent and partially regenerated particles of catalyst;

(e) at least partially separating particles of partially regenerated catalyst from particles of partially regenerated sorbent;

(f) fully regenerating said separated particles of catalyst;

(g) separately fully regenerating said separated particles of sorbent; and

(h) passing freshly regenerated sorbent from step (g) into said first reaction zone in step (a), while passing freshly regenerated catalyst from step (f) into said second reaction zone in step (b).

5,059,303

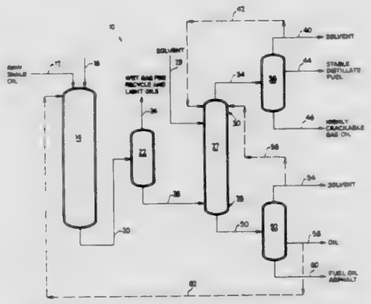
OIL STABILIZATION

James L. Taylor, Naperville, Ill.; Albert L. Hensley, Munster, Ind.; John M. Forgac, Elmhurst, and David F. Tatterson, Downers Grove, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 16, 1989, Ser. No. 367,144

Int. Cl.[5] C10G *43/08*

U.S. Cl. 208—96 **41 Claims**



1. A method for stabilizing an oil fraction comprising hydrocarbons having an initial boiling point of about 200° F. to about 1050° F., said method comprising the steps of:

hydrotreating an oil feedstock comprising an aromatic-containing oil fraction to be stabilized containing at least about 1 weight percent of nitrogen, said oil fraction to be stabilized comprising hydrocarbons having an initial boiling point of about 200° F. to about 1050° F. and a hydrogen-to-carbon atomic ratio of at least about 1.4 in a hydrotreater to reduce the nitrogen content of said fraction to be stabilized to a range of about 200 ppm to about 10,000 ppm and to also reduce the aromatic content of said oil fraction to result in a hydrotreated material liquid yield of greater than 100 percent; and

removing condensed aromatic compounds from at least said oil fraction to be stabilized of said hydrotreated feedstock to yield a stable oil fraction.

5,059,304

PROCESS FOR REMOVING SULFUR FROM A HYDROCARBON FEEDSTREAM USING A SULFUR SORBENT WITH ALKALI METAL COMPONENTS OR ALKALINE EARTH METAL COMPONENTS

Leslie A. Field, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 161,260, Feb. 12, 1988, abandoned, which is a continuation of Ser. No. 734,439, May 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 667,502, Oct. 31, 1984, abandoned. This application Nov. 30, 1988, Ser. No. 277,932

Int. Cl.[5] C10G *61/06*

U.S. Cl. 208—99 **6 Claims**

1. A process for removing sulfur and sulfur compounds from a naphtha feed comprising:

(a) contacting a maphtha feed with a platinum on alumina catalyst in the presence of added hydrogen so as to convert thiophenic or organic sulfur compounds to hydrogen sulfide under mild reforming conditions wherein the temperature is no greater than about 500° C. and the pressure is no greater than about 250 psig; and

(b) contacting the naphtha from step (a) with a sulfur sorbent which comprises a Group I-A or Group II-A metal supported on a porous refractory inorganic oxide support to remove hydrogen sulfide from the naphtha feed.

5,059,305

MULTISTAGE FCC CATALYST STRIPPING

Ajit V. Sapre, W. Berlin, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 509,455, Apr. 16, 1990, abandoned. This application Jan. 30, 1991, Ser. No. 649,280

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—113 **10 Claims**

1. A fluid catalytic cracking process for cracking hydrocarbons comprising the steps of:

(a) cofeeding active hot solid zeolite cracking catalyst and crackable hydrocarbon feed to a cracking zone;

(b) cracking said feed to hydrocarbon products while depositing coke on said catalyst to evolve spent catalyst;

(c) disengaging said spent catalyst from said hydrocarbon products;

(d) flowing said spent catalyst to a regeneration zone;

(e) passing an oxygen-containing gas upwardly through said regeneration zone at sufficient velocity to fluidize said catalyst contained within said regeneration zone;

(f) retaining said catalyst in said regeneration zone at elevated temperature for a time sufficient to effect exothermic oxidative regeneration of said catalyst by burning said coke deposited thereon, thereby heating and reactivating said catalyst;

(g) providing a catalyst stripping zone comprising three superimposed stages, said stages comprising an upper mixing stage, a central dehydrogenation/stripping stage, and a lower steam stripping stage;

(h) mixing spent catalyst of step (c) with regenerated catalyst of step (f) in said upper mixing stage of said catalyst stripping zone;

(i) retaining said mixture of step (h) within said upper mixing stage at elevated temperature for a period of time sufficient to effect desorption of cracked products from said spent catalyst;

(j) flowing said catalyst mixture of step (i) downwardly to said central dehydrogenation/stripping stage;

(k) introducing a stream containing C_2–C_4 alkanes to a lower section of said central dehydrogenation/stripping stage and flowing said stream containing C_2–C_4 alkanes upwardly in countercurrent contact with said catalyst mixture at superficial velocity adequate to maintain said catalyst in a state of sub-transport fluidization, and to strip cracked products from said spent catalyst while providing sufficient contact time between said catalyst mixture and said C_2–C_4 alkane-containing stream to cool said catalyst mixture by endothermically dehydrogenating at least a portion of alkanes present in said central dehydrogenation/stripping stage to evolve a dehydrogenated product stream;

(l) flowing said cooled catalyst mixture of step (k) from said central dehydrogenation/stripping stage downwardly to said lower steam stripping stage and flowing said dehydrogenated product stream upwardly to said upper mixing stage;

(m) introducing steam to a bottom portion of said lower steam stripping stage and flowing said steam upwardly at superficial gas velocity sufficient to fluidize said catalyst mixture and to countercurrently steam strip said downwardly flowing catalyst mixture to remove hydrocarbons from said catalyst mixture;

(n) withdrawing steam and stripped hydrocarbons from an upper portion of said lower steam stripping stage to prevent substantial flow of steam and stripped hydrocarbons upward from said lower steam stripping stage to said central dehydrogenation/stripping stage and further to minimize steam deactivation of said zeolite cracking catalyst within said catalyst cooling/stripping zone.

5,059,306

PROCESS FOR REMOVING PURE AROMATICS

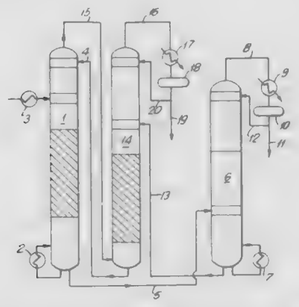
Hans-Joachim Krämer, Dormagen; Bruno Schulwitz, Cologne; Werner Horlitz, Dormagen; Peter M. Lange, Leverkusen, and Alfred Mitschker, Odenthal-Holz, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 221,808, Jul. 20, 1988. This application Jun. 21, 1990, Ser. No. 541,555

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1987, 3725228

Int. Cl.[5] C10G *7/08*

U.S. Cl. 208—313 **6 Claims**



1. In a process for removing aromatics from hydrocarbon mixtures by extraction with a selective solvent, said extraction being a liquid-phase extraction or extractive distillation, the improvement wherein the liquid-phase extraction or extractive distillation is carried out in the presence of solid base resins for ion exchangers said resins being styrene-divinylbenzene bead polymers containing 2–85% by weight of divinylbenzene.

5,059,307

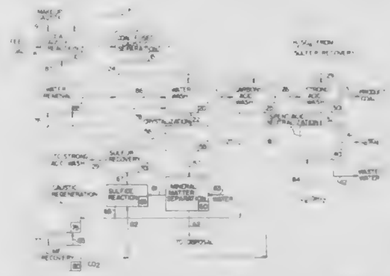
PROCESS FOR UPGRADING COAL

Robert A. Meyers, Tarzana; Walter D. Hart, Upland; Leslie J. Van Nice, deceased, late of, Manhattan Beach, all of Calif. by Norma R. Van Nice, executor , and Leslie J. Van Nice, heir, Coos Bay, Oreg., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 770,324, Aug. 27, 1985, abandoned, which is a continuation-in-part of Ser. No. 486,976, Mar. 10, 1983, Pat. No. 4,545,891, which is a continuation-in-part of Ser. No. 349,514, Mar. 31, 1981, Pat. No. 4,445,756. This application Oct. 11, 1989, Ser. No. 419,659

Int. Cl.[5] C10G *1/00*

U.S. Cl. 208—404 **32 Claims**



1. A process for reducing the sulfur content and ash content of a feed coal containing sulfur and mineral matter, the processing comprising the steps of:

(a) treating the feed coal in a reaction zone with fused alkali-metal caustic at an elevated temperature to remove mineral matter and sulfur from the feed coal, yielding a caustic-treated coal containing chemically bound alkali;

(b) subsequent to step (a), washing the caustic-treated coal with water to yield water-washed coal and a caustic-rich water;

(c) subsequent to step (b), washing the water-washed coal with carbonic acid for releasing chemically bound alkali from the water-washed coal to yield carbonic acid-washed coal and an alkali metal carbonate solution; and

(d) subsequent to step (c), washing the carbonic acid-washed coal with an acid stronger than the carbonic acid to yield (i) product coal having a sulfur content lower than the sulfur content of the feed coal and an ash content lower than the ash content of the feed coal, and (ii) spent acid.

5,059,308

INSTALLATION FOR PROCESSING RAW FRUIT, PARTICULARLY PLUMS

Gaston Petit, Cergy, and Daniel Monteiro, Laroque Timbaut, both of France, assignors to Auximat-Levage, Marines, France

Filed Jun. 30, 1988, Ser. No. 213,799

Claims priority, application France, Nov. 5, 1986, 86 15415

Int. Cl.[5] A23N *12/06*; B07B *13/065*

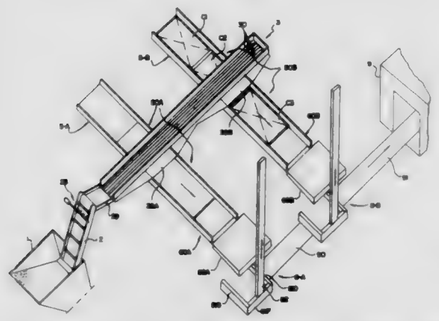
U.S. Cl. 209—10 **6 Claims**

1. An apparatus for processing of raw fruit, more particularly plums, comprising:

a receiving tank for raw plums in bulk form having means for washing said plums, an elevator belt for lifting washed plums from the tank and providing drainage of water from said plums, a sizing device which receives raw plums from the elevator belt and feeds said plums along a path to at least two raw plum outlets on said sizing device and spaced axially along said path, a tray-carrying chain passing under each of said outlets for receiving raw plums discharged from said outlet;

said tray-carrying chain under each outlet having means for conveying said trays on said each tray-carrying chain, one

tray behind the other, so that said trays pass under said each outlet of said sizing device, said each outlet tray-carrying chain further having a means for receiving trays from said tray conveying means and conveying said re-



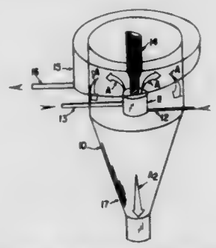
ceived trays at a speed more rapid than said trays are conveyed on said conveying means, said tray receiving means including means for transferring said tray, one tray after another and stacking said transferred trays on a cart carried on a platform elevator.

5,059,309

ULTRASONIC FLOTATION SYSTEM

Cy E. Jordan, Tuscaloosa, Ala., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 21, 1990, Ser. No. 541,689
Int. Cl.[5] B03D *1/14, 1/24*
U.S. Cl. 209—164 **8 Claims**



1. A process of using an ultrasonic flotation cell to separate hydrophobic particles form hydrophilic particles contained in an ore pulp, said cell comprising cell means and a vertically disposed cylindrical chamber that forms a mixing chamber and defines a bubble particle contact region that is disposed within said cell means, said cell means forms a bubble-pulp separation region to obtain improved flotation speeds and metal recovery values while reducing power consumption requirements comprising:

feeding air through a conduit that enters a lower portion of said mixing chamber; feeding said ore pulp through a conduit entering a higher portion of said mixing chamber above said air feeding conduit;

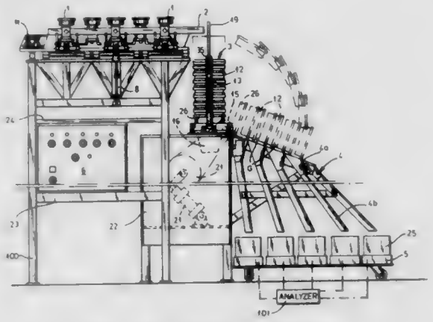
positioning an ultrasonic transducer probe above an outlet aperture in a top portion of said mixing chamber where slurry exits to said bubble pulp separation region; subjecting said bubble particle contact region in said mixing chamber to said ultrasonic probe for concentrating an effective amount of ultrasonic power in from about 1 to about 3% of the cell volume on the ore pulp in said mixing chamber to quickly attach hydrophobic particles to bubbles by creating micro-agitation to collide said hydrophobic particles and said bubbles and disperse the particles throughout a slurry in said mixing chamber and cause cavitation of fluid at particle surfaces to precipitate dissolved air upon hydrophobic particle surfaces; and separating air bubbles attached to hydrophobic particles as they rise to a top portion of said cell means as froth from hydrophilic particles not attached to said bubbles that settle and exit through a bottom of said cell means as a tailings.

5,059,310

ANALYTICAL SIEVE APPARATUS

Manfred Fischer; Horst Peterling, both of Remscheid; Johannes Kaiser, Dormagen; Klaus Keuser, Frechen-Buschbell, and Wilhelm Wüst, Troisdorf-Spich, all of Fed. Rep. of Germany, assignors to Rhewum GmbH, Remscheid and Quarzwerke GmbH, Frechen, both of, Fed. Rep. of Germany

Filed Aug. 29, 1990, Ser. No. 574,347
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1989, 3928872
Int. Cl.[5] B07B *1/28, 1/46, 1/54;* **G01N** *15/02*
U.S. Cl. 209—237 **20 Claims**



1. An analytical sieve apparatus, comprising:

a machine frame;

a vertical set of sieves mounted on said frame above a sieve tray, said sieves having downwardly decreasing sieve-passing screening apertures for collecting on said sieves and in said tray portions of a particulate material delivered to said set in accordance with a particle-size distribution of said particulate material;

lifting means on said frame for lifting said sieves from one another and from said tray to form an expanded assembly of said sieves;

tilting means on said frame for tilting said assembly together with said lifting means about a horizontal axis to discharge downwardly the portions of said particulate material on said sieves and said tray; and

collecting means at said frame and including a respective collector assigned to each of said sieves and said tray for receiving individually the respective portions of said particulate material.

5,059,311

METHOD AND APPARATUS FOR SEPARATING PARTICULATE SOLIDS

John M. Ganz, 346 S. Pennsylvania Ave., Wellston, Ohio 45692

Filed Jul. 26, 1988, Ser. No. 224,447
Int. Cl.[5] B03B *5/22, 5/24*
U.S. Cl. 209—455 **35 Claims**

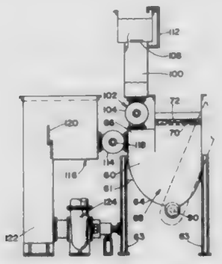
1. An apparatus for separating particulate solids according to differences in their specific gravities through the use of water generated pulsation cycles, comprising:

at least one separation cell having a pulse chamber that receives water that generates a water pulsation, a water

chamber for transferring the generated water pulsation, a perforated screen support for supporting particulate solids, and a separation chamber for separating the particulate solids according to differences in their specific gravities, wherein said pulse chamber, said water chamber, and said separation chamber are in fluid communication with one another through the perforations of said perforated screen support;

means for feeding the particulate solids to be separated onto said perforated screen support;

at least one water holding means extending laterally of and above said pulse chamber, wherein said water holding means is exposed to the surrounding atmosphere and stores unused water accumulated from previous pulsation cycles and water supplied at a preset rate from a water supply means to produce a water column possessing a gravitational pressure head that is fluctuating and responsive to changing conditions in the bed of particulate solids, with the gravitational pressure head increasing as the bed of particulate solids becomes heavier, and with the gravitational pressure head decreasing as the bed of particulate solids becomes lighter;



an inflow means connected between said water holding means and said pulse chamber for permitting the inflow of said stored water from the water holding means into the pulse chamber, thereby allowing for the stored water from the water holding means to enter into the pulse chamber to produce a water pulsion in the separation cell whenever the gravitational pressure head of the stored water from the water holding means is sufficient to overcome the resistance of the particulate solids supported on the screen support, with the intensity of the water pulsion fluctuating and responsive to changing conditions in the bed of particulate solids, responding in due course to a heavier bed of particulate solids with more intense water pulsions, and responding in due course to a lighter bed of particulate solids with less intense water pulsions;

an outflow means connected laterally of or below said pulse chamber of said separation cell for permitting the outflow of water from the separation cell, wherein, said outflow means is regulated alternately to said inflow means to produce water pulsations in the separation cell; and,

means for removing the separated solids produced by the water pulsations from the separation cell.

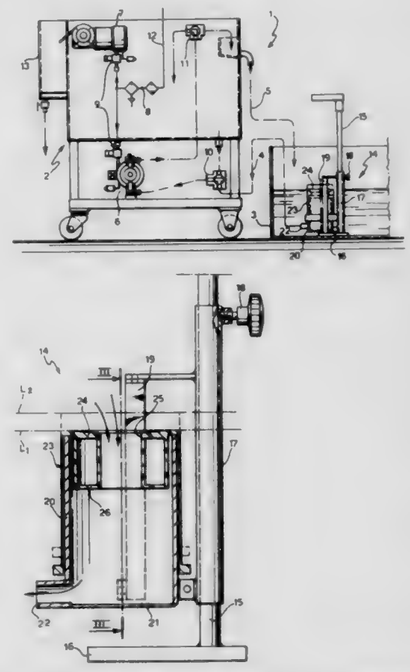
5,059,312

SKIMMING DEVICE FOR OIL-EXTRACTION EQUIPMENT FOR TANKS OF COOLANT FLUIDS WITH OIL IN SUSPENSION

Alfonso Galletti, Turin, Italy, assignor to GI. PI. S.r.l., Turin, Italy

Filed Aug. 8, 1990, Ser. No. 564,477
Claims priority, application Italy, Aug. 8, 1989, 67694 A/89
Int. Cl.[5] C02F *1/40*
U.S. Cl. 210—122 **3 Claims**

1. A skimming device for an oil-extraction equipment for a tank containing a coolant liquid with oil in suspension and including an intake pump, said skimming device comprising a stand (**15**) inserted in the tank (**3**) and carrying a support (**17, 18, 19**) which is adjustable in height and to which an upwardly-open, hollow, cylindrical body (**20**) with a vertical axis is fixed, the cylindrical body having a lateral wall which forms an axially elongated guide and defines a cavity, the cylindrical body (**20**) further having intake connector (**22**) at its lower end for connection to the intake pump (**6**) of the oil-extraction equipment (**1**) and being immersed in the coolant liquid in the tank (**3**), and a float member (**23**), having a side wall whose shape is complementary to that of the cylindrical body (**20**), being mounted for axial, telescopic sliding over the lateral wall



of the cylindrical body (**20**) and having an upper wall (**24**) with a central aperture (**25**) communicating with the cavity of the cylindrical body (**20**) and which positions itself at a level (L_1, L_2) for skimming the suspended oil from the coolant liquid in the tank (**3**) in order to enable the suspended oil to pass towards the intake connector (**22**),

wherein the upper wall (**24**) is formed with an annular air chamber (**26**) which is coaxial with the central aperture (**25**) and projects into the cavity of the cylindrical body (**20**).

5,059,313

CONVEYOR RAKE SIEVE WITH HOOK-LIKE PLATES

Helmut Etschel, and Hermann Wirth, both of Hof, Fed. Rep. of Germany, assignors to E+M Maschinenbau, Fed. Rep. of Germany

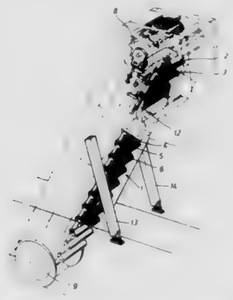
Filed Mar. 27, 1990, Ser. No. 499,757
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910464
Int. Cl.[5] B01D *33/048*
U.S. Cl. 210—155 **13 Claims**

1. A separating apparatus for sewage clarification plants comprising:

a strainer rake having a plurality of rake sieve sections connected in series, each rake sieve section having adjacently

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disposed hook-like plates, each hook-like plate comprising an outward hook portion with a front edge and a rear edge, and a hook projecting from said hook portion, the thickness of said hook portion decreasing from said front edge towards the rear edge,



upper and lower reversing means for guiding said strainer rake, said strainer rake being movable around said upper and lower reversing means, and

a stationary cleaning comb adapted to engage said strainer rake sieve sections from said front edges of said hook-like plate portions.

5,059,314

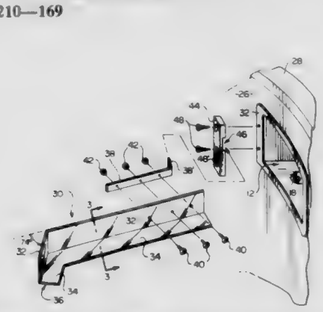
POOL SKIMMING APPARATUS

Bruce W. Beckman, 212 Roxanne Ave., N. Syracuse, N.Y. 13212

Filed Sep. 27, 1990, Ser. No. 588,726

Int. Cl.[5] E04H *3/16, 4/12*

U.S. Cl. 210—169 **3 Claims**



1. Apparatus for diverting a portion of the top surface of circulating pool water into the water inlet port of a pool filtering system, said apparatus comprising:

a) a skimmer arm having two elongated, planar walls disposed at substantially a 90° angle to each other along respective long edges thereof with one of said planar walls being vertically positioned and the other being horizontally positioned, and said planar walls forming a bend at a first end of said skimmer arm; and

b) means for releasable attachment of a second end of said skimmer arm to a vertical side of said water inlet port, said means comprising:

i) an elongated bar fixedly mounted at said second end on the surface of the vertically positioned said planar wall facing away from the horizontally positioned said planar wall, said bar having a terminal length thereof extending away from said surface at a substantially 90° angle therefrom; and

ii) an elongated mounting bracket including means for fixed attachment to said vertical side of said water inlet port, said bracket including a slot for releasably receiving said bar terminal length such that said skimmer arm extends along the surface of said circulating pool water in a direction away from said water intake port when releasably attached to said bracket, said circulating water which impinges upon said planar walls being directed therealong and into said water intake port.

5,059,315

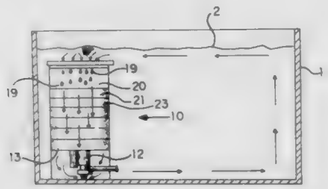
AQUARIUM WATER AERATION AND FILTERING SYSTEM

Saverio Senape, 215 W. 92nd St., New York, N.Y. 10025

Continuation-in-part of Ser. No. 340,786, Apr. 20, 1989, abandoned. This application Oct. 13, 1989, Ser. No. 420,886

Int. Cl.[5] C02F *9/00*

U.S. Cl. 210—169 **4 Claims**



1. A self-contained aquarium apparatus for maintaining stable parameters of aquarium water in an aquarium that sustains diverse aquatic species which comprises a casing having a top cover including a plurality of fine apertures therein and a bottom section defining a sump chamber having an opening communicating with the aquarium, a filtering cartridge having a plurality of filtering layers vertically disposed atop the sump chamber and in fluid communication with said sump chamber, a degasification chamber disposed adjacent the top cover and in fluid communication with said filtering cartridge, and a centrifugal pump secured within said sump chamber, wherein said casing containing the degasification chamber, filtering cartridge and sump chamber is completely immersed within the aquarium water and upon activation of the centrifugal pump, water from the top region of the aquarium is drawn through said fine apertures where the water is dispersed into droplets that fall through said degasification chamber and then passes through said filtering cartridge into said sump chamber where purified and aerated water is collected before entering the bottom region of the aquarium.

5,059,316

WATER TREATMENT DEVICE

Michael B. Renton, 31 4th Avenue, Parktown North, Johannesburg 2193, South Africa

Filed May 25, 1989, Ser. No. 356,894

Claims priority, application South Africa, May 25, 1988, 88/3752

Int. Cl.[5] C02F *1/50*

U.S. Cl. 210—198.1 **21 Claims**

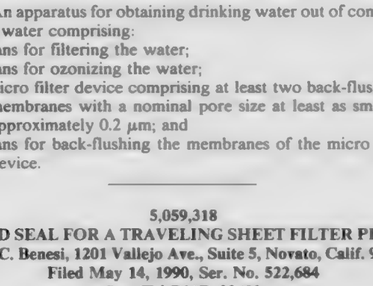
1. A water treatment device for treating water in a water containment comprising

a. a container having a top portion, sides and a base,

b. buoyancy means within the container giving a buoyancy to the water treatment device such that when the container contains a predetermined amount of water treatment material, the container will sink to the bottom of the water containment while the container will float on the surface of the water when it does not contain any water treatment material or only a small amount of such water treatment material,

c. support means located at the periphery of the container to support the container off the bottom of the water containment, said support means having openings therethrough to permit the flow of water between the container and the bottom of water containment,

d. a projection on the center portion of the base extending



below the level of the support means so that the water treatment device may rock slightly on movement of water therearound, the support means limiting the amount of such rocking movement.

5,059,317

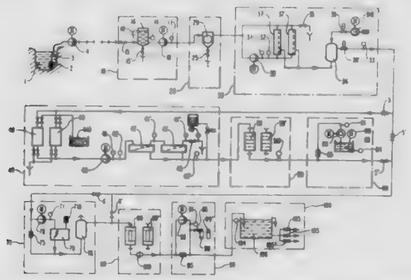
TRANSPORTABLE APPARATUS FOR PRODUCING DRINKING WATER

Dietrich Marius, Uferstrasse 9, A-5201 Seekirchen; Erich Müeller, Geismayerstr. 7; Christian Atzmüeller, Muellner Hauptstrasse 17/5, both of A-5020 Salzburg; Walter Doubrawa, Lindonhofstrasse 19, A-5162 Obertrum am See; Helmut Irauscheck, Koestendorferstrasse 52, A-5204 Strasswalchen, and Werner Meierhofer, Egon Schile Weg 6, A-5020 Salzburg, all of Austria

Filed Oct. 2, 1989, Ser. No. 416,247

Int. Cl.[5] C02F *9/00*

U.S. Cl. 210—202 **12 Claims**



1. An apparatus for obtaining drinking water out of contaminated water comprising:

means for filtering the water;

means for ozonizing the water;

a micro filter device comprising at least two back-flushable membranes with a nominal pore size at least as small as approximately 0.2 μm; and

means for back-flushing the membranes of the micro filter device.

5,059,318

FLUID SEAL FOR A TRAVELING SHEET FILTER PRESS

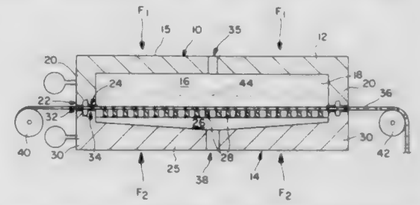
Steve C. Benesi, 1201 Vallejo Ave., Suite 5, Novato, Calif. 94945

Filed May 14, 1990, Ser. No. 522,684

Int. Cl.[5] B01D *29/09*

U.S. Cl. 210—227 **9 Claims**

1. In a slurry filtering device for filtering a slurry at a pressure above atmospheric pressure comprising at least a pair of upper and lower plate members with a sheet of porous media therebetween, said upper and lower plate members having recessed portions defining respective chamber areas and being movable together to form a closed chamber within said filtering device, means for providing input liquid slurry to said closed chamber at a pressure above atmospheric pressure, said upper member having a cover portion with an opening into said chamber for receiving said slurry to be filtered, peripheral sidewalls extending from the periphery of said cover portion of said upper plate member to define an upper portion of said closed chamber, said peripheral sidewalls defining a lower edge of said upper plate member, and said lower member having a bottom portion and peripheral walls defining an upper edge of said lower plate member to define a lower portion of said closed chamber, said upper edge of said lower plate member being positioned to support said peripheral sidewalls of said upper member, recessed areas within said lower plate member for trapping liquids passing through said sheet of porous media and extracted from said slurry, and an exit port from said lower plate member for removing said liquid extracted from said slurry in said closed chamber, and means for pressing said upper and lower plate members toward each other to mate said lower edge of said upper plate member and said upper edge of said lower plate member to establish said closed chamber and to secure said porous media between said plate members, the improvement in sealing the mating surfaces between said upper and lower plate members comprising:



a) said lower edge of said peripheral sidewalls of said upper plate member having a finite width sealing surface extending toward the interior of said chamber area of said upper plate member, said sealing surface extending along the entire lower edge of said upper plate member,

b) an open groove in said sealing surface of said upper plate member at said finite width and extending around the entire periphery of said sealing surface,

c) fluid passage means connected to said open groove in said sealing surface of said upper plate,

d) said upper edge of said lower plate member having a finite width sealing surface extending toward the interior of said chamber area of said lower plate member, said sealing surface extending along the entire upper edge of said lower plate member,

e) an open groove in said sealing surface of said lower plate member at said finite width and extending around the entire periphery of said sealing surface, said open groove in said lower plate member being positioned to be aligned with said open groove in said upper plate member,

f) fluid passage means connected to said open groove in said sealing surface of said lower plate member,

fluid supply means connected to said fluid passage means in said upper and lower plate members for supplying fluid at a higher pressure to the open groove in said upper plate member than to the open groove in said lower plate member.

5,059,319

PAINT CAN STRAINER COVER

Matthew J. Welsh, 33 Mt. Vernon Rd., Columbia, N.J. 07832

Filed Dec. 24, 1990, Ser. No. 633,059

Int. Cl.[5] B01D *25/00*

U.S. Cl. 210—232 **16 Claims**

7. A strainer for paint and other liquid products, mounted on

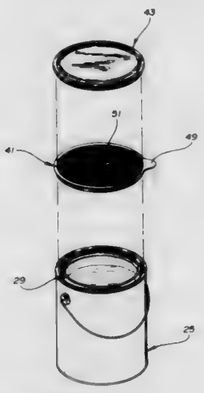
a standard commercial paint can having a lid well, comprising in combination:

a) a strainer having:

(i) a semi-flexible ring with a shaped cross-section contoured and adapted to removably engage said lid well of said standard commercial paint can;

(ii) a piece of mesh material having approximately the same perimeter as said ring, wherein said mesh material extends across the opening of said ring and its periphery is fixedly attached to said ring; and

(iii) a fastening means for fixedly attaching said mesh material to said ring; and



b) a paint can comprising:

(i) a substantially planar bottom;

(ii) at least one wall wherein said wall fixedly attaches to all peripheral points of said bottom and extends upwardly to a rim, forming a container for liquid;

(iii) a lid well fixed at the end of said wall opposite from where said bottom attaches, said well running substantially around the length of said rim; and

(iv) a substantially planar lid having a downwardly extended contour, said contour shaped and located to complement, and engage, said lid well.

5,059,320

LOCKING STRUCTURE OF WIRE ROD FOR FILTER ELEMENT

Koichi Arai, Kanagawa, Japan, assignor to Arai Corporation, Japan

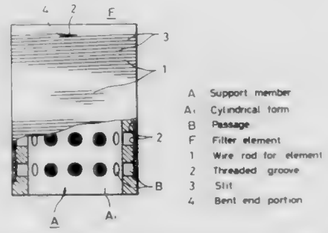
Filed Dec. 5, 1989, Ser. No. 446,082

Claims priority, application Japan, Dec. 7, 1988, 63-15829

The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.

Int. Cl.[5] B01D *27/06, 29/05*

U.S. Cl. 210—232 **21 Claims**



1. A locking structure of a wire rod for a filter element including:

a) a support member formed in the shape of a hollow cylinder and having passages into and out of said support member, said support member further including:

i) an inner and an outer peripheral surface, and

ii) a threaded grove formed on said inner or outer peripheral surface,

b) a wire rod having at least one bent end portion and a desired cross-section wound around said support member to form a continuous spiral groove between each winding of said wire rod; and

c) at least one locking hole formed on said support member to receive said bent portion of said wire rod, said locking hole being of a slightly smaller diameter than the diameter of said wire rod.

5,059,321

DEVICE FOR EXPRESSING PLANT MATTER, PARTICULARLY FOR RE-PRESSING SUGAR-BEET CHIPS

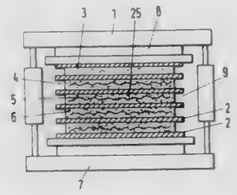
Albert Bähr, Am Hungerberg 10, D-6682 Ottweiler 2, Fed. Rep. of Germany

Filed May 11, 1990, Ser. No. 521,864

Claims priority, application Fed. Rep. of Germany, May 13, 1989, 3915738; Apr. 23, 1990, 4012920

Int. Cl.[5] B30B *9/24*

U.S. Cl. 210—386 **41 Claims**



1. A device for compressing plant matter comprising:

at least one filter cloth have distributed thereon a thin layer of the plant matter, the filter cloth enclosing the plant matter to form a plurality of superimposed plies;

a loading means for distributing the matter to be pressed in thin layers of approximately 10 mm thickness onto the filter cloth; and

a press platen means and a press crown means forming a press with a press opening for applying a substantially high pressure between the plurality of superimposed plies of filter cloth and plant matter,

wherein a plurality of filter cloths is provided having distributed thereon each a thin layer of the plant matter, wherein the plurality of superimposed plies include the plurality of filter cloths with the plant matter being enclosed between each two individual filter cloths, wherein the press platen means and the crown means are substantially flat, rectilinear and horizontal, and

wherein the superimposed plies formed by the filter cloths and the plant matter are fed rectilinearly and horizontally through the press opening and into the press formed between the press platen means and the crown means to thereby crush the plant matter.

5,059,322

APPARATUS FOR DEWATERING SLUDGE

Eric P. Austin, Sandbach, England, assignor to Simon-Hartley Limited, Stoke-on-Trent, England

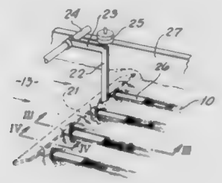
Filed Apr. 25, 1990, Ser. No. 514,293

Claims priority, application United Kingdom, Apr. 26, 1989, 8909463

Int. Cl.[5] B01D *33/46*

U.S. Cl. 210—396 **4 Claims**

1. Apparatus for dewatering sludge comprising a moving foraminous conveying belt driven in a single direction and arranged with a substantially horizontal conveying run having input and output ends, means for feeding sludge onto the belt at the input end of the conveying run so that liquid in the sludge may drain through the belt during conveyance, at least one inclined ramp disposed above the belt at a position between the input and output ends thereof and sloping upwardly in a direction towards said output end from a level on or adjacent the conveying surface thereof, for restricting forwards movement of the sludge and for causing the sludge to leave the belt and rise up the ramp before falling from an upper edge thereof towards said output end onto the belt, and a plurality of spaced fingers spaced above said belt and extending from an upper edge region of the ramp in the direction of conveyance by a distance sufficient to prevent sludge which advances onto the fingers from falling immediately back onto the belt beneath the fingers.



5,059,323

SELF-CLEANING VACUUM FILTER WITH PERMANENT, ENDLESS FILTER MEDIA PARTICULARLY FOR INDUSTRIAL LUBRICATING AND COOLING LIQUIDS

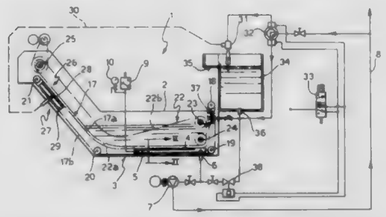
Alfonso Galletti, Turin, Italy, assignor to GI.PI. S.r.l., Turin, Italy

Filed Jul. 5, 1990, Ser. No. 548,539

Claims priority, application Italy, Jul. 5, 1989, 67555 A/89

Int. Cl.[5] B01D *33/056*

U.S. Cl. 210—400 **7 Claims**



1. A self-cleaning vacuum filter, particularly for industrial lubricating and cooling liquids, including a tank for the liquid to be filtered having a bottom wall, a vacuum chamber and a filter bed within the tank, said filter bed including a screen placed above the vacuum chamber and an endless loop of regenerable filter fabric having a return pass and side edges, return rollers disposed in engagement with an inner surface of the endless loop of filter fabric for supporting the endless loop of filter fabric, means for drawing the liquid through the filter bed, a station for the removable of the filtered material emerging from the tank, and motor-driven entrainment means for moving the said filter fabric in steps over the screen and through the said removal station, wherein the vacuum chamber with the filter bed is submersed in the liquid within the tank adjacent the bottom wall of the tank, the endless loop of filter fabric is also placed adjacent the bottom wall of the tank and passes over the return rollers with its return pass extending beneath the vacuum chamber from the removal station to the filter bed, said return rollers being disposed only in engagement with an inner surface of the loop, whereby in use the surface of the endless loop on which the filtered material is deposited always faces outwardly of the loop, and wherein pressure means for keeping the side edges of the filter fabric substantially in sealing contact with the corresponding sides of the screen of the filter bed are provided in the tank above the said filter fabric, said pressure means being comprises of a pair of endless entrainment chain means disposed above said endless loop of filter fabric in contact with said side edges of said fabric.

5,059,324

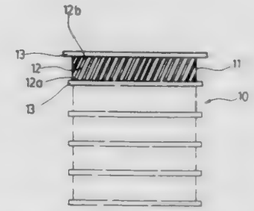
CENTRIFUGAL PULP SCREEN

Tzau-Ha Chen, No. 3, Pei-Shan Chuang, Fu-Chu Tsun, Ta-Aa Hsiang, Taichung Hsien, Taiwan

Filed Nov. 15, 1990, Ser. No. 612,971

Int. Cl.[5] B07B *1/20*

U.S. Cl. 210—413 **2 Claims**



1. A centrifugal pulp screen including a vertical rotor, a cylindrical screen member around said rotor, said cylindrical screen member having a plurality of parallel radial through-holes located in separate parallel tiers, each of said through-holes has an inner end, an outer end, a constricted intermediate portion, and a cross-section elongated in a direction transverse to a horizontal line and inclined at an angle with respect to a vertical line, each of said through-holes further having a lower end and an upper end, said lower end leading said upper end with respect to the direction of rotation of said rotor.

5,059,325

TUBULAR COFFEE FILTER WITH VERTICAL FOLD LINES

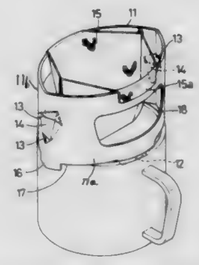
Motoyori Iida, Itami, Japan, assignor to Japan I. P. Co., Ltd., Amagasasaki, Japan

Filed May 29, 1990, Ser. No. 530,173

Claims priority, application Japan, Jun. 7, 1989, 1-67123[U]

Int. Cl.[5] B01D *29/085*

U.S. Cl. 210—474 **1 Claim**



1. A filter for hot beverage comprising: a filter body made of

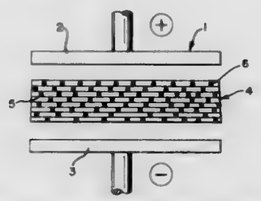
bendable sheet material and having a tubular shape and having two vertical fold lines diametrically opposite each other on said tubular shape so as to be collapsible along said vertical fold lines and to define side portions extending between said fold lines, said filter body being provided with a pair of cuts or cutouts across each fold line to form a tongue portion therebetween, said filter body being openable by urging said fold lines toward each other and said tongue portions being bendable inwards to hold the filter in an open oval state, and a bag member made of filter paper and having the top edge along both sides thereof bonded to side portions of said filter body.

5,059,326

FLUID FILTER AND METHOD OF MANUFACTURE

Hans A. Haerle, Bopfingen, Fed. Rep. of Germany, assignor to Schwaebische Huettenwerke GmbH, Fed. Rep. of Germany

Filed Aug. 9, 1990, Ser. No. 565,817
Int. Cl.[5] B01D *29/03*
U.S. Cl. 210—491 **29 Claims**



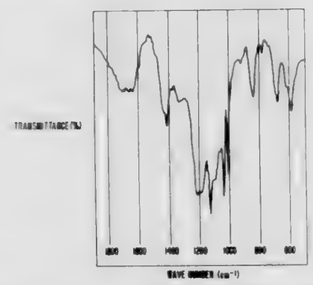
1. A process for manufacturing a filter for liquid or gaseous media, such as exhaust gases of combustion engines, which includes at least one filter plate made out of a mesh of metal wire, comprising the steps of positioning a plurality of layers of wire between the electrodes of a resistance welding unit, pressing the wires of the layers onto one another, providing an alternative to sintering by resistance welding the pressed wires of adjacent layers for at least a partial connection of the pressed wires to one another to form a multilayer filter plate structure, and transforming the resulting multilayer filter plate structure into a desired filter plate form and shape.

5,059,327

CROSS-LINKED SEPARATION MEMBRANE AND PROCESS FOR PERVAPORATION

Shinsuke Takegami, Ohtsu, Japan, assignor to Director-General, Agency of Industrial Science and Technology, Tokyo, Japan

Filed Aug. 25, 1987, Ser. No. 89,180
Claims priority, application Japan, Aug. 26, 1986, 61-198044
Int. Cl.[5] B01D *3/00, 13/00*
U.S. Cl. 210—500.34 **15 Claims**



1 A separation membrane for pervaporation which comprises an intermolecular crosslinked reaction product of a mixture consisting essentially of a polyvinyl alcohol or polyvinyl alcohol copolymer and a polystyrene sulfonic acid or polystyrene sulfonic acid copolymer.

5,059,328

SEPARATION AGENT COMPRISING 1,3-GLUCAN

Tohru Shibata; Hajime Namikoshi, and Ichiro Okamoto, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 432,557, Nov. 6, 1989, Pat. No. 5,002,669, which is a division of Ser. No. 316,648, Feb. 28, 1989, Pat. No. 4,897,198, which is a division of Ser. No. 8,114, Jan. 23, 1987, Pat. No. 4,830,752, which is a continuation of Ser. No. 716,734, Mar. 27, 1985, abandoned. This application Jan. 10, 1991, Ser. No. 639,519
Claims priority, application Japan, Mar. 30, 1984, 59-62661
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 **9 Claims**

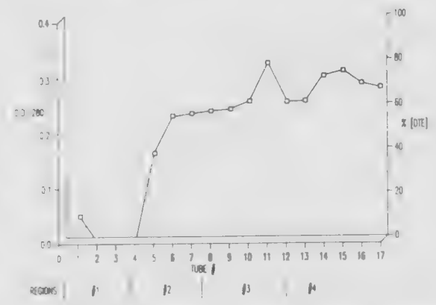
1. A method of separating an optical isomer from a racemic modification thereof, which comprises contacting said racemic modification with a 1,3-glucan derivative, under chromatographic separation conditions effective to separate said optical isomer, said derivative being a compound in which at least 85% of the total hydroxyl groups of a 1,3-glucan have been replaced by a substituent which is bonded to said 1,3-glucan by a thioester bond, said substituent being selected from the group consisting of aliphatic groups having 2 to 10 carbon atoms, alicyclic groups having 4 to 10 carbon atoms, aromatic groups having 6 to 20 carbon atoms and heteroaromatic groups having 4 to 20 carbon atoms; and recovering said optical isomer.

5,059,329

METHOD FOR ISOLATING DITHIOCHROME, AN INSULIN-BINDING MOLECULE WITH GLUCOSE METABOLISM-RELATED PHARMACEUTICAL UTILITY

Scott King, San Francisco, Calif., assignor to Thymax Corporation, San Francisco, Calif.

Filed Sep. 19, 1989, Ser. No. 409,546
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—656 **5 Claims**



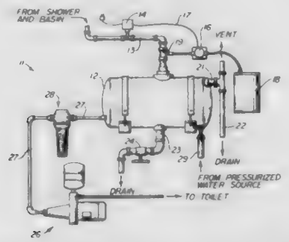
1. A process for obtaining a purified material possessing glucose tolerance factor activity, comprising:
(i) contacting a eukaryotic cell mass with a mixture of water and an alcohol;
(ii) separating the alcohol phase from the water phase and isolating a water phase extract;
(iii) applying the water phase extract to sulfhydryl exchange chromatography matrix;
(iv) washing said chromatography matrix; and
(v) treating said chromatography matrix with a solution of a reducing agent to obtain a material possessing glucose tolerance factor activity and capable of binding with insulin.

5,059,330

GRAY WATER RECLAMATION METHOD AND APPARATUS

Donald O. Burkhardt, 4265 N. Mountain Rd., Marietta, Ga. 30066

Filed Apr. 2, 1990, Ser. No. 503,528
Int. Cl.[5] E03D *5/016*
U.S. Cl. 210—744 **6 Claims**



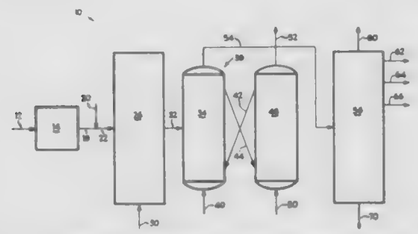
1. An apparatus for cleansing gray water and reclaiming the cleansed water for reuse with said apparatus comprising:
a receptacle for receiving and containing gray water;
conduit means for delivering gray water to said receptacle;
means for extracting floating contaminants from the surface of gray water within said receptacle;
means for extracting precipitated contaminants from the bottom of gray water within said receptacle;
means for drawing cleansed gray water from said receptacle for reuse; and
a first shutter valve means within said receptacle for selectively isolating floating contaminants from gray water within said receptacle for extraction.

5,059,331

SOLIDS-LIQUID SEPARATION

Shri K. Goyal, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 6, 1990, Ser. No. 489,368
Int. Cl.[5] B01D *29/52*
U.S. Cl. 210—748 **32 Claims**



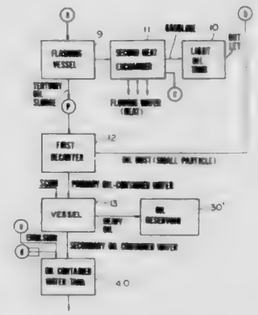
20. A method for treating a solids-containing liquid feed comprising the steps of:
passing said solids-containing liquid feed at a temperature of greater than 150° F. through a first solids-liquid separator unit containing a solids-liquid separation element effective to separate specified solids from said feed to form a stream comprising liquid substantially free of said specified solids, during which passage said separation element becomes fouled with matter comprising solids separated from said feed; and
cleaning the fouled separation element of said first separation unit to effect removal therefrom of solids fouling said element by a cleaning method comprising the steps of applying ultrasonic energy by means of at least one magnetostrictive ultrasonic transducer to the fouled separation element in situ in said first separator unit associated with said element while said element is immersed in a liquid in said first unit and backflushing the fouled separation element with a backflush liquid, said cleaning step occurring while additional quantities of said feed are passed through a parallel second said unit containing a second said element effective to separate said specified solids from said additional quantities of said feed to form an additional liquid substantially free of said specified solids-comprising stream.

5,059,332

METHOD AND DEVICE FOR TREATING OIL SLUDGE AND OIL-CONTAINING WASTE WATER

Yukimasa Satoh, 5-22 Jindaiji-higashimachi 6-chome, Chofu City, Tokyo, Japan

Filed Oct. 3, 1990, Ser. No. 592,274
Claims priority, application Japan, Apr. 9, 1990, 2-92295
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—771 **12 Claims**



1. A method of treating an oil sludge and an oil-containing waste water, comprising the steps of heating a mixture of said oil sludge and said oil-containing waste water to give a fluidity thereto; feeding said mixture to a flashing vessel having an inner pressure maintained less than atmospheric pressure to vaporize off a part of the water and a light oil and to obtain a sludge containing an oil-containing dust, a heavy oil component and residual water; cooling a vapor of said part of water and said light oil to condense said vapor and separate said part of water from said light oil and recovering said part of water and said light oil; separating said sludge into said oil-containing dust and a primary oil-containing water comprised of said heavy oil component and said residual water by means of a first centrifugal separator; separating said primary oil-containing water into said heavy oil component and said residual water as a secondary oil-containing water by means of a second centrifugal separator and recovering said heavy oil component; washing said oil-containing dust separated by said first centrifugal separator with a washing liquid to elute oil attached to said oil-containing dust into said washing water and thereby obtain an oil-free dust and an emulsion; separating said oil-free dust from said emulsion by means of a third centrifugal separator; washing said oil-free dust with an acidic water, then washing said oil-free dust with an alkaline water, and finally washing said oil-free dust with a neutral water to obtain a waste washing water containing said oil-free dust; separating said dust from said waste washing water by means of a fourth centrifugal separator to recover said dust; adding a pH adjusting liquid to a mixture of said secondary oil-containing water, said emulsion and said waste washing water to adjust a pH value of said mixture; electrolyzing said mixture after adjustment of the pH value in an electrolytic cell to separate the same into a scum containing said emulsion generated at an upper portion of said electrolytic cell, a sedimented substance containing a metal hydroxide collected at a lower portion of said electrolytic cell,

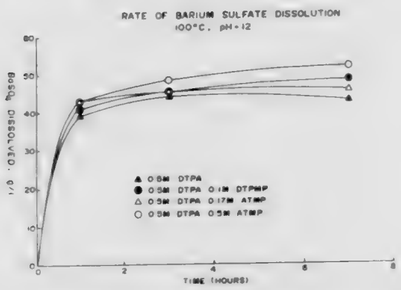
and a residual liquid generated at an intermediate portion of said electrolytic cell; returning said scum to said second centrifugal separator to treat the same; recovering said metal hydroxide; and discharging said residual liquid.

5,059,333

DISSOLUTION OF SULFATE SCALES

John L. Hen, Skillman, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 26, 1990, Ser. No. 558,963
Int. Cl.[5] E21B *43/12, 41/02*
U.S. Cl. 252—8.552 **18 Claims**



1. A composition for the removal of sulfate scale from surfaces comprising an aqueous solution of about 0.1 to 1.0 molar concentration of an aminopolycarboxylic acid (APCA) containing 1 to 4 amino groups or a salt thereof, and about 0.1 to 1.0 molar concentration of 2-phosphonobutane-1,2,4-tricarboxylic acid (PBTC) or a salt thereof as an internal phase enveloped by a hydrocarbon membrane phase which is itself emulsified in an external aqueous phase, said hydrocarbon membrane phase containing a complexing agent weaker for the cations of said sulfate scale than said APCA and PBTC, and any complexing agent for said cations in said external aqueous phase being weaker than that in said hydrocarbon membrane phase.

5,059,334

LUBRICANT

John L. Scheld, West Orange, N.J., assignor to Tribophysics Corporation, Wayne, N.J.

Continuation of Ser. No. 716,933, Mar. 28, 1985, which is a continuation of Ser. No. 220,654, Dec. 29, 1980. This application Sep. 4, 1986, Ser. No. 903,483
Int. Cl.[5] C10M *111/04*
U.S. Cl. 252—32.5 **19 Claims**

1. A liquid surface penetrating lubricant having improved frictional coefficient reducing properties for surfaces applied thereto comprising:

a) solid lubricant particles selected from a group consisting of fluorinated ethylene propylene (FEP), polytetrafluoroethylene and polytetrafluoroethylene substituted with the radical perfluorinated alkoxy (PFA);

b) a mineral oil coating said particles, whereby coated particles are formed;

c) a lubricant carrier medium having dispersed therein said coated particles;

d) viscosity lowering diluent, wherein said solid lubricant particles are present in the formation in the range of about 0.1 to 15% by volume, and wherein said mineral oil is present in the formulation in the concentration of 5–50% by volume.

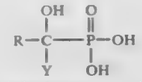
5,059,335

LUBRICANTS CONTAINING SALTS OF HYDROXYALKANE PHOSPHONIC ACIDS

Syed Q. A. Rizvi, Painesville; Stephen A. Di Biase; Joseph W. Pialet, both of Euclid, and Frederick W. Koch, Willoughby Hills, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 8, 1989, Ser. No. 308,178
Int. Cl.[5] C10M *137/12, 141/10*
U.S. Cl. 252—32.5 **44 Claims**

1. A lubricating composition comprising an oil of lubricating viscosity and an amount effective to improve the extreme pressure and antiwear properties of a composition made from salts of hydroxyalkane phosphonic acids of the formula:



wherein R is alkyl; Y is hydrogen or a phosphonic acid group; and a base selected from the group consisting of:

(A) a detergent, or

(B) a dispersant selected from the group consisting of:

(i) mannich dispersants,

(ii) succinimide dispersants,

(iii) nitrogen-containing ester type dispersants, and

(iv) dispersant viscosity improvers

5,059,336

GREASE COMPOSITION FOR HIGH SPEED ANTI-FRICTION BEARING

Michiharu Naka, Odawara; Hideki Koizumi, Chigasaki; Yukari Kondoh, Fujisawa; Hirotugu Kinoshita, Kawasaki; Mokoto Seikiya, Takarazuka, and Masaru Mishima, Kawasaki, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha and Nippon Oil Co., Ltd., both of, Japan

Filed Aug. 16, 1990, Ser. No. 568,608
Claims priority, application Japan, Aug. 22, 1989, 1-214116
Int. Cl.[5] C10M *141/02*
U.S. Cl. 252—33.3 **17 Claims**

1. A grease composition for a high speed anti-friction bearing comprising, in a synthetic lubricant base oil,

(A) 2 to 30 wt. % of a thickening agent consisting of an urea compound,

(B) 0.2 to 30 wt. % of sorbitan monooleate,

(C) 0.2 to 3.0 wt. % of barium sulfonate, and

(D) 0.2 to 3.0 wt. % of barium lanolate, as indispensable components, each weight percentage being based on the total weight of the composition.

5,059,337

SOFT MAGNETIC MATERIALS COMPRISING 9 TO 15 ATOMIC PERCENT CARBON ATOMS

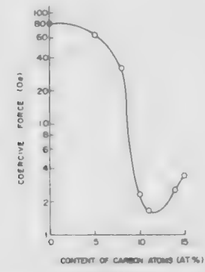
Tsuyoshi Maro, Ibaraki; Osamu Kitakami, Toride; Hideo Fujiwara, and Kunio Wakai, both of Ibaraki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Sep. 21, 1988, Ser. No. 247,074
Claims priority, application Japan, Sep. 22, 1987, 62-238206
Int. Cl.[5] C04B *35/04, 35/64;* **H01F** *1/00;* **B22F** *3/00*
U.S. Cl. 252—62.54 **9 Claims**

1. A soft magnetic material which comprises (a) a ferromagnetic metal, (b) at least one member selected from the group consisting of a carbide of said ferromagnetic metal and a silicide of said ferromagnetic metal and (c) at least one member selected from the group consisting of amorphous carbon and amorphous silicon, wherein said soft magnetic material has a carbon atom content of from 9 to 15 atomic %.

4. A soft magnetic material which comprises (a) a ferromagnetic metal, (b) at least one member selected from the group consisting of a carbide of said ferromagnetic metal and a silicide of said ferromagnetic metal and (c) at least one member selected from the group consisting of a hydrocarbon polymer and a silicone polymer, wherein said soft magnetic material has a carbon atom content of from 9 to 15 atomic %.

7. A soft magnetic material which comprises (a) a ferromagnetic metal, (b) at least one member selected from the group consisting of a carbide of said ferromagnetic metal and a silicide of ferromagnetic metal, (c) at least one member selected from the group consisting of amorphous carbon and amorphous silicon and (d) at least one member selected from the group consisting of a hydrocarbon polymer and a silicone polymer, wherein said soft magnetic material has a carbon atom content of from 9 to 15 atomic %.

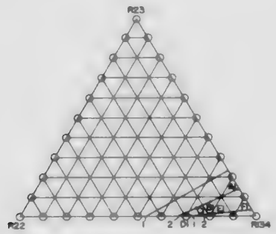


5,059,338

WORKING FLUID

Yuji Yoshida, Itami; Koji Arita, Osaka, and Takeshi Tomizawa, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 28, 1990, Ser. No. 618,962
Claims priority, application Japan, Nov. 29, 1989, 1-309644; Nov. 29, 1989, 1-309670; Nov. 29, 1989, 1-309671
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 **9 Claims**



1. A working fluid comprising 1 to 80% by weight of trifluoromethane, 1 to 90% weight of chlorodifluoromethane and 10 to 95% by weight of at least one halogenated ethane which consists of two carbon atoms, 1 or 2 hydrogen atoms, 0 to 2 chlorine atoms and balance of fluorine atoms and has a boiling point of not lower than −30° C. under atmospheric pressure.

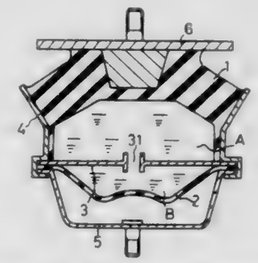
5,059,339

DAMPING LIQUID FOR HYDRAULIC VIBRATION DAMPING MOUNT

Takamasa Suzuki, Konan; Katsumasa Takeuchi, Ichinomiya, and Kazuya Ito, Yokkaichi, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 8, 1989, Ser. No. 390,757
Claims priority, application Japan, Sep. 21, 1988, 63-236898
Int. Cl.[5] C09K *5/00, 3/00*
U.S. Cl. 252—77 **7 Claims**

1. A damping liquid for filling a liquid chamber defined by walls of a hydraulic vibration damping mount, the walls being composed of a vibration damping rubber, said damping liquid comprising a glycol, water and an antiozonant, the relative proportion of said glycol to said water ranging from 98:2 to



70:30 by weight, and said antiozonant comprising 2 to 20 weight % of said damping liquid.

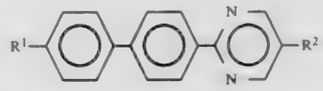
5,059,340

OPTICALLY ACTIVE 2-BIPHENYLPYRIMIDINE DERIVATIVE AND LIQUID CRYSTAL COMPOSITIONS CONTAINING SAME

Kazutoshi Miyazawa; Makoto Ushioda; Shinichi Saito; Hiromichi Inoue, and Kouji Ohno, all of Kanagawa, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 186,081, Apr. 25, 1988, abandoned. This application Oct. 18, 1990, Ser. No. 600,996
Claims priority, application Japan, Apr. 27, 1987, 62-103977; Oct. 20, 1987, 62-264964
Int. Cl.[5] C09K *19/34*
U.S. Cl. 252—299.61 **12 Claims**

1. An optically active compound expressed by the formula



(1)

wherein one of R^1 and R^2 represents a straight chain alkyl or alkoxy group of 1 to 20 carbon atoms and the other represents an optically active 2-alkoxypropoxy, 2-alkanoyloxypropoxy, 2-alkoxypropionyloxypropoxy, 2-fluoroalkoxy, alkanoyloxy or alkoxypropionyloxy group.

5,059,341

CLEANING COMPOSITION COMPRISING MICROBIAL LIPASE SD2, SODIUM DODECYLBENZENE SULFONATE AND GELATIN

Paul Holmes, Hamden, Conn., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 428,550, Oct. 30, 1989, which is a continuation-in-part of Ser. No. 324,062, Mar. 16, 1989. This application Apr. 2, 1990, Ser. No. 503,488
Int. Cl.[5] C11D *3/386, 1/22, 7/42*
U.S. Cl. 252—174.12 **8 Claims**

1. A detergent composition comprising the microbial lipase SD2, dodecylbenzene sulfonate, and gelatin, wherein said lipase is present in an amount of between about one million and about 100 million lipase units per kilogram of dodecylbenzene sulfonate in the detergent composition, and wherein said dodecylbenzene sulfonate is present in an amount of between about 0.01 and about 20 weight percent based upon the total weight of said detergent composition, and wherein said gelatin is present in an amount of between about 0.1 and about 100 kilograms per kilogram of dodecylbenzene sulfonate in the detergent composition.

5,059,342

NOVEL CHEMICAL COMPOUNDS AND THEIR USE AS LOW FOAM SURFACTANTS AND ANTIFOAMING AGENTS

Trevor G. Blease, Guisborough, England, assignor to Imperical Chemical Industries PLC, London, England

Filed Mar. 21, 1990, Ser. No. 496,601

Int. Cl.[5] **C11D** *3/075, 1/755;* **C09K** *3/32;* **C07C** *43/11*

U.S. Cl. 252—174.21 **10 Claims**

1. Compounds of formula

$CH_3\,CH_2\,CH_2O\,(A)\,R$

or mixtures thereof which are liquid at 20° C. in which (A) is a polyalkylene oxide chain which comprises 5 to 18 alkylene oxide residues in which there are from 1 to 8 propylene oxide residues for every 10 ethylene oxide residues and R is a C_8 to C_{18} alkyl group.

5,059,343

METHOD OF DIRECT PROCESS PERFORMANCE IMPROVEMENT VIA CONTROL OF SILICON MANUFACTURE

Roland L. Halm, Madison, Ind., and Oliver K. Wilding, Jr., Louisville, Ky., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 944,317, Dec. 22, 1986, Pat. No. 4,946,978. This application Aug. 7, 1990, Ser. No. 563,631

The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.

Int. Cl.[5] **C09K** *3/00*

U.S. Cl. 252—182.35 **20 Claims**

1. A method of making silicon with a controlled level of phosphorous promoter incorporated therein, the method comprising controlling the level of the phosphorous promoter to 25 to 2500 parts per million based on the silicon by incorporating a non-volatile phosphorous compound into the molten mass of the silicon after removal of the molten mass of the silicon from the reaction zone of the furnace in which the silicon is produced.

5,059,344

BLEACHING COMPOSITION

Muneo Aoyagi; Kazuhiro Takanashi, both of Utsunomiya; Hiroyuki Araki, Ichikai; Moriyasu Murata, Chiba; Kohshiro Sotoya; Nobuyuki Ogura, both of Wakayama, and Masaaki Yamamura, Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

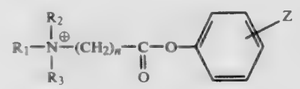
Division of Ser. No. 166,880, Mar. 11, 1988, Pat. No. 4,933,103. This application Mar. 20, 1990, Ser. No. 496,353

Claims priority, application Japan, Mar. 23, 1987, 62-68636; Mar. 23, 1987, 62-68637; Jan. 25, 1988, 63-14243

Int. Cl.[5] **C09K** *3/00;* **C07C** *209/00*

U.S. Cl. 252—186.38 **8 Claims**

1. An amphoteric compound having the formula (V):



(V)

in which R1 is an alkyl group having 1 to 22 carbon atoms, R2 and R3 each are a lower alkyl, n is an integer of 1 to 5, Z is $—COO^-$, —COOM, $—SO_3^-$ or $—SO_3M$ and M is a cation.

5,059,345

OPTICALLY ACTIVE COMPOUND AND CHIRAL LIQUID CRYSTAL COMPOSITION CONTAINING THE SAME

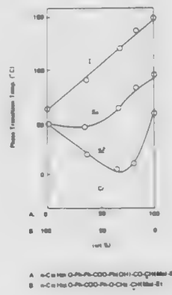
Shogo Kobayashi, Tokyo; Shigeki Ishibashi, Houya; Toshio Horie, Iruma; Shinji Tsuru, Higashimurayama; Kouzaburou Nakamura, Tokyo, and Tohru Maruno, Mito, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Nov. 3, 1988, Ser. No. 266,832

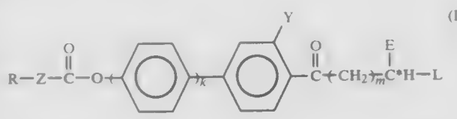
Claims priority, application Japan, Nov. 6, 1987, 62-280456; Nov. 6, 1987, 63-280458; Jun. 3, 1988, 63-136792; Jun. 3, 1988, 63-136793; Jun. 3, 1988, 63-136794; Aug. 29, 1988, 63-214632; Aug. 30, 1988, 63-216126; Oct. 11, 1988, 63-255437; Oct. 11, 1988, 63-255438

Int. Cl.[5] **C09K** *19/34;* **C07D** *239/02;* **C07C** *39/12, 69/76*

U.S. Cl. 252—299.61 **7 Claims**

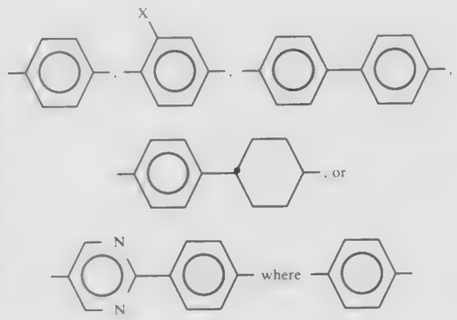


1. An optically active compound represented by the formula (I):



(I)

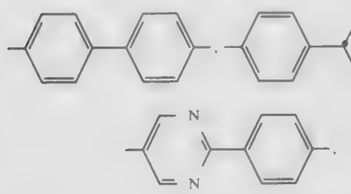
wherein R is an alkyl or alkoxy group having 4 to 22 carbon atoms; Z is



represents 1,4-phenylene group;



represents trans-1,4-cyclohexane group; X is a halogen atom; k is zero or 1 with the proviso that when Z is



k is zero; Y is a hydroxyl group; C* is an asymmetric carbon atom; E is a methyl group; L is an alkyl or aryl group having not more than 10 carbon atoms; and m is an integer of from 0 to 6.

5,059,346

CADMIUM SULFIDE MEMBRANES

Lubomir Spanhel, and Marc A. Anderson, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 18, 1989, Ser. No. 340,101

Int. Cl.[5] **C09K** *11/54, 11/56;* **C01G** *11/02*

U.S. Cl. 252—301.6 S **10 Claims**

1. A method of making a cadmium sulfide membrane comprising the steps of

a) preparing a cadmium sulfide colloid by introducing sulfide ions to an aqueous solution of 2.5×10^{-3}M cadmium ions and polyphosphate molecules;

b) concentrating the colloid by removing water from the colloid by concentration until the concentrated colloid has an electrical conductivity which exceeds twenty micro-mhos;

c) drying the concentrated colloid until a solid membrane is produced.

5,059,347

AQUEOUS ANTIOXIDENT EMULSIONS

Hans Mollet, Reinach, and Martin Holer, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 17, 1989, Ser. No. 395,245

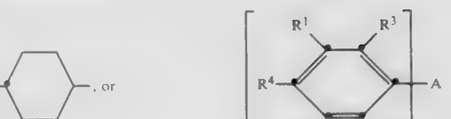
Claims priority, application Switzerland, Mar. 17, 1989, 998/89

Int. Cl.[5] **C09K** *15/14*

U.S. Cl. 252—400.62 **16 Claims**

1. A storage-stable, non-sedimenting emulsion comprising

(a) 10 to 80% by weight, based on the emulsion, of one or more antioxidants of formula I



(I)

wherein

R^1 is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted cycloalkyl of 5 to 12 ring carbon atoms, phenyl or C_7–C_9aralkyl,

R^2 is —H, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, C_1–C_4alkyl-substituted cycloalkyl of 5 to 12 ring carbon atoms, phenyl or C_7–C_9aralkyl,

R^3 is —H or CH_3,

n is 2,

A is $—(C_xH_{2x})—CO—X—[(C_aH_{2a})X-]_b—CO—(C_xH_{2x})—$,

x is 0 to 6,

X is oxygen,

a is 2 to 6,

b is 3 to 40,

R^4 is —OH, and

R^5 is —H; or

when n is 2 and A is —O—,

R^4 is —OH and R^5 is —H; or

R^5 is —OH and R^4 is —H or C_1–C_4alkyl, and R^1 is additionally —H,

(b) 0.25 to 10% by weight, based on the emulsion, of a surfactant in the form of a fatty acid salt of formula R-COOY, wherein R is straight or branched chain C_3–C_{18}alkyl or straight or branched chain C_3–C_{18}alkenyl, or is phenyl(C_3–C_{18}alkyl), and Y is an alkali metal, which salt is prepared in situ from the fatty acid,

(c) 0.25 to 10% by weight, based on the emulsion, of a co-surfactant in the form of an alcohol of the formula R′—OH, wherein R′ is straight or branched chain C_4–C_{19}alkyl or straight or branched chain C_4–C_{19}alkenyl, or is phenyl(C_4–C_{19})alkyl, and

(d) water to make up 100%.

15. A process for the preparation of an aqueous, storage-stable, non-sedimenting antioxidant emulsion as claimed in claim 1, which comprises heating the antioxidant or mixture of antioxidants, which are liquid or liquefied by heating, with an acid of the general formula R-COOH, wherein R is straight chain or branched C_3–C_{18}alkyl or straight chain or branched C_3–C_{18}alkenyl or phenyl(C_3–C_{18})alkyl, and with an alcohol of the general formula R′—OH, wherein R′ is straight chain or branched C_4–C_{19}alkyl or straight chain or branched C_4–C_{19}alkenyl or phenyl(C_4–C_{19})alkyl, and subsequently adding an aqueous solution of an alkali metal hydroxide, alkali metal hydrogencarbonate or alkali metal carbonate to the melt until the acid is neutralised, and, if desired adding further water to dilute the emulsion.

5,059,348

METHOD FOR MEASURING THE EFFICIENCY OF GAS MASK FILTERS

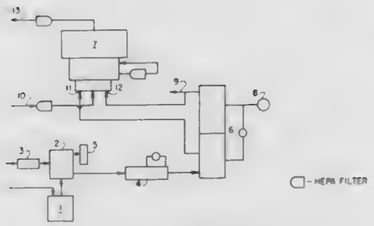
Mark A. Guelta, White Marsh, and Hugh R. Carlon, Fallston, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1990, Ser. No. 636,161

Int. Cl.[5] **G01N** *32/00*

U.S. Cl. 252—408.1 **5 Claims**

1. In an improved process of passing a prior nebulized aerosol mixture through a filter, and thereafter measuring the filter efficiency the improvement consisting essentially of said aerosol being in %, by volume, of about:



LOW PRESSURE FLOW SCHEMATIC

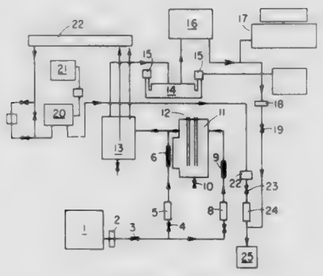
%	Chemical
70–76	isostearic acid
6–7	isopalmitic acid
7–11	myristic acid
4–5	palmitic acid.

5,059,349

METHOD OF MEASURING THE EFFICIENCY OF GAS MASK FILTERS USING MONODISPERSED AEROSOLS

Hugh R. Carlon, Fallston; Mark A. Guelta, White Marsh, and Bernard V. Gerber, Havre de Grace, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1990, Ser. No. 636,162
Int. Cl.[5] G01N *31/00*
U.S. Cl. 252—408.1 5 Claims



FLOW DIAGRAM TDA-100

1. In an improved process of passing an aerosol mixture through a filter, and thereby measuring the efficiency of the filter, the improvement consisting essentially of said aerosol being solely a poly-alpha olefin having chain lengths in % by volume of about:

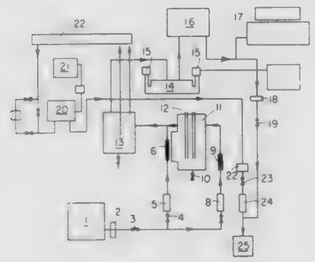
%	Carbon atoms, chain length
0.6	20
82.1	30
16.0	40
1.0	50
2.0	60.

5,059,350

METHOD OF TESTING THE EFFICIENCY OF GAS MASK FILTERS USING POLY-ALPHA OLEFIN AEROSOL MIXTURES

Hugh R. Carlon, Fallston; Mark A. Guelta, White Marsh, and Bernard V. Gerber, Havre de Grace, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1990, Ser. No. 636,160
Int. Cl.[5] G01N *31/00*
U.S. Cl. 252—408.1 5 Claims



FLOW DIAGRAM TDA-100

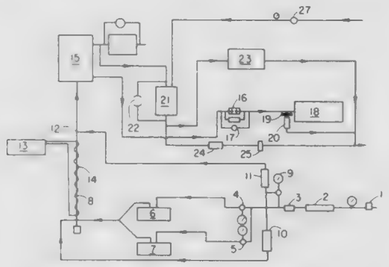
1. In an improved process of passing an aerosol mixture through a filter, the improvement consisting essentially of said aerosol being 30.9% by volume of a poly-alpha olefin having a chain length of 30 carbon atoms, 42.8% by volume of a poly-alpha olefin having a chain length of 40 carbon atoms, 20.4% by volume of a poly-alpha olefin having a chain length of 50 carbon atoms, 4.8% of a poly-alpha olefin having a chain length of 60 carbon atoms, and 1.1% of a poly-alpha olefin having a chain length of 70 carbon atoms.

5,059,351

METHOD OF TESTING THE EFFICIENCY OF GAS MASK FILTERS USING MONODISPERSED AEROSOLS

Nugh R. Carlon, Fallston; Mark A. Guelta, White Marsh, and Bernard V. Gerber, Havre de Grace, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1990, Ser. No. 636,164
Int. Cl.[5] G01N *32/00*
U.S. Cl. 252—408.1 4 Claims



AIR FLOW DIAGRAM - PROTOTYPE PENETROMETER

1. In an improved method of testing a particulate filter, improvement consisting essentially of passing salt nuclei coated with a dispersed aerosolized ester mixture through said filter, said ester mixture consisting essentially in percentage, by volume, of about:

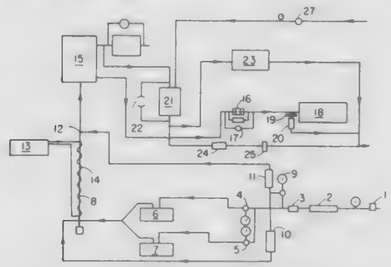
%	Chemical
[illegible]	methyl oleate
24	methyl stearate
14	methyl linoleate
4	methyl palmitate.

5,059,352

METHOD FOR THE GENERATION OF MONODISPERSED AEROSOLS FOR FILTER TESTING

Hugh R. Carlon, Fallston; Mark A. Guelta, White Marsh, and Bernard V. Gerber, Havre de Grace. all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1990, Ser. No. 636,159
Int. Cl.[5] C09F *7/00*
U.S. Cl. 252—408.1 4 Claims



AIR FLOW DIAGRAM - PROTOTYPE PENETROMETER

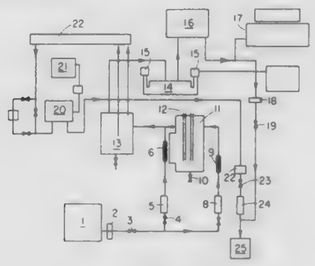
1. In an improved method of testing a particulate filter, the improvement consisting essentially of passing a salt nucleus coated with a dispersed aerosolized composition through said filter, said composition containing about 97–99% by volume of a poly-alpha olefin having a chain length of 20 carbon atoms and about 1–3% by volume of a poly-alpha olefin having a chain length of 30 carbon atoms.

5,059,353

METHOD FOR TESTING THE EFFICIENCY OF GAS MASK FILTERS USING MONODISPERSED AEROSOLS

Hugh R. Carlon, Fallston; Mark A. Guelta, White Marsh, and Bernard V. Gerber, Havre de Grace, all of Md., assignors to The United States of America as representated by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1990, Ser. No. 636,167
Int. Cl.[5] G01N *32/00*
U.S. Cl. 252—408.1 5 Claims



FLOW DIAGRAM TDA-100

1. In an improved process of passing an aerosol mixture through a filter, thereafter measuring the efficiency of the filter, the improvement consisting essentially of said aerosol solely consisting essentially in percentage, by volume, of about:

%	Chemical
71	oleic acid
8	palmitoleic acid
7	linoleic acid
4	palmitic acid
3	myristic acid
3	myristoleic acid
1.5	linolenic acid
1.5	margaric acid
1	stearic acid.

5,059,354

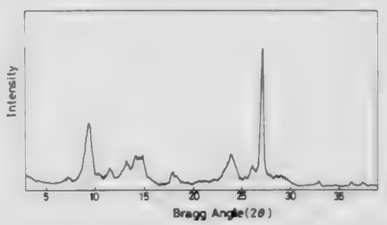
Patent Not Issued For This Number

5,059,355

PROCESS FOR PREPARATION OF CRYSTALLINE OXYTITANIUM PHTHALOCYANINE

Hitoshi Ono, Yokohama; Yoshiaki Kato, Mitaka, and Sumiko Watabe, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Japan

Filed Feb. 21, 1990, Ser. No. 482,560
Claims priority, application Japan, Feb. 23, 1989, 1-44907
Int. Cl.[5] C09B *67/50, 47/08;* G03G *5/06*
U.S. Cl. 252—584 7 Claims



1. A process for transforming oxytitanium phthalocyanine to crystalline oxytitanium phthalocyanine for use in an electrophotographic photoreceptor showing a distinct diffraction peak at a Bragg angle ($2\theta \pm 0.2°$) of 27.3° in the X-ray diffraction spectrum, which comprises mechanically pulverizing the oxytitanium phthalocyanine, dispersing it in water to form a suspension, adding an organic solvent selected from the group consisting of chloroform, dichloroethane, n-hexane, butyl acetate, monochlorobenzene, dichlorobenzene, toluene, xylene, nitrobenzene, α-chloronaphthalene and a mixture of at least two of those solvents into the suspension and heating the suspension at a temperature of from 30° to 100° C.

5,059,356

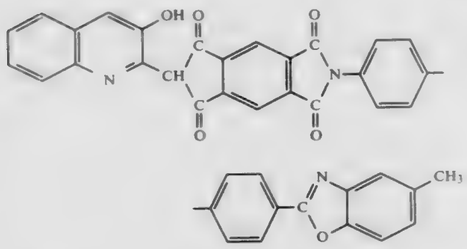
POLARIZING FILM

Katsuji Nakamura, Yokohama; Junichi Fujio; Shin Hosonuma, both of Nagoya; Masakatsu Nakatsuka, and Tsutomu Nishizawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 308,031, Feb. 27, 1989, abandoned, which is a division of Ser. No. 866,492, May 20, 1986, Pat. No. 4,824,882. This application Sep. 6, 1990, Ser. No. 579,246
Claims priority, application Japan, Oct. 5, 1984, 59-210067
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] F21V *9/14;* G02B *5/30*
U.S. Cl. 252—585 4 Claims

1. A polarizing film comprising a hydrophobic polymer containing a dichroic organic colorant in an oriented state,

wherein the dichroic organic colorant, which has the formula:



has a solubility in water, organic solvents and liquid crystals of not greater than 0.05 percent by weight at about 25° C., and the dichroic ratio of the colorant is not less than 7 when it is measured with the film obtained by blending the colorant intimately with polyethylene terephthalate, melting the resulting blend and forming it into a film.

5,059,357

VORTEX CHAMBER ATOMIZER

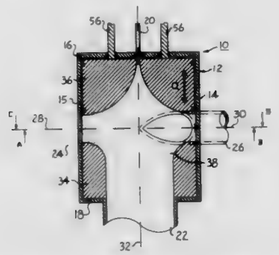
Hartmut Wolf, Schwimmbadstrasse 11, 6146 Lindelfels, and Norbert Caernawski, Lessingstrasse 21, 6140 Benzheim 3, both of Fed. Rep. of Germany

Filed Jun. 1, 1990, Ser. No. 531,863

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1989, 8906889[U]

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—53 **20 Claims**



1. A vortex chamber atomizer with a housing comprising an axially extending casing and first and second end plates which shut off ends of the casing and of which a first end plate has an inlet nozzle arranged therein and the second end plate has an outlet pipe arranged therein and at least two tubular connectors extend through the casing so that center lines of the connectors are spaced from, and approximately at a right angle to the axis of the housing, characterized in that internal structures are provided in the housing so as to extend from the face of the casing in a circumferential manner so that a cavity is defined in the interior of the housing which is substantially adapted to the form of a primary vortex produced in the vortex chamber atomizer.

5,059,358

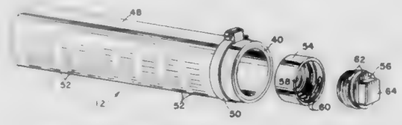
TUBULAR DIFFUSER WITH ADJUSTABLE PLUG

Charles E. Tharp, Columbia, Mo., assignor to Environmental Dynamics, Inc., Columbia, Mo.

Filed Jun. 4, 1990, Ser. No. 532,863

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—122 **3 Claims**



1. A diffuser for aerating wastewater, comprising:

a hollow pipe having first and second ends, said first end serving as an inlet end for receiving incoming air from an air source;

port means in said pipe for discharging air therefrom at a location between said first and second ends;

a flexible membrane sleeved onto said pipe and presenting pores through which air from the pipe is discharged through the membrane into the wastewater in the form of air bubbles;

a deformable ring fitted in the pipe and being movable therein along the length of the pipe, said ring having a threaded bore which tapers from end to end; and

a tapered plug element threaded to mate with the threads of said bore and acting to expand said ring against the pipe by wedging action as the plug element is progressively threaded into said bore, thereby permitting said ring to be secured in said pipe at said second end for fully buoyant service of the diffuser, at another location adjacent to said first end for substantially non-buoyant service of the diffuser, and at a plurality of locations between said first and second ends for partially buoyant service of the diffuser, said ring and plug element acting to seal the pipe against air passage beyond the ring and plug element.

5,059,359

METHODS AND APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY

Charles W. Hull, Arcadia; Stuart T. Spence, South Pasadena; David J. Albert, Saratoga; Dennis R. Smalley, Baldwin Park; Richard A. Harlow, Malibu; Phil Steinbaugh, Mountain View; Harry L. Tarnoff, Van Nuys; Hop D. Nguyen, Littlerock; Charles W. Lewis, Van Nuys; Tom J. Vorgitch, Simi Valley, and David Z. Remba, Studio City, all of Calif., assignors to 3 D Systems, Inc., Valencia, Calif.

Filed Apr. 18, 1988, Ser. No. 182,830

Int. Cl.[5] B29C *35/08, 67/00*

U.S. Cl. 264—22 **57 Claims**

1. A system for forming a three-dimensional object cross-section by cross-section out of a material capable of selective physical transformation upon exposure to synergistic stimulation, comprising:

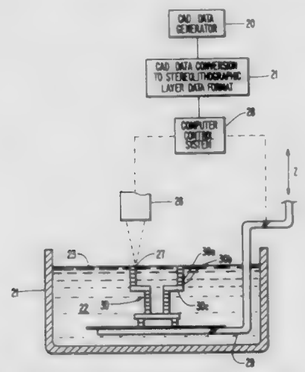
at least one computer programmed to process data descriptive of said three-dimensional object comprised of at least some polygons having vertices, the polygons substantially spanning a surface of the object, by overlaying the descriptive data with a plurality of slicing planes spaced along a slicing axis, placing at least some of the polygon vertices to at least one of the slicing planes to obtain preliminary descriptive data, and then converting the preliminary descriptive data to data descriptive of object cross-sections; and

means for selectively exposing layers of said material to said synergistic stimulation in accordance with said data descriptive of said cross-sections to form said object cross-section by cross-section.

10. A method for forming a three-dimensional object cross-section by cross-section out of a material capable of selective physical transformation upon exposure to synergistic stimulation, comprising the steps of:

providing data descriptive of said three-dimensional object comprised of at least some polygons having vertices, the polygons substantially spanning a surface of the object;

processing said object descriptive data by overlaying the object descriptive data with a plurality of slicing planes



spaced along a slicing axis, and placing at least some of the polygon vertices to at least one of the slicing planes to obtain preliminary object descriptive data;

converting the preliminary object descriptive data to data representative of object cross-sections; and

selectively exposing layers of said material to said synergistic stimulation in accordance with said data representative of said cross-sections to form said object cross-section by cross-section.

5,059,360

LID FOR CAN-LIKE CONTAINER AND METHOD FOR MAKING AN EASILY OPENED CONTAINER LID

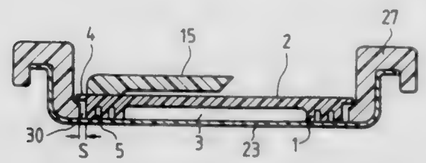
Wasuke Sato, Tokyo, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 334,632, Apr. 7, 1989. This application Dec. 21, 1989, Ser. No. 454,570

Claims priority, application Japan, Apr. 7, 1988, 63-84018

Int. Cl.[5] B29C *65/08, 59/00*

U.S. Cl. 264—23 **12 Claims**



1. A method off manufacturing a lid for a can-like container comprising the steps of:

preforming a gas barrier-type multi-layer base of a flat shape for the lid into a predetermined shape having a substantially flat portion;

forming a reinforcing thermoplastic resin layer on said multi-layer base in such a manner that said reinforcing thermoplastic resin layer extends from the outer peripheral edge portion of said substantially flat portion of said multi-layer base;

mounting a tab seat of a synthetic resin on a portion of an upper surface of said flat portion of said multi-layer base surrounded by said reinforcing thermoplastic resin layer, said tab seat being disposed in spaced relation to said upper surface of said flat portion to form an enclosed space covering substantially the entire of said upper surface beneath said tab seat and disposed in such a manner that a score portion having as small a width as possible is formed between the outer periphery of said tab seat and the inner peripheral edge of said reinforcing thermoplastic resin layer, wherein said outer periphery of said tab seat is disposed on said upper surface of said flat portion to form a non-contact central portion of said lid, and said upper surface of said flat portion being exposed through said score portion, whereby said space absorbs energy when said container is dropped so as to emit energy; and

securing one end of a tab of a synthetic resin to said tab seat.

5,059,361

METHOD FOR THE PRODUCTION OF STRUCTURAL ELEMENTS OF THERMOSETTING PLASTICS MATERIAL, PARTICULARLY COMPONENT PARTS FOR MOTOR VEHICLE BODIES, BY INJECTION MOULDING

Mario Da Re', Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Sep. 30, 1988, Ser. No. 252,072

Claims priority, application Italy, Sep. 30, 1987, 67830 A/87

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—25 **5 Claims**

1. A method for the production of structural elements of thermosetting plastic materials, particularly component parts for motor vehicle bodies, by moulding, which comprises the steps of:

preheating by applying a high frequency load immediately before injection moulding a first flow of thermosetting plastic material which, after its polymerization, has aesthetic characteristics and characteristics of flexibility and impact strength;

preheating, before injection moulding, a second flow of thermosetting plastic material which, after polymerization, has characteristics of rigidity and structural strength; and

injecting into the mould in succession said first preheated flow of thermosetting plastic material and said second preheated flow of thermosetting plastic material to form a rigid core of said second flow of thermosetting plastic material having a resilient shell of the first flow of thermosetting plastic material adhered thereto, said shell being formed prior to said core, wherein the material of the first flow of thermosetting plastic material is a fiber-reinforced unsaturated polyester resin (BMC) and wherein the material of said second flow of thermosetting plastic material is selected from the group consisting of a fiber-reinforced unsaturated polyester resin and a polyurethane, wherein said first flow of thermosetting plastic material and said second flow of thermoplastic material are both foamed.

5,059,362

METHOD OF MAKING A COMPOSITE FOAMED AND SHAPED ARTICLE

Hiroshi Tsuchihashi, Funabashi, Japan, assignor to Toray Engineering Co., Ltd., Osaka, Japan

Filed Oct. 24, 1989, Ser. No. 425,931

Claims priority, application Japan, Oct. 24, 1988, 63-267454

Int. Cl.[5] B29C *41/18*

U.S. Cl. 264—25 **18 Claims**

1. A method for making a composite foamed and shaped article comprising:

a first step in which a heated slush molding die is filled with a thermoplastic resin powder to form a first resin layer and then the surplus thermoplastic resin powder is discharged;

a second step in which said die with said first resin layer formed therein is filled with a mixed powder consisting of

a heat decomposable foaming agent and a thermoplastic resin powder, the remaining heat of said die is utilized while said mixed powder is brought into contact with said first resin layer to form a second resin layer, and the surplus mixed resin powder is discharged; and

a third step in which said second resin layer is subjected to heat treatment to cause a foaming thereof, said die is cooled, and said foamed and shaped article is then taken out of said mold;

wherein said slush molding die in which said thermoplastic resin powder is contained later is heated, before said first step is carried out, by an infrared heating method utilizing an infrared gas burner in an atmosphere in which air is agitated by an air agitating device.

5,059,363

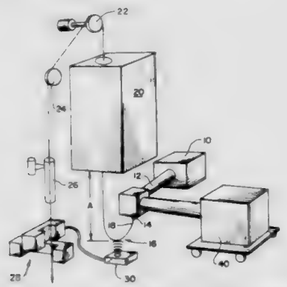
METHOD FOR EXTRUDING SILICONE TUBING

Charles R. Davis, Des Plaines, and Jeffrey T. Williams, Round Lake, both of Ill., assignors to Uresil, Inc., Skokie, Ill.

Filed Feb. 4, 1991, Ser. No. 650,427

Int. Cl.[5] B29C *47/00*; G01B *07/04, 07/12*

U.S. Cl. 265—40.1 **7 Claims**



1. A method of extruding tubing which maintains consistently precise dimensions in the final tubing product comprising:

extruding silicone rubber through a pin and die to produce uncured tubing;

forming a loop of a predetermined height from the uncured tubing in order to neck the outside diameter of the tubing down to a predetermined value;

curing the tubing;

cooling the tubing and producing an electrical signal indicative of the outside diameter of the tubing after cooling; and

adjusting the height of the loop by adjusting the rate of take-up to compensate for variations in the outside diameter of the tubing from the predetermined value.

5,059,364

INJECTION-COMPRESSION MOLDING MACHINE AND METHOD OF MOLDING BY USING THE MACHINE

Hideaki Okubo; Kan-ichi Sato; Kazuhiro Mimura; Satoshi Fujimoto, all of Hiratsuka, and Makoto Higuchi, Komatsu, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusha, Tokyo, Japan

PCT No. PCT/JP89/00315, § 371 Date Jan. 5, 1990, § 102(e) Date Jan. 5, 1990, PCT Pub. No. WO89/09124, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 24, 1989, Ser. No. 445,636

Claims priority, application Japan, Mar. 24, 1988, 63-70077

Int. Cl.[5] B29C *45/70, 45/77*

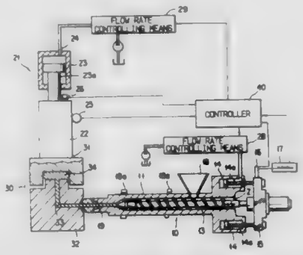
U.S. Cl. 264—40.1 **9 Claims**

1. A method of molding a plastic resin comprising the steps of:

opening a mold of an injection-compression molding machine, said injection-compression molding machine including a compression unit for clamping the mold and an injection unit for injecting a molten rein into the mold;

setting a command for an opening and closing speed of the mold and setting a command for a stroke position of the mold;

comparing a current mold opening and closing speed with the commanded opening and closing speed of the mold and comparing a current stroke position of the mold with the commanded stroke position of the mold;



setting a command matching a shape of a product to be molded for an injection speed of the molten resin when the current opening and closing speed and the current stroke of the mold become as commanded; and

injecting said molten resin from said injection unit into said mold in compliance with a filling speed of the molten resin within the mold so that the molten resin spreads uniformly therein as it is compressed in the mold by said compression unit.

5,059,365

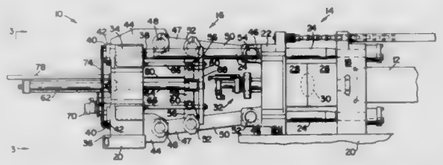
METHOD OF SETTING AND MAINTAINING A DESIRED MOLD CLAMPING FORCE

Ronald A. Hertzer, and Jeffrey A. Chappell, both of Milford, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 17, 1990, Ser. No. 524,312

Int. Cl.[5] B29C *33/22*

U.S. Cl. 264—40.5 **9 Claims**



1. A method for setting a predetermined clamping force between a first mold member on a stationary platen and a second mold member on a movable platen connected to a toggle clamping mechanism carried by a die height platen for movement of the movable platen and second mold member toward and away from the first mold member, the positions of both the movable platen and the toggle clamping mechanism being adjustable relative to the stationary platen, said toggle clamping mechanism being operable to selectively move the movable platen to any position relative to the stationary platen between a first extreme position at which the toggle clamping mechanism is retracted and the mold members are spaced from each other and a second extreme position at which the toggle clamping mechanism is fully extended and the mold members are in contact with each other, the method comprising the steps of:

a. defining a required clamp position of the toggle clamping mechanism relative to the die height platen, at which clamp position the mold members are in contact and are held together at the predetermined clamping force when the toggle clamping mechanism is in the second extreme position;

b. actuating the toggle clamping mechanism to move the movable platen toward the stationary platen;

c. detecting a first intermediate toggle clamping mechanism position in response to cessation of movement of the movable platen toward the stationary platen;

d. determining the difference between the required clamp position and the detected first intermediate toggle clamping mechanism position;

e. actuating the toggle clamping mechanism to move the movable platen away from the stationary platen; and

f. adjusting the position of the die height platen relative to the stationary platen such that the difference between the required clamp position and the detected first intermediate toggle clamping mechanism position approaches a zero value so that the predetermined clamping force will be produced on the molds when the toggle clamping mechanism is moved to the second extreme position.

5,059,366

METHOD OF MAKING A MEMBRANE FILTER

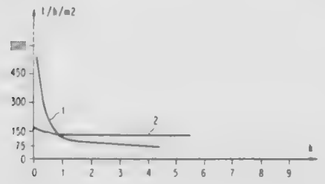
Stanislas Galaj, Arcueil; Marie-Paule Besland, Saintonge; Alain Wicker, Paris; Jacques Gillot, LaLoubere, and Raymond Soria, Bazet, all of France, assignors to Societe Des Ceramiques Techniques, Bazet, France

Division of Ser. No. 436,956, Nov. 15, 1989, Pat. No. 4,946,592, which is a continuation of Ser. No. 179,364, Apr. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 101,927, Sep. 28, 1987, abandoned. This application May 7, 1990, Ser. No. 520,015

Claims priority, application France, Oct. 10, 1986, 86 14134

Int. Cl.[5] B29C *35/02*; B29D *7/01, 9/00*; B01D *71/02*

U.S. Cl. 264—44 **10 Claims**



1. A method of manufacturing a membrane comprising forming a porous structure made of a material selected from sintered ceramics and sintered metals, and forming on said structure grains which are fixed one to another by bonded portions of their surfaces leaving pores therebetween delimited by the remaining exposed portions of the surfaces of the said grains, wherein the entire exposed portions of the surfaces of the grains including the surface inside the pores of the porous structure are covered with a thin and continuous film of an oxide selected from the group consisting of ZrO_2, MgO, Al_2O_3, SiO_2, TiO_2, Cr_2O_3, MnO, Fe_2O_3, CoO, NiO, CuO, ZnO, Ga_2O_3, GeO_2, TlO_2, Nb_2O_5, MoO_3, RuO_2, PdO, CdO, SnO_2, La_2O_3, HfO_2, Ta_2O_5, WO_3, PbO_2, Ce_2O_3, and Bi_2O_3, alone or in combination, or in mixture with B_2O_3, BaO, or CaO, wherein the thickness of said film lies between 2 nm and 1000 nm, wherein the average pore diameter of the surface layer of said structure lies between 0.02 microns and 15 microns, the porosity of the membrane being then substantially that of the initial porous structure.

5,059,367

ALUMINUM OXIDE TUBES AND PROCESS FOR THEIR MANUFACTURE

Günter Frankfurter, Marktredwitz, Fed. Rep. of Germany, assignor to Hoechst CeramTec Aktiengesellschaft, Selb, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 257,019, Oct. 13, 1988, abandoned. This application Jan. 30, 1989, Ser. No. 302,982

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1987, 3734914

Int. Cl.[5] C04B *35/10*

U.S. Cl. 264—60 **16 Claims**

1. A process for the manufacture of a gas-tight aluminum oxide tube which is suitable for performing catalytic high-temperature reactions, in which process water and a binder and plasticizer are added to aluminum oxide powder, the mixture is extruded to give a tubular green body, and said tubular green body is dense-sintered at 1720° to 1760° C., wherein

a) an aqueous suspension of aluminum oxide powder is obtained by grinding said aluminum oxide, producing a spray powder of a maximum particle size of 200 μm therefrom by spraying, presintering said spray powder at a temperature between 1300° and 1400° C., and grinding said presintered spray powder with water and a water-soluble stabilizing agent until the grinding residue left behind on a sieve of 63 μm inside mesh size is 0.2 to 0.4% by weight,

b) the aqueous suspension obtained from stage a) is spray-dried, water and plasticizer are added to the resultant spray powder, the mixture is kneaded to give a plastic mass, said mass is extruded to give a tubular green body and said extruded tubular green body is also presintered at a temperature between 1300° and 1400° C.,

c) the resultant presintered tube is immersed in water in order to fill the pores of said tube with water, said tube is briefly dried in order to expel a small part of said water from said pores, the aqueous suspension prepared in step a) is applied to the interior of said tube and the non-adhering residue is poured off, and

d) said tube with its coated interior is dried and finally dense-sintered.

5,059,368

METHOD FOR MOLDING A MATERIAL CONTAINING ALIGNABLE CONSTITUENTS

Peter S. Allan, Buckinghamshire, and Michael J. Bevis, Middlesex, both of England, assignors to National Research Development Corporation, London, England

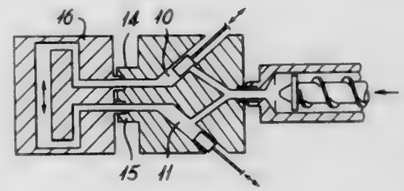
Continuation of Ser. No. 320,695, Mar. 8, 1989, Pat. No. 4,925,161, which is a continuation of Ser. No. 810,654, Dec. 18, 1985, abandoned. This application Mar. 28, 1990, Ser. No. 500,376

Claims priority, application United Kingdom, Dec. 21, 1984, 8432335; May 20, 1985, 8512708

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] B29C *45/02, 45/13*

U.S. Cl. 264—69 **10 Claims**



1. A method for molding a solid product in a mold cavity, from molten material containing alignable constituents,

wherein first and second conduits are coupled to the mold cavity at spaced positions for carrying the molten material, said method comprising:

a first step of driving a first element in the first conduit, having molten material therein, to displace the molten material through the first conduit and into the mold cavity, and then into the second conduit coupled to the mold cavity;

a second step, performed during the operation of said first steop, of driving a second element in the second conduit in a direction to permit flow of the molten material out of the mold cavity and into the second conduit; and

a third step of solidifying the molten material in the mold, wherein said first and second steps occur prior to completion of said third step.

5,059,369

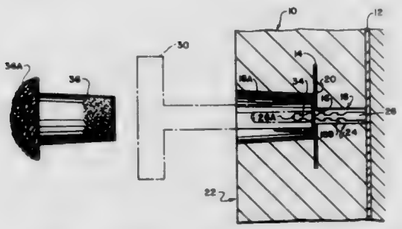
REFRACTORY FIBER MODULE RETAINER SYSTEM

Joseph J. Schiferl, Johnson Creek, Wis., assignor to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 320,388, Nov. 12, 1981, abandoned, and a continuation of Ser. No. 634,739, Jul. 26, 1984, abandoned. This application May 5, 1986, Ser. No. 860,702

Int. Cl.[5] C04B *33/28*

U.S. Cl. 264—87 **2 Claims**



1. A method of forming a refractory fiber module retainer system comprising the steps of:

vacuum molding a rigid module of refractory fiber material, including embedding in-situ, during the vacuum molding of the module, a support means in the form of a thin perforated disk, such disk having a central opening for permitting a first element of a fastening means to pass therethrough, said disk further having perforations completely surrounding its central opening for permitting the refractory fibers to be drawn into and around the perforations, thereby to interlock with the support means and bind the support means tightly into said rigid module;

further including forming, during the vacuum molding of said rigid module, a bore extending entirely through said module, a portion of said bore immediately adjacent said central opening having a larger diameter than said opening to permit a second element of said fastening means, while engaging said first element, to contact a plane surface of said disk, the central opening of said disk being substantially concentric with the center of said bore.

5,059,370

INJECTION MOLDING METHOD USING SURGE PRESSURE

Hisashi Kojima, No. 2 Nogre Green Coop-Suite 301, 8-1, Noge 2-chome, Setagaya-ku, Tokyo, Japan

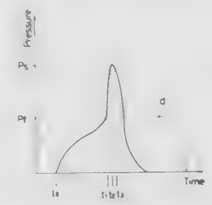
Filed Jun. 20, 1989, Ser. No. 370,749

Claims priority, application Japan, Jun. 21, 1988, 63-152981

Int. Cl.[5] B29C *45/77*

U.S. Cl. 264—102 **6 Claims**

1. An injection molding method comprising evacuating a mold cavity in an injection mold to a high vacuum of 10^{-1} Torr to 10^{-7} Torr, injecting a plasticized molding material into said mold cavity, momentarily applying a surge pressure of 1.2 to 1.5 times an injection pressure at which the molding material is injected into said mold cavity to the molding material injected in said mold cavity simultaneously with or within



0.01 to 0.05 second immediately after the completion of the injection of the molding material into said mold cavity, and effecting gate cutting immediately after the application of the surge pressure.

5,059,371

METHOD AND APPARATUS FOR EXTRUSION MOLDING FIBER-AND CEMENT-CONTAINING W/O TYPE EMULSION

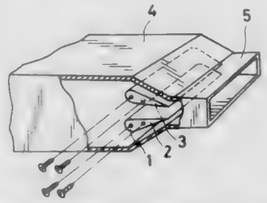
Takasi Saheki, and Hideaki Matsuda, both of Marugame, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Apr. 15, 1987, Ser. No. 39,007

Claims priority, application Japan, Apr. 26, 1986, 61-95915

Int. Cl.[5] B29C *47/12*

U.S. Cl. 264—108 **14 Claims**



1. A method of extrusion molding a W/O type emulsion obtained by stirring a mixture of a vinyl monomer solution composed of a vinyl monomer which is water insoluble and in a liquid state at normal temperature, a surface active agent having a hydrophilic-lipophilic balance of 3 to 6, and a polymerization catalyst, water, cement, and fibers through a die, wherein the length of said fibers is 3 mm to 12 mm and the aspect ratio thereof is 100 to 1,000, which comprises rectifying the stream of the emulsion in the die near the die lip of the die to direct the fibers in the emulsion to the extruding direction.

10. An apparatus for extrusion molding a W/O type emulsion containing fibers and cement, comprising an extrusion die equipped with at least one rectifying plate having a tear-drop-shape section in the die near the die lip thereof disposed in the extruding direction so that the round head portion of the rectifying plate is disposed at the opposite side to the die lip and the thin tail portion of the rectifying plate is at the die lip side, the thickness of the round head portion of the rectifying plate being at least ¼ of the length of the fibers in the W/O type emulsion.

5,059,372

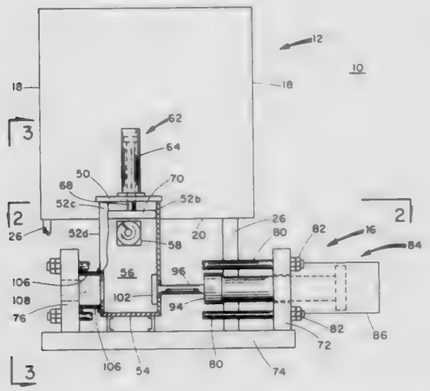
PROCESS AND APPARATUS FOR PRODUCING COMPRESSED SOLID BRIQUETTES

Günter Klais, 1625 12 St., N. E., Hickory, N.C. 28601

Filed Apr. 16, 1987, Ser. No. 39,469

Int. Cl.[5] B29C *43/04, 43/36*

U.S. Cl. 264—120 **21 Claims**



1. An apparatus for forming a compressed solid from particulate materials, which comprises:

a compacting vessel having side and bottom walls defining a compacting chamber and having an opening disposed in a lower portion of a side wall thereof;

means for introducing said particulate material into said compacting vessel;

die member having two chambers defining a solids configuration of said compressed solid and in solids communication with said opening in said wall of said compacting vessel, said die member being mounted for reciprocal movement between said compacting vessel wherein said chambers are alternately positioned in alignment with said opening in said compacting vessel;

support plate member disposed against said die member on a side opposite said compacting vessel;

means for compressing said particulate material from said compacting vessel into a chamber of said die member and including a plate member vertically-disposed for reciprocating movement within said lower portions of said compacting vessel; and

means for ejecting said thus formed compressed solid from said chamber of said die member.

14. A process for forming a compressed solid from particulate material, which comprises the steps of:

a) introducing said particulate material into a compacting zone of a compacting vessel having side and bottom walls and having a solids transfer opening in a wall thereof;

b) positioning a compacting chamber of a die member including two compacting chambers of a preselect solid configuration proximate said solids transfer opening of said compacting vessel;

c) compressing said particulate material from said compacting chamber through said solids transfer opening into said compacting chamber of said die member to form said compressed solid;

d) moving said die member to position another compacting chamber of said die member in alignment with said solids transfer opening; and

e) ejecting said compressed solid from a compacting chamber of said die member including said compressed solid.

5,059,373

METHOD OF MANUFACTURING CONTINUOUS STRIP OF ELECTRONIC DEVICES

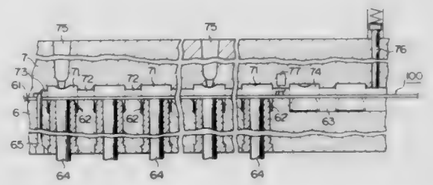
Michio Hirabayashi, Ibaraki, Japan, assignor to Idec Izumi Corporation, Osaka, Japan

Continuation of Ser. No. 137,025, Dec. 23, 1987, Pat. No. 4,937,654. This application Apr. 17, 1990, Ser. No. 509,786

Claims priority, application Japan, Dec. 26, 1986, 61-312487; Dec. 26, 1986, 61-312488

Int. Cl.[5] B29C *65/70, 45/14*

U.S. Cl. 264—154 **4 Claims**



1. A method of manufacturing of continuous strip of electronic devices comprising the steps of:

forming a first interconnected strip carrying a plurality of small size electronic devices having at least one terminal, said strip comprising a grid-like conductor strip member of a belt-like shape as a whole including a plurality of preassigned mount locations provided at a predetermined pitch along a center line of said grid-like conductor strip member and designated for mounting thereon small size electronic devices, and a plurality of conductors extending from each of said preassigned mount locations to both sides of said grid-like conductor strip member, said conductors having respective one end portions positioned closely to one another adjacent to the associated one of said mount locations, said end portions being used for connecting said at least one terminal of said electronic devices, those of said conductors extending to one side of said grid-like conductor strip member being connected to one another in the longitudinal direction with those conductors extending to the other side of said conductor strip member being connected to one another in the longitudinal direction;

molding a first plastic strip segment including molded bodies formed integrally with said grid-like conductor strip member at said preassigned mount locations, respectively, each of said molded bodies having an opening portion at which said end portions of said conductors are exposed and which is used for assembling said electronic device therein, a runner member formed integrally with said molded bodies so as to interconnect said molded bodies, and a connecting portion formed at least at one end of said plastic strip segment at a predetermined position;

shifting said first plastic strip segment by a predetermined distance in the longitudinal direction;

placing a second interconnected strip formed in the same way as said first interconnected strip; and

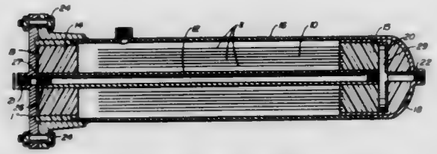
molding a second plastic strip segment which is the same as the first plastic strip segment upon said second interconnected strip, while connecting said connecting portion of said first plastic strip segment with one end of said second plastic strip segment, wherein said predetermined position of said connecting portion is such that the distance between said preassigned mount locations for the small size electronic devices positioned on both sides of said connecting portion coincides with said predetermined pitch.

5,059,374

METHOD FOR SEALING A HOLLOW FIBER MEMBRANE MODULE IN A CASE

Robert T. Krueger, Martinez; Terrence L. Caskey, Concord; Johnny L. Trimmer, Antioch, and Janine L. Jorgensen, Clayton, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 309,756, Feb. 9, 1989, Pat. No. 4,929,259. This application Dec. 14, 1989, Ser. No. 450,933
Int. Cl.[5] B28B *1/48*; B01D *35/30*
U.S. Cl. 204—156 18 Claims



1. A process for sealing a hollow fiber membrane separation module into a case in which the hollow fiber membrane separation module comprises a plurality of hollow fibers arranged in a bundle surrounding a core and having tubesheets surrounding each end of the bundle which bind the hollow fibers together, the process comprising:

A. positioning the hollow fiber separation module within a case, while the case is in a substantially vertical position;

B. providing first and second protective tubesheet caps adjacently disposed upon the tubesheets defining first and second protected and unprotected portions of the tubesheets, respectively, each protected portion and adjacently disposed protective tubesheet cap defining a space overlying the ends of the hollow fibers;

C. introducing a resin through an opening into the first end of the case in an amount sufficient to substantially fill the region defined by the first protective tubesheet cap, the first unprotected portion, and the interior of the case such that said resin encompasses a substantial portion of the first tubesheet;

D. curing the resin;

E. reversing the position of the case;

F. introducing a resin through an opening into the second end of the case in an amount sufficient to fill the regions defined by the second protective tubesheet cap, the second unprotected portion, and the interior of the case such that said resin encompasses a substantial portion o the second tubesheet;

G. curing the resin; and

H. providing openings at each end of the case through the cured resin, penetrating to the space overlying the ends of the hollow fibers, thereby providing flow paths for introducing and/or withdrawing fluids through said hollow fiber membrane separation module.

5,059,375

APPARATUS AND METHOD FOR PRODUCING KINK RESISTANT TUBING

Erin J. Lindsay, Manchester, Mich., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1989, Ser. No. 435,558
Int. Cl.[5] B29C *47/24*
U.S. Cl. 264—167 27 Claims

1. Apparatus for producing flexible kink resistant tubing adapted for medical purposes, the tubing having one or more non-reinforced section and one or more spirally-reinforced section with the non-reinforced section being adapted to be resiliently crushed to regulate fluid flow through the tubing, the apparatus comprising:

a body having inner surfaces defining a tube-forming passageway, the tube-forming passageway having a central axis;

a generally cylindrical core in the tube-forming passageway along the central axis thereof, the core having a mandrel portion adjacent one end of the core, around which an inner wall of the tubing may be formed;

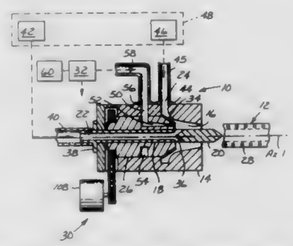
first extrusion means for substantially continuously extruding a first medical grade thermoplastic material along the mandrel portion of the core, with an outer wall of the tubing being formed against the inner surfaces of the body;

rotatable extrusion means for extruding a second thermoplastic material in a filament within the tube-forming passageway generally adjacent the mandrel portion of the core to form a reinforcing filament between the inner and outer walls of the tubing;

drive means for rotating the rotatable extrusion means around the core at a predetermined velocity relative to the body to form the reinforcing filament in a spiral or helical pattern in the wall of the tubing; and

valve means for selectively providing the second thermoplastic material to the rotatable extrusion means so that filament reinforced and non-reinforced longitudinal sections of tubing may be formed.

23. A method of producing flexible kink resistant tubing adapted for medical purposes, the tubing having a tubing wall with one or more non-reinforced section(s) and one or more spirally-reinforced section(s) with the non-reinforced section(s) being adapted to be resiliently crushed to regulate fluid flow through the tubing; the method comprising the steps of:



providing a first extrusion means having a generally annular opening through which tubing may be formed with a central longitudinal axis along a central axis of the opening;

providing a second extrusion means rotatable generally about the central axis of the first extrusion means and having an extrusion passageway spaced from the central axis such that the passageway is positioned adjacent the annular opening of the first extrusion means throughout rotation around the central axis;

providing first and second medical grade thermoplastic materials for extrusion through the first and second extrusion means, respectively, wherein the second thermoplastic material when solidified has a substantially greater stiffness than the first thermoplastic material when solidified;

substantially continuously extruding the first thermoplastic material through the annular opening to form the tubing wall, with the central longitudinal axis of the tubing substantially along the central axis of the opening;

selectively extruding the second thermoplastic material, generally simultaneously with the extrusion of the first material, to form a reinforcing filament in predetermined sections of the wall of the tube by selectively providing the second thermoplastic material to the second extrusion means; and

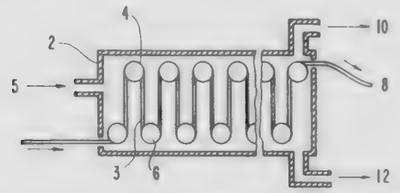
rotating the second extrusion means at a predetermined rotational velocity relative to the body such that the reinforcing filament is formed in a helical or spiral pattern in the wall of the tubing about the central longitudinal axis of the tubing.

5,059,376

METHODS FOR RAPID PURGING OF BLOWING AGENTS FROM FOAMED POLYMER PRODUCTS

Thomas M. Pontiff, Gansevoort, N.Y., and Joseph P. Rapp, Franklin Lakes, N.J., assignors to Astro-Valcour, Incorporated, Glens Falls, N.Y.

Filed Apr. 20, 1989, Ser. No. 340,709
Int. Cl.[5] B29C *71/02*
U.S. Cl. 264—234 33 Claims



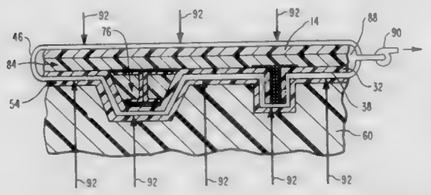
1. A method for rapidly purging residual blowing agent from polymeric foam products comprising a step of heating extruded thermoplastic polymer foam structures at an elevated temperature effective to remove a substantial portion of the residual blowing agent from said foam and to cause sufficient air to diffuse into said foam so as not to cause substantial collapse of said foam.

5,059,377

METHOD FOR FORMING A COMPOSITE STRUCTURE

Larry J. Ashton, Mapleton, and Todd H. Ashton, Provo, both of Utah, assignors to Aerotrans Corporation, Springville, Utah

Filed Jul. 21, 1989, Ser. No. 382,595
Int. Cl.[5] B29C *43/10, 43/18*
U.S. Cl. 264—257 17 Claims



1. A method of forming a composite structure, said method comprising the steps of:

forming a master plug tool having a finished surface,

forming an exterior mold means about said master plug tool, said exterior mold means having a reference surface formed common with said finished surface,

forming an interior mold means formed from a heat softenable material having a first temperature of deformation, said interior mold means having a mold surface shaped to form a portion of the interior surface of said composite structure, and a back surface,

forming compaction means having an inner surface and an outer surface, the outer surface of said compaction means shaped to operatively engage a portion of the back surface of said interior mold means,

assembling said compaction means adjacent the back surface of the interior mold means,

assembling uncured portions of said composite structure adjacent the mold surface of the interior mold means,

positioning the reference surface of said exterior mold means adjacent the outer surface of said portions of said composite structure,

applying and maintaining pressure to the back surface of said interior mold means,

softening the interior mold means by heating said interior mold means to said first temperature of deformation, the softened interior mold means and the composite structure being compacted towards the reference surface by the pressure applied to the back surface of the softened interior mold means by the compaction means,

heating said composite structure to a second temperature of cure,

maintaining said composite structure at said second temperature of cure until said structure dimensionally stabilizes,

relieving the pressure on the back surface of said interior mold means, and

removing said composite structure from between said interior mold means and said exterior mold means.

5,059,378

SYSTEM FOR ADAPTING HEAT SHRINKABLE FIBROUS STRUCTURES TO PARTICULAR USES

Dewitt R. Petterson, Dover; Charles E. Kramer, Walpole, and Francis A. DiTaranto, Plainville, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Feb. 22, 1990, Ser. No. 483,565
Int. Cl.[5] B32B *1/00, 5/02, 5/06, 5/14*
U.S. Cl. 264—258 12 Claims

10. A process of utilizing heat shrinkable fibers to establish a controlled multi-density structure, comprising the steps of:

(a) establishing adjacent layers of heat shrinkable fibers of differing shrink characteristics,

(b) establishing interpenetration of fibers from one of said layers into the other, to form a laminate, and

(c) restraining the laminate from shrinkage in at least one lateral dimension and heating the laminate above the glass transition temperature of fiber components of at least one of the layers.

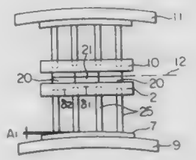
12. Process of claim 10 wherein the laminate is molded subsequent to its heat shrink processing.

5,059,379

METHOD OF RESIN SEALING SEMICONDUCTOR DEVICES

Yasutsugu Tsutsumi; Sueyoshi Tanaka; Tatsuro Takahashi; Yutaka Morita; Hideaki Seuzaki, and Hiromichi Yamada, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 8, 1989, Ser. No. 447,917
Claims priority, application Japan, Jul. 20, 1987, 62-180297; Jul. 27, 1987, 62-187317; Jul. 27, 1987, 62-187318; Jul. 27, 1987, 62-187319; Jan. 28, 1988, 62-17876
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—272.14 2 Claims



1. A method of resin sealing semiconductor devices comprising:

placing semiconductor devices in cavities provided in a pair of chase blocks;

clamping the pair of chase blocks together in a press having two opposed press surfaces, two bases, one of the bases being disposed on each of the press surfaces, two retention boards, each retention board supporting one of the chase blocks, spacer blocks disposed between the respective bases and retention boards, a plurality of support members disposed between and contacting the respective bases and

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retention boards for transmitting forces to the chase blocks from the press, the support members being longer between the respective bases and retention boards than the spacer blocks;

actuating the press and thereby applying a compressive force to urge the chase blocks together, the compressive force being transmitted from the press to the chase blocks through the support members, elastically compressing the support members, while maintaining clearance between the respective retention boards and spacer blocks; and

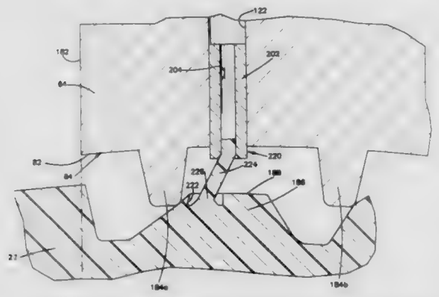
injection plastic into the cavities while clamping the pair of chase blocks together to resin seal said semiconductor devices.

5,059,380

TIRE MOLD VENT PLUG AND METHOD

Thomas E. Wise, Seville; John P. Czarnecki, Uniontown, and William F. Mattson, Hinckley, all of Ohio, assignors to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed Feb. 22, 1990, Ser. No. 483,178
Int. Cl.[5] B29C *33/10, 35/02*
U.S. Cl. 264—326 **11 Claims**



1. A mold for curing a green tire which is made of an elastomeric material capable of flowing prior to curing, said mold comprising:

surface means defining a cavity in the mold for receiving and shaping the green tire;

passage means for communicating the cavity with the exterior of the mold; and

a tubular metal vent plug located in said passage means, said vent plug having an opening extending longitudinally therethrough communicating the cavity with said passage means and into which opening uncured elastomeric material may flow as the green tire is pressed against said surface means during a molding operation to form a projection extending from the tire, said vent plug having a portion extending into the cavity a predetermined distance from said surface means to form a circular recess in the tire surrounding the projection.

5,059,381

Patent Not Issued For This Number

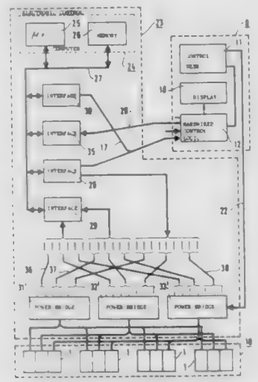
5,059,382

METHOD OF RENOVATING THE CONTROL SYSTEM FOR CONTROLLING CONTROL CLUSTERS IN A NUCLEAR REACTOR, AND A CORRESPONDING CONTROL SYSTEM

Serge Jahnke, Paris, and Philippe Ple, Nanterre, both of France, assignors to Framatome, Courbevoie, France

Filed Jan. 13, 1989, Ser. No. 296,817
Claims priority, application France, Jan. 13, 1988, 88 00313
Int. Cl.[5] G21C *7/36*
U.S. Cl. 376—215 **2 Claims**

1. A method of renovating a control system for controlling control clusters in a reactor provided with such clusters operated by electromagnetic mechanisms (**1**) having coils powered by power bridges (**31, 32, 33**) from a control desk (**11**) via said control system, said control system including a controlling hard-wired logic circuit (**12**) serving said desk and monitoring a plurality of hard-wired logic interfaces (**15**) each serving at least one subgroup (**10**) constituted by the electromagnetic operating mechanisms (**1**) of a determined number of simultaneously operable clusters, said method comprising successively and independently replacing each static power assembly (**9**) constituted by a hard-wired logic interface (**15**) and the



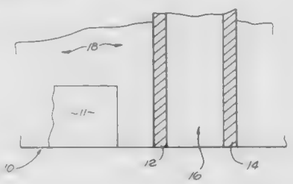
power bridges (**31, 32, 33**) of at least one subgroup served thereby by at least one electronic control assembly (**23**) constituted by a computer and the power bridges (**31', 32', 33'**) of a subgroup served thereby, said computer being interconnected via peripheral circuits (**28, 29, 30, 35**) with the power bridges and the controlling hard-wired logic in a manner which simulates a hard-wired logic interface.

5,059,383

SODIUM LEAK DETECTION SYSTEM FOR LIQUID METAL COOLED NUCLEAR REACTORS

Dariush Modarres, 12 La Vista Verde, Rancho Palos Verdes, Calif. 90274

Filed Apr. 12, 1989, Ser. No. 336,725
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—250 **6 Claims**



1. A device for detecting sodium leaks from a reactor vessel of a liquid sodium cooled nuclear reactor said reactor vessel being concentrically surrounded by a a containment vessel so as to define an airtight gap containing argon, comprising;

a light source for generating a first light beam, said first light beam having first and second predominant wavelengths, said first wavelength being substantially equal to an absorption line of sodium and said second wavelength being chosen such that it is not absorbed by sodium and argon;

an optical multiplexer optically coupled to said light source;

a plurality of sensors optically coupled to said multiplexer, each of said sensors being embedded in said containment vessel of said reactor, each of said sensors projecting said first light beam into said gap and collecting said first light beam after it has reflected off of a surface of said reactor vessel;

a beam splitter optically coupled to each of said sensors through said multiplexer; said beam splitter splitting said first light beam into second and third light beams of substantially equal intensities;

a first filter dispersed within a path of said second light beam for filtering said first wavelength out of said second light beam and a second filter disposed within a path of second light beam for filtering said second wavelength out of said third light beam;

first and second detector beams disposed with in the paths of said second and third light beams so as to detect the intensities of said second and third light beams, respectively; and

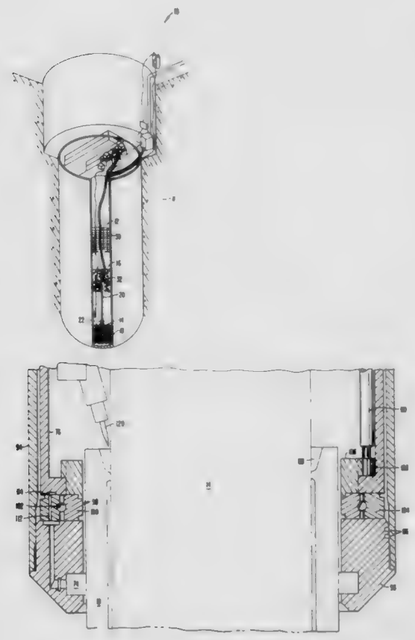
processing means connected to said first and second detector means for calculating the amount of said first wavelength which is absorbed when passing through said argon.

5,059,384

CONTROL ROD HOUSING ALIGNMENT AND REPAIR APPARATUS

Robert C. Dixon, Morgan Hill; Gerald A. Deaver; James R. Punches, both of San Jose; Guy E. Singleton, Fremont; John G. Erbes, San Jose, and Henry P. Offer, Los Gatos, all of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 526,880, May 22, 1990, Pat. No. 5,001,840.
This application Nov. 26, 1990, Ser. No. 617,828
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 **1 Claim**



1. A welding and repair device for precisely locating and welding the position of the top of a control rod drive housing attached from a stub tube from a corresponding aperture and alignment pin in a core plate within a boiling water nuclear reactor, the welding and repair device comprising:

a shaft, said shaft extending from the vicinity of the top of said control rod drive housing up to and through the aperture in said core plate;

means for registering to said aperture and said alignment pin on said core plate;

a fixture attached to the bottom end of said shaft for mating to the top of said control rod drive housing in precise mating relationship;

said fixture attached to the bottom end of said shaft whereby said fixture, when mated to said control rod drive housing and said registering means when registered to said alignment pin and aperture on said core plate imparts to said shaft, the angularity between the top of said control rod drive housing and said hole in said core plate;

a hollow cylinder, said cylinder mounted for depending and sealed support with respect to said shaft above, about and below said control rod drive housing top;

said cylinder depending down below said control rod drive housing to an elevation below the top of said stub tube;

a rotating welding apparatus with a welding head for dispensing weldment mounted for rotation with respect to said shaft;

said welding head disposed at the juncture between the side of said control rod drive housing and said stub tube; and

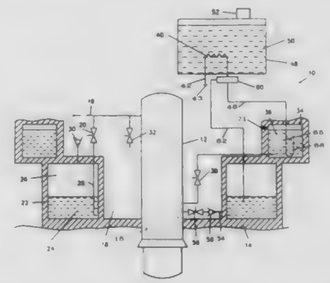
means for flooding said cylinder with gas whereby said cylinder may be lowered, flooded in a gas environment and effect a weld between the top of said stub tube an said control rod drive housing.

5,059,385

ISOLATION CONDENSER PASSIVE COOLING OF A NUCLEAR REACTOR CONTAINMENT

Douglas M. Gluntz, and Franklin E. Cooke, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 4, 1990, Ser. No. 519,070
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—282 **5 Claims**



1. A nuclear system comprising a containment airspace in which a nuclear reactor pressure vessel is disposed there being a reactor core within said pressure vessel, said system comprising:

a heat exchanger elevated a distance above said pressure vessel;

a pool of water surrounding said heat exchanger;

means for venting said pool of water to an environment outside said containment;

a heat exchanger entry conduit within said containment, said entry conduit having an open lower end communicating with the containment space, and an upper end connected to said heat exchanger, water-containing heated fluid present in the containment airspace incident a pressure vessel loss of coolant event entering and flowing through said entry conduit into said heat exchanger for cooling said fluid to convert water vapor therein to a condensate and separate non-condensable gasses therefrom;

a gravity driven cooling water pond-containing space, said gravity cooling water space being elevated a distance

above the core in said pressure vessel sufficient for cooling water upon occurrence of an event and when pressure in said presure vessel is reduced to a predetermined level, to gravity feed into said pressure vessel through a piping means connected therewith so that the water can cover said core; and

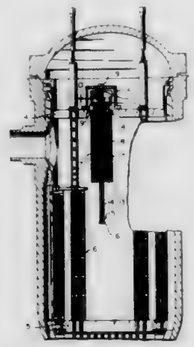
a condensate return conduit, said return conduit having an upper end connected to said heat exchanger and a lower outlet end disposed in said gravity driven cooling water space below the normal cooling water level in said space, the water condensate gravity feeding from the heat exchanger to supplement the water in said pond and upon depletion of said pond gravity outflowing from the space through said piping means to said pressure vessel.

5,059,386

MECHANISM FOR THE AUTOMATIC RELEASE OF CONTROL BARS IN A NUCLEAR REACTOR

Giovanni E. Farello, and Antonio Naviglio, both of Rome, Italy, assignors to Comitato Nazionale per la Ricerca e per lo Sviluppo Dell'Energia Nucleare e Delle Energie Alternative, Rome, Italy

Filed Apr. 13, 1990, Ser. No. 508,640
Claims priority, application Italy, Apr. 13, 1989, 47844 A/89
Int. Cl.[5] G21C *7/12*
U.S. Cl. 376—336 **4 Claims**



1. In a pressurized water cooled nuclear reactor having a reactor core and control bars for insertion into said reactor core, said reactor core comprising a plurality of fuel elements, means for supporting said control bars in a bundle, a mechanism for suspending said bundle of control bars in a spaced position above said fuel elements and for effecting an automatic release of said bundle of control bars, said mechanism comprising:

a thermal sensor generating a mechanical force as a function of the absolute temperature of water contacting said fuel elements in the reactor,

said thermal sensor being installed inside one of said fuel elements in contact with water cooling said reactor,

said thermal sensor comprising a first bar and a second bar, each of said bars extending from a lowermost position inside said one of said fuel elements to a position above said one of said fuel elements,

a connection member fixed only to lower ends of said first and second bars maintaining said bars in a parallel spaced relationship throughout the length of said bars,

said first bar having a different coefficient of thermal expansion than said second bar so that following an increase in temperature a relative elongation of one of said bars with respect to the other of said bars is produced,

holding device means rotatably connected to a rigid structure of said reactor for releasably engaging said means supporting said control bars in a suspended and spaced position above said fuel elements of said reactor when said reactor is in a normal operating condition,

mechanical actuator means for disengaging said holding device means from said means supporting said control bars to cause their fall under the force of gravity,

an upper end of said first bar being rotatably connected to said mechanical actuator means,

an upper end of said second bar being fixedly connected to a rigid structure of said reactor,

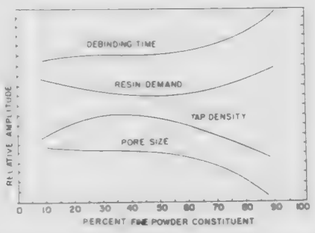
wherein elongation of one of said bars when the temperature of said water cooling said reactor reaches a predetermined value actuates said mechanical actuator means to release said holding device means.

5,059,387

METHOD OF FORMING SHAPED COMPONENTS FROM MIXTURES OF THERMOSETTING BINDERS AND POWDERS HAVING A DESIRED CHEMISTRY

Gregory M. Brasel, Ballwin, Mo., assignor to Megamet Industries, St. Louis, Mo.

Filed Jun. 2, 1989, Ser. No. 360,765
Int. Cl.[5] B22F *1/00, 1/02, 9/00*
U.S. Cl. 419—23 **33 Claims**



1. A method for producing a part from a powder having desired chemical properties comprising:

mixing the powder with a binder having as its primary constitutent a thermosetting condensation resin, the binder being mixed with the powder in an amount sufficient to fill the void volume of the powder;

mixing one of the powder or the binder, or both, with a substance which releases oxidizing vapors through a chemical reaction;

forming the resultant mixture into an appropriate part shape;

curing the part for the resin to form a film which leaves pores in the part open; and,

heating the part in a vacuum to the appropriate sintering temperature to cause a localized oxidation within the pores from the oxidizing vapors released by the substance to burn-out the film.

5,059,388

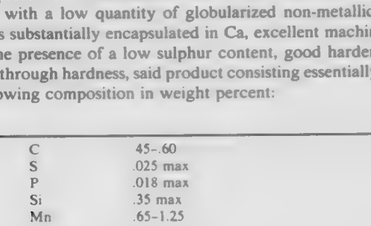
PROCESS FOR MANUFACTURING SINTERED BODIES

Hiroshi Kihara; Eiki Arai, both of Narashino; Shigeaki Ogata, Nagareyama; Yoshio Katagiri; Katsuyuki Fujita, both of Tokyo; Tadahiko Wachigai, and Hiroyoshi Hiratsuka, both of Sendai, all of Japan, assignors to Sumitomo Cement Co., Ltd.; Seiko Instruments Inc., both of Tokyo and Seiko Electronic Components Ltd., Sendai, all of, Japan

Filed Oct. 4, 1989, Ser. No. 417,198
Claims priority, application Japan, Oct. 6, 1988, 63-252672; Jan. 5, 1989, 64-610; Jan. 5, 1989, 64-611; May 22, 1989, 1-128261
Int. Cl.[5] C04B *38/04*
U.S. Cl. 419—37 **26 Claims**

1. A process for manufacturing a sintered body comprising mixing a powder and an organic binder which comprises at least one water-soluble thermoplastic organic polymer and at least one water-insoluble thermoplastic organic polymer to form a mixture,

plastic molding the mixture to obtain a plastic molded part, and



debinding said plastic molded part by bringing it in contact with water to extract and remove said water-soluble thermoplastic organic polymer, and

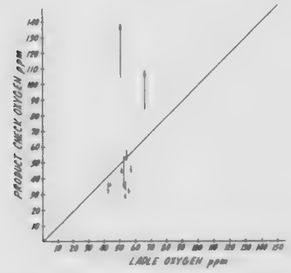
sintering the plastic molded part after said debinding.

5,059,389

LOW ALLOY STEEL PRODUCT

Charles W. Finkl, Evanston, Ill., and Albert L. Lehman, Boca Raton, Fla., assignors to A. Finkl & Sons Co., Chicago, Ill.

Filed Apr. 18, 1990, Ser. No. 510,496
Int. Cl.[5] C22C *38/06*
U.S. Cl. 420—67 **9 Claims**



1. A steel product, said steel product being characterized by the presence of a substantial content of aluminum in combination with a low quantity of globularized non-metallic inclusions substantially encapsulated in Ca, excellent machinability in the presence of a low sulphur content, good hardenability and through hardness, said product consisting essentially of the following composition in weight percent:

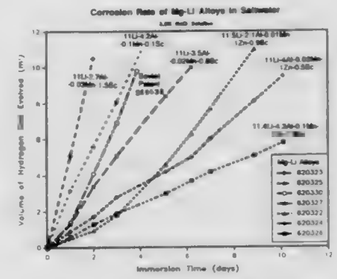
C	.45–.60
S	.025 max
P	.018 max
Si	.35 max
Mn	.65–1.25
Cr	.60–1.75
Ni	.75–1.25 or
Cu	up to .50 in the ratio of 2 Cu/Ni over .25 Cu, excess Ni
Mo	.30–.45
V	.03–.10
Al	.025 max in the presence of
Ca	approx. 15% of Al.

5,059,390

DUAL-PHASE, MAGNESIUM-BASED ALLOY HAVING IMPROVED PROPERTIES

T. David Burleigh, and Rebecca K. Wyss, both of Plum Borough, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 14, 1989, Ser. No. 365,840
Int. Cl.[5] C22C *23/06, 23/02*
U.S. Cl. 420—405 **24 Claims**



1. An ingot-derived, cadmium-free alloy consisting essentially of: about 7–12 wt. % lithium; about 2–6 wt. % aluminum, the combined lithium and aluminum content being between about 12 and 14.5 wt. %; about 0.4–2 wt. % of an element selected from: scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and lutetium; up to about 2 wt. % zinc; up to about 1 wt. % manganese; the balance magnesium and impurities.

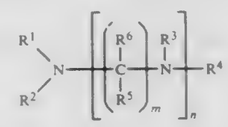
5,059,391

USE OF POLYARALKYLAMINES AS CORROSION INHIBITORS

Artur Botta, Krefeld; Christian Wegner, Cologne, and Heinz-Joachim Rother, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 1, 1988, Ser. No. 239,480
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1987, 3730475
Int. Cl.[5] C23F *11/14*
U.S. Cl. 422—7 **2 Claims**

1. In the method of protecting metals from corrosion wherein an effective amount of a corrosion inhibiting agent is added to the liquid medium with which said metals are in contact, the improvement which comprises using as the corrosion inhibiting agent a polyaralkylamine of the formula



wherein

R^1 to R^4 are identical or different and are hydrogen, C_1–C_{18}-alkyl, benzyl, α-methylbenzyl, α,α-dimethylbenzyl, 4-methylbenzyl and tert.-butylbenzyl, or polybenzyl, poly α-methylbenzyl, poly α, α-dimethylbenzyl, poly 4-methylbenzyl and poly tert.-butyl benzyl or C_6–C_{15}-aryl, or

R^1 to R^4 are linked to one another in such amnner that in each case two of the radicals, together with the nitrogen atom linking them or together with the N-C-containing remainder of the chain, form a 5-membered to 6-membered ring, at least one of the radicals R^1 to R^4 denoting

benzyl, α-methylbenzyl, α,α-dimethylbenzyl, poly 4-methylbenzyl and poly tert.-butyl benzyl, and

R_5 and R_6 independently of one another are hydrogen, C_1–C_6-alkyl, C_5–C_7-cycloalkyl, C_7–C_{12}-aralkyl or C_6–C_{10}-aryl,

m is an integer from 2 to 10, and

n is an integer from 2 to 30, and the C-chain defined by m can contain different radicals R^5 and R^6 and the C-N chain defined by n can have different values of m.

5,059,392

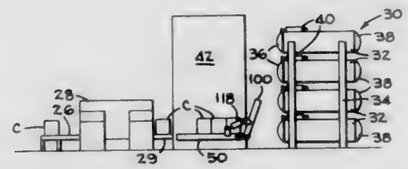
BATCH STERILIZING SYSTEM

Corneel C. Wijts, Saratoga, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 24, 1989, Ser. No. 346,443

Int. Cl.[5] A61L *2/00;* **B65B** *55/02*

U.S. Cl. 422—32 **21 Claims**



1. A method for sterilizing products in containers, comprising the steps of:

actuating a loader for loading containers into at least one car;

selectively elevating and translating said at least one loaded car into a selected empty retort;

transferring said at least one car into a selected one of a plurality of retorts, each having a door, said plurality of retorts being arranged in horizontal rows and vertical columns;

closing the door of said selected retort;

sterilizing and thereafter cooling the product in said at least one car while in said one retort;

releasing the sterilized and cooled containers from said selected retort and removing said sterilized and cooled containers from said selected retort;

unloading the sterilized and cooled containers from said at least one car;

conveying the empty car into a loader for loading other containers to be sterilized into said at least one car; and

repeating the above steps for sterilizing products and other cars and in other ones of said retorts.

5,059,393

ANALYSIS SLIDE POSITIONING APPARATUS AND METHOD FOR A CHEMICAL ANALYZER

John A. Quenin, Rochester; Johannes J. Porte, Webster, and Raymond F. Jakubowicz, Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 5, 1989, Ser. No. 293,717

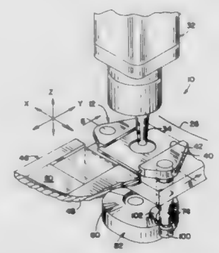
Int. Cl.[5] G01N *35/00, 35/04;* **F16H** *25/12, 25/16*

U.S. Cl. 422—64 **21 Claims**

1. A chemical analyzer including an incubator, at least one read station disposed adjacent to one side of the incubator, a sample fluid dispenser station which is constructed so as to provide the formation of pendant fluid drops, and an apparatus for aligning and vertically positioning test slides having geographically different fluid deposit zones relative to the sample fluid dispenser station to control fluid application to said slides, said apparatus comprising:

a movable platform defining a guideway leading to said incubator, said guideway defining a support for a slide beneath said sample fluid dispenser station to allow a pendant fluid drop to be deposited upon a fluid deposit zone of said slide;

linearly reciprocal means for moving said slide in a linear direction in said guideway toward said incubator and in a manner positioning said slide relative to said sample fluid dispenser station so as to dispense fluid thereon; and



cam driven means for moving said platform and the slide carried thereby in only two directions extending generally perpendicular to each other and to the linear direction of said slide relative to said sample fluid dispenser station in a manner controlling fluid application to said slide.

5,059,394

ANALYTICAL DEVICE FOR THE AUTOMATED DETERMINATION OF ANALYTES IN FLUIDS

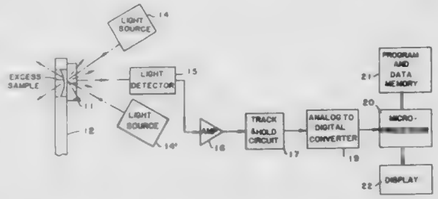
Roger Phillips, Palo Alto; Geoffery McGarraugh, Scotts Valley; Frank Jurik, San Mateo, and Ray Underwood, Red Bluff, all of Calif., assignors to Lifescan, Inc., Mountain View, Calif.

Division of Ser. No. 896,418, Aug. 13, 1986, Pat. No. 4,935,346.

This application Feb. 11, 1988, Ser. No. 154,941

Int. Cl.[5] G01N *21/00, 33/48;* **C12Q** *1/54*

U.S. Cl. 422—68.1 **7 Claims**



1. An apparatus for measuring reflectance from a porous matrix containing a reagent that reacts with an analyte suspected of being present in a liquid sample applied to a surface in said porous matrix, where said sample can migrate through said porous matrix and react with said reagent if said analyte is present in said sample, which comprises:

a housing;

an internal chamber in said housing;

means for accessing said internal chamber, whereby said porous matrix can be inserted in or removed from said internal chamber through said means for accessing;

means for excluding external light from entering said internal chamber through said means for accessing;

means for retaining said porous matrix in said internal chamber, wherein said porous matrix is retained with a first surface accessable for applying said liquid sample through said means for accessing;

means for illuminating a second surface of said porous matrix when said porous matrix is retained in said internal chamber, wherein said second surface is different from said first surface;

means for detecting intensity of light reflected from said second surface of said porous matrix when said porous matrix is retained in said internal chamber and illuminated by said means for illuminating, wherein said means for detecting produces an output related to said intensity, said means for detecting intensity being adapted to provide a series of outputs;

control means for processing said outputs, said control means including means for comparing outputs in said series and determining whether said outputs decrease by a predetermined difference sufficient to indicate that said sample of body fluid has reached said second surface, wherein said predetermined decrease in outputs causes said control means to initiate a timing period which results in a measurement reading being taken from said surface at a predetermined time after said second timing period is initiated without having determined the time at which said sample of body fluid was initially applied to said porous matrix; and

means for reporting said measurement reading.

5,059,395

PARTICLE ANALYZING APPARATUS

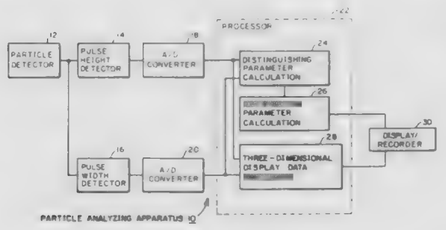
Gary M. Brittenham, Euclid; Christopher J. Allen, Cleveland, both of Ohio; Tokuhiro Okada, and Keiji Fujimoto, both of Hyogo, Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Nov. 9, 1988, Ser. No. 269,138

Claims priority, application Japan, Mar. 30, 1988, 63-77365

Int. Cl.[5] G01N *15/02*

U.S. Cl. 422—73 **2 Claims**



1. A particle analyzing apparatus which detects a change in a signal produced by a particle floating in an electrolytic suspension as the particle passes through a detector aperture, comprising:

particle detecting means for generating pulses corresponding to individual particles in a sample;

means for detecting height and width of individual generating pulses corresponding to said individual particles;

means for calculating as a distinguishing parameter a ratio of the detected pulse height to the detected pulse width;

means for calculating a coefficient of variation of the ratio of the pulse height to the pulse width as a distribution parameter of said distinguishing parameter; and

data means for displaying and recording at least one of said pulse data and calculated data, wherein said pulse data comprises the detecting pulse height and width and the calculated data comprises the calculated ratio and calculated coefficient of variation.

5,059,396

ARRANGEMENT FOR OPTICAL MEASURING OF CONCENTRATION OF SUBSTANCES

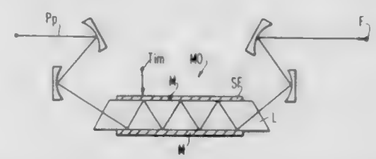
Norbert Opitz, Schwerte; Dietrich W. Lübbers, Dortmund, and Bernhard Schrader, Essen, all of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Förderung der Wissenschaften E.V., Göttingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 889,810, Jul. 24, 1986, abandoned, which is a continuation of Ser. No. 679,018, Dec. 6, 1984, abandoned. This application Sep. 26, 1988, Ser. No. 249,586

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3344019

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—82.11 **34 Claims**



1. An arrangement for optical measuring concentration of substances, comprising means defining a measuring space composed of a material which is permeable for particles to be measured, said measuring space being transparent for a measuring radiation, said measuring space being water repellant and free from any indicator, said measuring space having a light conductor which has a refractive index greater than that of the measuring space and is not permeable for particles to be measured and that the measuring radiation passes through said measuring space by attenuated total reflection; means for producing a testing light, which is an infrared radiation; and a layer arranged to be in connection with said measuring space, said layer excluding a reaction from the particles to be measured, said layer being composed of a water-insoluble solvent.

5,059,397

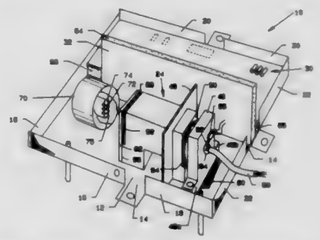
GAS DETECTOR SYSTEM

Jeffrey Melly, Clayton, Mo., and Shawn Bennett, Cumberland, R.I., assignors to Watlow/Winona, Inc., Winona, Minn.

Filed Feb. 15, 1989, Ser. No. 310,631

Int. Cl.[5] G01N *21/01*

U.S. Cl. 422—94 **17 Claims**



1. CO_2 gas detector analyzer system comprising:

a. a gas sample cell with windows on each end;

b. a heater including an embedded thermocouple position at one end of said cell;

c. thermopile detector and a temperature transducer adjacent thereto at an other end of said cell; and,

d. means for summing four voltages of said thermopile detector, an offset voltage state, said thermocouple and temperature transducer and means for generating a voltage signal from said summed voltages of said summing

means corresponding to the percentage of CO_2 gas in said cell.

5,059,398

DISPOSABLE PRESELECTED-VOLUME CAPILLARY PIPET DEVICE

James W. Kenney, West Chester, Pa., assignor to Drummond Scientific Company, Broomall, Pa.

Filed Jul. 22, 1985, Ser. No. 757,608
Int. Cl.[5] B01L 3/02
U.S. Cl. 422—100 16 Claims



1. A method of preparing a liquid sample for testing, comprising the steps of

providing a capillary means for drawing liquid into a capillary tube by capillary action, said capillary means comprising the capillary tube with an admitting-emitting end for liquids and a vent end for passing air from the tube as the liquid is being drawn into the tube by capillary action, and a barrier means positioned between the ends to define a preselected volume of liquid in a chamber formed between the barrier means and the admitting-emitting end,

drawing a volume of liquid to be tested into a capillary tube by capillary action,

venting the air in the tube through the barrier means and the vent end during the drawing of the liquid into the capillary tube by capillary action,

stopping the drawing of the liquid when the liquid contacts and wets the barrier means to obtain a preselected volume of liquid in the chamber,

and discharging the liquid from the chamber by pushing the barrier means through the chamber to the admitting-emitting end and pushing the preselected volume of liquid out of the chamber so that all of the liquid is discharged while retaining the barrier means within the tube.

4. A disposable preselected volume capillary pipet device comprising

capillary means for drawing liquid into a capillary tube by capillary action,

said capillary means comprising the capillary tube with an admitting-emitting end for liquids and a vent end for passing air from the tube as the liquid is being drawn into the tube by capillary action,

a port at the admitting-emitting end for admitting and emitting liquids to the capillary tube,

a port at the vent end of the tube,

barrier means for passing air freely from the tube to allow for capillary flow as the liquid is being drawn into the tube by capillary action and for stopping the passage of liquid through the tube when the liquid reaches and contacts the barrier means,

said barrier means being positioned in the tube at a preselected distance from the admitting-emitting port to define a liquid chamber of preselected volume,

and piston means for pushing the barrier means from the vent end to push the barrier means to the admitting-emitting end to cause the barrier means to wipe the walls of the liquid chamber and to cause the barrier means to push the preselected volume of liquid out of the liquid chamber so that all the liquid is discharged,

said piston means being of sufficient length to push the barrier means to the port at the admitting-emitting end of the tube,

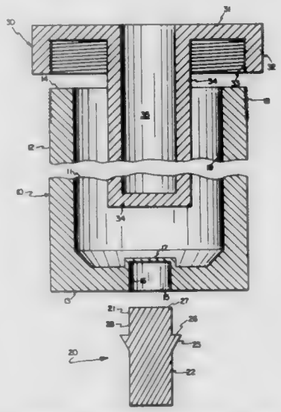
said piston means being readily detachable from said barrier means.

5,059,399

CRYOGENIC SELF-SEEDING VIAL

Dean W. Schilling, 400 Hoover Rd., Soquel, Calif. 95073

Filed Dec. 22, 1989, Ser. No. 455,266
Int. Cl.[5] B01L 3/14
U.S. Cl. 422—102 11 Claims



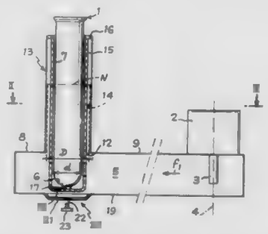
1. Vial for holding a biological specimen during a cryogenic freezing procedure, comprising a container having a wall of material having a predetermined coefficient of thermal conductivity K_1 and defining a specimen-receiving internal cavity, and at least one pin extending into close proximity with the internal cavity from outside the container and having a coefficient of thermal conductivity K_2 substantially greater than K_1 and defining a path of increased thermal conductivity from the interior to the exterior of the container to cool a specimen carried therein.

5,059,400

APPARATUS FOR CHEMICAL REACTION BY WET PROCESS COMPRISING A STACK EQUIPPED WITH A BARRIER AGAINST THE PROPAGATION OF MICROWAVES

Philippe H. Bénézech, Gien; Eric P. F. Quentin, and Jean-Jacques R. R. Baudet, both of Briare, all of France, assignors to Societe Anonyme : Societe Prolabo, France

Filed Mar. 5, 1990, Ser. No. 488,134
Claims priority, application France, Mar. 6, 1989, 89 03127
Int. Cl.[5] G01N 31/16
U.S. Cl. 422—186 11 Claims



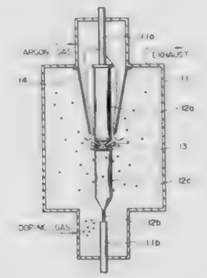
1. Apparatus for chemical reaction by wet process comprising a receptacle having a container portion of retaining one or more chemical compounds and cylindrical neck portion extending beyond said container portion, means for generating microwaves and an application cavity associated with said microwave generator, said cavity being bounded by an upper wall having an opening therein and having a stack bordering the opening rising over a sufficient height to encompass the receptacle and containing a perforated envelope forming a barrier to prevent the propagation of microwaves and a sleeve of a material transparent to microwaves.

5,059,401

MONOCRYSTAL GROWING APPARATUS

Masataka Watanabe, Niigata, and Eiichi Machida, Jyouetsu, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1990, Ser. No. 557,784
Claims priority, application Japan, Jul. 31, 1989, 1-199055
Int. Cl.[5] C30B 13/04, 35/00
U.S. Cl. 422—250 6 Claims



1. A monocrystal growing apparatus, comprising:

a chamber-defining housing;

an upper vertical shaft extending into said chamber-defining housing, said upper vertical shaft supporting one of a polycrystal rod and a seed crystal;

a lower vertical shaft extending into said chamber-defining housing coaxially with said upper vertical shaft, said lower vertical shaft supporting the other of the polycrystal rod and the seed crystal;

a heating means provided within said chamber-defining housing and melting a part of the polycrystal rod to produce a melt between the polycrystal rod and the seed crystal, the polycrystal rod and the seed crystal being rotated while the melt is progressively displaced relative to a length of the polycrystal rod provided adjacent the melt;

means for introducing a doping gas into said chamber-defining housing;

means, provided in said chamber-defining housing, for separating a remaining part of the polycrystal rod other than the melt from the atmosphere of the doping gas, said separation means containing the remaining part of the polycrystal rod and extending from an end remote from the melt of the polycrystal rod towards the melt along the polycrystal rod, said separation means terminating before the vertical position of the melt so that the melt is left outside said separation means and is exposed to the atmosphere of the doping gas; and

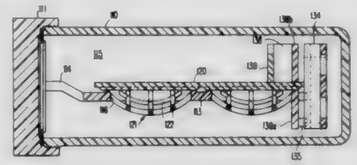
means for passing an inert gas into said separation means so as to prevent the doping gas from invading said separation means, the monocrystal growing apparatus thereby building up a monocrystal having a constant impurity level along its longitudinal axis.

5,059,402

CONTACT LENS DISINFECTION UNIT

Kenneth R. Seamons, 2789 Saddlebrook Way, Marietta, Ga. 30064, and Peter J. Gillespie, 4171 Gunnin Rd., Norcross, Ga. 30092

Filed Aug. 12, 1988, Ser. No. 231,526
Int. Cl.[5] A61L 2/00
U.S. Cl. 422—300 24 Claims



1. A contact lens disinfection unit comprising:

a container;

a cap detachably mounted on said container;

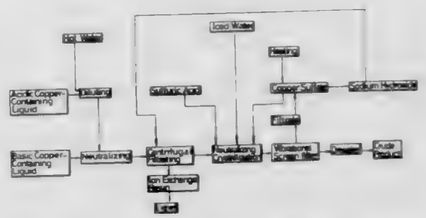
a lens and catalyst block holder mounted on and depending from said cap and extending into said container when said cap is mounted on said container, said holder having means for engaging a pair of contact lenses for holding the contact lenses with the surfaces thereof exposed to the space around said holder, and means for holding a catalyst block on said holder in a position for circulation of a disinfectant solution from the space around said holder over the catalyst block.

5,059,403

METHOD FOR PRODUCING COPPER SULFATE FROM WASTE COPPER-CONTAINING LIQUID

Chung C. Chen, Taipei, Taiwan, assignor to Compeq Manufacturing Co., Ltd., Tao Yuan Hsien, Taiwan

Filed Dec. 3, 1990, Ser. No. 620,748
Int. Cl.[5] C01G 3/10
U.S. Cl. 423—24 10 Claims



1. A method for producing copper sulfate from waste copper-containing liquid comprising the steps of:

a) dilution of acidic copper-containing liquid;

b) mixing and neutralizing the diluted acidic copper-containing liquid with a predetermined amount of basic copper-containing liquid such that the temperature of the resultant solution is within the range of 50°–80° C. and the pH value of the resultant solution is within the range of 5–9 and that the concentration of copper ion is within the range of 0.1–30 ppm;

c) filtrating the resultant liquid by centrifugal filtration into filtrate and residue;

d) subjecting the filtrate to an ion exchange resin tower which reduces the concentration of copper ion to below 0.3 ppm for being expelled to the surroundings;

e) treating the residue with deionized water and expelling the used deionized water having a pH value of 7–8 and a concentration of copper ion below 0.1 ppm to the surroundings;

f) further neutralizing and crystallizing the residue by treat-

ing the residue with an amount of preheated saturated copper sulfate solution and an amount of sulfuric acid solution having different proportions of sulfuric acid content, with addition of iced water to cool the resultant solution to an ambient temperature;

g) filtrating the resultant solution along with the crystalline copper sulfate formed in step (f) by using a vibrational screen filter;

h) combining the filtrate (a saturated solution of copper sulfate) with the saturated copper sulfate solution for recycle use;

i) periodically treating an amount of the saturated copper sulfate solution with a 10–45% sodium hydroxide solution to form copper hydroxide precipitate and filtrating the resultant solution by centrifugal filtration and treating the filtrate thus obtained by ion-exchange resin prior to being expelled to the surroundings, such that the copper sulfate solution is handled in a closed system; and

j) subjecting the crystalline copper sulfate into a dewaterer to form a crude copper sulfate product.

5,059,404

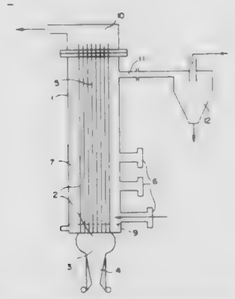
INDIRECTLY HEATED THERMOCHEMICAL REACTOR APPARATUS AND PROCESSES

Mamtaz N. Mansour, Columbia, Md.; Kanda-Swamy Durai-Swamy, Torrence, and David W. Warren, Sherman Oaks, both of Calif., assignors to Manufacturing and Technology Conversion International, Inc., Columbia, Md.

Filed Feb. 14, 1989, Ser. No. 310,202

Int. Cl.[5] **B01J** *8/18;* **C01B** *3/02;* **D21C** *11/12;* **F27B** *15/14*

U.S. Cl. 423—201 **30 Claims**



1. A process for carrying out thermochemical reactions, said process comprising:

a) introducing a fuel and an oxygen-containing gas into a pulse combustion zone;

b) combusting a first part of said fuel introduced into said pulse combustion zone in a combustion chamber under conditions operable for effecting pulse combustion of said first part of said fuel thereby producing a hot gaseous stream comprising the remaining part of said fuel and an acoustic pressure wave at a frequency of from about 20 to about 1500 Hertz and a sound pressure level in a range of from about 110 to about 190 dB;

c) discharging said hot gaseous stream from said pulse combustion chamber into an inlet of a resonance zone bounded by a conduit wall, said resonance zone having said inlet at one end and an outlet at the other end thereof and being surrounded at least in part by a bed of solid fluidizable particles;

d) combusting at least a portion of said remaining part of said fuel in said hot gaseous stream in said resonance zone thereby producing a combustion product stream;

e) confining said bed of solid particles in a reaction zone surrounding a significant portion of said resonance zone and maintaining said solid particles therein in a fluidized state;

f) allowing said acoustic wave to propagate through said conduit wall of said resonance zone into said reaction zone containing said fluidized bed of solid particles;

g) heating said bed of fluidized solid particles in said reaction zone by heat transfer from said combustion product stream in said resonance zone through said conduit wall thereof to said bed of fluidized solid particles; and

h) introducing one or more reactant materials into said reaction zone with said solid particles of said bed, thereby causing said reactant material to undergo thermochemical reaction.

15. An apparatus for carrying out thermochemical reactions, said apparatus comprising:

pulse combustion means for the combustion of a fuel to produce a pulsating flow of combustion products and an acoustic pressure wave at a frequency of about 20 to about 1500 Hertz and a sound pressure level in a range of from about 110 to about 190 dB, said pulse combustion means including a combustion chamber and at least one resonant tube having an inlet in communication with said pulse combustion chamber for receiving said pulsating flow of combustion products and acoustic pressure wave; and

a reactor vessel for containing a bed of fluidizable solid particles, said solid particles when fluidized surrounding at least a portion of said at least one resonant tube and having an inlet for introducing reactant materials, an outlet for removing gaseous reaction products therefrom; and an inlet for a medium for fluidizing said solid particles.

5,059,405

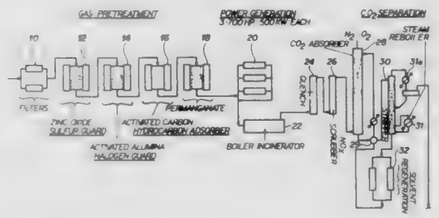
PROCESS AND APPARATUS FOR PURIFICATION OF LANDFILL GASES

J. Richard Watson, and Beryl Koplin, both of Atlanta, Ga., assignors to Bio-Gas Development, Inc., Atlanta, Ga.

Filed Dec. 9, 1988, Ser. No. 282,309

Int. Cl.[5] **B01D** *53/36, 53/34;* **C01B** *31/20*

U.S. Cl. 423—210 **23 Claims**



1. In a process for removing the impurities from landfill gas mixtures, comprising the steps of:

(a) dewatering said gas mixture;

(b) filtering solids and aersols from said gas mixture using a HEPA filter;

(c) adsorbing sulfur compounds from said gas mixture;

(d) removing halogens from said gas mixture;

(e) adsorbing hydrocarbons from said gas mixture;

(f) oxidizing any remaining impurities which can be oxidized from said gas mixture; and

(g) incinerating said gas mixture thereby producing an exit stream from said process consisting of CO_2, O_2, and N_2 and water, the collective molar purity which is not less than 99.99%.

5,059,406

DESULFURIZATION PROCESS

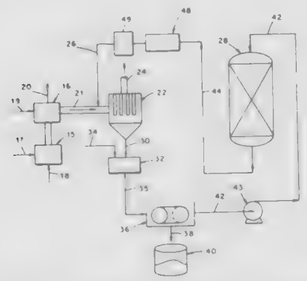
Atul C. Sheth, Tullahoma, Tenn., and William A. Butler, Longview, Tex., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Apr. 17, 1990, Ser. No. 510,101

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] **C01B** *17/00, 7/00;* **B01J** *8/00*

U.S. Cl. 423—244 **12 Claims**



1. In a fossil fuel combustion process involving the generation of a flue gas product containing sulfur oxides and halogen compounds wherein an alkali metal compound is contacted with the gas resulting in the removal of sulfur oxides from the gas and formation of a water-soluble residue comprising an alkali metal sulfate and alkali metal halides, which residue is collected from the gas before the gas is released to the environment, and the recovery of the alkali metal ions from the collected residue for use in supplying the alkali metal that is contacted with the gas, the improvement comprising dissolving the residue in water to form an aqueous solution thereof having a pH of less than about 8 so that sulfate ions, halogen ions and alkali metal ions are present therein, and thereafter contacting the solution with a weak base anion-exchange resin having bicarbonate groups associated therewith that exchange with sulfate and halogen ions in the solution so that the sulfate and halogen ions become associated with the resin and the bicarbonate groups become associated with the alkali metal ions in the solution, whereby the alkali metal ions are separated from the sulfate ions and halogen ions for use in supplying the alkali metal compound that is contacted with the gas.

5,059,407

LIQUID CARBON DIOXIDE INJECTION IN EXOTHERMIC CHEMICAL REACTIONS

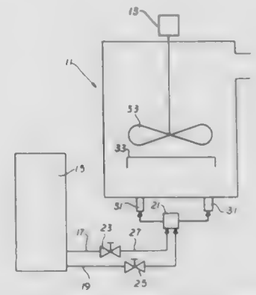
David E. Wallace, Plainfield; Ronald J. Merritello, Chicago; Leonard E. Zyzda, Buffalo Grove; Jacob D. Eisenwasser, Flossmoor, and Gary J. Lambesis, Hickory Hills, all of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill.

Filed Mar. 28, 1990, Ser. No. 500,719

Int. Cl.[5] **C01D** *7/00;* **C01F** *5/24*

U.S. Cl. 423—421 **17 Claims**

1. A method of carrying out an exothermic chemical reaction with CO_2, which method comprises providing a fluid solution of at least one chemical reactant selected from the group of metal oxides and hydroxides, in a reaction vessel, and injecting liquid CO_2 into said solution wherein said liquid CO_2 expends to CO_2 vapor in said reaction vessel and said CO_2 reacts exothermically with said chemical reactant in said solution, to provide a chemical reaction product.



5,059,408

CARBON BLACK FOR TIRE TREAD

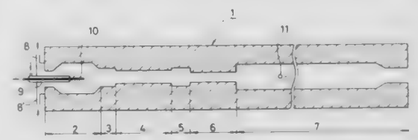
Masahiko Mito, Aichi, Japan, assignor to Tokai Carbon Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1989, Ser. No. 420,405

Claims priority, application Japan, Dec. 12, 1988, 63-313304

Int. Cl.[5] **C01B** *31/02;* **C09C** *1/48*

U.S. Cl. 423—445 **1 Claim**



1. Carbon black for a tire tread which has a cetyltrimethylammonium bromide specific surface area (CTAB) of 120 to 160 m^2/g, a dibutyl phthalate absorption number of compressed sample (24M4DBP) of at least 100 to 145 ml/100 g, a tinting strength (Tint) of 100 to 150%, and such a value Ma defined by the following equation (1) as to satisfy the relationship expressed by the following formula (2):

$$Ma = 0.792 \times \frac{[24M4DBP]^2}{[N_2SA]^2} \times \frac{[Tint]}{[Dst]} \quad (1)$$

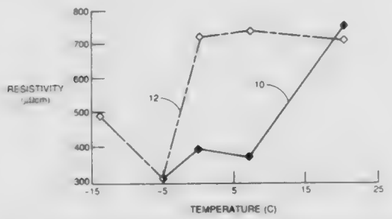
wherein N_2SA is a nitrogen adsorption specific surface area (m^2/g), and $\overline{D}st$ is the equivalent Stokes diameter (nm) at the maximum absorbance of the distribution curve of aggregates determined by the centrifugal classification method, and

$$Ma \geq 1.7 - 0.005\,[CTAB] \quad (2).$$

5,059,409
BROMINATED GRAPHITIZED CARBON FIBERS

Ching-Cheh Hung, Westlake, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 219,016, Jul. 14, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 443,289
Int. Cl.[5] C01B *31/04*
U.S. Cl. 423—448 **1 Claim**



1. A brominated graphitized carbon fabric material comprising

a plurality of pitch-based rebrominated previously brominated-debrominated graphitized carbon fibers having a unidirectional weave, each of said fibers having

(a) a bromine to carbon weight ratio of 18%,

(b) a diameter between 11 μm and 12 μm,

(c) a resistivity of 320 μΩ-cm,

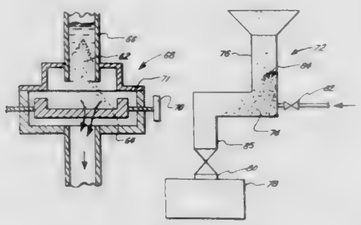
(d) an interplanar spacing which is about 0.01 Å to about 0.02 Å more than before-bromination, and

(e) a crystallite size which is substantially unchanged by bromination.

5,059,410
PRODUCTION OF SILICON

James E. Boone; David W. Owens; Robert E. Farritor, all of Baton Rouge, La., and Wesley D. Blank, Pasadena, Tex., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 59,565, Jun. 8, 1987, abandoned, which is a division of Ser. No. 761,434, Aug. 1, 1985, abandoned. This application Jul. 20, 1988, Ser. No. 221,657
Int. Cl.[5] C01B *33/027*
U.S. Cl. 423—349 **6 Claims**



1. A process, in the production of silicon product in a reactor, for maintaining the purity of said silicon product and for protecting said silicon product from contamination by impurities generated by erosion of a dispensing valve through which said silicon product is discharged from said reactor, said process comprising the steps of:

(a) fluidizing a heated bed of silicon seed particles with a gas stream comprising a silicon-containing compound in a reactor having a gas-tight dispensing valve below said reactor and an angle of repose valve comprising a non-contaminating surface between said reactor and said gas-tight dispensing valve, so as to thermally decompose said silicon-containing compound and deposit silicon on said seed particles to form silicon product;

(b) collecting said silicon product on said non-contaminating surface in an amount such that the collected silicon product forms a pile having a sloping surface angle equal to the angle of repose of said silicon product whereby said pile of silicon product blocks the flow of solids through said angle of repose valve;

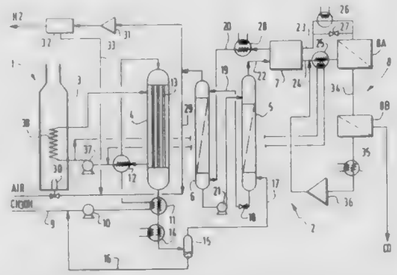
(c) opening said gas-tight dispensing valve; and

(d) unblocking the flow of and discharging said silicon product from said non-contaminating surface through said open dispensing valve so that said silicon product free falls through said open dispensing valve without significantly contacting said dispensing valve, thereby (1) reducing erosion of said dispensing valve and (2) protecting said silicon product from contamination by impurities generated by erosion of said dispensing valve.

5,059,411
PROCESS AND APPARATUS FOR THE PRODUCTION OF CARBON MONOXIDE

René Dupont, Nogent-sur-Marne, and Pierre Gauthier, Fresnes, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploration des Procedes Georges Claude, Paris, France

Filed Mar. 2, 1990, Ser. No. 487,060
Claims priority, application France, Mar. 2, 1989, 89 02696
Int. Cl.[5] C01B *3/38, 3/36*
U.S. Cl. 423—658.3 **17 Claims**



1. An apparatus for the production of a carbon monoxide-containing product gas, comprising, in serial arrangement in a production line:

means for catalytically cracking methanol and producing a synthesis gas comprising essentially hydrogen and carbon monoxide;

washing means for substantially eliminating from said synthesis gas the heaviest components therein;

absorption means for eliminating from said synthesis gas residual heaviest components and discharging a substantially first dual components hydrogen/carbon monoxide effluent gas;

first permeation means for producing from said effluent gas a purified carbon monoxide-containing product stream and waste gas stream containing hydrogen,

further comprising means for recirculating at least a portion of said waste gas stream into said line, downstream from said cracking means.

5,059,412
MACROCYCLIC AMINOPHOSPHONIC ACID COMPLEXES FOR THE TREATMENT OF CALCIFIC TUMORS

Jaime Simon, Angleton; David A. Wilson, Richwood; Joseph R. Garlich, Lake Jackson, all of Tex., and David E. Troutner, Columbia, Mo., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 50,263, May 14, 1987, Pat. No. 4,898,724, which is a continuation-in-part of Ser. No. 803,376, Dec. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 738,010, May 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 616,985, Jun. 4, 1984, abandoned. This application Dec. 19, 1988, Ser. No. 284,876
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.[5] A61K *43/00;* **C07F** *5/00*
U.S. Cl. 424—1.1 **88 Claims**

1. A composition suitable for administration to an animal having bone pain or having one or more calcific tumors comprising a complex which comprises a macrocyclic aminophosphonic acid or a physiologically acceptable salt thereof containing 1,4,7,10-tetraazacyclododecane as the macrocyclic moiety and wherein the nitrogen and phosphorous are interconnected by an alkylene or substituted alkylene radical of the formula



wherein X and Y are independently selected from the group consisting of hydrogen, hydroxyl, carboxyl, phosphonic, and hydrocarbon radicals having from 1–8 carbon atoms and physiologically acceptable salts of the acid radicals, and n is 1–3 with the proviso that when n>1, each X and Y may be the same as or different from the X and Y of any other carbon atom, and at least one radionuclide selected from the group consisting of Sm-153, Gd-159, Ho-166, Lu-177, and Yb-175 and wherein the resulting composition is therapeutically effective for the relief of bone pain or treatment of calcific tumors.

5,059,413
SCINTIGRAPHIC MONITORING OF IMMUNOTOXINS USING RADIONUCLIDES AND HETEROBIFUNCTIONAL CHELATORS

Dayton Reardan, Hercules, and Susan Bernhard, San Francisco, both of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Filed Apr. 18, 1988, Ser. No. 182,673
Int. Cl.[5] A61K *49/02, 39/395*
U.S. Cl. 424—4.1 **23 Claims**

1. A method for in vivo radioimmunodetection of a cytotoxic immunotoxin comprising

administering internally to a mammal a radio-labeled immunotoxin, wherein a heterobifunctional chelating agent provides a chemical bridge between a radiolabel and a cytotoxic component bound to the antigen-binding component of said immunotoxin, and

detecting externally the distribution of said immunotoxin in the mammal.

5,059,414
MULTI-PHASE HIGH VISCOSITY COSMETIC PRODUCTS

Joseph A. Dallal, Bridgeport; Teresa Ferullo, Wilton, and Cheryl M. Kurzyn, Norwalk, all of Conn., assignors to Shiseido Co. Ltd., Tokyo, Japan

Filed Jul. 1, 1988, Ser. No. 214,533
Int. Cl.[5] A61K *7/075, 7/11*
U.S. Cl. 424—70 **10 Claims**

1. A cosmetic product for application to the hair comprising a hair styling phase and a hair conditioning phase formed as two separate, distinct, and independent phases each of which is stored in contact with each other in a single container with each of said phases comprising a gelling matrix for retaining each phase rheologically separate and distinct from its adjacent phase said gelling matrix comprising

A. at least one gelling agent selected from the group consisting of carbomer 940, carbomer 934, carbomer 941, hydroxypropyl cellulose, hydroxypropyl guar, hydroxethyl cellulose, carboxymethyl cellulose, hydroxypropylmethyl cellulose, acrylates/steareth-20 methacrylate copolymer, silica, sodium stearate, and petrolatum, and

B. at least one neutralizing or pH adjusting agent selected from the group consisting of triethanolamine, tetrahydroxypropyl ethylenediamine, amino methyl propanol, and sodium hydroxide; whereby previously incompatible compounds are capable of being packaged in a single container and simultaneously dispensed therefrom in a pre-set metered ratio.

5,059,415
METHOD FOR DIAGNOSTICALLY IMAGING LESIONS IN THE BRAIN INSIDE A BLOOD-BRAIN BARRIER

Edward A. Neuwelt, Portland, Oreg., assignor to The State of Oregon Acting By and Through the Oregon State Board of Higher Education on Behalf of Oregon Health, Eugene, Oreg.

Filed Feb. 21, 1989, Ser. No. 314,940
Int. Cl.[5] G01N *31/00, 24/00*
U.S. Cl. 424—9 **6 Claims**

1. A method for diagnostically imaging a naturally occurring brain lesion in a warm-blooded animal having a brain situated inside a blood-brain barrier having an ambient permeability level, the method comprising the steps:

administering a first chemical agent to said animal at a location outside the blood-brain barrier, where the first chemical agent is capable of increasing the permeability of the blood-brain barrier from the ambient level to an elevated permeability level;

administering a second chemical agent to said animal at a location outside the blood-brain barrier following the administration of said first chemical agent, said second chemical agent being capable of binding preferentially to a naturally occurring brain lesion and of passing through the animal's blood-brain barrier to the brain lesion when the blood-brain barrier is at the elevated permeability level but not at the ambient permeability level, said second chemical agent comprised of molecules having at least one labeling agent attached to each said molecule;

allowing the animal to eliminate any amount of the second chemical agent with attached labeling agent not bound to said brain lesion; and

analyzing said brain of said animal for the presence of said labeling agent bound to the brain lesion in order to determine the size, type, and character of said brain lesion.

VOL 1131 ISS 4 OCT 22 1991 UMI

5,059,416
ZINC COMPOUND DELIVERY SYSTEM WITH IMPROVED TASTE AND TEXTURE

Subraman R. Cherukuri, Towaco, and Tommy L. Chau, Bridgewater, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 26, 1989, Ser. No. 372,394
Int. Cl.[5] A61K *9/68, 7/16, 33/30, 9/14*
U.S. Cl. 424—48 **19 Claims**

1. A delivery system for a zinc salt providing reduced bitterness with improved mouthfeed and high temperature stability, comprising:
(a) a core material comprising a zinc salt selected from the group consisting of inorganic salts of zinc, organic salts of zinc and mixtures thereof;
(b) a first hydrophilic coating comprising a hydrocolloid material in an amount of from about 10% to about 50% by weight of said core material; and
(c) a second hydrophobic coating selected from the group consisting of fats, fatty acids, waxes and mixtures thereof, present in an amount ranging from about 20% to about 100% by weight of the combination of said core material and said first hydrophilic coating.

5,059,417
PEROXIDE GEL DENTIFRICE

David R. Williams, Monroe, and Christine W. Ryles, Milford, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 26, 1990, Ser. No. 544,306
Int. Cl.[5] A61K *7/20, 33/40*
U.S. Cl. 424—53 **12 Claims**

1. An oral composition comprising:
(i) about 0.1 to about 10% by weight of a peroxygen compound;
(ii) from more than 30% to less than 50% by weight of glycerol; and
(iii) a polyoxyethylene-polyoxypropylene copolymer in an amount so that a weight ratio of glycerol to copolymer ranges from 1:0.7 to 1:0.4, the composition having a cohesion value ranging from 100 to 360 g and having a pH of less than 3.03.

5,059,418
SYNERGISTIC EFFECT OF HUMAN RECOMBINANT INTERFERON-BETA ON HALOGENATED PYRIMIDINES

Kenneth F. Soike, Covington, La., assignor to The Administrators of the Tulane Educational Fund, New Orleans, La.

Filed Sep. 20, 1989, Ser. No. 410,164
Int. Cl.[5] C07H *19/06;* **A61K** *37/66*
U.S. Cl. 424—85.6 **31 Claims**

1. A composition having a synergistic antiviral effect on viral infections comprising synergistically antiviral effective amounts of human recombinant interferon-beta and a fluorinated pyrimidine selected from the group consisting of FEAU, FMAU, FIAU, and FIAC.

5,059,419
STREPTOCOCCUS SUIS ANTISERUM AND ITS USE IN TREATING *STREPTOCOCCUS SUIS* INFECTIONS

Roger H. Ruehling, Inwood, Iowa, assignor to Grand Laboratories, Inc., Larchwood, Iowa

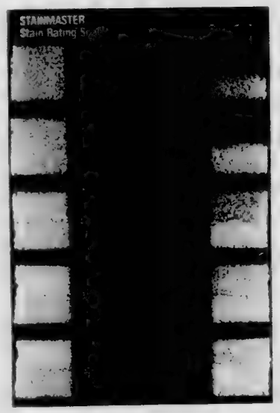
Filed Jun. 9, 1988, Ser. No. 204,270
Int. Cl.[5] A61K *39/40, 39/02*
U.S. Cl. 424—87 **17 Claims**

1. A hyperimmune equine antiserum which, when intramuscularly administered to piglets within about 24 hours of birth, provides protection against *Streptococcus suis* infections, essentially without adverse effects on the piglets, wherein the antiserum is reactive with *Streptococcus suis* of a serotype heterologous to the serotype(s) used to immunize the equine.

5,059,420
ANTIMICROBIAL STAIN-RESIST CARPET TREATMENT

Michael H. Scholla, Wilmington, and Yashavant Vinod, Hockessin, both of Del., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 269,265, Dec. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 136,035, Dec. 21, 1987, Pat. No. 4,925,707. This application Apr. 18, 1990, Ser. No. 509,986
Int. Cl.[5] A61K *7/16*
U.S. Cl. 424—405 **2 Claims**



1. An aqueous stain-resist composition having antimicrobial activity comprised of an effective amount of both a stain-blocker and an antimicrobial agent, the stain-blocker being selected from the group consisting of a sulfonated phenol-formaldehyde condensate polymer, a sulfonated naphthol-formaldehyde condensate polymer, a hydrolyzed vinyl aromatic maleic anhydride polymer and any combination thereof, the antimicrobial agent being gluteraldehyde.

5,059,421
PREPARATION OF TARGETED LIPOSOME SYSTEMS OF A DEFINED SIZE DISTRIBUTION

Helen C. Loughrey; Pieter R. Cullis, both of Vancouver; Marcel B. Bally, Bowen Island; Lewis S. L. Choi, Burnaby, and Kim F. Wong, Vancouver, all of Canada, assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 941,913, Dec. 15, 1986, Pat. No. 4,885,172, which is a continuation-in-part of Ser. No. 811,037, Dec. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 749,161, Jun. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 759,419, Jul. 26, 1985, Pat. No. 4,880,635. This application Jun. 23, 1989, Ser. No. 370,650
Int. Cl.[5] A01N *25/26, 25/28;* **A61K** *37/22;* **B32B** *5/16*
U.S. Cl. 424—417 **68 Claims**

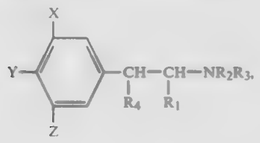
1. A composition comprising a stable, sized protein-liposome conjugate exhibiting an absence of aggregation wherein the conjugate comprises:
1). the liposome comprising:
a). at least about 90 ; mole percent of a liposome producing lipid;
b). at least about 0.1 mole percent of a functionalized lipid; and
2). a protein linked to said functionalized lipid in an amount equal to about 10 to about 100 protein molecules per liposome.

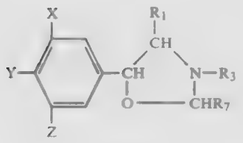
5,059,422
CONTINUOUS RELEASE PHENYLETHANOLAMINE DERIVATIVE COMPOSITIONS

Richard Fishbein, Skillman; Susan M. Cady, Yardley, and Ajit K. Chaudhuri, Somerville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

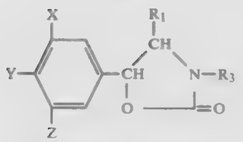
Continuation of Ser. No. 231,640, Aug. 11, 1988, which is a continuation of Ser. No. 759,702, Jul. 29, 1985, abandoned. This application Jun. 25, 1990, Ser. No. 543,237
Int. Cl.[5] A01N *33/02, 25/34;* **A61K** *47/00, 31/135*
U.S. Cl. 424—426 **16 Claims**

1. A composition for the parenteral administration of an essentially uniform and continuous amount of a phenylethanolamine derivative over an extended period of time which comprises a compacted and partially coated admixture of a wax, a cellulose or a mixture thereof with a phenylethanolamine derivative, which exhibits some degree of solubility in an aqueous physiological environment, where the phenylethanolamine derivative is a Formula I compound, having the structure selected from the group consisting of:

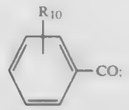

(I)


(Ia)

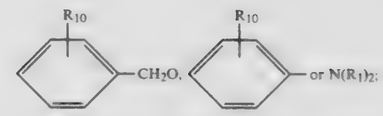
and

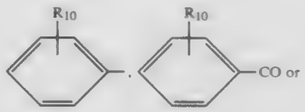

(Ib)

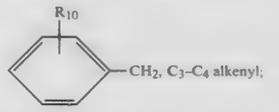
wherein
X is hydrogen, halogen or —CN;
Y is hydrogen, NR_8R_9 or $NHCOR_5$;
Z is hydrogen, halogen, OH, CN, CF_3, $COOR_1$, $CONH_2$, C_1–C_4 alkyl, C_1–C_4 alkoxy, NO_2, C_1–C_4-dialkylaminomethyl or hydroxymethyl;
R_1 is hydrogen or C_1–C_4 alkyl;
R_2 is hydrogen, C_1–C_6 alkyl, C_3–C_4 alkenyl, C_2–C_5 alkanoyl or



R_3 is hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, methoxypropyl, C_3–C_4 alkenyl, phenyl, 2-hydroxyethyl, α,α-dimethylphenethyl, benzyl, 3-phenylpropyl or 3-(4-carbomethoxyphenyl)propyl; and when R_2 and R_3 are taken together with the nitrogen to which they are attached, they represent morpholino or N′-C_1–C_4 alkylpiperazino;
R_4 is hydrogen, OH, OR_6 or SR_{11};
R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy,


R_6 is C_1–C_6 alkyl, C_2–C_5 alkanoyl,




R_7 is hydrogen, C_1–C_4 alkyl or phenyl;
R_8 is hydrogen, C_1–C_4 alkyl or C_3–C_4 alkenyl;
R_9 is hydrogen, C_1–C_6 alkyl, C_4–C_6 cycloalkyl, C_3–C_4 alkenyl, or benzyl; and when R_8 and R_9 are taken together with the nitrogen to which they are attached, they represent pyrrolidino;
R_{10} is chloro, dichloro, methyl, dimethyl, methoxy, dimethoxy or nitro; and
R_{11} is C_1–C_6 alkyl, phenyl or benzyl; or its C_{10}–C_{20} fatty acid salt.

5,059,423
DELIVERY SYSTEM COMPRISING BIOCOMPATIBLE BENEFICIAL AGENT FORMULATION

Judy A. Magruder, Mt. View; James B. Eckenhoff, Los Altos; Richard Cortese, Los Gatos; Jeremy C. Wright, Los Altos, and John R. Peery, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 283,359, Dec. 13, 1988, Pat. No. 5,034,229. This application Apr. 23, 1990, Ser. No. 513,528
The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.
Int. Cl.[5] A23K *1/18*
U.S. Cl. 424—438 **2 Claims**



1. A dispenser for delivering a beneficial agent to an animal, the dispenser comprising: a wall surrounding an internal lumen comprising a pair of ends in mated contact to form a closed dispenser, said wall comprising a section that substantially limits the passage of fluid into the lumen and a section that permits the passage of fluid into the lumen; a beneficial agent in

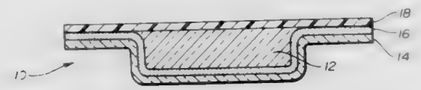
the lumen comprising the section that limits the passage of fluid; an expandable hydrophilic hydrogel selected from the groups consisting of cross-linked and non-crosslinked hydrogels which exhibit a 2 to 50 fold volume increase in the lumen in the section that permits the passage of fluid; and, an exit passageway in the dispenser for delivering the beneficial agent to the animal.

5,059,424

HYDROGEL WOUND DRESSING PRODUCT

James V. Cartmell; Wayne R. Sturtevant, both of Centerville, Ohio; Manuel Valadez, Castaic, Calif., and Michael L. Wolf, West Milton, Ohio, assignors to NDM Acquisition Corp., Minneapolis, Minn.

Filed Nov. 1, 1989, Ser. No. 430,188
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—443 **6 Claims**



1 A wound dressing product comprising:

a flexible backing member having a first side and a second side and further having a vacuum formed center portion to define a depression on said first side;

a pressure-sensitive adhesive layer extending across said first side of said flexible backing member;

a hydrogel material located in said depression of said flexible backing member, said hydrogel material comprises from about 15% to about 30% by weight of a polyhydric alcohol, from about 8% to about 14% by weight of an isophorone diisocyanate terminated prepolymer, from about 5% to about 10% by weight of a polyethylene oxide-based diamine, from about 0% to about 1% by weight of a salt, and the balance water; and

a release liner extending over said exposed pressure-sensitive adhesive layer and said exposed hydrogel material.

5,059,425

BANDAGE COMPRISING A FIBROUS SURFACE COATED WITH POLYPEPTIDES WITH TYPE IV COLLAGEN ACTIVITY

Effie C. Tsilibary, and Leo T. Furcht, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 397,012, Aug. 22, 1989, Pat. No. 5,007,925, which is a division of Ser. No. 106,858, Oct. 8, 1987, Pat. No. 4,876,332. This application Jan. 31, 1991, Ser. No. 648,190
Int. Cl.[5] A61L *15/00*
U.S. Cl. 424—445 **2 Claims**

1. A bandage comprising a fibrous surface coated with a polypeptide consisting essentially of:

met-phe-lys-lys-pro-thr-pro-ser-thr-leu-lys-ala-gly-glu-leu-arg,

thr-ala-gly-ser-cys-leu-arg-lys-phe-ser-thr-met,

asn-pro-leu-cys-pro-pro-gly-thr-lys-ile-leu,

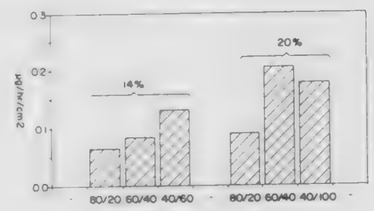
or mixtures thereof.

5,059,426

SKIN PERMEATION ENHANCER COMPOSITIONS, AND METHODS AND TRANSDERMAL SYSTEMS ASSOCIATED THEREWITH

Chia-Ming Chiang, Foster City, and Gary W. Cleary, San Mateo, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Division of Ser. No. 327,312, Mar. 22, 1989. This application Jun. 12, 1990, Ser. No. 537,498
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—449 **7 Claims**



1. A method for enhancing the flux of a drug through the skin, comprising transdermally administering the drug in combination with a permeation enhancing amount of a composition comprising:

(a) an ether component selected from the group consisting of diethylene glycol monethyl ether, diethylene glycol monomethyl ether, and a mixture thereof; and

(b) an ester component given by the formula $[CH_3(CH_2)_mCOO]_nR$, in which m is an integer in the range of 8 to 16, n is 1 or 2, and R is a lower alkyl (C_1–C_3) residue that is either unsubstituted or substituted with one or two hydroxyl groups.

wherein the ratio of ether to ester in the enhancer composition is in the range of about 90:10 to about 46:60 (v/v).

5,059,427

PHARMACEUTICAL PREPARATION FOR PERCUTANEOUS ADMINISTRATION CONTAINING EPERISONE OR TOLPERISONE OR SALT THEREOF

Mitsuhiro Yoshida, Fukaya; Yutaka Morita, Honjou; Yoshio Ishino, Kumagaya, and Shigemitsu Ohsawa, Honjou, all of Japan, assignors to Sansho Co., Ltd. and Eisai Co., Ltd., both of Tokyo, Japan

Filed May 13, 1988, Ser. No. 193,713
Claims priority, application Japan, May 15, 1987, 62-118660; Mar. 16, 1988, 63-62944
Int. Cl.[5] A61K *9/06, 47/12, 31/41;* **C07D** *207/06*
U.S. Cl. 424—449 **10 Claims**

1. A pharmaceutical preparation for percutaneous administration which comprises (a) eperisone, a salt thereof, tolperisone or a salt thereof and (b) an ester of lactic acid with an aliphatic alcohol having 12 to 18 carbon atoms.

5,059,428

SYNERGISTIC SWEETENING COMPOSITIONS CONTAINING POLYDEXTROSE AND A CHLORODEOXYSURGAR AND METHODS FOR PREPARING SAME

Lucy L. Wong, Jackson Heights, N.Y.; Steven M. Faust, Stanhope, and Subraman R. Cherukuri, Towaco, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 12, 1990, Ser. No. 491,898
Int. Cl.[5] A23G *3/30, 3/00;* **A23L** *1/22*
U.S. Cl. 426—3 **26 Claims**

1. A synergistic sweetening composition which consisting essentially of polydextrose and a chlorodeoxysugar derivative, wherein the chlorodeoxysugar derivative is present in an amount from about 0.05% to about 0.5%, by weight of the synergistic sweetening composition.

5,059,429

SUCRALOSE SWEETENED CHEWING GUM

Subraman R. Cherukuri, Towaco, N.J.; Lucy L. Wong, Jackson Heights, N.Y., and Steven M. Faust, Stanhope, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 27, 1989, Ser. No. 427,663
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—3 **20 Claims**

1. A sucralose sweetened chewing gum composition having a moisture content below about 2% by weight of the final composition, which comprises:

a chewing gum base, sucralose, at least one sugar alcohol and from about 0.5% to about 20% hygroscopic liquid by weight of the chewing gum composition, wherein said sucralose releases from said gum composition at a rate of 15 to 50 sucrose equivalents within the initial 30 seconds of chewing said chewing gum composition and at a rate of less than 6 sucrose equivalents after about 5 minutes of chewing.

5,059,430

ENZYME COMPOSITION FOR RETARDING STALING OF BAKED GOODS

Linda K. Bowles, Chicago, Ill., assignor to Enzyme Bio-Systems Ltd., Arlington Heights, Ill.

Filed Sep. 12, 1990, Ser. No. 581,290
Int. Cl.[5] A21D *8/04*
U.S. Cl. 426—20 **12 Claims**

1. A composition for retarding staling and improving softness of baked goods comprising in relative units of enzyme activity from about 5 to about 100 alpha-amylase units of an acid stable microbial alpha-amylase enzyme to from about 0.5 to about 10 alpha-amylase units of a bacterial alpha-amylase enzyme wherein the microbial alpha-amylase enzyme has optimum activity at a pH from about 3.0 to about 5.0 at a temperature from about 60° to about 75° C. and the bacterial alpha-amylase enzyme has optimum activity at a pH from about 5.0 to about 7.0 at a temperature from about 100° to about 110° C.

5,059,431

PROCESS FOR DEACIDIFYING WINE

Mark A. Daeschel, and Barney T. Watson, both of Corvallis, Oreg., assignors to State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University, Eugene, Oreg.

Filed Dec. 7, 1990, Ser. No. 624,061
Int. Cl.[5] C12G *1/00;* **C12H** *1/00*
U.S. Cl. 426—13 **38 Claims**

1. A method for reducing the acidity of a malic acid-containing wine, comprising the steps:

adding nisin to the wine;

adding to the wine an inoculum comprised of cells of a nisin-resistant mutant of a species of lactic acid bacteria capable of growing in the wine, the mutant being able in the presence of nisin to convert the malic acid in the wine to lactic acid; and

maintaining the inoculated wine at conditions which allow the nisin-resistant mutants to convert malic acid to lactic acid, thereby reducing the acidity of the wine.

5,059,432

LEAVENED BREADS WITH EXTENDED SHELF LIFE

Daniel Berkowitz, Wellesley, and Lauren E. Oleksyk, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1990, Ser. No. 607,406
Int. Cl.[5] A21D *2/08*
U.S. Cl. 426—19 **6 Claims**

1. A method for improving the shelf life of a yeast leavened bakery product comprising the step of adding, to a dough mixture, a sucrose ester emulsifier with an HLB number in the range of 15 to 16 and in an amount of up to 1% by weight of the dough mixture and polyvinylpyrrolidone synthetic hydrocolloid in an amount comprising 0.5% to 2.0% by weight of the dough mixture.

5,059,433

METHOD OF PREPARING SHELF STABLE, FILLED DOUGH FOOD PRODUCTS

Yanien Lee, Manlius; Catherine E. Hoyda, Liverpool, and Carleton G. Merritt, Phoenix, all of N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Oct. 26, 1990, Ser. No. 603,921
Int. Cl.[5] A21D *2/00*
U.S. Cl. 426—94 **32 Claims**

1. A process for preparing filled dough food products, which comprises the steps of:

(a) preparing an alimentary dough from flour and water, wherein the A_w of the dough is above 0.85;

(b) surrounding a mass of filling material with the dough from step (a) to produce a filled dough food product, wherein the filling material has a water activity (A_w) of less than about 0.85;

(c) allowing the food product of step (b) to at least partially equilibrate, whereby moisture moves from the dough into the filling material;

(d) at least partially drying the filled dough food product at 40 to 75% relative humidity and a temperature sufficient to reduce the moisture content to less than about 22% by weight, whereby a filled dough food product is produced with an A_w of less than about 0.85.

5,059,434

MICROWAVE BROWNING COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Young C. Kang, Oakhurst; Chee-Teck Tan, Middletown; Brian Byrne, East Brunswick; Lawrence L. Buckholz, Jr., Middletown; Marion A. Sudol, Boonton, and Richard M. Boden, Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 535,524, Jun. 8, 1990, Pat. No. 4,985,261, which is a continuation-in-part of Ser. No. 440,794, Nov. 24, 1989, Pat. No. 4,943,697, which is a division of Ser. No. 356,503, May 25, 1989, Pat. No. 4,904,490, which is a continuation-in-part of Ser. No. 295,450, Jan. 10, 1989, Pat. No. 4,882,184. This application Oct. 12, 1990, Ser. No. 596,498
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—96 **16 Claims**

1. A particulate flowable flavoring powder is prepared according to a process comprising the steps of:

(i) providing the separate Maillard reaction components:
an amino acid;
a sugar and, optionally,
a pH adjustment agent;

(ii) heating a high melting point normally solid encapsulating material to melt the encapsulating material forming a molten encapsulating agent;

(iii) separately mixing each of said separate Maillard reaction components with discrete individual portions of said molten encapsulating agent thereby forming separate encapsulated Maillard reaction reagent-containing compositions;

(iv) spray chilling or drum chilling each of the encapsulated Maillard reaction reagent-containing compositions to provide discrete particles of solid Maillard reaction reagent-containing agent; and

(v) mixing the resulting products thereby causing formation of said particulate flowable flavoring powder.

5,059,435

PROCESS FOR MAKING A STARCH COATED POTATO PRODUCT

Jerry L. Sloan, Richland; Karen F. Middaugh, Kennewick, and Gerald B. Jacobsen, Richland, all of Wash., assignors to Lamb-Weston, Inc., Tric-Cities, Wash.

Filed Feb. 21, 1991, Ser. No. 658,554
Int. Cl.[5] A23L *1/217*
U.S. Cl. 426—102 **14 Claims**

1. A process for preparing a frozen potato product with a film-like coating on the outer surface, which comprises:

cutting the raw potatoes;

blanching the potatoes;

partially drying the potatoes;

coating the potatoes with an aqueous starch slurry, the starch slurry including not less than about 15 percent by weight potato starch, between about 2–10 percent by weight corn starch and between about 2–10 percent by weight rice flour;

parfrying the potatoes in hot oil; and then

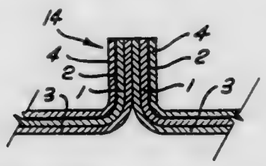
freezing the potatoes.

5,059,436

MICROWAVE INTERACTIVE PACKAGE

John F. Clark, Berala, Australia, assignor to Leigh-Mardon Pty. Limited, Australia

PCT No. PCT/AU88/00179, § 371 Date Jan. 4, 1990, § 102(e) Date Jan. 4, 1990, PCT Pub. No. WO88/09754, PCT Pub. Date Dec. 15, 1988
PCT Filed Jun. 7, 1988, Ser. No. 455,404
Claims priority, application Australia, Jun. 9, 1987, PI2360
Int. Cl.[5] B65D *85/00*
U.S. Cl. 426—107 **20 Claims**



1. A package for heating contained food in a microwave oven, said package comprising:

at least one web;

a packaging seam wherein at least one thickness of the web is affixed to a second thickness of the, or another, web in overlapping relationship;

and wherein the web or each web of the seam comprises:

a dielectric layer,

a microwave interactive layer comprising a microwave susceptible material which allows microwaves to pass therethrough but which also interacts with a proportion of the incident microwave energy and converts the same to heat energy, said microwave interactive layer being of a thickness of 700Å or less and being heated to a temperature of about 200° C. when subjected to microwave energy for conductively heating the contained food, and

a structural layer made from paper which maintains the dimensional integrity of the package when said microwave interactive layer is heated.

5,059,437

COLOR-STABILIZED PAPRIKA PIGMENT COMPOSITIONS AND FOODS COLORED THEREWITH HAVING INCREASED RESISTANCE TO OXIDATIVE COLOR FADING

Paul H. Todd, Jr., Kalamazoo, Mich., assignor to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Filed May 16, 1990, Ser. No. 525,340
Int. Cl.[5] A23L *1/27*
U.S. Cl. 426—250 **85 Claims**

1. A color-stabilized paprika composition having increased resistance to color fading in foods exposed to oxidative stress consisting essentially of

(A) a nonionic surface-active agent taken from the class consisting of:

a. mono and di glycerides of fatty acids,

b. polyglyceride esters of fatty acids,

c. mono and diglyceride esters further esterified with a dibasic organic acid taken from the class consisting of citric and lactic acids,

d. acetylated mono and diglyceride esters further esterified with a dibasic organic acid taken from the class consisting of citric and lactic acids,

e. sorbitan esters of fatty acids, and

f. propylene glycol esters of fatty acids,

g. lecithin, and

(B) an oleoresin of paprika,

the proportion of (A) to (B) being at least ten percent (10%) by weight, optionally also comprising an edible solid particulate substrate for the paprika pigment or color.

5,059,438

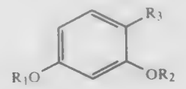
COMPOSITIONS AND METHODS FOR INHIBITING BROWNING IN FOODS USING RESORCINOL DERIVATIVES

Arthur J. McEvily, Weston; Radha Iyengar, Belmont, and Akiva Gross, Newtown, all of Mass., assignors to Enzytech, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 475,150, Feb. 5, 1990, abandoned. This application Jun. 13, 1990, Ser. No. 537,361
Int. Cl.[5] A23B *7/00*
U.S. Cl. 426—268 **43 Claims**

1. A method for inhibiting enzymatic browning of foods or beverages susceptible to such browning, comprising applying to the foods or beverages an amount of a resorcinol derivative sufficient to inhibit the browning of the foods, wherein the resorcinol derivative has the following general formula:

Formula I



wherein R_1 and R_2 are independently selected from the group consisting of: H, CH_3, COR′, CR′, $PO_3R'R''$, and $SO_3R'R''$ wherein R′ and R″ are independently H or an alkyl group having from 1 to 6 carbon atoms in a linear, branched or cyclic configuration or a substituted aromatic compound; and wherein R_3 is selected so that the resorcinol derivative inhibits enzymatic browning.

5,059,439

LOW TEMPERATURE EXTRUSION PROCESS FOR QUICK COOKING PASTA PRODUCTS

Marc L. Wenger, and Gordon R. Huber, both of Sabetha, Kans., assignors to Wenger Manufacturing, Inc., Sabetha, Kans.

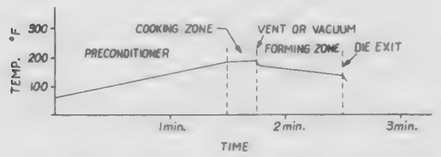
Filed Nov. 12, 1986, Ser. No. 930,155
Int. Cl.[5] A23P *1/00*
U.S. Cl. 426—451 **38 Claims**

1. A low temperature extrusion process for the production of quick cooking pasta products, said process comprising the steps of:

preparing a mixture of pasta flour and water in a preconditioner by mixing said flour with said water and elevating the temperature of the mixture to a level of from about 150° F. to 210° F. and retaining said mixture in said preconditioner for a period of time in the range of from about 20 seconds to about three minutes, for partial cooking of said mixture within said preconditioner;

introducing said partially cooked pasta flour and water mixture into the barrel of an extruder separate from said preconditioner and equipped with a flighted, rotatable screw and an extrusion die;

rotating said screw to sequentially advance said partially



cooked mixture along the length of said barrel first through a cooking zone, then through a venting zone and a forming zone, and finally through said extrusion die, to yield an extruded product,

said mixture having a maximum temperature of up to about 215° F. in said cooking zone, with said mixture reaching said maximum temperature which it will experience in said extruder in said cooking zone prior to said venting of gaseous products therefrom, said mixture being subjected to pressures in the range of from about 200 psig to 1200 psig in said forming zone;

causing gaseous products to be vented in said venting zone; and

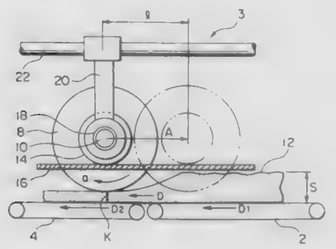
drying said extruded product to yield said quick cooking products.

5,059,440

METHOD FOR STRETCHING DOUGH

Torahiko Hayashi, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Mar. 1, 1990, Ser. No. 487,700
Claims priority, application Japan, Jun. 3, 1989, 1-53319
Int. Cl.[5] A21C *3/00*
U.S. Cl. 426—502 **7 Claims**



1. A method of stretching dough in which a roller is rotated over the surface of dough being moved downstream by a conveyor system that includes a series of a plurality of conveyors, the conveying speed of an upstream conveyer being lower than that of a downstream conveyor, said method comprising:

reciprocating said roller over said surface of said dough, and rotating said roller in the same direction as that of the movement of said dough when said roller moves upstream, and in the opposite direction of said movement of said dough when said roller moves downstream, the peripheral speed of said roller being higher than the total of the speed of movement of dough plus the speed of the linear movement of said roller in the upstream direction along said surface of said dough.

5,059,441

METHOD FOR MAKING MOLDED PRODUCTS

Frank J. Bunick, Randolph, and Ahmed A. Soliman, Budd Lake, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 10, 1989, Ser. No. 418,597
Int. Cl.[5] A23G *1/00*; **B28B** *1/00*
U.S. Cl. 426—515 **25 Claims**

1. A method for making a molded product consisting essentially of depositing a molten or fluid mass of substantially dissolved product into a porous hydrophilic polymer mold; gelling or hardening the fluid mass while absorbing moisture or solvent into the porous polymer mold by a wicking action and recovering the formed product.

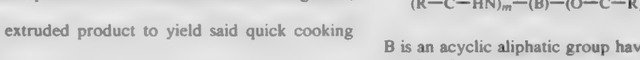
5,059,442

PRIMARY AMIDE ESTERS AS LOW CALORIE FAT MIMETICS

Lawrence P. Klemann, Somerville; John W. Finley, Whippany, and Ronald G. Yarger, Convent Station, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.Y.

Filed Sep. 19, 1989, Ser. No. 409,237
Int. Cl.[5] A23L *1/09*; **C09F** *5/00*
U.S. Cl. 426—531 **66 Claims**

1. A food composition comprising fat ingredients and nonfat ingredients and having said fat ingredients at least partially replaced by a fat mimetic compound of the formula



B is an acyclic aliphatic group having from 2 to 6 carbons,
m=1 to 3,
n=1 to 3, and
each R is, independently, a C_1 to C_{29} aliphatic group, a C_2 to C_{29} ether group of the formula R′—O—R″—, or a C_2 to C_{29} ester group of the formula

R′—O—(CO)—R′— or R′—(CO)—O—R″—,

where R′— and R″— are, independently, aliphatic groups.

5,059,443

ESTERIFIED ETHOXYLATED ALKYL GLYCOSIDES USEFUL IN LOW CALORIE FAT-CONTAINING FOOD COMPOSITIONS

John L. Ennis, Arlington; Peter W. Kopf, Sudbury; Stephen E. Rudolph, Carlisle, and Martin F. van Buren, Chelmsford, all of Mass., assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed Aug. 30, 1989, Ser. No. 400,428
Int. Cl.[5] C07H *15/00*
U.S. Cl. 426—531 **12 Claims**

1. A low calorie fat-containing food composition which comprises non-fat ingredients and fat ingredients, from about 10% to about 100% by weight of said fat ingredients consisting essentially of a fatty acid ester of an alkoxylated alkyl glycoside, wherein:

(a) the glycoside molecule has one alkyl group attached through a hemiacetal bond, and wherein the alkyl group contains between 1 and 22 carbon atoms;

(b) between 1 and about 50 alkoxyl groups are attached by ether linkages to each alkyl glycoside molecule, and not more than about 12 alkoxyl groups are attached to each attachment site of an alkyl glycoside molecule;

(c) each alkoxylated alkyl glycoside molecule is esterified with between 4 and 7 fatty acid groups, and wherein the

fatty acids contain between about 2 and about 24 carbon atoms; and

(d) the alkoxyl group is derived from the cyclic ether ethylene oxide.

5,059,444

METHOD OF PRODUCING MEAT PRODUCTS

Kyoji Ito, Ashiya, and Shingo Iwamoto, Amagasaki, both of Japan, assignors to Ito Ham Kabushiki Kaisha, Kobe, Japan

Continuation-in-part of Ser. No. 358,625, May 25, 1989, abandoned. This application Jun. 4, 1990, Ser. No. 532,173
Claims priority, application Japan, Jun. 2, 1988, 63-136487
Int. Cl.[5] A23L *1/275*
U.S. Cl. 426—540 **5 Claims**

5. A method of producing a meat product comprising the steps of:

(a) dispersing a red color pigment comprising red beet pigment throughout a block of meat, said red color pigment losing its red color upon heating to a discoloration temperature; and

(b) heating said block of meat under conditions such that a central internal portion thereof is heated to a temperature below said discoloration temperature and the remaining external portion of said block of meat is heated to a temperature above said discoloration temperature whereby said red color is discolored in said external portion but not in said central internal portion of said block of meat.

5,059,445

PROCESS FOR PRODUCING FREEZE DRIED MEAT

Harold B. Arsem, 1712 Elm Ave., Richmond, Calif. 94805

Continuation of Ser. No. 463,269, Jan. 10, 1990, abandoned. This application Feb. 4, 1991, Ser. No. 649,192
Int. Cl.[5] A23L *1/311*
U.S. Cl. 426—646 **4 Claims**

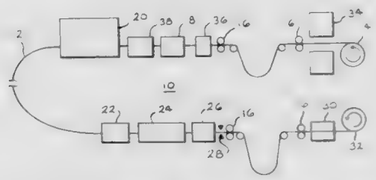
1. Process for producing freeze dried meat comprising mixing starch, egg containing protein having polar sulfhydryl groups and ground meat in water to produce a consistent mixture, in which the starch is first dispersed in water, then the egg is added and mixed thoroughly, and then the ground meat is blended in to produce a consistent mix, heating the mixture while continuing to mix it, the heating step converting at least some of the starch to glucose with an active reducing end on the molecule, the active reducing end creating a reducing environment for the meat protein, then freezing the mixture at atmospheric pressure without dehydrating it, such freezing without dehydration effecting movement of the egg polar protein to oxygenation sites on the meat to protect the meat against oxidation, subsequently freeze drying the meat, and then reducing the freeze dried meat to a powder.

5,059,446

METHOD OF PRODUCING PLASTIC COATED METAL STRIP

Sherman E. Winkle, Sr., Franklin; Lloyd E. Cockerham, and Frederick A. Myers, both of Middletown, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Feb. 14, 1990, Ser. No. 480,381
Int. Cl.[5] B05D *1/04*
U.S. Cl. 427—32 **18 Claims**



1. A method of producing plastic coated strip, comprising:

surface treating a metal strip,

passing said treated strip through an enclosed coating chamber, coating both sides of said treated strip with a charged powder in said chamber,

said powder being carried by a gas and blown from an electrostatic spray gun,

inductively heating said powder coated strip to a temperature above the melting point of said powder,

maintaining said coated strip above said melting point so that the fused coating has sufficient time to form an adherent coating having a smooth surface and a uniform thickness.

5,059,447

METHOD FOR THE ACITIVATION OF A SURFACE OF A SHAPED BODY FORMED OF A SYNTHETIC ORGANIC POLYMER

Koichiroh Katoh, Abilo; Etsuji Takehara, Tokyo, and Yoshiie Matsumoto, Iruma, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Filed Feb. 15, 1990, Ser. No. 479,683
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—37 **11 Claims**



1. A method of activating a surface of a shaped body formed of a synthetic organic polymer comprising:

(a) contacting said surface with a spark discharge to increase the surface energy of said surface; and

(b) at least one treatment selected from:

(1) contacting said surface with a UV ray-absorbing organic liquid at a temperature and for a period of time sufficient to swell said surface; and

(2) irradiating said surface with UV rays having wave lengths in the range of 1800–2100 Å.

5,059,448

RAPID THERMAL PROCESS FOR OBTAINING SILICA COATINGS

Grish Chandra, and Theresa E. Martin, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 18, 1990, Ser. No. 539,249
Int. Cl.[5] B05D *3/06, 5/12;* **H01L** *21/2*
U.S. Cl. 427—53.1 **23 Claims**

1. A method of applying a silica coating to a substrate comprising

coating the substrate with a solution comprising hydrogen silsesquioxane resin and a solvent;

evaporating the solvent to deposit a hydrogen silsesquioxane resin coating on the substrate; and

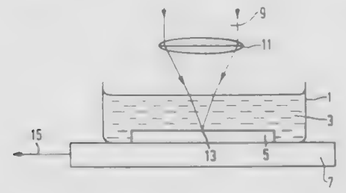
subjecting the coated substrate to high intensity radiation comprising incoherent light in a spectral region selected from the group consisting of visible, infrared, ultraviolet and combinations thereof, in order to heat the coated substrate sufficiently to facilitate conversion of the hydrogen silsesquioxane resin coating to a silica coating.

5,059,449

METHOD OF SELECTIVELY PROVIDING A METAL FROM THE LIQUID PHASE ON A SUBSTRATE BY MEANS OF A LASER

Andreas M. T. P. van der Putten; Johannes M. G. Rikken; Johannes W. M. Jacobs, and Cornells G. C. M. De Kort, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 15, 1989, Ser. No. 395,536
Claims priority, application Netherlands, Aug. 18, 1988, 8802047
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 427—53.1 **4 Claims**



1. A method of selectively providing a metal on a surface of a substrate, said surface being semiconducting or electrically insulating, comprising immersing said surface in a solution of a salt of said metal, said solution consisting essentially of a solvent, said salt and essentially only a member selected from the group consisting of ammonia, a cyclohexanol and an amine and, while said surface is immersed in said solution, locally irradiating said surface through said solution with a laser beam, the power of which beam at said surface is at least 10^5 W per cm^2 thereby causing said metal to be deposited on said substrate.

5,059,450

PROCESS FOR PRODUCING ELECTRIC CONNECTING MEANS, IN PARTICULAR INTERCONNECTION SUBSTRATES FOR HYBRID CIRCUITS

Sylvie Mellul, Vitry-sur-Seine, France; Frederic Rotman, Tokyo, Japan, and Dominique Navarro, Pont De La Maye, France, assignors to L'Air Liquide, Paris, France

Filed Mar. 16, 1990, Ser. No. 495,028
Claims priority, application France, Mar. 16, 1989, 8903942
Int. Cl.[5] C23C *26/00*
U.S. Cl. 427—96 **9 Claims**

8. A process for manufacturing a thick-film electrically conductive connection structure on a support made of aluminum nitride, which comprises the following successive steps:

superficially oxidizing the support under an oxidizing atmosphere at a temperature between 1200° C. and 1500° C. for a period of about one hour;

depositing onto said support at least one patterned layer of a paste containing a non-noble conductive metal dispersed in an organic phase to form a layered component;

drying the deposited paste at a first temperature;

subjecting said support to a second temperature under a first substantially inert atmosphere having an oxygen content between 100 and 5000 ppm to eliminate substantially the organic phase, said second temperature being lower than 600° C. and being higher than said first temperature;

sintering said deposited layer at a third temperature under a second substantially inert atmosphere having an oxygen content less than 10 ppm, said third temperature being higher than said second temperature;

cooling said treated support under a third substantially inert atmosphere, said third substantially inert atmosphere having an oxygen content less than 10 ppm.

5,059,451

REFLECTION-PREVENTIVE PELLICLE FILM AND PROCESS FOR PREPARATION THEREOF

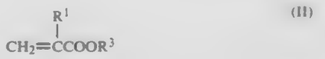
Tokinori Agou; Hitomi Matsuzaki, and Masaaki Kawasaki, all of Waki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 216,955, Jul. 11, 1988, Pat. No. 4,966,813. This application Jun. 27, 1990, Ser. No. 544,699
Claims priority, application Japan, Jul. 10, 1987, 62-171118; Oct. 13, 1987, 62-258100; Jan. 27, 1988, 63-16319; Jan. 27, 1988, 63-16320; Jan. 27, 1988, 63-16321; Feb. 29, 1988, 63-47091
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—164 **3 Claims**

1. A process for the preparation of a reflection-preventive pellicle film, which comprises supplying a solution of a cellulose derivative onto a substrate, forming a cellulose derivative film by the rotational film-forming method, drying the formed film, supplying onto the cellulose derivative film a polymer solution formed by dissolving a polyfluoro(meth)acrylate selected from the group consisting of:

(1) a polyfluoroacrylate which is a copolymer of (a) trifluoroethyl acrylate and (B) perfluorooctylethyl acrylate having an (A)/(B) molar ratio of from 55/45 to 75/25 and a reduced specific viscosity lower than 1 dl/g, as measured in a m-xylene hexafluoride solution having a coincentration of 0.1 g/dl at 30° C.,

(2) a polyfluoro(meth)acrylate which is a copolymer of at least one monomer represented by the following general formula:



(II)

wherein R^1 stands for a hydrogen atom or a methyl group, and R^3 stands for a fluoroalkyl group, and at least one monomer represented by the following general formula:



(III)

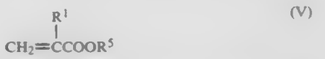
wherein R^1 is as defined above, and Y stands for a hydrocarbon group containing an intermediate etheric oxygen atom or a hydrocarbon group, containing an intermediate etheric oxygen atom or a hydrocarbon group containing an intermediate etheric oxygen atom, to which a fluoroalkyl group is bonded.

(3) a polyfluoro(meth)acrylate which is a copolymer of at least one monomer represented by the following general formula:



(IV)

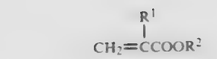
wherein R^1 is as defined above, and R^4 stands for a linear fluoroalkyl group not containing an etheric oxygen atom, and at lest one monomer represented by the following general formula:



(V)

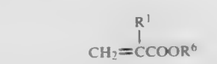
wherein R^1 is as defined above, and R^5 stands for a linear fluoroalkyl group containing an etheric oxygen atom or a branched fluoroalkyl group which may contain an etheric oxygen atom,

and (4) a polyfluoro(meth)acrylate which is a copolymer of at least one monomer represented by the general formula:



(I)

wherein R^1 is as defined above, and R^2 stands for a fluoroalkyl group which may contain an intermediate etheric oxygen atom, and at least one monomer represented by the following general formula:



(VI)

wherein R^1 is as defined above, and R^6 stands for an alkyl group, in a solvent capable of dissolving said polyfluoro(-meth)acrylate but incapable of dissolving or swelling said cellulose derivative, and forming a reflection-preventive layer by the rotational film-forming method.

5,059,452

FLOCKED FOAM FABRIC WITH FLATTENED FIBERS WHICH ARE COLOR PRINTED

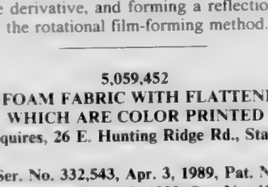
William J. Squires, 26 E. Hunting Ridge Rd., Stamford, Conn. 06903

Division of Ser. No. 332,543, Apr. 3, 1989, Pat. No. 4,895,748. This application Oct. 18, 1989, Ser. No. 423,218

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] B32B *33/00*

U.S. Cl. 428—88 **10 Claims**



1. A flocked foam fabric, comprising:

a group including a foamed polyurethane element having an outer surface, flock fibers, and means for adhering the flock fibers onto said outer surface, said flock fibers having a portion projecting out of said adhering means, said portion being thermally set into a flattened and entangled state along said outer surface of said foamed element so as to provide a substantially flat surface with entangled flock fibers; and

a substrate extending outward from said group and being closer to said foamed polyurethane element than to said flock fibers.

5,059,453

METHOD AND APPARATUS FOR METALIZING INTERNAL SURFACES OF METAL BODIES SUCH AS TUBES AND PIPES

Philip Bernsten, Jr., Chicago, Ill., assignor to Inductametals Corporation, Chicago, Ill.

Filed Oct. 30, 1990, Ser. No. 491,001

Int. Cl.[5] B05D *7/22, 1/00*

U.S. Cl. 427—231 **117 Claims**

1. A method for coating the inside surface of an elongated tubular body which comprises the steps of:

a) placing a plurality of elongated pieces of coating material into the bore of said elongated tubular body in parallel with the axis of said tubular body and in position within said bore to provide a substantially constant amount of coating material along the axial length of said bore, said coating material having a melting point below the melting point of said tubular body;

b) confining said elongated pieces of coating material within said bore by discrete and otherwise unconnected closure members fastened to the ends of said tubular body;

c) reducing the amount of oxygen contained within the bore of said tubular body;

d) rotating said tubular body and said confined elongated pieces of coating material at a high rotational speed sufficient to distribute said elongated pieces against the bore surface while maintaining said substantially constant amount of coating material along the axial length of said bore;

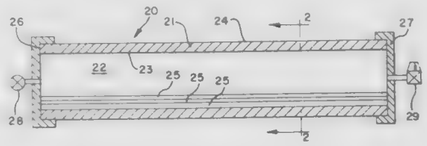
e) heating said rotating tubular body to an elevated temperature sufficient to melt said coating material pieces within said bore and insufficient to melt and said tubular body;

f) spreading melted coating material in a uniform layer upon the bore surface by means of the centrifugal force imposed upon the melted coating material by the continued rotation of said tubular body;

g) cooling said rotating tubular body with said closure members fastened to the ends of said tubular body; and,

h) recovering said tubular body with a uniform layer of solid coating material upon the bore surface, and with said closure members fastened to the ends of said tubular body.

52. Coating apparatus for coating the interior of an elongated tubular body which comprises:



a) a plurality of first rollers rotatably aligned along a first rotational axis in end-to-end orientation, said plurality of first rollers having an input end and an output end;

b) a plurality of second rollers rotatably aligned along a second rotational axis in end-to-end orientation and positioned adjacent to said plurality of first rollers with a narrow gap therebetween, said plurality of second rollers having an input end adjacent the input end of said first rollers and an output end adjacent the output end of said first rollers;

c) heating means centrally located at said first and second rollers for heating an elongated tubular body supported on said rollers;

d) roller motive means for rotating said first and second rollers in synchronization and in a common direction for rotating an elongated tubular body supported on said rollers;

e) a pusher element for pushing a rotating tubular body longitudinally upon said first and second rollers as said tubular body rotates thereon;

f) a pusher motive means for moving the pusher element to slide a rotating tubular body from the input end of said first and second rollers through a heating zone comprising said heating means and to the output end of said first and second rollers; and,

g) reciprocating means for returning said pusher element to the input end of said first and second rollers.

5,059,454

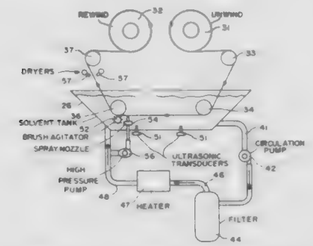
METHOD FOR MAKING PATTERNED THIN FILM

David W. Todd, Sebastopol; Lindsey Brown, Healdsburg; Roger W. Phillips, Santa Rosa, and Elliot E. Overshiner, Kenwood, all of Calif., assignors to Flex Products, Inc., Santa Rosa, Calif.

Filed Apr. 26, 1989, Ser. No. 343,904

Int. Cl.[5] B05D *3/12, 5/00*

U.S. Cl. 427—259 **5 Claims**



1. In a method for providing a patterned thin film on a flexible substrate having a surface, forming on said surface a patterned release coat which carries the desired pattern and having openings therein through which the surface of the substrate is exposed, depositing a thin film over the patterned release coat and onto the portions of the surface of the substrate exposed through the openings and removing by mechanical means the undesired thin film portions carried by the release coat so that there remains portions of the thin film deposited on the substrate to provide a patterned thin film on the substrate, the step of removal by mechanical means being accomplished by the steps of advancing the substrate through a solvent and mechanically brushing the substrate during the time the substrate is being advanced through the solvent.

5,059,455

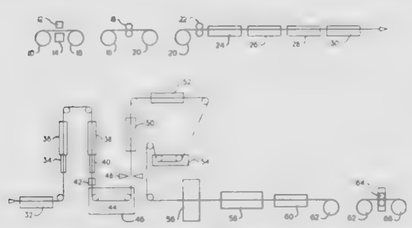
METHOD FOR GALVANIZING PERFORATED STEEL SHEET

LaVurne R. Hasselbach; Donald P. Kennedy, both of Dover; Roger H. Montgomery; Samuel W. Moore, both of New Philadelphia, and Jack W. Neiger, Tuscarawas, all of Ohio, assignors to Cyclops Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1988, Ser. No. 165,208

Int. Cl.[5] B05D *3/00*

U.S. Cl. 427—292 **23 Claims**



1. A method of producing a metallic coated perforated metallic sheet product comprising the steps of, in sequence:

a. perforating an uncoated, flat rolled metallic elongated sheet to provide a plurality of perforations in the web thereof;

b. passing the metallic sheet through a rolling mill to reduce any burrs formed around the perforations and improve the surface finish and shape of said metallic sheet; and

c. continuously applying a metallic coating to said metallic sheet.

5,059,456

LATEX BARRIER TIECOAT FOR USE WITH MASTIC COATINGS

Gary R. Larson, Hatfield; George A. Papsin, Jr., North Wales, and Donald A. Winey, Warminster, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 4, 1990, Ser. No. 519,624

Int. Cl.[5] B05D *1/36, 7/00*

U.S. Cl. 427—407.1 **9 Claims**

1. A method for improving the quality of a mastic coating system comprising:

(a) forming a tiecoat composition;

(b) applying the tiecoat composition to a substrate surface; and

(c) applying a mastic coating onto said tiecoat composition; and where said improvement comprises selecting said tiecoat composition comprising a water-insoluble latex polymer and a multivalent metal ion, wherein the latex polymer is prepared from a monomer mixture comprising at least 20 weight %, based on the weight of the monomer mixture, of at least one hydrophobic monomer selected from the group consisting of C_4–C_{20} alkyl methacrylates and C_8–C_{20} alkyl acrylates, and from about 3.0 weight % to about 7.5 weight % of methacrylic acid, based on the weight of the monomer mixture, and where the latex polymer has a glass transition temperature of from about −20° C. to about 5° C., and where the molar ratio of the multivalent metal ion to the methacrylic acid in the latex polymer is from about 1:1 to about 0.375:1.

5,059,457

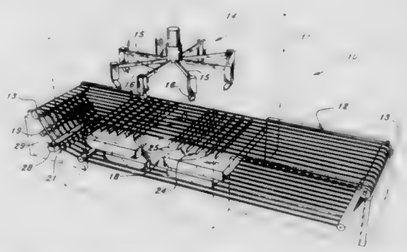
METHOD FOR CONTROLLING EMISSION, AND RECOVERY, OF SOLVENTS

Christian le Conte de Poly, Charlotte, N.C., assignor to Cattin 'Air Corporation, Charlotte, N.C.

Division of Ser. No. 438,599, Nov. 17, 1989. This application Oct. 29, 1990, Ser. No. 604,963

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—424 **15 Claims**



12. A method of spraying a workpiece with a liquid finishing material comprising:

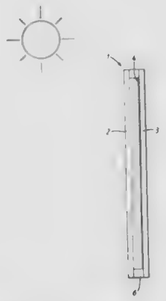
supporting the workpiece,

spraying liquid finish onto the workpiece,

collecting oversprayed liquid finish and chilling the collected oversprayed liquid finish to a temperature low enough to prevent substantial vaporization of collected overspray,

whereby the amount of solvent vaporized from the collected finishing material is reduced to a level below that which would be vaporized in the absence of the chilling.

5,059,458
GLAZING UNITS
David R. Goodall, St. Helens, England, assignor to Pilkington PLC, St. Helens, England
Continuation of Ser. No. 229,654, Aug. 8, 1988, abandoned. This application Aug. 9, 1990, Ser. No. 565,198
Claims priority, application United Kingdom, Aug. 14, 1987, 8719258
Int. Cl.[5] E06B *1/04*; E04C *2/54*
U.S. Cl. 428—34 12 Claims



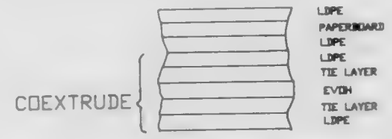
1. A double glazing unit comprising an at least partially toughened non-coated outer pane of body coloured heat absorbing glass being a glass which contains at least one heat absorbing metal oxide which colours the glass and which has, when in the form of a pane 6 mm thick, a heat absorption of at least 40%, and an inner pane of annealed glass with a coating including a silver layer having a thickness in the range 15 nm to 40 nm on its face turned towards the outer pane.

6. A double glazing unit comprising an at least partially toughened non-coated outer pane of body coloured heat absorbing glass, being a glass which contains at least one heat absorbing metal oxide which colours the glass and which has, when in the form of a pane 6 mm thick, a heat absorption of at least 40%, and an inner pane of annealed clear float glass with a coating including a silver layer having a thickness in the range 15 nm to 40 nm on its face turned towards the outer pane, the inner pane having a light transmission higher than its total solar heat transmission.

10. A double glazing unit comprising an at least partially toughened non-coated outer pane of body coloured heated absorbing glass, being a glass which contains at least one heat absorbing metal oxide which colours the glass and which has, when in the form of a pane 6 mm thick, a heat absorption of at least 40%, and an inner pane of annealed clear float glass with a coating including a silver layer having a thickness in the range 20 nm to 30 nm on its face turned towards the outer pane.

5,059,459
PAPERBOARD LAMINATE
Todd H. Huffman, Roanoke, Va., assignor to Westvaco Corporation, New York, N.Y.
Filed May 17, 1989, Ser. No. 352,937
Int. Cl.[5] B65D *85/00*; B32B *27/08*
U.S. Cl. 428—34.2 6 Claims

1. A paperboard container, the container being constructed from a laminate comprising:
(a) a paperboard substrate having opposed inner and outer surfaces;
(b) a layer of a heat-sealable, low density polyethylene polymer coated onto the outer surface of said paperboard substrate:
(c) a layer of a heat-sealable, low density polyethylene polymer coated onto the inner surface of said paperboard substrate: and,
(d) an inner, product contact sandwich layer comprising a heat-sealable, low density polyethylene polymer layer, a



tie layer, a ethylene vinyl alcohol copolymer layer, a tie layer, and a heat-sealable, low density polyethylene polymer layer coextruded onto the outer surface of the heat-sealable, low density polyethylene polymer applied to the inner surface of said paperboard substrate.

5,059,460
LAMINATED METAL SHEET
Peter J. Heyes, Wantage, and Nicholas J. Middleton, Highworth, both of England, assignors to CMB Foodcan plc, Worcester, England
PCT No. PCT/GB88/00853, § 371 Date Jun. 9, 1989, § 102(e) Date Jun. 9, 1989, PCT Pub. No. WO89/03304, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 12, 1988, Ser. No. 378,201
Claims priority, application United Kingdom, Oct. 15, 1987, 8724238
Int. Cl.[5] B65D *1/00*; B32B *15/08*
U.S. Cl. 428—35.3 24 Claims

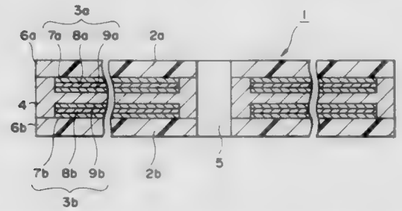


1. A container or a component for a container formed from a laminated metal sheet having a polymer film adhered to each of its major surfaces, the polymer films having been adhered to the metal sheet by simultaneous thermal lamination, the polymer film adhered to each major surface of the metal sheet being a composite polyester film (A) comprising an inner layer (A1) of a substantially non-crystalline linear polyester having a softening point below 200° C. and a melting point above 150° C. but below 250° C. and an outer layer (A2) of a biaxially oriented linear polyester having a melting point above 250° C.

5,059,461
OPTICAL DISK SUBSTRATE, OPTICAL INFORMATION-STORAGE MEDIUM, AND PROCESS AND APPARATUS FOR MANUFACTURING THE OPTICAL DISK SUBSTRATE
Kotaro Kojima; Yasumasa Shibata, and Toshiki Shojima, all of Chiba, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1990, Ser. No. 466,635
Claims priority, application Japan, Jan. 20, 1989, 1-9993; Jan. 20, 1989, 1-9994
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 6 Claims

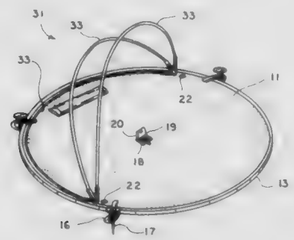
1. An optical disk substrate having a foreign-substances index of not more than 1×10^5 $\mu m^2/g$; said optical disk substrate being prepared from polycarbonate having a viscosity average molecular weight of 10,000 to 22,000.

5,059,462
INFORMATION RECORDING MEDIUM
Masayoshi Kurisu, and Hidehiko Hashimoto, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed Oct. 18, 1989, Ser. No. 423,211
Claims priority, application Japan, Nov. 24, 1988, 63-296597
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 10 Claims



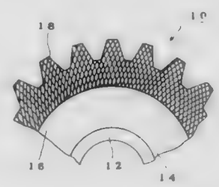
1. In the information recording medium comprising two disc substrates, each substrate comprising a transparent resin substrate and a recording layer formed on one surface of said substrate, said disc substrates being laminated together with an adhesive so that the recording layers are disposed opposite to each other, the improvement which resides in that said adhesive is a hot melt adhesive having a softening point of 141° C. or more.

5,059,463
FOLDING MAT AND SHELTER
Michael V. Peters, 7027 Jefferson Ave., Falls Church, Va. 22042
Filed Mar. 12, 1990, Ser. No. 491,591
Int. Cl.[5] A47G *9/06*; B32B *3/02*
U.S. Cl. 428—65 11 Claims



1. A folding mat for use on a beach, pool or park, including:
a first horizontal sheet of waterproof material forming a flat surface;
an outer edge to said horizontal sheet;
a flexible band of non-compressible material disposed about said outer edge of said horizontal sheet, said band allowing said sheet to be collapsed, but retains the shape of said sheet when flat;
a plurality of loops disposed about said outer edge for inserting tent stakes through to maintain said sheet in position;
a central aperture disposed on said sheet of material for the insertion of an umbrella stand:
an elastic band disposed about said central aperture in order to keep said aperture tightly engaged with said umbrella stand;
a second sheet of fabric material disposed over said sheet of waterproof material; whereby
said first sheet provides a soft, dry cushion to lay upon and said second sheet provides a non-irritating surface.

5,059,464
PHENOL RESIN TOOTHED WHEEL AND A METHOD OF PRODUCING THE SAME
Mitsuzo Mikuni, Ohtsu, Japan, assignor to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan
Filed Mar. 13, 1990, Ser. No. 492,934
Claims priority, application Japan, Mar. 16, 1989, 1-64135
Int. Cl.[5] B32B *1/04*, *3/02*
U.S. Cl. 428—66 5 Claims



1. A phenol resin toothed wheel having a toothed portion formed of a moulded part of phenol resin impregnated with reinforcing material and thermally pressurized, said toothed wheel characterized in that said reinforcing material is meta-aromatic polyamide fiber spun cloth and that said phenol resin is impregnated with epoxy resin.

5,059,465

Patent Not Issued For This Number

5,059,466

CHIPBOARD AND ITS MANUFACTURE

Hartwig Blümer, Järfälla, Sweden, assignor to Institutet for Trateknisk Forskning, Stockholm, Sweden

PCT No. PCT/SE89/00130, § 371 Date Aug. 20, 1990, § 102(e) Date Aug. 20, 1990, PCT Pub. No. WO89/08539, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 13, 1989, Ser. No. 566,398
Claims priority, application Sweden, Mar. 16, 1988, 8800950
Int. Cl.[5] B32B *5/12, 2/02;* B27N *3/02*
U.S. Cl. 428—106 2 Claims



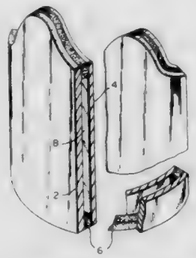
1. Chipboard comprising a central layer of coarse chips and two juxtaposed outer layers of chips whose fibers are oriented in the plane of the board, wherein the chips in the central layer consist of end-grain cut flake-like chips, the fibers of which are oriented in the direction of thickness of the chips, whereby the chip fibers of the central layer are oriented substantially transversely to the plane of the board.

5,059,467

PROTECTIVE BALLISTIC PANEL HAVING AN INTERIOR HERMETICALLY SEALED AIR SPACE

Azriel Berkovitz, Kfar-Saba, Israel, assignor to Eagle, Military Gear Overseas Ltd., Tel-Aviv, Israel

Filed Aug. 18, 1989, Ser. No. 395,699
Claims priority, application Israel, Nov. 15, 1988, 88384
Int. Cl.[5] B32B *3/10;* F41H *1/02, 5/04*
U.S. Cl. 428—137 8 Claims



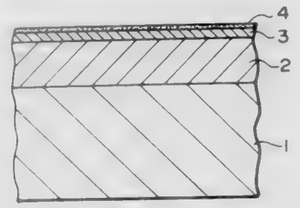
1. A protective ballistic body error panel adapted to be placed in proximity to a portion of the body of a person to be protected by said panel comprising a first-impact front layer and a rear layer having inner facing surfaces disposed in spaced-apart relationship to one another, both of said layers being made of a relatively tough, nonmetallic material capable of withstanding and absorbing impacts, said front and rear layers being connected to one another at their respective peripheries by an intermediate peripheral sealing strip made of an at least semi-elastic material, said peripheral strip being disposed between the inner facing surfaces of said front and rear layers and together with said front and said rear layer defining an enclosed hermetically sealed air space between said front and rear layers.

5,059,468

MAGNETIC RECORDING MEDIUM

Morimi Hashimoto, Wakoh; Tokio Matsumoto, Kawasaki; Takayuki Yagi, Tokyo; Kenji Suzuki, and Hiroshi Takagi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 287,530, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 32,332, Mar. 30, 1987, abandoned. This application Feb. 28, 1991, Ser. No. 662,971
Claims priority, application Japan, Mar. 29, 1986, 61-069756
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—141 7 Claims



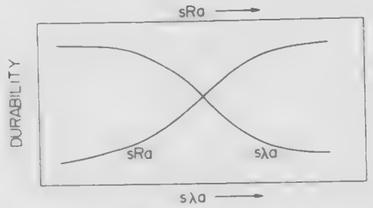
1. A magnetic recording medium comprising:
a substrate having a thermal expansion coefficient from 1.0×10^{-5} to 3.0×10^{-5} cm/cm/° C. and a tensile modulus from about 300 to 1,200 Kg/mm^2;
a magnetic layer of a Co-Cr alloy;
a layer of cobalt oxide; and
a 5 to 200 A thick organic protective layer comprising a fluorine-containing resin formed by electron-beam or resistance-heating vapor deposition, said fluorine containing resin being selected from the group consisting of polytetrafluoreothylene-hexafluoropropylene copolymer, polytetrafluoroethylene, polyvinylidene fluoride, polyvinyl fluoride and polytetafluoroethylene-perfluoroalkoxyethylene copolymer resins disposed in that order on the substrate, wherein said magnetic recording medium has a surface roughness of at least 0.005 μm in terms of an average of ten measured values of surface roughness R_z.

5,059,469

MAGNETIC RECORDING MEDIUM

Minoru Hashimoto, Yokohama, and Yoshihito Tsugane, Yamato, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 529,760, May 29, 1990, abandoned, which is a continuation of Ser. No. 192,290, May 10, 1988, abandoned. This application Jun. 12, 1990, Ser. No. 536,992
Claims priority, application Japan, May 13, 1987, 62-116079
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—141 16 Claims



1. A magnetic recording medium comprising a non-magnetic supporting member and a magnetic layer formed on at least one surface of said supporting member, said magnetic layer comprising magnetic particles and a binder resin and possessing a surface shape such that the space-average wavelength (sλa) falls in the range of 15 μm to 30 μm and the surface-average roughness (sRa) is in the range of 0.008 μm to 0.025 μm.

5,059,470

HEAT-SEALABLE LAMINATED POLYESTER FILM

Yujiro Fukuda, New York, N.Y., and Koji Utsunomiya, Nagahama, Japan, assignors to Diafoil Company, Ltd., Tokyo, Japan

Filed Jul. 10, 1990, Ser. No. 550,381
Int. Cl.[5] B32B *7/10*
U.S. Cl. 428—142 10 Claims

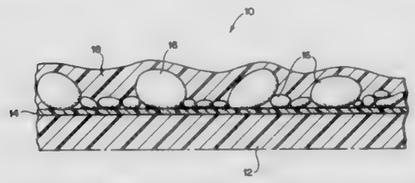
1. A laminated film which comprises,
B layer comprising a polyester containing terephthalic acid unit of not less than 60 mol % based on the total amount of the dicarboxylic acid component, ethylene glycol unit of not less than 60 mol % based on the total amount of the diol component, and at least one of a copolymerized dicarboxylic acid unit other than the terephthalic acid unit and a copolymerized diol unit other than the ethylene glycol unit, and
a layer comprising a polyester containing terephthalic acid unit of not less than 95 mol % based on the total amount of the dicarboxylic acid component, ethylene glycol unit of not less than 95 mol % based on the total amount of the diol component, and at least one of a copolymerized dicarboxylic acid unit other than terephthalic acid unit and a copolymerized diol unit other than ethylene glycol unit,
at least one of said copolymerized dicarboxylic acid unit and said copolymerized diol unit being commonly contained in said polyester of A layer and said polyester of B layer,
the thickness of said B layer being not less than 5 μm and not exceeding 40,
a degree of planar orientation of an outer surface of said B layer being not more than about 0.020,
the ratio of the thickness of said A layer to the thickness of said B layer being from about 80:20 to 20:80, and
a heat sealing strength when said B layer heat-sealed to itself being not less than 400 g/15 mm width.

5,059,471

INLAID TILE

Michael H. McNally, New Windsor; Walter C. Timm, Cornwall; Bruce J. Terwilliger, Newburgh, and James A. Perrego, New Windsor, all of N.Y., assignors to Tarkett AB, Ronneby, Sweden

Filed Feb. 13, 1989, Ser. No. 309,231
Int. Cl.[5] B32B *5/16;* D06N *7/04;* C04B *14/00*
U.S. Cl. 428—143 10 Claims



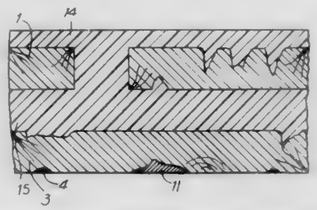
1. A floor covering comprising a plastic base having a first layer of UV cured coating applied to the upper surface of said plastic base, with particulate materials adhered to said first layer and with said first layer and said particulate materials being covered by a second layer of UV cured coating, each of said first and second layers of UV cured coating being cured in the absence of air, wherein said particulate materials are selected from the group consisting of vinyl polymer, acrylic and ABS materials as the major component of said particulate materials, said particulate materials including at least about 20 weight percent of the total particulate materials of clear chips, said clear chips being capable of transmission of at least a portion of the UV light having a wavelength of 300 nanometers or above, and wherein about 77 to 100 weight percent of said clear chips are of a U.S. mesh size in the range of between 60 and 200.

5,059,472

MULTI-PLY WOOD PRODUCT

Jean Le Bell, Turku; Simo Valjakka, Espoo; Jussi Pirbonen, Veikkola; Fred Sundén, Nagu; Erkki Hautaniemi, Moisio; Pentti Järvelä, Tampere; Björn Sandelin, and Rainer Algars, both of Parainen, all of Finland, assignors to Oy Partek Ab, Parainen, Finland

PCT No. PCT/FI86/00124, § 371 Date Aug. 31, 1987, § 102(e) Date Aug. 31, 1987, PCT Pub. No. WO87/02616, PCT Pub. Date May 7, 1987
PCT Filed Oct. 28, 1986, Ser. No. 83,793
Claims priority, application Finland, Oct. 29, 1985, 854237
Int. Cl.[5] B32B *19/00*
U.S. Cl. 428—161 17 Claims



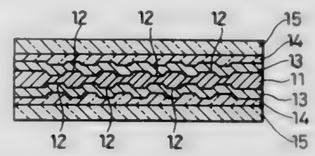
1. A hot-pressed multi-ply wood product, having at least one wooden ply, comprising at least one layer formed by a prefabricated crude fiber ply blank including fiber haphazardly oriented in three dimensions, a bonding agent, additives, and filler material, said ply blank, by virtue of partial breakdown and reorientation of said fiber, fills irregularities of the surface of an adjacent wood ply during hot-pressing, said hotpressing being carried out in a single step, so that said layer becomes fully bonded to said adjacent ply, wherein said fiber is mineral wool.

5,059,473

OPTICAL RECORDING MEDIUM AND MANUFACTURING METHOD THEREOF

Akira Takahashi, Nara; Michinobu Mieda, Tenri; Yoshiteru Murakami, Nishinomiya; Junichiro Nakayama, Nara; Tomoyuki Miyake, Tenri, and Kenji Ohta, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1989, Ser. No. 308,018
Claims priority, application Japan, Feb. 15, 1988, 63-32123
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—162 13 Claims



1. An optical recording medium comprising:
a center substrate;
said center substrate having either recesses or protrusions formed on both sides of said center substrate;
a first recording film formed on one side of said center substrate;
a second recording film formed on a side of said center substrate opposite said first recording film;
a first adhesive layer formed on said first recording film;
a second adhesive layer formed on said second recording film;

a first transparent protective plate formed on said first adhesive layer, said first transparent protective plate being a substantially planar surface of both sides; and

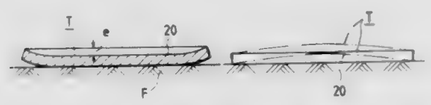
a second transparent protective plate formed on said second adhesive layer, said second transparent protective plate being a substantially planar surface on both sides.

5,059,474

FLOOR COVERING TILE

Yuji Yoshida, Fukushima, Japan, assignor to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Jul. 12, 1989, Ser. No. 378,947
Claims priority, application Japan, Jul. 12, 1988, 63-171920
Int. Cl.[5] B32B *1/00*
U.S. Cl. 428—174 **6 Claims**



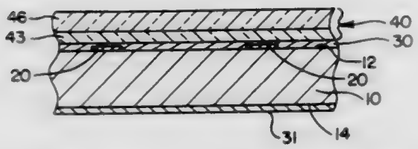
1. A floor covering panel comprising a lamination of a surface layer made of soft vinyl chloride resin having a small filler compounding ratio, an intermediate layer made of thermoplastic resin having a large filler compounding ratio, a glass fiber layer, and a lower layer made of thermoplastic resin having a filler compounding ratio no smaller than that of said intermediate layer; the sum of the respective thicknesses of said surface layer and said intermediate layer being not larger than the thickness of said lower layer, and said panel having first and second side edges, said first and second side edges having a gentle concave lower surface along their entire lengths; said concavity being such that said panel will lie flat on a horizontal surface due to the elasticity and weight of said panel when placed lower surface face down.

5,059,475

APPARATUS AND METHOD OF FORMING OPTICAL WAVEGUIDES ON METALIZED SUBSTRATES

Cheng-ko J. Sun; Shigeki Sakaguchi, both of Worthington, and Tadashi Miyashita, Upper Arlington, all of Ohio, assignors to Photonic Integration Research, Inc., Columbus, Ohio

Filed Jun. 29, 1990, Ser. No. 545,874
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **10 Claims**



1. An optical-electrical device, comprising: a substrate selected from the group consisting of ceramics, glass, and silicon materials including electrically operative integrated circuits connected by metalized thin film connectors on a first planar surface thereof;

a thin film coating selected from the group consisting of silicon and silicon dioxide (SiO_2) materials applied onto said planar surface including the electrically operative integrated circuits;

an optically conductive waveguide formed from a glass cladding layer applied onto said thin film coating and a glass core layer applied to said cladding layer;

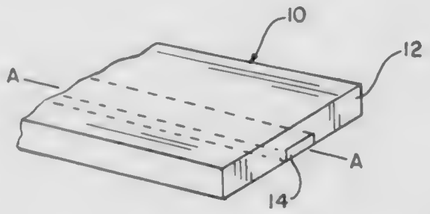
whereby the electrically operative integrated circuits are operationally interconnected to the optically conductive waveguides.

5,059,476

HINGED RIGID OR SEMIRIGID PRODUCT

John L. Steiniger, Westlake; Glen D. Schaaf; William S. Greenlee, both of Avon Lake, and Elaine A. Mertzel, Rocky River, all of Ohio, assignors to The B. F. Goodrich Company, Brecksville, Ohio

Filed Jun. 5, 1989, Ser. No. 361,195
Int. Cl.[5] B32B *7/02;* **A47G** *9/06;* **B29C** *65/00*
U.S. Cl. 428—217 **18 Claims**



1. An article having a smooth planar flexible section, said article comprising:

rigid or semirigid substrate means having a hardness of greater than about 35 Shore D as measured by ASTM test D-2240, said substrate means including at least one substrate adhering interface,

hinge means having a hardness of from about 25 to about 60 Shore D as measured by ASTM test D-2240 and said hinge means either being softer than said substrate means as measured by ASTM test D-2240 or having a greater flex fatigue resistance said hinge means including at least one hinge means adhering interface and said hinge means adhering interface adhering with said substrate means adhering interface to form said flexible section, said flexible section having a first exterior surface and a second exterior surface, said first and said second exterior surfaces both being substantially coplanar, continuous and unbroken, whereby said article is capable of repeated distortion through at least 90° within said flexible section without failure.

17. A foldable article having a smooth, planar flexible section, said article comprising:

rigid or semirigid thermoplastic substrate means comprises of a polyvinyl chloride or a copolymer or blend or plasticized composition which is at least 50 percent polyvinyl chloride by weight and having a hardness as measured by ASTM test D-2240 of greater than about 60 Shore D, said substrate means including at least one substrate adhering interface;

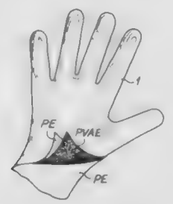
hinge means comprised of a polyurethane having a hardness as measured by ASTM test D-2240 of from about 40 to about 50 Shore D, said hinge means being at least 20 Shore D hardness units softer than said substrate means, said hinge means including at least one hinge means adhering interface and said hinge means adhering interface adhering directly with said substrate means adhering interface to form said flexible section, said flexible section having a first exterior surface and a second exterior surface, said first and second exterior surfaces both being substantially coplanar, continuous and unbroken and whereby said article is capable of being bent back on itself along said flexible section at least fifteen times without failure.

5,059,477

PROTECTIVE GARMENT

Henning R. Henriksen, 25, Dronningensgade, Copenhagen, Denmark DK-1420

PCT No. PCT/DK83/00034, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983, PCT Pub. No. WO83/03205, PCT Pub. Date Sep. 29, 1983
Continuation of Ser. No. 557,159, Nov. 9, 1983, abandoned. This PCT application Mar. 14, 1983, Ser. No. 785,094
Claims priority, application Denmark, Mar. 12, 1982, 1112/82
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—220 **15 Claims**



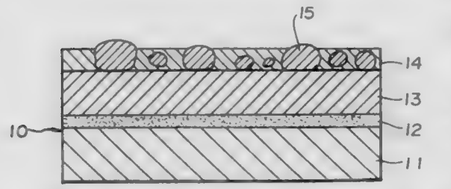
1. A protective garment designed to protect the skin of the wearer against exposure to epoxides and other hazardous chemicals, which comprises a membrane shaped by extrusion or casting and/or seamed by heat sealing or sewing into a glove, coverall suit, hood or boot, said membrane comprising a substantially water insoluble polymer material comprising a copolymer of a C_{2-5} alkene substituted with up to 4 hydroxy groups and a C_{2-5} alkene, or a homopolymer of a C_{3-5} alkene substituted with up to 4 hydroxy groups.

5,059,478

HEAT-SENSITIVE TRANSFER MATERIAL

Nobumori Kanno, and Neiji Takeda, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

PCT No. PCT/JP88/00618, § 371 Date Mar. 27, 1989, § 102(e) Date Mar. 27, 1989, PCT Pub. No. WO89/00923, PCT Pub. Date Feb. 9, 1989
PCT Filed Jun. 22, 1988, Ser. No. 360,936
Claims priority, application Japan, Aug. 5, 1987, 62-119888[U]; Oct. 30, 1987, 62-273357
The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—321.3 **8 Claims**



1. A heat-sensitive transfer material produced by forming an adhesive layer on one surface of a substrate film, forming a heat-melting ink layer on the adhesive layer and forming a transfer control layer on the heat-melting ink layer, the transfer control layer being formed by applying a dispersion solution of a heat-melting resin, a wax or a heat-melting ink in a heat-resistant resin.

5,059,479

PRESSURE-SENSITIVE ADHESIVE EMULSION COMPOSITION AND A KRAFT TAPE USING IT

Hajime Yuyama, Minoo; Fumio Maekawa, Suita, and Kazuo Umekage, Kamimaki, all of Japan, assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Dec. 29, 1989, Ser. No. 458,866
Int. Cl.[5] C08L *95/00;* **B32B** *7/12, 11/02*
U.S. Cl. 428—323 **4 Claims**

1. A pressure-sensitive adhesive emulsion composition, characterized in containing ingredients (A) and (B) below; the content of ingredient (B) is in the range of from 1–70 solid parts per 100 solid parts by weight of the emulsion composition, comprising

(A) a polymer derived from at least one compound selected from a group consisting of alkyl acrylates and alkyl methacrylates, and vinyl compounds selected from the group consisting of vinyl acetate, vinyl chloride, acrylonitrile, styrene, α-alkyl styrene, and α-chlorostyrene, said polymer having a glass transition temperature in the range of −60° C. to −30° C., and

(B) a bituminous emulsifier with an average particle diameter of the emulsified particles of 0.5 to 3.0 μm.

5,059,480

CURABLE ADHESIVES

Robert Guerra, Fremont, and Pravin Soni, Union City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 477,277, Feb. 8, 1990, abandoned, which is a division of Ser. No. 288,331, Dec. 21, 1988, Pat. No. 5,008,340. This application Sep. 20, 1990, Ser. No. 587,493
Int. Cl.[5] B32B *1/06, 1/08, 27/28*
U.S. Cl. 428—34.9 **14 Claims**

1. A heat-recoverable article having as a coating on at least a portion of a surface thereof, an adhesive composition comprising:

(a) about 30 to about 50% by weight of a thermoplastic vinylidine fluoride homopolymer or copolymer;

(b) about 5 to about 40% by weight of an elastomeric vinylidine fluoride polymer;

(c) about 5 to about 25% by weight of a thermoplastic ethylene copolymer comprising at least 50 mole % of units derived from ethylene and at least 5 mole % of units derived from at least one unsaturated comonomer containing at least one polar group;

(d) about 1 to about 10% by weight of a crosslinking agent component; and

(e) 0 to about 20% by weight of a tackifier; all percentages by weight being based on the total weight of the five components.

5,059,481

BIAXIALLY STRETCHED, HEAT SHRINKABLE VLDPE FILM

Stanley Lustig, Park Forest; Nancy M. Mack, Chicago; Jeffrey M. Schuetz, Woodridge, and Stephen J. Vicik, Darien, all of Ill., assignors to Viskase Corporation, Chicago, Ill.

Continuation of Ser. No. 384,589, Jul. 25, 1989, Pat. No. 4,976,898, which is a division of Ser. No. 42,087, Apr. 24, 1987, Pat. No. 4,863,769, which is a continuation of Ser. No. 745,236, Jun. 17, 1985, abandoned. This application Mar. 28, 1990, Ser. No. 501,986
The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.
Int. Cl.[5] B32B *27/08;* **C08F** *210/04, 210/14*
U.S. Cl. 428—39.9 **99 Claims**

1. A heat-shrinkable, flexible film comprising a biaxially stretched very low density polyethylene (VLDPE) which is a linear copolymer of ethylene and at least one alpha-olefin selected from the group of butene-1, pentene-1, hexene-1, 4-methyl pentene-1, heptene-1 and octene-1, said copolymer

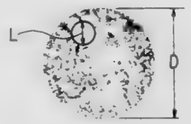
having a density of from about 0.86 g/cm^3 to about 0.91 g/cm^3 and a 1% secant modulus below about 140,000 kPa, said biaxially stretched film having a shrinkage value of from about 30% to about 50% percent at 90° C. in at least one direction.

5,059,482

COMPOSITE FIBER AND PROCESS FOR PRODUCING THE SAME

Masao Kawamoto; Kazuhiko Tanaka; Kiyoshi Hirakawa; Shinji Yamaguchi, and Tomoyasu Takegami, all of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Sep. 7, 1989, Ser. No. 404,208
Claims priority, application Japan, Sep. 13, 1988, 63-230296
Int. Cl.^{5} D02G *3/00*
U.S. Cl. 428—373 **2 Claims**



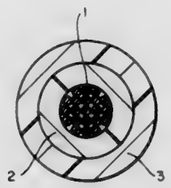
1. A composite fiber of ethylene-vinyl alcohol copolymer and polyester heterogeneously blended with each other, comprising a saponified product of an ethylene-vinyl acetate copolymer (A) having an ethylene content of 30 to 70 mol % and a saponification degree of at least 95% and a thermoplastic polyester (B) containing polyethylene terephthalate, polybutylene terephthalate or a copolymer of polyethylene terephthalate containing at least 80 mol % of polyethylene terephthalate units or a copolymer of polybutylene terephthalate containing at least 80 mol % of polybutylene terephthalate units in a blending ratio by weight of A: B=5:95 to 40:60, said component A being distributed in the form of islands in the cross section of the fiber, the region in the cross section of the fiber of said component (B) where component (A) is not present containing a component (B) zone having a circular area with a diameter at least 1/20 that of the fiber.

5,059,483

AN ELECTRICAL CONDUCTOR INSULATED WITH MEIT-PROCESSED, CROSS-LINKED FLUOROCARBON POLYMERS

Hans E. Lunk, Menlo Park; Neal Enault, Sunnyvale, and Ashok Mehan, Union City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 786,806, Oct. 11, 1985, abandoned.
This application Apr. 17, 1989, Ser. No. 338,914
Int. Cl.^{5} B32B *15/00, 27/00;* **H01B** *7/00*
U.S. Cl. 428—383 **12 Claims**



1. An insulated electrical conductor which comprises
(1) an elongated electrical conductor; and
(2) electrical insulation which comprises
(a) an inner electrically insulating layer which (i) is composed of a first melt-processed, cross-linked fluorocarbon polymer composition wherein the polymer has a melting point of at least 200° C., and (ii) has a first M_{100} value of 0 to 350 psi and an elongation of at least 100%; and
(b) an outer electrically insulating layer which (i) is separated from the conductor by the inner layer, (ii) is in contact with said inner layer; (iii) is composed of a second melt-processed cross-linked fluorocarbon polymeric composition wherein the polymer has a melting point of at least 300° C., and (iv) has a second M_{100} value which is at least 350 psi and at least 50 psi higher than the first M_{100} value and an elongation of 40 to 150%.

5,059,484

OPTICALLY CLEAR COMPOSITES COMPRISING TWO LAYER OF ORGANIC POLYMERS AND AN ORGANOSILOXANE ADHESIVE

Joseph N. Clark, Mapleton, Mich., and Schuyler B. Smith, deceased, late of Midland, Mich. by Chemical Bank and Trust Company, executor , assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 322,014, Mar. 13, 1989, Pat. No. 4,985,525.
This application Oct. 9, 1990, Ser. No. 598,459
Int. Cl.^{5} B32B *27/36, 9/04, 27/08*
U.S. Cl. 428—412 **4 Claims**

1. In an optically clear composite comprising two sheets of similar or dissimilar organic polymers and a layer of an optically clear adhesive between said sheets, where said adhesive comprises an organosiloxane composition curable by a platinum-catalyzed hydrosilation reaction, and said composition comprises a first polydiorganosiloxane gum containing at least two ethylenically unsaturated hydrocarbon radicals per molecule, an organhydrogensiloxane containing at least two silicon-bonded hydrogen atoms per molecule and a platinum-containing hydrosilation catalyst, the improvement comprising (1) selecting said organic polymers from the group consisting of polycarbonates and polymethyl methacrylate and (2) the presence in said composition of a second polydiorganosiloxane gum containing a concentration of silanol groups sufficient to impart to the mixture of said first and second gums an activity number of from 40 to 80, inclusive, where said activity number is a function of the increase in viscosity with respect to time of a solubilized curable composition consisting essentially of said mixture, a stoichiometric excess of ethyl orthosilicate, a curing catalyst and a solvent, where said activity number is calculated using the formula

$$(600{,}000)(\text{Log } T_{e1}/T_{e2}) / T,$$

where T_{e1} and T_{e2} each represent the time interval, in seconds, required for elution of said solubilized composition from a capillary type viscometer at 25° C., T_{e1} begins ten minutes following formation of said solubilized composition, T_{e2} begins 20 minutes following formation of said solubilized composition and T represents the difference, in minutes, between a) the time interval between formation of said solubilized composition and the end of time interval T_{e2} and b) the time interval between formation of said solubilized composition the end of time interval T_{e1}.

5,059,485

CONDUCTIVE METALLIZATION OF SUBSTANCES WITHOUT DEVELOPING AGENTS

William J. Parr, Naperville; Paul Y. Y. Moy, Des Plaines, and Dieter Frank, Naperville, all of Ill., assignors to Akzo America Inc., New York, N.Y.

Continuation-in-part of Ser. No. 204,044, Jun. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 68,593, Jun. 30, 1987, abandoned. This application Nov. 16, 1989, Ser. No. 437,289
Int. Cl.^{5} C23C *24/00*
U.S. Cl. 428—458 **24 Claims**

1. A method of forming a conductive metal layer on a substrate, consisting essentially of:

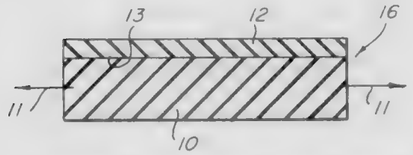
(a) a depositing step, wherein a layer of metal particles comprising copper, nickel or a combination thereof, said particles having a substantially continuous oxide coating on the surface thereof, is deposited on a substrate having a softening point such that said substrate does not deform under processing conditions at 200° C. and
(b) a heating and pressing step of subjecting metal particles to pressure at a temperature of at least 200° C. for a duration sufficient to improve the conductivity of said metal layer.

5,059,486

SELF-HEALING RUBBER ARTICLE AND METHOD

Hovaness H. Maronian, Rochester, and Malur R. Balaji, Pittsford, both of N.Y., assignors to Rochester Medical Devices, Inc., Rochester, N.Y.

Filed Jun. 23, 1989, Ser. No. 370,817
Int. Cl.^{5} B32B *25/08, 27/08;* **B29C** *55/00*
U.S. Cl. 428—493 **17 Claims**



1. A self-healing multilayer flexible member of rubber comprising:
a base layer of a rubber, and
an overlayer of a rubber which is adhered to the base layer of rubber;
wherein said overlayer of rubber is applied to the base layer as a liquid, while said base layer is maintained in a stretched condition, and thereafter the overlayer is cured while the base layer is maintained in its stretched condition, and wherein small openings in the base layer are sealed.

5,059,487

HOT-MELT ADHESIVE COMPOSITION

Tsuneaki Muro, and Masami Takeda, both of Waki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 647,972
Claims priority, application Japan, Jan. 30, 1990, 1-17723
Int. Cl.^{5} B32B *27/28;* **C08L** *53/02, 45/00, 23/08, 9/06*
U.S. Cl. 428—500 **11 Claims**

1. A hot-melt adhesive composition comprising (a) 20 to 70 parts by weight of a vinyl aromatic compound/conjugated diene copolymer or a hydrogenation product thereof, (b) 30 to 80 parts by weight of an alicyclic hydrocarbon resin tackifier, the total amount of the components (a) and (b) being 100 parts by weight, and (c) 0.3 to 20 parts by weight of a random copolymer of a cyclic olefin and ethylene.

5,059,488

GLUTARALDEHYDE RESIN BINDING SYSTEM FOR MANUFACTURE OF WOOD PRODUCTS

William D. Detlefsen; David Wen-I-Shiau, both of Eugene, and Nicholas K. Daisy, Springfield, all of Oreg., assignors to Borden, Inc., Columbus, Ohio

Filed Aug. 24, 1990, Ser. No. 573,389
Int. Cl.^{5} B32B *21/08*
U.S. Cl. 428—528 **26 Claims**

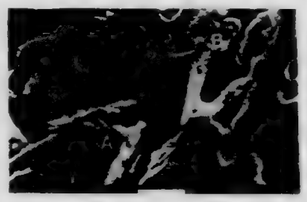
1. A resin adhesive system which comprises an ethyleneurea-glutaraldehyde resin having a molar ratio of ethyleneurea to glutaraldehyde of from about 0.3 to 3.5.

5,059,489

SURFACE MODIFIED STRUCTURES

Charles Q. Buckwalter, Jr.; Irwin M. Lachman; Mallanagouda D. Patil, all of Corning, and Jimmie L. Williams, Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 15, 1988, Ser. No. 219,978
Int. Cl.^{5} B22F *3/10*
U.S. Cl. 428—550 **9 Claims**



1. A structure comprising hard porous sintered metal, metal alloy, and/or combinations thereof consisting essentially of at least two members of the transition metals of the periodic chart of elements with differing surface energies, whereby the member or members with lower surface energy have formed a stable support and at least a portion of the member or members with higher surface energies have migrated to the surface of the solid areas of the porous structure.

5,059,490

METAL-CERAMIC COMPOSITES CONTAINING COMPLEX CERAMIC WHISKERS

John M. Brupbacher, Catonsville; Leontios Christodoulou, Baltimore, and Dennis C. Nagle, Ellicott City, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Division of Ser. No. 156,682, Feb. 17, 1988, Pat. No. 4,915,902, which is a continuation-in-part of Ser. No. 943,061, Dec. 18, 1986, abandoned, which is a division of Ser. No. 662,928, Oct. 19, 1984, abandoned. This application Jun. 15, 1989, Ser. No. 366,725
The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.
Int. Cl.^{5} C22C *32/00*
U.S. Cl. 428—614 **25 Claims**

1. A composite material comprising in-situ precipitated complex boride whiskers distributed throughout a solvent metal matrix wherein the complex boride whiskers have an aspect ratio of greater than 10:1.

5,059,491

CERMET BLADE MEMBER FOR CUTTING-TOOLS AND PROCESS FOR PRODUCING SAME

Niro Odani; Kazuyoshi Yoshioka, and Sinichi Sekiya, all of Tokyo, Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Filed Nov. 9, 1989, Ser. No. 435,200
Claims priority, application Japan, Nov. 11, 1988, 63-285215
Int. Cl.^{5} C22C *32/00*
U.S. Cl. 428—614 **4 Claims**

1. A blade member for cutting-tools, comprising a substrate of cermet consisting, apart from unavoidable impurities, of:
a binder phase of 5% to 30% by weight of at least one element selected from the group consisting of cobalt and nickel; and
a hard dispersed phase of a balance composite carbonitride of titanium and at least one element selected from the group consisting of tungsten, molybdenum, tantalum, niobium, hafnium and zirconium, said composite carbonitride satisfying the relationship of $0.2 \leqq b/(a+b) \leqq 0.7$, where a and b denote atomic ratios of carbon and nitrogen, respectively;

said substrate including a hard surface layer in which the region having the maximum hardness is present at a depth between 5 μm and 50 μm from a substrate surface thereof, said substrate surface having hardness of 20% to 90% of said maximum hardness.

5,059,492

HIGHLY CORROSION-RESISTANT, COLORED THIN FILM-COATED STEEL SHEET HAVING EXCELLENT PRESS-PROCESSABILITY AND SPOT-WELDABILITY

Yoshio Shindou, and Motoo Kabeya, both of Kimitsu, Japan, assignors to Nippon Steel Corporation, Japan

Filed Apr. 4, 1990, Ser. No. 503,979
Claims priority, application Japan, Apr. 4, 1989, 1-083967
Int. Cl.[5] B32B *15/04, 15/08, 15/18, 17/10*
U.S. Cl. 428—625 **15 Claims**

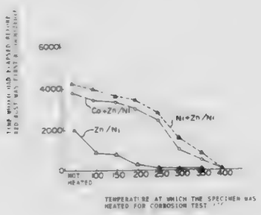
1. A highly corrosion-resistant, colored thin film-coated steel sheet having excellent press-processability and spot-weldability, which comprises a plated steel sheet, a first layer of a sparingly soluble chromate film formed on at least one surface of the plated steel sheet said chromate film having a water soluble content of 1 to 30%, a Cr^{6+}/Cr^{3+} ratio of 0.01 to 1.0 and a total chromium build-up of 10 to 150 mg/m^2 on one surface, and a second layer of a 0.3 to 5 μm-thick solid coating film formed of an organic solvent coating composition comprises of, based on the weight of the nonvolatile content:
(a) a urethanated epoxy ester resin having a number average molecular weight of 300 to 100,000; 30 to 90%,
(b) a hydrophilic polyamide resin having a polymerization degree of 50 to 1,000: 5 to 40%,
(c) a silica powder having an average particle diameter of 1 to 100 mμ: 5 to 40%,
(d) a lubricant: 1 to 20%, and
(e) at least one member selected from the group consisting of inorganic, and insoluble azo, azolake or phthalocyanine organic pigments having an average particle diameter of 0.05 to 5 μm: 0.1 to 20%.

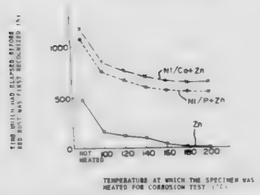
5,059,493

HEAT AND CORROSION RESISTANT PLATING

Seiya Takahata, Mishima, Japan, assignor to Usui Kokusai Sangyo Kaisha, Ltd., Shizuoka, Japan

Filed Mar. 23, 1990, Ser. No. 498,240
Claims priority, application Japan, Mar. 28, 1989, 1-75869
Int. Cl.[5] B32B *15/00, 1/00*
U.S. Cl. 428—658 **8 Claims**





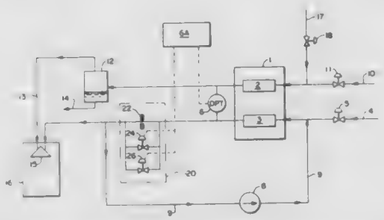
1. A heat and corrosion resistant plating comprising:
a first layer formed on a base surface from a material selected from the group consisting of cobalt, nickel, a cobalt alloy and a nickel alloy, said nickel alloy is selected from the group consisting of an alloy of nickel and phosphorous and an alloy of nickel and boron; and
a second layer formed on said first layer from a material selected from the group consisting of zinc and a zinc alloy.

5,059,494

FUEL CELL POWER PLANT

George Vartanian, Ellington, and Michael B. Landau, West Hartford, both of Conn., assignors to International Fuel Cells, South Windsor, Conn.

Filed May 10, 1990, Ser. No. 521,480
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—17 **5 Claims**



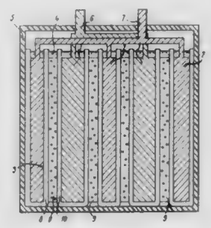
1. In a fuel cell power plant including a fuel cell stack containing a fuel cells, each having an anode and a cathode, an anode recirculation line for returning at least a part of anode exhaust gas via an anode recycle blower to the anode inlet, a differential pressure transmitter for measuring a differential pressure between the anode and the cathode, a cell cross pressure control valve complex comprising a control valve and either an orifice or a fixed opening throttle valve with said control valve in parallel with said orifice or throttle valve, and a controller for controlling a degree of opening of said cell cross pressure control valve according to a measured value of said differential pressure transmitter, the fuel cell power plant characterized in that said cell cross pressure control valve complex is installed in the line between the anode outlet and a branch point of said anode recirculation line from the anode outlet line.

5,059,495

ELECTRIC BATTERY

Oleg A. Burmistrov; Igor A. Aguf; Nikita J. Lyzlov; Martin A. Dasoian, and Galina V. Krivchenko, all of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky I Tekhnologichesky Akkumulyatorny Institut, Leningrad, U.S.S.R.

Continuation of Ser. No. 290,148, Dec. 23, 1988, abandoned.
This application Mar. 22, 1990, Ser. No. 498,468
Claims priority, application U.S.S.R., Dec. 25, 1987, 4348660
Int. Cl.[5] H01M *2/16*
U.S. Cl. 429—57 **1 Claim**



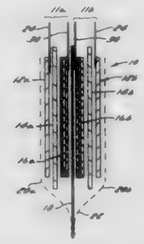
1. An electric battery, comprising: a positive electrode; a negative electrode; an aqueous electrolytic solution; a separator matrix disposed between said positive and negative electrodes and comprising twoouter layers and a middle layer; and a hydrogen/oxygen recombination catalyst inserted into the middle layer of said separator matrix; the platinum content of the hydrogen/oxygen recombination catalyst of the middle layer of the separator matrix being about 1 mg/cm^3.

5,059,496

NICKEL-HYDROGEN BATTERY WITH OXYGEN AND ELECTROLYTE MANAGEMENT FEATURES

John F. Sindorf, Pewaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 23, 1989, Ser. No. 328,117
Int. Cl.[5] H01M *10/34*
U.S. Cl. 429—101 **32 Claims**



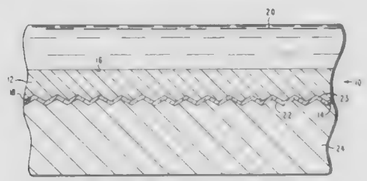
1. A metal oxide-hydrogen cell or battery having gas and electrolyte management features comprising one or more cell-modules, each cell-module having electrolyte and including:
a plurality of cell units each comprising
(a) a negative electrode;
(b) a positive electrode which facilitates oxygen diffusion to said negative electrode; and
(c) separator means for separating said positive and negative electrodes and holding electrolyte of ionic conductivity disposed between said negative electrode and a first surface of said positive electrode; and
means for enclosing said cell units, maintaining proper alignment of said electrodes and separator means, permitting passage of hydrogen gas therethrough to each negative electrode, and preventing swelling of separator edges, said enclosing means having a surface configuration adapted to allow electrolyte to drain from a surface of each negative electrode.

5,059,497

COMPOSITE ION-CONDUCTIVE ELECTROLYTE MEMBER

Lawrence S. Prince, Long Beach, and Lin R. Higley, Laguna Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 20, 1990, Ser. No. 512,222
Int. Cl.[5] H01M *6/18*
U.S. Cl. 429—193 **20 Claims**



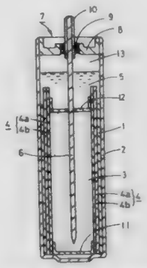
1. An electrochemical cell including:
an anode containing anodic reactants;
a cathode containing cathodic reactants;
a composite ion-conductive electrolyte member, including:
a first layer constituted of an ion-conductive material;
a second layer bonded to said first layer, said second layer being constituted of an electrically conductive material which is highly resistant to the anodic reactants of the cell, and which is sufficiently porous to allow flow of anodic reactants to contact said first layer; and,
wherein said first layer is disposed in contact with the cathode of the cell, and said second layer is disposed in contact with the anode of the cell.

5,059,498

INORGANIC NONAQUEOUS ELECTROLYTIC SOLUTION TYPE CELL

Kaoru Hisatomi; Hiroshi Sasama, both of Takatsuki; Kazuo Ishida, and Shintaro Sekido, both of Suita, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jun. 15, 1990, Ser. No. 538,745
Claims priority, application Japan, Jun. 16, 1989, 1-155500; Jun. 16, 1989, 1-155501
Int. Cl.[5] H01M *8/02, 2/16*
U.S. Cl. 429—196 **9 Claims**



1. An inorganic nonaqueous electrolytic solution type cell comprising:
an oxyhalide which is in the liquid state at room temperature and serves as an active material for a positive electrode and as a solvent for an electrolytic solution;
a negative electrode made of an alkali metal;
a positive electrode made of a porous carbon molded article; and
a separator which is positioned between said negative electrode and said positive electrode and comprises a nonwoven fabric of glass fibers and a microporous film having a substantially uniform micropores having curved passages.

5,059,499

MASTER HOLOGRAM AND MICROPATTERN REPLICATION METHOD

Michael Teitel, 1039 Massachusetts Ave. #4B, Cambridge, Mass. 02138

Filed Jun. 3, 1988, Ser. No. 202,579
Int. Cl.[5] G03H *1/04*
U.S. Cl. 430—1 **17 Claims**

1. A method of recording a hologram light pattern so as to make a master pattern having a surface relief suitable for direct replication by embossing, such method comprising the steps of:
(i) recording the light pattern onto a silver surface which has been chemically sensitized by reaction with a halogen to form a silver halide, said recording being performed by exposing the silver halide to a pattern of interfering coherent light to dissociate the silver halide in a corresponding pattern in exposed regions of the surface, and
(ii) differentially etching the surface to produce a surface contour of enhanced relief dimensions suitable for the

direct embossing of phase hologram copies of the recorded light pattern.

4. A method of recording a microscopic surface relief pattern corresponding to the amplitude of a radiation field of interfering coherent waves, such surface relief pattern having variations of surface height below approximately one micron, wherein the method comprises the steps of

(A) providing a field of interfering coherent waves

(B) providing a smooth silver surface, and

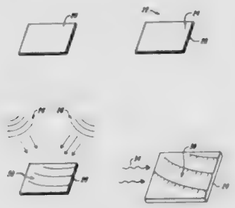
(i) chemically sensitizing the silver surface to radiation by reaction with a halogen to form a silver halide at said surface and subsequently

(ii) exposing the surface to said field of interfering coherent waves so as to dissociate the silver halide and thereby form a chemically varying surface distribution in a pattern corresponding to variations in amplitude of said field and

(iii) selectively removing material from said surface by differentially etching said chemically varying surface distribution to achieve a corresponding pattern having differential surface relief which transforms the phase of coherent light reflected from said surface in accordance with the interfering coherent waves.

15. A method of making a holographic pressing master for embossing a desired phase hologram such method comprising the steps of:

(i) providing a polished silver plate,



(ii) sensitizing the plate by chemically reacting a halogen at the surface thereof to form a photodissociable halogen salt at the surface

(iii) exposing the sensitized plate to a coherent light field to dissociate the silver halide in exposed areas and thereby vary the surface composition of the silver plate in accordance with the amplitude of said coherent light field over the surface, and

(iv) etching the plate with an etchant which differentially etches different portions of said varying surface composition to produce a relief modulated surface corresponding to said desired phase hologram, said etching being carried out to a relief depth sufficient for embossing phase hologram copies therefrom.

16. A method of recording a pattern of electromagnetic radiation so as to make a master pattern having a surface for modulating electromagnetic radiation in accordance with said master pattern, such method comprising the steps of

(i) providing a substrate having a smooth silver surface,

(ii) chemically treating the surface to form a radiation sensitive silver halide skin thereon by chemical reaction of a halogen with the silver surface,

(iii) exposing said skin to a recording pattern of said electromagnetic radiation, and

(iv) further treating the exposed skin to remove an effective amount of material therefrom to form said master pattern for phase modulating electromagnetic radiation directed thereat.

5,059,500
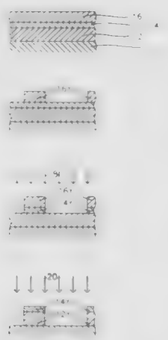
PROCESS FOR FORMING A COLOR FILTER

Christopher R. Needham, Beverly; Carl A. Chiulli, Randolph, and Stephen F. Clark, North Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 10, 1990, Ser. No. 595,211

Int. Cl.[5] G03F *9/00*; G03C *1/825*

U.S. Cl. 430—7 **28 Claims**



1. A process for forming a filter on a substrate, which process comprises:

providing on the substrate a layer of an absorber material comprising a dye material having predetermined absorption and transmission characteristics;

providing a layer of a barrier material superposed on the layer of absorber material,

the barrier material being more susceptible to reactive ion etching than the absorber material under a first set of etching conditions, but resistant to reactive ion etching under a second set of etching conditions under which the absorber material is susceptible to etching;

providing a layer of a photoresist material superposed on the layer of barrier material;

patternwise exposing the layer of photoresist material and developing the exposed layer to remove either the exposed or non-exposed regions thereof, thereby to bare the regions of the barrier layer underlying the removed regions of the photoresist material, the remaining regions of the photoresist material being resistant to reactive ion etching under said first set of etching conditions but susceptible to reactive ion etching under said second set of etching conditions;

reactive ion etching the coated substrate under said first set of etching conditions, thereby etching away the bared regions of the barrier layer and baring selected regions of the absorber layer, but not etching away the remaining regions of the photoresist material nor substantially etching away the bared regions of the absorber layer; and

reactive ion etching the coated substrate under said second set of etching conditions, thereby etching away the remaining regions of the photoresist layer and the bared regions of the absorber layer, and thereby forming a filter on the substrate.

5,059,501

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH OVERLAYER OF AMORPHOUS SI WITH N

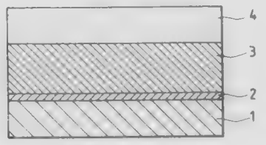
Shigeru Yagi; Masato Ono; Noriyoshi Takahashi; Masayuki Nishikawa; Yuzuru Fukuda, and Kenichi Karakida, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1989, Ser. No. 417,969

Claims priority, application Japan, Oct. 11, 1988, 63-253857

Int. Cl.[5] G03G *5/14, 5/147*

U.S. Cl. 430—65 **9 Claims**



1. An electrophotographic photoreceptor comprising:

a support;

a charge blocking layer overlying the support, comprising hydrogenated amorphous silicon including boron of 50–5,000 ppm;

a photosensitive layer overlying the charge blocking layer, essentially made of amorphous silicon including boron of 0.1–5 ppm; and

a surface layer overlying the photosensitive layer, made of amorphous silicon including nitrogen having an atomic ratio greater than or equal to about 0.1 and less than about 0.5 with respect to silicon.

5,059,502

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Narihito Kojima; Hiroshi Nagame, both of Numazu; Mitsuru Seto, Yamakita; Shunpei Yamazaki, Atsugi; Shigenori Hayashi, Atsugi; Noriya Ishida, Atsugi; Naoki Hirose, Atsugi; Mari Sasaki, Atsugi, and Junichi Takeyama, Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo and Semiconductor Energy Laboratory Company Co., Ltd., Atsugi, both of Japan

Filed Nov. 13, 1989, Ser. No. 434,783

Claims priority, application Japan, Nov. 13, 1988, 63-286507; Feb. 10, 1989, 01-032218

Int. Cl.[5] G03G *5/147*

U.S. Cl. 430—66 **24 Claims**

1. An electrophotographic photoconductor comprising:

an electroconductive substrate,

an organic photoconductive layer formed on said electroconductive substrate, and

a protective layer formed on said organic photoconductive layer, comprising carbon or a carbon-based material as its main component, with the difference between the Vickers hardness of said organic photoconductive layer and said protective layer being 2500 Kg/mm^2 or less.

5,059,503

ELECTROPHOTOSENSITIVE MATERIAL WITH COMBINATION OF CHARGE TRANSFER MATERIALS

Nariaki Muto, Daito; Tatsuo Maeda, Kobe; Toshihiko Nishiguchi, Moriguchi; Mikio Kakui, Mino; Keisuke Sumida, Hirakata, and Toru Nakazawa, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

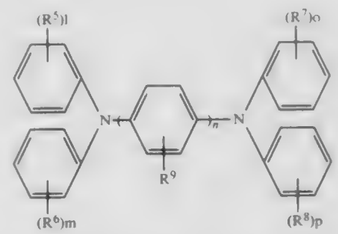
Filed Mar. 29, 1990, Ser. No. 501,040

Claims priority, application Japan, Mar. 30, 1989, 1-80012; Mar. 30, 1989, 1-80013; Mar. 30, 1989, 1-80014; Mar. 30, 1989, 1-80015; Mar. 30, 1989, 1-80016; Mar. 30, 1989, 1-80017; Mar. 30, 1989, 1-80018

Int. Cl.[5] G03G *5/09*

U.S. Cl. 430—83 **24 Claims**

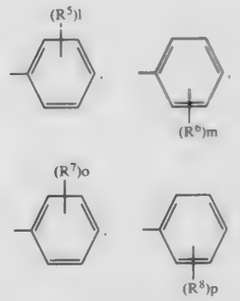
1. An electrophotosensitive material comprising a photoconductive material, and a photosensitive layer formed thereon containing a charge-generating material in the range of 2 to 20 parts by weight and a charge-transferring material in the range of 40 to 200 parts by weight to 100 parts by weight of a binding resin, said charge-transferring material comprising a diamine derivative represented by the following formula (I), and also containing a hydrazone compound represented by the following formula (II) or a fluorene compound represented by the following formula (III) or a m-phenylenediamine compound represented by the following formula IV:



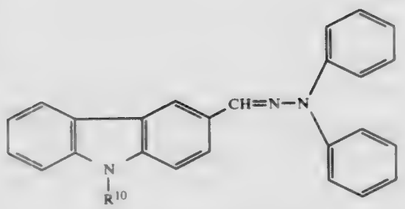
(I)

wherein R^5, R^6, R^7, R^8 and R^9 are the same or different, hydrogen atom, lower alkyl group, lower alkoxy group or halogen atom, n is an integer from 1 to 3,

l, m, o and p are the same or different, integers from 0 to 2, and at least one selected from the group consisting of following groups:

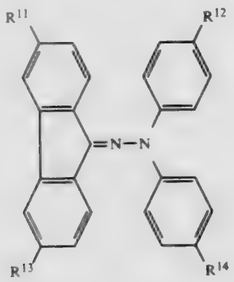


may form a condensed ring with benzene ring which may have lower alkyl group, lower alkoxy group or halogen atom as a substituent;



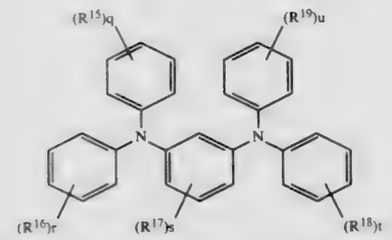
(II)

wherein R^{10} is hydrogen atom or alkyl group, wherein if said hydrazone compound is present then the weight ratio of said diamine derivative to said hydrazone compound is 95:5 to 90:10;



(III)

wherein R^{11}, R^{12}, R^{13} and R^{14} are the same or different, hydrogen atom or alkyl group, wherein if said fluorene compound is present then the weight ratio of said diamine derivative to said fluorene compound is 90:10 to 80:20;



(IV)

wherein R^{15}, R^{16}, R^{17}, R^{18} and R^{19} are the same or different, hydrogen atom, alkyl group, alkoxy group or halogen atom, q, r, t and u are the same or different, integers from 0 to 5, s is an integer from 0 to 4, wherein if said m-phenylenediamine compound is present then the weight ratio of said diamine derivative to said m-phenylenediamine compound is 75:25 to 25:75.

5,059,504

CARRIER FOR DEVELOPER

Masayoshi Shinoki; Masahiro Takagi; Ikutaroh Nagatsuka; Koichi Kumashiro; Takayoshi Aoki, and Masayuki Takeda, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 267,882, Nov. 7, 1988, Pat. No. 4,929,528. This application Mar. 5, 1990, Ser. No. 488,139

Claims priority, application Japan, Nov. 5, 1987, 62-278362; Nov. 5, 1987, 62-278363

Int. Cl.[5] G03G *9/00;* **B03B** *9/00, 19/00*

U.S. Cl. 430—108 **9 Claims**

1. A carrier for a developer comprising a core material coated with a coating material consisting essentially of a copolymer of vinylidene fluoride and hexafluoropropylene and a copolymer of trifluoromonochloroethylene and vinyl chloride at a ratio of said copolymer of vinylidene fluoride and hexafluoropropylene to said copolymer of trifluoromonochloroethylene and vinyl chloride in the range of 99:1 to 20:80.

5,059,505

RESIN PARTICLES

Akio Kashihara, Hirakata; Chikayuki Otsuka, Kadoma, and Naoya Yabuuchi, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 263,247, Oct. 27, 1988, abandoned. This application Aug. 20, 1990, Ser. No. 569,526

Claims priority, application Japan, Oct. 30, 1987, 62-277068

Int. Cl.[5] G03G *9/087*

U.S. Cl. 430—110 **4 Claims**

1. Resin particles substantially spherical in shape having a weight average particle size of 1 to 30 microns and containing a carbon atom as main component, a silicon atom in an amount of 1×10^{-1} to 7% by weight and/or a fluorine atom in an amount of 1×10^{-2} to 2% by weight; the particles being prepared by polymerizing a polymerizable monomer in an organic solvent having a higher solubility parameter than the resultant polymer by at least 1.0 in the presence of a dispersion stabilizer which is soluble in said organic solvent and which has a dialkylsiloxane bond and/or a fluorine atom, and then removing said organic solvent; wherein said resin particles have said dispersion stabilizer on the surface of said resin particles.

5,059,506

METHOD OF IMAGE FORMATION

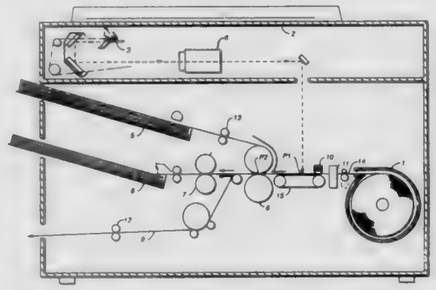
Hiroshi Mori, Chiba; Toshinki Kobayashi, Nara; Shoichi Nagata, Nara, and Kunio Ohashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 297,588, Jan. 13, 1989, abandoned. This application Jun. 1, 1990, Ser. No. 532,344

Claims priority, application Japan, Jan. 14, 1988, 63-6674

Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—138 **3 Claims**



1. In a method of image formation comprising the steps of projecting an image on a photosensitive sheet by light from a light source, said photosensitive sheet having a surface uniformly coated with three kinds of microcapsules including Y-microcapsules encapsulating therein a first light-curable agent which is hardenable by exposure to blue light and a first chromogenic agent which produces yellow, M-microcapsules encapsulating therein a second light-curable agent which is hardenable by exposure to green light and a second chromogenic agent which produces magenta, and C-microcapsules encapsulating therein a third light-curable agent which is hardenable by exposure to red light and a third chromogenic agent which produces cyanic,

superposing an image transfer sheet and said photosensitive sheet one on top of the other, said image transfer sheet having a surface coated with a developing agent having chromogenic effects on said chromogenic agents, the surface of said photosensitive sheet coated with said microcapsules and the surface of said image transfer sheet coated with said developing agent being contacting each other, and

compressing said superposed photosensitive sheet and image transfer sheet together,

the improvement wherein said photosensitive sheet is exposed to light from a metal halide lamp which comprises zinc iodide, lithium iodide and thallium iodide and have such emission characteristics that emission intensity thereof is concentrated in wavelength ranges where said first, second and third light-curable agents have peak photosensitivities.

5,059,507

POSITIVE RESIST COMPOSITION CONTAINING QUINONE DIAZIDE SULFONIC ACID ESTER OF A PHENOL COMPOUND AND AN ALKALI SOLUBLE RESIN

Yasunori Uetani, Minoo; Makoto Hanabata, Hyogo; Hirotoshi Nakanishi, Osaka; Koji Kuwana, Fujiidera; Yukio Hanamoto, Toyonaka, and Fumio Oi, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

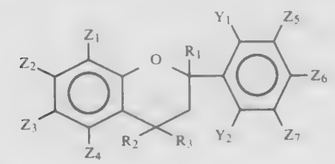
Filed Jun. 12, 1989, Ser. No. 364,123

Claims priority, application Japan, Jun. 13, 1988, 63-146498

Int. Cl.[5] G03C *1/52*

U.S. Cl. 430—192 **20 Claims**

1. A positive resist composition which in admixture comprises an alkali-soluble resin and one or more naphthoquinone or benzoquinone diazide sulfonic acid esters of a phenol compound of the general formula:



(I)

wherein Y_1 and Y_2 are each a hydrogen atom, an alkyl group or a hydroxyl group, provided that at least one of Y_1 and Y_2 is a hydroxyl group; Z_1, Z_2, Z_3, Z_5, Z_6 and Z_7 are the same or different and each of a hydrogen atom, a hydroxyl group, an alkyl group, a cycloalkyl group, an aryl group or halogen atom, provided that at least two of Z_1, Z_2, Z_3, Z_4, Z_5, Z_6 and Z_7 are hydroxyl groups; R_1, R_2 and R_3 are the same or different and each a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group or an aryl group,

wherein said alkali-soluble resin is present in an amount of not less than 30% by weight and said quinone diazide sulfonic acid ester of said phenol compound is present in an amount of from 10 to 50% by weight based on the total weight of the solid components in the resist composition.

5,059,508

METHOD FOR PREPARING PLANOGRAPHIC PRINTING PLATE

Jos A. Vaes, Betekom, and Luc J. Wabbes, Mortsel, both of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Oct. 11, 1990, Ser. No. 595,410

Claims priority, application European Pat. Off., Oct. 20, 1989, 89202652

Int. Cl.[5] G03C *5/54, 1/08*

U.S. Cl. 430—204 **9 Claims**

1. Method of preparing a planographic printing plate comprising the steps of:

(1) exposing a DTR mono-sheet material containing a silver halide emulsion layer and a nuclei containing surface layer in a laser beam containing device, wherein the said emulsion layer contains at least one emulsion showing following characteristics:

(a) the emulsion consists principally of silver chloride but contains bromide ranging from 5 mole % to 40 mole % and iodide ranging from 0 to 1 mole %;

(b) the emulsion belongs to the core-shell type wherein substantially all the bromide is concentrated in the core;

(c) the emulsion grains contain Rhodium and/or iridium dopants;

(2) processing the DTR material by means of a developing or activator solution, containing at least an alkali agent and a silver halide complexing agent, followed by a neutralization solution.

5,059,509

MULTICOLOR IMAGE-FORMING METHOD

Hisashi Mino, Saitama; Takeshi Iijima, Higashimatsuyama, and Kuniaki Monden, Sakado, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 325,814, Mar. 20, 1989, abandoned, which is a division of Ser. No. 225,582, Jul. 28, 1988, abandoned, which is a continuation of Ser. No. 914,578, Oct. 3, 1986, abandoned, which is a continuation of Ser. No. 634,254, Jul. 25, 1984, abandoned. This application Apr. 1, 1991, Ser. No. 679,999

Claims priority, application Japan, Jul. 27, 1983, 58-137346

Int. Cl.[5] G03C *11/12, 1/90*

U.S. Cl. 430—257 **9 Claims**

1. A method of forming a multi-color image of two or more colors from two or more articles of manufacture, each article of manufacture being a precursor for a multi-color image-forming material and comprising a substrate and two layers thereon, the substrate being a transparent substrate and the layers being an intermediate layer and a colored photo-sensitive layer; wherein:

the intermediate layer is releasably adhered to the transparent substrate, harmless to hue and transparency and has a first surface releasably adherable to the transparent substrate and a second surface;

the intermediate layer at the first surface is:

non-sticky at room temperature, and heat-fusible and mutually bondable, after removal of the transparent substrate, to a subsequently applied photosensitive layer of another precursor which, after photoinsolubilization and removal of water soluble unexposed portions, is firmly bonded to a second surface of the intermediate layer of the another precursor, which second surface of the intermediate layer of said another precursor is also mutually bondable to said first surface;

the intermediate layer at the second surface is:

adhered to the colored photo-sensitive layer and firmly adherable to a color image subsequently formed by photoinsolubilization and water development of the colored photo-sensitive layer,

non-sticky at room temperature,

heat-fusible and mutually bondable to another heat-fusible and mutually bondable surface, and

insoluble in water; and

the colored photo-sensitive layer is adhered to the second surface of the intermediate layer, formed from an admixture of a resin component which is film-forming, water soluble, and photoinsolubilizable, and a coloring agent, and upon exposure of a portion of the colored photo-sensitive layer to active rays, the exposed portions are rendered insoluble in water, the unexposed portions being easily removable by dissolving in water to form a color image;

the method comprising the steps of:

(1) providing the article of manufacture;

(2) superposing a negative manuscript corresponding to the color of the colored layer of the colored photo-sensitive layer on the colored photo-sensitive layer;

(3) exposing the colored photo-sensitive layer to light through said negative manuscript to cause light-exposed areas of the colored layer to become water-insoluble;
(4) washing and developing the light-exposed colored photo-sensitive layer with water to remove unexposed water-soluble portions and form an image layer in the article of manufacture;
(5) contacting directly the image carrying layer of the article of manufacture with a heat-fusible and bondable adhesive layer provided on a transfer material to form a laminate of the article of manufacture and the transfer material;
(6) heating and pressing the laminate to bond the article of manufacture to the transfer material to form a first color image laminate;
(7) removing the transparent substrate from the article of manufacture of the first color image laminate to permit the first surface of the heat-fusible and bondable first surface to become the outermost surface of the laminate;
(8) duplicating steps (2), (3) and (4) using the article of manufacture except that a different color is used;
(9) contacting directly the different colored image of step (8) with the outermost surface of the laminate in step (7) to form a second laminate of the different color image and the first color image;
(10) duplicating step (6) to form a two-color image laminate; and
(11) duplicating step (7) to permit the first surface of the heat-fusible and bondable first surface of the two-color image laminate to become the outermost surface of the laminate.

5,059,510

MEDIA FOR OPTICAL INFORMATION STORAGE COMPRISING AN ORGANIC MACROCYCLIC CHROMOPHORE SUBSTITUTED WITH A FILM CONFERRING ORGANIC SUBSTITUENT

R. Sidney Jones, Jr., Randolph; David E. Nikles, Colonia, both of N.J., and Malcolm E. Kenney, Cleveland Heights, Ohio, assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 913,457, Sep. 30, 1986, abandoned, which is a continuation of Ser. No. 698,210, Feb. 4, 1985, abandoned. This application Aug. 22, 1989, Ser. No. 396,962

Int. Cl.[5] G03C *1/492;* **C09B** *47/04*

U.S. Cl. 430—270 **5 Claims**

1. An optical information storage medium comprising an information recording layer which is a smooth, optical quality light absorptive layer in which changes can be induced and detected by using a laser focused upon the surface of the information layer, wherein the information recording layer comprises, as the major component of the information layer, an aza-annulene chromophore containing a central hetero atom wherein said hetero atom is substituted with a film conferring organic substituent, said substituent being a siloxy group containing an amide or ether function.

5,059,511

PRESENSITIZED PLATES FOR USE IN MAKING LITHOGRAPHIC PRINTING PLATES REQUIRING NO DAMPENING WATER

Tatsuji Higashi; Yukio Abe, and Nobuyuki Kita, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 27, 1990, Ser. No. 485,520

Claims priority, application Japan, Feb. 28, 1989, 1-46956

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—272 **13 Claims**

1. A presenitized plate for use in making a lithographic printing plate requiring no dampening water which comprises, on a substrate, a light-sensitive resin layer and a silicone rubber layer in this order,

wherein said silicone rubber is crosslinked through a reaction of a ≡SiH group with a —CH=CH— group and is obtained by curing a composition consisting essentially of the following components, to cause crosslinking;

(a) 100 parts by weight of an organopolysiloxane having at least two alkenyl groups which are directly bonded to silicon atoms in a molecule,
(b) 0.1 to 1,000 parts by weight of an organohydrogen polysiloxane having at least two ≡SiH bonds in a molecule, and
(c) 0.00001 to 10 parts by weight of a catalyst for an addition reaction,

wherein said silicone rubber layer is formed directly on said light-sensitive resin layer, and

said light-sensitive resin layer comprises in admixture:

(1) 5 to 65% by weight, on the basis of the total solid weight of the light-sensitive resin layer, of a monomer or an oligomer having at least one photopolymerizable (meth)acryloyl group and at least one allyl group, and being selected from the group consisting of: a reaction product of an isocyanate having an allyl group with a (meth)acrylate having a hydroxyl group; a reaction product of a glycidyl ether having an allyl group with a (meth)acrylate having a carboxyl group; and a reaction product of an alcohol having an allyl group with a (meth)acrylate having a carboxyl group or its acid chloride group;
(2) 0.1 to 20% by weight, on the basis of the total solid weight of the light-sensitive resin layer, of a photopolymerization initiator; and
(3) 30 to 94% by weight, on the basis of the total solid weight of the light-sensitive resin layer, of a polymeric compound having a film-forming ability.

5,059,512

ULTRAVIOLET LIGHT SENSITIVE PHOTOINITIATOR COMPOSITIONS, USE THEREOF AND RADIATION SENSITIVE COMPOSITIONS

Edward D. Babich, Chappaqua, N.Y.; Jeffrey D. Gelorme, Plainville, Conn.; Michael Hatzakis, Chappaqua, N.Y.; Jane M. Shaw, Ridgefield, Conn.; Kevin J. Stewart, Lake Peekskill, and David F. Witman, Pleasantville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

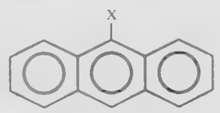
Filed Oct. 10, 1989, Ser. No. 419,047

Int. Cl.[5] G03F *7/029;* **C08F** *8/18*

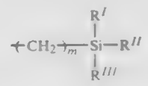
U.S. Cl. 430—280 **16 Claims**

1. An ultraviolet light sensitive photoinitiator composition suitable for cationic polymerization reactions which comprises:

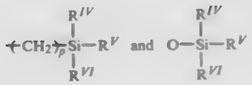
A) at least one anthracene derivative represented by the formula:



wherein X is CH=CH$_2$ or —(—CH$_2$—)—$_n$O—(—R) with R being selected from group consisting of H, and



wherein each R^I, R^{II} and R^{III} individually is selected from the group consisting of alkyl, alkenyl aryl,



wherein each R^{IV}, R^V and R^{VI} individually is selected from the group consisting of alkyl, alkenyl and aryl;

wherein m is an integer of 0 to 4, p is an integer of 0 to 4; and n is an integer of 1 to 2;

B) an onium salt; and

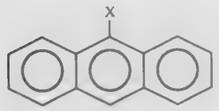
C) an organic solvent wherein the weight ratio of A:B is about 1:2 to about 1:10.

7. An ultraviolet light sensitive composition comprising:

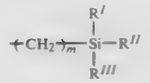
A) a cationically polymerizable material;

B) an onium salt in an amount sufficient to cause polymerization of the cationically polymerizable material; and

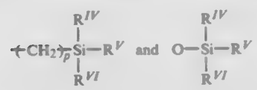
C) an anthracene derivative represent by the formula:



wherein X is CH=CH$_2$ or —(—CH$_2$—)—$_n$O—(—R) with R is selected from the group consisting of H,



wherein each R^I, R^{II} and R^{III} individually is selected from the group consisting of alkyl, alkenyl, aryl,



wherein each R^{IV}, R^V and R^{VI} individually is selected from the group consisting of alkyl, alkenyl and aryl; wherein m is an integer of 0 to 4, p is an integer of 0 to 4; and n is an integer of 1 to 2;

and wherein the weight of B:C is about 1:2 to about 1:10.

13. The compositions of claim 7 wherein said cationically polymerizable material is an epoxy polymer.

5,059,513

PHOTOCHEMICAL IMAGE PROCESS OF POSITIVE PHOTORESIST ELEMENT WITH MALEIMIDE COPOLYMER

Frederick R. Hopf, Parsippany; Michael J. McFarland, Morristown, and Christopher E. Osuch, Mine Hill, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

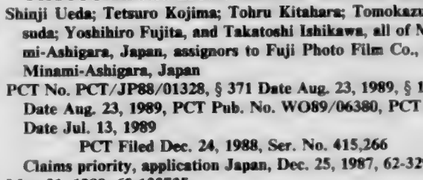
Division of Ser. No. 24,875, Mar. 17, 1989, Pat. No. 4,857,435, which is a continuation of Ser. No. 814,591, Jan. 2, 1986, abandoned, which is a continuation of Ser. No. 547,815, Nov. 1, 1983, abandoned. This application Jun. 14, 1989, Ser. No. 366,088

Int. Cl.[5] G03F *7/30, 7/32*

U.S. Cl. 430—326 **5 Claims**

1. A method of preparing a photochemical image which comprises

(a) depositing on the face of a substrate a solution of a positive photoresist composition comprising a mixture of about 65–99 weight percent of a copolymer prepared from



wherein the maleimide moiety is present in an amount of at least 10 mol percent based on the mol amount of comonomers in the copolymer so as to render the copolymer soluble in an aqueous alkaline developer solution wherein R_1 to R_4 are independently H or (C_1–C_5) alkyl, and about 1–35 weight percent of a photoactive compound, which, upon exposure to actinic radiation, is transformed into compounds containing acidic groups that are more soluble in aqueous alkaline developers than the photoactive compound before exposure, and an organic solvent in an amount sufficient to produce a uniform deposit having a thickness on the order of about 0.1 micron to about 20 microns of the composition on a face of the substrate;

(b) treating said deposit under conditions of temperature and pressure sufficient to remove substantially all the organic solvent and thereby forming a film on the substrate;

(c) image wise exposing through a mask said film to actinic radiation in the range of about 200–700 nm for a time sufficient to render the exposed areas of the film soluble in alkaline solution; and

(d) contacting the exposed film with a developer solution comprising an alkaline material having a pH greater than about 10 for a time sufficient to remove the exposed areas of the film.

5,059,514

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Shinji Ueda; Tetsuro Kojima; Tohru Kitahara; Tomokazu Yasuda; Yoshihiro Fujita, and Takatoshi Ishikawa, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

PCT No. PCT/JP88/01328, § 371 Date Aug. 23, 1989, § 102(e) Date Aug. 23, 1989, PCT Pub. No. WO89/06380, PCT Pub. Date Jul. 13, 1989

PCT Filed Dec. 24, 1988, Ser. No. 415,266

Claims priority, application Japan, Dec. 25, 1987, 62-329263; May 31, 1988, 63-133735

Int. Cl.[5] G03C *7/28*

U.S. Cl. 430—393 **16 Claims**

1. A method for processing silver halide color photographic light-sensitive materials which comprises color developing an image-wise exposed silver halide color photographic light-sensitive material which contains at least one color coupler and which comprises a substrate provided thereon with at least one silver halide emulsion layer containing silver iodobromide and bleaching the light sensitive material, wherein the bleaching is performed in the presence of a bleaching accelerator and the bleaching is carried out while a part or whole of a bleaching solution is brought into contact with an anion-exchange resin so that the amount of iodide ions in the bleaching solution is maintained at not more than 0.5 g/l expressed in the amount of KI.

5,059,515

STABILIZERS FOR COLOR PHOTOGRAPHIC RECORDING MATERIALS

David G. Leppard, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

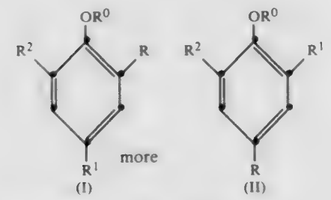
Continuation of Ser. No. 250,850, Sep. 28, 1988, abandoned. This application Sep. 28, 1990, Ser. No. 590,038

Claims priority, application Switzerland, Sep. 28, 1987, 3751/87

Int. Cl.[5] G03C *1/34*

U.S. Cl. 430—551 **2 Claims**

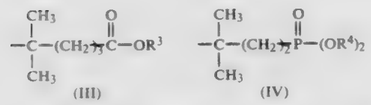
1. A silver halide colour photographic recording material containing at least one blue-green, purple or yellow coupler, which contains, as the stabilizer, a stabilizing amount of at least one compound of the formula I or II



(I)

(II)

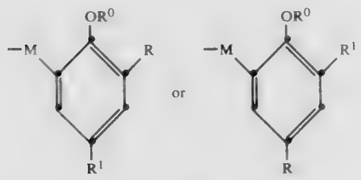
in which R is a group of the formula III or IV



(III)

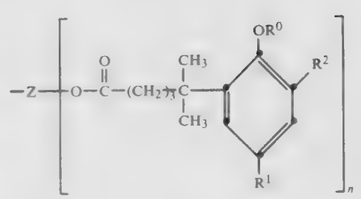
(IV)

R^1 is hydrogen, C_1–C_8alkyl, cyclohexyl, phenyl-C_1–C_4alkyl or a group of the formula III or IV, and R^2 is as defined for R^1, subject to the condition that R^1 and R^2 cannot simultaneously by hydrogen in the formula II, or R^2 is a group of the formula

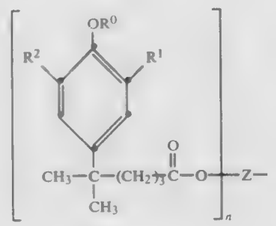


or

in which M is a direct bond, —CH_2— or —S—, R^3 is C_1–C_{20}alkyl which is unsubstituted or substituted by —OH, —$OCOR^5$ or —OR^5 and/or which can be interrupted by one or more O atoms, C_2–C_{18}alkenyl, C_5–C_{12}cycloalkyl, a phenyl or naphthyl group which is unsubstituted or substituted by one or two alkyl groups, or is phenyl-C_1–C_4alkyl, a radical Ⓧ—or Ⓧ—CH_2—in which Ⓧ—is a member selected from the group consisting of furyl tetrahydrofuran-2-yl, tetrahydropyran-4-yl, methylfuryl, 5-methylfurfur-2-yl and 2,6-dimethyltetrahydropyran-4-yl, or is a group of the formula V or VI

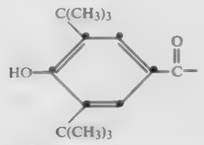


(V)



(VI)

in which n is a number from 1 to 3 and Z is a C_2–C_{18}alkyl radical which has 2 to 4 valencies and can be interrupted by rupted by one or more O and/or S atoms, R^4 is C_1—C_1-$_0$alkyl, C_2–C_{18}alkenyl, C_5–C_{12}cycloalkyl, a phenyl or naphthyl group which is unsubstituted or substituted by one or two alkyl groups, or is phenyl-C_1–C_4alkyl, R^0 is —CO—R^5, —CO-—COOR^3, —Si(R^7), (R^8), R^9) or a group of the formula VII,



(VII)

and R^7, R^8 and R^9, independently of one another are C_1–C_4alkyl, phenyl or benzyl.

5,059,516

SILVER HALIDE PHOTOGRAPHIC MATERIAL

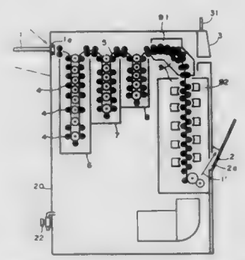
Kiyoshi Sato, and Kouji Ono, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Division of Ser. No. 353,295, May 17, 1989, Pat. No. 4,999,282. This application Oct. 30, 1990, Ser. No. 605,442

Claims priority, application Japan, May 18, 1988, 63-121495; Jun. 27, 1988, 63-158644

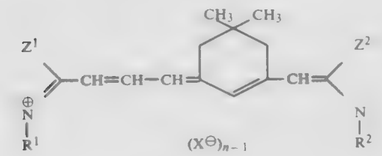
Int. Cl.[5] G03C *1/26*

U.S. Cl. 430—599 **11 Claims**



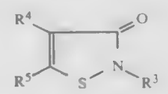
1. A silver halide photographic material that contains at least one compound represented by the general formula (2) shown

below and at least one compound selected from the group consisting of the compounds represented by the general formulas (3) and (4) shown below:



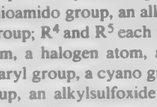
(2)

where Z^1 represents the non-metallic atomic group necessary to form an optionally substituted benzothiazole, benzoxazole, naphthothiazole or naphthoxazole nucleus; Z^2 represents the non-metallic atomic group necessary to form an optionally substituted benzothiazole nucleus; R^1 and R^2 each independently represents an alkyl group having 1–4 carbon atoms, a substituted alkyl group or anryl group; $X^\ominus$ is an anion; n is 1 or 2 and when an intramolecular salt is formed, n is 1;



(3)

where R^3 represents a hydrogen atom, a straight-chained or branched alkyl group, a cyclic alkyl group, an alkenyl group, an aralkyl group, an aryl group, a heterocyclic group, an alkylamido group, an arylamido group, an alkylthioamido group, an arylthioamido group, an alkylsulfamido group or an arylsulfamido group; R^4 and R^5 each independently represents a hydrogen atom, a halogen atom, an alkyl group, a cyclic alkyl group, an aryl group, a cyano group, an alkylthio group, an arylthio group, an alkylsulfoxide group, an alkylsulfonyl group, or a heterocyclic group;



(4)

where R^6 is a hydrogen atom, a lower alkyl group or a hydroxymethyl group; and R^7 is a hydrogen atom or a lower alkyl group.

5,059,517

SILVER HALIDE PHOTOGRAPHIC EMULSION AND MULTILAYER PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL HAVING THE SAME

Mikio Ihama; Yuji Kume; Koji Tamoto, and Hiroshi Ayato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 186,991, Apr. 27, 1988, abandoned. This application Jun. 25, 1990, Ser. No. 542,683

Claims priority, application Japan, Apr. 27, 1987, 62-103808; Jan. 18, 1988, 63-7855

Int. Cl.[5] G03C *1/005*

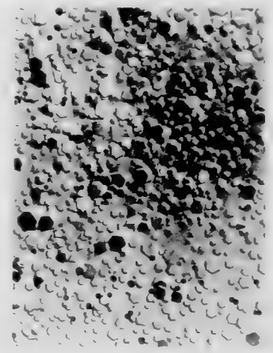
U.S. Cl. 430—567 **27 Claims**

1. A silver halide photographic emulsion containing tabular silver bromide series grains having a mean aspect ratio of 2 or more, wherein

(a) the grains have substantially planar parallel surfaces and have no projection on the grain planar surfaces;

(b) the silver chloride content in the planar surface part of the grain is higher than that in the part of the grain which is underneath the grain surface; and

(c) the planar surface parts of the grains are present on the main planes of the tabular grains and comprise a region of



from the surface to not more than 200 Å in the depth direction of the grains.

5,059,518

STABILIZED LYOPHILIZED MAMMALIAN CELLS AND METHOD OF MAKING SAME

Kenneth H. Kortright, Davie; Robert H. Raynor, Miramar, and Stephen F. Healy, Jr., Miami, all of Fla., assignors to Coulter Corporation, Hialeah, Fla.

Filed Oct. 20, 1988, Ser. No. 260,260

Int. Cl.[5] A01N *1/02;* C12Q *1/68;* G01N *33/569*

U.S. Cl. 435—6 **20 Claims**



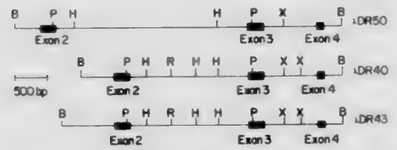
1. Lyophilized mammalian cells which have been lyophilized by means including isotonic trehalose solutions so as to be capable of being rehydrated in water to exhibit structural and cell surface antigenicity characteristics which authentically simulate the structural and cell surface antigenicity characteristics of the corresponding fresh cells prior to lyophilization so that said lyophilized cells can function effectively as biological control cells in immunological analysis procedures, said structural features capable of being authenticated by flow cytometric light scatter analysis and said cell antigenicity characteristics capable of authentication by flow cytometer fluorescence analysis, said lyophilized cells capable of exhibiting a real time stability after preservation at between 2 to 8 degrees Centigrade for at least approxinately a five month period of time.

5,059,519

OLIGONUCLEOTIDE PROBES FOR THE DETERMINATION OF THE PROCLIVITY FOR DEVELOPMENT OF AUTOIMMUNE DISEASES

David Owerbach, Houston, Tex., assignor to University of Massachusetts Medical School, Worcester, Mass.

Continuation-in-part of Ser. No. 880,857, Jul. 1, 1986, Pat. No. 4,965,189. This application Jun. 10, 1988, Ser. No. 206,054
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[5] C12Q *1/68;* C07H *15/12*
U.S. Cl. 435—6 2 Claims



2. A method of assaying for a polymorphic region associated with Type I diabetes mellitus in humans, the method comprising

(a) isolating a sample containing genomic or chromosomal DNA from a human,

(b) transferring the isolated DNA from step (a) to a substance that binds DNA,

(c) contacting the resultant DNA bound to the substance from step (b) under hybridization conditions with a labelled DQ beta gene oligonucleotide, said oligonucleotide being GGCCGCCTGCCGCCGAG and

(d) conducting detection for the label.

5,059,520

MONOCLONAL ANTIBODY PANEL FOR BLOOD GROUP A ANTIGEN

Koichi Furukawa, New York, N.Y.; Hanrik Clausen; Sen-itiroh Hakomori, both of Seattle, Wash.; Junichi Sakamoto, Nagoya, Japan; Katherine Look, New York, N.Y.; M. Jules Mattes, Flushing, N.Y., and Lloyd Kenneth O., Bronx, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Aug. 27, 1986, Ser. No. 900,820
The portion of the term of this patent subsequent to Apr. 6, 2006, has been disclaimed.
Int. Cl.[5] G01N *33/53, 33/577;* C07K *15/14;* C12N *1/00*
U.S. Cl. 435—7.21 7 Claims

1. A panel useful in determining the presence of different forms of type A blood group antigen, said panel comprising at least one antibody selected from the group consisting of HT29-36 (ATCC HB 8875), M2 (ATCC HB 8346), S12 (ATCC HB 8875), and CLH6 (ATCC HB 8232), and wherein at least one antibody is S12 (ATCC HB 8875).

5,059,521

MONOCLONAL ANTIBODIES AGAINST PROSUMAL PROTEINS

Klaus Scherrer, Paris, and Maria-Fatima Grossi de Sa, Gentilly, both of France, assignors to Pro-Soma, Paris, France

Continuation of Ser. No. 902,226, Aug. 29, 1986, abandoned.
This application Jan. 17, 1989, Ser. No. 298,791
Claims priority, application France, Aug. 30, 1985, 85 12946
Int. Cl.[5] G01N *33/53, 33/577;* G12N *15/00;* C07K *15/14*
U.S. Cl. 435—7.1 17 Claims

1. A monoclonal antibody specifically directed against a prosomal protein of a prosome, said prosome having a sedimentation coefficient of approximately 19S.

7. A monoclonal antibody specifically directed against a prosomal protein having a molecular weight of about 27K or 31K daltons by SDS-polyacrylamide gel electrophoresis, said prosomal protein being from a prosome having a sedimentation coefficient of approximately 19S.

5,059,522

INTRINSIC ENZYME DOT BLOT IMMUNOASSAY OR INDENTIFICATION OF MICROORGANISMS

Lawrence G. Wayne, 3602 Myrtle St., Irvine, Calif. 92714

Filed Aug. 18, 1988, Ser. No. 234,415
Int. Cl.[5] G01N *33/543, 33/548, 33/569*
U.S. Cl. 435—7.2 7 Claims

3. An assay kit for differentiating between related taxa of microorganisms, comprising:

a solid support;

a plurality of first zones on said support, each said first zone comprising immobilized antibody to an enzyme found in a different taxon of microorganism, wherein each antibody in each of said first zones is specific to said enzyme of one taxon, but not to a corresponding enzyme of other related taxa to be determined in said assay, and a control zone to which control antibody is immobilized, wherein said control antibody is specific to said corresponding enzyme of all said taxa to be differentiated; and

substrate for said enzyme to which said antibodies in said zones are specific, wherein said substrate, when acted on by enzyme bound by said antibodies, creates a detectable signal.

5,059,523

CELL-SURFACE GLYCOPROTEINS OF HUMAN SARCOMAS

Wolfgang J. Rettig; Pilar Garin-Chesa, both of New York; H. Richard Beresford, Century Island, all of N.Y.; Herbert F. Oettgen, New Canaan, Conn.; Myron R. Melamed, Dobbs Ferry, and Lloyd J. Old, New York, both of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed May 2, 1988, Ser. No. 189,238
Int. Cl.[5] G01N *33/53, 33/567;* C12N *15/00;* C07K *15/14*
U.S. Cl. 435—7.23 7 Claims

1. A method of identifying noncultured mesenchymal tissues as normal, proliferatively active or malignant which comprises contacting a noncultured mesenchymal tissue sample with at least one monoclonal antibody selected from the group consisting of monoclonal antibodies F19, F24, G171, S5, G253 and K117 (produced by the hybridoma cell lines ATCC Nos. HB 8269, HB9257, HB 9254, HB 9255, HB 9207, and HB 8553, respectively) under suitable conditions so as to form a complex between the sample and the selected antibody or antibodies, detecting the presence or absence of any complex so formed and identifying the noncultured mesenchymal tissue as normal when the following reactions are observed:

Antibody	Positive Antibody Response
F19	Occasional fibroblast; pancreatic islet A cells
G171	Capillary endothelium; adrenal medullary cells; myoepithelial cells; pneumocytes (weak)
S5	visceral smooth muscle; vascular endothelium (weak)
K117	CNS white and gray matter; peripheral nerves; PNS ganglion and glial cells; myoepithelial cells; mammary ducts; renal tubules (pars convoluta); adrenal endocrine cells; visceral smooth muscle; vascular endothelium; fibroblasts

and identifying the noncultured mesenchymal tissues as malignant by comparing the presence of absence of a positive reaction to the following:

	MALIGNANT			
	Antibody			
Tumor type	F19	G171	S5	K117
Sarcomas				
Fibrosarcoma	+	+	–	+
Malignant fibrous histiocytoma	+	+		+
Leiomyosarcoma	+	–	+	+
Osteosarcoma	+	+		+
Chondrosarcoma	+	+		+
Liposarcoma	+	+	–	+
Synovial sarcoma		+	–	+
Embryonal rhabdomyosarcoma	-	-		-
Ewing sarcoma	–	–	–	
Mesenchymal chondrosarcoma		+	–	
Rhabdomyosarcoma	-	+	–	+
Undifferentiated	+	+	–	+
Neuroectodermal tumors				
Melanoma		–	–	-
Astrocytoma		–	–	+
Schwannoma	–	–	–	+
Neuroblastoma	–	–	–	+
Meningioma	-	+	–	+
Carcinomas				
Neuroendocrine	–	–	–	+
Colorectal		–	–	
Gastric		–	–	
Skin	–	–	–	-
Lung	–	-	-	-
Breast	–	–	–	
Ovarian	–	–	–	
Testicular		+	–	+
Kidney				
Bladder	–	–	–	
Others		–	–	
Lymphomas				
Hodgkin	-		-	+
Non-Hodgkin		–	–	+

and identifying the noncultured mesenchymal tissue as proliferatively active when the following reactions are observed:

	Antibody			
	F19	F24	S5	G253
Positive Antigen Expression	+	+	-	-

thereby identifying non-cultured mesenchymal tissues as normal, proliferatively active or malignant.

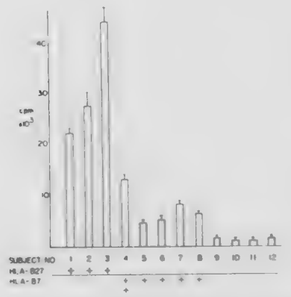
5,059,524

HLA-B27 TESTING

Ian F. C. McKenzie, Brunswick, and Joe Trapani, Templestowe, both of Australia, assignors to The University of Melbourne, Victoria, Australia

PCT No. PCT/AU87/00055, § 371 Date Dec. 22, 1987, § 102(e) Date Dec. 22, 1987, PCT Pub. No. WO87/05398, PCT Pub. Date Sep. 11, 1987
PCT Filed Feb. 26, 1987, Ser. No. 151,515
Claims priority, application Australia, Feb. 26, 1986, PH4811
Int. Cl.[5] C07K *15/28;* G01N *33/534, 33/535, 33/577*
U.S. Cl. 435—7.24 6 Claims

1. A method of testing for the HLA-B27 antigen in blood cells and blood cell lysates which comprises forming a mixture containing said blood cells or said blood cell lysates, a first antibody which binds and blocks the HLA-B7 antigen and a second antibody which binds the HLA-B27 antigen, wherein the second antibody is labelled; and thereafter separating the unbound second antibody from the mixture and detecting said



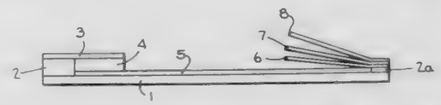
labelled second antibody bound to said HLA-B27 antigen and thereby detecting the presence of HLA-B27 antigen.

5,059,525

DRY REAGENT FOR BLOOD COAGULATION TESTS

Knut Bartl, Wilzhofen; Udo Becker, Marburg; Helmut Lill, Wielenbach, and Hans Wielinger, Weinheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 798,955, Nov. 18, 1985, abandoned.
This application May 29, 1990, Ser. No. 530,469
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1984, 3442271; May 8, 1985, 3516579
The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.
Int. Cl.[5] C12Q *1/56*
U.S. Cl. 435—13 19 Claims



1. Test strip useful in carrying out a Quick Test, a partial prothromboplastin time test, or in an analysis of one of prothrombin, Factor VII, Factor VIII, Factor IX and Factor X, comprising:

(i) a carrier material containing (ii) a protease which reacts with prothrombin, Factor VII, Factor VIII, Factor IX or Factor X to yield an activated protease; (iii) a chromophoric protease substrate cleavable by said activated protease in a reaction which does not change the course of the intrinsic or extrinsic coagulation cascade system of blood in the presence of said carrier material, (iv) a buffer, and (v) at least one additional member of the intrinsic or extrinsic coagulation cascade system, wherein said protease reacts with prothrombin, Factor VII, Factor VIII, Factor IX or Factor X in a reaction which is part of the intrinsic or extrinsic coagulation cascade system wherein (ii), (v) are dried on said carrier material.

5,059,526

DRY MULTILAYER ANALYTICAL ELEMENT FOR ANALYSIS OF ENZYMES OR TRIGLYCERIDES

Kazumi Arai; Mario Kobayashi, and Kenichiro Okaniwa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 14,142, Feb. 12, 1987, abandoned, which is a continuation of Ser. No. 527,680, Aug. 29, 1983, abandoned. This application Mar. 14, 1990, Ser. No. 494,931

Claims priority, application Japan, Sep. 6, 1982, 67-155701; Nov. 12, 1982, 67-198446

Int. Cl.[5] **C12Q** *1/50, 1/44, 1/26;* **G01N** *31/22*

U.S. Cl. 435—17 **28 Claims**

1. A dry multilayer analytical element for analysis of an enzyme or triglycerides in a fluid sample comprising:

a support which is impervious to liquids and is light transmissive,

a first layer on said support, said first layer comprising a dye forming precursor which is a tetrazolium salt selected from the group consisting of 3,3'-(3,3'-dimethoxy-4,4'-biphenylene)-bis [2-(p-nitrophenyl)-5-phenyltetrazolium chloride] (NBT), 3,3'-(3,3'-dimethoxy-4, 4'-biphenylene)-bis[2,5-diphenyltetrazolium chloride] (BT), 3-(4',5'-dimethylthiazolyl-2)-2,4-diphenyltetrazolium bromide (MTT), 2-(p-iodophenyl)-3-(p-nitrophenyl)-5-phenyl-tetrazolium chloride (INT), 2,2',5,5'-tetra-(p-nitrophenyl)-3,3'-(3-dimethoxy-4-diphenylene)-ditetrazolium chloride (TNBT), 2,3,5-triphenyltetrazolium chloride (TT) and 3,3'-(4,4'-biphenylene)-bis [2,5-diphenyltetrazolium chloride] (NT), and

a second layer provided adjacent to said first layer, said second layer comprising an electron-transmitting agent selected from the group consisting of N-methylphenazine methosulfates, meldra Blue, Methylene Blue and diaphorase,

wherein:

one of said first layer and said second layer comprises an oxidation co-enzyme, and one of said first layer and said second layer comprises a reagent comprising an enzyme substrate, enzyme or coenzyme other than an oxidation coenzyme, and said oxidation co-enzyme is oxidized nicotinamide adenine dinucleotide (NAD^+) or oxidized nicotinamide adenine dinucleotide phosphoric acid ($NADP^+$); and

said reagent is operable to react with said oxidation co-enzyme to form a reduction co-enzyme, in the presence of said enzyme or said triglycerides in said fluid sample, whereby said reduction co-enzyme reduces said electron-transmitting agent to produce a reduced electron-transmitting agent and said reduced electron-transmitting agent reduces said tetrazolium salt to form a dye which can be detected and measured.

5,059,527

DETECTION OF ENDOTOXINS OF GRAM NEGATIVE BACTERIA

David C. White, 11104 Poplar Ridge Rd., Knoxville, Tenn. 37932-1925, and Marc W. Mittelman, 12909 Old Stage Rd., Knoxville, Tenn. 37922

Filed Dec. 8, 1989, Ser. No. 448,071

Int. Cl.[5] **C12Q** *1/02*

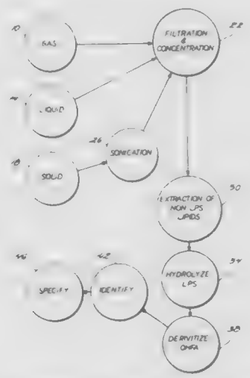
U.S. Cl. 435—29 **25 Claims**

1. A method for identifying and quantifying endotoxins of Gram-negative bacteria in a bacteria-containing sample comprising the steps of:

extracting any lipids in said sample to obtain a lipid insoluble residue;

hydrolyzing any hydroxy fatty acids in said lipid insoluble residue;

derivatizing said hydroxy fatty acids; and



detecting said derivatized hydroxy fatty acids;

said extracting is done with a supercritical solvent.

5,059,528

EXPRESSION OF HUMAN PROAPOLIPOPROTEIN A-I

Alex Bollen, Itterbeek; Jean Gobert, and Ernst Wülfert, both of Brussels, all of Belgium, assignors to UCB, S.A., Brussels, Belgium

Filed May 26, 1988, Ser. No. 198,830

Claims priority, application United Kingdom, May 28, 1987, 8712540

Int. Cl.[5] **C12P** *21/06;* **C12N** *15/00;* **C07H** *15/12*

U.S. Cl. 435—69.4 **15 Claims**

1. A recombinant DNA sequence coding for human proapolipoprotein A-I and capable of reducing the formation of hairpins, which comprises (a) a synthetic DNA fragment having the nucleotide sequence:

5'-ATGAGACATTTCTGGCAGCAGGAC-
GAACCTCCACAATCTCCTTG-
GGATAGAGTTAAGGACTTG-3',

coding for the amino acids −6 to +14 of human proapolipoprotein A-I, and (b) downstream from the said synthetic DNA fragment, the natural DNA sequence coding for the amino acids +15 to +243 of human proapolipoprotein A-I.

5,059,529

STABILIZED EXPRESSION VECTORS CONTAINING λP_L PROMOTER AND THE GENE FOR THE CI_{434} REPRESSOR, PLASMIDS CONTAINING THE VECTORS, HOSTS CONTAINING THE PLASMIDS AND RELATED METHODS

Amos B. Oppenheim, and Giladi Locker, both of Jerusalem, Israel, assignors to Bio-Technology General Corp., New York, N.Y.

Continuation of Ser. No. 644,551, Aug. 27, 1984, abandoned. This application Mar. 1, 1989, Ser. No. 317,629

Int. Cl.[5] **C12N** *15/18, 15/63, 15/70, 15/73*

U.S. Cl. 435—69.4 **4 Claims**

1. The plasmid designated pHG50 which has been deposited under ATCC Accession No. 39805.

2. A host plasmid system for production of a polypeptide analog of bovine growth hormone comprising the plasmid of claim 1 in a suitable *Escherichia coli* host.

5,059,530

EXPRESSION VECTOR FOR HUMAN TNF

Takehiro Oshima; Shoji Tanaka, and Shigekazu Matsukura, all of Osaka, Japan, assignors to Suntory Ltd., Osaka, Japan

Continuation of Ser. No. 6,907,816, Sep. 16, 1986, Pat. No. 4,871,663. This application Sep. 5, 1989, Ser. No. 402,675

Claims priority, application Japan, Sep. 30, 1985, 60-217740

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.[5] **C07H** *15/12;* **C12P** *2/02;* **B61K** *37/02;* **C12N** *1/20*

U.S. Cl. 435—69.5 **10 Claims**

1. A plasmid capable of efficient expression of human tumor necrosis factor (TNF) in *Escherichia coli* (*E. coli*), said plasmid comprising a structural gene for human TNF, a promoter element selected from the group consisting of the T4 phage promoter and a hybrid PL-T4 phage promoter, and a DNA fragment which comprises the trpA terminator, said promoter being operably linked to the hTNF structural gene, and said DNA fragment which comprises the trpA terminator being located at a point immediately downstream of said structural gene.

5,059,531

PROCESS FOR THE PREPARATION OF PILOCARPINE FROM IN VITRO CULTURES OF PILOCARPUS

Gerhard R. Reuther, Geisenheim, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Mar. 22, 1991, Ser. No. 673,559

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1990, 4009392

Int. Cl.[5] **H01H** *4/00;* **C07D** *405/06;* **C12P** *17/16*

U.S. Cl. 435—118 **12 Claims**

1. A process for the preparation of pilocarpine, comprising isolating the pilocarpine from a culture of Pilocarpus cells grown in vitro wherein the in vitro culture is obtained by producing a callus, derived from an organ explant of Pilocarpus, on a nutrient medium, inducing shoot differentiation of the callus on a series of nutrient media containing hormones, and culturing the thus-obtained cells in a liquid nutrient medium, or inducing root formation and culturing the thus-obtained differentiated plant.

5,059,532

MICROORGANISM BELONGING TO GENUS RHODOCOCCUS, AND A PROCESS FOR PRODUCING ALKENE DERIVATIVE AND UNSATURATED FATTY ACID

Yoshiharu Kimura; Shigehito Adachi; Katsutoshi Ara, all of Utsunomiya; Shigeo Inoue, Ibaraki, and Kenzo Koike, Utsunomiya, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Dec. 1, 1987, Ser. No. 127,119

Claims priority, application Japan, Feb. 18, 1987, 62-33361; Feb. 18, 1987, 62-33362; Feb. 18, 1987, 62-33363

Int. Cl.[5] **C12P** *7/04, 5/02, 7/62;* **C12N** *1/20*

U.S. Cl. 435—134 **18 Claims**

2. A process for producing an unsaturated fatty acid or derivative thereof which comprises culturing the unsaturated fatty acid-producing microorganism Rhodococcus sp KSM-B-3M in a culture medium containing a saturated fatty acid or derivative thereof, or reacting the resting cells of the microorganism in a suspension of a buffer solution with a saturated fatty acid or derivative thereof, wherein the saturated fatty acid or derivative thereof is represented by $RCOOR_1$, wherein R is a straight chain alkyl group having 9 to 21 carbon atoms, R_1 is a hydrogen atom, a straight chain or branched chain saturated alkyl group having 1 to 10 carbon atoms, or an alkali metal and recovering said unsaturated fatty acid or derivative thereof.

5,059,533

RHIZOBIAL FERREDOXIN GENES

John M. Watson, Holder; Siiri E. Iismaa, Thirimere, both of Australia; Helmut Reilander; Alfred Puhler, both of Bielefeld, Fed. Rep. of Germany, and Hauke Hennecke, Zurich, Switzerland, assignors to Lubrizol Genetics, Inc., Wickliffe, Ohio

Continuation-in-part of Ser. No. 19,043, Feb. 26, 1987. This application Jul. 15, 1988, Ser. No. 219,738

Int. Cl.[5] **C12N** *15/00;* **C12P** *21/00;* **C12R** *1/41;* **C07H** *15/12*

U.S. Cl. 435—172.3 **4 Claims**



1. A recombinant DNA molecule comprising a ferredoxin gene which has the nucleotide sequence of the *Rhizobium trifolii* fixX gene as in Table 1.

5,059,534

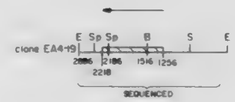
RHIZOBIUM JAPONICUM 191 NODD-RELATED GENES

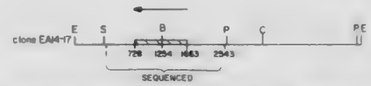
Edward R. Appelbaum, Blue Bell, Pa., assignor to Lubrizol Genetics, Inc., Wickliffe, Ohio

Continuation of Ser. No. 763,934, Aug. 7, 1985, abandoned. This application Jul. 17, 1989, Ser. No. 403,907

Int. Cl.[5] **C12N** *15/00;* **C12R** *1/41;* **C07H** *15/12*

U.S. Cl. 435—172.3 **10 Claims**





1. A cloned DNA molecule comprising a nodD-related gene of *Rhizobium japonicum* USDA 191 selected from the group consisting of nodD-r1, nodD-r2, and allelic variants thereof having unaltered functional properties.

5,059,535

PROCESS FOR THE SEPARATION AND PURIFICATION OF SIALYL TRANSFERASES

M. Abdul Mazid, and Mohammed A. Kashem, both of Edmonton, Canada, assignors to Chembiomed, Ltd., Edmonton, Canada

Filed Apr. 12, 1989, Ser. No. 336,932

Int. Cl.[5] **C12N** *9/10*

U.S. Cl. 435—193 **9 Claims**

1. A method to purify a first sialyl transferase (ST) which catalyses sialylation of a known specific acceptor from a second ST which catalyses sialylation of a different known specific acceptor and/or from other protein contaminants, which method comprises:

contacting a sample containing the said first ST with a chromatographic support derivatized through a covalently bound spacer arm to said specific known acceptor in the presence of cytidine-5'-diphosphate (CDP) under conditions wherein said first ST is adsorbed; and

eluting the adsorbed first ST in the absence of said CDP.

5,059,536

MUTANT STRAINS OF AZOTOBACTER VINELANDII USED FOR THE HYPERPRODUCTION OF POLY-β-HYDROXYBUTYRATE DURING EXPONENTIAL GROWTH

William J. Page, Edmonton, Canada, and Olga Knosp, Innsbruck, Austria, assignors to The Governors of the University of Alberta, Edmonton, Canada

Continuation of Ser. No. 268,789, Nov. 9, 1988, abandoned. This application Dec. 21, 1990, Ser. No. 631,211

Claims priority, application Canada, Nov. 7, 1988, 582405

Int. Cl.[5] C12R *1/065*

U.S. Cl. 435—252.3 **5 Claims**

1. A biologically pure culture of a mutant microorganism of claim 4 having all the identifying characteristics of ATCC 53799, said identifying characteristics of ATCC 53799 including the hyperproduction of pHB in recoverable quantities during the exponential growth of said mutant microorganism.

5,059,537

CLONING AND SEQUENCING OF THE GENE WHICH CODES FOR A NEW PILINIC SUBUNIT OF *BORDETELLA PERTUSSIS*

Paola Pedroni, Via Plinio, 48, 20129 Milano; Barbara Riboli, Via Borgo Spera, 1, 26100 Cremona; Francesca De Ferra, Via Europa, 30, 20097 San Donato Milanese; Guido Grandi, Nona Strada, 4, 20090 Segrate San Felice; Salvatore Toma, V.le Caterina da Forli, 5, 20146, all of Milano; Beatrice Arico', Via Calamandrei, 35, and Rino Rappuoli, Via Calamandrei, 35, both of 53010 Quercegrossa, Sienna, all of Italy

Filed Dec. 22, 1988, Ser. No. 288,169

Claims priority, application Italy, Dec. 22, 1987, 23150 A/87

Int. Cl.[5] C12N *1/20, 15/00, 1/18, 15/72, 15/75, 15/81;* **C12P** *21/02;* **C07H** *15/12;* **C07K** *3/02*

U.S. Cl. 435—252.31 **14 Claims**

1. A biologically pure culture of a mutant microorganism having all the identifying characteristics of ATCC 53799, said identifying characteristics of ATCC 53799 including the hyperproduction of pHB in recoverable quantities during the exponential growth of said mutant microorganism.

ATG CAA GCC AAA ACG TTC CTC

30
CTG GGC GCG GCG CTC GCC GGC GTC GCG CTC

60
GCC GCC CAT GCC GAA GAC GGC ACC ATT GTC

90
ATT ACC GGC ACG ATC ACC GAC CAG ACC TGC

120
ACG ATC GAG GAC CCG AGC CCC GGT TAC ATC

150
AAG GTC GTT CAC CTG CCC ACG ATC TCC AAG

180
AGC GCG CTG AAG AAC GCC GGC GAC GTG GCG

210
GGG CGC ACT CGC TTC GAT ATC AAG CTG AAG

240
GAC TGC CCG ACC ACC GTC AAC ACT CTC AAG

270
CTG TAC TTC GAG CCC GGC CCC ACC ACG GAT

-continued

300
TCA GGC ACC AAG GAT CTG AAA GCC TAT AAG

330
CAG GCT TGG TAC GTC GAC GCC GCA ACG CTG

360
CTC AAA TCG CCG CCC AGT GTG ACC GAA GCC

390
ACG GGG GTG CAG ATC CGG CTG ATG AAC CTG

420
AAC GGC AAG CAG ATT CCC ATG GGC GAG ACC

450
GAG CCC AAC CAG CAT GCC GCG GCA TTT TCC

480
GGC ACC ATG CAA GCC GGC CAG GGA CAG AAA

510
TCG TTC ACC TTG CAC TAC CTG GCC GGC TAC

540
GTG AAG AAG GCC AGT GGA GAG GTC GAG GCG

570
ACC ATG CTG ACC ACC TAC GTG GGC TTT TCG

600
GTC GTC TAC CCC TGA

5,059,538

RECOMBINANT PLASMID INSERTED WITH HERPES SIMPLEX VIRUS GENE

Chikateru Nozaki; Hiroshi Nakatake; Yoichiro Kino; Tatsuo Eto; Keiichi Makizumi, and Nobuya Ohtomo, all of Kumamoto, Japan, assignors to Juridical Foundation The Chemo-Sero-Therapeutic Research Institute, Kumamoto, Japan

Filed Aug. 15, 1986, Ser. No. 896,923

Claims priority, application Japan, Aug. 30, 1985, 60-192916

Int. Cl.[5] C12N *15/81, 15/38*

U.S. Cl. 435—320.1 **2 Claims**

1. A recombinant plasmid which comprises a plasmid vector containing DNA sequences necessary for replication of the yeast ars 1 and 2 μori and optionally a gene useful as a selective marker in transformed yeast, and a DNA sequence of a replication initiating region of plasmid col E1 and optionally a gene useful as a selective marker in transformed *Escherichia coli*, said vector being able to replicate in both *Escherichia coli* and yeast, said vector carrying a promoter region and a herpes simplex virus gB gene under control of the promoter, such that HSVgB protein coded for by said herpes simplex virus gB gene can be expressed in yeast, wherein a DNA sequence encoding the N-terminal 30 amino acids of the herpes simplex virus gB protein is deleted.

5,059,539

TEST FOR CATALYST ACTIVITY

Geoffrey M. Kimber, and Stephen T. Walton, both of Prestatyn, Wales, assignors to Coal Industry (Patents) Limited, United Kingdom

Filed Aug. 8, 1989, Ser. No. 390,898

Claims priority, application United Kingdom, Aug. 11, 1988, 8819055

Int. Cl.[5] G01N *31/10*

U.S. Cl. 436—37 **7 Claims**

1. A method of testing the activity of a reversible hydrogenation catalyst for promoting a given chemical reaction in which a starting material is reversibly hydrogenated by gaseous hydrogen into a reaction product, which comprises the steps of introducing a hydrogenated material that is chemically the same as the reaction product of the given chemical reaction, and a reversible hydrogenation catalyst into a sealed container, heating the container too a reaction temperature for a predetermined time effecting dehydrogenation of said hydrogenated material to yield a dehydrogenated product which is chemically the same as the starting material of the given chemical reaction, determining the amount of said dehydrogenated product that is chemically the same as the starting material of the given chemical reaction, and has formed by dehydrogenation, determining the activity of said catalyst for promoting dehydrogenation of said dehydrogenated material, and correlating said activity of said catalyst for promoting the dehydrogenation of said hydrogenated material to the activity of said catalyst for promoting hydrogenation of said dehydrogenated product which is chemically the same as the starting material of the given chemical reaction.

5,059,540

SEQUENTIAL C-TERMINAL DEGRADATION OF PEPTIDES AND PROTEINS USING CLEAVING REAGENTS SUCH AS SODIUM TRIMETHYLSILANOLATE OR TRIMETHYLAMINE N-OXIDE

Jerome M. Bailey, Duarte, Calif., assignor to City of Hope, Duarte, Calif.

Filed Aug. 13, 1990, Ser. No. 576,943

Int. Cl.[5] G01N *33/68*

U.S. Cl. 436—89 **7 Claims**

7. A method for sequencing a peptide by carboxyl terminal degradation which comprises coupling the carboxyl terminus of a peptide with a coupling reagent to form a peptidylthiohydantoin derivative and cleaving the peptidylthiohydantoin derivative with a reagent having the formula $R_3SiO^-X^+$, in which R is a straight or branched chain hydrocarbon radical having from about 1 to about 10 carbon atoms and X is an alkali metal ion to provide a thiohydantoin derivative of the amino acid previously at the carboxyl terminus of the peptide and a peptidyl residue lacking such an amino acid.

5,059,541

MINIMAL DERIVATIZATION OF PROTEINS

Alan R. Fritzberg; Daniel S. Wilbur, both of Edmonds; Ananthachari Srinivasan, Kirkland, and Dennis W. Wester, Lynnwood, all of Wash., assignors to Neorx Corporation, Seattle, Wash.

Filed Apr. 29, 1988, Ser. No. 187,714

Int. Cl.[5] G01N *33/566*

U.S. Cl. 436—501 **12 Claims**

1. A process for conjugating a targeting protein with a radiolabeled ligand, comprising the steps of:

attaching unradiolabeled ligands to an insoluble support;

reacting the ligands attached to the insoluble support with a radionuclide, wherein binding of the radionuclide by the ligand releases radiolabeled ligands from the insoluble support, while unradiolabeled ligands remain attached to the insoluble support; and

conjugating the radiolabeled ligands with a targeting protein.

5,059,542

ARTIFICIAL CARRIER PARTICLES AND METHOD FOR PREPARATION THEREOF

Takenori Hirai; Hirotaka Ihara; Chuichi Hirayama; Haruo Fuzita, and Munehiro Saisho, all of Kumamoto, Japan, assignors to Juridical Foundation the Chemo-sero-Therapeutic Research Institute, Kumamoto, Japan

Filed Oct. 12, 1989, Ser. No. 420,531

Claims priority, application Japan, Oct. 12, 1988, 63-258004

Int. Cl.[5] G01N *33/543*

U.S. Cl. 436—518 **8 Claims**

1. An artificial carrier particle, comprising;

a complex of (A) a synthetic polyamino acid having at least one carboxylic group and at least one amino group in its side chain, in which a molar ratio of the carboxyl group to the amino group is about 10:90 to about 90:10 and a polymerization degree of 50 to 1500; and

(B) an anionic polymer selected from the group consisting of water soluble polysaccharides, polyglutamate and polyacrylate, the complex being insolubilized by an aldehyde crosslinking agent selected from the group consisting of glutaraldehyde, formaldehyde, glyoxal, crotonyl aldehyde, acrolein and acetoaldehyde.

5,059,543

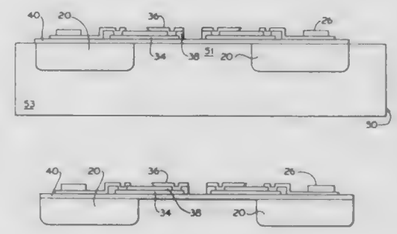
METHOD OF MANUFACTURING THERMOPILE INFRARED DETECTOR

Kensall D. Wise, and Khalil Najafi, both of Ann Arbor, Mich., assignors to The Board of Regents acting for and on behalf of the University of Michigan, Ann Arbor, Mich.

Filed Sep. 21, 1990, Ser. No. 586,520

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 **13 Claims**



1. A method of fabricating a thermopile comprising the steps of:

providing a semiconductor substrate;

forming a rim in said semiconductor substrate, the rim surrounding a first region in the substrate and being surrounded by a second region in the substrate;

forming a plurality of thermocouples on the first region; and

etching the semiconductor substrate with an etchant to which the rim is resistant and which dissolves the semiconductor substrate including both the first and second regions, with the rim remaining intact.

5,059,544

METHOD OF FORMING BIPOLAR TRANSISTOR HAVING SELF-ALIGNED EMITTER-BASE USING SELECTIVE AND NON-SELECTIVE EPITAXY

Joachim N. Burghartz, Croton-on-Hudson; Barry J. Ginsberg, Yorktown Heights, and Siegfried Mader, Croton-on-Hudson, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 14, 1988, Ser. No. 219,020

Int. Cl.[5] H01L *21/331*

U.S. Cl. 437—31 **20 Claims**

1. A method for fabricating a bipolar transistor comprising the steps of:

providing a substrate of semiconductor material of a first conductivity type a portion of which forms a collector region;

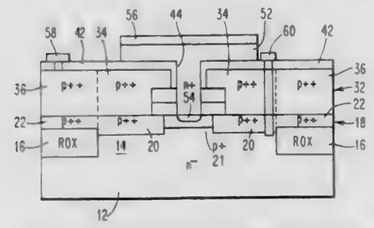
depositing a first layer of semiconductor material of a second conductivity type on said substrate, a portion of which forms an intrinsic base region;

forming an element of insulating material over a portion of said first layer, said intrinsic base region being formed below said element and the remainder of said first layer forming an extrinsic base region;

depositing a second layer of semiconductor material of said

second conductivity type on said first layer, a portion of said second layer laterally overgrowing onto a portion of an upper surface of said element defining an aperture and leaving an exposed region on the upper surface, the second layer forming a portion of the extrinsic base region;

forming a layer of insulating material on said second layer



which narrows said aperture and said exposed region of said element;

removing said narrowed exposed region of said element to expose a portion of said first layer below said aperture; and

forming an emitter region of said first conductivity type in said first layer through said aperture.

5,059,545

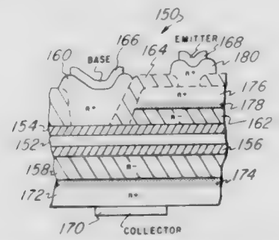
THREE TERMINAL TUNNELING DEVICE AND METHOD

William R. Frensley, Richardson, and Mark A. Reed, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 231,622, Aug. 8, 1988, abandoned, which is a continuation of Ser. No. 825,720, Jan. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 768,542, Aug. 23, 1985, abandoned. This application Jul. 24, 1990, Ser. No. 559,521

Int. Cl.[5] H01L *21/205*

U.S. Cl. 437—31 **7 Claims**



1. A method of fabrication of tunneling devices, comprising the steps of:

(a) growing a single-crystal layered semiconductor body with the following layers from bottom to top:

i. thick, heavily doped, and narrow bandgap material,

ii. thick, heavily doped, and graded bandgap from narrow to medium bandgap material,

iii. thick, lightly doped, and medium bandgap material,

iv. thin (tunneling barrier), undoped, and wide bandgap material,

v. thin (quantum well), undoped, and narrow bandgap material,

vi. thin (tunneling barrier), undoped, and wide bandgap material,

vii. thick, lightly doped, and medium bandgap material,

viii. thick, heavily doped, and graded bandgap from medium to narrow bandgap material, and

ix. thick, heavily doped, and narrow bandgap material;

(b) spinning photoresist on the top of said body and patterning said photoresist to define a base plus isolation region;

(c) selectively etching layers vii, viii and ix of said semiconductor body with said patterned photoresist as mask, stopping at the wide bandgap layer vi;

(d) removing said photoresist and growing thick, undoped medium bandgap semiconductor material over the etched surface;

(e) spinning on second photoresist and patterning said second photoresist to define a base region and an emitter region;

(f) selectively etching the undoped, medium bandgap semiconductor material with said second patterned photoresist as mask, stopping at the wide bandgap layer vi at a first region thereof and stopping at the narrow bandgap layer ix at a second region thereof;

(g) removing said second photoresist and growing thick, heavily doped narrow bandgap semiconductor material over the etched surface;

(h) spinning on third photoresist and patterning said third photoresist to define an isolation between the base and emitter;

(i) etching the narrow bandgap semiconductor material with said patterned second photoresist as a mask, stopping at the grown medium bandgap semiconductor material; and

(j) forming ohmic contacts on the heavily doped, narrow bandgap exposed semiconductor material.

5,059,546

BICMOS PROCESS FOR FORMING SHALLOW NPN EMITTERS AND MOSFET SOURCE/DRAINS

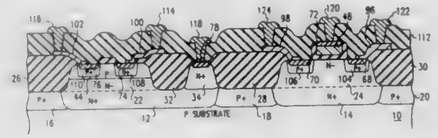
Robert H. Havemann, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 301,220, Jan. 24, 1989, Pat. No. 4,877,748, which is a division of Ser. No. 45,978, May 1, 1987, Pat. No. 4,816,423. This application Oct. 3, 1989, Ser. No. 416,619

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.[5] H01L *21/283*

U.S. Cl. 437—34 **17 Claims**



1. A device having a bipolar transistor and a field effect transistor, formed at a silicon surface of a substrate by a process comprising the steps of:

forming in a first area of the surface a bipolar region, said bipolar region having an intrinsic base of the first conductivity type at said surface and a collector of a second conductivity type

defining in a second area of the surface an MOS region of said second conductivity type;

forming a polycrystalline silicon gate electrode in said MOS region and separated from the surface of the substrate by a gate oxide layer, source and drain regions being defined on either side of the gate electrode;

exposing the source and drain regions;

forming a layer of oxide in the first area over the intrinsic base region;

forming an emitter opening and a base opening in said layer of oxide to expose the underlying surface at said intrinsic base region, said emitter opening and said base opening separated by a remaining portion of the oxide layer;

forming a layer of refractory metal over the surface and contacting the exposed silicon surfaces;

reacting the refractory metal to form a silicide film at the source and drain regions of the MOS region and at the base opening of the bipolar region;

masking said emitter opening with a masking material;

simultaneously implanting impurities of the first conductivity type into the silicide film formed at the source and drain regions of the MOS region and at the base opening;

doping the surface of said intrinsic base at the location of said emitter opening with dopant of the second conductivity type;

removing non-silicide portions of the refractory metal layer after the implanting step; and

driving the impurities implanted into the silicide at said source and drain regions of said MOS region and at the base and emitter openings of said bipolar region downward therefrom to form p—n junctions therebelow.

5,059,547

METHOD OF MANUFACTURING DOUBLE DIFFUSED MOSFET WITH POTENTIAL BIASES

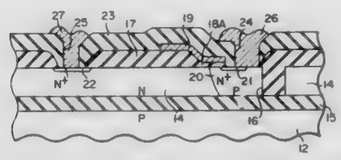
Koji Shirai, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 132,032, Dec. 14, 1987, Pat. No. 4,884,116. This application Sep. 25, 1989, Ser. No. 412,149

Claims priority, application Japan, Dec. 20, 1986, 61-304671

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—40 **3 Claims**



1. A method of manufacturing a vertical double diffusion MOS transistor, comprising the steps of:

contacting first and second insulating layers formed on the opposing surface of first and second semiconductor substrates and having first and second conductivity types;

converting said first and second insulating layers to a third insulating layer by thermal treatment, said third insulating layer being a unitary body of said first and second insulating layers;

forming a groove in said first semiconductor substrate, said groove reaching to said third insulating layer;

forming a fourth insulating layer covering the entire surface of said first semiconductor substrate and filling said groove;

forming first and second insulating films by selectively removing said forth insulating layer, said first and second insulating films serving as a gate insulating film of the MOS transistor;

forming a conductive layer of the second conductivity type on a portion of said first insulating film and on a portion of said fourth insulating layer, said conductive layer serving as a gate electrode of the MOS transistor;

forming a first conductive region of the second conductivity type by means of ion implantation and thermal diffusion, said first conductive region serving as a channel region of the MOS transistor, located underneath said first insulating film, and extending from the surface of said first semiconductor substrate to said third insulating layer and said groove; and

forming first and second high impurity regions of the first conductivity type underneath said first and second insulating films, said first and second high impurity regions serving as a source and a drain of the MOS transistor.

5,059,548

METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE HAVING A DOUBLE STACKED CAPACITOR

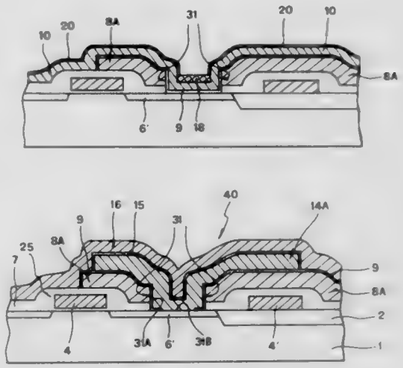
Jae kap Kim, Kyungki, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Apr. 2, 1990, Ser. No. 503,228

Claims priority, application Rep. of Korea, Apr. 3, 1989, 89-4351; Apr. 3, 1989, 89-4352

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **5 Claims**



1. A method for manufacturing a semiconductor memory device having a MOSFET and a double stacked capacitor in which the MOSFET comprises a gate electrode **4**, a source region **6** and a drain region **6'** formed on a silicon substrate, and an oxide film **7** for insulation with the oxide film extending over the gate electrode, the top of the drain region and over the gate electrode line formed on the MOSFET, and the double stacked capacitor is electrically connected to the drain region **6'** of the MOSFET, wherein the improvement for forming the double stacked capacitor to electrically connect the MOSFET comprises:

depositing a conductive material layer **8** on the entire surface of the oxide film **7** for insulation and etching the conductive material layer **8** to form a first plate electrode **8A**;

forming a contact hole having a sidewall **31A** and a bottom **31B** by sequentially etching, a portion of the first plate electrode **8A** and a portion of the oxide film **7** for insulation to expose the surface of the drain region **6'**;

forming a dielectric film **9** on the first plate electrode **8A** and on the sidewall and the bottom of the contact hole;

forming a conductive material layer **10** on the entire surface of the structure;

forming a nitride film on the conductive material layer **10**;

removing the nitride film by an etch back process, leaving only a portion of the nitride film on that portion of the conductive material layer **10** which is positioned on the bottom of the contact hole;

growing a thermal oxide film on the conductive material layer **10**;

etching the nitride film remaining in the contact hole utilizing the thermal oxide film as a mask layer;

removing the conductive material layer **10** from the bottom of the contact hole to expose dielectric film **9**;

removing the thermal oxide film and the dielectric film **9** exposed at the bottom of the contact hole to expose the drain region;

depositing a conductive material layer **14** on the conductive material layer **10** and on the exposed drain region;

performing a mask patterning process of the respective conductive material layers **10** and **14** thereby forming a charge storage electrode **14A** comprising the patterned conductive material layers **10** and **14** to electrically connect the charge storage electrode **14A** to the drain region of the MOSFET through the contact hole;

forming a dielectric film **15** on the charge storage electrode **14A**; and,

forming a second plate electrode **16** on the entire surface of the structure.

5,059,549

METHOD OF MANUFACTURING A BI-MOS DEVICE WITH A POLYCRYSTALLINE RESISTOR

Tomoyuki Furuhata, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 329,561, Mar. 28, 1989. This application Mar. 27, 1990, Ser. No. 499,906

Claims priority, application Japan, May 10, 1988, 63-111421

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—59 **4 Claims**

1. In a method of manufacturing a Bi-MOS semiconductor device having a bipolar device and a plurality of MOS devices formed on a principal surface of a semiconductor substrate, the improvement comprising the steps of:

forming a plurality of element isolation regions each thereof being formed by forming in said semiconductor substrate a first semiconductor region of the same type of conductivity as said semiconductor substrate and selectively forming a thick insulation layer on said first semiconductor region;

forming a thin insulation layer on a plurality of device forming regions surrounded by said element isolation regions and then forming simultaneously openings for one of emitter region and collector lead-out region and an opening for buried contact;

forming a polycrystalline silicon layer forming at least one of an emitter electrode and a collector electrode in said bipolar device, gate electrodes of said MOS devices, a low-resistivity polycrystalline silicon layer formed by a buried contact from one of said MOS devices, and a high-resistivity portion formed by a high-resistivity polycrystalline silicon layer connected to said low-resistivity polycrystalline silicon layer by the same growing and processing operations; and

diffusing an impurity from said polycrystalline silicon layer to form said emitter region together with a buried contact region or to form said collector lead-out region together with a buried contact region.

5,059,550

METHOD OF FORMING AN ELEMENT ISOLATING PORTION IN A SEMICONDUCTOR DEVICE

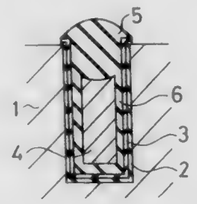
Hidehisa Tateoka, Tenri; Shigeo Onishi, Nara, and Kenichi Tanaka, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1989, Ser. No. 425,924

Claims priority, application Japan, Oct. 25, 1988, 63-268999; Jan. 13, 1989, 1-6413

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **11 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

(i) making a trench in a Si semiconductor substrate;

(ii) forming on the surface, including said trench, of said Si semiconductor substrate a thermal oxidation film, a Si_3N_4 film and a SiO_2 film by a chemical vapor deposition as a three-layered insulating film in that order;

(iii) forming a polysilicon layer, with the polysilicon filling said trench having said three-layered insulating film;

(iv) removing said polysilicon layer outside said trench;

(v) removing said SiO_2 film of said three-layered insulating film located above the exposed surface of said polysilicon layer in said trench;

(vi) converting the exposed surface of said polysilicon layer in said trench to a SiO_2 film by a thermal oxidation;

(vii) removing said Si_3N_4 film of said three-layered insulating film located above the opening of said trench;

(viii) depositing a SiO_2 film by a chemical vapor deposition on the entire surface of said Si semiconductor substrate including said trench; and

(ix) forming a side wall by leaving a SiO_2 film only at the peripheral portion of said SiO_2 formed by said thermal oxidation;

whereby an element isolating portion is formed in said trench.

5,059,551

PROCESS FOR NEUTRALIZING ACCEPTOR ATOMS IN P-TYPE INP

Jacques Chevallier, Maurepas; Jean-Claude Pesant, Meudon la Forêt; Andrei Mircea, Yerres, and Rose Benoir, Paris, all of France, assignors to Etat Francais, represente par le Ministre Delegue des Postes, Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

PCT No. PCT/FR89/00423, § 371 Date Apr. 10, 1990, § 102(e) Date Apr. 10, 1990, PCT Pub. No. WO90/02416, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 17, 1989, Ser. No. 474,715

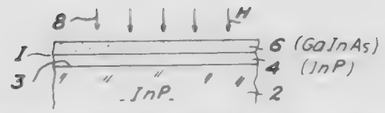
Claims priority, application France, Aug. 18, 1988, 88 10983

Int. Cl.[5] H01L *21/324*

U.S. Cl. 437—96 **9 Claims**

1. Process for the neutralization of acceptor atoms in a p-type InP material (**4**), essentially consisting of depositing a not intentionally doped $Ga_xIn_{1-x}As$ layer (**6**), in good crystal lattice agreement with the InP, x being a number at the most

equal to 1, then hydrogenating or deuterating said material by subjecting the assembly (**4**, **6**) to a plasma (**8**) of hydrogen,



deuterium or a hydrogenated compound having a power density below 0.07 W/cm^2 and at the most at 250° C.

5,059,552

PROCESS FOR FORMING THE RIDGE STRUCTURE OF A SELF-ALIGNED SEMICONDUCTOR LASER

Christoph S. Harder, Zurich; Wilhelm Heuberger, Richterswil, both of Switzerland; Peter D. Hoh, Hopewell Junction, N.Y., and David J. Webb, Rüschlikon, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1991, Ser. No. 669,816

Claims priority, application European Pat. Off., Apr. 6, 1990, 90810279

Int. Cl.[5] H01L *21/20;* **H01R** *21/20*

U.S. Cl. 437—129 **8 Claims**

1. A process for forming a self-aligned ridge structure for a III-V compound semiconductor double heterostructure laser device, comprising the steps of:

providing an epitaxially grown, layered heterostructure comprised of, from top to bottom: a) a contact layer; b) a first cladding layer; c) an active region for recombination and light generation; d) a second cladding layer, wherein said first and second cladding layers form a waveguide for light confinement and gain;

depositing a first silicon oxynitride layer on top of said contact layer in a PECVD process, at a high (RF) excitation frequency;

depositing and patterning a photoresist layer on top of said first silicon oxynitride layer for use as a mask for the definition of the ridge structure;

reactive ion etching (RIE) said first silicon oxynitride layer, thereby leaving the section covered by said photoresist layer intact;

selective etching said contact layer down to said first cladding layer, thereby obtaining underneath said first silicon oxynitride layer a crystallographic etch angle and a small undercut;

selective etching said first cladding layer to a predetermined depth, leaving said contact layer substantially unaffected;

depositing a conformal, second silicon oxynitride layer in a low (LF) exitation frequency, PECVD process, said second silicon oxynitride layer thereby having an etch rate lower than that of said first silicon oxynitride layer;

lift-off of the part of said second silicon oxynitride layer deposited on top of said photoresist layer by dissolving said photoresist layer, thereby exposing said first silicon oxynitride layer; and

selective removal of said first silicon oxynitride layer, thereby leaving said second silicon oxynitride layer and said contact layer substantially unaffected.

5,059,553

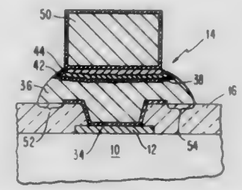
METAL BUMP FOR A THERMAL COMPRESSION BOND AND METHOD FOR MAKING SAME

Erich Berndlmaier, Wappingers Falls; Gobinda Das, Hopewell Junction, both of N.Y., and Thomas L. Viau, Milton, Vt., assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 14, 1991, Ser. No. 640,658

Int. Cl.[5] H01L *21/603*

U.S. Cl. 437—183 **5 Claims**



1. A method for providing a metal bump on a conductive pad of a semiconductor substrate and connecting thereto, comprising the steps of:

depositing a glassy passivating layer of at least three microns thickness over said conductive pads;

providing an aperture in said passivating layer to expose a portion of said conductive pad;

forming a deformable metal bump having a predetermined height so as to cover both the portion of said conductive pad exposed in said aperture and surrounding edges of said passivating layer; and

thermal compression bonding a conductor to said metal bump, said bonding causing said bump to be compressed by approximately 30% to 40% of said predetermined height and to thereby expand laterally over said glassy passivating layer and to exert pressure on said glassy passivating layer, said thickness of said layer withstanding said pressure to avoid fracture thereof.

5,059,554

METHOD FOR FORMING POLYCRYSTALLINE SILICON CONTACTS

Charles R. Spinner; Fusen F. Chen, both of Dallas, and Fu-Tai Liou, Carrollton, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 23, 1989, Ser. No. 370,615

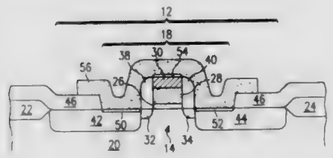
Int. Cl.[5] H01L *21/283*

U.S. Cl. 437—193 **4 Claims**

1. A method for forming a shared contact in an integrated circuit, comprising the steps of:

forming a thin gate oxide over a silicon substrate;

forming a first polycrystalline silicon layer over the gate oxide;
forming a first metal silicide layer over the first polycrystalline silicon layer;
patterning the gate oxide layer, first polycrystalline silicon layer, and the first metal silicide layer to form a first interconnect layer;
forming an active region in the substrate in an area adjacent to a substrate region underlying the first interconnect layer;
forming an insulating layer over the surface of the integrated circuit;



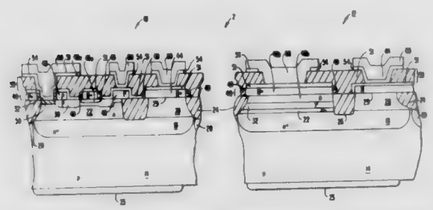
forming an opening in the insulating layer to expose both a portion of the active region and a portion of the first interconnect layer within the opening;
depositing a layer of refractory metal over the surface of the integrated circuit;
reacting the refractory metal to form metal silicide regions within the exposed active region portion and on the exposed first interconnect layer portion;
removing portions of the metal layer which did not form the silicide regions;
forming a second layer of polycrystalline silicon over the integrated circuit; and
patterning the second polycrystalline silicon layer to form a second interconnect layer.

5,059,555

METHOD TO FABRICATE VERTICAL FUSE DEVICES AND SCHOTTKY DIODES USING THIN SACRIFICIAL LAYER

Ali A. Iranmanesh, Sunnyvale, Calif., and Lawrence K. C. Lam, Kent, Wash., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 20, 1990, Ser. No. 570,068
Int. Cl.[5] H01L *21/90, 21/44*
U.S. Cl. 437—192 **11 Claims**



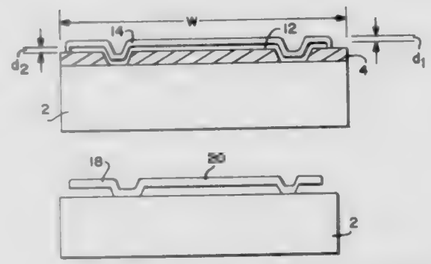
1. A process for fabricating a semiconductor structure on a substrate having a Sckottky transistor, said transistor further including a collector region, an emitter region, and a base region, said base region being between said collector and emitter regions, the process comprising the steps of:
a) reacting a first refractory metal over selected areas of a contact polysilicon layer to form a first reacted refractory metal layer, said selected areas further comprising at least a portion of a contact to said transistor base region, a contact to said transistor emitter region, and a contact to said transistor collector region;
b) forming a contact oxide layer and etching contact vias therein;
c) growing a thin sacrificial oxide layer over said first and second areas;
d) forming a contact window through said contact polysilicon to said transistor collector region; and
e) depositing and reacting a second refractory metal to form a second refractory metal silicide contact on said collector window and said base polysilicon contact, said second silicide forming an ohmic contact between said base and said collector.

5,059,556

LOW STRESS POLYSILICON MICROSTRUCTURES

Duane T. Wilcoxen, Williamsburg, Va., assignor to Siemens-Bendix Automotive Electronics, L.P., Auburn Hills, Mich.

Continuation of Ser. No. 250,055, Sep. 28, 1988, abandoned. This application Mar. 16, 1990, Ser. No. 494,828
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—200 **14 Claims**



1. A method of producing a sensor having a free-standing low stress microstructure, said method of forming the microstructure comprising the steps of:
forming a layer of a metal selected from the group consisting of refractory metal and a noble metal on a substrate of polycrystalline silicon to give a metal-coated silicon layer; and
sintering said metal-coated silicon layer at a temperature not higher than 500° C. in an inert atmosphere to cause formation of stress-relieving metal silicide.

5,059,557

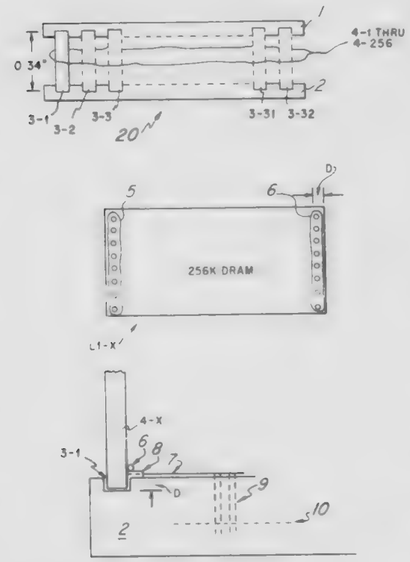
METHOD OF ELECTRICALLY CONNECTING INTEGRATED CIRCUITS BY EDGE-INSERTION IN GROOVED SUPPORT MEMBERS

Harvey G. Cragon, Austin, and Charles L. Hutchins, Sugar land, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 393,052, Aug. 8, 1989, abandoned, which is a continuation of Ser. No. 706,430, Feb. 27, 1985, Pat. No. 4,982,264. This application Apr. 2, 1990, Ser. No. 503,020
Int. Cl.[5] H01L *21/84, 21/90*
U.S. Cl. 437—208 **12 Claims**

1. A process for packaging integrated circuits, comprising the steps of:
a) forming a plurality of parallel grooves in a surface of each of a first support member and a second support member;
b) disposing electrical conductors of said surface of said first support member;
c) disposing internal electrical conductors within said first support member;
d) coupling selected ones of said surface electrical conductors with selected ones of said internal electrical conductors;

e) forming bonding pads along at least one edge of each one of a plurality of integrated circuits;
f) inserting said at least one edge and another edge of each one of said plurality of integrated circuits into one of said grooves in both of said first and said second support members respectively; and



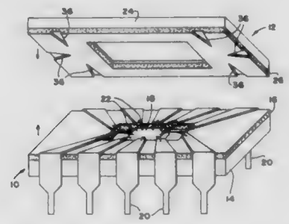
g) electrically connecting said bonding pads formed along said at least one edge of each one of said plurality of integrated circuits to said surface electrical conductors in said first support member.

5,059,558

USE OF VENTING SLOTS TO IMPROVE HERMETIC SEAL FOR SEMICONDUCTOR DICE HOUSED IN CERAMIC PACKAGES

Thawatchai Tatsanakit, Bangkok, and Thana Amnatsing, Nonthaburi, both of Thailand, assignors to North American Philips Corp., Signetics Division, Sunnyvale, Calif.

Continuation of Ser. No. 210,051, Jun. 22, 1988, abandoned. This application Jul. 2, 1990, Ser. No. 547,412
Int. Cl.[5] H01L *23/02*
U.S. Cl. 437—216 **11 Claims**



1. A method for sealing a cap structure of a package for a semiconductor device to a base structure of the package where: the base structure comprises a generally rectangular ceramic base, a generally rectangular base sealing layer that adjoins the base, a semiconductor die mounted on the base in a base cavity passing through the base sealing layer, a plurality of electrical leads that adjoin the base sealing layer opposite the base and extend beyond the outer lateral boundary of the base, and means for electrically connecting the leads to the die; the cap structure comprises a generally rectangular ceramic cap and a generally rectangular cap sealing layer that adjoins the cap, a cap cavity passing through the cap sealing layer; and the method involves the steps of (a) fusing the structures together by bringing them into contact along the sealing layers and leads and heating the structures to a temperature sufficient to cause the material of the sealing layers to flow readily but insufficient to cause any significant melting or softening of the base, die, leads, connecting means, or cap, and (b) cooling the resultant structure to a temperature low enough to harden the sealing layers into a unitary layer from which the leads protrude; characterized, before the fusing step, by the step of providing a specified one of the sealing layers with at least two venting slots located along the outer lateral boundary of the specified layer spaced apart from the four corners of the specified layer and extending laterally inward beyond the outer lateral boundaries of both the base and cap when the structures are aligned, each slot passing at least partway through the thickness of the specified layer, whereby the slots flatten out and substantially disappear during the fusing step.

5,059,559

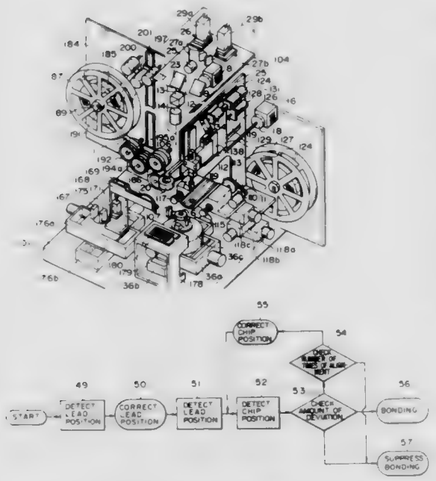
METHOD OF ALIGNING AND BONDING TAB INNER LEADS

Michio Takahashi; Tooru Mita, both of Yokohama; Yasuo Nakagawa, Chigasaki; Toshimitsu Hamada, Yokohama; Hisafumi Iwata, Yokohama; Aizo Kaneda, Yokohama; Kouji Serizawa, Fujisawa; Hiroyuki Tanaka, Yokohama; Koichi Sugimoto, Hiratsuka; Toshihiko Sakai, Yokohama; Keizo Matsukawa, Kokubunji, and Tsutomu Mimata, Akikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1988, Ser. No. 265,704
Claims priority, application Japan, Nov. 2, 1987, 62-275799; Feb. 29, 1988, 63-44416
Int. Cl.[5] H01L *21/603*
U.S. Cl. 437—220 **21 Claims**

5. A TAB inner lead bonding method comprising the steps of:
disposing an IC chip having bumps formed on a surface thereof and inner leads formed on a carrier tape opposite to each other at a bonding station;
detecting a position of the IC chip on a stage through the inner leads at the bonding station to determine the amount of correction for position of the stage so that the inner leads and the IC chip are aligned with each other;
bonding the inner leads and the IC chip to each other after the alignment of the inner leads and the IC chip with each other has been made; and further establishing two fields of view at two corner portions of the IC chip, respectively;
determining a position of the inner leads and a position of the IC chip in each of the two fields of view;
determining the amounts of correction for position in X, Y and θ directions on the basis of position data of the inner leads and the IC chip in the two fields of view, positions of the two fields of view, and a position of the center of rotation of an XYθ stage on which the IC chip is placed; and
aligning the inner leads and the IC chip with each other in accordance with the determined amounts of correction;
wherein two amounts of correction for position in the X, Y and θ directions are determined using, as said position data

in the fields of view, average positions of inner leads in each of the fields of view in horizontal and vertical directions and average positions of bumps in each of the fields of view in the horizontal and vertical directions.



5,059,560

BI-CA-SR-CU-ZN-O SUPERCONDUCTING GLASS-CERAMICS

M. Grayson Alexander, Newfield; George H. Beall, Big Flats; Candace J. Quinn, Corning, and C. John Yu, Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 287,737, Dec. 21, 1988, abandoned. This application Mar. 21, 1990, Ser. No. 496,946

Int. Cl.[5] C03C *10/02*

U.S. Cl. 501—10 **5 Claims**

1. A superconducting glass-ceramic consisting essentially of the oxides of Bi, Ca, Sr, Cu and Zn in the stoichiometric formula range: $Bi_2Ca_xSr_2Zn_nCu_wO_y$, wherein x ranges about 1–2, z ranges about 1–2, n ranges about 0.001–2, w ranges about 1–2, and y ranges about 6–11.

5,059,561

UV ATTENUATED COLORED GLASSES

Sally Ciolek, Luzerne, and David Krashkevich, Dallas, both of Pa., assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed Mar. 16, 1990, Ser. No. 494,337

Int. Cl.[5] C03C *4/00, 3/076, 3/089, 3/078*

U.S. Cl. 501—13 **19 Claims**

1. A colored lens having attenuated UV transmission comprising colored glass containing:

SiO_2 as at least one network former;

a coloring-effective amount of a photopic colorant; and

an amount of a cadmium chalcogenide chromophore sufficient that when said glass is struck, the UV-region transmission cut-on wavelength of said glass is shifted;

said glass having been struck under temperature conditions and for a time sufficient to achieve about 0% T at 400–450 nm and about 50% T at 420–465 nm and to produce essentially no color or only light coloring due to said chromophore in a different glass having the same composition except lacking said photopic colorant;

said lens being a sunglass lens.

5,059,562

COLORED ZIRCONIA CERAMICS AND PROCESS FOR PREPARATION THEREOF

Takuya Gentsu, Sendai, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Apr. 14, 1988, Ser. No. 181,553

Int. Cl.[5] C04B *35/48, 35/56*

U.S. Cl. 501—87 **6 Claims**

1. Colored partially stabilized zirconia ceramics containing zirconia in a crystal phase, a colorant component and a stabilizer, the colorant component being present in an amount of 0.1 to 10% by weight calculated as metal oxide, and the stabilizer being present in an amount sufficient for effecting partial stabilization, wherein the zirconia ceramics contains 0.05 to 15% by weight of zirconium carbide based on the entire ceramics, the content of free carbon is lower than 0.1% by weight, and the crystal phase of the zirconia is composed of tetragonal crystals in an amount sufficient to give the ceramics high strength and high toughness characteristics, wherein the colorant component is a reduction product of an oxide of at least one element selected from the group consisting of Cr, Co, Fe, Ti, Mn, V and Ni.

5,059,563

SYNTHESIS OF REFRACTORY METAL BORIDE POWDERS OF PREDETERMINED PARTICLE SIZE

Bijan Khazai, and William G. Moore, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 12, 1988, Ser. No. 217,926

Int. Cl.[5] C04B *35/52*

U.S. Cl. 501—87 **16 Claims**

1. A method of producing a metal boride powder consisting essentially of reacting a solid boron source, a metal source, and a reductant under conditions sufficient to produce a metal boride powder with a particle size that correlates to that of the solid boron source.

5,059,564

ALUMINA-TITANIUM CARBIDE-SILICON CARBIDE COMPOSITION

Pankaj K. Mehrotra, Greensburg, Pa., and Elizabeth R. Billman, Street, Md., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jun. 5, 1989, Ser. No. 361,451

Int. Cl.[5] C04B *35/10*

U.S. Cl. 501—89 **34 Claims**



1. A fired ceramic composition comprising:

about 1.0 to less than 30 volume percent silicon carbide whiskers having an average diameter between about 0.3 and about 0.7 microns;

about 5 to about 40 volume percent titanium carbide phase selected from the group consisting of substantially equiaxed titanium carbide particles having an average diameter between 1 and 10 microns, titanium carbide whiskers having an average diameter of between about 1 to about 10 microns, and mixtures thereof;

wherein the sum of said silicon carbide whiskers and said titanium carbide phase is less than about 60 volume percent;

an alumina based matrix forming essentially the remainder;

and wherein said silicon carbide whiskers and said titanium carbide phase are dispersed in said alumina based matrix

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5,059,565

SILICON NITRIDE CERAMIC AND A PROCESS FOR ITS PREPARATION

Marcellus Peuckert, and Cornelia Boberski, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1990, Ser. No. 481,358

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1989, 3905271

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—97 **9 Claims**

1. A multi-phase ceramic which is resistant to high temperatures and contains 25–85% by weight of crystalline β-silicon nitride and an amorphous glass phase, wherein the ceramic contains 11 to 70% by weight of crystalline cubic HfO_2 and the glass phase contains, in addition to silicon, at least one element selected from the group consisting of the elements magnesium, yttrium and the rare earths .

5,059,566

HIGH-DIELECTRIC CONSTANT CERAMIC COMPOSITE AND CERAMIC CAPACITOR ELEMENTS

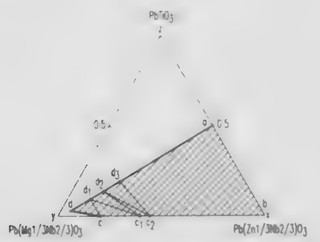
Hideyuki Kanai; Yohachi Yamashita; Osamu Furukawa, and Mitsuo Harata, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1989, Ser. No. 457,502

Claims priority, application Japan, Dec. 27, 1988, 63-327589; Feb. 22, 1989, 1-40195

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—138 **26 Claims**



1. A high-dielectric constant ceramic composite comprising:

a lead-based perovskite compound as a major component; and

a glass component added to said perovskite compound, said glass component including the following constituents

B_2O_3 of about 10 wt % to about 80 wt %,

SiO_2 of about 10 wt % to about 60 wt %,

Al_2O_3 of about 2 wt % to about 20 wt %,

BaO of about 2 wt % to about 20 wt %, and

MgO of about 2 wt % to about 20 wt %, wherein the total amount of said constituents equals 100 wt %, and wherein the amount of said glass component added to said perovskite compound is between about 0.005 wt % and about 1.0 wt %.

5,059,567

PROCESS FOR THE PREPARATION OF A MODIFIED ZEOLITE

Olof M. Linsten, Kungalv, and Arne Ö. Frestad, Göteborg, both of Sweden, assignors to PQ Zeolite B. V., Leiden, Netherlands

Continuation-in-part of Ser. No. 53,408, May 22, 1987, abandoned. This application Jul. 13, 1988, Ser. No. 220,345

Claims priority, application Sweden, May 22, 1986, 8602341

Int. Cl.[5] B01J *29/08*

U.S. Cl. 502—64 **27 Claims**

1. An improved process for the production of a modified zeolite Y comprising aluminum ions supplied and fixed by ion-exchange and preferably also having a small unit cell size, in which process NaY zeolite is prepared and subjected to a series of treatment steps comprising ammonium ion-exchange, calcination, aluminum (III) ion-exchange and drying, the improvement which comprises subjecting the zeolite, after the aluminum (III) ion-exchange step, to a further calcination step, at least the last-mentioned calcination step being carried out in a steam atmosphere at 400–900° C. to fix the aluminum ions supplied by ion-exchange.

2. A process as claimed in claim 1, wherein said last-mentioned calcination step is carried out at 500–900° C. for decreasing the unit cell size to 21.15–24.35 Å in dependence on the amount of aluminum supplied by ion-exchange.

7. A process as claimed in claim 1, wherein the aluminum ion-exchange is carried out on an ultrastable zeolite Y.

5,059,568

INTERCALATED CLAY HAVING LARGE INTERLAYER SPACING

John F. McCauley, Louisville, Md., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 304,319, Jan. 31, 1989, Pat. No. 4,957,889, which is a continuation-in-part of Ser. No. 21,972, Mar. 5, 1987, Pat. No. 4,952,544. This application Sep. 17. 1990, Ser. No. 583,788

Int. Cl.[5] B01J *21/16, 29/04*

U.S. Cl. 502—65 **14 Claims**

4. An intercalated clay having pillars which comprise a rare earth metal and a metal chosen from the group consisting of aluminum, chromium and zirconium and also characterized by an interlayer spacing of about 16–18 angstroms.

11. A composition comprising a zeolite and an intercalated clay having an interlayer spacing greater than about 16 angstroms, with the clay having pillars which comprise a rare earth metal and a pillaring metal chosen from the group consisting of aluminum, zirconium, chromium and iron.

5,059,569

PROCESS AND CATALYST FOR SELECTIVE REDUCTION OF NITROGEN OXIDES

Andre Deschamps, Noisy Le Roi; Claude Dezael, Maisons Laffitte; Claude Roux-Guerraz, Paris, and Christine Travers, Rueil-Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Jan. 19, 1989, Ser. No. 299,168

Claims priority, application France, Jan. 19, 1988, 88 00635

Int. Cl.[5] B01J *29/20*

U.S. Cl. 502—78 **20 Claims**

1. A zeolitic catalytic composition comprised of a small-pore mordenite exchanged with at least one metal chosen from the group consisting of copper, vanadium, tungsten, iron, cobalt and molybdenum, the small-pore mordenite used for the exchange being the sodium, ammonium or protonic form, a major part of the mordenite being present in needle form and having the property of only adsorbing molecules of a kinetic diameter less than 4.4×10^{-10} m, said mordenite being dealuminated at least in part so as to improve performance of the catalyst in removal of NO, N_2O, NH_3, and SO_3 from effluent gases.

5,059,570

PROCESS FOR PREPARING A VANADIUM/TITANIUM BASED CATALYST SUITABLE FOR OLEFIN POLYMERIZATION

Jean-Claude A. Bailly, Martigues, and Philippe Bres, Fos-sur-Mer, both of France, assignors to BP Chemicals Limited, London, England

Filed Aug. 6, 1990, Ser. No. 563,285
Claims priority, application France, Aug. 17, 1989, 8911147
Int. Cl.[5] C08F *4/685*
U.S. Cl. 502—104 **9 Claims**

1. Process for the preparation of a catalyst of Ziegler-Natta type comprising a spherical support of magnesium chloride, a process characterized in that a vanadium compound and a titanium compound are precipitated on the support by means of a reaction of reduction of vanadium and of titanium, which is carried out by bringing into contact within a liquid hydrocarbon:

a) a titanium- and vanadium-reducing agent chosen from organometallic compounds, with

b) a vanadium compound and a titanium compound, both soluble in the liquid hydrocarbon and employed in such quantities that the molar ratio of the quantity of vanadium to that of titanium is between 70/30 and 99.5/0.5 and

c) a solid support containing (i) from 80 to 99.5 mol % of magnesium dichloride which is substantially free from any product containing an Mg—C bond, and (ii) from 0.5 to 20 mol % of at least one organic electron-donor compound, D, free from labile hydrogen, the said solid support consisting of spherical particles which have a mass-average diameter, Dm, of 10 to 100 microns and a narrow particle size distribution such that the ratio of Dm to the number-average diameter, Dn, of the particles is less than 2.

5,059,571

CATALYTIC COMPOSITION AND ITS USE IN OLIGOMERIZING MONOOLEFINS

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Alain Forestiere, Vernaison, and Gérard Leger, Ecully, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 1, 1990, Ser. No. 560,960
Claims priority, application France, Aug. 8, 1989, 89 10758
Int. Cl.[5] C08F *4/80*
U.S. Cl. 502—117 **19 Claims**

1. A catalytic composition resulting from placing at least one divalent nickel compound into contact with at least one hydrocarbylaluminum halide and at least one epoxy compound, in any order, wherein the molar ratio of hydrocarbylaluminum halide to divalent nickel compound is from 1:1 to 50:1, and the molar ration of epoxy compound to divalent nickel compound is from 0.1:1 to 10:1.

5,059,572

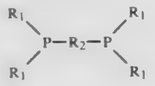
CATALYST AND PROCESS FOR COUPLING ORGANOMETALLIC REAGENTS WITH ARYL OR VINYLIC HALIDES

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company

Filed Oct. 31, 1989, Ser. No. 429,582
Int. Cl.[5] B01J *31/24*
U.S. Cl. 502—162 **19 Claims**

1. A composition comprising a chemical complex formed by contacting, in a liquid medium,

(a) a diphosphine of the formula



in which each R_1 and R_2 are selected independently from C_{1-20} alkyl, aryl, alkaryl and aralkyl, and

(b) a nickel (II) carboxylate or sulfonate.

5,059,573

PROCESS FOR PRODUCING MOLYBDENUM-CONTAINING METAL OXIDE FLUID-BED CATALYST

Yutaka Sasaki; Kunio Mori, and Kiyoshi Moriya, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1990, Ser. No. 480,698
Claims priority, application Japan, Feb. 16, 1989, 1-35124
Int. Cl.[5] B01J *23/16, 21/00, 27/057, 27/18*
U.S. Cl. 502—205 **8 Claims**

1. A process for producing a molybdenum-containing metal oxide fluid-bed catalyst comprising, as essential components,

(i) at least one element selected from the group consisting of iron, bismuth, and tellurium,

(ii) molybdenum, and

(iii) silica,

which comprises (a) adjusting an aqueous slurry containing a raw material providing element (i), a molybdenum compound, a silica sol, and a chelating agent capable of inhibiting gelation of the slurry to a pH of at least 6, or (b) adjusting an aqueous slurry containing a raw material providing element (i), a molybdenum compound and a chelating agent capable of inhibiting gelation to a pH of at least 6 and mixing the slurry with a silica sol,

then spray drying the thus pH-adjusted aqueous slurry, and calcining the resulting particles.

3. A process as claimed in claim 1, wherein the resulting catalyst is represented by the empirical formula:

$$Mo_aC_cD_dE_eF_fO_g(SiO_2)_h$$

wherein

C represents at least one element selected from the group consisting of Fe, Bi, and Te;

D represents at least one element selected from the group consisting of Ni, Co, Mg, Cr, Mn, Cu, Zn, Ga, Ge, Cd, In, Sn, Sb, V, W, Re, Pb, Ru, Rh, Pd, Os, Ir, Pt, Th, U, La, Ce, Pr, Nd, Sm, Eu, Gd, Al, Ti Ta, Nb, and Zr;

E represents at least one element selected from the group consisting of P and B;

F represents at least one element selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Sr, Ba, and Tl;

O is oxygen; and

a, b, c, d, e, f, g, and h each represents the atomic ratio of elements for which they are subscripts and, wherein when

a = 8 to 12,

c = 0.5 to 20,

d = 0 to 25,

e = 0 to 5,

f = 0 to 5,

g is a number determined by a, b, c, d, e, and f so as to form an oxide of the corresponding elements, and

h = 20 to 150.

5. A process as claimed in claim 1, wherein said chelating agent is at least one compound selected from the group consisting of an amine, an aminopolycarboxylic acid, a polycarboxylic acid, an aromatic carboxylic acid, a hydroxycarboxylic acid, a keto-carboxylic acid, a thiol, a sulfur compound, an amino acid, a diketone, and a phosphonic acid.

5,059,574

MODERATED RUTHENIUM FISCHER-TROPSCH SYNTHESIS CATALYST

Hayim Abrevaya, Wilmette, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 290,398, Dec. 29, 1988, Pat. No. 4,945,116. This application Jul. 23, 1990, Ser. No. 556,247
Int. Cl.[5] B01J *21/02, 21/06, 23/62, 23/64*
U.S. Cl. 502—261 **14 Claims**

1. A catalyst useful for producing C_3-plus hydrocarbons from hydrogen and carbon monoxide, which catalyst comprises: (i) an inorganic oxide support; (ii) about 0.3–6.0 wt. percent ruthenium present as particles of about 40–60 Angstroms and (iii) about 0.1–5.0 wt. % of a modifier component chosen from the group consisting of aluminum, silicon, lead, arsenic, and bismuth.

5,059,575

CATALYST FOR THE OXIDATION OF CARBONACEOUS PARTICULATES AND METHOD OF MAKING THE CATALYST

Norman Jorgensen, Reading; Michael J. Davies, Wallingford, all of United Kingdom; James A. Cairns, Dundee, Scotland, and Paul G. Deards, Reading, United Kingdom, assignors to United Kingdom Atomic Energy Authority, United Kingdom

Filed Jun. 18, 1990, Ser. No. 539,481
Claims priority, application United Kingdom, Jun. 17, 1989, 8913978
Int. Cl.[5] B01J *23/04, 23/10*
U.S. Cl. 502—304 **19 Claims**

1. A method of manufacturing a catalyst for the oxidation of carbonaceous particulates carried in a gaseous phase, which method comprises the steps of:

a) preparing a ceramic oxide aquasol,

b) preparing an aquasol of cerium (IV) oxide,

c) mixing the ceramic oxide aquasol and the cerium (IV) oxide aquasol to form a mixed aquasol,

d) adding to the mixed aquasol a compound in a dispersed form of a metal from Group IA of the Periodic Table,

e) applying the resultant mixture to a substrate to form a coating thereon, and

f) drying and calcining the coated substrate.

5,059,576

CATALYST FOR REMOVING NITROGEN OXIDES AND A PROCESS FOR PRODUCING THE SAME

Yasuyoshi Kato; Fumito Nakajima; Ikuhisa Hamada; Masahiro Nitta; Kunihiko Konishi; Toshiaki Matsuda; Naomi Yoshida, all of Kure; Nobuyoshi Ishida, Hiroshima, and Hitoshi Yamasaki, Kure, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 453,690, Dec. 20, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 565,211
Claims priority, application Japan, Dec. 21, 1988, 63-324676; Jan. 25, 1989, 1-15930; Mar. 2, 1989, 1-50742
Int. Cl.[5] B01J *21/06, 23/22, 23/28, 23/30*
U.S. Cl. 502—309 **10 Claims**

1. A catalyst for removing nitrogen oxides comprising a catalyst composition containing titanium oxide and at least one member of oxides of vanadium, molybdenum and tungsten, and inorganic fibers, wherein the clearances of the inorganic fibers are filled with said catalyst composition; the ratio by weight of said catalyst composition to said inorganic fibers is 3 or more; and the apparent density of said catalyst is 0.8g/cm^3 or more.

5,059,577

FLUID ABSORBENT COMPOSITION

John H. Hatton, 567 S. Sierra Ave., No. 90, Solana Beach, Calif. 92075

Filed Sep. 12, 1986, Ser. No. 906,813
Int. Cl.[5] B01J *20/24*
U.S. Cl. 502—404 **4 Claims**

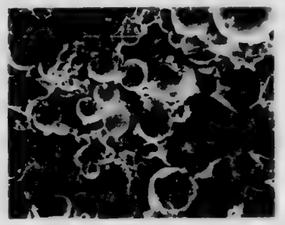
1. A synthetic composition for absorbing a liquid, such as oils and the like for clean up purposes, said composition consisting of ground Plantago psyllium husks mixed with ground newsprint.

5,059,578

PROCESS FOR THE PRODUCTION OF MOLECULAR SIEVING CARBON

Chisato Marumo, Neyagawa; Eiji Hayata, and Niro Shiomi, both of Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Division of Ser. No. 165,525, Mar. 8, 1988, Pat. No. 4,933,314. This application Mar. 9, 1990, Ser. No. 492,799
Claims priority, application Japan, Mar. 10, 1987, 62-55012
Int. Cl.[5] C01B *31/10, 53/04;* **B01J** *20/20*
U.S. Cl. 502—432 **11 Claims**



1. A process for the production of a carbonized particulate product of molecular sieving carbon, said carbonized particulate product comprising an assembly of contiguous, carbonaceous spheres having a diameter of 0.8 to 120 microns and bonded together three-dimensionally at random with continuous interstitial pathways having an average diameter of 0.1 to 20 microns running three-dimensionally at random between a number of said carbonaceous spheres, a plurality of the carbonaceous spheres having micropores communicating with said pathways, said micropores having an average diameter of about 10 Å or less and a volume of 0.1 to 0.7 cc/g, said process comprising the steps of:

(1) preparing an intimate mixture comprising

(A) a finely-divided thermosetting phenol resin, said finely-divided thermosetting phenol resin being specified as

(a) fine powder comprising primary spherical particles of a phenol resin having a particle diameter of 1 to 150 microns,

(b) of which at least 50% by weight of said fine powder having a size capable of passing through a 100 Tyler mesh sieve,

(c) satisfying the following formula derived from an infrared absorption spectrum:

$$D_{900-1015}/D_{1600}=0.2\text{–}9.0$$

$$D_{890}/D_{1600}=0.09\text{–}1.0$$

in the case where in the infrared absorption spectrum by KBr tablet method, the absorption intensity of a peak at 1600 cm^{-1} is expressed as D_{1600}, the absorption intensity of the greatest peak in the range of 900–1015 cm^{-1} as $D_{900-1015}$, and the absorption intensity of a peak at 890 cm^{-1} as D_{890}, and

(d) having a solubility in methanol under reflux of 50% by weight or less,

(B) a solution of a phenol or melamine thermosetting resin, and
(C) a polymer binder selected from polyvinyl alcohols and water-soluble or water-swellable cellulose derivatives,
said intimate mixture containing 5 to 50 parts by weight (as solids) of the solution of the thermosetting resin (B) and 1 to 30 parts by weight of the polymer binder (C) per 100 parts by weight of the finely-divided thermosetting phenol resin;
(2) molding the said intimate mixture into a shaped particulate object; and
(3) heat treating the shaped particulate object at a temperature falling in the range of 500°to 1,100° C. in a non-oxidizing atmosphere to form said carbonized particulate product.

5,059,579
RECEIVER SHEET
Charles H. Hart, Hutton Rudby; John Francis, Levendale, and Roger Waldron, Guisborough, all of England, assignors to Imperial Chemical Industries PLC, London, England
Filed Jun. 27, 1989, Ser. No. 371,735
Claims priority, application United Kingdom, Jun. 30, 1988, 8815632
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **14 Claims**

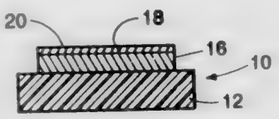


1. A thermal transfer printing receiver sheet for use in association with a compatible donor sheet, the receiver sheet comprising a supporting substrate having, on at least one surface thereof, (1) a dye-receptive receiving layer to receive a dye thermally transferred from the donor sheet, characterised in that the receiver sheet additionally comprises, on at least one surface thereof, (2) an antistatic layer, wherein the antistatic layer comprises (a) a polychlorohydrin ether of an ethoxylated hydroxyamine and (b) a polyglycol diamine, the total alkali metal content of components (a) and (b) not exceeding 0.5% of the combined weight of (a) and (b).

5,059,580
THERMAL TRANSFER IMAGE RECEIVING MATERIALS
Takeshi Shibata, and Seiichiro Kishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 12, 1989, Ser. No. 420,425
Claims priority, application Japan, Oct. 14, 1988, 63-258563
The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.
Int. Cl.[5] B41M *5/35, 5/26*
U.S. Cl. 503—227 **16 Claims**

1. A thermal transfer image receiving material comprising a support of a paper comprising natural pulp as a principal component, having laminated thereon a layer comprising a polyolefin resin as principal component, and further having thereon a dye image receiving layer, said dye image receiving layer containing a dye-accepting synthetic resin crosslinked by a hardening agent, and said polyolefin resin laminate layer having a thickness of from 5 to 35 μm.

5,059,581
PASSIVATION OF HIGH TEMPERATURE SUPERCONDUCTORS
Richard P. Vasquez, Altadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jun. 28, 1990, Ser. No. 545,016
Int. Cl.[5] B05D *5/12;* **C23F** *1/00*
U.S. Cl. 505—1 **11 Claims**



1. A method of passivating the surface of a metal cuprate high temperature superconductor material comprising the steps of:
reacting the native metals on the surface of the superconductor material with an aqueous solution of a reagent that does not degrade the superconducting properties of the material, said reagent being reactive with said native metal ions and being selected from compounds of the formula:

M^3X

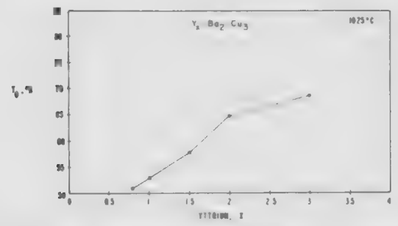
where M^3 is selected from H, ammonium and Group I metal ions, and X is an anion selected from halide, sulfide, sulfate and oxalate; and
forming a passivating layer on the surface of said material, said layer consisting essentially of a salt of the anion of the reagent and at least one of said native metal ions, said layer having a solubility in water of no more than 10^{-3}M.

5,059,582
SUPERCONDUCTOR-METAL LAMINATES AND METHOD OF MAKING
Deborah D. L. Chung, Pittsburgh, Pa., assignor to The Research Foundation of State University of NY, Albany, N.Y.
Filed Mar. 22, 1989, Ser. No. 326,918
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 **48 Claims**



1. A superconducting laminate comprising first and second layers; said first layer comprising a high T_c ceramic superconductor and said second layer comprising a metal; said first layer being diffusion bonded to said second layer, wherein said metal is selected from the group consisting of tin, indium and tin lead alloy.

5,059,583
HIGH TC SUPERCONDUCTING Y-BA-CU-O THIN FILMS
Mark Lelental; John A. Agostinelli, and Henry J. Romanofsky, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 208,707, Jun. 20, 1988, abandoned, and Ser. No. 236,420, Aug. 25, 1988, abandoned. This application Jul. 28, 1989, Ser. No. 386,329
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 **6 Claims**

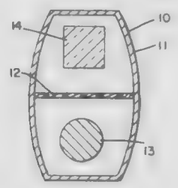


1. An article comprised of a substrate and an electrically conductive crystalline rare earth alkaline earth copper oxide thin film characterized in that
the substrate is an alkaline earth oxide and
the rare earth alkaline earth copper oxide thin film has a thickness of less than 5 microns and is comprised of a $Y_1A_2C_3O_z$ crystalline oxide phase and a $Y_2A_1C_1O_y$ crystalline oxide phase, where
Y, A, and C represent yttrium, alkaline earth, and copper, respectively,
y represents the amount of oxygen that results from heating $Y_1A_2C_3O_z$ to a temperature of from 1050° to 1300° C. and
z is the amount of oxygen that results from
(a) heating an amorphous mixture of oxides of Y, A and C satisfying the ratio

$Y_1:A_2:C_3$

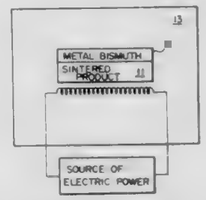
in the form of a coating having a thickness of 5 μm or less on the substrate to a temperature in the range of from 900° C. to 950° C. to form a crystalline phase and
(b) cooling in the presence of oxygen at a rate of less than 25° C. per minute until it reaches a temperature of from 700° to 350° C.

5,059,584
METHOD FOR HOT ISOSTATIC PRESSING A CERAMIC ARTICLE
Richard H. Benfer, Jr., Arlington, and Kerry T. Richards, Medfield, both of Mass., assignors to United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 4, 1990, Ser. No. 519,043
Int. Cl.[5] H01L *39/12;* **B29C** *43/10*
U.S. Cl. 505—1 **3 Claims**



1. Method for forming an oxide ceramic article by hot isostatic pressing, comprising the steps of:
(a) placing an oxide ceramic material in a capsule,
(b) placing an oxygen donor in the capsule,
(c) separating the ceramic material from the donor by a barrier which is oxygen permeable, and
(d) subjecting the capsule and contents of a high temperature gas at high pressure to collapse the capsule around the ceramic material and to cause the oxygen donor to release oxygen which permeates the barrier, whereby the ceramics material will be compacted without substantially reducing the oxygen content of the ceramic material.

5,059,585
METHOD OF MAKING A SPUTTERING TARGET FOR A BISMUTH BASED SUPERCONDUCTOR
Tadashi Sugihara; Takuo Takeshita, and Yukihiro Obuchi, all of Saitama, Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan
Filed Apr. 21, 1989, Ser. No. 341,190
Claims priority, application Japan, Apr. 21, 1988, 63-98942
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—1 **15 Claims**



1. A process of fabricating a target used in a sputtering system, comprising the steps of:
a) preparing ingredient powders of a calcium carbonate, a strontium carbonate and a copper oxide;
b) producing a porous bulk body of a complex oxide from said ingredient powders, said complex oxide being of the calcium-strontium-copper oxide system, by mixing said ingredient powders to a predetermined proportion to produce a mixture, calcining said mixture to produce said complex oxide, pulverizing said complex oxide to produce a powder of said complex oxide, pressurizing the powder of said complex oxide to produce a bulk body of the powder of said complex oxide, and sintering said bulk body of the powder of said complex oxide to produce a porous bulk body of said complex oxide; and
c) impregnating molten bismuth into the porous bulk body of said complex oxide.

5,059,586
METHOD FOR ENHANCING GROWTH OF MAMMARY PARENCHYMA
Robert J. Collier, University City, and Michael F. McGrath, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 837,477, Mar. 7, 1986, abandoned. This application Sep. 2, 1987, Ser. No. 92,009
Int. Cl.[5] A61K *37/24, 37/36*
U.S. Cl. 514—12 **19 Claims**

1. A method for enhancing the proliferation of mammary parenchymal cells in a female ruminant wherein an amount effective to cause proliferation of mammary parenchyma cells, of a polypeptide growth factor having a molecular weight of less than 65,000 daltons and having a direct mitogenic effect on mammary epithelial cells in said ruminant is administered to the ruminant by intramammary infusion during gestation or between the onset of puberty and the ruminant's first gestation.

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5,059,587

PHYSIOLOGICALLY ACTIVE PEPTIDE COMPOSITION FOR NASAL ADMINISTRATION

Nakayuki Yamamoto; Hideo Sakakibara, and Kimio Mizuno, all of Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Shizuoka, Japan

Filed Jul. 19, 1988, Ser. No. 221,302

Claims priority, application Japan, Aug. 3, 1987, 62-192658; Nov. 26, 1987, 62-296059; Jun. 16, 1988, 63-144704

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **10 Claims**

1. A composition being in powder form suitable for nasal administration containing a hypocalcemic effective amount of a peptide having calcitonin activity as an active ingredient and a water-soluble organic acid as an absorption promoter said acid present in an amount sufficient to render acidic an aqueous solution including said composition, said acid being at least one member selected from the group consisting of succinic acid, tartaric acid, and glucuronic acid.

5,059,588

METHODS AND COMPOSITIONS FOR HEALING BONE USING GLY HIS LYS: COPPER

Loren R. Pickart, Bellevue, Wash., assignor to ProCyte Corporation, Incorporated, Redmond, Wash.

Filed Oct. 13, 1989, Ser. No. 421,101

Int. Cl.[5] A61K *37/02;* **C07K** *5/10, 7/10*

U.S. Cl. 514—12 **16 Claims**

1. A method for promoting the healing of affected bone in warm-blooded animals, comprising:

administering to an affected bone or the area surrounding the affected bone a therapeutically effective amount of a composition containing glycyl-L-histidyl-L-lysine:copper (II).

5,059,589

GLAUCOMA TREATMENT

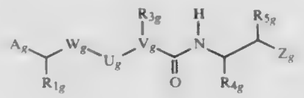
Herman H. Stein, Highland Park; Jacob J. Plattner, Libertyville, and Steven R. Crowley, Vernon Hills, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 240,567, Sep. 8, 1988, Pat. No. 4,927,807, which is a continuation-in-part of Ser. No. 105,636, Oct. 6, 1987, abandoned. This application Mar. 2, 1990, Ser. No. 488,572

Int. Cl.[5] A61K *37/00, 31/16*

U.S. Cl. 514—19 **4 Claims**

1. A method for treating glaucoma or reducing and/or controlling intraocular pressure comprising administering to a patient in need of such treatment a therapeutically effective amount of a renin inhibiting compound of the formula:



wherein

A_g is hydrogen, loweralkyl, aminoalkyl, (alkyl)aminoalkyl, dialkylaminoalkyl, (alkoxy)aminoalkyl, (alkoxy) (alkyl-)aminoalkyl, phenylalkyl, (substituted phenyl)alkyl wherein the phenyl ring is substituted with one, two or three substituents indpendently selected from loweralkoxy, loweralkyl, amino, alkylamino, dialkylamino, hydroxy, halo, mercapto, nitro, thioalkoxy, carboxaldehyde, carboxy, alkoxycarbonyl and carboxamide, naphthylalkyl, (substituted naphthyl)alkyl wherein the naphthyl ring is substituted with one, two or three substituents independently selected from loweralkoxy, loweralkyl, amino, alkylamino, dialkylamino, hydroxy, halo, mercapto, nitro, thioalkoxy, carboxaldehyde, carboxy, alkoxycarbonyl and carboxamide, substituted or unsubstituted heterocyclic, where saturated heterocyclics may be unsubstituted, monosubsituted or disubstituted with hydroxy, oxo, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, loweralkyl, haloalkyl or polyhaloalkyl; unsaturated heterocyclics may be unsubstituted or monosubstituted with hydroxy, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, loweralkyl, haloalkyl or polyhaloalkyl, or A_g is (unsubstituted heterocyclic)alkyl or (substituted heterocyclic)alkyl wherein unsubstituted or substituted heterocyclic is as defined above, or A_g is $—OR_{7g}$ or $—SR_{7g}$ wherein R_{7g} is hydrogen, loweralkyl, aminoalkyl, (alkyl-)aminoalkyl, dialkylaminoalkyl, (alkoxy)aminoalkyl, (alkoxy)(alkyl)aminoalkyl, phenylalkyl, (substituted phenyl)alkyl wherein substituted phenyl is as defined above, naphthylalkyl, (substituted naphthyl)alkyl wherein the substituted naphthyl is as defined above, substituted or unsubstituted heterocyclic as defined above, (unsubstituted heterocyclic)alkyl or (substituted heterocyclic)alkyl wherein unsubstituted or substituted heterocyclic is as defined above, (unsubstituted heterocyclic)C(O)—or (substituted heterocyclic)C(O)—wherein unsubstituted or substituted heterocyclic is as defined above; or A_g is $—NR_{8g}R_{9g}$ wherein R_{8g} and R_{9g} are independently selected from hydrogen, hydroxy, alkoxy, loweralkyl, aminoalkyl, cyanoalkyl and hydroxyalkyl; or A is

wherein

B_g is NH, alkylamino, S, O, CH_2, $NHCH_2$ or $CH(OR_{52g})$ wherein R_{52g} is hydrogen, loweralkyl or loweralkylcarbonyl, and R_{10g} is hydrogen, loweralkyl, cycloalkyl, phenyl, substituted phenyl as defined above, naphthyl, substituted naphthyl as defined above, alkoxy, alkenyloxy, hydroxyalkoxy, dihydroxyalkoxy, phenylalkoxy, (substituted phenyl)alkoxy wherein substituted phenyl is as defined above, naphthylalkoxy, (substituted naphthyl)alkoxy wherein substituted naphthyl is as defined above, phenylalkoxyalkyl, (substituted phenyl)alkoxyalkyl wherein substituted phenyl is as defined above, naphthylalkoxyalkyl, (substituted naphthyl)alkoxyalkyl wherein substituted naphthyl is as defined above, thioalkoxyalkyl, loweralkylsulfinylalkyl, loweralkylsulfonylalkyl, phenylthioalkyl, (substituted phenyl)thioalkyl wherein substituted phenyl is as defined above, naphthylthioalkyl, (substituted naphthyl)thioalkyl wherein substituted naphthyl is as defined above, phenylsulfonylalkyl, (substituted phenyl)sulfonylalkyl wherein substituted phenyl is as defined above, naphthylsulfonylalkyl, (substituted naphthyl)sulfonylalkyl wherein substituted naphthyl is as defined above, amino, alkylamino, dialkylamino, (hydroxyalkyl)(alkyl)amino, (dihydroxyalkyl)(alkyl)amino, aminoalkyl, alkoxycarbonylalkyl, carboxyalkyl, (N-protected)aminoalkyl, alkylaminoalkyl, (N-protected)(alkyl)aminoalkyl, dialkylaminoalkyl, (heterocyclic)alkyl, a substituted or unsubstituted heterocyclic as defined above, aminocycloalkyl, aminoalkylamino, (dialkylaminoalkyl)(alkyl)amino, phenylalkylamino, (substituted phenyl)alkylamino wherein substituted phenyl is as defined above, naphthylalkylamino, (substituted naphthyl)alkylamino wherein substituted naphthyl is as defined above, (phenylalkyl) alkyl)amino, ((substituted phenyl)alkyl)(alkyl)amino wherein substituted phenyl is as defined above, (naphthylalkyl)(alkyl-)amino, ((substituted naphthyl)alkyl)(alkyl)amino wherein substituted naphthyl is as defined above, alkoxyalkyl(alkyl)amino, (polyalkoxy)alkyl(alkyl)amino, di-(alkoxyalkyl)amino, di-(hydroxyalkyl)amino, di-((polyalkoxy)alkyl-)amino, ((heterocyclic)alkyl)(alkyl)amino, ((heterocyclic-)alkyl)amino, (heterocyclic)(alkyl)amino, (alkylaminoalkyl)(alkyl)amino, (dialkylaminoalkyl)(alkyl)amino, ((alkoxy)(alkyl)aminoalkyl)(alkyl)amino, ((alkoxy)aminoalkyl)-(alkyl)amino, polyalkoxy or (polyalkoxy)alkyl; or A_g is $R_{41g}CH(OH)CH_2$—or $R_{41g}CH(OH)CH(OH)$—wherein R_{41g} is loweralkyl, cycloalkyl, phenyl, substituted phenyl as defined above, naphthyl, substituted naphthyl as defined above, phenylalkyl, (substituted phenyl)alkyl wherein substituted phenyl is as defined above, naphthylalkyl, (substituted naphthyl)alkyl wherein substituted naphthyl is as defined above, phenylalkoxyalkyl, (substituted phenyl)alkoxyalkyl wherein substituted phenyl is as defined above, naphthylalkoxyalkyl, (substituted naphthyl)alkoxyalkyl wherein substituted naphthyl is as defined above, thioalkoxyalkyl, loweralkylsulfinylalkyl, loweralkylsulfonylalkyl, phenylthioalkyl, (substituted phenyl)thioalkyl wherein substituted phenyl is as defined above, naphthylthioalkyl, (substituted naphthyl)thioalkyl wherein substituted naphthyl is as defined above, phenylsulfonylalkyl, (substituted phenyl)sulfonylalkyl wherein substituted phenyl is as defined above, naphthylsulfonylalkyl, (substituted naphthyl)sulfonylalkyl wherein substituted naphthyl is as defined above, aminoalkyl, alkoxycarbonylalkyl, carboxyalkyl, (N-protected)aminoalkyl, alkylaminoalkyl, (N-protected)(alkyl)aminoalkyl, dialkylaminoalkyl, heterocyclicalkyl, a substituted or unsubstituted heterocyclic as defined above, aminocycloalkyl or polyalkoxy)alkyl;

W_g is C═O, CHOH or NR_{2g} wherein R_{2g} is hydrogen or loweralkyl;

U_g is C═O, CH_2 or NR_{2g} wherein R_{2g} is hydrogen or loweralkyl, with proviso that when W_g is CHOH then U_g is CH_2 and with the proviso that U_g is C═O or CH_2 when W_g is NR_{2g};

V_g is CH, C(OH) or C(halogen) with the proviso that V_g is CH when U_g is NR_{2g};

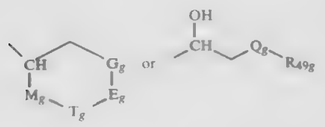
R_{1g} is loweralkyl, cycloalkylalkyl, benzyl, (alpha, alpha)-dimethylbenzyl, 4-methoxybenzyl, halobenzyl, 4-hydroxybenzyl, (1-naphthyl)methyl, (2-naphthyl)methyl, (unsubstituted heterocyclic)methyl, (substituted heterocyclic)methyl wherein unsubstituted or substituted heterocyclic is as defined above, phenethyl, 1-benzyloxyethyl, phenoxy, thiophenoxy or anilino, provided that B_g is CH_2 or CHOH or A_g is hydrogen when R_{1g} is phenoxy, thiophenoxy or anilino;

R_{3g} is loweralkyl, loweralkenyl, ((alkoxy)alkoxy)alkyl, carboxyalkyl, (thioalkoxy)alkyl, azidoalkyl, aminoalkyl, (alkyl)aminoalkyl, dialkylaminoalkyl, (alkoxy)(alkyl-)aminoalkyl, (alkoxy)aminoalkyl, benzyl or heterocyclic ring substituted methyl;

R_{4g} is loweralkyl, cycloalkylmethyl or benzyl;

R_{5g} is OH or NH_2; and

Z_g is



wherein

M_g is O, S or NH, T_g is C═O, C═S, S, S(O), $S(O)_2$ or CH_2, E_g is O, S, NR_{6g} wherein R_{6g} is hydrogen, loweralkyl, hydroxyalkyl, hydroxy, alkoxy, amino, or alkylamino, or E_g is $CR_{6g}R_{42g}$ wherein R_{6g} is as defined above and R_{42g} is hydrogen or loweralkyl or E_g is $C═CR_{43g}R_{44g}$ wherein R_{43g} and R_{44g} are independently selected from hydrogen and loweralkyl, G_g is absent, CH_2, or NR_{11g} wherein R_{11g} is hydrogen or loweralkyl, with proviso that when G_g is NR_{11g} then R_{6g} is loweralkyl or hydroxyalkyl, Q_g is $CR_{45g}R_{46g}$ wherein R_{45g} and R_{46g} are independently selected from hydrogen and loweralkyl or Q_g is $C═CR_{47g}$ R_{48g} wherein R_{47g} and R_{48g} are independently selected from hydrogen and loweralkyl, and R_{49g} is $—CH_2OH$, carboxy, alkoxycarbonyl or $—CONR_{50g}R_{51g}$ wherein R_{50g} is hydrogen or loweralkyl and R_{51g} is hydrogen, loweralkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl or alkoxyalkyl; or a pharmaceutically acceptable salt or ester thereof.

5,059,590

IMIDAZOLE DERIVATIVES, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF

Tohru Ueda; Akira Matsuda; Noriaki Minakawa, all of Sapporo; Takuma Sasaki, Kanazawa, and Yoshikazu Yanagi, Kawanishi, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba and Sumitomo Pharmaceuticals Company Limited, Osaka, both of, Japan

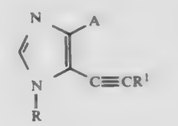
Filed Feb. 28, 1989, Ser. No. 316,969

Claims priority, application Japan, Feb. 29, 1988, 63-46921; Apr. 1, 1988, 63-82089; Apr. 1, 1988, 63-82090

Int. Cl.[5] A61K *31/70;* **C07H** *5/04;* **C07D** *233/66*

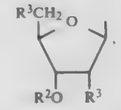
U.S. Cl. 514—23 **7 Claims**

1. Imidazole derivatives represented by formula [I]:



[I]

wherein R is



wherein R^2 is a hydrogen atom or a hydroxy protecting group selected from the group consisting of acyl, alkyloxymethyl, substituted ethyl, aralkyl, pyranyl, silyl, acetal-type, ketal-type, alkyloxycarbonyl and phosphoryl protecting groups, R^2 protecting either a single hydroxy or two hydroxies together when R^2 is a hydroxy protecting group, and R^3 is a hydrogen atom or OR^2; A is $CONH_2$ or CN; and R^1 is a hydrogen atom, lower alkyl, hydroxy lower alkyl, or phenyl.

5,059,591

DRUG PREPARATIONS OF REDUCED TOXICITY

Andrew S. Janoff, Yardley, Pa.; Mircea C. Popescu, Plainsboro, N.J.; Carl R. Alving, Bethesda, Md.; Michael W. Fountain, Farragut, Tenn.; Robert P. Lenk, The Woodlands, Tex.; Marc J. Ostro, Princeton, N.J.; Paul A. Tremblay, Hamilton, N.J., and Alan L. Weiner, Lawrenceville, N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 844,248, Mar. 24, 1986, Pat. No. 4,897,384, which is a continuation of Ser. No. 604,503, May 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 498,268, May 26, 1983, abandoned. This application Sep. 12, 1989, Ser. No. 405,623

Int. Cl.[5] A61K *31/70, 31/685, 31/015, 35/00*

U.S. Cl. 514—31 **44 Claims**

1. A drug preparation of reduced toxicity, comprising: a mixture of (a) a pharmaceutically active therapeutic drug which exhibits toxic effects in humans or animals by binding to a toxicity receptor, the drug being selected from the group consisting of the polyene or polyene macrolide antibiotics, anthracyclines, and cisplatin, and (b) a ligand capable of preventing binding of the drug to the toxicity receptor in vivo while allowing the drug to retain its pharmaceutical activity, the ligand being a phospholipid when the drug is an anthracycline or cisplatin, and the ligand being a sterol or water soluble derivative thereof when the drug is a polyene macrolide antibiotic, wherein the drug to ligand ratio reduces the toxicity of

the drug in vivo and wherein the preparation is substantially free of liposomes.

5,059,592

COMPOSITION FOR PREVENTION AND (OR) TREATMENT OF AIDS

Yoshiko Yokota, Ibaraki; Yasuhiro Mine, Osaka, and Yoshimi Wakai, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 20, 1988, Ser. No. 221,518

Claims priority, application United Kingdom, Jul. 29, 1987, 8717955

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—50 **7 Claims**

1. A method for treatment of Lymphadenopathy which comprises administering FK-565 or its pharmaceutically acceptable salt and AZT in a ratio of about 1:10–2000 by weight to an individual in need thereof.

5,059,593

POUR-ON FORMULATIONS WHICH ARE ACTIVE AGAINST TICKS

Wilhelm Stendel, Wuppertal, and Herbert Voege, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

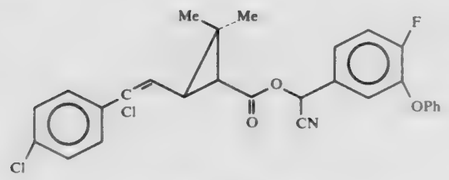
Continuation of Ser. No. 821,088, Jan. 21, 1986, abandoned, which is a continuation of Ser. No. 595,083, Mar. 30, 1984, abandoned, which is a continuation of Ser. No. 281,616, Jul. 9, 1981, abandoned. This application Apr. 11, 1990, Ser. No. 508,389

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029426

Int. Cl.[5] A01N *65/00, 37/34*

U.S. Cl. 514—65 **6 Claims**

1. A pour-on formulation which is active against ticks, and which effects distribution over the skin of an animal to which it is applied the active ingredient consisting of 0.1 to 30 parts by weight of a compound having no systemic action of the formula



10 to 80 parts by weight of a spreading oil, wherein said spreading oil has a surface tension at an air interface which is less than 30 dynes/cm and, 20 to 95 parts by weight of at least one solvent which is tolerated by the skin of an animal to which the formulation is applied.

5,059,594

PHYTIC ACID COMPOSITIONS

Kiichi Sawai, Funabashi; Masayasu Kurono, Mie; Hiromoto Asai, Nagoya; Takahiko Mitani, Mie; Naohisa Ninomiya, Nagoya, and Tomoo Suzuki, Kasugai, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

Filed Mar. 22, 1990, Ser. No. 497,364

Claims priority, application Japan, Mar. 31, 1989, 1-82599

Int. Cl.[5] A61K *31/66*

U.S. Cl. 514—103 **4 Claims**

1. A highly water-soluble dosage form of phytic acid containing phytic acid, ferric ions and carboxylate ions in a molar ratio of about 10:1:1 to about 1:12:36 of phytic acid: ferric ions: carboxylate ions.

5,059,595

PHARMACEUTICAL COMPOSITIONS CONTAINING 5-METHYLTETRAHYDROFOLIC ACID, 5-FORMYLTETRAHYDROFOLIC ACID AND THEIR PHARMACEUTICALLY ACCEPTABLE SALTS IN CONTROLLED-RELEASE FORM ACTIVE IN THE THERAPY OF ORGANIC MENTAL DISTURBANCES

Cristina Le Grazie, Milan, Italy, assignor to Bioresearch, S.p.A., Milan, Italy

Filed Mar. 20, 1990, Ser. No. 496,366

Claims priority, application Italy, Mar. 22, 1989, 19867 A89

Int. Cl.[5] A61K *9/22, 31/505*

U.S. Cl. 424—468 **7 Claims**

1. In a therapeutic method for treating an elderly depressed patient diagnosed as having at least one organic mental disturbance selected from the group consisting of senile primary degenerative dementia of the Alzheimer type with depression, presenile primary degenerative dementia of the Alzheimer type with depression, and multiinfarctual dementia with depression, the improvement, as compared to orally administering folate not in controlled-release form, or to placebo, consisting essentially of the step of orally administering a therapeutically effective amount of 5-methyl-tetrahydrofolic acid or 5-formyl-tetrahydrofolic acid or a pharmaceutically acceptable salt thereof in a controlled-release form.

5,059,596

AZABICYCLO COMPOUNDS

Abdul B. N. Luheshi, Hull; Robert K. Smalley, Urmston; Peter D. Kennewell, Swindon, and Robert Westwood, Kingston Bagpuize, all of Great Britain, assignors to Roussel Uclaf, Paris, France

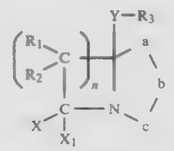
Filed Jan. 16, 1990, Ser. No. 465,031

Claims priority, application United Kingdom, Jan. 16, 1989, 8900663

Int. Cl.[5] C07D *487/04*

U.S. Cl. 514—210 **23 Claims**

1. A compound selected from the group consisting of a compound of the formula

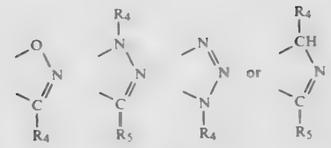


I

wherein R_1 and R_2 are individually selected from the group consisting of hydrogen, alkyl and hydroxyalkyl of 1 to 5 carbon atoms and amino, n is 1 X and X_1 are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms or taken together with the carbon atom to which they are attached are >C=O, Y is —O— or —S—, R_3 is alkyl of 1 to 3 carbon atoms or carbocyclic aryl of 6 to 8 carbon atoms,



is selected from the group consisting of



R_4 and R_5 are individually aryl unsubstituted or substituted with at least one member of the group consisting of halogen, $—NO_2$ and alkyl and alkoxy of 1 to 3 carbon atoms and non-toxic, pharmaceutically acceptable salts thereof with acids and bases.

5,059,597

7-(4-OXA OR 4-THIA-2,7-DIAZABICYCLO[3.3.0]OCT-2-EN-3-YL)-3-QUINOLONE-AND-NAPHTHYRIDONE-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS AND FEED ADDITIVES

Uwe Petersen; Thomas Schenke; Andreas Krebs; Klaus Grohe; Michael Schriewer, all of Bayerwerk; Ingo Hallier, Wuppertal-Elberfeld; Karl G. Metzger, Wuppertal-Elberfeld; Rainer Endermann, Wuppertal-Elberfeld, and Hans-Joachim Zeiler, Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

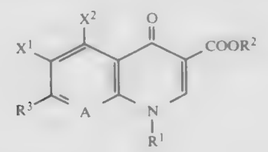
Division of Ser. No. 375,434, Jun. 30, 1989, Pat. No. 4,990,517. This application Sep. 10, 1990, Ser. No. 580,906

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1988, 3824072; Mar. 1, 1989, 3906365

Int. Cl.[5] A61K *31/435, 31/47;* **C07D** *471/04, 215/56*

U.S. Cl. 514—224.5 **8 Claims**

1. A 7-(pyrrolidinly)-3-quinolone- or -naphthyridone- carboxylic acid derivative of the formula



(I)

in which

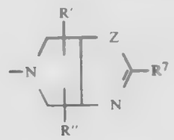
X^1 represents halogen,

X^2 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio or halogen,

R^1 represents alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, 2-hydroxyethyl, 2-fluoroethyl, methoxy, amino, methylamino, ethylamino, dimethylamino or phenyl which is optionally substituted by 1 or 2 fluorine atoms,

R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

R^3 represents a radical of the structure



wherein

R^7 represents H or C_1–C_4-alkyl,

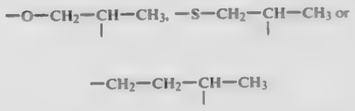
R' represents H, CH_3 or phenyl,

R'' represents H, CH_3 or phenyl, and

Z represents O or S, and

A represents N or C—R^8, wherein

R^8 represents H, halogen, methyl, cyano, nitro, hydroxyl or methoxy or, together with R^1, forms a bridge having the structure



or a pharmaceutically useable addition product thereof with water, an acid or an alkali.

5,059,598

N-HETEROCYCLO-SUBSTITUTED P-AMINOPHENOLS

Kenichi Kanai; Kiyoto Goto, and Kinji Hashimoto, all of Naruto, Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Naruto, Japan

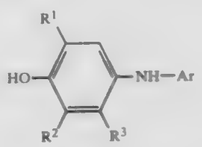
Division of Ser. No. 75,910, Jul. 20, 1987, Pat. No. 4,868,183. This application Sep. 19, 1989, Ser. No. 409,192

Claims priority, application Japan, Jul. 21, 1986, 61-172431; Sep. 10, 1986, 61-213660; Feb. 20, 1987, 62-38595; Apr. 16, 1987, 62-94199

Int. Cl.[5] A61K *31/53;* **C07D** *253/04, 253/07*

U.S. Cl. 514—242 **6 Claims**

1. A p-aminophenol compound which is represented by the formula



(1-2)

wherein:

R^1 and R^2 represents a lower alkyl group;

R^3 is a hydrogen atom or a lower alkyl group; and

Ar is a 1,2,3- or 1,2,4-triazinyl group, each of which may optionally have 1 to 3 substituents selected from the group consisting of a lower alkyl group, phenyl group and lower alkoxycarbonyl group;

or a pharmaceutically acceptable salt thereof.

5,059,599

DERIVATIVES OF 1-PHENYL 1,4-DIHYDRO 3-AMINO 4-OXO PYRIDAZINES, THEIR PREPARATION AND THEIR USE IN THERAPY

Gilbert Mouzin, Toulouse; Henri Cousse; Jean-Francois Patoiseau, both of Castres; Jean-Marie Autin, Labruguiere, and Dennis Bigg, Castres, all of France, assignors to Pierre Fabre Médicament, Paris, France

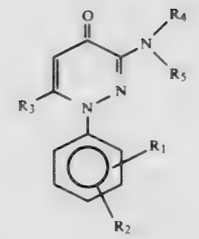
Filed Jun. 6, 1990, Ser. No. 534,180

Claims priority, application France, Jun. 7, 1989, 89 07532

Int. Cl.[5] C07D *237/22*

U.S. Cl. 514—247 **9 Claims**

1. An Aryl pyridazine compound of formula I



in which:

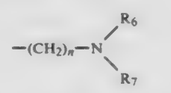
R_1, R_2, which are identical or different, represent a lower alkyloxy group, a halogen, or a trifluoromethyl radical;

R_3 represents a hydrogen, a lower-alkyl group, whether or not branched, a phenyl or phenyl lower-alkyl group,

R_4 represents hydrogen, a linear or branched lower-alkyl or lower-cycloalkyl radical or a radical which forms with R_5 and the nitrogen atom to which they are bound a heterocycle selected from pyrrole, pyrrolidine, morpholine, piperidine, imidazole, piperazine, 4-methylpiperazine, and 4-phenylpiperazine;

R_5 represents:

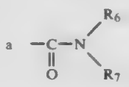
hydrogen, a linear or branched lower-alkyl radical, an aminoalkyl group II



in which n is 2 to 5, inclusive, and R_6, R_7, which are identical or different, represent hydrogen, a lower-alkyl or cycloalkyl group or, together with the nitrogen atom to which they bound, form a heterocycle selected from piperidine, pyrrolidine, morpholine or piperazine, 4-methylpiperazine, 4-pyrimidinylpiperazine, and 4-phenylpiperazine:

a  group in which

m is to 0 or 1 and R_8 represents a lower-alkyl group, linear or branched, phenyl or phenyl lower-alkyl group, or an amino alkyl group II as defined above;

a 

group in which R_6 and R_7 have the same meanings as above; "lower" always meaning at most C_6, or a therapeutically-acceptable organic or inorganic salt thereof.

5,059,600

TREATING HABIT DISORDERS

Frank H. Gawin, New Haven, Conn.; Brian G. Humblestone, and David F. Allen, both of Nassau, The Bahamas, assignors to Yale University, New Haven, Conn.

Filed Mar. 31, 1989, Ser. No. 331,923

Int. Cl.[5] A61K *31/50, 31/495*

U.S. Cl. 514—253 **6 Claims**

1. A method for treating drug disorders in a human comprising administering to said human an effective anti-habitual amount of a pharmaceutically active compound comprising flupenthixol or esters thereof or pharmaceutically acceptable salts thereof, either alone, or in admixture with a physiologically acceptable diluent, said pharmaceutically active compound resulting in activation of brain reward systems.

5,059,601

IMIDAZOLONE DERIVATIVES WITH ACTIVITY ON CENTRAL NERVOUS SYSTEM AND ANTIHYPERTENSIVE ACTIVITY, PREPARATION METHODS THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Aldo Salimbeni; Giuseppe Cascio, and Elso Manghisi, all of Milan, Italy, assignors to Istituto Lusofarmaco D'Italia S.P.A., Milan, Italy

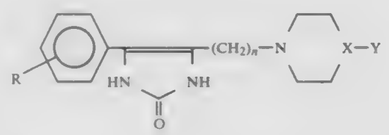
Filed Jan. 18, 1990, Ser. No. 467,000

Claims priority, application Italy, Jan. 25, 1989, 19193 A/89

Int. Cl.[5] A61K *31/495, 31/445;* **C07D** *403/00, 401/00*

U.S. Cl. 514—255 **6 Claims**

1. A compound of general formula I



(I)

wherein:

R is an halogen atom, a straight or branched C_1–C_4 alkoxy group or a C_1–C_4 alkyl group;

n is an integer from 1 to 3;

X is a nitrogen atom forming a piperazine ring in which case Y may be a C_1–C_4 alkyl group unsubstituted or substituted by a hydroxy group; a phenyl group unsubstituted or substituted by one or more halogen atoms, C_1–C_4 alkoxy group or by hydroxy group;

or X is a CH group and Y is then hydrogen, phenyl, benzoyl, benzamido, 2-oxo-1-benzimidazolinyl groups unsubstituted or substitute by one or more halogen atoms or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition having antipsychotic, antidepressive and ansiolytic activity and useful in the prevention and therapy of hypertension, ischaemic cardiopathies, thrombosis and cerebral circulation disorders which comprises as the principal active ingredient an effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable carrier.

6. A method of treating a patient having a central nervous or cardiovascular system disorder which comprises administering thereto an effective amount of a composition according to claim 5.

5,059,602

4-SUBSTITUTED DIHYDROPYRIDO(4,3-D)PYRIMIDINES AS ANALGESICS AND TOPICAL ANTIINFLAMMATORY AGENTS FOR THE TREATMENT OF SKIN DISORDERS

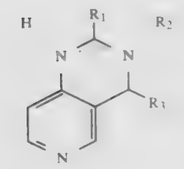
Richard C. Effland, and Joseph T. Klein, both of Bridgewater, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Aug. 27, 1990, Ser. No. 573,414

Int. Cl.[5] A61K *31/505;* **C07D** *487/04*

U.S. Cl. 514—258 **18 Claims**

1. A compound having the formula,



where

R_1 is hydrogen, loweralkyl, arylloweralkyl or aryl;

R_2 when present is hydrogen, loweralkyl, arylloweralkyl; and

R_3 is hydrogen, loweralkyl, cycloalkyl or aryl; the term cycloalkyl signifying a cycloalkyl group of 3 to 6 carbon atoms;

or a pharmaceutically acceptable addition salt thereof.

5,059,603

METHOD AND COMPOSITION FOR TREATING IMPOTENCE

David Rubin, San Diego, Calif., assignor to Centuries Laboratories, Inc., Port Washington, N.Y.

Filed Jun. 12, 1989, Ser. No. 364,289

Int. Cl.[5] A61K *31/52*

U.S. Cl. 514—264 **2 Claims**

1. A composition for treating impotence consisting essentially of an effective amount of nitroglycerine as a vasocilator and an effective amount of caffeine as a vasoconstrictor, and a penetration enhancer, in a pharmaceutically acceptable carrier.

5,059,604

2-AMINO PURINE DERIVATIVES

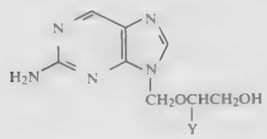
Thomas A. Krenitsky, Chapel Hill, and Lilia M. Beauchamp, Raleigh, both of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 434,394, Oct. 14, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,555

Int. Cl.[5] C07D *473/18;* **A61K** *31/52*

U.S. Cl. 514—261 **14 Claims**

1. A pharmaceutical composition comprising an effective antiviral amount of the compound of the formula



where Y is hydroxymethyl or a pharmacologically acceptable salt thereof and a pharmacologically acceptable carrier therefor.

5,059,605

PYRIMIDINE DERIVATIVES USEFUL AS FUNGICIDES

John M. Clough, Marlow; Christopher R. A. Godfrey, Bracknell, and Ian T. Streeting, Wokingham, all of United Kingdom, assignors to Imperial Chemical Industries plc, London, England

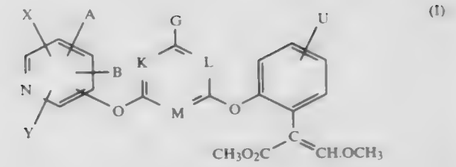
Filed Apr. 10, 1990, Ser. No. 506,790

Claims priority, application United Kingdom, Apr. 19, 1989, 8908875

Int. Cl.[5] A61K *31/505, 31/535;* **C07D** *401/12, 401/14*

U.S. Cl. 514—269 **9 Claims**

1. Compounds having the formula (I):



(I)

in which any two of K, L and M are nitrogen and the other is CE; X and Y are independently hydrogen, halogen, C_{1-4} alkyl, C_{3-6} cycloalkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, phenyl, benzyloxy, cyano, isocyano, isothiocyanato, nitro, NR^1R^2, NR^1OR^2, N_3, $NHCOR^1$, $NR^1CO_2R^2$, $NHCONR^1R^2$, $N{=}CHNR^1R^2$, $NHSO_2R^1$, OR^1, $OCOR^1$, OSO_2R^1, SR^1, SOR^1, SO_2R^1, SO_2OR^1, $SO_2NR^1R^2$, COR^1, $CR^1{=}NOR^2$, $CHR^1CO_2R^2$, CO_2R^1, $CONR^1R^2$, $CSNR^1R^2$, $CH_3O_2C.C{:}CH.OCH_3$, 1-(imidazol-1-yl)vinyl, a 5-membered heterocyclic ring containing one, tow or three nitrogen heteroatoms; pyridopyridazines, pyridopyrimidiens, pyridooxazines, and pyrrolo-, furo-, thieno-, triazolo-, and thiadiazolopyridines; A, B, E, G, and U are independently hydrogen, halogen C_{1-4} alkyl, C_{1-4} alkoxy, cyano, nitro or trifluoromethyl; and R^1 and R^2 are independently hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl or phenyl; the aliphatic moieties of any of the foregoing being optionally substituted with one or more of halogen, cyano, OR^1, SR^1, NR^1R^2, $SiR^1{}_3$ or $OCOR^1$ and the phenyl moieties of any of the foregoing being optionally substituted with one or more of halogen, C_{1-4} alkyl, C_{1-4} alkoxy, nitro or cyano; and their pyridine N-oxides and N-alkyl pyridinium salts.

5,059,606

COMBINATION OF PYRIMIDINE DERIVATIVES AND CALCIUM ANTAGONISTS TO INDUCE AND STIMULATE HAIR GROWTH AND REDUCE HAIR LOSS

Jean F. Grollier, Paris, and Georges Rosenbaum, Asnières, both of France, assignors to L'Oreal, Paris, France

Filed Dec. 8, 1988, Ser. No. 281,273

Claims priority, application Luxembourg, Dec. 9, 1987, 87068

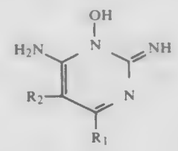
Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—231.5 **21 Claims**

1. A combination of components, which is useful for the treatment of the hair and scalp and is effective for inducing and stimulating hair growth and for decreasing hair loss, comprising:

(a) a first component, (A), that contains an effective concentration of at least one calcium antagonist in a physiologically acceptable medium; and

(b) a second component, (B), that contains, in a physiologically acceptable medium, an effective concentration of at least one compound of formula (I):



(I)

as well as acid addition salts thereof with physiologically acceptable acids,

wherein:

R_1 is a group having the formula



R_3 and R_4 are either selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkylaryl and cycloalkyl groups that contain 4 to 6 carbon atoms, in which the alkyl portions are lower alkyl, or R_3 and R_4, with the nitrogen to which they are each bound, form a heterocyclic group, which is unsubstituted or is substituted on the carbon atoms with one to three lower alkyl, hydroxy, or alkoxy groups, and which is selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinylm, piperidinyl hyxahydroazepinyl, heptamethylenimino, octamethyleneimino, morpholino and 4-(lower alkyl)piperazinyl;

R_2 is selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkoxyalkyl, cycloalkyl groups that contain 4 to 6 carbon atoms, aryl, alkylaryl, arylalkyl, alkylarylalkyl, alkoxyarylalkyl and haloarylalkyl, in which the alkyl portions are lower alkyl radicals;

said components are intended for use as a composition comprising said components or as separate components that are used either simultaneously, successively or intermittently; and

each of said concentrations is effective for inducing and stimulating the growth of hair and decreasing its loss when said components are used as said combination.

5,059,607

IMIDAZOLYL BENZISOQUINOLINES USEFUL AS 5-HT$_3$ RECEPTOR ANTAGONISTS

Tadao Okegawa, and Masonari Kawamura, both of Mishima, Japan, assignors to Ono-Pharmaceutical Co., Ltd., Osaka, Japan

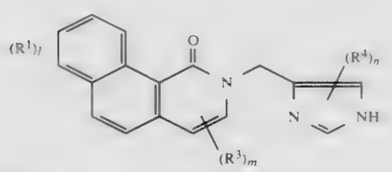
Filed Jun. 11, 1990, Ser. No. 535,969

Claims priority, application Japan, Jun. 13, 1989, 1-148480

Int. Cl.^{5} C07D *221/10;* **A61K** *31/435*

U.S. Cl. 514—290 **3 Claims**

1. A benzisoquinoline derivative of the formula:



(I)

wherein

R^1 is hydrogen, C1–4 alkyl, C1'4 alkoxy, or halogen;

R^3 is hydrogen or C1–4 alkyl;

R^4 is hydrogen or C1–6 alkyl;

l is 1–6;

m is 1 or 2;

n is 1–3;

and non-toxic acid addition salts or hydrates thereof.

3. A pharmaceutical composition which comprises a benzisoquinoline derivative of the formula (I), and non-toxic acid addition salts or hydrates thereof, as defined in claim 1, in association with a pharmaceutically acceptable carrier or coating.

5,059,608

BICYCLIC AMINE COMPOUND AND A PROCESS FOR THE PREPARATION THEREOF

Hisashi Takasugi; Atsushi Kuno, both of Osaka, and Mitsuru Ohkubo, Hyogo, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

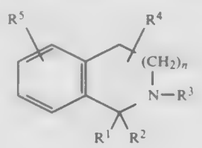
Filed Mar. 23, 1989, Ser. No. 327,813

Claims priority, application United Kingdom, Apr. 5, 1988, 8807922.3

Int. Cl.^{5} A61K *31/47;* **C07D** *401/04*

U.S. Cl. 514—307 **14 Claims**

1. A bicyclic amine compound of the formula:



wherein

R^1 is lower alkyl,

R^2 is aryl which may have one or more suitable substituent(s), cyclo(lower)alkyl or heterocyclic group,

R^3 is hydrogen, lower alkyl which may have one or more suitable substituent(s), lower alkenyl, or acyl which may have one or more suitable substituent(s),

R^4 is hydrogen, lower alkyl, or hydroxy(lower)alkyl,

R^5 is hydrogen, lower alkyl, halogen, or protected amino, and

n is an integer of 1 or 2, with the proviso that when R^3 is lower alkyl which may have one or more suitable substituent(s), R^2 is cyclo(lower)alkyl or heterocyclic group, or a pharmaceutically acceptable salt thereof.

14. A method for the therapeutic treatmetn of convulsion and delayed neuronal death which comprises administering an effective amount of a compound of claim 1 to a human being or animal.

5,059,609

SUBSTITUTED TETRALINS, CHROMANS AND RELATED COMPOUNDS IN THE TREATMENT OF ASTHMA, ARTHRITIS AND RELATED DISEASES

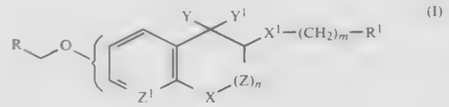
James F. Eggler, Stonington; Anthony Marfat, Mystic, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 4, 1989, Ser. No. 507,211

Int. Cl.^{5} C07D *401/12, 405/12;* **A61K** *31/47, 31/505*

U.S. Cl. 514—314 **35 Claims**

1. A racemic or optically active compound having the structural formual



(I)

wherein

n is 0 or 1;

m is 0 or an integer from 1 to 3;

X is CH_2, O, S, SO, SO_2, NH or N(C_1–C_4)alkyl;

X^1 is CH_2, O, S, SO or SO_2;

Y and Y^1 are taken together and form a carbonyl group, or Y and Y^1 are taken separately, Y is hydrogen and Y^1 is hydroxy or an acyloxy group which is hydrolyzed to form a hydroxy group under physiological conditions;

Z is CH_2, $CHCH_3$, CH_2CH_2 or $CH_2CH_2CH_2$;

Z^1 is CH or N;

R is 2-, 3-, 4 or 8-quinolyl, or one of said groups mono- or

disubstituted on carbon with the same or different substituents which are bromo, chloro, fluoro, (C_1–C_4)alkyl, trifluoromethyl, hydroxy, hydroxymethyl or (C_1–C_4)alkoxy, or on adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—; and

R^1 is attached by means of aromatic or heteroaromatic carbon and is phenyl, naphthyl, pyridyl, pyridazinyl, pyrymidinyl, pyrrolyl, N-[(C_1–C_4) alkyl]pyrrolyl, pyrazolyl, 1-[(C_1–C_4)alkyl]pyrazolyl, imidazolyl, 1-[(C_1–C_4)alkyl]imidazolyl, furyl, oxazolyl, isoxazolyl, thienyl, thiazolyl, isothiazolyl; or, only when either X^1 is CH_2 or m is at least 2, R^1 is attached by means of hetrocyclic nitrogen and is 1-pyrrolyl, 1-pyrazolyl, or 1-imidazolyl; or R^1 is one of said groups which is mono- or disubstituted on carbon with the same or different groups which are bromo, chloro, fluoro, hydroxy, hydroxymethyl, CF_3, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, [(C_1–C_4)alkoxy]carbonyl, or substituted on adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—; or substituted on tertiary nitrogen to form an N-oxide;

a pharmaceutically acceptable acid addition salt thereof; or

a pharmaceutically acceptable cationic salt when the compound contains a carboxy group.

30. A method of inhibiting 5-lipoxygenase and/or blocking leukotriene D4 receptors in a mammal in need of such inhibition and/or blocking which comprises administering to said mammal a 5-lipoxygenase inhibiting and/or leukotriene D4 receptor blocking amount of a compound of claim 1.

5,059,610

QUINOLINE DERIVATIVES AND THEIR USE AS ANTAGONISTS OF LEUKOTRIENE D_4

Fu-Chi Huang, Gwynedd; Robert A. Galemmo, Jr., Ambler, and Henry F. Campbell, North Wales, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Fort Washington, Pa.

PCT No. PCT/US88/C3897, § 371 Date Apr. 20, 1990, § 102(e) Date Apr. 20, 1990, PCT Pub. No. WO89/04305, PCT Pub. Date May 18, 1989

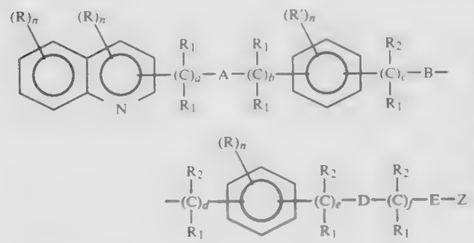
PCT Filed Nov. 1, 1988, Ser. No. 477,896

The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.

Int. Cl.^{5} C07D *401/10, 215/12;* **A61K** *31/41, 31/47*

U.S. Cl. 514—314 **43 Claims**

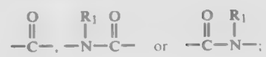
1. A compound of the formula



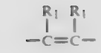
where:

A is O or S;

B is O, S, SO, SO2NR_1,

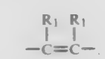


D is O, S, NR,



or a chemical bond;

E is a chemical bond or



a is 0–2;

b is 0–1;

c is 0–4;

d is 0–5;

e is 0–4;

f is 0–5;

n is 0–2;

R is independentiy hydrogen, alkyl, hydroxy, alkoxy, carboxy, carbalkoxy, halo, nitro, haloalkyl, cyano or acyl;

R′ is independently hydrogen, alkyl, hydroxy, alkoxy, halo or haloalkyl;

R_1 is independently hydrogen, alkyl or aralkyl;

R_2 is —(CH2)$_x$—X, where x is 0–3;

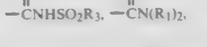
X is hydrogen, alkyl, alkenyl, cycloalkyl, aryl aralkyl, hydroxy, alkoxy, aralkoxy, amino, mono-and di-alkylamino, aralkylamino, acylamino, carbamyl, carboxy, carbalkoxy, tetrazolyl, or acylsulfonamido;

vicinal R_2 groups together may be $(CH_2)_y$— where y is 1–4, thus forming a 3–6 membered ring;

geminal R_1 and R_2 groups may together form a spiro substituent, —$(CH_2)_z$—, were z is 2 to 5;

geminal R_1 or R_1 and R_2 groups may together form an alkylidenyl substituent, =CHR_1;

Z is —$COOR_1$, CN,



—OR_1, tetrazolyl or substituted tetrazolyl where the substituent may be alkyl, carboxyalkyl or carbalkoxyalkyl; and

R_3 is hydrogen, alkyl, haloalkyl, phenyl or benzyl; or a pharmaceutically acceptable salt thereof.

42. A method for the treatment of hypersensitive ailments in humans and mammals comprising administering thereto an effective amount of a compound of the formula according to claim 1.

5,059,611

ANTI-INFLAMMATORY 5-HYDROXY-2-FURANONES

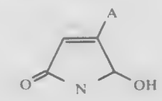
Gary C. M. Lee, Laguna Hills, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 273,300, Nov. 18, 1988, abandoned. This application Oct. 25, 1989, Ser. No. 427,268

Int. Cl.^{5} A61K *31/44, 31/34;* **C07D** *307/28*

U.S. Cl. 514—336 **11 Claims**

1. A compound of the formula:

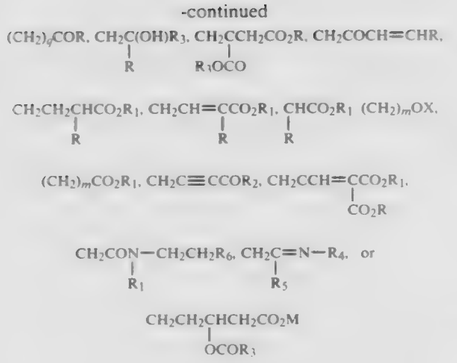


in which

A is

CH_2—CO_2M, CH_2CH_2OCOR, $(CH_2)_nCH$=CHCOR,

-continued



n is 1 or 2;
q is 1–4;
m is 8–12;
R is C_7–C_{14} alkyl, C_7–C_{14} alkoxide, $NR_3(CH_2)_pZ$ or C≡CM;
p is 2–8;
Z is H, $N(R_3)_2$ or CO_2H;
R_1 is hydrogen or C_1–C_4 alkyl;
R_2 is C_7–C_{14} alkyl or phenyl;
M is C_7–C_{14} alkyl; phenyl(C_1–C_4 alkyl) optionally substituted on the phenyl ring by 1–3 halo substituents; pyridyl(C_1–C_4 alkyl) or naphthyl(C_1–C_6 alkyl);
R_4 is O—(C_8–C_{14} alkyl) or NH(C_8–C_{14} alkyl); and R_5 is hydrogen or R_4 is OH and R_5 is o-hydroxyphenyl;
X is hydrogen, acetyl, $PO(OH)_2$ or $CO(CH_2)_3N(R_{32})$.HCl;
R_3 is C_1–C_4 alkyl and
R_6 is phenyl or C_4–C_{12} alkyl.

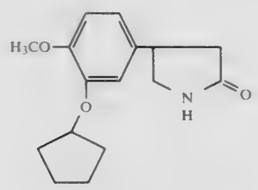
5,059,612

ANTI-DEMENTIA DRUG

Taiichiro Imanishi; Yasuyuki Ichimaru; Aiko Sawa; Fukio Konno, all of Yokohama, Japan; Helmut Wachtel, Berlin, Fed. Rep. of Germany; Showa Ueki, Fukuoka, Japan; Michihiro Fujiwara, Fukuoka, Japan, and Tsuneyuki Yamamoto, Fukuoka, Japan, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 7, 1990, Ser. No. 578,655
Claims priority, application Japan, Dec. 11, 1989, 1-318818
Int. Cl.[5] A61K *31/41*
U.S. Cl. 514—359 **8 Claims**

1. A method for the treatment of dementia, comprising administering to a host in need of such treatment an effective amount of a compound of the formula



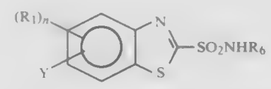
5,059,613

TOPICALLY ACTIVE OCULAR BENZOTHIAZOLE SULFONAMIDE CARBONIC ANHYDRASE INHIBITORS

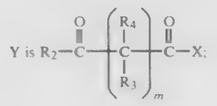
William M. Pierce, Jr., Louisville, Ky., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Mar. 19, 1990, Ser. No. 495,551
Int. Cl.[5] C07D *277/80;* **A61K** *31/125*
U.S. Cl. 514—367 **32 Claims**

1. A compound of the formula



and pharmaceutically acceptable salts thereof wherein
R_6 is hydrogen or lower alkyl;
each R_1 is hydrogen, lower alkyl, halogen, nitro, trihaloalkyl, lower alkoxy, formyl, or lower alkanoyl, lower alkylamino or diloweralkylamino;



X is 0, NR_5 or S;
R_2 is OR_7 or NR_7R_8;
each R_3 and R_4 are independently hydroqen or lower alkyl;
R5, R7 and R8 are independently hydrogen or lower alkyl;
n is 0–3 and
m is 0–6.

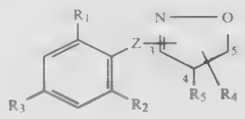
5,059,614

ISOXAZOLE AND ISOXAZOLINE COMPOUNDS WITH ANTICONVULSANT ACTIVITY PROCESS FOR THEIR PREPARATION AND THERAPEUTIC COMPOSITION CONTAINING THEM

Francis Lepage, Creteil, and Bernard Hublot, Paris, both of France, assignors to Novapharme, Paris, France

Filed Nov. 29, 1989, Ser. No. 443,133
Claims priority, application France, Nov. 30, 1988, 88 15718
Int. Cl.[5] A61K *31/42;* **C07D** *260/04, 261/10, 261/20*
U.S. Cl. 514—378 **17 Claims**

1. A heterocyclic compound of the formula



I

in which the dotted line represents the possibility of a double-bond,
R_1 and R_2 is each selected from C_1–C_4 alkyl, phenyl, benzyl, trifluoromethyl and halogen,
R_3 is selected from hydrogen, hydroxy, C_1–C_4 alkyl and alkoxy,
R_4, at position 3 or position 5, is selected from hydrogen, trifluoromethyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, and C_1–C_4 hydroxyalkyl,
R_5 is selected from hydrogen and C_1–C_4 alkyl, or R_4 and R_5 together form tetramethylene,
Z, at position 3 or 5 on the heterocycle, is selected from —N(R_6)—CO—, —CH(R_6)—NH—CO, and —N-H—CO—CH(R_6)—,
in which R_6 is selected from hydrogen or C_1–C_4 alkyl;

provided that, when Z is at position 5, R_4 and R_5 do not simultaneously represent hydrogen.

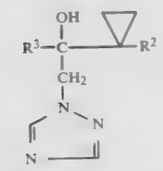
5,059,615

ANTIMYCOTICALLY ACTIVE CYCLOPROPYL-SUBSTITUTED AZOLYLMETHYLCARBINOLS

Burkhard Fugmann, Wuelfrath; Manfred Plempel, Haan; Klaus Stroech, Solingen, and Karl H. Büchel, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 1, 1989, Ser. No. 430,204
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1988, 3839170
Int. Cl.[5] A61K *31/41;* **C07D** *249/08*
U.S. Cl. 514—383 **9 Claims**

1. An azolylmethylcarbinol of the formula



in which
R^2 is cyano or the group



and
R^3 is phenyl or phenyl which is substituted by identical or different substituents selected from the group consisting fluorine, chlorine, methoxy, trifluoromethyl, trifluoromethoxy and phenyl.

6. A pharmaceutical composition useful for combating mycoses comprising an azolymethylcarbinol according to claim 1 and a pharmaceutically acceptable excipient therefor.

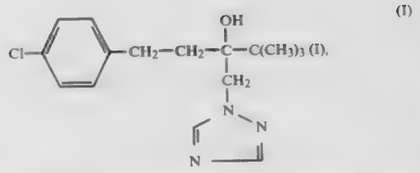
5,059,616

FUNGICIDAL COMBINATIONS OF ACTIVE COMPOUNDS

Stefan Dutzmann, Duesseldorf; Wilhelm Brandes, Leichlingen; Dieter Berg, Wuppertal; Graham Holmwood, Wuppertal, and Detlef Wollweber, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

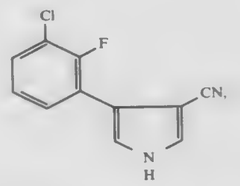
Filed Oct. 3, 1990, Ser. No. 592,158
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1989, 3934714
Int. Cl.[5] A01N *43/36, 43/64*
U.S. Cl. 514—383 **5 Claims**

1. A fungicidal composition comprising synergistic fungicidally effective amounts of
A) 1-(4-chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-yl-methyl)-pentan-3-ol of the formula



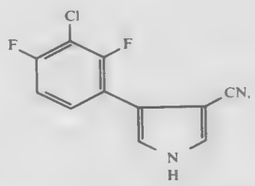
(I)

B) about 0.2 to 15 times the weight of (A) of at least one member selected from the group consisting of 3-cyano-4-(2-fluoro-3-chloro-phenyl)-pyrrole of the formula



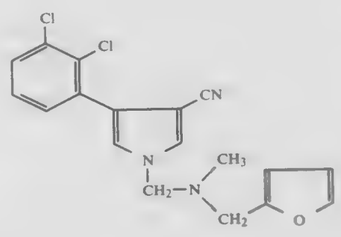
(II)

3-cyano-4-(2,4-difluoro-3-chlorophenyl)-pyrrole of the formula



(III)

and 3-cyano-4-(2,3-dichloro-phenyl)-1-(N-methyl-N-furfuryl-aminomethyl)-pyrrole of the formula



(IV)

5,059,617

SYNERGISTIC FUNGICIDAL COMPOSITIONS

Wilhelm Brandes, Leichlinggen; Helmut Kaspers, Leverkusen; Paul Reinecke, Leverkusen; Hans Scheinpflug, Leverkusen, and Wolfgang Krämer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 936,416, Dec. 1, 1986, Pat. No. 4,902,704, which is a division of Ser. No. 750,719, Jun. 28, 1985, abandoned, which is a continuation of Ser. No. 526,933, Aug. 26, 1983, abandoned. This application Oct. 18, 1989, Ser. No. 423,162

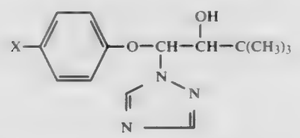
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234624

Int. Cl.[5] **A61K** *31/41, 31/12*

U.S. Cl. 514—383 **2 Claims**

1. A fungicidal composition comprising a fungicidally effective amount of

(I) a 1,2,4-triazolyl-alkanol of the formula



in which X is chlorine or phenyl, and

(II) n-dodecyl-guanidine acetate of the formula



wherein the weight ratio of I:II is between about 1:5.

5,059,618

BIOACTIVE DISCODERMIDES AND METHODS OF USE

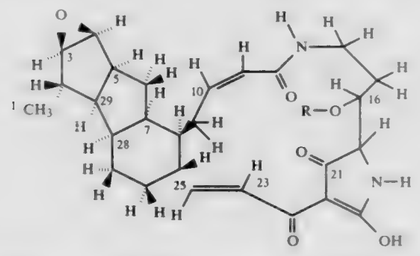
Sarath P. Gunasekera; Malika Gunasekera, and Peter J. McCarthy, all of Vero Beach, Fla., assignors to Harbor Branch Oceanographic Institution, Inc., Fort Pierce, Fla.

Filed Jul. 6, 1990, Ser. No. 548,783

Int. Cl.[5] **C07D** *309/14;* **A61K** *31/365*

U.S. Cl. 514—410 **13 Claims**

1. A compound having the following structure:



wherein R is H, lower alkyl, or $COCH_3$; or a derivative of said compound.

5,059,619

STABLE FREEZE-DRIED POLYHEMATOPORPHYRIN ETHER/ESTER

Bruce E. Haeger, Highland Mills; James R. Lawter, Goshen; Vijay H. Naringrekar, Suffern, and Michael C. Cucolo, Yonker, all of N.Y., assignors to Quadra Logic Technologies, Inc., Vancouver, Canada

Filed Jun. 14, 1989, Ser. No. 366,374

Int. Cl.[5] **A61K** *31/40*

U.S. Cl. 514—410 **6 Claims**

1. A pharmaceutical composition comprising a freeze-dried preparation of polyhematoporphyrin ether/esters wherein said freeze-dried preparation does not contain sodium chloride.

5,059,620

ARYL SUBSTITUTED AMINOMETHYL BENZENE DERIVATIVES

David M. Stout; William L. Matier, both of Libertyville, and Lawrence A. Black, Vernon Hills, all of Ill., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

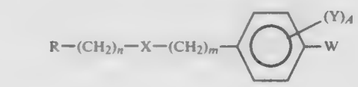
Division of Ser. No. 813,734, Dec. 27, 1985, Pat. No. 4,748,184. This application Apr. 7, 1988, Ser. No. 178,964

The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.

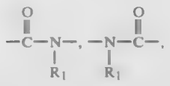
Int. Cl.[5] **C07D** *211/00, 211/30, 277/04, 263/04, 207/00, 233/66, 487/00;* **A61K** *31/445, 31/40, 31/395*

U.S. Cl. 514—422 **19 Claims**

1. A compound of the formula

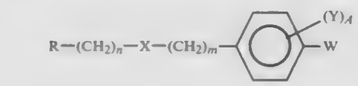


wherein X is

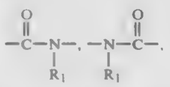


wherein R_1 is phenyl, benzyl, cinnamoyl, thiophene, furan, pyrrole, imidazole, pyrazole, oxazole or thiazole; W is hydrogen or hydroxy; $(Y)_A$ is positioned ortho to W and is an aminoloweralkyl having the formula $—CH_2NR_2R_3$ where R_2 and R_3 are the same or different and may be lower alkyl or R_2 and R_3 may together with N form a pyrrolidine, piperidine or azepine ring, and A is 2; n and m are independently from 0 to 5; and R is straight or branched C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, straight or branched C_2–C_4 alkenyl, or straight or branched C_2–C_4 alkynyl, or a pharmaceutically acceptable salt thereof.

14. A method of treating cardiac arrhythmias in a patient by administration of an antiarrhythmic effective amount to such patient of a compound of the formula



wherein X is



wherein R_1 is phenyl, or benzyl cinnamoyl, thiophene, furan, pyrrole, imidazole, pyrazole, oxazole or thiazole; W is hydrogen or hydroxy; $(Y)_A$ is positioned ortho to W and is an aminoloweralkyl having the formula $—CH_2NR_2R_3$ where R_2 and R_3 are the same or different and may be lower alkyl or R_2 and R_3 may together with N form a pyrrolidine, piperidine or azepine ring, and A is 2; n and m are independently from 0 to 5; and R is straight or branched C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, straight or branched C_2–C_4 alkynyl, or a pharmaceutically acceptable salt thereof.

5,059,621

AROMATIC HETEROCYCLIC DERIVATIVES AND THEIR THEREAPEUTIC AND COSMETIC USE

Braham Shroot, Antibes; Jacques Eustache, Grasse, and Jean-Michel Bernardon, Le Rouret, all of France, assignors to Centre International de Recherches Dermatologiques (C.I.R.D.), Valbonne, France

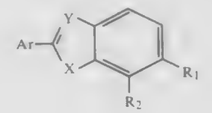
Division of Ser. No. 172,494, Mar. 24, 1988, Pat. No. 4,920,140, which is a division of Ser. No. 839,269, Mar. 13, 1986, Pat. No. 4,740,519, which is a continuation-in-part of Ser. No. 777,728, Sep. 19, 1985, abandoned. This application Nov. 2, 1989, Ser. No. 430,286

Int. Cl.[5] **A61K** *31/38;* **C07D** *335/06*

U.S. Cl. 514—443 **14 Claims**

1. An aromatic heterocyclic compound having the formula

(I)



wherein



R_1 represents (i) $—CH_3$, (ii) $—CH_2OH$ or (iii)

R_3 represents hydrogen, $—OR_4$ wherein R_4 represents hydrogen, alkyl having 1–20 carbon atoms, mono or polyhydroxy alkyl, or R_3 represents

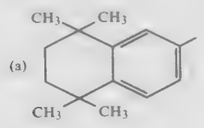


wherein r' and r'' represent hydrogen or lower alkyl,

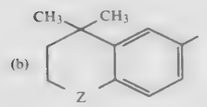
R_2 represents hydrogen or $—CH_3$,

Ar represents an aromatic radical having one of the following formulas

(A)

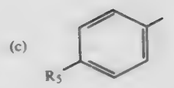


(B)



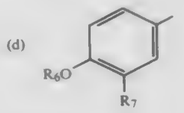
wherein Z is O or S,

(C)



wherein R_5 represents lower alkyl, and

(D)



wherein R_6 represents hydrogen or alkyl having 1–10 carbon atoms and R_7 represents branched alkyl having 4–12 carbon atoms or cycloalkyl,

Y represents CH, and

X represents oxygen or sulfur,

with the provisos that: (i) when Y represents CH and X represents oxygen or sulfur, Ar is other than formula (C) wherein R_5 is $—CH_3$, and (ii) when Y represents CH and X represents sulfur Ar is other than formula (A).

5,059,622

METHOD FOR REDUCING BLOOD PRESSURE LEVELS IN HYPERTENSIVE PERSONS

Barry D. Sears, Swampscott, Mass., assignor to BioSyn, Inc., Marblehead, Mass.

Division of Ser. No. 400,288, Aug. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 251,139, Sep. 28, 1988, abandoned. This application Jun. 18, 1990, Ser. No. 539,384

Int. Cl.[5] **A61K** *31/22, 31/20, 31/23*

U.S. Cl. 514—549 **8 Claims**

1. A method for the reduction of blood pressure levels in a hypertensive mammal, which method comprises administering to the hypertensive mammal a therapeutic, effective amount of a composition which consists essentially of in combination as the active ingredients:

a) eicosapentaenoic acid (EPA) or a salt or ester thereof; and

b) gamma linolenic acid (GLA) or a salt or ester thereof, the EPA and the GLA employed in a weight ratio of EPA to GLA of from about 2:1 to 8:1.

5,059,623

SUBSTITUTED CYCLOALKYL- AND HETEROCYCLYL-CARBOXANILIDES

Bernd-Wieland Krüger; Klaus Sasse, both of Bergisch-Gladbach; Hermann Hagemann; Albrecht Marhold, both of Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 5, 1989, Ser. No. 333,481

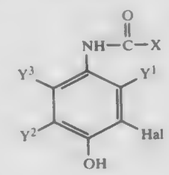
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814505

Int. Cl.[5] **A01N** *37/18*

U.S. Cl. 514—613 **8 Claims**

1. A cycloalkyl- or carbox-anilide of the formula

(I)



wherein

X stands for cyclopropyl which is substituted in the alpha position, cyclobutyl, cyclopentyl, cyclohexyl or cycloheptyl, each of which is unsubstituted or monosubstituted to tetrasubstituted by identical or different, straight-chain or branched alkyl substituents having 1–4 carbon atoms,

Hal stands for fluorine, chlorine or bromine,

Y^1, Y^2 and Y^3 independently of one another stand for hydrogen, fluorine, chlorine, bromine, straight-chain or branched alkyl having 1–4 carbon atoms, for straight-chain or branched alkoxy or alkylthio, each having 1–4 carbon atoms per alkyl moiety, or for halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1–4 carbon atoms in the straight-chain or branched alkyl moiety and having 1–5 identical or different halogen atoms.

5,059,624

GUANIDINE DERIVATIVES HAVING HYPOTENSIVE ACTIVITY, COMPOSITION CONTAINING THEM AND PROCESS FOR OBTAINING THEM

Giuliano D. Monache; Franco D. Monache; Marco Carmignani, all of Rome, Italy; Stella C. Bonnevaux, Montevideo, Uruguay; Romulo Espinal, Valencia, Venezuela; Carlo De Luca, Bracciano, and Bruno Botta, Manziana, both of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

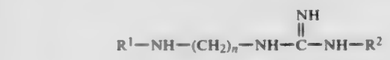
Filed Feb. 24, 1989, Ser. No. 315,107

Claims priority, application Italy, Feb. 24, 1988, 47665 A/88

Int. Cl.[5] A01N *37/18*

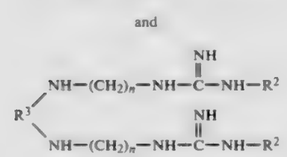
U.S. Cl. 514—616 **8 Claims**

1. A guanidine derivative selected from the group consisting of members having the following formulas:



(1)

and



(2)

wherein:

R^1 is hydrogen or 3, 4 dimethyoxy cinnamoyl;

R^2 is hydrogen, an alkyl having 1–5 carbon atoms, or an alkenyl having 1–5 carbon atoms with the proviso that R^1 and R^2 cannot both be hydrogen;

R_3 is truxinoyl or truxilloyl, each substituted with four methoxy groups in the 3- and 4- positions on the two rings; and,

n is an integer from 1 to 8.

5,059,625

POLYGLYCIDOL AMINE OXIDE SURFACTANTS HAVING ANTIMICROBIAL ACTIVITY

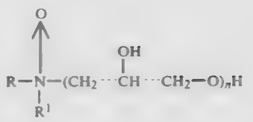
Michael Scardera, Hamden, and Frank R. Grosser, Bethany, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 1, 1990, Ser. No. 591,997

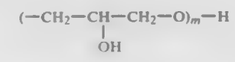
Int. Cl.[5] A61K *31/13;* **C07C** *283/04*

U.S. Cl. 514—644 **8 Claims**

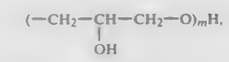
1. An antimicrobial composition for use in controlling bacteria and fungi in an aqueous medium consisting essentially of a suitable carrier and an antimicrobial effective amount of a compound represented by the formula:



wherein R is an alkyl group having from about 8 to about 18 carbon atoms, n has a value of from 1 to 6, R_1 is selected from the group consisting of an alkyl group having from 1 to about 12 carbon atoms, or



with the proviso that when R_1 is



the sum of $n+m=3$ to 12.

5,059,626

LIQUID ORAL PHARMACEUTICAL COMPOSITIONS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Moo W. Park, Darnestown, Md., and Henry C. Caldwell, Ambler, Pa., assignors to Applied Analytical Industries, Inc., Wilmington, N.C.

Division of Ser. No. 223,420, Jul. 25, 1988, Pat. No. 4,918,103, and Ser. No. 488,955, Mar. 6, 1990, Pat. No. 5,011,852. This application Jan. 30, 1991, Ser. No. 648,513

Int. Cl.[5] A01N *33/02, 37/00, 37/34, 25/00*

U.S. Cl. 514—658 **7 Claims**

1. A single phase, non-aqueous, liquid dosage unit pharmaceutical composition for oral administration comprising a therapeutic but nontoxic dose of a nonsteroidal anti-inflammatory agent which is an anthranilic acid derivative and an edible oil comprising an ester of glycerol or propylene glycol with 2 or 3 C_6–C_{12} fatty acids in the absence of ethanol.

5,059,627

NERVE GROWTH FACTOR SECRETION INDUCING COMPOSITION

Giichi Goto, Toyono, and Kyozo Hayashi, Gifu, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

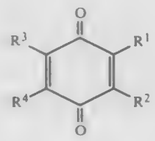
Filed Mar. 2, 1990, Ser. No. 487,249

Claims priority, application Japan, Aug. 24, 1989, 218255

Int. Cl.[5] A01N *35/00, 31/14*

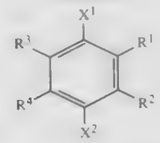
U.S. Cl. 514—688 **4 Claims**

1. A method for inducing nerve growth factor secretion for the prophylaxis or treatment of degenerative nervous system disorders which comprises administering to a mammal suffering from said disorders an effective amount of a compound of the formula:



or

-continued



wherein R^1 is a lower alkyl group; R^2 is a hydrogen atom or an alkyl or alkenyl group which may be substituted; R^3 and R^4 each independently means a lower alkyl or lower alkoxy group or, taken together, mean a butadienylene group; and X^1 and X^2 each means a free hydroxy group, C_{1-8} alkoxy, C_{7-8} aralkoxy, acyclic or cyclic C_{8-10} alkanoyloxy or phosphoric acid-derived acyloxy.

5,059,628

MEDICAL COMPOSITION FOR PERCUTANEOUS ADMINISTRATION

Yoko Tsuda; Susumu Satoh, and Tetsuo Omata, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

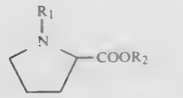
Continuation of Ser. No. 101,604, Sep. 28, 1987, abandoned. This application Mar. 14, 1990, Ser. No. 494,843

Int. Cl.[5] A01N *25/00*

U.S. Cl. 514—784 **4 Claims**

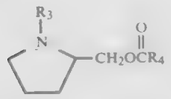
1. A method for enhancing percutaneous absorption of a pharmaceutically active compound comprising externally applying a medical composition to the skin of one in need thereof wherein said medical composition comprises:

(a) a proline ester represented by formula (I):



(I)

wherein R_1 represents a hydrogen atom or an aliphatic hydrocarbon residue, and R_2 represents an aliphatic hydrocarbon residue, with the total number of carbon atoms in R_1 and R_2 being 20 or less, or a prolinol ester represented by the formula (II):



(II)

wherein R_3 represents a hydrogen atom or an aliphatic hydrocarbon residue, and R_4 represents an aliphatic hydrocarbon residue, with the total number of carbon atoms in R_3 and R_4 being 18 or less; and

(b) a pharmaceutically active compound.

5,059,629

BIOCIDAL FOAMS

Robert T. Patton; Walter L. Vaughn, both of Lake Jackson, and Thomas J. McKeand, Jr., Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 481,913, Feb. 16, 1990, Pat. No. 5,004,760. This application Mar. 25, 1991, Ser. No. 675,369

The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.

Int. Cl.[5] C08J *9/14;* **A61K** *31/74*

U.S. Cl. 521—84.1 **3 Claims**

1. A foam structure having biocidal characteristics comprising a polymeric foam substrate having incorporated therein particles and/or fibers, said fibers and particles comprising a blend of a biocidal effective amount of a copolymer of an alpha olefin and an alpha, beta-ethylenically unsaturated carboxylic acid having at least one cationic biocidal agent ionically bonded thereto with a water insoluble thermoplastic material.

5,059,630

METHODS FOR MANUFACTURE OF POROUS RESIN MOLDINGS, ULTRAFINE FIBERS AND ULTRAFINE FIBER NONWOVEN FABRICS

Takeshi Fujita; Chuzo Isoda, and Sejin Pu, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jan. 2, 1991, Ser. No. 636,813

Claims priority, application Japan, Jan. 9, 1990, 2-2904; Jan. 9, 1990, 2-2905; Jan. 9, 1990, 2-2906; Apr. 13, 1990, 2-98088

Int. Cl.[5] C08J *9/26*

U.S. Cl. 521—61 **8 Claims**

1. A method for manufacturing a porous resin molding, which is characterized by melt-blending a thermoplastic resin and a high molecular compound having a weight average molecular weight of not less than 10,000 which is obtainable by reacting a polyalkylene oxide compound, which is available on addition polymerization of an organic compound containing two active hydrogen groups and an alkylene oxide containing ethylene oxide, with a polycarboxylic acid or an anhydride or a lower alkyl ester thereof, or a diisocyanate, molding the resulting mixture, and removing said high molecular compound from the molding by dissolution with water or an aqueous medium.

5,059,631

EXTRUDED ETHYLENIC POLYMER FOAM CONTAINING BOTH OPEN AND CLOSED CELLS

Edward E. Hovis, Newark; Eric D. Johnson, Wilmington, and Michael J. Schroeder, Newark, all of Del., assignors to Applied Extrusion Technologies, Inc., Middletown, Del.

Division of Ser. No. 365,838, Jun. 14, 1989, Pat. No. 4,931,484, which is a continuation-in-part of Ser. No. 257,510, Oct. 13, 1988, abandoned. This application May 22, 1990, Ser. No. 526,629

The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—79 **18 Claims**

1. A method of producing a polymeric foam comprising the steps of feeding an ethylenic polymer material selected from the group consisting of polyethylene, soft ethylenic copolymers and blends thereof to an extruder, and extruding the material in a foam form having a cross-section of from about 0.20 in^2 to about 40 in^2, a density of from about 1.5 $lb./ft^3$ to about 10 $lb./ft^3$, a compression resistance of 10 psi or less at 50% compression, where the foam contains from about 30% to about 85% open cells and the remainder closed cells, an integral skin covering the foam, and the foam is non-outgassing as determined by ASTM C24.32.13 (Task Group 13) Proposed Test Method for Determining Outgassing.

5,059,632

NOVEL COPOLYMERS AND THEIR USE AS AUXILIARIES AND/OR ADDITIVES IN FORMULATIONS FOR THE PREPARATION OF POLYISOCYANATE ADDITION POLYMERIZATION PRODUCTS

Peter Horn, Heidelberg; Gerd Rehmer, Beindersheim; Heinz-Dieter Lutter, Neckargemuend; Gerhard Ramlow, Weinheim; Werner Hinz, and Hans U. Schmidt, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 1, 1989, Ser. No. 430,607

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 3838030

Int. Cl.[5] C08G *18/62*

U.S. Cl. 521—137 **9 Claims**

1. Copolymers having a K-value of 5 to 80, measured as a 0.5 weight percent solution in isopropanol at 25° C., prepared in the presence of polymerization initiators by the radical polymerization of:

A) 20 to 80 weight percent, based on the total weight of monomers (A) and (B), of at least one olefinic unsaturated polyoxyalkylene alcohol adduct or polyester alcohol adduct;

B) 80 to 20 weight percent, based on the total weight of monomers (A) and (B), of at least one vinyl monomer selected from the group consisting of N-vinyl-formamide, N-vinyl-2-pyrrolidone, N-vinyl-2-piperidone, N-vinyl-2-caprolactam, N-vinyl-imidazole, N-vinyl-2-ethylene urea ano N-vinyl-2-propylene urea;

C) 0.05 to 40 weight percent, based on 100 parts by weight of monomers (A) and (B), of glycidyl acrylate, glycidyl methacrylate or mixtures thereof;

D) 0 to 10 parts by weight based on 100 parts per weight of monomers (A) and (B) of at least one a,b-monoolefinic unsaturated acid and;

E) 0 to 30 parts by weight based on 100 parts per weight of monomers (A) and (B) of at least one olefinic unsaturated carboxylic acid amide, and/or olefinic unsaturated carboxylic acid ester and/or styrene.

5,059,633

PREPARATION OF FLEXIBLE POLYURETHANE FOAMS HAVING LOW COMPRESSIVE STRENGTH AND BLOCK POLYOXYPROPYLENEPOLYOXYETHYLENEPOLYOL MIXTURES WHICH CAN BE USED FOR THIS PURPOSE

Heinz-Dieter Lutter, Neckargemuend; Werner Hinz, Frankenthal; Walter Decker, Ludwigshafen; Reinhard Leppkes, Bobenheim-Roxheim; Erhard Reich, Damme; Reinhard Peters, Munich; Volker Haase, Adelzhausen, and Michael Lugmayr, Groebenzell, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 28, 1990, Ser. No. 619,380

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942329

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—160 **10 Claims**

1. A process for the preparation of a flexible polyurethane foam having low compressive strength by reacting

a) bifunctional or polyfunctional polyoxyalkylenepolyols and

b) if required, low molecular weight chain extenders with

c) organic and/or modified organic polyisocyanates,

in the presence of

d) catalysts,

e) blowing agents

and, if required,

f) assistants and/or additives,

wherein the polyoxyalkylenepolyols (a) used are a block polyoxypropylenepolyoxyethylenepolyol mixture which has a hydroxyl number of from 14 to 65, contains from 2 to 9% by weight, based on the weight of the polyoxypropylene units, of ethylene oxide units bonded in the terminal position, and was prepared by anionic polymerization, at elevated temperatures, of 1,2-propylene oxide with an initiator mixture having an average functionality of from 2.3 to 2.8 and consisting of water and glycerol and/or trimethylolpropane, and polymerization of ethylene oxide with the resulting polyoxypropylene adduct.

5,059,634

HIGH FLEXUAL MODULUS POLYURETHANE POLYMERS AND RIM PROCESSES EMPLOYING SAID POLYMERS

Stuart B. Smith, Conyers, Ga., assignor to Resin Design International Corp., Norcross, Ga.

Filed Feb. 9, 1990, Ser. No. 477,749

Int. Cl.[5] C08K *7/00*

U.S. Cl. 521—167 **26 Claims**

1. In a polymer molding composition, which composition comprises a polyisocyanate and an aromatic diamine chain extender for reaction with the polyisocyanate and optionally a catalytic amount of a catalyst to effect a reaction between the polyisocyanate and the aromatic diamine to provide a thermoset polymeric reaction product having "cold break" properties on demolding, the improvement which comprises a "cold break"-reducing amount of an additive compound, the additive compound selected from the group consisting of triethanol amine and a triethanol amine-polyalkylene oxide reaction product to provide a thermoset polymer having a flexual modulus of over about 80,000 psi at 75° F. and the thermoset polymer substantially free of "cold break" properties after reaction.

5,059,635

METHODS FOR REDUCING THE REACTIVITY OF ARTICLES DESTINED FOR DISPOSAL

Joseph M. Mon, Lawrenceville, and James R. Petisce, Norcross, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 15, 1989, Ser. No. 366,557

Int. Cl.[5] C08F *2/46;* **C08G** *85/00;* **C08J** *3/28*

U.S. Cl. 522—3 **11 Claims**



1. A method of preparing a container, at least a portion of which includes a curable composition of matter, for disposal, said method comprising the steps of:

supporting a container which is destined for disposal and at least a portion of interior surfaces of which has a curable composition of matter in engagement therewith; and

exposing the curable composition of matter within the container to suitable reproducible energy having an intensity level which is sufficient to cure completely the composition of matter and thereby reduce the reactivity of the container.

5,059,636

TIRE SEALANT COMPOSITION

Paul A. Grenga, 327 Oak St., Youngstown, N.Y. 14174

Filed Nov. 13, 1990, Ser. No. 611,702

Int. Cl.[5] B29C *73/16;* **C08L** *3/00;* **C08K** *3/16*

U.S. Cl. 523—166 **9 Claims**

1. A composition for coating the inside of or for injection into inflatable tires, the composition consisting essentially of:

(a) finely ground rubber from the tread area of old tires

(b) calcium chloride,

(c) all purpose wheat flour,

(d) water,

(e) sodium nitrite,

(f) vegetable oil, and

(g) a de-foaming agent.

5,059,637

ENDOTHERMIC FIRE PROTECTIVE MATERIAL

Roger L. Langer, Troy Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 581,399, Sep. 11, 1990, abandoned, which is a continuation of Ser. No. 172,218, Mar. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 5,945, Jan. 22, 1987, abandoned. This application May 16, 1991, Ser. No. 701,197

Int. Cl.[5] C09K *21/14*

U.S. Cl. 523—179 **5 Claims**

1. A water-based endothermic fire protective material comprising about 5 to 10 dry weight percent of an epoxy resin containing a curing agent which hardens upon exposure to heat from an external source; about 5–20 dry weight percent of a thermoplastic resin binder; about 60 to 90 dry weight percent hydrated endothermic filler; and about 1 to 5 dry weight percent inorganic fiber.

5,059,638

POLYESTER RESIN FILLED WITH LOW-ADHESIVE GLASS FIBER

Rolf B. Wissmann, Vesenaz, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 8, 1989, Ser. No. 434,863

Claims priority, application European Pat. Off., Dec. 20, 1988, 88312064.4

Int. Cl.[5] C08K *9/04, 7/14*

U.S. Cl. 523—205 **13 Claims**

1. A fiber-filled polyester resin, comprising:

a polyetherester, a poly(etherimide)ester or a blend of both, or a blend of one or both of a polyetherester or a poly(etherimide)ester with a poly(butylene terephthalate) or poly(ethylene terephthalate) other than a blend having a matrix phase of poly(butylene terephthalate), poly(ethylene terephthalate) or both; and

glass or mineral fibers that do not substantially adhere to the resin,

the fiber-filled resin having an elongation at break when injection moulded substantially greater than that of the same resin when filled with reinforcing glass or mineral fiber that adhere to the resin.

5,059,639

METHOD FOR PRODUCING A MATT PAINT

Ken Ohkura, Tokyo; Yukio Shinagawa, Iwata, and Tamiaki Shibata, Shizuoka Prefecture, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1990, Ser. No. 498,318

Int. Cl.[5] C08K *9/00, 9/04;* **C08F** *2/16*

U.S. Cl. 523—205 **10 Claims**

1. A method for producing a matt paint comprising:

(a) homogeneously blending a pigment with a polyfunctional vinyl monomer having at least two α,β-ethylenic unsaturated double bonds in a monomer molecule and which is insoluble in water to obtain a homogeneous blend of said pigment and said polyfunctional vinyl monomer;

(b) dispersing the homogeneous blend in water with a protective colloidant at a controlled particle size between 1 to 100 μm;

(c) heat polymerizing the dispersion to obtain colored and spherical fine particles having said particle size; and

(d) blending the particles in a paint vehicle to obtain a matt paint.

5,059,640

EPOXY CORROSION-RESISTANT COATING

Charles R. Hegedus, Warrington, Pa.; Donald J. Hirst, Mt. Laurel, N.J.; Anthony T. Eng, Philadelphia, Pa., and William J. Green, Clementon, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 442,085, Nov. 28, 1989, which is a continuation-in-part of Ser. No. 331,200, Mar. 28, 1989, Pat. No. 4,885,324, which is a continuation of Ser. No. 211,026, Jun. 16, 1988, abandoned. This application Sep. 28, 1990, Ser. No. 593,416

Int. Cl.[5] C08L *63/00*

U.S. Cl. 523—451 **15 Claims**

1. A coating composition comprising about 100 parts by weight of an epoxy resin from about 0 to 1000 parts by weight of at least one organic solvent, from about 0–140 parts by weight of a TiO_2 pigment, and from about 0.01 to 300 parts by weight of a combination of corrosion-inhibiting pigments consisting essentially of about:

(a) 10–120 parts by weight of a zinc phosphate,

(b) 40–260 parts by weight of zinc molybdate, and

(c) 1–30 parts by weight of at least one zinc salt of a benzoic acid.

5,059,641

EPOXY MODIFIED POLYOLS AS DISPERSANTS FOR HIGH STYRENE, HIGH SOLIDS CONTENT POLYMER POLYOLS

John E. Hayes, Wilmington, Del., and Robert G. Gastinger, West Chester, PA, assignors to ARCO Chemical Technology, Inc., Wilmington, Del.

Filed Jan. 10, 1990, Ser. No. 463,172

Int. Cl.[5] C08K *5/00, 5/06;* **C08F** *8/00;* **C08G** *18/28*

U.S. Cl. 523—456 **40 Claims**

1. Stable, low viscosity polymer polyols made by a process comprisign polymerizing, via a free-radical reaction, an addition polymerizable monomer component with ethylenic unsaturation, in the presence of a polyol mixture comprising a major portion of a base polyol unmodified with an epoxy resin and a minor portion of an epoxy modified polyol as a dispersant, where the dispersant has a ratio of hydroxyl equivalents to epoxy equivalents equal to or less than 6.8, where the polymer polyols have lower viscosity compared with the polymer polyols made where the dispersant has a ratio of hydroxyl equivalents to epoxy eqivalents greater than 6.8, and where the epoxy is an organic material having an average of at least 1.5 reactive 1,2-epoxy groups per molecule.

5,059,642

DEGRADABLE PLASTICS FROM OCTENYL SUCCINATE STARCH

Jay-Lin Jane; Robert J. Gelina; Zivko Nikolov, and Roque L. Evangelista, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 14, 1989, Ser. No. 407,294

Int. Cl.[5] C08L *89/00, 3/00*

U.S. Cl. 524—52 **20 Claims**

1. A degradable, high tensile strength plastic comprising from about 6% by weight to about 50% by weight of an octenyl succinate starch metal ion complexes and the balance comprising a plastic having hydrophobic tendencies selected

from the group consisting of polyethylene, polypropylene, polystyrene and polyvinylchloride.

5,059,643

STABILIZED POLYAMIDES

Hans-Josef Buysch, Krefeld; Hans-Georg Gelhaar; Erich Istel, both of Dormagen, and Franz Zimmermann, Neuss, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

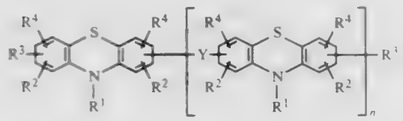
Filed Jun. 12, 1987, Ser. No. 61,430

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1986, 3621038

Int. Cl.[5] C08K *5/46. 5/48*

U.S. Cl. 524—83 **21 Claims**

1. A polyamide containing one or more stabilizers which include at least one phenothiazine having a molecular weight of at least 400 and which corresponds to the formula



in which

R^1 denotes a C_1–C_6-alkyl, C_5–C_6-cycloalkyl, C_3–C_5-alkenyl or C_7–C_{10}-aralkyl or a hydrogen atom,

R_2 and R_4 are identical or different and denote a hydrogen atom, a methyl or ethyl,

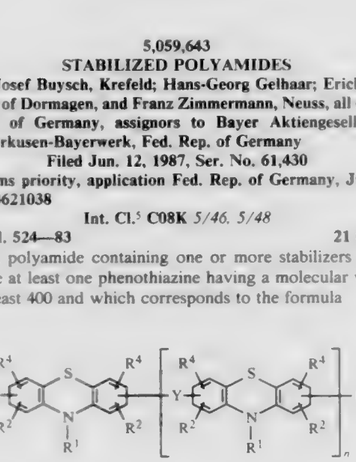
R^3 denotes a hydrogen atom, a C_4–C_{12}-alkyl, C_6–C_9-cycloalkyl, C_5–C_9-alkylcycloalkenyl, C_5–C_9-cycloalkylalkenyl or C_7–C_{12}-aralkyl,

n is an integer from 1 to 29 and

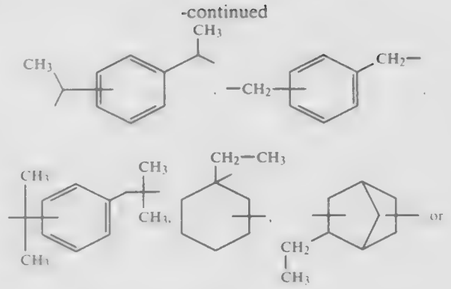
Y denotes

where R^5 has any of the meanings given for R^2 and where R^6 is a C_1–C_7-alkyl, cyclohexyl, cyclohexenyl or aryl, or

Y denotes



-continued



Y denotes —S— or —CH_2—, and

each of the multiply occurring substituents R^2 and R^4 as well as R^1, R^3 and Y when n is >1, independently have any of the meanings specified therefor.

5,059,644

POLYACETAL COMPOSITIONS CONTAINING AT LEAST ONE OXO-PIPERAZINYLTRIAZINE HINDERED AMINE LIGHT STABILIZER

Leonard E. R. Kosinski, Washington, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1990, Ser. No. 495,665

Int. Cl.[5] C08K *5/3492*

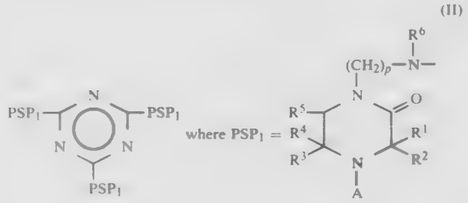
U.S. Cl. 524—100 **13 Claims**

1. A composition consisting essentially of

(a) 95.0 to 99.95 weight percent of a polyacetal polymer and

(b) 0.05 to 5.0 weight percent of a hindered amine light stabilizer having the structure

(II)



wherein A represents C_1–C_3 alkyl; R_1, R_2, R_3, and R_4 each independently represent C_1–C_6 alkyl, or, when together cyclized, R_1 and R_2, and R_3 with R_4, represent C_5–C_7 cycloalkyl; R_5 represents C_1–C_6 alkyl, C_5–C_7 cycloalkyl, C_7–C_{12} aralkyl, hydrogen, and phenyl; R_6 represents C_1–C_{12} alkyl and C_5–C_{12} cycloalkyl; and, p represents an integer in the range from 2 to about 12;

provided that the component (b) hindered amine light stabilizer has a pH of 5–10, as measured on a 1–10 weight percent aqueous suspension thereof, and wherein the above-stated weight percents are based upon the weight of components (a) and (b) only.

5,059,645

THERMOPLASTIC MOLDING MATERIALS BASED ON POLYPHENYLENE ETHERS

Bertram Ostermayer, Roedersheim-Gronau; Erhard Seiler, Ludwigshafen; Daniel Wagner, Bad Duerkheim; Klaus Bronstert, Carlsberg, and Volker Ladenberger, Schwetzingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 184,087, Apr. 20, 1988, abandoned. This application May 2, 1990, Ser. No. 525,201

Claims priority, application Fed. Rep. of Germany, May 2, 1987, 3714710

Int. Cl.[5] C08K *5/524. 71/12*

U.S. Cl. 524—128 **6 Claims**

1. A thermoplastic molding material, containing:

a) from 20 to 80 parts by weight of a polyphenylene ether having a viscosity number of from 0.4 to 0.8 dl/g;

b) from 1 to 20 parts by weight of an unsymmetrical block copolymer of the formula A-B-A^1 consisting of two polyvinylaromatic blocks A and A^1 and a partially hydrogenated rubber block B;

c) from 20 to 60 parts by weight of a high impact polystyrene; and

d) a measurable quantity of trisononylphenyl phosphite; the sum of a) to d) being 100 parts by weight, wherein

the mean molecular weights of A and A^1 differ by a factor of from 2 to 20,

the shorter block, A, has a mean molecular weight of from 2,000 to 4,000, and

the blocks A and A^1 together account for from 35 to 50% by weight of (b).

5,059,646

COMPOSITION WHICH CONTAINS A POLYPHENYLENE ETHER RESIN AND POLYAMIDE

Masataka Morioka, and Hiromi Ishida, both of Moka, Japan, assignors to General Electric Co., Selkirk, N.Y.

Filed Dec. 13, 1989, Ser. No. 450,142

Claims priority, application Japan, Dec. 13, 1988, 63-312820

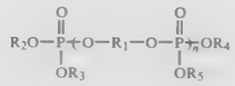
Int. Cl.[5] C08K *5/52;* **C08L** *71/12, 77/06*

U.S. Cl. 524—142 **10 Claims**

1. A resin composition which comprises:

a) first component which comprises mixture of about 5–90 parts by weight of a polyphenylene ether resin and about 95–10 parts by weight of a polyamide resin; and

b) about 0.05–30 parts by weight relative to the first compound of a second component of the type



wherein n is an integer of 0–5, R_1–R_5 is selected from the group consisting of aliphatic hydrocarbon residues containing 2–12 carbon atoms, aryl groups containing 6–14 carbon atoms, alkyl-substituted aryl groups, aralkyl groups and corresponding divalent residues, wherein at least one member selected from the group consisting of the R_1–R_5 contains a carbon-carbon unsaturated double bond or triple bond, and further wherein at least one member selected from the group consisting of the R_1–R_5 is an oxazoline residue.

5,059,647

OLIGOMERIC SEMICARBAZIDE ADDITIVES FOR SPANDEX

Akitsugu Kawaguchi, Otsu, Japan, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1989, Ser. No. 414,411

Int. Cl.[5] C08K *5/3492*

U.S. Cl. 524—100 **8 Claims**

1. A polyether-based spandex fiber containing, for protection against discoloration by atmospheric fumes and light, a synergistic combination of N,N-dialkylsemicarbazide groups and a hydroxyphenyl-1,3,5-triazine light absorber, the semicarbazide groups being present as spandex polymer end groups or as substituents on an additive in a concentration range of 10 to 60 millequivalents per kilogram of spandex fiber and

the light absorber being present in a concentration range of 0.2 to 2 percent based on the weight of the spandex fiber and being 2,4-di(2',4'-dimethylphenyl)-6-(2''-hydroxy-4''-alkoxyphenyl)-1,3,5-triazine, the alkoxy group having 1 to 12 carbon atoms.

5,059,648

RUBBER COMPOSITION

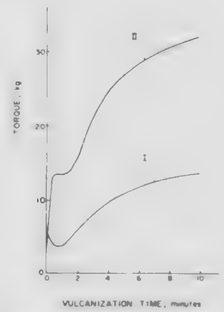
Motoo Fukushima, Kanagawa; Tsutomu Nakamura, Gunma; Hiroyuki Ohata, and Harukazu Okuda, both of Fukui, all of Japan, assignors to Nissin Chemical Industry Co., Ltd., Fukui, Japan

Filed Oct. 25, 1989, Ser. No. 427,049

Claims priority, application Japan, Oct. 27, 1988, 63-271467; Sep. 26, 1989, 1-250213; Sep. 26, 1989, 1-250214

Int. Cl.[5] C08K *5/06*

U.S. Cl. 524—376 **6 Claims**



1. A rubber composition which comprises, as a blend:

(a) 100 parts by weight of a rubbery polymer which is natural rubber or a synthetic rubber selected from the group consisting of styrene-butadiene copolymeric rubbers, acrylonitrile-butadiene copolymeric rubbers, hydrogenated acrylonitrile-butadiene copolymeric rubbers, polybutadiene rubbers, polyisoprene rubbers, polychloroprene rubbers, ethylene-propylene copolymeric rubbers, terpolymeric rubbers of ethylene, propylene and a diene monomer, acrylic rubbers, ethylene-acrylic ester copolymeric rubbers, ethylene-vinyl acetate copolymeric rubbers, urethane rubbers, polysulfide rubbers, chlorosulfonated polyethylene rubbers, chlorinated polyethylene rubbers, fluorocarbon rubbers, epichlorohydrin rubbers or mixtures thereof;

(b) from 10 to 200 parts by weight of a finely divided reinforcing filler having a specific surface area of at least 30 m^2/g; and

(c) from 0.1 to 10 parts by weight of an alkylene oxide adduct of an acetylene alcohol.

5,059,649

STORAGE STABLE ONE-PART FLUOROSILICONE GEL COMPOSITIONS EXHIBITING IMPROVED THERMAL STABILITY

Myron T. Maxson, and Bernard VanWert, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 8, 1989, Ser. No. 433,300
Int. Cl.[5] B01J *13/00*; C08K *5/04, 5/09*
U.S. Cl. 524—398 2 Claims

1. In a one-part liquid fluorosilicone composition that cures to a gel by means of a platinum-catalyzed hydrosilylation reaction when heated, is stable for prolonged periods of time under ambient conditions and consists essentially of the product obtained by blending

A. a liquid diorganovinylsiloxy terminated polydiorganosiloxane wherein at least 25 percent of the silicon atoms are bonded to a fluorine-containing hydrocarbon radical;

B. a compatible liquid organohydrogensiloxane containing fluorinated hydrocarbon radicals bonded to silicon and an average of more than two silicon bonded hydrogen atoms per molecule, the amount of said organohydrogensiloxane being sufficient to provide a molar ratio of silicon bonded hydrogen atoms to vinyl radicals in said composition of from 0.5 to 1.0;

C. an amount sufficient to promote curing of said composition of a platinum-containing catalyst; and

D. from 1 to 100 parts by weight per million parts by weight of said composition of at least one N,N,N',N'-tetraalkyl alkylenediamine as the platinum catalyst inhibitor, where the alkyl portion of the diamine contains from 1 to 4 carbon atoms, the alkylene portion contains from 2 to 4 carbon atoms, and the amount of inhibitor is sufficient to inhibit curing of said composition in bulk form at 25° C. without impairing the ability of said composition to cure at temperatures above 100° C.,

the improvement comprising the presence in said composition of

E. from 0.003 to 0.007 percent, based on the weight of said composition, of copper acetylacetonate to inhibit discoloration and heat-induced hardening of cured gels formed from said composition.

5,059,650

PREPARATION OF FLAMEPROOFED POLYSTYRENE

Manfred Goettsch, Mutterstadt; Hubert Kindler, Ludwigshafen; Norbert Moedersheim, Frankenthal, and Guenther Rudolph, Beindersheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 895,663, Aug. 11, 1986, abandoned.
This application Sep. 7, 1988, Ser. No. 241,806
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3529982
Int. Cl.[5] C08K *5/03*
U.S. Cl. 524—412 3 Claims

1. In a process for preparing flame-proofed polystyrene which contains halohydrocarbons as flame-proofing agents and which additionally contains additives from the group consisting of a synergist for the flame-proofing agents, a stabilizer, an antioxidant, an additional additive, and mixtures thereof, the improvement which comprises:

1) in a mixing apparatus, preparing a premix comprising the flame-proofing agent and at least part of the stabilizer at a temperature up to 100° C.

2) in a continuously operated single-screw or twin-screw extruder combining the premix of step 1) with the remaining additives in such a manner that, viewed in the conveying direction of the extruder, the premix and the remaining additives are combined in a first mixing zone, to form a flame-proofing mix,

3) passing the flame-proofing mix into a discharge zone of the extruder,

4) performing in a polymerization apparatus a polystyrene polymerization process to prepare a polystyrene melt which is free of monomers and solvents and is at a temperature of 200° to 250° C.,

5) introducing the polystyrene of step 4) directly from the polymerization apparatus into the discharge zone of the extruder containing the flame-proofing mix, mixing the polystyrene and the flame-proof mix to form flame-proofed polystyrene,

6) discharging the flame-proofed polystyrene from the extruder, preparing granules of the flame-proofed polystyrene extrudate, and isolating the granules,

whereby flame-proofed polystyrene granules are prepared which are resistant to discoloration and decomposition.

5,059,651

FLAME RETARDANT AND SMOKE SUPPRESSED POLYMERIC COMPOSITION AND ELECTRIC WIRE HAVING SHEATH MADE FROM SUCH COMPOSITION

Keiji Ueno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 240,377, Aug. 23, 1988, abandoned, which is a continuation of Ser. No. 775,943, Sep. 12, 1985, abandoned, which is a continuation of Ser. No. 564,649, Dec. 22, 1983, abandoned. This application Jul. 25, 1990, Ser. No. 559,453
Claims priority, application Japan, Dec. 23, 1982, 57-231308
Int. Cl.[5] C08K *3/27, 3/26*
U.S. Cl. 524—424 40 Claims

1. A flame retardant and smoke suppressed polymeric thermoplastic composition, which consists of:

a radiation curable copolymer of ethylene and vinyl acetate containing 50 to 85% by weight of polymerized units derived from vinyl acetate; and

a flame retarding and smoke suppressing amount of finely divided filler mixture intimately admixed with said copolymer, said filler mixture consisting essentially of a first filler selected from the group consisting of hydroxides and carbonates of di- and tri-valent metals and a second filler which is zinc borate, the ratio by weight of said second filler to the filler mixture being within the range between 0.25 and 0.75.

5,059,652

CROSSLINKING COMPONENTS FOR PAINT BINDERS AND PROCESS FOR THEIR PREPARATION

Gerhard Schmölzer, and Rudolf Schipfer, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Jul. 5, 1989, Ser. No. 375,470
Claims priority, application Austria, Jul. 4, 1988, 1721/88
Int. Cl.[5] C08G *18/28, 18/80*; C09D *167/00, 175/00*
U.S. Cl. 524—591 10 Claims

1. A crosslinking component for paint binders containing functional groups selected from the group consisting of hydroxyl groups, tertiary amino groups secondary amino groups and primary amino groups, and mixtures thereof, particularly for cathodically depositable paints, which can be crosslinked by transesterification, or transamidation or transurethanization, or a combination of said transesterification, transamidation and transurethanization, characterized in that said crosslinking component contains, per molecule, at least 0.5 transesterifiable groups, obtained from an ester containing a reactive CH-group, and at least 0.5 blocked isocyanate groups.

5,059,653

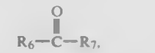
METHOD FOR SYNTHESIZING A PEPTIDE CONTAINING A NON-PEPTIDE BOND

David H. Coy, and Simon J. Hocart, both of New Orleans, La., assignors to The Administrators of the Tulane Educational Fund, New Orleans, La.

Division of Ser. No. 164,068, Mar. 4, 1988, Pat. No. 4,897,445.
This application Dec. 6, 1988, Ser. No. 280,318
Int. Cl.[5] C08F *283/00*; C08G *63/48, 63/91*
U.S. Cl. 525—54.11 7 Claims

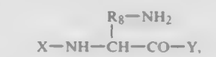
1. A method of solid phase chemical modification of a peptide, comprising the steps of

(a) providing a carbonyl-containing compound of the formula



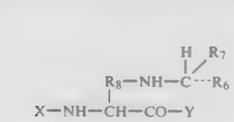
where R_6 and R_7, independently, comprise hydrogen, a branched or straight chain C_1–C_6 alkyl group, or an aryl group selected from phenyl, para-chloro-phenyl, and napthyl;

(b) providing a complex of the formula



where X comprises a protecting group capable of preventing non-specific chemical interactions with said NH group, Y comprises a reversibly chemically bound solid phase upon which synthesis of a peptide can be performed, and R_8—NH_2 is a side group of Lys, ornithine, or diaminobutyric acid;

(c) reacting said carbonyl-containing compound with said complex in the presence of sodium cyanoborohydride to form



(d) chemically cleaving said solid phase from said peptide; and

(e) removing said peptide from said solid phase.

5,059,654

AFFINITY MATRICES OF MODIFIED POLYSACCHARIDE SUPPORTS

Kenneth C. Hou, Glastonbury, Conn.; Tung-Ping D. Liao, Missouri City, Tex., and Robert Rohan, Columbia, Conn., assignors to Cuno Inc., Meridan, Conn.

Continuation-in-part of Ser. No. 154,815, Feb. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 130,186, Dec. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 13,512, Jan. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 656,922, Oct. 2, 1984, Pat. No. 4,639,513, which is a continuation-in-part of Ser. No. 576,448, Feb. 2, 1984, Pat. No. 4,663,163, which is a continuation-in-part of Ser. No. 466,114, Feb. 14, 1983, abandoned. This application Feb. 16, 1989, Ser. No. 311,498
Int. Cl.[5] C08H *5/00*; A61K *37/04*; B01J *20/00*; C07K *3/20*
U.S. Cl. 525—54.1 28 Claims

1. A modified polysaccharide material which comprises:

(1) a water-insoluble polysaccharide covalently bonded to a synthetic polymer;

(2) said synthetic polymer made from

(a) a polymerizable compound which has an epoxy group capable of direct covalent coupling to said polysaccharide; and

(b) one or more polymerizable compounds containing

(i) a chemical group capable of causing the covalent coupling of said synthetic polymer to an affinity ligand or a biologically active molecule, or

(ii) a hydrophobic chemical group.

5,059,655

POLYURETHANE POLYANHYDRIDE OLIGOMERS AND METHOD OF PREPARATION

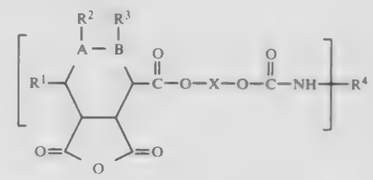
Jonathan T. Martz, Glenshaw; Karl F. Schimmel, Verona; Padmanabhan Sundararaman, Allison Park, and David N. Walters, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 5, 1990, Ser. No. 504,814
Int. Cl.[5] C08L *75/04, 73/02*
U.S. Cl. 525—131 9 Claims

1. A curable composition comprising

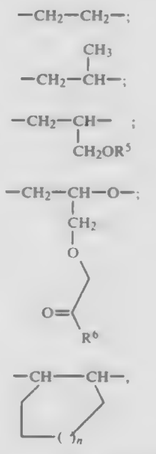
(a) a hydroxyl functional material, and

(b) a polyurethane polyanhydride oligomer characterized in that it comprises at least one moiety represented by the following structure



wherein:

X is:



wherein n is 0, 1, 2, 3 a fused ring system;

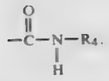
R^1 is hydrogen or an aliphatic radical;

A and B are both CH— in which case R_2 and R_3 are independently hydrogen or an aliphatic radical; or

A and B are connected to form —C=C;

R^4 is the residue of a mono or polyisocyanate;

R^5 is an aliphatic group, aromatic group, alicyclic group or



R^6 is an aliphatic, aromatic or alicyclic group.

5,059,656

TWO-SOLUTION ACRYLIC ADHESIVE COMPOSITION

Hideoki Tsuji, Toyono, Japan, assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Dec. 28, 1989, Ser. No. 458,030
Claims priority, application Japan, Dec. 29, 1988, 63-331016
Int. Cl.[5] C08L *23/24, 9/02, 23/26, 51/04*
U.S. Cl. 525—155 5 Claims

1. A two-solution acrylic adhesive composition, consisting of a solution A, in which the following ingredients (1)–(3) are dissolved and mixed as necessary ingredients, in the proportions mentioned below, and a solution B, in which the following ingredients (4)–(6) are dissolved and mixed as necessary ingredients, in the proportions mentioned below:

Solution A	
(1) Chlorosulfonated polyethylene	12.5–35 wt %
(2) At least one (meth)acrylate selected from a group consisting of (meth)acrylic acid, (meth)acrylate, di(meth)acrylate, and (meth)acrylate with hydroxyl, glycidyl, or amino groups	50–85 wt %
(3) Organic peroxide	0.2–10 wt %
Solution B	
(4) Butadiene-acrylonitrile copolymer elastomer	10–25 wt %
(5) At least one (meth)acrylate selected from a group consisting of (meth)acrylic acid, (meth)acrylate, di(meth)acrylate, and (meth)acrylate with hydroxyl, glycidyl, or amino groups	40–90 wt %
(6) Curing accelerator consisting of an amine-aldehyde condensate	1–20 wt %

5,059,657

POLYMERIZATION OF SELECTED VINYL MONOMERS

Joe D. Druliner, Newark, Del., and Michael Fryd, Morristown, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1990, Ser. No. 562,981
Int. Cl.[5] C08F *287/00*
U.S. Cl. 525—244 34 Claims

1. A process for the polymerization of vinyl monomers, comprising, contacting:

(a) an acrylic monomer or N-phenylmaleimide;

(b) a diazotate of the formula $Ar^1—N=N—O—M^+$, or a cyanate of the formula MOCN, or a hyponitrite of the formula $M_2N_2O_2$, wherein Ar^1 is aryl or substituted aryl, and M is a metal or a tetrahydro-carbylammonium ion; and

(c) N-chlorosuccinimide, N-bromosuccinimide, or a diazonium salt of the formula $Ar^2N_2^+ X^-$, wherein Ar^2 is aryl or substituted aryl, and X is an anion.

5,059,658

METHOD OF PRODUCING MODIFIED POLYPROPYLENE

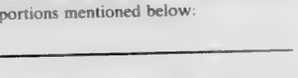
Tadashi Sezume, Ohi; Akira Kobayashi, Kamifukuoka; Masahide Murata, Ohi; Mayako Ogata, Kamifukuoka; Masahiro Ohsawa, Yokohama, and Takashi Mikami, Komae, all of Japan, assignors to Tonen Sekiyagaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1990, Ser. No. 503,583
Claims priority, application Japan, Apr. 7, 1989, 1-89221; Apr. 7, 1989, 1-89222
Int. Cl.[5] C08F *279/00, 255/02*
U.S. Cl. 525—263 11 Claims

1. A method of producing a modified polypropylene having a weight-average molecular weight of 50,000–1,000,000 and a graft ratio of 0.1–10 weight %, said weight-average molecular weight and said graft ratio satisfying the following relation:

$$50{,}000 \leq (\text{weight-average molecular weight}) \times (\text{graft ratio expressed by weight \%}),$$

comprising the step of graft-polymerizing 100 parts by weight of a substantially crystalline propylene random copolymer having a weight-average molecular weight of 100,000–1,000,000 and consisting essentially of propylene and 0.05–10 mol % of an unconjugated diene comonomer represented by the general formula:



wherein R_1–R_4 are H or an alkyl group having 1–6 carbon atoms, and n is an integer of 1–20, with 0.1–10 parts by weight of a monomer having an unsaturated bond in the presence of a radical generator.

5,059,659

SURFACE TREATMENTS TO IMPART HYDROPHILICITY

Harry P. Gregor, 410 Riverside Dr., New York, N.Y. 10025; Alexander Burshteyn, Flushing, N.Y.; Leonard T. Hodgins, Closter, N.J.; John Kassotis, Astoria, and Edgar Samuelson, Brooklyn, both of N.Y., assignors to Harry P. Gregor, New York, N.Y.

Continuation of Ser. No. 55,667, May 29, 1987, abandoned. This application Jan. 3, 1991, Ser. No. 635,421
Int. Cl.[5] C08F *8/12*
U.S. Cl. 525—329.1 12 Claims

1. A solid water-soluble non-swelling substantially linear polymeric material having a core containing hydrophobic pendant groups of at least one of nitrile groups and ester groups and substantially free of amide groups, and a thin hydrophilic skin integral with the core and containing predominately hydrophilic pendant amide groups.

5,059,660

SELF-BONDING ENAMEL SOLUTION FOR HEAT-RESISTANT COATINGS

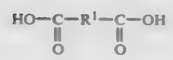
Peter Hoessel, Schifferstadt; Hans Schupp, Worms; Klaus Lienert, Hamburg, and Helmut Lehmann, Rheinbek, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 9, 1990, Ser. No. 521,030
Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917197
Int. Cl.[5] C08L *77/00;* C08G *18/00*
U.S. Cl. 525—419 10 Claims

1. A self-bonding enamel solution containing

A) from 5 to 80% by weight of a copolyamide composed of units which are derived from

A_1) organic dicarboxylic acids



where R^1 is an aliphatic radical of 1 to 20 carbon atoms or an aromatic radical of 5 to 25 carbon atoms,

and

A_2) a mixture of diisocyanates, consisting of

a_{21}) from 20 to 95 mol % of a diisocyanate of the formula

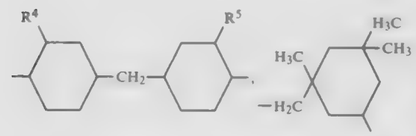
$$OCN—R^2—NCO$$

where R^2 is an aromatic radical of 5 to 25 carbon atoms,

a_{22}) from 5 to 70 mol % of a diisocyanate of the formula

$$OCN—R^3—NCO$$

where R^3 is



or a linear aliphatic radical of 3 to 30 carbon atoms which is substituted by 1 to 3 C_1–C_4-alkyl groups and R^4 and R^5 independently of one another are each C_1–C_4-alkyl or hydrogen, and

a_{23}) from 0 to 20 mol % of a diisocyanate of the formula

$$OCN—(CH_2)_y—NCO$$

where y is an integer of from 1 to 20, and

B) from <0.5 to 30% by weight of a blocked di- or polyisocyanate

in an organic solvent or solvent mixture.

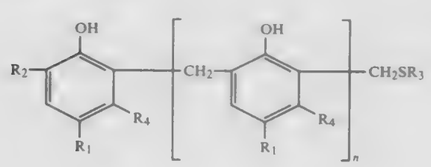
5,059,661

PHENOLIC COMPOUNDS AS CHAIN-TERMINATORS FOR THE ANIONIC SOLUTION POLYMERIZATION OF DIENES

Gerrit Knobloch, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 21, 1990, Ser. No. 570,498
Claims priority, application Switzerland, Aug. 30, 1989, 3141/89
Int. Cl.[5] C08F *2/38*
U.S. Cl. 526—84 6 Claims

1. A process for discontinuing the organolithium-initiated anionic solution polymerization of 1,3-dienes and the copolymerization thereof with styrene compounds by addition of a chain-terminator to the polymerization solution, which process comprises using as chain-terminator at least one phenolic antioxidant of formula I



I

wherein

n is 0 to 3,

R_1 and R_2 are each independently of the other C_1–C_{12}alkyl, C_5–C_8cycloalkyl or $—CH_2SR_3$,

R_3 is C_1–C_{18}alkyl, phenyl or benzyl, and

R_4 is hydrogen or methyl.

5,059,662

METHOD FOR PRODUCING ETHYLENE COPOLYMER

Karl W. Wikelski, Odessa, Tex., and Shinji Kojima, Yokohama, Japan, assignors to Resene Products Company, Odessa, Tex. and Nippon Petrochemicals Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 436,090, Nov. 13, 1989, abandoned, which is a continuation of Ser. No. 52,298, May 21, 1987, abandoned. This application Feb. 26, 1990, Ser. No. 484,920
Claims priority, application Japan, Jan. 29, 1987, 62-019430
Int. Cl.[5] C08F *210/02*
U.S. Cl. 526—208 13 Claims

1. In a method for producing ethylene copolymer by copolymerization of ethylene with at least one comonomer of saturated glycidyl monomer using a polymerization apparatus equipped with at least one high pressure compressor, outlet piping and a polymerization zone, the polymerization being conducted at pressures in the range of 500 to 4000 kg/cm^2 and at polymerization temperatures in the range of 100° C. to 330° C. in the presence of a polymerization initiator, the improvement in the method which is characterized in that at least two polymerization inhibitors are used and the inhibition factor of one polymerization inhibitor added to said unsaturated glycidyl monomer is in the range of 0.001 to 0.49 sec/ppm and is smaller than that of another polymerization inhibitor added to the lubricating oil for said compressor as compared at the same temperature and the same concentration, said unsaturated glycidyl monomer containing 100 to 2000 ppm of said one polymerization inhibitor is mixed with ethylene and then introduced from the inlet side of said high pressure compressor through the outlet piping into the polymerization zone and said lubricating oil containing 0.1% to 10% by weight of said another polymerization inhibitor is used for said high pressure compressor.

5,059,663

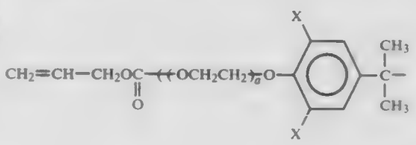
LIQUID COMPOSITION POLYMERIZABLE INTO ORGANIC GLASSES OF HIGH REFRACTIVE INDEX

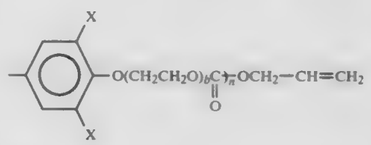
Franco Rivetti, Milan, and Fiorenzo Renzi, Gorgonzola, both of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Filed Aug. 2, 1990, Ser. No. 561,793
Claims priority, application Italy, Aug. 3, 1989, 21440 A/89
Int. Cl.[5] C08F *4/36*
U.S. Cl. 526—230.5 8 Claims

1. A liquid composition stable during storage and polymerizable radically into organic glasses having a high refractive index consisting essentially of:

(A) from 20 to 80 percent by weight of a mixture of monomer and oligomers of a carbonic allyl derivative representable by the formula (I):





where:

X=halogen (except fluorine);

a and b are independently 1 or 2;

n is from 1 to 5 on condition that at least 10% by weight of the mixture consists of carbonic allyl oligomer derivatives (n>1); and

(B) from 80 to 20 percent by weight of a liquid monomer copolymerizable with said component (A) and selected from the group consisting of diallyl isophthalate, diallyl terephthalate, triallyl cyanurate and triallyl isocyanurate; wherein aliphatic polymerizable compounds are excluded from the composition.

5,059,664

PROCESS FOR THE PREPARATION OF WATER ABSORPTIVE RESIN

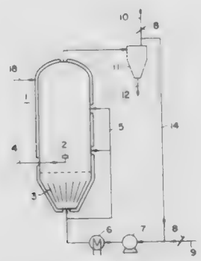
Shuhei Yada; Takeshi Shibano; Kiichi Itoh, and Kenji Yoshinaga, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,820

Claims priority, application Japan, Jun. 22, 1988, 63-154188; Aug. 15, 1988, 63-202995; Aug. 30, 1988, 63-215907

Int. Cl.[5] C08F *2/34*

U.S. Cl. 526—240 **5 Claims**



1. A process for the preparation of water absorptive resins which comprises supplying a solution containing as a main component 45 to 80% by weight of a water soluble monomer selected from the group consisting of a partially neutralized sodium acrylate in which 20 to below 95% of the carboxyl groups are neutralized to its sodium salt and a partially neutralized potassium acrylate in which 40% or more of the carboxyl groups are neutralized to its potassium salt to a polymerization vessel accommodating a vapor phase comprising steam or a mixture of steam with at lest one gas substantially inert with respect to polymerization, and polymerizing the monomer with the use of a redox initiator or with irradiation of ultraviolet rays and/or high-energy radiations in the vapor phase under the relative humidity conditions in said vapor phase of 30% or more.

5,059,665

HEAT-CURABLE BISMALEIMIDE RESINS

Philipp Eisenbarth, Bad Duerkheim; Roland Peter, Mutterstadt, and Thomas Folda, Neuleiningen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 15, 1990, Ser. No. 568,308

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1989, 3929386

Int. Cl.[5] C08F *22/40*

U.S. Cl. 526—262 **4 Claims**

1. A heat-curable bismaleimide resin having extended gel time consisting essentially of

A) 100 parts by weight of a bismaleimide,

B) 5–100 parts by weight of an aromatic alkenyl compound, and

C) 0.01–2.0 parts by weight of a Lewis acid wherein the gel time of the resin is greater than the same resin without said Lewis acid.

5,059,666

ENAMINE KETONE AND ENONESULFIDE POLYMER SYSTEMS

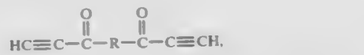
Frank W. Harris, Akron, Ohio, assignor to Edison Polymer Innovation Corporation, Broadview Heights, Ohio

Filed Jun. 6, 1990, Ser. No. 534,449

Int. Cl.[5] C08F *26/06, 38/00;* **C08G** *12/00*

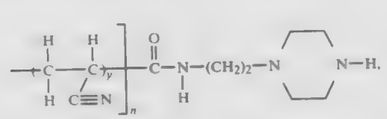
U.S. Cl. 526—263 **12 Claims**

1. A method for synthesizing enamine ketone and enonesulfide polymers comprising initially preparing a liquid propynone-terminated prepolymer compound by reacting a bispropynone having the formula

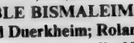


where R is selected from the group consisting of alkylene, cycloalkylene, alkylene ether and combinations thereof, with a member of the group consisting of a liquid diamine compound and a liquid dithiol compound, said prepolymer compound having an intrinsic viscosity no greater than about 0.6, and said diamine compound being selected from the group consisting of diamine compounds having the formula

where R^1 is selected from the group consisting of alkylene, arylene, branched alkylene, alkylene ether, and combinations thereof, and R^2 is selected from the group consisting of alkyl or hydrogen and may be the same or different; and



where n is a whole number and x=1, y=0–0.5, indicating the relative abundance of the two groups in the bracketed unit; and said dithiol compound having the formula



where R^3 is selected from the group consisting of alkylene, arylene, branched alkylene, alkylene ether, and combinations thereof, and

subsequently cross-linking said prepolymer compound in the absence of solvent by causing acetylene end groups of said prepolymer compound to interact to form cross-links, thereby producing a desired polymeric product having a glass transition temperature no greater than about 60° C.

5,059,667

STYRENE-BASED POLYMER AND METHOD FOR THE PREPARATION THEREOF

Shinichi Nakamura, Sodegaura, Japan, assignor to Idemitsu Petrochemical Company, Ltd., Tokyo, Japan

Filed Jan. 2, 1990, Ser. No. 460,264

Claims priority, application Japan, Jan. 9, 1989, 1-2267

Int. Cl.[5] C08F *222/10, 12/36*

U.S. Cl. 526—324 **4 Claims**

1. A styrene based polymer which is a copolymer of an aromatic monovinyl compound and a polyfunctional vinyl compound, in which the weight proportion of the moiety derived from the polyfunctional vinyl compound is in the

range from 30 to 300 ppm based on the moiety derived from the aromatic monovinyl compound, having a weight-average molecular weight in the range from 150,000 to 350,000, of which the ratio of kinematic viscosities $\Delta\eta'(\eta'_o/\eta'_b)$ does not exceed 0.07 where η'_o and η'_b are the kinematic viscosities when the shear rate in a cone-and-disc type rheometer is 1×10^2 rad/second and 1×10^{-2} rad/second, respectively.

5,059,668

FLUOROSILICONE RUBBER COMPOSITION

Takeshi Fukuda, and Motoo Fukushima, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 222,212, Jul. 21, 1988, Pat. No. 4,988,758, which is a continuation-in-part of Ser. No. 157,124, Feb. 10, 1988, abandoned, which is a continuation of Ser. No. 3,946, Jan. 16, 1987, abandoned. This application Sep. 10, 1990, Ser. No. 580,199

Claims priority, application Japan, Jan. 20, 1986, 61-652

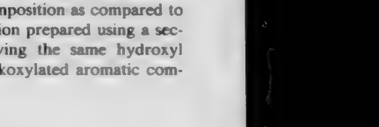
Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **3 Claims**

1. A curable fluorine-substituted organopolysiloxane composition which comprises, in admixture

(A) a polyorganosiloxane having a viscosity of at least 400 centipoise at 25° C. and a molecular structure represented by the general formula:

or



in which R is a monovalent hydrocarbon group selected from the class consisting of methyl, vinyl and phenyl groups, R_f is a fluorinated alkyl group having 3 to 10 carbon atoms, n is zero or a positive integer, m is a positive integer with the proviso that m: (m+n) is in the range from 0.005 to 1, p is 2, 3 or 4, X^1 is a vinyl dimethyl siloxy-substituted silyl group represented by the general formula:



in which Vi is a vinyl group, Me is a methyl group and r is a positive integer in the range from 1 to 30, and X^2 is a hydrogen atom or X^1; and

(B) a curing agent which is a combination of an organohydrogenpolysiloxane having at least three hydrogen atoms directly bonded to the silicon atoms in a molecule and a platinum catalyst.

5,059,669

ADHESION PROMOTER

Yuji Hamada; Shosaku Sasaki, and Hiroshi Masaoka, all of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Nov. 19, 1987, Ser. No. 123,029

Claims priority, application Japan, Nov. 25, 1986, 61-280337

Int. Cl.[5] C08G *77/26*

U.S. Cl. 528—32 **4 Claims**

1. As an adhesion promoter for radiation-curable organopolysiloxane, an organopolysiloxane selected from the group consisting of copolymers of vinylmethylsiloxane units, aminopropylmethylsiloxane units, and dimethyl-siloxane units; copolymers of acryloxypropylmethylsiloxane units, aminopropylmethylsiloxane units, and dimethylsiloxane units; copolymers of trimethyl-siloxy units, gamma-acryloxypropylmethyl-siloxane units, gamma-aminopropylsiloxane units, and dimethylsiloxane units; copolymers of trimethylsiloxy units, gamma-aminopropylmethyl-siloxane units, vinylmethylsiloxane units, and dimethylsiloxane units, and copolymers of trimethylsiloxy units, N-beta-(aminoethyl)-gamma-aminopropylmethylsiloxane units, and dimethylsiloxane units wherein some of the amino hydrogen are reacted with acrylic chloride to provide the acrylic group.

5,059,670

THERMOSETTABLE COMPOSITIONS CONTAINING ALKOXYLATED AROMATIC COMPOUNDS

Stephen H. Harris, West Chester, Pa., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Filed Apr. 27, 1990, Ser. No. 515,987

Int. Cl.[5] C08G *22/16*

U.S. Cl. 528—48 **20 Claims**

1. A rigid polyurethane-modified polyisocyanurate composition which is the reaction product of a thermosettable composition comprising:

A. an alkoxylated aromatic compound having an average hydroxyl functionality of at least about two and having an aromatic content of at least about 10 percent;

B. optionally, a first aliphatic polyether polyol, provided that the total aromatic content of A and B combined is at least about 10 percent;

C. an organic polyisocyanate having an average NCO functionality of at least about two;

D. a liquid modifying agent having a boiling point at atmospheric pressure of at least about 175° C. which is substantially non-reactive with the organic polyisocyanate; and

E. an effective amount of an isocyanate trimerization catalyst;

wherein the molar ratio of isocyanate to hydroxy lin the composition is greater than 1.5, the weight ratio of (A+B):D is from about 10:1 to 1:10, the weight of D is from about 5 to 50 percent of the total weight of the thermosettable composition, and the total aromatic content of A and B combined is effective to increase the flexural strength, tensile strength, and flexural modulus of the polyisocyanurate composition as compared to the same polyisocyanurate composition prepared using a second aliphatic polyether polyol having the same hydroxyl equivalent weight in place of the alkoxylated aromatic compound.

5,059,671

MANUFACTURING PROCESS OF SPRAY URETHANE ELASTOMER

Kazuo Taniguchi, Kamakura; Kazuhiro Imaoka, Yokohama; Tetsuyoshi Ogura, Zushi, and Hiroaki Sakaguchi, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 21, 1989, Ser. No. 454,274

Claims priority, application Japan, Dec. 28, 1988, 63-328944

Int. Cl.[5] C08G *18/14*

U.S. Cl. 528—49 **5 Claims**

1. A process for manufacturing a solventless spray urethane elastomer which comprises spraying components (a) and (b) directly onto a substrate, using a two component high pressure spray machine equiped with a colliding and mixing type spray gun; components (a) and (b) comprising: (a) a partial prepolymer component prepared by reacting an organic polyisocyanate and a polytetramethylene ether glycol having a molecular weight of 400 to 2,000 at a NCO/OH molar ratio of 5 to 40; and (b) a resin component prepared by mixing (i) a polytetramethylene ether glycol, having a molecular weight of 400 to about 2000, (II) an active aromatic polyamine chain extender free of electron attractive groups on the aromatic nucleus, and (III) an organobismuth catalyst.

5,059,672
ELASTOMERIC REACTION PRODUCTS OF AROMATIC ISOCYANATE, ALIPHATIC ISOCYANATE AND AROMATIC DIAMINE COMPONENTS
Preston J. Engebretson, Houston, Tex., assignor to Thare Coat, Inc., Houston, Tex.
Filed Jun. 25, 1990, Ser. No. 543,452
Int. Cl.[5] C08G *18/12, 18/32*
U.S. Cl. 528—64 30 Claims

1. An elastomer comprising the reaction product of an aromatic isocyanate component, an aliphatic isocyanate component with a functionality of at least two, and an aromatic diamine component, and wherein:
the aromatic isocyanate component is selected from the group consisting of one or more of aromatic isocyanates, aromatic isocyanate terminated aliphatics, aromatic isocyanate terminated cycloaliphatic, aromatic isocyanate terminated quasi-prepolymers, and aromatic isocyanate terminated prepolymers;
the aliphatic isocyanate component with a functionality of at least two is selected from the group consisting of one or more of isocyanate terminated aliphatics, cycloaliphatic isocyanate with at least two isocyanates, isocyanate terminated quasi-prepolymers, and isocyanate terminated prepolymers;
the aromatic diamine component is selected from the group consisting of one or more of:
(1) aromatic diiamines with which a gelation reaction results initially upon mixing the aromatic diamines with the aromatic isocyanate component and the aliphatic isocyanate component, and following the gelation reaction the elastomer cures,
(2) reaction products of said aromatic diiamines with a subequivalent amount of a reactive prepolymer or quasi-prepolymer.

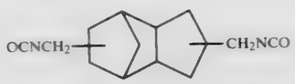
5,059,673
RESIN FOR URETHANE LENSES, LENSES COMPRISING THE RESIN, AND A PROCESS FOR PREPARATION OF THE RESIN AND THE LENSES
Yoshinobu Kanemura; Katsuyoshi Sasagawa; Masao Imai, all of Yokohama, and Toshiyuki Suzuki, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Oct. 3, 1990, Ser. No. 592,372
Claims priority, application Japan, Oct. 9, 1989, 1-262204
Int. Cl.[5] C08G *18/75*
U.S. Cl. 528—67 8 Claims

1. A resin for urethane lenses which is obtained by reacting an alicyclic isocyanate compound represented by the formula (I)



(I)

and/or an alicyclic isocyanate compound represented by the formula (II)

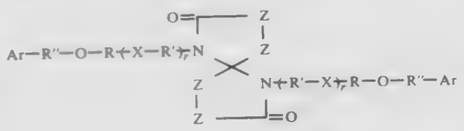


(II)

with at least one active hydrogen compound selected from the consisting of polyol compounds polythiol compounds except 1,2-bis](2-mercaptoethyl)thio]-3-mercaptopropane, and thiol compounds having a hydroxyl group.

5,059,674
CURED ARYLCYCLOBUTENE ETHER SPIRODILACTAM
Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Division of Ser. No. 324,872, Mar. 17, 1989, Pat. No. 4,968,810.
This application Apr. 9, 1990, Ser. No. 506,037
Int. Cl.[5] C08G *83/00*
U.S. Cl. 528—210 11 Claims

1. The cured product obtained by heating to a temperature above 150° C. the ether of the formula



wherein Ar is an arylcyclobutene ring system having up to 4 aromatic rings and up to 30 carbon atoms, inclusive, R'' is alkylene of up to 10 carbon atoms inclusive attached to a six-membered ring of Ar, R is aromatic of up to 15 carbon atoms and up to two aromatic rings, inclusive, R' is R, X is a direct valence bond, or X is alkylene of up to 8 carbon atoms, inclusive, oxy, thio, sulfonyl, carbonyl, dioxydiphenylene, 2,2-di(oxyphenyl)propane di(oxyphenyl)sulfone or dioxydiphenylene, r is 0 or 1 and Z independently is



in which Z' independently is hydrogen, lower alkyl, lower halo or phenyl, or Z is such that adjacent Z groups taken together form a ring system Z'' of from 5 to 7 ring atoms, up to two of which are heteroatoms selected from nitrogen, oxygen, or sulfur with the remainder of the ring atoms being carbon atoms, there being up to 15 carbon atoms in each Z'', two of which form a bridge between the carbon atoms connected by the adjacent Z groups.

5,059,675
SURFACE SIZING COMPOSITION
William W. Carlin, Corpus Christi, Tex.; Sai H. Hui, Hudson, and John D. Mansell, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 14, 1988, Ser. No. 270,553
Int. Cl.[5] C08G *12/30;* B32B *27/42*
U.S. Cl. 528—254 11 Claims

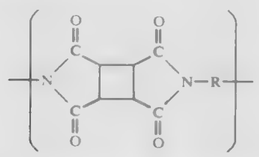
1. A composition comprising the reaction product of a melamine formaldehyde compound, at least one long chain alcohol and at least one long chain polyethoxylated alcohol.

5,059,676
POLYMERS OF CARBON MONOXIDE AND BICYCLIC UNSATURATED CARBOXYLIC ACID COMPOUND
Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.
Filed May 24, 1990, Ser. No. 527,923
Claims priority, application Netherlands, Sep. 25, 1989, 8902383
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—271 15 Claims

1. A process for the production of linear alternating polymers containing pendant higher alkyl carboxylate groups by contacting carbon monoxide, and bicyclic unsaturated carboxylic acid or carboxylic acid anhydride, under polymerization conditions in the presence of a higher alkanol and a catalyst composition formed from a palladium compound, the anion of a strong non-hydrohalogenic acid and a bidentate ligand of phosphorus.

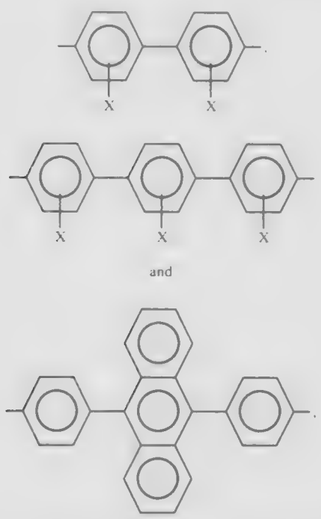
5,059,677
POLYIMIDE RESIN AND INSULATING FILM FOR ELECTRIC AND ELECTRONIC DEVICES
Noriaki Kohtoh; Takashi Kobayashi, and Masahiko Yukawa, all of Ichihara, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan
Filed Jan. 5, 1989, Ser. No. 293,766
Claims priority, application Japan, Jan. 8, 1988, 63-1935; Jul. 11, 1988, 63-172157
Int. Cl.[5] C08G *8/02, 14/00, 63/00, 69/26*
U.S. Cl. 528—353 1 Claim

1. A polyimide resin for an electrical insulating film having a repeating unit of the formula:



(1)

wherein R is a bivalent organic group derived from a diamine selected from the group consiting of



wherein X is a hydrogen atom, an alkyl group, an acyl group, an alkoxy group or a halogen atom.

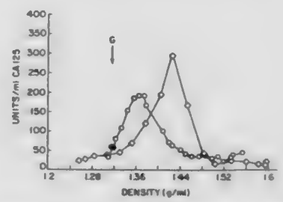
5,059,678
POLYMERIZATION OF OLEFIN/CARBON MONOXIDE WITH PALLADIUM SALT, BIDENTATE LIGAND AND CARBOXYLIC ACID ESTER OR ANHYDRIDE
Johannes A. M. Van Broekhoven; Pieter A. Gautier; Eit Drent, and Wiebren A. Miedema, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Filed Sep. 27, 1990, Ser. No. 588,898
Claims priority, application Netherlands, Oct. 26, 1989, 8902655
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 10 Claims

1. In the process of producing linear alternating polymers of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contact of the carbon monoxide and hydrocarbon under polymerization conditions in the presence of a reaction diluent and a catalyst composition formed from a palladium salt, a bidentate ligand of phosphorus, nitrogen or sulfur, and a source of ions, the improvement wherein the sole source of ions is an alkyl ester or anhydride of a monocarboxylic acid or a dicarboxylic acid.

5,059,679
METHOD OF SELECTIVELY SULFATING PEPTIDES
Haruaki Yajima; Nobutaka Fujii, both of Ohsaka, and Shinya Kiyama, Kanagawa, all of Japan, assignors to Shin-Etsu CHemical Co., Ltd., Tokyo, Japan
Filed Mar. 30, 1989, Ser. No. 331,292
Claims priority, application Japan, Mar. 31, 1988, 63-80116
Int. Cl.[5] A61K *37/02;* C07K *1/00*
U.S. Cl. 530—335 4 Claims

1. A method for the modification of a polypeptide containing a Tyr residue and either Ser or Tyr, or both, which comprises the successive steps of:
(a) protection of the polypeptide amine groups with a base labile protective group;
(b) the selective protection of the Ser or Thr hydroxyl groups with tert-butyl diphenylsilyl whereby the copresence of phenol further prevents the modification of the Tyr hydroxyl group;
(c) sulfating the hydroxyl group on the Tyr residues.

5,059,680
METHOD OF ISOLATING CA 125 ANTIGEN
Hugh M. Davis; Thomas L. Klug, and Vincent R. Zurawski, Jr., all of Westchester, Pa., assignors to Centocor, Inc., Malvern, Pa.
Filed Nov. 24, 1986, Ser. No. 933,784
Int. Cl.[5] C07K *15/00, 3/28*
U.S. Cl. 530—350 20 Claims



1. A preparation of an isolated immunoreactive CA 125 antigen which is a glycoprotein having a molecular weight of about 200 kDa as determined by SDS:PAGE chromatography, and having a carbohydrate composition of about 24% by mass, and which preparation is reactive with the monoclonal antibody OC 125 but is free of reactivity with monoclonal antibody 19-9.

5,059,681

BIS-AZOTRIAZINYL REACTIVE DYES HAVING AN N-ALKYL-PHENYLENEDIAMINE LINK

John A. Taylor, Prestwich, England, assignor to Imperial Chemical Industries plc, London, United Kingdom

Continuation of Ser. No. 84,097, Aug. 11, 1987, abandoned. This application Feb. 1, 1990, Ser. No. 472,407

Claims priority, application United Kingdom, Aug. 15, 1986, 8619914

Int. Cl.[5] **C09B** *62/09, 62/04, 62/20;* **D06P** *1/382*

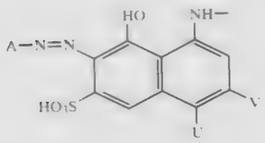
U.S. Cl. 534—634 **6 Claims**

1. A water-soluble reactive dye of the formula:

D—Z—NH—T—NR—Z—D

wherein

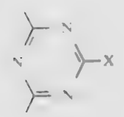
each D is a radical of a sulphonated water-soluble dye of the formula:



wherein

A is a sulphonated phenyl group or a sulphonated naphthyl group, one of U and V is SO_3H and the other is H;

each Z is a triazinylene radical of the formula;



wherein

X is Cl

R is C_{1-4}-alkyl; and

T is 1,4-phenylene or 1,4-phenylene substituted by halogen.

5,059,682

WATER-SOLUBLE PHTHALOCYANINE COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE

Rudolf Schaulin, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

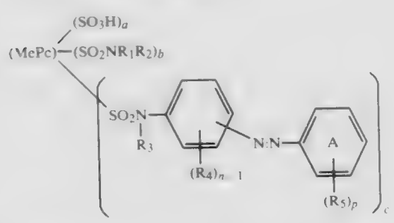
Filed May 3, 1989, Ser. No. 346,689

Claims priority, application Switzerland, Nov. 5, 1988, 1785/88

Int. Cl.[5] **C09B** *56/14;* **D06P** *1/39*

U.S. Cl. 534—702 **6 Claims**

1. A compound of the formula



(1)

in which

R_1 and R_2 are identical or different and in each case are hydrogen, hydroxyalkyl having 2 to 5 carbon atoms or carboxyalkyl having 1 to 5 carbon atoms in the alkyl radical or phenyl, or

R_1 and R_2 together with the nitrogen atom to which they are bound represent a pyrrolidinyl, piperidinyl, morpholinyl or thiomorpholinyl radical,

R_3 is hydrogen or methyl,

R_4 is alkyl or alkoxy each of which has 1 to 5 carbon atoms, —$NHCOR_6$ in which R_6 is alkyl or hydroxyalkyl having in each case 1 to 3 carbon atoms, or unsubstituted or methyl- or halogen-substituted phenyl, or sulfo,

R_5 is alkyl or alkoxy each of which has 1 to 5 carbon atoms, hydroxyl, carboxyl or sulfo, at least two substituents R_5 which are different from one another being present in the phenyl ring A, Me is an iron, cobalt, nickel or copper atom attached by coordination,

Pc is (a+b+c)-valent phthalocyanine radical,

n is 1 to 3,

p is 2 to 4,

a is 1 to 1.5,

b is 0.5 to 1,

c is 1 to 1.5, and the total of (a+b+c) is 2.5 to 3.

5,059,683

DYES CONTAINING 6-HYDROXYPYRID-2-ONE GROUPS THE 1-POSITIONS OF WHICH CONTAIN SUBSTITUTED 1,3,5-TRIAZINYL OR PYRIMIDYL-PIPERAZINO OR -PIPERAZINIUM GROUPS LINKED THROUGH BRIDGING RADICALS AND INTERMEDIATES THEREFOR

Helmut A. Moser, Oberwil, Switzerland, and Roland Wald, Huningue, France, assignors to Sandoz Ltd., Basel, Switzerland

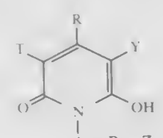
Filed May 5, 1989, Ser. No. 348,340

Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815481

Int. Cl.[5] **C09B** *29/42, 31/153, 45/14, 45/24*

U.S. Cl. 534—759 **31 Claims**

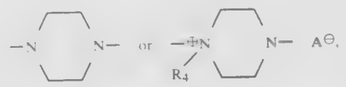
1. A metal-free compound of the formula



a 1:1 or 1:2 metal complex of a metallizable compound of said formula or an acid addition salt of a metal-free compound of said formula or of a 1:1 or 1:2 metal complex thereof, wherein

A_1 is linear or branched C_{1-8}alkylene; linear or branched C_{2-8}alkylene substituted by 1 or 2 substituents selected from hydroxy, halo and cyano; linear or branched C_{2-8}alkenylene; cyclohexylene; cyclohexylene substituted by 1 to 3 C_{1-4}alkyl gruops; phenylene or phenylene substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl and C_{1-4}alkoxy,

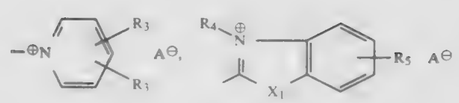
B_1 is



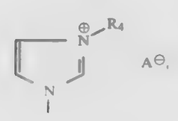
wherein the quaternized nitrogen atom is bound to a carbon atom of A_1,

R is hydrogen, C_{1-4}alkyl, C_{5-6}cycloalkyl, phenyl, benzyl or phenylethyl,

T is hydrogen, cyano, —$COOR_1$, —$CON(R_2)_2$, —$SO_2N(R_2)_2$,



or



where

R_1 is C_{1-6}alkyl or phenyl(C_{1-3}alkyl),

each R_3 is independently hydrogne, C_{1-4}-alkyl, —$CON(R_2)_2$or —$N(R_5)_2$, and

X_1 is —S—, —O— or —NR_5—,

Y is —N=N—D or —X—F,

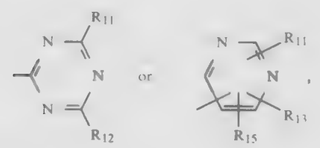
wherein

D is the radical of a diazo component,

F is a chromophoric grup, and

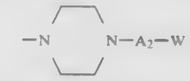
X is a divalent radical,

Z is



wherein

R_{11} is —NR_5—A_2—W,

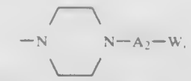


or —NR_5—A_2—NR_5—A_2—W,

wherein

W is —NR_6R_7 or —$\oplus NR_8R_9R_{10}$ Aβ,

R_{12} is —NR—A_2—W,



—NR_5—A_2—NR_5—A_2—W, —OR_{14}, —O—A_2—O—R_{14} or —NR_6R_7,

wherein

W is as defined above,

R_{13} is hydrogen, halo, C_{1-4}alkyl, —O—R_{14}, —O—A_2—O—R_{14} or —NR_6R_7, and

R_{15} is hydrogen or halo,

wherein

each A_1 is independently linear or branched C_{2-8}alkylene or linear or branched C_{3-8}alkylene mono-substituted by hydroxy,

each R_2 is independently hydrogen or C_{1-4}alkyl, or

—$N(R_2)_2$ is a saturated ring containing, in addition to the depicted nitrogen atom, 0 to 2 radicals selected from —O—, —S—, and —NH—, which ring is unsubstituted or substituted by 1 to 3 C_{1-4}alkyl groups,

each R_4 is independently C_{1-4}alkyl,

each R_5 is indepencently hydrogen or C_{1-4}alkyl,

each R_6 is independently hydrogen; C_{1-4}alkyl; C_{2-4}alkyl monosubstituted by hydroxy or C_{1-4}alkoxy; cyclohexyl or phenyl(C_{1-4}alkyl),

each R_7 is indepenently hydrogen; C_{1-4}alkyl; C_{2-4}alkyl monosubstituted by hydroxy or C_{1-4}alkoxy; cyclohexyl; phenyl or phenyl(C_{1-4}alkyl), or

—NR_6R_7 is a saturated ring containing, in addition to the depicted nitrogen atom, 0 to 2 radicals selected from —O—, —S— and —NH—, which ring is unsubstituted or substituted by 1 to 3 C_{1-4}alkyl gorups or is N'-amino(C_{2-3}alkyl)-piperazino,

each R_8 and R_9 is independently C_{1-4}alkyl or C_{2-4}-alkyl monosubstituted by hydroxy or C_{1-4}alkoxy, and

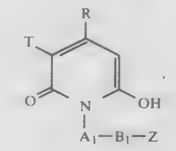
R_{10} is C_{1-4}alkyl or phenyl(C_{1-4}alkyl), or

—$\ominus NR_8R_9R_{10}$ is pyridinium; pyridinium substituted by 1 to 3 C_{1-4}alkyl groups; a saturated ring containing, in addition to the depicted nitrogen atom, 1 to 3 radicals selected from —O—, —S— and —NH—, which ring is unsubstituted or substituted by 1 to 3 C_{1-4}alkyl groups; or N—C_{1-4}alkyl—N'-amino(C_{2-3}alkyl)piperazinium,

each R_{14} is independently hydrogen, C_{1-4}alkyl or phenyl, and

each A$\ominus$ is independently a non-chromophoric anion, wherein each halo is independently fluoro, chloro or bromo, with the provisos that (i) each metal-free compound, 1:1 and 1:2 metal complex and acid addition salt is free of sulfo groups, and (ii) the hydroxy groups of each alkylene radical substituted by two hydroxy groups are attached to different carbon atoms.

23. A compound of the formula

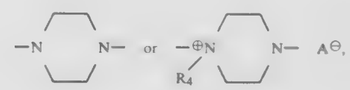


or an acid addition sal thereof,

wherien

A_1 is linear or branched C_{1-8}alkylene; linear or branched C_{2-8}alkylene substituted by 1 or 2 substituents selected from hydroxy, halo and cyano; linear or branched C_{2-8}alkenylene; cyclohexylene; cyclohexylene substituted by 1 to 3 C_{1-4}alkyl gruops; phenylene or phenylene substituted by 1 or 2 substituents selected from halo, C_{1-4}alkyl and C_{1-4}alkoxy,

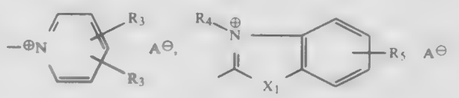
B_1 is



wherein the quaternized nitrogen atom is bound to a carbon atom of A_1,

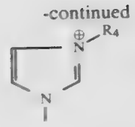
R is hydrogen, C_{1-4}alkyl, C_{5-6}cycloalkyl, phenyl, benzyl or phenylethyl,

T is hydrogen, cyano, —$COOR_1$, —$CON(R_2)_2$, —$SO_2N(R_2)_2$,

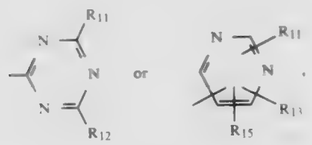


or

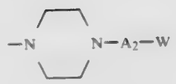
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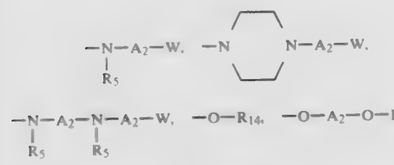
wherein
R_1 is C_{1-6}alkyl or phenyl (C_{1-3}alkyl),
each R_3 is independently hydrogen, C_{1-4}-alkyl, $—CON(R_2)_2$ or $—N(R_5)_2$, and
X_1 is —S—, —O— or $—NR_5$—, and
Z is



wherein
R_{11} is



or
wherein
W is $—NR_6R_7$ or $—\oplus NR_8R_9R_{10}$ $A\ominus$,
R_{12} is



wherein
W is as defined above,
R_{13} is hydrogen, halo, C_{1-4}alkyl, —O—R_{14}, —O—A_2—O—R_{14} or $—NR_6R_7$, and
R_{15} is hydrogen or halo,
wherein
each A_2 is independently linear or branched C_{2-8}alkylene or linear or branched C_{3-8}alkylene monosubstituted by hydroxy,
each R_2 is independently hydrogen or C_{1-4}alkyl, or
$—N(R_2)_2$ is a saturated ring containing, in addition to the depicted nitrogen atom, 0 to 2 radicals selected from —O—, —S— and —NH—, which ring is unsubstituted or substituted by 1 to 3 C_{1-4}alkyl groups,
each R_4 is independently C_{1-4}alkyl,
each R_5 is independently hydrogen or C_{1-4}alkyl,
each R_6 is independently hydrogen; C_{1-4}alkyl; C_{2-4}alkyl monosubstituted by hydroxy or C_{1-4}alkoxy; cyclohexyl or phenyl(C_{1-4}alkyl),
Each R_7 is independently hydrogen; C_{1-4}alkyl; C_{2-4}alkyl monosubstituted by hydroxy or C_{1-4}alkoxy; cyclohexyl; phenyl or phenyl (C_{1-4}alkyl), or
$—NR_6R_7$ is a saturated ring containing, in addition to the depicted nitrogen atom, 0 to 2 radicals selected from —O—, —S— and —NH—, which ring is unsubstituted or substituted by 1 to 3 C_{1-4}alkyl groups or is N'-amino(C_{2-3}-alkyl)piperazino,
each R_8 and R_9 is independelty C_{1-4}alkyl or C_{2-4}-alkyl monosbustituted by hydroxy or C_{1-4}alkoxy, and
R_{10} is C_{1-4}alkyl or phenyl (C_{1-4}alkyl), or $—\oplus NR_8R_9R_{10}$ is pyridinium; pyridinium substituted by 1 to 3 C_{1-4}alkyl grups; a saturated ring containing, in addition to the depicted nitrogen atom, 0 to 2 radicals selected from —O—, —S— and —NH—, which ring is unsubstituted or substituted by 1 to 3 alkyl grups; or N—C_{1-4}-alkyl—N'-amino(C_{2-3}alkyl)piperazinium,
each R_{14} is independently hydrogen, C_{1-4}alkyl or phenyl, and
each $A\ominus$ is independently a non-chromophoric anion, wherein each halo is independently fluoro, chloro or bromo, with the proviso that the hydroxy group of each alkylene radical substituted by two hydroxy groups are attached to different carbon atoms.

5,059,684

AZO DYES WHOSE DIAZO AND COUPLING COMPONENTS STEM FROM THE THIAZOLE SERIES

Gunther Lamm, Hassloch; Karl H. Etzbach, Frankenthal; Matthias Wiesenfeldt, Mutterstadt; Guenter Hansen, Ludwigshafen, and Helmut Reichelt, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

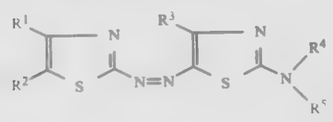
Filed Mar. 5, 1990, Ser. No. 489,327

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910408

Int. Cl.[5] **C09B** *29/042, 29/36;* **D06P** *1/18, 3/36*

U.S. Cl. 534—765 **2 Claims**

1. A thiazole-azo dye of the formula I



(I)

where
R^1 is C_1–C_{12}-alkyl, which may be interrupted by from 1 to 3 oxygen atoms, phenyl, halogen, cyano or C_1–C_4-alkoxycarbonyl, R^2 is formyl, cyano, C_1–C_4-alkoxycarbonyl or a radical of the formula $—CH=CX^1X^2$, where X^1 and X^2 are identical or different and each is independently of the other cyano or C_1–C_4-alkoxycarbonyl,
R^3 is C_1–C_{12}-alkyl, which may be interrupted by from 1 to 4 oxygen atoms or substituted by phenyl or phenoxy, C_5–C_7-cycloalkyl, unsubstituted phenyl, furyl, thienyl, C_1–C_4-alkylthienyl or pyridyl, and
R^4 and R^5 are identical or different and each is independently of the other C_1–C_{12}-alkyl, which may be interrupted by from 1 to 3 oxygen atoms and substituted by hydroxyl or phenyl or substituted by hydroxyl or phenyl with the proviso that in at least one of R^1R^4 and R^5 the alkyl chain is interrupted by from 1 to 3 oxygen atoms.

5,059,685

CATIONIZED POLYSACCHARIDE DERIVATIVES WITH HYPOCHOLESTEROLEMIC ACTIVITY

Franco Conti, Milan, Italy, assignor to Etablissement Texcontor, Liechtenstein, Italy

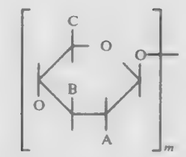
Continuation of Ser. No. 249,124, Sep. 26, 1988, abandoned. This application Feb. 5, 1991, Ser. No. 652,217

Claims priority, application Italy, Nov. 20, 1987, 22711 A/87

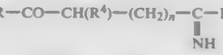
Int. Cl.[5] **C07H** *1/00, 5/00;* **C08B** *37/00, 31/00*

U.S. Cl. 536—1.1 **7 Claims**

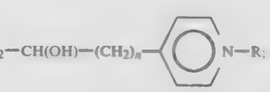
2. A process for preparing a cationized derivative of a natural polysaccharide of the formula:



wherein m is a whole number between 50 and 5,000;
A is
$N(^+)RR^1R^2$; $—NR—CO—R^3$; $—NR—R^3$;
$NR—CO—CH(R^4)—(CH_2)_n—R^4$; $—NR—R^5$;



$NR—CH_2—CH(OH)—(CH_2)_n—Ar—(CH_2-)_n—N(^+)RR^1R^2$;
n is a whole number between 0 and 20;
R, R^1 and R^2 are the same or different and are hydrogen, a linear or branched alkyl with 1 to 30 carbon atoms, phenyl, or a C_7–C_{30} alkylphenyl radical;
R^3 is $—CH_2—CH(OH)—(CH_2)_n—N(^+)RR^1R^2$;
R^4 is $—NR—R^3$;
R^5 is



Ar is phenyl or a C_7–C_{30} alkylphenyl radical;
B is OR or R^3 where R and R^3 have the same meanings as for A;
C is $—CH_2OH$; $—CH_2OR$; —COOH; —COOR; $—CH_2OR^3$; or $—CO—NR—(CH_2)_n—NR—R^3$ where R,R^3, and n are as defined previously, with the provisos that (1) if R is hydrogen, R^1 and R^2 are not hydrogen, (2) for each cationized nitrogen atom, there exists one anion X of a pharmaceutically acceptable acid, said anion selected from the group consisting of Cl—, Br—, I—, HSO_4—, CH_3OSO_3—, NO_3—, and $EtOSO_3$—, and (3) each of the side chains having a number of quaternary nitrogen atoms such that each monomer unit has a cationic charge density greater than or equal to two comprising
(a) pretreating the natural polysaccharide, if insoluble in water, with an acid solution or, if soluble in water, with an alkaline hydroxide;
(b) dissolving the pretreated polysaccharide of step (a) in water or in an organic solvent and reprecipitating the polysaccharide in amorphous form from the solution;
(c) suspending or dissolving in an organic solvent the precipitated polysaccharide of step (b) and reacting same with aliphatic and/or aromatic amines and/or amino acids having the structure intended to be introduced into the polysaccharide molecules as side chains; and
(d) cationizing the polysaccharide side chain(s) by reacting same with quaternary ammonium salts having equal or different nitrogen substituents and having a reactive epoxide or halohydrin group.

5,059,686

SILATED POLYSACCHARIDES

Arjun Sau, Newark, Del., assignor to Aqualon Company, Wilmington, Del.

Filed Sep. 28, 1990, Ser. No. 589,416

Int. Cl.[5] **C08B** *37/02, 37/08, 37/12, 31/02*

U.S. Cl. 536—114 **8 Claims**

1. A silated polysaccharide containing from 0.005 to 2.0 hydrolytically stable silyl groups convalently bound to the polysaccharide per anhydrosaccharide unit where the polysaccharide is selected from the group of guar gum, guar ether, xanthan gum, chitosna, dextran, starch and starch ether.

5,059,687

PROCESS FOR THE CONDENSATION OF IMIDES AND ALCOHOLS OR AMINES

Christiaan Schröder, Stein; Albert A. Van Geenen, Brunssum, and Josefina M. A. Schiffer, Vaals, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Apr. 12, 1990, Ser. No. 507,851

Claims priority, application Netherlands, Apr. 14, 1989, 8900937

Int. Cl.[5] **C07D** *233/38, 207/273, 211/40*

U.S. Cl. 540—526 **12 Claims**

1. A process for the condensation of imides and alcohols or amines to form ester acyl lactams, amide acyl lactams or ester amide acyl lactams comprising the steps of reacting a polyol or a polyamine, in the liquid phase, with an acyl lactam, and condensing in the presence of a lactone or a lactam with fewer than 7 ring atoms or a compound containing a lactam group with fewer than 7 ring atoms.

5,059,688

1-ARYLOXY-2,3,4,5-TETRAHYDRO-3-BENZAZEPINE PREPARATION

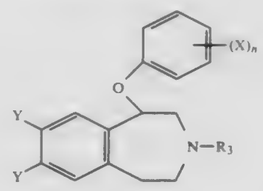
Richard C. Effland; Joseph T. Klein, both of Bridgewater, and Larry Davis, Sergeantsville, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 236,104, Aug. 23, 1988, Pat. No. 4,935,418, which is a division of Ser. No. 819,439, Jan. 16, 1986, Pat. No. 4,794,181, which is a continuation of Ser. No. 541,767, Oct. 13, 1983, abandoned, which is a continuation-in-part of Ser. No. 387,916, Jun. 14, 1982, Pat. No. 4,988,690. This application Apr. 23, 1990, Ser. No. 513,400

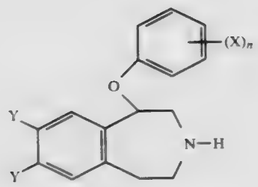
Int. Cl.[5] **C07D** *223/16*

U.S. Cl. 540—594 **1 Claim**

1. A method of preparing a compound of the formula



where
n is 1 or 2;
each X is independently hydrogen, halogen, loweralkyl, loweralkoxy, CF_3, CN, NO_2 or NH_2;
each Y is independently hydrogen or loweralkoxy; and
R_3 is loweralkyl, cycloalkylloweralkyl, 4,4-di-(4-fluorophenyl)-butyl, aryllowerlalkyl, aryloxyloweralkyl, cyanoloweralkyl, aminoloweralkyl, loweralkylaminoloweralkyl, diloweralkylaminoloweralkyl or aminocarbonylloweralkyl, the term aryl in each occurrence signifying a phenyl group optionally mono-substituted with halogen, loweralkyl, loweralkoxy, CF_3, NO_2 or NH_2;
which method comprises allowing a compound of the formula



to react with a halide compound of the formula R_3-Hal where Hal is chlorine, bromine or iodine in the presence of a base to afford said compound.

5,059,689

TETRAMETHYLPIPERIDINO-S-TRIAZINES

Jean Rody, Riehen; Gerhard Rytz, Schwarzenburg, and Mario Slongo, Tafers, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

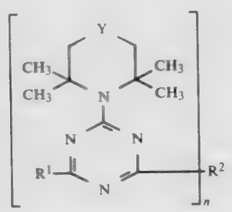
Filed Jan. 30, 1989, Ser. No. 303,217

Claims priority, application Switzerland, Feb. 8, 1988, 440/88

Int. Cl.[5] C07D *279/12, 403/06, 401/06, 403/12*

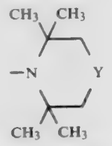
U.S. Cl. 544—6 **18 Claims**

1. A 2,2,6,6-tetramethyl-1-piperidyl-triazinyl compound of the formula II

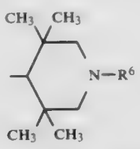


II

in which n is an integer from 1 to 6, R^1 is a radical of the formula

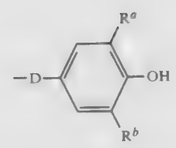


or Cl, OH, $—OR^3$, $—SR^3$ or $—NR^4R^5$, where R^3 is C_1–C_{18}alkyl, allyl, cyclohexyl, benzyl, phenyl or a group of the formula A



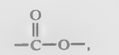
A

R^4 is hydrogen, C_1–C_{12}alkyl, 2-hydroxyethyl, allyl, cyclohexyl, benzyl or a group of the formula A, R^5 is C_1–C_{12}alkyl, 2-hydroxyethyl, allyl, cyclohexyl, benzyl, phenyl, phenyl which is substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy, a group of the formula A or a group of the formula C

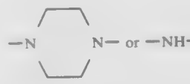


C

in which D is C_2–C_{20}alkylene interrupted by



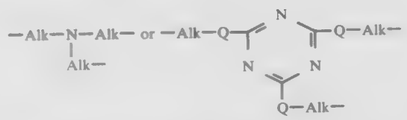
R^a *and* R^b are C_1–C_{12}alkyl, C_5–C_6cycloalkyl, C_6–C_{10}aryl or C_7–C_9phenylalkyl and R^a is also hydrogen, or R^4 and R^5 together are C_4–C_8alkylene which may optionally be interrupted by —O— or $—N(R^8)—$ and in which R^8 is hydrogen, C_1–C_4alkyl or acetyl, R^6 is hydrogen, C_1–C_{12}alkyl, C_7–C_9phenylalkyl, C_3–C_5alkenyl, C_2–C_4alkanoyl, C_3–C_5alkenoyl, —O, —OH or $—OR^7$ and R^7 is C_1–C_{18}alkyl, C_5–C_8cycloalkyl, C_7–C_9phenylalkyl, phenyl, C_2–C_{18}alkanoyl or benzoyl, R^2, if n=1, is Cl, OH, $—OR^3$, $—SR^3$ or $—NR^4R^5$, if n=2, R^2 is a group —O—R^9—O—, —S—R^9—S—, $—N(R^{10})—R^9—N(R^{10})—$, $—O—R^9—N(R^{10})—$,



where R^9 is C_2–C_{20}alkylene which may optionally be interrupted by one or more —O—, $—N(R^8)—$ or $—OOC—R^{1-7}—COO—$, C_4–C_8alkenylene, C_5–C_8cycloalkylene, xylylene, phenylene or tolylene, R^{10} is hydrogen, C_1–C_{12}alkyl, ally, 2-hydroxyethyl, benzyl, phenyl or a group of the formula A, if n=3, R^2 is a group



in which a is 2 or 3, Q is —O—, —S— or $—N(R^{10})—$ and T is C_3–C_{20}alkanetriyl or a group



in which Alk is a C_2–C_{12}alkylene group, if n=4, R^2 is a group $C(CH_2O—)_4$ or



in which a is 2 or 3 and b is 2–12, if n=5, R^2 is a group

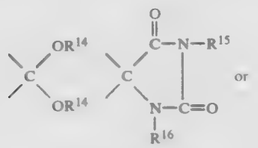


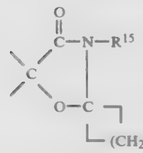
and if n=6, R^2 is a group



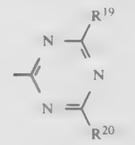
Y is a group





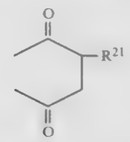


in which m is 0, 1 or 2, q is an integer from 5–11, R^{11} is hydrogen, C_1–C_{18}alkyl, C_3–C_7alkenyl, C_5–C_8cycloalkyl, C_7–C_{11}aralkyl or a group —CO—R^{18}, R^{12} is hydrogen, C_1–C_{12}alkyl, C_3–C_7alkenyl, C_5–C_8cycloalkyl, C_7–C_{11}aralkyl, C_2–C_4hydroxyalkyl, C_3–C_8alkoxyalkyl, C_4–C_{20}dialkylaminoalkyl, C_3–C_{14}alkoxycarbonylalkyl or a group of the formula A, R^{13} is C_1–C_{12}alkyl, C_2–C_4hydroxyalkyl, C_3–C_7alkenyl, C_5–C_8cycloalkyl, phenyl, phenyl which is substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy, c_2–C_{20}alkanoyl, C_3–C_8alkenoyl, benzoyl, phenylacetyl or a triazinyl radical of the formula B



B

or R^{12} and R^{13} together are C_4–C_8alkylene which may optionally be interrupted by —O— or $—N(R^8)—$ or R^{12} and R^{13} together are a radical of the formula



in which R^{21} is C_1–C_{18}alkyl, R^{14} is C_1–C_{18}alkyl, C_5–C_8cycloalkyl or C_7–C_9phenylalkyl or both groups R^{14} together are C_2–C_6alkylene, o-phenylene or o-xylylene, R^{15} is hydrogen, C_1–C_{12}alkyl, C_3–C_5alkenyl, C_7–C_9phenylalkyl, C_2–C_4hydroxyalkyl, C_3–C_8alkoxyalkyl or C_3–C_{14}alkoxycarbonylalkyl, R^{16} is hydrogen, C_1–C_{12}alkyl, allyl or benzyl, R^{17} is C_1–C_{12}alkylene, vinylene, cyclohexylene, xylylene or C_6–C_{12}arylene, R^{18} is C_1–C_{18}alkyl, C_2–C_6alkenyl, C_5–C_8cycloalkyl, C_7–C_9phenylalkyl, phenyl or phenyl which is substituted by halogen, nitro, C_1–C_4alkyl, hydroxyl or C_1–C_4alkoxy or C_7–C_9phenylalkyl which is substituted by hydroxyl and C_1–C_4alkyl, R^{19} is as defined for R^1, and R^{20} is Cl, —OH, $—OR^3$, $—SR^3$ or $—NR^4R^5$.

5,059,690

PURINYL TETRAHYDROFURANS

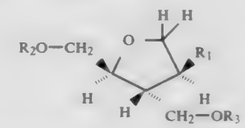
Robert Zahler, Princeton, and Joseph A. Tino, Robbinsville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 1, 1990, Ser. No. 486,988

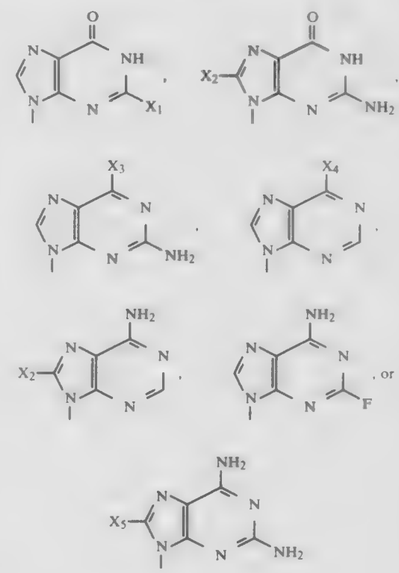
Int. Cl.[5] A61K *31/52;* **C07D** *473/18, 473/30, 473/34*

U.S. Cl. 544—276 **13 Claims**

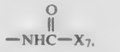
1. A compound having the formula



and pharmaceutically acceptable salts thereof wherein R_1 is



wherein X_1 is hydrogen, amino,



$—N=CHN(X_8)_2$

X_2 is methyl, fluoro, chloro, bromo, iodo, hydroxy, or amino,

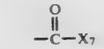
X_3 is hydrogen, chloro, or O-X_8,

X_4 is amino, chloro,

or $—N=CHN(X_8)_2$

X_5 is hydrogen, methyl, fluoro, chloro, bromo, iodo, hydroxy, or amino,

R_2 and R_3 are independently hydrogen, $—PO_3H_2$, or



the term "alkyl" refers to straight and branched chained groups of 1 to 10 carbons,

the term "substituted alkyl" refers to alkyl groups having one or more substituents selected from the group consisting of halogen, amino, axiod, hydroxy, cyano, trialkylammonium (wherein each alkyl group has 1 to 6 carbons), alkoxy of 1 to 6 carbons, phenyl, substituted phenyl, and carboxy, and

the term "substituted phenyl" refers to a phenyl substituted with one, two, or three groups selected from the group consisting of alkyl of 1 to 6 carbons, alkoxy of 1 to 6 carbons, halogen, trifluoromethyl, amino, alkylamino of 1 to 6 carbons, halogen, trifluoromethyl, amino, alkylamino of 1 to 6 carbons, dialkylamino (wherein each alkyl group has 1 to 6 carbons), nitro, cyano, alkanoyloxy of 2 to 11 carbons, carboxy, carbonyl, and hydroxy.

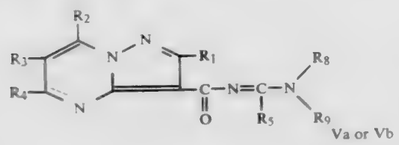
5,059,691

N-((DIALKYLAMINO)METHYLENE)-SUBSTITUTED PYRAZOLO (1,5-A)-PYRIMIDINE-3-CARBOXAMIDES AND N-((DIALKYLAMINO)METHYLENE)-SUBSTITUTED-4,5-DIHYDROPYRAZOLO-(1,5-A)-PYRIMIDINE-3-CARBOXAMIDES

John P. Dusza, Nanuet, N.Y., and Shin S. Tseng, Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

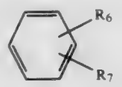
Filed Jan. 22, 1990, Ser. No. 468,449
Int. Cl.[5] C07D *471/02*
U.S. Cl. 544—281 **9 Claims**

1. A compound of the formula:



Va or Vb

wherein --- may represent the presence of a double bond between the N^4 and C^5 position, Va, or the absence of a double bond between the N^4 and C^5 position and a hydrogen atom bonded to the N^4 position, Vb; R_1, R_3, R_4 and R_5 may be the same or different and are hydrogen or C_1 to C_3 alkyl; R_2 is



where R_6 and R_7 may be the same or different and are hydrogen, halogen, C_1 to C_3 alkyl or trifluoromethyl; R_8 and R_9 may be the same or different and are C_1 to C_3 alkyl, and where halogen is chlorine, bromine or fluorine; or a pharmaceutically-acceptable salt thereof.

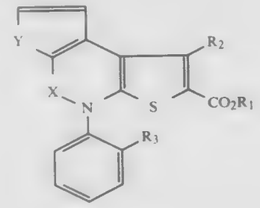
5,059,692

COMPOUNDS EXHIBITING A VASODILATING ACTIVITY AND INHIBITORY ACTIVITY FOR PLATELET AGGREGATION

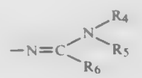
Hiroyoshi Hidaka, 1105-1-5-104, Hachimanyama, Tenpaku-ku, Nagoya-shi, Aichi-ken; Tomohiko Ishikawa, 2-C, Kohpo-Ogawa, 1-64-12, Fukiago-cho, Showa-ku, Nagoya-shi, Aichi-ken; Tsutomu Inoue, 1-8-2-201, Futawanishi, Funabashi-shi, Chiba-ken; Masayuki Yuasa, 3-25-5-103, Showa-machi, Akishima-shi, Tokyo-to; Takashi Inaba, 3-5-11-403, Sakae-cho, Higashimurayama-shi, Tokyo-to; Kenji Naito, 5-7-6-106, Matsubara-cho, Akishima-shi, Tokyo; Osamu Sakuma, 2-40-3-1105, Sekido, Tama-shi, Tokyo-to; Tadashi Morita, 2-9-10, Minamigashiwa, Kashiwa-shi, Chiba-ken, and Shinpei Kidokoro, 6-27-16, Daita, Setagaya-ku, Tokyo-to, all of Japan

Filed Aug. 30, 1990, Ser. No. 574,730
Claims priority, application Japan, Sep. 1, 1989, 1-224374; Sep. 12, 1989, 1-234793
Int. Cl.[5] C07D *455/04, 513/16*
U.S. Cl. 546—80 **11 Claims**

1. A compound represented by the formula:



wherein R_1 represents an alkyl group having 1 to 3 carbon atoms, R_2 represents an amino group or a group of formula



in which R_4 represents an alkyl group having 1 to 3 carbon atoms, R_5 represents an alkyl group having 1 to 3 carbon atoms or may combine with R_6 to form a five or six membered ring containing 4 to 5 carbon atoms, R_6 represents a hydrogen atom or may combine with R_5 to form a five or six membered ring containing 4 to 5 carbon atoms, R_3 represents a hydrogen atom, an alkyl group having 1 to 3 carbon atoms or a halogen atom, X represents a carbonyl group or a methylene group, Y represents a sulfur atom or a vinylene group and pharmaceutically acceptable salts thereof.

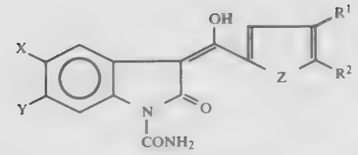
5,059,693

PROCESS FOR MAKING 3-AROYL-2-OXINDOLE-1-CARBOXAMIDES

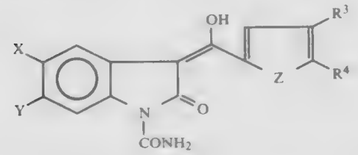
Gary R. Schulte, Stonington, and Frederick J. Ehrgott, Norwich, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 6, 1989, Ser. No. 417,988
Int. Cl.[5] C07D *405/06, 409/06*
U.S. Cl. 548—468 **7 Claims**

1. Process for making compounds of the formula



wherein X and Y are each hydrogen, chloro or fluoro; R^1 and R^2 are each hydrogen, deuterium or tritiium; and Z is O or S which comprises the reductive dehalogenation of a compound of the formula



(I)

wherein R^3 and R^4 are each hydrogen, bromo or iodo using hydrogen, deuterium or tritium gas and a $Pd/BaSO_4$ catalyst in a reaction-inert solvent containing a 1–3 molar excess, based on the reactant of formula I, of a tri(lower)alkylamine with the provisos that (1) at least one of R^3 and R^4 is bromo or iodo; and wherein (2) when R^1 is deuterium, R^2 is deuterium or hydrogen; and wherein (3) when R^1 is tritium, R^2 is tritium or hydrogen.

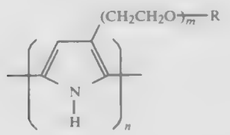
5,059,694

3-SUBSTITUTED POLYPYRROLE

Didier Delabouglise, Thiais; Marc Lemaire, Paris; Jean Roncali, and Francis Garnier, both of Thiais, all of France, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 509,785
Claims priority, application Japan, Apr. 18, 1989, 1-096592
Int. Cl.[5] C07D *207/06;* **C08F** *26/06*
U.S. Cl. 548—518 **2 Claims**

1. A 3-substituted polypyrrole represented by the following formula (I)



(I)

wherein R is an alkyl group having 1 to 5 carbon atoms, m is an integer of from 1 to 20, and n is an integer of 2 or more.

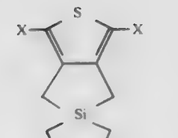
5,059,695

SILANE COMPOUND FOR USE IN THE SYNTHESIS OF SEMICONDUCTING POLYMERS WITH PERPENDICULAR ARRANGED CORES

James M. Tour; Ruilian Wu, and Jeffry S. Schumm, all of Columbia, S.C., assignors to The University of South Carolina, Columbia, S.C.

Filed Mar. 12, 1990, Ser. No. 492,543
Int. Cl.[5] C07D *521/00*
U.S. Cl. 549—4 **6 Claims**

1. A compound of the formula



wherein X is a reactive group other than $—O—SO_2—CH_3$ through which polymeric subunits can be bonded to the compound.

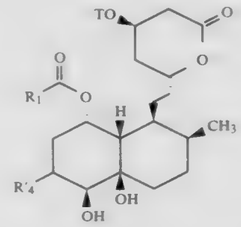
5,059,696

PROCESSES AND INTERMEDIATES FOR THE PREPARATION OF 5-OXYGENATED HMG-COA REDUCTASE INHIBITORS

Robert K. Anderson, Plainsboro; Ann E. DeCamp, N. Plainfield; Alan T. Kawaguchi, Berkeley Heights; Anthony O. King, Hillsborough; Sander G. Mills, Woodbridge, and Ralph P. Volante, East Windsor, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 15, 1990, Ser. No. 493,595
Int. Cl.[5] C07F *7/18;* **C07D** *309/10*
U.S. Cl. 549—214 **4 Claims**

1. A compound of structural formula (3):



(3)

wherein:

T is H, tert-butyldimethylsilyl, tert-butyldiphenylsilyl, trimethylsilyl, triethylsilyl, triiospropylsilyl, or tetrahydropyranyl;

R_1 is selected from:

(1) C_{1-10} alkyl;

(2) substituted Cl-10 alkyl in which one or more substituent(s) is selected from

(a) halogen,

(b) hydroxy,

(c) C_{1-10} alkoxy,

(d) C_{1-5} alkoxycarbonyl,

(e) C_{1-5} acyloxy,

(f) C_{3-8} cycloalkyl

(g) phenyl,

(h) substituted phenyl in which the substituents are X and Y,

C_{3-10} alkyl-$S(O)_n$ in which n is 0 to 2,

(j) C_{3-8}-cycloalkyl-$S(O)_n$,

(k) phenyls$(O)_n$,

substituted phenyl $S(O)_n$ in which the substituents are X and Y, and

(m) oxo;

(3) C_{1-10} alkoxy;

(4) C_{2-10} alkenyl;

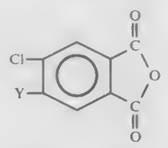
(5) C_{3-8} cycloalkyl; one substituted C3-8 cycloalkyl in which one substituent is selected from

(a) C_{1-10} alkyl
(b) substituted C_{1-10} alkyl in which the substituent is selected from
(i) halogen,
(ii) hydroxy,
(iii) C_{1-10} alkoxy,
(iv) C_{1-5} alkoxycarbonyl,
(v) C_{1-5} acyloxy,
(vi) phenyl,
(vii) substituted phenyl in which the substituents are X and Y
(viii) C_{1-10} alkyl-S(O)n,
(ix) C3-8 cycloalkyl-S(O)$_n$,
(x) phenyl-S(O)$_n$,
(xi) substituted phenyl-S(O)$_n$ in which the substituents are X and Y, and
(xii) oxo,
(c) C_{1-10} alkyl-S(O)$_n$,
(d) C_{3-8} cycloalkyl-S(O)$_n$,
(e) phenyl S(O)$_n$,
(f) substituted phenyl-S(O)$_n$ in which substituents are X and Y,
(g) halogen,
(h) hydroxy,
(i) C_{1-10} alkoxy,
(j) C_{1-5} alkoxycarbonyl,
(k) C_{1-5} acyloxy,
(l) phenyl, and
(m) substituted phenyl in which the substituents are X and Y;
(7) phenyl;
(8) substituted phenyl in which the substituents are X and Y;
(9) amino;
(10) C_{1-5} alkylamino;
(11) di(C_{1-5} alkyl)amino;
(12) phenylamino;
(13) substituted phenylamino in which the substituents are X and Y;
(14) phenyl C_{1-10} alkylamino;
(15) substituted phenyl C_{1-10} alkylamino in which the substituents are X and Y;
(16) a member selected from
(a) piperidinyl,
(b) pyrrolidinyl,
(c) piperazinyl,
(d) morpholinyl, and
(e) thiomorpholinyl; and
(17) R_5S in which R_5 is selected from
(a) C_{1-10} alkyl,
(b) phenyl, and
(c) substituted phenyl in which the substituents are X and Y;

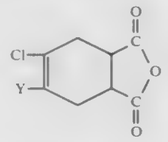
R'_4 is CH_3, CH_2OT or H; X and Y are independently selected from:
a) OH,
b) halogen,
c) trifluoromethyl,
d) C_{1-3}alkoxy,
e) C_{1-3}alkylcarbonyloxy,
f) phenylcarbonyloxy,
g) C_{1-3}alkoxycarbonyl,
h) phenyloxycarbonyl,
i) hydrogen;
j) C_{1-5}alkyl.

5,059,697
PREPARATION OF HALOGENATED PHTHALIC ANHYDRIDES
Lawrence B. Fertel, Buffalo; Neil J. O'Reilly, and Henry C. Lin, both of Grand Island, all of N.Y., assignors to Occidental Chemical Corporation, Grand Island, N.Y.
Filed Jun. 14, 1990, Ser. No. 537,717
Int. Cl.[5] C07D *307/77, 307/36*
U.S. Cl. 549—246 **9 Claims**

1. A process for the preparation of a halogen-substituted phthalic anhydride of the formula



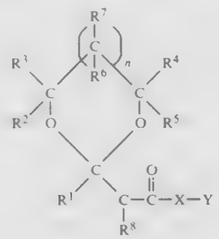
where Y is either hydrogen or chlorine, by heating a halogen substituted tetrahydrophthalic anhydride of the formula

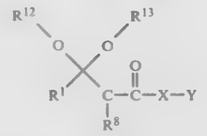


where Y is either hydrogen or chlorine, in a liquid phase, with at least partial exclusion of air in the presence of activated carbon.

5,059,698
UNSATURATED BETA-KETO-ESTER ACETALS
Adrian Schulthess, Tentlingen, and Max Hunziker, Düdingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jun. 9, 1989, Ser. No. 363,801
Claims priority, application Switzerland, Jun. 13, 1988, 2257/88
Int. Cl.[5] C07D *317/22, 319/04;* **C07F** *69/708*
U.S. Cl. 549—375 **3 Claims**

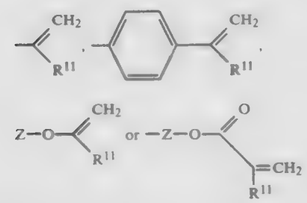
1. A compound of the formula I or II


(I)

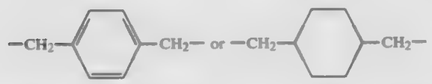

(II)

in which n is zero or the number 1, R^1 is hydrogen, C_1–C_4alkyl which is unsubstituted or substituted by a chlorine atom or

atoms, a C_2–C_4alkyl interrupted by an ether oxygen atom or atoms, phenyl or benzyl, R^2, R^3, R^4, R^5, R^6 and R^7 independently of one another are each a hydrogen atom, chlorine atom, C_1–C_6alkyl or phenyl, R^8 is a hydrogen atom, phenyl, p-nitrophenyl, p-cyanophenyl or the radical —COOR[9], in which R^9 is C_1–C_6alkyl or phenyl, X is an oxygen atom, Y is a radical of the formulae



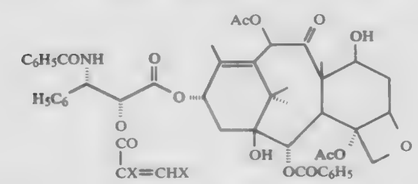
in which R^{11} is a hydrogen atom or C_1–C_4alkyl, Z is one of the following radicals $—(CH_2)_b—$, $—CH_2—CH_2—OCH_2—CH_2—)_cOCH_2—CH_2—$, $—CH_2—CHR^{11}—$,



in which b is a number from 3 to 5 and c is zero or a number from 1 to 3, and R^{12} and R^{13} independently of one another are each C_1–C_4alkyl.

5,059,699
WATER SOLUBLE DERIVATIVES OF TAXOL
David G. I. Kingston, and Zhi-Yang Zhao, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.
Filed Aug. 28, 1990, Ser. No. 573,731
Int. Cl.[5] C07D *305/14;* **A61K** *31/335*
U.S. Cl. 549—511 **8 Claims**

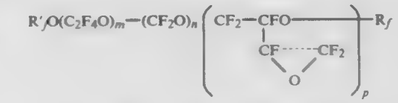
1. A taxol compound having the following structure:



wherein:
X is selected from the group consisting of H, alkyls, and aryls.

5,059,700
PERFLUOROPOLYETHERS FREE FROM PEROXIDIC OXYGEN AND CONTAINING PERFLUOROEPOXY GROUPS POSITIONED ALONG THE PERFLUOROPOLYETHER CHAIN, AND THEIR DERIVATIVES
Giuseppe Marchionni, Milan; Ugo De Patto, Cogliate; Ezio Strepparola, Treviglio, and Gian Tommaso Viola, Cervia, all of Italy, assignors to Ausimont S.p.A., Milan, Italy
Continuation of Ser. No. 287,168, Dec. 21, 1988, abandoned, which is a division of Ser. No. 45,541, May 4, 1987, Pat. No. 4,853,097. This application Jul. 30, 1990, Ser. No. 561,251
Claims priority, application Italy, May 7, 1986, 20346 A/86
Int. Cl.[5] C07D *303/08*
U.S. Cl. 549—550 **3 Claims**

1. A perfluoropolyether prepared by photooxidation of tetrafluoroethylene and perfluoro-butadiene comprising the following formula:



which do not contain peroxidic oxygen wherein:
R_f and R'_f are $—CF_2COF$ or $—CF_3$ end groups at least one being $—CF_2COF$, or groups R_f, R'_f are $—CF_2COOR$, or $—CF_2Br$ m, n and p are integers different from zero, the m/n ratio is within the range of from 0.5 to 2, the oxyfluoroalkylene units being randomly distributed along the chain; and the (m+n)/p ratio ranging from 3 to 40.

5,059,701
METHODS FOR PREPARATION OF CYCLOPENTADIENYLIRON (II) ARENES
Steven J. Keipert, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 20, 1990, Ser. No. 585,865
Int. Cl.[5] C07F *15/02*
U.S. Cl. 556—13 **23 Claims**

1. A method for preparing a cyclopentadienyliron (II) arene cation complex salt comprising the steps:
a) providing a mixture comprising ferrocene, an arene, a Lewis acid, and a ferrous salt in an amount sufficient to effect complete reaction,
b) isolating the product of said reaction.

5,059,702
^{124}SN-LABELLED TETRA-N-BUTYLTIN AND TRI-N-BUTYLTIN BROMIDE
Carol A. Dooley, San Diego, Calif., and John P. Testa, Jr., Oklahoma City, Okla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 29, 1989, Ser. No. 414,994
Int. Cl.[5] C07F *7/22*
U.S. Cl. 556—104 **8 Claims**

1. A stable-isotope-labelled compound comprising tri-n-butyl(^{124})tin bromide enriched with the isotope ^{124}Sn to produce at least a 5% increase of the amount of the isotope ^{124}Sn in the labelled compound over the natural abundance of the isotope ^{124}Sn in an unlabelled tin compound.

5,059,703

HYDROCARBON SOLUBLE COPPER ALKOXIDE COMPOSITIONS

Andrzej M. Piotrowski, Houston, and Dennis B. Malpass, La Porte, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Continuation of Ser. No. 129,796, Dec. 7, 1987, Pat. No. 4,847,239. This application Apr. 7, 1989, Ser. No. 334,637

Int. Cl.[5] C07F *1/08*

U.S. Cl. 556—113 **4 Claims**

1. A process for forming copper alkoxy alkoxides of the formula CuOR or $Cu(OR)_2$, where R is alkoxy alkyl having a total carbon content of from about 3 to about 8, by an exchange reaction which comprises reacting a copper alkoxide with an alkoxy alcohol of the formula ROH, where R is as defined above.

5,059,704

FOLIAR-APPLIED HERBICIDAL COMPOSITIONS CONTAINING A SILICONE GLYCOL-SILICONE ALKANE TERPOLYMER ADJUVANT

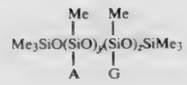
Lenin J. Petroff, Bay County; David J. Romensko, and Robert A. Ekeland, both of Midland County, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 450,342, Dec. 13, 1989, Pat. No. 4,990,175, and a continuation-in-part of Ser. No. 365,628, Jun. 13, 1989, abandoned. This application Sep. 12, 1990, Ser. No. 581,360

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—437 **3 Claims**

1. A silicone glycol-silicone alkane terpolymer having the average formula



wherein Me denotes a methyl radical, A is a linear or branched alkyl radical having 6 to 24 carbon atoms, G is a glycol moiety having the formula $—R'(OCH_2CH_2)_mOZ$, in which R' is a divalent alkylene group having 2 to 6 carbon atoms, Z is selected from the group consisting of hydrogen, an alkyl radical having 1 to 3 carbon atoms and an acyl group having 2 to 4 carbon atoms and m is 12 to 32, y is 0.1 to 1.25 and z is 0.75 to 1.9, with the proviso that when the weight fraction of $—OCH_2CH_2—$ groups of said terpolymer is less than 0.7 said alkyl radical A contains from 6 to 12 carbon atoms and when the weight fraction of $—OCH_2CH_2—$ groups of said terpolymer is more than 0.8 said alkyl radical A contains from 8 to 24 carbon atoms.

5,059,705

BUTADIENYL GROUP-CONTAINING SILOXANE COMPOUNDS AND METHOD OF PRODUCING THE SAME

Hiroshige Okinoshima, Annaka, and Hiroshi Kanbara, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

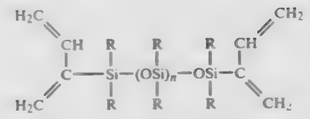
Filed Feb. 28, 1991, Ser. No. 662,038

Claims priority, application Japan, Feb. 28, 1990, 2-48318

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—453 **10 Claims**

1. A butadienyl group-containing siloxane compound having the following formula [1]:



[1]

wherein each R is a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 10 carbon atoms, the R groups may be the same or different, and n is an integer of from 0 to 100.

5,059,706

PROCESS FOR THE PREPARATION OF ALKYLHALOGENOSILANES

Bruno Degen, Much; Kurt Feldner, Leverkusen; Hans-Joachim Kaiser, Bergisch Gladbach, and Manfred Schulze, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 21, 1990, Ser. No. 497,466

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1989, 3910665

Int. Cl.[5] C07F *7/16*

U.S. Cl. 556—472 **3 Claims**

1. In a process for the preparation of alkylhalogenosilanes comprising by reacting silicon with an alkyl halide in the presence of catalysts and promoter substances, including phosphorus compounds the improvement comprising carrying out the reaction in the presence of gaseous or readily volatile phosphorus compounds.

5,059,707

HYDROXYL GROUP-CONTAINING ORGANOSILICON COMPOUND

Hisao Motegi; Takeshi Sunaga, and Michio Zenbayashi, all of Gunma, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

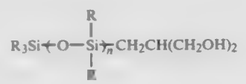
Filed Mar. 27, 1990, Ser. No. 499,875

Claims priority, application Japan, Mar. 29, 1989, 1-76912

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—449 **4 Claims**

1. A hydroxyl group-containing organosilicon compound represented by formula (I)



(I)

wherein R which may be the same or different each represents an alkyl group, an aryl group, or an alkenyl group, and n is an integer of 1 to 1,000.

5,059,708

PYRENE-RING-CONTAINING OLEFIN COMPOUND, INTERMEDIATE FOR SYNTHESIZING THE OLEFIN COMPOUND AND METHOD OF SYNTHESIZING THE OLEFIN COMOPUND

Tamotsu Aruga, Mishima; Masaomi Sasaki, Susono; Tomoyuki Shimada, and Hiroshi Adachi, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

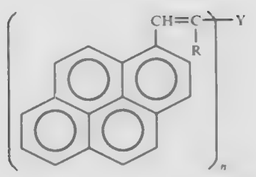
Filed Jan. 16, 1991, Ser. No. 641,903

Claims priority, application Japan, Jan. 19, 1990, 2-8288; Apr. 9, 1990, 2-94812; Apr. 27, 1990, 2-113510; Jul. 31, 1990, 2-204599; Jul. 31, 1990, 2-204600

Int. Cl.[5] C07C *15/38, 15/40;* C07F *9/38, 9/40*

U.S. Cl. 558—714 **3 Claims**

1. A pyrene-ring-containing olefin compound of formula [I]:



[1]

wherein R is a hydrogen atom, an unsubstituted or substituted alkyl group, or an unsubstituted or substituted aryl group; Y is an unsubstituted or substituted aliphatic hydrocarbon group, a cyclic hydrocarbon group, or an aromatic group; and n is an integer of 1 to 3, and when n is 1, Y and R may be bonded to form a ring.

5,059,709

PROCESS FOR THE SYNTHESIS OF α-[(DIALKYLAMINO)SUBSTITUTED-METHYLENE]-β--OXO--(SUBSTITUTED)PROPANENTRILES

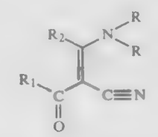
John P. Dusza, Nanuet, N.Y., and Robert F. Church, Cos Cob, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 13, 1990, Ser. No. 613,601

Int. Cl.[5] C07C *253/00*

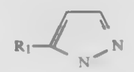
U.S. Cl. 558—309 **19 Claims**

1. A process for producing compounds of the formula:

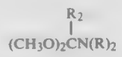


wherein R is lower alkyl (C_1–C_3); R_1 is selected from the group consisting of phenyl substituted by one of the group selected from halogen, nitro, alkyl(C_1–C_3) and alkoxy(C_1–C_3); phenyl di- or tri- substituted by methoxy, halogen and lower alkyl; phenyl substituted by one of the group consisting of dialkylamino(C_1–C_3), methylenedioxy, alkylthio(C_1–C_3), alkylsulfonyl(C_1–C_3)-amino, alkanoyl (C_1–C_3)amino, trifluoromethyl and phenyl; thienyl; thienyl substituted by one or two of the group selected from halogen and alkyl(C_1–C_3); furanyl; furanyl substituted by one or two of the group selected from alkyl(C_1–C_3), naphthalenyl, pyrazinyl and pyrrolyl; and R_2 is selected from the group consisting of hydrogen and lower alkyl(C_1–C_3); which comprises:

reacting a substituted isoxazole having the formula



with dialkylamide dimethylacetal having the formula



at a temperature from about 50° to about 100° C. and recovering the α-[(dialkylamino)substituted methylene]-β-oxo-(substituted)propanenitrile so produced.

5,059,710

IONIC PHOSPHITES AND THEIR USE IN HOMOGENEOUS TRANSITION METAL CATALYZED PROCESSES

Anthony G. Abatjoglou, Charleston, and David R. Bryant, South Charleston, both of W. Va., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

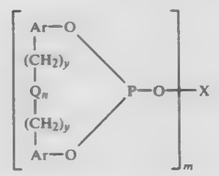
Filed Aug. 5, 1988, Ser. No. 228,507

Int. Cl.[5] C07F *9/141*

U.S. Cl. 558—78 **25 Claims**

1. An ionic phosphite ligand selected from the group consisting of

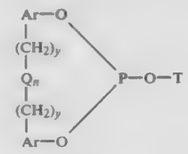
(i) poly-phosphites having the formula



(I)

wherein each Ar group represents an identical or different aryl radical; wherein X represents an m-valent hydrocarbon radical selected from the group consisting of alkylene, alkylene-oxy-alkylene, aryl, and aryl-$(CH_2)_y$—(Q-)$_n$—$(CH_2)_y$-aryl; wherein each y individually has a value of 0 or 1; wherein each Q individually represents a divalent briding group selected from the class consisting of $—CR^1R^2—$, —O—, —S—, $—NR^3—$, $—SiR^4R^5—$, and —CO—, wherein R^1 and R^2 each individually represents a radical selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, tolyl, and anisyl, wherein R^3, R^4, and R^5 each individually represents —H or $—CH_3$; wherein each n individually has a value of 0 to 1; wherein m has a value of 2 to 6; and wherein the polyphosphites of formula (I) contain at least one ionic moiety selected from the group consisting of salts of carboxylic acid and of sulfonic acid substituted on an aryl moiety of Ar or X;

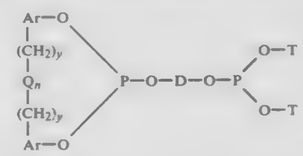
(ii) diorganophosphites having the formula



(II)

wherein T represents a monovalent hydrocarbon radical; wherein Ar, Q, n, and y are as defined above; and wherein the diorganophosphites of formula (II) contain at least one ionic moiety selected from the group consisting of salts of carboxylic acid and of sulfonic acid, substituted on an aryl moiety of Ar or T; and

(iii) open ended bis-phosphites having the formula



(III)

wherein D represents a divalent bridging group selected from the group consisting of alkylene, aryl, and aryl-

$(CH_2)_y$—Q_a—$(CH_2)_y$-aryl; wherein Ar, Q, n. y, and T are as defined above and each T may be identical or different; and wherein the bis-phosphites of formula (III) contain at least one ionic moiety selected from the group consisting of salts of carboxylic acid and of sulfonic acid substituted on an aryl moiety of Ar, D or T;

wherein said salts contain that number of cations needed to balance the charge of the acid anions substituted onto the phosphite ligand, said cations being selected from the group consisting of alkali metals, alkaline earth metals, and quaternary ammonium cations.

5,059,711

PROCESS FOR THE PREPARATION OF TRIFLUOROMETHANESULPHONIC ACID

Dietmar Bielefeldt, Ratingen, and Albrecht Marhold, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 24, 1988, Ser. No. 172,732

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1987, 3712318

Int. Cl.[5] C07C *303/00*

U.S. Cl. 562—113 **8 Claims**

1. A process for the preparation of trifluoromethanesulphonic acid, comprising reacting bis-(trifluoromethyl)disulphane in the liquid phase and in an acidic medium with an oxygen-containing oxidizing agent selected from the group consisting of an inorganic peracid, a salt of an inorganic peracid, an organic peracid, a peroxo salt, a sulphur-peroxo compound substituted with fluorine, an active oxygen-containing compound, an oxide of a metal in a higher valency state, a corresponding acid, a corresponding salt and molecular oxygen, wherein 5 to 20 parts by weight of acid are employed per part by weight of bis-(tri-fluoromethyl) disulphane and wherein said reacting is carried out at a temperature of −20° C. to 100° C.

5,059,712

ISOLATING AMINOARGININE AND USE TO BLOCK NITRIC OXIDE FORMATION IN BODY

Owen W. Griffith, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 13, 1989, Ser. No. 406,897

Int. Cl.[5] C07C *241/00*

U.S. Cl. 562—560 **10 Claims**

1. Pharmaceutically pure N^G-amino-L-arginine in the free base form.

4. A composition containing more than 99.9% by weight (on a water-free basis) of agent selected from the group consisting of N^G-aminoarginine containing L-enantiomer thereof and pharmaceutically acceptable acid addition salts of said N^G-aminoarginine.

5,059,713

PROCESS FOR THE PREPARATION OF N-VINYL AMIDES

John N. Armor, Orefield, and Gene E. Parris, Revere, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 211,806, Jun. 27, 1988, Pat. No. 4,942,259. This application May 24, 1990, Ser. No. 528,652

The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.

Int. Cl.[5] C07C *231/12*

U.S. Cl. 564—187 **17 Claims**

1. In a process for forming N-vinyl amides having the structural formula:

$$CH_2=CH-NHCOR^1$$

wherein R^1 is hydrogen, a C_1 to C_6 alkyl group or a C_6-C_9 aryl or substituted aryl group, by heating to a temperature of about 210°–350° C., carboxylic acid amides having the structural formula:

$$CH_3-\underset{\displaystyle R^2}{\underset{|}{CH}}-NHCOR^1$$

wherein R^1 is defined above, and

R^2 is a C_1 to C_9 alkoxy, carboxy or carboxamide group, the improvement for achieving higher conversions and/or selectivities for said N-vinyl amides which comprises:

heating said carboxylic acid amides in the presence of a porous catalyst which is MgS, CaO, SrO, $Sr(OH)_2$, $SrTiO_2$, $SrSnO_3$, or SrO/MgO.

5,059,714

INHIBITORS OF LYSYL OXIDASE

Michael G. Palfreyman; Philippe Bey, both of Cincinnati, and Ian A. McDonald, Loveland, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 512,624, Apr. 12, 1990, abandoned, which is a continuation of Ser. No. 160,382, Feb. 25, 1988, abandoned. This application Jan. 9, 1991, Ser. No. 637,977

Int. Cl.[5] C07C *211/24*

U.S. Cl. 564—509 **5 Claims**

1. A compound of the formula

$$X-\underset{\displaystyle R}{\underset{\|}{C}}-Y \quad \text{or} \quad X-\underset{\displaystyle R}{\underset{\|}{C}}-Y$$
$$R-C-CH_2NHR_1 \qquad R-A-C-CH_2NHR_1$$

wherein

X and Y are identical and are each either a chloro or bromo group or one of X and Y is a hydrogen and the other is a chloro or bromo group;

R_1 is a hydrogen or a $(C_1$–$C_4)$alkyl group;

A is a divalent radical group selected from

$$-(CH_2)_m-\underset{\displaystyle R_2}{\underset{|}{CH}}(CH_2)_n-$$

wherein

R_2 is hydrogen, methyl, or ethyl, and m and n, independently, are an integer from 0 to 16, provided that m+n cannot be greater than 17;

$$-(CH_2)_p-D-(CH_2)_q-$$

wherein

D is oxygen or sulfur, p is an integer of from 0 to 16, and q is an integer of from 1 to 16, provided that m+n cannot be greater than 17; and

$$-(CH_2)_r-CH=CH-(CH_2)_s-$$

wherein

s is an integer of from 1 to 16 and r is an integer of from 0 to 16, provided that r+s cannot be greater than 16; and

R is a methyl group;

or a pharmaceutically acceptable salt thereof.

5,059,715

PREPARATION OF BIS(4-HYDROXYPHENYL)SULFONE

Michael Stumpp, Deidesheim; Peter Neumann, Mannheim; Wolfgang Ruehenback, Birkenau, and Michael Bergner, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 413,585, Sep. 28, 1989, abandoned. This application Mar. 14, 1991, Ser. No. 668,328

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1988, 3835527

Int. Cl.[5] C07C *315/04*

U.S. Cl. 568—33 **8 Claims**

1. In a process for the preparation of bis(4-hydroxyphenyl)-sulfone by reacting phenol with sulfuric acid in the presence of a solvent at from 130° to 220° C. and in the presence or absence of a sulfonating assistant, the improvement comprising selectively crystallizing the bis(4-hydroxyphenyl)sulfone formed on a nucleating supercooled surface during or after the reaction, and removing the crystallized bis(4-hydroxyphenyl)sulfone selectively deposited on the nucleating supercooled surface from the reaction medium.

5,059,716

PROCESS FOR THE PREPARATION OF ALDEHYDES

Winfried Joentgen, Cologne, and Helmut Fiege, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

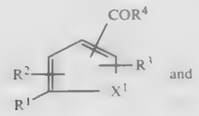
Filed Aug. 8, 1990, Ser. No. 564,226

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927786

Int. Cl.[5] C07C *45/41*

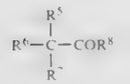
U.S. Cl. 568—435 **17 Claims**

1. A process for the preparation of an aromatic or an aliphatic aldehyde from aromatic carboxylic acids and derivatives of the formulae



(I)

and



(II)

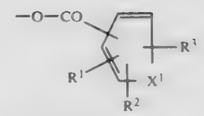
in which

R^1 is hydrogen, straight-chain or branched C_1–C_8-alkyl, straight-chain or branched C_1–C_8-alkoxy, R^3-substituted phenyl, naphthyl, R^3-substituted phenoxy, R^3-substituted benzyl, R^3-substituted benzyloxy, hydroxyl, amino, NH-(C_1–C_8-alkyl), N-(C_1–C_8-alkyl)$_2$, halogen or COR^4,

R^2 represents hydrogen, straight-chain or branched C_1–C_8-alkyl, straight-chain or branched C_1–C_8-alkoxy, or R^3-substituted phenyl, where R^1 and R^2 may together form a condensed benzene ring which may be substituted by hydroxyl, amino, methyl, ethyl, methoxy or ethoxy,

R^3 may be hydrogen, straight-chain or branched C_1–C_8-alkyl, straight-chain or branched C_1–C_8-alkoxy, hydroxyl, amino or halogen,

R^4 is hydroxyl, C_1–C_4-alkoxy, chlorine, bromine or the group



where in the latter case of anhydride formation, R^1 does not assume the meaning COR^4,

X^1 represents —O—, —N—, —S—, —N=CH—or —CH=CH—,

R^5 is hydrogen or straight-chain or branched C_1–C_8-alkyl,

R^6 represents straight-chain or branched C_1–C_8-alkyl, R^3-substituted phenyl or halogen,

R^7 represents straight-chain or branched C_1–C_8-alkyl or R^3-substituted phenyl, where the C_1–C_8-alkyl may be substituted by halogen, methoxy or ethoxy and where furthermore R^6 and R^7 are together dimethylene, tetramethylene or pentamethylene, and

R^8 is hydroxyl, C_1–C_4-alkoxy, chlorine, bromine or the group —O—CO—C(R^5,R^6, R^7),

by catalytic gas phase hydrogenation of the corresponding aromatic or aliphatic carboxylic acid or the ester, anhydride or halide thereof at a temperature of 300° to 500° C. using hydrogen, wherein a catalyst system composed of an oxide of titanium and/or vanadium whereby at least a part of the vanadium is present in the oxidation stage IV, and of one or more co-metals is used, the co-metals being selected from the group consisting of a chromium, molybdenum, cobalt, nickel, zinc, cadmium and copper.

5,059,717

METHOD FOR PURIFICATION OF 2,2'-DI(1,6,7-TRIHYDROXY-3-METHYL-5-ISOPROPYL-8-NAPHTHALDEHYDE)

Bakhtiyar T. Ibragimov, 3 proezd Ilyasova, 7; Samat A. Talipov, massiv Junusabad, kvartal 15, 31, kv. 98; Rustam G. Mardanov, ulitsa Gvardii polkovnika Khodzhaeva, 15, and Takhir F. Aripov, ulitsa Parashjutny gorodok, 8, all of Tashkent, U.S.S.R.

Continuation of Ser. No. 293,826, Jan. 5, 1989, abandoned. This application Jul. 16, 1990, Ser. No. 552,342

Int. Cl.[5] C07C *45/00*

U.S. Cl. 568—438 **1 Claim**

1. A method for purification of 2,2'-di(1,6,7-trihydroxy-3-methyl-5-isopropyl-8-naphthaldehyde) by crystallization of said 2,2'-di-(1,6,7-trihydroxy-3-methyl-5-isopropyl-8-naphthaldehyde) from a solution thereof in diethyl ether, which comprises the steps of:

1) preparing a solution containing 0.2–0.2 g/ml of said naphthaldehyde in diethyl ether,

2) adding hexane to said solution in an amount of 0.25–3 parts by volume per part of diethyl ether,

3) maintaining said solution at a temperature of from 10° to 30° C. until crystallization is complete, and

4) separating and drying the resulting crystalline precipitate.

5,059,718

OXO PROCESS FOR INCREASING YIELD OF OXO ALCOHOL

Jose M. Vargas, Baton Rouge, La.; Jean A. Hanin, Rixensart, Belgium, and John C. Reisch, Hilton Head, S.C., assignors to Exxon Chemical Patents Inc., Linden, N.J.

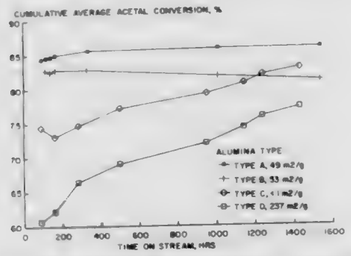
Filed Sep. 24, 1990, Ser. No. 586,906

Int. Cl.[5] C07C *29/14, 29/74*

U.S. Cl. 568—881 **9 Claims**

1. In the process for increasing the yield of an oxo alcohol prepared from the hydrogenation of a demetalled hydroformylation reaction product by hydrolyzing prior to hydrogenation the reaction product at conditions sufficient to convert an amount of acetal impurities in the reaction product to the

corresponding aldehyde or alcohol, the improvement comprising the step of conducting the hydrolysis in the presence of a catalytically effective amount of an alumina catalyst having a



surface area between about 40 to about 60 m^2/g and at a hydrolysis temperature between about 400 to about 600° F. and at a hydrolysis pressure between about 3,000 to about 3,500 psig.

5,059,719

ALKOXYLATION PROCESS USING CATALYST OF THE LANTHANUM SERIES

Charles L. Edwards, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 134,272, Dec. 17, 1987, abandoned. This application Mar. 23, 1990, Ser. No. 498,483

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] G07C *41/03*

U.S. Cl. 568—618 **30 Claims**

1. A process for the preparation of alkylene oxide adducts of active hydrogen containing organic compounds, which comprises contacting and reacting reactants consisting of (a) an alkylene oxide reactant selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof and (b) one or more active hydrogen containing organic compounds, in the presence of a catalytically effective amount of one or more soluble basic compounds of one or more of the elements of the lanthanum series, with the provision that said soluble basic compounds are sufficiently basic that a one percent by weight mixture of the compounds in water has a pH greater than 8.0.

5,059,720

HYDROXY CONTAINING FLUOROVINYL COMPOUNDS AND POLYMERS THEREOF

Ming-Hong Hung, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 473,083, Jan. 31, 1990. This application Oct. 9, 1990, Ser. No. 592,172

Int. Cl.[5] C07C *43/00*

U.S. Cl. 568—674 **3 Claims**

1. Hydroxy containing fluorovinyl ethers of the formula $CF_2{=}CF[OCF_2CF(CF_3)]_n(O)_p(CF_2)_mCH_2OH$ wherein:

p is 0 or 1;

m is 0 to 10 and n is 1 to 20; and

provided that when m is 0, p is 0; and

further provided that when m is greater than 0, p is 1.

5,059,721

PROCESS FOR PREPARING A BISPHENOL

Joseph B. Powell, and Zaida Diaz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

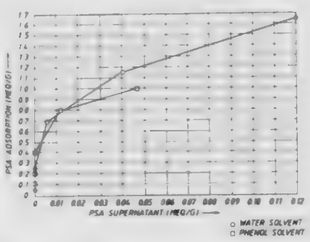
Filed Jul. 31, 1990, Ser. No. 560,956

Int. Cl.[5] C07C *37/20, 37/70, 39/14*

U.S. Cl. 568—724 **7 Claims**

1. A process for the production of bisphenol comprising the steps of:

(a) contacting, in a reaction zone, a carbonyl compound selected from the group consisting of ketones and aldehydes with a stoichiometric excess of a phenolic compound in the presence of an effective amount of an acidic ion exchange resin catalyst under conditions effective to produce a reaction product mixture comprising a bisphenol and a sulfonic acid;



(b) passing the reaction product mixture containing the bisphenol and the sulfonic acid in contact with a carbon adsorbent and producing an adsorbent-treated disphenol-containing reaction product stream having a lower sulfonic acid content than the reaction product mixture; and

(c) recovering bisphenol from the adsorbent-treated reaction product stream.

5,059,722

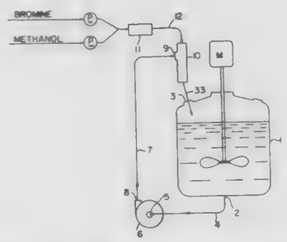
TETRABROMOBISPHENOL-A PROCESS

Olan W. Mitchell, Glen Carbon, Ill., and Bonnie G. McKinnie, Magnolia, Ark., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 205,729, Jun. 13, 1988, Pat. No. 4,909,997, which is a division of Ser. No. 125,931, Nov. 27, 1987, Pat. No. 4,783,556, which is a continuation of Ser. No. 870,813, Jun. 5, 1986, abandoned, which is a continuation-in-part of Ser. No. 778,710, Sep. 23, 1985, Pat. No. 4,628,124. This application Dec. 22, 1989, Ser. No. 455,099

Int. Cl.[5] C07C *39/367, 37/62*

U.S. Cl. 568—226 **5 Claims**



1. A process for preparing tetrabromobisphenol-A which comprises:

(a) providing a first stream comprised of bromine and methanol;

(b) providing a second stream comprised of bisphenol-A and methanol;

(c) forming a third stream by rapidly mixing the first and second stream together outside of a reaction vessel;

(d) feeding the third stream to the reaction vessel; and

(e) at least subsequent to (d), providing said second feed stream from the reaction vessel.

5,059,723

HYDROXYALKYLATION OF PHENOLS OR THIOPHENOLS WITH CYCLIC ORGANIC CARBONATES USING TRIORGANOPHOSPHINE CATALYSTS

Hans Dressler, Monroeville, Pa., assignor to Indspec Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 13, 1990, Ser. No. 552,428

Int. Cl.[5] C07C *41/01, 319/10*

U.S. Cl. 568—45 **19 Claims**

1. In a process for preparing hydroxyalkyl phenyl ethers prepared from phenolic compounds or hydroxyalkyl phenyl thioethers prepared from thiophenolic compounds comprising reacting the phenolic or thiophenolic compound with a cyclic organic carbonate compound in the presence of a catalyst, wherein the improvement comprises using as the catalyst a triorganophosphine compound.

5,059,724

PREPARATION OF METHYL ISOBUTYL KETONE

Po Y. Chen, Tao Yuan; Shiao J. Chu; Cha C. Chen, both of Hsin Chu; Nan S. Chang, Tai-nan; Wen C. Lin, and T. K. Chuang, both of Hsin Chu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation-in-part of Ser. No. 240,316, Sep. 2, 1988, abandoned. This application May 31, 1990, Ser. No. 531,395

Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—396 **4 Claims**

1. A process for the selective production of methyl isobutyl ketone, which comprises reacting in the vapor phase or the vapor/liquid phase acetone and hydrogen at a temperature of about 150° to 300° C. and a pressure of about 1 to 30 atmospheres, in the presence of a ZSM-5 zeolite catalyst having a molar ratio of from SiO_2/Al_2O_3 of about 30:1 to 100:1 and about 0.05 to 1% by weight of palladium, wherein said catalyst is prepared by treating a substantially completely acidic ZSM-5 zeolite with an alkali metal ion, m, so as to form a zeolite having the formula mHZSM-5, adding palladium to said mHZSM-5 zeolite by impregnation or ion-exchange, and activating the resulting catalyst with hydrogen or a mixture of hydrogen and nitrogen for at least two hours.

5,059,725

ONE STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL PLUS METHANOL USING GROUP IV OXIDES TREATED WITH SULFATES OR SULFURIC ACID

John F. Knifton, Austin, and John R. Sanderson, Leander, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Mar. 29, 1991, Ser. No. 677,192

Int. Cl.[5] C09D *41/00*

U.S. Cl. 568—698 **13 Claims**

1. In a method for the synthesis of methyl t-butyl ether from t-butanol and methanol in one step, the improvement comprising accomplishing the reaction in one step, using a catalyst consisting of a Group IV oxide that has been treated with a sulfur-containing compound from the group consisting of ammonium sulfate or sulfuric acid, contacting said t-butanol and methanol in a molar amount of 0.1 to 10 moles of methanol per mole of t-butanol at a temperature of about 20° C. to 250° C. and a pressure of about atmospheric to about 1000 psig and obtaining the MTBE product.

5,059,726

PROCESS FOR PRODUCING TETRABROMOBISPHENOL A

Hisao Eguchi; Masashige Kubo; Koji Kunimoto, all of Tokuyama; Sadami Shimizu, Tokyo; Masakatsu Sato, Matsudo, and Hanzo Tamabayashi, Tokuyama, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Division of Ser. No. 470,212, Jan. 25, 1990, Pat. No. 5,008,469. This application Oct. 22, 1990, Ser. No. 600,817

Int. Cl.[5] C07C *39/367, 39/62*

U.S. Cl. 568—726 **4 Claims**

1. A process for producing tetrabromobisphenol A which comprising brominating bisphenol A with bromine, at a temperature of between 0–50° C. wherein methanol containing from 5 to 15% by weight of water is used as the solvent for reaction, so that a hydrolyzable bromide and inorganic bromine ions in tetrabromobisphenol A are minimized.

5,059,727

METHOD FOR ALKYLATION OF PHENOLS, AND CATALYST THEREFOR

Muneo Ito, Tsukuba, Japan, assignor to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Aug. 21, 1990, Ser. No. 570,327

Claims priority, application Japan, Aug. 22, 1989, 1-214059

Int. Cl.[5] C07C *37/16*

U.S. Cl. 568—804 **10 Claims**

1. A method of alkylating phenols which comprises reacting a phenol having a hydrogen atom in at least one of the ortho-positions with regard to the hydroxyl group with an alcohol in a gaseous phase at a temperature between 300° C. and 450° C. in the presence of a catalyst comprising iron oxide, silica, chromium oxide, germanium oxide and an inorganic alkali metal compound.

5,059,728

PARTIALLY FLUORINATED ALKANES HAVING A TERTIARY STRUCTURE

Chien C. Li, East Aurora, N.Y., and Bernard Sukornick, Cooper City, Fla., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jun. 29, 1990, Ser. No. 546,067

Int. Cl.[5] C07C *19/02, 19/08*

U.S. Cl. 570—134 **13 Claims**

1. A compound having the formula



wherein each R is the same or different and is selected from the group consisting of CF_3, CHF_2, CH_2F, and CH_3CF_2, and R′ is an alkyl or fluoroalkyl group having 1 to 6 carbon atoms with the proviso that when each R is CF_3, R′ is not $CF_3(CF_2)_3CF_3(CF_2)_2$-, or CF_3CF_2-, or CF_3.

5,059,729

PROCESS FOR PREPARING 1,2-DIFLUOROETHANE AND 1,1,2-TRIFLUOROETHANE

Claudio Gervasutti, Mestre, Italy, assignor to Ausimont S.r.l., Milan, Italy

Continuation of Ser. No. 545,762, Jun. 29, 1990, abandoned, which is a continuation of Ser. No. 464,653, Jan. 11, 1990, abandoned, which is a continuation of Ser. No. 296,068, Jan. 12, 1989, abandoned. This application Apr. 2, 1991, Ser. No. 680,620

Claims priority, application Italy, Jan. 15, 1988, 19077 A/88

Int. Cl.[5] C07C *17/00*

U.S. Cl. 570—175 **4 Claims**

1. A process for preparing 1,2-difluoroethane, which comprises reacting 1,2-dichlorodifluoroethylene with hydrogen in

the gas phase at a temperature in the range of from 100° C. to 220° C. for a contact time ranging from 30 to 60 seconds, the molar ratio between H_2 and olefin being from 4 to 6, in the presence of a hydrogenation catalyst of palladium supported on carbon at concentrations of 0.1 to 5% by weight.

5,059,730

PROCESS FOR THE PURIFICATION OF VINYL CHLORIDE

Michel Strebelle, Brussels, Belgium, assignor to Solvay & Cie (Société Anonyme), Brussels, Belgium

Filed May 31, 1990, Ser. No. 531,343
Claims priority, application France, Jun. 2, 1989, 89 08234
Int. Cl.[5] C07C *17/38*
U.S. Cl. 570—238 **5 Claims**

1. Process for the removal from vinyl chloride of compounds of the unsaturated ester type exhibiting an enol ester structure, characterized in that the impure vinyl chloride undergoes a treatment comprising an alkaline washing stage followed by a stage of treatment with an alkali metal bisulphite.

5,059,731

PROCESS OF REDUCTION OF A REFINING CATALYST BEFORE ITS USE

Georges Berrebi, Bourg Les Valence, France, assignor to Europeene De Retraitement De Catalyseurs Eurecat, La Voulte Sur Rhone, France

Filed Feb. 6, 1990, Ser. No. 475,520
Claims priority, application France, Feb. 7, 1989, 89 01662
Int. Cl.[5] C07C *5/08;* **C10G** *45/34;* **B01J** *37/16, 23/40*
U.S. Cl. 585—259 **6 Claims**

1. In a process for selectively hydrogenating acetylenic and diolefinic hydrocarbons, comprising contacting said hydrocarbons with a catalyst and hydrogen, under hydrogenation conditions, the improvement wherein the catalyst is produced by a process comprising:

a) in a first stage, impregnating a catalyst, containing a support and an active phase with a base of at least one metal of the group VIII of the periodic table and/or at least one metal of group IB, between 0 and 50° C., with an aqueous or organic solution of a compound that is a reducing agent selected from the group consisting of aldehydes containing 2 to 14 carbon atoms per molecule, ketones or polyketones containing 1 to 18 carbon atoms per molecule and organic acids or polyacids containing 1 to 14 carbon atoms per molecule, so as to introduce 10 ppm to 100% by weight of reducing agent in the catalyst,

b) in a second stage, raising the temperature of the catalyst thus impregnated to a temperature between 100 and 150° C. and under a pressure of 1 to 10 bars, whereby reduction occurs,

c) in a third stage, drying the catalyst to eliminate the impregnation solvent and the water formed in step b),

wherein, during the first stage, there is added to the reducing agent at least one halocarboxylic acid, in an amount of 0.1 to 10% by weight, based on halogen, relative to the weight of the reducing agent.

5,059,732

PROCESS FOR SELECTIVE CATALYTIC HYDROGENATION IN LIQUID PHASE OF A NORMALLY GASEOUS FEED CONTAINING ETHYLENE, ACETYLENE AND GASOLINE

Jean Cosyns, Maule, and Jean-Paul Boitiaux, Poissy, both of France, assignors to Institut Francais du Petrol, Rueil Malmaison, France

Continuation of Ser. No. 327,444, Mar. 22, 1989, abandoned. This application Apr. 22, 1991, Ser. No. 689,095
Claims priority, application France, Mar. 23, 1988, 88 03909
Int. Cl.[5] C07C *5/00, 7/00*
U.S. Cl. 585—259 **16 Claims**

1. A process for the selective hydrogenation in the liquid phase of a hydrocarbon feed containing at least a gasoline cut and a normally gaseous hydrocarbon mixture containing ethylene and acetylene, said process comprising contacting said feed with a catalyst comprising at least supported palladium, whereby hydrogenation occurs, wherein the process is carried out in the presence of a liquid phase, said liquid phase containing at least part of a hydrogenated gasoline cut, which has been condensed and recycled after said hydrogenation to said feed, and wherein the feed contains 25 to 80% by weight of C_2 hydrocarbons.

5,059,733

PROCESS FOR MAKING 1-HEXENE AND HIGH OCTANE BLENDING COMPONENTS

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 22, 1990, Ser. No. 542,298
Int. Cl.[5] C07C *1/00*
U.S. Cl. 585—324 **16 Claims**

1. A process for making 1-hexene comprising:

A. reacting a mixture of C_6 olefin isomers comprising (1) n-hexenes and (2) reactive C_6 iso-olefins with an alcohol in the presence of an acid catalyst until the reactive C_6 iso-olefins are etherified;

B. separating the etherified C_6 iso-olefins from the product of step A;

C. reacting the remainder of the product of step A with an electrophilic compound containing reactive hydrogen under conditions which permit the electrophilic compound containing reactive hydrogen to add to carbon-carbon double bonds; and

D. cracking the product of step C to produce a mixture of C_6 olefins containing a quantity of 1-hexene greater than that in the mixture of C_6 olefin isomers employed in step A.

5,059,734

PROCESS FOR SELECTIVELY PRODUCING C5 TO C18 STRAIGHT CHAIN α OLEFINS

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 22, 1990, Ser. No. 542,297
Int. Cl.[5] C07C *1/00*
U.S. Cl. 585—324 **13 Claims**

1. A process for making C_5 to C_{18} straight chain α-olefins comprising: selectively cracking a mixture comprising (1) C_5 to C_{18} straight chain, saturated compounds having an electrophilic group in the 2 position and (2) C_5 to C_{18} straight chain, saturated compounds having an electrophilic group in a 3+ position under conditions whereby substantially more of the compounds having the electrophilic group at the 2 position are converted to olefins than are the compounds having the electrophilic group at a 3+ position.

5,059,735

PROCESS FOR THE PRODUCTION OF LIGHT OLEFINS FROM C_5+ HYDROCARBONS

Margaret Nemet-Mavrodin, Cherry Hill, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Continuation of Ser. No. 347,308, May 4, 1989, abandoned. This application Jan. 22, 1991, Ser. No. 643,706
Int. Cl.[5] C07C *5/393, 5/32*
U.S. Cl. 585—418 **18 Claims**

1. A process for converting a paraffinic feedstream containing at least 76 weight percent C_6–C_7 paraffins comprising the steps of:

(a) charging said paraffinic feedstream to a reaction zone containing a composite catalyst comprising a zeolite having a Constraint Index of between 1 and about 12 and Alpha Value of between 5 and 30 together with a supplemental feedstream containing at least 85 weight percent propane under conversion conditions including temperature of from about 400° C. to about 700° C., pressure of from about 0.1 atmosphere to about 60 atmospheres and weight hourly space velocity from about 0.1 to about 400;

(b) controlling the mass flowrate of said supplemental feedstream to maintain a weight ration of C_6–C_7 paraffins to propane of between about 2:1 and 3:1 to enhance the extent of conversion of said paraffinic feedstream to C_2–C_4 olefins; and

(c) recovering a product having more than 40 weight percent C_2–C_4 olefins and more than 10 weight percent C_6+ aromatics.

5,059,736

PROCESS FOR PRODUCTION OF SEC-BUTYLBENZENE

Mitsuhisa Tamura; Kazuhiro Yamauchi; Yasuhiko Higashio, and Kazutern Takahashi, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Apr. 24, 1990, Ser. No. 514,060
Claims priority, application Japan, Apr. 25, 1989, 1-106657; Feb. 27, 1990, 2-48849
Int. Cl.[5] C07C *2/70*
U.S. Cl. 585—461 **9 Claims**

1. A process for producing sec-butylbenzene from benzene and n-butene, comprising reacting benzene and n-butene in the presence of a homogeneous liquid aluminum chloride complex catalyst said catalyst comprising aluminum chloride, hydrogen chloride, and an aromatic hydrocarbon, wherein the amount of aluminum chloride used as a component of the complex catalyst is from 0.51 to 5% by weight of the benzene used, the reaction temperature is from 20° to 70° C., and the amount of isobutylbenzene formed as a by-product is such that the weight ratio of isobutylbenzene to sec-butylbenzene formed is not more than 0.01:1.

5,059,737

CATALYTIC CONDENSATION PROCESS

Tai-Hsiang Chao, Mt. Prospect; Fiona P. Wilcher, Wilmette; Mark R. Ford, Buffalo Grove, and Andrzej Z. Ringwelski, Marengo, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 288,921, Dec. 23, 1988, Pat. No. 4,946,815. This application Jul. 2, 1990, Ser. No. 546,971
Int. Cl.[5] C07C *2/66, 2/18, 1/20;* **B01J** *21/16*
U.S. Cl. 585—466 **11 Claims**

1. A process for conversion of hydrocarbons or oxygenated hydrocarbons in the presence of a solid phosphoric acid catalyst by contacting at hydrocarbon conversion conditions a hydrocarbon or oxygenated hydrocarbon feedstock with a solid phosphoric acid catalyst having a total silicon phosphate x-ray intensity greater than 40 percent relative to alpha-alumina and comprising silicon pyrophosphate crystallites with at least 1.0 percent x-ray intensity and silicon orthophosphate crystallites with at least 30 percent x-ray intensity, both relative to alpha-alumina, with the desired phosphoric acid catalyst crystallinity produced by crystallizing an amorphous mixture of an acid oxide of phosphorus and a siliceous material in a crystallizing means where the crystallizing means is operated at a temperature of from 350° to 450° C., and at a steam concentration of from 10 to 50 mole percent based upon the total vapor in the crystallizing means.

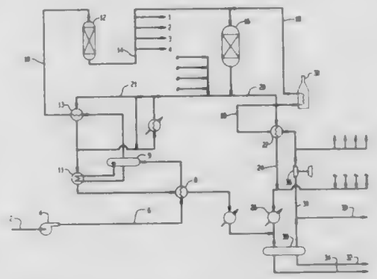
5,059,738

METHOD FOR REACTIVATING MTG PROCESS CATALYST

James H. Beech, Jr., Wilmington, Del., and Francis P. Ragonese, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 7, 1990, Ser. No. 489,991
Int. Cl.[5] C07C *1/20, 1/00;* **B01J** *29/38, 38/04*
U.S. Cl. 585—469 **20 Claims**

1. In a fixed bed process for the conversion of C_1–C_4 oxygenates in contact with acidic, medium pore, shape selective zeolite catalyst particles to produce gasoline boiling range hydrocarbons, including the step of reactivating spent catalyst at super atmospheric process pressure and elevated temperature, the improvement comprising:



reactivating said spent catalyst at pressure less than about 1400 kPa and temperature between about 300° C. and 400° C. in contact with a stream of inert purge gas for a time period of from about 4 hours to about 40 hours.

5,059,739

HYDROGEN CHLORIDE-FREE CATALYST SYSTEM FOR DIMERIZING AND CODIMERIZING OLEFINS

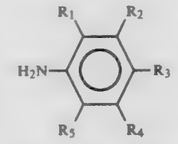
Dan E. Hendriksen, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Oct. 31, 1989, Ser. No. 429,877
Int. Cl.[5] C07C *2/24;* **B01J** *31/00*
U.S. Cl. 585—513 **38 Claims**

1. A process for dimerizing an alpha-olefin or codimerizing two dissimilar alpha-olefins, said process comprising:

contacting a member selected from the group consisting of alpha olefin and a mixture of two dissimilar alphaolefins with an active catalyst system substantially free of hydrogen chloride, said system comprising:

(a) a complex comprising a tungsten salt and an aniline of the formula

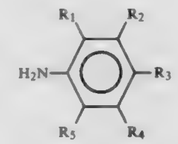


wherein each of R_1–R_5 is selected from the group consisting of hydrogen, halogens, and hydrocarbon groups; and

(b) an alkyl aluminum halide.

30. An active catalyst system substantially free of hydrogen chloride, said system comprising:

(a) a complex comprising a tungsten salt and an aniline of the formula



wherein each of R_1–R_5 is a member of the group consisting of hydrogen, halogens, and hydrocarbon groups; and

(b) an alkyl aluminum halide.

5,059,740

TIN-CONTAINING COMPOSITION AND USE

Mark P. Kaminsky, Lisle; Mark S. Kleefisch, Plainfield, and Gerry W. Zajac, Warrenville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 382,477, Jul. 19, 1989, Pat. No. 4,971,940, which is a continuation-in-part of Ser. No. 233,063, Aug. 17, 1988, Pat. No. 4,939,311. This application Jun. 25, 1990, Ser. No. 555,768

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 **8 Claims**

1. A method for converting a feedstock alkane containing from 1 to 4 carbon atoms to a higher molecular weight hydrocarbon, said method comprising:

contacting a feedstock comprising at least one alkane containing from 1 to 4 carbon atoms with an oxidative coupling catalyst comprising: a) an oxidized Group IIA metal selected from the group consisting of magnesium, calcium, strontium and barium; and b) oxidized tin wherein the tin and Group IIA metal are in an approximate atomic ratio of 2–4 atoms of tin per 0.5–3 atoms of Group IIA metal, with said catalyst having a tin Auger line transition wherein the ratio of the area of the $M_5N_{4,5}N_{4,5}$ transition peak at 424.5 eV±1 eV, having a 6 eV FWHM, to the area of the $M_4N_{4,5}N_{4,5}$ transition peak at 430.5 eV±1 eV is at least 10 to 1, in the presence of oxygen at oxidative coupling reaction conditions to produce a gaseous mixture comprising hydrocarbon products having higher molecular weight than the feedstock alkane from which they were formed.

5,059,741

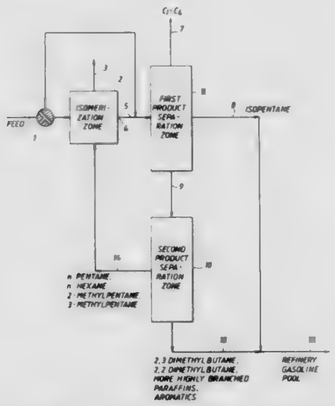
C5/C6 ISOMERIZATION PROCESS

Richard M. Foley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 29, 1991, Ser. No. 647,078

Int. Cl.[5] C07C *5/13*

U.S. Cl. 585—734 **20 Claims**



1. An integrated process for producing a gasoline blending component with increased octane value from a hydrocarbon feed stream comprising C_5 paraffins and C_6 paraffins, said process comprising:

(a) passing said hydrocarbon feed stream to an isomerization zone maintained at isomerizaton conditions and containing an isomerization catalyst whereby said hydrocarbon feed stream is isomerized to produce an isomerization zone effluent stream comprising di-branched paraffins, mono-methyl-branched paraffins and unreacted normal paraffins;

(b) passing said isomerization zone effluent stream to a first product separation zone;

(c) separating said isomerization zone effluent stream into at least two streams:

1) a first product separation zone product stream comprising mono-methyl-branched-pentane, and

2) a first product separation zone bottom stream comprising C_5 normal paraffins, C_6 normal paraffins, C_6 mono-branched paraffins and C_6 di-branched paraffins;

(d) recovering said first product separation zone product stream comprising mono-methyl-branched pentane from step (c), as part of said gasoline blending component;

(e) passing said first product separation zone bottom stream from step (c) to a second product separation zone and separating said first product separation zone bottom stream into at least two stream:

1) a second product separation zone effluent stream comprising di-branched paraffins;

2) a second product separation zone recycle stream comprising mono-methyl-branched paraffins and normal paraffins;

(f) recovering said second product separation zone recycle stream comprising mono-methyl-branched paraffins and normal paraffins from (e), and recycling at least a portion thereof to said isomerization zone; and

(g) recovering said second product zone effluent stream from (e) as part of said gasoline blending component.

5,059,742

PROCESS FOR SEPARATING 2,6-DIMETHYLNAPHTHALENE

Tsutomu Miyashi, Miyagi; Yoshiro Yamashita, Aichi; Takanori Suzuki, Miyagi, and Hiroshi Fujii, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1989, Ser. No. 365,650

Claims priority, application Japan, Jun. 13, 1988, 63-143773

Int. Cl.[5] C07C *7/152*

U.S. Cl. 585—860 **7 Claims**

1. A process for separating 2,6-dimethylnapthalene from a 2,6-dimethylnapthalene-containing mixture, which process comprises mixing said 2,6-dimethylnaphthalene-containing mixture with 2,4,7-trinitro-9-fluorenone to thereby form a complex of 2,6-dimethylnapthalene and 2,4,7-trinitro-9-fluorenone, wherein said mixing of said 2,6-dimethylnaphthalene-containing mixture with said 2,4,7-trinitro-9-fluorenone is carried out at a temperature of 0° C. to 100° C.; separating a solid matter containing the complex of 2,6-dimethylnaphthalene and 2,4,7-trinitro-9-fluorenone thus formed; and decomposing said solid matter containing the complex by heating said solid matter containing the complex to 50° C. to 200° C. under reduced pressure of 1 mm Hg to 50 mm Hg to thereby separate and collect an oil rich in the 2,6-dimethylnaphthalene and separate and collect the 2,4,7-trinitro-9-fluorenone which is then recirculated and reused to form the complex, wherein said 2,4,7-trinitro-9-fluorenone is added in an amount to give a ratio of 2,6-dimethylnaphthalene to 2,4,7-trinitro-9-fluorenone of about 10/1 by mol or below.

5,059,743

TREATMENT OF HYDROCARBON FUEL

Tetsuo Sakuma, Osaka, Japan, assignor to Shinfuji Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1990, Ser. No. 509,439

Claims priority, application Japan, Apr. 17, 1989, 1-96693; Apr. 17, 1989, 1-96694; Apr. 28, 1989, 1-110688; Aug. 22, 1989, 1-215324

Int. Cl.[5] C07C *7/20;* **B01J** *19/08;* **B01D** *35/06*

U.S. Cl. 585—899 **4 Claims**

1. A method of improving the combustion efficiency of a hydrocarbon fuel which comprises exposing the fuel to a magnetic field from a magnet having a magnetic flux density of about 5–18 gauss at the S pole and a magnetic flux density of less than about 6 gauss at the N pole, wherein the ratio of the magnetic flux density at the N pole to the magnetic flux density at the S pole is equal to or less than about 0.5

5,059,744

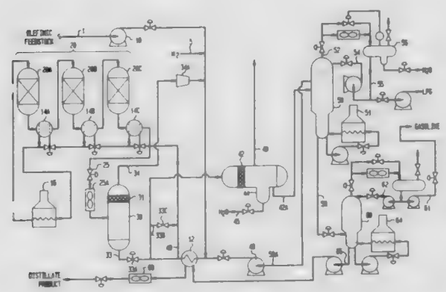
REACTOR AND RECOVERY SYSTEM FOR UPGRADING LOWER OLEFINS

Moshen N. Harandi, Lawrenceville, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 163,498, Mar. 3, 1988, Pat. No. 4,879,428. This application Sep. 29, 1989, Ser. No. 414,863

Int. Cl.[5] C07C *2/12*

U.S. Cl. 585—921 **9 Claims**



1. A continuous reactor system having improved product recovery for upgrading lower olefinic feedstock to higher hydrocarbons rich in C_{10}+ distillate product, comprising:

reactor means for contacting said feedstock with a fixed-bed solid acid oligomerization acid zeolite catalyst under oligomerization reaction conditions at elevated temperature and pressure in the presence of hydrogen to convert olefins to heavier hydrocarbons, thereby providing a hot reaction effluent stream containing light gas, C_5–C_9 intermediate hydrocarbon and C_{10}+ distillate hydrocarbons;

heat exchange means for cooling said effluent stream to recover a liquid stream comprising C_5+ hydrocarbons;

means for recycling a first portion of said liquid stream to said reacotor means;

means for fractionating a second portion of said liquid stream in a multistage distillation tower to recover a distillate hydrocarbon product stream comprising C_{10}+ hydrocarbons and a light overhead gas stream;

means for recovering an overflash liquid stream rich in C_5–C_9 intermediate hydrocarbons from an upper stage of said distillation tower;

means for recycling said overflash liquid stream to said reactor means in combination with said first portion of said liquid stream.

5,059,745

INBRED CORN LINE LH195

Terry J. Foley, Williamsburg, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Dec. 4, 1989, Ser. No. 444,883

Int. Cl.[5] A01H *5/00*

U.S. Cl. 800—200 **10 Claims**

1. An inbred corn line designated LH195.

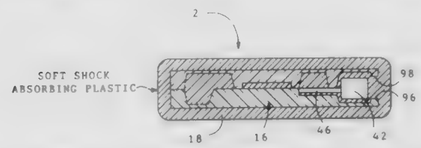
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5,059,746

HOUSING ASSEMBLY FOR ELECTRONIC COMPONENTS

Earl J. Hayes, Mechanicsburg, and Gary W. Hawk, Halifax, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 1, 1989, Ser. No. 345,497
Int. Cl.[5] H05K *5/00*
U.S. Cl. 174—52.1 **18 Claims**



1. A housing means containing electrical device means comprises a premolded inner housing of a relatively firm plastics material and an outer housing of a relatively softer deformable shock absorbing material, the electrical device means being in a cavity in the inner housing, the outer housing being in enclosing relationship to the inner housing,

the outer housing being overmolded on the inner housing with said softer material flowing through an opening into said cavity during said overmolding whereby,

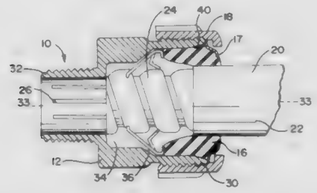
the electrical device means is at least partially surrounded by said softer material and protected from the imposition of external forces by said softer material and by the inner housing and the inner housing is protected by the outer housing.

5,059,747

CONNECTOR FOR USE WITH METAL CLAD CABLE

Jaspal S. Bawa, Neshanicsta; Luis Couto, Hillside; Giacomo F. Mancini, Piscataway; Nicholas Pulitano, Livingston, and George S. Zabrodski, Iselin, all of N.J., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Dec. 8, 1989, Ser. No. 447,738
Int. Cl.[5] H02G *3/22*
U.S. Cl. 174—65 SS **17 Claims**



1. A connector for terminating an electrical cable having a conductive sheath and a plurality of conductors extending therethrough comprising:

an elongate gland having a cable receiving end, a conductor egressing and a longitudinal central bore axially extending therethrough for insertable receipt of said cable;

a gland nut movably securable to said gland, said gland nut being axially movable from a position adjacent said cable receiving end of said gland toward said conductor egressing end;

sealing means movably supported between said gland and said gland nut for effecting a seal between said cable and said gland upon said axial movement of gland nut; and

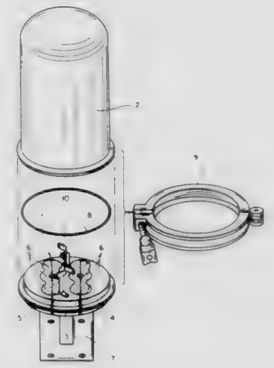
sheath grounding means movably supported within said gland adjacent said sealing means, said sheath grounding means being movable toward said conductors egressing end upon said axial movement of gland nut, said sheath grounding means further including an annular body having a first plurality of radially inwardly directed deflectable fingers of a first configuration for mechanical and electrical engagement with said cable sheath upon said insertable receipt of said cable, and a second plurality of radially inwardly directed deflectable fingers of a second configuration different from said first configuration for mechanical and electrical engagement with said cable sheath upon said axial movement of said gland nut with respect to said gland.

5,059,748

CABLE SPLICE ENCLOSURE

Barry Allen, Siler City; Mark Harvell, Lillington; Christopher Hastings, Garner; Luis Puigcerver, Fuquay-Varina, and Gloria J. Marik, Raleigh, all of N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 26, 1990, Ser. No. 515,004
Int. Cl.[5] H02G *7/20*
U.S. Cl. 174—87 **21 Claims**



1. A closure for a cable splice which comprises:

(a) a base comprising first, second and third parts, the second and third parts being adjacent to and hinged to the first part, and respective cable ports extending from one side of the base to another between respectively the first and second parts and the first and third parts;

(b) a cover for use together with the base for defining an enclosed space for the cable splice; and

(c) a support for the base attached to the first part.

5,059,749

INPUT/OUTPUT APPARATUS AND METHOD THEREFOR

Azuma Murakami; Akio Kikuchi, and Toshihide Chikami, all of Saitama, Japan, assignors to Wacom Co., Ltd., Saitama, Japan

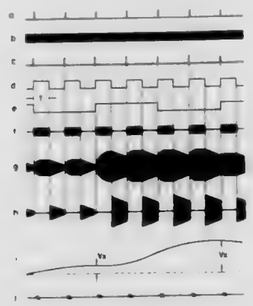
Filed Mar. 22, 1990, Ser. No. 497,332
Claims priority, application Japan, Mar. 24, 1989, 1-72453
Int. Cl.[5] G08C *21/06*
U.S. Cl. 178—19 **20 Claims**

1. An input/output apparatus comprising:

a coordinate input device wherein radio waves are intermittently transmitted from a tablet, said radio waves excite a tuned circuit incorporated in an input designating device, said tablet suspending transmission of said radio waves and receiving radio waves transmitted by said tuning circuit and thereby the coordinates of a position designated with said input designating device are detected;

a display device,

characterized in that the times while display data latch pulses are generated in said display device is synchronized



with the transmission period of said radio waves from said tablet.

5,059,750

MULTI-POSITION SWITCH OPERATING MECHANISM FOR ADJUSTMENT OF A VEHICLE SEAT

Manfred Granzow, Dörentrup; Hans-Peter Mischer, Horn-Bad Meinberg, and Christian Süss, Bad Salzuflen, all of Fed. Rep. of Germany, assignors to Gebr. Isringhausen, Lemgo, Fed. Rep. of Germany

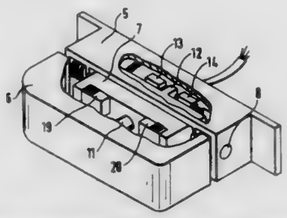
PCT No. PCT/EP89/00703, § 371 Date Feb. 27, 1990, § 102(e) Date Feb. 27, 1990, PCT Pub. No. WO90/00123, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 22, 1989, Ser. No. 460,950

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1988, 3821952

Int. Cl.[5] H01H *9/00*

U.S. Cl. 200—5 R **1 Claim**



1. An actuating device for controlling the operation of a vehicle seat, said seat having first, second, third, fourth, fifth, and sixth adjustment functions, said actuating device comprising a fastening case, a central block shaft having an axis and mounted in said fastening case, a central block mounted on said central block shaft, said central block being movable in opposite first and second directions along the axis of said central block shaft and being pivotable in opposite third and fourth directions about the axis of said central block shaft, a handle housing shaft having an axis and mounted on said central block in perpendicular relation to said central block shaft, a handle housing mounted on said handle housing shaft, said handle housing being rotatable in opposite fifth and sixth directions with respect to the axis of said handle housing shaft, switch means actuated in response to movement of said central block in either of said first, second, third, or fourth, directions for controlling said first, second, third, or fourth, adjustment functions, respectively, and switch means actuated in response to movement of said handle housing in either of said fifth or sixth directions for controlling said fifth or sixth adjustment functions, respectively.

5,059,751

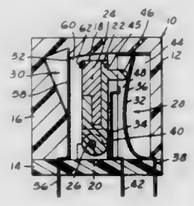
COMBINATION ARMING/DISCRIMINATING INERTIA SWITCH

Douglas A. Woodman, and Michael R. Sewell, both of Chatham, Canada, assignors to Siemens Automotive Limited, Chatham, Canada

Filed Aug. 27, 1990, Ser. No. 573,613

Int. Cl.[5] H01H *35/14;* **B60R** *21/32*

U.S. Cl. 200—61.45 M **6 Claims**



1. A passive automotive vehicle occupant restraint system comprising an electrically-fired occupant restraint device which is deployed in response to the concurrence of the closure of an arming switch means and of the closure of a discriminating switch means in an electrical firing circuit for the restraint device, characterized in that said arming switch means comprises an arming switch which has normally closed contacts that are caused to be held open by the attraction of a magnetically responsive inertial sensing mass to a magnet means with respect to which said inertial sensing mass is relatively movable until velocity change sensed by said inertial sensing mass creates inertial force in a direction opposite that of the magnetic attraction of said inertial sensing mass to said magnet means to move said inertial sensing mass along a defined path of motion to a point beyond which said inertial sensing mass ceases to hold said contacts of said arming switch open, there is provided means to impose damping on motion of said inertial sensing mass along said path in said direction, and said discriminating switch means comprises a discriminating switch which has normally open contacts that remain open until closed by said inertial sensing mass having executed an amount of motion along said path in said direction sufficient to have caused said inertial sensing mass to cease holding said contacts of said arming switch open so that as a consequence concurrence of the closure of said contacts of said arming switch and of the closure of said contacts of said discriminating switch is attained upon said inertial sensing mass having executed said amount of motion along said path in said direction.

5,059,752

VACUUM SWITCH

Koichi Inagaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1989, Ser. No. 410,269

Claims priority, application Japan, Nov. 24, 1988, 63-296887

Int. Cl.[5] H01H *33/66*

U.S. Cl. 200—144 B **7 Claims**

1. A vacuum switch, comprising:

a vacuum vessel enclosing an evacuated space;

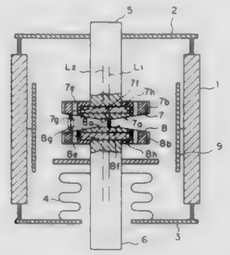
a stationary electrode and a movable electrode located within said evacuated space, each of said stationary and movable electrodes including a main electrode and an auxiliary electrode disposed around the periphery of said main electrode, said stationary and movable electrodes being relatively movable into and out of contact with each other to switch a flow of current on and off;

stationary support means for supporting said stationary electrode within said vacuum vessel;

movable support means for supporting said movable electrode within said vacuum vessel;

a highly conductive member provided in contact with said stationary support means and said main electrode of said stationary electrode; and

a highly conductive member provided in contact with said movable support means and said main electrode of said movable electrode;



wherein the conductivities σ_a, σ_b, σ_h of said main electrode, auxiliary electrode, and highly conductive member of said stationary and movable electrodes satisfy the relationship $\sigma_a < \sigma_b < \sigma_h$, so as to cause arc current to flow from said support means to said auxiliary electrodes through said highly conductive members, bypassing said main electrodes.

5,059,753

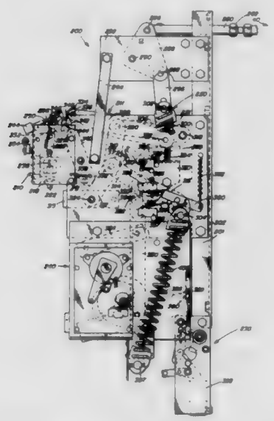
SF6 PUFFER RECLOSER

Sidney R. Hamm, Muskego, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 117,604, Nov. 6, 1987, Pat. No. 4,841,108, and Ser. No. 282,700, Dec. 9, 1988, Pat. No. 4,965,407. This application Mar. 28, 1989, Ser. No. 329,464

Int. Cl.[5] H01H *33/42, 33/88*

U.S. Cl. 200—148 F **56 Claims**



1. A circuit recloser, comprising:

a circuit interrupter for interrupting current flow, said interrupter including:

a housing containing an arc-extinguishing media therein;

a pair of electrical contacts disposed within said housing, at least one of said contacts being movable within said housing between a closed position where it is in electrical contact with said other contact and an opened position where it is separated from said other contact forming a gap such that an arc may form therebetween; and

means for injecting a flow of said arc-extinguishing media into said gap as said contacts are moved into the opened position; and

operator means for moving said interrupter contacts from the closed position to the opened position and for reclosing the contacts after a predetermined interval.

5,059,754

COMPACT SWITCH DEVICE HAVING A PUSH BUTTON WITH LONG STROKE

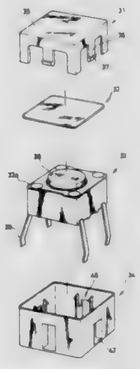
Akio Kaichi, and Hiroyuki Moriyama, both of Tottori, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Feb. 14, 1990, Ser. No. 479,430

Claims priority, application Japan, Feb. 15, 1989, 1-16683; Nov. 30, 1989, 1-138011; Nov. 30, 1989, 1-138012

Int. Cl.[5] H01H *9/02*

U.S. Cl. 200—332.1 **7 Claims**



1. A switch structure comprising:

(A) a push button;

(B) a switch body switched in correspondence with a pressing operation of said push button; and

(C) a holder holding said push button and said switch body unitary, said holder comprising a pair of opposed inner wall surfaces and fixing members which are formed on each of said pposed inner wall surfaces and which detachably engage said switch body for fixing said switch body to said holder, each said fixing member comprising an engaging pawl which projects from said fixing member toward the inside of said holder and which is adapted to engage said switch body, each said engaging pawl being formed spaced from the respective inner wall surface of said holder to define a space which receives said push button when said push button is inserted in said holder, whereby

when said switch body is inserted in said holder, each said engagin pawl can be pressed open by said switch body toward the respective inner wall surface of said holder.

5,059,755

LOW PROFILE OVEN TURNTABLE

John R. Nottingham; John W. Spirk, both of Moreland Hills, and Jeffrey M. Kalman, Cleveland Heights, all of Ohio, assignors to G & S Metal Products Company, Inc., Cleveland, Ohio

Filed Jul. 23, 1990, Ser. No. 556,670

Int. Cl.[5] H05B *6/78*

U.S. Cl. 219—10.55 F **22 Claims**

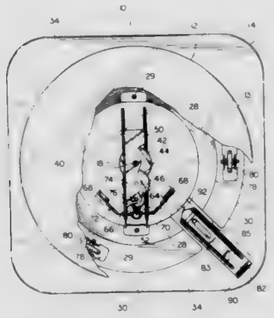
1. A rotatable platform, comprising

a base having a raised rim portion, said raised rim portion including a plurality of apertures;

a turntable top rotatably disposed above said base;

means for rotating said turntable top disposed within said base;

means for governing the rotational speed of said turntable top, said governing means cooperates with said rotating means; and



means for supporting the periphery of said turntable top above said base, said supporting means being carried by said raised rim portion and including a plurality of support wheels, each of said support wheels being rotationally disposed within one of said raised rim portion apertures.

5,059,756

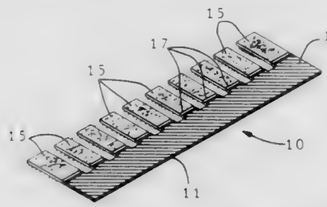
SELF REGULATING TEMPERATURE HEATER WITH THERMALLY CONDUCTIVE EXTENSIONS

Homer E. Henschenp, Carlisle; Michael J. McKee, New Cumberland, and Joseph M. Pawlikowski, Lancaster, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 29, 1988, Ser. No. 277,116

Int. Cl.[5] B23K *1/00*

U.S. Cl. 219—85.22 **49 Claims**



26. A method for providing electrically-conductive connections between contacts in a first plurality of spaced electrical contacts and respective contacts in a second plurality of similarly spaced electrical contacts at a respective plurality of connection sites, said method comprising the steps of:

disposing a plurality of connecting members at a respective connection sites in abutting relation with a respective contact in said first plurality of contacts and a respective contact in said second plurality of contacts, each of said connecting members projects from and is in thermally-conductive contact with a heater body having a substrate of an electrically-conductive first material having relatively low electrical resistivity and magnetic permeability, and a skin layer of second material having a very much higher magnetic permeability at temperatures below its Curie temperature and a greater electrical resistivity than that of said first material;

delivering thermal energy to said connection sites via said connecting members to melt fusible electrically-conductive material at each connection site by flowing an alternating current of fixed amplitude in said heater body such that: (a) for heater body temperatures below the Curie temperature of said second material the current is substantially concentrated in said skin layer; and (b) for heater body temperatures above said Curie temperature the current is distributed to a substantially greater extent in said substrate; and

removing the thermal energy from the concentration sites to permit the fusible material to harden and secure said first and second pluralities of contacts to said plurality of connecting members whereby each connecting member remains a permanent part of a respective electrically-conductive connection at a respective connection site.

5,059,757

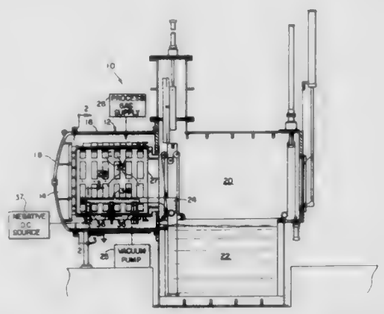
GAS SHROUDED ELECTRODE FOR A PLASMA CARBURIZING FURNACE

Trevor J. Law, Cambridge; Richard E. Andrews, Essex, both of United Kingdom, and Christopher A. Gall, Chalfont, Pa., assignors to Abar Ipsen Industries, Inc., Feasterville, Pa.

Filed Nov. 24, 1989, Ser. No. 440,660

Int. Cl.[5] B23K *9/00*; **H01B** *17/26*

U.S. Cl. 219—121.52 **13 Claims**



1. In a plasma carburizing furnace having a rigid enclosure forming a vacuum chamber, means for heating the interior of the vacuum chamber, means for evacuating the vacuum chamber to a subatmospheric pressure, a first electrode, means for supplying a carburizing gas into the vacuum chamber, and means for supplying a d.c. voltage, a gas shrouded electrode and workpiece support comprising:

a support fixture mounted to the rigid enclosure inside the vacuum chamber;

a collar supported by said support fixture and having an end opening into the vacuum chamber;

a pedestal insulator disposed within said collar, said pedestal insulator having a portion that is dimensioned and positioned in said collar so as to provide a first annular space between said pedestal insulator and said collar, said portion having a top surface facing the vacuum chamber;

an elongated, conductive element extending from the end of said collar that opens into the vacuum chamber and supported by the top surface of said pedestal insulator such that said elongated, conductive element is electrically isolated from the first electrode; said elongated, conductive element being dimensioned and positioned within said collar so as to provide a second annular space between said elongated, conductive element and said collar, said second annular space connecting with the first annular space, said elongated, conductive element being dimensioned and positioned relative to said pedestal insulator so as to leave uncovered an annular area of the top surface of said pedestal insulator; and

means for injecting a shrouding gas through said collar such that during a treatment cycle the shrouding gas flows through the first annular space, across the annular area of the top surface of said pedestal insulator, and through the second annular space toward the vacuum chamber, whereby a dynamic gas shroud is provided in said annular spaces and across the annular area of the top surface of said pedestal insulator.

5,059,758

METHOD AND AN APPARATUS FOR JOINING TOGETHER TWO ELEMENTS INCLUDED IN AN IMPLANT AND/OR PROSTHESIS STRUCTURE

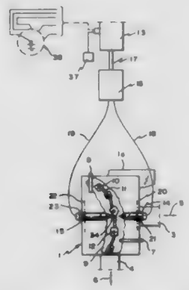
Matts Andersson, Karlskoga, Sweden, assignor to Nobelpharma AB, Gothenburg, Sweden

Filed Apr. 28, 1989, Ser. No. 344,570

Claims priority, application Sweden, Apr. 28, 1988, 8801601

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.63 **19 Claims**



1. A method for a distortion-free joining of at least two elements of hard material, preferably of titanium, included in an implant structure and/or prosthetic structure, comprising the steps of:

adjusting two registering contact surfaces of the two elements to fit each other with high accuracy and to form a joint therebetween;

providing means for supporting said mutually adjusted elements in a fixed state;

positioning at least two focusing optical devices, constituting part of the laser equipment for welding said elements, on the opposite sides of the joint towards the registering circumferential portions of the joint;

said means for supporting and said optical elements being controllably displaceable;

effecting alignment of said focusing devices towards two substantially registering, or slightly mutually offset starting areas which each include their section of each respective joint circumferential portion with circumjacent material parts on the elements, and thereafter towards areas subsequent to the starting areas and with associated sections of joint circumferential portions and material parts prior to emission of the laser pulses effecting the welding; and

delivering the laser pulses for performing the welding.

5,059,759

LASER BEAM MACHINE

Takayuki Kudo; Kunihiko Sato; Shigehiro Yoshiyasu; Tatsuya Hirosaki; Manabu Kubo, and Hajime Imaizumi, all of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jan. 5, 1990, Ser. No. 461,505

Claims priority, application Japan, Jan. 9, 1989, 1-2511; Feb. 23, 1989, 1-43821; Dec. 12, 1989, 1-320676

Int. Cl.[5] B23K *26/08*

U.S. Cl. 219—121.78 **7 Claims**

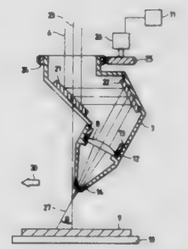
1. A laser beam machine comprising:

a laser oscillator for generating a laser beam;

a machining head for concentrating said laser beam and applying said laser beam thus concentrated to a workpiece;

a machining table on which said workpiece is mounted;

a control unit for controlling the movement of said machining table in an X-Y plane; and



laser beam inclining means for inclining said laser beam which said machining head applies to said workpiece with respect to said workpiece in a machining direction, said inclination being dependent upon said workpiece and machining speed to reduce dross buildup on said workpiece during machining.

5,059,760

LASER BEAM MACHINING DEVICE

Nobuaki Iehisa, Mishima, and Etsuo Yamazaki, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

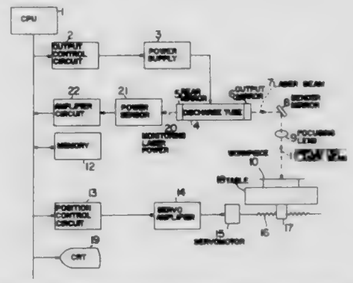
PCT No. PCT/JP89/01163, § 371 Date Jul. 30, 1990, § 102(e) Date Jul. 30, 1990, PCT Pub. No. WO90/07397, PCT Pub. Date Jul. 12, 1990

PCT Filed Nov. 15, 1989, Ser. No. 548,988

Claims priority, application Japan, Dec. 29, 1988, 63-332535

Int. Cl.[5] B23K *26/02*

U.S. Cl. 219—121.83 **5 Claims**

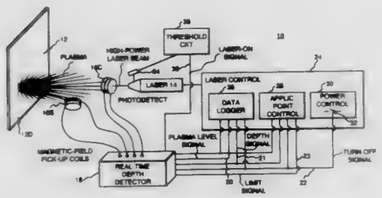


1. A laser beam machining device for machining a workpiece by irradiating a laser beam onto a surface of the workpiece, comprising:

reflected light detecting means for detecting a power level of a reflected laser beam fed back to a laser oscillator due to a reflection of said laser beam by the surface of the workpiece; and

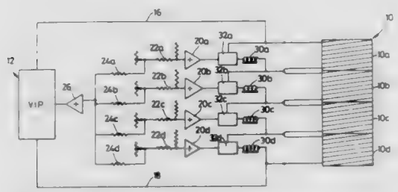
abnormality detecting means for stopping an operation of the laser oscillator and a movement of one of the workpiece and a nozzle portion and displaying an alarm at a display device when the power level of the reflected laser beam becomes higher than a predetermined value.

5,059,761
INDUCTIVE DEPTH SENSING AND CONTROLLING METHOD AND SYSTEM FOR LASER DRILLING
Rudolph A. A. Koegl, Niskayuna; Richard A. Hogle, and Susan D. Bauer, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 21, 1990, Ser. No. 631,839
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 20 Claims



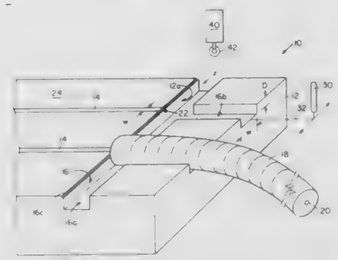
1. A method of applying a laser beam to a workpiece comprising the steps of:
placing at least one magnetic field pick-up coil adjacent to a surface on a front of a workpiece;
applying a laser beam to an application point on said surface to drill a hole in said surface, said laser beam causing a magnetic field in an ionized plasma of particles escaping from said surface;
sensing said magnetic field by use of said magnetic field pick-up coil; and
generating a depth signal representative of the depth of the hole as it is being drilled, the depth signal being dependent on the sensing of the magnetic field.

5,059,762
MULTIPLE ZONE INDUCTION HEATING
John H. Simcock, Droitwich, United Kingdom, assignor to Inductotherm Europe Limited, Hereford, United Kingdom
Filed Oct. 15, 1990, Ser. No. 597,611
Claims priority, application United Kingdom, Oct. 31, 1989, 8924436; Jul. 2, 1990, 9014659
Int. Cl.[5] H05B *6/08*
U.S. Cl. 219—10.77 9 Claims



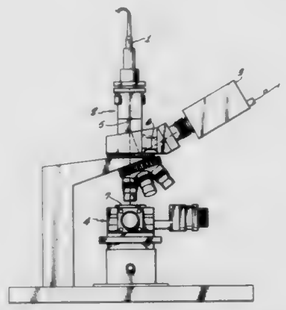
1. Induction heating apparatus comprising:
induction coil means operatively associated with a melt or other work load to be heated, said coil means being divided into a plurality of defined sections each associated with a respective zone of the work load in use;
power supply means for providing power input to the induction coil means; and
a plurality of control means each for individually regulating the power applied to each said section of the coil means, respectively, for regulation of the operating temperature in the respective associated zone characterized in that each control means includes fixed reactor responsive to at least one electronic switch means and connected between the coil means and the at least one electronic switch means, and each selectively operable to shunt at least a substantial proportion of the maximum power which can be applied in that section in response to regulation of the excitation of the reactor by the electronic switch means, said electronic switch means regulating said excitation respective to each reactor as a function of a demand signal derived from the operation in that zone.

5,059,763
FORMATION OF OPTICAL QUALITY SURFACES IN OPTICAL MATERIAL
Daniel R. O'Brien, Franklin; Charles H. Cox, III, Carlisle, and Carlton D. Hoyt, Reading, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jun. 6, 1990, Ser. No. 534,452
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 24 Claims



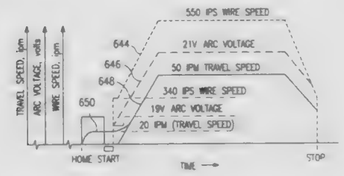
1. A method of forming optical quality surfaces in a device formed of optical material comprising the steps of:
a) ablating the material at a predetermined location using electromagnetic radiation to remove material and form a first depression therein;
b) utilizing the depression so formed as an access opening for a polishing tool; and polishing at least a portion of a surface in the depression until it is of sufficiently high optical quality.

5,059,764
DIODE-PUMPED, SOLID STATE LASER-BASED WORKSTATION FOR PRECISION MATERIALS PROCESSING AND MACHINING
Tom Baer, Mountain View, Calif., assignor to Spectra-Physics, Inc., San Jose, Calif.
Filed Oct. 31, 1988, Ser. No. 265,052
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 22 Claims



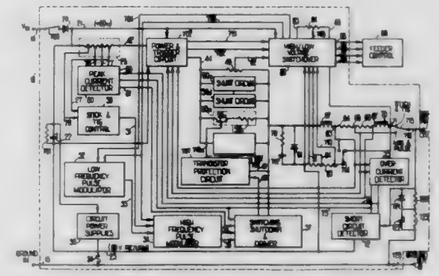
1. A q-switched diode laser pumped, solid state laser-based system for precision materials processing and machining, comprising:
lasing means including a q-switched, solid state laser cavity spaced from and coupled to a diode laser pumping source by means of an optical fiber for controllably producing and transmitting a pulsed laser beam for ablating the surface of a material;
workstation means for holding the material with respect to said pulsed laser beam;
optical means including a microscope integrally coupled to the q-switched, solid state laser cavity for directing the pulsed laser beam along an optical path to ablate the surface of the material; and
control means electrically coupled to the lasing means and the workstation means for positioning the material with respect to the lasing means at a particular location, and also directing the lasing means to transmit said pulsed laser beam in order to ablate the surface of the material at that location.

5,059,765
METHOD OF OPERATION FOR HIGH SPEED AUTOMATIC WELDING
Brian S. Laing, Houston, Tex., assignor to CRC-Evans Pipeline International, Inc., Houston, Tex.
PCT No. PCT/US90/00021, § 371 Date Jan. 4, 1990, § 102(e) Date Jan. 4, 1990
PCT Filed Jan. 4, 1990, Ser. No. 474,001
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—125.11 4 Claims



1. A method for welding together two workpieces which are butted together and have a gap at the junction of the workpieces, the welding performed by use of a welder which travels along the gap and provides n arc through a feed wire supplied to the gap, the method comprising the steps of:
establishing with respect to said gap a start point for a weld and a stop point for the weld,
moving said welder along said gap at a first travel speed when said welder passes through said start point, and thereafter,
starting the feed of said wire to said gap and initiating said arc at said gap when said welder passes through said start point,
increasing the travel speed of said welder from a first travel speed at said start point to a second travel speed along said gap,
after the initiation of said arc, increasing the speed of said wire to said gap until and wire speed reaches a preselected speed, and
moving said welder along said gap at said second travel speed toward said stop point.

5,059,766
METHOD AND APPARATUS FOR IMPROVED ARC STRIKING
Malcolm T. Gilliland, 310 Pine Valley Rd., Marietta, Ga. 30067
Division of Ser. No. 62,543, Jun. 12, 1987, Pat. No. 4,896,018, which is a continuation-in-part of Ser. No. 791,224, Oct. 25, 1985, Pat. No. 4,716,274. This application Nov. 15, 1989, Ser. No. 436,711
Int. Cl.[5] B23K *9/067*
U.S. Cl. 219—130.21 27 Claims

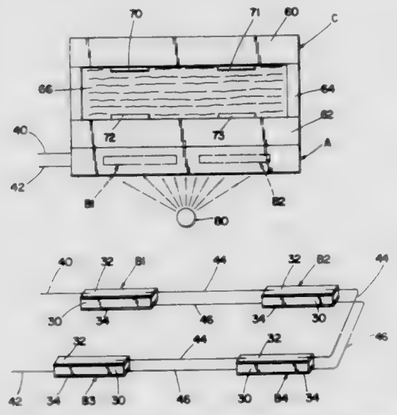


1. An improved welding station for providing a first output pulse rate for arc striking operations and a second output pulse rate for welding operations, comprising:
output means responsive to a drive signal for providing an output voltage;
oscillation means responsive to a rate selection signal being in a second state for providing said drive signal at said second output pulse rate and responsive to said rate selection signal being in a first state for providing said drive signal at said first output pulse rate, said first output pulse rate being greater than said second output pulse rate; and
sensing means connected to said output means and responsive to said output voltage exceeding a predetermined voltage for providing said rate selection signal in said first state and responsive to said output voltage being less than said predetermined voltage for providing said rate selection signal in said second state.

5,059,767
HEATER
Gay L. Marks, Muskegon; Indra J. Loomba, Grand Haven, and John Saling, II, Whitehall, all of Mich., assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio
Filed Feb. 20, 1990, Ser. No. 481,324
Int. Cl.[5] H05B *3/06, 1/00*
U.S. Cl. 219—209 17 Claims

1. A heater including a support member of a synthetic plastic material that is pervious to light, said support member having substantially parallel opposite external surfaces, a plurality of spaced-apart positive temperature coefficient thermistors electrically connected in parallel and being encapsulated in said support member in heat transfer relationship therewith between said opposite external surfaces, and said thermistors

being located on said support member for providing a substantial unobstructed area of said support member through which



light is transmittable past said thermistors from said side to the other of said support member.

5,059,768

CERAMIC HEATER TYPE GLOW PLUG

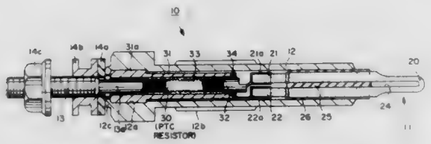
Koji Hatanaka, and Takashi Aota, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd. and Hitachi Metals, Ltd., both of Tokyo, Japan

Filed Sep. 10, 1990, Ser. No. 579,805

Claims priority, application Japan, Sep. 11, 1989, 1-232742; May 21, 1990, 2-129012

Int. Cl.[5] H05B *3/00;* **F23Q** *7/22;* **F02P** *19/00*

U.S. Cl. 219—270 **5 Claims**



1. A ceramic heater type glow plug comprising:

a U-shaped ceramic heater consisting of a resistive ceramic material, said heater having a front heating end and a rear end having a pair of terminal caps;

a hollow metal holder having a distal end portion housing the rear end of said ceramic heater and supporting said ceramic heater via electrically insulating members;

an external connecting terminal electrically insulatingly supported at a rear end of said metal holder;

a power control resistor, electrically connected between one of said terminal caps at the rear end side of said ceramic heater housed in said metal holder and said external connecting terminal, for performing power supply control with respect to said ceramic heater; and

connecting means electrically connecting the other of said terminal caps at the rear end side of said ceramic heater to said metal holder,

wherein said power control resistor consists of a metal material having a larger positive resistance temperature coefficient than that of said resistive ceramic material constituting said ceramic heater,

said connecting means includes a hollow metal sleeve extending in the direction of said heater spatially separated from said metal holder electrically insulatingly housing said power control resistor, and

the rear end of said metal sleeve is caulked to the rear end of said metal holder while said external connecting terminal is fitted in said metal sleeve via an electrically insulating means.

5,059,769

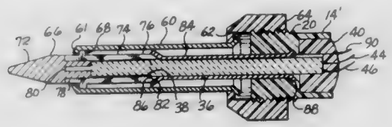
REPLACEABLE SOLDERING TIP ASSEMBLY

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Filed Feb. 22, 1991, Ser. No. 660,351

Int. Cl.[5] B23K *3/02;* **H05B** *1/02, 3/00*

U.S. Cl. 219—238 **3 Claims**



1. Replaceable soldering tip assembly comprising:

A. handle base means having a longitudinal axis and including a threaded bushing coaxially aligned therewith;

B. ceramic heating rod means supported centrally by and extending forwardly from said handle base means;

C. an electrically resistive heating element disposed on the outer surface of said rod means contiguously to its forward end;

D. an inner sheath disposed snugly about said rod means and covering the major rearward portion thereof,

said inner metal sheath terminating at its forward end in an outwardly flared short cone-like surface disposed axially contiguously to the rear end of said heating element

E. soldering tip means having an elongated body bored from the rear to form a skirt portion adapted in length and diameter to fit loosely over said heating element,

a. the rear edge of said skirt portion having an inwardly tapered, cone-like surface adapted to fit within said flared cone-like surface of the forward end of said inner metal sheath,

b. the body of said soldering tip means having retaining rim means disposed thereabout well forwardly of said skirt portion rear edge,

c. the body of said soldering tip means having a plurality of axially disposed slots provided therein extending from said rear edge, through said skirt portion, and forwardly of said retaining rim means; and

F. outer sheath means disposed over said ceramic heating rod means and said retaining rim and skirt portion and having threaded nut means disposed at its rearward end for fastening engagement with said threaded bushing and having a reduced diameter forward end for engaging said retaining rim and urging it rearwardly and inwardly when said nut means is threaded rearwardly onto said threaded bushing.

5,059,770

MULTI-ZONE PLANAR HEATER ASSEMBLY AND METHOD OF OPERATION

Imad Mahawili, Sunnyvale, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Sep. 19, 1989, Ser. No. 409,125

Int. Cl.[5] F27B *5/14*

U.S. Cl. 219—391 **25 Claims**

1. A heater assembly for use in semiconductor wafer processing for developing and maintaining a uniform elevated temperature in the wafer, comprising

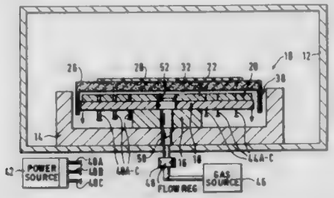
a dielectric heater base having a circular surface,

a plurality of heater elements arranged on the circular surface of the heater base and formed from conductive material capable of resistive heating, the plurality of heater elements forming radially spaced, circumferentially extending segments which, in combination, substantially cover the circular surface, the heater element segments being separated from each other by circumferentially extending regions, each heater element segment being interrupted by a radially extending region,

separate means for respectively regulating operation of the plurality of heater elements, the separate means for respectively regulating operation of the plurality of heater elements comprising electrical couplings operatively coupled with each heater element segment opposite the respective radially extending region,

a heater shroud arranged in spaced apart relation from the plurality of heater elements and intermediate the heater elements and the semiconductor wafer, and

means for maintaining a blanket of inert gas between the heater elements and the heater shroud.



5,059,771

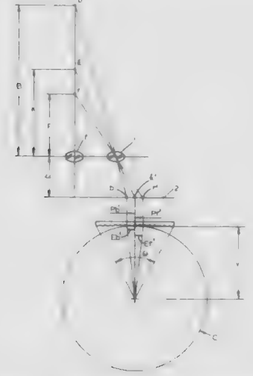
METHOD AND CALCULATOR TO DETERMINE THE SPATIAL PARALLAX IN A 3-D PHOTOGRAPH

Sunny L. Ip, Atlanta, and Augustine K. Wu, Norcross, both of Ga., assignors to Image Technology, Inc., Norcross, Ga.

Filed May 1, 1989, Ser. No. 330,768

Int. Cl.[5] G06C *3/00*

U.S. Cl. 235—64.7 **12 Claims**



1. In a method of making a three-dimensional lenticular photograph of a scene including a key object and a foreground object located between a veiwer of said scene and said key object, said photograph having width D, the method including the steps of exposing with a single-lens camera said scene from a first vantage point, movign said camera laterally with respect to said scene over a distance T and there exposing said scene from a second vantage point, the improvement comprising a method of calculating said distance T including the steps of:

(a) first calculating a distance V at which an observer will observe said photograph in accordance with the equation:

$$V = D/(2 \tan (\theta/2))$$

wherein θ is a predetermined viewing angle of said photograph;

(b) calculating a spatial parallax P for said photograph in accordance with the equation:

$$P = \frac{2V\pi}{21600} E,$$

wherein π is 3.1416 and E is a preselected value from 2 to 10 arc minutes representative of the ability of the eyes of said observer to fuse two images of said three-dimensional photograph together; and

(c) calculating said distance T in accordance with the equation:

$$T = \frac{FKP}{(K - F)u},$$

wherein K is the distance between said camera and said key object, F is the distance between said camera and said foreground object, and u is the back focal length of said single-lens camera.

5,059,772

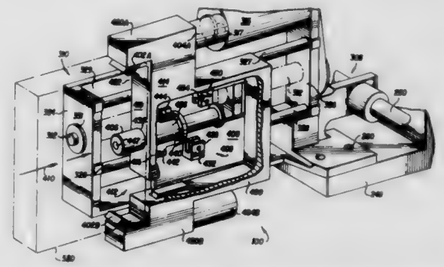
READING METHOD AND APPARATUS FOR CARTRIDGE LIBRARY

Bruce Younglove, Boulder, Colo., assignor to Exabyte Corporation, Boulder, Colo.

Filed Nov. 9, 1989, Ser. No. 434,099

Int. Cl.[5] G06K *15/00*

U.S. Cl. 235—383 **43 Claims**



1. Apparatus for transporting a unit of a information storage medium, said apparatus comprising:

a transportable frame;

contacting means mounted on said frame and positioned to physically contact a unit of information storage medium, the contacting means being translatable through a range of positions in response to the displacement of a unit of information storage medium;

means for sensing the translation of said contacting means through at least one of said positions and for generating a signal indicative of the location of said unit of information storage medium relative to a reference point on said frame; and,

reading means for reading an indicia provided on said unit of information storage medium, at least a portion of said reading means being internally mounted in said contacting means.

5,059,773

BAR CODE READER SIGNAL PROCESSING METHOD AND DEVICE

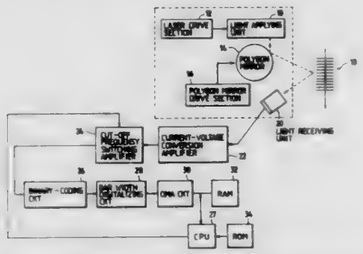
Masaharu Shimizu; Tatsuyuki Usami; Yoshihiro Saito, and Nobuhiro Nakamura, all of Tokyo, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Nov. 15, 1989, Ser. No. 436,999

Claims priority, application Japan, Nov. 16, 1988, 63-287841; Nov. 16, 1988, 63-287842

Int. Cl.[5] G06K *7/00*

U.S. Cl. 235—436 **7 Claims**



1. A method of processing a signal in a bar code reader in which an optical signal provided by scanning a bar code is subjected to photo-electric conversion to provide an analog electrical signal, which is utilized to decode said bar code, said method comprising the steps of:

scanning a bar code with a light beam whose diameter is small enough to detect thin bars;

determining whether said bar code is a thin bar code or a thick bar code;

if said bar code is said thick bar code, then employing data based on analog electrical signals, whose frequency components higher than a first cut-off frequency corresponding to said thick bar code are cut off, as effective data; and

if said bar code is said thin bar code, then employing data based on analog electrical signals, whose frequency components higher than a second cut-off frequency corresponding to said thin bar code are cut off, as effective data.

5,059,774

SEEK AND TRACK CONTROL FOR A RECTANGULAR OPTICAL CARD HANDLING APPARATUS

Nobuaki Kubo, Urawa, and Isamu Shibata, Fuchu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1988, Ser. No. 258,693

Claims priority, application Japan, Oct. 15, 1987, 62-157990[U]; Oct. 15, 1987, 62-157991[U]; Jan. 26, 1988, 63-14993

Int. Cl.[5] G06K *7/015;* **G11B** *7/09*

U.S. Cl. 235—454 **1 Claim**

1. An optical card handling apparatus, comprising:

supporting means for supporting an optical card, wherein said optical card is generally rectangular in shape and is formed with a plurality of recording tracks on a surface thereof;

rotating means for rotating said supporting means to thereby rotate said card around a predetermined axis extending in a direction perpendicular to said surface of said card;

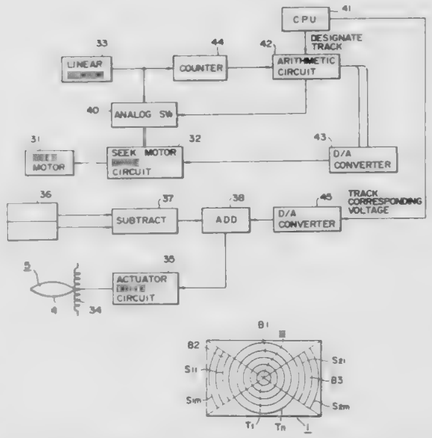
an optical pick-up movable relative to said supporting means in a predetermined direction which is normal to said recording track, said optical pick-up having tracking error detecting light-receiving means generating a tracking error signal;

a seek motor operatively coupled to said optical pick-up for driving said optical pick-up back and forth along said predetermined direction;

first storing means for storing a seek digital value corresponding to a supply voltage for causing the seek motor to drive the pick-up head toward a selected recording track of said card and a seek D/A converter receiving said seek digital value and in response supplying a voltage corresponding to the selected recording track of said card to said seek motor to drive said pick-up toward said selected recording track;

a sensor sensing increments of the movement of the pick-up head toward the selected position, which increments are greater than the track pitch, and providing an output signal related to the sensed increments;

a comparing circuit coupled to the sensor and to the first storing means and responsive to said output of the sensor to generate a halt signal when the increments sensed by the sensor correspond in number to the seek digital value stored in the first storing means;



a switch coupled to the comparing circuit and to the seek motor and responsive to said halt signal to directly couple said output of the sensor to said seek motor to cause said motor to produce a halting torque to halt said seek motor; and

second storing means for storing a tracking digital value corresponding to a selected number of tracks, a tracking D/A converter receiving said tracking digital value and in response generating a first tracking signal, an adder adding said first tracking signal and said tracking error signal generated by said tracking error detecting light-receiving means to generate a sum signal, and tracking control means for controlling said optical pick-up depending on said sum signal.

5,059,775

SLIP AND METHOD OF AND APPARATUS FOR AUTOMATIC READING OF THE SLIP

Mamoru Nakayama, Urayasu, Japan, assignor to ICS & Trading Co., Ltd., Japan

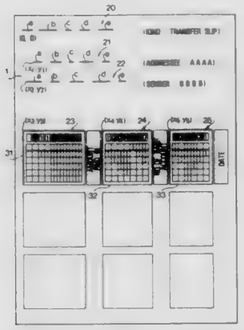
Filed Apr. 1, 1988, Ser. No. 177,595

Claims priority, application Japan, Apr. 17, 1987, 62-93123; Apr. 30, 1987, 62-104822; Oct. 14, 1987, 62-257384

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—456 **6 Claims**

1. A method for automatic reading of a slip comprising the steps of photoelectrically converting a control mark made up of line segments of different lengths sequentially arranged in a line for representing kind of format and information marks spaced apart from said control mark, each thereof being made up of line segments of different sizes sequentially arranged in a line, for representing task data delineated on a slip thereby to obtain image data, subjecting the image data to data transfer thereby to input the data to an automatic reading apparatus, calculating coordinates of said control mark and information marks on said slip from said image data, and then, calculating a numerical value by sequentially comparing lengths of adjoining line segments of said control mark thereby to read out a format corresponding to the numerical value from a file unit, and



reading out criterion coordinates and criterion numerical values for the information marks representing the task data, comparing said calculated coordinates with these criterion coordinates to determine according to the result of comparison whether or not the following data should be taken in from said slip, and further, calculating numerical values by sequentially comparing lengths of adjoining line segments of said information marks, and comparing these numerical values with said criterion numerical values to determine according to the result of comparison whether or not the following data should be taken in from said slip.

5,059,776

BAR CODE FIELD AND BAR CODE READER

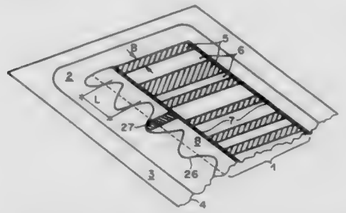
Gregor Antes, Zürich, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Aug. 10, 1989, Ser. No. 392,276

Claims priority, application Switzerland, Sep. 30, 1988, 03645/88

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—457 **20 Claims**



1. An article of manufacture including a substrate for supporting a first bar code field, said first bar code field being self-timing and including optically encoded machine readable information, said first bar code field comprising bar elements of different widths separated by background elements, wherein at least said bar elements each comprise an optically-diffractive microscopic relief structures with a spatial frequency of over 10 lines per mm and a predetermined orientation defined by an azimuth angle.

5,059,777

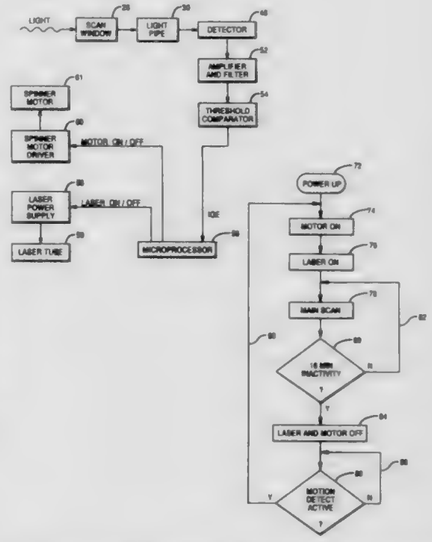
SCANNING SYSTEM PRESENCE SENSING APPARATUS AND METHOD

Christopher J. Wittensoldner, Cambridge, and Paul O. Detwiler, New Concord, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 21, 1989, Ser. No. 410,698

Int. Cl.[5] G06K *7/10, 7/14*

U.S. Cl. 235—470 **16 Claims**



1. A record media scanning apparatus capable of being activated by movement in the frequency range of human motion adjacent to said apparatus, comprising:

a surface on which articles to be scanned are supported;

a space beneath said surface defined by a box-like enclosure having a plurality of walls;

motor driver means for driving a motor forming a part of said scanning apparatus;

laser power supply means for providing power to a laser which provides light for operation of said scanning apparatus;

a photodetector for detecting changes in the intensity of ambient light impinging on said detection means caused by varying degrees of shadowing and for providing a signal having a frequency representative of the changes and having a level determined by the intensity of the ambient light impinging on said photodetector;

transmission means having first and second ends, a first end extending from said space to said photodetector for conveying ambient light to said photodetector and a second end extending from an inner surface of said one of said walls at an acute angle into said space;

amplifying and filtering means coupled to said detection means for receiving the signal therefrom, amplifying the signal, and filtering the signal to provide a single output signal having frequencies representative of human motion;

comparison means coupled to said amplifying and filtering means for receiving the amplified and filtered signal therefrom and comparing the level of the signal with a threshold signal representative of a predetermined degree of shadowing, which is less than the degree of shadowing during scanning, to provide an operator activity signal when the level of the amplified and filtered signal exceeds the threshold signal; and

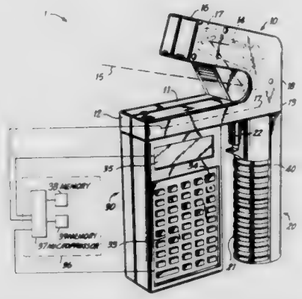
data processing means coupled to said comparison means to receive the operator activity signal therefrom and coupled to said motor driver means and said laser power supply means for operating said motor driver means and said laser power supply means in response to receiving the operator activity signal from said comparison means.

5,059,778

PORTABLE DATA SCANNER APPARATUS

John Zouzoulas, West Chester, Pa., and Louis J. Frontino, Cherry Hill, N.J., assignors to Mars Incorporated, McLean, Va.

Filed Sep. 29, 1986, Ser. No. 913,215
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **59 Claims**



1. A handheld light scanning and detection apparatus comprising:

a first module comprising a first housing of elongate shape having first and second ends, and means located within the first housing for projecting a light beam;

means for detecting light from the scanned light beam which has been reflected from scanned objects and producing a first electrical signal representative of the detected light;

a second module attached to the first module near the first end of the first housing, the second module comprising a second housing and one or more components of a data processing system which system is electrically connected to receive said first electrical signal; and

a third module attached to the first module near the second end of the first housing, the third module comprising a third housing for one or more electrical components of the apparatus.

5,059,779

SCAN PATTERN GENERATORS FOR BAR CODE SYMBOL READERS

Mark Krichever, Hauppauge, and Boris Metlitsky, Stony Brook, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 367,335, Jun. 16, 1989. This application Apr. 13, 1990, Ser. No. 510,074
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 **43 Claims**

1. An arrangement in a light scanning system for reading symbols, comprising:

(a) a housing having an exit port;

(b) light means in the housing for generating a light beam;

(c) optical means in the housing for directing the light beam along an optical path through the exit port;

(d) scanning means in the housing for scanning the light beam in scans across successive symbols located exteriorly of the housing, said scanning means including a central rotary mirror mounted in the optical path for rotation



about an axis, and a plurality of folding mirrors arranged in an annulus about the central mirror, said central mirror directing the light beam to the folding mirrors to generate a scan pattern; and

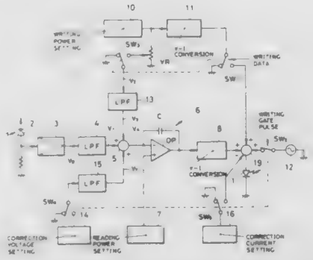
(e) changing means in the housing operatively connected to one of the folding mirrors, for moving said one folding mirror, thereby changing the scan pattern to a different scan pattern.

5,059,780

LIGHT POWER CONTROL CIRCUIT FOR A SEMICONDUCTOR LIGHT-EMITTING ELEMENT

Yoshiyuki Kakuta, and Masatoshi Adachi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 19, 1990, Ser. No. 540,530
Claims priority, application Japan, Sep. 7, 1989, 1-232097; Sep. 22, 1989, 1-246902; Sep. 22, 1989, 1-246903
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **7 Claims**



1. A light power control circuit for controlling a light power of a semiconductor light-emitting element in an optical disk information recording and reproducing system, comprising:

drive current supply means for supplying a drive current to said semiconductor light-emitting element;

superposing means for superposing a high-frequency signal on said drive current, wherein said superposing means inhibits the superposition of said high-frequency signal during a writing mode of said recording and reproducing

system, wherein said drive current supply means comprises:

light sensing device for receiving a part of light rays emitted by said semiconductor light-emitting element;

means for supplying a reading drive current corresponding to a reading power set value to said semiconductor light emitting element;

means for performing an increase-decrease control of said reading drive current in response to a variation of a detection output signal of said light sensing device with respect to said reading power set value;

correction means for correcting said detection output signal of said light sensing device during said writing mode;

first modulating means for modulating a voltage corresponding to a writing power set value by writing data; and

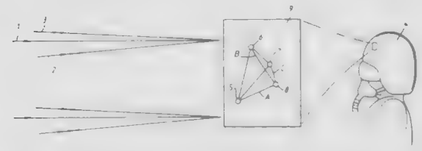
means for superposing an output current of said first modulating means on said reading drive current and supplying a current obtained by the superposition to said semiconductor light-emitting element as a writing drive current.

5,059,781

ORIENTATION MONITORING APPARATUS

Roger M. Langdon, Colchester, United Kingdom, assignor to GEC-Marconi Limited, Stanmore, United Kingdom

Filed Sep. 20, 1990, Ser. No. 585,782
Claims priority, application United Kingdom, Sep. 20, 1989, 8921268
Int. Cl.[5] G01N *21/86;* **G01V** *9/04*
U.S. Cl. 250—206.1 **27 Claims**



1. Apparatus for monitoring the orientation of an object comprising means for illuminating the object with a first interference pattern moving in a first direction and a second interference pattern moving in a second direction at an angle to the first direction; an array of sensors arranged to be mounted on the object and to produce outputs in response to the interference patterns and means to derive from the outputs and known configuration of the array alone the orientation of the object.

5,059,782

MULTI-FUNCTION DETECTION CIRCUIT FOR A PHOTOELECTRIC SWITCH USING AN INTEGRATED CIRCUIT WITH REDUCED INTERCONNECTIONS

Toshifumi Fukuyama, Uji, Japan, assignor to Astex Co., Ltd. and Takenaka Electronic Ind. Co. Ltd., both of Japan

Division of Ser. No. 421,529, Oct. 13, 1989. This application Jul. 11, 1990, Ser. No. 551,498
Claims priority, application Japan, Oct. 19, 1988, 63-263199; Oct. 28, 1988, 63-273914; Oct. 28, 1988, 63-273915; Oct. 28, 1988, 63-273916; Oct. 28, 1988, 63-273917; Jul. 28, 1989, 1-197104
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **3 Claims**

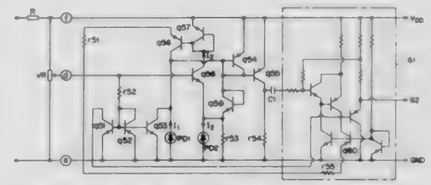
1. In a photoelectric switch including an integrated circuit arranged to cooperate with a support circuit via a limited number of input/output pins, a multi-function detection circuit comprising:

(A) an integrated circuit portion including:

first and second light-receiving means each for providing a photoelectric current in response to incident illumination;

first amplifier means, including first current mirror means coupled to said first light-receiving means and second current mirror means coupled to said second light-receiving means, for combining said photoelectric currents in a first additive mode and a second difference mode, dependent upon a control signal, to provide a composite detection signal;

mode control means, coupled to an input/output pin, for providing a mode control signal to said first amplifier means in response to the level of a voltage externally applied to said input/output pin;



second amplifier means, coupled to said input-output pin and responsive to said composite detection signal, for providing an amplified composite detection signal with an amplification gain dependent upon the level of said voltage externally applied to said input/output pin; and

(B) a support circuit portion including:

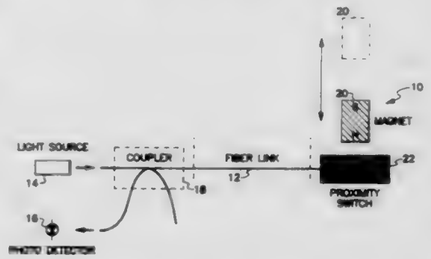
adjustable means, coupled to said input/output pin, for providing an adjustable voltage externally applied to said input/output pin for controlling the mode of operation of said first amplifier means.

5,059,783

INTERFEROMETRIC FIBER OPTIC PROXIMITY SWITCH

Lee K. Stranjord, Burlington, Mass., and Yellapu Anjan, Scottsdale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 4, 1990, Ser. No. 532,787
Int. Cl.[5] H01J *5/16;* **G01R** *33/02;* **G01B** *9/02*
U.S. Cl. 250—227.19 **14 Claims**



1. A fiber optic proximity sensing system, comprising:

an interferometer having a reference leg and a sensing leg, said sensing leg having a first predetermined length;

said interferometer further having means for reflecting optical energy;

a second predetermined length of magnetostrictive material secured to said sensing leg so that changes in said second predetermined length of said magnetostrictive material cause a change in said first predetermined length of said sensing leg;

an optical energy source, said source providing the only energy required for operation of said proximity sensing system;

an optical path for conveying said optical energy in a direction from said optical energy source to said interferometer and for conveying optical energy reflected from said reflecting means in an opposite direction;

detection means responsive to the magnitude of said reflected optical energy; and

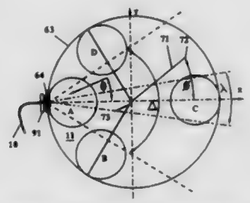
a permanent magnet movable between a first position adjacent said interferometer with the magnetic field of said permanent magnet interacting with said magnetostrictive material to cause constructive interference of said optical energy within said interferometer to produce a first level of reflected optical energy sufficient to energize said detection means and a second position with said magnet spaced from said interferometer to cause destructive interference of said optical energy within said interferometer to produce a second level of reflected optical energy insufficient to energize said detection means.

5,059,784

OPTICAL MASK FILTER CAPABLE OF REDUCING THE SEMIPERIODIC COMPONENT OF TEMPORAL VARIATION IN ENDPOINT DETECTION

Ronnie Northrup, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 30, 1990, Ser. No. 502,400
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—237 R **20 Claims**



1. A mask capable of reducing a semiperiodic component of temporal variation of a detector signal in a detector system in which a flux $F(\theta)$ of radiation is incident over a range of directions θ from a radiation source onto an input of a detector and in which said flux exhibits a semiperiodic temporal component of variation, said mask comprising:

a radiation transmission filter that transmits a fraction $T(\theta)$ of light incident at an angle θ relative to a reference direction; and

aligning fixture means for accurately aligning the transmission filter between the radiation source and the input of said detector.

5,059,785

BACKSCATTERING SPECTROMETRY DEVICE FOR IDENTIFYING UNKNOWN ELEMENTS PRESENT IN A WORKPIECE

Barney L. Doyle, and James A. Knapp, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

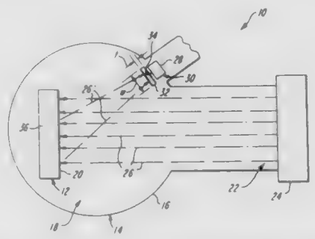
Filed May 30, 1990, Ser. No. 530,672
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—309 **14 Claims**

1. A backscattering spectrometry device for identifying and determining the amount of unknown elements in a workpiece, comprising:

(a) an ion beam impacting a surface of and penetrate a workpiece to collide with known atoms and unknown atoms in said workpiece resulting in a backscattered beam from said surface away from said workpiece;

(b) filter means for stopping said backscattered ions which collided with known atoms in said workpiece while said backscattered ions which collided with unknown atoms in said workpiece pass through said filter means; and

(c) detector means for counting the number and measuring the energy of said backscattered ions which collided with unknown atoms in said workpiece to determine the mass of said unknown atoms in said workpiece to thereby identify and determine the concentration of said unknown atoms in said workpiece.

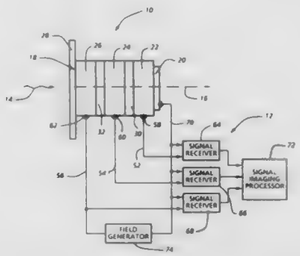


5,059,786

MULTI-COLOR COINCIDENT INFRARED DETECTOR

Tak-Kin Chu, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1990, Ser. No. 519,064
Int. Cl.[5] G01J *5/20, 3/28*
U.S. Cl. 250—338.4 **12 Claims**



2. In a photodetector device having a plurality of successive semiconductor layers stacked in alignment with an optical axis along which radiation at different wavelengths is projected, said layers being respectively made of compatible photovoltaic materials having energy bandgaps progressively decreasing in magnitude in a direction in which said radiation is projected; the improvement residing in said bandgaps being interrelated to limit absorption of the radiation to a common spectral range and semi-insulating spacing means interfaced between the semiconductor layers for extracting electrically separated signal outputs in response to the absorption of the radiation by the respective layers at different wavelengths within said common spectral range.

5,059,787

HIGH SPEED BROADBAND SILICON PHOTODETECTOR

Liang-fu Lou, Rancho Palos Verdes, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Mar. 22, 1990, Ser. No. 498,185
Int. Cl.[5] H01J *40/14;* **H01L** *27/14*
U.S. Cl. 250—211 J **4 Claims**

1. A photodetector, comprising:

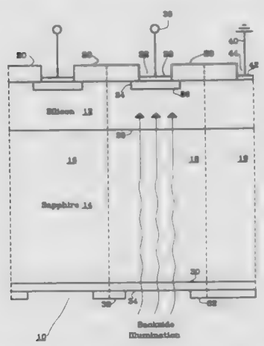
a sapphire substrate having a first surface and a free surface;

a p-doped silicon semiconductor layer formed on said first surface to form an interface with said substrate and a second surface spaced from said interface;

means forming an n-type junction at said second surface;

means for setting said p-doped silicon semiconductor layer to a reference potential,

means for biasing said junction with respect to said reference potential to create and enlarge a depletion region to extend into contact with said substrate at the interface, whereby the entire region within said semiconductor between said junction and said interface is depleted;



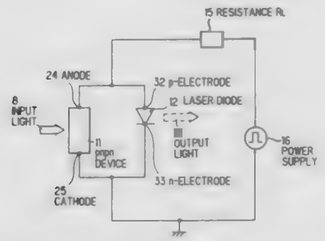
said substrate being open at the free surface away from said silicon semiconductor for receiving infrared radiation which passes through said interface and into said depletion region to generate carriers in said depletion region which are transported through said depletion region to said junction for detection.

5,059,788

OPTICAL LOGIC DEVICE WITH PNPN DETECTION AND LASER DIODE OUTPUT

Yoshiharu Tashiro, and Kenichi Kasahara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 7, 1990, Ser. No. 489,990
Claims priority, application Japan, Mar. 7, 1989, 1-55343
Int. Cl.[5] H01J *31/50*
U.S. Cl. 250—213 A **4 Claims**



1. An optical logic device, comprising:

a pnpn device which is turned on under a predetermined voltage by receiving an input light, said pnpn device having a switching voltage;

a semiconductor laser diode for emitting an output light under said predetermined voltage, said switching voltage being greater than a turn-on voltage of said semiconductor laser diode; and

a power supply for applying said predetermined voltage to said pnpn device and said semiconductor laser diode, said predetermined voltage being initially set to a value between said switching voltage and said turn-on voltage causing a current to flow through said semiconductor laser diode which is greater than a threshold current, said current decreasing to be less than said threshold current at an input light stage;

wherein said predetermined voltage is applied to said semiconductor laser diode to emit said output light, when said pnpn device is turned off; and

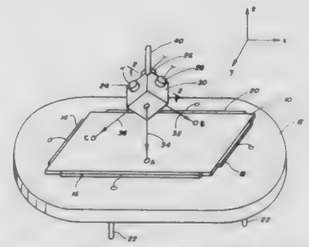
no voltage is applied to said semiconductor laser diode to not emit said output light, when said pnpn device is turned on.

5,059,789

OPTICAL POSITION AND ORIENTATION SENSOR

Septimiu E. Salcudean, Vancouver, Canada, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 22, 1990, Ser. No. 601,149
Int. Cl.[5] G01J *40/14*
U.S. Cl. 250—206.1 **8 Claims**



1. An optical position determination system for determining the relative position of an object with respect to a two-dimensional position sensing detector comprising:

energy source means connected to said object for directing at least three energy beams to points of incidence on said position sensing detector;

means connected to said energy source means for characterizing each said energy beam, whereby said position sensing detector provides outputs which are indicative of the position of each said point of incidence; and

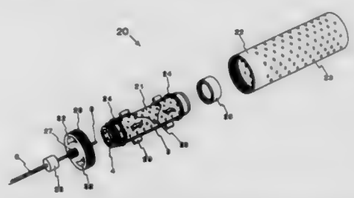
computer means responsive to said outputs for calculating the position and orientation of said object.

5,059,790

RESERVOIR FIBER OPTIC CHEMICAL SENSORS

Stanley M. Klainer, Henderson; Chet A. Frank, Las Vegas; Dileep K. Dandge, and Kisholoy Goswami, both of Henderson, all of Nev., assignors to FiberChem, Inc., Las Vegas, Nev.

Filed Mar. 30, 1990, Ser. No. 503,463
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.21 **38 Claims**



1. A reservoir cell fiber optic chemical sensor, comprising:

a modular cell body with a fluid communication opening on a lateral face thereof;

a semipermeable membrane mounted on the lateral face and covering the fluid communication opening;

a sensing reagent filling the cell body and contained therein by the membrane;

a fiber optic connected to one end of the modular cell body and oriented substantially transversely to the direction of flow of chemical species through the membrane;

wherein the membrane and sensing reagent are selected from the following combinations:
(a) the membrane is a hydrogen ion/hydronium ion permeable membrane and the sensing reagent is selected from pH sensitive absorption dyes and pH sensitive fluorescent dyes;
(b) the membrane is an arsenic ion permeable membrane and the sensing reagent is selected from an ammonium molybdate/stannous chloride mixture and an N-ethyl-8-hydroxtetrahydroquinoline/ferric chloride mixture;
(c) the membrane is selected from high density polyethylene, high density polypropylene and fluorinated forms thereof, and the sensing reagent is a solvent for benzene with refractive index lower than benzene;
(d) the membrane is a cyanide permeable membrane and the sensing reagent is p-benzoquinone;
(e) the membrane is a hydrazine permeable membrane and the sensing reagent is cupric neocuproine solution;
(f) the membrane is a cupric ion permeable membrane and the sensing reagent is selected from 2,2'-dipyridylketone hydrazone solution and lumocupferron solution;
(g) the membrane is a TCE permeable silicone polymer and the sensing reagent is a solvent for TCE with refractive index lower than TCE;
(h) the membrane is a mercuric ion permeable membrane and the sensing reagent is selected from 2,2'-dipyridylketone hydrazone solution and indole-3-propionic acid;
(i) the membrane is an iron(2+0 permeable membrane and the sensing reagent is ferrozine solution.

5,059,791

REFERENCE POSITION DETECTING DEVICE UTILIZING A PLURALITY OF PHOTO-DETECTORS AND AN ENCODER USING THE DEVICE

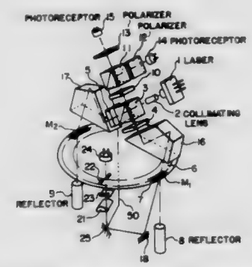
Koh Ishizuka; Tetsuharu Nishimura, both of Kawasaki, and Osamu Kasahara, Yokohoma, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 506,540, Mar. 8, 1990, abandoned, which is a continuation of Ser. No. 415,385, Sep. 28, 1989, abandoned, which is a continuation of Ser. No. 342,625, Apr. 19, 1989, abandoned, which is a continuation of Ser. No. 2,228, Jan. 12, 1987, abandoned. This application Oct. 3, 1990, Ser. No. 593,477

Claims priority, application Japan, Jan. 14, 1986, 61-005738; Jan. 14, 1986, 61-005739; Feb. 27, 1986, 61-042676

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.17 **48 Claims**



1. An encoder for detecting relative displacement between a beam spot and an optical scale on which a grating pattern and a reference pattern are formed, comprising:
means for reading the grating pattern;
means for irradiating the optical scale with a laser beam to form at least one beam spot on the optical scale; and
first and second light-receiving means for receiving the laser beam from the optical scale to output first and second signals, respectively, said first and second signals having levels which change in accordance with the positional relationship between the beam spot and the reference pattern, the levels of said first and second signals are the same only when the beam spot and the reference pattern achieve a predetermined positional relationship, wherein a predetermined reference signal is output when the levels of said first and second signals are the same.

5,059,792

THERMAL FIELD EMISSION ELECTRON GUN

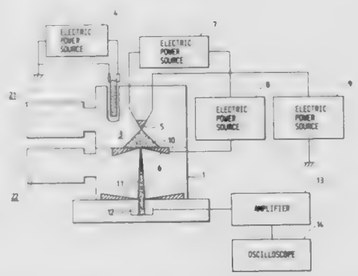
Hiroyasu Kaga, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,742

Claims priority, application Japan, Oct. 16, 1989, 1-268645

Int. Cl.[5] H01J *37/06*

U.S. Cl. 250—306 **8 Claims**



1. In an electron gun having a thermal field emission cathode having a Ti/W chip and first and second anodes which are disposed opposite to said cathode and whereon a lead-out voltage and an acceleration voltage are applied, a thermal field emission electron gun wherein the fore end of the aforesaid Ti/W chip is formed to have a radius of curvature of 2000 Å or above.

5,059,793

SCANNING TUNNELING MICROSCOPE HAVING PROPER SERVO CONTROL FUNCTION

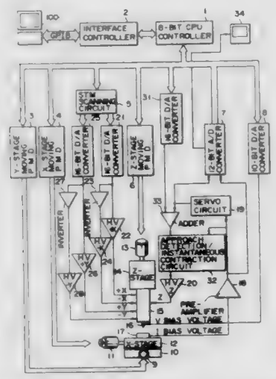
Hirofumi Miyamoto; Takao Okada; Tsugiko Takase; Shuzo Mishima, and Hiroko Ota, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1990, Ser. No. 591,457

Claims priority, application Japan, Oct. 4, 1989, 1-259617; Oct. 4, 1989, 1-259618

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—306 **12 Claims**



1. A scanning tunneling microscope comprising:

a piezoelectric driver capable of expanding and contracting to adjust a distance between a probe and a sample according to a voltage applied thereto, the distance including a distance at which a tunnel current can flow between said probe and said sample;
a servo circuit for outputting a servo voltage for controlling expansion and contraction of said piezoelectric driver to keep the tunnel current at a constant value;
correction voltage generating means for generating a given correction voltage to correct a voltage to be applied to said piezoelectric driver;
adding means for adding the servo voltage output from said servo circuit and the correction voltage supplied from said correction voltage generating mean to each other to supply an added output to said piezoelectric driver; and
control means for controlling the correction voltage supplied from said correction voltage generating means based on the servo voltage output from said servo circuit so a to keep the added output from said adding means at a given reference voltage.

5,059,794

RADIATION IMAGING SENSOR

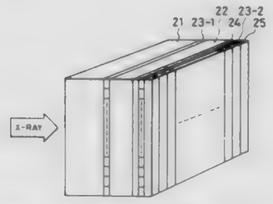
Tetsuhiko Takahashi, Suginami; Kenichi Okajima, Houya, and Ken Ueda, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 181,694, Apr. 14, 1988, abandoned. This application May 1, 1990, Ser. No. 517,382

Claims priority, application Japan, Apr. 17, 1987, 62-93023; Jul. 8, 1987, 62-168654

Int. Cl.[5] G03B *42/00*

U.S. Cl. 250—327.2 **7 Claims**



6. A radiation imaging sensor comprising:
a phosphorescent layer for converting a radiation image to a visible ray image;
a laminate structure, optically connected to said phosphorescent layer, and including a first light-transmissive electrode, a photoconductor layer, an insulating layer and a second light-transmissive electrode, wherein said photoconductor layer is a blocking type layer;
means for charging said laminate structure before storing said radiation image by applying a first voltage between said first and second light-transmissive electrodes;
means for applying a second voltage, reverse in polarity to said first voltage, between said first and second light-transmissive electrodes so that said radiation image is stored in said laminate structure as an electric charge distribution, the second voltage being of such magnitude that avalanche multiplication of at least one of electrons and holes takes place in said photoconductor layer when an electron and hole pair, which is generated in said photoconductor layer by absorption of a photon emitted from said phosphorescent layer, move toward respective surfaces of said photoconductor layer; and
means for reading out said radiation image from said laminate structure by scanning said photoconductor layer with a light beam under the condition that said first voltage is applied between said first and second light-transmissive electrodes.

5,059,795

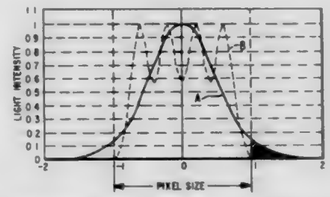
MULTIPLE BEAM RADIATION IMAGE READING APPARATUS

Masaki Izumi, Yokohama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1990, Ser. No. 571,362

Int. Cl.[5] G03B *42/00*

U.S. Cl. 250—327.2 **6 Claims**



1. An apparatus for reading out a radiation image from a storage phosphor plate on which the radiation image has been recorded in a plurality of pixels, by scanning an excitation light thereonto and detecting emitted light caused by the scanning of the excitation light,
the improvement comprising a plurality of laser beam source means for simultaneously irradiating excitation light having multiple laser beam spots, each laser beam spot having a particular dimensional magnitude, onto each of the pixels on said phosphorescent storage plate, said plurality of laser beam source means being arranged adjacent each other in at least a one dimensional array so that a single laser beam spot is formed by said multiple laser beam spots, such that said single laser beam spot extends in at least one dimension along a direction perpendicular to the main scanning direction with a particular dimensional magnitude greater than that of any one of said multiple laser beam spots so that said pixel is illuminated with said single laser beam spot having a sharp light intensity rising characteristic formed by combining said multiple laser beam spots.

5,059,796

INFRARED MONITORING SYSTEM

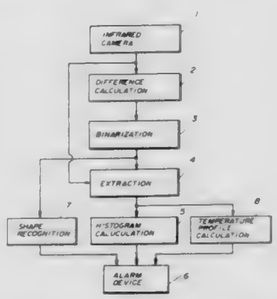
Tetsuya Nakamura, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 31, 1990, Ser. No. 531,152

Claims priority, application Japan, May 31, 1989, 1-138270

Int. Cl.[5] G06K *9/00*; **G01J** *5/18*

U.S. Cl. 250—330 **17 Claims**



1. An infrared monitoring system comprising:
an infrared camera outputting temperature data related to a pictured scene scanned in a predetermined time corresponding to one frame;

memory means for storing said temperature data supplied from said infrared camera;

difference calculation means, coupled to said memory means, for receiving said temperature data related to two consecutive frames and for calculating a difference between said temperature data related to said two consecutive frames;

binarization means, coupled to said difference calculation means, for classifying said pictured scene into a background area having no temperature change and a temperature change area having a temperature change between said two consecutive frames from said difference supplied from said difference calculation means;

extraction means, coupled to said memory means and said binarization means, for extracting temperature data related to said temperature change area from said temperature data stored in said memory means;

calculation means, coupled to said extraction means, for detecting an alarm area having a plurality of pixels more than a threshold number of pixels and having a temperature higher than a threshold temperature and for generating a first alarm signal when said alarm area is detected;

shape recognition means, coupled to said binarization means, for determining whether or not a shape of said temperature change area corresponds to a predetermined shape and for generating a second alarm signal when it is determined that the shape of said temperature change area corresponds to said predetermined shape; and

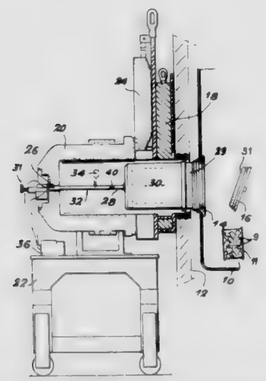
alarm generating means, coupled to said calculation means and said shape recognition means, for generating an alarm when both said first and second alarm signals are generated by said calculation means and said shape recognition means, respectively.

5,059,797

APPARATUS FOR MEASURING THE DOSE RATE IN A TRANSPORTATION FLASK CONTAINING RADIOACTIVE WASTE

Claude Bukowski, Bretteville en Saire, France, assignor to Cogema - Compagnie Generale des Matieres Nucleaires, France

Filed Nov. 5, 1990, Ser. No. 609,421
Claims priority, application France, Nov. 9, 1989, 89 14702
Int. Cl.[5] G01T *1/167*
U.S. Cl. 250—336.1 **8 Claims**



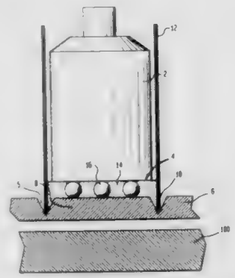
1. Apparatus for measuring the dose rate within a transportation flask containing a container carrier able to receive a container filled with radioactive waste, the transportation flask having a bottom which has a passage opening for a transfer poker, which can be coupled to a screw of the container carrier, said apparatus comprising a probe holder having a tube able to pass through the passage hole, a coupling nut mounted at one end of the tube and which can be coupled to the screw of the container carrier, an articulated door formed in the tube and able to occupy a closed position and an open position, and manipulating means accessible from the opposite end of the tube and controlling a displacement of the door between its open and closed positions; a probe for measuring the dose rate fixed to the door in such a way that it can be retracted into the tube when the door is in the closed position; an external measuring means connected to the probe for measuring the dose rate by electrical conductors passing into the tube.

5,059,798

FRANGIBLE BONDING OF PHOTOMULTIPLIER TUBES FOR USE IN SCINTILLATION CAMERAS AND PET SCANNERS

Dennis E. Persyk, Barrington, Ill., assignor to Siemens Gammasonics, Inc., Hoffman Estates, Ill.

Filed May 21, 1991, Ser. No. 703,553
Int. Cl.[5] G01T *1/20, 1/164*
U.S. Cl. 250—363.03 **11 Claims**



1. A method of detachably securing photomultiplier tubes to an element in a detector, comprising the following steps:

applying, to the element and at locations where photomultiplier tubes are to be attached, a measured quantity of an adhesive which cures to a soft state;

introducing, into each of the measured quantities, at least one stress-increasing body; and

placing, onto each of the measured quantities with said at least one stress-increasing body therein, a photomultiplier tube.

5,059,799

SCINTILLATION CAMERA

Tadakazu Kurakake, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1990, Ser. No. 502,031
Claims priority, application Japan, Apr. 4, 1989, 1-85358
Int. Cl.[5] G01T *1/20*
U.S. Cl. 250—363.10 **14 Claims**

14. A scintillation camera system comprising:

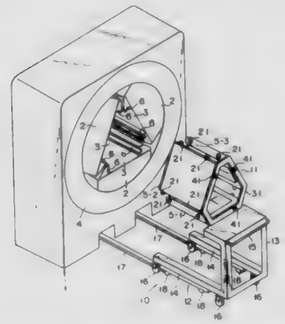
a scintillation camera comprising:

three detectors collectively forming a triangle-shaped opening for allowing an object such as a human to be inserted into the scintillation camera;

three collimators corresponding to the three detectors; and

means for securing the three collimators to the three detectors simultaneously; and

carrier means, movable toward the triangle-shaped opening, for simultaneously inserting the three collimators into the



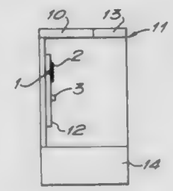
triangle-shaped opening and for simultaneously attaching the three collimators to the securing means.

5,059,801

RADIATION DETECTOR

Peter H. Burgess, Wantage, England, assignor to National Radiological Protection Board, Oxfordshire, England

Continuation-in-part of Ser. No. 138,372, Oct. 15, 1987, Pat. No. 4,876,454. This application Aug. 7, 1989, Ser. No. 395,103
Claims priority, application United Kingdom, Mar. 5, 1986, 8505394
The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.
Int. Cl.[5] G01J *5/22, 5/20, 5/02*
U.S. Cl. 250—370.14 **9 Claims**



1. A radiation detector for generating pulses in response to incident radiation, comprising:

first and second photo diodes, said first photo diode having a substantially larger effective sensitive area than that of the second diode;

means for attenuating radiation incident on said first diode; and

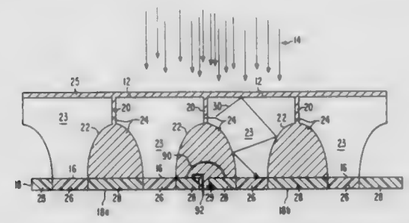
means for combining the output of said first and second diodes.

5,059,800

TWO DIMENSIONAL MOSAIC SCINTILLATION DETECTOR

Michael K. Cueman, Niskayuna; Gregory A. Mohr, Scotia, and Dale M. Brown, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 19, 1991, Ser. No. 687,100
Int. Cl.[5] G01T *1/202*
U.S. Cl. 250—367 **20 Claims**



1. A detector for a first type of radiation, said detector comprising:

a plurality of radiation receiving means, disposed in a mosaic, for emitting a second type of radiation in response to incident radiation of the first type, each of said receiving means having wide and narrow ends defining communicating grooves between adjacent receiving means, said wide ends being adapted to receive the incident radiation of the first type;

means for reflecting said second radiation type filling each groove between each of said plurality of receiving means; and

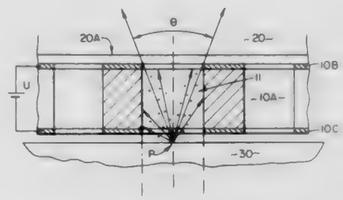
means for providing a signal in response to radiation of said second type, said providing means being optically coupled to said narrow ends.

5,059,802

COLLIMATOR FOR MEASURING RADIOACTIVE RADIATION

Heinz Filthuth, Bahnhofstrasse 29 D-7540 Neuenburg, Fed. Rep. of Germany

Filed May 14, 1990, Ser. No. 522,713
Claims priority, application Fed. Rep. of Germany, May 12, 1989, 3915613
Int. Cl.[5] H01J *47/00;* **G01T** *1/00*
U.S. Cl. 250—374 **21 Claims**



1. A plate-shaped collimator with a plurality of throughbores for increasing locality-sensitivity during measurement of the radiation from a radioactive substance, by means of a detector disposed adjacent said collimator, wherein said collimator is provided with an insulating core having two opposed major surfaces, two electrically conductive layers each disposed on a respective collimator surface, and means connected for applying a voltage for creating, between said conductive layers, an electrical field which acts on charged particles emanating from the radioactive substance to exert on these particles a force having a main component which is directed towards the detector in a direction substantially perpendicular to said conductive layers, and further wherein said throughbores extend through said core and between said conductive

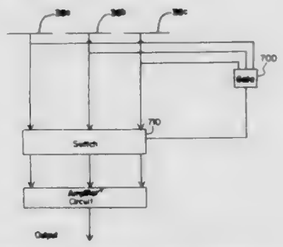
layers, and there are approximately 50–300 of said throughbores per cm^2 of surface area.

5,059,803

RUGGED ALPHA PARTICLE COUNTER

Stanley Kronenberg, Skillman, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 19, 1990, Ser. No. 554,508
Int. Cl.[5] H01J *47/00*; G01T *1/18*
U.S. Cl. 250—385.1 **11 Claims**



1. A portable rugged alpha particle detector for counting alpha particle radiation, comprising a housing, a first electrode having an aperture open to ambient air and carried by the housing, insulation means between the first electrode and the housing, a wire screen cover for the first electrode aperture opposite the housing, a second electrode carried by the housing and disposed adjacent to the first electrode, a field effect transistor within the housing and having respective emitter, collector and base terminals, a first battery connected between the first electrode and the housing providing a negative bias on the first electrode with respect to the second electrode, a second battery connected between the housing and the collector terminal of the field effect transistor, a dropping resistor between the housing and the emitter of the field effect transistor, an attenuating resistor between the base terminal and the housing, means for connecting the base terminal and the second electrode, an external count analyzer, and a means for connecting the count analyzer to the junction of the dropping resistor and the emitter terminal of the field effect transistor, whereby the transistor operates as an emitter follower amplifier producing single voltage pulses for each energetic alpha particle which enters the first electrode through the wire screen and loses its energy by ionization of the ambient air within the first electrode.

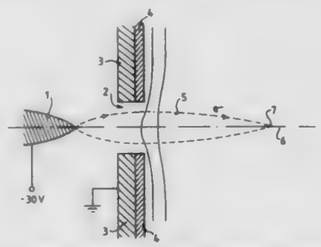
5,059,804

DELTA-PHI MICROLENS FOR LOW-ENERGY PARTICLE BEAMS

Hans-Werner Fink, Gattikon; Heinz Schmid, Oberrieden, and Bettina Stocker, Waedenswil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1990, Ser. No. 607,175
Claims priority, application European Pat. Off., Dec. 13, 1989, 89810951.7
Int. Cl.[5] H01J *49/42*
U.S. Cl. 250—396 R **12 Claims**

1. Delta-Phi microlens for low-energy particle beams, combined for operation with a source of particles, namely a sharply pointed tip (**1**), and comprising at least two metal foils (**3,4**) arranged inclose proximity with said tip (**1**) and each having a hole (**2**) exactly aligned with the axis of said tip (**1**), characterized in that a first one of said metal foils (**3,4**) serves as a substrate plate (**3**), and that a second foil (**4**) is coated onto at least part of that surface of said substrate plate (**3**) which is facing away from said tip (**1**), and the combined materials of said first



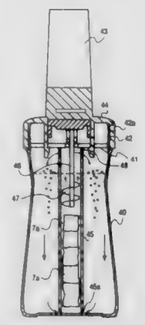
and second metal foils have a work function difference ($\Delta\Phi$) on the order of 3 eV.

5,059,805

MINERAL LIQUID PRODUCING DEVICE

Yasuhiro Shimizu, Isehara, Japan, assignor to Toshin Technical Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1989, Ser. No. 322,808
Claims priority, application Japan, Dec. 12, 1988, 63-313499
Int. Cl.[5] G21H *5/00*
U.S. Cl. 250—436 **5 Claims**



1. A mineral liquid producing device comprising a housing member for housing an activating stone and a liquid circulating means for circulating a liquid in said housing member by recirculating said liquid over said activating stone a plurality of times, whereby said liquid is changed to a mineral liquid by circulating and contacting said liquid with said activating stone.

5,059,806

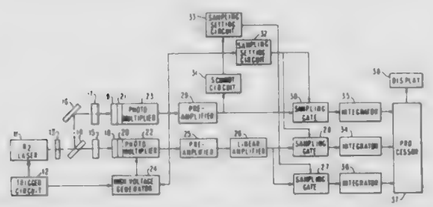
GAS DOSIMETER READING METHOD AND APPARATUS

Bertram Burgkhardt, Karlsruhe, Fed. Rep. of Germany, and Tatsuyo Ishidoya, Shizuoka, Japan, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany and Toshiba Glass Co. Ltd., Tokyo, Japan

Filed Sep. 17, 1990, Ser. No. 583,013
Claims priority, application Japan, Sep. 18, 1989, 1-239869
Int. Cl.[5] G01T *1/06*
U.S. Cl. 250—484.1 **4 Claims**

1. In an apparatus for reading a glass dosimeter including a fluorescent glass element which was exposed to ionizing radiation, said apparatus comprising a nitrogen gas laser unit for producing exciting ultraviolet pulses, an optical system for transmitting the exciting ultra-violet pulses produced in said nitrogen gas laser unit to said fluorescent glass element to generate fluorescence pulses thereof, means for transmitting

only a part of said exciting ultraviolet light pulses to the fluorescent glass element, and for transmitting another part of said exciting ultraviolet light pulses to a standard fluorescent glass element with a given predose luminescence, and first and second photoelectric detectors provided for separately detecting the fluorescence pulses produced in said fluorescent glass elements and operative means for calculating the exposure dose of said fluorescent glass element from the fluorescence intensity detected by said photoelectric detectors the improvement comprising ultraviolet light eliminating filters and wavelength selecting elements arranged between said fluorescent glass elements and the respective photoelectric detectors for selectively filtering fluorescent pulse components in a specific wavelength range so as to cause fluorescence intensity resulting from the radiation exposure to be high relative to and that resulting from the predose is for improved distinction therebetween for compensation in said operative means for predose luminescence present in the fluorescent glass element which was exposed to radiation.

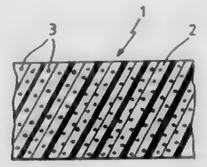


5,059,807

PROTECTION BARRIER AGAINST IONIZING RAYS OF THE γ TYPE AND/OR X-RAYS

Jean Kersten, Villers-St.-Amand; Etienne Lombard, Genappe, and Christian Carlier, Brussels, all of Belgium, assignors to Baxter International Inc., Deerfield, Ill.

PCT No. PCT/US89/01094, § 371 Date Nov. 21, 1989, § 102(e) Date Nov. 21, 1989, PCT Pub. No. WO89/09472, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 17, 1989, Ser. No. 435,512
Claims priority, application Belgium, Mar. 24, 1988, 08800334
Int. Cl.[5] G21F *3/02*
U.S. Cl. 250—519.1 **12 Claims**



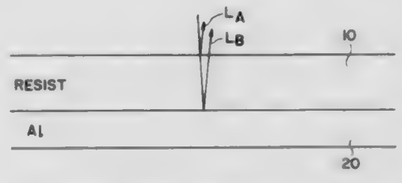
1. Protection barrier against ionizing rays of the type and/or x-rays, comprising a flexible single layer polymeric film of between 50 and 500 microns, in thickness in which particles of an agent absorbing said rays are dispersed, characterized in that said ionizing ray absorbing agent is selected from the group consisting of particles of bismuth, bismuth oxide, bismuth hydroxide or bismuth salts, said particles having a size of less than 40 microns.

5,059,808

ALIGNMENT METHOD FOR PATTERNING

Atsushi Tarui; Kazuhiko Urayama, and Yutaka Kamata, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 289,812, Dec. 27, 1988, abandoned. This application Jul. 3, 1990, Ser. No. 547,332
Claims priority, application Japan, Dec. 24, 1987, 62-328250
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—548 **10 Claims**



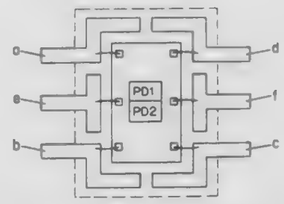
1. An alignment method comprising the steps of:
irradiating a He-Ne laser beam as an alignment light toward an alignment mark whose surface has a high reflectance, said alignment mark being provided on a semiconductor substrate and being coated by a resist film, and
performing alignment on the basis of the resultant intensity of reflected light from the surface of said resist and reflected light from an interface between said resist and said mark,
wherein said resist comprises a chemical material having a light absorption characteristic in a wavelength band of said alignment light, said wavelength band of said alignment light being irrespective of that of an exposure light used to expose said resist.

5,059,809

LIGHT-RESPONSIVE DEVICE FOR A PHOTOELECTRIC SWITCH

Toshifumi Fukuyama, Uji, Japan, assignor to Astex Co., Ltd. and Takenaka Electronic Industrial Co., Ltd., both of Kyoto, Japan

Division of Ser. No. 421,529, Oct. 13, 1989. This application Jul. 11, 1990, Ser. No. 551,499
Claims priority, application Japan, Oct. 19, 1988, 63-263199; Oct. 28, 1988, 63-273914; Oct. 28, 1988, 63-273915; Oct. 28, 1988, 63-273916; Oct. 28, 1988, 63-273917; Jul. 28, 1989, 1-197104
Int. Cl.[5] G02B *27/00*
U.S. Cl. 250—551 **4 Claims**



1. A light-responsive device, suitable for use in a photoelectric switch characterized by inclusion of a current mirror formed of two PNP transistors responsive to a signal from a light-responsive device to provide a light detection output, said light-responsive device comprising:
a P-type sublayer;
an N-type layer grown on said P-type layer;
a P-type layer grown on said N-type layer;
coupling means for coupling said P-type sublayer and P-type layer to a common point; and

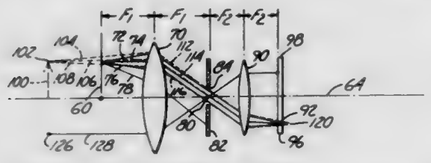
terminal means coupled to said N-type layer for providing light-responsive outputs from said device.

5,059,810

DISTANCE INDEPENDENT GAUGING SYSTEM

Dennis J. Wilwerding, Littleton, and Norman L. Stauffer, Englewood, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 28, 1990, Ser. No. 500,685
Int. Cl.[5] G01N *21/86;* **G01B** *11/14*
U.S. Cl. 250—561 **29 Claims**



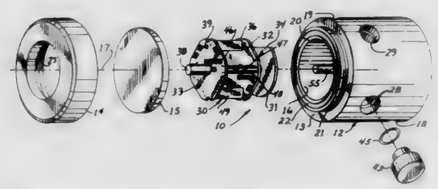
1. Position sensing apparatus comprising:
first lens means having a first effective focal length and being positioned along a first axis to receive rays of radiation from a remote object, some of the rays being parallel to the first axis;
radiation blocking means, having an aperture therethrough, and positioned along the first axis at a distance proximate the first effective focal length from the first lens means so that only the rays of radiation from the object which are parallel and nearly parallel to the first axis pass through the aperture;
second lens means having a second effective focal length and being positioned along the first axis proximate the second focal length from the radiation blocking means to receive rays of radiation which pass through the aperture; and
radiation sensing means mounted along the first axis to receive radiation from the second lens means and to produce an output in accordance therewith, the center ray of the rays emanating from a point on the remote object being parallel to the first axis which ray is transmitted by the first lens through the aperture to the second lens and is transmitted by the second lens to intersect the radiation sensing means at a position which is independent of the distance between the remote object and the first lens means, the output being indicative of the position of intersection.

5,059,811

TURBIDIMETER HAVING A BAFFLE ASSEMBLY FOR REMOVING ENTRAINED GAS

Karl L. King, Brown Deer; Bruce W. Weiss, Whitefish Bay, and Robert W. Endl, Johnson Creek, all of Wis., assignors to Great Lakes Instruments, Inc., Milwaukee, Wis.

Filed Aug. 30, 1990, Ser. No. 574,998
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—573 **22 Claims**



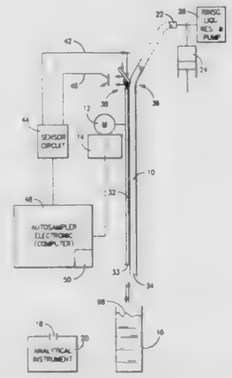
1. An apparatus for measuring turbidity of a fluid comprising:
a housing having a cavity with upper and lower regions, an inlet through which the fluid enters the lower region of the cavity, and an outlet through which the fluid exits the upper region of the cavity;
a baffle assembly within the cavity and having a first means for directing substantially all the fluid from the inlet into the upper region, a second means for directing fluid with entrained gas through the upper region to the outlet, a third means for directing fluid substantially devoid of entrained gas through a turbidity sensing zone in the cavity; and
means for measuring the turbidity of the fluid flowing in the sensing zone.

5,059,812

CONTROL APPARATUS FOR CONTROLLING AN ASPIRATOR TUBE IN AN AUTOMATIC SAMPLE DISPENSER

Bernhard Huber, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin Elmer GmbH, Überlingen, Fed. Rep. of Germany

Filed Oct. 9, 1990, Ser. No. 595,129
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1989, 3934344
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—577 **5 Claims**



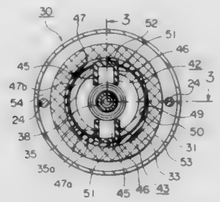
1. A control apparatus for controlling a lowering motion of an aspirator tube into a sample vessel in an automatic sample dispenser, comprising:
servo drive means drivingly connected to the aspirator tube for lowering said aspirator tube into a sample vessel;
light guide means associated with and extending in the lengthwise direction of said aspirator tube;
said aspirator tube containing a lower end facing the surface of a liquid present in said sample vessel upon lowering said aspirator tube into said sample vessel;
a light transmitter associated with said light guide means;
said light guide means receiving light emitted by said light transmitter and guiding said light to said lower end of said aspirator tube facing said surface of the liquid present in said sample vessel;
said light guide means emitting said light guided to said lower end of said aspirator tube, in a direction toward said surface of the liquid present in said sample vessel;
a photoelectric receiver associated with said light guide means;
said light guide means receiving light reflected at said surface of the liquid present in said sample vessel and guiding said reflected light to said photoelectric receiver;
said light guide means constituting a single light guide;
light coupling means associated with said single light guide;
said light coupling means coupling in light emitted by said light transmitter into said single light guide in a direction toward said lower end of said aspirator tube; and
said light coupling means coupling out light reflected at said surface of the liquid present in said sample vessel and travelling back from said lower end of said aspirator tube, from said single light guide in a direction toward said photoelectric receiver.

5,059,813

SOLENOID SWITCH FOR A COAXIAL ENGINE STARTER

Shigeru Shiroyama, Himeji City, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1990, Ser. No. 559,916
Claims priority, application Japan, Aug. 1, 1989, 1-200541
Int. Cl.[5] F02N *11/02*
U.S. Cl. 290—48 **2 Claims**



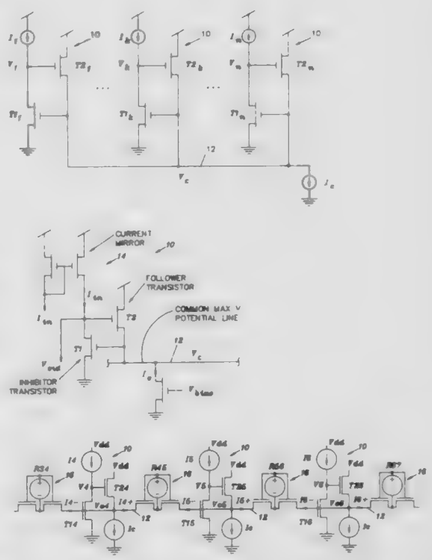
1. A solenoid switch for a coaxial engine starter, comprising:
a cylindrical case (**31**);
a hollow coil bobbin (**34**) concentrically disposed within said case and defining a cylindrical space (**36**);
a solenoid coil (**33**) wound around said coil bobbin within said case;
a pair of diametrically opposed stationary contact assemblies (**42**, **43**) having respective electrical conductors (**44**) including stationary contact elements (**45**) and electrically insulating members (**46**) individually disposed around said conductors, said stationary contact assemblies being supported from said case, and said stationary contact elements extending into said cylindrical space of said coil bobbin;
a plunger (**37**) disposed within said cylindrical space of said coil bobbin and axially slidable in response to a magnetic field generated by said solenoid coil;
a movable contact (**39**) mounted on said plunger for separably engaging with said stationary contact elements;
said coil bobbin having a tubular wall (**47**) defining a cylindrical inner surface (**49**) along which said plunger slides and an oval outer surface (**50**) such that thickened wall portions (**47***a*) are formed between said inner and said outer surfaces at opposite ends of a major axis of said oval, and thinner wall portions (**47***b*) are formed at opposite ends of a minor axis of said oval;
said coil bobbin having recesses (**51**) formed in said inner surface in said thickened wall portions for partially receiving therein said insulating members of said stationary contact assemblies; and
said insulating members of said stationary contact assemblies having a thickness sufficient to provide a necessary electrical insulation of said conductors of said stationary contact assemblies; and
a pair of elongated through bolts (**24**) individually extending alongside said thinner wall portions for assembling the solenoid switch to a motor of said engine starter.

5,059,814

WINNER-TAKE-ALL CIRCUITS FOR NEURAL COMPUTING SYSTEMS

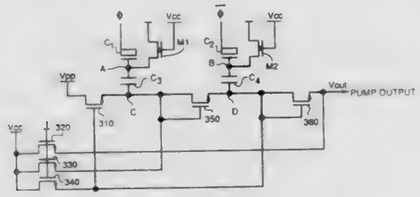
Carver A. Mead; John Lazzaro; M. A. Mahowald, and Sylvie Ryckebusch, all of Pasadena, Calif., assignors to The California Institute of Technology, Pasadena, Calif.

Filed Nov. 30, 1988, Ser. No. 277,795
Int. Cl.[5] H03K *3/013, 3/353, 17/687;* **G06F** *13/00*
U.S. Cl. 307—201 **12 Claims**



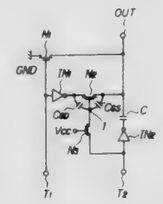
1. A neural computing circuit producing a single winner-take-all output at the "winning" circuit when a plurality of the circuits are simultaneously connected to a common line supplying current and producing a maximum voltage potential comprising:
a) follower transistor means operably connected to the common line for sourcing current, said follower transistor means including gate means for connection to a current signal input source providing a current signal to each neural computing circuit to be compared to the said current signals at respective ones of the other neural computing circuits connected to the common line; and
b) inhibitor transistor means having a gate operably connected to the common line and being operably connected to said gate means of said follower transistor means for providing a voltage output of the neural circuit at an output thereof and for inhibiting said voltage output at all neural computing circuits connected to the common line which have a said current signal which is smaller than the largest said current signal connected to one of the neural computing circuits.

5,059,815
HIGH VOLTAGE CHARGE PUMPS WITH SERIES CAPACITORS
Colin S. Bill; Michael A. Van Buskirk, both of San Jose, and Antonio J. Montalvo, San Francisco, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Apr. 5, 1990, Ser. No. 505,335
Int. Cl.[5] H03K *17/66;* **H02J** *11/00*
U.S. Cl. 307—246 **10 Claims**



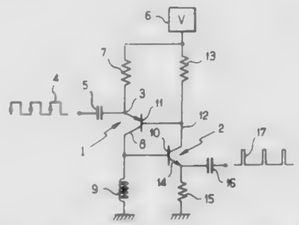
1. A charge pump apparatus comprising:
charge pumping means having an input lead and an output lead, for providing an increase in voltage on said output lead in response to a signal received on said input lead;
a capacitor having first and second leads, said first lead of said capacitor connected to said output lead of said charge pumping means, such that said increase in voltage in said output lead of said charge pumping means is distributed between said output lead of said charge pumping means and said second lead of said capacitor;
diode means having input and output leads, said input lead of said diode means connected to said second lead of said capacitor, for transferring said increase in voltage from said input lead of said diode means to said output lead of said diode means; and
voltage clamp means connected to said output lead of said charge pumping means, for ensuring that voltage on said output lead of said charging means does not fall below a minimum predetermined voltage.

5,059,816
HIGH SPEED BOOSTER CIRCUIT
Hiroyuki Kobatake, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 18, 1990, Ser. No. 539,594
Claims priority, application Japan, Jun. 20, 1989, 1-158586
Int. Cl.[5] H03K *17/56, 19/01*
U.S. Cl. 307—246 **5 Claims**



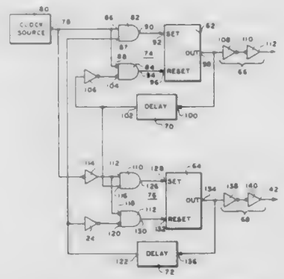
1. A booster circuit, comprising:
a first field effect transistor having a gate connected to a first signal terminal supplied with a first signal and a source-drain path connected between an output terminal and a first power supply;
a second field effect transistor having a gate connected to a first node and a source-drain path connected between said output terminal and a second node;
first means for supplying said second node with an inverted signal of said first signal;
a third field effect transistor having a gate connected to a second power supply and a source-drain path connected between a second signal terminal and said first node, said second signal terminal being supplied with a second signal different in phase from said first signal;
a capacitance element connected between said output terminal and a third node; and
second means for supplying said third node with a third signal relative to said second signal.

5,059,817
NARROW PULSE GENERATOR
André Jolivet, Versailles, France, assignor to Matra Communication, Quimper, France
Filed Jul. 17, 1990, Ser. No. 553,456
Claims priority, application France, Jul. 19, 1989, 8909703
Int. Cl.[5] H03K *3/017, 5/04*
U.S. Cl. 307—265 **1 Claim**



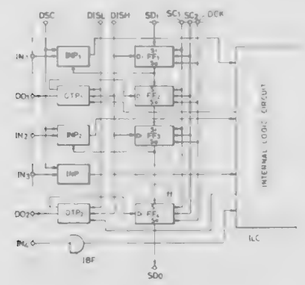
1. A narrow pulse generator comprising a first transistor and a second transistor connected to a stabilized power supply through respective impedance-matching resistances, the first transistor having an input terminal connected to a source of signals including a series of voltage edges, an output terminal connected firstly to an inductance and secondly to a control terminal of the second transistor, and a control terminal connected to an input terminal of the second transistor, the second transistor additionally including an output terminal connected to a ground through a load resistance and to an output terminal of the pulse generator.

5,059,818
SELF-REGULATING CLOCK GENERATOR
David B. Witt, and Brian D. McMinn, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jun. 1, 1990, Ser. No. 532,311
Int. Cl.[5] H03K *5/13, 7/00*
U.S. Cl. 307—269 **15 Claims**



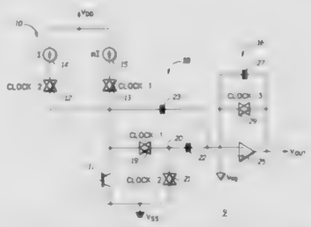
1. A clock generator for providing an output clock signal for clocking a microprocessor having first and second speed paths requiring first and second minimum execution time periods, said output clock signal having, during each period, a first phase to establish a first execution time period for said processor sufficient to accommodate said first speed path during said first phase and a second phase to establish a second execution time period for said processor sufficient to accommodate said second speed path during said second phase, said output clock signal being provided responsive to an externally applied input clock signal having a frequency and a duty cycle within a wide range of frequencies and duty cycles, said clock generator comprising:
latch means having an input to receive said input clock signal and having an output said latch means being set and reset by said input clock signal for providing said output clock signal at said output; and
enable means coupled between said latch means output and said latch means input, said enable means including a first delay means having a first delay time for establishing said first execution time period during said first phase and a second delay means having a second delay time for establishing said second execution time period during said second phase to enable the setting and resetting of said latch means by said input clock signal after said first and second execution time periods have elapsed,
said latch means including a first latch which is reset enabled by said first delay means and set enabled by said second delay means and said latch means further including a second latch which is reset enabled by said second delay means and set enabled by said first delay means.

5,059,819
INTEGRATED LOGIC CIRCUIT
Kazuo Tanaka; Masato Hamamoto; Toshio Yamada, all of Tokyo; Tohru Kobayashi, Iruma, and Hiromasa Katoh, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 16, 1987, Ser. No. 133,915
Claims priority, application Japan, Dec. 26, 1986, 61-308441; Jan. 16, 1987, 62-005973
Int. Cl.[5] H03K *3/29, 19/086;* **H01L** *25/00*
U.S. Cl. 307—272.1 **23 Claims**



1. An integrated logic circuit comprising:
a plurality of input circuits having first input terminals which receive thereat input signals supplied from first external terminals and having individual output terminals which provided output signals, said plurality of input circuits including first input circuits each having one of said first input terminals and a second input terminal, the first input circuits each including first and second input bipolar transistors, the first input bipolar transistor having a base serving as the first input terminal and an emitter, the second input bipolar transistor having a base serving as the second input terminal and an emitter coupled to the emitter of the first input bipolar transistor;
an internal logic circuit having inputs respectively coupled to the output terminals of said plurality of input circuits and providing outputs in accordance with the signals received from the output terminals of said plurality of input circuits;
a plurality of output circuits having input terminals coupled to receive the outputs supplied from said internal logic circuits and having output terminals which provide output signals to second external terminals; and
a plurality of flip-flops for storing test data therein including at least a plurality of first flip-flops, each having an output respectively coupled to the second input terminal of individual ones of said first input circuits, so as to transfer said test data via said first input circuits to said internal logic circuit, said plurality of flip-flops being coupled in cascade forming individual stages of a shift register so that said test data is serially supplied to said plurality of flip-flops.

5,059,820
SWITCHED CAPACITOR BANDGAP REFERENCE CIRCUIT HAVING A TIME MULTIPLEXED BIPOLAR TRANSISTOR
Alan L. Westwick, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 19, 1990, Ser. No. 584,811
Int. Cl.[5] H03K *3/01, 17/56*
U.S. Cl. 307—296.6 **8 Claims**



5. A switched capacitor bandgap reference circuit having a time multiplexed bipolar transistor, comprising:
a first current source having a first terminal coupled to a first power supply voltage terminal, and a second terminal for providing a first current;
a second current source having a first terminal coupled to the first power supply voltage terminal, and a second terminal for providing a second current differing from the first current by a predetermined proportion;
a first switch having a first terminal coupled to the second terminal of the first current source, and a second terminal;
a second switch having a first terminal coupled to the second terminal of the second current source, and a second terminal;
bipolar transistor means coupled between the second terminals of the first and second switches and a second power supply voltage terminal for time multiplexing during two predetermined time periods conduction of the first and second currents thru an identical predetermined current path of the bipolar transistor means during the two time periods;
a first capacitor having a first electrode coupled to the second terminals of the first and second switches, and having a second electrode;
a third switch having a first terminal coupled to the second terminals of the first and second switches, and having a second terminal;
a second capacitor having a first electrode coupled to the second terminal of the third switch and having a second electrode coupled to the second electrode of the first capacitor;
a fourth switch having a first terminal coupled to the second terminal of the third switch, and having a second terminal coupled to the second power supply voltage terminal;
an amplifier having a first input coupled to the second electrodes of the first and second capacitors, a second input coupled to a reference voltage terminal, and an output for providing an output reference voltage;
a third capacitor having a first electrode coupled to the first

input of the amplifier, and a second electrode coupled to the output of the amplifier; and

a fifth switch having a first terminal coupled to the first input of the amplifier, and a second terminal coupled to the output of the amplifier.

5,059,821

BI-CMOS DRIVER WITH TWO CMOS PREDRIVERS HAVING DIFFERENT SWITCHING THRESHOLDS

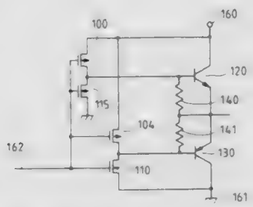
Fumio Murabayashi; Yoji Nishio, both of Hitachi; Shoichi Kotoku, Katsuta; Kozaburo Kurita, Hitachi, and Kazuo Kato, Tohkai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1991, Ser. No. 649,854

Claims priority, application Japan, Mar. 18, 1988, 63-63338

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—360 **5 Claims**



1. A logic circuit comprising:

first and second power source terminals having an absolute value of potential difference;

an output terminal;

a first bipolar transistor having a collector of a first conductivity type coupled to said first power source terminal, an emitter of the first conductivity type coupled to said output terminal, and a base of a second conductivity type;

a second bipolar transistor having a collector of the second conductivity type coupled to said second power source terminal, an emitter of the second conductivity type coupled to said output terminal, and a base of the first conductivity type;

a first CMOS circuit having a first threshold voltage closer to the first power source voltage applied to said first power source terminal than the second power source voltage applied to said second power source terminal, including:

at least one first field effect transistor of the second conductivity type having its gate responsive to an input signal applied to said input terminal and its source-drain current path coupled between said first power source terminal and the base of said first bipolar transistor;

at least one second field effect transistor of the first conductivity type having its gate responsive to the input signal and its source-drain current path coupled between said second power source terminal and the base of said first bipolar transistor; and

a second CMOS circuit having a second threshold voltage closer to the second power source voltage than the first power source voltage, including:

at least one third field effect transistor of the second conductivity type having its gate responsive to the input signal and its source-drain current path coupled between said first power source terminal and the base of said second bipolar transistor; and

at least one fourth field effect transistor of the first conductivity type having its gate responsive to the input signal and its source-drain current path coupled between said second power source terminal and the base of said second bipolar transistor.

5,059,822

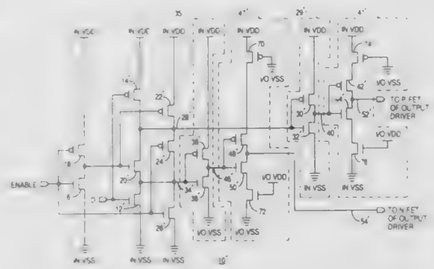
METHOD AND APPARATUS FOR CONTROLLING NOISE ON POWER SUPPLY BUSES

Glenn E. Dukes, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 23, 1990, Ser. No. 617,846

Int. Cl.[5] H03K *17/16, 19/003*

U.S. Cl. 307—443 **7 Claims**



1. A noise reduction apparatus for use with a buffer having an output stage connected to a pad driver, said buffer being within an integrated circuit having internal upper potential and lower potential power supply buses and input/output upper potential and lower potential power supply buses, comprising:

first means connected to the output stage for reducing a current from the internal upper potential power supply bus via the output stage to the pad driver if a potential difference between the input/output lower potential power supply bus and the internal upper potential power supply bus decreases; and

second means connected to the output stage for reducing a second current from the internal lower potential power supply bus via the output stage to the pad driver if a potential difference between the input/output upper potential power supply bus and said internal lower potential power supply bus decreases;

whereby noise is reduced by the first means reducing the first current driving the pad driver if ground bounce noise is occurring on the input/output lower potential power supply bus connected to the pad driver and by the second means reducing the second current driving the pad driver if transient noise is occurring on the input/output upper potential power supply bus connected to the pad driver.

5,059,823

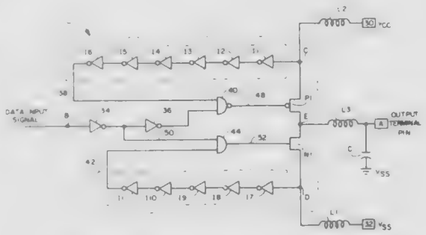
SUPPLY BOUNCE CONTROLLED OUTPUT BUFFER CIRCUIT

Zahid Ahsanullah, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 22, 1990, Ser. No. 600,948

Int. Cl.[5] H03K *19/003, 19/094, 17/687*

U.S. Cl. 307—443 **13 Claims**



1. A supply bounce controlled output buffer circuit for

producing an output signal at an output terminal pin which has a significant reduction in inductive ringing said output buffer circuit comprising:

a first pull-up transistor (P1) having one of its main electrodes coupled to a first power supply terminal pin and its other main electrode coupled to the output terminal pin;

a pull-down transistor (N1) having one of its main electrodes coupled to a second power supply terminal pin and its other main electrode coupled to the output terminal pin;

a first inverter (34) having its input connected to receive a data input signal and an output;

a second inverter (36) having its input connected to the output of said first inverter (34) and an output;

a NAND logic gate (40) having a first input connected to the output of said second inverter (36) and an output connected to a control electrode of said pull-up transistor (P1);

first delay means (38) having an input connected to said one of its main electrodes of said pull-up transistor (P1) and an output connected to a second input of said NAND logic gate (40);

an AND logic gate (44) having a first input connected to the output of said first inverter (34) and an output connected to a control electrode of said pull-down transistor (N1); and

second delay means (42) having an input connected to said other main electrode of said pull-down transistor (N1) and an output connected to a second input of said AND logic gate (44).

5,059,824

BICMOS OUTPUT CIRCUIT WITH STATIC OUTPUT CURRENT CONTROL CIRCUIT

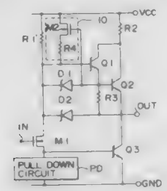
Masaji Ueno, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 10, 1990, Ser. No. 579,668

Claims priority, application Japan, Sep. 13, 1989, 1-235775

Int. Cl.[5] H03K *19/02, 5/12*

U.S. Cl. 307—446 **10 Claims**



1. An output circuit comprising:

an input terminal for receiving an input signal;

an output terminal for outputting a signal of said output circuit;

a first power source terminal for receiving a first power source potential and a second power source terminal for receiving a second power source potential;

a pull up first bipolar transistor having a collector, an emitter, and a base; and a pull down second bipolar transistor having a collector, an emitter, and a base, said first and second bipolar transistors being connected in series between said first and second power source terminals, said emitter of said first bipolar transistor being connected to a common node, said collector of second bipolar transistor being connected to said common node, and said output terminal being connected to said common node;

a first resistor connected in series between said first and second power source terminals, and a first MOS transistor, having a gate connected to said input terminal, a source connected to said base of said first bipolar transistor and a drain connected to said base of said second bipolar transistor, for controlling said first and second bipolar transistors in response to the input signal; and

a static output-current control circuit connected in parallel with said first resistor, the control circuit being turned on to flow a static output current by detecting that a potential of an output signal at said output terminal becomes a predetermined value or less when a logic level of the output signal changes from "1" level to "0" level.

5,059,825

NAND GATE CIRCUIT

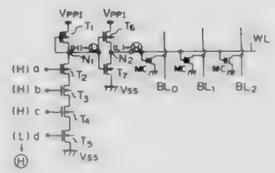
Masanobu Yoshida, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

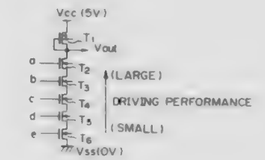
Filed Oct. 19, 1989, Ser. No. 424,038

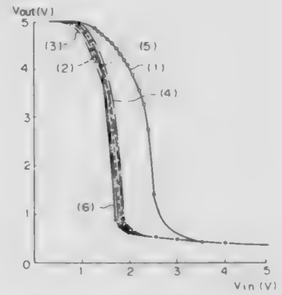
Claims priority, application Japan, Oct. 27, 1988, 63-269408

Int. Cl.[5] H03K *19/017, 19/094, 19/20, 17/687*

U.S. Cl. 307—448 **11 Claims**







1. A NAND gate circuit comprising:

a high potential voltage source line;

an output terminal;

a low potential voltage source line;

a load element connected between said high potential voltage source line and said output terminal; and

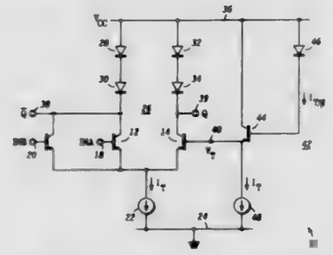
a driving circuit, connected between said output terminal and said low potential voltage source line, including a plurality of driving transistors connected in series, said driving transistors being controlled by an input signal being applied to each gate, at least one of the driving transistors having a driving performance different from that of the other driving transistors constituting said driving circuit.

5,059,826

VOLTAGE THRESHOLD GENERATOR FOR USE IN DIODE LOAD EMITTER COUPLED LOGIC CIRCUITS

Karl J. Huehne, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 30, 1989, Ser. No. 443,790
Int. Cl.[5] H03K *19/12, 17/16*
U.S. Cl. 307—455 **4 Claims**



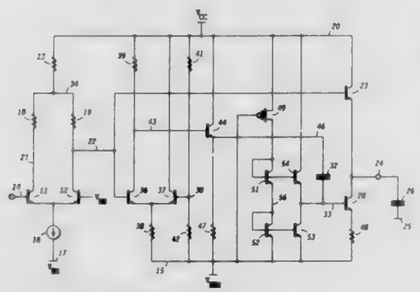
1. A voltage reference generator for providing an output reference voltage of a predetermined substantially constant value at an output, comprising:
a first transistor having first and second electrodes and a control electrode, said first electrode being coupled to the output, said second electrode being directly connected to a first power supply conductor to which is supplied a constant DC operating voltage, said first transistor being maintained conductive during operation of the voltage reference generator responsive to said DC operating voltage for providing the output reference voltage;
first diode means connected between said first power supply conductor and said control electrode of said first transistor; and
current supply means coupled between said first electrode of said first transistor and a second power supply conductor.

5,059,827

ECL CIRCUIT WITH LOW VOLTAGE/FAST PULL-DOWN

M. Nghiem Phan, Mesa, and William R. Blood, Jr., Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1990, Ser. No. 560,916
Int. Cl.[5] H03K *19/06, 19/02*
U.S. Cl. 307—455 **15 Claims**



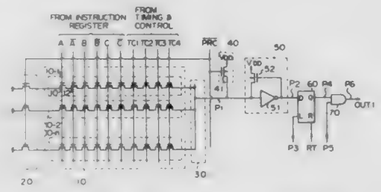
1. A logic circuit which comprises:
an input stage;
an output stage coupled to the input stage;
a low-voltage inverter stage coupled to the input stage;
an active pull-down stage coupled too the low-voltage inverter stage and to the output stage;
means for pre-biasing the active pull-down stage such that the active pull-down stage is pre-biased to be slightly conductive, wherein the output stage comprises a first transistor having a collector, a base, and an emitter, the collector being coupled to a positive voltage supply terminal, the base being coupled to the input stage, and the emitter being coupled to the active pull-down stage and to an output terminal; and
wherein the active pull-down stage comprises:
a second transistor having a collector, a base, and an emitter, the collector being coupled to the output stage and to the output terminal, and the base being coupled to the means for pre-biasing; and
a first resistor having a first end and a second end, the first end being coupled to the emitter of the second transistor, and the second end being coupled to a negative voltage supply terminal.

5,059,828

PROGRAMMABLE LOGIC ARRAY CIRCUIT HAVING A GATE TO CONTROL AN OUTPUT CONDITION STATE OF A LATCH THEREOF

Kouji Tanagawa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Japan

Filed Mar. 23, 1990, Ser. No. 498,269
Claims priority, application Japan, Apr. 6, 1989, 1-40748[U]
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **7 Claims**



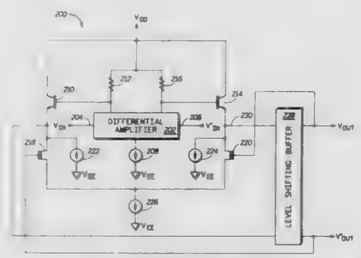
1. A programmable logic array circuit comprising:
means for decoding a prescribed signal after a first precharge timing;
means for latching an output signal from said decoder means immediately before a second precharge timing; and
gating means for controlling a passage of a output from said latching means therethrough with a predetermined timing signal.

5,059,829

LOGIC LEVEL SHIFTING CIRCUIT WITH MINIMAL DELAY

Stephen T. Flannagan, and Tai-Sheng Feng, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1990, Ser. No. 577,178
Int. Cl.[5] H03K *19/092, 19/094, 19/01, 19/003*
U.S. Cl. 307—475 **12 Claims**



1. A logic level shifting circuit with minimal delay comprising:

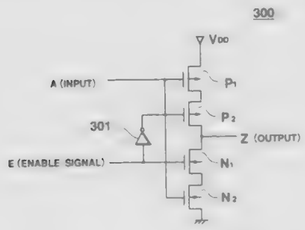
a first current source;
current steering means coupled to the first current source and having differential mode inputs for respectively receiving differential mode input voltages associated with a first set of logic levels and having a first pair of differential outputs, each providing a current proportional to the differential mode input voltages;
a first pair of passive loads respectively coupled to the first pair of differential outputs of the current steering means, for providing a first pair of voltages in response to the currents, each voltage of the first pair of voltages provided in response to a predetermined one of the currents from the current steering means;
a pair of voltage followers respectively coupled to the first pair of voltages for respectively providing at a second pair of voltages associated with the first set of logic levels;
a pair of switched current control means respectively coupled to a second pair of voltages of the pair of voltage followers;
a second current source coupled to the pair of switched current control means for providing a predetermined current to the pair of switched current control means; and
buffer means coupled to one of the second pair of voltages and providing a third pair of output voltages associated with a second set of logic levels and coupled to control electrodes of the pair of switched current control means.

5,059,830

INTEGRATED CIRCUIT USING BUS DRIVER HAVING REDUCED AREA

Takeji Tokumaru, Yokohama; Tsuneaki Kudou, Kawasaki, and Kazuyuki Omote, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 14, 1989, Ser. No. 435,932
Claims priority, application Japan, Nov. 14, 1988, 63-285809
Int. Cl.[5] H03K *19/02, 19/096*
U.S. Cl. 307—481 **3 Claims**



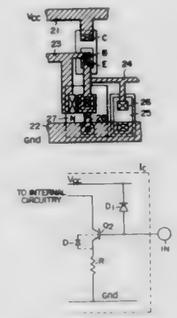
1. An integrated circuit bus driver for driving bus lines, the bus driver including a clocked inverter having two P channel MOS transistors and two N channel MOS transistors connected to one another in series, each bus driver having a data input terminal, a control terminal for inputting an enable signal, and an output terminal, comprising:
a plurality of bus drivers each having an output terminal;
a plurality of first bus lines for transferring data among the components of the integrated circuit; and
a plurality of second bus lines, for transferring data among the components of the integrated circuit, each of which are respectively coupled to the first bus lines;
wherein the output terminal of each bus driver is connected to one of the second bus lines.

5,059,831

BUFFER CIRCUIT WITH AN ELECTROSTATIC PROTECTOR

Masashi Itoh, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1990, Ser. No. 494,315
Claims priority, application Japan, Mar. 20, 1989, 1-65862
Int. Cl.[5] H01L *25/00, 27/02;* **H03K** *19/02, 19/20*
U.S. Cl. 307—482.1 **27 Claims**



1. A semiconductor input buffer circuit for a semiconductor circuit comprising:
a first power source;
an input node; and
a bipolar transistor on a substrate having a collector coupled to the semiconductor circuit, an emitter coupled to said first power source through a resistor formed by a P-type diffusion region in an N-type resistor island region of said substrate, and a base coupled to the input node and the N-type resistor island region of said resistor
wherein the N-type resistor island region and the P-type diffusion region form a diode structure between the emitter and base of said bipolar transistor such that the cathode of the diode structure is coupled to the base and the anode of the diode structure is coupled to the emitter.

5,059,832

SWITCHED CURRENT INTEGRATOR CIRCUIT

John B. Hughes, Hove, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1990, Ser. No. 520,683
Claims priority, application United Kingdom, May 10, 1989, 8910755
Int. Cl.[5] G06G *7/12*
U.S. Cl. 307—490 **17 Claims**

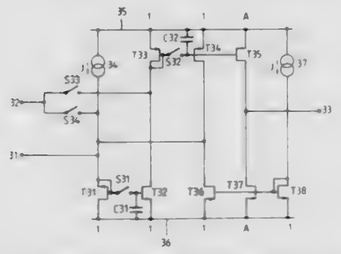
13. An integrator circuit for integrating sampled input signal currents comprising:
a first current input for receiving a sampled input signal current to be integrated,
a current output for the integrated output current,
first and second current memory cells each including an input and an output,
means coupling the output of the first current memory cell to the input of the second current memory cell,
means coupling said output of the second current memory cell to the input of the first current memory cell,

means coupling a second output of the second current memory cell to said current output,

means coupling the first current input to the input of at least one of said first and second current memory cells,

a further current input for receiving a further input signal current, and

switching means coupled to said first and second current memory cells and operated by non-overlapping timing signals whereby the first current memory cell produces at its output during a first portion of a sampling period a



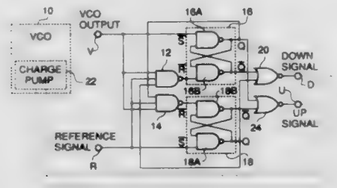
current related to its input current during a second portion of a preceding sample period and the second memory cell produces at its outputs during a second portion of a sampling period currents related to its input current during the first portion of the sampling period, and whereby the further input is coupled to the input of the first current memory cell during at least the second portion of a sampling period and to the input of the second current memory cell during at least the first portion of a sampling period.

5,059,833

PHASE DETECTOR SUITABLE FOR USE IN PHASE LOCK LOOP

Takashi Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 17, 1990, Ser. No. 599,196
Claims priority, application Japan, Oct. 17, 1989, 1-270866
Int. Cl.[5] H03L *7/093*
U.S. Cl. 307—510 **4 Claims**



1. A digital phase detector comprising a first input for receiving an output of a voltage controlled oscillator and a second input for receiving a reference signal, the phase detector operating to compare said first input with said second input both in phase and in frequency so as to output a first control signal for decrease of an oscillation frequency of the voltage controlled oscillator when a phase of said first input is in advance of that of said second input or when a frequency of said first input is higher than that of said second input, and so as to output a second control signal for increase of the oscillation frequency of the voltage controlled oscillator when the phase of said first input is delayed from that of said second input or when the frequency of said first input is lower than that of said second input, the phase detector being configured to output neither said first control signal nor said second control signal when both of said first input and said second input are at a low level;

said digital phase detector further including:

first and second three-input NAND gates each having a first input connected to receive said output of the voltage controlled oscillator and a second input connected to receive said reference signal;

a first RS-flipflop having a set input connected to receive said output of the voltage controlled oscillator, a reset input connected to an output of said first NAND gate, and a Q output connected to a third input of said second NAND gate;

a second RS-flipflop having a set input connected to receive said reference signal, a reset input connected to an output of said second NAND gate, and a Q output connected to a third input of said first NAND gate;

a first logic output circuit having a first input connected to a Q output of said first flipflop, a second input connected to the Q output of said second flipflop, and an output for generating said first control signal for decrease of the oscillaiton frequency of the voltage controlled oscillator; and

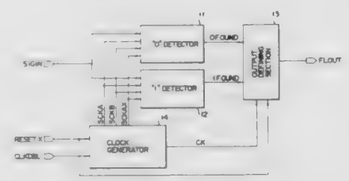
a second logic output circuit having a first input connected to a Q output of said second flipflop, a second input connected to the Q output of said first flipflop, and an output for generating said second control signal for increase of the oscillation frequency of the voltage controlled oscillator.

5,059,834

CIRCUIT DEVICE FOR ELIMINATING NOISE FROM AN INPUT SIGNAL INDEPENDENT OF TIME OF ARRIVAL OF NOISE OR NOISE WIDTH

Haruyuki Tago, Kawasaki, and Yasuo Yamada, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 20, 1990, Ser. No. 512,153
Claims priority, application Japan, Apr. 25, 1989, 1-103517
Int. Cl.[5] H03K *5/22*
U.S. Cl. 307—542 **17 Claims**



1. A noise eliminating circuit comprising:

first detecting means for continuously monitoring the logic level of an input signal by use of at least one first detecting element for detecting that the input signal is at a first logic level and detecting that the input signal has said first logic level within a predetermined operating cycle in accordance with the result of detecting by said first detecting element every said operating cycle;

second detecting means for continuously monitoring the logic level of said input signal by use of at least one second detecting element for detecting that the input signal is at a second logic level and detecting that the input signal has said second logic level within said predetermined operating cycle in accordance with the result of detection by said second detecting element every said operating cycle; and

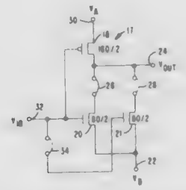
output determining means coupled to said first and second detecting means for determining its output signal such that said output signal is at said first logic level in a first case where only said first detecting means continues its detecting over a predetermined time period longer than said operating cycle, said output signal is at said second logic level in a second case where only said second detecting means continues its detection over said predetermined time period, and said output signal is held at the logic level value that it had previously, when the input signal is not at said first logic level and not at said second logic level, including means for deciding the results of detection by said first and second detecting means every said operating cycle and determining said predetermined period according to the number of decisions made by said first and second detecting means.

5,059,835

CMOS CIRCUIT WITH PROGRAMMABLE INPUT THRESHOLD

Donald K. Lauffer, Poway, and Ikuo J. Sanwo, San Marcos, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 4, 1987, Ser. No. 57,416
Int. Cl.[5] H01H *37/76;* **H03K** *19/094*
U.S. Cl. 307—576 **6 Claims**



1. A CMOS circuit having an input threshold voltage, said CMOS circuit comprising:

an input terminal;

an output terminal;

a first power supply terminal;

a second power supply terminal;

first field-effect transistor means having a source connected to said first power supply terminal, a drain connected to said output terminal, a gate connected to said input terminal, and a first channel means between said source and said drain having a first width and a first length;

programmable field-effect transistor means having a gate terminal connected to said input terminal, a drain terminal connected to said output terminal, a source terminal connected to said second power supply terminal, second channel means between said drain terminal and said source terminal, said second channel means having an effective width and an effective length; and

programmable input means connected to said second channel means for changing the ration of the product of said first width times said effective length to the product of said effective width times said first length said that the input threshold voltage of said CMOS circuit is changed responsive to the change of said ratio;

wherein said second channel means includes a plurality of field-effect transistors connected in a series/parallel circuit; and

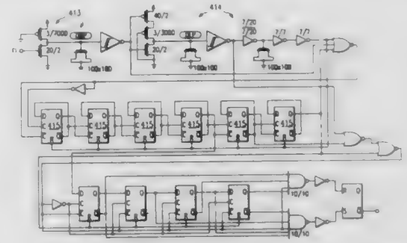
wherein said programmable input means include gate terminal means connected to the gates of selected ones of said plurality of field-effect transistors such that said selected ones of said plurality of field-effect transistors may be turned on and off by electric signals applied to said gate terminal means.

5,059,836

DIFFERENTIAL-TIME-CONSTANT BANDPASS FILTER USING THE ANALOG PROPERTIES OF DIGITAL CIRCUITS

Robert D. Lee, Denton, and Robert W. Mounger, Dallas, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 283,554, Dec. 9, 1988, Pat. No. 4,967,108. This application Oct. 30, 1990, Ser. No. 605,603
Int. Cl.[5] H03K *19/00, 5/00*
U.S. Cl. 307—520 **8 Claims**



1. An integrated circuit bandpass filter, for providing a passband with predetermined upper and lower passband edge frequencies, comprising:

a first digital circuit which has an input and an output, said first circuit outputting a signal made from delaying by a first time interval first polarity transitions of an input signal but not delaying transitions of polarity opposite said first polarity wherein said first circuit outputs a constant signal if said delayed first polarity transitions overlap said not delayed opposite polarity transitions;

a second digital circuit which has an input and an output, said second circuit outputting a signal made from delaying by a first time interval second polarity transitions of an input signal but not delaying transitions of polarity opposite said second polarity wherein said first circuit outputs a constant signal if said delayed second polarity transitions overlap said not delayed opposite polarity transitions;

the output of said second circuit connected to the input of said first circuit;

a digital counter circuit, having reset and clock inputs, and having a count output which is determined in accordance with said clock and reset inputs;

wherein the output of said first digital circuit is connected to drive said reset input of said counter, and the output of said second digital circuit is connected to drive said clock input of said counter;

whereby said count output of said counter provides said bandpass filter function for signals at said input of said second circuit.

5,059,837

DATA DEPENDENT VARIABLE TIME DELAY CIRCUIT

Charles K. Erdelyi, and Mark G. Marshall, both of Essex Junction, Vt., assignors to IBM, Armonk, N.Y.

Filed Feb. 13, 1989, Ser. No. 309,530
Int. Cl.[5] H03K *5/13, 5/159, 17/28*
U.S. Cl. 307—601 **11 Claims**

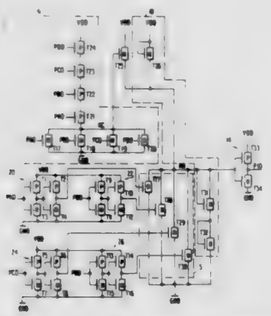
11. A delay circuit for receiving a plurality of input signals, comprising:

output means, coupled to a node, for producing a first output when a voltage at the node is greater than or equal to a predetermined threshold voltage, and for producing a second output, which is different form the first output, when the voltage at the node is less than the predetermined voltage;

means for maintaining the voltage at the node greater than

the predetermined threshold voltage, thereby causing said output means to produce the first output; and

a plurality of switching means, each of said switching means receiving a different one of the plurality of input signals, each of the switching means being rendered conductive, when receiving a predetermined level of its associated input signal, to cause the voltage at the node to decrease to a voltage which is less than the predetermined threshold voltage, thereby causing the output means to produce the second output;



wherein at least one of the plurality of switching means is constructed such that, when the at least one switching means is rendered conductive, the rate at which the voltage at the node decreases is different from the rate at which the voltage at the node decreases when any of the other switching means is rendered conductive, and wherein said output means comprises a CMOS invertor having its input connected to the node.

5,059,838

SIGNAL DELAY CIRCUIT USING CHARGE PUMP CIRCUIT

Hiroyuki Motegi, Kawasaki; Kenji Matsuo, Yokohama; Akira Nagae, Yokohama, and Hideaki Uchida, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 17, 1990, Ser. No. 466,472

Claims priority, application Japan, Jan. 17, 1989, 1-8019; Dec. 22, 1989, 1-331131

Int. Cl.[5] H03K *5/13, 5/159, 3/01*

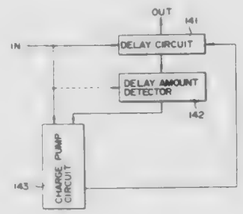
U.S. Cl. 307—603 64 Claims

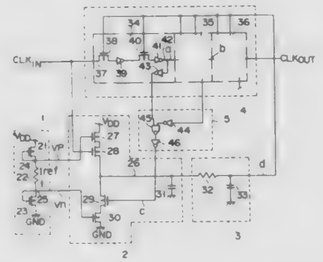
1. A signal delay circuit comprising:

variable delay means for delaying an input signal having a predetermined frequency by a time corresponding to a control signal;

delay amount detecting means for detecting a signal delay amount of said delay means; and

a charge pump circuit for receiving the input signal and a detection signal from said delay amount detecting means, generating a DC voltage corresponding to a pulse width





ratio between the two signals, and feeding back the DC voltage to said variable delay means as the control signal.

5,059,839

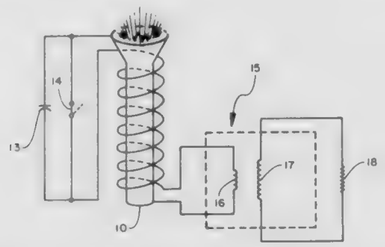
EXPLOSIVE MAGNETIC FIELD COMPRESSION GENERATOR TRANSFORMER POWER SUPPLY FOR HIGH RESISTIVE LOADS

Millard F. Rose, King George Co., Va.; Lawrence H. Luessen, Upper Marlboro, Md., and Monty P. Villere, New Orleans, La., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 585,268, Jun. 9, 1975, abandoned. This application May 16, 1977, Ser. No. 797,168

Int. Cl.[5] H20K *7/00*

U.S. Cl. 310—10 13 Claims



1. A compact device for use in a single shot environment wherein high energy is fed to resistance loads in a short time, comprising:

an explosive flux compression generator having at least unity energy gain;

a pulse transformer electrically connected to said generator;

a resistive load operatively connected to said transformer; and

means to detonate said generator.

5,059,840

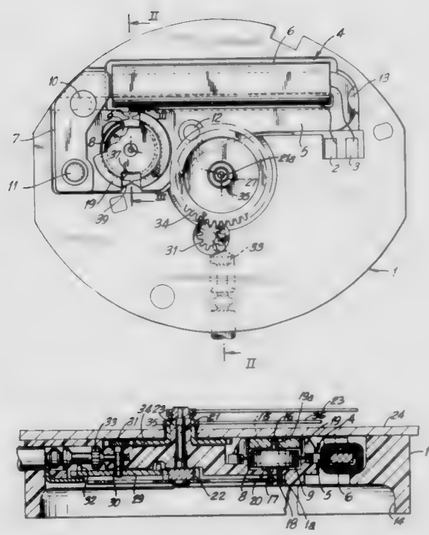
STATOR ASSEMBLY FOR A TIMEPIECE STEPPING MOTOR

Michel Plancon, Besancon, France, assignor to Timex Corporation, Waterbury, Conn.

Filed Jan. 25, 1991, Ser. No. 645,759

Int. Cl.[5] H02K *37/00;* G04C *5/00*

U.S. Cl. 310—49 R 7 Claims



1. A stator assembly for a timepiece stepping motor adapted to be held in a plastic frame defining stator locating means and a frame bore and having a stepping motor rotor with a pair of journals, one of which journals is adapted to be disposed in said frame bore, comprising:

a flat one-piece stator member defining a stator opening for said rotor and having a pair of diametrically opposed narrow sections on either side of said stator opening,

a non-magnetic bushing having an outer ring and a central annular portion defining a bushing bore arranged to receive the other journal of said rotor, said outer ring defining diametrically opposed cut-out notches larger than said stator narrow sections,

said bushing being located and attached to said stator member so that said cut-out notches are aligned with said narrow sections,

said narrow sections being severed so as to separate the stator member into two pole shoe portions defining gaps therebetween,

said rotor being disposed in said stator opening, and

said stator member being located and attached to said frame so that said bushing bore and frame bore are aligned and journal said rotor coaxially within the stator opening.

5,059,841

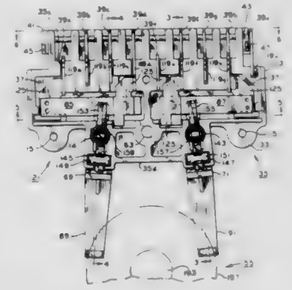
DYNAMOELECTRIC MACHINE

James P. Frank, Rock Falls, Ill., and James L. King, Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 283,539, Dec. 12, 1988, Pat. No. 4,922,062, which is a division of Ser. No. 156,581, Feb. 16, 1988, Pat. No. 4,834,679, which is a division of Ser. No. 849,915, Apr. 9, 1986, Pat. No. 4,757,604, which is a division of Ser. No. 496,524, May 20, 1983, Pat. No. 4,594,773. This application Dec. 26, 1989, Ser. No. 456,740

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—71 21 Claims



1. A dynamoelectric machine comprising:

a stationary assembly including a stator having a pair of opposite end faces, a pair of opposite end frames formed of electrical conductive metallic material arranged in spaced relation with said opposite end faces of said stator, a bore through said stator between said opposite end faces thereof, winding means associated with said stator and adapted for excitation, a plurality of winding leads with connection free ends emanating from said winding means and extending from one of said opposite end faces of said stator toward one of said opposite end frames, respectively, a pair of bearing and lubrication systems associated with said opposite end frames, respectively, a pair of container means for said lubrication and bearing systems connected with said opposite end frames and extending toward said opposite end faces of said stator, respectively, and a first opening in said one opposite end frame;

a rotatable assembly including a shaft rotatably received in said bearings of said bearing and lubrication systems, respectively, rotor means on said shaft for conjoint rotation therewith and arranged at least in part within said bore of said stator in magnetic coupling relation with said winding means said rotor means and shaft being rotatable from an at-rest position to a preselected rotational speed upon the excitation of said winding means, a centrifugal mechanism arranged on said shaft so as to be conjointly rotatable therewith and spaced between said rotor and one of said container means on said one opposite end frame, said centrifugal mechanism having a push collar with a force transmitting face extending generally radially with respect to said shaft, said push collar being generally axially movable with respect to said shaft from a protracted position with said force transmitting face spaced adjacent said one container means on said one opposite end frame toward a retracted position in response to the conjoint rotation of said rotor means and shaft from the at-rest position to the preselected rotational speed thereof, and resiliently urged means associated with said centrifugal mechanism and operable generally for exerting a force urging said push collar toward its protracted position;

a switch and terminal assembly disposed between said one opposite end frame and said one opposite end face of said stator including a casing having a plurality of wall means

defining chamber means within said casing, a second opening extending at least in part through said casing between a pair of opposite wall means thereof and isolated from said chamber means in said casing, means on said casing extending beyond one of said opposite wall means thereof for at least in part releasably mounting said casing to said one opposite end frame with said one opposite wall means being disposed at least adjacent thereto and with said second opening through said casing being at least generally aligned with said first opening through said one opposite end frame, a plurality of sets of terminals disposed in said casing along only a third one of said wall means of said casing interposed between said opposite wall means thereof, said terminals in one of said terminal sets having a pair of electrical connector sections of dissimilar configurations arranged generally in planar and angular relation and extending generally in row formation with each other exteriorly of said casing, one of said electrical connector sections in said one terminal set extending in the row formation thereof only beyond said third one wall means of said casing and the other of said electrical connector sections of said terminals in said one terminal set extending in the row formation thereof beyond both said third one wall means and the other of said opposite wall means of said casing, said terminals in another of said terminal sets having only another one electrical connector section with a configuration similar to that of said one electrical connector sections of said terminals in said one terminal set and arranged so as to extend in the row formation therewith only beyond said third one wall means of said casing, respectively, one of said terminals in said another terminal set comprising a ground terminal having strap means extending therefrom exteriorly of said casing in abutment between said one opposite wall means thereof and said one opposite end frame for ground connection engagement therewith and with said strap means being disposed at least in part about said first opening through said one opposite end frame and said second opening through said casing, at least one of said terminals in a third one of said terminal sets having only a third one electrical connector section with a configuration similar to that of said other electrical connector sections of said terminals in said one terminal set and arranged in the row formation therewith so as to extend beyond said third one wall means of said casing, respectively, said other connector sections of said terminals in said one terminal set and said third one electrical connector section of said at least one terminal of said third one terminal set being connected with said connection free ends of said winding leads, respectively, a plurality of supporting sections on some of said terminals in said terminal sets and extending interiorly of said casing from said third one wall means thereof into said chamber means, respectively, a pair of switch means movably secured to respective ones of said supporting sections within said chamber means and operable generally between switching positions for making with and breaking from at least other respective ones of said supporting sections, respectively, a pair of actuating arms pivotally movable in said casing and extending into said chamber means, respectively, a pair of means on said actuating arms for engagement with said switch means to effect the operation of said switch means between the switching positions thereof in response to the pivotal movement of said actuating arms, respectively, a pair of driving arms associated with said actuating arms so as to be conjointly pivotally movable therewith and extending exteriorly of said casing through a fourth one of said wall means of said casing generally opposite said third one wall means thereof with said driving arms being disposed on opposite sides of said shaft between said one container means on said one end opposite frame and said force transmitting face on said push collar of said centrifugal mechanism, and a pair of means on said driving arms engaged with said force transmitting face on said push collar for receiving therefrom the force exerted by said resiliently urged means on said push collar at least when said push collar is in the protracted position thereof, respectively, said driving arms and actuating arms being conjointly pivotally movable in response to the axial movement of said push collar from the protracted position toward the retracted position thereof against the force exerted by said resiliently urged means at least when said rotor and shaft attain the preselected rotational speed thereof so as to effect the respective operations of said switch means from one of the switching positions toward the other of the switching positions thereof; and

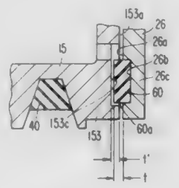
means extending through said first opening in said one opposite end frame and at least in part into said second opening in said casing for ground connection engagement between said one opposite end frame and said strap means of said ground terminal and for at least in part assisting in the releasable mounting of said casing to said one opposite end frame with said strap means of said ground terminal being retained in abutment between said other opposite wall means of said casing and said one opposite end frame in the ground connection engagement therewith.

5,059,842

ELECTROMAGNETIC CLUTCH WITH GROOVED FRICTION SURFACE

Fumiaki Uehara, Sawa, Japan, assignor to Sanden Corporation, Japan

Filed Oct. 12, 1990, Ser. No. 596,492
Claims priority, application Japan, Oct. 12, 1989, 1-118775[U]
Int. Cl.[5] H02K *7/108;* **F16D** *27/10*
U.S. Cl. 310—78 **9 Claims**



1. An electromagnetic clutch comprising:

a first rotatable member made of a magnetic material and including a first friction surface associated therewith;

a second rotatable member;

an annular armature plate made of a magnetic material and coupled to said second rotatable member so that said annular armature plate is capable of limited axial movement, said annular armature plate including a second friction surface associated therewith which faces said first friction surface with an axial air gap therebetween;

electromagnetic means associated with said first rotatable member and said annular armature plate for attracting said second friction surface to said first friction surface to transmit rotational force to said second rotatable member; and

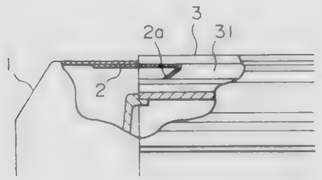
a friction member made of a nonmagnetic material and fixedly disposed on said second friction surface of said annular armature plate, said friction member having a first end surface which faces said first friction surface of said first rotatable member, said first rotatable member having a first annular groove formed in said first friction surface to receive said friction member, said first end surface of said friction member and said second friction surface of said annular armature plate being separated by a predetermined distance which allows said first end surface of said friction member to engage a bottom surface of said first annular groove.

5,059,843

LOCKING END COVER FOR ROTARY MACHINE

Noriyuki Ishimoto, Aichi, and Hirofumi Iida, Obu, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 6, 1990, Ser. No. 534,615
Int. Cl.[5] H02K *5/15, 5/18*
U.S. Cl. 310—89 **2 Claims**



1. A rotary machine comprising:

a machine body having an open end;

a cover covering said open end of said body; and

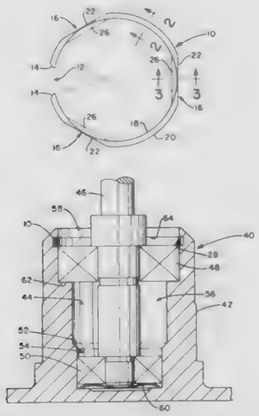
means for mounting and fixing said cover to said machine body, said means comprising: a plurality of cover mounting hooks formed as elastic plate-shaped members on a peripheral edge of said cover adjacent said machine body, each of said mounting hooks projecting from said peripheral edge and having a folded distal end portion; and mounting portions comprising a plurality of longitudinally extending grooves providing recesses open at said open end of said machine body and receiving said folded distal end portions of said mounting hooks therein.

5,059,844

SNAP RING FOR ELECTRIC MOTOR

William E. Anstine, North Canton, Ohio, assignor to Ametek-Lamb Electric, Kent, Ohio

Filed Dec. 4, 1989, Ser. No. 445,365
Int. Cl.[5] H02K *7/08*
U.S. Cl. 310—90 **17 Claims**



1. A snap ring for retaining a motor shaft within a housing, comprising:

a generally circular body member having a center, an inner circumferential surface, and an outer circumferential surface, said body member being open at a sector thereof; and

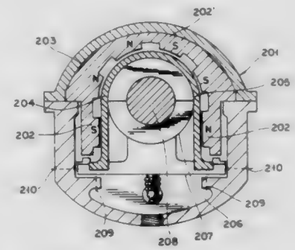
a plurality of lobes extending from one of said circumferential surfaces away from the other of said circumferential surfaces, said lobes being tapered from a top surface of said body member to a bottom surface of said body member.

5,059,845

ACTIVE MAGNETIC BEARING DEVICE FOR CONTROLLING ROTOR VIBRATIONS

Donald S. Wilson, Clifton Park, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed May 7, 1990, Ser. No. 521,158
Int. Cl.[5] H02K *7/09*
U.S. Cl. 310—90.5 **12 Claims**



1. An active magnetic bearing device for controlling rotor vibration, comprising:

an active magnetic bearing including a stator and an armature assembly, said armature assembly having a central bore and an inner bearing therein for supporting a rotating shaft, said stator being adapted to fit around said armature assembly;

means for inhibiting rotation between said stator and said armature assembly; and

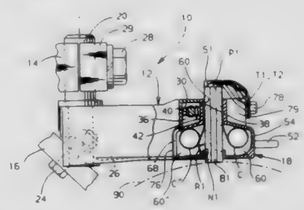
said active magnetic bearing having a dynamic stiffness sufficient with respect to said inner bearing so that said inner bearing tracks shaft motion in an oscillatory manner while magnetically suspended during flotation of said active magnetic bearing and said active magnetic bearing attenuates forces thereon.

5,059,846

BRUSH HOLDING APPARATUS FOR A DYNAMOELECTRIC MACHINE

Brian T. Concannon, Countryside, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1991, Ser. No. 644,133
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—239 **4 Claims**



1. Brush holding apparatus for a dynamoelectric machine, comprising:

a body element rigidly secured to a housing of said machine and having a front face thereby disposed in proximity to said machine;

spring means comprising a pair of coupled coil spring elements; and

a cartridge element having at least one brush compartment defined in part by a rear face and oppositely disposed

upper and lower faces, the rear face having a service opening through which said spring means is inserted, and the upper and lower faces having brush openings through which an elongate brush element is received, the coil spring elements of said spring means being adapted to unwind and tension said brush element as said brush element is inserted through said brush openings, the cartridge element being detachably secured to said body element so that the front face of said body element covers said service opening, enclosing said coil spring elements within said brush compartment.

5,059,847

SURFACE ACOUSTIC WAVE DEVICE

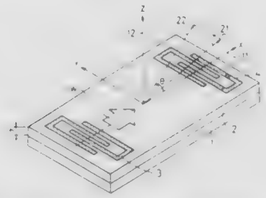
Toshiharu Tanaka, Higashiosaka; Kenichi Shibata, Hirakata; Kousuke Takeuchi, Hirakata; Masakazu Sakata, Hirakata; Hiroshi Okano, Hirakata, and Kazuhiko Kuroki, Uji, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 10, 1990, Ser. No. 507,288

Claims priority, application Japan, Apr. 11, 1989, 1-92307; Jun. 19, 1989, 1-156240; Nov. 9, 1989, 1-292008

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 A **10 Claims**



1. A surface acoustic wave device comprising a single crystal silicon substrate and piezoelectric thin film of single crystal or C-axis-oriented polycrystalline aluminum nitride formed on the surface of the substrate, the device being characterized in that the C-axis of the piezoelectric thin film is set in a direction in which the projection vector of the C-axis on a plane containing the axis of propagation direction of a surface acoustic wave and a normal axis of the single crystal silicon substrate makes a predetermined angle of inclination θ with respect to the axis of propagation direction, the inclination angle θ is in the range of 0 degree $< \theta \leqq 60$ degrees, and the piezoelectric aluminum nitride thin film has a thickness h satisfying the relationship of $1.8 \leqq 2\pi h/\lambda \leqq 20$ wherein λ is the wavelength of the surface acoustic wave.

5,059,848

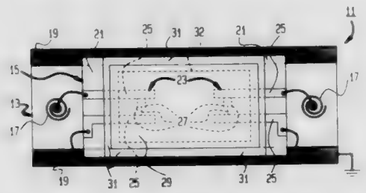
LOW-COST SAW PACKAGING TECHNIQUE

Elio A. Mariani, Hamilton Square, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 20, 1990, Ser. No. 569,810

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 R **1 Claim**



1. A surface acoustic wave (SAW) device package comprising:

a SAW device having a substrate with an active area theron for the propagation and processing of SAWs;

a planar carrier chip fabricated of glass material upon which said SAW device is mounted, said carrier chip extending beyond said SAW device substrate and having areas for disposing appropriate impedance matching circuits thereon and an area comprising metallization thereon, said metallized area being disposed on said carrier chip underneath said SAW device substrate and extending beyond said SAW device substrate to define said areas for disposing impedance matching circuits on said carrier chip to provide transducer-to-transducer shielding and an electrical ground for said SAW device; and

a package cover fabricated of glass material mounted over the active area of said SAW device with a glass frit, said glass frit being disposed on said SAW device substrate surrounding the active area of said SAW device to separate said cover from said SAW device substrate and provide a vacuum tight seal between said cover and said SAW device substrate, said glass material having thermal characteristics similar to those of said SAW device substrate.

5,059,849

ULTRASONIC MOTOR

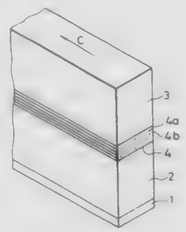
Masanori Sumihara, Moriguchi; Yoshinobu Imasaka, Higashiosaka, and Hiroshi Yoneno, Shiki, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 274,967, Nov. 22, 1988, Pat. No. 4,963,781. This application May 24, 1990, Ser. No. 527,857

Claims priority, application Japan, Nov. 26, 1987, 62-298951; Nov. 26, 1987, 62-298952; Nov. 26, 1987, 62-298953; Mar. 15, 1988, 63-60996

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—323 **2 Claims**



1. An ultrasonic motor comprising:

a piezoelectric element;

a vibrating stator provided on said piezoelectric element for generating traveling waves;

a driven member; and

a friction member disposed between said vibrating stator and said driven member, said friction member comprising reinforcing fibers, all of said reinforcing fibers being arranged in unidirection substantially perpendicular to a moving direction of said driven member.

5,059,850

TEMPERATURE COMPENSATION MEMBER COMPOSED OF SHAPE MEMORY EFFECT ALLOY FOR AN ACTUATOR DRIVEN BY A PIEZO-ELECTRIC ELEMENT

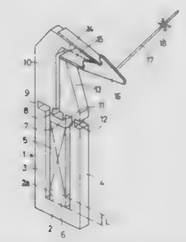
Manabu Yoshimura, Nagoya, and Chihiro Yonekura, Okazaki, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 13, 1990, Ser. No. 479,250

Claims priority, application Japan, Feb. 14, 1989, 1-34258

Int. Cl.[5] H01L *41/00*

U.S. Cl. 310—328 **5 Claims**



1. An actuator driven by a piezo-electric element, comprising:

a piezo-electric element that expands when subjected to a voltage;

a frame attached to the piezo-electric element;

a movable member attached to the piezo-electric element such that the movable member moves relative to the frame when the piezo-electric element expands; and

a temperature compensation member comprising a plurality of layers of shape memory effect alloy having substantially same predetermined thermal expansion coefficients and different transformation temperatures, where the temperature compensation member is attached to the piezo-electric element to eliminate movement of the movable member relative to the frame caused by thermal contraction of the piezo-electric element.

5,059,851

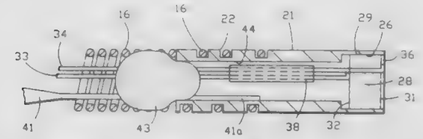
MINIATURE ULTRASOUND HIGH EFFICIENCY TRANSDUCER ASSEMBLY, GUIDEWIRE USING THE SAME AND METHOD

Paul D. Corl, Palo Alto; Ilan Lifshitz, Mountain View; Jeffrey J. Christian, San Jose, and Menahem F. Nassi, Palo Alto, all of Calif., assignors to Cardiometrics, Inc., Mountain View, Calif.

Filed Sep. 6, 1990, Ser. No. 579,074

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—334 **20 Claims**



1. A guidewire comprising a flexible elongate member having a distal extremity an ultrasonic transducer secured to the distal extremity of the flexible elongate member, the transducer having a diameter ranging from 0.007 inches to 0.018 inches and having a thickness and a diameter to provide a transducer having an aspect ratio with a thickness which is one-half of the diameter $\pm 5\%$ and electrical leads connected to the transducer and extending the length of the flexible elongate member.

5,059,852

PIEZOELECTRIC MECHANISM FOR GAS LIGHTERS

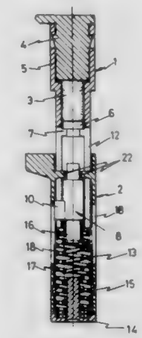
Marcel Meury, Tarragona, Spain, assignor to LaForest, S.A., Arragona, Spain

Filed Oct. 25, 1989, Ser. No. 427,569

Claims priority, application Spain, Aug. 2, 1989, 8902741

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—339 **3 Claims**



1. A piezoelectric mechanism for gas lighters, comprising:

a first generally hollow body and a second generally hollow body, said first body being telescopically received in said second body, said bodies being translatable relative to each other along a longitudinal axis, said second body including a pair of ribs extending diametrically toward said axis from opposite sides of said second body, said first body having longitudinal grooves wherein said ribs are guided during relative translation of said first and second bodies, the relative axial orientation of said first and second bodies being fixed at least by said ribs guided by said longitudinal grooves;

a hammer slidable along said axis within said first body, said hammer having diametric projections subject to guidance within said longitudinal grooves of said first body;

an anvil fixed in said first body at a longitudinal position away from said second body;

a piezoelectric element having two ends and fixed in said first body with one said end adjacent to said anvil;

a stop piece fixed in said first body and adjacent to the other said end of said piezoelectric element, said stop piece opposing said hammer;

a removable cover for closing the end of said second body, said closable end being away from said first body;

a first spring within said second body, said first spring resting at one end against said cover and at the other end against said first body, said first spring urging said first and second bodies to a least-telescoped position, said least-telescoped position being a stand-by condition;

a second spring within said second body, said second spring resting at one end against said cover and at the other end against said hammer to urge said hammer toward said stop piece, said hammer and stop piece being spaced apart in said stand-by condition,

said first body further including notches away from said anvil at the ends of said longitudinal grooves, said hammer projections being constrained in said notches in said stand-by condition, said second body including windows on opposite walls thereof, said windows having ramped edges, said hammer projections extending through said notches in said first body in said stand-by condition to be guided by said windows,

compression of said first body from said stand-by condition into said second body causing said springs to compress, action of said ramped window edges on said hammer projections concurrently causing said hammer to rotate

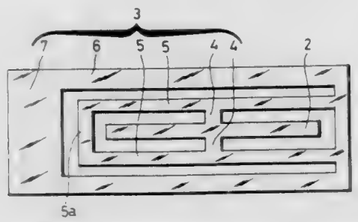
about said axis, said hammer projections being guided from said first body notches into alignment with said first body longitudinal grooves, whereby said hammer is released to impact with said stop piece, said hammer being guided by said longitudinal grooves and propelled by said compressed second spring.

5,059,853

LONGITUDINAL QUARTZ CRYSTAL RESONATOR

Hirofumi Kawashima, Sendai, Japan, assignor to Seiko Electric Components Ltd., Japan

Continuation of Ser. No. 199,540, May 27, 1988, abandoned. This application Jul. 13, 1990, Ser. No. 554,172
Claims priority, application Japan, Jun. 2, 1987, 62-138382
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—367 **2 Claims**



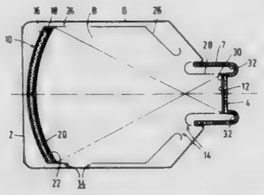
1. A longitudinal quartz crystal resonator formed as a united body by etching, said resonator comprising:
- a longitudinal vibrational portion;
- a pair of flexural portions which support said vibrational portion, each flexural portion having a longitudinal shape extending parallel to the vibrational portion;
- a transverse connecting portion which interconnects the pair of flexural portions at one of the ends thereof;
- at least two oppositely positioned bridge portions which fasten said flexural portions to said vibrational portion at opposite points on said vibrational portion;
- a frame which surround said flexural portions and which has at one side thereof a transverse beam;
- wherein each flexural portion is connected at the other end thereof directly to the transverse beam and separately from the point of connection of the other flexural portion; and
- wherein the vibrational portion is surrounded by said pair of flexural portions, said transverse connecting portion and said transverse beam.

5,059,854

IMAGE INTENSIFIER TUBE COMPRISING A CHROMIUM-OXIDE COATING

Petrus G. H. J. Smits, Heerlen, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jan. 8, 1990, Ser. No. 461,892
Claims priority, application Netherlands, Jan. 9, 1989, 8900039
Int. Cl.[5] H01J *31/50, 29/88*
U.S. Cl. 313—107 **4 Claims**



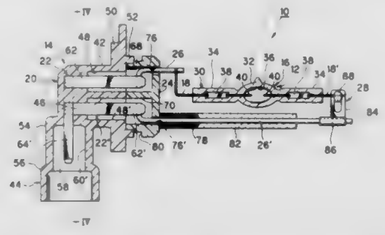
1. An image intensifier tube, comprising a housing which is formed by an entrance window, an exit window and an envelope portion which consists partly of a translucent, electrically insulating material, which housing accommodates an electron-optical system for imaging photoelectrons from a photocathode onto an exit screen, characterized in that at least a part of the translucent envelope portion is coated with transparent chromium oxide.

5,059,855

DISCHARGE LAMP BASE CONSTRUCTION

Shinichi Irisawa; Yukio Wakimizu, and Masakazu Nagasawa, all of Shimizu, Japan, assignors to Koito Manufacturing Co. Ltd., Shizuoka, Japan

Filed Jul. 24, 1990, Ser. No. 556,508
Claims priority, application Japan, Jul. 31, 1989, 1-198750
Int. Cl.[5] H01J *61/36, 5/62*
U.S. Cl. 313—318 **7 Claims**



1. A discharge lamp having a lamp assembly and a base assembly, the lamp assembly including a discharge lamp unit with a pair of lamp lead means extending therefrom, wherein the improvement resides in the base assembly comprising:
- (a) a hollow base structure of electrically insulating material having an open end and a closed end;
- (b) a partition within the base structure formed in one piece therewith, the partition extending between the open and closed ends of the base structure and dividing the interior thereof into a pair of isolated spaces;
- (c) a pair of conductors rigidly received with clearances, one in each of the isolated spaces in the base structure, and each having a first end anchored to the closed end of the base structure and a second end projecting through the open end of the base structure;
- (d) a pair of base lead means electrically connecting the second ends of the pair of conductors to the pair of lamp lead means and mechanically supporting the discharge lamp unit in position with respect to the base assembly; and
- (e) a base cover of electrically insulating material closing the open end of the base structure, the base cover having a pair of openings through which extend the pair of base lead means.

5,059,856

OXIDE CATHODE

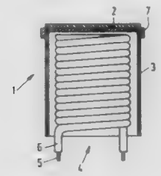
Petrus J. A. M. Derks, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Nov. 21, 1989, Ser. No. 439,994
Claims priority, application Netherlands, Dec. 13, 1988, 8803047
Int. Cl.[5] H01J *19/06*
U.S. Cl. 313—346 R **6 Claims**

1. In an electron beam tube provided with a cathode comprising a supporting body having an external surface, the supporting body comprising substantially nickel optionally containing reducing means and being coated on an external surface with a layer of electron-emissive material,

the improvement wherein said emissive material consists

essentially of (1) an alkaline earth metal oxide selected from barium oxide and mixtures of barium oxide with at least one oxide selected from the group of strontium oxide



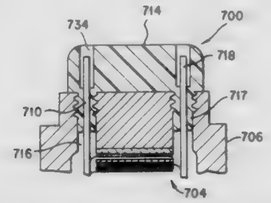
and calcium oxide and (2) from 0.1 to 10% by weight of an additive selected from the group of hafnium oxide, zirconium oxide and mixtures thereof.

5,059,857

INTEGRAL CONNECTOR FOR A PIEZOELECTRIC SOLID STATE MOTOR STACK

Everett G. Brandt, Chillicothe; Morris A. Swanson; Kurtis C. Kelley, both of Washington, and Carey A. Towe, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 28, 1990, Ser. No. 589,844
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—366 **10 Claims**



1. An integral connector for a piezoelectric solid state motor stack having a plurality of ceramic disks interleaved with electrodes, and lead wires for connecting the electrodes to a source of electrical potential, comprising:
- a housing containing the motor stack, said housing having an end surface with a pair of openings formed therein through which the lead wires pass;
- a spacer having first and second opposing surfaces, said first surface contacting a substantial surface area of said end surface of said housing, and a cavity formed at least in part by said spacer through which the lead wires pass; and
- a connector fixedly mounted to said second spacer surface, said connector including a plurality of contact pins mounted in said connector and adapted to be electrically connected to the lead wires and the source of electrical potential.

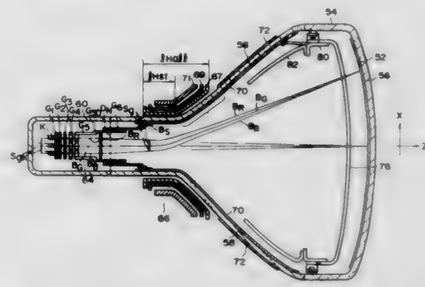
5,059,858

COLOR CATHODE RAY TUBE APPARATUS

Taketoshi Shimoma, Isesaki; Eiji Kamohara, and Jiro Shimokobe, both of Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 25, 1990, Ser. No. 603,153
Claims priority, application Japan, Oct. 27, 1989, 1-278567
Int. Cl.[5] H01J *29/70*
U.S. Cl. 313—440 **6 Claims**

1. A color cathode ray tube apparatus comprising:
- an envelope having a tube axis and having a panel, a funnel, and a neck;
- a screen formed on an inner surface of said panel;
- an electron gun, accommodated in said neck, for outputting three in-line electron beams; and
- deflection means, arranged to extend on outer surfaces of said neck and said funnel, for deflecting the electron beams emerging from said electron gun in horizontal and vertical directions,
- wherein an outer diameter of said neck having a cylindrical shape is represented by D_N and an interval of adjacent electron beams at a screen-side end portion of said electron gun is represented by Sg, a value D_N/Sg is not less than 8.0, and
- said deflection means comprises a saddle-type horizontal deflection coil for deflecting the electron beams in an in-line direction, and if a length of said saddle-type horizontal deflection coil in a direction of the tube axis is represented by $l_H$all, $l_H$all is not less than 90 mm.

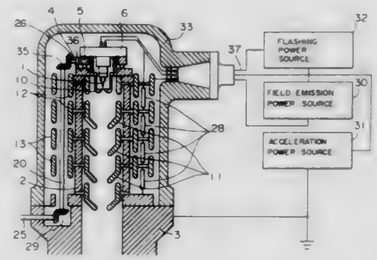


5,059,859

CHARGED PARTICLE BEAM GENERATING APPARATUS OF MULTI-STAGE ACCELERATION TYPE

Junji Endo, Sakado; Takeshi Kawasaki, Yuki; Masahiro Tomita; Shigeto Isakozawa, both of Katsuta; Toshimitu Miyada, Hachioji, and Yutaka Kaneko, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 507,798
Claims priority, application Japan, Apr. 14, 1989, 1-092841; Aug. 28, 1989, 1-218667
Int. Cl.[5] H01J *37/073, 31/02*
U.S. Cl. 313—443 **33 Claims**



1. A charged particle beam generating apparatus of multi-stage acceleration type comprising:
- a source of a charged particle beam;
- a multi-stage acceleration tube having a plurality of acceleration electrodes arranged in cascade over a plurality of stages thereinside so as to accelerate the charged particle beam generated from said charged particle beam source;
- a plurality of first shield electrodes disposed in one-to-one concentrical relation with respect to the plurality of acceleration electrodes on the radially outer side of said multi-stage acceleration tube over the plural stages, said plurality of first shield electrodes being applied with the same potentials as those of the associated ones of said acceleration electrodes, respectively;

a plurality of second shield electrodes disposed in one-to-one concentrical relation with respect to the plurality of first shield electrodes on the radially outer side of said first shield electrodes over the plural stages, said second shield electrodes being applied with the same potentials as those of the associated ones of said acceleration electrodes respectively; and

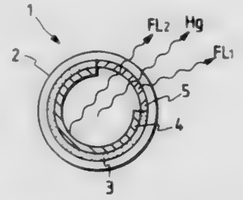
a plurality of dividing resistors disposed between said first shield electrodes and said second shield electrodes and arranged to define predetermined potentials applied to said acceleration electrodes.

5,059,860

ILLUMINATING LIGHT SOURCE FOR COLOR IMAGE RECORDING DEVICE

Masaaki Sato, and Izumi Takashima, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 30, 1990, Ser. No. 530,311
Claims priority, application Japan, Jun. 2, 1989, 1-140660
Int. Cl.[5] H01J *1/62*
U.S. Cl. 313—488 **10 Claims**



1. An illuminating light source for a color image recording device comprising:

a glass tube for mounting in the device, said glass tube having a predetermined diameter and an inner wall, said inner wall having a first portion and a second portion;

a reflecting film coated on said first portion of said inner wall of said glass tube;

a fluorescent film formed on said reflecting film coated on said glass tube; wherein at least one of an ultraviolet ray absorbing film and said fluorescent film is formed on said second portion of said inner wall of said glass tube to maintain a ratio of a bright line to a fluorescence being not more than 1.3 when a fluorescent lamp current is applied;

a heater provided on an outer wall of said glass tube for preheating said glass tube and maintaining the temperature of the glass tube in a predetermined temperature range;

sensor means for detecting the temperature of said glass tube wall and outputting an output value corresponding to said detected temperature; and

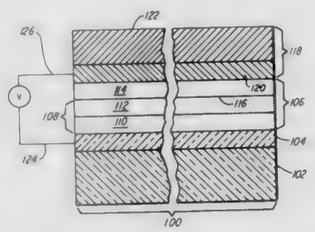
a temperature controller for controlling the temperature of said heater in response to said output value of said sensor means to maintain said one of said predetermined temperature of said glass tube to thereby maintain the bright line to fluorescence ratio at 1.3 or less when said one of said ultraviolet absorbing film and said fluorescent film formed on said second portion of said inner wall of said glass tube is incapable of maintaining the bright line to fluorescence ratio at 1.3 or less due to an excessive amount of operation.

5,059,861

ORGANIC ELECTROLUMINESCENT DEVICE WITH STABILIZING CATHODE CAPPING LAYER

Jon E. Littman, Honeoye Falls, and Michael Scozzafava, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1990, Ser. No. 557,847
Int. Cl.[5] H05B *33/26;* **B32B** *15/04*
U.S. Cl. 313—503 **11 Claims**



1. An organic electroluminescent device comprised of, in sequence, a support, an anode, an organic electroluminescent medium, and a cathode containing a plurality of metals other than alkali metals,

characterized in that said cathode is comprised of

a capping layer containing at least one alkaline earth metal having a work function of less than 3.5 eV or rare earth metal having a work function of less than 3.5 eV and

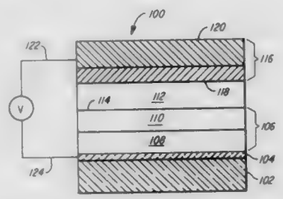
interposed between said capping layer and said organic electroluminescent medium, an electron injecting layer containing at least one metal having a work function of less than 4.0, but exhibiting a higher work function than said alkaline earth or rare earth metals in said capping layer.

5,059,862

ELECTROLUMINESCENT DEVICE WITH IMPROVED CATHODE

Steven A. VanSlyke, and Ching W. Tang, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1990, Ser. No. 558,285
Int. Cl.[5] H05B *33/26;* **B32B** *15/04*
U.S. Cl. 313—503 **11 Claims**



1. An internal junction organic electroluminescent device comprising in sequence, an anode, an organic hole injecting and transporting zone, an organic electron injecting and transporting zone, and a cathode comprised of a layer contacting the organic electron injecting and transporting zone containing a combination of magnesium and at least one metal having a higher work function than magnesium,

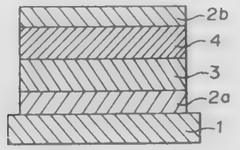
characterized in that the one metal having a higher work function than magnesium is aluminum and accounts for at least 80 percent of the cathode layer.

5,059,863

ORGANIC ELECTROLUMINESCENT DEVICE

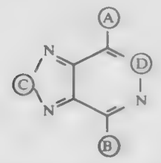
Masashi Tashiro, Dazaifu; Shuntaro Mataga, Onojyo; Kazufumi Takahashi, Kasuga; Shogo Saito, Fukuoka; Tetsuo Tsutsui, Kasuga; Chihaya Adachi, Onojyo; Yoshiharu Sato, Sagamihara, and Shuichi Maeda, Hidaka, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jul. 3, 1990, Ser. No. 547,147
Claims priority, application Japan, Jul. 4, 1989, 1-172176; Jul. 4, 1989, 1-172177; Dec. 28, 1989, 1-343982
Int. Cl.[5] H05B *33/14;* **C09K** *11/06;* **B32B** *19/00*
U.S. Cl. 313—504 **9 Claims**



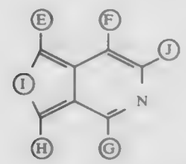
1. An organic electroluminescent device having an organic hole injection transport layer and an organic luminescent layer formed between two conductive layers constituting electrodes, wherein the organic luminescent layer contains a compound selected from the group consisting of a compound of the following formula (I):

(I)

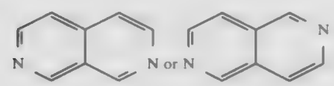


wherein each of (A) and (B) is an aromatic hydrocarbon group which may have a substituent, (C) is a nitrogen atom which may have a substituent, a sulfur atom, an oxygen atom, or a selenium atom, and (D) is a nitrogen atom, or a carbon atom which may have a substituent; a compound of the following formula (II):

(II)



wherein each of (E), (F), (G) and (H) is an aromatic hydrocarbon group which may have a substituent, (I) is a nitrogen atom which may have a substituent, a sulfur atom, an oxygen atom, or a selenium atom, and (J) is a hydrogen atom, a cyano group, an amide group, an ester group, an alkyl group, a carboxyl group, an aromatic hydrocarbon group which may be substituted, or an aromatic heterocyclic group which may be substituted; and a compound having at least one group selected from the group consisting of aromatic hydrocarbon cyclic groups and aromatic heterocyclics groups, bonded directly, or via other group, to a naphthyridine skeleton of the following formula:

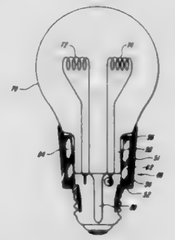


5,059,864

NEGATIVE GLOW LAMP

Andre C. Bouchard, Peabody; Paul Thibault, Danvers, and Tom Haraden, Ipswich, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 22, 1989, Ser. No. 455,527
Int. Cl.[5] H05B *41/14;* **H01J** *17/34*
U.S. Cl. 315—56 **5 Claims**



1. A negative glow discharge lamp comprising:

a light transmitting envelope containing a gas fill material and having a neck portion terminating in an exhaust tubulation,

at least a pair of electrodes disposed in said envelope,

an activating electrical circuit for said electrodes, including one or more capacitors,

a lamp base having a socket portion provided with an outer wall, said base further includes a shelf portion,

said envelope being assembled to said base with its neck portion enclosed within the socket portion,

said neck portion being spaced from the outer wall of said socket portion of the base to create a cavity therebetween, and

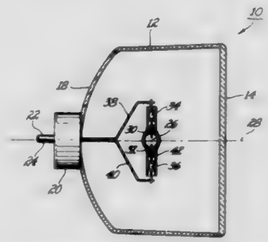
said one or more capacitors being located on the shelf portion within said base in the cavity between said neck portion and said outer wall.

5,059,865

XENON-METAL HALIDE LAMP PARTICULARLY SUITED FOR AUTOMOTIVE APPLICATIONS

Rolf S. Bergman, Cleveland Heights; John M. Davenport, Lyndhurst, and Richard L. Hansler, Pepper Pike, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 157,436, Feb. 18, 1988, abandoned. This application Jun. 18, 1990, Ser. No. 539,276
Int. Cl.[5] B60Q *1/02;* **H01J** *61/12*
U.S. Cl. 315—82 **20 Claims**



1. A discharge lighting system for producing instant light, comprising:

a light source and supply means for energizing said light source,

said light source having a vitreous envelope, a pair of electrodes disposed therein and a fill comprising xenon at a pressure at room temperature in the range of about 2

atmospheres to about 15 atmospheres, mercury, and a metal halide,

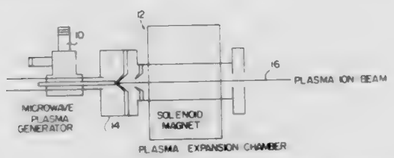
said supply means being coupled to said electrodes to energize said light source with an initial current that is higher than a second current for sustaining light source operation, said initial current being sufficient to excite said xenon so as to produce instant light from said light source, said supply means further energizing said light source with said second current sufficient to maintain ionization of the mercury and metal halide for sustained light operation.

5,059,866

METHOD AND APPARATUS FOR COOLING ELECTRONS, IONS OR PLASMA

Shui-Yin Lo, Sherman Oaks, Calif., assignor to Apricot S.A., Luxembourg, Luxembourg

Filed Oct. 1, 1987, Ser. No. 103,631
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.21 **20 Claims**



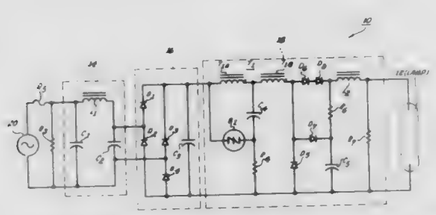
7. A method of cooling a plasma comprising: directing the plasma in neutral gas together to a substantially evacuated plasma expansion chamber, said expansion chamber being subjected to a magnetic field to move said plasma therethrough, whereby the plasma and neutral gas expand within said expansion chamber, the temperature of the plasma being reduced by the collision of the plasma with the neutral gas during said expansion.

5,059,867

BALLAST CIRCUIT WITH IMPROVED TRANSFER FUNCTIONS

Louis R. Nerone, Brecksville; Michael M. Secen, Mentor, and Michael M. Minarczyk, North Royalton, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1990, Ser. No. 505,100
Int. Cl.[5] H05B *41/26*
U.S. Cl. 315—247 **11 Claims**



1. A power circuit for operating a gas discharge lamp with DC excitation developed from an AC power source, said power circuit generating voltages and currents so as to transition said gas discharge lamp from (1) its initial or starting mode requiring a high voltage so as to cause an initial arcing within the gas discharge lamp; to (2) its glow mode; and then to (3) its final arc or run mode, said gas discharge lamp having a lamp impedance associated therewith which transitions between different values as a function of which mode said gas discharge lamp is operating in, said power circuit comprising:

(A) an input filter stage arranged in a pi configuration and comprising capacitors (C1 and C2) and an inductor (L1) with one of the capacitors (C1) having an impedance value selected to present a relatively high power factor to said AC power source especially during said run mode of operation, said input filter stage being effective to establish a lamp voltage required for operation of said gas discharge lamp in such glow mode;

(B) an AC to DC converter having an output stage whose DC voltage is dependent upon said lamp impedance value, said lamp impedance sequencing down in value from said starting, glow, and run modes;

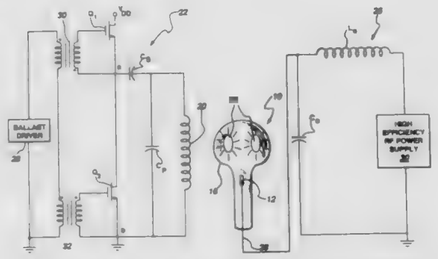
(C) an oscillator having an electronic switching device (S1) with a predetermined breakdown voltage characteristic, said switching device (S1) connected to said output stage of said AC to DC converter, said oscillator having an output stage with components, including an inductor (T1) with a mutually coupled winding to establish a high voltage, while the other components having values selected to establish the frequency of said oscillator, said breakdown voltage characteristic being selected so that said switching device is: (1) rendered conductive when said DC voltage at said output stage corresponds to said lamp impedance value of said gas discharge lamp during said starting mode, and (2) maintained in its non-conductive state when said DC voltage at said output stage corresponds to the impedance value of said discharge lamp during said run mode.

5,059,868

STARTING CIRCUIT FOR AN ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP

Sayed-Amr A. El-Hamamsy, and Robert J. Thomas, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 23, 1990, Ser. No. 527,500
Int. Cl.[5] H05B *41/24*
U.S. Cl. 315—248 **17 Claims**



1. A starting circuit for an electrodeless high intensity discharge lamp of the type having an excitation coil situated about an arc tube containing a fill for exciting an arc discharge in said arc tube upon application of a first radio frequency signal to said excitation coil, said starting circuit comprising:

a starting probe disposed proximate said arc tube at least during initiation of the arc discharge therein; and

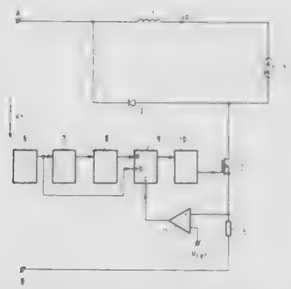
a high efficiency, radio frequency power supply coupled to said starting probe for providing a second radio frequency signal thereto, said power supply comprising a Class-D power amplifier having first and second switching devices coupled in series in a half-bridge configuration, said power supply further including a tuned output circuit coupled to the junction between said switching devices, said tuned output circuit comprising an inductance coupled in series with a capacitance.

5,059,869

CIRCUIT ARRANGEMENT FOR THE OPERATION OF HIGH-PRESSURE GAS DISCHARGE LAMPS BY MEANS OF A PULSATORY SUPPLY CURRENT

Manfred Albach, Aachen; Hans-Peter Stormberg, Stolberg, and Armin F. Wegener, Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1987, Ser. No. 127,825
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1986, 3641070
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—289 **7 Claims**



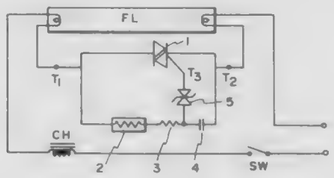
1. A circuit arrangement for the operation of at least one high-pressure gas discharge lamp comprising: means coupled to the lamp for supplying the lamp with a pulsatory supply current having a pulse recurrence frequency between 50 and 2000 Hz and a duty cycle between 0.2. and 0.8, and means for superimposing on the pulsatory current a current having a high-frequency between 20 and 200 kHz and with a modulation ratio between 0.3 and 1, the high-frequency being an integral multiple of the pulse recurrence frequency.

5,059,870

ELECTRONIC SOLID STATE STARTER FOR FLUORESCENT LAMPS

Chung Y. Choon, Boeun Jutaek Ga Dong 101, 933-1-, Shinwol 4 Dong, Yangcheon-Ku, Seoul, Rep. of Korea

Filed Jun. 15, 1989, Ser. No. 366,478
Claims priority, application Rep. of Korea, Jan. 24, 1989, 700
Int. Cl.[5] H05B *41/14*
U.S. Cl. 315—289 **4 Claims**



1. An electronic starter for fluorescent lamps comprising:

a Triac having a trigger electrode, and having an anode and a cathode connectable to first and second filaments, respectively, of a fluorescent lamp;

a positive thermistor, a resistor, and a capacitor connected in series across said anode and cathode; and

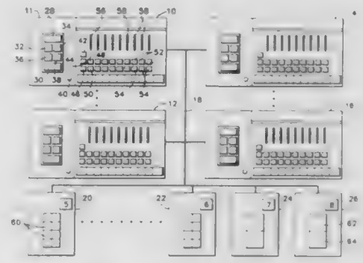
a voltage responsive element connected between said trigger electrode and the junction between said resistor and said capacitor.

5,059,871

PROGRAMMABLE LIGHTING CONTROL SYSTEM LINKED BY A LOCAL AREA NETWORK

Gordon W. Pearlman, and Steven B. Carlson, both of Portland, Oreg., assignors to Lightolier Incorporated, Jersey City, N.J.

Filed Jul. 9, 1990, Ser. No. 550,176
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—316 **8 Claims**



1. A lighting control system comprising:

(a) a plurality of lighting control modules, each said module having

(i) function switches for generating command signals to control light intensity levels,

(ii) a plurality of lighting channels responsive to the command signals,

(iii)a programmable central processing unit for transmitting the command signals and for generating an ID (identification) code indicating a unique identity;

(b) local area network means for interconnecting said plurality of lighting control modules and for carrying the ID code and command signals; and

(c) programming means associated with each of said lighting control modules for selecting predetermined ID codes whereby command signals generated by selected ones of said control modules may be executed by other ones of said control modules.

5,059,872

DIGITAL CONVERGENCE CORRECTION DEVICE

Kuninori Matsumi, Fujisawa; Tadahiro Kawagishi, Yokohama; Masahiro Kame, Kasukabe, all of Japan; Makoto Shiomi, Dumont, N.J.; Kousuke Ozeki, Yokohama, and Michitaka Ohsawa, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering Inc., Kanagawa, both of Japan

Filed Mar. 15, 1991, Ser. No. 670,177
Claims priority, application Japan, Apr. 2, 1990, 2-084859
Int. Cl.[5] G09G *1/28;* **H01J** *29/52*
U.S. Cl. 315—368 A **4 Claims**

1. A digital convergence correction device comprising:

a digital memory for storing digital correction data which corresponds to correction values at a plurality of convergence adjustment points on a display screen that is divided in the horizontal and vertical directions;

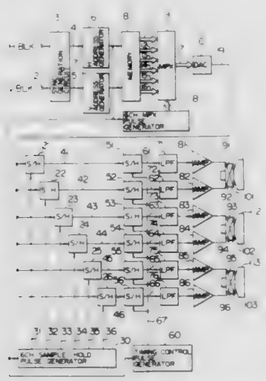
a multiplexer which reads out digital correction data for the respective adjustment points from said digital memory, and implements the time division multiplexing for the data;

a digital-to-analog converter which receives the digital correction data provided by said multiplexer, and converts the data into an analog signal;

a plurality of first sample-holding circuits which samples and hold the analog correction signal provided by said digital-to-analog converter at time points corresponding to the respective adjustment points;

a plurality of second sample-holding circuits which sample and hold the contents of said first sample-holding circuits

at a same time point on completion or after completion of the sample-holding operation of said first sample-holding circuits; and



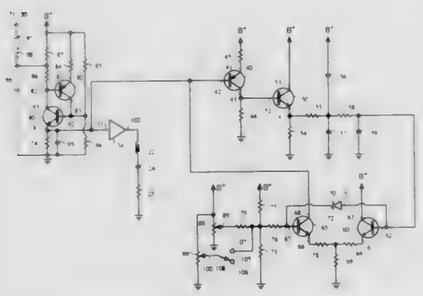
a plurality of convergence correction means driven by the analog correction signals held by said second sample-holding circuits.

5,059,873

MULTIPLE FREQUENCY VERTICAL SCAN SYSTEM

George R. Gawell, Mt. Prospect, and Philip J. Nowaczyk, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 3, 1990, Ser. No. 621,672
Int. Cl.[5] H01J *29/70, 29/76*
U.S. Cl. 315—403 **7 Claims**



1. A vertical scan control system for use in a cathode ray tube display having a vertical deflection yoke and a vertical deflection system including a saw-forming capacitor and an oscillator operative thereon to periodically charge the saw-forming capacitor and conductive element for discharging the saw-forming capacitor for producing vertical deflection current in the deflection yoke, said vertical scan control system comprising:

sensing means coupled to said saw-forming capacitor for producing a sample vertical deflection signal representative of the current within the vertical deflection yoke;

amplitude detecting means coupled to said sensing means for producing a control signal proportional to the amplitude of said sample signal;

reference voltage means producing first and second reference voltages corresponding to first and second predetermined vertical deflection current amplitudes;

comparator means having a first input coupled to said amplitude detecting means and a second input producing an output signal representative of the difference between signals applied to said first and second inputs;

a switch for selectively coupling said first or second reference voltages to said second input of said comparator means; and

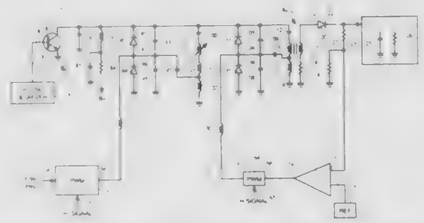
amplitude means including an active element coupled to said saw-forming capacitor having a conduction level responsive to the output of said comparator means for altering the amplitude of vertical deflection current produced by the vertical deflection system by altering the discharge of said saw-forming capacitor.

5,059,874

HIGH VOLTAGE REGULATOR FOR CRT DISPLAY

Kirk D. Oliver, Forest Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 27, 1990, Ser. No. 634,673
Int. Cl.[5] H01J *29/70*
U.S. Cl. 315—411 **8 Claims**



1. For use in a display system having a cathode ray tube in which an intensity modulated electron beam is directed toward a display screen, vertical deflection means for deflecting the electron beam vertically, horizontal deflection means including a horizontal deflection yoke for producing horizontal deflection currents within the horizontal deflection yoke for deflecting the electron beam horizontally, and high voltage means for producing an electron beam accelerating potential and having a high voltage transformer including primary and secondary windings, high voltage regulating means comprising:

sensing means for producing a signal indicative of electron beam accelerating potential;

a source of reference potential related to a desired electron beam accelerating potential;

a comparator coupled to said sensing means and said source of reference potential producing an error signal related to the difference between said electron beam accelerating potential and said desired electron beam accelerating potential;

modulation means coupled to said comparator and to the primary winding of the high voltage transformer for controlling the energy within the primary winding to regulate the accelerating potential in response to said error signal and maintain said desired electron beam accelerating potential.

5,059,875

MOTOR AND CONTROLLER

William A. De Salme, 6223 Highway 87 E. Suite 13, San Antonio, Tex. 78222

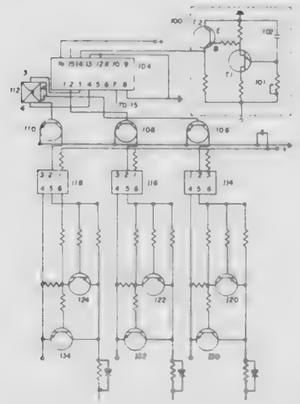
Filed Dec. 11, 1989, Ser. No. 448,347
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—138 **7 Claims**

1. A motor controller for a brushless DC motor having a permanent magnet rotor and a stator with stator windings comprising:

(a) said rotor having three permanent magnet sections mounted about a central shaft; means for securing said permanent magnet sections on said shaft; each of said sections having a plurality of disc shaped magnets, and a spacing means for separating said permanent magnet sections;

(b) a rectifier circuit rectifying an AC power source to supply rectified current to said stator windings;

(c) pulse signal generation means for generating a pulse train signal having means for varying the pulse width and pulse rate of said signal so that the speed of said motor can be controlled;



(d) control signal means connected to said pulse signal generation means for receiving said pulse signal and sequentially outputting motor control signals to said stator windings so that power is selectively applied to said stator windings;

(e) cross-wired, double-pole double-throw switch for reversing the sequence of said pulse signals;

(f) amplifying means connected to said control signal means for receiving and amplifying said control signals;

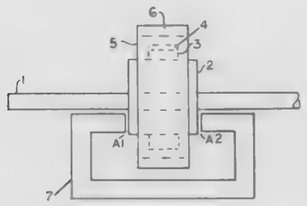
(g) optical isolation means connected to receive said amplified control signals.

5,059,876

BRUSHLESS ROTATING ELECTRICAL MACHINE

Emanuel E. Shab, 1221 Trinity Dr., Benbrook, Tex. 76126

Continuation-in-part of Ser. No. 130,957, Dec. 10, 1987, abandoned. This application Dec. 12, 1989, Ser. No. 448,990
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—254 **14 Claims**



1. A brushless rotating electrical machine for transferring power and having a shaft, comprising:

a rotor member means attached to the machine shaft and includes at least one rotor coil means and a rotor magnetic path means, wherein said rotor coil means is magnetically coupled to said rotor path means and the axis of said machine shaft passes through said rotor coil means;

a stator member means includes at least one stator coil means;

a stationary yoke member means made up of magnetic flux conducting material which forms at least one air gap with the rotor magnetic path means, said stationary yoke member means completes a closed magnetic circuit mutually coupling said rotor coil means and said stator coil means, said stationary yoke member means is disposed so as to allow free relative motion of said rotor member means with respect to said stator member means and said stationary yoke member means;

said stator member means magnetically couples with said rotor member means in such a way that said stator coil means and said rotor coil means overlap each other and the magnetic circuit is completed by said stationary yoke member means and said at least one air gap; and

means for applying time variant voltage to the coil means of one of said member means, wherein a voltage is induced in the coil means of the other of said member means by virtue of mutual magnetic coupling between the coil means of the two member means and power is transferred from one member means to the other member means for use in said brushless rotating electrical machine.

4. A brushless rotating electrical machine for transfer of power and having a shaft, comprising:

a rotor member means attached to the machine shaft and includes at least one rotor coil means and a rotor magnetic path means, wherein said rotor coil means is magnetically coupled to said rotor magnetic path means;

a stator member means includes at least one stator coil means, wherein the axis of the machine shaft passes through said stator coil means;

a stationary yoke member means forms at least one air gap with said rotor magnetic path means, said stationary yoke member means completes a closed magnetic circuit mutually coupling said rotor coil means and said stator coil means, and said stationary yoke member means is disposed so as to allow free relative motion of said rotor member means with respect to said statoor member means and said stationary yoke member means;

said stationary yoke member means comprises a cylindrical structure occupied by a means capable of carrying magnetic flux and is characterized by a hollow cylinder made up of spirally wound sheet of magnetic flux conducting material;

at least one rotating member attached to the machine shaft and forms said rotor magnetic path means by linking magnetic flux from one end of said cylindrical structure to the other end; and

means for applying time variant voltage to the coil means of one of said member means, wherein a voltage is induced in the coil means of the other of said member means by virtue of mutual magnetic coupling between the coil means of the two member means and power is transferred from one member mans to the other member means for use in said brushless rotating electrical machine.

5,059,877

RAIN RESPONSIVE WINDSHIELD WIPER CONTROL

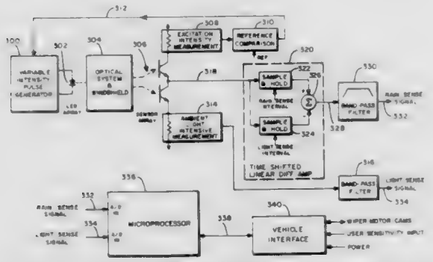
Rein S. Teder, Minneapolis, Minn., assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Continuation-in-part of Ser. No. 455,941, Dec. 22, 1989, abandoned. This application Aug. 20, 1990, Ser. No. 569,207
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—444 **15 Claims**

1. In a vehicle of the type incorporating a windshield and at least one motor for operating a device on said vehicle, a control circuit for said motor for automatically activating same upon detection of moisture droplets on the exterior surface of said windshield, comprising:

(a) a housing secured to the inside surface of said windshield, said housing having means for mounting an array of radiant energy sources and an array of radiant energy sensors such that radiant energy emitted by said sources are directed to the plane of the exterior surface of said windshield and normally are directed back to said array of sensors when no moisture droplets are present on the portion of said windshield occupied by said housing;

(b) driver means for periodically energizing said radiant energy sources with pulses of a predetermined duty cycle, the interval when said radiant energy sources are "on" defining a rain sense interval and the interval when said radiant energy sources are "off" defining an ambient light sense interval;



(c) first means for sampling and holding the output of said radiant energy sensors during said rain-sense interval;

(d) second means for sampling and holding the output of said radiant energy sensors during said ambient light sense interval, the sampling by said first and second means occurring successively within a time interval which is significantly less than the time required for changes in ambient light impinging on said windshield;

(e) means for linearly rejecting signal components in said sensor output due to ambient light disturbances in successive samples taken by said first and second means to leave only a signal component due to sensing of moisture droplets on said windshield; and

(f) activating means responsive to said signal component due to sensing of moisture droplets for activating said motor.

5,059,878

DEVICE FOR THE DYNAMIC MEASUREMENT OF THE TORQUE OF A SELF-SYNCHRONOUS MOTOR AND DEVICE FOR THE SERVO-CONTROL OF A SELF-SYNCHRONOUS MOTOR USING THIS DEVICE

Vianney Bardelang, Cormeilles en Parisis; Jacques Coeuillet, Dieulefit, and Pascal Dubos, Louveciennes, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jun. 28, 1990, Ser. No. 544,931

Claims priority, application France, Jul. 7, 1989, 89 09173

Int. Cl.[5] G01L *3/00*

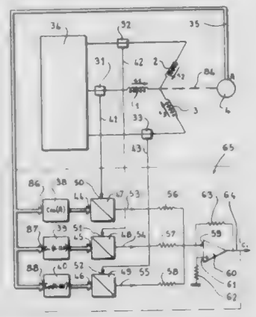
U.S. Cl. 318—490 **5 Claims**

1. A device for the dynamic measurement of the electromagnetic torque Ci of a self-synchronous motor comprising a rotor, formed by a permanent magnet associated with an axis perpendicular to the magnetic moment (APMM) of said magnet, and stator windings supplied by electronic supply means giving respective currents to said windings, said device comprising:

first means to measure the instantaneous value of said currents in each of said stator windings;

second means to measure the instantaneous value of at least one of the angles between the directions of the respective magnetic fields, created in each of said windings, and said axis;

third means to compute the cosine of each of said respective angles and to multiply said cosines respectively by said instantaneous values of said corresponding currents, so as to obtain the arithmetical values of the respective projections, on said axis, of the vectors representing, in the electrical plane of said motor, said respective stator currents; and



fourth means to add up said arithmetical values given by said third means and to multiply the sum thus obtained by a predetermined factor of proportionality to obtain the instantaneous value of said electromagnetic torque.

5,059,879

ELECTRIC ACTUATOR CONTROL APPARATUS

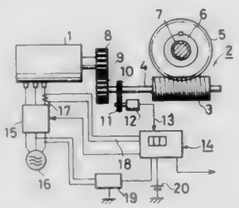
Susumu Watanabe, Tokyo, Japan, assignor to Nippon Gear Co., Ltd., Fujisawa, Japan

Filed Jun. 22, 1989, Ser. No. 369,958

Claims priority, application Japan, Jun. 28, 1988, 63-84537[U]

Int. Cl.[5] H02K *17/34*

U.S. Cl. 318—603 **8 Claims**



1. A control apparatus in an electric actuator for actuating driven material requiring relatively large initial torque, with output form an electric motor via reduction means, the motor providing reduced torque with increase of rotation of the output of the motor, the apparatus comprising:

rotation amount detecting means to detect an input rotation amount of the reduction means digitally at an absolute level from a certain reference position;

load torque control means connected in electrical communication with the rotation amount detecting means for detecting load torque from rate of change of the detected input rotation amount and identifying magnitude of the detected load torque to control the electric motor;

operation position control means connected in electrical communication with the rotation amount detecting means for identifying the detected input rotation amount by measuring an operation position of said driven material at the absolute level of the input rotation amount of the reduction means and controlling the electric motor at operation points; and

said rotation amount detecting means being one of an incremental rotary encoder and an absolute rotary encoder with a backup battery.

5,059,880

DIGITAL CONTROL SYSTEM

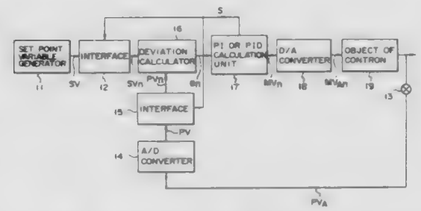
Kazuo Hiroi, Hachiooji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1989, Ser. No. 414,453

Claims priority, application Japan, Oct. 5, 1988, 63-251254

Int. Cl.[5] G05B *11/42*

U.S. Cl. 318—610 **2 Claims**



1. A digital controller in which a process variable of an object is measured, a deviation between a measured value and a desired value is calculated, a positional P-calculation is performed in accordance with the deviation to obtain a positional P-calculation signal, a velocity-type I-calculation is performed in accordance with the deviation, to obtain a velocity-type I-calculation signal, and a condition of the object is cotnrolled in accordance with the positional P-calculation signal and the velocity-type I-calculation signal, said controller comprising:

signal converting means wherein a first upper limit and a first lower limit of a magnitude of a converted signal can be externally determined, wherein

when said first upper and first lower limits are not externally determined, said signal converting means converts said velocity-type I-calculation signal into a positional I-signal and outputs said positional I-signal,

when said first upper limit is externally determined, said signal converting means converts said velocity-type I-calculation signal into a positional I-signal, and when the magnitude of said positional I-signal is of a value equal to or less than said first upper limit, said signal covnerting means outputs said positional I-signal as is, and when the magnitude is of a value exceeding said first upper limit, said signal converting means outputs said positional I-signal after limiting the magnitude to said first upper limit, and

when said first lower limit is externally determined, said signal covnerting means converts said velocity-type I-calculation signal into a positional I-signal, and when the magnitude of said positional I-signal is of a value equal to or greater than said first lower limit, said signal converting means outputs said positional I-signal as is, and when the magnitude is of a value below said first lower limit, said signal converting means outputs said positional I-signal after limiting the magnitude to said first lower limit;

adder means for adding the positional I-signal input from said signal converting means and said positional P-calculation signal together, to thereby obtain a first manipulation signal; and

upper/lower limiting means, a second upper limit and a second lower limit of which are predetermined, and which, when the magnitude of the first manipulation signal input from said adder means has a value exceeding said second upper limit, outputs said first manipulation signal as a second manipulation signal after limiting the magnitude of said first manipulation signal to said second upper limit and sets said first upper limit at said second upper limit, and when the magnitude of the first manipulation signal input from said adder means has a value below said second lower limit, outputs said first manipulation signal as a second manipulation signal after limiting the magnitude of said first manipulation signal to said second lower limit and sets said first lower limit at said second lower limit;

said controller controlling the condition of the object so as to make said process variable equal to said desired value, in accordance with the second manipulation signal output from said upper/lower limiting means.

5,059,881

NUMERICAL CONTROL APPARATUS HAVING A BACKLASH COMPENSATION FUNCTION AND METHOD THEREOF

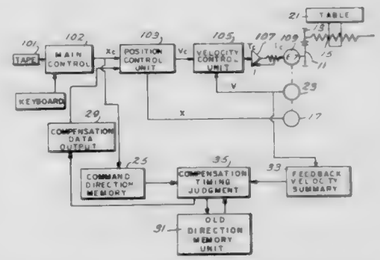
Jun Fujita, and Michio Matumoto, both of Shizuoka, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1990, Ser. No. 635,227

Claims priority, application Japan, Dec. 28, 1989, 1-343370

Int. Cl.[5] G05B *11/01*

U.S. Cl. 318—630 **15 Claims**



1. A numerical control apparatus having a backlash compensation function, comprising:

main control means for inputting a machining program and backlash compensation data, and outputting a motion command;

servo drive means for driving a feed mechanism inputting the motion command from the main control means;

command direction input means for inputting a command direction in the motion command output from the control means;

velocity input means for inputting velocity data output from the servo drive means;

judgement means for judging stop or direction reverse of the velocity of the feed mechanism, and outputting a compensation command so as to decide a backlash compensation timing;

output means for storing the backlash compensation data input by the main control means, and outputting the backlash compensation data to the servo drive means receiving the compensation command output from the judgement means; and

previous direction storing means for storing command direction previously output from the main control means.

5,059,882

ELECTROMECHANICAL CONTROL DEVICE USABLE FOR PILOTING A VEHICLE

Gérard Marcillat, and Jean-Pierre Mota, both of Chatellerault, France, assignors to Sextant Avionique, France

Filed May 30, 1990, Ser. No. 530,697

Claims priority, application France, May 31, 1989, 89 07492

Int. Cl.[5] G05B *11/01*

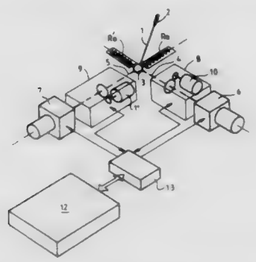
U.S. Cl. 318—675 **6 Claims**

1. An electromechanical control device usable for piloting a vehicle, this device comprising:

a piloting control stick articulated to a support by means of an articulation device with two degrees of freedom which therefore has two output axes;

a detection assembly comprising one or more position sensors associated with each of these axes;

two electromechanisms acting respectively on said axes via two respective transmission devices, so as to oppose, to the movements of the control stick, resistant forces in accordance with a predetermined force law, wherein each of the transmission devices comprises a resilient connection disposed in series, and each of said electromechanisms is controlled by a servo-control device generating a control signal representative of the difference between the



value of the force exerted on the control stick by the electromechanism and a first reference value delivered by a computer according to force law, as a function of the position of the control stick and the value of the force exerted on the control stick by said electromechanism is determined as a function of the values measured by the detectors which measure the deformations of the resilient connection.

5,059,883

METHOD AND APPARATUS FOR DRIVING STEPPING MOTOR

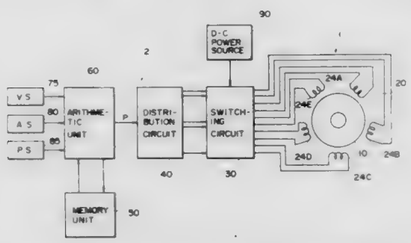
Masaki Takahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1990, Ser. No. 534,280

Claims priority, application Japan, Jun. 29, 1989, 1-168141; Sep. 20, 1989, 1-244611

Int. Cl.[5] H02P *8/00*

U.S. Cl. 318—696 **21 Claims**



1. A drive method of rotating a rotor of a stepping motor by sequentially switching/exciting a plurality of excitation windings of said stepping motor in a predetermined order, comprising the steps:

(a) determining periodic velocity fluctuation characteristics of at least said stepping motor;

(b) storing periodic velocity fluctuation data determined in step (a) in a memory device; and

(c) exciting said excitation windings while causing time intervals of sequential switching/excitation of said excitation windings to fluctuate in correspondence with the periodic velocity fluctuation data stored in the memory device.

5,059,884

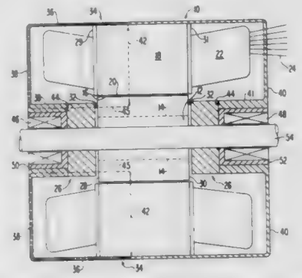
VARIABLE RELUCTANCE MOTOR PROVIDING HOLDING TORQUE

Mahesh J. Shah, and Jayant G. Vaidya, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 10, 1990, Ser. No. 506,818

Int. Cl.[5] H02P *5/42*

U.S. Cl. 318—701 **21 Claims**



1. A variable reluctance motor for providing holding torque comprising:

a magnetically permeable rotor not having windings and having a first number of poles;

a stator axially aligned with the rotor having at least one phase winding for producing a magnetic field causing the rotor to rotate with the stator having a second number of poles different than the first number of poles; and

a first cylindrical permanent magnet mounted coaxial with and outboard from a first side of the rotor which creates a permanent magnetic field coupling the rotor to the magnet to provide holding torque; and wherein

a magnetic flux linkage of a variable reluctance magnetic circuit magnetically coupling the stator to the rotor is a maximum when poles of the rotor are aligned with poles of the stator during motor operation with torque being produced by variation of the reluctance of the variable reluctance magnetic circuit.

5,059,885

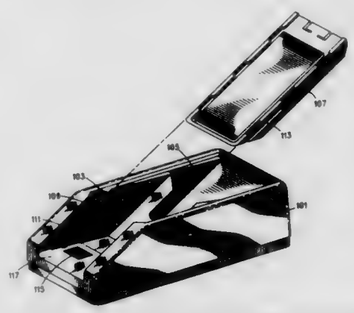
BATTERY CHARGER WITH BATTERY POSITIONING AND SUPPORT APPARATUS

Gary R. Weiss, Wheeling, and Leonid Soren, Lincolnwood, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 23, 1989, Ser. No. 397,220

Int. Cl.[5] H02J *7/00;* **H01M** *10/46*

U.S. Cl. 320—2 **22 Claims**



1. A housing for a battery charging apparatus which charges batteries of differing sizes, each battery having a housing shape conformal to at least part of the shape of a recess in the housing of the battery charging apparatus and having at least one slot

disposed in the battery housing shape, the housing having a plurality of surfaces including top and bottom surfaces and comprising:

a recess in the top surface of the housing;

a wall of said recess extending from the top surface of the housing toward the bottom surface of the housing and having a predetermined contour corresponding to at least part of the shape of the battery housing; and

a rib member disposed on said wall in a location which allows said rib member to engage the at least one slot disposed in the battery housing shape, below the top surface of the housing, and extending toward the bottom surface of the housing,

whereby a battery to be charged can be inserted into said recess, being first guided by said wall and subsequently positioned by said rib member.

5,059,886

CHARGING GENERATOR

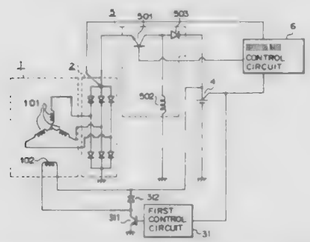
Shinji Nishimura, and Kazutoshi Kaneyuki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1990, Ser. No. 532,730

Claims priority, application Japan, Jun. 5, 1989, 1-142442

Int. Cl.[5] H02J *7/14*

U.S. Cl. 322—28 **1 Claim**



1. A charging generator for charging a battery by a voltage output from a generating unit having an armature coil and a field coil comprising:

voltage boost/drop circuit means connected between the output of said generating unit and said battery;

first control circuit means connected between the field coil of said generating unit and said battery for controlling a field current flowing through the field coil to regulate a voltage generated in the armature coil of said generating unit in response to a voltage across said battery; and

second control circuit means connected to said voltage boost/drop circuit means for controlling the boost/drop ratio of said voltage boost/drop circuit means.

5,059,887

STEP-UP AND STEP-DOWN CHOPPER DEVICE

Katsuji Iida, and Takahiro Kishimoto, both of Ebina, Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, Japan

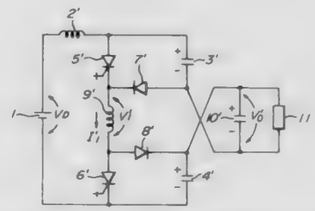
Filed Aug. 10, 1990, Ser. No. 566,085

Claims priority, application Japan, Aug. 23, 1989, 1-216857

Int. Cl.[5] G05F *1/56*

U.S. Cl. 323—222 **2 Claims**

1. A step-up and step-down chopper device comprising a series arrangement connected between positive and negative terminals of a direct current source, the series arrangement having a first reactor, a first switching element, a second reactor and a second switching element, the chopper device further comprising a second series arrangement of a first diode, a first condenser and a second diode connected between positive and negative poles of the second reactor, the device further comprising a second condenser connected between a positive polarity terminal of the first switching element and a negative polarity terminal of the first condenser, a third condenser connected between a negative polarity terminal of the second switching element and a positive polarity terminal of the first



condenser and a load is connected between the two terminals of the first condenser.

5,059,888

SERIES VOLTAGE REGULATING CIRCUIT HAVING A PARALLEL STABILIZER

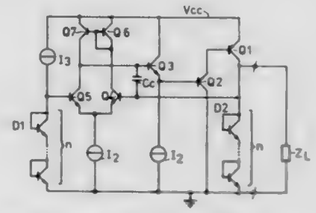
Adrianus J. M. Van Tuijl, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1990, Ser. No. 501,648

Claims priority, application Netherlands, Apr. 13, 1989, 8900919

Int. Cl.[5] G05F *1/613*

U.S. Cl. 323—224 **8 Claims**



6. A voltage regulating circuit comprising:

a series voltage stabilizer which includes a control transistor connected between a terminal of a DC voltage source and an output terminal of the voltage regulating circuit,

a comparison circuit comprising first and second transistors connected as a differential transistor pair with a first main electrode of each transistor connected in common via a current source to a point of reference voltage, a current mirror circuit coupling second main electrodes of said first and second transistors to said terminal of the DC voltage source, and means coupling a control electrode of the second transistor to said output terminal,

a parallel stabilizer coupled to said output terminal and to said point of reference voltage so as to develop an output voltage,

a reference voltage circuit coupled to a control electrode of the first transistor of the comparison circuit and operative in a manner such that the output voltage of the parallel stabilizer is made equal to the output voltage of the series stabilizer, and

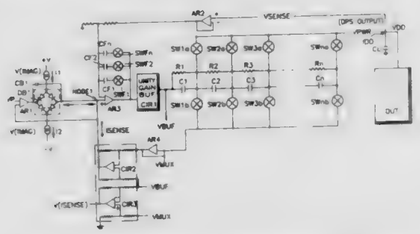
means coupling a control electrode of the control transistor to one of said second main electrodes of the differential transistor pair.

5,059,889

PARAMETRIC MEASUREMENT UNIT/DEVICE POWER SUPPLY FOR SEMICONDUCTOR TEST SYSTEM

Dale A. Heaton, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1990, Ser. No. 490,803
Int. Cl.[5] H02M *3/335*
U.S. Cl. 323—285 **20 Claims**



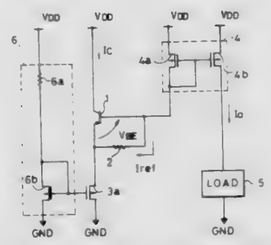
1. A device power supply in a semiconductor test system for supplying programmed voltages to a semiconductor device under test and for current range switching of a current range impedance without affecting the output voltage of the device power supply, including:
- a closed loop voltage feedback circuit to maintain at the device under test the programmed voltage;
- a closed loop current feedback circuit, the input of which is across the current range impedance, said current feedback circuit functioning independent of the closed loop voltage feedback circuit; and
- a plurality of current range switched connected inside the closed loop voltage feedback circuit.

5,059,890

CONSTANT CURRENT SOURCE CIRCUIT

Yoshinori Yoshikawa, Kawasaki, and Kunihiko Gotoh, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 6, 1989, Ser. No. 446,885
Claims priority, application Japan, Dec. 9, 1988, 63-312535
Int. Cl.[5] G05F *3/26*
U.S. Cl. 323—315 **19 Claims**



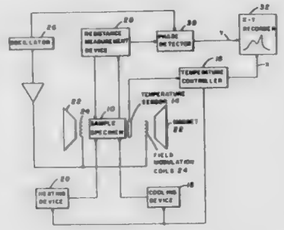
1. A constant current source circuit comprising:
- a current mirror circuit supplying a load circuit with an output current which is regulated on the basis of a reference current;
- a transistor having an emitter, a collector connected to a first power source line, and a base coupled to said current mirror circuit;
- a resistor coupled between said emitter and base, said reference current passing through said resistor;
- current control means, coupled to said emitter, for controlling a current directed to a second power source line in accordance with a bias voltage, said current composed of said reference current and a collector current passing through said transistor; and
- bias means, coupled to said current control means and having a current path, for deriving said bias voltage from a current passing from said first power source line to said second power source line through said current path.

5,059,891

MICROWAVE METHOD FOR DETECTION OF WEAK LINKS IN SUPERCONDUCTORS

Joseph Bohandy, Columbia; Boris F. Kim, Pasadena; Terry E. Phillips, Ellicott City; Frank J. Adrian, Olney, and Kishin Moorjani, Silver Spring, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 325,823, Mar. 20, 1989, Pat. No. 4,904,929. This application Dec. 28, 1989, Ser. No. 458,066
Int. Cl.[5] G01N *27/14;* **G01R** *27/04*
U.S. Cl. 324—71.6 **24 Claims**



1. A method for detecting weak links in a superconducting sample comprising:
- a) placing the superconducting sample in a resonant cavity;
- b) imposing a magnetic field in the range of 1 G to 5 KG on the sample;
- c) modulating the imposed magnetic field, in the range 0.1 G–5 G and at a frequency in the range of 1 KHz–100 KHz, in such a fashion that the total magnetic field is always of the same polarity;
- d) sequentially changing the temperature of the sample, recording the temperature at each change and producing first signals;
- e) imposing microwave power in the range of 0.01 milliwatts to 200 milliwatts on the sample, measuring the microwave power reflected from the cavity at each temperature change and producing second signals;
- f) comparing the second signals to the modulation frequency by phase detection and producing third signals;
- g) plotting a series of coordinate points where one axis represents said first signals and the other axis represents said third signals; and
- h) measuring the unmodulated microwave resistance of the sample as a function of temperature to obtain a resistance vs. temperature curve;

wherein the existence of weak links in the superconducting sample is indicated by the presence of at least one peak formed by the series of coordinate points at a temperature lower than the T_c of the superconducting sample where T_c is the superconducting phase transition temperature.

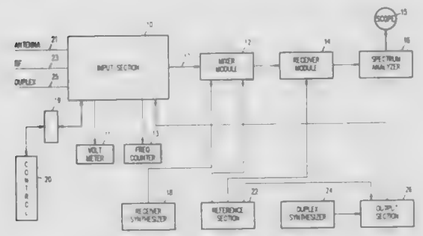
5,059,892

RADIO FREQUENCY SIGNAL INTERFACE

David E. Stoft, Bellingham, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 15, 1990, Ser. No. 597,981
Int. Cl.[5] G01R *15/10;* **H04B** *17/00*
U.S. Cl. 324—73.1 **16 Claims**

1. In a multi-function test apparatus which includes multi-instrumentalities controlled by processor control means, said processor control means enabled by a stored program and user inputs to configure said multi-instrumentalities controlled to perform a plurality of desired functions, a radio frequency (RF) signal interface coupling user equipment under test to said multi-function test apparatus, said RF signal interface comprising:
- a low power RF signal input for receiving a low power RF signal input from equipment under test;
- a high power RF signal input port for receiving a high power RF signal input from equipment under test;
- first switch means coupled to said-low power RF signal port and to said high power RF signal port, said first switch means for selectively coupling a selected one of said low power and high power RF signal ports to a first interface port, said first interface port for coupling an RF signal to selected ones of a plurality of instrumentalities within said test apparatus; and
- an RF signal output port coupled to a second interface port, said RF signal output port for coupling an RF signal to equipment under test, said RF signal internally generated by at least one of said pluralities of instrumentalities within said test apparatus, said second interface port for coupling said RF signal to said RF signal output port.

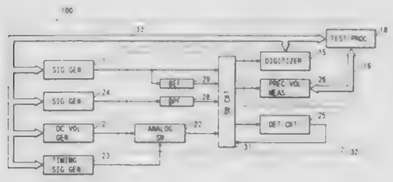


5,059,893

AC EVALUATION EQUIPMENT FOR AN IC TESTER

Masahisa Hirai, Kazo, and Shigemi Komagata, Kitaadachi, both of Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Dec. 3, 1990, Ser. No. 620,788
Claims priority, application Japan, Dec. 6, 1989, 1-316806
Int. Cl.[5] G01R *11/32*
U.S. Cl. 324—74 **7 Claims**



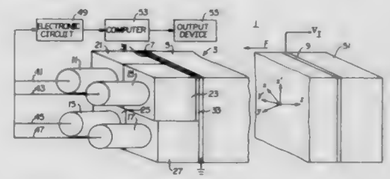
1. An IC evaluation equipment for an IC tester, comprising:
- an analog testing part of said IC tester including: first and second AC signal generators for AC signals of preset frequencies and levels; a DC voltage generator for generating a DC voltage of a preset level; a timing signal generator for generating a- timing signal of a preset frequency and duty ratio; a digitizer for analyzing frequency components of an input signal waveform and their levels; a precision voltage measurement unit for measuring a DC voltage with high precision; and a test processor connected via bus means to said first and second AC signal generator, said DC voltage generator, said timing signal generator, said digitizer and said precision voltage measurement unit, for controlling them and for processing measured data received from said digitizer and said precision voltage measurement unit;
- a performance board attached to said analog testing part, for mounting thereon IC's to be tested;
- an analog switch provided on said performance board and connected to the outputs of said DC voltage generator and said timing signal generator, whereby a rectangular-wave signal of the frequency and duty ratio of said timing signal input thereinto is output at the level corresponding to said DC voltage input thereinto;
- a detector circuit provided on said performance board;
- a band pass filter provided on said performance board and connected to the output of said second AC signal generator;
- a band elimination filter provided on said performance board and connected to the output of said first AC signal generator; and
- a switching circuit provided on said performance board, for connecting the outputs of desired ones of said analog switch, said detector circuit, said band pass filter, said band elimination filter and said first AC signal generator to the inputs of desired ones of said detector circuit, said digitizer and said precision voltage measurement unit.

5,059,894

ELECTRO-OPTIC VOLTAGE MEASURING APPARTAUS WITH SINGLE ENDED OPTICS

Robert C. Miller, New Alexandria, Pa., assignor to ABB Power T&D Company, Inc., Blue Bell, Pa.

Filed May 16, 1990, Ser. No. 524,643
Int. Cl.[5] G01R *33/032*
U.S. Cl. 324—96 **24 Claims**



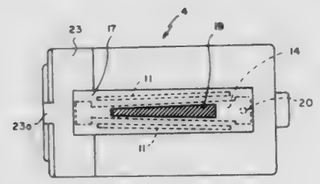
1. Apparatus for measuring a voltage between a first conducting object at a low electrical potential and a spaced apart second conducting object at a high electrical potential, said apparatus comprising:
- an electro-optic crystal having a fourfold axis or rotary inversion extending between a first end of said electro-optic crystal electrically connected to said first conducting object and a second end of said electro-optical crystal electrically connected to said second conducting object, said electro-optic crystal also having a fast axis and a slow axis each perpendicular to said fourfold axis of rotary inversion and to each other;
- input means injecting into one of said first and second ends of said electro-optical crystal light which is polarized in a plane intersecting said fast and slow axes at selected angles and which passes through said electro-optical crystal parallel to said fourfold axis of rotary inversion and exits at the other end of said electro-optical crystal;
- redirecting means adjacent said other end of said electro-optic crystal directing said polarized light exiting said second end of said electro-optic crystal back into said electro-optic crystal at said other end with the plane of polarization at said selected angles to the fast and slow axes to pass back through said electro-optic crystal parallel to said fourfold axis of rotary inversion and exit said one end of electro-optic crystal; and
- conversion means, including means adjacent said one end of said electro-optic crystal, converting polarized light exiting said one end of said electro-optic crystal, into a signal representative of the voltage between the first and second conducting objects.

5,059,895

BATTERY VOLTMETER

Richard T. Cataldi, Webster; Patrick D. Hein; Henry J. Heirigs, both of Fairport, and John C. Leo, Seneca Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1990, Ser. No. 504,504
Int. Cl.[5] G01N *27/416*; G01R *19/04*
U.S. Cl. 324—104 29 Claims



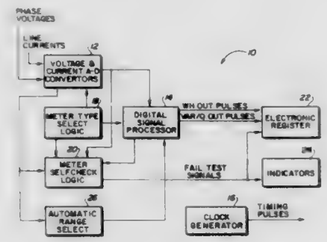
1. A voltmeter comprising:
A) a dielectric layer;
B) a conductive layer above or below one of the surfaces of the dielectric layer; and
C) a temperature sensitive color indicator layer in thermal contact with the conductive layer,
characterized in that the conductive layer has i) an air pocket under one of its surfaces and ii) sufficient heat generating capacity to affect a change in the temperature sensitive color indicator layer.

5,059,896

ELECTRONIC WATTHOUR METER

Warren R. Germer, Dover, N.H.; Maurice J. Ouellette, North Berwick, Me.; Mehrdad N. Hagh, and Bertram White, both of Irvine, Calif., assignors to General Electric Company, Somersworth, N.H.

Filed Sep. 25, 1989, Ser. No. 412,359
Int. Cl.[5] G01R *21/133*
U.S. Cl. 324—142 16 Claims



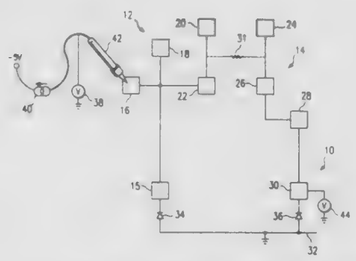
12. A type select means for a meter, the meter comprising processing means for processing current and voltage values proportional to current and voltage samples from conductor means, and sampling means for providing, to said processing means, the current value proportional to samples of current flowing in the conductor means and the voltage value proportional to the voltage of the conductor means, said type select means comprising:
first clock means for providing, to said sampling means, a plurality of first clock signals to selectively effect the transfer of current samples from the conductor means in accordance with a selected type of meter configuration; and
second clock means for providing, to said sampling means, a plurality of second clock signals to selectively control the sequence of sampling voltage on the conductor means to selectively effect the transfer of voltage samples in accordance with the type of meter configuration selected.

5,059,897

METHOD AND APPARATUS FOR TESTING PASSIVE SUBSTRATES FOR INTEGRATED CIRCUIT MOUNTING

Thomas J. Aton, Dallas; Satwinder Malhi; Masashi Hashimoto, both of Garland, all of Tex.; Shivaling S. Mahant-Shitti, Bangalore, India; Oh-Kyong Kwon, Richardson, Tex., and Thirumalai Sridhar, Huston, N.H., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 7, 1989, Ser. No. 447,328
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 R 31 Claims



1. A circuit for testing the continuity between conductive nodes connected in a plurality of interconnecting nets in an integrated circuit interconnecting device, comprising:
first and second test points coupled to a plurality of conductive nodes in respective first and second interconnecting nets;
a common conductive node;
first and second diodes couples respectively between said common node and said first and second test points;
circuitry for applying a predetermined signal to one of said nodes in said first interconnecting net;
circuitry for detecting a voltage of said one of said nodes in said first net responsive to the application of said predetermined signal, said voltage indicative of the electrical continuity between said nodes in said first net; and
circuitry for detecting a change in the voltage of said second test point responsive to the application of said predetermined signal, said change in voltage indicative of erroneous electrical continuity between said first and second nets.

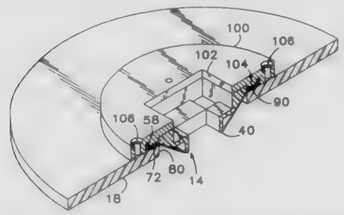
5,059,898

WAFER PROBE WITH TRANSPARENT LOADING MEMBER

Christina C. Barsotti, Vancouver, Wash., and Alfred H. Schamel, West Linn, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 9, 1990, Ser. No. 564,511
Int. Cl.[5] G01R *1/06*
U.S. Cl. 324—158 P 19 Claims

1. A probe head for establishing electrically conductive contact with an electronic device, said probe head comprising:
a loading member having an attachment portion for attachment to a support structure and a cantilever arm having first and second opposite end regions, the cantilever arm being attached at its first end region to the attachment portion and the second end region of the cantilever arm being spaced from the attachment portion,
a flexible sheet of insulating material having first and second opposite main faces and first and second opposite end regions, the sheet being attached at its first end region to the second end region of the cantilever arm with the first main face of the flexible sheet confronting the cantilever arm,
a first array of contact elements exposed at the second main face of the sheet at the first end region thereof, whereby the sheet of insulating material is between the cantilever arm and the contact elements of the first array,



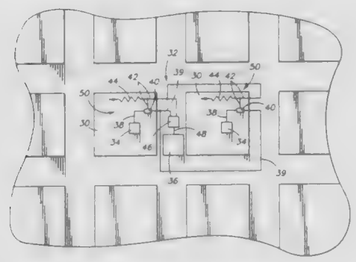
a second array of contact elements exposed at the second end region of the sheet, and
conductor runs connecting the contact elements of the first array with respective contact elements of the second array.

5,059,899

SEMICONDUCTOR DIES AND WAFERS AND METHODS FOR MAKING

Warren D. Farnworth; Kevin Duesman, and Ed Heitzeberg, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 16, 1990, Ser. No. 568,407
Int. Cl.[5] E01R *31/28*
U.S. Cl. 324—158 R 22 Claims



14. A semiconductor wafer comprising:
a plurality of individual dies containing integrated circuits, the dies containing at least one signal node;
scribe line area separating the dies to be severed through to cut the wafer into individual chips;
integrated test circuitry formed within the scribe line area; and
a conductive interconnecting line extending from the at least one signal node to the integrated test circuitry formed within the scribe line area.

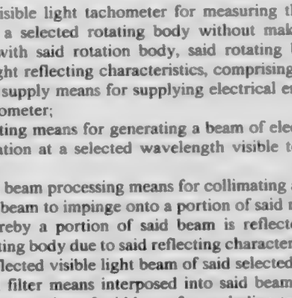
5,059,900

METHOD AND APPARATUS FOR DETERMINING THE ANGULAR VELOCITY OF A SHAFT

Edward H. Phillips, Rochester Hills, Mich., assignor to Techco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 534,437, Jun. 6, 1990. This application Jul. 26, 1990, Ser. No. 558,603
Int. Cl.[5] G01P *3/42, 3/48, 3/54*; G01B *7/14*
U.S. Cl. 324—160 20 Claims

1. A tachometer for measuring the angular velocity of a rotating device comprising:
an input shaft coupled to the rotating device for rotation therewith about a first center line, said input shaft having eccentric surface means forming two substantially sinusoidal undulations which are offset from said first center line; and
a first pair of proximity detectors oriented with respect to said two sinusoidal undulations for generating output signals defining a first set of x' and y' coordinate signals, a second pair of proximity detectors oriented with respect to said two sinusoidal undulations for generating output



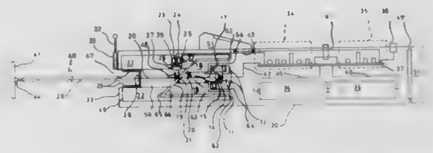
signals defining a second set of x'' and y'' coordinate signals, said first and second sets of coordinate signals being algebraically summed to derive x and y offset dimensions where x=x'+x'' and y=y'+y'' for substantially negating any radial and axial displacement errors associated with rotation of said input shaft, said x and y offset dimensions being indicative of the rotational location of said eccentric surface means with respect to said first and second pairs of proximity detectors.

5,059,901

VISIBLE LIGHT LASER TACHOMETER FOR SENSING ROTATIONAL SPEED OF AN OBJECT

James B. Van Voorhis, Roane County, Tenn., assignor to Technology for Energy Corporation, Knoxville, Tenn.

Filed May 4, 1990, Ser. No. 519,101
Int. Cl.[5] G01P *3/36*
U.S. Cl. 324—175 11 Claims



1. A visible light tachometer for measuring the rotational speed of a selected rotating body without making physical contact with said rotation body, said rotating body having visible light reflecting characteristics, comprising:
power supply means for supplying electrical energy to said tachometer;
generating means for generating a beam of electromagnetic radiation at a selected wavelength visible to the human eye;
optical beam processing means for collimating and directing said beam to impinge onto a portion of said rotating body whereby a portion of said beam is reflected from said rotating body due to said reflecting characteristics to form a reflected visible light beam of said selected wavelength;
optical filter means interposed into said beam and said reflected portion of said beam for excluding transmission of a major portion of light of a wavelength different than said selected wavelength and for transmitting a major portion of light of said selected wavelength; and

signal conditioning circuitry for detecting, conditioning, and converting said reflected light beam into electrical signal pulses representative of said rotational speed of said rotating body.

5,059,902

ELECTROMAGNETIC METHOD AND SYSTEM USING VOLTAGE INDUCED BY A DECAYING MAGNETIC FIELD TO DETERMINE CHARACTERISTICS, INCLUDING DISTANCE, DIMENSIONS, CONDUCTIVITY AND TEMPERATURE, OF AN ELECTRICALLY CONDUCTIVE MATERIAL

Sten Linder, Box 133, S-150 13 Trosa, Sweden

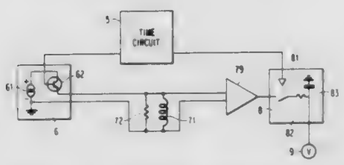
PCT No. PCT/SE87/00457, § 371 Date Mar. 27, 1989, § 102(e) Date Mar. 27, 1989, PCT Pub. No. WO88/02842, PCT Pub. Date Apr. 21, 1988

PCT Filed Oct. 9, 1987, Ser. No. 340,626

Claims priority, application Sweden, Oct. 10, 1986, 8604315

Int. Cl.[5] G01B *7/00;* **G01N** *27/72;* **G01R** *33/12;* **G01F** *23/26*

U.S. Cl. 324—207.17 **20 Claims**



1. A method for the contactless measuring of absolute parameter magnitudes of or relating to an electrically conductive material in solid or liquid form, such parameters comprising at least one of the distance of the conductive material from a given point, linear dimensions of a body that incorporates said material, the electrical conductivity of the material, and the temperature of said material, in which method an electromagnetic field is caused to penetrate the material at least partially, comprising:

generating the electromagnetic field with the aid of a constant current which flows through at least one field generating coil;

discontinuing the supply of current to said at least one coil subsequent to the magnetic field having penetrated the electrically conductive material to an extent sufficient for the intended parameter to be measured,

sensing the voltage which is induced in at least one sensing coil located at said given point in the magnetic field as a result of the decaying magnetic field, said sensed voltage comprising an initial portion corresponding to the decay of the magnetic field across said distance parameter during an initial, very short time period on the order of microseconds beginning with the discontinuance of the current supply; and

utilizing said initial portion of the sensed voltage to determine the absolute value of said distance parameter.

5,059,903

METHOD AND APPARATUS UTILIZING A MAGNETIC FIELD FOR DETECTING DEGRADATION OF METAL MATERIAL

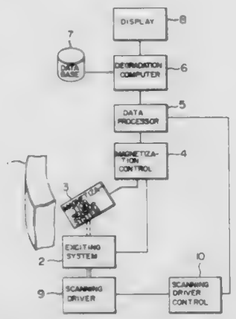
Masahiro Otaka, Hitachi; Kunio Enomoto, Ibaraki; Kunio Hasegawa, Katsuta; Makoto Hayashi, Hitachi; Tasuku Shimizu, Hitachi, and Kazuo Takaku, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1988, Ser. No. 247,414

Claims priority, application Japan, Sep. 21, 1987, 62-234828; Nov. 4, 1987, 62-277445; Dec. 4, 1987, 62-305656

Int. Cl.[5] G01R *33/14, 33/035;* **G01N** *27/72;* **G21C** *17/003*

U.S. Cl. 324—223 **6 Claims**



1. A method of determining mechanical strength degradation of a measuring object by applying a magnetic field to said measuring object, measuring the magnitude of at least one of form, area, coercive force and residual magnetism of a magnetic hysteresis loop as a magnetization characteristic of said measuring object, and determining the mechanical strength degradation of said measuring object from the result of measurement of the magnitude of said magnetization characteristic of a material object in a virgin unused state, with said material object being made of the same material and being made using the same manufacturing processes as said measuring object, said method comprising the steps of computing a relation between changes in the magnitude of said magnetization characteristic and mechanical strength degradation of said material object, estimating the magnitude of said magnetization characteristic for said measuring object when said measuring object was in an unused virgin state on the basis of said computed relation, measuring the magnitude of said magnetization characteristic of said measuring object during use, computing the difference between the estimated magnitude of said magnetization characteristic and said magnitude of said magnetization characteristic, and comparing said computed difference in magnitude of said magnetization characteristic with said computed relation between said magnetization characteristic and said mechanical strength degradation to determine the degree of mechanical strength degradation of said measuring object at the time of measurement.

5,059,904

CONTROL CIRCUIT FOR VARIABLE CHARACTERISTIC ROTATING EDDY CURRENT PROBE

Daniel P. Mazzone, Dayton, and James D. Hoeffel, Centerville, both of Ohio, assignors to Systems Research Laboratories, Inc., Dayton, Ohio

Filed Aug. 8, 1990, Ser. No. 564,273

Int. Cl.[5] G01N *27/72;* **G01R** *33/12*

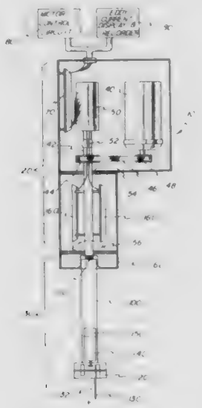
U.S. Cl. 324—226 **7 Claims**

1. In an inspection system including a detachable inspection probe, means for rotating said inspection probe, means for mechanically and electrically attaching said detachable probe

to said rotating means, and means for transferring signals to and from said rotating inspection probe,

the improvement comprising

means for changing a mechanical characteristic of said inspection probe while it is rotating, said means including a motor carried by said probe for changing the position of



said inspection probe, and an encoder for indicating the position of said probe,

means for controlling said motor through said signal transferring means, and

means for receiving signals from said encoder through said signal transferring means.

5,059,905

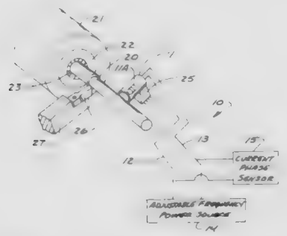
INDICATION OF CUTTING TOOL WEAR BY MONITORING EDDY CURRENTS INDUCED IN A METALLIC WORKPIECE

Vladimir Drits, Minnetonka, Minn., assignor to Innovex Inc., Hopkins, Minn.

Filed Aug. 28, 1989, Ser. No. 399,324

Int. Cl.[5] G01N *27/80, 27/90;* **G01R** *33/12*

U.S. Cl. 324—233 **12 Claims**



4. An apparatus for determining cutting tool dullness comprising means for generating eddy currents in a workpiece which was machined by such cutting tool, means for supporting a workpiece adjacent to said means for generating eddy currents, and means connected to the eddy current generator for measuring a parameter related to the generated eddy currents which changes with surface work hardening in the workpiece before the workpiece is machined to obtain an initial work hardening reference measurement, and at least after the workpiece is machined to obtain a second work hardening measurement, and comparing the second measurement with the initial reference measurement to obtain a representation for dullness of a cutting edge of the tool machining such workpiece.

5,059,906

MAGNETIC RESONANCE IMAGING APPARATUS

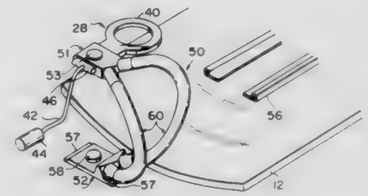
Kayuri Yamanaka, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1989, Ser. No. 441,773

Claims priority, application Japan, Nov. 25, 1988, 63-296057; Mar. 22, 1989, 1-69804

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **11 Claims**



1. A magnetic resonance imaging apparatus comprising a retaining mechanism for retaining receiving means so that the receiving means is situated close to the surface of the body of a patient lying on a bed, said receiving means receiving a magnetic resonance signal induced in the body of the patient, said retaining mechanism including:

retaining means for retaining the receiving means;

supporting means for supporting the retaining means, said supporting means having a distal end connected to the retaining means and a proximal end, said supporting means including a first flexible member flexible enough to be bent by external force and retentive enough to maintain a bent posture, and a flexible cylindrical covering member covering the first flexible member,

said first flexible member having a plurality of cylindrical engaging segments in frictional engagement with one another so as to define a hollow cylinder, and said supporting means further includes a second flexible member inserted in the cylindrical first flexible member, said second flexible member being flexible enough to be bent by external force and elastic to a degree such that the second flexible member tends to be restored to the original posture thereof; and

mounting means connected to the proximal end of the supporting means and adapted to mount the supporting means on a predetermined portion of the bed,

whereby as the supporting means is bent, said receiving means is moved to and kept in a desired position.

5,059,907

METHOD FOR EVALUATING THE WATER SATURATION OF SUBTERRANEAN FORMATIONS FROM DIELECTRIC PERMITTIVITY MEASUREMENTS

Michael M. Sherman, Broken Arrow, Okla., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 240,985, Sep. 6, 1988, abandoned. This application Apr. 27, 1990, Ser. No. 520,162

Int. Cl.[5] G01V *3/38, 3/18*

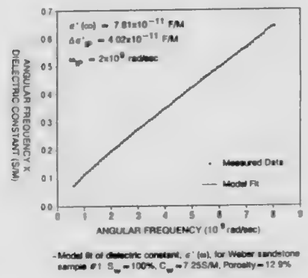
U.S. Cl. 324—323 **9 Claims**

1. A method of converting a dielectric permittivity well log representing a record of measurements of dielectric permittivity made on a formation as a function of depth in a borehole at a frequency of less than about 100 MHz to a water saturation log of the formation as a function of depth in the borehole, comprising:

saturating a sample of the formation with brine having a resistivity similar to the resistivity of the formation brine;

measuring the dielectric permittivity of the brine saturated sample at a plurality of frequencies greater than about 100 MHz;

extrapolating the measurements made on the brine saturated sample to determine the dielectric permittivity of the formation at the frequency of the dielectric log made on the formation at less than about 100 MHz; and



- Model fit of dielectric constant, ε'(ω), for Weber sandstone sample #1. S_w = 100%, C_w = 7.25S/M, Porosity = 12.9%

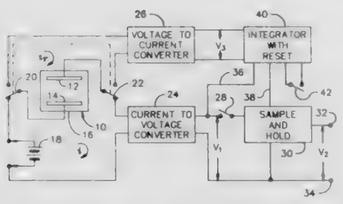
converting the dielectric permittivity log made on the formation as a function of depth at less than about 100 MHz and the dielectric permittivity of the formation as determined by extrapolating the measurements made on the brine saturated sample to a water saturation log of the formation as a function of depth using an interpretation algorithm.

5,059,908

AMPERIMETRIC MEASUREMENT WITH CELL ELECTRODE DEPLATING

Charles J. Mina, Willow Grove, Pa., assignor to Capital Controls Company, Inc., Colmar, Pa.

Filed May 31, 1990, Ser. No. 531,047
Int. Cl.[5] G01N *27/02*
U.S. Cl. 324—444 **16 Claims**



1. Amperimetric measurement apparatus comprising:

an amperimetric cell having means for containing a solution, and a pair of electrodes arranged within said cell for contact with said solution;

means for establishing a forward current through said cell;

means for repeatedly interrupting said forward current, and, during the interruptions, imposing a reverse current on said cell; and

control means, including integrator means for integrating the magnitude of the forward current with respect to time, and means responsive to said integrator means, for regulating the magnitude and duration of the reverse current so that the net flow of charge through said cell is substantially zero.

5,059,909

DETERMINATION OF PARTICLE SIZE AND ELECTRICAL CHARGE

Richard W. O'Brien, Turramurra, Australia, assignor to Colloidal Dynamics Pty. Ltd., Sydney, Australia

PCT No. PCT/AU87/00333, § 371 Date Feb. 27, 1989, § 102(e) Date Feb. 27, 1989, PCT Pub. No. WO88/02482, PCT Pub. Date Apr. 7, 1988
PCT Filed Sep. 30, 1987, Ser. No. 328,254
Claims priority, application Australia, Sep. 30, 1986, 8241/86
Int. Cl.[5] G01R *29/12;* **G01N** *29/02*
U.S. Cl. 324—457 **10 Claims**

1. A method for determining the particle charge and size distribution of particles in suspensions of arbitrary concentration in a fluid medium, comprising:

applying at least one of an unsteady electric field of at least two different frequencies and an unsteady mechanical force of at least two different frequencies to the suspension to accelerate the particles;

measuring a resulting acoustic wave generated by the particles as a result of the application at each frequency of unsteady electric field, or a resulting electrical response generated by the particles as a result of the application at each frequency of unsteady mechanical force;

determining the frequency dependent electrophoretic mobility of the particles from the measured acoustic wave or electrical response at each of the applied frequencies; and

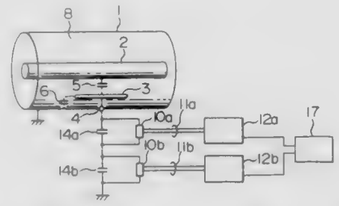
calculating the particle size and charge distribution from the frequency dependent electrophoretic mobility.

5,059,910

OPTICAL TRANSFORMER

Naoki Ochi, Amagasaki City, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 24, 1990, Ser. No. 571,978
Claims priority, application Japan, Aug. 25, 1989, 1-217474
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—537 **9 Claims**



1. An optical transformer for determining the voltage of a high-voltage conductor by making use of light, comprising:

an intermediate electrode provided between said high-voltage conductor and the ground and having an intermediate potential intermediate between the potential of said high-voltage conductor and the ground potential;

at least two potential dividing capacitors connected in series to each other between the ground and said high-voltage conductor for dividing said intermediate potetial of said intermediate electrode;

optical voltage detecting means provided for each of said potential dividing capacitors, each of said optical voltage detection means including an optical voltage sensor connected in parallel with one of said potential dividing capacitors and capable of generating a signal corresponding to the voltage at said potential dividing capacitor; and

a fault detection circuit connected to said optical voltage detection means associated with one of potential dividing capacitor and capable of detecting difference between the outputs of these optical voltage detection means, thereby detecting occurrence of the fault;

whereby the fault is detected accurately even when the fault is a short circuit accident in one of said optical voltage sensors.

5,059,911

CABLE FAULT LOCATION DETECTOR

Carl H. Huber, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1990, Ser. No. 602,599
Int. Cl.[5] G01R *31/08*
U.S. Cl. 324—539 **8 Claims**



1. Apparatus for detecting a location of a break in a conductor of a cable having a multiple number of conductors therein comprising:

(a) means for grounding conductors adjacent to the conductor under test;

(b) means for sending a charging current into the conductor under test; and

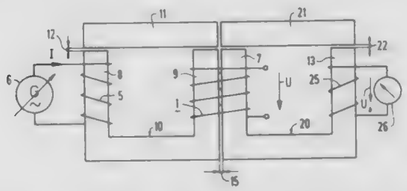
(c) means for measuring the amount of charging current flow with respect to time into the conductor under test.

5,059,912

METHOD AND APPARATUS FOR THE INTERTURN AND INTERLAYER FAULT TESTING OF COILS

Wolfgang Trampert, Baiersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 2, 1990, Ser. No. 474,353
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1989, 3904554
Int. Cl.[5] G01R *31/06*
U.S. Cl. 324—546 **6 Claims**



1. A method for testing an electric coil for interturn and interlayer faults, wherein the electric coil to be tested is from a known type of coil and is a test piece in the method, the method comprising the steps of:

a) inducing a first induced voltage in said test piece by using an excitation winding which forms part of an excitation circuit;

b) generating a stray magnetic field in the test piece, if the test piece has an interturn fault, wherein the stray magnetic field results from a short circuit current flowing in the test piece caused by said first induced voltage;

c) inducing a second induced voltage in a measuring coil, which forms part of a measuring circuit, wherein the second induced voltage is induced by said stray magnetic field; and

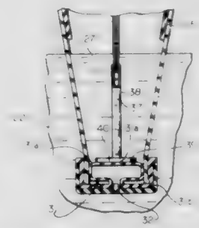
d) performing steps a), b) and c) at a measuring frequency selected such that the second induced voltage in the measuring coil is at a minimum voltage value when the test piece is free of interlayer and interturn faults, an interlayer or interturn fault being detected when the second induced voltage in the measuring coil is greater than the said minimum voltage value when measured at the selected measuring frequency.

5,059,913

APPARATUS AND METHOD FOR ELECTRICAL TESTING OF INSULATING ARM SLEEVES USING A CONDUCTIVE LIQUID AND INFLATABLE SEALING MEMBER

Jack M. Nigro, Malvern, and Roy O. Wilson, Bolivar, both of Ohio, assignors to The Hannon Company, Canton, Ohio

Filed Dec. 13, 1990, Ser. No. 628,852
Int. Cl.[5] G01R *31/16*
U.S. Cl. 324—557 **21 Claims**



16. An inflatable sealing device for sealing an open end of an elastomeric sleeve for electrical testing of said sleeve, said device including a rigid cup-like member formed of a dielectric material, an air inflatable bladder portion mounted within the rigid cup-like member to be positioned within the open end of the sleeve and expanded outwardly to seal said sleeve end interiorly in pressure-tight relation within said rigid cup-like member; and valve means mounted on the rigid member and communicating with the inflatable bladder portion for introducing pressurized air into the bladder portion to inflate said bladder portion.

5,059,914

MICROWAVE DEVICE FOR THE CONTINUOUS MEASUREMENT OF THE VISCOSITY OF A VISCOUS MEDIUM

Jean-Francis Lacombe, St Medard en Jalles, and Jean-Louis Miane, Pessac, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jul. 11, 1990, Ser. No. 551,181
Claims priority, application France, Jul. 11, 1989, 89 09307
Int. Cl.[5] G01R *27/04;* **G01N** *22/00*
U.S. Cl. 324—642 **14 Claims**

1. Device for the continuous real time measurement of the viscosity of a polar viscous resin (**22**) said device comprising, in combination, a microwave source (**26**), a sensor having at least one semirigid, coaxial microwave cable (**2**, **2***a*, **2***b*, **2***c*, **2***d*) for immersion in the resin to be measured, and means (**10**, **10***a*, **10***b*) for connecting said sensor via a microwave guide to a microwave source, said cable having an outer sheath (**4**, **4***c*, **4***d*) and a core (**6**, **6***c*, **6***d*) which conduct electricity and which are arranged coaxially, the space defined between the sheath and the core being filled with a dielectric (**8**), said core having a bare end (**12**, **12***a*, **12***b*, **12***c*, **12***d*) for placement in contact with the viscous resin to be measured, said sensor producing in said medium incident microwaves of a given power and detecting

the power of microwaves reflected by the resin, a detector (**42**) for transforming the power of the reflected microwaves into an electric signal which is a rising function of the viscosity, a first



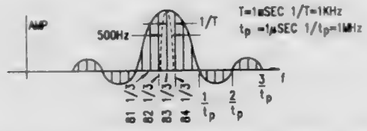
microwave guide (**34**, **36**, **38**) for coupling the microwave source to the sensor, and a second microwave guide (**40**) for coupling the detector to the sensor.

5,059,915

VECTOR NETWORK ANALYZER RF PULSE PROFILING METHOD AND APPARATUS

Martin I. Grace, San Jose, and Peter M. Kapetanic, Morgan Hill, both of Calif., assignors to Wiltron Company, Morgan Hill, Calif.

Filed Dec. 1, 1989, Ser. No. 444,711
Int. Cl.[5] G01R *23/16, 27/02*
U.S. Cl. 324—650 **21 Claims**



1. For use in a vector network analyzer having means for providing a train of RF pulses having a predetermined pulse repetition rate to a device-under-test (DUT) for measuring the amplitude and phase of the central spectral line in RF pulses received from said DUT in response thereto, an RF pulse profiling apparatus comprising:

means for time modulating the amplitude of said RF pulses received from said DUT;

means responsive to said modulating means for down-converting the frequency of said RF pulses received from said DUT;

means responsive to said down-converting means for filtering said RF pulses received from said DUT, said filtering means having a bandwidth which is less than said predetermined pulse repetition rate; and

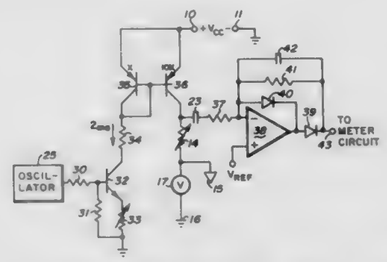
means responsive to said filtering means for providing a pair of dc output signals having an amplitude corresponding to the real and imaginary components of said RF pulses received from said DUT.

5,059,916

GAUGE DRIVER FOR USE WITH A REMOTE SENSOR AND HAVING REDUCED OFFSET POTENTIAL RESPONSE

Nick M. Johnson, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 8, 1990, Ser. No. 462,174
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—713 **6 Claims**



1. In a locally grounded gauge circuit, having a remotely grounded sense resistor that is supplied with an excitation current whereby said sense resistor develops a sense potential that is a function of a parameter the gauge circuit is intended to monitor, wherein an offset potential exists between said locally grounded gauge circuit and said remotely grounded resistor, said gauge circuit comprising:

means for varying said excitation current at a predetermined frequency;

a detector configured to respond to variations in said sense potential thereby to produce an output proportional to the variations in said excitation current; and

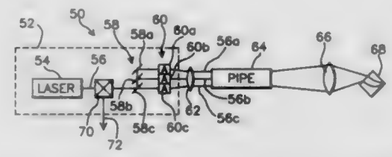
capacitor coupling means for passing said sense potential variations to said detector wherein said capacitor has a value selected to couple said variations in said sense potential and to reject said offset potential.

5,059,917

OPTICAL PHASE CONJUGATION APPARATUS INCLUDING LIGHT PIPE FOR MULTIPLE BEAM COMBINATION

Ronald R. Stephens, Westlake Village, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 20, 1990, Ser. No. 511,665
Int. Cl.[5] H01S *3/098, 3/98*
U.S. Cl. 330—4.3 **22 Claims**



16. A phase conjugate, master oscillator power amplifier apparatus including light source means for producing a light beam, beam splitting means for splitting said light beam to produce a plurality of input light beams, optical power amplifier means for amplifying the input light beams, said power amplifier means causing each of said input light beams to diverge over a range of divergences in accordance with the degree of amplification imparted to said input light beams, at least two of said input light beams having differing divergences, and phase conjugate mirror means for phase conjugating the input light beams which emerge from the power amplifier means and reflecting the phase conjugated light beams back through the power amplifier means, characterized by comprising:

optical light pipe means having a first end facing the power amplifier means and a second end facing the phase conjugate mirror means;

first optical means disposed between the power amplifier means and the light pipe means for focussing the input light beams fully onto the first end of the light pipe means within the boundaries of the first end, said light pipe means being long enough for said input beam to overlap and each substantially completely fill the face of the light pipe means at said second end; and

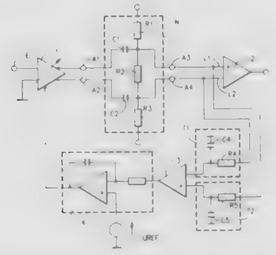
second optical means disposed between the second end of the light pipe means and the phase conjugate mirror means for focussing said overlapping light beams emerging from the second end of the light pipe means into the phase conjugate mirror means at a predetermined position therein and with a predetermined beam diameter.

5,059,918

PROCEDURE AND APPARATUS FOR AMPLIFICATION OF A BURST SIGNAL

Martin Brahms, Hanover; Andreas Hennig, Garbsen, and Andreas Timmermann, Ronnenberg, all of Fed. Rep. of Germany, assignors to ke Kommunikations Elektronik, Hanover, Fed. Rep. of Germany

Filed Oct. 2, 1990, Ser. No. 591,629
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1989, 3934384
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—11 **4 Claims**



1. A procedure for amplification of a burst signal, comprising the steps of:

feeding the burst signal to a controllable amplifier (**1**) with two symmetrical outputs (A1, A2), at which two output signals mirror-symmetrical with respect to each other are present;

adjusting the two output signals so that a predetermined d.c. voltage difference (ΔU) is provided for the formation of matched signals;

forming the arithmetic mean values of the two matched signals and feeding the mean values to a comparator (**3**);

feeding the output value of the comparator (**3**) to an integrator (**4**), to which a reference voltage (UREF) is also supplied; and

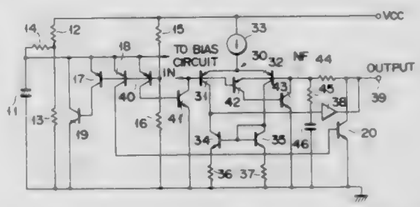
adjusting the amplifier (**1**) in a compensating direction by means of an output from the integrator (**4**) in the event of a deviation between the mean values of the two matched signals.

5,059,919

AMPLIFYING APPARATUS WITH A DIFFERENTIAL AMPLIFIER STAGE

Hitoshi Kinoshita, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed May 30, 1990, Ser. No. 530,619
Claims priority, application Japan, May 31, 1989, 1-138921
Int. Cl.[5] H03H *3/45*
U.S. Cl. 330—51 **9 Claims**



1. An amplifying apparatus with a differential amplifier stage including a pair of transistors respectively supplied with an input signal to be amplified and a negative feedback signal corresponding to an amplified output signal, said apparatus comprising:

power-off detecting means for detecting cutoff of a power supply voltage to be supplied to said differential amplifier stage;

first input control means for inhibiting an input to said differential amplifier stage when a power-off state is detected by said power-off detecting means;

input detecting means, controlled based on an input signal to said differential amplifier stage, for detecting inhibition of said input signal; and

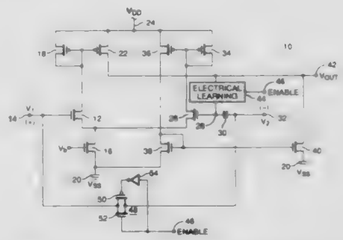
second input control means for inhibiting said negative feedback signal to said differential amplifier stage when said input detecting means detects said input signal being inhibited.

5,059,920

CMOS AMPLIFIER WITH OFFSET ADAPTATION

Janeen D. W. Anderson, Fremont; Carver A. Mead, Pasadena; Timothy P. Allen, Los Gatos, and Michael F. Wall, Sunnyvale, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 486,336, Feb. 28, 1990, which is a continuation-in-part of Ser. No. 282,176, Dec. 9, 1988, Pat. No. 4,935,702. This application May 18, 1990, Ser. No. 525,764
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **18 Claims**



1. An analog MOS auto-compensating amplifier fabricated on a semiconductor substrate as a part of an integrated circuit, including:

an input node,

an output node,

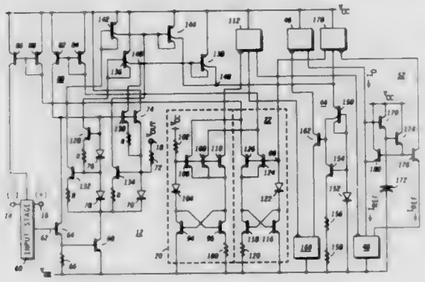
an amplifier having an input connected to a floating node and an output connected to said output node,
an MOS capacitor having a first plate connected to said input node and a second plate connected to said floating node,
a source of an electrical control signal,
electron injecting means coupled to said floating node and responsive to said electrical control signal for injecting electrons on to said floating node while the voltage on said floating node is within the normal operating range of said amplifier, said electron injecting means operating to vary the rate of injection of electrons on to said floating node in response to the magnitude of said electrical control signal.

5,059,921

AMPLIFIER HAVING TWO OPERATING MODES

Robert L. Vyne, and Thomas D. Petty, both of Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 27, 1990, Ser. No. 558,927
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—261 **10 Claims**



10. An amplifier responsive to an input signal applied thereto for providing output drive current at an output thereof, comprising:
an input stage to which the input signal is applied;
an output stage coupled to the input stage for providing the output drive current;
circuit means coupled with said output stage for sensing a portion of the output drive current to provide an enabling signal; and
bias circuit means for biasing said input stage and said output stage of the amplifier in a quiescent operating mode absent the applied input signal and being responsive to said enabling signal for biasing the amplifier in an active operating mode.

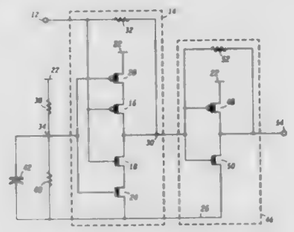
5,059,922

HIGH SPEED LOW OFFSET CMOS AMPLIFIER WITH POWER SUPPLY NOISE ISOLATION

John K. Mahabadi, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 19, 1990, Ser. No. 615,117
Int. Cl.[5] H03F *3/30*
U.S. Cl. 330—264 **22 Claims**

15. A method of increasing the amplitude of an input signal applied at an input of an amplifier circuit, comprising the steps of:
amplifying the input signal with first and second operating potentials for providing an output signal;
isolating said first operating potential from the input signal with a first transistor operating in its linear region in response to a fixed reference potential for reducing the noise coupled therebetween;
isolating said second operating potential from the input signal with a second transistor operating in its linear region in response to said fixed reference potential for reducing the noise coupled therebetween; and



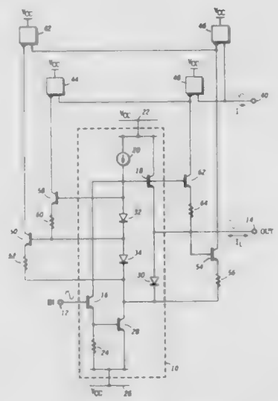
feeding back said output signal to the input of the amplifier circuit for controlling said amplification of the input signal.

5,059,923

FRACTIONAL LOAD CURRENT DETECTOR

Thomas D. Petty, and Robert L. Vyne, both of Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 1, 1990, Ser. No. 607,962
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—273 **10 Claims**



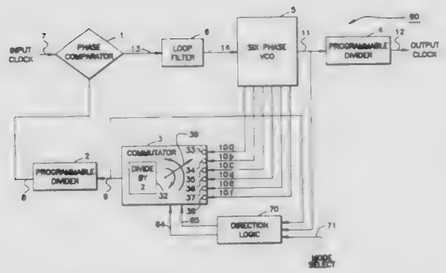
1. A circuit for detecting current flow in a load utilization circuit the latter of which includes an output circuit for sourcing and sinking current at an output thereof and a bias circuit across which a substantially constant potential is developed, the circuit comprising:
first sensing means coupled to the bias circuit for providing first and second output currents at respective first and second outputs the magnitudes of which are proportional to a current flowing through the bias circuit;
second sensing means coupled to said first output of said first sensing means and being responsive to current being sourced from the output circuit for providing a current at an output of the circuit the magnitude of which is proportional to said current that is sourced from the output circuit; and
third sensing means coupled to said second output of said first sensing means and being responsive to the output circuit sinking current for providing a current at said output of the circuit the magnitude of which is proportional to said sinking current.

5,059,924

CLOCK ADAPTER USING A PHASE LOCKED LOOP CONFIGURED AS A FREQUENCY MULTIPLIER WITH A NON-INTEGER FEEDBACK DIVIDER

William S. JenningsCheck, Orangevale, Calif., assignor to Level One Communications, Inc., Folsom, Calif.

Continuation-in-part of Ser. No. 425,709, Oct. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 268,240, Nov. 7, 1988, abandoned. This application Apr. 26, 1990, Ser. No. 514,596
Int. Cl.[5] H03L *7/099, 7/18*
U.S. Cl. 331—1 A **16 Claims**



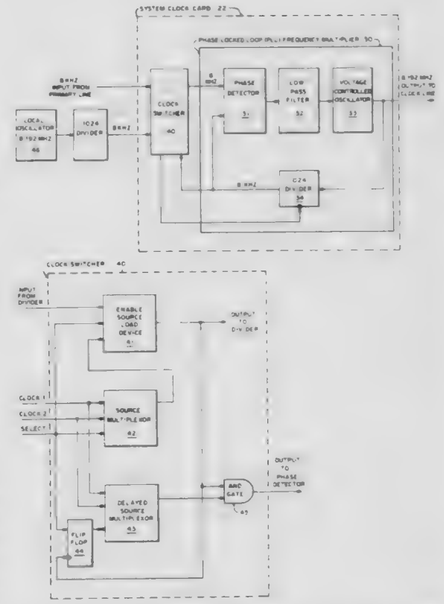
1. A frequency multiplier, comprising:
a) an input port, the input port being adapted to receive an input signal having a first frequency;
b) a voltage controlled oscillator, the voltage controlled oscillator generating a plurality of oscillator signals, each oscillator signal having a substantially identical second frequency, the second frequency being a nonintegral multiple of the first frequency, each oscillator signal having a different phase relationship to every other oscillator signal;
c) frequency translation means, the frequency translation means being cooperatively coupled to the plurality of oscillator signals so as to permit shifting the oscillator signal from the second frequency to a third frequency, the third frequency being an integral multiple of the first frequency and the first frequency being related to the second frequency by a ratio, the frequency multiplier further comprising commutator means, the commutator means permitting the ratio between the first frequency and the second frequency to be altered;
d) divider means, the divider means being cooperatively coupled to the frequency translation means, the divider means dividing the third frequency by an integer so as to produce a divider output signal substantially equal to the first frequency; and
e) a phase comparator, the phase comparator having a first input cooperatively coupled to the input port, the phase comparator having a second input cooperatively coupled to the divider output signal, the phase comparator generating an error voltage proportional to the phase difference between the input signal and the divider output signal, the error voltage being cooperatively coupled to the voltage controlled oscillator, thereby causing the voltage controlled oscillator to generate an oscillator signal which, after processing by the frequency translation means and the divider means, is of a frequency substantially equal to the first frequency.

5,059,925

METHOD AND APPARATUS FOR TRANSPARENTLY SWITCHING CLOCK SOURCES

John D. Weisbloom, Los Gatos, Calif., assignor to Stratacom, Inc., Campbell, Calif.

Filed Sep. 28, 1990, Ser. No. 590,668
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—1 A **10 Claims**



1. A circuit for maintaining a stable output from a phase-locked loop frequency multiplier circuit, comprising a phase detector, a voltage controlled oscillator, and a divider, when switching an input to said phase-locked loop frequency multiplier circuit from a first input signal to a second input signal, comprising:
(a) a load circuit coupled to receive as a first input an output of said divider of said phase-locked loop frequency multiplier circuit, said load circuit changing its output load signal from a first type of state to a second type of state when said second input signal is selected and the output of said divider changes from said first type of state to said second type of state, said divider of said phase-locked loop frequency multiplier circuit coupled to receive said load signal, said divider cleared when said load signal is in said second type of state;
(b) a first switch coupled to receive said first input signal and said second input signal, said first switch for switching its output from said first input signal to said second input signal when said second input signal is selected, said load circuit coupled to receive as a second input said first switch output signal, said load circuit changing said load signal from said second type of state to said first type of state when said second input signal is selected and said first switch output signal changes from said first type of state to said second type of state, said load signal in said first type of state causing said divider of said phase-locked loop frequency multiplier circuit to continue counting;

(c) a second switch coupled to receive said first input signal, said second input signal, and said load signal, said second switch for switching its output from said first input signal to said second input signal when said second input signal is selected and said load signal changes from said second type of state to said first type of state;

(d) a logic circuit coupled to receive said load signal and said second switch output signal, said logic circuit for generating the logical AND of said load signal and said second switch output signal, said logic circuit output coupled to the input of said phase-locked loop frequency multiplier circuit.

5,059,926

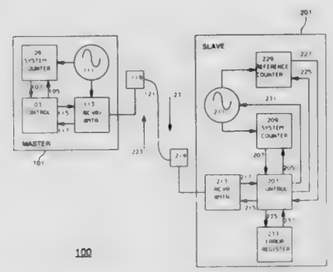
FREQUENCY SYNCHRONIZATION APPARATUS

Casimir Karczewski, Lake Villa, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 13, 1991, Ser. No. 668,575

Int. Cl.[5] H03L *7/00, 7/06*

U.S. Cl. 331—47 **13 Claims**



1. In a system comprising a master having a master oscillator of frequency f_m and a master counter responsive to said master oscillator, said master coupled to a slave via a channel, said slave having a slave oscillator of frequency f_s and a slave counter responsive to said slave oscillator, a method of adjusting said slave oscillator, comprising the steps of:

at said master:

(a) sending a first signal to said slave;

(b) after Δt has elapsed since sending said first signal as in master

step (a), sending a second signal to said slave, where Δt is predetermined;

at said slave:

(a) receiving said first signal;

(b) upon receiving said first signal, resetting said slave counter;

(c) receiving said second signal;

(d) upon receiving said second signal, determining the slave counter value;

(e) computing an error $= \frac{\text{slave counter value} - \delta}{\delta}$, where δ is equal to the expected slave counter value for Δt time;

(f) adjusting $f_s = f_s(1 - \text{error})$.

5,059,927

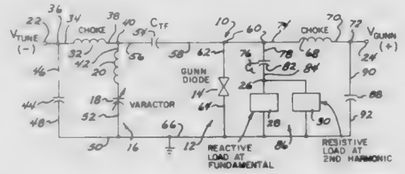
MICROWAVE OSCILLATOR WITH REDUCED PHASE NOISE

Leonard D. Cohen, Brooklyn, N.Y., assignor to All Systems, Inc., Deer Park, N.Y.

Continuation of Ser. No. 399,774, Aug. 28, 1989, Pat. No. 4,973,921. This application Jun. 7, 1990, Ser. No. 534,735

Int. Cl.[5] H03B *9/12*

U.S. Cl. 331—77 **26 Claims**



1. A method for reducing phase noise in an oscillator operational in the millimeter wave and microwave range, comprising providing a lumped element active circuit including an active element with a negative resistance, providing a lumped element resonator circuit coupled to said active circuit and affording resonant circuitry in combination therewith, reducing phase noise by enhancing Q of said resonant circuitry by reactively terminating fundamental frequency oscillation and increasing stored fundamental frequency energy in said resonant circuitry.

5,059,928

MODE TRANSFORMER FOR MICROWAVE ENERGY TRANSMISSION CIRCUIT

Georges Mourier, Le Port Marly, and Aaron Bensimhon, Boulogne, both of France, assignors to Thomson CSF, Puteaux, France

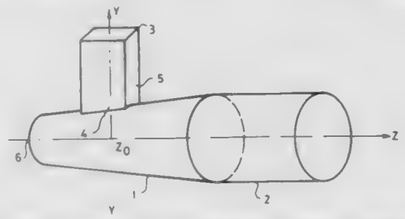
PCT No. PCT/FR89/00002, § 371 Date Jul. 13, 1990, § 102(e) Date Jul. 13, 1990, PCT Pub. No. WO89/06869, PCT Pub. Date Jul. 27, 1989

PCT Filed Jan. 6, 1989, Ser. No. 536,643

Claims priority, application France, Jan. 13, 1988, 88 00298

Int. Cl.[5] H01P *1/16*

U.S. Cl. 333—21 R **7 Claims**



1. Mode transformer for a microwave energy transmission circuit, comprising:

a conical tube, interposed between an electromagnetic wave source operating in a predetermined frequency band and transmitting energy in a first propagation mode, and a waveguide transmitting energy in a second unique propagation mode, the second propagation mode being different from the first propagation mode; wherein,

a large end of said conical tube is connected to the waveguide;

said electromagnetic wave source is connected to said conical tube via a lateral opening and excites a region of said conical tube where the conical tube has a cross section smaller than that of the waveguide; and

at a center of the lateral opening, dimensions of the cross section of the conical tube are cut-off dimensions for the second unique propagation mode at a central frequency of the operating band frequency.

5,059,929

DIELECTRIC RESONATOR

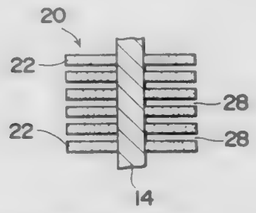
Hiroaki Tanaka, Nagaokakyo, Japan, assignor to Murata Mfg., Co. Ltd., Japan

Continuation of Ser. No. 398,174, Aug. 24, 1989, abandoned. This application Sep. 14, 1990, Ser. No. 582,793

Claims priority, application Japan, Aug. 24, 1988, 63-210081; Sep. 29, 1988, 63-127713[U]

Int. Cl.[5] H01P *7/10*

U.S. Cl. 333—219.1 **13 Claims**



1. A dielectric resonator comprising:

a conductive case having a plurality of walls which together define an inner space;

a support member within said inner space and joined to a wall of said conductive case; and

a dielectric resonance unit having a longitudinal axis and a transverse axis perpendicular thereto and including a plurality of dielectric plates mounted on said support member such as to be longitudinally spaced from each other with no other body interposed between said plates and such that said plates are spaced from all of said walls.

5,059,930

ELECTROMAGNETIC CONTACTOR AND FABRICATION METHOD THEREFOR

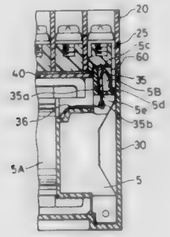
Shigeharu Ootsuka, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1990, Ser. No. 497,615

Claims priority, application Japan, Mar. 29, 1989, 1-76989

Int. Cl.[5] H01H *67/02*

U.S. Cl. 335—131 **8 Claims**



1. An electromagnetic contactor comprising:

a coil spool in which a movable iron core is movably mounted and in which a coil is wound;

a cover in which a fixed contact is fixedly mounted and in which a crossbar having a movable contact is slidably mounted;

a mechanical link which is pivotally held by said coil spool and which mechanically links said movable iron core with said crossbar;

an engaging portion of said cover, said engaging portion being in engagement with said coil spool;

a coil terminal which is fixedly mounted in said cover and which includes an end part; and

a contact terminal which has an elastic portion and which forms an electrical connection between said coil terminal and said coil by contact between said elastic portion and said end part, said contact between said elastic portion and said end part biasing said engaging portion into engagement with said coil spool.

5,059,931

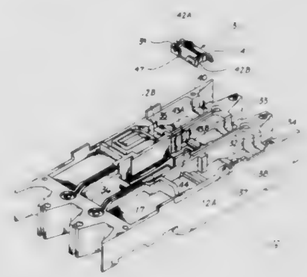
MOLDED CASE CIRCUIT BREAKER COVER INSERT

David J. Lesslie, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Aug. 27, 1990, Ser. No. 572,829

Int. Cl.[5] H01H *67/02*

U.S. Cl. 335—132 **11 Claims**



1. A circuit breaker comprising:

a molded plastic case and cover;

an operating mechanism within said case;

a pair of separable contacts arranged on corresponding fixed and movable contact arms within said case arranged for becoming separated by operation of said operating mechanism upon occurrence of an overcurrent condition through a protected circuit;

an arc chute within said case cooling and quenching an intense arc that occurs upon separation of said contacts, said arc chute extending from a bottom of said case to an interior recess within said cover;

an insert within said interior recess contacting a top part of said arc chute and trapping said arc chute between said cover and said case; and

a pair of barriers formed within said recess extending between opposing endwalls on said cover, said barriers including first means attaching said insert to said cover.

5,059,932

QUICK-ACTION CIRCUIT BREAKER ASSISTED BY A CONTROL CIRCUIT

Henri Bonhomme, Ans, Belgium, assignor to Acec Transport S.A., Charleroi, Belgium

Filed Jun. 26, 1989, Ser. No. 371,223

Claims priority, application European Pat. Off., Jun. 27, 1988, 88870113.3

Int. Cl.[5] H01H *53/00*

U.S. Cl. 335—147 **16 Claims**

1. A quick-action circuit breaker comprising:

(A) a repulsion coil;

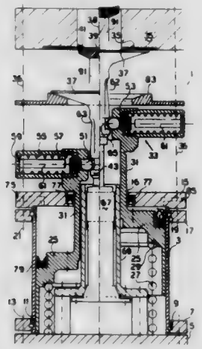
(B) contacts which are movable from an open state to a closed state;

(C) a contact bridge which supports said contacts;

(D) a repulsion disk which is connected to said contact bridge and which is repulsed by the action of said repulsion coil; and

(E) means for holding said contacts in said closed state, said means for holding comprising a retaining device which abuts said repulsion disk and a retaining spring which exerts a biasing force on said repulsion disk via said retaining device, which biasing force tends to retain said repulsion disk in a position in which said contacts are in their

closed state, wherein said retaining device exerts a force on said repulsion disk which is sufficient to resist an imposed contact pressure and wherein said retaining device retracts when said repulsion disk is repulsed by said repulsion coil.

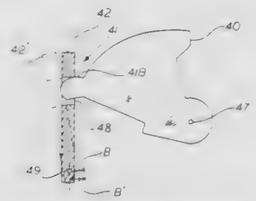


5,059,933

MOLDED CASE CIRCUIT BREAKER OPERATING CRADLE CONFIGURATION

Roger N. Castonguay, Terryville, and David Arnold, Chester, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 14, 1990, Ser. No. 582,683
Int. Cl.[5] H01H *9/20*
U.S. Cl. 335—167 **4 Claims**



1 A molded case circuit breaker comprising:

a plastic cover joined to a plastic case;

a pair of separable contacts within said case controlled by an operating mechanism;

a pair of springs within said operating mechanism arranged for driving said contacts to their open position;

a latch system coupled with said operating mechanism restraining said operating mechanism from separating said contacts until occurrence of an overcurrent condition of predetermined magnitude, said latch system includes a primary latch having a cradle slot receiving said latching end of said cradle operator and a second latch interacting with said primary latch to thereby prevent rotation of said cradle operator, said primary latch rotated about a first pivot located a first distance from said cradle slot to move from a latched position to an unlatched position to thereby release said cradle operator from said primary latch.

said cradle operator radial surface defines a radius of curvature resulting in a constant moment of force exerted between said primary latch and said cradle operator as said primary latch moves from said latched to said unlatched position; and

a cradle pivotally-arranged within said case and connecting between said latch system and said operating mechanism, said cradle operator having a pivot end and an opposing latching end said latching end interacting with said latch system whereby said cradle operator releases from said latch system to allow said operating mechanism to separate said contacts upon occurrence of said overcurrent condition, said latching end having a radial surface engaging an edge of said cradle slot.

5,059,934

CROSS-COIL ROTARY MAGNET DEVICE

Roland Sudler, Frankfurt am Main, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1989, Ser. No. 389,970
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1988, 3838464
Int. Cl.[5] H01F *7/14*
U.S. Cl. 335—272 **14 Claims**



1. A cross-coil rotary magnet device comprising

a shaft, and a rotor which is mounted on the shaft for rotation together with the shaft, the rotor including a permanent magnet with diametrically opposite permanent magnet poles, there being a coil arrangement on the rotor with coils which are arranged at an angle of preferably 90° from each other;

a coil body which is divided into two parts and which is configured for receiving the coils;

bearings for the shaft of the rotor, the bearings being disposed in said coil body and holding the shaft such that the shaft protrudes from at least a front end of the coil body;

an intermediate body, and tab-shaped clips for a clamping attachment of the intermediate body to the coil body, the clips being provided on said front end, said front end being on one of the two parts of the coil body; and

a plurality of connecting pins, and bored holes in the coil body for receiving the connecting pins, the bored holes being parallel to the shaft.

5,059,935

SOLENOID COIL APPARATUS

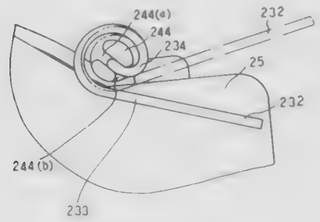
Koichi Ohsawa, and Masanori Ohmi, both of Anjo, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 8, 1990, Ser. No. 564,281
Claims priority, application Japan, Aug. 8, 1989, 1-205099
Int. Cl.[5] H01F *5/00, 15/10*
U.S. Cl. 335—282 **7 Claims**

1. A solenoid coil apparatus for an internal combustion engine starter comprising:

a bobbin having a cylindrical body, a flange formed on an end of said cylindrical body, and a post which is formed on said flange, and said post having a slit extending longitudinally through said post;

a core provided on a surface of said bobbin flange; and a coil wound about said cylindrical body, and having an end portion which is inserted into said slit of said post;



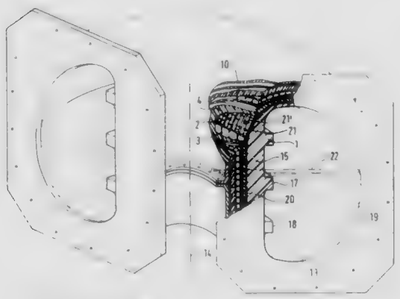
wherein said end portion of said coil has a fixed portion which is fixed to said core, and a wound portion which is loosely wound around said post by a predetermined space.

5,059,936

TOROIDAL HYBRID TRANSFORMER

François Moisson-Franckhauser, Bretigny sur Orge, France, assignor to Alsthom, Paris, France

Filed May 5, 1989, Ser. No. 347,619
Claims priority, application France, May 5, 1988, 88 06039
Int. Cl.[5] H01F *27/08*
U.S. Cl. 336—55 **7 Claims**



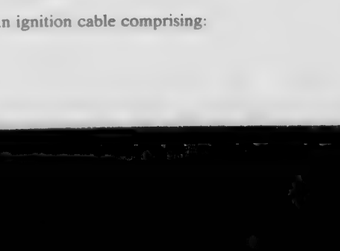
1. A toroidal hybrid transformer comprising: a primary winding of conductor turns which is superconducting in operation, a secondary winding which is non-superconducting, thermal and electrical insulation means separating said primary and secondary windings, and a strength member supporting said primary winding for withstanding centripetal forces exerted on the primary winding by electrodynamic force created by electrical current flowing through said primary winding, said strength member supporting the primary winding being disposed inside the conductor turns of said primary winding and comprising means for mechanically coupling the strength member to at least that portion of each conductor turn which lies adjacent to the axis of symmetry of the toroidal transformer, thereby transmitting the centripetal forces exerted of the primary winding to the strength member.

5,059,937

SWITCH ASSEMBLY

Richard E. Welch, Lexington, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Oct. 23, 1990, Ser. No. 602,462
Int. Cl.[5] H01H *37/04, 37/52*
U.S. Cl. 337—380 **11 Claims**



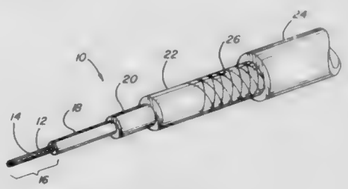
1. In a thermostatic switch assembly including a switch case and a disc cup, said switch case including a peripheral wall having an outer surface and an open end, a flange extending radially outwardly from said outer surface of said peripheral wall adjacent said open end thereof, said disc cup having an open end portion closely receiving said flange, said flange and said open end portion of said disc cup having non-circular cooperative peripheral shapes with cooperative abutment surfaces for preventing relative rotation between said switch case and said disc cup, said flange having an outer flange terminal end facing toward said disc cup and having a predetermined flange thickness, said open end portion of said disc cup in which said flange is closely received having a depth greater than said flange thickness and said open end portion of said disc cup having a terminal end portion rolled over on the opposite site of said flange from said flange terminal end.

5,059,938

WIRE WOUND IGNITION CABLE AND METHOD FOR MAKING SAME

Karl M. Brown, Port Huron, Mich., assignor to Prestolite Wire Corporation, Farmington Hills, Mich.

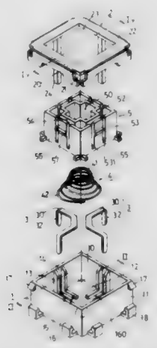
Filed Apr. 16, 1990, Ser. No. 509,145
Int. Cl.[5] H01C *10/08, 7/00*
U.S. Cl. 338—66 **24 Claims**



1. An ignition cable comprising:

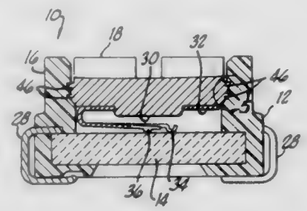
a longitudinal strength member;
a wire helically wound around said longitudinal strength member to produce a conductive core having a predetermined resistivity;
a thin layer of adhesive material circumjacent said conductive core;
a layer of cross-linkable semi-conductive thermosetting material extruded over said thin layer of adhesive material and said conductive core to produce a composite core, said thin layer of adhesive material promoting a strippable bond between said cross-linkable semi-conductive thermosetting material and said conductive core;
a layer of insulating material overlaying said composite core; and
a protective jacket overlaying said layer of insulating material.

5,059,939
VARIABLE RESISTOR DEVICE
I-Long Wu, 2F, No. 85-1, Ning-Han St., Taichung City, Taiwan
Filed Sep. 11, 1990, Ser. No. 580,596
Int. Cl.[5] H01C *10/06*
U.S. Cl. 338—93 10 Claims



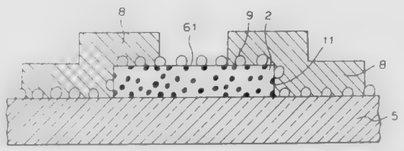
1. A variable resistor device, comprising:
a hollow push button seat member having an open top end, a base portion, and a confining wall extending upward from said base portion and defining a receiving space;
at least one resistor piece mounted inside said seat member, each said resistor piece having a contact portion with two ends lying on top of said base portion and at least two leg portions, one of said leg portions projecting outward through said base portion from each end of said contact portion;
a spiral spring resistor disposed inside said receiving space above said resistor piece, said spring resistor having a plurality of concentric turns of varying diameters, said concentric turns including a topmost turn and a bottom endmost turn electrically isolated from said resistor piece; and
a push button having a liked body slidably fitted in and guided by said seat member, said slide body having a top portion protruding upward through said open top end of said seat member, and a key cap mounted on said top portion of said slide body, said slide body having a bottom wall connected to said topmost turn,
wherein when pressure is applied on said push button, said spring resistor is compressed causing said concentric turns other than said topmost turn and said bottom endmost turn to contact said contact portion of said resistor piece, the number of said concentric turns contacting said resistor piece being varied according to the amount of pressure applied on said push button.

5,059,940
SINGLE TURN POTENTIOMETER WITH DIRECT ROTOR-TO-HOUSING SEAL
Ronald E. Thomas, Jr., Alta Loma, Calif., assignor to Bourns, Inc., Riverside, Calif.
Filed Jan. 24, 1990, Ser. No. 469,639
Int. Cl.[5] H01C *10/32*
U.S. Cl. 338—164 21 Claims



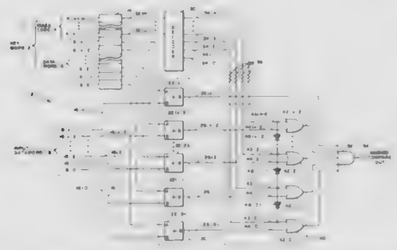
1. In a potentiometer, of the type having a substrate with a resistive element and a plurality of metallized conductive elements thereon, a rotor carrying conductive wiper means for electrically contacting the resistive element and at least one of the metallized conductive elements, and housing means containing the substrate and the rotor, a portion of the housing means forming a cavity that receives the rotor, the cavity having an interior wall surface that is engageable with a peripheral edge of the rotor, the improvement comprising:
sealing means, formed on the peripheral edge of the rotor and on the interior wall surface of the cavity, for creating a fluid-tight sealing engagement between the peripheral edge and the interior wall surface.

5,059,941
ELECTRODE STRUCTURE FOR A THICK FILM RESISTOR
Eishi Gofuku, and Mitsuyuki Takada, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 19, 1990, Ser. No. 584,602
Claims priority, application Japan, Sep. 19, 1989, 1-243003
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—307 2 Claims



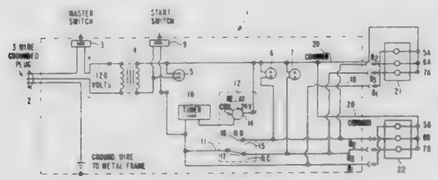
1. A resistor device, comprising:
a substrate,
a thick film resistor upon said substrate, said thick film resistor including minute conducting RuO_2 particles dispersed in and partially diffused into lead borosilicate glass, whereby said glass is semiconducting, surface portions of said thick film resistor being acid-etched surface portions with conducting RuO_2 exposed on said surface portions;
thin film electrodes on said surface portions, providing a contact resistance between said electrodes and said surface portions which is much lower than the resistance of said device, whereby said contact resistance remains unchanged.

5,059,942
BIT MASKING COMPARE CIRCUIT
James L. Burrows, Merrimack, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.
Filed Jan. 3, 1990, Ser. No. 460,649
Int. Cl.[5] G06F *7/02*
U.S. Cl. 340—146.2 4 Claims



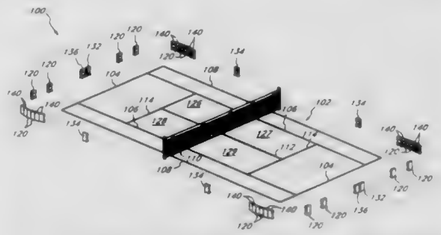
1. A masked compare circuit for comparing a first N-bit dataword to a second N-bit dataword, N being a positive integer, the circuit comprising:
a decoder for receiving an M-bit mask code and generating an output signal identifying a bit position, K, derived from the M-bit mask code, M and K being positive integers; and
a comparator module responsive to the decoder output signal for comparing the N−K+1 most significant bits of the first dataword to corresponding most significant bits of the second data word, the comparator module generating an output signal having a first value when all of the compared bits are the same and having a second value when any of the compared bits is different,
wherein the comparator module includes:
an array of N comparators, each comparator of the comparator array for comparing a different bit of the first dataword to a corresponding bit of the second dataword, the comparator array generating an N-bit match signal which identifies all bit positions of the first and second datawords that match;
an array of gates responsive to the decoder output signal for generating a masked match signal by setting the first K least significant bits of the match signal to indicate a match; and
an N-input AND gate for receiving the masked match signal and producing the comparator module output signal therefrom.

5,059,943
CONTROL UNIT FOR INDICATING THE STATUS OF A PROCEDURE
Peter J. LoBello, 130 Beechwood Dr., Mamaroneck, N.Y. 10543
Filed Mar. 15, 1990, Ser. No. 493,782
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—309.4 16 Claims



1. A control unit for indicating the status of a procedure comprising:
a first indicator responsive to application of power to said control unit, said first indicator signifying that the start of the procedure is imminent;
a second indicator responsive to a first control signal, said second indicator signifying that the procedure has commenced;
a third indicator responsive to a second control signal, said third indicator signifying that the procedure is complete; and
control means for generating the first and second control signals so that only one of said second and third indicators is operable after the procedure has commenced.

5,059,944
TENNIS COURT BOUNDARY SENSOR
Pedro M. Carmona, Avenida San Jeronimo 1006-8, San Jeronimo Lidice, Delegacion Magdalena Contreras, Mexico, D. F., Mexico
Filed Aug. 2, 1989, Ser. No. 389,065
Int. Cl.[5] A63B *61/00*
U.S. Cl. 340—323 R 26 Claims

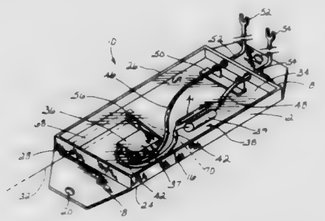


1. A out-of-bounds sensor for ball courts defined by boundary lines comprising:
at least one first light emitter providing a first light beam substantially parallel to a boundary line;
at least one first light receptor which is collinear to said first light beam for receiving said first light beam;
at least one second light emitter providing a second light beam substantially parallel to said first light beam, wherein said second light beam is elevated above said first light beam for disabling said first light emitter when said second light beam is interfered;
at least one second light receptor which is collinear to said second light for receiving said second light beam; and
at least one timing circuit coupled to said first light receptor for determining the duration of interference in said first light beam;
wherein said first light emitter and said first receptor are a plurality of light emitters and receptors providing the first light beam as substantially parallel light beams forming a first plane parallel to a surface of said ball court, and
wherein said second light emitter and said second receptor are a plurality of light emitters and receptors providing the second light beam as substantially parallel light beams forming a second plane parallel to and above said first plane.

5,059,945
REMOTE ALARM MODULE AND ALARM SYSTEM
Michael R. Scheele, and Max R. Ginther, both of Fort Wayne, Ind., assignors to Allen Protection Services, Inc., Fort Wayne, Ind.
Continuation of Ser. No. 206,038, Jun. 13, 1988, abandoned.
This application May 1, 1990, Ser. No. 517,432
Int. Cl.[5] B60R *25/00*; G08B *13/12*
U.S. Cl. 340—426 22 Claims

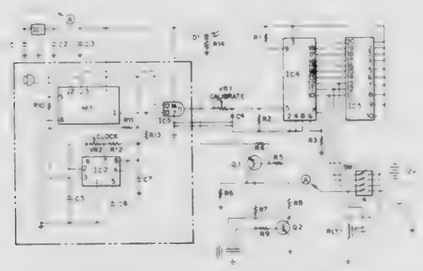
1. A remote alarm module comprising a base, said base defining a line passage, a transient generator, said transient generator generating a single electric transient following the connection of said transient generator to an electric circuit, a normally open switch, said switch being joined to said base in

registry with said passage, said switch being connected electrically in series with said transient generator, said transient generator and said switch having terminals for connecting the same to said electric circuit, said switch being connected to a line receiver, said line receiver joining said passage, said line receiver moving said switch between a second position



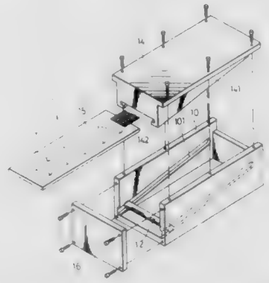
wherein said terminals are electrically isolated from each other and a first position wherein said terminals are in an electrically conductive relationship, said base completely encasing said transient generator and said switch except for said passage defined by said base, said passage extending through said base, said passage being linearly related to said line receiver.

5,059,946
ULTRASONIC OBSTACLE DETECTOR
Richard R. Hollowbush, 38 Conrad Rd., Fleetwood, Pa. 19522
Filed May 10, 1989, Ser. No. 350,149
Int. Cl.[5] G08G *1/16;* **G01S** *15/00*
U.S. Cl. 340—435 **21 Claims**



1. An ultrasonic detector for detecting an object in a manually operated vehicle having a stern which defines a pathway when the vehicle is traveling in reverse comprising:
(a) means for generating and transmitting an ultrasonic wave externally sternward from the vehicle;
(b) means to focus the transmitted ultrasonic wave into a defined beam pattern the means comprising:
(1) a primary convex reflector inclined at a defined angle of reflectance disposed in the path of the wave and having a defined radius of convexity;
(2) a hood over the reflector;
(3) a secondary reflector combination consisting of first and second planar baffles disposed upon the convex surface centrally upward which are inclined away from each other vertically at a defined angle and are spaced apart so as to divide the ultrasonic wave into 3 portions;
(c) means for receiving an echo of the ultrasonic wave and converting it into audio-visual signals indicative of the distance of an object from the vehicle's stern.

5,059,947
VEHICLE BRAKE WARNING DEVICE
Shih-Chiang Chen, No. 42, Hua-Hsin Rd., Ling-Ya Dist., Kaohsiung City, Taiwan
Filed Mar. 19, 1990, Ser. No. 495,608
Int. Cl.[5] B60Q *1/50*
U.S. Cl. 340—467 **2 Claims**

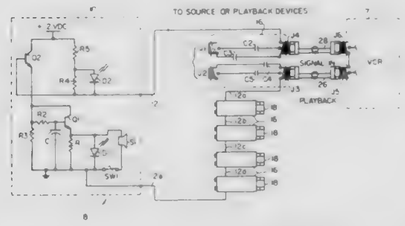


1. A vehicle brake warning device for use in a vehicle with a brake pedal, comprising:
a detector for producing different electrical signals in response to the magnitude of the inertia force experienced during braking, said detector including a rolling switch actuator and a plurality of switches at different predetermined positions, the inertia force experienced during braking causing said switch actuator to selectively move one of said switches for actuation; a housing and an inclined support plate in said housing to hold said switches, said housing having an inclined rail extending adjacent to and along the length of said support plate to hold and guide said switch actuator, said switch actuator being moved along said rail by a distance depending upon the magnitude of the inertia force;
a control circuitry electrically connected to said detector and receiving said electrical signals from the same, said control circuitry having an output dependent upon said signals, wherein said control circuitry includes a capacitor and a plurality of resistors having different resistances, said resistors being respectively connected in series with said switches, said capacitor having a charging time which depends upon the magnitude of the resistance of the resistor in series with one of the switches actuated by said switch actuator, said output of said control circuitry depending upon said charging time of said capacitor; and
a warning device activated by said output of said control circuitry;
whenever a pressing force is exerted on said brake pedal to reduce the speed of said vehicle, said detector experiences an inertia force whose magnitude depends upon the speed of said vehicle, said detector sends out an appropriate signal dependent upon the magnitude of the inertia force to said control circuitry, said control circuitry activating said warning device to send out a warning signal which depends upon the magnitude of the inertia force.

5,059,948
ANTI-THEFT SECURITY DEVICE AND ALARM
Claude Desmeules, Indianapolis, Ind., assignor to Tronics 2000, Inc., Indianapolis, Ind.
Filed Jul. 26, 1990, Ser. No. 557,979
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—568 **17 Claims**

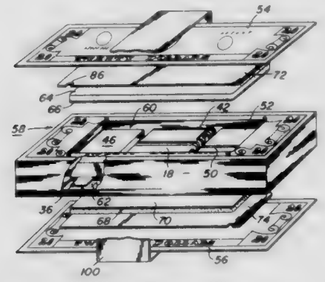
1. An anti-theft device for detecting the disconnection of an electronic device which includes a first connector and a second connector, the first and second connectors each having a signal conductor and a common conductor and wherein the common conductors of the first and second connectors are electrically shorted, said anti-theft device comprising:

circuit means for producing an alarm signal, said circuit means including a loop input and a loop output, said circuit means producing an alarm signal when said loop input is electrically disconnected from said loop output;
a source connector connected to the first connector, said source connector including a signal conductor and a common conductor which are connected to the respective conductors of said first connector, said loop input also connected to the common conductor of said source connector;



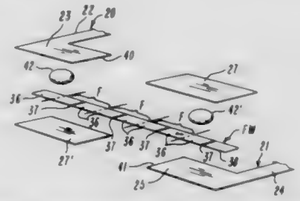
a playback connector connected to the second connector, said playback connector including a signal conductor and a common conductor which are connected to the respective conductors of said second connector, said loop output also connected to said playback connector common conductor; and
alarm means responsive to said alarm signal for indicating when said alarm signal is present.

5,059,949
CURRENCY ALARM PACK
Louis J. Caparoni, Audubon; Robert H. Banfield, Philadelphia; Neal B. Cohen, Flourtown; Homer W. Fogle, Jr., Wallingford, all of Pa., and Michael J. McCann, Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.
Filed May 10, 1990, Ser. No. 521,665
Int. Cl.[5] G08B *13/14;* **B42D** *15/00*
U.S. Cl. 340—571 **27 Claims**



1. An alarm pack comprising:
an elongated stack of sheets of paper including at least one top sheet, at least one bottom sheet, and a group of intermediate sheets between the top and bottom sheet, the group of intermediate sheets having a hollowed-out central portion providing a space within the stack for alarm components, the top and bottom sheets having the appearance of conventional banknotes, and the peripheries of the intermediate sheets of the stack having the appearance of the peripheries of conventional banknotes;
means for holding said top, bottom and intermediate sheets together in the stack while allowing flexure of the stack about at least one axis which is transverse to the direction of elongation of the stack and parallel to the surfaces of the sheets of paper in the stack, and which intersects said hollowed-out central portion;
a set of alarm components arranged within said space in a series extending in the direction of elongation of the stack; and
flexible means providing electrical interconnections between the alarm components;
said alarm components being movable relative to one another to allow flexure of the stack about said transverse axis.

5,059,950
DEACTIVATABLE ELECTRONIC ARTICLE SURVEILLANCE TAGS, TAG WEBS AND METHOD OF MAKING TAG WEBS
Robert Perchak, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Sep. 4, 1990, Ser. No. 577,228
Int. Cl.[5] G08B *13/14;* **H01Q** *1/36*
U.S. Cl. 340—572 **17 Claims**

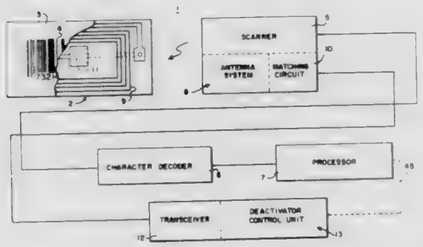


1. A flexible deactivatable tag for use in an electronic article surveillance system, the tag comprising: a flexible carrier, a flexible resonant circuit- on the carrier and responsive to receipt of a first energy level signal to emit an alarm signal to indicate the presence of the resonant circuit in an interrogation zone, wherein the resonant circuit includes two circuit portions, a flexible fuse including a film of non-conductive plastics material, a coating of conductive material on the film and spaced-apart connectors on the conductive material, wherein the conductive material which connects adjacent connectors constitutes a fuse member, wherein the fuse member is responsive to a second energy level signal at an energy level higher than the first energy level signal to cause deactivation of the resonant circuit, and means for electrically connecting the circuit portions through the fuse.

5,059,951
METHOD AND APPARATUS FOR INTEGRATED DATA CAPTURE AND ELECTRONIC ARTICLE SURVEILLANCE
George W. Kaltner, Mt. Holly, N.J., assignor to Checkpoint Systems, Inc., Thorofare, N.J.
Filed Nov. 14, 1988, Ser. No. 271,001
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—572 **29 Claims**

19. An apparatus including means for capturing data from label means associated with an article, wherein said article further includes means for actuating an electronic article surveillance means,
said apparatus further including means for deactivating said actuating means,
said capturing means and said deactivating means comprising an integral unit,
said capturing means being a hand held scanner having a gun

for accessing said label means, and said deactivating means being positioned within forward portions of said



gun and including a radio-frequency field-generating antenna system.

5,059,952

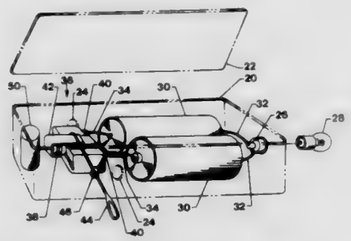
SURVIVOR LOCATOR LIGHT WITH WATER-ACTIVATED SWITCHES

Samuel C. Wen, 30-15 50th St., Woodside, N.Y. 11377

Filed Apr. 27, 1990, Ser. No. 515,625

Int. Cl.[5] G08B *23/00*; H01H *29/00*

U.S. Cl. 340—573 **12 Claims**



1. Apparatus comprising:

means for closing a circuit to activate a light source which is electrically connected to said circuit;

means for preventing said closing means from closing said circuit, said preventing means physically touching said closing means, at least part of said preventing means disintegrating, when in contact with a fluid containing water, so as to activate said light source; and

means for removing said preventing means so as to activate said light source when said apparatus is free from said fluid.

5,059,953

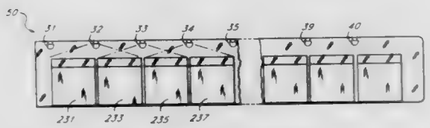
INFRARED OVERHEAT AND FIRE DETECTION SYSTEM

Michael L. Parsons, San Dimas; Peter L. Hutchins, Roland Heights, and Yeong-Jeng V. Tseng, Phillips Ranch, all of Calif., assignors to Pacific Scientific Company, Duarte, Calif.

Filed Apr. 10, 1990, Ser. No. 507,656

Int. Cl.[5] G08B *17/12*

U.S. Cl. 340—578 **38 Claims**



1. A system for detecting fire comprising:

an aircraft having a cargo bay capable of holding cargo in cargo containers;

a plurality of cargo containers in said bay;

a control unit attached to said aircraft; and

a plurality of thermal imaging modules coupled to said control unit and positioned in direct view of said cargo containers, said thermal imaging modules having an infrared detector for sensing an overheat condition on the outside of said cargo bay containers indicating a fire within said containers and outputting a signal to said control unit, said thermal imaging modules also sized and positioned in said cargo bay to not interfere with the loading and unloading of said cargo bay.

5,059,954

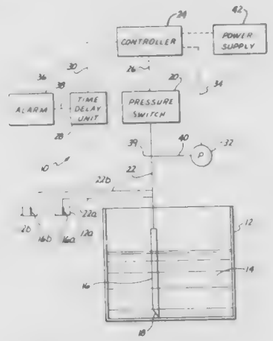
LIQUID LEVEL SENSING SYSTEM

Paul M. Beldham, El Toro; Erik W. Jones, Irvine, and Larry G. Bremer, Orange, all of Calif., assignors to Knight Equipment Corp., Costa Mesa, Calif.

Filed Dec. 21, 1990, Ser. No. 633,045

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—614 **9 Claims**



1. A liquid level sensing system for sensing a liquid level in a container, comprising:

a probe at least partially receivable in the container, said probe being adapted to have a compressible fluid therein with the pressure of the fluid being related to the level of the liquid in the container;

means responsive to the pressure in the probe dropping below a predetermined level for supplying fluid under pressure to the probe; and

means responsive to the pressure in the probe remaining below said predetermined level for a predetermined time to provide an indication of low liquid level in the container.

5,059,955

APPARATUS FOR PRODUCING VIDEO SIGNALS

Kimio Yamamura, Tokyo, Japan, assignor to Hudson Soft Co. Ltd., Hokkaido, Japan

Filed Aug. 30, 1988, Ser. No. 239,201

Claims priority, application Japan, Sep. 2, 1987, 62-219989; Sep. 2, 1987, 62-219990

Int. Cl.[5] G09G *1/28*

U.S. Cl. 340—701 **3 Claims**

1. An apparatus for providing video signals, comprising:

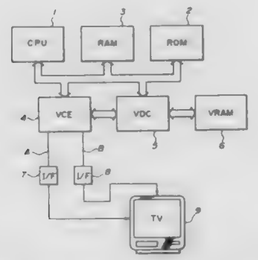
a color table RAM for storing RGB color data at addresses defined by video data, said addresses including a first group of addresses for background RGB color data and a second group of addresses for sprite RGB color data, each group of said addresses including plural blocks each including plural addresses, and said video data including a

bit designating one of said first and second groups, a predetermined number of bits designating one of said plural blocks, and a predetermined number of bits designating an address in a designated block;

a circuit for supplying RGB analog signals to a display means selected from a CRT of a television set and a RGB monitor, said RGB analog signals being obtained by a digital to analog conversion of RGB color data read from said color table RAM;

a matrix ROM for storing luminance signals and color difference signals at addresses each defined by said RGB color data, addresses of said matrix ROM being designated by said RGB color data read from said color table RAM; and

a circuit for supplying a composite signal to a receiving circuit of a television set, said composite signal being obtained by an analog luminance signal to which a luminance signal read from said matrix ROM is converted, and color carriers generated from analog color difference signals, to which color difference signals read from said matrix ROM are converted, in accordance with a modulation by use of color subcarriers.



5,059,956

INDICATION DISPLAY UNIT FOR VEHICLES

Tadashi Iino, Susono, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Sep. 5, 1989, Ser. No. 402,404

Claims priority, application Japan, Sep. 21, 1988, 63-122829[U]; Oct. 27, 1988, 63-139191[U]

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—705 **8 Claims**



1. An indication display unit for a vehicle comprising:

an indicating means provided on a steering column for indicating driving information of the vehicle;

a reflecting means provided at a dashboard for reflecting information indicated by said indicating means from a surface of said indicating means to a driver, said reflecting means including a first shaft protruding from at least one lateral end thereof and a second shaft provided at an upper portion; and

a drive mechanism for shifting a position of said reflecting means in an upward and downward direction to adjust a height thereof for reflecting said information at an effective angle toward the driver in accordance with a vehicle speed, said drive mechanism includes

a drive motor that rotates in accordance with the vehicle speed,

a male threaded rod that transmits the rotation of the motor, and

an elevation means having

a female threaded portion to be engaged with said male threaded rod,

a hole to be engaged with said first shaft of said reflecting means, and

a guide means formed with a guide slot having an open upper end, said second shaft to be engaged with said guide slot of said guide means when said drive mechanism moves said reflecting means in said downward direction.

5,059,957

DISPLAY APPARATUS FOR VEHICLE

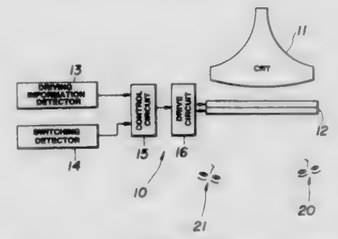
Tsuyoshi Todoriki; Shigeru Okabayashi, both of Kanagawa, and Masao Sakata, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 27, 1989, Ser. No. 329,225

Claims priority, application Japan, Mar. 30, 1988, 63-74816

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—705 **14 Claims**



1. An apparatus for providing images from a display source within a vehicle comprising:

filter means, having variable transmission factor, for adjusting visual recognition area of the images appearing on the display so that light from the images directed toward a driver's seat of the vehicle is interrupted;

first detecting means for detecting vehicle run status to provide a signal indicative thereof;

second detecting means for detecting an ambient light level to provide a signal indicative thereof; and

control means for controlling said filter means so as to provide no image from the display toward the driver's seat during driving in response to the signal output from said first detecting means, said control means controlling the transmission factor of said filter means based on the signal output from said second detecting means regardless of said vehicle run status.

5,059,958

MANUALLY HELD TILT SENSITIVE NON-JOYSTICK CONTROL BOX

Jordan S. Jacobs, and Marvin Jacobs, both of 38 Sunrise Ave., Ormond Beach, Fla. 32176

Filed Apr. 10, 1990, Ser. No. 507,249

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—706 **15 Claims**

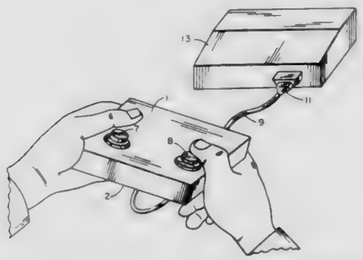
1. A manually held tilt sensitive control box device for producing electrical control signals, comprising:

an enclosure for said control box device structured in a boxlike shape wherein main structural members of said enclosure are rigidly disposed relative to each other;

means disposed within said enclosure for producing said

electrical control signals corresponding to different tilt attitudes;

said enclosure shaped for holding with both hands symmetrically disposed at opposing left and right sides of said enclosure to facilitate tilting said enclosure around an axis of said enclosure to produce said electrical tilt attitude control signals for control of an apparatus; and



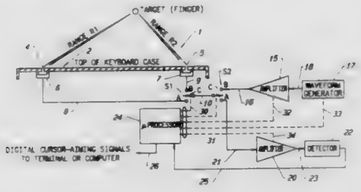
said enclosure having at least one planar horizontal top surface for auxiliary applications that include providing an operator of said control box device with a visual reference to facilitate attaining a neutral tilt attitude position with respect to a horizon.

5,059,959

CURSOR POSITIONING METHOD AND APPARATUS

George Barry, Saratoga, Calif., assignor to Seven Oaks Corporation, Saratoga, Calif.

Filed Jun. 3, 1985, Ser. No. 740,641
Int. Cl.[5] G09G *5/08*
U.S. Cl. 340—709 **32 Claims**



1. A control system for use with a display screen having a movable graphic element comprising:

a keyboard;

means for generating a field of signals which extends generally vertically from the rear of said keyboard; and

means responsive to reflections of said signals from an object moving in said field for changing the position of said graphic element on said display screen from a first position to a second position as a function of the direction and speed of movement of said object in said field.

5,059,960

CONTROL PANEL

Daniel J. Rosenberg, and Thomas C. Littlefield, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1986, Ser. No. 945,140
Int. Cl.[5] G03G *15/00*
U.S. Cl. 340—111 **14 Claims**

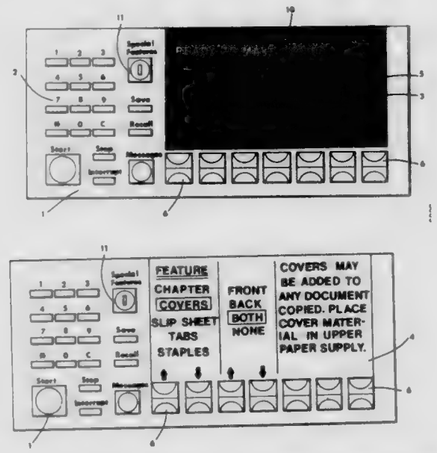
1. A control panel for a copier, printer or the like, comprising

electronically addressable display means,

an overlay for said display means, said overlay including permanet light attenuating portions indicating operator options in response to backlighting, and

means for indicating a particular option by actuating the electronically addressable display means to selectively backlight the light attenuating portion indicating that option,

said panel having first and second modes of operation in which:



in said first mode, said overlay overlies the display means and the display means is actuable to selectively backlight operator options permanently indicated in said overlay, and

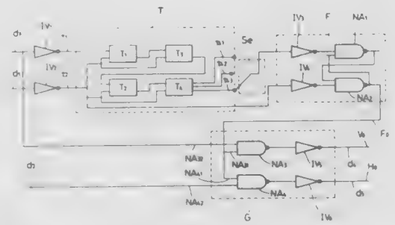
in said second mode, said overlay does not overlie the display means and the display means is actuable to directly display information.

5,059,961

SCREEN BLANKER FOR A MONITOR OF A COMPUTER SYSTEM

Te J. Cheng, 3rd Fl., 238 Chuang Ching Rd., Taipei, Taiwan

Filed Aug. 21, 1989, Ser. No. 397,059
Int. Cl.[5] G09G *3/02*
U.S. Cl. 340—720 **1 Claim**



1. A screen blanker for a video monitor of a computer system having a CPU, a video RAM connected to said CPU, and a CRT controller connected to said CPU, said video monitor being connected to said CRT controller and said screen blanker, said video monitor having a first input terminal and a second input terminal for receiving a vertical synchronizing signal and horizontal synchronizing signal respectively, said screen blanker comprising:

a first input terminal, a second input terminal and a third input terminal, said first input terminal being connectable between said CPU and said video RAM for receiving a memory write/read signal from said video RAM, said second input terminal and third input terminal being connectable to said CRT controller, for respectively receiving the horizontal synchronizing signal and the vertical synchronizing signal from said CRT controller;

a first output terminal and a second output terminal for providing said vertical synchronizing signal and horizontal synchronizing signal, respectively, to said first and second input terminals of said video monitor;

a timer comprising a first counter, a second counter, a third counter and a fourth counter, said counters being interconnected to provide timing intervals, a first input terminal of said first counter being connected to an output terminal of a first inverter, and an input terminal of said first inverter forming said third input terminal of said screen blanker for receiving the vertical synchronizing signal from said CRT controller, a first input terminal of said second counter being connected to an output terminal of a second inverter, and an input terminal of said second inverter forming said first input terminal of said screen blanker for receiving the memory write/read signal from said video RAM, said fourth counter being provided with a first output terminal, a second output terminal and a third output terminal;

a time selector capable of being connected to a desired one of said first, second, or third output terminals of said fourth counter of said timer;

a detector connected between said time selector and said first input terminal of said second counter of said timer, said detector comprising a third inverter, a fourth inverter and an RS flip-flop, said RS flip-flop being comprised of a first NAND gate and a second NAND gate, an output terminal of the second NAND gate forming an output terminal of said detector; and

a video signal controller connected to said output terminal of said detector and said third input terminal of said screen blanker, said video signal controller comprising a third NAND gate, a fourth NAND gate, a fifth inverter and a sixth inverter, said fifth inverter and said sixth inverter being respectively connected in series with said third NAND gate and said fourth NAND gate, a first input terminal of said third NAND gate and a first input terminal of said fourth NAND gate being connected to said output terminal of said detector, a second input terminal of said third NAND gate being connected to said third input terminal of said screen blanker, a second input terminal of said fourth NAND gate being connected to said second input terminal of said screen blanker, the output terminals of said fifth inverter and said sixth inverter forming, respectively, said first and second output terminals of said screen blanker.

5,059,962

DISPLAY SYSTEM

Kazuo Sekiya, Tokyo, and Yuichi Shiraishi, Yamato, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1989, Ser. No. 412,029
Int. Cl.[5] G09G *5/02*
U.S. Cl. 340—793 **8 Claims**

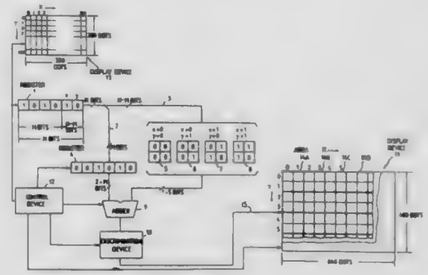
1. A display system for converting first gray level signals of N bits each, representing 2^N gray levels, to second gray level signals representing 2^M gray levels, where N is an integer larger than or equal to 2 and M is an integer satisfying $N>M\geqq 1$, said system comprising:

means for separating each of said first gray level signals of N bits into higher M bits and lower N−M bits;

2^{N-M} tables each of which stores a distinctive set of P×Q modification values satisfying $P\times Q\geqq 2^{N-M}$;

means for selecting one of said tables using said N−M bits;

means for respectively adding said M bits and each of the modification values of said selected table to generate P×Q second gray level signals; and



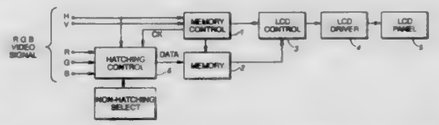
means for supplying said second gray level signals to a display device of 2^M gray levels.

5,059,963

TWO-LEVEL DISPLAY DEVICE WITH HATCHING CONTROL MEANS

Hirofumi Fukuoka, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 1, 1988, Ser. No. 239,435
Claims priority, application Japan, Jan. 12, 1988, 63-5549; Jan. 13, 1988, 63-5278
Int. Cl.[5] G09G *3/00, 3/36*
U.S. Cl. 340—793 **3 Claims**



1. A display device for displaying an image in two levels, comprising:

pattern generation means for receiving red, green and blue color video signals and for generating hatching patterns of the two levels, corresponding individually to a plurality of colors represented by said color signals;

selection means for selecting one of said colors; and

inhibiting means, coupled to said pattern generation means and to said selection means, for inhibiting generation of said hatching pattern corresponding to the one selected color selected by said selection means and for generating a non-hatching pattern in one level of the two levels for said selected color instead of the inhibited hatching pattern.

5,059,964

PREDICTIVE WINDSHEAR WARNING INSTRUMENT

Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

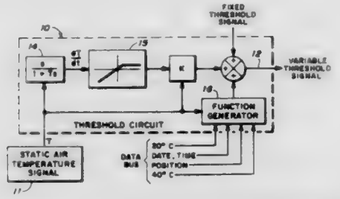
Continuation of Ser. No. 34,807, Apr. 3, 1987, Pat. No. 4,905,000. This application Dec. 1, 1989, Ser. No. 444,513
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—968 **4 Claims**

1. In an aircraft having means for providing a signal representative of a windshear condition, means for providing a signal representative of the altitude of the aircraft, means for providing a static air temperature signal representative of the temperature of the air through which the aircraft is flying and means for providing a warning in the event that the signal

representative of a windshear condition exceeds a threshold signal, the improvement comprising:

means responsive to the altitude representative signal for providing a standard temperature representative signal that is determined by the altitude of the aircraft;

threshold setting means for comparing the temperature signal and the standard temperature representative signal



and decreasing the value of the threshold signal when the static air temperature representative signal decreases at a greater rate than the standard temperature representative signal, wherein said threshold setting means includes means for lowering the value of the threshold signal for a predetermined geographic position of the aircraft which indicates a windshear condition is probable.

5,059,965

METHOD OF AND DEVICE FOR SELECTION OR ENTRY OF A DESTINATION IN A MOTOR VEHICLE SYSTEM

Georg Geiser, Karlsruhe, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

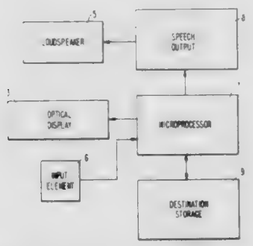
PCT No. PCT/DE88/00168, § 371 Date Sep. 1, 1989, § 102(e) Date Sep. 1, 1989, PCT Pub. No. WO88/08119, PCT Pub. Date Oct. 20, 1988

PCT Filed Mar. 18, 1988, Ser. No. 415,338

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1987, 3712360

Int. Cl.[5] G08G 1/.23

U.S. Cl. 340—995 9 Claims



1. A method of selection or entry of a destination in a motor vehicle navigation system including manual input means having horizontal and vertical components, an optical display, a speech output, and computer means, said method comprising the steps of selecting a letter position with the horizontal component; running through a letter alphabet with the vertical component until a letter corresponding to a letter determining a destination name appears at the selected letter position; indicating the selecting and running steps on the optical display; effecting acoustic acknowledgement of the letter to be entered; and effecting one of selection of the destination and entry of the destination by computer means by effecting the horizontal and vertical components; and determining a subset of letters that can follow a predetermined letter and running only through said subset of letters in a letter position immediately following a position of the predetermined letter.

5,059,966

SYNTHETIC APERTURE RADAR SYSTEM

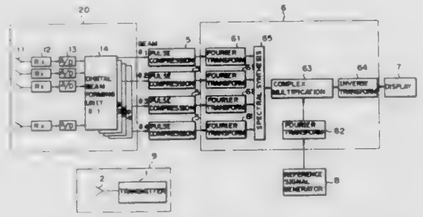
Takahiko Fujisaka, and Yoshimasa Oh-Hashi, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1990, Ser. No. 477,346

Claims priority, application Japan, Feb. 10, 1989, 1-31657

Int. Cl.[5] G01S 13/90

U.S. Cl. 342—25 1 Claim



1. In a synthetic aperture radar system comprising transmission means mounted on a moving radar platform for transmitting radio waves to and receiving them from a stationary object to be observed, reception means for receiving echo signals reflected by the object, pulse compression means for enhancing the range resolution of the received signals, azimuth compression means for enhancing the cross-range resolution, and reference signal generation means for generating a reference signal required for performing the azimuth compression, said azimuth compression means including a first Fourier transform means for performing Fourier transform of the output of the pulse compression means, a second Fourier transform means for performing Fourier transform of the output of the reference signal generation means, a complex multiplication section for carrying out the complex multiplication of the outputs of said first and second Fourier transform means, and an inverse Fourier transform means for performing inverse Fourier transform of the output of the complex multiplication means, the improvement wherein said reception means is provided with a digital beam forming antenna for A/D converting and digitally processing the echo signals received through a plurality of antenna elements to simultaneously form a plurality of beams for reception directed in different directions, said pulse compression means being provided for respective outputs of the digital beam forming antenna, and the azimuth compression means being provided with first Fourier transform means for each of said respective outputs and also with a spectral synthesis means for synthesizing the spectra of the respective outputs to provide an output to the complex multiplication means.

5,059,967

APPARATUS AND METHOD FOR DISPLAYING WEATHER INFORMATION

Mark G. Roos, 11926 W. 49th Ter., Shawnee, Kans. 66216

Filed Mar. 27, 1990, Ser. No. 499,848

Int. Cl.[5] G01S 13/64, 7/22, 7/24

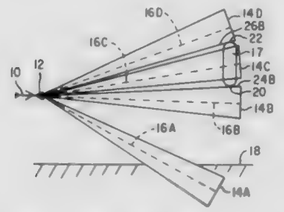
U.S. Cl. 342—26 6 Claims

1. A method for displaying information relating to a weather disturbance, and which information is obtained from weather radar equipment mounted on an aircraft, said weather radar equipment transmitting a beam that widens as it travels through space, comprising:

scanning a weather cell with said transmitted beam to obtain information relating to the position of the weather disturbance in space;

displaying the obtained information in the form of a display showing the position of the weather disturbance relative to reference marks positioned on the display, the position of the reference marks being related to the position of the aircraft and being distorted due to the widening of the transmitted beam;

developing a distortion factor based upon the beam being positioned straight ahead of the aircraft, whereupon the beam width extremities at a given range of the radar equipment extend substantially normal to the beam centerline;



using the developed distortion factor as an approximation for other positions of the beam relative to the aircraft for each range of the radar equipment, whereupon the developed distortion factor is a constant for all ranges; and

adjusting the position of the reference marks on the display to compensate for said distortion.

5,059,968

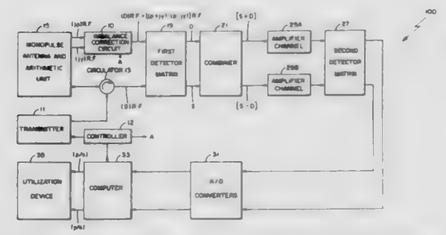
RADAR SYSTEM AND METHOD OF OPERATING SUCH SYSTEM

Bernard J. Thompson, Concord, Mass., and George R. Spencer, Bedford, N.H., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 11, 1990, Ser. No. 626,364

Int. Cl.[5] G01S 9/22

U.S. Cl. 342—152 14 Claims



1. A method of operating a monopulse receiver comprising the steps of:

(a) forming an elevation difference signal, p, and an azimuth difference signal, y;

(b) forming, during a first interval of time, a first composite signal comprising the elevation difference signal phase multiplexed with the azimuth difference signal and providing said first composite signal to an output terminal;

(c) forming, during a second interval of time following the first interval of time, a second composite signal comprising the elevation difference signal phase multiplexed with the azimuth difference signal delayed in phase by one hundred and eighty degrees and providing said second composite signal to the output terminal; and

(d) repeating steps (a), (b) and (c) during successively occurring intervals to provide a composite difference signal.

5,059,969

GPS SATELLITE SIGNAL TRACKING METHOD FOR GPS RECEIVERS

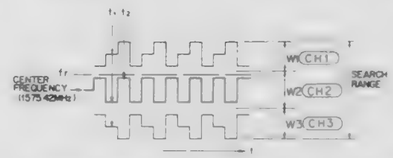
Shozaburo Sakaguchi, and Hitoshi Ando, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 7, 1990, Ser. No. 578,919

Claims priority, application Japan, Nov. 30, 1989, 1-308884

Int. Cl.[5] G01S 5/24, 5/02

U.S. Cl. 342—352 7 Claims



1. A satellite signal tracking method for a GPS receiver having a plurality of receiving channels, comprising the steps of:

selecting a GPS satellite, as a target, which is estimated to be at the maximum elevation angle when signals from all GPS satellites being tracked are interrupted for a specified period of time;

dividing a search range of satellite signal receiving frequency into a plurality of frequency bands;

assigning each of the divided frequency bands to each receiving channel; and

changing a search frequency of each receiving channel respectively within the assigned frequency band in order to search for a signal from the GPS satellite at the maximum elevation angle.

5,059,970

NAVIGATIONAL AID

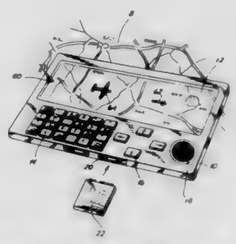
Dennis A. Raubenheimer; Dan C. Cawood; Geoffrey J. Rawlings; Etienne Rijkheer, all of Johannesburg, and Anthony D. B. Holderness, Randburg, all of South Africa, assignors to Invention Factory (Proprietary) Limited, Transvaal, South Africa

Filed Mar. 14, 1990, Ser. No. 493,330

Claims priority, application South Africa, Mar. 14, 1989, 89/1905

Int. Cl.[5] G01S 3/02

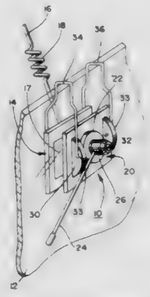
U.S. Cl. 342—451 11 Claims



1. A navigational aid comprising display means defining a display zone and adapated to display at least one symbol at a variable position in the display zone in reponse to control signals, manual input means comprising a keyboard operable by a user of the aid to generate input signals, and processor means adapted to accept input signals from the input means corresponding to the scale of a map, the speed of a craft, and a time value, to calculate the position of the craft relative to a reference point in terms of the input signals, and to generate display control signals representative of the position of the craft relative to the reference point so that a graphic display of

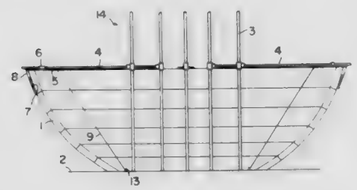
the position of the craft is generated in the display zone, the processor means further being adapted to calculate the distance between a cursor and a reference point and to generate display control signals representative of the distance between two points on the map corresponding to the positions of the cursor and the reference point.

5,059,971
CORDLESS ANTENNA
Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634
Filed Jul. 9, 1990, Ser. No. 550,324
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—713 **10 Claims**



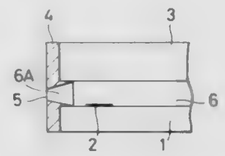
1. A cordless antenna for mounting on a motor vehicle's window, which comprises:
an outer RF transfer member having a first electrically conductive member on its underside for engagement with the outside of the window;
an outside radiator adapted to be located on the outside of the window and connected to said first electrically conductive member;
an inner RF transfer member having a second electrically conductive member on its underside for engagement with the inside of the window;
an inside radiator adapted to be located on the inside of the window and connected to said second electrically conductive member; and
movable connecting means for movably connecting said inside radiator to said inner RF transfer member.

5,059,972
METHOD FOR ASSEMBLING ELEMENTS TO A RADOME
Erik V. Heieren, Moltzaus vei, 3506 Royse, Norway
Filed Dec. 15, 1989, Ser. No. 451,443
Int. Cl.[5] H01Q *1/42*
U.S. Cl. 343—872 **4 Claims**



1. Method of constructing a generally spherical structure of part spherical elements into a radome comprising the steps of forming a first horizontal ring of the elements, applying glue between adjacent elements, mechanically joining the adjacent elements together in abutting relationship, arranging a hoop strap around the entire circumference of the ring, providing a vertical pressure to the ring of elements and tightening the hoop strap to maintain a vertical and radial pressure during the entire glue curing time to form said first horizontal ring, forming subsequent rings on a top of said first horizontal ring by gluing and mechanically joining the elements of each ring to each other and to an adjacent ring until the radome is completed.

5,059,973
INK JET HEAD FORMED BY BONDING A DISCHARGE PORT PLATE TO A MAIN BODY
Takashi Watanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 2, 1990, Ser. No. 473,824
Claims priority, application Japan, Feb. 3, 1989, 1-025547
Int. Cl.[5] B41J *2/14, 2/05, 2/165*
U.S. Cl. 346—1.1 **18 Claims**

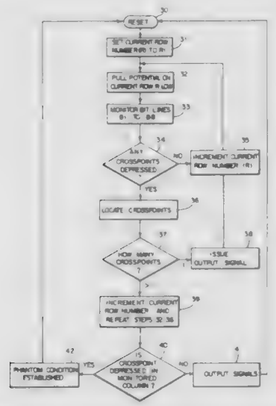


1. A process for preparing an ink jet head, the head having a discharge port plate having a discharge port provided therethrough for discharging ink, and an ink jet head main body having an opening on a face of the main body, the opening provided corresponding to the discharge port, an ink pathway communicated to the opening and an energy generating member for generating energy to be utilized for discharging ink from the discharge port, wherein said main body is bonded to said discharge port plate, said process comprising the steps of:
bonding a plate member which becomes the discharge port plate to the face of the ink jet head main body where the opening is provided;
applying a pressure on at least a portion of the plate member through which the discharge port is to be formed, the portion of the plate member being extruded into the opening of the main body; and
forming the discharging port through the plate member which becomes the discharge port plate.

5,059,974
METHOD FOR DETERMINING PHANTOM SWITCH CONDITION
Dennis Wu, Kao-Hsiung Hsien, China, assignor to Acer Incorporated, China
Filed Feb. 2, 1989, Ser. No. 305,946
Int. Cl.[5] H03M *11/00;* **G06F** *3/02;* **H04L** *1/00;* **G08C** *25/00*
U.S. Cl. 341—25 **7 Claims**

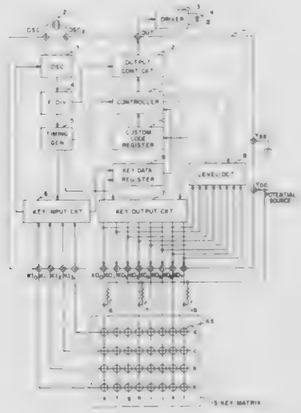
1. A method of determining a phantom switch condition in an encoder array and for controlling the issuance of array condition signals responsive to the presence or absence of a phantom switch condition, the array having a matrix of conductors set in intersecting rows and columns, said conductors being electrically interconnectable by a switch at each intersection of a row and column, said method comprising the steps of:
(a) placing the array in a condition in which actuation of the switches can be detected by scanning the rows and detecting switch actuation in the columns;
(b) scanning each row to detect whether two or more switches in the scanned row are actuated;
(c) if two or more switches in the scanned row are not detected as being actuated in step (b), issuing array condition signals in accordance with the actuated switch;

(d) if two or more switches are detected as being actuated in step (b), further detecting whether another switch in the same column as that of a switch detected in step (b) is actuated;



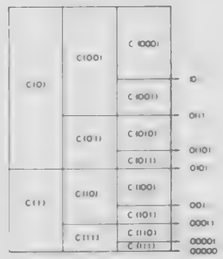
(e) if another switch is detected as being actuated in step (d), so that a phantom switch condition exists in the array, preventing issuance of array condition signals; and
(f) if another switch is not detected as being actuated in step (d), issuing array condition signals corresponding to all actuated switches in the array.

5,059,975
CONTROL SIGNAL GENERATION CIRCUIT FOR WIRELESS REMOTE CONTROL SIGNAL TRANSMITTER
Shigeyuki Nakatsuka, Tokyo, Japan, assignor to NEC Corporation, Japan
Continuation of Ser. No. 826,067, Feb. 4, 1986, abandoned. This application Apr. 19, 1988, Ser. No. 185,248
Claims priority, application Japan, Feb. 5, 1985, 60-20433
Int. Cl.[5] H04Q *9/00*
U.S. Cl. 341—26 **15 Claims**



1. A signal generator comprising a plurality of key scan output terminals, means for cyclically outputting scan signals to said key scan output terminals, means for coupling a part of said key scan output terminals to a potential source to provide a potential level or levels to said part of said key scan output terminals which is different from the potential levels of the remaining key scan out terminals when said scan signals are not outputted, means coupled to each individual output terminal of all of said key scan output terminals for detecting potential levels at each individual output terminal for all of the coupled key scan output terminals to determine an output data based upon a location within the coupled key scan output terminals of said part of said key scan output terminals which has or have potential level or levels which are different from the potential levels of the remaining key scan output terminals when said scan signals are not outputted, said output data comprising a code for each said individual key output scan terminal based upon its detected potential level, and means responsive to said output data of said detecting means for generating custom code data.

5,059,976
CODING METHOD OF IMAGE INFORMATION
Fumitaka Ono; Shigenori Kino; Masayuki Yoshida, and Tomohiro Kimura, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1990, Ser. No. 470,099
Claims priority, application Japan, Jan. 31, 1989, 1-21672
Int. Cl.[5] H03M *7/34*
U.S. Cl. 341—51 **6 Claims**



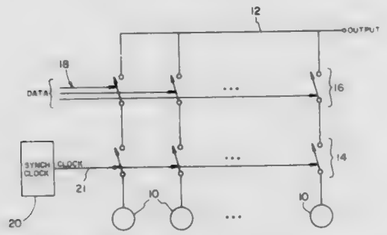
1. A method for coding information from a binary Markov information source by binary coding an output symbol sequence from said information source comprising less probable symbols (LPS) and more probable symbols (MPS), each having an occurrence probability, on a normalization number line, said method comprising the steps of;
a) storing in a memory storage device a normalization number line having a range from 0 to 1 which corresponds to said output symbol sequence,
b) keeping a desired calculation accuracy by expanding a range of the normalization number line which includes a mapping range by means of a multiple of a power of 2 when the mapping range becomes less than 0.5,
c) allocating a portion of said normalization number line as a predetermined mapping interval for said LPSs, said portion being proportional to the occurrence probability of said LPSs,
d) allocating the remaining portion of said number line as a mapping interval for said MPSs,
e) reassigning half of the LPS mapping interval above 0.5 to said MPS mapping interval when the LPS mapping range exceeds 0.5, and
f) repeating steps b, c, d and e.

5,059,977

SYNCHRONIZING SWITCH ARRANGEMENT FOR A DIGITAL-TO-ANALOG CONVERTER TO REDUCE IN-BAND SWITCHING TRANSIENTS

Ray M. Herman, Huntington Beach; Anthony L. McKay, Long Beach, and Andrew M. Chao, San Marino, all of Calif., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Aug. 3, 1990, Ser. No. 562,165
Int. Cl.[5] H03M 1/66
U.S. Cl. 341—144 27 Claims



1. A digital-to-analog converter, for converting a stream of input words comprising a plurality of high and low digital data bits received on a set of input lines at a sampling frequency into a consenter analog output signal on the converter output line, comprising:

electric signal means for producing a plurality of predetermined electrical signals such that an electrical signal of predetermined magnitude is associated with each bit of the data word to be converted;

data means responsive to a received data bit;

synchronizing means for connecting and disconnecting each electrical signal of the electrical signal means to the data means;

the data means connecting and disconnecting each electrical signal supplied by the synchronizing means to the output line in response to a received data bit; and

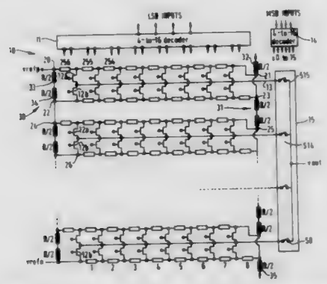
digital control means for controlling the synchronizing means such that the synchronizing means connects the electrical signals to the data means only when the data means is not responding to a received data bit.

5,059,978

RESISTOR-STRING DIGITAL TO ANALOG CONVERTERS WITH AUXILIARY COARSE LADDERS

Patrick Valdenaire, Golff-Juan, France, assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 20, 1990, Ser. No. 631,602
Int. Cl.[5] H03M 1/68
U.S. Cl. 341—145 5 Claims



3. A digital to analog converter for the conversion of a digital signal into a corresponding analog signal, comprising:

a resistive string of first resistive segments, said string having selectable nodes between segments, said selectable nodes including intermediate nodes wherein consecutive intermediate nodes are separated by a respective plurality of said segments;

switch means for selectively coupling at least one of the selectable nodes nodes to an output, said switch means comprising a two dimensional switching matrix having a plurality of sets of switches wherein one switch in each set is operable to connect a respective selectable node to a respective one of a plurality of selector lines and a further set of switches for coupling a selcted selector line to an output;

decoding means responsive to the digital signal for controlling the switches to couple the said at least one node to the said output, the decoding means comprising means responsive to a first group of digits for controlling said plurality of sets of switches and means responsive to a second group of digits for controlling said further set of switches;

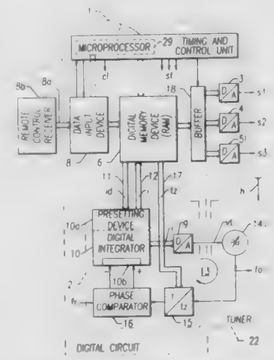
at least one auxiliary string of second resistive segments, said second resistive segments of the auxiliary string providing between said intermediate nodes substantially lower impedance than the respective first segments, connected in parallel with the said resistive string and having nodes coupled to intermediate nodes of the said resistive string.

5,059,979

DIGITAL CONTROL CIRCUIT FOR TUNING SYSTEMS WITH A PULSE DENSITY MODULATION DIGITAL TO ANALOG CONVERTER

Ljubomir Micic, Freiburg, Fed. Rep. of Germany; Daniel Mlynek, Grand Vaux, France; Ulrich Sieben, and Klaus Heberle, both of Klaus, Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Jun. 15, 1990, Ser. No. 538,954
Claims priority, application European Pat. Off., Jul. 6, 1989, 89112332
Int. Cl.[5] H03M 1/86
U.S. Cl. 341—152 27 Claims



1. A digital control circuit for tuning systems, comprising:

a tuning voltage generating device that generates a tuning voltage, said tuning voltage generating device including:

a first digital-to-analog convertor which provides said tuning voltage in response to an input; and

a digital integrator that provides an integration value as said input of said first digital-to-analog convertor, said digital integrator including a presetting device having an input;

a digital memory device that stores data for said tuning voltage, said digital memory device providing a preset data value as said input to said presetting device, said preset data value being equal to the steady-state value of said integration value at said tuning voltage;

a timing and control unit; and

a data input device; wherein said first digital-to-analog convertor comprises:

an adder having an n-bit input, a least-significant-bit input, and an (n+1)-bit output, said n-bit input receiving said integration value from said digital integrator;

a pulse density modulator having a data input that receives said integration value from said digital integrator and an output that provides said least-significant-bit input to said adder, said pulse density modulator being switched by a system cock;

a first static digital-to-analog convertor having an input that receives said (n+1)-bit output from said adder and having an output; and

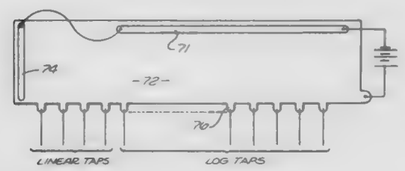
an analog smoothing filter having an input connected to said output of said first static digital-to-analog convertor and having an output that provides said tuning voltage.

5,059,980

NON-LINEAR ANALOG TO DIGITAL CONVERTER

Henry S. Katzenstein, Pacific Palisades, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 321,992, Mar. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,100, Aug. 11, 1988, Pat. No. 4,928,102. This application Oct. 12, 1990, Ser. No. 597,511
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] H03M 1/36, 1/58, 1/78
U.S. Cl. 341—159 62 Claims



29. In combination in an analog-to-digital converter,

a member provided with an electrically resistive material on one surface of the member, the member being defined by first and second side edges and top and bottom edges,

means for providing a reference voltage on the resistive material along the first side edge of the member,

means for providing an energizing voltage on the resistive material at particular positions near the corner displaced from the first side edge of the resistive material,

means for obtaining an output voltage at progressive positions along the second side edge of the resistive material,

means for providing an input voltage, and

means for comparing the input voltage with the output voltage at the progressive positions relative to the second side edge of the resistive material to provide an indication of the input voltage,

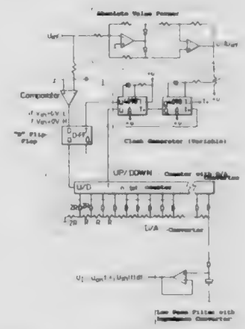
the progressive positions relative to the second side edge of the resistive material being substantially equally spaced relative to the second side edge to provide an exponential relationship in the voltage at the progressive positions with respect to the positions of such successive terminals.

5,059,981

ARRANGEMENT AND METHOD FOR COVERTING AN ANALOG VOLTAGE SIGNAL TO A DIGITAL SIGNAL UTILIZING THE ABSOLUTE VALUE OF THE ANALOG SIGNAL

Karl-Heinz Hauser, Bruckmuhl, Fed. Rep. of Germany, assignor to Messerschmitt Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 16, 1990, Ser. No. 480,884
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1989, 3906754
Int. Cl.[5] H03M 1/50
U.S. Cl. 341—164 8 Claims



1. An arrangement for integrating an analog voltage signal and for converting the analog voltage signal into a corresponding digital signal, whereby during a measuring cycle, the analog signal is fed via a comparator to a counting circuit, the counting circuit being directly connected to a variable clock frequency generator device controlled by the analog signal to provide tie-related control of the counting circuit, the comparator being connected to a "D"-flipflop, the "D"-flipflop having a Q output connected to an up-down control input of an up-down counter having a counting output connected to a digital-to-analog converter, the up-down counter having a counting input coupled to the Q output of the variable clock frequency generator, the variable clock frequency generator changing it clock frequency according to the absolute value of the analog voltage signal to be integrated.

5,059,982

BACK-SAMPLING ANALOG TO DIGITAL CONVERTER

Kantilal Bacrania, and Chong I. Chi, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

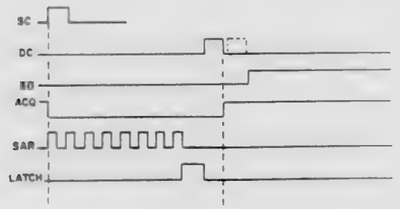
Continuation-in-part of Ser. No. 340,705, Apr. 20, 1989, Pat. No. 4,982,194. This application Sep. 24, 1990, Ser. No. 587,089
The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.
Int. Cl.[5] H03M 1/38
U.S. Cl. 341—172 12 Claims

1. A method of performing analog to digital conversion using an array, comprising in sequence:

terminating acquisition of an analog input signal upon occurrence of a start conversion command;

successively approximating a digital value of said analog input signal using said array;

fixing said digital value upon completion of said successive approximation; and



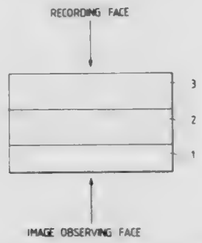
initiating acquisition of an analog input signal after fixing said digital value and before a leading edge of said start conversion command.

5,059,983

RECORDING MEDIUM AND RECORDING METHOD THEREFOR

Masahiko Higuma, Tokyo; Takahiro Mori, and Hiroshi Sato, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1989, Ser. No. 393,235
Claims priority, application Japan, Aug. 19, 1988, 63-206134
Int. Cl.[5] B41M *5/00*
U.S. Cl. 346—1.1 **32 Claims**



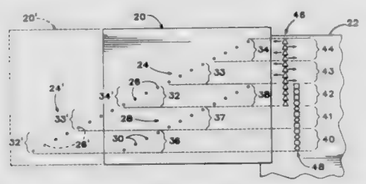
21. A process for forming an image comprising the step of applying droplets of an ink on a recording medium, said recording medium comprising an ink retaining layer and an ink transporting layer provided on a substrate of a resin film or a glass plate, said ink transporting layer comprising a surfactant (A) and an acetylene glycol and/or an acetylene alcohol (B).

5,059,984

METHOD AND APPARATUS FOR INTERLACED MULTICOLOR PRINTING

John S. Moore, Beaverton, Oreg.; Jeffrey J. Anderson, Camas, Wash., and Joern B. Eriksen, Oregon City, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 25, 1990, Ser. No. 528,518
Int. Cl.[5] B41J *2/21*
U.S. Cl. 346—1.1 **36 Claims**



1. A method of interlaced printing a multiple-color image on a print medium along print lines having centers spaced a predetermined interline distance apart, the method comprising the steps of:

printing simultaneously on a first set of adjacent print lines a first color and a second color different from the first color, such that the colors are printed on different lines and alternate along the lines of the first set; and

after completing the step of printing lines of the first set with the first and second colors, printing simultaneously on a second set of adjacent print lines the first and second colors such that the colors are printed on different lines and alternate along the lines of the second set, while printing on the first set of print lines the first color on lines not printed previously with the first color, whereby adjacent lines of the first set are not printed simultaneously with a color.

5,059,985

THERMAL PRINTING APPARATUS

Yukihisa Takeuchi, and Tetsuo Watanabe, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Apr. 3, 1987, Ser. No. 33,730
Claims priority, application Japan, Apr. 10, 1986, 61-82480
Int. Cl.[5] B41J *2/395;* **G01D** *15/16*
U.S. Cl. 346—76 PH **12 Claims**

1. A printing apparatus for printing on a recording medium by using an ink film which has an electrically resistive layer and an ink layer comprising an ink material which is thermally fusible and transferable to said recording medium, said printing apparatus comprising:

a printing head which has a substrate, and a plurality of recording electrodes disposed on said substrate, each of said plurality of electrodes including an electrical, contact portion for electrically contacting said electrically resistive layer of said ink film, each electrode cooperating with another of said electrodes to apply a voltage to said electrically resistive layer, thereby energizing a portion of the electrically resistive layer so that the energized portion of said electrically resistive layer generates Joule heat which softens ink material on the corresponding portion of said ink layer and transferring the softened ink material onto said recording medium;

said substrate comprising a material having a low wear resistance; and

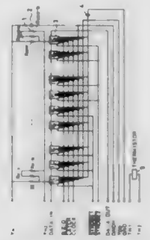
the electrical contact portion of each recording electrode consisting essentially of an electrically conductive material for resisting oxidation deterioration of the electrodes, said electrically conductive material selected from the group consisting of: a metal silicide; at least one metal selected from the group consisting of chromium, titanium, tantalum, zirconium, hafnium and niobium; at least one alloy which contains at least one of said metals; and at least one metal compound which contains at least one of said metals.

5,059,986

THERMAL HEAD

Katsuyasu Deguchi, Nara; Takatoshi Mizoguchi, Gojo; Takayuki Taminaga, Yamatokoriyama, and Akiyoshi Fujii, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Aug. 13, 1990, Ser. No. 566,506
Claims priority, application Japan, Aug. 28, 1989, 1-222173
Int. Cl.[5] H04N *1/032;* **B41J** *2/345, 2/335*
U.S. Cl. 346—76 PH **6 Claims**



1. A thermal head comprising:

a substrate;

two common electrodes provided in parallel on said substrate;

a thermal element array including a plurality of thermal elements linearly disposed between said common electrodes, one of each adjacent pair of the thermal elements being formed of a single thermal resistor while the other is formed of two thermal resistors connected in series;

a plurality of driver ICs provided along said thermal element array and including a plurality of drive circuit elements for controlling said thermal elements in accordance with a print signal;

a first wiring pattern provided on said substrate for connecting two ends of each said adjacent pair of thermal elements in common to a respective one of said drive circuit elements;

second and third wiring patterns provided on said substrate for connecting the other ends of each said pair of thermal elements separately to the two common electrodes.

5,059,987

SYNCHRONIZING SIGNAL GENERATING SYSTEM

Yoshinobu Takeyama, Kawasaki, and Susumu Imakawa, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 5, 1990, Ser. No. 504,883
Claims priority, application Japan, Apr. 11, 1989, 1-91535; May 23, 1989, 1-129833; May 23, 1989, 1-129834; May 24, 1989, 1-130953; Feb. 1, 1990, 2-22478
Int. Cl.[5] G01D *15/16;* **H04N** *1/21*
U.S. Cl. 346—108 **17 Claims**

1. A synchronizing signal generating system for a laser scanner, said synchronizing signal generating system comprising:

first means for emitting a first laser beam for scanning and a second laser beam for synchronization of scans by said first laser beam;

second means including a deflector for scanning a medium by said first laser beam;

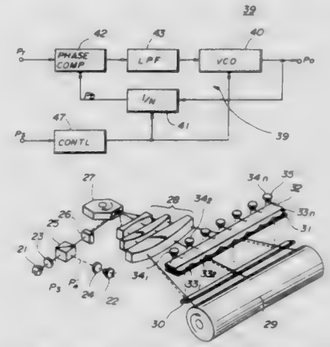
moving means for moving said medium at a predetermined speed;

third means for scanning a grating by said second laser beam, said grating having bright portions and dark portions alternately arranged along a scanning direction of said second laser beam with a predetermined pitch which is N times a recording density on said medium, where N is an integer;

a converging optical system for converging said second laser beam transmitted through said grating;

a light receiving system for receiving said second laser beam converged by said converging optical system and for generating a reference pulse signal;

fourth means for controlling said first means responsive to said reference pulse signal so as to synchronize a scan timing of said first laser beam, said fourth means comprising a phase locked loop circuit for generating a synchronizing signal which has a frequency N times a frequency of said reference pulse signal in response to said reference pulse signal, and control means for controlling a value of N depending on the recording density; and



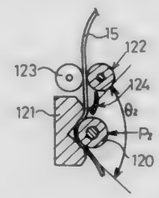
driving means for driving said first means in synchronism with said synchronizing signal depending on input information data.

5,059,988

IMAGE FORMING APPARATUS

Hidenori Hisada, Tokoname, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Jul. 3, 1990, Ser. No. 547,139
Claims priority, application Japan, Aug. 9, 1989, 1-93814[U]
Int. Cl.[5] G01D *15/24;* **B65H** *29/70, 31/00*
U.S. Cl. 346—134 **9 Claims**



1. An image forming apparatus for forming an image on a sheet based on at least one original sheet, comprising:

a preparing means for preparing an original sheet;

an original feed means for feeding the original sheet along a feed path from the preparing means; and

a recurl means arranged in the feed path for recurling a curled portion of the original sheet;

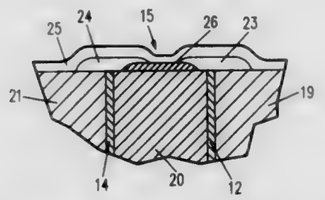
wherein the recurl means comprises a roller and a guide member having a V-shaped groove, and wherein the roller extends into and applies a positive force towards the V-shaped groove.

5,059,989

THERMAL EDGE JET DROP-ON-DEMAND INK JET PRINT HEAD

Jerome M. Eldridge, Los Gatos; Gary S. Keller; Francis C. Lee, both of San Jose, all of Calif., and Graham Olive, Vancouver, Canada, assignors to Lexmark International, Inc., Greenwich, Conn.

Filed May 16, 1990, Ser. No. 524,197
Int. Cl.[5] B41J *2/05*
U.S. Cl. 346—140 R **5 Claims**



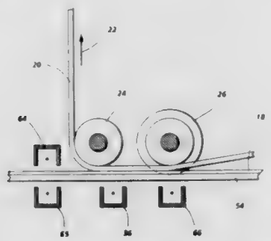
1. A thermal drop-on-demand ink jet print head comprising:
a substrate having two surfaces joined by a common edge;
an array of heater elements formed on said edge;
two sets of thick film conductor elements (**12**, **14**), one on each of said surfaces, those elements of at least one of the sets extending to said edge, each element (**12**) of one set being discrete and in electrical contact with a corresponding one of the heater elements, and at least one of the electrodes (**14**) of the other set being in common electrical contact with a plurality of said heater elements, such that the print head may be activated by application of electrical pulses to selectable discrete conductor elements;
each heater element comprising a thin film (**15**) of resistive material, and thin film conductor electrodes (**23**, **24**) applied to said edge to electrically connect the conductor elements of one set with one area of the resistive material of the respective heater elements and electrically connect another area of the resistive material of the respective heater elements with the conductor electrodes of the other set; and
a dielectric passivation layer over said arrays.

5,059,990

IMAGE TRANSFER AND SHEET SEPERATION CHARGING

Christian O. Abreu, Rochester; Jon M. Beresniewicz, Webster; James A. Long, Penfield, and Thomas W. Pike, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 10, 1990, Ser. No. 521,496
Int. Cl.[5] G01D *15/06;* **G03G** *21/00*
U.S. Cl. 346—153 **4 Claims**



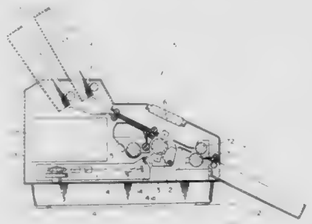
1. An apparatus for transferring a toner image having a charge thereon from a member to a sheet, including:
means for moving the sheet in a direction such that the sheet moves in synchronism with the member in a recirculating path enabling successive toner images to be transferred to the sheet in superimposed registration with one another;
a first corona generator for applying a charge to the sheet of a polarity opposite to that of the charge on the toner image for transferring the toner image from the member to the sheet;
a second corona generator, located after said first corona generator in the direction of movement of the sheet, for applying a charge to the sheet of a polarity which is the same as that of the charge on the toner image to assist in separating the sheet from the member and control air ionization during separation of the sheet from the member;
a third corona generator, located after said second corona generator in the direction of movement of the sheet, applies a charge on the toner image of a polarity opposite to that of the charge on the toner image for discharging the toner image transferred to the sheet; and
means for electrically grounding the sheet as said third corona generator applies the charge on the toner image.

5,059,991

DUSTPROOF TRANSPARENT MEMBER

Satoru Morisawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 426,028, Oct. 24, 1989, abandoned.
This application Jun. 29, 1990, Ser. No. 545,119
Claims priority, application Japan, Oct. 28, 1988, 63-141417[U]
Int. Cl.[5] G01D *15/14;* **G03G** *21/00*
U.S. Cl. 346—160 **12 Claims**



12. A laser beam printer comprising a body frame and a laser scanning unit housing said body frame and having an opening positioned beneath a developing unit, through which a laser beam is emitted outwardly; wherein said opening is covered by a transparent member, said transparent member being conductive and being positioned so as to shed dust or toner particles, which may fall from the developing unit, away from said laser scanning unit; and wherein said transparent member and said body frame are electrically connected to make their electric potentials equal.

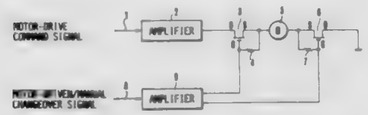
5,059,992

DRIVE DEVICE FOR MOTOR

Michihiro Akiike, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1990, Ser. No. 602,645
Claims priority, application Japan, Oct. 27, 1989, 1-278439
Int. Cl.[5] G03B *3/10, 9/02;* **H03K** *17/687*
U.S. Cl. 354—195.1 **5 Claims**

1. A control device for a motor, comprising:
means to be driven by said motor;
first signal generating means for producing a drive signal for driving said motor;
second signal generating means for producing a changeover signal for changing over between the supply and interruption of said drive signal to said motor;
a first field-effect transistor, said drive signal produced by said first signal generating means being inputted to a drain terminal of said first field-effect transistor, a signal related to said changeover signal being inputted to its gate terminal, and its source terminal being connected to said motor; and



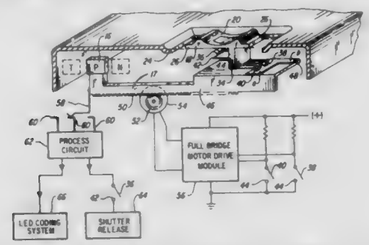
a second field-effect transistor, a source terminal of said second field-effect transistor being connected to said motor, a signal related to said changeover signal being inputted to its gate terminal, and its drain terminal being grounded.

5,059,993

VIEW FINDER MODE SELECTOR AND SHUTTER RELEASE MEANS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1990, Ser. No. 601,549
Int. Cl.[5] G03B *13/12*
U.S. Cl. 354—222 **13 Claims**



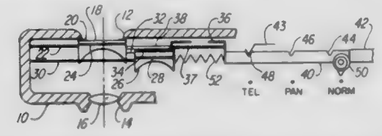
1. In a photographic camera including a viewfinder having a plurality of settable viewing modes and actuatable shutter release means, the improvement comprising:
a single actuating member movable between a plurality of mode selecting positions for setting the viewing mode of the viewfinder and to a shutter release position for actuating said shutter release means.

5,059,994

TWO MAGNIFICATION THREE MASK VIEWFINDER

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 601,163, Oct. 23, 1990, abandoned.
This application Apr. 8, 1991, Ser. No. 683,513
Int. Cl.[5] G03B *13/12*
U.S. Cl. 354—222 **13 Claims**



1. In a viewfinder for a photographic camera having a viewing axis and first and second objective lens assemblies moveable into alignment with the viewing axis, the improvement comprising:
a mask defining a field of view for the viewfinder; and
moveable means coupled to said lens assemblies for selectively positioning said lens assemblies and said mask into alignment with the viewing axis, said movable means having a first position wherein said first lens assembly is in alignment with the viewing axis, a second position wherein said second lens assembly is in alignment with said viewing axis, and a third position wherein said mask and said second lens assembly is in alignment with the viewing axis.

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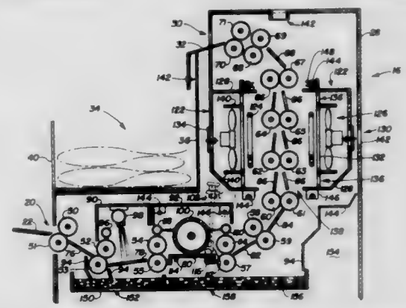
Patent Not Issued For This Number

5,059,996

APPARATUS FOR PROCESSING A PHOTOSENSITIVE ELEMENT

James S. Bailey, Wilmington, Del.; Timothy C. Croce, Elkton, Md.; Lawrence D. Huppman, Newark, Del., and Michael P. Marion, Monroeville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 15, 1990, Ser. No. 612,977
Int. Cl.[5] G03D *5/04*
U.S. Cl. 354—317 **19 Claims**



1. An apparatus for processing a web or sheet of material to wash out non-image portions with water, comprising:
a wash system comprising:
a primary developing station comprising means for spraying water on the material such that most non-image portions are washed away;
means for prewetting the material with water prior to the primary developing station;
a secondary developing station comprising means for brushing the material to remove or substantially remove a remainder of the non-image portions; and
means for wetting the brushing means with water;
a dryer for drying the processed material;
means for transporting the material in order through the first developing station, the second developing station, and the dryer; and
a control system for automatically controlling the wash system, the dryer and the transporting means.

5,059,997

APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

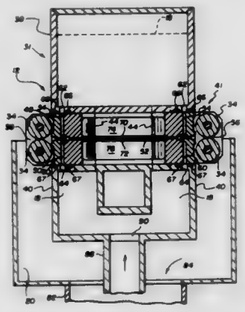
Douglas O. Hall, Canandaigua, and Bruce R. Muller, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1990, Ser. No. 630,142
Int. Cl.[5] G03D *3/06*
U.S. Cl. 354—324 **3 Claims**

1. In apparatus for processing photosensitive material, the apparatus having an upper tank for a processing fluid and a lower tank for the processing fluid, means coupling the tanks together so that processing fluid can flow freely from the lower tank to the upper tank, a processing chamber between the upper and lower tanks through which the material can be advanced for processing the material, means for supplying processing fluid from the upper tank to the processing chamber

and from the lower tank to the processing chamber, and a sump for holding a supply of processing fluid; the improvement comprising:

a pump having an inlet in fluid communication with the sump for receiving processing fluid from the sump and



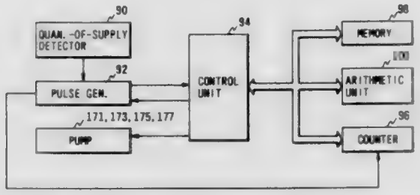
having an outlet connected directly to the lower tank so that processing fluid from the sump is delivered by the pump to the lower tank with the fluid then flowing upwardly into the upper tank through the means coupling the tanks together, thus reducing aeration and air entrapment by avoiding a free-falling condition in the fluid.

5,059,998

PROCESSING SOLUTION SUPPLEMENTING APPARATUS AND METHOD

Kouichi Sasaki, and Takashi Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1990, Ser. No. 501,822
Claims priority, application Japan, Mar. 31, 1989, 1-78519
Int. Cl.[5] G03D *3/06*
U.S. Cl. 354—324 **7 Claims**



1. A processing solution supplementing apparatus for supplementarily supplying a processing solution into a processing vessel for processing a photographic photosensitive material, comprising:

detecting means for detecting a quantity of supply of said processing solution;

pulse generating means for producing pulses with a predetermined period in correspondence to said quantity of supply thus detected;

arithmetic means for calculating the number of pulses corresponding to the quantity of processing solution to be supplied supplementarily; and

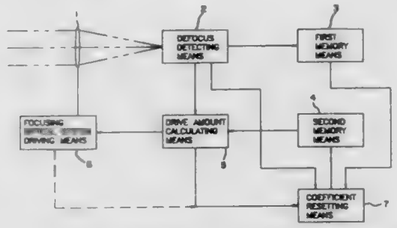
control means for controlling a time of stopping the operation of processing solution supplying means according to the number of pulses thus produced and the number of pulses calculated by said arithmetic means.

5,059,999

AUTOFOCUS APPARATUS FOR A CAMERA

Yoshinori Matsuzawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1990, Ser. No. 507,385
Claims priority, application Japan, Apr. 14, 1989, 1-94380
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 **28 Claims**



1. An autofocus apparatus for a camera having a taking lens, an image plane where the light from an object to be photographed is imaged by the taking lens, and a film plane; the autofocus apparatus comprising:

focus detecting means for detecting deviation information including the direction and amount of deviation of the image plane from the film plane;

first memory means for storing at a predetermined timing the deviation information detected by the focus detecting means;

second memory means for storing a movement coefficient which correlates the deviation amount and the drive amount of the taking lens;

drive amount calculating means for calculating the drive amount of the taking lens from the deviation information and the movement coefficient;

driving means for driving the taking lens in accordance with the drive amount calculated by the drive amount calculating means;

movement coefficient calculating means for calculating, after the drive of the taking lens by the driving means, a new movement coefficient from deviation information newly detected by the focus detecting means, the deviation information stored in the first memory means, and the drive amount of the taking lens; and

movement coefficient resetting means for replacing the movement coefficient stored in the second memory means with the movement coefficient calculated by the movement coefficient calculating means, whereby the drive amount of the taking lens for the next drive is calculated by using the reset movement coefficient

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5,060,000

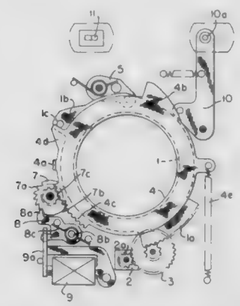
MOTOR-DRIVEN SHUTTER FOR CAMERA

Masuo Ogihara; Hiroyuki Ishida; Shinji Nagaoka; Youichi Seki; Shigeru Tagami; Hiroshi Yamazaki, and Nobuo Shinozaki, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Japan

Continuation of Ser. No. 15,169, Feb. 17, 1987, Pat. No. 4,881,096. This application Oct. 25, 1989, Ser. No. 427,037
The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.
Int. Cl.[5] G03B *3/10, 7/00, 9/22*
U.S. Cl. 354—400 **7 Claims**

1. In a camera shutter: range adjustment means displaceable to an in-focus position for adjusting the range of the camera to an in-focus condition; locking means normally engageable with the range adjustment means to prevent displacement thereof and disengageable from the range adjustment means to permit displacement thereof to the in-focus position and thereafter engageable with the range adjustment means to releasably lock the same in the in-focus position; means including a solenoid

operative when energized for effecting disengagement of the locking means from the range adjustment means; and electro-



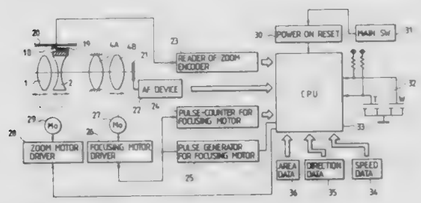
magnetic driving means for effecting displacement of the range adjustment means to the in-focus position during energization of the solenoid.

5,060,001

OPTICAL APPARATUS

Naoya Kaneda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1990, Ser. No. 540,267
Claims priority, application Japan, Jun. 23, 1989, 1-161303
Int. Cl.[5] G03B *13/36, 5/00;* **G02B** *7/09*
U.S. Cl. 354—400 **16 Claims**



1. An optical apparatus comprising:

(a) a first lens for effecting magnification change;

(b) a second lens provided more adjacent to the focal plane than said first lens for effecting focusing and compensation during the magnification change;

(c) driving means for moving said first and said second lens along the optic axis thereof;

(d) detecting means for detecting the positions of said first and said second lens; and

(e) control means for controlling said second lens so as not to move to an area in which continuous in-focus cannot be maintained to an object at a close distance, during the movement of said first lens from the telephoto to the wide end.

5,060,002

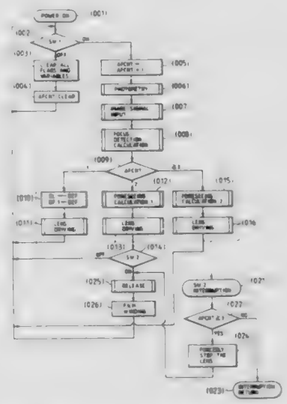
AUTOMATIC FOCUS ADJUSTING DEVICE

Ichiro Ohnuki, Kawasaki; Masaki Higashihara, Yokohama; Akira Akashi, Yokohama, and Terutake Kadohara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1989, Ser. No. 308,034
Claims priority, application Japan, Feb. 11, 1988, 63-029776; May 16, 1988, 63-118820
Int. Cl.[5] G03B *13/36, 17/38;* **G02B** *7/28*
U.S. Cl. 354—402 **41 Claims**

1. A focus adjusting device for finding the lens driving amount or the position of the image plane for making a lens in-focus to an object after a predetermined time on the basis of data concerned with focus adjustment obtained by the focus adjusting operation in the past, and adjusting the focus to the object after said predetermined time, comprising:

a calculation circuit for finding said lens driving amount or said position of the image plane for making the lens in-focus to the object after said predetermined time, in accordance with a predetermined functional equation by the use



of said data obtained by said focus adjusting operation in the past, said calculation circuit having a plurality of equations as said functional equation; and

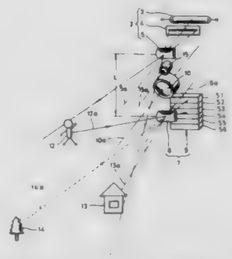
a change-over circuit for changing over said functional equation between a high-order functional equation and a low-order functional equation in conformity with the number of times over which said focus adjusting operation in the past was executed.

5,060,003

DISTANCE MEASURING DEVICE

Takaaki Kotani, and Seiji Takada, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 257,041, Oct. 12, 1988, Pat. No. 4,976,537. This application Jun. 27, 1990, Ser. No. 544,443
Claims priority, application Japan, Oct. 12, 1987, 62-256934; Oct. 12, 1987, 62-256935; Oct. 12, 1987, 62-256938
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **3 Claims**



1. An automatic focusing camera having a first discharge tube that projects flash light onto a subject during photographing and a second discharge tube that projects flash light onto the subject during distance measurement, comprising:

at least one first capacitor connected to said first discharge tube for causing said first discharge tube to project flash light for photographing;

at least one second capacitor connected to said second dis-

charge tube for causing said second discharge tube to project flash light for distance measurement, said second capacitor having a smaller capacitance than that of said first capacitor;

means for detecting a condition wherein the smaller capacitance of said second capacitor is sufficient to cause said first discharge tube to project light of a sufficient intensity for photographing; and

control means responsive to said detecting means for connecting said second capacitor in place of said first capacitor to said first discharge tube so as to cause said first discharge tube to project flash light for photographing by using said second capacitor without causing said second discharge tube to project flash light for distance measurement.

5,060,004

DISTANCE MEASURING DEVICE

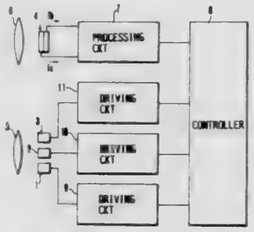
Kiyoshi Ikuta, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1989, Ser. No. 450,615

Claims priority, application Japan, Dec. 15, 1988, 63-315063; Jan. 19, 1989, 1-10778

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—403 **20 Claims**



1. A distance measuring device for measuring a distance to an object by projecting a signal light onto the object and then by receiving a reflected light from the object, or a camera having said distance measuring device, comprising:

a) light projecting means for projecting said signal light, said light projecting means including first, second and third light emitting parts; arranged to emit said signal light;

b) a common drive source for driving said first, second and third light emitting parts; and

c) control means for preventing said first and second light emitting parts from simultaneously lighting up and for causing said third light emitting part to light up simultaneously with said first or second light emitting part.

5,060,005

CAMERA SYSTEM

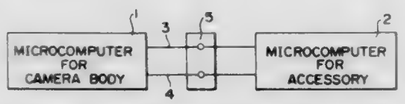
Junichi Itoh; Yoshinori Matsuzawa, both of Hachioji; Youji Watanabe, Sagamihara, and Yoshiaki Kobayashi, Nagano, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Nov. 16, 1989, Ser. No. 437,983

Claims priority, application Japan, Nov. 17, 1988, 63-292065

Int. Cl.[5] G03B *7/00*

U.S. Cl. 354—412 **36 Claims**



1. A camera system including a camera having a camera body and a camera accessory which may be mounted on the camera body to execute predetermined operations in accordance with instructions from the camera body when the accessory is mounted on the camera body, comprising:

accessory operating means associated with said accessory normally maintained in a standby condition;

means associated with said camera for outputting a control signal to the accessory for bringing the accessory into an operative state prior to a predetermined camera operation;

said accessory operating means being responsive to the control signal for activating the camera accessory from an inoperative state to an operative state;

means associated with said camera for providing a signal to instruct an operation mode to the accessory from the camera body after the accessory has been activated into an operative state;

means associated with said accessory for executing an operation mode in the accessory in accordance with the operation mode instructing signal; and

means for returning the accessory from an operative state to an inoperative state after the execution of the operation mode.

5,060,006

PHOTOGRAPHIC CAMERA

Nobuyuki Taniguchi; Yoshiaki Hata, both of Nishinomiya; Yoshinobu Kudo, Sakai; Manabu Inoue, Kobe; Takeo Hoda, Kawachinagano, and Hiroshi Ueda, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

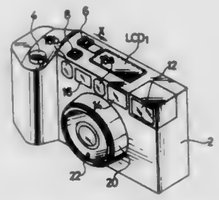
Continuation of Ser. No. 207,330, Jun. 16, 1988, Pat. No. 4,943,825, which is a division of Ser. No. 895,826, Aug. 12, 1986, Pat. No. 4,780,735. This application Jun. 13, 1990, Ser. No. 537,123

Claims priority, application Japan, Aug. 29, 1985, 60-190520; Aug. 29, 1985, 60-190521; Aug. 29, 1985, 60-190522; Aug. 29, 1985, 60-190523; Aug. 30, 1985, 60-192621; Sep. 10, 1985, 60-201095; Sep. 10, 1985, 60-201096; Nov. 14, 1985, 60-255550; Dec. 19, 1985, 60-286732

The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.

Int. Cl.[5] G03B *15/03, 17/24*

U.S. Cl. 354—419 **2 Claims**



1. A photographic camera having a photographic lens, comprising:

means for selecting a real focal length photographing mode in which a normal range in a frame of a film will be printed on a photographic paper and a pseudo focal length photographing mode in which a range smaller than the normal range in a frame of the film will be printed on a photographic paper;

means for measuring light coming from the object to be photographed and outputting a signal corresponding to a luminance of the object;

means for illuminating the object with flash light emission;

means for outputting a signal for activating said illuminating means when the output signal from said measuring means shows that the luminance of the object is lower than a predetermined level; and

means for altering said predetermined level in response to a selection of said selecting means.

5,060,007

IMAGE BLUR DISPLAY DEVICE

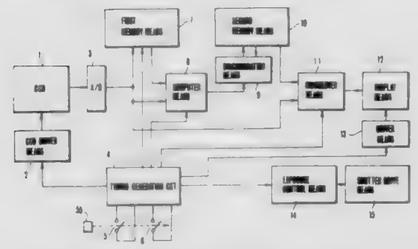
Akira Egawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 498,460, Mar. 21, 1990, abandoned, which is a continuation of Ser. No. 366,241, Jun. 12, 1989, abandoned, which is a continuation of Ser. No. 121,684, Nov. 17, 1987, abandoned. This application Jan. 22, 1991, Ser. No. 644,408

Claims priority, application Japan, Nov. 20, 1986, 61-275434; Nov. 20, 1986, 61-275435; Nov. 20, 1986, 61-275436

Int. Cl.[5] G03B *17/18*

U.S. Cl. 354—430 **16 Claims**



1. An image blur displaying device comprising:

(A) image signal forming means for forming an image signal of an object to be photographed;

(B) detection means for detecting a change of said image signal caused along time during an exposure time; and

(C) display means for displaying the change of said image signal along time detected by said detection means as an information of an image blur caused during said exposure time.

5,060,008

IMAGE RECORDING APPARATUS WHICH REDUCES THE WASTING OF PHOTOSENSITIVE RECORDING MEDIUM WHEN OPERATING IN A PLURAL IMAGE RECORDING MODE

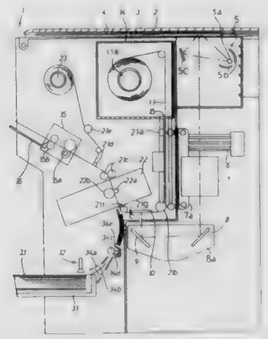
Shin Asai, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 11, 1990, Ser. No. 595,850

Claims priority, application Japan, Oct. 30, 1989, 1-282098

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—27 **12 Claims**



1. An image recording apparatus defining a recording medium feeding path and comprising:

setting means for setting a plural image mode of operation wherein a plurality of images are copied sequentially upon a single actuation thereof by an operator;

exposing means for exposing an elongated continuous form photosensitive recording medium to a light image at predetermined time intervals as the photosensitive recording medium is fed along said recording medium feeding path, said exposing means having an exposure position at which a leading edge of a portion of the photosensitive recording medium is located prior to exposure thereof to the light image;

developing means, disposed downstream of said exposing means with respect to said recording medium feeding path, for developing the exposed photosensitive recording medium;

first recording medium feeding means for feeding said photosensitive recording medium upstream of the exposure position with respect to said recording medium feeding path;

second recording medium feeding means for feeding said photosensitive recording medium downstream of the exposure position through the developing means with respect to said recording medium feeding path; and

controlling means for controlling said first recording medium feeding means and said second recording medium feeding means so that the photosensitive recording medium is continuously fed downstream of said exposure position by said second recording medium feeding means while the photosensitive recording medium is being fed upstream of said exposure position by said first recording medium feeding means, and wherein the speed of feeding of the photosensitive recording medium by said first recording medium feeding means is faster than the speed of feeding of the photosensitive recording medium by said second recording medium feeding means, at least during an exposing operation when the photosensitive recording medium is being exposed to the light image when said plural image mode is set by the setting means.

5,060,009

METHOD AND APPARATUS FOR THE AUTOMATED IMAGE FORMATION ON ANY PHOTOGRAPHIC MEDIA

André Milovanovich, Saint Sauveur, France, assignor to Caisse Regional de Credit Agricole Mutuel de L'yonne, France, a part interest

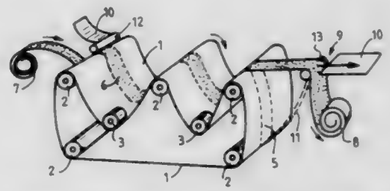
PCT No. PCT/FR89/00554, § 371 Date Jun. 26, 1990, § 102(e) Date Jun. 26, 1990, PCT Pub. No. WO90/04809, PCT Pub. Date May 3, 1990

PCT Filed Oct. 24, 1989, Ser. No. 499,508

Claims priority, application France, Oct. 26, 1988, 88 14095

Int. Cl.[5] G03B *27/32*

U.S. Cl. 355—27 **26 Claims**



1. Apparatus for an automated formation of images on photographic media, said apparatus comprising a transporter belt on which said media are placed by a distributor and temporarily fixed by adhesive means, treatment stations through which said media are successively transported by the belt, and an extractor for extracting said media from said belt, wherein:

i. said belt has a supporting surface having with said adhesive means a first adhesive power;

ii. said media each comprises a back surface which is fixed on said supporting surface and which has with said adhesive

means a second adhesive power different from said first adhesive power;

iii. said adhesive means are initially placed on the surface having the lower adhesive power so as to be selftransferred by the extractor on the surface having the greatest adhesive power.

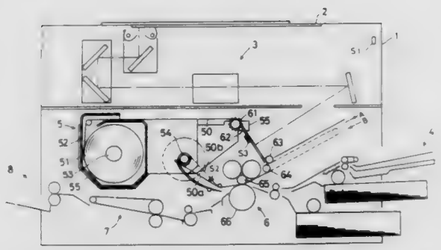
5,060,010

IMAGE FORMING APPARATUS AND LEADER SHEET THEREFOR

Mitsuru Ogura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 19, 1990, Ser. No. 584,751
Claims priority, application Japan, Sep. 27, 1989, 1-251603
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—27 **2 Claims**





1. An image forming apparatus which comprises:

a pair of pinch rolls operable to press a web of donor sheet, supplied from a roll thereof, and a receptor sheet together to accomplish an image development;

an automatic loading means operable to set a leader sheet, secured to a radially outermost end of the roll of donor sheet, in a transport passage means including the pinch roll pair and then to secure the leader sheet to a take-up spool having an adhesive region formed thereon for connection with the leader sheet; and

a direction control means for controlling the take-up spool so as to rotate in a first direction about a longitudinal axis of the take-up spool during an automatic loading and so as to rotate in a second direction counter to the first direction about the longitudinal axis of the take-up spool during an image forming operation.

5,060,011

IMAGE RECORDING APPARATUS

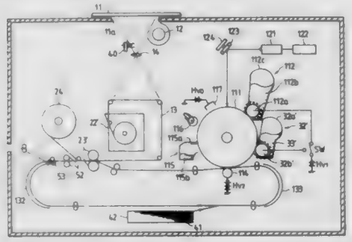
Takemi Yamamoto; Jun Sakai, and Mitsuru Ohta, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 10, 1989, Ser. No. 335,492
Claims priority, application Japan, Apr. 28, 1988, 63-105691; Jul. 2, 1988, 63-165235
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—27 **4 Claims**

1. An image recording apparatus for recording an output image on a sheet medium, the sheet medium being any ordinary copying sheet material, the output image corresponding to an image of an original, said original containing first and second images, the apparatus using a photosensitive recording medium having a surface which carries microcapsules encapsulating therein a chromogenic material, the apparatus comprising:

exposure unit means for exposing to light said photosensitive recording medium for forming a latent image corresponding to said first image on the photosensitive recording medium;

supplying means for supplying developer material particles which urdergo a chromogenic reaction with the chromogenic material, the supplying means supplying said developer material particles to the ordinary copying sheet material for recording said first image, said developer material particles supplying means including a photosensitive drum;



pressure developing unit means disposed downstream of the exposure unit for generating the chromogenic reaction between the chromogenic material and said developer material particles to provide said first image on the ordinary copying sheet material; and

means for supplying toner particles onto said ordinary copying sheet for recording said second image thereon, said toner particles supplying means comprising:

a photosensitive drum;

a toner image forming means for forming a toner image corresponding to the second image onto the photosensitive drum; and

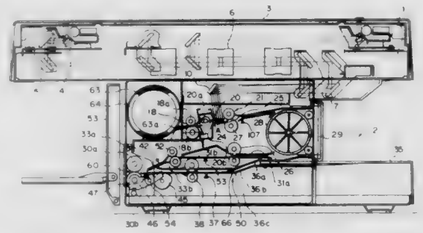
a means for transferring the toner image on the photosensitive drum onto said ordinary copying sheet.

5,060,012

IMAGE REPRODUCING DEVICE WHICH DETECTS THE END OF A PHOTOSENSITIVE FILM

Takashi Seto, Ayase; Kouji Ozaki, Tokyo; Osamu Kobayashi, Tokyo, and Shigeru Suzuki, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 359,581
Claims priority, application Japan, Jun. 3, 1988, 63-135600; Sep. 6, 1988, 63-116399; Feb. 28, 1989, 1-45306
Int. Cl.[5] G03B *29/00*
U.S. Cl. 355—28 **7 Claims**



1. An image reproducing device comprising:

a storing means for storing a strip-like photosensitive material so that said photosensitive material is rolled up, said photosensitive material having a mark at a a first predetermined length from a final end of said rolled photosensitive material;

a conveying means for pulling out said rolled photosensitive material from said storing means and conveying said photosensitive material;

a cutting means for cutting successively said conveyed photosensitive material into respective photosensitive sheets each with a second predetermined length;

a pair of developing rollers for rolling each of said cut photosensitive sheets put together with a transfer sheet between which a developer-containing pod is interposed;

a detecting means for detecting said mark of said conveyed photosensitive material;

a measuring means for measuring a remaining length of said stored photosensitive material when said detecting means detects said mark of said conveyed photosensitive material; and

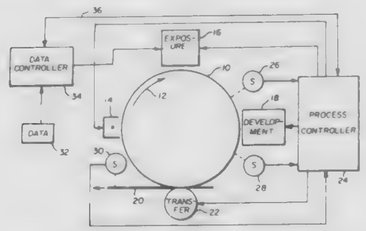
a separating means for separating a pair of said developing rollers from each other when said measured remaining length is less than a length required for image formation.

5,060,013

HARDCOPY OUTPUT DEVICE WITH TEST PATCH LOCATION SEQUENCER

John P. Spence, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 31, 1990, Ser. No. 561,043
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **15 Claims**



1. A system for monitoring the performance of an electrostatographic machine which includes a photosensitive surface, an exposure device for exposing selected areas of the photosensitive member, and a developing device for applying toner to a exposed photosensitive member, said system comprising:

means for randomly requesting of a test area which has not been tested in a portion of a frame on the photosensitive member;

means for controlling a location of the test area in the frame so that subsequently exposed test areas are at different locations in the frame;

means for measuring a characteristic of, or produced by, the test area; and

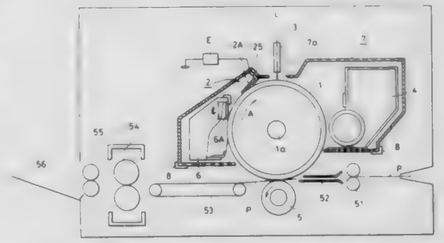
means for informing the measuring means about the location of the test area.

5,060,014

IMAGE FORMING APPARATUS AND DETACHABLE PROCESS KIT UTILIZING A DRUM CHARGING MEANS IN RELATIVELY LIGHT CONTACT PRESSURE THEREWITH

Hiroyuki Adachi, Tokyo, and Noribumi Koitabashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1990, Ser. No. 505,156
Claims priority, application Japan, Apr. 5, 1989, 1-87387
Int. Cl.[5] G03G *15/02, 15/21*
U.S. Cl. 355—211 **29 Claims**



1. A process kit detachable relative to an image forming apparatus, comprising:

a movable image carrying member;

cleaning means including a blade-like cleaning member for contactably cleaning said image carrying member; and

charging means including a blade-like charging member for contactably charging said image carrying member at a side downstream in the direction of movement of said image carrying member from said cleaning member;

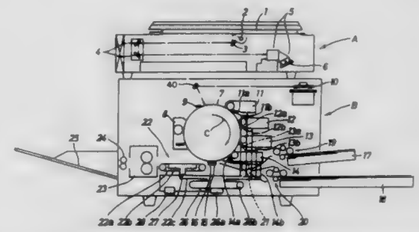
wherein the contact pressure of said charging member to said image carrying member is made smaller than the contact pressure of said cleaning member to said image carrying member.

5,060,015

AIR FLOW CONTROLLING SYSTEM FOR AN IMAGE RECORDING APPARATUS

Akihiro Ikuma, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Dec. 10, 1990, Ser. No. 625,215
Claims priority, application Japan, Dec. 14, 1989, 1-324506
Int. Cl.[5] G03G *21/00;* **B65H** *29/32*
U.S. Cl. 355—215 **3 Claims**



1. An air flow control system for an image recording apparatus, comprising:

a rotatable image retainer for carrying a latent image thereon;

developing means for developing said latent image to obtain a toner image;

a recording medium;

means for transferring said toner image to said recording medium;

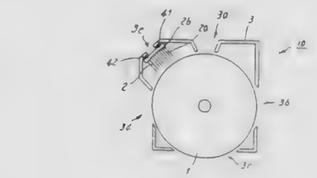
carrying means for carrying said recording medium with said toner image thereon;
first suction means for preventing toner dispersion from said developing means;
second suction means arranged in said carrying means for providing suction to carry said recording medium;
air flow control means for dynamically controlling the suction in both said first and said second suction means; and
detection means for generating a detection output signal which indicates whether said second suction means is carrying said recording medium; and
said air flow control means dynamically controlling suction to both said first and said second suction means responsive to said detection output signal.

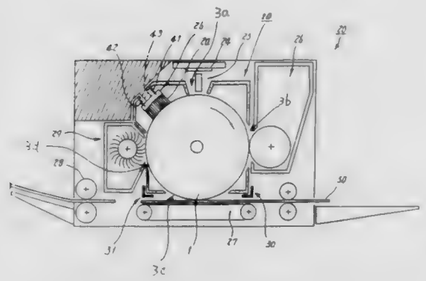
5,060,016

PROCESS UNIT FOR IMAGE FORMING APPARATUS, INCLUDING A CHARGING BRUSH

Masahiro Wanou, Kawasaki; Kunihiko Sato, Hadano; Masatoshi Kimura, Ebina, and Junzo Nakajima, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 15, 1988, Ser. No. 219,489
Claims priority, application Japan, Jul. 15, 1987, 62-177678
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **16 Claims**





1. A process unit to be loaded in or unloaded from an image forming apparatus, comprising:
a photosensitive member having a surface and transferred in a first direction;
a conductive brush type charger comprising a plurality of conductive brush fibers having tips, arranged in a second direction substantially perpendicular to the first direction, for electrostatically charging the surface of said photosensitive member uniformly by causing the tips of said conductive brush fibers to touch the surface of said photosensitive member and applying a charging voltage to the surface of said photosensitive member through said conductive brush fibers;
a unit case for housing said photosensitive member and said conductive brush type charger; and
means for supporting said conductive brush type charger so as to position said tips of said conductive brush fibers out of contact with said surface of said photosensitive member, while said process unit is unloaded from said image forming apparatus.

5,060,017

SURFACE POTENTIAL CONTROL DEVICE OF PHOTOCONDUCTIVE MEMBER

Masahide Ueda, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1989, Ser. No. 450,054
Claims priority, application Japan, Dec. 16, 1988, 63-318994
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—221 **9 Claims**



1. An image forming apparatus, comprising:
a photoconductor;
charging means for uniformly charging the surface of the photoconductor;
means for operating the charging means;
means for forming an electrostatic latent image by exposing the photoconductor which is charged;
means for developing the electrostatic latent image; and
means for controlling output of the charging means to start with a different value from a predetermined value when the charging means is operated, and for controlling the output so as to coincide with the predetermined value after a predetermined period has elapsed, wherein output characteristic of the charging means is controlled to be varied during an initial stage and during the latter half stage of the predetermined period, and wherein the control means includes a first circuit means for changing the output of the charging means by a relatively large amount in a short period of time and a second circuit means for gradually changing the output of the charging means in longer period of time than that of the first circuit means.

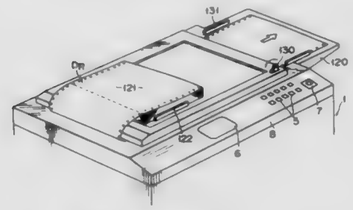
5,060,018

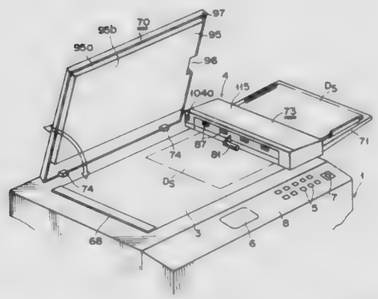
IMAGE FORMING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 4, 1990, Ser. No. 577,112
Claims priority, application Japan, Sep. 14, 1989, 1-237194
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—230 **16 Claims**

1. An image forming apparatus for forming an image corresponding to an original document placed on a document table, comprising:
means for supporting the original document together with the document table, said supporting means including:
a cover member defining a gap which allows the original document to be projected from the supporting means when the original document is in a supported state, and a movable member which is movable within the cover member such that the movable member is brought into contact with or is separated from the document table; and
means for separating the movable member from the document table in a state where the cover member covers the document table, said separating means including:
an operation member formed on the cover member to be manually operated; and
means, located in said cover member, for moving said movable member onto or from said document table when said operation member is operated;





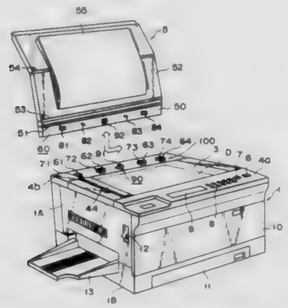
wherein said separating means is operated to allow conveyance of the original document projected from the document table.

5,060,019

MOUNTING STRUCTURE FOR AN ORIGINAL COVER IN AN IMAGE FORMING APPARATUS

Takehito Fukunaga, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 31, 1989, Ser. No. 429,221
Claims priority, application Japan, Oct. 31, 1988, 63-275636
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—231 **5 Claims**



1. An image forming apparatus comprising:
a main body including an upper and lower portion hinged together at respective one ends thereof to assume an openable and closable clamshell configuration, the main body further including an original table on which an original is placed, and a cover mount portion located at one side of said original table on the upper portion of the apparatus;
a removable original cover for holding in place the original placed on said original table, said cover having a mounting portion adapted to be removably mounted on said cover mount portion; and
engaging and holding means disposed on both said mounting portion and said cover mount portion, said engaging and holding means being so constructed and arranged that they are engaged with each other by moving said original cover in a first direction, substantially orthogonal to the direction of opening and closing of said original cover, such engagement securing said original cover to said main body, and said original cover is easily detached from said main body by moving said original cover in a second direction, opposite to said first direction;
said engaging and holding means comprising:
engaging means for restricting the degree of movement of said cover in a back-and-forth direction and a vertical direction perpendicular thereto when said original cover is engaged and held;
stopper means for restricting movement of said cover when said original cover is engaged and held;
first, second, third and fourth engaging portions, said first and fourth engaging portions respectively comprising first and fourth engaging members each having an engaging hole with one open end and being mounted being spaced apart from each other at the left and right portions of said cover mount portion of said main body, and first and fourth L-shaped hooks each having a pawl inserted in and engaged with a corresponding one of said engaging holes of said first and fourth engaging members from a corresponding one of said open ends, said first and fourth hooks extending from left and right portions of said mounting portion of said cover and being spaced apart from each other, so that the movement/insertion limit of said original cover and the movement of said mounting portion of said cover in the back-and-forth direction and an upward direction are restricted when said first and fourth hooks are inserted in and engaged with said first and fourth engaging members respectively; and
said second and third engaging portions respectively comprising second and third engaging members each having an engaging groove with one open end and an open upper portion, said second and third engaging members being mounted on said cover mount portion of said main body and located between said first and fourth engaging members, and second and third pins extending from said cover portion to be mounted and located between first and fourth hooks, and respectively inserted in and engaged with said engaging grooves of said second and third engaging members from said open ends, so as to restrict the movement/insertion limit of said original cover and the movement of said mounting portion in the back-and-forth direction and a downward direction when said second and third pins are inserted and engaged with said second and third engaging members, respectively; and
said stopper means comprising a triangular lower lock projection extending from said cover mount portion of said main body and located between said second and third engaging members, and a triangular upper lock projection extending form said mounting portion of said cover and located between said second and third pins, said upper lock projection being moved over said lower lock projection and engaged with an upper end of said lower lock projection when said cover is moved and inserted.

5,060,020

IMAGE RECORDING APPARATUS USING COLORING PHOTOSENSITIVE TONER IN THE FORM OF MICROCAPSULE

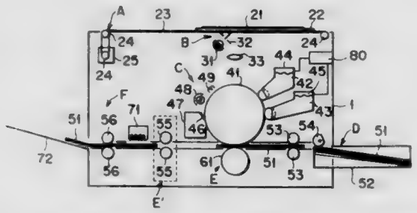
Jun Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Sep. 5, 1990, Ser. No. 577,610

Claims priority, application Japan, Sep. 6, 1989, 1-230732; Oct. 13, 1989, 1-266728

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **5 Claims**



1. An image recording apparatus for recording an image of an original document on a recording medium, comprising:

a photosensitive drum rotatable about its own axis;

exposure means for exposing said photosensitive drum to an imaging light carrying the image of the original document to form a latent image corresponding to the image of the original document;

first storage means for storing coloring photosensitive toner in the form of a microcapsule having a shell, a photosensitive resin and a chromogenic material both encapsulated in said shell, and a developer material coated on an outer surface of said shell, wherein the chromogenic material reacts with the developer material and a color is thereby formed;

second storage means for storing monochromatic toner containing a coloring agent and a binder;

driving means connected to said first and second storage means for activating at least one of said first and second storage means, wherein the toner stored in the activated storage means is deposited on the latent image, and wherein the coloring photosensitive toner deposited thereon is exposed to the imaging light to form a color latent image corresponding to a color image of the original document;

pressure developing means for pressure developing the color latent image and providing a visible color image on the recording medium;

transferring means for transferring the monochromatic toner deposited on said photosensitive drum onto the recording medium; and

fixing means for fixing the image on the recording medium.

5,060,021

MONOCOMPONENT DEVELOPING DEVICE

Masashi Yamamoto, Takatsuki, and Toshimitsu Fujiwara, Kobe, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1990, Ser. No. 634,043

Claims priority, application Japan, Dec. 26, 1989, 1-339524; Jul. 10, 1990, 2-183578

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **12 Claims**

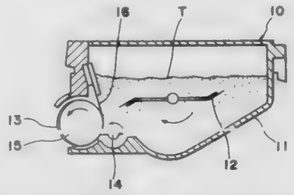
1. A monocomponent developing device comprising.

a developing roller rotatably provided and confronting a rotatable photoreceptor;

a supplying means for supplying a toner onto said developing roller;

a regulating member in contact with the surface of the developing roller for frictionally charging the toner supplied onto the developing roller while regulating the amount of the toner; and

a coating film provided on the surface of said regulating member at least in a portion contacting with the developing roller and having the same polarity in triboelectric series as the toner, said coating film being so formed to be abraded away so that the surface of the regulating member exposes after repetition of developing.



5,060,022

IMAGE PROCESSING EQUIPMENT FOR SETTING IMAGE DENSITY CONDITIONS ACCORDING TO TEMPERATURE

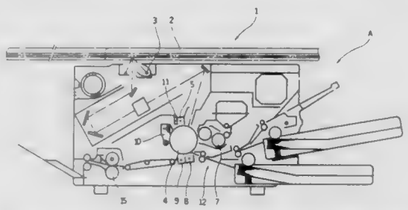
Takeshi Yoshida, and Nariaki Tanaka, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1990, Ser. No. 553,752

Claims priority, application Japan, Jul. 18, 1989, 1-185802; Jul. 18, 1989, 1-185803

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—246 **3 Claims**



1. An image processing equipment by which image density setting conditions are adjusted according to the temperature changes of an organic photosensitive body, said image processing equipment being characterized in that a number of times of using the image processing equipment under such a condition that a temperature of the organic photosensitive body has exceeded an appointed predetermined temperature is counted, and a relation of conditions of the image density to the temperature of the photosensitive body is adjusted according to the results of the counting thereof.

5,060,023

DEVELOPING PROCESS FOR FORMING IMAGE HAVING HIGH QUALITY

Teruaki Higashiguchi, Tokyo, and Takeshi Hori, Yokohama, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

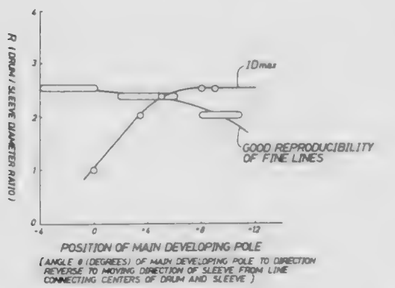
Filed Jun. 27, 1990, Ser. No. 544,639

Claims priority, application Japan, Jun. 27, 1989, 1-162805

Int. Cl.[5] G03G *15/09*

U.S. Cl. 355—251 **3 Claims**

1. A developing process for forming an image having a high quality, which comprises supplying a component type developer comprising a magnetic carrier and a toner onto a developing sleeve having many magnetic poles arranged in the interior thereof and developing an electrostatic latent image by bringing a photosensitive material drum into sliding contact with a magnetic brush of the developer, wherein the moving direction of the developing sleeve is the same as the moving direction of the photosensitive material drum at the position of the sliding contact, the angle θ (degrees) of the fixed main developing plea which is the magnetic pole, in the developing sleeve which is closest to the line connecting the center of the rum



and the center of the sleeve in the direction reverse to the moving direction of the sleeve from said line connecting the centers of the drum and sleeve is 4 to 60°, and the ratio R of the diameter of the drum to the diameter of the sleeve is 2.2 to 2.5.

5,060,024

METHOD AND APPARATUS FOR CLEANING SQUEEZE ROLLERS IN LIQUID ELECTROPHOTOGRAPHIC DEVELOPING APPARATUS

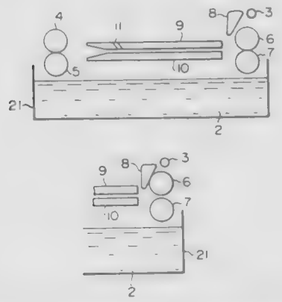
Isao Kohmura; Takao Senga, and Sadao Kuriu, all of Nagaoka-kyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 365,733

Claims priority, application Japan, Jun. 17, 1988, 63-149314; Jul. 4, 1988, 63-166096

Int. Cl.[5] G03G *15/20, 21/00*

U.S. Cl. 355—283 **9 Claims**



4. A liquid electrophotographic developing apparatus which is provided with a pair of squeeze rollers, a cleaning pad comprising a liquid absorbing material, and a means for supplying a solvent for liquid developer to the squeeze rollers and a means for isolating said squeeze rollers from each other, thereby allowing one of the rollers which contacts a photosensitive surface of an electrophotographic photoreceptor, to contact the cleaning pad, which action thereby cleans the one of the rollers which contacts the photosensitive surface.

5,060,025

SINGLE-SHEET PAGE PRINTER FOR DUPLEX AND SIMPLEX OPERATION

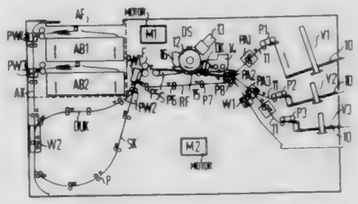
Klaus Kümmel; Gerhard Klapettek, both of Giessen, and Siegfried Schneider, Biebertal, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1990, Ser. No. 566,383

Claims priority, application PCT Int'l Appl., Mar. 2, 1988, PCT/DE88/00111

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—319 **15 Claims**



1. A printing apparatus for printing one or both sides of single sheets fed consecutively to the printing apparatus in a mixed sequence of single sheets to be printed both on one side and on both sides, comprising:

a) a printing channel with an associated printing station and paper-transport elements, said printing channel having entry and exit sides;

b) a return channel coupled to said printing channel on said entry and exit sides which has paper-transport elements and a turning device and which, on demand, after printing of a front side of the single sheets feeds the single sheets to the printing station once again for printing of a reverse side of the single sheets;

c) a paper-transport channel system coupled to said printing channel and having paper-transport elements and a separate duplex channel and a simplex channel for separate transport of the single sheets printed on both sides or on one side into a common output channel;

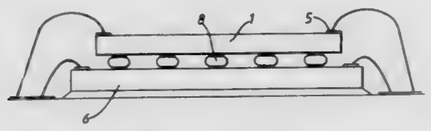
d) a paper storage device associated with said simplex channel for storing a single sheet printed on one side;

e) a control means for controlling an output sequence of the single sheets to the common output channel by storing a single sheet printed on one side following a single sheet printed on both sides in the sequence of printed single sheets in the paper storage device, until the single sheet printed on both sides has run through said duplex channel.

5,060,026

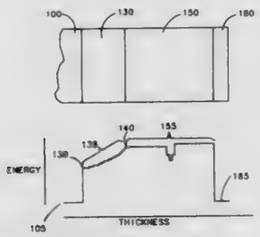
Patent Not Issued For This Number

5,060,027
LIGHT EMITTING DIODE ARRAY WITH ALIGNED SOLDER BUMPS
Peter B. Hart, Duston, and John Gooding, Daventry, both of England, assignors to Plessey Overseas Limited, Ilford, England
PCT No. PCT/GB89/00926, § 371 Date May 15, 1990, § 102(e) Date May 15, 1990, PCT Pub. No. WO90/01803, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 11, 1989, Ser. No. 469,454
Claims priority, application United Kingdom, Aug. 11, 1988, 8819070
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—17 **7 Claims**



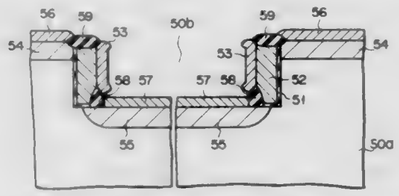
1. A light emitting diode array comprising an optically transparent substrate of semiconductor material in which a multiplicity of light emitting diodes are defined on one surface of the substrate, each of said diodes having an electrical contact on said one surface of the substrate, said substrate being provided with a common electrode of an optically transparent material for all the diodes, a further substrate in which a multiplicity of driver circuits are defined corresponding to the number and positions of the light emitting diodes on the substrate, each driver circuit having a corresponding contact and wherein the contacts of the light emitting diodes and the corresponding contacts of the driver circuits are in alignment and in electrical soldered contact.

5,060,028
HIGH BAND-GAP OPTO-ELECTRONIC DEVICE
Chih-Ping Kuo, Milpitas; Robert M. Fletcher, and Timothy D. Osentowski, both of San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 19, 1989, Ser. No. 300,003
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—17 **15 Claims**



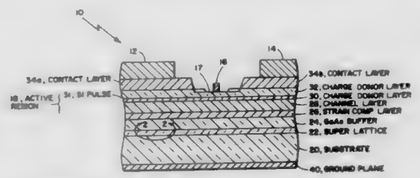
1. An electro-optical device comprising:
a first substrate layer;
a section composed of aluminum gallium indium phosphide having higher energy band gaps than the first substrate layer; and
a second layer composed of aluminum gallium indium phosphide adjoining the section so as to form a boundary therewith, said second layer having a varying energy band gap such that an energy band gap of said second layer at the boundary substantially equals that of the section at the boundary and decreases to a lesser energy band gap away from said boundary, wherein said first substrate layer adjoins one of said section and said second layer and said first substrate layer, section and second layer are substantially lattice matched.

5,060,029
STEP CUT TYPE INSULATED GATE SIT HAVING LOW-RESISTANCE ELECTRODE AND METHOD OF MANUFACTURING THE SAME
Jun-ichi Nishizawa, and Nobuo Takeda, both of Sendai, Japan, assignors to Small Power Communication Systems Research Laboratories Co., Ltd., Japan
Filed Feb. 23, 1990, Ser. No. 483,740
Claims priority, application Japan, Feb. 28, 1989, 1-45292; Feb. 28, 1989, 1-45293
Int. Cl.[5] H01L *29/80*
U.S. Cl. 357—22 **4 Claims**



1. A step cut type insulated gate static induction transistor, comprising:
at least one U-shaped groove formed in one major surface of a semiconductor substrate;
a drain region of a first conductivity type, having high impurity concentration and formed in said one major surface;
a source region of the first conductivity type, having high impurity concentration and formed in said U-shaped groove;
a gate electrode formed only on a side wall of said U-shaped groove and including a thin insulating film and a polysilicon layer; and
a first low-resistance electrode made of one of refractory metal and refractory metal silicide and formed on an upper portion of a side wall of said polysilicon layer.

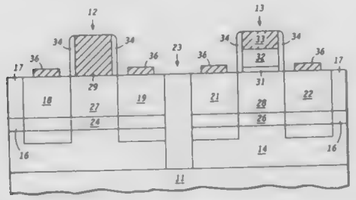
5,060,030
PSEUDOMORPHIC HEMT HAVING STRAINED COMPENSATION LAYER
William E. Hoke, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jul. 18, 1990, Ser. No. 554,240
Int. Cl.[5] H01L *29/80, 29/61, 27/12, 27/14*
U.S. Cl. 357—22 **14 Claims**



1. A high electron mobility transistor comprising:
substrate means comprising a material having a first lattice constant characteristic for supporting a semiconductor active region;
a strain compensation layer disposed between said semiconductor active region and said substrate means said strain compensation layer comprised of a material having a second lattice characteristic which when disposed over said substrate means provides said strain compensation layer having a first intrinsic lattice strain characteristic;

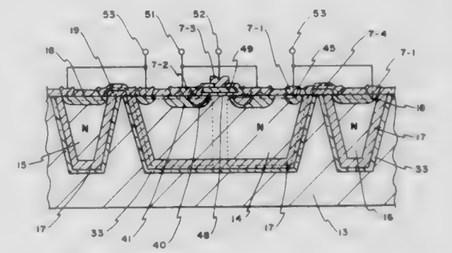
said semiconductor active region comprising:
a channel layer comprised of a narrow band Group III–V material different from the material of the strain compensation layer, said material having a third, different lattice constant characteristic which when disposed over said strain compensation layer develops a second, different intrinsic lattice strain characteristic opposite to that of the first intrinsic lattice strain characteristic which is compensated by the first intrinsic lattice strain characteristic of the strain compensating layer; and
a charge donor layer comprised of a wide bandgap Group III–V material, said layer disposed to donate charge to said channel layer; and
means for providing ohmic source and drain contacts disposed over said semiconductor active region and a gate electrode disposed on said active region for controlling conduction in said channel layer.

5,060,031
COMPLEMENTARY HETEROJUNCTION FIELD EFFECT TRANSISTOR WITH AN ANISOTYPE N+ GATE FOR P-CHANNEL DEVICES
Jonathan K. Abrokwah, Tempe; Schyi-Yi Wu, Mesa, and Jenn-Hwa Huang, Gilbert, all of Ariz., assignors to Motorola, Inc, Schaumburg, Ill.
Filed Sep. 18, 1990, Ser. No. 584,014
Int. Cl.[5] H01L *29/80*
U.S. Cl. 357—22 **12 Claims**



1. A complementary GaAs based heterostructure integrated circuit structure comprising: a semi-insulating GaAs substrate having a major surface; a first epitaxial layer of substantially intrinsic GaAs grown directly over the major surface; a second epitaxially grown layer of substantially intrinsic AlGaAs grown directly over the first layer; a third epitaxially grown layer of substantially intrinsic GaAs grown over the second layer; a fourth epitaxial layer of substantially intrinsic InGaAs grown over the third layer; a fifth epitaxial layer of substantially intrinsic AlAs grown over the fourth layer; a sixth layer of substantially intrinsic AlGaAs grown over the fifth layer; first and second N-type regions formed in the surface of the sixth layer and extending to the third layer, wherein a portion of the fourth layer which lies between the first and second N-type regions forms a channel of an N-channel HFET; a conductive material formed on top of the sixth layer between and separated from the first and second N-type regions and making a rectifying contact with the sixth layer, wherein the conductive material serves as a gate electrode of the N-channel HFET; electrodes formed on the first and second N-type regions to serve as source-drain electrodes of the N-channel HFET; first and second P-type regions formed in the surface of the sixth layer and extending to the third layer, wherein a portion of the fourth layer which lies between the first and second P-type regions forms a channel of a P-channel HFET; an epitaxially grown N-type anisotype region covering a portion of the sixth layer between and separated from the first and second P-type regions; an epitaxially grown pre-ohmic layer covering the N-type anisotype region; a conductive material formed on top of the pre-ohmic layer making contact with the pre-ohmic layer, wherein the conductive material serves as a gate electrode of the P-channel HFET; electrodes formed on the first and second P-type regions to serve as source-drain electrodes of the P-channel HFET; and an insulating region formed between the N-channel and the P-channel HFET.

5,060,032
INSULATED GATE TRANSISTOR OPERABLE AT A LOW-DRAIN-SOURCE VOLTAGE
Kenji Ogawa, Tokyo, Japan, assignor to NEC Corporation, Japan
Continuation of Ser. No. 252,159, Sep. 30, 1988, abandoned. This application Nov. 13, 1990, Ser. No. 611,453
Claims priority, application Japan, Sep. 30, 1987, 62-248311
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.4 **4 Claims**



1. A transistor comprising:
a first semiconductor region of one conductivity type having an upper surface;
a second semiconductor region of said one conductivity type, said first and second semiconductor regions being physically supported by polycrystalline semiconductor and being electrically isolated from each other;
a base semiconductor region of other conductivity type formed in said upper surface of said first region;
a source semiconductor region of said one conductivity type formed in said base semiconductor region;
a gate insulator film formed on said base semiconductor region located between said source and first semiconductor regions;
a gate electrode formed on said gate insulator film;
a third semiconductor region of said other conductivity type formed in said upper surface of said first region but separated from said base semiconductor region;
a fourth semiconductor region of said one conductivity type formed in said first semiconductor region along its surfaces except for said upper surface, said fourth semiconductor region having an impurity concentration which is higher than said first semiconductor region;
a fifth semiconductor region of said other conductivity type formed in said second semiconductor region, said fifth semiconductor region having first and second contact portions to present a predetermined value of resistance therebetween;
a wiring connecting said fourth semiconductor region and said first contact portion of said fifth semiconductor region; and
a drain electrode connected with said fourth semiconductor region and said second contact portion of said fifth semiconductor region.

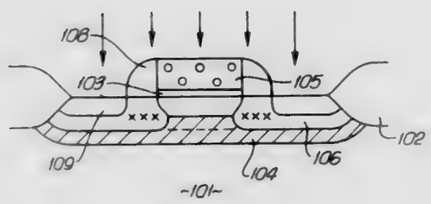
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5,060,033

SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING SEMICONDUCTOR DEVICE

Masahiro Takeuchi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 17, 1989, Ser. No. 395,735
Claims priority, application Japan, Aug. 18, 1988, 63-205535
Int. Cl.[5] H01L *29/78, 27/06*
U.S. Cl. 357—23.4 7 Claims



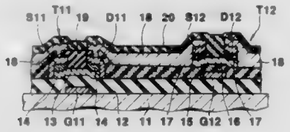
1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type having a first impurity concentration, said substrate having an exterior surface and said exterior surface having a gate region;
a first belt-shaped impurity layer of said first conductivity type formed in said semiconductor substrate so as to be spaced apart from the exterior surface of said semiconductor substrate and which has a second impurity concentration which is higher than said first concentration at a first depth from the exterior surface of said semiconductor substrate, said first layer extending beneath the entirety of said gate region;
a gate electrode having side walls formed on said semiconductor substrate at said gate region and a first insulating film interposed between said substrate and said gate electrode;
two first impurity regions of a second conductivity type formed in said semiconductor substrate on both sides of said gate electrode so as to be spaced apart from each other and having a third impurity concentration at a second depth from the exterior surface of said semiconductor substrate, each region having a lower surface which is above said first impurity layer, said regions having a portion projecting downward of said gate electrode at a location adjacent to said first impurity layer;
side wall insulating films each formed on a respective side wall of said gate electrode; and
second impurity regions of said second conductivity type formed in said first regions laterally of said side wall insulating films and having a fourth impurity concentration higher than said third concentration,
wherein said first impurity layer has a maximum impurity concentration at a depth of 0.2 to 0.7 μm from the exterior surface of said substrate.

5,060,034

MEMORY DEVICE USING THIN FILM TRANSISTORS HAVING AN INSULATION FILM WITH SI/N COMPOSITION RATIO OF 0.85 TO 1.1

Hideaki Shimizu, Inagi; Nobuyuki Yamamura, Hanno; Hiroyasu Yamada, Fussa; Haruo Wakai, Hamura, and Hiroshi Matsumoto, Tachikawa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 427,252
Claims priority, application Japan, Nov. 1, 1988, 63-274444; Dec. 14, 1988, 63-313811; Jan. 26, 1989, 1-15164; May 12, 1989, 1-117581; May 12, 1989, 1-117583
Int. Cl.[5] H01L *29/68, 27/01, 27/13, 29/78*
U.S. Cl. 357—23.5 8 Claims



1. A memory device comprising:
a memory thin film transistor; and
a select thin film transistor, coupled to the memory thin film transistor for selecting an operation of the memory thin film transistor;
said memory thin film transistor including:
a semiconductor layer,
source and drain electrodes electrically connected to said semiconductor layer,
a gate electrode for controlling formation of a channel of said semiconductor layer, and
first insulating film means for insulating said gate electrode and said semiconductor layer from each other, said first insulating film means comprising a silicon nitride film whose Si/N composition ratio is 0.85 to 1.1; and
said select thin film transistor including;
a semiconductor layer,
source and drain electrodes electrically connected to said semiconductor layer of said select thin film transistor,
a gate electrode for controlling formation of said semiconductor layer of the select thin film transistor, and
second insulating film means for insulating said gate electrode and said semiconductor layer of the select thin film transistor from each other, said second insulating film means comprising a silicon nitride film whose Si/N composition ratio is about 0.75.

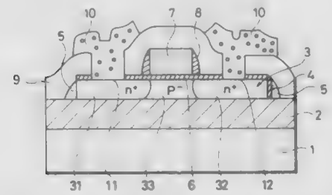
5,060,035

SILICON-ON-INSULATOR METAL OXIDE SEMICONDUCTOR DEVICE HAVING CONDUCTIVE SIDEWALL STRUCTURE

Tadashi Nishimura, and Tsuyoshi Yamano, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1990, Ser. No. 550,584
Claims priority, application Japan, Jul. 13, 1989, 1-180952; May 23, 1990, 2-133001
Int. Cl.[5] H01L *27/01, 27/02, 29/10, 29/04*
U.S. Cl. 357—23.7 10 Claims

1. A semiconductor device comprising:
an insulating substrate having a major surface,
an island-shaped semiconductor layer of a first conductivity type formed on the major surface of said insulating substrate, having a major surface and a sidewall at eh periphery of said major surface of said island-shaped semiconductor layer, and isolated from any surrounding structures,
source and drain regions of a second conductivity type formed spaced apart from each other in said island-shaped semiconductor layer so as to define a channel region having a part of the major surface of said island-shaped semiconductor layer as a channel surface,
a gate electrode formed on said channel surface through an insulating film,
a sidewall insulating film formed on a sidewall along said periphery enclosing all of said island-shaped semiconductor layer other than said source region,



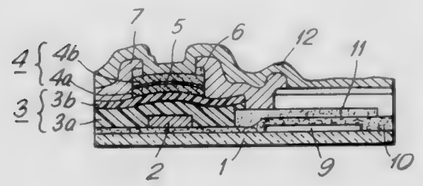
a semiconductor sidewall layer of the first conductivity type formed on a sidewall of said island-shaped semiconductor layer corresponding to said source region and said sidewall insulating film,
potentials of said source region and said semiconductor sidewall layer being held the same.

5,060,036

THIN FILM TRANSISTOR OF ACTIVE MATRIX LIQUID CRYSTAL DISPLAY

Kwangsu Choi, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Rep. of Korea

Filed Dec. 28, 1989, Ser. No. 458,324
Claims priority, application Rep. of Korea, Dec. 31, 1988, 88-18214; Dec. 31, 1988, 88-18215
Int. Cl.[5] H01L *27/01*
U.S. Cl. 357—23.7 4 Claims



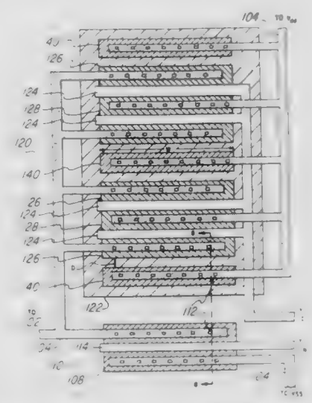
1. A thin film transistor used in active matrix liquid crystal display comprising:
two laminated SiO_2 insulating layers, a second layer of SiO_2 being disposed on top of a first layer of SiO_2, electrically isolating a gate electrode from a source electrode and preventing short circuiting therebetween and said second layer of SiO_2 providing insulation from pinholes in said first layer of SiO_2;
a semiconductor layer formed of two laminated amorphous silicon layers formed on the SiO_2 insulating layer and a layer of SiN of predetermined thickness formed between said two amorphous silicon layers to protect against leakage current and short circuiting in cross points between the gate electrode and the source electrode.

5,060,037

OUTPUT BUFFER WITH ENHANCED ELECTROSTATIC DISCHARGE PROTECTION

Robert N. Rountree, Richmond, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 334,732, Apr. 6, 1989, which is a continuation of Ser. No. 34,465, Apr. 3, 1987. This application Jul. 10, 1990, Ser. No. 550,228
Int. Cl.[5] H01L *29/78, 29/40*
U.S. Cl. 357—23.13 34 Claims



1. A CMOS output buffer with enhanced electrostatic discharge protection formed in a semiconductor surface on a substrate, comprising:
a. an N-channel transistor having a source connected to a first reference supply, a drain connected to an output pad of the output buffer, and a gate connected to an input of the output buffer;
b. a P-channel transistor formed in a first N-type region of said surface, including a source connected to a second reference supply, a drain connected to said output pad of the output buffer and a gate connected to another input of the output buffer, said P-channel source being formed of plural elongate diffusions and said P-channel drain being formed of plural elongate diffusions on both long sides of said P-channel source diffusions to form channel regions; and
c. plural, separate diffusion regions each formed in said semiconductor surface on a side of said P-channel drain diffusions opposite said P-channel source diffusions, said plural diffusion regions each being connected to said second reference supply to furnish electrostatic discharge protection of said N-channel transistor.

5,060,038

CHARGE SWEEP SOLID-STATE IMAGE SENSOR

Masafumi Kimata; Naoki Yutani, and Masahiko Denda, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

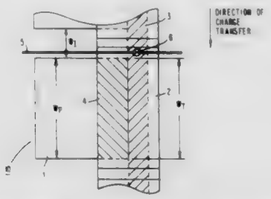
Continuation of Ser. No. 244,651, Sep. 13, 1988, abandoned, which is a continuation of Ser. No. 893,933, Aug. 6, 1986, abandoned. This application Nov. 30, 1989, Ser. No. 442,461
Claims priority, application Japan, Aug. 13, 1985, 60-179653
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 357—24 27 Claims

1. A solid-state image sensor comprising a plurality of pixels, arranged in a matrix formed of rows and columns, extending over an image area each converting a supplied optical signal into a signal charge, and charge transfer means for transferring signal charge from at least one pixel among said plurality of pixels, which are arranged in the same row, in a charge transfer

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direction, said charge transfer means including a charge transfer channel layer formed of an impurity doped region into a substrate and extending over a row in said charge transfer direction, and wherein said charge transfer means comprises a charge sweep type device in which a packet of electrical charge from a photo-electric transforming element is transferred to a charge transfer channel of said charge transfer means and the potentials of portions of said charge transfer channel are manipulated in a manner to transfer substantially all charge contained within said one of said packets of electrical charge out of said charge transfer channel prior to transferring another of said packets of electrical charge into said charge transfer channels, each of said plurality of pixels comprising:

a photo-electro transforming element on said substrate, forming a potential well of a first predetermined depth and extending in said charge transfer direction on the image area for transforming a given optical signal into a packet



of signal charge, opposite ends of said element in said charge transfer direction being spaced apart from each other by a width W_p, an end of said element being separated from a proximal end of an adjacent photo-electro transforming element by a distance W_T;

a charge transfer gate region in said substrate, connected to said photo-electro transforming element and to said channel layer of said charge transfer means, forming a potential well having a depth less than said predetermined depth, opposite ends of said charge transfer channel layer in said vertical charge transfer direction being spaced apart from each other by a width W_T; and

a single transfer gate on said charge transfer gate region continuously extending over a portion of said channel layer for controlling the depth of said potential well in said charge transfer gate region to control charge transfer in said charge transfer gate region from each photo-electro transforming element and in said channel layer.

5,060,039

PERMANENT MAGNET FORCE REBALANCE MICRO ACCELEROMETER

Marc S. Weinberg, Needham, and Paul Greiff, Wayland, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 143,515, Jan. 13, 1988, abandoned. This application Feb. 22, 1989, Ser. No. 314,453

Int. Cl.[5] H01L *29/84, 27/22;* **G01P** *15/08, 15/00*

U.S. Cl. 357—26 **11 Claims**

1. A micromachined monolithic structure adapted for use in inertial acceleration sensing comprising:

a monolithic body of an etchable structural material and having an etched cavity with a bottom therein;

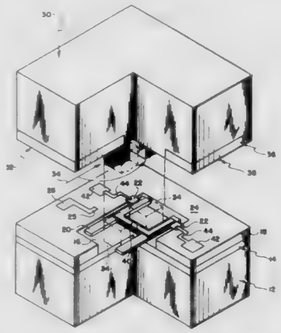
said monolithic body including a resiliently supported element suspended in said cavity above said bottom and having attachments to said body forming resilient supports for said element which permits said element to rotate about a first axis which passes through said supports;

said resiliently supported element including an opening between first and second segments coupled to said resilient supports, said first and second segments of said resiliently supported element coupled by a crosspiece extending parallel to and laterally displaced from said first axis;

said element and supports having etch resistant dopants therein, and formed in the same structural material as said monolithic body by selectively etching portions of said body;

an electrical conductor extending in a direction parallel to said axis across a portion of a surface of said crosspiece of said element;

a permanent magnet including first and second pole portions disposed on either side of said crosspiece of said element,



said first and second pole portions supported to direct magnetic field lines orthogonal to the direction of said conductor where it crosses a portion of said surface of said crosspiece of said element such that rotation of said crosspiece of said element about said axis will cause said conductor to pass through a maximum of magnetic field lines from said permanent magnet; and

means for imparting electrical conductivity to said bottom of said body.

5,060,040

PHOTOELECTRIC CONVERSION APPARATUS

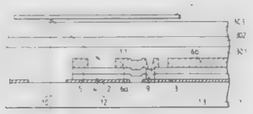
Toshihiro Saika, and Noriyuki Kaifu, both of Hiratsuka, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

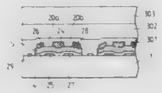
Filed Nov. 10, 1988, Ser. No. 269,703

Claims priority, application Japan, Nov. 14, 1987, 62-288199

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 357—30 **12 Claims**





1. A photoelectric conversion apparatus comprising:

an insulating substrate;

a photoelectric conversion unit including a semiconductor layer and a pair of electrodes, provided on said insulating substrate;

an electric charge storage section provided on said insulating substrate, having a semiconductor layer and a pair of electrodes, one electrode being electrically connected to an electrode of said photoelectric conversion unit and the other electrode which is closest to an information-carrying original being kept at a constant potential;

an element driving unit, coupled to said electric charge storage section, having a semiconductor layer and an electrode, for reading an electric charge stored in said electric charge storage section; and

an insulating protection layer provided over said photoelectric conversion unit, said electric charge storage section, and said driving element unit so that said insulating protection layer can contact with the information-carrying original.

5,060,041

AMORPHOUS SILICON PHOTOSENSOR

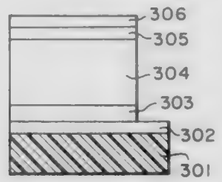
Koichi Haga; Akishige Murakami, both of Miyagi, and Hiroshi Miura, Natori, all of Japan, assignors to Ricoh Research Institute of General Electronics, Natori, Japan

Filed Nov. 14, 1988, Ser. No. 270,633

Claims priority, application Japan, Nov. 12, 1987, 62-286656

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 357—30 **33 Claims**



1. An amorphous silicon photosensor, comprising a substrate, a lower electrode formed on said substrate, an amorphous silicon photoelectric conversion layer formed on said lower electrode, and an upper electrode formed on said amorphous silicon photoelectric conversion layer, wherein said substrate is transparent to incident light for photosensing, said lower electrode and said upper electrode each independently comprises at least one of an electroconductive oxide and an electroconductive nitride, both of said electrodes for receiving the incident light for photosensing being transparent to said incident light, and wherein said amorphous silicon photoelectric conversion layer comprises a plurality of amorphous silicon layers at least one of which is a hydrogenated amorphous silicon layer comprising at least one of oxygen atom and nitrogen atom, and further wherein at least one of said amorphous silicon layers in contact with at least one of said electroconductive oxide and electroconductive nitride, comprises at least one of the same atoms as constituent atoms of said electroconductive oxide and electroconductive nitride, and further wherein said amorphous photoelectric conversion layer comprises an a-Si:H layer and a pair of a-Si:O:H layers, with said a-Si:H layer being interposed between said pair of a-Si:O:H layers.

5,060,042

PHOTOELECTRIC CONVERSION APPARATUS WITH RERESH VOLTAGE

Mahito Shinohara, Tokyo; Shigetoshi Sugawa, Atsugi; Seiji Hashimoto, Yokohama, and Mamoru Miyawaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 470,407, Jan. 29, 1990, Pat. No. 4,962,412, which is a continuation of Ser. No. 149,082, Jan. 27, 1988, abandoned. This application Jul. 5, 1990, Ser. No. 548,508

Claims priority, application Japan, Jan. 29, 1987, 62-17150; May 11, 1987, 62-112290; May 22, 1987, 62-123872; May 26, 1987, 62-126888

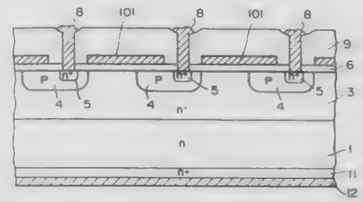
Int. Cl.[5] H04L *27/14*

U.S. Cl. 357—30 **5 Claims**

1. A photoelectric conversion apparatus, comprising:

first accumulation means for directly effecting a reading operation on a plurality of photoelectric conversion elements and accumulating read-out signals therefrom;

second accumulation means for directly effecting a refreshing operation on the photoelectric conversion elements and accumulating signals remaining immediately after said refreshing operation;



process means for processing the read-out signals and the remaining signals respectively accumulated in said first and second accumulation means to eliminate the remaining signal from said read-out signal; and

control means for changing a magnitude of a predetermined bias supplied to the photoelectric conversion elements during the refreshing operation to supply a bias voltage different from that supplied during other operations.

5,060,043

SEMICONDUCTOR WAFER WITH NOTCHES

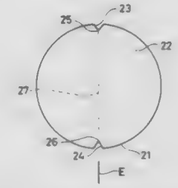
Takao Yasue, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1990, Ser. No. 462,525

Claims priority, application Japan, Jun. 26, 1989, 1-163534

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—40 **11 Claims**



1. A semiconductor wafer having a reference for identifying a specified crystal orientation, comprising:

a circular periphery; and

first and second notches spaced apart from each other on the outer periphery of said semiconductor wafer,

wherein each of said first and second notches has an angular V-shape with a vertex, and a line coupling the vertices of said first and second notches serves as a reference for identifying the specified crystal orientation.

5,060,044

INTEGRATED BIPOLAR-CMOS CIRCUIT ISOLATION FOR PROVIDING DIFFERENT BACKGATE AND SUBSTRATE BIAS

Stephen R. Tomassetti, Lewisville, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 55,480, May 28, 1987, Pat. No. 4,825,275. This application Apr. 11, 1989, Ser. No. 336,162

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] H01L *29/72, 27/02*

U.S. Cl. 357—43 **10 Claims**

1. A bipolar-CMOS circuit, comprising:

a semiconductor substrate of a first conductivity type having

an epitaxial layer of said first conductivity type disposed thereon;

a vertical bipolar transistor having a collector region formed by a first well of a second conductivity type opposite said first conductivity type disposed in said epitaxial layer;

a MOS transistor of said first conductivity type formed in a second well of said second conductivity type disposed in said epitaxial layer;

a MOS transistor of said second conductivity type formed in a selected portion of said epitaxial layer and having a backgate, said selected portion of said epitaxial layer being electrically isolated from said substrate and from an adjacent portion of said epitaxial layer;



conductors for interconnecting said MOS transistor of said second conductivity type with said MOS transistor of said first conductivity type to form a CMOS circuit;

as first connection for applying a voltage to said substrate; and

a second conduction for applying a different voltage to said selected portion of said epitaxial layer, whereby said backgate of said MOS transistor of said second conductivity type in said selected portion of said epitaxial layer can be biased by a different voltage than said substrate can said adjacent portion of said epitaxial layer.

5,060,045

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

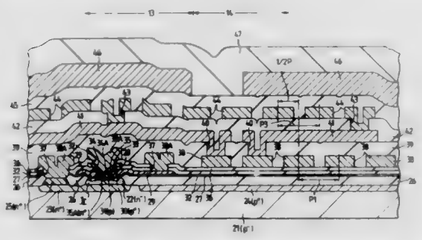
Nobuo Owada; Hiroyuki Akimori, both of Ohme; Takahisa Nitta, Fuchuu; Tohru Kobayashi; Shunji Sasabe, both of Iruma; Mikinori Kawaji, Hino, and Osamu Kasahara, Hinode, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1989, Ser. No. 422,640

Claims priority, application Japan, Oct. 17, 1988, 63-261035

Int. Cl.[5] H01L *27/10*

U.S. Cl. 357—45 **51 Claims**



1. A semiconductor integrated circuit device adopting a gate array scheme wherein circuits constructed of basic cells, which are arranged in a matrix array, are electrically connected by a plurality of layers of wiring, comprising:

a semiconductor substrate having (1) basic cell forming regions, in which said basic cells are arranged in the matrix array, and (2) wiring channel regions, said wiring channel regions respectively being located between adjacent basic cell forming regions;

first-layer wiring lines which are arranged at a position overlying said wiring channel regions;

a first-layer inter-layer insulator film which is formed so as to cover said basic cells in said basic cell forming regions and said first-layer wiring lines overlying said wiring channel regions;

second-layer wiring lines which are arranged at a position overlying said basic cell forming regions and overlying said wiring channel regions, and lying on said first-layer inter-layer insulator film, and which extend in a second direction different from a first extending direction, of said first-layer wiring lines, said wiring channel regions also extending in said first extending direction;

a second-layer inter-layer insulating film which is formed so as to cover said first-layer inter-layer insulator film and said second-layer wiring lines; and

third-layer wiring lines which are arranged at a position overlying said basic cell forming regions and overlying said wiring channel regions, and lying on said second-layer inter-layer insulator film, and which extend in a third direction, a wiring pitch of said third-layer wiring lines being substantially equal to or smaller than that of said first-layer wiring lines.

5,060,046

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING ENLARGED CELLS FORMED ON ENDS OF BASIC CELL ARRAYS

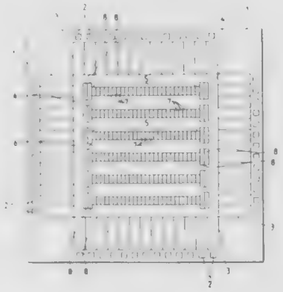
Yoshio Shintani, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 457,050, Dec. 26, 1989, abandoned. This application Feb. 22, 1991, Ser. No. 658,453

Claims priority, application Japan, Dec. 28, 1988, 63-330817

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—45 **16 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate having a principal surface which forms an internal circuit region and peripheral circuit regions;

a plurality rows of basic cell arrays which have basic cells of a MOSFET type forming a matrix array and which is formed on said internal circuit region, each row of basic cell array arranged along a first direction and said each row having a gate width which is measured along a second direction which is perpendicular to said first direction;

wiring channel formation regions which are located between adjacent rows of said basic cell arrays; and

a special basic cell of a MOSFET type formed adjacent each end portion of said plurality of rows of said basic cell arrays, said special basic cell having a larger gate width which is measured along said second direction than said gate width of the basic cells of a respective array, wherein said special basic cell has a pair of end portions which extend along said first direction and which extend into a pair of adjacent wiring channel regions.

5,060,047

HIGH VOLTAGE SEMICONDUCTOR DEVICE

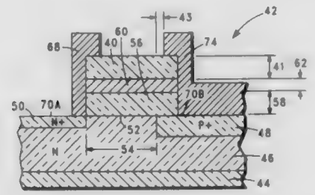
Denis Jaume, Colomiers; Andre P. Lavigne, Lacroix Falgarde, and Georges Charitat, Luzech, all of France, assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 437,404, Nov. 16, 1989, abandoned. This application Dec. 24, 1990, Ser. No. 630,804

Claims priority, application France, Jul. 21, 1989, 89 09897

Int. Cl.[5] H01L *29/36*

U.S. Cl. 357—53 **20 Claims**



1. A semiconductor device comprising:

a substrate;

a semiconductor region on the substrate including a doped electrode region and a doped isolation region, wherein the doped electrode region and the doped isolation region are separated by a first distance;

an isolation layer on part of the semiconductor region between the doped isolation region and the doped electrode region, the isolation layer covering a portion of an end of the doped electrode region;

a first polycrystalline semiconductor layer of a first resistivity on the isolation layer;

a second polycrystalline semiconductor layer of a second resistivity different than the first resistivity on the first polycrystalline semiconductor layer, wherein the second resistivity exceeds the first resistivity; and

a metallization layer extending at least partly over the second polycrystalline semiconductor layer.

5,060,048

SEMICONDUCTOR COMPONENT HAVING AT LEAST ONE POWER MOSFET

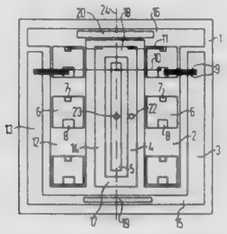
Ernst Hebenstreit, Munich; Leo Lorenz, Neubiberg; Winfried Schierz, Heideck, and Heinz Amann, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft & Semikron GmbH, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 363,456, Jun. 6, 1989, abandoned, which is a continuation of Ser. No. 112,223, Oct. 22, 1987, abandoned. This application May 4, 1990, Ser. No. 520,958

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1986, 3635956

Int. Cl.[5] H01L *23/48, 29/78, 27/22*

U.S. Cl. 357—68 **15 Claims**



2. A semiconductor component, comprising:

at least one power MOSFET formed of a semiconductor body having a drain, a source contact, and a gate contact;

a first interconnect, the semiconductor body being positioned on the first interconnect and the drain connecting to the first interconnect such that the first interconnect serves as a drain terminal;

a second interconnect as a source terminal lying at one side of the first interconnect and being connected to the source contact;

a third interconnect lying on an opposite side of the first interconnect such that the first interconnect lies between the second interconnect and third interconnect, said third interconnect connecting to the gate contact and serving as a gate terminal;

a fourth interconnect lying alongside the third interconnect such that the third interconnect lies between the fourth interconnect and the first interconnect, said fourth interconnect serving as an auxiliary terminal also connected to the source contact; and

an input of the component being applied between the gate terminal and auxiliary terminal of the third and fourth interconnects, whereby the input is decoupled from an output at the source terminal lying at the opposite one side of the first interconnect.

5,060,049

MULTIPLE RESISTIVITY WIRING APPARATUS

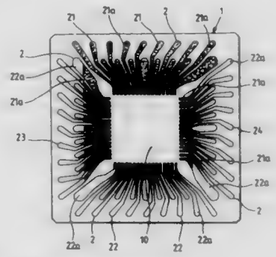
Kozo Yamasaki, Gifu; Kouichi Mouri; Naomiki Kato, both of Aichi, all of Japan; Mitsuru Hirano, Santa Clara, Calif.; Michael A. Schmitt, and Bidyut Bhattacharyya, both of Chandler, Ariz., assignors to NGK Spark Plug Co., Ltd., Aichi, Japan; NGK Spark Plugs (U.S.A.), Inc., Torrance, Calif. and Intel Corporation, Chandler, Ariz.

Filed Jul. 18, 1990, Ser. No. 553,804

Claims priority, application Japan, Jul. 21, 1989, 1-189230

Int. Cl.[5] H01L *23/54, 23/14*

U.S. Cl. 357—70 **20 Claims**



1. A wiring apparatus comprising:

a substrate formed of an electrically insulative ceramic;

a pattern formed on a surface of said substrate, said pattern including

a plurality of first wirings composed of a first metallized material having an electrical resistivity of a first value; and

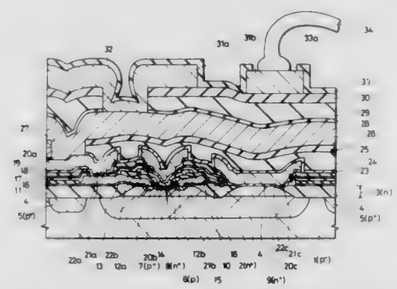
a plurality of second wirings composed of a second metallized material having an electrical resistivity of a second value different from said first value.

5,060,050

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Masatoshi Tsuneoka, Ohme, and Mitsuaki Horiuchi, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 219,249, Jul. 15, 1988, abandoned. This application Aug. 31, 1990, Ser. No. 577,093
Claims priority, application Japan, Jul. 21, 1987, 62-181459
Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*
U.S. Cl. 357—71 17 Claims



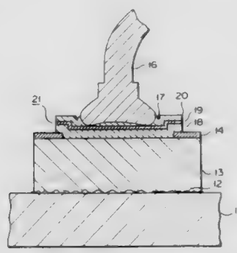
1. A semiconductor integrated circuit device comprising:
a first layer, comprising polycrystalline silicon and having impurity contained therein, on a semiconductor substrate;
a second layer on said first layer; and
a third layer consisting essentially of copper on said second layer, whereby said second layer is between the first and third layers, wherein said second layer is made of a material that prevents said impurity from diffusing from said first layer to said third layer so as to prevent said impurity from diffusing into said third layer, whereby increase in resistivity of the third layer consisting essentially of copper, due to diffusion of the impurity into the third layer, is prevented.

5,060,051

SEMICONDUCTOR DEVICE HAVING IMPROVED ELECTRODE PAD STRUCTURE

Osamu Usuda, Tatsuno, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 130,514, Dec. 9, 1987. This application Jan. 25, 1991, Ser. No. 645,707
Claims priority, application Japan, Dec. 12, 1986, 61-294902
Int. Cl.[5] H01L *23/54*
U.S. Cl. 357—71 1 Claim



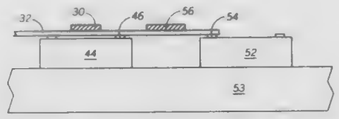
1. A semiconductor device comprising a semiconductor element, an electrode pad on the element, and a copper wire bonded on the electrode pad and connecting the electrode pad to an external lead,
wherein said electrode pad comprises:
a first metal layer consisting essentially of aluminum or an aluminum alloy on the semiconductor element, ohmically contacting the semiconductor element and having a thickness of 0.5 to 2.5 micrometers,
a second metal layer consisting essentially of vanadium or a vanadium alloy on the first metal layer and having a thickness of 0.1 to 0.8 micrometers, and
a third metal layer consisting essentially of aluminum or an aluminum alloy on the second metal layer and having a thickness of 0.5 to 5.0 micrometers.

5,060,052

TAB BONDED SEMICONDUCTOR DEVICE HAVING OFF-CHIP POWER AND GROUND DISTRIBUTION

James J. Casto, and Charles G. Bigler, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1990, Ser. No. 577,234
Int. Cl.[5] H01L *23/02, 23/12, 39/02, 29/44*
U.S. Cl. 357—74 4 Claims



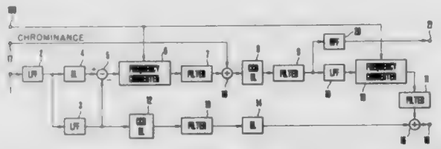
1. A multi-chip TAB bonded package having off-chip power and ground distribution comprising:
at least a first and second semiconductor device each having a plurality of bonding pads arrayed thereon;
at least one selected bonding pad located on the first semiconductor device and at least one selected bonding pad on the second semiconductor device;
at least one TAB lead bonded to the at least one selected bonding pad on each of the first and second semiconductor devices electrically coupling the first semiconductor device to the second semiconductor device; and
a carrier tape supporting the at least one TAB lead intermediate to the first and second semiconductor devices.

5,060,053

INFORMATION SIGNAL PROCESSING DEVICE

Tomotaka Muramoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 300,823, Jan. 23, 1989, abandoned. This application Jun. 25, 1990, Ser. No. 543,213
Claims priority, application Japan, Jan. 28, 1988, 63-017566; Sep. 16, 1988, 63-231938
Int. Cl.[5] H04N *9/64, 9/88*
U.S. Cl. 358—21 R 9 Claims



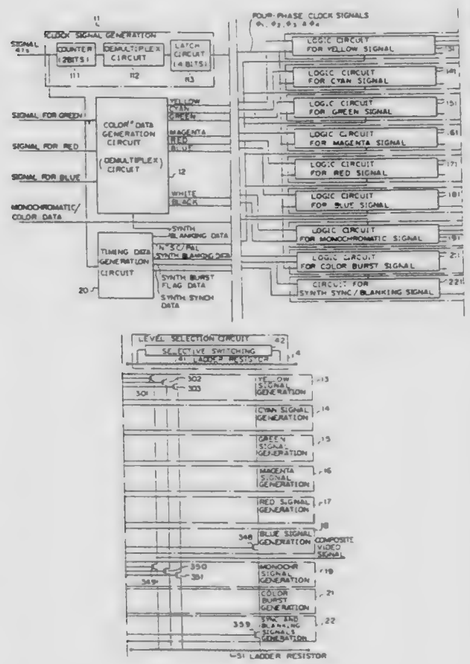
1. An image signal processing device for processing an image signal composed of a luminance signal having a second frequency band including a frequency component higher than a frequency component included in a first frequency band and a color signal having the frequency component included in the first frequency band, comprising:
a) first separation means, arranged to input the luminance signal, for separating the input luminance signal into a first luminance signal having a frequency component not higher than the frequency component included in the first frequency band and a second luminance signal having a frequency component higher than the frequency component included in the first frequency band to output the first and second luminance signals;
b) first frequency converting means for frequency-converting the second luminance signal output from said first separation means into the first frequency band to output the frequency-converted second luminance signal;
c) multiplexing means, arranged to input the color signal, for multiplexing the input color signal with the second luminance signal output from said first frequency converting means to output a multiplex signal; and
d) delay means, having a pass-band for the passage of a signal having the first frequency band, for delaying and outputting the first luminance signal output from said first separation means and the multiplex signal output from said multiplexing means.

5,060,054

DEVICE FOR CONTROLLING A COLOR VIDEO DISPLAY

Joji Murakami, and Minoru Wano, both of Kawasaki, Japan, assignors to Fujitsu Limited and Fujitsu Microcomputer Systems Limited, both of Kawasaki, Japan

Filed Dec. 1, 1988, Ser. No. 278,501
Claims priority, application Japan, Dec. 4, 1987, 62-307929
Int. Cl.[5] H04N *9/68*
U.S. Cl. 358—27 4 Claims



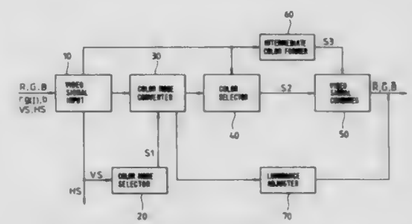
1. A device for controlling a color video display comprising:
ladder resistor means having a plurality of taps;
clock signal generating means for generating four-phase clock signals having the same frequency as a frequency of a subcarrier from a clock signal having a frequency which is four times the frequency of the sub-carrier; and
color signal generating means for receiving data, corresponding to colors to be displayed, and for successively selecting different sequences of said taps of said ladder resistor means based on said four-phase clock signals generated by said clock signal generating means wherein color signals having a predetermined phase relationship therebetween are generated.

5,060,055

COLOR DISPLAY CIRCUIT

Kang-soo Kim, Kyungsangbuk-do, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Rep. of Korea

Filed Jan. 4, 1990, Ser. No. 461,085
Claims priority, application Rep. of Korea, Apr. 4, 1989, 89-4488
Int. Cl.[5] G09G *1/28;* H04N *9/68*
U.S. Cl. 358—27 6 Claims



1. A color display circuit comprising:
a video signal input section for receiving color information data of a predetermined number of bits, intensity information data for them, and vertical and horizontal synchronizing signals;
a color mode selecting section for selectively outputting color mode selecting signals in accordance with said vertical synchronizing signals which are inputted through said video signal input section;
a color mode converting section for selecting and outputting the intensity information, after being controlled by said color mode selecting signals;
a color selecting section for selecting and outputting the corresponding color signals after receipt of the color information data through said video signal inputting section and after receipt of the intensity information data from said color mode converting section;
a video signal combining section for outputting control signals in order to control a plurality of electron guns after D/A conversions of the color signals;
an intermediate color forming section for letting said video signal combining section form an intermediate color upon inputting of an intermediate color information to said video signal input section; and
a luminance adjusting section for controlling the level of the

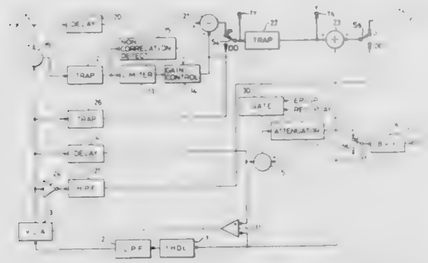
control signals which are outputted from said video signal combining section upon inputting of an intensity information to said video signal input section.

5,060,056

LUMINANCE SIGNAL/COLOR SIGNAL SEPARATING CIRCUIT AND NOISE REDUCTION CIRCUIT USING A COMB FILTER

Shigeru Miki; Mitsuzou Shirai, both of Osaka, and Yuuichi Ichikawa, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 10, 1990, Ser. No. 521,489
Claims priority, application Japan, Jun. 2, 1989, 1-141373
Int. Cl.[5] H04N *9/64*
U.S. Cl. 358—31 **10 Claims**



1. A luminance signal/color signal separating circuit comprising:

means (T_1) for providing a color video signal including a luminance signal and a color signal,

1H delay means (**1**) for delaying said color video signal by 1 horizontal period,

first addition means (**6**) for adding said color video signal and the output of said 1H delay means,

subtraction means (**5**) for subtracting said color video signal and the output of said 1H delay means,

means (**7**, **8**, T_3) for outputting the output of said subtraction means as said color signal,

signal separating means (**12**) for removing said color signal from the output of said subtraction means,

second addition means (**18**) for adding the output of said signal separating means to the output of said first addition means to output the result of addition as said luminance signal,

means (**15**) for detecting whether the output of said signal separating means includes non-correlation components of said luminance signal which are above a predetermined level or not, and

means (**13**, **14**, **16**) for enhancing said non-correlation components when said detection means detects that the output of said signal separating means does not include non-correlation components which are above said predetermined level.

5,060,057

INTRAFRAME PROCESSOR AND LUMINANCE-CHROMINANCE ADAPTIVE SEPARATOR APPARATUS

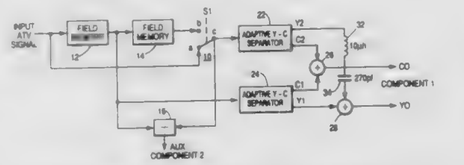
Anton W. Keller, Zurich, and Felix Aschwanden, Thalwil, both of Switzerland, assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Sep. 18, 1990, Ser. No. 584,009
Int. Cl.[5] H04N *9/78*
U.S. Cl. 358—31 **8 Claims**

1. Apparatus for decoding a television-type video signal containing auxiliary information modulating an auxiliary subcarrier other than a chrominance subcarrier, and main information containing luminance and chrominance components, comprising:

memory means having an input for receiving said video signal, a first output for providing a first field delayed signal, and a second output for providing a second field delayed signal relative to said first field delayed signal;

a first adaptive luminance-chrominance separator of a line comb filter type, having an input, a luminance output and a chrominance output;



a second adaptive luminance-chrominance separator of a line comb filter type, having an input, a luminance output and a chrominance output;

first means for combining signals from said luminance outputs of said first and second adaptive separators;

second means for combining signals from said chrominance outputs of said first and second adaptive separators; and

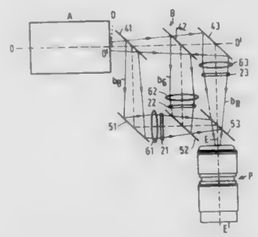
means for selectively coupling signals from said memory means to said inputs of said first and second adaptive separators, said coupled signals containing information from adjacent image fields.

5,060,058

MODULATION SYSTEM FOR PROJECTION DISPLAY

Jill F. Goldenberg, Pelham Manor, N.Y., and Wilhelmus A. G. Timmers, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1989, Ser. No. 362,641
Int. Cl.[5] H04N *9/30*
U.S. Cl. 358—60 **4 Claims**



1. In a modulation system for a color projection display comprising:

at least two light valves each of which defines a plurality of picture elements;

a color separation subsystem for separating an incoming light beam into a number of colored subbeams, each subbeam being modulated by one of the light valves; and

a color recombination subsystem for recombining the modulated subbeams to a projection beam, said color separation subsystem and said color recombination subsystem each comprising at least one dichroic mirror having a cut-off wavelength exhibiting a shift in dependence as a function of an angle of incidence;

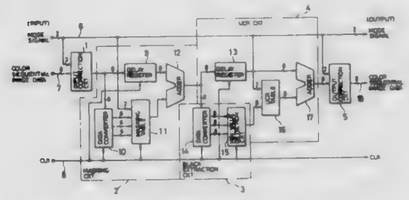
the improvement wherein the dichroic mirror in the separation subsystem and the dichroic mirror in the recombination subsystem are arranged in relation to one another such that, for all picture elements of the light valves, an average shift in cut-off wavelength in the separation and recombination subsystems for light rays passing through each picture element is substantially equal in size and opposite in sign.

5,060,059

COLOR IMAGE PROCESSING APPARATUS FOR CONVERTING COLOR-SEQUENTIAL IMAGE DATA INTO COLOR-PARALLEL IMAGE DATA

Tetsuzo Mori, Hiratsuka; Takashi Sugino, Atsugi; Makoto Takaoka, Atsugi; Susumu Sugiura, Atsugi, and Hiroyuki Ichikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 900,604, Aug. 26, 1986, abandoned.
This application Jun. 27, 1989, Ser. No. 372,172
Claims priority, application Japan, Jan. 14, 1986, 61-4161; Jan. 14, 1986, 61-4163; Jul. 26, 1986, 61-176161
Int. Cl.[5] H04N *1/46, 1/40*
U.S. Cl. 358—79 **15 Claims**



1. A color image processing apparatus comprising:

input means for entering first color-sequential image data in which plural color component signals are sequentially arranged;

first converting means for converting the first color-sequential image data into first parallel image data;

color image processing means for effecting color image processing on the first parallel image data obtained from said first converting means, said color image processing means outputting second parallel image data by performing calculation using the first parallel image data together;

second converting means for converting the second parallel image data output by said color image processing means into second color-sequential image data; and

supply means for supplying the second color-sequential image data to a color-sequential image data processing means at a next stage of processing of the plural color component signals, wherein the second color-sequential image data output by said second converting means is sequentially arranged having the same form as that of the first color-sequential image data entered by said input means.

5,060,060

METHOD AND APPARATUS FOR PROCESSING COLOR IMAGES HAVING HIGH MAXIMUM SATURATION

Yoshiro Udagawa, Tokyo, and Hideo Takiguchi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

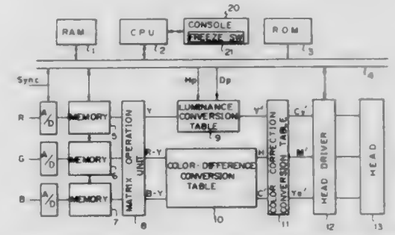
Continuation of Ser. No. 54,588, May 27, 1987, abandoned. This application Jul. 27, 1990, Ser. No. 560,295
Claims priority, application Japan, May 30, 1986, 61-123716; May 30, 1986, 61-123717; May 30, 1986, 61-123718; May 30, 1986, 61-123719; May 30, 1986, 61-123720; May 30, 1986, 61-123721; May 30, 1986, 61-123722; May 30, 1986, 61-123723
Int. Cl.[5] H04N *9/74;* **G03F** *3/08*
U.S. Cl. 358—80 **21 Claims**

1. A color image processing apparatus comprising:

extracting means for extracting a hue component from a color image signal;

memory means for storing a predetermined hue component indicative of a hue of a preferable skin color; and

color correcting means for automatically correcting by adjusting the hue component to within a first predetermined range of the predetermined hue component indicative of the hue of skin color when the hue component



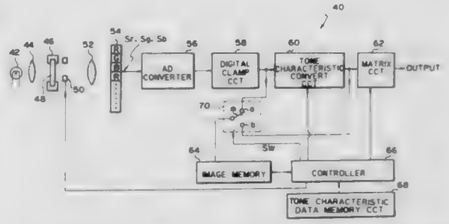
extracted by said extracting means is present within a second predetermined range of hue.

5,060,061

METHOD OF READING AN IMAGE RECORDED IN A PHOTOGRAPHIC FILM TONE CHARACTERISTIC CORRECTING METHOD IN REPRODUCING AN IMAGE RECORDED IN A PHOTOGRAPHIC FILM

Ichiro Shishido; Tadayoshi Miyoshi; Takashi Kuriyama, all of Yokohama; Hiromitsu Kurokawa, Yokosuka; Shigeaki Tada, Hiratsuka, and Hiroshi Nishiyama, Ninomiya, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 27, 1990, Ser. No. 545,420
Claims priority, application Japan, Jun. 30, 1989, 1-170763; Aug. 8, 1989, 1-205248
Int. Cl.[5] G03F *3/08;* **H04N** *3/36*
U.S. Cl. 358—80 **10 Claims**



1. A method of reading an image recorded in a photographic film to generate an image signal representative of said image, comprising the steps of:

(a) prescanning the image of the film to generate a first image signal;

(b) reading tone characteristic data stored beforehand and associated with the film;

(c) estimating exposing conditions of the film selected at the time of shooting on the basis of said first image signal and said tone characteristic data;

(d) determining a first tone conversion characteristic from said estimated exposure conditions and said tone characteristic data;

(e) scanning the image of the film to generate a second image signal;

(f) correcting a tone characteristic of said second image signal by said first tone conversion characteristic;

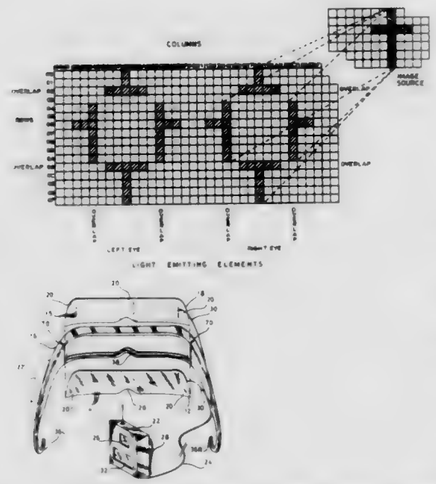
(g) determining a frequency distribution of a luminance component of said corrected second image signal;

(h) determining a second tone conversion characteristic by changing said first tone conversion characteristic such that said determined frequency distribution becomes a predetermined flat distribution; and

(i) further correcting by said second tone conversion charac-

teristic said tone characteristic of said second image signal corrected in step (f).

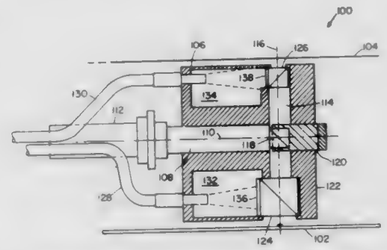
5,060,062
ELECTRONIC VISION AID DEVICE
Robert S. Dotson, 137 Danbury Dr., Oak Ridge, Tenn. 37830
Filed May 2, 1990, Ser. No. 517,830
Int. Cl.[5] H04N *7/00*
U.S. Cl. 358—94 **9 Claims**



1. A visual sensory aid system for the partially sighted, comprising:
- a portable imager for wearing on the face in the same manner as, and in place of, eyeglasses;
- electronic circuitry for detecting and processing incident light from an image source into patterns corresponding to said image source, displayed on an inner surface of said sensory aid so as to impinge on those areas of the eyes which still retain sight ability; and
- means for shaping the visual image imparted to conform to the particular shape of the blind spot of each eye of the wearer.

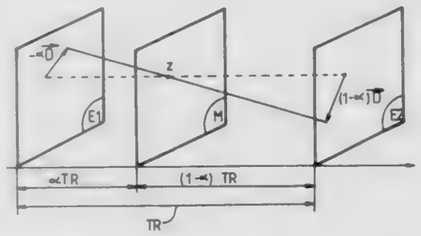
5,060,063
VIEWING AND ILLUMINATING VIDEO PROBE WITH VIEWING MEANS FOR SIMULTANEOUSLY VIEWING OBJECT AND DEVICE IMAGES ALONG VIEWING AXIS AND TRANSLATING THEM ALONG OPTICAL AXIS
Gary T. Freeman, Beverly, Mass., assignor to MPM Corporation, Franklin, Mass.
Filed Jul. 30, 1990, Ser. No. 559,622
Int. Cl.[5] H04W *7/18, 7/00*
U.S. Cl. 358—101 **21 Claims**

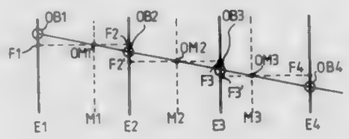
18. Viewing and illuminating apparatus comprising,
- a video probe, having an optical axis, arranged to be placed between an object and a device acting on the object to view an object image and a device image along a viewing axis;
- viewing means, disposed in said video probe, for simultaneously viewing the object image and the device image along said viewing axis and translating said images along said optical axis;
- a first illumination means disposed in said video probe for directing illumination along said viewing axis toward the object and away from said viewing means; and



- a second illumination means disposed in said video probe for directing illumination along said viewing axis toward the device and away from said viewing means.

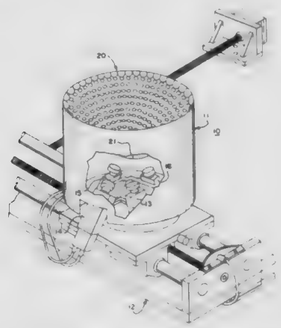
5,060,064
ARRANGEMENT FOR INTERPOLATION IMAGES BY MOTION ESTIMATION AND COMPENSATION AND A TELEVISION STANDARD CONVERTER SYSTEM COMPRISING SUCH AN ARRANGEMENT
Moustanir Lamnabhi, Limeil Brevannes, and Jean-Jacques Lhuillier, Saint Maur, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
PCT No. PCT/NL89/00028, § 371 Date Feb. 6, 1990, § 102(e) Date Feb. 6, 1990, PCT Pub. No. WO89/10600, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 26, 1989, Ser. No. 460,326
Claims priority, application France, Apr. 29, 1988, 8805775
Int. Cl.[5] H04N *7/01*
U.S. Cl. 358—105 **9 Claims**





1. An arrangement for interpolating images in an input sequence of images by motion estimation and compensation, said arrangement comprising:
- motion estimation means for estimating motion vectors for blocks of picture elements;
- means for comparing, separately for each picture element of a block, a plurality of motion vectors estimated for said block and for blocks adjacent to said block to determine a selected motion vector for each picture element separately; and
- means for interpolating an image in dependence on said selected motion vectors.

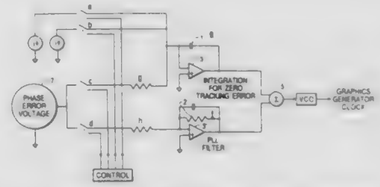
5,060,065
APPARATUS AND METHOD FOR ILLUMINATING A PRINTED CIRCUIT BOARD FOR INSPECTION
Harold Wasserman, Belle Mead, N.J., assignor to Cimflex Teknowledge Corporation, Princeton, N.J.
Filed Feb. 23, 1990, Ser. No. 483,882
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—106 **36 Claims**



1. An apparatus for inspecting a printed circuit board, and components affixed to said printed circuit board, said components having leads or pins for engaging features of said printed circuit board for soldered connection thereto, said apparatus comprising:
- means for illuminating said printed circuit board and said components; and
- camera means for receiving light reflected from said printed circuit board and said components, and for producing an electrical signal which varies responsive to the reflected light received by said camera means;
- wherein said illuminating means in comprised of a substantially dome-shaped fixture incorporating an array of individually addressable light producing elements defining a plurality of latitudes and longitudes of the dome-shaped fixture, and means for selectively controlling the light producing elements to activate subsets of the light producing elements within the array at intersections of latitudes and longitudes of the dome-shaped fixture.

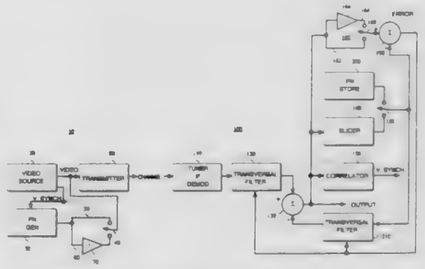
5,060,066
INTEGRATING-PHASE LOCK METHOD AND CIRCUIT FOR SYNCHRONIZING OVERLAY DISPLAYS ON CATHODE-RAY-TUBE MONITORS OF DIGITAL GRAPHIC INFORMATION AND VIDEO IMAGE INFORMATION AND THE LIKE
Jerry B. Roberts, Lexington, Mass., assignor to Visage, Inc., Framingham, Mass.
Filed Feb. 21, 1989, Ser. No. 313,388
Int. Cl.[5] H04W *5/04*
U.S. Cl. 358—148 **10 Claims**

1. A method of horizontal sychronizing of overlayed digital graphic image information and video image information in the same display area of a cathode-ray-tube monitor screen, that comprises, applying phase error voltage signals along a pair of independently operative paths, one integrating the phase error voltage to obtain zero tracking error and the other serving phase loop locking functions; summing the output of both paths for control of the clocking of the graphic image information; and controlling the separate operation of the paths in accordance with display signal aberrations, maintaining the phase lock loop operative in response to the phase error signals during the aberrations while disconnecting the integrating path



from such phase error signals during such aberrations, and varying the time constants of one or both of said paths.

5,060,067
SYSTEM FOR NEGATING THE EFFECTS OF DC OFFSETS IN AN ADAPTIVE EQUALIZER
Ronald B. Lee, and Larry E. Nielsen, both of Chicago, Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Nov. 26, 1990, Ser. No. 618,188
Int. Cl.[5] H04N *5/21*
U.S. Cl. 358—167 **10 Claims**



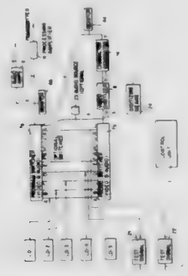
1. In a system of the type wherein a reference signal is transmitted and received during successive spaced time intervals of an information signal and a stored representation of the reference signal is subtracted from the received reference signal to derive a feedback signal for controlling an adaptive filter for equalizing the received information signal, the improvement comprising:
- means for transmitting said reference signal in inverted and non-inverted form during alternate ones of said time intervals; and
- means for reinverting the received reference signals transmitted in inverted form prior to deriving said feedback signal such that DC offsets acquired by the transmitted reference signal are produced as opposite polarity components of said feedback signal during alternate ones of said time intervals.

5,060,068
AUDIO/VIDEO DISTRIBUTION SYSTEM
James E. Lindstrom, 47 Pike Dr.-2B, Wayne, N.J. 07470, assignor to James E. Lindstrom, Wayne, N.J.
Filed Oct. 31, 1988, Ser. No. 265,401
Int. Cl.[5] H04N *5/222*
U.S. Cl. 358—185 **25 Claims**

1. A system for transmitting audio-video signals to a broadcasting system, comprising:
- at least one playing means for playing a show which is pre-recorded in a pre-defined continuous and coherent edited sequence on at least one source recording which is amenable to repeated playings without noticeable wear or distortion and which contains at least a substantial portion

of the show, wherein different recorded material is provided on each said source recording;

control means programmed to transmit said show in its entirety and separately and repeatedly to select and transmit at least one promotional segment of said show previ-



ous to or following the entire transmission of said show from the same source recording;

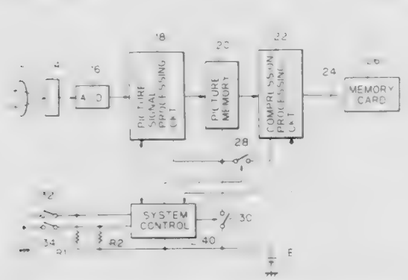
wherein said control means is programmed to access any point of the source recording and to retrieve any length of segment from the source recording in accordance with a programmed schedule.

5,060,069

ELECTRONIC STILL CAMERA WITH LESS ELECTRIC CONSUMPTION

Akira Aoki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Feb. 27, 1990, Ser. No. 485,510
Claims priority, application Japan, Mar. 7, 1989, 1-52927
Int. Cl.[5] H04N *5/225*
U.S. Cl. 358—209 **9 Claims**



1. An electronic still camera for photographing an object to record a picture signal representative of a still image of the object in a semiconductor storage medium, comprising:

photographing means for taking an image of an object to produce a picture signal representative of the image of the object;

signal conversion means for converting the picture signal into a digital image data corresponding to the picture signal;

image processing means for processing the image data to produce a resultant picture signal;

compression processing means interconnected to said image processing means for compressing the resultant picture signal produced from said image processing means to develop the compressed picture signal to the semiconductor storage medium;

control means for controlling said image processing means and said compression processing means in response to a shutter release operation of said camera;

power source means for supplying said photographing means, said image , rocessing means, said compression processing means and said control means with electric power; and

switch means for connecting said power source means to said image processing means and said compression processing means;

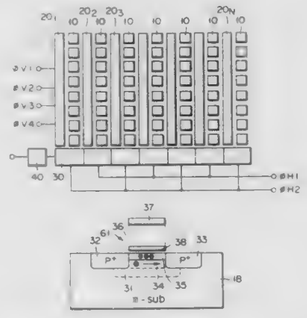
said control means controlling said switch means to allow said image processing means to be interconnected to said power source means with said compression processing means disconnected from said power source means while said image processing means is in operation, and controlling said switch means to allow said compression processing means to be interconnected to said power source means while said compression processing means is in operation.

5,060,070

SOLID STATE IMAGE SENSOR HAVING LOW AND HIGH LEVEL SIGNAL COMPONENT DETECTORS

Yasuaki Nishida, Tokyo; Yoshiyuki Matsunaga, Kamakura; Nozomu Harada, Yokohama; Sohei Manabe, Yokohama, and Yukio Endo, Yokohama, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed May 23, 1990, Ser. No. 527,444
Claims priority, application Japan, May 25, 1989, 1-131869
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.1 S **9 Claims**



1. A solid state image sensor comprising:

image sensing means for outputting a light image as signal charges;

first signal detecting means, connected to said image sensing means and having a characteristic of a low amount of saturation signals and low noise, for detecting said signal charges output from said image sensing means and for outputting a first detection signal having a low level signal component and a low level noise component;

second signal detecting means, connected to said image sensing means and having a characteristic of a high amount of saturation signals and high noise, for detecting the same signal charges as outputted to said first signal detecting means from said image sensing means and for outputting a second detection signal having a high level signal component and a high level noise component; and

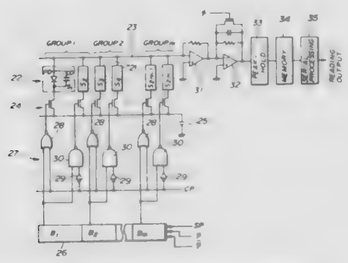
adding means, connected to said first and second signal detecting means, for adding said first and second detection signals to obtain an output signal having a high level signal component and a low level signal component.

5,060,071

FULL-SIZE OPTICAL SENSOR DEVICE HAVING IMPROVED DRIVING MEANS

Masumitsu Ino; Hiroyuki Tanaka, and Takehito Nagata, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 554,462
Claims priority, application Japan, Jul. 24, 1989, 1-190851
Int. Cl.[5] H04N *5/335, 3/14*
U.S. Cl. 358—213.11 **17 Claims**



1. A full-size optical sensor device comprising:

a sensor array including a plurality of photoelectric conversion elements which are arranged in a line, each of said photoelectric conversion elements outputting image signal to one signal output line, and wherein said sensor array is divided into a plurality of groups, each of them including a plurality of said photoelectric conversion elements; and

driving means, coupled to said sensor array, for selectively driving said photoelectric conversion elements of said sensor array,

said driving means comprising;

shift register means, having a plurality of bits which are arranged in a line, for shifting a predetermined binary data, and

selecting means for selecting one of said driven photoelectric conversion elements in accordance with an external control signal and said predetermined binary data shifted by said shift register means, said selecting means having a plurality of circuit sets, each of said circuit sets being connected between one of the bits of said shift register means and one of said groups having photoelectric conversion elements, wherein each of said circuit sets selects one of said driven photoelectric conversion elements in a corresponding one of said groups in accordance with said external control signal when a corresponding one of said bits of said shift register means has said predetermined binary data.

5,060,072

CCD IMAGER WITH POSITIVE AND MIRROR IMAGE OUTPUT

Junichi Hojo; Naoki Kato; Toshiaki Wakayama, and Kazuhide Fujikawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

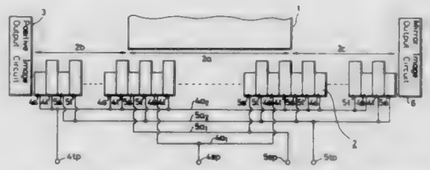
Filed Sep. 17, 1990, Ser. No. 583,218
Claims priority, application Japan, Sep. 12, 1989, 1-246195
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 358—213.11 **7 Claims**

1. A charge-coupled device (CCD) imager comprising:

a) a CCD image sensor;

b) a horizontal register for delivering an image signal from said CCD image sensor, said horizontal register being formed of an effective bit portion corresponding to said CCD image sensor and first and second dummy bit portions of a predetermined length, said first and second dummy bit portions being located at both sides of said effective bit portion; and

first and second output portions provided in succession to said first and second dummy bit portions to provide a positive image signal and a mirror image signal, wherein said effective bit portion is connected with four bus lines through which a transfer clock is supplied to said horizontal register and said first and second dummy bit portions are each connected with only two of said four bus lines through which a transfer clock is supplied to said horizontal register.

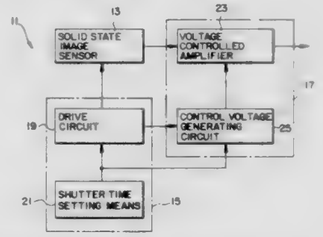


5,060,073

SOLID-STATE IMAGE DEVICE AND OUTPUT COMPENSATE METHOD THEREOF

Shinichi Yamaguchi, and Tomoyuki Sasaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 16, 1990, Ser. No. 509,328
Claims priority, application Japan, Apr. 28, 1989, 1-110104
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 358—213.11 **16 Claims**



1. A solid-state image device comprising:

a solid-state image sensor having a plurality of photoelectric conversion elements and a transfer section, a storage section, and an output section, wherein the solid-state image sensor picks up a picture image comprised of the first field image and a second field image;

a control means for controlling the output of data of a certain voltage level from the output section of the solid-state image sensor, said data representing the first field image and the second field image;

a means for compensating for differeces in the voltage level of the data representing the first and the second field images, wherein the compensating means outputs one field image data without change and amplifies the remaining field image data by an amount based on a shutter time of said photoelectric conversion elements to compensate for the differences in the voltage level of the data of the first and second field.

5,060,074

VIDEO IMAGING APPARATUS

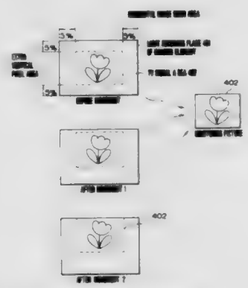
Toshiro Kinugasa, Hiratsuka; Takuya Imaide, Yokohama; Naoki Yamamoto, Yokohama, and Hiroyuki Komatsu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering, Inc., Yokohama, both of Japan

Filed Oct. 10, 1990, Ser. No. 595,364

Claims priority, application Japan, Oct. 18, 1989, 1-268898; Nov. 6, 1989, 1-287453; Dec. 22, 1989, 1-331350

Int. Cl.[5] H04N *5/228*

U.S. Cl. 358—224 22 Claims



1. An imaging apparatus comprising:
an imaging element;
a signal processing circuit for processing a signal produced from said imaging element to produce an image signal;
a transfer pulse generating circuit for supplying a transfer pulse for reading out the signal from said imaging element to said imaging element; and
a scanned pixel area control circuit for supplying a control signal for controlling a scanned pixel area of said imaging element to said transfer pulse generating circuit;
whereby signals of pixels arranged in said imaging element and adjacent in the vertical direction are read out simultaneously and the scanned pixel area is varied in a pitch of one pixel at a minimum.

5,060,075

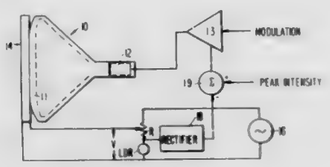
CRT DISPLAY DEVICE WITH VARIABLE LIGHT TRANSMISSION PANEL

Kenneth R. Skinner, Jefferson City, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 22, 1989, Ser. No. 456,028

Int. Cl.[5] H04N *5/72*

U.S. Cl. 358—250 4 Claims



1. In a CRT display device including an envelope having a faceplate of predetermined light transmissivity, a luminescent screen disposed on an inner surface of the faceplate and electron beam producing means disposed within the envelope for exciting the screen to effect production of a luminescent image, the improvement comprising means for controllably reducing ambient light reflections, said means including:
(a) a variable light transmissivity panel disposed adjacent an outer surface of the faceplate for intercepting ambient light radiation reflected from the screen and for passing light radiation from the luminescent image, the light transmissivity of said panel varying with the magnitude of an applied control signal;
(b) a light sensor disposed in proximity to the faceplate for sensing the intensity of ambient light received at the faceplate; and
(c) control circuitry, electrically connected to the light sensor and to the variable light transmissivity panel, for producing the control signal;
during operation of the display device said control signal varying in response to the intensity of ambient light received at the light sensor and effecting variation of the panel light transmissivity inversely to variation of said ambient light intensity; and
during non-operation of the display device said control signal effecting a minimum transmissivity of the panel.

5,060,076

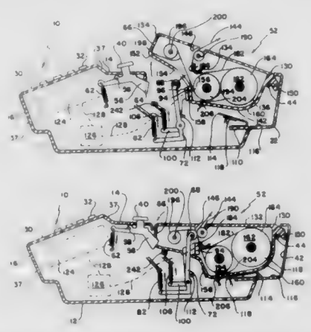
THERMAL PAPER CARTRIDGE FOR FACSIMILE MACHINE

Charles M. Curley, Ithaca, N.Y., assignor to Smith Corona Corporation

Filed Feb. 8, 1990, Ser. No. 476,998

Int. Cl.[5] H04N *1/23;* G01D *15/00;* B41F *35/00*

U.S. Cl. 358—296 35 Claims



1. A thermal paper cartridge for a facsimile machine having a recess and a print head projectable into the recess, comprising:
a cartridge housing configured for releasable disposition in the recess and having an access opening for accommodating the print head for operational engagement in said cartridge;
a paper supply roll having a supply of thermal paper adapted to be drawn from said roll as a web and being located within said cartridge housing;
a paper guide secured within said housing for receiving said web of paper; and
said paper supply roll being disposed in said cartridge housing and said paper web being drawn across said paper guide so that the print head may press said paper web against said paper guide to transfer a facsimile message upon said paper web.

5,060,077

REPRODUCTION APPARATUS HAVING MEANS FOR INITIALIZING FLAG MEMORIES DURING SLOW MOTION AND FREEZE REPRODUCTION

Toshiaki Koya, Kadoma, and Kunio Suesada, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

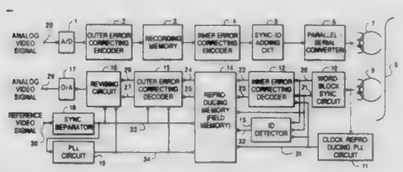
PCT No. PCT/JP89/00872, § 371 Date Apr. 17, 1990, § 102(e) Date Apr. 17, 1990, PCT Pub. No. WO90/02401, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 28, 1989, Ser. No. 490,599

Claims priority, application Japan, Aug. 31, 1988, 63-216567

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 8 Claims



8. An apparatus for reproducing data recorded on a recording medium, said apparatus comprising:
detecting means for detecting the data recorded on the recording means;
flag generating means for generating a flag indicative of a state of the data detected by said detecting means;
a flag memory for storing the flag generated by said flag generating means;
a data memory for storing the data detected by said detecting means;
read-out control means for reading the flag stored in said flag memory;
read-out and initialization control means for reading the flag stored in said flag memory and for initializing the flag memory; and,
switching means for selectively activating one of said read-out control means and said read-out and initialization means;
said switching means activating said read-out and initialization means only during a final time the data stored in said data memory is read during a reading period in which the data and flag are to be repeatedly read from said data memory and flag memory a number of times prior to a subsequent writing of the data and flag in said data memory and flag memory.

5,060,078

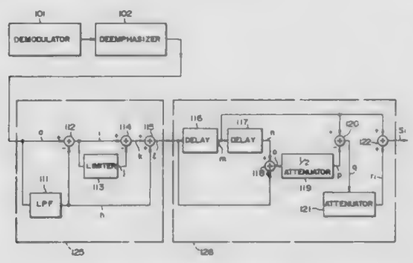
VIDEO SIGNAL PROCESSING APPARATUS HAVING A NOISE REDUCTION CIRCUIT

Yasuo Mitsuhashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1989, Ser. No. 379,969

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—340 7 Claims



1. A video signal processing apparatus for removing the noise overlapped with an input signal which is picked up by a playback head of a VTR and executing noise reduction processing of said input signal so as to enhance the sharpness of the reproduced picture, said video signal processing apparatus comprising:
a demodulator for demodulating an FM video signal;
a deemphasis circuit for suppressing a high-frequency component of the output signal of said demodulator;
a noise canceller circuit for removing the noise component from the output signal of said deemphasis circuit including,
a low pass filter for removing said high-frequency component from said output signal of said deemphasis circuit,
a first subtractor for subtracting the output signal of said low pass filter from said output signal of said deemphasis circuit,
a limiter for limiting the amplitude of the output signal of said first subtractor at a predetermined level,
a second subtractor for subtracting the output signal of said limiter from said output signal of said first subtractor, and
a first adder for adding the output signal of said second subtractor and said output signal of said low pass filter to produce a noise canceller circuit output signal; and
an outline emphasizing circuit for processing the output signal of said noise canceller circuit so as to form peaks having a narrow pulse width and a large amplitude at transient portions of the pulse wave of said output signal with bipolarity including,
first and second delay circuit connected to each other in series so as to delay the output signal of said first adder by respective predetermined amounts,
a second adder for adding the output signal of said second delay circuit and said output signal of said first adder,
a ½ attentuator for reducing the amplitude of the output signal of said second adder by ½,
a third subtractor for subtracting the output signal of said ½ attentuator from the output signal of said first delay circuit, and
a third adder for adding said output signal of said first delay signal circuit and the output signal of said third subtractor.

5,060,079

APPARATUS FOR CONTROLLING TELEVISION MONITORING

Alexander Rufus-Isaacs, 110 Winnett Pl., Santa Monica, Calif. 90402

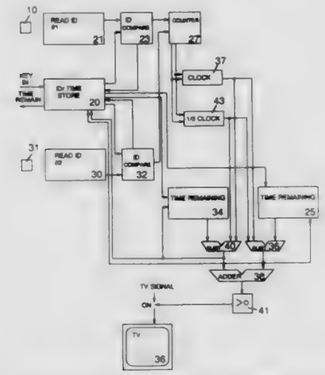
Filed Mar. 30, 1990, Ser. No. 503,311

Int. Cl.[5] H04N *7/167*

U.S. Cl. 358—349 4 Claims

1. An arrangement for limiting the time an authorized viewer may view a television program on a television receiver comprising means for sensing a value stored in a transportable magnetic medium, means operating in response to the sensing of a value stored in the transportable magnetic medium for providing a signal indicative of the time remaining to the authorized viewer, means responsive to an indication that time remains to the viewer to enable the transmission of television

signals to a television receiver, and means for changing the value stored in the transportable magnetic medium to reduce



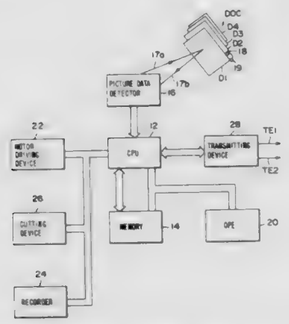
the time remaining to the viewer incrementally with the passage of time.

5,060,080

SELF MULTI-COPY METHOD IN A FACSIMILE SYSTEM

Hyo-Hyun Hwang, Kyounggi, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 31, 1989, Ser. No. 359,273
Claims priority, application Rep. of Korea, Feb. 28, 1989, 2475
Int. Cl.[5] H04M *1/00*
U.S. Cl. 358—401 **13 Claims**



1. A method for making multiple copies in a facsimile system, comprising the steps of:

displaying a first message notifying a user to set a number of copies for each page using a multi-copy key, set in a stand-by state, and detecting whether said number of copies for each page is set;

saving, during a first saving process, in a memory said number of copies, and displaying a second message notifying the user to load an original document until the original document is detected in a first detecting process by a document detecting sensor;

conveying, during a first reading process, the original document into a scanning position upon the detecting the original document in said first detecting process, scanning and encoding the original document to store data representing the original document into said memory by the page, and detecting, in a second detecting process, the end of the original document;

increasing a count by a document counter when the end of the original document is detected in said third detecting process, and detecting, as in said second detecting process, whether another document is inserted;

repeatedly executing, from the document scanning position, said first reading process of conveying, scanning, and encoding and said second detecting process upon detection of another document, until no document is detected, and saving a current count of said document counter in a register during a second saving process;

producing a facsimile document, by accessing and decoding, one page of the data from said memory after completion of said step of repeatedly executing said first reading process;

decreasing the stored content of said register and repeatedly executing, in a third process, said step of producing facsimile documents by accessing and decoding the data by the page until the value of said register becomes "0";

decreasing the number of copies by one after completion of said third process, and detecting, during a fourth detecting process, whether a current value of the number of copies is "0"; and

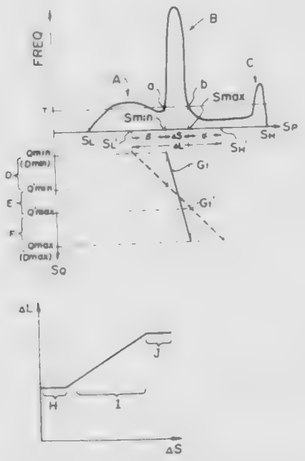
storing the current value of the number of copies when the result of said fourth detecting process is not "0" and then repeatedly producing facsimile documents and clearing the data from memory when the current value is "0", to transmit into the stand-by mode.

5,060,081

METHOD OF ADJUSTING READ-OUT CONDITION AND/OR IMAGE PROCESSING CONDITION FOR RADIATION IMAGE

Kazuo Shimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1989, Ser. No. 325,176
Claims priority, application Japan, Mar. 19, 1988, 63-66747; Aug. 1, 1988, 63-192373
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—443 **9 Claims**



5. In a radiation image read-out and reproducing system for obtaining an image signal by reading out a radiation image from a recording medium, on which the radiation image of an object has been recorded, carrying out image processing of the image signal by using an image processing condition, and reproducing a visible image from the processed image signal,

a method of adjusting an image processing condition for a radiation image, which comprises the steps of:

i) creating a histogram of said image signal,

ii) determining an image information range, which is necessary for reproducing said visible image, from said histogram, and

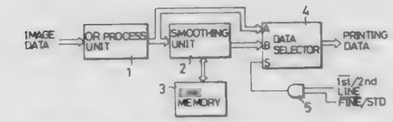
iii) adjusting the image processing condition in accordance with a latitude of said image information range so that a latitude of said reproduced visible image is changed so as to widen nonlinearly when the latitude of said image information range widens.

5,060,082

FACSIMILE APPARATUS

Masafumi Matsumoto, Takaichi; Masafumi Yamanoue, Yao, and Hiroshi Morimoto, Sakurai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1990, Ser. No. 497,011
Claims priority, application Japan, Mar. 24, 1989, 64-72146
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—447 **5 Claims**



1. A facsimile apparatus comprising:

image data conversion means for converting image data corresponding to an image to be printed in such a manner that two adjacent dots on a main scanning line of said image data are converted into one dot;

smoothing means connected to said conversion means for modifying converted image data in such a manner that, if a pattern of a region formed by a predetermined number of converted dots coincides with a predetermined pattern, said converted image data is changed to have a pattern corresponding to said predetermined pattern in said region; and

selection means connected to said image data conversion means and said smoothing means and adapted to select an output of said image data conversion means as printing data if it is detected that said image data has been transmitted in a fine mode, and select an output of said smoothing means as printing data if it is detected that said image data has been transmitted in a standard mode.

5,060,083

BACKGROUND LEVEL DETECTION METHOD

Takeshi Ueno, Takarazuka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 8, 1990, Ser. No. 461,817
Claims priority, application Japan, Jan. 13, 1989, 1-7392
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—464 **14 Claims**

1. A method of detecting a reference level of a document for reading, comprising the steps of:

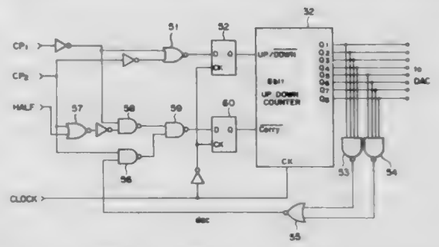
detecting variations of a background level of the document during a scan thereof to produce a variable background level signal indicative of at least a peak value of the background level;

producing digital data such that the digital data is changed in correspondence to variations of said variable background level signal;

selecting said variable background level signal as a reference signal used as a reference level for reading the document when the document is a first type document which is free from a half-tone image;

selecting the digital data as the reference signal when reading a second type document which carries a half-tone image; and

controlling the digital data, when reading the second type document, such that said digital data is updated only when the peak value of the detected background level exceeds a predetermined threshold, said updating of the digital data



being prohibited in a direction decreasing a value of the digital data;

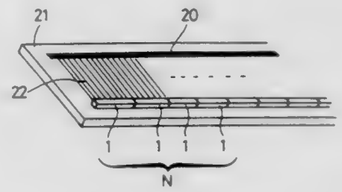
wherein said steps of selecting said variable background level signal and the digital data as the reference signal are achieved selectively in response to a command signal the respectively specifies one of the background level signal and the digital data as the reference signal.

5,060,084

SINGLE SUBSTRATE SEMICONDUCTOR DEVICE FOR IMAGE SENSING AND PRINTING

Yukito Kawahara; Satoshi Machida; Hiroshi Mukainakano, and Masato Higashi, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Dec. 23, 1988, Ser. No. 289,185
Claims priority, application Japan, Dec. 29, 1987, 62-332504
Int. Cl.[5] H04N *1/024*
U.S. Cl. 353—472 **19 Claims**



1. A semiconductor device of the integrated circuit type, comprising:

a single semiconductor substrate;

a plurality of phototransistors formed on the semiconductor substrate for reading image data and producing corresponding output signals;

driving circuit means formed on the same semiconductor substrate for driving external printing cells; and

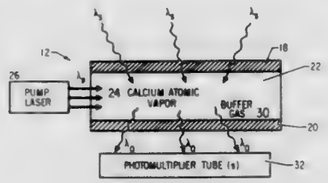
control circuit means formed on the same semiconductor substrate for controlling the driving circuit means in response to printing data and for processing the output signals from the phototransistors.

5,060,085

DEEP BLUE ATOMIC FILTER WITH INTRINSIC SOLAR BACKGROUND REDUCTION

Jerry A. Gelbwachs, Hermosa Beach, Calif., assignor to The Aerospace Corporation, El Segundo

Filed Mar. 14, 1990, Ser. No. 493,586
Int. Cl.[5] H04B *10/10*
U.S. Cl. 359—160 **3 Claims**



1. An improved method for suppressing solar background in a receiver of laser light, comprising the steps of:
a. providing a first optical filter having an optical transmission wavelength greater than a first cutoff wavelength λ_{c1};
b. providing a second optical filter spaced apart from the first optical filter and having an optical transmission wavelength less than a second cutoff wavelength λ_{c2}, where λ_{c2} is less than λ_{c1};
c. providing a pump laser with output λ_p;
d. providing calcium vapor positioned between and adjacent to the first and second optical filters;
e. providing a buffer gas positioned between and adjacent to the first and second optical filters;
f. transmitting light at a wavelength λ_s centered at a Fraunhofer line in the deep blue portion of the spectrum, where λ_s is greater than λ_{c1}, thereby exciting the calcium to a first excited state;
g. colliding the excited calcium vapor with the buffer gas, thereby exciting the calcium vapor to a second excited state;
h. optically pumping the excited calcium vapor with output λ_p, thereby exciting the calcium vapor to a third excited state;
i. relaxing the excited calcium vapor to a ground level, thereby emitting output light at a wavelength λ_o;
j. passing light at wavelength λ_o through the second optical filter, where λ_o is less than λ_{c2};
k. detecting light at wavelength λ_o at the laser light receiver.

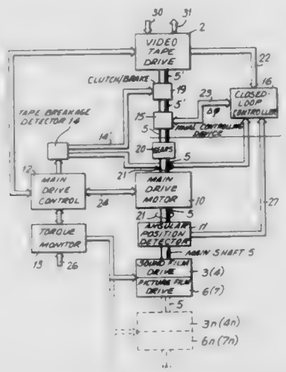
5,060,086

APPARATUS FOR ASSEMBLING OF VIDEO TAPES

Wolf-Rüdiger Otto, Elmshorn, and Joachim Behrens, Hamburg, both of Fed. Rep. of Germany, assignors to W. Steenbeck & Co. (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 948,466, Dec. 29, 1986, abandoned, which is a continuation of Ser. No. 550,592, Nov. 9, 1983, abandoned. This application Feb. 15, 1989, Ser. No. 311,224
Int. Cl.[5] G11B *27/02*; H04N *5/76*
U.S. Cl. 360—14.1 **4 Claims**

1. An apparatus for assembling audio and video tapes in editing tapes, comprising at least one device for driving a video tape which issues synchronization signals; at least one picture film drive and at least one sound film drive; a main drive device; drive coupling means including a main shaft driven by said main drive device to provide a synchronous run of said video tape, said picture film and said sound film relative to each other under operational conditions which include standstill, positive acceleration, uniform tape speed and negative acceleration, said drive coupling means commonly driving said device for driving a video tape, said picture film drive and said sound film drive; an angular position detecting device connected to said main shaft between said main drive device and said sound film drive to issue respective angular position signals; a final controlling device coupled to said main shaft between said main drive device and said device for driving the video tape; a closed-loop controller for receiving and phase-comparing said synchronization signals from said device for driving the video tape and respective signals from said position



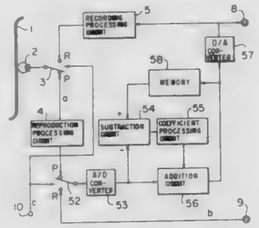
detecting device and issuing control signals to the final controlling device so that the difference between the position of the video tape in device and the picture film and sound film drives, respectively, are kept to a minimum, thus compensating for the mechanical slip of the video tape.

5,060,087

EDITING CIRCUIT FOR A MAGNETIC RECORDING AND REPRODUCING APPARATUS

Hideo Nishijima, Katsuta; Michio Masuda, Yokohama; Koichi Ono, Katsuta, and Hiroyasu Ohtsubo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1989, Ser. No. 305,005
Claims priority, application Japan, Mar. 10, 1988, 63-54803
Int. Cl.[5] H04N *5/782*
U.S. Cl. 360—14.1 **4 Claims**



3. An editing circuit for magnetic recording and reproducing apparatus for recording a first video signal of a first scene recorded on a magnetic tape and a second video signal of a second scene in succession, comprising:
switch means for selecting said second video signal of said second scene concurrently with completion of a reproduction of a last field of said first video signal of said first scene;
delay means having a delay equivalent to one field;
subtraction means for subtracting an output signal of said switch means from an output signal of said delay means;
attenuation means for attenuating an output signal of said subtraction means; and
addition means for adding an output signal of said attenuation means to the output signal of said switch means and supplying a resultant sum signal to said delay means,

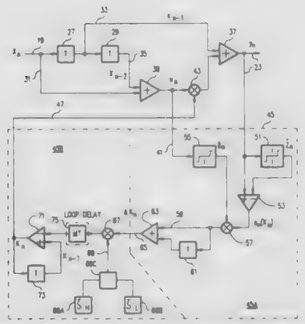
recording of an output signal of said addition means onto said magnetic tape being started concurrently with the start of selection of said second video signal of said second scene performed by said switch means so as to make said first scene fade out and make said second scene fade in at a joint between said first scene and said second scene.

5,060,088

ADAPTIVE EQUALIZATION FOR RECORDING SYSTEMS USING PARTIAL-RESPONSE SIGNALING

Francois B. Dolivo, Wädenswil; Sedat Oelcer, Thalwil, both of Switzerland; Andreas Rüngeler, Benningen/Neckar, Fed. Rep. of Germany, and Wolfgang H. Schott, Rüschlikon, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1989, Ser. No. 372,722
Claims priority, application European Pat. Off., Oct. 17, 1988, 88810705.9
Int. Cl.[5] G11B *5/09, 5/035*
U.S. Cl. 360—46 **4 Claims**



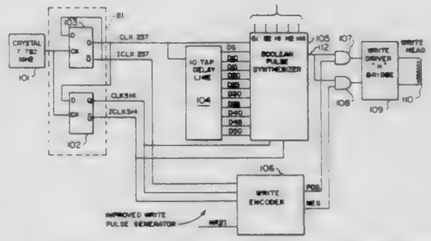
1. Equalizer apparatus having an input for receiving digital data and an output comprising:
delay line means (**27,29**) comprising two delay elements and having a first outer tap (**31**) connected to the input (**19**) of the equalizer, a center tap (**33**), and a second outer tap (**35**);
first adding means (**39**) connected to the first and second outer taps, for providing on its output (**41**) a sample sum u_n;
multiplying means (**43**) connected to the output of said first adding means and to a tap coefficient line (**47**), for providing on its output an intermediate value;
second adding means (**37**) connected to said center tap and to the output of said multiplying means, for furnishing to the equalizer output (**23**) an equalizer output sample y_n; and
tap coefficient adjustment means (**45**) having two inputs connected to the outputs (**41,23**) of said first and second adding means, and having an output connected to said tap coefficient line (**47**), said tap coefficient adjustment means including:
(i) tap coefficient gradient generation means (**45A**) for receiving said sample sum u_n and said equalizer output sample y_n from the outputs (**41,23**) of said first and second adding means, respectively, for furnishing on its output (**65**) a tap coefficient gradient ΔK_n; and
(ii) tap coefficient updating means (**45B**) connected to said tap coefficient gradient generation means for receiving said tap coefficient gradient ΔK_n, and furnishing a tap coefficient K_n to said tap coefficient line (**47**).

5,060,089

DATA WRITE PULSE COMPENSATOR CIRCUIT

Brian G. Cleveland, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Aug. 22, 1990, Ser. No. 571,307
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 **13 Claims**



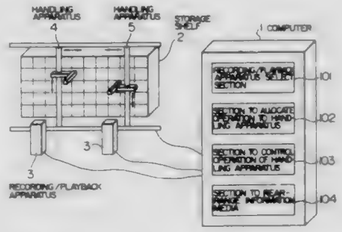
1. A pulse compensator circuit responsive to a clock signal for generating a succession of write head drive pulses of predetermined frequency to write data on a magnetic recording media via an associated write head, where said write head drive pulses are generated in synchronization with a data write frame frequency, comprising:
means responsive to said clock signal for generating a series of pulses, with each successively generated pulse in said series of pulses being delayed a predetermined amount of time with respect to the last previously generated pulse in said series of pulses;
means for combining a predetermined plurality of said pulses in said series of pulses to produce at least two write head drive pulses, each of precisely determined width and time spacing apart; and
means responsive to said combining means for transmitting said write head drive pulses to said write head.

5,060,090

AUTOMATIC STORAGE SYSTEM AND METHOD FOR INFORMATION RECORDING MEDIA

Takashi Kobayashi, Kawasaki; Kenzo Kurihara, Tokyo; Takashi Doi; Masaru Teranishi, both of Hadano; Yoshihiro Uchiyama, Odawara; Soichi Oyama, Yokohama; Isao Tsushima, Yamato; Norihisa Komoda, Kawasaki; Ai Tanaka, Zama; Kenichi Kageura, Fujisawa, and Minoru Kosuge, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 381,990
Claims priority, application Japan, Jul. 22, 1988, 63-181903; Jul. 22, 1988, 63-182894; Apr. 19, 1989, 1-97308
Int. Cl.[5] G11B *15/68, 17/00, 17/22*
U.S. Cl. 360—71 **17 Claims**



1. An information medium storage system comprising:
a medium storage shelf for storing information media therein;
a plurality of information means for recording information

on the information media and/or for reproducing information recorded thereon;

means for subdividing an existing area of said storage shelf into a plurality of subareas, each of said subareas having at least one of said information means assigned thereto;

plurality of handling means for extracting the information media from said storage shelf so as to mount the information media on said information means and for demounting the information media from said information means so as to restore the information media in said storage shelf; each of said plurality of handling means capable of extracting the information media from any of said subareas;

means, operative in a mount operation for a requested information media or in a document operation for an information media already being used, for selecting at least one of said information means assigned to one of said subareas of said storage shelf based on a predetermined selection criterion which takes into account a distance between one of said information means and said storage shelf, and denotes a possible of an occurrence of an interference between said handling means; and

means for allocating the mount or demount operation to one of said handling means which is assigned said subarea corresponding to the operation based on a predetermined allocation criterion which denotes an existence of a minimized possibility of an occurrence of an interference between said handling means at a time when the allocated operation is executed, at a time preceding the execution time or at both of the times.

5,060,091

APPARATUS AND METHOD FOR HARD DISK TESTING

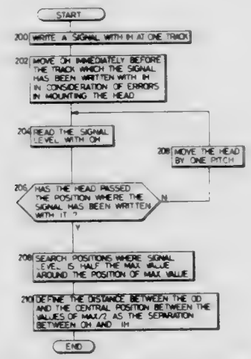
Ryuichi Matsuzaki, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Apr. 10, 1989, Ser. No. 335,829

Claims priority, application Japan, Apr. 12, 1988, 63-89995

Int. Cl.[5] G11B *21/02, 5/02*

U.S. Cl. 360—78.04 **8 Claims**



1. An apparatus for hard disk testing comprising:

a plurality of heads mounted on a carriage capable of moving in the direction of a hard disk at intervals defined by dividing the radius of said hard disk, wherein each of the heads corresponds to annularly divided test regions;

write means for writing a test signal including a separation test signal through said plurality of heads in said hard disk;

read means for reading the test signal including the separation test signal written through said heads;

measuring means for measuring a separation between a first head of said heads and a second head of said heads provided adjacent to said first head based on a shift distance of said second head by shifting said second head to read the separation test signal written by said first head; and

control means for controlling the shift distance and testing position of said heads to maintain said heads in corresponding annularly divided test regions without entering into adjacent annularly divided test regions.

5,060,092

MAGNETIC RECORDING WITH SPLIT TRACK TRACKING SIGNALS

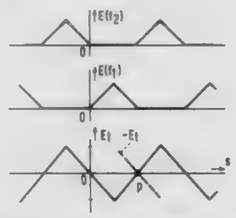
Joannes A. E. van der Kop, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1989, Ser. No. 348,821

Claims priority, application Netherlands, May 27, 1988, [illegible]

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.140 **7 Claims**



1. An apparatus for recording an electric signal on a magnetic record carrier in tracks which extend parallel to each other in a track direction and are inclined relative to the longitudinal direction of said record carrier, comprising

an input terminal for receiving the electric signal,

a signal source for supplying tracking signals,

write means having an input coupled to the input terminal and to an output of the signal source, for recording the electric signal and the tracking signals in a track, which write means comprise at least one write head arranged on a rotatable head drum,

characterized in that the write head comprises two head halves having a mechanically rigid coupling with each other,

the signal source is adapted to supply a first and a second tracking signal,

the write means are adapted to apply the electric signal to both head halves, in order to write the electric signal at least substantially concurrently in both track halves of a track, said halves extending alongside each other in said track direction for substantially their entire lengths, and

the write means are further adapted to apply the first and the second tracking signal to the first head half and the second head half respectively, in order to record the first and the second tracking signal at least substantially concurrently in the first and the second track half of a track respectively, in such a way that when the electric signal is recorded in tracks on the record carrier the first and the second tracking signals are recorded in every n-th track, n being an integer greater than 1.

5,060,093

SYSTEM FOR CONTROLLING DISPLACEMENT OF A HEAD IN A DISC STORAGE UNIT

Yuji Kawahara, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 11, 1989, Ser. No. 336,346

Claims priority, application Japan, Apr. 20, 1988, 63-97336

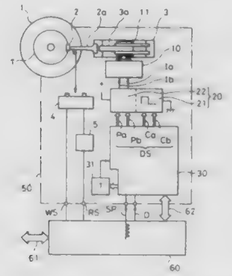
Int. Cl.[5] G11B *21/08, 5/55*

U.S. Cl. 360—78.13 **8 Claims**

1. An apparatus for controlling displacement of a head in a disc storage unit, which unit includes a disc with a surface on which a plurality of tracks for recording data are defined, said head for writing and reading data onto and out of said plurality of tracks, and a stepping motor for displacing said head on said

surface of said disc, the disc storage unit receiving a series of pulses which represent the number of tracks to displace the head, so that a desired position of said head is designated, said apparatus comprising:

a timer for indicating the elapse of a predetermined time, said predetermined time being less than the time required to receive a maximum number of pulses being representative of the maximum number of tracks the head could be displaced;



count means for counting pulses received during said predetermined time indicated by said timer; and

drive means for selectively driving said stepping motor when a counted value counted by said count means during said predetermined time is greater than a predetermined value.

5,060,094

CASSETTE LOADING APPARATUS FOR DIGITAL AUDIO TAPE RECORDER

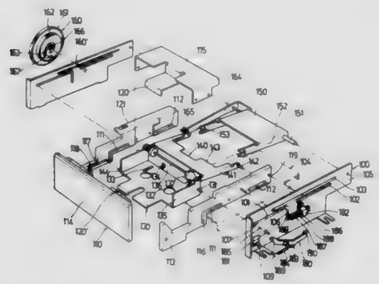
Seok P. Chung; Byung C. Lim, both of Kyungki, and Seung H. Yoo, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 18, 1988, Ser. No. 273,412

Claims priority, application Rep. of Korea, Nov. 20, 1987, 20107; Dec. 31, 1987, 24574; Apr. 29, 1988, 6198; Apr. 29, 1988, 6199

Int. Cl.[5] G11B *5/008*

U.S. Cl. 360—96.5 **4 Claims**



1. A cassette loading apparatus for a digital audio tape recorder, comprising:

a main body;

a cassette holder;

a capstan motor mounted on said main body, and

a switch for supplying power to said capstan motor, said switch being mounted to be activated, for supplying of power to said capstan motor, by contact with said cassette holder for controlling said capstan motor to move said cassette holder into said main body, said loading apparatus further comprising a lift and drop plate and an axle shaft connecting said lift and drop plate to said cassette holder, and a cam lever mounted on said main body, said cam lever being positioned to be activated by said capstan motor, when said cassette holder has been moved a predetermined distance horizontally into said main body, to move said lift and drop plate for moving said cassette holder downwardly into said main body to thereupon turn power to said capstan motor off.

5,060,095

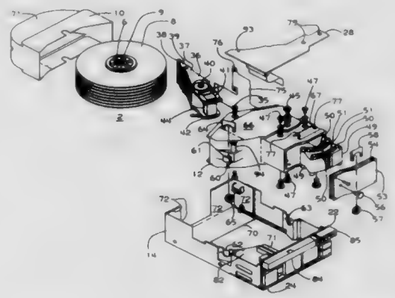
HEAD-DISK ENCLOSURE ASSEMBLY FOR A MAGNETIC DISK STORAGE DEVICE

James M. Rigotti, Rochester; Lyle R. Tufty, Elgin, and Michael N. Zell, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1989, Ser. No. 305,236

Int. Cl.[5] G11B *17/02*

U.S. Cl. 360—98.01 **9 Claims**



1. A magnetic disk storage device having a spindle which supports a plurality of rigid magnetic disks to form a spindle assembly for rotation of said disks about a common axis and a rotary actuator which supports magnetic transducers for movement in unison about a first axis from one data track to another data track on respective disk surfaces comprising

a single piece box frame member including a pair of substantially parallel wall portions;

said rotary actuator being positioned between said substantially parallel wall portions and connected respectively to said substantially parallel wall portions, each such connection being concentric with respect to said first axis;

said spindle assembly being positioned between said substantially parallel wall portions and supported at each said wall portion by being connected concentrically with respect to the spindle axis of rotation;

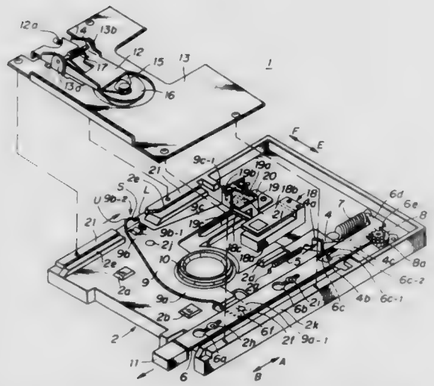
motor means for rotating said disks, said motor means being mounted about the axis of said spindle assembly and supported on said box frame;

a cover which loosely adjoins said box frame and is sealed to said box frame member to enclose said plurality of disks, said motor and said actuator; and

shock mounting means supporting said box frame within said storage device,

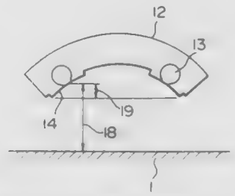
said box frame member occupying substantially the total height of said storage device adjacent each axial end of said plurality of disks with accommodation for the downward sway space of said shock mounting means.

5,060,096
MAGNETIC DISC CLAMPING/SEATING UNIT
Yoshio Hirose, Urawa, and Kazuhiko Inoue, Tokyo, both of Japan, assignors to TEAC Corporation, Japan
Filed Jun. 13, 1990, Ser. No. 537,504
Claims priority, application Japan, Aug. 2, 1989, 1-200869
Int. Cl.[5] G11B *17/04*
U.S. Cl. 360—99.12 13 Claims



1. A magnetic disc unit into and from which a disc case housing a magnetic disc is loaded and ejected, comprising:
a chassis;
a magnetic head provided on said chassis and recording and reproducing data on and from the magnetic disc loaded into said magnetic disc unit;
a slide member slidably provided in directions of inserting of said disc case and ejecting thereof on a side end of said chassis, said slide member being capable of sliding between a first position and a second position;
a latch member provided on said chassis, said latch member fixing said slid member at the first position when the disc case is ejected, being pushed by the disc case inserted in said magnetic disc unit at a time of inserting the disc case and fixing said slide member at the second position when the disc case is loaded into said magnetic disc unit and is positioned at a predetermined set position;
an arm member rotatably provided on said chassis, an end of said arm member engaging with said slide member, said arm member rotated by a sliding operation of said slide member, another end of said arm member being positioned at a side end of said chassis opposite to the end of the side where said slide member is provided;
a clamping member clamping the magnetic disc housed in the disc case; and
a connection mechanism connecting said arm member to said clamping member, said connection mechanism making said clamping member clamp the magnetic disc when said arm member is positioned at a second rotation position corresponding to the second position for said slide member and separating said clamping member from the magnetic disc when said arm member is positioned at a first rotation position corresponding to the first position, so that when said clamping member clamps the magnetic disc said magnetic head is positioned at a predetermined regular position and records and reproduces data on and from the magnetic disc.

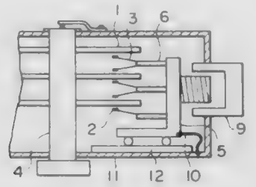
5,060,097
MAGNETIC DISC FILE INCLUDING A SLIDER WHICH EXHIBITS REDUCED DEFORMATION DURING OPERATION
Shinsuke Higuchi; Takeshi Miyazaki; Akihiro Gotoh; Kunihiro Maeda, all of Hitachi, and Yokuo Saitoh, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 3, 1990, Ser. No. 460,513
Claims priority, application Japan, Jan. 6, 1989, 64-331; Jun. 16, 1989, 1-154041
Int. Cl.[5] G11B *5/60;* C04B *33/00*
U.S. Cl. 360—103 25 Claims



1. A magnetic disc file which comprises
a thin film magnetic disc for recording information,
a means for rotating said thin film magnetic disc,
a magnetic head for writing and reading information, said head being provided with a flying slider having opposing major surfaces, one of said major surface comprising a flying face facing said thin form magnetic disc, and said flying slider having a magnetic head element at one end thereof which connects said opposing major surfaces; and
a means for supporting said magnetic head and changing the position of said head in respect to said thin film magnetic disc,
the flying height of said flying slider from said thin film magnetic disc during operation being set by said means for supporting said magnetic head and changing the position of said magnetic head in the range of 0.05 to 0.15 μm, and
a distance from a base line to an end of said magnetic head element being not more than 5% of said flying height, said base line connecting edges of said flying face at said one end of said flying slider which are furthest from one another, such that said flying slider is not in contact with said thin film magnetic disc during the writing and reading operation on said thin film magnetic disc.

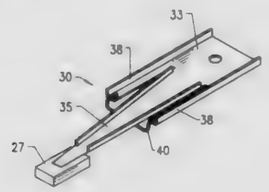
5,060,098
MAGNETIC RECORDER PROVIDED WITH A MAGNETIC HEAD SLIDER HAVING A NON-MAGNETIC OXIDE OF SPINEL STRUCTURE
Akihiro Gotoh; Shinsuke Higuchi; Takeshi Miyazaki; Kunihiro Maeda, all of Hitachi; Yokuo Saitoh, Kanagawa; Toyoji Okuwaki, Tokyo; Noriaki Okamoto, and Kousaku Wakatsuki, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 17, 1989, Ser. No. 339,490
Claims priority, application Japan, Apr. 18, 1988, 63-93532; Sep. 14, 1988, 63-228830
Int. Cl.[5] G11B *5/187;* C04B *35/56, 35/10*
U.S. Cl. 360—103 5 Claims

1. A magnetic disk recorder equipped with (i) magnetic disks having magnetic recording media, (ii) thin-film magnetic heads for recording information on said magnetic recording media and reproducing information therefrom, and (iii) a carriage for moving said magnetic heads to intended positions, wherein said thin-film magnetic heads are formed on sliders made of sintered ceramic bodies consisting essentially of a non-magnetic metal oxide of spinel structure and 3 to 50% by volume



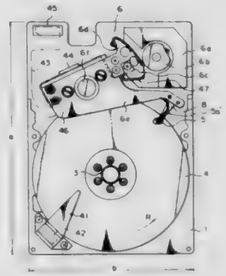
of ceramic particles which are harder than the metal oxide and which are dispersed in the oxide.

5,060,099
DISC DRIVE SLIDER LIFTER USING SHAPE MEMORY METALS
John R. Yaeger, Santa Clara County, and Ramgopal Battu, Los Angeles County, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Apr. 5, 1990, Ser. No. 504,929
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—105 15 Claims



1. A slider lifter arrangement for a disc drive assembly including a housing, a rotatable information storage disc having a data storage surface, a flexure arm that carries a slider transducer for transferring information between the information storage disc and an external system, the flexure arm being designed such that when the disc is rotating at an operational speed, the slider flies above the surface of the disc and when the disc is stopped, the slider and flexure arm are at rest, and a head positioning means for positioning the slider relative to the information storage disc, the slider lifter comprising:
a wire support carried by the head positioning means, the wire support having a pair of extended wire support arms extending outward from the head positioning means adjacent opposite sides of the flexure arm;
a lifting wire strung between the opposing wire support arms in a space between the flexure arm and the disc surface, the lifting wire being formed from a shape memory alloy having martensitic and austenitic phase conditions, wherein the lifting wire cooperates with the flexure arm such that when the lifting wire is in a first phase condition, the lifting wire lifts the flexure arm to lift the slider further from the disc surface and when the wire is in a second phase condition, the flexure arm deforms the lifting wire such that the slider is allowed to rest or flip independently over the disc surface, and
transform means for heating the lifting wire to change the state of the lifting wire from one of said phase conditions to the other said phase condition.

5,060,100
MAGNETIC DISC DEVICE
Takahisa Mihara, Sagamihara; Shoji Samma, Yokohama, and Sigeo Saito, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kangawa, Japan
Continuation of Ser. No. 58,148, Jun. 4, 1987, abandoned. This application Jan. 11, 1990, Ser. No. 463,838
Claims priority, application Japan, Jun. 4, 1986, 61-85144[U]; Jul. 18, 1986, 61-109459[U]; Jul. 19, 1986, 61-110030[U]
Int. Cl.[5] G11B *5/55, 21/08*
U.S. Cl. 360—106 4 Claims



1. A magnetic disc device comprising: a case having a base; a plurality of magnetic discs; a plurality of magnetic heads; a head actuator; a motor for driving a spindle of said magnetic discs; a printed circuit board for driving said motor; and a main printed circuit board mounting a read/write circuit for the magnetic discs; said magnetic discs, said magnetic heads and said head actuator being housed within said case; and said motor, said printed circuit board for driving the motor and said main printed circuit board being disposed outside of said base of the case, wherein said head actuator comprises a head arm which is rotatable about a pivot, said pivot comprising an outer sleeve installed on a stationary shaft, wherein a lower inner peripheral edge of said outer sleeve is inclined, and said shaft is supported on a seat which has an inclined periphery corresponding to said inclined periphery edge of said outer sleeve.

2. A magnetic disc device according to claim 1, wherein the device comprises a magnetic head structure comprising a magnetic head electrically connected to a read/write means through a lead wire and a head arm supporting said magnetic head, wherein said head arm has a groove-like lead wire holding means formed thereon along the lead wire pass, the lead wire being fitted in the groove and held therein.

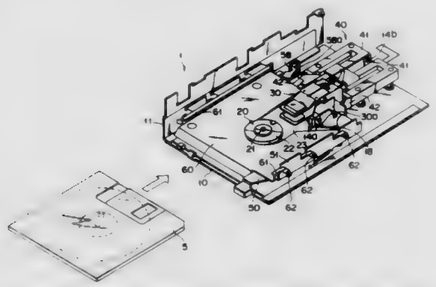
5,060,101
STORAGE DEVICE HAVING A LOCK SYSTEM FOR THE ACCESS MECHANISM AND METHOD FOR LOCKING
Akihiro Isomura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 30, 1990, Ser. No. 472,185
Claims priority, application Japan, Jan. 31, 1989, 1-21062
Int. Cl.[5] G11B *5/55, 5/54, 17/04*
U.S. Cl. 360—106 20 Claims

1. A device for at least reproducing information recorded on an information recording medium, comprising:
a base member;
drive means mounted on said base member for driving said recording medium;
loading means for loading said recording medium on said drive means and for releasing said recording medium from said drive means, said loading means having a receiver member to receive said recording medium therein and an ejector member which is operated by an operator and guides said receiver member between an engaging position where said recording medium is engaged with said

drive means and an ejection position where said recording medium is released from said drive means and can be ejected from and inserted into said device;

access means having a carriage means including a head for at least reading the information recorded on said recording medium, said carriage means being continuously and smoothly movable over a range of motion in which said head has access to said recording medium when said recording medium is engaged with said drive means; and

locking means for mechanically locking said carriage means, including a locking member mechanically cooperative



with said ejector member to hold said carriage means in a fixed position when said ejector member guides said receiver member into said ejection position, and to release said carriage means from said fixed position when said ejector member guides said receiver member into said engaging portion;

wherein said ejector member mechanically moves said locking member so that said locking member mechanically moves said carriage means into said fixed position when said ejector member guides said receiver member into said ejection position.

5,060,102

MAGNETIC HEAD HAVING TRACK REGULATION GROOVES FORMED AT TAPE SLIDING SURFACE

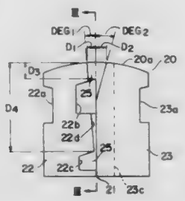
Makoto Ozeki; Takashi Tsutsui; Sohei Ohara, all of Yokohama, and Kouji Nemoto, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 16, 1990, Ser. No. 464,135

Claims priority, application Japan, Jan. 17, 1989, 1-8128

Int. Cl.[5] G11B *5/127, 5/187*

U.S. Cl. 360—125 **4 Claims**



1. In a magnetic head including a head core comprised of a first head core half body having a side surface thereon and a winding groove on said side surface, a second head core half body having at least one side surface, said side surfaces of said first and second half bodies being joined by mold glass fixing said half bodies about joined planes thereof, a gap spacer of material having a melting point higher than the mold glass between said half bodies, and an end surface on said head core having an arc shape and extending normal to said joined planes to provide a tape sliding surface having a magnetic gap at said joined planes of said half bodies, the improvement comprising:

a second end surface on said head core opposite to said sliding surface;

a back groove on said first half body near said second end surface;

a pair of first track width regulation grooves at corners of said joined plane of said first half body, said regulation grooves being slanted at a predetermined angle and extending from a position of said first half body near said second end surface in a direction toward said sliding surface and transverse to said winding groove;

a pair of second track width regulation grooves on said second half body at corners between said joined plan and said sliding surface on said second half body, said second regulation grooves being slanted at a predetermined angle and extending from the middle of said winding groove toward said sliding surface;

said mold glass being filled into said back groove and said first and second track width regulation grooves for fixing said first and second half bodies;

said first pair of track width regulation grooves having a slanted angle of 4 degrees with respect to said joined plane of said first half body and extending from the intersection of said joined plane of said first half body and said second end surface; and

said pair of second track width regulation grooves on said second half body being slanted at an angle of 15 degrees with respect to said joined plane of said second half body.

5,060,103

MAGNETIC DISC APPARATUS HAVING PROTECTIVE SHIELD FOR ELIMINATING SPURIOUS MAGNETISM AT A MAGNETIC HEAD

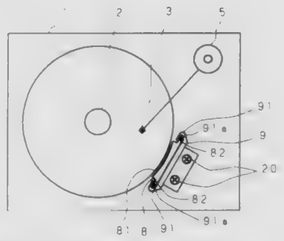
Kyoichi Ohtsuka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 469,062

Claims priority, application Japan, Jan. 21, 1989, 1-5957[U]

Int. Cl.[5] G11B *5/11*

U.S. Cl. 360—128 **13 Claims**



1. A magnetic disc apparatus comprising:

a magnetic disc positioned on a rotatable spindle and having a face on which magnetically encoded information is stored;

a driving means for rotating the spindle on which the magnetic disc rests to drive the disc;

a magnetic head positioned so that a reading portion of the magnetic head faces the face of said magnetic disc on which magnetically encoded information is stored, said magnetic head reading information from said magnetic disc;

a shield member having a first side facing the peripheral edge of said magnetic disc to isolate the magnetic head from sources of magnetism other than magnetism of information magnetically encoded on said face of said disc and a second support side wherein distance across said shield member from the first side to the second side varies along a line orthogonal to the plane of the disc to provide a clearance distance between said shield member and the peripheral edge of the disc; and

a supporting body member including means for slidably supporting said shield member at its support side, said means for slidably supporting said shield member facilitating sliding of the shield member along the line orthogonal to the plane of the disc,

whereby the clearance distance between said shield member and the peripheral edge of said magnetic disc is changeable due to the sliding of said shield member along said line orthogonal to the plane of the disc.

5,060,104

ROTARY HEAD DEVICE WITH SIX HEAD UNITS

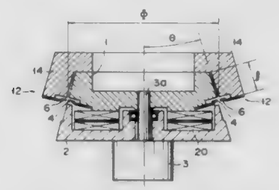
Shoji Kitaori, Kawasaki, and Shigeo Kizu, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 27, 1990, Ser. No. 558,428

Claims priority, application Japan, Jul. 28, 1989, 1-195691; Jul. 28, 1989, 1-195693; Sep. 28, 1989, 1-250441; Apr. 18, 1990, 2-102631

Int. Cl.[5] G11B *15/60*

U.S. Cl. 360—130.24 **12 Claims**



1. A rotary head device of a recording and reproducing apparatus for running a tape-shaped recording medium with a pair of side edges in a longitudinal direction thereof, and recording and reproducing information on and from the recording medium, said device comprising:

a rotary drum arranged for rotation and having a guide surface formed of a conical surface coaxial with the axis of rotation of the rotary drum and wound with the recording medium by about 180 degrees in a circumferential direction of the guide surface;

six head units mounted on the rotary drum at equal intervals in the circumferential direction of the guide surface and rotatable integrally therewith, each of said head units including first and second head elements facing each other, for scanning the recording medium wound on the guide surface, while the recording medium is being interposed between the first and second head elements, as the rotary drum rotates, whereby the recording medium is interposed between head elements of at least three head units at all times; and

circuit means for causing the first and second head elements of each head unit to consecutively record and reproduce information on and from the recording medium when the first and second head elements scan the recording medium.

5,060,105

HYBRID NONWOVEN DISKETTE LINER

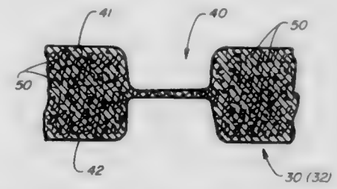
Jon A. Howey, Mansfield, Mass., assignor to International Paper Company, Purchase, N.Y.

Filed Apr. 16, 1990, Ser. No. 509,533

Int. Cl.[5] G11B *23/03;* **B65D** *85/30*

U.S. Cl. 360—133 **24 Claims**

1. A hybrid nonwoven diskette liner for use in cleaning the surface of a disk recording medium, comprising a nonwoven fabric of fibers which are bonded together and impregnated with a small amount of binder that is applied as a solution to the fabric and has its fluid content removed by drying such that the binder is collected at junction points of the fibers and is substantially uniformly distributed throughout the fibers of the fabric, said fabric having a concentration of binder uniformly



distributed therein of no more than 5%, and preferably between 1.5–3.0%, by weight of the fabric.

5,060,106

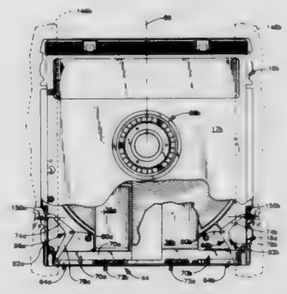
DISK CARTRIDGE INCLUDING DOOR OPENING MECHANISM AND IMPROVED HUB ASSEMBLY

Marvin B. Davis, Colorado Springs, Colo.; Hendrikus W. C. M. Peeters, Hapert, Netherlands, and Wilhelm Taylor, Colorado Springs, Colo., assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Filed Nov. 13, 1989, Ser. No. 434,904

Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—133 **3 Claims**



1. A disk cartridge having a disk including first and second surfaces with the disk cartridge being insertable and removable from a disk drive apparatus, the disk cartridge comprising:

a housing having opposing first and second major surfaces and first and second minor surfaces substantially normal to and located between edges of said first and second major surfaces, wherein said first minor surface is substantially opposite said second minor surface;

first and second openings in said first and second major surfaces adjacent to the first and second disk surfaces, respectively;

first and second doors slidably mounted relative to said first and second major surfaces for covering said first and second openings, respectively, when the disk cartridge is not in the disk drive apparatus;

a first recess located in said first minor surface and a second recess located in said second minor surface, said first recess for receiving a first guide projection of the disk drive apparatus upon insertion of a disk cartridge into the disk drive apparatus, said second recess for receiving a second guide protection of the disk drive apparatus upon insertion of a disk cartridge into the disk drive apparatus; wherein said first guide projection has a first eccentric surface that faces said first recess and said second guide surface has a second eccentric surface that faces said second recess;

first and second means for biasing said first and second doors, respectively, over said first and second openings;

first door opening means for opening said first door by cooperating with said first guide projection; and

second door opening means for opening said second door by cooperating with said second guide projection;

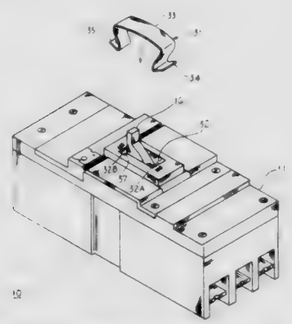
wherein said first door opening means includes a first arm that projects through a first slot in said first minor surface and into said first recess and is adapted for interacting with said first guide projection to open said first door, said second door opening means includes a second arm that projects through a second slot in said second minor surface and into said second recess and is adapted for interacting with said second guide projection to open said second door, wherein both a first area of contact between said first arm and said first guide projection and a second area of contact between said second arm and said second guide projection change during insertion of the disk cartridge into said disk drive apparatus and when the disk cartridge is no longer being inserted relative to the disk drive apparatus so that said first door and said second door are open and the disk can be accessed for reading/-writing, said first arm is being urged against said first eccentric surface to hold said first door open and said second arm is being urged against said second eccentric surface to hold said second door open.

5,060,107

MOLDED CASE CIRCUIT BREAKER OPERATING HANDLE GUARD

Roger N. Castonguay, Terryville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 5, 1990, Ser. No. 608,789
Int. Cl.[5] H01H *9/28*
U.S. Cl. 361—115 **6 Claims**



1. A molded case circuit breaker comprising:

a plastic case and cover;

a pair of contacts within said case arranged for interrupting current through a protected circuit;

an operating mechanism within said case connecting with said contacts and separating said contacts upon occurrence of an overcurrent condition within said protected circuit;

an operating handle extending through a handle slot in said cover and connecting with said operating mechanism for manual opening and closing said contacts in the absence of said overcurrent condition;

a visual access slot in said cover providing indication of TRIPPED, OPEN and CLOSED conditions of said contacts; and

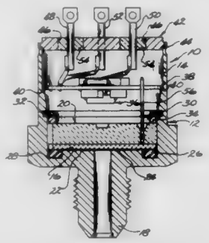
a handle guard having opposite ends positioned within said handle slot with a central part extending over said operating handle, said operating handle being free to move traversely within said handle slot when said contacts are in said TRIPPED, OPEN and CLOSED conditions under said handle guard.

5,060,108

PACKAGING AND SEALING FOR PRESSURE TRANSDUCER

Gary A. Baker, North Scituate, R.I., and Peter G. Berg, Attleboro Falls, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 25, 1990, Ser. No. 477,361
Int. Cl.[5] H01G *7/00;* **G01L** *9/12*
U.S. Cl. 361—283 **18 Claims**



1. A pressure transducer having an improved seal comprising a metallic cup shaped housing with a bottom wall and an integrally attached generally cylindrical side wall extending therefrom to a free distal end portion defining a chamber therein, the chamber having a first pressure sensing module receiving portion and a second electronics receiving portion, a pressure fluid inlet formed in the bottom wall, a pressure sensing module disposed in the first portion of the chamber in communication with the pressure fluid inlet, seal means disposed intermediate the pressure sensing module and the bottom wall circumscribing the fluid inlet, a groove formed in the internal surface of the cylindrical side wall, a retainer ring disposed in the groove placing a force on the pressure sensing module against the seal means, electronics board mounting means formed in the second portion of the chamber, an electronics board mounted on the mounting means, a metallic header received on the free distal end portion of the cylindrical wall and welded thereto, the header having terminal receiving apertures extending therethrough, a terminal extending through each aperture and electrically separated from the header by glass material, the terminals electrically coupled to the electronics board and electrical coupling means connecting the electronics board to the pressure sensing module.

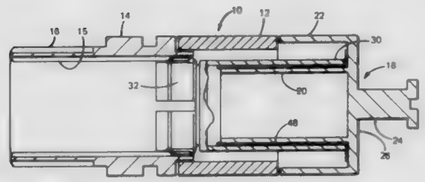
5,060,109

ADJUSTABLE ELECTRICAL DEVICE

Trevor Armistead, and Robert G. Armistead, both of Ulverston, England, assignors to Oxley Developments Company, Ltd., Cumbria, England

Filed May 9, 1990, Ser. No. 520,723
Claims priority, application United Kingdom, Jun. 9, 1989, 8913362
Int. Cl.[5] H01G *5/12*
U.S. Cl. 361—294 **13 Claims**

1. An adjustable electrical device having a housing and an electrode of generally cylindrical configuration which is movable relative to the housing, the electrode comprising a resiliently deformable, externally screw-threaded portion which is in compliant threaded engagement with an internally screw-threaded portion of the housing, said externally screw-threaded portion being split to allow deformation thereof, and



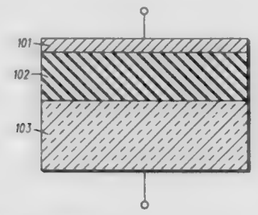
the split being in the form of a slot extending across said screw-threaded portion.

5,060,110

HIGH FREQUENCY MOSCAP

Robert C. Kane, Woodstock, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 29, 1990, Ser. No. 575,106
Int. Cl.[5] H01G *4/06, 7/00;* **H01L** *21/28, 27/02*
U.S. Cl. 361—311 **9 Claims**



1. A capacitor comprising:

A) a semiconductor layer having a characteristic band-gap, and further including at least one preselected impurity, which impurity has an energy level corresponding to an energy residing near the middle of the band-gap;

B) a conductor layer; and

C) a dielectric layer disposed between the semiconductor layer and the conductor layer; such that the capacitor will exhibit a substantially stable capacitance when used in a high frequency application.

5,060,111

RADIAL TYPE OF PARALLEL SYSTEM BUS STRUCTURE

Tokuhei Takashima, Tokyo, Japan, assignor to Graphico Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1990, Ser. No. 507,194
Claims priority, application Japan, Apr. 21, 1989, 1-102909
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—384 **4 Claims**

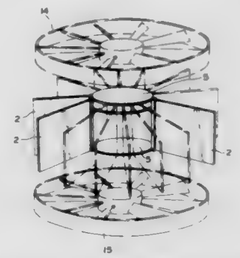
1. A radial type of parallel system bus structure comprising:

a plurality of bus wire-printed boards mounted in spaced, parallel relationship and having a common central axis,

each of said boards having an outer edge and having a plurality of signal conductors of equal length extending radially from a common contact center,

a plurality of stationary connectors mounted adjacent to and spaced around said board outer edges and connected to said signal conductors,

each of said stationary connectors including connecting means connecting said signal conductors to conductors on CPU boards, and



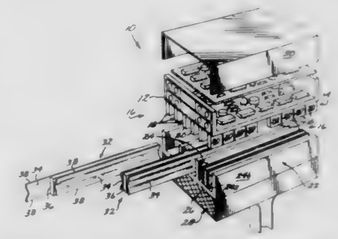
all signal conductors of each of said bus wire-printed boards being connected to all CPU boards.

5,060,112

ELECTRICAL COMPONENT ASSEMBLY WITH HEAT SINK

Alan G. Cocconi, 725 S. Scottdale Ave., Glendora, Calif. 91740

Filed Apr. 2, 1990, Ser. No. 503,252
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **8 Claims**



1. An electrical component assembly comprising:

a longitudinally-extending heat sink;

a plurality of spaced-apart electrical components mounted on a printed circuit board, each component having a body portion extending outwardly therefrom; and

spring means for pressing the electrical components and heat sink into heat-conducting contact;

wherein the heat sink includes at least one longitudinally-extending wall, and the spring means presses the component body portions against the wall and comprises an elongated longitudinally-extending spring that is curved in cross-section;

wherein the heat sink further includes a longitudinally-extending second wall opposite the one heat sink wall, thereby forming a channel into which the electrical components are suspended; and

wherein the spring means further includes a slidable and removable spacer beam that compresses the elongated spring against the electrical components.

5,060,113

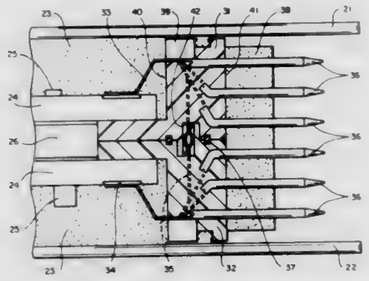
CONNECTOR ASSEMBLY

Brian Jacobs, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 172,739, Mar. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 36,060, Apr. 9, 1987, abandoned. This application Jul. 31, 1990, Ser. No. 561,228
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **7 Claims**

1. A connector assembly for forming electrical connections

to at least two circuit boards disposed in a substantially parallel surface-to-surface relationship, comprising a plurality of mateable connector modules, each of which comprises a plurality of contact elements having contact portions for connection to respective contacts on one of the circuit boards, a first set of the contact elements having contact portions for connection to an electrical device so as to form connections between the device and the said contacts on one or both of the circuit boards, and a second set of the contact elements having contact portions for connection to respective contact portions of the second set of contact elements of the other module so as to



form connections between respective contacts on the two circuit boards when the modules are mated, in which assembly:

(a) the contact portions for connection to the circuit board contacts are provide on a first face of each module;

(b) the contact portions for connection to the electrical device are provided on a second face of each module that is opposite and substantially parallel to the first face; and

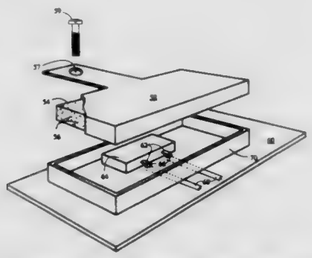
(c) the contact portions for connection to the contact elements on the other module are provided on a third face of each module that is substantially perpendicular to the first and second faces.

5,060,114

CONFORMABLE PAD WITH THERMALLY CONDUCTIVE ADDITIVE FOR HEAT DISSIPATION

Jay H. Feinberg, Deerfield, and William N. Roberts, Niles, both of Ill., assignors to Zenith Electronics Corporation

Filed Jun. 6, 1990, Ser. No. 533,971
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—387 **16 Claims**



1. An arrangement for removing heat from a packaged electronic device positioned on a printed circuit (PC) board, said arrangement comprising:

a conformable, gel-like pad having a first surface portion disposed in intimate contact with the packaged electronic and including a plurality of heat conducting particles disposed therein for transmitting heat from said first surface portion to a second surface portion thereof; and

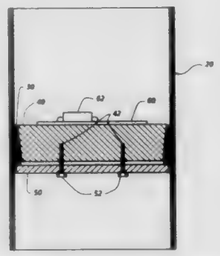
a metallic housing disposed about said pad and in intimate contact with the second surface portion thereof for removing heat from said pad.

5,060,115

HEAT SINK DEVICE FOR ELECTRONICS MODULES PACKAGED IN CYLINDRICAL CASINGS

Mark W. Sewell, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1990, Ser. No. 590,186
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—388 **11 Claims**



1. A heat sink device for electronics modules packaged in a cylindrical outer case comprising:

a slotted, heat conducting ring capable of radial expansion within the cylindrical case, wherein said ring is in contact with the cylindrical case;

a heat transfer disk in wedged position inside said ring wherein said heat transfer disk has a truncated portion on one side whereby a space is formed between the truncated portion of the disk and said slotted ring to allow passage of a wiring harness; and

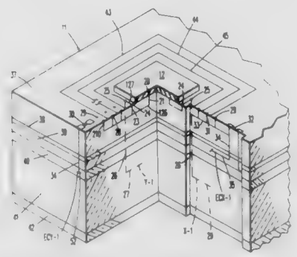
an electronics module in heat transfer contact with a planar surface of said heat transfer disk.

5,060,116

ELECTRONICS SYSTEM WITH DIRECT WRITE ENGINEERING CHANGE CAPABILITY

Warren D. Grobman, 202 Drew La., Carmel, N.Y. 12512; Charles J. Kraus, deceased, late of Chatham, Mass.; by Paula A. Kraus, executrix, 28 Somerset Dr., Chatham, Mass. 02633; Leon L. Wu, Dogwood Rd., Box 98, R.D. 6, Hopewell Junction, N.Y. 12533, and Herbert I. Stoller, 26 Sabra La., Wappingers Falls, N.Y. 12590

Filed Apr. 20, 1990, Ser. No. 513,342
Int. Cl.[5] H05K *1/18*
U.S. Cl. 361—474 **39 Claims**



1. An electronics system comprising:

a supporting substrate composed of layers of insulating and conducting material;

a plurality of device sites on said substrate;

electrical interconnections between a multiplicity of said device sites;

means for changing said electrical interconnections between device sites comprising:

at least one electrically conductive ring pattern at least partially surrounding each device site;

a series of engineering change patterns which extend at least between adjacent device sites;

means for connecting a predetermined interconnection to said ring pattern; and

means for connecting said ring pattern to at least one engineering change pattern, wherein said interconnection between the device sites is comprised of:

a set of chip pads adapted for connection of a semiconductor chip thereto;

a set of fan-out pads;

fan-out subsurface metallization connected to said chip pads and said set of fan-out pads;

surface LST metallization which connects said set of fan-out pads to logic service terminals (LSTs); and

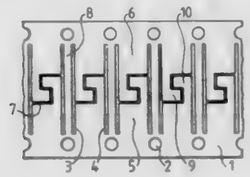
network subsurface metallization connected to said logic service terminals.

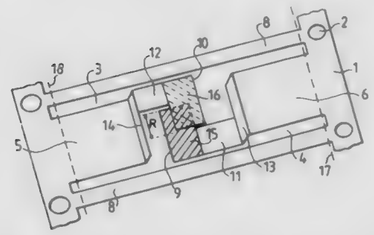
5,060,117

TAPE OF CONNECTIONS FOR ASSEMBLY-LINE MOUNTING OF SURFACE-MOUNTED COMPONENTS

Olivier Dorlanne, and Dominique Petit, both of Dijon, France, assignors to Compagnie Europeene de Composants Electroniques LCC, Courbevoie, France

Filed Dec. 21, 1989, Ser. No. 454,627
Claims priority, application France, Dec. 23, 1988, 8817090
Int. Cl.[5] H05K *5/02*
U.S. Cl. 361—421 **13 Claims**





1. A planar metallic strip which can be bent to accommodate a plurality of electronic surface-mounted components, said metallic strip comprising:

a pair of transverse slots cut through said strip locating a component position between said slots;

a zigzag cut through said strip joining said pair of transverse slots and defining a first contact element on a first side of the cut and a second contact element on a second side of the cut,

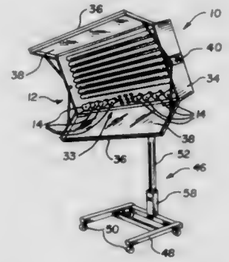
said first contact element including a first tongue carrying a first surface and said second contact element including a second tongue carrying a second surface, said first and second surfaces extending inwardly from the first and second tongues, respectively, and each of said surfaces extending more than half way across a distance separating said transverse slots.

5,060,118

APPARATUS FOR DAYLIGHT COLOR DUPLICATION

Richard J. Penrod, Homer, and Roy H. McCullagh, Shelocta, both of Pa., assignors to Frank A. Arone, Homer City, Pa.

Filed Apr. 6, 1989, Ser. No. 334,072
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—1 **4 Claims**



1. A device for color mode switching, comprising a plurality of incandescent lamps, and eight first, second, third, fourth, fifth, sixth, seventh and eighth fluorescent lamps have the following chromaticity coordinates, respectively:

x = .438–.442,	y = .404–.408
x = .373–.377,	y = .378–.382
x = .374–.378,	y = .385–.389
x = .343–.347,	y = .357–.361
x = .344–.348,	y = .357–.361
x = .311–.315,	y = .335–.339
x = .311–.315,	y = .335–.339
x = .298–.302,	y = .310–.314,

wherein said incandescent lamps are switched together, further wherein each of said fluorescent lamps is switched separately, further wherein a first switch controls said incandescent lamps, and a second, third, fourth, fifth, sixth, seventh, eighth and ninth switch controls said first, second, third, fourth, fifth, sixth, seventh and eighth fluorescent lamp, respectively, and further wherein the following switching combinations enable spectral emission of light which substantially duplicates the daylight chromaticity of the following colors:

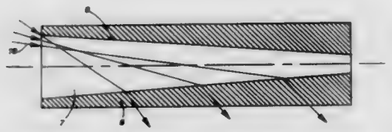
Switching Combination	Color Name
56789	Medium Blue
56789	Light Blue
35678	Grey
356789	Silver
3456789	White
567	Green
134568	Yellow
156789	Bright Red
1234	Dark Beechwood
134	Medium Walnut
1456	Light Mesa Broad
14789	Flax
1789	Light Wheat,

5,060,119

LIGHT PIPE FOR DECORATIVE ILLUMINATION

Mellapalayam R. Parthasarathy, 4841 Rocklin Dr., Union City, Calif. 94587

Division of Ser. No. 269,880, Nov. 10, 1988, Pat. No. 4,933,815.
This application Mar. 29, 1990, Ser. No. 501,660
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **18 Claims**



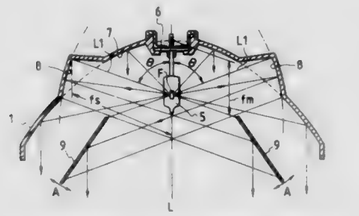
1. A light pipe for decorative illumination comprising:
at least one core layer for propagating incident light along its length;
a cladding layer to selectively refract predominantly all light modes radially outward for illumination from the outer surface of said cladding;
said core having cross sectional area at the light input end to accept predominately all of the incident light and said core changing, preferably reducing, in diameter at a preferred rate in the direction of light propagation to refract light out of said core at a controlled rate along the length of the light pipe thereof.

5,060,120

VARIABLE DISTRIBUTION TYPE AUTOMOTIVE HEADLAMP

Syoji Kobayashi, and Michihiko Hayakawa, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 679,970
Claims priority, application Japan, Apr. 19, 1990, 2-41122[U]
Int. Cl.[5] F21M *3/20*
U.S. Cl. 362—61 **10 Claims**



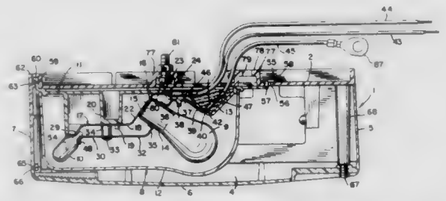
1. A variable distribution type automotive headlamp, comprising:
a single-filament type bulb;
a reflector, said reflector comprising a main reflecting surface and a pair of subsidiary reflecting surfaces provided within said main reflecting surface and which are left-and-right symmetrical with respect to said optical axis, said bulb being provided on an optical axis of said main reflecting surface, said main reflecting surface having a focal point substantially at the position of said bulb, both said subsidiary reflecting surfaces being arranged opposed to each other so that an optical axis of each of said subsidiary reflecting surfaces is inclined relative to said optical axis of said main reflecting surface within a horizontal plane and within a range of from 45 to 80 degrees, and a distance between said optical axis of said main reflecting surface and each of said subsidiary reflecting surfaces being greater than a distance between a center of said main reflecting surface and a focal point thereof;
at least one movable reflector provided forward of said reflector for reflecting light reflected from said subsidiary reflecting surfaces substantially in parallel to the optical axis; and
a movable reflector driving mechanism for pivoting said movable reflector in at least one of a horizontal direction and a vertical direction.

5,060,121

SEALED TAIL LIGHT FOR A BOAT TRAILER

Alton J. Cunningham, Slinger, and Brian A. Hanson, Theresa, both of Wis., assignors to Wesbar Corporation, West Bend, Wis.

Filed Jul. 26, 1990, Ser. No. 557,977
Int. Cl.[5] B60Q *1/56*
U.S. Cl. 362—61 **28 Claims**



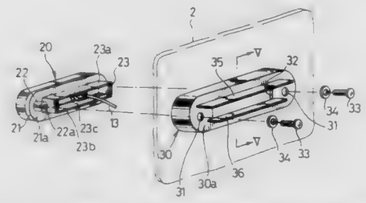
1. A tail light assembly, comprising a housing, a sealed capsule disposed in the housing and including a base and a transparent casing, said base having a well therein and having an opening connecting the well with the interior of said casing, an electric bulb disposed within the capsule, electrical conducting means connected to the bulb and having an end extending through said opening and into said well, electrical lead means connected to said end of said electrical conducting means, and a mass of electrically insulating material disposed within the well and encapsulating the connection between said conducting means and said lead means.

5,060,122

LAMP MOUNTING STRUCTURE FOR BUMPER

Kenichi Miyoshi, Machida, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 12, 1991, Ser. No. 654,189
Claims priority, application Japan, Feb. 13, 1990, 2-11901[U]
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—82 **12 Claims**



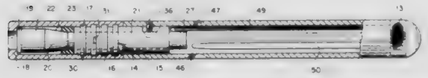
1. A lamp mounting structure for a bumper of an automobile, the bumper having a surface member, and the lamp having a rear side, comprising:
a concave portion formed in the surface member of the bumper for receiving the lamp therein, the concave portion having a base part at a bottom thereof in which an opening is formed, and the base part having a rear surface and upper and lower edges which define the opening;
a lamp mounting portion protrudingly provided on the rear side of the lamp, the lamp mounting portion having a configuration which is to be fitted into the opening of the concave portion, and the lamp mounting portion having upper and lower plate parts each having a flat outer surface;
upper and lower rib members protrudingly provided on the rear surface of the base part of the concave portion along the upper and lower edges thereof, the upper and lower rib members being adapted to come into contact with the outer surfaces of the upper and lower plate parts of the lamp mounting portion, respectively, when the lamp is inserted into the concave portion in such a manner that the lamp mounting portion is fitted into the opening; and
means for fixing the inserted lamp to the concave portion.

5,060,123

FLASHLIGHT CARRYING BATON

Charles S. Arnold, Bay St. Louis, Miss., assignor to LETD, Inc., New Orleans, La.

Filed May 3, 1991, Ser. No. 695,015
Int. Cl.[5] A63B *15/02*
U.S. Cl. 362—102 **11 Claims**



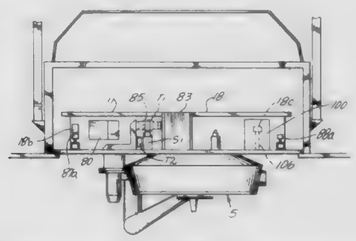
1. A baton for use with a twist on-off flashlight, comprising an elongated tube, said tube having front and rear portions, said rear portion having a rotatably engagable portion extending axially at the front of said rear portion, said front portion having a rotatably engagable rear portion extending axially and adapted to engage the engagable front portion of said rear portion, whereby the front and rear portions of said tube may be rotatably assembled, said flashlight having a tubular body portion and a head portion of a size to be received within said tube, said flashlight body being rotatable relative to its head in order to turn the flashlight off and on, means for receiving the body of said flashlight and abutting its head portion and engaging the tube's front portion to hold the flashlight head against movement relative to the front portion of said tube, means for interengaging said flashlight tubular body and said tube's rear portion in order to hold the body against movement relative to the rear portion of said tube, whereby relative rotation of said front and rear portions of said tube causes relative rotation between the flashlight body and its head in order to turn the flashlight off and on.

5,060,124

CONCEALABLE BIRTHING ROOM LIGHT

George E. Crispin, La Canada; Burnie M. Craig, South Laguna, and Roy K. Fujitaki, Altadena, all of Calif., assignors to ALM Surgical Equipment, Inc., Santa Ana, Calif.

Filed Sep. 28, 1990, Ser. No. 590,307
Int. Cl.[5] F21S *1/14*
U.S. Cl. 362—147 **19 Claims**



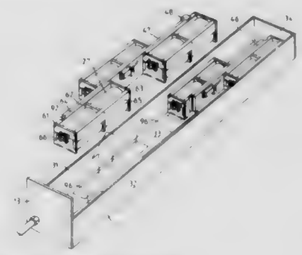
1. A lighting device concealable in a structure, the device comprising:
(a) a frame having first and second sides and means for mounting a light on the first side thereof;
(b) means fixedly attachable to the structure for supporting the frame for rotation between a closed position in which the second side of the frame is exposed and the light is concealed, and an open position in which the first side of the frame is exposed and the second side is concealed; and
(c) drive means for rotating the frame between the closed and open positions.

5,060,125

LAMP ASSEMBLY

John C. Cowie, and Kenneth J. Soper, both of Worcester, United Kingdom, assignors to CMB Foodcan plc, Worcester, United Kingdom

Filed Mar. 20, 1991, Ser. No. 673,138
Claims priority, application United Kingdom, Mar. 22, 1990, 9006409
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—218 **10 Claims**



1. A lamp assembly comprising:
a cradle housing;
at least two cradle arrangements contained in said cradle housing, each cradle arrangement comprising at least two cradles secured together; and
an individual elongate lamp mounted in each cradle;
the individual cradles being disposed successively along a common axis but in a staggered fashion with respect to said common axis, the cradles being arranged so that the individual lamps are substantially parallel to the common axis, and the cradles being arranged so that the ends of neighbouring cradles overlap each other.

5,060,126

COLOR WHEEL FOR LIGHTING DEVICES

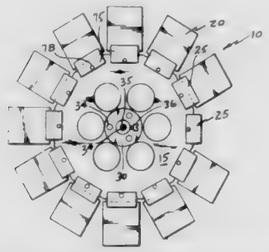
Thomas Tyler, Rd 3, Box 349, Cronk Rd., Wallkill, N.Y. 12589; John F. Luk, 55-02 96th St., Corona, N.Y. 11368, and Roger Pujol, 150 Rinaldi Blvd., (Apt. 9D), Poughkeepsie, N.Y. 12601

Filed Jul. 23, 1990, Ser. No. 556,752
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—277 **8 Claims**

1. A color wheel comprising
a metal plate with planar opposed surfaces in the form of a regular polygon having ten or more side edges of equal length and a central opening;
collar means affixed to said plate, surrounding said opening, and adapted to engage a shaft passing through said central opening for rotation of said plate;
a plurality of flat-bottomed, open top and open sided, slotted metal bars each having a length between about $\frac{1}{4}$ and $\frac{3}{4}$ of the length of a side edge of the metal plate, each of said bars being respectively, centrally seated on said side edges with their bottom portions contacting said metal plate and their slots aligned with said metal plate so that the open tops of the metal bars face outwardly from the central opening of said metal plate, each said slotted metal bar, having an integral metal tab portion extending away from

the open top thereof and toward the central opening of said metal plate and in close contact with a surface of said metal plate; means for separately mechanically engaging each said metal tab to said metal plate;

a plurality of equal-sized, spaced apart, planar, rectangular glass plates having straight side edges and planar opposed



surfaces respectively arranged in a slot of a metal bar with a side edge parallel to an adjacent side edge of said metal plate and spaced from said metal bar;

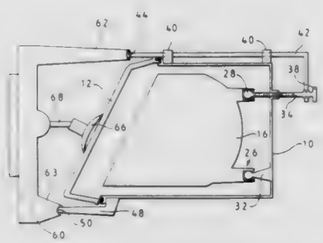
and adhesive means attaching a portion of each of the opposed planar surfaces of each glass plate, within a slot, to respective metal bars.

5,060,127

MOTOR VEHICLE HEADLAMP

David A. Birt, Cannock, England, assignor to Carello Lighting Plc., England

Filed Mar. 1, 1991, Ser. No. 669,741
Int. Cl.[5] F21M *3/20*
U.S. Cl. 362—421 **9 Claims**



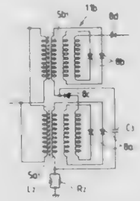
1. A headlamp comprising a housing including a light-transmitting front cover, said housing being adapted to be fixed to a motor vehicle, a lamp reflector body mounted within said housing, and mounting means operatively connected between said lamp reflector body and said housing for adjustably mounting said lamp reflector body within said housing, said mounting means including an adjuster which is connected with said lamp reflector body so that adjustment thereof tilts said lamp reflector body about a substantially horizontal axis, characterised in that an element is mounted externally of said housing and connected for movement with said lamp reflector body, said element extending forwardly of said housing and mounting an abutment which is disposed at the front of said housing, whereby the position of said abutment relative to said housing is dependant upon the tilted position of said lamp reflector.

5,060,128

FLYBACK POWER SUPPLY

Shunji Onodera, Iwai, and Shinichi Ito, Kashiwa, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 30, 1990, Ser. No. 501,464
Claims priority, application Japan, Mar. 31, 1989, 1-83753
Int. Cl.[5] H02M *7/06*
U.S. Cl. 363—20 **5 Claims**



1. A flyback power supply comprising: a flyback transformer comprising:

a core having a plurality of core legs spaced from each other;

a plurality of coil units supported respectively on said core legs; and

each of said coil units including a low-voltage coil bobbin fitted over one of said core legs, a low-voltage coil wound around said low-voltage coil bobbin, a high-voltage coil bobbin disposed around said low-voltage coil bobbin, and a high-voltage coil which comprises a plurality of coil layers wound successively around said high-voltage coil bobbin with insulating layers interposed between said coil layers, the low-voltage coils of said coil units being connected parallel to each other;

a plurality of first diodes connected in series with said coil layers, respectively, of said high-voltage coil of each of said coil units such that voltages produced across said coil layers will be in phase with each other;

a second diode by which said high-voltage coils of said coil units are connected in series with each other, whereby voltages produced across said high-voltage coils are added and rectified;

a parallel-connected circuit of a resistor and an inductive element, said parallel-connected circuit being connected to an input terminal of an innermost one of the coil layers of one of said coil units which is of a lower potential than the other coil units; and

a capacitor connected between said input terminal and an input terminal of an innermost one of the coil layers of another of said coil units.

5,060,129

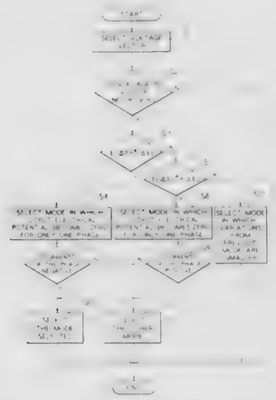
METHOD OF CONTROLLING THREE-PHASE, THREE-LEVEL INVERTER

Takafumi Maruyama, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 8, 1991, Ser. No. 638,814
Claims priority, application Japan, Apr. 11, 1990, 2-96707
Int. Cl.[5] H02M *7/5387*
U.S. Cl. 363—41 **4 Claims**

1. A method of controlling a three-phase, three-level inverter, in which a plurality of on/off modes are in turn switched in order to control an instantaneous space voltage vector determined by a combination of the electrical potentials of both terminals and the neutral-point terminal of the capacitor of said three-phase, three-level inverter comprising a DC voltage source, a capacitor both terminals of which connected to said DC voltage source and having a neutral-point terminal positioned between both of these terminals, and a plurality of switch elements connected to the section between both terminals and the neutral-point terminal of said capacitor and three output terminals of the inverter, comprising the steps of:

judging whether the current of the output terminal of an inverter of the phase such that the electrical potential of the output terminal equals to that of the neutral-point terminal of said capacitor among three-output terminals of said inverter is in a positive direction in which current flows into a load connected to this output terminal or in a negative direction in which current flows from the load when another on/off mode having the same instantaneous space voltage vector as the instantaneous space voltage vector in a tentatively selected on/off mode exists;



actually selecting the tentatively selected on/off mode if the result of said judgment is positive and actually selecting another on/off mode instead of the tentatively selected on/off mode when the result of said judgment is negative in the case where the electrical potential of the neutral-point terminal of said capacitor is above a preset upper-limit value; and

actually selecting the tentatively selected on/off mode if the result of said judgment is negative and actually selecting another on/off mode instead of the tentatively selected on/off mode when the result of said judgment is positive in the case where the electrical potential of the neutral-point terminal of said capacitor is below a preset lower-limit value.

5,060,130

HIGH-EFFICIENCY, HIGH-DENSITY, POWER SUPPLY INCLUDING AN INPUT BOOST POWER SUPPLY

Robert L. Steigerwald, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1990, Ser. No. 571,382
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—65 **20 Claims**

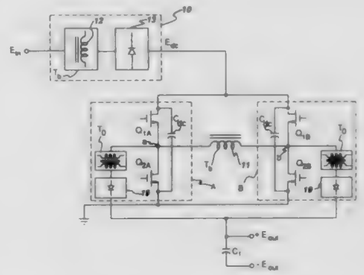
1. A high-efficiency, high-density power supply, comprising:

two converter modules coupled in parallel to each other, each said converter module comprising at least one pair of switching devices coupled together in a half-bridge configuration;

converter control means for regulating the output voltage of said power supply;

boost power supply means having a boost supply output voltage coupled in series with a power supply input voltage and with said converter modules, said boost power supply means maintaining an input voltage applied to said converter modules within a predetermined range of steady-state voltages; and

boost control means for activating said boost power supply means by controlling said switching devices in order to boost the input voltage applied to said converter modules



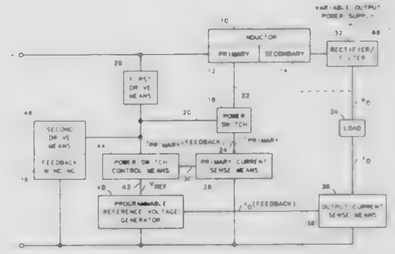
only when said power supply input voltage is outside said predetermined range of steady-state voltages.

5,060,131

DC TO DC CONVERTER POWER SUPPLY WITH FEEDBACK CONTROLLED CONSTANT CURRENT OUTPUT

Scott T. Sikora, Mesa, Ariz., assignor to Tomar Electronics, Inc., Gilbert, Ariz.

Filed May 29, 1990, Ser. No. 530,632
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—97 **37 Claims**



1. A power supply for delivering a constant output current to a load comprising:

a. a coupled inductor including a primary winding, a secondary winding and a feedback winding;

b. rectifier/filter means coupled to the secondary winding for supplying the load with a DC current;

c. a power switch having a control lead and first and second switching leads coupled in series with the primary winding for switching between conductive and non-conductive states to control the flow of current through the primary winding;

d. first drive means for applying a first drive signal to the control lead of the power switch for switching the power switch into the conductive state;

e. primary current sense means coupled to measure the flow of current through the primary winding and to generate a primary current feedback signal;

f. output current sense means coupled to monitor the current flow through the load and to generate an output current feedback signal representative of the power supply output current magnitude;

g. a programmable reference voltage generator for generating a DC reference voltage having a magnitude determined by the output current feedback signal;

h. power switch control means for comparing the primary current feedback signal with the DC reference voltage and for removing the first drive signal from the power

switch control lead when the primary current feedback signal reaches a predetermined level relative to the DC reference voltage to switch the power switch into the non-conductive state; and

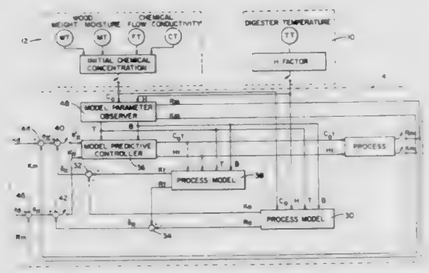
i. second drive means including the feedback winding for applying a second drive signal to the control lead of the power switch for maintaining the power switch in the non-conductive state while energy is being transferred from the secondary winding into the rectifier/filter means.

5,060,132

METHOD OF MODELING AND CONTROL FOR DELIGNIFICATION OF PULPING

Jeffrey A. Beller, Willoughby; Ralph K. Johnson, Highland Heights, both of Ohio; Roger Kammerer, Mercer Island, Wash.; Azmi Kaya, Akron, and Marion A. Keyes, IV, Chagrin Falls, both of Ohio, assignors to Elsag International B.V., Amsterdam, Netherlands

Division of Ser. No. 365,350, Jun. 13, 1989, Pat. No. 4,978,425.
This application Dec. 7, 1989, Ser. No. 430,532
Int. Cl.[5] D12C *7/12*
U.S. Cl. 364—158 **1 Claim**



1. A method for compensating an open loop operation in a supervisory feedback control path in a pulping delignification process, comprising the steps of:

generating signals of expected perturbation in actual process output states, Kappa number, K_a, and residual chemical concentration, R_a;

comparing the expected perturbation signals to targeted perturbation signals, Kappa number, K_t, and residual chemical concentration, R_t;

producing model mismatch estimated error signals, $\hat{e}_K$ and $\hat{e}_R$, from a difference in the targeted and expected perturbation signals;

generating actual measured error signals, e_K and e_R, from a difference in predetermined desired values and measured values of Kappa number and residual chemical concentration;

producing compensated control error signals, e'_K and e'_R, from a difference in the measured and estimated error signals; and

controlling pulp Kappa number and liquor residual chemical concentration in the pulping delignification process from changes in the compensated error signals, e'_K and e'_R, respectively.

5,060,133

TRANSPUTER CNC PROCESSOR

Woodward C. Carter, II, Maitland, Fla., assignor to Automation Intelligence, Inc., Orlando, Fla.

Filed Feb. 6, 1990, Ser. No. 475,743
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—192 **6 Claims**

2. In a computerized numerical controller system having a part program, an input device, a processor for motion planning and interpolation, machine tool servo drives, a machine tool, and sensor controls and operator controls, the improvement in said processor comprising:

a) a first transputer element having a convert program

i) to create convert processes for operation on program data read from said part program,

ii) to start and continuously loop said convert processes,

iii) to create at least one convert data buffer (CDB),

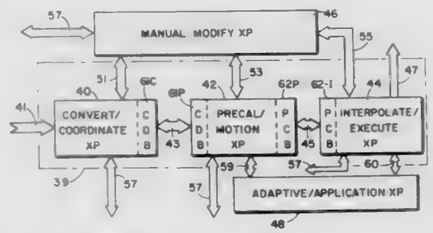
iv) to convert said program data to fixed format binary data,

v) to store said converted data messages in said created CDB, and

vi) to transmit said CDB stored converted data messages:

b) a second transputer element connected to an output of said first transputer element, and having a precalculate program

i) to create a receive process for receiving said CDB stored converted data message from said first transputer element CDB,



ii) to precalculate motion control data from said converted data message,

iii) to create at least one precalculated data buffer (PCB),

iv) to store said precalculated motion control data in said PCB, and

v) transmitting said PCB stored precalculated motion control data;

c) a third transputer element connected to an output of said second transputer element, and having an interpolation program

i) to create a receive process for receiving said PCB stored motion control data from said second transputer element,

ii) to interpolate said precalculated data to provide a real time interpolated point stream defining a desired motion trajectory, and

iii) to create an output bus for outputting said point stream.

5,060,134

ACTION DIRECTION PORT EXPANSION CIRCUIT AND SYSTEM

Roy E. Hunninghaus, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 12, 1988, Ser. No. 194,677
Int. Cl.[5] G06F *1/04*
U.S. Cl. 364—200 **25 Claims**

1. An action direction port expansion circuit for directing timed output signal transitions/pulses to implement desired changes at a plurality of output ports, comprising:

first event timer terminal for receiving first event signal transitions/pulses;

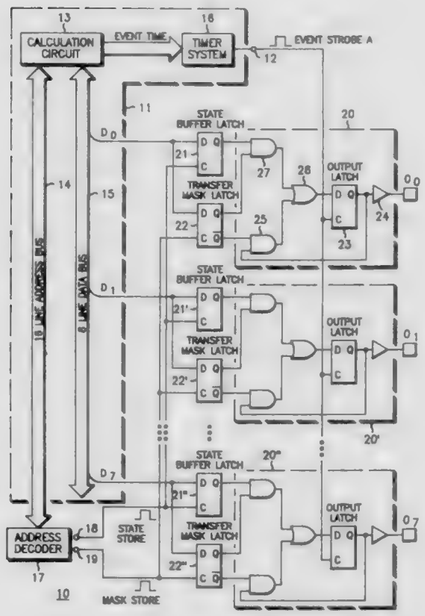
a plurality of output latch means each coupled to said first event timer terminal and each providing an associated output signal having any of at least two different states, each of said output latch means coupled to said first event signal transitions/pulses, each of said output latch means selectively in response to said first event signal transitions/pulses, and also in response to being enabled by receipt of an associated first event enable signal, changing the state of the output signal associated with said output

latch means to a predetermined state at a time determined by the time occurrence of said first event signal transitions/pulses;

means coupled to each of said output latch means for providing output state data which determines said predetermined state to which said output latch means output signals are to be changed to;

means for providing selection data for determining which of said output latch means should respond to said first event signal transitions/pulses by changing the state of the output latch means output signal; and

a plurality of first event action (transfer mask) latch means coupled to said selection data means for receiving said selection data therefrom, each one of said first event action latch means associated with and coupled to a separate associated one of said plurality of output latch means for selectively providing, as a latched output of said each one



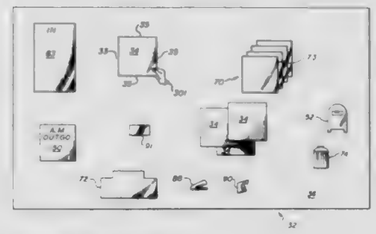
of said first event action latch means, said associated first event enable signal which is provided to said associated one of said output latch means, said provided first event enable signal enabling said associated one of said output latch means while others of said output latch means are unaffected by said first event enable signal which enables said associated one of said output latch means, wherein the time occurrences of said first event signal transitions/pulses provide precise timing information for changing the states of any of said output latch means output signals while said plurality of first event action latch means, via said first event enable signals, determine, in accordance with said received selection data, which ones of said output latch means are to be enabled to react to both said first event signal transitions/pulses and said output state data and change the states of the enabled output latch means output signals.

5,060,135

APPARATUS FOR MANIPULATING DOCUMENTS IN A DATA PROCESSING SYSTEM UTILIZING REDUCED IMAGES OF SHEETS OF INFORMATION WHICH ARE MOVABLE

Stephen R. Levine, North Andover, Mass.; Alex J. Harui, Derry, N.H.; Michael W. Schirpke, Bedford, Mass.; Karen Donoghue, Melrose, Mass., and Donna Ajgaonkar, Carlisle, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 245,419, Sep. 16, 1988, which is a continuation-in-part of Ser. No. 200,091, May 27, 1988, abandoned. This application Nov. 1, 1988, Ser. No. 265,685
Int. Cl.[5] G06F *15/40, 3/033*
U.S. Cl. 364—200 **33 Claims**



1. Apparatus comprising:

a. a display having a screen;

b. an input device providing first, position inputs and a second input;

c. a memory storing a least one reduced image of a sheet of information, said reduced image containing recognizable and distinguishable details of said sheet of information, said reduced image of each sheet of information thus being unique, said memory also storing a position for said reduced image to be displayed on said screen of said display;

d. a processor coupled to said memory, receiving inputs from said input device, providing outputs to said display, and:

i. displaying said reduced image on said screen at said stored position;

ii. moving said displayed reduced image on said screen in response to said first inputs upon intersection of said first, position inputs and said position of said displayed reduced image during a predetermined first state of said second input, and stopping said movement and storing the new position of said reduced image in said memory when said second input changes to a predetermined second state, whereby sheets of information stored as reduced images in said memory may be displayed and moved about said screen to simulate manipulation of sheets of information on a desk thereby providing a desk view.

5,060,136

FOUR-WAY ASSOCIATIVE CACHE WITH DLAT AND SEPARATELY ADDRESSABLE ARRAYS USED FOR UPDATING CERTAIN BITS WITHOUT READING THEM OUT FIRST

Richard W. Furney, Johnson City; Gordon C. Hurlbut, Vestal, and Michael P. Vachon, Apalachin, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 6, 1989, Ser. No. 293,913
Int. Cl.[5] G06F *13/08, 9/36*
U.S. Cl. 364—200 **4 Claims**

1. A computer system comprising:

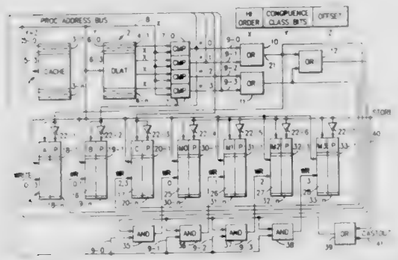
a four-way associative cache having groups of memory locations, each of said groups comprising four associative classes, said cache including means for coupling to a CPU and permitting said CPU to individually access each of said associative classes;

means for determining which associative class is currently being accessed by said CPU;

a storage array for storing indications of relative order of access by said CPU to the associative

classes within each group, said array including a separately addressable entry for each group, said storage array also storing parity bits for each of said entries; and

storage array control means, coupled to said storage array and the determining means, for directly updating, without first reading, the entry in said storage array corresponding to the group containing the associative class that is currently being accessed by said CPU with an indication of relatively recent access to said associative class compared to other associative classes within said group, and writing the respective parity bits for the entry; and



wherein there are exactly four associative classes within each group, each of said entries of said storage array utilizes exactly three bits to indicate said relative order of access, and there is a one-to-one correspondence between each of said parity bits and each bit of the corresponding entry in said storage array; and

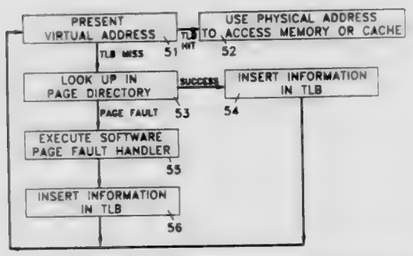
said storage array control means sets one of the three bits of the entry corresponding to the currently accessed group to indicate that two of the associative classes within the group have not been accessed by the current access, and sets another one of the three bits to indicate that one of the other two of the associative classes within the gorup has not been accessed by the current access.

5,060,137

EXPLICIT INSTRUCTIONS FOR CONTROL OF TRANSLATION LOOKASIDE BUFFERS

William R. Bryg, Saratoga; Michael E. Gardner, Sunnyvale, and Steven C. Boettner, San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 750,390, Jun. 28, 1985, abandoned.
This application Aug. 3, 1988, Ser. No. 229,750
Int. Cl.[5] G06F *12/10, 12/08*
U.S. Cl. 364—200 **7 Claims**



1. A computer implemented method of updating information in a translation look-aside buffer (TLB), said method comprising the steps of:

(a) assigning a physical page number to a virtual page number to provide a translation from this physical page number to this virtual page number;

(b) executing at least one explicit software instruction which directs entry into said TLB of this translation from said virtual page number to said physical page number; and

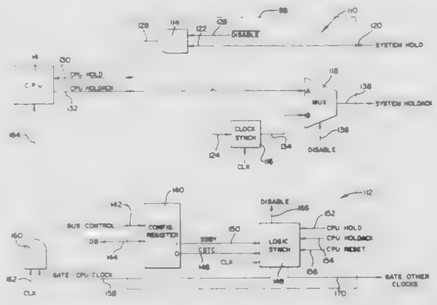
(c) as the direct and definitive response to said at least one explicit software instruction to change the contents of the TLB, without accessing a page directory, inserting said physical page number into a memory location in the TLB assigned to said virtual page number.

5,060,138

APPARATUS FOR USE WITH A COMPUTING DEVICE FOR GENERATING A SUBSTITUTE ACKNOWLEDGEMENT TO AN INPUT WHEN THE COMPUTING DEVICE IS IN AN OPERATIONAL HIATUS

Douglas D. Gephardt, Austin, and Peggy Avalos, Georgetown, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 31, 1990, Ser. No. 576,695
Int. Cl.[5] G06F *15/16, 11/16*
U.S. Cl. 364—200 **5 Claims**



1. An apparatus for use with a computing device for generating a substitute acknowledgement to a first input when said computing device is in an operational hiatus; the apparatus comprising:

a logical processing means for indicating presence of said first input depending upon the state of a second input, said first input being indicated as present by a status signal when said second input is in a first state, and said first input being not indicated as present by said status signal when said second input is in a second state; and

a logical means for producing an output signal, said output signal being representative of a selection of one of a plurality of signal inputs, said selection being determined by said state of said second input, said logical processing means and said logical means being operatively connected with said computing device;

a first of said plurality of signal inputs being said first input, and a second of said plurality of signal inputs being an acknowledgement signal, said acknowledgement signal being generated by said computing device in response to said status signal indicating presence of said first input.

5,060,139

FUTUREBUS INTERRUPT SUBSYSTEM APPARATUS

John G. Theus, Sherwood, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 7, 1989, Ser. No. 335,027
Int. Cl.[5] G06F *13/14, 13/18, 13/40*
U.S. Cl. 364—200 **3 Claims**

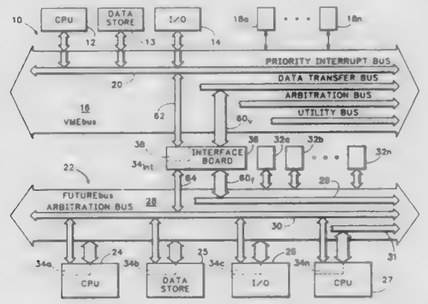
1. In a data processing system having a plurality of modular devices each connected asynchronously to a standard backplane bus and including a distributed-logic arbitration controller resolving contention for access to the standard backplane bus among the plurality of modular devices and communicating with each of the plurality of modular devices for the purpose of arbitration by way of an arbitration bus of the standard backplane bus, wherein each of the plurality of modular devices contending for access to the bus during an arbitration cycle asserts a unique arbitration number on the arbitration bus, the arbitration controller granting control of the standard backplane bus to one of the contending modular devices in accordance with a predetermined order of priority of the arbitration numbers of the plurality of modular devices, the arbitration controller, prior to granting such control to the one contending modular device, releasing from the arbitration bus the arbitration numbers of other contending modular devices, the arbitration number of the one contending modular device remaining asserted on the arbitration bus for recording by the plurality of modular devices, at least one of the modular devices having an event-driven interrupt signal source, the improvement comprising a method of transmitting an event-driven interrupt signal from one of the plurality of modular devices to all of the other modular devices across the standard backplane bus, the method comprising the steps of:

converting in the at-least-one of the modular devices the event-driven interrupt signal to an interrupt message number having a priority higher than the arbitration numbers of the plurality of modular devices;

initiating an arbitration cycle from the at-least-one of the modular devices;

asserting the interrupt message number on the arbitration bus during a bus arbitration cycle; and

relinquishing control of the standard backplane bus after such control is granted to the at-least-one of the modular devices by the arbitration controller, the interrupt message having been recorded by the plurality of modular devices.



5,060,140

UNIVERSAL PROGRAMMABLE DATA COMMUNICATION CONNECTION SYSTEM

Alexander S. Brown, Hopkinton, Mass.; James T. Hirni, Hollis, N.H., and Bruce S. Allen, Concord, Mass., assignors to Jupiter Technology Inc., Waltham, Mass.

Filed Jan. 16, 1986, Ser. No. 819,884
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—200 **13 Claims**

1. A data protocol converter for a data communication system, said data protocol converter selectively connecting and allowing data communication between at least one data source having a first communication protocol, said data source coupled to a selected one of a plurality of data communication system input ports, and at least one data destination having a second communication protocol different from said first communication protocol, said data destination coupled to a selected one of a plurality of data communication system output ports, said data protocol converter comprising:

at least one user definable protocol processing process capable of being executed on said data communication system, each user definable protocol processing process including:

at least one logical input to recieve data from said data source, and including a data queue receiving said data;

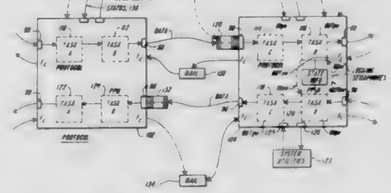
at least one logical output; and

at least first and second user selectable communication protocol translation tasks selectable from among a plurality of communication protocol translation tasks, each of said first and second communication protocol translation tasks including at least one data input and one data output;

means, responsive to user selections, for selecting said at least first and second protocol translation tasks from among said plurality of protocol translation tasks;

path connecting means, responsive to said user selections, for selectively providing a data path to interconnect and allow data communication between said data source having said first communication protocol and said data destination having said second communication protocol, said data path comprising a plurality of constituent selectively connectable data sub-paths;

said path connecting means providing a first selectively connectable data sub-path between said at least first and second communication protocol translation tasks, for connecting the input of one of said first and second communication protocol translation tasks and the output of the



other of said first and second communication protocol translation tasks, between the input of said other of said first and second communication protocol translation tasks and the logical input of said protocol processing process, and between the output of said one of first and second communication protocol translation tasks and the logical output of said protocol processing process;

said path connecting means providing a second selectively connectable data sub-path between the logical input of said protocol processing process and said selected input of said data communication system connected to said data source, wherein the logical input of said protocol processing process is connected to receive data from said data source;

said path connecting means providing a third selectively connectable data sub-path between the logical output of said protocol processing process and said selected output of said data communication system connected to said data source, wherein the logical output of said protocol processing process is connected to provide protocol converted data to said data destination; and

a path control manager, operative to control execution of each protocol processing process, and to maintain a flow of data along said data path from said data source to said data destination along said selectively connectable constituent first, second and third data sub-paths, according to and through the selected communication protocol translation tasks executing in said at least one protocol processing process.

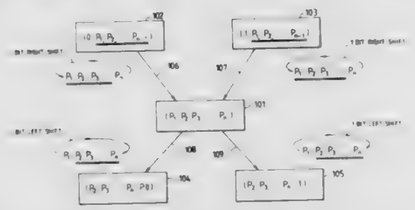
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5,060,141

MULTIPROCESSOR SYSTEM HAVING UNIDIRECTIONAL COMMUNICATION PATHS

Akiyoshi Wakatani, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Inc., Osaka, Japan

Filed Dec. 28, 1988, Ser. No. 291,209
Claims priority, application Japan, Dec. 29, 1987, 62-334484
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—200 **2 Claims**



1. A multiprocessor system comprising:

a set of R^n processing elements, where R is an integer which is greater than one, and n is a non-zero integer, each of said processing elements being identified by an address comprising n digits, each of said digits having a value in the range 0 to (R−1); and,

a set of unidirectional data lines for interconnecting said processing elements, each of said unidirectional data lines being connected to provide unidirectional communication from one of said processing elements to another one of said processing elements;

in which an arbitrary one of said processing elements having an address (P_1, P_2, . . . P_i, . . . P_{n-1}, P_n), where P_1 to P_n denote respective address digits and the position i of a digit P_i relative to a leading position in said address is fixedly established as a value in the range 1 to n, is coupled by a set of R ones of said unidirectional data lines to a set of R ones of said processing elements for unidirectional communication to said set of R processing elements, and in which respective addresses of said set of R processing elements are determined in relation to said address of said arbitrary processing element by executing a cyclic one digit left shift operation of the digits of said address (P_1, P_2, . . . P_i, . . . P_{n-1}, P_n) to obtain an address (P_2, P_3, . . . P_i, . . . P_n, P_1) and replacing said digit P_i by respective values in said range 0 to (R−1).

5,060,142

SYSTEM WHICH MATCHES A RECEIVED SEQUENCE OF CHANNEL COMMANDS TO SEQUENCE DEFINING RULES FOR PREDICTIVELY OPTIMIZING PERIPHERAL SUBSYSTEM OPERATIONS

Moothedath J. Menon, 6017 Montoro Dr., San Jose, Calif. 95120, and Dickie K. Woo, 736 Homer Ave., Palo Alto, Calif. 94301

Filed May 20, 1988, Ser. No. 197,056
Int. Cl.[5] G06F *13/14*
U.S. Cl. 364—200 **8 Claims**

1. In a machine-effected method of operating a peripheral data-storage subsystem having a machine-sensible data-storing medium with a large plurality of addressable data-storage locations;

including, the machine-executed steps of:

establishing a set of sequence defining rules for a channel program having a series of channel commands, said channel commands being in a plurality of chains of said channel commands;

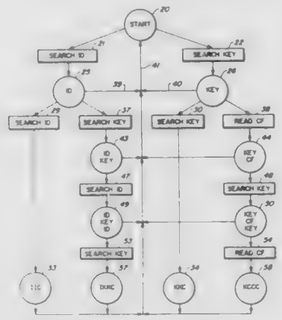
the subsystem receiving from a connected input-output channel one or more of said channel commands in each said chain of channel commands, some of said chains of channel commands including ones of said received channel commands having data record identifying parameter data for identifying to the data-storage subsystem predetermined ones of said data-storage locations;

examining the sequence of said channel commands having said parameter data in each one of the chains of commands for any one of a predetermined set of a plurality of said channel command sequences;

during said each chain of channel commands, attempting to match the examined sequence of said channel commands to the set of sequence defining rules;

if no rule match between said examined sequence of channel commands and said set of sequence occurring rules is found, then resetting the examining to start anew;

if a rule match between said examined sequence of channel commands and said set of sequence occurring rules is found, establishing a state of operation in the subsystem for effecting changes in the operation of the subsystem in responding to ensuing ones of said channel commands after said match is found and such ensuing chan-



nel commands being related to the examined channel commands; and

such changes causing the subsystem to execute first predetermined subsystem machine operations in an unchanged mode of operation of the subsystem during the existence of said each chain of channel commands which would occur as if the subsystem were transferring data over said the channel but wherein the subsystem performs such first predetermined subsystems machine operations during said state of operation while the subsystem is disconnected from the channel and during said first predetermined machine operations the system storing data in a buffer connected to the data-storing medium during said first predetermined machine operations and wherein said ensuing channel commands in the said each chain of commands appear to the channel to be executed in the same manner using said buffer without the state of operation accessing said data storing medium but at electronic speeds including accessing said buffer whereby the usage of the channel during the chain of channel commands is reduced.

5,060,143

SYSTEM FOR STRING SEARCHING INCLUDING PARALLEL COMPARISON OF CANDIDATE DATA BLOCK-BY-BLOCK

Kuo-Chu Lee, Franklin Township, Somerset County, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

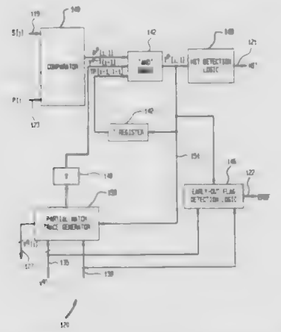
Filed Aug. 10, 1988, Ser. No. 230,483
Int. Cl.[5] G06F *7/06, 7/20, 15/40*
U.S. Cl. 364—200 **5 Claims**

1. An electronic string search processor circuit for identifying a target pattern in a data base in the form of a string of characters, said circuit comprising:

a comparator array for comparing in parallel a current block of characters from said data base with a character from said target,

match trace processor means responsive to said comparator array for determining if said target character forms part of a match trace, said match trace processor means comprising a register for storing information identifying match traces including the last character of an immediately previous block from said data base, in order to determine when a match trace crosses the boundary between the previous block and the current block of said data base,

means for loading a new target character into said comparator array if said target character forms part of a match trace and it is not the last character of said target,



means for loading a new block from said data base into said comparator array if said target character does not form part of a match trace and there are no match traces including the last character of the previous block of said data base which can possibly be extended across said boundary into the current block by a subsequent character from said target, and

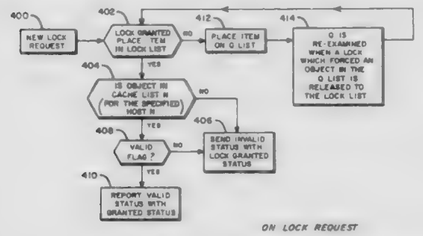
means for generating a hit signal for indicating the presence of said target in said data base when the last character of said target forms part of a match trace.

5,060,144

LOCKING CONTROL WITH VALIDITY STATUS INDICATION FOR A MULTI-HOST PROCESSOR SYSTEM THAT UTILIZES A RECORD LOCK PROCESSOR AND A CACHE MEMORY FOR EACH HOST PROCESSOR

Ralph E. Sipple, Shoreview; John R. Jordan, St. Paul, and Anthony P. vonArx, New Brighton, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 16, 1989, Ser. No. 324,129
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 **1 Claim**



ON LOCK REQUEST

1. A method for a multi-processor data system of controlling locking requests for objects that are stored in a shared memory in which some of said objects may also be stored in any of a plurality of cache memories and for indicating the validity of said objects that are stored in said plurality of cache memories wherein said system further comprises a plurality of processors each of which is coupled to, and associated with, one of said cache memories, and a locking control means that contains a separate cache list for each of the processors of the system is coupled between all of said processors and said shared memory, wherein said processors are capable of obtaining locks on selected ones of said objects under the control of said locking control means, of utilizing said selected ones of said objects, and of then unlocking said selected ones of said objects under the control of said locking control means comprising:

(A) transmitting lock entries from said processors to said locking control means, wherein each of said lock entries comprise source bits that identify the processor that requests a lock on a particular selected object, and associated object bits that identify the particular selected object upon which the lock is requested by the requesting processor,

(B) entering the source bits and the object bits of those lock entries that represent objects upon which any processor of said plurality of processors have been granted a lock into a lock list in said locking control means as lock list entries,

(C) determining if the object bits of requested lock entries are already stored in said lock list as lock list entries at the time that any of said processors requests a lock on any object specified by said object bits,

(D) entering the source bits and the object bits of those lock entries that represent objects upon which any of said plurality of processors has requested a lock into a queue list in said locking control means as queue list entries when the requested lock on an object cannot be granted a lock because another lock list entry then exists in said lock list which also comprises the same object bits,

(E) removing a lock list entry for any selected object from said lock list after a processor that obtained a lock on said selected object has utilized said selected object, and has directed the locking control means to unlock the lock on said selected object,

(F) entering a queue list entry from said queue list into said lock list as a lock list entry when no lock list entry exists in said lock list which then also comprises the same object bits,

(G) granting locks on the objects represented by lock list entries in said lock list,

(H) entering the object bits of all objects that are stored in said cache memories in separate cache lists in said locking control means as cache lists entries, each of said cache lists being associated with one of said processors,

(I) comparing the object bits of each lock list entry that represents an object upon which a lock has been granted to the object bits stored as cache list entries in the cache list in said locking control means that is associated with the processor that was granted said lock to determine if said locked object is then stored in the cache memory that is associated with said processor that was granted said lock,

(J) checking the validity bits associated with said locked object if it is determined that said locked object is stored in said cache memory of its associated processor to determine if said stored locked object indicates a valid or invalid status,

(K) sending both lock granted and invalid status indications to a processor that has requested a lock on a selected object if either said selected object is not identified by object bits in the cache list that is associated with said requesting processor, and therefore said selected object upon which a lock is requested is not stored in said cache memory of its associated processor, or if said validity bits for said selected object that is stored in said associated cache list indicate an invalid status for said selected object,

(L) obtaining said selected object for said requesting processor from said shared memory and storing said selected object in said associated cache memory that is associated with said requesting processor if said lock is granted and

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said validity bits in said associated cache list indicate an invalid status for said selected object,

(M) sending both lock granted and valid status indications to the processor that has requested a lock on a selected object if said selected object was identified by object bits in the cache list that is associated with the processor that has requested a lock on the selected object and said validity bits in said associated cache list indicate a valid status,

(N) obtaining said selected object for said requesting processor from the cache memory that is associated with said requesting processor if said lock is granted on said selected object and said validity bits for said selected object in the cache list for the associated processor indicate a valid status,

(O) transmitting an unlocking command from said requesting processor to said locking control means after said selected object upon which a lock has been obtained has been utilized by said requesting processor,

(P) setting to indicate a valid status the validity bits of each cache list entry that represents each selected object upon which a lock was obtained by any of said processors for each selected object which was utilized by the requesting processor that obtained the lock, and which was returned in an unmodified form to the same cache memory from which it was obtained,

(Q) setting to indicate an invalid status the validity bit of each cache list entry that represents a selected object upon which a lock was obtained by a requesting processor that was either (1) obtained from said shared memory and utilized by said requesting processor, or (2) obtained from a cache memory associated with the processor that obtained the lock on said selected object, utilized by the requesting processor and then returned to the same cache memory in modified form, and

(R) setting to indicate an invalid status, in both instances (1) and (2), the validity bits of all other lock entries of all of the other cache list entries which comprise the same object bits as said selected object that has been utilized by said requesting processor upon receipt of said unlocking command by said locking control means from said requesting processor.

5,060,145

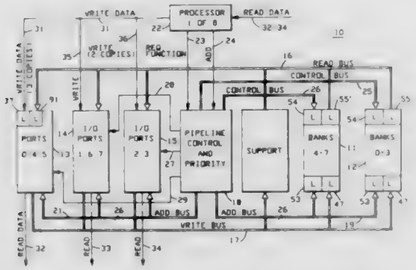
MEMORY ACCESS SYSTEM FOR PIPELINED DATA PATHS TO AND FROM STORAGE

James H. Scheuneman, St. Paul; Larry L. Byers, Apple Valley, and Wayne A. Michaelson, Circle Pines, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 6, 1989, Ser. No. 403,624

Int. Cl.[5] G11C *7/00;* **G06F** *7/00, 13/00*

U.S. Cl. 364—200 **17 Claims**



1. An access system for a main storage unit for simultaneously loading read and write pipelined data paths comprising:

a plurality of memory banks,

a write bus and a read bus connected to said memory banks,

a plurality of I/O ports coupled to said write bus and to said read bus,

pipeline control means having address bus means and control bus means coupled to said memory banks and to said I/O ports,

processor means coupled to said pipeline control means for raising a plurality of request functions and addresses for the transfer of data on said read bus and said write bus between said memory banks and said I/O ports,

said pipeline control means being provided with means for sequentially raising either write or read requests on said control bus means for the transfer of pipelined data on said write bus and said read bus and for generating time slot windows during which a subsequent write or read data transfer operation will occur, and

said pipeline control means further comprising means for accessing different memory bank addresses on said address bus during a write or a read operation so that data on said write and said read buses is being accessed simultaneously.

5,060,146

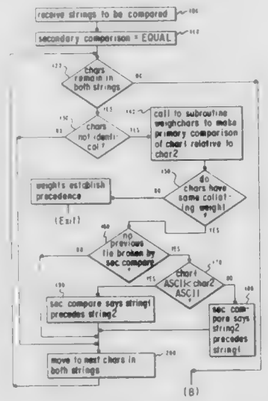
MULTILINGUAL INDEXING SYSTEM FOR ALPHABETICAL LYSORTING BY COMPARING CHARACTER WEIGHTS AND ASCII CODES

Philip Y. T. Chang, and Michael R. Cross, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1988, Ser. No. 179,179

Int. Cl.[5] G06F *7/08, 15/38, 15/401, 7/04*

U.S. Cl. 364—900 **6 Claims**



1. A method of operating a computer system, including an operating system computer program, to automatically order strings of characters, comprising:

comparing, with a programmed computer processor, only computer program defined collating weights, specific to a first language and obtained from said operating system, of nonidentical pairs of corresponding characters in a first and second of said strings of characters;

performing a secondary comparison, with said programmed computer processor, of ASCII numerical values of characters of a first pair of said corresponding characters when both characters of said pair of corresponding characters are determined to have equal collating weights; and

positioning, with said programmed computer processor, a character string having a corresponding character with a lower ASCII numerical value to have a predetermined order with respect to the other of said first and second character strings when each pair of corresponding characters succeeding said first pair also has equal collating weights.

5,060,147

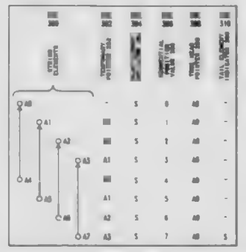
STRING LENGTH DETERMINATION ON A DISTRIBUTED PROCESSING SYSTEM

Robert M. Mattheyses, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 44,633, May 1, 1987, abandoned. This application Aug. 22, 1989, Ser. No. 397,632

Int. Cl.[5] G06F *15/80, 15/66*

U.S. Cl. 364—200 **13 Claims**



1. A method of operating a data processing system to determine a length of a data string comprising a plurality of sequential data elements, said method comprising the steps of:

a) assigning each element a pointer identifying an immediately succeeding element in said string which is closer to a true head element of said string;

b) processing the string of data elements to identify a tail element of said string;

c) forming in the processing system for each data element a corresponding data structure having a second pointer, a head indicator, a sequential position value, a true head pointer and a tail element indicator;

d) copying said first pointer into the second pointer at each said element;

e) setting the sequential position value of the data structure corresponding to the true head element to zero;

f) setting the head indicator at the data structure corresponding to said true head element;

g) initializing a counter in the processing system to a value of zero;

h) determining if said head indicator is set in the data structure corresponding to each said element in said string and, if so, proceeding to step n) and, if not, proceeding to step i);

i) assigning a value $2^{i}+v$ as the sequential position value of each said data structure for which said head indicator is not set, each of the last recited elements being a receiving element, where:

i=a current counter value; and

v=a sequential position value of a passing element identified by said second pointer of said data structure;

j) copying at the data structure corresponding to each said receiving element the head indicator of said passing element;

k) determining, at each said element for which said head indicator is not set, the element currently identified by said second pointer of the corresponding data structure and substituting said second pointer of said currently identified element for said second pointer of said determining element;

l) incrementing by one said counter value;

m) repeating steps h) through i) until all head indicators are set;

n) incrementing by one said sequential position value of the data structure corresponding to the tail element, the last recited incremented value being the number of said elements in said string, the number of elements being the length of the string; and

o) using the length information derived on step n) to manipulate the data elements and perform calculations in the data processing system.

5,060,148

CONTROL SYSTEM FOR VECTOR PROCESSOR WITH SERIALIZATION INSTRUCTION FOR MEMORY ACCESSES FOR PIPELINE OPERATION

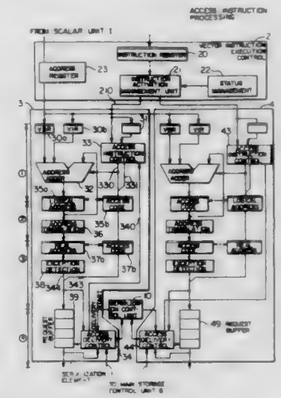
Tadaaki Isobe, and Toshiko Isobe, both of Hadano, Japan, assignors to Hitachi, Ltd., Chiyoda and Hitachi Computer Engineering Co. Ltd., Tokyo, both of Japan

Filed Nov. 16, 1987, Ser. No. 121,134

Claims priority, application Japan, Nov. 18, 1986, 61-274398

Int. Cl.[5] G06F *15/347, 9/38*

U.S. Cl. 364—200 **5 Claims**



1. A vector processor for pipelining vector data including a storage unit, a storage control unit for controlling said storage unit, a plurality of access instruction pipelines having a plurality of stages connected to said storage control unit of pipelining access instructions, a vector register connected between said storage unit and said access instruction pipelines, an a vector instruction execution control unit connected to said plurality of access instruction pipelines for distributing an access instruction and a serialization instruction for serializing said access instruction to said access instruction pipelines,

wherein each access instruction pipeline of said vector processor comprises:

(a) a stage for calculating an address of an instruction inputted from said vector instruction execution control units;

(b) a plurality of request buffers coupled to an output of said calculating stage and including stages which sequentially hold access requests to be sent to said storage control unit in accordance with said inputted instruction;

(c) detection means connected to said plurality of request buffers for detecting if an access request sent to said storage control unit is said serialization instruction or not;

(d) AND means for receiving all outputs from said detection means in said plurality of access instruction pipelines and generating a logical AND of said outputs so as to detect said serialization instruction at a stage within each of said access instruction pipelines.

(e) means for inhibiting the sending of an access request from said access instruction pipelines to said storage control unit based on a result of detection from said detection means; and

(f) access request start means for sending the contents of said plurality of buffers of said plurality of access instruction pipelines to a next stage therein based on an output from said AND means.

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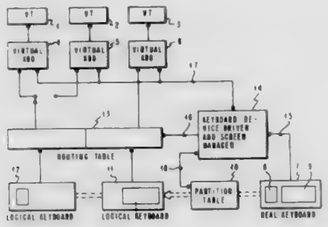
METHOD FOR CONTROLLING MULTIPLE TERMINALS FROM A SINGLE LOGICALLY PARTITIONED INPUT DEVICE

Gregory A. Flurry, and Leslie A. Wagner, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 820,469, Jan. 17, 1986, abandoned. This application Sep. 18, 1989, Ser. No. 409,264

Int. Cl.[5] **G06F** *3/147, 3/023, 7/00;* **G06K** *15/18*

U.S. Cl. 364—200 **7 Claims**



1. In a computer system having a user input device and a plurality of virtual terminals, a method of causing said input device to be concurrently interactive with the plurality of virtual terminals, said method comprising the steps of:

a) selectively partitioning a single user enabled input device into one of a plurality of logically distinct functional segments;

b) transmitting, subsequent to said step of partitioning, a logically distinct user enabled function from a selected segment of said partitioned input device to the corresponding selected one of said plurality of virtual terminals in said system; and

c) controlling a distinct application program executing on the selected one of said plurality of virtual terminals using the transmitted logical distinct user enabled function.

5,060,150

PROCESS CREATION AND TERMINATION MONITORS FOR USE IN A DISTRIBUTED MESSAGE-BASED OPERATING SYSTEM

Gabor Simor, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 476,115, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 336,630, Apr. 7, 1989, abandoned, which is a continuation of Ser. No. 624, Jan. 5, 1987, abandoned. This application Jan. 31, 1991, Ser. No. 649,247

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 364—200 **25 Claims**

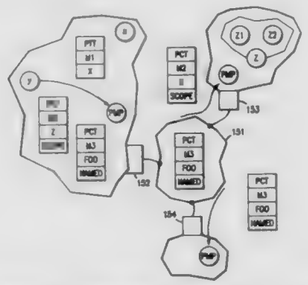
1. In a distributed data processing system comprising a plurality of interconnected nodes, said system comprising a plurality of processes, said processes communicating with one anther by means of messages, a method of providing a notification message when a process is created on one of said plurality of interconnected nodes comprising the steps of:

a) transmitting a request from a requesting process of a first node to a process manager process of said first node;

b) transmitting said request from said process manager process of said first node to a process manager process of a second node;

c) monitoring said second node for a monitored process being created on said second node;

d) transmitting a notification message from said process manager process of said second node to said process manager process of said first node when said monitored process is created on said second node and prior to said process manager process of said second node receiving a notice from said monitored process of the creation of said monitored process; and



e) transmitting a notification message from said process manager process of said first node to said requesting process.

5,060,151

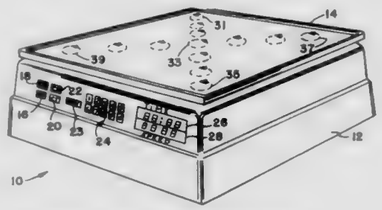
SPEED CONTROL FOR ORBITAL SHAKER WITH REVERSING MODE

Glenn E. Mikyska, Naperville, and William W. Stanley, Batavia, both of Ill., assignors to Cymatics, Inc., Naperville, Ill.

Continuation of Ser. No. 376,902, Jul. 5, 1989, abandoned, which is a continuation of Ser. No. 62,265, Jun. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 632,574, Jul. 19, 1984, Pat. No. 4,673,297. This application Jan. 17, 1991, Ser. No. 642,707

Int. Cl.[5] **G06F** *15/46;* **B01F** *11/00*

U.S. Cl. 364—400 **37 Claims**



31. A reversing orbital shaker, comprising:

a base;

an electric motor connected to said base;

a suspension system connected to said base;

a table connected to said suspension system to be movably supported thereby and coupled to said electric motor to be driven thereby with respect to said base;

means for sensing a rotational speed of said electrical motor and generating a motor speed signal in response thereto;

means, coupled to said motor speed sensing means to receive said motor speed signal, for controlling said rotational speed of said electric motor in response to said motor speed signal;

means, coupled to said controlling means, for timing said electric motor operating in a first rotary direction and generating a reversing signal when the time interval in which said electric motor operates in said first rotary direction reaches a selected amount; and

means, coupled to said timing means to receive said reversing signal, for reversing a direction of rotation of said electric motor from said first rotary direction to a second rotary direction in response to said reversing signal.

5,060,152

PORTABLE TRANSCEIVER

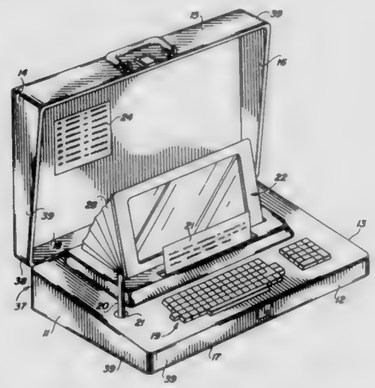
William C. Maeser, 12222 Paradise Village Pkwy. #146A, Phoenix, Ariz. 85016, and Ward W. Maeser, 2903 E. 10th St., Tempe, Ariz. 85281

Division of Ser. No. 913,743, Sep. 30, 1986, Pat. No. 4,803,652. This application Feb. 1, 1989, Ser. No. 305,425

The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.

Int. Cl.[5] **G06F** *1/00*

U.S. Cl. 364—401 **4 Claims**



1. A portable terminal device adapted to be carried to a site and to perform transaction operations by transmitting and receiving data to and from a central unit, said portable terminal device including

(a) memory means for storing transaction defining data;

(b) input means for inputting transaction defining data into said memory;

(c) control means coupled to said memory means for determining

(i) when sufficient transaction defining data is stored in said memory means for a transaction and said terminal device is in a transaction ready state, and

(ii) when insufficient transaction defining data is stored in said memory means for a transaction and said terminal device is in a transaction inhibit state;

(d) modem means for transmitting transaction defining data over a telephone line;

(e) transaction means coupled to said memory means and said modem means for transmitting selected transaction defining data stored in said memory means through said modem means over telephone lines to said central unit when said control means determined said terminal device is in said transaction ready state;

(f) a screen movable between at least two operative positions,

(i) a first stored position for transport of said terminal device, and

(ii) a second display position;

(g) an optical system for projecting images of said transaction defining data onto said screen when said screen is in said display position;

(h) means coupling said control means to said optical system for transferring transaction defining data from said memory means to said optical system for display on said screen; and,

(i) a common portable housing for said memory means, input means, control means, modem means, transaction means, screen, optical system, and coupling means.

5,060,153

TELLER MACHINE WITH MODE FOR CONTINUOUSLY SENDING OFF-LINE COLLECTED TRANSACTION DATA TO A HOST WHILE IGNORING INCOMPLETE DATA RESPONSE SIGNALS

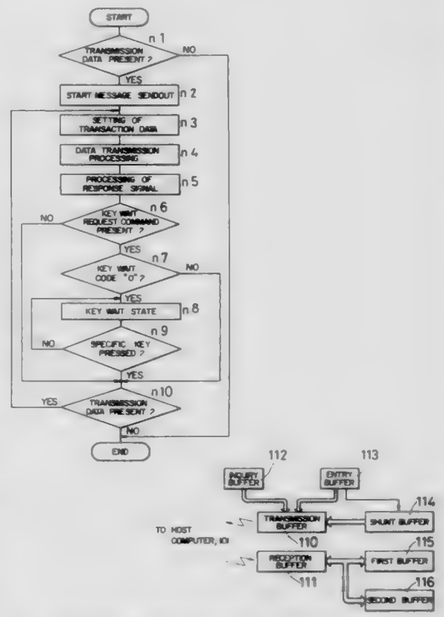
Shigemitsu Nakagawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 5, 1989, Ser. No. 333,562

Claims priority, application Japan, Apr. 5, 1989, 63-84839

Int. Cl.[5] **G06F** *15/21*

U.S. Cl. 364—405 **6 Claims**



1. An automatic transaction system comprising:

a teller machine and a host computer connected to each other,

said teller machine being operable in an on-line and off-line mode and including,

input means for feeding in predetermined transaction data,

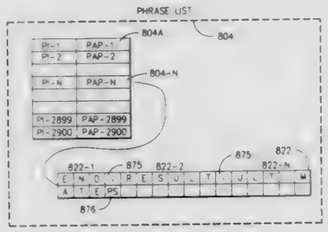
entry means for registering said transaction data received from said input means, and

means for temporarily storing said transaction data during said off-line mode prior to being transmitted to the host computer,

said host computer additionally including, means for transmitting a predetermined request command signal to said teller machine when in the off-line mode for requesting a predetermined operation at the teller machine in response to said predetermined transaction data transmitted thereto from said teller machine,

said teller machine additionally including means for selectively being set in a first and a second operating state, said teller machine responding to said request command signal when said first operational state is set to inhibit transmission of data to said host computer until a predetermined operation is performed by an operator and responding to said request command signal when said second operational state is set to permit transmission of data to said host computer without any operation being performed by said operator.

5,060,154
ELECTRONIC TYPEWRITER OR WORD PROCESSOR WITH DETECTION AND/OR CORRECTION OF SELECTED PHRASES
Howard C. Duncan, IV., Dryden, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.
Continuation of Ser. No. 294,248, Jan. 6, 1989, abandoned. This application May 31, 1990, Ser. No. 531,198
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419 **9 Claims**



1. A word-processing system having a memory, character and control input to the system through a keyboard with a plurality of alphanumeric and function keys depressible by an operator, and a display, in combination wherein said memory includes:

a. a spelling dictionary part;

b. a phrase alert part which is responsive to said spelling dictionary part;

c. a list of correctly spelled words in said spelling dictionary part such that each of said correctly spelled words is assigned a specific location in said list of correctly spelled words and those correctly spelled words that are also included in said phrase alert part include a special code;

d. decoding tree means in said phrase alert part for providing a list of plural sets of series of specific locations of words in said list of correctly spelled words in said spelling dictionary part that include a special code, such that each of said sets correspond to a series of words in a potentially misused phrase;

e. table look up means in said phrase alert part for providing a list of alternative phrases corresponding to each of said potentially misused phrases which corresponds to said sets of series of specific locations of words in said list of correctly spelled words in said spelling dictionary part that include a special code, said list of alternative phrases being identified by said decoding tree means in said phrase alert part;

f. means for registering said locations of words in said list of correctly spelled words;

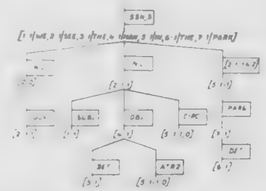
g. means for comparison of the characters being entered into the system with said list of correctly spelled words in said dictionary part, such that said dictionary part recognizes when a word has been entered and compares the entered word with said list of correctly spelled words and upon entry of a word that is included in said list of correctly spelled words and contains said special code, said assigned specific location of said word is provided as input into said means for registering said specific locations of words;

h. detection means for comparison of said specific locations in said means for registering with said list of plural sets of series of specific locations of words that correspond to a series of words in a potentially misused phrase;

i. a selectively enabled generator of a warning signal for the operator that is activated in response to sensing entry of any of said potentially misused phrases by said detection means; and

j. a first control responsive to pressing a discrete one of said depressible keys, said first control being operable to present in the display any potentially misused phrase so detected along with said list of alternative phrases corresponding to said potentially misused phrase.

5,060,155
METHOD AND SYSTEM FOR THE REPRESENTATION OF MULTIPLE ANALYSES IN DEPENDENCY GRAMMAR AND PARSER FOR GENERATING SUCH REPRESENTATION
Job M. van Zuijlen, Utrecht, Netherlands, assignor to Bso/Buro Voor Systeemontwikkeling B.V., Utrecht, Netherlands
Filed Jan. 31, 1990, Ser. No. 472,831
Claims priority, application Netherlands, Feb. 1, 1989, 8900247
Int. Cl.[5] G06F *15/38, 1/00*
U.S. Cl. 364—419 **7 Claims**

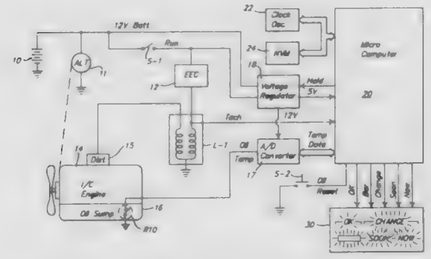


1. Method for unambiguously coding multiple parsing analyses of a natural language word sequence in dependency grammar in which dependencies are defined between pairs of words, each pair consisting of a superordinate word or governor and a thereto related word or dependent, said method comprising the following steps:

a) determining for each word in said natural language word sequence a word index, representing the rank of order of said word in said sequence, determining for each word all dependents thereof permitted by the grammar and determining the relation between said word and said dependents using a parsing algorithm in combination with a grammar defining all the permitted dependency relations in the language and a dictionary in which all words of the language are stored together with their syntactic interpretation and an interpretation index, representing the rank order of the syntactic interpretation of the word in the dictionary in order to distinguish between multiple syntactic interpretations of said word,

b) defining a syntactic network which is represented as a tree consisting of nodes mutually coupled by edges and comprising at least one top node, one or more terminal nodes and eventually a number of intermediate nodes, each node being interpreted as an exclusive OR node serving as a pointer if there is only one alternative and serving as a choice point if there are several alternatives, whereby each of the pointer nodes is assigned to a word of the sequence and each edge is assigned to the syntactic relation between the two nodes coupled by said edge, whereby each node is coded by an identifier which in case of a pointer node is directly related to the entry of a word in the dictionary and in the case of a choice point comprises a list of further identifiers one of which has to be selected.

5,060,156
METHOD AND APPARATUS FOR DETERMINING ENGINE OIL CHANGE INTERVALS ACCORDING TO ACTUAL ENGINE USE
Jeffery L. Vajgart, Corunna; Peter W. Misangyi; Parshuram G. Date, both of Novi; Roger S. Heitzeg, Dearborn Heights; Noel A. Walker, Royal Oak; David A. McNamara, Saline, and Joe C. Attard, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 20, 1989, Ser. No. 382,515
Int. Cl.[5] G01D *1/00;* **G06F** *15/20*
U.S. Cl. 364—424.03 **1 Claim**



1. A lubricating oil change indicating system for an internal combustion engine comprising:

means for sensing the speed of engine operation and outputting electrical pulses at a rate proportional to said engine speed;

means for sensing the temperature of the lubricating oil;

means for measuring the time the engine is in continuous operation above a predetermined speed;

means for periodically sampling the temperature sensing means and said time measuring means and outputting a then current weighting factor according to predetermined levels of sensed temperature and the continuous time said engine has been in operation above said predetermined speed;

means for multiplying each output pulse from said speed sensing means by the then current weighting factor to produce a corresponding weighted pulse value;

means for accumulating the weighted pulse values to produce an accumulated pulse value;

means for comparing the accumulated pulse value with a predetermined value that corresponds to a prescribed wear limit for said lubricating oil;

means for signaling an indication of the necessity for changing the lubricating oil when said comparing means determines that said accumulated pulse value exceeds said predetermined value; and

means for resetting said time measuring means whenever said speed sensing means outputs pulses at a rate that is proportional to an engine speed below said predetermined speed.

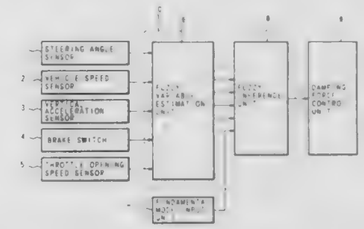
5,060,157
SHOCK ABSORBER CONTROL APPARATUS
Masahiro Tado; Hiroshi Satoh; Noriyuki Inoue; Yoshihiko Utsui, all of Amagasaki, and Shunichi Wada, Himeji, all of Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Apr. 10, 1990, Ser. No. 507,323
Claims priority, application Japan, Apr. 13, 1989, 1-93742
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 **16 Claims**

1. A shock absorber control apparatus for controlling a damping force of a shock absorber provided at a vehicle, comprising:

detecting means for detecting a running condition of said vehicle, wherein said running condition is detected based upon data derived from a sensor for detecting a steering angle of said vehicle, a sensor for detecting a speed of said vehicle, a sensor for detecting a vertical acceleration of said vehicle, a sensor for detecting whether or not braking operation is carried out for said vehicle, and a sensor for detecting an opening speed of a throttle of said vehicle;

means for estimating a value of a fuzzy variable on the basis of the running condition detected by said detecting means;

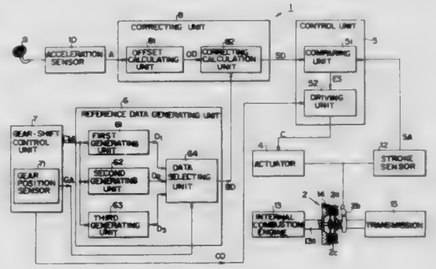
fuzzy inference means for performing a fuzzy inference corresponding to a fuzzy rule between a membership



function of said fuzzy variable and a membership function using the damping force as the fuzzy variable, thereby deciding the damping force of said shock absorber; and

means for controlling the damping force of said shock absorber corresponding to the damping force decided by said fuzzy inference means, said damping force being decided by a center of gravity of a logical sum of said membership functions.

5,060,158
APPARATUS FOR CONTROLLING CLUTCHES
Hiromi Kono, and Masuhiro Ohtsuka, both of Hagashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Sep. 25, 1989, Ser. No. 411,983
Claims priority, application Japan, Sep. 27, 1988, 63-126140[U]
Int. Cl.[5] B60K *41/28*
U.S. Cl. 364—424.1 **17 Claims**



1. A clutch control apparatus for controlling the operation for engaging a friction type clutch in response to an engaging command signal, said apparatus comprising:

an actuating means for operating said clutch;

a data generating means responsive to the engaging command signal for generating an electrical signal representing time course changes in a target clutch stroke pattern;

a stroke detecting means for detecting an actual clutch stroke of said clutch; and

a control means responsive to said data generating means and said stroke detecting means for controlling said actuating means to make the difference between a target clutch stroke and the actual clutch stroke substantially

zero, whereby the actual clutch stroke is changed in accordance with said pattern.

5,060,159

METHOD AND CIRCUIT CONFIGURATION FOR CONTROLLING A TWO-CHANNEL ANTI-LOCK SYSTEM

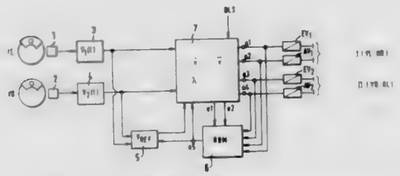
Helmut Fennel, Bad Soden, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 23, 1990, Ser. No. 528,015

Claims priority, application Fed. Rep. of Germany, May 23, 1989, 3916672

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 **2 Claims**



1. A method for controlling the brake system of a two-channel anti-lock system comprising the steps of: measuring and analyzing the wheel rotational behavior for generating a vehicle reference speed signal related thereto as well as braking-pressure control signals, measuring quantities determining the braking pressure in the wheel brakes from which measured quantities a wheel pressure pattern is derived that is by approximation representative of the pressure variation in the wheel brakes and, in conjunction with the wheel rotational behavior, is utilized for the purpose of wheel slip control and for determining the braking-pressure control signals, and ascertaining the vehicle reference speed (v_{REF}) from the rotational behavior of the front wheels (VL, VR) and the wheel pressure pattern (RDM).

5,060,160

METHOD FOR CALCULATING THE QUANTITY OF FUEL TO BE SUPPLIED TO AN INTERNAL COMBUSTION ENGINE

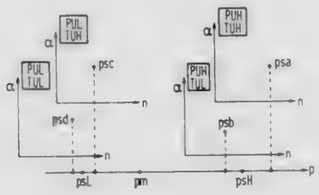
Ludwig Binnewies, Lappersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 6, 1989, Ser. No. 446,929

Claims priority, application European Pat. Off., Dec. 7, 1988, 88120463.0

Int. Cl.[5] F02D *41/26*

U.S. Cl. 364—442 **8 Claims**



1. A method for calculating a quantity of fuel to be supplied to an internal combustion engine during a dynamic transitional mode, comprising the steps of:

a) creating at least first, second, third, and fourth supporting characteristics fields each containing supporting values for intake pressure of the engine dependent on speed n of the engine and on an opening angle α of a throttle valve of the engine, the first field being valid for a first ambient pressure and a first ambient temperature, the second field being valid for the first ambient pressure and a second ambient temperature, the third field being valid for a second ambient pressure and the first ambient temperature, and the fourth field being valid for the second ambient pressure and the second ambient temperature;

b) at every cycle of the internal combustion engine measuring an intake pressure pm of the engine, a speed n of the engine, an opening angle α of the throttle valve of the engine, and an intake air temperature TAL;

c) at every cycle of the internal combustion engine

(1) calculating a first division ratio that characterizes the intake air temperature TAL relative to said first and second ambient temperatures of said first and second fields valid for said first ambient pressure,

(2) with currently identified values for the speed n and the opening angle α, obtaining a respective supporting value psa, psb, psc, or psd from the respective first, second, third, and fourth fields,

(3) calculating a supporting maximum value psH from said first division ratio and from said supporting values psa and psb for the first ambient pressure,

(4) calculating a supporting minimum value psL from said first division ratio and from the supporting values psc and psd for the second ambient pressure, and

(5) calculating a second division ratio that characterizes the measured intake pressure pm relative to the supporting maximum value psH and the supporting minimum value psL;

d) calculating a compensated intake pressure pk from said second division ratio and from the respective current supporting maximum value psH and supporting minimum value psL;

e) using the compensated intake pressure pk to correct the respective currently measured intake pressure pm to form a dynamic intake pressure pdyn according to the relationship

$$pdyn = pm + \frac{pk - pm}{\tau}$$

wherein τ is a time constant that takes dead times of air masses in an intake train of the engine into consideration;

f) calculating a corrected intake pressure pkorr using said dynamic intake pressure pdyn plus correction factor RF that takes a delay time tv caused by said calculation; and

g) defining the quantity of fuel by use of said corrected intake pressure value pkorr together with the speed n and supplying said defined quantity of fuel to said internal combustion engine.

5,060,161

METHOD OF CONTROLLING OPERATING SPEED OF A LOOM

Tsutomu Sainen, Kanazawa, Japan, assignor to Tsudakoma Corporation, Ishikawa, Japan

Filed Nov. 29, 1989, Ser. No. 442,994

Claims priority, application Japan, Nov. 30, 1988, 63-303183

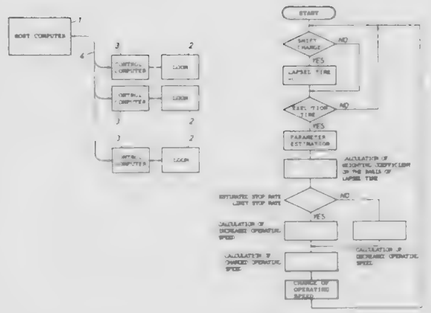
Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—470 **5 Claims**

1. A method of controlling an operating speed of a loom comprising the steps of:

estimating a stop rate of the loom at a final point of time during a predetermined period of a weaving operation, the estimation being carried out at a certain point of time during the predetermined period; and

comparing the estimated stop rate with a predetermined limit stop rate and setting the present operating speed of the loom to increase it when the estimated stop rate is less than the limit stop rate and setting the present operating speed of the loom to decrease it when the estimated stop rate exceeds the limit stop rate.



5,060,162

VEHICLE IN-SITU LOCATING APPARATUS

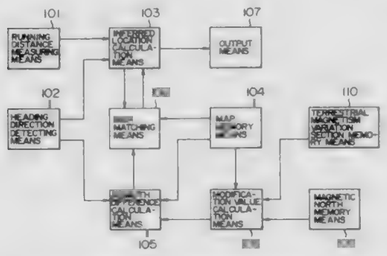
Yoshiki Ueyama, Neyagawa, and Nobuhiko Yasui, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 5, 1989, Ser. No. 446,123

Claims priority, application Japan, Dec. 9, 1988, 63-312236; May 24, 1989, 1-130819

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—449 **12 Claims**



9. A vehicle locating apparatus comprising:

running distance measuring means for measuring a running distance of a vehicle;

heading direction detecting means including at least one terrestrial magnetism sensor, for detecting a heading direction of the vehicle;

inferred location calculation means for calculating a relative movement value of the vehicle from the heading direction detected by said heading direction detection means and the running distance measured by said running distance measuring means, and for determining the coordinates of an inferred location of the vehicle by adding the relative movement value to coordinates of a previous inferred location;

map memory means for storing road data;

magnetic north memory means for storing an angle between the north and magnetic north;

terrestrial magnetism variation section memory means for storing states of roads;

modification value calculation means for calculating a modification value for a road direction provided by said map memory means in response to an output of said terrestrial magnetism variation section memory means and an output of said magnetic north memory means;

azimuth difference calculation means for calculating an angle as the calculated azimuth difference by subtracting said modification value as an upper limit value from an azimuth difference between the road direction stored in said map memory means and the heading direction detected by said heading direction detecting means;

map matching calculation means for judging based on the calculated azimuth difference, the road data stored in said map memory means and data of the inferred vehicle location provided by said inferred location calculation means, whether the vehicle is running on a road on the map, for calculating when it is judged that the vehicle is running on a road on the map, a position of the vehicle which is running on the road from said road data and for correcting the inferred location calculated by said inferred location calculation means based on the calculated vehicle position; and

output means for outputting the corrected inferred location.

5,060,163

PROGRAMMING APPARATUS FOR LATHES

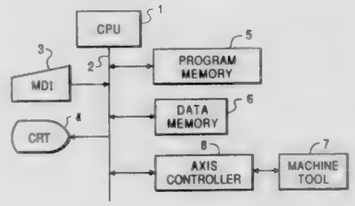
Teruyuki Matsumura, Hachioji, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

Continuation of Ser. No. 245,394, Aug. 22, 1988, abandoned. This application Nov. 5, 1990, Ser. No. 609,102

Claims priority, application Japan, Feb. 10, 1987, 62-29245

Int. Cl.[5] G06F *15/46;* **G05B** *19/18*

U.S. Cl. 364—474.22 **3 Claims**



1. A lathe programming apparatus for adding an additional machining program to a main machining program for machining a workpiece into a predetermined shape, comprising:

input means for inputting a main machining program composed of predetermined shape data and position data for machining the workpiece to the predetermined shape, and for inputting an additional machining program as a part program;

memory means for storing said main machining program and said additional machining program which are input by said input means; and

designating means for designating a machining plane, contained in the predetermined shape data with respect to the workpiece which is to be additionally machined, from the main machining program which is stored in said memory means;

said input means inputting the position of an axis for addi-

tional machining on said machining plane which is designated by said designating means;

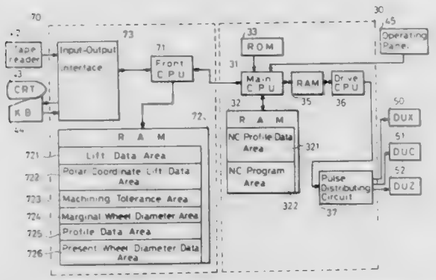
the arrangement being such that a new machining program is generated by adding, to the main machining program, an additional machining program in which a point where the input position of an axis of additional machining and the machining plane designated by said designating means intersect, and the intersecting point is used as a machining starting point in the additional machining program.

5,060,164

NUMERICAL CONTROLLER FOR MACHINING A NON-CIRCULAR WORKPIECE AND CAPABLE OF CALCULATING PROFILE DATA

Takao Yoneda, Nagoya; Naoki Arimoto, Takahama, and Toshihiro Yonezu, Nishio, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 24, 1989, Ser. No. 383,528
Claims priority, application Japan, Jul. 26, 1988, 63-186459
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.29 **5 Claims**



1. A numerical controller capable of calculating profile data defining a relationship between a rotational angle of a spindle and a position of a tool feed axis, based upon lift data specifying a desired shape of a non-circular workpiece and a wheel diameter of a grinding wheel, in order to control machining of said non-circular workpiece in accordance with said calculated profile data, said controller comprising:

present wheel diameter memory means for storing said present wheel diameter of said grinding wheel;

machining tolerance input means for inputting a machining tolerance related to a finished shape of said non-circular workpiece;

finished shape error calculating means for calculating respective finished shape errors corresponding to different diameters of said grinding wheel, said respective finished shape errors indicating respective difference between said desired shape and respective theoretical finished shapes which would be obtained by machinings with grinding wheels having said different diameters using said profile data common to said different diameters, said respective theoretical finished shapes being calculated from either one of said desired shape or said profile data and said respective different diameters;

marginal wheel diameter calculating means for calculating a function representing a relationship between said different diameters and said corresponding finished shape errors to calculate a marginal diameter requiring renewal of said profile data from said function and said machining tolerance;

profile data calculating means for calculating new profile data from a locus of a center of said grinding wheel which is calculated from said desired shape and said marginal wheel diameter;

judging means for comparing said marginal wheel diameter and said present wheel diameter to judge whether said present wheel diameter is larger than said marginal wheel diameter or not; and

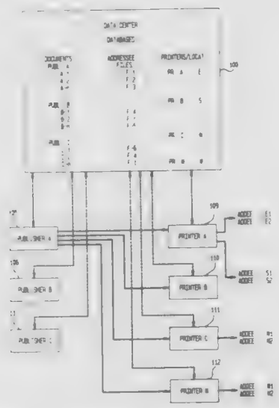
profile data renewing means for renewing said profile data used for machining, when said present wheel diameter reaches said marginal wheel diameter, with said new profile data corresponding to said marginal wheel diameter.

5,060,165

OPTIMIZING MAIL PROCESSING BY MATCHING PUBLISHER AND PRINTER ENTITIES

Karl H. Schumacher, Westport, Conn., and Raymond Keating, Purdys, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 3, 1989, Ser. No. 416,732
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—478 **15 Claims**



1. Apparatus for performing mail processing functions for postal system users, said apparatus comprising:

(a) a data center having a data processor and means for receiving and storing data representative of:

(i) specifications of inserts to be produced and distributed via the postal system to a plurality of addressees;

(ii) profiles of a plurality of facilities for producing inserts from said specifications;

(b) means for processing said data to determine which facilities are suited for producing determined inserts.

5,060,166

METHOD AND APPARATUS FOR RAPIDLY ANALYZING AC WAVEFORMS CONTAINING DC OFFSETS

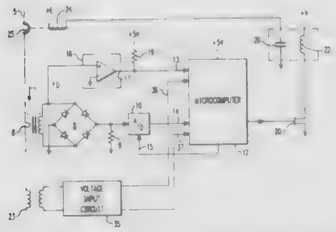
Joseph C. Engel, Monroeville, and Deborah K. Mort, Wilkins Township, Allegheny County, both of Pa., assignors to ABB Power T&D Company Inc., Blue Bell, Pa.

Filed Dec. 6, 1989, Ser. No. 446,739
Int. Cl.[5] H02H *3/08*; G06F *15/134*
U.S. Cl. 364—487 **21 Claims**

1. An apparatus for measuring the magnitude of an ac waveform within less than one cycle of the waveform despite the presence of dc offset, said apparatus comprising:

means continuously generating a plurality of digitized samples of the magnitude of said waveform, said samples being generated at spaced intervals with alternate samples separated by ninety electrical degrees of the waveform, and with each successful sample generated within ninety electrical degrees of the preceding sample, and

digital computer means including means storing said samples and means generating output signals representative of the dc offset and the magnitude of said waveform from pairs of said samples taken in less than one cycle of the wave-



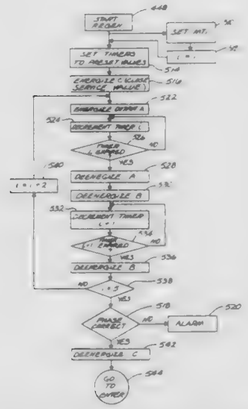
form with samples in each pair being ninety electrical degrees apart.

5,060,167

ELECTRONIC PROGRAMMABLE WATER TREATMENT CONTROLLER

James E. Ticcioni, Mequon; Robert W. Colburn, Green Bay, and Richard V. D. Baxter, Neenah, all of Wis., assignors to Bruner Corporation, Milwaukee, Wis.

Filed Jun. 26, 1989, Ser. No. 371,546
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—509 **7 Claims**



1. A controller for water treatment systems having regeneration sequence valves and a service valve comprising:

a plurality of valve control signal output means connected to the regeneration sequence valves and service valve;

a first status input receiving a valve position signal from the service valve;

a flow rate input receiving signals from a flow meter;

means for calculating volume flow responsive to the flow rate input, said calculating means providing current flow rate and total flow volume;

an input means for definition of regeneration parameters by a user;

a memory connected to the input means to receive and store the regeneration parameters;

a plurality of timing means programmable through the input means and connected to the valve control signal output means for activating thereof;

an additional timing means programmable through the input means;

control means for initiating the plurality of timing means to begin a regeneration cycle responsive to the programmed parameters, the total flow volume provided by the volume flow calculation means and the additional timing means;

a display unit responsive to the volume flow calculation means, the input means, and the control means for communication to the user; and

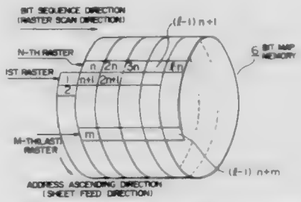
means for communication between multiple controllers includinq means for recognizing a master/slave status and means for recognizing a regeneration sequence in process in another controller to inhibit initiation of a regeneration by the controller.

5,060,168

METHOD AND APPARATUS FOR CONTROLLING RASTER SCAN PRINTER

Kunio Jingu, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1988, Ser. No. 228,012
Claims priority, application Japan, Aug. 12, 1987, 62-199774
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—519 **6 Claims**



1. An apparatus for controlling a raster scan printer comprising:

a bit map memory for storing bit information corresponding to print dots with a bit sequence direction being in a raster scan direction, said bit map memory being in the form of a helical ring to permit said bit information to be stored in a sequential manner in said bit map memory; and

means for reading said bit information from said bit map memory and sending said bit information to the raster scan printer having a print are of words in the raster scan direction by m rasters in a sheet feed direction;

wherein addresses of said bit map memory ascend in the sheet feed direction along said helical ring;

wherein a memory width of said bit map memory in the sheet feed direction is n rasters which is smaller than m rasters of said raster scan printer;

wherein an address of a word adjacent in the raster scan direction to another word under consideration of the bit map memory is given by adding n rasters to the address of the word under consideration;

wherein a memory capacity of said bit map memory is a predetermined amount larger than l-n words; and

wherein each ring of said helical ring is shifted by one word every n rasters in the raster scan direction.

5,060,169

VIDEO SIMULATION OF AN AIRBRUSH SPRAY PATTERN

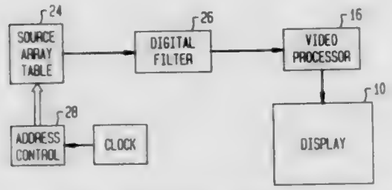
Ashok M. Khosla, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jul. 1, 1987, Ser. No. 68,978
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—521 **38 Claims**

1. A method for generating a randomly varying pattern in a video graphic image, comprising the steps of:

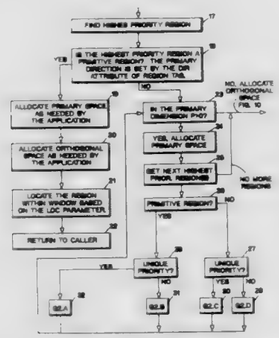
a) generating a source array of values which define a raster

mask having at least one video display parameter which varies in a random manner within the area of the mask;
b) varying said source array over time; and



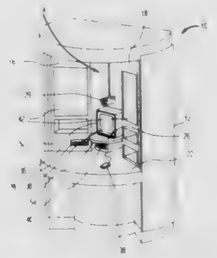
c) repetitively generating pixel display patterns in the video image in accordance with said varying source array to produce a displayed random pattern.

5,060,170
SPACE ALLOCATION AND POSITIONING METHOD FOR SCREEN DISPLAY REGIONS IN A VARIABLE WINDOWING SYSTEM
Nancy E. Bourgeois, Cary; Sandra L. Hause, Raleigh, and Arwin B. Lindquist, Cary, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 9, 1989, Ser. No. 391,290
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—521 **8 Claims**



1. A computer-implemented method of controlling construction of visual window displays from area specifications describing relative area positions, priorities and minimum sizes comprising the steps of:
determining whether specified minimum dimensions of a composite of specified areas to be displayed within a window are equal to or less than available space within the window; and
if sufficient space is available within the window, allocating final dimensions and arrangement from the available space by first allocating dimensions in a primary axis of orientation and then allocating the dimensions in an axis orthogonal to said primary axis.

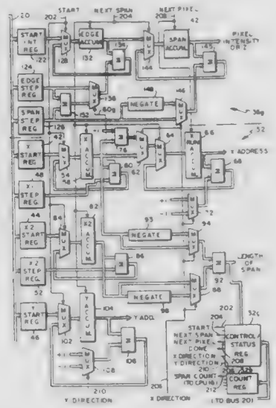
5,060,171
A SYSTEM AND METHOD FOR SUPERIMPOSING IMAGES
Stephen C. Steir, Millbury, Mass., and Allen K. A. Wells, Millford, both of Mass., assignors to Clearpoint Research Corporation, Hopkinton, Mass.
Filed Jul. 27, 1989, Ser. No. 386,581
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—521 **20 Claims**



1. An image enhancement system including:
means for storing a representation of a first image;
means for creating a superimposed image by superimposing a second image over portions of the representation of the first image;
means for automatically marking a plurality of locations along the boundary in the superimposed image between portions containing part of the first image and portions containing part of the second image;
means for performing a graphic smoothing function, including means for changing the light value associated with a given picture element to be more equivalent to the light value of picture elements in its vicinity; and
means for automatically causing said means for performing a graphic smoothing function to perform said function in the vaccination of each of said marked locations, so as to automatically smooth the boundary between the first and second images in said superimposed image.

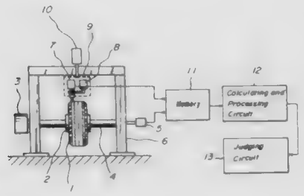
5,060,172
METHOD AND APPARATUS FOR DISPLAYING SMOOTH-SHADED OBJECTS
Willem Engelse, Townsend, and Todd Comins, N. Chelmsford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Jul. 6, 1989, Ser. No. 376,450
Int. Cl.[5] G06F *15/62;* **G09G** *1/16*
U.S. Cl. 364—522 **18 Claims**

11. Apparatus for rendering a smooth-shaded graphics primitive composed of a series extending in a Y direction of pixel spans which extend in a X direction between opposite beginning and trailing edges of the primitive, the permitted pixel locations being spaced from each other in the X direction by a selected distance dX and in the Y direction by a selected distance dY, said apparatus comprising:
means for producing selected X and Y addresses of the first and last pixels in the beginning span of the primitive and a selected number indicating the number of spans in the primitive;
means for producing XI step and X2 step values (dX/dY) indicating the slopes of said beginning and trailing edges, respectively;
means for producing a beginning intensity value for the first pixel in the beginning span of the primitive;
means for adding the selected distance dX to the X address of each pixel in each span to determine the X address of the next pixel in that span;
means for adding one of said XI and X2 step values to the X address of the first pixel in each span of the primitive and changing the resulting number to the nearest pixel location within said edges of the primitive to calculate the X address of the first pixel in the next span of the trapezoid;
means for adding the other of said X1 and X2 step values to the X address of the last pixel in each span of the primitive to calculate the X address of the last pixel in the next span of the primitive;
means for determining the number of pixels in each span from the X addresses of the first and last pixels in each span and after the determined number of pixels has been rendered, adding the selected distance dY to the Y address



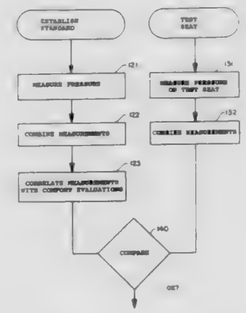
of each span to calculate the Y address of the next span of the primitive until the selected number of spans has been rendered; and
means for adding one or more intensity values to said beginning intensity value to calculate the intensity value for a next pixel to be rendered in a given row, and means for successively adding a selected one of said intensity values to said next pixel rendered to calculate the intensity value of a successive pixel to be rendered in that row so as to produce a substantially constant intensity change from pixel to pixel in any given direction through the primitive.

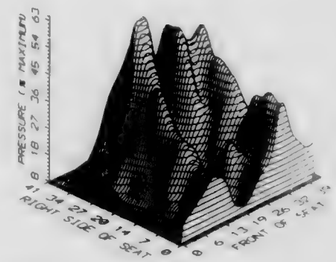
5,060,173
METHOD AND APPARATUS FOR DETECTING DEFECTS IN PNEUMATIC TIRE
Naotaka Tsuji, Higashiyamato, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed May 2, 1990, Ser. No. 517,790
Claims priority, application Japan, May 10, 1989, 1-114969
The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.
Int. Cl.[5] G01M *17/02*
U.S. Cl. 364—551.01 **23 Claims**



1. A method of detecting internal defects formed within a pneumatic tire in a non-destructive manner comprising the steps of:
rotating an inflatable pneumatic tire inflated with a predetermined internal presusre;
urging at least one displacement sensor against an outer surface of said inflated pneumatic tire;
deriving from siad displacement sensor a first set of displacement signals S_{1n} which represent displacements of the outer surface of tire at N measuring points on the outer surface of the tire along a circumference thereof when the displacement sensor is urged against the tire at a first pressure and a second set of displacement signals S_{2n} which represent displacements of the outer surface of tire at said N measuring points when the displacement sensor is urged against the outer surface of the tire at a second pressure which is different from said first pressure;
deriving displacement differences ΔS_n at the N measuring points on the tire from said first and second sets of displacement signals; and
determining the presence of a defect within the tire on the basis of an analysis of said displacement differences.

5,060,174
METHOD AND APPARATUS FOR EVALUATING A LOAD BEARING SURFACE SUCH AS A SEAT
Clifford M. Gross, Roslyn, N.Y., assignor to Biomechanics Corporation of America, Deer Park, N.Y.
Filed Apr. 18, 1990, Ser. No. 510,653
Int. Cl.[5] G01N *9/00;* **G06F** *15/00;* **A47C** *27/00*
U.S. Cl. 364—558 **24 Claims**





21. Apparatus for evaluating a seat for comfort comprising:
a two-dimensional array of sensors distributed across an area approximately as large as that of a seat pan of a first seat that is to be evaluated,
means for reading signals from said sensors that are representative of pressures exerted by a human subject when said subject is seated in said first seat,
means for processing said signals to form data values representative of said seat,
means for storing said data values for a second seat having a specified comfort level, and

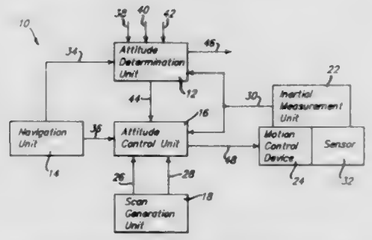
means for comparing the data values derived from the first seat with the data values derived from the second seat to determine a comfort level for the first seat.

5,060,175

MEASUREMENT AND CONTROL SYSTEM FOR SCANNING SENSORS

Ronald Cubalchini, Torrance; William G. McArthur, Rancho Palos Verdes; Paul E. Craft, Jr., Canoga Park, and Arthur K. Rue, Rancho Palos Verdes, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 13, 1989, Ser. No. 309,640
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—559 **25 Claims**



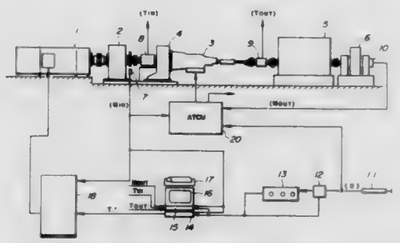
1. A measurement and control system comprising:
a scanning sensor;
means for controlling the motion of said sensor with respect to a sensor coordinate system;
inertial measurement system for measuring angular rate of said sensor;
attitude determination unit for determining the relationship between the sensor coordinate system and a reference coordinate system; and
sensor attitude control unit coupled to said attitude determination unit for providing motion control commands to said means for controlling the motion of the sensor, said sensor attitude control unit comprising dual loop processing means for controlling said sensor.

5,060,176

ELECTRIC MOTOR POWERED TESTING APPARATUS FOR AUTOMOTIVE POWER TRANSMISSION

Michio Nawa, Kanagawa; Toshimitsu Maruki, Shizuoka; Seiki Murakami, Shizuoka; Fumio Mizushina, Shizuoka, and Takashi Goto, Shizuoka, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 427,031
Claims priority, application Japan, Oct. 25, 1988, 63-269003; Nov. 14, 1988, 63-148309; Nov. 14, 1988, 63-287435; Nov. 14, 1988, 63-287436
Int. Cl.[5] G05B *23/02;* **G01M** *19/00;* **G01L** *3/00*
U.S. Cl. 364—579 **22 Claims**



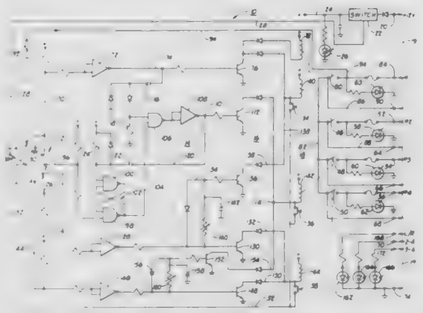
1. A transmission testing apparatus comprising:
a low inertia driving power source means including an electric motor and a speed increasing device which accelerates revolution speed of said electric motor for supplying a driving power to an automotive power transmission;
a first sensor for monitoring revolution speed at the input of said transmission for producing an engine speed simulated data;
an engine load setting means for generating an engine load simulated data which is variable according to a desired pattern for testing various modes of operation of said transmission; means for deriving a torque demand for controlling said electric motor on the basis of said engine speed simulated data and said engine load simulated data, said torque demand deriving means having a plurality of torque variation characteristics relative to said engine speed simulated data value, each torque variation characteristic being set with respect to specific engine load simulated data value; and
means for controlling said electric motor on the basis of said torque demand for supplying input torque for said transmission.

5,060,177

TEST CIRCUIT FOR AUTOMATIC TRANSMISSION

Stevon D. Gregory, Route 2, Box 217, and Fred J. Blackburn, Rte. 4, Box 2960, both of Cushing, Okla. 74023

Filed Mar. 9, 1990, Ser. No. 491,163
Int. Cl.[5] G05B *19/02*
U.S. Cl. 364—580 **7 Claims**



1. A test circuit for a computer-controlled automatic transmission that has plural solenoid valves, comprising:
a rotary switch for selecting one of the automatic transmission gear speeds;
logic circuitry enabled by the rotary switch to provide a selection output;
plural switch circuits receiving said selection output and generating at least one relay control outputs; and
at least one relays energizable by said at least one control outputs to provide a ground connection input to the automatic transmission to energize at least one of the plural solenoid valves.

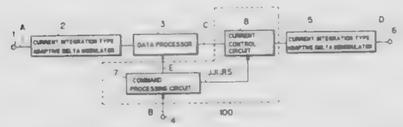
5,060,178

SYSTEM FOR ANALOG-DIGITAL-ANALOG CONVERSION

Hisao Kato, and Yasushi Adachi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1989, Ser. No. 380,025
Claims priority, application Japan, Dec. 27, 1988, 63-331391
Int. Cl.[5] G06J *7/12*
U.S. Cl. 364—600 **13 Claims**

1. A signal processing apparatus for receiving a first analog signal to convert the first analog signal into a digital signal, performing prescribed processing on said digital signal and re-converting the digital signal as processed into a second analog signal to output the second analog signal, comprising:
an input terminal for receiving said first analog signal;
an A-D converter connected to said input terminal for converting said first analog signal into a digital signal;
a data processor connected to said A-D converter for performing prescribed processing on said digital signal from said A-D converter in a designated processing mode within a plurality of data processing modes to output a processed digital signal;
a D-A converter for receiving said processed digital signal from said data processor to convert said processed digital signal into said second analog signal;



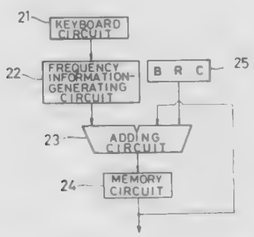
a data processing mode change command terminal for receiving a data processing mode change command for changing said data processing mode of said data processor; and
control means connected to said data processor, said D-A converter and said data processing mode change command terminal for attenuating said second analog signal in response to said data processing mode change command from said data processing mode change command terminal while delaying said data processing mode change command by a first prescribed time to supply the command to said data processor and releasing attenuation of said second analog signal after a lapse of a second prescribed time being longer than said first prescribed time.

5,060,179

MATHEMATICAL FUNCTION-GENERATING DEVICE FOR ELECTRONIC MUSICAL INSTRUMENTS

Paul H. Sharp, Aloha, Oreg., assignor to Roland Corporation, Osaka, Japan

Filed Nov. 14, 1989, Ser. No. 436,540
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—718 **7 Claims**



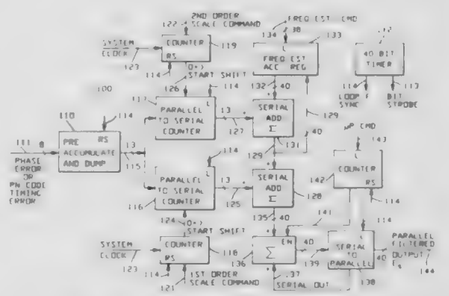
1. A mathematical function-generating device for producing, in a musical instrument, functional values based on accumulated digital data which are produced by sequentially adding first digital data to said accumulated digital data, truncated by a predetermined number of least significant bits and concatenated with a bit-reversed digital value string having said predetermined number of bits, the device comprising:
(a) a digital data-generating circuit for generating said first digital data, each data unit thereof being a bit string comprising a predetermined number of digits;
(b) digital value string-generating means for generating said bit-reversed digital value string which increments a predetermined amount each time a first digital data unit is generated and which corresponds to said predetermined number of least significant bits in said first digital data unit generated by said digital data-generating means;
(c) an adder coupled to said digital data-generating circuit and responsive to said digital value string-generating means for adding said first digital data generated by said digital data-generating means to each said truncated accumulated value concatenated with said bit-reversed digital value string to produce a sum thereof; and
(d) a memory circuit coupled to said adder for storing a new accumulated value in place of the accumulated value which has been added in the adder to produce said sum, said new accumulated value being a bit string produced by truncating said new accumulated value by said predetermined number of least significant bits, and for supplying said adder with said new accumulated value.

5,060,180

PROGRAMMABLE DIGITAL LOOP FILTER

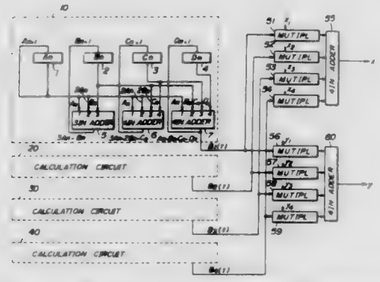
Samuel C. Kingston; Steven T. Barham, both of Salt Lake City, and Harold L. Simonsen, West Valley City, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 26, 1990, Ser. No. 559,014
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.03 **13 Claims**



1. A programmable digital loop filter of the type employed in communications receivers, comprising:
first and second programmable scaling means each having input means for receiving parallel input error signals and producing serial output error signals,
first and second programmable serial adder means coupled to the respective serial outputs of said first and second programable scaling means each said adder having a second adder input,
the second adder input of said first serial adder means being coupled to the output of said second serial adder means,
programmable input register means having a frequency estimate input,
the second adder input of said second serial adder means being coupled to an output of said programmable input register means,
programmable output stage means,
the output of said first serial adder means being coupled to said programmable output stage means for providing output filtered error signals having the accuracy of the full width of the error signal data being serially added in said first and second serial adder means.

5,060,181
CUBIC EQUATION CALCULATION APPARATUS AND CUBIC CURVE COORDINATE DATA GENERATION APPARATUS USING THE SAME
Sigeki Matsuoka, Suita, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jan. 3, 1990, Ser. No. 460,589
Claims priority, application Japan, Jan. 11, 1989, 1-5697
Int. Cl.[5] G06F *15/32, 1/02*
U.S. Cl. 364—735 **15 Claims**



1. A cubic equation calculation apparatus for calculating f(n) of a function when a cubic equation variable T=n is defined by

$$f(T)=AT^3+BT^2+CT+D$$

where A, B, C and D are constants, the apparatus comprising:
a first calculation circuit using a process where variable T is incremented by 1 from 1, for calculating coefficient data A_n, B_n, C_n and D_n when T=n (n=1, 2, . . .) in accordance with

$$A_n=A_{n-1}$$

$$B_n=3A_{n-1}+B_{n-1}$$

$$C_n=3A_{n-1}+2B_{n-1}+C_{n-1}$$

$$D_n=A_{n-1}+B_{n-1}+C_{n-1}+D_{n-1}$$

and using coefficient data A_1, B_1, C_1 and D_1 when T=1 being such that A_1'A, B_1=B, C_1=C and D_1=D, and using coefficient data A_{n-1}, B_{n-1}, C_{n-1} and D_{n-1} when T=n−1, and
a second calculation circuit, operatively connected to an output of said first calculation circuit, for using the results of calculation of said first calculation circuit for calculating f(n) in accordance with

$$f(n)=A_n+B_n+C_n+D_n$$

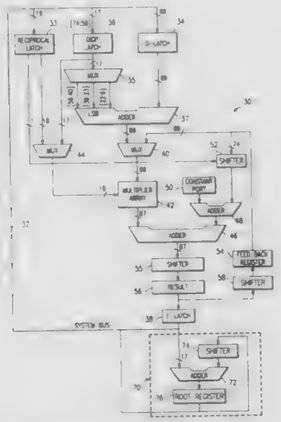
when T=n,
wherein said first calculation circuit includes:
first data storage means for storing coefficient data A_n,
second data storage means for storing coefficient data B_n,
third data storage means for storing coefficient data C_n,
fourth data storage means for storing coefficient data D_n,
a first data transfer circuit, operatively connected to said first data storage means, for transferring coefficient data A_n stored in said first data storage means when T=n, to said first data storage means as the coefficient data A_{n+1} when T=n+1,
a first coefficient data calculation circuit, operatively connected to said first data storage means and said second data storage means, for inputting coefficient data A_n stored in said first data storage means and coefficient data B_n stored in said second data storage means and for performing the calculation of $(3A_n+B_n)$,
a second data transfer circuit, operatively connected to said first data calculation circuit, for transferring data calculated by said first data calculation circuit when T=n, to said second data storage means as the coefficient data B_{n+1} when T=n+1,
a second coefficient data calculation circuit, operatively connected to said first data storage means and said second data storage means and said third data storage means, for inputting coefficient data A_n stored in said first data storage means and coefficient data B_n stored in said second data storage means and coefficient data C_n stored in said third data storage means and for performing the calculation of $(3A_n2B_n+C_n)$,
a third data transfer circuit, operatively connected to said second data calculation circuit, for transferring data calculated by said second data calculation circuit when T=n, to said third data storage means as the coefficient data C_{n+1} when T=n+1,
a third coefficient data calculation circuit, operatively connected to said first data storage means and said second data storage means and said third data storage means and said fourth data storage means, for inputting coefficient data A_n stored in said first data storage means and coefficient data B_n stored in said second data storage means and coefficient data C_n stored in said third data storage means and coefficient data D_n stored in said fourth data storage means and for performing the calculation of $(A_n+B_n+C_n+D_n)$, and
a fourth data transfer circuit, operatively connected to said third data calculation circuit, for transferring data calculated by said third data calculation circuit when T=n, to said fourth data storage means as the coefficient data D_{n+1} when T=n+1,
wherein said second calculation circuit uses coefficient data stored in said first data storage means, said second data storage means, said third data storage means and said fourth data storage means to calculate

$$f(n)=A_n+B_n+C_n+D_n.$$

5,060,182
METHOD AND APPARATUS FOR PERFORMING THE SQUARE ROOT FUNCTION USING A RECTANGULAR ASPECT RATIO MULTIPLIER
Willard S. Briggs, Carrollton; Thomas B. Brightman, Plano, and David W. Matula, Dallas, all of Tex., assignors to Cyrix Corporation, Richardson, Tex.
Filed Sep. 5, 1989, Ser. No. 402,822
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—752 **92 Claims**

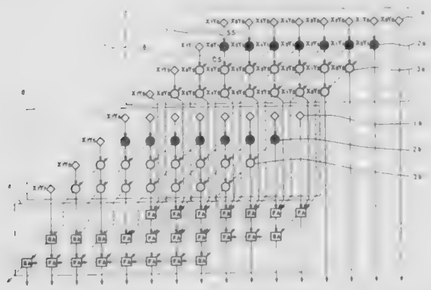
1. A circuit for calculating an exact square root of an operand, comprising:
circuitry for obtaining a short reciprocal of the square root of the operand;
circuitry for computing a first root digit value by multiplying a short reciprocal of the square root of the operand by said operand;
circuitry for computing a first remainder as the difference between said operand and a square of said first root digit value:
circuitry for computing a second root digit value by multiplying said short reciprocal by one half of said first remainder;
circuitry for generating a product of said second root digit value and a sum of said second root digit value and twice said first root digit value;
circuitry for computing a second remainder as the difference between said first remainder and said product of said second root digit value and said sum of said second root digit value and twice said first root digit value, said first and second root digit values and said first and second remainders calculated such that said first remainder and said second remainder have magnitudes corresponding to

less than one unit in the last place of said first root digit value and said second root digit value, respectively; and



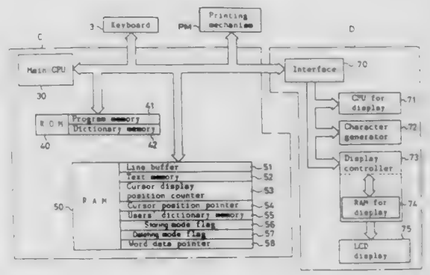
circuitry for computing a partial root, said partial root comprising a sum of all appropriately shifted root digit values.

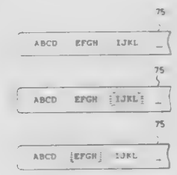
5,060,183
PARALLEL MULTILIER CIRCUIT USING MATRICES, INCLUDING HALF AND FULL ADDERS
Kazuhiro Sakashita, and Yoshiki Tsujihashi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 258,223, Oct. 14, 1988, abandoned. This application Feb. 12, 1991, Ser. No. 655,229
Claims priority, application Japan, Nov. 19, 1987, 62-293520; Nov. 19, 1987, 62-293521
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—757 **16 Claims**



1. A parallel multiplier which multiplies a first numeral having at least two bits and including at least one most significant bit and at least one remaining bit by a second numeral, comprising: logic cells having half adders and full adders arranged in a matrix to form logic cell arrays;
said logic cell arrays divided into a first logic cell array which receives said second numeral and the most significant bit of said first numeral and calculates a sum of partial products generated by multiplying the most significant bit of the first numeral by the second numeral, and a second logic cell array which receives said second numeral and the remaining bit of said first numeral and calculates a sum of partial products generated by multiplying the remaining bit of the first numeral not input into said first array by the second numeral;
wherein each bit of said first numeral is input into one of said first and second arrays; and
a third logic cell array, coupled to said first and second logic cell arrays, which adds the sum calculated by said first logic cell array to the sum calculated by the second logic cell array.

5,060,184
WORD PROCESSING APPARATUS
Toshiyuki Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 141,591, Jan. 5, 1988, abandoned. This application Sep. 24, 1990, Ser. No. 587,558
Claims priority, application Japan, Jan. 7, 1987, 62-2079
Int. Cl.[5] B41J *5/30*
U.S. Cl. 364—900 **8 Claims**





1. A word processing apparatus comprising:
inputting means for inputting data of characters, symbols and various command signals including a storage key for generating a storage command signal;
memory means for storing data inputted from said inputting means;
display means comprising a display for displaying characters and symbols corresponding to data stored in said memory means, and a cursor on said display for indicating a position of a character or symbol to be nextly inputted;
cursor position counting means for counting and storing a current position of said cursor on said display, and current position of said cursor indicating the position of a character or symbol to be nextly inputted;
address pointing means for indicating an address in said memory means corresponding to said current position of said cursor stored in said cursor position counting means;
a users' dictionary memory for storing data of words to be supplied form said memory means;
means for detecting operation of a key of said inputting means and for determining whether said key is the storage key;
means responsive to operation of said storage key for causing the current position of said cursor stored in said cursor

position counting means to be entered into said address pointing means;

means responsive to the operation of said storage key and to the address stored in said address pointing means, for automatically detecting in said memory means a word nearest in the backspacing direction, to the address entered in the address pointing means, without movement of said cursor;

comparing means for detecting an absence of said nearest word from among words stored in said users' dictionary memory, and for generating a storage signal in response thereto; and

means responsive to said storage signal for causing said nearest word to be entered into said users' dictionary memory.

5,060,185

FILE BACKUP SYSTEM

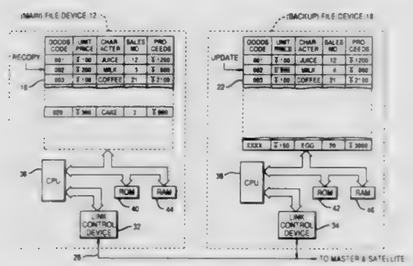
Jiro Naito, Ninomiya, and Fumio Ito, Oiso, both of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 27, 1989, Ser. No. 316,272

Claims priority, application Japan, Mar. 25, 1988, 63-69962

Int. Cl.[5] G06F *15/21, 12/16*

U.S. Cl. 364—900 **10 Claims**



1. A file backup system comprising a

master device and a plurality of satellite devices positioned for inputting sales information on sold goods, and a

plurality of file devices including point of sale data files and file control sections for retrieving and for updating said point of sale data files and to provide an up-to-date state of said data files in response to a request from said master device or any of said satellite devices and to control data communication with said master device or with any of said satellite devices during operation of the system, said plurality of file devices being coupled with each other such that any one of said file devices operates as a main file device to control file retrieving and updating operations and data communication within the system and to control the updating of said point of sale data files of the remaining file devices and any one of said remaining file devices operates as a main file device when said main file device has failed, and said main file device being coupled with said remaining file devices such that, when said point of sale data file of one of said remaining file devices is destroyed, said main file device retrieves said one of said remaining file devices and while updating the data file therein is responsive to a request from one of said master or satellite devices to transmit updated data to one of said master or satellite devices and then recopies the updated data contents from its own file to said point of sale data file that failed in the up-to-date state while at the same time performing normal file retrieving and updating operations and controlling operation of the data communication.

5,060,186

HIGH-CAPACITY MEMORY HAVING EXTENDED ADDRESSING CAPACITY IN A MULTIPROCESSING SYSTEM

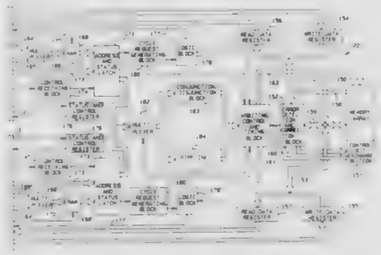
Giuseppe Barbagelata, Genova; Bruno Conterno, Genova-Rivarolo, and Fernando Pesce, Genova-Sestri, all of Italy, assignors to Elettronica San Giorgio-Elsag S.p.A., Italy

Continuation of Ser. No. 939,174, Dec. 8, 1986, abandoned. This application Sep. 11, 1989, Ser. No. 405,408

Claims priority, application Italy, Dec. 13, 1985, 68-044 A/85

Int. Cl.[5] G06F *12/06, 12/08, 12/10, 15/16*

U.S. Cl. 364—200 **10 Claims**



2. A high-capacity memory (**22**), characterized by the fact that it is accessible by at least two external processors (**17**, **18**) and that said memory (**22**) comprises first means (**168**, **168'**, **171**, **171'**, **161**, **182**) for addressing the said memory (**22**) independently of the addresses emitted by each of the said external processors (**17**, **18**), that for each group of address data received from the said processors (**17**, **18**) by said memory (**22**) the said first means comprises match coding memory means (**168**, **168'**) for receiving a first part (**165**, **165'**) of said group of address data, a remaining second part (**173**, **173'**) of said group of address data from said processors being reunited with said first part obtained from said match coding memory means (**168**, **168'**), the complete said group of address data being selected by selecting means (**161**, **152** for supply to a main memory block (**150**), said match coding memory means (**168**, **168'**) comprising read and write memory means,

the said first part (**165**, **165'**) of the said group of address data sent to the said match coding memory means (**168**, **168'**) being the most significant part of the address data,

said main memory block (**150**) comprising a memory of 2^N words divided conceptually into 2^{N-K} segments of 2^K words each, so that the physical address of any one word consists of N bits, of which N-K indicate the said segment, and K the word within the said segment; the said second part (**173**, **173'**) of the said address data supplying the said K bits, and the said first part (**165**, **165'**) of the said address data consisting of (M-K) bits, where the said group of address data supplied by the said processors (**17**, **18**) is of M bits; the said match coding memory means (**168**, **168'**) supplying (N-K) address bits for the said segment,

said match coding memory means (**168**, **168'**) comprising a number of words equal to (2^M) addressable by the processors (**17**, **18**) divided by the size (2^K) of the said segments; the said words having (N-K) bits, to which are added additional coding and/or control bits.

5,060,187

DATA INPUT AND OUTPUT DEVICE

Hiroshi Hattori, and Hideo Ueno, both of Nagoya, Japan, assignors to Brother Kogyo Kabushikikaisha, Aichi, Japan

Filed Jun. 22, 1989, Ser. No. 369,821

Claims priority, application Japan, Jun. 24, 1988, 63-157475

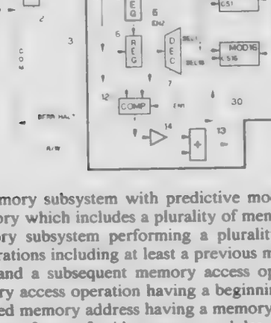
Int. Cl.[5] G06F *15/02*

U.S. Cl. 364—900 **20 Claims**

1. A data input and output device comprising input means for inputting character data, represent means connected to said input means for representing at least characters in response to data inputted by said input means, said input and output device further comprises:

memory means including a plurality of memory areas, each of said memory areas respectively having an input format, for storing the inputted data;

select means for selecting one of said memory areas included in said memory means;



represent means for controlling said represent means so that said represent means represents the contents of the memory area selected by said select means in the format of the selected one memory area; and

input control means for controlling said input means so as to input character data to the memory area whose contents are represented by said represent control means on said represent means and for simultaneously storing the character data into corresponding areas of the non-selected ones of said memory areas.

5,060,188

SYSTEM USING REGISTERS FOR MAINTAINING DATA ADDRESS AND CLASS INFORMATION FROM PREVIOUS MODULE ACCESSES FOR PREDICTIVE MEMORY MODULE SELECTION

Ferruccio Zulian, Via G.B. Vico 12, 20010 Cornaredo (MI), Italy, and Enrico Porro, Via S. Anna 17, 20010 Bareggio (MI), Italy

Filed Feb. 27, 1989, Ser. No. 316,068

Claims priority, application Italy, Mar. 15, 1988, 19773 A/88

Int. Cl.[5] G06F *15/18, 13/14, 12/06, 9/355*

U.S. Cl. 364—900 **2 Claims**

1. A memory subsystem with predictive module selection for a memory which includes a plurality of memory modules, said memory subsystem performing a plurality of memory access operations including at least a previous memory access operation and a subsequent memory access operation, each said memory access operation having a beginning and an end and a related memory address having a memory address field, the selection of one of said memory modules for a memory access operation being performed by a module selection command obtained by decoding the memory address field related to a previous access operation, said memory subsystem comprising:

A) latching register means for storing the memory address field related to a previous memory access operation at the end of said previous access operation and until the end of another memory access operation subsequent to said current memory access operation, said latching register means having inputs for receiving a memory address field to be stored and outputs for issuing a stored memory address field.

B) a decoding network for generating said module selection command by decoding the memory address field which is stored in said latching register means and is related to a previous access operation, said decoding network having inputs and outputs;

C) means coupling said outputs of said latching register means to said inputs of said decoding network whereby said decoding network generates said module selection command at its said outputs during said memory access operation subsequent to said previous one;

D) a comparator having first inputs connected to the inputs of said latching register means and second inputs connected to the outputs of said latching register means for comparing said memory address field to be stored in said register means and related to said subsequent memory access operation with the memory address field stored in said register means and related to said previous memory access operation and for providing an error and invalidation signal in case of inequality;

E) said latching register means comprising a plurality of registers, each said register being devoted to the latching of a memory address field related to a predetermined class of information among a plurality of classes including at least a data information class and in instruction information class; and

F) said memory subsystem further comprising selection means controlled by control signals indicative of one among said plurality of classes to select one among said registers at the beginning of said subsequent memory access operation to enable the selected one register to transfer the memory address field, stored therein and related to a previous memory access operation and to the same one among said plurality of classes, to the inputs of said decoding network and to load said selected one register with the memory address field related to said subsequent memory access operation at the end of said subsequent memory access operation.

5,060,189

SEMICONDUCTOR DEVICE WITH REDUCED CROSSTALK BETWEEN LINES

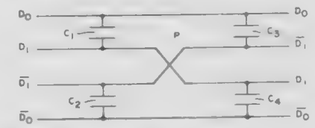
Yoshiji Ota, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 306,244, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 49,740, May 13, 1987, abandoned. This application Dec. 12, 1990, Ser. No. 627,617

Claims priority, application Japan, Jun. 13, 1986, 61-90698[U]

Int. Cl.[5] G11C *7/02, 5/06*

U.S. Cl. 365—69 **4 Claims**



1. A semiconductor integrated circuit device having substantially parallel data input-output lines, said data input-output lines comprising

a first line,

a second line which is complementary to said first line,

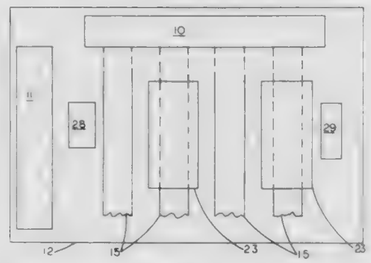
a third line disposed between said first and second lines so as to be in part directly adjacent to said first line and in part directly adjacent to said second line, and

a fourth line which is complementary to said third line and is disposed between said first and second lines so as to be in part directly adjacent to said first line and in part directly adjacent to said second line, said third and fourth lines being connected to means for applying mutually opposite signals to said third and fourth lines during an active period whereby crosstalks between said first and third lines are cancelled by the presence of said fourth line.

5,060,190
READ ONLY MEMORY WITH WRITE OPERATION USING MASK

Ying-Cheng Chen, and Bau-Tong Dai, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Sep. 18, 1990, Ser. No. 584,347
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—104 **7 Claims**



1. A ROM of the type having

an array of FET's connected along the bit dimension of the array in a NAND configuration, each FET having a drain region and a source region, and sensing circuits connected to detect the conduction state of the FET's of each bit position,

whereby in a write operation a cell can be made permanently conductive between its drain and source to store a bit value arbitrarily designated 0 and a cell can be left switchable to store a 1,

means forming FET gates interconnected along the word dimension of the array, and an addressing circuit for addressing a word of the array,

wherein the improvement comprises,

insulation over the gate and the associated source and drain regions of each FET of the array,

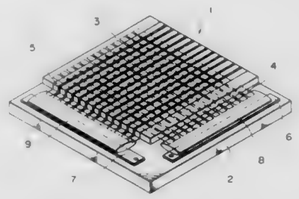
openings in the insulation to permit electrical contact with the drain and source regions but maintaining insulation for the gales,

and shorting elements formed selectively at cells that are to be permanently conductive for a predetermined pattern of words to be stored in the ROM, each shorting element being formed between the drain and source of the associated cell and being insulated from the associated gate by the insulation for the gate.

5,060,191
FERROELECTRIC MEMORY

Tatsuo Nagasaki, Yokohama; Masayoshi Omura, Tachikawa; Hitoshi Watanabe; Shinichi Imade, both of Hachiooji; Eishi Ikuta, Sagamihara; Hiroyuki Yoshimori, Fujino, and Kazuhisa Yanagisawa, Mitaka, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 373,082
Claims priority, application Japan, Jul. 8, 1988, 63-170471; Dec. 20, 1988, 63-321639
Int. Cl.[5] G11C *11/22*
U.S. Cl. 365—145 **19 Claims**



1. A ferroelectric memory comprising:

a ferroelectric thin film having first and second surfaces opposite to each other;

a first electrode assembly including a plurality of stripe electrodes arranged in parallel on the first surface side of said ferroelectric thin film;

a second electrode assembly including a plurality of stripe electrodes arranged in parallel on the second surface side of said ferroelectric thin film, said stripe electrodes of said second electrode assembly crossing over said stripe electrodes of said first electrode assembly;

first and second common electrodes arranged separately from end portions of said respective first and second electrode assemblies and extending in respective directions in which said stripe electrodes of said first and second electrode assemblies are arranged; and

selection means for respectively connecting said first and second electrode assemblies to said first and second common electrodes and for selectively activating at least one of said stripe electrodes of each of said first and second electrode assemblies.

5,060,192
CROSS-POINT SWITCH

William R. Young, and William F. Johnstone, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 27, 1989, Ser. No. 457,504
Int. Cl.[5] G11C *11/412*
U.S. Cl. 365—156 **20 Claims**

1. A cross-point switch having a plurality of switching means at cross-points for selectively interconnecting N input lines and M output lines comprising:

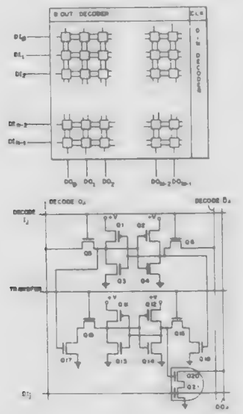
input decoder means for selecting one of N input lines;

output decoder means for selecting one of M output lines;

a clock means for providing a transfer signal;

switch means at each cross-point being connected to a respective input and output line for transmitting data from said input line to said output line in a first state of said switch means and blocking transmission of data from said input line to said output line in a second state of said switch means; and

at each cross-point, a first storage means connected to said input and output decoders means for storing a next cross-point state selected by said input and output decoders means, and a second storage means connected to said first storage means, to said switch means and to said clock means for storing a present cross-point state transferred from said first storage means in response to said transfer

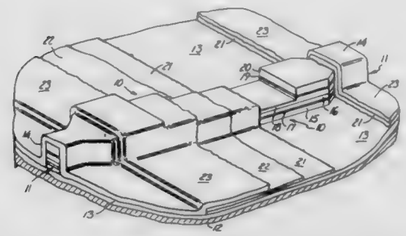


signal and controlling the state of said switch means as a function of said present cross-point state.

5,060,193
MAGNETIC STATE ENTRY ASSURANCE

James M. Daughton, Edina; Allan T. Hurst, Jr., Anoka, both of Minn., and Arthur V. Pohm, Ames, Iowa, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 4, 1990, Ser. No. 505,090
Int. Cl.[5] G11C *11/15*
U.S. Cl. 365—173 **20 Claims**



1. A method for storing selected magnetic states in magnetic bit structures each comprising a memory film of a magnetoresistive, anisotropic, magnetic material between first and second terminal portions thereof and each having a word line conductor located across an electrical insulating layer from its said memory film which extends over a pair of opposite edges of that said memory film with each said edge extending between said first and second terminal portions, said memory film of each magnetic bit structure having an easy axis of magnetization oriented substantially along that direction in which its corresponding said word line conductor extends with directions of magnetization along said easy axis determining said magnetic states of that said magnetic bit structure, said memory film of each magnetic bit structure having portions thereof sufficiently near either of its said pair of opposite edges exhibiting magnetizations therein oriented substantially parallel to said edges with such edge magnetizations directed at least partially in substantially a common direction, said method comprising:

providing a selected activation current through a first said word line conductor in a direction which results in that magnetic field due thereto in said memory film of a corresponding first said magnetic bit structure being oriented substantially parallel to, and directed in, said common direction;

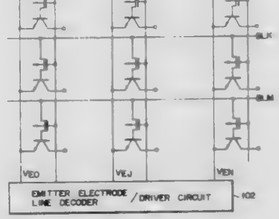
providing a selected sense current through said first magnetic bit structure memory film between said first and second terminal portions thereof which is at least partially concurrent with said providing of said activation current; and

providing, after cessation of said activation current but at least partially concurrent with said providing of said sense current, a selected bit completion assurance current through said first word line conductor in a direction which results in that magnetic field due thereto in said memory film of said first magnetic bit structure being oriented substantially opposite to said common direction.

5,060,194
SEMICONDUCTOR MEMORY DEVICE HAVING A BICMOS MEMORY CELL

Koji Sakui; Tsuneaki Fuse, both of Tokyo; Takehiro Hasegawa, Tamar; Shigeyoshi Watanabe, and Fujio Masuoka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1990, Ser. No. 501,865
Claims priority, application Japan, Mar. 31, 1989, 1-83575; Jul. 17, 1989, 1-184238
Int. Cl.[5] G11C *11/34;* **H01L** *29/72*
U.S. Cl. 365—177 **21 Claims**



1. A semiconductor memory device comprising:

a plurality of word lines;

a plurality of bit lines;

an array of memory cells each including a bipolar transistor which has a base, an emitter and a collector and a switching transistor connected between the base of said bipolar transistor and a corresponding one of said plurality of bit lines and controlled by a corresponding one of said plurality of word lines;

means for controlling a collector-emitter voltage applied to said bipolar transistor so that the polarity of a base current changes due to impact ionization as a base-emitter voltage applied to said bipolar transistor is increased and so that a potential corresponding to a base-emitter voltage at a boundary between forward and reverse base currents is used as a writing potential; and

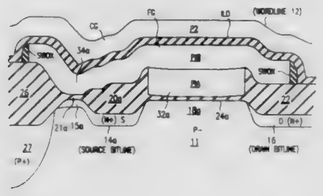
voltage-variable means for varying an emitter voltage of a memory cell selected by one of said plurality of word lines to have the collector-emitter voltage higher in a memory cell data readout operation than in a case wherein the memory cell is not selected.

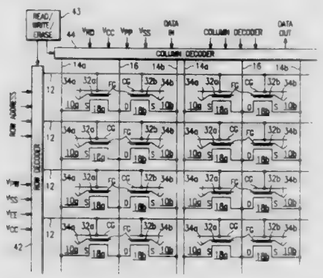
5,060,195

HOT ELECTRON PROGRAMMABLE, TUNNEL ELECTRON ERASABLE CONTACTLESS EEPROM

Manzur Gill, Rosharon, and Sung-Wei Lin, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 458,936, Dec. 29, 1989, Pat. No. 5,010,028.
This application Oct. 11, 1990, Ser. No. 595,521
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **16 Claims**





1. An electrically erasable, electrically programmable read-only memory cell formed in a face of a semiconductor substrate of a first conductivity type, comprising:

source and drain regions of a second conductivity type opposite the first type, formed in the substrate and separated by a channel region;

said source region including a Fowler-Nordheim tunnel window subregion located opposite said channel region;

a floating gate conductor insulatively disposed over said channel region for controlling channel conductivity;

said floating gate having a first channel section layer and a second layer overlying and in contact with said first channel section layer;

said first channel section layer being insulatively disposed over said channel region, said channel region being defined by source and drain region junctions which are substantially aligned with edges of said first channel section layer;

said second layer including a tunnel window section insulatively disposed over said tunnel window subregion for establishing a Fowler-Nordheim tunnel current path; and

a control gate conductor insulatively disposed over said floating gate conductor;

the memory cell being programmable by transferring a predetermined charge to said floating gate conductor by hot carrier injection in response to programming voltages applied to said control gate conductor and said drain region relative to said source region;

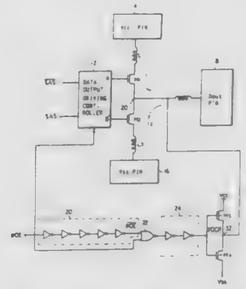
the memory cell being erasable by removing a predetermined charge from said floating gate conductor by Fowler-Nordheim tunneling in response to an erasing voltage applied to said control gate conductor relative to said source region.

5,060,196

CIRCUIT FOR ADJUSTING VOLTAGE LEVEL OF DATA OUTPUT IN A SEMICONDUCTOR MEMORY DEVICE

Myoung-Ho Pae, and Dong-Su Jun, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed Jan. 29, 1990, Ser. No. 471,933
Claims priority, application Rep. of Korea, May 26, 1989, 1989-7068[U]
Int. Cl.[5] G11C *7/00, 11/413*
U.S. Cl. 365—189.05 **6 Claims**



6. A circuit for adjusting voltage level of a data output terminal in a semiconductor memory device, comprising:

a power supply terminal;

a ground reference voltage terminal;

a data output terminal;

a data output driving controller having a plurality of input terminals, for receiving amplified sensing signals at said input terminals and for providing said amplified sensing signals in response to an enable clock, said data output driving controller being enabled by said enable clock;

driving means for providing data to the data output terminal in response to reception of the amplified sensing signals from the data output driving controller;

control pulse generating means receiving said enable clock, for generating an output data control pulse at a point that the data output driving controller has the amplified sensing signals as enabled by the enable clock; and

high-impedance voltage generating means connected between the data output terminal, the power supply terminal and the ground reference voltage terminal, for generating a high-impedance voltage in response to the output data control pulse and applying said high-impedance voltage to the data output terminal.

5,060,197

STATIC RANDOM ACCESS MEMORY WITH REDUNDANCY

Heui-Chul Park, and Chang-Rae Kim, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd, Kyung, Rep. of Korea

Filed Feb. 28, 1990, Ser. No. 486,400
Claims priority, application Rep. of Korea, Dec. 30, 1989, 1989-20608
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **21 Claims**

1. A semiconductor memory device having at least one normal block and at least one redundant block, comprising:

a plurality of normal block selectors for selecting corresponding ones of a plurality of normal blocks;

a plurality of redundant decoders for sensing a redundant mode on a basis of address signals provided thereto from an address buffer;

a block selection decoder for generating a block selection signal in response to reception of an external address signal; and

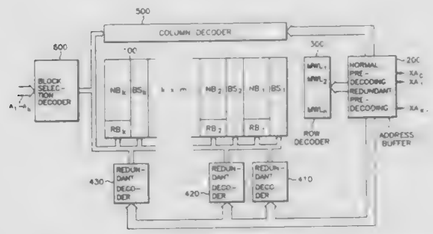
redundancy combining means for generating a normal block selection signal and a redundant block selection signal, in dependence upon output of said block selection decoder and output of said redundant decoder;

wherein several of said plurality of redundant decoders each comprise:

fuse programming means for generating a fuse programming signal for replacing a defective one of said normal blocks with a redundant block;

first logic means for performing logical NAND operations on a basis of said fuse programming signal and a predecoded redundant signal received from the address buffer; and

first inverting means for inverting the output generated from said first logic means and for providing said inverted output signal to said redundancy combining means.

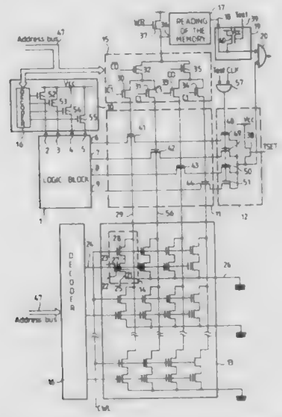


5,060,198

DEVICE FOR THE STRUCTURAL TESTING OF AN INTEGRATED CIRCUIT

Jacek Kowalski, Trets, France, assignor to SGS - Thomson Microelectronics S.A., Gentilly, France

Continuation of Ser. No. 258,813, Oct. 17, 1988, abandoned.
This application Sep. 24, 1990, Ser. No. 587,512
Claims priority, application France, Oct. 19, 1987, 87 14344
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **7 Claims**



1. A device to perform structural tests on logic blocks of an integrated circuit, the tests comprising the introduction of logic test signals in the logic blocks and a checking of the form of output signals delivered by the logic blocks, said device comprising:

said logic blocks having inputs and outputs, and performing logic functions,

means for introducing logic test signals at the inputs of said logic blocks,

means for delivering logic output signals accessible from the outputs of said logic blocks and resulting from the passage of said logic test signals through said logic blocks, onto an output terminal of the integrated circuit,

a memory with memory cells,

decoder circuitry providing access to memory cells of said memory through a selection of a bit line and a work line coupled to a memory cell to be accessed,

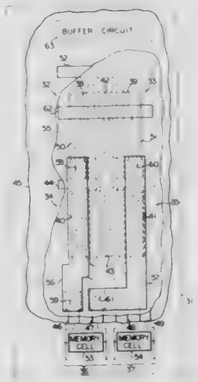
said means for delivering comprising a first gate circuit including one transistor per output of said logic blocks, each transistor having its drain connected to a respective output of the logic blocks, its control gate connected to an associated output of the decoder circuitry of the memory and its source connected to an output circuit of the integrated circuit.

5,060,199

SEMICONDUCTOR DEVICE WITH COMPONENT CIRCUITS UNDER SYMMETRIC INFLUENCE OF UNDESIRABLE TURBULENCE

Hiroyuki Goto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 21, 1989, Ser. No. 382,890
Claims priority, application Japan, Jul. 26, 1988, 63-186001
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—203 **5 Claims**



1. A semiconductor device fabricated on a semiconductor substrate and having a plurality of component circuits of an integrated circuit and at least one component conductive strip operative to propagate a first electric signal, one of said component circuits comprising

a) a first pair of component elements operative to produce a second electric signal and the complementary electric signal thereof and arranged in such a manner as to be substantially equivalent in an electrical influence of said component conductive strip to each other, and

b) a second pair of component elements operative to produce a third electric signal and arranged in such a manner as to be substantially equivalent in the electric influence of said component conductive strip, said first pair of said component elements are different in the electric influence of said component conductive strip from said second pair of said component elements, in which said first pair of said component elements are substantially equivalent in an electric influence of another component circuit to each

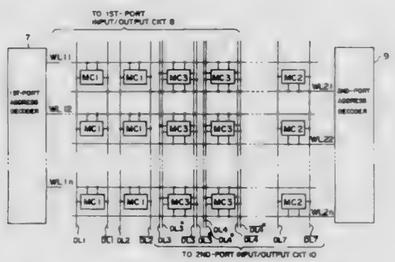
other, and in which said second pair of said component elements are substantially equivalent in he electric influence of aforesaid another component circuit to each other, wherein said first pair of said component elements are different in the electric influence of aforesaid another circuit from said second pair of said component elements.

5,060,200

PARTIAL RANDOM ACCESS MEMORY

Daisuke Miura, Yokohama, and Junichi Shikatani, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 4, 1989, Ser. No. 347,320
Claims priority, application Japan, May 20, 1988, 63-124113
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—230.05 **20 Claims**



1. A partial random access memory comprising:
a plurality of memory cells arrayed in matrix form;
a plurality of pairs of bit lines extending in a column direction, each of said plurality of memory cells being coupled to corresponding one of said pairs of bit lines, memory cells in one row respectively connected to different pairs of bit lines;
a plurality of word lines including a plurality of first and second word lines, one first word line and one second word line being paired in one row and arranged in a row direction, each of said plurality of memory cells in each row being connected to at least one of said first and second word lines;
activating means, coupled to said plurality of word lines, for separately activating said first and second word lines, depending on an address signal supplied from an external circuit, therein independently selecting said first and second word lines and selectively activating only those memory cells in one row which are connected to the selected word line; and
input/output means, coupled to said plurality of bit lines, for writing input data into corresponding memory cells and reading out output data from corresponding memory cells.

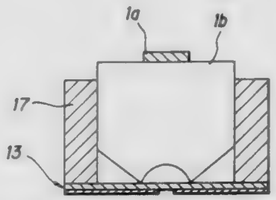
5,060,201

PROBE FOR ULTRASONIC MICROSCOPE

Isao Ishikawa, Takasaki; Takuya Semba, Fukuoka; Yasuhiro Tani, and Hisayoshi Sato, both of Tokyo, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed May 14, 1990, Ser. No. 522,897
Claims priority, application Japan, May 12, 1989, 1-119994; Apr. 26, 1990, 2-108742
Int. Cl.[5] G01N *29/00*
U.S. Cl. 367—7 **12 Claims**

1. In a probe for an ultrasonic microscope, said probe having an element for radiating and receiving an ultrasonic wave and an acoustic lens for causing an ultrasonic wave, which has been generated by the element, to converge at a point into an ultrasonic beam, whereby the ultrasonic beam is radiated against a sample and a reflected wave of the thus-radiated ultrasonic beam is received by the element to convert the reflected wave into an electrical signal proportional to the reflected wave, the improvement wherein a mask is provided on a side of the sample relative to the acoustic lens, the mask is composed of an ultrasonic wave transmitting portion and an ultrasonic wave blocking portion, the ultrasonic wave transmitting portion permits the transmission of first components of the ultrasonic beam, said first beam components taking part in producing an



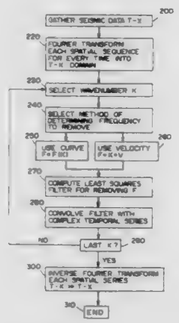
elastic surface wave in one direction in a surface layer of the sample, and second components of the ultrasonic beam taking no part in the production of any elastic surface wave, and the ultrasonic wave blocking portion substantially reduces the transmission of third components of the ultrasonic beam, said third components taking part in producing elastic surface waves in directions other than said one direction in the surface layer of the sample.

5,060,202

METHOD FOR REMOVING COHERENT NOISE FROM SEISMIC DATA THROUGH T-K FILTERING

Robert A. Meek, Sanger, and Andrew F. Linville, Jr., Dallas, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 4, 1991, Ser. No. 637,424
Int. Cl.[5] G01V *1/28, 1/36*
U.S. Cl. 367—45 **8 Claims**



1. In seismic exploration wherein seismic sources are activated at spaced locations along a line of exploration and the amplitude of reflections from subsurface formations are recorded as a function of time and distance along said line of exploration to produce a time-distance array of seismic traces, said traces comprised of a seismic signal component and a coherent noise component, a method of processing said seismic traces to remove said coherent noise component, comprising the steps of:
a) transforming said time-distance array of seismic traces into a time-wavenumber domain,
b) determining a wavenumber at which said coherent noise resides,
c) determining a frequency corresponding to the coherent noise component at the determined wavenumber,

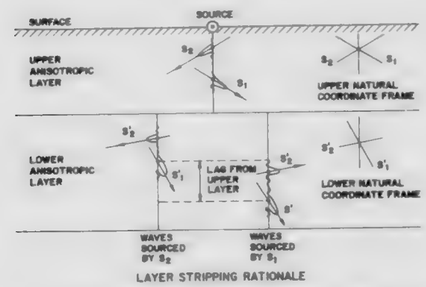
d) filtering said time-wavenumber domain of seismic traces to remove the determined frequency, and
e) transforming said filtered time-wavenumber domain of seismic traces back to the time-distance domain to produce a time-distance array of seismic traces with said coherent noise component removed.

5,060,203

METHOD OF LAYER STRIPPING TO PREDICT SUBSURFACE STRESS REGIMES

Donald F. Winterstein, Brea, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 26, 1990, Ser. No. 543,994
Int. Cl.[5] G01V *1/36, 1/40*
U.S. Cl. 367—75 **16 Claims**



LAYER STRIPPING RATIONALE

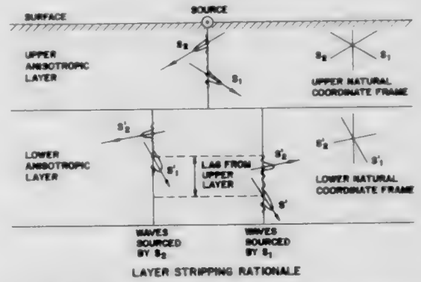
1. A method of analyzing seismic shear wave data, said data having at least one linearly independent, nearly horizontal source axis (Sx), and each of said source axes having at least first and second linearly independent, nearly orthogonal, and nearly horizontal receiver axes (Rx, Ry), to evaluate changes in shear wave polarization with depth comprising the steps of:
(a) performing an initial analysis of shear wave polarization directions relative to a fixed coordinate frame, and determining the apparent time lags between a fast and a slow shear wave, at several depths;
(b) identifying cues in said data that indicate shear wave polarization changes;
(c) determining the natural polarization directions of and the time lag between said fast and slow shear waves, in an upper layer, above and adjacent to the shallowest depth where said cues suggest polarization changes are indicated;
(d) rotating said receiver axes (Rx, Ry) of all of said data that are at or below the shallowest depth where said polarization changes are indicated, by an azimuth angle determined down to said depth, so that said first receiver axis, (Rx) is aligned with the natural polarization direction of said fast shear wave in said upper layer, and said second receiver axis is at an azimuth angle which is really 90 degrees to said first receiver axis; and
(e) applying a static shift either to data components aligned with said fast shear wave polarization direction, or to components corresponding to the source aligned with the slow shear wave polarization direction, to eliminate said time lag in said upper layer above and adjacent to the shallowest depth where said cues suggest polarization changes are indicated.

5,060,204

METHOD OF LAYER STRIPPING TO DETERMINE FAULT PLANE STRESS BUILD-UP

Donald F. Winterstein, Brea, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

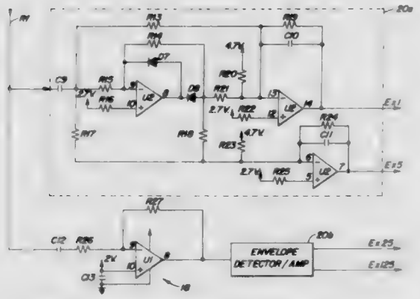
Filed Jun. 27, 1990, Ser. No. 545,030
Int. Cl.[5] G01V *1/36, 1/40*
U.S. Cl. 367—75 **16 Claims**



LAYER STRIPPING RATIONALE

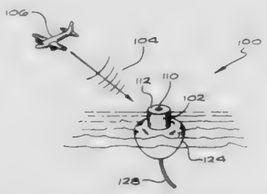
1. A method of determining fault plane stress build-up, by analyzing seismic shear wave data, said data having at least one linearly independent, nearly horizontal source axis (Sx), and each of said source axes having at least first and second linearly independent, nearly orthogonal, and nearly horizontal receiver axes (Rx, Ry), to evaluate changes in shear wave polarization with depth comprising the steps of:
(a) performing an initial analysis of shear wave polarization directions relative to a fixed coordinate frame, and determining the apparent time lags between a fast and a slow shear wave, at several depths;
(b) identifying cues in said data that indicate shear wave polarization changes;
(c) determining the natural polarization directions of and the time lag between said fast and slow shear waves, in an upper layer, above and adjacent to the shallowest depth where said cues suggest polarization changes are indicated;
(d) rotating said receiver axes (Rx, Ry) of all of said data that are at or below the shallowest depth where said polarization changes are indicated, by an azimuth angle determined down to said depth, so that said first receiver axis, (Rx) is aligned with the natural polarization direction of said fast shear wave in said upper layer, and said second receiver axis is at an azimuth angle which is nearly 90 degrees to said first receiver axis;
(e) applying a static shift either to data components aligned with said fast shear wave polarization direction, or to components corresponding to the source aligned with the slow shear wave polarization direction, to eliminate said time lag in said upper layer above and adjacent to the shallowest depth where said cues suggest polarization changes are indicated;
(f) determining shear wave polarization azimuth angles for said shallowest depth where polarization changes are indicated;
(g) comparing said shear wave polarization azimuth angles to the strike of a selected fault, said fault located close enough to a position where said data originated, to be effected by a compressional or tensional stress associated with said azimuth angle;
(h) determining time lags between said shear waves at one or more depths in said upper layer; and
(i) repeating steps (a) through (g) at a later time, to evaluate time varying changes in said shear wave polarization azimuth angles, or in said time lags between said shear waves.

5,060,205
ULTRASONIC DISTANCE MEASURING SYSTEM
James J. Phelan, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.
Filed May 29, 1990, Ser. No. 529,828
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—98 **19 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 20 Pages)



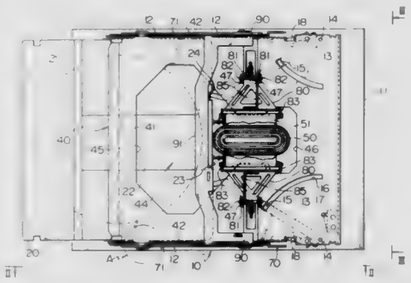
1. A distance measuring system, comprising:
a transducer for generating at a transmit time a transmit pulse towards a surface the distance to which is to be measured and for receiving a plurality of echo signals reflected from the surface and from other surfaces exposed to the transmit pulse;
means for determining a trailing edge time for each echo signal, the trailing edge time being defined as the time at which an amplitude of an echo signal crosses a threshold with a negative slope; and
means for determining a distance value from the transmit time and the trailing edge time of the last of said a minimum amplitude.

5,060,206
MARINE ACOUSTIC AEROBUOY AND METHOD OF OPERATION
Frederick C. DeMetz, Sr., Panama City, Fla., assignor to Allied-Signal Inc., Morristownship, N.J.
Filed Sep. 25, 1990, Ser. No. 587,389
Int. Cl.[5] H04B *1/06*
U.S. Cl. 367—136 **20 Claims**



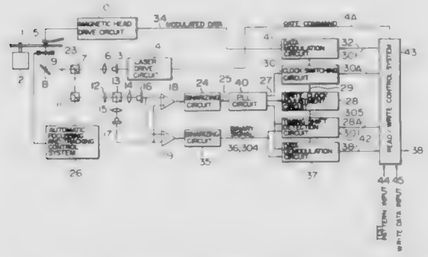
1. A marine acoustic detector for identifying a plurality of airborne sound waves generated by a propeller-driven aircraft comprising, in combination:
means for forming a resonating air chamber within said acoustic detector, said chamber being tuned to the frequency of said plurality of airborne sound waves generated by said aircraft and being in mechanical communication with a first endplate and a second endplate;
means for intercepting said plurality of airborne sound waves generated by said aircraft, said intercepting means being formed in said first endplate and said frequency of said plurality of airborne sound waves being from a narrow band of frequencies, said plurality of sound waves resonating within said chamber;
means for detecting said plurality of resonating airborne sound waves and for converting said plurality of detected airborne sound waves to an electrical signal, said detecting and converting means being mounted inside said chamber;
means for amplifying said electrical signal, said amplifying means being in electrical communication with said detecting means; and
means for supporting said acoustic detector in a marine environment, said supporting means in communication with said second endplate, said amplified electrical signal being transmitted to a signal processor operating in a marine environment, the sound amplification properties of said resonating chamber being employed for passively detecting said aircraft at airborne ranges exceeding those ranges of visual and sonar detection.

5,060,207
MAGNETO-OPTICAL RECORDING/REPRODUCING APPARATUS
Tokuya Kaneda, and Chikazu Yokoi, both of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 27, 1989, Ser. No. 428,507
Claims priority, application Japan, Oct. 28, 1988, 63-270932
Int. Cl.[5] G11B *21/02, 21/12*
U.S. Cl. 369—13 **14 Claims**



1. A magneto-optical recording/reproducing apparatus comprising:
a frame;
a cartridge containing a magneto-optical recording medium;
means for applying an optical beam on a surface of said recording medium;
means for applying a bias magnetic field on said recording medium, said bias magnetic field applying means being so disposed that said recording medium is positioned between said optical beam applying means and said bias magnetic field applying means;
means for holding said cartridge;
means for reciprocating said holding means between an insertion position and a loading position in which a recording operation, a reproducing operation and an erasing operation are carried out;
means for moving said recording medium into said loading position; and
means for driving said bias magnetic field applying means close to said recording medium when it is to be in said loading position and away from said recording medium when it is to be in said insertion position, said means for driving moving said bias magnetic field applying means in opposite directions perpendicular to a plane of a face of said recording medium, said means for driving being disposed on said means for holding and being driven by a driving power due to reciprocative movement of said means for holding.

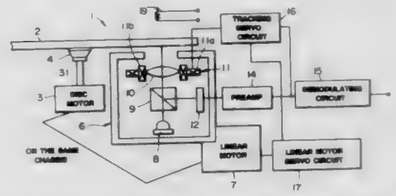
5,060,208
MAGNETOOPTICAL RECORDING METHOD AND APPARATUS UTILIZING SHIFT ADJUSTMENT
Nobuyuki Nagai, Hadano; Takeshi Maeda, Kokubunji; Atsushi Saito, Ichikawa; Takeshi Nakao, Sagamihara, and Hitoshi Watanabe, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Maxwell, Osaka, both of Japan
Filed Dec. 22, 1988, Ser. No. 288,124
Claims priority, application Japan, Dec. 25, 1987, 62-326898
Int. Cl.[5] G11B *13/04, 11/12*
U.S. Cl. 369—013 **18 Claims**



1. A method of recording a signal in a magneto-optical disk having pre-pits formed on a recording track which pits are optically detectable and are read out for enabling generation of data read clocks and data write clocks and wherein means including light beam means and magnetic field generating means are provided for recording or writing data onto said magnetooptical disk or reading data therefrom, comprising the steps of:
prior to writing data in said magnetooptical disk, writing a test pattern in accordance with a test pattern signal to form a magnetized domain in a leading portion of a data recording area of said magnetooptical disk in accordance with predetermined data write timings;
reading said test pattern by reading said leading portion of said data recording area to generate a reproduced signal of said magnetized domain;
detecting a time shift between said reproduced signal of said magnetized domain and said test pattern signal;
adjusting said data write timings in accordance with said time shift; and
recording data in said data recording area in accordance with said adjusted data write timings.

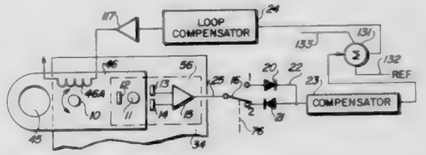
5,060,209
OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS WITH VIBRATION ATTENUATING MECHANISM
Kazutoshi Kobayashi, Tokorozawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1989, Ser. No. 293,771
Claims priority, application Japan, Jan. 12, 1988, 63-004453
Int. Cl.[5] G11B *7/00, 25/00*
U.S. Cl. 369—32 **11 Claims**

1. An optical information recording and reproducing apparatus comprising:
light pickup means at least recording, reproducing or erasing information by radiating a light beam to an optical recording medium;
light pickup moving means moving said light pickup means in the direction crossing said optical recording medium recording and reproducing region;
driving signal generating means generating a signal driving said light pickup moving means from the light returning from said optical recording medium;
rotating driving means having a rotary shaft for rotatably moving said optical recording medium, and
vibration attenuating means attenuating the vibration of the rotary shaft of said rotating driving means, said vibration



attenuating means being integrated with said rotating driving means, and acting directly on the rotary shaft.

5,060,210
CONTROLLING HEAD SEEKING SPEED IN DISK STORAGE UNITS BY LIMITING DISPLACEMENT OF HEAD WITH RESPECT TO ITS SUPPORTING HEADARM
Alan A. Fennema, and Reed A. Hancock, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 28, 1990, Ser. No. 589,706
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 **10 Claims**



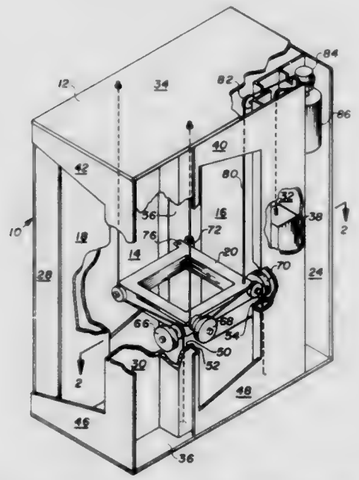
1. In a disk storage system having a fine actuator carrying a head and being movably supported by a coarse actuator, a frame mounting the coarse actuator and a record member for relative movements across record tracks of the record member at varying cross-track speeds of the fine actuator wherein there is a relative movement between the fine and coarse actuators resulting in a momentary displacement of the fine actuator from a desired reference position on the coarse actuator, the improvement including, in combination:
actuating means connected to the fine actuator for actuating the fine actuator for movements transverse to the tracks;
relative position error (RPE) sensing and indicating means mounted between the coarse and fine actuators for detecting and indicating the displacement of the fine actuator from said reference position as an RPE indication; and
means electrically interposed between the RPE sensing and indicating means and the actuating means for responding to the RPE sensing and indicating means indication of the displacement of the fine actuator from said desired reference position for actuating the actuating means to reduce the speed of the fine actuator such that the displacement of the fine actuator is limited to a predetermined maximum displacement from said reference position.

5,060,211

TRANSPORT DRIVE AND SUPPORT MEANS FOR AN AUTOMATED DATA LIBRARY

Douglass L. Blanding, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1990, Ser. No. 508,035
Int. Cl.[5] G11B *17/10, 17/22*
U.S. Cl. 369—36 **11 Claims**



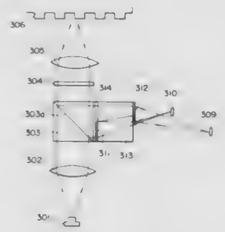
1. In an automated data library comprising a plurality of storage means each arranged to accept and store a data storage member, a reading device arranged to retrieve data from a data storage member, and transport means arranged to selectively transfer data storage members between said storage means and said reading device, a housing for said assembly forming a generally centrally disposed shaftway accommodating the movement of said transport means and at least one generally open bay area opening into and extending along said shaftway, said bay area being arranged to locate said plurality of storage means and said reading device therein for access thereto by said transport means, the improvement comprising means for moving and guiding said transport means in said shaftway whereby said transport means is accurately and repeatably located therein with reference to said storage means and said reading device, said transport means comprising a carriage member disposed in said shaftway, means for locating said carriage with respect to an x-axis and a y-axis transverse of said shaftway while permitting motion of said carriage along a z-axis parallel to said shaftway, a plurality of guide surfaces on the portion of said housing adjacent said shaftway, a first guide roller rotatably mounted on said carriage at a first location and bearing on a first guide surface to locate said carriage with respect to said y-axis, a second guide roller rotatably mounted on said carriage at a second location perpendicular to said first guide roller and bearing on a second guide surface to locate said carriage with respect to said x-axis, a third guide roller rotatably mounted on said carriage at a third location parallel to one of said first rollers and bearing on a third guide surface to locate said carriage with respect to rotation about said z-axis, a fourth roller rotatably mounted on said carriage at a location opposite said three guide rollers, means for biasing said fourth roller into engagement with a fourth guide surface thereby applying a predetermined loading on said three guide rollers, and drive means for moving said carriage along said z-axis.

5,060,212

INTEGRATED OPTICAL PICK-UP DEVICE

Kazuhiro Fujita; Toshiyuki Inokuchi; Nobuyuki Baba; Hideo Maeda, all of Yokohama, and Shigeru Ohuchida, Zama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 15, 1988, Ser. No. 232,321
Claims priority, application Japan, Aug. 17, 1987, 62-125084[U]; Aug. 17, 1987, 62-125085[U]; Oct. 8, 1987, 62-254475; Oct. 15, 1987, 62-260696
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.12 **10 Claims**



1. A split-type optical pick-up device for use in an optical information recording/reproducing apparatus, comprising:
a light source for emitting a light beam;
detecting means; and
an optical system for first guiding said light beam to a recording medium to impinge thereon and to be reflected thereby and then guiding the light beam reflected from said recording medium to said detecting means, said optical system including a movable optical system which is movable relative to said recording medium and a stationary optical system which is fixed in position with respect to said recording medium and has an integrated one-piece structure, comprising a multiplicity of optical elements which are in contact with and fixed relative to each other;
wherein said stationary optical system includes: an integrated double beam splitter having two polarization reflection surfaces; a first optical unit fixedly attached to a first position of said splitter, said first optical unit including a plate-shaped focusing element for collimating said light beam received from said light source, a beam shaping element for shaping said collimated light beam into a shaped light beam having a substantially circular cross sectional shape and a beam dividing element for dividing said shaped light beam into three light beams to be guided to said recording medium through said splitter and said movable optical system; a recorded information detecting device; a second optical unit fixedly attached to a second position of said splitter for guiding the light passing through said two polarization reflection surfaces of said splitter to said recorded information detecting device; a servo error detecting means; and a third optical unit fixedly attached to a third position of said splitter for guiding the light passing through one of said two polarization reflection surfaces and reflected by the remaining of said two polarization reflection surfaces to said servo error detecting means.

5,060,213

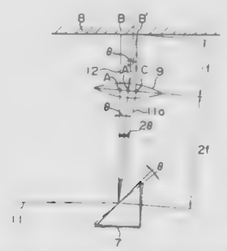
SEPARATION TYPE OPTICAL HEAD

Toshimasa Kamisada, Hiratsuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1989, Ser. No. 391,195
Claims priority, application Japan, Aug. 30, 1988, 63-213565
Int. Cl.[5] G11B *7/00, 21/00*
U.S. Cl. 367—44.21 **13 Claims**

1. An optical recording/reproducing apparatus for recording or reproducing information by irradiating a light beam onto an optical recording medium, said apparatus comprising:

a stationary section comprising a light source adapted to emit a light beam toward the optical recording medium, and a detector adapted to output a data signal and a servo signal responsive to said light beam after it has been reflected by said recording medium;
a movable section including a mirror adapted to reflect the light beam from said light source to irradiate said record-



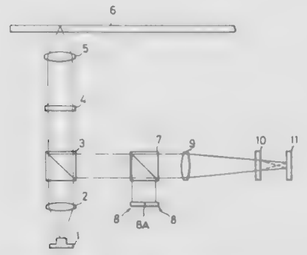
ing medium and to cause the resulting reflected light beam to reflect from said recording medium; and
means for moving said movable section in a direction parallel to the surface of said recording medium; said mirror and said lens being disposed such that a distance between said mirror and the principal point of said lens is substantially twice as large as the focal length of said lens.

5,060,214

OPTICAL PICKUP DEVICE KEEPING COINCIDENT THE OPTICAL AXES OF THE OBJECTIVE LENS AND OF THE RECORDING/REPRODUCING BEAM

Masahiko Nakayama; Toshihiro Shigemori; Haruhiko Kono, and Kiyoshi Yokomori, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1989, Ser. No. 383,029
Claims priority, application Japan, Jul. 21, 1988, 63-182601
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.26 **6 Claims**



1. An optical pickup device for recording on and/or reproducing optical information from an optical recording disk having an information recording surface, comprising:
an objective lens for converging a light beam directed thereto from a light source onto the information recording surface of the optical recording disk to form a beam spot on an information track of the information recording surface;
a first light detecting unit disposed on a movable pickup body and having at least two photodetectors, each of the photodetectors receiving a light beam reflected from a plane mirror portion formed on the information track of the information recording surface and producing an output signal related to the received amount of the reflected light beam; and
driving means for moving the movable pickup body such that an output signal produced by one of the at least two photodetectors becomes equal to an output signal produced by another of the at least two photodetectors when said output signals differ from each other, in order to keep coincident with each other an optical axis of the objective lens and an axis of the light beam directed to the objective lens.

5,060,215

METHOD AND APPARATUS FOR LEADING-IN FOCUS SERVO BY MOVING THE OBJECTIVE LENS TOWARD THE RECORDING SURFACE AT TWO DIFFERENT SPEEDS

Katsumi Kawamura; Ichiro Narumi, and Takao Yamada, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,841
Claims priority, application Japan, Sep. 13, 1988, 63-229330
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.35 **8 Claims**



1. A reproducing device having an objective lens used to focus a beam of light on a recording surface to thereby provide a reflected beam and a focus servo loop for maintaining the focus of said lens, said reproducing device comprising:
first detection means for providing a sum signal representing an intensity of said reflected beam from said recording surface;
first detection signal generating means for generating a first detection signal when said sum signal indicates that said lens is at a first predetermined distance relative to said recording surface;
second detection means responsive to said reflected beam for providing focusing signals representing the state of focusing of said beam on said recording surface;
second detection signal generating means for generating second detection signals by comparing said focusing signal to a second predetermined voltage thereby detecting that said lens is at a position suitable for operation of said focus servo loop;
first power supplying means for supplying a first driving signal to drive said lens towards said recording surface by a first velocity;
second power supplying means for supplying a second driving signal to drive said lens towards said recording surface by a second velocity, said second velocity being less than said first velocity;
means for moving said lens relative to said recording surface in response to either said focusing signal or said first driving signal or said second driving signal; and
switching control means for selectively applying said focusing signal, said first driving signal, and said second driving

signal to said driving means according to the following sequence:

(a) initially said switching control means selects said first driving signal until said first detection signals are received by said switching control means;

(b) said switching control means selects said second driving signal until said second detection signals are received by said switching control means;

(c) said switching control means selects said focusing signals thereby closing said focus servo loop so that said moving means moves said lens relative to said recording surface in accordance with to said focusing signals.

5,060,216

TRACKING CONTROL SYSTEM FOR USE IN AN OPTICAL READING APPARATUS

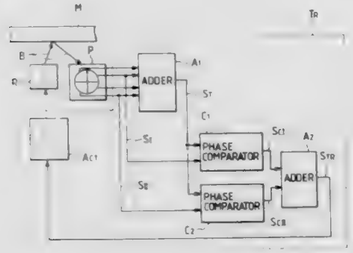
Toshio Suzuki, and Mitsuru Nishitsuka, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 1, 1990, Ser. No. 591,176

Claims priority, application Japan, Apr. 25, 1990, 2-109377

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.41 **6 Claims**



1. In an optical information reading apparatus comprising light beam irradiation means for irradiating a light beam onto a signal track on an information recording surface of an information recording medium, photo detector means including quandrant-separated subdetectors for applying photoelectric conversion to a reflected light beam from said information recording surface to output electric signals, and tracking control means for conducting a follow-up control of an irradiation position onto said track of the light beam from said light beam irradiation means on the basis of said electric signals,

the improvement in which said tracking control means includes:

a first adder for adding all electric signals outputted from said quandrant-separated subdetectors;

a first phase comparator for making a phase comparison between a first electric signal outputted from one of a pair of subdetectors located at diagonal positions of said quandrant-separated subdetectors of said photo detector means and a sum total signal of electric signals outputted from said first adder to output a first phase compared result signal;

a second phase comparator for making a phase comparison between a second electric signal outputted from the other of subdetector located at said diagonal positions and said sum total signal to output a second phase compared result signal; and

a second adder for adding said first and second phase compared result signals to output a tracking control signal.

5,060,217

OPTICAL HEAD DEVICES FOR USE IN RECORDING AND/OR REPRODUCTION OF INFORMATION

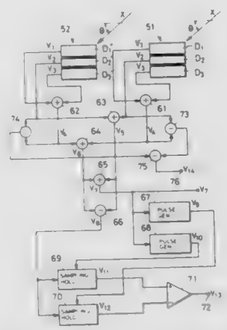
Hidehiro Kume, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 30, 1989, Ser. No. 358,258

Claims priority, application Japan, Jun. 16, 1988, 1-149098

Int. Cl.[5] G01N *21/88;* **G01J** *1/20*

U.S. Cl. 369—44.41 **6 Claims**



1. An optical head device for use in recording and/or reproduction of information comprising:

light beam generating means,

lens means for causing a light beam obtained from said light beam generating means to impinge upon a record medium and for receiving a reflected light beam from the recording medium, and

photodetecting means to which said reflected light beam received by said lens means is guided, said photodetecting means comprising a group of photosensitive elements including a central and two side photosensitive elements separated from each other by respective parallel dividing portions each extending along a predetermined direction, said group of photosensitive elements being disposed to form a common light receiving plane on which a single beam spot is formed by said reflected light beam for detecting said reflected light beam and for producing respective detection output signals corresponding to said central photosensitive element and an added signal obtained by adding the detection output signals corresponding to said side photosensitive elements to each other, said parallel dividing portions each being of a width substantially less than the size of said single beam spot formed on said common light receiving plane, and said predetermined direction along which each of said parallel dividing portions extends being selected to be at a non-zero angle less than 90 degrees relative to a direction of movement of a diffraction pattern appearing in said single beam spot formed on said common light receiving plane in response to the record track in said record medium.

5,060,218

WRITE-ONCE TYPE OPTICAL RECORDING/REPRODUCING DEVICE

Nobumitsu Chiyomatsu, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1988, Ser. No. 272,222

Claims priority, application Japan, Nov. 16, 1987, 62-290203

Int. Cl.[5] G11B *5/09, 3/90/27/36*

U.S. Cl. 369—47 **12 Claims**

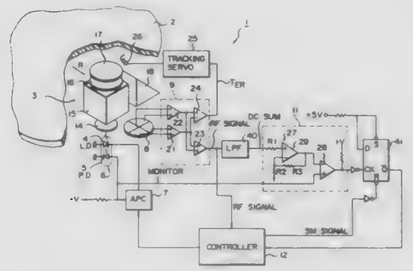
1. An optical recording/reproducing device having a write power mode and a read power mode, comprising:

means for detecting an optical signal in the write power mode from a record mark portion arranged on an upstream side of a data area in which data is recorded, and

generating a reproduction signal corresponding to a recording state of said record mark portion;

means for generating a reference signal;

means for receiving said reproduction signal and said reference signal, and discriminating whether data is already recorded in said data area by comparing the reproduction signal with a reference signal, and generating a discriminating signal;



means for receiving the discriminating signal so as to generate an inhibiting signal for inhibiting overwriting of data in said data area if in the write power mode when the discriminating signal represents that data is already recorded in said data area; and

means for switching from the write power mode to the read power mode in response to the inhibiting signal generated when in the write power mode.

5,060,219

RECORDING SYSTEM FOR RECORDING ONLY THOSE TYPES OF INFORMATION WHICH ARE SPECIFIED BY THE RECORD CARRIER

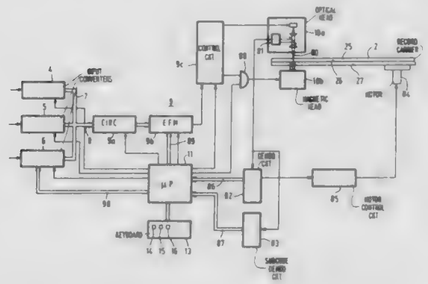
Gerardus C. P. Lokhoff; Rudolf Roth, and Wilhelmus P. M. Raaymakers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1988, Ser. No. 287,941

Claims priority, application Netherlands, May 18, 1988, 8801275

Int. Cl.[5] G11B *7/28*

U.S. Cl. 369—48 **12 Claims**



12. A system as claimed in claim 1, wherein said record carrier is a compact disc (CD) and the servo track has a lead-in portion in which said pattern of control information is preformed; and said control means adds said control information to the subcode-Q channel of a digital signal for recording on said CD.

5,060,220

PROTECTION CIRCUIT FOR OPTICAL DISC PLAYERS

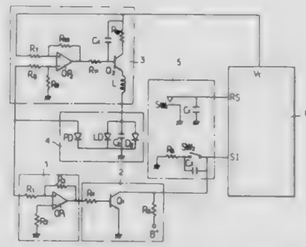
Rae Hwan Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 5, 1989, Ser. No. 375,479

Claims priority, application Rep. of Korea, Jul. 5, 1989, 1988-10968

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—58 **16 Claims**



1. A protection circuit for optical disc players, comprising:

switching means for supplying switching signals for eject and playback modes;

microcomputer means for supplying a driving voltage for radiation of laser beams in response to said switching signals from said switching means;

radiation intensity control means driven by said driving voltage from said microcomputer means, for providing a control voltage for controlling laser beam radiation intensity;

laser beam radiating and detecting means for radiating said laser beams in dependence upon said control voltage from said radiation intensity control means and for detecting radiation intensity of laser beams reflected from an optical disc, said laser beam radiating and detecting means providing a detection signal having a level corresponding to the radiation intensity of said reflected laser beams;

means for amplifying said detection signal with a predetermined voltage gain and outputting an amplified detection signal; and

driving means receiving the amplified detection signal output from said means for amplifying, for providing a start signal to said microcomputer means so that said microcomputer means controls the supply of said driving voltage provided to said radiation intensity control means.

5,060,221

DIGITAL DATA RECORDING/REPRODUCTION APPARATUS

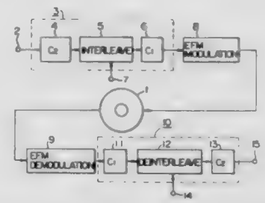
Yoichiro Sako, Chiba, and Hiroshi Ogawa, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 12, 1989, Ser. No. 351,837

Claims priority, application Japan, May 16, 1988, 63-118567

Int. Cl.[5] G11B *20/12;* **G06F** *11/10*

U.S. Cl. 369—59 **9 Claims**



1. A digital data recording apparatus of the type having encoding means for adding a predetermined error correction code to input data and means for recording the encoded data

onto a recording medium, wherein the improvement resides in the encoding means which comprises

a memory for temporarily storing the input data;

control address means for selectively supplying either a first control address or a second control address to the memory; and

interleave means for interleaving the input data in response to the control address supplied to the memory, wherein when the control address is the first control address the interleave means interleaves input data to make convolution encoding and when the control address is the second control address the interleave means interleaves input data in a format allowing complete encoding in a sector.

5,060,222

METHOD OF OVERWRITING INFORMATION ON RECORDING MEDIUM

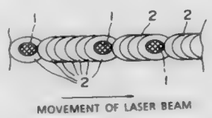
Mitsuru Sawano; Toshiaki Igata, and Younosuke Takahashi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 14, 1989, Ser. No. 338,043

Claims priority, application Japan, Apr. 14, 1988, 63-92796

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—100 **6 Claims**



1. A method of optically writing an information over an information recorded on a recording material which is reversively convertible between a stable phase and a metastable phase to show different light reflection or transmission by controlling a heating condition to be applied to the recording material, said recorded information being recorded in the form of a plurality of separated areas of the metastable phase in the recording material of the stable phase which comprises the steps of:

intermittently irradiating the plurality of separated areas of metastable phase of the recording material with a laser beam which gives such a high thermal energy to the recording material at least at its central area of a beam spot formed on the recording material as to be able to convert the metastable phase into the stable phase under the condition that the central area of one beam spot is formed on the recording material in an area overlapping with an area of a central high thermal energy area of a laser beam spot having been formed by the preceding irradiation to form a series of the stable phases by converting the metastable phase into the stable phase, whereby the recorded information is erased; and

subsequently recording another information in the recording material by irradiating the recording material with a laser beam to form a plurality of separated areas of the metastable phase in the recording material.

5,060,223

OPTICAL TYPE INFORMATION RECORDING MEDIUM HAVING SPECIFIED PIT AND GUIDE GROOVE SHAPES

Hideki Segawa, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,569

Claims priority, application Japan, Aug. 16, 1988, 63-203377

Int. Cl.[5] G11B *5/82, 7/00*

U.S. Cl. 369—275.4 **1 Claim**

1. An optical type information recording medium comprising:

guide grooves for tracking formed in a concentric or spiral shape at a predetermined pitch; and

a pre-format pit formed approximately midway between the guide grooves for recording at least address information;

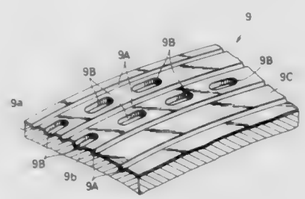
said optical type information recording medium being constructed such that said predetermined pitch is from 1.4 μm to 2.0 μm, said pre-format pit has a depth from $0.46\lambda/n$ to $0.58\lambda/n$, where n is the refractive index of a substrate of the medium and λ is the wavelength of a light source for reading the information recorded in the medium,

said pre-format pit having a cross-sectional shape defined by a first inequality,

$$F_1(x) \leqq y \leqq F_2(x)$$

where x and y in said first inequality are coordinates having an origin located at approximately the mid-point between adjacent guide grooves on a substrate face of the medium, $F_1(x)$ is a function representing the cross-sectional shape of the pre-format pit at a maximum depth in a y-direction and $F_2(x)$ is a function representing the cross-sectional shape of the pre-format pit at a minimum depth in the y-direction; and

when $y=f_1(x)=(1.5/780)(\lambda/n)((3\times10^{-3})x^2-400)$, then $F_1(x)=0$ when $f_1(x)\geqq0$, $F_1(x)=f_1(x)$ when



$0\geqq f_1(x)\geqq-0.58\lambda/n$, and $F_1(x)=-0.58\lambda/n$ when $-0.58\lambda/n\geqq f_1(x)$;

when $y=f_2(x)=(1.5/780)(\lambda/n)((20\times10^{-3})x^2-350)$, then $F_2(x)=0$ when $f_2(x)\geqq0$, $F_2(x)=f_2(x)$ when $0\geqq f_2(x)\geqq-0.46\lambda/n$, and $F_2(x)=-0.46\lambda/n$ when $-0.46\lambda/n\geqq f_2(x)$;

the cross-sectional shape of said guide grooves is defined by a second inequality,

$$G_1(x) \leqq y \leqq G_2(x)$$

where x and y in said second inequality are coordinates the origin of which is at a center of a guide groove on the substrate face of the medium, $G_1(x)$ is a function representing the cross-sectional shape of the guide grooves at a maximum depth in a y-direction, and $G_2(x)$ a function representing the cross-sectional shape of the guide grooves at a minimum depth in the y-direction, and

when $y=g_1(x)=(1.5/780)(\lambda/n)((1.5\times10^{-3})x^2-150)$, then $G_1(x)=0$ when $g_1(x)\geqq0$, and $G_1(x)=g_1(x)$ when $g_1(x)\leqq0$; and

when $y=g_2(x)=(1.5/780)(\lambda/n)((2.5\times10^{-3})x^2-60)$, then $G_2(x)=0$ when $g_2(x)\geqq0$ and $G_2(x)=g_2(x)$ when $g_2(x)\leqq0$.

5,060,224

METHOD AND APPARATUS FOR CONNECTING BRANCH NETWORKS WITH A TRUNK NETWORK IN OPTICAL TRANSMISSION SYSTEM

Kuniyoshi Konishi, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 278,245, Nov. 30, 1988, abandoned.

This application Jan. 29, 1990, Ser. No. 470,416

Claims priority, application Japan, Nov. 30, 1987, 62-302686

Int. Cl.[5] H04B *10/16;* **H04J** *14/00*

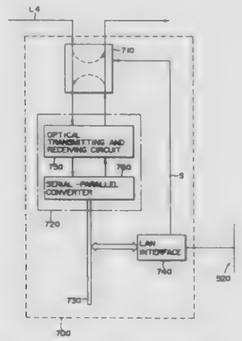
U.S. Cl. 359—119 **1 Claim**

1. An apparatus for connecting branch networks with a trunk network including a plurality of nodes having a loop back function and optical transmission lines, the apparatus comprising:

switch means for switching a data flow between the trunk network and the branch network;

first converting means for converting a first optical signal from the trunk network through the switch means into a first electric signal;

second converting means for concerting first serial data representing the converted first electric signal into first parallel data; and



interface means for receiving the converted first parallel data, transferring the received first parallel data to the branch network, receiving a second parallel data from the branch network, transferring the received second parallel data to the second converting means, and controlling the switch means, and

wherein the second converting means includes means for converting the second parallel data from the interface means into second serial data; and

the first converting means includes means for converting a second electric signal representing the converted second serial data into a second optical signal.

5,060,225

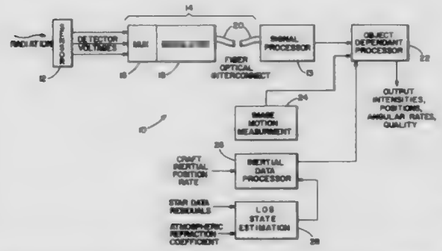
PHASE MODULATED OPTICAL CARRIER DATA LINK FOR A FOCAL PLANE ARRAY

Maureen A. Godfrey, West Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 14, 1988, Ser. No. 270,181

Int. Cl.[5] H04J *14/00;* **G02F** *1/00*

U.S. Cl. 359—124 **37 Claims**



26. A method for coupling an output signal of a radiation detector to a signal measurement apparatus comprising the steps of:

providing an optical carrier signal having a frequency component and a phase component associated therewith;

varying the phase component of the carrier signal as a function of a magnitude of the radiation detector output signal;

redundantly transmitting the carrier signal to one or more remote locations; and

responsive to the phase component of the carrier signal,

generating at the one or more remote locations an output signal having a magnitude which is a function of the magnitude of the radiation detector output signal.

5,060,226

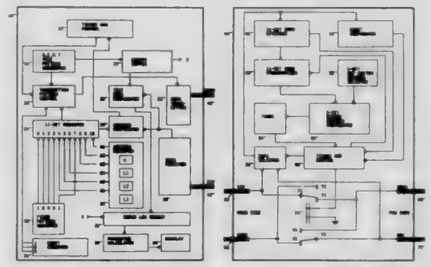
TELECOMMUNICATIONS NETWORK TEST SYSTEM

Robert E. Gewin, Huntsville, and Gary L. Aderholt, Athens, both of Ala., assignors to Phoenix Microsystems, Inc., Huntsville, Ala.

Filed Jul. 5, 1990, Ser. No. 548,675

Int. Cl.[5] H04J *1/16;* **G06F** *11/00;* **H04M** *1/24*

U.S. Cl. 370—15 **5 Claims**



1. A telecommunications network test system for the testing of at least one portion of a communications link between a first station and a selected second station, said link including a first transmission path (**40**) from said first station to said second station and a second transmission path (**42**) from said second station to said first station, comprising in combination:

at least one master test unit comprising:

address means (**24**) for repetitively providing a selected 11-bit code, each code consisting of five constant bits and six loopback unit address bits forming address signals thereto,

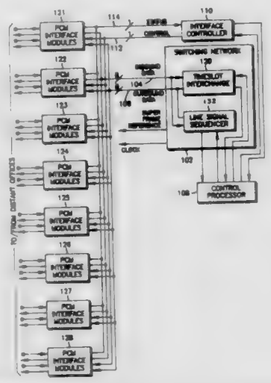
test data means (**14**) for providing a sequence of binary words as test data signals,
reset means (**34**) for providing a binary reset signal,
selection means (**18**) responsive to a selection signal and coupled to said address means (**24**), said reset means (**34**), and said test data means (**14**) for selectively providing as an output said address signals, said test data signals, or said reset signal, to said first path,
signal receiving means (**28**) coupled to said second path (**42**) for receiving looped back signals,
first digital comparison means (**23**) responsive to said receiving means (**28**) and said looped back signals and said 11-bit code for detecting a received selected 11-bit address code and responsively providing a selection signal coupled to said selection means (**18**) for providing as an output to said first path (**40**) said test data signals,
second digital comparison means (**20**) responsive to said receiving means (**28**) and said looped back signals and said test data means for detecting bit errors,
memory means (**32**) responsive to said second digital comparison means and coupled to said test data means and said looped back signals for storing bit error signals,
calculation means (**36**) responsive to said memory means (**32**) for evaluating said bit error signals and providing as an output user data representing said signals, and
display means (**38**) responsive to said calculation means (**36**) for displaying said user data;
at least one remote loopback unit located along said communications link, said unit being coupled to said first and second transmission paths comprising:
first switching means (**60, 64, T1–T6**) interrupting said paths and having a first, second, third, fourth, fifth, and sixth terminals and control means responsive to a first signal state for connecting said first terminal to said third terminal and for connecting said fifth terminal to said sixth terminal and responsive to a second signal state for connecting said first terminal to said second terminal and for connecting said fifth terminal to said fourth terminal,
said first terminal (**T1**) being connected through said first path from said first station, said second and sixth terminals being connected through said second path to said first station,
said third and fourth terminals being connected through said first path to said second station, and
said fifth terminal being connected through said second path to said second station;
storage means (**52**) for storing a six bit address uniquely associated with said remote loopback unit;
second switching means (**58**) coupled to said first station through said first transmission path and to said second station through said second transmission path for repeatedly switching, or polling, between said first transmission path from said first station and said second transmission path from said second station;
first detection means (**46**) responsive to said second switching means and an occurrence of an 11-bit word on either of said first or second transmission paths for providing said last named 11-bit word as an output;
second detection means (**50**) responsive to said first detection means and a selectively timed repetition of any binary word of 11 bits in length for providing as an output six selected bits of said binary word;
first digital comparison means (**56**) responsive to said storage means (**52**) and said second detection means (**50**) for providing a discrete output upon the detection of a matching six bit address code;
timing means (**54**) responsive to said discrete output of said first digital comparison means for timing the duration of said discrete output and providing a time out signal upon said duration persisting for a selected interval of time, said time out signal representing said second signal state and being coupled to said first switching means (**60**); and
second digital comparison means (**48**) responsive to said second switching means (**58**) for detecting said reset signal and responsively providing said first signal state to said first switching means (**60**).

5,060,227

DIGITAL TELEPHONE SWITCH WITH SIMULTANEOUS DUAL PCM FORMAT COMPATIBILITY

Roger W. Finley, Barrington; Barry D. Lubin, Schaumburg, and Bruce A. Bergendahl, Lake Zurich, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 161,883, Feb. 29, 1988, abandoned.
This application Jul. 26, 1989, Ser. No. 385,842
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—79 **8 Claims**



1. A digital telephone switch which has simultaneous dual pulse code modulated (PCM) format capability, comprising:
first means, coupled to a first trunk of a plurality of communication subchannels in a first serial data bit stream of a PCM format having A DS-1 frame structure and data rate, for converting one of said plurality of communication subchannels in said first serial data bit stream to a parallel data byte;
second means, coupled to a second trunk of a plurality of communication subchannels in a second serial data bit stream of a PCM format having a CEPT-30 frame structure and data rate, for converting said parallel data byte to one of said plurality of communication subchannels in said second serial data bit stream; and
means for switchably coupling said parallel data byte from said first means for converting to said second means for converting.

5,060,228

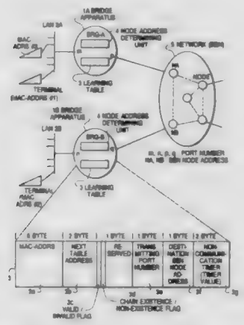
BRIDGE COMMUNICATION SYSTEM

Eiichi Tsutsui, and Wataru Nakashima, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 20, 1989, Ser. No. 438,081
Claims priority, application Japan, Nov. 19, 1988, 63-293193; May 30, 1989, 01-136695; Jul. 10, 1989, 01-177802
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.13 **13 Claims**

1. A bridge communication system for connecting a plurality of bridge apparatuses, each connected to a local area network, through a backbone network and for performing communication, between terminals connected to the local area network connected to each bridge apparatus, through said backbone network, each bridge apparatus comprising:
a backbone-network node address setting means for previously setting an address of a local node of said backbone network connected to said bridge apparatus;

a learning table for storing at least a port number of said bridge apparatus and an address of a corresponding node of said backbone network, corresponding to respective terminals;
means for sequentially registering in said learning table a source address designating a source terminal of a data frame received by said bridge apparatus via a port from one of said local area net work and said backbone network, a port number of the port receiving the data frame for said bridge apparatus, and a source backbone-network



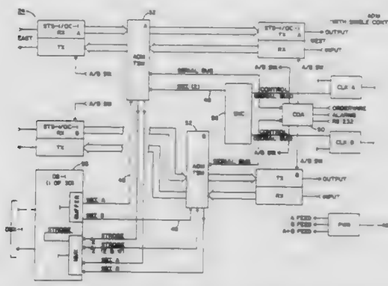
node address when the data frame is transmitted from said backbone network, said source address, said port number and said source backbone-network node address representing, respectively, an address of a terminal, a port number and an address of a node; and
means for adding at least the address of the local node stored by said backbone node address setting means and the address of any node, obtained by searching said learning table, to said data frame to be transmitted to said backbone network as the source node address and the destination node address, respectively.

5,060,229

SERIAL TRANSPORT FRAME FORMAT METHOD

Raymond E. Tyrrell, Raleigh; Stephen C. Dunning, Cary; Richard J. Sanders, Jr., Raleigh; Claude M. Hurlocker, Raleigh; Michael J. Gingell, Raleigh, and Jeffrey P. Jones, Raleigh, all of N.C., assignors to Alcatel NA Network Systems Corp., Raleigh, N.C.

Filed May 12, 1989, Ser. No. 351,458
Int. Cl.[5] H04J *3/12, 3/16*
U.S. Cl. 370—110.1 **30 Claims**



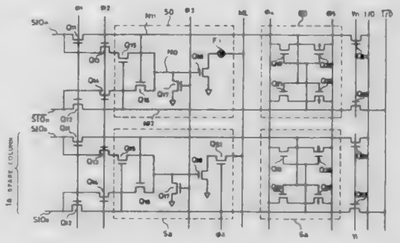
1. A serial transport frame format method for positioning information to be transferred in a serial bit stream, comprising the steps of:
1) arranging the data to be transferred in frames, where each frame comprises N channels, each channel having a fixed length of bits, where N is an integer greater than one;
2) for each of m of said N channels, where M is an integer less than N, placing data, representing information to be conveyed, in a first portion of the channel;
3) for each of M channels, placing control information related to the data in that channel in a second portion of the channel; and
4) placing synchronization data in at least one channel of each frame.

5,060,230

ON CHIP SEMICONDUCTOR MEMORY ARBITRARY PATTERN, PARALLEL TEST APPARATUS AND METHOD

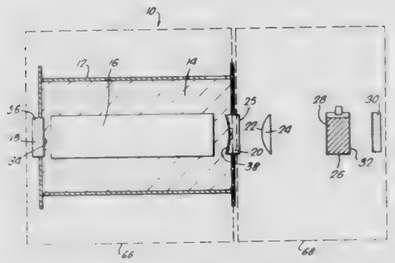
Kazutami Arimoto; Kazuyasu Fujishima; Yoshio Matsuda; Tsukasa Ooishi, and Masaki Tsukude, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,899
Claims priority, application Japan, Aug. 30, 1988, 63-217109; May 31, 1989, 1-137972
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—21.2 **18 Claims**



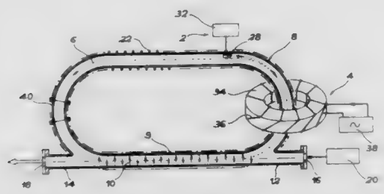
2. A semiconductor memory device comprising:
a plurality of groups of bit lines (**BL1, BL3/ ~BL3, BL3; BL4, BL4/ ~BL6, BL6/**) each comprising a plurality of bit lines,
a plurality of word lines (WL) arranged intersecting with said plurality of bit lines (**BL1, BL1/ ~BL6, BL6/**),
a plurality of memory cells (**MC1, MC2**), respectively provided at intersections of said plurality of bit lines (**BL1, BL1/ ~BL6, BL6/**) and said plurality of word lines (WL), for storing information,
a plurality of sub-input/output lines (**SIO1, SIO1/ ; SIO2, SIO2/**) each provided corresponding to each of said plurality of groups of bit lines,
an input/output line (**I/O, I/O/**) common to said plurality of sub-input/output lines (**SIO1, SIO1/ ; SIO2, SIO2/**),
a plurality of first switching means (**S1 ~ S6**) each connected between each of said plurality of bit lines (**BL1, BL1/ ~BL6, BL6/**) and the corresponding sub-input/output line (**SIO1, SIO1/ ; SIO2, SIO2/**),
a plurality of second switching means (**Q51, Q52**) each connected between each of said plurality of sub-input/output lines (**SIO1, SIO1/ ; SIO2, SIO2/**) and said input/output line (**I/O, I/O/**),
a plurality of holding means (**60**) each provided corresponding to each of said plurality of sub-input/output lines (**SIO1, SIO1/ ; SIO2, SIO2/**) for holding information corresponding to said sub-input/output line, and
a plurality of comparing means (**50**) each provided corresponding to each of said plurality of sub-input/output lines (**SIO1, SIO1/ ; SIO2, SIO2/**) for determining whether or not the information held in the corresponding holding means (**60**) matches the information on the corresponding sub-input/output line.

5,060,231
LASER SYSTEM
Richard C. Hollins, and David L. Jordan, both of Worcester, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed May 31, 1989, Ser. No. 359,649
Claims priority, application United Kingdom, Dec. 22, 1986, 8630603
Int. Cl.[5] H01S *3/091, 3/092*
U.S. Cl. 372—71 **21 Claims**



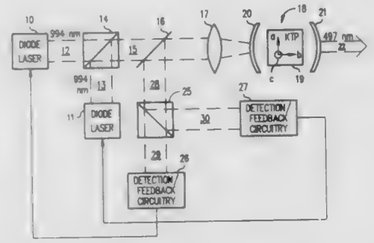
1. A laser system including a first laser and a second laser optically coupled to the first laser, said system comprising:
(a) said first laser comprising means, including a lasing medium responsive to pumping, for producing a first laser output at a first wavelength and for retaining, for a time period, a net gain for radiation at a second wavelength, said second wavelength longer than said first wavelength; and
(b) said second laser including a lasing medium responsive to pumping at said first wavelength by generating a second laser output at said second wavelength, said second laser further including means for returning said second laser output to said first laser and thereby effecting injection control of said first laser.

5,060,232
FREE ELECTRON LASER
Claude Etievant, Versailles, France, assignor to Commissariat A L'energie Atomique, Paris, France
Filed Aug. 21, 1990, Ser. No. 570,325
Claims priority, application France, Aug. 24, 1989, 89 11214
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—2 **10 Claims**



1. A free electron laser comprising:
a source of electrons,
acceleration means for accelerating the electrons issuing from the source and for supplying a beam of said electrons to a storage ring for storing said beam of electrons, said storage ring comprising at least one rectilinear section,
magnetic means for generating a closed magnetic configuration having a magnetic axis, said configuration having a first magnetic field component which is mainly directed parallel to the circulating beam of electrons and which enables said beam to circulate within said storage ring, and a second magnetic field component which compensates for a drift of the electrons transversely to the axis of the beam of the electrons, and
at least one magnetic wiggler which is provided for the storage ring and which is placed on said at least one rectilinear section and which is traversed by the beam of electrons circulating in the ring,
wherein said electron beam is accelerated and confined within said storage ring.

5,060,233
MINIATURE BLUE-GREEN LASER SOURCE USING SECOND-HARMONIC GENERATION
Christoph S. Harder, Zurich, Switzerland; Wilfried Lenth, Capitola, Calif.; Heinz P. Meier, Thalwil, Switzerland, and William P. Risk, Mountain View, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 297,461, Jan. 13, 1989, abandoned. This application Aug. 17, 1990, Ser. No. 570,251
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 **32 Claims**

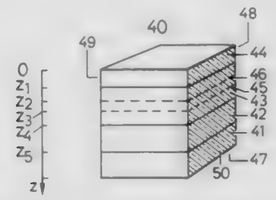


1. A laser system comprising:
a light generation means for producing an essentially 980–1,000 nm wavelength fundamental radiation having a first and second orthogonal polarization component;
a non-linear crystal of essentially **KTP** receiving said fundamental radiation and for producing second harmonic radiation, the crystal is oriented with its b-axis approximately parallel to the direction of propagation of said fundamental radiation and with its a- and c-axis approximately parallel to said first and second polarization components, respectively, the system being tolerant of variations in fundamental radiation wavelength, crystal orientation and operating temperature.

5,060,234
INJECTION LASER WITH AT LEAST ONE PAIR OF MONOATOMIC LAYERS OF DOPING ATOMS
Erdmann Schubert; Klaus Ploog, both of Stuttgart, and Albrecht Fischer, Löchgau, all of Fed. Rep. of Germany, assignors to Max-Planck Gesellschaft zur Förderung der Wissenschaften, Göttingen, Fed. Rep. of Germany
Division of Ser. No. 413,911, Sep. 28, 1989, abandoned, which is a division of Ser. No. 798,053, Nov. 14, 1985, Pat. No. 4,882,609. This application Jan. 4, 1991, Ser. No. 636,017
Int. Cl.[5] H01S *3/19*; H01L *29/205, 33/00, 45/00*
U.S. Cl. 372—45 **3 Claims**

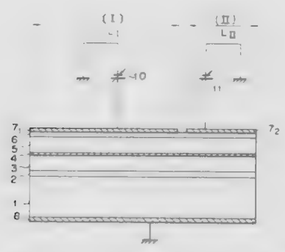
1. An epitaxial, semiconductor device in the form of an injection diode (**40**) comprising in sequence a first layer (**41**) of a highly doped n-type semiconducting substrate, a second layer of a highly doped n-type semiconducting substrate, a (**42**), a third layer of a distinct intrinsic semiconducting material (**43**) and a fourth layer (**44**) of a highly doped p-typed version of the material of said second layer (**42**), with first and second electrical connections (**47, 48**) being provided to said fourth layer (**44**) and to at least one of said first and second layers (**41, 42**); wherein one or more pairs of Dirac-delta doped monoatomic layers (**45, 46**) are provided in said third intrinsic layer (**43**), with the first Dirac-delta doped monoatomic layer

(**45**) of each pair comprising a monoatomic layer of donors and with the second Dirac-delta doped monoatomic layer (**46**) of each pair comprising a monoatomic layer of acceptors posi-



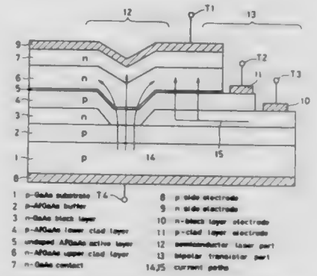
tioned parallel to and spaced apart from the associated first Dirac-delta doped layer (**45**) on the side thereof facing said fourth layer (**44**).

5,060,235
SEMICONDUCTOR LASER ELEMENT SELECTIVELY EMITTING LIGHTS OF DIFFERENT WAVELENGTHS
Sotomitsu Ikeda, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1990, Ser. No. 501,487
Claims priority, application Japan, Mar. 31, 1989, 1-083206; Jun. 14, 1989, 1-152592
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **40 Claims**



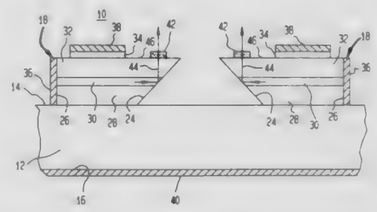
1. A semiconductor laser element selectively emitting lights differing in corresponding quantized energy from each other, comprising:
a substrate;
a laser resonator provided on said substrate and having end surfaces opposed to each other, said resonator comprising semiconductor layers including an active layer of quantum well structure and laminated on said substrate; and
a plurality of electrodes juxtaposed in the direction of resonance of said resonator, said electrodes independently applying an electric current to said active layer,
wherein a bias voltage is applied in the direction of resonance to each of said plurality of electrodes,
wherein the end surface loss of said resonator is set so that a light corresponding to greater quantized energy may be oscillated when electric currents are applied at equal densities from said plurality of electrodes to said active layer, and
wherein a light corresponding to small requantized energy is oscillated when electric currents are applied at different densities from said plurality of electrodes to said active layer.

5,060,236
SEMICONDUCTOR LIGHT EMISSION SYSTEM
Tetsuya Yagi, and Misao Kironaka, both c/o Mitsubishi Denki Kabushiki Kaisha Kita-Itami Seisakusho 1, Mizuhara 4-chome, Itami-shi, Hyogo-ken, Japan
Filed Sep. 16, 1987, Ser. No. 97,457
Claims priority, application Japan, Sep. 17, 1986, 61-220244
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **23 Claims**



1. A semiconductor light emission system having
a) a semiconductor laser part including:
(i) a p-side electrode,
(ii) a substrate,
(iii) a buffer layer,
(iv) a current block layer,
(v) a lower clad layer,
(vi) an active layer,
(vii) an upper clad layer,
(viii) a contact layer, and
(ix) an n-side electrode, and
b) a bipolar npn transistor part constituted in a position other than said semi-conductor laser part and including:
(i) an emitter formed from said contact layer,
(ii) a base formed from said lower clad layer, and
(iii) a collector formed from said current block layer.

5,060,237
MULTI-BEAM LASER DIODE ARRAY
David L. Peterson, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 24, 1990, Ser. No. 632,826
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **20 Claims**



1. A laser diode array comprising:
a substrate of a semiconductor material having a surface; and
a plurality of bodies of a semiconductor material on said substrate surface, each of said bodies having a semiconductor junction therein for generating light when a suitable voltage is placed thereacross and a reflecting end surface at an end of the junction which is angled to reflect light generated in the body out of the body substantially perpendicular to and away from the substrate, said angled

end surfaces of said bodies being close to and facing each other.

5,060,238

LASER OSCILLATOR DEVICE

Norio Karube, Machida, and Tsutomu Funakubo, Fujiyoshida, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

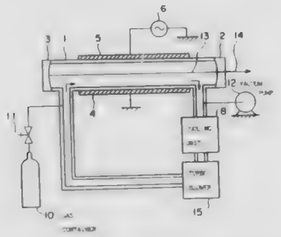
PCT No. PCT/JP89/00527, § 371 Date Jan. 16, 1990, § 102(e) Date Jan. 16, 1990, PCT Pub. No. WO89/12921, PCT Pub. Date Dec. 28, 1989

PCT Filed May 25, 1989, Ser. No. 455,328

Claims priority, application Japan, Jun. 24, 1988, 63-156157

Int. Cl.[5] H01S *3/22*

U.S. Cl. 372—58 **2 Claims**



1. A laser oscillator device comprising an electric-discharge tube for producing an electric discharge in a laser gas contained in the electric-discharge tube for laser excitation, an optical resonator for effecting laser oscillation, and a gas circulating device having a gas blower and a cooling unit for forcibly cooling the laser gas,

said gas blower comprising a turbo impeller that is rotatable in the laser gas and an electric motor for driving the turbo impeller, the electric motor having a stator that is cooled by thermal contact with a water- or air-cooled medium and a rotor that is cooled by contact with cooling gas flowing between the rotor and said stator, said gas circulating device including conduit means for directing the flow of said cooling gas between the rotor and the stator.

5,060,239

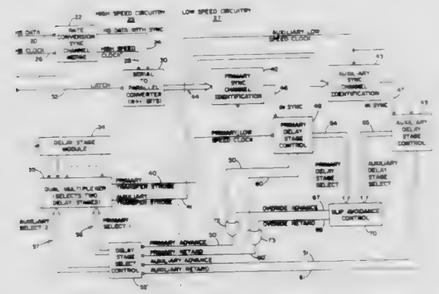
TRANSFER STROBE TIME DELAY SELECTOR AND METHOD FOR PERFORMING SAME

Milton R. Briscoe, Raleigh, and Raymond E. Tyrrell, Wake Forest, both of N.C., assignors to Alcatel NA Network Systems Corp., Raleigh, N.C.

Filed May 12, 1989, Ser. No. 351,016

Int. Cl.[5] H04L *27/28*

U.S. Cl. 375—38 **30 Claims**



1. A transfer strobe delay stage selector for insuring the accurate transfer of data between a high speed data stream associated with high speed circuitry and a low speed parallel data stream associated with low speed circuitry comprising:

(A) means for periodically inserting a synchronization channel comprising N + 1 bits of data of a predetermined bit pattern into the high speed steam of data, where N is a positive integer;

(B) means for converting the high speed stream of data and periodic synchronization channel into words of parallel data, each word of parallel data containing N + 1 bits;

(C) means for generating a periodic latch signal having a repetition rate equal to the high speed bit transfer rate divided by N + 1;

(D) a delay stage module for receipt of the latch signal, the delay stage module comprising a plurality of delay stages, each stage having a time delay between its input and its output, each stage having a selectable output, and each stage, except the last stage, connected as an input to the next stage;

(E) means for selecting any one of the delay stage outputs of the delay stage module so as to generate a transfer strobe signal having a repetition rate the same as the latch signal, but time delayed equal to the sum of the time delays of the selected delay stage plus all the preceding delay stages;

(F) a synchronization channel identification module for receipt of the parallel data generated by the means for converting the high-speed stream of data and operable so as to perform an identification process upon receipt of the transfer strobe signal, the synchronization identification module having means for generating an "in sync" signal on an output when a word of parallel data periodically matches a predetermined parallel data bit pattern; wherein the periodic matching occurs at the same rate as the periodicity of the synchronization channel, thereby effectively determining the proper detection of the periodic synchronization channel; and

(G) a delay stage control module connected to said output of the synchronization channel identification module for causing the delay stage selecting means to change the delay stage selected when an "in-sync" signal is not received by the delay stage control module, and wherein modification of the selected delay stage is halted when an "in-sync" signal is received;

whereby the transfer strobe signal is adjusted with respect to its time delay as compared to the latch signal until the synchronization channel identification module accurately detects the synchronization channel contained within the high-speed data stream, thereby insuring the accurate transferral of data between the high speed circuitry and the low speed circuitry.

5,060,240

SIMULCAST SYSTEM AND CHANNEL UNIT

Paul M. Erickson; John E. Matz, both of Hanover Park; Tim J. Groch, Streamwood; Robert B. Stedman, Hoffman Estates; Mark L. Shaughnessy, Glendale Heights, and Taisir Y. Kandah, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

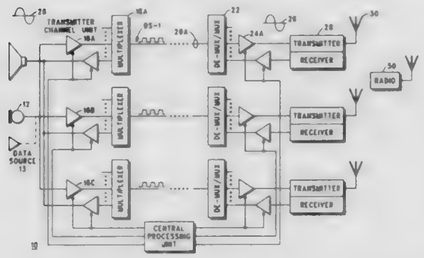
Filed Feb. 14, 1989, Ser. No. 310,797

Int. Cl.[5] H04B *7/00*

U.S. Cl. 375—38 **27 Claims**

1. In a simulcast transmission system having a central station, a plurality of remote transmit stations for substantially simultaneously transmitting a radio frequency signal modulated by a signal for broadcast, said simulcast transmission system having a plurality of transmission paths between said central station and said remote transmit stations, each transmission path having a first end at said central station and a second end at one of said remote transmit stations, each transmission path capable of having varying amplitude and time delay characteristics and carrying said signal for broadcast to said remote transmit stations, an improvement comprising:

first means for digitally processing said signal for broadcast at said first ends of said transmission paths into digital signal values, said first means for digitally processing said signal for broadcast, digitally compensating said signal for broadcast to compensate said signal for variations in at least amplitude and time delay characteristics in said transmission paths and for transmitting processed signal values over said transmission paths;



second means for digitally processing the transmitted processed signals at the second ends of said transmission paths, to provide a recovered signal for broadcast to transmitters at said remote transmit stations such that said transmitters are each provided with substantially identical modulating signals digitally compensated for variations in amplitude and time delay in said transmission paths.

5,060,241

SYNCHRONIZING SYSTEM FOR A PRIVATE DIGITAL EXCHANGE CONNECTED TO AN ISDN

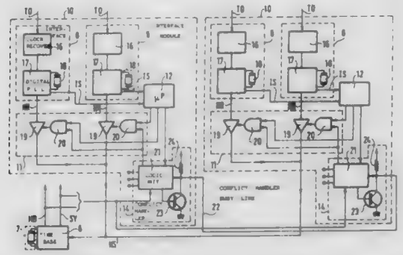
Jacques Allouis, Ostwald; Patrick Hauptmann, Strasbourg; Xavier Penet, Illkirch Graffenstaden, and Pierre Saint-Ellier, Strasbourg, all of France, assignors to Telic Alcatel, Paris, France

Filed Nov. 3, 1989, Ser. No. 431,061

Claims priority, application France, Nov. 3, 1988, 88 14329

Int. Cl.[5] H04L *7/033*

U.S. Cl. 375—108 **8 Claims**



1. A synchronizing system for a private digital exchange (1), the exchange comprising: a controlling logic unit (4) and specialized interfaces (9, 8) via which the exchange is connected firstly to a plurality of subscriber terminals (2), and secondly to a telecommunications network (3) of the integrated services digital type, wherein said specialized interfaces comprise first specialized interfaces connected to the network via base accesses through which digital information and/or signalling signals transit in both directions between the exchange (1) and the telecommunications network (3), together with clock signals transmitted from the network to the exchange and the terminals, and second specialized interfaces connected to the terminals by terminal access via which digital information and/or signalling signals are transmitted in both directions between the exchange and the terminals together with clock signals which are transmitted to the terminals, said exchange also including a local fixed frequency oscillator (7), a phase locked loop (32) and a time base (6) associating said fixed-frequency oscillator (7) with said phase locked loop (32) and a time base (6) associating said fixed-frequency oscillator (7) with said phase locked loop (32) for providing the clock signals required for the exchange (1) and for the terminals connected thereto, the system being characterized in that it further comprises: clock switching means coupled to receive first clock signals from said specialized interfaces, which first clock signals are obtained from the network (3) via an active one of said base accesses and the associated interface (8), for comparing the phase of said first clock signals to the phase of clock signals provided by the time base (6) when the first clock signals are absent, and for imposing said first clock signals on the phase locked loop (32) of the exchange's time base (6) as soon as said first clock signals become close in phase to the corresponding clock signals provided by the time base (6) when said first clock signals are absent, and for continuing to impose said first clock signals on said phase locked loop for as long as said first clock signals continue to be provided by said active base access and the interface (8) which transmits them.

5,060,242

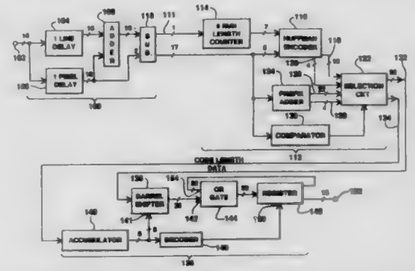
NON-DESTRUCTIVE LOSSLESS IMAGE CODER

James H. Arbeiter, Hopewell, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 24, 1989, Ser. No. 314,749

Int. Cl.[5] H03M *7/40, 7/48*

U.S. Cl. 375—122 **19 Claims**



6. Apparatus for processing a digital signal having successive samples to provide a tightly packed uncoded and decorrelated signal having code words of uniform length formed from code words of varying length, said apparatus comprising:

means for decorrelating adjacent samples of the digital signal;

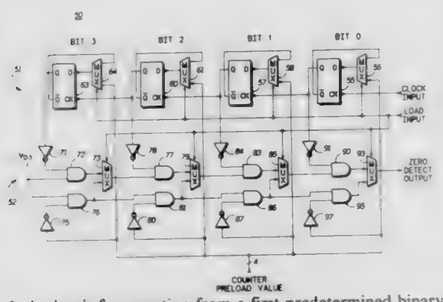
means for encoding the decorrelated samples into variable length code words; and

means for tightly packing the variable length code words without any gaps therebetween including selectable modulo logic means for receiving the variable length code words and having a control input adaptable to receive control signals for selecting the modulus of the logic means and providing output signals corresponding to tightly packed code words and means for determining the modulus of said logic means having an input connected to receiving information corresponding to the length of the code words and an output coupled to said control input for delivering to said control input said control signals to thereby shift and tightly pack the variable length code words.

5,060,243
RIPPLE COUNTER WITH REVERSE-PROPAGATED ZERO DETECTION

Kim H. Eckert, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 29, 1990, Ser. No. 530,703
Int. Cl.[5] H03K *21/40, 21/10*
U.S. Cl. 377—28 8 Claims

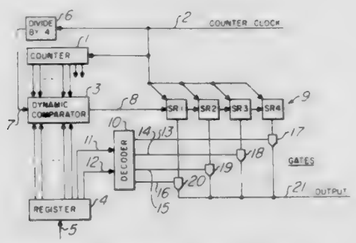


1. A circuit for counting from a first predetermined binary number to a second predetermined binary number, comprising:
counter means of predetermined bit length for receiving the first predetermined binary number, storing the first binary number and serially counting to the second binary number by transitioning between a plurality of intermediate count numbers, the counting being implemented by sequentially toggling bit values from a least significant bit position to a most significant bit position of the counter means; and
detection means coupled to the counter means for providing an output indicating when the counter means has counted to the second binary number, said detection means also receiving the first predetermined binary number while the counter means is directly receiving the first predetermined binary number and monitoring the serial predetermined binary number and monitoring the serial counting of the counter means by detecting from a most significant bit position to a least significant bit position when bits of the intermediate count numbers assume a predetermined logic value, said detection means not allowing the output to be falsely provided as the result of transitional bit changes in the counter means.

5,060,244
METHOD AND APPARATUS FOR INDICATING WHEN THE TOTAL IN A COUNTER REACHES A GIVEN NUMBER

Iain C. Robertson, Bedford, United Kingdom, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 28, 1989, Ser. No. 387,266
Int. Cl.[5] H03K *21/10*
U.S. Cl. 377—39 29 Claims

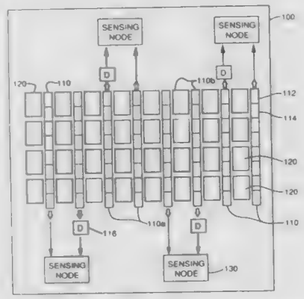


1. Apparatus for indicating when the total in a counter counting pulses from a source reaches a given number, the total and the number each including a more significant group of digits and a less significant group of digits, the apparatus including a comparator for comparing the more significant group of digits of the total recorded in the counter with the more significant group of digits of the given number and producing an output signal when the groups of digits are equal to each other, a time delaying means connected to receive the output signal from the comparator and using as timing pulses the pulses from the source, decoding means responsive to the less significant digits of the given number to produce a gating signal on a corresponding one of a plurality of output conductors, the time delaying means being connected to the plurality of output conductors and being arranged to impose a time delay on the transmission of the output signal from the comparator to an output terminal depending on which of the output conductors carries the gating signal.

5,060,245
INTERLINE TRANSFER CCD IMAGE SENSING APPARATUS

Edward T. Nelson, Pittsford, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 29, 1990, Ser. No. 546,472
Int. Cl.[5] G11C *19/28;* H01L *29/78, 27/14;* H04N *3/14*
U.S. Cl. 377—60 3 Claims

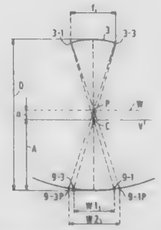


1. An interline transfer CCD image sensing apparatus comprising in combination:
a plurality of photodiode arranged in a predetermined number of columns each containing a predetermined number of photodiodes,
a plurality of CCD registers arranged in a predetermined number of columns which are parallel to and interweaved with said columns of photodiodes, said columns of photodiodes respectively cooperating with a CCD register of said plurality of CCD registers, said plurality of CCD registers arranged such that two adjacent CCD register columns form a register pair which transfers charges in a predetermined direction, adjacent register pairs transfer charges in opposite directions and one register of each register pair includes a clock gate at the output of said register, said clock gate provides an extra one-half clock cycle to the transfer charge, said register pairs providing a first and second charge signal, and
a plurality of sensing nodes, each sensing node of said plurality of sensing nodes respectively receiving said first and second charge signal from a register pair.

5,060,246
COMPUTER TOMOGRAPHY SYSTEM WITH A SCANOGRAM

Willem P. Van Der Brug; Jan Timmer, and Petrus N. J. Vis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1989, Ser. No. 354,005
Claims priority, application Netherlands, Oct. 18, 1988, 8802556
Int. Cl.[5] G21K *5/02, 5/10*
U.S. Cl. 378—20 6 Claims

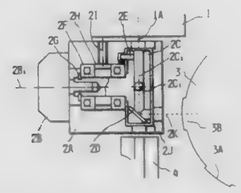


1. A computer tomography system comprising:
first means for producing a radiation attenuation distribution image in a transverse slice of an object, said means comprising an X-ray source for irradiating an object in a plurality of directions in a plane about an axis and detector means for detecting the radiation passed through the object and for producing signals representing said detected radiation in said plurality of directions;
an object carrier between said source and detector;
displacement means for displacing the object carrier in a direction transverse said plane; and
second means responsive to said source and detector means for creating in response to said detector signals a second image of said object extending substantially normal to said plane, said second means including means for emphasizing a given object layer by causing overlying adjacent layers of said second image to be blurred and arithmetic means for combining in superposition the detector signals generated in said plurality of directions to form said second image as a composite semi-scanogram image of said object.

5,060,247
FLUORESCENT X-RAY FILM THICKNESS GAUGE

Toshio Watanabe, Tokyo, Japan, assignor to Seiko Instruments, Inc., Tokyo, Japan

Filed Nov. 15, 1989, Ser. No. 436,874
Claims priority, application Japan, Nov. 17, 1988, 63-150103[U]
Int. Cl.[5] G01N *23/223*
U.S. Cl. 378—50 5 Claims

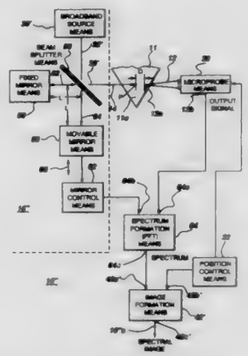


1. In a fluorescent X-ray film thickness gauge having an X-ray source for generating an X-ray beam, a shutter device providing a selectively blockable path for the X-ray beam, a collimator for collimating the X-ray beam, a sample stage for mounting a sample for irradiation by the collimated X-ray beam, and a detector for detecting fluorescent X-rays generated from the sample upon irradiation by the collimated X-ray beam, the improvement wherein said shutter device comprises:
a shutter member formed to provide a measurement passage as a through hole, a calibration passage as a blind hole and a fluorescent X-ray passage opening to said calibration passage as a blind hole directed at an angle with respect to said measurement passage and said calibration passage, said shutter member having a calibration plate disposed in said calibration passage and extending across the entirety of said calibration passage and said shutter member being rotatable about an axis positioned at substantially a right angle with respect to the direction of said X-ray beam between a measurement position and a calibration position, said measurement position being such that the X-ray beam generated by said source travels through said measurement passage to said sample stage and said calibration position being such that the X-ray beam generated by said source travels through said calibration passage to impinge on said calibration plate in order to cause fluorescent X-rays emitted by said calibration plate to be directed to said detector through said fluorescent X-ray passage; and
switching means connected to said shutter member for selectively moving said shutter member between said measurement position and said calibration position.

5,060,248
SCANNING ANALYSIS AND IMAGING SYSTEM WITH MODULATED ELECTRO-MAGNETIC ENERGY SOURCE

Charles L. Dumoulin, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1990, Ser. No. 546,281
Int. Cl.[5] G01N *23/06*
U.S. Cl. 378—53 27 Claims



1. A scanning micro-probe subsystem, for use in a system for imaging a surface of a sample, comprising:
a micro-probe having a tip;
means for positioning the micro-probe tip in direct contact with at least one selected point P upon said sample surface;
means for illuminating said surface with abeam of radiation having at least one wavelength to cause a modulation of said surface toward the tip, so as to cause a strain force to be exerted between the tip and said point P when the beam is absorbed; and
when the beam is absorbed; and
means for measuring the strain force between said tip and said point P, responsive to the modulation of said surface, in at least the vicinity of point P, the measuring means including:
a) means for varying the at least one wavelength of the

illuminating beam of radiation including interferometer means for modulating the beam of radiation at a frequency inversely proportional to the incident radiation, and

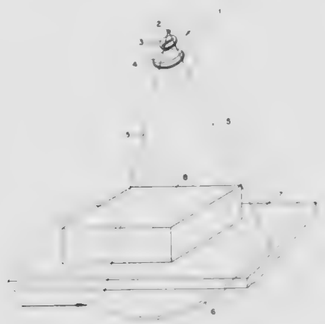
b) means for providing displayable spectral information from each point analyzed allowing spectroscopic analysis of one or more atoms at point P.

5,060,249

METHOD AND APPARATUS FOR THE DETECTION AND IMAGING OF HEAVY METALS

Yosef Eisen, Rishon Lezion; Drora Kedem, Emanuel Yellin, both of Rehovot, all of Israel, assignors to the State of Israel, Atomic Energy Commission, Soreq Nuclear Research Center, Israel

Filed Aug. 15, 1989, Ser. No. 394,016
Claims priority, application Israel, Aug. 26, 1988, 87570
Int. Cl.[5] G01N *23/04*
U.S. Cl. 378—57 **16 Claims**



1. An automatic method of detaching in sequentially inspected objects a target article made of or containing an elemental or compounded target metal of the kind capable of producing with impinging X-ray radiation within the range of 60–160 KeV a detachable photoelectric interaction, said method comprising the steps of

providing a radiation generating assembly comprising a 110–160 KeV X-ray source in association with collimating and filtering means, which filtering means are designed to successively generate several energy bins during each one of repeating cycles;

generating with such assembly a collimated X-ray beam consisting of repeating cycles each comprising several energy bins centered around the K-energy of said target metal;

placing at a distance from said radiation generating assembly and in the region flushed by said collimated X-ray beam a linear array of solid state, spectroscopy grade detectors in association with signal counting, processing and imaging means;

providing object carrier means intermediary between said radiation generating assembly and linear array of solid state, spectroscopy grade detectors;

placing objects on said object carrier means;

arranging for said energy generating assembly on the one hand and said object carrier means on the other hand to be displaced relative to each other at a relative velocity so adjusted that during each one of predetermined pixels commensurate with the expected smallest size of said target article the full energy range of one of said repeating cycles impinges a full cross-section of an inspected object without any mutual dislocation of said radiation generating assembly and linear array of solid state detectors; whereby successive electrical signals are produced in said linear array of spectroscopy grade detectors;

using said electrical signals for recording for each pixel the intensity of transmitted radiation of selected energy bands;

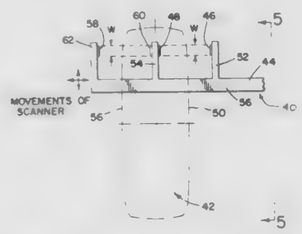
determining for each pixel the ratios between the transmitted radiation in said selected energy bands; and processing the resulting data to produce an image of any detected target article.

5,060,250

METHOD AND SYSTEM FOR DETECTING DEFECTS IN TIRE SIDEWALLS

Henry T. Kwee, and Alexandra Valsamidis, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 6, 1990, Ser. No. 488,828
Int. Cl.[5] G01B *15/06;* **G01N** *23/02*
U.S. Cl. 378—61 **15 Claims**



1. An apparatus for detecting missing or overlapping cords within an elastomer of the sidewalls of a tire, the apparatus comprising:

(a) a radiation source or sources for providing a collimated beam of radiation through each tire sidewall, such radiation being less attenuated or reflected by the elastomer of said sidewalls than by the cords;

(b) a sensor or sensors aligned in combination with said radiation source or sources, said sensor or sensors detecting said collimated radiation and, generating an electrical signal in response to said radiation;

(c) a positioning arm, said radiation source or sources and said sensor or sensors being attached to said positioning arm;

(d) means for moving and holding at ire in said apparatus while allowing it to be rotated in association with a positioning means for causing said positioning arm to interpose a tire sidewall between each radiation source and sensor

(e) a means for causing said radiation source or sources and sensor to scan along a section of tire sidewall at a predetermined speed;

(f) means responsive to said electrical signal generated by said sensor or sensors for a providing timing signal when said sensor bears a predetermined relationship to each scanned cord in the tire sidewall; and

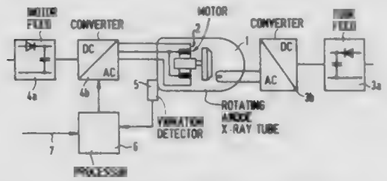
(g) means responsive to said timing signal associated with said sensor or sensors during a predetermined scan for measuring the time each scanned cord is between a radiation source and a sensor.

5,060,251

X-RAY DIAGNOSTICS GENERATOR HAVING A ROTATING ANODE X-RAY TUBE

Horst Aichinger, Fuerth, and Albert Moosmann, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 7, 1990, Ser. No. 578,663
Claims priority, application European Pat. Off., Oct. 4, 1989, 89118401
Int. Cl.[5] H05G *1/66*
U.S. Cl. 378—93 **1 Claim**



1. An x-ray generator for diagnostics comprising:

an x-ray tube having an anode seated in a motor bearing and means for rotating said anode;

control means connected to said means for rotating for setting the rotational speed of said anode, said motor bearing being subjected to mechanical resonances causing vibrations at particular rotational speeds; and

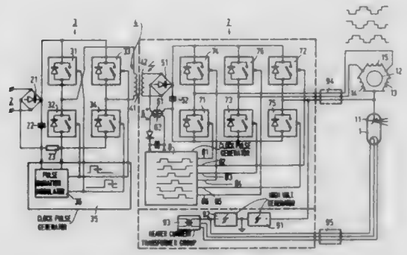
means in mechanical contact with said x-ray tube for detecting vibrations and for supplying a signal to said control means for altering the rotational speed of said anode upon the occurrence of a mechanical resonance for substantially eliminating said mechanical resonance and thereby minimizing said vibrations.

5,060,252

GENERATOR FOR OPERATING A ROTATING ANODE X-RAY TUBE

Gerd Vogler, Minden, and Wulf Muller, Norderstedt, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1990, Ser. No. 532,041
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1989, 3918164
Int. Cl.[5] H05G *1/66, 1/10*
U.S. Cl. 318—93 **13 Claims**



1. A power generator for generating a first alternating current voltage applied to an X-ray tube anode and cathode to generate X-rays and a second alternating current voltage applied to a stator to rotate the anode via a rotor connected to the anode, said generator comprising:

an isolation transformer having primary and secondary windings;

means for applying a third alternating current voltage to said primary winding to produce an output voltage at said secondary winding;

rectifier means coupled to said secondary winding for rectifying the output voltage;

inverter means for receiving said rectified output voltage and for generating said second alternating current voltage from said received voltage;

a voltage generator for generating a fourth voltage and for applying said fourth voltage across said anode and cathode to generate said X-rays; and

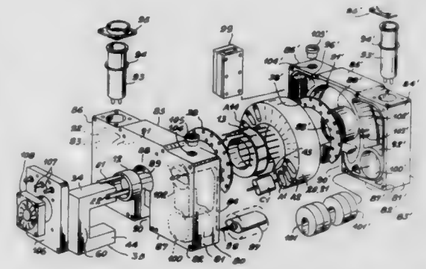
means for applying said fourth voltage to said inverter means and to said stator and for applying said second alternating current voltage to said stator.

5,060,253

HIGH-VOLTAGE BLOCK FOR AN X-RAY TUBE, THE BLOCK INCLUDING A COOLING TANK INTEGRATED WITH ITS SECONDARY CIRCUIT

Hans Jedlitschka, Chatillon-Sous-Bagneux, and Jacques Sireul, Wissous, both of France, assignors to General Electric CGR S.A., Issy les Moulineaux, France

Filed Nov. 23, 1990, Ser. No. 617,100
Claims priority, application France, Nov. 24, 1989, 89 15509
Int. Cl.[5] H05G *1/10*
U.S. Cl. 378—101 **11 Claims**



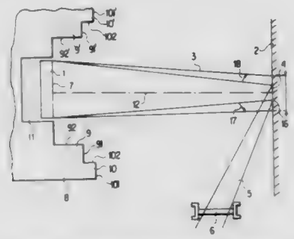
1. A high-voltage power supply for an X-ray tube, said power supply comprising a transformer having at least one primary winding, a plurality of secondary windings having two output terminals each, and a magnetic circuit, said output terminals of each of said secondary windings being connected to a rectifier and voltage-doubler circuit constituted by two diodes and two filter capacitors, said rectifier and voltage-doubler circuits being interconnected so that their output voltages are added, said primary and secondary windings of the transformer being wound as concentric coils, said output terminals of said secondary windings being distributed on each of the sides of said coils, said capacitors being disposed on the outer periphery of the coils, and said diodes being disposed on one of the sides of said coils, wherein said secondary windings of the transformer, said capacitors, and said diodes, are all disposed in an enclosure which is filled with an insulating and cooling medium, said primary winding and said magnetic circuit being disposed outside said enclosure and wherein said enclosure is made of two half-shells which each include cells for housing and holding at least the components connected to a high voltage.

5,060,254

X-RAY TUBE HAVING A VARIABLE FOCUS WHICH IS SELF-ADAPTED TO THE LOAD

Sixte de Fraguier, Grasse; Catherine Thomas, Issy les Moulineaux, and François Caire, Gagny, all of France, assignors to General Electric CGR S.A., Issy les Moulineaux, France

Filed Jun. 30, 1989, Ser. No. 373,885
Claims priority, application France, Jul. 1, 1988, 88 08958
Int. Cl.[5] H01J *35/06*
U.S. Cl. 378—136 **1 Claim**



1. An X-ray tube with self limitation of thermal flux comprising a cathode and an anode inside a vacuum enclosure, said anode being located opposite said cathode, said cathode being placed at the base of a stair-step focusing device which is shaped so as to cause said cathode to emit direct electron beams towards said anode therefor;

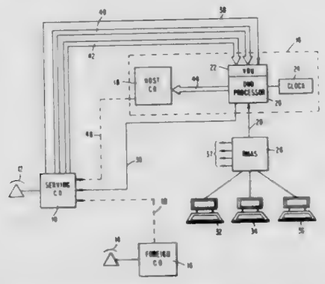
wherein said stair-step focusing device has a double step and has a deep plane common with a portion of said cathode and limited by a cylinder having a width of approximately 4 millimeters, an intermediate plane located at approximately 7 millimeters from said anode and limited by a cylinder of approximately 5 millimeters and, an upper plane located at approximately 6 millimeters form said anode.

5,060,255

TELECOMMUNICATIONS SYSTEM WITH TIMED-DO-NOT-DISTURB

James L. Brown, Ellicott City, Md., assignor to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Apr. 25, 1990, Ser. No. 514,472
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—67 **12 Claims**



1. In a telecommunications system having a plurality of switching means interconnected by trunks, a plurality of subscriber stations arranged in groups with each group being served by one of said switching means, a plurality of subscriber lines connecting each switching means with the group of subscriber stations served thereby, a switching network in each switching means for establishing communication paths between calling subscriber stations and called subscriber stations addressed by the calling stations, at least one of said switching means including means for providing call forwarding services to subscriber stations served thereby, computer means associated with said switching means and adapted to respond to input signals to generate recent change signals to program switch translation variables in said switching means, and terminals connected to said computer means for entering programming orders, the improvement comprising:

adjunct means associated with said computer means and connectable to at least one of said switching means which includes means for providing call forwarding services to subscriber stations served thereby;

a multiline hunt group associated with a do-not-disturb service access number;

said adjunct means including:

voice response means connected to said multiline hunt group; and

processor means responsive to subscriber identification and stored class of service information (a) for recognizing that a do not disturb service is to be provided to a subscriber station connected to one of said switch means including means for providing call forwarding services to subscriber stations served thereby, and (b) for generating a signal for programming said switch means in the circuit to said subscriber station so as to effect the modification necessary to provide the call forwarding and do not disturb service to that subscriber station; and

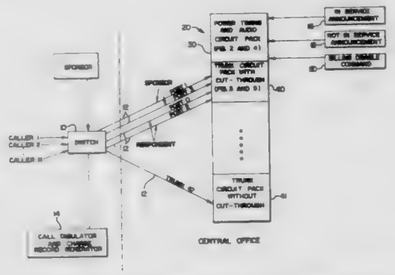
said processor means being connected between said computer means and at least one of said switch means for transmitting to said switch means signals from said computer means.

5,060,256

MASS POLLING SYSTEM WITH CUT-THROUGH

William Borbas, Woodridge, and Robert W. Walker, Glen Ellyn, both of Ill., assignors to Illinois Bell Telephone Company, Chicago, Ill.

Filed Apr. 26, 1990, Ser. No. 514,708
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—92 **8 Claims**



5. A telephone mass polling system for a sponsor to present an issue and a plurality of respondents to respond by dialing a predetermined telephone number comprising:

means for switching telephone calls from respondents to a selected telephone number to at least one trunk;

means for tabulating calls to said selected telephone number;

message means for presenting respondents calling said selected telephone number with recorded message;

a first port for receiving incoming calls from the sponsor of the poll;

a second port for receiving a call from a respondent;

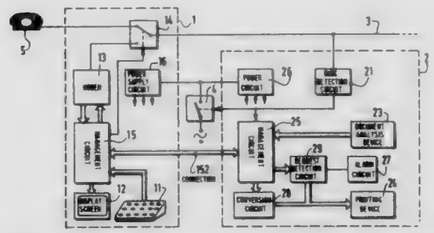
a means for selectively providing a two-way transmission path between the second port and one of the first port and the means for presenting the message means.

5,060,257

VIDEOTEX TERMINAL FOR RECEIVING TELECOPIES

Georges Penalver, Conflans Sainte Honorine, France, assignor to Societe D'Applications Generales D'Electricite et de Mecanique Sagem, Paris, France

Filed Apr. 11, 1990, Ser. No. 507,207
Claims priority, application France, Apr. 13, 1989, 89 04895; Jul. 18, 1989, 89 09613
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **9 Claims**



1. A videotex terminal which can be connected to a telephone network for asking for and receiving pages of characters from a server center also connected to said network, and comprising:

a control keyboard,

a display screen, and

a modem with an input connected to the keyboard, an output connected to said screen and a bidirectional access connectable to a telephone line of said network, said modem being normally provided for transmitting data from said center at a first speed and data towards said center at a second speed, in which terminal are provided:

means connected to the output of said modem, for printing fixed images in response to first graphic data from a source such as a graphic server center or a telecopier connected to said network, and

means for controlling procedures for communicating said first graphic data and videotex characters whereby at least one procedure for communicating comprises protocol phases during which said terminal and said source exchange questions and answers in the form of data transmitted at said first speed via the modem used alternately in one direction and in the other, and transfer phases, during which a flow of first graphic data is transmitted by said modem, at said first speed, from the source to said terminal and data for regulating said flow is transmitted by said modem, at said second speed, from said terminal to said source.

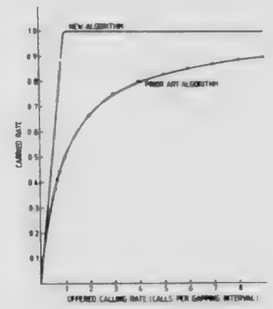
5,060,258

CALL TRAFFIC CONTROL

Peter M. D. Turner, Colchester, England, assignor to British Telecommunications public limited company, Great Britain

PCT No. PCT/GB89/00302, § 371 Date Jul. 10, 1990, § 102(e) Date Jul. 10, 1990, PCT Pub. No. WO89/09525, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 21, 1989, Ser. No. 543,755
Claims priority, application United Kingdom, Mar. 21, 1988, 8806625
Int. Cl.[5] H04M *15/02*
U.S. Cl. 379—134 **12 Claims**

1. A method of controlling call traffic in a communications switching system wherein the recurrence rate of successive attempts for a particular type of call is limited, characterised by setting a predetermined allowance of call attempts in each of a



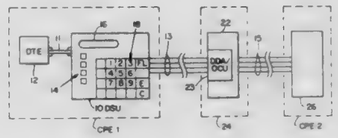
succession of equal time intervals, and by carrying forward unused allowance cumulatively.

5,060,259

CALL PROGRESS CAPABILITY FOR A SWITCHED CHANNEL DATA SERVICE UNIT

Daniel M. Joffe, North Plainfield, and Charles R. Eberle, Jr., Rockaway, both of N.J., assignors to Integrated Network Corporation, Bridgewater, N.J.

Continuation of Ser. No. 477,760, Feb. 9, 1990, Pat. No. 4,995,076. This application Aug. 28, 1990, Ser. No. 574,319
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[5] H04M *1/26, 3/22*
U.S. Cl. 379—257 **14 Claims**



1. In a telephone network having a direct digital access/office channel unit (DDA/OCU), a method of obtaining call progress information for a call placed from a calling party data service unit to a called party node wherein a local loop to which the calling party data service unit is connected lacks byte alignment, comprising the steps of:

a) placing a call from the calling party data service unit to the called party node over the telephone network;

b) providing a bit sequence of digitally encoded tones that encode progress of the call from the called party node that travels across the network to the DDA/OCU;

c) issuing a first type of signal from the DDA/OCU to the calling party data service unit whenever there is an absence of digitally encoded tone in the sequence of tones received by the DDA/OCU from the called party node;

d) issuing a second type of signal from the DDA/OCU to the calling party data service unit whenever there is digitally encoded tone present in the sequence of tones received by the DDA/OCU from the called party node; and

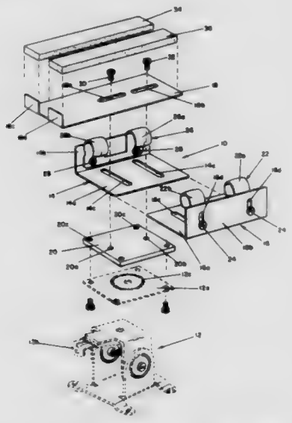
e) interpreting a resulting sequence of first type signals and second type signals at the calling party data service unit to decode call progress information.

5,060,260

MOUNTING CRADLE FOR A PORTABLE CELLULAR TELEPHONE

Joseph J. O'Connell, 830-G Live Oak, N. E., Albuquerque, N. Mex. 87122

Filed Jul. 24, 1990, Ser. No. 558,090
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—454 **20 Claims**



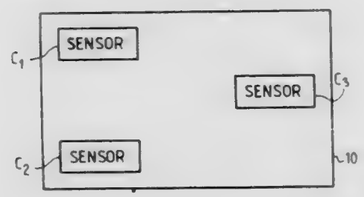
1. A cradle for a portable telephone, comprising:
an elongate base plate;
a pair of first and second side plates affixed to said elongate base plate;
inwardly directed compression spring means affixed to at least one side plate; and
fastening means for fastening said elongate base plate to a cradle mount to accommodate a portable telephone, wherein said elongate base plate comprises slot means therein for adjusting the position of said elongate base plate.

5,060,261

MICROCIRCUIT CARD PROTECTED AGAINST INTRUSION

Jean-Pierre Avenier, Trets; Gilles Lisimaque; Philippe Maes, both of Peynier, and Jacek Kowalski, Trets, all of France, assignors to Gemplus Card International, Gemenos, France

Filed Jul. 11, 1990, Ser. No. 551,550
Claims priority, application France, Jul. 13, 1989, 89 09549
Int. Cl.[5] G11B *23/28;* **G06K** *19/02*
U.S. Cl. 380—3 **7 Claims**



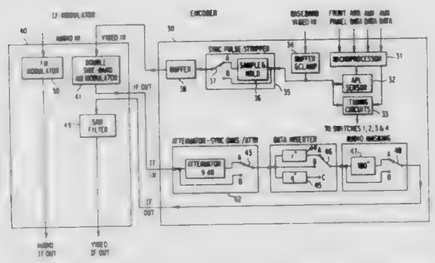
1. A card comprising a microcircuit protected against intrusion by a protection layer, wherein at least one strain-indicating sensor is placed on the microcircuit, said microcircuit being in a known state of artificial prestress, this state of prestress being maintained by said protection layer deposited on said microcircuit, and this state of prestress being modified by any attempt to remove the microcircuit from the card, the microcircuit including an internal logic circuit connected to the terminals of the sensor to detect the changes in this state of prestress.

5,060,262

VIDEO SCRAMBLING, AUDIO MASKING AND DATA TRANSMISSION METHODS FOR WIRELESS CABLE SYSTEMS

George L. Bevins, Jr, 3524 Godwin Blvd., Suffolk, Va. 23434; Patrick G. Griffin, 2424 Locks Landing, Chesapeake, Va. 23323; Phillip K. Kendall, 710 Summers Pl., Portsmith, Va. 23702, and John J. Hayes, 1013 Kincaid Ter., Chesapeake, Va. 23320

Filed May 7, 1990, Ser. No. 519,856
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—19 **40 Claims**



1. In a television system of the type including a modulator receiving input signals from a video source and an audio source and providing a video intermediate frequency video modulating signal and an audio intermediate frequency modulating signal to a transmitter, said transmitter being responsive to said intermediate frequency video and audio modulating signals for transmitting a modulated radio frequency signal to a plurality of receiving sites, each of said receiving sites having a television receiver, the improvement comprising:
said modulator including encoder means for scrambling the video and masking the audio intermediate frequency modulation signals, said encoder means further generating data signals as a sequence of binary "1s" and "0s", said data signals phase modulating video carrier during a horizontal blanking period, said modulator further including means for combining said scrambled video signals with said phase modulated video carrier, and said transmitter transmitting the combined video signal with said masked audio signal to said plurality of receiving sites; and
each of said receiving sites including a means for receiving said combined video signal and detecting said data signals and a converter responsive to said detected data signals for descrambling said video and unmasking said audio portions of received signals.

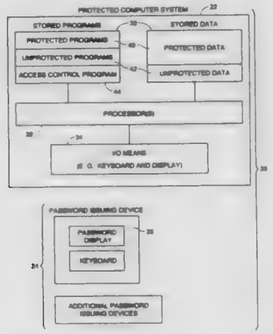
5,060,263

COMPUTER ACCESS CONTROL SYSTEM AND METHOD

Robert J. Bosen, Pittsburg, and John R. Muir, Antioch, both of Calif., assignors to Enigma Logic, Inc., Concord, Calif.

Filed Mar. 9, 1988, Ser. No. 165,868
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—25 **25 Claims**

1. An access control system, comprising:
at least one protected system, each protected system including means for reading a password submitted by a user as part of a request for access to at least a specified portion of said protected system, means for conveying information to said user, and digital computer means coupled to said reading means and said information conveying means for determining whether to permit access to said protected system; said digital computer means including:
means for storing at least one authentic password;
means for selecting any sequence of one or more encryption steps from a multiplicity of distinct predefined encryption steps;
means for generating a new authentic password by encrypting a stored password with the first of said selected sequence of predefined encryption steps and, when said sequence contains more than one encryption step, successively encrypting the result of each previous encryption step with the next of said selected sequence of predefined encryption steps;



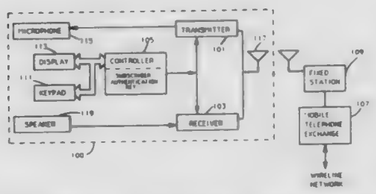
means for challenging said user, via said information conveying means, to encrypt a previously defined password value with said selected sequence of encryption steps and to submit a password which is the result of said selected sequence of encryption steps; and
means for comparing said new authentic password with said submitted password, and for permitting access to said portion of said protected system when a submitted password matches said new authentic password;
said access control system further including at least one portable password issuing device for issuing authentic passwords to the possessor thereof, including storage means for separately storing said previously defined password for each of one or more distinct protected systems or portions of protected systems.

5,060,264

RADIOTELEPHONE CONTROLLER CONFIGURED FOR CORESIDENT SECURE AND NONSECURE MODES

Grazyna E. Muellner, Bartlett; Rafaele Pini, Norridge; Dennis Casben, Lake Zurich; Patrick J. Marry, Cary, all of Ill., and David K. Ford, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1990, Ser. No. 461,570
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—46 **8 Claims**



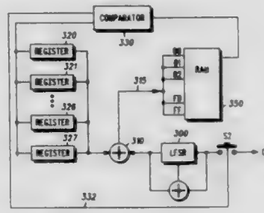
1. A controller for a radiotelephone apparatus which communicates with a fixed site, the controller having an internal secure mode of operation and an internal nonsecure mode of operation, comprising:
means for inputting a message received from the fixed site;
means, responsive to said message, for calculating a signed response from a stored numerical subscriber authentication key, such that said numerical subscriber authorization key and said calculations cannot be accessed external to the controller;
means for communicating with a radiotelepone apparatus user interface device external to the controller; and
means for enabling said means for calculating and for disabling said means for communicating when said means for calculating is enabled.

5,060,265

METHOD OF PROTECTING A LINEAR FEEDBACK SHIFT REGISTER (LFSR) OUTPUT SIGNAL

Louis D. Finkelstein, Wheeling, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 23, 1990, Ser. No. 556,132
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—46 **20 Claims**



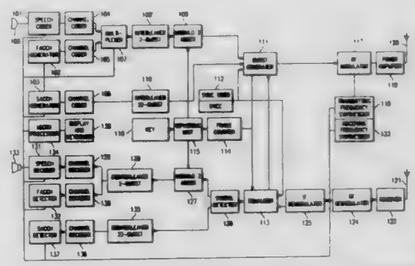
1. A method of protecting a pseudorandom (PN) signal generated by a Linear Feedback Shift Register (LFSR) from cryptographic attack comprising the steps of:
deterministically introducing non-linearity into the PN signal to produce a deterministic bit pattern; and
substituting the deterministic bit pattern for the PN signal, whereby the PN signal is protected from cryptographic attack.

5,060,266

CONTINUOUS CIPHER SYNCHRONIZATION FOR CELLULAR COMMUNICATION SYSTEM

Paul Dent, Stehag, Sweden, assignor to Ericsson GE Mobile Communications Holding Inc., Paramus, N.J.

Filed Jul. 20, 1990, Ser. No. 556,102
Claims priority, application Sweden, Mar. 7, 1990, 9000801
Int. Cl.[5] H04L *9/02*
U.S. Cl. 380—49 **58 Claims**



1. A method of communicating with cryptographically

encoded data within a digital telecommunications system, comprising:

generating a first pseudo-random key stream of bits in accordance with an algorithm which is a function of a multi-bit digital value contained in a first register;

incrementing the value contained in said first register at defined intervals to vary the pattern of bits in the first key stream;

combining the bits of the first pseudo-random key stream with a stream of data bits carrying communications information to cryptographically encode said data;

transmitting said encoded data to a receiver;

transmitting to said receiver at intervals and interspersed with said transmissions of encoded data the value contained in said first register;

generating a second pseudo-random key stream of bits in accordance with said algorithm which is a function of a multi-bit digital value contained in a second register;

incrementing the value contained in said second register at the same defined intervals as said first register to vary the pattern of bits in the second key stream in an identical fashion to the pattern of bits in the first key stream;

combining the bits of the second pseudo-random key stream with the received stream of cryptographically encoded data to decode said data into said communications information; and

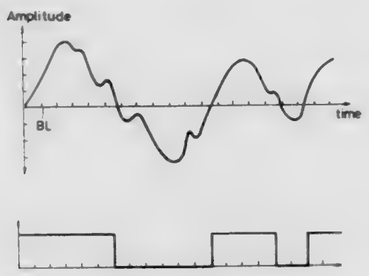
periodically comparing the value contained in said second register with the received value of the first register to determine whether the two values correspond for corresponding moments of time and whether the first and second key streams are in synchronism with one another.

5,060,267

METHOD TO PRODUCE AN ANIMAL'S VOICE TO EMBELLISH A MUSIC AND A DEVICE TO PRACTICE THIS METHOD

Michael Yang, 4 Fl., No. 28, Lane 42, Tung Kuang Rd., Hsin Chu City, Taiwan

Filed Sep. 19, 1989, Ser. No. 409,301
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—36 **8 Claims**



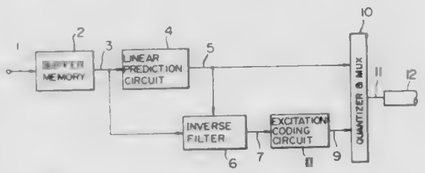
1. A method for producing an imitative voice of an animal, comprising the steps of: producing a clock signal of period t_s, analyzing the animal's voice in a waveform graph on an amplitude-vs.-time coordinate system; dividing the time-abscissa of said coordinate system into equal intervals, each interval equal to t_s; encoding the amplitude of each time interval into corresponding amplitude data; storing the amplitude data in consecutive addresses of a read only memory; and producing the imitative voice by reading the amplitude data sequentially at every interval t_s, said amplitude data of each interval being represented by a HIGH signal when the amplitude of the waveform of the said interval is not below a predetermined level and represented by a LOW signal when the amplitude thereof is below the predetermined level, the predetermined level corresponding to the zero voltage level of a natural sine wave, resulting in an approximated waveform represented by the high/low state of the intervals, wherein each series of consecutive intervals of the encoded waveforms with like high/low states is taken as a group, the number of the intervals of each group being chosen as time data values X and stored sequentially in the consecutive addresses of said read only memory, said imitative voice being produced by alternatedly giving a high/low output for a duration Xt_s corresponding to the X values stored in the corresponding address of the ROM.

5,060,268

SPEECH CODING SYSTEM AND METHOD

Yoshiaki Asakawa, Kawasaki; Takanori Miyamoto, Fuchu; Kazuhiro Kondo, Kokubunji; Akira Ichikawa, Musashino, and Toshiro Suzuki, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,025
Claims priority, application Japan, Feb. 21, 1986, 61-35148
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—38 **12 Claims**



1. A speech coding system comprising:

memory means for storing successive frames of a digitized speech signal;

means connected to said memory means for producing a parameter signal representative of a spectral envelope of said speech signal by analyzing said digitized speech signal for each of said successive frames;

means including an inverse filter connected to receive said digitized speech signal and said parameter signal for producing a residual pulse train for each frame of said digitized speech signal;

excitation extracting means coupled to said inverse filter for dividing said residual pulse train for each frame into a plurality of sub-frames and for extracting a pulse having a peak amplitude from said residual pulse train within each sub-frame, and including means for producing an information signal indicative of the amplitude and location of said peak amplitude pulse as excitation information; and

coding means coupled to said parameter signal producing means and said excitation extracting means for coding said parameter signal and said information signal to produce a coded speech signal.

5,060,269

HYBRID SWITCHED MULTI-PULSE/STOCHASTIC SPEECH CODING TECHNIQUE

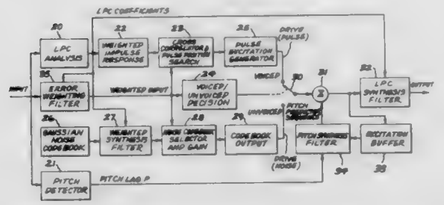
Richard L. Zinser, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 18, 1989, Ser. No. 353,855
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—38 **8 Claims**

1. A method of combining stochastic excitation and pulse excitation in a multi-pulse voice coder to reproduce audible speech, comprising the steps of:

analyzing an input speech signal to determine if the input signal if voiced or unvoiced;

selecting a form of excitation for coding the input signal depending upon the type of input signal, said excitation being multi-pulse excitation if the input signal is voiced and being Gaussian codebook excitation coding if the input signal is unvoiced; and



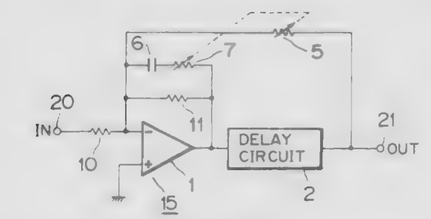
synthesizing said audible speech from the selected form of excitation.

5,060,270

REVERBERATION CIRCUIT

Ryuichi Shinoda, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 19, 1990, Ser. No. 511,166
Claims priority, application Japan, Apr. 20, 1989, 1-45573[U]
Int. Cl.[5] H04R *5/00;* **H03G** *3/00*
U.S. Cl. 381—63 **8 Claims**



1. A reverberation circuit comprising:

an input terminal (**20**);

an output terminal (**21**);

an amplifier (**1**) for amplifying an input signal to said input terminal and outputting an amplified signal;

a delay circuit (**2**) for delaying said amplified signal and outputting a delayed signal to said output terminal (**21**);

feedback means (**5**) for feeding back the delayed signal from said delay circuit (**2**) to said amplifier (**1**), said feedback means (**5**) controllably varying a feedback amount of said delayed signal to said amplifier (**1**) in accordance with a desired depth of reverberation; and

attenuation means (**6,7**) for selectively attenuating levels of variable frequency components of a signal passing therethrough, said variable frequency components being varied in frequency in accordance with said feedback amount, said attenuation means being operated in interlocked relation with the feedback means such that when said feedback amount is increased, levels of said variable frequency components in an output signal from said output terminal (**21**) are decreased.

5,060,271

ACTIVE MUFFLER WITH DYNAMIC TUNING

Earl R. Geddes, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1990, Ser. No. 519,389
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 **7 Claims**

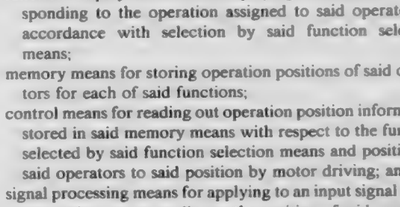
1. A dynamically tuned exhaust system for a motor vehicle exhaust conduit having an inlet and an outlet, said system comprising:

a sensor for generating a signal representative of sound pressure pulses from a source through a conduit;

a first transducer fixed at a first position along said conduit;

a second transducer fixed at a second position spaced from said first position;

an electronic controller for selectively driving said first and second transducers in response to said sensor signal and



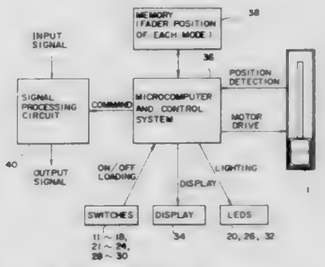
producing an output pulse having a phase opposite to said sound pressure pulse at said first and second positions, and including means for variably driving said first transducer and second transducer to control the effective cancellation point along said conduit as the frequency of said sound pressure pulses changes with engine speed by inducing a minimum pressure at the conduit inlet throughout the engine speed range.

5,060,272

AUDIO MIXING CONSOLE

Takashi Suzuki, Hamamatsu, Japan, assignor to Yamahan Corporation, Hamamatsu, Japan

Filed Oct. 11, 1990, Ser. No. 595,539
Claims priority, application Japan, Oct. 13, 1989, 1-267272
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—119 **2 Claims**



1. A mixing console comprising:

operators which can be driven both manually and by motors;

function selection means for selecting one of a fader function or other functions in respective channels as a function to be assigned to each of said operators;

function display means for displaying information corresponding to the operation assigned to said operators in accordance with selection by said function selection means;

memory means for storing operation positions of said operators for each of said functions;

control means for reading out operation position information stored in said memory means with respect to the function selected by said function selection means and positioning said operators to said position by motor driving; and

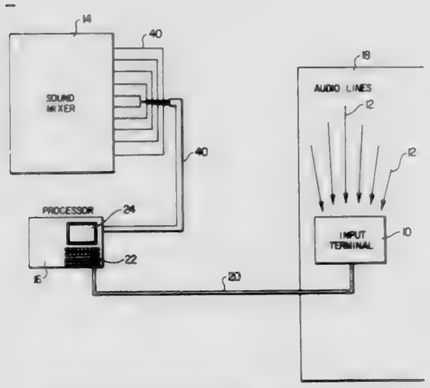
signal processing means for applying to an input signal signal processing corresponding to the position of said operators with respect to the function selected by said function selection means.

5,060,273

SOUND MIXING PROCESSOR, METHOD AND SYSTEM

Laszlo Olah, Dallas, Tex., and Frank Nagy, Budapest, Hungary, assignors to Lester Audio Laboratories, Inc., Dallas, Tex.

Filed Oct. 11, 1989, Ser. No. 419,827
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—119 **7 Claims**



1. A sound mixer processor system, said system comprising:
a plurality of input lines for parallel transmission of input signals generated at a plurality of remote locations;
an audio signal transmitter connected to said plurality of parallel input lines, said audio signal transmitter including means for converting said plurality of parallel input signals to a serial input signal;
an audio signal receiver, said audio signal receiver including means for converting said serial input signal into a second plurality of parallel input signals and means for providing multiple allocations of said second plurality of parallel input signals;
an optical fiber interconnecting said audio signal transmitter and said audio signal receiver, said optical fiber transmitting said serial input signal therebetween; and
a sound mixer connected to receive said multiple allocations of said second plurality of parallel input signals from said audio signal receiver.

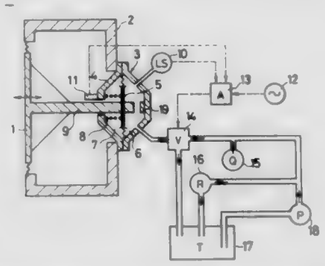
5,060,274

HYDROSTATIC SPEAKER AND SPEAKER DRIVER

Shuji Asami, Yokohama, and Hitoshi Kitayama, Kodaira, both of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1989, Ser. No. 361,164
Claims priority, application Japan, Jun. 10, 1988, 63-141755
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—166 **16 Claims**

1. A hydraulic speaker of the type having a speaker driver and a core for radiating acoustic sound in response to external signals, comprising:
an oscillator and a moving body, the oscillator being divided into a front section and a rear section by the moving body, one of the sections serving as a fluid pressure chamber to vibrate said moving body in accordance with the external signals, and wherein said core is connected with said moving body such that said core radiates a low-frequency sound, said hydrostatic speaker further including a fluid pressure sensor for detecting a pressure in said fluid pressure chamber or a pressure in a pipe connected to said fluid pressure chamber wherein the speaker driver includes a fluid pressure controller connected to a fluid power source to control the fluid pressure of the fluid pressure chamber, and a control amplifier for controlling said fluid pressure controller in accordance with the external signals, and inputting into said control amplifier a



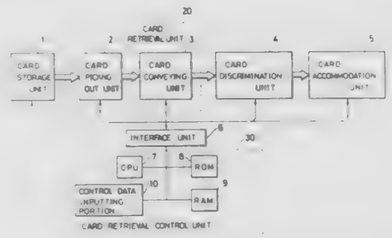
detection signal from the fluid pressure sensor as a feedback signal for improving controllability and for preventing the occurrence of noise due to variations in the fluid source pressure.

5,060,275

CARD TRUNK SYSTEM

Tadashi Hirano, Sayama, Japan, assignor to Data Card Japan Ltd., Tokyo, Japan

Filed Jul. 27, 1989, Ser. No. 386,585
Claims priority, application Japan, Sep. 26, 1988, 63-238962
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **27 Claims**



1. A card trunk system comprising:
card storage means for storing a plurality of cards, said card storage means comprising a plurality of boxes and including a first box designated for storing a first type of card and a second box designated for storing a second type of card;
card retrieval means for retrieving a card from one of said first and second boxes in said card storage means; and
card discrimination means connected to said card retrieval means for examining the retrieved card, determining if the card retrieved by said card retrieval means is of the type associated with the box from which it was retrieved and, if the card is not of the type associated with the box from which it was retrieved, directing said card to a discard area.

5,060,276

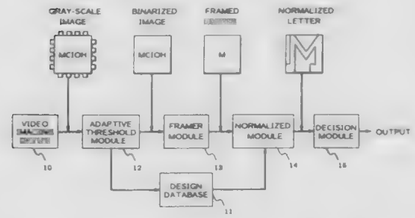
TECHNIQUE FOR OBJECT ORIENTATION DETECTION USING A FEED-FORWARD NEURAL NETWORK

Robert J. T. Morris, and Lawrence D. Rubin, both of Holmdel, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 31, 1989, Ser. No. 359,296
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **10 Claims**

1. A method of determining the orientation of features or text on an object, the method comprising the steps of:

(a) extracting a predetermined sized image of each of at least one of the features, or at least one symbol of the text, disposed on the object;
(b) normalizing each of the at least one feature or symbol obtained in step (a) within a second predetermined sized image;
(c) processing the predetermined sized image for each of the at least one feature or symbol obtained in step (a) or (b) for determining a similarity measure between the second sized image and a reference image and determining therefrom first and second conditional probabilities indicative of the



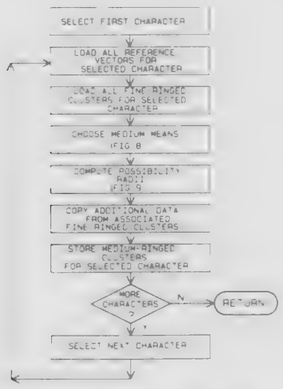
at least one feature or symbol having an "up" or "down" orientation, respectively;
(d) determining from the first and second conditional probabilities for each of the at least one feature or symbol obtained in step (c) whether the feature or text is in the "up" or "down" orientation or is in an "indeterminate" orientation; and
(e) determining from the indication of the orientation of each one feature or symbol obtained in step (d) whether the object is in the "right-side up", "upside-down" or indeterminate orientation.

5,060,277

PATTERN CLASSIFICATION MEANS USING FEATURE VECTOR REGIONS PRECONSTRUCTED FROM REFERENCE DATA

Mindy R. Bokser, San Francisco, Calif., assignor to Palantir Corporation, Santa Clara, Calif.

Division of Ser. No. 786,035, Oct. 10, 1985, Pat. No. 4,773,099.
This application Apr. 25, 1988, Ser. No. 163,374
Int. Cl.[5] G06K *9/62*
U.S. Cl. 382—14 **87 Claims**



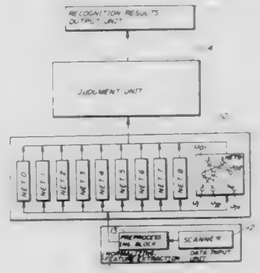
1. The method of classifying an input feature vector representing an input pattern comprising the steps of:
for each selected pattern class in a predefined list of one or more pattern classes, obtaining a hierarchy of one or more sets of possibility regions associated with said selected pattern class, wherein
said associated hierarchy is formed using a large plurality of reference feature vectors;
each possibility region in each set of said associated hierarchy contains a plurality of reference feature vectors beloning to said selected class and may contain reference feature vectors which do not belong to said selected class;
for each set of said associated hierarchy, each reference feature vector belonging to said selected class is contained within at least one possibility region of said set; and
for each set of said associated hierarchy, the number of possibility regions in said set is significantly less than the number of reference feature vectors belonging to said selected class;
receiving said input feature vector; and
excluding from consideration those pattern classes which, for some set in the hierarchy associated with said pattern class, said input feature vector does not lie within any possibility region in said set.

5,060,278

PATTERN RECOGNITION APPARATUS USING A NEURAL NETWORK SYSTEM

Kenji Fukumizu, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed May 15, 1990, Ser. No. 524,271
Claims priority, application Japan, May 20, 1989, 1-127389
Int. Cl.[5] G06K *9/62*
U.S. Cl. 382—14 **11 Claims**



1. A pattern recognition apparatus, comprising:
(a) pattern input means for inputting pattern data and learning data:
(b) a neural network system including a plurality of neural networks, wherein:
(1) each of said plurality of neural networks receives said pattern data from said pattern input means;
(2) each of said plurality of neural networks is assigned a corresponding one of a plurality of identification classes and has only two output units consisting of a first unit (Uo1) and a second unit (Uo2);
(3) learning for each of said plurality of neural networks is performed by using said learning data belonging to all of said identification classes so that:
(A) when each of said neural networks receives said learning data belonging to said corresponding one of the identification classes:
(i) an output value A from said first unit (Uo1) equals a first value V1; and
(ii) an output value B from said second unit (Uo2) equals a second value V2; and
(B) when each of said neural networks receives learning

data belonging to one of said identification classes other than said corresponding one of the identification classes;

(i) said output value A from said first unit (Uo1) equals said second value V2 and

(ii) said output value B from said second unit (Uo2) equals said first value V1; and

(c) judgment means for judging which one of the identification classes said pattern data from said pattern input means belongs to, on the basis of output values A and B from said two output units (Uo1) and (Uo2) of all neural networks.

5,060,279

EXPERT SYSTEM USING PATTERN RECOGNITION TECHNIQUES

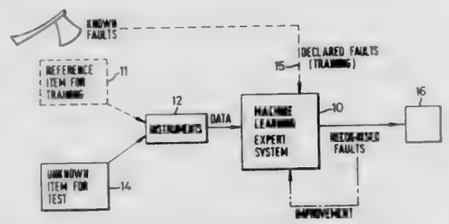
Thomas M. Crawford; Colin F. N. Cowan, both of Edinburgh, Scotland, and Virgil N. Marton, Bath, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

PCT No. PCT/GB86/00199, § 371 Date Sep. 27, 1988, § 102(e) Date Sep. 27, 1988, PCT Pub. No. WO87/06371, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 10, 1986, Ser. No. 265,859

Int. Cl.[5] G06K *9/62*

U.S. Cl. 382—14 **11 Claims**



1. An expert system for fault diagnosis, comprising:

processing means for receiving input data relating to a device or system to be diagnosed and manipulating said input data to produce output data representative of at least one parameter indicating the condition of said device or system, said processing means having adaptive pattern recognition means for recognizing certain patterns of input data and associating said patterns with known conditions, means for storing pattern data representing said known conditions during an instruction mode, and means for comparing input data from said device or system with said stored pattern data to determine the presence of said known conditions in said input data during a diagnostic mode; and

means for displaying a result of said comparison as said output data representative of said at least one parameter.

5,060,280

MASKING CONTROL FOR IMAGE PROCESSING SYSTEMS

Yoshinobu Mita, Kawasaki; Naoto Kawamura; Miyuki Enokida, both of Yokohama, and Yoshihiro Ishida, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 102,581, Sep. 29, 1987, abandoned. This application Mar. 22, 1990, Ser. No. 501,429

Claims priority, application Japan, Sep. 30, 1986, 61-230012; Jan. 26, 1987, 62-014267

Int. Cl.[5] G06K *9/00*

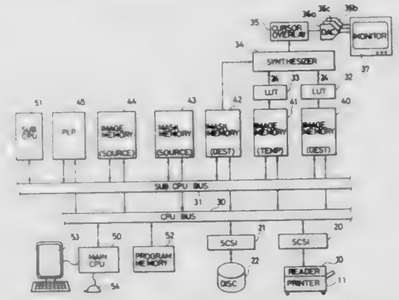
U.S. Cl. 382—33 **6 Claims**

1. An image processing apparatus comprising:

first image memory means for storing a page of first image information, wherein the first image information comprises a first predetermined number of pixels and the first memory means compresses and stores the first predetermined number of pixels as a first plurality of groups of pixels;

second image memory means for storing a page of second image information, wherein the second image information comprises a second predetermined number of pixels and the second memory means compresses and stores the second predetermined number of pixels as a second plurality of groups of pixels;

mask memory means for storing information representing a partial area of the first image information, wherein the partial area comprises a first unit area corresponding to an internal area of the partial area and a second unit area corresponding to a border area of the partial area, wherein the first unit area comprises, a third predetermined number of pixels and the mask memory means compresses and



stores the third predetermined number of pixels as a third plurality of groups of pixels, and wherein the second unit area comprises a fourth predetermined number of pixels and the mask memory means codes and stores the fourth predetermined number of pixels as at least one predefined code representing a fourth plurality of groups of pixels, each predefined code corresponding to a predefined configuration of pixels; and

extracting means for extracting the first image information stored in said first memory means, the first image information corresponding to the partial area, and extracting from the second image information stored in said second image memory means the image information corresponding to an area other than the partial area, on the basis of the first unit area and second unit area.

5,060,281

METHOD AND APPARATUS FOR DETECTING DISPARITY OF CYCLIC LENGTH OF PRINTED PATTERNS

Ryuji Ohnishi, Takamatsu, Japan, assignor to Futec, Inc., Kagawa, Japan

Continuation of Ser. No. 207,969, Jun. 17, 1988, abandoned. This application Feb. 22, 1991, Ser. No. 658,450

Claims priority, application Japan, Oct. 15, 1987, 62-260157

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—34 **8 Claims**

1. A method of detecting a disparity in a cyclic length of a pattern, comprising the steps of:

moving a to-be-checked sheet on which predetermined patterns are cyclically printed in a longitudinal direction of travel;

scanning said to-be-checked sheet by means for obtaining image data corresponding to the pattern;

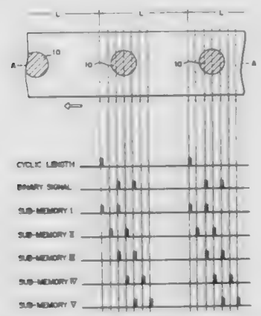
extracting from the image data output data representing an outline of the pattern;

obtaining movement position data indicating different movement positions of said to-be-checked sheet;

writing the outline data, extracted in the extracting step, into storage means as reference outline data;

updating, for every cycle, the reference outline data stored in the storage means such that the reference outline data becomes outline data corresponding to a cycle which precedes a current cycle by at least one cycle in accordance with the movement position data;

reading out the reference outline data from said storage means into a comparator;



comparing current outline data corresponding to a current cycle with updated reference outline data read out from the storage means, in order to obtain a comparison result; and

detecting a disparity in the cyclic length of the pattern from a correlation between the current outline data and the updated reference outline data, in accordance with the comparison result obtained by said comparator.

5,060,282

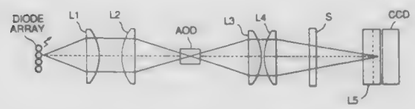
OPTICAL PATTERN RECOGNITION ARCHITECTURE IMPLEMENTING THE MEAN-SQUARE ERROR CORRELATION ALGORITHM

Perry A. Molley, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 26, 1990, Ser. No. 499,120

Int. Cl.[5] G06K *9/58*

U.S. Cl. 382—42 **13 Claims**



1. An optical pattern recognition architecture implementing the mean-square-error algorithm, $MSE=\Sigma[I-R]^2$, for discriminating a reference pattern R in an input image I, comprising:

light source means for outputting modulated light in accordance with a light source modulation signal applied to a light source modulation signal input thereof;

optical deflector means for diffracting light incident at an aperture thereof in accordance with an optical deflector modulation signal applied to a signal input thereof for producing a spatial distribution of said incident light;

means for focusing modulated light output by said light source means onto the aperture of said optical deflector means;

means for generating a double-sideband suppressed-carrier amplitude modulated light source modulation signal $I_1(t)$ as the product of a time-varying reference image signal $s_1(t)$ applied thereto and a frequency offset carrier signal f_o and for applying said light source modulation signal $I_1(t)$ to said light source modulation signal input of said light source means for causing said light source means to be temporally modulated in accordance therewith, said light source modulation $I_1(t)$ taking the form:

$$I_1(t)=A_1[1+\sqrt{2}m_1s_1(t)\cos(2\pi f_o t)];$$

means for generating a double-sideband suppressed-carrier amplitude modulated optical deflector modulation signal $I_2(t)$ as the product of a time-varying input image signal $s_2(t)$ input thereto and a reference carrier f_c and an offset frequency carrier f_o, and for applying said optical deflector modulation signal $I_2(t)$ to said optical deflector modulation signal input of said optical deflector means for causing said modulated light output from said light source means to be diffracted into a time-delayed spatial modulation in accordance therewith, said optical deflector modulation $I_2(t)$ taking the form:

$$I_2(t)=A_2[1+2m_2^2s_2^2(t)-2\sqrt{2}m_2s_2(t)\cos(2\pi f_o t)];$$

integrating light detector means having a detection plane for detecting and electronically integrating light incident on said detector plane and for outputting a mean-square-error correlation signal R(t) in correspondence therewith, said mean-square-error correlation signal $R(\tau)$ taking the form:

$$R(\tau)=A_1A_2\{[T]+[2m_2^2\cdot\int s_2^2(t-\tau)dt]-[2m_1m_2\cos[2\pi f_o\tau]\cdot\int s_1(t)s_2(t-\tau)dt]\}$$

such that by adjusting the m_1 and m_2 for the input modulation, m_1 is equal to 2 m_2, and a zero value of $R(\tau)$ represents a match correlation between said input image I and said reference pattern R; and

means for imaging the spatially distributed light diffracted by said optical deflector means onto the detector plane of said integrating light detector means;

where:

$s_1(t)$ is the signal input to the light source modulation means;

$s_2(t)$ is the signal input to the optical deflector modulation means;

A_1 is the light intensity;

A_2 is the diffraction efficiency;

m_1 and m_2 are constants that determine the signal-to-bias ratio;

f_o is the frequency offset between the reference oscillator at f_c and the DSB-SC modulation at f_c+f_o; and

a_o and a_1 are constants chosen to bias the light source means and the optical deflector into their respective linear operating regions so that the light source means exhibits a linear intensity characteristic and the optical deflector means exhibits a linear amplitude characteristic.

5,060,283

METHOD AND SYSTEM FOR READING IMAGES WITH A MOVABLE LIGHT INTERCEPTING PLATE

Atsushi Shiraishi, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1990, Ser. No. 509,844

Claims priority, application Japan, Apr. 20, 1989, 1-101108; Apr. 20, 1989, 101109

Int. Cl.[5] G06K *9/42;* **H01J** *3/14;* **G02B** *15/00;* **G01J** *1/40*

U.S. Cl. 382—47 **20 Claims**

18. An apparatus for reading an image scanned in a first main direction and in a second auxiliary direction which is normal to the first main direction, the apparatus comprising:

a light source for emitting light;

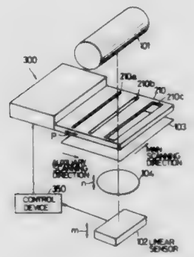
a movable light intercepting plate including a plurality of slits each having a different width;

moving means for moving said movable light intercepting plate;

a light sensor for receiving light which is emitted from said

light source and which passes through one of said slits; and

control means, coupled to said moving means and said light sensor, for controlling said moving means and for reading output levels of said light source, said control means having input means for receiving information representing a desired magnification for the image, said control means operable for: determining an optimal position of one of said slits relative to said light source by controlling said moving means to move said movable light intercepting plate in the second auxiliary direction so that said light sensor receives light emitted from said light source through the one slit, reading output levels of said light source as said movable light intercepting plate is moved, controlling said moving means to move said movable light intercepting plate so that the one slit is positioned at the determined optimal position, reading and storing a predetermined pixel number of said movable light source after said light intercepting plate is moved to the optimal position, selecting one of said slits in accordance with inputted information representing a desired image magnification, determining an optimal position of said selected slit relative to said light source by controlling said moving means to move said movable intercepting plate in the second auxiliary direction such that light emitted from said light source is received by said light sensor through said selected slit, reading output levels of said light source as said movable light intercepting plate is moved, controlling said moving means to move said movable light intercepting plate to the determined optimal position of the selected slit, again reading and storing the predetermined pixel number of said light source, calculating a difference between the stored predetermined pixel numbers, and adjusting the scanning of the image in the first main direction in accordance with the calculated difference.



5,060,284

ADAPTIVE ERROR DIFFUSION THRESHOLDING FOR DOCUMENT IMAGES

Kevin J. Klees, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1990, Ser. No. 498,119
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—53 **12 Claims**

1. Apparatus for performing error diffusion thresholding of multiple level digital images into bi-level digital images using either a local minimum or local maximum signal to calculate the error signal, said apparatus comprising:

means for scanning a grayscale image and detecting the density levels of individual input pixels;

means for delaying said input pixels by a predetermined number of pixel locations per line

and by a predetermined number of scan lines;

means for generating a fixed threshold signal;

means for comparing said threshold signal to one of said delayed pixels to generate a bi-level output pixel value;

means for generating a signal representing the local minimum signal level of said input pixels;

means for generating a signal representing the local maximum signal level of said input pixels;

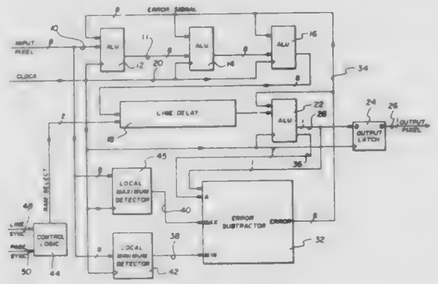
means for selecting either the said local minimum or said local maximum based on said output pixel;

means for generating an error signal using said selected minimum or maximum signal and the said delayed pixel used in said thresholding comparison, such that said error signal contains either positive or negative sign information;

means for weighting said error signal by a fixed number of predetermined factors;

means for adding or subtracting said weighted error signal from said fixed number of remaining delayed pixel values thus generating new delayed pixel values; and

means for checking to insure that said new delayed pixel values are within a predetermined range.



5,060,285

HIERARCHICAL VARIABLE BLOCK SIZE ADDRESS-VECTOR QUANTIZATION USING INTER-BLOCK CORRELATION

Sudhir S. Dixit, Norwood, and Yushu Feng, Worcester, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 19, 1989, Ser. No. 354,646
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **10 Claims**



1. A method of compressing and reconstructing an image by a hierarchial variable block-size address-vector quantization, comprising the steps of:

partitioning an image into basic blocks of equal size to form a first layer of blocks, each basic block having the same number of pixels;

constructing a first layer pixel vector code book having a plurality of addressable entries, each entry representing a combination of elements which have appeared frequently in individual blocks of previously coded images;

combining groups of adjacent basic blocks of said first layer to form a second layer of blocks;

constructing an address code book for said second layer blocks having a plurality of addressable entries wherein said entries are addresses of combinations of code vectors in said first layer code book which have the highest probability of occurrence;

determining a maximum block size and the number of layers N required to encode a maximum size block;

if N≧2. combining groups of adjacent blocks from layer i−1 to form a layer i block, where 1<i≦N;

constructing an address code book for said ith layer of blocks having a plurality of addressable entries wherein said entries are those combinations of address vectors in said i−1 layer code book which have the highest probability of occurrence;

storing said code books such that they may be used for both compression and reconstruction of the same images;

dividing each newly arriving image into blocks of maximum size;

dividing each of said maximum size blocks of said newly arriving image into basic blocks;

comparing each of said basic blocks of said maximum size block with said entries in said first layer vector code book to find the best matches of all said basic blocks in said maximum block;

scanning said address code book of said second layer to determine if there is an entry representing combinations of addresses of the best matches of adjacent basic blocks in said first layer code book;

if all basic blocks of said first layer within the larger block of said second layer can be encoded by a single address in said second layer address code book, combining adjacent blocks of said second layer to form a larger block of a third layer;

scanning said address code book of said third layer to determine if there is an entry representing the combination of addresses of second layer blocks of the previous step;

if such an entry exists, then repeating the iterative steps of combining the blocks of layer i−1 to form a block of layer i; and

scanning the address code book of layer i to find a single entry which represents the combination of addresses of blocks of layer i−1 in said layer i block;

terminating said iterative steps upon occurrence of one of the following events:

the maximum block size is reached and encoded;

all of the component blocks of a block in layer i cannot be encoded by a single address vector entry in the address code book of layer i; and

sending a tree message with block combination information and the code book addresses of the encoded image to a receiver for reconstruction of said image after transmission.

5,060,286

RASTER ROW AND BYTE GROUP GRAPHICS IMAGES DATA COMPRESSION METHOD

Steven O. Miller, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 19, 1989, Ser. No. 299,363
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **6 Claims**

1. A computer-implemented method used in a system, wherein byte groups of data are arranged on a raster-row-by-raster-row basis, for compressing such data comprising:

comparing raster rows of data on a raster-row-by-raster-row adjacency basis, including comparing a first raster row and a second raster row;

noting the changes between the compared rows, including recording the number and location of bytes in the second raster row that differ from corresponding bytes in the first raster row;

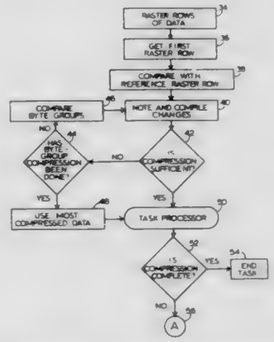
compiling such changes so that they constitute a first compressed description of at least one of the compared rows, including both supplying replacement bytes for bytes in the second raster row that differ from the corresponding bytes in the first raster row, and using the recorded number and location with the replacement bytes to constitute a compressed description of the second raster row;

determining whether such first compressed description results in a predetermined rate of compression of the data;

if so, using the first compressed description;

if not, comparing the data on a byte-group-by-byte-group adjacency basis;

noting the changes between the compared byte groups;



compiling such changes so that they constitute a second compressed description of at least one of the compared byte groups;

determining whether such second compressed description results in a predetermined rate of compression of the data;

is of, using the second compressed description;

it not, using the most compressed description between the first and second compressed descriptions and the uncompressed data; and

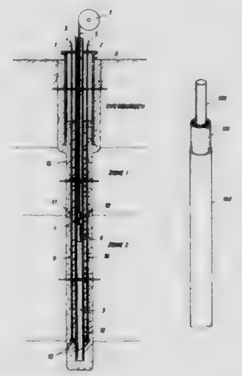
repeating the above-disclosed steps for subsequent raster rows of data.

5,060,287

HEATER UTILIZING COPPER-NICKEL ALLOY CORE

Cornelius F. H. Van Egmond, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1990, Ser. No. 622,025
Int. Cl.[5] E21B *23/00;* **H05B** *3/40*
U.S. Cl. 392—301 **13 Claims**



13. A well heater comprising:

a) at least one heating section which

i) is capable of extending for at least a hundred feet within

a well borehole adjacent to an interval of subterranean earth formation to be heated,

ii) contains at least one electrical heating cable, and

iii) contains a combination of heating cable core resistance and core cross-sectional areas capable of producing temperatures between about 600° C. and 1000° C. within the subterranean earth formation, wherein the heating cable is an electrical resistance heating cable comprising: a core consisting essentially of 6 percent by weight nickel and 94 percent by weight copper; electrical insulation surrounding the core; and surrounding the electrical insulation, a metal sheath; and

b) a means of supplying electrical power to the heating cable core.

5,060,288

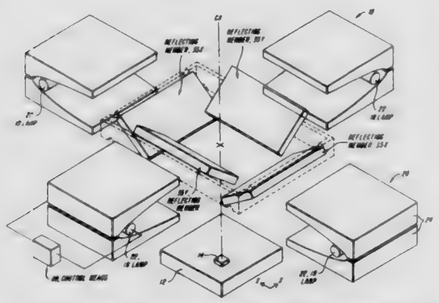
INFRARED HEATER ARRAY FOR IC SOLDERING

Donald J. Spigarelli, Carlisle, Mass.; John M. DeCarlo, York, Me., and Karl E. Bahr, Hooksett, N.H., assignors to Sierra Research and Technology, Inc., Hooksett, N.H.

Filed Aug. 27, 1990, Ser. No. 573,500

Int. Cl.[5] F26B *3/30*

U.S. Cl. 392—412 **10 Claims**



1. An IR heater array apparatus for use in combination with a placement apparatus having a placement head to provide thermal energy at bonding sites for soldering or desoldering an IC device to or from a printed circuit board, comprising:

a. means for generating focused IR radiation having a predetermined focal length and heating pattern and sufficient thermal energy for soldering the IC device to the printed circuit board, said means for generating focused IR radiation comprising:

i. first and second pairs of opposed IR lamps concentrically disposed about and spaced apart from the placement head, each of said IR lamps generating IR radiation having a predetermined energy level; and

ii. a lamp envelope disposed in combination with each of said IR lamps, each of said lamp envelopes having a reflecting surface of predetermined configuration for convergingly reflecting said IR radiation generated by said corresponding IR lamp to provide said focused IR radiation

each said lamp envelope and said IR lamp in combination defining an IR subassembly for providing said focused IR radiation,

and wherein said focussed IR radiation generating means includes four IR subassemblies providing four predetermined heating patterns of predetermined length and minimal width;

b. means for aligning said focussed IR radiation with the binding sites of the IC device and printed circuit board said alignment means comprising

i. first opposed pair of reflecting members disposed to reflect said focused IR radiation provided by one opposed pair of associated IR subassemblies and rotatably adjustable to coincidentally align said heating patterns thereof with bonding sites oriented in a first linear direction; and

ii. a second opposed pair of reflecting members disposed to reflect said focused IR radiation provided by the other opposed pair of associated IR subassemblies and rotatably adjustable to coincidentally align said heating patterns thereof with bonding sites oriented in a second linear direction;

c. means for securing said IR heating array apparatus concentrically in combination with the placement head of the placement apparatus; and

d. a frame member having opposed pairs of sidewalls configured for rotatably mounting said first and second opposed pairs of reflecting members, wherein each sidewall includes a radiation slot for transmitting focused IR radiation from said respective IR subassembly to said respective reflecting member.

5,060,289

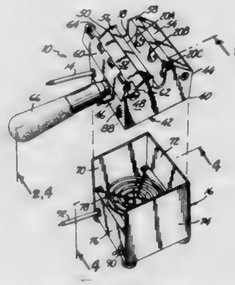
PORTABLE TUBE SHRINKING TOOL

Andrew E. Abramson, Excelsior, Minn., assignor to Research, Incorporated, Eden Prairie, Minn.

Filed May 4, 1990, Ser. No. 519,030

Int. Cl.[5] F24H *9/02*

U.S. Cl. 392—423 **7 Claims**



1. A device for heating selected objects, the device comprising:

a pair or reflector means for directing radiant energy toward a receiving space therebetween each of which has a concave surface facing the other which is elongated in a selected direction, these concave surfaces being spaced apart by said receiving space such that an object for heating can be received therein;

two pluralities of lamps capable of providing radiant energy with each of these pluralities of lamps located between the receiving space and a corresponding one of the concave surfaces, these pluralities of lamps each having the lamps therein capable together of providing radiant energy generally along a line directed substantially parallel to the direction of elongation of the corresponding concave surface; and

an enclosure containing the lamps and reflector means therein, the enclosure having an access opening therein permitting access to the receiving space with said access opening being elongated in said direction of elongation and with each said concave surface substantially extending to said access opening, the enclosure further having a first structure containing an aperture with said aperture intersecting said receiving space and with said aperture merging with said access opening whereby an elongated object can extend into said receiving space through said aperture.

5,060,290

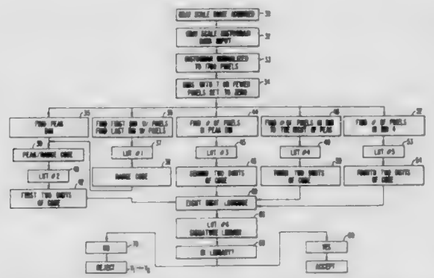
ALGORITHM FOR GRAY SCALE ANALYSIS ESPECIALLY OF FRUIT OR NUTS

Patrick L. Kelly, and Cynthia M. Klein, both of Bakersfield, Calif., assignors to Dole Dried Fruit and Nut Company, Bakersfield, Calif.

Filed Sep. 5, 1989, Ser. No. 402,932

Int. Cl.[5] G06K *9/00, 9/46, 9/66;* **H04N** *7/18*

U.S. Cl. 382—18 **12 Claims**



9. A process for the classification of acceptable product from look alike unacceptable product comprising in combination;

passing a stream of acceptable and unacceptable product by apparatus including a video camera for creating with respect to said stream a series of histograms for each serial item in said stream;

providing a histogram array having discrete bins for receiving like data, said discrete bins distributed over a discrete range of bin values for receiving individual pixel counts within those bin values and accumulating those data counts for creation of a histogram;

selecting at least three attributes from an attribute category including, but not limited to, bin range peak value, peak bin value, bin value to side of peak and selected bin value;

dividing each select attribute range into a plurality of arbitrary categories;

assigning a unique arbitrary code to each said category, said arbitrary code constituting a portion of a unique serial word for the characterization of each said histogram;

determining for said selected attributes from said histogram the arbitrary code words for each of said selected attributes;

concatenating said arbitrary codes to form unique serial words for describing said histograms;

providing a library of unique serial code words for the classification of articles in said passing serial stream;

comparing each said serial code word to said library for determining whether said unique serial code word is written to said library;

classifying each passing article with respect to said stream based on the comparison with said library.

5,060,291

FOAM COMPOSITE AND METHOD OF FORMING SAME

Aldino Albertelli, London, England, assignor to Company 'A' Foam Limited, Slough, England

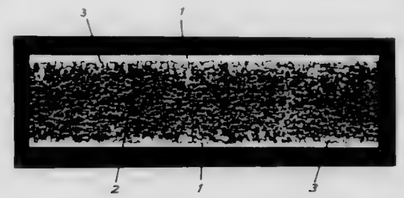
Filed May 10, 1989, Ser. No. 350,192

Claims priority, application United Kingdom, May 10, 1988, 8811033

Int. Cl.[5] B32B *3/26*

U.S. Cl. 428—306.6 **14 Claims**

3. A panel comprising (i) a solid body of substantially rigid structural foamed material comprising a substantially open-celled foamed phenolic resin containing finely divided filler and having an average cell size in the range of 0.5 to 5 mm, said solid body having a face containing pores open to the surface and, bonded to said face, (ii) a layer which contains fibre reinforcement and is formed by setting a settable viscous or pasty material selected from aqueous gypsum plaster compositions



and thermosetting resin compositions in contact with said face with some of the set material lying within said pores whereby there is a mechanical key between said layer and the foamed body.

5,060,292

TRANSMITTING POWER CONTROL SYSTEM

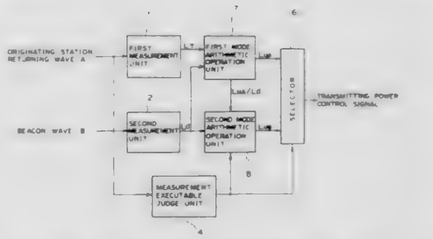
Ichiro Ayukawa, Yokohama, and Sachio Miyazaki, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 8, 1990, Ser. No. 490,249

Claims priority, application Japan, Mar. 9, 1989, 1-056760

Int. Cl.[5] H04B *7/185*

U.S. Cl. 455—52 **11 Claims**



1. A transmitting power control system comprising:

a first measuring means for measuring a total rain degradation amount of an up-link and a down-link using an originating station returning wave;

a second measurement means for measuring a down-link rain attenuation amount using a beacon wave;

a first-mode arithmetic operation means for arithmetically obtaining an actual up-link rain attenuation amount based on a total rain degradation amount and a down-link rain attenuation amount and for arithmetically obtaining a ratio of said actual up-link rain attenuation amount to said down-link rain attenuation amount;

a measurement executable judgement means for determining whether or not measurement of total rain degradation amount is possible based on the originating station returning wave;

a second-mode arithmetic operation means, connected to said measurement executable judgement means, for presuming and arithmetically obtaining an up-link rain attenuation amount based on the actual rain attenuation amount ratio and the down-link rain attenuation amount by latching the rain attenuation amount ratio when said measurement executable judgement means determines that the measurement is impossible; and

a selecting means, connected to said measurement executable judgement means and first and second mode arithmetic operation means, for selectively providing an output of said first mode arithmetic operation means when said measurement executable judgement means determines,

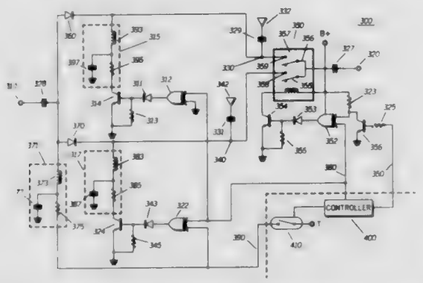
based on the originating station returning wave, that measurement is possible and for selectively providing an output of said second-mode arithmetic means when said measurement executable judgement means determines that measurement is impossible, said outputs of said first and second mode arithmetic operation means forming a transmitting power control signal.

5,060,293

ANTENNA SWITCH FOR TRANSMIT-RECEIVE OPERATION USING RELAYS AND DIODES

Gee S. Kok; Sek L. Chan, both of Penang, Malaysia; Wan F. Tay, Coral Springs, Fla.; Pek B. Teo, Penang, Malaysia; Chacko Prakash, Penang, Malaysia, and Hock S. Lim, Penang, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 20, 1989, Ser. No. 424,412
Int. Cl.[5] H01P *1/10*; H04B *1/44*
U.S. Cl. 455—78 **3 Claims**



1. An antenna switch for selectively switching a receive port and a transmit port to at least one antenna port, comprising:
- a relay switching means coupled between said receive port and said antenna port for only switching a substantially low power received signal from said antenna port to said receive port;
- a diode switching means coupled between said transmit port and said antenna port for only switching a substantially high power transmit signal from said antenna port to said transmit port;
- a relay switch control means for switching said relay switching means to couple said receive port to said antenna port only when said transmit port is not coupled to said antenna port; and
- a diode switch control means for switching said diode switching means to couple said transmit port to said antenna port only when said receive port is not coupled to said antenna port.

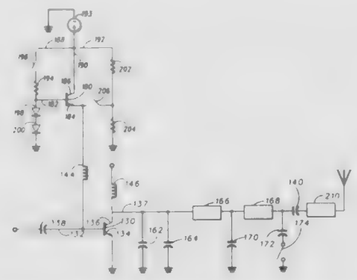
5,060,294

DUAL MODE POWER AMPLIFIER FOR RADIOTELEPHONE

Dale G. Schwent, Hoffman Estates; Rashid M. Osmani, Carol Stream, and Gary M. Cristiano, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1990, Ser. No. 548,807
Int. Cl.[5] H03F *3/04*; H04B *1/04*
U.S. Cl. 455—93 **54 Claims**

1. Amplifying apparatus for converting an input signal into an amplified, output signal, said amplifying apparatus comprising:
- means forming an amplifier having an input and an output for amplifying characteristics of the input signal supplied to the input of the amplifier to generate thereby the amplified, output signal;
- means forming a load element coupled to the output of the amplifier for receiving the amplified, output signal; and
- means for altering load characteristics of the load element to cause saturation of, or alternately, to prevent saturation of, the amplifier formed by the means for amplifying to operate the amplifier in the saturation mode or the linear mode, respectively.

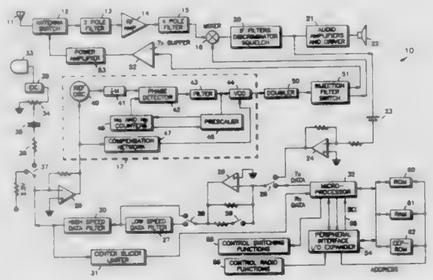


5,060,295

RADIO DEVICE WITH CONTROLLED PORT AND METHOD OF PORT CONTROL

Jaime A. Borras, Hialeah, and Wayne H. Browand, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 798,643, Nov. 15, 1985, abandoned. This application Nov. 25, 1987, Ser. No. 129,882
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—186 **10 Claims**



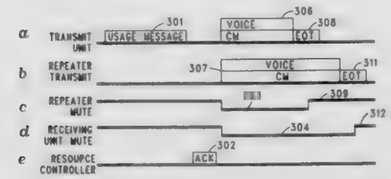
1. A radio device comprising:
- receiver means having an antenna for receiving a radio signal including digital information,
- programmable memory means for storing customized radio information,
- connector means for providing an external data connection to the radio device memory means,
- gate means operatively interconnecting the connector means and the memory means, and
- control means, responsive to the received radio signal for selectively actuating the gate means off to inhibit communication with the memory means and selectively actuating the gate means on for permitting communication with the memory means via the connector means,
- the programmable memory means including a bit of information for control of said gate means.

5,060,296

COMMUNICATION SYSTEM WITH SQUELCH CONTROL

Gary W. Grube, Palatine, and Robert F. Molnar, Crystal Lake, both of Ill., assignors to Motorola, Inc., Schaumberg, Ill.

Filed Feb. 28, 1989, Ser. No. 316,738
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—218 **13 Claims**



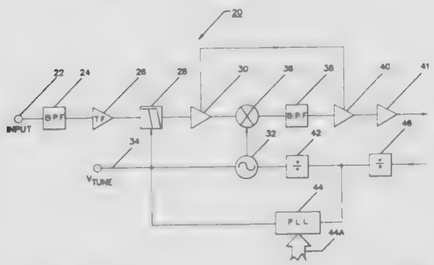
1. A communication system for routing communications between communication units over a limited number of information channels, said communication system comprising:
- a) a resource controller including:
- transceiver means for transceiving signalling information regarding information channel requests and information channel grants between the resource controller and the communication units;
- channel monitoring means for determining, at least from time to time, whether an assigned information channel continues to support communication activity; and
- channel assigning means, responsive to said transceiver means and said channel monitoring means, for processing information channel requests from said communication units, assigning communication units to identified information channels, and de-assigning previously assigned information channels;
- b) squelch means, independent of the channel assigning means and responsive to a squelch activation signal as transmitted by a communication unit, for causing other communication units assigned to said communication channel to squelch.

5,060,297

TVRO RECEIVER SYSTEM WITH TRACKING FILTER FOR REJECTION OF IMAGE FREQUENCIES

John Y. Ma, 499 Dundee Ave., Milpitas, Calif. 95035, and Bonnie Houston, 19301 Bear Creek Rd., Los Gatos, Calif. 95035

Filed Apr. 4, 1988, Ser. No. 176,844
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—302 **17 Claims**



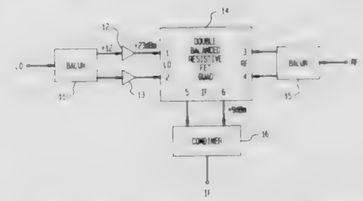
1. A TVRO receiver for receiving frequency modulated video signals while rejecting image frequencies generated at received signal frequencies, the receiver comprising
- a tuner including a super heterodyne circuit having a voltage-controlled oscillator (VCO), means for supplying a first controlling variable tuning voltage to said VCO, and a mixer for combining incoming 1st IF signals with the output frequency of said VCO to reduce the frequency of the 1st IF signals to a selected 2nd IF frequency;
- a tracking filter upstream of said mixer and having a cut-off frequency controllable by application of a controlling tuning voltage thereto for passing only said incoming 1st IF signals while rejecting any image frequency signals generated from said incoming signals; and
- means for supplying a second controlling variable tuning voltage to said tracking filter for adjusting said cut-off frequency to have a value higher than the incoming 1st IF signals but less than that of the image frequencies.

5,060,298

MONOLITHIC DOUBLE BALANCED MIXER WITH HIGH THIRD ORDER INTERCEPT POINT EMPLOYING AN ACTIVE DISTRIBUTED BALUN

Raymond M. Waugh, Phillipsburg, and Mahesh Kumar, Lawrenceville, both of N.J., assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 9, 1988, Ser. No. 282,542
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—326 **8 Claims**



1. A double balanced mixer apparatus for mixing an RF input signal with a local oscillator (LO) signal to provide at an output an intermediate frequency (IF) signal with a high third order intercept point, comprising:
- a first active distributed input balun means having an input port for receiving said local oscillator signal (LO) and having first and second output ports,
- a double balanced resistive FET quad mixing means having first and second input ports for receiving said local oscillator signal, with said first input port coupled to said first output port of said first input balun, and said second input port coupled to said second output port of said first input balun, said mixing means having a third and a fourth input port for receiving said RF signal, and a first and second output port for providing an IF signal,
- a second active distributed input balun means having an input port for receiving said RF signal and having first and second output ports, with the first output port coupled to said third input port of said mixing means and said second output port coupled to said fourth input port of said mixing means,
- a combiner means having a first input port coupled to said first output port of said mixing means and a second input port coupled to said second output port of said mixing means to provide at an output of said combiner, said intermediate frequency signal (IF) relatively free of said LO and RF frequencies and having a high third order intercept point, 'wherein said combiner means is a common gate combiner comprising:
- a first FET having dual source electrodes, a gate and a drain electrode with said first source electrode serving as said first input port, and with said second source electrode serving as said second input port, with said first source electrode directed to a point of reference potential via a second FET having the source electrode connected to the gate electrode and the drain electrode connected to said first source electrode of said first FET, and with said second source electrode directed to said point of reference potential via a third FET having the source electrode

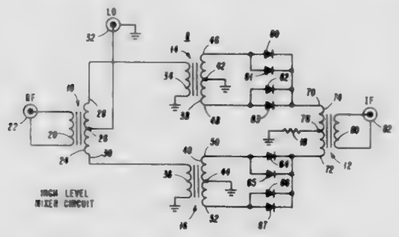
connected to the gate electrode and the drain electrode connected to said second source electrode of said first FET, with the gate electrode of said first FET adapted to receive a bias voltage and with the drain electrode of said first FET serving as said output port, with said drain electrode of said first FET coupled to a source of operating potential via a fourth FET having the source electrode connected to the gate electrode and connected to the drain electrode of said first FET and with the drain electrode of said fourth FET adapted to receive a source of operating potential.

5,060,299

RADIO FREQUENCY MIXER CIRCUIT UTILIZING INTERFACE TRANSFORMERS AND SWITCHING DIODES

Eugene S. Enderson, Robins, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 29, 1989, Ser. No. 414,894
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—326 **15 Claims**



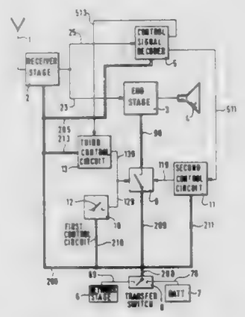
1. A double-balanced mixer circuit, comprising:
a first transformer having a primary coupled to a radio frequency signal source and a center-tapped secondary with its center tap terminal connected to a local oscillator signal source;
a second transformer including a primary having a first end terminal connected to one end terminal of the secondary of said first transformer and a second end terminal connected to ground and including a center-tapped secondary having its center taped connected to ground;
a third transformer including a primary having a first end terminal connected to the other end terminal of the secondary of said first transformer and a second end terminal connected to ground and including a center-tapped secondary having its center tap connected to ground;
a fourth transformer having a primary coupled to an intermediate frequency load and a center-tapped primary with its center tap terminal connected to ground through a bias resistor; and
a plurality of diodes connected in parallel for linking the end terminals of the secondaries of said second and third transformers to the primary of said fourth transformer in order to thereby enable rapid switching action by said diodes.

5,060,300

RECEIVER SWITCHABLE BETWEEN NETWORK SUPPLY MODE AND POWER-CONSERVING BATTERY SUPPLY MODE

Gunter Luber; Wolfgang Heuer, both of Hildesheim; Rudolf Messerschmidt, Sibbesse, and Uwe Mätzold, Salzgitter, all of Fed. Rep. of Germany, assignors to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Continuation of Ser. No. 307,349, Feb. 7, 1989, abandoned. This application Nov. 30, 1990, Ser. No. 622,385
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1988, 3805191
Int. Cl.[5] H04B *17/00, 1/16*
U.S. Cl. 455—343 **2 Claims**



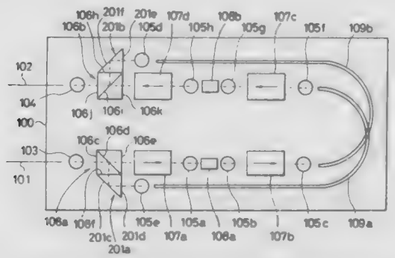
1. Warming receiver having a receiver stage (**2**) with at least one signal output (**23,25,200**), an end stage (**3**) for driving speaker means (**4**), and a power supply stage (**6,7,8,9,90**) including an ON/OFF switch (**9**) with a power supply input (**209**) and a plurality of control inputs (**119, 129, 139**) controlling supply of power (**90**) to said end stage (**3**) in accordance with signals received over said control inputs, and further including, as alternative power sources, a network connection stage (**6**) and a battery (**7**), and
means (**8**), coupled to said power supply input (**209**) of said ON/OFF switch (**9**), for transfer between said alternative power sources,
a control signal decoder (**5**) connected (**25**) to an output of said receiver stage (**2**),
a first control circuit (**10**) detecting any failure of network power and in response thereto directing changeover by said transfer means (**8**) to battery operation mode and signalling (**129**) said ON/OFF switch (**9**) to interrupt supply of power to said end stage (**3**), thereby conserving power yet preventing unnecessary switchoffs, due to momentary fading or loss of signal from said receiver stage (**2**), by said ON/OFF switch (**9**) of power to said end stage (**4**),
a second control circuit (**11**) having an input (**511**) connected to an output of said control signal decoder (**5**) and operative, in response to a predetermined signal from said decoder, to transmit a signal to said ON/OFF switch (**9**) over a control input (**119**) of said switch to reverse the interruption of power to said end stage (**3**), upon receipt of a first control signal in said receiver stage (**2**) and detection thereof in said decoder (**5**), to restore power during a warning broadcast,
signal leads (**200, 205, 210, 211**) interconnecting an output of said receiver stage (**2**) and respective signal terminals of at least said control signal decoder (**5**), said transfer means (**8**), and said first and second control circuits (**10, 11**), and
power supply leads (**208, 209**) from said transfer means (**8**) to at least said receiver stage (**2**), said first and second control circuits (**10, 11**), and said ON/OFF switch (**9**).

5,060,301

OPTICAL REPEATED TRANSMISSION METHOD AND SYSTEM

Eiichi Nishimura, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1990, Ser. No. 561,949
Claims priority, application Japan, Aug. 7, 1989, 64-202814
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—179 **7 Claims**



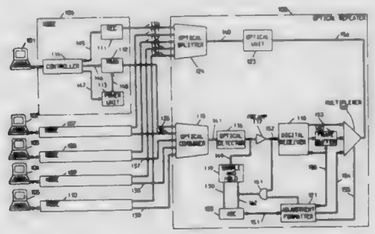
1. An optical amplification system which comprises:
a first polarization beam splitter for separating an input optical signal into a first light component and a second light component whose directions of polarization are orthogonal to each other;
first and second amplifying elements which amplify said first and second light components, respectively;
second polarization beam splitter for merging into an output optical signal said first and second light components that have been amplified by said first and second amplifying elements;
a first isolator provided between said first polarization beam splitter and said first amplifying element;
a second isolator provided between said first amplifying element and said second polarization beam splitter;
a third isolator provided between said first polarization beam splitter and said second amplifying element;
a fourth isolator provided between said second amplifying element and said second polarization beam splitter;
said isolators permitting passage of light traveling in a forward direction from input to output and blocking light traveling in a backward direction from output to input;
each of said isolators rotating the direction of polarization of the light input into it by 45 degrees.

5,060,302

AUTOMATIC ADJUSTMENT OF OPTICAL POWER OUTPUT OF A PLURALITY OF OPTICAL TRANSMITTERS

Gary J. Grimes, Thornton, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 28, 1990, Ser. No. 486,479
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—135 **16 Claims**



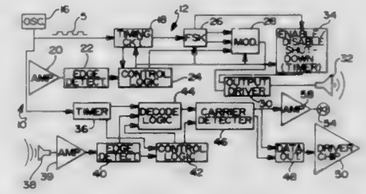
11. An apparatus for adjusting outputs of optical units inter-connected to said apparatus by a common optical communication path and said optical units communicate with each other via said common optical communication path and said apparatus, said apparatus comprising:
means for sampling outputs of said optical units;
means for comparing the samples of said outputs with a predefined optical output level; and
means for designating one of said optical units for adjustment upon the difference between a sample of an output of said one of said optical units and said predefined optical output level exceeding a predefined difference; and
means for transmitting to said designated one of said optical units via said common optical communication path adjustment information for controlling the output level of said designated one of said optical units.

5,060,303

OPTICAL DATA LINK SYSTEM, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Thomas E. Wilmoth, 7891 Wiggins Rd., Howell, Mich. 48843

Filed Sep. 6, 1988, Ser. No. 240,514
Int. Cl.[5] H04B *10/24*
U.S. Cl. 359—152 **16 Claims**



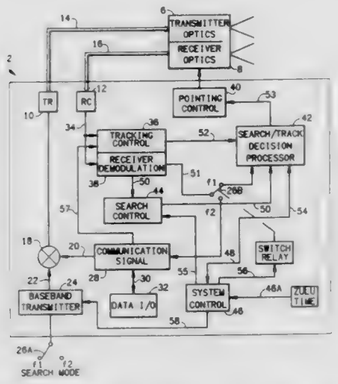
1. Apparatus for high speed communication of data, comprising, in combination:
(a) oscillator means for producing a synchronization clock signal;
(b) timing and control means connected to and receiving clock signals from the oscillator means for producing timing and control signals, and including divider circuit first means for producing simultaneous transmitting and receiving timing and control signals;
(c) synchronization means connected to the timing and control means for synchronizing the same to the clock signal of the oscillator means;
said divider change circuit means includes a second transmitter circuit means for producing two frequency shift key time base carrier frequency representing respectively a high and low input data signal;
said timing and control means further includes a second receiver circuit means, with each first and second transmitter circuit means and said first and second receiver circuit means including at least one counter;
wherein said synchronization means includes edge detector means connected to said at least one counter of the timing and control means for receiving data signal and clearing said at least one counter on detection of transitions of the data received between high and low states;
wherein said oscillator means includes a 24 Megahertz front-end oscillator;
at least one light-emitting diode means connected to the transmitter circuit for transmitting light;
at least one photosensor means connected to the receiver circuit for receiver circuit for receiving light;
said diode means and photosensor means being arranged adjacent one another and directed substantially in a common direction.

5,060,304

ALIGNMENT ACQUIRING, OPTICAL BEAM COMMUNICATION LINK

James C. Solinsky, La Jolla, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Dec. 26, 1989, Ser. No. 456,520
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—152 2 Claims



1 Transmitter and receiver optics for an optical beam transceiver comprising:

(a) a matched pair of reflecting telescopes rigidly mounted in such relation to each other that they are pointing in the same direction with their optical axes being boresight aligned, one for transmitting and one for receiving optical beams, each of said telescopes comprising:

(1) a primary means for parabolically reflecting an incident beam, said primary means having a focal point and defining an aperture at its virtual focal point vertex,

(2) a secondary means optically aligned with said primary means and interposed between said primary means and the primary means focal point for hyperbolically reflecting beams incident upon it from the primary means through said aperture, said secondary means having a focal point behind the primary means, the primary means aperture being large enough to permit substantially all of the beams secondarily reflected by said secondary means to pass therethrough, and

(3) a tertiary means optically aligned with the primary means for retro-reflecting any beams incident upon it passing through said primary means aperture, the vertex of said tertiary means being generally at the secondary means focal point, said tertiary means defining an aperture at its vertex,

(b) a means for transmitting an optical beam through the aperture of the tertiary means of one of the telescopes, said optical beam being optically aligned with said telescope's primary means and aimed at said telescope's secondary means, the aperture of said telescope's tertiary means being generally only large enough to permit passage therethrough of the transmitted beam,

(c) means for detecting any optical beam passing through the aperture of the tertiary means of the other telescope from said other telescope's secondary means, the aperture of said other telescope's tertiary means being generally only large enough to permit passage therethrough of the beams converging on said other telescopes' secondary means focal point, and

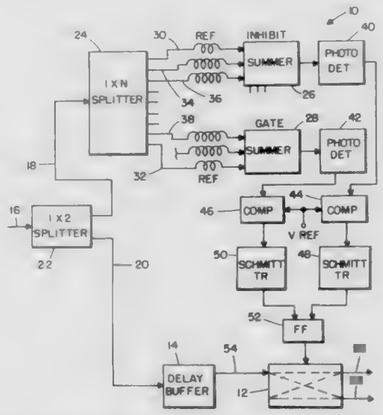
(d) means for selectively pointing the telescopes in unison over a suitable range.

5,060,305

SELF CLOCKED, SELF ROUTED PHOTONIC SWITCH

Paul R. Prucnal, and Philippe A. Perrier, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

Filed Aug. 29, 1989, Ser. No. 399,922
Int. Cl.[5] H04B *10/20*
U.S. Cl. 359—140 7 Claims



1. In an optical communication system for switching messages wherein a pathway is indicated by a message's destination address which is manifested by an address time interval between a reference optical signal and an address optical signal, an optical switch for directing messages onto selected pathways comprising:

gate summing means,

reference means for applying to said gate summing means a portion of a message containing a destination address;

first delay means for applying said destination address message portion to said gate summing means, said first delay means retarding said destination address message portion by a first address time interval, whereby said gate summing means sums said message portions from said reference means and said first delay means to produce a gate signal if a reference optical signal and address optical signal are time coincident; and

switch means responsive to said gate signal to direct said message along a first selected pathway.

5,060,306

OPTICAL TRANSMISSON SYSTEM

Masaru Nakamura, Saitama, and Hideto Furuyama, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 20, 1990, Ser. No. 554,890
Claims priority, application Japan, Jul. 27, 1989, 1-192507
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—173 10 Claims

1. An optical transmission system for transmitting a first electrical signal having a rising edge and a falling edge, comprising:

a first generating means for generating a first light pulse in response to the rising edge of said first electric signal;

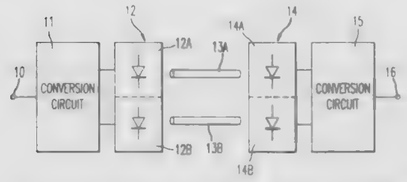
a second generating means for generating a second light pulse in response to the falling edge of said first electric signal;

a first transmitting means for transmitting said first light pulse;

a second transmitting means for transmitting said second light pulse;

a first receiving means for receiving said first light pulse transmitted by said first transmitting means;

a second receiving means for receiving said second light pulse transmitted by said second transmitting means;



means for generating a second electric signal corresponding to said first electric signal in response to said first and second light pulses received by said first and second receiving means.

5,060,307

APPARATUS AND A METHOD COMPRISING AN OPTICAL FIBER MODULATOR, COUPLER, SWITCH, SENSOR AND DISTRIBUTION SYSTEM

Mahmoud A. El-Sherif, Photonics Inc. P.O. Box 2815, Upper Darby, Pa. 19082

Continuation-in-part of Ser. No. 869,570, Jun. 2, 1986, abandoned, and a continuation-in-part of Ser. No. 79,179, Jul. 29, 1987, abandoned. This application Jun. 19, 1989, Ser. No. 368,254
Int. Cl.[5] H04B *10/12*
U.S. Cl. 359—173 16 Claims

1. An electrooptic apparatus selectively operable for coupling, switching, modulating, or distributing an optical signal transmitted in at least one optical fiber, comprising:

(a) a first optical fiber and a second optical fiber, each of said fibers having a core and cladding material surrounding said core and each of said fibers having a region wherein the cladding has been removed to form a region of uncladding, said optical fibers being twisted about each other to provide surface contact between said fibers at said region of uncladding while preventing mechanical movement of said fibers in relation to each other;

(b) an active modified material surrounding the region of uncladding to form an electrooptic modified cladding, said modified cladding having an index of refraction which is changed by an applied external electromagnetic field;

(c) a light source means focused to provide an optical signal to said first optical fiber;

(d) means for applying an external electromagnetic field to said region of modified cladding to change said index of refraction, whereby the effect of said external field modulates the optical signal in said first optical fiber and conveys said signal through said active modified material to said second optical fiber;

(e) detector means positioned on each optical fiber downstream from said light source and said region of modified cladding for detecting optical signals in said first and second optical fibers; and

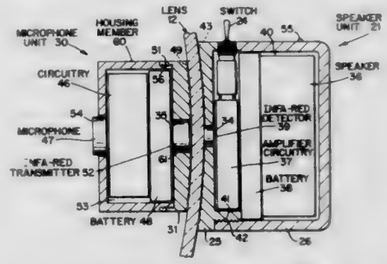
(f) indicator means coupled with said detector means to amplify any output signal of said detector while also providing a reference signal from a power supply to provide a noise free indicator output, said indicator output including output of each of said fibers for direct read-out or comparative read-out as desired.

5,060,308

FIREFIGHTERS MASK COMMUNICATION SYSTEM

John S. Bieback, 83 Hopkins Rd., Ellington, Conn. 06029

Filed Jan. 23, 1989, Ser. No. 299,333
Int. Cl.[5] H04B *10/10, 10/22*
U.S. Cl. 359—154 9 Claims



1. A communication apparatus for being affixed to the lens of a conventional (SCBA) self contained breathing type face mask as utilized by fire fighters, comprising:

inner housing means (**30**) dimensioned for being disposed on a selected portion of the lens, said inner housing means includes a first member (**31**) having a convex surface portion (**32**) contoured for being disposed in mating alignment with the lens and having wall portions defining a hole (**35**) and having connecting means (**51**), said convex surface portion being formed of suitable material to enable said first member to be bonded to the selected inner concave surface portion of the mask lens, and said inner housing means having a second member (**60**) having an alcove (**53**) and having connecting mean (**50**) for enabling said second member to be readily mounted onto and dismantled from said first member to enable quick easy access into said inner housing means;

signal transmitter means (**46**) mounted within said inner housing means and being responsive to a voice communication for transmitting a signal indicative of the voice communication through the mask lens without degradation of the hermetic mask lens;

outer housing means (**21**) dimensioned for being disposed on a selected portion of the exterior surface of the lens, said outer housing means includes a first member (**25**) having a concave surface portion (**22**) contoured for being disposed in mating alignment with the exterior surface of the lens and having wall portions defining a hole (**34**) and having connecting means (**41**), said concave surface portion being formed of suitable material to enable said first member (**25**) to be bonded to a selected outer convex surface portion of the mask lens, and having a second member (**26**) having an alcove (**40**), and having connecting means (**42**) for enabling said second member (**26**) to be readily mounted onto and dismantled from said first member (**25**) to enable relatively quick and easy access into said outer housing means;

signal receiving means (**39**) mounted within said outer housing means and being responsive to the transmitted signal from said transmitting means for providing an electrical signal indicative of said transmitted signal;

speaker means (**36**) mounted within said outer housing means and being responsive to said electrical signal for

generating a representative voice communication without the mask.

5,060,309

INFRARED DETECTOR

Masaru Narita, Uji, Japan, assignor to Takenaka Engineering Co. Ltd., Kyoto, Japan

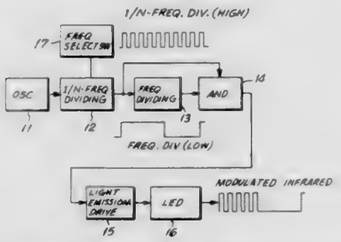
PCT No. PCT/JP88/01288, § 371 Date Jul. 26, 1989, § 102(e) Date Jul. 26, 1989, PCT Pub. No. WO89/05986, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 20, 1988, Ser. No. 392,983

Claims priority, application Japan, Dec. 22, 1987, 62-194678[U]

Int. Cl.[5] H04B *10/10*

U.S. Cl. 359—154 1 Claim



1. An infrared detector including a light projector adapted to output double-modulated infrared pulse light by modulating the amplitude of high frequency modulated light by means of low frequency waves, and a light receiver adapted to receive said double-modulated infrared pulse light, said infrared detector characterized in that:

said light projector (**1**) comprises a basic frequency oscillating circuit (**11**), an 1/N- frequency dividing circuit (**12**) for dividing by N the frequency of the basic frequency signal from said oscillating circuit so that it can be switchably set, a second frequency dividing circuit (**13**) for dividing the frequency of the 1/N- frequency-divided signal by a given factor to produce a low frequency signal, a frequency combining circuit (**14**) for combining said 1/N-frequency-divided signal and the signal frequency-divided by a given factor, a light emission drive circuit (**15**) for receiving the double-modulated signal from said combining circuit (**14**), a light emitting element (**16**) adapted to produce double-modulated infrared rays by the output of said light emission drive circuit (**15**), and a switch (**17**) for switching the frequency dividing factor for said 1/N-frequency dividing circuit (**12**), and

said light receiver (**2**) comprises a light receiving element (**21**) for receiving the infrared rays from said light projector (**1**), a first tuning circuit (**23**) for selecting the optical signal received by the light receiving element (**21**) on the basis of a frequency which corresponds to said 1/N- frequency-divided signal, a second tuning circuit (**24**) adapted to be tuned to said low frequency signal in the selected signal from said first tuning circuit (**23**), a warning output section (**25**) adapted to receive the output signal from said second tuning circuit (**24**), said second tuning circuit (**24**) being provided with a PLL circuit, and a two-circuit ganged type selector switch (**26**) connected to said first and second tuning circuits (**23, 24**) for registering said first and second tuning frequencies with the respective frequencies of the set 1/N- frequency-divided signal and the signal frequency-divided by a given factor.

5,060,310

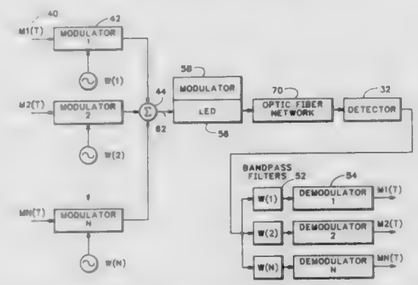
APPARATUS AND METHOD FOR REDUCTION OF INTERMODULATION DISTORTION IN AN OPTICAL FIBER NETWORK

Arnold M. Frisch, Portland, and Thomas A. Almy, Tualatin, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 10, 1989, Ser. No. 392,175

Int. Cl.[5] H04J *14/02;* H04B *10/04*

U.S. Cl. 359—188 21 Claims



1. An apparatus for compensating a light source to reduce distortion, said light source receiving an AC signal source and outputting a modulated optical signal, the apparatus comprising:

semiconductor light source means having a nonlinear transfer curves outputting an optical signal,

means for generating pilot tones,

means for combining said pilot tones and the signal from said AC signal source to form an input signal, said input signal modulating the output of said light source means,

detector means for detecting optical outputs resulting from the pilot tones,

analyzer means for analyzing said optical outputs to determine the distortion in the modulated output signal as a function of the pilot tones and an intermodulation frequency resulting from the pilot tones, and

circuit means responsive to the distortion for introducing countervailing nonlinearities to pre-distort said input signal as a function of the nonlinear transfer curve of the semiconductor light source means.

5,060,311

METHOD AND APPARATUS FOR OBTAINING PHASE OR POLARIZATION INSENSITIVE OPTICAL HETERODYNE RECEPTION FOR DPSK OR ASK-MODULATED TRANSMISSION SIGNAL

Eckhard Meissner, Munich, and Franz Auracher, Baierbrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 18, 1990, Ser. No. 510,859

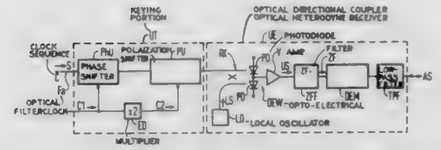
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1989, 3918474

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—192 8 Claims

8. Apparatus for obtaining a phase and/or a polarization insensitive optical heterodyne receiver for a DPSK or ASK modulated optical transmission signal (S) comprising, a clockable phase shifter (PhU) or sinusoidally controllable phase modulator (PhM) for shift-keying or sinusoidal modulating the phase of the transmission signal (S) or of a local oscillator signal (LS), obtained from a local oscillator (LO), and/or a clockable polarization shifter (PU) for shift-keying the polarization of the transmission signal (S) or of the local oscillator signal (LS), and an optical heterodyne receiver (ÜS) having an optical means (RK) for superimposing the optical transmission signal (S) and the local oscillator signal (LS), an opto-electrical converter means (OEW) for converting the two superimposed optical signals (S, LS) into the electrical superposition signal

(ÜS), an intermediate frequency filter (ZF) for filtering the superposition signal (ÜS) and generating the intermediate frequency signal (ZF), a DPSK or ASK demodulator (DEM) for demodulating the intermediate frequency signal (ZF), and



a low-pass filter (TPF) for filtering the demodulated signal, and whereby the intermediate frequency filter (ZFF) is formed of an integrator which integrates over a quarter of the clock time (T).

5,060,312

POLARIZATION INDEPENDENT COHERENT LIGHTWAVE DETECTION ARRANGEMENT

Jean-Marc P. Delavaux, Wescosville, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 5, 1990, Ser. No. 488,568

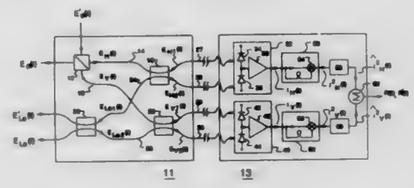
Int. Cl.[5] H04B *11/16*

U.S. Cl. 359—192 5 Claims

1. In a coherent lightwave detection system, an optical hybrid for providing polarization independent signal recovery, the hybrid including

polarization splitting means for dividing a first incoming lightwave message signal into first and second orthogonal components of a first and second polarization state, respectively, and dividing a second incoming lightwave message signal into first and second orthogonal components of said first and second polarization states, respectively, the components of the first and second message signals exiting said splitting means in a manner such that orthogonal components of like polarization state propagate along the same signal path;

means for dividing a first local oscillator signal of a known frequency and known polarization state into first and second components of essentially equal power, and dividing a second local oscillator signal of a frequency different from said first oscillator signal into first and second components of essentially equal power;



first combining means for mixing the first polarization state components of the first and second message signals with the associated first polarization state components of the first and second local oscillator signals, respectively, and providing as an output a plurality of combined signals of the first polarization state; and

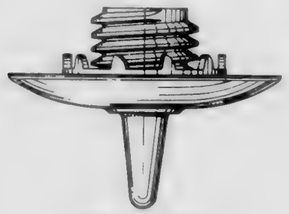
second combining means for mixing the second polarization state components of the first and second message signals with the associated second polarization state components of the first and second local oscillator signals, respectively, and providing as an output a plurality of combined signals of the second polarization state.

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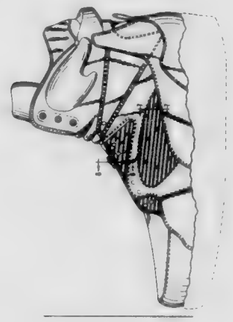
DESIGNS

OCTOBER 22, 1991

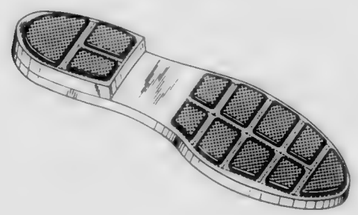
320,882
STUD FOR AN ARTICLE OF FOOTWEAR
Roy S. Collins, Sutton Coldfield, England, assignor to Trisport Limited, Tamworth, England
Filed Aug. 1, 1988, Ser. No. 227,058
Term of patent 14 years
U.S. Cl. D2—314



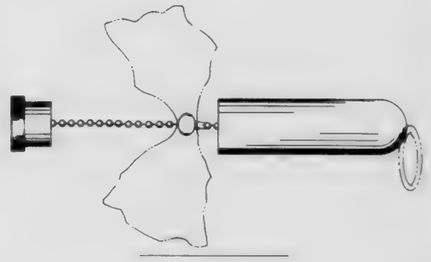
320,883
SHOE UPPER
Michael A. Aveni, Lake Oswego, Oreg., assignor to Nike Inc. and Nike, International Ltd., both of Beaverton, Oreg.
Filed Jan. 18, 1991, Ser. No. 643,074
Term of patent 14 years
U.S. Cl. D2—314



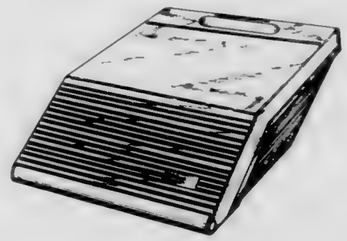
320,884
ANTI-SLIP SOLE FOR FOOTWEAR
Aldo Brué , Monte S. Pietrangeli, Italy, assignor to Brué S.p.A., Monte S. Pietrangeli, Italy
Filed Jan. 25, 1989, Ser. No. 301,144
Claims priority, application Int'l Pat. Institute, Jul. 27, 1988, DM/011440
Term of patent 14 years
U.S. Cl. D2—320



320,885
CONTAINER FOR A REMOVABLE LENS CLEANING MATERIAL
Michael A. Fitzhugh, 1089 Vallejo Cir., Costa Mesa, Calif. 92627
Filed Jul. 29, 1988, Ser. No. 225,942
Term of patent 14 years
U.S. Cl. D3—34

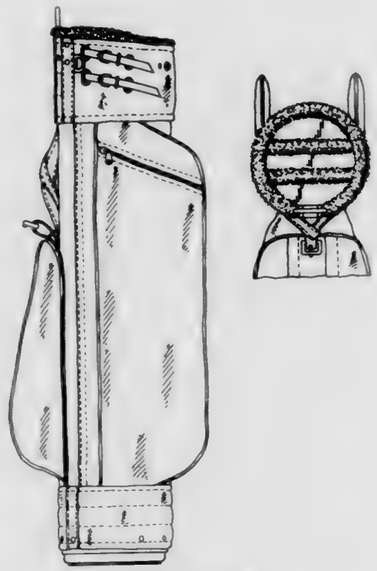


320,886
CARRYING CASE FOR COMPACT DISCS OR THE LIKE
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Inc., Chicago, Ill.
Filed Nov. 21, 1988, Ser. No. 273,865
Term of patent 14 years
U.S. Cl. D3—35

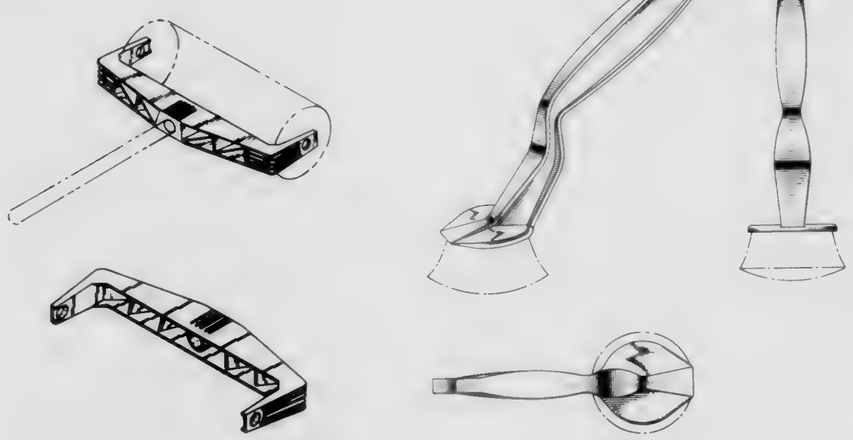


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320,887
GOLF CLUB BAG
George H. Jones, 13460 SW. Fielding Rd., Lake Oswego, Oreg. 97034
Filed Jan. 17, 1989, Ser. No. 297,744
Term of patent 14 years
U.S. Cl. D3—37

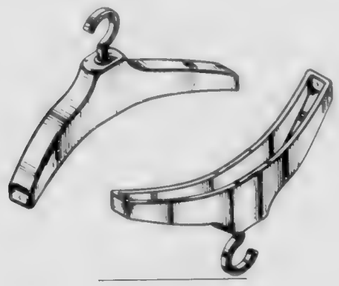


320,888
PAINT ROLLER YOKE
Scott R. Parizek, Fridley, Minn., assignor to Padco, Inc., Minneapolis, Minn.
Filed Jul. 12, 1988, Ser. No. 218,106
Term of patent 14 years
U.S. Cl. D4—122

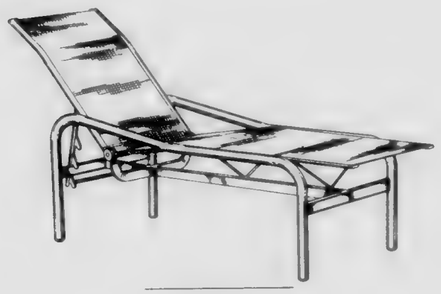


320,889
BRUSH HANDLE
Enzo Berti, Venice, Italy, assignor to Libman Broom Company, Arcola, Ill.
Filed Nov. 22, 1989, Ser. No. 440,289
Term of patent 14 years
U.S. Cl. D4—138

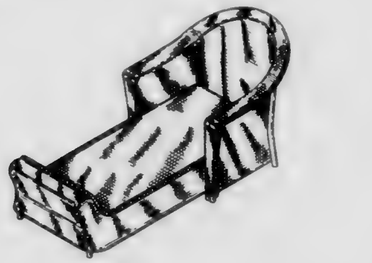
320,890
COAT HANGER OR SIMILAR ARTICLE
Bonnie J. Moore, 7055 Juniper Dr., Black Forest, Colo. 80908
Filed Oct. 10, 1989, Ser. No. 419,451
Term of patent 14 years
U.S. Cl. D6—318



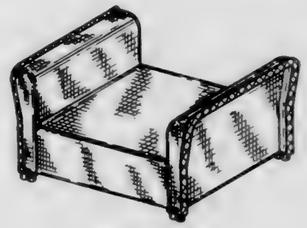
320,891
CHAISE
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 20, 1988, Ser. No. 221,924
Term of patent 14 years
U.S. Cl. D6—361



320,892
CHAISE LOUNGE
George M. Kinard, Menominee, Mich., and James R. Tress, Marinette, Wis., assignors to Flanders Industries, Inc., Fort Smith, Ark.
Filed Dec. 1, 1988, Ser. No. 278,428
Term of patent 14 years
U.S. Cl. D6—369



320,893
OTTOMAN
George M. Kinard, Menominee, Mich., and James R. Tress, Marinette, Wis., assignors to Flanders Industries, Inc., Fort Smith, Ark.
Filed Dec. 1, 1988, Ser. No. 278,431
Term of patent 14 years
U.S. Cl. D6—369



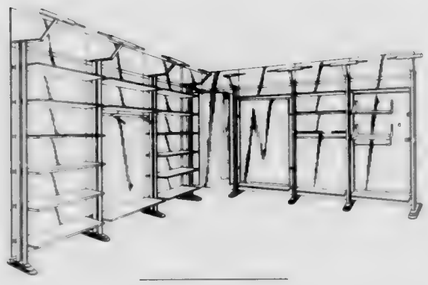
320,894
CHAIR
Gabriel Pons, Alacuas, Spain, assignor to Empire State Chair Co., Inc., Haverstraw, N.Y.
Filed Oct. 24, 1988, Ser. No. 261,465
Term of patent 14 years
U.S. Cl. D6—370



320,895
CHAIR
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 19, 1988, Ser. No. 221,186
Term of patent 14 years
U.S. Cl. D6—373



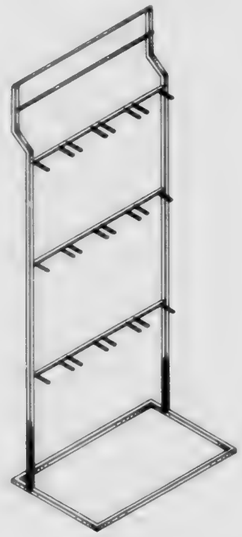
320,896
COMBINED SHELF AND WALL UNIT
Tiziana Prevedello, Oderzo, and Adamo Tortoli, Siena, both of Italy, assignors to Stefanel S.p.A., Ponte de Piave, Italy
Filed Feb. 3, 1988, Ser. No. 152,093
Claims priority, application Italy, Aug. 3, 1987, 35961/87[U]
Term of patent 14 years
U.S. Cl. D6—399



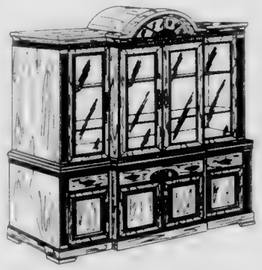
320,897
BLANKET RACK
Peter M. Yau Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Jeffersonville, Ind.
Division of Ser. No. 295,474, Jan. 10, 1989, Pat. No. Des. 309,063. This application Jan. 26, 1990, Ser. No. 471,363
The portion of the term of this patent subsequent to Mar. 26, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—410



320,898
BOOT RACK
Arnold R. Dyess, 4236 Imperial Hwy., #A, Lynwood, Calif. 90262
Filed Oct. 14, 1988, Ser. No. 257,784
Term of patent 14 years
U.S. Cl. D6—411



320,899
CHINA CABINET
H. Thomas Keller, High Point, N.C., assignor to Bernhardt Furniture Co., Inc., Lenoir, N.C.
Filed Jun. 13, 1988, Ser. No. 205,804
Term of patent 14 years
U.S. Cl. D6—438



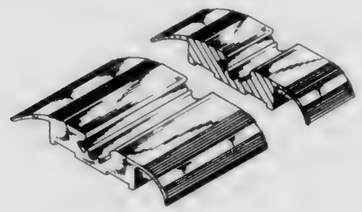
320,900
BATHROOM ETAGERE
Peter M. Yau Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Jeffersonville, Ind.
Division of Ser. No. 295,474, Jan. 10, 1989, Pat. No. Des. 309,063. This application Jan. 26, 1990, Ser. No. 471,278
The portion of the term of this patent subsequent to Jan. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—465



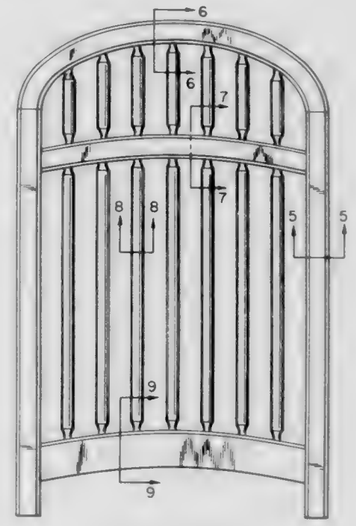
320,901
SHELF UNIT
Peter M. Yau Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Jeffersonville, Ind.
Filed Apr. 9, 1990, Ser. No. 506,756
The portion of the term of this patent subsequent to Aug. 14, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—479



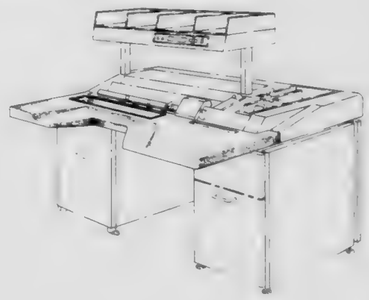
320,902
TRACK FOR A MOBILE SHELVING SYSTEM
Alan R. Leist, Grand Rapids, Mich., assignor to Pipp Mobile Systems, Inc., Grand Rapids, Mich.
Filed Feb. 29, 1988, Ser. No. 161,835
Term of patent 14 years
U.S. Cl. D6—491



320,903
CRIB FOOTBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Apr. 12, 1989, Ser. No. 337,170
Term of patent 14 years
U.S. Cl. D6—508



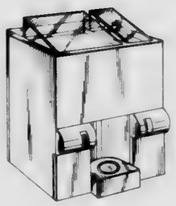
320,904
SHELF ATTACHMENT FOR A MAIL SORTING DESK
John D. Coleman, and Eric A. Schneider, both of Philadelphia, Pa., assignors to Opex Corporation, Moorestown, N.J.
Filed Feb. 5, 1990, Ser. No. 475,090
Term of patent 14 years
U.S. Cl. D6—511



320,905
COFFEE MAKER
Jose M. Vidal-Brualla, Barcelona, Spain, assignor to C.M.H., S.A., Barcelona, Spain
Division of Ser. No. 257,025, Oct. 12, 1988, Pat. No. Des. 320,525. This application Feb. 11, 1991, Ser. No. 654,925
Claims priority, application Spain, Apr. 15, 1988, 115,726
Term of patent 14 years
U.S. Cl. D7—309

320,906
COFFEE POT OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 17, 1988, Ser. No. 169,358
Term of patent 14 years
U.S. Cl. D7—321





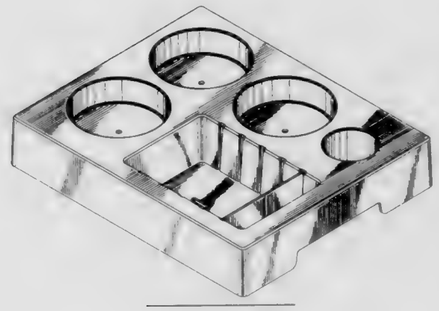


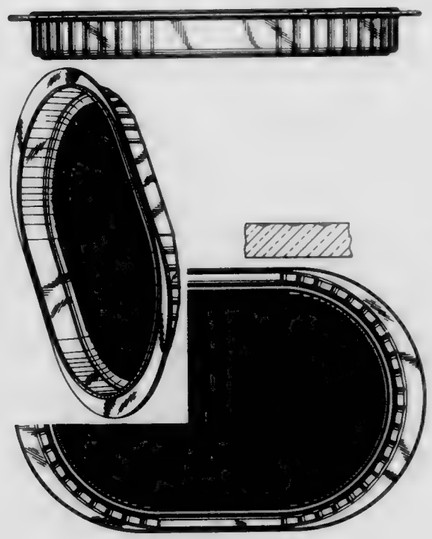
320,907
CUP OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 10, 1989, Ser. No. 321,805
Term of patent 14 years
U.S. Cl. D7—536



320,908
TRAY OR THE LIKE
Larry G. Zimmerman, North Smithfield, R.I., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Jan. 23, 1989, Ser. No. 300,679
Term of patent 14 years
U.S. Cl. D7—545

320,909
ORGANIZER TRAY FOR BEVERAGES
Michael J. Szablak, Stephens City, and Glen E. Tomblin, Winchester, both of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Aug. 16, 1989, Ser. No. 394,436
Term of patent 14 years
U.S. Cl. D7—616



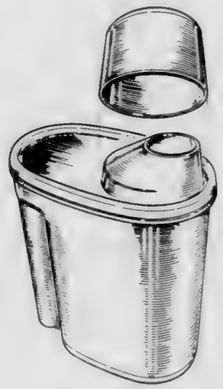


320,910
CONTAINER FOR PRESERVATION OF FOOD
Kiyotake Saiki, 8744, Yoshino-machi, Kagoshima-shi, Kagoshima-ken, Japan
Filed Aug. 10, 1989, Ser. No. 395,712
Term of patent 14 years
U.S. Cl. D7—628

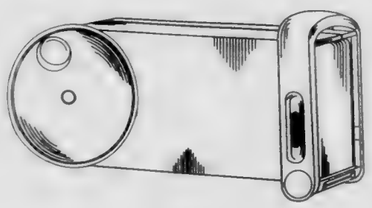


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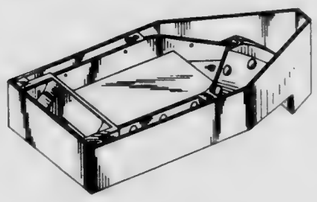
320,911
CEREAL CONTAINER
Arthur R. Carlson, East Malvern, Australia, assignor to The Decor Corporation Pty. Ltd., Victoria, Australia
Filed Jun. 16, 1989, Ser. No. 367,215
Term of patent 14 years
U.S. Cl. D7—629



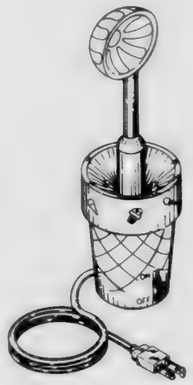
320,912
CHEESE DISPENSER
David A. Holcomb, Seattle, Wash., assignor to Chef'N Corporation, Seattle, Wash.
Filed Mar. 30, 1989, Ser. No. 332,753
Term of patent 14 years
U.S. Cl. D7—672



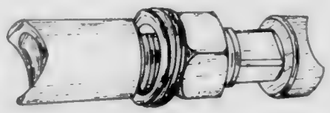
320,913
MOLD FOR MAKING A BOAT-SHAPED ICE BLOCK
Takeo Suzuki, 17-4 Nishinaka, Shimoda-shi, Shizuoka-ken, Japan
Filed Feb. 23, 1989, Ser. No. 314,829
Claims priority, application Japan, Aug. 29, 1988, 63-34079
Term of patent 14 years
U.S. Cl. D7—675



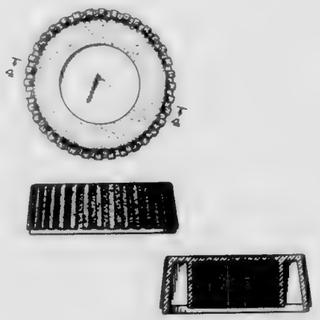
320,914
ELECTRICALLY HEATED FROZEN FOOD SERVER
Milton W. Allen, P.O. Box 1243, Lyman, Wyo. 82937
Filed Aug. 7, 1989, Ser. No. 390,352
Term of patent 14 years
U.S. Cl. D7—681



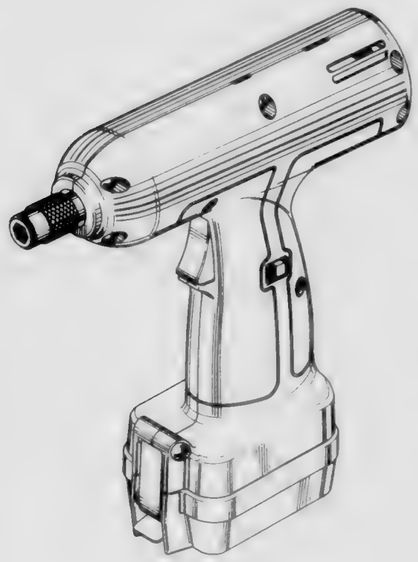
320,915
EXHAUST MANIFOLD ALIGNMENT TOOL
Arthur Sanguino, 136 Marilyn Ave., Stockton, Calif. 95207
Filed Nov. 2, 1988, Ser. No. 266,489
Term of patent 14 years
U.S. Cl. D8—14



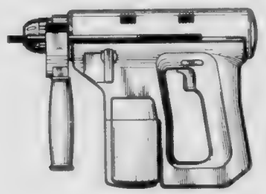
320,916
BOTTLE CAP REMOVING AID, OR SIMILAR ARTICLE
Jay S. Riddle, 2137 Wembly, Corona, Calif. 91719, and Doug J. Fraser, 8182 Cobblestone Dr., Midway City, Calif. 92655
Filed Nov. 27, 1989, Ser. No. 441,408
Term of patent 14 years
U.S. Cl. D8—40



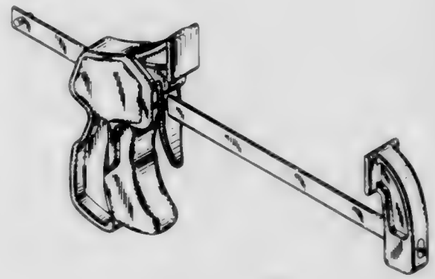
320,917
CORDLESS SCREWDRIVER
Fusao Fushiya, and Kiyotaka Ichikawa, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Mar. 9, 1989, Ser. No. 320,458
Claims priority, application Japan, Sep. 28, 1988, 63-37930
Term of patent 14 years
U.S. Cl. D8—68



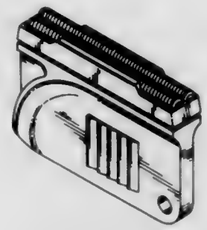
320,918
PORTABLE ELECTRIC HAMMER DRILL
Taro Mochida, Kadoma, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jan. 27, 1989, Ser. No. 302,729
Term of patent 14 years
U.S. Cl. D8—68



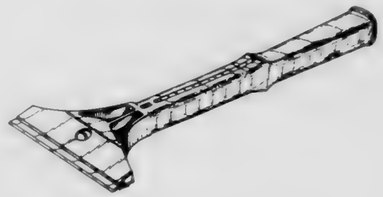
320,919
QUICK ACTION BAR CLAMP
Joseph A. Sorensen, Lincoln, Nebr., assignor to Petersen Manufacturing Co., Inc., DeWitt, Nebr.
Filed Jan. 18, 1989, Ser. No. 298,498
Term of patent 14 years
U.S. Cl. D8—72



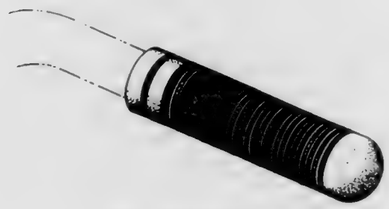
320,920
FISH HOOK SHARPENER
Lamar R. Madsen, 2220 SE. 132nd Ct., Vancouver, Wash. 98684
Filed Oct. 7, 1988, Ser. No. 254,667
Term of patent 14 years
U.S. Cl. D8—91



320,921
WALLSTRIPPER TOOL
David R. Henke, Maple Grove, and David J. Ruha, Hopkins, both of Minn., assignors to Warner Manufacturing Company, Minneapolis, Minn.
Filed Jan. 5, 1989, Ser. No. 293,867
Term of patent 14 years
U.S. Cl. D8—98



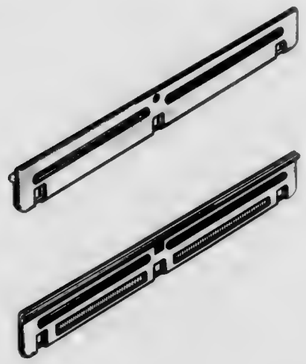
320,922
BICYCLE HANDLE BAR GRIP
Jeffry L. Lurkis, 7726 Willow Glen Rd., Los Angeles, Calif. 90046
Filed Feb. 26, 1990, Ser. No. 485,070
Term of patent 14 years
U.S. Cl. D8—303



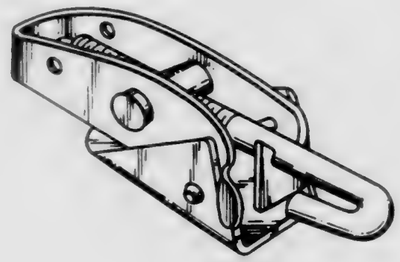
320,923
ATTACHMENT FOR TURNING DOOR KNOBS
Norbert Leopoldi, Chicago, Ill., assignor to The Cloverline, Inc., Chicago, Ill.
Filed Sep. 19, 1988, Ser. No. 246,171
Term of patent 14 years
U.S. Cl. D8—321



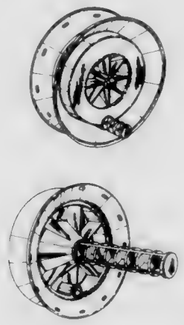
320,924
PIVOTING LATCH FOR SECURING THE LID OF A CONTAINER
Laurance A. Harris, 15553 Peach Leaf La., Gaithersburg, Md. 20878
Filed Sep. 18, 1989, Ser. No. 408,319
Term of patent 14 years
U.S. Cl. D8—336



320,925
DOUBLE-LOCKING ANCHOR CHAIN TENSIONER
Robert G. Barbour, 4238 Collidge Ave., Mar Vista, Calif. 90066, and Glenn A. Smith, Mar Vista, Calif., assignors to Robert G. Barbour, Los Angeles, Calif.
Filed Jul. 19, 1989, Ser. No. 383,341
Term of patent 14 years
U.S. Cl. D8—356



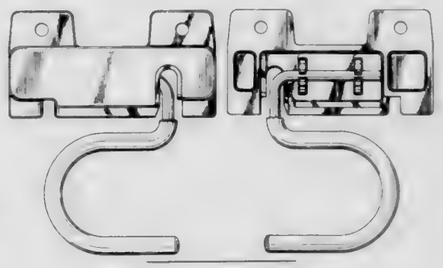
320,926
HAND REEL
Desmond G. Fanning; Peter J. Anderson; Nicholas J. Booth, and Robert K. McNab, all of Victoria, Australia, assignors to Peter Fanning and Company Proprietary Ltd., Melbourne, Australia
Filed Oct. 27, 1989, Ser. No. 427,806
Claims priority, application Australia, May 2, 1989, 1373/89; Oct. 19, 1989, 3410/89
Term of patent 14 years
U.S. Cl. D8—359



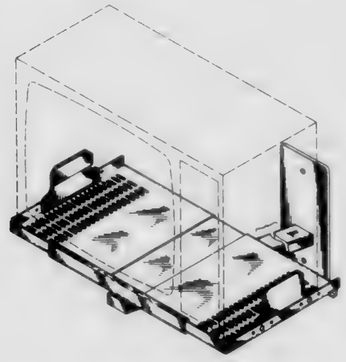
320,927
POLY-V PULLEY
Toshiaki Kanemitsu, Kobe, Japan, assignor to Kabushiki Kaisha Kanemitsu, Japan
Filed Jan. 3, 1990, Ser. No. 460,599
The portion of the term of this patent subsequent to Jun. 25, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—360



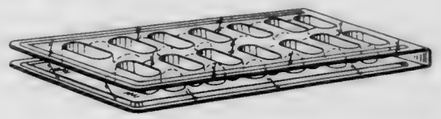
320,928
ADJUSTABLE WALL-MOUNTED APPLIANCE SUPPORT
William L. Boscacci, and Edward L. O'Neill, both of San Leandro, Calif., assignors to Lucasey Manufacturing Corporation, Oakland, Calif.
Filed Sep. 9, 1987, Ser. No. 94,927
Term of patent 14 years
U.S. Cl. D8—363



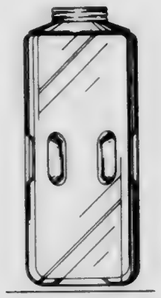
320,929
WALL MOUNT SINGLE HOOK ASSEMBLY UNIT
Jody A. Hobson, Rocky River, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 11, 1989, Ser. No. 392,379
Term of patent 14 years
U.S. Cl. D8—367



320,930
PACKAGE
Richard D. Richards, Liphook, United Kingdom, assignor to Parke Davis & Co., St. Helier, Channel Islands
Filed Jul. 28, 1988, Ser. No. 225,517
Claims priority, application United Kingdom, Jan. 28, 1988, 1048095
Term of patent 14 years
U.S. Cl. D9—345



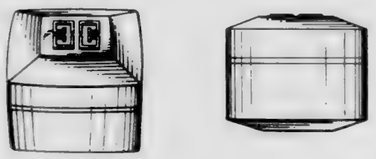
320,931
BOTTLE
Gerald Siegel, 12261 N. 74th St., Scottsdale, Ariz. 85260
Filed Nov. 9, 1989, Ser. No. 433,738
Term of patent 14 years
U.S. Cl. D9—369



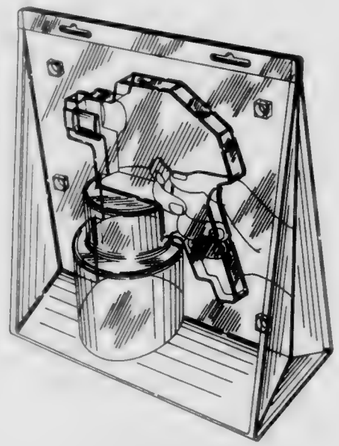
320,932
BOTTLE
Gerard E. Lyons, 637 MacLaren Drive, Burlington, Ontario, Canada L7N 2Z3
Filed Oct. 23, 1989, Ser. No. 425,316
Claims priority, application Canada, Aug. 14, 1989, 14-08-89-19
Term of patent 14 years
U.S. Cl. D9—370



320,933
COMBINED JAR AND CLOSURE
Jean Courtiere, Paris, and Yves-Marie Degliame, Beauvais, both of France, assignors to Parfums Givenchy, S.A., Levallois-Perret, France
Filed Dec. 9, 1988, Ser. No. 282,448
Claims priority, application France, Jun. 13, 1988, DM/011143
Term of patent 14 years
U.S. Cl. D9—377



320,934
COMBINED PACKAGE FOR SPRAY GUN AND ADVERTISING INSERT
Michael J. Cross, Gurnee, and Joseph Jasionowski, Park Ridge, both of Ill., assignors to Federal Equipment Corporation, North Chicago, Ill.
Filed Oct. 5, 1989, Ser. No. 417,814
Term of patent 14 years
U.S. Cl. D9—415



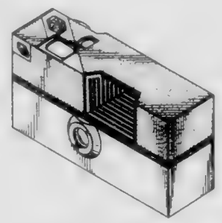
320,935
PACKAGING CONTAINER
Per Nylander, Jönköping, Sweden, assignor to Roby Teknik AB, Lund, Sweden
Division of Ser. No. 143,614, Jan. 13, 1988. This application Nov. 26, 1990, Ser. No. 618,103
Claims priority, application Sweden, Jul. 13, 1987, 871584; Jul. 13, 1987, 871585; Jul. 13, 1987, 871586; Jul. 13, 1987, 871587; Jul. 13, 1987, 871588; Jul. 13, 1987, 871589; Jul. 13, 1987, 871590; Jul. 13, 1987, 871591; Jul. 13, 1987, 871592; Jul. 13, 1987, 871593
Term of patent 14 years
U.S. Cl. D9—417



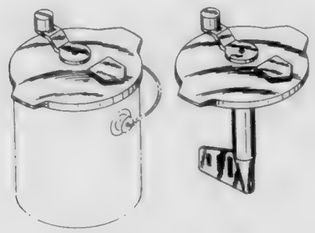
320,936
CHEMICAL CONTAINER
Shinzo Honda, Tokyo; Kazunori Hirose, and Zensho Kanda, both of Yamanashi, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1989, Ser. No. 454,113
Claims priority, application Japan, Jun. 27, 1989, 1-23515
Term of patent 14 years
U.S. Cl. D9—430



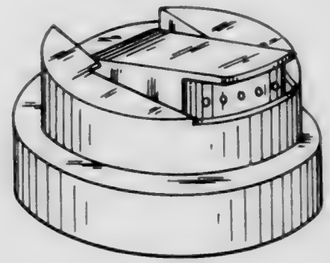
320,937
PACKAGE FOR A DISPOSABLE CAMERA
Takuya Arai, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 195,957, May 17, 1988, Pat. No. D. 313,183.
This application Apr. 6, 1990, Ser. No. 505,522
Term of patent 14 years
U.S. Cl. D9—432



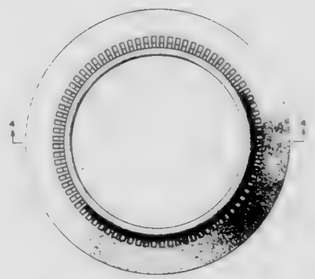
320,938
COMBINED CLOSURE AND MIXER FOR PAINT CANS
Dorothy Stallings, Rte. 1, Box 165C, Pattonville, Tex. 75468, assignor to Dorothy Stallings, Pattonville, Tex.
Filed Feb. 12, 1990, Ser. No. 478,771
Term of patent 14 years
U.S. Cl. D9—436

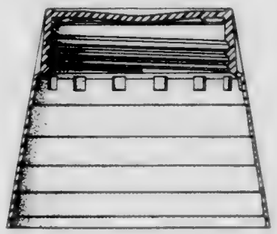


320,939
DISPENSING CLOSURE
Richard W. Hofmann, Chicago, and John S. Song, Evanston, both of Ill., assignors to Magenta Corporation, Hodgkins, Ill.
Filed Feb. 26, 1990, Ser. No. 485,077
Term of patent 14 years
U.S. Cl. D9—447

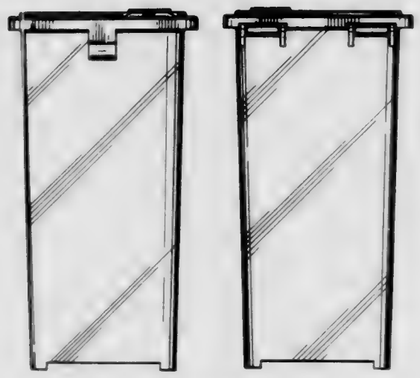


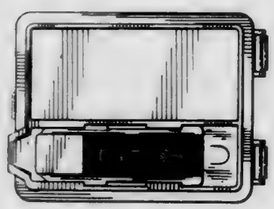
320,940
CLOSURE
John S. Reece; Timothy J. Beechuk, both of Cincinnati, Ohio, and John Pardo, Yonkers, N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 29, 1988, Ser. No. 213,219
Term of patent 14 years
U.S. Cl. D9—453





320,941
HOLDER FOR A BEVERAGE CONTAINER
Chris J. Lyon, P.O. Box 429, Estill, S.C. 29918
Filed Apr. 28, 1989, Ser. No. 344,848
Claims priority, application United Kingdom, Mar. 1, 1989, 1057520
Term of patent 14 years
U.S. Cl. D9—455

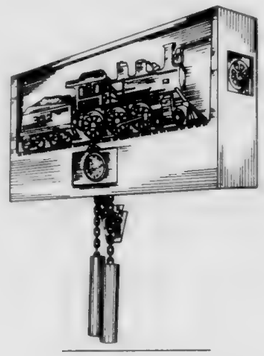




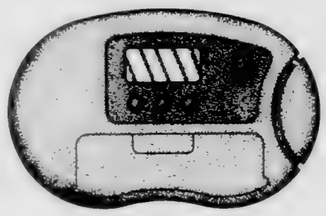
320,942
DIVIDED INSERT FOR A CONTAINER
Stig Lillelund, Gardenhøjvej 33, and Eskil H. Olsen, C.L. Ibsensvej 48, both of DK-2800 Gentofte, Denmark
Filed May 26, 1989, Ser. No. 359,054
Term of patent 14 years
U.S. Cl. D9—456



320,943
CLOCK
Myron Harsch, Rte. 1, Box 60, Waverly, Kans. 66871
Filed Mar. 2, 1988, Ser. No. 162,865
Term of patent 14 years
U.S. Cl. D10—12



320,944
CLOCK
Mitsuo Wada, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 14, 1989, Ser. No. 311,182
Claims priority, application Japan, Aug. 30, 1988, 63-34249
Term of patent 14 years
U.S. Cl. D10—15



320,945
BELT LOOP WATCH
Richard Hiles, 2870 Maysville Pike, Lot #54, Zanesville, Ohio 43701
Filed Jan. 6, 1989, Ser. No. 294,136
Term of patent 14 years
U.S. Cl. D10—31



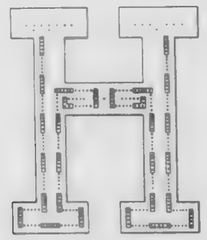
320,946
COMBINED WRISTWATCH AND STRAP
Carlo Crocco, Lugano, Switzerland, assignor to Montres MDM Fabrication SA, Nyon, Switzerland
Filed Dec. 21, 1988, Ser. No. 288,617
Claims priority, application Hague, Jun. 21, 1988, DM/011205
Term of patent 14 years
U.S. Cl. D10—32



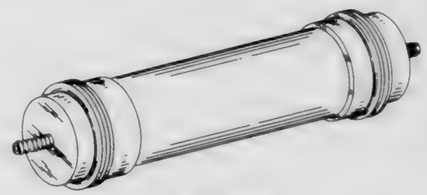
320,947
WRIST WATCH
Atsushi Goto, Ohme, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 28, 1989, Ser. No. 372,942
Term of patent 14 years
U.S. Cl. D10—39



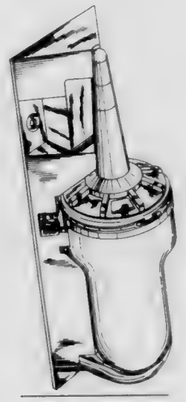
320,948
CRIBBAGE BOARD
Robert K. DuMond, Jr., 316 W. Montcalm St., Greenville, Mich. 48838
Filed Sep. 15, 1989, Ser. No. 407,775
The portion of the term of this patent subsequent to Aug. 20, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—46.1



320,949
CHROMATOGRAPHY COLUMN
Henry B. Kopf, 108 Coatbridge Cir., Cary, N.C. 27511
Filed Jun. 16, 1989, Ser. No. 367,212
Term of patent 14 years
U.S. Cl. D10—81



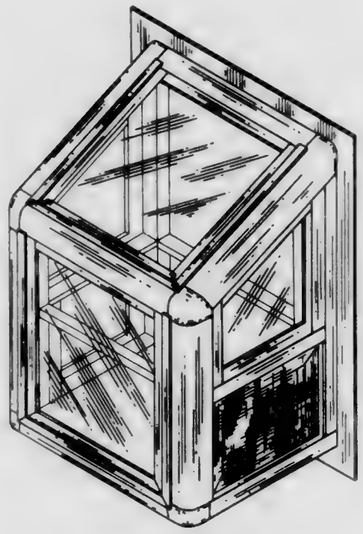
320,950
COMBINED TRANSMITTER BUOY AND BRACKET THEREFOR
Peter W. Bressler, Philadelphia; Albert C. Paulowitz, Kennett Square; David R. Schiff, Philadelphia, and Thomas R. Krishan, Newtown Square, all of Pa., assignors to Litton Systems, Inc., Springfield, Pa.
Filed Mar. 31, 1989, Ser. No. 332,321
Term of patent 14 years
U.S. Cl. D10—107



320,951
EARRING
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Italy
Filed Nov. 13, 1989, Ser. No. 436,017
Claims priority, application Hague, May 23, 1989, DM013.637
Term of patent 14 years
U.S. Cl. D11—42



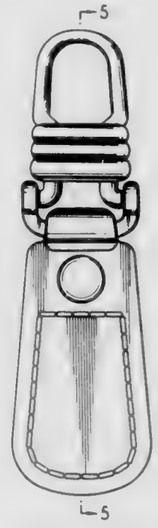
320,952
WINDOW GREENHOUSE
Richard A. Lang, 3421 Woodview Dr., Lafayette, Calif. 94549
Filed Jan. 30, 1989, Ser. No. 303,397
Term of patent 14 years
U.S. Cl. D11—145



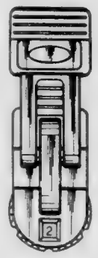
320,953
PULL TAB FOR SLIDE FASTENER
Yoshiyuki Horita, and Kenji Yuuki, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed May 30, 1989, Ser. No. 357,856
Term of patent 14 years
U.S. Cl. D11—221



320,954
PULL TAB FOR SLIDE FASTENER
Chiharu Takemura, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jun. 5, 1989, Ser. No. 361,115
Claims priority, application Japan, Dec. 8, 1988, 63-47905
Term of patent 14 years
U.S. Cl. D11—221



320,955
SLIDER FOR SLIDE FASTENERS
Yoshiyuki Horita, Toyama, and Kiyoyasu Waki, Kawasaki, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jul. 10, 1989, Ser. No. 377,203
Claims priority, application Japan, Dec. 15, 1988, 63-48889
Term of patent 14 years
U.S. Cl. D11—221



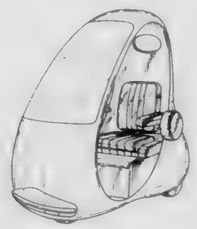
320,956
SLIDER FOR SLIDE FASTENER
Yoshiyuki Horita, Toyama, and Kiyoyasu Waki, Kawasaki, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jul. 10, 1989, Ser. No. 377,205
Term of patent 14 years
U.S. Cl. D11—221



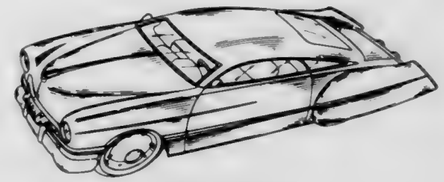
320,957
PULL TAB FOR SLIDE FASTENER
Kenji Yuki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Oct. 16, 1989, Ser. No. 421,710
Claims priority, application Japan, Apr. 17, 1989, 1-14185
Term of patent 14 years
U.S. Cl. D11—221



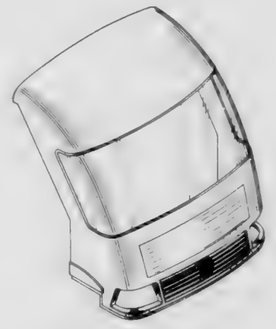
320,958
AUTOMOBILE
Kazutoshi Kimura; Hideharu Ushiroda, both of Fujisawa, and Shou Kagawa, Kanagawa, all of Japan, assignors to Isuzu Motors Limited and Shatai Kogyo Company Ltd., both of Japan
Filed Mar. 16, 1989, Ser. No. 324,348
Claims priority, application Japan, Oct. 8, 1988, 63-39364
Term of patent 14 years
U.S. Cl. D12—85



320,959
AUTOMOBILE
Larry R. Erickson, Birmingham, Mich., and William F. Gibbons, Houston, Tex., assignors to Gizmochine, Inc., Houston, Tex.
Filed Feb. 21, 1989, Ser. No. 312,581
Term of patent 14 years
U.S. Cl. D12—91



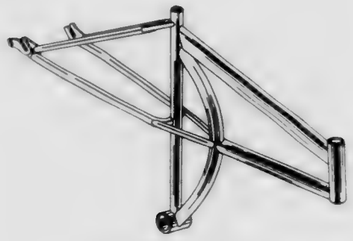
320,960
FRONT PANEL OF A MOTORHOME
James F. Shea, Sr., Nappanee, Ind., assignor to Gulf Stream Coach, Inc., Nappanee, Ind.
Division of Ser. No. 441,865, Nov. 27, 1989. This application Mar. 23, 1990, Ser. No. 497,643
Term of patent 14 years
U.S. Cl. D12—100



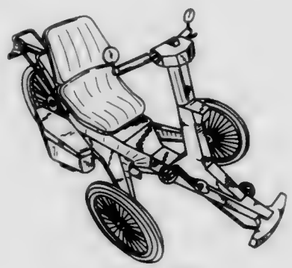
320,961
MOTORCYCLE
Akihiko Hikida, Venice, Calif., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jul. 26, 1989, Ser. No. 385,779
Term of patent 14 years
U.S. Cl. D12—110



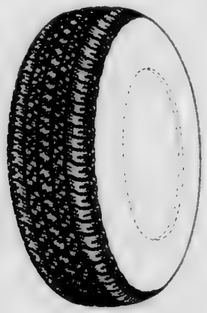
320,962
BICYCLE FRAME
William M. Savage, 1472 Chariot Ct., Bonsall, Calif. 92003
Filed Nov. 13, 1989, Ser. No. 434,830
Term of patent 14 years
U.S. Cl. D12—111



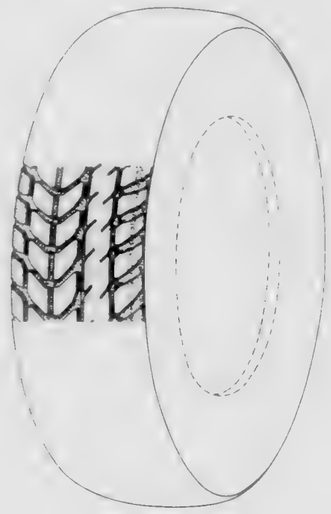
320,963
TRICYCLE
John Krieger, Pasadena, Calif., assignor to Yamaha Hatsudoki Katushiki Kaisha, Iwata, Japan
Filed Aug. 4, 1989, Ser. No. 389,553
Term of patent 14 years
U.S. Cl. D12—112



320,964
TIRE TREAD AND BUTTRESS
Robert L. Crump, Cumberland, Md.; Ronald T. Harris, Greenspring, and Roger R. Riffle, Ridgeley, both of W. Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 5, 1990, Ser. No. 474,890
Term of patent 14 years
U.S. Cl. D12—146



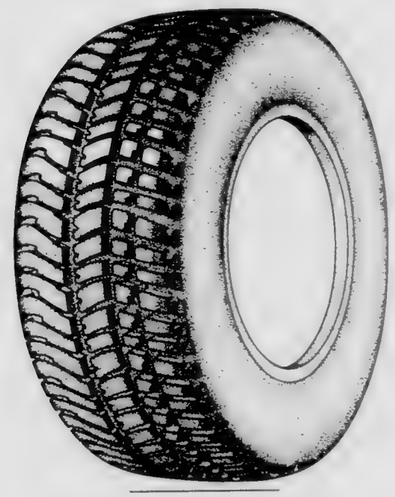
320,965
TIRE TREAD AND BUTTRESS
Paul B. Maxwell, Akron; Philip S. Hammond, Mogadore, and Darrell E. Covert, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 17, 1989, Ser. No. 437,880
Term of patent 14 years
U.S. Cl. D12—147



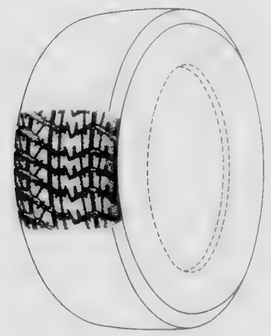
320,966
TIRE TREAD AND BUTTRESS
Frederick W. Miller, Akron; Jay K. Lawrence, Uniontown, and William M. Hopkins, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 21, 1990, Ser. No. 484,732
Term of patent 14 years
U.S. Cl. D12—147



320,967
TIRE
Darrell E. Covert, Uniontown, and Paul B. Maxwell, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 18, 1989, Ser. No. 395,919
Term of patent 14 years
U.S. Cl. D12—147



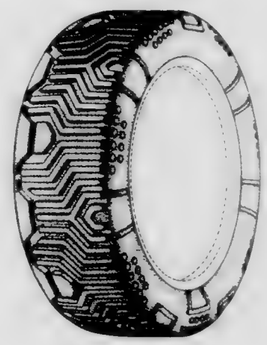
320,968
TIRE TREAD AND BUTTRESS
Paul B. Maxwell, Akron; Philip S. Hammond, Mogadore, and Darrell E. Covert, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 30, 1989, Ser. No. 429,242
Term of patent 14 years
U.S. Cl. D12—147



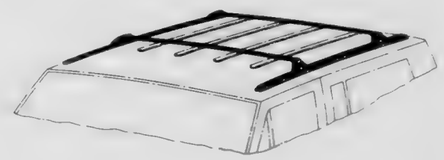
320,969
AUTOMOBILE TIRE
Toshiaki Kobayashi, and Yuji Sakamaki, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 1, 1989, Ser. No. 361,007
Claims priority, application Japan, Dec. 5, 1988, 63-47202
Term of patent 14 years
U.S. Cl. D12—147



320,970
TIRE TREAD AND BUTTRESS
Paul B. Maxwell, Akron; Philip S. Hammond, Mogadore, and Darrell E. Covert, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 18, 1989, Ser. No. 395,918
Term of patent 14 years
U.S. Cl. D12—149



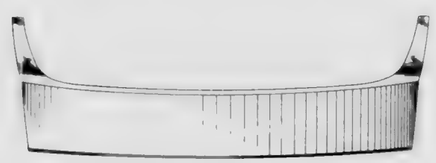
320,971
ARTICLE CARRIER FOR A PASSENGER VEHICLE
Jon D. Sparham, Pontiac; Alan D. Lusky, Warren; Ralph J. Mandarino, Grosse Pointe Farms, and Thomas C. Nanney, Warren, all of Mich., assignors to Huron/St. Clair Incorporated, Taylor, Mich.
Continuation-in-part of Ser. No. 250,705, Sep. 28, 1988. This application Aug. 1, 1989, Ser. No. 388,222
Term of patent 14 years
U.S. Cl. D12—157



320,972
MASTER CONTROLLER COVER FOR A LOCOMOTIVE TRAIN
David O. Chase; Peter F. Lynch; Martin V. Maloney, and Scott W. Osiecki, all of Skaneateles, N.Y., assignors to Knorr Brake Holding Corporation, Rockville, Md.
Filed Sep. 18, 1989, Ser. No. 408,598
Term of patent 14 years
U.S. Cl. D12—179

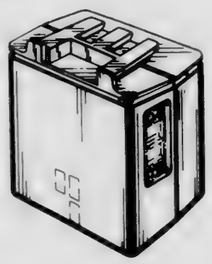


320,973
AUTOMOBILE AIR SPOILER
Kazuhiro Ichinose, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 8, 1989, Ser. No. 391,366
Claims priority, application Japan, Feb. 8, 1989, 1-4420
Term of patent 14 years
U.S. Cl. D12—181

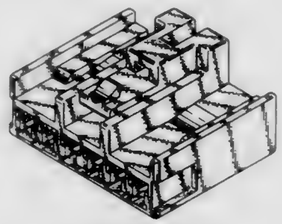




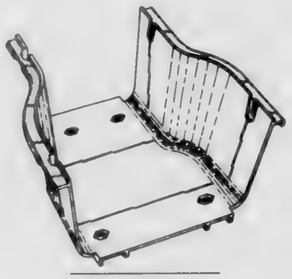
320,974
BATTERY FOR A PORTABLE RADIO
Richard Culbertson, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Filed Aug. 3, 1989, Ser. No. 388,908
Term of patent 14 years
U.S. Cl. D13—103



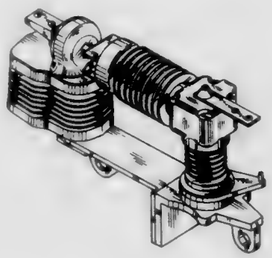
320,975
ELECTRICAL CONNECTOR HOUSING
Toshiharu Kawashima; Yoshitsugu Sawada, and Keishi Jinno, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Sep. 26, 1989, Ser. No. 413,022
Claims priority, application Japan, Apr. 3, 1989, 1-011825
Term of patent 14 years
U.S. Cl. D13—147



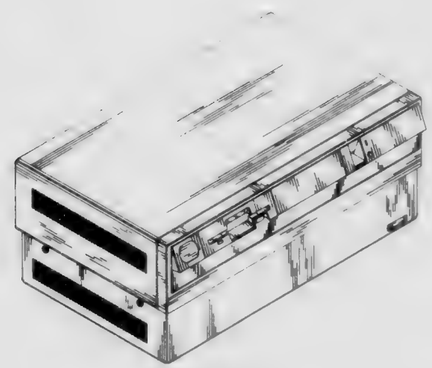
320,976
GUIDING TROUGH, STRAIGHT REDUCING ADAPTER FOR OPTICAL FIBERS
Roy Henneberger, 1596 Clemson Dr., Eagan, Minn. 55122
Filed Jul. 31, 1989, Ser. No. 387,707
Term of patent 14 years
U.S. Cl. D13—155



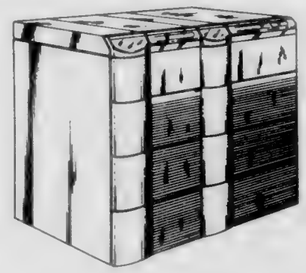
320,977
INTERRUPTER SWITCH WITH CIRCUIT-PARAMETER SENSING FEATURES
Bruce A. Biller; Joel A. Ramos, both of Chicago; Henry W. Scherer, Mt. Prospect, and Roy T. Swanson, North Riverside, all of Ill., assignors to S&C Electric Company, Chicago, Ill.
Filed Mar. 30, 1989, Ser. No. 331,571
Term of patent 14 years
U.S. Cl. D13—160



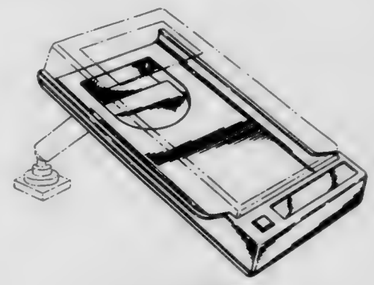
320,978
WORD PROCESSOR SYSTEM UNIT
Darell D. Cronch, Georgetown; Freddie M. Lawson, Mt. Sterling; Robert F. McDaniel, Paris, and James P. Wang, Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Jul. 14, 1989, Ser. No. 380,043
Term of patent 14 years
U.S. Cl. D14—100



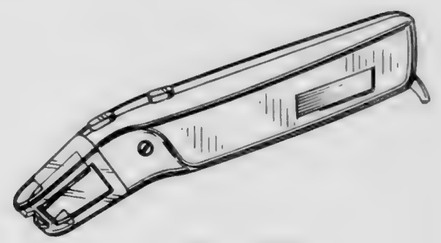
320,979
COMPUTER CABINET
Charles L. Vice, Orange; Douglas M. Patton, Irvine; Matthew F. Duncan, Mission Viejo; Richard K. Jung, and Joan Ciranny, both of Laguna Niguel, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Apr. 22, 1988, Ser. No. 186,976
Term of patent 14 years
U.S. Cl. D14—102



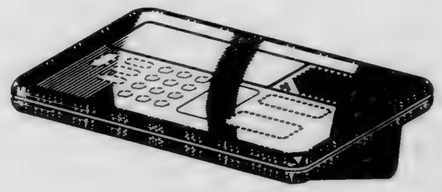
320,980
CRADLE MOUNT FOR A PORTABLE DATA TERMINAL
Joseph P. Howard, Euless, and Clarence Zierhut, Richardson, both of Tex., assignors to ElectroCom Automation, Inc., Arlington, Tex.
Filed May 5, 1989, Ser. No. 347,791
Term of patent 14 years
U.S. Cl. D14—114



320,981
HAND HELD SCANNER
Giuseppe R. Conversano, and David G. Mateer, both of Boulder, Colo., assignors to Soricon Corporation, Boulder, Colo.
Filed Nov. 16, 1989, Ser. No. 438,156
Term of patent 14 years
U.S. Cl. D14—116

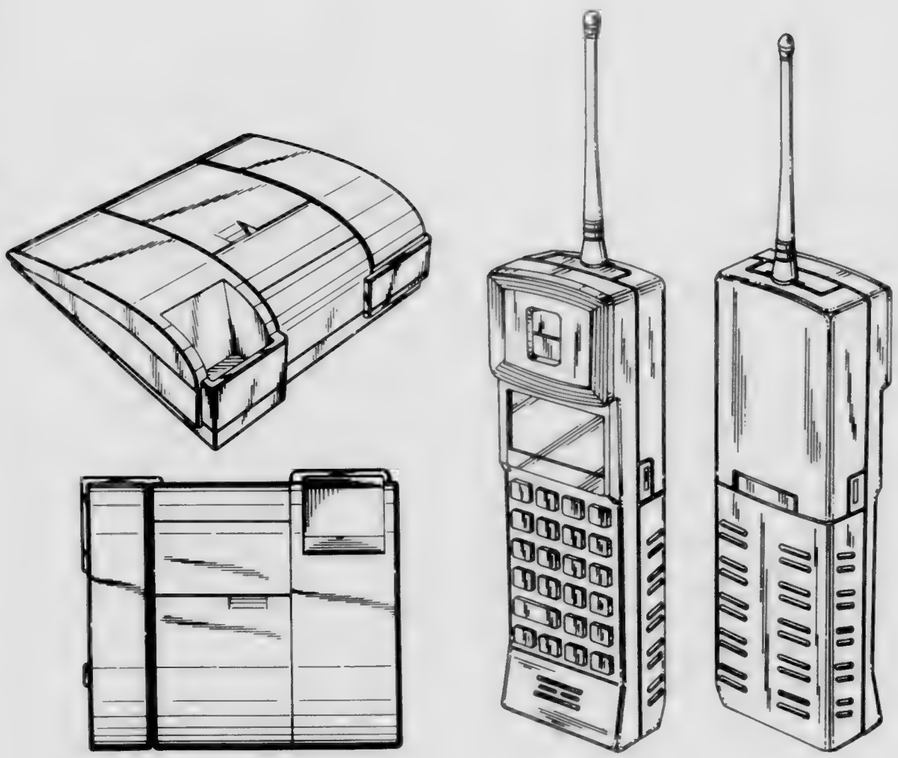


320,982
DESK-TOP COMMUNICATIONS RADIO UNIT OR SIMILAR ARTICLE
Craig F. Siddoway, Davie, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 6, 1989, Ser. No. 431,805
Term of patent 14 years
U.S. Cl. D14—137

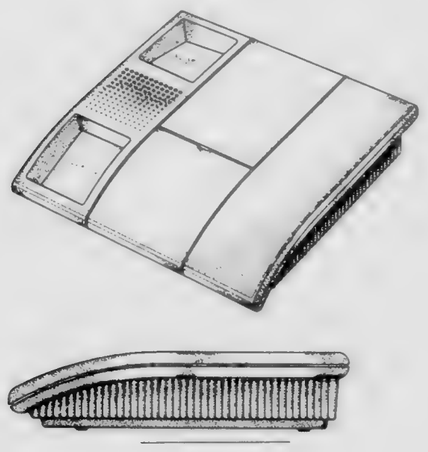


320,983
COMBINATION TELEPHONE SET ANSWERING MACHINE AND CORDLESS TELEPHONE SUPPORT UNIT
Clive Grinyer, London, England, assignor to Commtel Consumer Electronics plc, England
Filed Aug. 23, 1990, Ser. No. 571,274
Term of patent 14 years
U.S. Cl. D14—138

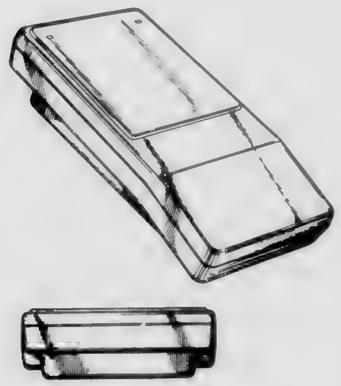
320,984
RADIOTELEPHONE
Jouko Tattari, Nokia, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Apr. 16, 1990, Ser. No. 510,395
Claims priority, application Finland, Oct. 16, 1989, 913/89
Term of patent 14 years
U.S. Cl. D14—138



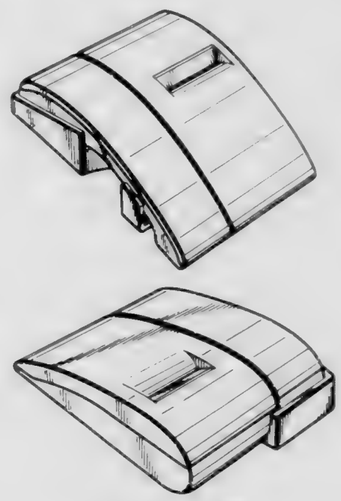
320,985
INTEGRATED ANSWERING MACHINE
David C. Danielson, New Canaan, Conn.; David Dubbs, Morristown, N.J.; Daniel K. Harden, San Jose, Calif.; Raymond Motluck, Noblesville, Ind., and Michael P. Zambelli, Livingston, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 19, 1990, Ser. No. 511,024
Term of patent 14 years
U.S. Cl. D14—141



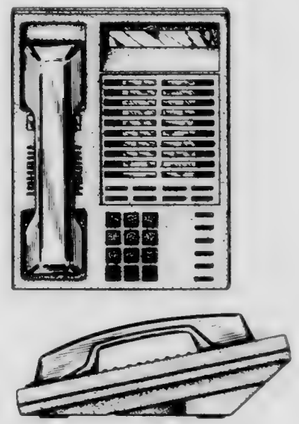
320,986
RADIO TRANSMITTING HOUSING FOR A PORTABLE TELEPHONE OR SIMILAR ARTICLE
Michael Suckley, Southampton, England, assignor to Orbitel Mobile Communications Limited, Bracknell, England
Filed Apr. 18, 1990, Ser. No. 510,565
Claims priority, application United Kingdom, Oct. 19, 1989, 2001826
Term of patent 14 years
U.S. Cl. D14—144



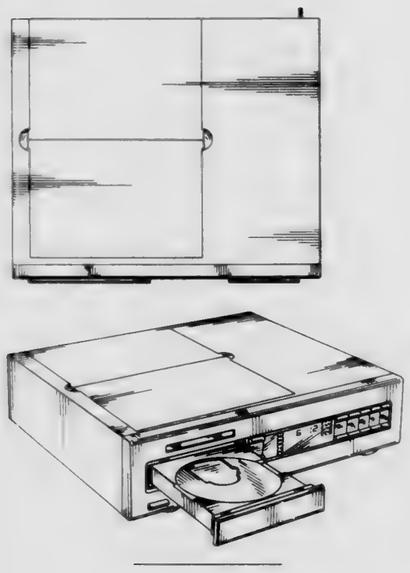
320,987
TELEPHONE SET
Clive Grinyer, London, England, assignor to Commtel Consumer Electronics plc, England
Filed Aug. 23, 1990, Ser. No. 571,276
Term of patent 14 years
U.S. Cl. D14—151



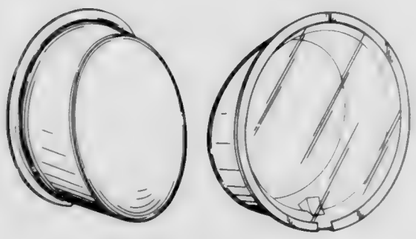
320,988
TELEPHONE KEYSET
Robert A. Gordon, Scottsdale, Ariz., assignor to Executone Information Systems, Inc., Scottsdale, Ariz.
Filed Jan. 29, 1990, Ser. No. 472,463
Term of patent 14 years
U.S. Cl. D14—151



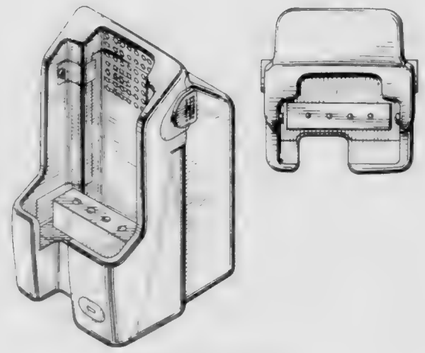
320,989
DIGITAL AUDIO DISK PLAYER
Tatsuo Horikoshi, and Kenshiro Tanaka, both of Sayama, Japan, assignors to Nakamichi Corporation, Tokyo, Japan
Filed Dec. 1, 1989, Ser. No. 444,372
Term of patent 14 years
U.S. Cl. D14—156



320,990
ANTENNA
Richard P. Scott, Woodbridge, and Ian G. Rose, Stowmarket, both of England, assignors to British Telecommunications plc, London, England
Filed Jan. 27, 1989, Ser. No. 302,179
Claims priority, application United Kingdom, Jul. 27, 1988, 1052600
Term of patent 14 years
U.S. Cl. D14—230



320,991
CRADLE FOR A PORTABLE TELEPHONE SET
Michio Nagai, and Kozo Maemura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 29, 1990, Ser. No. 546,058
Claims priority, application Japan, Dec. 29, 1989, 1-48304
Term of patent 14 years
U.S. Cl. D14—251



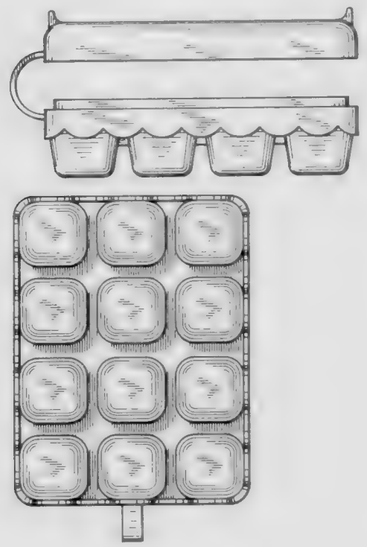
320,992
MOUNTING BRACKET FOR A TELEPHONE HANDSET TO BE MOUNTED UPON THE DASHBOARD OF A MOTOR VEHICLE OR THE LIKE
Bjorn Jondelius, Upplandsgatan 84, S-113 44 Stockholm, Sweden
Filed Nov. 30, 1989, Ser. No. 443,651
Term of patent 14 years
U.S. Cl. D14—253



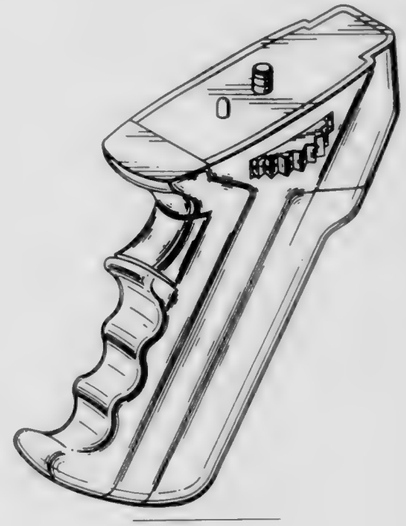
320,993
SNOW THROWER
Anthony N. Pink, Shakopee, and Randall Beihoffer, Bloomington, both of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Jan. 6, 1989, Ser. No. 294,142
Term of patent 14 years
U.S. Cl. D15—12



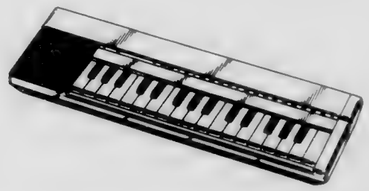
320,994
COMBINED ICE CUBE TRAY AND LID
Tom Kafka, 8721 Evans, Omaha, Nebr. 68134, and Jay Gerry, 6759 Emmet St., Omaha, Nebr. 68104
Filed Feb. 10, 1989, Ser. No. 309,058
Term of patent 14 years
U.S. Cl. D15—90



320,995
HAND GRIP FOR A VIDEO CAMERA
Hiroshi Fukuda, and Masahiro Fukuda, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 1, 1988, Ser. No. 280,223
Claims priority, application Japan, Jun. 1, 1988, 63-21691
Term of patent 14 years
U.S. Cl. D16—243



320,996
ELECTRONIC MUSIC KEYBOARD
Masaki Koide, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 3, 1989, Ser. No. 332,944
Claims priority, application Japan, Dec. 22, 1988, 63-49963
Term of patent 14 years
U.S. Cl. D17—1



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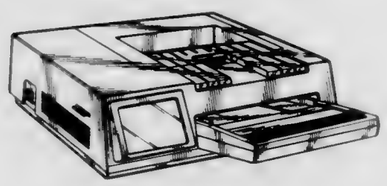
320,997
ELECTRONIC SAXHORN
Tatsuo Katsuhara, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Division of Ser. No. 182,052, Apr. 14, 1988. This application Dec. 18, 1990, Ser. No. 629,463
Claims priority, application Japan, Oct. 14, 1987, 62-42008; Apr. 13, 1988, 63-14973
Term of patent 14 years
U.S. Cl. D17—10



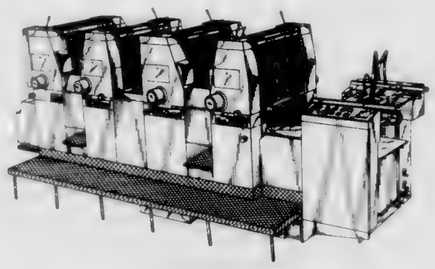
320,998
ELECTRONIC TYPEWRITER
Seiichi Omino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1990, Ser. No. 470,528
Claims priority, application Japan, Jul. 27, 1989, 1-28020
Term of patent 14 years
U.S. Cl. D18—1



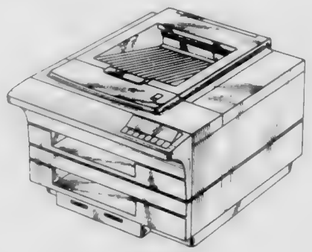
320,999
PRINTER
Koki Sugawara, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1988, Ser. No. 292,013
Claims priority, application Japan, Jun. 30, 1988, 63-25779
Term of patent 14 years
U.S. Cl. D18—13



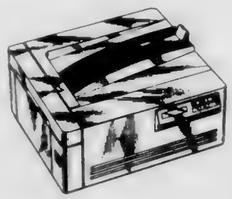
321,000
OFFSET PRINTING MACHINE
Yusaku Kitamura, and Tetsuyuki Doi, both of Hyogo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Sep. 12, 1990, Ser. No. 582,022
Claims priority, application Japan, Mar. 14, 1990, 2-8780
Term of patent 14 years
U.S. Cl. D18—13



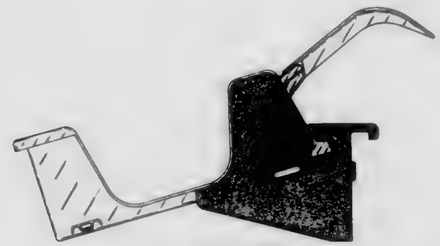
321,001
LASER BEAM PRINTER
Toshio Umino, Yokohama, and Masaaki Sakai, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 17, 1989, Ser. No. 338,758
Claims priority, application Japan, Oct. 17, 1988, 63-40834
Term of patent 14 years
U.S. Cl. D18—13



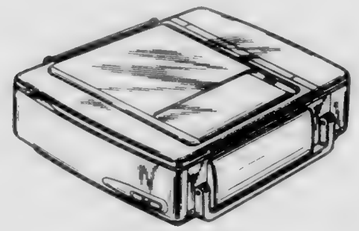
321,002
LASER BEAM PRINTER
Naoki Tashiro, and Masaaki Sakai, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1989, Ser. No. 422,448
Claims priority, application Japan, Apr. 19, 1989, 1-14448
Term of patent 14 years
U.S. Cl. D18—13



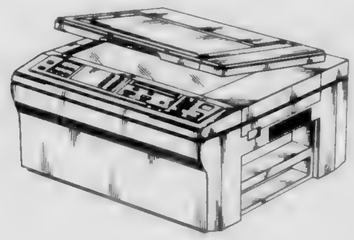
321,003
PAPER CATCHER FOR A PRINTER
Balthasar Kirchner, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft m.b.H., Eferding, Austria
Filed Mar. 14, 1988, Ser. No. 167,472
Claims priority, application Austria, Sep. 15, 1987, 26300-26301
Term of patent 14 years
U.S. Cl. D18—22



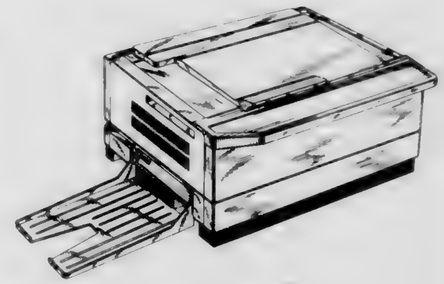
321,004
COPYING MACHINE
Takeshi Komada, Yokohama, and Yosuke Osawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1989, Ser. No. 418,467
Claims priority, application Japan, Apr. 13, 1989, 1-13769
Term of patent 14 years
U.S. Cl. D18—36



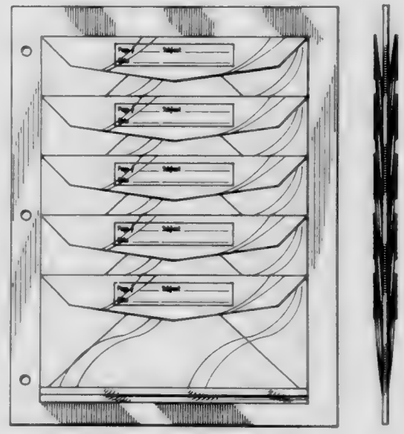
321,005
ELECTRONIC COPYING MACHINE
Shin-ichi Hiroki, Machiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 25, 1990, Ser. No. 470,127
Claims priority, application Japan, Jul. 26, 1989, 1-27332
Term of patent 14 years
U.S. Cl. D18—39



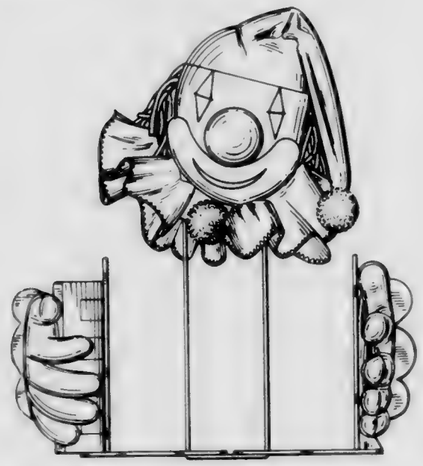
321,006
COLOR COPY MACHINE
Koichi Takahashi, and Keisuke Tsuji, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Jan. 19, 1990, Ser. No. 467,573
Claims priority, application Japan, Jul. 19, 1989, 1-26703
Term of patent 14 years
U.S. Cl. D18—39



321,007
PHOTOGRAPH NEGATIVE ORGANIZER
Ralph E. Barrick, Kirk Line, R.R. #2, Bracebridge, Ontario, Canada P0B 1C0
Filed Jun. 22, 1988, Ser. No. 211,396
Term of patent 14 years
U.S. Cl. D19—33



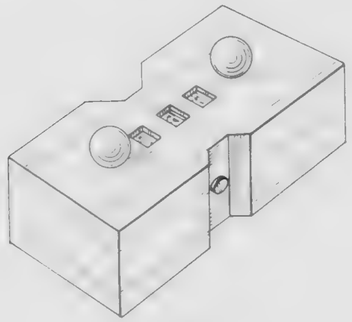
321,008
BOOKRACK
Peter S. C. Cheng, 5 Ross Street, Toronto, Ontario, Canada M5T 1Z8
Filed Feb. 2, 1990, Ser. No. 473,699
Term of patent 14 years
U.S. Cl. D19—34.5



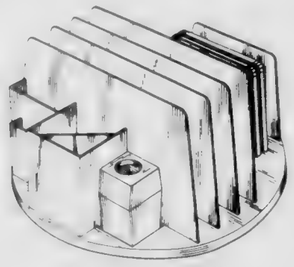
321,009
FOUNTAIN PEN
Teruo Yubisui, Tokyo, Japan, assignor to Wecle Company Limited, Tokyo, Japan
Filed Feb. 17, 1988, Ser. No. 156,555
Claims priority, application Japan, Oct. 7, 1987, 62-40998
The portion of the term of this patent subsequent to Aug. 21, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—48



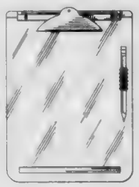
321,010
TRAINING TOOL FOR TEACHING WORD ASSEMBLY
Barbara H. Healy, 390 E. Circle Dr., New Lenox, Ill. 60451
Filed Sep. 28, 1988, Ser. No. 250,356
Term of patent 14 years
U.S. Cl. D19—59



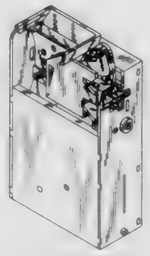
321,011
DESK ORGANIZER CAROUSEL
Harold E. Blossom, 5101 Stagehouse Trail, Madison, Wis. 53714
Filed May 15, 1989, Ser. No. 352,032
Term of patent 14 years
U.S. Cl. D19—78



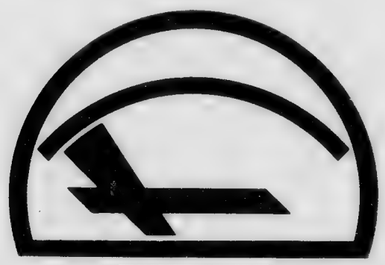
321,012
AUTOMOTIVE CLIP BOARD
Richard J. Wright, 9100 Teson #231, Denver, Colo. 80221
Filed Oct. 11, 1988, Ser. No. 256,375
Term of patent 14 years
U.S. Cl. D19—88



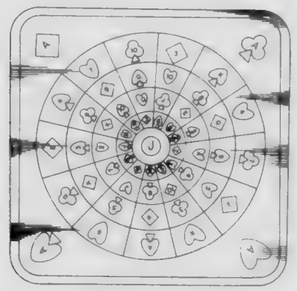
321,013
COIN SELECTOR FOR AN AUTOMATIC VENDOR
Koji Yukimoto, Sakado; Mitsugu Mikami, Kawagoe; Yukio Ito, Niiza, and Kenji Nishiumi, Sakado, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan
Filed Dec. 23, 1988, Ser. No. 289,578
Claims priority, application Japan, Oct. 29, 1988, 63-42574
Term of patent 14 years
U.S. Cl. D20—9



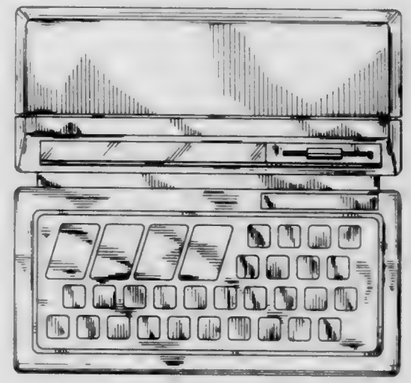
321,014
GAUGE FACE PLATE
Stephen H. Arkell, 53 Rose Way, Markham, Ontario, Canada L3P 3N1 , assignor to Stephen H. Arkell, Markham, Canada
Filed Nov. 3, 1987, Ser. No. 116,272
Term of patent 14 years
U.S. Cl. D20—11



321,015
DART BOARD
Allen C. Hertzog, 306 Rte. 9 Lot 40, Erma, Cape May, N.J. 08204
Filed Mar. 8, 1989, Ser. No. 323,602
Term of patent 14 years
U.S. Cl. D21—5



321,016
ELECTRONIC EDUCATIONAL GAME HOUSING
Donny Leung, Tai Koo Shing, Hong Kong, assignor to Video Technology Industries, Inc., Wheeling, Ill.
Filed Oct. 14, 1987, Ser. No. 108,044
Term of patent 14 years
U.S. Cl. D21—13



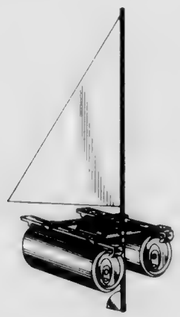
321,017
SKILL TOY
Alvaro Aguilar, 4a. Calle 1-69 Zona 9, Guatemala City, Guatemala, assignor to Alvaro Aguilar, Guatemala City, Guatemala
Filed Nov. 29, 1988, Ser. No. 278,308
Term of patent 14 years
U.S. Cl. D21—62



321,018
HOOP ROLLER
Alphus J. Mitchem, 12920 El Monte, Leawood, Kans. 66209
Filed Mar. 24, 1989, Ser. No. 328,147
Term of patent 14 years
U.S. Cl. D21—101



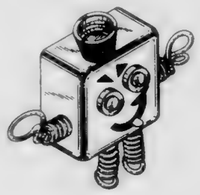
321,019
TOY SAIL BOAT
Robert A. Noga, 13404 Calais Dr., Del Mar, Calif. 92024
Filed Aug. 15, 1988, Ser. No. 231,989
Term of patent 14 years
U.S. Cl. D21—130



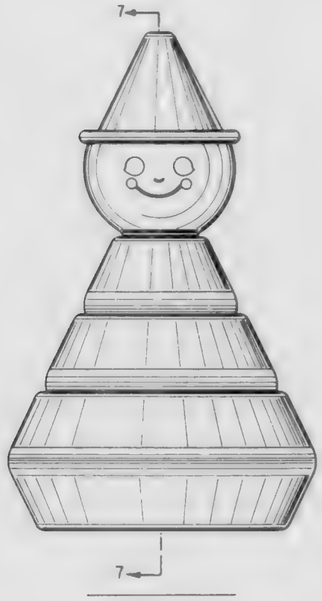
321,020
TOY CAT FIGURE
A. Edward Fogarty, and Bonnie R. Fogarty, both of 39 Sandy Hook Rd., Sarasota, Fla. 34242
Filed Jun. 6, 1989, Ser. No. 361,972
Term of patent 14 years
U.S. Cl. D21—163



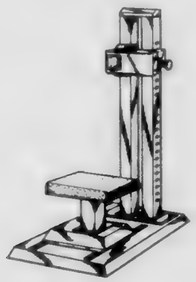
321,021
DOLL
Jose A. Ortega, 5730 Lake Side Dr., Apt. 401, Margate, Fla. 33063
Filed Oct. 10, 1989, Ser. No. 420,394
Term of patent 14 years
U.S. Cl. D21—166



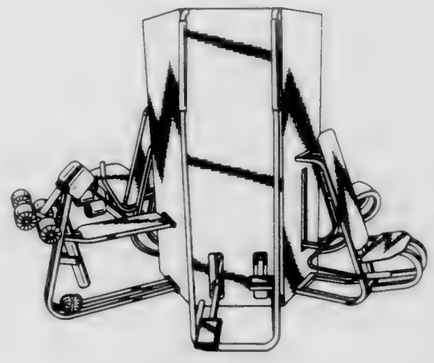
321,022
TOY STACKING CLOWN
James F. Mariol, Cincinnati, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Jul. 19, 1989, Ser. No. 381,933
Term of patent 14 years
U.S. Cl. D21—173



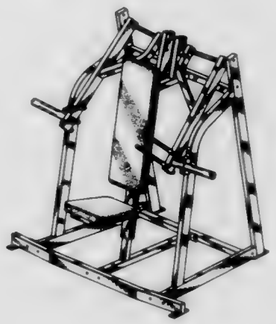
321,023
MUSCLE TESTING MACHINE
David R. Schultz, 12600 San Pablo Ave., Richmond, Calif. 94805
Filed Oct. 21, 1988, Ser. No. 260,487
Term of patent 14 years
U.S. Cl. D21—191



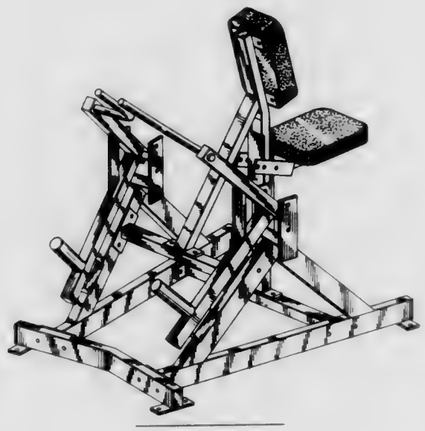
321,024
MULTI-STATION PHYSICAL EXERCISER
Jerry D. Brentham, P.O. Box 599, 2121 Industrial Park, Belton, Tex. 76513
Filed Jun. 23, 1989, Ser. No. 370,585
Term of patent 14 years
U.S. Cl. D21—195



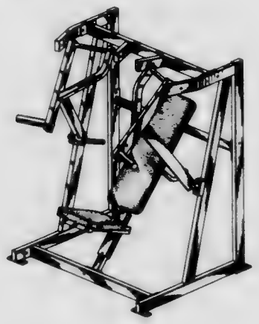
321,025
ISOLATERAL DUMBBELL PRESS EXERCISE MACHINE
Gary A. Jones, Falmouth, Ky., assignor to Hammer Corporation, Cincinnati, Ohio
Filed Jun. 1, 1989, Ser. No. 360,716
Term of patent 14 years
U.S. Cl. D21—195



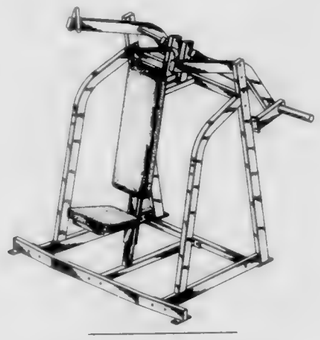
321,026
ISOLATERAL ROWING EXERCISE MACHINE
Gary A. Jones, Falmouth, Ky., assignor to Hammer Corporation, Cincinnati, Ohio
Filed Jun. 1, 1989, Ser. No. 359,926
Term of patent 14 years
U.S. Cl. D21—195



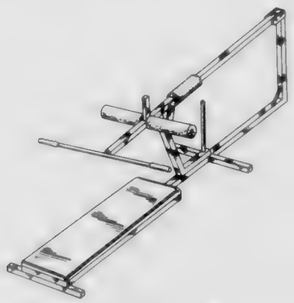
321,027
ISOLATERAL DECLINE PRESS EXERCISE MACHINE
Gary A. Jones, Falmouth, Ky., assignor to Hammer Corporation, Cincinnati, Ohio
Filed Jun. 1, 1989, Ser. No. 360,715
Term of patent 14 years
U.S. Cl. D21—195



321,028
ISOLATERAL TORSO ARM EXERCISE MACHINE
Gary A. Jones, Falmouth, Ky., assignor to Hammer Corporation, Cincinnati, Ohio
Filed Jun. 1, 1989, Ser. No. 359,932
Term of patent 14 years
U.S. Cl. D21—195



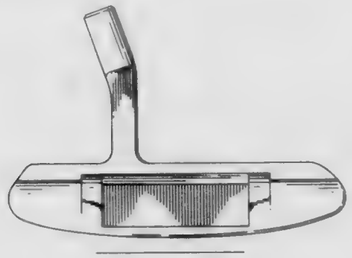
321,029
PHYSICAL EXERCISER
Peter L. Low, 20 Commodore St., Acacia Ridge. Qld. 4110, Australia
Filed Feb. 14, 1989, Ser. No. 311,670
Term of patent 14 years
U.S. Cl. D21—195



321,030
GAME PADDLE
Robert A. Hessling, 2539½ First Ave., and Thomas A. Hessling, 2539 First Ave., both of San Diego, Calif. 92103
Filed Apr. 3, 1989, Ser. No. 332,752
Term of patent 14 years
U.S. Cl. D21—213



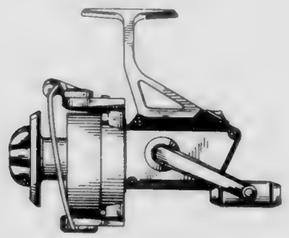
321,031
GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Feb. 6, 1989, Ser. No. 306,315
Term of patent 14 years
U.S. Cl. D21—219



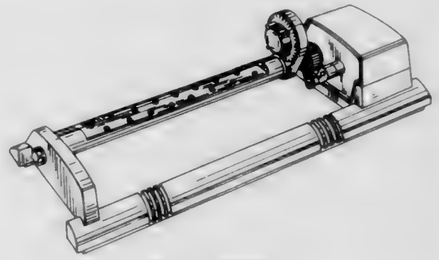
321,032
HOLDER FOR GOLF BALLS AND ACCESSORIES
Robert H. Marthaler, 942 Sycamore La., Bartlett, Ill. 60103, and Gregory A. Marthaler, 1969 Dorset Dr., Wheaton, Ill. 60187
Filed Jan. 30, 1989, Ser. No. 303,392
Term of patent 14 years
U.S. Cl. D21—234



321,033
SPINNING FISHING REEL
Richard J. Robbins, Derby, Kans., and Richard J. Feehan, Pawnee, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Jan. 27, 1989, Ser. No. 302,725
Term of patent 14 years
U.S. Cl. D22—141



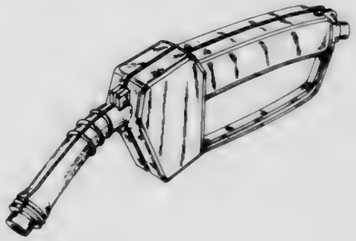
321,034
OSCILLATING SPRINKLER
Stephen P. Whitehead, Elgin, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Jul. 19, 1990, Ser. No. 555,745
Term of patent 14 years
U.S. Cl. D23—216



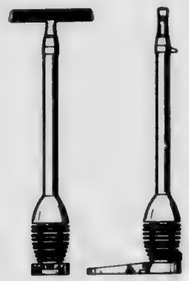
321,035
SPONGE ATTACHMENT FOR USE ON A SHOWER HEAD
Francois Geneve, and Luc Heiligenstein, both of Chicago, Ill., assignors to Associated Mills Inc., Chicago, Ill.
Filed Mar. 6, 1989, Ser. No. 320,034
Term of patent 14 years
U.S. Cl. D23—223



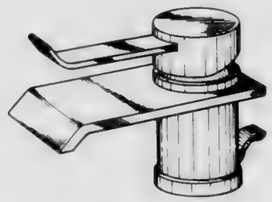
321,036
FUEL DISPENSER HANDLE
Richard H. Jacobs, Roseville, Minn., assignor to TRI Industries, Inc., Hopkins, Minn.
Filed Jul. 2, 1990, Ser. No. 547,111
Term of patent 14 years
U.S. Cl. D23—226



321,037
AIR PUMP
Masahiro Furusawa, 12-3, Ryouke 1-chome, Urawa-shi, Saitama-ken, Japan
Division of Ser. No. 156,200, Feb. 11, 1988, Pat. No. D. 309,174.
This application Aug. 16, 1989, Ser. No. 394,437
Claims priority, application Japan, Aug. 18, 1987, 62-33301; Aug. 18, 1987, 62-33308; Aug. 18, 1987, 62-33310; Aug. 18, 1987, 62-33311
Term of patent 14 years
U.S. Cl. D23—231



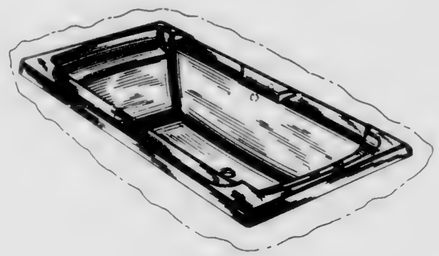
321,038
FAUCET
Jean-Claude Delepine, 23, rue Clapeyron, 75008 Paris, France
Filed Oct. 14, 1988, Ser. No. 257,771
Claims priority, application Hague, Apr. 18, 1988, 010778
The portion of the term of this patent subsequent to Sep. 10, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—238



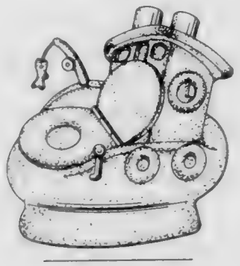
321,039
SPOUT
Tom E. Robbins, San Leandro, Calif., assignor to Kallista, Inc., San Leandro, Calif.
Filed Dec. 12, 1988, Ser. No. 283,875
Term of patent 14 years
U.S. Cl. D23—255



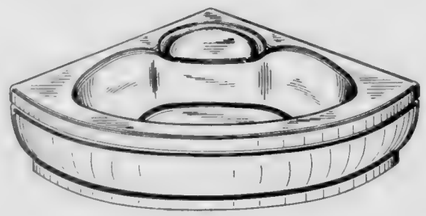
321,040
TUB OR THE LIKE
Mary J. Reid, Sheboygan, and Mark W. Cors, Menomonie, both of Wis., assignors to Jacob Delafon, Paris, France
Filed Nov. 6, 1989, Ser. No. 432,275
Term of patent 14 years
U.S. Cl. D23—277



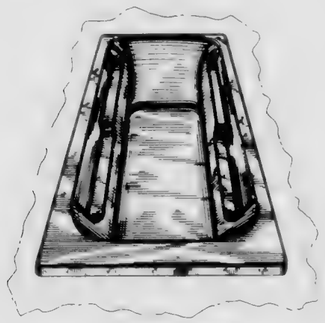
321,041
TOILET TRAINER FOR CHILDREN
Margaret G. Lambdin, 1117 Elbank Ave., Baltimore, Md. 21239
Filed Nov. 13, 1989, Ser. No. 436,181
Term of patent 14 years
U.S. Cl. D23—297



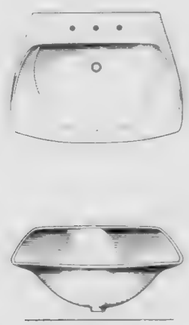
321,042
BATHTUB
Robin Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Filed May 24, 1989, Ser. No. 356,150
Term of patent 14 years
U.S. Cl. D23—281



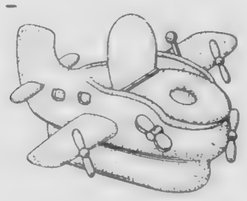
321,043
TUB SHELL OR THE LIKE
Maurice Y. Magnin, Par Bornel, France, assignor to Jacob Delafon, Paris, France
Filed Aug. 17, 1989, Ser. No. 395,916
Term of patent 14 years
U.S. Cl. D23—281



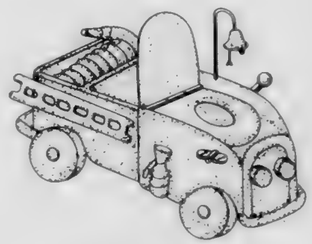
321,044
LAVATORY
David B. Hobbs, 313 W. 88th St. #4A, New York, N.Y. 10024
Filed Feb. 3, 1988, Ser. No. 151,266
Term of patent 14 years
U.S. Cl. D23—294



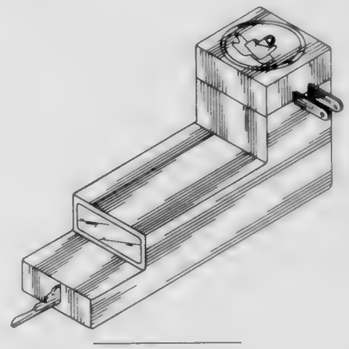
321,045
TOILET TRAINER FOR CHILDREN
Margaret G. Lambdin, 1117 Elbank Ave., Baltimore, Md. 21239
Filed Nov. 13, 1989, Ser. No. 436,184
Term of patent 14 years
U.S. Cl. D23—297



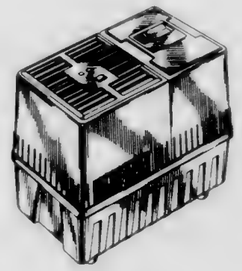
321,046
TOILET TRAINER FOR CHILDREN
Margaret G. Lambdin, 1117 Elbank Ave., Baltimore, Md. 21239
Filed Jan. 10, 1990, Ser. No. 463,953
Term of patent 14 years
U.S. Cl. D23—297



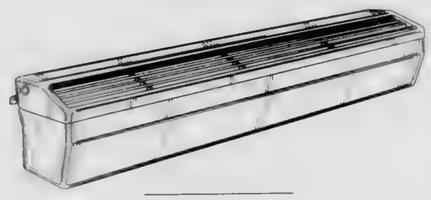
321,047
FROZEN LOCK HEATER
Cyrus Haghkar, 610 Middleton Pl., Norristown, Pa. 19403-2936
Filed May 21, 1990, Ser. No. 525,643
Term of patent 14 years
U.S. Cl. D23—332



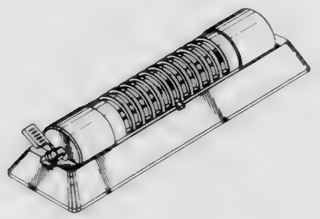
321,048
PORTABLE HUMIDIFIER
Bernard Chiu, Ashland, Mass., assignor to Duracraft Corporation, Sudbury, Mass.
Filed Apr. 17, 1990, Ser. No. 510,790
Term of patent 14 years
U.S. Cl. D23—356

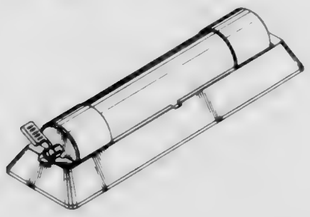


321,049
HUMIDIFIER FOR ATTACHMENT TO A BASEBOARD HEATER
Joseph Ghorayeb, Westmount, Canada, assignor to Mizmar, Inc., Quebec, Canada
Filed Feb. 7, 1990, Ser. No. 476,278
Claims priority, application Canada, Aug. 15, 1989, 15-08-89-3
Term of patent 14 years
U.S. Cl. D23—356

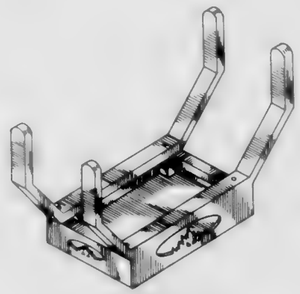


321,050
AIR FRESHENER
Heinz H. Weick, 94 rue le la Servette, CH - 1203 Geneva, Switzerland
Filed Apr. 13, 1990, Ser. No. 508,988
Claims priority, application Switzerland, Oct. 19, 1989, 117734
Term of patent 14 years
U.S. Cl. D23—369

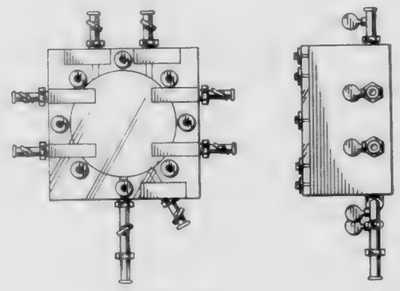




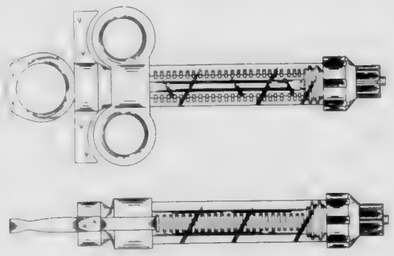
321,051
FIREWOOD SUPPORT UNIT
William C. Nagy, 18 Walnut Dr., Lake In The Hills, Ill. 60102
Filed Oct. 10, 1990, Ser. No. 595,486
Term of patent 14 years
U.S. Cl. D23—410



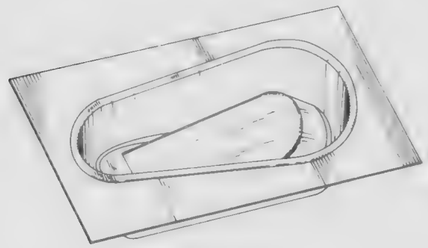
321,052
MULTIPLE EMBALMING INJECTOR
Allen Brown, 16 Donna Dr., Unit 23, Norwalk, Conn. 06854, and Jesse L. Colodner, Pearl River, N.Y., assignors to Allen Brown, Norwalk, Conn.
Filed May 27, 1988, Ser. No. 199,591
Term of patent 14 years
U.S. Cl. D24—108



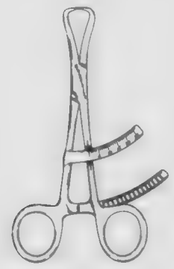
321,053
INJECTOR DEVICE
Thomas M. Baum, Raleigh, N.C., assignor to Coeur Laboratories, Inc., Raleigh, N.C.
Filed Nov. 23, 1988, Ser. No. 275,543
Term of patent 14 years
U.S. Cl. D24—114



321,054
HAND SOAK TRAY
Garret Cohn, Chicago, Ill., assignor to Derm/Boro, Inc., Deerfield, Ill.
Filed Feb. 1, 1989, Ser. No. 304,837
Term of patent 14 years
U.S. Cl. D24—200



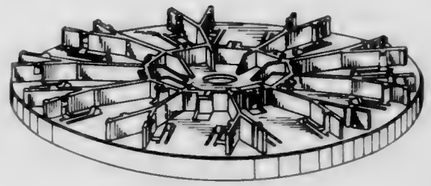
321,055
CALIPER FOR DENTAL IMPLANTS
Joseph E. Carchidi, Whitman, Mass., assignor to ACE Surgical Supply Co., Inc., Brockton, Mass.
Filed Oct. 31, 1989, Ser. No. 429,337
Term of patent 14 years
U.S. Cl. D24—152



321,056
INFRARED HEATING UNIT FOR PAIN RELIEF
John M. Chambers, 49 Fox Wood Run, Middletown, N.J. 07748
Filed Apr. 10, 1989, Ser. No. 335,520
Term of patent 14 years
U.S. Cl. D24—211



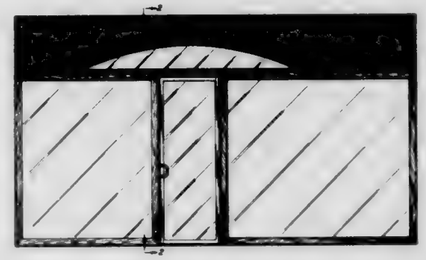
321,057
TEST CARD CAROUSEL FOR A BIOLOGICAL ANALYZER
James T. Holen, Mundelein, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Feb. 24, 1989, Ser. No. 316,109
Term of patent 14 years
U.S. Cl. D24—224



321,058
THERAPEUTIC BREAST PAD
Walter B. Dickinson, 2064 Mar Kara, Guadalajara, Jal, Mexico
Filed Feb. 21, 1989, Ser. No. 313,142
Term of patent 14 years
U.S. Cl. D24—207

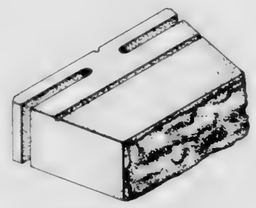


321,059
CLOTHING SHOP STOREFRONT
Tobia Scarpa; Afra Bianchin Scarpa, both of Trevignano, Italy, assignor to Centro Studi e Servizi Moda di Paola Bertagnin & C. S.a.s., Villorba, Italy
Continuation of Ser. No. 804,367, Nov. 6, 1985, abandoned. This application Dec. 31, 1990, Ser. No. 634,959
Claims priority, application Italy, May 27, 1985, 21976/85[U]
Term of patent 14 years
U.S. Cl. D25—59

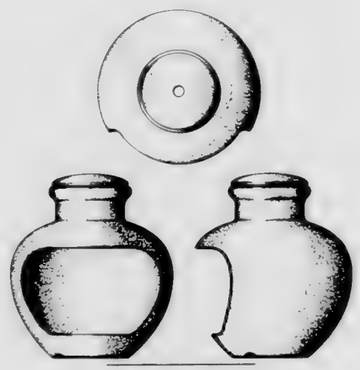


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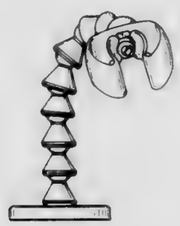
321,060
RETAINING WALL BLOCK
Peter J. Blomquist, and Michael E. Woolford, both of Lake Elmo, Minn., assignors to Kiltie Corporation, North St. Paul, Minn.
Continuation of Ser. No. 267,744, Nov. 7, 1988, abandoned. This application Nov. 30, 1990, Ser. No. 622,160
Term of patent 14 years
U.S. Cl. D25—118



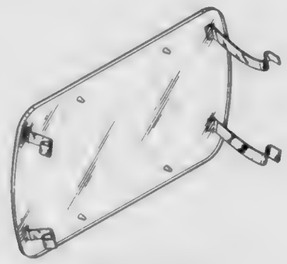
321,061
LAMP BASE
Melanie H. Rahn, 612 W. Straford Dr., Chandler, Ariz. 85224
Filed Oct. 27, 1989, Ser. No. 428,324
Term of patent 14 years
U.S. Cl. D26—106



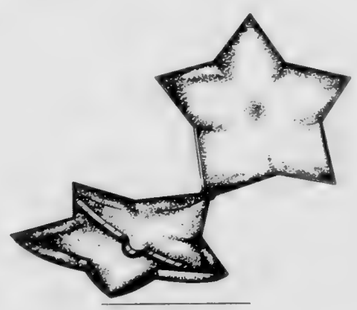
321,062
FLEXIBLE HOLDER WITH MAGNETIC BASE AND CLAMP FOR A SMALL FLASHLIGHT AND THE LIKE
James D. Bonbright, 19480 Eighth St. - East, Sonoma, Calif. 95476
Filed Apr. 7, 1989, Ser. No. 334,397
Term of patent 14 years
U.S. Cl. D26—140



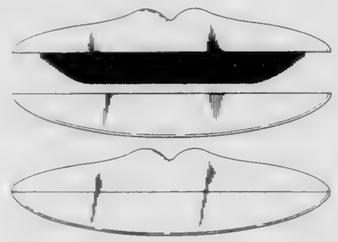
321,063
SHIELD FOR PROTECTING A TRUCK DRIVING LIGHT FROM ROAD DAMAGE
Roy M. Neece, 9436 Tranquil Acres Rd., Saginaw, Tex. 76179
Filed May 5, 1989, Ser. No. 349,784
Term of patent 14 years
U.S. Cl. D26—139



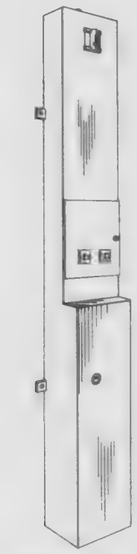
321,064
ASH TRAY
Roger D. Mattison, 315 Seawell Ave., Raleigh, N.C. 27601
Filed May 2, 1990, Ser. No. 517,607
Term of patent 14 years
U.S. Cl. D27—106



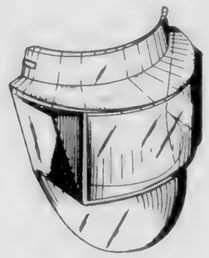
321,065
COMBINED COMB AND SHEATH THEREFOR
Lindsey J. Walker, Flat 1, 21 Woodstock Road, London NW11, England
Filed Aug. 7, 1989, Ser. No. 390,265
Claims priority, application United Kingdom, Feb. 7, 1989, 1056955
Term of patent 14 years
U.S. Cl. D28—22



321,066
FIRE EXTINGUISHER
Richard L. Nieman, 7243 Rene, Shawnee, Kans. 66216
Filed Aug. 2, 1989, Ser. No. 388,357
Term of patent 14 years
U.S. Cl. D29—2



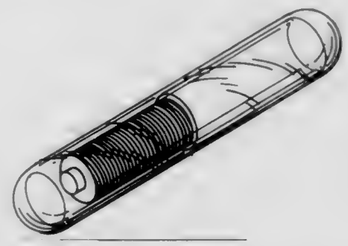
321,067
DISPOSABLE FACESHIELD
Arthur J. Salce, Southbridge, and Richard T. Metcalfe, Sturbridge, both of Mass., assignors to Cabot Safety Corporation, Southbridge, Mass.
Continuation-in-part of Ser. No. 206,711, Jun. 14, 1988, which is a continuation-in-part of Ser. No. 152,920, Feb. 5, 1988, Pat. No. Des. 308,582. This application Feb. 9, 1989, Ser. No. 308,421
The portion of the term of this patent subsequent to Oct. 30, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D29—15



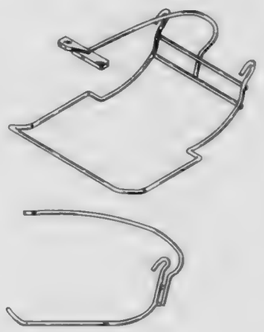
321,068
PORTABLE PET KENNEL
Margaret Shantz, 3914 N. Farwell, Shorewood, Wis. 53211, and John Feuerstein, 912 E. Meadow Pl., Whitefish Bay, Wis. 53217
Filed Dec. 11, 1987, Ser. No. 131,542
Term of patent 14 years
U.S. Cl. D30—114



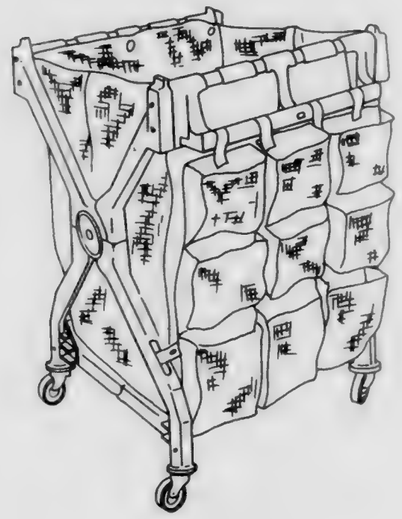
321,069
ANIMAL IDENTIFICATION TRANSPONDER TAG
Hannis L. Stoddard, III, Norco, Calif., assignor to American Veterinary Identification Devices Inc., Calif.
Filed Aug. 31, 1988, Ser. No. 238,515
Term of patent 14 years
U.S. Cl. D30—155



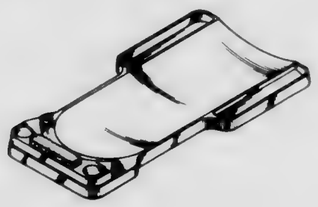
321,070
PAINT TRAY HOLDER WITH PAINT ROLLER SUPPORT
George Lewicki, 131 Bearberry Crescent N.W., Calgary, Alberta, Canada T3K 1R1
Filed Jan. 23, 1989, Ser. No. 299,521
Term of patent 14 years
U.S. Cl. D32—54



321,071
COMBINED COLLAPSIBLE UTILITY CART AND BAG THEREFOR
Thomas Dickinson, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed Sep. 6, 1988, Ser. No. 240,566
Term of patent 14 years
U.S. Cl. D34—17



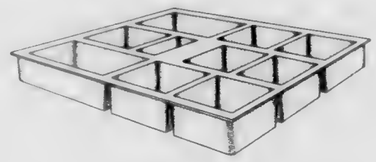
321,072
MECHANIC'S CREEPER
Jeffrey Bennett, and Richard Landy, both of Sylmar, Calif., assignors to Allied International, Sylmar, Calif.
Filed Oct. 13, 1989, Ser. No. 421,200
Term of patent 14 years
U.S. Cl. D34—23



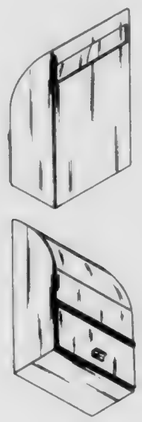
321,073
WICKER BASKET
Noel G. Azures, Laguna, Philippines, assignor to Decra-Stone, Inc., Prior Lake, Minn.
Filed Feb. 23, 1989, Ser. No. 314,585
Term of patent 14 years
U.S. Cl. D34—44



321,074
TRAY
Sidney N. Eby, Solona Beach, Calif., assignor to E&H Company, Solana Beach, Calif.
Filed Jan. 8, 1990, Ser. No. 461,793
Term of patent 14 years
U.S. Cl. D34—46



321,075
MAILBOX FOR SECURITY DOORS OR THE LIKE
John H. Scott, 5054 Maple Ave., St. Louis, Mo. 63113
Filed Jan. 3, 1989, Ser. No. 292,736
Term of patent 14 years
U.S. Cl. D99—33



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF OCTOBER, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Meyers, Robert A.; Hart, Walter D.; Van Nice, Leslie J., deceased; and Van Nice, Leslie J., heir, 5,059,307, Cl. 208-404.000.

A. Ahlstrom Corporation: *See*—
Timperi, Jukka; Vesala, Reijo; and Vikman, Vesa, 5,058,615, Cl. 137-1.000.

A. E. Bishop & Associates Pty., Ltd.: *See*—
Scott, David W., 5,059,068, Cl. 407-9.000.

A. Finkl & Sons Co.: *See*—
Finkl, Charles W.; and Lehman, Albert L., 5,059,389, Cl. 420-67.000.

Abacus Holdings Ltd.: *See*—
Jenvey, Alan J., 5,058,336, Cl. 52-115.000.

Abar Ipsen Industries, Inc.: *See*—
Law, Trevor J.; Andrews, Richard E.; and Gall, Christopher A., 5,059,757, Cl. 219-121.520.

Abatjoglou, Anthony G.; and Bryant, David R., to Union Carbide Chemicals and Plastics Technology Corporation. Ionic phosphites and their use in homogeneous transition metal catalyzed processes. 5,059,710, Cl. 558-78.000.

ABB Power T&D Company Inc.: *See*—
Engel, Joseph C.; and Mort, Deborah K., 5,060,166, Cl. 364-487.000.
Miller, Robert C., 5,059,894, Cl. 324-96.000.

Abbatte, Gerard P.: *See*—
Breads, Peter R.; Abbatte, Gerard P.; and Warunek, Stephen P., 5,059,118, Cl. 433-6.000.

Abbott Laboratories: *See*—
Stein, Herman H.; Plattner, Jacob J.; and Crowley, Steven R., 5,059,589, Cl. 514-19.000.

Abbott, Stephan L.: *See*—
Blaushild, Ronald M.; Abbott, Stephan L.; Miller, Phillip E.; and Shaffer, Robert, 5,058,762, Cl. 220-378.000.

ABC/Sebrn Techcorp.: *See*—
Shannon, Joseph W., 5,058,782, Cl. 222-330.000.

Abe, Yukio: *See*—
Higashi, Tatsuji; Abe, Yukio; and Kita, Nobuyuki, 5,059,511, Cl. 430-272.000.

Abraham, Aleyamma. Combination of a wheelchair and a transport device for transporting a patient. 5,058,221, Cl. 5-81.00R.

Abramson, Andrew E., to Research, Incorporated. Portable tube shrinking tool. 5,060,289, Cl. 392-423.000.

Abratis, Horst; Selenz, Hans-Joachim; and Hofer, Friedrich, to Klockner Stahl GmbH. Process for the production of steel having a varying chemical composition in the cross-section. 5,058,659, Cl. 164-473.000.

Abreu, Christian O.; Beresniewicz, Jon M.; Long, James A.; and Pike, Thomas W., to Xerox Corporation. Image transfer and sheet seperation charging. 5,059,990, Cl. 346-153.000.

Abrevaya, Hayim, to UOP. Moderated ruthenium fischer-tropsch synthesis catalyst. 5,059,574, Cl. 502-261.000.

Abrokwah, Jonathan K.; Wu, Schyi-Yi; and Huang, Jenn-Hwa, to Motorola, Inc. Complementary heterojunction field effect transistor with an anisotype N+ gate for P-channel devices. 5,060,031, Cl. 357-22.000.

Acec Transport S.A.: *See*—
Bonhomme, Henri, 5,059,932, Cl. 335-147.000.

Acer Incorporated: *See*—
Wu, Dennis, 5,059,974, Cl. 341-25.000.

ACF Industries, Incorporated: *See*—
Holt, Jan D., 5,059,072, Cl. 410-60.000.

Achia, Biddanda U.: *See*—
Cody, Ian A.; Bell, James D.; West, Theodore H.; Wachter, William A.; and Achia, Biddanda U., 5,059,299, Cl. 208-27.000.

Ackermann, Ulrich; Bauch, Hartmut; and Paquet, Volker, to Schott Glaswerke. Internal coating of a glass tube by plasma pulse-induced chemical vapor deposition. 5,059,231, Cl. 65-3.120.

Acrowood Corporation: *See*—
Artiano, Adrian, 5,058,751, Cl. 209-673.000.

Adachi, Chihaya: *See*—
Tashiro, Masashi; Mataga, Shuntaro; Takahashi, Kazufumi; Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; Sato, Yoshiharu; and Maeda, Shuichi, 5,059,863, Cl. 313-504.000.

Adachi, Hiroshi: *See*—
Aruga, Tamotsu; Sasaki, Masaomi; Shimada, Tomoyuki; and Adachi, Hiroshi, 5,059,708, Cl. 558-714.000.

Adachi, Hiroyuki; and Koitabashi, Noribumi, to Canon Kabushiki Kaisha. Image forming apparatus and detachable process kit utilizing a drum charging means in relatively light contact pressure therewith. 5,060,014, Cl. 355-211.000.

Adachi, Masatoshi: *See*—
Kakuta, Yoshiyuki; and Adachi, Masatoshi, 5,059,780, Cl. 250-205.000.

Adachi, Shigehito: *See*—
Kimura, Yoshiharu; Adachi, Shigehito; Ara, Katsutoshi; Inoue, Shigeo; and Koike, Kenzo, 5,059,532, Cl. 435-134.000.

Adachi, Yasushi: *See*—
Kato, Hisao; and Adachi, Yasushi, 5,060,178, Cl. 364-600.000.

Adamek, Frank C.; and Hunter, Rick C., to Vetco Gray Inc. Integrally redundant seal. 5,058,906, Cl. 277-167.500.

Adams, John Q. Aerodynamic projectile. 5,058,503, Cl. 102-501.000.

Adams, Marvin, to Meltzer Industries Corporation. Garment having seamless body. 5,058,208, Cl. 2-80.000.

Aderholt, Gary L.: *See*—
Gewin, Robert E.; and Aderholt, Gary L., 5,060,226, Cl. 370-15.000.

Adler, Robert; Fendley, James R.; Lange, Howard G.; Prazak, Charles J.; Steiner, Johann; and Strauss, Paul, to Zenith Electronics Corporation. Method and apparatus for making flat tension mask color cathode ray tubes. 5,059,147, Cl. 445-4.000.

Administrators of the Tulane Educational Fund, The: *See*—
Coy, David H.; and Hocart, Simon J., 5,059,653, Cl. 525-54.110.
Soike, Kenneth F., 5,059,418, Cl. 424-85.600.

Adolfsson, Rune, to SKF Nova AB. Magnetic bearing bushing. 5,059,039, Cl. 384-133.000.

Adrian, Frank J.: *See*—
Bohandy, Joseph; Kim, Boris F.; Phillips, Terry E.; Adrian, Frank J.; and Moorjani, Kishin, 5,059,891, Cl. 324-71.600.

Advanced Building Technologies: *See*—
Newsom, Bob G., 5,058,357, Cl. 52-648.000.

Advanced Environmental Technologies, Inc.: *See*—
Renfro, Arthur E., Jr., 5,059,252, Cl. 134-7.000.

Advanced Micro Devices, Inc.: *See*—
Ahsanullah, Zahid, 5,059,823, Cl. 307-443.000.
Bill, Colin S.; Van Buskirk, Michael A.; and Montalvo, Antonio J., 5,059,815, Cl. 307-246.000.
Gephardt, Douglas D.; and Avalos, Peggy, 5,060,138, Cl. 364-200.000.
Witt, David B.; and McMinn, Brian D., 5,059,818, Cl. 307-269.000.

Advantest Corporation: *See*—
Hirai, Masahisa; and Komagata, Shigemi, 5,059,893, Cl. 324-74.000.

Aerospace Corporation, The: *See*—
Gelbwachs, Jerry A., 5,060,085, Cl. 359-160.000.

Aerospatiale Societe Nationale Industrielle: *See*—
Lacombe, Jean-Francis; and Miane, Jean-Louis, 5,059,914, Cl. 324-642.000.

Aerotrans Corporation: *See*—
Ashton, Larry J.; and Ashton, Todd H., 5,059,377, Cl. 264-257.000.

Agency of Industrial Science & Technology: *See*—
Kimura, Yoshiharu; Adachi, Shigehito; Ara, Katsutoshi; Inoue, Shigeo; and Koike, Kenzo, 5,059,532, Cl. 435-134.000.

Agfa-Gevaert, N.V.: *See*—
Vaes, Jos A.; and Wabbes, Luc J., 5,059,508, Cl. 430-204.000.

Agostinelli, John A.: *See*—
Lelental, Mark; Agostinelli, John A.; and Romanofsky, Henry J., 5,059,583, Cl. 505-1.000.

Agou, Tokinori; Matsuzaki, Hitomi; and Kawasaki, Masaaki, to Mitsui Petrochemical Industries, Ltd. Reflection-preventive pellicle film and process for preparation thereof. 5,059,451, Cl. 427-164.000.

Agran, Robert B. Non-rechargeable disposable syringe. 5,059,181, Cl. 604-110.000.

Aguf, Igor A.: *See*—
Burmistrov, Oleg A.; Aguf, Igor A.; Lyzlov, Nikita J.; Dasoian, Martin A.; and Krivchenko, Galina V., 5,059,495, Cl. 429-57.000.

Ahsanullah, Zahid, to Advanced Micro Devices, Inc. Supply bounce controlled output buffer circuit. 5,059,823, Cl. 307-443.000.

Aichinger, Horst; and Moosmann, Albert, to Siement Aktiengesellschaft. X-ray diagnostics generator having a rotating anode x-ray tube. 5,060,251, Cl. 378-93.000.

Ail Systems, Inc.: *See*—
Cohen, Leonard D., 5,059,927, Cl. 331-77.000.

Aimono, Sakae: *See*—
Fujisaki, Yoshinori; and Aimono, Sakae, 5,058,246, Cl. 24-394.000.

Air Products and Chemicals, Inc.: *See*—
Armor, John N.; and Parris, Gene E., 5,059,713, Cl. 564-187.000.
Kiczek, Edward F., 5,059,151, Cl. 452-13.000.

Airflo Aluminum Awning Company: *See*—
Schwartz, Seymour L., 5,058,333, Cl. 52-73.000.

Aisan Kogyo Kabushiki Kaisha: *See*—
Kondo, Yutaka, 5,059,076, Cl. 411-377.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Harada, Shintaro, 5,058,665, Cl. 165-164.000.
Shimei, Masato, 5,058,461, Cl. 74-866.000.

Ajgaonkar, Donna: *See—*
Levine, Stephen R.; Harui, Alex J.; Schirpke, Michael W.; Donoghue, Karen; and Ajgaonkar, Donna, 5,060,135, Cl. 364-200.000.

Akademija nauk SSSR: *See—*
Bieha, Miroslav; Schauer, Jan; Lokaj, Jan; Polockaja, Galina A.; Kuznecov, Jurij P.; and Romaskova, Kira A., 5,059,220, Cl. 55-158.000.

Akashi, Akira: *See—*
Ohnuki, Ichiro; Higashihara, Masaki; Akashi, Akira; and Kadohara, Terutake, 5,060,002, Cl. 354-402.000.

Akiike, Michihiro, to Canon Kabushiki Kaisha. Drive device for motor. 5,059,992, Cl. 354-195.100.

Akimori, Hiroyuki: *See—*
Owada, Nobuo; Akimori, Hiroyuki; Nitta, Takahisa; Kobayashi, Tohru; Sasabe, Shunji; Kawaji, Mikinori; and Kasahara, Osamu, 5,060,045, Cl. 357-45.000.

Akins, Edward A. Feeder for animals. 5,058,531, Cl. 119-60.000.

Akopov, Ernest M.; and Kapitanova, Elena N., to Vsesojuzny Nauchno-Issledovatelsky i Ispytatelny Institut Meditsinskoi Tekhniki. Surgical forceps. 5,059,214, Cl. 606-207.000.

Aktiebolaget Electrolux: *See—*
Svensson, Leif R., 5,058,738, Cl. 206-229.000.

Akzo America Inc.: *See—*
Parr, William J.; Moy, Paul Y. Y.; and Frank, Dieter, 5,059,485, Cl. 428-458.000.

Albach, Manfred; Stormberg, Hans-Peter; and Wegener, Armin F., to U.S. Philips Corporation. Circuit arrangement for the operation of high-pressure gas discharge lamps by means of a pulsatory supply current. 5,059,869, Cl. 315-289.000.

Albany International Corp.: *See—*
Petterson, Dewitt R.; Kramer, Charles E.; and DiTaranto, Francis A., 5,059,378, Cl. 264-258.000.

Albert, David J.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Steinbaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,059,359, Cl. 264-22.000.

Albert, Ernst, to Deutsche Star GmbH. Anti-friction bearing for linear movements. 5,059,037, Cl. 384-45.000.

Albert-Frankenthal AG: *See—*
Kobler, Norbert; Gobel, Pirmin; and Herb, Rudolf, 5,058,502, Cl. 101-363.000.

Albertelli, Aldino, to Company 'A' Foam Limited. Foam composite and method of forming same. 5,060,291, Cl. 428-306.600.

Alberto, Bacchini, to Filteco S.p.A. Melt spinning apparatus. 5,059,104, Cl. 425-72.200.

Alcatel NA Network Systems Corp.: *See—*
Briscoe, Milton R.; and Tyrrell, Raymond E., 5,060,239, Cl. 375-38.000.
Tyrrell, Raymond E.; Dunning, Stephen C.; Sanders, Richard J., Jr.; Hurlocker, Claude M.; Gingell, Michael J.; and Jones, Jeffrey P., 5,060,229, Cl. 370-110.100.

Alcebo, Raul: *See—*
Towne, Randall; Alcebo, Raul; and Cordido, Ricardo, 5,059,177, Cl. 604-96.000.

Alden Laboratories, Inc.: *See—*
Hanson, Chris A., 5,058,291, Cl. 36-117.000.

Alessandro, Mascioli. Silencer device for exhausts of motors and similar, with acoustic interference. 5,058,702, Cl. 181-206.000.

Alexander, David V.; Toy, Stephen W.; and March, Marvin, to NEC Electronics Inc. Water leak and water level detector. 5,058,421, Cl. 73-49.200.

Alexander, M. Grayson; Beall, George H.; Quinn, Candace J.; and Yu, C. John, to Corning Incorporated. Bi-Ca-Sr-Cu-Zn-O superconducting glass-ceramics. 5,059,560, Cl. 501-10.000.

Alfa Metal Corp.: *See—*
Lee, Dickey, 5,058,239, Cl. 16-324.000.

Alfred Teves GmbH: *See—*
Fennel, Helmut; Wupper, Hans; Buschmann, Gunther; Keller, Lothar; and Klusemann, Rainer, 5,058,699, Cl. 180-197.000.
Fennel, Helmut, 5,060,159, Cl. 364-426.020.
Weiler, Rolf; Panek, Claus-Peter; Endler, Wolfgang; and Hendrich, Uwe, 5,058,714, Cl. 188-196.00P.

Algars, Rainer: *See—*
Le Bell, Jean; Valjakka, imo; Pirhonen, Jussi; Sunden, Fred; Hautaniemi, Erkki; Jarvela, Pentti; Sandelin, Bjorn; and Algars, Rainer, 5,059,472, Cl. 428-161.000.

Alkor GmbH Kunststoffe: *See—*
Fleischmann, Edgar; Mayr, Maximillian; and Heitz, Heinrich, 5,059,270, Cl. 156-251.000.

Allan, Peter S.; and Bevis, Michael J., to National Research Development Corporation. Method for molding a material containing alignable constituents. 5,059,368, Cl. 264-69.000.

Allen, Barry; Harvell, Mark; Hastings, Christopher; Puigcerver, Luis; and Marik, Gloria J., to Raychem Corporation. Cable splice enclosure. 5,059,748, Cl. 174-87.000.

Allen, Bruce S.: *See—*
Brown, Alexander S.; Hirni, James T.; and Allen, Bruce S., 5,060,140, Cl. 364-200.000.

Allen, Christopher J.: *See—*
Brittenham, Gary M.; Allen, Christopher J.; Okada, Tokuhiro; and Fujimoto, Keiji, 5,059,395, Cl. 422-73.000.

Allen, David F.: *See—*
Gawin, Frank H.; Humblestone, Brian G.; and Allen, David F., 5,059,600, Cl. 514-253.000.

Allen Protection Services, Inc.: *See—*
Scheele, Michael R.; and Ginther, Max R., 5,059,945, Cl. 340-426.000.

Allen, Timothy P.: *See—*
Anderson, Janeen D. W.; Mead, Carver A.; Allen, Timothy P.; and Wall, Michael F., 5,059,920, Cl. 330-253.000.

Allergan, Inc.: *See—*
Lee, Gary C. M., 5,059,611, Cl. 514-336.000.

Allied-Signal Inc.: *See—*
—DeMetz, Frederick C., Sr., 5,060,206, Cl. 367-136.000.
—Li, Chien C.; and Sukornick, Bernard, 5,059,728, Cl. 570-134.000.

Allison, J. Dennis; and Schmitt, Robert A., to Columbia Machine, Inc. Apparatus for forming concrete blocks having plural separately driven vibrator sets. 5,059,110, Cl. 424-260.000.

Allouis, Jacques; Hauptmann, Patrick; Penet, Xavier; and Saint-Ellier, Pierre, to Telic Alcatel. Synchronizing system for a private digital exchange connected to an ISDN. 5,060,241, Cl. 375-108.000.

ALM Surgical Equipment, Inc.: *See—*
Crispin, George E.; Craig, Burnie M.; and Fujitaki, Roy K., 5,060,124, Cl. 362-147.000.

Almy, Thomas A.: *See—*
Frisch, Arnold M.; and Almy, Thomas A., 5,060,310, Cl. 359-188.000.

Alsthom: *See—*
Moisson-Franckhauser, Francois, 5,059,936, Cl. 336-55.000.

Altinger, Winfried. Viewing window for heat protective clothing. 5,058,207, Cl. 2-8.000.

Aluminium Pechiney: *See—*
Garat, Michel, 5,058,653, Cl. 164-34.000.

Aluminum Company of America: *See—*
Banthia, Vinod K.; Long, Russell S.; and Klingensmith, James D., 5,059,056, Cl. 403-170.000.
Burleigh, T. David; and Wyss, Rebecca K., 5,059,390, Cl. 420-405.000.
Hochbein, David E.; and Pastuszak, Ronald F., 5,058,878, Cl. 271-145.000.
Leftault, Charles J., Jr.; Gunkel, Ronald W.; Cargnel, Robert A.; and Douds, E. Scott, 5,058,408, Cl. 72-56.000.
Wefers, Karl; Nitowski, Gary A.; and Wieserman, Larry F., 5,059,258, Cl. 148-272.000.

Alving, Carl R.: *See—*
Janoff, Andrew S.; Popescu, Mircea C.; Alving, Carl R.; Fountain, Michael W.; Lenk, Robert P.; Ostro, Marc J.; Tremblay, Paul A.; and Weiner, Alan L., 5,059,591, Cl. 514-31.000.

Alza Corporation: *See—*
Magruder, Judy A.; Eckenhoff, James B.; Cortese, Richard; Wright, Jeremy C.; and Peery, John R., 5,059,423, Cl. 424-438.000.

Amada Company, Limited: *See—*
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, 5,058,406, Cl. 72-9.000.

Amann, Heinz: *See—*
Hebenstreit, Ernst; Lorenz, Leo; Schierz, Winfried; and Amann, Heinz, 5,060,048, Cl. 357-68.000.

Amemiya, Koji: *See—*
Takeuchi, Tatsuo; and Amemiya, Koji, 5,059,465, Cl. 428-76.000.

American Cyanamid Company: *See—*
—Dusza, John P.; and Tseng, Shin S., 5,059,691, Cl. 544-281.000.
—Dusza, John P.; and Church, Robert F., 5,059,709, Cl. 558-309.000.
—Fishbein, Richard; Cady, Susan M.; and Chaudhuri, Ajit K., 5,059,422, Cl. 424-426.000.

American Home Products: *See—*
Sutherland, Stephen F.; and Silverstein, Jerome, 5,059,172, Cl. 604-73.000.

American Machine & Tool Company, Inc.: *See—*
Pollak, Henry; and Wells, Gordon V., 5,058,280, Cl. 30-392.000.

American Standard Inc.: *See—*
Noah, Lewis R., 5,058,712, Cl. 188-59.000.

Ametek-Lamb Electric: *See—*
Anstine, William E., 5,059,844, Cl. 310-90.000.

Amnatsing, Thana: *See—*
Tatsanakit, Thawatchai; and Amnatsing, Thana, 5,059,558, Cl. 437-216.000.

Amoco Corporation: *See—*
—Goyal, Shri K., 5,059,331, Cl. 210-748.000.
—Kaminsky, Mark P.; Kleefisch, Mark S.; and Zajac, Gerry W., 5,059,740, Cl. 585-500.000.
—Sherman, Michael M., 5,059,907, Cl. 324-323.000.
—Taylor, James L.; Hensley, Albert L.; Forgac, John M.; and Tatterson, David F., 5,059,303, Cl. 208-96.000.

AMP Incorporated: *See—*
Dale, James L.; and Miller, Vernon R., 5,059,137, Cl. 439-395.000.
Gloe, Karl-Heinz; Kruezer, Helmut; and Biehl, Harald, 5,058,260, Cl. 29-564.400.
Grabbe, Dimitry G., 5,059,143, Cl. 439-886.000.
Hayes, Earl J.; and Hawk, Gary W., 5,059,746, Cl. 174-52.100.
Henschenp, Homer E.; McKee, Michael J.; and Pawlikowski, Joseph M., 5,059,756, Cl. 219-85.220.
Olsson, Billy E., 5,059,138, Cl. 439-460.000.

Ampex Corporation: *See—*
Khosla, Ashok M., 5,060,169, Cl. 364-521.000.

Ampulski, Robert S.; and Spendel, Wolfgang U., to Procter & Gamble Company, The. Soft tissue paper. 5,059,282, Cl. 162-111.000.

Anchor Hocking Packaging Company: *See—*
Hayes, Thomas H., 5,058,755, Cl. 215-252.000.

Andersen, Hans, to Siemens Aktiengesellschaft. Method and apparatus for detecting a sequence of abnormal events in an electrical signal, particularly in the depolarization signal of a heart. 5,058,599, Cl. 128-705.000.

Andersen, Kent. Fishing lure. 5,058,310, Cl. 43-42.150.

Anderson, Charles B., to Atco Rubber Products, Inc. Carton construction for flexible duct. 5,058,741, Cl. 206-321.000.

Anderson, Christopher D.: *See—*
Anderson, Lucinda L.; and Anderson, Christopher D., 5,058,574, Cl. 128-80.00F.

Anderson, Janeen D. W.; Mead, Carver A.; Allen, Timothy P.; and Wall, Michael F., to Synaptics, Incorporated. CMOS amplifier with offset adaptation. 5,059,920, Cl. 330-253.000.

Anderson, Jeffrey J.: *See—*
Moore, John S.; Anderson, Jeffrey J.; and Eriksen, Joern B., 5,059,984, Cl. 346-1.100.

Anderson, Jerry L.; and Boyington, Thomas R., to Brunswick Corporation. Paint spraying system. 5,058,805, Cl. 239-3.000.

Anderson, John P., to Hartwell Medical Corporation. Splint device. 5,058,575, Cl. 128-87.00R.

Anderson, Lucinda L.; and Anderson, Christopher D. Therapeutic limb brace. 5,058,574, Cl. 128-80.00F.

Anderson, Marc A.: *See—*
Spanhel, Lubomir; and Anderson, Marc A., 5,059,346, Cl. 252-301.60S.

Anderson, Richard T.: *See—*
Guntly, Thomas G.; Rasmussen, Jerome L.; and Anderson, Richard T., 5,058,544, Cl. 123-187.50R.

Anderson, Robert K.; DeCamp, Ann E.; Kawaguchi, Alan T.; King, Anthony O.; Mills, Sander G.; and Volante, Ralph P., to Merck & Co., Inc. Processes and intermediates for the preparation of 5-oxygenated HMG-CoA reductase inhibitors. 5,059,696, Cl. 549-214.000.

Andersson, Matts, to Nobelpharma AB. Method and an apparatus for joining together two elements included in an implant and/or prosthesis structure. 5,059,758, Cl. 219-121.630.

Ando, Hitoshi: *See—*
Sakaguchi, Shozaburo; and Ando, Hitoshi, 5,059,969, Cl. 342-352.000.

Ando, Osamu, to Shimadzu Corporation. Spectrophotometer. 5,059,025, Cl. 356-319.000.

Andra, Rainer; and Engemann, Gunter, to Carl Freudenberg, Firma. Process of producing a torsional vibration damper with a loosely embedded guiding ring. 5,058,267, Cl. 29-897.200

Andrews, Ethan K., to Beloit Corporation. Process and mechanism to empty pulping digester. 5,059,281, Cl. 162-52.000.

Andrews, Richard E.: *See—*
Law, Trevor J.; Andrews, Richard E.; and Gall, Christopher A., 5,059,757, Cl. 219-121.520.

Anjan, Yellapu: *See—*
Stranjord, Lee K.; and Anjan, Yellapu, 5,059,783, Cl. 250-227.190.

Annand, Brian S., to International Leisure Products, Inc. Inflatable mattress, changeable to chair. 5,058,225, Cl. 5-449.000

Anstine, William E., to Ametek-Lamb Electric. Snap ring for electric motor. 5,059,844, Cl. 310-90.000.

Antes, Gregor, to LGZ Landis & Gyr Zug AG. Bar code field and bar code reader. 5,059,776, Cl. 235-457.000.

Anthony, William S.; and McCaskill, Oliver L., to United States of America, Agriculture. System for analyzing entrained solids such as cotton or seed. 5,058,444, Cl. 73-866.000.

Antonelli, Ken. Spray tube support assembly. 5,058,783, Cl. 222-538.000.

Aoki, Akira, to Fuji Photo Film Co., Ltd. Electronic still camera with less electric consumption. 5,060,069, Cl. 358-209.000.

Aoki, Takayoshi: *See—*
Shinoki, Masayoshi; Takagi, Masahiro; Nagatsuka, Ikutaroh; Kumashiro, Koichi; Aoki, Takayoshi; and Takeda, Masayuki, 5,059,504, Cl. 430-108.000

Aota, Takashi: *See—*
Hatanaka, Koji; and Aota, Takashi, 5,059,768, Cl. 219-270.000.

Aoyagi, Muneo; Takanashi, Kazuhiro; Araki, Hiroyuki; Murata, Moriyasu; Sotoya, Kohshiro; Ogura, Nobuyuki; and Yamamura, Masaaki, to Kao Corporation. Bleaching composition. 5,059,344, Cl. 252-186.380.

Appelbaum, Edward R., to Lubrizol Genetics, Inc. *Rhizobium japonicum* 191 NODD-related genes. 5,059,534, Cl. 435-172.300.

Applied Analytical Industries, Inc.: *See—*
Park, Moo W.; and Caldwell, Henry C., 5,059,626, Cl. 514-658.000.

Applied Extrusion Technologies, Inc.: *See—*
Hovis, Edward E.; Johnson, Eric D.; and Schroeder, Michael J., 5,059,631, Cl. 521-79.000.

Applied Materials, Inc.: *See—*
Northrup, Ronnie, 5,059,784, Cl. 250-237.00R.

Apricot S.A.: *See—*
Lo, Shui-Yin, 5,059,866, Cl. 315-111.210.

Aqualon Company: *See—*
Sau, Arjun, 5,059,686, Cl. 536-114.000.

Ara, Katsutoshi: *See—*
Kimura, Yoshiharu; Adachi, Shigehito; Ara, Katsutoshi; Inoue, Shigeo; and Koike, Kenzo, 5,059,532, Cl. 435-134.000

Arabori, Hideo; Yamazaki, Shiro; Arahira, Masato; and Murakami, Aiko, to Kureha Kagaku Kogyo K.K. N-substituted-3-(substituted hydrazino)-benzenesulfonamide derivatives, and herbicidal compositions. 5,059,238, Cl. 71-93.000.

Arahira, Masato: *See—*
Arabori, Hideo; Yamazaki, Shiro; Arahira, Masato; and Murakami, Aiko, 5,059,238, Cl. 71-93.000

Arai Corporation: *See—*
Arai, Koichi, 5,059,320, Cl. 210-232.000.

Arai, Eiki: *See—*
Kihara, Hiroshi; Arai, Eiki; Ogata, Shigeaki; Katagiri, Yoshio; Fujita, Katsuyuki; Wachigai, Tadahiko; and Hiratsuka, Hiroyoshi, 5,059,388, Cl. 419-37.000.

Arai, Kazumi; Kobayashi, Mario; and Okaniwa, Kenichiro, to Konishiroku Photo Industry Co., Ltd. Dry multilayer analytical element for analysis of enzymes or triglycerides. 5,059,526, Cl. 435-17.000.

Arai, Koichi, to Arai Corporation. Locking structure of wire rod for filter element. 5,059,320, Cl. 210-232.000.

Arakawa & Co., Ltd.: *See—*
Arakawa, Hideo, 5,058,847, Cl. 248-328.000.

Arakawa, Hideo, to Arakawa & Co., Ltd. Hanging holder and hanging structure including same. 5,058,847, Cl. 248-328.000.

Arakawa, Masayuki: *See—*
Nakamura, Fumio; Shimano, Masayoshi; Sakakibara, Kaoru; and Arakawa, Masayuki, 5,058,401, Cl. 68-19.200

Araki, Hiroyuki: *See—*
Aoyagi, Muneo; Takanashi, Kazuhiro; Araki, Hiroyuki; Murata, Moriyasu; Sotoya, Kohshiro; Ogura, Nobuyuki; and Yamamura, Masaaki, 5,059,344, Cl. 252-186.380.

Araki, Nobuo; Tabata, Kazufumi; Yokoi, Kiyomi; Ashidate, Tadami; and Hattori, Osamu, to Nippon Steel Welding Products & Engineering Co., Ltd. Method and apparatus for passing threadlike pieces through tubular products. 5,058,259, Cl. 29-433.000.

Arbeiter, James H., to General Electric Company. Non-destructive lossless image coder. 5,060,242, Cl. 375-122.000.

Arbo Medizin-Technologie GmbH: *See—*
Ding, Wolfgang; and Arnold, Werner, 5,058,589, Cl. 128-640.000.

Arco Chemical Technology, Inc.: *See—*
Harris, Stephen H., 5,059,670, Cl. 528-48.000
Hayes, John E.; and Gastinger, Robert G., 5,059,641, Cl 523-456.000.

Arendt, Henry P.: *See—*
Godfrey, Craig W.; Schnatzmeyer, Mark A.; and Arendt, Henry P., 5,058,683, Cl. 166-381.000.

Arens, Richard F.: *See—*
Henriquez, Kenneth R.; and Arens, Richard F., 5,058,791, Cl. 224-310.000.

Arghiracopulos, Salvatore: *See—*
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, 5,058,406, Cl. 72-9.000.

Arico', Beatrice: *See—*
Pedroni, Paola; Riboli, Barbara; De Ferra, Francesca; Grandi, Guido; Toma, Salvatore; Arico', Beatrice; and Rappuoli, Rino, 5,059,537, Cl. 435-252.310.

Arii, Mitsuzo: *See—*
Kondoh, Osamu; Arii, Mitsuzo; Nakajima, Tohru; and Kawabata, Yasunari, 5,058,978, Cl. 385-43.000.

Arijs, Marc R. M.: *See—*
Chapman, Walter F.; and Arijs, Marc R. M., 5,058,515, Cl 112-112.000.

Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, to Mitsubishi Denki Kabushiki Kaisha. On chip semiconductor memory arbitrary pattern, parallel test apparatus and method. 5,060,230, Cl. 371-21.200

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Winkle, Sherman E., Sr.; Cockerham, Lloyd E.; and Myers, Frederick A., 5,059,446, Cl. 427-32.000.

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Castonguay, Roger N.; and Arnold, David, 5,059,933, Cl. 335-167.000.

Arnold, Steven M. Passive ring resonator laser angular rate sensor 5,059,030, Cl. 356-350.000.

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Lessway, Richard J., 5,058,468, Cl. 82-157.000

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Arroyo, Melvin L.; and Cannizaro, Leonard. Fluid treating device 5,059,217, Cl. 44-639.000.
Arsem, Harold B. Process for producing freeze dried meat. 5,059,445, Cl. 426-646.000.
Artiano, Adrian, to Acrowood Corporation. Machine for sorting out over-thick wood chips. 5,058,751, Cl. 209-673.000.
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Yaba, Susumu; Takigawa, Tomoya; Kikugawa; Osada, Koichi; Sato, Katsuhito; and Omae, Masaru, 5,059,254, Cl. 136-251.000
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Sudo, Haruo, 5,058,975, Cl. 385-24.000.
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Morisawa, Satoru, 5,059,991, Cl. 346-160.000.
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Asakawa, Yoshiaki; Miyamoto, Takanori; Kondo, Kazuhiro; Ichikawa, Akira; and Suzuki, Toshiro, to Hitachi, Ltd. Speech coding system and method. 5,060,268, Cl. 381-38.000.
Asakura, Hideo; and Momiyama, Motokazu, to Nippondenso Co., Ltd. Contactless ignition apparatus for internal combustion engine 5,058,560, Cl. 123-633.000.
Asakura, Takaaki, to Oji Yuka Goseishi Co., Ltd. Method of controlling thickness of oriented resin film. 5,059,265, Cl. 156-64.000.
Asami, Shuji; and Kitayama, Hitoshi, to Ishikawajima-Harima Heavy Industries Co., Ltd. Hydrostatic speaker and speaker driver 5,060,274, Cl. 381-166.000.
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Guey, Lee S., 5,058,446, Cl. 74-89.170.
ASC Incorporated: *See—*
Milu, Dean R., 5,058,939, Cl. 292-110.000.
Aschwanden, Felix: *See—*
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Aschwanden, Franz; and Eberhart, M., to HCM AG. Undermattress laths having spring type connections. 5,058,224, Cl. 5-238.000.
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Nazmy, Mohamed; and Staubli, Markus, 5,059,259, Cl. 148-429.000
Ash, Gary S.: *See—*
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Ashland Oil, Inc.: *See—*
Grant, David C. H., 5,058,631, Cl. 141-10.000
Ashley, Paul; and Chapman, John U., to Clark Door Limited. Roller door assemblies. 5,058,651, Cl. 160-271.000.
Ashton, Larry J.; and Ashton, Todd H., to Aerotrans Corporation Method for forming a composite structure. 5,059,377, Cl. 264-257.000
Ashton, Todd H.: *See—*
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Aske, Vernon H., to Honeywell Inc. Sensor capsule mounting. 5,058,430, Cl. 73-497.000.
Asnis, Stanley E. Suture threading, stitching and wrapping device for use in open and closed surgical procedures. 5,059,201, Cl. 606-144.000
Associated Mills Inc.: *See—*
Jursich, Donald N.; and Gentry, Jefferson L., 5,058,271, Cl 30-123.000.
Aster Corporation: *See—*
Corke, Michael C.; Gillham, Frederick J.; Hu, Andong; and Moore, Wayne, 5,058,983, Cl. 385-78.000.
Astex Co., Ltd.: *See—*
Fukuyama, Toshifumi, 5,059,782, Cl. 250-214.00A
Fukuyama, Toshifumi, 5,059,809, Cl. 250-551.000.
Astro-Valcour, Incorporated: *See—*
Pontiff, Thomas M.; and Rapp, Joseph P., 5,059,376, Cl. 264-234.000
AT&T Bell Laboratories: *See—*
—Delavaux, Jean-Marc P., 5,060,312, Cl. 359-192.000
—DiGiovanni, David J.; and Walker, Kenneth L., 5,058,976, Cl. 359-173.000.
—Grimes, Gary J., 5,060,302, Cl. 359-135.000.
—Mollenauer, Linn F., 5,058,974, Cl. 385-27.000.
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—Mon, Joseph M.; and Petisce, James R., 5,059,635, Cl. 522-3.000
—Morris, Robert J. T.; and Rubin, Lawrence D., 5,060,276, Cl 382-8.000
Atago, Takeshi: *See—*
Nagano, Masami; and Atago, Takeshi, 5,058,550, Cl. 123-422.000.
Atco Rubber Products, Inc.: *See—*
Anderson, Charles B., 5,058,741, Cl. 206-321.000.
Atkins, Walter F.: *See—*
Hartman, Earl D.; and Atkins, Walter F., 5,058,774, Cl. 222-140.000.
Atlantic Network Services, Inc.: *See—*
Brown, James L., 5,060,255, Cl. 379-67.000.
Atlas Copco Construction and Mining Technique AB: *See—*
Hartwin, Carl S. M.; and Nilsson, Ove V. E., 5,058,690, Cl. 175-339.000.
Aton, Thomas J.; Malhi, Satwinder; Hashimoto, Masashi; Mahant-Shitti, Shivaling S.; Kwon, Oh-Kyong; and Sridhar, Thirumalai, to Texas Instruments Incorporated. Method and apparatus for testing passive substrates for integrated circuit mounting. 5,059,897, Cl. 324-158.00R
Atsugi Unisia Corporation: *See—*
Iwaya, Naohiro, 5,058,489, Cl. 92-233.000.
Saito, Masaharu; Tsuruta, Seiji; Uchida, Katsuhiko; and Suga, Seiji, 5,058,539, Cl. 123-90 170.
Attard, Joe C.: *See—*
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Auracher, Franz: *See—*
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Ausimont S.r.l.: *See—*
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Marchionni, Giuseppe; De Patto, Ugo; Strepparola, Ezio; and Viola, Gian Tommaso, 5,059,700, Cl. 549-550.000.
Austin, Barry G.: *See—*
Eccleston, Larry; and Austin, Barry G., 5,058,960, Cl. 303-24.100.
Austin, Eric P., to Simon-Hartley Limited. Apparatus for dewatering sludge. 5,059,322, Cl. 210-396.000
Autier, Philippe: *See—*
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Automated Machinery Systems, Inc.: *See—*
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Automated Packaging Systems, Inc.: *See—*
Stout, Chester H.; and Van Domelen, John, 5,059,114, Cl. 431-3.000
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Opperthauser, Keith G., 5,058,730, Cl. 198-732.000.
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Plohberger, Diethard; Pichl, Volker; and Ofner, Herwig, 5,058,614, Cl. 137-1.000.
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Ayato, Hiroshi: *See—*
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Ayukawa, Ichiro; and Miyazaki, Sachio, to Fujitsu Limited. Transmitting power control system. 5,060,292, Cl. 455-52.000.
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B. F. Goodrich Company, The: *See—*
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Baba, Nobuyuki: *See—*
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Babcock & Wilcox Company, The: *See—*
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Babich, Edward D.; Gelorme, Jeffrey D.; Hatzakis, Michael; Shaw, Jane M.; Stewart, Kevin J.; and Witman, David F., to International Business Machines Corporation. Ultraviolet light sensitive photoinitiator compositions, use thereof and radiation sensitive compositions. 5,059,512, Cl. 430-280.000.
Bacardit, Joan S., to Bendix Espana. Relief valve for hydraulic fluid. 5,058,618, Cl. 137-116.000.
Bacrania, Kantilal; and Chi, Chong I., to Harris Corporation. Back-sampling analog to digital converter. 5,059,982, Cl. 341-172.000.
Baer, Tom, to Spectra-Physics, Inc. Diode-pumped, solid state laser-based workstation for precision materials processing and machining. 5,059,764, Cl. 219-121.680.
Bahr, Albert. Device for expressing plant matter, particularly for re-pressing sugar-beet chips. 5,059,321, Cl. 210-386.000.
Bahr, Karl E.: *See—*
Spigarelli, Donald J.; DeCarlo, John M.; and Bahr, Karl E., 5,060,288, Cl. 392-412.000.
Bailey, James S.; Croce, Timothy C.; Huppman, Lawrence D.; and Marion, Michael P., to Du Pont de Nemours, E. I., and Company. Apparatus for processing a photosensitive element. 5,059,996, Cl. 354-317.000.
Bailey, Jerome M., to City of Hope. Sequential C-terminal degradation of peptides and proteins using cleaving reagents such as sodium trimethylsilanolate or trimethylamine N-oxide. 5,059,540, Cl. 436-89.000.
Bailly, Jean-Claude A.; and Bres, Philippe, to BP Chemicals Limited. Process for preparing a vanadium/titanium based catalyst suitable for olefin polymerization. 5,059,570, Cl. 502-104.000.
Baird, John, to Motorola, Inc. Resilient mold assembly. 5,059,105, Cl. 425-116.000.
Baker, Brian, to GTE Valenite Corporation. Two-edge threading milling insert. 5,059,070, Cl. 407-114.000.
Baker, Craig A.: *See—*
Simmel, Thomas L.; and Baker, Craig A., 5,058,636, Cl. 141-346.000.
Baker, Gary A.; and Berg, Peter G., to Texas Instruments Incorporated. Packaging and sealing for pressure transducer. 5,060,108, Cl. 361-283.000.
Balaji, Malur R.: *See—*
Maronian, Hovaness H.; and Balaji, Malur R., 5,059,486, Cl. 428-493.000.
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Loughrey, Helen C.; Cullis, Pieter R.; Bally, Marcel B.; Choi, Lewis S. L.; and Wong, Kim F., 5,059,421, Cl. 424-417.000.
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Barber, Thomas A., III, to BOC Group, Inc., The. Animal carcass injection system. 5,059,152, Cl. 452-135.000.
Barda, Rudolph C.; and Engels, Berno, to Keiper Recaro, Inc. Composite inertia latch for vehicle seat back. 5,058,240, Cl. 16-325.000.
Bardelang, Vianney; Coeuillet, Jacques; and Dubos, Pascal, to Thomson-CSF. Device for the dynamic measurement of the torque of a self-synchronous motor and device for the servo-control of a self-synchronous motor using this device. 5,059,878, Cl. 318-490.000.
Barham, Steven T.: *See—*
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Barnes, Albert T. Spot and collar scrubber. 5,058,403, Cl. 68-229.000.
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Barry, George, to Seven Oaks Corporation. Cursor positioning method and apparatus. 5,059,959, Cl. 340-709.000.
Barsotti, Christina C.; and Schamel, Alfred H., to Tektronix, Inc. Wafer probe with transparent loading member. 5,059,898, Cl. 324-158.00P.
Barth, Phillip W.: *See—*
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Bartolles, Rolf, to Rheinmetall GmbH. Dual-catch trigger mechanism. 5,058,304, Cl. 42-69.010.
Bartolles, Rolf, to Rheinmetall GmbH. Blocking device for the breech-block in a gun. 5,058,482, Cl. 89-26.000.
Basek, Charles; Mathews, Phil; and Newcombe, Terry L. Cooking device. 5,058,493, Cl. 99-339.000.
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Goertsch, Manfred; Kindler, Hubert; Moedersheim, Norbert; and Rudolph, Guenther, 5,059,650, Cl. 524-412.000.
Hagen, Helmut; Pfister, Juergen; Ziegler, Hans; Wuerzer, Bruno; and Westphalen, Karl-Otto, 5,059,240, Cl. 71-94.000.
Hoessel, Peter; Schupp, Hans; Lienert, Klaus; and Lehmann, Helmut, 5,059,660, Cl. 525-419.000.
Horn, Peter; Rehmer, Gerd; Lutter, Heinz-Dieter; Ramlow, Gerhard; Hinz, Werner; and Schmidt, Hans U., 5,059,632, Cl. 521-137.000.
Lamm, Gunther; Etzbach, Karl H.; Wiesenfeldt, Matthias; Hansen, Guenter; and Reichelt, Helmut, 5,059,684, Cl. 534-765.000.
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Ostermayer, Bertram; Seiler, Erhard; Wagner, Daniel; Bronstert, Klaus; and Ladenberger, Volker, 5,059,645, Cl. 524-128.000.
Stumpp, Michael; Neumann, Peter; Ruehenback, Wolfgang; and Bergner, Michael, 5,059,715, Cl. 568-33.000.
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Hays, Byron G., 5,059,249, Cl. 106-412.000.
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Bauer, Martin G. Portable personal floatation device. 5,058,522, Cl. 114-351.000.
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Bauerfeind, Hans B.: *See—*
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Baumann, Hans D. Bellows seal and method for assembling. 5,058,861, Cl. 251-335.300.
Bawa, Jaspal S.; Couto, Luis; Mancini, Giacomo F.; Pulitano, Nicholas; and Zabrodski, George S., to Thomas & Betts Corporation. Connector for use with metal clad cable. 5,059,747, Cl. 174-65.0SS.
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Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 5,059,617, Cl. 514-383.000.
Burow, Wilfried; Brunn, Horst; Kresse, Peter; and Sander, Hans, 5,059,250, Cl. 106-459.000.
Buysch, Hans-Josef; Gelhaar, Hans-Georg; Istel, Erich; and Zimmermann, Franz, 5,059,643, Cl. 524-83.000.
Degen, Bruno; Feldner, Kurt; Kaiser, Hans-Joachim; and Schulze, Manfred, 5,059,706, Cl. 556-472.000.
Dutzmann, Stefan; Brandes, Wilhelm; Berg, Dieter; Holmwood, Graham; and Wollweber, Detlef, 5,059,616, Cl. 514-383.000
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Kramer, Hans-Joachim; Schulwitz, Bruno; Horlitz, Werner; Lange, Peter M.; and Mitschker, Alfred, 5,059,306, Cl. 208-313.000
Kruger, Bernd-Wieland; Sasse, Klaus; Hagemann, Hermann; Marhold, Albercht; and Brandes, Wilhelm, 5,059,623, Cl. 514-613.000.
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,059,597, Cl. 514-224.500
Schulz, Hans H.; and Jonischkeit, Horst, 5,059,121, Cl. 433-88.000.

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Beagle, Gerald R.; and Schultz, Christopher L., to Blissfield Manufacturing Company. Valve assembly. 5,058,623, Cl. 137-540.000.
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Beckman, Bruce W. Pool skimming apparatus. 5,059,314, Cl 210-169.000.
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Blankenship, Michael G.; and Berkey, George E., 5,059,229, Cl. 65-2.000.
Buckwalter, Charles Q., Jr.; Lachman, Irwin M.; Patil, Mallanagouda D.; and Williams, Jimmie L., 5,059,489, Cl. 428-550.000.
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Cosyns, Jean; and Boitiaux, Jean-Paul, to Institut Francais du Petrol. Process for selective catalytic hydrogenation in liquid phase of a normally gaseous feed containing ethylene, acetylene and gasoline. 5,059,732, Cl. 585-259.000.
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Counseller, Erika R.; and Rinard, Susan M. Cat litter box apparatus and method. 5,058,528, Cl. 119-165.000.
Coursen, David D., to Gaylord Container Corporation. Garment box. 5,058,740, Cl. 206-288.000.
Courtney, Michael L.; Hockey, Joseph S.; and Grady, Ayton J., to General Motors of Canada Limited. Apparatus for dispensing particulate material for foundry furnace relining. 5,058,776, Cl. 222-168.000.
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Cox, Jack L.; and Scharfenberger, James A., to Ransburg Corporation. System for dispensing of both water base and organic solvent base coatings. 5,058,812, Cl. 239-691.000.
Cox, Ronald L., to McDonnell Douglas Corporation. Conical expansion washer. 5,059,059, Cl. 403-408.100.
Coy, David H.; and Hocart, Simon J., to Administrators of the Tulane Educational Fund, The. Method for synthesizing a peptide containing a non-peptide bond. 5,059,653, Cl. 525-54.110.
Craft, Paul E., Jr.: *See—*
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Crawford, Douglas W.; Crawford, William B.; and Crawford, Mark S. Oriented valve and latch for side pocket mandrel. 5,058,670, Cl. 166-117.600.
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Crawford, Thomas M.; Cowan, Colin F. N.; and Marton, Virgil N., to Hewlett-Packard Company. Expert system using pattern recognition techniques. 5,060,279, Cl. 382-14.000.
Crawford, Wheeler C.; and Cuscurida, Michael, to Texaco Chemical Company. Method for the preparation of foundry sand compositions. 5,059,247, Cl. 106-38.350.
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Cueman, Michael K.; Mohr, Gregory A.; and Brown, Dale M., to General Electric Company. Two dimensional mosaic scintillation detector. 5,059,800, Cl. 250-367.000.
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Cullen, Joao A.; and Azevedo, Miguel N. D., to Metal Leve S.A. Means for preventing the build-up of carbon deposits on pistons. 5,058,488, Cl. 92-208.000.
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Curry, William J., to Harborchem. Recovery of isopropyl acetate and ethanol from an isopropyl acetate, ethanol and water-containing stream. 5,059,288, Cl. 203-43.000.
Curtin, James J. Mailable 3-D viewers of post card size. 5,058,991, Cl. 359-474.000.
Curtis, William. Tube rollup. 5,058,771, Cl. 222-99.000.
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Cycon, James P.; Schneider, George S.; and Tenerowicz, Gregory P., to United Technologies Corporation. Servo control system for a co-axial rotary winged aircraft. 5,058,824, Cl. 244-17.130.

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Dabbs, Stephen L.; and Bowen, Clay B. Fireplace hearth pad system. 5,058,566, Cl. 126-500.000.
Daeschel, Mark A.; and Watson, Barney T., to State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University. Process for deacidifying wine. 5,059,431, Cl. 426-13.000.
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Daisy, Nicholas K.: *See—*
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Dale, Hal J. Osteologically correct ski pole. 5,058,923, Cl. 280-821.000
Dale, James L.; and Miller, Vernon R., to AMP Incorporated. Insulation displacement contact for flat cable. 5,059,137, Cl. 439-395.000.
Dalebout, William T.; Liechty, Kim B.; and Watterson, Scott R., to Proform Fitness Products, Inc. Stepper exerciser. 5,058,882, Cl. 272-70.000.
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Da Re', Mario, to Fiat Auto S.p.A. Method for the production of structural elements of thermosetting plastics material, particularly component parts for motor vehicle bodies, by injection moulding. 5,059,361, Cl. 264-25.000.
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Davenport, John M.; Finch, William W.; Hansler, Richard L.; Henkes, John L.; and Johnson, Jeffrey D., to General Electric Company. Coupling means between a light source and a bundle of optical fibers and method of making such coupling means. 5,058,985, Cl. 385-115.000.
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Davis, Charles F., III. Cleaning device. 5,058,233, Cl. 15-244.100.
Davis, Charles R.; and Williams, Jeffrey T., to Uresil, Inc. Method for extruding silicone tubing. 5,059,363, Cl. 265-40.100.
Davis, Frederick. Liquid crystal device having distinguishing means. 5,058,999, Cl. 359-43.000.
Davis, Hugh M.; Klug, Thomas L.; and Zurawski, Vincent R., Jr., to Centocor, Inc. Method of isolating CA 125 antigen. 5,059,680, Cl. 530-350.000
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Davis, Lorne A., Jr.; Pepin, Gregory P.; and Moss, Robert M., to Texaco Inc. Earthen core analyzing means and method for determining the methane storage capacity of the core. 5,058,425, Cl. 73-153.000.
Davis, Marvin B.; Peeters, Hendrikus W. C. M.; and Taylor, Wilhelm, to Laser Magnetic Storage International Company. Disk cartridge including door opening mechanism and improved hub assembly. 5,060,106, Cl. 360-133.000.
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de Fraguier, Sixte; Thomas, Catherine; and Caire, Francois, to General Electric CGR S.A. X-ray tube having a variable focus which is self-adapted to the load. 5,060,254, Cl. 378-136.000.
Degen, Bruno; Feldner, Kurt; Kaiser, Hans-Joachim; and Schulze, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of alkylhalogenosilanes. 5,059,706, Cl. 556-472.000.
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Deguchi, Katsuyasu; Mizoguchi, Takatoshi; Taminaga, Takayuki; and Fujii, Akiyoshi, to Sharp Kabushiki Kaisha. Thermal head. 5,059,986, Cl. 346-76.0PH.
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Del Campo, Daniel A., to National Starch and Chemical Investment Holding Corporation. Process for bonding tubing with polytetrafluoroethylene glass reinforced tape. 5,059,054, Cl. 403-13.000.
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De Salme, William A. Motor and controller. 5,059,875, Cl. 318-138.000.
Deschamps, Andre; Dezael, Claude; Roux-Guerraz, Claude; and Travers, Christine, to Institut Francais du Petrole. Process and catalyst for selective reduction of nitrogen oxides. 5,059,569, Cl. 502-78.000.
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Dickerson, Jack A.; and Poley, Neil M., to International Business Machines Corporation. TFT LCD with optical interference color filters. 5,058,997, Cl. 359-59.000.
Dickhut, Heinrich; and Berns, John S., to Cullom Machine Tool & Die, Inc. Corrugated mold block. 5,059,109, Cl. 425-233.000.
Dickinson, Addison M. Waste separation apparatus. 5,058,763, Cl. 220-404.000.
Dickinson, Peter D.; and Bertram, William K., to IGT. Reel monitoring device for an amusement machine. 5,058,893, Cl. 273-143.00R.
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Diebolder, Helmut. Vacuum cleaner for simplified dirt disposal. 5,059,223, Cl. 55-373.000
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Dieterich, Peter D., Jr. Dispensing apparatus and method of dispensing bag holders. 5,058,767, Cl. 221-279.000.
DiGiovanni, David J.; and Walker, Kenneth L., to AT&T Bell Laboratories. System comprising Er-doped optical fiber. 5,058,976, Cl. 359-173.000.
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Barda, Rudolph C.; and Engels, Berno, 5,058,240, Cl. 16-325.000.
Engelse, Willem; and Comins, Todd, to Digital Equipment Corporation. Method and apparatus for displaying smooth-shaded objects. 5,060,172, Cl. 364-522.000.
Engemann, Gunter: *See—*
Andra, Rainer; and Engemann, Gunter, 5,058,267, Cl. 29-897.200.
Enichem Synthesis S.p.A.: *See—*
Rivetti, Franco; and Renzi, Fiorenzo, 5,059,663, Cl. 526-230.500.
Enigma Logic, Inc.: *See—*
Bosen, Robert J.; and Muir, John R., 5,060,263, Cl. 380-25.000.

Ennis, John L.; Kopf, Peter W.; Rudolph, Stephen E.; and van Buren, Martin F., to Procter & Gamble Co., The. Esterified ethoxylated alkyl glycosides useful in low calorie fat-containing food compositions. 5,059,443, Cl. 426-531.000.

Enokida, Miyuki: *See*—
Mita, Yoshinobu; Kawamura, Naoto; Enokida, Miyuki; and Ishida, Yoshihiro, 5,060,280, Cl. 382-33.000.

Enomoto, Kunio: *See*—
Otaka, Masahiro; Enomoto, Kunio; Hasegawa, Kunio; Hayashi, Makoto; Shimizu, Tasuku; and Takaku, Kazuo, 5,059,903, Cl. 324-223.000.

Environmental Dynamics, Inc.: *See*—
Tharp, Charles E., 5,059,358, Cl. 261-122.000.

Enzyme Bio-Systems Ltd.: *See*—
Bowles, Linda K., 5,059,430, Cl. 426-20.000.

Enzytech, Inc.: *See*—
McEvily, Arthur J.; Iyengar, Radha; and Gross, Akiva, 5,059,438, Cl. 426-268.000.

Ephraim, Daniel R.; and Ephraim, Philip C., to Modern Process Equipment, Inc. Coffee grinder. 5,058,814, Cl. 241-152.00A.

Ephraim, Philip C.: *See*—
Ephraim, Daniel R.; and Ephraim, Philip C., 5,058,814, Cl. 241-152.00A.

Epps, Alan L., to Dynamic Custom Equipment Limited. Hexo-modular office furniture system. 5,058,331, Cl. 52-36.000.

Equine Innovations: *See*—
Evertson, Sarah K., 5,058,367, Cl. 54-66.000.

Erbes, John G.: *See*—
Dixon, Robert C.; Deaver, Gerald A.; Punches, James R.; Singleton, Guy E.; Erbes, John G.; and Offer, Henry P., 5,059,384, Cl. 376-260.000.

Erdelyi, Charles K.; and Marshall, Mark G., to IBM. Data dependent variable time delay circuit. 5,059,837, Cl. 307-601.000.

Ericksen, Colin W. Hinge installation tool. 5,059,071, Cl. 409-182.000.

Erickson, Erik E. Method for destroying burrowing animals. 5,058,311, Cl. 43-58.000.

Erickson, Frederick L.; and Richeson, William E., to North American Philips Corporation. Hydraulically propelled phneumatically returned valve actuator. 5,058,538, Cl. 123-90.120.

Erickson, Paul M.; Matz, John E.; Groch, Tim J.; Stedman, Robert B.; Shaughnessy, Mark L.; and Kandah, Taisir Y., to Motorola, Inc. Simulcast system and channel unit. 5,060,240, Cl. 375-38.000.

Ericsson GE Mobile Communications Holding Inc.: *See*—
Dent, Paul, 5,060,266, Cl. 380-49.000.

Eriksen, Joern B.: *See*—
Moore, John S.; Anderson, Jeffrey J.; and Eriksen, Joern B., 5,059,984, Cl. 346-1.100.

Erman, Marko; and Autier, Philippe, to U.S. Philips Corp. Integrated semiconductor device including an optoelectronic switching element. 5,058,972, Cl. 385-17.000.

Ernest, Richard C.; and Retzinger, P. Paul, to Crown Metal Manufacturing Company. Signholder. 5,058,300, Cl. 40-606.000.

Espinal, Romulo: *See*—
Monache, Giuliano D.; Monache, Franco D.; Carmignani, Marco; Bonnevaux, Stella C.; Espinal, Romulo; De Luca, Carlo; and Botta, Bruno, 5,059,624, Cl. 514-616.000.

Esquivel H., J. Benjamin, to Dow Chemical Company, The. Tristimulus color evaluation sample cup. 5,059,024, Cl. 356-246.000.

Etablissement Texcontor: *See*—
Conti, Franco, 5,059,685, Cl. 536-1.100.

Etat Francais, represente par le Ministre Delegue des Postes, Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications): *See*—
Chevallier, Jacques; Pesant, Jean-Claude; Mircea, Andrei; and Benoir, Rose, 5,059,551, Cl. 437-96.000.

Ethyl Corporation: *See*—
—Boone, James E.; Owens, David W.; Farritor, Robert E.; and Blank, Wesley D., 5,059,410, Cl. 423-349.000.
—Mitchell, Olan W.; and McKinnie, Bonnie G., 5,059,722, Cl. 568-226.000.

Etievant, Claude, to Commissariat a l'Energie Atomique. Free electron laser. 5,060,232, Cl. 372-2.000.

Eto, Tatsuo: *See*—
Nozaki, Chikateru; Nakatake, Hiroshi; Kino, Yoichiro; Eto, Tatsuo; Makizumi, Keiichi; and Ohtomo, Nobuya, 5,059,538, Cl. 435-320.100.

Etoh, Yoshiyuki: *See*—
Yoshida, Kiyoshi; Yamamoto, Isao; Inoue, Hiroshi; Mori, Kazuyuki; Suzuki, Koichi; Nakano, Kinichiro; Nomura, Hiroyuki; and Etoh, Yoshiyuki, 5,058,698, Cl. 180-179.000.

Etschel, Helmut; and Wirth, Hermann, to E+M Maschinenbau. Conveyor rake sieve with hook-like plates. 5,059,313, Cl. 210-155.000.

Etzbach, Karl H.: *See*—
Lamm, Gunther; Etzbach, Karl H.; Wiesenfeldt, Matthias; Hansen, Guenter; and Reichelt, Helmut, 5,059,684, Cl. 534-765.000.

Europeane de Retraitement de Catalyseurs Eurecat: *See*—
Berrebi, Georges, 5,059,731, Cl. 585-259.000.

Eustache, Jacques: *See*—
Shroot, Braham; Eustache, Jacques; and Bernardon, Jean-Michel, 5,059,621, Cl. 514-443.000.

Evangelista, Roque L.: *See*—
Jane, Jay-Lin; Gelina, Robert J.; Nikolov, Zivko; and Evangelista, Roque L., 5,059,642, Cl. 524-52.000.

Evans, Anthony C., to Kelsey-Hayes Company. Hydraulic drum brake assembly. 5,058,713, Cl. 188-79.540.

Everett, Hobart R., Jr., to United States of America, Navy. Pneumatic actuator with hydraulic control. 5,058,385, Cl. 60-571.000.

Evertson, Sarah K., to Equine Innovations. Molded saddle pad. 5,058,367, Cl. 54-66.000.

Exabyte Corporation: *See*—
Younglove, Bruce, 5,059,772, Cl. 235-383.000.

executrix, Phyllis Daugherty: *See*—
Snellen, Paul F., deceased, 5,058,324, Cl. 51-124.00R.

Exxon Chemical Patents Inc.: *See*—
—Hendriksen, Dan E., 5,059,739, Cl. 585-513.000.
—Vargas, Jose M.; Hanin, Jean A.; and Reisch, John C., 5,059,718, Cl. 568-881.000.

Exxon Research and Engineering Company: *See*—
—Cody, Ian A.; Bell, James D.; West, Theodore H.; Wachter, William A.; and Achia, Biddanda U., 5,059,299, Cl. 208-27.000.

Faatz, Donald B.: *See*—
Levinn, Mitchell D.; Faatz, Donald B.; and Krishnamoorthy, Mukkai S., 5,058,894, Cl. 273-153.00R.

Fabbri, Vladimiro, to I.E.M.C.A. S.p.A. Industria Elettromeccanica Complessi Automatici. Device for inserting polygonal and shaped bars in the collet of a chuck of machine tools. 5,058,466, Cl. 82-126.000.

Faber, Robert G. Hinged trailer and boat cover. 5,058,946, Cl. 296-181.000.

Fabschitz, Heinze: *See*—
Memminger, Gustav; Kuhn, Falk; and Fabschitz, Heinze, 5,058,398, Cl. 66-132.00R.

Fagerlund, Bertil K. E., to Beloit Corporation. Apparatus to displace a digester from both ends. 5,059,284, Cl. 162-239.000.

Fahrney, Volker A., to elTGrim Hugo Kruger KG. Apparatus for influencing the position of a boat in water. 5,058,520, Cl. 114-285.000.

Faiola, Norman A., to Syracuse University. Rapid chilling system. 5,058,396, Cl. 62-457.200.

Fairbrother, John E.: *See*—
Cilento, Rodolfo D.; Frank, Margaret A.; Fairbrother, John E.; and Freeman, Frank M., 5,059,189, Cl. 604-307.000.

Faitel, William M., to Litton Industrial Automation Systems, Inc. Cylinder with radially movable rod. 5,058,487, Cl. 92-167.000.

Fanuc Ltd.: *See*—
Ichisa, Nobuaki; and Yamazaki, Etsuo, 5,059,760, Cl. 219-121.830.

Fanuc Ltd: *See*—
Karube, Norio; and Funakubo, Tsutomu, 5,060,238, Cl. 372-58.000.
Matsumura, Teruyuki, 5,060,163, Cl. 364-474.220.

Farello, Giovanni E.; and Naviglio, Antonio, to Comitato Nazionale per la Ricerca e per lo Sviluppo Dell'Energia Nucleare e Delle Energie Alternative. Mechanism for the automatic release of control bars in a nuclear reactor. 5,059,386, Cl. 376-336.000.

Farnworth, Warren D.; Duesman, Kevin; and Heitzeberg, Ed, to Micron Technology, Inc. Semiconductor dies and wafers and methods for making. 5,059,899, Cl. 324-158.00R.

Farritor, Robert E.: *See*—
Boone, James E.; Owens, David W.; Farritor, Robert E.; and Blank, Wesley D., 5,059,410, Cl. 423-349.000.

Faust, Steven M.: *See*—
Cherukuri, Subraman R.; Wong, Lucy L.; and Faust, Steven M., 5,059,429, Cl. 426-3.000.
Wong, Lucy L.; Faust, Steven M.; and Cherukuri, Subraman R., 5,059,428, Cl. 426-3.000.

Fearnot, Neal E.: *See*—
Geddes, Leslie A.; Fearnot, Neal E.; and Wessale, Jerry L., 5,058,583, Cl. 128-419.00D.

Feierabend, Ralf: *See*—
Mossinger, Jurgen; Stein, Siegfried; Stephan, Max; and Feierabend, Ralf, 5,059,111, Cl. 425-294.000.

Feinberg, Jay H.; and Roberts, William N., to Zenith Electronics Corporation. Conformable pad with thermally conductive additive for heat dissipation. 5,060,114, Cl. 361-387.000.

Feldner, Kurt: *See*—
Degen, Bruno; Feldner, Kurt; Kaiser, Hans-Joachim; and Schulze, Manfred, 5,059,706, Cl. 556-472.000.

Feliks, Robert C.: *See*—
Lawassani, Abdi; and Feliks, Robert C., 5,059,016, Cl. 359-871.000.

Fell, Donald M. Recyclable waste sorter collector. 5,058,957, Cl. 298-24.000.

Fell, Michael J., to M&M Displays, Inc. Message display saddle for fuel dispensing nozzle. 5,058,637, Cl. 141-392.000.

Fendley, James R.: *See*—
Adler, Robert; Fendley, James R.; Lange, Howard G.; Prazak, Charles J.; Steiner, Johann; and Strauss, Paul, 5,059,147, Cl. 445-4.000.

Feng, Tai-Sheng: *See*—
Flannagan, Stephen T.; and Feng, Tai-Sheng, 5,059,829, Cl. 307-475.000.

Feng, Yushu: *See*—
Dixit, Sudhir S.; and Feng, Yushu, 5,060,285, Cl. 382-56.000.

Fennel, Helmut; Wupper, Hans; Buschmann, Gunther; Keller, Lothar; and Klusemann, Rainer, to Alfred Teves GmbH. Process and circuit configuration for controlling a TSC-system with brake and motor management. 5,058,699, Cl. 180-197.000.

Fennel, Helmut, to Alfred Teves GmbH. Method and circuit configuration for controlling a two-channel anti-lock system. 5,060,159, Cl. 364-426.020.

Fennema, Alan A.; and Hancock, Reed A., to International Business Machines Corporation. Controlling head seeking speed in disk storage units by limiting displacement of head with respect to its supporting headarm. 5,060,210, Cl. 369-32.000.

Fernandez, Angel, to TRW Vehicle Safety Systems Inc. Free falling cinch tongue. 5,058,244, Cl. 24-170.000.

Fernbaugh, Bonnie J.: *See*—
Fernbaugh, James B.; and Fernbaugh, Bonnie J., 5,058,841, Cl. 248-126.000.

Fernbaugh, James B.; and Fernbaugh, Bonnie J. Saddle support. 5,058,841, Cl. 248-126.000.

Ferno-Washington, Inc.: *See*—
Schmid, K. Stephen; and Brault, Richard A., 5,058,572, Cl. 128-75.000.

Ferraro, James A. Reading material holder. 5,058,848, Cl. 248-441.100.

Ferri, Giampiero. Toy fire-arm for strip ammunition. 5,058,303, Cl. 42-57.000.

Ferris, Ian: *See*—
Miles, Richard; and Ferris, Ian, 5,058,959, Cl. 301-108.0TW.

Fertel, Lawrence B.; O'Reilly, Neil J.; and Lin, Henry C., to Occidental Chemical Corporation. Preparation of halogenated phthalic anhydrides. 5,059,697, Cl. 549-246.000.

Ferullo, Teresa: *See*—
Dallal, Joseph A.; Ferullo, Teresa; and Kurzyn, Cheryl M., 5,059,414, Cl. 424-70.000.

Fiat Auto S.p.A.: *See*—
Da Re', Mario, 5,059,361, Cl. 264-25.000.

FiberChem, Inc.: *See*—
Klainer, Stanley M.; Frank, Chet A.; Dandge, Dileep K.; and Goswami, Kisholoy, 5,059,790, Cl. 250-227.210.

Fiege, Helmut: *See*—
Joentgen, Winfried; and Fiege, Helmut, 5,059,716, Cl. 568-435.000.

Field, Leslie A., to Chevron Research Company. Process for removing sulfur from a hydrocarbon feedstream using a sulfur sorbent with alkali metal components or alkaline earth metal components. 5,059,304, Cl. 208-99.000.

Fietzke, Gunter; and Muller, Richard, to Gebruder Hofmann GmbH & Co. KG Maschinenfabrik. Apparatus for measuring an unbalance of a rotary member. 5,058,429, Cl. 73-475.000.

Filteco S.p.A.: *See*—
Alberto, Bacchini, 5,059,104, Cl. 425-72.200.

Filthuth, Heinz. Collimator for measuring radioactive radiation. 5,059,802, Cl. 250-374.000.

FIMA S.p.A.: *See*—
Ciampi, Vincenzo, 5,058,338, Cl. 52-167.0DF.

Finch, William W.: *See*—
Davenport, John M.; Finch, William W.; Hansler, Richard L.; Henkes, John L.; and Johnson, Jeffrey D., 5,058,985, Cl. 385-115.000.

Finelli, Anthony F.: *See*—
Gartland, Robert J.; Finelli, Anthony F.; and Bell, Anthony J., 5,058,647, Cl. 152-524.000.

Fink, Hans-Werner; Schmid, Heinz; and Stocker, Bettina, to International Business Machines Corporation. Delta-phi microlens for low-energy particle beams. 5,059,804, Cl. 250-396.00R.

Finkelstein, Louis D., to Motorola, Inc. Method of protecting a linear feedback shift register (LFSR) output signal. 5,060,265, Cl. 380-46.000.

Finkl, Charles W.; and Lehman, Albert L., to A. Finkl & Sons Co. Low alloy steel product. 5,059,389, Cl. 420-67.000.

Finley, James J., to PPG Industries, Inc. Method of making low emissivity window. 5,059,295, Cl. 204-192.270.

Finley, John W.: *See*—
Klemann, Lawrence P.; Finley, John W.; and Yarger, Ronald G., 5,059,442, Cl. 426-531.000.

Finley, Roger W.; Lubin, Barry D.; and Bergendahl, Bruce A., to Motorola, Inc. Digital telephone switch with simultaneous dual PCM format compatibility. 5,060,227, Cl. 370-79.000.

Firmin, Herman P., to Knight Manufacturing Company, Inc. Steerable fishing lure. 5,058,309, Cl. 43-42.130.

Firmstone, Michael G.; and Lindley, Andrew. Seed layer compositions containing organogold and organosilver compounds. 5,059,242, Cl. 106-1.230.

Fischell, Robert E.; and Fischell, Tim A., to Medical Innovative Technologies R & D Limited Partnership. Intra-arterial stent with the capability to inhibit intimal hyperplasia. 5,059,166, Cl. 600-3.000.

Fischell, Tim A.: *See*—
Fischell, Robert E.; and Fischell, Tim A., 5,059,166, Cl. 600-3.000.

Fischer, Albrecht: *See*—
Schubert, Erdmann; Ploog, Klaus; and Fischer, Albrecht, 5,060,234, Cl. 372-45.000.

Fischer, Manfred; Peterling, Horst; Kaiser, Johannes; Keuser, Klaus; and Wust, Wilhelm, to Rhewum GmbH; and Quarzwerke GmbH. Analytical sieve apparatus. 5,059,310, Cl. 209-237.000.

Fish, Aaron M.; and Toledano, Abraham, to Ilco Unican Inc. Push-button lock arrangement. 5,058,404, Cl. 70-315.000.

Fishbein, Richard; Cady, Susan M.; and Chaudhuri, Ajit K., to American Cyanamid Company. Continuous release phenylethanolamine derivative compositions. 5,059,422, Cl. 424-426.000.

Fisher, Franklin G.: *See*—
Maclay, William R., Sr.; and Fisher, Franklin G., 5,059,125, Cl. 434-249.000.

Fiskars OY AB: *See*—
Kishimoto, Ikuo, 5,058,277, Cl. 30-252.000.

Fitzpatrick, Harvey J.; Weaver, Jimmie D.; and Wilson, J. Michael, to Halliburton Company. Method for setting well casing using a resin coated particulate. 5,058,676, Cl. 166-278.000.

FL Industries, Inc.: *See*—
Specht, Werner O., 5,058,512, Cl. 110-238.000.

Flannagan, Stephen T.; and Feng, Tai-Sheng, to Motorola, Inc. Logic level shifting circuit with minimal delay. 5,059,829, Cl. 307-475.000.

Fleischmann, Edgar; Mayr, Maximillian; and Heitz, Heinrich, to Alkor GmbH Kunststoffe. Process for the welding of plastic films lying flat one on top of the other. 5,059,270, Cl. 156-251.000.

Fletcher, Robert M.: *See*—
Kuo, Chih-Ping; Fletcher, Robert M.; and Osentowski, Timothy D., 5,060,028, Cl. 357-17.000.

Flex Products, Inc.: *See*—
Phillips, Roger W.; Mayer, Thomas; and Ash, Gary S., 5,059,245, Cl. 106-22.000.
Todd, David W.; Brown, Lindsey; Phillips, Roger W.; and Overshiner, Elliot E., 5,059,454, Cl. 427-259.000.

Floatron, Inc.: *See*—
Sherman, Mark, 5,059,296, Cl. 204-228.000.

Flood, Kevin M.; and Cassarly, William J., to General Electric Company. Wide angle beam steerer using translation of plural lens arrays. 5,059,008, Cl. 359-196.000.

Flora, David D.: *See*—
Legler, John G.; Bartlett, Robert L.; and Flora, David D., 5,058,476, Cl. 83-782.000.

Flotow, Richard A.; and Kummer, Martin E., to Dana Corporation Drive assembly for clutch plate. 5,058,719, Cl. 192-70.190.

Flurry, Gregory A.; and Wagner, Leslie A., to International Business Machines Corporation. Method for controlling multiple terminals from a single logically partitioned input device. 5,060,149, Cl. 364-200.000.

FMC Corporation: *See*—
Merritt, Robert D., 5,058,726, Cl. 198-418.300.
Wijts, Corneel C., 5,059,392, Cl. 422-32.000.

Focke, Bernhard: *See*—
Focke, Heinz; and Focke, Bernhard, 5,058,363, Cl. 53-443.000.

Focke & Co.: *See*—
Focke, Heinz; and Focke, Bernhard, 5,058,363, Cl. 53-443.000.

Focke, Heinz; and Focke, Bernhard, to Focke & Co. Package for a plurality of cigarette packs or the like (cigarette carton). 5,058,363, Cl. 53-443.000.

Fogle, Homer W., Jr.: *See*—
Caparoni, Louis J.; Banfield, Robert H.; Cohen, Neal B.; Fogle, Homer W., Jr.; and McCann, Michael J., 5,059,949, Cl. 340-571.000.

Folda, Thomas: *See*—
Eisenbarth, Philipp; Peter, Roland; and Folda, Thomas, 5,059,665, Cl. 526-262.000.

Foley, Richard M., to Shell Oil Company. C5/C6 isomerization process. 5,059,741, Cl. 585-734.000.

Foley, Terry J., to Holden's Foundation Seeds, Inc. Inbred corn line LH195. 5,059,745, Cl. 800-200.000.

Ford, David K.: *See*—
Muellner, Grazyna E.; Pini, Rafaele; Cashen, Dennis; Marry, Patrick J.; and Ford, David K., 5,060,264, Cl. 380-46.000.

Ford, Mark R.: *See*—
Chao, Tai-Hsiang; Weiler, Fiona P.; Ford, Mark R.; and Ringwelski, Andrzej Z., 5,059,737, Cl. 585-466.000

Ford Motor Company: *See*—
Geddes, Earl R., 5,060,271, Cl. 381-71.000.
Graf, Michael C.; and Tengler, David R., 5,058,701, Cl 180-268.000.
Lippe, Wolfgang V. D.; Biederman, Sieghart; Schulz, Winfried; Wirtz, Hans-Peter; and Kirchhoffer, Johann, 5,058,716, Cl. 192-3.330.
Mahr, Josef, 5,058,237, Cl. 16-225.000.
Sambor, Stephen P., 5,058,322, Cl. 49-352.000
Vajgart, Jeffery L.; Misangyi, Peter W.; Date, Parshuram G.; Heitzeg, Roger S.; Walker, Noel A.; McNamara, David A.; and Attard, Joe C., 5,060,156, Cl. 364-424.030.

Ford New Holland, Inc.: *See*—
Van Den Bossche, Bart; and Naaktgeboren, Adrianus, 5,058,495, Cl. 100-4.000.

Forest, Jean-Francois: *See*—
Watisse, Luc; Plaskowski, Christian; and Forest, Jean-Francois, 5,058,399, Cl. 66-203.000.

Forestiere, Alain: *See*—
Chauvin, Yves; Commereuc, Dominique; Forestiere, Alain; and Leger, Gerard, 5,059,571, Cl. 502-117.000.

Forestieri, Steven F.; Lin, Sheng T.; Lum, John J.; Rains, William A.; and McNerney, Steven A., to Diasonics, Inc. Apparatus for processing and displaying ultrasonic data. 5,058,593, Cl. 128-661.070.

Forgac, John M.: *See*—
Taylor, James L.; Hensley, Albert L.; Forgac, John M.; and Tatterson, David F., 5,059,303, Cl. 208-96.000.

Forges de Courcelles-Centre S.A.: *See*—
Deroulou, Jean; Van Dorpe, Claude; and Van Scheepdael, Philippe, 5,058,457, Cl. 76-101.100.

Forrest, James K., to Chevron Research and Technology Company Two-step method for horizontal gravel packing. 5,058,677, Cl. 166-278.000.

Fortune, William S. Replaceable soldering tip assembly. 5,059,769, Cl 219-238.000.

Foulke, Richard F.; and Keohane, Richard J., to Proconics International, Inc. Particle-free storage for articles. 5,059,079, Cl 414-275.000.

Fountain, Michael W.: *See*—
Janoff, Andrew S.; Popescu, Mircea C.; Alving, Carl R.; Fountain, Michael W.; Lenk, Robert P.; Ostro, Marc J.; Tremblay, Paul A.; and Weiner, Alan L., 5,059,591, Cl. 514-31.000.

Fountain Technologies, Inc.: *See—*
Lichfield, William H., 5,058,768, Cl. 222-1.000.

Framatome: *See—*
Jahnke, Serge; and Ple, Philippe, 5,059,382, Cl. 376-215.000.

Francis, Cecil V.; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Second harmonic Generation with achiral, Straight-chain carbamic acid derivatives. 5,059,002, Cl. 359-328.000.

Francis, John: *See—*
Hart, Charles H.; Francis, John; and Waldron, Roger, 5,059,579, Cl. 503-227.000.

Frank A. Arone: *See—*
Penrod, Richard J.; and McCullagh, Roy H., 5,060,118, Cl. 362-1.000.

Frank, Chet A.: *See—*
Klainer, Stanley M.; Frank, Chet A.; Dandge, Dileep K.; and Goswami, Kisholoy, 5,059,790, Cl. 250-227.210.

Frank, Dieter: *See—*
Parr, William J.; Moy, Paul Y. Y.; and Frank, Dieter, 5,059,485, Cl. 428-458.000.

Frank, James P.; and King, James L., to General Electric Company. Dynamoelectric machine. 5,059,841, Cl. 310-71.000.

Frank, Kurt; Nusser, Hermann; and Strohl, Willi, to Robert Bosch GmbH. Apparatus for delivery of fuel from a storage tank to an internal combustion engine of a vehicle. 5,058,557, Cl. 123-509.000.

Frank, Margaret A.: *See—*
Cilento, Rodolfo D.; Frank, Margaret A.; Fairbrother, John E.; and Freeman, Frank M., 5,059,189, Cl. 604-307.000.

Frank, Steven R.: *See—*
Walker, Christopher W.; Szafranski, Michael M.; Kim, Sung H.; Hsiao, Howell F.; and Frank, Steven R., 5,058,888, Cl. 272-130.000.

Frankfurter, Gunter, to Hoechst CeramTec Aktiengesellschaft. Aluminum oxide tubes and process for their manufacture. 5,059,367, Cl. 264-60.000.

Frascone, Gerald L. Folding adhesive insect catcher. 5,058,314, Cl. 43-136.000.

Freeman, Frank M.: *See—*
Cilento, Rodolfo D.; Frank, Margaret A.; Fairbrother, John E.; and Freeman, Frank M., 5,059,189, Cl. 604-307.000.

Freeman, Gary T., to MPM Corporation. Viewing and illuminating video probe with viewing means for simultaneously viewing object and device images along viewing axis and translating them along optical axis. 5,060,063, Cl. 358-101.000.

Freestone, David W.; and Borter, Thomas W. Tool for inserting and removing pin for bucket tooth. 5,058,257, Cl. 29-275.000.

Frensley, William R.; and Reed, Mark A., to Texas Instruments Incorporated. Three terminal tunneling device and method. 5,059,545, Cl 437-31.000.

Frestad, Arne O.: *See—*
Linsten, Olof M.; and Frestad, Arne O., 5,059,567, Cl. 502-64.000

Freund, Hans: *See—*
Brockmuller, Uwe; and Freund, Hans, 5,058,262, Cl. 29-725.000.

Frey, Robert E.; and Whitaker, John C., to Cin-Made Corporation. Composite can. 5,058,801, Cl. 229-3.5MF

Frisch, Arnold M.; and Almy, Thomas A., to Tektronix, Inc. Apparatus and method for reduction of intermodulation distortion in an optical fiber network. 5,060,310, Cl. 359-188.000

Fritzberg, Alan R.; Wilbur, Daniel S.; Srinivasan, Ananthachari; and Wester, Dennis W., to Neorx Corporation. Minimal derivatization of proteins. 5,059,541, Cl. 436-501.000.

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Frontino, Louis J.: *See—*
Zouzoulas, John; and Frontino, Louis J., 5,059,778, Cl. 235-472.000.

Fryd, Michael: *See—*
Druliner, Joe D.; and Fryd, Michael, 5,059,657, Cl. 525-244.000.

Fugmann, Burkhard; Plempel, Manfred; Stroech, Klaus; and Buchel, Karl H., to Bayer Aktiengesellschaft. Antimycotically active cyclopropyl-substituted azolylmethylcarbinols. 5,059,615, Cl. 514-383.000.

Fuji Electric Co., Ltd.: *See—*
Kawahara, Yuji, 5,060,093, Cl. 360-78.130.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Morikawa, Koji, 5,058,547, Cl. 123-198.00D.
Morikawa, Koji; and Furuya, Akira, 5,058,548, Cl. 123-298.000.
Sato, Keiji, 5,059,157, Cl. 474-18.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Akira, 5,060,069, Cl. 358-209.000.
Higashi, Tatsuji; Abe, Yukio; and Kita, Nobuyuki, 5,059,511, Cl 430-272.000.
Ihama, Mikio; Kume, Yuji; Tamoto, Koji; and Ayato, Hiroshi, 5,059,517, Cl. 430-567.000.
Kotani, Takaaki; and Takada, Seiji, 5,060,003, Cl. 354-403.000.
Sasaki, Kouichi; and Nakamura, Takashi, 5,059,998, Cl. 354-324.000.
Sawano, Mitsuru; Igata, Toshiaki; and Takahashi, Younosuke, 5,060,222, Cl. 369-100.000.
Shibata, Takeshi; and Kishida, Seiichiro, 5,059,580, Cl. 503-227.000
Shimura, Kazuo, 5,060,081, Cl. 358-443.000.
Shiraishi, Atsushi, 5,060,283, Cl. 382-47.000.
Ueda, Shinji; Kojima, Tetsuro; Kitahara, Tohru; Yasuda, Tomokazu; Fujita, Yoshihiro; and Ishikawa, Takatoshi, 5,059,514, Cl. 430-393.000.

Fuji Photo Optical Co., Ltd.: *See—*
Matsumura, Takeshi, 5,059,004, Cl. 359-646.000.

Fuji Xerox Co., Ltd.: *See—*
Sato, Masaaki; and Takashima, Izumi, 5,059,860, Cl. 313-488.000.
Shinoki, Masayoshi; Takagi, Masahiro; Nagatsuka, Ikutaroh; Kumashiro, Koichi; Aoki, Takayoshi; and Takeda, Masayuki, 5,059,504, Cl. 430-108.000.
Yagi, Shigeru; Ono, Masato; Takahashi, Noriyoshi; Nishikawa, Masayuki; Fukuda, Yuzuru; and Karakida, Kenichi, 5,059,501, Cl. 430-65.000.

Fujii, Akiyoshi: *See—*
Deguchi, Katsuyasu; Mizoguchi, Takatoshi; Taminaga, Takayuki; and Fujii, Akiyoshi, 5,059,986, Cl. 346-76.0PH.

Fujii, Hiroshi: *See—*
Miyashi, Tsutomu; Yamashita, Yoshiro; Suzuki, Takanori; and Fujii, Hiroshi, 5,059,742, Cl. 585-860.000.

Fujii, Nobutaka: *See—*
Yajima, Haruaki; Fujii, Nobutaka; and Kiyama, Shinya, 5,059,679, Cl. 530-335.000

Fujii, Tadashi: *See—*
Onoda, Masahiro; and Fujii, Tadashi, 5,058,597, Cl. 128-696.000.

Fujii, Takashi, to NEC Corporation. Phase detector suitable for use in phase lock loop. 5,059,833, Cl. 307-510.000.

Fujikawa, Kazuhide: *See—*
Hojo, Junichi; Kato, Naoki; Wakayama, Toshiaki; and Fujikawa, Kazuhide, 5,060,072, Cl. 358-213.110.

Fujikura Ltd.: *See—*
Yamauchi, Ryozo; Kawakami, Noboru; and Suzuki, Fumio, 5,058,979, Cl. 385-28.000.

Fujimoto, Keiji: *See—*
Brittenham, Gary M.; Allen, Christopher J.; Okada, Tokuhiro; and Fujimoto, Keiji, 5,059,395, Cl. 422-73.000.

Fujimoto, Satoshi: *See—*
Okubo, Hideaki; Sato, Kan-ichi; Mimura, Kazuhiro; Fujimoto, Satoshi; and Higuchi, Makoto, 5,059,364, Cl. 264-40.100.

Fujimoto, Yoshiaki; and Hidaka, Sachio, to Kabushiki Kaisha Kobe Seiko Sho. Control lever apparatus and actuator operation apparatus. 5,058,451, Cl. 74-527.000.

Fujio, Junichi: *See—*
Nakamura, Katsuji; Fujio, Junichi; Hosonuma, Shin; Nakatsuka, Masakatsu; and Nishizawa, Tsutomu, 5,059,356, Cl. 252-585.000.

Fujisaka, Takahiko; and Oh-Hashi, Yoshimasa, to Mitsubishi Denki Kabushiki Kaisha. Synthetic aperture radar system. 5,059,966, Cl. 342-25.000.

Fujisaki, Yoshinori; and Aimono, Sakae, to Yoshida Kogyo K. K. Slide fastener elements made of helically wound monofilament and method of forming the same. 5,058,246, Cl. 24-394.000.

Fujisawa Pharmaceutical Company, Ltd.: *See—*
Takasugi, Hisashi; Kuno, Atsushi; and Ohkubo, Mitsuru, 5,059,608, Cl. 514-307.000.
Yokota, Yoshiko; Mine, Yasuhiro; and Wakai, Yoshimi, 5,059,592, Cl. 514-50.000

Fujishima, Kazuyasu: *See—*
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,060,230, Cl. 371-21.200.

Fujita, Jun; and Matumoto, Michio, to Toshiba Kikai Kabushiki Kaisha. Numerical control apparatus having a backlash compensation function and method thereof. 5,059,881, Cl. 318-630.000.

Fujita, Katsuyuki: *See—*
Kihara, Hiroshi; Arai, Eiki; Ogata, Shigeaki; Katagiri, Yoshio; Fujita, Katsuyuki; Wachigai, Tadahiko; and Hiratsuka, Hiroyoshi, 5,059,388, Cl. 419-37.000.

Fujita, Kazuhiro; Inokuchi, Toshiyuki; Baba, Nobuyuki; Maeda, Hideo; and Ohuchida, Shigeru, to Ricoh Company, Ltd. Integrated optical pick-up device. 5,060,212, Cl. 369-44.120.

Fujita, Takeshi; Isoda, Chuzo; and Pu, Sejin, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Methods for manufacture of porous resin moldings, ultrafine fibers and ultrafine fiber nonwoven fabrics. 5,059,630, Cl 521-61.000.

Fujita, Yoshihiro: *See—*
Ueda, Shinji; Kojima, Tetsuro; Kitahara, Tohru; Yasuda, Tomokazu; Fujita, Yoshihiro; and Ishikawa, Takatoshi, 5,059,514, Cl. 430-393.000.

Fujitaki, Roy K.: *See—*
Crispin, George E.; Craig, Burnie M.; and Fujitaki, Roy K., 5,060,124, Cl. 362-147.000.

Fujitsu Limited: *See—*
Ayukawa, Ichiro; and Miyazaki, Sachio, 5,060,292, Cl. 455-52.000.
Mihara, Takahisa; Samma, Shoji; and Saito, Sigeo, 5,060,100, Cl. 360-106.000.
Miura, Daisuke; and Shikatani, Junichi, 5,060,200, Cl. 365-230.050.
Murakami, Joji; and Wano, Minoru, 5,060,054, Cl. 358-27.000.
Nakamura, Tetsuya, 5,059,796, Cl. 250-330.000.
Tsutsui, Eiichi; and Nakashima, Wataru, 5,060,228, Cl. 370-85.130.
Wanou, Masahiro; Sato, Kunihiko; Kimura, Masatoshi; and Nakajima, Junzo, 5,060,016, Cl. 355-219.000.
Yoshida, Masanobu, 5,059,825, Cl. 307-448.000.
Yoshikawa, Yoshinori; and Gotoh, Kunihiko, 5,059,890, Cl. 323-315.000.

Fujitsu Microcomputer Systems Limited: *See—*
Murakami, Joji; and Wano, Minoru, 5,060,054, Cl. 358-27.000.

Fujiwara, Hidehiko; Watanabe, Hideyo; and Idenawa, Hiroyuki, to Ricoh Company, Ltd. Automatic cut-sheet feeding apparatus. 5,058,877, Cl. 271-124.000.

Fujiwara, Hideo: *See—*
Maro, Tsuyoshi; Kitakami, Osamu; Fujiwara, Hideo; and Wakai, Kunio, 5,059,337, Cl. 252-62.540.

Fujiwara, Kenichi: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,058,217, Cl. 4-420.000.

Fujiwara, Michihiro: *See—*
Imanishi, Taiichiro; Ichimaru, Yasuyuki; Sawa, Aiko; Konno, Fukio; Wachtel, Helmut; Ueki, Showa; Fujiwara, Michihiro; and Yamamoto, Tsuneyuki, 5,059,612, Cl. 514-359.000.

Fujiwara, Toshimitsu: *See—*
Yamamoto, Masashi; and Fujiwara, Toshimitsu, 5,060,021, Cl. 355-245.000.

Fukanuma, Tetsuhiko: *See—*
Suzuki, Shinichi; Ban, Takashi; Fukanuma, Tetsuhiko; and Yoshida, Tetsuo, 5,059,098, Cl. 417-295.000.

Fukuda, Akira, to Hamada Printing Press Co., Ltd. Paper feed preparatory device. 5,059,275, Cl. 156-511.000.

Fukuda, Takeshi; and Fukushima, Motoo, to Shin-Etsu Chemical Co., Ltd. Fluorosilicone rubber composition. 5,059,668, Cl. 528-15.000.

Fukuda, Yujiro; and Utsunomiya, Koji, to Diafoil Company, Ltd. Heat-sealable laminated polyester film. 5,059,470, Cl. 428-142.000.

Fukuda, Yuzuru: *See—*
Yagi, Shigeru; Ono, Masato; Takahashi, Noriyoshi; Nishikawa, Masayuki; Fukuda, Yuzuru; and Karakida, Kenichi, 5,059,501, Cl. 430-65.000.

Fukuma, Takao; Tsukamoto, Keisuke; Takaoka, Toshio; and Yamasaki, Hirofumi, to Toyota Jidosha Kabushiki Kaisha. Device for determining activated condition of an oxygen sensor. 5,058,556, Cl. 123-489.000.

Fukumizu, Kenji, to Ricoh Company, Ltd. Pattern recognition apparatus using a neural network system. 5,060,278, Cl. 382-14.000.

Fukumoto, Kenji: *See—*
Matsushita, Yoshinari; Fukumoto, Kenji; and Takeda, Satoshi, 5,058,526, Cl. 118-715.000.

Fukunaga, Takehito, to Kabushiki Kaisha Toshiba. Mounting structure for an original cover in an image forming apparatus. 5,060,019, Cl. 355-231.000.

Fukuoka, Hirofumi, to Sharp Kabushiki Kaisha. Two-level display device with hatching control means. 5,059,963, Cl. 340-793.000.

Fukushima, Motoo; Nakamura, Tsutomu; Ohata, Hiroyuki; and Okuda, Harukazu, to Nissin Chemical Industry Co., Ltd. Rubber composition. 5,059,648, Cl. 524-376.000.

Fukushima, Motoo: *See—*
Fukuda, Takeshi; and Fukushima, Motoo, 5,059,668, Cl. 528-15.000.

Fukuyama, Toshifumi, to Astex Co., Ltd.; and Takenaka Electronic Ind. Co. Ltd. Multi-function detection circuit for a photoelectric switch using an integrated circuit with reduced interconnections. 5,059,782, Cl. 250-214.00A.

Fukuyama, Toshifumi, to Astex Co., Ltd.; and Takenaka Electronic Industrial Co., Ltd. Light-responsive device for a photoelectric switch. 5,059,809, Cl. 250-551.000.

Fuller, Barney R., Sr. Exercise machine for conditioning football players. 5,058,884, Cl. 272-117.000.

Fuller, Norman M.: *See—*
Hoff, Steven R.; and Fuller, Norman M., 5,058,467, Cl. 82-153.000.

Funahashi, Koji: *See—*
Masuyama, Joe; Mikuriya, Koji; Takai, Tsuneo; Chiba, Shinji; Hotta, Kiyoshi; Hamano, Yoshinori; Onishi, Katsuyuki; Funahashi, Koji; Takahashi, Yuji; and Sugawara, Junichi, 5,058,332, Cl. 52-66.000.

Funakubo, Tsutomu: *See—*
Karube, Norio; and Funakubo, Tsutomu, 5,060,238, Cl. 372-58.000.

Furcht, Leo T.: *See—*
Tsilibary, Effie C.; and Furcht, Leo T., 5,059,425, Cl. 424-445.000.

Furney, Richard W.; Hurlbut, Gordon C.; and Vachon, Michael P., to International Business Machines Corp. Four-way associative cache with DLAT and separately addressable arrays used for updating certain bits without reading them out first. 5,060,136, Cl. 364-200.000.

Furuhata, Tomoyuki, to Seiko Epson Corporation. Method of manufacturing a Bi-MOS device with a polycrystalline resistor. 5,059,549, Cl. 437-59.000.

Furukawa Electric Co., Ltd., The: *See—*
Hikami, Toshiya; Yoshida, Koji; Obara, Yuichi; and Fuse, Kenichi, 5,059,133, Cl. 439-161.000.

Furukawa, Kazuo: *See—*
Hirai, Toshihiro; Kurosaka, Shuji; and Furukawa, Kazuo, 5,058,545, Cl. 123-195.00C.

Furukawa, Koichi; Clausen, Hanrik; Hakomori, Sen-itiroh; Sakamoto, Junichi; Look, Katherine; Mattes, M. Jules; and Lloyd Kenneth O., to Sloan-Kettering Institute for Cancer Research. Monoclonal antibody panel for blood group a antigen. 5,059,520, Cl. 435-7.210

Furukawa, Osamu: *See—*
Kanai, Hideyuki; Yamashita, Yohachi; Furukawa, Osamu; and Harata, Mitsuo, 5,059,566, Cl. 501-138.000.

Furuya, Akira: *See—*
Morikawa, Koji; and Furuya, Akira, 5,058,548, Cl. 123-298.000.

Furuyama, Hideto: *See—*
Nakamura, Masaru; and Furuyama, Hideto, 5,060,306, Cl. 359-173.000.

Fuse, Kenichi: *See—*
Hikami, Toshiya; Yoshida, Koji; Obara, Yuichi; and Fuse, Kenichi, 5,059,133, Cl. 439-161.000.

Fuse, Tsuneaki: *See—*
Sakui, Koji; Fuse, Tsuneaki; Hasegawa, Takehiro; Watanabe, Shigeyoshi; and Masuoka, Fujio, 5,060,194, Cl. 365-177.000.

Fuse, Yoshiya: *See—*
Watanabe, Tomoki; Nitta, Yukio; Sato, Kouichi; Fuse, Yoshiya; and Kinoshita, Koji, 5,059,041, Cl. 384-476.000.

Futec, Inc.: *See—*
Ohnishi, Ryuji, 5,060,281, Cl. 382-34.000.

Fuzita, Haruo: *See—*
Hirai, Takenori; Ihara, Hirotaka; Hirayama, Chuichi; Fuzita, Haruo; and Saisho, Munehiro, 5,059,542, Cl. 436-518.000.

G.D Societa per Azioni: *See—*
Gamberini, Antonio; and Spatafora, Mario, 5,058,725, Cl. 198-406.000.

G. M. Thierion S.A.: *See—*
Thierion, Michel, 5,059,086, Cl. 414-626.000

G & S Metal Products Company, Inc.: *See—*
Nottingham, John R.; Spirk, John W.; and Kalman, Jeffrey M., 5,059,755, Cl. 219-10.55F

Gaba, Rodolfo, to Devon Industries, Inc. Mounting bracket having a hidden lock for a sharps collection system. 5,058,764, Cl. 220-481.000

Gabriel, William L.: *See—*
Wright, Robert W.; Gabriel, William L.; Bergstrom, Donald E.; Meditz, Reinhold; and Sygnator, Henry A., 5,058,228, Cl. 10-162.00A.

Gagnon, Paul E.: *See—*
McKenna, John F.; Brown, Robert E.; and Gagnon, Paul E., 5,059,148, Cl. 445-25.000.

Gala Industries, Inc.: *See—*
Bruckmann, Theodor; Martin, Wayne; and Hannah, Sam, 5,059,103, Cl. 425-67.000.

Galaj, Stanislas; Besland, Marie-Paule; Wicker, Alain; Gillot, Jacques; and Soria, Raymond, to Societe des Ceramiques Techniques. Method of making a membrane filter. 5,059,366, Cl. 264-44.000

Galemmo, Robert A., Jr.: *See—*
Huang, Fu-Chi; Galemmo, Robert A., Jr.; and Campbell, Henry F., 5,059,610, Cl. 514-314.000.

Gall, Christopher A.: *See—*
Law, Trevor J.; Andrews, Richard E.; and Gall, Christopher A., 5,059,757, Cl. 219-121.520

Galletti, Alfonso, to GI. PI. S.r.l. Skimming device for oil-extraction equipment for tanks of coolant fluids with oil in suspension. 5,059,312, Cl. 210-122.000.

Galletti, Alfonso, to GI. PI. s.r.l. Self-cleaning vacuum filter with permanent, endless filter media particularly for industrial lubricating and cooling liquids. 5,059,323, Cl. 210-400.000.

Gamberini, Antonio; and Spatafora, Mario, to G.D Societa per Azioni. Method and device for successively conveying flat-shaped items. 5,058,725, Cl. 198-406.000.

Gamble, Fritz F.: *See—*
Grim, Tracy E.; and Gamble, Fritz F., 5,058,576, Cl. 128-87.00R

Gannett, Thomas P.: *See—*
Boyce, Richard J.; and Gannett, Thomas P., 5,059,273, Cl. 156-307.400.

Ganz, John M. Method and apparatus for separating particulate solids. 5,059,311, Cl. 209-455.000.

Garat, Michel, to Aluminium Pechiney. Process for lost foam casting of metal parts. 5,058,653, Cl. 164-34.000.

Gardner, Michael E.: *See—*
Bryg, William R.; Gardner, Michael E.; and Boettner, Steven C., 5,060,137, Cl. 364-200.000.

Garin-Chesa, Pilar: *See—*
Rettig, Wolfgang J.; Garin-Chesa, Pilar; Beresford, H. Richard; Oettgen, Herbert F.; Melamed, Myron R.; and Old, Lloyd J., 5,059,523, Cl. 435-7.230.

Garlich, Joseph R.: *See—*
Simon, Jaime; Wilson, David A.; Garlich, Joseph R.; and Troutner, David E., 5,059,412, Cl. 424-1.100

Garner, Frank D. Automated device and method for harvesting plants with uniform stem length. 5,058,369, Cl. 56-13.900.

Garnier, Francis: *See—*
Delabouglise, Didier; Lemaire, Marc; Roncali, Jean; and Garnier, Francis, 5,059,694, Cl. 548-518.000.

Garrett, Michael J. Bean trawl pickup device. 5,058,307, Cl. 43-9.100.

Garrido Vasquez, Vicente G., to Comercial Distribuidora de Medios Audiovisuales, S.A. Spring mattress strip. 5,058,223, Cl. 5-237.000.

Gartland, Robert J.; Finelli, Anthony F.; and Bell, Anthony J., to Goodyear Tire & Rubber Company, The. Tire having decorative applique on sidewall and method for preparing same. 5,058,647, Cl 152-524.000.

Gartner, Ernst. Multifunctional frame element. 5,058,353, Cl. 52-476.000.

Gas Research Institute: *See—*
Yamanaka, Shoji; and Komarneni, Sridhar, 5,058,442, Cl 73-865.500.

Gaskell, David J., to Lucas Industries Public Limited Company Method and electrode for forming passages in workpieces. 5,059,289, Cl. 204-129.550.

Gastinger, Robert G.: *See—*
Hayes, John E.; and Gastinger, Robert G., 5,059,641, Cl. 523-456.000.

Gauthier, Pierre: *See—*
Dupont, Rene ; and Gauthier, Pierre, 5,059,411, Cl. 423-658.300.

Gautier, Pieter A.: *See—*
Van Broekhoven, Johannes A. M.; Gautier, Pieter A.; Drent, Eit; and Miedema, Wiebren A., 5,059,678, Cl. 528-392.000.

Gawell, George R.; and Nowaczyk, Philip J., to Zenith Electronics Corporation. Multiple frequency vertical scan system. 5,059,873, Cl. 315-403.000.

Gawin, Frank H.; Humblestone, Brian G.; and Allen, David F., to Yale University. Treating habit disorders. 5,059,600, Cl. 514-253.000.
Gaylord Container Corporation: *See—*
Coursen, David D., 5,058,740, Cl. 206-288.000.
Gaz de France: *See—*
Chaumont, Claude; Waroux, Denis W.; Bonneric, Paul; and Jannin Bernard, 5,058,437, Cl. 73-861.210.
Gebr. Hennig GmbH: *See—*
Stohr, Albert, 5,058,232, Cl. 15-236.010.
Gebr. Isringhausen: *See—*
Granzow, Manfred; Mischer, Hans-Peter; and Suss, Christian, 5,059,750, Cl. 200-5.00R.
Gebruder Hofmann GmbH & Co. KG Maschinenfabrik: *See—*
Fietzke, Gunter; and Muller, Richard, 5,058,429, Cl. 73-475.000.
GEC Alsthom SA: *See—*
Periot, Robert, 5,058,391, Cl. 62-238.600.
GEC Ferranti Defence Systems Limited: *See—*
Hill, Roger, 5,059,028, Cl. 356-350.000.
GEC-Marconi Limited: *See—*
Langdon, Roger M., 5,059,781, Cl. 250-206.100.
Geddes, Earl R., to Ford Motor Company. Active muffler with dynamic tuning. 5,060,271, Cl. 381-71.000.
Geddes, Leslie A.; Fearnot, Neal E.; and Wessale, Jerry L. Multiple monopolar system and method of measuring stroke volume of the heart. 5,058,583, Cl. 128-419.00D.
Gee, Randy C.; and May, Edmund K., to Industrial Solar Technology Solar concentrator device and support structure therefor. 5,058,565, Cl. 126-438.000.
Geiser, Georg, to Robert Bosch GmbH. Method of and device for selection or entry of a destination in a motor vehicle system. 5,059,965, Cl. 340-995.000.
Gelbwachs, Jerry A., to Aerospace Corporation, The. Deep blue atomic filter with intrinsic solar background reduction. 5,060,085, Cl. 359-160.000.
Gelhaar, Hans-Georg: *See—*
Buysch, Hans-Josef; Gelhaar, Hans-Georg; Istel, Erich; and Zimmermann, Franz, 5,059,643, Cl. 524-83.000.
Gelina, Robert J.: *See—*
Jane, Jay-Lin; Gelina, Robert J.; Nikolov, Zivko; and Evangelista, Roque L., 5,059,642, Cl. 524-52.000.
Gelorme, Jeffrey D.: *See—*
Babich, Edward D.; Gelorme, Jeffrey D.; Hatzakis, Michael; Shaw, Jane M.; Stewart, Kevin J.; and Witman, David F., 5,059,512, Cl. 430-280.000.
Gemplus Card International: *See—*
Avenier, Jean-Pierre; Lisimaque, Gilles; Maes, Philippe; and Kowalski, Jacek, 5,060,261, Cl. 380-3.000.
General Clutch Corporation: *See—*
Rude, Edward T.; and Waine, Martin, 5,058,720, Cl. 192-41.00S.
General Electric CGR S.A.: *See—*
de Fraguier, Sixte; Thomas, Catherine; and Caire, Francois, 5,060,254, Cl. 378-136.000.
Jedlitschka, Hans; and Sireul, Jacques, 5,060,253, Cl. 378-101.000.
General Electric Company: *See—*
Arbeiter, James H., 5,060,242, Cl. 375-122.000.
Bergman, Rolf S.; Davenport, John M.; and Hansler, Richard L., 5,059,865, Cl. 315-82.000.
Castonguay, Roger N.; and Arnold, David, 5,059,933, Cl. 335-167.000.
Castonguay, Roger N., 5,060,107, Cl. 361-115.000.
Coffinberry, George A., 5,058,826, Cl. 244-53.00R.
Cueman, Michael K.; Mohr, Gregory A.; and Brown, Dale M., 5,059,800, Cl. 250-367.000.
Davenport, John M.; Finch, William W.; Hansler, Richard L.; Henkes, John L.; and Johnson, Jeffrey D., 5,058,985, Cl 385-115.000.
Dixon, Robert C.; Deaver, Gerald A.; Punches, James R.; Singleton, Guy E.; Erbes, John G.; and Offer, Henry P., 5,059,384, Cl. 376-260.000.
Dumoulin, Charles L., 5,060,248, Cl. 378-53.000.
El-Hamamsy, Sayed-Amr A.; and Thomas, Robert J., 5,059,868, Cl. 315-248.000.
Flood, Kevin M.; and Cassarly, William J., 5,059,008, Cl 359-196.000.
Frank, James P.; and King, James L., 5,059,841, Cl. 310-71.000.
Germer, Warren R.; Ouellette, Maurice J.; Hagh, Mehrdad N.; and White, Bertram, 5,059,896, Cl. 324-142.000.
Gluntz, Douglas M.; and Cooke, Franklin E., 5,059,385, Cl. 376-282.000.
Goodzeit, Neil E.; and Linder, David M., 5,058,835, Cl. 244-165.000.
Hubert, Carl H., 5,058,834, Cl. 244-164.000.
Koegl, Rudolph A. A.; Hogle, Richard A.; and Bauer, Susan D., 5,059,761, Cl. 219-121.830.
Lesslie, David J., 5,059,931, Cl. 335-132.000.
Mattheyses, Robert M., 5,060,147, Cl. 364-200.000.
Moore, James H., 5,058,373, Cl. 60-39.270.
Morioka, Masataka; and Ishida, Hiromi, 5,059,646, Cl. 524-142.000.
Nerone, Louis R.; Secen, Michael M.; and Minarczyk, Michael M., 5,059,867, Cl. 315-247.000.
Nobel, Charles I., 5,058,836, Cl. 244-176.000.
Pillari, Anthony, 5,058,828, Cl. 244-110.00B.
Siemers, Paul A.; and Rutkowski, Stephen F., 5,058,411, Cl. 72-342.400.
Snow, Barton H., 5,058,376, Cl. 60-204.000.
Steigerwald, Robert L., 5,060,130, Cl. 363-65.000.
Stockman, Norbert O.; Yates, David E.; and Crum, Timothy S., 5,058,617, Cl. 137-15.100.
Zinser, Richard L., 5,060,269, Cl. 381-38.000.
General Motors Corporation: *See—*
Christenson, Barry O.; and Mayfield, Albert H., 5,058,381, Cl. 60-299.000.
Concannon, Brian T., 5,059,846, Cl. 310-239.000.
Hibner, John A.; and Lentz, Carl A., 5,058,460, Cl. 74-867.000.
Nguyen, Hung P., 5,058,662, Cl. 165-76.000.
Prebay, Richard J.; Whelton, John C.; and Witucki, David E., 5,058,696, Cl. 180-141.000.
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Courtney, Michael L.; Hockey, Joseph S.; and Grady, Ayton J., 5,058,776, Cl. 222-168.000.
General Signal Corporation: *See—*
Schiferl, Joseph J., 5,059,369, Cl. 264-87.000.
Genieis, Jean A. Devices for automatically feeding an image projector. 5,059,020, Cl. 353-122.000.
Gentry, Cecil C., to Phillips Petroleum Company. Rodbaffle heat exchanger. 5,058,664, Cl. 165-162.000.
Gentry, Jefferson L.: *See—*
Jursich, Donald N.; and Gentry, Jefferson L., 5,058,271, Cl. 30-123.000.
Gentsu, Takuya, to Kyocera Corporation. Colored zirconia ceramics and process for preparation thereof. 5,059,562, Cl. 501-87.000.
Geoffrey, Crompton. Moulded components and their manufacture. 5,058,342, Cl. 52-232.000.
Gephardt, Douglas D.; and Avalos, Peggy, to Advanced Micro Devices, Inc. Apparatus for use with a computing device for generating a substitute acknowledgement to an input when the computing device is in an operational hiatus. 5,060,138, Cl. 364-200.000.
Gerber, Bernard V.: *See—*
Carlon, Hugh R.; Guelta, Mark A.; and Gerber, Bernard V., 5,059,349, Cl. 252-408.100.
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Germer, Warren R.; Ouellette, Maurice J.; Hagh, Mehrdad N.; and White, Bertram, to General Electric Company. Electronic watthour meter. 5,059,896, Cl. 324-142.000.
Gerritsen, John, to Jarrow Products, Inc. Exterior jamb cladding and brick mold assembly. 5,058,323, Cl. 49-504.000.
Gervasutti, Claudio, to Ausimont S.r.l. Process for preparing 1,2-difluoroethane and 1,1,2-trifluoroethane. 5,059,729, Cl. 570-175.000.
Gesellschaft fur Strahlen-und Umweltforschung mbH (GSF): *See—*
Beyer, Wolfgang; Heinze, Armin; Sroka, Ronald; and Unsold, Eberhard, 5,059,191, Cl. 606-2.000.
Gewin, Robert E.; and Aderholt, Gary L., to Phoenix Microsystems, Inc. Telecommunications network test system. 5,060,226, Cl. 370-15.000.
Geyer, Allan E.: *See—*
Malik, Dev R.; Ehret, James A.; Blair, Richard E.; Iyengar, Shrishailesh R.; and Geyer, Allan E., 5,058,753, Cl. 212-247.000.
GI. Pl. S.r.l.: *See—*
Galletti, Alfonso, 5,059,312, Cl. 210-122.000
Galletti, Alfonso, 5,059,323, Cl. 210-400.000.
Giblin, Edward J.; and Griffiths, Jeannine D., to Lever Brothers Company, Division of Conopco Inc. Detergent carton. 5,058,748, Cl. 206-624.000
Gierut, Joseph: *See—*
Skowronski, David M.; DeRoss, Robert W.; Bogiel, Steven; Gierut, Joseph; Data, Mark M.; Stanhibel, Dennis; and Dudek, Ronald, 5,059,132, Cl. 439-100.000.
Giles, Randy K., to Hearthstone Builders, Inc. Log surface hewing process. 5,058,641, Cl. 144-369.000.
Gill, Manzur; and Lin, Sung-Wei, to Texas Instruments Incorporated. Hot electron programmable, tunnel electron erasable contactless EEPROM. 5,060,195, Cl. 365-185.000.
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Gillespie, John R.; and Gillespie, Charles K., 5,059,116, Cl. 432-72.000.
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Seamons, Kenneth R.; and Gillespie, Peter J., 5,059,402, Cl. 422-300.000.
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Gillespie, John R.; and Gillespie, Charles K., 5,059,116, Cl. 432-72.000.
Gillham, Frederick J.: *See—*
Corke, Michael C.; Gillham, Frederick J.; Hu, Andong; and Moore, Wayne, 5,058,983, Cl. 385-78.600.
Gilliland, Malcolm T. Method and apparatus for improved arc striking. 5,059,766, Cl. 219-130.210.
Gillot, Jacques: *See—*
Galaj, Stanislas; Besland, Marie-Paule; Wicker, Alain; Gillot, Jacques; and Soria, Raymond, 5,059,366, Cl. 264-44.000.
Gillott, Michael A.: *See—*
Beloncik, Scott J.; Hansen, Kenneth P.; and Gillott, Michael A., 5,058,853, Cl. 248-634.000.

Gimpelson, Richard J. Gynecological tenaculum. 5,059,198, Cl. 606-119.000.
Gingell, Michael J.: *See—*
Tyrrell, Raymond E.; Dunning, Stephen C.; Sanders, Richard J., Jr.; Hurlocker, Claude M.; Gingell, Michael J.; and Jones, Jeffrey P., 5,060,229, Cl. 370-110.100.
Ginsberg, Barry J.: *See—*
Burghartz, Joachim N.; Ginsberg, Barry J.; and Mader, Siegfried, 5,059,544, Cl. 437-31.000.
Ginther, Max R.: *See—*
Scheele, Michael R.; and Ginther, Max R., 5,059,945, Cl. 340-426.000.
Girard, Charles J. Fish alarm apparatus. 5,058,308, Cl. 43-17.000.
Girau, Lydia. Infant rattle and teething kit. 5,059,215, Cl. 606-234.000.
Gladow, Dean E., to Didde Web Press Corp. Chain cam. 5,058,872, Cl. 270-30.000.
Glick, Ike N. Easel for picture frame. 5,058,850, Cl. 248-450.000.
Glidden Company, The: *See—*
Sheets, Harold J., 5,059,264, Cl. 156-62.200.
Globe-Union Inc.: *See—*
Sindorf, John F., 5,059,496, Cl. 429-101.000.
Gloe, Karl-Heinz; Kruezer, Helmut; and Biehl, Harald, to AMP Incorporated. Wire processing apparatus. 5,058,260, Cl. 29-564.400.
Gluntz, Douglas M.; and Cooke, Franklin E., to General Electric Company. Isolation condenser passive cooling of a nuclear reactor containment. 5,059,385, Cl. 376-282.000.
Gobel, Pirmin: *See—*
Kobler, Norbert; Gobel, Pirmin; and Herb, Rudolf, 5,058,502, Cl. 101-363.000.
Gobert, Jean: *See—*
Bollen, Alex; Gobert, Jean; and Wulfert, Ernst, 5,059,528, Cl. 435-69.400.
Goddard, Larry C. Eye dropper attachment. 5,059,188, Cl. 604-300.000.
Godfrey, Christopher R. A.: *See—*
Clough, John M.; Godfrey, Christopher R. A.; and Streeting, Ian T., 5,059,605, Cl. 514-269.000
Godfrey, Craig W.; Schnatzmeyer, Mark A.; and Arendt, Henry P., to Otis Engineering Corporation. Wet connector. 5,058,683, Cl. 166-381.000.
Godfrey, Maureen A., to Hughes Aircraft Company. Phase modulated optical carrier data link for a focal plane array. 5,060,225, Cl. 359-124.000.
Godwin, James P., Sr. Hydraulically actuated tarp extension and retraction system for a truck. 5,058,956, Cl. 298-23.00C.
Goettsch, Manfred; Kindler, Hubert; Moedersheim, Norbert; and Rudolph, Guenther, to BASF Aktiengesellschaft. Preparation of flame-proofed polystyrene. 5,059,650, Cl. 524-412.000.
Gofuku, Eishi; and Takada, Mitsuyuki, to Mitsubishi Denki Kabushiki Kaisha. Electrode structure for a thick film resistor. 5,059,941, Cl. 338-307.000.
Goi, Kouichi, to Laurel Bank Machines Co., Ltd. Coin receiving and dispensing machine. 5,059,153, Cl. 453-11.000.
Golden Valley Microwave Foods Inc.: *See—*
Wilson, David, 5,059,279, Cl. 156-651.000.
Goldenberg, Jill F.; and Timmers, Wilhelmus A. G., to U.S. Philips Corporation. Modulation system for projection display. 5,060,058, Cl. 358-60.000.
Goldfarb, Harold, to Rockwell International Corporation. Method for packaging a board of electronic components. 5,058,265, Cl. 29-852.000.
Goldstar Co., Ltd.: *See—*
Chung, Seok P.; Lim, Byung C.; and Yoo, Seung H., 5,060,094, Cl. 360-96.500.
Gomi, Yoshiaki; Okawa, Mitsugu; and Taniuchi, Norihisa, to Tokyo Electric Co., Ltd. Money case. 5,058,765, Cl. 220-528.000.
Gonzalez, Govelio R.: *See—*
Charet, Pierre; Gonzalez, Govelio R.; and White, John M., 5,059,058, Cl. 403-322.000.
Goodall, David R., to Pilkington PLC. Glazing units. 5,059,458, Cl. 428-34.000.
Gooding, John: *See—*
Hart, Peter B.; and Gooding, John, 5,060,027, Cl. 357-17.000.
Goodyear Tire & Rubber Company, The: *See—*
Gartland, Robert J.; Finelli, Anthony F.; and Bell, Anthony J., 5,058,647, Cl. 152-524.000.
Hoang, Andy N.; Trares, Keith C.; and Kahrs, Jeffrey W., 5,058,649, Cl. 152-540.000.
Kansupada, Bharat K., 5,058,648, Cl. 152-524.000.
Kwee, Henry T.; and Valsamidis, Alexandra, 5,060,250, Cl. 378-61.000.
Goodzeit, Neil E.; and Linder, David M., to General Electric Company. Wheel speed management control system for spacecraft. 5,058,835, Cl. 244-165.000.
Gordon, Gary B.; and Barth, Phillip W., to Hewlett-Packard Company. Thermally-actuated microminiature valve. 5,058,856, Cl. 251-11.000.
Goswami, Kisholoy: *See—*
Klainer, Stanley M.; Frank, Chet A.; Dandge, Dileep K.; and Goswami, Kisholoy, 5,059,790, Cl. 250-227.210.
Goto, Giichi; and Hayashi, Kyozo, to Takeda Chemical Industries, Ltd. Nerve growth factor secretion inducing composition. 5,059,627, Cl. 514-688.000.
Goto, Hiroyuki, to NEC Corporation. Semiconductor device with component circuits under symmetric influence of undesirable turbulence. 5,060,199, Cl. 365-203.000.
Goto, Kiyoto: *See—*
Karai, Kenichi; Goto, Kiyoto; and Hashimoto, Kinji, 5,059,598, Cl. 514-242.000.
Goto, Takashi: *See—*
Nawa, Michio; Maruki, Toshimitsu; Murakami, Seiki; Mizushina, Fumio; and Goto, Takashi, 5,060,176, Cl. 364-579.000.
Goto, Tsuyoshi: *See—*
Ueda, Kazuhiko; Oda, Hiroyuki; Hashimoto, Kazuhiko; Hatamura, Kouichi; Goto, Tsuyoshi; Ohtsuru, Takashi; and Tabata, Shigeo, 5,058,558, Cl. 123-559.100.
Goto, Yozo: *See—*
Sugimoto, Tadao; Tsuchiyama, Shigeki; Hayakawa, Makoto; Goto, Yozo; Koide, Tadao; Endoh, Tamotsu; Toriihara, Makoto; and Ejiri, Joji, 5,059,063, Cl. 405-36.000.
Gotoh, Akihiro; Higuchi, Shinsuke; Miyazaki, Takeshi; Maeda, Kunihiro; Saitoh, Yokuo; Okuwaki, Toyoji; Okamoto, Noriaki; and Wakatsuki, Kousaku, to Hitachi, Ltd. Magnetic recorder provided with a magnetic head slider having a non-magnetic oxide of spinel structure. 5,060,098, Cl. 360-102.000.
Gotoh, Akihiro: *See—*
Higuchi, Shinsuke; Miyazaki, Takeshi; Gotoh, Akihiro; Maeda, Kunihiro; and Saitoh, Yokuo, 5,060,097, Cl. 360-103.000.
Gotoh, Kunihiko: *See—*
Yoshikawa, Yoshinori; and Gotoh, Kunihiko, 5,059,890, Cl. 323-315.000.
Goulet, Christine L.: *See—*
Thompson, Roger B.; and Goulet, Christine L., 5,059,280, Cl 162-4.000.
Goutti, Rene : *See—*
Bellec, Gerard; and Goutti, Rene , 5,058,436, Cl. 73-727.000.
Gouvenot, Daniel, to Societe Anonyme dite - Soletanche. Injection product for sealing and/or consolidating soils and building materials, and a method for its employment. 5,059,251, Cl. 106-633.000.
Goyal, Shri K., to Amoco Corporation. Solids-liquid separation. 5,059,331, Cl. 210-748.000.
Grabbe, Dimitry G., to AMP Incorporated. Connector contact. 5,059,143, Cl. 439-886.000.
Graber Industries, Inc.: *See—*
Morris, John E., 5,058,650, Cl. 160-168.100.
Grace, Martin I.; and Kapetanic, Peter M., to Wiltron Company. Vector network analyzer RF pulse profiling method and apparatus. 5,059,915, Cl. 324-650.000.
Grady, Ayton J.: *See—*
Courtney, Michael L.; Hockey, Joseph S.; and Grady, Ayton J., 5,058,776, Cl. 222-168.000.
Graef, Andrew. High strength, thin-walled, plastic tubes and connector combination and method of fabrication. 5,059,057, Cl. 403-298.000.
Graf, Michael C.; and Tengler, David R., to Ford Motor Company. Passive restraint system with manual lap belt interlock. 5,058,701, Cl. 180-268.000.
Graham, Lawrence F.; and Swanson, Victor E., to Caterpillar Inc. Torsional vibration damper. 5,058,453, Cl. 74-574.000.
Graham, Timothy W.: *See—*
Thomas, Brian J.; Graham, Timothy W.; and Briggs, Daniel C., 5,059,146, Cl. 445-4.000.
Grammer AG: *See—*
Meier, Johann; Grassl, Johann; and Dotzler, Josef, 5,058,852, Cl. 248-588.000.
Grand Laboratories, Inc.: *See—*
Ruehling, Roger H., 5,059,419, Cl. 424-87.000.
Grandi, Guido: *See—*
Pedroni, Paola; Riboli, Barbara; De Ferra, Francesca; Grandi, Guido; Toma, Salvatore; Arico', Beatrice; and Rappuoli, Rino, 5,059,537, Cl. 435-252.310.
Grant, David C. H., to Ashland Oil, Inc. Flexible gas salvage containers and process for use. 5,058,631, Cl. 141-10.000.
Granzow, Manfred; Mischer, Hans-Peter; and Suss, Christian, to Gebr. Isringhausen. Multi-position switch operating mechanism for adjustment of a vehicle seat. 5,059,750, Cl. 200-5.00R.
Graphico Co., Ltd.: *See—*
Takashima, Tokuhei, 5,060,111, Cl. 361-384.000.
Grassberger, Roland, to Studio Tecnico Sviluppo e Ricerche S.T.S.R. S.r.l. Pair of hard material plates for a faucet of the screw type, having an extended control field. 5,058,860, Cl. 251-208.000.
Grassl, Johann: *See—*
Meier, Johann; Grassl, Johann; and Dotzler, Josef, 5,058,852, Cl. 248-588.000.
Grav-I-Flo Corporation, The: *See—*
Davidson, Richard S., 5,058,326, Cl. 51-163.100.
Gray, Frank B. Surgical instrument with detachable tool member. 5,059,195, Cl. 606-84.000.
Grayson, James M.; and Barnhardt, Thomas L., to Briggs & Stratton Corporation. Rocker box cover assembly for internal combustion engine. 5,058,542, Cl. 123-90.380.
Graze, Russell R., Jr., to Caterpillar Inc. Gas sampling device and dilution tunnel used therewith. 5,058,440, Cl. 73-863.830.
Great Lakes Instruments, Inc.: *See—*
King, Karl L.; Weiss, Bruce W.; and Endl, Robert W., 5,059,811, Cl. 250-573.000.
Great Lakes Orthodontics, Ltd.: *See—*
Breads, Peter R.; Abbatte, Gerard P.; and Warunek, Stephen P., 5,059,118, Cl. 433-6.000.
Green, Derek J.: *See—*
Carter, David G.; Green, Derek J.; and Collins, Michael C., 5,058,607, Cl. 131-58.000.

Green, Stephen, to Trailmobile, Inc. Stressed side plat vehicle body. 5,058,756, Cl. 220-1.500.

Green, William J.: *See—*
Hegedus, Charles R.; Hirst, Donald J.; Eng, Anthony T.; and Green, William J., 5,059,640, Cl. 523-451.000.

Greenlee, William S.: *See—*
Steiniger, John L.; Schaaf, Glen D.; Greenlee, William S.; and Mertzel, Elaine A., 5,059,476, Cl. 428-217.000.

Gregg, Peter. Paddle suspension device. 5,059,145, Cl. 440-104.000.

Gregor, Harry P.; Burshteyn, Alexander; Hodgins, Leonard T.; Kassotis, John; and Samuelson, Edgar, to Gregor, Harry P. Surface treatments to impart hydrophilicity. 5,059,659, Cl. 525-329.100.

Gregory, Stevon D.; and Blackburn, Fred J. Test circuit for automatic transmission. 5,060,177, Cl. 364-580.000.

Greff, Paul: *See—*
Weinberg, Marc S.; and Greiff, Paul, 5,060,039, Cl. 357-26.000.

Grenga, Paul A. Tire sealant composition. 5,059,636, Cl. 523-166.000.

Grierson, Keith J., to Whirlpool Corporation. Bearing retainer for a vacuum cleaner motor. 5,059,042, Cl. 384-537.000.

Griffin, Arthur B.: *See—*
Bechlher, Bryan L.; and Griffin, Arthur B., 5,058,374, Cl. 60-39.550.

Griffin, Patrick G.: *See—*
Bevins, George L., Jr; Griffin, Patrick G.; Kendall, Phillip K.; and Hayes, John J., 5,060,262, Cl. 380-19.000.

Griffith, Owen W., to Cornell Research Foundation, Inc. Isolating aminoarginine and use to block nitric oxide formation in body. 5,059,712, Cl. 562-560.000.

Griffiths, Jeannine D.: *See—*
Giblin, Edward J.; and Griffiths, Jeannine D., 5,058,748, Cl. 206-624.000.

Grim, Tracy E.; and Gamble, Fritz F., to Royce Medical Company. Adjustable wrist and hand splint. 5,058,576, Cl. 128-87.00R.

Grimes, Gary J., to AT&T Bell Laboratories. Automatic adjustment of optical power output of a plurality of optical transmitters. 5,060,302, Cl. 359-135.000.

Grobman, Warren D.; Kraus, Charles J., deceased; by Kraus, Paula A., executrix; Wu, Leon L.; and Stoller, Herbert I. Electronics system with direct write engineering change capability. 5,060,116, Cl. 361-474.000.

Groch, Tim J.: *See—*
Erickson, Paul M.; Matz, John E.; Groch, Tim J.; Stedman, Robert B.; Shaughnessy, Mark L.; and Kandah, Taisir Y., 5,060,240, Cl. 375-38.000.

Grohe, Klaus: *See—*
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,059,597, Cl. 514-224.500.

Grollier, Jean F.; and Rosenbaum, Georges, to L'Oreal. Combination of pyrimidine derivatives and calcium antagonists to induce and stimulate hair growth and reduce hair loss. 5,059,606, Cl. 514-231.500.

Groover, Phillip B.: *See—*
Wiley, Ronald L.; Miller, Benjamin D.; and Groover, Phillip B., 5,058,630, Cl. 141-1.000.

Gross, Akiva: *See—*
McEvily, Arthur J.; Iyengar, Radha; and Gross, Akiva, 5,059,438, Cl. 426-268.000.

Gross, Clifford M., to Biomechanics Corporation of America. Method and apparatus for evaluating a load bearing surface such as a seat. 5,060,174, Cl. 364-558.000.

Gross, Richard A.; and Lay, Dieter F., to Seaquist Closures, a Division of Pittway Corporation. Toggle-acting dispensing closure with premature actuation prevention means. 5,058,775, Cl. 222-153.000.

Grosser, Frank R.: *See—*
Scardera, Michael; and Grosser, Frank R., 5,059,625, Cl. 514-644.000.

Grossi de Sa, Maria-Fatima: *See—*
Scherrer, Klaus; and Grossi de Sa, Maria-Fatima, 5,059,521, Cl. 435-7.100.

Grossmann, Dieter, to Heidelberger Druckmaschinen AG. Device for controlling feeder blowing air and feeder suction air in a sheet feeder of a printing machine. 5,058,876, Cl. 271-98.000.

Gr ae, Steen S., to Dansk Vaskeri Teknik A/S. Plant for the sorting of suspended articles and the use hereof. 5,058,750, Cl. 209-583.000.

Grube, Gary W.; and Molnar, Robert F., to Motorola, Inc. Communication system with squelch control. 5,060,296, Cl. 455-218.000.

GTE Laboratories Incorporated: *See—*
Dixit, Sudhir S.; and Feng, Yushu, 5,060,285, Cl. 382-56.000.

GTE Products Corporation: *See—*
Bouchard, Andre C.; Thibault, Paul; and Haraden, Tom, 5,059,864, Cl. 315-56.000.
McKenna, John F.; Brown, Robert E.; and Gagnon, Paul E., 5,059,148, Cl. 445-25.000.

GTE Valenite Corporation: *See—*
Baker, Brian, 5,059,070, Cl. 407-114.000.

Guelta, Mark A.; and Carlon, Hugh R., to United States of America, Army. Method for measuring the efficiency of gas mask filters. 5,059,348, Cl. 252-408.100.

Guelta, Mark A.: *See—*
Carlon, Hugh R.; Guelta, Mark A.; and Gerber, Bernard V., 5,059,349, Cl. 252-408.100.
Carlon, Hugh R.; Guelta, Mark A.; and Gerber, Bernard V., 5,059,350, Cl. 252-408.100.
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Guerra, Robert; and Soni, Pravin, to Raychem Corporation. Curable adhesives. 5,059,480, Cl. 428-34.900.

Guevarra, Ferdinand A.; and Devonald, David H., III, to S&C Electric Company. Fastening arrangement. 5,059,074, Cl. 411-107.000.

Guey, Lee S., to Asanuma & Company Ltd. Elevation mechanism of tripod. 5,058,446, Cl. 74-89.170.

Guglielmo, Michael E. Dispenser for hair treatment solutions. 5,059,050, Cl. 401-171.000.

Guindon, Alain. Garment drying apparatus. 5,058,289, Cl. 34-104.000.

Gulf States Paper Corporation: *See—*
Gulliver, Richard F., 5,058,803, Cl. 229-148.000.

Gulliver, Richard F., to Gulf States Paper Corporation. Carton with over center toggle action indicating tab. 5,058,803, Cl. 229-148.000.

Gunasekera, Malika: *See—*
Gunasekera, Sarath P.; Gunasekera, Malika; and McCarthy, Peter J., 5,059,618, Cl. 514-410.000.

Gunasekera, Sarath P.; Gunasekera, Malika; and McCarthy, Peter J., to Harbor Branch Oceanographic Institution, Inc. Novel bioactive discodermides and methods of use. 5,059,618, Cl. 514-410.000.

Gunkel, Ronald W.: *See—*
Leftault, Charles J., Jr.; Gunkel, Ronald W.; Cargnel, Robert A.; and Douds, E. Scott, 5,058,408, Cl. 72-56.000.

Guntly, Thomas G.; Rasmussen, Jerome L.; and Anderson, Richard T., to Briggs & Stratton Corp. Floatless carburetor with integral primer system. 5,058,544, Cl. 123-187.50R.

Gustin-Bacon Division, a division of Tyler Pipe: *See—*
Bowsher, Mark A., 5,058,931, Cl. 285-112.000.

Guthrie, John T., Jr. Device for locating lost skis in powder snow. 5,058,524, Cl. 116-209.000.

Guyot, Volker, to Schenck Auto-Service-Gerate GmbH. Process for the determination of unbalance. 5,058,428, Cl. 73-457.000.

H. A. Phillips & Co.: *See—*
Ni, Shimao; and Heitz, Phillip C., 5,058,395, Cl. 62-278.000.

H. Krantz GmbH & Co.: *See—*
Sodec, Franc; and Schweikert, Wolfgang, 5,058,490, Cl. 98-40.010.

Haase, Volker: *See—*
Lutter, Heinz-Dieter; Hinz, Werner; Decker, Walter; Leppkes, Reinhard; Reich, Erhard; Peters, Reinhard; Haase, Volker; and Lugmayr, Michael, 5,059,633, Cl. 521-160.000.

Haboush, William P., II; and Schramm, John G., to Handy & Harman Automotive Group, Inc. Modular fuel injector pod and fuel injection system. 5,058,555, Cl. 123-470.000.

Hacker, Gerold; and Strzygowski, Walter, to Steyr-Daimler-Puch AG. Apparatus for cross-cutting treetrunks, comprising a device for measuring lengths. 5,058,638, Cl. 144-3.00D.

Hadano, Katsuya; and Ueno, Masato, to Toyoda Gosei Co., Ltd. Cylindrical vibration damping bushing. 5,058,867, Cl. 267-141.300.

Haeger, Bruce E.; Lawter, James R.; Naringrekar, Vijay H.; and Cucolo, Michael C., to Quadra Logic Technologies, Inc. Stable freeze-dried polyhematoporphyrin ether/ester. 5,059,619, Cl. 514-410.000.

Haehnel, Rudolf H.; and Schartel, Ronald S., to Magnatech International, Inc. Multi-strand bobbin winding apparatus. 5,058,818, Cl. 242-42.000.

Haerle, Hans A., to Schwaebische Huettenwerke GmbH. Fluid filter and method of manufacture. 5,059,326, Cl. 210-491.000.

Haga, Koichi; Murakami, Akishige; and Miura, Hiroshi, to Ricoh Research Institute of General Electronics. Amorphous silicon photosensor. 5,060,041, Cl. 357-30.000.

Hagemann, Hermann: *See—*
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Aske, Vernon H., 5,058,430, Cl. 73-497.000.
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Huffman, Todd H., to Westvaco Corporation. Paperboard laminate 5,059,459, Cl. 428-34.200.
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Godfrey, Maureen A., 5,060,225, Cl. 359-124.000.
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Hung, Chih P.: *See—*
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Hunter, Rudolph; and Spector, George. Swivel tool tray. 5,058,911, Cl. 280-47.350
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Iehisa, Nobuaki; and Yamazaki, Etsuo, to Fanuc Ltd. Laser beam machining device. 5,059,760, Cl. 219-121.830.
Igarashi, Lawrence Y. Golf club with improved moment of inertia. 5,058,895, Cl. 273-167.00F.
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Iida, Katsuji; and Kishimoto, Takahiro, to Toyo Denki Seizo Kabushiki Kaisha. Step-up and step-down chopper device. 5,059,887, Cl. 323-222.000
Iida, Motoyori, to Japan I. P. Co., Ltd. Tubular coffee filter with vertical fold lines. 5,059,325, Cl. 210-474.000.
Iijima, Takeshi: *See—*
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Ikeda, Sotomitsu, to Canon Kabushiki Kaisha. Semiconductor laser element selectively emitting lights of different wavelengths. 5,060,235, Cl. 372-45.000.
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Ikuma, Akihiro, to Konica Corporation. Air flow controlling system for an image recording apparatus. 5,060,015, Cl. 355-215.000.
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Ikuta, Kiyoshi, to Canon Kabushiki Kaisha. Distance measuring device. 5,060,004, Cl. 354-403.000.
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Hart, Charles H.; Francis, John; and Waldron, Roger, 5,059,579, Cl. 503-227.000.
Jones, Michael E. B., 5,059,209, Cl. 623-23.000.
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Inaba, Takashi: *See—*
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Indspec Chemical Corporation: *See—*
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Inductametals Corporation: *See—*
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Inductotherm Europe Limited: *See—*
Simcock, John H., 5,059,762, Cl. 219-10.770.
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Industrial Solar Technology: *See—*
Gee, Randy C.; and May, Edmund K., 5,058,565, Cl. 126-438.000.
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Ino: Masumitsu; Tanaka, Hiroyuki; and Nagata, Takehito, to Ricoh Company, Ltd. Full-size optical sensor device having improved driving means. 5,060,071, Cl. 358-213.110.
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Inoue, Hiromichi: *See—*
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Inoue, Hiroshi: *See—*
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Inoue, Noriyuki: *See—*
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Krueger, Robert T.; Caskey, Terrence L.; Trimmer, Johnny L.; and Jorgensen, Janine L., 5,059,374, Cl. 204-156.000.

Jorgensen, Norman; Davies, Michael J.; Cairns, James A.; and Deards, Paul G., to United Kingdom Atomic Energy Authority. Catalyst for the oxidation of carbonaceous particulates and method of making the catalyst. 5,059,575, Cl. 502-304.000.

Joseph, Jeffrey S., to Motor Wheel Corporation. Apparatus for molding composite metal-elastomeric wheels. 5,059,106, Cl. 425-125.000.

Joseph Vogele AG: *See—*
Saam, Werner, 5,058,709, Cl. 184-108.000.

Jouan, Cynthia; and Jouan, Marcel. Air conditioner heatbox. 5,058,392, Cl. 62-238.600.

Jouan, Marcel: *See—*
Jouan, Cynthia; and Jouan, Marcel, 5,058,392, Cl. 62-238.600.

Jun, Dong-Su: *See—*
Pae, Myoung-Ho; and Jun, Dong-Su, 5,060,196, Cl. 365-189.050.

Jung-Mei Jong Chiu: *See—*
Jong, Jiunn-Neng, 5,058,749, Cl. 209-539.000.

Jupiter Technology Inc.: *See—*
Brown, Alexander S.; Hirni, James T.; and Allen, Bruce S., 5,060,140, Cl. 364-200.000.

Juridical Foundation The Chemo-Sero-Therapeutic Research Institute: *See—*
Hirai, Takenori; Ihara, Hirotaka; Hirayama, Chuichi; Fuzita, Haruo; and Saisho, Munehiro, 5,059,542, Cl. 436-518.000.

Nozaki, Chikateru; Nakatake, Hiroshi; Kino, Yoichiro; Eto, Tatsuo; Makizumi, Keiichi; and Ohtomo, Nobuya, 5,059,538, Cl 435-320.100

Jurik, Frank: *See—*
Phillips, Roger; McGarraugh, Geoffery; Jurik, Frank; and Underwood, Ray, 5,059,394, Cl. 422-68.100

Jursich, Donald N.; and Gentry, Jefferson L., to Associated Mills Inc Shower shaver with steam free mirror. 5,058,271, Cl. 30-123.000.

Justice, Donald R. Horizontal dewatering system. 5,059,064, Cl 405-37.000

Kabelitz, Hans-Peter; Lassig, Harald; and Schneider, Helmut, to Leybold Aktiengesellschaft. Vacuum pump having emergency bearings 5,059,092, Cl. 415-90.000.

Kabelmetal Electro GmbH: *See—*
Schauer, Friedrich; Berthold, Hans; Wolff, Manfred; and Wolfel, Kurt, 5,059,134, Cl. 439-164.000.

Kabeya, Motoo: *See—*
Shindou, Yoshio; and Kabeya, Motoo, 5,059,492, Cl. 428-625.000

Kabushiki Kaisha Daikin Seisakusho: *See—*
Tojima, Hiromi; and Asada, Masaaki, 5,058,718, Cl. 192-30.00W
Tojima, Hiromi, 5,059,155, Cl. 464-68.000

Kabushiki Kaisha Hikoma Seisakusho: *See—*
Kishi, Mitsuhiro; and Sunaoka, Toyohiko, 5,058,213, Cl. 4-111.100.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Fujimoto, Yoshiaki; and Hidaka, Sachio, 5,058,451, Cl. 74-527.000

Kabushiki Kaisha Komatsu Seisakusha: *See—*
Okubo, Hideaki; Sato, Kan-ichi; Mimura, Kazuhiro; Fujimoto, Satoshi; and Higuchi, Makoto, 5,059,364, Cl. 264-40.100.

Kabushiki Kaisha Meidensha: *See—*
Nawa, Michio; Maruki, Toshimitsu, Murakami, Seiki; Mizushina, Fumio; and Goto, Takashi, 5,060,176, Cl. 364-579.000

Kabushiki Kaisha Shinkawa: *See—*
Terakado, Yoshimitsu; Mochida, Tohru; and Yamazaki, Nobuto, 5,058,797, Cl. 228-104.000
Yamazaki, Nobuto; and Nishimura, Akihiro, 5,058,798, Cl. 228-110.000.

Kabushiki Kaisha Toshiba: *See—*
Fukunaga, Takehito, 5,060,019, Cl. 355-231.000.
Hashimoto, Minoru; and Tsugane, Yoshihito, 5,059,469, Cl 428-141.000
Hiroi, Kazuo, 5,059,880, Cl. 318-610.000
Isomura, Akihiro, 5,060,101, Cl. 360-106.000.
Itoh, Masashi, 5,059,831, Cl. 307-482.100.
Kanai, Hideyuki; Yamashita, Yohachi; Furukawa, Osamu; and Harata, Mitsuo, 5,059,566, Cl. 501-138.000.
Kinoshita, Hitoshi, 5,059,919, Cl. 330-51.000.
Kitaori, Shoji; and Kizu, Shigeo, 5,060,104, Cl. 360-130.240.
Konishi, Kuniyoshi, 5,060,224, Cl. 359-119.000
Kurakake, Tadakazu, 5,059,799, Cl. 250-363.100.
Motegi, Hiroyuki; Matsuo, Kenji; Nagae, Akira; and Uchida, Hideaki, 5,059,838, Cl. 307-603.000.
Nakamura, Masaru; and Furuyama, Hideto, 5,060,306, Cl. 359-173.000
Nishida, Yasuaki; Matsunaga, Yoshiyuki; Harada, Nozomu; Manabe, Sohei; and Endo, Yukio, 5,060,070, Cl. 358-213.10S
Sakui, Koji; Fuse, Tsuneaki; Hasegawa, Takehiro; Watanabe, Shigeyoshi; and Masuoka, Fujio, 5,060,194, Cl. 365-177.000.
Shimoma, Taketoshi; Kamohara, Eiji; and Shimokobe, Jiro, 5,059,858, Cl. 313-440.000.
Shirai, Koji, 5,059,547, Cl. 437-40.000.
Tago, Haruyuki; and Yamada, Yasuo, 5,059,834, Cl. 307-542.000
Takahashi, Masaki, 5,059,883, Cl. 318-696.000.
Tarui, Atsushi; Urayama, Kazuhiko; and Kamata, Yutaka, 5,059,808, Cl. 250-548.000.
Tokumaru, Takeji; Kudou, Tsuneaki; and Omote, Kazuyuki, 5,059,830, Cl. 307-481.000.
Ueno, Masaji, 5,059,824, Cl. 307-446.000.
Usuda, Osamu, 5,060,051, Cl. 357-71.000
Watanabe, Junji, 5,060,018, Cl. 355-230.000.
Yamaguchi, Shinichi; and Sasaki, Tomoyuki, 5,060,073, Cl. 358-213.110.
Yamanaka, Kayuri, 5,059,906, Cl. 324-318.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Isomura, Renichi; Shirotani, Mitsuyoshi; Ito, Tomohito; and Hirai, Hidetoshi, 5,059,107, Cl. 425-174.80R.
Iwanaga, Yoshihisa, 5,058,694, Cl. 180-90.000.
Suzuki, Shinichi; Ban, Takashi; Fukanuma, Tetsuhiko; and Yoshida, Tetsuo, 5,059,098, Cl. 417-295.000.

Kadohara, Terutake: *See—*
Ohnuki, Ichiro; Higashihara, Masaki; Akashi, Akira; and Kadohara, Terutake, 5,060,002, Cl. 354-402.000.

Kadokawa, Satoshi, to Nippon Seiko Kabushiki Kaisha. Unit for installing a roller bearing. 5,059,040, Cl. 384-448.000.

Kaestle, Siegfried, to Hewlett-Packard Company. Oximeter and medical sensor therefor. 5,058,588, Cl. 128-633.000.

Kaga, Hiroyasu, to Hitachi, Ltd. Thermal field emission electron gun. 5,059,792, Cl. 250-306.000.

Kagayama, Shigeru: *See—*
Yamane, Mitsuo; Kawaguchi, Takashi; Kagayama, Shigeru; Higashiyama, Shunichi; Suzuki, Keiko; Sakai, Jun; Imaeda, Mikio; and Inaishi, Kouji, 5,059,266, Cl. 156-64.000.

Kageura, Kenichi: *See—*
Kobayashi, Takashi; Kurihara, Kenzo; Doi, Takashi; Teranishi, Masaru; Uchiyama, Yoshihiro; Oyama, Soichi; Tsushima, Isao; Komoda, Norihisa; Tanaka, Ai; Kageura, Kenichi; and Kosuge, Minoru, 5,060,090, Cl. 360-71.000.

Kagi, Bruno, to Strapex AG. Tensioning and sealing apparatus for a strap made of plastic. 5,058,365, Cl. 53-582.000

Kahrs, Jeffrey W.: *See—*
Hoang, Andy N.; Trares, Keith C.; and Kahrs, Jeffrey W., 5,058,649, Cl. 152-540.000

Kaichi, Akio; and Moriyama, Hiroyuki, to Omron Corporation. Compact switch device having a push button with long stroke. 5,059,754, Cl. 200-332.100.

Kaifu, Noriyuki: *See—*
Saika, Toshihiro; and Kaifu, Noriyuki, 5,060,040, Cl. 357-30.000.

Kaiser, Hans-Joachim: *See—*
Degen, Bruno; Feldner, Kurt; Kaiser, Hans-Joachim; and Schulze, Manfred, 5,059,706, Cl. 556-472.000.

Kaiser, Johannes: *See—*
Fischer, Manfred; Peterling, Horst; Kaiser, Johannes; Keuser, Klaus; and Wust, Wilheim, 5,059,310, Cl. 209-237.000.

Kaiser, Klaus; and Kubach, Hans, to Robert Bosch GmbH. Valve for intermittent introduction of fuel. 5,058,625, Cl. 137-624.150.

Kajikawa, Akira; Kojima, Yoshihide; and Itho, Hiroshi, to Sumitomo Rubber Industries, Ltd. Pneumatic safety tire. 5,058,646, Cl. 152-454.000

Kakko-Chiloff, Nicolas, to Usinage Montage et Assistance Technique (U.M.A.T.). Rotary cutting apparatus. 5,058,472, Cl. 83-344.000.

Kakui, Mikio: *See—*
Muto, Nariaki; Maeda, Tatsuo; Nishiguchi, Toshihiko; Kakui, Mikio; Sumida, Keisuke; and Nakazawa, Toru, 5,059,503, Cl. 430-83.000.

Kakuta, Yoshiyuki; and Adachi, Masatoshi, to Pioneer Electronic Corporation. Light power control circuit for a semiconductor light-emitting element. 5,059,780, Cl. 250-205.000.

Kalamazoo Holdings, Inc.: *See—*
Todd, Paul H., Jr., 5,059,437, Cl. 426-250.000.

Kalman, Jeffrey M.: *See—*
Nottingham, John R.; Spirk, John W.; and Kalman, Jeffrey M., 5,059,755, Cl. 219-10.55F.

Kaltner, George W., to Checkpoint Systems, Inc. Method and apparatus for integrated data capture and electronic article surveillance. 5,059,951, Cl. 340-572.000

Kalyaniwalla, Nauzer: *See—*
Haus, Joseph W.; Kalyaniwalla, Nauzer; Inguva, Ramarao; and Bowden, Charles M., 5,059,003, Cl. 359-243.000.

Kamata, Eitaro, to Shoei Kako Kabushiki Kaisha. Helmet for riding vehicle. 5,058,212, Cl. 2-424.000.

Kamata, Yutaka: *See—*
Tarui, Atsushi; Urayama, Kazuhiko; and Kamata, Yutaka, 5,059,808, Cl. 250-548.000

Kame, Masahiro: *See—*
Matsumi, Kuninori; Kawagishi, Tadahiro; Kame, Masahiro; Shiomi, Makoto; Ozeki, Kousuke; and Ohsawa, Michitaka, 5,059,872, Cl. 315-368.00A

Kamei, Yasuhiko: *See—*
Takagi, Genjiro; and Kamei, Yasuhiko, 5,058,953, Cl. 297-284.00B.

Kaminsky, Mark P.; Kleefisch, Mark S.; and Zajac, Gerry W., to Amoco Corporation. Tin-containing composition and use. 5,059,740, Cl. 585-500.000.

Kamisada, Toshimasa, to Hitachi, Ltd. Separation type optical head. 5,060,213, Cl. 367-44.210.

Kammerer, Roger: *See—*
Beller, Jeffrey A.; Johnson, Ralph K.; Kammerer, Roger; Kaya, Azmi; and Keyes, Marion A., IV, 5,060,132, Cl. 364-158.000.

Kammerling, Bruno: *See—*
Herzog, Ingo; and Kammerling, Bruno, 5,058,288, Cl. 33-720.000.

Kamohara, Eiji: *See—*
Shimoma, Taketoshi; Kamohara, Eiji; and Shimokobe, Jiro, 5,059,858, Cl. 313-440.000.

Kamoto, Muneo: *See—*
Mochiki, Yuuichi; and Kamoto, Muneo, 5,058,350, Cl. 52-396.000.

Kamrath, David J., to BOC Group, Inc., The. Process to ultrapurify liquid nitrogen imported as back-up for nitrogen generating plants. 5,058,387, Cl. 62-11.000.

Kan-Chee, Lee. Body contour support structure for travelers and audiences. 5,058,954, Cl. 297-317.000.

Kanai, Hideyuki; Yamashita, Yohachi; Furukawa, Osamu; and Harata, Mitsuo, to Kabushiki Kaisha Toshiba. High-dielectric constant ceramic composite and ceramic capacitor elements. 5,059,566, Cl. 501-138.000.

Kanai, Kenichi; Goto, Kiyoto; and Hashimoto, Kinji, to Otsuka Pharmaceutical Factory, Inc. N-heterocyclo-substituted p-aminophenols. 5,059,598, Cl. 514-242.000.

Kanapenas, Rimantas-Mikolas V.; Vaitkyavichjus, Mindaugas J.; Vischakas, Jurgis K.; Dumchjus, Kyastutis J.; and Bendoraitis, Eduardas J. Method of manufacturing filters by laser treatment and device therefor. 5,059,256, Cl. 148-9.00C.

Kanbara, Hiroshi: *See—*
Okinoshima, Hiroshige; and Kanbara, Hiroshi, 5,059,705, Cl. 556-453.000.

Kandah, Taisir Y.: *See—*
Erickson, Paul M.; Matz, John E.; Groch, Tim J.; Stedman, Robert B.; Shaughnessy, Mark L.; and Kandah, Taisir Y., 5,060,240, Cl. 375-38.000

Kane, Robert C., to Motorola, Inc. High frequency MOSCAP. 5,060,110, Cl. 361-311.000.

Kanebo, Ltd.: *See—*
Marumo, Chisato; Hayata, Eiji; and Shiomi, Niro, 5,059,578, Cl. 502-432.000.

Kaneda, Aizo: *See—*
Takahashi, Michio; Mita, Tooru; Nakagawa, Yasuo; Hamada, Toshimitsu; Iwata, Hisafumi; Kaneda, Aizo; Serizawa, Kouji; Tanaka, Hiroyuki; Sugimoto, Koichi; Sakai, Toshihiko; Matsukawa, Keizo; and Mimata, Tsutomu, 5,059,559, Cl. 437-220.000.

Kaneda, Naoya, to Canon Kabushiki Kaisha. Optical apparatus. 5,060,001, Cl. 354-400.000.

Kaneda, Tokuya; and Yokoi, Chikazu, to Hitachi, Ltd. Magneto-optical recording/reproducing apparatus. 5,060,207, Cl. 369-13.000

Kaneko, Shuzo; Mouri, Akihiro; Isaka, Kazuo; Yoshinaga, Kazuo; Ohnishi, Toshikazu; Toshida, Yomishi; Kurabayashi, Yutaka; and Eguchi, Takeo, to Canon Kabushiki Kaisha. Image forming medium and image forming apparatus using same. 5,059,000, Cl. 350-351.000.

Kaneko, Yutaka: *See—*
Endo, Junji; Kawasaki, Takeshi; Tomita, Masahiro; Isakozawa, Shigeto; Miyada, Toshimitu; and Kaneko, Yutaka, 5,059,859, Cl. 313-443.000.

Kanemura, Yoshinobu; Sasagawa, Katsuyoshi; Imai, Masao; and Suzuki, Toshiyuki, to Mitsui Toatsu Chemicals, Inc. Resin for urethane lenses, lenses comprising the resin, and a process for preparation of the resin and the lenses. 5,059,673, Cl. 528-67.000.

Kaneyuki, Kazutoshi: *See—*
Nishimura, Shinji; and Kaneyuki, Kazutoshi, 5,059,886, Cl. 322-28.000.

Kang, Young C.; Tan, Chee-Teck; Byrne, Brian; Buckholz, Lawrence L., Jr.; Sudol, Marion A.; and Boden, Richard M., to International Flavors & Fragrances Inc. Microwave browning composition and process for producing the same. 5,059,434, Cl. 426-96.000.

Kanno, Nobumori; and Takeda, Neiji, to Toyo Ink Manufacturing Co., Ltd. Heat-sensitive transfer material. 5,059,478, Cl. 428-321.300.

Kanome, Shinji; and Ichihara, Masuji, to Menicon Co., Ltd. Colored contact lens. 5,059,018, Cl. 351-162.000.

Kansai Paint Co., Ltd.: *See—*
Sugishima, Masami; and Nagaoka, Haruo, 5,059,293, Cl. 204-181.700.

Kansupada, Bharat K., to Goodyear Tire & Rubber Company, The. Coating composition and tire coated therewith. 5,058,648, Cl. 152-524.000.

Kanzaki Kokyukoki Mfg., Ltd.: *See—*
Nemoto, Shusuke; Hikishima, Keisaku; and Kirihata, Yoshiyuki, 5,058,455, Cl. 74-606.00R.
Nemoto, Shusuke; Kirihata, Yoshiyuki; and Hikishima, Keisaku, 5,058,459, Cl. 74-745.000.

Kao Corporation: *See—*
Aoyagi, Muneo; Takanashi, Kazuhiro; Araki, Hiroyuki; Murata, Moriyasu; Sotoya, Kohshiro; Ogura, Nobuyuki; and Yamamura, Masaaki, 5,059,344, Cl. 252-186.380.

Kapak Corporation: *See—*
Richison, Cecil; and Bell, Gary M., 5,059,036, Cl. 383-61.000.

Kapetanic, Peter M.: *See—*
Grace, Martin I.; and Kapetanic, Peter M., 5,059,915, Cl 324-650.000.

Kapgan, Michael I.; and Kosarczuk, Richard H., to Raychem Corporation. Method of forming a mechanical. 5,058,936, Cl. 285-382.000.

Kapitanova, Elena N.: *See—*
Akopov, Ernest M.; and Kapitanova, Elena N., 5,059,214, Cl. 606-207.000.

Karakida, Kenichi: *See—*
Yagi, Shigeru; Ono, Masato; Takahashi, Noriyoshi; Nishikawa, Masayuki; Fukuda, Yuzuru; and Karakida, Kenichi, 5,059,501, Cl. 430-65.000.

Karczewski, Casimir, to Motorola, Inc. Frequency synchronization apparatus. 5,059,926, Cl. 331-47.000.

Kardos, Thomas J.: *See—*
Lundquist, Ingemar H.; Tarczy-Hornoch, Zoltan; and Kardos, Thomas J., 5,059,167, Cl. 600-17.000

Karl Lautenschlager GmbH & Co. KG: *See—*
Lautenschlager, Reinhard, 5,058,238, Cl. 16-278.000.

Karl Storz GmbH & Co.: *See—*
Irion, Klaus; Dittrich, Horst; and Schwarz, Hans-Peter, 5,058,568, Cl. 128-4.000

Karube, Norio; and Funakubo, Tsutomu, to Fanuc Ltd. Laser oscillator device. 5,060,238, Cl. 372-58.000.

Karwacki, Francis A., to United States of America, Navy. Superconducting Josephson junction gyroscope apparatus. 5,058,431, Cl. 73-505.000.

Kasahara, Kenichi: *See—*
Tashiro, Yoshiharu; and Kasahara, Kenichi, 5,059,788, Cl. 250-213.00A.

Kasahara, Osamu: *See—*
Ishizuka, Koh; Nishimura, Tetsuharu; and Kasahara, Osamu, 5,059,791, Cl. 250-231.170.
Owada, Nobuo; Akimori, Hiroyuki; Nitta, Takahisa; Kobayashi, Tohru; Sasabe, Shunji; Kawaji, Mikinori; and Kasahara, Osamu, 5,060,045, Cl. 357-45.000

Kashem, Mohammed A.: *See—*
Mazid, M. Abdul; and Kashem, Mohammed A., 5,059,535, Cl. 435-193.000

Kashihara, Akio; Otsuka, Chikayuki; and Yabuuchi, Naoya, to Nippon Paint Co., Ltd. Resin particles. 5,059,505, Cl. 430-110.000.

Kaspers, Helmut: *See—*
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 5,059,617, Cl. 514-383.000.

Kassotis, John: *See—*
Gregor, Harry P.; Burshteyn, Alexander; Hodgins, Leonard T.; Kassotis, John; and Samuelson, Edgar, 5,059,659, Cl 525-329.100.

Katagiri, Yoshio: *See—*
Kihara, Hiroshi; Arai, Eiki; Ogata, Shigeaki; Katagiri, Yoshio; Fujita, Katsuyuki; Wachigai, Tadahiko; and Hiratsuka, Hiroyoshi, 5,059,388, Cl. 419-37.000.

Katakura, Shinichi: *See—*
Tanuma, Jiro; and Katakura, Shinichi, 5,059,046, Cl. 400-320.000

Kato, Hisao; and Adachi, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. System for analog-digital-analog conversion. 5,060,178, Cl. 364-600.000.

Kato, Kazuo: *See—*
Murabayashi, Fumio; Nishio, Yoji; Kotoku, Shoichi; Kurita, Kozaburo; and Kato, Kazuo, 5,059,821, Cl. 307-360.000

Kato, Naoki: *See—*
Hojo, Junichi; Kato, Naoki; Wakayama, Toshiaki; and Fujikawa, Kazuhide, 5,060,072, Cl. 358-213.110.

Kato, Naomiki: *See—*
Yamasaki, Kozo; Mouri, Kouichi; Kato, Naomiki; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut, 5,060,049, Cl. 357-70.000.

Kato, Yasuyoshi; Nakajima, Fumito; Hamada, Ikuhisa; Nitta, Masahiro; Konishi, Kunihiko; Matsuda, Toshiaki; Yoshida, Naomi; Ishida, Nobuyoshi; and Yamasaki, Hitoshi, to Babcock-Hitachi Kabushiki Kaisha. Catalyst for removing nitrogen oxides and a process for producing the same. 5,059,576, Cl. 502-309.000.

Kato, Yoshiaki: *See—*
Ono, Hitoshi; Kato, Yoshiaki; and Watabe, Sumiko, 5,059,355, Cl. 252-584.000.

Katoh, Hiromasa: *See—*
Tanaka, Kazuo; Hamamoto, Masato; Yamada, Toshio; Kobayashi, Tohru; and Katoh, Hiromasa, 5,059,819, Cl. 307-272.100

Katoh, Koichiroh; Takehara, Etsuji; and Matsumoto, Yoshie, to Director-General of Agency of Industrial Science and Technology. Method for the acitivation of a surface of a shaped body formed of a synthetic organic polymer. 5,059,447, Cl. 427-37.000.

Katzenstein, Henry S., to Brooktree Corporation. Non-linear analog to digital converter. 5,059,980, Cl. 341-159.000

Katzir, Yigal, to Orbot Systems Ltd. Illumination system and inspection apparatus including same. 5,058,982, Cl. 385-33.000.

Kavieff, Shelden M.; and Dehne, Clarence A., to Jervis B. Webb Company. Conveyor system with cantilever carriers. 5,058,508, Cl 105-149.000.

Kawabata, Yasunari: *See—*
Kondoh, Osamu; Arii, Mitsuzo; Nakajima, Tohru; and Kawabata, Yasunari, 5,058,978, Cl. 385-43.000.

Kawagishi, Tadahiro: *See—*
Matsumi, Kuninori; Kawagishi, Tadahiro; Kame, Masahiro; Shiomi, Makoto; Ozeki, Kousuke; and Ohsawa, Michitaka, 5,059,872, Cl. 315-368.00A.

Kawaguchi, Akitsugu, to Du Pont de Nemours, E. I., and Company. Oligomeric semicarbazide additives for spandex. 5,059,647, Cl. 524-100.000.

Kawaguchi, Alan T.: *See—*
Anderson, Robert K.; DeCamp, Ann E.; Kawaguchi, Alan T.; King, Anthony O.; Mills, Sander G.; and Volante, Ralph P., 5,059,696, Cl. 549-214.000.

Kawaguchi, Takashi: *See—*
Yamane, Mitsuo; Kawaguchi, Takashi; Kagayama, Shigeru; Higashiyama, Shunichi; Suzuki, Keiko; Sakai, Jun; Imaeda, Mikio; and Inaishi, Kouji, 5,059,266, Cl. 156-64.000.

Kawahara, Yuji, to Fuji Electric Co., Ltd. System for controlling displacement of a head in a disc storage unit. 5,060,093, Cl. 360-78.130.

Kawahara, Yukito; Machida, Satoshi; Mukainakano, Hiroshi; and Higashi, Masato, to Seiko Instruments Inc. Single substrate semiconductor device for image sensing and printing. 5,060,084, Cl. 353-472.000.

Kawaji, Mikinori: *See—*
Owada, Nobuo; Akimori, Hiroyuki; Nitta, Takahisa; Kobayashi, Tohru; Sasabe, Shunji; Kawaji, Mikinori; and Kasahara, Osamu, 5,060,045, Cl. 357-45.000.

Kawakami, Noboru: *See—*
Yamauchi, Ryozo; Kawakami, Noboru; and Suzuki, Fumio, 5,058,979, Cl. 385-28.000

Kawamoto, Masao; Tanaka, Kazuhiko; Hirakawa, Kiyoshi; Yamaguchi, Shinji; and Takegami, Tomoyasu, to Kuraray Company, Ltd. Composite fiber and process for producing the same. 5,059,482, Cl. 428-373.000.

Kawamoto, Ryuichi: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,058,217, Cl. 4-420.000.

Kawamura, Katsumi; Narumi, Ichiro; and Yamada, Takao, to Pioneer Electronic Corporation. Method and apparatus for leading-in focus servo by moving the objective lens toward the recording surface at two different speeds. 5,060,215, Cl. 369-44.350.

Kawamura, Masonari: *See—*
Okegawa, Tadao; and Kawamura, Masonari, 5,059,607, Cl 514-290.000.

Kawamura, Naoto: *See—*
Mita, Yoshinobu; Kawamura, Naoto; Enokida, Miyuki; and Ishida, Yoshihiro, 5,060,280, Cl. 382-33.000

Kawano, Yoshihiro, to Olympus Optical Co., Ltd. Objective lens system for microscopes. 5,059,005, Cl. 359-654.000.

Kawasaki, Masaaki: *See—*
Agou, Tokinori; Matsuzaki, Hitomi; and Kawasaki, Masaaki, 5,059,451, Cl. 427-164.000.

Kawasaki, Takeshi: *See—*
Endo, Junji; Kawasaki, Takeshi; Tomita, Masahiro; Isakozawa, Shigeto; Miyada, Toshimitu; and Kaneko, Yutaka, 5,059,859, Cl. 313-443.000.

Kawashima, Hirofumi, to Seiko Electric Components Ltd. Longitudinal quartz crystal resonator. 5,059,853, Cl. 310-367.000.

Kaya, Azmi: *See—*
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Koiwa, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for igniting fuel for internal combustion engine. 5,058,559, Cl. 123-612.000.
Koizumi, Hideki: *See*—
Naka, Michiharu; Koizumi, Hideki; Kondoh, Yukari; Kinoshita, Hirotugu; Seikiya, Mokoto; and Mishima, Masaru, 5,059,336, Cl. 252-33.300.
Kojima, Hisashi. Injection molding method using surge pressure. 5,059,370, Cl. 264-102.000.
Kojima, Kotaro; Shibata, Yasumasa; and Shojima, Toshiki, to Idemitsu Petrochemical Co., Ltd. Optical disk substrate, optical information-storage medium, and process and apparatus for manufacturing the optical disk substrate. 5,059,461, Cl. 428-64.000.
Kojima, Narihito; Nagame, Hiroshi; Seto, Mitsuru; Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Hirose, Naoki; Sasaki, Mari; and Takeyama, Junichi, to Ricoh Company, Ltd.; and Semiconductor Energy Laboratory Company Co., Ltd. Electrophotographic photoconductor. 5,059,502, Cl. 430-66.000.
Kojima, Shinji: *See*—
Wikelski, Karl W.; and Kojima, Shinji, 5,059,662, Cl. 526-208.000.
Kojima, Tetsuro: *See*—
Ueda, Shinji; Kojima, Tetsuro; Kitahara, Tohru; Yasuda, Tomokazu; Fujita, Yoshihiro; and Ishikawa, Takatoshi, 5,059,514, Cl. 430-393.000.
Kojima, Yoh: *See*—
Ozaki, Masaaki; and Kojima, Yoh, 5,058,423, Cl. 73-117.000.
Kojima, Yoshihide: *See*—
Kajikawa, Akira; Kojima, Yoshihide; and Itho, Hiroshi, 5,058,646, Cl. 152-454.000.
Kok, Gee S.; Chan, Sek L.; Tay, Wan F.; Teo, Pek B.; Prakash, Chacko; and Lim, Hock S., to Motorola, Inc. Antenna switch for transmit-receive operation using relays and diodes. 5,060,293, Cl. 455-78.000.
Koller, Ernest H. Trailer with tiltable bed(s). 5,059,085, Cl. 414-482.000.
Kollinger, Rudolf: *See*—
Nosowicz, Josef; and Kollinger, Rudolf, 5,058,905, Cl. 277-65.000.
Kolze, Lawrence A. Flow control valve with stable modulation. 5,058,624, Cl. 137-607.000.
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Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,058,217, Cl. 4-420.000.
Komagata, Shigemi: *See*—
Hiral, Masahisa; and Komagata, Shigemi, 5,059,893, Cl. 324-74.000.
Komarneni, Sridhar: *See*—
Yamanaka, Shoji; and Komarneni, Sridhar, 5,058,442, Cl. 73-865.500.
Komatsu, Hiroyuki: *See*—
Kinugasa, Toshiro; Imaide, Takuya; Yamamoto, Naoki; and Komatsu, Hiroyuki, 5,060,074, Cl. 358-224.000.
Komatsu, Toshiyasu: *See*—
Shibata, Mitsuhiro; and Komatsu, Toshiyasu, 5,058,541, Cl. 123-90.370.
Komoda, Norihisa: *See*—
Kobayashi, Takashi; Kurihara, Kenzo; Doi, Takashi; Teranishi, Masaru; Uchiyama, Yoshihiro; Oyama, Soichi; Tsushima, Isao; Komoda, Norihisa; Tanaka, Ai; Kageura, Kenichi; and Kosuge, Minoru, 5,060,090, Cl. 360-71.000.
Kondo, Hiroshi: *See*—
Yoshizawa, Tetsuo; Kondo, Hiroshi; Sakaki, Takashi; Imaizumi, Masaaki; Nishida, Hideyuki; Ichida, Yasuteru; and Konishi, Masaki, 5,058,800, Cl. 228-180.200.
Kondo, Kazuhiro: *See*—
Asakawa, Yoshiaki; Miyamoto, Takanori; Kondo, Kazuhiro; Ichikawa, Akira; and Suzuki, Toshiro, 5,060,268, Cl. 381-38.000.
Kondo, Shigeyuki; and Yamamoto, Yoshihisa, to Nippondenso Co., Ltd. Variable-discharge high pressure pump. 5,058,553, Cl. 123-456.000.
Kondo, Yoshihito: *See*—
Hayashi, Kojiro; Kondo, Yoshihito; Miyawaki, Takahiro; and Mashiba, Michihiro, 5,058,494, Cl. 99-453.000.
Kondo, Yuji: *See*—
Tsunemi, Masahiro; Kondo, Yuji; and Shimoura, Kenichi, 5,058,383, Cl. 60-493.000.
Kondo, Yutaka, to Aisan Kogyo Kabushiki Kaisha. Readjustment preventing structure for adjustment member. 5,059,076, Cl. 411-377.000.
Kondoh, Osamu; Arii, Mitsuzo; Nakajima, Tohru; and Kawabata, Yasunari, to Mitsubishi Gas Chemical Co., Inc. Optical divider for multimode optical fiber systems. 5,058,978, Cl. 385-43.000.
Kondoh, Yukari: *See*—
Naka, Michiharu; Koizumi, Hideki; Kondoh, Yukari; Kinoshita, Hirotugu; Seikiya, Mokoto; and Mishima, Masaru, 5,059,336, Cl. 252-33.300.
Konica Corporation: *See*—
Ikuma, Akihiro, 5,060,015, Cl. 355-215.000.
Sato, Kiyoshi; and Ono, Kouji, 5,059,516, Cl. 430-599.000.
Konishi, Kunihiko: *See*—
Kato, Yasuyoshi; Nakajima, Fumito; Hamada, Ikuhisa; Nitta, Masahiro; Konishi, Kunihiko; Matsuda, Toshiaki; Yoshida, Naomi; Ishida, Nobuyoshi; and Yamasaki, Hitoshi, 5,059,576, Cl. 502-309.000.
Konishi, Kuniyoshi, to Kabushiki Kaisha Toshiba. Method and apparatus for connecting branch networks with a trunk network in optical transmission system. 5,060,224, Cl. 359-119.000.
Konishi, Masaki: *See*—
Yoshizawa, Tetsuo; Kondo, Hiroshi; Sakaki, Takashi; Imaizumi, Masaaki; Nishida, Hideyuki; Ichida, Yasuteru; and Konishi, Masaki, 5,058,800, Cl. 228-180.200.
Konishiroku Photo Industry Co., Ltd.: *See*—
Arai, Kazumi; Kobayashi, Mario; and Okaniwa, Kenichiro, 5,059,526, Cl. 435-17.000.
Konno, Fukio: *See*—
Imanishi, Taiichiro; Ichimaru, Yasuyuki; Sawa, Aiko; Konno, Fukio; Wachtel, Helmut; Ueki, Showa; Fujiwara, Michihiro; and Yamamoto, Tsuneyuki, 5,059,612, Cl. 514-359.000.
Kono, Haruhiko: *See*—
Nakayama, Masahiko; Shigemori, Toshihiro; Kono, Haruhiko; and Yokomori, Kiyoshi, 5,060,214, Cl. 369-44.260.
Kono, Hiromi; and Ohtsuka, Masuhiro, to Diesel Kiki Co., Ltd. Apparatus for controlling clutches. 5,060,158, Cl. 364-424.100.
Kono, Masanao; Hasegawa, Yoshihiro; Nishi, Yasutaka; Sanada, Yasuyoshi; Mizuta, Tatsuji; Inoue, Ryo; and Ohara, Shinsuke, to Harima Chemicals, Inc. Method for the manufacture of electronic circuits utilizing a composition with insulating and electroconductive properties. 5,059,272, Cl. 156-306.600.
Kopf, Peter W.: *See*—
Ennis, John L.; Kopf, Peter W.; Rudolph, Stephen E.; and van Buren, Martin F., 5,059,443, Cl. 426-531.000.
Koplin, Beryl: *See*—
Watson, J. Richard; and Koplin, Beryl, 5,059,405, Cl. 423-210.000.

Koran, Peter: *See*—
Herold, Wolf-Dietrich; Koran, Peter; and Pauser, Helmut, 5,058,770, Cl. 222-80.000.
Korb, Klaus: *See*—
Doring, Ralf; and Korb, Klaus, 5,058,938, Cl. 292-45.000.
Kordis, Thomas F.: *See*—
El-Nounou, Fozan O.; Savin, Michael A.; Sahatjian, Ronald A.; Weinreich, Michael; and Kordis, Thomas F., 5,059,205, Cl. 606-200.000.
Korpi, John G., to United States of America, Army. Security drain plug for armor and the like. 5,058,858, Cl. 251-127.000.
Korthoff, Herbert W., to United States Surgical Corporation. Surgical needle-suture attachment for controlled separation of the needle from the suture. 5,059,212, Cl. 606-224.000.
Kortright, Kenneth H.; Raynor, Robert H.; and Healy, Stephen F., Jr., to Coulter Corporation. Stabilized lyophilized mammalian cells and method of making same. 5,059,518, Cl. 435-6.000.
Kosaka, Kenji: *See*—
Okazaki, Michio; Shitara, Mototaka; and Kosaka, Kenji, 5,059,097, Cl. 417-222.00S.
Kosarczuk, Richard H.: *See*—
Kapgan, Michael I.; and Kosarczuk, Richard H., 5,058,936, Cl 285-382.000.
Kosinski, Leonard E. R., to Du Pont de Nemours, E. I., and Company. Polyacetal compositions containing at least one oxo-piperazinyltriazine hindered amine light stabilizer. 5,059,644, Cl. 524-100.000
Koskenmaki, David C.: *See*—
Calhoun, Clyde D.; and Koskenmaki, David C., 5,059,262, Cl. 156-47.000.
Kosowski, Bernard M.: *See*—
Condo, Albert C.; and Kosowski, Bernard M., 5,059,261, Cl 149-19.920.
Koster, Brian L., to Minnesota Mining and Manufacturing Company Adjustable trim strip mounting assembly. 5,058,843, Cl. 248-221.400.
Kosuge, Minoru: *See*—
Kobayashi, Takashi; Kurihara, Kenzo; Doi, Takashi; Teranishi, Masaru; Uchiyama, Yoshihiro; Oyama, Soichi; Tsushima, Isao; Komoda, Norihisa; Tanaka, Ai; Kageura, Kenichi; and Kosuge, Minoru, 5,060,090, Cl. 360-71.000.
Kotani, Takaaki; and Takada, Seiji, to Fuji Photo Film Co., Ltd. Distance measuring device. 5,060,003, Cl. 354-403.000
Kotoku, Shoichi: *See*—
Murabayashi, Fumio; Nishio, Yoji; Kotoku, Shoichi; Kurita, Kozaburo; and Kato, Kazuo, 5,059,821, Cl. 307-360.000.
Kowa Company Ltd.: *See*—
Makino, Misao; Hashimoto, Kiyoshi; and Sugita, Toshiaki, 5,058,596, Cl. 128-665.000.
Kowalski, Jacek, to SGS - Thomson Microelectronics S.A. Device for the structural testing of an integrated circuit. 5,060,198, Cl 365-201.000.
Kowalski, Jacek: *See*—
Avenier, Jean-Pierre; Lisimaque, Gilles; Maes, Philippe; and Kowalski, Jacek, 5,060,261, Cl. 380-3.000.
Koya, Toshiaki; and Suesada, Kunio, to Matsushita Electric Industrial Co., Ltd. Reproduction apparatus having means for initializing flag memories during slow motion and freeze reproduction. 5,060,077, Cl. 358-335.000.
Koyama, Masateru: *See*—
Kikkawa, Tatsuo; Asanari, Shigeyuki; and Koyama, Masateru, 5,059,224, Cl. 55-385.300.
Koyfman, Ilya: *See*—
Chesterfield, Michael P.; Koyfman, Ilya; and Hain, Matthew R., 5,059,213, Cl. 606-228.000.
Koyo Seiko Co., Ltd.: *See*—
Kiyooka, Masanori; Kitami, Etsuro; Sakaguchi, Shigehiko; and Takeuchi, Katsuya, 5,058,448, Cl. 74-422.000
Kramer, Charles E.: *See*—
Petterson, Dewitt R.; Kramer, Charles E.; and DiTaranto, Francis A., 5,059,378, Cl. 264-258.000.
Kramer, Hans-Joachim; Schulwitz, Bruno; Horlitz, Werner; Lange, Peter M.; and Mitschker, Alfred, to Bayer Aktiengesellschaft. Process for removing pure aromatics. 5,059,306, Cl. 208-313.000.
Kramer, Wolfgang: *See*—
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 5,059,617, Cl. 514-383.000.
Krashkevich, David: *See*—
Ciolek, Sally; and Krashkevich, David, 5,059,561, Cl. 501-13.000.
Kraus, Charles J., deceased: *See*—
Grobman, Warren D.; Kraus, Charles J., deceased; Kraus, Paula A., executrix; Wu, Leon L.; and Stoller, Herbert I., 5,060,116, Cl. 361-474.000.
Kraus, Paula A., executrix: *See*—
Grobman, Warren D.; Kraus, Charles J., deceased; Kraus, Paula A., executrix; Wu, Leon L.; and Stoller, Herbert I., 5,060,116, Cl. 361-474.000.
Krause, Wolfgang: *See*—
Hess, Heinrich; Krause, Wolfgang; and Bauerfeind, Hans B., 5,058,573, Cl. 128-77.000.
Krebs, Andreas: *See*—
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,059,597, Cl. 514-224.500.
Krein, Reuben, to BJK Industries, Inc. Vacuum apparatus for installing a water proof liner. 5,059,084, Cl. 414-467.000.
Krenitsky, Thomas A.; and Beauchamp, Lilia M., to Burroughs Wellcome Co. 2-amino purine derivatives. 5,059,604, Cl. 514-261.000.
Kresse, Peter: *See*—
Burow, Wilfried; Brunn, Horst; Kresse, Peter; and Sander, Hans, 5,059,250, Cl. 106-459.000.
Krichever, Mark; and Metlitsky, Boris, to Symbol Technologies, Inc. Scan pattern generators for bar code symbol readers. 5,059,779, Cl. 235-467.000
Krishnamoorthy, Mukkai S.: *See*—
Levinn, Mitchell D.; Faatz, Donald B.; and Krishnamoorthy, Mukkai S., 5,058,894, Cl. 273-153.00R
Krishnan, Mahadevaiyer: *See*—
Jagannathan, Rangarajan; Knarr, Randolph F.; Krishnan, Mahadevaiyer; and Wandy, Gregory P., 5,059,243, Cl. 106-1.260
Kristensen, Knud N., to Colgate-Palmolive Company. Flexible pouch with folded spout. 5,059,035, Cl. 383-33.000.
Krivchenko, Galina V.: *See*—
Burmistrov, Oleg A.; Aguf, Igor A.; Lyzlov, Nikita J.; Dasoian, Martin A.; and Krivchenko, Galina V., 5,059,495, Cl. 429-57.000.
Kronenberg, Stanley, to United States of America, Army. Rugged alpha particle counter. 5,059,803, Cl. 250-385.100
Krstovic, Alexander P. Curved stairway and method. 5,058,339, Cl 52-187.000.
Krueger, Robert T.; Caskey, Terrence L.; Trimmer, Johnny L.; and Jorgensen, Janine L., to Dow Chemical Company, The. Method for sealing a hollow fiber membrane module in a case. 5,059,374, Cl. 204-156.000
Kruezer, Helmut: *See*—
Gloe, Karl-Heinz; Kruezer, Helmut; and Biehl, Harald, 5,058,260, Cl. 29-564.400.
Kruger, Bernd-Wieland; Sasse, Klaus; Hagemann, Hermann; Marhold, Albercht; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Substituted cycloalkyl- and heterocyclyl-carboxanilides. 5,059,623, Cl 514-613.000
Krumme, Jens-Peter: *See*—
Schmitt, Hans-Jurgen; Seidenberg, Jurgen; Thorweihe, Norbert; Dammann, Hans; Doormann, Volker; and Krumme, Jens-Peter, 5,058,971, Cl. 385-11.000.
Krupp Koppers GmbH: *See*—
Pohl, Hans-Christoph; and Kohnen, Klaus, 5,058,534, Cl. 122-6.00A
Kubach, Hans: *See*—
Kaiser, Klaus; and Kubach, Hans, 5,058,625, Cl. 137-624.150.
Kubo, Manabu: *See*—
Kudo, Takayuki; Sato, Kunihiko; Yoshiyasu, Shigehiro; Hirosaki, Tatsuya; Kubo, Manabu; and Imaizumi, Hajime, 5,059,759, Cl 219-121.780.
Kubo, Masashige: *See*—
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,059,726, Cl. 568-726.000.
Kubo, Nobuaki; and Shibata, Isamu, to Ricoh Company, Ltd. Seek and track control for a rectangular optical card handling apparatus. 5,059,774, Cl. 235-454.000.
Kudo, Takayuki; Sato, Kunihiko; Yoshiyasu, Shigehiro; Hirosaki, Tatsuya; Kubo, Manabu; and Imaizumi, Hajime, to Mitsubishi Denki K.K. Laser beam machine. 5,059,759, Cl. 219-121.780
Kudo, Yoshinobu: *See*—
Taniguchi, Nobuyuki; Hata, Yoshiaki; Kudo, Yoshinobu; Inoue, Manabu; Hoda, Takeo; and Ueda, Hiroshi, 5,060,006, Cl. 354-419.000.
Kudou, Tsuneaki: *See*—
Tokumaru, Takeji; Kudou, Tsuneaki; and Omote, Kazuyuki, 5,059,830, Cl. 307-481.000.
Kuhn, Falk: *See*—
Memminger, Gustav; Kuhn, Falk; and Fabschitz, Heinze, 5,058,398, Cl. 66-132.00R.
Kuhne, Karl F., to Vermont American Corporation. Blast joint for snubbing unit. 5,059,043, Cl. 285-45.000.
Kukkonen, Osmo; and Vayrynen, Antero, to Nokia Mobile Phones Ltd. Resilient connector for radio frequency signals. 5,059,131, Cl. 439-78.000.
Kumagai, Yuzo, to Bridgestone Corporation. Tire forming apparatus including upper and lower conveyors. 5,059,274, Cl. 156-406.400.
Kumar, Mahesh: *See*—
Waugh, Raymond M.; and Kumar, Mahesh, 5,060,298, Cl 455-326.000.
Kumashiro, Koichi: *See*—
Shinoki, Masayoshi; Takagi, Masahiro; Nagatsuka, Ikutaroh; Kumashiro, Koichi; Aoki, Takayoshi; and Takeda, Masayuki, 5,059,504, Cl. 430-108.000.
Kume, Hidehiro, to Sony Corporation. Optical head devices for use in recording and/or reproduction of information. 5,060,217, Cl. 369-44.410.
Kume, Yuji: *See*—
Ihama, Mikio; Kume, Yuji; Tamoto, Koji; and Ayato, Hiroshi, 5,059,517, Cl. 430-567.000.
Kummel, Klaus; Klapettek, Gerhard; and Schneider, Siegfried, to Siemens Aktiengesellschaft. Single-sheet page printer for duplex and simplex operation. 5,060,025, Cl. 355-319.000.
Kummer, Martin E.: *See*—
Flotow, Richard A.; and Kummer, Martin E., 5,058,719, Cl 192-70.190
Kunimoto, Koji: *See*—
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,059,726, Cl. 568-726.000.

Kuno, Atsushi: *See—*
Takasugi, Hisashi; Kuno, Atsushi; and Ohkubo, Mitsuru, 5,059,608, Cl. 514-307.000.

Kuo, Chih-Ping; Fletcher, Robert M.; and Osentowski, Timothy D., to Hewlett-Packard Company. High band-gap opto-electronic device. 5,060,028, Cl. 357-17.000.

Kuo, Tien H. Vibrating and sonic device for toy gun. 5,059,150, Cl. 446-405.000.

Kurabayashi, Yutaka: *See—*
Kaneko, Shuzo; Mouri, Akihiro; Isaka, Kazuo; Yoshinaga, Kazuo; Ohnishi, Toshikazu; Toshida, Yomishi; Kurabayashi, Yutaka; and Eguchi, Takeo, 5,059,000, Cl. 350-351.000.

Kurokake, Tadakazu, to Kabushiki Kaisha Toshiba. Scintillation camera. 5,059,799, Cl. 250-363.100.

Kuraray Company, Ltd.: *See—*
Kawamoto, Masao; Tanaka, Kazuhiko; Hirakawa, Kiyoshi; Yamaguchi, Shinji; and Takegami, Tomoyasu, 5,059,482, Cl. 428-373.000.
Saito, Sanpei, 5,058,245, Cl. 24-306.000.

Kurashina, Isao; and Horiguchi, Takeshi, to Nippon Sheet Glass Co., Ltd. Method of manufacturing glass by using a float bath. 5,059,232, Cl. 65-99.200.

Kureha Kagaku Kogyo K.K.: *See—*
Arabori, Hideo; Yamazaki, Shiro; Arahira, Masato; and Murakami, Aiko, 5,059,238, Cl. 71-93.000.

Kurihara, Kenzo: *See—*
Kobayashi, Takashi; Kurihara, Kenzo; Doi, Takashi; Teranishi, Masaru; Uchiyama, Yoshihiro; Oyama, Soichi; Tsushima, Isao; Komoda, Norihisa; Tanaka, Ai; Kageura, Kenichi; and Kosuge, Minoru, 5,060,090, Cl. 360-71.000.

Kurisu, Masayoshi; and Hashimoto, Hidehiko, to Mitsui Petrochemical Industries, Ltd. Information recording medium. 5,059,462, Cl. 428-64.000.

Kurita, Kozaburo: *See—*
Murabayashi, Fumio; Nishio, Yoji; Kotoku, Shoichi; Kurita, Kozaburo; and Kato, Kazuo, 5,059,821, Cl. 307-360.000.

Kuru, Sadao: *See—*
Kohmura, Isao; Senga, Takao; and Kuriu, Sadao, 5,060,024, Cl. 355-283.000.

Kuryama, Kazumi, to Pioneer Electronic Corporation; and Pioneer Video Corporation. Fluid supplying and processing device. 5,058,610, Cl. 134-98.000.

Kuryama, Takashi: *See—*
Shishido, Ichiro; Miyoshi, Tadayoshi; Kuriyama, Takashi; Kurokawa, Hiromitsu; Tada, Shigeaki; and Nishiyama, Hiroshi, 5,060,061, Cl. 358-80.000.

Kurokawa, Hiromitsu: *See—*
Shishido, Ichiro; Miyoshi, Tadayoshi; Kuriyama, Takashi; Kurokawa, Hiromitsu; Tada, Shigeaki; and Nishiyama, Hiroshi, 5,060,061, Cl. 358-80.000.

Kuroki, Kazuhiko: *See—*
Tanaka, Toshiharu; Shibata, Kenichi; Takeuchi, Kousuke; Sakata, Masakazu; Okano, Hiroshi; and Kuroki, Kazuhiko, 5,059,847, Cl. 310-313.00A.

Kurono, Masayasu: *See—*
Sawai, Kiichi; Kurono, Masayasu; Asai, Hiromoto; Mitani, Takahiko; Ninomiya, Naohisa; and Suzuki, Tomoo, 5,059,594, Cl. 514-103.000.

Kurosaka, Shuji: *See—*
Hirai, Toshihiro; Kurosaka, Shuji; and Furukawa, Kazuo, 5,058,545, Cl. 123-195.00C.

Kurtz, Robert H., to Liquid Control Corporation. Self-contained pneumatic gun for dispensing flowable materials. 5,058,769, Cl 222-47.000.

Kurtz, William E., to Bethlehem Steel Corp. Railway car with vented bolster to facilitate the thawing of lading. 5,058,509, Cl. 105-226.000.

Kurzyn, Cheryl M.: *See—*
Dallal, Joseph A.; Ferullo, Teresa; and Kurzyn, Cheryl M., 5,059,414, Cl. 424-70.000.

Kushner, Burton A.; Rotolico, Anthony J.; Nerz, John E.; and Saia, Lawerence A., to Perkin-Elmer Corporation, The. Turbine rotor blade tip coated with alumina-zirconia ceramic. 5,059,095, Cl. 416-241.00B.

Kuslich, Stephen D., to Spine-Tech, Inc. Expandable spinal implant and surgical method. 5,059,193, Cl. 606-61.000.

Kuster, Hans-Werner: *See—*
D'Iribarne, Benoit; Vanaschen, Luc; Promper, Hans-Josef; and Kuster, Hans-Werner, 5,059,235, Cl. 65-287.000.

Kuttruf, Werner, to BW Hydraulik GmbH. Electrohydraulic control arrangement for controlling a hydraulic drive. 5,058,484, Cl. 91-461.000.

Kuwana, Koji: *See—*
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; Hanamoto, Yukio; and Oi, Fumio, 5,059,507, Cl. 430-192.000.

Kuznecov, Jurij P.: *See—*
Bleha, Miroslav; Schauer, Jan; Lokaj, Jan; Polockaja, Galina A.; Kuznecov, Jurij P.; and Romaskova, Kira A., 5,059,220, Cl. 55-158.000.

Kwee, Henry T.; and Valsamidis, Alexandra, to Goodyear Tire & Rubber Company, The. Method and system for detecting defects in tire sidewalls. 5,060,250, Cl. 378-61.000.

Kwon, Oh-Kyong: *See—*
Aton, Thomas J.; Malhi, Satwinder; Hashimoto, Masashi; Mahant-Shitti, Shivaling S.; Kwon, Oh-Kyong; and Sridhar, Thirumalai, 5,059,897, Cl. 324-158.00R.

Kyocera Corporation: *See—*
Gentsu, Takuya, 5,059,562, Cl. 501-87.000.

Lachman, Irwin M.: *See—*
Buckwalter, Charles Q., Jr.; Lachman, Irwin M.; Patil, Mallanagouda D.; and Williams, Jimmie L., 5,059,489, Cl. 428-550.000.

Lacombe, Jean-Francis; and Miane, Jean-Louis, to Aerospatiale Societe Nationale Industrielle. Microwave device for the continuous measurement of the viscosity of a viscous medium. 5,059,914, Cl. 324-642.000.

Lacour, Gilles, to L'Enrouleur Electrique Moderne. Paying out/winding in device for eliminating torsion in a line in a rotary connection. 5,058,819, Cl. 242-54.00R.

Ladenberger, Volker: *See—*
Ostermayer, Bertram; Seiler, Erhard; Wagner, Daniel; Bronstert, Klaus; and Ladenberger, Volker, 5,059,645, Cl. 524-128.000.

LaForest, S.A.: *See—*
Meury, Marcel, 5,059,852, Cl. 310-339.000.

Lagerberg, Stig E. V., to Sandvik AB. Insert for thread cutting. 5,059,069, Cl. 407-113.000.

Laing, Brian S., to CRC-Evans Pipeline International, Inc. Method of operation for high speed automatic welding. 5,059,765, Cl. 219-125.110.

Laing, David H., to Laing, David H. Portable infusion device. 5,059,182, Cl. 604-142.000.

L'Air Liquide: *See—*
Mellul, Sylvie; Rotman, Frederic; and Navarro, Dominique, 5,059,450, Cl. 427-96.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploration des Procedes Georges Claude: *See—*
Dupont, Rene ; and Gauthier, Pierre, 5,059,411, Cl. 423-658.300.

Laitram Corporation, The: *See—*
Lapeyre, James M., 5,058,732, Cl. 198-852.000.

Lam, Lawrence K. C.: *See—*
Iranmanesh, Ali A.; and Lam, Lawrence K. C., 5,059,555, Cl. 437-192.000.

Lamb, George K. Device for operating an animal squeeze chute. 5,058,532, Cl. 119-98.000.

Lamb-Weston, Inc.: *See—*
Sloan, Jerry L.; Middaugh, Karen F.; and Jacobsen, Gerald B., 5,059,435, Cl. 426-102.000.

Lambesis, Gary J.: *See—*
Wallace, David E.; Merritello, Ronald J.; Zyzda, Leonard E.; Eisenwasser, Jacob D.; and Lambesis, Gary J., 5,059,407, Cl. 423-421.000.

Lamborot, Pierre: *See—*
Hamel, Jean-Pierre; and Lamborot, Pierre, 5,059,031, Cl 356-428.000.

Lamm, Gunther; Etzbach, Karl H.; Wiesenfeldt, Matthias; Hansen, Guenter; and Reichelt, Helmut, to BASF Aktiengesellschaft. Azo dyes whose diazo and coupling components stem from the thiazole series. 5,059,684, Cl. 534-765.000.

Lamnabhi, Moustanir; and Lhuillier, Jean-Jacques, to U.S. Philips Corporation. Arrangement for inter_olation images by motion estimation and compensation and a television standard converter system comprising such an arrangement. 5,060,064, Cl. 358-105.000.

Landau, Michael B.: *See—*
Vartanian, George; and Landau, Michael B., 5,059,494, Cl. 429-17.000.

Lane, James L., Jr.: *See—*
Dill, Walter R.; and Lane, James L., Jr., 5,058,678, Cl. 166-279.000.

Langdon, Roger M., to GEC-Marconi Limited. Orientation monitoring apparatus. 5,059,781, Cl. 250-206.100.

Lange, Howard G.: *See—*
Adler, Robert; Fendley, James R.; Lange, Howard G.; Prazak, Charles J.; Steiner, Johann; and Strauss, Paul, 5,059,147, Cl. 445-4.000.

Lange, Peter M.: *See—*
Kramer, Hans-Joachim; Schulwitz, Bruno; Horlitz, Werner; Lange, Peter M.; and Mitschker, Alfred, 5,059,306, Cl. 208-313.000.

Langer, Roger L., to Minnesota Mining and Manufacturing Company. Endothermic fire protective material. 5,059,637, Cl. 523-179.000.

Lapeyre, James M., to Laitram Corporation, The. Apparatus to allow non-destructive removal of pivot rods in modular plastic conveyor belts. 5,058,732, Cl. 198-852.000.

Lardellier, Alain M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. High by-pass ratio turbojet engine with counterrotating upstream and downstream fans. 5,058,379, Cl. 60-226.100.

La Riviere, Alexander; and Sousa, Jorge. Self-locking bicycle wheel safety retainer mount. 5,058,913, Cl. 280-281.100.

Larsen, Marvin L.: *See—*
Miehe, Donald R.; and Larsen, Marvin L., 5,058,937, Cl. 292-34.000.

Larson, Gary R.; Papsin, George A., Jr.; and Winey, Donald A., to Rohm and Haas Company. Latex barrier tiecoat for use with mastic coatings. 5,059,456, Cl. 427-407.100.

Laser Magnetic Storage International Company: *See—*
Davis, Marvin B.; Peeters, Hendrikus W. C. M.; and Taylor, Wilhelm, 5,060,106, Cl. 360-133.000.

LaSota, Laurence. Conformable seat with pivotal belt support. 5,058,952, Cl. 297-284.00A.

Lassig, Harald: *See—*
Kabelitz, Hans-Peter; Lassig, Harald; and Schneider, Helmut, 5,059,092, Cl. 415-90.000.

Laub, Helmut A.: *See—*
Wiemer, Klaus C.; Buhler, James E.; Simon, Rudolf O.; and Laub, Helmut A., 5,058,491, Cl. 98-115.300.

Laub, James S.: *See—*
Quesada, John F.; Schrank, Douglas A.; Haller, David K.; Su, Lin; Spagnoli, Charles R.; and Laub, James S., 5,059,100, Cl. 417-312.000.

Lauffer, Donald K.; and Sanwo, Ikuo J., to NCR Corporation. CMOS circuit with programmable input threshold. 5,059,835, Cl. 307-576.000.

Laurel Bank Machines Co., Ltd.: *See—*
Goi, Kouichi, 5,059,153, Cl. 453-11.000.

Lautenschlager, Reinhard, to Karl Lautenschlager GmbH & Co. KG. Crosslink hinge with closing mechanism. 5,058,238, Cl. 16-278.000.

LaVelle, Thomas P. Seat-mounted clothing valet. 5,058,790, Cl. 224-275.000.

Lavigne, Andre P.: *See—*
Jaume, Denis; Lavigne, Andre P.; and Charitat, Georges, 5,060,047, Cl. 357-53.000.

Law, Trevor J.; Andrews, Richard E.; and Gall, Christopher A., to Abar Ipsen Industries, Inc. Gas shrouded electrode for a plasma carburizing furnace. 5,059,757, Cl. 219-121.520.

Lawarre, Robert W., Jr.: *See—*
Lawarre, Robert W., Sr.; and Lawarre, Robert W., Jr., 5,058,632, Cl. 141-39.000.

Lawarre, Robert W., Sr.; and Lawarre, Robert W., Jr., to Precision Metalcraft Corporation. Filling valve apparatus. 5,058,632, Cl. 141-39.000.

Lawassani, Abdi; and Feliks, Robert C., to United Technologies Automotive. Vanity mirror assembly. 5,059,016, Cl. 359-871.000.

Lawlor, Patrick J.; McCormack, John J.; and Desmond, John P., to Donnelly Mirrors Limited. Mounting assembly for rearview mirror. 5,058,851, Cl. 248-549.000.

Lawrence Paper Company, The: *See—*
Creaden, David E., 5,058,744, Cl. 206-419.000.

Lawrence, Thomas G., to Chrysler Corporation. Engine air pump with speed drum drive. 5,058,546, Cl. 123-198.00C.

Lawson, William C.; Paganelli, Jude V.; and Sepielli, Perry, to Site Microsurgical Systems, Inc. Ocular cutter with enhanced cutting action. 5,059,204, Cl. 606-171.000.

Lawter, James R.: *See—*
Haeger, Bruce E.; Lawter, James R.; Naringrekar, Vijay H.; and Cucolo, Michael C., 5,059,619, Cl. 514-410.000.

Lax, Hermann: *See—*
Hoffken, Erich; Lax, Hermann; and Pietzko, Gunter, 5,058,656, Cl 164-416.000.

Lay, Dieter F.: *See—*
Gross, Richard A.; and Lay, Dieter F., 5,058,775, Cl. 222-153.000.

Lazenby, John C., to Quantum Medical Systems, Incorporated. Direct velocity estimator for ultrasound blood flow imaging. 5,058,594, Cl. 128-661.080.

Lazzaro, John: *See—*
Mead, Carver A.; Lazzaro, John; Mahowald, M. A.; and Ryckebusch, Sylvie, 5,059,814, Cl. 307-201.000.

Le Textile Delcer: *See—*
Watisse, Luc; Plaskowski, Christian; and Forest, Jean-Francois, 5,058,399, Cl. 66-203.000.

Lear Siegler Truck Products Corp.: *See—*
Hicks, William J., 5,058,916, Cl. 280-704.000.

Le Bell, Jean; Valjakka, imo; Pirhonen, Jussi; Sunden, Fred; Hautaniemi, Erkki; Jarvela, Pentti; Sandelin, Bjorn; and Algars, Rainer, to Oy Partek AB. Multi-ply wood product. 5,059,472, Cl. 428-161.000

le Conte de Poly, Christian, to Cattin 'Air Corporation. Method for controlling emission, and recovery, of solvents. 5,059,457, Cl. 427-424.000.

Lee, Dickey, to Alfa Metal Corp. Fixing knuckles in foldable aluminum ladder. 5,058,239, Cl. 16-324.000.

Lee, Francis C.: *See—*
Eldridge, Jerome M.; Keller, Gary S.; Lee, Francis C.; and Olive, Graham, 5,059,989, Cl. 346-140.00R.

Lee, Gary C. M., to Allergan, Inc. Anti-inflammatory 5-hydroxy-2-furanones. 5,059,611, Cl. 514-336.000.

Lee, Kuo-Chu, to Bell Communications Research, Inc. System for string searching including parallel comparison of candidate data block-by-block. 5,060,143, Cl. 364-200.000.

Lee, Rae Hwan, to SamSung Electronics Co., Ltd. Protection circuit for optical disc players. 5,060,220, Cl. 369-58.000.

Lee, Robert D.; and Mounger, Robert W., to Dallas Semiconductor Corporation. Differential-time-constant bandpass filter using the analog properties of digital circuits. 5,059,836, Cl. 307-520.000.

Lee, Robert L. Dental impression pads and method of manufacture. 5,059,120, Cl. 433-37.000.

Lee, Ronald B.; and Nielsen, Larry E., to Zenith Electronics Corporation. System for negating the effects of DC offsets in an adaptive equalizer. 5,060,067, Cl. 358-167.000.

Lee, Yanien; Hoyda, Catherine E.; and Merritt, Carleton G., to Borden, Inc. Method of preparing shelf stable, filled dough food products. 5,059,433, Cl. 426-94.000.

Leffingwell, Burton C.: *See—*
Velke, David C., Sr.; Marsden, George P.; and Leffingwell, Burton C., 5,058,838, Cl. 248-50.000.

Leftault, Charles J., Jr.; Gunkel, Ronald W.; Cargnel, Robert A.; and Douds, E. Scott, to Aluminum Company of America. Method for partially annealing the sidewall of a container. 5,058,408, Cl 72-56.000.

Leger, Gerard: *See—*
Chauvin, Yves; Commereuc, Dominique; Forestiere, Alain; and Leger, Gerard, 5,059,571, Cl. 502-117.000.

Legler, John G.; Bartlett, Robert L.; and Flora, David D., to Shopsmith, Inc. Scroll saw. 5,058,476, Cl. 83-782.000.

Le Grazie, Cristina, to Bioresearch, S.p.A. Pharmaceutical compositions containing 5-methyltetrahydrofolic acid, 5-formyltetrahydrofolic acid and their pharmaceutically acceptable salts in controlled-release form active in the therapy of organic mental disturbances. 5,059,595, Cl. 424-468.000.

Lehman, Albert L.: *See—*
Finkl, Charles W.; and Lehman, Albert L., 5,059,389, Cl. 420-67.000.

Lehmann, Helmut: *See—*
Hoessel, Peter; Schupp, Hans; Lienert, Klaus; and Lehmann, Helmut, 5,059,660, Cl. 525-419.000.

Leigh-Mardon Pty. Limited: *See—*
Clark, John F., 5,059,436, Cl. 426-107.000.

Leiweke, Michael E.; and Holler, Jon H., to Continental Baking Company. Cleaning apparatus for wrapping machine conveyor. 5,058,728, Cl. 198-495.000.

Lelental, Mark; Agostinelli, John A.; and Romanofsky, Henry J., to Eastman Kodak Company. High TC superconducting Y-BA-CU-O thin films. 5,059,583, Cl. 505-1.000.

Lemaire, Marc: *See—*
Delabouglise, Didier; Lemaire, Marc; Roncali, Jean; and Garnier, Francis, 5,059,694, Cl. 548-518.000.

Lemons, William T.: *See—*
Bridge, Burton E.; Lemons, William T.; and Thompson, John S., 5,059,171, Cl. 604-67.000.

Lenk, Robert P.: *See—*
Janoff, Andrew S.; Popescu, Mircea C.; Alving, Carl R.; Fountain, Michael W.; Lenk, Robert P.; Ostro, Marc J.; Tremblay, Paul A.; and Weiner, Alan L., 5,059,591, Cl. 514-31.000.

Lenkeit, Uwe; and Weeger, Hans-Peter, to Zinser Textilmaschinen GmbH. Apparatus for controlling the lateral disposition of a traveling service unit of a textile machine. 5,058,504, Cl. 104-243.000.

L'Enrouleur Electrique Moderne: *See—*
Lacour, Gilles, 5,058,819, Cl. 242-54.00R.

Lenth, Wilfried: *See—*
Harder, Christoph S.; Lenth, Wilfried; Meier, Heinz P.; and Risk, William P., 5,060,233, Cl. 372-22.000.

Lentz, Carl A.: *See—*
Hibner, John A.; and Lentz, Carl A., 5,058,460, Cl. 74-867.000.

Leo, John C.: *See—*
Cataldi, Richard T.; Hein, Patrick D.; Heirigs, Henry J.; and Leo, John C., 5,059,895, Cl. 324-104.000.

Leonard, Thomas E.: *See—*
Steere, Robert E., III; and Leonard, Thomas E., 5,058,328, Cl. 51-215.00E.

Lepage, Francis; and Hublot, Bernard, to Novapharme. Novel isoxazole and isoxazoline compounds with anticonvulsant activity process for their preparation and therapeutic composition containing them. 5,059,614, Cl. 514-378.000.

Leppanen, Jorma T.: *See—*
Miihkinen, Veijo T. T.; and Leppanen, Jorma T., 5,059,233, Cl. 65-104.000.

Leppard, David G., to Ciba-Geigy AG. Stabilizers for color photographic recording materials. 5,059,515, Cl. 430-551.000.

Leppkes, Reinhard: *See—*
Lutter, Heinz-Dieter; Hinz, Werner; Decker, Walter; Leppkes, Reinhard; Reich, Erhard; Peters, Reinhard; Haase, Volker; and Lugmayr, Michael, 5,059,633, Cl. 521-160.000

Lesslie, David J., to General Electric Company. Molded case circuit breaker cover insert. 5,059,931, Cl. 335-132.000.

Lessway, Richard J., to Arobotech Systems, Inc. Remote gage steady rest head. 5,058,468, Cl. 82-157.000.

Lester Audio Laboratories, Inc.: *See—*
Olah, Laszlo; and Nagy, Frank, 5,060,273, Cl. 381-119.000.

LETD, Inc.: *See—*
Arnold, Charles S., 5,060,123, Cl. 362-102.000.

Leuchtenmuller, Rudolf, to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft. Apparatus for needling a nonwoven web. 5,058,249, Cl. 28-109.000.

Level One Communications, Inc.: *See—*
JenningsCheck, William S., 5,059,924, Cl. 331-1.00A.

Lever Brothers Company, Division of Conopco Inc.: *See—*
Giblin, Edward J.; and Griffiths, Jeannme D., 5,058,748, Cl. 206-624.000.

Levine, Stephen R.; Harui, Alex J.; Schirpke, Michael W.; Donoghue, Karen; and Ajgaonkar, Donna, to Wang Laboratories, Inc. Apparatus for manipulating documents in a data processing system utilizing reduced images of sheets of information which are movable. 5,060,135, Cl. 364-200.000.

Levinn, Mitchell D.; Faatz, Donald B.; and Krishnamoorthy, Mukkai S. Musical puzzle toy. 5,058,894, Cl. 273-153.00R.

Leviton, Douglas B., to United States of America, National Aeronautics & Space Administration. Control system for ruling blazed, aberration corrected diffraction gratings. 5,058,281, Cl. 33-19.200.

Lewis, Charles; Sheehan, Kathleen M.; DeVore, Richard N.; and Swanson, Leonard C., to Educational Testing Service. Computerized mastery testing system, a computer administered variable length sequential testing system for making pass/fail decisions. 5,059,127, Cl. 434-353.000.

Lewis, Charles W.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Steinbaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,059,359, Cl. 264-22.000.

Lexmark International, Inc.: *See—*
Eldridge, Jerome M.; Keller, Gary S.; Lee, Francis C.; and Olive, Graham, 5,059,989, Cl. 346-140.00R.
Mrvos, James M.; Paterra, Jeffrey H.; and Zimmer, Agnes K., 5,059,045, Cl. 400-197.000.

Leybold Aktiengesellschaft: *See—*
Kabelitz, Hans-Peter; Lassig, Harald; and Schneider, Helmut, 5,059,092, Cl. 415-90.000.

LGZ Landis & Gyr Zug AG: *See—*
Antes, Gregor, 5,059,776, Cl. 235-457.000.

Lhuillier, Jean-Jacques: *See—*
Lamnabhi, Moustanir; and Lhuillier, Jean-Jacques, 5,060,064, Cl. 358-105.000.

Li, Chien C.; and Sukornick, Bernard, to Allied-Signal Inc. Partially fluorinated alkanes having a tertiary structure. 5,059,728, Cl 570-134.000.

Liang, Marc D.; Narayanan, Krishna; and Ross, Eugene D., to Montefiore Hospital Association of Western Pennsylvania, The. Tendon approximator. 5,059,202, Cl. 606-150.000.

Liao, Tung-Ping D.: *See—*
Hou, Kenneth C.; Liao, Tung-Ping D.; and Rohan, Robert, 5,059,654, Cl. 525-54.100.

Liao, Wan M. Flowerpot having a water reservoir. 5,058,319, Cl. 47-81.000.

Libbey-Owens-Ford Co.: *See—*
Teder, Rein S., 5,059,877, Cl. 318-444.000.

Liboff, Abraham R., to Life Resonances, Inc. Method and apparatus for regulating transmembrane ion movement. 5,059,298, Cl. 204-299.00R.

Lichfield, William H., to Fountain Technologies, Inc. Methods and apparatus for dispensing plural fluids in a precise proportion 5,058,768, Cl. 222-1.000.

Liechty, Kim B.: *See—*
Dalebout, William T.; Liechty, Kim B.; and Watterson, Scott R., 5,058,882, Cl. 272-70.000.

Lienert, Klaus: *See—*
Hoessel, Peter; Schupp, Hans; Lienert, Klaus; and Lehmann, Helmut, 5,059,660, Cl. 525-419.000.

Liers, Arthur H.; Principe, Louis J.; Zekulin, Nikita; and Hosein, Asgarali, to Sonicor Instrument Corporation. Process and apparatus for the ultrasonic cleaning of a printing cylinder. 5,058,611, Cl 134-105.000.

Life Resonances, Inc.: *See—*
Liboff, Abraham R., 5,059,298, Cl. 204-299.00R.

Lifescan, Inc.: *See—*
Phillips, Roger; McGarraugh, Geoffery; Jurik, Frank; and Underwood, Ray, 5,059,394, Cl. 422-68.100.

Lifshitz, Ilan: *See—*
Corl, Paul D.; Lifshitz, Ilan; Christian, Jeffrey J.; and Nassi, Menahem F., 5,059,851, Cl. 310-334.000.

Lightolier Incorporated: *See—*
Pearlman, Gordon W.; and Carlson, Steven B., 5,059,871, Cl. 315-316.000.

Lill, Helmut: *See—*
Bartl, Knut; Becker, Udo; Lill, Helmut; and Wielinger, Hans, 5,059,525, Cl. 435-13.000.

Lim, Byung C.: *See—*
Chung, Seok P.; Lim, Byung C.; and Yoo, Seung H., 5,060,094, Cl. 360-96.500.

Lim, Hock S.: *See—*
Kok, Gee S.; Chan, Sek L.; Tay, Wan F.; Teo, Pek B.; Prakash, Chacko; and Lim, Hock S., 5,060,293, Cl. 455-78.000.

Lin, Henry C.: *See—*
Fertel, Lawrence B.; O'Reilly, Neil J.; and Lin, Henry C., 5,059,697, Cl. 549-246.000.

Lin, Sheng T.: *See—*
Forestieri, Steven F.; Lin, Sheng T.; Lum, John J.; Rains, William A.; and McNerney, Steven A., 5,058,593, Cl. 128-661.070.

Lin, Sung-Wei: *See—*
Gill, Manzur; and Lin, Sung-Wei, 5,060,195, Cl. 365-185.000.

Lin, Wen C.: *See—*
Chen, Po Y.; Chu, Shiao J.; Chen, Cha C.; Chang, Nan S.; Lin, Wen C.; and Chuang, T. K., 5,059,724, Cl. 568-396.000.

Lindblom, Curtis H., to Skyline Displays, Inc. Lightweight overhead beam for portable display structure. 5,058,359, Cl. 52-731.000.

Linder, David M.: *See—*
Goodzeit, Neil E.; and Linder, David M., 5,058,835, Cl. 244-165.000.

Linder, Sten. Electromagnetic method and system using voltage induced by a decaying magnetic field to determine characteristics, including distance, dimensions, conductivity and temperature, of an electrically conductive material. 5,059,902, Cl. 324-207.170.

Lindley, Andrew: *See—*
Firmstone, Michael G.; and Lindley, Andrew, 5,059,242, Cl. 106-1.230.

Lindquist, Arwin B.: *See—*
Bourgeois, Nancy E.; Hause, Sandra L.; and Lindquist, Arwin B., 5,060,170, Cl. 364-521.000.

Lindsay, Erin J., to Minnesota Mining & Manufacturing Company. Apparatus and method for producing kink resistant tubing. 5,059,375, Cl. 264-167.000.

Lindsey, Charles E., to Caterpillar Inc. Tip-relieved spiral bevel gear. 5,058,449, Cl. 74-459.500.

Lindsey Completion Systems, Inc.: *See—*
Cochran, Chudleigh B., 5,058,671, Cl. 166-124.000.
Cochran, Chudleigh B., 5,058,672, Cl. 166-124.000.

Lindstrom, James E., to Lindstrom, James E. Audio/video distribution system. 5,060,068, Cl. 358-185.000.

Link Research & Development, Inc.: *See—*
Simmel, Thomas L.; and Baker, Craig A., 5,058,636, Cl. 141-346.000.

Linsten, Olof M.; and Frestad, Arne O., to PQ Zeolite B. V. Process for the preparation of a modified zeolite. 5,059,567, Cl. 502-64.000.

Linville, Andrew F., Jr.: *See—*
Meek, Robert A.; and Linville, Andrew F., Jr., 5,060,202, Cl. 367-45.000.

Liou, Fu-Tai: *See—*
Spinner, Charles R.; Chen, Fusen F.; and Liou, Fu-Tai, 5,059,554, Cl. 437-193.000.

Liposome Company, Inc., The: *See—*
Janoff, Andrew S.; Popescu, Mircea C.; Alving, Carl R.; Fountain, Michael W.; Lenk, Robert P.; Ostro, Marc J.; Tremblay, Paul A.; and Weiner, Alan L., 5,059,591, Cl. 514-31.000.
Loughrey, Helen C.; Cullis, Pieter R.; Bally, Marcel B.; Choi, Lewis S. L.; and Wong, Kim F., 5,059,421, Cl. 424-417.000.

Lippe, Wolfgang V. D.; Biederman, Sieghart; Schulz, Winfried; Wirtz, Hans-Peter; and Kirchhoffer, Johann, to Ford Motor Company. Control system for a hydrokinetic torque converter lock-up clutch. 5,058,716, Cl. 192-3.330.

Liquid Carbonic Corporation: *See—*
Wallace, David E.; Merritello, Ronald J.; Zyzda, Leonard E.; Eisenwasser, Jacob D.; and Lambesis, Gary J., 5,059,407, Cl. 423-421.000

Liquid Control Corporation: *See—*
Kurtz, Robert H., 5,058,769, Cl. 222-47.000.

Lishness, Bryant L.; and Scirica, Paul A., to Colt's Manufacturing Company Inc. Reversible magazine catch assembly and method of making the same. 5,058,301, Cl. 42-7.000.

Lisimaque, Gilles: *See—*
Avenier, Jean-Pierre; Lisimaque, Gilles; Maes, Philippe; and Kowalski, Jacek, 5,060,261, Cl. 380-3.000.

Littlefield, Thomas C.: *See—*
Rosenberg, Daniel J.; and Littlefield, Thomas C., 5,059,960, Cl. 340-111.000.

Littman, Jon E.; and Scozzafava, Michael, to Eastman Kodak Company. Organic electroluminescent device with stabilizing cathode capping layer. 5,059,861, Cl. 313-503.000.

Litton Industrial Automation Systems, Inc.: *See—*
Faitel, William M., 5,058,487, Cl. 92-167.000.

Liu, David; and Keo, Jane. Pen holder for a clip-board. 5,058,242, Cl 24-67.700.

Lizardi, Paul M., to University of Puerto Rico, The. Method for separating nucleic acids and nucleic acid probes. 5,059,294, Cl. 204-182.800.

Lloyd Kenneth O.: *See—*
Furukawa, Koichi; Clausen, Hanrik; Hakomori, Sen-itiroh; Sakamoto, Junichi; Look, Katherine; Mattes, M. Jules; and Lloyd Kenneth O., 5,059,520, Cl. 435-7.210.

Lloyd, Peter G.: *See—*
Wilson, David; and Lloyd, Peter G., 5,058,433, Cl. 73-651.000.

Lo, Shui-Yin, to Apricot S.A. Method and apparatus for cooling electrons, ions or plasma. 5,059,866, Cl. 315-111.210.

Lobbert, Johannes. Waterless toilet. 5,058,218, Cl. 4-479.000.

LoBello, Peter J. Control unit for indicating the status of a procedure. 5,059,943, Cl. 340-309.400.

Locker, Giladi; Hilla: *See—*
Oppenheim, Amos B.; and Locker, Giladi; Hilla, 5,059,529, Cl. 435-69.400.

Lockheed Sanders, Inc.: *See—*
Burrows, James L., 5,059,942, Cl. 340-146.200.

Loevinger, Richard P. Heated tank car with discharge valve and pressure equalizer. 5,058,511, Cl. 105-451.000.

Loiselle, Scot D.; Riffle, Michael W.; and Burke, Patrick K. Barrier system. 5,058,352, Cl. 52-406.000.

Lokaj, Jan: *See—*
Bleha, Miroslav; Schauer, Jan; Lokaj, Jan; Polockaja, Galina A.; Kuznecov, Jurij P.; and Romaskova, Kira A., 5,059,220, Cl. 55-158.000.

Lokhoff, Gerardus C. P.; Roth, Rudolf; and Raaymakers, Wilhelmus P. M., to U.S. Philips Corporation. Recording system for recording only those types of information which are specified by the record carrier. 5,060,219, Cl. 369-48.000.

Lombard, Etienne: *See—*
Kersten, Jean; Lombard, Etienne; and Carlier, Christian, 5,059,807, Cl. 250-519.100.

Long, James A.: *See—*
Abreu, Christian O.; Beresniewicz, Jon M.; Long, James A.; and Pike, Thomas W., 5,059,990, Cl. 346-153.000.

Long, Russell S.: *See—*
Banthia, Vinod K.; Long, Russell S.; and Klingensmith, James D., 5,059,056, Cl. 403-170.000.

Long, S. Craig. Motor vehicle safety belt comfort device. 5,058,922, Cl. 280-808.000

Look, Katherine: *See—*
Furukawa, Koichi; Clausen, Hanrik; Hakomori, Sen-itiroh; Sakamoto, Junichi; Look, Katherine; Mattes, M. Jules; and Lloyd Kenneth O., 5,059,520, Cl. 435-7.210.

Looman, James A.: *See—*
Schuelke, David J.; and Looman, James A., 5,058,347, Cl. 52-339.000.

Loomba, Indra J.: *See—*
Marks, Gay L.; Loomba, Indra J.; and Saling, John, II, 5,059,767, Cl. 219-209.000.

L'Oreal: *See—*
Grollier, Jean F.; and Rosenbaum, Georges, 5,059,606, Cl. 514-231.500.

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Lustig, Stanley; Mack, Nancy M.; Schuetz, Jeffrey M.; and Vicik, Stephen J., to Viskase Corporation. Biaxially stretched, heat shrinkable VLDPE film. 5,059,481, Cl. 428-39.900

Lutter, Heinz-Dieter; Hinz, Werner; Decker, Walter; Leppkes, Reinhard; Reich, Erhard; Peters, Reinhard; Haase, Volker; and Lugmayr, Michael, to BASF Aktiengesellschaft. Preparation of flexible polyurethane foams having low compressive strength and block polyoxypropylenepolyoxyethylenepolyol mixtures which can be used for this purpose. 5,059,633, Cl. 521-160.000.

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Mack, Russel T.; and Rieger, Ronald W., to Dow Chemical Company, The. Free standing fluxmeter fixture with dual infrared pyrometers. 5,059,032, Cl. 374-29.000.

Mackal, Glenn H. Gas cartridge inflator having hollow pin of truncate extent. 5,058,635, Cl. 141-329.000.

Mackal, Glenn H. Annular clip for inflation manifold. 5,058,932, Cl. 285-200.000.

Mackal, Glenn H. Rotation and retraction-resistant manifold having integral flange. 5,058,933, Cl. 285-200.000.

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King, Clifford R.; and Hines, John B., 5,059,244, Cl. 106-21.000.
Love, Franklin S.; and Rumler, Joseph E., 5,058,329, Cl. 51-323.000.

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Anderson, Robert K.; DeCamp, Ann E.; Kawaguchi, Alan T.; King, Anthony O.; Mills, Sander G.; and Volante, Ralph P., 5,059,696, Cl. 549-214.000.

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Takahashi, Michio; Mita, Tooru; Nakagawa, Yasuo; Hamada, Toshimitsu; Iwata, Hisafumi; Kaneda, Aizo; Serizawa, Kouji; Tanaka, Hiroyuki; Sugimoto, Koichi; Sakai, Toshihiko; Matsukawa, Keizo; and Mimata, Tsutomu, 5,059,559, Cl. 437-220.000.

Mimura, Kazuhiro: *See—*
Okubo, Hideaki; Sato, Kan-ichi; Mimura, Kazuhiro; Fujimoto, Satoshi; and Higuchi, Makoto, 5,059,364, Cl. 264-40.100.

Mina, Charles J., to Capital Controls Company, Inc. Amperimetric measurement with cell electrode deplating. 5,059,908, Cl. 324-444.000.

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Ueda, Tohru; Matsuda, Akira; Minakawa, Noriaki; Sasaki, Takuma; and Yanagi, Yoshikazu, 5,059,590, Cl. 514-23.000.

Minarczyk, Michael M.: *See—*
Nerone, Louis R.; Secen, Michael M.; and Minarczyk, Michael M., 5,059,867, Cl. 315-247.000.

Mine, Yasuhiro: *See—*
Yokota, Yoshiko; Mine, Yasuhiro; and Wakai, Yoshimi, 5,059,592, Cl. 514-50.000.

Mineo, Beth A.: *See—*
Companion, John A.; Heyman, Joseph S.; Mineo, Beth A.; Cavalier, Albert R.; and Blalock, Travis N., 5,058,591, Cl. 128-661.030.

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Minneman, William J., to Minneman, William J. Shooter's portable maintenance center. 5,058,302, Cl. 42-94.000.

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Calhoun, Clyde D.; and Koskenmaki, David C., 5,059,262, Cl 156-47.000.
Francis, Cecil V.; and Tiers, George V. D., 5,059,002, Cl. 359-328.000
Keipert, Steven J., 5,059,701, Cl. 556-13.000.
Koster, Brian L., 5,058,843, Cl. 248-221.400
Langer, Roger L., 5,059,637, Cl. 523-179.000.
Lindsay, Erin J., 5,059,375, Cl. 264-167.000
Snead, Wilford A., 5,059,119, Cl. 433-17.000.
Stenemann, Heinrich F.; and Keller, Louis F., 5,059,061, Cl 404-72.000
Mino, Hisashi; Iijima, Takeshi; and Monden, Kuniaki, to Sanyo-Kokusaku Pulp Co., Ltd. Multicolor image-forming method. 5,059,509, Cl. 430-257.000
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Taniguchi, Nobuyuki; Hata, Yoshiaki; Kudo, Yoshinobu; Inoue, Manabu; Hoda, Takeo; and Ueda, Hiroshi, 5,060,006, Cl. 354-419.000
Ueda, Masahide, 5,060,017, Cl. 355-221.000.
Yamamoto, Masashi; and Fujiwara, Toshimitsu, 5,060,021, Cl 355-245.000
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Vajgart, Jeffery L.; Misangyi, Peter W.; Date, Parshuram G.; Heitzeg, Roger S.; Walker, Noel A.; McNamara, David A.; and Attard, Joe C., 5,060,156, Cl. 364-424.030.
Mischer, Hans-Peter: *See*—
Granzow, Manfred; Mischer, Hans-Peter; and Suss, Christian, 5,059,750, Cl. 200-5.00R.
Mishima, Masaru: *See*—
Naka, Michiharu; Koizumi, Hideki; Kondoh, Yukari; Kinoshita, Hirotugu; Seikiya, Mokoto; and Mishima, Masaru, 5,059,336, Cl. 252-33.300.
Mishima, Shuzo: *See*—
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Miszewski, Antoni: *See*—
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Mita Industrial Co., Ltd.: *See*—
Higashiguchi, Teruaki; and Hori, Takeshi, 5,060,023, Cl 355-251.000.
Miyoshi, Jun; Nagai, Hiroyuki; Shibanaka, Mitsugu; Otsuka, Nobukazu; Kida, Yasuhiko; Yamamoto, Haruo; and Matsui, Toshikazu, 5,058,874, Cl. 271-4.000.
Muto, Nariaki; Maeda, Tatsuo; Nishiguchi, Toshihiko; Kakui, Mikio; Sumida, Keisuke; and Nakazawa, Toru, 5,059,503, Cl 430-83.000.
Yoshida, Takeshi; and Tanaka, Nariaki, 5,060,022, Cl. 355-246.000.
Mita, Tooru: *See*—
Takahashi, Michio; Mita, Tooru; Nakagawa, Yasuo; Hamada, Toshimitsu; Iwata, Hisafumi; Kaneda, Aizo; Serizawa, Kouji; Tanaka, Hiroyuki; Sugimoto, Koichi; Sakai, Toshihiko; Matsukawa, Keizo; and Mimata, Tsutomu, 5,059,559, Cl. 437-220.000
Mita, Yoshinobu; Kawamura, Naoto; Enokida, Miyuki; and Ishida, Yoshihiro, to Canon Kabushiki Kaisha. Masking control for image processing systems. 5,060,280, Cl. 382-33.000.
Mitani, Takahiko: *See*—
Sawai, Kiichi; Kurono, Masayasu; Asai, Hiromoto; Mitani, Takahiko; Ninomiya, Naohisa; and Suzuki, Tomoo, 5,059,594, Cl. 514-103.000.
Mitani, Yoshio; and Yanai, Takenori, to Murata Kikai Kabushiki Kaisha. Bobbin conveying system. 5,059,087, Cl. 414-626.000
Mitchell, Eugene C.: *See*—
Simmons, Wyman D.; and Mitchell, Eugene C., 5,058,654, Cl. 164-47.000
Mitchell, Olan W.; and McKinnie, Bonnie G., to Ethyl Corporation. Tetrabromobisphenol-A process. 5,059,722, Cl. 568-226.000.
Mito, Masahiko, to Tokai Carbon Co., Ltd. Carbon black for tire tread. 5,059,408, Cl. 423-445.000.
Mitschker, Alfred: *See*—
Kramer, Hans-Joachim; Schulwitz, Bruno; Horlitz, Werner; Lange, Peter M.; and Mitschker, Alfred, 5,059,306, Cl. 208-313.000.
Mitsubishi Denki K.K.: *See*—
Kudo, Takayuki; Sato, Kunihiko; Yoshiyasu, Shigehiro; Hirosaki, Tatsuya; Kubo, Manabu; and Imaizumi, Hajime, 5,059,759, Cl 219-121.780.
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Tado, Masahiro; Satoh, Hiroshi; Inoue, Noriyuki; Utsui, Yoshihiko; and Wada, Shunichi, 5,060,157, Cl. 364-424.050
Tokumitsu, Kiyonori; Nishida, Mitsuhiro; and Ozaki, Yasunobu, 5,059,102, Cl. 418-55.200.
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Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,060,230, Cl. 371-21.200.
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Inagaki, Koichi, 5,059,752, Cl. 200-144.00B.
Kato, Hisao; and Adachi, Yasushi, 5,060,178, Cl. 364-600.000.
Kimata, Masafumi; Yutani, Naoki; and Denda, Masahiko, 5,060,038, Cl. 357-24.000.
Koiwa, Mitsuru, 5,058,559, Cl. 123-612.000.
Maruyama, Takafumi, 5,060,129, Cl. 363-41.000.
Mitsuhashi, Yasuo, 5,060,078, Cl. 358-340.000.
Nishimura, Shinji; and Kaneyuki, Kazutoshi, 5,059,886, Cl. 322-28.000
Nishimura, Tadashi; and Yamano, Tsuyoshi, 5,060,035, Cl. 357-23.700
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Ono, Fumitaka; Kino, Shigenori; Yoshida, Masayuki; and Kimura, Tomohiro, 5,059,976, Cl. 341-51.000.
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Sakashita, Kazuhiro; and Tsujihashi, Yoshiki, 5,060,183, Cl. 364-757.000.
Shiroyama, Shigeru, 5,059,813, Cl. 290-48.000.
Tsuji, Shintaro, 5,058,711, Cl. 187-124.000.
Tsutsumi, Yasutsugu; Tanaka, Sueyoshi; Takahashi, Tatsuro; Morita, Yutaka; Seuzaki, Hideaki; and Yamada, Hiromichi, 5,059,379, Cl. 264-272.140
Yamauchi, Shiro; and Rito, Naotake, 5,059,291, Cl. 204-153.220.
Yasue, Takao, 5,060,043, Cl. 357-40.000.
Mitsubishi Gas Chemical Co., Inc.: *See*—
Ito, Muneo, 5,059,727, Cl. 568-804.000.
Kondoh, Osamu; Arii, Mitsuzo; Nakajima, Tohru; and Kawabata, Yasunari, 5,058,978, Cl. 385-43.000.
Mitsubishi Kasei Corporation: *See*—
Ono, Hitoshi; Kato, Yoshiaki; and Watabe, Sumiko, 5,059,355, Cl. 252-584.000.
Tashiro, Masashi; Mataga, Shuntaro; Takahashi, Kazufumi; Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; Sato, Yoshiharu; and Maeda, Shuichi, 5,059,863, Cl. 313-504.000.
Mitsubishi Metal Corporation: *See*—
Odani, Niro; Yoshioka, Kazuyoshi; and Sekiya, Sinichi, 5,059,491, Cl. 428-614.000.
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Mitsubishi Paper Mills Limited: *See*—
Kohmura, Isao; Senga, Takao; and Kuriu, Sadao, 5,060,024, Cl. 355-283.000.
Mitsubishi Petrochemical Company Limited: *See*—
Yada, Shuhei; Shibano, Takeshi; Itoh, Kiichi; and Yoshinaga, Kenji, 5,059,664, Cl. 526-240.000.
Mitsubishi Rayon Co., Ltd.: *See*—
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Mitsuhashi, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Video signal processing apparatus having a noise reduction circuit. 5,060,078, Cl. 358-340.000
Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
Uchiyama, Shunichi; and Suzuki, Shuichi, 5,059,290, Cl. 204-153.100.
Mitsui, Hiroyuki: *See*—
Morii, Satoshi; Murata, Kunihiko; Mitsui, Hiroyuki; and Iwasaki, Toshiaki, 5,058,517, Cl. 112-121.150.
Mitsui Petrochemical Industries, Ltd.: *See*—
Agou, Tokinori; Matsuzaki, Hitomi; and Kawasaki, Masaaki, 5,059,451, Cl. 427-164.000.
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Mitsui Toatsu Chemicals, Inc.: *See*—
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Nakamura, Katsuji; Fujio, Junichi; Hosonuma, Shin; Nakatsuka, Masakatsu; and Nishizawa, Tsutomu, 5,059,356, Cl. 252-585.000.
Taniguchi, Kazuo; Imaoka, Kazuhiro; Ogura, Tetsuyoshi; and Sakaguchi, Hiroaki, 5,059,671, Cl. 528-49.000.
Mitsuyasu, Masaki: *See*—
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Mittelman, Marc W.: *See*—
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Miura, Daisuke; and Shikatani, Junichi, to Fujitsu Limited. Partial random access memory. 5,060,200, Cl. 365-230.050.
Miura, Hiroshi: *See*—
Haga, Koichi; Murakami, Akishige; and Miura, Hiroshi, 5,060,041, Cl. 357-30.000
Miwa, Yuji, to Brother Kogyo Kabushiki Kaisha. Fluid coupling device. 5,058,927, Cl. 285-11.000.
Mixter, Steven G.: *See*—
Murdock, Thomas G.; and Mixter, Steven G., 5,058,693, Cl. 180-69.400.
Miyada, Toshimitu: *See*—
Endo, Junji; Kawasaki, Takeshi; Tomita, Masahiro; Isakozawa, Shigeto; Miyada, Toshimitu; and Kaneko, Yutaka, 5,059,859, Cl. 313-443.000

Miyake, Tomoyuki: *See*—
Takahashi, Akira; Mieda, Michinobu; Murakami, Yoshiteru; Nakayama, Junichiro; Miyake, Tomoyuki; and Ohta, Kenji, 5,059,473, Cl. 428-162.000.
Miyamoto, Hirofumi; Okada, Takao; Takase, Tsugiko; Mishima, Shuzo; and Ota, Hiroko, to Olympus Optical Co., Ltd. Scanning tunneling microscope having proper servo control function. 5,059,793, Cl. 250-306.000.
Miyamoto, Takanori: *See*—
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Miyasaka, Masao: *See*—
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Miyashi, Tsutomu; Yamashita, Yoshiro; Suzuki, Takanori; and Fujii, Hiroshi, to Mitsubishi Oil Co., Ltd. Process for separating 2,6-dimethylnaphthalene. 5,059,742, Cl. 585-860.000.
Miyashita, Tadashi: *See*—
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Miyawaki, Mamoru: *See*—
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Miyawaki, Takahiro: *See*—
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Miyazaki, Sachio: *See*—
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Miyazaki, Takeshi: *See*—
Gotoh, Akihiro; Higuchi, Shinsuke; Miyazaki, Takeshi; Maeda, Kunihiro; Saitoh, Yokuo; Okuwaki, Toyoji; Okamoto, Noriaki; and Wakatsuki, Kousaku, 5,060,098, Cl. 360-103.000
Higuchi, Shinsuke; Miyazaki, Takeshi; Gotoh, Akihiro; Maeda, Kunihiro; and Saitoh, Yokuo, 5,060,097, Cl. 360-103.000
Miyazawa, Kazutoshi; Ushioda, Makoto; Saito, Shinichi; Inoue, Hiromichi; and Ohno, Kouji, to Chisso Corporation. Optically active 2-biphenylpyrimidine derivative and liquid crystal compositions containing same. 5,059,340, Cl. 252-299.610.
Miyoshi, Jun; Nagai, Hiroyuki; Shibanaka, Mitsugu; Otsuka, Nobukazu; Kida, Yasuhiko; Yamamoto, Haruo; and Matsui, Toshikazu, to Mita Industrial Co. Ltd. Automatic document conveying device. 5,058,874, Cl. 271-4.000.
Miyoshi, Kenichi, to Nissan Motor Co., Ltd. Lamp mounting structure for bumper. 5,060,122, Cl. 362-82.000.
Miyoshi, Risho: *See*—
Yonekubo, Hiroaki; Miyoshi, Risho; Hirata, Katsumi; Tokumoto, Munehiko; and Iwasa, Takashi, 5,058,804, Cl. 236-12.120.
Miyoshi, Tadayoshi: *See*—
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Mizoguchi, Takatoshi: *See*—
Deguchi, Katsuyasu; Mizoguchi, Takatoshi; Taminaga, Takayuki; and Fujii, Akiyoshi, 5,059,986, Cl. 346-76.0PH.
Mizuno, Kenichi, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus and printing system for developing lithographic plate for printing and measuring its image area rates. 5,058,500, Cl. 101-142.000.
Mizuno, Kimio: *See*—
Yamamoto, Nakayuki; Sakakibara, Hideo; and Mizuno, Kimio, 5,059,587, Cl. 514-12.000.
Mizushina, Fumio: *See*—
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Mizuta, Tatsuji: *See*—
Kono, Masanao; Hasegawa, Yoshihiro; Nishi, Yasutaka; Sanada, Yasuyoshi; Mizuta, Tatsuji; Inoue, Ryo; and Ohara, Shinsuke, 5,059,272, Cl. 156-306.600.
Mizutome, Atsushi: *See*—
Mihara, Tadashi; Inoue, Hiroshi; Mizutome, Atsushi; Tsuboyama, Akira; Taniguchi, Osamu; and Onitsuka, Yoshihiro, 5,058,994, Cl. 359-56.000.
Mladejovsky, Michael G.: *See*—
Hanover, Barry K.; Jacobsen, Stephen C.; Simon, Eric M.; Petelenz, Tomasz; and Mladejovsky, Michael G., 5,059,175, Cl. 604-891.100.
Mlynek, Daniel: *See*—
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Mobil Oil Corporation: *See*—
Beech, James H., Jr.; and Ragonese, Francis P., 5,059,738, Cl. 585-469.000.
Harandi, Moshen N.; and Owen, Hartley, 5,059,744, Cl. 585-921.000.
Hen, John L., 5,059,333, Cl. 252-8.552.
Meek, Robert A.; and Linville, Andrew F., Jr., 5,060,202, Cl. 367-45.000.
Nemet-Mavrodin, Margaret, 5,059,735, Cl. 585-418.000.
Sapre, Ajit V., 5,059,305, Cl. 208-113.000.
Mochida, Tohru: *See*—
Terakado, Yoshimitsu; Mochida, Tohru; and Yamazaki, Nobuto, 5,058,797, Cl. 228-104.000.
Mochiki, Yuuichi; and Kamoto, Muneo, to Nippon Aluminium Mfg., Co., Ltd.; and Nippon Aluminium Kenzai Co., Ltd. Expansion joint apparatus. 5,058,350, Cl. 52-396.000.
Moda Solaris S.p.A.: *See*—
Bennato, Antonio, 5,059,017, Cl. 351-121.000.
Modarres, Dariush. Sodium leak detection system for liquid metal cooled nuclear reactors. 5,059,383, Cl. 376-250.000
Modern Process Equipment, Inc.: *See*—
Ephraim, Daniel R.; and Ephraim, Philip C., 5,058,814, Cl. 241-152.00A.
Moedersheim, Norbert: *See*—
Goettsch, Manfred; Kindler, Hubert; Moedersheim, Norbert; and Rudolph, Guenther, 5,059,650, Cl. 524-412.000.
Moffitt, John M., to J. I. Case Company. Dozer blade mounting apparatus. 5,058,685, Cl. 172-820.000.
Mohr, Gregory A.: *See*—
Cueman, Michael K.; Mohr, Gregory A.; and Brown, Dale M., 5,059,800, Cl. 250-367.000.
Moisson-Franckhauser, Francois, to Alsthom. Toroidal hybrid transformer. 5,059,936, Cl. 336-55.000.
Molenaar, Ronald N.; and Nijholt, Rienk M., to Hoogovens Groep BV. Method of manufacture of pig iron using hollow tube to reseal tap role. 5,058,864, Cl. 266-45.000.
Molex Incorporated: *See*—
Skowronski, David M.; DeRoss, Robert W.; Bogel, Steven; Gierut, Joseph; Data, Mark M.; Stanhibel, Dennis; and Dudek, Ronald, 5,059,132, Cl. 439-100.000
Mollenauer, Linn F., to AT&T Bell Laboratories. Distributed amplification for lightwave transmission system. 5,058,974, Cl. 385-27.000
Mollenauer, Linn F.; Simpson, Jay R.; and Walker, Kenneth L., to AT&T Bell Laboratories. Fabrication of doped filament optical fibers. 5,059,230, Cl. 65-3.110.
Mollet, Hans; and Holer, Martin, to Ciba-Geigy Corporation. Aqueous antioxident emulsions. 5,059,347, Cl. 252-400.620
Molley, Perry A., to United States of America, Energy. Optical pattern recognition architecture implementing the mean-square error correlation algorithm. 5,060,282, Cl. 382-42.000.
Molnar, Robert F.: *See*—
Grube, Gary W.; and Molnar, Robert F., 5,060,296, Cl. 455-218.000.
Momiyama, Motokazu: *See*—
Asakura, Hideo; and Momiyama, Motokazu, 5,058,560, Cl 123-633.000.
Mon, Joseph M.; and Petisce, James R., to AT&T Bell Laboratories Methods for reducing the reactivity of articles destined for disposal. 5,059,635, Cl. 522-3.000.
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Monache, Giuliano D.; Monache, Franco D.; Carmignani, Marco; Bonnevaux, Stella C.; Espinal, Romulo; De Luca, Carlo; and Botta, Bruno, to Consiglio Nazionale Delle Ricerche. Guanidine derivatives having hypotensive activity, composition containing them and process for obtaining them. 5,059,624, Cl. 514-616.000
Monarch Marking Systems, Inc.: *See*—
Perchak, Robert, 5,059,950, Cl. 340-572.000.
Monden, Kuniaki: *See*—
Mino, Hisashi; Iijima, Takeshi; and Monden, Kuniaki, 5,059,509, Cl. 430-257.000.
Monsanto Company: *See*—
Collier, Robert J.; and McGrath, Michael F., 5,059,586, Cl. 514-12.000.
Yu, Jing-peir; Pursley, Thomas C.; and Southern, John H., 5,058,371, Cl. 57-239.000.
Montalvo, Antonio J.: *See*—
Bill, Colin S.; Van Buskirk, Michael A.; and Montalvo, Antonio J., 5,059,815, Cl. 307-246.000.
Montefiore Hospital Association of Western Pennsylvania, The: *See*—
Liang, Marc D.; Narayanan, Krishna; and Ross, Eugene D., 5,059,202, Cl. 606-150.000.
Monteiro, Daniel: *See*—
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Montgomery, Roger H.: *See*—
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Moore, David N.; Petro, Richard J.; and Ullrich, Jeffrey F., to Phoenix Closures, Inc. Dispenser closure with drain back feature. 5,058,772, Cl. 222-109.000.
Moore, James H., to General Electric Company. Overspeed protection for a gas turbine/steam turbine combined cycle. 5,058,373, Cl. 60-39.270.
Moore, John S.; Anderson, Jeffrey J.; and Eriksen, Joern B., to Tektronix, Inc. Method and apparatus for interlaced multicolor printing. 5,059,984, Cl. 346-1.100.
Moore, Samuel W.: *See*—
Hasselbach, LaVurne R.; Kennedy, Donald P.; Montgomery, Roger H.; Moore, Samuel W.; and Neiger, Jack W., 5,059,455, Cl. 427-292.000.
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Morgan, Robert L., IV. Pallet container structure II. 5,058,746, Cl. 206-597.000.

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Mori, Tetsuzo; Sugino, Takashi; Takaoka, Makoto; Sugiura, Susumu; and Ichikawa, Hiroyuki, to Canon Kabushiki Kaisha. Color image processing apparatus for converting color-sequential image data into color-parallel image data. 5,060,059, Cl. 358-79.000.

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Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; Hanamoto, Yukio; and Oi, Fumio, 5,059,507, Cl. 430-192.000.
Nakaniwa, Shinpei, to Japan Electronic Control Systems Company, Limited. System for identifying misfire cylinder in internal combustion engine. 5,058,551, Cl. 123-425.000.
Nakano, Kinichiro: *See—*
Yoshida, Kiyoshi; Yamamoto, Isao; Inoue, Hiroshi; Mori, Kazuyuki; Suzuki, Koichi; Nakano, Kinichiro; Nomura, Hiroyuki; and Etoh, Yoshiyuki, 5,058,698, Cl. 180-179.000.
Nakao, Takeshi: *See—*
Nagai, Nobuyuki; Maeda, Takeshi; Saito, Atsushi; Nakao, Takeshi; and Watanabe, Hitoshi, 5,060,208, Cl. 369-013.000.
Nakasaki, Eiji, to Sumitomo Rubber Industries, Ltd. ATV tire with zig zag lugs. 5,058,643, Cl. 152-209.00B.
Nakashima, Wataru: *See—*
Tsutsui, Eiichi; and Nakashima, Wataru, 5,060,228, Cl. 370-85.130.
Nakatake, Hiroshi: *See—*
Nozaki, Chikateru; Nakatake, Hiroshi; Kino, Yoichiro; Eto, Tatsuo; Makizumi, Keiichi; and Ohtomo, Nobuya, 5,059,538, Cl. 435-320.100.
Nakatsuka, Masakatsu: *See—*
Nakamura, Katsuji; Fujio, Junichi; Hosonuma, Shin; Nakatsuka, Masakatsu; and Nishizawa, Tsutomu, 5,059,356, Cl. 252-585.000.
Nakatsuka, Shigeyuki, to NEC Corporation. Control signal generation circuit for wireless remote control signal transmitter. 5,059,975, Cl. 341-26.000.
Nakaya, Katsunori; and Kitagawa, Masashi, to Honda Giken Kogyo Kabushiki Kaisha. Suspension system for motor vehicle. 5,058,918, Cl. 280-718.000.
Nakayama, Junichiro: *See—*
Takahashi, Akira; Mieda, Michinobu; Murakami, Yoshiteru; Nakayama, Junichiro; Miyake, Tomoyuki; and Ohta, Kenji, 5,059,473, Cl. 428-162.000.
Nakayama, Mamoru, to ICS & Trading Co., Ltd. Slip and method of and apparatus for automatic reading of the slip. 5,059,775, Cl. 235-456.000.
Nakayama, Masahiko; Shigemori, Toshihiro; Kono, Haruhiko; and Yokomori, Kiyoshi, to Ricoh Company, Ltd. Optical pickup device keeping coincident the optical axes of the objective lens and of the recording/reproducing beam. 5,060,214, Cl. 369-44.260.
Nakazawa, Masashi: *See—*
Ohta, Wasaburo; and Nakazawa, Masashi, 5,058,527, Cl. 118-723.000.
Nakazawa, Toru: *See—*
Muto, Nariaki; Maeda, Tatsuo; Nishiguchi, Toshihiko; Kakui, Mikio; Sumida, Keisuke; and Nakazawa, Toru, 5,059,503, Cl. 430-83.000.
Namikoshi, Hajime: *See—*
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,059,328, Cl. 210-635.000.
Narayanan, Krishna: *See—*
Liang, Marc D.; Narayanan, Krishna; and Ross, Eugene D., 5,059,202, Cl. 606-150.000.
Naringrekar, Vijay H.: *See—*
Haeger, Bruce E.; Lawter, James R.; Naringrekar, Vijay H.; and Cucolo, Michael C., 5,059,619, Cl. 514-410.000.
Narita, Masaru, to Takenaka Engineering Co. Ltd. Infrared detector. 5,060,309, Cl. 359-154.000.
Narita, Naomasa: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,058,217, Cl. 4-420.000.
Narumi, Ichiro: *See—*
Kawamura, Katsumi; Narumi, Ichiro; and Yamada, Takao, 5,060,215, Cl. 369-44.350.
Nassi, Menahem F.: *See—*
Corl, Paul D.; Lifshitz, Ilan; Christian, Jeffrey J.; and Nassi, Menahem F., 5,059,851, Cl. 310-334.000.
National Gypsum Company: *See—*
Menchetti, Robert J., 5,058,354, Cl. 52-486.000.
Menchetti, Robert J.; Chapman, Robert M.; and Kessler, Matthew J., 5,058,355, Cl. 52-486.000.
National Radiological Protection Board: *See—*
Burgess, Peter H., 5,059,801, Cl. 250-370.140.
National Research Development Corporation: *See—*
Allan, Peter S.; and Bevis, Michael J., 5,059,368, Cl. 264-69.000.
National Semiconductor Corporation: *See—*
Iranmanesh, Ali A.; and Lam, Lawrence K. C., 5,059,555, Cl. 437-192.000.
Johnson, Nick M., 5,059,916, Cl. 324-713.000.
National Starch and Chemical Investment Holding Corporation: *See—*
Carter, David G.; Green, Derek J.; and Collins, Michael C., 5,058,607, Cl. 131-58.000.
Del Campo, Daniel A., 5,059,054, Cl. 403-13.000.
Tsuji, Hideoki, 5,059,656, Cl. 525-155.000.
Yuyama, Hajime; Maekawa, Fumio; and Umekage, Kazuo, 5,059,479, Cl. 428-323.000.
Naumanen, Esko. Apparatus for storing and conveying roller pallets or equivalent. 5,059,080, Cl. 414-276.000.
Navarro, Dominique: *See—*
Mellul, Sylvie; Rotman, Frederic; and Navarro, Dominique, 5,059,450, Cl. 427-96.000.
Naviglio, Antonio: *See—*
Farello, Giovanni E.; and Naviglio, Antonio, 5,059,386, Cl. 376-336.000.
Navistar International Transportation Corp.: *See—*
O'Hara, Douglas, 5,058,424, Cl. 73-118.100.
Nawa, Michio; Maruki, Toshimitsu; Murakami, Seiki; Mizushina, Fumio; and Goto, Takashi, to Kabushiki Kaisha Meidensha. Electric motor powered testing apparatus for automotive power transmission. 5,060,176, Cl. 364-579.000.
Nayar, Bimal K.; Blow, Keith J.; and Doran, Nicholas J., to British Telecommunications public limited company. Non-linear inferferometer. 5,058,986, Cl. 385-27.000.
Nazmy, Mohamed; and Staubli, Markus, to Asea Brown Boveri Ltd. Oxidation-and corrosion-resistant high-temperature alloy of high toughness at room temperature for directional solidification, based on an intermetallic compound of the nickel aluminide type. 5,059,259, Cl. 148-429.000.
NCR Corporation: *See—*
Dukes, Glenn E., 5,059,822, Cl. 307-443.000.
Lauffer, Donald K.; and Sanwo, Ikuo J., 5,059,835, Cl. 307-576.000.
Naito, Jiro; and Ito, Fumio, 5,060,185, Cl. 364-900.000.
Wittensoldner, Christopher J.; and Detwiler, Paul O., 5,059,777, Cl. 235-470.000.
NDM Acquisition Corp.: *See—*
Cartmell, James V.; Sturtevant, Wayne R.; Valadez, Manuel; and Wolf, Michael L., 5,059,424, Cl. 424-443.000.
Neathery, William D.: *See—*
Robinson, Madison K.; Lufkin, Martin H.; and Neathery, William D., 5,059,094, Cl. 416-134.00A.
NEC Corporation: *See—*
Fujii, Takashi, 5,059,833, Cl. 307-510.000.
Goto, Hiroyuki, 5,060,199, Cl. 365-203.000.
Kobatake, Hiroyuki, 5,059,816, Cl. 307-246.000.
Nakatsuka, Shigeyuki, 5,059,975, Cl. 341-26.000.
Ogawa, Kenji, 5,060,032, Cl. 357-23.400.
Tashiro, Yoshiharu; and Kasahara, Kenichi, 5,059,788, Cl. 250-213.00A.
NEC Electronics Inc.: *See—*
Alexander, David V.; Toy, Stephen W.; and March, Marvin, 5,058,421, Cl. 73-49.200.
Needham, Christopher R.; Chiulli, Carl A.; and Clark, Stephen F., to Polaroid Corporation. Process for forming a color filter. 5,059,500, Cl. 430-7.000.
Neiger, Jack W.: *See—*
Hasselbach, LaVurne R.; Kennedy, Donald P.; Montgomery, Roger H.; Moore, Samuel W.; and Neiger, Jack W., 5,059,455, Cl. 427-292.000.
Nelson, Edward T., to United States of America, Air Force. Interline transfer CCD image sensing apparatus. 5,060,245, Cl. 377-60.000.
Nelson Irrigation Corporation: *See—*
Rupar, Robert L., 5,058,806, Cl. 239-205.000.
Nelson, Thomas E. Animal attracting litter. 5,058,533, Cl. 119-173.000.
Nelva, Gian M.: *See—*
Haigh, John S.; and Nelva, Gian M., 5,058,241, Cl. 19-150.000.
Nemet-Mavrodin, Margaret, to Mobil Oil Corp. Process for the production of light olefins from C_5+ hydrocarbons. 5,059,735, Cl. 585-418.000.
Nemoto, Kouji: *See—*
Ozeki, Makoto; Tsutsui, Takashi; Ohara, Sohei; and Nemoto, Kouji, 5,060,102, Cl. 360-125.000.

Nemoto, Shusuke; Hikishima, Keisaku; and Kirihata, Yoshiyuki, to Kanzaki Kokyukoki Mfg., Ltd. Transmission assembly for tractor. 5,058,455, Cl. 74-606.00R.
Nemoto, Shusuke; Kirihata, Yoshiyuki; and Hikishima, Keisaku, to Kanzaki Kokyukoki Mfg., Ltd. Transmission assembly for tractors. 5,058,459, Cl. 74-745.000.
Neorx Corporation: *See—*
Fritzberg, Alan R.; Wilbur, Daniel S.; Srinivasan, Ananthachari; and Wester, Dennis W., 5,059,541, Cl. 436-501.000.
Nerone, Louis R.; Secen, Michael M.; and Minarczyk, Michael M., to General Electric Company. Ballast circuit with improved transfer functions. 5,059,867, Cl. 315-247.000.
Nerz, John E.: *See—*
Kushner, Burton A.; Rotolico, Anthony J.; Nerz, John E.; and Saia, Lawerence A., 5,059,095, Cl. 416-241.00B.
Neumann, Peter: *See—*
Stumpp, Michael; Neumann, Peter; Ruehenback, Wolfgang; and Bergner, Michael, 5,059,715, Cl. 568-33.000.
Neuwelt, Edward A., to State of Oregon Acting By and Through the Oregon State Board of Higher Education on Behalf of Oregon Health, The. Method for diagnostically imaging lesions in the brain inside a blood-brain barrier. 5,059,415, Cl. 424-9.000.
Neville, Harvey E.; and Hung, Chih P., to North American Manufacturing Company, The. Apparatus for guiding a moving strip. 5,058,793, Cl. 226-15.000.
Nevola, Charles, to EG&G Sealol Inc. Self-contained sealing ring assembly. 5,058,904, Cl. 277-44.000.
New Brunswick Scientific Co., Inc.: *See—*
Zheng, Zhen B., 5,058,619, Cl. 137-240.000.
Neway Corp.: *See—*
Richardson, Gregory A., 5,058,917, Cl. 280-704.000.
Newbow Engineering Industries Limited: *See—*
Knotts, John M., 5,058,418, Cl. 73-31.010.
Newcombe, Terry L.: *See—*
Basek, Charles; Mathews, Phil; and Newcombe, Terry L., 5,058,493, Cl. 99-339.000.
Newell, Charles R.: *See—*
Reuschel, Jeffrey; Newell, Charles R.; and Wright, Alan R., 5,058,964, Cl. 312-111.000.
Newmark, Don B. Leg holster assembly. 5,058,788, Cl. 224-222.000.
Newsom, Bob G., to Advanced Building Technologies. Construction blocks. 5,058,357, Cl. 52-648.000.
Newton, Hille. Rod guide bearing assembly for oil well pumping apparatus. 5,058,668, Cl. 166-84.000.
NGK Insulators, Ltd.: *See—*
Takeuchi, Yukihisa; and Watanabe, Tetsuo, 5,059,985, Cl. 346-76.0PH.
NGK Spark Plug Co., Ltd.: *See—*
Yamasaki, Kozo; Mouri, Kouichi; Kato, Naomiki; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut, 5,060,049, Cl. 357-70.000
NGK Spark Plugs (U.S.A.), Inc.: *See—*
Yamasaki, Kozo; Mouri, Kouichi; Kato, Naomiki; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut, 5,060,049, Cl. 357-70.000.
Nguyen, Dam C.: *See—*
Sindermann, Frederick L.; and Nguyen, Dam C., 5,058,390, Cl. 62-181.000.
Nguyen, Hop D.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Steinbaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,059,359, Cl. 264-22.000.
Nguyen, Hung P., to General Motors Corporation. Multi tube heat exchanger with integral tube spacers and interlocks. 5,058,662, Cl. 165-76.000.
Nguyen, Thai; and Reichenberg, George, to Storage Technology Corporation. Takeup reel positioning apparatus for tape threading in a tape drive system. 5,058,822, Cl. 242-195.000.
Ni, Shimao; and Heitz, Phillip C., to H. A. Phillips & Co. Slug surge suppressor for refrigeration and air conditioning systems. 5,058,395, Cl. 62-278.000.
Nichols, Jerry L.: *See—*
Chitty, Gordon W., Jr.; and Nichols, Jerry L., 5,058,622, Cl. 137-385.000.
Nicklas, John M.; and Scherer, Julie A. Method and apparatus for synthesizing leads of an electrocardiogram. 5,058,598, Cl. 128-699.000.
Nielsen, Larry E.: *See—*
Lee, Ronald B.; and Nielsen, Larry E., 5,060,067, Cl. 358-167.000.
Nigro, Jack M.; and Wilson, Roy O., to Hannon Company, The. Apparatus and method for electrical testing of insulating arm sleeves using a conductive liquid and inflatable sealing member. 5,059,913, Cl. 324-557.000.
Nihon Tensaiseito Kabushiki Kaisha: *See—*
Tsuru, Ryuzo; Sakaki, Michinori; Tanimura, Masashi; Ito, Sumio; and Terasawa, Hidekazu, 5,058,320, Cl. 47-86.000.
Nijholt, Rienk M.: *See—*
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Nikki Co., Ltd.: *See—*
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Nikles, David E.: *See—*
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Nikolov, Zivko: *See—*
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Nilsson, Ove V. E.: *See—*
Hartwin, Carl S. M.; and Nilsson, Ove V. E., 5,058,690, Cl. 175-339.000.
Nilsson, Sven W., to SKF Nova AB. Irreversible screw and nut driving device. 5,058,445, Cl. 74-89.150.
Ninomiya, Naohisa: *See—*
Sawai, Kiichi; Kurono, Masayasu; Asai, Hiromoto; Mitani, Takahiko; Ninomiya, Naohisa; and Suzuki, Tomoo, 5,059,594, Cl. 514-103.000.
Nipko, John A. Modular log structures and methods of constructing same. 5,058,343, Cl. 52-233.000.
Nippon Air Brake Kabushiki Kaisha: *See—*
Tsunemi, Masahiro; Kondo, Yuji; and Shimoura, Kenichi, 5,058,383, Cl. 60-493.000.
Nippon Aluminium Kenzai Co., Ltd.: *See—*
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Nippon Aluminium Mfg., Co., Ltd.: *See—*
Mochiki, Yuuichi; and Kamoto, Muneo, 5,058,350, Cl. 52-396.000.
Nippon Gear Co., Ltd.: *See—*
Watanabe, Susumu, 5,059,879, Cl. 318-603.000.
Nippon Hoso Kyokai: *See—*
Nishida, Yasuaki; Matsunaga, Yoshiyuki; Harada, Nozomu; Manabe, Sohei; and Endo, Yukio, 5,060,070, Cl. 358-213.10S.
Nippon Oil Co., Ltd.: *See—*
Delabouglise, Didier; Lemaire, Marc; Roncali, Jean; and Garnier, Francis, 5,059,694, Cl. 548-518.000.
Naka, Michiharu; Koizumi, Hideki; Kondoh, Yukari; Kinoshita, Hirotugu; Seikiya, Mokoto; and Mishima, Masaru, 5,059,336, Cl. 252-33.300.
Nippon Paint Co., Ltd.: *See—*
Kashihara, Akio; Otsuka, Chikayuki; and Yabuuchi, Naoya, 5,059,505, Cl. 430-110.000.
Nippon Petrochemicals Co. Ltd.: *See—*
Wikelski, Karl W.; and Kojima, Shinji, 5,059,662, Cl. 526-208.000.
Nippon Seiko Kabushiki Kaisha: *See—*
Kadokawa, Satoshi, 5,059,040, Cl. 384-448.000.
Naka, Michiharu; Koizumi, Hideki; Kondoh, Yukari; Kinoshita, Hirotugu; Seikiya, Mokoto; and Mishima, Masaru, 5,059,336, Cl. 252-33.300.
Nippon Sheet Glass Co., Ltd.: *See—*
Kurashina, Isao; and Horiguchi, Takeshi, 5,059,232, Cl. 65-99.200.
Yoshizawa, Hideo; and Tanaka, Mitsuo, 5,059,234, Cl. 65-273.000.
Nippon Steel Corporation: *See—*
Shindou, Yoshio; and Kabeya, Motoo, 5,059,492, Cl. 428-625.000.
Nippon Steel Welding Products & Engineering Co., Ltd.: *See—*
Araki, Nobuo; Tabata, Kazufumi; Yokoi, Kiyomi; Ashidate, Tadami; and Hattori, Osamu, 5,058,259, Cl. 29-433.000.
Nippon Telegraph and Telephone Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
Asakura, Hideo; and Momiyama, Motokazu, 5,058,560, Cl. 123-633.000.
Kondo, Shigeyuki; and Yamamoto, Yoshihisa, 5,058,553, Cl. 123-456.000.
Ohsawa, Koichi; and Ohmi, Masanori, 5,059,935, Cl. 335-282.000.
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Nishida, Hideyuki: *See—*
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Nishida, Mitsuhiro: *See—*
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Nishida, Yasuaki; Matsunaga, Yoshiyuki; Harada, Nozomu; Manabe, Sohei; and Endo, Yukio, to Nippon Hoso Kyokai; and Kabushiki Kaisha Toshiba. Solid state image sensor having low and high level signal component detectors. 5,060,070, Cl. 358-213.10S.
Nishiguchi, Toshihiko: *See—*
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Nishijima, Hideo; Masuda, Michio; Ono, Koichi; and Ohtsubo, Hiroyasu, to Hitachi, Ltd. Editing circuit for a magnetic recording and reproducing apparatus. 5,060,087, Cl. 360-14.100.
Nishikawa, Masayuki: *See—*
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Nishimura, Akihiro: *See—*
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Nishimura, Eiichi, to Oki Electric Industry Co., Ltd. Optical repeated transmission method and system. 5,060,301, Cl. 359-179.000.

Nishimura, Keiichi: *See—*
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Nishimura, Shinji; and Kaneyuki, Kazutoshi, to Mitsubishi Denki Kabushiki Kaisha. Charging generator. 5,059,886, Cl. 322-28.000.

Nishimura, Tadashi; and Yamano, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Silicon-on-insulator metal oxide semiconductor device having conductive sidewall structure. 5,060,035, Cl. 357-23.700.

Nishimura, Tetsuharu: *See—*
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Nishimura, Yukinobu: *See—*
Shimomura, Setsuhiro; Wataya, Seiji; Nishimura, Yukinobu; and Okubo, Satoru, 5,058,552, Cl. 123-425.000.

Nishio, Hiroshi, to NKK Corporation. Method for manufacturing a porous body of molybdenum silicide. 5,059,267, Cl. 156-89.000.

Nishio, Yoji: *See—*
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Nishizawa, Jun-ichi; and Takeda, Nobuo, to Small Power Communication Systems Research Laboratories Co., Ltd. Step cut type insulated gate SIT having low-resistance electrode and method of manufacturing the same. 5,060,029, Cl. 357-22.000.

Nishizawa, Tsutomu: *See—*
Nakamura, Katsuji; Fujio, Junichi; Hosonuma, Shin; Nakatsuka, Masakatsu; and Nishizawa, Tsutomu, 5,059,356, Cl. 252-585.000.

Nissan Chemical Industries, Ltd.: *See—*
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Nissan Motor Co., Ltd.: *See—*
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Nisshin Steel Co., Ltd.: *See—*
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Nissho Optical Co., Ltd.: *See—*
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Nissin Chemical Industry Co., Ltd.: *See—*
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Nitta, Masahiro: *See—*
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Nitta, Takahisa: *See—*
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Nitto Boseki Co., Ltd.: *See—*
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Nitto Chemical Industry Co., Ltd.: *See—*
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Nitto Electric Industrial Co., Ltd.: *See—*
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NKK Corporation: *See—*
Nishio, Hiroshi, 5,059,267, Cl. 156-89.000.

Noah, Lewis R., to American Standard Inc. Pre-loading pivotal pin connection for a disc brake assembly. 5,058,712, Cl. 188-59.000.

Nobel, Charles I., to General Electric Company. Adaptive autopilot. 5,058,836, Cl. 244-176.000.

Nobelpharma AB: *See—*
Andersson, Matts, 5,059,758, Cl. 219-121.630.

Noguchi, Yasuo: *See—*
Idemoto, Morito; and Noguchi, Yasuo, 5,058,570, Cl. 128-24.0AA.

Nokia Mobile Phones Ltd.: *See—*
Kukkonen, Osmo; and Vayrynen, Antero, 5,059,131, Cl. 439-78.000.

Nomura, Hiroyuki: *See—*
Yoshida, Kiyoshi; Yamamoto, Isao; Inoue, Hiroshi; Mori, Kazuyuki; Suzuki, Koichi; Nakano, Kinichiro; Nomura, Hiroyuki; and Etoh, Yoshiyuki, 5,058,698, Cl. 180-179.000.

Nomura, Toshiaki: *See—*
Yamazaki, Yasuo; Nomura, Toshiaki; Maruyama, Takashi; and Sato, Shigenobu, 5,058,360, Cl. 53-133.200.

Nordstrom, Kari N.; and Rothman, Ronald C., to Ruble, Earl H.; and Earl Ruble and Associates, Inc. Method and apparatus for determining the location of a sound source. 5,058,419, Cl. 73-40.50A.

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Knoll, Richard, 5,058,266, Cl. 29-890.049.

North American Manufacturing Company, The: *See—*
Neville, Harvey E.; and Hung, Chih P., 5,058,793, Cl. 226-15.000.

North American Philips Corporation: *See—*
Erickson, Frederick L.; and Richeson, William E., 5,058,538, Cl. 123-90.120
Skinner, Kenneth R., 5,060,075, Cl. 358-250.000.

North American Philips Corp., Signetics Division: *See—*
Tatsanakit, Thawatchai; and Amnatsing, Thana, 5,059,558, Cl. 437-216.000

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Lou, Liang-fu, 5,059,787, Cl. 250-211.00J.

Northrup, Ronnie, to Applied Materials, Inc. Optical mask filter capable of reducing the semiperiodic component of temporal variation in endpoint detection. 5,059,784, Cl. 250-237.00R.

Norton, Doug. Insulated diffuser for evaporative air cooling system. 5,058,492, Cl. 98-119.000

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Satoh, Kazuo; and Nosaka, Tsutomu, 5,059,268, Cl. 156-130.300.

Nosowicz, Josef; and Kollinger, Rudolf. Seal. 5,058,905, Cl. 277-65.000.

Nottingham, John R.; Spirk, John W.; and Kalman, Jeffrey M., to G & S Metal Products Company, Inc. Low profile oven turntable. 5,059,755, Cl. 219-10.55F

Notzel, Wolfgang, to Wohlfahrt GmbH. Calendar. 5,058,296, Cl. 40-107.000

Novak, Julius, to ColoPlast A/S. External male urinary catheter and method and apparatus for manufacturing such a catheter. 5,059,190, Cl. 604-349.000.

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Lepage, Francis; and Hublot, Bernard, 5,059,614, Cl. 514-378.000.

Nowaczyk, Philip J.: *See—*
Gawell, George R.; and Nowaczyk, Philip J., 5,059,873, Cl. 315-403.000

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Nudeshima, Masahiro: *See—*
Kohno, Hiromasa; and Nudeshima, Masahiro, 5,058,587, Cl. 128-633.000

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Frank, Kurt; Nusser, Hermann; and Strohl, Willi, 5,058,557, Cl. 123-509.000

O & S Manufacturing Company: *See—*
Rose, John A., 5,059,053, Cl. 403-24.000.

Obara, Yuichi: *See—*
Hikami, Toshiya; Yoshida, Koji; Obara, Yuichi; and Fuse, Kenichi, 5,059,133, Cl. 439-161.000.

O'Brien, Daniel R.; Cox, Charles H., III; and Hoyt, Carlton D., to Massachusetts Institute of Technology. Formation of optical quality surfaces in optical material. 5,059,763, Cl. 219-121.690.

O'Brien, Richard W., to Colloidal Dynamics Pty. Ltd. Determination of particle size and electrical charge. 5,059,909, Cl. 324-457.000.

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Fertel, Lawrence B.; O'Reilly, Neil J.; and Lin, Henry C., 5,059,697, Cl. 549-246.000.

Ochi, Naoki, to Mitsubishi Denki Kabushiki Kaisha. Optical transformer. 5,059,910, Cl. 324-537.000

O'Connell, Joseph J. Mounting cradle for a portable cellular telephone. 5,060,260, Cl. 379-454.000.

O'Connor, Michael P. Ground anchor. 5,058,337, Cl. 52-162.000.

Oda, Hiroyuki: *See—*
Ueda, Kazuhiko; Oda, Hiroyuki; Hashimoto, Kazuhiko; Hatamura, Kouichi; Goto, Tsuyoshi; Ohtsuru, Takashi; and Tabata, Shigeo, 5,058,558, Cl. 123-559.100.

Odai, Nobuhiro, to Tsubakimoto Chain Co. Camshaft driving mechanism. 5,058,458, Cl. 74-665.0GE.

Odani, Niro; Yoshioka, Kazuyoshi; and Sekiya, Sinichi, to Mitsubishi Metal Corporation. Cermet blade member for cutting-tools and process for producing same. 5,059,491, Cl. 428-614.000.

Oelcer, Sedat: *See—*
Dolivo, Francois B.; Oelcer, Sedat; Rungeler, Andreas; and Schott, Wolfgang H., 5,060,088, Cl. 360-46.000.

Oertgen, Ekkehard: *See—*
Wiesner, Hagen H.; Spies, Klaus; and Oertgen, Ekkehard, 5,058,963, Cl. 305-35.0EB.

Oettgen, Herbert F.: *See—*
Rettig, Wolfgang J.; Garin-Chesa, Pilar; Beresford, H. Richard; Oettgen, Herbert F.; Melamed, Myron R.; and Old, Lloyd J., 5,059,523, Cl. 435-7.230.

Offer, Henry P.: *See—*
Dixon, Robert C.; Deaver, Gerald A.; Punches, James R.; Singleton, Guy E.; Erbes, John G.; and Offer, Henry P., 5,059,384, Cl. 376-260.000.

Ofner, Herwig: *See—*
Plohberger, Diethard; Pichl, Volker; and Ofner, Herwig, 5,058,614, Cl. 137-1.000.

Ogata, Mayako: *See—*
Sezume, Tadashi; Kobayashi, Akira; Murata, Masahide; Ogata, Mayako; Ohsawa, Masahiro; and Mikami, Takashi, 5,059,658, Cl. 525-263.000.

Ogata, Shigeaki: *See—*
Kihara, Hiroshi; Arai, Eiki; Ogata, Shigeaki; Katagiri, Yoshio; Fujita, Katsuyuki; Wachigai, Tadahiko; and Hiratsuka, Hiroyoshi, 5,059,388, Cl. 419-37.000.

Ogata, Tomohide: *See—*
Omoto, Kaneo; Nagasima, Hironao; Ogata, Tomohide; and Iwata, Ritsuo, 5,058,777, Cl. 222-200.000.

Ogawa, Hiroshi: *See—*
Sako, Yoichiro; and Ogawa, Hiroshi, 5,060,221, Cl. 369-59.000.

Ogawa, Kenji, to NEC Corporation. Insulated gate transistor operable at a low-drain-source voltage. 5,060,032, Cl. 357-23.400.

Ogihara, Masuo; Ishida, Hiroyuki; Nagaoka, Shinji; Seki, Youichi; Tagami, Shigeru; Yamazaki, Hiroshi; and Shinozaki, Nobuo, to Seikosha Co., Ltd. Motor-driven shutter for camera. 5,060,000, Cl. 354-400.000.

Ogita, Hiroshi: *See—*
Maegawa, Hiroji; Omuta, Tatsurou; Ogita, Hiroshi; and Imai, Takanori, 5,058,516, Cl. 112-121.120.

Ogura, Mitsuru, to Sharp Kabushiki Kaisha. Image forming apparatus and leader sheet therefor. 5,060,010, Cl. 355-27.000.

Ogura, Nobuyuki: *See—*
Aoyagi, Muneo; Takanashi, Kazuhiro; Araki, Hiroyuki; Murata, Moriyasu; Sotoya, Kohshiro; Ogura, Nobuyuki; and Yamamura, Masaaki, 5,059,344, Cl. 252-186.380.

Ogura, Tetsuyoshi: *See—*
Taniguchi, Kazuo; Imaoka, Kazuhiro; Ogura, Tetsuyoshi; and Sakaguchi, Hiroaki, 5,059,671, Cl. 528-49.000.

Oh-Hashi, Yoshimasa: *See—*
Fujisaka, Takahiko; and Oh-Hashi, Yoshimasa, 5,059,966, Cl. 342-25.000.

O'Hara, Douglas, to Navistar International Transportation Corp. Wheel end play setting device. 5,058,424, Cl. 73-118.100.

Ohara, Shinsuke: *See—*
Kono, Masanao; Hasegawa, Yoshihiro; Nishi, Yasutaka; Sanada, Yasuyoshi; Mizuta, Tatsuji; Inoue, Ryo; and Ohara, Shinsuke, 5,059,272, Cl. 156-306.600.

Ohara, Sohei: *See—*
Ozeki, Makoto; Tsutsui, Takashi; Ohara, Sohei; and Nemoto, Kouji, 5,060,102, Cl. 360-125.000.

Ohashi, Kunio: *See—*
Mori, Hiroshi; Kobayashi, Toshiaki; Nagata, Shoichi; and Ohashi, Kunio, 5,059,506, Cl. 430-138.000.

Ohata, Hiroyuki: *See—*
Fukushima, Motoo; Nakamura, Tsutomu; Ohata, Hiroyuki; and Okuda, Harukazu, 5,059,648, Cl. 524-376.000.

Ohbayashi Corporation: *See—*
Sugimoto, Tadao; Tsuchiyama, Shigeki; Hayakawa, Makoto; Goto, Yozo; Koide, Tadao; Endoh, Tamotsu; Toriihara, Makoto; and Ejiri, Joji, 5,059,063, Cl. 405-36.000.

Ohkubo, Mitsuru: *See—*
Takasugi, Hisashi; Kuno, Atsushi; and Ohkubo, Mitsuru, 5,059,608, Cl. 514-307.000.

Ohkura, Ken; Shinagawa, Yukio; and Shibata, Tamiaki, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Method for producing a matt paint. 5,059,639, Cl. 523-205.000.

Ohmi, Masanori: *See—*
Ohsawa, Koichi; and Ohmi, Masanori, 5,059,935, Cl. 335-282.000.

Ohmi, Tadahiro. Method of supplying ultrahigh purity gas. 5,058,616, Cl. 137-13.000.

Ohnishi, Ryuji, to Futec, Inc. Method and apparatus for detecting disparity of cyclic length of printed patterns. 5,060,281, Cl. 382-34.000.

Ohnishi, Toshikazu: *See—*
Kaneko, Shuzo; Mouri, Akihiro; Isaka, Kazuo; Yoshinaga, Kazuo; Ohnishi, Toshikazu; Toshida, Yomishi; Kurabayashi, Yutaka; and Eguchi, Takeo, 5,059,000, Cl. 350-351.000.

Ohno, Kouji: *See—*
Miyazawa, Kazutoshi; Ushioda, Makoto; Saito, Shinichi; Inoue, Hiromichi; and Ohno, Kouji, 5,059,340, Cl. 252-299.610

Ohnuki, Ichiro; Higashihara, Masaki; Akashi, Akira; and Kadohara, Terutake, to Canon Kabushiki Kaisha. Automatic focus adjusting device. 5,060,002, Cl. 354-402.000.

Ohsawa, Koichi; and Ohmi, Masanori, to Nippondenso Co., Ltd. Solenoid coil apparatus. 5,059,935, Cl. 335-282.000.

Ohsawa, Masahiro: *See—*
Sezume, Tadashi; Kobayashi, Akira; Murata, Masahide; Ogata, Mayako; Ohsawa, Masahiro; and Mikami, Takashi, 5,059,658, Cl. 525-263.000.

Ohsawa, Michitaka: *See—*
Matsumi, Kuninori; Kawagishi, Tadahiro; Kame, Masahiro; Shiomi, Makoto; Ozeki, Kousuke; and Ohsawa, Michitaka, 5,059,872, Cl. 315-368.00A.

Ohsawa, Shigemitsu: *See—*
Yoshida, Mitsuhiro; Morita, Yutaka; Ishino, Yoshio; and Ohsawa, Shigemitsu, 5,059,427, Cl. 424-449.000.

Ohsumi, Hideki: *See—*
Ohta, Yukio; Watanabe, Hiroshi; Ohsumi, Hideki; and Taguchi, Naoto, 5,059,142, Cl. 439-752.000.

Ohta, Kenji: *See—*
Takahashi, Akira; Mieda, Michinobu; Murakami, Yoshiteru; Nakayama, Junichiro; Miyake, Tomoyuki; and Ohta, Kenji, 5,059,473, Cl. 428-162.000.

Ohta, Mitsuru: *See—*
Yamamoto, Takemi; Sakai, Jun; and Ohta, Mitsuru, 5,060,011, Cl. 355-27.000.

Ohta, Wasaburo; and Nakazawa, Masashi, to Ricoh Company, Ltd. Thin film forming apparatus. 5,058,527, Cl. 118-723.000

Ohta, Yukio; Watanabe, Hiroshi; Ohsumi, Hideki; and Taguchi, Naoto, to Yazaki Corporation. Electric connector with a terminal conductor detaining mechanism. 5,059,142, Cl. 439-752.000.

Ohtomo, Nobuya: *See—*
Nozaki, Chikateru; Nakatake, Hiroshi; Kino, Yoichiro; Eto, Tatsuo; Makizumi, Keiichi; and Ohtomo, Nobuya, 5,059,538, Cl. 435-320.100.

Ohtsubo, Hiroyasu: *See—*
Nishijima, Hideo; Masuda, Michio; Ono, Koichi; and Ohtsubo, Hiroyasu, 5,060,087, Cl. 360-14.100.

Ohtsuka, Kyoichi, to Mitsubishi Denki Kabushiki Kaisha. Magnetic disc apparatus having protective shield for eliminating spurious magnetism at a magnetic head. 5,060,103, Cl. 360-128.000.

Ohtsuka, Masuhiro: *See—*
Kono, Hiromi; and Ohtsuka, Masuhiro, 5,060,158, Cl. 364-424.100.

Ohtsuru, Takashi: *See—*
Ueda, Kazuhiko; Oda, Hiroyuki; Hashimoto, Kazuhiko; Hatamura, Kouichi; Goto, Tsuyoshi; Ohtsuru, Takashi; and Tabata, Shigeo, 5,058,558, Cl. 123-559.100.

Ohuchi, Yukihiro: *See—*
Sugihara, Tadashi; Takeshita, Takuo; and Ohuchi, Yukihiro, 5,059,585, Cl. 505-1.000.

Ohuchida, Shigeru: *See—*
Fujita, Kazuhiro; Inokuchi, Toshiyuki; Baba, Nobuyuki; Maeda, Hideo; and Ohuchida, Shigeru, 5,060,212, Cl. 369-44.120

Oi, Fumio: *See—*
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; Hanamoto, Yukio; and Oi, Fumio, 5,059,507, Cl. 430-192.000.

Oji Yuka Goseishi Co., Ltd.: *See—*
Asakura, Takaaki, 5,059,265, Cl. 156-64.000.

Okabayashi, Shigeru: *See—*
Todoriki, Tsuyoshi; Okabayashi, Shigeru; and Sakata, Masao, 5,059,957, Cl. 340-705.000.

Okada, Mizuo: *See—*
Sakunaga, Kenichi; and Okada, Mizuo, 5,058,989, Cl. 359-455.000.

Okada, Takao: *See—*
Miyamoto, Hirofumi; Okada, Takao; Takase, Tsugiko; Mishima, Shuzo; and Ota, Hiroko, 5,059,793, Cl. 250-306.000.

Okada, Tokuhiro: *See—*
Brittenham, Gary M.; Allen, Christopher J.; Okada, Tokuhiro; and Fujimoto, Keiji, 5,059,395, Cl. 422-73.000.

Okada, Tsutomu; and Inoue, Kazuhiro, to Olympus Optical Co., Ltd. Treating device for endoscopes. 5,059,199, Cl. 606-127.000.

Okajima, Kenichi: *See—*
Takahashi, Tetsuhiko; Okajima, Kenichi; and Ueda, Ken, 5,059,794, Cl. 250-327.200.

Okamoto, Ichiro: *See—*
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,059,328, Cl. 210-635.000.

Okamoto, Noriaki: *See—*
Gotoh, Akihiro; Higuchi, Shinsuke; Miyazaki, Takeshi; Maeda, Kunihiro; Saitoh, Yokuo; Okuwaki, Toyoji; Okamoto, Noriaki; and Wakatsuki, Kousaku, 5,060,098, Cl. 360-103.000.

Okaniwa, Kenichiro: *See—*
Arai, Kazumi; Kobayashi, Mario; and Okaniwa, Kenichiro, 5,059,526, Cl. 435-17.000.

Okano, Hiroshi: *See—*
Tanaka, Toshiharu; Shibata, Kenichi; Takeuchi, Kousuke; Sakata, Masakazu; Okano, Hiroshi; and Kuroki, Kazuhiko, 5,059,847, Cl. 310-313.00A.

Okawa, Mitsugu: *See—*
Gomi, Yoshiaki; Okawa, Mitsugu; and Taniuchi, Norihisa, 5,058,765, Cl. 220-528.000.

Okazaki, Michio; Shitara, Mototaka; and Kosaka, Kenji, to Diesel Kiki Co. Ltd. Variable capacity wobble plate compressor. 5,059,097, Cl. 417-222.00S.

Okegawa, Tadao; and Kawamura, Masonari, to Ono-Pharmaceutical Co., Ltd. Imidazolyl benzisoquinolines useful as 5-HT_3 receptor antagonists. 5,059,607, Cl. 514-290.000.

Oki Electric Industry Co., Ltd.: *See—*
Nishimura, Eiichi, 5,060,301, Cl. 359-179.000.
Tanagawa, Kouji, 5,059,828, Cl. 307-465.000.
Tanuma, Jiro; and Katakura, Shinichi, 5,059,046, Cl. 400-320.000.

Okimoshima, Hiroshige; and Kanbara, Hiroshi, to Shin-Etsu Chemical Co., Ltd. Butadienyl group-containing siloxane compounds and method of producing the same. 5,059,705, Cl. 556-453.000.

Okubo, Hideaki; Sato, Kan-ichi; Mimura, Kazuhiro; Fujimoto, Satoshi; and Higuchi, Makoto, to Kabushiki Kaisha Komatsu Seisakusha. Injection-compression molding machine and method of molding by using the machine. 5,059,364, Cl. 264-40.100.

Okubo, Satoru: *See—*
Shimomura, Setsuhiro; Wataya, Seiji; Nishimura, Yukinobu; and Okubo, Satoru, 5,058,552, Cl. 123-425.000.

Okuda, Harukazu: *See—*
Fukushima, Motoo; Nakamura, Tsutomu; Ohata, Hiroyuki; and Okuda, Harukazu, 5,059,648, Cl. 524-376.000.

Okura Kogyo Kabushiki Kaisha: *See—*
Saheki, Takasi; and Matsuda, Hideaki, 5,059,371, Cl. 264-108.000

Okuwaki, Toyoji: *See—*
Gotoh, Akihiro; Higuchi, Shinsuke; Miyazaki, Takeshi; Maeda, Kunihiro; Saitoh, Yokuo; Okuwaki, Toyoji; Okamoto, Noriaki; and Wakatsuki, Kousaku, 5,060,098, Cl. 360-103.000

Olah, Laszlo; and Nagy, Frank, to Lester Audio Laboratories, Inc. Sound mixing processor, method and system. 5,060,273, Cl. 381-119.000.

Old, Lloyd J.: *See—*
Rettig, Wolfgang J.; Garin-Chesa, Pilar; Beresford, H. Richard; Oettgen, Herbert F.; Melamed, Myron R.; and Old, Lloyd J., 5,059,523, Cl. 435-7.230.

Oldendorf, Christian: *See—*
Melcher, Franz-Josef; Oldendorf, Christian; and Berthel, Dieter, 5,058,692, Cl. 177-181.000.

Oleksyk, Lauren E.: *See—*
Berkowitz, Daniel; and Oleksyk, Lauren E., 5,059,432, Cl 426-19.000

Olin Corporation: *See—*
Holmes, Paul, 5,059,341, Cl. 252-174.120.
Scardera, Michael; and Grosser, Frank R., 5,059,625, Cl 514-644.000

Olive, Graham: *See—*
Eldridge, Jerome M.; Keller, Gary S.; Lee, Francis C.; and Olive, Graham, 5,059,989, Cl. 346-140.00R.

Oliver, Kirk D., to Zenith Electronics Corporation. High voltage regulator for CRT display. 5,059,874, Cl. 315-411.000.

Olsson, Billy E., to AMP Incorporated. Latch mechanism for electrical connectors. 5,059,138, Cl. 439-460.000.

Olympus Optical Co., Ltd.: *See—*
Chiyomatsu, Nobumitsu, 5,060,218, Cl. 369-47.000
Itoh, Junichi; Matsuzawa, Yoshinori; Watanabe, Youji; and Kobayashi, Yoshiaki, 5,060,005, Cl. 354-412.000
Kawano, Yoshihiro, 5,059,005, Cl. 359-654.000.
Kobayashi, Kazutoshi, 5,060,209, Cl. 369-32.000.
Matsuzawa, Yoshinori, 5,059,999, Cl. 354-400.000.
Miyamoto, Hirofumi; Okada, Takao; Takase, Tsugiko; Mishima, Shuzo; and Ota, Hiroko, 5,059,793, Cl. 250-306.000
Nagasaki, Tatsuo; Omura, Masayoshi; Watanabe, Hitoshi; Imade, Shinichi; Ikuta, Eishi; Yoshimori, Hiroyuki; and Yanagisawa, Kazuhisa, 5,060,191, Cl. 365-145.000.
Okada, Tsutomu; and Inoue, Kazuhiro, 5,059,199, Cl. 606-127.000.
Ookawa, Kaneyasu, 5,059,022, Cl. 356-124.000.

Omae, Masaru: *See—*
Yaba, Susumu; Takigawa, Tomoya; Kikugawa; Osada, Koichi; Sato, Katsuhito; and Omae, Masaru, 5,059,254, Cl. 136-251.000

Omata, Tetsuo: *See—*
Tsuda, Yoko; Satoh, Susumu; and Omata, Tetsuo, 5,059,628, Cl. 514-784.000

Omote, Kazuyuki: *See—*
Tokumaru, Takeji; Kudou, Tsuneaki; and Omote, Kazuyuki, 5,059,830, Cl. 307-481.000.

Omoto, Kaneo; Nagasima, Hironao; Ogata, Tomohide; and Iwata, Ritsuo, to Yamaha Corporation. Automatic method and apparatus for scattering wood pieces in production of a decorative board 5,058,777, Cl. 222-200.000.

Omron Corporation: *See—*
Kaichi, Akio; and Moriyama, Hiroyuki, 5,059,754, Cl. 200-332.100

Omura, Masayoshi: *See—*
Nagasaki, Tatsuo; Omura, Masayoshi; Watanabe, Hitoshi; Imade, Shinichi; Ikuta, Eishi; Yoshimori, Hiroyuki; and Yanagisawa, Kazuhisa, 5,060,191, Cl. 365-145.000.

Omuta, Tatsurou: *See—*
Maegawa, Hiroji; Omuta, Tatsurou; Ogita, Hiroshi; and Imai, Takanori, 5,058,516, Cl. 112-121.120.

Onishi, Katsuyuki: *See—*
Masuyama, Joe; Mikuriya, Koji; Takai, Tsuneo; Chiba, Shinji; Hotta, Kiyoshi; Hamano, Yoshinori; Onishi, Katsuyuki; Funahashi, Koji; Takahashi, Yuji; and Sugawara, Junichi, 5,058,332, Cl. 52-66.000.

Onishi, Shigeo: *See—*
Tateoka, Hidehisa; Onishi, Shigeo; and Tanaka, Kenichi, 5,059,550, Cl. 437-67.000

Onitsuka, Yoshihiro: *See—*
Mihara, Tadashi; Inoue, Hiroshi; Mizutome, Atsushi; Tsuboyama, Akira; Taniguchi, Osamu; and Onitsuka, Yoshihiro, 5,058,994, Cl. 359-56.000.

Ono, Fumitaka; Kino, Shigenori; Yoshida, Masayuki; and Kimura, Tomohiro, to Mitsubishi Denki Kabushiki Kaisha. Coding method of image information. 5,059,976, Cl. 341-51.000.

Ono, Hitoshi; Kato, Yoshiaki; and Watabe, Sumiko, to Mitsubishi Kasei Corporation. Process for preparation of crystalline oxytitanium phthalocyanine. 5,059,355, Cl. 252-584.000.

Ono, Koichi: *See—*
Nishijima, Hideo; Masuda, Michio; Ono, Koichi; and Ohtsubo, Hiroyasu, 5,060,087, Cl. 360-14.100.

Ono, Kouji: *See—*
Sato, Kiyoshi; and Ono, Kouji, 5,059,516, Cl. 430-599.000.

Ono, Masato: *See—*
Yagi, Shigeru; Ono, Masato; Takahashi, Noriyoshi; Nishikawa, Masayuki; Fukuda, Yuzuru; and Karakida, Kenichi, 5,059,501, Cl. 430-65.000.

Ono-Pharmaceutical Co., Ltd.: *See—*
Okegawa, Tadao; and Kawamura, Masonari, 5,059,607, Cl. 514-290.000

Onoda, Masahiro; and Fujii, Tadashi, to Terumo Kabushiki Kaisha. Long-term electrocardiograph for screening. 5,058,597, Cl. 128-696.000

Onodera, Shunji; and Ito, Shinichi, to Victor Company of Japan, Ltd. Flyback power supply. 5,060,128, Cl. 363-20.000

Onoue, Akihiro, to Sanshin Kogyo Kabushiki Kaisha. Ahead/astern shifting device for marine propulsion unit. 5,059,144, Cl. 440-75.000

Ooishi, Tsukasa: *See—*
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,060,230, Cl. 371-21.200.

Ookawa, Kaneyasu, to Olympus Optical Company Limited. Device for measuring radius of curvature and a method thereof. 5,059,022, Cl. 356-124.000

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Opitz, Norbert; Lubbers, Dietrich W.; and Schrader, Bernhard, to Max Planck Gesellschaft zur Forderung der Wissenschaften E.V. Arrangement for optical measuring of concentration of substances. 5,059,396, Cl. 422-82.110.

Oppenheim, Amos B.; and Locker, Giladi; Hilla, to Bio-Technology General Corp. Stabilized expression vectors containing λP_L promoter and the gene for the cI_{434} repressor, plasmids containing the vectors, hosts containing the plasmids and related methods. 5,059,529, Cl. 435-69 400.

Opperthauser, Keith G., to Automated Systems, Inc. Automatic dump actuator conveyor system. 5,058,730, Cl. 198-732.000.

Orbot Systems Ltd.: *See—*
Katzir, Yigal, 5,058,982, Cl. 385-33.000.

O'Reilly, Neil J.: *See—*
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Miyamoto, Hirofumi; Okada, Takao; Takase, Tsugiko; Mishima, Shuzo; and Ota, Hiroko, 5,059,793, Cl. 250-306.000.

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Iwasa, Masao, 5,058,710, Cl. 187-114.000.

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Otsuka Pharmaceutical Factory, Inc.: *See—*
Kanai, Kenichi; Goto, Kiyoto; and Hashimoto, Kinji, 5,059,598, Cl. 514-242.000

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Takahashi, Nagashige; and Ouchi, Teruo, 5,058,567, Cl. 128-4.000.

Ouellette, Maurice J.: *See—*
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Todd, David W.; Brown, Lindsey; Phillips, Roger W.; and Overshiner, Elliot E., 5,059,454, Cl. 427-259.000.

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Harandi, Moshen N.; and Owen, Hartley, 5,059,744, Cl 585-921.000.

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Boone, James E.; Owens, David W.; Farritor, Robert E.; and Blank, Wesley D., 5,059,410, Cl. 423-349.000.

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Oxley Developments Company, Ltd.: *See—*
Armistead, Trevor; and Armistead, Robert G., 5,060,109, Cl. 361-294.000.

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Le Bell, Jean; Valjakka, imo; Pirhonen, Jussi; Sunden, Fred; Hautaniemi, Erkki; Jarvela, Pentti; Sandelin, Bjorn; and Algars, Rainer, 5,059,472, Cl. 428-161.000.

Oyama, Soichi: *See—*
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Seto, Takashi; Ozaki, Kouji; Kobayashi, Osamu; and Suzuki, Shigeru, 5,060,012, Cl. 355-28.000.

Ozaki, Masaaki; and Kojima, Yoh, to Honda Giken Kogyo Kabushiki Kaisha. Method of checking the functioning of a driving wheel slip control system. 5,058,423, Cl. 73-117.000.

Ozaki, Yasunobu: *See—*
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Matsumi, Kuninori; Kawagishi, Tadahiro; Kame, Masahiro; Shiomi, Makoto; Ozeki, Kousuke; and Ohsawa, Michitaka, 5,059,872, Cl. 315-368.00A.

Ozeki, Makoto; Tsutsui, Takashi; Ohara, Sohei; and Nemoto, Kouji, to Victor Company of Japan, Ltd. Magnetic head having track regulation grooves formed at tape sliding surface. 5,060,102, Cl. 360-125.000.

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Parsons, Michael L.; Hutchins, Peter L.; and Tseng, Yeong-Jeng V., 5,059,953, Cl. 340-578.000.

Pae, Myoung-Ho; and Jun, Dong-Su, to SamSung Electronics Co., Ltd. Circuit for adjusting voltage level of data output in a semiconductor memory device. 5,060,196, Cl. 365-189.050.

Paganelli, Jude V.: *See—*
Lawson, William C.; Paganelli, Jude V.; and Sepielli, Perry, 5,059,204, Cl. 606-171.000.

Page, William J.; and Knosp, Olga, to University of Alberta, The Governors of the. Mutant strains of azotobacter vinelandii used for the hyperproduction of poly-β-hydroxybutyrate during exponential growth. 5,059,536, Cl. 435-252.300.

Pai, Yang-Kwan. Safety controller for high-building escapee. 5,058,706, Cl. 182-5.000.

Pairetti, Bartolomeo; and Marinoni, Giorgio, to Comau S.p.A. Apparatus for manipulating laser beams, particularly power laser beams for use by robots. 5,058,967, Cl. 359-861.000.

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Bokser, Mindy R., 5,060,277, Cl. 382-14.000.

Palfreyman, Michael G.; Bey, Philippe; and McDonald, Ian A., to Merrell Dow Pharmaceuticals Inc. Inhibitors of lysyl oxidase. 5,059,714, Cl. 564-509.000.

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Weiler, Rolf; Panek, Claus-Peter; Endler, Wolfgang; and Hendrich, Uwe, 5,058,714, Cl. 188-196.00P.

Papsin, George A., Jr.: *See—*
Larson, Gary R.; Papsin, George A., Jr.; and Winey, Donald A., 5,059,456, Cl. 427-407.100.

Paquet, Volker: *See—*
Ackermann, Ulrich; Bauch, Hartmut; and Paquet, Volker, 5,059,231, Cl. 65-3.120.

Paquette, Scott L.; Synor, Jeffrey C.; and Wiers, John W., to TRW Vehicle Safety Systems, Inc. Air bag module construction and assembly technique. 5,058,919, Cl. 280-732.000.

Park, Heui-Chul; and Kim, Chang-Rae, to SamSung Electronics Co., Ltd. Static random access memory with redundancy. 5,060,197, Cl. 365-200.000.

Park, Moo W.; and Caldwell, Henry C., to Applied Analytical Industries, Inc. Liquid oral pharmaceutical compositions of non-steroidal anti-inflammatory drugs. 5,059,626, Cl. 514-658.000.

Parker, Charles H., to Duit Level Co. Level for use in bending conduit. 5,058,407, Cl. 72-37.000.

Parker, William H. Hedge trimmer. 5,058,276, Cl. 30-228.000.

Parr, William J.; Moy, Paul Y. Y.; and Frank, Dieter, to Akzo America Inc. Conductive metallization of substances without developing agents. 5,059,485, Cl. 428-458.000.

Parris, Gene E.: *See—*
Armor, John N.; and Parris, Gene E., 5,059,713, Cl. 564-187.000.

Parsons, Michael L.; Hutchins, Peter L.; and Tseng, Yeong-Jeng V., to Pacific Scientific Company. Infrared overheat and fire detection system. 5,059,953, Cl. 340-578.000.

Parthasarathy, Mellapalayam R. Light pipe for decorative illumination. 5,060,119, Cl. 362-32.000

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Hochbein, David E.; and Pastuszak, Ronald F., 5,058,878, Cl. 271-145.000

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Mrvos, James M.; Paterra, Jeffrey H.; and Zimmer, Agnes K., 5,059,045, Cl. 400-197.000.

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Ealba, Robert H.; Paterson, Robert W.; Werle, Michael J.; and Presz, Walter M., Jr., 5,058,703, Cl. 181-228.000.

Patil, Mallanagouda D.: *See—*
Buckwalter, Charles Q., Jr.; Lachman, Irwin M.; Patil, Mallanagouda D.; and Williams, Jimmie L., 5,059,489, Cl. 428-550.000

Patoiseau, Jean-Francois: *See—*
Mouzin, Gilbert; Cousse, Henri; Patoiseau, Jean-Francois; Autin, Jean-Marie; and Bigg, Dennis, 5,059,599, Cl. 514-247.000

Patterson, Gary W. Hydraulic exercise apparatus. 5,058,887, Cl. 272-130.000

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Patterson, Ronald; and Patterson, John W. Plate and glass assembly 5,058,737, Cl. 206-217.000

Patton, Robert T.; Vaughn, Walter L.; and McKeand, Thomas J., Jr., to Dow Chemical Company, The. Biocidal foams. 5,059,629, Cl. 521-84.100.

Paul, Ana: *See—*
Paul, Marius A.; and Paul, Ana, 5,058,537, Cl. 123-51.0BA

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Herold, Wolf-Dietrich; Koran, Peter; and Pauser, Helmut, 5,058,770, Cl. 222-80.000.

Pawlikowski, Joseph M.: *See—*
Henschenp, Homer E.; McKee, Michael J.; and Pawlikowski, Joseph M., 5,059,756, Cl. 219-85.220.

Payne Engineering Company: *See—*
Payne, III; Henry E., 5,058,521, Cl. 114-339.000.

Payne, III; Henry E., to Payne Engineering Company. Submarine with keel wing for effectively countering tendency to snap roll in high speed turns while fully submerged. 5,058,521, Cl. 114-339.000

Pearlman, Gordon W.; and Carlson, Steven B., to Lightolier Incorporated. Programmable lighting control system linked by a local area network. 5,059,871, Cl. 315-316.000.

Pedroni, Paola; Riboli, Barbara; De Ferra, Francesca; Grandi, Guido; Toma, Salvatore; Arico', Beatrice; and Rappuoli, Rino. Cloning and sequencing of the gene which codes for a new pilinic subunit of *Bordetella pertussis*. 5,059,537, Cl. 435-252.310.

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Magruder, Judy A.; Eckenhoff, James B.; Cortese, Richard; Wright, Jeremy C.; and Peery, John R., 5,059,423, Cl. 424-438.000.

Peeters, Hendrikus W. C. M.: *See—*
Davis, Marvin B.; Peeters, Hendrikus W. C. M.; and Taylor, Wilhelm, 5,060,106, Cl. 360-133.000.

Pelters, Stephan; and Klink, Horst, to Dr. Ing. h.c.F. Porsche AG. Exhaust system of an internal-combustion engine. 5,058,380, Cl. 60-288.000.

Penalver, Georges, to Societe d'Applications Generales d'Electricite et de Mecanique Sagem. Videotex terminal for receiving telecopies. 5,060,257, Cl. 379-100.000.

Penet, Xavier: *See—*
Allouis, Jacques; Hauptmann, Patrick; Penet, Xavier; and Saint-Ellier, Pierre, 5,060,241, Cl. 375-108.000.

Penrod, Richard J.; and McCullagh, Roy H., to Frank A. Arone. Apparatus for daylight color duplication. 5,060,118, Cl. 362-1.000.

Pepin, Gregory P.: *See—*
Davis, Lorne A., Jr.; Pepin, Gregory P.; and Moss, Robert M., 5,058,425, Cl. 73-153.000.

Percebois, Alain; Remy, Andre; and Vitel, Jean-Pierre, to Pont-A-Mousson S.A. Pipe joint gasket with annular anchoring heel. 5,058,907, Cl. 277-207.00A.

Perchak, Robert, to Monarch Marking Systems, Inc. Deactivatable electronic article surveillance tags, tag webs and method of making tag webs. 5,059,950, Cl. 340-572.000.

Periot, Robert, to GEC Alsthom SA. Method of cooling electrical components, device for implementing same and application to vehicle-borne components. 5,058,391, Cl. 62-238.600.

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Kushner, Burton A.; Rotolico, Anthony J.; Nerz, John E.; and Saia, Lawerence A., 5,059,095, Cl. 416-241.00B

Permclip Products Corporation: *See—*
Corey, Joseph T., 5,059,051, Cl. 402-75.000.

Permelec Electrode Ltd.: *See—*
Hirao, Kazuhiro; and Hayashi, Takanobu, 5,059,297, Cl. 204-290.00R.

Perrego, James A.: *See—*
McNally, Michael H.; Timm, Walter C.; Terwilliger, Bruce J.; and Perrego, James A., 5,059,471, Cl. 428-143.000

Perner, Philippe A.: *See*—
Prucnal, Paul R.; and Perrier, Philippe A., 5,060,305, Cl. 359-140.000.

Persyk, Dennis E., to Siemens Gammasonics, Inc. Frangible bonding of photomultiplier tubes for use in scintillation cameras and PET scanners. 5,059,798, Cl. 250-363.030.

Pesant, Jean-Claude: *See*—
Chevallier, Jacques; Pesant, Jean-Claude; Mircea, Andrei; and Benoir, Rose, 5,059,551, Cl. 437-96.000.

Pesce, Fernando: *See*—
Barbagelata, Giuseppe; Conterno, Bruno; and Pesce, Fernando, 5,060,186, Cl. 364-200.000.

Petelenz, Tomasz: *See*—
Hanover, Barry K.; Jacobsen, Stephen C.; Simon, Eric M.; Petelenz, Tomasz; and Mladejovsky, Michael G., 5,059,175, Cl 604-891.100.

Peter, Roland: *See*—
Eisenbarth, Philipp; Peter, Roland; and Folda, Thomas, 5,059,665, Cl. 526-262.000.

Peterling, Horst: *See*—
Fischer, Manfred; Peterling, Horst; Kaiser, Johannes; Keuser, Klaus; and Wust, Wilhelm, 5,059,310, Cl. 209-237.000.

Peters, Michael V. Folding mat and shelter. 5,059,463, Cl. 428-65.000.

Peters, Reinhard: *See*—
Lutter, Heinz-Dieter; Hinz, Werner; Decker, Walter; Leppkes, Reinhard; Reich, Erhard; Peters, Reinhard; Haase, Volker; and Lugmayr, Michael, 5,059,633, Cl. 521-160.000.

Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft 7-(4-oxa or 4-thia-2,7-diazabicyclo[3.3.0]oct-2-en-3-yl)-3-quinolone-and-naphthyridone-carboxylic acid derivatives as antibacterial agents and feed additives. 5,059,597, Cl. 514-224.500.

Peterson, David L., to Eastman Kodak Company. Multi-beam laser diode array. 5,060,237, Cl. 372-50.000.

Peterson, Stanley P. D.; and Redford, Gary R., to Hughes Aircraft Company. Optical fiber dispensing system. 5,058,969, Cl. 385-147.000.

Petisce, James R.: *See*—
Mon, Joseph M.; and Petisce, James R., 5,059,635, Cl. 522-3.000.

Petit, Dominique: *See*—
Dorlanne, Olivier; and Petit, Dominique, 5,060,117, Cl. 361-421.000.

Petit, Gaston; and Monteiro, Daniel, to Auximat-Levage. Installation for processing raw fruit, particularly plums. 5,059,308, Cl. 209-10.000.

Petrak, Peter: *See*—
Stuber, Istvan; Nagy, Geza; and Petrak, Peter, 5,059,011, Cl. 359-375.000.

Petro, Richard J.: *See*—
Moore, David N.; Petro, Richard J.; and Ullrich, Jeffrey F., 5,058,772, Cl. 222-109.000.

Petroff, Lenin J.; Romensko, David J.; and Ekeland, Robert A., to Dow Corning Corporation. Foliar-applied herbicidal compositions containing a silicone glycol-silicone alkane terpolymer adjuvant 5,059,704, Cl. 556-437.000.

Petterson, Dewitt R.; Kramer, Charles E.; and DiTaranto, Francis A., to Albany International Corp. System for adapting heat shrinkable fibrous structures to particular uses. 5,059,378, Cl. 264-258.000.

Petty, Thomas D.; and Vyne, Robert L., to Motorola Inc. Fractional lead current detector. 5,059,923, Cl. 330-273.000.

Petty, Thomas D.: *See*—
Vyne, Robert L.; and Petty, Thomas D., 5,059,921, Cl. 330-261.000.

Peuckert, Marcellus; and Boberski, Cornelia, to Hoechst Aktiengesellschaft. Silicon nitride ceramic and a process for its preparation. 5,059,565, Cl. 501-97.000.

Pfister, Juergen: *See*—
Hagen, Helmut; Pfister, Juergen; Ziegler, Hans; Wuerzer, Bruno; and Westphalen, Karl-Otto, 5,059,240, Cl. 71-94.000.

Pfizer Inc.: *See*—
Eggler, James F.; Marfat, Anthony; and Melvin, Lawrence S., Jr., 5,059,609, Cl. 514-314.000.
Schulte, Gary R.; and Ehrgott, Frederick J., 5,059,693, Cl. 548-468.000.

Phan, M. Nghiem; and Blood, William R., Jr., to Motorola, Inc. ECL circuit with low voltage/fast pull-down. 5,059,827, Cl. 307-455.000.

Phelan, James J., to Deere & Company. Ultrasonic distance measuring system. 5,060,205, Cl. 367-98.000.

Philip Morris Incorporated: *See*—
Van Davelaar, Peter C., 5,059,164, Cl. 493-12.000.

Philippson, Walter M.; Brennan, Robert J.; and Meighen, Terrence, to Stewart Stamping Corporation. Shielded plug and jack connector. 5,059,140, Cl. 439-607.000.

Phillips, Edward H., to Techco Corporation. Method and apparatus for determining the angular velocity of a shaft. 5,059,900, Cl. 324-160.000.

Phillips Petroleum Company: *See*—
Gentry, Cecil C., 5,058,664, Cl. 165-162.000.

Phillips, Roger; McGarraugh, Geoffery; Jurik, Frank; and Underwood, Ray, to Lifescan, Inc. Analytical device for the automated determination of analytes in fluids. 5,059,394, Cl. 422-68.100.

Phillips, Roger W.; Mayer, Thomas; and Ash, Gary S., to Flex Products, Inc. Ink incorporating optically variable thin film flakes. 5,059,245, Cl. 106-22.000.

Phillips, Roger W.: *See*—
Todd, David W.; Brown, Lindsey; Phillips, Roger W.; and Overshiner, Elliot E., 5,059,454, Cl. 427-259.000.

Phillips, Terry E.: *See*—
Bohandy, Joseph; Kim, Boris F.; Phillips, Terry E.; Adrian, Frank J.; and Moorjani, Kishin, 5,059,891, Cl. 324-71.600.

Phoenix Closures, Inc.: *See*—
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Phoenix Microsystems, Inc.: *See*—
Gewin, Robert E.; and Aderholt, Gary L., 5,060,226, Cl. 370-15.000.

Photonic Integration Research, Inc.: *See*—
Sun, Cheng-ko J.; Sakaguchi, Shigeki; and Miyashita, Tadashi, 5,059,475, Cl. 428-195.000.

Pialet, Joseph W.: *See*—
Rizvi, Syed Q. A.; Di Biase, Stephen A.; Pialet, Joseph W.; and Koch, Frederick W., 5,059,335, Cl. 252-32.500.

Pichl, Volker: *See*—
Plohberger, Diethard; Pichl, Volker; and Ofner, Herwig, 5,058,614, Cl. 137-1.000

Pick, William. Construction for supporting a flexible sheet. 5,059,218, Cl. 55-131.000

Pickart, Loren R., to ProCyte Corporation, Incorporated. Methods and compositions for healing bone using Gly His Lys: Copper. 5,059,588, Cl. 514-12.000.

Pierce, William M., Jr., to Research Corporation Technologies, Inc. Topically active ocular benzothiazole sulfonamide carbonic anhydrase inhibitors. 5,059,613, Cl. 514-367.000.

Pierre Fabre Medicament: *See*—
Mouzin, Gilbert; Cousse, Henri; Patoiseau, Jean-Francois; Autin, Jean-Marie; and Bigg, Dennis, 5,059,599, Cl. 514-247.000.

Pietzko, Gunter: *See*—
Hoffken, Erich; Lax, Hermann; and Pietzko, Gunter, 5,058,656, Cl. 164-416.000

Pike, Thomas W.: *See*—
Abreu, Christian O.; Beresniewicz, Jon M.; Long, James A.; and Pike, Thomas W., 5,059,990, Cl. 346-153.000.

Pilkington PLC: *See*—
Goodall, David R., 5,059,458, Cl. 428-34.000.

Pillari, Anthony, to General Electric Company. Overwing thrust reverser. 5,058,828, Cl. 244-110.00B.

Pineau, Jean C., to Societe Procedes Machines Speciales, S.P.M.S. Machine for the abrasive machining of cylindrical journals on components, in particular for machining journals and crank pins on crankshafts using abrasive material. 5,058,325, Cl. 51-154.000.

Pini, Rafaele: *See*—
Muellner, Grazyna E.; Pini, Rafaele; Cashen, Dennis; Marry, Patrick J.; and Ford, David K., 5,060,264, Cl. 380-46.000.

Pioneer Electronic Corporation: *See*—
Kakuta, Yoshiyuki; and Adachi, Masatoshi, 5,059,780, Cl. 250-205.000.
Kawamura, Katsumi; Narumi, Ichiro; and Yamada, Takao, 5,060,215, Cl. 369-44.350.
Kuriyama, Kazumi, 5,058,610, Cl. 134-98.000.
Sakaguchi, Shozaburo; and Ando, Hitoshi, 5,059,969, Cl. 342-352.000
Shinoda, Ryuichi, 5,060,270, Cl. 381-63.000.
Suzuki, Toshio; and Nishitsuka, Mitsuru, 5,060,216, Cl. 369-44.410.

Pioneer Video Corporation: *See*—
Kuriyama, Kazumi, 5,058,610, Cl. 134-98.000.

Piotrowski, Andrzej M.; and Malpass, Dennis B., to Texas Alkyls, Inc. Hydrocarbon soluble copper alkoxide compositions. 5,059,703, Cl. 556-113.000

Piper, William D. Shoulder cushion attachment for ladders. 5,058,789, Cl. 224-265.000.

Pirhonen, Jussi: *See*—
Le Bell, Jean; Valjakka, imo; Pirhonen, Jussi; Sunden, Fred; Hautaniemi, Erkki; Jarvela, Pentti; Sandelin, Bjorn; and Algars, Rainer, 5,059,472, Cl. 428-161.000.

Pitney Bowes Inc.: *See*—
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Plahm, Jack E.: *See*—
Seiden, Frederick C.; Plahm, Jack E.; Veix, Scott J.; and Wiles, Jerald R., 5,058,364, Cl. 53-455.000.

Plaks, Norman; and Sparks, Leslie E., to United States of America, Environmental Protection Agency. Electroprecipitator with alternating charging and short collector sections. 5,059,219, Cl. 55-138.000.

Plancon, Michel, to Timex Corporation. Stator assembly for a timepiece stepping motor. 5,059,840, Cl. 310-49.00R.

Plaskowski, Christian: *See*—
Watisse, Luc; Plaskowski, Christian; and Forest, Jean-Francois, 5,058,399, Cl. 66-203.000.

Plastmo Ltd.: *See*—
Harbom, John; and Skjodt, Allan, 5,058,321, Cl. 49-177.000.

Plattner, Jacob J.: *See*—
Stein, Herman H.; Plattner, Jacob J.; and Crowley, Steven R., 5,059,589, Cl. 514-19.000.

Plazanet, Maurice P. Machine and drive disk for the repair and/or maintenance of floors. 5,058,229, Cl. 15-49.100.

Ple, Philippe: *See*—
Jahnke, Serge; and Ple, Philippe, 5,059,382, Cl. 376-215.000.

Plempel, Manfred: *See*—
Fugmann, Burkhard; Plempel, Manfred; Stroech, Klaus; and Buchel, Karl H., 5,059,615, Cl. 514-383.000.

Plessey Overseas Limited: *See*—
Hart, Peter B.; and Gooding, John, 5,060,027, Cl. 357-17.000.

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Pon, Yun c.: *See*—
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Kok, Gee S.; Chan, Sek L.; Tay, Wan F.; Teo, Pek B.; Prakash, Chacko; and Lim, Hock S., 5,060,293, Cl. 455-78.000.

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Pringle, Ronald E., to Camco International Inc. Equalizing means for a subsurface well safety valve. 5,058,682, Cl. 166-324.000.

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Procter & Gamble Company, The: *See*—
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Ennis, John L.; Kopf, Peter W.; Rudolph, Stephen E.; and van Buren, Martin F., 5,059,443, Cl. 426-531.000.
Hood, William H.; and Trokhan, Paul D., 5,059,283, Cl 162-199.000.
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Product Innovation, Inc.: *See*—
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Proform Fitness Products, Inc.: *See*—
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D'Iribarne, Benoit; Vanaschen, Luc; Promper, Hans-Josef; and Kuster, Hans-Werner, 5,059,235, Cl. 65-287.000.

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Qualkenbush, Jack D. Cam shaft bushing puller. 5,058,255, Cl. 29-255.000.

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Ramsower, Vernon O. Reciprocating water well pump. 5,058,667, Cl 166-68.000.
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Rasmussen, Henry G. Method and apparatus for forming radius corners. 5,058,640, Cl. 144-367.000.
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Le Bell, Jean; Valjakka, imo; Pirhonen, Jussi; Sunden, Fred; Hautaniemi, Erkki; Jarvela, Pentti; Sandelin, Bjorn; and Algars, Rainer, 5,059,472, Cl. 428-161.000.
Sanden Corporation: *See—*
Uehara, Fumiaki, 5,059,842, Cl. 310-78.000.
Sander, Hans: *See—*
Burow, Wilfried; Brunn, Horst; Kresse, Peter; and Sander, Hans, 5,059,250, Cl. 106-459.000.
Sanders, Richard J., Jr.: *See—*
Tyrrell, Raymond E.; Dunning, Stephen C.; Sanders, Richard J., Jr.; Hurlocker, Claude M.; Gingell, Michael J.; and Jones, Jeffrey P., 5,060,229, Cl. 370-110.100.
Sanderson, John R.: *See—*
Knifton, John F.; and Sanderson, John R., 5,059,725, Cl. 568-698.000.
Sandoz Ltd.: *See—*
Moser, Helmut A.; and Wald, Roland, 5,059,683, Cl. 534-759.000.
Sandoz, Maria A.: *See—*
Sandoz, William J.; and Sandoz, Maria A., 5,058,609, Cl. 132-270.000.
Sandoz, William J.; and Sandoz, Maria A., to Sandoz, William J. Hair highlighting apparatus. 5,058,609, Cl. 132-270.000.
Sandvik AB: *See—*
Lagerberg, Stig E. V., 5,059,069, Cl. 407-113.000.
Sanshin Kogyo Kabushiki Kaisha: *See—*
Onoue, Akihiro, 5,059,144, Cl. 440-75.000.
Sansho Co., Ltd.: *See—*
Yoshida, Mitsuhiro; Morita, Yutaka; Ishino, Yoshio; and Ohsawa, Shigemitsu, 5,059,427, Cl. 424-449.000.
Santicchi, Augusto. Device for adjusting the stop position of conveyor belts used on overhead conveyor systems. 5,058,722, Cl. 198-345.200.
Sanwa Kagaku Kenkyusho Co., Ltd.: *See—*
Sawai, Kiichi; Kurono, Masayasu; Asai, Hiromoto; Mitani, Takahiko; Ninomiya, Naohisa; and Suzuki, Tomoo, 5,059,594, Cl. 514-103.000.
Sanwo, Ikuo J.: *See—*
Lauffer, Donald K.; and Sanwo, Ikuo J., 5,059,835, Cl. 307-576.000.
Sanyo Electric Co., Ltd.: *See—*
Miki, Shigeru; Shirai, Mitsuzou; and Ichikawa, Yuuichi, 5,060,056, Cl. 358-31.000.
Tanaka, Toshiharu; Shibata, Kenichi; Takeuchi, Kousuke; Sakata, Masakazu; Okano, Hiroshi; and Kuroki, Kazuhiko, 5,059,847, Cl. 310-313.00A.
Sanyo-Kokusaku Pulp Co., Ltd.: *See—*
Mino, Hisashi; Iijima, Takeshi; and Monden, Kuniaki, 5,059,509, Cl. 430-257.000.
Sapre, Ajit V., to Mobil Oil Corporation. Multistage FCC catalyst stripping. 5,059,305, Cl. 208-113.000
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, to Amada Company, Limited. Plate bending machine equipped with a plate clamping manipulator and a plate position detecting device. 5,058,406, Cl. 72-9.000.
Sartorius AG: *See—*
Melcher, Franz-Josef; Oldendorf, Christian; and Berthel, Dieter, 5,058,692, Cl. 177-181.000.
Sasabe, Shunji: *See—*
Owada, Nobuo; Akimori, Hiroyuki; Nitta, Takahisa; Kobayashi, Tohru; Sasabe, Shunji; Kawaji, Mikinori; and Kasahara, Osamu, 5,060,045, Cl. 357-45.000.
Sasagawa, Katsuyoshi: *See—*
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Sasaki, Kouichi; and Nakamura, Takashi, to Fuji Photo Film Co., Ltd Processing solution supplementing apparatus and method. 5,059,998, Cl. 354-324.000.
Sasaki, Mari: *See—*
Kojima, Narihito; Nagame, Hiroshi; Seto, Mitsuru; Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Hirose, Naoki; Sasaki, Mari; and Takeyama, Junichi, 5,059,502, Cl. 430-66.000.
Sasaki, Masaomi: *See—*
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Sasaki, Shizuo: *See—*
Hashimoto, Eiji; Sawada, Daisaku; Sasaki, Shizuo; Tamaki, Yoshiyuki; and Mitsuyasu, Masaki, 5,058,549, Cl. 123-298.000.
Sasaki, Shosaku: *See—*
Hamada, Yuji; Sasaki, Shosaku; and Masaoka, Hiroshi, 5,059,669, Cl. 528-32.000.
Sasaki, Takuma: *See—*
Ueda, Tohru; Matsuda, Akira; Minakawa, Noriaki; Sasaki, Takuma; and Yanagi, Yoshikazu, 5,059,590, Cl. 514-23.000.
Sasaki, Tomoyuki: *See—*
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Sasaki, Tsuto: *See—*
Takaoka, Tokuro; Sasaki, Tsuto; Kobayashi, Yukio; Saitoh, Kouichi; Hamano, Satoshi; and Tatumoto, Toshiya, 5,058,626, Cl. 137-625.660.
Sasaki, Yutaka; Mori, Kunio; and Moriya, Kiyoshi, to Nitto Chemical Industry Co., Ltd. Process for producing molybdenum-containing metal oxide fluid-bed catalyst. 5,059,573, Cl. 502-205.000.
Sasama, Hiroshi: *See—*
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Sasse, Klaus: *See—*
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Sato, Hiroshi: *See—*
Higuma, Masahiko; Mori, Takahiro; and Sato, Hiroshi, 5,059,983, Cl. 346-1.100.
Sato, Hisayoshi: *See—*
Ishikawa, Isao; Semba, Takuya; Tani, Yasuhiro; and Sato, Hisayoshi, 5,060,201, Cl. 367-7.000.
Sato, Kan-ichi: *See—*
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Sato, Katsuhito: *See—*
Yaba, Susumu; Takigawa, Tomoya; Kikugawa; Osada, Koichi; Sato, Katsuhito; and Omae, Masaru, 5,059,254, Cl. 136-251.000.
Sato, Keiji, to Fuji Jukogyo Kabushiki Kaisha. System for controlling a continuously variable transmission having a torque converter. 5,059,157, Cl. 474-18.000.
Sato, Kiyoshi; and Ono, Kouji, to Konica Corporation. Silver halide photographic material. 5,059,516, Cl. 430-599.000.
Sato, Kouichi: *See—*
Watanabe, Tomoki; Nitta, Yukio; Sato, Kouichi; Fuse, Yoshiya; and Kinoshita, Koji, 5,059,041, Cl. 384-476.000.
Sato, Kunihiko: *See—*
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Wanou, Masahiro; Sato, Kunihiko; Kimura, Masatoshi; and Nakajima, Junzo, 5,060,016, Cl. 355-219.000.
Sato, Masaaki; and Takashima, Izumi, to Fuji Xerox Co., Ltd. Illuminating light source for color image recording device. 5,059,860, Cl. 313-488.000.
Sato, Masakatsu: *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,059,726, Cl. 568-726.000.
Sato, Shigenobu: *See—*
Yamazaki, Yasuo; Nomura, Toshiaki; Maruyama, Takashi; and Sato, Shigenobu, 5,058,360, Cl. 53-133.200.
Sato, Wasuke, to Showa Denko K.K. Lid for can-like container and method for making an easily opened container lid. 5,059,360, Cl. 264-23.000.
Sato, Yoshiharu: *See—*
Tashiro, Masashi; Mataga, Shuntaro; Takahashi, Kazufumi; Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; Sato, Yoshiharu; and Maeda, Shuichi, 5,059,863, Cl. 313-504.000.
Satoh, Hiroshi: *See—*
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Satoh, Kazuo; and Nosaka, Tsutomu, to Sumitomo Rubber Industries, Ltd. Method for applying the material. 5,059,268, Cl. 156-130.300.
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Tsuda, Yoko; Satoh, Susumu; and Omata, Tetsuo, 5,059,628, Cl. 514-784.000.
Satoh, Yukimasa. Method and device for treating oil sludge and oil-containing waste water. 5,059,332, Cl. 210-771.000.
Sau, Arjun, to Aqualon Company. Silated polysaccharides. 5,059,686, Cl. 536-114.000.
Savin, Michael A.: *See—*
El-Nounou, Fozan O.; Savin, Michael A.; Sahatjian, Ronald A.; Weinreich, Michael; and Kordis, Thomas F., 5,059,205, Cl. 606-200.000.
Sawa, Aiko: *See—*
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Sawada, Daisaku: *See—*
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Sawai, Kiichi; Kurono, Masayasu; Asai, Hiromoto; Mitani, Takahiko; Ninomiya, Naohisa; and Suzuki, Tomoo, to Sanwa Kagaku Kenkyusho Co., Ltd. Phytic acid compositions. 5,059,594, Cl. 514-103.000.
Sawano, Mitsuru; Igata, Toshiaki; and Takahashi, Younosuke, to Fuji Photo Film Co., Ltd. Method of overwriting information on recording medium. 5,060,222, Cl. 369-100.000.
Sayles, David C., to United States of America, Army. Composite rocket propellant composition with a controllable pressure exponent. 5,059,260, Cl. 149-192.000.
Scardera, Michael; and Grosser, Frank R., to Olin Corporation. Polyglycidol amine oxide surfactants having antimicrobial activity. 5,059,625, Cl. 514-644.000.
Schaaf, Glen D.: *See—*
Steiniger, John L.; Schaaf, Glen D.; Greenlee, William S.; and Mertzel, Elaine A., 5,059,476, Cl. 428-217.000.
Schable, Reinhold A.: *See—*
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Schamel, Alfred H.: *See—*
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Scharfenberger, James A.: *See—*
Cox, Jack L.; and Scharfenberger, James A., 5,058,812, Cl. 239-691.000
Schartel, Ronald S.: *See—*
Haehnel, Rudolf H.; and Schartel, Ronald S., 5,058,818, Cl. 242-42.000
Schartz, Rene. Mask for reconditioning the rims of automobile wheels. 5,058,958, Cl. 301-37.00R.
Schauer, Friedrich; Berthold, Hans; Wolff, Manfred; and Wolfel, Kurt, to Kabelmetal Electro GmbH. Apparatus for providing an electrical conduction path between two contact locations which are rotatable with respect to each other. 5,059,134, Cl. 439-164.000.
Schauer, Jan: *See—*
Bleha, Miroslav; Schauer, Jan; Lokaj, Jan; Polockaja, Galina A.; Kuznecov, Jurij P.; and Romaskova, Kira A., 5,059,220, Cl. 55-158.000
Schaulin, Rudolf, to Ciba-Geigy Corporation. Water-soluble phthalocyanine compounds, process for their preparation and their use. 5,059,682, Cl. 534-702.000.
Schechter, Gary L.; and Coleman, Robert F., to Center for Innovative Technology; and Eastern Virginia Medical School of the Medical College. Graphical readout of laryngotracheal spectra and airway monitor. 5,058,600, Cl. 128-716.000
Scheele, Michael R.; and Ginther, Max R., to Allen Protection Services, Inc. Remote alarm module and alarm system. 5,059,945, Cl. 340-426.000
Scheible, Wayne. Storage and display device for coin cassettes. 5,058,734, Cl. 206-0.830.
Scheinpflug, Hans: *See—*
Brandes, Wilhelm; Kaspers, Helmut; Reinecke, Paul; Scheinpflug, Hans; and Kramer, Wolfgang, 5,059,617, Cl. 514-383.000.
Scheld, John L., to Tribophysics Corporation. Lubricant. 5,059,334, Cl. 252-32.500
Schenck Auto-Service-Gerate GmbH: *See—*
Guyot, Volker, 5,058,428, Cl. 73-457.000.
Schenke, Thomas: *See—*
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Scherer, Julie A.: *See—*
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Schering Aktiengesellschaft: *See—*
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Scherrer, Klaus; and Grossi de Sa, Maria-Fatima, to Pro-Soma. Monoclonal antibodies against prosumal proteins. 5,059,521, Cl. 435-7.100.
Scheuneman, James H.; Byers, Larry L.; and Michaelson, Wayne A., to Unisys Corporation. Memory access system for pipelined data paths to and from storage. 5,060,145, Cl. 364-200.000.
Schierz, Winfried: *See—*
Hebenstreit, Ernst; Lorenz, Leo; Schierz, Winfried; and Amann, Heinz, 5,060,048, Cl. 357-68.000.
Schiferl, Joseph J., to General Signal Corporation. Refractory fiber module retainer system. 5,059,369, Cl. 264-87.000.
Schildkraut, Jay S.; Revelli, Joseph F.; and Prince, Eric T., to Eastman Kodak Company. Quasi-phase matching optical waveguide. 5,058,970, Cl. 359-328.000.
Schilling, Dean W. Cryogenic self-seeding vial. 5,059,399, Cl. 422-102.000.
Schimmel, Karl F.: *See—*
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Schindler, Peter V. System and method for disposal of waste. 5,059,066, Cl. 405-210.000.
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Schirpke, Michael W.: *See—*
Levine, Stephen R.; Harui, Alex J.; Schirpke, Michael W.; Donoghue, Karen; and Ajgaonkar, Donna, 5,060,135, Cl. 364-200.000.
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Schlich, Elmar: *See—*
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Schlosser, Alvin L., to Lourdes Industries. High pressure coupling with provision for preventing separation of parts and with anti-galling provision. 5,058,930, Cl. 285-92.000.
Schlumberger Technology Corporation: *See—*
Muller, Laurent E.; Randermann, Ervin, Jr.; and Upchurch, James M., deceased, 5,058,673, Cl. 166-187.000.
Schlumberger Technology Corportion: *See—*
Huber, Klaus B.; Edwards, A. Glen; Hill, William M.; and Miszewski, Antoni, 5,058,680, Cl. 166-297.000.
Schmacher, Roland W. Package end fold sealer and method. 5,058,361, Cl. 53-370.900.
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Schmid, Dagobert, to Chr. Renz GmbH & Co. Apparatus for the combing-in and binding of punched sheets. 5,059,078, Cl. 412-39.000.
Schmid, Heinz: *See—*
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Schmid, K. Stephen; and Brault, Richard A., to Ferno-Washington, Inc. Adjustable cervical collar. 5,058,572, Cl. 128-75.000.
Schmid, Paul M., to Isolink Ltd. Fixing element for low strength materials. 5,059,077, Cl. 411-400.000.
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Schmidt, Hans U.: *See—*
Horn, Peter; Rehmer, Gerd; Lutter, Heinz-Dieter; Ramlow, Gerhard; Hinz, Werner; and Schmidt, Hans U., 5,059,632, Cl. 521-137.000.
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Schmitt, Hans-Jurgen; Seidenberg, Jurgen; Thorweihe, Norbert; Dammann, Hans; Doormann, Volker; and Krumme, Jens-Peter, to U.S. Philips Corp. Planar optical isolator. 5,058,971, Cl. 385-11.000.
Schmitt, Michael A.: *See—*
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Schmitt, Robert A.: *See—*
Allison, J. Dennis; and Schmitt, Robert A., 5,059,110, Cl. 424-260.000.
Schmolzer, Gerhard; and Schipfer, Rudolf, to Vianova Kunstharz, A.G. Crosslinking components for paint binders and process for their preparation. 5,059,652, Cl. 524-591.000.
Schnatzmeyer, Mark A.: *See—*
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Schneider, George S.: *See—*
Cycon, James P.; Schneider, George S.; and Tenerowicz, Gregory P., 5,058,824, Cl. 244-17.130.
Schneider, Helmut: *See—*
Kabelitz, Hans-Peter; Lassig, Harald; and Schneider, Helmut, 5,059,092, Cl. 415-90.000.
Schneider, Michael G.; and Byrd, William A., to Sundstrand Corporation. Centrifugal two-phase flow distributor. 5,059,226, Cl. 55-459.100.
Schneider, Siegfried: *See—*
Kummel, Klaus; Klapettek, Gerhard; and Schneider, Siegfried, 5,060,025, Cl. 355-319.000.
Schneider, Werner: *See—*
Henning, Paul-Georg; and Schneider, Werner, 5,058,608, Cl 131-336.000.
Schoenfelder, George. Under-bed humidifier. 5,058,227, Cl. 5-508.000.
Scholla, Michael H.; and Vinod, Yashavant; V., to Du Pont de Nemours, E. I., and Company. Antimicrobial stain-resist carpet treatment. 5,059,420, Cl. 424-405.000.
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Schott Glass Technologies, Inc.: *See—*
Ciolek, Sally; and Krashkevich, David, 5,059,561, Cl. 501-13.000.
Schott Glaswerke: *See—*
Ackermann, Ulrich; Bauch, Hartmut; and Paquet, Volker, 5,059,231, Cl. 65-3.120.
Schott, Wolfgang H.: *See—*
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Schrader, Bernhard: *See—*
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Schriewer, Michael: *See—*
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Schroder, Christiaan; Van Geenen, Albert A.; and Ortmans born Schiffer, Josefina M. A., to Stamicarbon B.V. Process for the condensation of imides and alcohols or amines. 5,059,687, Cl. 540-526.000.
Schroeder, Michael J.: *See—*
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Schubert, Erdmann; Ploog, Klaus; and Fischer, Albrecht, to Max-Planck Gesellschaft zur Forderung der Wissenschaften. Injection laser with at least one pair of monoatomic layers of doping atoms. 5,060,234, Cl. 372-45.000.
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Schuelke, David J.; and Looman, James A., to Herman Miller, Inc. Panel connector system. 5,058,347, Cl. 52-339.000.
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Schuler, Andreas: *See—*
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Schulte, Gary R.; and Ehrgott, Frederick J., to Pfizer Inc. Process for making 3-aroyl-2-oxindole-1-carboxamides. 5,059,693, Cl. 548-468.000.
Schulthess, Adrian; and Hunziker, Max, to Ciba-Geigy Corporation. Unsaturated beta-keto-ester acetals. 5,059,698, Cl. 549-375.000
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Schultz, Roger L.; Manke, Kevin R.; and Beck, H. Kent, to Halliburton Company. Wellbore fluid sampler and method. 5,058,674, Cl. 166-264.000.
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Schulz, Hans H.; and Jonischkeit, Horst, to Bayer Aktiengesellschaft Device and process for spraying dental molding compound. 5,059,121, Cl. 433-88.000.
Schulz, Winfried: *See—*
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Schumacher, Karl H.; and Keating, Raymond, to Pitney Bowes Inc Optimizing mail processing by matching publisher and printer entities. 5,060,165, Cl. 364-478.000
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Schupp, Hans: *See—*
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Schwaebische Huettenwerke GmbH: *See—*
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Schwartz, Seymour L., to Airflo Aluminum Awning Company. Foam panel roof mounting system. 5,058,333, Cl. 52-73.000.
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Schwarzbauer, Herbert, to Siemens Aktiengesellschaft. Apparatus for fastening electronic components to substrates. 5,058,796, Cl 228-44.300.
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Schwent, Dale G.; Osmani, Rashid M.; and Cristiano, Gary M., to Motorola, Inc. Dual mode power amplifier for radiotelephone. 5,060,294, Cl. 455-93.000.
Scirica, Paul A.: *See—*
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Scott, David W., to A. E. Bishop & Associates Pty., Ltd. Rotary slot cutting tools and insert clamping method. 5,059,068, Cl. 407-9.000
Scott, Harry A.: *See—*
Wurst, Stephen G.; and Scott, Harry A., 5,058,830, Cl. 244-140.000
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Scott, Xenophon C. Modem/telephone handset cord adaptor 5,059,141, Cl. 439-638.000.
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Steube, Gary J., to Mississippi Power Company. Tool apparatus for applying large forces. 5,058,272, Cl. 30-134.000.
Stevens, Harry C. Trash bag holder. 5,058,839, Cl. 248-97.000.
Stevenson, James T. Precision gauge assembly. 5,058,284, Cl. 33-535.000.
Stewart, Kevin J.: *See—*
Babich, Edward D.; Gelorme, Jeffrey D.; Hatzakis, Michael; Shaw, Jane M.; Stewart, Kevin J.; and Witman, David F., 5,059,512, Cl. 430-280.000.
Stewart, Robert M., to Brandt, Inc. Currency counter. 5,058,875, Cl. 271-10.000.
Stewart Stamping Corporation: *See—*
Philippson, Walter M.; Brennan, Robert J.; and Meighen, Terrence, 5,059,140, Cl. 439-607.000.
Steyr-Daimler-Puch AG: *See—*
Hacker, Gerold; and Strzygowski, Walter, 5,058,638, Cl. 144-3.00D.
Stillwagon Applied Technology Incorporated: *See—*
Stillwagon, Woodrow C., 5,058,405, Cl. 70-456.00R.
Stillwagon, Woodrow C., to Stillwagon Applied Technology Incorporated. Key chain with storage compartment. 5,058,405, Cl. 70-456.00R.
STL International, Incorporated: *See—*
Teeter, Roger C.; and Smith, Larry C., 5,058,910, Cl. 280-14.200.
Sto AG: *See—*
Rheinlander, Heinz, 5,058,705, Cl. 181-287.000.
Stocker, Bettina: *See—*
Fink, Hans-Werner; Schmid, Heinz; and Stocker, Bettina, 5,059,804, Cl. 250-396.00R.
Stockham Valves & Fittings, Inc.: *See—*
Chitty, Gordon W., Jr.; and Nichols, Jerry L., 5,058,622, Cl. 137-385.000.
Stockman, Norbert O.; Yates, David E.; and Crum, Timothy S., to General Electric Company. Nacelle inlet for an aircraft gas turbine engine. 5,058,617, Cl. 137-15.100.
Stoft, David E., to Hewlett-Packard Company. Radio frequency signal interface. 5,059,892, Cl. 324-73.100.
Stohr, Albert, to Gebr. Hennig GmbH. Scraping arrangement for telescopic steel covers. 5,058,232, Cl. 15-236.010.
Stoller, Herbert I.: *See—*
Grobman, Warren D.; Kraus, Charles J., deceased; Kraus, Paula A., executrix; Wu, Leon L.; and Stoller, Herbert I., 5,060,116, Cl. 361-474.000.
Stone, Joseph J. Neonatal autotransfusion apparatus and method. 5,059,168, Cl. 604-4.000.
Stone, Timothy J. Stuffed animal with book enclosure apparatus. 5,059,149, Cl. 446-73.000.
Storage Technology Corporation: *See—*
Cleveland, Brian G., 5,060,089, Cl. 360-51.000.
Nguyen, Thai; and Reichenberg, George, 5,058,822, Cl. 242-195.000.
Stordy Combusion Engineering Limited: *See—*
Wills, Brian J., 5,059,117, Cl. 432-176.000.
Stormberg, Hans-Peter: *See—*
Albach, Manfred; Stormberg, Hans-Peter; and Wegener, Armin F., 5,059,869, Cl. 315-289.000.
Stout, Chester H.; and Van Domelen, John, to Automated Packaging Systems, Inc. Heating apparatus and method. 5,059,114, Cl. 431-3.000.
Stout, David M.; Matier, William L.; and Black, Lawrence A., to Du Pont Merck Pharmaceutical Company, The. Aryl substituted aminomethyl benzene derivatives. 5,059,620, Cl. 514-422.000.
Stranjord, Lee K.; and Anjan, Yellapu, to Honeywell Inc. Interferometric fiber optic proximity switch. 5,059,783, Cl. 250-227.190.
Strapex AG: *See—*
Kagi, Bruno, 5,058,365, Cl. 53-582.000.
Stratacom, Inc.: *See—*
Weisbloom, John D., 5,059,925, Cl. 331-1.00A.
Stratton, Paul A., to Midwest Industries Ltd. Hanger bracket apparatus for securing a joist member to an elevated vertical support surface. 5,058,358, Cl. 52-702.000.
Strauss, Paul: *See—*
Adler, Robert; Fendley, James R.; Lange, Howard G.; Prazak, Charles J.; Steiner, Johann; and Strauss, Paul, 5,059,147, Cl. 445-4.000.
Strebelle, Michel, to Solvay & Cie (Societe Anonyme). Process for the purification of vinyl chloride. 5,059,730, Cl. 570-238.000.
Streeting, Ian T.: *See—*
Clough, John M.; Godfrey, Christopher R. A.; and Streeting, Ian T., 5,059,605, Cl. 514-269.000.
Streger, Howell B. Vibratory carving tool kit. 5,058,273, Cl. 30-164.900.
Strepparola, Ezio: *See—*
Marchionni, Giuseppe; De Patto, Ugo; Strepparola, Ezio; and Viola, Gian Tommaso, 5,059,700, Cl. 549-550.000.

Stroech, Klaus: *See—*
Fugmann, Burkhard; Plempel, Manfred; Stroech, Klaus; and Buchel, Karl H., 5,059,615, Cl. 514-383.000
Strohl, Willi: *See—*
Frank, Kurt; Nusser, Hermann; and Strohl, Willi, 5,058,557, Cl. 123-509.000.
Strzygowski, Walter: *See—*
Hacker, Gerold; and Strzygowski, Walter, 5,058,638, Cl. 144-3.00D.
Stuber, Istvan; Nagy, Geza; and Petrak, Peter. Apparatus for the relative increase of depth sharpness and improvement of resolving power of magnifying systems, particularly microscopes. 5,059,011, Cl. 359-375.000.
Studio Tecnico Sviluppo e Ricerche S.T.S.R. S.r.l.: *See—*
Grassberger, Roland, 5,058,860, Cl. 251-208.000.
Stukey, Arthur D.: *See—*
Wacht, Raymond J.; and Stukey, Arthur D., 5,058,752, Cl. 212-150.000.
Stumpp, Michael; Neumann, Peter; Ruchenback, Wolfgang; and Bergner, Michael, to BASF Aktiengesellschaft. Preparation of bis(4-hydroxyphenyl)sulfone. 5,059,715, Cl. 568-33.000.
Sturtevant, Wayne R.: *See—*
Cartmell, James V.; Sturtevant, Wayne R.; Valadez, Manuel; and Wolf, Michael L., 5,059,424, Cl. 424-443.000
Su, Lin: *See—*
Quesada, John F.; Schrank, Douglas A.; Haller, David K.; Su, Lin; Spagnoli, Charles R.; and Laub, James S., 5,059,100, Cl. 417-312.000.
Su, Tseng; and Pon, Yun c. One hand operated umbrella capable of self-closing. 5,058,613, Cl. 135-20.300.
Successs Builders International: *See—*
Rich, Clayton E.; Dye, Jesse D.; and Bremers, Robert, 5,058,785, Cl. 223-111.000
Suddeth, Bucky D. Compressed gas cylinder valve and gauge protector. 5,058,758, Cl. 220-85.00P.
Sudler, Roland, to VDO Adolf Schindling AG. Cross-coil rotary magnet device. 5,059,934, Cl. 335-272.000.
Sudo, Haruo, to Asahi Kogaku Kogyo K.K. Fiber optic mixing device. 5,058,975, Cl. 385-24.000.
Sudol, Marion A.: *See—*
Kang, Young C.; Tan, Chee-Teck; Byrne, Brian; Buckholz, Lawrence L., Jr.; Sudol, Marion A.; and Boden, Richard M., 5,059,434, Cl. 426-96.000.
Suesada, Kunio: *See—*
Koya, Toshiaki; and Suesada, Kunio, 5,060,077, Cl. 358-335.000.
Suga, Seiji: *See—*
Saito, Masaharu; Tsuruta, Seiji; Uchida, Katsuhiko; and Suga, Seiji, 5,058,539, Cl. 123-90.170.
Sugawa, Shigetoshi: *See—*
Shinohara, Mahito; Sugawa, Shigetoshi; Hashimoto, Seiji; and Miyawaki, Mamoru, 5,060,042, Cl. 357-30.000.
Sugawara, Junichi: *See—*
Masuyama, Joe; Mikuriya, Koji; Takai, Tsuneo; Chiba, Shinji; Hotta, Kiyoshi; Hamano, Yoshinori; Onishi, Katsuyuki; Funahashi, Koji; Takahashi, Yuji; and Sugawara, Junichi, 5,058,332, Cl. 52-66.000.
Sugihara, Tadashi; Takeshita, Takuo; and Ohuchi, Yukihiro, to Mitsubishi Metal Corporation. Method of making a sputtering target for a bismuth based superconductor. 5,059,585, Cl. 505-1.000.
Sugimoto, Koichi: *See—*
Takahashi, Michio; Mita, Tooru; Nakagawa, Yasuo; Hamada, Toshimitsu; Iwata, Hisafumi; Kaneda, Aizo; Serizawa, Kouji; Tanaka, Hiroyuki; Sugimoto, Koichi; Sakai, Toshihiko; Matsukawa, Keizo; and Mimata, Tsutomu, 5,059,559, Cl. 437-220.000.
Sugimoto, Naoshige: *See—*
Yoshida, Tetsushi; Muto, Tetsuo; Matsuda, Toshiyuki; and Sugimoto, Naoshige, 5,058,998, Cl. 359-63.000.
Sugimoto, Tadao; Tsuchiyama, Shigeki; Hayakawa, Makoto; Goto, Yozo; Koide, Tadao; Endoh, Tamotsu; Torihara, Makoto; and Ejiri, Joji, to Ohbayashi Corporation; and Chubu Electric Power Company, Incorporated. Method of protecting underground structures in ground liable to be liquefied. 5,059,063, Cl. 405-36.000.
Sugino, Takashi: *See—*
Mori, Tetsuzo; Sugino, Takashi; Takaoka, Makoto; Sugiura, Susumu; and Ichikawa, Hiroyuki, 5,060,059, Cl. 358-79.000.
Sugishima, Masami; and Nagaoka, Haruo, to Kansai Paint Co., Ltd. Coating resin composition. 5,059,293, Cl. 204-181.700.
Sugita, Toshiaki: *See—*
Makino, Misao; Hashimoto, Kiyoshi; and Sugita, Toshiaki, 5,058,596, Cl. 128-665.000.
Sugiura, Susumu: *See—*
Mori, Tetsuzo; Sugino, Takashi; Takaoka, Makoto; Sugiura, Susumu; and Ichikawa, Hiroyuki, 5,060,059, Cl. 358-79.000.
Sugiura, Takashi; Matsuura, Ichiro; and Yanagishita, Norio, to Ikeda Bussan Co., Ltd. Skin covered formed plastic seat. 5,058,955, Cl. 297-452.000.
Sukornick, Bernard: *See—*
Li, Chien C.; and Sukornick, Bernard, 5,059,728, Cl. 570-134.000.
Sulzer Brothers Limited: *See—*
Spiller, Peter; Thalmann, Theo; and Vogel, Rudolf, 5,058,628, Cl. 139-25.000.
Sumida, Keisuke: *See—*
Muto, Nariaki; Maeda, Tatsuo; Nishiguchi, Toshihiko; Kakui, Mikio; Sumida, Keisuke; and Nakazawa, Toru, 5,059,503, Cl. 430-83.000.
Sumihara, Masanori; Imasaka, Yoshinobu; and Yoneno, Hiroshi, to Matsushita Electrical Industrial Co., Ltd. Ultrasonic motor 5,059,849, Cl. 310-323.000.
Sumitomo Bakelite Company Limited: *See—*
Idemoto, Morito; and Noguchi, Yasuo, 5,058,570, Cl. 128-24.0AA.
Sumitomo Cement Co., Ltd.: *See—*
Kihara, Hiroshi; Arai, Eiki; Ogata, Shigeaki; Katagiri, Yoshio; Fujita, Katsuyuki; Wachigai, Tadahiko; and Hiratsuka, Hiroyoshi, 5,059,388, Cl. 419-37.000.
Sumitomo Chemical Company, Limited: *See—*
Kohsaka, Hideo; and Takase, Masayuki, 5,059,237, Cl. 71-92.000
Tamura, Mitsuhisa; Yamauchi, Kazuhiro; Higashio, Yasuhiko; and Takahashi, Kazuteru, 5,059,736, Cl. 585-461.000
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; Hanamoto, Yukio; and Oi, Fumio, 5,059,507, Cl. 430-192.000.
Sumitomo Electric Industries, Ltd.: *See—*
Hosoya, Toshifumi, 5,058,987, Cl. 385-128.000
Ueno, Keiji, 5,059,651, Cl. 524-424.000.
Umegaki, Shinsuke; Uemiya, Takafumi; Uenishi, Naota; and Shimizu, Yo, 5,058,981, Cl. 359-328.000.
Sumitomo Heavy Industries, Ltd.: *See—*
Ishimoto, Noriyuki; and Iida, Hirofumi, 5,059,843, Cl. 310-89.000.
Sumitomo Pharmaceuticals Company Limited: *See—*
Ueda, Tohru; Matsuda, Akira; Minakawa, Noriaki; Sasaki, Takuma; and Yanagi, Yoshikazu, 5,059,590, Cl. 514-23.000.
Sumitomo Rubber Industries, Ltd.: *See—*
Kajikawa, Akira; Kojima, Yoshihide; and Itho, Hiroshi, 5,058,646, Cl. 152-454.000.
Nakasaki, Eiji, 5,058,643, Cl. 152-209.00B.
Satoh, Kazuo; and Nosaka, Tsutomu, 5,059,268, Cl. 156-130.300
Sun, Cheng-ko J.; Sakaguchi, Shigeki; and Miyashita, Tadashi, to Photonic Integration Research, Inc. Apparatus and method of forming optical waveguides on metalized substrates. 5,059,475, Cl 428-195.000.
Sunaga, Takeshi: *See—*
Motegi, Hisao; Sunaga, Takeshi; and Zenbayashi, Michio, 5,059,707, Cl. 556-449.000.
Sunaoka, Toyohiko: *See—*
Kishi, Mitsuhiro; and Sunaoka, Toyohiko, 5,058,213, Cl. 4-111.100
Suncepts Inc.: *See—*
Jackson, Jeffrey D.; and Avance, Kenneth J., 5,058,899, Cl 273-411.000.
Sundararaman, Padmanabhan: *See—*
Martz, Jonathan T.; Schimmel, Karl F.; Sundararaman, Padmanabhan; and Walters, David N., 5,059,655, Cl. 525-131.000.
Sunden, Fred: *See—*
Le Bell, Jean; Valjakka, imo; Pirhonen, Jussi; Sunden, Fred; Hautaniemi, Erkki; Jarvela, Pentti; Sandelin, Bjorn; and Algars, Rainer, 5,059,472, Cl. 428-161.000.
Sundstrand Corporation: *See—*
Schneider, Michael G.; and Byrd, William A., 5,059,226, Cl. 55-459.100.
Shah, Mahesh J.; and Vaidya, Jayant G., 5,059,884, Cl. 318-701.000
Shekelton, Jack R.; and Johnson, Douglas C., 5,058,375, Cl. 60-39.360.
Sindermann, Frederick L.; and Nguyen, Dam C., 5,058,390, Cl 62-181.000.
Sundstrand Data Control, Inc.: *See—*
Bateman, Charles D., 5,059,964, Cl. 340-968.000.
Suntory Ltd.: *See—*
Oshima, Takehiro; Tanaka, Shoji; and Matsukura, Shigekazu, 5,059,530, Cl. 435-69.500.
Surdilla, Silverio B. Positive displacement piston metering pump. 5,058,779, Cl. 222-309.000.
Suss, Christian: *See—*
Granzow, Manfred; Mischer, Hans-Peter; and Suss, Christian, 5,059,750, Cl. 200-5.00R.
Sutherland, Stephen F.; and Silverstein, Jerome, to American Home Products. Syringe with two part mastitis cannula cap. 5,059,172, Cl. 604-73.000.
Sutton, David M., to British Gas plc. Fuel fired burner. 5,059,115, Cl. 431-328.000.
Suzuki, Fumio: *See—*
Yamauchi, Ryozo; Kawakami, Noboru; and Suzuki, Fumio, 5,058,979, Cl. 385-28.000.
Suzuki, Hideo; and Sakama, Masao, to Yamaha Corporation. Swing activated musical tone control apparatus. 5,058,480, Cl. 84-600.000.
Suzuki, Keiko: *See—*
Yamane, Mitsuo; Kawaguchi, Takashi; Kagayama, Shigeru; Higashiyama, Shunichi; Suzuki, Keiko; Sakai, Jun; Imaeda, Mikio; and Inaishi, Kouji, 5,059,266, Cl. 156-64.000.
Suzuki, Kenji: *See—*
Hashimoto, Morimi; Matsumoto, Tokio; Yagi, Takayuki; Suzuki, Kenji; and Takagi, Hiroshi, 5,059,468, Cl. 428-141.000.
Suzuki, Koichi: *See—*
Yoshida, Kiyoshi; Yamamoto, Isao; Inoue, Hiroshi; Mori, Kazuyuki; Suzuki, Koichi; Nakano, Kinichiro; Nomura, Hiroyuki; and Etoh, Yoshiyuki, 5,058,698, Cl. 180-179.000.
Suzuki, Shigeru: *See—*
Seto, Takashi; Ozaki, Kouji; Kobayashi, Osamu; and Suzuki, Shigeru, 5,060,012, Cl. 355-28.000.
Suzuki, Shinichi; Ban, Takashi; Fukanuma, Tetsuhiko; and Yoshida, Tetsuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for varying capacity of scroll type compressor. 5,059,098, Cl. 417-295.000.

Suzuki, Shuichi: *See*—
Uchiyama, Shunichi; and Suzuki, Shuichi, 5,059,290, Cl 204-153.100.
Suzuki, Takamasa; Takeuchi, Katsumasa; and Ito, Kazuya, to Toyoda Gosei Co., Ltd. Damping liquid for hydraulic vibration damping mount. 5,059,339, Cl. 252-77.000.
Suzuki, Takanori: *See*—
Miyashi, Tsutomu; Yamashita, Yoshiro; Suzuki, Takanori; and Fujii, Hiroshi, 5,059,742, Cl. 585-860.000.
Suzuki, Takashi, to Yamahan Corporation. Audio mixing console. 5,060,272, Cl. 381-119.000.
Suzuki, Teruo, to SCS Promotion Company Limited. Advertising device. 5,058,299, Cl. 40-603.000.
Suzuki, Tomoo: *See*—
Sawai, Kiichi; Kurono, Masayasu; Asai, Hiromoto; Mitani, Takahiko; Ninomiya, Naohisa; and Suzuki, Tomoo, 5,059,594, Cl. 514-103.000.
Suzuki, Toshio; and Nishitsuka, Mitsuru, to Pioneer Electronic Corporation. Tracking control system for use in an optical reading apparatus. 5,060,216, Cl. 369-44.410.
Suzuki, Toshiro: *See*—
Asakawa, Yoshiaki; Miyamoto, Takanori; Kondo, Kazuhiro; Ichikawa, Akira; and Suzuki, Toshiro, 5,060,268, Cl. 381-38.000.
Suzuki, Toshiyuki: *See*—
Kanemura, Yoshinobu; Sasagawa, Katsuyoshi; Imai, Masao; and Suzuki, Toshiyuki, 5,059,673, Cl. 528-67.000.
Svenkeson, John W.: *See*—
Murphy, Patrick J.; and Svenkeson, John W., 5,059,128, Cl. 439-65.000.
Svensson, Leif R., to Aktiebolaget Electrolux. Package for a cleaning article such as a mop. 5,058,738, Cl. 206-229.000.
Swan, Scott A., to United States of America, Administrator, National Aeronautics and Space Administration. Bidirectional drive and brake mechanism. 5,058,506, Cl. 105-87.000.
Swanson, Leonard C.: *See*—
Lewis, Charles; Sheehan, Kathleen M.; DeVore, Richard N.; and Swanson, Leonard C., 5,059,127, Cl. 434-353.000.
Swanson, Morris A.. *See*—
Brandt, Everett G.; Swanson, Morris A.; Kelley, Kurtis C.; and Towe, Carey A., 5,059,857, Cl. 310-366.000.
Swanson, Victor E.: *See*—
Graham, Lawrence F.; and Swanson, Victor E., 5,058,453, Cl 74-574.000.
Sweeney, William A., to Chevron Research and Technology Company. Process for making 1-hexene and high octane blending components. 5,059,733, Cl. 585-324.000.
Sweeney, William A., to Chevron Research and Technology Company. Process for selectively producing C5 to C18 straight chain α olefins. 5,059,734, Cl. 585-324.000.
Sygnator, Henry A.: *See*—
Wright, Robert W.; Gabriel, William L.; Bergstrom, Donald E.; Meditz, Reinhold; and Sygnator, Henry A., 5,058,228, Cl. 10-162.00A.
Symbol Technologies, Inc.: *See*—
Krichever, Mark; and Metlitsky, Boris, 5,059,779, Cl. 235-467.000
Synaptics, Incorporated: *See*—
Anderson, Janeen D. W.; Mead, Carver A.; Allen, Timothy P.; and Wall, Michael F., 5,059,920, Cl. 330-253.000.
Synor, Jeffrey C.: *See*—
Paquette, Scott L.; Synor, Jeffrey C.; and Wiers, John W., 5,058,919, Cl. 280-732.000.
Syracuse University: *See*—
Faiola, Norman A., 5,058,396, Cl. 62-457.200.
Systems Research Laboratories, Inc.: *See*—
Mazzone, Daniel P.; and Hoeffel, James D., 5,059,904, Cl. 324-226.000.
Szabo, Gerald S. Powerswing bat speed enhancer. 5,058,890, Cl. 273-26.00R.
Szafranski, Michael M.: *See*—
Walker, Christopher W.; Szafranski, Michael M.; Kim, Sung H.; Hsiao, Howell F.; and Frank, Steven R., 5,058,888, Cl. 272-130.000.
T.H.E. Business Products Corporation: *See*—
Casper, Chester W., 5,059,052, Cl. 402-80.00R.
T. Y. Lin International: *See*—
Chow, Philip Y., 5,058,330, Cl. 52-2.110.
Tabata, Kazufumi: *See*—
Araki, Nobuo; Tabata, Kazufumi; Yokoi, Kiyomi; Ashidate, Tadami; and Hattori, Osamu, 5,058,259, Cl. 29-433.000.
Tabata, Shigeo: *See*—
Ueda, Kazuhiko; Oda, Hiroyuki; Hashimoto, Kazuhiko; Hatamura, Kouichi; Goto, Tsuyoshi; Ohtsuru, Takashi; and Tabata, Shigeo, 5,058,558, Cl. 123-559.100.
Tachi-S Co., Ltd.: *See*—
Takagi, Genjiro; and Kamei, Yasuhiko, 5,058,953, Cl. 297-284.00B.
Tada, Shigeaki: *See*—
Shishido, Ichiro; Miyoshi, Tadayoshi; Kuriyama, Takashi; Kurokawa, Hiromitsu; Tada, Shigeaki; and Nishiyama, Hiroshi, 5,060,061, Cl. 358-80.000.
Tado, Masahiro; Satoh, Hiroshi; Inoue, Noriyuki; Utsui, Yoshihiko; and Wada, Shunichi, to Mitsubishi Denki K.K. Shock absorber control apparatus. 5,060,157, Cl. 364-424.050.
Tagami, Shigeru: *See*—
Ogihara, Masuo; Ishida, Hiroyuki; Nagaoka, Shinji; Seki, Youichi; Tagami, Shigeru; Yamazaki, Hiroshi; and Shinozaki, Nobuo, 5,060,000, Cl. 354-400.000.
Tago, Haruyuki; and Yamada, Yasuo, to Kabushiki Kaisha Toshiba. Circuit device for eliminating noise from an input signal independent of time of arrival of noise or noise width. 5,059,834, Cl. 307-542.000.
Taguchi, Naoto: *See*—
Ohta, Yukio; Watanabe, Hiroshi; Ohsumi, Hideki; and Taguchi, Naoto, 5,059,142, Cl. 439-752.000.
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, to Inax Corporation; and Nippondenso Co., Ltd. Water closet blowing warm air and water closet unit attachable to toilet room. 5,058,217, Cl. 4-420.000.
Taiwan Semiconductor Manufacturing Company, Ltd.: *See*—
Wiemer, Klaus C.; Buhler, James E.; Simon, Rudolf O.; and Laub, Helmut A., 5,058,491, Cl. 98-115.300.
Takada, Mitsuyuki: *See*—
Gofuku, Eishi; and Takada, Mitsuyuki, 5,059,941, Cl. 338-307.000.
Takada, Seiji: *See*—
Kotani, Takaaki; and Takada, Seiji, 5,060,003, Cl. 354-403.000.
Takagi, Genjiro; and Kamei, Yasuhiko, to Tachi-S Co., Ltd. Seat back of automotive seat. 5,058,953, Cl. 297-284.00B.
Takagi, Hiroshi: *See*—
Hashimoto, Morimi; Matsumoto, Tokio; Yagi, Takayuki; Suzuki, Kenji; and Takagi, Hiroshi, 5,059,468, Cl. 428-141.000.
Takagi, Masahiro: *See*—
Shinoki, Masayoshi; Takagi, Masahiro; Nagatsuka, Ikutaroh; Kumashiro, Koichi; Aoki, Takayoshi; and Takeda, Masayuki, 5,059,504, Cl. 430-108.000.
Takagi, Yukio, to 501 Meinan Machinery Works, Inc. Method for applying pressure to a driving roller for a veneer lathe. 5,058,639, Cl. 144-357.000.
Takahama, Yoshihiro: *See*—
Yamada, Toshiyuki; Takahama, Yoshihiro; Nakajima, Hajime; and Nishiya, Takayuki, 5,058,334, Cl. 52-80.000.
Takahashi, Akira; Mieda, Michinobu; Murakami, Yoshiteru; Nakayama, Junichiro; Miyake, Tomoyuki; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Optical recording medium and manufacturing method thereof. 5,059,473, Cl. 428-162.000.
Takahashi, Kazufumi: *See*—
Tashiro, Masashi; Mataga, Shuntaro; Takahashi, Kazufumi; Saito, Shogo; Tsutsui, Tetsuo; Adachi, Chihaya; Sato, Yoshiharu; and Maeda, Shuichi, 5,059,863, Cl. 313-504.000.
Takahashi, Kazuteru: *See*—
Tamura, Mitsuhisa; Yamauchi, Kazuhiro; Higashio, Yasuhiko; and Takahashi, Kazuteru, 5,059,736, Cl. 585-461.000.
Takahashi, Kenji: *See*—
Yasuda, Hiromu; Daikoku, Takahiro; Takahashi, Kenji; Zushi, Shizuo; Yamashita, Tetsuji; Yoshikawa, Tomio; and Murakami, Kyoshiro, 5,058,389, Cl. 62-99.000.
Takahashi, Kunio: *See*—
Doi, Yuzuru; Shirahata, Hiroshi; and Takahashi, Kunio, 5,058,603, Cl. 128-774.000.
Takahashi, Masaki, to Kabushiki Kaisha Toshiba. Method and apparatus for driving stepping motor. 5,059,883, Cl. 318-696.000.
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Takeda, Satoshi: *See*—
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Spiller, Peter; Thalmann, Theo; and Vogel, Rudolf, 5,058,628, Cl. 139-25.000.

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Engebretson, Preston J., 5,059,672, Cl. 528-64.000.

Tharp, Charles E., to Environmental Dynamics, Inc. Tubular diffuser with adjustable plug. 5,059,358, Cl. 261-122.000.

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Herold, Wolf-Dietrich; Koran, Peter; and Pauser, Helmut, 5,058,770, Cl. 222-80.000

Therm-O-Disc, Incorporated: *See—*
Marks, Gay L.; Loomba, Indra J.; and Saling, John, II, 5,059,767, Cl. 219-209.000.
Welch, Richard E., 5,059,937, Cl. 337-380.000.

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Bouchard, Andre C.; Thibault, Paul; and Haraden, Tom, 5,059,864, Cl. 315-56.000.

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Thomas & Betts Corporation: *See—*
Bawa, Jaspal S.; Couto, Luis; Mancini, Giacomo F.; Pulitano, Nicholas; and Zabrodski, George S., 5,059,747, Cl. 174-65.0SS.

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Thomas, Dennis A.; and Blaney, Ted L., to Proctor & Gamble Company, The. Mechanical fastening prong. 5,058,247, Cl. 24-448.000.

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Plus, Dora, 5,058,995, Cl. 359-59.000.

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Bardelang, Vianney; Coeuillet, Jacques; and Dubos, Pascal, 5,059,878, Cl. 318-490.000.
Mourier, Georges; and Bensimhon, Aaron, 5,059,928, Cl. 333-21.00R.
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3 D Systems, Inc.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Steinbaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,059,359, Cl. 264-22.000.

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King, Scott, 5,059,329, Cl. 210-656.000.

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Derp, Helmut; Keese, Horst; and Schlich, Elmar, 5,058,655, Cl. 164-128.000.

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Hoffken, Erich; Lax, Hermann; and Pietzko, Gunter, 5,058,656, Cl. 164-416.000.

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Francis, Cecil V.; and Tiers, George V. D., 5,059,002, Cl. 359-328.000.

Timex Corporation: *See—*
Plancon, Michel, 5,059,840, Cl. 310-49.00R.

Timm, Walter C.: *See—*
McNally, Michael H.; Timm, Walter C.; Terwilliger, Bruce J.; and Perrego, James A., 5,059,471, Cl. 428-143.000.

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Van Der Brug, Willem P.; Timmer, Jan; and Vis, Petrus N. J., 5,060,246, Cl. 378-20.000.

Timmermann, Andreas: *See—*
Brahms, Martin; Hennig, Andreas; and Timmermann, Andreas, 5,059,918, Cl. 330-11.000.

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Goldenberg, Jill F.; and Timmers, Wilhelmus A. G., 5,060,058, Cl. 358-60.000.

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Tino, Joseph A.: *See—*
Zahler, Robert; and Tino, Joseph A., 5,059,690, Cl. 544-276.000.

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Tisma, Steven, 5,058,634, Cl. 141-129.000.

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Tivis, Victor L. Disposable sweat liner for safety hats. 5,058,210, Cl. 2-181.000.

Toa Medical Electronics Co., Ltd.: *See—*
Brittenham, Gary M.; Allen, Christopher J.; Okada, Tokuhiro; and Fujimoto, Keiji, 5,059,395, Cl. 422-73.000.

Tobishima Corporation: *See—*
Masuyama, Joe; Mikuriya, Koji; Takai, Tsuneo; Chiba, Shinji; Hotta, Kiyoshi; Hamano, Yoshinori; Onishi, Katsuyuki; Funahashi, Koji; Takahashi, Yuji; and Sugawara, Junichi, 5,058,332, Cl. 52-66.000.

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Todoriki, Tsuyoshi; Okabayashi, Shigeru; and Sakata, Masao, to Nissan Motor Company, Limited. Display apparatus for vehicle. 5,059,957, Cl. 340-705.000.

Tojima, Hiromi; and Asada, Masaaki, to Kabushiki Kaisha Daikin Seisakusho. Clutch facing abrasion indicator. 5,058,718, Cl. 192-30.00W.

Tojima, Hiromi, to Kabushiki Kaisha Daikin Seisakusho. Friction device of damper disc. 5,059,155, Cl. 464-68.000.

Tokai Carbon Co., Ltd.: *See—*
Mito, Masahiko, 5,059,408, Cl. 423-445.000.

Tokico Ltd.: *See—*
Endo, Mitsuhiro, 5,058,486, Cl. 92-48.000.

Tokumaru, Takeji; Kudou, Tsuneaki; and Omote, Kazuyuki, to Kabushiki Kaisha Toshiba. Integrated circuit using bus driver having reduced area. 5,059,830, Cl. 307-481.000.

Tokumitsu, Kiyonori; Nishida, Mitsuhiro; and Ozaki, Yasunobu, to Mitsubishi Denki K.K. Fluid scroll machine with peripherally attached counter weights and reduced thickness scroll. 5,059,102, Cl. 418-55.200.

Tokumoto, Munehiko: *See—*
Yonekubo, Hiroaki; Miyoshi, Risho; Hirata, Katsumi; Tokumoto, Munehiko; and Iwasa, Takashi, 5,058,804, Cl. 236-12.120.

Tokyo Electric Co., Ltd.: *See—*
Gomi, Yoshiaki; Okawa, Mitsugu; and Taniuchi, Norihisa, 5,058,765, Cl. 220-528.000.
Takaishi, Kazuaki, 5,059,044, Cl. 400-120.000.

Toledano, Abraham: *See—*
Fish, Aaron M.; and Toledano, Abraham, 5,058,404, Cl. 70-315.000.

Toma, Salvatore: *See—*
Pedroni, Paola; Riboli, Barbara; De Ferra, Francesca; Grandi, Guido; Toma, Salvatore; Arico', Beatrice; and Rappuoli, Rino, 5,059,537, Cl. 435-252.310.

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Sikora, Scott T., 5,060,131, Cl. 363-97.000.

Tomassetti, Stephen R., to Texas Instruments Incorporated. Integrated bipolar-CMOS circuit isolation for providing different backgate and substrate bias. 5,060,044, Cl. 357-43.000.

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Endo, Junji; Kawasaki, Takeshi; Tomita, Masahiro; Isakozawa, Shigeto; Miyada, Toshimitu; and Kaneko, Yutaka, 5,059,859, Cl. 313-443.000.

Tomizawa, Takeshi: *See—*
Yoshida, Yuji; Arita, Koji; and Tomizawa, Takeshi, 5,059,338, Cl. 252-67.000.

Tone, Shoichi, to Murata Kikai Kabushiki Kaisha. Apparatus for controlling rotation of drum. 5,058,817, Cl. 242-36.000.

Tonen Sekiyagaku Kabushiki Kaisha: *See—*
Sezume, Tadashi; Kobayashi, Akira; Murata, Masahide; Ogata, Mayako; Ohsawa, Masahiro; and Mikami, Takashi, 5,059,658, Cl. 525-263.000.

Tonus, Egidio L. Machine and method for making pallets. 5,058,795, Cl. 227-7.000.

Toppan Printing Co., Ltd.: *See—*
Takahashi, Susumu, 5,058,992, Cl. 359-567.000

Yamazaki, Yasuo; Nomura, Toshiaki; Maruyama, Takashi; and Sato, Shigenobu, 5,058,360, Cl. 53-133.200.
Toray Engineering Co., Ltd.: *See*—
Tsuchihashi, Hiroshi, 5,059,362, Cl. 264-25.000.
Toray Silicone Company, Ltd.: *See*—
Hamada, Yuji; Sasaki, Shosaku; and Masaoka, Hiroshi, 5,059,669, Cl. 528-32.000.
Torihara, Makoto: *See*—
Sugimoto, Tadao; Tsuchiyama, Shigeki; Hayakawa, Makoto; Goto, Yozo; Koide, Tadao; Endoh, Tamotsu; Torihara, Makoto; and Ejiri, Joji, 5,059,063, Cl. 405-36.000.
Toshiba Glass Co. Ltd.: *See*—
Burgkhardt, Bertram; and Ishidoya, Tatsuyo, 5,059,806, Cl. 250-484.100.
Toshiba Kikai Kabushiki Kaisha: *See*—
Fujita, Jun; and Matumoto, Michio, 5,059,881, Cl. 318-630.000.
Toshiba Silicone Co., Ltd.: *See*—
Motegi, Hisao; Sunaga, Takeshi; and Zenbayashi, Michio, 5,059,707, Cl. 556-449.000.
Toshida, Yomishi: *See*—
Kaneko, Shuzo; Mouri, Akihiro; Isaka, Kazuo; Yoshinaga, Kazuo; Ohnishi, Toshikazu; Toshida, Yomishi; Kurabayashi, Yutaka; and Eguchi, Takeo, 5,059,000, Cl. 350-351.000.
Toshin Technical Co., Ltd.: *See*—
Shimizu, Yasuhiro, 5,059,805, Cl. 250-436.000.
Tosoh Corporation: *See*—
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,059,726, Cl. 568-726.000.
Tour, James M.; Wu, Ruilian; and Schumm, Jeffry S., to University of South Carolina, The. Silane compound for use in the synthesis of semiconducting polymers with perpendicular arranged cores. 5,059,695, Cl. 549-4.000.
Towe, Carey A.: *See*—
Brandt, Everett G.; Swanson, Morris A.; Kelley, Kurtis C.; and Towe, Carey A., 5,059,857, Cl. 310-366.000.
Towne, Randall; Alcebo, Raul; and Cordido, Ricardo, to Cordis Corporation. Triple lumen balloon catheter. 5,059,177, Cl. 604-96.000
Toy, Stephen W.: *See*—
Alexander, David V.; Toy, Stephen W.; and March, Marvin, 5,058,421, Cl. 73-49.200.
Toyo Denki Seizo Kabushiki Kaisha: *See*—
Iida, Katsuji; and Kishimoto, Takahiro, 5,059,887, Cl. 323-222.000.
Toyo Glass Co., Ltd.: *See*—
Ito, Yoshifumi, 5,059,236, Cl. 65-319.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Kanno, Nobumori; and Takeda, Neiji, 5,059,478, Cl. 428-321.300.
Toyo Jozo Company, Ltd.: *See*—
Yamamoto, Nakayuki; Sakakibara, Hideo; and Mizuno, Kimio, 5,059,587, Cl. 514-12.000.
Toyoda Gosei Co., Ltd.: *See*—
Hadano, Katsuya; and Ueno, Masato, 5,058,867, Cl. 267-141.300.
Suzuki, Takamasa; Takeuchi, Katsumasa; and Ito, Kazuya, 5,059,339, Cl. 252-77.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Tsutsui, Toshihiro; and Soma, Shinji, 5,058,562, Cl. 125-11.030
Yoneda, Takao; Arimoto, Naoki; and Yonezu, Toshihiro, 5,060,164, Cl. 364-474.290.
Toyota Jidosha Kabushiki Kaisha: *See*—
Fukuma, Takao; Tsukamoto, Keisuke; Takaoka, Toshio; and Yamasaki, Hirofumi, 5,058,556, Cl. 123-489.000.
Hashimoto, Eiji; Sawada, Daisaku; Sasaki, Shizuo; Tamaki, Yoshiyuki; and Mitsuyasu, Masaki, 5,058,549, Cl. 123-298.000.
Trac International Corp.: *See*—
Harkey, Charles W., Sr., 5,059,287, Cl. 203-1.000.
Trailmobile, Inc.: *See*—
Green, Stephen, 5,058,756, Cl. 220-1.500.
Trampert, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for the interturn and interlayer fault testing of coils. 5,059,912, Cl. 324-546.000.
Tran, Donald Q. Vehicular signal mirror apparatus. 5,059,015, Cl. 359-844.000.
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Drower, Herbert M., 5,058,926, Cl. 283-109.000.
Transnuklear GmbH: *See*—
Derp, Helmut; Keese, Horst; and Schlich, Elmar, 5,058,655, Cl. 164-128.000.
Trapani, Joe: *See*—
McKenzie, Ian F. C.; and Trapani, Joe, 5,059,524, Cl. 435-7.240
Trares, Keith C.: *See*—
Hoang, Andy N.; Trares, Keith C.; and Kahrs, Jeffrey W., 5,058,649, Cl. 152-540.000.
Travers, Christine: *See*—
Deschamps, Andre; Dezael, Claude; Roux-Guerraz, Claude; and Travers, Christine, 5,059,569, Cl. 502-78.000.
Travis, Elmer E. Method and apparatus for the destructive distillation of kerogen in situ. 5,058,675, Cl. 166-272.000.
Trayer, Frank C.: *See*—
Trayer, Jane S.; and Trayer, Frank C., 5,058,216, Cl. 4-251.000.
Trayer, Jane S.; and Trayer, Frank C. Apparatus for lowering toilet seat. 5,058,216, Cl. 4-251.000.
Tremblay, Paul A.: *See*—
Janoff, Andrew S.; Popescu, Mircea C.; Alving, Carl R.; Fountain, Michael W.; Lenk, Robert P.; Ostro, Marc J.; Tremblay, Paul A.; and Weiner, Alan L., 5,059,591, Cl. 514-31.000.
Tri/Mark Corporation: *See*—
Miehe, Donald R.; and Larsen, Marvin L., 5,058,937, Cl. 292-34.000
Tri-State Oil Tools, Inc.: *See*—
Lynde, Gerald D.; and Harvey, Harold H., Jr., 5,058,666, Cl. 166-55.600
Tri-Way Machine Ltd.: *See*—
Jones, Joel W., 5,058,251, Cl. 29-33.00P
Tribophysics Corporation: *See*—
Scheld, John L., 5,059,334, Cl. 252-32.500
Trimmer, Johnny L.: *See*—
Krueger, Robert T.; Caskey, Terrence L.; Trimmer, Johnny L.; and Jorgensen, Janine L., 5,059,374, Cl. 204-156.000
Trinity Industries, Inc.: *See*—
Vanderlinden, Richard J., 5,058,510, Cl. 105-282.200.
Triplett, James T. Camelback pallet trailer. 5,059,083, Cl. 414-458.000.
Trokhan, Paul D.: *See*—
Hood, William H.; and Trokhan, Paul D., 5,059,283, Cl. 162-199.000
Tronics 2000, Inc.: *See*—
Desmeules, Claude, 5,059,948, Cl. 340-568.000.
Troska, Georg: *See*—
Plester, George; Schorr, Frederick D.; and Troska, Georg, 5,058,780, Cl. 222-321.000.
Troutner, David E.: *See*—
Simon, Jaime; Wilson, David A.; Garlich, Joseph R.; and Troutner, David E., 5,059,412, Cl. 424-1.100.
TRW Inc.: *See*—
Meyers, Robert A.; Hart, Walter D.; Van Nice, Leslie J., deceased; and Van Nice, Leslie J., heir, 5,059,307, Cl. 208-404.000.
TRW Vehicle Safety Systems, Inc: *See*—
Paquette, Scott L.; Synor, Jeffrey C.; and Wiers, John W., 5,058,919, Cl. 280-732.000.
TRW Vehicle Safety Systems Inc.: *See*—
Fernandez, Angel, 5,058,244, Cl. 24-170.000.
Tscheplak, Ernst: *See*—
Worner, Gunter; and Tscheplak, Ernst, 5,059,156, Cl. 464-68.000.
Tseng, Shin S.: *See*—
Dusza, John P.; and Tseng, Shin S., 5,059,691, Cl. 544-281.000.
Tseng, Yeong-Jeng V.: *See*—
Parsons, Michael L.; Hutchins, Peter L.; and Tseng, Yeong-Jeng V., 5,059,953, Cl. 340-578.000.
Tsilibary, Effie C.; and Furcht, Leo T., to University of Minnesota, Regents of the. Bandage comprising a fibrous surface coated with polypeptides with type IV collagen activity. 5,059,425, Cl. 424-445.000
Tsubakimoto Chain Co.: *See*—
Odai, Nobuhiro, 5,058,458, Cl. 74-665.0GE.
Uehira, Makoto, 5,058,505, Cl. 104-284.000.
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Mihara, Tadashi; Inoue, Hiroshi; Mizutome, Atsushi; Tsuboyama, Akira; Taniguchi, Osamu; and Onitsuka, Yoshihiro, 5,058,994, Cl. 359-56.000
Tsuchihashi, Hiroshi, to Toray Engineering Co., Ltd. Method of making a composite foamed and shaped article. 5,059,362, Cl. 264-25.000.
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Sugimoto, Tadao; Tsuchiyama, Shigeki; Hayakawa, Makoto; Goto, Yozo; Koide, Tadao; Endoh, Tamotsu; Torihara, Makoto; and Ejiri, Joji, 5,059,063, Cl. 405-36.000.
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Tsudakoma Corporation: *See*—
Sainen, Tsutomu, 5,060,161, Cl. 364-470.000.
Tsugane, Yoshihito: *See*—
Hashimoto, Minoru; and Tsugane, Yoshihito, 5,059,469, Cl. 428-141.000.
Tsuji, Hideoki, to National Starch and Chemical Investment Holding Corporation. Two-solution acrylic adhesive composition. 5,059,656, Cl. 525-155.000.
Tsuji, Naotaka, to Bridgestone Corporation. Method and apparatus for detecting defects in pneumatic tire. 5,060,173, Cl. 364-551.010.
Tsuji, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Group-supervising an elevator system. 5,058,711, Cl. 187-124.000.
Tsujihashi, Yoshiki: *See*—
Sakashita, Kazuhiro; and Tsujihashi, Yoshiki, 5,060,183, Cl. 364-757.000.
Tsujita, Masahiro. Imitation apparatus for fire extinguishing training. 5,059,124, Cl. 434-226.000.
Tsukamoto, Keisuke: *See*—
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Tsukude, Masaki: *See*—
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Tsunemi, Masahiro; Kondo, Yuji; and Shimoura, Kenichi, to Nippon Air Brake Kabushiki Kaisha. Hydraulic motor control circuit 5,058,383, Cl. 60-493.000.
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Kobayashi, Shogo; Ishibashi, Shigeki; Horie, Toshio; Tsuru, Shinji; Nakamura, Kouzaburou; and Maruno, Tohru, 5,059,345, Cl. 252-299.610.
Tsuruta, Seiji: *See*—
Saito, Masaharu; Tsuruta, Seiji; Uchida, Katsuhiko; and Suga, Seiji, 5,058,539, Cl. 123-90.170.
Tsushima, Isao: *See*—
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Tsutsui, Eiichi; and Nakashima, Wataru, to Fujitsu Limited. Bridge communication system. 5,060,228, Cl. 370-85.130.
Tsutsui, Takashi: *See*—
Ozeki, Makoto; Tsutsui, Takashi; Ohara, Sohei; and Nemoto, Kouji, 5,060,102, Cl. 360-125.000.
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Tsutsui, Toshihiro; and Soma, Shinji, to Toyoda Koki Kabushiki Kaisha. Rotary diamond tool for truing grinding wheel. 5,058,562, Cl. 125-11.030.
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Tufty, Lyle R.: *See*—
Rigotti, James M.; Tufty, Lyle R.; and Zell, Michael N., 5,060,095, Cl. 360-98.010.
Tulip, John. Laser lithotripsy. 5,059,200, Cl. 606-128.000.
Tuntland, Martell F. Golf bag cover. 5,058,642, Cl. 150-159.000.
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Turner, Peter M. D., to British Telecommunications public limited company. Call traffic control. 5,060,258, Cl. 379-134.000.
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Tyrrell, Raymond E.; Dunning, Stephen C.; Sanders, Richard J., Jr.; Hurlocker, Claude M.; Gingell, Michael J.; and Jones, Jeffrey P., to Alcatel NA Network Systems Corp. Serial transport frame format method. 5,060,229, Cl. 370-110.100.
Tyrrell, Raymond E.: *See*—
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UCB, S.A.: *See*—
Bollen, Alex; Gobert, Jean; and Wulfert, Ernst, 5,059,528, Cl. 435-69.400.
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Aoyagi, Muneo; Takanashi, Kazuhiro; Araki, Hiroyuki; Murata, Moriyasu; Sotoya, Kohshiro; Ogura, Nobuyuki; and Yamamura, Masaaki, 5,059,344, Cl. 252-186.380.
Yamamura, Nobuyuki: *See*—
Shimizu, Hideaki; Yamamura, Nobuyuki; Yamada, Hiroyasu; Wakai, Haruo; and Matsumoto, Hiroshi, 5,060,034, Cl 357-23.500.
Yamanaka, Kayuri, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,059,906, Cl. 324-318.000.
Yamanaka, Shoji; and Komarneni, Sridhar, to Gas Research Institute. Apparatus for measuring liquid vapor adsorption and desorption characteristics of a sample. 5,058,442, Cl. 73-865.500.
Yamane, Mitsuo; Kawaguchi, Takashi; Kagayama, Shigeru; Higashiyama, Shunichi; Suzuki, Keiko; Sakai, Jun; Imaeda, Mikio; and Inaishi, Kouji, to Brother Kogyo Kabushiki Kaisha. Apparatus and method for forming three-dimensional article. 5,059,266, Cl 156-64.000.
Yamano, Tsuyoshi: *See*—
Nishimura, Tadashi; and Yamano, Tsuyoshi, 5,060,035, Cl 357-23.700.
Yamanoue, Masafumi: *See*—
Matsumoto, Masafumi; Yamanoue, Masafumi; and Morimoto, Hiroshi, 5,060,082, Cl. 358-447.000.
Yamasa Shoyu Kabushiki Kaisha: *See*—
Ueda, Tohru; Matsuda, Akira; Minakawa, Noriaki; Sasaki, Takuma; and Yanagi, Yoshikazu, 5,059,590, Cl. 514-23.000.
Yamasaki, Hirofumi: *See*—
Fukuma, Takao; Tsukamoto, Keisuke; Takaoka, Toshio; and Yamasaki, Hirofumi, 5,058,556, Cl. 123-489.000.
Yamasaki, Hitoshi: *See*—
Kato, Yasuyoshi; Nakajima, Fumito; Hamada, Ikuhisa; Nitta, Masahiro; Konishi, Kunihiko; Matsuda, Toshiaki; Yoshida, Naomi; Ishida, Nobuyoshi; and Yamasaki, Hitoshi, 5,059,576, Cl. 502-309.000.
Yamasaki, Kozo; Mouri, Kouichi; Kato, Naomiki; Hirano, Mitsuru; Schmitt, Michael A.; and Bhattacharyya, Bidyut, to NGK Spark Plug Co., Ltd.; NGK Spark Plugs (U.S.A.), Inc.; and Intel Corporation. Multiple resistivity wiring apparatus. 5,060,049, Cl. 357-70.000
Yamashita, Takehiko, to Daiwa Electricity Plant Co., Ltd. Coil bobbin 5,058,821, Cl. 242-118.400.
Yamashita, Tetsuji: *See*—
Yasuda, Hiromu; Daikoku, Takahiro; Takahashi, Kenji; Zushi, Shizuo; Yamashita, Tetsuji; Yoshikawa, Tomio; and Murakami, Kyoshiro, 5,058,389, Cl. 62-99.000.
Yamashita, Yohachi: *See*—
Kanai, Hideyuki; Yamashita, Yohachi; Furukawa, Osamu; and Harata, Mitsuo, 5,059,566, Cl. 501-138.000
Yamashita, Yoshiro: *See*—
Miyashi, Tsutomu; Yamashita, Yoshiro; Suzuki, Takanori; and Fujii, Hiroshi, 5,059,742, Cl. 585-860.000.
Yamauchi, Kazuhiro: *See*—
Tamura, Mitsuhisa; Yamauchi, Kazuhiro; Higashio, Yasuhiko; and Takahashi, Kazuteru, 5,059,736, Cl. 585-461.000
Yamauchi, Ryozo; Kawakami, Noboru; and Suzuki, Fumio, to Fujikura Ltd. Optical fiber coupler and a fabrication method for the same 5,058,979, Cl. 385-28.000
Yamauchi, Shiro; and Rito, Naotake, to Mitsubishi Denki Kabushiki Kaisha. Humidity controller. 5,059,291, Cl. 204-153.220.
Yamauchi, Takashi: *See*—
Hasegawa, Morihiro; and Yamauchi, Takashi, 5,058,657, Cl. 164-428.000
Yamazaki, Etsuo: *See*—
Iehisa, Nobuaki; and Yamazaki, Etsuo, 5,059,760, Cl. 219-121.830.
Yamazaki, Hiroshi: *See*—
Ogihara, Masuo; Ishida, Hiroyuki; Nagaoka, Shinji; Seki, Youichi; Tagami, Shigeru; Yamazaki, Hiroshi; and Shinozaki, Nobuo, 5,060,000, Cl. 354-400.000.
Yamazaki, Nobuto; and Nishimura, Akihiro, to Kabushiki Kaisha Shinkawa. Method for forming bump on semiconductor elements. 5,058,798, Cl. 228-110.000
Yamazaki, Nobuto: *See*—
Terakado, Yoshimitsu; Mochida, Tohru; and Yamazaki, Nobuto, 5,058,797, Cl. 228-104.000.
Yamazaki, Shiro: *See*—
Arabori, Hideo; Yamazaki, Shiro; Arahira, Masato; and Murakami, Aiko, 5,059,238, Cl. 71-93.000.
Yamazaki, Shunpei: *See*—
Kojima, Narihito; Nagame, Hiroshi; Seto, Mitsuru; Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Hirose, Naoki; Sasaki, Mari; and Takeyama, Junichi, 5,059,502, Cl. 430-66.000.
Yamazaki, Yasuo; Nomura, Toshiaki; Maruyama, Takashi; and Sato, Shigenobu, to Toppan Printing Co., Ltd. Filling and sealing apparatus for fluid containing package. 5,058,360, Cl. 53-133.200.
Yanagi, Yoshikazu: *See*—
Ueda, Tohru; Matsuda, Akira; Minakawa, Noriaki; Sasaki, Takuma; and Yanagi, Yoshikazu, 5,059,590, Cl. 514-23.000.
Yanagisawa, Kazuhisa: *See*—
Nagasaki, Tatsuo; Omura, Masayoshi; Watanabe, Hitoshi; Imade, Shinichi; Ikuta, Eishi; Yoshimori, Hiroyuki; and Yanagisawa, Kazuhisa, 5,060,191, Cl. 365-145.000.
Yanagishita, Norio: *See*—
Sugiura, Takashi; Matsuura, Ichiro; and Yanagishita, Norio, 5,058,955, Cl. 297-452.000.
Yanai, Takenori: *See*—
Mitani, Yoshio; and Yanai, Takenori, 5,059,087, Cl. 414-626.000.
Yang, Michael. Method to produce an animal's voice to embellish a music and a device to practice this method. 5,060,267, Cl. 381-36.000.
Yarger, Ronald G.: *See*—
Klemann, Lawrence P.; Finley, John W.; and Yarger, Ronald G., 5,059,442, Cl. 426-531.000.
Yasuda, Hiromu; Daikoku, Takahiro; Takahashi, Kenji; Zushi, Shizuo; Yamashita, Tetsuji; Yoshikawa, Tomio; and Murakami, Kyoshiro, to Hitachi, Ltd. Fluid temperature control system and computer system using same. 5,058,389, Cl. 62-99.000.
Yasuda, Tomokazu: *See*—
Ueda, Shinji; Kojima, Tetsuro; Kitahara, Tohru; Yasuda, Tomokazu; Fujita, Yoshihiro; and Ishikawa, Takatoshi, 5,059,514, Cl. 430-393.000.
Yasue, Takao, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor wafer with notches. 5,060,043, Cl. 357-40.000.
Yasui, Nobuhiko: *See*—
Ueyama, Yoshiki; and Yasui, Nobuhiko, 5,060,162, Cl. 364-449.000.
Yates, David E.: *See*—
Stockman, Norbert O.; Yates, David E.; and Crum, Timothy S., 5,058,617, Cl. 137-15.100.
Yazaki Corporation: *See*—
Iino, Tadashi, 5,059,956, Cl. 340-705.000.
Ohta, Yukio; Watanabe, Hiroshi; Ohsumi, Hideki; and Taguchi, Naoto, 5,059,142, Cl. 439-752.000.
Yellin, Emanuel: *See*—
Eisen, Yosef; Yellin, Emanuel; and Kedem, Drora, 5,060,249, Cl. 378-57.000.
Yokoi, Chikazu: *See*—
Kaneda, Tokuya; and Yokoi, Chikazu, 5,060,207, Cl. 369-13.000.
Yokoi, Kiyomi: *See*—
Araki, Nobuo; Tabata, Kazufumi; Yokoi, Kiyomi; Ashidate, Tadami; and Hattori, Osamu, 5,058,259, Cl. 29-433.000.
Yokomori, Kiyoshi: *See*—
Nakayama, Masahiko; Shigemori, Toshihiro; Kono, Haruhiko; and Yokomori, Kiyoshi, 5,060,214, Cl. 369-44.260.

Yokota, Yoshiko; Mine, Yasuhiro; and Wakai, Yoshimi, to Fujisawa Pharmaceutical Co., Ltd. Composition for prevention and (or) treatment of AIDS. 5,059,592, Cl. 514-50.000.
Yomoda, Kazuo, to Nissho Optical Co., Ltd. Optical system and an optical attachment for a microscope including a field lens, a relay lens, and four mirrors. 5,059,010, Cl. 359-372.000.
Yoneda, Takao; Arimoto, Naoki; and Yonezu, Toshihiro, to Toyoda Koki Kabushiki Kaisha. Numerical controller for machining a non-circular workpiece and capable of calculating profile data. 5,060,164, Cl. 364-474.290.
Yonekubo, Hiroaki; Miyoshi, Risho; Hirata, Katsumi; Tokumoto, Munehiko; and Iwasa, Takashi, to Matsushita Electric Industrial Co., Ltd. Automatic hot water supply apparatus. 5,058,804, Cl. 236-12.120.
Yonekura, Chihiro: *See*—
Yoshimura, Manabu; and Yonekura, Chihiro, 5,059,850, Cl. 310-328.000.
Yoneno, Hiroshi: *See*—
Sumihara, Masanori; Imasaka, Yoshinobu; and Yoneno, Hiroshi, 5,059,849, Cl. 310-323.000.
Yonezu, Toshihiro: *See*—
Yoneda, Takao; Arimoto, Naoki; and Yonezu, Toshihiro, 5,060,164, Cl. 364-474.290.
Yoo, Seung H.: *See*—
Chung, Seok P.; Lim, Byung C.; and Yoo, Seung H., 5,060,094, Cl. 360-96.500.
Yoshida, Hiroshi: *See*—
Ito, Michio; and Yoshida, Hiroshi, 5,059,113, Cl. 425-564.000.
Yoshida, Kiyoshi; Yamamoto, Isao; Inoue, Hiroshi; Mori, Kazuyuki; Suzuki, Koichi; Nakano, Kinichiro; Nomura, Hiroyuki; and Etoh, Yoshiyuki, to Nissan Motor Company, Limited. Cruise control system for automotive vehicle. 5,058,698, Cl. 180-179.000.
Yoshida Kogyo K. K.: *See*—
Fujisaki, Yoshinori; and Aimono, Sakae, 5,058,246, Cl. 24-394.000.
Ito, Michio; and Yoshida, Hiroshi, 5,059,113, Cl. 425-564.000.
Yoshida, Koji: *See*—
Hikami, Toshiya; Yoshida, Koji; Obara, Yuichi; and Fuse, Kenichi, 5,059,133, Cl. 439-161.000.
Yoshida, Masanobu, to Fujitsu Limited. Nand gate circuit. 5,059,825, Cl. 307-448.000.
Yoshida, Masayuki: *See*—
Ono, Fumitaka; Kino, Shigenori; Yoshida, Masayuki; and Kimura, Tomohiro, 5,059,976, Cl. 341-51.000.
Yoshida, Mitsuhiro; Morita, Yutaka; Ishino, Yoshio; and Ohsawa, Shigemitsu, to Sansho Co., Ltd.; and Eisai Co., Ltd. Pharmaceutical preparation for percutaneous administration containing eperisone or tolperisone or salt thereof. 5,059,427, Cl. 424-449.000.
Yoshida, Naomi: *See*—
Kato, Yasuyoshi; Nakajima, Fumito; Hamada, Ikuhisa; Nitta, Masahiro; Konishi, Kunihiko; Matsuda, Toshiaki; Yoshida, Naomi; Ishida, Nobuyoshi; and Yamasaki, Hitoshi, 5,059,576, Cl. 502-309.000.
Yoshida, Takeshi; and Tanaka, Nariaki, to Mita Industrial Co., Ltd. Image processing equipment for setting image density conditions according to temperature. 5,060,022, Cl. 355-246.000.
Yoshida, Tetsuo: *See*—
Suzuki, Shinichi; Ban, Takashi; Fukanuma, Tetsuhiko; and Yoshida, Tetsuo, 5,059,098, Cl. 417-295.000.
Yoshida, Tetsushi; Muto, Tetsuo; Matsuda, Toshiyuki; and Sugimoto, Naoshige, to Casio Computer Co., Ltd. Liquid crystal display devide with a twisted alignment state. 5,058,998, Cl. 359-63.000.
Yoshida, Yuji; Arita, Koji; and Tomizawa, Takeshi, to Matsushita Electric Industrial Co., Ltd. Working fluid. 5,059,338, Cl. 252-67.000.
Yoshida, Yuji, to Nitto Boseki Co., Ltd. Floor covering tile. 5,059,474, Cl. 428-174.000.
Yoshigai, Kenichi, to Yoshigai Kikai Kinzoku Co., Ltd. Device for adjusting a return spring in a bicycle brake assembly. 5,058,450, Cl. 74-502.200.
Yoshigai Kikai Kinzoku Co., Ltd.: *See*—
Yoshigai, Kenichi, 5,058,450, Cl. 74-502.200.
Yoshikawa, Tomio: *See*—
Yasuda, Hiromu; Daikoku, Takahiro; Takahashi, Kenji; Zushi, Shizuo; Yamashita, Tetsuji; Yoshikawa, Tomio; and Murakami, Kyoshiro, 5,058,389, Cl. 62-99.000.
Yoshikawa, Yoshinori; and Gotoh, Kunihiko, to Fujitsu Limited. Constant current source circuit. 5,059,890, Cl. 323-315.000.
Yoshimori, Hiroyuki: *See*—
Nagasaki, Tatsuo; Omura, Masayoshi; Watanabe, Hitoshi; Imade, Shinichi; Ikuta, Eishi; Yoshimori, Hiroyuki; and Yanagisawa, Kazuhisa, 5,060,191, Cl. 365-145.000.
Yoshimura, Manabu; and Yonekura, Chihiro, to Brother Kogyo Kabushiki Kaisha. Temperature compensation member composed of shape memory effect alloy for an actuator driven by a piezo-electric element. 5,059,850, Cl. 310-328.000.
Yoshinaga, Kazuo: *See*—
Kaneko, Shuzo; Mouri, Akihiro; Isaka, Kazuo; Yoshinaga, Kazuo; Ohnishi, Toshikazu; Toshida, Yomishi; Kurabayashi, Yutaka; and Eguchi, Takeo, 5,059,000, Cl. 350-351.000.
Yoshinaga, Kenji: *See*—
Yada, Shuhei; Shibano, Takeshi; Itoh, Kiichi; and Yoshinaga, Kenji, 5,059,664, Cl. 526-240.000.
Yoshioka, Kazuyoshi: *See*—
Odani, Niro; Yoshioka, Kazuyoshi; and Sekiya, Sinichi, 5,059,491, Cl. 428-614.000.
Yoshitake, Kazuo: *See*—
Morita, Shiro; and Yoshitake, Kazuo, 5,058,285, Cl. 33-563.000.
Yoshitake Seisakujo Co., Inc.: *See*—
Morita, Shiro; and Yoshitake, Kazuo, 5,058,285, Cl. 33-563.000.
Yoshiyasu, Shigehiro: *See*—
Kudo, Takayuki; Sato, Kunihiko; Yoshiyasu, Shigehiro; Hirosaki, Tatsuya; Kubo, Manabu; and Imaizumi, Hajime, 5,059,759, Cl. 219-121.780.
Yoshizawa, Hideo; and Tanaka, Mitsuo, to Nippon Sheet Glass Co., Ltd. Sheet glass bending apparatus. 5,059,234, Cl. 65-273.000.
Yoshizawa, Tetsuo; Kondo, Hiroshi; Sakaki, Takashi; Imaizumi, Masaaki; Nishida, Hideyuki; Ichida, Yasuteru; and Konishi, Masaki, to Canon Kabushiki Kaisha. Method of making electric circuit device. 5,058,800, Cl. 228-180.200.
Young, Donald C., to Union Oil Company of California. Plant growth regulation. 5,059,241, Cl. 71-106.000.
Young, Timothy M., to Halliburton Company. Burner nozzle. 5,058,808, Cl. 239-464.000.
Young, William R.; and Johnstone, William F., to Harris Corporation. Cross-point switch. 5,060,192, Cl. 365-156.000.
Younglove, Bruce, to Exabyte Corporation. Reading method and apparatus for cartridge library. 5,059,772, Cl. 235-383.000.
Yu, C. John: *See*—
Alexander, M. Grayson; Beall, George H.; Quinn, Candace J.; and Yu, C. John, 5,059,560, Cl. 501-10.000.
Yu, Chuen-Huan. Turbo jet muffler. 5,058,704, Cl. 181-262.000.
Yu, Jing-peir; Pursley, Thomas C.; and Southern, John H., to Monsanto Company. Continuous filament yarn for tackless carpet. 5,058,371, Cl. 57-239.000.
Yu, Zeng-gi: *See*—
Collins, George J.; McNeil, John R.; and Yu, Zeng-gi, 5,059,292, Cl. 204-164.000.
Yuasa, Masayuki: *See*—
Hidaka, Hiroyoshi; Ishikawa, Tomohiko; Inoue, Tsutomu; Yuasa, Masayuki; Inaba, Takashi; Naito, Kenji; Sakuma, Osamu; Morita, Tadashi; and Kidokoro, Shinpei, 5,059,692, Cl. 546-80.000.
Yukawa, Masahiko: *See*—
Kohtoh, Noriaki; Kobayashi, Takashi; and Yukawa, Masahiko, 5,059,677, Cl. 528-353.000.
Yutani, Naoki: *See*—
Kimata, Masafumi; Yutani, Naoki; and Denda, Masahiko, 5,060,038, Cl. 357-24.000.
Yuyama, Hajime; Maekawa, Fumio; and Umekage, Kazuo, to National Starch and Chemical Investment Holding Corporation. Pressure-sensitive adhesive emulsion composition and a kraft tape using it 5,059,479, Cl. 428-323.000.
Zabrodski, George S.: *See*—
Bawa, Jaspal S.; Couto, Luis; Mancini, Giacomo F.; Pulitano, Nicholas; and Zabrodski, George S., 5,059,747, Cl. 174-65.0SS.
Zahler, Robert; and Tino, Joseph A., to E. R. Squibb & Sons, Inc. Purinyl tetrahydrofurans. 5,059,690, Cl. 544-276.000.
Zaias, Nardo. Method of hair depilation. 5,059,192, Cl. 606-9.000.
Zaizen, Reigi: *See*—
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,058,217, Cl. 4-420.000.
Zajac, Gerry W.: *See*—
Kaminsky, Mark P.; Kleefisch, Mark S.; and Zajac, Gerry W., 5,059,740, Cl. 585-500.000.
Zaschel, Jorg, to Carl Schenck AG. Process for early detection of damage to machine parts. 5,058,434, Cl. 73-659.000.
Zeiler, Hans-Joachim: *See*—
Petersen, Uwe; Schenke, Thomas; Krebs, Andreas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,059,597, Cl. 514-224.500.
Zekulin, Nikita: *See*—
Liers, Arthur H.; Principe, Louis J.; Zekulin, Nikita; and Hosein, Asgarali, 5,058,611, Cl. 134-105.000.
Zell, Michael N.: *See*—
Rigotti, James M.; Tufty, Lyle R.; and Zell, Michael N., 5,060,095, Cl. 360-98.010.
Zemlin, Karl E.; and Sergeant, Ronald G., to Burle Technologies, Inc. Low torque tilting platform. 5,058,842, Cl. 248-178.000.
Zenbayashi, Michio: *See*—
Motegi, Hisao; Sunaga, Takeshi; and Zenbayashi, Michio, 5,059,707, Cl. 556-449.000.
Zenith Electronics Corporation: *See*—
Adler, Robert; Fendley, James R.; Lange, Howard G.; Prazak, Charles J.; Steiner, Johann; and Strauss, Paul, 5,059,147, Cl. 445-4.000.
Feinberg, Jay H.; and Roberts, William N., 5,060,114, Cl. 361-387.000.
Gawell, George R.; and Nowaczyk, Philip J., 5,059,873, Cl 315-403.000.
Lee, Ronald B.; and Nielsen, Larry E., 5,060,067, Cl. 358-167.000.
Oliver, Kirk D., 5,059,874, Cl. 315-411.000.
Zentner, Ronald C.; and Smith, Steven A., to United States of America, National Aeronautics and Space Administration. Mechanized fluid connector and assembly tool system with ball detents. 5,058,929, Cl. 285-39.000.
Zhao, Zhi-Yang: *See*—
Kingston, David G. I.; and Zhao, Zhi-Yang, 5,059,699, Cl. 549-511.000.
Zheng, Zhen B., to New Brunswick Scientific Co., Inc. Connector for coupling a fluid line to a resterilizable port. 5,058,619, Cl. 137-240.000.

Ziegler, Hans: *See*—
Hagen, Helmut; Pfister, Juergen; Ziegler, Hans; Wuerzer, Bruno; and Westphalen, Karl-Otto, 5,059,240, Cl. 71-94.000.
Zilber, Serge, to C. R. Bard, Inc. High-friction prostatic stent. 5,059,169, Cl. 604-8.000.
Zimmer, Agnes K.: *See*—
Mrvos, James M.; Paterra, Jeffrey H.; and Zimmer, Agnes K., 5,059,045, Cl. 400-197.000.
Zimmermann, Franz: *See*—
Buysch, Hans-Josef; Gelhaar, Hans-Georg; Istel, Erich; and Zimmermann, Franz, 5,059,643, Cl. 524-83.000.
Zinser, Richard L., to General Electric Company. Hybrid switched multi-pulse/stochastic speech coding technique. 5,060,269, Cl. 381-38.000.
Zinser Textilmaschinen GmbH: *See*—
Lenkeit, Uwe; and Weeger, Hans-Peter, 5,058,504, Cl. 104-243.000.
Staedele, Norbert; and Hoffman, Martin, 5,058,372, Cl. 57-274.000.
Zoechbauer, Michael, to Hartmann & Braun AG. Interferometric device having a controllable Fabry-Perot. 5,059,026, Cl. 356-346.000.
Zouzoulas, John; and Frontino, Louis J., to Mars Incorporated. Portable data scanner apparatus. 5,059,778, Cl. 235-472.000.
Zsamboky, Kalman F. Metallized ceramic substrate and method therefor. 5,058,799, Cl. 228-124.000.
Zulian, Ferruccio; and Porro, Enrico. System using registers for maintaining data address and class information from previous module accesses for predictive memory module selection. 5,060,188, Cl. 364-900.000.
Zurawski, Vincent R., Jr.: *See*—
Davis, Hugh M.; Klug, Thomas L.; and Zurawski, Vincent R., Jr., 5,059,680, Cl. 530-350.000.
Zushi, Shizuo: *See*—
Yasuda, Hiromu; Daikoku, Takahiro; Takahashi, Kenji; Zushi, Shizuo; Yamashita, Tetsuji; Yoshikawa, Tomio; and Murakami, Kyoshiro, 5,058,389, Cl. 62-99.000.
Zyzda, Leonard E.: *See*—
Wallace, David E.; Merritello, Ronald J.; Zyzda, Leonard E.; Eisenwasser, Jacob D.; and Lambesis, Gary J., 5,059,407, Cl. 423-421.000.
3D Systems, Inc.: *See*—
Spence, Stuart T., 5,058,988, Cl. 356-121.000.
Spence, Stuart T.; and Tarnoff, Harry L., 5,059,021, Cl. 356-121.000.
501 Meinan Machinery Works, Inc.: *See*—
Takagi, Yukio, 5,058,639, Cl. 144-357.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF OCTOBER, 1991

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Canon Kabushiki Kaisha: *See*—
Sato, Hideki; and Sugiura, Yoshinori, Re. 33,721, Cl. 359-198.000.
Cummings, Peter A. Skylight assembly. Re. 33,720, Cl. 52-200.000.
Hartley, Philip J. Liquid filtering apparatus. Re. 33,723, Cl. 210-448.000.
Konica Corporation: *See*—
Takei, Yoshiaki; Nomori, Hiroyuki; and Matuura, Katumi, Re. 33,724, Cl. 430-59.000.
Lee, Donald T. Y., to North American Philips Corporation. Self referenced sense amplifier. Re. 33,725, Cl. 307-530.000.
Matuura, Katumi: *See*—
Takei, Yoshiaki; Nomori, Hiroyuki; and Matuura, Katumi, Re. 33,724, Cl. 430-59.000.
Nomori, Hiroyuki: *See*—
Takei, Yoshiaki; Nomori, Hiroyuki; and Matuura, Katumi, Re. 33,724, Cl. 430-59.000.
North American Philips Corporation: *See*—
Lee, Donald T. Y., Re. 33,725, Cl. 307-530.000.
Sato, Hideki; and Sugiura, Yoshinori, to Canon Kabushiki Kaisha. Light beam scanning apparatus. Re. 33,721, Cl. 359-198.000.
Scifres, Donald R.; and Worland, D. Philip, to Spectra Diode Laboratories, Inc. Optical system with bright light output. Re. 33,722, Cl. 385-33.000.
Spectra Diode Laboratories, Inc.: *See*—
Scifres, Donald R.; and Worland, D. Philip, Re. 33,722, Cl. 385-33.000.
Sugiura, Yoshinori: *See*—
Sato, Hideki; and Sugiura, Yoshinori, Re. 33,721, Cl. 359-198.000.
Takei, Yoshiaki; Nomori, Hiroyuki; and Matuura, Katumi, to Konica Corporation. Photoreceptor having polycarbonate layers and process for the preparation thereof. Re. 33,724, Cl. 430-59.000.
Worland, D. Philip: *See*—
Scifres, Donald R.; and Worland, D. Philip, Re. 33,722, Cl. 385-33.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Aloka Co., Ltd.: *See*—
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, B1 4,573,477, Cl. 128-661.090.
Crawford Products, Inc.: *See*—
Sheftel, Steven J., B1 8,273,544, Cl. D8-376.000.
Kasai, Chihiro: *See*—
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, B1 4,573,477, Cl. 128-661.090.
Koyano, Akira: *See*—
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, B1 4,573,477, Cl. 128-661.090.
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, to Aloka Co., Ltd. Ultrasonic diagnostic apparatus. B1 4,573,477, 10-22-91, Cl. 128-661.090.
Sheftel, Steven J., to Crawford Products, Inc. Tool rack. B1 8,273,544, 10-22-91, Cl. D8-376.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Holen, James T., 321,057, Cl. D24-224.000.
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Horita, Yoshiyuki; and Waki, Kiyoyasu, 320,955, Cl. D11-221.000.
Horita, Yoshiyuki; and Waki, Kiyoyasu, 320,956, Cl. D11-221.000.
Walker, Lindsey J. Combined comb and sheath therefor. 321,065, 10-22-91, Cl. D28-22.000.
Wang, James P.: *See*—
Cronch, Darell D.; Lawson, Freddie M., McDaniel, Robert F.; and Wang, James P., 320,978, Cl. D14-100.000.
Warner Manufacturing Company: *See*—
Henke, David R.; and Ruha, David J., 320,921, Cl. D8-98.000.
Weele Company Limited: *See*—
Yubisui, Teruo, 321,009, Cl. D19-48.000.
Weick, Heinz H. Air freshener. 321,050, 10-22-91, Cl. D23-369.000.
Whitehead, Stephen P., to Suncast Corporation. Oscillating sprinkler. 321,034, 10-22-91, Cl. D23-216.000.
Woolford, Michael E.: *See*—
Blomquist, Peter J.; and Woolford, Michael E., 321,060, Cl. D25-118.000.
Wright, Richard J. Automotive clip board. 321,012, 10-22-91, Cl. D19-88.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Hikida, Akihiko, 320,961, Cl. D12-110.000.
Yamaha Hatsudoki Katushiki Kaisha: *See*—
Krieger, John, 320,963, Cl. D12-112.000.
Yau Kee, Peter M., to Rosalco, Inc. Blanket rack. 320,897, 10-22-91, Cl. D6-410.000.
Yau Kee, Peter M., to Rosalco, Inc. Bathroom etagere. 320,900, 10-22-91, Cl. D6-465.000.
Yau Kee, Peter M., to Rosalco, Inc. Shelf unit. 320,901, 10-22-91, Cl. D6-479.000.
Yazaki Corporation: *See*—
Kawashima, Toshiharu; Sawada, Yoshitsugu; and Jinno, Keishi, 320,975, Cl. D13-147.000.
Yoshida Kogyo K. K.: *See*—
Horita, Yoshiyuki; and Yuuki, Kenji, 320,953, Cl. D11-221.000.
Yoshida Kogyo K.K.: *See*—
Horita, Yoshiyuki; and Waki, Kiyoyasu, 320,955, Cl. D11-221.000.
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Takemura, Chiharu, 320,954, Cl. D11-221.000
Yuki, Kenji, 320,957, Cl. D11-221.000.
Yubisui, Teruo, to Wecle Company Limited. Fountain pen. 321,009, 10-22-91, Cl. D19-48.000.
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Yukimoto, Koji; Mikami, Mitsugu; Ito, Yukio; and Nishiumi, Kenji, to Kabushiki Kaisha Nippon Conlux. Coin selector for an automatic vendor. 321,013, 10-22-91, Cl. D20-9.000.
Yuuki, Kenji: *See*—
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Zambelli, Michael P.: *See*—
Danielson, David C.; Dubbs, David; Harden, Daniel K.; Motluck, Raymond; and Zambelli, Michael P., 320,985, Cl. D14-141.000.
Zebco Corporation: *See*—
Robbins, Richard J.; and Feehan, Richard J., 321,033, Cl. D22-141.000.
Zierhut, Clarence: *See*—
Howard, Joseph P.; and Zierhut, Clarence, 320,980, Cl. D14-114.000.
Zimmerman, Larry G., to Dart Industries Inc. Tray or the like. 320,908, 10-22-91, Cl. D7-545.000.

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Shoesmith, Leonard H., deceased; Shoesmith, May V.; and Hesse, Peter S., 7,682, Cl. 74.000.
Shoesmith, Leonard H., deceased; Shoesmith, May V.; and Hesse, Peter S., 7,683, Cl. 76.000.
Holtkamp, Reinhold, Sr. African violet plant named Rose. 7,684, 10-22-91, Cl. 69.000.
Holtkamp, Reinhold, Sr. African violet plant named Improved Montana. 7,685, 10-22-91, Cl. 69.000.
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Shoesmith, Leonard H., deceased (by Shoesmith, May V., executrix); Shoesmith, May V.; and Hesse, Peter S., to Yoder Brothers, Inc. Chrysanthemum plant named Daytona. 7,683, 10-22-91, Cl. 76.000.
Shoesmith, May V.: *See*—
Shoesmith, Leonard H., deceased; Shoesmith, May V.; and Hesse, Peter S., 7,682, Cl. 74.000.
Shoesmith, Leonard H., deceased; Shoesmith, May V.; and Hesse, Peter S., 7,683, Cl. 76.000.
Shoesmith, May V., executrix: *See*—
Shoesmith, Leonard H., deceased; Shoesmith, May V.; and Hesse, Peter S., 7,683, Cl. 76.000.
Shoesmith, May Victoria, executrix: *See*—
Shoesmith, Leonard H., deceased; Shoesmith, May V.; and Hesse, Peter S., 7,682, Cl. 74.000.
Yoder Brothers, Inc.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 22, 1991

NOTE.—First number, class; second number, subclass; third number, patent number

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121.52 5,059,757
121.63 5,059,758
121.68 5,059,764
121.69 5,059,763
121.78 5,059,759
121.83 5,059,760
5,059,761
125.11 5,059,765
130.21 5,059,766
209 5,059,767
238 5,059,769
270 5,059,768
391 5,059,770

CLASS 220

1.5 5,058,756
85 H 5,058,757
85 P 5,058,758
270 5,058,759
276 5,058,760
306 5,058,761
378 5,058,762
404 5,058,763
481 5,058,764
528 5,058,765

CLASS 221

254 5,058,766
279 5,058,767

CLASS 222

1 5,058,768
47 5,058,769
80 5,058,770
99 5,058,771
109 5,058,772
140 5,058,774
153 5,058,775
168 5,058,776
200 5,058,777
209 5,058,778
309 5,058,779
321 5,058,780
326 5,058,781
330 5,058,782
538 5,058,783
598 5,058,784

CLASS 223

111 5,058,785

CLASS 224

42.32 5,058,786
42.46 R 5,058,787
222 5,058,788
265 5,058,789
275 5,058,790
310 5,058,791

CLASS 225

42 5,058,792

CLASS 226

15 5,058,793

CLASS 227

7 5,058,794
5,058,795
129.4 5,058,773

CLASS 228

44.3 5,058,796
104 5,058,797
110 5,058,798
124 5,058,799
180.2 5,058,800

CLASS 229

3.5 MF 5,058,801
120.26 5,058,802
148 5,058,803

CLASS 235

64.7 5,059,771
383 5,059,772
436 5,059,773
454 5,059,774
456 5,059,775
457 5,059,776
467 5,059,779
470 5,059,777
472 5,059,778

CLASS 236

12.12 5,058,804

CLASS 239

3 5,058,805
205 5,058,806
302 5,058,807
428.5 5,058,809
464 5,058,808
489 5,058,810
659 5,058,811
691 5,058,812

CLASS 241

19 5,058,813
152 A 5,058,814
192 5,058,815

CLASS 242

18 R 5,058,816
36 5,058,817
42 5,058,818
54 R 5,058,819
67.1 R 5,058,820
118.4 5,058,821
195 5,058,822
261 5,058,823

CLASS 244

17.13 5,058,824
17.25 5,058,825
53 R 5,058,826
103 R 5,058,827
110 B 5,058,828
122 R 5,058,829
140 5,058,830
142 5,058,831
155 R 5,058,832
158 R 5,058,833
164 5,058,834
165 5,058,835
176 5,058,836
199 5,058,837

CLASS 248

50 5,058,838
97 5,058,839
118.5 5,058,840
126 5,058,841
178 5,058,842
221.4 5,058,843
286 5,058,844
291 5,058,845
292.1 5,058,846
328 5,058,847
441.1 5,058,848
442.2 5,058,849
450 5,058,850
549 5,058,851
588 5,058,852
634 5,058,853

CLASS 249

2 5,058,854
47 5,058,855

CLASS 250

205 5,059,780
206.1 5,059,781
5,059,789
211 J 5,059,787
213 A 5,059,788
214 A 5,059,782
227.19 5,059,783
227.21 5,059,790
231.17 5,059,791
237 R 5,059,784
306 5,059,792
5,059,793
309 5,059,785
327.2 5,059,794
5,059,795
330 5,059,796
336.1 5,059,797
338.4 5,059,786
363.03 5,059,798
363.10 5,059,799
367 5,059,800
370.14 5,059,801
374 5,059,802
385.1 5,059,803
396 R 5,059,804
436 5,059,805
484.1 5,059,806
519.1 5,059,807
548 5,059,808
551 5,059,809
561 5,059,810
573 5,059,811
577 5,059,812

CLASS 251

11 5,058,856
30.05 5,058,857
127 5,058,858
149.4 5,058,859
208 5,058,860
335.3 5,058,861

CLASS 252

8.552 5,059,333
32.5 5,059,334
5,059,335
33.3 5,059,336
62.54 5,059,337
67 5,059,338
77 5,059,339
174.12 5,059,341
174.21 5,059,342
182.35 5,059,343
186.38 5,059,344
299.61 5,059,340
5,059,345
301.6 S 5,059,346
400.62 5,059,347
408.1 5,059,348
5,059,349
5,059,350
5,059,351
5,059,352
5,059,353
584 5,059,355
585 5,059,356

CLASS 254

26 R 5,058,862

CLASS 256

26 5,058,863

CLASS 261

53 5,059,357
122 5,059,358

CLASS 264

22 5,059,359
23 5,059,360
25 5,059,361
5,059,362
40.1 5,059,364
40.5 5,059,365
44 5,059,366
60 5,059,367
69 5,059,368
87 5,059,369
102 5,059,370
108 5,059,371
120 5,059,372
154 5,059,373
167 5,059,375
234 5,059,376
257 5,059,377
258 5,059,378
272.14 5,059,379
326 5,059,380

CLASS 265

40.1 5,059,363

CLASS 266

45 5,058,864
209 5,058,865

CLASS 267

140.1 5,058,866
141.3 5,058,867
259 5,058,868

CLASS 269

45 5,058,869
118 5,058,870
323 5,058,871

CLASS 270

30 5,058,872
52 5,058,873

CLASS 271

4 5,058,874
10 5,058,875
98 5,058,876
124 5,058,877
145 5,058,878
259 5,058,879
315 5,058,880

CLASS 272

69 5,058,881
70 5,058,882
93 5,058,883
117 5,058,884
122 5,058,885
123 5,058,886
130 5,058,887
5,058,888

CLASS 273

25 5,058,889
26 R 5,058,890
63 E 5,058,901
73 J 5,058,902
81 B 5,058,891
128 A 5,058,892
143 R 5,058,893
153 R 5,058,894
167 F 5,058,895

272 5,058,896
278 5,058,897
[illegible] 5,058,898
411 5,058,899
416 5,058,900

CLASS 277

34 5,058,903
44 5,058,904
65 5,058,905
167.5 5,058,906
207 A 5,058,907
235 B 5,058,908

CLASS 279

B 5,058,909

CLASS 280

14.2 5,058,910
47.35 5,058,911
87.021 5,058,912
281.1 5,058,913
433 5,058,914
441.2 5,058,915
704 5,058,916
5,058,917
718 5,058,918
732 5,058,919
735 5,058,920
741 5,058,921
808 5,058,922
821 5,058,923
837 5,058,924

CLASS 283

95 5,058,925
109 5,058,926

CLASS 285

11 5,058,927
38 5,058,928
39 5,058,929
45 5,059,043
92 5,058,930
112 5,058,931
200 5,058,932
5,058,933
226 5,058,934
330 5,058,935
382 5,058,936

CLASS 290

[illegible] 5,059,813

CLASS 292

34 5,058,937
45 5,058,938
110 5,058,939
167 5,058,940

CLASS 296

24.1 5,058,941
97.4 5,058,942
107 5,058,943
146 5,058,944
180.5 5,058,945
181 5,058,946
216 5,058,947

CLASS 297

18 5,058,948
45 5,058,949
5,058,950
278 5,058,951
284 A 5,058,952
284 B 5,058,953
317 5,058,954
452 5,058,955

CLASS 298

23 C 5,058,956
24 5,058,957

CLASS 301

37 R 5,058,958
108 TW 5,058,959

CLASS 303

24.1 5,058,960
115 5,058,961
116 PC 5,058,962

CLASS 305

35 EB 5,058,963

CLASS 307

201 5,059,814
246 5,059,815
5,059,816
265 5,059,817
269 5,059,818
272.1 5,059,819
296.6 5,059,820
360 5,059,821
443 5,059,822
5,059,823
446 5,059,824
448 5,059,825
455 5,059,826
5,059,827
465 5,059,828
475 5,059,829
481 5,059,830
482.1 5,059,831
490 5,059,832
510 5,059,833
[illegible] 5,059,836
530 Re.33,725
542 5,059,834
576 5,059,835
[illegible] 5,059,837
[illegible] 5,059,838

CLASS 310

10 5,059,839
49 R 5,059,840
71 5,059,841
78 5,059,842
89 5,059,843
90 5,059,844
90.5 5,059,845
239 5,059,846
313 A 5,059,847
313 R 5,059,848
323 5,059,849
328 5,059,850
334 5,059,851
339 5,059,852
366 5,059,857
367 5,059,853

CLASS 312

111 5,058,964
231 5,058,965
319 5,058,966

CLASS 313

107 5,059,854
318 5,059,855
346 R 5,059,856
[illegible] 5,059,858
443 5,059,859
488 5,059,860
503 5,059,861
5,059,862
[illegible] 5,059,863

CLASS 315

[illegible] 5,059,864
[illegible] 5,059,865
111.21 5,059,866
247 5,059,867
[illegible] 5,059,868
[illegible] 5,059,869
5,059,870
316 5,059,871
368 A 5,059,872
403 5,059,873
411 5,059,874

CLASS 318

93 5,060,252
138 5,059,875
254 5,059,876
[illegible] 5,059,877
490 5,059,878
603 5,059,879
610 5,059,880
630 5,059,881
675 5,059,882
[illegible] 5,059,883
701 5,059,884

CLASS 320

2 5,059,885

CLASS 322

28 5,059,886

CLASS 323

222 5,059,887
224 5,059,888
285 5,059,889
315 5,059,890

CLASS 324

71.6 5,059,891
73.1 5,059,892
74 5,059,893
[illegible] 5,059,894
104 5,059,895
142 5,059,896
158 P 5,059,898
158 R 5,059,897
5,059,899
160 5,059,900
175 5,059,901
207.17 5,059,902
223 5,059,903
226 5,059,904
233 5,059,905
318 5,059,906
323 5,059,907
444 5,059,908
457 5,059,909
537 5,059,910
539 5,059,911
546 5,059,912
557 5,059,913
642 5,059,914
650 5,059,915
713 5,059,916

CLASS 330

4.3 5,059,917
11 5,059,918
51 5,059,919
253 5,059,920
261 5,059,921
264 5,059,922
273 5,059,923

CLASS 331

1 A 5,059,924
5,059,925
47 5,059,926
77 5,059,927

CLASS 333

21 R 5,059,928
219.1 5,059,929

CLASS 335

131 5,059,930
132 5,059,931
147 5,059,932
167 5,059,933
272 5,059,934
282 5,059,935

CLASS 336

55 5,059,936

CLASS 337

[illegible] 5,059,937

CLASS 338

[illegible] 5,059,938
93 5,059,939
164 5,059,940
307 5,059,941

CLASS 340

111 5,059,960
146.2 5,059,942
309.4 5,059,943
323 R 5,059,944
426 5,059,945
435 5,059,946
467 5,059,947
[illegible] 5,059,948
571 5,059,949
572 5,059,950
5,059,951
573 5,059,952
578 5,059,953
614 5,059,954
701 5,059,955
705 5,059,956
5,059,957
706 5,059,958
709 5,059,959
720 5,059,961
793 5,059,962
5,059,963
[illegible] 5,059,964
995 5,059,965

CLASS 341

25 5,059,974
26 5,059,975
51 5,059,976
144 5,059,977
145 5,059,978
152 5,059,979
159 5,059,980
164 5,059,981
172 5,059,982

CLASS 342

25 5,059,966
26 5,059,967
152 5,059,968
352 5,059,969
451 5,059,970

CLASS 343

713 5,059,971
872 5,059,972

CLASS 346

1.1 5,059,973
5,059,983
5,059,984
76 PH 5,059,985
5,059,986
[illegible] 5,059,987
'34 5,059,988
140 R 5,059,989
153 5,059,990
160 5,059,991

CLASS 350

351 5,059,000
426 5,059,006

CLASS 351

121 5,059,017
162 5,059,018

CLASS 352

131 5,059,019

CLASS 353

122 5,059,020
472 5,060,084

CLASS 354

195.1 5,059,992
222 5,059,993
5,059,994
5,059,996
317 5,059,997
324 5,059,998
5,059,999
400 5,060,000
5,060,001
402 5,060,002
403 5,060,003
5,060,004
412 5,060,005
419 5,060,006
430 5,060,007

CLASS 355

27 5,060,008
5,060,009
5,060,010
5,060,011
28 5,060,012
[illegible] 5,060,013
211 5,060,014
215 5,060,015
219 5,060,016
221 5,060,017
230 5,060,018
231 5,060,019
245 5,060,020
5,060,021
5,060,022
251 5,060,023
283 5,060,024
319 5,060,025

CLASS 356

121 5,058,988
5,059,021
124 5,059,022
239 5,059,023
246 5,059,024
319 5,059,025
346 5,059,026
5,059,027
350 5,059,028
5,059,029
5,059,030
428 5,059,031

CLASS 357

17 5,060,027
5,060,028
22 5,060,029
5,060,030
5,060,031
23.13 5,060,037
23.4 5,060,032
5,060,033
23.5 5,060,034
23.7 5,060,035
5,060,036
24 5,060,038
26 5,060,039
30 5,060,040
5,060,041
5,060,042
40 5,060,043
43 5,060,044
45 5,060,045
5,060,046
53 5,060,047
68 5,060,048
70 5,060,049
71 5,060,050
5,060,051
74 5,060,052

CLASS 358

21 R 5,060,053
27 5,060,054
5,060,055
31 5,060,056
5,060,057
60 5,060,058
79 5,060,059
[illegible] 5,060,060
5,060,061
[illegible] 5,060,062
101 5,060,063
105 5,060,064
106 5,060,065
148 5,060,066
167 5,060,067
185 5,060,068
209 5,060,069
213.1 S 5,060,070
213.11 5,060,071
5,060,072
5,060,073
224 5,060,074
250 5,060,075
296 5,060,076
335 5,060,077
340 5,060,078
349 5,060,079
401 5,060,080
443 5,060,081
447 5,060,082
464 5,060,083

CLASS 359

43 5,058,999
56 5,058,994
59 5,058,995
5,058,997
63 5,058,998
[illegible] 5,058,996
119 5,060,224
124 5,060,225
135 5,060,302
140 5,060,305
152 5,060,303
5,060,304
154 5,060,308
5,060,309
160 5,060,085
173 5,058,976
5,060,306
5,060,307
179 5,060,301
[illegible] 5,060,310
192 5,060,311
5,060,312
196 5,059,008
198 Re.33,721
213 5,058,968
243 5,059,003
245 5,059,001
328 5,058,970
5,058,981
5,059,002
372 5,059,010
375 5,059,011
435 5,059,009
455 5,058,989
474 5,058,990
5,058,991
503 5,059,013
567 5,058,992
646 5,059,004
654 5,059,005
676 5,059,007
841 5,059,014
844 5,059,015
861 5,058,967
871 5,059,016
896 5,058,993

CLASS 360

14.1 5,060,086
5,060,087
46 5,060,088
51 5,060,089
71 5,060,090
77.140 5,060,092
78.04 5,060,091
78.13 5,060,093
96.5 5,060,094
98.01 5,060,095
99.12 5,060,096
103 5,060,097
5,060,098
105 5,060,099
106 5,060,100
5,060,101
125 5,060,102
128 5,060,103
130.24 5,060,104
133 5,060,105
5,060,106

CLASS 361

115 5,060,107
283 5,060,108
294 5,060,109
311 5,060,110
384 5,060,111
386 5,060,112
5,060,113
387 5,060,114
388 5,060,115
421 5,060,117
474 5,060,116

CLASS 362

1 5,060,118
32 5,060,119
61 5,060,120
5,060,121
[illegible] 5,060,122
[illegible] 5,060,123
147 5,060,124
218 5,060,125
277 5,060,126
421 5,060,127

CLASS 363

20 5,060,128
41 5,060,129
65 5,060,130
97 5,060,131

CLASS 364

158 5,060,132
192 5,060,133
200 5,060,134
5,060,135
5,060,136
5,060,137
5,060,138
5,060,139
5,060,140
5,060,141
5,060,142
5,060,143
5,060,144
5,060,145
5,060,147
5,060,148
5,060,149
5,060,150
5,060,186
400 5,060,151
401 5,060,152
405 5,060,153
419 5,060,154
5,060,155
424.03 5,060,156
424.05 5,060,157
424.1 5,060,158
426.02 5,060,159
442 5,060,160
449 5,060,162
470 5,060,161
474.22 5,060,163
474.29 5,060,164
478 5,060,165
487 5,060,166
[illegible] 5,060,167
519 5,060,168
521 5,060,169
5,060,170
5,060,171
522 5,060,172
551.01 5,060,173
558 5,060,174
559 5,060,175
579 5,060,176
[illegible] 5,060,177
[illegible] 5,060,178
718 5,060,179
724.03 5,060,180
735 5,060,181
752 5,060,182
757 5,060,183
900 5,060,146
5,060,184
5,060,185
5,060,187
5,060,188

CLASS 365

69 5,060,189
104 5,060,190
145 5,060,191
156 5,060,192
173 5,060,193
177 5,060,194
185 5,060,195
189.05 5,060,196
200 5,060,197
201 5,060,198
203 5,060,199
230.05 5,060,200

CLASS 367

7 5,060,201
44.21 5,060,213
45 5,060,202
75 5,060,203
5,060,204
98 5,060,205
136 5,060,206

CLASS 369

13 5,060,207
32 5,060,209
5,060,210
36 5,060,211
44.12 5,060,212
44.26 5,060,214
44.35 5,060,215
44.41 5,060,216
5,060,217
47 5,060,218

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48 5,060,219
58 5,060,220
59 5,060,221
013 5,060,208
100 5,060,222
275.4 5,060,223

CLASS 370

15 5,060,226
79 5,060,227
85.13 5,060,228
110.1 5,060,229

CLASS 371

21.2 5,060,230

CLASS 372

2 5,060,232
22 5,060,233
45 5,060,234
5,060,235
50 5,060,236
5,060,237
58 5,060,238
71 5,060,231

CLASS 374

29 5,059,032

CLASS 375

38 5,060,239
5,060,240
108 5,060,241
122 5,060,242

CLASS 376

215 5,059,382
250 5,059,383
260 5,059,384
282 5,059,385
336 5,059,386

CLASS 377

28 5,060,243
39 5,060,244
60 5,060,245

CLASS 378

20 5,060,246
50 5,060,247
53 5,060,248
57 5,060,249
61 5,060,250
93 5,060,251
101 5,060,253
136 5,060,254

CLASS 379

67 5,060,255
92 5,060,256
100 5,060,257
134 5,060,258
257 5,060,259
454 5,060,260

CLASS 380

3 5,060,261
19 5,060,262
25 5,060,263
46 5,060,264
5,060,265
49 5,060,266

CLASS 381

36 5,060,267
38 5,060,268
5,060,269
63 5,060,270
71 5,060,271
119 5,060,272
5,060,273
166 5,060,274

CLASS 382

I 5,060,275
8 5,060,276
14 5,060,277
5,060,278
5,060,279
18 5,060,290
33 5,060,280
34 5,060,281
42 5,060,282
47 5,060,283
53 5,060,284
56 5,060,285
5,060,286

CLASS 383

13 5,059,033
21 5,059,034
35 5,059,035
61 5,059,036

CLASS 384

45 5,059,037
104 5,059,038
133 5,059,039
448 5,059,040

476 5,059,041
537 5,059,042

CLASS 385

11 5,058,971
17 5,058,972
24 5,058,975
27 5,058,973
5,058,974
5,058,986
28 5,058,979
30 5,058,977
31 5,058,980
33 Re.33,722
5,058,982
43 5,058,978
78 5,058,983
80 5,058,984
115 5,058,985
128 5,058,987
147 5,058,969

CLASS 392

301 5,060,287
412 5,060,288
423 5,060,289

CLASS 400

120 5,059,044
197 5,059,045
320 5,059,046
322 5,059,047
486 5,059,048
605 5,059,049

CLASS 401

171 5,059,050

CLASS 402

75 5,059,051
80 R 5,059,052

CLASS 403

13 5,059,054
24 5,059,053
5,059,055
170 5,059,056
298 5,059,057
322 5,059,058
408.1 5,059,059

CLASS 404

11 5,059,060
72 5,059,061
110 5,059,062

CLASS 405

36 5,059,063
37 5,059,064
115 5,059,065
210 5,059,066
268 5,059,067

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114 5,059,070

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17 5,059,526
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69.5 5,059,530
118 5,059,531
134 5,059,532
172.3 5,059,533
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93 5,060,294
186 5,060,295
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326 5,060,298
5,060,299
343 5,060,300

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	5,058,857		5,058,581		5,059,183		5,059,924		5,059,213		5,059,192
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04	5,058,215		5,058,724		5,059,252		5,059,977		5,059,600		5,059,958
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	5,058,606		5,058,745		5,059,304		5,060,028		5,059,654		5,060,192
	5,058,642		5,058,764		5,059,307		5,060,079		5,059,693		5,060,206
	5,058,863		5,058,767		5,059,318		5,060,085		5,059,931		5,060,295
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	5,060,031		5,058,895		5,059,413		5,060,203		5,059,641		5,059,330
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05	5,059,084		5,058,934		5,059,454		5,060,277		5,059,738		5,059,635
	5,059,154		5,058,935		5,059,480		5,060,290		5,059,996		5,059,766
06	Re.33,722		5,058,936		5,059,483		5,060,297	12	5,058,266		5,059,771
	Re.33,725		5,058,942		5,059,497		5,060,304		5,058,307	16	5,058,369
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1126 O.G. 2, on May 7, 1991.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990

The search fee of the European Patent Office was changed on July 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the German mark, and was announced in the *Official Gazette* at 1126 O. G. 76 on May 28, 1991

International fees were changed on August 1, 1991, due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss franc, and were announced in the *Official Gazette* at 1128 O.G. 46, on July 23, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1320.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	490.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region for the first 10 national or regional offices	119.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	150.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

June 27, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on October 25, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,779,288 through 4,780,910
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 23, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,477,927 through 4,479,266
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$830.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 18, 1991
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,875	07/154,568	2/21/89
(4,687,571)	(06/786,411)	(8/18/87)
4,398,305	06/258,570	8/16/83
4,398,306	06/267,304	8/16/83
4,398,316	06/339,107	8/16/83
4,398,318	06/259,365	8/16/83
4,398,324	06/244,429	8/16/83
4,398,325	06/272,095	8/16/83
4,398,331	06/238,047	8/16/83
4,398,336	06/225,928	8/16/83
4,398,342	06/350,976	8/16/83
4,398,345	06/269,911	8/16/83
4,398,346	06/314,210	8/16/83
4,398,347	06/275,930	8/16/83
4,398,351	06/321,453	8/16/83
4,398,356	06/275,313	8/16/83
4,398,364	06/283,258	8/16/83
4,398,371	06/297,551	8/16/83
4,398,375	06/334,155	8/16/83
4,398,381	06/219,823	8/16/83
4,398,392	06/300,988	8/16/83
4,398,398	06/292,979	8/16/83
4,398,407	06/228,300	8/16/83
4,398,408	06/257,725	8/16/83
4,398,409	06/237,497	8/16/83
4,398,413	06/264,790	8/16/83
4,398,416	06/290,635	8/16/83
4,398,421	06/333,923	8/16/83
4,398,427	06/270,931	8/16/83
4,398,433	06/282,637	8/16/83
4,398,443	06/380,523	8/16/83
4,398,444	06/343,945	8/16/83
4,398,445	06/296,719	8/16/83
4,398,459	06/349,782	8/16/83
4,398,470	06/357,707	8/16/83
4,398,471	06/387,258	8/16/83
4,398,479	06/277,965	8/16/83
4,398,481	06/285,957	8/16/83
4,398,487	06/277,773	8/16/83
4,398,488	06/304,120	8/16/83
4,398,489	06/338,894	8/16/83
4,398,514	06/231,343	8/16/83
4,398,515	06/274,855	8/16/83
4,398,524	06/286,302	8/16/83
4,398,525	06/320,249	8/16/83
4,398,527	06/278,012	8/16/83
4,398,531	06/223,354	8/16/83
4,398,532	06/215,626	8/16/83
4,398,533	06/260,002	8/16/83
4,398,545	06/274,302	8/16/83
4,398,546	06/272,165	8/16/83
4,398,547	06/290,170	8/16/83
4,398,553	06/325,231	8/16/83
4,398,558	06/276,128	8/16/83
4,398,562	06/280,269	8/16/83
4,398,565	06/295,098	8/16/83
4,398,568	06/250,326	8/16/83
4,398,569	06/278,072	8/16/83
4,398,570	06/242,682	8/16/83
4,398,574	06/315,927	8/16/83
4,398,580	06/267,796	8/16/83
4,398,589	06/305,524	8/16/83
4,398,598	06/264,641	8/16/83
4,398,599	06/236,761	8/16/83
4,398,601	06/228,894	8/16/83
4,398,603	06/223,172	8/16/83
4,398,607	06/271,252	8/16/83
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4,398,615	06/283,142	8/16/83
4,398,616	06/276,106	8/16/83
4,398,617	06/334,024	8/16/83
4,398,619	06/363,662	8/16/83
4,398,623	06/302,541	8/16/83
4,398,633	06/291,951	8/16/83
4,398,640	06/238,690	8/16/83
4,398,641	06/261,334	8/16/83
4,398,645	06/278,971	8/16/83
4,398,656	06/334,324	8/16/83
4,398,663	06/270,874	8/16/83
4,398,665	06/390,114	8/16/83
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4,398,692	06/326,670	8/16/83
4,398,703	06/254,531	8/16/83
4,398,717	06/284,124	8/16/83
4,398,718	06/277,189	8/16/83
4,398,720	06/222,436	8/16/83
4,398,727	06/429,051	8/16/83
4,398,737	06/224,809	8/16/83
4,398,740	06/328,124	8/16/83
4,398,745	06/269,236	8/16/83
4,398,749	06/239,513	8/16/83
4,398,753	06/330,325	8/16/83
4,398,757	06/235,689	8/16/83
4,398,766	06/257,811	8/16/83
4,398,782	06/254,339	8/16/83
4,398,796	06/335,774	8/16/83
4,398,811	06/358,664	8/16/83
4,398,813	06/303,016	8/16/83
4,398,823	06/268,838	8/16/83
4,398,825	06/234,776	8/16/83
4,398,826	06/293,284	8/16/83
4,398,829	06/281,790	8/16/83
4,398,835	06/271,891	8/16/83
4,398,839	06/255,060	8/16/83
4,398,846	06/246,526	8/16/83
4,398,849	06/334,432	8/16/83
4,398,850	06/232,884	8/16/83
4,398,855	06/251,953	8/16/83
4,398,866	06/276,843	8/16/83
4,398,869	06/439,703	8/16/83
4,398,870	06/254,451	8/16/83
4,398,873	06/293,967	8/16/83
4,398,887	06/310,803	8/16/83
4,398,893	06/301,738	8/16/83
4,398,895	06/263,366	8/16/83
4,398,900	06/217,884	8/16/83
4,398,907	06/280,064	8/16/83
4,398,909	06/336,223	8/16/83
4,398,928	06/416,772	8/16/83
4,398,929	06/326,754	8/16/83
4,398,937	06/308,987	8/16/83
4,398,938	06/379,839	8/16/83
4,398,943	06/331,064	8/16/83
4,398,944	06/273,313	8/16/83
4,398,958	06/346,670	8/16/83
4,398,968	06/297,310	8/16/83
4,398,977	06/405,648	8/16/83
4,399,001	06/315,726	8/16/83
4,399,002	06/239,081	8/16/83
4,399,032	06/421,340	8/16/83
4,399,034	06/315,531	8/16/83
4,399,062	06/322,841	8/16/83
4,399,072	06/225,248	8/16/83
4,399,080	06/301,828	8/16/83
4,399,081	06/296,423	8/16/83
4,399,087	06/275,620	8/16/83
4,399,089	06/337,745	8/16/83
4,399,092	06/284,690	8/16/83
4,399,096	06/385,700	8/16/83
4,399,097	06/288,000	8/16/83
4,399,101	06/271,820	8/16/83
4,399,109	06/352,537	8/16/83
4,399,110	06/272,681	8/16/83
4,399,111	06/368,252	8/16/83
4,399,115	06/362,591	8/16/83
4,399,118	06/277,413	8/16/83
4,399,119	06/252,654	8/16/83
4,399,121	06/363,084	8/16/83
4,399,136	06/272,351	8/16/83
4,399,137	06/330,374	8/16/83
4,399,138	06/344,969	8/16/83
4,399,139	06/359,936	8/16/83
4,399,140	06/222,959	8/16/83
4,399,148	06/247,369	8/16/83
4,399,172	06/421,039	8/16/83
4,399,178	06/372,402	8/16/83
4,399,185	06/303,583	8/16/83
4,399,193	06/295,950	8/16/83
4,399,195	06/295,850	8/16/83
4,399,203	06/368,789	8/16/83
4,399,212	06/353,197	8/16/83
4,399,224	06/282,557	8/16/83
4,399,227	06/350,181	8/16/83
4,399,235	06/262,670	8/16/83
4,399,249	06/220,116	8/16/83
4,399,252	06/247,202	8/16/83
4,399,254	06/305,590	8/16/83
4,399,259	06/304,521	8/16/83
4,399,267	06/401,809	8/16/83
4,399,277	06/245,718	8/16/83
4,399,278	06/353,000	8/16/83
4,399,281	06/304,456	8/16/83
4,399,284	06/282,440	8/16/83
4,399,297	06/279,795	8/16/83
4,399,299	06/256,167	8/16/83
4,399,305	06/435,095	8/16/83
4,399,318	06/329,153	8/16/83
4,399,321	06/249,641	8/16/83
4,399,323	06/233,034	8/16/83
4,399,326	06/223,951	8/16/83
4,399,330	06/291,018	8/16/83
4,399,335	06/289,788	8/16/83
4,399,338	06/304,599	8/16/83
4,399,340	06/261,812	8/16/83
4,399,343	06/253,488	8/16/83
4,399,347	06/258,764	8/16/83
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4,399,360	06/364,353	8/16/83
4,399,365	06/243,370	8/16/83
4,399,366	06/257,030	8/16/83
4,399,375	06/238,295	8/16/83
4,399,382	06/277,452	8/16/83
4,399,385	06/347,976	8/16/83
4,399,386	06/347,790	8/16/83
4,399,394	06/317,150	8/16/83
4,399,396	06/289,278	8/16/83
4,399,398	06/279,194	8/16/83
4,399,401	06/296,452	8/16/83
4,399,403	06/304,580	8/16/83
4,399,411	06/304,379	8/16/83
4,399,414	06/274,120	8/16/83
4,399,433	06/300,820	8/16/83
4,399,448	06/230,873	8/16/83
4,399,453	06/246,506	8/16/83
4,399,456	06/304,540	8/16/83
4,399,459	06/316,736	8/16/83
4,399,466	06/334,298	8/16/83
4,399,470	06/257,655	8/16/83
4,399,476	06/253,577	8/16/83
4,399,480	06/248,807	8/16/83
4,399,481	06/253,701	8/16/83
4,399,483	06/346,489	8/16/83
4,399,490	06/238,867	8/16/83
4,399,491	06/401,451	8/16/83
4,399,495	06/384,794	8/16/83
4,399,497	06/217,136	8/16/83
4,399,514	06/218,770	8/16/83
4,399,515	06/249,304	8/16/83
4,399,526	06/228,848	8/16/83
4,399,532	06/292,327	8/16/83
4,399,542	06/239,845	8/16/83
4,399,548	06/253,625	8/16/83
4,399,552	06/348,600	8/16/83
4,399,560	06/276,093	8/16/83
4,686,716	06/810,496	8/18/87
4,686,728	06/707,245	8/18/87
4,686,731	06/633,658	8/18/87
4,686,734	06/796,161	8/18/87
4,686,738	06/777,408	8/18/87
4,686,742	06/891,186	8/18/87
4,686,745	06/890,505	8/18/87
4,686,746	06/577,163	8/18/87
4,686,755	06/744,814	8/18/87
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4,686,773	06/882,468	8/18/87
4,686,774	06/901,386	8/18/87
4,686,778	06/867,213	8/18/87
4,686,784	06/887,712	8/18/87
4,686,785	06/756,646	8/18/87
4,686,787	06/831,727	8/18/87
4,686,790	06/792,656	8/18/87
4,686,792	06/835,168	8/18/87
4,686,806	06/826,761	8/18/87
4,686,808	06/475,159	8/18/87
4,686,815	06/870,082	8/18/87
4,686,817	06/846,678	8/18/87
4,686,824	06/362,017	8/18/87
4,686,840	06/945,820	8/18/87
4,686,848	06/673,379	8/18/87
4,686,849	06/805,772	8/18/87
4,686,852	06/788,227	8/18/87
4,686,855	06/780,693	8/18/87
4,686,865	06/920,980	8/18/87
4,686,869	06/818,448	8/18/87
4,686,873	06/935,159	8/18/87
4,686,876	06/808,157	8/18/87
4,686,877	06/848,922	8/18/87
4,686,878	06/873,212	8/18/87
4,686,880	06/601,474	8/18/87
4,686,888	06/835,464	8/18/87
4,686,891	06/758,964	8/18/87
4,686,893	06/877,388	8/18/87
4,686,899	06/913,080	8/18/87
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4,686,908	06/747,129	8/18/87
4,686,910	06/846,693	8/18/87
4,686,915	06/873,739	8/18/87
4,686,917	06/888,768	8/18/87
4,686,920	06/934,330	8/18/87
4,686,922	06/879,396	8/18/87
4,686,923	06/889,165	8/18/87
4,686,926	06/844,516	8/18/87
4,686,927	06/832,705	8/18/87
4,686,929	06/770,278	8/18/87
4,686,937	06/680,527	8/18/87
4,686,938	06/917,970	8/18/87
4,686,950	06/887,264	8/18/87
4,686,952	06/944,312	8/18/87
4,686,972	06/857,341	8/18/87
4,686,973	06/659,976	8/18/87
4,686,977	06/847,678	8/18/87
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4,686,985	06/853,680	8/18/87
4,686,999	06/753,069	8/18/87
4,687,005	06/785,225	8/18/87
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4,687,014	06/702,565	8/18/87
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4,687,027	06/832,018	8/18/87
4,687,029	06/774,297	8/18/87
4,687,031	06/818,526	8/18/87
4,687,032	06/766,516	8/18/87
4,687,036	06/795,853	8/18/87
4,687,038	06/562,532	8/18/87
4,687,039	06/721,380	8/18/87
4,687,053	06/637,224	8/18/87
4,687,063	06/809,354	8/18/87
4,637,064	06/843,133	8/18/87
4,687,065	06/682,254	8/18/87
4,687,066	06/819,031	8/18/87
4,687,071	06/867,222	8/18/87
4,687,073	06/634,587	8/18/87
4,687,076	06/920,586	8/18/87
4,687,077	06/846,349	8/18/87
4,687,078	06/877,157	8/18/87
4,687,082	06/799,379	8/18/87
4,687,086	06/861,443	8/18/87
4,687,093	06/670,030	8/18/87
4,687,094	06/816,820	8/18/87
4,687,100	06/804,284	8/18/87
4,687,103	06/758,166	8/18/87
4,687,111	06/833,359	8/18/87
4,687,112	06/906,884	8/18/87
4,687,115	06/758,057	8/18/87
4,687,119	06/793,319	8/18/87
4,687,122	06/778,211	8/18/87
4,687,126	06/800,610	8/18/87
4,687,128	06/914,890	8/18/87
4,687,135	06/861,572	8/18/87
4,687,151	06/759,662	8/18/87
4,687,157	06/810,203	8/18/87
4,687,160	06/847,173	8/18/87
4,687,166	06/760,553	8/18/87
4,687,176	06/882,840	8/18/87
4,687,177	06/872,179	8/18/87
4,687,179	06/803,383	8/18/87
4,687,197	06/490,840	8/18/87
4,687,204	06/777,079	8/18/87
4,687,206	06/686,307	8/18/87
4,687,208	06/944,819	8/18/87
4,687,209	06/914,916	8/18/87
4,687,210	06/778,553	8/18/87
4,687,219	06/843,041	8/18/87
4,687,221	06/749,718	8/18/87
4,687,227	06/680,280	8/18/87
4,687,228	06/898,573	8/18/87
4,687,236	06/786,686	8/18/87
4,687,238	06/874,418	8/18/87
4,687,239	06/815,934	8/18/87
4,687,246	06/919,987	8/18/87
4,687,248	06/909,294	8/18/87
4,687,249	06/871,884	8/18/87
4,687,259	06/732,241	8/18/87
4,687,261	06/774,483	8/18/87
4,687,265	06/868,762	8/18/87
4,687,268	06/814,949	8/18/87
4,687,272	06/878,310	8/18/87
4,687,279	06/811,495	8/18/87
4,687,285	06/783,294	8/18/87
4,687,290	06/701,974	8/18/87
4,687,310	06/871,895	8/18/87
4,687,324	06/610,978	8/18/87
4,687,347	06/829,430	8/18/87
4,687,352	06/813,510	8/18/87
4,687,362	06/902,422	8/18/87
4,687,369	06/871,926	8/18/87
4,687,374	06/839,791	8/18/87
4,687,380	06/868,689	8/18/87
4,687,386	06/734,733	8/18/87
4,687,390	06/507,161	8/18/87
4,687,391	06/714,938	8/18/87
4,687,399	06/816,414	8/18/87
4,687,401	06/782,046	8/18/87
4,687,407	06/810,769	8/18/87
4,687,408	06/872,876	8/18/87
4,687,415	06/861,685	8/18/87
4,687,427	06/855,315	8/18/87
4,687,431	06/837,686	8/18/87
4,687,437	06/844,032	8/18/87
4,687,439	06/834,523	8/18/87
4,687,441	06/732,567	8/18/87
4,687,445	06/236,244	8/18/87
4,687,447	06/868,119	8/18/87
4,687,448	06/808,734	8/18/87
4,687,452	06/888,584	8/18/87
4,687,457	06/769,116	8/18/87
4,687,458	06/907,518	8/18/87
4,687,460	06/843,519	8/18/87
4,687,467	06/872,934	8/18/87
4,687,479	06/798,761	8/18/87
4,687,480	06/774,053	8/18/87
4,687,482	06/604,996	8/18/87
4,687,484	06/881,210	8/18/87
4,687,486	06/586,555	8/18/87
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Patent Number	Serial Number	Issue Date
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4,687,525	06/771,305	8/18/87
4,687,531	06/342,831	8/18/87
4,687,549	06/947,883	8/18/87
4,687,550	06/745,860	8/18/87
4,687,552	06/803,703	8/18/87
4,687,558	06/859,956	8/18/87
4,687,566	06/827,082	8/18/87
4,687,572	06/854,169	8/18/87
4,687,575	06/837,698	8/18/87
4,687,591	06/899,202	8/18/87
4,687,600	06/688,627	8/18/87
4,687,603	06/835,528	8/18/87
4,687,606	06/660,759	8/18/87
4,687,609	06/851,781	8/18/87
4,687,617	06/703,557	8/18/87
4,687,626	06/692,568	8/18/87
4,687,632	06/609,393	8/18/87
4,687,635	06/658,396	8/18/87
4,687,646	06/606,019	8/18/87
4,687,672	06/668,827	8/18/87
4,687,681	06/701,336	8/18/87
4,687,689	06/788,212	8/18/87
4,687,702	06/877,006	8/18/87
4,687,723	06/821,832	8/18/87
4,687,731	06/794,642	8/18/87
4,687,743	06/584,079	8/18/87
4,687,748	06/552,144	8/18/87
4,687,755	06/879,141	8/18/87
4,687,758	06/799,718	8/18/87
4,687,783	06/837,969	8/18/87
4,687,790	06/870,605	8/18/87
4,687,792	06/695,985	8/18/87
4,687,797	06/901,974	8/18/87
4,687,804	06/928,582	8/18/87
4,687,806	06/798,451	8/18/87
4,687,813	06/817,757	8/18/87
4,687,814	06/692,974	8/18/87
4,687,817	06/863,107	8/18/87
4,687,834	06/888,039	8/18/87
4,687,840	06/828,380	8/18/87
4,687,846	06/834,985	8/18/87
4,687,847	06/743,157	8/18/87
4,687,848	06/740,435	8/18/87
4,687,849	06/784,067	8/18/87
4,687,860	06/900,488	8/18/87
4,687,878	06/860,564	8/18/87
4,687,886	06/783,703	8/18/87
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4,687,909	06/737,393	8/18/87
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4,687,995	06/586,465	8/18/87
4,688,002	06/845,630	8/18/87
4,688,011	06/809,195	8/18/87
4,688,023	06/766,809	8/18/87
4,688,027	06/794,714	8/18/87
4,688,043	06/374,708	8/18/87
4,688,059	06/920,829	8/18/87
4,688,107	06/716,994	8/18/87
4,688,108	06/786,673	8/18/87
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4,688,121	06/930,096	8/18/87
4,688,125	06/708,332	8/18/87
4,688,127	06/512,753	8/18/87
4,688,129	06/868,702	8/18/87
4,688,143	06/900,539	8/18/87
4,688,155	06/940,338	8/18/87
4,688,158	06/933,661	8/18/87
4,688,169	06/739,162	8/18/87
4,688,175	06/655,740	8/18/87
4,688,215	06/741,740	8/18/87
4,688,218	06/570,447	8/18/87
4,688,224	06/766,754	8/18/87
4,688,226	06/730,449	8/18/87
4,688,229	06/760,166	8/18/87
4,688,236	06/877,847	8/18/87
4,688,240	06/669,316	8/18/87
4,688,253	06/889,490	8/18/87
4,688,254	06/846,775	8/18/87
4,688,258	06/793,384	8/18/87
4,688,265	06/882,643	8/18/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,366,338	06/223,768	12/28/82	1/09/81	9/12/91
4,523,992	06/616,241	6/18/85	6/01/84	9/13/91
4,578,246	06/591,212	3/25/86	3/19/84	9/12/91
4,618,157	06/761,436	10/21/86	8/01/85	9/12/91
4,622,782	06/764,041	11/18/86	8/09/85	9/13/91
4,624,662	06/483,207	11/25/86	4/13/83	9/13/91
4,627,808	06/739,624	12/09/86	5/31/85	9/13/91
4,637,145	06/554,861	1/20/87	11/23/83	9/13/91
4,637,440	06/727,243	1/20/87	4/24/85	9/13/91
4,641,046	06/745,475	2/03/87	6/17/85	8/27/91
4,648,302	06/750,306	3/10/87	7/01/85	9/13/91
4,654,922	06/738,275	4/07/87	5/28/85	8/27/91
4,358,767	06/220,488	11/08/82	12/29/80	8/15/91

Errata

In the list of patents which expired on Jan. 13, 1991, due to failure to pay maintenance fees, in the O.G. of March 26, 1991 the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,635,772	06/683,620	1/13/87	12/19/84

In the list of patents which expired on Feb. 17, 1991, due to failure to pay maintenance fees, in the O.G. of April 30, 1991 the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,643,971	06/567,066	2/17/87	12/30/83

In the list of patents which expired on June 9, 1991, due to failure to pay maintenance fees, in the O.G. of Aug. 20, 1991 the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,387,111	06/279,029	6/7/83	6/30/81

In the list of patents which expired on June 16, 1991, due to failure to pay maintenance fees, in the O.G. of Aug. 27, 1991 the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,673,609	06/760,048	6/16/87	7/29/85

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,653,478, Re. S.N. 07/762,033, Filed Sept. 16, 1991, Cl. 128, ENDOSCOPE EQUIPMENT, Tatsuo Nagasaki, et. al. Owner of Record: *Olympus Optical Co. Ltd., Tokyo, Japan*, Attorney or Agent: Michael J. Foycik Jr., Ex. Gp.: 339

4,661,575, Re. S.N. 07/758,503, Filed Sept. 6, 1991, Cl. 526, DICYCLOPENTADIENE POLYMER PRODUCT, Glenn M. Tom, Owner of Record: *Hercules Inc., Wilmington, Del.*, Attorney or Agent: Martin G. Mullen, Ex. Gp. 155

4,689,380, Re. S.N. 07/758,501, Filed Sept. 6, 1991, Cl. 526, CYCLOOLEFIN COMPOLYMERIZATION METHOD, FEED COMPOSITION AND PRODUCT, Steven H. Nahm, Owner of Record: *Hercules Inc., Wilmington, Del.*, Attorney or Agent: Martin G. Mullen, Ex. Gp. 155

4,827,517, Re. S.N. 07/694,583, Filed May 2, 1991, Cl. 381/41, DIGITAL SPEECH PROCESSOR USING ARBITRARY EXCITATION CODING, Bishnu S. Atal, et. al., Owner of Record: *American Telephone and Telegraph Co., New York, N.Y.*, Attorney or Agent: William Ryan, Ex. Gp.: 217

4,829,364, Re. S.N. 07/764,847, Filed Sept. 24, 1991, Cl. 357/72, SEMICONDUCTOR DEVICE, Mituo Ohdate, Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Edward J. Kessler, Ex. Gp.: 258

4,851,873, Re. S.N. 07/735,905, Filed July 25, 1991, Cl. 355/245, DEVELOPING DEVICE, Shingo Sakato, et. al., Owner of Record: *Mita Industrial Co. Ltd., Osaka, Japan*, Attorney or Agent: Jeffrey Nolton, Ex. Gp.: 215

4,858,634, Re. S.N. 07/747,187, Filed Aug. 19, 1991, Cl. 135/104, SELF-ERECTING STRUCTURE, Eddie S. McLeese, Owner of Record: *Inventor*, Attorney or Agent: George C. Smith, Ex. Gp.: 354

4,870,434, Re. S.N. 07/765,323, Filed Sept. 25, 1991, Cl. 346/160, PRINTER FOR CONTINUOUS FORM WITH JUSTIFICATION CONTROL, Kiyoshi Negishi, et. al., Owner of Record: *Asahi Kogaku Kogyo K.K., Tokyo, Japan*, Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 218

4,896,803, Re. S.N. 07/762,410, Filed Sept. 19, 1991, Cl. 223/112, PULLING ON AID FOR COMPRESSION STOCKINGS, Claus-Dieter Wilkens, Owner of Record: *Inventor*, Attorney or Agent: Thomas R. Vigil, Ex. Gp.: 247

4,923,196, Re. S.N. 07/753,850, Filed Sept. 3, 1991, Cl. 273/65ef, ENGINE-SPIRALED STABILIZED TOY FOOTBALL, Daniel Z. Rohring, Owner of Record: *Inventor*, Attorney or Agent: William R. Laney, Ex. Gp.: 334

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 309,027, Reexam. No. 90/002,447, Requested Sept. 27, 1991, Cl. D25/139, TAB PORTION OF A SHINGLE, Michael J. Noone, Owner of Record: *Certain Tweed Co. Valley Forge, Pa.*, Attorney or Agent: John McNulty, Paul & Paul, Philadelphia, Pa., Ex. Gp.: 291, Requester: Bird Inc., Dedham, Mass.

4,228,528, Reexam. No. 90/002,446, Requested Sept. 26, 1991, Cl. 365/200, MEMORY WITH REDUNDANT ROWS AND COLUMNS, Ronald Paul Cenker, Owner of Record: *AT & T Bell Laboratories, Murray Hill, N.J.*, Attorney or Agent: Peter V. D. Wilde, AT & T Bell Labs., Murray Hill, N.J., Ex. Gp.: 233, Requester: Owner

4,815,604, Reexam. No. 90/002,449, Requested Sept. 27, 1991, Cl. 206/518, NESTABLE PAINT ROLLER TRAY WITH MULTIPLE FEATURES, Robert A. O'Neil, et. al., Owner of Record: *Ez Paintr Corp., Milwaulkee Wis.*, Attorney or Agent: James G. Staples, Baker & McKenzie, Chicago, Ill., Ex. Gp.: 244, Requester: Owner

4,958,150, Reexam. No. 90/002,448, Requested Sept. 27, 1991, Cl. 340/783, DISPLAY DEVICES AND DISPLAY ELEMENTS THEREOF, Rad. H. Dabbaj, Owner of Record: *Rad H. Dabbaj, London, United Kingdom*, Attorney or Agent: Richard

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E. Backus, Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 269, Requester: Owner

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Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before Dec. 13, 1991.

Castel, Benoit, 8100 Vista Point La., Fairfax Station, Va. 22039
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Petraglia-Treanor, Susan P., 116 6th St., N.E., #303, Washington, D.C. 20002

Sept. 18, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Reinstatement to Register

The following list of persons, whose names have been previously removed from the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.11(b), have been reinstated in view of the required fee and information they furnished to the Office of Enrollment and Discipline.

Aine, Harry E., Rt. 4 Box 767, Sumrall, Miss. 39482
Armstrong, R. Craig, Carson, Armstrong, 285 Fountain St., S., Cambridge, Ont., N3H 1J2, Canada
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Yungman, Bruce A., 10415 Edgewater Rd., Louisville, Ky. 40223
Zalman, Leonard, 526 Stratford Ct., #E, Del Mar, Calif. 92014
Zeh, Herbert J. Jr., Reichhold Chemicals, Inc., P.O. 13582, Research Triangle Park, N.C. 27709
Zeller, Harvey, American Telephone & Telegraph Co., 10 Independence Blvd., Warren, N.J. 07059
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Sept. 30, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Mosegi & Darvishian, Buffalo, N.Y., Reg. No. 1,634,878, for the mark "M." and design, Canc. No. 19,624.

American Exhaust Company of Rock Hill, Inc., Rock Hill, S.C., Reg. No. 1,130,117, for the mark, "MUFFLER MAN" and design, Canc. No. 19,663.

Blackhawk Bottling Co., Rockford, Ill., Reg. No. 568,985, for the mark "BLACK HAWK" and design, Canc. No. 19,669.

Chiquarri Sport Inc., New York, N.Y., Reg. No. 1,392,469, for the mark "NO PARKING", Canc. No. 19,681.

D.B.S. Industries, Inc., New York. N.Y., Reg. No. 1,402,236, for the mark "YES" WEAR PARIS ROME and design, Canc. No. 19,754.

Yuth, Inc., New York, N.Y., Reg. No. 584,082, for the mark "YUTH", Canc. No. 19,846.

JEAN BROWN
Administrator, Trademark
Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Fax One, Inc., Evansville, Ind., 1,556,137 for the mark "FAX ONE" Canc. No. 19,678.

JEAN BROWN
Administrator, Trademark
Trial and Appeal Board
For JEFFREY M. SAMUELS
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Status of PTO Services

The following is an update of the status of PTO services for Sept. 1991:

Service Item	FY 1991 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:		
Patents	22	18
Trademarks	30	31
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	14 Hours
Window Coupons	5	2
Mail Coupons	12	5
Letter Orders	16	13
Electronic Ordering Service (EOS)	11	4
Certified Copies:		
Trademark Registrations	21	21
Applications-As-Filed	17	14
File-Wrapper/Contents	N/A	17
Walk-up Certification	1	1
Patent Application Expedited	5	7
Trademark Search Library:		
Filing Pending Marks	23	25
Filing Reg. Certificates	Issue Date + 2 days	Issue + 3
Filing Temp. Drawings	8	12
Assignments:		
Recording Patent-New Applications	20**	18
Recording Patent-Mail Room Recpts.	20	19
Return Patents-New Applications	34**	31
Return Patents-Mail Room Recpts.	34	29
Recording Trademarks	20	17
Returning Trademark Documents	34	27
Avg. Days from Issue Fee Payment to Issue Date	90-100	110
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On Time
Patent Copies Available	95% on Issue Date	91% on Issue Date
Trademark Copies Available	95% on Issue Date	99% on Issue Date

* Unless otherwise noted.
** Goal reflects the number of days from the date the filing receipt is mailed.

October 4, 1991

THERESA BRELSFORD
Assistant Commissioner for Administration

PATENT NOTICES

Certificates of Correction For Week of October 29, 1991

D. 309,584	4,888,792	4,923,202	4,937,378
D. 309,968	4,890,241	4,924,438	4,937,687
Re. 33,245	4,892,536	4,924,896	4,937,787
4,371,923	4,892,667	4,925,269	4,937,788
4,558,083	4,893,524	4,925,593	4,938,740
4,697,967	4,897,518	4,925,832	4,939,178
4,698,307	4,897,773	4,927,004	4,939,202
4,723,465	4,897,831	4,927,194	4,939,548
4,759,352	4,898,648	4,927,345	4,939,837
4,760,548	4,900,052	4,927,540	4,940,246
4,765,301	4,900,334	4,927,961	4,940,909
4,791,355	4,900,801	4,927,994	4,942,179
4,798,299	4,900,837	4,928,017	4,943,251
4,808,827	4,901,019	4,928,050	4,943,529
4,813,478	4,902,486	4,928,120	4,943,581
4,825,376	4,903,688	4,928,912	4,943,750
4,828,039	4,904,661	4,929,870	4,944,996
4,833,136	4,906,232	4,930,969	4,945,044
4,833,578	4,906,624	4,931,189	4,947,196
4,834,300	4,907,103	4,931,578	4,947,783
4,838,200	4,908,242	4,931,891	4,947,935
4,842,041	4,908,405	4,932,146	4,948,768
4,847,752	4,911,619	4,932,940	4,948,921
4,855,993	4,911,865	4,933,430	4,950,420
4,858,430	4,912,699	4,933,474	4,950,525
4,863,959	4,913,706	4,933,729	4,950,710
4,864,041	4,914,035	4,934,369	4,950,841
4,864,324	4,914,124	4,934,677	4,952,320
4,864,391	4,915,193	4,934,724	4,952,436
4,868,810	4,917,243	4,935,070	4,970,889
4,869,066	4,917,935	4,935,296	4,984,383
4,869,154	4,919,067	4,935,342	4,984,670
4,871,258	4,919,662	4,935,374	4,985,080
4,872,794	4,920,021	4,935,962	5,006,684
4,873,566	4,920,830	4,936,775	5,011,270
4,879,414	4,921,827	4,936,832	5,029,703
4,880,213	4,921,846	4,937,127	
4,882,419	4,922,267	4,937,222	
4,888,694	4,922,935	4,937,345	

Disclaimers

3,567,846—*William J. Brorein*, Whippany; *Fred F. Polizzano*, Allendale, N.J. METALLIC SHEATHED CABLES WITH FOAM CELLULAR POLYOLEFIN INSULATION AND METHOD OF MAKING. Patent dated Mar. 2, 1971. Disclaimer filed June 4, 1991, by the assignee, Trilogy Communications, Inc.

Hereby enters this disclaimer to claims 7 and 8 of said patent.

4,800,031—*Stephen A. Dibiase; Joseph W. Pialet*, both of Euclid, Ohio. SULFUR-CONTAINING LUBRICANT AND FUNCTIONAL FLUID COMPOSITIONS. Patent dated Jan. 24, 1989. Disclaimer filed Aug. 28, 1991, by the assignee, The Lubrizol Corp.

The term of this patent subsequent to Jan. 24, 2006 has been disclaimed.

4,842,307—*Thomas F. Sweeney*, Newbury Park, Calif; *Philippe C. Nobileau*, Paris, France; *Charles E. Jennings*, Houston, Tex. WELLHEAD LOAD SUPPORTING SYSTEM. Patent dated June 27, 1989. Disclaimer filed July 15, 1991, by the assignee, Vetco Gray Inc.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,885,332—*Zayn Bilkadi*, Mahtomedi, Minn. PHOTOCURABLE ABRASION RESISTANT COATINGS COMPRISING SILICON DIOXIDE DISPERSIONS. Patent dated Dec. 5, 1989. Disclaimer filed Aug. 15, 1991, by the assignee, Minnesota Mining and Manufacturing Co.

Hereby enters this disclaimer to claims 1-16 of said patent.

4,962,729—*Aurelio F. Barreto St.*, Hawthorne, Calif., *Darrell R. Paxman*, Redmond, Wash. INSULATED SHELTER FOR PET ANIMALS AND METHOD OF MANUFACTURE THEREOF. Patent dated Oct. 16, 1990. Disclaimer filed Feb. 4, 1991, by the assignee, Dogloo, Inc.

Hereby enters this disclaimer to claims 1, 8, 9, 10, 11, and 14 of said patent.

5,018,661—*Frederick F. Cyb*, Taylor, Mich. HEAT-RESISTANT EXHAUST MANIFOLD AND METHOD OF PREPARING SAME. Patent dated May 28, 1991. Disclaimer filed Mar. 22, 1991, by the inventor.

The term of this patent subsequent to June 5, 2007 has been disclaimed.

Disclaimer and Dedication

4,707,676—*Yosio Saitou; Takeshi Kataoka; Moriaki Takechi, Takahiro Matsumoto*, all of Ako, Japan. SUPERCONDUCTING MAGNET. Patent dated Nov. 17, 1987. Disclaimer and Dedication filed July 25, 1991, by the assignee, Mitsubishi Denki Kabushiki Kaisha.

Hereby disclaims and dedicates to the Public claims 1-3, 5, 7, and 8 of said patent.

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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110 — D. E. TALBERT, Director	308-0661	5/31/90
ORGANIC CHEMISTRY, GROUP 120 — JOHN F. TERAPANE, JR., Director	308-1235	10/1/90
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130 — BARRY S. RICHMAN, Director	308-0651	2/1/91
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150 — J. O. THOMAS, Director	308-2351	6/1/90
BIOTECHNOLOGY, GROUP 180 — EDWARD E. KUBASIEWICZ, Director	308-0196	1/1/90
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210 — D. G. KELLY, Director	308-1782	3/1/90
SPECIAL LAWS ADMINISTRATION, GROUP 220 — ROBERT E. GARRETT, Director	308-0511	1/15/90
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COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260 — BOBBY R. GRAY, Director	308-0962	6/1/90
DESIGN, GROUP 290 — ROBERT E. GARRETT, Director	308-0511	1/15/89
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 310 — D. G. KELLY, Director	308-1113	10/1/90
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320 — N. GODICI, Director	308-1148	1/1/91
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330 — J. J. LOVE, Director	308-0858	10/1/90
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340 — JOHN KITTLE, Director	308-0861	12/7/90
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 350 — A. L. SMITH, Director	308-0651	10/1/90

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,832,735 to 3,838,465 inclusive
Plant Patents ..... 3,604 to 3,627

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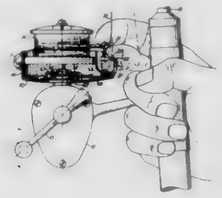
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REEXAMINATIONS

OCTOBER 29, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,342,442 (1579th)
FISHING REEL
Sigurd Brantingson, Short Hills, N.J., assignor to Sigurd Brantingston, Jr.
Reexamination Request No. 90/002,082, Jul. 5, 1990.
Reexamination Certificate for Patent No. 3,342,442, issued Sep. 19, 1967, Ser. No. 424,645, Jan. 11, 1965.
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—233



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

Claims **4** and **5** are cancelled.

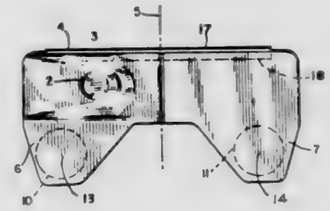
1. A spinning-type fishing reel comprising:
a reciprocable spool;
means for winding a fishing line around the spool comprising a rotatable reel bowl and a bail wire rotatably mounted on the bowl;
means comprising a trigger mechanism for rotating the bail wire between a closed position at which it contacts the fishing line and an open position at which it does not contact the fishing line;
said trigger mechanism comprising a rotatable trigger lever located closely adjacent the point of contact of the fishing line with the bail wire when the bail-wire is in the closed position;
first and second bevel gears;
the first bevel gear being rotatable with the trigger lever;
the second bevel gear being rotatable with the bail wire;
the first and second bevel gears being in intermeshing relationship;
a spring for biasing the bail wire in the closed position, whereby the rotation of the bail wire to the open position is made against said spring bias;
means comprising a latch mechanism for locking the bail wire in the open position;
and means responsive to the rotation of the reel bowl for releasing said latch mechanism, whereby the bail wire is automatically returned to the closed position prior to rewinding of the fishing line about the spool.

B1 3,966,210 (1580th)
GOLF CLUB
John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312
Reexamination Request No. 90/001,424, Jan. 20, 1988.
Reexamination Certificate for Patent No. 3,966,210, issued Jun. 29, 1976, Ser. No. 798,351, Feb. 11, 1969.
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2** having been finally determined to be unpatentable, are cancelled.

[1. In a golf club:
a head with heel and toe sections and front and rear sides;
a ball striking face formed on the front side with the plane of impact of the head being located between the heel and toe sections and being generally normal to the striking face;
a shaft connected to the head with the projection of the shaft axis extending through the plane of impact;
means on the head forming weight means respectively disposed on opposite sides of the plane of impact and whose



mass concentrations are located substantially outwardly from the plane of impact respectively toward the heel and toe sections and also substantially spaced from the projection of the shaft axis in a rearward direction, said disposition of the shaft axis and the location of the mass concentrations being for use in causing the striking face, during the swing, to be oriented generally normal to the line of swing and for use in providing for the head to have, at the moment of ball impact, a high moment of inertia with respect to the plane of impact so as to minimize twist of the striking face; and
said mass concentrations being substantially formed by that the head is formed with a pair of wings respectively disposed on opposite sides of the plane of impact and that there are weights respectively in said wings.**]**

B1 4,208,433 (1581st)
METHOD FOR THE ADSORPTION OF SOLIDS BY WHOLE SEEDS
Harold N. Barham, Jr., Lubbock, and Harold N. Barham, deceased, late of Lubbock, both of Tex. by Doris Barham, heir , assignors to Seed Technology of Texas, Ltd., Lubbock, Tex.
Reexamination Request No. 90/001,170, Feb. 24, 1987.
Reexamination Certificate for Patent No. 4,208,433, issued Jun. 17, 1980, Ser. No. 907,834, May 19, 1978.
Int. Cl.[5] A23K *1/72*
U.S. Cl. 426—69

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–42** are cancelled.

[1. A method for treating whole seeds to render the internal structures thereof more available for use which comprises:
(a) contacting the whole seeds with a synergistic mixture of a fine solid material and an oleaginous vehicle which alone are not significantly sorbed into the seeds but in mutual

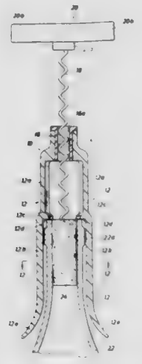
presence result in the relatively rapid sorption of the components by the seeds, and

(b) maintaining the contact until the synergistic mixture has been sorbed by the seeds.]

B1 4,276,789 (1582nd)
CORK EXTRACTOR

Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.

Reexamination Request No. 90/002,315, Apr. 5, 1991.
Reexamination Certificate for Patent No. 4,276,789, issued Jul. 7, 1981, Ser. No. 925,365, Jul. 17, 1978.
Int. Cl.[5] B67B *7/00*
U.S. Cl. 81—3.36



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **28–31** is confirmed.

Claims **5**, **8** and **9** are cancelled.

Claims **1**, **6**, **23** and **32** are determined to be patentable as amended.

Claims **2–4**, **7**, **10–22** and **24–27**, dependent on an amended claim, are determined to be patentable.

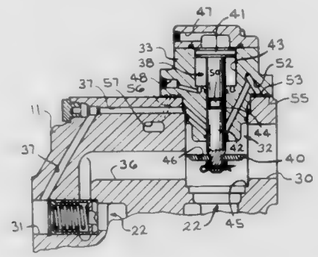
New claims **33–37** are added and determined to be patentable.

1. Apparatus for extracting a cork from a bottle comprising:
a holder including
guide means having a guide passageway extending generally longitudinally therethrough and having generally radially facing guide surface means;
stop means engageable with the bottle to limit downward movement of said holder with respect to the bottle and space said guide means from the top of the bottle; and
grip means engageable with the bottle and comprising a plurality of longitudinally downwardly extending circumferentially spaced gripping elements *opposite the guide means with respect to the stop means and radially deflectable for gripping engagement with the bottle, the gripping elements* having lower free ends which are radially deflectable and approximately equally resiliently biased to a normal unflexed radial position;
spacing means *between the stop means and the guide means and* connecting the upper ends of said gripping elements to and spacing them downwardly from said guide means by a distance such that, when said stop means are engaged with the bottle, said gripping elements are generally radially aligned with the neck of the bottle, *said spacing means being radially and resiliently flexible to radially deflect the gripping elements into gripping engagement with the bottle;*
a cork engaging member including a corkscrew, said cork engaging member having a guide portion rotatably and longitudinally movable in said guide passageway, said guide portion having a diameter sized to lie closely adjacent said guide surface means.

B1 4,746,276 (1583rd)
GEAR PUMP HAVING CONDITIONAL DRY VALVE CLOSURE STRUCTURE

James R. McBurnett; James M. Eley, and Kuldip Raina, all of Corinth, Miss., assignors to Dana Corporation

Reexamination Request No. 90/002,227, Dec. 12, 1990.
Reexamination Certificate for Patent No. 4,746,276, issued May 24, 1988, Ser. No. 20,007, Feb. 27, 1987.
Int. Cl.[5] F04B *49/02, 49/08*
U.S. Cl. 417—295



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** and **10** is confirmed.

Claim **6** is cancelled.

Claim **7** is determined to be patentable as amended.

Claims **8** and **9**, dependent on an amended claim, are determined to be patentable.

1. A pump for selectively generating a flow of pressurized fluid to a hydraulic system from a reservoir comprising:
an inlet port communicating with the reservoir;
an outlet port communicating with the hydraulic system;
a pumping chamber formed within the pump communicating with said inlet port and said outlet port;
pumping means disposed in said pumping chamber and adapted to draw fluid through said inlet port from the reservoir and to generate a flow of pressurized fluid through said outlet port to the hydraulic system;
dry valve means selectively movable between an opened position, wherein the flow of fluid from said inlet port to said pumping chamber is unobstructed, and a closed position, whereby the flow of fluid from said inlet port to said pumping chamber is obstructed; and
means responsive to the pressure of the fluid in said outlet port for preventing said dry valve means from being moved from said opened position to said closed position when the outlet port fluid pressure exceeds a predetermined magnitude.

B1 4,751,528 (1584th)
PLATEN ARRANGEMENT FOR HOT MELT INK JET APPARATUS

Charles W. Spehrley, Jr., Hartford, Vt.; Linda T. Creagh, West Lebanon, and Robert R. Schaffer, Canaan, both of N.H., assignors to Spectra, Inc., Hanover, N.H.

Reexamination Request No. 90/002,089, Jul. 13, 1990.
Reexamination Certificate for Patent No. 4,751,528, issued Jun. 14, 1988, Ser. No. 94,664, Sep. 9, 1987.
Int. Cl.[5] G01D *15/16, 9/00*; G03G *15/16*
U.S. Cl. 346—140

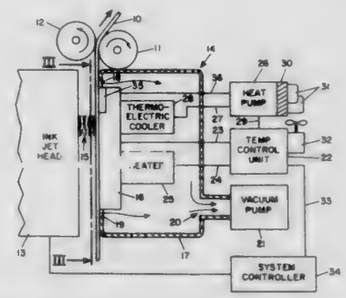
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** to **11** is confirmed.

Claims **12**, **13** and **16** are determined to be patentable as amended.

Claims **14**, **15**, **17**, **18** and **19**, dependent on an amended claim, are determined to be patentable.

1. Ink jet apparatus comprising an ink jet means for projecting ink at elevated temperature onto a substrate, platen means for supporting the substrate during operation of the ink jet means, and temperature control means for controlling the



temperature of the platen means during operation including heat pump means for removing heat from the platen means so as to maintain a desired platen means temperature.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,726

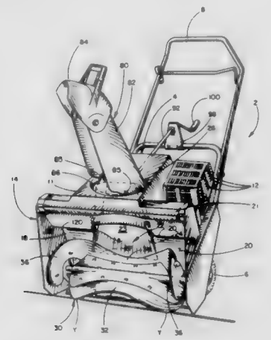
SINGLE STAGE SNOWTHROWER

Richard A. Thorud, Bloomington, and Donald M. White, III, Chanhassen, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Original No. 4,694,594, dated Sep. 22, 1987, Ser. No. 775,288, Sep. 12, 1985. Application for reissue Sep. 22, 1989, Ser. No. 411,034

Int. Cl.[5] **E01H** *5/09*

U.S. Cl. 37—244 **45 Claims**



8. An improved single stage snowthrower of the type having a housing that includes a generally open front portion defined by spaced side walls connected together by a rear wall; a rotatable snowthrowing impeller extending between the side walls and located in front of the rear wall; and engine means carried by the housing for rotating the impeller; and wherein the improvement comprises:

a) an impeller having at least one outwardly extending paddle for picking up and throwing snow, wherein the paddle comprises a wide central snowthrowing section which is curved forwardly from the midpoint to each side thereof to be generally concave such that snow is thrown in a stream that tapers inwardly as it rises from the central section, wherein the central snowthrowing section extends over at least approximately one-half of the entire impeller's predetermined length; and

b) a funnel-shaped snow collecting chamber located on the rear wall of the housing generally behind the impeller which chamber is inverted to taper inwardly from side-to-side as it rises and is wide at its lower end to receive snow from the wide central snowthrowing section of the paddle.

Re. 33,727

BANDAGE FRAME

Larry A. Sims, Hermosa Beach, Calif., assignor to Baxter International, Inc., Deerfield, Ill.

Original No. 4,372,303, dated Feb. 8, 1983, Ser. No. 186,351, Sep. 11, 1980. Application for reissue Nov. 2, 1983, Ser. No. 548,186

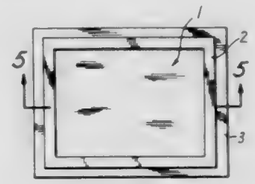
Int. Cl.[5] **A61B** *19/08*

U.S. Cl. 128—85 L **4 Claims**

[1. A system for bandaging a patient comprising:

a flexible bandage having a backing with an adhesive on a surface thereof for applying to a patient; and

a frame means which is substantially less flexible than the bandage and is attachable to the backing thereof for maintaining said bandage in a generally flat configuration and for controlling wrinkling during handling and application of the bandage to the patient when attached thereto;



whereby the bandage may resume its flexible nature after application to the patient and removal of the frame means, so as not to interfere with the flexible functioning of the bandage on the patient's anatomy.**]**

Re. 33,728

METHOD FOR CATALYTICALLY CONVERTING RESIDUAL OILS

Robert R. Dean, Littleton, Colo.; Warren S. Letzsch, Ellicott City, Mass., and Jean L. Mauleon, Marly Le Roi, France, assignors to Total Engineering and Research Company, Denver, Colo.

Original No. 4,415,438, dated Nov. 15, 1983, Ser. No. 324,450, Nov. 24, 1981. Continuation of Ser. No. 798,031, Nov. 13, 1985, abandoned. Application for reissue Aug. 4, 1987, Ser. No. 81,716

Int. Cl.[5] **C10G** *11/05*

U.S. Cl. 208—120 **41 Claims**

1. A method for **[**upgrading**]** *increasing conversion to liquid products of* a residual oil portion of crude oil boiling above 600° F. comprising metallo-organic compounds which comprises contacting *a feed containing* said residual portion of crude oil boiling above 600° F. *said feed having a Conradson carbon content above about 2.5 weight percent* with a catalyst consisting of from 20 to 80 wt. % of an ultrastable faujasite crystalline zeolite dispersed in a **[**silica-clay**]** matrix **[**for a time at a temperature particularly selective for conversion of the residual portion of crude oil to products of gasoline, light cycle oil and gasoline forming gaseous components, and

recovering said products comprising gasoline and light cycle oil**]** *selected from the group consisting of: silica-clay, silica-alumina, clay, silica, alumina and mixtures thereof,*

at a temperature above about 950° F. to provide a ratio of volume percent of light cycle oil to heavy cycle oil of in excess of 1.03 at essentially constant conversion and recover said light cycle oil and heavy cycle oil .

Re. 33,729

MULTILAYER OPTICAL FILTER FOR PRODUCING COLORED REFLECTED LIGHT AND NEUTRAL TRANSMISSION

Bruce E. Perilloux, Grass Valley, Calif., assignor to Coherent, Inc., Auburn, Calif.

Original No. 4,793,669, dated Dec. 27, 1988, Ser. No. 96,135, Sep. 11, 1987. Application for reissue Jul. 27, 1990, Ser. No. 558,597

Int. Cl.[5] **G02B** *5/22, 5/28*

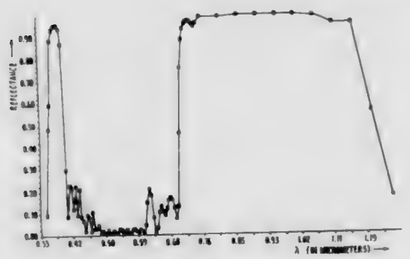
U.S. Cl. 359—359 **32 Claims**

24. An optical filter comprising:

a substrate having a surface; and

a coating supported by the surface of the substrate, the coating including a set of alternating layers of material having a high

refractive index and substantially quarter-wave optical thickness and of material having a low refractive index and substantially quarter-wave optical thickness, where the thickness of each of the layers is selected so that the filter has a reflectance spectrum exhibiting a ripple over at least one segment of the visible portion of the spectrum while exhibiting no signifi-



cant ripple over another segment of the visible portion of the spectrum so that a desired aesthetic color is produced substantially exclusively by reflected light in the at least one segment of the visible portion of the spectrum and further selected so that the combination of the substrate and the coating function to block substantially all of the light in the near-infrared portion of the spectrum.

Re. 33,730

REFUSE COLLECTION APPARATUS

Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Original No. 3,999,669, dated Dec. 28, 1976, Ser. No. 440,745, Feb. 8, 1974. Division of Ser. No. 264,021, Jun. 19, 1972, Pat. No. 3,899,091. Application for reissue Jul. 24, 1987, Ser. No. 77,432

Int. Cl.[5] **B65F** *3/00*

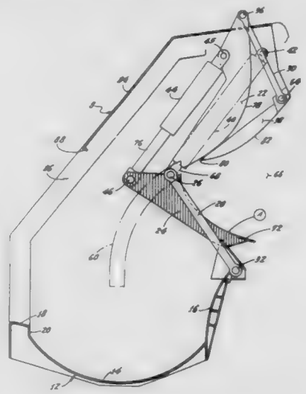
U.S. Cl. 414—525.4 **27 Claims**

1. In a refuse collector,

hopper means for storing the refuse, the hopper means having a rear wall, a substantially vertically disposed forward wall spaced from the rear wall and a bottom wall extending substantially horizontally between the rear wall and the forward wall,

fixed panel means spaced upwardly from the forward wall of the hopper means and disposed relative to the forward wall to define an opening through which the refuse is removed and to provide for the forward movement of the refuse through the opening,

packer panel means initially movable forwardly relative to the hopper means from the rear wall toward the forward wall in abutting relationship to the bottom wall to provide for a horizontal packing of the refuse against the forward wall of the hopper means *by a scooping movement* and subsequently movable substantially vertically upwardly relative to the hopper means and the fixed panel means and in abutting relationship to the forward wall of the hopper means to provide for a vertical packing of the refuse against the fixed panel means and a horizontal



movement of the refuse through the opening *by at least a scooping movement*, and

control means operatively coupled to the packer panel means for initially producing a forward movement of the packer panel means relative to the hopper means from the rear wall toward the forward wall to obtain the horizontal packing of the refuse against the forward wall of the hopper means and for subsequently producing a movement of the packer panel means upwardly relative to the hopper means and the fixed panel means to obtain the vertical packing of the refuse against the fixed panel means.

Re. 33,731

Patent Not Issued For This Number

PLANT PATENTS

GRANTED OCTOBER 29, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,688

ROSE PLANT NAMED 'SWEEP SUCCESS'

Gary R. Hater, 4286 Turf La., Cincinnati, Ohio 45202, and John D. Pottschmidt, 5584 Palisades Dr., Cincinnati, Ohio 45238

Filed Feb. 22, 1990, Ser. No. 483,540

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, characterized as to novelty by its vigorous growing habit, its ability to yield on an almost continuous basis abundant blooms, and quality and color of its bloom and foliage as shown and described.

7,689

MINIATURE POT ROSE NAMED DEVIENTE

Stanley G. Marciel, Aptos, Calif., assignor to DeVor Nurseries, Inc., Watsonville, Calif.

Filed May 29, 1990, Ser. No. 529,313

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. The new and distinct variety of pot plant rose, substantially as herein shown and described, particularly characterized by its profuse and continuous production of relatively small Tyrian Purple flowers borne singly on strong stems growing from a plant having an average height of about 25 cm. at the age of about twelve weeks as grown in a 4 in. pot.

7,690

IMPATIENS PLANT NAMED PEACH ICE

Douglas S. Cole, R.F.D. 13, Box 240, Concord, N.H. 03301

Filed Apr. 25, 1990, Ser. No. 514,206

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of *Impatiens sultanii* plant named Peach Ice, as illustrated and described.

7,691

ALSTROEMERIA PLANT NAMED ROSA

Erwin Mojonnier, 237 Quail Dr., Encinitas, Calif. 92024

Filed Jul. 24, 1990, Ser. No. 556,404

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Alstroemeria plant named Rosa, as illustrated and described.

7,692

ALSTROEMERIA PLANT NAMED LILIANA

Erwin Mojonnier, 237 Quail Dr., Encinitas, Calif. 92024

Filed Jul. 24, 1990, Ser. No. 556,432

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Alstroemeria plant named Liliana, as illustrated and described.

7,693

AFRICAN VIOLET PLANT NAMED LONI

Arnold Fischer, Kahledamm 22, 3000 Hannover 51, Fed. Rep. of Germany

Filed May 16, 1990, Ser. No. 524,069

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Loni characterized by the following combination of characteristics:

(a) forms attractive medium blue-violet single zygomorphic rotate flowers having substantially no undulation of the petals,

(b) forms dark green pubescent foliage comprising oval leaves with a very slightly crenate margin having a narrow apex and a cordate base,

(c) exhibits a compact miniature rosette growth habit with the flowers being held erect above the foliage on upright peduncles, and

(d) exhibits a very floriferous habit with the flowers continuing to open for many weeks after the onset of flowering;

substantially as herein shown and described.

7,694

AFRICAN VIOLET PLANT NAMED DEBBY

Arnold Fischer, Kahlendamm 22, 3000 Hannover 51, Fed. Rep. of Germany

Filed May 16, 1990, Ser. No. 524,070

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Debby characterized by the following combination of characteristics:

(a) forms attractive deep violet-blue single zygomorphic rotate flowers having no or only very weak undulation of the petals,

(b) forms dark green pubescent foliage comprising oval leaves with a very slightly crenate margin having a narrow apex and a cordate base,

(c) exhibits a compact miniature rosette growth habit with the flowers being held erect above the foliage on upright peduncles, and

(d) exhibits a very floriferous habit with the flowers continuing to open for many weeks after the onset of flowering;

substantially as herein shown and described.

7,695

AFRICAN VIOLET PLANT NAMED LITTLE HOPI GIRL

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Reese-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,068

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct cultivar of African violet named Little Hopi Girl, as described and illustrated, and particularly characterized by its mid-size growth habit (13–15 cm in diameter); pink, star-shaped flowers; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse flowering; bright breen, spear- to heart-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

7,696

AFRICAN VIOLET PLANT NAMED LITTLE CHEROKEE GIRL

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,316

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Little Cherokee Girl, as described and illustrated, and particularly characterized by its mid-size growth habit (13–15 cm in diameter); pink, semi-double to double flowers; strong stems which

curve toward the center to form a compact bouquet above the leaves; profuse flowering; medium green, heart-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

7,697

AFRICAN VIOLET PLANT NAMED LORETTA

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,319

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Loretta, as described and illustrated, and particularly characterized by its double, purplish red flowers with slightly frilled, white edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; large, dark green, spear-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,698

AFRICAN VIOLET PLANT NAMED HAITI

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,320

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Haiti, as described and illustrated, and particularly characterized by its wavy, purple, star-shaped flowers with frilled, white edges; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; dark green, wavy and serrated leaves; profuse flowering, vigorous growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

7,699

ST. AUGUSTINEGRASS NAMED 'FX-33'

Philip Busey, Plantation, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Jul. 7, 1989, Ser. No. 378,339

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of St. Augustinegrass, substantially as herein illustrated and described, characterized by its many hairs on the young leaf blades, its superior resistance to seasonal drought when grown in a humid region with shallow subsurface soil moisture, and its resistance to STD and PDP populations of the southern chinch bug.

PATENTS

GRANTED OCT. 29, 1991

ERRATA

For CLASS	See PATENT NO.
24-113	5,060,356
359-350	5,061,024
359-018	5,061,025
385-031	5,061,026
385-014	5,061,027
385-132	5,061,028
385-132	5,061,029
385-003	5,061,030
385-015	5,061,031
385-037	5,061,032
385-092	5,061,033
385-095	5,061,034
385-115	5,061,035
385-116	5,061,036
385-011	5,061,037
359-328	5,061,038
359-894	5,061,039
359-894	5,061,039
359-063	5,061,042
359-063	5,061,043
359-075	5,061,044
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359-683	5,061,051
359-742	5,061,052
359-690	5,061,053
359-399	5,061,054
359-862	5,061,055
359-872	5,061,056
405-224	5,061,131
244-137	5,061,142
623-020	5,061,271
524-130	5,061,743
514-206	5,061,794
361-335	5,062,022
359-135	5,062,101
377-055	5,062,128

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364-900	5,062,147
359-152	5,062,150
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359-185	5,062,152
359-156	5,062,153
359-154	5,062,154
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PATENTS

GRANTED OCTOBER 29, 1991

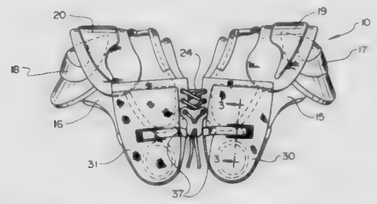
GENERAL AND MECHANICAL

5,060,313

FOOTBALL SHOULDER PAD WITH OUTER PADS

Mark Neuhalfen, Villa Park, Ill., assignor to Wilson Sporting Goods Co., River Grove, Ill.

Filed Apr. 2, 1990, Ser. No. 502,797
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **16 Claims**



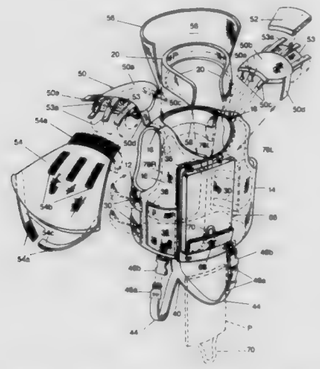
1. A football shoulder pad comprising a pair of relatively rigid arch portions, each of the arch portions being generally U-shaped and having a front portion shaped to extend over at least a portion of the chest of a wearer, a pair of compressible and resilient outer pads removably attached to the front portions of the arch portions, each of the outer pads covering at least a portion of the outer surface of one of the arch portions, and means on the outer pads for removably attaching the outer pads to the arch portions.

5,060,314

MULTI-MISSION BALLISTIC RESISTANT JACKET

Michael L. Lewis, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1990, Ser. No. 504,522
Int. Cl.[5] F41H *1/02*
U.S. Cl. 2—2.5 **26 Claims**



1. A ballistic resistant garment of the vest or jacket type which is of a length to cover the lower waist and back areas of a wearer of the garment, said garment comprising in combination:

a. interjoined fabric-encased ballistic-resistant jacket-forming panels including a back body panel having partial left and right side portions, left and right combined front and side body panels, all of which are shaped to collectively define a pair of arm-receiving holes, and so that the front portions overlap significantly;

b. said body panels being permanently interjoined at over-the-shoulder portions with each other and with a first collar means including a fabric-enclosed ballistic-resistant first collar panel;

c. said jacket-forming body panels being of predetermined size and shape, and including flexible band means interconnected between the respective side portions to provide and maintain a predetermined amount of side overlap at all times;

d. mutually cooperable releasable fastener means on the respective back, side, and front body panels to provide for fit-adjustment and a closed overlapping relationship of all panels;

a. said body and collar panels being made of non-hydroscopic, inherently buoyant, ballistic-resistant material, such as Spectra Shield ®, and encased in substantially fire-resistant or high-temperature resistant fabric, such as Nomex ®, thereby imparting a natural buoyancy and repellancy to the garment when subjected to a petroleum-contaminated water environment;

f. the garment, further comprising first shoulder pad means in the form of generally trapezoidal shaped ballistic resistant left and right fabric-covered shoulder pads respectively having collar-proximal attachment means for fixedly but flexibly attaching them at a juncture of said collar with said over-the-shoulder strap portions in a manner which amply straddles said latter portions;

g. said shoulder pads respectively also having distal fore-and-aft disposed flexible attachment bands for flexibly attaching fore and aft portions of said respective pads to the respective front and back body panels adjacent the shoulder areas but distally of said collar; and

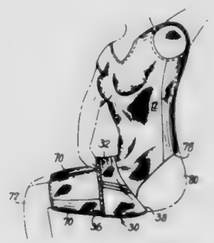
h. said garment including pockets in both the shoulder pads, and in at least inside areas of said body panels to selectively removably receive therein respective flotation pads which inherently also serve as potential trauma reducing means when so worn.

5,060,315

GARMENT

Elizabeth Ewing, 70 Lefurgy Ave., Hastings-on-Hudson, N.Y. 10706

Filed Jul. 13, 1990, Ser. No. 553,196
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] A41B *9/08*; **A41D** *1/06*
U.S. Cl. 2—69 **6 Claims**



1. A garment which is capable of being worn over one or more optional undergarments such as underpants, tights, a pantie-type undergarment, comprising, in combination:

an upper garment portion including upper and lower annular ring portions which, respectively cover body parts above and below an area of the wearer's naval, said lower annu-

lar ring portion being capable of covering at least front body parts below said area of the wearer's naval,

a lower garment portion comprising

an annular lower web portion formed with a lower wall member having upper and lower annular edges between which edges said lower garment portion lower wall member extends, said annular web portion wall member including front and rearward portions thereof which, respectively, overlie front and rearward body parts below said area of the wearer's naval, said lower garment portion also comprising a pair of hose portions, one for each leg, said hose portions extending from the lower annular edge of said annular web portion downwardly about the legs of the wearer, said hose portions constituting integral portions of said garment and being integrally attached to said annular web portion,

a crotch portion extending from said rearward portion of said lower wall member to the lower annular ring portion of said upper garment portion,

said garment being capable of repeated manipulation between fitted and loosened states, said loosened state facilitating the wearer's removal of said lower wall member and any optional undergarments worn beneath said garment from said front and rearward body parts below the area of the wearer's naval to a position below the thighs, thereby exposing sufficient portions of the crotch area to permit lowering or removal of the pantie-type undergarment and to permit access to the crotch area without the need to remove entirely from the wearer's legs below the thighs either said garment or optional undergarments worn beneath said garment.

5,060,316

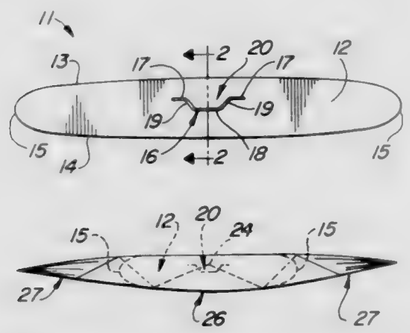
SCARF SUPPORT

Donna Jepsen, 307 Sixth St., Durant, Iowa 52747

Continuation of Ser. No. 377,384, Jul. 10, 1989, abandoned. This application Jan. 2, 1991, Ser. No. 635,811

Int. Cl.[5] A41F *9/00*

U.S. Cl. 2—338 **2 Claims**



1. A scarf support for use in combination with a scarf dimensioned to encircle the waist of a user to prevent wrinkles in the scarf when wrapped around the support wherein the support comprises an elongated flat main body having an enlarged central portion and generally tapered rounded ends; wherein, the enlarged central portion is provided with a generally elongated U-shaped slot centrally disposed therein; and, wherein, the main body has longitudinal top and bottom edges; and, wherein the length and width of the main body are dimensioned to cover a substantial portion of the front of the users midriff; such that when a scarf is operatively engaged in the said slot and snugly wrapped around the entire main body in an enveloping fashion, the main body will be completely covered by the scarf while the spaced top and bottom longitudinal edges of the main body will maintain the external surface of the scarf in a generally smooth and flat disposition at least over the central portion of the wrapped scarf; and across the said substantial portion of the users midriff.

5,060,317

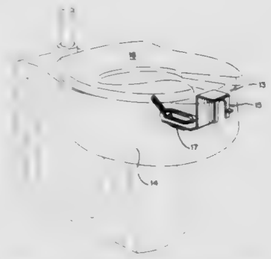
COMBINATION SPECIMEN CUP AND BRACKET

Erik Bertelsen, 1251 Easthill Crt., Mobile, Ala. 36695

Filed Apr. 24, 1990, Ser. No. 513,897

Int. Cl.[5] A47K *11/00*

U.S. Cl. 4—144.2 **32 Claims**



1. A specimen cup and bracket for the same for use on a toilet having a bowl and a rim:

a. said bracket comprising at least one bendable arm engaging the side of said bowl, a ledge attached to said arm, a wall attached to said ledge opposite and a plate attached to said wall defining a hole for receiving the specimen cup, wherein the plate has edges angled downward from parallel;

b. said specimen cup comprising a handle extending towards the bowl, said handle having a channel means for funneling fluid and a reservoir attached to the handle.

5,060,318

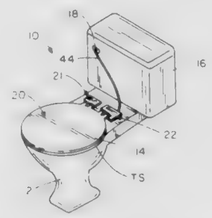
ASSEMBLY FOR AUTOMATICALLY CLOSING A WATER CLOSET COVER IN A CONTROLLED MANNER

Andrzej Jaskiewicz, 92 Daen Ave. #7, Smithfield, R.I. 02917

Filed Apr. 4, 1990, Ser. No. 503,891

Int. Cl.[5] A47K *13/10, 13/04*

U.S. Cl. 4—251 **12 Claims**



1. An assembly for automatically lowering a toilet bowl cover in a controlled manner comprising:

A) a toilet bowl having a rim, a forward location and a tank mounted thereon at a rear location on said bowl;

B) a toilet flush system which includes a flush handle mounted on said tank;

C) a hinge unit mounted on said toilet bowl adjacent to said tank and including

(1) a first shaft mount having a first shaft rotatably mounted therein, said first shaft being cylindrical and having a longitudinal axis extending parallel to a plane containing said toilet bowl rim and rotating about said longitudinal axis,

(2) a second shaft mount having a second shaft rotatably mounted therein, said second shaft being cylindrical and having first and second ends and a longitudinal centerline which is aligned with said first shaft longitudinal axis, said second shaft rotating about said second shaft longitudinal centerline;

D) a toilet bowl cover fixed to said first and second shafts for movement therewith between an upright bowl uncovering position and a bowl covering position; and

E) a mechanism for automatically lowering said toilet bowl cover from said bowl uncovering position to said bowl covering position and for controlling and retarding such movement as said cover moves, said mechanism including

(1) a torsion spring on said second shaft near said second shaft one end, said torsion spring being fixed to said second shaft at one end of said spring and being fixed to said second shaft mount at another end of said spring and applying force to said second shaft to bias said second shaft to rotate in a forward direction which moves said cover from said bowl uncovering position towards said bowl covering position,

(2) a cover pushing unit which includes

(a) a trip wire connected at a top end thereof to said toilet flush handle to move when said flush handle is operated to flush said toilet,

(b) a pusher bar attached to said trip wire at a bottom end of said trip wire for movement therewith, said pusher bar being located to be in abutting contact with said second shaft when said cover is in said upright bowl uncovering position,

(c) a trip wire mount which orients said pusher bar and said trip wire to move in a trip wire forward direction towards said cover and to force cover forward when said flush handle is operated to flush said toilet with said abutting contact between said pusher bar and said toilet bowl second shaft causing said cover to move out of said upright position towards said bowl covering position when said flush handle is operated to flush said toilet, and

(3) a cover movement controlling unit for controlling and retarding forward movement of said cover from said upright position toward said bowl covering position, said cover movement controlling unit including

(a) a spring-loaded shock absorber mounted on said second shaft mount and including a shock absorber arm connected to said second shaft,

(b) a spring in said shock absorber and connected to said shock absorber arm, said shock absorber spring acting in opposition to said torsion spring and in opposition to the force gravity exerts on said cover to control and retard forward movement of said toilet bowl cover from said upright position towards said bowl covering position.

5,060,319

PORTABLE TOILET SEAT UNIT

Michael C. Laroue, 931 S. Ford Blvd., Los Angeles, Calif. 90022

Filed Dec. 10, 1990, Ser. No. 625,028

Int. Cl.[5] E03D *11/00;* **A47K** *13/00*

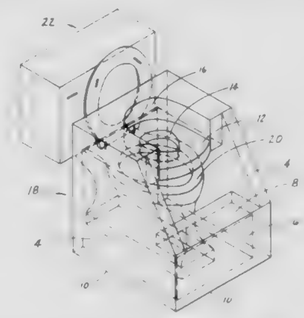
U.S. Cl. 4—254 **8 Claims**

1. A portable accessory for use with an installed toilet having a top rim defining a bowl opening, comprising:

a. a toilet seat defining a central opening substantially smaller than said bowl opening,

b. step means for climbing and standing on,

c. support means which rest on a floor surface, and which are rigidly connected to said step means, and which support said seat horizontally over said toilet, and which support the weight of said portable accessory and a user independently of said toilet, all at the same time, d. stabilizing means being that portion of said support means which contacts said floor surface, acting independently of the weight of said accessory and substantially extended to contact said floor surface so as to prevent said accessory from tilting when weight is placed on said step means, and



wherein the toilet seat, step means, support means and stabilizing means are molded together as a one piece unit.

5,060,320

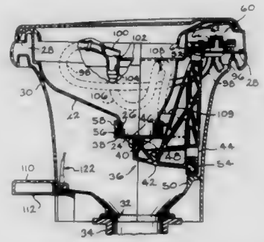
RECREATIONAL VEHICLE TOILET WITH FOOT PEDAL FLUSH

Charles L. Sargent; John M. Antos, both of Ann Arbor, and David B. Cameron, Brighton, all of Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Jun. 25, 1990, Ser. No. 542,528

Int. Cl.[5] E03D *11/10*

U.S. Cl. 4—438 **4 Claims**

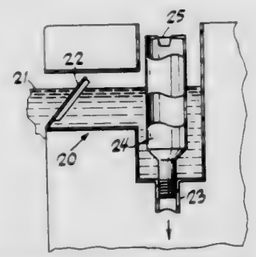


1. Toilet apparatus with foot pedal flush comprising a housing, a toilet bowl mounted on said housing and having an outlet at its lower end and a closure member movable between positions opening and closing said outlet, and flush water supply means including a discharge nozzle operatively associated with said bowl for supplying flush water to the upper end of the bowl, the improvement comprising foot pedal apparatus mounted on said housing for movement in up and down directions, a closure member control lever and a flush water control lever both rotatably mounted to said housing, said closure member control lever coupled to said closure member for moving said closure member to said open position in response to rotation of said closure member control lever in a first direction, said flush water control lever coupled to said flush water supply means for opening said supply means to supply flush water to said bowl in response to rotation of said flush water control lever in said first direction, a pair of flexible control wires contained in conduits mounted to said housing for sliding movement therein with the proximal and distal ends of said wires extending from the ends of said conduits, the proximal ends of said wires being coupled to said foot pedal apparatus with the distal end of one of said wires connected to said closure member control lever through a first guide pin and the distal end of the other of said wires connected to said flush water control lever through a second guide pin for rotation of

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said control levers in said first direction upon tension applied to said wires in response to downward depression of said pedal apparatus, bias means for returning said closure member to the closed position and closing said flush water supply means upon release of said pedal apparatus by rotating said control levers in a second direction opposite to said first direction, said flexible control wires being solid element wires of sufficient stiffness whereby compression of said wires by manual raising of said foot pedal apparatus causes said control levers to rotate in a second direction in the event of a failure of said bias means.

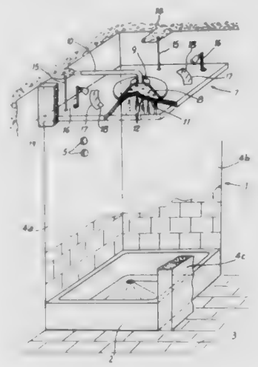
5,060,321
POOL WINTERIZING SYSTEM
William J. Breneisen, 110 Blair Rd., Oyster Bay Cove, N.Y. 11771
Filed Jun. 4, 1990, Ser. No. 532,970
Int. Cl.[5] E04H *4/14*
U.S. Cl. 4—496 **4 Claims**



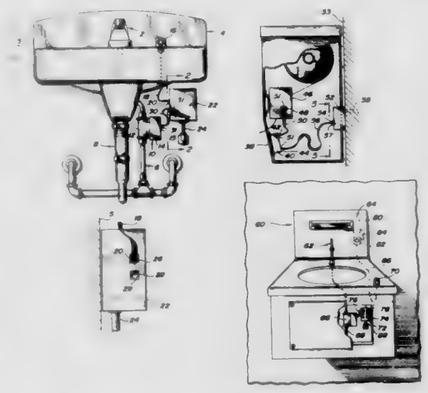
1. A swimming pool winterizing system adapted for use with a pool skimmer and water input system to facilitate purging of the water lines without lowering the pool water level which comprises a substantially one piece straight hollow plastic tubular member having the lower end thereof threaded to facilitate fastening to the skimmer discharge and removal therefrom, said straight tubular member being of a length sufficient to maintain the upper end above the pool water line when fastened to said skimmer discharge, said straight hollow plastic tubular member further being molded with a thin resilient plastic wall of a diameter larger than said threaded portion suitable to absorb the forces from ice expansion in said skimmer, and a one piece L-shaped hollow plastic tubular member having the end of one leg thereof adapted to be fastened into and removed from the water input outlet in the swimming pool and the other leg thereof being of a length sufficient to maintain the upper end above the pool water line when fastened to said water input outlet.

5,060,322
SHOWER ROOM AND CEILING ELEMENT, ESPECIALLY FOR A SHOWER ROOM
Jean-Claude Delepine, 23 rue Clapeyron, 75008 Paris, France
Filed Jul. 27, 1989, Ser. No. 384,287
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—601 **11 Claims**

1. A ceiling element for a shower room of the type having rearwall and sidewalls defined as part of a room enclosure, said element comprising a substantially planar plate having at least one closed cavity therein adapted to be connected to a water intake pipe, said plate being sized and adapted to be mounted to said rear and side walls as a ceiling of said shower room, said cavity being comprised of said substantially planar plate defining a lower face of said cavity and a hollow housing sealed to said plate, the portion of said plate corresponding to said cavity being provided with a plurality of orifices adapted to eject water entering said cavity.



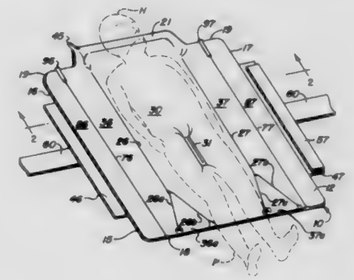
5,060,323
MODULAR SYSTEM FOR AUTOMATIC OPERATION OF A WATER FAUCET
Daniel C. Shaw, Geneva, Fla., assignor to Bauer Industries, Inc., Orlando, Fla.
Filed Jul. 12, 1989, Ser. No. 378,924
Int. Cl.[5] E03C *1/05*
U.S. Cl. 4—623 **20 Claims**

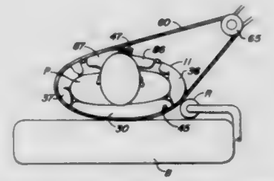


1. A modular system for automatically controlling the operation of a water dispensing fixture, comprising:
a) electrically operable valve means having an operating voltage eliminating the need for conduit while enhancing safety to the installer and user for installation in line of a water supply line to the fixture for controlling water flow to the fixture, said valve means including a connector means;
b) sensor means for detecting the presence of an individual within a predetermined range of said sensor means;
c) control means for connection with said valve means and said sensor means for receiving a detection signal from said sensor means and for causing said valve means to operate in response to the detection signal, and said control means including a plurality of connector means;
d) a first flexible cord for interconnecting said valve means to said control means, said cord having connector means at the opposite ends thereof for interconnection with cooperating ones of said connector means of said control means and said valve means;
e) each of said connector means is a plug, or a cooperating receptacle; and,
f) a second flexible cord extends from said sensor means and has a connector means at the remote end thereof for interconnection with a cooperating connector means of said control means.

5,060,324
INFLATABLE APPARATUS FOR IMMOBILIZING AND CHANGING POSITIONS OF A PATIENT
Boris V. Marinberg, 711 Appletree La., Glencoe, Ill. 60022, and Leah W. Ratner, 820 W. Belle Plaine #804, Chicago, Ill. 60613
Filed Jul. 23, 1990, Ser. No. 556,352
Int. Cl.[5] A61G *7/08;* **A47C** *27/08*
U.S. Cl. 5—81 R **2 Claims**

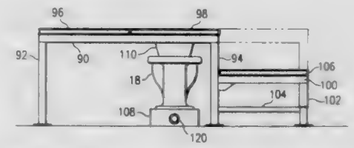
1. An inflatable envelope for enclosing the body of a patient, comprising:
an exterior resilient membrane of substantially rectangular planform extending substantially the entire length of the body of the patient;
an interior resilient membrane of a planform substantially equal to said rectangular planform of said exterior membrane, said interior membrane being joined at the periphery thereof to the periphery of said exterior membrane to form an air impervious containment structure in combination therewith, said exterior membrane including valve means for admitting air therethrough;
a first and second bonding seam formed to engage said interior and exterior membrane and extending partly therebetween for dividing said first and second membranes into a central enclosure and adjacent first and second lateral enclosures;
a third and fourth bonding seam formed to engage said exterior membrane to said interior membrane between said first and second bonding seams;
sealing means formed between said first and second membranes for selectively closing off an air passage to each of said first and second lateral enclosures;
securing means fixed to said exterior membrane for selectively engaging said first and second enclosure to each other, a strap secured transversely to said exterior membrane for applying manipulative forces thereto; and





closing means for securing a first end of said strap to a second end of said strap.

5,060,325
INTEGRATED MATTRESS AND COMMODE WITH INTEGRATED BATHING SECTION
Monte Carnahan, and Gayle A. Carnahan, both of 100 W. Cedar, Wilburton, Okla. 74578
Continuation-in-part of Ser. No. 468,853, Jan. 23, 1990, which is a continuation-in-part of Ser. No. 439,849, Nov. 20, 1989, Pat. No. 4,944,058. This application Dec. 17, 1990, Ser. No. 628,576
Int. Cl.[5] A61G *7/02, 9/02, 7/015*
U.S. Cl. 5—90 **4 Claims**



1. A bed with an integrated commode and integrated bathing section, comprising:
a mattress and bed frame that comprise a primary sleeping surface, the primary sleeping surface being parallel with the floor on which said mattress and bed frame are disposed;
a flush commode having a commode bowl and a commode seat;
a secondary support surface and associated support, adjacent to and coplanar with said primary sleeping surface said secondary support surface having a hole disposed therethrough to communicate with said commode such that the upper surface of said commode seat is proximate to the same plane as the upper surface of said secondary support surface, the hole approximately the same size as the outer peripheral edge of said commode, said secondary support surface having first and second portions, said first portion comprising a central section having the hole disposed therein and a head section approximately the same size as

the central section, said second portion comprising a foot section approximately the same size as the central section, said central, head and foot sections having a central pad, a head pad and a foot pad for being disposed thereon, said central section pad having a hole disposed therein for interfacing with said commode bowl;

said foot section being operable to be raised or lowered and fixed to either a lowered, horizontal foot rest position or a horizontal supine position coplanar with said first portion;

a bathing section positioned on said secondary support surface including:

a flat vinyl surface substantially the size of first and second portions,

an inflatable tube disposed about the periphery of said flat vinyl surface and being integral therewith, said tube operable to contain water within the interior periphery edge thereof

when inflated, said tube when inflated rising above the surface of said vinyl surface; and

a drain disposed in the central portion thereof for interfacing with said commode.

5,060,326

BED WITH FLUIDICALLY SUPPORTED SLATS

Kurt Oswald, Hauptstrasse 22-26, 6701 Fussgönheim, Fed. Rep. of Germany

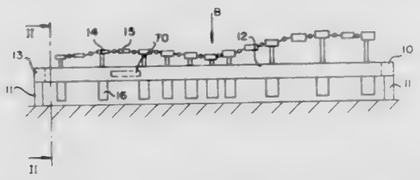
PCT No. PCT/EP88/00754, § 371 Date Jun. 26, 1989, § 102(e) Date Jun. 26, 1989, PCT Pub. No. WO89/01749, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 23, 1988, Ser. No. 391,510

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1987, 3728408

Int. Cl.[5] A47C *23/00*

U.S. Cl. 5—236.1 **10 Claims**



1. A bed, comprising a box-like frame having longitudinal frame parts and transverse frame parts joined to said longitudinal frame parts, slats with ends for supporting a mattress, piston/cylinder mechanisms supporting said ends of said slats on said longitudinal frame parts in the vicinity of said longitudinal frame parts, each of said piston/cylinder mechanisms including fluidically operative chambers communicating with one another hydraulically or pneumatically for adjusting the slats to various heights depending on the respective partial weight of a person resting thereon, said longitudinal frame parts being hollow for hydraulically or pneumatically connecting said operative chambers of said piston/cylinder mechanisms.

5,060,327

LABOR GRIPS FOR BIRTHING BED

Mary A. Celestina, Cincinnati, Ohio; David W. Williams, Batesville, Ind., and David C. Newkirk, Fairfield, Ohio, assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Oct. 18, 1990, Ser. No. 599,434

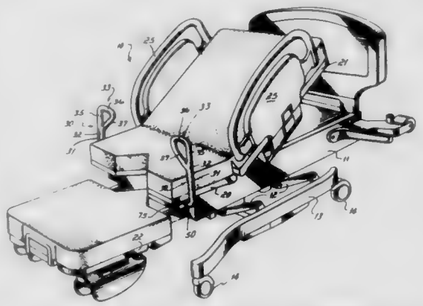
Int. Cl.[5] A61G *7/00*

U.S. Cl. 5—445 **10 Claims**

1. In a birthing bed having a main frame and a patient support mounted on said main frame, a labor grip on each side of said main frame comprising:

a normally vertical post mounted on said frame,

and a triangular hand grip integral with the end of said post, said hand grip having three interconnected sides present-



ing at least three different hand grip positions for the laboring mother.

5,060,328

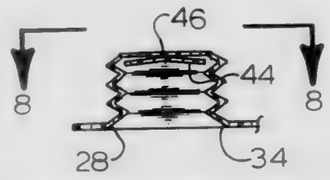
WATERBED MATTRESS WITH SPRING INSERT

Lynn D. Larson, 1052 N. Lakeshore Dr., Lincoln, Nebr. 68528

Filed Oct. 9, 1990, Ser. No. 594,416

Int. Cl.[5] A47C *27/08*

U.S. Cl. 5—450 **33 Claims**



1. In a waterbed mattress including a top wall, bottom wall and a peripheral sidewall, all interconnected to define a fluid tight chamber, the improvement comprising,

a plurality of spring bellows units within said chamber, each unit having at least one end wall and a peripheral sidewall and each unit being collapsible from a normal expanded height to a shortened compressed height wherein the internal volume of the unit is substantially reduced, spring means for spring biasing each bellows unit to the normal expanded height thereof, and each bellows unit further including a bleeder opening in one wall thereof, and

means for supporting said bellows units in upright relation within said chamber whereby downward force exerted on a bellows units through the mattress top wall tends to collapse the unit against the spring action of the sidewall thereof and against the hydraulic action thereof whereby fluid flow from said unit is generally constrained.

5,060,329

THREE IN ONE TWEEZER

Vonnie L. Hudson, 54 First Ave., Westbury, N.Y. 11590

Filed Oct. 11, 1990, Ser. No. 595,554

Int. Cl.[5] B25F *1/00;* **H02G** *1/12*

U.S. Cl. 7—107 **2 Claims**

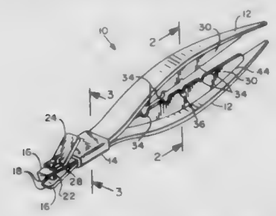
1. A three in one tweezer tool which comprises:

(a) two spring members;

(b) jaws for cutting wire, wherein said jaws for cutting wire each have a cutting edge and are integrally attached to said spring members on one end and are formed in a normally open condition and are closed by finger pressure on a finger operated lever having an underside cam that engages with a surface of a first jaw of said jaws, said cam urging said first jaw against a second jaw of said jaws

when said finger pressure is applied to said operating lever, and said lever is pivotally received on a post received through said first jaw and rotatively secured to a second jaw of said jaws;

(c) fastening means for securing said spring members together, wherein said fastening means is a collar fixedly secured adjacent to said jaws for cutting wire;



(d) tweezer means for picking up wire and other articles, wherein said tweezers means is a pair of inwardly curved and normally open tweezer portions integrally attached to another end of said spring members, and operated when finger pressure is applied to said tweezer portions to grasp said wire or other articles in a tweezer point portion of said tweezer; and

(e) a wire stripping means for removing insulation from insulated wires.

5,060,330

SCREW-THREAD REPAIR TOOL

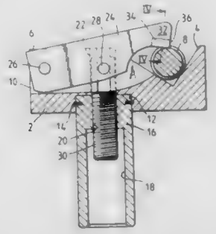
Zeev Stahl, Village Har Gilo, Israel, assignor to Moshe Abraham, Israel

Filed Jul. 28, 1988, Ser. No. 225,225

Claims priority, application Israel, Oct. 19, 1987, 84215

Int. Cl.[5] B23G *5/00*

U.S. Cl. 10—1 B **7 Claims**



1. A chasing tool for repairing screw threads, comprising:

a substantially prismatic body with two ends and a bottom and a top surface, having on one end of said body a transverse, notch-like recess opening into said top surface and serving as a support for a threaded component the thread of which is to be repaired, two slots extending in a direction substantially perpendicular to the direction of, and opening into, said notch-like recess, said slots originating at the other end of said body;

a hand extending from the bottom surface of said body and being rotatably retained therein, said handle being provided with an axially directed bore, at least a portion of which is provided with an internal thread;

two separate arms fitting one each into said two slots with clearance and hingedly articulated by loosely fitting hinge pins, at a first point to said body at a region thereof adjacent said other end, and, at a second point, to a terminal portion of a rod at least part of whose length is provided with an external thread matching and engaging the internal thread of said bore in said handle, a free end portion of each of said arms projecting into the region of said notch-like recess and being provided with integral thread-chasing means;

wherein rotating said handle will alter the position of said thread-chasing means of said two arms relative to said notch-like recess, and wherein, after contact is made by said means with said treaded component, a relative rotary movement about the axis of said threaded component, between said component and said body, will cause said thread-chasing means to repair said screw thread.

5,060,331

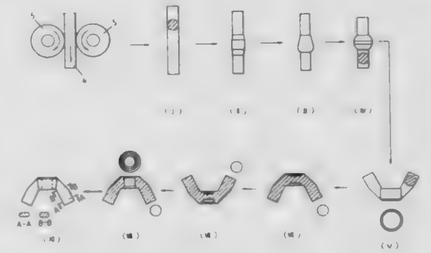
METHOD OF PRODUCING WING NUTS

Tsai-Fu Shie, Tainan, Taiwan, assignor to Luchu Shinyee Works Co., Ltd., Luchu Kaohsiung, Taiwan

Filed Dec. 21, 1990, Ser. No. 631,412

Int. Cl.[5] B21D *53/20, 53/24*

U.S. Cl. 10—86 W **2 Claims**



1. An improved method of manufacturing wing nuts, comprising:

a. precisely cutting a predetermined length of raw material;

b. evenly trimming opposing ends of said cut length of said raw material;

c. a first upsetting step for flattening a center portion of said cut length;

d. a second upsetting step for forming said flattened portion into a substantially cylindrical contour having a pair of opposing end surfaces;

e. a bending step for displacing opposing ends of said cut length in a direction substantially othoginal a plane defined by either of said pair of opposing end surfaces;

f. a first forging step for further shaping said center portion and forming an indentation of a predetermined depth in each of said pair of opposing end surfaces;

g. a second forging step for increasing said depth of said indentations;

h. forming a through opening extending between said indentations formed in said pair of opposing end surfaces;

i. pressing said displaced opposing ends of said cut length to form wing members of said wing nuts in a press machine; and,

j. tapping said through opening.

5,060,332

CABLE STAYED BRIDGE CONSTRUCTION

David R. Webster, Wstmount, Canada, assignor to H. J. G. McLean Limited, Bantford, Canada

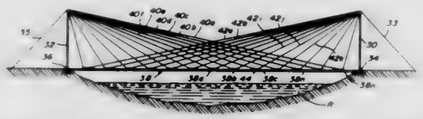
Filed Jun. 21, 1990, Ser. No. 541,821

Int. Cl.[5] E01D *11/00*

U.S. Cl. 14—21 **6 Claims**

1. A cable stayed bridge comprising at least a pair of towers, one of the pair being erected from a base on either side of an area being spanned, cable means being provided for suspending a roadway deck between the bases of the pair of towers, the roadway deck comprising rigid deck segments forming a continuous roadway deck, means defining load-bearing points with at least one load-bearing attachment point for each deck segment; the cable means including a pair of cable stays extend-

ing from each load-bearing attachment point on a deck segment, one stay to the top of each tower of the pair, the cable stays being fixedly connected at each load-bearing attachment point to the respective deck segment, an anchor means pro-



vided remote from each tower relative to the span between the towers, and anchor cable stays extending from the anchor means to a respective tower whereby the continuous deck is supported solely by the cable means.

5,060,333

APPARATUS FOR CLEANING PIPELINES FOR BEVERAGES AND THE LIKE WITH A RELIEF VALVE IN THE LIQUID ADMITTING INLET

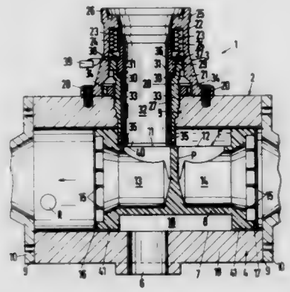
Friedrich Bersch, Industriestrasse 18, D-5401 Halsenbach, Fed. Rep. of Germany

Filed Jan. 19, 1990, Ser. No. 468,689

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1989, 3901829

Int. Cl.[5] B08B *9/02*

U.S. Cl. 15—3.51 **16 Claims**



1. Apparatus for cleaning with a liquid and at least one cleaning element a pipeline of finite length, comprising a four-way shuttle valve including a body having a liquid admitting inlet, an outlet and two hollow couplings connectable to the ends of a pipeline of finite length, and a shuttle movable in said body in response to movement of said at least one cleaning element between a first position to establish a path for the flow of liquid from said inlet into one of said couplings, through the pipeline between said couplings, the other coupling and into said outlet, and a second position to establish a path for the flow of liquid from said inlet into said other coupling, through the pipeline between said couplings, through said one coupling and into said outlet; and a pressure relief valve installed in said inlet and having means for establishing a first portion of an additional path from said inlet to said outlet in response to a rise of liquid pressure in said inlet above a predetermined value, said shuttle and said body defining a chamber which establishes a second portion of said additional path and communicates with said outlet, said relief valve comprising a tubular housing in said inlet and means for establishing said first portion of said additional path comprising a tubular valving element which is reciprocable in said housing between an operative position in which said additional path is sealed and an inoperative position in which liquid is free to flow from said inlet into said outlet by way of said additional path.

5,060,334

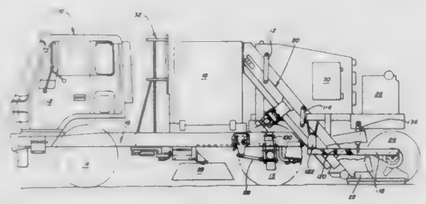
STREET SWEEPER

Roger D. Star, and Daniel P. Strauser, Elgin, St. Charles, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Sep. 7, 1988, Ser. No. 241,329

Int. Cl.[5] E01H *1/04*

U.S. Cl. 15—84 **32 Claims**



1. In a street sweeper which carries an elevatable hopper, the improvement comprising, in combination:

hopper elevation means which comprises a first, vertically extending mast section carried by the street sweeper; an intermediate vertically extending mast section carried by the first mast section, means for vertically elevating the intermediate mast section over the first mast section; an added vertically extending mast section carried by the intermediate mast section; and means for vertically elevating the added mast section over the intermediate mast section; said hopper being carried by said added mast section; and means for laterally tipping said hopper to dump its contents while said intermediate and added mast sections are in vertically elevated position.

5,060,335

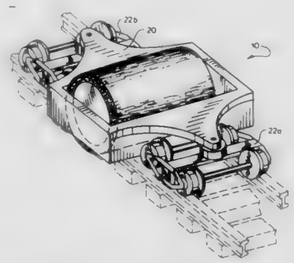
APPARATUS FOR CLEANING THE SURFACE OF A RAILWAY RAIL

Richard Webster, 6 N 332 Keeney Rd., Keeneyville, Ill. 60172

Filed Dec. 28, 1990, Ser. No. 635,246

Int. Cl.[5] E01H *8/10*

U.S. Cl. 15—97.1 **10 Claims**



1. Apparatus for cleaning the surface of the rails of a railroad track assembly comprising:

roller means for providing a wiping contact with the rails;

cage means for guiding said roller means to allow rolling movement thereof along the rails, said cage means being arranged to be transported along the railroad track; and

means for retarding the rolling movement of said roller means.

5,060,336

DEVICE FOR CLEANING WIND MUSICAL INSTRUMENTS

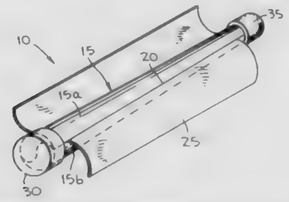
Anthony F. LaLonde, 2469 Klein Rd., San Jose, Calif. 95148

Continuation of Ser. No. 322,547, Mar. 13, 1989, Pat. No. 4,967,439. This application Jun. 18, 1990, Ser. No. 539,544

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] B08B *9/02*; **G10G** *7/00*

U.S. Cl. 15—104.10 R **2 Claims**



1. A cleaning device for cleaning a tube of a wind musical instrument comprising:

(a) an elongated member having separable sections separable from one another along the axis of said elongated member, said separable sections confronting one another in the axial direction of said elongated member and defining therebetween a slit axially directed along the axis of said elongated member when said separable sections are disposed in contiguous relation;

(b) a cleaning cloth removably secured between said separable sections and disposed within said axially directed slit, said cleaning cloth having at least one flap extending out of said slit for cleaning the tube of the wind musical instrument, said flap being furled about said elongated member to prevent the elongated member from marring the tube of the wind musical instrument; and

(c) means for releasably securing said separable sections in contiguous relation,

(d) said slit extending substantially along the entire axial distance of said elongated member, and said cleaning cloth being disposed in and extending out of said slit substantially along the entire axial distance of said elongated member.

5,060,337

HANDBRUSH AND METHOD OF MANUFACTURE THEREOF

Gerhard A. Van Niekerk, Pretoria, South Africa, assignor to Climbminster Limited, West Gorton, United Kingdom

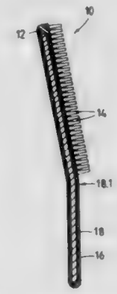
Filed Feb. 13, 1990, Ser. No. 479,168

Claims priority, application South Africa, Feb. 15, 1989, 89/1158; Jan. 31, 1990, 90/0718

Int. Cl.[5] A47L *13/12*

U.S. Cl. 15—111 **6 Claims**

1. A handbrush comprising a head, a handle connected to the head, a rigid strengthening member imbedded in the head and in the handle, and a plurality of bristles projecting from the head; the head, the handle and the bristles being all integrally molded in one piece from an unvulcanized rubber compound



formulated to impart to the handbrush, upon vulcanization thereof, a Shore hardness of between 55 and 65.

5,060,338

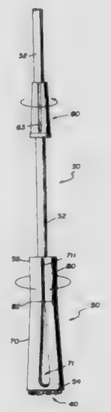
WET MOP WITH SELF-CONTAINED WRINGER

James P. Yates, Casey, Ill., and Enzo Berti, Mirano, Italy, assignors to The Libman Company, Arcola, Ill.

Filed Apr. 16, 1990, Ser. No. 509,135

Int. Cl.[5] A47L *13/144*

U.S. Cl. 15—119 A **21 Claims**



1. A mop comprising:

an elongated mop handle having top and bottom ends;

a plurality of fibrous strands comprising a mop body for cleaning a surface;

means attaching the mop body to the mop handle bottom end;

a sleeve in the form of a tubular shell, for squeezing water from the mop body by sliding the shell downward along the handle and over and around the mop body, axially and slidably mounted on the mop handle upward of the mop body;

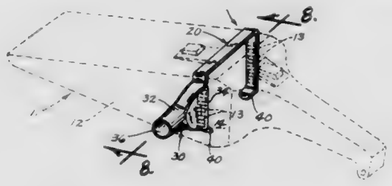
the tubular shell having an open lower end and a closed upper end;

the tubular shell including a frusto conical shell portion tapering inwardly from the shell lower end portion for at least a major portion of the shell length;

the frusto conical shell portion having a group of axially positioned inwardly directed grooves equally spaced apart around the shell periphery;

each groove of the group having a bottom, with the bottom of the groove being straight for its length and parallel to the shell axis;
each groove of the group extending for at least nearly the entire length of the frusto conical shell portion;
the grooves being positioned such that each groove is diametrically opposite another groove;
the bottoms of each opposing pair of grooves being parallel to one another;
the depth of the grooves decreasing uniformly from their lower end to their upper end; and
the width of the grooves decreasing uniformly from their lower end to their upper end.

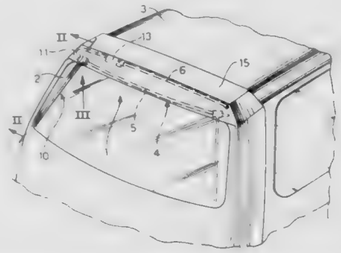
5,060,339
BLOWER ATTACHMENT FOR A VACUUM CLEANER
Robert S. Evers, 1405 West First St., Pella, Iowa 50219
Filed Sep. 17, 1990, Ser. No. 583,125
Int. Cl.[5] A47L *5/14, 9/08*
U.S. Cl. 15—246 **7 Claims**



1. A blower attachment for a vacuum cleaner of the type including a casing having a single inlet and a plurality of peripherally aligned and opposed exhaust air discharge openings, said attachment comprising:
an attached member disposed to contact and overlie a peripheral portion of the casing over said discharge openings, said attached member including:
a generally L-shaped resilient strap section having one end disposed to extend over and block air flow from a number of the discharge openings; a plenum section operatively connected to the other end of the strap section and disposed to extend over the discharge openings remaining unblocked by the strap section, said plenum section including a tubular housing having an inlet port disposed over and in fluid communication with the unblocked discharge openings, and an air output orifice disposed to extend outwardly from the casing; and at least one tab extending from said attached member and disposed to be received in one of the discharge openings to secure the attached member to the casing over the discharge openings.

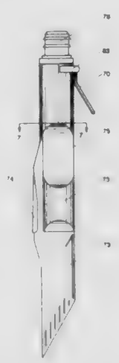
5,060,340
WINDSCREEN WIPER WITH TRANSLATIONAL MOTION, PARTICULARLY FOR A SPOILER ABOVE THE REAR WINDOW OF A MOTOR CAR
Osvaldo Grassini, Torino, Italy, assignor to Fiat Auto S.p.A., Torino, Italy
Filed Aug. 9, 1989, Ser. No. 392,193
Claims priority, application Italy, Oct. 7, 1988, 67901 A/88
Int. Cl.[5] B60S *1/20;* **B62D** *37/02*
U.S. Cl. 15—250.24 **6 Claims**

1. A windscreen wiper assembly with translational motion for a motor car having a rear window with an upper horizontal edge, the motor car having a rear edge above the upper horizontal edge of the rear widow and proximate a roofline, said assembly comprising:
a spoiler mounted substantially in parallel to the upper horizontal edge of the rear window and externally to the motor car proximate to the edge of the roofline, said spoiler having a lower part and an inner surface;
a hollow elongate guide element provided with a longitudinal channel and having a lower horizontal limb and an upper horizontal limb arranged above the rear window, parallel to the upper side thereof, the lower limb and the upper limb being coupled together at one end thereof;
support flanges provided on the inner surface of the spoiler and adapted to connect the guide element to the lower part of the spoiler;



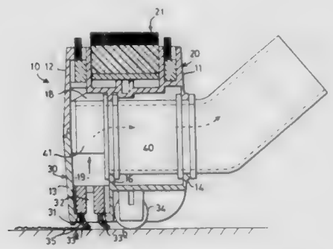
a wiper arm slidably mounted on the lower limb of the guide element;
operating means slidable within the guide element and provided with fixing means for fixing the wiper arm to the operating means; and
motor means mounted within the spoiler for imparting a reciprocal translational motion to the operating means within the guide element
wherein the windscreen wiper assembly is adapted to be retrofitted to the motor car.

5,060,341
VACUUM-POWERED WORK SURFACE CLEARING DEVICE
Joseph A. Nelle, P.O. Box 1183, Del Mar, Calif. 92014-1183
Division of Ser. No. 353,812, May 17, 1989, Pat. No. 5,018,238.
This application Mar. 8, 1991, Ser. No. 667,683
Int. Cl.[5] A47L *5/38*
U.S. Cl. 15—314 **6 Claims**



1. An apparatus for clearing a work surface from dust and small debris which comprises:
an air-sucking assembly having an air inlet;
a wand substantially commensurate with a pen and other articles which can be held between thumb and fore finger of one hand;
said wand comprising a hollow tubular body having an intake opening at a working tip and an outlet at a proximal end opposite said tip;
a control switch mounted on the outer surface of said body;
a flexible conduit connecting said outlet to said air inlet; and
wherein said body comprises a first arcuately depressed median area shaped, dimensioned and positioned to receive the tip of said fore finger;
said intake opening having a shape and orientation with respect to said wand such that proper positioning of said intake opening with respect to said work surface requires a particular positioning of said wand in the hand of said user, whereby when said wand is held in said particular position, the forefinger of said user will be located at said depressed median area.

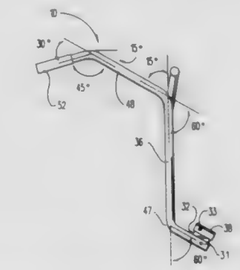
5,060,342
CLEANING HEAD
Alan J. Brazier, Inkberrow, United Kingdom, assignor to Vax Appliances Limited, Droitwich, United Kingdom
PCT No. PCT/GB88/00542, § 371 Date Mar. 10, 1989, § 102(e) Date Mar. 10, 1989, PCT Pub. No. WO89/00395, PCT Pub. Date Jan. 26, 1989
PCT Filed Jul. 7, 1988, Ser. No. 326,548
Claims priority, application United Kingdom, Jul. 10, 1987, 8716295
Int. Cl.[5] A47L *5/28*
U.S. Cl. 15—322 **7 Claims**



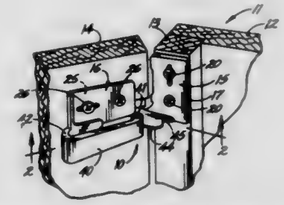
7. A cleaning head for use with apparatus for cleaning hard surfaces by the application and optionally pick-up of a cleaning liquid, said cleaning head comprising an applicator assembly including a compressible porous body having an operative facing layer formed by a pile fabric, a liquid supply duct arranged to deliver such liquid to said porous body so that the liquid percolates through said porous body and said facing layer, a brush of relatively harder material than the facing layer arranged at at least one edge of said applicator assembly, said applicator assembly being disposed in a housing, said housing having means defining an air inlet in said housing, and a further brush being disposed at the edge of the applicator assembly opposite to that at which the air inlet is provided.

5,060,343
TOOL HANDLE
Philip Nisenbaum, P.O. Box 214133, Sacramento, Calif. 95821
Continuation-in-part of Ser. No. 824,735, Jan. 31, 1986, Pat. No. 4,828,427. This application May 2, 1989, Ser. No. 346,580
Int. Cl.[5] A47B *95/02;* **A47J** *45/00;* **B65D** *25/28;* **E05B** *1/00*
U.S. Cl. 16—111 R **15 Claims**

1. A tool handle for attachment to various tool heads, comprising:
an elongated handle having first and second ends;
retaining means including a pair of hollow sockets at said first end of said elongated handle for receiving a pair of tool head shanks to removably securing a tool head;
said elongated handle including at least three substantially straight obliquely intersecting inclined portions disposed between said first and second ends;
a first hand grip on said second end of said elongated handle; and
a second hand grip secured intermediate said first and second ends of said elongated handle, adjacent an intersection of two of said inclined handle portions; said second hand grip spaced above and extending substantially perpendicular to said first hand grip and said elongated handle.



5,060,344
SELF-LATCHING KNIFE HINGE
David R. Cress, Janesville, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Jun. 4, 1990, Ser. No. 533,088
Int. Cl.[5] E05D *11/10*
U.S. Cl. 16—332 **6 Claims**



1. A hinge for mounting a door for swinging between open and closed positions on a frame, said hinge comprising door and frame wings mountable on the door and the frame, respectively, a pivot interconnecting said wings to permit swinging of said door between said open and closed positions, a latching finger disposed in spaced opposing relation with said door wing and having first and second end portions, said finger and said door wing being made of a single piece of resiliently yieldable plastic, the first end portion of said finger being integral with said door wing and being resiliently hinged thereto so as to permit the second end portion of said finger to swing cantilever fashion toward and away from said door wing, a post molded integrally with and extending from said door wing and engaging the second end portion of said finger to limit movement of said finger toward said door wing, the second end portion of said finger extending toward said frame wing and having a free end, said frame wing including a cam having a cam surface engageable with the free end of said latching finger to force the second portion of said finger to swing away from said door wing as the door is swung toward said closed position, and a pocket in said cam adjacent the cam surface thereof, the free end portion of said finger snapping resiliently toward said door wing and into said pocket as the door reaches said closed position and thereafter coacting with the pocket to latch the door releasably in its closed position.

5,060,345
LOOP CUTTER FOR BULKED CONTINUOUS FILAMENTS

Andrew M. Coons, III, Anderson, and James L. Bradley, Starr, both of S.C., assignors to BASF Corporation, Parsippany, N.J.

Filed Mar. 7, 1990, Ser. No. 490,170
Int. Cl.[5] D01G *3/00*
U.S. Cl. 19—0.6 **6 Claims**

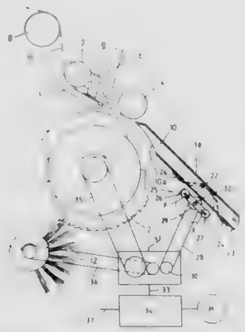


1. An apparatus for converting continuous multifilament yarn to staple-like yarn, comprising a curved tube and means for securing the tube to a yarn processing frame, a transverse slot formed partway in the outer peripheral surface of the tube between the ends of the tube, and a moveable cutting surface extending a predetermined distance into the slot, whereby crunodal filament loops of a textured yarn passing through the curved tube will be severed by the cutting surface yet core filaments will not.

5,060,346
COMBING MACHINE WITH SUCTION TRANSFER OF COMBED FIBERS

Jurg Bischofberger, Elsau-Raterschen; Andreas Jörg, Neftenbach; Giancarlo Mondini, and Peter Oehy, both of Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 438,177, Nov. 20, 1989. This application Oct. 2, 1990, Ser. No. 591,742
Claims priority, application Switzerland, Nov. 23, 1988, 04356/88
Int. Cl.[5] D01G *19/28*
U.S. Cl. 19—225 **18 Claims**

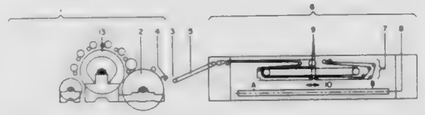


1. A method of combing and conveying fibers comprising the steps of:
a) opening a suction tube;
b) tearing off fibers from a fiber tuft;
c) drawing off torn off fibers into said suction tube;
d) combing the fibers to remove noils;
e) closing said suction tube;
f) removing the noils from the comb; and
g) opening said suction tube.

5,060,347
PROCESS AND DEVICE FOR THE MANUFACTURE OF NON-WOVEN FABRICS

Michel F. M. J. A. D. Beckers, Verviers, Belgium, assignor to S.A. des Ateliers Houget Duesberg Bosson, Verviers, Belgium

Filed Nov. 24, 1989, Ser. No. 440,688
Claims priority, application Belgium, Nov. 30, 1988, 8801349
Int. Cl.[5] D01G *25/00*
U.S. Cl. 19—300 **12 Claims**

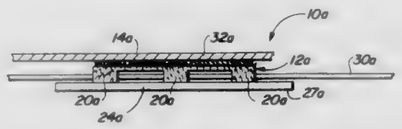


1. A device for manufacturing non-woven fabrics comprising a carding machine (1) with an outlet comb (2), a superposition machine (6) with cylinders (9) for depositing a web, and at least one consolidation machine, characterized in that the superposition machine (6) comprises a detection system (17) for the position of the cylinders (9) depositing the web, a calculation system (15) for the speed of the comb (2) depending on the position of cylinders (9), and a speed variation system (19) for the comb (2) depending on the result of the calculation system (15).

5,060,348
BRASSIERE STRAP RETAINER

David R. Moshier, 18620 Hatteras, #275, Tarzana, Calif. 91356

Filed Apr. 6, 1990, Ser. No. 505,805
Int. Cl.[5] A44B *18/00*
U.S. Cl. 24—442 **12 Claims**

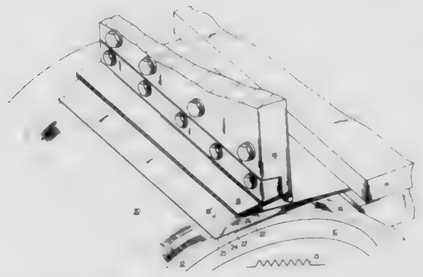


1. An improved brassiere strap retainer for securing a brassiere strap to a garment, said retainer comprising, in combination:
a) a first generally flat strip having a top surface and a generally smooth bottom surface, said first strip having a plurality of hooks protruding upwardly from the top surface thereof, said first strip having a plurality of spaced tabs protruding laterally from the sides thereof and bearing certain of said hooks, said tabs being looped around and spaced below said bottom surface so that said hooks of said tabs project downwardly from said first strip; and,
b) a second flat strip secured to at least one of said hook bearing spaced tabs and having a generally smooth top surface and a bottom surface bearing hook-receiving material to which the hooks of said tabs are releasably connected, said two strips forming an openable hollow tube to slidingly receive a brassiere strap for anchoring said retainer to a garment by those hooks on said first strip upper surface which are not on said tabs.

5,060,349
COMPRESSIVE TREATMENT OF WEBS

Richard R. Walton, Ten West Hill Pl., Boston, Mass. 02114; George E. Munchbach, Roslindale, and Sandra M. Ellingson, Boston, both of Mass., assignors to Richard R. Walton, Boston, Mass.

Continuation-in-part of Ser. No. 035,268, Apr. 2, 1987. This application Oct. 17, 1988, Ser. No. 258,629
Int. Cl.[5] D06C *21/00, 23/04*
U.S. Cl. 26—18.6 **34 Claims**



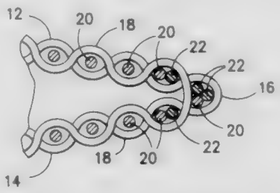
1. A web treating machine of the type comprising a drive member having a web-gripping drive surface, a smooth-surfaced primary member arranged over the drive member to press the web into driven engagement with the surface of the drive member, and a generally stationary retarding surface arranged after the primary surface to engage and retard the web before the web has left the drive member, the retarding surface being supported by a sheet form support member, having the following combination of features:
a) said sheet form support member is a longitudinally inextensible, elastically deflectable spring member,
b) a tip deflector is constructed and arranged to apply deflecting pressure on the downstream end portion of said longitudinally inextensible support member to deflect said support member toward said drive member,
c) there being a cavity stabilizer in the form of a portion of a second sheet form member which extends in face-to-face reinforcing relationship over the initial portion of said support member in the region immediately downstream of said primary member, thereby providing in said region a dimensional stabilizing effect in the normal direction to the cavity defined between said longitudinally inextensible sheet-form support member and said web-gripping drive surface,
d) the portion of said longitudinally inextensible support member extending between said cavity stabilizer and said tip deflector being relatively reinforced.

5,060,350
METHOD TO MANUFACTURE TUBULAR WOVEN FABRIC

Philip G. Harris, Spartanburg, S.C., and Tom M. Reid, Thomson, Ga., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 610,688, Nov. 8, 1990. This application Feb. 19, 1991, Ser. No. 656,978
Int. Cl.[5] D06L *1/12;* **D06H** *7/14;* **D03D** *3/02, 15/00*
U.S. Cl. 28—168 **8 Claims**

1. A method to provide an endless impression fabric without tight ends comprising the steps of: weaving a tubular woven fabric, supplying a plurality of polyvinyl alcohol warp yarns in at least one edge of the tubular woven fabric during weaving, washing the tubular woven fabric to dissolve the polyvinyl alcohol warp yarns to alleviate the tendency of the fill yarns to protrude upwardly above the surface of the fabric and cutting

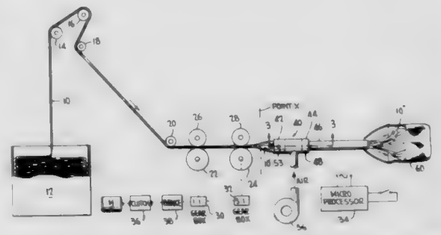


the tubular woven fabric in the fill direction to the desired width.

5,060,351
PROCESS AND APPARATUS FOR BLOWING CONTINUOUS FILAMENT TOW

Robert L. Street, Rock Hill, S.C., assignor to WM. T. Burnett & Co., Inc., Baltimore, Md.

Filed Jun. 4, 1990, Ser. No. 532,746
Int. Cl.[5] D01D *11/02*
U.S. Cl. 28—283 **11 Claims**



1. A machine system for blooming continuous filament tow comprising means for partially deregistering continuous filament tow; means for creating a turbulent air flow channeled to draw said partially deregistered tow from said partial deregistering means and blooming said tow to maximize blooming for providing bulk to said tow; and means for collecting said bloomed tow at maximum bloom without restrainment on said tow.

5,060,352
MANUFACTURE OF EXPANDED SHEET METAL ARTICLES

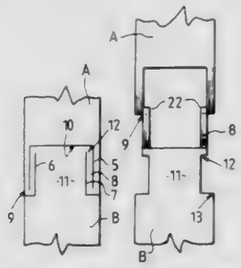
Victor G. Barker, Whinfell, Black Range Road, Romsey, Victoria, 3434, Australia

Continuation-in-part of Ser. No. 407,902, Sep. 15, 1989, abandoned. This application Jul. 18, 1990, Ser. No. 555,191
Claims priority, application Australia, Sep. 29, 1988, PJ0672
Int. Cl.[5] B21D *31/04*
U.S. Cl. 29—6.1 **8 Claims**

1. A method of making an expanded sheet metal workpiece comprising the steps of:
(a) slitting an area of a non-functional zone of said workpiece, thereby forming slits to render said non-functional zone extendable, said slits defining a plurality of interconnected tongues, each of said tongues extending in a longitudinal direction of said non-functional zone and in a direction at an angle to said longitudinal direction, each of said tongues having a root line, a major portion of said slits extending linearly with some of said slits extending in the longitudinal direction and some of said slits extending at an angle to said longitudinal direction, at least some of the

longitudinally and angularly extending slits being interconnected with each other;

(b) subsequently extending said non-functional zone in said



longitudinal direction by expansion of the non-functional zone by at least 100%, said expansion causing folding of said tongues about said root line, thereby producing said expanded sheet metal workpiece.

5,060,353

CONTROL DEVICE FOR SETTING TWO OR MORE TOOL UNITS IN A MACHINE, ESPECIALLY A VENETIAN BLIND PRODUCTION MACHINE

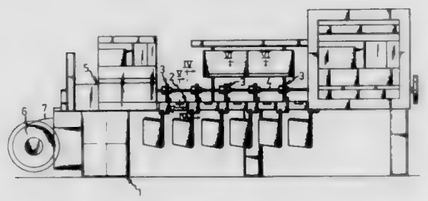
Berndt R. Nilsson, Adolf Fredriksgatan 6, S-217 74 Malmö, Sweden

Continuation of Ser. No. 315,799, Feb. 27, 1989, abandoned. This application Feb. 21, 1990, Ser. No. 483,313

Claims priority, application Sweden, Feb. 29, 1988, 8800704

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—24.5 **15 Claims**



1. In a machine having a plurality of tool units arranged in succession along the length of a machine bed, a control device for proportionally adjusting the positions of the tool units along the machine bed length, said control device comprising:

a plurality of tool unit displacement mechanisms arranged in succession along the machine bed length, each displacement mechanism including a gear unit and a corresponding setting screw, each gear unit having means responsive to rotation of the corresponding setting screw for displacing that gear unit along the machine bed length and being connected to an associated tool unit for displacement of that tool unit therewith along the machine bed length, the gear unit of each displacement mechanism prior to the last in succession having means for transmitting rotation of the corresponding setting screw to the setting screw of the next displacement mechanism in succession, said rotation responsive means and said rotation transmitting means being constructed such that the gear units are proportionally displaced along the machine bed length in response to rotation of the setting screws.

5,060,354

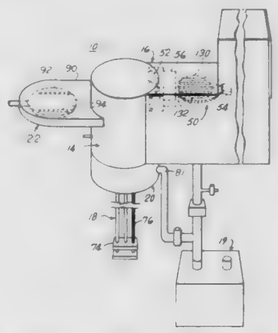
HEATED PLATE RAPID THERMAL PROCESSOR

George Chizinsky, 143 West St., Beverly Farms, Mass. 01915

Filed Jul. 2, 1990, Ser. No. 547,805

Int. Cl.[5] C23C *16/00, 16/46*

U.S. Cl. 29—25.02 **5 Claims**



1. A rapid thermal processor for heat processing and cooling of semiconductor wafer material, comprising:

an elongated process chamber defined by a base, side walls and an upper wall;

a heater plate disposed within said process chamber for delivering heat to and establishing the temperature of the wafer within said process chamber;

means for advancing and withdrawing a wafer with respect to said heater plate; and

cooling means disposed within said process chamber to facilitate rapid temperature drop within said wafer;

and wherein said upper wall of said process chamber has an inner surface with a radiation absorbent material disposed thereon.

5,060,355

MACHINE TOOL WITH A HIGH-PRESSURE AND A LOW-PRESSURE HYDRAULIC NETWORK

Helmut F. Link, Aichwald, Fed. Rep. of Germany, assignor to Index-Werke Komm. -Ges. Hahn & Tessky, Fed. Rep. of Germany

Filed Oct. 24, 1989, Ser. No. 426,312

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836601

Int. Cl.[5] B23B *3/16*

U.S. Cl. 29—42 **18 Claims**

1. A machine tool comprising:

a hydraulic drive for operation in a working motion with a demand of hydraulic medium below a preselectable maximum flow or in a rapid motion with a demand of hydraulic medium above said preselectable maximum flow;

high pressure network means for operating said hydraulic drive in said working motion;

a high pressure pump coupled to supply said high pressure network;

low pressure network means for operating said hydraulic drive in said rapid motion;

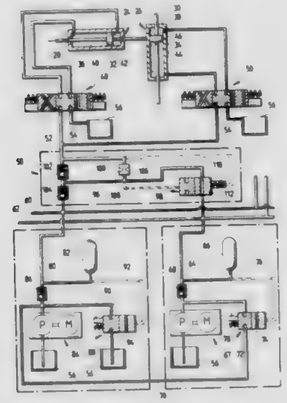
a low pressure pump coupled to supply said low pressure network;

flow limiting means coupled to said high pressure network;

a supply pipe coupled between said flow limiting means and said hydraulic drive;

flow detecting means arranged within said supply pipe for detecting the flow of hydraulic medium through said supply pipe;

said flow limiting means being responsive to said flow detecting means for limiting the flow of a hydraulic medium from the high pressure network into said supply pipe to said preselectable maximum flow to create a pressure drop in said supply pipe during rapid motion of said drive and to establish high pressure in said supply pipe to a substantial degree during said working motion of said drive; and



check valve means, coupled between said low pressure network and said supply pipe for connecting said low pressure network to said supply pipe by opening in response to said flow limitation caused by said flow limiting means during rapid motion of said drive.

5,060,356

COVERING PART FOR UTILIZING ELEMENTS SUCH AS CLOTHING BUTTONS

Manfred V. Szedzinski, Burghaldenstrasse 8, D-7140 Ludwigsburg, Fed. Rep. of Germany

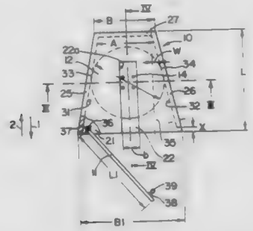
PCT No. PCT/EP88/00317, § 371 Date Apr. 13, 1990, § 102(e) Date Apr. 13, 1990, PCT Pub. No. WO89/03645, PCT Pub. Date May 5, 1989

PCT Filed Apr. 14, 1988, Ser. No. 474,006

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1987, 3735867

Int. Cl.[5] A44B *1/14*

U.S. Cl. 24—113 R **31 Claims**



1. An ornamental cover for an operating element such as clothing button which is connected to a fabric material by holding means which comprises: a cover with a receiving portion for the operating element;

wherein the receiving portion has at least two points facing each other to each define a clamping surface that engages with side edges of the operating element; and

wherein a distance between the at least two clamping surfaces facing each other decreases at least partially along a mounting direction of the cover and the operating element.

5,060,357

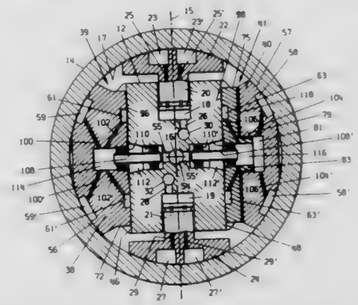
SELF-LOADING CONTROLLED DEFLECTION ROLL

Arnold J. Roerig, Beloit, and Dale A. Brown, Milton, both of Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Jun. 21, 1990, Ser. No. 541,678

Int. Cl.[5] B21B *31/32*

U.S. Cl. 29—113.2 **12 Claims**



1. A self-loading controlled deflection roll for use in engaging another roll, along a nip line of contact therewith, comprising, in combination:

a stationary roll shaft having a longitudinal axis extending along a nip plane, said shaft including guide surfaces on two sides thereof on either side of the nip plane;

a roll shell, having inner and outer cylindrical surfaces, disposed about the shaft and defining, with the shaft, a space between the shaft and the inner surface of the shell;

support shoe means mounted on the shaft and disposed in the space to supportingly engage the inner surface of the shell and move the shell translationally relative to the shaft in the nip plane through the longitudinal axis and nip into, and out of, nipping engagement with the opposing support;

guide shoe means for use in conjunction with the guide surfaces on both sides of the roll shaft, each guide shoe means having a support surface and a stabilizing surface with the support surface positioned for sliding movement on a guide surface and the stabilizing surface positioned for sliding engagement with the inner surface of the roll shell;

at least one of said guide shoe means including a compensating means for permitting relative reciprocal movement between its corresponding support surface and stabilizing surface;

hydraulic means for maintaining fluid communication between a source of pressurized hydraulic fluid and the guide shoe means to actuate the guide shoe means such that substantially equal stabilizing force is maintained at each of the interfaces between the stabilizing surfaces and inner surface of the roll shell relative to the roll shaft.

5,060,358

APPARATUS AND METHOD OF INSTALLING A GASKET IN A CHANNEL MEMBER

Adam J. Haas, and Glenn E. Crabtree, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 10, 1989, Ser. No. 419,384

Int. Cl.[5] B23P *19/02*

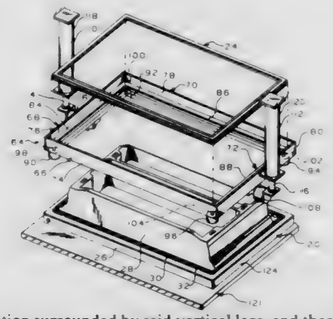
U.S. Cl. 29—235 **6 Claims**

1. Apparatus for installing a stretchable gasket having a rectangular periphery and including integral magnetic means, in a channel member having a mating rectagular periphery and secured to a refrigerator door having a rectagular outer periphery with the channel member positioned adjacent the outer periphery of the door, comprising:

a rectangular shaped frame having an elongated side rail

extending along each edge thereof; each of said rails having a length extending along the corresponding edge of said frame and, as viewed in lateral cross-section, having a vertical leg and a horizontal leg joined together along the length; said vertical legs forming an outer perimeter of said frame slightly greater than the outer periphery of the door, magnetic metal applying integral with said horizontal legs and arrayed in a rectangle corresponding to the rectangular shape of the gasket;

means effective to position said frame in an upwardly facing position, in which a gasket may be placed on said horizontal legs so that said magnetic metal elements thereafter releasably secure the gasket to said horizontal legs in a



position surrounded by said vertical legs, and thereafter to pivot said frame to a downwardly facing position;

means actuated when said frame is in its downwardly facing position to move said frame from a raised position to a lower position in which said vertical legs closely enclose the outer periphery of the door to assure alignment of the gasket with the channel shaped member; and thereafter to return said frame to its raised position; and

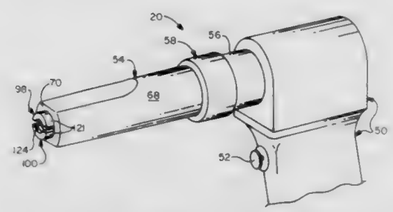
force applying means located at each corner of said frame and actuated when said frame is in its lower position to apply a force to corner portions of the gasket to force corresponding portions of the gasket into the channel member.

5,060,359

TOOL FOR SEATING A LOCKBOLT FASTENER

Jon W. Muir, The Boeing Company, P.O. Box 3707, M.S. 7E-25, Seattle, Wash. 98124

Filed Sep. 25, 1989, Ser. No. 411,917
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—244 **6 Claims**



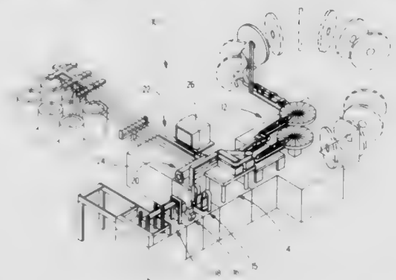
1. A tool for seating a fastener of the lockbolt type, said tool comprising: a housing with an end wall; jaws which are displaceable between open and closed positions and have cooperating means for gripping the pintail of the fastener upon said jaws being displaced to their closed positions, said jaws being rectilinearly displaceable in said housing to positions in which they protrude beyond the end wall of the housing; and means including a collet in said housing and rectilinearly displaceable relative to said jaws for sequentially: displacing the protruding jaws from their open to their closed positions to cause said jaws to grip said pintail, retract said jaws into said housing and thereby pull said fastener through the components to be joined and thus seat the fastener, and release said jaws for restoration to their open positions so that said tool can be removed from the fastener.

5,060,360

CONNECTOR LOCATING APPARATUS

Bryan J. Dornes, Elizabethtown; Marlin R. Schollenberger, Myerstown, and Joseph F. Stachura, Lebanon, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 26, 1990, Ser. No. 471,192
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—281.5 **7 Claims**



1. In a cable making machine a connector locating apparatus for positioning a connector group consisting of a plurality of connectors on a desired spacing for termination of conductors to terminals associated with said connectors, said apparatus comprising:

(a) track means for receiving and guiding said plurality of connectors in side by side and abutting relationship, and arranged to permit concurrent movement of at least two abutting, adjacent said connectors along said track;

(b) stop means for positioning adjacent thereto only one of said plurality of side by side, abutting connectors in a known position along said track means;

(c) alignment means for engaging each of said plurality of connectors and positioning them on said desired spacing, said alignment means engaging one of said connectors that is positioned closer to said stop means prior to engaging another of said connectors that is positioned further away therefrom.

5,060,361

METHOD FOR SHADING A REAR WINDOW SHELF

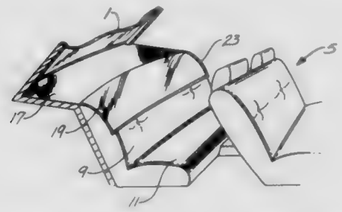
Mildred Grimes, 1628 Calle Miradero, San Dimas, Calif. 91773

Continuation of Ser. No. 425,415, Oct. 23, 1989, Pat. No. 4,997,226. This application Jun. 22, 1990, Ser. No. 542,732
Int. Cl.[5] B60R *13/02*
U.S. Cl. 29—450 **6 Claims**

3. A method for shading from the sun a rear window shelf and a rear seat back of a motor vehicle interior, the rear window shelf having sound and/or air ports, the method comprising the step of:

covering the rear window shelf and seat back by draping a flexible material over the shelf and back, the material having a partially opaque portion fitting and overlying the shelf, and for allowing sound and air transmission, yet providing shade from the sun, and the material having a

fully opaque portion for fitting and overlying the back, and for providing shade from the sun, the partially opaque



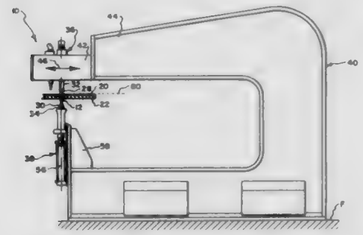
portion being positioned over the shelf, and the fully opaque portion being positioned over the back.

5,060,362

SLUG RIVETING METHOD AND APPARATUS WITH C-FRAME DEFLECTION COMPENSATION

James L. Birke, North Tonawanda; David Michalewski, Buffalo; Steven Gross, Lancaster; Robert J. Kellner, Orchard Park, and Mark J. Andrews, Niagara Falls, all of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Filed Jul. 10, 1990, Ser. No. 550,514
Int. Cl.[5] B23P *19/04;* **B27C** *3/06*
U.S. Cl. 29—525.2 **10 Claims**



1. A method for riveting two or more side-by-side workpieces together with opposed upper and lower riveting ram assemblies, the workpieces being provided with aligned apertures in which a slug rivet has been inserted; comprising the following steps:

positioning the upper riveting ram assembly against an upward movement limiting stop to establish an upper die cavity;

applying an upward force to move the lower riveting ram assembly upwardly towards the upper riveting ram assembly until both ends of the slug rivet are snugly engaged between adjacent ends of the upper and the lower riveting ram assemblies;

applying a downward force to the upper riveting ram assembly after both ends of the slug rivet are snugly engaged until the after both ends of the slug rivet are snugly engaged until the downward force of the upper riveting ram assembly equals the upward force applied to the lower riveting ram assembly, without any deformation of the rivet occuring due to the equal forces; and then;

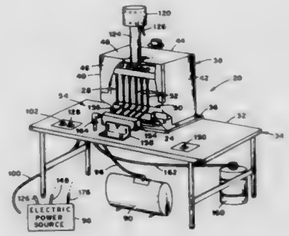
simultaneously moving the upper and lower ram assemblies towards each other to simultaneously form upset heads on both ends of the rivet, thereby compensating for deflection of a frame carrying said upper and lower ram assemblies.

5,060,363

APPARATUS AND METHOD FOR FORMING HOLES IN THERMOPLASTIC WEBBING

Bradley J. Headrick, Walland, Tenn., assignor to BJ Automations, Inc., Walland, Tenn.

Filed Sep. 12, 1990, Ser. No. 581,737
Int. Cl.[5] B23Q *11/14;* **B23B** *35/00*
U.S. Cl. 29—557 **20 Claims**



17. A method for forming a hole in webbing constructed of thermoplastic material comprising the steps of:

securing the webbing in a stationary condition for working thereon;

providing a drilling tool having an elongated shank including a leading end and at least one flute which spirals along the periphery of the shank from the leading end thereof;

heating a portion of the drilling tool shank adjacent the leading end thereof to a temperature which is at least as great as the melting temperature of the thermoplastic material of the webbing;

rotating the drilling tool about a rotation axis which corresponds with the longitudinal axis of the tool shank; and

directing the leading end of the heated drilling tool through the webbing as the tool is rotated about its rotation axis to form a hole in the webbing.

5,060,364

WEDGE INSERTER WITH INTERMEDIATE WEDGE SUPPORT

Mark A. Scherer, Fort Wayne, Ind., assignor to Advanced Machine & Tool Corporation, Fort Wayne, Ind.

Filed Nov. 1, 1990, Ser. No. 607,913
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—734 **17 Claims**

1. An apparatus for inserting coils and wedges into a dynamoelectric machine stator core, said apparatus comprising:

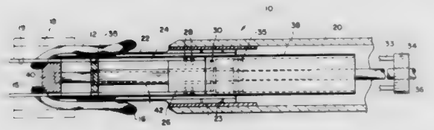
a housing;

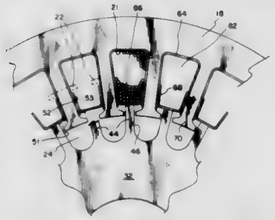
an array of circumferentially spaced, elongated wedge guides mounted on said housing for guiding wedges during insertion thereof into a stator core, said wedge guides having ends adapted to be disposed adjacent a stator core;

a plurality of elongated blades operatively disposed within said wedge guide array for axial movement relative to said wedge guides;

a stripper operatively mounted within said plurality of blades for axial movement relative to said blades, said stripper having an extended position; and

a wedge support operatively associated with said stripper and said wedge guides for supporting elongated wedges at





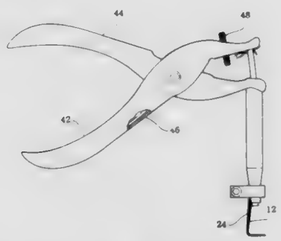
said ends of said wedge guides and said stripper has moved to said extended position.

5,060,365

TOOL FOR INSTALLATION OF CONNECTOR PIN BUSHINGS INTO A COMPUTER PATCH BOARD

Robert F. Lanzo, La Mesa, Calif., assignor to General Dynamics Corporation, Convair Division, San Diego, Calif.

Filed Oct. 10, 1990, Ser. No. 597,916
Int. Cl.[5] H05K *13/04*
U.S. Cl. 29—739 **11 Claims**



1. A tool for inserting a locking bushing into a pin connector assembly positioned within a complementary shaped orifice in a computer patch panel board, the pin connector assembly having a pin that extends vertically above the upper surface of the computer patch board, an annular relieved portion provided in a body portion of the pin assembly surrounding the pin for receiving the locking bushing and positioned mediate the upper and lower surfaces of the patch board when the pin assembly is positioned therein, which tool comprises:

a retainer means for engaging the relieved portion provided in the body portion of said pin assembly;

tubular drive means for receiving within the vertically extending pin of the pin assembly after a locking bushing has been placed upon the pin; and

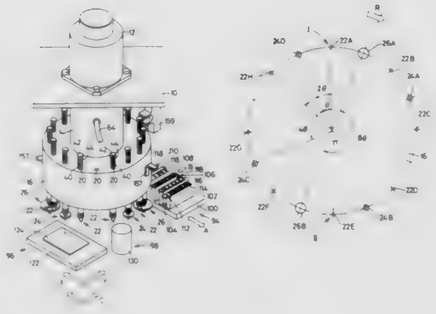
means drivingly connected to the drive means for driving the tubular drive means a predetermined distance downwardly on the pin into the annular recess to lock the pin assembly within the computer patch board in an interference fit while said retainer means engages said relieved portion.

5,060,366

ELECTRONIC COMPONENT MOUNTING APPARATUS

Koichi Asai, Nagoya; Mamoru Tsuda, Okazaki, and Yasuo Muto, Chiryu, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., Aichi, Japan

Filed Aug. 21, 1990, Ser. No. 570,617
Claims priority, application Japan, Sep. 5, 1989, 1-229603
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—739 **16 Claims**



1. An apparatus for mounting different sorts of electronic components on a substrate, comprising:

a table rotatable about an axis;

a plurality of groups of mounting heads supported by said table, each of the head groups consisting of a plurality of identical mounting heads different from the mounting heads of the other head group or groups, the mounting heads of said each head group taking an electronic component of a corresponding one of said different sorts, from an electronic component supply device, and mounting said electronic component on a substrate, said mounting heads of said each head group being supported by said table such that said mounting heads of said each head group are equiangularly distant from each other on a circle whose center is located on said axis of said table;

drive means for intermittently rotating said table about said axis, said drive means rotating said table by one of a plurality of predetermined rotation amounts for each of the intermittent rotations thereof, said plurality of rotation amounts including a rotation amount equal to the equiangular distance predetermined with respect to said mounting heads of said each head group; and

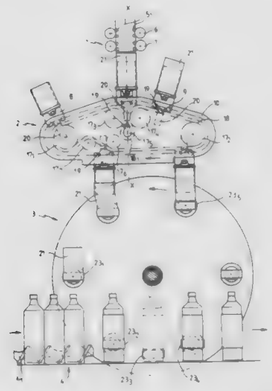
changing means for changing from said one of said rotation amounts to another of said rotation amounts.

5,060,367

MACHINE FOR PLACING LABELLING SLEEVES ON BOTTLES OR THE LIKE

Jean-Claude Vandevoorde, Montdidier, France, assignor to Protection Decoration Conditionnement Europe Sa, Montdidier, France

Filed May 10, 1990, Ser. No. 521,638
Claims priority, application France, May 12, 1989, 8906260
Int. Cl.[5] B29C *63/18;* **B65G** *17/00, 37/00*
U.S. Cl. 29—775 **6 Claims**



1. Machine for placing labelling sleeves on bottles comprising a device (1) for presenting the labelling sleeves in a discontinuous manner, a device (4) for the continuous run-through of the bottles to be labelled, an assembly (2) for transferring the sleeves from the sleeve presenting device (1) and towards the bottles on the bottle run-through device (4), the transfer assembly comprising a plurality of independent sleeve-supporting carriages (8), these carriages being moveable on an endless guide path (10), an endless flexible drive belt (18) developing, on guide means (17_1, 17_7), in the vicinity of the guide path (10), means (19, 20) connecting the flexible belt and the carriages, the flexible belt (18) having locally at least one area (18_1) developing perpendicular to the belt, in the form of a loop, in order to stop the carriages (8) momentarily and in succession in front of the device (1) presenting the sleeves in a discontinuous manner.

5,060,368

APPARATUS FOR ASSEMBLING PLASTIC CASES FOR CASSETTE TAPES

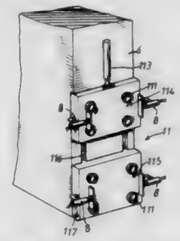
Senda Chen, No. 33, Jung Hsing Rd., Pa Te Hsiang, Tao Yuan Hsien, Taiwan

Filed Oct. 22, 1990, Ser. No. 601,309
Int. Cl.[5] B29C *6/02;* **B29F** *1/14*
U.S. Cl. 29—793 **1 Claim**

1. An apparatus for assembling plastic cases consisting of a male case member and a female case member including a robot for removing the male case member and the female case member from an injection mold, in which the male case member and the female case member are formed, an assembly head for the robot including:

an arm having a sucker assembly consisting of an upper sucker seat and a lower sucker seat, a plurality of suckers being provided on said upper and lower sucker seats, said suckers being controlled to selectively retain the male and female case members on said sucker seats or release the cases members for said sucker seats;

two parallel vertical holding arms being respectively provided adjacent to both sides of each said sucker seat; and



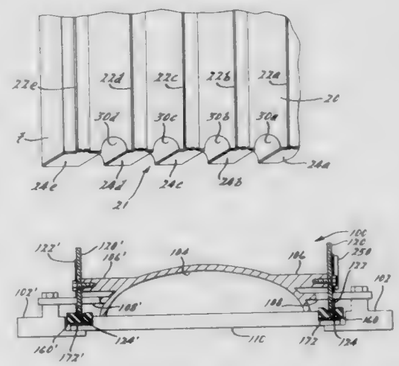
two vertical rails being formed on said arm between said upper sucker seat and said lower sucker seat, said upper sucker seat being movable along said vertical rails under the control of an actuating bar provided on said upper sucker seat, said lower sucker seat being articulated to said arm at a lower portion thereof.

5,060,369

PRINTED WIRING BOARD CONSTRUCTION

Parshuram G. Date, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 31, 1990, Ser. No. 473,247
Int. Cl.[5] C23C *26/00*
U.S. Cl. 29—830 **5 Claims**



1. A method of fabricating a printed wiring board comprising the steps of:

supplying a substrate board having a designated linear connector edge;

depositing a predetermined wiring pattern of electrically conducting layers on at least one surface of said substrate extending to said connector edge;

depositing a second electrically conducting layer of material over the thickness of said connector edge; and

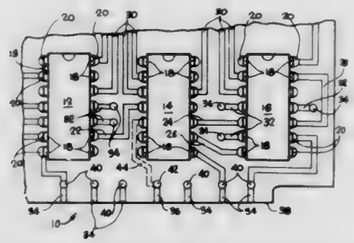
trimming portions of said second layer therefrom and thereby form edge contacts along the board thickness that are electrically isolated from each other.

5,060,370

MODIFICATION METHOD FOR ETCHED PRINTED CIRCUIT BOARDS

James W. Scales, Jr., 13160 Via Arriba Ct., Saratoga, Calif. 95070, and Walter L. Marks, 293 Spreading Oak Dr., Scotts Valley, both of Calif. 95066

Filed Oct. 15, 1990, Ser. No. 597,813
Int. Cl.[5] H05K *3/02*
U.S. Cl. 29—846 **20 Claims**



1. A method of electrically connecting first and second locations on a printed circuit board having a circuit pattern of conductive traces fabricated thereon comprising:

identifying first and second locations on a printed circuit board for electrical connection of said location,

selecting a path having at least one turn for placement of a board trace in contact with said printed circuit board from said first location to said second location,

fabricating a plurality of substantially identical, lay-flat traces in a frame means for supporting said lay-flat traces such that said lay-flat traces area each configured to follow said selected path,

removing one of said lay-flat traces from said frame means, and

laying said removed lay-flat trace along said selected path in parallel relation to said printed circuit board and bonding opposed ends of said lay-flat trace to said first and second locations to maintain said parallel relation.

5,060,371

METHOD OF MAKING PROBE CARDS

John P. Stewart; Ronald C. Seubert, and Donald B. Snow, all of King County, Wash., assignors to Applied Precision, Inc., Mercer Island, Mich.

Division of Ser. No. 254,269, Oct. 5, 1988, Pat. No. 4,918,374. This application Mar. 1, 1990, Ser. No. 487,434
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—850 **1 Claim**

1. A method of manufacturing probe cards for use in testing integrated circuits, said probe card including a plurality of probe wires terminating in respective probe points arranged in a probe point array, said method comprising:

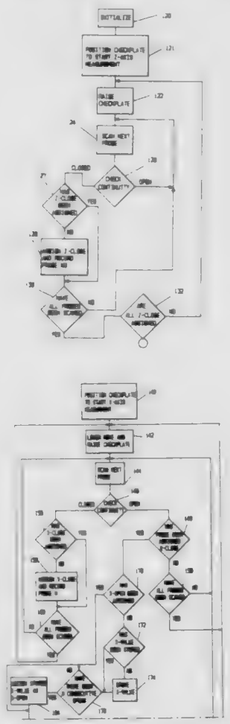
(a) providing a checkplate having a planar measurement surface with a conductivity transition border formed thereon in which the resistance between the surface of said checkplate and a measurement terminal varies between two values on opposite sides of said border, said checkplate having a known position with respect to said holder;

(b) sequentially clamping each of said probe wires in a holder;

(c) scanning said probe point across said border so that said probe point contacts said measurement surface from one side of said conductivity transition border to the other during said scan;

(d) monitoring the impedance between said probe point and said measurement terminal during said scan in order to detect a change in impedance between said probe point and said measurement terminal when said probe point reaches said conductivity transition border;

(e) determining the position of said probe card relative to said checkplate when a change in impedance occurs for said probe point checkplate when a change in impedance occurs for said probe point as said probe point reaches said conductivity transition border, thereby determining the position of said probe point relative to said probe card;



(f) attaching said probe wire to said probe card; and

(g) repeating steps (b)–(f) until all of said probe wires have been attached to said probe card.

5,060,372

CONNECTOR ASSEMBLY AND CONTACTS WITH SEVERED WEBS

Randolph E. Capp, 424 B Brandy La., Mechanicsburg, Pa. 17055, and Leroy J. Morningstar, 2 Speyer Rd., Middletown, Pa. 17057

Filed Nov. 20, 1990, Ser. No. 616,036
Int. Cl.[5] H01R *13/405, 13/41*
U.S. Cl. 29—883 **4 Claims**

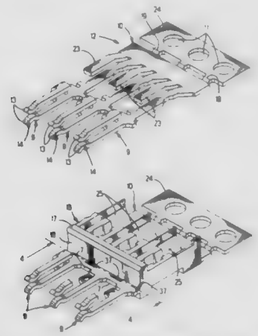
1. A method for assembling an electrical connector assembly, comprising the steps of:

applying an insulative housing block to electrical contacts connected by integral webs extending in the thickness of said contacts,

separating said contacts from one another by removing the webs and leaving fins projecting from said contacts within the thickness of respective said contacts,

connecting said contacts to wires of at least one electrical cable,

inserting said contacts and the fins into corresponding cavities of an insulative housing, and



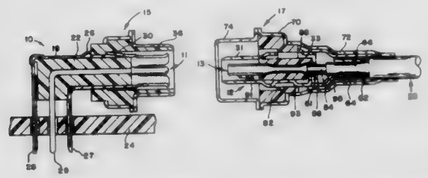
holding the contacts in stable positions by engaging interior walls of the cavities by the fins.

5,060,373

METHODS FOR MAKING COAXIAL CONNECTORS

Bernard C. Machura, Oak Brook, and Eugene J. Mysiak, Lisle, both of Ill., assignors to The Phoenix Company of Chicago, Inc., Wood Dale, Ill.

Filed Aug. 22, 1989, Ser. No. 396,991
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—858 **24 Claims**



1. A method for assembling a coaxial connector comprising the steps of:

providing a center conductor;

inserting said center conductor into a mold;

molding a dielectric member of a predetermined form around said center conductor;

stamping and forming an outer shell into a mating shape with the form of said dielectric member; and

inserting said molded dielectric member and said center conductor into said formed outer shell.

5,060,374

METHOD FOR FABRICATING A VALVE

Shane J. Findlanl, Concord, and William F. Newell, Jr., Mooresville, both of N.C., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 5, 1989, Ser. No. 361,492
Int. Cl.[5] B21D *53/00*
U.S. Cl. 29—888.44 **6 Claims**

1. A method for producing a valve seat insert comprising the steps of:

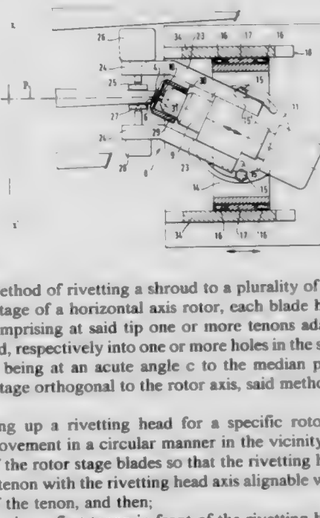
a) forming a first ring shaped member having a groove in at least one surface;

b) positioning powdered material in said groove;

c) mating a second ring shaped member with said first ring shaped member;

d) attaching said first and second ring shaped members together to form a structure having an outer region surrounding said powdered material;

e) subjecting said structure to a bonding cycle to produce a composite structure by bonding said first and second ring



shaped members together to form an outer region, to fuse said powder to form an inner region of hard material, and to bond said inner and outer regions together; and

f) removing selected portion of said composite structure to produce said valve seat insert.

5,060,375

METHOD AND DEVICE FOR RIVETING A SHROUD TO THE TIPS OF ROTOR BLADES

Marcel Demichel, Sarcelles, France, assignor to GEC Alsthom SA, Paris, France

Filed Apr. 20, 1990, Ser. No. 512,240
Claims priority, application France, Apr. 21, 1989, 8905354
Int. Cl.[5] B21S *15/02*
U.S. Cl. 29—889.21 **11 Claims**

1. Method of rivetting a shroud to a plurality of blades of a rotor stage of a horizontal axis rotor, each blade having a tip and comprising at said tip one or more tenons adapted to be inserted, respectively into one or more holes in the shroud, said tenons being at an acute angle c to the median plane of the rotor stage orthogonal to the rotor axis, said method comprising:

setting up a rivetting head for a specific rotor stage for movement in a circular manner in the vicinity of the tips of the rotor stage blades so that the rivetting head is over a tenon with the rivetting head axis alignable with the axis of the tenon, and then;

centering a first tenon in front of the rivetting head,

clamping the head against vertical and horizontal movement,

clamping together a group of blades including the blade to be shrouded by the rivetting head,

clamping the shroud against the tip of the blade,

rivetting the tenon,

unclamping the shroud and the group of blades,

unclamping the rivetting head to allow vertical and horizontal movement thereof,

rotating the rivetting head to bring a second tenon in front of the rivetting head, and

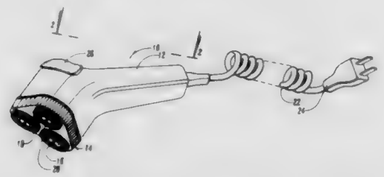
repeating the rivetting operations, and so on until all of the tenons of said shroud have been treated in this manner.

5,060,376

ELECTRIC SHAVER CLEANING MEANS AND METHOD

Gerald W. Berry, R.R. #1, Box 125, Maynard, Iowa 50655

Filed Feb. 22, 1991, Ser. No. 660,297
Int. Cl.[5] B26B *19/44*
U.S. Cl. 30—41 16 Claims



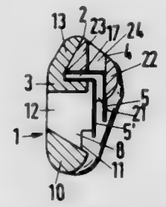
1. A means for facilitating cleaning of an electric shaver, where the electric shaver includes a body portion and a shaving head portion, the improvements comprising: a pad means attached to the body portion of the electric shaver generally opposite the shaving head of the electric shaver.

5,060,377

SHAVER HEAD WITH FLOW PASSAGES

Wolfgang Althaus, Wuppertal, and Michael Schwarz, Herne, both of Fed. Rep. of Germany, assignors to Wilkinson Sword GmbH, Solingen, Fed. Rep. of Germany

Filed Aug. 15, 1990, Ser. No. 567,819
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1989, 8909759[U]
Int. Cl.[5] B26B *21/00*
U.S. Cl. 30—50 7 Claims



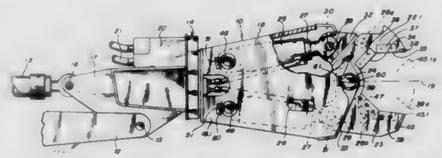
1. A shaver head for a wet shaver, comprising:
at least one razor blade having a cutting edge;
a plastic housing for supporting said blade, the housing including a front guide strip and a front portion from which the cutting edge of the blade extends, a rear portion, an underside portion, an open region located in the front portion of the plastic housing near the cutting edge of the blade, a strip having two legs arranged in an essentially L-shaped cross-sectional profile, the blade being fastened parallel to one of the legs, the other leg having short strip portions connected by web portions and separated by openings, and perforations located both in the underside portion and the rear portion of the plastic housing, the perforations being connected to the open region of the plastic housing, and the openings being aligned with the perforations formed in the rear portion of the plastic housing.

5,060,378

DEMOLITION TOOL FOR A HYDRAULIC EXCAVATOR

Roy E. LaBounty, and Kenneth R. LaBounty, both of Two Harbors, Minn., assignors to LaBounty Manufacturing, Inc., Two Harbors, Minn.

Filed Dec. 15, 1989, Ser. No. 451,377
Int. Cl.[5] B25B *1/22;* B23D *17/00;* B26D *1/00*
U.S. Cl. 30—134 19 Claims



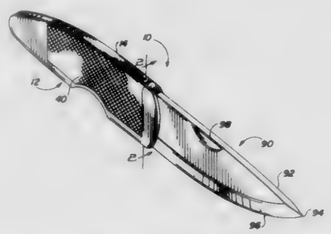
1. A heavy-duty demolition tool for attachment to the boom structure and hydraulic system of a hydraulic excavator, comprising
a frame means mountable on the boom structure,
a pair of demolition jaws having pivot means connecting the jaws to each other and to the frame means, the jaws being swingable through predeteimined operational arcs between open and closed positions, and
a pair of juxtaposed hydraulic cylinders mounted on the frame means and connectable to the hydraulic system of the excavator, each of the cylinders having a pivotal connection to a respective jaw, and the hydraulic cylinders being extendible and retractable to move the pivotal connections through such operational arcs which are nearly bisected by radii which are normal to the directions of extension and retraction of the cylinders.

5,060,379

FOLDING KNIFE APPARATUS

Vaughn O. Neely, 666 Grand Ave., Mancos, Colo. 81328

Continuation-in-part of Ser. No. 445,425, Dec. 4, 1989, abandoned. This application Oct. 29, 1990, Ser. No. 604,126
Int. Cl.[5] B26B *1/00, 1/06, 1/04, 1/08*
U.S. Cl. 30—161 22 Claims



1. Folding knife apparatus, comprising, in combination:
handle and case means for supporting a blade when the knife apparatus is in an open, use position and for receiving the blade when the knife apparatus is in a closed, storage position, including wedging means for providing wedging action for locking the blade in the open and closed positions;
blade means pivotally secured to the handle and case means, including
a blade,
a tang extending outwardly from the blade and having a top surface adapted to contact the wedging means of the handle and case means for defining the open position of the knife apparatus,
a bottom surface on the tang adapted to contact the wedging means of the handle and case means for defining the closed position of the knife apparatus, and

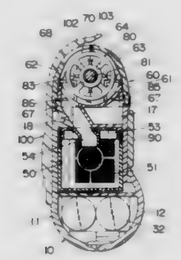
slot means in the tang;
a pin secured to the handle and case means and extending through the slot means in the tang; and
spring means disposed in the slot means and against the pin for providing a bias to urge the top surface of the tang against the wedging means to lock the knife apparatus in the open position and for providing a bias to urge the blade means to the closed position as the blade is pivoted from its open position to its closed position.

5,060,380

HAIR CUTTER WITH COMB

Shoji Fujikawa, Ishibe, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 11, 1991, Ser. No. 653,132
Claims priority, application Japan, Feb. 15, 1990, 2-34242
Int. Cl.[5] B26B *19/00*
U.S. Cl. 30—200 3 Claims



1. A hair cutter comprising:
a housing with a cutter head comprising an outer shear plate having a number of perforations and an inner cutter assembly; said inner cutter assembly having a rotary shaft and a plurality of radially oriented cutter blades supported thereon in a circumferentially spaced relation about an axis of said rotary shaft, said outer shear plate being arcuately curved in transverse cross section around a portion of a circle centered on said rotary shaft axis so as to have its inside surface in hair shearing engagement with said cutter blades,
drive means mounted in said housing for rotating said inner cutter assembly in such a manner that said cutter blades sweep the inside surface of said outer shear plate to shear hairs introduced through said perforations; and
a comb member attached to said housing and having a number of comb teeth spaced along the axis of said rotary shaft and extending over an perforated area of said outer shear plate for smoothing the hairs into said perforations, said comb teeth being configured to have tapered ends.

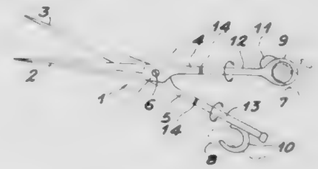
5,060,381

PAIR OF SCISSORS, IN PARTICULAR FOR USE IN THE CUTTING OF HAIR

Jean-Jacques Taberlet, Chez Désiré Route de Taninges, 74269 Les Gets, France

Filed Aug. 13, 1990, Ser. No. 566,545
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—232 16 Claims

1. Pair of scissors, in particular for the cutting of hair, comprising
two articulated elements being disposed for movement about a common spindle (6),
each of the elements having respective cutting blades (2, 3) extending beyond the spindle in one direction and each of the elements having respective limbs (4, 5) extending beyond the spindle in an other direction.
two annular grips (9, 10), one being disposed proximate each distal end of the limbs for respectively enabling the limbs to be controlled by an end phalange of a user's fingers (7, 8), wherein the one of the annular grips is adapted to receive the end phalange of ring finger (7) and an other of the annular grips is adapted to receive the end phalange of thumb (8) of the user,
at least one of the limbs (4) having mounted in the one of the two annular grips (9), a tubularly configured transverse socket (11) and being closed at one end and open at an other,
each of the limbs (4, 5) having an orientable disposed connection (14) intermediately positioned between the limbs and each of the adjacently disposed annular grips (9, 10) to provide inclination of plane (16, 17) of the annular grips with respect to cutting plane (15) of the blades (2, 3) and the socket being externally threaded (21) to cooperate with a threaded surface (22) of a same pitch made in the one of the two annular grips so as to provide adjustment of relative position of the annular grips with respect to the socket, which receives and immobilizes the end phalange of the ring finger or of the thumb of the user.

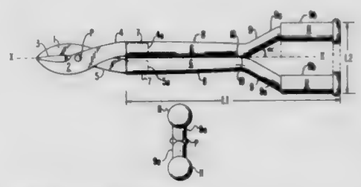


5,060,382

HIGH LEVERAGE SHEARS

Gary L. Wilhelm, Statesboro, and Mel C. Mock, Rocky Ford, both of Ga., assignors to Cooper Industries, Houston, Tex.

Filed Dec. 20, 1989, Ser. No. 453,840
Int. Cl.[5] B26B *13/12*
U.S. Cl. 30—244 13 Claims



1. A cutting tool comprising:
a pair of jaws, each jaw having a first end and a second end;
a pin that pivotally couples said jaws such that said first ends engage with one another when said jaws are in closed positoin; and
a pair of extensions, each extension consisting of a single hollow tubular member having first and second portins and a bend therebetween, said bend defining an angle with respect to the first portion of the hollow tubular member of about 30 to 50 degrees, said second ends of the jaws being fixedly secured only to said extensions, wherein said extensions extend from the jaws and converge and contact one another along said first portions when the jaws are in said closed position.

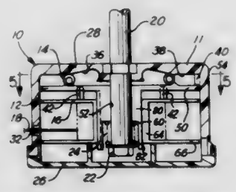
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5,060,383
VEGETATION CUTTER
Richard H. Ratkiewich, 90 Clark Hill Rd., Prospect, Conn. 06712
Filed Aug. 6, 1990, Ser. No. 563,511
Int. Cl.[5] B26B *7/00*
U.S. Cl. 30—276 **21 Claims**



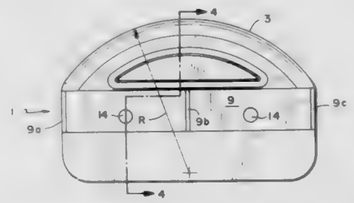
1. A vegetation cutter comprising:
(a) a shaft with a power source at one end operatively connected at the other end to a rotating cutting device defining a planar cutting circle disposed about an axis at an obtuse angle with respect to a major portion of the shaft,
(b) a guard and guide having an elongate arcuate shape, the arc centered on the axis with its radius substantially the same as that of the planar cutting circle and normally disposed in front of the planar cutting circle, the guard and guide having sufficient length in its normal position to operatively support and guide the cutting device when the cutter is turned and operated with the planar cutting circle in vertical disposition, and
(c) mounting means secured to both the shaft and the guard and guide.

5,060,384
AUTOMATIC HEAD FOR A LINE TRIMMER
Robert G. Everts, Chandler, Ariz., assignor to Inertia Dynamics Corporation, Chandler, Ariz.
Filed Dec. 6, 1990, Ser. No. 623,241
Int. Cl.[5] B26B *7/00*
U.S. Cl. 30—276 **15 Claims**



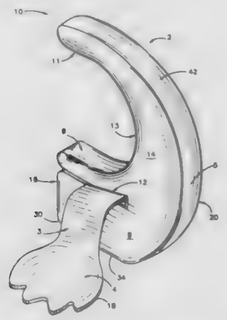
1. An automatic head for a line trimmer used to cut vegetation comprising:
a housing having a top including a central opening in coaxial alignment relative to an axis of rotation of the head and a side wall depending from said top and having a line feed opening formed in said side wall;
a rotor having a central opening and including a cylindrical portion having a key and including a circular disk portion disposed at an upper end of said cylindrical portion, said cylindrical portion and disk portion being oriented in axial alignment with said axis of rotation;
a radially expansible annular member retained between said rotor and said housing;
a spool having a central opening therethrough, said central opening of said spool being adapted to receive said cylindrical portion of said rotor and having a keyway formed therein for receiving said key of said cylindrical portion of said rotor;
a supply of line wound around said spool with a length of said line extending through said line feed opening;
a shaft having a lower end and extending along the axis of rotation and through said central openings in said housing, said rotor and said spool;
retainer means secured to said lower end of said shaft for holding said rotor and said housing on said shaft;
spring means disposed on said shaft between said retainer means and said rotor for biasing said rotor into engagement with said housing;
base cover means secured to said housing for covering the lower end of said housing and for supporting said spool;
said spool being alternately engaged and disengaged for rotation with said housing to automatically feed line from said spool through said housing, said spool being engaged and disengaged by axial displacement of said rotor, said rotor being axially displaced relative to the top of said housing by the expansion and contraction of said annular member wherein an increase in the rotational speed of said shaft causes said annular member to expand shifting radially outwardly across an inclined surface contacted by said annular member on one side and wherein reduction in the rotational speed of said shaft causes said annular member to contract radially inwardly across said inclined surface; and
step means disposed between said housing and said rotor for allowing stepwise rotational advancement of the rotor and spool relative to the housing as the annular member is expanded and contracted.

5,060,385
HAND-HELD RAZOR EDGE TRIMMER FOR FRAMES AND THE LIKE
Harold Newsom, 2023 Franklin St., Columbus, Ind. 47201
Filed Feb. 27, 1991, Ser. No. 661,200
Int. Cl.[5] B26B *29/00*
U.S. Cl. 30—287 **7 Claims**



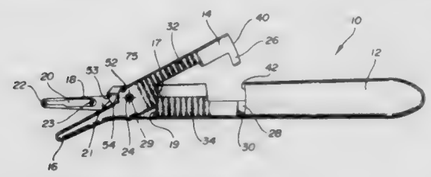
1. A hand-held razor edge trimmer that can be comfortably held in either hand of a user to safely and easily trim material, including dust cover paper applied over a rear surface of a frame, said trimmer comprising a palm-sized body having a pair of step-like razor blade mounting surfaces and an adjacent pair of step-like guiding surfaces formed thereon; and means for clamping a pair of razor blades onto one of the mounting surfaces so as to cause a cutting edge of the blade to overhang the step-like guiding surfaces; wherein the body of the trimmer has a rear edge that is arcuately contoured to fit comfortably against the palm of either of the user's hands; and wherein a forward edge portion of the body of the trimmer has a rear side that is arcuately contoured at lateral edges thereof to provide a safe and comfortable rest for an index finger of either of the user's hands.

5,060,386
CURVED HANDLE EATING UTENSIL FOR THE PHYSICALLY DISABLED
Suzanne P. Mars, 23649 Duffield Rd., Shaker Heights, Ohio 44122
Filed Apr. 16, 1990, Ser. No. 509,559
Int. Cl.[5] A47J *43/28, 45/00, 43/00*
U.S. Cl. 30—327 **12 Claims**



1. An eating utensil for used by persons with limited wrist movement, comprising:
a base for resting upon a flat horizontal surface, the base being in the shape of a geometric solid, the base including a front surface, a back surface, a top surface, a bottom surface, and opposed side surfaces;
a curved handle for grasping the utensil, said handle extending upwardly from the base from a location adjacent the intersection of the front surface and the top surface, the handle extending generally vertically and rearwardly so as to overlie the top surface, the handle and the top surface being spaced a distance adequate to permit the fingers of a user's hand to be fitted therebetween;
a utensil head, the utensil head projecting laterally from the base at a vertical location in the region of the bottom surface, the utensil head lying in a generally horizontal plane when the base is resting on the horizontal surface; and
a shaft having a first end and a second end, the first end being connected to the base and the second end being connected to the utensil head.

5,060,387
BLADE HANDLE
Thomas H. Doucette, West Milford, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Nov. 13, 1990, Ser. No. 612,356
Int. Cl.[5] B26B *1/00*
U.S. Cl. 30—330 **5 Claims**



1. A blade holder, comprising:
(a) an elongated flat fixed body portion;
(b) a blade receiving area at one end of said elongated fixed body portion;
(c) a handle gripping area at the other end of said fixed body portion opposite said blade receiving area;
(d) a pivot pin on said flat fixed body intermediate the ends thereof adjacent said blade receiving area;
(e) the axis of said pivot pin being perpendicular to said flat fixed body portion;
(f) an integral elongated boss on the surface of said blade receiving area for receiving the tang of a blade, said boss being the same shape as the opening in the tang of a blade to be received thereover;
(g) an abutment extending from each end of said integral elongated boss;
(h) an elongated flat rotatable body portion having a pivot axis intermediate the ends thereof
(i) said rotatable body portion rotatable around said pivot axis on said pivot pin from an open position for receiving a blade in said blade receiving area to a closed position locking a blade tank in said blade receiving area;
(j) said abutments for engaging the cooperating opposed surfaces of said elongated rotatable body portion; and
(k) cooperating locking means on said flat fixed body portion and said rotatable body portion for locking the tang of a blade in said blade receiving area.

5,060,388
MEASURING STRIP
Pierre H. Nys, Berchem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium
Filed Dec. 17, 1990, Ser. No. 627,832
Claims priority, application European Pat. Off., Jan. 19, 1990, 90200144.5
Int. Cl.[5] G01B *3/00*
U.S. Cl. 33—1 BB **9 Claims**

¶m	F_1	F_2
4	F_{11}	F_{21}
6	F_{12}	F_{22}
9	F_{13}	F_{23}
12	F_{14}	F_{24}
15	F_{15}	F_{25}
20	F_{16}	F_{26}
25	F_{17}	F_{27}
30	F_{18}	F_{28}
40	F_{19}	F_{29}

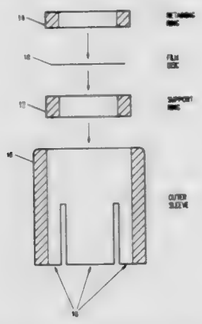
1. A measuring strip for evaluating the quality of photographic half tone images which contains on a transparent base a test field (F) divided into at least two sub-fields, wherein (1) a first sub-field (F_1) contains a plurality of individual areas each containing a group of opaque dots, wherein each individual area has dots of substantially equal size uniformly distributed in a transparent background area, and wherein (2) a second sub-field (F_2) contains a plurality of individual areas each containing a group of transparent dots, wherein each individual area has transparent dots of substantially equal size uniformly distributed in an opaque background area, and wherein in each individual area containing said opaque or transparent dots having substantially the same dot size the dots are substantially equal distance from each other, measured center-to-center, the dots in the individual areas of each sub-field being graduated in size so that an area containing dots of smaller size contains more dots than an area containing dots of a larger size and wherein the light transmission of said first and second sub-field expressed as a percentage is different by at least 10%, and wherein said individual areas in their sub-field have the same transmission.

5,060,389

SEMICONDUCTOR DEVICE INSPECTION TEMPLATE

Thomas J. Frederick, 7125 E. Port Au Prince Pl., Tucson, Ariz. 85710

Filed Jan. 18, 1989, Ser. No. 298,383
Int. Cl.[5] G01C 9/10
U.S. Cl. 33—1 BB 9 Claims



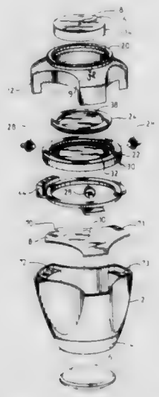
1. A template for placement in the optical path of an optical instrument used for inspecting a semiconductor device, the template comprising:
- a transparent film patterned with selected die or package features extracted from a data base storing information related to the semiconductor device to be inspected;
- a film support means supporting said film; and
- an outer sleeve surrounding said film support means.

5,060,390

NAVIGATION AID

David C. Hill, Oakville, Canada, assignor to Navitrak Corp., Oakville, Canada

Filed Jan. 29, 1990, Ser. No. 471,943
Int. Cl.[5] G01C 17/02, 21/00
U.S. Cl. 33—1 SD 11 Claims



1. A navigation device comprising, mounted in a case parallel to and aligned with each other, said case having openings at opposite ends thereof:
- a lens across one said opening;
- a compass across the other said opening, having a body, transparent faces and a magnetic compass needle;
- a North marking on said case or on said body of said compass;
- a grid wheel between said lens and said compass, having a transparent or translucent central area inscribed with at least one first directional arrow, at a distance from said lens approximating the focal length of the lens;
- positioned between said grid wheel and said compass, and geared to said grid wheel for counter-rotation therewith, a direction wheel having a transparent or translucent central area inscribed with at least one second directional arrow, such that said first and second directional arrows align with each other when pointed at said North marking and 180 degrees therefrom; and
- a transparency holder adapted to carry a map transparency with magnetic north thereon aligning with said North marking, said transparency holder being in close proximity to said grid wheel such that it is also at a distance from the lens approximating the focal length of the lens;

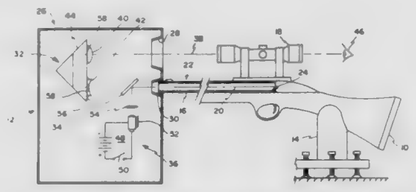
whereby a bearing may be taken by examining an installed map transparency through said lens, rotating said grid wheel and direction wheel to align said at least one first directional arrow with the desired direction of travel on the map, then aligning said compass needle with said North marking on said case or on the body of the compass, said at least one second directional arrow then indicating the bearing to be taken.

5,060,391

BORESIGHT CORRELATOR

Jeffrey A. Cameron, 2808 Montrose Dr., SW., Decatur, Ala. 35601, and Deborah L. Fraley, 119 Steele Dr., Madison, Ala. 35758

Filed Feb. 27, 1991, Ser. No. 661,882
Int. Cl.[5] F41G 1/54; G01B 11/26
U.S. Cl. 33—234 22 Claims



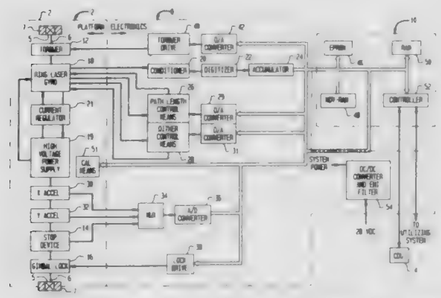
1. A device for boresighting a firearm having a barrel including a bore, a muzzle end, a chamber end, and sight means carried thereon, said boresighting device comprising:
- a source of illumination; and
- an optical assembly disposed in spaced relation with said muzzle of said firearm and said source of illumination, said optical assembly comprising light receiving and directing means, a beam splitter intermediate said light receiving and directing means and said source of illumination, and collimating means mounted generally adjacent to said light receiving and directing means, said beam splitter disposed for directing said illumination into said muzzle, said bore, and said chamber for incident relation therewith and for directing reflected illumination therefrom and into said light receiving and directing means, said reflected illumination containing images of said muzzle, said bore, and said chamber, said collimating means including at least one lens disposed for directing said reflected illumination from said light receiving and directing means to said sight means, said sight means disposed for adjustment to provide coincident relation between said reflected and incident illumination.

5,060,392

NORTH FINDING SYSTEM

Mark S. Grasso, Whippany, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 9, 1990, Ser. No. 549,843
Int. Cl.[5] G01C 19/38
U.S. Cl. 33—324 16 Claims



1. A north finding system of the type mounted to ground based equipment for providing a north reference for said equipment, and including platform means and control means, said north finding system comprising:
- the platform means including a case and a gimbal rotatably supported by the case for being indexed to a plurality of positions;
- means coupled to the gimbal for rotatably driving the gimbal to index said gimbal to the plurality of positions;
- means coupled to the gimbal for locking the gimbal to prevent said gimbal from being rotatably driven and for thereby strapping down the platform means, and for otherwise unlocking said gimbal;
- gyroscope means having an input axis angularly displaced from the horizontal, and coupled to the gimbal for sensing earth's rate when the gimbal is locked and the platform means is strapped down, said gyroscope means thereupon being in a gyrocompassing mode and providing gyrocompassing signals, and for sensing its own rotational displacement when the gimbal is unlocked for being indexed to the plurality of positions and for providing gyroscope rotational displacement signals;
- signal providing means coupled to the gimbal and providing signals corresponding to the tilt of the gyroscope means and signals corresponding to the motion of the ground based equipment when the gyroscope means is in the gyrocompassing mode; and
- the control means including means connected to the gyroscope means and to the signal providing means and responsive to the signals therefrom for compensating for predetermined gyroscope means tilt and ground based equipment base motion parameters, and including means for controlling the means for rotatably driving the gimbal and means for controlling the gimbal locking and unlocking means.

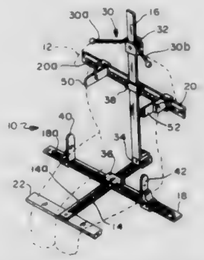
5,060,393

APPARATUS FOR TAKING BODY MEASUREMENTS

Michael W. Silverman, Highland Park; Michael Heinrich, Chicago, both of Ill., and C. Kerry Jones, South Bend, Ind., assignors to Pin Dot Products, Niles, Ill.

Filed Mar. 11, 1991, Ser. No. 667,670
Int. Cl.[5] A61B 5/10
U.S. Cl. 33—512 23 Claims

1. Apparatus for measuring the dimensions of a person in a seated position, said apparatus comprising:
- first measuring means for receiving a person seated thereon and for measuring the person's knee-to-buttocks dimension;
- second measuring means coupled to said first measuring means and moveable along the length thereof, said second measuring means adapted for positioning adjacent to the back of the seated person for measuring the person's shoulder-to-buttocks dimension;



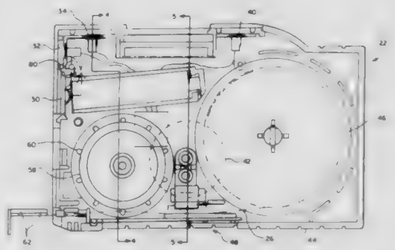
- third measuring means coupled to said first measuring means and moveable along the length thereof and adapted to engage opposed lateral hip portions of the person for measuring the width of the person's hips; and
- fourth measuring means coupled to said second measuring means and moveable along the length thereof for measuring the width of the person's torso.

5,060,394

MEASURING APPARATUS WITH READOUT DISPLAY

Larry A. Lincoln, Milpitas; Nicholas Vrionis; Donald E. Pezzolo, both of Los Altos; James W. Pfeiffer, Santa Clara; Robert A. Wilk, Sierra Village, and John D. Scheff, Milpitas, all of Calif., assignors to Homestar International Inc., Pleasanton, Calif.

Filed Apr. 20, 1989, Ser. No. 341,030
Int. Cl.[5] G01B 3/10
U.S. Cl. 33—763 28 Claims



1. An apparatus for making a measurement including:
- a housing;
- a flexible tape;
- means located in said housing for allowing said tape to be retracted into and extended from said housing;
- a capstan;
- means for rotatingly securing said capstan in said housing;
- means for operably engaging said tape with said capstan to cause said capstan to rotate with the retraction of the tape into said housing and the extension of said tape from said housing;
- encoder means for determining movement of said tape;
- said encoder means including a plurality of coded electrical conductors which include an absolute scale and a relative scale, at least some of the coded electrical conductors having different codes;
- said encoder means including electrical switch means for

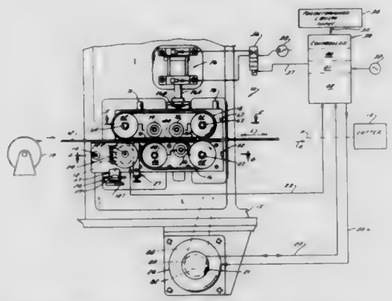
contacting said coded electrical conductors and for causing a signal to be created;
means for operably coupling said encoder means to said capstan;
processor means connected to said encoder means for determining a measurement dependant on the signal from the encoder means; and
means for displaying the measurement.

5,060,395

CLOSED LOOP WIRE FEEDING AND MEASURING APPARATUS AND METHOD OF OPERATING SAME

Thierry Pepin, Champigny, France, assignor to Artos Engineering Company, New Berlin, Wis.

Filed Feb. 15, 1990, Ser. No. 480,770
Int. Cl.[5] G01B *5/04*
U.S. Cl. 33—735 **13 Claims**



1. Wire feeding and measuring apparatus comprising:
first means for axially feeding a wire strand (**12**);
and second means for operating said first means to feed said wire strand (**12**) forward,
for measuring the actual length of the wire strand (**12**) fed forward,
for stopping said first means and ascertaining whether the actual length fed forward corresponds to a predetermined length,
for further operating said first means to feed said wire strand (**12**) forward or in reverse in the event said actual length is less or more, respectively, than said predetermined length,
for measuring the actual length of wire strand fed forward or in reverse during the further operation of said first means,
and for stopping said further operation of said first means when said predetermined length is achieved,
said second means comprising wire measuring means responsive to actual movement of said wire strand (**12**) in forward and reverse and including a movable component (**24**) engaged with and movable by said wire strand (**12**) as the latter moves forward or in reverse,
said second means further comprising a controller (**30**) for operating said first means and which receives a signal from said wire measuring means in response to movement of said movable component (**24**).

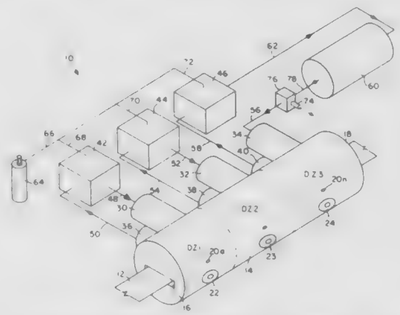
5,060,396

ZONED CYLINDRICAL DRYER

Dennis L. Hansen, DePere, Wis., assignor to W. R. Grace & Co.-Conn., Lexington, Mass.

Filed Aug. 17, 1989, Ser. No. 395,440
Int. Cl.[5] F26B *5/04*
U.S. Cl. 34—16 **14 Claims**

14. Process of drying a traveling web through a zoned dryer comprising the steps of:
a. pressurizing to a predetermined set point relative to the atmosphere a cylindrical zoned dryer with an inert gas;
b. positioning opposing air bars in each of zones of said dryer;
c. ducting air through said air bars in each of said zones; and,



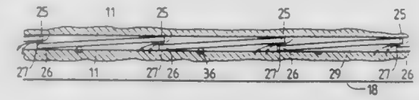
d. extracting vapors or fluids from the ducted air in each of said zones.

5,060,397

APPARATUS FOR HEAT TREATMENT OF MATERIAL, PARTICULARLY INFRA-RED RADIATION OF A CONTINUOUS PAPER WEB IN A PAPER MACHINE

Karl-Arvid Hamrin, Kungsör, Sweden, assignor to Infrarodteknik AB, Sweden

PCT No. PCT/SE88/00675, § 371 Date Jul. 5, 1990, § 102(e) Date Jul. 5, 1990, PCT Pub. No. WO89/05883, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 13, 1988, Ser. No. 488,063
Claims priority, application Sweden, Dec. 17, 1987, 8705033-2
Int. Cl.[5] F26B *19/00, 13/00*
U.S. Cl. 34—60 **6 Claims**



1. Apparatus (**1**) for heat-treatment of a web of material of a continuous paper web (**18**) in a paper machine, comprising a number of infra-red heaters (**17**) arranged in parallel relation to the web and separated from the web by protection glass (**12**), a cooling air system being provided to cool the infra-red heaters and the protection glass, characterized in that the protection glass (**12**) is provided as a series of separate panes overlapping each other and forming ventilation gaps (**27**), which are directed substantially in parallel relation to the web.

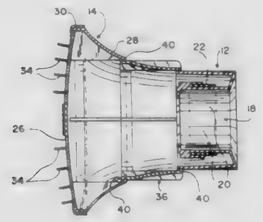
5,060,398

AIR DIFFUSER

John Wolens, 40 Hazel Ave., Glencoe, Ill. 60022

Filed May 2, 1990, Ser. No. 517,727
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—90 **4 Claims**

1. A portable air diffuser for use with a hand-held hair drying apparatus, said diffuser comprising:
a base member having means for mounting said diffuser to the discharge port of said drying apparatus;
an air diffusing member having an air discharge end provided with a plurality of air passageways and an air receiving end telescopically mounted over said base member;
said base and air diffusing members being slidably engageable between an extended operating position and a collapsed position wherein said base member is nested within said air diffusing member; and



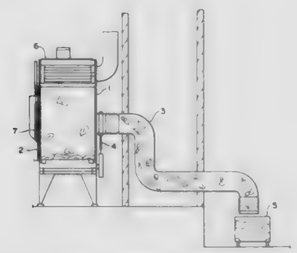
said mounting means adapted to engage the discharge port of said drying apparatus in press fit relation and having an axial length equal to or less than the axial length of said base and air diffusing members.

5,060,399

DRYER HAVING LOADING ON BOTH SIDES

Gerhard Engel, Weststtr. 12, 7129 Gueglingen, Fed. Rep. of Germany

Filed Aug. 3, 1990, Ser. No. 562,579
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1989, 3925976
Int. Cl.[5] F26B *11/02*
U.S. Cl. 34—133 **14 Claims**



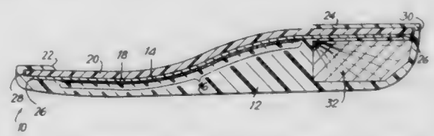
1. A dryer for drying materials initially located in loading stations comprising:
(a) a frame having suction openings formed therein;
(b) a drum rotatably mounted on said frame;
(c) drive means for rotating said drum;
(d) a first flexible tube attached in an air-tight manner to said dryer and opening into said drum and into one of said loading stations;
(e) suction fan means for drawing materials into said drum from said loading station through said flexible tube;
(f) a first suction flap adapted to selectively seal said first flexible tube; and
(g) air flaps adapted to selectively close said suction openings.

5,060,400

OPEN TOE/OPEN HEEL SHOE HAVING REPLACEABLE INNER SOLE

Norman H. Finn, Newton, Mass., and Herbert W. Hirsch, Salem, N.H., assignors to AmAsia International, Ltd., Stoneham, Mass.

Continuation of Ser. No. 371,758, Jun. 27, 1989, abandoned.
This application Oct. 31, 1990, Ser. No. 607,849
Int. Cl.[5] A43B *03/12*
U.S. Cl. 36—12 **18 Claims**



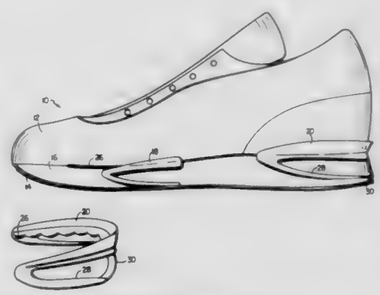
1. A shoe having at least one of an open toe or open heel comprising:
a unit bottom with a toe portion and a heel portion, said unit bottom having first and second recesses, said second recess being formed within said first recess;
an upper, said upper being disposed in said second recess and permanently affixed to said unit bottom;
an insole, said insole being disposed in said second recess and permanently affixed to said upper and said unit bottom; and
a flap for removably retaining a replaceable inner sole in said first recess, in contact with said unit bottom and said insole, said flap being disposed at at least one of the toe an heel portions of said unit bottom, and extending inwardly from the outer edge o the unit bottom and partially across said first recess, forming a slot at said at least one of the toe and heel portions of said unit bottom to receive a portion of said replaceable inner sole.

5,060,401

FOOTWEAR CUSHINONING SPRING

Ian H. Whatley, 926 Cleveland St., Apt. F-101, Greenville, S.C. 29601

Filed Feb. 12, 1990, Ser. No. 478,369
Int. Cl.[5] A43B *13/00*
U.S. Cl. 36—25 R **22 Claims**



1. An article of footwear comprising:
an upper,
an outsole including a first upper surface, a first lower surface and a first external side wall between the perimeters of said first upper and lower surfaces,
a midsole provided between said outsole and said upper,
said midsole having a second upper surface upon which a sole of a foot is positioned during use of said article of footwear, a second lower surface, and a second external side wall between the perimeters of said second upper and lower surfaces, and

an external cushioning spring comprising an angled strip of resilient elastic material, one end of said strip is fixed on said first side wall at location at least 3 mm below said second upper surface of said midsole, and the other end of said strip is fixed on said second sidewall at least 3 mm vertically above said location, such that a vertical force on said footwear created by a wearer of said footwear striking said outsole on a solid surface causes said angled strip to bend between said ends and absorb a portion of said force.

5,060,402

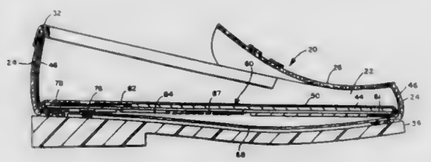
ADJUSTABLE GIRTH SHOE CONSTRUCTION

Henri E. Rosen, 229 Coolidge Ave., Watertown, Mass. 02172

Continuation-in-part of Ser. No. 312,668, Feb. 17, 1989, abandoned. This application Nov. 28, 1989, Ser. No. 441,978

Int. Cl.[5] **A43B** *3/26*

U.S. Cl. 36—97 **22 Claims**



1. A shoe having a toe, a midportion, and a heel portion comprising an at least partly deformable upper which is attached to a sole, said upper and sole forming a cavity into which a foot can be placed, and an adjustable inner assembly disposed within said cavity and attached to an upper portion of said upper, so as to extend along at least a portion of the sides of the upper, said inner assembly having a resiliently deformable portion which acts together with the said at least partly deformable upper to adjust the girth of the shoe in response to a force exerted thereon so as to fit feet of differing widths and girths.

5,060,403

ADJUSTABLE CLOSURE DEVICE PARTICULARLY FOR SKI BOOTS

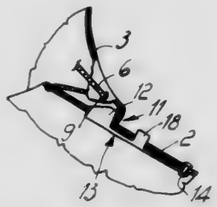
Mirco Battistella, Breda di Piave, and Roberto Gorza, Feltre, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Aug. 24, 1990, Ser. No. 571,698

Claims priority, application Italy, Aug. 31, 1989, 82578 A/89

Int. Cl.[5] **A43B** *5/04*

U.S. Cl. 36—117 **20 Claims**



1. An adjustable closure device particularly for rear entry ski boots comprising a shell, and a front quarter and a rear quarter both connected to said shell, said adjustable closure device comprising at least one traction element and a tensioning means, said tensioning means being connected to said ski boot and having connected thereto said at least one traction element for tensioning thereof, said front quarter defining a front perimetric edge positioned above said shell, said at least one traction element having at least one portion which is slidingly engages said front quarter at a first point substantially near said front perimetric edge thereof and which is connected to said shell at a second point, said second point being in a rearward position from said first point, whereby a forward flexing of said front quarter in use relative to said shell provides an automatic further tensioning of said at least one traction element due to a distancing of said first point from said second point.

5,060,404

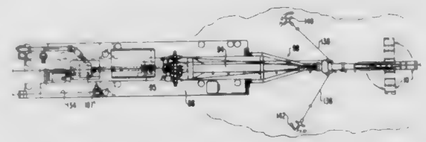
AUGER TYPE DREDGING HEAD

Keith W. Lipford, Pasadena, Md., assignor to Ellicott Machine Corporation, Baltimore, Md.

Filed Jul. 16, 1990, Ser. No. 552,502

Int. Cl.[5] **E02F** *3/92*

U.S. Cl. 37—64 **10 Claims**



1. An auger type dredging head comprising an elongated inverted U-shaped frame having a vertical end components joined in spaced relation by a horizontal component, an auger digger having opposite ends journaled in said end components, said auger digger comprising first and second oppositely spiraled digging fins, power means carried by said frame for rotating said auger diggers in a direction wherein said fins propel dredged material in a direction towards the center of said frame, means carried by said frame for releasably connecting same to the end of a dredge ladder in any one of a plurality of preselected angular working positions with respect to the axis of said ladder, a suction pipe inlet opening into a region at the center of the auger digger in a position to receive dredged material propelled theretowards by said oppositely spiraled digger fins, first and second shrouds comprising arcuate wall parts substantially complementary in curvature to the circle defined by the radius of said auger digger, each of said wall parts having upper and lower edges spaced apart a distance substantially equal to the diameter of said auger digger and end edges spaced apart a distance substantially equal to the length of said auger digger, means pivotally connecting said shrouds to said frame, and power means carried by said frame for selectively moving said shrouds between raised and lowered positions with respect to said auger digger.

5,060,405

MATERIAL MOVING APPARATUS

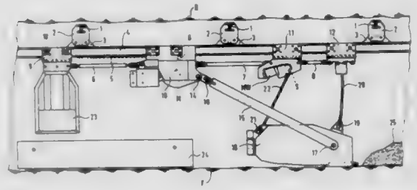
Horst Siffrin, Merchweiler, and Werner Michaely, Lebach, both of Fed. Rep. of Germany, assignors to Walter Becker GmbH, Friedrichsthal, Fed. Rep. of Germany

Filed May 23, 1989, Ser. No. 356,266

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1988, 3819644

Int. Cl.[5] **B61C** *11/00;* **E02F** *3/50*

U.S. Cl. 37—117 **20 Claims**



1. Material moving apparatus, particularly for use in excava-

tions, comprising an elongated fixed overhead track; a motor-driven conveyance suspended on and mounted for movement along said track; and an attachment including a supporting member, connecting means including means for pivotally securing said supporting member to said conveyance for movement about a substantially horizontal axis extending substantially transversely of said track, and an earth-working implement secured to said supporting member at a level below said conveyance.

5,060,406

STEAM IRON HAVING A HYDROPHILIC ACID RESISTANT STEAM CHANGER

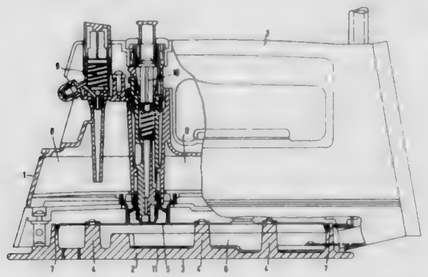
Hendrik Verweij; Paulus H. G. Offermans, both of Eindhoven; Andreas P. L. Krebbers, and Arend Schuurman, both of Drachten, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 2, 1990, Ser. No. 591,903

Claims priority, application Netherlands, Oct. 25, 1989, 8902638

Int. Cl.[5] **D06F** *75/18;* **C23C** *22/07*

U.S. Cl. 38—77.83 **6 Claims**



1. A steam iron comprising a steam chamber provided with a hydrophilic acid resistant coating comprising an acid phosphate compound.

5,060,407

APERTURE CARD AND PRINTER THEREFOR

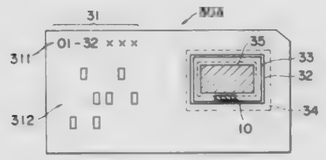
Shunkichi Igarashi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 143,540, Jan. 13, 1988, abandoned. This application Jun. 28, 1990, Ser. No. 544,807

Claims priority, application Japan, Jan. 13, 1987, 62-4070; Jan. 13, 1987, 62-4071

Int. Cl.[5] **A47G** *1/06*

U.S. Cl. 40—159 **4 Claims**



1. An aperture card mounted with a microfilm on a window thereof which is characterized in that retrieval information containing at least a portion of the contents of frames of said microfilm is recorded on a non-imaged portion on the periphery of images on said microfilm, and said recorded retrieval information is printed at a punch/memorandum section of said aperture card.

5,060,408

DEVICE FOR THE CYCLIC REARRANGEMENT OF A PILE OF SHEETS

Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

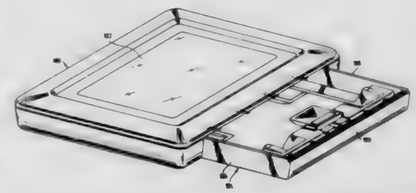
PCT No. PCT/EP88/01053, § 371 Date Aug. 14, 1989, § 102(e) Date Aug. 14, 1989, PCT Pub. No. WO89/04991, PCT Pub. Date Jun. 1, 1989

PCT Filed Nov. 21, 1988, Ser. No. 381,662

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1987, 3739500

Int. Cl.[5] **G09F** *11/30*

U.S. Cl. 40—513 **121 Claims**



1. A device for cyclic rearrangement of a pile of substantially rectangular sheets, comprising:

a first frame part and a second frame part, one of said frame parts having a viewing window therein, said second frame part being reciprocable relative to said first frame part in a reciprocation direction between an inner end position and an outer end position over a stroke limited by stop means,

means for removing a sheet from a first end of an inserted pile when said second frame part is displaced from said inner end position to said outer end position and for adding said removed sheet to a second end of said pile when said second frame part is displaced from said outer end position back to said inner end position, said removing and adding means including transfer means for displacing said removed sheet from said first pile end toward said second pile end, and

spring-biased pressing means for pressing said pile towards said viewing window when said second frame part is in said inner end position, said pressing means including two rail elements made of plastics material, said rail elements being arranged symmetrically with respect to a central plane of symmetry extending in said reciprocation direction, each rail element having a length substantially equal to said stroke, each rail element being supported by a leaf spring, each leaf spring having a first end fastened to said first frame part and a second end supported by said first frame part, each leaf spring being bowed between said first and second ends towards said viewing window and connected approximately midways between said first and second ends to said rail element allocated thereto, and a space being provided between said rail elements for accommodation of said transfer means.

5,060,409

STEADY HOLD-SHOOTERS REST

Dennison M. Caustic, 2305 Jungle St., Lakeland, Fla. 33801

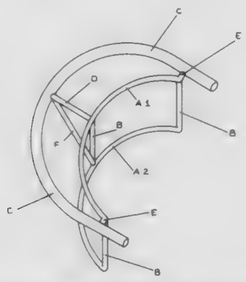
Filed Dec. 3, 1990, Ser. No. 623,126

Int. Cl.[5] **F41A** *23/00*

U.S. Cl. 42—94 **3 Claims**

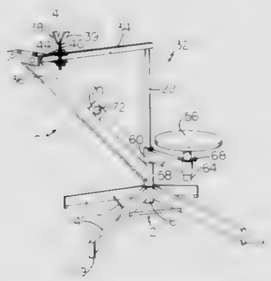
1. A shooting rest comprising: a body support bracket having top and bottom bars bent on a radius and held together by three spacer bars placed one on each end and one in the center of said top and bottom bars; an arm rest bar bent elliptically and fastened to the top bar of said body support bracket by a spacer bar at the center of the arm rest bar and a shorter spacer bar at each end of the body support bracket; said arm rest bar being further secured to said body support bracket by a gusset

bar between the center of the arm rest bar and the center of the bottom bar of said body support bracket; and said shooting rest



having a belt for securing the body support bracket to a shooter's waist, and neck or shoulder straps for positioning the rest higher or lower on the shooter's waist.

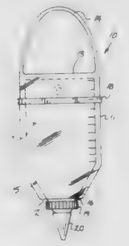
5,060,410
COLLAPSIBLE SHOOTING STAND
Evan Mueller, 305 S. D St., Livingston, Mont. 59047
Filed Jul. 13, 1990, Ser. No. 553,738
Int. Cl.[5] F41A *23/06*
U.S. Cl. 42—94 **11 Claims**



1. A collapsible support stand comprising:
(a) a base;
(b) a framework including an upright standard mounted to the base for rotation about a longitudinal axis of the standard, a horizontal member attached to an upper end of the standard, and in a hypotenuse member rigidly connecting a terminal portion of the horizontal member to the standard at a position adjacent a lower end of the standard; and
(c) a seat and a support arm including means for rotatively coupling the seat to the arm and the arm to the standard for movement about the standard and further including means for adjusting the height of the seat.

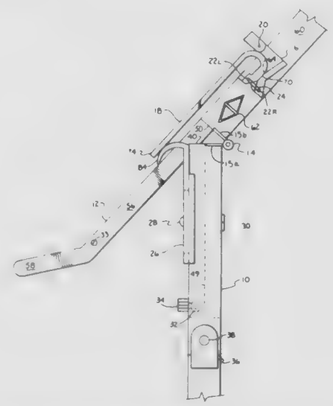
5,060,411
GAME LURING SCENT DISPENSING KIT
Jeffrey A. Uhlman, 314 Church St., Northboro, Mass. 01532
Filed Oct. 15, 1990, Ser. No. 597,516
Int. Cl.[5] A01M *31/00*
U.S. Cl. 43—1 **5 Claims**

1. A game luring scent dispensing kit comprising, in combination,
an elongate, flexible containment harness including an open lower end defined by a first diameter, and an opened top end defined by a second diameter, wherein the second diameter is greater than said first diameter, and
a dispensing container mounted within the harness, including dispensing tip directed through the open lower end of the harness, wherein the dispensing container includes a game attracting fluid contained therewithin, and
wherein the harness includes a harness strap, the harness strap orthogonally mounted at diametrically opposed portions of the open top end of the harness for suspending the harness from an overlying support, and
therein the container includes a narrow neck coaxially mounted to an elongate body, the narrow neck mounting a cap, the cap including the dispensing tip mounted thereon, the dispensing tip of a conical configuration, and



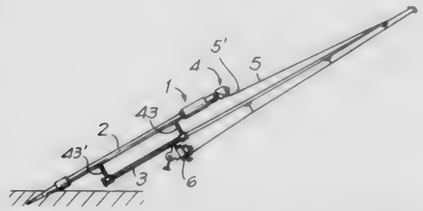
including a funnel member, the funnel member including a funnel cavity defined by a cavity configuration complementary to the dispensing tip, and the funnel member including diametrically secured flexible lines mounted to opposed ends of an upper end of the funnel, the flexible lines further including securement hooks mounted at free terminal ends of each flexible line for securement of the funnel member to the harness, and an elongate, porous wick mounted to an exit lower end of the funnel in fluid communication therewith, the porous wick defined by a flexible construction to enhance distribution of the fluid contained within the container.

5,060,412
CASTING ROD
Robert A. Ries, Rte. 3, Box 296, Buffalo, Mo. 65622
Filed Feb. 2, 1990, Ser. No. 474,517
Int. Cl.[5] A01K *91/02*
U.S. Cl. 43—19 **8 Claims**



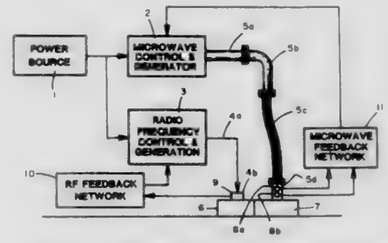
1. A casting rod, which includes:
(a) a handle assembly with front and back ends and a hand grip located adjacent to the back end;
(b) a rod assembly with a fulcrum, a rod shaft extending generally forwardly from the fulcrum and a lever extending generally rearwardly from the fulcrum;
(c) a hinge connected to said handle assembly front end and said rod assembly fulcrum;
(d) said rod assembly having an aligned position generally aligned with said handle assembly and a skewed position skewed with respect to said handle assembly, said rod being swingable between its aligned and skewed positions about said hinge; and
(e) a line release mechanism, which includes:
(1) a fixed jaw member mounted on said rod assembly in proximity to the fulcrum thereof;
(2) a movable jaw member having front and back ends, said movable jaw member front end being pivotally connected to said fixed jaw member;
(3) said movable jaw member being swingable between a clamp position in clamping relation with respect to said fixed jaw member and a release position;
(4) said fixed jaw member having a fixed line engagement face and said movable jaw member having a movable line engagement face;
(5) a line passage between said line engagement faces, said line passage being narrower with said movable jaw member in its clamp position and wider with said movable jaw member in its release position; and
(6) an actuator mounted on said handle assembly in proximity to the front end thereof and selectively engaging said movable jaw member in proximity to the back end thereof with said rod assembly in its aligned position.

5,060,413
FISHING LINE LAUNCHING DEVICE
Manuel E. Garcia, Manuel Obarrio 2080, Olivos, Buenos Aires, Argentina
Filed Nov. 14, 1988, Ser. No. 271,179
Claims priority, application Argentina, Nov. 17, 1987, 309.319; Jul. 28, 1988, 311.539
Int. Cl.[5] A01K *91/02*
U.S. Cl. 43—19 **14 Claims**



1. An apparatus for launching a fishing line, applicable to a fishing rod, of the type comprising a reel or winding member of a line or casting line extending among line guides thereof, comprising, in combination, a fishing line holder with fishhooks and baits and an impeller device thereof, said device including a tubular body possessing a free end portion having an explosion chamber for accomodating a cartridge closed by a cap provided with a hole for introduction of a stem with support on said cartridge and which forms an integrating part of the line holder, in the bottom of said chamber being mounted a percussion device, coaxially arranged in relation to a percussion axle, mounted in a freely slidable manner on a guiding conduit for percussion with support on an end of a first spring the opposite end of which is found supported against a disk for closure of the conduit, a free end of said percussion axle being facing and spaced from said percussion device, said body and the percussion axle having respective longitudinal slots through which, transversally to the body and to said axle, a shooting collar is projected with support on the axle and constituted by an arm articulated to the body slot and having a tail or free end housed in a longitudinal recess in the inner surface of a jacket, which is mounted in a freely slidable manner on said body, in opposition to a second spring supported against a fixed stop at the rear end of the body, said jacket recess being provided, in an intermediate point, with a drag tooth of the shooting collar and of the percussion axle in opposition to said first spring, the drag tooth and shooting collar being capable of automatically locking and unlocking said axle for its impact against the percussion device, said line holder being, in turn, constituted by a vessel, secured to an end of said stem, inside which said fishing line is accommodated, which is tied to the bottom of a closing cap of the vessel, mounted with free play and capable of being removed in response to its impact against the water.

5,060,414
PHYTOTOXICITY OF A COMBINED RF AND MICROWAVE ELECTROMAGNETIC FIELD
J. Robert Wayland, 500 Oakwood Pl. NE., Albuquerque, N. Mex. 87123
Filed Jul. 20, 1989, Ser. No. 382,205
Int. Cl.[5] A01G *1/00*
U.S. Cl. 47—1.3 **8 Claims**



1. A method of vegetation and pest control in a planting media comprising the steps of:
first, generating a plurality of preselected radio frequency electromagnetic fields at preselected power levels for emission from radiators;
second, generating a plurality of preselected microwave electromagnetic fields at preselected power levels for emission from radiators;
positioning said radiators to expose said media to said electromagnetic fields whereby the application of said microwave electromagnetic fields for a preselected duration follows immediately after the application of said radio frequency electromagnetic fields for a preselected duration to produce death or debilitation of the vegetation and pests.

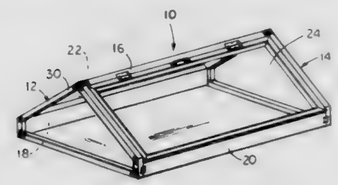
5,060,415
HOT BED ENCLOSURE
Ernest G. Schleip, and Bruce E. Schleip, both of 380 N. 2d St., Box 148, Springfield, Nebr. 68059
Continuation of Ser. No. 195,886, May 19, 1988, abandoned. This application Mar. 11, 1991, Ser. No. 667,103
Int. Cl.[5] A01G *13/04*
U.S. Cl. 47—19 **4 Claims**

1. An elongated open bottomed hot bed enclosure for starting new plants, comprising,
an elongated longitudinally extended top cross bar,
a pair of generally upright, transversely extended and longitudinally spaced apart end walls having upwardly converging top edges, a substantial portion of the area of said end walls being substantially translucent,
said top cross bar being connected to and extended between upper portions of said end walls,
a pair of bottom rails connected to and extended between transversely spaced apart lower portions of said end walls,
detachable fastening means for connecting said top cross bar

and bottom rails to said end walls, said detachable fastening means comprising a plurality of hinges having removable hinge pins,

a pair of top panels, collectively of a size and shape to substantially cover and close the entire area between the opposite top edges of said end walls, a substantial portion of the area of said top panels being substantially translucent,

means for detachably and pivotally supporting said top panels for pivotal movement about respective longitudinal pivot axis extended between upper portions of said end walls, each top panel being pivotally movable between a closed position where said top panel substantially covers and closes the area between opposite top edges of said end walls and an open position wherein the lower end of said top panel is situated in spaced relation above said top edges of the end walls thereby providing access to plants in said enclosure, said means for detachably supporting



said top panels comprising a plurality of hinges, each having one half secured to said top cross bar and another half secured to said top panel and a removable hinge pin for pivotally joining said hinge halves, and

said bottom rails stationarily fastened to said end walls whereby upward pivotal movement of the top panels opens a space between said top panels and said bottom rails,

said enclosure including limited ventilation openings between the interior of said enclosure and the ambient atmosphere upon placement of said enclosure onto the ground and movement of said top panels to the closed positions thereof,

said limited ventilation openings comprising elongated gaps between said top panels and end walls in the closed positions of said top panels,

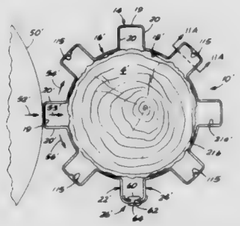
said top panels, in the closed positions thereof, being inclined at an angle of between 40° and 45° to horizontal.

5,060,416

CORRUGATED TREE PROTECTOR AND TREE PROTECTION METHOD

George A. Rohde, Cottage Grove, Minn., assignor to Seaberry Landscape, Inc., Eagan, Minn.

Continuation-in-part of Ser. No. 293,213, Jan. 4, 1989. This application Aug. 14, 1990, Ser. No. 567,152
Int. Cl.[5] A01G *13/10*
U.S. Cl. 47—23 29 Claims



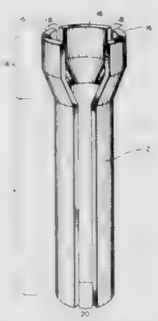
1. A semi-rigid tree protector positionable about a circumference outer surface, said tree protector comprising corrugated band means for encircling the circumference of the base of the tree, said corrugated band means including a series of alternating ridges and grooves each extending substantially vertically of the base of the tree when said band means are positioned around the base of the tree, each said groove including a vertical wall with an inside surface that is positioned adjacent to and extending generally parallel to the circumference of the tree in a circumferential direction and said band means being made of materials which are sufficiently flexible and resilient to withstand and absorb energy from impact such that the tree can be protected from injury due to the impact.

5,060,417

FLOWER STEM AND HEAD SUPPORT APPARATUS

Edward H. Court, 314 Kingsbury Grade, Stateline, Lake Tahoe, Nev. 89449

Filed Oct. 25, 1989, Ser. No. 426,976
Int. Cl.[5] A01G *5/00*
U.S. Cl. 47—41.15 22 Claims



1. An apparatus for supporting the stem of a flower comprising:

an elongated tubular member dimensional such that the stem of a flower fits longitudinally within the elongated tubular member, the elongated tubular member having a first end;

means for forming an opening along the longitudinal length of the elongated tubular member, the opening allowing the cross-sectional area of the elongated tubular member to be increased to accommodate placing the stem through the opening to the interior surface of the elongated tubular member and such that at least a portion of the stem is snugly gripped by the elongated tubular member once placed therein, the elongated tubular member adapted for supporting the stem adjacent to the flower head; and

a flared portion provided at the first end of the elongated tubular member for receiving the flower calyx.

5,060,418

METHOD OF TRANSPLANTING A CONTAINER GROWN PLANT

Gerald S. Pullman, Renton, and Michael J. Yancey, Puyallup, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 17, 1989, Ser. No. 394,910
Int. Cl.[5] A01G *9/10, 23/04*
U.S. Cl. 47—58 22 Claims

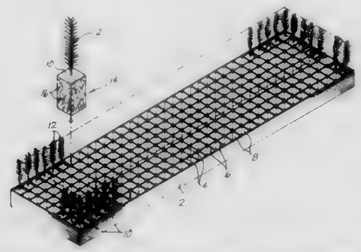
1. A method of growing and preparing a plant for transplanting which comprises:

placing a particulate plant growing substance in a container to provide a porous plant growth medium;

placing a seed, cutting, or started plant in the growth medium;

growing the plant to a desired size;

after the plant has reached said desired size, treating the body of particles of the growth medium with a liquid adhesive forming substance in an amount and of a viscosity to allow permeation into substantially the volume of the container, said adhesive forming substance being essentially physiologically inert to said plant, said adhesive forming substance being selected from the group consisting of complex carbohydrate materials, proteinaceous materials, and mixtures thereof;



allowing sufficient time for the adhesive to bond the growth medium particles into an essentially intact plug, and

removing the intact plant containing plug from the container,

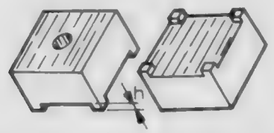
whereby the plant can be transplanted with minimum physical and biological disturbance to the plant roots.

5,060,419

SUBSTRATE FOR OUT-OF-GROUND CULTIVATION

Martien de Graaf, Vijfhuizn, Netherlands; Jacques Vos, Chatou, and Dominique Plantard, Paris, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Mar. 21, 1990, Ser. No. 496,933
Claims priority, application France, Mar. 21, 1989, 89 03651
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—64 12 Claims



1. A substrate for the cultivation of seedlings, comprising:

a parallelepiped formed of semi-rigid felt having a lower face,

said lower face of said parallelepiped resting on protuberances separating said lower face from a support on which said parallelepiped rests, and

a ratio of surface contact of said protuberances to the entire surface of said lower face being very small.

5,060,420

COMBINATION MARKETING AND PLANTING PACKAGE FOR PLANT BULBS

Randal E. Bergman, 6212 - 142nd Street, Surrey, British Columbia, Canada V3W 5M3

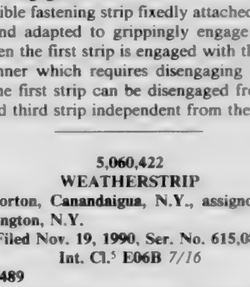
Filed Jan. 31, 1990, Ser. No. 473,225
Claims priority, application Canada, Feb. 7, 1989, 590381
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—78 10 Claims

1. Apparatus for planting a plant bulb in soil at a preferred soil depth, comprising:

(a) a water porous bag for enclosing said plant bulb;

(b) a limp filament attached to said bag, the length of said filament being sufficient to extend above the soil when said plant bulb is plated at said preferred depth; and

(c) identifier means for identifying said plant bulb, said identifier means being connected to said filament at a point which extends above the soil when said plant bulb is plated at said preferred depth,



wherein said filament is marked at a predetermined distance from the bottom of said bag to indicate said preferred depth for planting said plant bulb.

5,060,421

CHILD AND INFANT RESTRAINT AND FASTENER

Dario D. Castelli, 26 Woodland Dr., Pittsburgh, Pa. 15228

Filed Jun. 29, 1990, Ser. No. 545,844
Int. Cl.[5] E05B *3/32*
U.S. Cl. 49—463 4 Claims

1. A fastener for releasably securing a first article to a second article comprising:

a first flexible fastening strip fixedly attached to the first article;

a second flexible fastening strip fixedly attached to the second article and adapted to grippingly engage with the first fastening strip but remote and independent therefrom when not engaged therewith;

a third flexible fastening strip fixedly attached to the second article and adapted to grippingly engage with the first strip when the first strip is engaged with the second strip in a manner which requires disengaging the third strip before the first strip can be disengaged from the second strip, said third strip independent from the second strip.

5,060,422

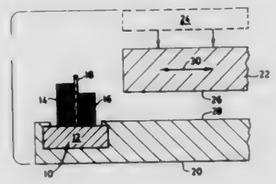
WEATHERSTRIP

Robert C. Horton, Canandaigua, N.Y., assignor to Ultrafab, Inc., Farmington, N.Y.

Filed Nov. 19, 1990, Ser. No. 615,084
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—489 5 Claims

1. A weatherstrip which comprises a backing member extending longitudinally, first and second rows of flexible sealing material attached to said backing member and extending longitudinally along said backing member, said first and second rows projecting away from said backing member respectively providing a seal and support between opposing surfaces of a

pair of members which move relatively into and out of closing relationship with each other, said weatherstrip being adapted to be fixedly attached to one of said pair of members, a fin of flexible material attached to said backing strip and disposed between said rows and extending longitudinally along said backing strip, said second of said rows projecting in height a



greater distance from said backing strip and the opposing surface of the member in which it is disposed than said first row, said flexible fin projecting a distance equal or slightly greater than the height of said second row whereby said fin is bent over said second row, bending said second row to form a seal between the opposing surfaces of said members when said members come together into closing relationship.

5,060,423

AUTOMATIC CONTROL CENTERLESS FINISHING DEVICE FOR HONING EXTERNAL CYLINDRICAL SURFACES

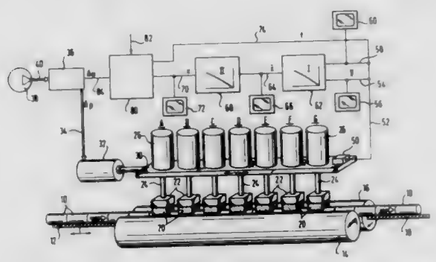
Norbert Klotz, Remscheid, Fed. Rep. of Germany, assignor to Supfina Maschinenfabrik Hentzen GmbH & Co. KG., Remscheid, Fed. Rep. of Germany

Filed Jun. 21, 1989, Ser. No. 369,642

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1988, 8807980[U]; Sep. 26, 1988, 8812160[U]

Int. Cl.[5] B24B *33/04, 35/00*

U.S. Cl. 51—165.71 **12 Claims**



1. In a continuous flow machine with a centerless finishing device for honing external cylindrical surfaces, said device including a plurality of successive finishing elements with individually feedable finishing stones and a common oscillation drive connected to each said plurality of successive finishing elements for oscillating said elements; wherein the improvement comprising:

a measuring device connected to said common oscillation drive for measuring the oscillation movement of said plurality of successive finishing elements generated by said common drive;

computer means connected to said measuring device and receiving a signal representing the measured oscillation movement, said computer means comparing the received oscillation movement signal to a desired value and generating an adjustable signal representing the comparison; and

adjustable control means, connected to said computer means and said common oscillation drive, for receiving the adjustable signal and for generating a control signal to adjust said common oscillation drive.

5,060,424

SURFACE GRINDING APPARATUS

Takesi Sato; Kenichi Mitsuhashi, both of Ibaraki; Yoji Tomita, Tochigi, and Yasuoki Sasaki, Ibaraki, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

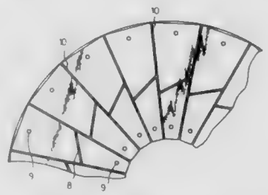
Continuation-in-part of Ser. No. 216,483, Jul. 8, 1988, Pat. No. 4,918,872, which is a continuation of Ser. No. 16,985, Feb. 19, 1987, abandoned, which is a continuation of Ser. No. 732,207, May 9, 1985, abandoned. This application Feb. 9, 1990, Ser. No. 476,859

Claims priority, application Japan, May 14, 1984, 59-97223

The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.

Int. Cl.[5] B24D *5/10*

U.S. Cl. 51—209 R **2 Claims**



1. A surface grinding apparatus in which a work piece having a plate-like, disc-like, circular or annular shape and having a flat surface and a uniform thickness, which is held by carrier plates between upper and lower horizontal surface tables confronting one another, is pressed against the upper and lower surface tables and the upper and lower surface table and carrier plates are slidably moved by different rotary actions to grind the work piece by sliding friction, said surface grinding apparatus being characterized in that a plurality of resin bond grinding stones are attached to the upper and lower surface tables directly or through attaching plates so that both of the upper and lower acting surfaces constitute the same plane, the grinding stones are defined by a plurality of grooves formed to extend toward the outer side of the surface table from the inner side thereof in a direction opposite to the direction of rotation of the surface table and communicate with the outer side of the surface table and a plurality of radial grooves passing through an imaginary center of the surface table, a width of the grooves being at least 4 mm, and an area ratio of the grinding stone-action surface to the effective grinding surface being at least 50%.

5,060,425

HEAD WALL FOR HOSPITAL BED

Timothy A. Kappers, Cincinnati, Ohio; Steven R. Westerfeld, Batesville, Ind., and Dennis J. Gallant, Harrison, Ohio, assignors to Hill-Rom Company, Inc., Batesville, Ind.

Continuation-in-part of Ser. No. 443,432, Nov. 30, 1989, which is a continuation of Ser. No. 267,387, Nov. 4, 1988, which is a continuation of Ser. No. 208,380, Jun. 17, 1988, Pat. No. 4,821,470. This application Apr. 12, 1990, Ser. No. 508,930

Int. Cl.[5] E06B *9/15;* **H02G** *3/10*

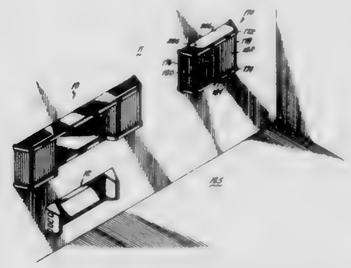
U.S. Cl. 52—36 **11 Claims**

1. A head wall adapted to be mounted on a wall above a patient's bed location in a patient room comprising:

two horizontally spaced modules, said modules projecting outwardly from said wall and defining a recessed section therebetween, and containing a plurality of medical service outlets, said modules being spaced a distance sufficient to be disposed on either side of said patient's bed location and having a bottom edge adapted to be disposed above the height of said patient's bed in said patient room, said two horizontally spaced modules being joined together across said recessed section;

first door means for each said two horizontally spaced modules movable between an open position in which said medical service outlets are exposed and accessible for use, and a closed position in which said service outlets are concealed from view to provide a more visually pleasing environment;

a third module spaced horizontally in said patient room on said wall from said two horizontally spaced modules, said third module projecting outwardly from said wall and having a front, a top edge, and a bottom edge, and a recessed center section therebetween, said bottom edge



being adapted to be disposed above a patient in said patient room;

a plurality of medical service outlets mounted in said recessed center section of said third module for providing medical services to said patient; and

second door means mounted across said front of said third module between said top edge and said bottom edge and movable between an open position in which said plurality of medical service outlets in said third module are exposed and accessible for use and a closed position in which said plurality of medical service outlets in said third module are concealed from view to provide a more visually pleasing environment.

5,060,426

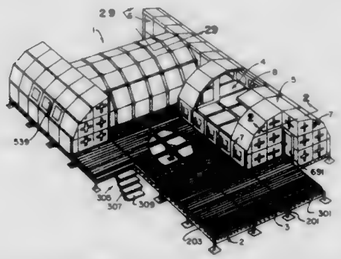
BUILDING STRUCTURE

Michael E. Jantzen, Clinton County, Ill., assignor to Hypertat Corporation, St. Louis, Mo.

Filed Apr. 18, 1986, Ser. No. 853,778

Int. Cl.[5] E04B *1/32*

U.S. Cl. 52—86 **47 Claims**



44. A modular building constructed of preinsulated modules, which may be erected by two workers without special lifting equipment, said modules being attached to each other to form floor, roof and walls of said building without framing supports between said modules, most of said modules having a volume of from about three cubic feet to about forty cubic feet, and all of said modules having a weight of less than about two hundred pounds.

5,060,427

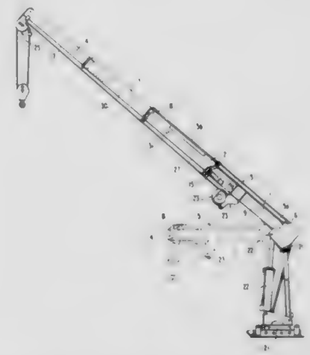
EXTENSION AND RETRACTION SYSTEM FOR FOUR SECTION TELESCOPIC BOOM HAVING SIMULTANEOUS AND EQUAL EXTENSION AND RETRACTION OF THE TELESCOPIC SECTIONS

Vincent Bernabe, Jr., Newville, Pa., assignor to Kidde Industries, Inc., Iselin, N.J.

Filed Feb. 1, 1990, Ser. No. 473,438

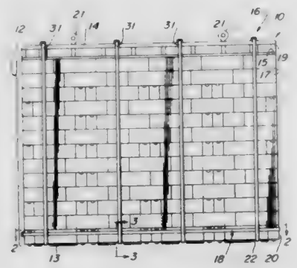
Int. Cl.[5] E04H *12/34*

U.S. Cl. 52—118 **15 Claims**



1. An extension and retraction system for a four section telescopic boom comprising, a base section, an inner mid section slidably mounted in said base section, an outer mid section slidably mounted in said inner mid section, and a fly section slidably mounted in said outer mid section, hydraulic cylinder means connected between the base section and said inner mid section, a first flexible extension element operatively connected interior of said sections between the base section and the outer mid section, and a second flexible extension element operatively connected interior of said sections between the fly section and the inner mid section, whereby, when the hydraulic cylinder means is actuated to extend the inner mid section outwardly of the base section, said first flexible extension element simultaneously moves the outer mid section outwardly of the inner mid section, and the second flexible extension element causes the fly section to move outwardly from the outer mid section; a first flexible retraction element operatively connected interior of said boom sections between the base section and the outer mid section, and a second flexible retraction element operably connected interior of said boom sections between the fly section, and the inner mid section, whereby when the hydraulic cylinder means is actuated to retract the boom sections, the inner mid section is retracted within the base section, while the first flexible retraction element simultaneously pulls the outer mid section into the inner mid section, and the second flexible retraction element pulls the fly section into the outer mid section.

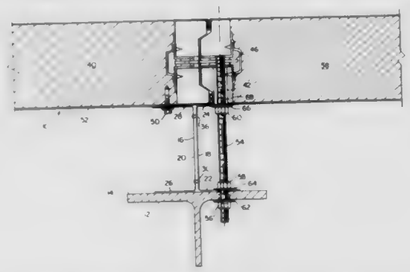
5,060,428
PREFABRICATED WALLS
Reuben B. Arthur, Jr., Greensboro; James L. Edwards, Jamestown; Ernest H. Jeffries, Jr., Greensboro; Chester O. Westmoreland, Jr., Winston-Salem, and Jerry W. Whitley, Greensboro, all of N.C., assignors to Resco Products, Inc., Conshohocken, Pa.
Filed Feb. 9, 1990, Ser. No. 477,797
Int. Cl.[5] E02D *35/00*
U.S. Cl. 52—125.6 **41 Claims**



30. A liftable, transportable prefabricated structure comprising:
(a) a wall unit comprising a plurality of horizontal courses of construction material stacked one atop of another and arranged to define at least one generally vertical passage within said unit, said passage opening through said unit bottom end;
(b) lifting means, positioned on said unit upper most horizontal course of said construction material, for lifting said unit;
(c) banding means for securing said lifting means to said unit, said banding means being generally vertically-oriented and being in contact with and passing under at least a portion of said unit lowest horizontal course of construction material; and
(d) spacer means fitted within said unit passage, said spacer means being in contact with at least two parallel inside surfaces of said unit lowest horizontal course of construction material defining said passage which opens through said unit bottom end, and being positioned within said unit passage and being dimensioned such that said unit can be lifted without collapsing.

5,060,429
CEILING-WALL ATTACHMENT
Norman L. Pitts, Ellisville, and Raouf R. Sinno, Starkville, both of Miss., assignors to Mid-South Industries, Inc., Laurel, Miss.
Filed Jun. 21, 1990, Ser. No. 541,994
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—127.7 **10 Claims**

1. A ceiling or wall panel assembly comprising:
a) a structural support having a planar upper surface;
b) a flanged spacer member supported upon and extending longitudinally away from said upper surface of said structural support;
c) first and second adjacent panel members supported on said spacer member, said first panel member further including:
i) a camlock for joining said first and second panels including a locking piece extensible into a complementary lock piece in said second panel member, said camlock further including a threaded inner wall defining a vertical opening within said camlock; and
d) a thread rod extending longitudinally through said structural support and said spacer member, into said first panel member, a portion of said thread rod further extending into said vertical opening within said camlock, in threaded engagement with said inner wall, said thread rod being

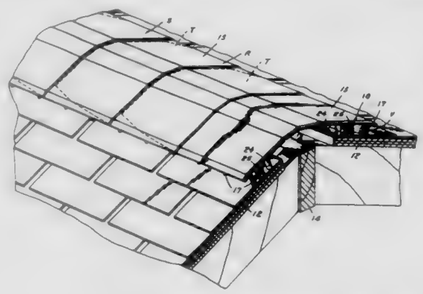


secured against vertical or rotational movement relative to said structural support and said first and second panel members.

5,060,430

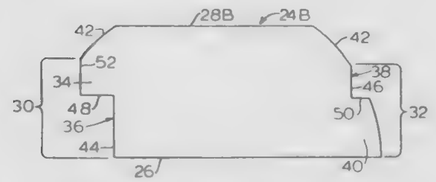
Patent Not Issued For This Number

5,060,431
RIDGE ROOF VENT
Richard J. MacLeod, Milford; Norman L. Chubb, Dearborn, and Charles E. Schiedegger, Metamora, all of Mich., assignors to Tapco Products Company Inc., Detroit, Mich.
Filed Oct. 16, 1990, Ser. No. 598,246
The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.
Int. Cl.[5] F24F *7/02*
U.S. Cl. 52—199 **5 Claims**



1. A ridge roof vent adapted to be mounted on the ridge of a roof and comprising a top wall that is spaced from the remainder of the vent and is adapted to receive overlapping shingle pieces of roofing material, the improvement comprising
transversely extending primary indicia provided along the length of the ridge roof vent and including secondary indicia associated with the primary indicia in repetitive series,
each series of transverse primary indicia spanning a distance greater than the length of a shingle piece, the transverse indicia associated with the secondary indicia being such that when the first shingle piece is applied from one end, the end of the shingle piece will be positioned between a pair of indicia of a series and can be used to provide indicia an overlapping for ends of a succeeding shingle piece by locating the end of the succeeding piece between the secondary indicia of the succeeding series corresponding to the indicia of the preceding series where the first edge of a preceding piece has been positioned without the need for measurement.

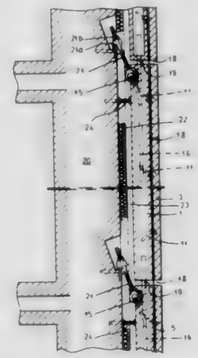
5,060,432
MODULAR PANEL
William D. Christian, P.O. Box 338, Moncure, N.C. 27559
Filed Dec. 7, 1990, Ser. No. 623,354
Int. Cl.[5] E04B *1/10*
U.S. Cl. 52—233 **25 Claims**



1. A modular panel system comprising:
(a) wall panels, each wall panel being fastenable to other wall panels and to a roofing assembly and having a long axis; and
(b) floor panels, each floor panel being fastenable to other floor panels and to a wall panel,
wherein each of said wall panels and floor panels comprises a plurality of columns, each of said columns comprising:
(i) a flat first side;
(ii) a second side opposite said first side;
(iii) a third side, a portion of which third side is perpendicular to said first side, said third side having a receptacle adjacent said first side and a protrusion adjacent said second side; and
(iv) a fourth side, a portion of which fourth side is perpendicular to said first side, said fourth side having a protrusion adjacent said first side and a receptacle adjacent said second side; wherein the third and fourth sides of two adjacent columns may be fit together by insertion of the protrusion on the third side of a first column into the receptacle on the fourth side of a second column, and insertion of the protrusion on the fourth side of said second column into the receptacle on the third side of said first column, and wherein a plurality of adjacent columns may be joined together by said protrusions and receptacles to form sets of columns;
and wherein each of said wall panels comprises;
(i) an inside face, formed by the first side of each column of a first set of columns, said inside face having a bottom portion into which a floor panel fits, and
(ii) an outside face formed by the second side of each column of said first set of columns;
and wherein each of said floor panels comprises:
(i) a top face being formed by the first side of each column of a second set of columns, and
(ii) a bottom face being formed by the second side of each column of said second set of columns, wherein each of the columns in each of said wall panels extends vertically and parallel to the long axis of the panel when the wall panel is adjoined to a floor panel, and the wall panel is capable of aiding in roof support.

5,060,433
FACADE FACING ELEMENT
Rudolf Buryan, Johannessiedlung 1, A2170 Poysdorf, and Konrad Berger, Gablitz, both of Austria, assignors to Universale-Bau AG, Vienna and Rudolf Buryan, Poysdorf, both of, Austria
Filed Sep. 11, 1989, Ser. No. 405,621
Claims priority, application Austria, Sep. 16, 1988, 2276/88
Int. Cl.[5] E04B *2/88*
U.S. Cl. 52—235 **7 Claims**

1. A building structure comprising:
a building wall; and
a facade member for facing a facade and mounted on said wall, said facade member including:
as concrete slab formed with a pair of opposite broad sides;
attachment means affixed to said concrete slab on one of said sides for securing said facade member to said wall with said one of said sides spaced therefrom;
stone slab means including at least one stone slab juxtaposed with another of said sides of said concrete slab and substantially coextensive therewith for covering substantially all of said other side of said concrete slab;

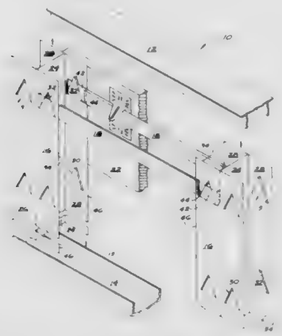


elastic fastening means interconnecting said stone slab means and said concrete slab resiliently for maintaining said stone slab means nondetachably on said concrete slab while permitting slight relative movement of said stone slab and said concrete slab over an entire area of said other side; and
an elastic separating layer interposed between said stone slab means and said other side of said concrete slab, said elastic separating layer formed with drainage passages for draining a space between said stone slab and said elastic separating layer.

5,060,434
DEMOUNTABLE WALL SYSTEM
Ronald J. Allison, 6550 Longpoint, Suite 204, Houston, Tex. 77055
Continuation of Ser. No. 433,971, Nov. 9, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 565,184
Int. Cl.[5] E04H *1/00*
U.S. Cl. 52—238.1 **21 Claims**

1. A demountable wall system comprising:
first and second track members mounted horizontally on a ceiling and floor, respectively, in confronting relationship;
a plurality of spaced vertical studs extending between said first and second track members, each stud having laterally extending flanges thereon with a plurality of wedge-shaped cut-outs spaced at regular intervals spaced at regular intervals along the flanges, each of the cut-outs in the flanges having a retaining member representing the cut-out portion thereof extending at an angle from the base thereof;
a horizontal bar member resting in the angle formed by the retaining member and the inside surface of the flange of adjacent studs;
a plurality of suspension clips, each of said clips having a cut-out therein, and an angled member representing the cut-out portion member thereof extending outwardly therefrom; and
a plurality of gypsum board panels having said suspension clips affixed thereto, the angled member of said suspension clips resting on said horizontal bar member whereby the

weight of said gypsum board panel both causes said panel to tightly engage said horizontal bar member and said



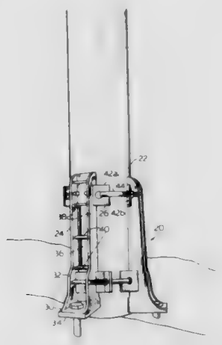
horizontal bar member to tightly engage said studs to align adjacent gypsum board panels in close abutment to form smooth joints therebetween.

5,060,435

BRACKET FOR SUPPORT OF VERTICAL POLE

Anatol L. Bogdanow, P.O. Box 27, New Market, Ontario, Canada L3Y 4W3

Filed Feb. 15, 1990, Ser. No. 480,566
Int. Cl.[5] E04H *12/08*
U.S. Cl. 52—292 **10 Claims**



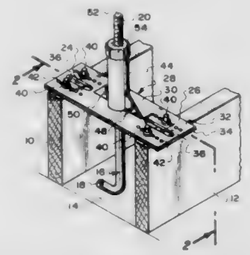
1. A bracket for anchoring a pole vertically on a support surface comprising: pole-mount having a base for resting on the support surface and a vertically upwardly extending upright which contacts said pole, said base having a lower surface; clamping means for clamping said pole-mount to said pole; a leg which extends downwardly from said pole-mount for insertion into a hole which extends downwardly from said support surface, said leg including a sleeve, an inner member and expandible means, said sleeve having an upper end connectable to said base and extending downwardly therefrom, said inner member being movable within and relative to said sleeve and when so moved causing lateral expansion of said expandible means with resulting anchoring of said leg in the hole.

5,060,436

APPARATUS FOR POSITIONING ANCHOR BOLTS WITHIN CONCRETE

David G. Delgado, Jr., 1122 Landsburn Cir., Westlake Village, Calif. 91361

Filed Jun. 25, 1990, Ser. No. 543,027
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—295 **3 Claims**



1. An apparatus for positioning anchor bolts within concrete which is to be poured within a pre-erected form, composed of a pair of parallel spaced apart boards, said form comprising the space between said boards, said apparatus comprising:

a mounting plate, said mounting plate being rigid and not penetratable, said mounting plate to be fixedly mounted on both said boards at a precise preselected position, said mounting plate having an upper surface and a lower surface, said lower surface to be located directly adjacent the concrete;

an upstanding sleeve mounted on said upper surface of said mounting plate, said upper surface having a through opening, said through opening having a longitudinal center axis, said upstanding sleeve being of a preselected length, an anchor bolt is adapted to be located within said through opening with the outer portion of the anchor bolt to extend from said mounting plate and be embedded within the cement after pouring and curing of such; and

said mounting plate including a series of holes with there being a series of said holes located directly adjacent each longitudinal end of said mounting plate, a said hole within said series of holes at each end of said mounting plate to have conducted therethrough a fastener with each said fastener then being embedded within a said form.

5,060,437

BREAKAWAY UTILITY POLE

James H. Parsons, Prosperity; Philippe H. McLain, Columbia; John F. Boozer, III, Pomaria, and John R. Lewis, Jr., Chapin, all of S.C., assignors to Shakespeare Company, Newberry, S.C.

Continuation-in-part of Ser. No. 332,553, Apr. 3, 1989, Pat. No. 4,920,715, which is a continuation-in-part of Ser. No. 165,530, Mar. 8, 1988, and Ser. No. 165,620, Mar. 8, 1988. This application Nov. 6, 1989, Ser. No. 432,571
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] E02D *27/42*
U.S. Cl. 52—298 **6 Claims**

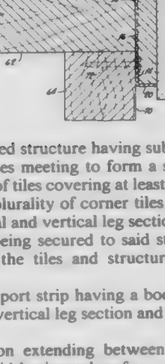
1. A breakaway utility pole mounting structure comprising:

a utility pole having at least one substantially tubular end portion;

a base anchored in the ground substantially below ground level and having a tubular portion extending below ground level, said tubular portion adapted telescopically to enclose said pole end portion;

an adhesive material bonding said pole end portion to said base tubular portion;

said adhesive material adapted to fail and release said pole when it is subjected to an impact at a predetermined distance above the base from a vehicle of predetermined minimum weight moving at a predetermined minimum speed;



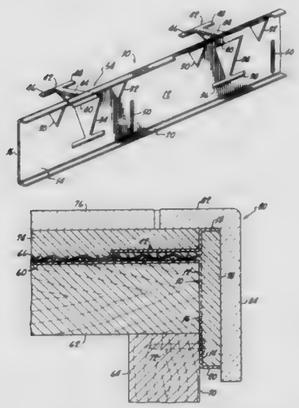
and a telephone call box mounted on the pole at a approximately four feet above ground level, said call box being of minimum weight to inhibit the pole from tipping backward over the vehicle on breakaway of said pole.

5,060,438

METHOD AND APPARATUS FOR SUPPORTING A TILE COUNTER CAP SUPPORT STRIP

Dennis S. O'Rourke, 630 East Walnut, Orange, Calif. 92667

Filed May 18, 1990, Ser. No. 526,037
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—371 **15 Claims**



1. In a tile covered structure having substantially horizontal and vertical surfaces meeting to form a structure corner and having a plurality of tiles covering at least part of said horizontal surface, and a plurality of corner tiles each formed of substantially horizontal and vertical leg sections positioned at said corner, said tiles being secured to said structure by adhesive material between the tiles and structure, the improvement comprising:

a corner tile support strip having a body portion extending between said vertical leg section and said vertical surface, and

a locking portion extending between said horizontal leg section and said horizontal surface,

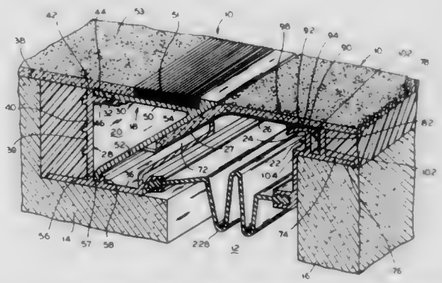
said locking portion extending horizontally at a distance above said horizontal surface of said structure into adhesive material between said horizontal leg section and said horizontal surface.

5,060,439

EXPANSION JOINT COVER ASSEMBLIES

Matthew J. Clements; Maxim A. Fedor, both of Pittsburgh, Pa.; Jerry T. Moffitt, Wexford, Pa.; Lisa Ye, Syracuse, N.Y., and John F. Wadsworth, San Francisco, Calif., assignors to Watson Bowman Acme Corp., Amherst, N.Y.

Filed Jun. 19, 1990, Ser. No. 540,071
Int. Cl.[5] E04B *1/68;* **E04C** *11/02*
U.S. Cl. 52—396 **20 Claims**



1. An expansion joint cover assembly for a joint formed between first and second adjacent, spaced structural sections, said second structural section having a recess formed therein, said assembly comprising in combination:

a first elongate base member stationarily secured to said first structural section and a second elongate base member positioned within the recess formed in said second structural section and stationarily secured to said second structural section;

an elongate cover member having oppositely disposed, longitudinally spaced first and second end sections, said first end section being fixedly and stationarily interconnected with said first base member;

said second base member including a passageway therein for receiving the second end section of said cover member in supporting, sliding engagement; and

said cover member extending across said joint in a cantilever manner overlying and covering said joint with said second end section of said cover member inserted in said passageway to accommodate relative movement of the adjacent, spaced structural sections and to assure proper alignment of the cover member.

5,060,440

ENCAPSULATED WINDOW WITH HINGE

William R. Weaver, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

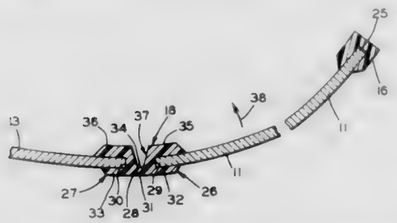
Continuation of Ser. No. 853,399, Apr. 18, 1986, abandoned. This application Oct. 5, 1987, Ser. No. 106,982
Int. Cl.[5] E04B *1/62*
U.S. Cl. 52—400 **6 Claims**

1. A window assembly comprising:

at least a first and second sheet of transparent material; and

a gasket composed of a synthetic polymer and extending along all of the peripheral edge portions of said first and second sheets of transparent material and adhered to said sheets of transparent material, said gasket including a first member extending along a first portion of the peripheral edge of said first sheet, a second member extending along a first portion of a peripheral edge of said second sheet, and a third member connecting said first and second members of said gasket, said third member having an external surface coplanar with an external surface of each of said

first and second members and having an internal surface recessed with respect to an internal surface of each of said first and second members to define a generally U-shaped groove in said gasket extending substantially the entire length of said third member, said third member functioning as a hinge to permit angular displacement of said first and second sheets of transparent material relative to one another about the axis of the U-shaped groove so as to



allow the window assembly to be installed to fit contours in an associated window opening, and wherein said gasket has been polymerized in situ adjacent with first portions of the peripheral edges of said first and second transparent sheets and having assumed through the autogenous mechanism incident to its polymerization and cure while confined, intimate contact with the portions to which it is adhered.

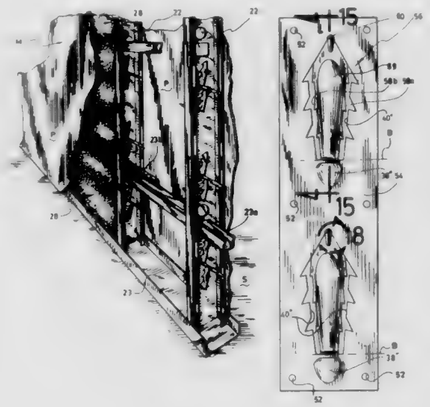
5,060,441

WALL FRAME ELEMENTS WITH INSULATING PANEL ANCHORING PRONGS

Carold Pichette, 163, rue de l'Eglise, Château-Richer, Québec, Canada G0A 1N0

Filed Feb. 14, 1991, Ser. No. 655,052
Claims priority, application Canada, Feb. 20, 1990, 2010500
Int. Cl.[5] E04B *1/62*
U.S. Cl. 52—404 **19 Claims**

1. A sheet metal element with a flat portion having a first and a second face and provided with a prong struck out from said flat sheet metal portion which has a resultant similarly shaped opening, said prong of elongated shape with a pointed free end, teeth protruding from at least one side and having an inner end integral with said sheet portion about a bending line transverse to said prong, bendable between an operative position generally normal to said sheet portion and on one side of the latter from an inoperative position nearly parallel to said sheet portion, characterized in that said prong, in its inoperative position, protrudes from said first face and has a part which overlaps an edge of said opening, such that this prong cannot be



bent through said opening, because said part then abut against said opening edge.

5,060,442

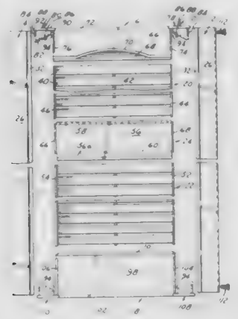
LOUVERED PLASTIC BUILDING PRODUCT

Norman L. Chubb, Dearborn, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Oct. 16, 1990, Ser. No. 598,351
The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.
Int. Cl.[5] E06B *7/08*
U.S. Cl. 52—473 **5 Claims**

1. A louvered plastic building product comprising
a pair of plastic side rail members which may be cut to desired length,
each said side rail member including a track extending along the side rail member,
a plurality of plastic shutter panels,
each said shutter panel having a runner along each side slidably received within said tracks extending along the side rail members,
upper and lower plastic end rail members extending between the side rail members,
each end rail member having a runner along each side slidably received in said tracks and capturing the panels in assembly,
a mullion member,
said mullion member having a runner along each side slidably received in said tracks and separating said panels,
at least one of said end rail members and said mullion member including a lip,

said lip extending beyond the runners on said member having said lip such that said lip overlaps a portion of the louver of the adjacent panel such that when the various parts are assembled, the panels and mullion member can



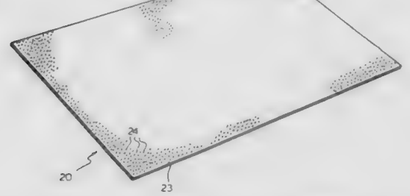
be moved vertically to accommodate dimensional variations between the side rails and the assembled parts with the lip covering any gap that may exist between adjacent members.

5,060,443

ANCHOR BOARD SYSTEM

Joseph R. Pacione, Thornhill, Canada, assignor to Tac-Fast Systems SA, Fribourg, Switzerland

Continuation-in-part of Ser. No. 148,711, Jul. 22, 1988, abandoned. This application Jul. 19, 1989, Ser. No. 381,834
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—506 **5 Claims**



1. Cladding to form interior surfaces of buildings, the cladding comprising plasterboard panels locatable edge to edge to form the interior surface of an area to be clad and adapted to be cut to fit the shape of said area and being attachable to a wall framework:
each panel having one-half of a hook and loop attachment system embedded in the plasterboard and projecting from a front surface and distributed at least substantially over the whole of the front surface, whereby finishing material having the other half of the hook and loop attachment system or a rear surface may be attached anywhere on the front surface.

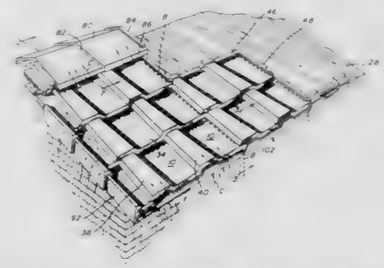
5,060,444

SHINGLE

Jean-Paul Paquette, 91, rang des Etangs, St-Jean Baptiste de Rouville, Québec, Canada J0L 2B0

Filed Sep. 10, 1990, Ser. No. 579,611
Int. Cl.[5] E04D *1/26*
U.S. Cl. 52—535 **6 Claims**

1. A shingle consisting of a one-piece quadrangular body, made of insulating material, having a flat underface, a body top face, a front and a back edge face substantially parallel to each other, a right-hand and a left-hand side edge face generally parallel to each other, said shingle of decreasing thickness from said front to said back edge face, said underface having intersecting channels opening at all said edge faces; a back and a right-hand peripheral flange upstanding from said body top face adjacent said back edge face and said right-hand side edge face, respectively, and interconnected at a back right-hand corner defined by the junction of said back edge face with said righthand side edge face, each peripheral flange having a top face and an inner upstanding face joining with said body top face; the top face of said back peripheral flange defining fastening areas to fasten said shingle to an underlying support surface; said front and back edge faces at least partially forwardly and downwardly inclined at substantially the same angle relative to said underface; said body top face extended by a front marginal extension of said body which overhangs said front edge face and which has an underface; said body top face extended by a lefthand side marginal extension of said body which overhangs said left-hand side edge face; said left-hand side marginal extension and the left-hand part of said front marginal extension forming a rib upstanding from said body top face and extending from the front edge of said front marginal extension to said back edge face, said rib having a free edge face, said back flange also upstanding from the rear end of said rib: the portion of said rib defining said left-hand side marginal extension and said left-hand part of said front marginal extension having an underface which is substantially co-planar with the top face of said right-hand peripheral flange



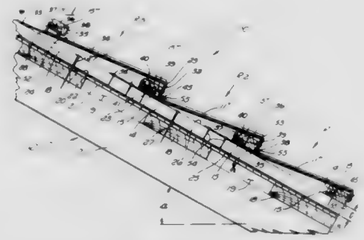
and with the top face of said back peripheral flange adjacent said right-hand peripheral flange; said rib tapering from front to back of said body an amount about equal to the thickness of said left-hand part of said marginal extension, said front and left-hand marginal extensions having a front dependent flange and a left-hand dependent flange downwardly protruding from the underface of said marginal extensions, respectively, said front- and left-hand dependent flanges each having an inner face joining with the underface of said front marginal extension and with the underface of said left-hand marginal extension, respectively: the spacing, in a plane parallel to said body top face, between the inner face of said front dependent flange and said front edge face being greater than the spacing, in a plane parallel to said body top face, between the inner face of said back flange and said back edge face, the spacing, in a plane parallel to said body top face, between the inner face of said left-hand dependent flange and said left-hand side edge face being greater than the spacing, in the plane parallel to said body top face, between the inner face of said right-hand upstanding flange and said right-hand side edge face; said rib having a notch made in its free edge face adjacent and forwardly of said back flange: said right-hand peripheral flange terminating at its front end short of the front edge of said front marginal extension, the right-hand part of said front marginal extension and the front portion of said right-hand side edge face forming a recessed side edge face portion; said shingle adapted to form with three other identical shingles an array of four adjacent shingles which, when in service, have their underface flatly resting on a sloping or vertical support sur-

face, with said front and back edge face of each shingle of said array at a substantially constant lower level and higher level, respectively, with a first lower shingle and a second upper shingle aligned in the same left-hand longitudinal row in the sloping direction, and with a third lower shingle and a fourth upper shingle aligned in the same right-hand longitudinal row in the sloping direction, with said first and third lower shingles aligned in the same lower cross-row transverse to said sloping direction and with said second and fourth shingles aligned in the same upper cross-row transverse to said sloping direction, said second and fourth shingles have their front edge face abutting and interlocking with the back edge face of said first and third shingles, respectively, and said second and fourth shingles have their front marginal extension overlapping said back flange of said first and third shingle, respectively, the left-hand edge face of said third and fourth shingles abutting the right-hand edge face of said first and second shingles, respectively, said left-hand marginal extension of said third and fourth shingles overlapping said upstanding right-hand flange of said first and second shingles, respectively, the front dependent flange of said second and fourth shingles contacting the top face of said first and third shingles, respectively, the left-hand dependent flange of said third and fourth shingles contacting the top face of said first and second shingles respectively, with the inner faces of each pair of front and back flanges and of each pair of right-hand upstanding flange and left-hand dependent flange spaced from each other to define a back concealed passage at the back of said first and third shingles, and a side concealed passage along the left-hand side of said first and second shingles, said back and side passages intercommunicating at the back right-hand corner of said first shingle and with the notch of said third shingle, the side passage along said second shingle being closed at its forward end by the front dependent flange of said fourth shingle and communicating with said notch of said third shingle around the front end of the right-hand upstanding flange of said second shingle, said last-named notch in turn communicating the side concealed passage of said first shingle and overlapped by said left-hand part of said front marginal extension; said recessed side edge face portion of said second shingle receiving the rear end portion of the free edge face of the rib of said third shingle to permit alignment of said second and first shingles in the left-hand longitudinal row and overlapping of said first shingle by said second shingle.

5,060,445
ROOF CONSTRUCTION

Slosson B. Jong, 20722 Hunter La., Huntington Beach, Calif. 92646

Filed Mar. 23, 1989, Ser. No. 327,795
Int. Cl.[5] E04D *1/00*
U.S. Cl. 52—553 32 Claims

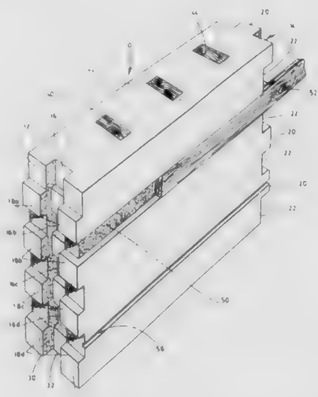


18. A covering for a building comprising:
a series of tiles arranged in rows on a support structure, with each tile having two side edges and having generally horizontally extending top and bottom edges;
an elongated member extending generally horizontally on a first of said tiles in a first of said rows and at a location near said top edge of said first tile;
a second of the tiles in a second of the rows being positioned to overlap said first tile and said member, with said member received between a portion of the first tile near said top edge thereof and a portion of said second tile near said bottom edge thereof;
said first tile having a flange turned to project away from said support structure;
said second tile having a flange turned to project toward said structure;
said elongated member being received between said flanges of said first and second tiles; and
fasteners driven through each of said flanges and into said elongated member to secure said first and second tiles to the member.

5,060,446
INSULATING WALL PANEL

Jean L. Beliveau, R.R. No. 3, Magog, Quebec, Canada J1X 3W4

Filed Sep. 21, 1990, Ser. No. 586,249
Int. Cl.[5] E04C *3/02*
U.S. Cl. 52—595 15 Claims

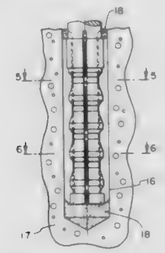


1. An insulating panel having at least one pair of opposite vertical sides defining opposite vertical interfaces for connection to other similar insulating panels abutting said insulating panel, one of said opposite vertical interfaces including a tongue and groove interlock consisting of at least three rows of aligned tongues and grooves, said at least three rows including first, second and third rows adjacent to each other, the second row extending between the first and third rows, the aligned tongues and grooves of each of said rows being staggered with respect to the tongues and grooves of each adjacent row, the vertical interface opposite said one vertical interface including a corresponding tongue and groove interlock consisting of a same number of rows of aligned tongues and grooves sized and positioned to engage and interfit with the rows of tongues and grooves of the one vertical interface of another similar insulating panel abutted to said panel so as to maximize a homogeneous force distribution along the adjacent interfaces of said abutted panels and to act as a weather strip to prevent air circulation between said rows of tongues and grooves, thereby to increase the effective shearing strength as well as the effective insulation of said abutted panels.

5,060,447
TIE ROD

Manfred Rinklake, Emmendingen; Albert Frischmann, Kenzingen; Anisi Daryoush, Wyhl, and Paul Steurer, Teningen, all of Fed. Rep. of Germany, assignors to Upat GmbH & Co., Emmendingen, Fed. Rep. of Germany

Filed Oct. 2, 1990, Ser. No. 591,797
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1989, 3936804
Int. Cl.[5] F16B *13/04*
U.S. Cl. 52—698 20 Claims

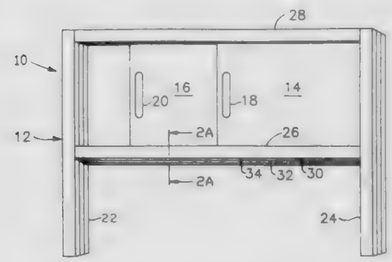


1. Tie rod with a shaft section and a front fastening section cementable by means of a hardenable composition into a bore hole of a construction, said fastening section including several axially offset spreading cones tapering from a front insertion end to a rear load-receiving end of said tie rod, said fastening section including respective reduced diameter portions disposed axially between adjacent spreading cones, characterized in that a cage slidable onto said fastening section is provided, wherein said cage includes several flat separating webs extending radially and projecting radially into said reduced diameter portions between said spreading cones.

5,060,448
COMPOSITE LIGHTWEIGHT BEAM FOR A FREESTANDING DISPLAY OR THE LIKE

Wallace A. Krapf, Macedon; Robert J. Blood, Holcomb, and Daniel W. Rossborough, Conesus, all of N.Y., assignors to Krapf Business Systems, Inc., Macedon, N.Y.

Filed Jan. 14, 1991, Ser. No. 640,887
Int. Cl.[5] A47B *96/14*
U.S. Cl. 52—732 8 Claims

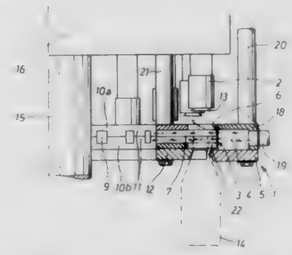


1. A composite box beam, comprising
a first channel section, a second channel section and an elongate central section,
said central section comprising a pair of spaced, parallel plates having opposed, longitudinally extending side edges connected to said first and second channel sections,
each of said first and second channel sections having attachment means thereon for connection with the longitudinal side edges of said central section, and
said central section including reenforcing means extending between said spaced plates,
said reenforcing means of said central section being formed of a honeycombed material.

5,060,449
CONTAINER CLOSING MACHINE HAVING AN IMPROVED AIR FLUSHING SYSTEM

Hermann Klarl, Thalmassing, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Jul. 26, 1990, Ser. No. 558,104
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1989, 3925952
Int. Cl.[5] B65B *31/00*
U.S. Cl. 53—88 5 Claims



1. A container closing machine comprising:
a rotationally driven rotor and a container closing device carried on said rotor for being moved along a circular path,
wheel means which rotates with the rotor and centers the mouths of said containers under said container closing device while said containers move along said circular path,
a system for flushing atmospheric air from the vicinity of the mouth of said container with gas before said container is closed,
said system comprising fixedly positioned means for defining a channel having input means for gas, said channel being arranged radially outwardly of said circular path of the mouths of the said containers and having at least one gas jet outlet positioned radially outwardly of said circular path and arranged for projecting a stream of gas radially inwardly over the mouths of a plurality of containers simultaneously,
said wheel means including upper and lower vertically spaced apart plate members revolving with said closing devices and defining a gas conducting passageway between them generally coplanar with said gas jet outlet of said channel, said upper member having openings through which said closing devices move towards said bottle mouths for closing said containers, said passageway having an inlet which rotates past the jet outlet of said means for defining a channel with small clearance.

5,060,450
APPARATUS FOR SHIFTING PARTICULATE MATERIAL IN POUCHES

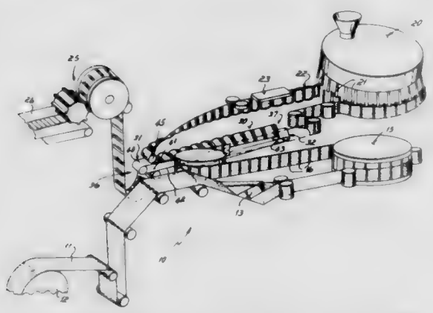
Joseph D. Greenwell, Florence, and Christopher B. Gilmore, Villa Hills, both of Ky., assignors to R. A. Jones & Co. Inc., Covington, Ky.

Filed Oct. 5, 1990, Ser. No. 593,866
Int. Cl.[5] B65B *43/04, 1/20, 1/06, 63/00*
U.S. Cl. 53—113 7 Claims

1. In a pouch machine where a continuous, vertically-oriented web which is folded upon itself and has vertical, longitudinally-spaced, transverse seals to form individual pouches

which are filled with particulate material and sealed across the top of the pouches, apparatus for shifting said material from the lower end portion toward the upper end portion of each pouch comprising:

at least one endless belt passing about two longitudinally-spaced pulleys, said belt having an upper and a lower flight, the axis of at least one pulley being set at an angle



to a horizontal plane and at an angle to said other pulley to twist said upper flight,

means for passing said web over said upper flight of said belt with said belt gradually inclining the orientation of said web to raise said lower portion of each said pouch and thus to cause flow of said material toward the upper end portion of each pouch.

5,060,451

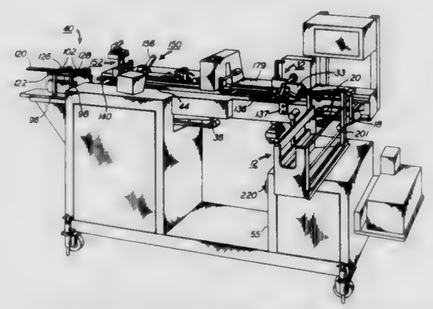
CONVERTIBLE CARTON FILLING MACHINE

Karl F. DeMay, Newark; Darryl F. Lord, Port Gibson; Henry Talma, Phelps, and Robert S. Conklin, Rochester, all of N.Y., assignors to Fold-Pak Corporation, Newark, N.Y.

Filed Nov. 23, 1990, Ser. No. 617,213

Int. Cl.[5] B65B *59/00*

U.S. Cl. 53—201 **13 Claims**



1. A versatile ice cream carton filling machine comprising:

hopper means for storing a plurality of empty cartons;

filling means for filling the empty cartons with ice cream;

transport means for moving the empty cartons from the hopper means to the filling means and for moving the filled cartons away from the filling means to a discharge station;

interchangeable carton closing means mountable on the machine comprising:

removable bottom flap tucking means disposable between the hopper means and the filling means for closing one end of a lock end carton;

removable top flap tucking means disposable between the filling means and the discharge station for closing the top of a lock end carton;

top adhesive sealing and closing means interchangeably disposable with said top flap tucking means between the filling means and the discharge for closing the top end of a tamper evident glued end carton;

bottom adhesive sealing and closing means interchangeably disposable with the bottom flap tucking means between the hopper means and the filling means for closing the bottom end of a tamper evident glued end carton; and

attachment means on said machine for interchangeably receiving said adhesive sealing means and flap tucking means.

5,060,452

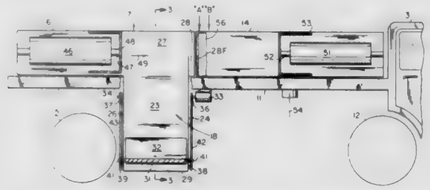
GARBAGE MANAGEMENT APPARATUS AND METHOD

Donald R. Tabor, 815 Layton Rd., Anderson, Ind. 46011

Filed Apr. 12, 1990, Ser. No. 508,794

Int. Cl.[5] B65B *1/24, 63/02*

U.S. Cl. 53—438 **15 Claims**



15. A method of handling refuse comprising the steps of:

placing the refuse in a receiving chamber;

consolidating the refuse into a transfer station;

confining the refuse in the transfer station and pushing it therefrom in one direction into a crushing and compacting chamber;

compacting the refuse in the compacting chamber;

using a portion of a compacting member as a confining member and guide for the refuse as the refuse is pushed into the compacting chamber;

moving the compacting chamber away from the transfer station to facilitate ejection of the compacted refuse into a bag;

placing a bag of fabric coated plastic onto a part of the compacting chamber before ejecting the compacted refuse into the bag; and

moving the compacted refuse from the compacting chamber by said compacting member into a bag mounted on the compacting chamber.

5,060,453

HOT FILL CONTAINER WITH RECONFIGURABLE CONVEX VOLUME CONTROL PANEL

Alfred C. Alberghini, Dunwoody; David A. Brunson, Marietta, and Stephen R. Lynn, Douglasville, all of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.

Filed Jul. 23, 1990, Ser. No. 556,536

Int. Cl.[5] B65B *3/26, 3/28, 7/28;* **B67B** *3/20*

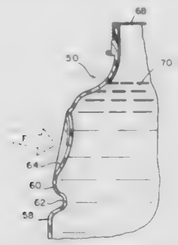
U.S. Cl. 53—440 **4 Claims**

1. A method of filling a thermoplastic container with a hot fluid comprising the steps of:

providing a container made of thermoplastic material having a neck portion, a body portion, and a bottom portion, the body including a plurality of panels situated in circumferentially spaced locations around the periphery of the container, the panels bulging outwardly with respect to the body portion immediately contiguous thereto,

filling the container with a fluid having a temperature greater than about 50° C. and capping the container before a 5% drop in temperature of the fluid occurs, and

contacting the plurality of panels while cooling the container and contents such that the panels are reconfigured to an inwardly collapsed position with respect to the body portion immediately contiguous thereto for providing



controlled volumetric reduction of the container to compensate for the development of a partial vacuum within the container.

5,060,454

METHOD AND APPARATUS FOR PACKAGING CYLINDRICAL-SHAPED OBJECTS IN BOXES

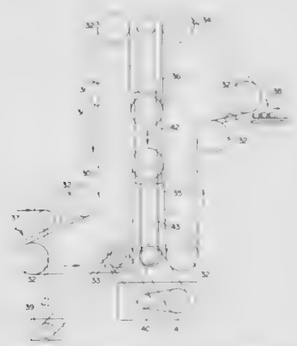
Gottlieb Benz, Flums, Switzerland, assignor to Maschinenfabrik Flums AG, Switzerland

Filed Jan. 24, 1991, Ser. No. 645,895

Claims priority, application Switzerland, Jan. 25, 1990, 00233/90; Dec. 14, 1990, 03971/90

Int. Cl.[5] B65B *19/00, 19/10, 19/14, 19/34*

U.S. Cl. 53—444 **10 Claims**



1. A method for packaging cylindrical-shaped objects, continuously arriving from a continuous supply (**1**), in a box (**9**), comprising continuously delivering cylindrical-shaped objects to a compensator (**3**) from said continuous supply (**1**), delivering said cylindrical-shaped objects in cycles and under opto-electric monitoring from said compensator (**3**) to a carriage (**4**) grouped in accordance with a desired number for a layer, stopping said compensator (**3**) at a delivery point (**38**) for delivering said cylindrical-shaped objects to said carriage (**4**) while continuing to run said compensator at a loading station (**37**) for receiving said cylindrical-shaped objects from said continuous supply (**1**), and while said compensator is stopped at said delivery point, moving said carriage (**4**) from said delivery point and with a slide (**8**) pushing the cylindrical-shaped objects from the carriage (**4**) perpendicular to a direction of movement of said carriage (**4**) into said box (**9**), lowering said box (**9**) by an amount of a height of said layer while simultaneously pulling the slide (**8**) back and moving the carriage (**4**) back to said delivery point, and commencing movement of the compensator (**3**) at said delivery point (**38**).

5,060,455

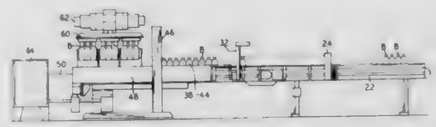
ROBOTIC CASE PACKING SYSTEM AND METHOD

Heinz Schmeisser, Greenfield, Wis., assignor to Ameco Corporation, Menomonee Falls, Wis.

Filed Jun. 28, 1990, Ser. No. 545,375

Int. Cl.[5] B65B *5/06*

U.S. Cl. 53—448 **9 Claims**



1. An apparatus for loading a plurality of articles arranged in side-by-side rows into a container using a robotic arm, comprising:

a gripper head having a planar body;

means for connecting said gripper head to the robotic arm;

a plurality of gripper elements mounted on said gripper head in opposed pairs arranged in parallel rows, each gripper element of said opposed pairs including a gripping face directed toward the gripping face of the gripper element of said opposed pairs, each of said opposed pairs including a stationarily mounted gripper element and a pivotable gripper element wherein said pivotable gripper element is pivotably movable to move said gripping face of said pivotable gripper element alternately toward and away from said gripping face of said stationarily mounted gripper element to individually grip one of the articles therebetween; and

means for simultaneously pivoting all of said pivotable gripper elements on said gripper head to simultaneously yet individually grip a plurality of the articles in the side-by-side rows.

5,060,456

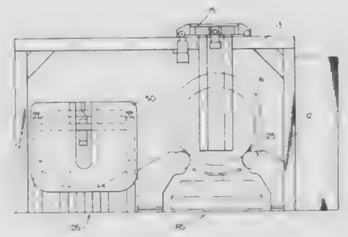
APPARATUS AND METHOD FOR DEHEADING AND DISPOSING OF THE HEAD, WRAPPER CRIMP AND PLUG FROM A PAPER ROLL

Ivan Wehrli, Montesano, Wash., assignor to Enterprises International, Inc., Hoquiam, Wash.

Filed Oct. 2, 1990, Ser. No. 591,733

Int. Cl.[5] B65B *69/00*

U.S. Cl. 53—492 **21 Claims**



17. The method of cutting a head and wrapper crimp from the end of a roll comprising

rotating a wrapped and headed roll about the longitudinal axis of the roll,

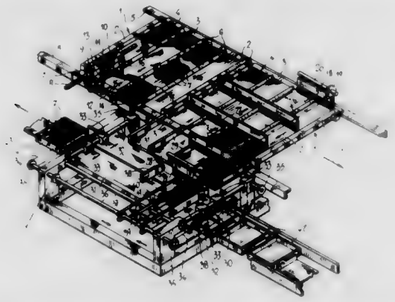
rolling a blade along the wrapper by rotating the roll relative to the blade,

pressing the blade against the wrapper with a force that will not penetrate the wrapper while the blade is supported by the roll but will penetrate the wrapper if the blade moves beyond the end of the roll,

moving the blade longitudinally of the roll until the blade

presses beyond the end of the roll to penetrate the wrapper between the end of the roll and the head, and continuing to rotate the roll until the entire head and wrapper crimp are severed.

5,060,457
PASTA HANDLING APPARATUS
Gabriele Zambelli, Forli, Italy, assignor to G.A.P. Tecnica S.r.l., Forli, Italy
Filed Jul. 23, 1990, Ser. No. 556,822
Claims priority, application Italy, Jul. 26, 1989, 3567 A/89
Int. Cl.[5] B65B *35/30*
U.S. Cl. 53—543 **3 Claims**



1. An apparatus for removing pasta nests from drying frames and introducing said nests into packaging containers, comprising:

first grouping means for grouping a number of said nests in a checkerboard pattern with respective interstices between adjacent groups of said nests, said grouping means comprising: at least one individual brush means mounted on at least one armature and vertically displaceable by piston means; and fixed cross bar means corresponding in number to said brush means, wherein each cross bar means faces a select brush means at a predetermined distance from said brush means to enable cooperative interaction between said brush means and said cross bar means to collect and form one group of said nests for each pair of brush means and cross bar means;

moving means for taking said grouped nests from said first grouping means and moving said nests in a first planer direction;

second grouping means for receiving said grouped nests from said first grouping means via said first moving means in said first planer direction, and moving said nests in a second planer direction perpendicular to said first planer direction, said second grouping means comprising a plurality of equally spaced brushes transversely supported by two parallel endless chains, said chains supported by two parallel beams, said beams vertically and alternatively movable by means of piston means, wherein said chains move said brushes and said brushes move said groups in a direction substantially perpendicular to the direction that said groups were moved by said moving means to said second grouping means thereby delivering a group of nests to third grouping means; and

third grouping means for receiving a predetermined number of grouped nests from said second grouping means, said third grouping means comprising at least one flap-board and conveyor means below said flap-board carrying a plurality of containers, means for opening and closing said at least one flap-board so that each flap-board receives at least one nest while said flap-board is in a closed position and deposits said received nest into a container when said flap-board is in an open position, and said conveyor means carries the container carrying said nest away from said third grouping means while simultaneously delivering an empty container thereto.

5,060,458
PROTECTIVE DOG COAT
Cynthia L. Curtis, Box 61M, S. R. 2, 7271 Bond St., St. Leonard, Md. 20685-9620
Filed Aug. 20, 1990, Ser. No. 569,969
Int. Cl.[5] A01K *13/00;* **B68C** *5/00*
U.S. Cl. 54—79 **5 Claims**



1. A protective coat for an animal, comprising,

a breast cover having a breast outer shell and a breast cover inner liner, said breast cover inner liner attached to an underside of said breast cover piece outer fabric shell,

a collar piece, said collar piece having an outer collar shell and an inner collar liner, said inner collar liner attached to an underside of said outer collar shell,

a back piece, said back piece having an outer shell and a back inner liner, said back inner liner attached to an underside of said back outer shell,

a fastening means having long interconnecting strips,

said fastening means provided to secure said protective coat around an animal, attached on one side of said back piece inner liner of said back piece and to one side of said breast cover outer shell of said breast cover,

said breast cover having an upper left-side area attached to said back piece at a right shoulder area,

said collar piece attached to a neckline area of said back cover piece,

said breast cover having an upper right side area attached by said fastening means to said back piece at a left shoulder area,

said breast cover extended between an animal's forelegs rearward and attached to said back piece, by said fastening means, on one side of said back piece inner liner of said back piece.

5,060,459
HAY CONDITIONING UNIT
Harold S. Herron, Rte. 5, Box 177, Live Oak, Fla. 32060
Filed Nov. 20, 1990, Ser. No. 615,870
Int. Cl.[5] A01D *78/14, 84/00*
U.S. Cl. 56—10.2 **10 Claims**

1. A hay conditioner comprising:

A) a chassis having a forward end and a rear end, sides connecting said forward end to said rear end, a top surface, a towing bar element connected to said forward end and having a towing vehicle attaching element thereon;

B) a plurality of wheels rotatably mounted on said chassis;

C) a power take-off unit connected to a vehicle which is towing said chassis;

D) an electrical generator mounted on said chassis and connected to said power take-off unit;

E) a hay pickup unit mounted on said chassis front end and including

(1) a central hub rotatably mounted on said chassis,

(2) raking tines mounted on said central hub in position to contact hay located on the ground over which said chassis moves, and

(3) means for rotating said central hub in a direction to throw hay from the ground onto said chassis top surface;

F) a conveyor unit mounted on said chassis and which includes

(1) a conveyor belt extending along the chassis from adjacent to said chassis front end to adjacent to said chassis rear end,

(2) an inlet end located near said chassis front end,

(3) an outlet end located near said chassis rear end, and

(4) conveyor belt drive means for moving said conveyor belt from said inlet end to said outlet end;

G) a housing mounted on said chassis top surface adjacent to said conveyor belt and including

(1) a first end located near said conveyor unit inlet end,

(2) a second end located near said conveyor unit outlet end,

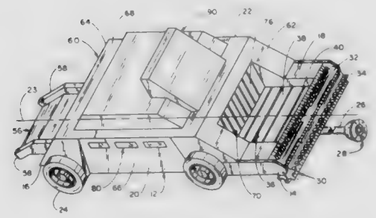
(3) sides located near said chassis sides,

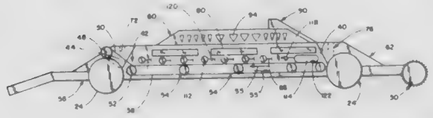
(4) a top connected to said sides, and

(5) windows defined through said housing sides;

H) a hay conditioning unit mounted on said housing and including

(1) a plurality of drying units mounted in said housing,





each of said drying units including a magnetron oscillator,

(2) a power source connected to said generator and to each drying unit,

(3) a control unit connected to said power source and to said hay conditioning power unit,

(4) a manual on/off switch connected to said hay conditioning control unit,

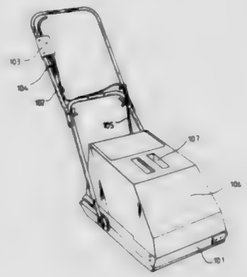
(5) a temperature sensor element mounted in said housing adjacent to said conveyor belt and connected to said hay conditioning control unit, said hay conditioning control unit including circuit means connected to said conveyor belt drive means to control the speed with which said conveyor belt moves through said housing according to temperature conditions in said housing,

(6) a humidity sensor mounted in said housing adjacent to said conveyor belt and connected to said hay conditioning control unit, said hay conditioning control unit including further circuit means connected to said conveyor belt drive means to control the speed with which said conveyor belt moves through said housing according to moisture conditions in said housing,

(7) a manual control connected to each of said drier units, and

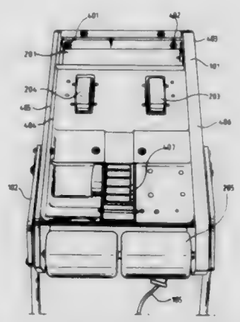
(8) timer mechanism connected to said control unit and to said humidity sensor element and to said temperature sensor element.

5,060,460
CYLINDER MOWER AIR-LIFTED GRASS CUTTINGS
Kenneth Dunn, Mowden Park, United Kingdom, assignor to Electrolux Northern limited, Durham, United Kingdom
Filed Jun. 21, 1990, Ser. No. 541,912
Claims priority, application United Kingdom, Jun. 22, 1989, 8914324
Int. Cl.[5] A01D *34/12*
U.S. Cl. 56—12.8 **7 Claims**



1. A power driven cylinder mower including a mower body, a cylindrical cutter assembly supported by the body and having at least two cutter blades, fan means, means for driving the fan means and means for applying suction derived from the fan means in the region of the cutter assembly so as to assist in urging cut grass clear of the cutter and transporting cut grass into a grass box.

5,060,461
SEMI-HOVER CYLINDER MOWER
Kenneth Dunn, Mowden Park, United Kingdom, assignor to Electrolux Northern Limited, Durham, United Kingdom
Filed Jun. 21, 1990, Ser. No. 541,915
Claims priority, application United Kingdom, Jun. 22, 1989, 8914325
Int. Cl.[5] A01D *35/00*
U.S. Cl. 56—13.3 **4 Claims**



1. A cylinder mower comprising a body, a cutter assembly including at least one cutting blade disposed transversely of the mower, a grass box and a fan for transferring grass cuttings from the cutter assembly to the grass box, in which the cutter assembly is adjustable for height with respect to the body of the mower, and support means for supporting the body of the mower relative to the ground, the support means including rotatable support members mounted on the body and a skirt

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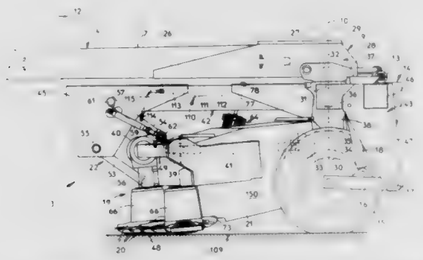
depending from the body to surround a major part of the body and extending in proximity to the ground and into which air from the fan is discharged, the support means lying wholly to the rear of the cutters relative to the normal direction of movement of the mower.

5,060,462

MOWER HAVING A LIGHTENING MECHANISM

Roland Helfer, Lampertheim, and Bernard Wattron, Saverne, both of France, assignors to Kuhn S.A., Saverne, France

Filed Nov. 26, 1990, Ser. No. 617,581
Claims priority, application France, Nov. 24, 1989, 89 15686
Int. Cl.[5] A01D *34/66, 34/74, 34/76, 67/00*
U.S. Cl. 56—14.9 **24 Claims**



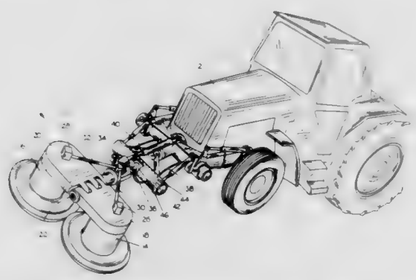
1. A mower which is movable in a direction of advance during work, comprising:
a frame having connecting means for connecting said frame to a motor vehicle;
at least one harvesting mechanism comprising in particular cutting elements and connected to said frame through a suspension device, said suspension device permitting a displacement in height of said harvesting mechanism relative to said frame; and
a lightening device operatively connected to said harvesting mechanism and comprising at least one spring connected directly to said harvesting mechanism, said lightening device at least approximately extending in a vicinity of a vertical plane which is directed in said direction of advance at work and which contains the center of weight of said harvesting mechanism.

5,060,463

FORWARD MOUNTED HITCH APPARATUS

Hollis H. Jones, Star Rte. 1, Box 145, Lusk, Wyo. 82225

Filed Aug. 16, 1990, Ser. No. 568,598
Int. Cl.[5] A01D *34/66;* **A01B** *59/048*
U.S. Cl. 56—15.9 **7 Claims**



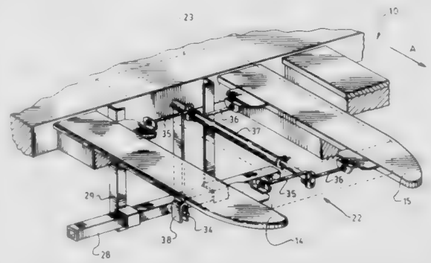
1. A hitching apparatus for the forward end of a prime mover frame comprising:
a pair of spaced-apart support members, having forward and rearward ends;
means on said support members for connecting the support members to said prime mover frame;
a cross member operably connected between said support member forward ends for rotatable movement about the longitudinal axis of the cross member, oriented generally perpendicular to said support members;
means connected between said support members and said cross member for selectively rotating said cross member;
a shaft means having forward and rearward ends, removably connected at its rearward end to said cross member and oriented generally normal thereto, said shaft means connected for movement with said cross member such that the forward end of the shaft means will move up and down upon rotation of the cross member;
said shaft means being rotatably connected to said cross member for rotation about an axis normal to the cross member; and
said shaft means having an implement attached to the forward end thereof.

5,060,464

MECHANISM FOR ADJUSTING THE GAP BETWEEN THE STRIPPER PLATES OF A HARVESTER

Norm Caron, R.R. #1, Grand Pointe, Ontario, Canada N0P 1S0

Filed Oct. 16, 1990, Ser. No. 598,521
Int. Cl.[5] A01D *45/02*
U.S. Cl. 56—62 **10 Claims**



1. In a harvester having a plurality of pairs of stripper plates for detaching the fruit from the plant stalks, said stripper plates being disposed substantially parallel to each other and to the direction of movement of the harvester; the stripper plates within each pair being disposed a distance from each other so that a stalk-receiving gap is formed therebetween; and adjacent pairs of stripper plates being disposed a distance from each other so that a space is formed therebetween; a mechanism for adjusting the size of the stalk-receiving gaps comprising:
a reciprocating means attached to the harvester and adapted for reciprocal movement substantially perpendicular to the direction of movement of the harvester;
a plurality of rotating means attached to the reciprocating means, each rotating means being disposed substantially parallel to the direction of movement of the harvester and within a space between adjacent pairs of stripper plates; each rotating means being adapted for rotational movement about its axis in response to the movement of the reciprocating means;
linkage means attached at one end to a rotating means and at the other end to the stripper plates disposed on either side of the space;
said linkage means being configured so that as the rotating means rotate, the stripper plates disposed on either side of every space are either drawn closer to each other or moved further apart from each other, depending on the direction of movement of the reciprocating means, thereby respectively either increasing or decreasing the size of all the stalk-receiving gaps simultaneously and to the same degree.

5,060,465

TRANSPORTABLE FARM MACHINE FOR WINDROWING PRODUCTS

Aron Jérôme, Bouxwiller, France, assignor to Kuhn S.A., Saverne, France

Filed Jun. 12, 1990, Ser. No. 536,477
Claims priority, application France, Jun. 16, 1989, 89 08233
Int. Cl.[5] A01D *78/12*
U.S. Cl. 56—367 **21 Claims**



1. A transportable farm machine for windrowing products, comprising:
a frame which can be connected to a tractor;
a rotor mounted to said frame for rotation about a vertical axis;
a plurality of toolholder arms mounted to said rotor such that tools mounted on said toolholder arms may form the products into windrows during the rotation of said rotor;
a cam mounted in a central housing of said rotor for pivoting said arms, during rotation of said rotor, around their respective geometric axes;
each of said toolholder arms comprising an inside part mounted to said rotor and an outside part to which said tools are mounted and which is connected to said inside part by a joint about which said outside part can be displaced between a work position and a transport position, said joint comprising:
(a) a first pivot comprising means for pivoting said outside part around the longitudinal axis of said inside part,
(b) a second pivot comprising means for pivoting said outside part about an axis forming a positive angle relative to the axis of said first pivot, and
(c) locking means for licking said outside part with the corresponding inside part in the work position,
whereby said outside part can pivot about the axis of said second pivot to the transport position in which said outside part is not coaxial with said inside part and is no longer controlled by said cam and in which the size of said farm machine is reduced.

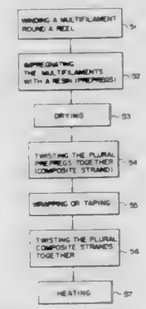
5,060,466

COMPOSITE ROPE AND MANUFACTURING METHOD FOR THE SAME

Shigeharu Matsuda, Ebina; Hiroshi Takaki, Tsuchiura, and Hiroshi Kimura, Ooazashimoinayoshi, all of Japan, assignors to Tokyo Rope Mfg. Co. Ltd., Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 427,171
Claims priority, application Japan, Oct. 31, 1988, 63-275623
Int. Cl.[5] D02G *3/36, 3/40*
U.S. Cl. 57—7 **15 Claims**

1. A process for making a composite rope, comprising the following steps performed in the recited sequence:
(a) preparing a plurality of prepregs which are formed by impregnating a multifilament with a thermosetting resin and half-setting the resin impregnated in the multifilament;
(b) twisting the prepregs together to form a primarily-twisted product;
(c) wrapping and tightly bonding the primarily-twisted product with a selected one of a yarn or a porous tape;



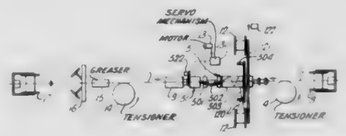
(d) twisting a plurality of primarily-twisted products together to form a secondarily-twisted product; and
(e) heating said secondarily-twisted product to set the resin.

5,060,467

CABLE CORE WITH A TWISTING CHANNEL, AND LAYING OPTICAL FIBER THEREIN

Ronald Y. Gill, Chelmsford, and Frank J. Shepherd, Romford, both of Great Britain, assignors to Telephone Cables Limited, England

Filed Aug. 29, 1989, Ser. No. 400,829
Claims priority, application United Kingdom, Sep. 7, 1988, 8820941; May 19, 1989, 8911533
Int. Cl.[5] D01H *13/04, 13/32*
U.S. Cl. 57—13 **7 Claims**



1. Apparatus for laying an optical fibre unit into one of a plurality of parallel helical or reversing helical grooves in the outer surface of a cable core, comprising: means for conveying the core along a path; a downstream guide freely rotatable about the core path and having an aperture for feeding the fibre unit into the groove and an inward projection for following one of the grooves to maintain registration of the downstream guide with the groove; an upstream guide independently rotatable about the core path and adjacent, upstream of, and having an angular position relative to, the downstream guide, said upstream guide having means for guiding the fibre unit from a fibre unit supply toward the downstream guide; servo drive means responsive to rotation of the downstream guide relative to the upstream guide to adjust the angular position of the upstream guide in relation to the downstream guide and the groove; and a brake which exerts a predetermined braking torque on the downstream guide for limiting the free rotation thereof.

5,060,468

METHOD AND APPARATUS FOR PRODUCING A SURGICAL STAPLE HAVING TWO DIFFERENT INCLINED SURFACES

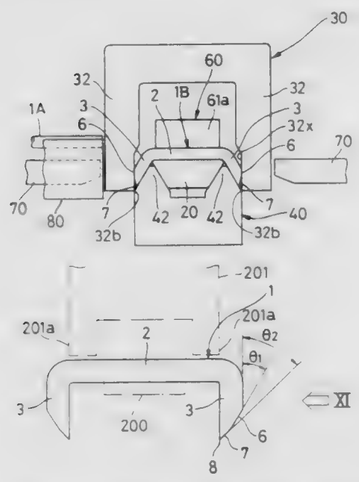
Kanji Matsutani, Shioya, and Masatoshi Fukuda, Utsunomiya, both of Japan, assignors to Matsutani Seisakucho Co., Ltd., Tochigi, Japan

Division of Ser. No. 429,099, Oct. 30, 1989, Pat. No. 4,955,898. This application May 29, 1990, Ser. No. 529,455

Claims priority, application Japan, Oct. 31, 1988, 63-275249

Int. Cl.[5] B21G *7/02*

U.S. Cl. 59—74 **6 Claims**



1. A method of producing a surgical staple, comprising the steps of:

(a) bending opposite end portions of a wire in intersecting relation to a central portion of said wire lying between said opposite end portions of said wire; said central portion defining a base portion of the staple;

(b) setting each of said opposite end portions of said wire on a receiving surface of receiving means for receiving said opposite end portions of said wire in such a manner that said end portion intersects an edge of said receiving surface and projects from said edge; and

(c) after setting said end portion of said wire, moving a cutting edge of shearing means toward said edge of said receiving means in an inclined direction to said receiving surface with said cutting edge being parallel to said edge of said receiving means to shear said end portion to provide a staple body, so that a smooth sheared surface and a coarse ruptured surface are formed on each of opposite end portions of said staple body and arranged in this order toward the end of said staple body, said opposite end portions of said staple body respectively defining a pair of leg portions of said staple extending respectively from the opposite ends of said base portion, said sheared surface and said ruptured surface respectively defining a first inclined surface and a second inclined surface, said first and second inclined surfaces being inclined with respect to the axis of said leg portion, the angle of said first inclined surface with respect to the axis of said leg portion being smaller than the angle of said second inclined surface with respect to the axis of said leg portion, said second inclined surface intersecting the outer peripheral surface of said leg portion to form a sharp end edge.

5,060,469

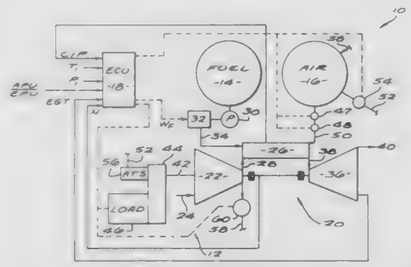
INTEGRATED POWER UNIT CONTROL APPARATUS AND METHOD

Reinhard M. Klaass, Phoenix; Bert J. Minshall, Scottsdale; Francis J. Suriano, Scottsdale, and William Caan, Scottsdale, all of Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 21, 1989, Ser. No. 411,431

Int. Cl.[5] F02C *9/50*

U.S. Cl. 60—39.03 **6 Claims**



4. A method of controlling operation of a turbine engine which includes a storage source of pressurized air, a combustor receiving a flow of pressurized air from said storage source along with fuel for maintaining combustion to provide a flow of pressurized high temperature combustion products, and a turbine expanding said combustion products toward ambient to provide shaft power, said control method including the steps of:

measuring an air pressure associated with inflow of said pressurized air from said storage source at said combustor, said storage source providing substantially all of said inflow and configured for mounting aboard an aircraft;

predicting the mass flow rate of pressurized air from said storage source flowing to said combustor based upon said measured pressure; and

delivering fuel to said combustor based upon said prediction of mass air flow rate thereto to achieve a selected air/fuel ratio.

5,060,470

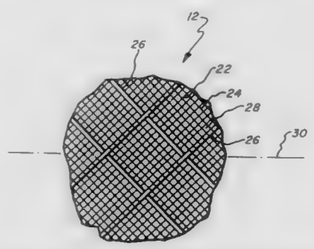
GAS GENERATOR VENTABLE AT A HIGH TEMPERATURE FOR HAZARD REDUCTION

Frederick W. VanName, Newark, Del., assignor to Thiokol Corporation, Ogden, Utah

Filed May 22, 1990, Ser. No. 526,884

Int. Cl.[5] F02K *9/34, 9/38*

U.S. Cl. 60—253 **4 Claims**



3. A rocket motor comprising a case composed of a plurality of plies of fibrous material strands impregnated with a matrix material, solid propellant material disposed within said case, means for igniting said solid propellant material, nozzle means attached to said case, and a plurality of elongate memory metal members interleaved between said plies, said solid propellant material characterized by automatically igniting at a predetermined temperature which is substantially higher than the ambient temperature range to which the rocket motor is normally subjected, said memory metal members having a transformation temperature which is substantially higher than said ambient temperature range and which is substantially lower than said predetermined temperature and characterized by a change in shape when heated to a temperature above said transformation temperature.

5,060,471

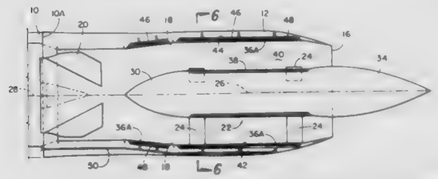
JET ENGINE NOISE REDUCTION SYSTEM

Delbert W. Torkelson, Claremore, Okla., assignor to 501 Nordam, Tulsa, Okla.

Continuation-in-part of Ser. No. 432,367, Oct. 6, 1989. This application Feb. 2, 1990, Ser. No. 474,346

Int. Cl.[5] F01N *1/24;* **F02K** *1/04*

U.S. Cl. 60—262 **17 Claims**



1. For use with a jet engine having an aft exhaust end, a noise reduction system comprising:

a tubular exhaust shroud affixed to the jet engine exhaust end through which engine exhaust gases pass, the shroud having an internal circumferential surface and having a forward end and an aft end;

porous acoustical lining supported to at least a portion of said internal circumferential surface of said shroud, the acoustical lining having an inner surface exposed to engine exhaust gases passing through said shroud and an outer surface; and

means to control the passage of gas through at least a portion of said acoustical lining in the direction from said outer to said inner surface or in the direction from said inner to said outer surface to thereby vary the acoustical absorption properties of said acoustical lining.

5,060,472

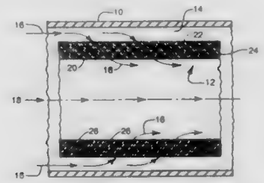
INSULATED COOLING LINER

Gary A. Schirtzinger, North Palm Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1990, Ser. No. 508,334

Int. Cl.[5] B64D *33/00;* **F02K** *3/10*

U.S. Cl. 60—265 **2 Claims**



1. In a system for heat shielding the exit nozzle of a gas turbine engine from the hot gases flowing therethrough, said system including a stream of cooling fluid, and a liner positioned within said nozzle and spaced therefrom, said hot exit gases from said turbine flowing on one side of said liner, and said cooling fluid flowing on the other side of said liner in the space between said nozzle and said liner, said liner comprising:

a first metal sheet in contact with said stream of hot gases;

a second metal sheet spaced from said first metal sheet, said second sheet being in contact with said stream of cooling fluid;

a plurality of tubes interconnecting said first and second sheets; and

a fibrous insulating material sandwiched between said sheets and surrounding said tubes.

5,060,473

SYSTEM FOR DETECTING DETERIORATION OF CATALYST IN CATALYTIC CONVERTER

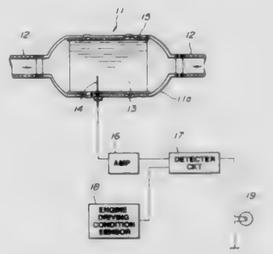
Toyoaki Nakagawa, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 13, 1989, Ser. No. 379,134

Claims priority, application Japan, Jul. 13, 1988, 63-175462; Aug. 8, 1988, 63-105137

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—277 **17 Claims**



1. A system for detecting a deterioration condition of a catalyst comprising:

a first means for monitoring temperature of a catalyst to produce a catalyst temperature indicative signal;

a second means for monitoring engine driving condition for producing an engine driving condition indicative signal;

a third means for generating a reference value signal, said reference signal value representative of a temperature criterion for determination of a deteriorated catalyst, and said reference signal value being generated on the basis of said engine driving condition indicative signal value; and

a fourth means for comparing said catalyst temperature indicative signal value with said reference value to produce an alarm when said catalyst temperature indicative signal value is smaller than said reference value.

5,060,474

EXHAUST EMISSION CONTROL FAILURE DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takashi Aramaki, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 26, 1990, Ser. No. 556,717

Claims priority, application Japan, Jul. 26, 1989, 1-191523

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—277 **14 Claims**

1. In an exhaust emission control system for an internal combustion engine, said exhaust emission control system having:

exhaust passage means for conducting an exhaust gas discharged from an engine combustion chamber, said exhaust passage means including therein catalytic converter means; and

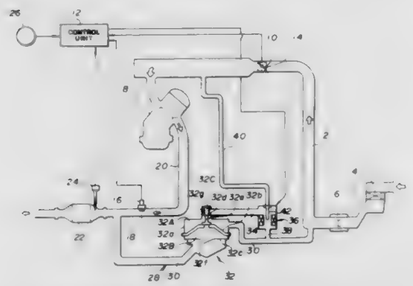
secondary air supply means for selectively feeding a secondary air into said exhaust passage means at a first position upstream of said catalytic converter means;

a failure detection system comprising:

first means for controlling said secondary air supply means to feed said secondary air into said exhaust passage at said first position;

second means for deriving a first temperature of the exhaust gas at a second position downstream of said first position when said secondary air is fed by said first means;

third means for controlling said secondary air supply means



to stop feeding of said secondary air into said exhaust passage at said first position;

fourth means for deriving a second temperature of the exhaust gas at said second position when the feeding of said secondary air is stopped by said third means;

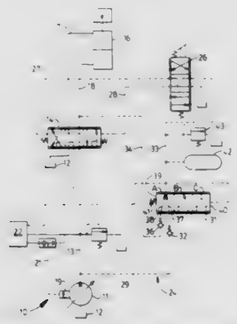
fifth means for deciding whether said exhaust emission control system includes a failure, based on said first temperature and said second temperature.

5,060,475

PILOT CONTROL CIRCUIT FOR LOAD SENSING HYDRAULIC SYSTEMS

Eugene E. Latimer, Wilmington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed May 29, 1990, Ser. No. 530,147
Int. Cl.[5] F15B *11/08*
U.S. Cl. 60—413 2 Claims



1. A pilot control circuit for a load sensing hydraulic system having a hydraulic motor, a load sensing variable displacement pump, a supply conduit connected to the pump, and a pilot operated valve connected to the supply conduit and to the hydraulic motor and being moveable to an operating position at which the supply conduit communicates with the hydraulic motor, comprising:

a pilot control valve connected to the pilot operated valve;

a primary pilot line connected to the supply conduit;

a secondary pilot line connected to the pilot control valve;

a load pressure line connected to the load supporting end of the hydraulic motor;

a pressure reducing valve connected to the primary, secondary, and load pressure pilot lines and having primary and secondary flow paths therethrough, the pressure reducing valve being movable between a position at which fluid flow through the primary flow path between the primary and secondary pilot lines is controllably metered and fluid flow through the secondary flow path is blocked, and another position at which fluid flow through the secondary flow path between the load pressure pilot line and the secondary pilot line is controllably metered, the reducing valve being adapted to reduce the pressure of the fluid passing therethrough from the primary and load pressure pilot lines to the secondary pilot line to a predetermined level; and

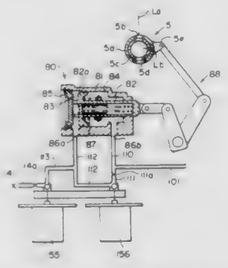
accumulator means connected to the secondary pilot line downstream from the pressure reducing valve for storing pressurized pilot fluid for use by the pilot control circuit to maintain the pilot operated valve in the operating position when the fluid pressure level in the supply conduit momentarily drops to a level lower than said predetermined level.

5,060,476

DIFFERENTIAL AREA MOTOR CIRCUIT FOR HYDROSTATIC TRANSMISSION CONTROL

Kouji Yamaguchi; Junichi Miyake, both of Saitama, and Kazuya Maki, Aichi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1988, Ser. No. 262,931
Claims priority, application Japan, Oct. 19, 1987, 62-263055; Oct. 19, 1987, 62-263059; Oct. 20, 1987, 62-264840
Int. Cl.[5] F15B *15/17*; F16D *31/08, 31/00*
U.S. Cl. 60—487 61 Claims



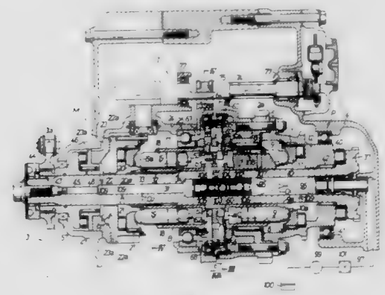
6. A control apparatus for a hydraulic servo unit with a piston slidably fitted in a cylinder, said piston dividing said cylinder into a head-side chamber and a rod-side chamber, said piston having a first pressure-bearing surface facing into said head-side chamber and a second pressure-bearing surface facing into said rod-side chamber, and a rod integral with said piston on the side of the piston facing into the rod-side chamber, said rod extending out of said cylinder, comprising, first hydraulic line means for supplying a working fluid of a predetermined pressure to said rod-side chamber, first solenoid means for opening and closing a first valve in accordance with duty-ratio control signals, second hydraulic line means for connecting said head-side chamber with said first hydraulic line means through said first solenoid means, second solenoid means for opening and closing a second valve in accordance with duty-ratio control signals, control means for supplying said duty-ratio control signals, drain means for connecting said head-side cylinder chamber with a drain through said second solenoid means, and a first restriction in said second hydraulic line means and a second restriction in said drain means, said first restriction having a first predetermined fixed flow area and said second restriction having a second predetermined fixed flow area.

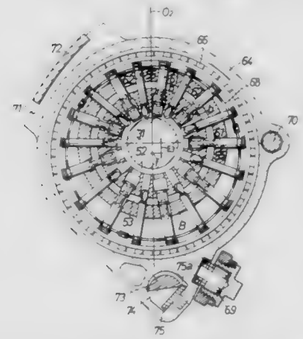
5,060,477

HYDROSTATIC CONTINUOUSLY VARIABLE TRANSMISSION WITH A SET OF PUMP DISTRIBUTOR VALVES, A SET OF MOTOR DISTRIBUTOR VALVES AND A SET OF CLUTCH VALVES ARRANGED RADIATELY WITH AND CIRCUMFERENTIALLY ALTERNATING WITH THE MOTOR DISTRIBUTOR VALVES

Tsutomu Hayashi, and Mitsuru Saito, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1990, Ser. No. 615,611
Claims priority, application Japan, Nov. 21, 1989, 1-302785
Int. Cl.[5] F16D *39/00*
U.S. Cl. 60—488 4 Claims





1. A hydrostatic continuously variable transmission, comprising:

a pump cylinder in a hydraulic pump and a motor cylinder in a hydraulic motor, said cylinders being coaxially integrally coupled with each other to form a cylinder block,

an annular inner oil passage and an annular outer oil passage, which are formed in the cylinder block between a large number of cylinder bores provided in an annular arrangement in the pump cylinder and a large number of cylinder bores provided in an annular arrangement in the motor cylinder, so as to surround an axis of the cylinder block,

a large number of first distributor valves disposed radiately in the cylinder block and adapted to be reciprocally moved radially of the cylinder block to put the large number of cylinder bores in the pump cylinder into alternate communication with said oil passages,

a large number of second distributor valves disposed radiately in the cylinder block and adapted to be reciprocally moved radially of the cylinder block to put the large number of cylinder bores in the motor cylinder into alternate communication with said oil passages,

a first eccentric ring engaged with the first distributor valves for providing the reciprocal movement to the first distributor valves in response to relative rotation between the cylinder block and an input member of the hydraulic pump, and

a second eccentric ring engaged with the second distributor valves for providing the reciprocal movement to the second distributor valves in response to the rotation of the cylinder block,

wherein said transmission further includes a large number of clutch valves arranged radiately with and circumferentially alternating with the second distributor valves in the cylinder block and adapted to be reciprocally moved between radially inner and outer positions in the cylinder block to short-circuit the oil passages when a reciprocation stroke of each clutch valve exceeds a given value, said clutch valves being engaged with the second eccentric ring together with the second distributor valves, and said second eccentric ring being movable between a clutch-on position providing a normal reciprocal movement to the second distributor valves and a clutch-off position moving the clutch valves reciprocally to a position to short-circuit the oil passages.

5,060,478

MAGNETICAL WORKING AMORPHOUS SUBSTANCE

Kazuaki Fukamichi, Sendai, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 156,851, Feb. 17, 1988, abandoned, which is a continuation of Ser. No. 848,377, Mar. 12, 1986, abandoned. This application Aug. 31, 1989, Ser. No. 401,545
Claims priority, application Japan, Jul. 27, 1984, 1-155562; Feb. 8, 1985, 2-21915
Int. Cl.[5] F25B *21/00*
U.S. Cl. 62—3.1 13 Claims



1. A method of producing refrigeration and cooling by adiabatical demagnetization of an amorphous substance, which comprises:

preparing an amorphous substance comprising an amorphous alloy selected from the group consisting of an amorphous alloy containing at least one rare earth metal and an amorphous alloy containing at least Fe; and

applying to the amorphous substance an external magnetic field in an amount sufficient to adiabatically demagnetize said amorphous substance,

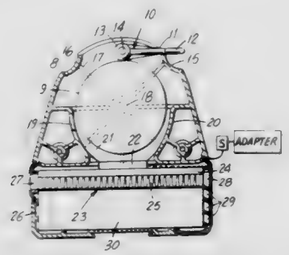
whereby producing magnetic refrigeration and cooling.

5,060,479

THERMOELECTRIC DEVICE FOR HEATING OR COOLING FOOD AND DRINK CONTAINERS

Amatzia Carmi, Kibbutz Afikim; Abraam Ram, Pardes Hana, and Izac Gur-Arif, Kibbutz Afikim, all of Israel, assignors to Afikim Kvutzat Poalim Lehity Ashvut Shitufit B.M., Kibbutz Afikim, Israel

Filed Oct. 31, 1990, Ser. No. 607,303
Claims priority, application Israel, Nov. 3, 1989, 92209
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—362 **6 Claims**



1. A thermostatic apparatus for heating or cooling of a substantially cylindrical container for food and drink, the apparatus comprising a housing made of a heat insulating material and having at least one compartment; a heat transfer member of low heat storage capacity positioned remote from an outer wall of said at least one compartment and having a concave side facing said compartment and an opposite side having a flat portion of an area smaller than that of the concave side, said concave side facing said compartment being constructed to envelope part of a circumference of said container in an inserted position thereof; a thermoelectric device matching the flat portion of said opposite side of the heat transfer member and being connectable to a source of direct electric current via switch means for selecting a direction of current flow, said thermoelectric device having a first face bearing on the flat portion of the opposite side of the heat transfer member and an opposite, second face; a heat exchanger including a radiator section and mounted in intimate contact with the second face of said thermoelectric device, and a blower section holding a blower adapted to pump ambient air through said radiator section; and means for tightening together a container placed within said at least one compartment and said heat transfer member so as to cause intimate contact therebetween whereby said heat transfer member and said tightening means coact to define means to enable the heat transfer member to establish intimate contact with about a half of a side wall of said container for removably receiving and holding said container

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5,060,480

PROCESS AND APPARATUS FOR THE LIQUEFACTION OF A FLOW OF GASEOUS OXYGEN

Bernard Saulnier, Colombes, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Oct. 30, 1990, Ser. No. 605,496
Int. Cl.[5] F25J *1/00*
U.S. Cl. 62—9 **15 Claims**

1. Process for the liquefaction of a flow of gaseous oxygen under pressure, which comprises the following steps:
passing gaseous oxygen, in one direction, through a first line which extends across a heat exchanger;
passing a counter-current flow of liquid nitrogen under pressure through a second line which extends across the exchanger;
withdrawing at least a portion of the nitrogen which has been vaporized and warmed up at a first temperature in the second line;
expanding nitrogen withdrawn from the second line, in a first turbine;



recirculating through a third line of the exchanger a counter-current flow of nitrogen expanded in the first turbine; and collecting liquid oxygen which exits from the first line.

5,060,481

METHOD AND APPARATUS FOR CONTROLLING A CRYOGENIC REFRIGERATION SYSTEM

Allen J. Bartlett, Milford; Maureen C. Buonpane, Lexington, and Paul E. Amundsen, Ipswich, all of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 20, 1989, Ser. No. 383,170
Int. Cl.[5] F25B *19/02*
U.S. Cl. 62—51.2 **35 Claims**

1. A cryogenic refrigeration system, comprising:
(a) a path through which a refrigerant flows;
(b) at least one Joule-Thomson valve positioned in the path through which the refrigerant flows for cooling the refrigerant;
(c) at least one heater positioned near the at least one Joule-Thomson valve for heating the at least one value to remove blockage caused by freezing of contaminants at the at least one valve; and
(d) a temperature sensor to measure a temperature in the system to determine when to turn on the at least one heater.

5,060,482

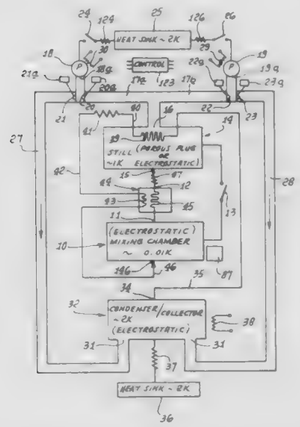
CONTINUOUSLY OPERATING HU 3HE-4HE DILUTION REFRIGERATOR FOR SPACE FLIGHT

Henry W. Jackson, 222 S. Holliston #305, Pasadena, Calif. 91106

Filed Jan. 25, 1990, Ser. No. 470,303
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.3 **70 Claims**

1. In a dilution refrigerator, the combination comprising
a) an electrostatic mixing chamber containing ^{3}He-rich and ^{4}He-rich phases subject to separation in response to electrostatic force application, the chamber having an outlet for ^{3}He that has passed through an interface between those two liquid phases to produce cooling,

b) a still connected with the mixing chamber to receive ^{3}He therefrom, the still having an outlet for ^{3}He,
c) two adsorption pumps connected with said still outlet to receive ^{3}He vapor, alternately, there being valve means connected with each pump,
d) heater means associated with the pumps to cause ^{3}He desorption by the pumps,



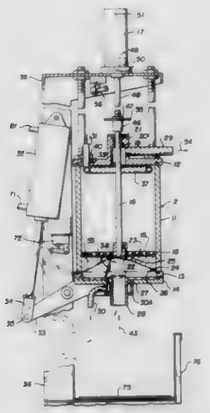
e) a condenser-collector connected with the valves to receive desorbed ^{3}He, and means to hold ^{3}He liquid at a flow path outlet from the condenser-collector,
f) and a heat exchanger connected in a flow path from the condenser-collector back to the mixing chamber.

5,060,483

TWIN RINSE COLUMNS FOR FREEZE CONCENTRATION OF RINSABLE CONCENTRATES

Wolfgang K. Heiland, Trevose, and E. Richard Radewonuk, Crum Lynne, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 4, 1990, Ser. No. 592,735
Int. Cl.[5] B01D *9/04*
U.S. Cl. 62—123 **22 Claims**



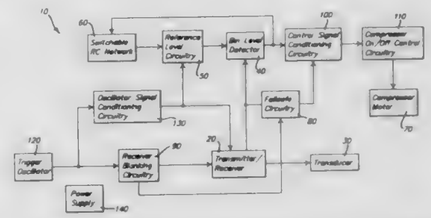
11. An apparatus for freeze concentration of liquids selected from the group consisting of solutions, emulsions and slurries, comprising, in combination:
a. heat exchanger means for freezing said liquid to form a slurry of ice crystals and concentrated liquid,
b. at least one separating and rinsing column comprising:
1) a container having a hollow chamber, a top, and a bottom moveable between an open and a closed position,
2) first conduit means communicating with a lower portion of said container for removing fluid in said chamber while said bottom is in said closed position,
3) valve means on said first conduit means,
4) second conduit means communicating with an upper portion of said container for adding fluid in said chamber,
5) third conduit means communicating with the lower portion of said container for removing a fluid from said chamber while said bottom is in said closed position, said third conduit means further having means for retaining ice crystals in said container,
6) a reciprocating piston inside said chamber, said piston adapted to allow the passage of liquids and gases through said piston while preventing the passage of ice crystals,
7) fourth conduit means communicating with the upper portion of said container for adding fluid to said chamber,
c. line means connecting said heat exchanger means with said first conduit means,
d. first receptacle means in communication with said second conduit means and said third conduit means, said receptacle means receiving fluid from said chamber,
e. second receptacle means positioned below said separating and rinsing column for receiving ice from said container when said bottom is moved to said open position.

5,060,484

BIN LEVEL CONTROL CIRCUIT AND TRANSDUCER MOUNTING SYSTEM FOR AN ICE MAKING MACHINE

Vincent N. Bush, Madison Lake, Minn., and Gregory L. Griswold, Lake Villa, Ill., assignors to Scotsman Group, Inc., Vernon Hills, Ill.

Filed Jun. 12, 1990, Ser. No. 536,503
Int. Cl.[5] F25C *1/00*
U.S. Cl. 62—137 **22 Claims**



14. An ultra-sonic bin level control circuit for controlling the volume of ice within a container comprising:
(a) transmitter-receiver means having a transmitter portion for emitting a pulsed electromagnetic signal and a receiver portion for receiving a reflected pulsed electromagnetic signal;
(b) transducer means mounted at a fixed position above the bottom of the container for converting an emitted electromagnetic pulse into an acoustic energy pulse directed at the upper surface of the ice and for converting a reflected acoustic energy pulse into a reflected pulsed electromagnetic signal;
(c) switching means for starting and stopping increases in the level of the ice within the container;
(d) reference level means for generating a pulsed reference

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signal whose pulse width determines the desired level of the ice within the container, said reference level means including a monostable multivibrator and a resistor-capacitor (RC) network, said resistor-capacitor (RC) network including a first set of resistors coupled to said monostable multivibrator and a second set of resistors coupled between said monostable multivibrator and said level detector means for preventing said switching means from starting an increase in the level of the ice after it has reached the desired level until a predetermined time has elapsed, said second set of resistors being in parallel with said first set of resistors until the ice reaches the desired level within the container;

(e) level detector means for producing control signals for controlling the switching means and for comparing the pulsed reference signal with the reflected pulsed electromagnetic signal, said ice reaching the desired level when the reflected pulsed electromagnetic signal overlaps the pulsed reference signal in time, said level detector means including a D-type flip-flop clocked by said reflected pulsed electromagnetic signal;

(f) receiver blanking means for generating a blanking signal for shutting off the receiver portion while said transmitter portion is emitting the pulsed electromagnetic signal and for generating a fail-safe signal, said receiver blanking means including a monostable multivibrator and a fixed resistor capacitor (RC) network coupled to said monostable multivibrator;

(g) triggering means for producing triggering signals for establishing the phase relationships between the reflected pulsed electromagnetic signal and the emitted pulsed electromagnetic and pulsed reference level signals, said triggering means including a dual monostable oscillator for controlling said reference level means, said transmitter portion, and said receiver blanking means, and oscillator signal conditioning means coupled to said dual monostable oscillator for delaying triggering signals to said reference level means and said transmitter portion to ensure that said receiving portion is shut-off by said blanking signal while said transmitter portion is emitting the pulsed electromagnetic signal;

(h) fail-safe means controlled by said fail-safe signal for causing said switching means to stop increases in the level of the ice in the container when the reflected pulsed electromagnetic signal is late or absent; and

(i) control signal conditioning means coupled between said level detector means and said switching means for preventing a spurious reflected pulsed electromagnetic signal from causing said switching means to stop increases in the level of the ice before the ice has reached the desired level.

5,060,485

EXPANSION VALVE

Masaru Watanabe, Kawasaki, and Osamu Yamamoto, Tokyo, both of Japan, assignors to Fujikoki America, Inc., Dallas, Tex.

Continuation of Ser. No. 67,865, Jun. 30, 1987, Pat. No. 4,819,443. This application Jan. 23, 1989, Ser. No. 299,427

Int. Cl.[5] F25B *41/04*

U.S. Cl. 62—225 **5 Claims**

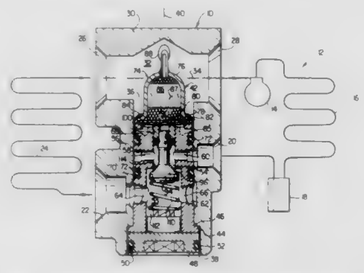
1. An expansion valve for an air conditioner having an evaporator and a compressor, the expansion valve comprising:

a body assembly defining a first flow path for high pressure refrigerant flow from the compressor to the evaporator and a second flow path for low pressure refrigerant flow from the evaporator to the compressor;

a cartridge, including:

(a) a valve member positioned in the first flow path for varying the flow cross section through the first flow path for modulating refrigerant flow;

(b) means positioned within the second flow path for sensing the superheat of the low pressure refrigerant flow and for moving the valve member in response to the sensed superheat to modulate the refrigerant flow;



the cartridge being self-contained and pre-calibrated to modulate the refrigerant flow in response to the superheat sensed independent of the body assembly, permitting use in a variety of body assembly configurations.

5,060,486

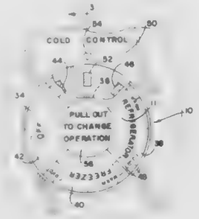
THERMOSTAT CONTROL FOR PROVIDING MULTIPLE TEMPERATURE RANGES IN A SINGLE REFRIGERATION COMPARTMENT

William J. Linstromberg, Lincoln Township, Berrien County, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 18, 1987, Ser. No. 27,397

Int. Cl.[5] F25B *49/00;* **H01H** *37/12*

U.S. Cl. 62—229 **31 Claims**



1. A refrigeration unit comprising

a refrigeration compartment,

means for cooling said refrigeration compartment and

means for controlling the operation of said cooling means to maintain a temperature in said compartment within a selected temperature range of a plurality of alternatively available, distinct temperature ranges respectively associated with a plurality of distinct operational modes of said refrigeration unit, said operational modes comprising at least two distinct operational modes of the following three distinct operational modes:

a wine cooler operational mode and a refrigerator operational mode and a freezer operational mode.

5,060,487

ABSORPTION REFRIGERATION SYSTEM PURGE PUMP APPARATUS

Joseph G. Murray, Worthington, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Apr. 18, 1991, Ser. No. 687,042

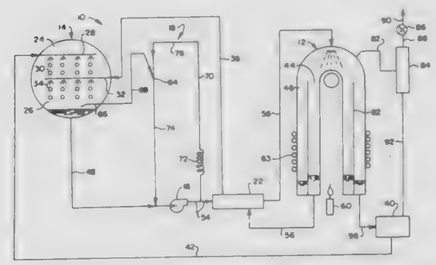
Int. Cl.[5] F25B *43/04*

U.S. Cl. 62—475 **4 Claims**

1. In an absorption refrigeration system having absorber, generator, and refrigeration solution pump elements, purge pump apparatus comprising, in combination,

a.) fluid flow resistance means receiving relatively dilute bleed refrigeration solution from the high-pressure side of said system solution pump element and substantially reducing the pressure of said reduced pressure dilute bleed refrigeration solution;

b.) inverted, U-tube means connected to receive reduced pressure dilute bleed refrigeration solution from said fluid flow resistance means and having upward and downward



vertical flow legs connected by a cross-over leg and an entrapment zone positioned in said downward flow vertical leg at an elevation below said cross-over leg; and

c.) purge line means flowing un-wanted, non-condensed gases from said system absorber element to said U-tube means downward flow leg entrapment zone,

said un-wanted, non-condensed gases being flowed downwardly in said U-tube downward flow leg toward as spaced-apart gas increments separated by dilute refrigeration solution increments for compression by gravitational forces and for delivery to the inlet of said system solution pump element.

5,060,488

DEVICE FOR SUPPORTING AND CONTROLLING STITCH-PRESSING AND STITCH-RETAINING MEANS IN AN AUTOMATIC STRAIGHT KNITTING MACHINE

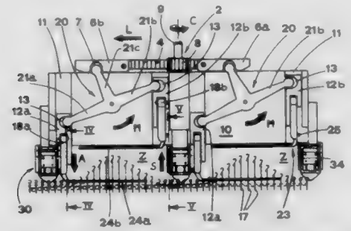
Benito Stoppazzini, Sala Bolognese, Italy, assignor to E.M.M. S.r.l., Padulle Di Sala Bolognese, Italy

Filed May 22, 1990, Ser. No. 526,826

Claims priority, application Italy, May 29, 1989, 3496 A/89

Int. Cl.[5] D04B *7/04, 35/00*

U.S. Cl. 66—64 **6 Claims**



1. A device for supporting and controlling stitch-pressing and stitch-retaining means designed to press on corresponding portions of the knitted fabric being formed on an automatic straight knitting machine, said portions being dynamically located in proximity of at least one work zone of needles of said machine, with said machine comprising at least one needle bed bearing a plurality of needles, and a carriage made to reciprocate over said needle bed in order to send said needles into operation, said device comprising:

a plate held vertically by support means over said needle bed and featuring, on at least one side, at least two vertical grooves disposed bilaterally with respect to each of said work zone;

small bars, namely even small bars and odd small bars, placed into said grooves, with possibility for said bars to slide vertically and axially according to opposite directions, respectively rising direction and lowering direction;

a rocking lever for each pair of small bars hinged to said plate and provided with two arms acting with two free ends respectively on said small bars, and provided with a third arm subjected to the action of drive means suited to bring about the swinging in the same sense of said rocking levers in opposite directions lying in planes parallel to said plate, respectively to achieve the translation of said even small bars according to said raising direction, with the contemporary translation of said odd small bars according to said lowering direction, and vice versa;

a segment for each of said small bars, said segment being hinged to said bar with one end and disposed vertically so as to be able to swing according to opposite directions perpendicular to said plate;

stitch-pressing means fastened to the lower end of said small bars and extending for the whole length of the relative work zone of the needles;

guide means for said segments suited to cause their contemporary swinging according to said opposite directions perpendicular to said plate, during their vertical sliding, to allow the mutual change of position of said stitch-pressing means;

a series of stitch-retaining means, placed and being operating at the beginning and at the end of each work zone.

5,060,489

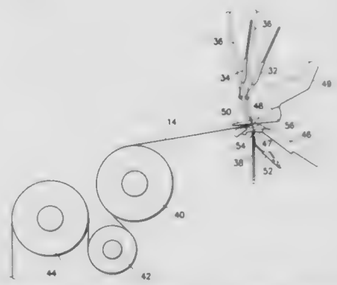
TRICOT KNITTING MACHINE IMPROVEMENT

Kenneth H. Sanders, Jonesville, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 551,295, Jul. 12, 1990, Pat. No. 5,017,425. This application Sep. 14, 1990, Ser. No. 582,310

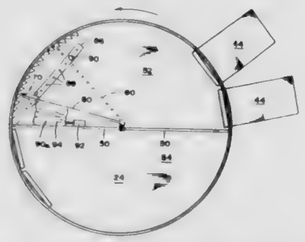
Int. Cl.[5] D04B *23/12, 27/04*

U.S. Cl. 66—203 **1 Claim**



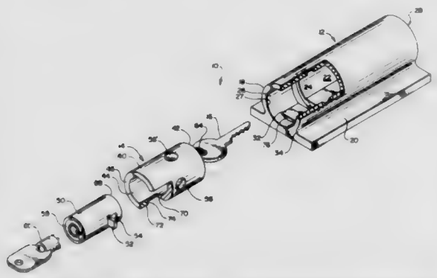
1. A method of knitting a fabric on a tricot knitting machine having sinkers comprising the steps of: providing a row of knitting needles, providing guide bars to guide yarn to the knitting needles, placing the sinkers in a fixed position to prevent the sinkers from moving with the loops formed on the needles, forming the yarn on the knitting needles into a course of interconnected loops, taking the formed knitted fabric away from the knitting machine in a direction substantially perpendicular to the vertical axis of the knitting machine and locating hold-down fingers between adjacent needles and above the formed knit fabric with their outer ends projecting beyond the outer ends of the sinkers to hold down the first three or four courses of knit fabric coming from the needles to prevent the loops from breaking out of the formed fabric.

5,060,490
ROTARY DYEING SYSTEM
Stephen K. Shaw, Winston-Salem, N.C.; Calvin C. Allen, Clarksville, Ak., and Constantin Anastase, Wichita Falls, Tex., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 17, 1989, Ser. No. 437,642
Int. Cl.[5] D06B *5/24, 23/14*
U.S. Cl. 68—27 15 Claims



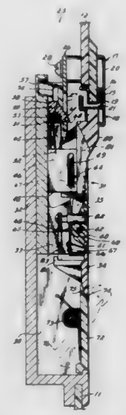
1. A machine for dyeing flexible fabric articles which shrink as they become wetted during the dyeing process, comprising a vat for containing a dye bath in which the articles are wetted during the dyeing process, a cylinder mounted in said vat, said cylinder defining a chamber, means dividing said chamber into a plurality of compartments for receiving unwetted articles to be dyed, and means effectively reducing the size of each compartment as said machine operates, causing said articles to be wetted and shrink, eliminating excessive movement of said articles within said compartment.

5,060,491
TUBULAR LOCK BOX
Neil E. Smith, #1006 7361 Halifax St., N. Burnaby, BC, Canada V5C 5P8
Filed Jan. 10, 1991, Ser. No. 639,679
Int. Cl.[5] E05B *65/52*
U.S. Cl. 70—63 31 Claims



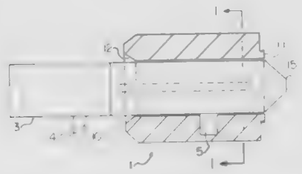
1. A lockable receptacle for a key, said receptacle comprising:
an elongated tubular member having a longitudinally extending cavity Which is open through only one axial end of said member;
mounting means formed integrally with the exterior of said tubular member for attachment of said receptacle to a structure;
a closure plug which is receivable within said open axial end of said tubular member so as to enclose said key within said longitudinal cavity; and
locking means mounted to said closure plug, said locking means having an engagement portion Which is selectively movable in response to operation of a master key from a locked position, in which said engagement portion engages said tubular member so as to prevent withdrawal of said closure plug from said cavity, to an unlocked position, in which said engagement portion disengages from said tubular member so as to permit withdrawal of said closure plug from said cavity, said locking means being configured to permit said closure plug to be inserted in said open end of said tubular member, so that said engagement Portion lockingly engages said tubular member, without requiring said operation of said master key.

5,060,492
LUGGAGE LATCH
Lester E. Carpenter, Middletown; John V. Pulichino, Jr., Providence, and David Bieber, East Greenwich, all of R.I., assignors to American Tourister, Inc., Warren, R.I.
Filed Jun. 22, 1990, Ser. No. 542,111
Int. Cl.[5] E05B *65/48*
U.S. Cl. 70—73 7 Claims



1. A luggage latch to join the edge of a box to the edge of a lid comprising:
a keeper fixed to the edge of said lid,
a slide mounted on the edge of said box and movable toward and away from said keeper,
a bolt pivotally mounted on said slide to pivot up into said keeper,
a fixture mounted on said box,
said slide being slidable on said fixture and having a raised end,
lever and link means for moving said slide toward and away from said lid,
said lever and link means comprising:
a link pivoted at one end to the raised end of said slide,
a lever pivoted at one end to said fixture and centrally to the other end of said link,
said link having pivot axes on said slide and lever moving through an overcenter position with respect to the pivot point of
said lever on said fixture as said lever moves from a latch-open position to a latch-closed position,
said slide being formed of two arms,
said fixture having a central block alongside of which said arms move,
said block having a longitudinal slot,
said arms having a pivot pin that rides in said slot.

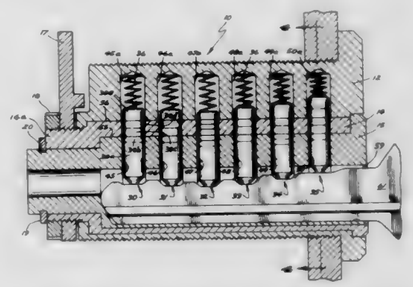
5,060,493
SINGLE UNIT KEY ACTIVATED PIN LOCK
Thore Johnsen, 2976 Islip Ct., Wantagh, N.Y. 11793
Filed Jun. 5, 1990, Ser. No. 533,575
Int. Cl.[5] E05B *65/08*
U.S. Cl. 70—95 12 Claims



1. A locking device for use for locking sliding curtain type doors, comprising:
a rigid body having a bore passing therethrough, at least a portion thereof having a non-circular cross section;
a bolt with a longitudinal axis having at least some portion thereof with a cross-section complementary to that of said non-circular portion of said bore, said bolt being at least partially slideably moveable within said bore between a first and second position, but prevented from rotating within said bore about its vertical axis, said bolt including a means for immobilizing said bolt relative to said rigid body in said second position, said immobilizing means comprising a cylinder lock connectably disposed with said bolt at one end thereof, said cylinder lock having a key activated tumbler coupled to a latch member, said latch member extending laterally of the longitudinal axis of said bolt and being spring loaded in said cylinder lock, said latch member having a beveled edge which faces said rigid body when said bolt is in said first position, a key means for activating said tumbler and means for releasing said key means from said tumbler of said cylinder lock only when said latch member is fully extended from said lock cylinder, and an indentation defined in said rigid body, on the inner surface of said bore, said indentation positioned to receive said latch member when said bolt is in said second position; and
limiting means to prevent said bolt from being longitudinally moved in said bore beyond said first position, said limiting means comprising at least one longitudinally recessed groove on said bolt terminating at a distance from one end of said bolt, and a pin extending from said rigid body and slideably received in said recessed groove, thereby preventing complete withdrawal of said bolt from said bore.

5,060,494
CYLINDRICAL LOCK STRUCTURE
John H. Moorhouse, Clear Lake, Minn. 55319
Filed Jul. 13, 1990, Ser. No. 552,155
Int. Cl.[5] E05B *15/14, 63/00*
U.S. Cl. 70—419 5 Claims

1. A rotary lock structure using a key, comprising
a housing,
a sleeve within said housing longitudinally thereof and rotatable therein,
a shear line between said sleeve and said housing,
said sleeve having a longitudinal bore therein,
a plug disposed within said bore of said sleeve and rotatable therein,
a shear line between said plug and said sleeve,
means securing said sleeve and said plug within said housing,
a latch means operable by said sleeve,
a plurality of vertical longitudinally aligned bores extending through said sleeve and through said plug,
said bores extending into said housing with enlarged diameters,
tumblers respectively disposed into said bores and extending into said plug, sleeve and housing,
means in each of said bores urging said tumblers into locking position,
each of said tumblers includes a plurality of segments,
said segments being variable in length,
a particular selective positioning of said segments in each of said bores clears said shear lines,
some of said segments being false segments which unless particularly positioned clear one of said shear lines only



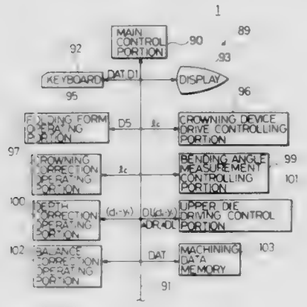
for rotation of said plug but not the other of said shear lines for the rotation of said sleeve,
misleading means permitting said false segments partial rotation of said plug and sleeve to the extent of the increase in diameter of said bores in said housing,
a keyway underlying said plug intersecting said bores therein,
a key disposable into said keyway engaging said tumblers in said bores and adapted to position the segments thereof to clear said shear lines for rotation of said plug and said sleeve.

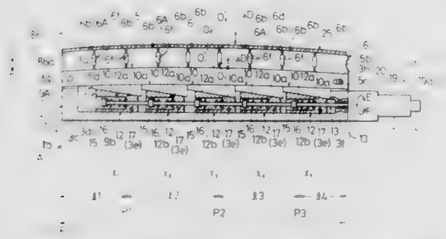
5,060,495
PRESS BRAKE HAVING PLURAL PROBE PAIRS FOR MEASURING BEND ANGLES OF WORKPIECE
Miyagawa Naoomi, Gifu; Chiyoaki Yoshida, Aichi; Kazuyuki Toda, Aichi, and Yukiyasu Nakamura, Aichi, all of Japan, assignors to Yamazaki Mazak Kabushiki Kaisha, Aichi, Japan
Division of Ser. No. 378,622, Jun. 12, 1989. This application Jul. 16, 1990, Ser. No. 554,758
Claims priority, application Japan, Jul. 19, 1988, 63-179398; Nov. 22, 1988, 63-294947
Int. Cl.[5] B21D *5/02*
U.S. Cl. 72—10 1 Claim

1. A press brake comprising:
a lower die disposed in a horizontal position and an upper die movable in up and down directions and out of and into workpiece shaping relationship with said lower die for bending a workpiece so that it has a bent portion;
at least one workpiece measuring portion provided on said lower die;
at least one workpiece measuring means at said workpiece measuring portion, said workpiece measuring means having at least two pairs of probes movable in up and down directions, said two pairs of probes being disposed on opposite sides of the bent portion of the workpiece which is in said lower die, a workpiece contacting portion on each of said probes for contacting said workpiece as said probes are moved upwardly in said lower die, and a displacement detectint means connected to said workpiece measuring means for detecting relative displacement in the up and down directions between said probes of each pair of probes as said probes respectively engage in the workpiece;
a folding form operation means connected to said displacement detecting means and including means for determining from the relative displacements of said probes the bend

angles at which the parts of the workpiece on opposite sides of the bent portion are bent, and for determining from the bend angles a bending angle of said workpiece at which the workpiece has been bent;

a crowning correction operating means connected to said folding form operating means and having a depth chasing quantity obtaining means for obtaining from the bend angle of the workpiece and the dimensions of the lower die a depth chasing quantity at said workpiece measuring portion as the difference between the bent portion of the workpiece and the deepest portion of said die, and further





having a crowning amount obtaining means for obtaining the amount of crowning of said lower die at said workpiece measuring portion;

a depth correction operating means connected to said crowning correction operation means for obtaining a depth correction value for said upper die from said depth chasing quantity; and

a balance correction operating means connected to said depth correction operating means for obtaining a balance correction value for the opposite ends of said upper die from the depth correction value.

5,060,496

PROCEDURE FOR PRODUCING COIL-FORMING TUBES IN AN INERT ENVIROMENT

Karl Reiter, Leoben; Nobert Köck, St. Peter-Freienstein, and Rainer Wahn, Leoben, all of Austria, assignors to Voest-Alpine Stahl Donawitz Gesellschaft m.b.H., Leoben-Donawitz, Austria

Filed Sep. 1, 1989, Ser. No. 401,413

Claims priority, application Austria, Sep. 16, 1988, 2277/88

Int. Cl.[5] B21B *9/00*

U.S. Cl. 72—38 **6 Claims**

6. A procedure for producing coil-forming tubes, said procedure comprising the steps of:

using a steel for at least one tube that has a guide analysis being 0.09%/wt to 1.00%/wt C. 0.01%/wt to 1%/wt Si, 0.01%/wt to 2.00%/wt Mn, with the remainder being Fe and production-related impurities;

heating the tube to a temperature of no more than 1,050° C.;

bending the tube at temperatures of more than 850° C. on a bending device; and

flushing the tube with N_2 during the heating and bending steps;

wherein the heating step is performed over a period of 15 to 25 minutes;

wherein the bending step is performed with the flushing step occurring at temperatures of more than 850° C. within 15 to 25 seconds after completion of the heating step; and

wherein the flushing step is performed at least until the tube is taken off the bending device at a tube temperature of less than 450° C.

5,060,497

METHOD OF FORMING ASYMMETRICAL ARTICLES BY ROLLING

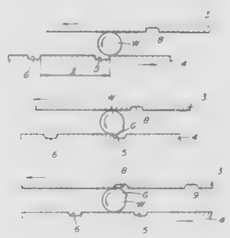
Ryoichi Takahashi, Fuji; Tomoyoshi Sato, Fujisawa; Hidehiko Tsukamoto, Hiroshima; Kazuo Morimoto, Hiroshima, and Nobutaka Maeda, Hiroshima, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Mitsubishi Jukogyo Kabushiki, Tokyo, both of, Japan

Continuation of Ser. No. 289,052, Dec. 23, 1988, abandoned, which is a division of Ser. No. 32,109, Mar. 30, 1987, Pat. No. 4,811,585. This application Apr. 24, 1990, Ser. No. 512,591

Claims priority, application Japan, Apr. 2, 1986, 61-75954; Apr. 2, 1986, 61-75955; Apr. 16, 1986, 61-87704; Sep. 30, 1986, 61-150140

Int. Cl.[5] B21D *7/00;* **B21K** *1/08*

U.S. Cl. 72—68 **13 Claims**



1. A method of forming an asymmetrical article by rolling, comprising:

preparing a circumferentially symmetrical article;

preparing a plurality of dies between which said article is to be rolled as said dies are driven to move in opposite directions, said dies each having die faces which are formed with independent patterns arranged in lines extending only essentially in parallel to the directions of movement of said dies and which are capable of being sequentially brought into engagement with only a particular part-circular peripheral portion of the article as the article rolls between said die faces; and

compressing the article while driving the same to roll between said die faces by moving said dies in opposite directions and forming said particular portion of the article into a circumferentially asymmetrical portion of the article by the effect of said portions of said die faces.

5,060,498

SECTION STEEL STRAIGHTENER WITH ADJUSTABLE ROLLER WIDTH

Tsuneo Seto; Atsushi Hatanaka; Hironori Miura, and Hideo Baba, all of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 28, 1990, Ser. No. 573,236

Int. Cl.[5] B21D *3/04;* **B21B** *1/12*

U.S. Cl. 72—164 **2 Claims**

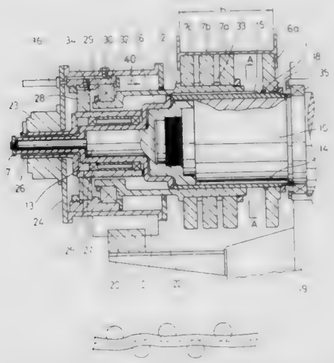
1. A section steel straightener, having an adjustable width

roller in which a fixed roller and a movable roller having an identical outer diameter are coaxially juxtaposed in an axial direction of the apparatus, comprising:

a spindle for rotating the fixed roller and the movable roller;

a first sleeve, which is disposed around the spindle with a coupling key therebetween and on which the fixed roller is mounted, for transmitting driving torque from the spindle to the fixed roller;

a second sleeve, which is disposed around the first sleeve with a coupling and guiding key therebetween and on which the movable roller is mounted, for transmitting the driving torque from the spindle to the movable roller;



a sleeve pressing hollow shaft disposed around a support shaft extending from one end of the spindle, for prohibiting a movement of the first sleeve in the axial direction;

a screw sleeve rotatably disposed around the sleeve pressing shaft and having a thread formed on a surface thereof;

a movable nut having rotation preventing means screwed to the screw sleeve, and coupled to one end of the second sleeve; and

a rotating device for rotating the screw sleeve, to move the second sleeve back and forth in the axial direction via the movable nut and the coupling and guiding key.

5,060,499

ROLLING STAND WITH MULTIPLE ROLLS SUPPORTED AS CANTILEVERS FOR HIGH-SPEED ROLLING

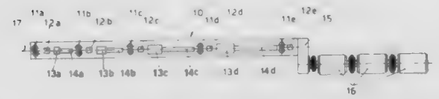
Alfredo Poloni, Fogliano Di Redipuglia, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jun. 28, 1990, Ser. No. 545,630

Claims priority, application Italy, Jul. 10, 1989, 83453 A/89

Int. Cl.[5] B21B *45/02*

U.S. Cl. 72—201 **13 Claims**



1. Rolling stand with multiple rolls supported as cantilevers for high-speed rolling, which comprises a motor unit that actuates at least one common shaft which transmits motion to a plurality of pairs of rolls with their axes placed alternately substantially at a right angle to each other, the stand including from six to ten pairs of rolls, a rolled stock being kept under traction between one pair of rolls and the next pair, the stand being characterized in that cooling chamber means followed by temperature equalisation chamber means are included between a pair of rolls which processes round sections and a pair of rolls which processes oval sections, the length of the cooling chamber means being at least a function of the rolling speed of the pair of rolls pair of rolls, the cooling chamber means being progressively longer in the direction of feed of the rolled stock.

5,060,500

APPARATUS FOR AUTOMATICALLY FORMING A POINTED END OF RAW PIPE TO BE DRAWN

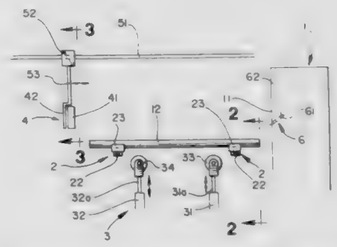
Noboru Ohneda, Tochigi; Shunta Ushioda, Ibaraki; Haruo Arima, Tochigi; Ichiro Hashimoto; Denziro Kaneko, both of Tochigi; Kazuo Sugiyama, Ibaraki; Tsuguo Fukazawa, Tochigi; Teruo Tachi, and Takashi Mukasa, both of Ibaraki, all of Japan, assignors to Showa Aluminum Kabushiki Kaisha, Osaka, Japan

Filed Oct. 25, 1990, Ser. No. 603,126

Claims priority, application Japan, Oct. 31, 1989, 1-285952

Int. Cl.[5] B21B *1/16;* **B21D** *41/04, 43/20*

U.S. Cl. 72—287 **5 Claims**



1. An apparatus for automatically forming a pointed end at an end portion of each raw pipe which is subsequently subjected to a drawing process, the apparatus comprising:

a swaging machine which reduces a diameter of the end portion of the raw pipe to thereby deform the end portion into the pointed end;

a transporting device disposed below a height corresponding to a pipe inlet of the swaging machine and in front thereof, the transporting device carrying thereon a plurality of the raw pipes which are arranged parallel with each other at regular intervals, and the transporting device being intermittently driven to sequentially transport the raw pipes which are in their positions parallel with a pipe inlet axis towards a horizontal area located therebelow;

a lifting device comprising a front supporter and a rear supporter which respectively support portions adjacent to a leading end or a trailing end of each raw pipe which has been transported to the horizontal area, the supporters then sequentially raising and lowering the raw pipes from the transporting device one after another between a height thereof on the transporting device and a further height of the pipe inlet; and

a gripping device for gripping the trailing end of each raw pipe which has been raised to the further height by the lifting device, the gripping device reciprocating in a direction of the pipe inlet axis of the swaging machine so as to insert thereinto the leading end of each raw pipe, wherein the supporters of the lifting device are controlled not to be in contact with the pipe while the leading end is processed to form the pointed end, and wherein the front supporter includes an idle roller, and the rear supporter is kept away from the raw pipe while it is moving in its longitudinal direction.

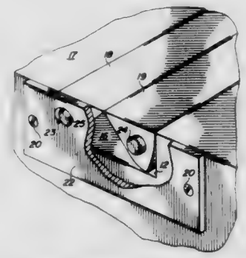
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5,060,501

FLAT METAL STOCK BENDING DIE

Roger K. Heath, Uxbridge, Mass., assignor to Century Manufacturing Co. Inc., Holliston, Mass.

Filed Jan. 25, 1991, Ser. No. 645,721
Int. Cl.[5] B21D *5/01*
U.S. Cl. 72—382 17 Claims



1. A die for use with a punch for bending flat metal stock and comprising:

body means defining a support surface adapted to support a piece of flat metal stock, a cavity disposed in a path of movement of the punch and intersecting and projecting below said support surface, and a stop surface forming a bottom wall of said cavity and having first and second surface portions;

mounting means retained by said body means;

a first elongated die bar supported by said mounting means for both translational and pivotal movement on a first axis in said cavity on one side of said path of movement; said first die bar defining upper and lower surfaces having a wedge shaped cross-section including upper and lower legs defined by, respectively, said upper and lower surfaces; said lower surface of said first die bar conforming to said first surface portion and adapted for engagement therewith; and wherein said first axis extends longitudinally of said first die bar and is disposed between both said upper and lower surfaces and said support surface and said first surface portion; and

a second elongated die bar supported by said mounting means for both translational and pivotal movement on a second axis in said cavity on an opposite side of said path of movement; said second die bar defining upper and lower surfaces of complementary shape and having a wedge shaped cross-section including upper and lower legs defined by, respectively, said upper and lower surfaces of said second die bar; said lower surface of said second die bar conforming to said second surface portion and adapted for engagement therewith; and wherein said second axis extends longitudinally of said second die bar and is disposed between both said upper and lower surfaces of said second die bar and said support surface and said second surface portion.

5,060,502

HYDRAULICALLY-OPERATED STRIPPING DEVICE

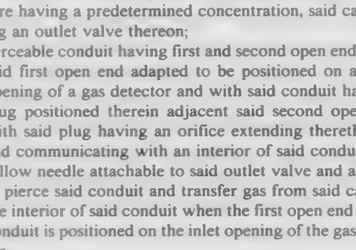
Wolf Kuhlmann, Nürnberg; Dieter Hesse, and Karl Kögel, both of Erlangen, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer, Fed. Rep. of Germany

Filed Aug. 1, 1990, Ser. No. 561,190
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1939, 3926279
Int. Cl.[5] B21D *1/12*
U.S. Cl. 72—392 11 Claims

1. A hydraulic operated stripping device for creating a hole in sheet material comprising:

a hydraulic cylinder including a cylinder housing outside the cylinder, a piston rod in the cylinder and being movable relative to the cylinder, and hydraulic means for pressurizing the cylinder for moving the piston;

a clamping jaw attached to the cylinder housing; an axially displaceable stripping jaw connected with the piston for being moved by the piston in a direction away from the clamping jaw; the stripping jaw and the clamping jaw being adapted for insertion into an opening in the sheet material and such that with the cylinder pressurized for moving the piston with respect to the cylinder, the stripping jaw is moved away from the clamping jaw for enlarging an opening in the sheet material;



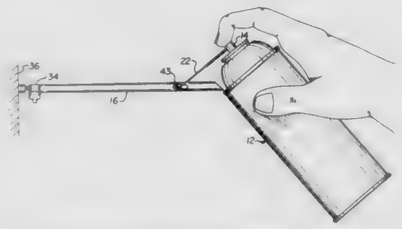
a mandrel attached on the piston and supported thereby, the mandrel being shaped and of a character to form an initial opening in the surface to be stripped, the mandrel being shaped such that the initial opening formed is of a size to initially receive the clamping jaw and the stripping jaw therein before the cylinder is pressurized to move the clamping and stripping jaws apart.

5,060,503

TEST KIT FOR GAS DETECTORS

William P. Spohn, Swissvale, and Richard M. Hickox, Ross Township, Allegheny County, both of Pa., assignors to Bacharach, Inc., Pittsburgh, Pa.

Filed Feb. 8, 1990, Ser. No. 477,033
Int. Cl.[5] G01D *18/00*
U.S. Cl. 73—1 G 15 Claims



1. A test kit for gas detectors comprising:

an aerosol can containing therein a predetermined gas mixture having a predetermined concentration, said can having an outlet valve thereon;

a pierceable conduit having first and second open ends, with said first open end adapted to be positioned on an inlet opening of a gas detector and with said conduit having a plug positioned therein adjacent said second open end, with said plug having an orifice extending therethrough and communicating with an interior of said conduit; and

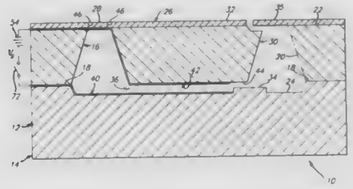
a hollow needle attachable to said outlet valve and adapted to pierce said conduit and transfer gas from said can into the interior of said conduit when the first open end of said conduit is positioned on the inlet opening of the gas detector.

5,060,504

SELF-CALIBRATING ACCELEROMETER

Craig W. White, Grosse Pointe; Leonard W. Behr, Pontiac, and Kevin E. Musser, Farmington, all of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 248,362, Sep. 23, 1988, abandoned. This application Sep. 27, 1989, Ser. No. 413,318
Int. Cl.[5] G01P *21/00*
U.S. Cl. 73—1 D 22 Claims



1. An acceleration sensor comprising a rigid frame;

a resilient beam extending from said frame;

a sensing mass supported relative to said frame by said beam, said sensing mass being responsive to acceleration of said frame so as to be displaced thereby from an initial position relative to said frame towards a second position of maximum sensing mass displacement relative to said frame, whereby said beam is deflected;

a resistor on said beam, the resistance of said beam resistor varying in response to deflection of said beam;

means for electrostatically displacing said sensing mass to a third position short of said second position without regard to acceleration; and

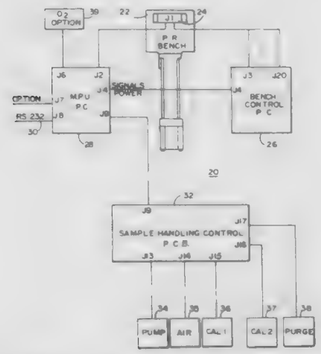
an electrical circuit responsive to the resistance of said beam resistor for generating an output signal, said output signal being calibrated by displacing said sensing mass to said third position by said electrostatic displacement means.

5,060,505

NON-DISPERSIVE INFRARED GAS ANALYZER SYSTEM

Edward L. Tury, Brighton, Mich.; Keith Kaste; Ross E. Johnson, both of San Luis Obispo, Calif., and David O. Danielson, Gregory, Mich., assignors to Sensors, Inc., Saline, Mich.

Filed Sep. 12, 1989, Ser. No. 406,041
Int. Cl.[5] G01J *3/42*; G01N *21/01*; G01D *18/00*
U.S. Cl. 73—1 G 16 Claims



1. An apparatus for detecting at least one component gas in a sample comprising:

source means for providing radiation along an optical path in a preselected spectral band having at least one absorption line of the component gas to be detected;

detector means positioned in said optical path for detecting radiation in the preselected spectral band and for producing thereby a detector output;

a sample chamber positioned in said optical path between said source means and said detector means and adapted to contain a quantity of sample gas including the component gas to be detected;

a calibration cell enclosing an amount of said component gas to be detected, said calibration cell having absorption characteristics in said preselected spectral band determined in part by said amount of said component gas to be detected;

means for selectively positioning said calibration cell in said optical path between said source means and said detector means in series with said sample chamber;

means for determining a factor that is a function of said detector output when said calibration cell is positioned in said optical path and said sample chamber is filled with a gas that is nonabsorbing of radiation at said absorption line; and

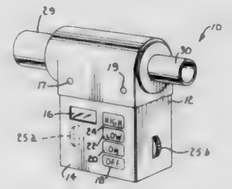
means responsive to said factor and to said detector output when said sample chamber is filled with a sample gas including the component gas to be detected to provide an indication of the concentration of the component gas in the sample gas.

5,060,506

METHOD AND APPARATUS FOR MONITORING THE CONTENT OF BINARY GAS MIXTURES

David W. Douglas, 9323 Alden, Lenexa, Kans. 66215

Filed Oct. 23, 1989, Ser. No. 424,931
Int. Cl.[5] G01N *7/00*
U.S. Cl. 73—24.01 16 Claims



1. Apparatus for monitoring the content of a gas sample consisting essentially of two known gases, said apparatus comprising:

means for providing a sample chamber for receiving the gas sample;

a resonant transmitter in said sample chamber excitable at a predetermined resonant frequency and operable when excited to transmit sound waves through the gas sample in said sample chamber;

means for exciting said transmitter with an excitation signal having a plurality of successive bursts each including a preselected number of excitation pulses at said resonant frequency, the initial pulse in each burst being separated from the final pulse in the immediately preceding burst by a quiescent time period of sufficient duration to allow dissipation of any transient effect that may have existed as a result of said immediately preceding burst, thereby suppressing standing waves in the sample chamber;

a resonant receiver in said sample chamber spaced a preselected distance from said transmitter and operable to receive the sound waves transmitted thereby, said receiver being resonant at said predetermined resonant frequency;

means for generating from said receiver an electrical signal representative of the transit time between said transmitter

and receiver of each sound wave transmitted through the gas sample in said sample chamber; and

means for using said electrical signal to generate an output signal indicative of the ratio of the two known gases in the gas sample.

5,060,507

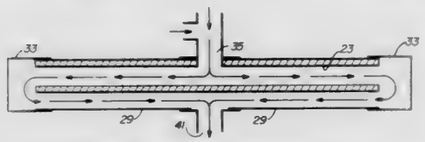
METHOD AND APPARATUS FOR FLUID MIXTURE MONITORING, CONSTITUENT ANALYSIS, AND COMPOSITION CONTROL

John Urmson, 3807 Harrison, Oakland, Calif. 94612; Anthony Pearson, 141 Halton La., Watsonville, Calif. 95076, and Sanjay Gidwani, 47112 Warm Springs Blvd., #232, Fremont, Calif. 94539

Filed Jun. 21, 1989, Ser. No. 369,104

Int. Cl.[5] G01N *29/18*

U.S. Cl. 73—24.01 **39 Claims**



1. A fluid analysis instrument comprising,

at least one acoustic analyzer having means for introducing fluid samples there into,

means for maintaining all samples at the same temperature during analysis,

means for creating and detecting sound in said analyzer,

means for making time based electronic measurements from which either the resonant frequency or time-of-flight of sound in the analyzer can be determined, and

means for ratiometrically comparing said time-based measurements of the same type to verify correct fluid constituents, and to determine fluid composition.

5,060,508

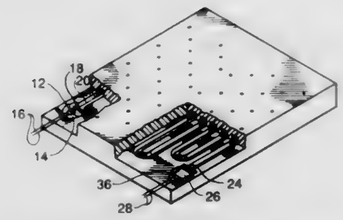
GAS SAMPLE CHAMBER

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech Corporation, Goleta, Calif.

Filed Apr. 2, 1990, Ser. No. 503,216

Int. Cl.[5] G01N *30/02*

U.S. Cl. 73—31.02 **13 Claims**



1. A sample chamber comprising:

a first block having a planar face and having an elongated groove of uniform depth in said planar face, the length of said elongated groove exceeding the largest dimension of said first block;

a first passage extending transversely from said elongated groove clear through said first block;

a second block having a planar face and having an elongated groove of uniform depth in said planar face, said elongated groove being the mirror image of the elongated groove in said first block, so that when said first block and said second block are brought together to form a combined block with the planar face of said first block lying against the planar face of said second block, the elongated grooves can be brought into registration to form an elongated passage in the combined block; and,

a second passage extending transversely from said elongated groove of said second block clear through said second block, said second passage in combination with said first passage facilitating diffusion of a gas into and out of said elongated passage in the combined block.

5,060,509

SECONDARY CONTAINMENT SYSTEM USING FLEXIBLE PIPING

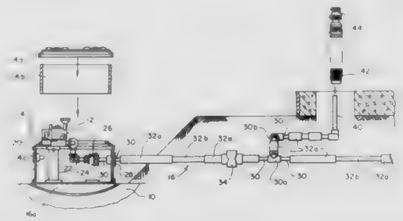
Michael C. Webb, 15 E. Uwchlan Ave., Exton, Pa. 19341

Continuation of Ser. No. 254,021, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 103,206, Oct. 1, 1987, Pat. No. 4,405,444. This application Nov. 13, 1990, Ser. No. 611,435

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] B65D *25/24*

U.S. Cl. 73—40.5 R **10 Claims**



1. A sump-riser apparatus for connection to a fluid storage tank in a pipeline system, said sump-riser apparatus comprising:

a) a hollow sump base having a bottom end and a top end including at least one side wall forming a substantially tubular housing extending between said bottom end and said top end;

b) a generally tubular hollow riser section located at the top end of said sump base and extending therefrom and having a hollow interior;

c) said riser section being generally smaller in width than said sump base;

d) a cover mounted over said riser section and having means for accessing the interior of said riser section and said hollow sump base;

e) said sump base including an opening in said at least one side wall so that a conduit may be inserted through said opening.

5,060,510

METHOD OF CORRECTING VARIATIONS IN RADIAL FORCE BETWEEN A TIRE AND THE GROUND

Jean-Baptiste Rousseau, Riom, France, assignor to Michelin & Cie Compagnie Generale des Etablissements Michelin, Clermont-Ferrand Cedex, France

Filed Jun. 20, 1990, Ser. No. 540,902

Claims priority, application France, Jun. 30, 1989, 89 09070

Int. Cl.[5] G01M *17/02*

U.S. Cl. 73—146 **10 Claims**

10. A method of making an annular compensation wedge ring for correcting defects in uniformity of a tire by being placed between the beads of a tire and the seats of a rim which form an angle of $15° \pm 1°$ with the axis of rotation of the tire comprising determining the amplitude and the circumferential positions of the optimums of the variation in radial force of the first harmonic of the inflated tire under load over a complete revolution and forming the annular compensation wedge ring of plastic or elastomeric material having a density of at most 1.2 and a thickness which is at least 0.3 mm, the thickness of the wedge ring, measured perpendicular to the seat of the rim,

being constant axially over its length but variable circumferentially between a maximum value at the location of the minimum value of the radial force and a minimum value at the



location of the maximum value of the radial force, the variation in thickness varying inversely as the variation in radial force between minimum and maximum.

5,060,511

INTAKE AIR QUANTITY MEASURING APPARATUS

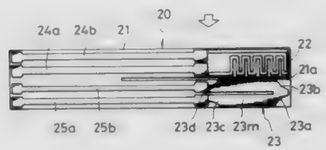
Yasunori Sakaue, Nagoya; Shinichi Sakakibara, Handa, and Mamoru Matsubara, Toyoake, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Mar. 28, 1990, Ser. No. 500,190

Claims priority, application Japan, Mar. 31, 1989, 1-83822; Mar. 31, 1989, 1-83823; Mar. 31, 1989, 1-83824

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.26 **4 Claims**



1. An apparatus for measuring intake air quantity comprising:

a flat base plate disposed in an intake air duct with the flat surface of said base plate positioned in parallel with a flow direction of an intake air passing through said intake air duct;

a flow speed sensing resistor deposited on said base plate and formed into a film having a cross-sectional area of a section at least a tip end portion of said film taken in a direction parallel to the air flow of said intake air smaller than a cross-sectional area of a central portion of said film, said flow speed sensing resistor having an ohmic value varying in response to change in temperature of said resistor depending upon a flow speed of said intake air; and

a pair of lead members deposited on said base plate and electrically connected to said flow speed sensing resistor, wherein said flow speed sensing resistor comprises a film resistor deposited on said base plate and formed in substantially U-shaped form with open ends thereof directed toward the base end of said base plate, a cross-sectional area of a section at each of a bent portion and the open ends of said film resistor being smaller than a cross-sectional area of a longitudinal center portion of said film resistor.

5,060,512

LIQUID LEVEL DETECTING APPARATUS

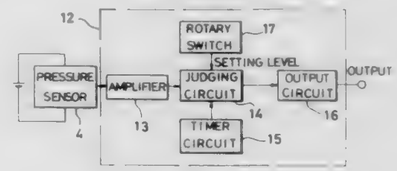
Masanori Kanashige, Yokohama; Kenji Okada, Tokyo, and Michihiro Kumagai, Hamakita, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo and Nippon Automation Co., Ltd., Hamakita, both of, Japan

Filed Jul. 11, 1990, Ser. No. 551,248

Claims priority, application Japan, Jul. 13, 1989, 1-179169

Int. Cl.[5] G01F *23/14*

U.S. Cl. 73—301 **4 Claims**



1. A liquid-level detecting apparatus for detecting the liquid level in a tank divided into a plurality of regions, which comprises a pressure-detecting means for detecting a liquid pressure and converting the detected pressure to an electric signal, a detecting part of which is exposed to a liquid in a tank,

setting means for setting a plurality of predetermined liquid levels in each region in the tank and putting out reference electric signals corresponding to the set plurality of predetermined liquid levels,

judging means for inspecting the electric signal output from the detecting means at predetermined time intervals and judging the electric signal output from the detecting means with respect to each of the reference electric signals, and

output means for outputting a signal indicative of the result of the judgement by the judging means.

5,060,513

APPARATUS FOR MEASURING UNBALANCE ON ROTARY MEMBERS

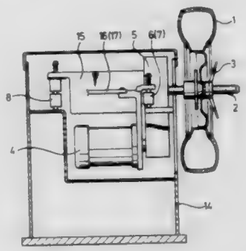
Karl Rothamel, Darmstadt, Fed. Rep. of Germany, assignor to Hofmann Werkstatt-Technik GmbH, Pfungstadt, Fed. Rep. of Germany

Filed May 10, 1990, Ser. No. 521,379

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1989, 3923191

Int. Cl.[5] G01M *1/22*

U.S. Cl. 73—460 **16 Claims**



1. An apparatus for measuring unbalance on a rotary member comprising:

a main shaft for carrying a rotary member to be balanced;

clamping means for clamping said rotary member on said main shaft, an actuation of said clamping means applying a torque to said main shaft;

a motor for driving said main shaft at a measuring speed of rotation;

reduction transmission means operatively disposed between said main shaft and said motor for applying a restraining torque to said main shaft in the absence of power to said motor, the restraining torque which is applied to said main shaft by a restraining effect of the reduction transmission means being greater than said torque applied to said main shaft by actuation of said clamping means; and

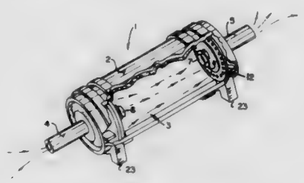
a torque monitoring circuit means for detecting a torque applied to said main shaft and for turning on said motor to overcome said restraining effect of said reduction transmission means when a torque is being applied to said main shaft by actuation of said clamping means.

5,060,514

ULTRASONIC GAS MEASURING DEVICE

Alonzo C. Aylsworth, St. Charles County, Mo., assignor to Puritan-Bennett Corporate, Lenexa, Kans.

Filed Nov. 30, 1989, Ser. No. 444,048
Int. Cl.[5] G01N *31/00*
U.S. Cl. 73—24.01 **19 Claims**



1. An ultrasonic gas measuring device for continuously monitoring a gas including a housing means, said housing means comprising a chamber having a first end wall and a second and opposite end wall, said housing means having a gas inlet through the first end wall, and a gas outlet provided through the second end wall, said gas inlet and gas outlet provided communicating through the chamber for passage of a gas to be measured, ultrasonic means provided within the housing means, said ultrasonic means having a transmitter connected to the first end wall, and a receiver at a spaced location provided at the second end wall of the housing means for transmission of its ultrasonic waves along the length of the chamber in alignment with the transfer of the passing gas, said housing means incorporating gas processing means for dividing the gas flow at least at some instance during the gas flow through the housing means, whereby gas flow turbulence is substantially reduced as the concentration of the gas is being measured by the ultrasonic waves of the ultrasonic means through resistance to the movement of the ultrasonic waves through the gas being measured as said gas and waves pass through the chamber of the housing means and along the length of the measuring device.

5,060,515

IMAGE SIGNAL PROCESSING CIRCUIT FOR ULTRASONIC IMAGING APPARATUS

Ryoichi Kanda, Ootawara, and Takeshi Sato, Tochigi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

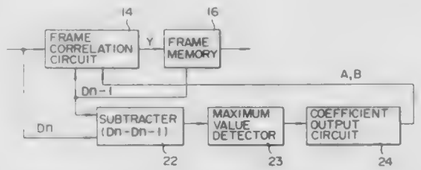
Filed Mar. 1, 1990, Ser. No. 486,742
Claims priority, application Japan, Mar. 1, 1989, 1-49411; May 18, 1989, 1-125302
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—602 **15 Claims**

1. An image signal processing circuit for an ultrasonic imaging apparatus, comprising:

receiving means for sequentially receiving a plurality of frame image signals each including a plurality of pixels;

frame correlation processing means for performing a frame correlation process for the frame image signals in accordance with a predetermined correlation coefficient; and

coefficient outputting means for changing the predetermined correlation coefficient of the frame correlation processing means in accordance with a difference between current input frame image signals and preceding frame image signals from the receiving means, said coefficient output means comprising:



difference detecting means for detecting a difference between the current input frame image signals and immediately preceding frame image signals,

detecting means for detecting a maximum value of differences obtained by said difference detecting means, and

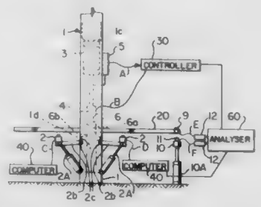
output means for outputting a coefficient corresponding to the maximum value.

5,060,516

METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING THE QUALITY OF MANUFACTURING WOOD PANELS

Peter W. Lau, Gloucester, and Yvon G. Tardif, Gatineau, both of Canada, assignors to Forintek Canada Corp., Ottawa, Canada

Filed Sep. 27, 1990, Ser. No. 588,860
Claims priority, application Canada, Sep. 29, 1989, 614463
Int. Cl.[5] G01M *7/00*
U.S. Cl. 73—602 **19 Claims**



1. A method for non-destructively testing the quality of a manufactured panel made of wood products comprising:

a) supporting the panel in such a manner as to have a portion thereof projecting beyond the support and thereby providing an unsupported panel portion;

b) causing complex vibrations in said unsupported portion of the panel so as to include both twisting and bending vibrations;

c) sensing said complex vibrations and providing an output signal as a result thereof; and

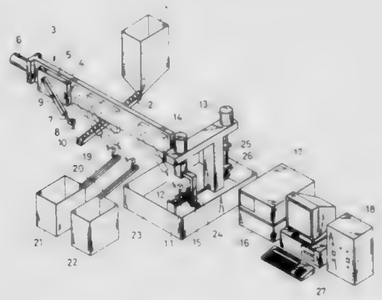
d) analyzing, from said output signal, each of the bending and twisting vibrations simultaneously induced into the panel and therefrom providing an indication of the quality of the panel by virtue respectively from an indication of its modulus of elasticity and shear modulus.

5,060,517

IMMERSION TYPE AUTOMATIC ULTRASONIC TESTING APARATUS FOR DETECTING FLAWS OF BALLS

Koji Fushimi, Gifu; Shigeo Nishioka, and Kazuhiro Konishi, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Aug. 29, 1990, Ser. No. 574,017
Claims priority, application Japan, Aug. 31, 1989, 1-225016
Int. Cl.[5] G01M *13/04;* **G01N** *29/26, 29/06*
U.S. Cl. 73—620 **7 Claims**



1. An immersion type automatic ultrasonic testing apparatus for detecting flaws in balls which comprises:

a tank for containing a liquid medium for transmitting ultrasonic waves;

a ball rotating means for rotating a ball to be tested;

an ultrasonic flaws detection means, comprising an ultrasonic probe, for detecting flaws in the ball rotated by the ball rotating means;

a ball feeding means for feeding the ball to the ball rotating means, the ball feeding means comprising an air cylinder for holding the ball by suction at the tip thereof, the ball rotating means and the probe being immersed in the liquid medium contained in the tank when detecting flaws;

a liquid level regulating means for setting a level of the liquid medium in the tank below the ball when the ball held by suction at the tip of the air cylinder is placed onto the ball rotating means and when the ball is removed from the ball rotating means by suction at the tip of the air cylinder, and for maintaining the level above the ball and the probe during the detection of flaws in the ball by the ultrasonic flaws detection means.

5,060,518

METHOD OF ULTRASONIC INSPECTION OF WELDS OF ARTICLES

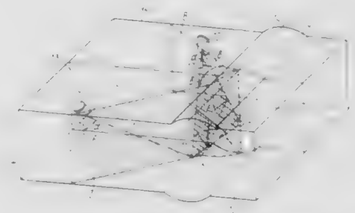
Nikolai P. Aleshin; Vladimir J. Baranov, both of Moscow; Leonid J. Mogilner, Moskovskaya, and Alexandr A. Yarovoi, Nikolaev, all of U.S.S.R., assignors to Moskovskoe Vysshee Tekhnicheskoe Uchilische Imeni N.E. Baumana, Moscow, U.S.S.R.

PCT No. PCT/SU88/00112, § 371 Date Feb. 13, 1990, § 102(e) Date Feb. 13, 1990, PCT Pub. No. WO89/11651, PCT Pub. Date Nov. 30, 1989
PCT Filed May 20, 1988, Ser. No. 460,908
Int. Cl.[5] G01N *29/10*
U.S. Cl. 73—620 **2 Claims**

1. A method of ultrasonic inspection of welds of articles, including the steps of:

determining a direction of radiation of transverse ultrasonic oscillations into an article, a plane of polarization of said transverse ultrasonic oscillations radiated into a weld of said article, a plane of incidence of said transverse ultrasonic oscillations upon a reflecting surface of a flaw in said weld of said article, a direction of said transverse oscillations reflected from said reflecting surface of said welding flaw of said article, and a plane of polarization of said reflected transverse oscillations;

disposing said planes of polarization of said oscillations radiated into said weld of said article and reflected from said reflecting surface relative to each other at a preset angle of 2θ, determining this angle by disposing said direction of radiation of said oscillations into said weld and said direction of said reflected oscillations outside a plane perpendicular to a longitudinal axis of said weld and extending through said reflecting surface of said flaw, and by selecting an angle ξ_1 between said plane of polarization of said oscillations radiated into said weld of said article and said plane of incidence of said oscillations onto said reflecting surface and an angle ξ_2 between said plane of polarization of said reflected oscillations and said plane of



incidence of said oscillations on said reflecting surface, either equal or in excess of 64° but less than 94°, thus extracting from said transverse ultrasonic oscillations a component horizontally polarized relative to said reflecting surface;

periodically radiating said transverse ultrasonic oscillations into said article and registering the time of arrival and the amplitude of said oscillations reflected from said reflecting surface at a preselected location; and

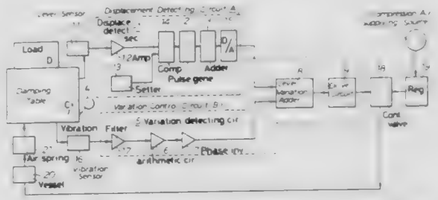
using said horizontally polarized component extracted from said oscillations for estimation of the geometric size of said flaw, namely, the amplitude of said horizontally polarized component is used for estimation of said geometric size of said flaw while the time of its registration is used for locating said flaw in said weld.

5,060,519

ACTIVE CONTROL PRECISION DAMPING TABLE

Hitoshi Chojitani, Ibaraki; Takahide Osaka, Itami; Fumiaki Itojima, Yao, and Masashi Yasuda, Suita, all of Japan, assignors to Tokkyo Kiki Kabushiki Kaisha, Hyogo, Japan

Filed Jan. 23, 1989, Ser. No. 299,586
Claims priority, application Japan, Feb. 18, 1988, 63-35829; Feb. 18, 1988, 63-35830; Feb. 18, 1988, 63-35831
Int. Cl.[5] G01M *7/00;* **F16M** *13/00*
U.S. Cl. 73—662 **2 Claims**



1. An active control precision damping table comprising a table body supported by air springs having pressure vessels, the table body being provided with a level sensor and a vibration sensor, a level variation adder for carrying out an adding operation on a level displacement signal output received from

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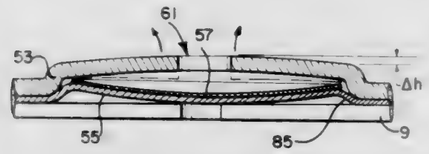
the level sensor and a vibration detection signal output from the vibration sensor resulting from vibrations of the table body due to a vibration source in which the vibration detection signal is inverted by 180 degrees, a drive circuit for generating a drive signal in response to an added variation signal received from the level variation adder, and a control valve operable in response to the drive signal to adjust air pressure in the pressure vessels of the air springs.

5,060,520

HERMETIC PRESSURE SENSOR

Werner Strasser, Versailles, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 366,793, Jun. 15, 1989, Pat. No. 5,025,667. This application Sep. 17, 1990, Ser. No. 583,760
Int. Cl.[5] G01L *7/08*
U.S. Cl. 73—715 **4 Claims**



1. A method of providing an hermetically sealed diaphragm for a pressure sensing element comprising the steps of:
(a) providing a metal diaphragm capable of being deformed beyond its elastic limit to a fixed shape;
(b) placing a snap acting disc between the diaphragm and a securing member and hermetically securing the edge portion of said diaphragm to said securing member;
(c) then forcing a central portion of said diaphragm under sufficient pressure against the disc and a surface more rigid than said diaphragm and said disc to cause said central portion of said diaphragm to bend beyond its elastic limit to conform to the shape of said surface supported disc and then reducing said pressure allowing the disc to snap to its normal position to provide an unwrinkled central portion of said diaphragm conforming to the shape of the snap acting disc.

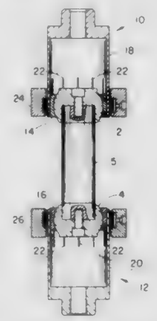
5,060,521

REVERSE-DIRECT STRESS TESTING DEVICE

David M. Cole, Lyme, and Larry D. Gould, Canaan, both of N.H., assignors to The United States of America as represented by the Secretary of the Army, Fort Belvoir, Va.

Filed Aug. 10, 1989, Ser. No. 391,903
Int. Cl.[5] G01N *3/02*
U.S. Cl. 73—857 **11 Claims**

1 A clamping device for gripping a test specimen comprising:
(a) specimen gripping means including a spherical segment for connection the test specimen and an end cap affixed to the specimen;
(b) means for attaching said specimen gripping means to means for applying an axial or torsional load to said specimen gripping means;



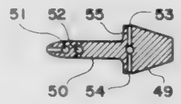
(c) said specimen gripping means including means for correction of alignment error such that introduction of unintended bending moments or axial loads is avoided.

5,060,522

MASS-VOLUME VORTEX FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jan. 19, 1990, Ser. No. 467,486
Int. Cl.[5] G01F *1/32, 15/10*
U.S. Cl. 73—861.02 **21 Claims**



1. An apparatus for measuring flow rate of fluid comprising in combination:
a) a vortex generator of an elongated cylindrical shape disposed generally perpendicular to the direction of fluid flow, said vortex generator having a blunt upstream face and a planar member disposed generally parallel to the direction of fluid flow on a plane generally including the central axis of the vortex generator immediately adjacent to said blunt upstream face of the vortex generator;
b) at least one hole emerging through leading edge of said planar member and connected to a first conduit for tapping total pressure of the fluid flow;
c) at least one hole emerging through at least one of the two side surface of said planar member and connected to a second conduit for tapping static pressure of the fluid flow;
d) means for measuring shedding frequency of vortices shed from the vortex generator; and
e) means for determining dynamic pressure of the fluid flow from a differential combination of the total pressure and the static pressure of the fluid flow.

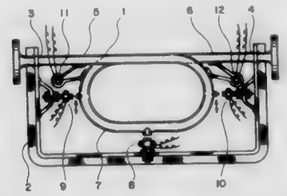
5,060,523

VIBRATING LOOPED CONDUIT MASS FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jan. 19, 1990, Ser. No. 467,481
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **13 Claims**

1. An apparatus for measuring flow rate of media comprising in combination:
a) a conduit with two extremities secured to a rigid support, said conduit including a first and second sections respectively extending from the two secured extremities of the conduit towards one another and connected to one another by a looped midsection of the conduit with a loop angle generally equal to 350 degrees;
b) means for exerting a vibratory force to a midsection of the conduit in directions generally perpendicular to the midsection of the conduit and generally parallel to a plane substantially parallel to the looped midsection of the conduit, wherein the vibratory force induces a flexural vibration of the conduit in directions generally parallel to said plane; and



c) a first motion sensor measuring relative flexural vibration between the first section of the conduit and a first half of the looped midsection connected to the second section of the conduit, and a second motion sensor measuring relative flexural vibration between the second section of the conduit and a second half of the looped midsection connected to the first section of the conduit;
wherein mass flow rate of media moving through the conduit is determined from difference between the two relative flexural vibrations respectively measured by the first and second motion sensors.

5,060,524

RACKET STRINGING TENSION MEASURING DEVICE

Felipe Artola, Vizcaya, Spain, assignor to Makser, S.A., Las Arenas-Getxo, Spain

Filed Apr. 11, 1990, Ser. No. 507,219
Int. Cl.[5] G01L *5/10, 1/10*
U.S. Cl. 73—862.41 **2 Claims**



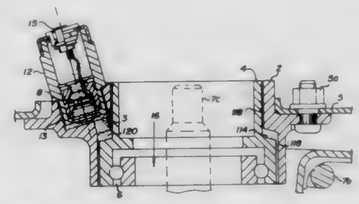
1. Racket stringing tension measuring device, having an elongated element with a rounded end to strike the stringing and another end in the form of a handle, in that in the proximity of the said rounded end is fitted a multiple diapason equipped with several teeth, in that one of these teeth vibrates due to the effect of striking the stringing with the rounded end of the measuring device depending on the stringing tension and in that this vibration can be checked to provide a measurement of the tension of the said stringing with means which are contained in the measuring device.

5,060,525

RESILIENT CONNECTING DEVICE, IN PARTICULAR WITH INCORPORATED FORCE-MEASURING DEVICE AND PROCESS FOR MANUFACTURING IT

Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany

PCT No. PCT/EP89/00096, § 371 Date Sep. 29, 1989, § 102(e) Date Sep. 29, 1989, PCT Pub. No. WO89/07055, PCT Pub. Date Aug. 10, 1989
PCT Filed Feb. 2, 1989, Ser. No. 425,214
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1988, 68801249
Int. Cl.[5] G01L *5/00, 1/04*
U.S. Cl. 862.54 **21 Claims**



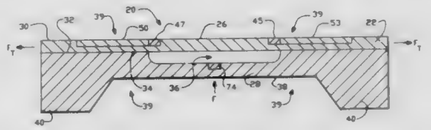
1. A joint connection, comprising:
a rigid inner element having outer surfaces;
a rigid outer element having inner surfaces and receiving said rigid inner element while separating said inner and outer surfaces without contact such that a narrow annular gap exists between the opposing said inner surfaces of said rigid outer element and said outer surfaces of said rigid inner element, said gap being essentially completely filled with elastomeric material strongly adhering to said inner and outer surfaces;
a force/pressure sensing means disposed in force transmitting communication with said elastomeric material;
a bore disposed in one of said rigid inner element and said rigid outer element and opening to one of said respective outer and inner facing surfaces, said force/pressure sensing means being in threaded engagement with a wall of said bore; and
a liquid sealed in said bore such that any space existing between said force/pressure sensing means and said elastomeric material is filled with said liquid.

5,060,526

LAMINATED SEMICONDUCTOR SENSOR WITH VIBRATING ELEMENT

Phillip W. Barth, Palo Alto; Kurt E. Petersen, San Jose, and Joseph R. Mallon, Jr., Fremont, all of Calif., assignors to Schlumberger Industries, Inc., Norcross, Ga.

Filed May 30, 1989, Ser. No. 358,771
Int. Cl.[5] G01L *1/10*
U.S. Cl. 73—862.59 **85 Claims**



67 An electromechanical sensor comprising:
a first single crystal silicon wafer which defines a vibratable beam;
at least one piezoresistive element formed in said vibratable beam;
a second single crystal silicon wafer which defines a first shallow recessed region;

means for coupling mechanical stress from said second wafer to said vibratable beam;

wherein said first and second wafers are laminated together such that said vibratable beam is disposed opposite said shallow recessed region.

5,060,527

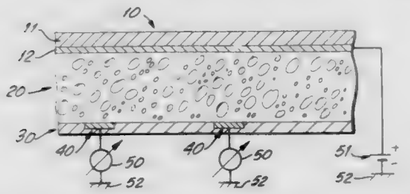
TACTILE SENSING TRANSDUCER

Lester E. Burgess, Box AB, Swarthmore, Pa. 19081

Filed Feb. 14, 1990, Ser. No. 480,103

Int. Cl.[5] G01L *1/18, 5/00*

U.S. Cl. 73—862.68 **36 Claims**



1. A tactile sensor which defines an electrical circuit path having an electrical resistance which varies in dependance upon the tactile pressure applied, which comprises:

a) a first layer including at least one electrode;

b) a second layer of electrically conductive cellular foam material which is deformable in response to tactile pressure applied thereto and which has an electrical resistance which varies in dependance upon said deformation, a portion or a first of two surfaces of said second layer being in electrically contacting relationship with said at least one electrode of said first layer; and

c) an electrically conductive third layer having elastomeric properties and having a surface portion which is in electrically contacting relationship with the second surface of said second layer at least when tactile pressure is being applied.

5,060,528

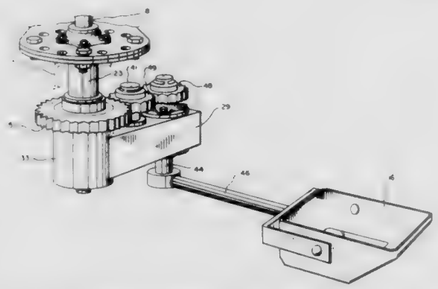
BEET TARE-TAKING APPARATUS

Joseph M. Silver, 1568 28th St., Ogden, Utah 84401

Filed Apr. 23, 1990, Ser. No. 513,085

Int. Cl.[5] G01N *1/20*

U.S. Cl. 73—863.52 **14 Claims**



1. A tare taking mechanism for carrying a tare bucket transversely through a stream of beets to obtain a sample of the beets in the bucket, the mechanism comprising:

a central arm having two opposing ends and mounted to rotate about a fixed central axis perpendicular to one of the ends of said arm;

power means for rotating the central arm about the central axis;

a tare bucket arm having two opposing ends and mounted to rotate about one of its ends about a bucket arm axis parallel to the central axis and through the other opposing end of the central arm;

a tare bucket attached to the other opposing end of the tare bucket arm;

means causing the bucket arm to rotate about the bucket arm axis with respect to the central arm at twice the rate of rotation of said central arm, in the opposite direction to the direction of rotation thereof; and

tare mechanism support means securing the mechanism in position to cause the tare bucket to pass through the stream of beets during a desired portion of its path.

5,060,529

APPARATUS FOR DETECTING GASEOUS CONSTITUENTS WITHIN THE INNER SPACE OF PACKAGES

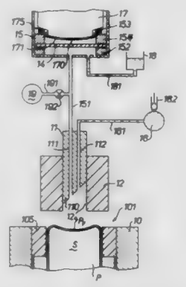
Ion Bals, Cologny; Willy Hofer, Lully, and Antoine Gagnebin, Geneva, all of Switzerland, assignors to Orbisphere Laboratories Neuchatel SA, Switzerland

Filed Nov. 5, 1990, Ser. No. 608,840

Claims priority, application Switzerland, Nov. 17, 1989, 4144/89

Int. Cl.[5] G01N *1/10*

U.S. Cl. 73—864.74 **13 Claims**



1. An apparatus for detecting gaseous constituents within an inner space of each of a sequence of normally gas-tight sealed packages comprising:

holder means for the temporary fixation of an associated package;

a hollow needle for piercing a predetermined portion of the package;

said hollow needle being provided with at least two channels;

a compartment for receiving a sensor;

a membrane-enclosed sensor arranged in said compartment;

means for connecting said compartment with one channel of the hollow needle;

said connecting means and said one channel of said hollow needle defining a gas-conducting portion;

said membrane-enclosed sensor comprising a membrane defining a sensor surface arranged in said compartment;

means for the introduction of a displacement liquid into the inner space of a package to be pierced by the hollow needle;

means for flushing the gas-conducting portion with an inert gas defining a flushing gas;

a separation membrane arranged in said compartment; and

said separation membrane allowing the through-passage of gases practically without hindrance and protecting the sensor surface of the sensor against deposition of liquids thereat.

5,060,530

HOLDER FOR MOLTEN METAL SAMPLING DEVICE

Gary H. Haughton, Burlington, Canada, assignor to Evacuo Enterprises Limited, Ontario, Canada

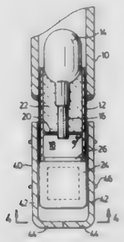
Continuation-in-part of Ser. No. 240,506, Sep. 6, 1988, Pat. No. 4,932,271, and a continuation-in-part of Ser. No. 406,529, Sep. 13, 1989, Pat. No. 4,941,364. This application Nov. 27, 1989, Ser. No. 441,289

Claims priority, application United Kingdom, Sep. 9, 1987, 8721185; May 5, 1989, 8910406

The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.

Int. Cl.[5] G01N *1/12*

U.S. Cl. 73—864.53 **10 Claims**



1. A holder for a molten metal sample device, comprising:

a pipe which is elongated in a given direction, the pipe having an upper portion and a lower portion, the lower portion defining an internal guidance chamber and having an opening lying in a plane making an angle with respect to said given direction, the opening communicating with the guidance chamber, the upper portion being adapted to receive and retain the molten metal sampling device in such a way that molten metal in the guidance chamber can be sampled by the sampling device,

a closure element for said opening, the closure element having a density such that it will seek to float upwardly in the molten metal being sampled,

and a protective cover enclosing a portion of said closure element and a lower part of said pipe, the protective cover having at least two separate parts,

and retaining means for holding the separate parts of the protective cover together around the closure element and the lower part of the pipe, the retaining means being adapted to fail upon contact with the molten metal,

said pipe and said closure element both being cylindrical and coaxial, and having substantially the same diameters, the closure element further having an outwardly projecting circumferential ledge remote from the pipe, the protective cover comprising two similar halves constituting said parts, each half having a semi-cylindrical side wall of which one end lines in juxtaposition against said ledge.

5,060,531

SCREW ROTOR

Yuichi Iguchi, and Koji Tani, both of Tokyo, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

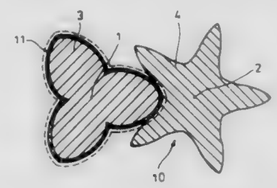
Filed Dec. 18, 1989, Ser. No. 451,759

Claims priority, application Japan, Jan. 10, 1989, 1-1417[U]

Int. Cl.[5] F04C *18/16;* **F16H** *1/08*

U.S. Cl. 74—424.5 **1 Claim**

1. In a screw rotor wherein a male rotor element having ridge portions helically extending in an axial direction and a female rotor element having valley portions helically extending in the axial direction are rotatably engaged with each other while leaving a small clearance therebetween, an improvement comprising a coating made from polytetraflurethylene on one of said elements and made from heat-resisting material which is substantially similar in thermal expansion coefficient to said one element and is substantially different in hardness to the other uncoated element, said coating of polytetrafluoethylene being machined after applied to said one element and being



scraped off by said other uncoated element to provide an optimum clearance.

5,060,532

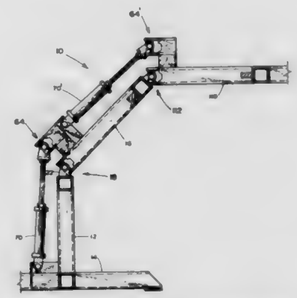
UNIVERSAL JOINT BOOM

Sidney L. Barker, 4301 Hudson La., Tampa, Fla. 33624

Filed Aug. 23, 1990, Ser. No. 571,293

Int. Cl.[5] B25J *18/02*

U.S. Cl. 74—479 **15 Claims**



1. A boom assembly, comprising in combination:

a first boom segment having an end with paired ears;

a second boom segment having an end with paired ears pivotably connected to said paired ears of said end of said first boom segment by means of a spider of a boom universal joint, said paired ears of said boom segments defining +X and −X axes perpendicular to +Y and −Y axes;

an X axis extensible assembly for pivoting said second boom segment about the Y axis in the direction of the +X and −X axes, said X axis extensible assembly comprising an X axis extensible means having two ends each with paired ears, said paired ears of one said end being pivotably connected to a first X axis offset bracket by means of a spider of an X axis universal joint and said paired ears of said other end being pivotably connected to paired ears of a second X axis offset bracket, said first X axis offset bracket being connected to said end of said first boom segment and said second X axis offset bracket being connected to said second boom segment, said paired ears of said ends of said X axis extensible assembly being parallel to said paired ears of said second boom segment; and

a Y axis extensible assembly for pivoting said second boom segment about the X axis in the direction of the +Y and −Y axes, said Y axis extensible assembly comprising a Y axis extensible means having two ends each with paired ears, said paired ears of said one end being pivotably connected to a first Y axis offset bracket and said paired ears of said other end being pivotably connected to paired ears of a second Y axis offset bracket by means of a spider of a Y axis universal joint, said first Y axis offset bracket being connected to said first boom segment and said sec-

ond Y axis offset bracket being connected to said end of said second boom segment, said paired ears of said ends of said Y axis extensible assembly being parallel to said paired ears of said first boom segment.

whereby, extension or contraction of said X axis extensible means pivots said second boom segment toward said X axis and whereby, extension or contraction of said Y axis extensible means pivots said second boom segment toward said Y axis.

5,060,533

ARM FITTING STRUCTURE OF HORIZONTAL ARTICULATED ROBOT

Nobotoshi Torii, Hachioji; Susumu Ito, and Akira Tanaka, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

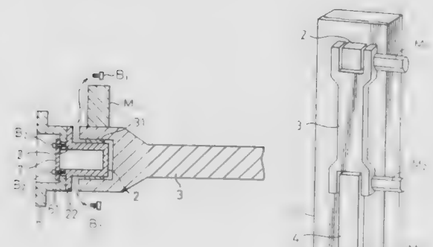
PCT No. PCT/JP89/00498, § 371 Date Jan. 12, 1990, § 102(e) Date Jan. 12, 1990

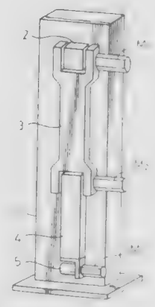
PCT Filed May 17, 1989, Ser. No. 457,777

Claims priority, application Japan, May 17, 1989, 63-118233

Int. Cl.[5] G05G *11/00;* **F16D** *1/12;* **B25J** *18/00*

U.S. Cl. 74—479 3 Claims





1. An arm fitting structure of a horizontal articulated robot, comprising:

a vertically moving robot base;

a linearly movable slider guided longitudinally along the robot base up to an upper portion thereof;

a first arm having a base end provided with a base rotatably fitted to the slider; and

removable stopping means for restricting a rotation of the base relative to the slider, the robot base having a length which is the same as that of both first arm and second arm when linearly extended.

5,060,534

QUICK RELEASE DEVICE FOR BICYCLE BRAKE

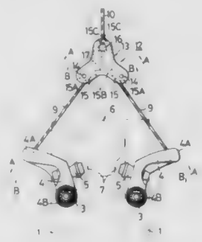
Kenichi Yoshigai, Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Co., Ltd., Osaka, Japan

Filed Apr. 20, 1990, Ser. No. 512,180

Int. Cl.[5] F16C *1/20*

U.S. Cl. 74—502.2 2 Claims

1. In a bicycle brake, in which suspension wires are connected to upper ends of a pair of brake arms which are loosely pivotally mounted to a bicycle body and are equipped with brake shoes, and the suspension wires are connected by a fastener to a lower end of a Bowden cable for operating the brake by means of a hanger in the form of a nearly triangular laminar body, as viewed from the front, a quick release device for bicycle brakes, wherein: one end of each suspension wire is connected to the hanger by means of a release lever; a lower end of each said lever is pivotally mounted to a bottom end of the hanger by means of a pin, said pin being located outside the upper end of the suspension wire when the brake is set; each release lever is nearly L-shaped as viewed from the front, and an intermediate portion thereof is connected to the upper end of a respective suspension wire by means of a clasp, said clasp



being pivotally secured to a respective release lever; and in which a top end of each release lever comes into contact with a respective side of the fastener when the brake is set.

5,060,535

STEERING WHEEL

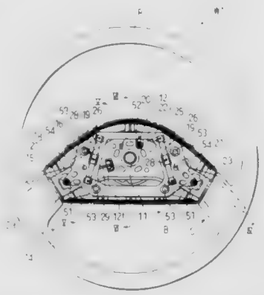
Yoshiyuki Fujita, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 6, 1990, Ser. No. 505,492

Claims priority, application Japan, Apr. 22, 1989, 1-102321

Int. Cl.[5] B62D *1/08*

U.S. Cl. 74—552 8 Claims



1. A steering wheel comprising:

a curved ring section having a core member and a center of curvature, said core member being covered with a coating layer, said coating layer partially covering a spoke member that extends inward from said core member;

a boss section having a boss and being disposed at the center of curvature of said ring section;

a unitary integral connecting plate connecting said core member and said boss, said connecting plate being deformable at least in part and including a base part adjacent to said boss and said spoke part extending radially outward from said base part and connected to said core member; and

a rib member being integral with and extending from said base part to said spoke part, said rib member terminating prior to the portion of said spoke part covered with said coating layer;

wherein said connecting plate undergoes plastic deformation when subjected to an impacting deforming force, said deformation causing said ring section to become substantially perpendicular to the direction of said deforming force.

5,060,536

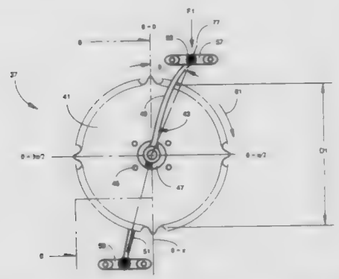
FLEXIBLE CRANK DRIVE

Donald R. Boys, 2720 Tierra Way, Watsonville, Calif. 95076

Filed Mar. 5, 1990, Ser. No. 488,235

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.1 8 Claims



1. A crank for driving a sprocket for propelling a bicycle comprising:

a crankshaft mounted rotationally in a frame of said bicycle; and

a crank arm for applying a torque to turn said crankshaft, said crank arm having a first end mounted to said crankshaft and a second end opposite said first end, said second end for mounting a pedal assembly;

said crank arm being flexible and deflecting to shorten the distance between said first end and said second end under the influence of a force applied at said second end to turn said crank, said crank arm having a cross-section shape at points at least 2.5 cm. from each end with a long dimension and a short dimension, said short dimension substantially in the direction of rotation of said crank arm to facilitate flexure of said crank arm, and said long dimension substantially at a right angle to said short dimension to impede torsional deflection of said crank arm, said long dimension being at least 4 times said short dimension.

5,060,537

BICYCLE PEDAL AND CLAMPING DEVICE THEREFOR

Masashi Nagano, Osaka, Japan, assignor to Shimano Industrial Co., Ltd., Osaka, Japan

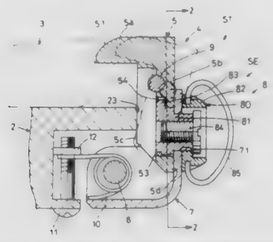
Filed Sep. 8, 1989, Ser. No. 404,531

Claims priority, application Japan, Sep. 9, 1988, 63-226982

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.6 12 Claims



1. A bicycle pedal including a clamping device for securing a shoe of a cyclist onto said pedal by a cleat on the shoe, said bicycle pedal including a pedal body pivotably supported by a pedal shaft, said clamping device being mounted on said pedal body for clamping the cleat of the shoe to the pedal body,

a pivotable clamp member including a pivotable hook member at one end of the pedal body for engaging said cleat at one end of the pedal body of the shoe, said clamp member being pivotable about a second axis to move the pivotable hook member in directions toward and away from the pedal body,

pivot limiting means for limiting pivotal movement of said pivotable clamp member toward said pedal body,

urging means for urging said pivotable clamp member toward said pedal body,

said pivotable clamp member being pivotable about said second axis to move away from said pedal body thereby to permit disengagement of said cleat of the shoe when said cleat of the shoe is moved sideways relative to said pedal body,

said pivotable hook member being pivotable about a first axis parallel to and displaced from said second axis,

said first axis being so positioned to permit oscillation of said pivotable hook member in a direction away from said pedal body when said cleat of the shoe is pulled upwardly, and

upward pull selector means for selectively allowing said pivotable hook member to pivot about said first axis.

5,060,538

GEAR SHIFT MECHANISM FOR A MANUAL AUTOMOTIVE TRANSMISSION

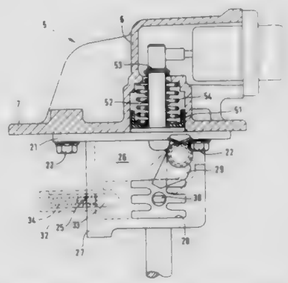
Martin Schnell, Pulheim; Wolfgang Winter-Peter, and Gustav Sabel, both of Cologne, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 18, 1990, Ser. No. 510,491

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1989, 3913269

Int. Cl.[5] G05G *9/12*

U.S. Cl. 74—477 8 Claims



1. A gear shift mechanism for an automotive manual transmission controlled manually by movement of a gear selector lever among several gear shift planes, each plane containing selectable gear positions, comprising:

a gear selector shaft supported for rotation about its axis and displacement along its axis;

a selector finger extending radially from the selector shaft;

a shift fork rod slidably supporting shift forks, each shift fork having an arm extending toward the selector finger, each arm formed with a groove adapted for engagement with the selector finger;

a cam fixed to the selector shaft, having detent recesses spaced angularly about the axis of the selector shaft, each recess corresponding to a gear shift plane;

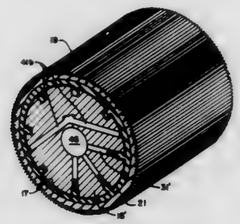
a cam fixed against rotation relative to the shaft, biased by a spring toward engagement with the detent recesses of the cam;

a locking plate held against rotation and supported for movement along the selector shaft, having first and second locking tongues, each tongue located at an axially opposite side of the selector finger and adapted to engage grooves on the shift fork arms, a web connecting the first

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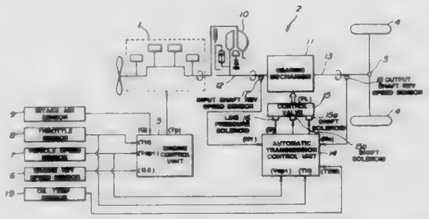
and second locking tongues having a hole through which a cam holding sleeve passes;
a spring plate having an aperture through which the selector shaft passes;
a first plate having an aperture through which the selector shaft passes;
a bushing located in the aperature having a flange contacting the first plate;
a cover located at an end of the selector shaft defining a chamber for receiving two concentric helical springs, the first spring biasing the selector shaft against the spring plate, the second spring pressing the spring plate into contact with said bushing, contact between the bushing and the first plate sealing said chamber;
an angle joined to the first plate, having a first leg substantially perpendicular to the selector finger formed with a system of interconnected slots corresponding to the gear shift planes, and a second leg substantially parallel to the selector finger having a slot directed substantially parallel to the axis of the selector shaft, the holding sleeve extending through said slot and through the web of the locking plate; and
a pin extending outward from the selector shaft diametrically opposite the selector finger and extending within the interconnected slots of the angle.

5,060,539
PNEUMATIC STEPPER MOTOR ACTUATOR
Thomas J. Cissell; David C. Doerschuk, both of Columbus; Karsten G. Koester, Plain City, and Gordon K. Reed, Bexley, all of Ohio, assignors to ABB Process Automation Inc., Columbus, Ohio
Filed Jan. 18, 1991, Ser. No. 642,773
Int. Cl.[5] F16H *33/00*
U.S. Cl. 74—640 **7 Claims**



1. In an actuator of the type comprising:
a housing;
a tooth stator rotationally fixed in said housing, said stator comprising a stator body, a flexible annular gear disposed about said stator body, and an extensible annular membrane disposed therebetween;
said stator body including a plurality of longitudinally extending grooves;
said membrane including a plurality of inwardly projecting longitudinal ribs adapted to be received in said longitudinal grooves of said stator body;
a toothed rotor rotatably carried in said housing, said rotor having a different number of teeth than said stator;
fluidic means for selectively bringing said teeth of said stator into driving engagement with said teeth of said rotor for rotating said rotor, said fluidic means including means for injecting pressurized fluid between selected portions of said membrane and said stator body;
a spindle slidably carried by said housing; and
translation means for converting rotation of said rotor into linear displacement of said spindle;
the improvement comprising means for venting pressurized fluid which may become entrapped in said longitudinal grooves between said membrane ribs and said stator body.

5,060,540
LINE PRESSURE CONTROL BASED ON LEARNING OF QUALITY OF SHIFTING IN AUTOMATIC TRANSMISSION
Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 18, 1990, Ser. No. 510,553
Claims priority, application Japan, May 19, 1989, 1-126230
Int. Cl.[5] B60K *41/16*
U.S. Cl. 74—866 **3 Claims**



1. In a motor vehicle having an internal combustion engine, and an automatic transmission including a transmission output member and a transmission input member drivingly connected to the internal combustion engine, the automatic transmission being shiftable between one gear ratio and another gear ratio and including a friction device which is adapted to be engaged in response to a magnitude of a line pressure to effect a shifting between the one and another gear ratios:
a group of sensor means, each for detecting one of operating variable of the internal combustion engine and the automatic transmission and generating a sensor output signal indicative of said operating variable detected;
said group of sensor means including,
input sensor means for detecting a revolution speed of the transmission input member and generating a first sensor output signal indicative of said revolution speed of the transmission input member detected;
output sensor means for detecting a revolution speed of the transmission output member and generating a second sensor output signal indicative of said revolution speed of the transmission output member detected;
a transmission control unit operatively coupled with said group of sensor means and including means for converting said sensor output signals into forms ready for processing in controlling the automatic transmission;
said transmission control unit including,
means for determining whether said group of sensors and said converting means malfunction or not upon occurrence of the shifting and generating an abnormality indicative signal when at least one of said group of sensors and said converting means malfunctions;
means responsive to said first and second sensor output signals for determining an actual gear ratio of said revolution speed of the transmission input member to said revolution speed of the transmission output member,
means for setting a predetermined range determined in view of the one and another gear ratios,
means for repeatedly checking whether or not said actual gear ratio determined falls in said predetermined range and incrementing a timer when said actual gear ratio falls in said predetermined range,
means for comparing the content of said timer with a predetermined value after the completion of the shifting at least upon absence of said abnormality indicative signal; and
means for adjusting the magnitude of the line pressure which engages the friction device upon the next occurrence of the shifting in response to result from comparing the content of said timer with said predetermined value.

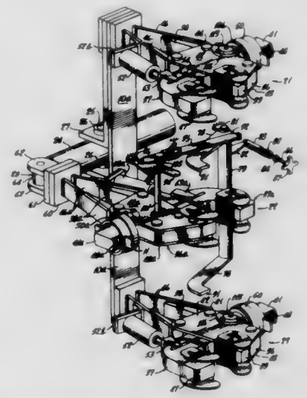
5,060,541
SHIFT INITIATION DETECTION SYSTEM FOR AUTOMATIC AUTOMOTIVE TRANSMISSION
Shigeki Shimanaka, Hadano, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan
Filed Jul. 3, 1989, Ser. No. 374,852
Claims priority, application Japan, Jul. 4, 1988, 63-164870
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—866 **5 Claims**



1. A shift initiation detection arrangement for use in an automotive transmission, the transmission being operatively connected with an engine having an engine speed sensor, and including means for producing a shift command signal, comprising:
a circuit responsive to the engine speed sensor and the shift command signal, the circuit including means for:
timing a predetermined period from a time the shift command signal is issued;
ignoring an output of said engine speed sensor during the predetermined period;
monitoring engine speed following an expiration of the predetermined period and determining a rate of change of the engine speed; and
determining a shift initiation upon the rate of change of the engine speed exceeding a predetermined level.

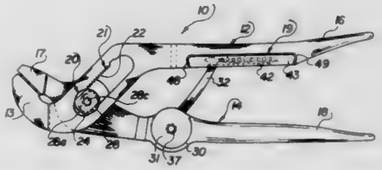
5,060,542
APPARATUS AND METHOD FOR MAKING AND BREAKING JOINTS IN DRILL PIPE STRINGS
Thomas D. Hauk, Los Alamitos, Calif., assignor to Hawk Industries, Inc., Long Beach, Calif.
Filed Oct. 12, 1990, Ser. No. 596,774
Int. Cl.[5] E21B *19/16*
U.S. Cl. 81—57.34 **55 Claims**

3. A method of making and breaking threaded joints in strings of threadedly-connected pipe, said strings extending into an oil well, said method comprising:
(a) providing three jaw sets on a common frame, at least one of said jaw sets being fixed on said frame, at least one other of said jaw sets being mounted on said frame for pivotal movement relative thereto,
(b) disposing said frame and jaw sets at the wellhead of an oil well containing a string of threadedly-connected pipe sections,
(c) closing said one other jaw set on said string at a region beneath a joint thereof, so that said one other jaw set tends to be held against rotation by said string,
(d) closing said one jaw set on said string at a region above said joint thereof,
(e) effecting relative pivotal movement between said one other jaw set and said frame, thus causing said frame to



pivot and accordingly causing said one jaw set to pivot, whereby to make or break said joint, and
(f) opening said one jaw set and said one other jaw set.

5,060,543
SELF-ADJUSTING TOOL
William A. Warheit, 121 Iroquois Dr., Butler, Pa. 16001
Filed Jan. 30, 1990, Ser. No. 472,516
Int. Cl.[5] B25B *7/04*
U.S. Cl. 81—409 **10 Claims**



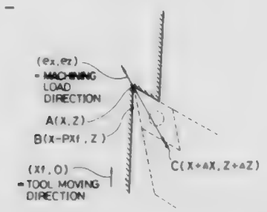
1. A self-adjusting tool comprising:
a. first and second elongated members, each of said members having a workend and at opposite ends therefrom handle means for applying force to said member, said first member having a raceway along a portion thereof and positioned adjacent said handle means;
b. connector means adjacent said workends for slideably and pivotally connecting said first and second members together, said connector means including an elongated slot in said first member, said slot including engaging means along at least a portion of one edge and an engagement member slideable within said slot and adapted to pivotally engage said engaging means, and means for securing said first and second members together and securing said engagement member in said slot;
c. a torsion arm with first and second ends, said first end including torsion means connected to said second member and said second end being slideably positioned within said raceway, said torsion arm being of length so as to space said work ends away from each other to their maximum extent when no force is applied to said handle means; and
d. restraining means positioned within said raceway to initially restrain movement of said torsion arm therein, said restraining means comprising a first compression spring and a second compression spring positioned within said first spring but having a reverse helix.

5,060,544

METHOD OF AN APPARATUS FOR RETRACTING TOOL IN NUMBERICAL CONTROL MACHINE TOOL

Yoshimaro Hanaki, and Kyoichi Yamamoto, both of Ooguchi, Japan, assignors to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Mar. 27, 1990, Ser. No. 500,253
Claims priority, application Japan, Mar. 27, 1989, 1-74722
Int. Cl.[5] B23B *3/00*
U.S. Cl. 82—1.11 **7 Claims**



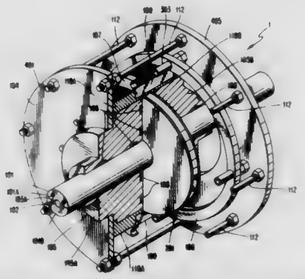
1. A method of retracting a tool of an NC machine tool device upon detection of an abnormal condition during automatic machining of a workpiece by the NC machine tool device, said method comprising the steps of:
detecting, in response to the detection of the abnormal condition, vector components of a machining load magnitude acting on the workpiece by the tool in each of at least two axis directions;
determining a direction of the machining load acting on the workpiece based on a ratio of the vector components of the machining load magnitude;
determining a tool retraction relative position in accordance with the direction of the machining load;
generating a tool retraction command in accordance with tool retraction relative position; and
causing the tool to be automatically retracted in accordance with the tool retraction command.

5,060,545

METHOD AND APPARATUS FOR CUTTING TOW INTO STAPLE

Charles A. Keith, Blountsville; Barbara J. Dietz; Jose F. Flores, both of Kingsport, and Thomas G. Greenwood, Knoxville, all of Tenn., assignors to Mini Fibers, Inc., Johnson City, Tenn.

Filed Aug. 23, 1989, Ser. No. 397,536
Int. Cl.[5] D01G *1/04*
U.S. Cl. 83—15 **21 Claims**



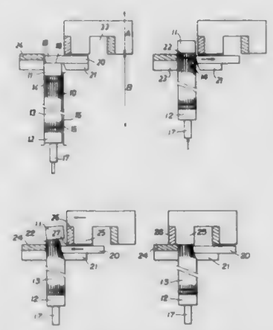
15. A method of cutting staple fibers comprising the steps of:
providing a substantially continuous supple of tow to a whorl assembly of a tow cutting apparatus through a tow passageway of a shaft, said whorl assembly being supported by said shaft;
providing a cooling fluid along a fluid inlet passageway disposed within said shaft to a cooling enclosure of said whorl assembly to absorb and remove heat generated within said cutting apparatus, said fluid inlet passageway being disposed substantially parallel to said tow passageway; and
cutting said tow into staple of substantially uniform length as said tow exits said whorl assembly.

5,060,546

METHOD AND APPARATUS FOR CUTTING IRRADIATED FUEL ELEMENTS IN THE HORIZONTAL POSITION BY MEANS OF A BLADE-CARRYING CARRIAGE

Daniel Tucoulat, Cormeilles en Parisis, France, assignor to Societe Generale Pour Les Techniques Nouvelles, France

Filed Feb. 16, 1988, Ser. No. 156,320
Claims priority, application France, Feb. 17, 1987, 87 02027
Int. Cl.[5] B26D *7/02, 7/06*
U.S. Cl. 83—19 **34 Claims**



1. A method for cutting an irradiated fuel element having a longitudinal axis and comprising a plurality of fuel rods arranged between first and second end pieces, said method comprising the steps of:
(a) supporting said fuel element with its longitudinal axis being substantially horizontally aligned;
(b) moving the fuel element a predetermined distance in a direction of its longitudinal axis toward a cutting location;
(c) clamping the fuel element at a location intermediate the end pieces and adjacent to the cross-section of the fuel element to be cut;
(d) providing a movable end piece cutting blade and a movable rod cutting blade and at least one backing blade;
(e) positioning the backing blade adjacent one side of the fuel element, one edge of said backing blade lying in a cutting plane;
(f) advancing the fuel element so that the cross-section to be cut is aligned with said cutting plane;
(g) moving the end piece cutting blade toward said backing blade for severing the first end piece adjacent to the cutting plane from the remainder of the fuel element whereby the first end piece is caused to fall into a stationary end piece removal means;
(h) providing a movable member having a cavity and arranging said rod cutting blade within said cavity, said cavity having a depth at least equal to the length of the fuel element rods being cut;
(i) moving the movable member to bring the cavity into alignment with the fuel element;
(j) unclamping the fuel element;
(k) advancing the fuel element to move a portion of the fuel element rods beyond said cutting plane and into said cavity sufficient to obtain the desired rod lengths when cut;
(l) clamping the fuel element rods at a location adjacent to the cross-section to be cut through said fuel element;

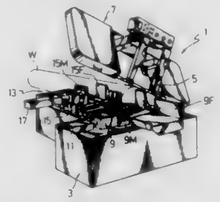
(m) moving the movable member having the cavity and rod cutting blade along said cutting plane in a direction transverse to the longitudinal axis of the fuel element and toward the backing blade, whereby the section of fuel element rods within said cavity are severed from the remaining portion of the fuel element by said rod cutting blade and diverted into a fixed fuel rod removal means.

5,060,547

CUTTING MACHINE AND METHOD FOR POSITIONING END OF WORKPIECE TO BE CUT IN CUTTING MACHINE

Kikuo Moriya, Machida, and Isomi Washio, Hadano, both of Japan, assignors to Amada Company, Limited, Japan

Filed May 19, 1989, Ser. No. 354,359
Claims priority, application Japan, May 20, 1988, 63-122120; Feb. 9, 1989, 1-28691
Int. Cl.[5] B26D *5/20*
U.S. Cl. 83—210 **10 Claims**



1. A cutting machine comprising:
a main vise device for interposedly securing a workpiece close to a cutting position;
a feed means for feeding a workpiece toward the cutting position;
a feed velocity control means for controlling the feed velocity of the workpiece by the feed means;
a stopper means capable of contacting a front end of the workpiece at a specified position, the stopper means being mounted on a movable vise jaw of the main vise device so that the front end of the workpiece can contact the stopper means when the movable vise jaw is closed toward a fixed vise jaw of the main vise device; and
a contact detection means for detecting the contact between the front end of the workpiece and the stopper means and sending a halt signal to the feed velocity control means for halting the feed action.

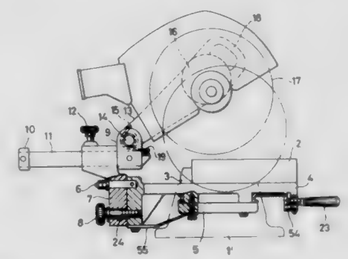
5,060,548

DESK-TOP CIRCULAR SAW

Masayuki Sato, and Shigeharu Ushiwata, both of Fukushima, Japan, assignors to Hitachi Koki Haramachi Co., Ltd., Fukushima, Japan

Continuation of Ser. No. 127,023, Nov. 27, 1987, Pat. No. 4,869,142. This application May 1, 1989, Ser. No. 345,520
Claims priority, application Japan, Feb. 20, 1987, 62-025738
The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.
Int. Cl.[5] B23D *45/04;* **B27B** *5/20*
U.S. Cl. 83—471.003 **2 Claims**

1. A desk-top slidable circular saw apparatus comprising:
a base;
a turntable, mounted on a substantially central portion of said base in a rotatable manner, for supporting a workpiece;
a motor section disposed above said turntable;
a circular saw disposed on said motor section, said saw having a drive shaft with a circular saw blade mounted thereon, wherein said motor section may be lowered toward the top of said turntable, so that a workpiece arranged on said turntable may be cut by said circular saw;
a hinge arranged at a rear end of said motor section, said motor section and said hinge being connected about a first pivot that is in parallel with the drive shaft of said circular saw;
a shaft member having an axis in parallel with the saw blade of said circular saw and being fixed to a lower portion of said hinge; and



a holder for slidably supporting said shaft member so that said shaft member is slidable in the axial direction thereof and so that a distance between said hinge and said saw drive shaft is kept constant when said shaft member slides in the axial direction, said holder being connected to said turntable about a second pivot that has an axis in a plane flush with the top of said turntable under the condition that said shaft member and said turntable top are kept in parallel with each other, said first pivot serving as a pivot for the up-and-down movement of said circular saw being always moved in a horizontal direction.

5,060,549

SAFETY ROPE FOR CLIMBING AND MANUFACTURING METHOD THEREFOR

Michel Beal, Vienne, France, assignor to Societe Anonyme De Droit Francais Dite : Ets Beal, Vienne, France

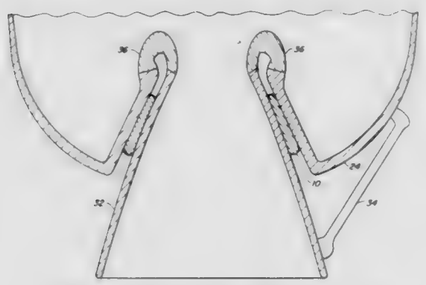
Filed Feb. 16, 1990, Ser. No. 480,855
Claims priority, application France, Feb. 17, 1989, 89 02451
Int. Cl.[5] D04C *1/12*
U.S. Cl. 87—6 **6 Claims**



1. Safety rope for climbing, comprising a core of strands surrounded by a braided tubular sheath, the tightness of the sheath determining the degree of stiffness or flexibility of the rope, said rope having its greater part flexible because of a looseness of the sheath and having near an end intended for creating a tying knot a stiff section whose sheath is tighter than said greater part and said end for said tying knot of said rope.

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5,060,550
ROCKET NOZZLE SNUBBER
Jeffrey P. Hoever, Santa Clara; Richard L. Reginato, Sunnyvale; Frederic M. Bay, Sunnyvale; Claudia E. Rolon, Sunnyvale; Michael Bazigos, Belmont, and Rolla W. Allen, Santa Clara, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 19, 1991, Ser. No. 658,163
Int. Cl.[5] F41F *3/07*; **B63H** *11/00*
U.S. Cl. 89—1.809 **3 Claims**



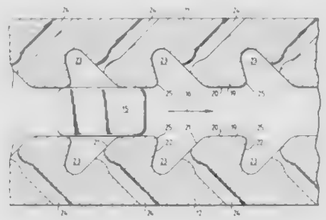
1. A snubber for transferring stress from the nozzle of a rocket to the main body of the rocket, comprising:
a flexible hollow conical toroid filled with incompressible fluid fitted between the rocket nozzle and the main body of the rocket.

5,060,551
SOLUTION MONOPROPELLANT FOR LIQUID PROPELLANT GUN APPLICATION
Thomas L. Boggs; Jack L. Prentice, and Donald E. Zurn, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 4, 1977, Ser. No. 785,971
Int. Cl.[5] F41A *1/04*
U.S. Cl. 89—7 **3 Claims**

1. A method for firing a liquid propellant gun comprising the steps of:
inserting a projectile into the rear of the gun barrel;
injecting a liquid monopropellant made up of ammonium perchlorate and ammonia into a chamber behind the projectile; and
igniting the monopropellant.

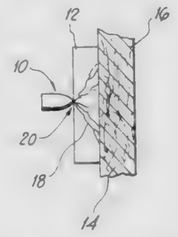
5,060,552
RAIL GUNS
Graham A. Reynolds, Coventry, England, assignor to Rolls-Royce Business Ventures Limited, Derby, England
Filed Aug. 28, 1990, Ser. No. 573,823
Claims priority, application United Kingdom, Oct. 13, 1989, 8923114
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 **13 Claims**

1. A rail gun comprising two elongate co-extensive generally equally spaced apart electrodes for carrying an electric current, each of said electrodes defining a surface which confronts a corresponding surface on the other electrode to facilitate electrical contact between said electrode surfaces and an electrically conductive armature operationally located between said electrodes, each of said confronting surfaces having a plurality of grooves therein extending generally transversely to the longitudinal extents of said electrodes, means being provided in each groove to direct a cooling fluid into that



groove and thence to the space between said rail electrodes to provide cooling of said rail electrodes.

5,060,553
ARMOR MATERIALS
Ronald W. Jones, Market Harborough, United Kingdom, assignor to Ceramic Developments (Midlands) Limited, England
Filed May 7, 1990, Ser. No. 474,080
Int. Cl.[5] F41H *5/04*
U.S. Cl. 89—36.02 **6 Claims**

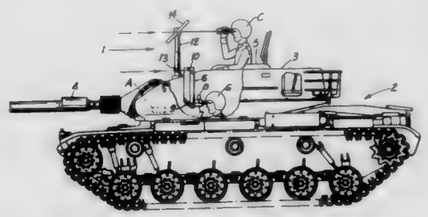


1. In an armor material comprising an energy absorptive layer (16); a layer of ceramic material (12); and said layers forming a laminar assembly; the improvement wherein:
said layer of ceramic material (12) comprises a glass-ceramic composition selected from the group consisting of lithium zinc silicates; lithium zinc alumino silicates; magnesium zinc silicates; calcium magnesium zinc silicates; and zinc alumino silicates; said glass-ceramic composition having a hardness at least 50% less than that of alumina; and
said glass ceramic composition having been produced by controlled crystallization of the corresponding glass by heat treatment, thereby to promote during use in said armor material, multiple fracture upon impact by a ballistic projectile.

5,060,554
OPTICAL SIGHTING SYSTEM FOR A GUN MOUNTED ON MOBILE PLATFORM
Oren Aharon, Haifa, Israel, assignor to The State of Israel Ministry of Defence, Rafael Armament Development Authority, Tel Aviv, Israel
Filed Aug. 30, 1990, Ser. No. 575,073
Claims priority, application Israel, Sep. 6, 1989, 91539
Int. Cl.[5] F41G *1/40*
U.S. Cl. 89—41.19 **9 Claims**

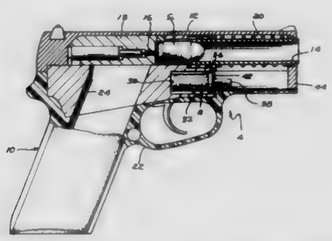
1. In a sighting system for use in aiming a gun that is mounted on a self-propelled mobile platform being of the kind that comprises a gunner's periscope-type sighting device having near a lower end thereof an eyepiece and an associated mirror and near an upper end thereof a viewing opening and one of an associated pivoting head mirror and prism; a collimator for projecting an optical reticle or spot on said one of

associated head mirror and prism; and electronic fire control means for correlating the position of the gun to the position of said head mirror, the improvement comprising said collimator having a source of essentially monochromatic light and said system including auxiliary sighting means for use by a commander situated on said platform remote of the gunner, said auxiliary sighting means including first and second window reflectors of which the first window/reflector faces said



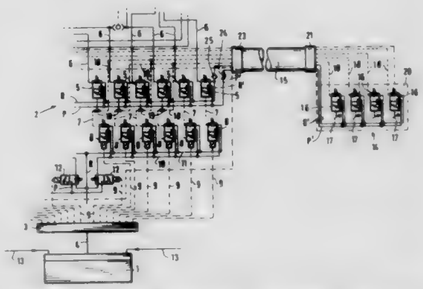
one of associated head mirror and prism and the second window/reflector is vertically spaced from said first window/reflector, said first and second window/reflectors being transparent to ambient light and capable of reflecting the monochromatic light arriving from said collimator; and means for transmitting light between said first and second window/reflectors whereby said optical reticle or spot is projected into the commander's line of sight.

5,060,555
SLIDE DECELERATOR FOR A FIREARM
Ghaleb A. Sater, East Longmeadow; Robert L. Constant, Westfield, and W. David Lee, West Newton, all of Mass., assignors to Smith & Wesson Corp., Springfield, Mass.
Filed Mar. 30, 1990, Ser. No. 501,476
Int. Cl.[5] F41A *3/78*
U.S. Cl. 89—196 **4 Claims**



1. Slide decelerating system for a firearm, having a slide which has reciprocable stroke relative to the receiver of the firearm comprising an open ended cavity provided in said receiver, a deformable elastomeric material disposed within said cavity, a portion of said slide being carried toward the open end of said cavity, a plunger slidably disposed within said cavity against said elastomer, a rod extending forwardly from said plunger a predetermined distance so that its outer end is longitudinally spaced from said portion of the slide a distance substantially less than the length of the slide stroke so that during the terminal portion of the rearward movement of the slide, the plunger will substantially deform the elastomer to thereby absorb the kinetic energy of the slide during said terminal portion of its rearward stroke to cushion the impact of said slide relative to the receiver of said firearm, said elastomer being in the form of a rod and said cavity being of generally the same cross-sectional configuration as said rod but of substantially smaller diameter than said cavity to allow for radial expansion of the elastomeric rod commensurate with its deformation by the force of rearward movement of the slide thereagainst.

5,060,556
ARRANGEMENT FOR EMERGENCY OPERATION OF HYDRAULIC APPLIANCE IN AN ELECTRO-HYDRAULICALLY CONTROLLED MINERAL MINING INSTALLATION
Walter Weirich, Dortmund; Michael Dettmers, Kamen, and Uwe Trox, Ottmarsbocholt, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 441,615, Nov. 27, 1989, abandoned. This application Sep. 28, 1990, Ser. No. 590,560
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840478
Int. Cl.[5] F15B *13/07*
U.S. Cl. 91—527 **7 Claims**

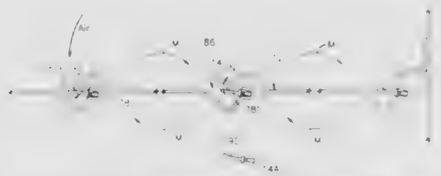


1. In a mineral mining installation comprising a plurality of supports equipped with hydraulic appliances and an electro-hydraulic control system for controlling the operation of the hydraulic appliances; said system comprising electronic control devices and valve units allocated to the supports, the valve units having hydraulically controllable direction control valves which are connected on an inlet side to hydraulic pressure and return lines and on an outlet side to pressure chambers of the appliances, and solenoid pilot valves which are controlled electrically by the associated control device and are arranged in hydraulic control lines of the control valves; an arrangement for effecting alternative operation of at least some of the appliances, said arrangement comprising a portable device with further manually actuatable control valves, a multi-core cable and complementary releasable coupling means for connecting the cable to any selected one of the valve units, the multi-core cable serving to connect the further valves of the device to said one valve unit to provide hydraulic pressure to the control lines of the control valves to operate these valves.

5,060,557
SMOKE DAMPER BLADE SEAL
James C. Dunn, Bensalem, Pa., assignor to Penn Ventilator Company, Inc., Philadelphia, Pa.
Filed Jan. 26, 1990, Ser. No. 470,644
Int. Cl.[5] F24F *13/14*
U.S. Cl. 98—121.2 **20 Claims**

19. A damper comprising:
a. a frame;
b. a plurality of members mounted in said frame, moveable between an open position and a closed position in which adjacent members are substantially contiguous;
c. a recess in one of said members proximate an edge thereof to which an adjacent member is substantially contiguous when said members are in the closed position;
d. means for closing space between said adjacent members

when in said closed position, secured to said member having said recess and extending at least part-way there-



across, by moving against said adjacent member responsively to air flow towards said recess.

5,060,558

MACHINE FOR BREWING COFFEE, TEA AND THE LIKE

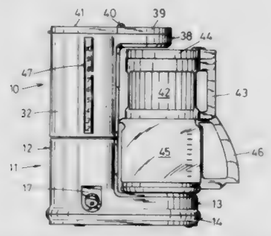
Klaus Beumer, and Hans-Jürgen Precht, both of Solingen, Fed. Rep. of Germany, assignors to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany

Filed Feb. 2, 1990, Ser. No. 473,879

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1989, 3904376

Int. Cl.[5] **A47J** *31/02, 31/057*

U.S. Cl. 99—306 **15 Claims**



1. A machine for brewing hot beverages comprising a hollow base including a top wall having an upper side provided with at least one recess, said top wall including a bottom portion beneath said recess and said bottom portion having first and second openings; first and second annular sealing elements disposed in said recess in register with the respective openings, said top wall having a partition dividing said recess into first and second sections for the respective sealing elements; a liquid storing container including a bottom wall adjacent said top wall and having first and second nipples extending into and sealingly engaging the respective sealing elements; an electric heater disposed in said base and having a liquid admitting inlet and a liquid discharging outlet; a first conduit having a first end portion connected with said inlet and a second end portion in said first sealing element; a check value provided in said top wall and including the second end portion of said first conduit; a second conduit having a first end portion connected to said outlet and a second end portion in said second sealing element; and a riser provided in said container and having a liquid-receiving lower end in communication with said second nipple.

5,060,559

TIMED COOKING PROCESS LOCK-OUT FOR A COOKING SYSTEM

David Winter, Eaton, Ohio, assignor to Henny Penny Corporation, Eaton, Ohio

Filed Feb. 9, 1989, Ser. No. 307,953

Int. Cl.[5] **A47J** *37/12*

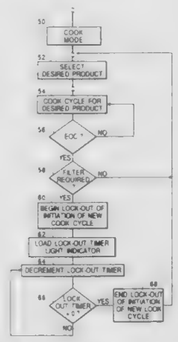
U.S. Cl. 99—325 **20 Claims**

1. A cooking system comprising:

filter means for filtering a cooking medium;

first determining means for determining when the cooking medium should be filtered by said filter means;

a counter responsive to said first determining means for fixing a predetermined initial count corresponding to a first predetermined time period if said first determining means determines that the cooking medium should be filtered, said counter being decremented from said initial count to a predetermined final count to define the first predetermined time period;



count means for controlling a cooking process of said cooking system, said control means including means responsive to said first determining means and said counter for inhibiting initiation of the cooking process during the first predetermined time period fixed by said counter and for permitting initiation of the cooking process after said counter has decremented to the predetermined final count.

5,060,560

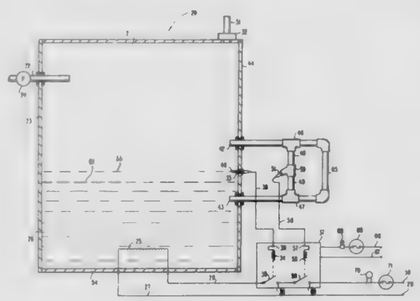
LOW-WATER ELEMENT SAFETY CONTROL

Lowell VanDeMark, 11370 N. Shelborne Rd., Zionsville, Ind. 46077

Filed Jan. 9, 1990, Ser. No. 462,579

Int. Cl.[5] **A47J** *27/00*

U.S. Cl. 99—337 **13 Claims**



1. A low-water element safety control for a steam cooker comprising:

a closed container for holding liquid;

liquid entrance means associated with said container for introducing said liquid into said container;

steam exit means associated with said container for allowing escape of steam from said container;

heating means for heating said liquid and having an off position when disconnected from a source of energy and

an on position for heating said liquid when connected to said source of energy;

first safety means having a first low liquid sensor located into said container, said safety means connected to said heating means operable to disconnect said heating means from said source of energy placing said heating means in said off position when said liquid is below said sensor; and,

back up safety means connectable to a source of energy and defining a liquid passage extending out of said container with said passage having less volume than said container, said back up safety means further having an additional low liquid sensor located outside of said container in said passage, said back up safety means connected to said heating means being operable to disconnect said heating means from said source of energy when said liquid is below said additional low liquid sensor and even though said first safety means is inoperable.

5,060,561

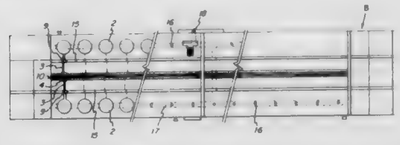
MACHINE FOR SHAPING AND COOKING FOODSTUFFS

Luis B. Campo, Desengano #94, Huesca, Spain

Filed Jan. 26, 1989, Ser. No. 302,408

Int. Cl.[5] **A23L** *1/32;* **A47J** *37/06*

U.S. Cl. 99—353 **7 Claims**



1. A machine for shaping and cooking foodstuffs comprising:

a) a series of containers distributed in two symmetric parallel rows, wherein said rows of containers are transversely aligned in pairs and said containers move along said rows;

b) drag means for said containers comprising an endless chain having fixed therein equidistant supports;

c) a series of pairs of arms, each of the arms in each pair of arms having an end hingeably connected to one of said equidistant supports and a free end which supports one of said containers, wherein said arms are positioned on said equidistant supports in a manner effective to maintain the symmetry and transverse alignment of said containers along the length of said rows;

d) a moving arched fork having a central branch and two side branches, wherein said fork runs under said chain, in a point of its path, in a transverse direction;

e) a shaft parallel to and equidistant from said rows of containers and parallel to the rotational axis of said arms, having said fork fixed thereto by its central branch;

f) tipping means which causes said fork to shift in a circular path about said shaft between two limit positions:

i) a first limit position in which said fork is placed under said chain with its side branches placed slightly under said arms on one of said rows, and

ii) a second limit position in which said fork is partially placed over said chain with its side branches placed at the height of said arms on the other of said rows, wherein said tipping means displaces said containers from a rest portion to an inverted position over the opposite container, and from the inverted position back to the rest position;

g) control means for starting and stopping said drag means and said tipping means; and

h) heating means for heating at least one of said containers.

5,060,562

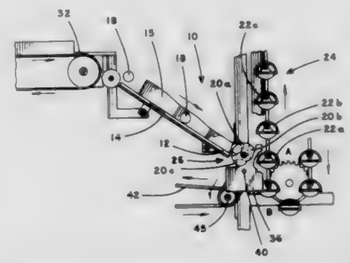
ROTARY INDEXING MACHINE

Augusto Florindez, 13029 Ocaso Ave., La Mirada, Calif. 90638

Filed Oct. 5, 1990, Ser. No. 593,096

Int. Cl.[5] **A47J** *27/00;* **B65B** *35/46;* **B65G** *47/29*

U.S. Cl. 99—353 **7 Claims**



1. A machine for manufacturing bakery products wherein main drive means powers feeding means for advancing rows of individual dough packets step-wise along an assembly line to a transport apparatus including rows of cup means into which individual dough packets are deposited row by row, said transport apparatus being driven by said main drive means to advance the rows of cup means step-wise row by row, including

gravity feed means in the assembly line having an inclined table member with a surface over which the individual dough packets slide as said dough packets are advanced by the feeding means to the transport apparatus, said table member terminating at a lower end thereof near the transport apparatus,

roller gate means between the table member and the transport apparatus, said gate means comprising a roller member having three rows of receptacles spaced apart from each other 120°, with each row of receptacles having a number of receptacles equal to the number dough packets being advanced towards the transport apparatus and positioned to receive the individual dough packets as said packets fall off the table member and into aligned receptacles. and

drive means for rotating synchronously with the transport apparatus said gate means through a 120° turn each time a row of dough packets are deposited in the transport apparatus.

5,060,563

APPARATUS FOR PRODUCING A VEGETABLE PRODUCT

Rex B. Plant, 99 Heatherdale Place, Hamilton, Ontario, Canada L9C 6K7 , and John P. Marton, Hamilton, Canada, assignors to Rex Plant, Hamilton, Canada

Filed May 22, 1989, Ser. No. 354,940

Int. Cl.[5] **A23L** *1/216;* **A23N** *15/00;* **A23P** *1/00;* **B26D** *3/26*

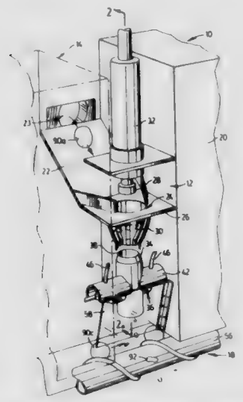
U.S. Cl. 99—544 **12 Claims**

1. In an apparatus for producing a product of predetermined shape from a vegetable:

first means to cut a cylindrical core from the vegetable, said first cutting means comprising a tube having an annular cutting edge and a plunger actuable to urge the vegetable against the cutting edge of the tube whereby a cylindrical core of the vegetable is introduced into the tube, the tube having a pair of opposed apertures in the side thereof; and

second means to cut said product of predetermined shape from the core, said second cutting means comprising a

pair of oppositely disposed arms movable one into each of the apertures in the tube toward the longitudinal axis of



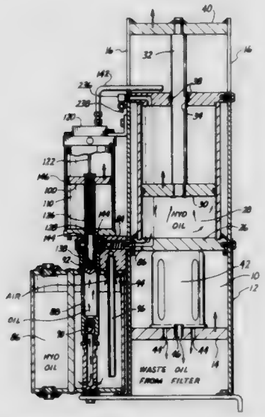
the core, the arms each carrying a configured cutting element rotatably mounted thereon proximate the core.

5,060,564

MEANS TO EXTRACT OIL FROM USED AUTOMOTIVE OIL FILTER

Charles G. Buford, 4566 Quail Ridge Rd., Oceanside, Calif. 92056, and Thomas J. Dawson, 26291 Roundtree Ct., San Juan Capistrano, Calif. 92675

Filed May 29, 1990, Ser. No. 529,501
Int. Cl.[5] B30B *15/16, 9/02, 1/32*
U.S. Cl. 100—52 **11 Claims**



1. Means in an automotive service facility to extract oil from a used automotive oil filter, comprising:

(a) said service facility having an air source of relatively low psi compressed air,

(b) a waste disposal container with a top opening,

(c) a press supported by said container over said top opening so that oil extracted from said filter by said press will drain into said container through said top opening,

(d) said press having an access opening for manual deposit and removal of said filter,

(e) said press being operable to squeeze said filter to extract most oil therefrom,

(f) a hydraulic source of hydraulic fluid and said press having operating means including air pressure to hydraulic pressure conversion means converting from said relatively low psi compressed air from said air source to relatively high psi hydraulic fluid from said hydraulic source and a hydraulic cylinder powered by said relatively high psi hydraulic fluid and said hydraulic cylinder being capable of operating said press, and

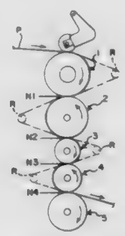
(g) said press including a bottom plate on which said filter is deposited positioned below said hydraulic cylinder, upright draw means disposed about said cylinder and having its lower end secured to said bottom plate and a top press lift plate disposed above said cylinder and said upright draw means having its upper end secured to said top press lift plate, a piston in said cylinder and a piston rod extending upwardly from said piston and having its upper end bearing on said lift plate so that said filter is squeezed between said bottom plate and the bottom of said cylinder when said press is operated by said hydraulic cylinder.

5,060,565

SMOOTHING AND CALIBRATING OF PAPER

Friedrich-Wilhelm Schönheit, Osnabruck, Fed. Rep. of Germany, assignor to Felex Schoeller Jr. GmbH & Co., Osnabruck, Fed. Rep. of Germany

Filed Dec. 21, 1989, Ser. No. 454,516
Claims priority, application European Pat. Off., Dec. 22, 1988, 88 121 477.9
Int. Cl.[5] B30B *15/34, 3/04*
U.S. Cl. 100—93 RP **10 Claims**



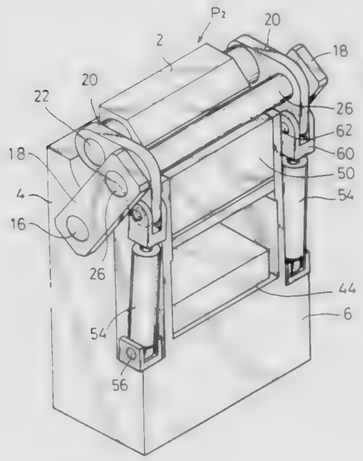
1. A smoothing and calibrating mechanism for papers, and particularly for photographic base papers, said mechanism comprising at least four hard cylinders positioned sequentially one adjacent to the next to define a nip between each of the respective adjacent cylinders through which the paper passes between the adjacent cylinders, the first two cylinders between which the paper first passes having a larger diameter than the diameter of the remaining smaller cylinders through and including at least the second to last of the cylinders between which the paper passes; the ratio of the diameters of the larger diameter cylinders to the diameters of the smaller diameter cylinders being between about 1:0.45 to 1:0.70; the larger diameter cylinders having a ratio of cylinder length to cylinder diameter of between about 4:1 to 8:1; the smaller diameter cylinders having a ratio of cylinder length to cylinder diameter of between about 10:1 to 14:1; and wherein at least one of the first and the last cylinders between which the paper passes is a zone controlled bending compensation cylinder.

5,060,566

PRESS APPARATUS

Ryoseki Ihara, Aichi, Japan, assignor to Kabushiki Kaisha Ihara Kogyo, Aichi, Japan

Filed May 10, 1990, Ser. No. 520,660
Claims priority, application Japan, May 11, 1989, 1-117817; Jan. 12, 1990, 2-5878
Int. Cl.[5] B30B *1/16*
U.S. Cl. 100—272 **13 Claims**



1. A press apparatus comprising:

a bed;

a pair of opposing ram guides fixedly mounted to said bed;

a ram having an upper end and a lower end and being slidably mounted to said ram guides for linear movement relative to said bed;

a pair of pull links arranged on opposing sides of said ram and having upper ends and lower ends;

pull link support means for pivotally mounting said lower ends of said pull links to said bed for pivotal movement together relative to said bed and such that said pull links are opposed to one another;

a pair of lever links arranged on opposing sides of said ram;

lever link support means for pivotally mounting said pair of lever links to said ram for pivotal movement together relative to said ram;

first connecting means for pivotally mounting said upper end of each of said pull links to a respective one of said lever links; and

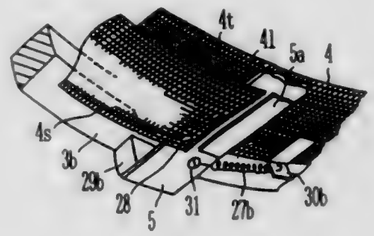
drive means, comprising at least one reciprocating cylinder device operatively connected to said lever links, for forcing said lever links to pivot together in a first lever link rotational direction relative to said ram when said cylinder device is operated in a first selected manner, to thereby force said pull links to pivot together in a first pull link rotational direction relative to said bed and, in turn, force said ram to move linearly relative to said ram guides in a first linear direction, and for forcing said lever links to pivot together in a second lever link rotational direction, opposite said first lever link rotational direction, relative to said ram when said cylinder device is operated in a second selected manner, to thereby force said pull links to pivot together in a second pull link rotational direction, opposite said first pull link rotational direction and, in turn, force said ram to move linearly in a second linear direction, opposite said first linear direction.

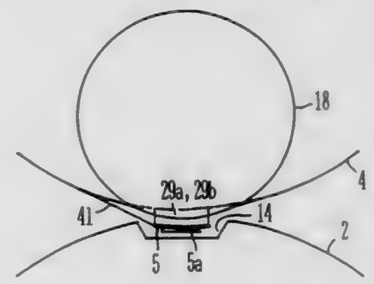
5,060,567

ROTARY STENCIL PRINTER WITH PRINTING DRUM OF NET CYLINDRICAL BODY RADIALLY OUTWARDLY EXPANDABLE IN FULL CIRCUMFERENCE

Noboru Hayama, and Yoshiharu Ohinata, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Dec. 13, 1990, Ser. No. 626,831
Claims priority, application Japan, Dec. 26, 1989, 1-341020
Int. Cl.[5] B41L *13/00*
U.S. Cl. 101—120 **5 Claims**





1. A rotary stencil printer comprising a printing drum including two annular members of a common diameter, a transverse bar member extending between said two annular members and having a stencil sheet fastening means for fastening a leading edge portion of a stencil sheet, and a net member of woven, non-woven or knitted fibers of a rectangular shape in development, said net member being wound completely around said two annular members with opposite side edge portions thereof in said rectangular shape of development being slidably laid on outer circumferential surfaces of said annular members so as to form a porous cylindrical body for mounting said stencil sheet as wound therearound; a back press roller of a diameter common with said printing drum disposed to face an outside surface of said printing drum so as to define a print sheet nip region with said printing drum therebetween; and an inner press roller disposed in an inside space of said printing drum so as to contact with an inside surface of said porous cylindrical body along a generatrix thereof, said back press roller having a groove in an outside surface portion thereof adapted to receive said transverse bar member therein in meeting therewith, means rotating said printing drum and said back press roller in synchronization with one another and in opposite directions relative to one another so that said transverse bar member is aligned with said groove when both said transverse bar member and said groove net at said nip region said transverse bar member having at a portion thereof facing said porous cylindrical body said portion being spaced radially outward from said porous cylindrical body.

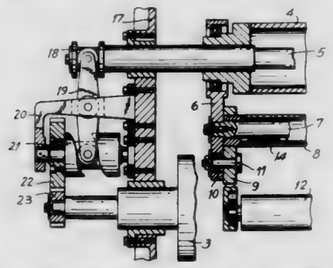
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5,060,568
DISTRIBUTING ROLLER UNIT AND PRINTING MECHANISM PROVIDED THEREWITH
Arndt Jentzsch; Wolfgang Müller; Horst Sachers; Hans Johne, and Guenter Schumann, all of Coswig, German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 590,875, Mar. 19, 1984, abandoned, which is a continuation of Ser. No. 367,963, Apr. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 352,845, Feb. 26, 1982, abandoned. This application Aug. 7, 1985, Ser. No. 763,361

Claims priority, application German Democratic Rep., Feb. 26, 1981, 227887

Int. Cl.[5] B41F *7/26, 7/40, 31/34*

U.S. Cl. 101—148 **5 Claims**

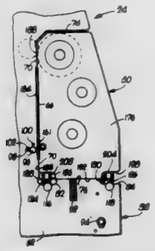


1. A printing mechanism, comprising an inking roller; a dampening roller; a distributing roller located between said inking roller and said dampening roller and movable between at least two positions in which it becomes alternately associated with said inking roller and said dampening roller and axially moves relative to said inking roller and said dampening roller, respectively, to thereby counteract stencil formation from said inking roller and said dampening roller, respectively; means for moving said distributing roller between said two positions; and means for axially displacing said distributing roller, said means for moving including a rotatable sleeve having an eccentricity, and a coupling connected with said distributing roller and said rotatable sleeve so that when said rotatable sleeve rotates eccentrically it displaces said coupling and thereby said distributing roller between said at least two positions.

5,060,569
APPARATUS FOR CHANGEOVER OF CYLINDERS IN WEB FED PRINTING PRESS
Dean E. Gladow, Emporia, Kans., assignor to Didde Web Press Corporation, Emporia, Kans.
Filed Jun. 22, 1989, Ser. No. 370,759

Int. Cl.[5] B41F *5/00*

U.S. Cl. 101—216 **8 Claims**



1. A module for a printing press adapted to receive a replaceable insert and to form therewith a complete, functional station for the press, said module comprising:

a pair of laterally spaced apart module sidewalls each presenting a surface for supporting a corresponding wall of said insert,

a pair of spaced apart rails extending laterally between said sidewalls and presenting upper, insert-engaging surfaces; and

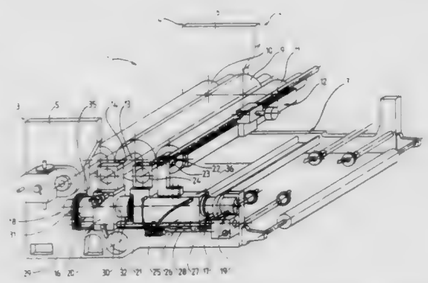
means operatively coupling said rails to said sidewalls, including structure for selective shifting said insert-engaging rail surfaces along a limited arcuate path of travel when said insert is placed on said rails, for positioning of said insert within said module, said rail surface-shifting structure comprising a pair of aligned bushing members respectively supporting the ends of each corresponding rail, said bushing members defining a pair of axes, and motive means operatively connected to said rails for selective eccentric rotational movement of said rails about the axes defined by said bushing members.

5,060,570
FLEXOGRAPHIC PRINTING MACHINE HAVING COMMON CONTROL MEANS FOR RAPID APPROACH AND DISENGAGEMENT OF CYLINDERS
Gilbert Braedle, Ringendorf; Paul Cromer, Stotzheim, and Francis Huck, Rosenwiller, all of France, assignors to H. I. Holweg International S. A., Rosheim, France
Filed Oct. 2, 1989, Ser. No. 415,773

Claims priority, application France, Oct. 4, 1988, 88 13243

Int. Cl.[5] B41F *5/24*

U.S. Cl. 101—247 **20 Claims**



1. Printing unit for a flexographic printing machine comprising:

a) a bed

b) an impression cylinder

c) a plate cylinder movably mounted by first means for support on said bed;

d) an inking cylinder combined with an inking device and integral with second means for support which slide on said bed;

e) said first means for support and said second means for support being arranged to slide on a guide shaft which is integral to and mounted on a side of said bed to thereby permit said plate cylinder and said inking cylinder to slide on said guide shaft;

f) pre-positioning devices for permitting rapid approach, or disengagement of said impression cylinder, said plate cylinder, and said inking cylinder with respect to each other;

g) fine adjustment means for positioning said impression cylinder, said plate cylinder and said inking cylinder precisely with respect to each other; and

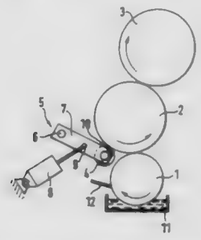
h) common control means mounted adjacent said guide shaft for displacement of said first means for support and said second means for support along said guide shaft to permit rapid approach and disengagement to ensure engagement and disengagement of said impression cylinder, said plate cylinder and said inking cylinder with respect to each other.

5,060,571
INKER WITH CONTROLLED ZONE INK DISTRIBUTION, AND METHOD OF CONTROLLING INK TRANSFER BETWEEN CYLINDERS OF A PRINTING MACHINE
Thomas John, Augsburg, Fed. Rep. of Germany, assignor to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany
Filed Oct. 5, 1990, Ser. No. 593,039

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1989, 3938447

Int. Cl.[5] B41F *31/06, 31/36*

U.S. Cl. 101—350 **20 Claims**



1. An inker system for a printing machine having

a rotatable ink transfer cylinder or roller (**2**) having a yieldingly compressible surface (**14**);

a rotatable ink supplying cylinder (**1**) having a cellular surface in operative engagement with the ink transfer cylinder or roller (**2**),

said ink transfer cylinder or roller (**2**) engaging said ink supplying cylinder (**1**) at a first ink transfer station (**15, 16**); and

a rotatable further cylinder (**3**) in operative engagement with said ink transfer cylinder or roller (**2**) to receive ink therefrom,

said ink transfer cylinder or roller (**2**) engaging said further cylinder (**3**) at a second ink transfer station (**17**),

comprising, in accordance with the invention,

means for controlling the quantity of ink being transferred at a respective one of the ink transfer zones, said ink quantity transfer control means including a rotatable surface compression roller (**4**) in engagement with the yielding surface (**14**) of the ink transfer cylinder or roller (**2**) located, with respect to the direction of rotation of said ink transfer cylinder (**2**) closely in advance of at least one of said ink transfer zones (**15, 16; 17**); and

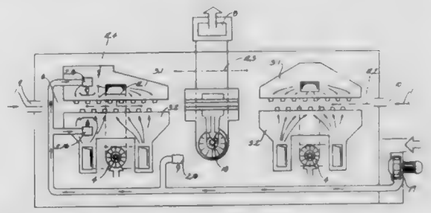
means (**5; 18, 19, 25; 26–31**) for selectively controlling the engagement pressure of the surface compression roller on said yieldingly compressible surface (**14**) of the ink transfer cylinder or roller (**2**) for deforming said compressible surface (**14**) in advance of the respective ink transfer zone (**15, 16; 17**) to control the circumferential width of the respective ink transfer zone and thereby the quantity of ink being transferred at the respective ink transfer zone.

5,060,572
CONTINUOUS DRIER ON ROTARY OFFSET PRINTING PRESSES AND OPERATION OF SUCH A DRIER DURING THE PRINTING AND CYLINDER WASHING PROCESSES WITH THE WEB RUNNING
Franz Waizmann, Gessertshausen, Fed. Rep. of Germany, assignor to Baldwin-Gegenheimer GmbH, Fed. Rep. of Germany
Filed Jan. 25, 1990, Ser. No. 470,139

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1989, 3902180; Nov. 27, 1989, 3939190

Int. Cl.[5] B41F *23/04;* **F23N** *5/24*

U.S. Cl. 101—424.1 **33 Claims**



1. A continuous printed web drier for use in rotary web offset printing presses comprising:

(a) a housing through which a printed web passes, the housing having an intake gas flow into the housing, an exhaust gas flow out of the housing and a heater for heating the gas within the housing;

(b) an ink and damping solution supply to the web, a cleaning solution supply to the web and means for driving the web to pass through the housing;

(c) actuators for controlling the heater, the intake gas flow and the exhaust gas flow;

(d) actuators for controlling an ink and damping solution supply, a cleaning solution supply and web speed;

(e) a plurality of optical elements for measuring the intensity of extinction bands attributable to vapor concentrations within the housing;

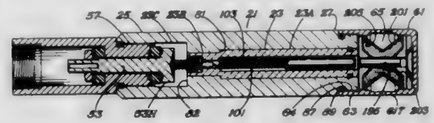
(f) a measuring and evaluation circuit for receiving the band intensity measurements obtained by the plurality of optical elements, standardizing the measurements and comparing them to predefined extinction values; and

(g) a control system for controlling the actuators in response to the comparisons of the measuring and evaluation circuit in order to regulate the vapor concentrations in the housing.

5,060,573
DETONATOR ASSEMBLY
Mike Montgomery, Stephenville, and Scott L. Hayes, Burleson, both of Tex., assignors to Goex International, Inc., Gleburne, Tex.
Filed Dec. 19, 1990, Ser. No. 630,281

Int. Cl.[5] F42B *3/182*

U.S. Cl. 102—202.5 **6 Claims**



1. A detonator assembly, comprising:

a metal housing means having a central opening formed therethrough between first and second ends,

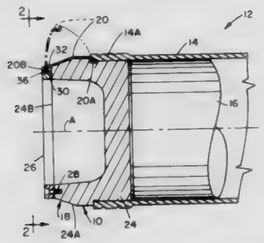
a detonator located in said opening at said first end,

first and second electrical leads connected to said detonator

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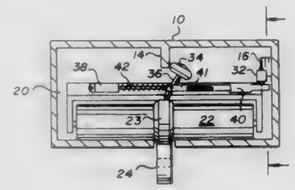
for causing said detonator to explode upon the application of an electrical energy to said first and second leads,
a metal contact spring located in said opening of said housing means at said second end and extending out of said second end,
electrical insulating means for electrically insulating said contact spring from said housing means,
an interior spring located in said central opening of said housing means for urging said detonator toward said first end,
said first electrical lead extending from said detonator through said central opening of said housing means and electrically connected to said contact spring,
said second electrical lead being electrically coupled to said housing means.

5,060,574
PROJECTILE BASE PLUG WITH ENHANCED DRAG-PRODUCING SEPARATION CAPABILITY
John P. Glish, Bloomington, and Bernard F. Bickman, New Brighton, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 2, 1990, Ser. No. 546,828
Int. Cl.[5] F42B *12/62*
U.S. Cl. 102—489 **9 Claims**



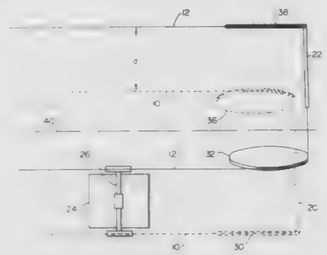
4. In combination with a projectile having a longitudinal axis and being capable of spinning during travel along a path of flight and having an outer tubular casing for housing an object being ejectable from a hollow rear end of the projectile casing, a base plug with enhanced drag-producing separation capability, comprising:
(a) a body detachably attached at a forward portion within said hollow rear end of said tubular casing of said spinning projectile and at a rearward portion projecting rearwardly from said casing rear end, said body being capable of ejection from said casing rear end upon ejection of the object during flight of said projectile;
(b) at least one drag-producing element having forward and rearward end, said element at its rearward end being mounted to an outer peripheral surface of said rearward portion of said body for movement about an axis extending substantially perpendicular to a longitudinal axis of the projectile between stowed and deployed positions relative to said body, said element before ejection of said body from said casing rear end being encompassed at its forward end by said casing rear end so as to prevent pivoting of said element from the stowed to deployed positions, said element upon ejection of said body from the projectile casing being movable from the stowed to deployed position as a result of centrifugal force imposed on said element by continued rotation of said ejected body after ejection from said spinning projective.

5,060,575
TURN CONTROLLER FOR SUSPENDED PERSONAL TRANSPORT VEHICLE
Stanley J. Hallett, Chicago, Ill., and Thomas E. Hallett, Melbourne Beach, Fla., assignors to Pathfinder Systems, Inc., Chicago, Ill.
Filed Jun. 19, 1990, Ser. No. 540,114
Int. Cl.[5] E01B *7/04*
U.S. Cl. 104—130 **3 Claims**



1. A turn controller system for an over head suspended rail type vehicle comprising:
slotted channel shaped track means for guiding said vehicle, said track means including a guiding slot extending along said track means and guide vane means for directing said vehicle at branches of said track means, said guide vane means extending within said channel shaped track means and located opposite said guiding slot;
a wheeled bogey for supporting and propelling said vehicle through said track means;
a guidance system for directing said bogey through said track means comprising a guide wheel, said guide wheel being pivotally connected to said bogey and being positioned left and right within said track means by at least one actuator mounted on said bogey, said guide wheel engaging said guide vane means and riding therealong, and guiding said bogey in the direction of said guide vane means;
a default wheel connected to said guide wheel which urges said guide wheel to a default left or right orientation within said track means; and
said track means further comprising turn bumper means depending within said channel shaped track means to engage and urge said default wheel against said guide wheel.

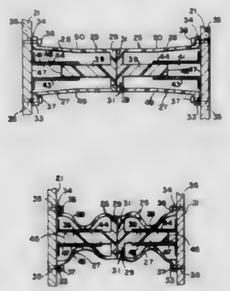
5,060,576
DETACHABLE CABLE-CAR
Denis Creissels, 1, Allée de la Piscine, F 38170 Corenc, France
Filed May 2, 1990, Ser. No. 518,436
Claims priority, application France, May 26, 1989, 89 07361
Int. Cl.[5] B16B *12/10*
U.S. Cl. 104—178 **6 Claims**



1. An aerial transport installation, comprising:
two terminals each having an entry and an exit;
a first track and a second track including a first and a second

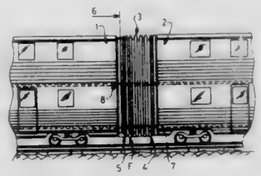
pair of carrier-hauling ropes, respectively, which extend in parallel and form two closed loops between said terminals;
passenger cars capable of being engaged between and coupled to said first pair of ropes and said second pair of ropes, and capable of being uncoupled from the carrier-hauling ropes when in said terminals;
uncoupling means disposed adjacent the entry of each of said terminals for uncoupling said cars from the carrier-hauling ropes;
recoupling means disposed adjacent the exit of each of said terminals for recoupling said cars to the carrier-hauling ropes;
platforms disposed in each of said terminals;
transfer tracks connecting said first track and said second track in each of said terminals, whereby said cars run on said transfer tracks and said platforms after being uncoupled from the carrier-hauling ropes;
a pair of bull-wheels located in each of said terminals below a running trajectory of said cars;
diverging means arranged between said uncoupling means and said bull-wheels for diverging the carrier-hauling ropes toward said bull-wheels;
converging means arranged between said recoupling means and said bull-wheels for converging the carrier-hauling ropes from said bull-wheels;
wherein a longitudinal symmetry axis exists between said first track and said second track at each of said terminals, and each bull-wheel is symmetrical to a corresponding bull-wheel in each said pair of bull-wheels with respect to a vertical plane containing said longitudinal axis, said bull-wheel and said corresponding bull-wheel being offset in a direction of the longitudinal axis to enable the carrier-hauling ropes to cross therebetween.

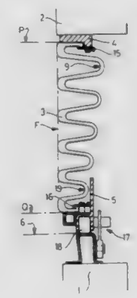
5,060,577
DIAPHRAGM ASSEMBLY FOR THE ENDS OF PASSENGER RAILROAD CARS COMPRISING ONE PIECE INTEGRALLY MOLDED URETHANE CHANNEL MEMBERS
Floyd Steinmetz, R. D. #4, Moscow, Pa. 18444
Filed Dec. 13, 1989, Ser. No. 450,609
Int. Cl.[5] B61D *17/22*
U.S. Cl. 105—15 **16 Claims**



1. A diaphragm assembly for the ends of railroad passenger cars, comprising
an integral head section,
an integral sill section,
a pair of spaced-apart upright integral side sections connecting the ends of the head and sill sections together,
each section being made of a single case of synthetic resin,
each side section comprising a channel member having a pair of legs separated at one end and connected together at the bottom of the legs by a channel base member having a face portion,
a hard rubbing surface on the face portion of the channel base member for rubbing against a similar rubbing surface of an abutting diaphragm assembly,
hard flanges molded onto the separated ends of the legs for mounting the channel member onto the door frame of a railroad car,
and a series of alignment means molded into the channel member for holding the channel member in longitudinal alignment and preventing lateral movement of the channel member,
said legs being made of a material which is flexible and resilient enough to bend when subjected to compressive force from an abutting diaphragm assembly.

5,060,578
MEMBRANE SYSTEM FOR CONNECTING CONSECUTIVE VEHICLES
Jean-Paul Carimentrand, Decize, France, assignor to Caoutchouc Manufacture et Plastiques S.A., Versailles Cedex, France
Filed Mar. 28, 1990, Ser. No. 500,406
Claims priority, application France, Mar. 28, 1989, 89 04125
Int. Cl.[5] B60D *5/00*
U.S. Cl. 105—18 **18 Claims**





1. A system for connection of consecutive vehicles, providing for intercommunication between the consecutive vehicles, said system comprising:
an elastically deformable membrane being substantially in one-piece, and self-supporting for providing substantially weatherproof protection of a passage way between consecutive vehicles;
said membrane formed by a plurality of successive corrugations;
said membrane having one end means for being connected to one end surface of a first vehicle;
said membrane having an opposite end means opposite said one end means for being fastened to and unfastened from an end surface of a second vehicle consecutive to the first vehicle;
said corrugations of said membrane being flexible for extension and compression within a range of distances between the consecutive vehicles;
said corrugations of said membrane comprising successive peaks;

said corrugations of said membrane having a plurality of depths of corrugations between said successive peaks; and

the depth of said corrugations increasing from one of: said one end of said membrane and said opposite end of said membrane toward the other of said one end of said membrane and said opposite end of said membrane.

5,060,579

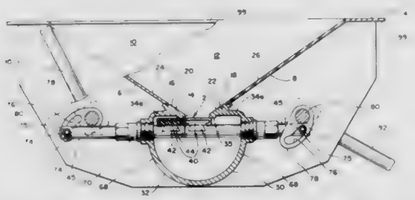
SLIDING HOPPER OUTLET GATE WITH PLASTIC UPPER SURFACE FOR SMOOTH SLIDING AND FOR SEALING THE OUTLET

James W. Johnson, Jackson, Tenn.; Francis R. Schultz, Woodridge, Ill.; Wayne A. Rhodes, Luray, Tenn., and Roy W. Miller, Highland, Ind., assignors to Itel Rail Corporation, San Francisco, Calif.

Filed Mar. 8, 1990, Ser. No. 491,117

Int. Cl.[5] B61D *7/20, 7/22*

U.S. Cl. 105—282.1 **19 Claims**



15. A hopper for carrying a load of particulate having an elongate outlet slot, a pair of plates extending in end to end relation across the slot in sealing relation thereto and movable coplanarly edgewise between open and closed positions,

each plate having an upper face and having a plastic surface of flexible material across the upper face thereof for engaging the load in the hopper and butting into sealing engagement with marginal portions of the hopper about the slot.

5,060,580

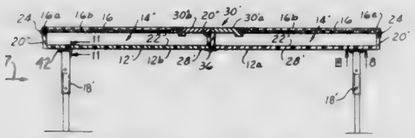
FOOD MANAGEMENT TABLE

William L. Shaw, 1224 Randolph, Detroit, Mich. 48226

Filed Apr. 6, 1990, Ser. No. 505,843

Int. Cl.[5] A47B *85/00*

U.S. Cl. 108—25 **9 Claims**



1. A food management table, comprising:

a table member, said table member having a floor and sidewalls which collectively define an internal storage area for the storage of articles;

table member folding means connectged with said floor and sidewalls for enabling said table member to be selectively foldable from a first folded position for storage and transportation of said table member to a second unfolded position for table use of said table member;

at least one cover member movably connected with said sidewalls of said table member for selectively covering said internal storage area, said at least one cover member mating with said sidewalls so as to prevent intrusion into said internal storage area by insects, wherein said at least one cover member comprises:

a frame

a hinge pivotally connecting said frame to said sidewalls of said table member; and

a screen material spanning said frame; and

a plurality of legs connected with said table member.

5,060,581

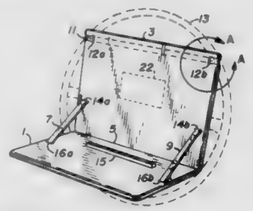
STEERING WHEEL TRAY APPARATUS

Carole S. Malinski, 8 Arden Ct., Oak Brook, Ill. 60521

Filed Feb. 7, 1991, Ser. No. 653,082

Int. Cl.[5] A47B *37/00*

U.S. Cl. 108—44 **14 Claims**



1. Tray apparatus for mounting to a circular shaped automobile steering wheel of predetermined diameter comprising:

a first panel, with said panel comprising a generally rectangular shape and having a front and rear surface and left and right sides;

a second panel, with said second panel comprising a generally rectangular shape for receiving articles on a surface thereof;

hinge means connecting said first and second panels along an edge thereof for permitting relative pivotal movement between said first and second panels to permit said panels to be moved between a folded position and an open position;

restraining means connected to said first and second panels for limiting pivotal movement of said second panel relative to said first panel in one direction to thereby hold said second panel in a suspended open level position, whereby articles may be placed on a surface thereof; said restraining means comprising first strap means located on a left side and second strap means located on a right side of said panels;

said first and second strap means being of a relatively non-stretchable characteristic in an axial direction and of a limp characteristic in direction orthogonal to said axial direction;

a first pair of slots in said first panel and a second pair of slots in said second panel with said slots being spaced from said hinge means;

said first strap means having a first end extending through a first one of said slots in said first panel and a second end extending through said corresponding slot in said second panel;

said second end of said first strap means including a bunched end portion with said end portion defining a cross sectional area of material greater than the area of said slot associated therewith to prevent withdrawal of said end through said associated panel slot;

said first end of said first strap means including a bunched section located at the rear side of said first panel; said bunched section including: a plurality of spaced slits extending through said strap means with at least a portion of said slits being aligned to form a singular passage; brad means, said brad means containing a brad head and two legs attached at one end to said head; said brad means having a portion of said legs extending through said singular passage formed by said aligned slits with said brad head being on one side of said bunched end section and the leg portions spread apart on the other side of said bunched section; wherein said brad legs prevent withdrawal of said bunched section through said associated slot in said first panel and unbunching of said end section;

coupling means for coupling said first panel onto said automobile steering wheel; said coupling means comprising: third strap means, with said third strap means having one end connected to said first panel proximate the upper left side thereof, and an opposed end connected to said first panel proximate the upper right side thereof and defining a loop about the rear surface of said first panel; said defined loop being of a maximum extent less than the outer diameter of said steering wheel; said third strap means and said first panel defining therebetween a yoke in which to receive and pass there through a portion, less than half, of the steering wheel rim to thereby suspend said tray apparatus from said steering wheel; said rear surface of said first panel having at least on surface portion for abutting at least on portion of said steering wheel.

5,060,582

HIGH SECURITY BLAST RESISTANT DOOR LEAF

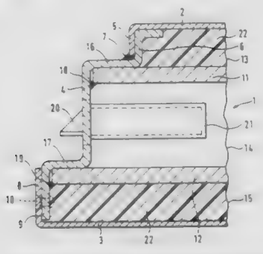
Heinrich Salzer, Marburg, Fed. Rep. of Germany, assignor to Salzer Sicherheitstechnik GmbH, Wehrda, Fed. Rep. of Germany

Filed Oct. 15, 1990, Ser. No. 597,433

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1989, 3934983

Int. Cl.[5] E06B *9/00*

U.S. Cl. 109—49.5 **5 Claims**



1. A bullet and blast resistant door leaf comprising inner and outer sheets defining the inner and outer faces of said door leaf, said outer sheet extending laterally beyond said inner sheet, a profile section forming an end face of said leaf and extending between said inner and outer sheets, said profile section including a first step portion interposed between said faces and extending inwardly generally in the plane of said leaf, and a second step portion interposed between said first step portion and said inner sheet and extending inwardly generally in the plane of said sheets, said first step portion extending laterally outwardly beyond said second step portion, an outer plate disposed in the plane of said leaf and secured to said profile section and having outer edge portions bearing against said first step portion, an inner plate disposed in the plane of said leaf and secured to said profile section and having outer edge portions bearing against said second step portion, said plates being of substantially greater thickness than said inner and outer sheets and dividing the interior of said leaf into inner, outer, and central chambers, and lock means mounted within said central chamber and extending laterally outwardly through said profile section, said outer plate extending laterally outwardly beyond the outermost lateral extremity of said lock means, whereby said lock means is shielded by said outer plate.

5,060,583

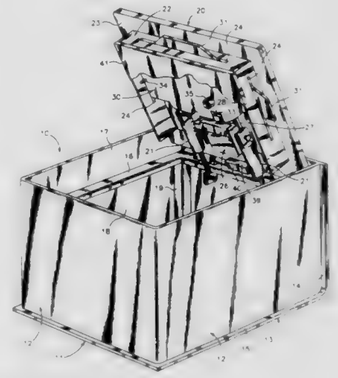
FLOOR SAFE

Martin J. Stinson, 1250 Industroal Ave., Escondido, Calif. 92029

Filed Feb. 4, 1991, Ser. No. 649,994

Int. Cl.[5] E05G *1/00, 1/04*

U.S. Cl. 109—50 **7 Claims**



1. A safe comprising:

a. an upwardly opening box-like structure having a plurality of side walls and a bottom wall;

b. a side flange on at least one of the side walls;

c. a bottom flange on the bottom wall;

d. a lintel support shelf on a perimeter of an inner chamber formed by the side walls;

e. a plurality of support braces attached to the support shelf and to the bottom wall;

f. a door panel hingingly connected to the structure;

g. at least one door closure cushioning and delaying apparatus connected to the door panel and the structure;

h. a locking apparatus connected to the door panel to lock the door panel to the structure; and

i. a floor plate cover removably placed over the door panel and over an upward opening of the structure.

5,060,584

FLUIDIZED BED COMBUSTION

Norman K. Sowards, and Michael L. Murphy, both of Coeur d'Alene, Id., assignors to Energy Products of Idaho, Coer d'Alene, Id.

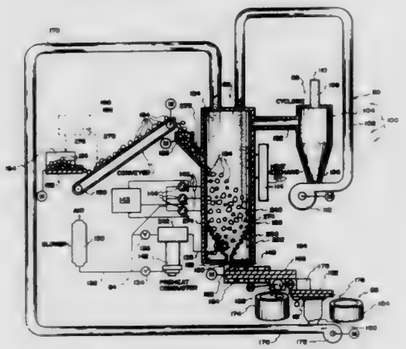
Filed Jun. 22, 1990, Ser. No. 542,229

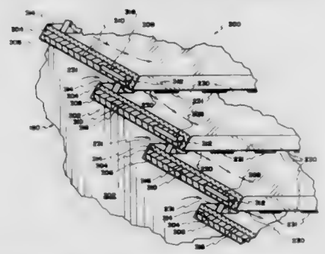
Int. Cl.[5] F23G *5/00*

U.S. Cl. 110—245 **23 Claims**

23. A vessel comprising a fluid bed for continuously incinerating fuel comprising tire segments and the like which comprise metallic wire tramp and for concurrently removing tramp and bed materials at a bottom effluent exit means of the vessel, the vessel further comprising static air distributor means at the periphery of the bed comprising a substantially centrally unobstructed relatively large central region in which the fluid bed and fuel only are disposed and through which bed material and tramp migrate without obstruction to and through the effluent exit means, downwardly and inwardly stepped lower vessel wall means and a plurality of peripherally located

centrally directed vertically and horizontally offset spaced air influent means surrounding the central region and associated





with the stepped lower vessel wall means by which the bed is supported and fluidized.

5,060,585

AGRICULTURAL SEED PLANTER

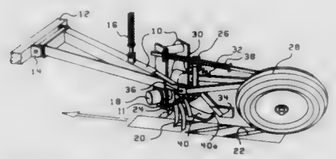
Frederick M. Alexander, Private Bag 2502, Banket, Zimbabwe

Continuation of Ser. No. 439,785, Nov. 21, 1989, abandoned. This application Dec. 14, 1990, Ser. No. 629,042

Claims priority, application Zimbabwe, Nov. 22, 1988, 155/88

Int. Cl.[5] A01C *5/04*

U.S. Cl. 111—89 16 Claims



1. A seed planter unit comprising:

a frame having front and rear ends and defining a longitudinal axis of said planter which defines a travel direction therefore;

means, adjacent the front end, for attaching said planter to planter conveying means;

means for supporting said frame at a desired height above a surface of soil;

a shaft mounted to the frame, oriented at an acute angle to and transversely of the longitudinal axis;

soil groove cutting means, consisting of a plurality of circumferentially spaced individual groove forming tines extending away from the shaft and all lying substantially in a single plane normal to the shaft, supported by said shaft for free rotation about the axis of the shaft and positioned to interact with the soil, said acute angle being such that the tines of the soil groove cutting means will be rotated about said shaft axis by their interaction with the soil during forward motion of the planter in the direction of travel, all said groove forming tines being angled to extend, adjacent their ends, circumferentially in a direction opposite to the direction of said rotation of the soil groove cutting means to produce, during said forward motion of said planter in the direction of travel, a sequential plurality of discrete parallel open topped grooves in the surface of that soil, each said groove extending transversely of the direction of travel at an acute angle thereto; and

means attached to the frame for supplying seed to said open topped plurality of grooves subsequent to their formation.

5,060,586

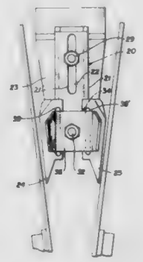
DISC BLADE SCRAPER DEVICE

Walter R. Hoyt, Rte. #1, Box 28, Pekin, N. Dak. 58361

Filed Dec. 19, 1989, Ser. No. 453,987

Int. Cl.[5] A01B *71/08*

U.S. Cl. 111—164 2 Claims



1. An adjustable disc blade scraper for scraping the disc blades of a grain drill wherein the grain drill has a fixed support means between each pair of disc blades with an aperature therethrough, comprising a fixed plate having projecting front and rear bolts at its forward and rearward faces, respectively said rear bolt being adapted to extend through said aperture of the fixed support means with means on the rear bolt to secure the fixed plate to the fixed support means, an elongated sliding plate having an elongated slot therethrough, the front bolt on said fixed plate projecting through said elongated slot of the sliding plate with the sliding plate being slidable longitudinally along the fixed plate within the limits of the slot, means on the front bolt on said fixed plate to secure the sliding plate to the fixed plate at an adjusted longitudinal position, said sliding plate having a bolt fixed thereto adjacent said slot, a pair of scraper blades having slotted ends, a scraper mounting hinge plate having curved ends to be received in the slotted ends of the scraper blades to pivotally mount the scraper blades to the mounting hinge plate, a spring plate, having outer ends said scraper mounting hinge plate and said spring plate each having bores to receive the bolt of the sliding plate with the outer ends of the spring plate resiliently urged against the scraper blades to urge the scraper blades against the disc blades of the grain drill, means on the bolt of the sliding plate to secure the spring plate and mounting hinge plate to the sliding plate with the scraper blades on the mounting hinge plate resiliently urged against the disc blades.

5,060,587

METHOD AND APPARATUS FOR CHANGING THE SPIRAL STITCH PATH IN A TUBULAR FABRIC

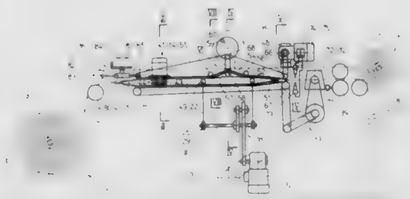
Peter J. Biesinger, Saumstr. 15, D-7944 Herbertingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 207,951, Jun. 17, 1988, abandoned. This application Dec. 27, 1989, Ser. No. 457,555

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1987, 3720990; European Pat. Off., Jun. 15, 1988, 88109517.82304; Turkey, Jun. 23, 1988, 31156/88

Int. Cl.[5] D05B *23/00;* D06C *3/00*

U.S. Cl. 112—63 53 Claims



31. An apparatus for changing a spiral stitch path in a tubular fabric such as a striped fabric produced on a circular knitting machine comprising:

a) a machine frame (**1**), wherein the frame (**1**) includes:

b) an inner guide means (**17, 18**) for the tubular fabric (**4**);

c) at least one conveying device (**11**) for continuously conveying the tubular fabric over the inner guide means (**17, 18**);

d) a cutting device (**41**), mounted in the region of the inner guide means (**17, 18**), for slitting the tubular fabric (**4**) in the direction of advance of said fabric forming two slit edges (**51,52**) bordering a longitudinal slit (**49**), wherein separate guide means guide each of the two slit edges (**51,52**) over conveying paths, which are of different lenths, and wherein said separate guide means guide said edges at disparate speeds, in order to produce a mutual displacement of said edges (**51,52**) from their previous mutual position, and wherein said guide means further serves for subsequent tandem conveying of the slit edges in the mutually displaced relation;

f) sewing machine (**12**) for rejoining the slit edges (**51, 52**) to form a seam joint, after the slit edges have been brought back together, to re-form a tubular configuration, during the further conveying;

g) sewing machine (**12**) is connected to a seam-checking device (**71**) having a signal transducer generator;

h) said signal transducer generator being actuated when a defect in the seam joint is recognized; and

i) said signal transducer generator being adapted to control a shutoff of at least a part of the apparatus.

5,060,588

METHOD OF ATTACHING A STRIP OF CLOTH WITH A ZIP-FASTENER COMPONENT TO A TROUSER FOREPART

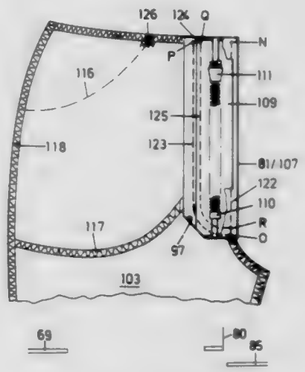
Werner Sadlack, Bünde; Siegfried Vogt, Leopoldshöhe; Egon Upmeier, Lage, and Wolfram Schulze, Bielefeld, all of Fed. Rep. of Germany, assignors to Kochs Adler Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 463,416, Jan. 11, 1990. This application Nov. 2, 1990, Ser. No. 608,233

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1989, 3901922

Int. Cl.[5] D05B *3/12*

U.S. Cl. 112—265.2 3 Claims





1. A method of sewing a strip of cloth provided with a zip-fastener component to one of two trouser foreparts comprising the following steps:

folding over a rim of the strip of cloth;

folding over a rim of said one trouser forepart;

arranging the strip of cloth above said one trouser forepart;

positioning the folded-over rim of said one trouser forepart and the folded over rim of the strip of cloth relative to one another in a position which said folded-over rims occupy after being sewn together;

bringing the folded over rim of said one trouser forepart and the folded-over rim of said strip of cloth into mutual contact; and

sewing together said one trouser forepart and the strip of cloth by a seam penetrating said folded-over rim of said one trouser forepart and the folded-over rim of said strip of cloth, which seam is effected in a single sewing operation.

5,060,589

SYSTEM FOR ALLEVIATING THE EFFECTS OF OIL TANKER OIL SPILLS

Emil V. Winckelmann, 3108 Blossom La., Redondo Beach, Calif. 90278

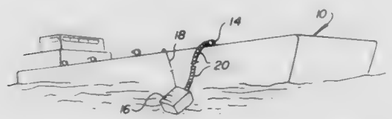
Filed Jul. 16, 1990, Ser. No. 553,129

Int. Cl.[5] E02B *15/04*

U.S. Cl. 114—74 R 3 Claims

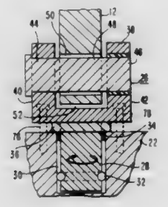
1. A system for cutting off the escape of oil from an oil tanker after the hull of the tanker has been pierced, said system comprising: a pump having an intake extending into the interior of the tanker to pump oil from the interior; an elongated

flexible sleeve bag normally stored on the oil tanker in a roller condition and coupled to the outtake of the pump to receive the oil pumped by the pump; and a releasable bracket for



supporting the rolled sleeve bag adjacent to the side of the tanker to permit the sleeve bag to roll into the water adjacent to the tanker to receive oil from the pump immediately upon actuation of the pump.

5,060,590
SAILING APPARATUS
Oliver M. Springall, 458 Hobart Rd., New Brunswick, N.J. 08903
Filed Apr. 6, 1990, Ser. No. 505,683
Int. Cl.[5] B63B *15/00*
U.S. Cl. 114—91 7 Claims



1. A wind propelled vehicle comprising a vehicle body having support means adapted to support a human being; a mast rotatably and pivotally mounted to said vehicle body; a boom supported by said mast; and a sail supported by said mast and said boom such that movement of the boom by said human being causes movement of the mast and sail, said vehicle including mast mounting means characterized in that movement of the mast at any given moment in time is confined to two degrees of freedom, one being rotationally about the axis of the mast and the other being pivotally in single plane transverse to the axis of rotation of the mast, wherein said mass mounting means is secured to the vehicle body support means and comprises a bottom portion and two upwardly extending, opposing, spaced side portions between which said mast is pivotally mounted, said bottom portion including means for securing said mast mounting means to said vehicle body support means, said spaced side members having opposingly aligned holes therein, and means adapted to fit within said opposing holes for pivotally mounting said mast thereto, said mast adapted to receive such pivotal mounting means, said vehicle including a split ring collar secured to a circumferential groove provided around said mast for receiving said collar, said collar including opposing rod-like extensions which pass through the opposing holes in the side portions of said mast mounting means, said mast being rotatable within said collar and pivotal about the axis of said rod-like extensions.

5,060,591
SAILBOAT
Richard Ciavarra, 4511 Tyrone Ave., Sherman Oaks, Calif. 91423
Filed Apr. 23, 1990, Ser. No. 512,327
Int. Cl.[5] B63B *43/14*
U.S. Cl. 114—123 1 Claim



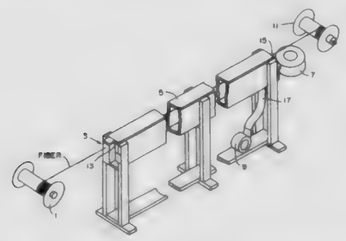
1. A sail boat which is small in length and wide in the beam, having a passenger compartment and an attached outrigger, a mast mounted on the sail boat for holding a sail, said mast mounted on the extreme front of said boat, a sail supported by the mast, said outrigger in the form of buoyant tank, means for admitting and expelling water from the outrigger, said means comprising valve controlled openings beneath the water line of the outrigger to permit a controllable quantity of water to flow inside the outrigger to increase the weight of the outrigger under proper wind conditions, a motor mounted in the boat, a propeller mounted in the boat below the water line, said motor connected to said propeller to drive the sailboat when there is no wind, an air pump mounted in said boat, said motor connected to said pump to operate it, air lines connected from said pump to said outrigger to increase the pressure inside said outrigger to drive the water therein out through said openings, whereby the outrigger can be lightened under suitable wind conditions.

5,060,592
STEERING DIRECTION INDICATOR FOR BOATS
Marvin G. Stock, 7460 Pickway Dr., Cincinnati, Ohio 45233
Filed Oct. 22, 1990, Ser. No. 601,295
Int. Cl.[5] G01P *13/02*
U.S. Cl. 116—215 2 Claims



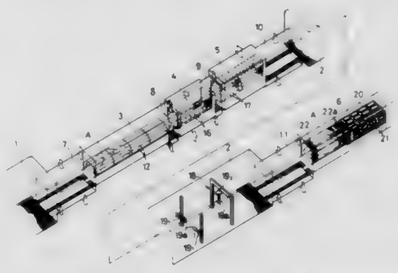
1. A rudder position indicator for a boat having a steering wheel connected to a rudder, the axis of rotation of said wheel being generally horizontal, comprising:
wall means forming a single spiral groove about a central location, said groove beginning at first stop means located proximate said central location and ending at second stop means,
means for attaching said indicator to the center of said steering wheel with said central location proximate said axis of rotation, and
rolling means in said groove and visible to the boat operator, said rolling means being movable in said groove as said steering wheel is rotated, between: (a) said first stop means when said wheel and rudder are at an extreme degree of wheel rotation and rudder movement in one direction, (b) said second stop means when said wheel and rudder are at an extreme degree of wheel rotation and rudder movement in the opposite direction, and (c) a central position approximately midway between said two stop means when said wheel and rudder are at a straight-ahead position,
said groove having indicia cooperating with said rolling means and visible to the operator, said indicia comprising: (a) a first portion colored white located in an intermediate portion of said groove, with its ends approximately 180° apart and horizontally aligned, indicating, with said rolling means, a generally straight-ahead position of said wheel and rudder, (b) a second portion colored red beginning at one end of said first portion, indicating, with said rolling means, steering to port, and (c) a third portion colored green beginning at the other end of said first portion, indicating, with said rolling means, steering to starboard.

5,060,593
DEVICE FOR APPLYING ADHESIVE ONTO FIBER AND DRYING BEFORE WINDING
Paul B. Ruffin, Huntsville; Michael L. Steelman, Madison; Kenneth A. Corbett, and Charles A. Mandy, Jr., both of Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 25, 1990, Ser. No. 542,508
Int. Cl.[5] B05C *3/15, 11/00*
U.S. Cl. 118—65 3 Claims



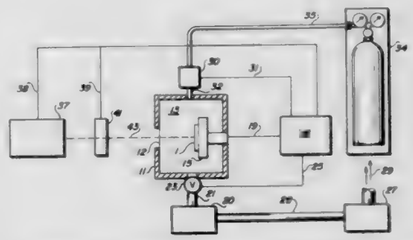
1. A device for applying adhesive onto a fiber as the fiber is unwound from a supply spool and rewound onto a rewinder, said device being located between said supply spool and said rewinder and comprising: a covered cup, said cup being suitably insulated from external temperature changes and further being suitable for containing liquid adhesive therein and having a first bore on a first side and a second bore on a second side, said first bore being suitably positioned to receive said fiber from aid supply spool, said bores further being large enough to pass said fiber therethrough and small enough to deposit a desired amount of adhesive on the fiber; a drying chamber having an entrance and an exit at opposite ends, said entrance being coupled to said second side of said cup such that said entrance surrounds said second bore, said exit being positioned to enable fiber passing therethrough to be wound onto said rewinder; and a means to maintain a suitable drying mechanism inside said chamber.

5,060,594
APPARATUS FOR PAINTING
Yoshio Tomioka; Toshio Soma; Kengo Takano, and Mikio Kobayashi, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 15, 1990, Ser. No. 523,678
Claims priority, application Japan, Jun. 23, 1989, 1-159712; Jul. 3, 1989, 1-169906; Oct. 19, 1989, 1-270309
Int. Cl.[5] B05D *5/00*; F26B *3/28*
U.S. Cl. 118—666 11 Claims



1. An apparatus for painting in which a water-based paint or an oil-based paint is painted on top of a water-based paint coat in a wet-on-wet manner, comprising
a front-stage paint booth for painting therein a water-based paint to obtain the water-based paint coat,
a first predrying chamber in a line with and after said front-stage paint booth and having means for heating with far infrared rays,
a second predrying chamber in a line with and after said first predrying chamber and having means for heating with hot air,
a cooling chamber for forcibly cooling with cool air, in a line with and after said second predrying chamber, and
a rear-stage paint booth in a line with and after the cooling chamber, for painting therein one of the water-based paint and the oil-based paint.

5,060,595
VIA FILLING BY SELECTIVE LASER CHEMICAL VAPOR DEPOSITION
Alan R. Ziv, 3129 E. Nora St., Mesa, Ariz. 85213, and Michael N. Kozicki, 14842 S. 27th St., Phoenix, Ariz. 85044
Division of Ser. No. 180,780, Apr. 12, 1988, Pat. No. 4,938,996.
This application Apr. 23, 1990, Ser. No. 512,745
Int. Cl.[5] C23C *16/48*
U.S. Cl. 118—722 7 Claims



1. Apparatus for forming an integrated circuit via to a semiconductor substrate and a first electrical connection site on the substrate, material at the first electrical connection site being absorptive of laser light having a first frequency, through a first via hole in an insulative layer on the substrate, the insula-

tive layer being relatively transparent to laser light of the first frequency, the apparatus comprising in combination:

(a) means for providing an atmosphere containing atoms of a first metal above the insulative layer;

(b) means for aiming a Q-switched laser beam through the atmosphere at the via hole, the beam being at least as wide as the first via hole, the laser beam having the first frequency;

(c) means for repetitively pulsing the laser beam at predetermined intervals, the pulses having enough energy to heat material at the bottom of the via hole to a deposition threshold temperature to cause deposition of atoms of the first metal onto the bottom of the via hole, the intervals between the pulses being great enough to allow enough thermal decay of the temperature at the interface between the substrate and the insulative layer by conduction of heat through the substrate that upper portions of the walls of the first via hole are not heated to the deposition threshold temperature, whereby the first via hole becomes filled with the first metal without prior build-up of the first metal on the upper portions of the walls of the first via hole.

5,060,596

METHOD FOR FILLING A CONTAINER FOR TRANSPORTATION OF LIVE POULTRY, AND CONTAINER FOR CARRYING OUT THE METHOD

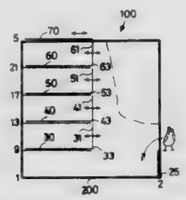
Maurice E. T. Esbroeck, Nijmegen, Netherlands, assignor to Stork PMT B.V., Boxmeer, Netherlands

Filed Feb. 23, 1990, Ser. No. 484,377

Claims priority, application Netherlands, Feb. 24, 1989, 8900470

Int. Cl.[5] A01K *31/07*

U.S. Cl. 119—17 **4 Claims**



1. A container for live poultry, said container being divided into a number of compartments lying one on top of the other, the compartments comprising a bottom face, a top face and four side faces, the bottom face of each compartment, with the exception of the bottom compartment, forming the top face of each compartment lying below it, and in which container prior to the filling of the container with poultry, the bottom face(s) can be moved in such a way that one or more compartments lying below become accessible, wherein the bottom face of at least one compartment lying above the compartment to be filled, together with the side face thereof facing a filling side, can be slid away sideways at least partially, as a whole or in parts, together with the side face.

5,060,597

ANIMAL ENCLOSURE BAG

Chester P. Fredericks, 3535 W. 72nd Pl., Chicago, Ill. 60629

Filed Jun. 6, 1988, Ser. No. 202,707

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—159 **1 Claim**

1. An animal enclosure bag fabricated of impervious flexible transparent sheet material and comprising:

a) a body portion having upper, lower, front and rear extremities, and several spaced apart aerosol-receiving apertures,

b) a bottom portion emergent from said lower extremity as a continuous extension thereof, having four leg-receiving holes positioned in a rectangular array, and sagging downwardly in the central region between said leg-receiving holes,

c) a head-accommodating opening adjacent the front extremity,

d) a closeable elongated opening running the length of said upper extremity, defining two interactive opposed flap-



like portions, and communicating with said head-accommodating opening, and

e) strips of contact adhesive associated with said flap-like portions and adapted to permit adjustably overlapping interengagement of said flap-like portions to close said elongated opening with attendant securement of a snug fit around the neck of the animal and adjustment of the height of the bag upon the animal.

5,060,598

CAT LITTER

Jeffrey C. Richards, 3635 James Ave., Deephaven, Minn. 55391

Filed Apr. 17, 1990, Ser. No. 510,092

Int. Cl.[5] A01K *45/00*

U.S. Cl. 119—171 **6 Claims**

1. A method of producing a filler material, the method comprising the steps of:

processing a selected quantity of peat so that the peat absorbs urine such that release of ammonia is substantially inhibited;

draining free water from the peat;

air drying the peat until the peat has a moisture content of approximateiy 40% to 60% by weight; and

rotary drying the peat until the peat has a moisture content of approximately 6% to 16% by weight.

5,060,599

METHOD AND REACTOR FOR COMBUSTION IN A FLUIDIZED BED

Lars A. Chambert, Bjärred, Sweden, assignor to Götaverken Energy Aktiebolag, Göteborg, Sweden

PCT No. PCT/SE87/00601, § 371 Date Aug. 7, 1990, § 102(e) Date Aug. 7, 1990, PCT Pub. No. WO89/05942, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 14, 1987, Ser. No. 476,460

Claims priority, application Sweden, Jun. 12, 1986, 8602631

Int. Cl.[5] B09B *3/00*; **F22B** *1/00*

U.S. Cl. 122—4 D **16 Claims**

1. A reactor for combustion of solid granular fuel material in a fluid bed comprising:

a fluid bed;

a reactor bottom;

boundary side walls;

means for supplying primary air to said reactor bottom; and

means for supplying secondary air at a distance above said reactor bottom, said primary and secondary air dividing said fluid bed in the reactor into a dense primary bed and a less dense secondary bed;

said reactor having one or more pockets within said boundary side walls, said pockets having upward mouths lo-



cated not lower than a level of said secondary air supply, and

said pocket having a cooling surface arranged therein.

5,060,600

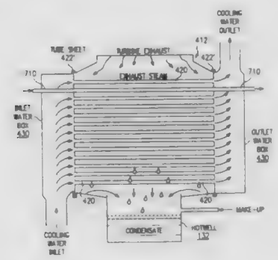
CONDENSER OPERATION WITH ISOLATED ON-LINE TEST LOOP

David S. Brown, Lexington, and W. Cave Baum, Longview, both of Tex., assignors to Texas Utilities Electric Company, Dallas, Tex.

Filed Aug. 9, 1990, Ser. No. 566,222

Int. Cl.[5] F22B *37/18, 37/48*

U.S. Cl. 122—379 **20 Claims**



1. A condenser system, comprising:

at least one bundle of tubes;

an inlet water box, connected to a first source of cooling water, and connected to the interiors of plural ones of said tubes;

an outlet water box, connected to the interiors of plural ones of said tubes;

a drain, connected to drain water from said outlet water box;

a steam manifold, connected to pass depleted steam over the exterior of said tubes in said bundle of tubes, whereby said steam is cooled and condensed by contact with said bundle of tubes;

a condensate removal path, connected to drain condensed steam from the exterior of said bundle of tubes;

wherein said bundle of tubes includes at least one monitoring tube, and said monitoring tube

has an interior which is isolated from the water flow in both of said water boxes and which can be viewed through an endoscopic probe without shutting down said first source of cooling water,

has a first end connected to a second source of cooling water, and

has a second end connected to a water drain;

whereby scale deposition on the interior of tubes ins aid tube bundle can be assessed by monitoring scale deposition on the interior of said monitoring tube.

5,060,601

WATER-TUBE BOILER AND A HEATING INSTALLATION EQUIPPED WITH SUCH A BOILER

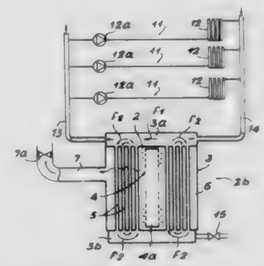
Maurice Vidalenq, 27, rue du Maréchal Joffre, 78430 Louveciennes, France

Filed Mar. 28, 1990, Ser. No. 500,748

Claims priority, application France, Mar. 28, 1989, 89 03980

Int. Cl.[5] F22D *7/00*

U.S. Cl. 122—406.1 **5 Claims**



1. A water-tube boiler which includes a body in which are located a furnace providing a source of heat, a series of vertical tubes serving as heating and exchange surface between the furnace and the water to be heated flowing through these tubes, and two respectively upper and lower manifolds to which the tubes are connected; wherein the improvement comprises:

all of said tubes are located within said furnace, with some of them being located close to the source of heat and others being located further away from the source of heat so that the temperature of the water in said tubes decreases the further they are away from the source of heat;

said manifolds are connected with each other only through said tubes; and

an outgoing duct and a return duct communicate with said upper manifold for conducting heated water therefrom out to, and cooled water back thereto from, a heating circuit;

whereby two independent water flows are provided in the boiler, one through the upper manifold from said return duct toward said outgoing duct, and the other between the upper and lower manifolds through the tubes caused by thermosiphon action inside the tubes and the upper and lower manifolds, with the temperature difference between the water in the various tubes serving to accelerate the thermosiphon action inside the tubes.

5,060,602

DEVICE FOR CONTROLLING OR MONITORING THE START OF INTRODUCTION UNDER PRESSURE, OF A FUEL-AIR MIXTURE FOLLOWING SCAVENGING OF AN ENGINE CYLINDER BY AIR

Jean-Pierre Maissant, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jul. 2, 1990, Ser. No. 546,832

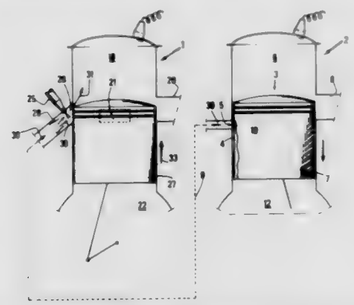
Claims priority, application France, Jun. 30, 1989, 89 08855

Int. Cl.[5] F01L *11/00*

U.S. Cl. 123—47 A **8 Claims**

1. Device for controlling the start of introduction, under pressure, of a fuel-air mixture into a first cylinder of an internal combustion engine, said engine comprising at least one other cylinder having a pump crankcase, a passageway to provide a connection between said pump crankcase and the upper part of the first cylinder, means for injecting fuel into said passageway and means for blocking communication between said passageway and the combustion chamber of the first cylinder, with a non-zero angular offset existing between the cycles of said pistons, characterized by comprising control means for controlling a start of injection, said control means interrupting in

an intermittent and predetermined fashion, communication between said passageway and said pump crankcase, wherein



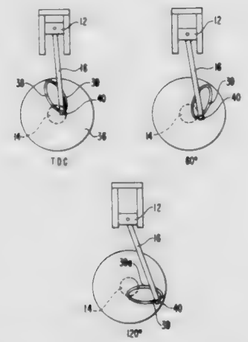
said control means comprises an opening provided in a lower part of said other cylinder, said opening being blocked by a skirt of the piston of said other cylinder.

5,060,603

INTERNAL COMBUSTION ENGINE CRANKDISC AND METHOD OF MAKING SAME

Kenneth A. Williams, 315 Eastleigh Dr., Belleair, Fla. 34616

Filed Jan. 12, 1990, Ser. No. 464,326
Int. Cl.[5] F02B *75/32*
U.S. Cl. 123—58 A **17 Claims**



1. A mechanism for translating reciprocating motion to rotary motion on a cyclic basis in combination with an internal combustion engine comprising:

at least one reciprocating piston slidably provided within a cylinder of said internal combustion engine;

synchronous control means which supplies a combustible mixture to said cylinder and ignites the mixture for producing a combustion force causing the piston to move in one direction of its reciprocating motion to provide a power stroke of the piston cycle; and

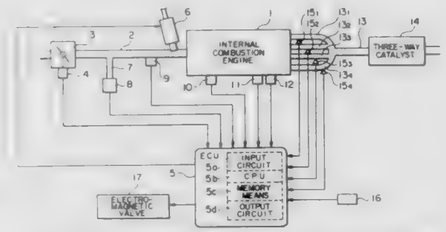
an engine output shaft rotatably mounted with said internal combustion engine, connection means for operatively connecting said engine output shaft to said reciprocating piston for translating the reciprocal motion of said piston to rotary motion of said shaft through a leverage arm between the axis of rotation of said engine output shaft and the point of operative connection between said piston and said shaft, said engine output shaft including work receiving means for increasing the length of said leverage arm during said power stroke while the combustion force acting on said reciprocating piston decreases, said work receiving means including means for providing a substantially constant level of torque to said engine output shaft during the power stroke despite said decreasing combustion force acting on said piston during the power stroke.

5,060,604

METHOD OF DETECTING FAILURE OF A VALVE TIMING CHANGEOVER CONTROL SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Yasunari Seki, and Yosuke Tachibana, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1990, Ser. No. 536,745
Claims priority, application Japan, Jun. 15, 1989, 1-152847
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 **12 Claims**



1. A method of detecting failure of a valve timing changeover control system of an internal combustion engine having at least one inlet valve, at least one exhaust valve, an exhaust system, at least one exhaust gas ingredient concentration sensor arranged in said exhaust system for detecting the concentration Of an exhaust gas ingredient, and control means for controlling the air-fuel ratio of an air-fuel mixture supplied to said engine to a desired value in a feedback manner by the use of a coefficient which is varied in response to output from said exhaust gas ingredient concentration sensor, said valve timing changeover control system changing the valve timing of at least one of said at least one inlet valve and said at least one exhaust valve depending on ope.ating conditions of said engine, the method comprising the steps of:

(1) obtaining a predetermined value of said coefficient based on values of said coefficient obtained during the control of the air-fuel ratio in said feedback manner;

(2) comparing a present value of said coefficient with said obtained predetermined value; and

(3) detecting whether there is failure in said valve timing changeover control system, from the result of said comparison.

5,060,605

VALVE DRIVE MECHANISM FOR VEHICLE ENGINE

Shojiro Yamazaki, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 543,591
Claims priority, application Japan, Jun. 26, 1989, 1-160730
Int. Cl.[5] F01L *1/26*
U.S. Cl. 123—90.23 **21 Claims**

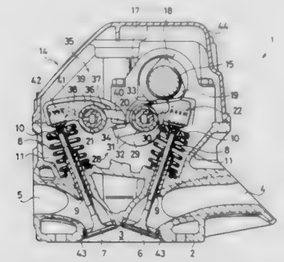
1. A valve drive mechanism for an engine, the engine including at least one cylinder, at least one combustion chamber for each cylinder, a cylinder head, a spark plug for each cylinder, at least one intake valve for each cylinder, at least one exhaust valve for each cylinder, the cylinder having an axial direction and an upper portion, comprising:

a spark plug mounted in the axial direction of the cylinder;

a cam shaft journalled in the upper portion of the cylinder head, the cam shaft being offset toward the intake valve such that the cam shaft does not interfere with the spark plug;

a first rocker are swung by rotation of the cam shaft for opening and closing the intake valve, the first rocker arm directly contacting the cam shaft;

an intermediate rocker arm swung by the cam shaft, the intermediate rocker arm directly contacting the cam shaft; and



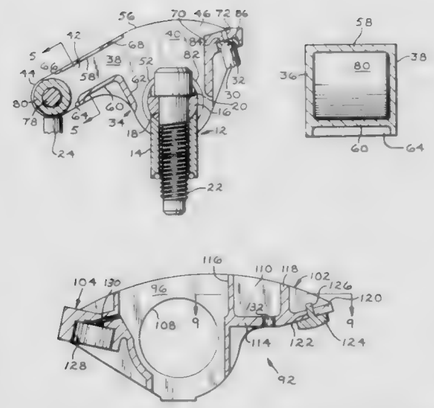
a second rocker arm swung by the cam shaft via the intermediate rocker arm for opening and closing the exhaust valve, the second rocker arm directly contacting the intermediate rocker arm.

5,060,606

ROCKER ARM

Donald G. Hubbard, Jackson, Mich., assignor to Camshaft Machine Company, Jackson, Mich.

Filed Aug. 14, 1990, Ser. No. 567,102
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.39 **20 Claims**



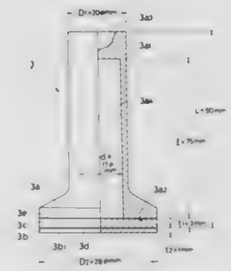
1. A rocker arm for use in the valve train of an internal combustion engine comprising, in combination, a unitary, homogeneous metal body having a pivot axis, a valve engaging arm extending in a first direction, and an actuator engaging arm extending in a second direction substantially opposite to said first direction, said valve and actuator engaging arms being located on opposite sides of said pivot axis, said arms each having an outer cantilever end and an inner region adjacent said pivot axis, said valve engaging arm inner region having a closed box cross sectional configuration including a bottom, actuator engaging means defined on said actuator engaging arm outer end and valve engaging means defined on said valve engaging arm outer end.

5,060,607

TAPPET STRUCTURE

Masato Taniguchi, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed May 30, 1990, Ser. No. 530,694
Claims priority, application Japan, Jun. 21, 1989, 1-71654
Int. Cl.[5] F01L *1/14*
U.S. Cl. 123—90.51 **2 Claims**



1. In a tappet structure in which a rotary movement is transformed into an axial movement by way of a cam, the tappet structure comprising:

a metallic tappet body, an inside of which is hollowed by means of drilling to have a lower open end and an upper closed end, said lower open end having a predetermined diameter;

a metallic plate having a diameter equivalent to said predetermined diameter integrally fixed to the lower open end of the tappet body in a manner to close the lower open end thereof by means of brazing, the metallic plate being made of JIS SNCM 630 and having a Young's modulus of more than 2×10^4 kg/mm^2, the metallic plate being joined to the lower open end of the tappet body by concentrically locating an annular braze sheet between the lower open end of the tappet body and the metallic plate, and heating the annular braze sheet to approximately 800 degrees Celsius in a vacuum atmosphere; and

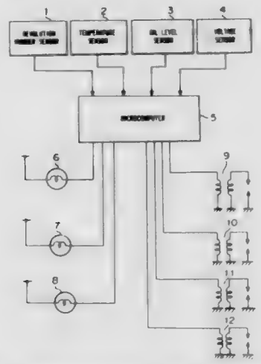
a friction-resistant ceramic plate having a diameter equivalent to said predetermined diameter integrally fixed to the lower open end of the tappet body through the metallic plate by means of brazing, so that the cam can frictionally slide on the ceramic plate to axially move the tappet body, the ceramic plate being joined to the tappet body through the metallic plate by concentrically locating a braze sheet between the metallic plate body and the ceramic plate, and heating the braze sheet so as to fix the ceramic plate to the metallic plate in overlapping relationship with each other, so that the ceramic plate is reinforced by the metallic plate.

5,060,608

ENGINE CONTROL APPARATUS

Hideki Umemoto, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1990, Ser. No. 628,914
Claims priority, application Japan, Jan. 12, 1990, 2-3374
Int. Cl.[5] F02B 77/00
U.S. Cl. 123—198 D 2 Claims



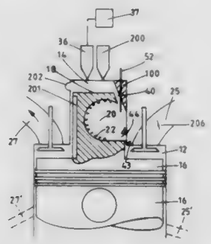
1. An engine control apparatus which comprises:
a revolution speed sensor for detecting the number of revolutions of an internal combustion engine;
an abnormality detecting means for detecting abnormality in said engine, and a control means for or increasing the number of misfire cylinders so that the revolution speed of the engine is brought down by a limited degree corresponding to a degree of abnormality of the engine when the abnormality is detected.

5,060,609

INTERNAL COMBUSTION ENGINE

Dan Merritt, 139 Baginton Road, Coventry, England

Filed Dec. 5, 1990, Ser. No. 622,752
Claims priority, application United Kingdom, Dec. 6, 1989, 8927617; Jan. 31, 1990, 9002177; Feb. 8, 1990, 9002871
Int. Cl.[5] F02B 19/04, 19/08
U.S. Cl. 123—256 39 Claims



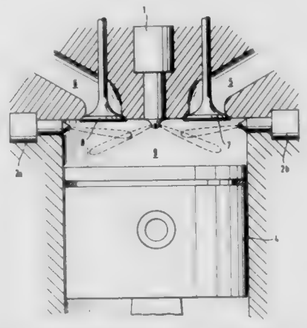
1. An internal combustion engine comprising
first and second cylinders, said first cylinder having a larger swept volume than said second cylinder and said second cylinder being formed in the crown of said first cylinder;
first and second pistons reciprocable respectively in said first and second cylinders, said second piston being formed as a protrusion on the crown of said first piston;
a combustion chamber;
a first port for enabling communication between said first cylinder and said combustion chamber;
a second port for enabling communication between said second cylinder and said combustion chamber;
first means for supplying air or the like into said first cylinder during an induction stroke of said first piston;
second means for supplying fuel to said second cylinder;
and means for enabling transfer of air from said first cylinder to said second cylinder other than through said combustion chamber over a preselected angle of movement of the pistons relative to the cylinders for assisting movement of gases from said second cylinder into said combustion chamber.

5,060,610

COMBUSTION PROCESS FOR INTERNAL COMBUSTION ENGINES USING GASEOUS FUEL

Daniel Paro, Kvevlax, Finland, assignor to Oy Wartsila Diesel International Ltd., Helsinki, Finland

Filed Sep. 21, 1990, Ser. No. 586,222
Claims priority, application Finland, Sep. 26, 1989, 894533
Int. Cl.[5] F02B 43/00
U.S. Cl. 123—300 13 Claims



1. An improved combustion process for an internal combustion engine including at least one cylinder provided with valved inlet and outlet ducts, said process including the following steps:
feeding an initial charge of gaseous fuel into the cylinder during a suction stroke with the outlet duct closed through feeding valve means separate from the inlet duct for providing a lean fuel/air mixture in the cylinder;
feeding a first additional charge of fuel into the cylinder during a compression stroke for facilitating ignition of the lean fuel/air mixture, and
feeding a second additional charge of fuel into the cylinder after ignition of the fuel/air mixture for increasing the mean effective pressure of the engine.

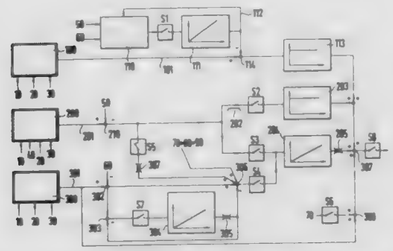
5,060,611

PROCESS AND DEVICE FOR INFLUENCING THE AIR FEED IN AN INTERNAL-COMBUSTION ENGINE, IN PARTICULAR DURING IDLING AND COASTING

Wolfgang Krampe, Renningen; Günter Braun, Bietigheim-Bissingen, and Helmut Janetzke, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE88/00745, § 371 Date Aug. 10, 1989, § 102(e) Date Aug. 10, 1989, PCT Pub. No. WO89/05905, PCT Pub. Date Jun. 29, 1989
Continuation of Ser. No. 397,495, Aug. 10, 1989, abandoned.
This PCT application Nov. 23, 1988, Ser. No. 593,481
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744222
Int. Cl.[5] F02D 39/02
U.S. Cl. 123—320 23 Claims

1. Process for air proportioning during idling and overrun modes of operation of an internal combustion engine of a motor vehicle including means for electrically controlling an engine-power adjusting member, comprising the steps of
measuring the air intake rate of the engine;
determining a preliminary air rate control value in dependency on temperature, drive gear position and air conditioning state of the vehicle;



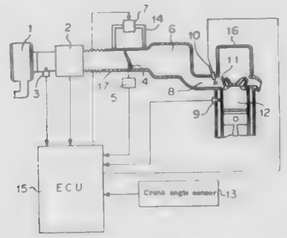
detecting the occurrence of the idling mode of engine operating and, during the idling phase, regulating the engine speed to a nominal value;
storing the difference of the air intake rate value measured at the regulated nominal engine speed and the preliminary air rate control value; and, during the overrun phase of the engine, adjusting the intake air rate according to the stored difference value.

5,060,612

FUEL CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Katsuhiko Kondo, and Yasuhiko Ishida, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1991, Ser. No. 637,836
Claims priority, application Japan, Feb. 6, 1990, 1-26610
Int. Cl.[5] F02D 31/00
U.S. Cl. 123—357 1 Claim



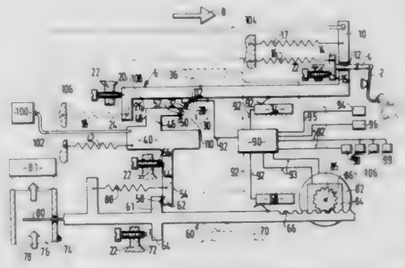
1. A fuel control apparatus for an internal combustion engine which comprises:
an intake air quantity detecting means for detecting an intake air quantity for the engine,
a crank angle detecting means for detecting a crank angle of the engine,
a sampling means for sampling the intake air quantity at constant, predetermined time intervals,
means for determining if the engine speed is at or above a predetermined value,
a first calculating means for calculating the mean value of the sampled values during a single crank angle period when the engine speed is below the predetermined value,
a second calculating means for calculating the mean value of the sampled values by dividing the sum of accumulated values of the air intake quantity samplings in one crank angle period at the present time and the accumulated values of the air intake quantity samplings in at least one crank angle period of a preceding time, by the sum of the number of samplings at the present time and the number of samplings at the preceding time when the engine speed is at or above the predetermined value,
a third calculating means for calculating a fuel injection quantity on the basis of an output from a selected one of the first and second calculating means, and
a fuel injection means for injecting fuel to the engine in accordance with the fuel injection quantity calculated by the third calculating means.

5,060,613

SYSTEM FOR TRANSFERRING A CONTROL POSITION OF A SET-POINT VALUE TRANSDUCER

Bernd Lieberoth-Leden, Leonberg; Günter Spiegel, Karlsruhe; Karl-Heinrich Preis, Buehlertal; Uwe Schaper, Buehl-Vimbuch, and Karlheinz Jansen, Kleve-Griethausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 487,518
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1989, 3908596
Int. Cl.[5] F02D 9/02, 11/04
U.S. Cl. 123—399 26 Claims



1. A system including a set-point transducer and a control element (**60**) in which a control position of a said set-point transducer is transferred to a control position of said control element to determine an output of a driving machine by electromechanical transmission means, as well as by a mechanical transmission means which couples said control element (**60**) to said set-point transducer (**6**), said control element is decoupled from said set-point transducer whenever a control position of said control element is equivalent to a control position of the set-point transducer, said mechanical transmission means includes an intermediate element (**40**) between said set-point transducer (**6**) and said control element (**60**) as well as a spring (**88, 132**) which generates a coupling force that forces a stop face (**62**) of the said control element (**60**) toward a stop location (**58**) of said intermediate element (**40**).

5,060,614

IGNITION TIMING CONTROL SYSTEM FOR AN ENGINE HAVING BACKUP FUNCTION FOR FAILURE

Kazuhiro Uchimi; Shoji Sasaki; Kenji Tabuchi, all of Katsuta, and Noboru Sugiura, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

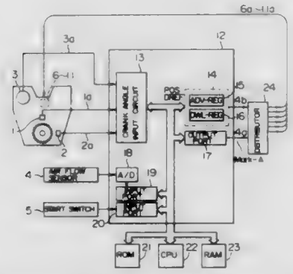
Filed Apr. 10, 1990, Ser. No. 507,030
Claims priority, application Japan, Apr. 14, 1989, 1-092870
Int. Cl.[5] F02P 7/077
U.S. Cl. 123—414 14 Claims

1. An engine ignition timing control system comprising:
first signal generating means for generating first signals at intervals of a predetermined crank angle while an engine is rotated n times, said first signals including a marked signal identifying a particular cylinder each time said engine is rotated n times;
second signal generating means for generating a number of second signals equal to the number of all cylinders of said

engine at intervals of substantially an equal crank angle in synchronism with said first signals, said second signals including a reference signal having a form which is distinguishable from other second signals and which occurs in synchronism with said marked signal;

means for producing ignition signals in response to said first signals;

distributing means responsive to at least said reference signal



for distributing an ignition signal to each cylinder in a predetermined ignition order;

means for detecting an abnormal condition of said first signals; and

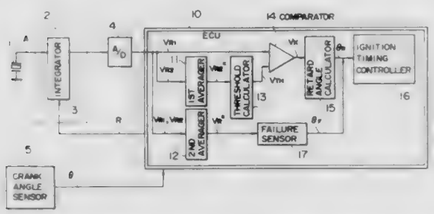
means for controlling said ignition signal producing means in response to said detecting means for producing said ignition signals in response to said second signals in place of said first signals when said abnormal condition of said first signals is detected.

5,060,615

KNOCK SENSING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Atsuko Hashimoto, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1990, Ser. No. 600,931
Claims priority, application Japan, Oct. 24, 1989, 1-274902
Int. Cl.[5] F02D *1/00*
U.S. Cl. 123—425 **8 Claims**



1. A knock sensing apparatus for a multi-cylinder internal combustion engine, comprising:

a knock sensor for generating an electrical output signal corresponding to vibrations of an engine;

level indicating means responsive to the knock sensor output signal for generating a first level signal indicating the level of the output signal of the knock sensor during a first time period at least partially coinciding with a power stroke of a cylinder of the engine and a second level signal indicating the level of the output signal of the knock sensor during a second time period not coinciding with a power stroke of a cylinder;

first averaging means responsive to the level indicating means for forming a first average of the second level signal;

threshold calculating means responsive to the first averaging means for calculating a threshold based on the first average; and

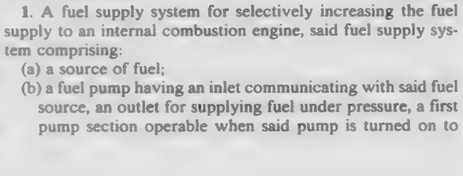
comparing means for comparing the first level signal and the threshold and generating a signal indicating knocking when the first level signal exceeds the threshold.

5,060,616

INTAKE SYSTEM FOR MULTIPLE-VALVE ENGINE

Tadashi Nakagawa; Youichi Kuji, and Kenji Kashiyama, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Aug. 10, 1990, Ser. No. 566,019
Claims priority, application Japan, Aug. 11, 1989, 1-208781
Int. Cl.[5] F02B *15/00*
U.S. Cl. 123—432 **9 Claims**



1. An intake system of a multiple-valve engine having first, second and third intake ports each opened or closed by an intake valve, which are opened to a combustion chamber formed at one end of a cylinder in an engine along its center line and arranged along the periphery of the cylinder, in which the third intake port is arranged between the first and second intake ports, said intake system comprising:

a first air intake passage having a downstream end connected to said first intake port to supply intake air into the combustion chamber through said first intake port, whose axial center line is set so that the intake air supplied into the combustion chamber through said first intake port may flow along an inner peripheral surface of the combustion chamber;

a second air intake passage having a downstream end connected to said second intake port to supply intake air into the combustion chamber through said second intake port, whose axial center line intersects the axial center line of said first air intake passage at a first intersecting point;

a third air intake passage having a downstream end connected to said third intake port to supply intake air into the combustion chamber through said third intake port, whose axial center line intersects the axial center line of said first air intake passage at a second intersecting point which is upstream of said first intersecting point; and

a common air intake passage connected to the upstream ends of said first, second and third air intake passages.

5,060,617

FUEL SUPPLY SYSTEM FOR SELECTIVELY INCREASING THE FUEL SUPPLY TO AN ENGINE

Akinori Kojima, Hamamatsu; Norikazu Ishikawa, and Yukio Ishida, both of Tokyo, all of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Shizuoka and Nippon Carbureter Co., Tokyo, both of, Japan

Filed Aug. 30, 1990, Ser. No. 574,757
Claims priority, application Japan, Aug. 30, 1989, 1-221634
Int. Cl.[5] F02D *41/06, 41/10, 41/04*
U.S. Cl. 123—435 **16 Claims**

1. A fuel supply system for selectively increasing the fuel supply to an internal combustion engine, said fuel supply system comprising:

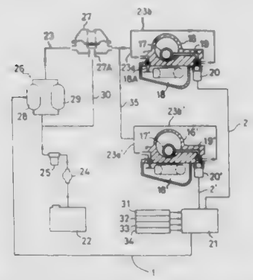
(a) a source of fuel;

(b) a fuel pump having an inlet communicating with said fuel source, an outlet for supplying fuel under pressure, a first pump section operable when said pump is turned on to supply fuel under pressure to said outlet, and a second pump section operable in response to an actuating signal to supply fuel under pressure to said outlet;

(c) a first fuel supply passage communicating with said pump outlet for receiving fuel from said fuel pump and conducting it to an internal combustion engine;

(d) a second fuel supply passage communicating with said pump outlet and said first fuel supply passage for conducting an additional amount of fuel to said first fuel supply passage;

(e) a control valve disposed in said second fuel supply passage for selectively permitting fuel to flow therethrough;



(f) a controller operatively coupled to said second pump section and said control valve for selectively actuating said second pump section and said control valve in response to predetermined engine operating conditions; and

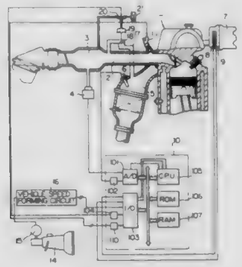
(g) a series of engine operating condition sensors operatively coupled to said controller for detecting engine start-up and engine acceleration wherein said controller actuates said second pump section and said control valve to supply an additional amount of fuel to said first fuel supply passage via said second fuel supply passage when either engine start-up or engine acceleration is detected by said sensors.

5,060,618

METHOD AND APPARATUS FOR CONTROLLING TORQUE VARIATIONS IN AN INTERNAL COMBUSTION ENGINE

Toshio Takaoka; Keisuke Tsukamoto; Takao Fukuma, and Hirofumi Yamasaki, all of Toyota, Japan, assignors to Toyota Jidosa Kabushiki Kaisha, Toyota, Japan

Filed Jan. 28, 1991, Ser. No. 646,668
Claims priority, application Japan, Jan. 30, 1990, 2-18011
Int. Cl.[5] F02D *41/04;* **F02M** *25/07*
U.S. Cl. 123—436 **12 Claims**



1. A method of controlling a torque variation of an internal combustion engine of a vehicle while said engine is operated, having an air-fuel ratio feedback system, wherein said torque variation due to a combustion variation of the engine is controlled to a predetermined stabilized value, comprising the steps of:

detecting a vibration period and a vibration amplitude of said vehicle;

storing a natural vibration period in accordance with a driving condition of a transmission system of said vehicle;

determining whether or not said detected vibration period is equal to said natural vibration period in accordance with a driving condition under which said vibration period is detected;

determining whether or not said detected vibration amplitude is larger than a predetermined value;

determining that said torque variation is small when said detected vibration amplitude is smaller than or equal to said predetermined value and that said torque variation is large when said detected vibration amplitude is larger than said predetermined value if said detected vibration period is equal to said natural vibration period, in accordance with a driving condition under which said vibration period is detected;

decreasing a coefficient for changing an amount of fuel injection by a predetermined value to shift said air-fuel ratio to the lean side when said torque variation is determined to be small;

counting a number of decrements of said coefficient from the start up of the engine;

increasing a coefficient for changing an amount of fuel injection by a predetermined value in accordance with said number of decrements of said coefficient when said torque variation is determined to be large; and

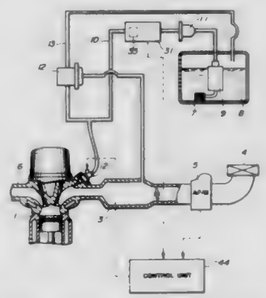
adjusting an amount of fuel injection in accordance with a change of said coefficient and driving condition parameters of said engine.

5,060,619

ELECTROSTATIC CAPACITY TYPE FUEL CONCENTRATION MONITORING UNIT WITH TEMPERATURE DEPENDENT FLUCTUATION COMPENSATING FEATURE

Osamu Sakurai; Kazumitsu Kobayashi; Hideki Kano, all of Isezaki, and Kiyoshi Takeuchi, Tokyo, all of Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isezaki and Nissan Motor Company, Limited, Yokohama, both of, Japan

Filed Nov. 9, 1990, Ser. No. 611,276
Claims priority, application Japan, Nov. 10, 1989, 1-293676; May 30, 1990, 2-140326
Int. Cl.[5] F02D *41/04;* **F02B** *75/12;* **G01F** *1/56*
U.S. Cl. 123—494 **10 Claims**



1. An electrostatic capacity type fuel concentration monitoring unit comprising:

a first sensor disposed within a mixture fuel containing a specific type of fuel in a variable mixture rate, said first sensor producing a first sensor signal indicative of concentration of said specific type of fuel;

a second sensor disposed within said mixture fuel for moni-

toring temperature thereof, said second sensor generating a second sensor signal indicative of temperature of said mixture fuel;

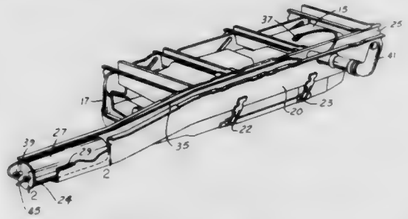
a circuit incorporated in said unit for generating a fuel concentration indicative signal which varies in a given rate across a predetermined reference value set at a predetermined fuel concentration, said circuit being responsive to said second sensor signal to correct said fuel concentration indicative signal value by varying said given rate depending upon said second sensor signal value.

5,060,620

MOTOR VEHICLE FUEL VAPOR EMISSION CONTROL ASSEMBLY

Algis G. Oslapas, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 21, 1988, Ser. No. 247,182
Int. Cl.[5] F02M *33/02;* **B62D** *61/02*
U.S. Cl. 123—519 **22 Claims**



1. A motor vehicle fuel vapor emission control assembly comprising fuel vapor emission control means and structural vehicle support means integral with said motor vehicle for providing structural support for said motor vehicle, said fuel vapor emission control means being for controlling emissions of fuel vapor from said motor vehicle and comprising:

adsorption means for releasably adsorbing fuel vapors from a fuel reservoir of said vehicle;

housing means for containing such adsorption means, said housing means being positioned within a hollow in a structural member of said structural vehicle support means; and

vapor communication means for communicating fuel vapor from said reservoir to said adsorption means within said housing means and for communicating fuel vapor from within said housing means to a fuel burning engine of said vehicle.

5,060,621

VAPOR PURGE CONTROL SYSTEM

Jeffrey A. Cook, Dearborn, and Douglas R. Hamburg, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

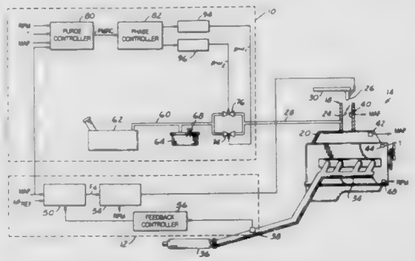
Filed Aug. 28, 1989, Ser. No. 399,192
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **11 Claims**

1. A method for purging fuel vapors from a fuel system into an internal combustion engine, comprising the steps of:

determining a desired percentage of maximum purge flow;

actuating a first electronically actuated valve connected between said fuel system and said engine with an on time proportional to said desired percentage when said desired percentage is below a predetermined value and fully actuating said first valve when said desired percentage is above said predetermined value; and

actuating a second electronically actuated valve connected in parallel to said first valve with an on time proportional to the difference between the said desired percentage and



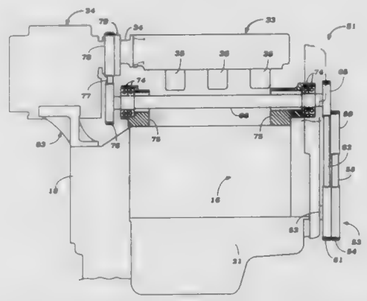
the said predetermined value when said desired percentage is above said predetermined value.

5,060,622

SUPERCHARGED MOTOR VEHICLE

Takamitsu Suzuki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 312,600, Feb. 17, 1989, abandoned. This application Sep. 4, 1990, Ser. No. 577,811
Claims priority, application Japan, Feb. 18, 1988, 63-35485; Oct. 27, 1988, 63-271486
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—559.1 **4 Claims**



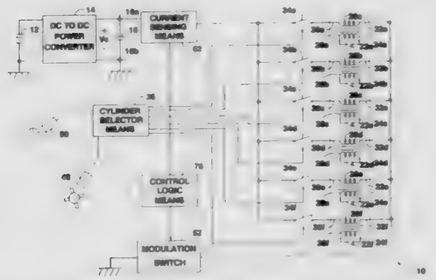
1. In an internal combustion engine for avehicle having at least one driven wheel, said engine having a plurality of aligned cylinders each containing a respective piston, an output shaft driven by said pistons, a change speed transmission at one end of said engine for driving said wheel and driven by said engine output shaft at one end thereof, a plenum chamber extending along one side of the engine and a plurality of outlets each communicating with a respective one of said cylinders, a supercharger positioned at said one end of said engine, spaced from said plenum chamber and said aligned cylinders, conduit means interconnecting an output of said supercharger with said plenum chamber inlet at said one end of said engine, and means at the other end of said engine for driving said supercharger directly from the other end of said output shaft.

5,060,623

SPARK DURATION CONTROL FOR A CAPACITOR DISCHARGE IGNITION SYSTEM

Steven R. McCoy, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 20, 1990, Ser. No. 630,578
Int. Cl.[5] F02P *5/145, 3/045, 3/08*
U.S. Cl. 123—605 **12 Claims**



1. An apparatus for controlling ignition in an internal combustion engine having N cylinders, a cylinder selector means, and a capacitor discharge ignition system, each of said cylinders including a spark plug having an associated spark gap, said capacitor discharge system being of the type having an ignition capacitor including first and second terminals and charging circuit connected to said ignition capacitor for maintaining said capacitor first terminal at a predetermined electrical potential greater than said capacitor second terminal, said cylinder selector means selectively producing cylinder select signals at desired points in time corresponding to a desired ignition sequence for said engine cylinders, said cylinder select signals being produced for a period of time corresponding to a desired spark duration in an associated cylinder, comprising:

N transformers each having a primary coil and a secondary coil, said primary coils including first and second terminals and said secondary coils being electrically being connected in parallel with a spark gap in an associated one of said N cylinders;

N selector switches each being connected between said ignition capacitor first terminal and an associated one of said primary coil first terminals, said selector switches being normally biased open and being adapted to close in response to receiving said cylinder select signals;

a modulation switch connected between said primary coil second terminals and a source of low electrical potential; and

control means for operating said modulation switch while a selector switch is closed such that the current flowing in an associated primary coil initially rises to a first current threshold sufficient to cause a spark to arc an associated spark gap and is thereafter modulated between said first current threshold and a second current threshold lower than said first current threshold to maintain said spark, and wherein said spark is maintained in this manner until said selector switch is opened.

5,060,624

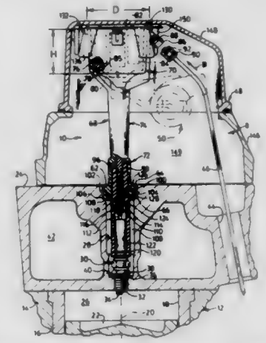
ENGINE IGNITION SYSTEM INCLUDING A TRANSFORMER ASSEMBLY AND POSITIONING MEANS THEREFOR

E. Eugene Bruning, Normal, and Ronald D. Richardson, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 10, 1990, Ser. No. 624,841
Int. Cl.[5] F02P *15/00*
U.S. Cl. 123—635 **18 Claims**

1. An engine ignition transformer assembly adapted to be positioned in a profiled bore of a cylinder head of an engine in an electrically connected relationship to a spark plug seated in the profiled bore, comprising:

an elongate body constructed of a dielectric material including a cup portion generally containing a primary coil and a secondary coil, an electrical coupling member extending outwardly from the cup portion and being electrically connected to the primary coil, a base portion adapted to



be sealingly engaged with the profiled bore, and a stem portion interconnecting the cup and base portions;

a conducting element electrically connected to the secondary coil and extending through the stem and base portions; and

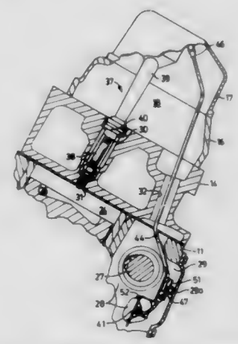
contact means for releasably connecting the conducting element to the spark plug.

5,060,625

IGNITION SYSTEM WIRING HARNESS AND SPRING CLIP RETAINERS THEREFOR

E. Eugene Bruning, Normal, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 10, 1990, Ser. No. 625,255
Int. Cl.[5] F02P *23/00, 3/12;* **F02F** *7/00*
U.S. Cl. 123—647 **6 Claims**

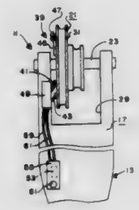


1. An electronic ignition system for an internal combustion engine having a block, a plurality of cylinder bores defined in the block, cylinder head means mounted on the block and having a plurality of threaded bores individually opening into the cylinder bores, and cover means connected to the cylinder head means and cooperating therewith to define enclosed compartment means, comprising:

a plurality of electrically energized fuel igniter means indi-

vidually threaded into the threaded bores in the cylinder head means and disposed within the compartment means;
means defining a longitudinally extending passageway in the block and extending substantially the length of the block;
means defining a plurality of connecting passageways in the cylinder head means for communicating the longitudinally extending passageway with the compartment means;
a plurality of electrical lead wires bundled into a wiring harness having a plurality of pigtails branched therefrom at spaced intervals, said wiring harness extending through the longitudinally extending passageway with the pigtails extending through the connecting passageways and being connected to the fuel igniter means; and
means for retaining the wiring harness and the pigtails at fixed locations relative to the block.

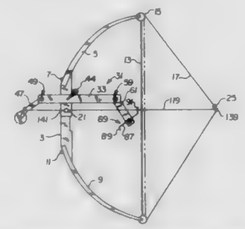
5,060,626
COMPOUND BOW DRAW SENSOR
James P. Elliott, Rte. 1, Box 126B; Jerry A. Elliott, Rte. 1, Box 19M, and Ted M. Elliott, Rte. 1, Box 18A1, all of Buchanan, Tenn. 38222
Filed Nov. 19, 1990, Ser. No. 617,014
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—86 **18 Claims**



1. A sensor for use with a compound archery bow of the type including a body, a bowstring for being drawn by an archer, and cam means for connecting said bowstring to said body; said cam means including a body for being rotated when said bowstring is drawn; said sensor comprising:
a) switch means for being closed by said cam means in response to the drawing of said bowstring; said switch means including a first contact member, a second contact member, and an electrically conductive plate member attached to said body of said cam means for rotation with said cam means and for closing an electrical circuit between said first and second contact members when both of said first and second contact members simultaneously contact said electrically conductive plate member;
b) light means for emitting light when electrically energized and activated; and
c) electrical energy source for electrically energizing and activating said light means when said switch means is closed.

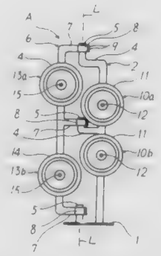
5,060,627
DEVICE AND METHOD FOR FINE TUNING A COMPOUND ARCHERY BOW
Jack L. Fenchel, Beaver Falls, Pa., assignor to Jo Jan Sportsequip Co., Washington, Pa.
Filed May 23, 1990, Ser. No. 527,273
Int. Cl.[5] F41B *5/14*
U.S. Cl. 124—88 **8 Claims**

1. A bow adjustment device attachable to a compound archery bow having a handle, limbs and a string, for fine tuning of the same comprising:
an elongated support plate;
means for securing the elongate support plate to the handle of the bow adjacent the location of an arrow rest with a first end thereof spaced from a front of the handle of said bow and a second end thereof positioned between the handle and the bow string;
a front arm pivotally attached to said support plate adjacent the first end thereof;
a rear arm pivotally attached to said support plate adjacent the second end thereof;
at least one line carried by the front arm, extendable to the bow string and moveable therewith;



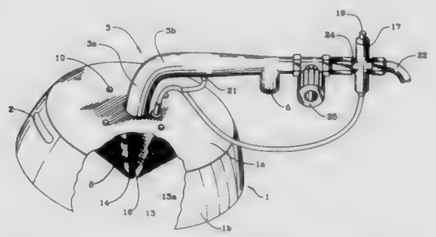
an indicator comprising a rod releasably secured to said rear arm and an indicator pin releasably secured to said rod, attached to the rear arm; and
means for tensioning said at least one line, to maintain the same taut when the bow string is at rest and when fully drawn.

5,060,628
GUIDE PULLEY BASE FOR WIRE SAW
Yasuhiro Ishida, Kyoto, Japan, assignor to Kabushiki Kaisha Dymosha, Kyoto, Japan
Filed Mar. 28, 1991, Ser. No. 676,534
Claims priority, application Japan, Apr. 4, 1990, 2-36261[U]
Int. Cl.[5] B28D *1/08*
U.S. Cl. 125—21 **2 Claims**



1. A guide pulley base for wire saw comprising a primary support member, a secondary support member rotatably mounted on the primary support member, a primary grooved pulley rotatably supported on the primary support member in such a way that the rotational axial line of the second support member passes tangentially through the peripheral groove of the primary grooved pulley, and a secondary grooved pulley rotatably supported on the secondary support member in such a way that the rotational axial line of the second support member passes tangentially through the peripheral groove of the secondary grooved pulley.

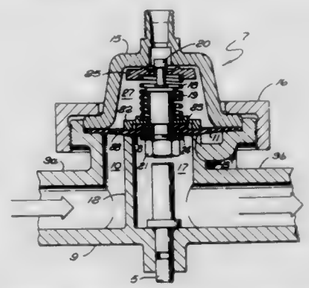
5,060,629
HEATING APPARATUS OF THE INFRARED TYPE
Joseph Sirand, Laplume, France, assignor to Centre D'Etude et de Realisation D'Equipements et de Materiel (C.E.R.E.M.), Laplume, France
Filed Feb. 6, 1990, Ser. No. 475,642
Claims priority, application France, Feb. 7, 1989, 89 01720
Int. Cl.[5] F24C *3/04*
U.S. Cl. 126—92 B **13 Claims**



1. A heating apparatus of the infrared type, particularly intended for the agricultural industry for directionally downward heating of breeder buildings, characterized in that it comprises in combination:
a feed conduit (**3**) provided with an air inlet opening (**5**),
a safety valve (**17**) provided with an inlet adapted to be connected to gas feed means (**22**) and an outlet connected to the feed conduit (**3**) by a gas injection conduit (**24**), said valve being provided with a member for keeping its valve member in an open position, a member acting as a temperature detector (**18**), and an opening member (**19**), in particular a manual button, permitting causing the opening of said valve member,
a reflecting dome (**1**) provided with a gas/air mixture inlet opening, secured to said feed conduit (**3**) at an end thereof, and arranged essentially concentrically with respect to said conduit,
a first chamber (**8**), called a primary combustion chamber having a conical shape pointed downwardly and arranged on the interior of the dome (**1**) essentially concentrically with respect to the latter, said chamber comprising a wall (**9**) called the base, fixed at the end of the feed conduit (**3**) and provided with a mixture inlet opening, and a conical wall (**13**) of a perforate conducting material, resistant to heat, provided with a base secured to the base wall (**9**),
a second chamber (**15**) termed a diffusion pre-chamber, arranged in the primary combustion chamber (**8**) and comprising a wall (**16**) of a heat resistant material, perforated with holes having a maximum dimension of the opening of less than 1.5 mm, said wall having a conical shape, pointed downwardly, with an apex angle less that of the conical wall (**13**) of the primary chamber (**8**), and comprising a base of a diameter slightly greater than that of the feed conduit (**3**), secured to the refractory wall of the base (**9**) essentially concentrically with respect to this conduit (**3**),
seal means (**12**) arranged at the level of the base of the conical wall (**16**) of the diffusion pre-chamber (**15**) and adapted to prevent all passage of the mixture in combustion in the primary combustion chamber (**8**) to the interior of said diffusion pre-chamber (**15**).

5,060,630
VALVE SEAT FOR AUTOMATIC CONTROL SYSTEM FOR WATER HEATERS
Wayne S. Boals, P.O. Box 1289, Blue Jay, Calif. 92317
Filed Jan. 15, 1991, Ser. No. 641,377
Int. Cl.[5] F24H *1/00*
U.S. Cl. 126—362 **4 Claims**

1. In a water heater having a pressurized fluid source, a storage tank, and a delivery system supplied from the storage tank wherein a control valve, including a housing defining a valve seat, a rib and a pressure chamber, allows the passage of fluid from the fluid source to the storage tank by sensing a pressure differential between pressure at the fluid source and the pressure at the delivery system to move a diaphragm away from the valve seat, said valve seat defining a leak path for preventing water pressure loss in said water heater during a cooling cycle, the improvement comprising:
said valve seat having,
a first circumference defining an entrance notch from the pressurized fluid source;
a second circumference defining an exit notch into the pressure chamber, said entrance and exit notches being radially angularly displaced relative to each other; and

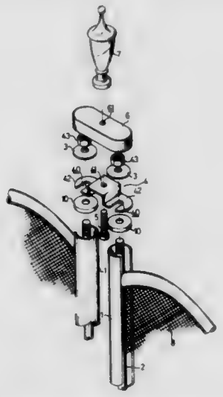


means defined by said valve seat for providing a fluid communication path between said entrance notch and said exit notch; and
said diaphragm engaging said valve seat when the pressure across said diaphragm is substantially zero while allowing water to flow through said fluid communication path during a water heater cooling cycle and wherein said diaphragm enters said fluid communication path to prevent fluid communication between said entrance notch and said exit notch when a leak or rupture occurs in said storage tank.

5,060,631
FIREPLACE SCREEN
Patrick Lin, 14 Fl., No. 598, Min Sheng E. Rd., Taipei, Taiwan
Filed Dec. 3, 1990, Ser. No. 621,522
Int. Cl.[5] F24B *1/192*
U.S. Cl. 126—544 **1 Claim**

1. A fireplace screen comprising:
a pair of connecting rods each surrounded by a protective housing and each attached to fireproof meshing, and each said connecting rod having two threaded end portions;
a round capping washer having a center through hole being provided on two ends of each said protective housing with each said threaded end portion of each said connecting rod passing through said center through hole;
a nut and second washer being provided on top of each said capping washer for engaging with each said threaded end portion of each said connection rod;
a connecting member having two wings extending outwardly from a bottom edge thereof, each said wing provided in between the said capping washer and second washer; each said wing having a U-shaped notch to be inserted to each said threaded end portion of each said connecting rod;
a cap-like enclosure enclosing each said connecting member;

a threaded means extending from said connecting member through said cap-like enclosure and threadably connected



to a finial for securing each said cap-like enclosure to each said connecting member.

5,060,632

ENDOSCOPE APPARATUS

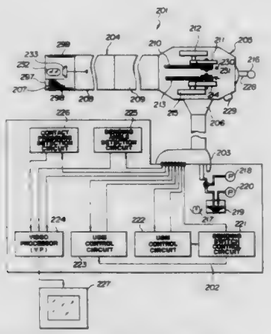
Hiroki Hibino; Yoshikatsu Nagayama; Mutsumi Yoshikawa, all of Hachioji; Toshiyuki Takara, Higashimurayama; Masahito Goto; Akira Suzuki, both of Hachioji; Sakae Takehana, Machida; Yoshinao Oaki, Hachioji; Koichi Hoshimitsu, Hachioji; Yoshisada Aoki, Hachioji; Yasuhiro Ueda, Kokubunji, and Raifu Matsui, Hino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1990, Ser. No. 535,252

Claims priority, application Japan, Sep. 5, 1989, 1-230235; Oct. 18, 1989, 1-121980[U]; Mar. 20, 1990, 2-71086; Mar. 22, 1990, 2-75142; Apr. 20, 1990, 2-105821; Apr. 20, 1990, 2-105822; Apr. 20, 1990, 2-105823; Apr. 20, 1990, 2-105824; Apr. 20, 1990, 2-105825; Apr. 20, 1990, 2-105826

Int. Cl.[5] A63B *1/04*

U.S. Cl. 128—6 **29 Claims**



1. An endoscope apparatus comprising:

an elongate insert section including an observation window in the distal end portion and inserted into an object to be observed;

observation means for producing an endoscope image, said observation means including a focusing optical system which receives an incident light from said object through said observation window to focus said endoscope image; and

vibration means for vibrating at least a part of said insert section in a direction crossing the axial direction of said insert section, said vibration means including a vibration unit capable of vibrating in itself to vibrate at least the part of said insert section even under a condition that said insert section is not contact with said object.

5,060,633

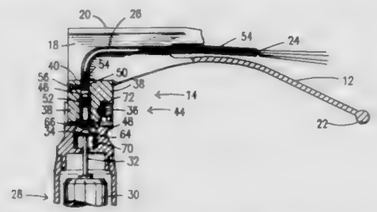
LARYNGOSCOPE BLADE

Michael S. Gibson, 22733 Margarita Dr., Woodland Hills, Calif. 91364

Filed Aug. 31, 1990, Ser. No. 577,188

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—11 **2 Claims**



1. In a laryngoscope blade having a self-contained light source, a tongue depressor portion having a first and second end, a blade side wall mounted upwardly along a first edge of the tongue depressor, a light conducting fiber enclosing sheath ending on a top surface of the tongue depressor and the blade being readily connectable and detachable form a handle power source, the improvement comprising, a base housing integral with a bottom surface of the tongue depressor at the first end of the tongue depressor, the housing having four side walls, a bottom wall, and a top wall, the base housing having a bulb receiving channel directed upwardly form the bottom wall, the channel narrowing adjacent the top wall to receive a bundle of light conducting fibers enclosed within a tubular sheath, a portion of the sheath in the channel held in place by a set screw, the channel having threaded inner side walls to receive complimentary threads from a bulb enclosure, a front side wall of the base housing having a cut out portion to accept an axially mounted pin from a laryngoscope handle, and the bulb enclosure having the complimentary threads on an upper portion and a ribbed ring at a bottom portion projecting at least partially below the housing bottom wall, the ribbed ring being used for grasping by a user's finger to insert or remove the bulb from the channel by a turning motion and a contact surface on the bulb below the ribbed ring projecting below the base housing bottom wall to directly complete electrical contact with the handle power source.

5,060,634

LITHOTRIPTOR WITH REDUCED ATTENUATION X-RAY LOCATING SYSTEM

Thomas Belikan; Werner Krauss, both of Knittlingen, and Helmut Wurster, Oberderdingen, all of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittligen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 408,835, Sep. 18, 1989, and a continuation-in-part of Ser. No. 494,208, Mar. 15, 1990. This application Aug. 28, 1990, Ser. No. 574,330

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1989, 3934105

Int. Cl.[5] A61B *17/22*

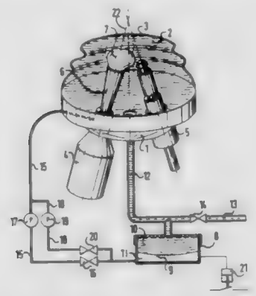
U.S. Cl. 128—24 EL **6 Claims**

1. A lithotriptor comprising:

a shock wave transducer for emitting shock waves for the destruction of an object in the body of a patient, said transducer having a forward section containing a fluid coupling medium closed off by a diaphragm for application to the patient's body;

an X-ray system for locating the object to be destroyed, including an X-ray emitter mounted in a wall of the transducer and having an outlet with a direction of radiation aimed through said forward section of the shock wave transducer and said diaphragm; and

an X-ray permeable balloon in said forward section connected in gastight fashion to the outlet of the X-ray emitter, means for expanding the balloon in the direction of radiation of said X-ray emitted by feeding a gas into the balloon, and means for evacuating gas from the balloon.



5,060,635

INTERNAL FIXATION KIT

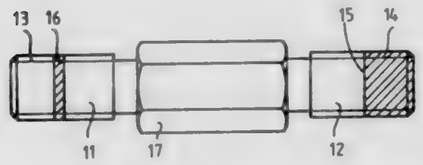
Gerhard Steür, and Günther Sauer, both of Berlin, Fed. Rep. of Germany, assignors to Mecron medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany

Filed Sep. 19, 1989, Ser. No. 410,063

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1988, 8812077[U]; Jan. 2, 1989, 890080[U]

Int. Cl.[5] A61F *5/00, 2/28, 2/44*

U.S. Cl. 128—69 **11 Claims**



1

1. An internal fixation device comprising:

an elongated member comprising metal having a generally silver color and including a first end portion, said first end portion having an external thread and having a region coated with titanium nitride which borders an uncoated region at a first borderline; and

a first component having an internal thread for engaging said external thread on said first end portion, said coated region on said first end portion being axially so located as to be visible prior to said first end portion disengaging from said first component when said elongated member is rotated in a direction which causes said first component to move outwardly relative to said first end portion.

5,060,636

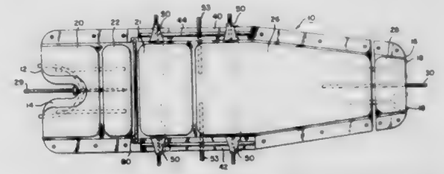
CHIROPRACTIC TABLE

William M. Bell, 1743 Highway 88 West, Brick Town, N.J. 08723

Filed Jan. 23, 1989, Ser. No. 299,303

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—72 **6 Claims**



1. An improved chiropractic table for spinal adjustment of lateral curvature of the spine comprising;

a segmented, padded horizontal table having a first longitudinal end, said first longitudinal end having a headrest for supporting the head of a patient in a prone face-down position, said headrest being generally U-shaped with angularly-shaped sidewalls to conform to the jaw and head configuration of said patient;

a second longitudinal end opposite said first longitudinal end of said segmented padded table, said second end having a plurality of foot stirrups secured thereto and removably attached to said patient's feet, said first longitudinal end and said second longitudinal end being longitudinally adjustable for providing longitudinal tension on said spine;

a plurality of lateral compressor adjustment arms longitudinally, movably disposed on a plurality of longitudinal guide rails disposed between said first longitudinal end and said second longitudinal end of said segmented padded table on the longitudinal sides of said table, said lateral compressor adjustment arms being concave in shape on their interior end to conform to the mid torso shape of said patient, said lateral compressor adjustment arms and said longitudinal guide rails removably secured to said table, said lateral compressor adjustment arms movably disposable inwardly and outwardly, perpendicular to said longitudinal axis of said table, said compressor adjustment arms for contacting and providing pressure to said patient's torso for lateral adjustment of said patient's spine.

5,060,637

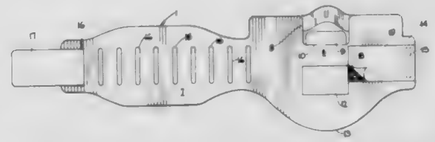
DISPOSABLE CERVICAL COLLAR

K. Stephen Schmid, New Vienna, Ohio; Richard A. Brault; Dianne B. Croteau, both of Toronto, Canada, and Jonathan P. Vinden, Mississauga, Canada, assignors to Ferno-Washington, Inc., Wilmington, Ohio

Filed Jan. 12, 1988, Ser. No. 143,006

Int. Cl.[5] A61H *1/02*

U.S. Cl. 128—75 **11 Claims**

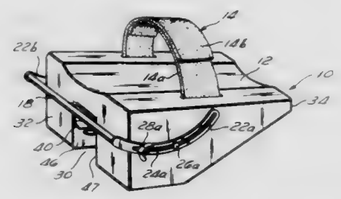


1. A disposable cervical collar comprising a one piece elongated body formed from a sheet of a light weight material which is essentially rigid in a direction transverse to its length, said elongated body having opposing spaced apart surfaces interconnected by spaced apart webs defining elongated narrow cells extending transversely between the opposing side edges of said elongated body,

VOL 1131 ISS 5 OCT 29 1991 UMI

said elongated body being configured to define a frontal section and a rear section connected to a side edge of said frontal section,
a chin receiving opening extending downwardly from the upper edge of said frontal section centrally thereof,
a second opening in said frontal section underlying said chin receiving opening,
a plurality of spaced apart lines of articulation in said rear section along which said rear section will bend when the collar is fitted about the wearer's neck,
a flexible strap projecting outwardly from the side of said rear section opposite said frontal section, and
attachment means on the side of said frontal section opposite said rear section for securing said strap to said frontal section when the collar is fitted around the wearer's neck.

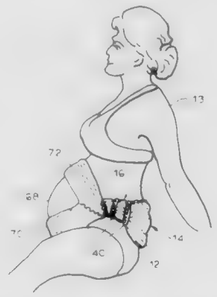
5,060,638
ORTHOTIC AND RESTRAINING DEVICE POSITIONABLE ON THE HAND AND FOREARM
Robert C. Bodine, Jr., Mission Viejo, Calif., assignor to Capra Resources, Inc., Mission Viejo, Calif.
Filed Dec. 14, 1989, Ser. No. 452,627
Int. Cl.[5] A61F *5/10, 5/37*
U.S. Cl. 128—77 **16 Claims**



1. A hand and forearm orthotic device comprising:
a block member having a front end, a rear end, an inclined upper surface, and a generally flat underside;
a retainer strap operative to hold a human forearm in a first position on the upper surface of said block member;
a hand support member attached to the block member and extending forward of the front end of said block member to engage the hand when said forearm is in said first position;
said block member being shaped such that the upper surface to underside dimension at the front end of said block member is greater than the upper surface to underside dimension at the rear end of said block member such that when the generally flat underside of the block member is positioned on a horizontally planar underlying surface the forearm in said first position on the upper surface of the block member will be inclined such that the wrist is higher than the elbow; and
said hand support member being movably mounted to said block member and having rigid means for selectively adjusting the position of said support member relative to said block member so as to effect varying degrees of dorsiflexion of the hand when said forearm is in said first position.

5,060,639
BACK SUPPORT
Donna Marcus, Port Vue, Pa., assignor to Helen A. Siudyla, Pittsburgh, Pa.
Filed Jan. 31, 1990, Ser. No. 472,846
Int. Cl.[5] A61F *5/00, 5/03*
U.S. Cl. 128—78 **24 Claims**

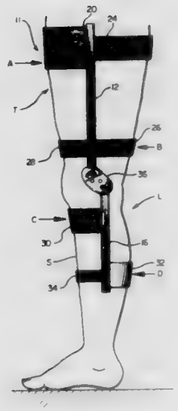
1. A back support adapted to be worn about a person's waist comprising:
(A) a resiliently compressible, flexible, elongate back pad configured and dimensioned to be positioned against the wearer's lower back when said back support is worn, said back pad being filled with a resiliently compressible, flexible filler material and having stitching therethrough which compresses said filler material in different areas to different degrees; said stitching defining first areas of greater stiffness adjacent each side of said back pad and a plurality of second areas of lesser stiffness intermediate said first areas, whereby said back pad has greater thickness and less firmness in said second areas and less thickness and greater firmness in said first areas;

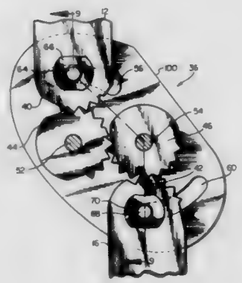


(B) a pair of resiliently compressible, flexible, elongate side pads configured and dimensioned to be positioned against the wearer's sides when said back support is worn, each of said side pads being secured at one end to a respective end of said back pad; and
(C) flexible strap means for releasably operably connecting said side pads together to adjustable fit said back support about the wearer's waist.

5,060,640
KNEE BRACE
James K. Rasmusson, Birmingham, Mich., assignor to Becker Orthopedic Appliance Company, Troy, Mich.
Filed Mar. 14, 1990, Ser. No. 493,582
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—80 C **31 Claims**

15. An adjustable knee brace for supporting a person's injured anterior cruciate ligament by applying a force couple to the femur and the tibia, comprising:
a medial femoral bar and a medial tibia bar, a lateral femoral bar and a lateral tibia bar;
attachment means for attaching the brace to the person's leg and for connecting the medial femoral bar to the lateral femoral bar and for connecting the medial tibia bar to the lateral tibia bar and for applying a force couple to the femur and the tibia to force the tibia backward in relation to the femur;
a pair of quadricentric hinges, one of said hinges located on the medial side of the leg and the other of said hinges located on the lateral side of the leg,
each quadricentric hinge having four serially intermeshing gears with parallel axes of pivotable rotation, said four gears including a first drive gear attached to the lower end of the femoral bar, which intermeshes with a first idler gear, a second drive gear attached to the upper end of the tibia bar, which intermeshes with a second idler gear, the first idler gear and the second idler gear capable of intermeshing about an axis adjacent to the anatomical center of the knee joint.





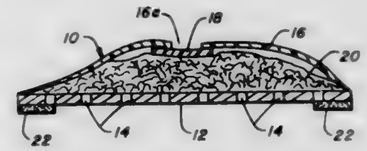
5,060,641
APPARATUS AND METHOD FOR THE TREATMENT OF FLEXURAL DEFORMITIES, CONTRACTED TENDONS, AND ANGULAR LIMB DEFORMITIES IN FOALS
Peyton A. Jones, Monkton, Md., assignor to Physicians & Nurses Mfg. Co., Larchmont, N.Y.
Filed Dec. 7, 1990, Ser. No. 623,783
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—80 R **8 Claims**

1. A pneumatic cast for the treatment of foals having an anatomical abnormality of the leg comprising:
a flexible tubular inner wall;
a flexible tubular outer wall positioned around said inner wall;
said inner and outer walls having a large diameter opening at one end and a small diameter opening at the other end;
a top seam sealing the large diameter opening ends of said inner and outer walls together;
a bottom seam sealing the small diameter opening ends of said inner and outer walls together;
an intermediate seam extending around a diameter of said inner and outer walls between said top and bottom seams closest to said bottom seam sealing said inner and outer walls together, said intermediate seam placed a substantial distance from said bottom sam wherein the portion between said bottom seams nd said intermediate seam remains uninflated providing support and assisting placement of the pneumatic cast;
a longitudinal uninflatable portion extending between said top and intermediate seams; and



a valve placed through said outer wall and entering into the cavity formed between said inner and outer walls between said top seam and said intermediate seam.

5,060,642
WOUND DRESSING WITH AIR PERMEABLE BACTERIA IMPERMEABLE RESERVOIR
Thomas H. Gilman, 2156 Sunrise Dr., Appleton, Wis. 54915
Filed Jan. 5, 1990, Ser. No. 461,598
Int. Cl.[5] A61F *13/00, 15/00*
U.S. Cl. 128—155 **10 Claims**



1. In a wound dressing including a fabric reservoir for receiving and retaining wound fluids;
the improvement wherein said dressing is provided with an outer cover characterized as being an effective bacterial barrier, at least a portion of said cover further being characterized as being air permeable, the periphery of a surface of said dressing containing a continuous layer of a pressure-sensitive adhesive for securing said dressing to skin, said adhesive layer further serving to provide a bacterial barrier.

5,060,643
BREATH-ACTIVATED INHALATION DEVICE
Michael Rich, Danbury, Conn.; Paul Mulhauser, and Douglas M. Spranger, both of New York, N.Y., assignors to Tenax Corporation, Danbury, Conn.
Filed Aug. 7, 1990, Ser. No. 563,927
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.23 **3 Claims**

1. A fluid dispensing device comprising:
a housing containing a medicant container adapted to be activated by movement of a valve against the bias of a captive spring to dispense a quantity of medicant:
said housing having a mouthpiece for insertion within the mouth of the user;
a flexible diaphragm-type valve means having opposite ends mounted in the interior of said housing and normally closing said housing to the ambient atmosphere, but exposing the housing in response to a difference in air pressure on either side of said valve means induced by inhala-

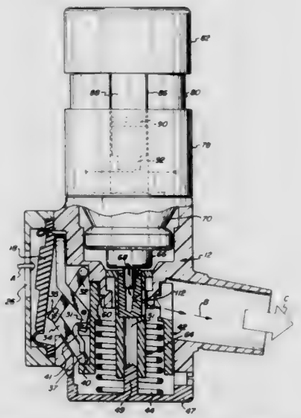
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tion of air from the interior of said housing by a user through said mouthpiece;

a rotatable lever in contact with the rear of said diaphragm-type valve;

a movable nozzle adapted to move into pressure contact with said valve on said medicant-container bottle to open the valve enabling the dispensation of a quantity of medicant after which the valve is closed, and upon closing of said valve said movable nozzle being returned to a non-pressure contact position with said valve, said nozzle including a plurality of upright spring arms, each spring arm having an enlarged camming head;

nozzle activation means for moving said nozzle into pressure contact with said valve on said medicant-container bottle to open said valve by contact with and beneath said enlarged camming head of said spring arms on said nozzle, which upon movement being imparted to said camming heads on said spring arms, said spring arms will contact a fixed abutment and will collapse towards each other with frictional braking contact with said abutment as the nozzle continues into pressure contact with said valve and then allowing said nozzle to be returned to its non-pressure contact position beneath said nozzle activation means by movement of said valve caused by the captive spring in said medicant container against the frictionally braked spring arms of said nozzle;



spring means for normally urging said nozzle activation means to move said nozzle into pressure contact with said valve on said medicant-container bottle;

toggle linkage means between said nozzle activation means and lever for normally locking said nozzle activation means against movement while compressing said spring means beneath said nozzle activation means, but pivotable to a nonlocking position upon rotation and contact by said lever permitting movement of said nozzle activation means under urging of said spring means to move said nozzle into pressure contact with said valve;

whereby upon inhalation of a user through said mouthpiece, said diaphragm-type valve will open to cause said lever to rotate to break and pivot said toggle linkage to enable said nozzle activation means to move said nozzle into pressure contact with said valve to open said valve of said medicant-containing bottle to dispense a dose of a medicant mixed with inhaled air through said mouthpiece, until said valve closes and said nozzle is returned to a non-pressure contact position with said valve; and

means on said housing for resetting said toggle linkage means to lock said nozzle activation means against movement, said means including:

reciprocably slidable cap means on said housing for contact with said nozzle activation means to push said nozzle activation means away from the valve on said medicant-container bottle and beneath the camming heads on said spring arms on said nozzle by overriding the enlarged camming heads on the top of each spring arm of said nozzle while simultaneously causing said nozzle activation means to pivot said toggle linkage means to its locking position.

5,060,644

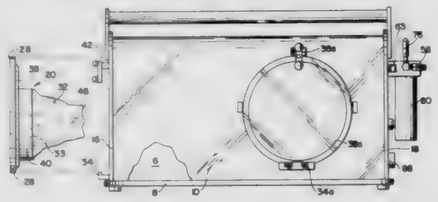
HYPERBARIC CHAMBER APPARATUS

Phillip E. Loori, Jersey City, N.J., assignor to Ventnor Corporation, Margate, N.J.

Continuation of Ser. No. 229,272, Aug. 8, 1988, abandoned. This application Sep. 4, 1990, Ser. No. 577,806

Int. Cl.[5] **A61G** *10/00*; **A62B** *32/00*

U.S. Cl. 128—202.12 **7 Claims**



1. A hyperbaric apparatus comprising: housing means defining a treating chamber, means on said housing means for introducing a limb to be treated into said treating chamber, said means for introducing a limb into said treating chamber including first removable closure means having an exterior surface and removably connected to said housing means, at least one access means on said housing means a spaced distance from said means on said housing means for introducing a limb to be treated and operative for communication with said treating chamber, said access means including second removable closure means having an exterior surface and removably connected to said housing, said first and second removably closure means each supporting an annular sealing ring for sealing said first and second removable closure means to said housing means, first attachment means for operatively and removably attaching said first removable closure means to said housing means, second attachment means for operatively and removably attaching said second removable closure means to said housing means, said first attachment means comprising a non-moveable first L-shaped flange means attached to said housing means for engaging said exterior surface of said first removable closure means at a first location and first pivotable latch means spaced from said first L-shaped flange means at a second location for providing a sealed removable connection of said first removable closure means to said housing means by engagement with the exterior surface of said first removable closure means at said second location, said second attachment means comprising a non-movable second L-shaped flange means attached to said housing means for engaging said exterior surface of said second removable closure means at a first location and second pivotable latch means spaced from said second L-shaped flange means at a second location for providing a sealed removable connection of said second removable closure means to said housing means by engagement with the exterior surface of said second removable closure means at said second location, sealing means for sealing said limb in said means on said housing means for introducing a limb to be treated into said treating chamber, and means connected to said housing means and communicating with said treating chamber for the introduction, regulation and control of a treating medium within said treating chamber.

5,060,645

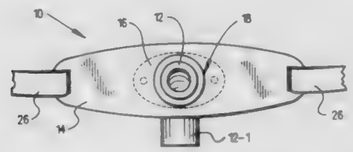
TRACHEOSTOMY TUBE ASSEMBLY

David N. Russell, 9737-123rd Street, Surrey, Canada V3V 4N7

Filed Aug. 14, 1990, Ser. No. 567,097

Int. Cl.[5] **A62B** *9/04*

U.S. Cl. 128—207.14 **14 Claims**



1. A tracheostomy tube assembly comprising:

a tracheostomy tube possessing a first end adapted for insertion into a trachea of a patient through a stoma cut in a patient's throat and a second end opposite said first end;

a flange extending substantially radially outwardly adjacent said second end of said tracheostomy tube;

a pair of substantially diametrically opposed studs projecting outwardly from an outer surface of said flange, said studs disposed on opposite sides of said tube;

each of said studs having a rounded enlarged terminal end portion connected to said flange by a reduced width neck portion;

a separate collar member adapted to be fitted on the exterior of a patient's throat, said collar member possessing an opening receiving said tracheostomy tube;

a pair of apertures formed through said collar member, said apertures disposed on opposite sides of said opening and dimensioned for releasable engagement with said studs; and

flexible fastening means secured to said collar member for securing said collar member around a patient's neck.

5,060,646

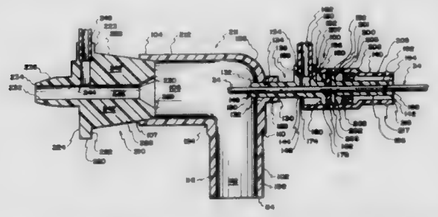
CLOSED SYSTEM FOR INVOLUNTARY MEDICAL ASPIRATION AND VENTILATION, AND METHOD

Larry E. Page, Salt Lake City, Utah, assignor to Ballard Medical Products, Draper, Utah

Filed Sep. 10, 1990, Ser. No. 580,247

Int. Cl.[5] **A61M** *16/00*

U.S. Cl. 128—207.14 **17 Claims**



1. A method of producing a closed system aspirating and ventilating apparatus by which the risk of premature interruption in any ventilating interval is alleviated, comprising the steps of:

providing a hollow elbow ventilating fitting comprising a wall having only one relatively large distal port, one relatively large side port oppositely aligned with a closed part of the wall and one relatively small hole in the wall in general alignment with the distal port;

providing aspirating structure comprising an aspirating catheter tube and a forward hollow male fitting tightly surrounding the catheter tube at a distal end of a bore in the male fitting the catheter tube being contiguously manually selectively advanced and retracted in respect to the male fitting;

inserting the hollow male fitting into the small hole in the wall in air-tight telescopic relation against inadvertent separation and so that said catheter tube advancement and retraction contiguously with the distal end of the bore concentrically within the hole in the wall is accommodated while passage of ventilating gas into the bore is prevented and the space for ventilating gases within the hollow elbow is not substantially increased by the combination of the hollow male fitting and the contiguous advancing and retracting path of the catheter tube.

5,060,647

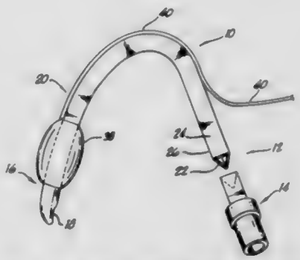
ENDOTRACHAEL TUBE

David M. Alessi, 3278 Wilshire Blvd., Los Angeles, Calif. 90010

Filed Feb. 23, 1989, Ser. No. 315,136

Int. Cl.[5] **A61M** *16/00*

U.S. Cl. 128—207.14 **13 Claims**



1. A flexible endotracheal tube having a proximal end for attachment to an adapter or to another tube, a distal end having an opening for extending past vocal cords of a patient and an intermediate portion for passing between the vocal cords and extending toward the proximal end and wherein the intermediate portion has a length when in place during normal use to extend outwardly of the patient's mouth and includes an outer shape in transverse cross section defined by two substantially straight sides converging to a tip and a third side opposite the tip for forming a closed shape, wherein the third side is curved outwardly away from the tip in an amount that compliments the curvature of the arytenoid cartilage, a mouthguard for placing in a patient's mouth to prevent biting by the patient of the tube and having a wall defining an opening conforming substantially to the outer shape of the intermediate portion.

5,060,648

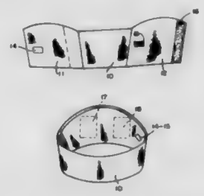
BREAST BINDER

Shahla Zarkesh, 14144 Saddler River Dr., N. Potomac, Md. 20878

Filed Oct. 11, 1990, Ser. No. 595,566

Int. Cl.[5] **A61F** *7/02*

U.S. Cl. 128—402 **4 Claims**



1. A breast binder to protect the breasts during breast engorgement, comprising three attached panels of textile fabric

of substantial inherent stability against stretch in use and a fastening means,

said three panels including a central trapezoidal panel and two similarly shaped adjacent four sided panels including top and bottom sides, the top side of each adjacent panel being convex and of greater length than said bottom side of the respective panel,

side central panel for placement against the back and said adjacent panels for overlapping the breasts said adjacent panels capable of being fastened with said fastening means in overlapping relationship such that when said adjacent panels overlap they lay on top of one another as substantial mirror images of one another and support the breasts, said adjacent panels adapted to support the ice bags therebetween when said adjacent panels are overlapped.

5,060,649

ADAPTER ARRANGEMENT FOR HEART PACEMAKER LEADS

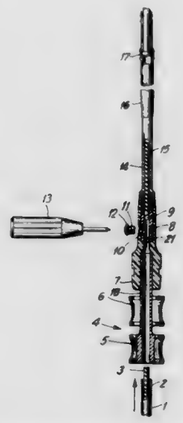
Manfred Höcherl, Rheinfelden, and Jörg Reinhardt, Grenzach-Wyhlen, both of Fed. Rep. of Germany, assignors to VascoMed Institut fur Kathetertechnologie GmbH

Filed May 31, 1990, Ser. No. 531,856

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 8906745[U]

Int. Cl.[5] A61N *1/05*

U.S. Cl. 128—419 P **7 Claims**



1. An adapter arrangement for heart pacemakers, comprising

an adapter member of an elastic, insulating material,

a clamping bushing of a conductive material, the clamping bushing being surrounded by the adapter member and defining a longitudinal bore adapted for receiving a pacemaker lead,

the adapter member defining a threaded bore extending transversely of the longitudinal bore of the clamping bushing;

a plug lead provided with a pacemaker plug and connected to the adapter member;

a clamping screw capable of being screwed into the threaded bore;

a stripper comprising

a stripping holder with lead guide shaft insertable in the adapter member, and

a stripping ring slidably mounted on the lead guide shaft.

5,060,650

LITHOTRIPTER WITH X-RAY AND ULTRASOUND LOCATION SYSTEMS

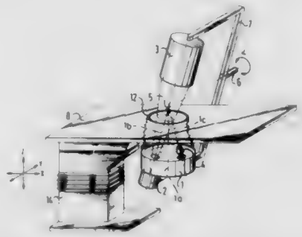
Helmut Wurster, Oberderdingen; Werner Krauss, and Thomas Belikan, both of Knittlingen, all of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlinger, Fed. Rep. of Germany

Filed Mar. 15, 1990, Ser. No. 494,208

Claims priority, application Fed. Rep. of Germany, May 17, 1989, 3916093

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—660.03 **12 Claims**



1. A lithotripter for destroying concretions or tissues by means of focussed ultrasonic shock waves comprising:

(a) a transducer for generating focussed ultrasonic shock waves, said transducer having an axis and a focus on said axis;

(b) at least one X-ray imaging system for locating a concretion or tissue to be destroyed, said system including an X-ray emitter having an axis and an image intensifier spaced from said emitter and positioned to receive X-ray emissions therefrom, said emitter and intensifier being arranged on a frame which is pivotable about an axis for location of concretions or tissues in various image planes,

(c) at least one ultrasonic locating transducer having an axis,

(d) means for mounting said at least one X-ray emitter and said at least one ultrasonic locating transducer in said ultrasonic shock wave generating transducer, said emitter and said locating transducer being offset from the axis of the shock wave transducer, and the axes of the shock wave transducer, X-ray emitter and locating transducer all intersecting at the focus of the shock wave transducer, and

(e) means for positioning the focus on a concrement or tissue to be destroyed.

5,060,651

ULTRASONIC DIAGNOSTIC APPARATUS

Toshio Kondo, Kunitachi; Yutaka Sato, Kashiwa; Hiroshi Masuzawa, Kokubunji, and Hiroshi Takeuchi, Matsudo, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Sep. 27, 1990, Ser. No. 588,714

Claims priority, application Japan, Oct. 2, 1989, 1-255135

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.07 **9 Claims**

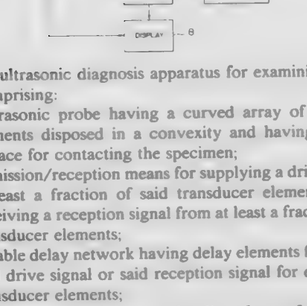
1. An ultrasonic diagnostic apparatus comprising:

(a) a probe including a plurality of transducer elements made of an electrostrictive material arranged in two-dimensional directions so as to form an n×m matrix of rows and columns;

(b) bias applying means for selecting transducer elements in an arbitrary row by applying a bias voltage thereto so that said selected transducer elements are rendered in an operative condition;

(c) switching means for selecting transducer elements in at least one arbitrary column by applying a bias voltage thereto;

(d) means for controlling said bias voltage applying means and said switching means to scan an ultrasonic beam in the two-dimensional directions of said n×m matrix; and



(e) means for collecting three-dimensional information on a body under inspection based on echo signals received in response to said two-dimensional scan.

5,060,652

ULTRASONIC DIAGNOSIS APPARATUS

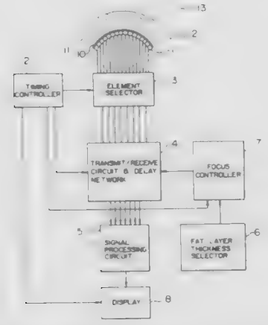
Shinichiro Umemura; Hiroshi Ikeda, both of Hachioji, and Kageyoshi Katakura, Tokyo, all of Japan, assignors to Hitachi Medical Corp., Tokyo, Japan

Filed Oct. 2, 1989, Ser. No. 415,668

Claims priority, application Japan, Oct. 5, 1988, 63-249886

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.01 **8 Claims**



1. An ultrasonic diagnosis apparatus for examining a specimen comprising:

an ultrasonic probe having a curved array of transducer elements disposed in a convexity and having a convex surface for contacting the specimen;

transmission/reception means for supplying a drive signal to at least a fraction of said transducer elements and for receiving a reception signal from at least a fraction of said transducer elements;

a variable delay network having delay elements for delaying said drive signal or said reception signal for each of said transducer elements;

memory means for storing a plurality of sets of delay distribution data to be used by said variable delay network, each set including delay distribution data for forming a focal point of an ultrasonic beam for transmission or reception so that a concave lens effect on the ultrasonic beam of a fat layer under a skin of the specimen deformed by the ultrasonic probe is compensated on the assumption that the fat layer has a thickness of each of a plurality of predetermined values;

control means for selecting a set from said plurality of sets of delay distribution data in accordance with a selection input, for reading the selected set of delay distribution data from said memory means, and for controlling the delay of each delay element of said variable delay network in accordance with the read data; and

image forming mean for forming and visualizing an echo image of said specimen in accordance with the reception signal obtained through said variable delay network.

5,060,653

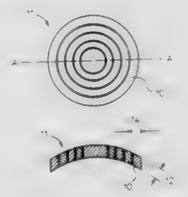
ULTRASONIC SENSOR WITH STARVED DILATATIONAL MODES

J. Fleming Dias, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 16, 1989, Ser. No. 352,807

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—662.03 **14 Claims**



1. A method of reducing a dilatational response of an ultrasonic sensor (**10**) by:

a. fabricating at least one element (**10**) of said sensor (**11**) with a thickness dimension (**12**), and a width dimension (**14**);

the ratio of said width dimension (**14**) to said thickness dimension (**12**) being such that a dilatational response of said thickness dimension (**12**) occurs at a specific frequency f_{dil};

b. driving at least one element (**10**) of said ultrasonic sensor (**11**) with a train of drive pulses;

the number of pulses in said train being selected so that a frequency spectrum of said train has a null at said frequency f_{dil}.

5,060,654

IDENTIFICATION METHOD FOR THE CUFF TYPE OF A SPHYGMOMANOMETER

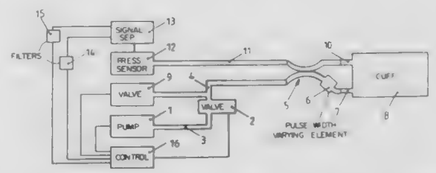
Lauri Malkamäki, Vantaa, and Lauri P. Kankkunen, Espoo, both of Finland, assignors to Instrumentarium Corporation, Finland

Filed Mar. 14, 1990, Ser. No. 493,352

Claims priority, application Finland, Mar. 17, 1989, 891289

Int. Cl.[5] A61B *5/02*

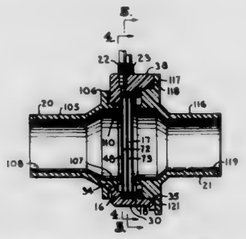
U.S. Cl. 128—686 **14 Claims**



14. A method for identifying which of a larger or smaller size cuff is connected in a sphygmomanometer by a fluid communication system having a pressurizing means and a sensor, said method comprising the steps of:

generating an acoustical pulse in the fluid communication system, said pulse having a predetermined pulse width;
transmitting the pulse in the fluid communication system;
increasing the width of the pulse, during its transmission, when a smaller size cuff is connected in the sphygmomanometer;
sensing the width of the pulse subsequent to transmission in the fluid communication system;
comparing the width of the sensed pulse with a predetermined valve having a magnitude less than the increased width of the pulse; and
determining, on the basis of said comparison, that the smaller size cuff is connected in the sphygmomanometer when the pulse width magnitude of the sensed pulse exceeds the predetermined value.

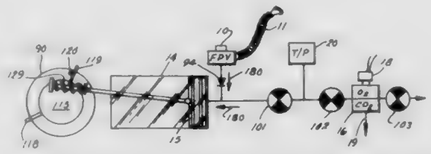
5,060,655
PNEUMOTACH
Kevin A. Rudolph, Kansas City, Mo., assignor to Hans Rudolph, Inc., Kansas City, Mo.
Filed Nov. 15, 1988, Ser. No. 271,607
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—716 **7 Claims**



1. In a pneumotach apparatus for measuring flows of gases and including a head having a flow passageway therethrough with a pair of hose receiving tube adaptors extending outwardly from opposite ends thereof and a plurality of flow measuring foraminous members positioned so as to extend across the passageway, the improving comprising wherein:
(a) each of said tube adaptors has a passageway passing therethrough; each of said passageways having an inner end and an outer end;
(b) both of said tube adaptor passageway inner ends terminating in a circular knife edge surrounding both of said passageway and the gas when passing through said passageway;
(c) each of said passageway inner ends being in a plane positioned so as to be parallel to and less than 30 thousands of an inch from a respective one of said foraminous members, so as to reduce gaseous turbulence at said foraminous members.

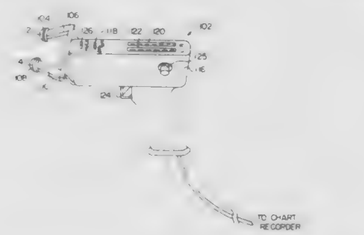
5,060,656
METABOLIC RATE ANALYZER
Charles P. Howard, Ann Arbor, Mich., assignor to AeroSport, Inc., Ann Arbor, Mich.
Filed May 22, 1990, Ser. No. 527,106
Int. Cl.[5] A61B *5/083*
U.S. Cl. 128—718 **57 Claims**

1. A metabolic rate analyzer comprising:
a flow proportioning valve for producing a proportional sample of the expired gas of a subject being studied;
a means for drawing from said flow proportioning valve a proportional sample of the expired gas of the subject;
a test chamber;
an O_2 sensor;
a selectively-permeable membrane disposed in said test chamber, said membrane being provided with a selective permeability for CO_2, said membrane being disposed in said test chamber for selectively venting CO_2 from said test chamber;
a means for charging said test chamber with the proportional sample of the expired gas of the subject;
a pressure sensor for monitoring the pressure of the sample and determining the rate of pressure decay in said test chamber due to the selective venting of CO_2 through said selectively-permeable membrane; and



an analyzing means for determining the CO_2 content of the expired gas of the subject from the rate of pressure decay in said test chamber, for conducting a volumetric analysis of the proportional sample to determine the total volume of gas expired from the subject being studied, and correlating O_2 content, CO_2 content and total volume of expired gas to provide a measure of the metabolic rate of the subject being studied.

5,060,657
HEMISPHERICAL NEUROCALOGRAPH
Robert A. Teague, 464 Sweetbriar Way, Easley, S.C. 29640
Filed Jun. 21, 1990, Ser. No. 541,613
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—736 **16 Claims**

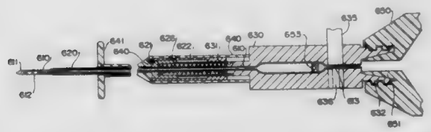


1. A probe for the measurement of the skin temperature of a living organism comprising:
a thermally and electrically insulative probe head having a generally convex skin contact surface, said head defining a depression in said surface; and
a thermocouple comprising the contact of two suitable metal wires attached within said depression, said depression of a depth such that said thermocouple will be in close proximity with the skin of said organism when said probe head is in contact with said skin.

5,060,658
FINE-NEEDLE ASPIRATION CELL SAMPLING APPARATUS
Stephen W. Dejter, Jr., Washington, D.C., and Richard H. Goodwin, Jr., Bethedsa, Md., assignors to Vance Products Incorporated, Spencer, Ind.
Continuation of Ser. No. 159,320, Feb. 23, 1988, Pat. No. 4,989,614. This application Jul. 30, 1990, Ser. No. 559,260
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—753 **24 Claims**

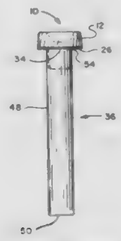
1. An apparatus for aspirating a cytological sample from a target area, comprising:
a needle having at least one opening;

occlusion means for blocking said at least one needle opening when the needle is inserted into and withdrawn from the target area;
a sheath surrounding at least a portion of said needle and cooperating with said occlusion means to selectively unblock said at least one needle opening;
reciprocation means for reciprocating said needle and said occlusion means relative to said sheath, said reciprocation means including reciprocation control means for controlling the reciprocation excursion of said needle within the



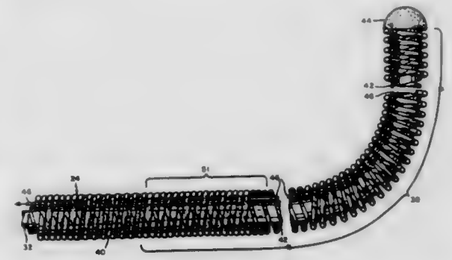
target area, said reciprocation control means including penetration control means for limiting the extent of penetration of the needle into the target area, said penetration control means including a first stop limiting the advancement of said occlusion means exteriorly of said sheath and a second stop limiting the advancement of said needle, wherein said second stop is positioned to permit extension of said needle outwardly of said occlusion means with said occlusion means advanced to said first stop; and
vacuum means connectable to said needle for selectively creating a partial vacuum at said needle opening.

5,060,659
MEDICAL CONTAINER STOPPER
Boyce W. Cook, Deland, Fla., and William R. Fiehler, St. Louis, Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Continuation of Ser. No. 165,806, Mar. 9, 1988, Pat. No. 4,893,636. This application Aug. 11, 1989, Ser. No. 380,925
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
Int. Cl.[5] A61M *5/178*
U.S. Cl. 128—764 **11 Claims**



1. In combination, a blood collection tube and a stopper for use with a holder, the holder having an inside surface, an open end, a closed end and a hollow needle extending axially from the closed end of the holder toward the open end of the holder, the combination comprising:
a hollow elongated blood collection tube having an open end, and
a stopper body having flange and plug portions, said plug portion of said stopper body sealably positioned within said open end of said blood collection tube, the largest outside diameter of said flange portion of said stopper body being less than the inside diameter of the holder body, and said flange portion being greater than the largest outside diameter of the blood collection tube proximate said open end of said tube by a factor of at least 1.4 whereby, when said plug portion is inserted into said open end of said blood collection tube and said stopper and said blood collection tube is placed through the open end of the holder, said stopper is constrained within the holder and forced to be concentrically aligned with the needle by the inside surface of the holder.

5,060,660
STEERABLE EXTENDABLE GUIDEWIRE WITH ADJUSTABLE TIP
Richard A. Gambale, Tyngsboro, and James S. Hunter, Westford, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Filed Feb. 28, 1990, Ser. No. 486,515
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **19 Claims**



1. A steerable guidewire comprising:
an elongate solid walled tubular shaft having a proximal end and a distal end;
an elongate flexible distal segment connected to and extending distally from the shaft, the distal segment being flexible;
a pull wire extending through the tubular shaft and into the flexible distal segment, the distal end of the pull wire being connected to the distal portion of the flexible segment in a manner such that when tension is applied to the pull wire, the distal end of the flexible distal segment will assume a curved configuration;
the shaft including a flexible stretchable tubular segment at a proximal portion distally of the proximal end of the shaft;
the pull wire extending through the flexible stretchable tubular segment and being attached to the shaft proximally of the flexible segment.

5,060,661
INFLATABLE NECK AND HEAD SUPPORT
Thomas L. Howard, 1972 Scudder Dr., Akron, Ohio 44320
Filed Jun. 8, 1990, Ser. No. 535,127
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—845 **4 Claims**



1. A personal floatation support for use around the neck of a wearer for supporting the head of a wearer in water consisting of a substantially rectangular body of flexible gas impervious material, said rectangular body having a pair of overlapping side panels, said side panels having a pair of spaced side edges and a pair of spaced end edges that are sealed to form a closed inflatable chamber, fastener means mounted adjacent to said end edges on said body for securing said flexible rectangular body into an annular shape for encompassing the neck of a

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wearer upon inflation, and valve means mounted on said rectangular body for connection to said chamber for providing pressurized gas to said chamber to convert said rectangular body from a collapsed flexible condition to an inflated annular flexible shape that holds the head in an upright position while permitting free movement in a side to side position wherein said fastener means includes strap means having one end secured to one of said end edges of said support, said strap means having two opposed faces of hook material, and T-shaped strips secured to the rectangular body adjacent the remaining one of said end edges of said support, each of said T-shaped strips having a head portion and a stem portion, said stem portion being a short perpendicular portion extending from said head portion and away from said rectangular body portion, said head portion being secured to said body, and said T-shaped strips having loop material faces thereon for cooperative locking action with said strips, and the free end portion of said stem secured over said strap means when said strap means is secured to said head portion of said T-shaped strips to provide a double locking.

5,060,662

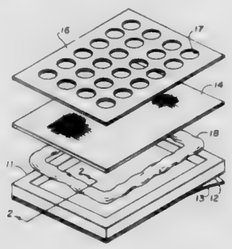
OPEN AIR BANDAGE

Kenneth F. Farnswoth, III, 605 W. Mill St., Ukiah, Calif. 95482

Filed Jul. 6, 1990, Ser. No. 549,262

Int. Cl.[5] A61F *13/00, 15/00*

U.S. Cl. 128—888 **3 Claims**



1. A bandage comprising a ring of pliant material having upper and lower sides and being adapted for engagement with the skin surrounding a wound, an absorbent material extending around the inner periphery of the ring of pliant material for collecting exudate from the wound, an adhesive on the lower side of the ring of pliant material for affixing the bandage to the skin, an air permeable member affixed to the upper side of the ring of pliant material and adapted to cover the area within the ring without touching the wound, and an outer protective layer of pliant foam overlying the air permeable member and having a plurality of openings through which air can pass.

5,060,663

PROCESS FOR MINIMIZING LOOSE ENDS IN CIGARETTES

Norman B. Rainer, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 746,650, Jun. 20, 1985, Pat. No. 4,715,388. This application Dec. 7, 1987, Ser. No. 129,537

Int. Cl.[5] A24B *15/28;* **A24C** *5/00, 5/18, 5/60*

U.S. Cl. 131—77 **18 Claims**

1. A method for producing a tobacco-containing rod from tobacco materials comprising the steps of shredding tobacco material, mixing a binder with the shredded tobacco material, subjecting the mixture of binder and shredded tobacco material to conditions which cause the binder to become tacky and forming a tobacco-containing rod from the mixture of shredded tobacco material and binder.

5,060,664

METHOD OF AND APPARATUS FOR MAKING STREAMS CONTAINING FIBROUS MATERIALS OF THE TOBACCO PROCESSING INDUSTRY

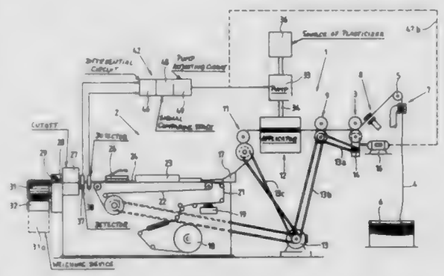
Wolfgang Siems, Hamburg, Fed. Rep. of Germany, and Andrzej Radzio, Quinton, Va., assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 53,176, May 21, 1987, abandoned. This application Dec. 23, 1987, Ser. No. 137,512

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1986, 3640730

Int. Cl.[5] A24C *5/18*

U.S. Cl. 131—84.1 **29 Claims**



1. A method of making rod-like products of the tobacco processing industry, comprising forming a composite stream containing a fibrous material and a second material; conveying the stream along a predetermined path; a first measuring step including measuring the density of successive increments of the stream by directing radiation across the stream in at least one portion of said path, monitoring the characteristics of radiation which passes through the stream and generating first signals denoting the density of the stream; a second measuring step including measuring the density of successive increments of the stream in a manner different from that in accordance with said first measuring step and generating second signals denoting the thus measured density; and processing the first and the corresponding second signals to ascertain the quantity of at least one said materials in the stream.

15. Apparatus for making rod-like products of the tobacco processing industry, comprising means for forming a composite stream containing fibrous material and a second material; means for conveying the stream along a predetermined path; first measuring means for measuring the density of the stream, including means for generating first signals denoting the density; second measuring means for measuring the density of the stream in a manner different from density measurement by said first measuring means, including means for generating second signals denoting the thus measured density; and means for processing said first and second signals to ascertain the quantity of at least one of said materials in the stream.

5,060,665

WRAPPING MECHANISM FOR ROD MAKING MACHINES OF THE TOBACCO PROCESSING INDUSTRY

Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

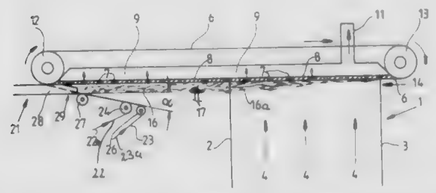
Filed Mar. 4, 1991, Ser. No. 664,616

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1990, 4006843

Int. Cl.[5] A24C *5/14, 5/18*

U.S. Cl. 131—84.1 **11 Claims**

1. In a machine for making a rod wherein a filler of fibrous material is draped into a deformable web of wrapping material, a wrapping mechanism including an endless belt conveyor; means for advancing said conveyor in a predetermined direction along an endless path; means for gradually converting the conveyor into a tube in a first portion of said path, said path having an upwardly sloping second portion upstream of said first portion; means for supplying the web onto said conveyor in the second portion of said path so that the web advances



upwardly in said second portion and is thereupon converted into a tube jointly with said conveyor in the first portion of said path; and a second conveyor having an elongated horizontal or upwardly sloping reach which delivers the filler onto the web at the first portion of said path.

5,060,666

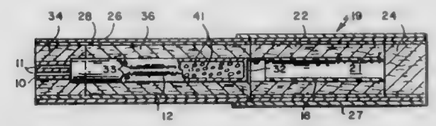
SMOKING ARTICLE WITH TOBACCO JACKET

Jack F. Clearman, Blakely, Ga.; Thomas L. Gentry, Winston-Salem, and Gary R. Shelar, Greensboro, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 791,721, Oct. 28, 1985, Pat. No. 4,756,318. This application Jul. 7, 1988, Ser. No. 216,082

Int. Cl.[5] A24D *1/00, 1/02, 1/18*

U.S. Cl. 131—194 **37 Claims**



1. A smoking article for use with a separate mouthend piece, comprising:

(a) a carbonaceous fuel element;

(b) a physically separate aerosol generating means including an aerosol forming material longitudinally adjacent to the fuel element and

(c) a physically separate tobacco containing mass which circumscribes at least a portion of the aerosol generating means.

5,060,667

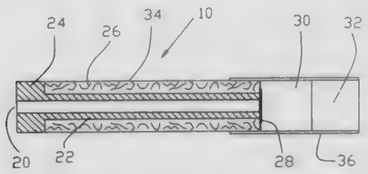
SMOKING ARTICLE

David G. Strubel, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 16, 1990, Ser. No. 568,151

Int. Cl.[5] A24F *47/00*

U.S. Cl. 131—271 **13 Claims**



1. A smoking article comprising:

a) a combustible fuel element;

b) a hollow heat transfer tube circumscribing said fuel element, said heat transfer tube having an upstream end and a downstream end, said heat transfer tube open at its upstream end and closed at its downstream end, said heat transfer tube having an annular flange at its upstream end, said flange having an outside diameter substantially the same as that of the smoking article and a centrally disposed opening in alignment with said combustible end element;

c) a flavor source material circumscribing said heat transfer tube and in fluid communication with a smoker's mouth; and

d) a porous wrapper circumscribing the smoking article.

5,060,668

DEVICE FOR THE PRODUCTION OF AT LEAST TWO ADJACENT ROWS OF PERFORATIONS IN CIGARETTES AND/OR FILTER-LINING PAPER OR FILTER-WRAPPING PAPER

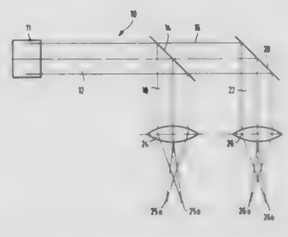
Friedrich Weinhold, Norderstedt, Fed. Rep. of Germany, assignor to B. A. T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed May 14, 1985, Ser. No. 734,356

Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418188

Int. Cl.[5] A24C *5/00, 5/60*

U.S. Cl. 131—281 **3 Claims**



1. A device for the production of at least two adjacent perforation rows in a cigarette paper comprising:

a pulsed laser light source;

a first lens formed of at least two contiguously joined lens elements, each lens element having a focus, the lens elements being positioned with respect to each other so that their foci fall in a plane at points separated from each other;

means for moving a cigarette paper linearly in the plane of said foci; and

means for directing a pulsed laser light beam from said light source on said first lens so that at least a portion of said beam impinges on each lens element such that a beam portion is focussed by each lens element, whereby said pulsed beam portions form rows of perforations in said paper at said foci.

5,060,669

TOBACCO TREATMENT PROCESS

Jackie L. White, Pfafftown; Milly M. L. Wong, Winston-Salem; Chi-Kuen Shu, Winston-Salem, and Thomas A. Perfetti, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 18, 1989, Ser. No. 452,175

Int. Cl.[5] A24B *15/18, 15/24, 15/26*

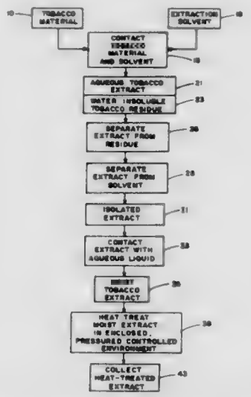
U.S. Cl. 131—297 **21 Claims**

1. A process for altering the chemical nature of a tobacco extract, the process comprising the steps of:

(a) extracting tobacco material with an extraction solvent to provide a tobacco extract,

(b) providing the tobacco extract within a liquid having an aqueous character such that the moisture content thereof

is at least about 5 percent, based on the total weight of the solvent and extract,



(c) subjecting the tobacco extract to heat treatment at above ambient pressure (i) in a pressure controlled environment, and (ii) at a temperature above about 100° C.

5,060,670

METHOD AND APPARATUS FOR BLOWING CUT MOISTURIZED TOBACCO MATERIAL

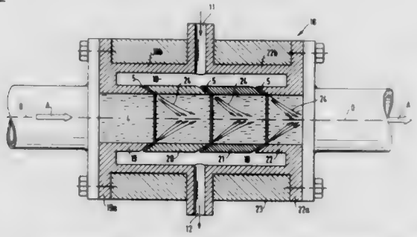
Laszlo Egri, Basel, Switzerland, assignor to Comas S.p.A., Treviso, Italy

Filed Nov. 22, 1989, Ser. No. 441,037

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1988, 3839529

Int. Cl.[5] A24B *3/18*

U.S. Cl. 131—304 **12 Claims**



1. A method for blowing cut moisturized leaf material comprising:

transporting the leaf in a carrier gas stream of steam or steam plus hot gas;

admixing a separately introduced gas stream of steam plus hot gas to said carrier gas stream at a plurality of successive mixing points, said admixed gas stream having at each mixing point a speed component in flow direction of said carrier gas stream, in which the flow rate of the separately introduced gas stream is higher than the flow rate of the carrier gas stream in order to increase the relative speed between leaf material and the gas stream carrying the leaf material, and the separately introduced gas stream surrounds the carrier gas stream at the mixing points; and

retarding the flow rate of the leaf material by increasing the flow cross-section.

5,060,671

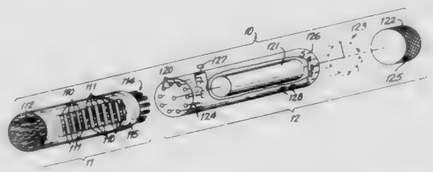
FLAVOR GENERATING ARTICLE

Mary E. Counts; Bernard C. LaRoy; D. Bruce Losee, Jr., all of Richmond; Constance H. Morgan; Ulysses Smith, both of Midlothian; F. Murphy Sprinkel, Jr., Glen Allen, and Francis V. Utsch, Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 1, 1989, Ser. No. 444,746

Int. Cl.[5] A24K *47/00*

U.S. Cl. 131—329 **84 Claims**



1. An article for delivering to a consumer an inhalable flavor-containing substance, said article comprising:

a plurality of pre-measured charges of flavor generating medium;

electrical heating means for individually heating each of said plurality of charges;

a source of electrical energy for powering said electrical heating means; and p1 control means for selectively applying said electrical energy to said electrical heating means to selectively heat said plurality charges in a predetermined sequence, each of said charges being heated only once and, when heated, delivering a predetermined quantity of flavor-containing substance to said consumer.

5,060,672

HIGHLY EFFICIENT TOBACCO SMOKE FILTER

Sándor Irimi; Ádám Molnár; József Gábor, all of Pécs; László Toke, Budapest; Lajos Trézl, Budapest; István Rusznák, Budapest; Viktória Horváth, Budapest, and Tibor Szarvas, Budapest, all of Hungary, assignors to Pésci Dohánygyár, Pécs, Hungary

Filed Dec. 6, 1989, Ser. No. 447,094

Claims priority, application Hungary, Apr. 28, 1989, 202389

Int. Cl.[5] A24D *3/14*

U.S. Cl. 131—331 **13 Claims**

1. A tobacco smoke filter, which comprises a (i) mechanically, adsorptively, or both mechanically and adsorptively filtering component, and a (ii) chemosorptively filtering component, wherein (ii) is a synergistic composition which comprises (a) at least one compound which contains a



enediol structural moiety, and (b) at least one compound adapted to undergo a rapid nucleophilic addition reaction with excited and ground level aldehydes not filtered out by (i).

5,060,673

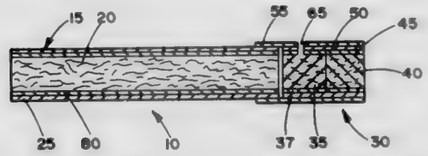
AGGLOMERATED MATRIX FOR CIGARETTES AND METHOD FOR MAKING SAME

Richard L. Lehman, Belle Mead, N.J., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 414,833, Sep. 29, 1989. This application Sep. 26, 1990, Ser. No. 588,238

Int. Cl.[5] A24B *15/18;* **A24D** *1/18*

U.S. Cl. 131—359 **11 Claims**



1. An agglomerated matrix in particle form comprising particles of inorganic filler material spaced within a continuous or semi-continuous phase of a carbonaceous binding material.

5,060,674

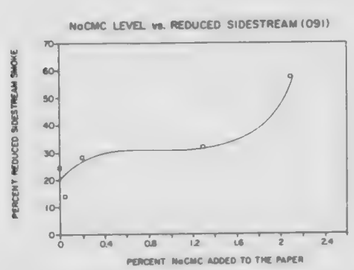
SIDESTREAM SMOKE REDUCING CIGARETTE PAPER WITH IMPROVED PHYSICALS AND IMPROVED SIDESTREAM ODOR/AROMA

J. Page Brown, Symna; William F. Cartwright, Roswell, and Larry D. Snow, Alpharetta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 12, 1990, Ser. No. 464,462

Int. Cl.[5] A24D *1/02*

U.S. Cl. 131—365 **23 Claims**



1. In a paper adapted for use as a wrapper for smoking articles, said paper comprising cellulose fibers, an inorganic filler, and a burn modifying salt, the improvement wherein said paper also includes a carboxylic acid salt and sodium carboxymethyl cellulose in amounts effective to achieve sidestream reduction in a smoking article.

5,060,675

CIGARETTE AND PAPER WRAPPER THEREFOR

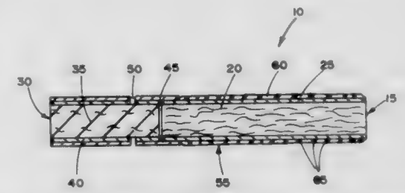
Ellen C. Milford, Clemmons; Hal E. Guess, Kernersville; Paul S. Chapman, Winston-Salem; Rebakah S. Dunn, Winston-Salem, and Patricia F. Perfetti, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Feb. 6, 1990, Ser. No. 475,635

Int. Cl.[5] A24D *1/02*

U.S. Cl. 131—365 **21 Claims**

1. A cigarette comprising a rod of smokable material contained in a circumscribing paper wrapping material thereby forming a smokable rod; the wrapping material (i) having a cellulosic base web containing inorganic filler, and (ii) having a coating of a polymeric material and an inorganic filler material, the coating weighing about 0.05 to about 0.5 pound per 3,000 square feet of wrapping material.



5,060,676

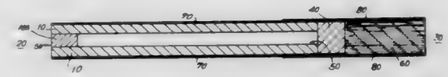
PROCESS FOR MAKING A CARBON HEAT SOURCE AND SMOKING ARTICLE INCLUDING THE HEAT SOURCE AND A FLAVOR GENERATOR

John R. Hearn, Chesterfield; Vincent Lanzillotti, Midlothian, and George H. Burnett, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 843,930, Mar. 24, 1986, abandoned, which is a continuation of Ser. No. 450,247, Dec. 16, 1982, abandoned. This application Oct. 26, 1987, Ser. No. 115,640

Int. Cl.[5] A24D *1/18;* **A24B** *15/16, 15/18*

U.S. Cl. 131—369 **45 Claims**



1. A process for producing a tasteless carbon heat source from a preformed article of ligno-cellulosic material, comprising

pyrolyzing the article in a continuously exchanged inert atmosphere at a temperature within the range of from about 800° to about 1100° C. for from about 0.5 to about 3 hours,

then cooling the pyrolyzed article in the inert atmosphere at a rate of from about 500° to about 10° C. per hour to a temperature within the range of from about 275° C. to about 25° C., and

then adding oxygen to the pyrolyzed article.

5,060,677

METHOD FOR CONSTRUCTION OF HAIRPIECE AND ARTICLE THEREOF

Dale L. Duffel, 7407 Marinette, Houston, Tex. 77074

Continuation of Ser. No. 69,843, Jul. 6, 1987, abandoned. This application Dec. 1, 1988, Ser. No. 278,658

Int. Cl.[5] A41G *5/00*

U.S. Cl. 132—53 **5 Claims**

1. A hairpiece adapted for vacuum attachment to the cranium of the user thereof comprising:

a semi-rigid convexo/concave scull cap formed specifically to the configuration of the cranium of the user thereof, said semi-rigid scull cap being of such size and dimension to cover only that portion or less of the cranium which is substantially permanently devoid of hair so as to enable a vacuum-like attachment to that portion of the cranium to which it has been made to fit upon the application of pressure thereto;

a fabric-like bedding cut to approximate the size and shape of said semi-rigid scull cap and which is affixed thereto for receiving plugs of hair thereon; and

hairplugs affixed to the bedding and extending therefrom and of sufficient varying length and quantity throughout as to extend over the scull cap and into the real hair of the

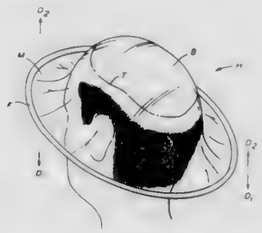
user to thus entirely obscure the scull cap and surrounding cranial areas of pre-existing sparse natural hair growth, wherein the scull cap is constructed by a method which comprises the steps of

(a) preparing a negative mold of the cranium;

(b) preparing a positive mold from the negative mold;

(c) preparing a thermoplastic of plastic sheet having the configuration of the positive mold to thereby prepare a first scull cap;

(d) fitting said first scull cap to the cranium of said user and ascertaining the high and low spots thereon;



(e) using said first scull cap in modifying the positive mold to neutralize high and low areas and making at least one additional scull cap and repeating the positive mold modifying step as necessary until no high or low areas are noted upon refitting said at least one additional scull cap on the cranium of said user to thereby prepare a final scull cap;

(f) affixing hair to said final scull cap to produce said hairpiece which may be press-vacuum fitted to the cranium of said user so as to thereby obviate the need for adhesive and/or other connective means between said hairpiece and the cranium of said user.

5,060,678

ARTIFICIAL NAIL AND IMPLANTATION TECHNIQUES

Mark L. Bauman, 1524 S. Bowling Green Dr., and Michael M. Goldberg, 1525 Dogwood Dr., both of Cherry Hill, N.J. 08003

Filed May 10, 1990, Ser. No. 521,450

Int. Cl.[5] A45D *29/00*

U.S. Cl. 132—73 **16 Claims**



1. An artificial nail for a toe or finger comprising a preformed bilayer structure having a distal end and a proximal end, a plurality of anchor extensions at said proximal end for insertion beneath skin flaps at the nail bed of the toe or finger to which the nail is implanted, said bilayer structure including a top cosmetic layer, said bilayer structure including a cohering layer mounted to the underside of said top layer for causing said bilayer structure to cohere to the nail bend, and said anchor extensions extending outwardly from and generally coplanar with said cohering layer for extending directly into a lateral incision made in the nail bed beneath the skin flaps at the nail bed.

5,060,679

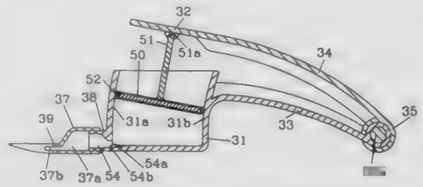
HAIR FLUID APPLICATOR AND METHOD

Armand Christopher, 7845 Blackbird La., Dallas, Tex. 75238, and Max A. Probasco, 1001 Harness La., Richardson, Tex. 75081

Filed Mar. 16, 1990, Ser. No. 494,650

Int. Cl.[5] A45D *24/22*

U.S. Cl. 132—114 **26 Claims**



1. A fluid applicator for applying fluids to selected strands of hair, including a fluid reservoir having sides and bottom outside surfaces, first and second handle parts connected at one end, and a plunger, comprising:

a fluid reservoir having inside walls which conforms to a radius swept by the plunger as the second handle part pivots around the second handle part where connected at one end;

said first handle part connected to the reservoir;

a reservoir lid;

said second handle part connected to the lid and pivotally connected to the first handle part where connected at one end;

said plunger connected to the reservoir lid and removably positioned inside the reservoir;

an applicator tip connected to the side of the fluid reservoir; and

a closure flap between the applicator tip and fluid reservoir;

wherein fluid is directed to the applicator tip from the reservoir when the second handle part causing the plunger to force fluid within the fluid reservoir through the applicator tip while causing the closure flap to open to allow the fluid to flow from the reservoir to the applicator tip.

5,060,680

HAIR STRAIGHTENING METHOD AND TEXTURING STRENGTHENER COMPOSITIONS THEREFOR

Muhammad Akhtar, Bolingbrook, Ill., assignor to Johnson Products Co., Inc., Chicago, Ill.

Filed Sep. 10, 1987, Ser. No. 95,397

Int. Cl.[5] A45D *7/04*

U.S. Cl. 132—204 **38 Claims**

1. A method of straightening, texturing and strengthening hair comprising the steps of:

(a) applying an alkaline hair straightener to the hair for a time sufficient to at least partially straighten the hair;

(b) rinsing substantially all the straightener from the straightened hair; and

(c) applying an aqueous hair texturing and strengthening composition having a pH from at least 8 to about 11 to the straightened hair, the composition including at least one water-dispersible hair texturing and strengthening agent including a quaternary nitrogen atom with at least one aliphatic alkyl group directly or indirectly bonded to the quaternary nitrogen atom, the aliphatic alkyl group having from about 3 to about 22 carbon atoms.

5,060,681

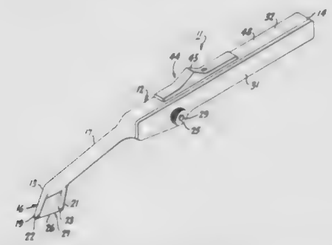
DENTAL FLOSSING DEVICE

Robert S. Westbrook, 1582 Response Rd., #3056, Sacramento, Calif. 95815; Robin L. Hibbard, Davis, Calif.; Robert D. Davis, Davis, Calif.; Erik S. Drews, Davis, Calif., and Jerald M. Henderson, Davis, Calif., assignors to Robert S. Westbrook, Sacramento, Calif.

Filed Dec. 24, 1990, Ser. No. 632,829

Int. Cl.[5] A61C *15/00*

U.S. Cl. 132—325 **7 Claims**



1. A dental flossing device comprising:

a. an elongated handle extending from a forward end to an after end;

b. a fork having a pair of elongated tines, said fork being mounted on said forward end of said handle;

c. a bobbin containing a supply of dental flosses, said bobbin being rotatably mounted on said handle to supply a predetermined amount of floss across the tip ends of said tines, said bobbin including a pair of annular end flanges and an intermediate spool portion, said spool portion being tapered in profile and increasing in diameter as said spool portion extends from one of said annular end flanges toward the other of said annular end flanges so that identical angular rotation of said bobbin releases a greater linear amount of floss from the large diameter end of said spool portion than from the small diameter end thereof;

d. a take-up reel rotatably mounted on said handle to receive spent floss from said tines, said take-up reel and said bobbin being rotatable on a common axis, said take-up reel including a pair of annular end walls and an intermediate drum portion of substantially uniform diameter so that as spent floss builds up on said drum portion, identical angular rotation of said take-up reel retrieves a progressively greater linear amount of floss from said bobbin;

e. means mounted on said handle for advancing a predetermined amount of floss from said bobbin across said tines and to said take-up reel; and,

f. means for selectively locking said bobbin and said take-up reel when said floss advancing means is inactive.

5,060,682

LYOPHOBIC DETACKIFIERS

Gene A. Merrell, Tomball, Tex., assignor to Laboratories, Inc. Betz, Trevose, Pa.

Filed Oct. 4, 1990, Ser. No. 592,763

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[5] B08B *9/00*

U.S. Cl. 134—38 **4 Claims**

1. A process for detackifying paint, lacquer or enamel in a spray booth in which water is used to wash air in said spray booth for the purpose of removing oversprayed paints, lacquers or enamels from said water prior to the recirculation of said water for further washing of the air in said spray booth comprising adding to said water, without regard to monitoring and adjusting its pH, a sufficient amount of a metal ion selected from the group consisting of Sr^{+2} and Ba^{+2}, or water soluble salt thereof, and a sufficient amount of an organic polymer selected from the group consisting of polydiallyldimethyl ammonium chloride, a copolymer of maleic anhydride and diisobutylene and a copolymer of dimethylamine/epichlorohydrin, to activate said metal ion to form a stable lyophobic sol which detackifies and coagulates paint lacquer or enamel in said water.

5,060,683

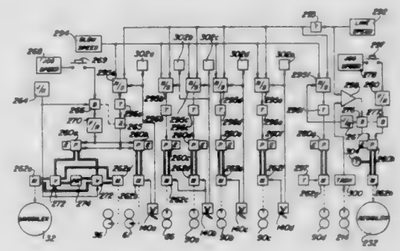
TENSION CONTROL FOR STRIP PICKLING

Carl G. Seiz, Hatfield, and Clyde G. Robinson, Lansdale, both of Pa., assignors to Continental Installers Corporation, Perkasie, Pa.

Division of Ser. No. 506,451, Apr. 9, 1990, Pat. No. 4,996,998, which is a division of Ser. No. 233,374, Aug. 18, 1988, Pat. No. 4,920,995. This application Jan. 24, 1991, Ser. No. 645,261

Int. Cl.[5] B08B *3/08;* **B65H** *23/192*

U.S. Cl. 134—64 R **9 Claims**



3. In a metal strip pickling apparatus including a series of pickling tanks and a pair of pinch rolls between adjacent ones of the tanks and at each end of the series for transporting a continuous metal strip lengthwise through the tanks from a supply reel to a take-up reel, a tension control system comprising:

first means responsive to a command signal for regulating the strip speed at each pair of pinch rolls; and

second means responsive to the strip sag in each of the tanks for modifying the command signal to one pair of pinch rolls of the associated tank.

5,060,684

AUTOMATIC UMBRELLA FOLDABLY RETAINED BY TIP CAP

Tsun-Zong Wu, No. 16, Chen-Tai Road, Sect. 3, Wu-Ku Hsiang, Taipei Hsien, Taiwan 24801

Filed Sep. 10, 1990, Ser. No. 580,185

Int. Cl.[5] A45B *23/00*

U.S. Cl. 135—25.41 **5 Claims**

1. An automatic umbrella comprising:

a central shaft means including a lower shaft having a grip secured on a lower portion of said lower shaft, a middle tubular shaft telescopically mounted in said lower tubular shaft having a middle plug formed on a lower end portion of said middle tubular shaft, and an upper tubular shaft mounted in said middle tubular shaft having an upper plug fixed on a lower end portion of said upper tubular shaft;

a rib assembly including at least a top rib having an inner end portion of said top rib pivotally secured to an upper ferrule fixed on an upper end portion of said upper tubular shaft, at least a stretcher rib having an inner end portion of said stretcher rib pivotally secured to a lower ferrule slidably held on said central shaft means and having an outer portion of said stretcher rib pivotally secured to said top rib, and at least an intermediate linking rib pivotally secured between said stretcher rib and a middle ferrule fixed on an upper end portion of said middle tubular shaft;

an opening tensioning spring formed in said central shaft means for opening said umbrella having an upper spring end portion retained on said middle plug of said middle

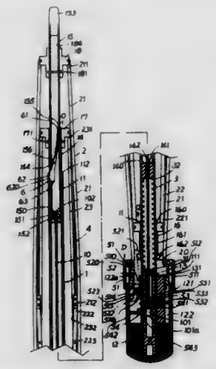
shaft and having a lower spring end portion retained on a lower sleeve tube inserted in the grip;

a central rod formed in said central shaft means having a locking head formed on a lower portion of said rod and having an upper end portion of said rod secured to said upper plug of said upper shaft, said rod passing said middle plug of said middle shaft;

at least a retraction restoring spring each secured between said middle ferrule and an outer portion of said rib assembly for retracting said rib assembly when closing said umbrella;

a control means formed in said grip having a tip cap actuator slidably mounted on said grip for operatively depressing an opening controller for opening the automatic umbrella, or depressing a closing controller for closing the umbrella, said closing controller having a sliding latch resiliently slidably retained in said grip for normally locking said locking head of said central rod when opening the umbrella;

said lower ferrule having an extension ring formed on a lower portion of said lower ferrule engageable with an upper hook portion of said opening controller for pulling lower and middle ferrules and said rib assembly downwardly along said central shaft means for retracting said rib assembly for compressing said tensioning spring for storing its elastic potential energy, and upon a disengage-



ment of said extension ring of said lower ferrule from said hook portion of said opening controller, said tensioning spring will be restored to raise said middle shaft and said middle ferrule for extending said rib assembly for opening said umbrella;

said control means including an intermediate positioner resiliently retained in said grip having a vertical thin plate and a horizontal latch normally protruding towards a center of said grip, said positioner operatively retarding a downward depression of said tip cap actuator when opening the umbrella for preventing a false closing operation after opening the umbrella; and

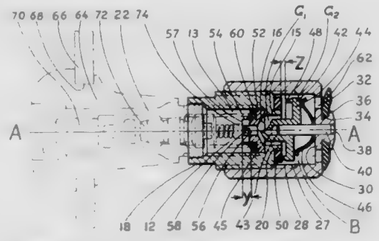
said tip cap actuator including a double-cylindrical-wall sleeve having an annular groove formed therein to be slidably engageable with a cylindrical wall formed in the grip, a sleeve tensioning spring retained in a socket defined within the wall for normally urging the sleeve upwardly, a first sloping surface tapered downwardly outwardly formed on an inner periphery of the sleeve for operatively depressing a protrusion formed on a lower portion of the opening controller resiliently pivotally mounted in the grip for biasing said hook portion of said opening controller for opening the umbrella, a second sloping surface formed on a central ring slidably engageable with the central shaft means under the first sloping surface and tapered downwardly outwardly to operatively depress the slide latch of the closing controller for closing the umbrella, and a lower retarding plate protruding downwardly from the central ring of the sleeve to be retarded by the intermediate positioner of said control means when opening the umbrella.

5,060,685

SAFETY CAP FOR TIRE VALVE

Ilya Zhabokrug, 754 38th Ave., San Francisco, Calif. 94121

Filed Oct. 18, 1990, Ser. No. 599,618
Int. Cl.[5] F16K *15/20;* **B60C** *29/06*
U.S. Cl. 137—230 **7 Claims**



1. A safety cap for tire valve comprising:

a hollow cylindrical body with means for removably connecting said body to a valve housing of a tire valve with a valve pusher head;

a cylindrical barrel with means for connecting said barrel to said hollow cylindrical body, said barrel having a bottom and forming a space between said bottom and said hollow cylindrical body;

a control valve preliminarily and constantly adjusted to a maximum allowable pressure for a predetermined tire, said control valve being located in said space;

means for carrying out said preliminary adjustment;

means for sealing said connection between said hollow cylindrical body and said tire valve housing;

means for pushing said valve pusher head into said tire valve for opening said tire valve and passing air through said pushing means;

said control valve comprises: a plunger moveable in said space in the axial direction of said cap, said plunger having a sharp shoulder on its periphery on one side; a valve seat on the end of said body facing said sharp shoulder; and resilient means located between said bottom of said barrel and the side of said plunger opposite to said sharp shoulder;

said pushing means comprises an insert inserted into said hollow body, and said sealing means comprises a resilient seal ring placed onto the side of said insert facing said tire valve housing;

said insert has a through hole and at least one face slot on its side facing said tire valve, said plunger having a cylindrical portion and a flange portion, said sharp shoulder being formed on said plunger flange on its side facing said valve seat, said barrel having a guide pin press fitted into its bottom and extending into said space between said bottom and said hollow cylindrical body, said plunger being slidingly fitted onto said pin for movement in said axial direction.

5,060,686

MULTI-PIECE NOZZLE FOR STEAM CONDENSATE REMOVAL DEVICES

Michael Troy, Westmont, Ill., assignor to Engineering Resources, Inc., Chicago, Ill.

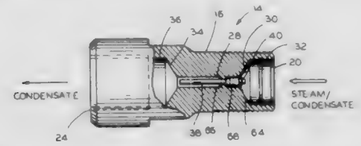
Filed Dec. 27, 1989, Ser. No. 457,361
Int. Cl.[5] F16T *1/34*
U.S. Cl. 137—171 **7 Claims**

1. A device for draining condensate and the like from steam

piping systems while retaining the steam within the steam piping system, which comprises:

(a) a body structure having an entrance end, an exit end, and an internal cylindrical bore extending between said entrance end and said exit end to allow fluid to flow into said entrance end and out of said exit end;

(b) a nozzle structure removeably mounted within said cylindrical bore having a plurality of mutually separable, partially cylindrical insert segments which cylindrically com-



bine to form a nozzle defining an internal constricted passageway through said nozzle structure;

(c) first positioning means extending radially outwardly from said nozzle structure for positioning said partially cylindrical insert segments within said cylindrical bore;

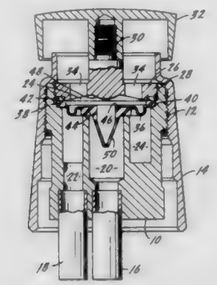
(d) and second positioning means extending radially inwardly from said cylindrical bore and cooperating with said first positioning means to position said nozzle structure within said cylindrical bore.

5,060,687

BACKFLOW PREVENTER AND VACUUM BREAKER

David E. Gayton, Bay Village, Ohio, assignor to Moen Incorporates, Elyria, Ohio

Filed May 21, 1990, Ser. No. 525,616
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—218 **8 Claims**



5. A backflow preventer and vacuum breaker for use with a plumbing fixture in which the discharge may be moved to a position within a body of water, including a body having an inlet and an outlet, a chamber connecting said inlet and outlet, a vent in communication with said chamber, and a diaphragm positioned within said chamber and normally closing communication between said chamber and said outlet,

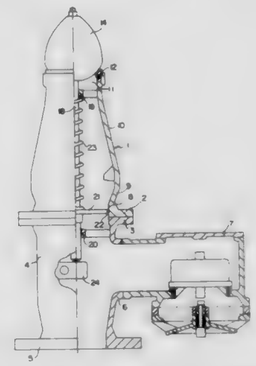
said diaphragm having an integral one-way check valve formed by a pair of normally closed flexible lips, said check valve being positioned at said inlet and permitting air from said vent to pass to said inlet to remove a vacuum condition therein, water flow from said inlet moving said diaphragm to open communication between said inlet and outlet, said diaphragm further preventing water from said outlet in reaching said vent.

5,060,688

PRESSURE RELIEF VALVE FOR PRESSURE EQUALIZATION BETWEEN A CLOSED SPACE AND THE SURROUNDING ATMOSPHERE

Emil A. Sorensen, Schützenmatte 2 A, CH-6362 Stansstad, Switzerland

PCT No. PCT/DK90/00050, § 371 Date Jul. 25, 1990, § 102(e) Date Jul. 25, 1990, PCT Pub. No. WO90/10168, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 21, 1990, Ser. No. 548,898
Claims priority, application Denmark, Feb. 24, 1989, 877/89
Int. Cl.[5] F16K *17/32*
U.S. Cl. 137—471 **13 Claims**



13. A pressure relief valve for pressure equalization, between a closed space and the surrounding atmosphere, comprising

(a) a valve housing having an upwardly facing blow-off opening at the top of the valve housing;

(b) an upper annular valve seat surrounding the blow-off opening;

(c) a valve lifting disc movable within the valve housing;

(d) a valve stem attached to the valve disc for movement therewith and extending upwardly therefrom within the housing;

(e) a drop-shaped body attached to the upper end portion of the valve stem and which is shaped with a rounded bottom portion and a pointed tip portion for concentrating a flow of gas impinging on its underside to an upwardly directed jet, said body being connected by the valve stem to the lifting disc;

(f) the drop-shaped body having a downwardly facing rounded surface with an annular valve face thereon adapted to close against the upper annular valve seat provided in the blow-off opening;

(g) the disc and housing being sized to provide a gas flow space between the disc and housing and in the closing position of the drop-shaped valve body; and

(h) the valve housing has an inner configuration such that the free passage slot around the disc is increased when the drop-shaped body and disc are lifted.

5,060,689

UNIVERSAL CHECK VALVE ASSEMBLY

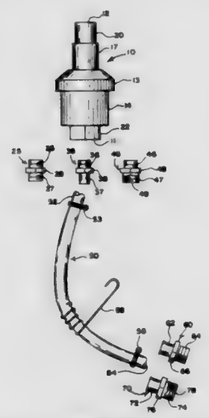
Gabor Csaszar, McHenry, and Kenneth M. Kotowicz, Addison, both of Ill., assignors to Ced's, Inc., Addison, Ill.

Filed Aug. 24, 1989, Ser. No. 398,183
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—515 **20 Claims**

1. A check valve assembly, suitable for insertion into a fluid flow conduit leading from a source of fluid flow to a user of the fluid flow, said check valve assembly comprising:

a.) a housing having an inlet port and an outlet port communicating with a central chamber in said housing;

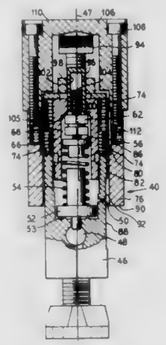
b.) first attachment means associated with said inlet port for attachment of said inlet port to a first fluid flow conduit leading from a source of fluid flow;
c.) second attachment means associated with said outlet port for attachment of said outlet port to an adapter element means;
d.) adapter element means including means for connecting said adapter element means to said second attachment means and to a second fluid flow conduit leading to a fluid flow user; and,
e.) valve means disposed in said central chamber for permitting fluid flow from said inlet port through said chamber



to said outlet port, and for preventing a reversal of fluid flow from said outlet port through said chamber to said inlet port, said valve means comprising a flat disc-shaped valve seat having first and second disc surfaces and a disc periphery, and further including an even number of flow apertures passing through said valve seat and an equal number of reinforcing ribs extending in a radial direction on a surface of said valve seat and alternating with each other such that one rib extends radially inwardly from between a pair of flow apertures and an adjacent rib extends radially outwardly from between a pair of flow apertures.

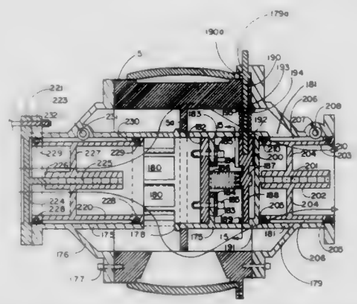
5,060,690
PRE-SET REGULATOR ASSEMBLY
Timothy H. Sparrow, Harrodsburg, Ky., assignor to YKK Corporation, Lyndhurst, N.J.
Filed Jul. 23, 1990, Ser. No. 556,667
Int. Cl.[5] F16K *17/06*
U.S. Cl. 137—540 **18 Claims**

1. A pressure regulator assembly comprising:
a base member having a first port communicating with a source of pressurized fluid and a second port communicating with fluid at a relatively lower pressure;
a valve member positioned in said base member between said two ports, said valve member being movable in said base member to regulate a flow of said pressurized fluid from said first port to said second port;
biasing means for urging said valve member towards said first port at a biasing pressure against said pressurized fluid to prevent said flow of fluid towards said second port when said pressurized fluid is below a predetermined pressure;
adjustable pre-set means for setting a predetermined biasing pressure for limiting movement of said valve member away from said first port, said preset means being located in a selectively inaccessible location in said base member;
shield means for blocking direct access to said second port from the exterior of said base member, yet maintaining communication between said port and said relatively lower pressure fluid; and



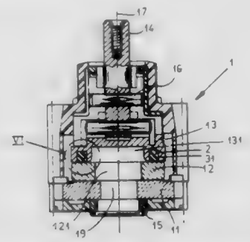
adjustable means for selectively varying said predetermined biasing pressure against said valve member toward said first port.

5,060,691
COMPACT MULTI-STAGE PRESSURE REDUCING VALVE
Ajit S. Gill, 4169 Bennion Rd., Salt Lake City, Utah 84119
Continuation-in-part of Ser. No. 340,898, Apr. 19, 1989, Pat. No. 4,967,793, which is a continuation-in-part of Ser. No. 167,861, Mar. 14, 1988, abandoned. This application Apr. 20, 1990, Ser. No. 511,579
Int. Cl.[5] F16K *31/44*
U.S. Cl. 137—613 **26 Claims**



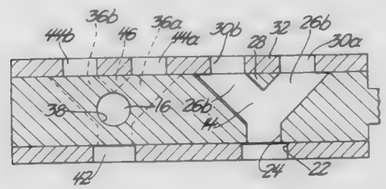
1. A flow control and pressure reducing valve, comprising:
a valve body having an inlet chamber and an outlet chamber therein;
a partition means within said valve body separating the inlet chamber and outlet chamber;
a plurality of passage means extending through the valve body from the inlet chamber to the outlet chamber around the partition means, said passage means each being divided by the partition means into an inlet portion opening into the inlet chamber and an outlet portion opening into the outlet chamber;
elastomeric flow control means located in said passage means and responsive to pressurized fluid introduced into said flow control means to controllably restrict said passage means;
means for supplying pressurized fluid to said flow control means for controllably restricting each of said passage means to thereby control flow of fluid through the valve;
an auxiliary passage extending centrally through the inlet chamber and partition means to allow flow of fluid therethrough to bypass the inlet chamber and passage means;
valve means within the auxiliary passage to control flow of fluid through the auxiliary passage; and
inlet gate means mounted in the auxiliary passage to control flow of fluid from the auxiliary passage into the inlet chamber of the valve.

5,060,692
SEAL RING FOR SINGLE-CONTROL FAUCET
Manfred Pawelzik, Soest, and Horst Titze, Hagen, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany
Filed Nov. 7, 1990, Ser. No. 610,253
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1989, 3936983
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—625.4 **8 Claims**



1. In combination with a pair of substantially planar, confronting, and substantially parallel faces one of which is formed with an annular groove surrounding a pressurizable chamber and having inner and outer flanks extending transverse to the respective plate face, a seal ring formed with
an outer edge normally engaging outward against the outer flank of the groove;
an inwardly projecting ridge defining an inner edge normally engaging inward against the inner flank of the groove; and
a pair of lips flanking the ridge and each defining therewith an inwardly open groove, each lip having an outer end lying outward of the inner edge and inward of the outer edge.

5,060,693
PROPORTIONING VALVE FOR HYDRAULIC SYSTEMS
Roger R. Smith, 7261 Lyons Rd., Imlay City, Mich. 48444
Filed Apr. 29, 1991, Ser. No. 695,146
Int. Cl.[5] F16K *11/087*
U.S. Cl. 137—625.17 **1 Claim**



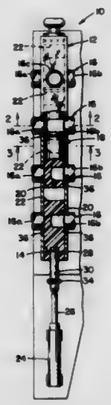
1. A proportioning valve for metering and controlling the flow of pressurized fluid from a pump to a pair of hydraulic motors the valve being adapted to provide variable fluid flow to the hydraulic motors and structured so as to allow operation of the motors in a forward or reverse direction, while simultaneously providing the capacity for differential flow to the motors to provide a speed differential between the motors, the valve comprising:
an elongated cylindrical valve body having a first Y-shaped passage with two arms extending from a stem portion, the first passage extending diametrically across the valve body, a second Y-shaped passage with two arms extending from a stem portion, the second passage extending diametrically across the valve body, the first and second Y-shaped passages having their longitudinal axes disposed at an acute angle to each other;
a sleeve circumferentially disposed about the cylindrical valve body the sleeve and body being mounted to so as to allow rotation of the cylindrical valve body between forward and reverse positions with a neutral position in between and longitudinal movement of the cylindrical valve body within the sleeve from a normal centered position to first and second differentiating positions, the sleeve having a forward inlet port connected to the pump, and a pair of forward outlet ports individually connected to the inlet ports of the hydraulic motors, when the valve body is rotated to the forward position, the first Y-shaped passage is brought into alignment with the forward inlet port and forward outlet ports, the forward inlet port is sized to allow full fluid flow into the Y-shaped passage stem at any valve body longitudinal position, the forward outlet ports are formed in the sleeve diametrically opposed to the forward inlet port and are sized to allow the free flow of fluid from the arms of the first Y-shaped passage when the valve body is in the normal centered position but will restrict the flow of pressurized fluid to only one of the forward outlet ports when the valve body is moved longitudinally from the normal position, forward return ports are formed in the sleeve and connected to the outlet of the hydraulic motors, the forward return ports being adapted to feed the fluid flow returning from the motors into the arms of the second Y-shaped passage in the valve body, a forward outlet return port is formed in the sleeve diametrically opposed to the return inlet ports, the forward return port being fluidly connected to a reservoir for receiving the hydraulic fluid. the sleeve having a reverse inlet port connected to the source of pressurized fluid, and a pair of reverse outlet ports individually connected to the outlet ports of the hydraulic motors, when the valve body is rotated to the reverse position the second Y-shaped passage is brought into alignment with the reverse inlet port and reverse outlet ports, the reverse inlet port is sized to allow full fluid flow into the second Y-shaped passage stem at any valve body longitudinal position, the reverse outlet ports are formed in the sleeve diametrically opposed to the reverse inlet port and are sized to allow the free flow of fluid from the arms of the second Y-shaped passage when the valve body is in the normal centered position but will restrict the flow of pressurized fluid to one of the reverse outlet ports when the valve body is moved longitudinally from the normal position, of the hydraulic motors, reverse return ports are formed in the sleeve and connected to the inlet port of the hydraulic motors, the reverse return ports being fluidly connected to the motors inlet so fluid from the motors enters the arms of the second Y-shaped passage in the valve body, a reverse return outlet port is formed in the sleeve diametrically opposed to the return inlet ports, the reverse return port being fluidly connected to a reservoir for hydraulic fluid.

5,060,694

FILLER SPOOL VALVE

William F. Florida, and Jon G. Burke, both of Fresno, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 9, 1990, Ser. No. 612,026
Int. Cl.[5] F16K *11/02, 3/26*
U.S. Cl. 137—625.18 10 Claims



1. A filler spool valve, comprising:
an open ended housing having an elongated cylindrical passage extending therethrough;
means defining a plurality of evenly spaced inlet/outlet axially aligned passages in said housing communicating with said cylindrical passage;
means defining a plurality of evenly spaced third passages in said housing normal to and communicating with said elongated cylindrical passage;
means defining a valve core slidably received within said open ended housing and sealed in fluid tight engagement to said housing;
means defining a plurality of large evenly spaced arcuate slots in said valve core;
means defining a plurality of evenly spaced linear passages extending transversely through said valve core and longitudinally spaced equal distances from associated ones of said arcuate slots; and
power means connected to said valve core for alternately shifting said valve core longitudinally between a position wherein said plurality of evenly spaced arcuate slots establishes fluid flow communication between a portion of said plurality of evenly spaced inlet/outlet passages and said associated third passages, and a second position wherein said plurality of evenly spaced linear passages establish fluid flow communication with said associated plurality of evenly spaced inlet/outlet passages.

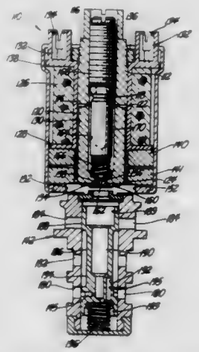
5,060,695

BYPASS FLOW PRESSURE REGULATOR

Ralph P. McCabe, Troy, Mich., assignor to Coltec Industries Inc, New York, N.Y.

Filed Apr. 2, 1990, Ser. No. 502,897
Int. Cl.[5] F15B *5/00*; F16K *11/07, 31/02*; G05D *16/00*
U.S. Cl. 137—625.61 32 Claims

1. A pressure regulating assembly for regulating the pressure of a flowing fluid medium, comprising housing means, said housing means comprising a first housing portion and a second housing portion, electrical field coil means carried by said first housing portion, pole piece means situated generally within said field coil means, a valve seat, fluid-flow passage means formed through said valve seat, said pole piece means comprising a pole piece annular axial end face portion, armature means at least partly situated generally within said field coil means, said armature means comprising an armature annular axial end face portion, wherein said armature means is axially situated between said pole piece means and said valve seat as to thereby cause said armature annular axial end face portion to be juxtaposed to said pole piece annular axial end face portion, resilient means normally resiliently urging said armature means in a direction away from said pole piece means and toward said valve seat as to thereby terminate the flow of said fluid medium out of said fluid-flow passage means, wherein said second housing portion comprises a generally cylindrical inner chamber, spool valve means situated in said cylindrical inner chamber and movable with respect to said cylindrical inner chamber and relatively movable with respect to said armature means, said spool valve means comprising at least first and second diametrically relatively large and generally cylindrical valving portions engaging the surface of said cylindrical inner chamber, said spool valve means further comprising generally axially extending body means situated between and operatively interconnecting said first and second cylindrical valving portions, said generally axially extending body means being diametrically relatively small as to thereby define an annular chamber circumferentially between said axially extending body means and said cylindrical inner chamber wherein said annular chamber is also axially confined between said first and second generally cylindrical valving portions, first fluid passage means formed in said second housing portion at a location



as to be generally juxtaposed to said first generally cylindrical valve portion for general control by said first valving portion, second fluid passage means formed in said second housing portion at a location as to communicate with said annular chamber, third fluid passage means formed in said second housing portion at a location as to be generally juxtaposed to said second generally cylindrical valving portion for general control by said second valving portion, fourth fluid passage means communicating between said first fluid passage means and said fluid-flow passage means formed through said valve seat, wherein when said armature means is moved as to terminate flow of said fluid medium out of said fluid-flow passage means formed through said valve seat the pressure of said fluid medium causes said spool valve means to move in a direction whereby said second valving portion at least further restricts flow of said fluid medium from said annular chamber and through said third fluid passage means toward sump and said first valving portion reduces its restrictive effect to flow of said fluid medium through said first fluid passage means and into said annular chamber and out of said second fluid passage means to associated structure to be acted upon by said fluid medium, wherein when said flow of said fluid medium out of said fluid-flow passage means is terminated by said armature means said resilient means is effective to maintain said armature means in position to continue termination of flow of said fluid medium against the force of the fluid pressure of said fluid

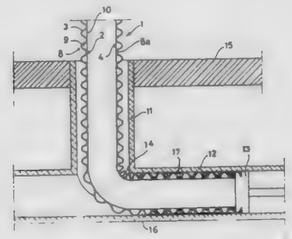
medium tending to move said armature means away from said valve seat, and wherein said armature means moves away from said valve seat and against said resilient means only upon said field coil means being electrically energized with the extent of the movement of said armature means away from said valve seat being related to the magnitude of the electrical current supplied to said field coil means, and wherein when said armature means moves away from said valve seat said fluid medium is permitted to flow out of said fluid-flow passage means and toward sump.

5,060,696

PLASTIC PIPE COMPRISING AN OUTER CORRUGATED PIPE AND A SMOOTH INNER WALL

Warner J. Putter, Hardenberg, Netherlands, assignor to Wavin, BV, Zwolle, Netherlands

Division of Ser. No. 141,157, Mar. 2, 1988, Pat. No. 4,867,203, which is a division of Ser. No. 889,087, Aug. 22, 1986, Pat. No. 4,754,781. This application Sep. 1, 1989, Ser. No. 401,714
The portion of the term of this patent subsequent to Jul. 5, 2005, has been disclaimed.
Int. Cl.[5] F16L *55/18*
U.S. Cl. 138—98 7 Claims



1. A concrete sewage pipe system comprising a rigid underground sewage transfer pipe, an access pipe extending upwardly from the underground pipe to the surface of the ground, a replacement liner including an external length of extruded flexible externally continuously corrugated liner pipe flexible substantially along its whole length and being adapted to be introduced into said access pipe in a substantially vertical position and then to bend to assume a substantially horizontal position within said underground transfer pipe, said externally corrugated extruded liner pipe being sufficiently rigid to support a curable material on its outside and being covered on its inside of the corrugations with a deformable wear resistant thermoplastic elastomeric tubular extruded sleeve liner defining a cavity between the internal portion of the corrugations of said external length of said extruded external liner pipe and its corrugations forming with said sleeve liner an essentially smooth inner wall providing sealing surfaces closing the corrugations of an external pipe defining a smooth non-turbulent path for fluids conveyed through said external liner pipe and its internal sleeve liner.

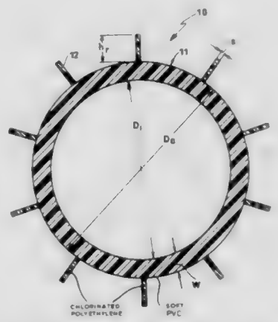
5,060,697

EXTRUDED BUCKLING-RESISTANT INSERTION MOUNTABLE DRAIN OR VENTING HOSE FOR POSITIONING IN A HOLLOW SPACE OF A MOTOR VEHICLE BODY

Heinz-Jürgen Weinheimer, Hagen, Fed. Rep. of Germany, assignor to Kunststoffwerk Voerde Hueck & Schade, Ennepetal-Voerde, Fed. Rep. of Germany

Filed Aug. 31, 1990, Ser. No. 576,580
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3929051
Int. Cl.[5] F16L *9/18, 11/00*
U.S. Cl. 138—121 5 Claims

1. An extruded buckling-resistant drain or venting hose for insertion into a cavity of a conveyance by feeding the hose progressively longitudinally into the cavity, especially in an automotive-vehicle body, said hose comprising:
a longitudinally extending tubualr hose body composed of an extruded thermoplastic synthetic resin; and
a plurality of thin-walled longitudinal ribs coextruded with said body and projecting generally radially outwardly



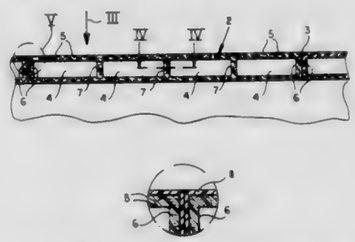
therefrom, said ribs being composed of an extruded synthetic resin fusible with that of said body upon coextrusion therewith and having a hardness less than that of said body such that said ribs are readily deflectable against walls of said vehicle body and provide a high degree of sound-damping, thereby minimizing noise generation.

5,060,698

LARGE-CALIBER PIPE FOR THERMOPLASTIC MATERIAL

Costas Anastassakis, and John Charaktinos, both of Moschaton Piraeus, Greece, assignors to George Aristovoulos Petzetakis, Moschaton Piraeus, Greece

Filed Sep. 14, 1990, Ser. No. 583,376
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1989, 3931613
Int. Cl.[5] F16L *9/16*
U.S. Cl. 138—154 10 Claims



1. A large-caliber pipe comprising helical turns of an extruded hollow profile welded contiguously along a helical contact seam, said extruded hollow profile being composed of a thermoplastic in which fibers are embedded in an amount of 5 to 30% by weight of the hollow profile and having a rectangular configuration and being internally subdivided into a multiplicity of cells of rectangular cross section, at least a portion of said fibers being oriented in a longitudinal direction of the profile and in a direction in which said turns extend so that the orientation of said fibers generated an anisotropic modulus of elasticity of said turns imparting annular rigidity and stability thereto.

5,060,699

DEVICE FOR AUTOMATIC REMOVAL OF MISPICKED WEFT

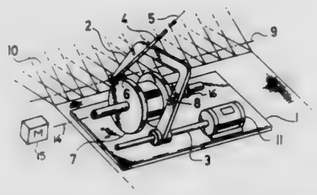
Petr Velechovsky, Liberec, Czechoslovakia, assignor to Elitex Liberec, Czechoslovakia

Filed Jun. 25, 1990, Ser. No. 543,215

Claims priority, application Czechoslovakia, Jun. 27, 1989, 3859-89

Int. Cl.[5] D03D *47/30*

U.S. Cl. 139—116.2 **7 Claims**



1. A device for automatic removal of a mispicked weft on a weaving machine, the device comprising:

a hook and means supporting the hook over the fabric being woven, means for moving the hook from a position at the fabric to be woven, where the hook can pick a mispicked weft up onto the hook, and move the weft to a position with the hook away from the fabric;

a holding nozzle for blowing air and the nozzle having an outlet aimed into the hook for blowing air onto the weft in the hook for retaining the weft in the hook;

relatively moveable drive discs normally positioned apart and at a location such that the hook is moveable for moving the mispicked weft, which is picked up by the hook, between the discs, and means for moving the discs together against the weft when the mispicked weft is between them;

means for rotating the discs when the discs are together for pulling upon the weft clamped between the discs.

5,060,700

DISPENSER FOR A VISCOUS SUBSTANCE

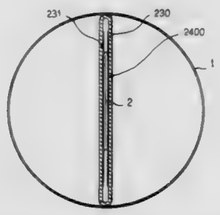
Paul Wenmaekers, 22 bis avenue de Suffren, 75015 Paris, France

Filed Mar. 8, 1990, Ser. No. 490,423

Claims priority, application France, Mar. 13, 1989, 89 03236

Int. Cl.[5] B65D *83/00, 35/28*

U.S. Cl. 141—20 **3 Claims**



1. A receptacle for dispensing a viscous substance, the receptacle being of the type comprising a receptacle body provided with a reservoir containing the substance to be dispensed, and a dispenser head suitable for being caused to open or to close, the reservoir being made of a flexible material and the receptacle further including pressure means for exerting pressure permanently on the reservoir when containing the substance, thereby enabling the substance to be dispensed merely by causing the dispenser head to open, wherein said pressure means bearing against an inside wall of the receptacle body comprise:

first and second spring-forming resilient flat blades with said reservoir made of flexible material being placed between inside faces thereof; and

a resilient sheath receiving the resilient blades and said reservoir between said blades, said resilient sheath being extended over said resilient blades when the reservoir made of resilient material is empty, the two resilient blades then being at a minimum distance apart, so that said resilient sheath applies a dispensing force on outside faces of said blades.

5,060,701

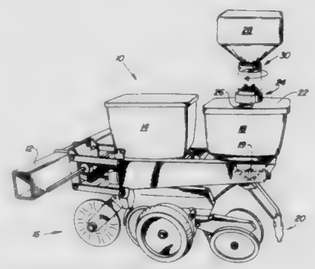
CLOSED GRANULAR CHEMICAL HANDLING SYSTEM

Myron L. McCunn, Orion, Ill.; Donald K. Landphair, Bettendorf, Iowa; Richard M. Neyrinck, Port Byron, Ill.; Richard A. DePauw, Moline, Ill.; William R. Lundie, East Moline, Ill.; Douglas P. Brown, Bettendorf, Iowa; Jeffrey A. Hoffman, Westerville, Ohio; Frank D. Tenne, Ivyland, Pa.; Patrick D. Holverson, Ahwatukee, Ark., and Keith Woodruff, Mountainside, N.J., assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 329,469, Mar. 27, 1989, abandoned. This application May 30, 1990, Ser. No. 530,705

Int. Cl.[5] B65D *88/54*

U.S. Cl. 141—21 **5 Claims**



1. An agricultural unit comprising:

a frame,

a chemical hopper mounted to the frame for holding a dry granular chemical to be applied during an agricultural operation, the chemical hopper having a detachable lid for enclosing the hopper;

application means mounted to the frame for applying a dry granular chemical during an agricultural operation;

a dry granular chemical metering valve operatively associated with the chemical hopper and application means for controlling the flow of a dry granular chemical from the chemical hopper to the application means;

a receiving valve mounted to the lid of the hopper for receiving a dry granular chemical from a chemical package, the receiving valve is biased closed and adapted to receive a cooperating dispensing valve on a chemical package.

5,060,702

FILLING VALVE APPARATUS

Robert W. LaWarre, Sr., Cocoa, and Robert W. LaWarre, Jr., Titusville, both of Fla., assignors to LaWarre Precision Technologies, Inc., Titusville, Fla.

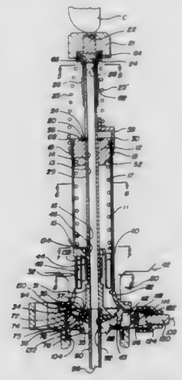
Continuation-in-part of Ser. No. 383,880, Jul. 20, 1989, Pat. No. 4,979,546, and a continuation-in-part of Ser. No. 207,546, Jun. 16, 1988, abandoned. This application Jul. 10, 1990, Ser. No. 550,729

Int. Cl.[5] B65B *3/18, 31/00*

U.S. Cl. 141—39 **19 Claims**

1. A filling valve assembly for filling containers, said assembly comprising; housing means having a passage for allowing liquid to flow therethrough and including an inlet for allowing liquid to flow into said housing means and an outlet to allow liquid to flow out of said housing means, valve means extending longitudinally through said passage and including sealing means for moving against said housing means for preventing liquid from flowing through said passage to said outlet and for moving away from said housing means for allowing liquid to flow through said passage to said outlet, said valve means comprising a valve stem having a passageway therethrough and extending through said of said housing means and having

nected to the adaptor for supplying pressurized hydraulic brake fluid to the system.



a first end allowing gas to enter said passageway and a second end supporting said sealing means, charging cap for receiving said first end of said valve stem and for sealing and preventing gas from entering said passageway in a closed position, cap means operably connected to said charging cap and including an aperture therethrough and extending to said charging cap for allowing equalization of air against said charging cap, and sleeve means for receiving said charging cap within a first end and for slidably receiving said valve stem at a second end.

5,060,703

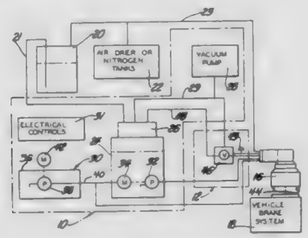
APPARATUS FOR FILLING HYDRAULIC SYSTEMS

Arthur Koerner, 3901 Waterview, Rochester, Mich. 48064

Continuation of Ser. No. 238,769, Aug. 31, 1988, abandoned. This application Apr. 2, 1990, Ser. No. 504,093

Int. Cl.[5] B65B *31/00, 1/04*

U.S. Cl. 141—59 **7 Claims**



1. An apparatus for filling a vehicle hydraulic brake system with hydraulic brake fluid and for excluding air and water from the system comprising:

an adaptor for coupling to the hydraulic brake system,

a vacuum pump connected to the adaptor for evacuating the brake system,

a closed vessel containing a supply of hydraulic brake fluid,

means coupling the vacuum pump to the vessel for maintaining a vacuum above the supply of hydraulic brake fluid, and

pump means mounted within the closed vessel and con-

5,060,704

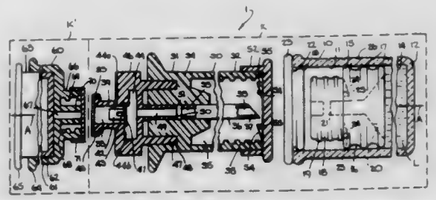
SUCTION TRANSFER ASSEMBLY

John Rohrbough, Walnut, Calif., assignor to David Bull Laboratories Pty. Ltd., Victoria, Australia

Filed May 25, 1990, Ser. No. 529,203

Int. Cl.[5] B65B *1/04*

U.S. Cl. 141—312 **21 Claims**



1. Suction transfer assembly for a medicament liquid comprising

a vial forming an enclosed longitudinal chamber filled with a medicament liquid and having an open end closed by a penetrable stopper, the vial being slidable longitudinally relative to the stopper and the stopper slidably sealing the liquid in the chamber in any position of vial sliding movement, the stopper having fastening means facing the vial open end, and

a longitudinal adapter having a front end, a rear end and an internal flow path extending therethrough,

the rear end having a rearwardly facing hollow needle with a pointed tip defining the rear terminus of the flow path, and counterpart fastening means, the rear end being insertable into the vial open end to fasten the counterpart fastening means to the fastening means for fastening the adapter to the stopper, and to penetrate the stopper by the needle for flow connecting the chamber and flow path, and

the front end having a forwardly facing hollow nozzle defining the front terminus of the flow path, a mechanical contact probe-openable and self-closing check valve in the flow path adjacent the nozzle, and a lock connector adapted to lock releasably to a counterpart lock connector on a separate suction operated dispenser device having a counterpart hollow nozzle containing a mechanical contact probe arranged for flow connection with the nozzle and for opening the valve,

whereby on fastening the counterpart fastening means to the fastening means and penetrating the stopper by the needle, and locking the counterpart lock connector to the lock connector and flow connecting the counterpart nozzle with the nozzle and mechanically opening the valve by the contact probe, suction operation of the device will cause liquid transfer from the chamber via the adapter to the device and simultaneous compensating vial movement longitudinally relative to the stopper under external atmospheric pressure to reduce the chamber volume by an amount generally equal to the liquid transferred.

5,060,705

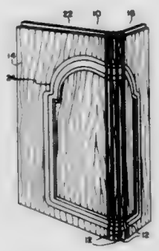
TAMBOUR DOOR AND METHOD OF MAKING

Bruce Woodward, Anchorage, and James Hall, Louisville, both of Ky., assignors to National Products, Inc., Louisville, Ky.

Division of Ser. No. 393,686, Aug. 16, 1989, which is a continuation-in-part of Ser. No. 270,103, Nov. 14, 1988, abandoned. This application Sep. 27, 1990, Ser. No. 588,751

Int. Cl.[5] B27D *1/00*

U.S. Cl. 144—350 13 Claims



1. A method of making a tambour door comprising the steps of:

placing a plurality of members of rectangular-shaped cross-section having a face and a back surface in a side-by-side abutting relationship;

attaching the members to a sheet of flexible material overlaying the back surface of the members;

finishing the face surface of members to a smooth finish and to a uniform thickness; and,

forming a design in the face surface of the members.

5,060,706

BEAD RETAINER

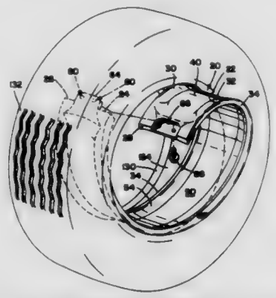
Paul W. Jones, Norton; John R. Abbott, Cuyahoga Falls, and Roger A. Fleming, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 348,832, May 8, 1988, Pat. No. 5,000,240. This application Mar. 13, 1991, Ser. No. 668,662

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.

Int. Cl.[5] B60C *15/02*

U.S. Cl. 152—381.5 16 Claims



1. A device for retaining the beads of a tire against the flanges of a multi-piece rim comprising:

a ring body having a substantially axial split forming first and second circumferential ends, a pair of axial ends for engaging the beads of a tire, the ring body having a minimum inside diameter at each of its axial edges and a larger inside diameter in its axially central portion;

a mechanical means for fastening and unfastening the first and second circumferential ends of the ring body;

the ring body being manually deformable, when the first and second circumferential ends are not fastened to one another, into a helical configuration for insertion between the tire beads, the diameter of the ring body being manually deformable to a diameter which is smaller than the diameter of the tire beads, the ring body also being manually deformable in the axial direction and being substantially manually non-deformable with the first and second circumferential ends fastened together.

5,060,707

OFF-THE-ROAD HEAVY DUTY PNEUMATIC RADIAL TIRES WITH SIDEWALL REINFORCING LAYERS

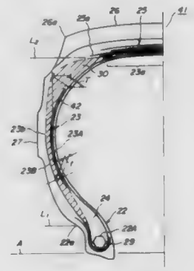
Yasushi Sumikawa, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed May 24, 1989, Ser. No. 356,166

Claims priority, application Japan, May 30, 1988, 63-134081

Int. Cl.[5] B60C *9/00, 13/00, 17/00*

U.S. Cl. 152—555 7 Claims



1. An off-the-road heavy duty pneumatic radial tire comprising; a pair of bead portions, at least one carcass ply of radial or substantially radial arrangement extending between bead cores and wound around each bead core to form a main carcass portion and a turnup portion h, a stiffener extending between the main carcass portion and the turnup portion above the bead core to gradually reduce a thickness of said stiffener along a radially outer surface of the main carcass portion and made from a hard rubber stock, a belt comprising a cross laminated structure superimposed about a radially outer periphery of a crown region of the main carcass portion and composed of plural cord layers, a rubber reinforcing layer having a partial crescent shape in section and a JIS hardness of 55°–75° arranged over a region ranging from a position of a radially inner face of the turnup defined by a contact boundary between outer surface of the bead portion and rim flange when the tire is mounted onto a normal rim, to a position just beneath each side edge of the belts, a ratio of height level of the turnup portion h to a height level of tread end H, h/H being 0.32–0.61, said rubber reinforcing layer has a thickness distribution such that the thickness of the rubber reinforcing layer gradually increases along radially outer surfaces of the stiffener and the main carcass portion toward the top of the stiffener and has a substantially uniform gauge t of 3–15 mm between the main carcass portion and the turnup portion a range of 3–15 mm between the main carcass portion and the turnup in a normal direction on the surface of the main carcass portion over a region ranging from the end of the stiffener to the end of the turnup portion, and further increases and then decreases through a thickest position having a maximum gauge T of not less than 3 times but not more than 6 times t, said maximum gauge T being 15–70 mm.

5,060,708

TIRE MOUNTING AND DISMOUNTING APPARATUS

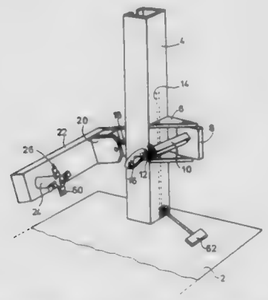
Arne H. Hansen, Virringvej 2, DK-8660 Skanderborg, Denmark

Continuation of Ser. No. 385,463, Jul. 27, 1989, abandoned. This application Mar. 11, 1991, Ser. No. 667,645

Claims priority, application Denmark, Jul. 29, 1988, 4234/88

Int. Cl.[5] B60C *25/135*

U.S. Cl. 157—1.24 4 Claims



1. A tire mounting and dismounting apparatus including a base, a support means mounted on said base, a carrier means mounted on said support means, a rotatable wheel holder mounted on said carrier means on which a wheel felly may be fastened, tool means including a pressure disc means mounted on said support means for pressing free a tire edge from a felly edge and a universal tool means mountable on said wheel holder for forcing a tire edge over a felly edge by the mounting and dismounting of a tire in response to the wheel holder being rotated, means for mounting the carrier means so as to enable the carrier means to be height adjustable relative to the base and pivotal relative to the support means in such a manner that an axis of the wheel holder is pivotal in a substantially vertical plane through a horizontal plane between an obliquely or straightly upwardly projecting position and an obliquely or straightly downwardly projecting position, and wherein the universal tool means are mountable on said wheel holder so as to be operative relative to the wheel felly fastened to the wheel holder in both the upwardly and downwardly projecting positions thereof.

5,060,709

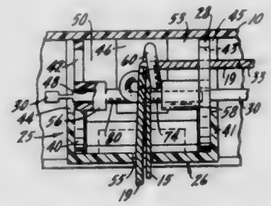
INFINITELY SIZABLE SOLID SLAT MINI BLIND

Terry L. Simon, Rockford, Ill., assignor to Newell Co., Freeport, Ill.

Filed Oct. 10, 1989, Ser. No. 419,320

Int. Cl.[5] E06B *9/30*

U.S. Cl. 160—168.1 10 Claims



1. A blind comprising a plurality of slats suspended in a vertical array from a main supporting member, said blind including array control means for varying said array, said array control means including tilting means for changing the angular orientation of said slats, and lifting means for changing the extent to which said slats extend from said supporting member, said lifting means including cord means extending along the outer periphery of said slats, said slats being generally free of apertures extending through said slats, whereby said slats are able to contact one another without interference from said cord means,

said array control means including a rotatable drum, said drum carrying guiding means for directing said lifting means from a generally horizontal transverse position to a generally vertical position, and for cooperating with said drum to hold said tilting means,

said guiding means and said drum having aligned apertures for receiving said lifting means.

5,060,710

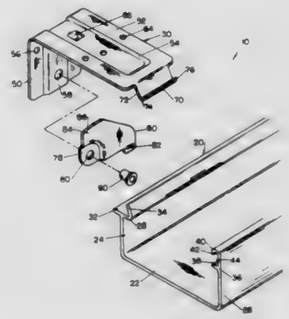
CAM BRACKET AND HEADRAIL SYSTEM

Steven R. Haarer, Sturgis, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 12, 1990, Ser. No. 537,909

Int. Cl.[5] E06B *9/30*

U.S. Cl. 160—178.1 15 Claims



1. A system for supporting blinds from a surface, comprising:

an elongated headrail for supporting the blinds, said headrail having an elongated rail and an elongated hookrail;

at least one bracket for attachment to the surface, said bracket having a support with a distal end, a base with a first bearing surface; and

a cam having a second bearing surface, said cam rotatably mounted on said base with an axis of rotation perpendicular to the direction of gravity to rotationally move said cam to a first position and to a second position, said second bearing surface being closer to said first bearing surface when said cam is in said first position than when said cam is in said second position;

upon assembly, said distal and engaging anywhere along said elongated hookrail, said first bearing surface engaging said elongated rail, and said cam rotated to said first position such that said second bearing surface engages said elongated rail opposite said first bearing surface and presses said elongated rail against said first bearing surface in a direction opposite to the direction of gravity.

5,060,711

MODULAR DOOR PANEL STRUCTURE AND METHOD OF ASSEMBLY AND DOOR ASSEMBLED THEREFROM

Edward Fimbell, III, R. D. #1, Box 114, Lambertville-Rocktown Rd., Lambertville, N.J. 08530

Filed Nov. 10, 1988, Ser. No. 269,400

Int. Cl.[5] E06B *3/48*

U.S. Cl. 160—229.1 8 Claims

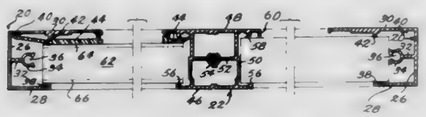
1. An articulated door assembly, comprising:

at least first and second modular door panels, each of said door panels including a framework defined by first and second parallel, spaced-apart and longitudinally extending

rail members and first and second stile members connecting said first and second rail members, each of said rail members having respective opposed first and second wall sections, and a pane member mounted between said wall sections of said members;

at lest one locking strip positioned between said pane member and at least one wall to positionally retain said pane in place;

engagement means defined between said locking strip and said at least one wall section to retain said locking strip in place, said engagement means comprising a locking spur and a hook-like means interengaged with one another to retain said locking strip in place and a stop ridge formed on said at least one wall section to control the engaged position of said locking strip;



hinge means for connecting said first rail member of one of said modular door panels to the second rail member of the other of said modular door panels;

a first tab-and-slot engagement interface between said first rail members and said second rail members of adjacent panels, said first tab-and-slot engagement interface including a longitudinally extending tab formed on a one of said rail members and the other of said rail members having a longitudinally extending slot formed therein for receiving said longitudinally extending tab; and

a second tab-and-slot engagement interface adjacent said first tab-and-slot engagement interface and including a longitudinally extending tab formed on a one of said rail members and the other slot formed therein for receiving said longitudinally extending tab of said second tab-and-slot engagement interface.

5,060,712

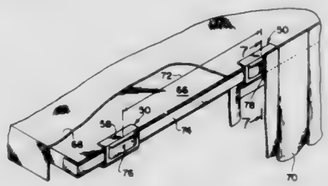
TABLE SKIRT-ATTACHING METHOD

Paul Ehrlich, 241 Mill St., Lawrence, N.Y. 11559

Filed Jun. 15, 1990, Ser. No. 538,704

Int. Cl.[5] A47H *1/00*

U.S. Cl. 160—330 **1 Claim**



1. A method of attaching a skirt for decorating a table in depending relation about the peripheral edge of said table using velcro strips and resilient table edge-engaging clips, said method comprising the steps of threading a selected number of said table edge-engaging clips in spaced relation along a first velcro strip, stapling each edge-engaging clip in its position located along said first velcro strip only to said velcro strip, to both establish said positions thereof along said velcro strip and minimize the misplacement of otherwise unattached edge-engaging clips, establishing by the engagement of said spaced clips to said peripheral edge of said table an operative position for said first velcro strip that is facing outwardly therefrom and extending about the periphery of said table, attaching a second velcro strip along an upper edge of a decorative skirt for said table, and attaching said first and second velcro strips to each other, to thereby correspondingly attach said skirt in suspended relation about said table.

5,060,713

METHOD OF AND APPARATUS FOR SPRAYCASTING

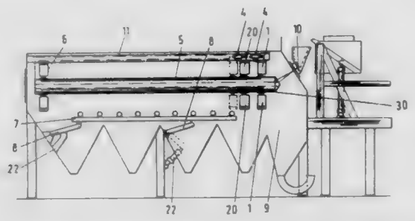
Wolfgang Reichelt, Moers; Peter Voss-Spilker, Kempen; Ulrich Urlau, Moers; Franz Keutgen, Lissendorf, and Erich Willems, Oberstadtfeld, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 5, 1990, Ser. No. 474,283

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1989, 3903597; Feb. 23, 1989, 3905873

Int. Cl.[5] B22D *23/00*

U.S. Cl. 164—46 **16 Claims**



1. Method for spray compaction of a form comprising the steps of:

a) providing a form to be spray compacted;

b) providing spray compacting means for spray-casting said form with liquid metal;

c) providing first means for moving said form adjacent said spray compacting means, said first means being movable in a first direction from a first position to a second position, said first means being movable in a second direction from said second position to said first position, said second direction being opposite said first direction;

d) providing second means for moving said form adjacent said spray compacting means, said second means being movable in said first direction from a third position to a fourth position, said second means being movable in said second direction from said fourth position to said third position;

e) moving said second means from said fourth position to said third position;

f) spray compacting said form solely by moving said form adjacent said spray compacting means in said first direction by said first means moving from said first position to said second position while axially rotating said form;

g) moving said first means from said second position to said first position;

h) spray compacting said form solely by moving said form adjacent said spray compacting means in said first direction by said second means moving from said third position to said fourth position while axially rotating said form; and

i) repeating steps e, f, g and h until said form is spray compacted.

10. Apparatus for spray compaction of a form comprising:

spray compacting means for spray-casting a form with liquid metal;

first means for longitudinally moving and axially rotating said form adjacent said spray compacting means, said first means being movable in a first direction from a first position to a second position to longitudinally move said form as said form rotates and liquid metal is sprayed onto the surface of said form, said first means being movable in a second direction from said second position to said first position, said second direction being substantially opposite said first direction; and

second means for longitudinally moving and axially rotating said form adjacent said spray compacting means, said second means being movable in said first direction from a third position to a fourth position to longitudinally move the form as said form rotates and liquid metal is sprayed onto the surface of said form, said second means being movable in said second direction from said fourth position to said third position.

5,060,714

APPARATUS FOR CONTINUOUS CASTING OF METAL STRIP

Takashi Yamauchi, Kudamatsu, and Morihiro Hasegawa, Tokuyama, both of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

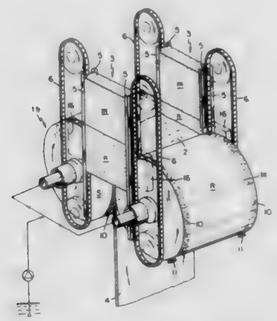
PCT No. PCT/JP89/00808, § 371 Date Apr. 9, 1990, § 102(e) Date Apr. 9, 1990, PCT Pub. No. WO90/01382, PCT Pub. Date Feb. 22, 1990

PCT Filed Aug. 8, 1989, Ser. No. 477,865

Claims priority, application Japan, Aug. 10, 1988, 63-197960

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—428 **6 Claims**



1. An apparatus for continously casting a metal strip comprising a pair of internally cooled rolls rotating in the opposite direction to each other and disposed parallel to each other with their axes held horizontal, a pair of side dams composed of a well-abradable refractory disposed with a space therebetween approximately corresponding to the width of a metal strip to be cast so that at least a portion of the thickness of each of the side dams is located on the circumferential surfaces of the rolls to form a pool of molten metal on the circumferential surfaces of the rolls, and a mechanism for feeding each of the side dams in the casting direction thereby continuously casting molten metal in the pool into a metal strip through a gap between the pair of rolls while abrading the side dams at their portions contacting the circumferential surfaces of the rolls with the circumferential surfaces of the rolls, characterized in that each of said abradable side dams comprises an assembly of successively stacked unit blocks in which one unit block except for the lowest one is placed on another unit block so that no clearance is formed between the lower end of the former and the upper end of the latter and that said mechanism for feeding each of the side dams is capable of feeding the assembly as a whole in the casting direction.

5,060,715

PROCESS AND ASSEMBLY FOR FEEDING MOLTEN METAL TO THE INGOT MOLD OF AN INSTALLATION FOR THE CONTINUOUS CASTING OF THIN COGS

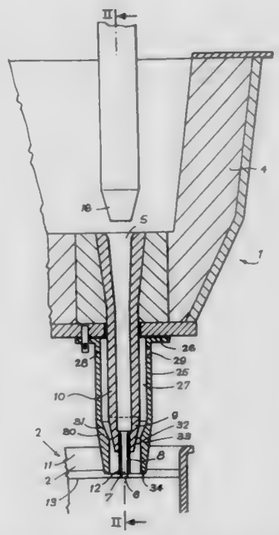
Jacques Barbe, Saint Etienne, France, assignor to Institut De Recherches De La Siderurgie Francaise (IRSID), Puteaux, France

Filed Nov. 22, 1989, Ser. No. 440,555

Claims priority, application France, Nov. 23, 1988, 88 15285

Int. Cl.[5] B22D *11/00, 41/58, 41/50, 37/00*

U.S. Cl. 164—453 **7 Claims**



1. Process for feeding molten metal to an ingot mold of an installation for continuous casting of thin cogs comprising two cooled large walls opposite one another, in contact with which walls said metal solidifies, and two end faces defining, with said large walls a casting space, said process comprising the steps of

(a) feeding said ingot mold with molten metal via at least one jet flowing from an orifice of a nozzle connected to a distributor of molten metal via a casting tube;

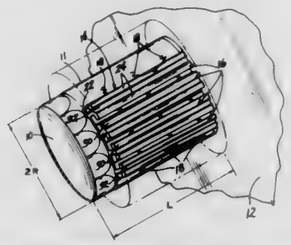
(b) regulating the level of a free surface of said molten metal in said ingot mold by acting on a flow rate of metal in said casting tube;

(c) retaining a lower end (**12**) of said nozzle (**8**) inside said ingot mold (**2**) and at a substantially constant predetermined distance above said free surface (**13**) of said molten metal contained in said ingot mold by means of vertical displacement of said distributor (**4**) as a function of variations in the level of said free surface (**13**) relative to a fixed reference level; and

(d) causing said jet (**6**) to undergo a horizontal sweeping movement along said large walls of said ingot mold via corresponding displacement of said nozzle and said tube and of said distributor which are integrally attached thereto;

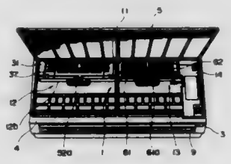
(e) said casting tube (**10**) and said nozzle (**8**) being surrounded by a layer of liquefied gas, said gas being non-oxidizing with respect to the cast metal and flowing along said casting tube (**10**) and along said nozzle (**8**), said free surface (**13**) of said molten metal contained in said ingot mold being covered with said gas over a height at least equal to a distance separating a lower end of said nozzle and said free metal surface (**13**).

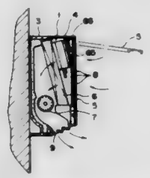
5,060,716
HEAT DISSIPATING DEVICE AND COMBINATION INCLUDING SAME
William F. Heine, 325 Grissom Rd., Manchester, Conn. 06040
Filed Mar. 31, 1989, Ser. No. 331,356
Int. Cl.[5] F28F *5/00*; B01D *24/00, 29/00, 35/18*
U.S. Cl. 165—47 10 Claims



1. A device for dissipating heat from a cylindrical object, said device comprising a heat dissipating element of thermally conductive material and at least a first spring for releasably and resiliently holding said first heat dissipating element against the exterior of the object, wherein said element has a hole therethrough and said first spring is a coil spring passing through said hole, said spring having ends which are fastened to each other and wherein said heat dissipating element is elongated and is a first heat dissipating element and said device further comprises additional heat dissipating elements which are the same as said first heat dissipating element, each said additional element having a hole therethrough, said first coil spring passing through said holes through said additional elements, and wherein each said heat dissipating element has an inner flange providing said element with an inner face which is concavely arcuate for fitting against the cylindrical object, and a central portion projecting outwardly from a central location relative to said inner flange, said holes being located in said central portions of said heat dissipating elements.

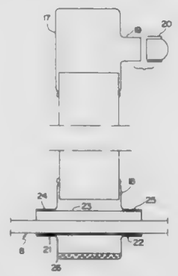
5,060,717
AIR CONDITIONER
Keiichi Morita, Fujinomiya; Akihiko Sugiyama; Oserojoin Watabiki, both of Fuji, and Mithuo Murano, Fujinomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 18, 1989, Ser. No. 451,797
Claims priority, application Japan, Dec. 20, 1988, 63-321145
Int. Cl.[5] F24F *7/00*; B03C *3/01, 3/14*
U.S. Cl. 165—53 9 Claims





1. An air conditioner comprising:
an indoor unit arranged in a space to be air-conditioned, said unit including a heat exchanger and circulating means for causing air in the space to circulate in a predetermined direction through the heat exchanger;
an air cleaner incorporated in the indoor unit, said cleaner including an electric dust collecting portion located on an upstream side of the heat exchanger, with respect to said predetermined direction, for capturing dust in the circulating air, a filter portion located on the upstream side of the heat exchanger, with respect to said predetermined direction, for absorbing the odor from the circulating air, said dust collecting portion and said filter portion being arranged side by side in a direction intersecting the predetermined direction; and
control means for controlling the operations of the indoor unit and the air cleaner, said control means being located side by side with the dust collecting portion and the filter portion, in said intersecting direction, the filter portion being situated between the dust collecting portion and the control means.

5,060,718
PRECAST WALL WITH THERMIC REGULATION ELEMENTS
Sergio Capilli, 19 Via Ottavilla, and Anna D. Capilli, 607 Via Aurelia, both of, Rome, Italy
Filed Sep. 24, 1990, Ser. No. 586,820
Claims priority, application Italy, Dec. 19, 1989, 48673 A89
Int. Cl.[5] F24D *11/00*; F28D *20/00*
U.S. Cl. 165—56 8 Claims

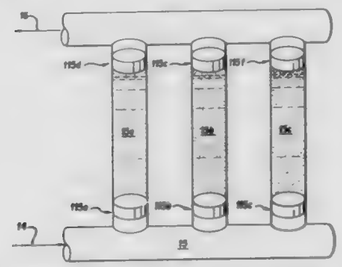


1. Reinforced concrete wall having a circuit embedded therein which is adapted to carry water warmed by solar panels, said wall having heat accumulation elements coupled with said circuit and being full of water the temperature whereof is regulated by said circuit, wherein each said element comprises a normal plastic pipe having a first end and a second end, a first fibroreinforced plastic component affixed to said first end and a second fibroreinforced plastic component affixed to said second end, said first component having a cylindrical bulge grafted onto its lateral surface, a fibroreinforced plastic plug having two cylindrical surfaces, with the same axis and different diameters adapted to receive the rim of said bulge therebetween so as to seal said bulge.

5,060,719
USING FLUIDIZED PARTICLES
Amos A. Avidan, Yardley, Pa., and Reuel Shinnar, Great Neck, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.
Division of Ser. No. 284,627, Dec. 15, 1988, Pat. No. 4,914,255.
This application Nov. 30, 1989, Ser. No. 443,686
Int. Cl.[5] F28C *3/12*
U.S. Cl. 165—104.13 11 Claims

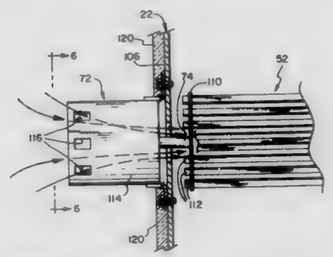
1. A method for increasing the heat transfer coefficient between a conduit and a gas stream flowing through said conduit comprising the steps of:

(a) fluidizing a Geldart Type A powder in said gas stream; and



(b) maintaining the fines content of said Geldart Type A powder at from about 10 to about 45 weight percent.

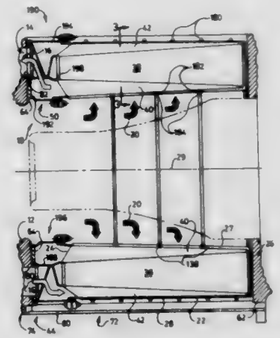
5,060,720
METHOD AND APPARATUS FOR COOLING MOTORS OF CROSS FLOW BLOWERS
Bruce A. Wollaber, Nolensville, and Robert G. Stanford, Murfreesboro, both of Tenn., assignors to Inter-City Products Corporation (USA), LaVergne, Tenn.
Filed Aug. 2, 1990, Ser. No. 561,890
Int. Cl.[5] H02K *9/00*; F04B *172/00*
U.S. Cl. 165—122 22 Claims



1. An apparatus comprising:
a housing including a compartment for moving air, said compartment defined on one side by a sidewall;
a tangential blower disposed in said air moving compartment and adapted to circulate air;
a motor drivingly connected to said tangential blower, said motor located exteriorly of said air moving compartment; and
means for cooling said motor by drawing air through said motor, said cooling means including an axially located aperture in said sidewall whereby said tangential blower induces an axial air flow through said motor and through said aperture.

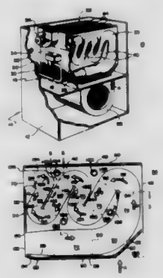
5,060,721
CIRCULAR HEAT EXCHANGER
Charles T. Darragh, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.
Filed May 29, 1990, Ser. No. 530,960
Int. Cl.[5] F28D *7/16*; F28F *3/08, 9/22*
U.S. Cl. 165—165 5 Claims

1. A heat exchanger including a core having a plurality of heat recipient passages and a plurality of heat donor passages therein, comprising:
said core being generally circularly shaped including a plurality of stacked individual cells including a plurality of individual primary surface pleated sheets and means for spacing the sheets a preestablished distance apart are secured together, each of said cells defining one of the passages therein, the cells being secured together and adjacent cells forming the other of the passages therebetween;



each of said cells includes a center portion having a pair of sides and a pair of wing portions being attached to the center portion at the pair of sides; and
each of said cells having a plurality of corners and securing means fixedly secures at least corresponding ones of said corners of adjacent pairs of cells together.

5,060,722
FURNACE HEAT EXCHANGER
Peter E. Zdenek, Trenton, N.J., and James T. VerShaw, Tyler, Tex., assignors to American Standard, Inc., New York, N.Y.
Filed Nov. 6, 1990, Ser. No. 610,887
Int. Cl.[5] F28F *3/14*; F28D *1/03*
U.S. Cl. 165—170 16 Claims



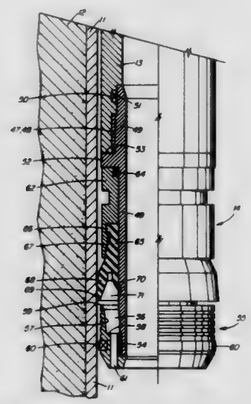
1. A serpentine passage for a gas furnace claim shell-type heat exchanger comprising:
a serpentine passage having an inlet and an outlet where the serpentine passage, from the outlet toward the inlet, is shaped as a leaning, cursive w with a trailing end having a first portion curling downwardly and a second portion underling the w wherein the w is formed by four oblique paths which are substantially parallel to each other and wherein the four oblique paths are at an angle relative the second portion of between 50 and 70 degrees.

5,060,723

WELLHEAD ISOLATION TOOL NIPPLE

James M. Sutherland, R.R. #4, Red Deer, Alberta, Canada T4N 5E4 , and Kenneth Wenger, R.R. #1, Red Deer, Alberta, Canada T4N 5E1

Filed Aug. 15, 1990, Ser. No. 567,813
Claims priority, application Canada, Aug. 16, 1989, 608528
Int. Cl.[5] E21B *23/06, 33/126*
U.S. Cl. 166—202 21 Claims



1. A seal apparatus for use in a well servicing tool, to facilitate the inserting of the tool into a wellhead casing, said apparatus Comprising, in combination:

(a) a seal tube having a normally upper, first end portion, a normally lower, second end portion, and securement means for securing the first end portion to a normally lower end of an associated main tube of the respective well servicing tool;

(b) annular seal including an outwardly oblique first skirtlike sealing portion divergent in a normally downward, first axial direction toward a free end of the apparatus, said sealing portion having a free end portion defining a sealing lip complementary with the inside diameter of an associated wellhead casing, said seal being sealingly secured to said seal tube;

(c) seal protective cup disposed in proximity to the seal and adapted to receive and protect the sealing lip when the latter is in a radially inwardly compressed state,;

(d) cup displacement means adapted to provide selective axial displacement between the cup and the seal along the axis of said seal from a first position, in which the cup receives and covers the sealing lip in the radially inwardly compressed state, to a second position, in which the cup is axially spaced from the sealing lip allowing the latter to expand into engagement with said associated wellhead casing.

5,060,724

CASING HANGER SEAL LOCKING MECHANISM WITH DETENT

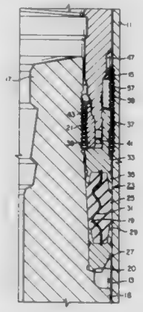
Norman Brammer, Fivie Turriff, Scotland, and Philippe C. Nobileau, Paris, France, assignors to Abb Vetco Gray Inc., Houston, Tex.

Continuation-in-part of Ser. No. 336,012, Apr. 7, 1989, Pat. No. 4,949,787. This application Jul. 13, 1990, Ser. No. 552,442
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.[5] E21B *23/00, 33/04*
U.S. Cl. 166—208 7 Claims

1. For use in a well having a wellhead housing with a bore therethrough for supporting a casing hanger, the casing hanger having a wall surface located above an annular band and spaced inward from a wall surface in the bore, an improved casing hanger seal for sealing the wall surfaces between the casing hanger and the wellhead housing, comprising in combination:

a seal member, having a seal section which is adapted to be compressed between the wall surfaces;

a rigid locking wall joined to and extending upward from the seal member;



a split ring radially separated from the locking wall; and

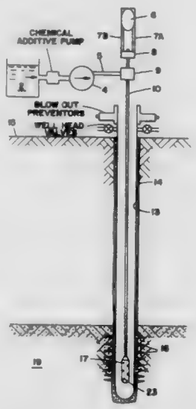
an energizing ring mounted for downward movement between the locking wall and the split ring in sliding contact with the split ring to move the split ring radially into engagement with one of the wall surfaces to lock the seal member in place.

5,060,725

HIGH PRESSURE WELL PERFORATION CLEANING

R. Scot Buell, Coalinga, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Dec. 20, 1989, Ser. No. 454,107
Int. Cl.[5] E21B *37/08*
U.S. Cl. 166—222 2 Claims



1. Apparatus for jet washing perforation tunnels in a well casing or liner positioned in a well and perforation tunnels in an adjacent geologic formation comprising a tubing means forming a well flow path from the earth's surface to a location adjacent to said well liner positioned in said well;

conduit means connecting a source of high pressure liquid to said tubing means, jet tool means having at least one hole in the wall thereof for jetting said high pressure liquid at said perforation tunnels in said well casing or liner, said jet tool means comprising a tubular member connected to the lower end of said tubing means;

a jet seat member fixedly connected to said tubular member, said jet seat member having a central opening aligned with said hole and a jet body having a central opening at least 3/23nd inch in diameter formed therein hydraulically sealed in said jet seat member, whereby said jet body may be rotated to provide axial movement of said jet body with respect to said jet seat member; and

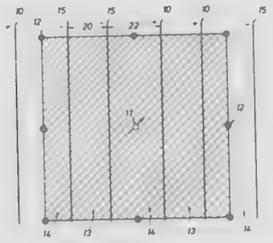
a source of high pressure liquid able to provide a hydraulic horsepower for supplying liquid at a flow rate of at least 0.77 barrels per minute per jet body used at pressures in excess of 5,000 psi, to wash said perforated tunnel to a standoff distance of at least 12 times the diameter of said central opening of said jet body.

5,060,726

METHOD AND APPARATUS FOR PRODUCING TAR SAND DEPOSITS CONTAINING CONDUCTIVE LAYERS HAVING LITTLE OR NO VERTICAL COMMUNICATION

Carlos A. Glandt; Harold J. Vinegar, both of Houston, and John W. Gardner, West University, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 23, 1990, Ser. No. 571,391
Int. Cl.[5] E21B *43/24, 43/30*
U.S. Cl. 166—248 23 Claims



1. A process for recovering hydrocarbons from hydrocarbon-bearing deposits containing thin highly conductive layers adjacent to at lease one hydrocarbon rich zone, the process comprising the steps of:

selecting a hydrocarbon-bearing deposit which contains a thin highly conductive layer within the deposit;

installing at least one pair of horizontal electrodes spanning the highly conductive layer and dividing the layer into electrically heated and non-electrically heated zones;

providing at least one vertical injection well for hot fluid injection into the hydrocarbon rich zone;

providing at least one vertical production well for production of hydrocarbons;

electrically heating the thin highly conductive layer to form a preheated zone immediately adjacent to the thin highly conductive layer while simultaneously stimulating the wells with steam;

injecting the hot fluid into the deposit adjacent to the thin highly conductive layer and within the thin preheated zone to displace the hydrocarbons to the production wells; and

recovering hydrocarbons from the production wells.

17. An apparatus for recovering hydrocarbons from tar sand deposits containing highly conductive layers comprising:

at least two pairs of horizontal electrodes which span the highly conductive layer and divide the highly conductive layer into at least two horizontally displaced electrically heated zones separated by non-electrically heated zones;

at least one vertical injection well; and

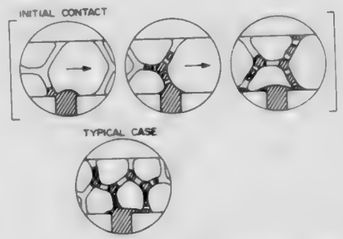
at least one vertical production well.

5,060,727

METHOD FOR IMPROVING ENHANCED RECOVERY OF OIL USING SURFACTANT-STABILIZED FOAMS

Laurier L. Schramm; Conrad Ayasse; Karin Mannhardt, and Jaromir Novosad, all of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Jan. 2, 1990, Ser. No. 459,460
Int. Cl.[5] E21B *43/22, 49/00*
U.S. Cl. 166—252 2 Claims



1. A process for enchanced oil recovery from a subterranean oil-bearing formation wherein a foam is utilized to reduce and control the mobility of a subsequently injected gaseous displacement fluid, comprising:

selecting a surfactant-containing foam which is functional both to imbibe and transport an oil phase in the formation to thereby enhance the recovery of oil; and

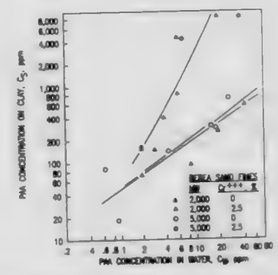
injecting the selected foam into the formation, either as preformed foam or by alternate injections of surfactant solution and gas.

5,060,728

PROCESS FOR PREVENTING SCALE FORMATION IN OIL WELLS

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 256,683, Oct. 12, 1988, abandoned. This application Oct. 3, 1990, Ser. No. 592,382
Int. Cl.[5] E21B *43/12*
U.S. Cl. 166—279 12 Claims



11. A method for treating the hydrocarbon- and water-producing formation surrounding a wellbore penetrating said formation to prevent the deposition of salts from water flowing through the formation into the wellbore comprising:

(a) isolating a section of the wellbore opposite the formation to be treated so that aqueous liquids can be injected down through the wellbore and into the formation;

(b) injecting into the formation an aqueous solution of scale inhibitor selected for its time release characteristics which comprises a water-soluble time-release agent comprising a complex of a water-soluble polyacrylic acid compound having a molecular weight from 1,000 to 15,000 cross-

linked with 0.01 to 0.05 equivalents per equivalent of the polyacrylic acid of trivalent chromium ions

(c) returning the wellbore to the normal production of hydrocarbons by the upward flow of hydrocarbons.

5,060,729

Patent Not Issued For This Number

5,060,730

WATER-WETTING TREATMENT FOR REDUCING WATER CONING IN AN OIL RESERVOIR

Kenneth E. Kisman, and Boyd Russell, both of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Jun. 15, 1990, Ser. No. 538,316

Claims priority, application United Kingdom, Jun. 16, 1989, 8913832

Int. Cl.[5] E21B *43/32*

U.S. Cl. 166—305.1 **5 Claims**

1. A method for treating an oil well completed in an oil reservoir, said well producing water, to reduce its water out, comprising:

injecting through the well into the oil reservoir a relatively small amount of water wetting agent in liquid form and a relatively large amount of natural gas; and

then placing the well back on production.

5,060,731

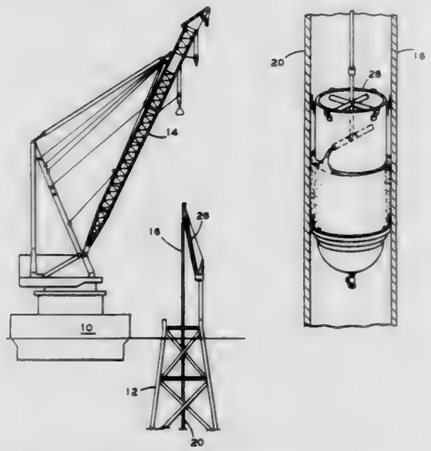
METHOD OF INSTALLING WELL CONDUCTORS

Daniel M. Houser, Thibodaux, La., assignor to McDermott International, Inc., New Orleans, La.

Filed Feb. 22, 1991, Ser. No. 658,829

Int. Cl.[5] E21B *7/12*

U.S. Cl. 166—350 **15 Claims**



1. A method of installing a well conductor in a marine environment comprising the steps of:

a) sealing a well conductor with a watertight plug;

b) submerging said conductor from an elevated platform;

c) adding additional conductor lengths to said conductor as needed thereby forming a conductor string;

d) adjusting the buoyancy of said string to control the lowering of said string to the sea floor; and

e) drilling through said plug after said conductor string has achieved the desired penetration depth.

5,060,732

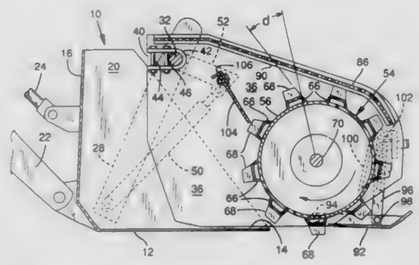
CYLINDER-TYPE GROUND-RAKING ATTACHMENT FOR A BUCKET-EQUIPPED TRACTOR

Theodore N. Baskett, 9514 Portland Ave., Tacoma, Wash. 98441

Filed May 3, 1990, Ser. No. 518,494

Int. Cl.[5] A01D *19/02*

U.S. Cl. 171—63 **7 Claims**



7. For use with a tractor having a material-handling bucket including a pair of spaced side walls and an open front end, a ground-raking attachment comprising:

a) a frame;

b) frame-mounting means for mounting the frame on the bucket,

c) a toothed, substantially cylindrical rotor,

d) rotor-mounting means mounting the rotor for axial rotation on the frame across the open front end of the bucket,

e) rotor drive means connected to the rotor for imparting thereto rotary motion in the rotational direction of bucket filling, and

f) a deflector comprising a length of resilient belting mounted on the frame and extending parallel to the rotor adjacent the upper rearward side of the rotor, the deflector extending angularly upwardly and rearward from the rotor for deflecting rocks into the bucket.

5,060,733

POWER-DRIVEN SCREWING TOOL

Willy Kress, Bisingen, Fed. Rep. of Germany, assignor to Kress-elektrik GmbH & Co., Elektromotorenfabrik, Bisingen, Fed. Rep. of Germany

Filed Feb. 9, 1990, Ser. No. 478,256

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 8901499[U]

Int. Cl.[5] B25B *23/157*

U.S. Cl. 173—12 **5 Claims**

1. A power-driven screwing tool comprising:

a housing;

a drive motor;

an adjustable depth stop;

a torque responsive first clutch positioned in said housing and coupled to said motor;

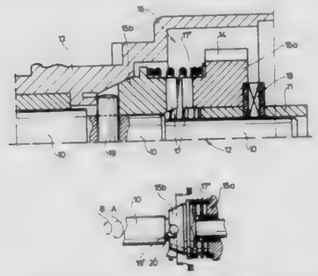
a bearing;

a drive shaft having one end seated in said bearing and the other end adapted to receive a screwing tool, said bearing being mounted on said housing and adapted to receive said first clutch for supporting said first clutch in an axially-fixed relationship to the longitudinal axis of said drive shaft, said drive shaft being displaceable relative to said depth stop and having a transverse pin mounted thereon;

a second clutch in driving relationship to said first clutch; said second clutch having an open-ended guide pocket,

the open end of said guide pocket extending axially outwardly towards the screwing tool, said guide pocket having a first and second section, said first section being positioned at the open end of said guide pocket, and having a predetermined inclination relative to to longitudinal axis of said drive shaft, said second section being positioned rearwardly of said first section; and

biasing means between said first and second clutches for biasing said clutches apart, whereby said transverse pin



is adapted to be positioned in said guide pocket, said pin sliding along said inclination into said first section of said guide pocket in response to the drive torque, thereby moving said second clutch towards said first clutch, said pin moving into said section section of said guide pocket in response to release of the drive torque when said housing reaches said depth stop to actuate said biasing means so that said first and second clutches are propelled apart.

5,060,734

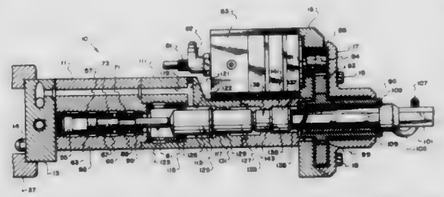
SEAWATER HYDRAULIC ROCK DRILL

Scot Anderson, Ventura; Bruce W. Farber, Oakview, and John P. Kunsemiller, Oxnard, all of Calif., assignors to United States of America, Washington, D.C.

Filed Sep. 11, 1989, Ser. No. 405,827

Int. Cl.[5] B25D *9/18*

U.S. Cl. 173—128 **22 Claims**



12. A hydraulic rock drill which uses seawater as the operating fluid, comprising:

a housing having a drive chamber located at a rear end thereof, a first cavity located at a forward end thereof, and a second cavity located between said drive chamber and said first cavity;

said drive chamber having a major diameter portion at a rear end thereof and a minor diameter portion at a front end thereof, said minor diameter portion having a pair of channels located therein;

said second cavity having an inlet port located in a forward portion thereof;

a supply poppet valve assembly located within said housing, said supply poppet valve assembly including a poppet sleeve, a supply poppet having a head and slidingly fitted within said poppet sleeve, a supply poppet seat connected to a supply line, said supply poppet seat being located at a front end of said supply poppet valve assembly, and a spring mounted within a rearward portion of said poppet sleeve, said spring being in engagement with the head of said supply poppet;

first, second and third passageways, said first passageway connecting the front end of said suppiy poppet valve assembly to the rear end of said drive chamber, said second passageway connecting the first channel of said drive chamber to the rearward portion of said supply poppet valve assembly, and said third passageway connecting the second channel of said drive chamber to said supply line;

an exhaust orifice having first, second and third ports;

a drive plunger slidingly mounted for axial movement within said drive chamber, said drive plunger having a head and a stem;

an anvil slidingly fitted for axial movement within said first cavity;

a piston slidingly fitted for axial movement within said second cavity, said piston having a major diameter portion and a minor diameter portion with the major diameter portion being positioned adjacent the stem of said drive plunger and the minor diameter portion being positioned adjacent said anvil;

a reversible seawater hydraulic motor affixed to a front head secured to the front end of said housing, said seawater hydrayulic motor having a pair of inlet ports and a shaft;

fourth, fifth, sixth and seventh passageway, said fourth passageway connecting the rear end of said drive chamber to the first port of said orifice, said fifth passageway connecting the front end of the major diameter portion of said drive chamber to the second port of said orifice, said sixth passageway connecting one of the pair of inlet ports of said motor to the third port of said exhaust orifice, and the seventh passageway connecting said supply line to the inlet port of said second cavity;

a chuck positioned at the front end of said housing in axial alignment with said anvil, said chuck being in rotational engagement with the shaft of said seawater hydraulic motor and being adapted to engage a drill bit; and

the stem of said plunger having a channel with the width of said channel being greater than the distance between the first and second channels of said driver chamber.

5,060,735

DEVICE FOR POSITIONING OF A DRILL BIT

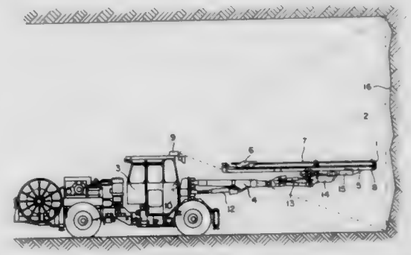
Nils Ågren, Sollentuna, Sweden, assignor to Atlas Copco Construction and Mining Technique AB, Stockholm, Sweden

Filed Jul. 20, 1990, Ser. No. 556,104

Claims priority, application Sweden, Aug. 28, 1989, 8902850; Oct. 20, 1989, 8903472

Int. Cl.[5] E21B *7/00, 47/02*

U.S. Cl. 175—40 **1 Claim**



1. Device for positioning of a drill bit (**1**) at a positioning plane (**2**), said device comprising a carrier (**3**), at least one drill boom (**4**) swingable relative to the carrier, a feed beam (**5**) swingable relative to the drill boom and carrying a rock drilling machine (**6**) movable to-and-fro along the feed beam, and a drill string (**7**) comprising said drill bit (**1**) connected to the

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rock drilling machine, characterized by a marker (8) arranged adjacent to said drill bit (1), two video cameras (9) arranged at a distance from each other on said carrier, and a monitor (10) for simultaneous reproductions of images from said video cameras, said video cameras being aligned in parallel, the image fields of the video cameras being displaced relative to each other such that a given point in the positioning plane is reproduced by both video cameras as a common point on the monitor, wherein said marker (8) causes one single point (11) on said monitor when the marker is situated in the positioning plane.

5,060,736

STEERABLE TOOL UNDERREAMING SYSTEM

Michael C. Neff, Cults-Aberdeen, Scotland, assignor to Smith International, Inc., Houston, Tex.

Filed Aug. 20, 1990, Ser. No. 570,059
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—74 **5 Claims**



1. A steerable bottom-hole assembly comprising a downhole motor of the tubular type, said motor having a bent housing, an underreamer rotatively interconnected to the lower end of the motor and a drill bit interconnected to the lower end of the underreamer, said underreamer functioning as the first point of stabilization to control the trajectory of the bottomhole assembly and enlarge the bore hole.

5,060,737

DRILLING SYSTEM

Frank Mohn, London, England, assignor to Framo Developments (UK) Limited, London, England

Continuation of Ser. No. 68,227, Jun. 30, 1987, abandoned. This application Nov. 29, 1989, Ser. No. 443,016
Claims priority, application United Kingdom, Jul. 1, 1986, 8616006
Int. Cl.[5] E21B *4/04, 17/00*
U.S. Cl. 175—104 **26 Claims**

24. A drilling system comprising topside equipment, a drill unit, and a drill string extending from said topside equipment to said drill unit, wherein:

said drill string comprising:

a drill pipe,

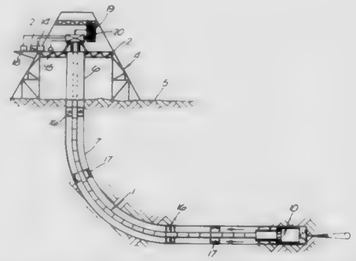
a mud pipe,

a tubular conductor assembly, said conductor assembly comprising a plurality of conductor elements each having the form of at least part of a tube; and each of said drill pipe, said mud pipe and said plurality of conductor elements extending from said topside equipment to said drill unit,

means mounting said mud pipe and said conductor assembly substantially concentrically within and spaced from said drill pipe, and spaced apart from each other, thereby to provide within said drill pipe a mud passage for supply of drilling mud from said topside equipment to said drill unit, and a first and a second fluid passage each providing fluid communication between said topside equipment and said drill unit, said first and said second fluid passages being at least in part defined by said conductor assembly,

said drill unit comprising:

a drill bit,



an electric motor for driving said drill bit, said electric conductor elements being connected to said electric motor for supplying power thereto from said topside equipment, and

fluid passage means extending through said electric motor and communicating with said first and said second fluid passages,

said topside equipment comprising:

means for supplying drilling mud through said mud passage to said drill unit, and

means for circulating fluid downwardly through one of said first and second fluid passages to said drill unit, through said fluid passage means, and upwardly from said drill unit to said topside equipment through the other of said first and second passages.

5,060,738

THREE-BLADE UNDERREAMER

Fred J. Pittard, Richmond, and Jimmy D. Fultz, Houston, both of Tex., assignors to Slimdril International, Inc., Houston, Tex.

Filed Sep. 20, 1990, Ser. No. 586,599
Int. Cl.[5] E21D *10/32*
U.S. Cl. 175—267 **13 Claims**

1. A downhole cutting tool comprising;

a generally cylindrical main body member having an upper end configured to receive a tubular member and a lower end configured to receive drill means, a longitudinal fluid passageway extending centrally through said body member, and a central bore in the upper end,

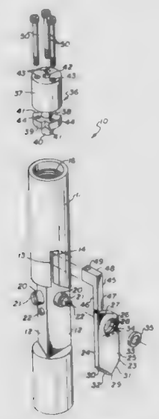
flat surfaces formed on the outer periphery of said main body member intermediate the upper and lower ends,

cutter blade members pivotally mounted on said flat surfaces,

a piston member slidably received in said central bore and having a fluid passageway therethrough to form a continuous fluid flow path from the upper end to the lower end of the tool, and

push rod members connected to said piston member and each push rod member having a portion slidably movable with said piston in said central bore and a portion extending to the exterior of said body member and slidably engaging an associated cutter blade member for moving the same between a retracted position against said body member and an extended position outward therefrom,

said piston member and said push rod moveable between a first position allowing said blades to assume the retracted position and a second position moving said cutter blade members to the extended position responsive to a predetermined fluid pressure acting thereon.

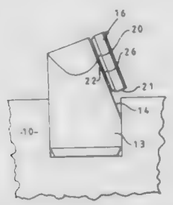


5,060,739

CUTTER ASSEMBLIES FOR ROTARY DRILL BITS, AND METHOD OF MANUFACTURING SAME

Nigel D. Griffin, 15 Paynes Meadow, Whitminster, Gloucestershire, England

Filed Jan. 26, 1990, Ser. No. 470,916
Claims priority, application United Kingdom, Jan. 26, 1989, 8901729
Int. Cl.[5] B23K *31/02;* **E21B** *10/46*
U.S. Cl. 175—329 **15 Claims**



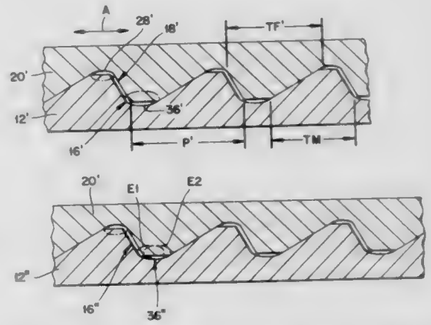
11. A method of manufacturing a cutter assembly for a rotary drill bit, which cutter assembly comprises a stud to be received in a socket in the surface of the bit body, the stud being formed, adjacent one end thereof, with a plane surface inclined at an angle of less than 90° to the longitudinal axis of the stud, and a preform cutting element comprising a front surface, a peripheral edge surface, and a flat rear surface which is bonded to said inclined plane surface on the stud, the method comprising forming the cutting element, before it is brazed to the stud, with a peripheral chamfer along at least a portion of the junction between the peripheral edge surface and the rear surface of the cutting element, and brazing the rear surface of the cutting element to said inclined surface of the stud with the peripheral edge surface of the cutting element substantially wholly exposed, and said chamfered portion of the cutting element being located at least in a region thereof which is furthest from said one end of the stud.

5,060,740

SCREW THREAD COUPLING

Faisal J. Yousef; Robert F. Kane, both of Houston; Joel Ham, Cypress, and David Mildren, Houston, all of Tex., assignors to Sandvik Rock Tools, Inc., Bristol, Va.

Filed May 29, 1990, Ser. No. 529,377
Int. Cl.[5] E21B *10/36, 17/042;* **F16B** *35/04;* **F16L** *15/06*
U.S. Cl. 175—415 **20 Claims**



19. A threaded mating member having a first screw thread adapted to be coaxially threadedly connected to a second screw thread of a threaded element, the second screw thread extending helically in spaced thread turns and including a second load bearing flank, a second non-load bearing flank, and a second crest portion extending between the second load bearing flank and the second non-load bearing flank, and a second root extending between adjacent turns of the second thread, the second root defined by a portion of a second generally elliptical curvature having a major axis extending parallel to the axial direction, said first thread extending helically in spaced thread turns, said first thread including a first load bearing flank adapted to engage the first load bearing flank, a first non-load bearing flank, and a first crest portion extending between said first load bearing flank and said first non-load bearing flank, and a first root extending between adjacent turns of said first thread, said first root defined by a portion of a first generally elliptical curvature having a major axis extending parallel to the axial direction, said first thread being of substantially equal height with the second thread, said first thread having an axial thickness greater than an axial thickness of the second thread, and said major axis of said first root being shorter than said major axis of the second root.

5,060,741

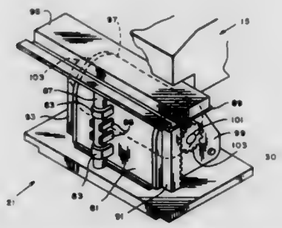
PLATEN MODULE FOR A MODULAR MAILING MACHINE

Jovito Abellana, Trumbull, and Donald T. Dolan, Ridgefield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 24, 1989, Ser. No. 384,120
The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.
Int. Cl.[5] G01G *23/38, 23/22*
U.S. Cl. 177—4 **4 Claims**

1. In an improved mailing machine having a base supporting a scale having a weighing plate, said weighing plate having a peripheral recess, and said mailing machine detachably supporting a postage meter having a printing surface such that said postage meter printing surface is in spaced apart alignment to said recess, wherein the improvement comprises:

a platen plate sized to travel through said recess;
a platen plate support means for supporting said platen plate in a first position and in an elevated second position, said platen plate support means having,
a rack post fixably mounted at one end to an underside of said platen plate;



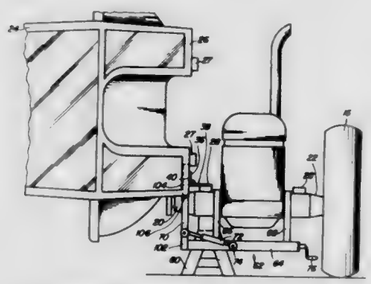
guide means for guiding and confining the displacement of said platen plate to a defined path such that in said elevated second position said platen plate is positioned in close proximity to said printing surface of said postage meter through said recess; and,
a drive motor means mounted in said mailing machine for driving said rack post such that said platen plate is positionable between said first and second position.

5,060,742

WORK VEHICLE WITH TILTABLE CAB AND TILTING APPARATUS

Ludger Kuhlmann, Deidesheim; Dieter Friederich, Mannheim, and Peter Ressel, Wallstadt, all of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Oct. 11, 1990, Ser. No. 595,507
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1939, 3933935
Int. Cl.[5] B62D *33/067*
U.S. Cl. 180—89.14 **17 Claims**



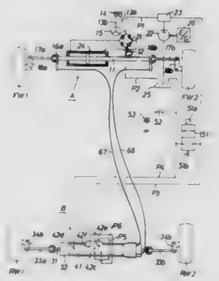
1. A work vehicle comprising:
a. a vehicle chassis including a rear axle having rear wheels at each end thereof;
b. a power train disposed at least partially between said rear wheels;
c. a cab tiltably mounted to said vehicle chassis to tilt about a tilt axis approximately parallel to the longitudinal axis of said vehicle chassis and tiltable between a normal operating position with said cab disposed over the rear axle, with the lower portion of said cab at least partially between said rear wheels and covering at least part of said power train, and a repair/maintenance position allowing comfortable access to the components which would be beneath said cab in its operating position, said cab being tiltable to its repair/maintenance position after removal of one of said rear wheels.

5,060,743

FOUR-WHEEL STEERING SYSTEM FOR AUTOMOTIVE VEHICLES

Susumu Oda, Toyota; Masami Aga; Takashi Kajiwara, both of Susono, and Naoki Tajima, deceased, late of Nagoya, by Chisako Tajima, heir; all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 28, 1989, Ser. No. 372,461
Claims priority, application Japan, Jun. 29, 1988, 63-162006
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—140 **4 Claims**



1. A four-wheel steering system for an automotive vehicle having a pair of dirigible front road wheels and a pair of dirigible rear road wheels, comprising a front wheel steering mechanism operable in response to a steering effort applied thereto to steer the front road wheels, a rear wheel steering mechanism arranged to steer the rear road wheels in response to steerage of the front road wheels, and a control apparatus arranged to control said rear wheel steering mechanism in such a manner that the rear road wheels are retained in their neutral positions when the front road wheels are steered at an angle less than a predetermined small angle and that the rear road wheels are steered in an opposite direction relative to the front road wheels when the front road wheels are steered at a larger angle than the predetermined small angle,
wherein said control apparatus is arranged to control said rear wheel steering mechanism in such a manner that a changing rate of the rear wheel steering angle per a unit steering angle of the front road wheels increases in accordance with an increase of the front wheel steering angle.

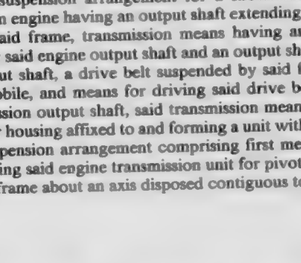
5,060,744

DEVICE FOR CONTROLLING MOTOR-OPERATED THROTTLE VALVE FOR AUTOMOBILES

Yukiya Katoh; Sunao Kitamura; Hitoshi Takeuchi, all of Obu, and Shinichiro Tanaka, Mishima, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Aug. 20, 1990, Ser. No. 569,968
Claims priority, application Japan, Aug. 28, 1989, 1-221301
Int. Cl.[5] B60K *31/02*
U.S. Cl. 180—178 **24 Claims**

1. A throttle valve control device for an internal combustion engine mounted on a vehicle having an auto-drive function, comprising:
elastic means (**5**) for applying a biasing force to a throttle shaft (**2**) which supports a throttle valve (**1**) so as to rotate said throttle valve in an opening direction thereof;
first operating means (**4**, **8**, **9**, **12**, **15**; **63**) connected to accelerator means (**13**, **14**) and restricting said throttle valve to a maximum opening angle against said biasing force of said elastic means according to an operational amount of depression of said accelerator means;
second operating means (**21**, **22**, **23**, **24**, **25**; **65**) for rotating said throttle valve in said opening direction by utilizing said biasing force of said elastic means within a range of a restricted opening angle of said throttle valve to be defined by said first operating means when said operational amount of depression of said accelerator means is increased, and for rotating said throttle valve in a closing direction thereof against said biasing force of said elastic means when said operational amount of depression of said accelerator means is decreased;
third operating means (**33**, **34**, **35**, **37**; **66**, **67**) to be interlocked with said second operating means when said third operating means is connected to said second operating means and for rotating said throttle valve irrespective of said restricted opening angle of said throttle valve to be effected by said first operating means;



connecting means (**32**) for connecting said second operating means to said third operating means;
an auto-drive switch (**52**) to be turned on when said vehicle is intended to run under an auto-drive condition; and
control means (**51**) for operating said second operating means to control rotation of said throttle valve within the range of said restricted opening angle of said throttle valve to be effected by said first operating means when said auto-drive switch is in an off-state, while when said auto-drive switch is turned on, said control means supplying current to said connecting means so as to connect said second operating means through said connecting means to said third operating means and thereby operate said third operating means in interlocking relationship with said second operating means, whereby the rotation of said throttle valve is controlled according to operational conditions of said internal combustion engine and said vehicle while under the auto-drive condition.

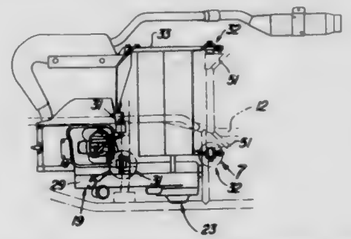
5,060,745

ENGINE MOUNTING ARRANGEMENT AND DRIVE MECHANISM FOR SMALL SNOWMOBILES

Toshihiro Yasui; Masanori Sugita; Tsuneo Isobe, and Haruhiko Nakanosono, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 162,179, Feb. 29, 1988, Pat. No. 4,917,207.
This application Feb. 15, 1990, Ser. No. 480,532
Claims priority, application Japan, Mar. 4, 1987, 62-49057
Int. Cl.[5] B62M *27/02*
U.S. Cl. 180—193 **6 Claims**

1. A suspension arrangement for a snowmobile having a frame, an engine having an output shaft extending transversely across said frame, transmission means having an input shaft drive by said engine output shaft and an output shaft driven by said input shaft, a drive belt suspended by said from for said snowmobile, and means for driving said drive belt from said transmission output shaft, said transmission means comprising an outer housing affixed to and forming a unit with said engine, said suspension arrangement comprising first means pivotally supporting said engine transmission unit for pivotal movement to said frame about an axis disposed contiguous to and parallel to said transmission output shaft and resilient second means spaced from said first means and resiliently suspending said engine transmission unit upon said frame, said resilient second



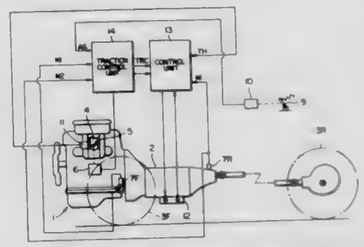
means being more resilient in a vertical direction than in a horizontal direction for resisting fore and aft movement while permitting relative vertical movement and pivoted mount of said engine transmission unit about said pivotal axis.

5,060,746

METHOD AND SYSTEM FOR CONTROLLING POWER TRAIN OF VEHICLE

Kazutoshi Nobumoto, Hiroshima; Toshiki Tsuyama, Higashihiroshima, and Eiji Nishimura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 18, 1990, Ser. No. 510,228
Claims priority, application Japan, Apr. 20, 1989, 1-101080
Int. Cl.[5] B60K *17/34, 20/00, 28/16, 31/00*
U.S. Cl. 180—197 **12 Claims**



1. A power train control system for a vehicle, having at least a driven wheel and a traction wheel, for transmitting power from a vehicle engine to said traction wheel through an automatic transmission, said control system shifting a speed range of said automatic transmission according to shift patterns and comprising:
first speed detecting means for detecting a first rotational speed transmitted to said traction wheel;
second speed detecting means for detecting a second rotational speed of said driven wheel;
load detecting means for detecting a load on said vehicle engine;
slippage determining means for determining slippage of said traction wheel; and
traction control means for causing said automatic transmission to shift its speed range according to a normal shift control by comparing a vehicle operating condition defined by said first rotational speed and the load on the vehicle engine with a first set of shift patterns when said slip determining means determines there is low slippage of said traction wheel, and according to a traction shift control by comparing a vehicle operating condition defined by said second rotational speed and the load on said vehicle engine with a second set of shift patterns when said slip

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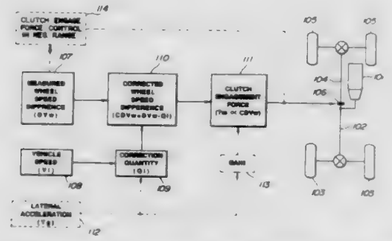
determining means determines there is high slippage of said traction wheel, thereby eliminating said slippage.

5,060,747

TORQUE SPLIT CONTROL SYSTEM FOR A FOUR WHEEL DRIVE VEHICLE

Yoshiyuki Eto, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 2, 1990, Ser. No. 502,684
Claims priority, application Japan, Apr. 19, 1989, 1-99745
Int. Cl.[5] B60K *17/35*
U.S. Cl. 180—197 **17 Claims**



1. A driving force distribution control system for a vehicle, said driving force distribution control system comprising:
a torque distributing unit including a primary drive means for transmitting a driving force from an engine of said vehicle to primary drive wheels of said vehicle, and a secondary drive means for transmitting a driving force from said engine to secondary drive wheels of said vehicle through a torque distributing clutch capable of varying driving force transmitted to said secondary drive wheels in response to a control signal;
a first sensing means for determining a measured wheel speed difference between a primary wheel speed of said primary drive wheels and a secondary wheel speed of said secondary drive wheels;
a second sensing means for determining a vehicle speed of said vehicle;
a first processing means for determining a correction quantity in accordance with said vehicle speed;
a second processing means for determining a corrected wheel speed difference which is a difference resulting from subtraction of said correction quantity from said measured wheel speed difference; and
a third processing means for determining a desired clutch engagement force in accordance with said corrected wheel speed difference, and for producing said control signal representing said clutch engagement force, said third processing means holding said desired clutch engagement force equal to zero when said measured wheel speed difference is less than said correction quantity.

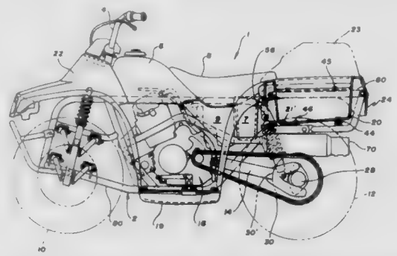
5,060,748

SADDLE TYPE VEHICLE HAVING A STORAGE RECEPTACLE

Kazuhiro Iwai, Saitama; Shinji Matsubayashi, Tokyo; Ikuo Ariga, Saitama, all of Japan, and Kazuhiko Saito, Rancho Palos Verdes, Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1989, Ser. No. 336,710
Int. Cl.[5] B62D *61/08*
U.S. Cl. 180—215 **23 Claims**

7. A saddle type, off-road vehicle, comprising:
a rigid frame;
an engine supported on said frame;
at least one front wheel;
a pair of rear wheels disposed on opposite sides of said frame;
a storage receptacle mounted to said frame and having at least a portion thereof positioned above said frame;
said storage receptacle having an opening defined in an upper surface thereof;
lid means for selectively covering said opening defined in said upper surface of said storage receptacle;
a front portion of said lid means being positioned at a level above said seat and forwardly inclined toward said seat;



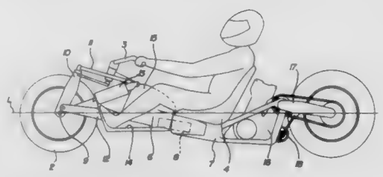
a pair of foot supports disposed on opposite sides of said frame;
said front portion of the lid means extend upwardly from the seat; and
a surface of the front inclined portion of said lid means being positioned rearwardly of a line extended between one of said foot supports and an upper rear part of said seat.

5,060,749

MOTORCYCLE

Satoru Horiike, Tokyo; Toshiteru Yamamoto, Saitama, and Eiji Hamano, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 327,451, Mar. 22, 1989, abandoned.
This application Jul. 31, 1990, Ser. No. 560,254
Claims priority, application Japan, Mar. 30, 1988, 63-74491
Int. Cl.[5] B62D *61/02*
U.S. Cl. 180—219 **2 Claims**



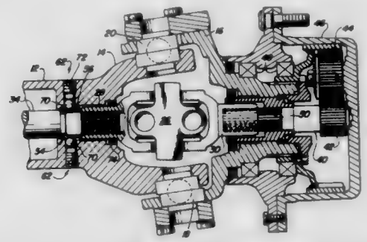
1. A motorcycle comprising:
a front wheel having an axis of rotation;
a rear wheel having an axis of rotation;
a vehicle body frame including
a front frame suspending said front wheel,
a main frame suspending said rear wheel, wherein said front and main frames are connected in front and rear directions,
a connecting shaft extending between said front frame and said main frame, the front frame being able to bank to a side of the vehicle body about said connecting shaft, said rear wheel preventing said main frame from banking about said connecting shaft, said connecting shaft is arranged and disposed at a position lower than each axis of rotation of said front and rear wheels,
a seat frame,
a mounting shaft provided on said front frame extending in substantially upper and lower directions of the vehicle body, a front of said seat frame being swingably mounted on said mounting shaft,
a seat provided on said front frame immediately above said connecting shaft, and
steps provided on lateral sides of a front portion of said front frame in front of said seat.

5,060,750

AXLE SHAFT RETENTION STRUCTURE

Corwin L. Klages, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 398,019, Aug. 24, 1989, abandoned.
This application Feb. 21, 1991, Ser. No. 660,161
Int. Cl.[5] B60K *17/30*
U.S. Cl. 180—257 **11 Claims**



6. In an axle for a steerable driven wheel, the axle including an axle housing having a yoke at one end and a knuckle pivotably mounted to the yoke by king pin means for movement about a pivot axis of the king pin means, an axle shaft extending through the housing, a universal joint connected to the axle shaft to transmit rotation across the pivot axis of the king pin means, the universal joint having a yoke end terminating in a hollow stub shaft splined to the axle shaft, and a split ring engaged in external and internal annular grooves in the axle shaft and hollow stub shaft, respectively, to prevent axial relative movement between the axle shaft and stub shaft, the improvement residing in means to prevent relative axial movement between the axle shaft and axial housing comprising:
an annular shoulder formed on an internal surface of the axle housing and facing the yoke end of the housing;
one or more threaded bores extending through the axle housing between the annular shoulder and yoke end and near the annular shoulder;
an annular shoulder formed on the axle shaft and facing the stub shaft;
an axle shaft retainer ring rotatably mounted on the axle shaft and trapped between the shoulder on the axle shaft and the stub shaft to prevent axial movement of the axle shaft retainer ring on the axle shaft;
the axle shaft retainer ring having a first end in engagement with the shoulders provided on the axle housing and axle shaft and a second end having a ramp surface; and
set screw means extending through said one or more threaded bores and engaging said ramp surface to cam said axle shaft retainer ring against said housing shoulder.

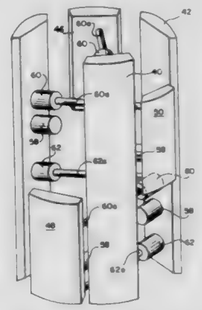
5,060,751

PNEUMATIC WALL-LOCKING GEOPHONE SYSTEM

Harland L. Kuhlman; Calvin L. Cumerlato, both of Minneapolis, and Daryl R. Tweeton, Apple Valley, all of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 14, 1990, Ser. No. 582,690
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—102 **20 Claims**

1. A seismic signal receiving system for use in boreholes to receive seismic waves in carrying out geophysical investigations, said system comprising:
at least two opposed elongate plates including oppositely facing outer surfaces for engagement with opposite sides of a borehole;
a seismic receiver means mounted on the inner surfaces of each of said plates to receiving seismic signals; and
fluid-operated means connected between said plates for selectively causing relative movement of said plates away from each other to provide expansion thereof so as to enable the plates to engage the walls of a borehole and for selectively causing relative movement of said plates toward each other to provide retraction thereof so as to enable the system to be removed from a borehole, said fluid-operated means comprising an actuator mounted on



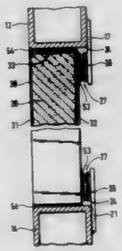
one of said plates and including an extensible actuator member controlled by said actuator connected to the opposed plate, and the seismic receiver means mounted on one of the plates being offset from the seismic receiver means mounted on the opposed plate so as to permit the receiver means on the respective plates to closely approach the inner surface of the plate opposed thereto when the plates are retracted and such that the spacing of the plates when the plates are retracted is determined by the greater of the respective heights of the receiver means above the inner surfaces of their associated plates and the height of the actuator above the inner surface of the plate on which the actuator is mounted.

5,060,752

SOUND-PROOFING FOAM PANELS

Franz Heiberger, Glastalstrasse 11, 7427 Huyingen, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 403,196
Int. Cl.[5] E04B *1/82*
U.S. Cl. 181—291 **23 Claims**



1. A large-surface, sound-proofing machine-cladding panel comprising
a first layer of sound-proofing material providing form, surface dimensions and thickness of said panel,
a second layer connected to said first layer over a large surface area,

a first half of a connecting device on one of said layers for fastening said panel to a machine-like structure by means of a second half of said connecting device on said machine-like structure, wherein:

a) said sound-proofing material is a foam material having a thickness of at least approximately 10 cm, a plane front face, a rear face spaced from said front face by the thickness of said foam material and circumferential faces connecting said front face and said rear face;

b) said second layer is a plastic foil reinforced with a fabric and is thin in relation to said foam material thickness, has a rear face that is adhesively connected over a substantial surface area to said front face of said foam material and has wrap-around portions that extend around said circumferential faces of said foam material at least as far as said rear face of said foam material and are adhesively connected over a substantial surface area to said rear face of said foam material; and

c) said first half of said connecting device is one half of a multiply reusable surface fastener that is releasable by manual force.

5,060,753

FIRE ESCAPE CHUTE

Sherlene Hopkins, 11827 Ohio, Detroit, Mich. 48204

Filed Jan. 30, 1991, Ser. No. 648,051
Int. Cl.[5] A62B *1/20*
U.S. Cl. 182—48 **9 Claims**



1. A fire escape chute for a home comprising a housing secured to a building wall below a window and having first and second storage chambers;

a compressed air tank having an outlet with a normally closed release valve stored within said first chamber;

a chute support pan forming the bottom of said second chamber, pivotally mounted upon said housing and retained in a horizontal position;

a hollow double wall open ended collapsibly folded chute stacked within said second chamber upon said pan;

a normally closed apertured cover pivotally mounted upon said housing enclosing said tank and chute and supporting said pan;

retracted expansion means within said housing connected to said cover, when manually released, pivoting said cover to an upright position in registry with said window;

yieldable clamp means upon said wall for anchoring said cover in an upright position;

a hollow rectangular air plenum having a plurality of spaced outlets secured upon said cover and connected to said outlet; and

a connector on one end of said chute surrounding and fixedly secured to and sealed over said plenum and its outlets for receiving compressed air between the double walls of said chute for inflating and extending said chute along its length;

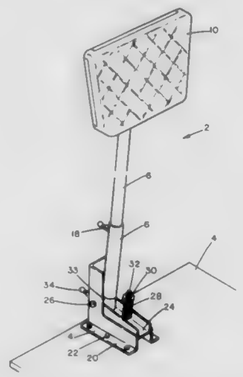
said cover opening upon manual release of said expansion means for interlock with said clamp means, said cover movement opening said valve pressurizing said plenum, releasing said chute support pan, said chute dropping from said housing for immediate inflation and extension and at its lower end engagable with the ground surface.

5,060,754

STANDING POSITION BACK SUPPORT

Murray L. Feick, 167 Sweetbriar Drive, Kitchener, Ontario, Canada N2M 4S9

Filed Dec. 12, 1990, Ser. No. 626,529
Int. Cl.[5] A47C *16/00*
U.S. Cl. 182—82 **12 Claims**



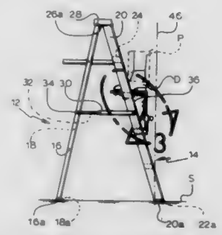
1. A back support for use by a user in a standing or leaning position, said support comprising a base, a longitudinal member having an upper end, a lower end and a front, with said lower end securely mounted to said base and said upper end extending slightly forward of said lower end when said support is in a rest position, said upper end supporting a back rest at said front, with adjustment means to adjust said position of the back rest to correspond to a level and orientation of a lower back of the user, the upper end of said longitudinal member being movable in a vertical plane so that when a user stands or leans against the back rest, said upper end moves rearward in response to a weight of the user and when the user moves away from said back rest, the upper end returns to said rest position, said support providing a resilient force in a forward direction to assist the user in separating from the support.

5,060,755

STEP LADDER FOOT-PLATFORM

Julien Bourdages, and Anne Roy, both of 10,833 Clark Street, Montreal, Canada H3L 2S9

Continuation-in-part of Ser. No. 429,605, Oct. 31, 1989, abandoned. This application Aug. 27, 1990, Ser. No. 572,243
Claims priority, application Canada, Apr. 5, 1990, 2013985
Int. Cl.[5] E06C *7/16*
U.S. Cl. 182—121 **5 Claims**



1. A stepladder capable of standing on the ground in an upright, well-balanced position and comprising a rigid frame and a series of cross-piece rungs anchored to the frame so as to be spaced from each other and substantially parallel to each other and so as to define a forwardly upwardly inclined plane

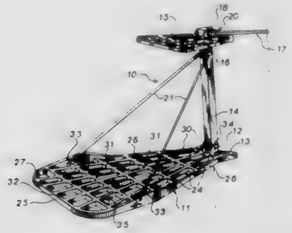
forming a large acute angle relative to the ground, said stepladder comprising a large platform supported by an intermediate rung or step and extending through said rungs plane so as to project on the forward side as well as on the rearward side of said rung plane, releasable anchoring means to fixedly secure said platform to said intermediate step and to a rung beneath said intermediate step so that the platform the horizontal in the said upright position of the stepladder; wherein a person may freely ascend on or descend from each of the rungs of the upright stepladder, even when the platform is installed, and wherein this person may stand on the platform with his feet on the forward side or the rearward side of said rung plane, in total safety, wherein the working area of this person will be maximized and the balance of the stepladder, made firm; said anchoring means of the platform comprising adjustment means, to adapt to rungs or steps of variable height or thickness; wherein each step is cross-sectionally quadrangular and wherein said anchoring means comprises a first rigid bar, defining a main section endwisely curved at right angle to form an [, and anchored by its upper flange to the end of the platform opposite the inclination of the steps plane, and freely standing by its lower flange against the upper face of said lower step, and a second, L-shape, rigid bar, defining a first leg hooked by a slider to said first bar so as to be slidable therealong, and a second leg abuttable against the underface of said lower step, and locking means to render the slider integral to said two bars.

5,060,756

CAST METAL TREESTAND

Andrae T. D'Acquisto, 5615 S. Pennsylvania Ave., Cudahy, Wis. 53110

Filed Jul. 31, 1990, Ser. No. 560,150
Int. Cl.[5] A01M *31/02*
U.S. Cl. 182—187 **7 Claims**



1. A portable treestand for demountable attachment to the trunk of a tree, said treestand comprising:

a main supporting platform made of cast metal at least approximately as light and strong as aluminum, said platform adapted to be attached at an inner platform edge to the tree trunk, and to extend generally horizontally outward from the trunk to an outer platform edge;

said platform being of uniform, one piece rigid construction having an open grate-like configuration; and,

attachment means connected to said platform for attaching said platform to the tree.

5,060,757

ADJUSTABLE RUNGS FOR LADDER

C. Thomas Wyche, Greenville, S.C., assignor to Naturaland Trust, Greenville, S.C.

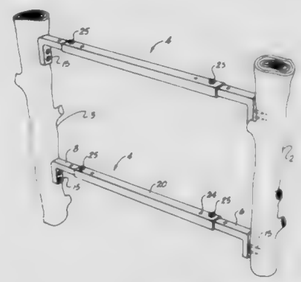
Filed Jul. 11, 1990, Ser. No. 551,138
Int. Cl.[5] E06C *7/08*
U.S. Cl. 182—228 **3 Claims**

1. Adjustable cross pieces of rungs for a ladder to be assembled using trees and the like in remote locations, said trees being trimmed of branches and cut to a length corresponding to the desired eight of said ladder and being positioned parallel to each other, said cross pieces comprising:

a pair of "L" shaped end members, said end member having an elongated main body portion terminating in a flange portion,

holes provided in said flange portion through which fastening members pass for securing a respective flange portion to a respective tree,

a centrally located channel member receiving said elongated main body portions of said pair of end members, said



elongated main body portions of said end members telescoping into said channel member;

a plurality of spaced holes provided in said main body portions of said "L" shaped end members,

a plurality of spaced holes provided adjacent opposed ends of said channel member; and

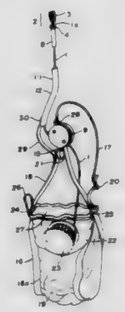
fastening means for being inserted through selected holes in said "L" shaped members and holes provided in said channel member for securing said end members to said channel member for selectively fixing the distance between said trees and producing a foot rest for said ladder.

5,060,758

EMERGENCY DESCENDING DEVICE

Shigeo Ishioka, Mie, Japan, assignor to TBR Corporation, Toyokawa; Daitoh Stainless Kaihsydu Center Co., Ltd., Nagoya and Iida Machine Works Limited, Iida, all of, Japan

PCT No. PCT/JP87/01030, § 371 Date May 18, 1989, § 102(e) Date May 18, 1989, PCT Pub. No. WO88/04942, PCT Pub. Date Jul. 14, 1988
PCT Filed Dec. 25, 1987, Ser. No. 359,653
Claims priority, application Japan, Dec. 28, 1986, 61-315843; Apr. 10, 1987, 62-89570
Int. Cl.[5] A62B *1/14*
U.S. Cl. 182—234 **8 Claims**



1. An emergency descending device comprising:

two parallel and spaced side plates,

a rotary wheel disposed between the side plates,

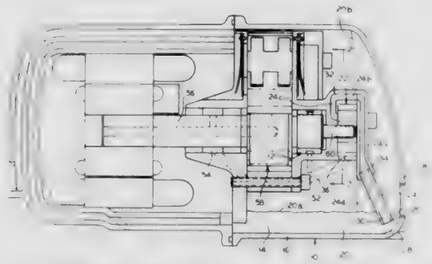
at least one cam disposed between the side plates,
a pair of brake shoes associated with the rotary wheel,
a brake drum associated with said cam and cooperating with said brake shoes,
at least one rope bending portion disposed between said side plates,
a main rope contacting with said rotary wheel, said cam and said rope bending portion at the location between said side plates,
connecting means provided on at least one of the side plates for connecting said device with a load or an upper fixed support, and
said main rope passing between the cam and the rotary wheel, between the cam and the rope bending portion or between the cam and the rotary wheel and the rope bending portion such that the main rope acts on the rotary wheel to expand said brake shoes thereby transmitting a rotational force to the brake drum, with the cam being rotated by said rotational force to apply a braking pressure on the main rope.

5,060,759

COMPRESSOR OIL SUPPLY SYSTEM

Jules L. Dussourd, Princeton, N.J., and Stanley M. Miller, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 13, 1990, Ser. No. 508,578
Int. Cl.[5] F01M *3/00*
U.S. Cl. 184—6.2 **13 Claims**



1. An oil supply system for a compressor capable of operating under different attitudes relative to the gravity field, comprising:
an oil sump defined at least in part by a pair of intersecting sump walls, each of said sump walls comprising a primary wall dependent upon instantaneous compressor attitude;
means for supplying said compressor with oil; and
an oil suction tube for drawing oil from said oil sump to said oil supplying means, said oil suction tube extending from said oil supplying means to a strategic point said oil sump;
said oil sump being generally L-shaped in axial cross-section and said sump walls including a generally cylindrical side wall and a generally skewed end wall, said strategic point within said oil sump to which said oil suction tube extends being adjacent a point of intersection of said cylindrical side wall and said generally skewed end wall.

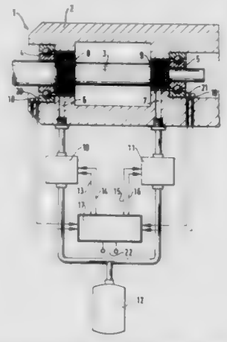
5,060,760

DEVICE FOR FEEDING GREASE TO A PLURALITY OF BEARINGS

Jacques Long, Annecy, and Denis Perrillat-Amédé, Annecy Le Vieux, both of France, assignors to Alcatel Cit, Paris, France

Filed May 18, 1990, Ser. No. 525,811
Claims priority, application France, May 22, 1989, 89 06637
Int. Cl.[5] F01M *1/18*
U.S. Cl. 184—6.4 **4 Claims**

1. A device for feeding grease to the bearings of a rotary machine comprising a stqator and a rotor, said device comprising: means for injecting grease into said bearings, an electronic control circuit connected to said injecting means, said circuit including inputs receiving signals from sensors adjacent said bearings for sensing parameters characteristic of the operating state of the bearings, said injecting means comprising a supply of grease under pressure connected to a plurality of injector blocks, each injector block being connected to a respective



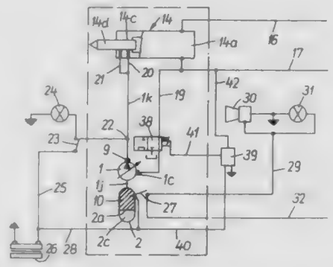
bearing feeder channel, said sensors being pressure and temperature sensors, and said electronic circuit including a clock and means for generating injecting cycles as a function of a preestablished program based on information provided by said sensors through said inputs and the operating time of the bearings.

5,060,761

AUTOMATIC LUBRICATING DEVICE FOR THE CHISEL OF A HYDRAULIC STRIKING MECHANISM

Friedrich K. Arndt; Robert-Jan Bartels, and Heribert Vielhaber, all of Essen, Fed. Rep. of Germany, assignors to Krupp Maschinentechnik Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Dec. 3, 1990, Ser. No. 620,704
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939785
Int. Cl.[5] F01M *9/02*
U.S. Cl. 184—6.14 **14 Claims**



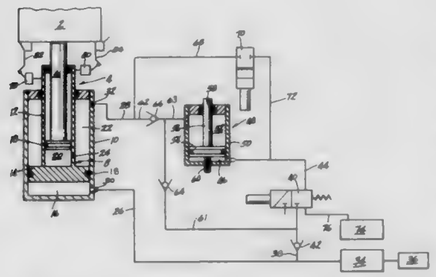
1. An automatic lubricating arrangement for a chisel of a hydraulic striking mechanism which is charged from a source of operating pressure, the chisel being movable within a chisel guide, comprising:
conveying means adapted for connection to the chisel guide for charging the chisel guide with lubricating grease and for connection to the source of operating pressure for the striking mechanism, said conveying means including a conveying chamber for receiving lubricating grease and means for performing a predetermined conveying stroke of adjustable magnitude each time the striking mechanism is charged with operating pressure for forcing lubricating grease out of said conveying chamber and into the chisel guide under pressure derived from the source of operating pressure; and
means defining a lubricant reservoir for storing lubricating grease, said lubricant reservoir being connected to said conveying means and having a movable separating element and compression spring means biasing said separating element against the lubricating grease for supplying lubricating grease to the conveying chamber of said conveying means.

5,060,762

PRESSURE INTENSIFIER FOR REPOSITIONING TELESCOPIC PLUNGERS IN SYNCHRONIZED TELESCOPIC CYLINDERS

Lawrence E. White, Harrington Park, N.J., assignor to Otis Elevator Company, Farmington, Conn.

Filed May 24, 1990, Ser. No. 527,905
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—17 **4 Claims**



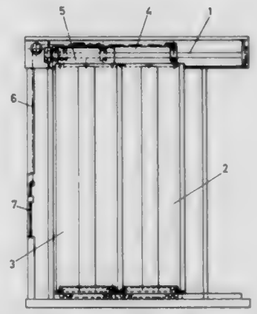
1. A system for automatically adjusting inner and outer plunger components in a synchronized telescopic plunger assembly, said system comprising:
(a) a cylinder for containing the outer plunger component;
(b) a first pressure chamber in said cylinder for receiving pressurized fluid for extending said outer plunger from said cylinder;
(c) a second pressure chamber in said cylinder and said outer plunger for receiving pressurized fluid for extending said inner plunger from said outer plunger and said cylinder;
(d) a pressure intensifier having two opposed pressure chambers separated by a pressurizing piston;
(e) means connecting said second pressure chamber with each of said pressure intensifier pressure chambers for fluid flow therebetween; and
(f) fluid flow control means including means for sensing an abnormal fully-retracted position of said inner plunger component relative to the outer plunger component, said control means being alternatively operable to cause fluid flow from said second pressure chamber to one of said pressure intensifier pressure chambers to selectively retract said inner plunger component into said outer plunger component or to cause fluid flow to said second pressure chamber from the other of said pressure intensifier pressure chambers to selectively extend said inner plunger component from said outer plunger component, whereby said inner plunger component will be properly repositioned relative to said outer plunger component irrespective of whether said inner and outer plungers are too high or too low relative to each other.

5,060,763

SIMPLIFIED AUTOMATIC TELESCOPIC DOORS FOR ELEVATORS

Alfonso Garrido; Juan Martin, and Jose Sevilleja, all of Madrid, Spain, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 23, 1990, Ser. No. 555,886
Int. Cl.[5] B66B *13/00*
U.S. Cl. 187—51 **6 Claims**



1. An automatic telescopic door assembly for elevators and the like, comprising two door panels displaceable laterally and telescopically, one of a high speed and the other of a low speed and which door panels move in the same first direction to open, and move in the said opposite direction to close, said door panels hanging from the respective supports to which sliding rolling means are fastened; a single sliding tract common to both door panels and carrying said rolling means for each door panel; the rolling means of each door consisting of units independent from the track and fastened to the corresponding hanger support of the door; said door panels being identical to each other in profile and provided with suitable orthogonal foldings in their longitudinal edges to form a fire labyrinth configuration and sealing both door panels together.

5,060,764

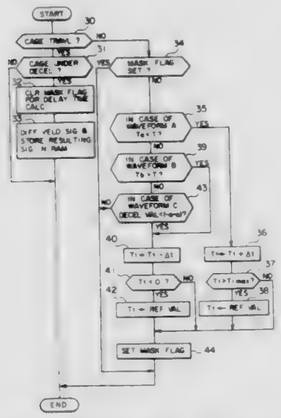
VELOCITY CONTROL METHOD FOR ELEVATOR

Katsumi Ohira, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 20, 1990, Ser. No. 481,620
Claims priority, application Japan, Mar. 17, 1989, 1-65664
Int. Cl.[5] B66B *1/30*
U.S. Cl. 187—116 **5 Claims**

1. A method for determining optimum delay time between a velocity command signal for an elevator cage and actual movement of the cage responsive to the velocity command signal, said method comprising steps of:
(a) differentiating a velocity command signal to obtain a selected deceleration value;
(b) calculating a value representing an actual time interval needed for the elevator to reach the selected deceleration value;
(c) incrementing a delay time value between the velocity command signal and the actual movement of the cage by a predetermined incremental value when the actual time interval is shorter than a standard time interval;
(d) decrementing the delay time value by a predetermined incremental value when the calculated value representing the actual time interval exceeds a value representing a standard time interval;
(e) decrementing the delay time value by a predetermined incremental value when the calculated value representing the actual time interval is equal to the value representing the standard time interval and a measured deceleration value is greater than the selected deceleration value;

thereby generating a delay time value which represents the optimum delay time which when introduced into



the velocity command signal will cause the elevator cage to travel smoothly and accurately to its intended destination.

5,060,765

ACTUATING DEVICE WITH AUTOMATIC READJUSTMENT FOR A VEHICLE BRAKE

Manfred Meyer, Gillenfeld, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Birmingham, England

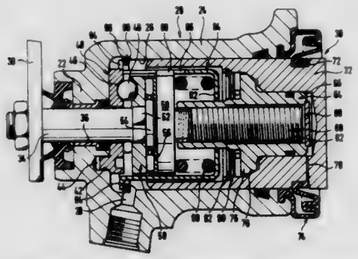
PCT No. PCT/EP90/00062, § 371 Date Aug. 8, 1990, § 102(e) Date Aug. 8, 1990, PCT Pub. No. WO90/08270, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 11, 1990, Ser. No. 573,212

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1989, 8900277[U]

Int. Cl.[5] F16D *65/56*

U.S. Cl. 188—71.9 **10 Claims**



1. An actuating device with automatic readadjustment for a vehicle brake, especially a disc brake, comprising

a casing (**20**) which includes a bottom (**22**) and a shell (**24**) having a cylindrical bore (**26**) which is open toward the brake

a piston (**30**) which is displace able hydraulically within the cylindrical bore (**26**) to actuate the brake,

a shaft (**34**) for mechanical parking brake application which is rotatably supported in the bottom (**22**) of the casing, coaxially with the piston (**30**), and sealed,

two ramp arrangements (**40,50**), one (**40**) being secured to the casing and the other one (**50**) rotatable by means of the shaft (**34**), thus being adjustable axially away from the bottom (**22**) of the casing,

a pair of strut members (**60,64**) screwed together so as to form a readjustable strut between the axially adjustable ramp arrangement (**50**) and the piston (**30**), and

a return spring (**90**) which is positioned under axial bias between a thrust bearing (**92**) secured to the casing and a thrust bearing (**58**) at one of the two strut members (**60**) and tends to keep the adjustable ramp arrangement (**50**) in an inoperative position, characterized in that

the bottom (**22**) of the casing is made in one piece with the shell (**24**) of the casing,

the ramp arrangement (**40**) which is secured to the casing is a plate which is separate from the bottom (**22**) of the casing and supported by the same,

the thrust bearing (**92**) which is secured to the casing is formed at an insert (**84**) guiding one of the strut members (**60**) in non-rotatable manner, and

the ramp arrangement (**40**) which is secured to the casing as well as the insert (**84**) are held against axial displacement in the casing (**20**) by a common fastening member (**96**) and prevented from rotating by a common twist preventing means (**42**).

5,060,766

DISC BRAKE ASSEMBLY

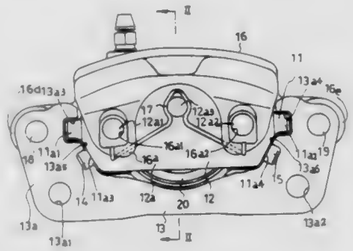
Toshio Kondo, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 314,113, Feb. 23, 1989, abandoned. This application Jul. 26, 1990, Ser. No. 559,374

Claims priority, application Japan, Feb. 23, 1988, 63-040144

Int. Cl.[5] F16D *55/227, 65/02*

U.S. Cl. 188—73.39 **10 Claims**



1. A disc brake assembly comprising:

a disc rotor connected with a wheel of a vehicle so as to be rotatable therewith;

a mounting member fixed to a stationary member of a vehicle and having an arm portion in which a pair of grooves extend in an axial direction of said disc rotor;

a brake pad positioned on at least one side of said disc rotor and having a backing plate associated therewith, said backing plate being provided with a pair of ear portions which project outwardly of a center portion of both ends of said backing plate in a rotational direction of said disc rotor, said ear portions being received in said pair of grooves formed in said arm portion of said mounting member and slidably supported on said arm portion of said mounting member in an axial direction of said disc rotor;

said backing plate having wedge-shaped end surfaces extending in the diameter direction of said disc rotor, each of said wedge-shaped end surfaces being positioned adjacent one of the ear portions and on the side of the respective ear portion disposed toward the rotational center of the disc rotor and

said mounting member having torque resisting surfaces opposed to the wedge-shaped end surfaces on said backing plate, said torque resisting surfaces being separate from and displaced from each ear portion of said backing plate and being separate from and displaced from said grooves formed in said arm portion of said mounting member, said torque resisting surfaces being formed in a shape corresponding to the end surfaces of said backing plate, said torque resisting surfaces being offset from a press center of said brake pad and said wedge-shaped end surfaces on the backing plate cooperating with the torque resisting surfaces on the mounting member so that during operation of the disc brake assembly, the wedge-shaped end surfaces on the backing plate engage and transmit torque to the torque resisting surfaces on the mounting member.

5,060,767

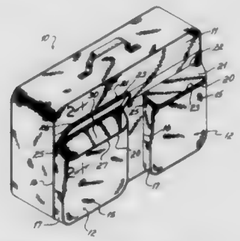
SOFT LUGGAGE WITH OUTSIDE POCKETS

John V. Pulichino, Jr., Providence, R.I., and Joy Tong, New York, N.Y., assignors to American Tourister, Inc., Warren, R.I.

Filed Feb. 6, 1990, Ser. No. 475,450

Int. Cl.[5] A45C *5/06*

U.S. Cl. 190—111 **2 Claims**



1. A soft-sided suitcase comprising:

a container having a fabric side wall lying in a plane,

a formed by pocket fabric pocket wall having a U-shaped edge stitched to said side wall to define a pocket,

the transverse dimension of said pocket fabric being substantially greater than the transverse dimension of said U-shaped stitching, thus causing said pocket to bulge outwardly from said container side wall and present a crescent-shaped upper edge defining a wide opening, said pocket having a bottom wall and side walls,

said fabric pocket wall including a gusset extending around the bottom and lower portion of the sides of said pocket to form said bottom and side walls to cause the pocket to bulge and create a substantial volume in an unfilled pocket between said pocket wall and said side wall,

a lid having one edge stitched to said side wall adjacent said pocket opening, said lid projecting outwardly from said side wall and having a crescent-shaped free edge normally lying adjacent said pocket upper edge,

and a slide fastener mounted on said adjacent edges to close said pocket,

whereby when said lid is unzipped and said pocket is opening, said lid may be raised along the stitched edge to provide easy access to said pocket and contents contained therein through the wide opening of said pocket.

5,060,768

CREEP CONTROL FOR A CONTINUOUSLY VARIABLE TRANSMISSION

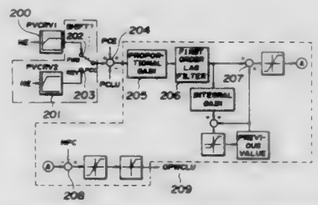
Yoshinori Yamashita; Sadayuki Hirano; Katsuaki Murano, all of Shizuoka; Takumi Tatsumi, and Hiroaki Yamamoto, both of Hyogo, all of Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan and Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 29, 1989, Ser. No. 443,719

Claims priority, application Japan, Nov. 30, 1988, 63-302730

Int. Cl.[5] F16H *59/18, 9/20;* **G06F** *15/50*

U.S. Cl. 192—0.052 **5 Claims**



1. In a continuously variable transmission having a fixed pulley piece and a movable pulley piece which is supported for movement toward and away from said fixed pulley piece, a width of a groove between said pulley pieces being increased or decreased in order to increase or decrease a radius of rotation of a belt looped around a driving side pulley and a driven side pulley which include said fixed and movable pulley pieces to thereby vary a comprises a hydraulic clutch which is/engaged and disengaged in response to changes in a clutch pressure in order to control a driving force output by said continuously variable transmission, and control means for feedback controlling said hydraulic clutch so that a continuous creep caused by slippage of said hydraulic clutch in a hold mode during a reverse gear operation of said continuously variable transmission is larger than a continuous creep caused by slippage of said hydraulic clutch in a hold mode during a forward gear operation of said continuously variable transmission.

5,060,769

SLIP CONTROL DEVICE OF A FLUID COUPLING

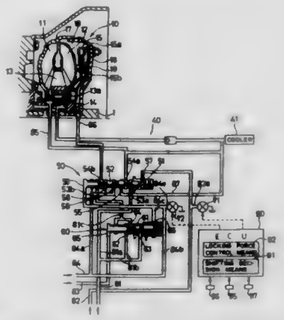
Hiroshi Yoshimura, and Kenji Okamoto, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 16, 1990, Ser. No. 597,721

Claims priority, application Japan, Oct. 16, 1989, 1-269365

Int. Cl.[5] B60K *41/28;* **F16H** *45/02*

U.S. Cl. 192—3.29 **6 Claims**



1. In a fluid coupling mounted in an automatic transmission having a lockup clutch for directly coupling an input side and an output side of the fluid coupling to each other and a locking

force adjusting means for adjusting a locking force of the lockup clutch so as to make a slip of the lockup clutch controllable:

a slip control device of the fluid coupling comprising:

a shifting decision means for deciding a shifting of said automatic transmission; and

a locking force control means for controlling said locking force adjusting means, based on a decision of said shifting decision means, so that the locking force of said lockup clutch is set to a predetermined value intermediate between a value corresponding to a complete lockup condition and a value corresponding to a complete release condition during a predetermined period of time from start point of the shifting, and upon lapse of said predetermined period of time, the locking force of said lockup clutch is reduced temporarily and then increased gradually.

5,060,770

METHOD OF CONTROLLING ROTATIONAL SPEED OF CONTINUOUS VARIABLE TRANSMISSION

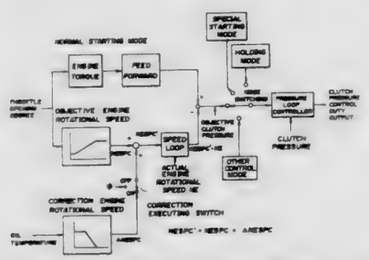
Sadayuki Hirano; Yoshinori Yamashita, both of Shizuoka; Takumi Tatsumi, and Hiroaki Yamamoto, both of Hyogo, all of Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Filed Sep. 26, 1990, Ser. No. 588,679

Claims priority, application Japan, Sep. 30, 1989, 1-256336

Int. Cl.[5] F16D *41/02*

U.S. Cl. 192—0.032 **5 Claims**



1. In a method of controlling rotational speed of a continuously variable transmission in which each of a driving side pulley and a driven side pulley has a fixed pulley member and a movable pulley member which is supported relative to the fixed pulley member so that it can move toward and away from the fixed pulley member, and in which the driving side pulley is drivingly connected to an engine, including the steps of decreasing and increasing groove width between each pair of said fixed and movable pulley member to cause a rotational radius of a belt reeved between both of said pulleys to be respectively increased and decreased and thereby change the belt ratio of the transmission, the improvement comprising the steps of providing a hydraulic clutch which engages and disengages the transmission in response to a clutch pressure applied thereto to connect with and disconnect from a driving force which is output from the continuously variable transmission, providing a control section for (1) calculating an objective clutch pressure of the hydraulic clutch from (a) an engine torque value which is determined by a throttle opening degree and (b) an objective engine rotational speed, and (2) controlling actual clutch pressure in each of various selectable clutch control modes so as to correspond to the objective clutch pressure, and selectively using said control section to correct the objective engine rotational speed based on transmission oil temperature when the selected clutch control mode is a normal vehicle motion starting mode.

5,060,771

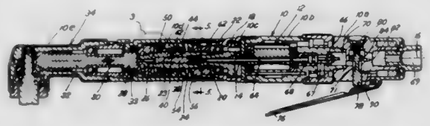
ADJUSTABLE AUTOMATIC SHUT-OFF MECHANISM FOR LEVER OR TRIGGER CONTROLLED AIR TOOL

Richard D. Robinson, Bryan, assignor to The Aro Corporation, Bryan, Ohio

Filed May 15, 1990, Ser. No. 523,705

Int. Cl.[5] B25B *23/145;* **B23Q** *5/06*

U.S. Cl. 192—0.034 **8 Claims**



1. An improved fluid tool comprising, in combination;

a tool housing;

a fluid driven motor with a rotary output shaft in the housing;

a fluid inlet to the motor;

a fluid outlet from the motor;

an inlet control valve mechanism to control admission of fluid to the motor;

a clutch mechanism connecting the motor output shaft with a tool bit, said clutch mechanism including

a driven member driven by the motor output shaft;

a driving member rotatably coupled to the driven member, and means for axially decoupling the driven member from the driving of the driving member whenever a predetermined torque setting results by action of the bit on a work piece;

a normally opened valve in the fluid inlet for passage of fluid to the motor including first biasing means for biasing the normally opened valve toward the open position and also including an inlet chamber;

means for effecting closure of the normally opened valve, said means comprising the combination of

a mechanical linkage between the clutch mechanism and the normally opened valve, and pressurized inlet fluid in the inlet chamber of the normally opened valve; said linkage and fluid together acting to close the normally opened valve whenever the predetermined torque setting results and the driven member is decoupled from the driving member; and

said inlet control valve mechanism including a manually operated, normally closed inlet valve in the fluid inlet which is manually operable to open the passage for flow of fluid to the motor by flow through the normally opened valve, said normally closed inlet valve including an exhaust passage from the normally opened valve inlet chamber for fluid flow to exhaust whenever the manual valve is in the closed positioned to thereby permit resetting of the linkage and reopening of the normally opened valve after closure by the first biasing means.

5,060,772

POWER-OPERATED TOOL

Heinz-Gerhard Anders, Aalen; Eugen Mattheiss, Lauchheim, and Dieter Weimer, Aalen, all of Fed. Rep. of Germany, assignors to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 15, 1989, Ser. No. 394,404

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1988, 3827840

Int. Cl.[5] B25B *23/145*

U.S. Cl. 192—0.034 **14 Claims**

1. A control mechanism for selectively controlling the output shaft of a rotary pneumatic power tool, comprising:

a housing;

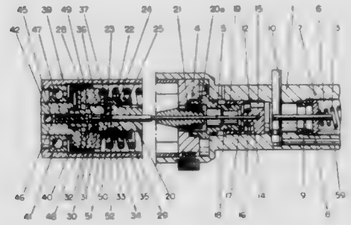
a pneumatic input means disposed on said housing for selectively supplying pressurized gases;

a pneumatic valve disposed in said housing adjacent said pneumatic input means to selectively allow the passage of pressurized gas through said housing;

a pneumatic motor disposed within said housing and having a rotor shaft which rotates in response to said passage of pressurized gas;

a separating clutch having a driver coupled to said rotor shaft for synchronous rotational movement therewith;

a switching clutch providing selective mechanical engagement between said separating clutch and the output shaft;



said switching clutch having a torque sensitive means allowing said separating clutch to slip with respect to said switching clutch upon the output shaft reaching a predetermined torque; and

said separating clutch having separating means for disengaging said switching clutch from said pneumatic motor in response to said separating clutch slipping with respect to said switching clutch to stop rotation of the output shaft.

5,060,773

SINGLE-ACTION FREEWHEEL CLUTCH WITH SUBSTANTIALLY LARGE CENTRAL DIAMETER

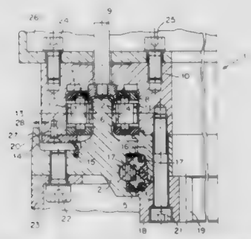
Johannes Bertram, Unna-Billmerich; Ulrich Krug, Hagen, and Peter Grünewald, Fuldabrück, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Oct. 30, 1990, Ser. No. 605,914

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1989, 3936586

Int. Cl.[5] F16D *13/00*

U.S. Cl. 192—45.2 **12 Claims**



1. A single-action freewheel with an open diameter greater than 500 mm comprising: an inner ring and an outer ring; at least two rows of shoes between said inner ring and said outer ring; at least one revolving web connected to said rings and extending between said rows; and actuating means for tightening and loosening said shoes, whereby a clutching torque equal substantially to the sum of individual torques of each row of shoes is transmitted, normal forces from said rows and acting on opposite sides of said web having substantially no bending forces; an outer row of shoes being held in a ring expanded through elastic deflection only by a fraction of said normal forces equalling substantially the inverse of the total number of rows, said elastic deflection being substantially independent of said open diameter, for providing reliable blocking function of said freewheel.

5,060,774

TEMPERATURE-CONTROLLED FAN FLUID COUPLING

Kazunori Takikawa, and Yuichi Ono, both of Numazu, Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Sunto, Japan

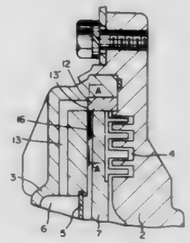
Filed Aug. 21, 1989, Ser. No. 396,544

Claims priority, application Japan, Aug. 19, 1988, 63-108898[U]; Aug. 19, 1988, 63-108899[U]

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.[5] F16D *35/00, 43/25*

U.S. Cl. 192—58 A **15 Claims**



1. A temperature-controlled fan fluid coupling comprising:

an enclosed housing consisting of a cover and a casing;

a rotating shaft having a driving disk fixed at the front end of the shaft one surface of the driving disk being in radial mesh with an opposite wall surface of the enclosed housing to form a labyrinth mechanism;

a bearing via which the housing is held to the rotating shaft;

a partition plate that is provided with an oil outflow control hole and divides the inside of the housing into an oil reservoir chamber and a torque transmission chamber in which the driving disk is mounted;

a dam formed in a part of the inner wall surface of the housing and opposite to the outer wall of the driving disk on which oil is collected during rotation;

a circulation passage connected with the dam and extending from the torque transmission chamber to the oil reservoir chamber;

a temperature-sensing element which is installed on the front surface of the cover and deforms as temperature varies; and

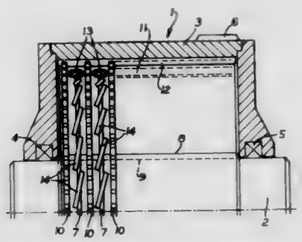
a valve member which interlocks with the temperature-sensing element and which, when the ambient temperature exceeds a predetermined temperature, opens the outflow control hole in the partition plate and which, when the ambient temperature is below the predetermined temperature, closes the outflow hole, the torque transmitted from the rotating shaft to the driven enclosed housing being controlled by increasing and decreasing the effective area with which oil makes contact with the driving disk at a torque transmission gap formed between opposite outer walls of the casing and the cover; and

an oil supply means formed on one of the surfaces of the housing and the driving disk opposite of the labyrinth and at the entrance side of the circulation passage to force oil to the dam.

5,060,775
FLUID FRICTION COUPLING

Georg Kwoka, Siegburg, Fed. Rep. of Germany, assignor to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Filed Oct. 5, 1990, Ser. No. 593,674
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1989, 3934327
Int. Cl.[5] F16D *31/00*
U.S. Cl. 192—58 B **7 Claims**

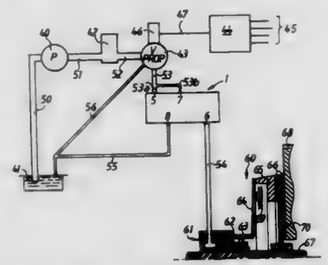


1. A fluid friction coupling having at least two sets of plates, the coupling comprising a first coupling part in the form of a hub and a second coupling part in the form of a housing which is at least partially filled with a viscous fluid, one of the sets of plates being non-rotatably connected to the first coupling part and the other set of plates being non-rotatably connected to the second coupling part, the plates of the two sets of plates being arranged to alternate and to radially overlap one another, wherein plates of one of the sets of plates are provided with slots and segments between the slots are inclined in the same direction relative to the radial plane of the plate at an angle which is substantially the same for each segment of the plate.

5,060,776
ARRANGEMENT FOR CONTROLLING A HYDRAULICALLY OPERATED FRICTION DISC CLUTCH WITH DIAPHRAGM SPRING

Lars Skog, Södertälje; Tommy Nordling, Trosa, both of Sweden, and Per-Ola Svenke, Kongsberg, Norway, assignors to Saab Automobile Aktiebolag, Sweden

PCT No. PCT/SE89/00221, § 371 Date Oct. 19, 1990, § 102(e) Date Oct. 19, 1990, PCT Pub. No. WO89/10494, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 20, 1989, Ser. No. 585,062
Claims priority, application Sweden, Apr. 22, 1988, 8801499
Int. Cl.[5] F16D *25/12;* **B60K** *23/02*
U.S. Cl. 192—85 R **29 Claims**



16. Apparatus for controlling a clutch, wherein the clutch includes clutch disks and a first spring means for normally biasing the clutch disks into engagement, the first spring means having a normal bias and being operable against the normal bias to disengage the clutch disks, the apparatus comprising:

hydraulic means for generating a force acting on the first spring means, the hydraulic means having a moving element movable between a first end position at which the hydraulic means enables the first spring means to bias the clutch disks into engagement and a second opposite end position where the first spring means is operated against the normal bias to release the engagement of the clutch disks;

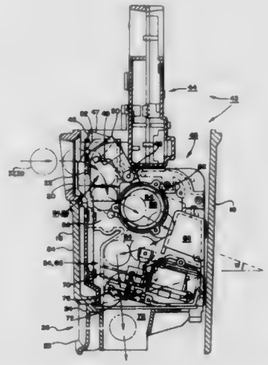
the hydraulic means having an inlet side adapted to be pressurized for moving the moving element from the first position toward the second position thereof;

a second spring means supported at the hydraulic means and positioned so as to not restrain movement of the moving element from the first position thereof to an intermediate position between the first and second positions, the second spring means being further positioned to be engaged by the moving element following movement of the moving element from the first to the intermediate position; the second spring means being adapted to apply increasing force opposing movement of the moving element when the second spring means engages the moving element at the intermediate position, thereby imposing an increasing force requirement on the moving element when the moving element moves from the intermediate position to the second position and the first spring means is decreasing its engaging force upon the clutch disks, said second spring means being dimensioned and adapted such that a substantially increasing force requirement is obtained over the disengagement stroke of the moving element, at least from the intermediate position to the second end position of the moving element.

5,060,777
LOW-POWER DEVICE FOR SORTING TOKENS

John W. Van Horn, Harrison, Ark., and Ralph H. Carmen, Lebanon, N.J., assignors to Duncan Industries Parking Control Corp., Harrison, Ark.

Filed Mar. 27, 1990, Ser. No. 500,015
Int. Cl.[5] G07F *17/24*
U.S. Cl. 194—317 **9 Claims**



1. A token-receiving machine equipped with a power-saving device for sequentially directing a first substantially disk-shaped token to one of a first path and a second path, the token-receiving machine comprising:

A. a token chute for receiving said token;

B. a first token characteristic sensor, mounted adjacent to said token chute, said sensor producing a first sensor token signal influenced by a characteristic of said token;

C. a programmable microprocessor, connected to said sensor, said microprocessor programmed:

i. to compare said first sensor token signal with a predetermined criterion, to assert a token acceptance signal if said first sensor token signal meets said predetermined criterion, and otherwise to assert a token rejection signal,

ii. to recall a quantity from a memory location, said quantity having a first value if an acceptance control signal was the last control signal asserted, said quantity having a second value if a rejection control signal was the last control signal asserted; and

iii. later to take one of the steps of:

a. if said token acceptance signal is asserted, and if said quantity has said second value, asserting said acceptance control signal and storing said first value in said memory location,

b. if said token rejection signal is asserted, and if said quantity has said first value, asserting said rejection control signal and storing said second value in said memory location, and

c. otherwise asserting neither said acceptance control signal nor said rejection control signal and making no change to said quantity stored in said memory location;

D. a gate, connected to said token receptacle, said gate comprising a barrier movable between a first stable position in which said gate directs said token to said first path and a second stable position in which said gate directs said token to said second path;

E. a DC motor having a first power connection and a second power connection, said motor equipped with a shaft, said first turnable in a first direction in response to a flow of current in said first power connection and out said second power connection, said shaft turnable in a second direction opposite to said first direction in response to a flow of current in said second power connection and out said first power connection;

F. a mechanical connection between said shaft and said barrier, said mechanical connection urging said barrier toward said first position when said shaft turns in said first direction and toward said second position when said shaft turns in said second direction;

G. a power control circuit having a first control signal input, a second control signal input, a first power output, and a second power output, said first control signal input receiving said acceptance control signal from said microprocessor, said second control signal input receiving said rejection control signal from said microprocessor, said first power output connected to said first power connection, said second power output connected to said second power connection, said power control circuit connected to a connection for higher potential and a connection for lower potential, said power control circuit operable to direct current in said first power connection and out said second power connection in response to the assertion of said first control signal and to direct current in said second power connection and out said first power connection in response to the assertion of said second control signal;

H. a timer connected to said microprocessor;

I. wherein said token chute further comprises:

i. a token insertion plate defining a slot sized to pass said token if said token has a diameter less than or equal to a predetermined diameter and a thickness less than or equal to a predetermined thickness,

ii. a token insertion slot lever raisable from a lowered position to a raised position, and

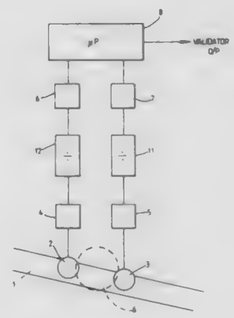
iii. a wake-up switch for asserting a wake-up signal if said token insertion slot lever is not in said lowered position; and,

J. wherein said microprocessor is further programmed to assert said second control signal, and to store said second value in said memory, if said first sensor token signal is not asserted within a predetermined interval of time after said wake-up signal is asserted.

5,060,778
MOVING COIN VALIDATION

Ronald E. Daw, Wimbourne, England, assignor to Landis & Gyr Communications, England

Filed Sep. 7, 1989, Ser. No. 403,980
Claims priority, application United Kingdom, Sep. 7, 1988, 8821025
Int. Cl.[5] G07D *5/02, 5/08*
U.S. Cl. 194—317 **9 Claims**

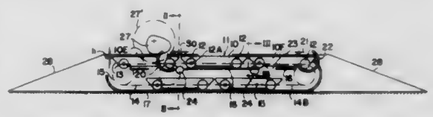


1. A coin validation system comprising a coin runway, a first coil positioned adjacent the runway, a first resonant circuit coupled to the first coil, and first signal monitoring means arranged to monitor oscillating signals generated in the resonant circuit as the coin moves down the runway, characterized in that the system further includes a second coil independent of the first coil, the second coil being displaced with respect to the first coil in the direction of the movement of the coin down the runway, a second resonant circuit independent of the first resonant circuit and coupled to the second coil and second signal monitoring means arranged to monitor oscillating signals generated in the second resonant circuit, said first and second coils, said first and second resonant circuits, and said first and second signal monitoring means all operating concurrently, the first and second signal monitoring means including means for comparing a signal in said first resonant circuit and a concurrent signal in said second resonant circuit and determining, from a measured signal parameter, a velocity and acceleration independent measurement representative of the coin.

5,060,779
MOVING RAMP

Kjell Landaeus, Vence, France, assignor to Rollomatic AB, Malmo, Sweden

PCT No. PCT/SE88/00694, § 371 Date Jul. 24, 1990, § 102(e) Date Jul. 24, 1990, PCT Pub. No. WO89/05771, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 19, 1988, Ser. No. 488,065
Claims priority, application Sweden, Dec. 18, 1987, 8705051
Int. Cl.[5] B66B *21/10*
U.S. Cl. 198—321 **4 Claims**



1. Moving ramp comprising plates, wheels on said plates supporting the plates, stationary guides forming upper and lower runway tracks for the wheeled plates, guiding said plates for movement at an upper level to form the loaded part of the

moving ramp, and at a lower level which is substantially parallel with the upper level, to form the returning part of the moving ramp, adjacent plates in each part being closed to each other, endless chains extending along said parts, the plates at the edges thereof being pivotally connected to the endless chains at one end of the plates, the other end of the plates being free for angular adjustment, a sprocket wheel for each chain at each end thereof, a rotating element forming a guide for lowering and raising, respectively, said other end of the plates along a circular path of movement, for displacement of said plates in a substantially horizontal position one at the time from one part to the other, means for driving said rotating element synchronously with the sprocket wheel, the rotation center of each of the rotating elements being displaced obliquely upwards toward the adjacent end of the moving ramp in relation to the center of the circular path of movement of said other end of the plates, and a plurality of drive stations for the endless chains for driving the chains.

5,060,780

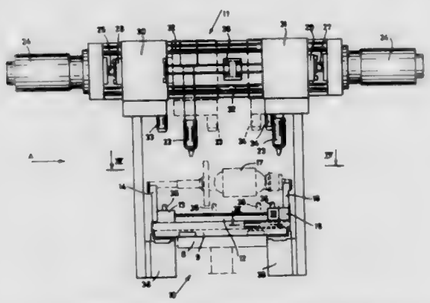
PALLETS FOR SUPPORTING WORKPIECES AND AUTOMATIC ADJUSTMENT OF PALLET WORKPIECE SUPPORT MEMBERS

Luciano Santandrea, and Massimo Lombardi, both of Firenze, Italy, assignors to Axis U.S.A., Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 326,158, Mar. 20, 1989, which is a continuation-in-part of Ser. No. 212,267, Jun. 27, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 490,826

Int. Cl.[5] B65G *21/20*

U.S. Cl. 198—345.1 **71 Claims**



1. In a production line for workpieces having different dimensions including a pallet having support members that are adjustable for supporting the workpieces and means for advancing pallets carrying workpieces, a system for automatic adjustment of the support members of the pallet to desired locations to support a selected workpiece, comprising:

a pallet having a first support member and a second support member, a guide for controlling the direction of travel of the first and second support members, the first and second support members being mounted on the pallet and adapted for translation towards and away from each other along the guide in respective first and second ranges of motion, and means for releasably securing the first and second support members to respective selected locations on the pallet along the guide, said pallet having a first condition wherein the releasably securing means frictionally secures the first and second support members to the pallet and a second condition wherein the releasably securing means permits the first and second members to be moved to desired locations along the guide;

release means for engaging the means for releasably securing the support members and changing the pallet between the first and second conditions;

a positioning unit having means for translating one or both of the support members to their respective desired locations to support the selected workpiece; and

means for moving the pallet and positioning unit into engagement so that the means for translating the support members contacts and moves the support members relative to each other when the pallet is in the second condition.

5,060,781

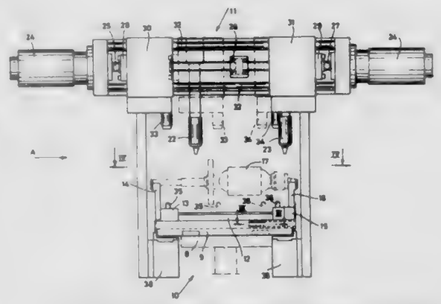
APPARATUS FOR THE AUTOMATIC ADJUSTMENT OF PALLET WORKPIECE SUPPORT MEMBERS

Luciano Santandrea, and Massimo Lombardi, both of Florence, Italy, assignors to Axis U.S.A., Inc., Marlborough, Mass.

Continuation of Ser. No. 212,267, Jun. 27, 1988, abandoned. This application Apr. 24, 1990, Ser. No. 513,025

Int. Cl.[5] B65G *21/20*

U.S. Cl. 198—345.1 **2 Claims**



1. In a production line for workpieces including a pallet for supporting a workpiece, and a means for advancing pallets carrying workpieces, apparatus for manipulating a workpiece on and off the pallet comprising:

means associated with said pallet for defining an aperture through said pallet;

a first support member and a second support member for supporting a workpiece so that the workpiece is suspended over said aperture, said first and second support members being releasably secured to the pallet by an automatic positioning means for adjusting the position of said support members relative to said aperture so that said support members can be relatively moved to support workpieces having different dimensions over said aperture; and

lifting means for raising and lowering a workpiece off or onto said support members of the pallet, said lifting means passing through said aperture of the pallet to raise or lower the workpiece off or onto said support members.

5,060,782

AUTOMATIC MACHINE FOR POSITIONING AND FEEDING FLAT CONTAINERS

Jaime S. Marti, Emancipación No. 8, Barcelona, Spain 08017

Filed Sep. 27, 1990, Ser. No. 589,007

Claims priority, application France, Sep. 27, 1989, 89 13046

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—392 **20 Claims**

1. A machine for continuously positioning and feeding containers having an irregular or substantially oval shape with wider sides, narrower sides, and a neck portion to a work station comprising:

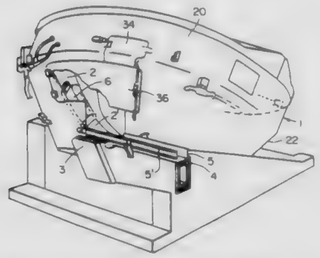
a hopper for receiving a plurality of randomly positioned containers;

a bottom wall member on said hopper positioned in a plane extending at an angle to the horizontal so that the wall member has a higher portion and a lower portion;

a rotatable disc means over the plane of said bottom wall member in substantially parallel relation and in proximity thereto;

a plurality of detachable container holding elements removably mounted at the periphery of said disc means and defining spaced peripheral recesses between said elements, said recesses having a dimension and shape for receiving individual containers and moving said containers from said lower portion of said bottom wall member to said higher portion upon rotation of said disc means, said container holding elements having marginal edges and seat means at said marginal edges for engaging the neck portion of a container;

an opening in said bottom wall member at said higher portion thereof positioned so that said recesses register therewith upon rotation of said disc means, said opening in said bottom wall member having a width allowing tipping of each container into a predetermined position as the container passes through said opening;



an inclined chute means below said bottom wall member opening having an inclined bottom and a cross-sectional dimension and shape for receiving and guiding containers discharged through said opening sliding downwardly on said inclined bottom of said chute means and discharging said containers in a position to lie on one of the narrower sides thereof;

conveyor means adjacent said chute means for receiving containers from said chute means and transporting the containers to a position remote from said chute means;

detector means for detecting the position of said containers on said conveyor means and emitting a signal when said containers are not in a predetermined position; and

first tilting means operatively connected to said detector means for tilting said containers into a predetermined position in response to said signal from said detector means, so that said containers lie on one of the wider sides thereof on said conveyor means downstream of said tilting means.

5,060,783

PROCESS AND APPARATUS FOR ALIGNING ARTICLES OR ROWS OF ARTICLES

Alexis Chenevard, Morges, and Hans Pilar, Pully, both of Switzerland, assignors to Sapal Societe Anonyme des Plieuses Automatiques, Ecublens, Switzerland

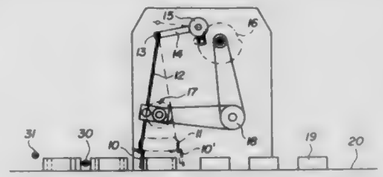
Filed May 12, 1988, Ser. No. 192,924

Claims priority, application France, May 12, 1987, 87 06759

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—434 **5 Claims**

1. Apparatus for aligning products or rows of products positioned irregularly on a conveyor along a predetermined path, comprising a first detector and a second detector for detecting passage of trailing products of a row of products or rows of products, a first alignment element and a second alignment element, and first activation means and second activation means associated, respectively, with said first alignment element and said second alignment element, said first detector being adapted to transmit to said first activation means a detection signal upon detecting passage of a first trailing product or a first row of products, said first activation means comprising means for displacing said first alignment element from an initial rest position situated beyond the path of said products or rows of products on said conveyor, to an active position abutting against said first trailing product or first row of products, and then for displacing said fist alignment element in the direction of movement of said conveyor at a substantially constant velocity greater than a velocity of said conveyor, in a manner so as to push said first trailing product or first row of products positioned on said conveyor over a predetermined distance, and then for returning said first alignment element to said initial rest position, said second detector being adapted to transmit to said second activation means a detection signal



upon detecting the passage of a second trailing product or second row of products following said first product or first row of products, said second activation means comprising means for displacing said second alignment element from an initial rest position beyond said predetermined path of said products or rows of products on said conveyor, to an active position abutting against said second trailing product or second row of products, then for displacing said second alignment element in the direction of said conveyor at a substantially constant velocity greater than that of said conveyor, in a manner so as to push said second trailing product or second row of products positioned on said conveyor over a predetermined distance, and then for returning said second alignment element to its initial rest position.

5,060,784

TORSION SPRING CONVEYING AND SEPARATING SYSTEM

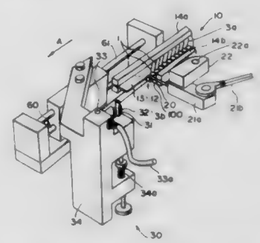
Masazumi Ogawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1990, Ser. No. 598,523

Claims priority, application Japan, Oct. 19, 1989, 1-272221

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—468.4 **4 Claims**



1. A torsion spring conveying and separating system comprising a linear vibrating feeder which conveys a plurality of α-shaped torsion springs along a conveyor rail extending in a predetermined direction and an escapement mechanism which separates the leading one of the α-shaped torsion springs from the trailing ones at the front end of the conveyor rail, each of the α-shaped torsion springs having a cylindrical coiled portion and first and second leg portions projecting from opposite

ends of the coiled portion, said torsion spring conveying and separating system characterized in that

said conveyor rail comprises a base wall portion extending horizontally in said predetermined direction, first and second side wall portions which project upward on opposite sides of the base wall portion and extend in the predetermined direction substantially in parallel to each other, a coil support surface which projects horizontally above the base wall portion from the second side wall portion toward the first side wall portion and terminates at a free edge spaced from the first side wall portion, and a partition wall portion which projects horizontally above the base wall portion from the first side wall portion toward the second side wall portion and terminates near the free edge of the coil support surface above the same, said α-shaped torsion spring being conveyed along the conveyor rail with the coiled portion resting on the coil support surface in a vertical position, the first leg portion projecting above the partition wall portion and the second leg portion projecting below the partition wall portion and being spaced from the base wall portion, the edge of the partition wall portion opposed to the second side wall portion preventing the leg portions from interfering with the first side wall portion during conveyance, and

said escapement mechanism comprises an escape pin member which is inserted into the coiled portion of the leading one of the α-shaped torsion springs conveyed along the conveyor rail and a suction means which holds the second leg portion of the leading one of the α-shaped torsion springs under suction force, the escape pin member and the suction means being movable together with each other in the predetermined direction to draw forward the leading one of the α-shaped torsion springs, thereby separating it from the trailing α-shaped torsion springs.

5,060,785

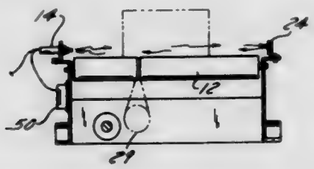
ELECTRICALLY-POWERED CONTROL SYSTEM FOR ACCUMULATING CONVEYOR

James R. Garrity, Shepherdsville, Ky., assignor to The Interlake Companies, Inc., Shepherdsville, Ky.

Filed Jun. 1, 1990, Ser. No. 532,040

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 **6 Claims**



1. A control system for an accumulating conveyor having a plurality of accumulation zones, and an activator for each zone, comprising:

an electrically-powered sensor for each accumulation zone of the conveyor; and

a logic circuit associated with each electrically-powered sensor, each logic circuit having control signal inputs and control signal outputs, consisting only of:

a. a first control signal input;

b. a second control signal input coming from the electrically-powered sensor with which that logic is associated;

c. a first control signal output which is adapted to transmit a signal to the activator for that zone; and

d. a second control signal output which is adapted to transmit a signal to the input for the next zone.

5,060,786

BELT CONVEYOR FOR A PACKAGING MACHINE

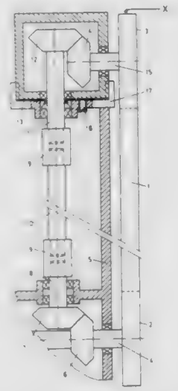
Helmut Demny, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Dec. 5, 1990, Ser. No. 622,758

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1989, 3940791

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—803.01 **12 Claims**



1. In a belt conveyor, the conveyor including an endless belt which supports plural equidistantly spaced receivers for articles to be conveyed, the belt passing about a pair of spatially displaced wheels, a first one of said wheels being driven via a first drive shaft, said first drive shaft being connected to a power source, the improvement comprising:

a second drive shaft, the other of said wheels being mounted on said second drive shaft; and

means coupling said first drive shaft to said second drive shaft, said coupling means including at least a first rotationally fixed cardan connection.

5,060,787

BELT CONVEYOR AND CONVEYOR BELT THEREFOR

Lennart Tingskog, Kattegattsgatan 23, S-253 71 Helsingborg, Sweden

PCT No. PCT/SE88/00626, § 371 Date Aug. 15, 1990, § 102(e) Date Aug. 15, 1990, PCT Pub. No. WO89/05765, PCT Pub. Date Jun. 29, 1989

PCT Filed Nov. 18, 1988, Ser. No. 488,055

Claims priority, application Sweden, Dec. 18, 1987, 8705052; Feb. 2, 1988, 8800315

Int. Cl.[5] B65G *15/40*

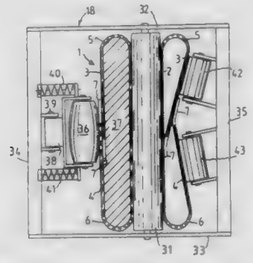
U.S. Cl. 198—819 **35 Claims**

1. A belt conveyor assembly comprising an endless conveyor belt of elastic material disposed in a conveying path, said conveying path having a conveying run portion and a return run portion, a plurality of support rollers for supporting the belt along at least part of said conveying path, and guide means for maintaining the desired shape of the belt, said guide means comprise pressing means, said conveyor belt comprises a planar central part, said central part having a first transverse reinforcement layer, said first transverse reinforcement layer providing flexural rigidity about the longitudinal axis of the belt, a longitudinal reinforcement layer, said longitudinal reinforcement layer providing low extensibility in the longitudinal direction of the belt;

a first and a second edge part, said first and second edge parts having a second and a third transverse reinforcement layer, respectively, said second and third transverse reinforcement layers providing flexural rigidity about the longitudinal axis of the belt, said first and second edge parts being extensible in the longitudinal direction of the belt and having a total combined width which is at least equal to the width of said central part;

a first and a second hinge part, said first hinge part integrally connecting one side of said central part to said first edge part, said second hinge part integrally connecting the opposite side of said central part to said second edge part, each said hinge part being flexible about the longitudinal axis of the belt, being extensible in the longitudinal direction of the belt, and being resilient for pivoting said corresponding adjacent edge part from a position folded towards said central part, each said hinge part having a substantially smaller width than said central part; and

a fourth transverse reinforcement layer, said fourth transverse reinforcement layer being disposed to extend through said second edge part, said second hinge part, said central part, said first hinge part, and said first edge part, said fourth transverse reinforcement layer providing flexural rigidity to said central part and to said edge parts about the longitudinal axis of the belt.



5,060,788

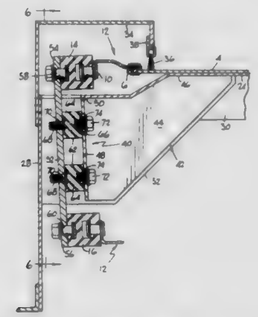
CHAIN GUIDE MOUNTING APPARATUS

Richard A. Compton, Pueblo, and David M. Pruett, Canon City, both of Colo., assignors to Portec, Inc., Oak Brook, Ill.

Filed Mar. 28, 1990, Ser. No. 501,150

Int. Cl.[5] B65G *15/02*

U.S. Cl. 198—831 **18 Claims**



1. Apparatus for supporting the guide means for guiding a moving endless chain for moving an endless conveyor belt comprising:

a movable endless conveyor belt having opposite side edge portions, an upper run and a lower run;

at least one movable endless chain having an upper run and a lower run and secured to at least one of said side edge portions so that movement of said at least one movable endless chain moves said movable endless conveyor belt;

drive means for moving said at least one movable endless chain;

first support means for supporting at least said movable endless conveyor belt, said at least one movable endless chain and said drive means;

upper and lower guide means for guiding the movement of said at least one movable endless chain;

second support means for supporting said upper and lower guide means; and

isolation mounting means for mounting said second support means on said first support means to isolate said upper and lower guide means from said first support means.

5,060,789

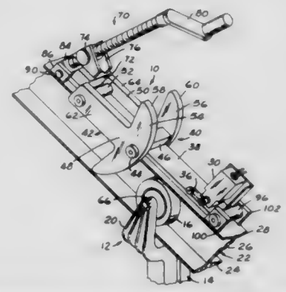
CONVEYOR ANTI-RUNAWAY APPARATUS

Lester R. Nelson, Belvidere, Ill., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 14, 1991, Ser. No. 640,793

Int. Cl.[5] B65G *23/00*

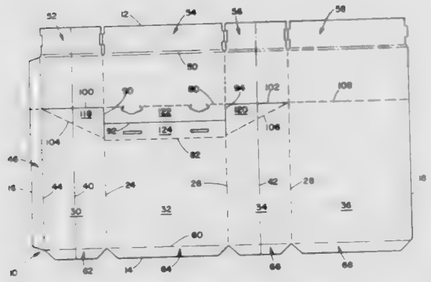
U.S. Cl. 198—832.3 **3 Claims**

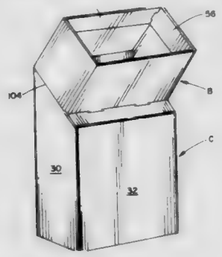


1. A conveyor anti-runaway apparatus for a conveyor of the type driven by an electric motor connected to a source of electrical power, the conveyor including a plurality of spaced apart wheel structures along the length thereof which ride on rails, the conveyor anti-runaway apparatus comprising a normally closed electric switch connected between the conveyor electric motor and the source of electrical power, the electric switch including a switch actuator movable between closed and open positions, a switch tripping device mounted on the upper side of a conveyor rail, a tripping arm structure, a pivot mount pivotably mounting the tripping arm structure on the switch tripping device, the tripping arm structure having an upper segment on one side of the pivot mount and a lower segment on the other side of the pivot mount, the tripping arm structure having a normal position with the lower segment extending into the path of the conveyor wheel structures to be bumped thereby and cause pivoting of the tripping arm structure each time a wheel structure passes by, the tripping arm structure including an elongated arm portion extending from the pivot mount at substantially right angles to the upper and lower segments, the moment of the elongated arm portion about the pivot mount being sufficient to cause the tripping arm structure to return to its normal position each time it is bumped by a wheel structure which is moving at an acceptably low speed and insufficient to cause such return when the wheel structure is moving at an unacceptably high speed resulting in the tripping arm structure pivoting entirely around the pivot mount into contact with the switch actuator causing the switch actuator to move to the open position thus interrupting electrical power to the electric motor and causing the conveyor to stop, the elongated arm portion including a stop structure adjacent the end thereof remote from the pivot mount, the stop structure abutting against the conveyor rail when the tripping arm structure is in its normal position and also when the tripping arm structure is pivoted to cause the switch actuator to move to the open position to thereby prevent further pivoting in either direction, the upper segment moving into the path of the

conveyor wheel structures when the tripping arm structure is pivoted to cause the switch actuator to move to the open position and thereafter functioning to block passage of conveyor wheel structures thereby, the electric switch is mounted on the switch tripping device, the switch tripping device being pivotably mounted on the conveyor rail, jackscrew support structure including an internally threaded opening, the jackscrew support structure extending upwardly from said conveyor rail, a jackscrew threadingly extending through said opening, manually engagable crank means provided on one end of the jackscrew, the other end of the jackscrew being rotatably connected to the switch tripping deivce whereby the tripping arm structure is movable out of its wheel structure blocking position by actuation of the jackscrew to pivot the switch tripping device upwardly and away from said conveyor rail so that the tripping arm structure can be manually pivoted back to its initial position to reset the switch tripping device to permit restarting of the conveyor.

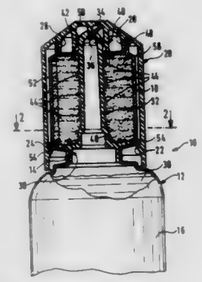
5,060,790
HINGED BACK DISPLAY
Jack D. Kindelberger, and Donald L. Baltzer, both of Navarre, Ohio, assignors to Vail Industries, Inc., Navarre, Ohio
Filed Jan. 10, 1990, Ser. No. 463,236
Int. Cl.[5] B65B *5/50, 5/52*
U.S. Cl. 206—45.11 **24 Claims**





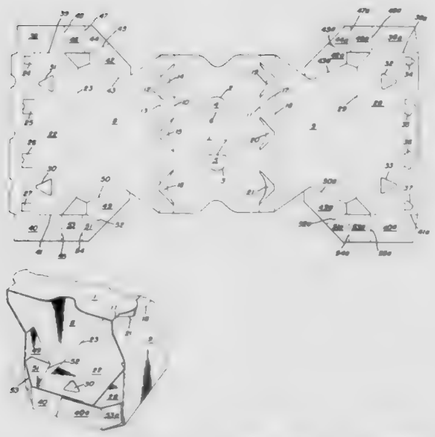
1. A display comprising:
a generally rectangular blank;
a first set of generally parallel score lines dividing the blank into four panels;
a first set of cut lines extending substantially perpendicular to said first set of score lines, at least two cut lines being substantially colinear and being spaced from one another by a panel;
first and second angular score lines extending from the colinear cut lines, respectively; and,
a hinge score line extending substantially perpendicular to said first set of score lines and being substantially colinear to the said first set of cut lines, said hinge score line being disposed in a panel adjacent a panel containing one of the two colinear cut lines.

5,060,791
TWO-CHAMBER CONTAINER
Karlheinz Zulauf, Höchst-Hassenroth, Fed. Rep. of Germany, assignor to Goldwell GmbH, Darmstadt-Eberstadt, Fed. Rep. of Germany
PCT No. PCT/EP89/00155, § 371 Date Dec. 28, 1989, § 102(e) Date Dec. 28, 1989, PCT Pub. No. WO89/09736, PCT Pub. Date Oct. 19, 1989
PCT Filed Feb. 20, 1989, Ser. No. 457,803
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1988, 3812343; Nov. 5, 1988, 3837595
Int. Cl.[5] B65D *25/08*
U.S. Cl. 206—221 **15 Claims**



1. A two-chamber container (**10**), in which two separate filling components are to be mixed to form a ready-to-use preparation prior to dispensing from the container, and which are contained in two container chambers (**16**; **18**) an upper container chamber and a lower container chamber, disposed one above the other in a container case, the upper and lower container chambers being connected together by a connecting passage (**14**) which opens in an upper side of the lower container and in a bottom surface of the upper container chamber and said connecting passage (**14**, being closed by a separating plug (**30**) which is displaceable into one of the container chambers (**16**; **18**) by a plunger element that is displaceable in a vertical direction from outside of said container, so that the filling components can flow together within said container and be mixed with one another within said container,
comprising the plunger element is formed as an elongated hollow applicator nozzle (**32**) extending through the upper container chamber (**18**) into an open mouth (**26**) of said upper container chamber, whose hollow interior opens at the bottom end through the separating plug (**30**) into the lower container chamber (**16**) and at the upper end terminates in an applicator orifice (**34**),
the plunger element having an exterior provided with an external thread (**44**) which is in engagement with a complementary counter-thread (**42**) which is formed in a cylindrical annular projection extending from the end wall of a turning cap (**20**) which at least partially overlays the upper container chamber (**18**), is held rotatably thereon, and seals it, into the open top of the upper container chamber (**18**),
that the portion of the end wall of the turning cap (**20**) situated within the annular projection (**40**) is configured so that, when the turning cap (**20**) is rotated in a sense of screwing the applicator nozzle (**32**) into the annular projection (**40**), the applicator nozzle can be pushed out of the end wall by the free end of the applicator nozzle (**32**), and
that the section of the applicator nozzle (**32**) directly adjoining the separating plug (**30**) has an external sealing surface (**46**) which, when the applicator nozzle (**32**) is in the fully deployed position, seals against a complementary sealing surface (**48**) formed on the annular projection (**40**).

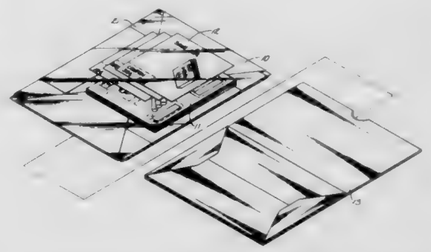
5,060,792
CAN CARTON
James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Sep. 26, 1990, Ser. No. 588,682
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—140 **7 Claims**



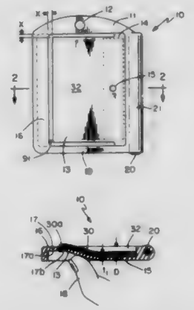
1. A carton formed from a unitary blank for packaging a plurality of cans and comprising a top wall, side walls foldably joined along their top edges respectively to opposite side edges of said top wall, a pair of lap panels foldably joined respectively to the bottom edges of said side walls and secured together in overlapping relation to form a composite bottom wall of the carton, an anchoring panel foldably joined to each end edge of each side wall and folded into flat face contacting relation with the inner surface of the associated side wall, a masking panel foldably joined to each end edge of each of said lap panels and arranged with the inner edges thereof disposed in overlapping relation at each end of the carton, and web structure foldably joined along one edge thereof to the adjacent edge of the associated anchoring panel and foldably joined along another edge thereof to the adjacent end of the associated masking panel.

5,060,793
COUPON STORAGE DEVICE KIT
David K. Hyun, and William H. Morgan, both of Pasadena, Calif., assignors to Value Savers Unlimited, Pasadena, Calif.
Filed Oct. 1, 1990, Ser. No. 591,038
Int. Cl.[5] B42D *15/00;* **B42F** *21/00;* **B65D** *69/00*
U.S. Cl. 206—232 **17 Claims**

1. A kit for storing manufacturers coupons in an organized manner comprising:
a substantially flat blank, the blank being foldable into a storage bin; and
a plurality of divider sheets, each having defined therein at least one divider card, the divider cards from the plurality of divider sheets being insertable into the storage bin thus separating the storage bin into individual compartments.



5,060,794
REMINDER SYSTEM
Richard A. Linn, 4237 Thomas Ave. N., Minneapolis, Minn. 55412, and Edward J. Goldstein, 4721 Isabel Ave., Minneapolis, Minn. 55406
Filed Aug. 24, 1990, Ser. No. 571,993
Int. Cl.[5] A45C *11/32*
U.S. Cl. 206—232 **6 Claims**



1. A memo pad key ring attachment device to be carried about in a user's pocket or purse with the memo pad key ring attachment device operable for holding a note pad comprising a stack of individual sheets of paper each having an adhesive backing for securing an individual sheet of paper of the stack of individual sheets of paper to an adjacent sheet of paper or to a support surface comprising:
a frame, said frame having a hole therein for engaging a key ring or the like;
a resilient panel, said resilient panel cantileverly connected to said frame, said resilient panel having a region for adhesively fastening a stack of individual sheets of paper thereto, said resilient panel and said frame co-acting to form a protective recess of a depth D for protectively receiving and storing a stack of individual sheets of paper;
a stack of individual sheets of paper, said stack of individual sheets of paper having a first end and a second end, said stack of individual sheets of paper first end having a strip of reusable adhesive located along said first end of said stack of individual sheets of paper to permit a user to fasten said stack of individual sheets of paper to said resilient panel, said stack of individual sheets of paper having a thickness t, said thickness of said stack of individual sheets of paper being less than the depth D of said recess so that an individual sheet of paper in said stack of individ-

ual sheets of paper is not accidently scraped off in the users pocket or purse; and

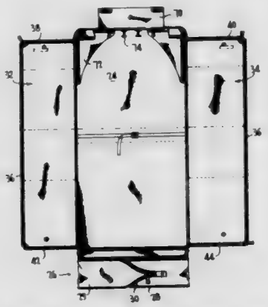
a lip mounted on said frame, said lip projecting inward into said recess to thereby hold said second end of said stack of individual sheets of paper within said recess, said lip and said panel spaced sufficiently far from each other to permit said resilient panel with a stack of individual sheets of paper to be flexed in a first direction to force said second end of said stack of individual sheets of paper above said lip to permit a user to remove an individual sheet of paper from said stack of individual sheets of paper by forcing at least one end of said individual sheets of paper in said stack of individual sheets of paper out of said recess so that a user can remove a sheet of said stack of individual sheets of paper to expose an unused sheet of paper for a user to write a reminder note thereon.

5,060,795

GARMENT BAG

Harvey J. Bomes, and Jack L. Barber, both of Baltimore, Md., assignors to The Baltimore Luggage Company, Baltimore, Md.

Filed Sep. 12, 1990, Ser. No. 581,524
Int. Cl.[5] A45C *7/00*
U.S. Cl. 206—279 **9 Claims**



1. A garment bag comprising a front wall, a back wall, a top wall, a bottom wall, and side walls defining a main storage compartment for carrying hanging garments, said top wall including means on the inside surface thereof for hanging at least one garment, at least one expansion joint at about the bottom of the garment bag to selectively expand and contract the length of said main storage compartment of said garment bag, said expansion joint comprising a zipper pull and zipper means extending around the circumference of said garment bag and a flexible expansion sleeve and wherein when said garment bag is in its expanded state said main compartment is extended in length through substantially its entire width and depth.

6. A garment bag comprising a front wall, a back wall, a top wall, a bottom wall, and side walls defining a main storage compartment for carrying hanging garments, said front wall including an opening means substantially the width of the front wall comprising first and second opening panels attached to said front wall, a separator zipper means for opening and closing said first and second panels, and a fastening means to hold said first and second panels open.

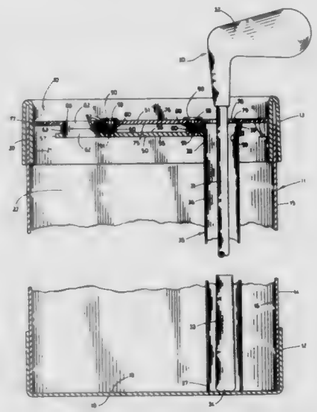
9. A garment bag comprising a front wall, a back wall, a top wall, a bottom wall, and side walls defining a main storage compartment for carrying hanging garments, said top wall including means on the inside surface thereof for hanging at least one garment, at least one expansion joint at about the bottom of the garment bag to selectively expand and contract the length of said main storage compartment of said garment bag, said expansion joint comprising a zipper pull and zipper means extending around the circumference of said garment bag and a flexible expansion sleeve wherein when said garment bag is in its expanded state said main compartment is extended in length through substantially its entire width and depth, at least one separate storage compartment in at least one of said front and back walls having a zipper pull and zipper means for opening and closing said separate storage compartment, and wherein the zipper of said expansion joint is enlarged to identify the zipper pull of the expansion joint from said zipper pull of said separate storage compartment.

5,060,796

MOUNTING APPARATUS FOR GOLF CLUBS

Jack N. Brooks, III., 546 W. Morris Ave., Fresno, Calif. 93704

Filed Aug. 20, 1990, Ser. No. 569,719
Int. Cl.[5] A63B *55/04, 55/06*
U.S. Cl. 206—315.6 **8 Claims**



1. An apparatus for mounting a work object in substantially fixed relation in a predefined area having a substantially rigid, substantially circular boundary, the apparatus comprising a substantially planar first member having a passage extending therethrough bounded by a peripheral edge coextensive with the first member adapted laterally to capture the work object when extended therethrough; a substantially planar second member having means for retaining the second member in substantially fixed relation in said predefined area including a peripheral edge dimensioned resistively to interfit with said substantially circular boundary and said retaining means further including a plurality of substantially concentric weakened courses substantially concentric to said peripheral edge to permit the peripheral edge selectively to be separated from the second member in a selected width to form a new peripheral edge for said second member resistively to interfit with a smaller substantially circular boundary; and means for interlocking the first member and the second member.

5,060,797

COLLATED NAILS HAVING TAPE RECESSES

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Oct. 15, 1990, Ser. No. 597,023
Int. Cl.[5] B65D *85/24*
U.S. Cl. 206—345 **18 Claims**

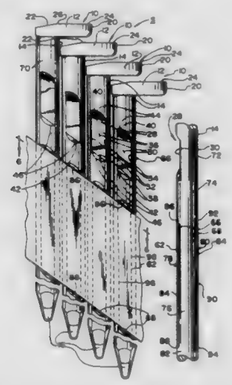
1. A strip of collated nails, comprising:

a plurality of nails each of which comprises a head and a cylindrical shank defining a longitudinal axis;

a prefabricated recess including a flat surface defined within a peripheral portion of each cylindrical nail shank such that said flat surfaces of said recesses of said plurality of nails together define a common planar surface when said nails are rotationally oriented in a common manner about said longitudinal axes of said nail shanks; and

collating tape means, extending across said plurality of nail shanks and disposed within said plurality of recesses and upon said flat surfaces of said recesses defining said common planar surface, for collating said plurality of nails together as a result of being adhered to said flat surfaces of said recesses solely by an adhesive layer interposed between said collating tape and said flat surfaces of said recesses,

whereby a nail driven from said strip of collated nails into a workpiece tends to carry into said workpiece, along with said driven nail, such portions of said collating tape and said adhesive layer as may be torn from said strip of collated nails along with said driven nail.

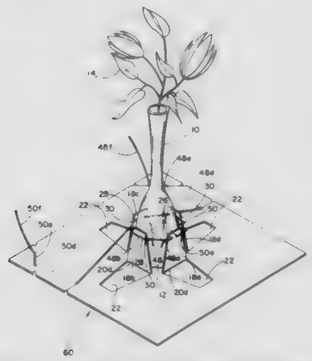


5,060,798

PAPERBOARD HOLDER FOR FLOWER VASES AND THE LIKE

Kenneth A. Braastad, 717 - 157th Ave. NE., Ham Lake, Minn. 55304

Continuation of Ser. No. 557,722, Jul. 25, 1990, abandoned. This application Mar. 4, 1991, Ser. No. 665,914
Int. Cl.[5] B65D *85/52*
U.S. Cl. 206—423 **22 Claims**



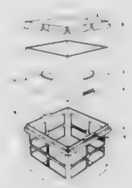
15. A holder of paperboard or cardboard for holding an item in a stabilized vertical position, with the item having a bottom and sides upstanding from the bottom, comprising, in combination: a planar panel; a central portion of said panel underlying the bottom of said item in the plane of the planar panel; a number of angularly disposed upwardly extending tabs formed in the planar panel and hingedly connected to said central portion, with the tabs having upper end portions spaced from the central portion, with the tabs being flexible upwardly at an angle to the plane of the planar panel to engage the upper end portions of said tabs against the sides of the item spaced above the bottom of the item; a marginal portion extending from the central portion in the plane of the planar panel and intermediate the tabs providing a large supporting surface; and means for holding the upper end portions of said tabs against said sides of the item.

5,060,799

PACKAGING FOR FLOWERS

Janus A. W. De Pagter, Dinteloord, Netherlands, assignor to Pagter & Partners International B.V., Dinteloord, Netherlands

Filed Oct. 7, 1988, Ser. No. 254,706
Claims priority, application Netherlands, Oct. 9, 1987, #702405
Int. Cl.[5] B65D *85/50, 85/52*
U.S. Cl. 206—423 **8 Claims**



1. Packaging for flowers comprising

a plastic crate having inclined walls so that it is nestable in an equivalent crate,

said crate being provided at its upper part with a circumferential ridge;

an extension having cardboard side walls and a cover part which can open and close,

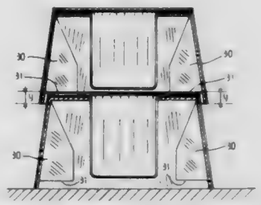
wherein the extension is receivable on top of the crate with the cover part uppermost and the side walls of the extension are supported resting on top of the circumferential ridge.

5,060,800

TIGHT CONTAINER PARTICULARLY FOR FOOD PRODUCTS

Jean A. Bodet, Saint Forget les Sablons, and Pierre-Denis Kuhlmann, Neuilly sur Seine, both of France, assignors to Societe Parisienne d'Impression et de Cartonnage (SPIC), Colombes, France

Continuation of Ser. No. 204,425, Jul. 22, 1988, abandoned. This application Aug. 24, 1990, Ser. No. 572,334
Claims priority, application France, Sep. 23, 1986, 86 13321
Int. Cl.[5] B65D *21/00*
U.S. Cl. 206—512 **15 Claims**



1. A container comprising:

a synthetic material film shaped so as to define at least one sealed compartment,

said at least one compartment being a hollow interior space with walls and a bottom surface coupled to the walls so as to allow said at least one compartment to be capable of containing material,

a plane top around the at least one compartment,

continuous external walls surrounding said at least one compartment,

said synthetic material film thereby forming a double side wall where one wall is a wall of the compartment and a second wall is a part of the wall of the external walls,

said at least one compartment having a height less than or equal to that of the external walls, the synthetic material film being backed by at least one bonded-on cardboard layer over substantially all of an inside surface of the external walls and a lower surface of the plane top,

a second synthetic material film in a single piece which constitutes an uninterrupted outside wall covering the container and the plane top,

wherein said cardboard layer comprises in a single piece a top having at least one opening therein and side walls with adjacent edges, and

projections from an interior wall of the cardboard layer, the projections having bases that are slightly short of a lower edge of the external walls, a perimeter of the container at the level of the top being smaller than a perimeter of the container at a level of said lower edge of the external walls.

5,060,801

PACKING BOLSTER, CONTAINER FOR SUCH A BOLSTER

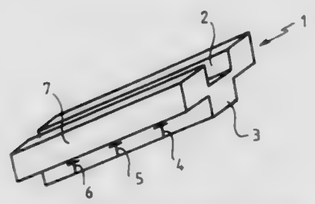
Jean-Claude Vilas-Boas, Sannois, France, assignor to Bull, S.A., Paris, France

Filed Jan. 26, 1989, Ser. No. 301,907

Claims priority, application France, Jan. 26, 1988, 88 00879

Int. Cl.[5] B65D *81/02, 85/30*

U.S. Cl. 206—523 **6 Claims**



1. A bolster for holding and protecting a product in a package, characterized in that the bolster (**21**) comprises plastic material in a continuous form and of a predetermined axial length so as to at least partially surround the product (**19**), said bolster having one face, at least one axial groove within which the product is to be received and including retaining portions to each side of the groove for retention of the product in the direction perpendicular to the plane in which the length of the bolster is located, to prevent the product from displacement in the package (**18**);

wherein said plastic material is a solid material such as polyethylene or polyurethane, said retaining portions and groove being arranged to receive and laterally hold the product (**15**), and including at least one contact face (**8***c*) opposite the groove for bearing against an inside wall of the package (**13**); and

wherein the contact face opposite the face of the bolster carrying the groove (**8***a*) is of a mating shape (**3**) to that of said one face, so as to permit stacking of the bolsters in storage in a nested configuration.

5,060,802

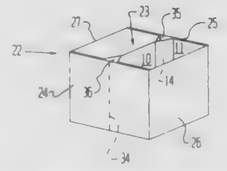
DIVIDABLE CARTONS

A. David Johnson, Jr., Berwyn, and Joseph L. Bachman, Jr., Wayne, both of Pa., assignors to Wayne Automation Corporation, Norristown, Pa.

Continuation of Ser. No. 504,849, Apr. 5, 1990, abandoned. This application Jan. 3, 1991, Ser. No. 637,195

Int. Cl.[5] B65D *5/54, 5/48*

U.S. Cl. 206—602 **1 Claim**



1. A blank for forming a U-shaped divider to be placed into subdividable carton:

a generally rectangular shaped piece of corrugated sheet stock;

a first pair of spaced apart, parallel score lines extending between a pair of oppositely disposed edges, each score line of the first pair being for use in determining a fold lien;

a second pair of spaced apart, parallel score lines spaced from said first pair and extending between said pair of oppositely disposed edges, each score line of the second pair being parallel said score lines of said first pair and said score lines of the second pair being for use in determining a fold lien; and

along one of said opposite edges, a plurality of spaced apart, lead-in cutouts.

5,060,803

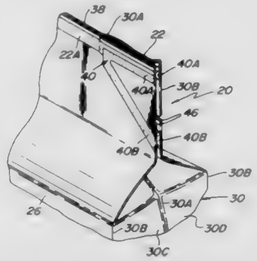
GUSSETTED FLEXIBLE PACKAGE WITH TEAR NOTCH TO FORM POUR SPOUT

Jeffrey S. Beer, 2340 Hill Rd., Perkiomenville, Pa. 18074, and Daniel R. Wigman, 512 Woodbridge Cir., Harleysville, Pa. 19438

Filed Jan. 17, 1991, Ser. No. 642,601

Int. Cl.[5] B65D *33/00*

U.S. Cl. 206—610 **14 Claims**



1. A gussetted flexible package having a hollow interior for holding material therein, said package being formed of flexible sheet material and comprising a pair of panels each having a pair of sides connected by respective gusset folds, a mouth located between said gusset folds and communicating with said interior, and means for forming a pouring spout for said package, each of said gusset folds comprising a central fold edge interposed between a pair of outer fold edges and defining therebetween two respective gusset sections, wherein one of said gusset sections of one gusset fold is contiguous with one of said outer fold edges and contiguous and subadjacent one of said panels on one side thereof, and the other of said gusset sections of said one gusset fold is located contiguous with the other of said outer fold edges and contiguous and subadjacent the other of said panels on said one side, said mouth of said package being sealed to hold said material within said interior of said package isolated from the ambient atmosphere, said means for forming said pouring spout comprising at least one notch formed in at least one of said outer fold edges of said one gusset fold and the one panel and gusset section contiguous therewith and a first air-tight seal surrounding said notch and joining said one panel and contiguous gusset section to each other to preclude air from entering into said interior of said package through said notch.

5,060,804

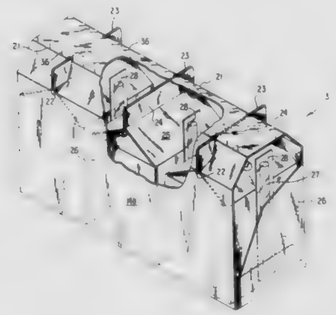
GABLE TOP CARTON WRAPPER

Jonathan T. Beales, Memphis, Tenn., and Paul D. Richardson, Cincinnati, Ohio, assignors to International Paper Company, Purchase, N.Y.

Filed Mar. 25, 1991, Ser. No. 691,249

Int. Cl.[5] B65D *5/54*

U.S. Cl. 206—611 **8 Claims**



1. A one piece paperboard blank (**2**) for a wrap-around carrier to package a linear series of gable-top liquid cartons, said blank comprising:

(a) a top panel portion (**10**),

(b) top corner panel portions (**12**) foldably attached to longitudinal edges (**21**) of the top panel portion and having oppositely disposed openings (**22**) to securely receive portions (**23**) of the top opening tabs (**24**) of contained said cartons (**26**),

(c) side wall panel portions (**14***a*, **14***b*) foldably attached to the top corner panel portions,

(d) a bottom panel portion (**16**) foldably attached to one said side wall panel portion,

(e) a first end flap (**32**) foldably attached to one of the said side wall and bottom panel portions and of a size sufficient to cover the major area of an end of said carrier when in erected condition thereby to inhibit pilferage of an object (**27**, **29**) temporarily secured to an exposed side of a said contained carton, and

(f) a second end flap (**34**) foldably attached to another of the said side wall and bottom panel portions so as to secure said first end flap in position when the blank is erected as a carrier.

5,060,805

PHOTOELECTRON EMITTING MEMBER

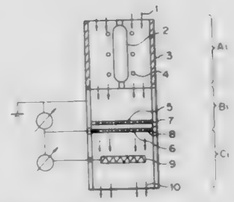
Toshiaki Fujii, Kanagawa, and Kazuhiko Sakamoto, Saitama, both of Japan, assignors to Ebara Research Co., Ltd., Fujisawa, Japan

Filed Jun. 15, 1990, Ser. No. 538,771

Claims priority, application Japan, Jun. 20, 1989, 1-155857; Jun. 12, 1990, 2-153335

Int. Cl.[5] B03B *1/00*

U.S. Cl. 209—3 **11 Claims**



1. A photoelectron emitting member having a multiplex structure comprising a matrix and a conductive, protective film disposed over said matrix, said matrix being selected from the group consisting of elements, inorganic compounds, alloys, mixtures thereof and composites thereof which emit photoelectrons upon exposure to uv rays and other forms of radiation, said conductive, protective film comprising at least one material selected from the group consisting of metals, metallic compounds, plastics and polycyclic aromatic hydrocarbons and derivatives thereof which is film-forming, said conductive, protective film being not thicker than 0.2 μm.

5,060,806

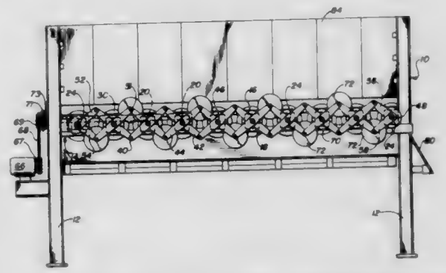
VARIABLE-APERTURE SCREEN

George M. Savage, Richmond, Calif., assignor to Cal Recovery Systems, Incorporated, Richmond, Calif.

Filed Feb. 6, 1989, Ser. No. 306,106

Int. Cl.[5] B07B *13/04*

U.S. Cl. 209—668 **14 Claims**



1. Apparatus adapted to separate material into first and second portions according to size, said apparatus comprising, in combination:

a support;

a plurality of cylindrically-shaped shafts movably mounted on said support in spaced, substantially parallel relationship and adapted to receive said material, each of said plurality of shaft having a longitudinal axis and defining spaced circumferential notches, said notches radiating outwardly at right angles to said longitudinal axis, with the notches defined by each of said shafts being offset from and out of alignment with the notches defined by shafts adjacent thereto and the notches defined by alternate shafts being in alignment with one another;

a plurality of spaced, generally flat disks radiating outwardly

from each of said shafts at right angles to the longitudinal axis thereof, with the disks of each of said shafts staggered relative to the disks on shafts adjacent thereto and defining therewith a plurality of apertures between adjacent shafts, said apertures permitting passage of said first portion therethrough under the influence of gravity to separate said first portion from said second portion, said disks of each of said shafts being located between the notches defined thereby and in alignment with the notches defined by adjacent shafts, whereby disks of alternate shafts are in alignment;

means for rotating said shafts; and

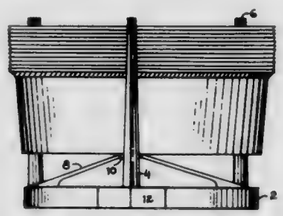
means for selectively moving said shafts on said support toward or away from one another to vary the size of said apertures including linkage interconnecting said shafts and adapted to cause substantially simultaneous movement of said shafts relative to said support while maintaining substantially parallel relationship between said shafts, said notches of each of said shafts receiving therein at least a portion of the disks radiating outwardly from adjacent shafts when said shafts are moved toward one another by said means for selectively moving said shafts, said apertures being discrete and having a rectangular configuration defined by the outer peripheries of said shafts between the notches defined thereby and said disks when said disk portions are received by said notches.

5,060,807

DISPOSABLE BOWL DISPENSER

Mark Beagle, 3250 Spottswood, Memphis, Tenn. 38111

Filed Jul. 26, 1990, Ser. No. 557,752
Int. Cl.[5] A47G *19/08*
U.S. Cl. 211—41 **1 Claim**



1. A pet feeding device for storing a number of disposable bowls, for holding said bowls in a stack with the topmost bowl of said stack being held so that pet food can be placed therein and so that a pet can eat directly therefrom, and for allowing said topmost bowl of said stack to be removed from said device and dispensed with, said device comprising:

(a) a base means for enabling said device to est on any generally flat surface,

(b) a retaining means being adapted so as to hold said number of disposable bowls horizontally aligned to said base means and for holding said topmost bowl of said stack of bowls so that said pet food can be placed therein and so that said pet can eat directly from said topmost bowl while said stack of bowls are held by said device and for allowing said topmost bowl to be subsequently removed from said device and dispensed with,

(c) a support means attached to said base so as to be usable for exertion of upward pressure on the underside of said stack of disposable bowls, said support means being made of flexible plastic and comprising two generally tee shaped members, and

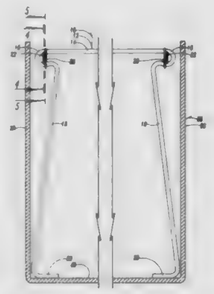
(d) means attached to said retaining means adapted so as to secure said number of disposable bowls in said retaining means thereby keeping said number of disposable bowls compressed against said support means.

5,060,808

HANGING FILE SUPPORT FRAME

Arnold B. Engman, Des Moines, Iowa, assignor to EMCO Industries, Inc., Des Moines, Iowa

Filed Aug. 28, 1989, Ser. No. 399,762
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—46 **6 Claims**



1. A hanging file support frame, comprising,

two spaced apart end members of integral one piece construction dwelling in substantially vertical planes, and having upper and lower portions, said end members comprising a horizontal strut with opposite ends terminating in C-shaped members, with said C-shaped members terminating in downwardly and outwardly extending leg portions,

two parallel hanging bars each having opposite ends supported by the upper portions of said end members, with the ends of said hanging bars being supported within said C-shaped members,

and clip elements detachably securing the ends of said hanging bars to said C-shaped members.

5,060,809

DEVICE FOR HOLDING BAGS

Richard M. Bayes, and Dennis B. Brashear, both of Duluth, Ga., assignors to Tara Plastics Corporation, Forest Park, Ga.

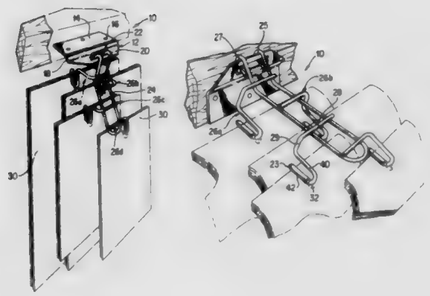
Filed Mar. 15, 1990, Ser. No. 494,081
Int. Cl.[5] B42F *7/00*
U.S. Cl. 211—59.1 **17 Claims**

1. A device for holding a plurality of differently sized bags adjacent a mounting surface, each bag having at least one support hole, comprising:

(a) a mounting bracket;

(b) an elongated hinge member hingedly attached to said mounting bracket; and

(c) a plurality of hooked members provided on said hinge member, each of said plurality of hooked members having at least one attachment flange extending from one side of said hinge member and wherein each of said hooked members has an attachment flange disposed from the side of the hinge opposite that of its adjacent hooked member.

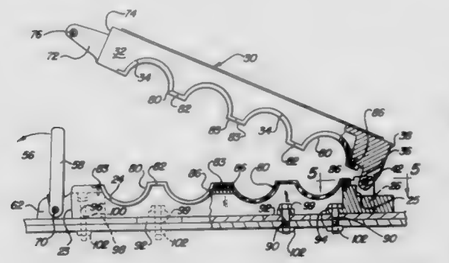


5,060,810

CLAMPS FOR LOAD BRACES

Gary Jones, 20 Prentiss St., P.O. Box 143, Monroeville, Ohio 44847

Filed May 3, 1990, Ser. No. 518,573
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—59.4 **14 Claims**



1. A pair of claims for storage of load braces extending between the clamps as they are mounted on a truck structure, each clamp including:

a base having a plurality of grooves;

a resilient insert secured to said base having a contoured portion conforming to the grooves in said base;

a cover having a plurality of grooves;

a resilient insert secured to said cover having a contoured portion conforming to the grooves in said cover;

a hinge securing one end of said Cover to said base for movement between an open position in which load braces can be placed in aligned grooves in each of said clamps to a closed position in which the load braces are engaged in the grooves of said cover being cushioned between the insert attached to said base and the insert attached to said cover;

securing means at the other ends of said base and cover for securing said cover to said base when said cover is in its closed position over said base; and

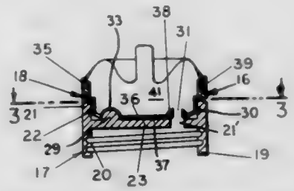
mounting means for attaching said clamps to said truck structure, said clamps being spaced apart and aligned to receive said load braces in the grooves of said base.

5,060,811

BABY BOTTLE

Martha Fox, 730 E. 19th St., Erie, Pa. 16503

Filed Aug. 24, 1990, Ser. No. 571,879
Int. Cl.[5] A61J *9/00, 11/04;* **A65D** *1/04, 25/52*
U.S. Cl. 215—6 **4 Claims**



1. A nursing bottle and valve combination comprising a valve and a bottle having a cylindrical externally threaded open end,

a partition dividing said bottle into a first compartment and a second compartment,

said partition terminating in a plane passing through said open end of said bottle,

a closure including means for threadably supporting said closure on said threaded open end of said bottle,

said valve comprising a nipple supported on a diaphragm and means rotatably connecting said valve to said closure,

said closure including a wall having openings therein aligned with said compartments,

said diaphragm having an opening therein and being rotatably supported on said wall and disposed to cooperate with said openings in said wall and said opening in said diaphragm being adapted to be aligned with one of said openings in said wall as said valve is rotated with respect to said closure whereby said first compartment, said second compartment or neither compartment can be connected to said nipple.

5,060,812

MEDICATION CONTAINER STOPPER WHICH CAN BE PUNCTURED BY NOZZLE OF A HYPODERMIC SYRINGE

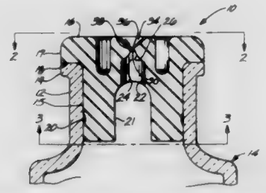
George B. Ogle, II, Alta Loma, Calif., assignor to International Medication Systems, Limited, South El Monte, Calif.

Filed Sep. 6, 1990, Ser. No. 578,746
Int. Cl.[5] B65D *39/00*
U.S. Cl. 215—247 **4 Claims**

2. An elastomeric stopper for a medication container, the stopper comprising:

an elastomeric plug adapted to make a friction fit in an opening of the medication container, the plug having an exterior surface adapted to face away from the container interior and an interior surface adapted to face toward the container interior, the exterior surface of the plug having a cavity which opens and diverges away from the interior surface of the plug, the interior surface of the plug having a cavity which opens and diverges away from the exterior surface of the plug, each cavity having a bottom, the bottoms of the cavities being spaced apart so they are separated by, and define opposite faces of, a thin dia-

phragm formed integrally with the plug, one of the cavities having an elongated groove with a bottom which defines one face of the diaphragm, the bottom of the groove being substantially parallel to the other face of the diaphragm, and the diaphragm being of a thickness which



permits the diaphragm to be ruptured by inserting a hypodermic syringe nozzle into one of the cavities; and

a transverse slot in the interior surface of the plug and a bore extending from an inner edge of the transverse slot to the beginning of the cavity in the interior surface of the plug.

5,060,813

CONTAINER WITH A SCREW-CAP CLOSURE

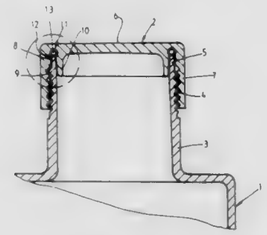
Albert Gollasch, Kuerten-Weiden, and Johannes Engst, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 5, 1990, Ser. No. 577,722

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1989, 3930519

Int. Cl.[5] B65D *41/28*

U.S. Cl. 215—329 **3 Claims**



1. A container comprising: a plastic body having a cylindrical pouring spout with a threaded external surface and an upper edge; a plastic closure having a top wall, a cylindrical peripheral wall depending downwardly from the top wall with a threaded internal surface configured to engage with the threaded external surface if the pouring spout, a conical sealing ring depending downwardly from the top wall and spaced radially inwardly from the peripheral wall to receive the upper edge of the pouring spout threrebetween with the external surface of the pouring spout bearing tightly on the internal surface of the peripheral wall, means forming an annular groove in the top wall between the peripheral wall and the sealing ring, the annular groove having a circular cross section with a center and a given diameter and an opening disposed symmetrically about the center and facing the upper edge of the pouring spout when engaged thereon and having a width less than the given diameter and an elastomeric O-ring in the groove and having a thickness greater than the width of the opening and engaging the upper edge of the pouring spout when the closure is engaged on the pouring spout.

5,060,814

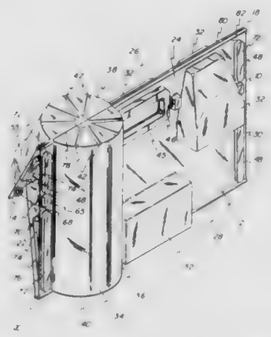
MOLDED PLASTIC CONTAINER FOR PACKAGING MULTIPLE PRODUCT SAMPLES

Richard K. Oglesbee, Lancaster, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 22, 1990, Ser. No. 600,957

Int. Cl.[5] B65D *51/04*

U.S. Cl. 220—339 **13 Claims**



1. A container comprising: a front panel having a top edge and a bottom edge;

a first rear panel;

a second rear panel;

means disposed along the top edge of said front panel for hingedly connecting said front panel to said first rear panel;

means disposed along the bottom edge of said front panel for hingedly connecting said front panel to said second rear panel; and

retaining means for mechanically retaining said first and second rear panels adjacent to said front panel with said first and second rear panels in an overlapping relationship, said retaining means comprising (a) said front panel including a first locking portion, (b) one of said rear panels including a second locking portion, and (c) the rear panel which does not include the second locking portion having an aperture therethrough through which one of said locking portions projects for mechanical interconnection with the other locking portion.

5,060,815

TRANSPORT AND STORAGE CONTAINER FOR FLUENT MATERIAL

Bruno Wendling, and Andre Hamm, both of Drulingen, France, assignors to Sotralentz S. A., Drulingen, France

Filed Dec. 14, 1989, Ser. No. 450,840

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1989, 3903392

Int. Cl.[5] B65D *19/00*

U.S. Cl. 220—401 **7 Claims**

1. In a transport and storage container for flowable materials comprising:

an annular and erect outer wall member in the form of a gridwork of horizontal rods and vertical bars and having a lower edge;

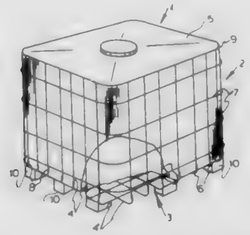
a generally planar floor member having an outer edge at the lower edge of the wall member and formed as a gridwork of horizontal bars; and

an inner vessel composed of a plastic material enclosed by the outer support member and supported on the floor member;

the improvement wherein

the bars of the planar floor member are separate from and not unitary with the bars and rods of the wall member;

each bar of the wall member is in substantial vertical alignment with a respective one of the bars of the floor member; and



the bars of at least one of the members are unitarily formed with L-shaped end extensions that extend past the respective edge and lie against and are joined to the respective bars of the other member by welds.

5,060,816

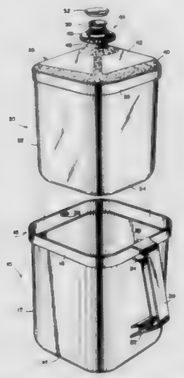
COMPOSITE CONTAINER AND ASSOCIATED CARRIER

Edward S. Robbins, III, 459 N. Court, Florence, Ala. 35630

Continuation-in-part of Ser. No. 288,237, Dec. 22, 1988, and Ser. No. 332,994, Apr. 4, 1989, abandoned, and Ser. No. 379,783, Jul. 14, 1989, abandoned. This application Nov. 7, 1989, Ser. No. 432,672

Int. Cl.[5] A47J *47/00*

U.S. Cl. 220—404 **19 Claims**



1. A collapsible container and carrier assembly comprising:

a relatively rigid plastic carrier having a substantially open upper end, a first peripheral side wall and a first bottom wall defining a first shape;

a relatively thin, flexible stand-along but collapsible polymer container body having a second peripheral sidewall and a second bottom wall defining a second shape substantially complementary to said first shape; said container body also provided with a top wall, said top wall having a unitary, relatively rigid upstanding dispensing portion formed therein, said second peripheral sidewall of said container body having a thickness of between 2 and about 6 mil, said dispensing portion of said top wall having a thickness of at least about 15 mil, wherein said container body is self-supporting both filled and empty and sufficiently strong for stand-along use, and wherein said container body is nestable within said outer carrier so that substantially all of said first peripheral side wall and first bottom wall are in engagement with and provide support for said second peripheral side wall and second bottom wall, said carrier being provided with a handle on an exterior side thereof to facilitate pouring of contents from said container body.

5,060,817

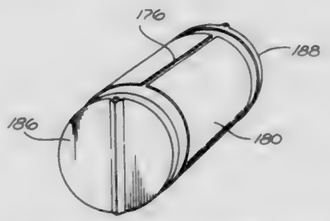
SECONDARY CONTAINMENT CAPSULE FOR UNDERGROUND STORAGE TANK AND METHOD FOR FABRICATING THE SAME

Jared A. Trussler, Santa Barbara, Calif., assignor to Trusco Tank, Inc., San Luis Obsipo, Calif.

Continuation of Ser. No. 219,048, Jul. 14, 1988, abandoned, which is a division of Ser. No. 99,546, Sep. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 35,412, Apr. 6, 1987, abandoned. This application Sep. 19, 1990, Ser. No. 585,045

Int. Cl.[5] B65H *81/00*

U.S. Cl. 220—414 **9 Claims**



1. A double wall storage tank comprising:

a steel inner tank having first and second ends and a substantially cylindrical center section;

a precured fiber reinforced plastic resin center section tightly wrapped around said center section of said steel tank and bonded together;

a texturing agent deposited on an inner surface of said plastic center section after the molding thereof, said texturing agent including a mixture of binder and solid materials, said texturing agent being deposited on said inner surface after said plastic center section is molded; and,

first and second precured fiber reinforced plastic resin end caps positioned over said first and second ends of said steel inner tank and banded to the plastic center section.

5,060,818

HEAT-RESISTANT LINER-PROVIDED VESSEL CLOSURE AND PROCESS FOR PREPARATION THEREOF

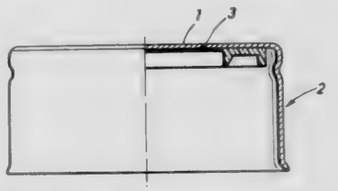
Konichi Doi, Yokohama; Junichi Itsubo, and Hiroaki Kikuchi, both of Hiratsuka, all of Japan, assignors to Japan Crown Cork Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 357,500, May 26, 1989, abandoned. This application Feb. 11, 1991, Ser. No. 652,500

Claims priority, application Japan, Aug. 8, 1988, 63-196168

Int. Cl.[5] B65D *45/02*

U.S. Cl. 220—454 **11 Claims**



1. A liner-provided vessel closure comprising a vessel closure shell and a liner formed on the inner face side of a top plate of the shell, wherein the liner is formed from a composition consisting essentially of (i) 10 to 60% by weight of a

hydrogenated styrene/butadiene block copolymer having a melt index smaller than 0.1 g/10 min as determined at a temperature of 200° C. under a load of 5 kg, (ii) 20 to 80% by weight of liquid paraffin and (iii) 5 to 60% by weight of a propylene resin.

5,060,819

NESTABLE LOW DEPTH TRAY

William P. Apps, Anaheim, Calif., assignor to Rehrig-Pacific Company, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 186,140, Apr. 26, 1988, Pat. No. 4,899,874, and a continuation-in-part of Ser. No. 272,039, Nov. 15, 1988, Pat. No. 4,932,532, and a continuation-in-part of Ser. No. 369,598, Jun. 21, 1989. This application Oct. 20, 1989, Ser. No. 424,163

Int. Cl.[5] B65D *75/00*

U.S. Cl. 220—519 **35 Claims**



1. A nestable tray comprising:

a floor having a top surface, a bottom surface, and a floor perimeter, said top surface having a plurality of fluid container support areas; and

a sidewall secured to said floor perimeter and extending up from said floor, said sidewall having elongated top and bottom surfaces, said top surface having a plurality of spaced raised portions, said bottom surface having a plurality of spaced raised portions corresponding to those of said top surface such that when said tray, when empty, is stacked on top of a similar empty tray said bottom surface mates with the top surface of the similar tray and said tray and the similar tray thereby nest relative to one another;

wherein said raised portions of said top surface are disposed directly above said raised portions of said bottom surface; and

wherein said sidewall comprises a plurality of serially-arranged panels, alternating ones of which are raised relative to said floor and whose upper and lower panel surfaces define said raised portions of said top and bottom surfaces, respectively.

5,060,820

PLATE ASSEMBLY

Gergory J. Boerner, 9505 Pagewood, Houston, Tex. 77063

Filed Jun. 11, 1990, Ser. No. 536,203

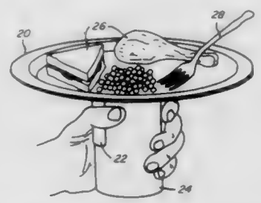
Int. Cl.[5] A47G *19/03*

U.S. Cl. 220—574 **10 Claims**

1. A food serving plate capable of being held simultaneously with a beverage container using just one hand, comprising:

a food bearing member having a bottom surface extending substantially horizontally and having a top surface free from apertures; and

an extension member, disposed flat against the bottom surface of the food bearing member prior to deployment, located so as to at least partially surround a central portion of the bottom surface, one end of which is securely affixed to the bottom surface of the food bearing member and the other end of which can be extended away from the bottom surface of the food bearing member so as to allow the



extension member and the beverage container to be simultaneously grasped.

5,060,821

LABEL DISPENSER FOR POSTAGE METER MACHINE

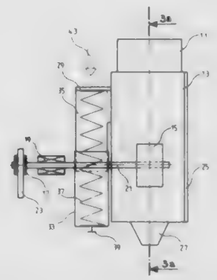
Erwin Berger, Thörishaus, and Christian Moy, Grossaffoltern, both of Switzerland, assignors to Ascom Hasler AG, Bern, Switzerland

Filed Jun. 6, 1989, Ser. No. 361,979

Claims priority, application Switzerland, Jun. 6, 1988, 02 157/88

Int. Cl.[5] B65H *3/06*

U.S. Cl. 221—190 **9 Claims**



1. A label dispenser for a postage meter machine comprising a counter piece;

a storage container for labels movably mounted on the counter pieces wherein the storage container can be shifted in a linear direction relative to the counter piece against the force of a pretensioned spring between a rest position and a dispensing position;

an outlet provided in said storage container;

a spring-loaded clamp within said storage container wherein the labels contained in the storage container are pressed by the spring loaded clamp against the outlet;

a shaft supported on the storage container;

a withdrawal roller mounted on an end of said shaft so as to be disposed adjacent the outlet of said storage container in engagement with the labels pressed against the outlet;

a free-wheeling bearing mounted adjacent the end of the shaft opposite the end having said withdrawal roller;

a gear-wheel pinion mounted on said shaft to be freely rotatable in one direction by the free-wheeling bearing;

a gear rack, mounted on the counter piece and engaging the gear-wheel pinion whereby linear movement of the storage container from its rest position to its dispensing position to cause rotation of the gear-wheel pinion and thereby the withdrawal roller to advance a label through the outlet and the pretensioned spring returns the storage container to its rest position such that the gear-wheel pinion is freely rotatable in said one direction so the withdrawal roller does not dispense a label.

5,060,822

CONFECTIONERY SUPPLYING MACHINE

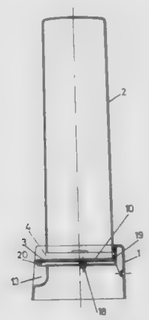
Antonio Florencio Perez, Gran Via de la Corts Catalanes, 1128 Barcelona, Spain; Alberto Vivancos Gil, Prat de la Manta, 65-08092 Hospitalet de Llobregat, Barcelona, Spain, and Antonio Alcantara Munoz, Taulat, 191 08005 Barcelona, Spain, assignors to Antonio Florencio Perez; Antonio Alcantara Munoz and Alberto Vivancos Gil, all of Barcelona, Spain

Filed Jun. 28, 1990, Ser. No. 544,541

Claims priority, application Spain, Jan. 3, 1990, 9000013

Int. Cl.[5] B65G *59/00*

U.S. Cl. 221—268 **5 Claims**



1. A device for successively dispensing individually lowermost articles such as a confectionery piece having a predetermined size and shape in plan, from the bottom of a stack of such articles, comprising:

A vertically elongated container having a generally square transverse cross-sectional shape, and including a front wall, a real wall, and two laterally opposite side walls, these walls having a lower edge perimetrically surrounding a bottom opening;

a support comprising wall means defining an upwardly open box having a bottom wall, a rear wall, and left and right laterally opposite side walls; said box being frontally open, and sized and shaped to telescopically receive a lower end portion of said container, including said lower edge;

surface means on said laterally opposite side walls of said container disengageably engaged with surface means on said laterally opposite side walls of said box and thereby releasably supporting said container on said support with said lower edge of said container spaced above said floor of said box frontally of said box, thereby defining an outlet slot extending widthwise of said box;

said bottom wall of said box having means defining a central, upwardly opening recess elongated in a front-to-rear direction of said box, said recess being laterally narrower than said bottom wall, so that two article support surfaces are defined on said bottom wall flanking laterally opposite edges of said recess;

an article removal plate slidingly received in said box through said outlet slot and disposed in said recess so as to have an upwardly facing support surface that is generally coplanar with said two flanking article support surfaces of said bottom wall of said box; said article removal plate being slidable between an extended position and a retracted position, said article removal plate extending forwardly from said slot to a greater extent when in said extended position than when in said retracted position;

said article removal plate being generally rectangular in plan and having at a forward end thereof a handle means which is manually accessible from externally of said device, for sliding said article removal plate forwards and rearwards through said slot;

said article removal plate further including an upwardly projecting, laterally extending article engagement flange provided thereon at a location distally of said handle means for engagement behind a lowermost article support on said support surfaces of said bottom wall of said box and said article removal plate when said article removal plate is in said retracted position, for dragging said lowermost article forwardly and at least partly out of said device through said slot as said article removal plate is slid forwards to said extended position by manually pulling outwards on said handle means;

interengaging guide means on said article removal plate and on said box, for guiding said plate as said plate is slid between said extended and retracted positions thereof; and

stop means provided on said article removal plate and arranged to engage with said support for limiting outward sliding of said article removal plate, and thereby defining said extended position of said article removal plate.

5,060,823

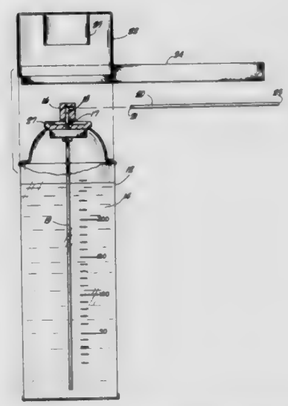
STERILE TRANSFER SYSTEM

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Sep. 15, 1988, Ser. No. 244,942

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **19 Claims**



19. A pressurized graduated container comprising a sterile liquid said liquid being chosen from a tissue culture solution, a microbiological cell culture solution and other cell culture related solutions for use with living cells.

5,060,824

BEVERAGE DISPENSER SYSTEM USING VOLUMETRIC RATIO CONTROL DEVICE

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 264,424, Oct. 31, 1988, abandoned, which is a continuation of Ser. No. 888,546, Jul. 18, 1986, abandoned. This application Nov. 7, 1989, Ser. No. 432,639

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—1 **25 Claims**

1. A beverage dispensing valve for dispensing a beverage into a cup and adapted to be mounted on a post-mix beverage dispenser comprising:

(a) a post-mix beverage dispensing valve including a body

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having a water passageway therethrough and a separate concentrate passageway therethrough, said body have a size of less than about 90 cubic inches;

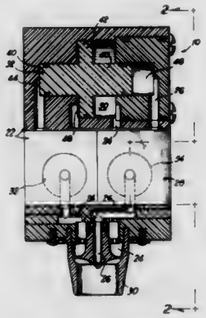
(b) said dispensing valve including a nozzle connected to said body for simultaneously dispensing water and concentrate from said dispensing valve;

(c) a self-contained volumetric ratio control device located entirely inside of said body of said dispensing valve for controlling the ratio of water to concentrate in the beverage dispensed from said nozzle, and including a water passage therethrough in communication with said water passageway and a separate concentrate passage therethrough in communication with said concentrate passageway;

(d) said water passageway extending from a water inlet passageway in said body through said volumetric ratio control device and then to said nozzle;

(e) said concentrate passageway extending from a concentrate inlet passageway in said body through said volumetric ratio control device and then to said nozzle;

(f) said volumetric ratio control device including a single reciprocatable piston located in a single cylinder, said cylinder having a central, larger diameter water portion and two smaller diameter concentrate portions, one on each side of said water portion, said piston having a central larger diameter water piston portion and two smaller



diameter concentrate piston portions, one on each side of said water piston portion, each of said concentrate piston portions being cylindrical and having a uniform diameter throughout their entire length for displacing water for providing improved casual drink performance, said piston separating said cylinder into a pair of separate larger diameter water chambers and a pair of separate smaller diameter concentrate chambers with the total volume of the water and concentrate chambers having a maximum value of 2.0 fluid ounces, said piston being operated by the pressure of the water such that operation of said device causes a predetermined ratio of water to concentrate to be forced therefrom and also causes concentrate to be drawn thereto and said device operating through a plurality of reciprocating cycles for each dispensing operation;

(g) said water passageway being in communication with each of said water chambers;

(h) said concentrate passageway being in communication with each of said concentrate chambers; and

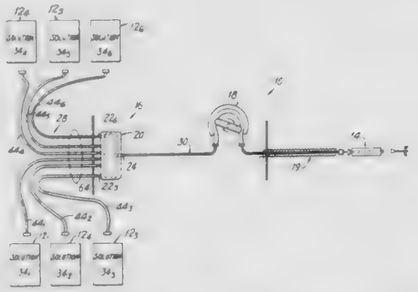
(i) self-contained, direct acting electrical solenoid valve means located entirely inside of said body of said dispensing valve for controlling the flow of water and concentrate through said volumetric ratio control device and for controlling the reciprocating movement of said piston in response to the pressure of the water in said water passageway.

5,060,825

IRRIGATION SYSTEM AND METHOD FOR DELIVERING A SELECTED ONE OF MULTIPLE LIQUID SOLUTIONS TO A TREATMENT SITE

Lee Palmer, Austin, Tex., and James Marsall, Westford, Mass., assignors to Sultan Chemists, Inc., Englewood, N.J.

Filed May 4, 1990, Ser. No. 519,405
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—25 **15 Claims**



1. Periodontal irrigating system for delivering one of a plurality of liquid irrigating solutions to a treatment site in an oral cavity, comprising:

a plurality of solution reservoirs, each reservoir including a quantity of a respective liquid irrigating solution substantially sealed within a container, each of said liquid irrigating solutions having a color which is distinguishable from the color of the other liquid irrigating solutions, and wherein color coded indicia are associated with each of said solution reservoirs corresponding to said liquid irrigating solution thereof;

handpiece means for delivering a selected one of said liquid solutions directly to a treatment site;

liquid solution coupling and selector means for fluidly coupling said handpiece means and a selected one of said liquid solutions of a respective solution reservoir, said liquid solution coupling and selector means including selector valve means having a plurality of inputs, an output, and means for coupling a selected one of said inputs and said output, first tubing means for fluidly coupling each of said liquid irrigating solutions and a respective one of said inputs of said selector valve means, and second tubing means for fluidly coupling said output of said selector valve means and said handpiece means;

said second tubing means including a flexible tube means having a length proximate to said handpiece means, and formed of substantially clear transparent material such that the color of a liquid irrigating solution following through said flexible tube means is visible during treatment with said handpiece means at said oral cavity; and pump means for causing a selected one of said liquid solutions to flow from said reservoir thereof to said handpiece means for delivery to the treatment site.

5,060,826

CONTAINER WITH INFLATABLE VESSEL FOR CONTROLLING FLOW OF LIQUID OR VISCOUS MATERIAL

Clarence B. Coleman, San Leandro, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Filed Aug. 25, 1988, Ser. No. 235,979
Int. Cl.[5] B67D *5/54*
U.S. Cl. 222—95 **6 Claims**

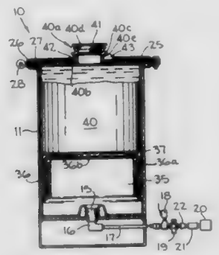
1. A bulk material container comprising:

(a) a shell;

(b) a fully enclosed, fluid tight inflatable vessel disposed in said shell, said inflatable vessel having an inlet opening:

(c) a compressible vessel in which is stored a product to be dispensed, said compressible vessel being disposed in said shell adjacent said inflatable vessel, said compressible vessel having an outlet through which passes the product to be dispensed;

(d) fitting means coupled to said inlet opening in a close fit relation and communicating with said inlet opening of said inflatable vessel for introducing fluid under pressure into said fully enclosed inflatable vessel to expand said inflatable vessel for compressing said compressible vessel to discharge the product stored in said compressible vessel for dispensing said product through said outlet of said compressible vessel;



(e) a cover seated on said shell and formed with an opening therethrough, said outlet for said compressible vessel being in the form of a neck for extending through said opening in said cover;

(f) product dispensing means communicating with said neck for dispensing said product from said compressible vessel;

(g) a plurality of stops on said cover in the vicinity of said product dispensing means, and

(h) a retainer clip engaging said neck of said compressible product vessel and said product dispensing means to inhibit rotation of said compressible vessel and to hold the neck in the upright position, said compressible product vessel being restrained from rotation in response to said retainer clip engaging one of said stops.

5,060,827

LOW PROFILE ANTI-DRIP DOSING CAP AND SPOUT FOR LIQUID CONTAINERS

Umberto D. I. Segati, Brussels, Belgium, assignor to Colgate-Palmolive Company, Piscataway, N.J.

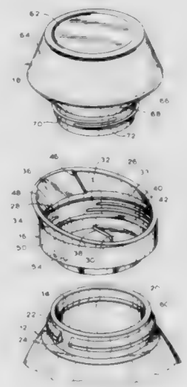
Filed May 9, 1990, Ser. No. 521,287
Int. Cl.[5] B67D *1/16*
U.S. Cl. 222—109 **20 Claims**

1. A dosing cap and spout for use in combination with a container which houses a liquid, the container having a dispensing opening, the closure comprising:

a coupling member including an open ended body portion formed by an upright boundary wall, and a top end peripheral edge which defines an outwardly projecting spout, said body portion having an interior surface;

means for fastening said coupling member to the dispensing opening;

a dosing cap including a top wall and downwardly depending boundary wall which defines an interior chamber and a dosing opening, said downwardly depending boundary wall having an exterior cap surface, said dosing cap being dimensioned for removable attachment to said coupling member by arrangement of said exterior cap surface in overlying relation with respect to the interior surface of said outwardly projecting spout; and



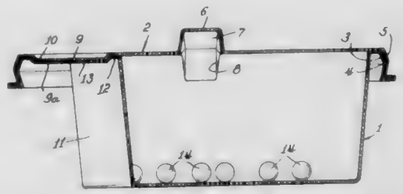
cap fastening means for removably locking said cap in said coupling member.

5,060,828

DISPENSING DISPLAY PACKAGE FOR SMALL BALLS

David B. Rosten, Cambridge, Minn.; Douglas E. Foos, Barrington; Richard L. Partlow, Jr., Naperville, both of Ill., and Edward M. Berger, Chatsworth, Calif., assignors to Plastofilm Industries, Inc., Wheaton, Ill.

Filed May 25, 1990, Ser. No. 529,198
Int. Cl.[5] B65D *41/00*
U.S. Cl. 222—142.9 **8 Claims**



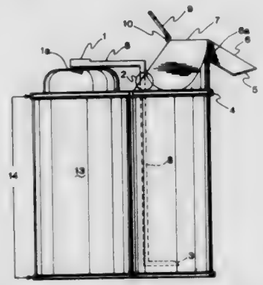
1. A dispensing display package for small balls comprising a generally cup-shaped base having a round open top and a cover therefor, fastening means for removably and rotatably securing said cover to said top of said base, said means comprising a base skirt flange spaced and depending from said top of said base, a cover skirt flange depending from the periphery of said cover overlying and in engagement with said base skirt flange, both of said skirt flanges having bulging middle portions thereof whereby the portions of said flanges below said bulging middle portions coverage inwardly to lock said cover to said base, the crest of said bulging middle portion of said cover skirt flange being at a slightly higher level and greater in diameter relative to the crest of said bulging middle portion of said base skirt flange in the closed package whereby to draw said cover downwardly upon said base, and an opening in at least said cover to permit passage of balls from within said package to the outside thereof.

5,060,829

PRODUCT CONDITIONING UNIT

Glen R. Evans, 18183 285th St., Shafer, Minn. 55074

Filed Jan. 22, 1990, Ser. No. 468,130
Int. Cl.[5] B67D *5/62*; B05B *1/24*
U.S. Cl. 222—146.3 **3 Claims**



1. Apparatus for heating and moisturing shaving cream dispensed from a valve proximate the top of a pressurized container, comprising:

(a) a fluid vessel for holding a hot fluid having a specific gravity greater than that of the shaving cream to be dispensed, said vessel having a vertical dimension approximating a vertical dimension of the pressurized container, said vessel to be disposed in a position laterally proximate, vertically coextensive with, the pressurized container; and

(b) conduit means for depositing shaving cream dispensed from the valve into said hot fluid within said fluid vessel proximate a lower extremity of said vessel, when said vessel is disposed laterally proximate the pressurized container.

5,060,830

DISPENSING PACKAGE FOR DISPENSING LIQUIDS

Thomas J. Krall, Toledo, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Jan. 11, 1990, Ser. No. 463,699
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—212 **9 Claims**

1. A dispensing package for dispensing liquid comprising:

an injection blow molded container having a flexible body,

an integral neck comprising an integral outer wall and an integral inner wall defining a space between said outer wall and said inner wall, said space being closed at one end nearest the container and open at the other end,

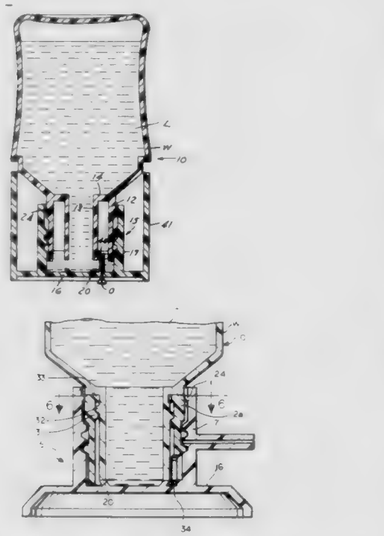
said inner wall defines a dispensing opening,

a plastic closure having a transverse wall, a peripheral skirt and a base for engaging a flat surface or the like, said closure having an outlet opening,

interengaging means between the closure and the outer wall for holding the transverse wall in sealing engagement with the inner wall of the neck for closing the dispensing opening,

means providing a seal between the skirt of the closure and the outer surface of the outer wall,

said closure being movable axially between a first position sealingly engaging the neck of the container and a second position wherein fluid is permitted to flow through the dispensing opening and to said outlet opening in the closure so that when the flexible body of the container is thereafter compressed a predetermined quantity of the



contents is dispensed through the outlet opening in the closure.

5,060,831

MATERIAL FOR COVERING A CASTING SHROUD

Mark K. Fishler, Naperville, Ill., and Gilbert Rancoule, Maubeuge, France, assignors to Vesuvius Crucible Company, Pittsburgh, Pa.

PCT No. PCT/FR89/00337, § 371 Date Feb. 12, 1990, § 102(e) Date Feb. 12, 1990, PCT Pub. No. WO90/00102, PCT Pub. Date Jan. 11, 1990
PCT Filed Jun. 28, 1989, Ser. No. 477,850
Int. Cl.[5] C04B *35/48*
U.S. Cl. 222—591 **15 Claims**

7. A nozzle for use in casting molten metal, said nozzle comprising a body of a refractory material and having a refractory liner portion formed therein adapted to resist oxide buildup during casting operations, said refractory liner consisting of carbon and a homogeneous, fused mixture of calcium oxide and zirconium oxide, said fused mixture consisting essentially of in weight percent between about 23% to about 50% calcium oxide and between about 50% to about 80% zirconium oxide.

5,060,832

WATER BOTTLE CAGE ASSEMBLY

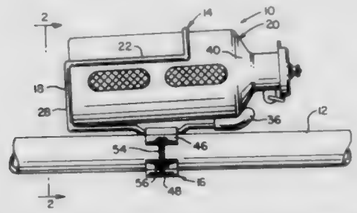
Paul C. Link, Ft. Recovery, Ohio, assignor to Huffy Corporation, Dayton, Ohio

Filed Apr. 11, 1990, Ser. No. 508,326
Int. Cl.[5] B62J *11/00*
U.S. Cl. 224—32 R **10 Claims**

1. For use with a water bottle of a type having a flexible body, a cage assembly for mounting said water bottle to a bicycle frame tube comprising:

a cage shaped to receive said water bottle in a releasable interference fit and including an inboard segment having a pair of substantially parallel, longitudinally-extending struts, each of said struts having an offset portion extending outwardly from said cage; and

bracket means for mounting said cage on said frame tube at said offset portions and including recess means for receiving said offset portions therein, said bracket means clamping said offset portions against said frame tube.

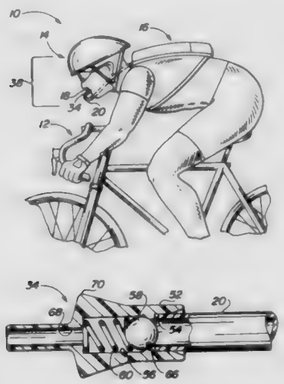


5,060,833

CAMEL BACK

James M. Edison, and Arthur D. Henderson, both of Odessa, Tex., assignors to Fastrak Systems, Inc., Odessa, Tex.

Continuation of Ser. No. 393,434, Aug. 14, 1989, abandoned.
This application Aug. 24, 1990, Ser. No. 574,576
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—148 **4 Claims**



1. A liquid delivery system for a bicyclist, said system includes a back pack that forms an enclosure made of flexible material and having an outer wall surface spaced from an inner wall surface;

the outer and inner wall surfaces have a periphery that is connected to form said enclosure, attachment means for mounting the inner wall to the back of a bicyclist at a location between the shoulders;

a liquid container having flexible sidewalls, said container is located within said enclosure and thereby elevated above the bicyclist's mouth when the bicyclist is in a normal riding position;

a flow line having opposed ends, a valve device in the form of a resilient annular mouthpiece of a size to be held in the bicyclist's mouth, said mouthpiece has an inlet end and an outlet, one end of said flow line is connected to said inlet end of said mouthpiece and the other end of said flow line is connected to said liquid container to receive flow therefrom; a passageway formed through said mouthpiece, a medial length of said passageway enlarges into a chamber having opposed ends, said resilient annular mouthpiece has a medial length that includes a circumferentially extending chamber forming wall within which said chamber is formed, the chamber forming wall is deformed towards said passageway when clamped between the teeth; a valve seat at one end of said chamber through which liquid can flow to said outlet, an annular shoulder at the other end of said chamber through which flow from said one end of said flow line can flow into said inlet end of said mouthpiece and into said chamber;

a valve element in said chamber, a spring means for biasing said valve element, one end of said spring means engages said shoulder at said chamber end that is opposed to the valve seat, and the other end of said spring means engages said valve element and thereby normally biases the valve element into engagement with said valve seat; said valve element is reciprocatingly received within said chamber and is unseated from said valve seat in response to opposed sidewalls of the medial part of said mouthpiece being deformed towards one another;

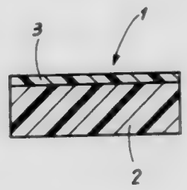
whereby said mouthpiece is compressed between the teeth, and the opposed sidewalls of the mouthpiece are deformed and forces the valve element and the valve seat away from one another and thereby opens the valve device to permit liquid to flow by gravity from said liquid container, through said flow line, into the inlet of the mouthpiece, through the chamber, through the valve seat, and through the outlet of said mouthpiece where the liquid is made available to the bicyclist.

5,060,834

WRISTLET OF PLASTIC MATERIAL

Jacques Cognard, Neuchâtel, France, and Claude Ganguillet, Cortaillod, Switzerland, assignors to ETA SA Fabriques d'Ebauches, Switzerland

Filed Nov. 21, 1989, Ser. No. 439,912
Claims priority, application France, Nov. 25, 1988, 88 15647
Int. Cl.[5] A44C *5/00*
U.S. Cl. 224—178 **12 Claims**

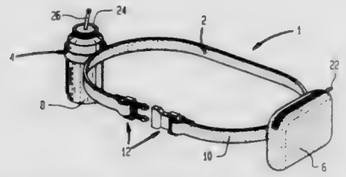


1. A wristlet comprising:

a band of a pliable non-fluorinated plastic material having a face for contacting the wrist of a wearer of the wristlet, and an opposite face; and

an outer layer of fluorinated polymer material adhered to said band and covering at least said opposite face, said fluorinated polymer material having a sufficiently low surface tension to substantially prevent dirt from becoming attached to the outer surface of said wristlet during the wearing thereof, and said outer layer being formed by a piece of fluorinated polymer film having the shape and dimensions of said outer layer and a sufficiently small thickness for the pliability of said wristlet to be determined substantially by the pliability of said band.

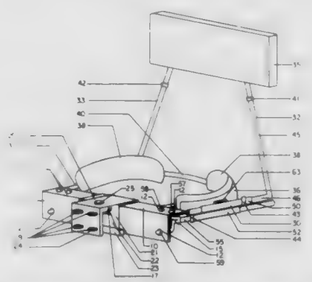
5,060,835
BELT TYPE PERSONAL CARRIER APPARATUS FOR CONVENIENTLY SUPPORTING A BEVERAGE CONTAINER AND OTHER BELONGINGS OF A PERSON ABOUT THE PERSON'S WAIST
Osamu M. Payne, 329 Desmond Dr., Fayetteville, N.C. 28304
Filed Jul. 30, 1990, Ser. No. 559,656
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—224 16 Claims



1 Belt type personal carrier apparatus comprising:
belt means for being secured exclusively about a person's waist;
means for readily securing a beverage container to the belt means;
receptacle means adapted to selectively enclose small articles therein;
said securing means and said receptacle means being permanently connected to said belt means as an integral unit;
said securing means and said receptacle means being disposed in spaced relation along said belt means such that the securing means and the receptacle means will be disposed opposite to each other and adjacent to a person's hips, respectively, when said belt means is secured about a person's waist;
said securing means comprising a first loop shaped strap adapted to be tightly secured about a beverage container such that the first strap will extend coaxially with a longitudinal axis of the beverage container, and at least one second strap having opposite ends extending perpendicularly from oppositely disposed portions of said first strap, said second strap being adapted to be tightly secured about a lower portion of a container secured by said first strap;
said first and second straps being constructed of an elastic material so that the straps can reliably secure different sized beverage containers; and
each of said belt means, said securing means and said receptacle means being constructed of lightweight material.

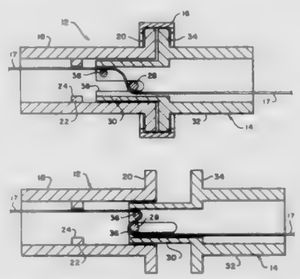
5,060,836
CARRYING DEVICE
Tracy W. Bradford, and Ryan W. Bradford, both of 14690 Pepperidge, Grand Haven, Mich. 49417
Filed May 18, 1990, Ser. No. 526,039
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—271 25 Claims

1. A carrier frame to support an object in front of a person, comprising:
a pair of elongated spaced-apart substantially parallel side members for extending generally horizontally along the sides of a person in the region of the waist;
a front member engaging one end of each of said side members and extending in a generally horizontal direction, for supporting an object in front of the person; and
a pair of elongated back members each having a first end portion connected to another opposing end of a respective side member and a second end portion, said back members generally extending upwardly and having a connection member connected between said second end portions thereof for engagement with the back thoracic region of a person;
said side members each comprising an attachment member for engagement with a support device supported on the person in the top regions of the hips, whereby downward



forces resulting from the weight of a carried object are applied to the hips and reaction forces are applied to the back thoracic region of the person.

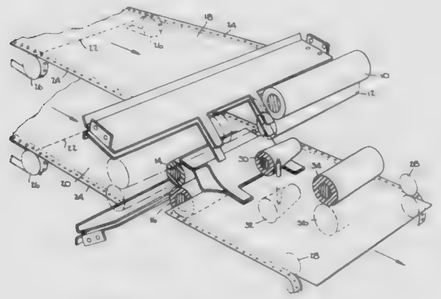
5,060,837
METHOD AND APPARATUS FOR SEVERING AN OPTICAL FIBER
Larry L. McCormick, Los Angeles, Calif., assignor to G & H Technology, Inc., Camarillo, Calif.
Filed Oct. 29, 1990, Ser. No. 604,193
Int. Cl.[5] B26F *3/00*
U.S. Cl. 225—1 6 Claims

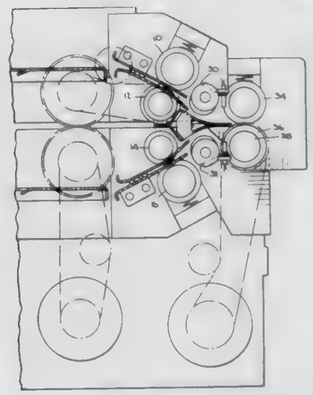


1. A method of breaking an optical fiber, comprising the steps of:
looping the fiber loosely about two spaced apart cylindrical pins, said pins each having such a relatively small diameter that an optical fiber conforming to the pin outer surface will break; and
moving the pins with respect to each other in such direction as to tighten the fiber looping and conform the fiber to each pin cylindrical surface.

3. An optical fiber cable severing device, comprising:
a first hollow, open-ended tube section;
a first break pin affixed to an inner wall of the first tube section and extending transversely of the tube section axis;
a second hollow, open-ended tube section having a cylindrical end part of such dimensions as to enable telescoping sliding receipt within an end of the first tube section, said cylindrical end part having a pair of aligned sidewall slots dimensioned for sliding receipt onto the first break pin; and
a second break pin mounted on the interior wall of the cylindrical end part adjacent the outer end thereof and extending generally transversely of the cylindrical end part axis;
said optical fiber cable being assembled about the break pins such that upon the first and second tube sections being moved apart the cable is formed into a generally S-shape configuration of increasingly smaller radii.

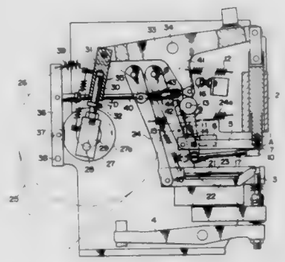
5,060,838
CLAM SHELL HOUSING FOR DUAL WEB BURSTING APPARATUS
William Gergely, Jr., Monroe, and Karel J. Janatka, Southbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Nov. 29, 1990, Ser. No. 619,536
Int. Cl.[5] B65H *35/10*
U.S. Cl. 225—100 4 Claims





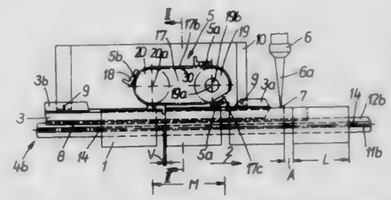
1. Apparatus for conveying upper and lower webs of material having equally spaced, successive, transverse lines of weakening along a longitudinal path and for separating said webs along said transverse lines of weakening, comprising:
a longitudinally extending support structure;
a bottom pair of upper and lower, vertically spaced feed rollers rotatably supported by said structure;
a pair of upper and lower, vertically spaced burster rollers, said lower burster roller having a shaft and being rotatably supported by said structure downstream of said bottom feed rollers;
a clam shell housing pivotably mounted on said lower burster roller shaft, wherein said upper burster roller is supported by said clam shell housing; and
a top pair of upper and lower, vertically spaced feed rollers rotatably supported by said clam shell housing.

5,060,839
STROKE ADJUSTMENT APPARATUS FOR LIGHT PROJECTOR OF BUTTON SETTING MACHINE
Fumio Seki, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jan. 22, 1990, Ser. No. 468,358
Claims priority, application Japan, Feb. 3, 1989, 1-12489[U]
Int. Cl.[5] A41H *37/10*
U.S. Cl. 227—18 5 Claims



1. An apparatus for adjusting a stroke of a light projector incorporated in a button setting machine having a horizontally reciprocable upper pusher for feeding a fastener element into a path of movement of a vertically reciprocable punch, said apparatus comprising:
(a) an actuating lever pivotally movable about a shaft in response to the reciprocating movement of the upper pusher;
(b) a holder pivotably connected to one end of said actuating lever and holding a rod, said rod having an end connected to a light projector;
(c) bias means for urging said rod upwardly;
(d) spring means for urging said actuating lever in a direction to retract said light projector from the path of movement of the punch; and
(e) an adjustable stopper engageable with said actuating lever to limit pivotal movement of said actuating lever in said direction against the force of said spring means.

5,060,840
APPARATUS FOR CONVEYING ROUNDED CAN BODY BLANKS TO A WELDING UNIT
Norbert Lentz, Essen, and Harald Schmidt, Langerwehe, both of Fed. Rep. of Germany, assignors to Krupp Maschinentechnik GmbH, Essen, Fed. Rep. of Germany
Filed Sep. 28, 1990, Ser. No. 589,632
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 3932551
Int. Cl.[5] B23K *37/04*; B21D *43/06*; B65G *19/22*
U.S. Cl. 228—47 17 Claims



1. An apparatus for conveying rounded can body blanks in a direction of transport to a welding unit, the blanks having front and rear edges and longitudinal edges between the front and rear edges, the welding unit connecting the longitudinal edges of the blanks with welded seams, said apparatus comprising:

a rail extending in the direction of transport, the rail having a predetermined width and having sides with longitudinal grooves to guide the longitudinal edges of the blanks; and

transport unit means adjacent the rail for moving the blanks in the direction of transport, the transport unit means having a pusher dog section in which the transport unit means comes into contact with the blanks, the transport unit means including

a single revolving device having a periphery,

a plurality of rocker elements, each having two feed pins which are connected to one another via the respective rocker element and which are spaced apart by a distance greater than the width of the rail, each feed pin having a pusher dog surface for engagement with the rear edges of the blanks, each rocker element additionally having a control arm with a control surface,

means for mounting the rocker elements on the revolving device so that the rocker elements are movable about respective swiveling axes that are transverse to the direction of transport, the rocker elements being uniformly distributed about the periphery of the revolving device at positions such that the distance between the pusher dog surfaces of one rocker element and the pusher dog surfaces of an adjacent rocker element is greater than the length of a can body blank, and

a guide track which is slidably engaged by the control surfaces of the rocker elements,

wherein the transport unit means brings the pusher dog surfaces of the rocker elements into contact with the rear edges of the blanks during entry of the blanks into the pusher dog section of the transport unit means, with the pusher dog surfaces of a rocker element being disposed on both sides of the rail and simultaneously pushing against the rear edge of a blank adjacent the longitudinal edges of the respective blank, and wherein the guide track has a portion which is configured to support the rocker elements so that the pusher dog surfaces maintain a predetermined orientation with respect to the direction of travel as the rocker elements exit the pusher dog section of the transport unit means.

5,060,841

WIRE BONDING METHOD AND APPARATUS AND METHOD OF PRODUCING SEMICONDUCTOR DEVICE BY USE OF WIRE BONDING APPARATUS

Yoshio Oshima, Tokorozawa; Yasushi Ishii, Kodaira; Hideki Hidaka, Hino, and Kunihiro Tsuchiya, Choufu, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Tokyo Electronics Co., Ltd., Ohme, both of, Japan

Continuation of Ser. No. 352,030, May 15, 1989, abandoned, which is a continuation of Ser. No. 946,773, Dec. 29, 1986, abandoned. This application Oct. 2, 1990, Ser. No. 593,346

Claims priority, application Japan, Dec. 29, 1985, 60-290678

Int. Cl.[5] H05K *3/32;* **H01L** *21/60*

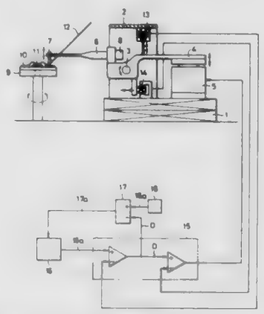
U.S. Cl. 228—102 **12 Claims**

1. A wire bonding method for electrically connecting a first wire bonding region to a second wire bonding region corresponding thereto through a bonding wire by a bonding tool means and a bonding arm means supporting the bonding tool means, the method comprising the steps of:

directly driving the bonding tool means and bonding arm means in a wire bonding cycle for driving the tool in an upward and downward direction by one of a linear motor and an electromagnetic linear drive means during said wire bonding cycle;

monitoring a differential signal during said wire bonding cycle representative of a difference between a position command signal for controlling an upward and downward displacement of the bonding tool means and a position signal outputted from a sensor for electrically detecting an actual upward and downward displacement of said bonding tool means; and

actuating said bonding tool means in accordance with an increase in value of said differential signal monitored during said wire bonding cycle to a landing of the tool on one of the first and second bonding regions up to a predetermined threshold value, by applying a predetermined



bonding load to the bonding tool means with one of the linear motor and the electromagnetic linear drive means to execute a wire bonding operation.

5,060,842

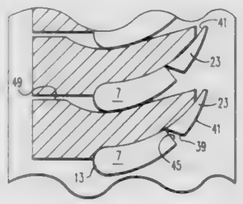
METHOD FOR REFURBISHING NOZZLE BLOCK VANES OF A STEAM TURBINE

Javaid I. Qureshi, Winter Springs, Fla., and Michael E. Anderson, Sr., Winston-Salem, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1990, Ser. No. 506,141

Int. Cl.[5] F01D *5/12;* **B23P** *6/04;* **B23K** *31/00*

U.S. Cl. 228—119 **10 Claims**



1. A method for refurbishing a nozzle block vane having an initial contour, with a concave face, and a damaged trailing edge section, secured to the walls of a passageway through a nozzle block, comprising:

removing the damaged trailing edge section from the nozzle block vane so as to provide an exposed end and a bevel that forms an acute angle from said concave face;

providing a replacement trailing end section of predetermined dimensions, having a concave face, a trailing end tip, opposite end, and opposed side walls, for said nozzle block vane said replacement trailing end section provided with a bevel that forms an acute angle from said concave face;

coating said replacement trailing end section with an erosion resistant coating while leaving an uncoated border along said opposite end and opposed side walls thereof;

positioning said coated replacement trailing end section adjacent the nozzle block vane with the uncoated opposite end of the replacement trailing end section confronting the exposed end of the nozzle bock vane; and

joining the uncoated opposite end of the replacement trailing end section to the exposed end of the nozzle block vane and the opposed side walls to the walls of the nozzle block to produce a repaired nozzle block vane having the same contour as that of the initial contour.

5,060,843

PROCESS OF FORMING BUMP ON ELECTRODE OF SEMICONDUCTOR CHIP AND APPARATUS USED THEREFOR

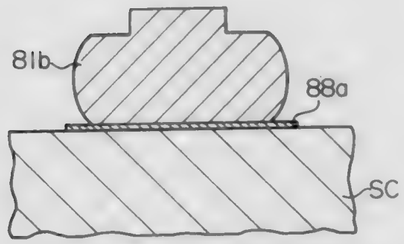
Tadao Yasuzato, and Keizo Sakurai, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jun. 1, 1990, Ser. No. 532,219

Claims priority, application Japan, Jun. 7, 1989, 1-146356; Jun. 13, 1989, 1-151632

Int. Cl.[5] B23K *101/40;* **H01L** *21/603*

U.S. Cl. 228—179 **3 Claims**



1. A process of forming bumps on respective electrodes of a semiconductor chip, said electrodes being arranged in at least first and second columns, said process comprising the steps of:

a) preparing a bonding apparatus equipped with a bonding tool movable in a first horizontal direction substantially parallel to an upper surface of said electrode, in a second horizontal direction substantially parallel to the upper surface of the electrode and substantially perpendicular to the first horizontal direction and in a vertical direction perpendicular to the upper surface of the electrode, a wire passsing through said bonding tool;

b) forming a small ball at a leading end of said wire, said small ball projecting from a leading end of said bonding tool;

c) causing said bonding tool to press said small ball against the upper surface of one of said electrodes in said first column for bonding thereto;

d) moving said bonding tool in a direction leaving from the upper surface of said electrodes;

e) moving said bonding tool in a predetermined direction on a virtual plane defined by said first and second horizontal directions so that said wire is cut from said small ball with a leading end of said bonding tool, a residual wire being left on said small ball; and

f) repeating said steps b) to e) for producing bumps on respective upper surfaces of the other electrodes, in which said predetermined direction for producing said bump on one of said electrodes in said first column is different from that for producing said bump on the upper surface of another electrode in said second column, and in which said semiconductor chip has a generally rectangular upper surface with two side edges, wherein said first and second columns are located along said two side edges, respectively, said predetermined direction for producing each bump in said first column being substantially in parallel with a direction form one of said side edges to a center of said rectangular upper surface, said predetermined direction for producing each bump in said second column being substantially in parallel to a direction from the other side edge to the center of said rectangular upper surface.

5,060,844

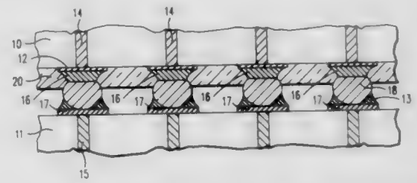
INTERCONNECTION STRUCTURE AND TEST METHOD

John R. Behun; Anson J. Call, both of Poughkeepsie; Francis F. Cappo; Marie S. Cole, both of Wappingers Falls, all of N.Y.; Karl G. Hoebener, Georgetown, Tex.; Bruno T. Klingel, Hopewell Junction, and John C. Milliken, Patterson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1990, Ser. No. 555,120

Int. Cl.[5] B23K *1/00, 101/40*

U.S. Cl. 228—180.2 **15 Claims**



1. A method for obtaining an electrical interconnection assembly on an electronic structure comprising the steps of:

applying at least one first solder portion to the surface of said structure;

applying at least one second solder portion to the at least one first solder portion; and

disposing a first dielectric medium on the surface of said structure covering said at least one first solder portion and contacting, but not covering, said at least one second solder portion.

5,060,845

METHOD FOR MANUFACTURE TITANIUM CLAD STEEL PLATE

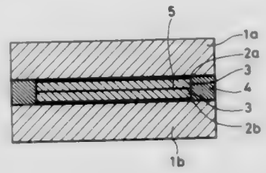
Hiroyoshi Suenaga; Misao Ishikawa, and Kuninori Minakawa, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jun. 4, 1990, Ser. No. 532,911

Claims priority, application Japan, Jul. 4, 1989, 1-171173

Int. Cl.[5] B23K *35/30, 11/16;* **B32B** *15/01*

U.S. Cl. 228—186 **14 Claims**



1. A method for manufacturing titanium clad steel plate comprising

forming a slab assembly comprising an alloy steel substrate, a titanium metal or alloy cladding on said substrate and a Ni-Cr alloy foil or film having opposed surfaces between said alloy steel and said titanium cladding; said Ni-Cr alloy foil or film having one surface in surface contact with said titanium cladding and the opposed surface in surface contact with said alloy steel substrate, and said Ni-Cr alloy comprising 32.5 to 40 wt. % Cr and 55 to 65 wt. % Ni;

heating said slab assembly at a temperature of 850 to 1010° C.; and

hot-rolling said heated slab assembly with a reduction ratio of 30% or more to form said titanium clad steel plate.

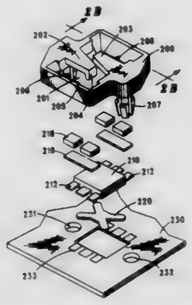
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5,060,846

INTEGRATED LOAD COMPENSATION DEVICE

Daniel J. Schaeffer, Arlington Heights; Raymond M. Fardoux, Wilmette; Robert P. Dein, Elmhurst, and Linda D. Limper, Glenview, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 23, 1990, Ser. No. 512,722
Int. Cl.[5] B23K *3/08*
U.S. Cl. 228—447 **20 Claims**



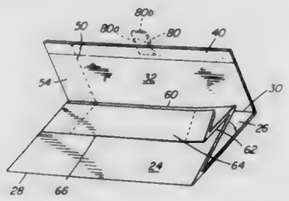
1. A load compensation device for fastening an electronic component having conductive leads to a substrate comprising:
- receiving means having a cavity for receiving an electronic component having conductive leads;
- fastening means connected to the receiving means for fastening the receiving means and the electronic component to the substrate; and
- urging means connected to the receiving means for urging the electronic component towards the substrate while maintaining conductive lead positions relative to contacts on the substrate, such that component placement and lead surface area contact is optimized by urging means force, which presses and holds the electronic component in place.

5,060,847

FILM PROCESSING ENVELOPE WITH OPTIONAL REMOVABLE NEGATIVE POUCH

James G. Angus, Don Mills, Canada, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 1, 1990, Ser. No. 561,990
Claims priority, application Canada, Sep. 29, 1989, 615027
Int. Cl.[5] B65D *27/08, 27/14*
U.S. Cl. 229—70 **18 Claims**



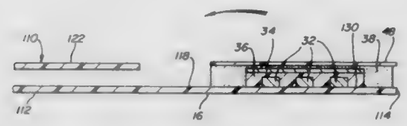
1. A film processing envelope formed from a single preglued web comprising:
- a generally rectangular back panel;
- a generally rectangular front panel overlying said back panel and adhesively secured to said back panel along opposite edges, and secured to said back panel by a fold line along a third edge, wherein the adhesive securement between said front and back panels comprises a strip of adhesive on one of said panels along said opposite edges, the strip along one edge being substantially broader than the strip along the other, to thereby provide a relatively stiff envelope portion along said one edge;
- a closure flap secured to said back panel by a fold line along a fourth edge opposite said third edge;
- means for securing the free edge of said closure flap opposite said fold line to said front panel;
- and an extension of said closure flap detachably secured thereto.

5,060,848

TAMPER INDICATING CONTAINERS AND SEALS

Frederick R. Ewan, Neptune, N.J., assignor to Frederick R. Ewan, Neptune and Robert E. Ozimek, Point Pleasant, both of, N.J.

Division of Ser. No. 334,084, Mar. 31, 1989, Pat. No. 4,998,666, which is a continuation-in-part of Ser. No. 193,799, May 13, 1989, abandoned. This application Jun. 13, 1990, Ser. No. 537,327
Int. Cl.[5] B65D *55/02*
U.S. Cl. 229—102 **10 Claims**



1. A container comprising:
- (a) a body portion and at least one integrated sealable closure flap, said closure flap having an exposed outer surface and a sealable inner surface;
- (b) a transparent masking material disposed (i) in an indicia-defining pattern (ii) on the inner surface of the closure flap and (iii) the masking material possessing low adhesion properties to the material of the closure flap;
- (c) a colorant layer disposed on the inner surface of the closure flap over the transparent masking material and extending beyond the indicia-defining pattern of the masking material; and
- (d) an adhesive disposed over at least the area in which the colorant layer and transparent masking material are disposed, the adhesive being registered with a surface of the container upon closure of the flap and operable upon unsealing of said flap to dislodge said colorant from said flap within the area of the indicia-defining pattern defined by said masking material.

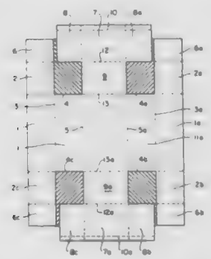
5,060,849

DISPOSABLE, TWO CONFIGURATION, DUAL PURPOSE BOX

Fred King, 10942 E. Daines Dr., Temple City, Calif. 91780

Filed Aug. 27, 1990, Ser. No. 572,414
Int. Cl.[5] B65D *5/08*
U.S. Cl. 229—101 **5 Claims**

1. A disposable multiple configured dual purpose box comprising:
- a blank having opposite surfaces of which a selected surface being scored and cut to define side and end fold lines and a plurality of panels;
- said panels being folded over upon themselves along said side and end fold lines to define a box-like structure having a bottom surrounded by endwalls and sidewalls;
- said panels having end flaps defined by flap fold lines and folded along said flap fold lines to either of a pair of box-like configurations cooperating with adjacent ones of said plurality of panels to provide a continuous peripheral sidewall about a common bottom;
- a separate fake bottom having edge marginal regions adapted to be received between said continuous sidewalls to rigidize said box-like configuration; and



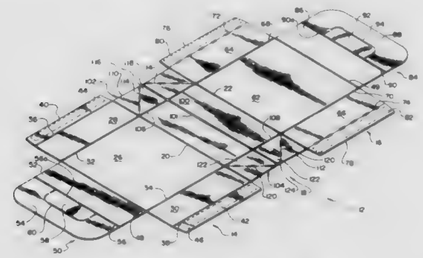
said false bottom includes a fold line midway between its opposite ends for form-fitting with either of said box-like configurations.

5,060,850

BAG-LIKE FOLDING CARTON

Sherry M. Weaver, Chicago, Ill., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Dec. 5, 1990, Ser. No. 622,714
Int. Cl.[5] B65D *5/06*
U.S. Cl. 229—117.06 **10 Claims**



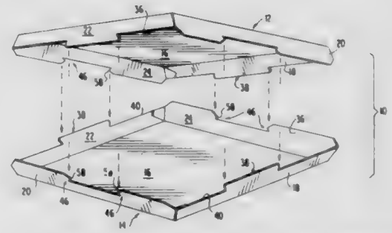
1. A blank for a container comprising:
- a first side panel group comprising:
  - a generally rectangular first main panel; and
  - a pair of opposed end panels, each said end panel being generally rectangular and joined to said first main panel at a side panel fold line, said side panel fold lines being parallel and at opposite edges of said first main panel, each of said end panels further having at the outer margin thereof a glue panel defined by a glue score line lying parallel to the side panel fold line associated with said end panel;
- a second side panel group comprising:
  - a generally rectangular second main panel; and
  - a pair of opposed end panels, each said end panel being generally rectangular and joined to said second main panel at a side panel fold line, said side panel fold lines being parallel and at opposite sides of said second main panel and each said side panel fold line being substantially collinear with one of the side panel fold lines of said first side panel group to form a pair of substantially collinear side panel fold lines; and
  - a bottom panel group integrally formed with and extending between said first and second side panel groups, said bottom panel group being joined to the first and second side panel groups at a pair of parallel bottom fold lines, each said bottom fold line being at an opposite edge of said bottom panel group and being substantially perpendicular to the collinear side panel fold lines of the first and second side panel groups, said bottom panel group comprising:
- a generally rectangular main bottom panel;
- a pair of gusseted bottom closure panels, each said closure panel being generally rectangular and joined to said main bottom panel at a closure panel fold line, said closure panel fold lines being parallel and each said closure panel fold line extending between one pair of the collinear side panel fold lines of the first and second side panel groups, each said closure panel having an outermost free edge lying substantially parallel to its closure panel fold line;
- a bottom center score line lying parallel to and between the pair of parallel bottom fold lines, said bottom center score line extending substantially between the outermost free edges of the closure panels; and
- a pair of gusset fold lines associated with each closure panel, each gusset fold line extending substantially from the point where the bottom center score line intersects the outermost free edge of the associated closure panel to one of the two points at which the closure panel fold line of said associated closure panel intersects the parallel bottom fold lines.

5,060,851

INTERLOCKING CONTAINER FOR CARRY-OUT FOOD PRODUCTS

Achim R. Lorenz, Marietta, Ga., assignor to MacMillan Bloedel Containers, Atlanta, Ga.

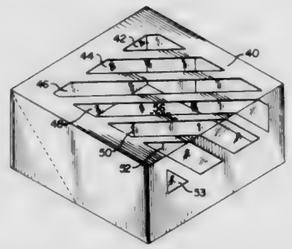
Filed Sep. 26, 1988, Ser. No. 248,988
Int. Cl.[5] B65D *21/00, 43/03*
U.S. Cl. 229—125.29 **19 Claims**



1. A container comprising a first piece and a second piece closable over said first piece to form said container,
- each of said pieces including a bottom wall and upstanding sidewalls having a central portion connected to said bottom wall,
- said sidewalls of each piece comprising:
- a first pair of opposite sidewalls with each sidewall of said first pair having a tab portion upstanding from said central portion thereof, and
- a second pair of opposite sidewalls with each sidewall of said second pair having two spaced-apart portions upstanding from said central portion thereof for receiving an associated tab portion therebetween to interlock said container pieces, said spaced-apart upstanding portions each including a boss portion oriented so that said boss portions on each sidewall face each other in opposition and project towards each other, said boss portions of one piece engaging with said tab portions of the other piece.

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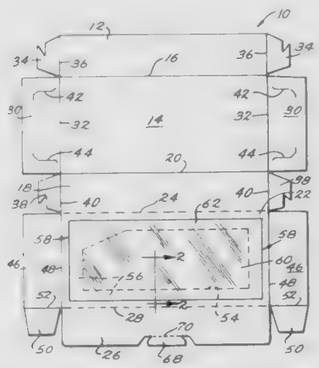
5,060,852
WINDOWED BOXES, BLANKS FOR MAKING THE SAME AND ASSOCIATED METHOD
Alan Beckerman, and Beth A. Brady, both of Pittsburgh, Pa., assignors to Package Products, Inc., Pittsburgh, Pa.
Filed Mar. 8, 1990, Ser. No. 491,669
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—162 **37 Claims**



1. A box comprising,
a cover and a base cooperating to define a product receiving compartment,
said cover having a plurality of windows formed therein,
at least a majority of said windows being oriented in relatively spaced relationship with respect to each other,
each said window being defined at least in part by a pair of window defining sides,
each of a first series of window defining sides disposed generally on one side of said windows being non-parallel with respect to each of a second series of said window defining sides disposed generally on the other side of said windows,
at least some of said window defining sides being non-parallel with respect to the adjacent window defining sides of adjacent windows,
said window defining sides being generally straight,
one window defining side of each said window diverging with respect to the other said window defining side of said window, and
said windows having longitudinal axes which are generally parallel to each other.

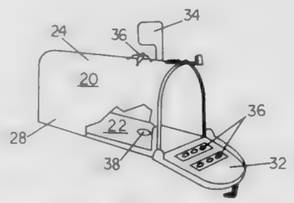
5,060,853
TAMPER EVIDENT CONSUMER PRODUCT PACKAGE, WINDOWED FLAT BLANK USED THEREIN, AND METHOD AND APPARATUS FOR MAKING THE BLANK
Richard F. Gulliver, Tuscaloosa, Ala., and Michael C. Linder, Monroe, La., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.
Filed Jul. 19, 1990, Ser. No. 554,670
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—162 **14 Claims**

1. In a package comprising a consumable product and a sealed container containing said consumable product, said container being defined by a folded and sealed sheet of carton material having an opening therein defining a product-viewing window and a sheet of clear film material disposed over said opening so as to close the opening while retaining the product-viewing capability of the window, said clear film sheet having a marginal periphery disposed in lapped relation to a marginal periphery of said carton sheet, the improvement which comprises
a wave energy curable adhesive between the marginal periphery of said clear film sheet and the marginal periphery of said carton sheet in a cured by wave energy condition bonding the clear film sheet over said carton sheet opening so that said bond cannot be rebonded by said cured



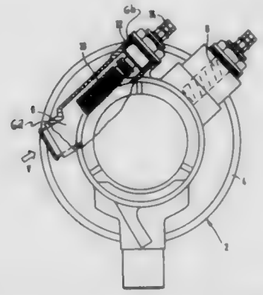
adhesive once the bond provided by said cured adhesive between said sheets has been broken.

5,060,854
REMOTE MAIL INDICATOR SYSTEM
Hugh Armstrong, 1650 Shamrock St., Milton, Fla. 32570
Filed May 22, 1991, Ser. No. 703,874
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—37 **3 Claims**



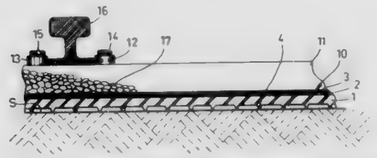
1. A remote indicator system for determining when incoming mail is present in a mailbox, said mailbox comprising a bottom and further comprising walls defining a top, sides, and a closed end, said mailbox further comprising a wall defining an openable door for access to the interior of said mailbox, said system comprising:
(a) at least one light port in one of said walls for passing a beam of outside ambient light into said mailbox;
(b) a first photodetector located in said bottom for normally receiving said beam;
(c) mail detector means comprising said first photodetector for normally producing a first signal when said beam impinges on said first photodetector and for normally producing a second signal when said beam is blocked by mail placed within said mailbox; and
(d) second photodetector means for disabling said mail detector means from responding to said second signal when said outside ambient light falls below a given intensity.

5,060,855
FUEL-FIRED HEATER FOR MOTOR VEHICLES
Fritz Mohring, Ostfildern, and Martin Stoll, Reutlingen, both of Fed. Rep. of Germany, assignors to Eberspächer, Esslingen, Fed. Rep. of Germany
Filed Oct. 31, 1989, Ser. No. 429,796
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1988, 3837075
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—12.3 C **8 Claims**



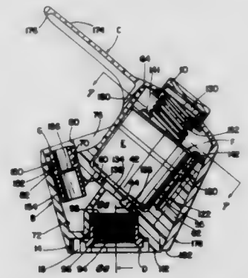
1. A fuel fired heater for mobile units, comprising:
a housing defining a combustion chamber including an air intake duct providing an air passage into said chamber, the fuel mixing with incoming air in the combustion chamber;
a glow plug positioned for one of igniting and vaporizing the fuel in the combustion chamber; and
a compensating resistor positioned at least partially in said housing of the combustion chamber, said compensating resistor including an electrical terminal extending outside said housing for electrically connecting said compensating resistor and said glow plug in series.

5,060,856
SOUND-DAMPING MAT, ESPECIALLY FOR A BALLAST BED
Hermann Ortwein, Niehler Kirchweg 155, D-5000 Köln 60, Fed. Rep. of Germany
Continuation of Ser. No. 362,881, Jun. 7, 1989, abandoned. This application Dec. 13, 1990, Ser. No. 626,322
Int. Cl.[5] E01B *19/00*
U.S. Cl. 238—382 **17 Claims**



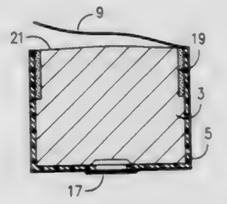
1. A noise-damping mat for an underlayment for a bed of ballast, comprising:
a base layer of an elastic material having an upper side engageable by the ballast of said bed and a lower side formed with projections engageable with a supporting surface; and
a knit layer on said upper side of said base layer as an exclusive fabric layer on said upper side of said base layer.

5,060,857
BUBBLER
Brian W. Engelbach, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio
Filed Feb. 20, 1990, Ser. No. 482,041
Int. Cl.[5] B05B *12/14*
U.S. Cl. 239—32 **19 Claims**



1. A plastic valve body having an outwardly opening cavity for receiving a metal mounting base, a plurality of circumferentially-spaced retaining screw receiving holes in said valve body outwardly of said cavity for receiving screws to secure a metal mounting base in said cavity, said valve body having a circumferential bottom surface spaced outwardly from said cavity and from said screw receiving holes in directions both axially and radially of said cavity to provide internal space for accommodating a mounting base and retaining screws without having same project outwardly of said valve body beyond said bottom surface thereof.

5,060,858
METHOD AND APPARATUS FOR DISPENSING VOLATILE COMPONENTS OF AN AIR TREATING GEL
Thomas F. Santini, Allentown, N.J., assignor to Wessel Fragrances, Inc., Elmwood Park, N.J.
Filed May 14, 1990, Ser. No. 523,881
Int. Cl.[5] A61L *9/04*
U.S. Cl. 239—60 **11 Claims**



1. A dispenser for dispensing volatile products by evaporation from a fully exposed emanating surface of a gel, comprising an open topped container having a perimeter defining an unobstructed opening from which the volatile products may be dispensed, said container having an annular attachment means, defining a plurality of interstices, disposed within the container adjacent the opening around the entire said perimeter thereof, said attachment means interstitially anchoring the gel around and adjacent said unobstructed opening of the container to define and sustain the emanating surface of the gel adjacent to the opening throughout the useful life of the dispenser, whereby during use, shrinkage of the gel will occur within the container as the gel within the container acts as a reservoir supplying the emanating surface wherein the attachment means is a band of porous material into the interstices of which

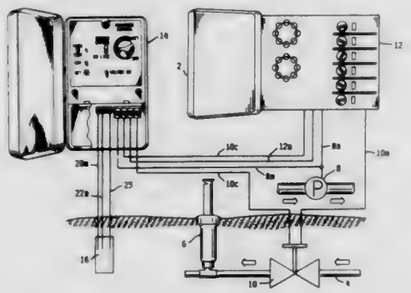
liquified gel, entering the dispenser, can penetrate to form the desired anchoring of the gel once it has set.

5,060,859

IRRIGATION CONTROL APPARATUS RESPONSIVE TO SOIL MOISTURE

Richard H. Bancroft, Riverside, Calif., assignor to The Toro Company, Minneapolis, Minn.

Filed Jan. 11, 1990, Ser. No. 463,602
Int. Cl.[5] A01G *25/16*
U.S. Cl. 239—64 15 Claims



1. An improved irrigation control apparatus for use by an operator in controlling the operation of an electrically operated irrigation valve, which comprises:

(a) a soil moisture sensor suited to be at least partially buried in the ground, the sensor having means for generating an output voltage when an input voltage is applied to an electrically conductive moisture sensing element in the sensor, the output voltage varying with the level of moisture in the soil; and

(b) a control unit suited to be operatively connected to the soil moisture sensor and a source of electrical power for controlling the operation of the valve in accordance with the soil moisture level, the control unit comprising:

(i) control circuit means having sensor input means for applying the input voltage to the sensor, logic means operatively connected to the sensor and responsive to the output voltage from the sensor for generating a wet soil signal or a dry soil signal depending on the relative level of soil moisture, and valve control means operatively connected to the logic means for allowing operation of the valve if a dry soil signal is sent by the logic means and for preventing operation of the valve if a wet soil signal is sent by the logic means;

(ii) a first power input operatively connected to the control circuit means;

(iii) means for applying electrical power to the first power input only during an irrigation cycle so that the control circuit means is activated only during such cycle;

(iv) display circuit means operatively connected to the logic means for providing a sensory indication to the operator of either a wet soil condition or a dry soil condition;

(v) a second power input operatively connected to the display circuit means by a selectively operable test switch; and

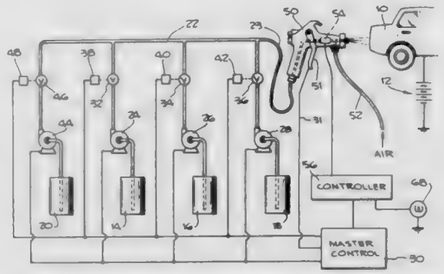
(vi) means for continuously applying power to the second power input so that the display circuit means may be activated at any time by closing the test switch, wherein the control circuit means is separately actuable from the display circuit means.

5,060,860

PAINT CONDUCTIVITY MEASUREMENT SYSTEM

Clifford A. Megerle, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 18, 1989, Ser. No. 395,693
Int. Cl.[5] B05B *5/03*
U.S. Cl. 239—67 10 Claims



1. A system for metering the delivery of liquids having different conductivities comprising:

a first reservoir containing a first liquid having a first conductivity;

a second reservoir containing a second liquid having a second conductivity which is measurably different from said first conductivity;

a manifold having first and second inlets for receiving said first and second liquids and an outlet;

first pumping means for pumping said first liquid from said first reservoir to said manifold, said first pumping means being operable between on and off pumping positions;

second pumping means for pumping said second liquid from said second reservoir to said manifold, said second pumping means being operable between on and off pumping positions;

a metering device having an inlet for receiving said first or second liquid from said manifold outlet and a nozzle through which said first or second liquid is dispersed;

a liquid conduit connected between said manifold outlet and said metering device inlet to provide liquid flow communication therebetween;

a conductivity cell located between said liquid conduit and said metering device nozzle, said conductivity cell having non-conducting interior walls and including means for measuring the conductivity of the liquid flowing therethrough; and

control means connected to said conductivity cell and to said first and second pumping means for controlling the operation of said first and second pumping means between said on and off positions based on the conductivity measured in said conductivity cell.

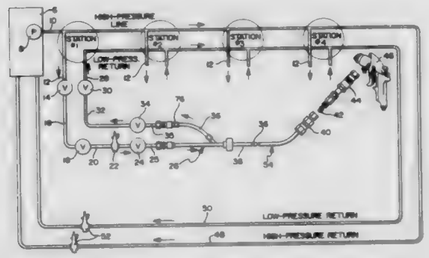
5,060,861

COAXIAL PAINT HOSE AND SUPPLY SYSTEM

Earl R. Holt, Rochester, Mich., assignor to Hose Specialties, Capri, Inc., Detroit, Mich.

Filed Aug. 29, 1988, Ser. No. 237,838
Int. Cl.[5] F16L *39/02*
U.S. Cl. 239—124 7 Claims

1. In a recirculating paint supply system or the like including a pressured high pressure supply conduit for supplying a liquid coating composition to a spray nozzle in an amount in excess of that required and a return conduit for returning the excess coating composition to a supply tank, the improvement comprising a substantially Y-shaped coupling having a substantially straight large diameter section and an integral small diameter branch section extending at an angle to the large diameter section and opening into it, a flexible coaxial conduit connected between the spray nozzle and the supply and return conduits, said coaxial conduit comprising an outer flexible tube connected at one end thereof to the large diameter section of said Y-shaped coupling and at the other end thereof to a flow restrictor disposed in communication with a spray nozzle, said coaxial conduit including an inner tube having a first end thereof extending into the Y-shaped coupling and out of it through said branch section where it may be connected to the return conduit, said inner tube extending axially within said outer tube and terminating at the second end thereof at a position axially spaced from the flow restrictor and disposed with said second end in communication with the interior of said outer tube for receiving and returning the excess paint supply, said branch section providing means for introducing said inner tube in liquid sealed relationship from a position exterior of said outer tube to a position in axial extending relationship within said outer tube.

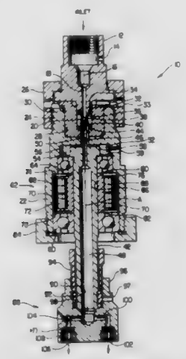


5,060,862

MAGNETIC SPEED CONTROL FOR SELF-PROPELLED SWIVEL

Amos Pacht, Houston, Tex., assignor to Butterworth Jetting Systems, Inc., Houston, Tex.

Filed Jan. 19, 1990, Ser. No. 467,782
Int. Cl.[5] B05B *3/06*
U.S. Cl. 239—252 4 Claims



1. In a self-propelled high pressure fluid delivery assembly of the type having a non-rotating housing connectable to a source of high pressure water;

a pair of anti-friction bearings having inner and outer ring portions means for securing said outer ring portions of said anti-friction bearings in said hollow housing in axially spaced relation;

a rotatable hollow spindle secured to said inner ring portions of said anti-friction bearings;

said hollow spindle being formed of magnetic material intermediate said bearings;

a plurality of permanent magnets;

said hollow spindle having an axial entering end for receiving the high pressure water and an axial discharge end;

non-magnetic means for mounting said plurality of magnets for rotation with said spindle in circumferentially spaced relationship and intermediate said anti-friction bearings;

a sleeve of electrically conducting, non-magnetic material mounted in said hollow housing intermediate said anti-friction bearings and in close proximity to the rotational path of said magnets; and

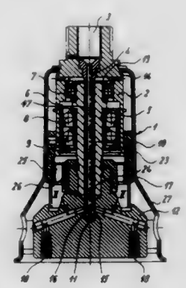
means for producing rotation of said hollow spindle by high pressure water discharged from said discharge end.

5,060,863

NOZZLE HEAD

Paul Hammelmann, Zum Sundern 17, 4740 Oelde 1, Fed. Rep. of Germany

Filed Jan. 25, 1990, Ser. No. 469,955
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1989, 3902135
Int. Cl.[5] B05B *3/06, 1/14*
U.S. Cl. 239—252 17 Claims



1. A nozzle head, comprising a plurality of nozzles; a nozzle carrier rotatable about an axis and driveable by a reaction of a pressurized water discharged from said nozzles, said nozzle carrier has passages communicating with said nozzles; a housing having a pressurized water connection; and a stationary sleeve having at least one opening and formed so that during rotation of said nozzle carrier with said nozzles relative to said stationary sleeve, the water passing through said opening of said stationary sleeve is successively supplied to some of said nozzles and is not supplied to other of said nozzles so that a water supply on the way from said opening of said stationary sleeve to said rotatable nozzles produces water jets which cover a cylindrical surface concentric to said axis and also is interrupted in edge regions parallel to a displacement direction of the nozzle head relative to an object, said opening of said stationary sleeve and said passages of said nozzle carrier being arranged so that during rotation of said nozzle carrier with said nozzles, successively some of said passages of said nozzle carrier communicate with said opening of said stationary sleeve while other of said passages of said nozzle carrier do not communicate with said opening of said stationary sleeve, so that the water passing through said opening of said stationary sleeve is supplied to some of said nozzles and is not supplied to said other of said nozzles.

5,060,864

PERFUME EMITTING DEVICE FOR USE IN AN AUTOMOBILE

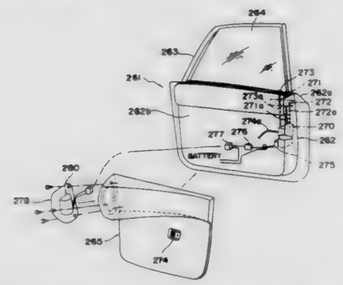
Masatake Nishi; Tsuneshi Matsuo, both of Hiroshima; Hidemi Aoki, Higashihiroshima; Isao Hirashima, Aki, and Yoshiharu Nakagawa, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 26, 1989, Ser. No. 412,775

Claims priority, application Japan, Sep. 27, 1988, 63-126666[U]; Oct. 6, 1988, 63-131062[U]; Oct. 6, 1988, 63-131063[U]; Oct. 27, 1988, 63-271900

Int. Cl.[5] B05B *17/00*

U.S. Cl. 239—289 15 Claims



1. A perfume emitting arrangement for use in an automobile, comprising:

a door lock device for locking a door of the automobile;

a door outer handle connected to said door lock device and adapted to perform an operation for opening the door from outside of the automobile; and

a perfume emitting means for emitting a perfume emitting material to an inside of the automobile only when said door lock device is unlocked and the operation for opening the door is performed by said door outer handle.

5,060,865

FLUID FLOW RESTRICTOR SYSTEM

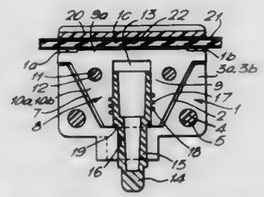
Malcolm R. Alder, Berkshire, and Charles A. Boughtflower, Bucks, both of England, assignors to Imperial Chemical Industries plc, London, England

Filed Dec. 5, 1989, Ser. No. 450,321

Claims priority, application United Kingdom, Dec. 15, 1988, 8829413

Int. Cl.[5] B05B *1/30*

U.S. Cl. 239—332 8 Claims



1. A fluid flow restrictor assembly comprising a restrictor valve and a flexible tube housed in said valve, and an internally located outwardly biasing coil spring positioned in the tube and biasing the tube towards its maximum diameter prior to, during, and following action of the valve such that the tube is biased against the action of the valve, whereby when the valve pressure is released, the coil spring assumes it normal configuration and biases the tube outwardly, thereby preventing permanent deformity of the tube caused by the action of the valve.

5,060,866

DEVICE AT WASHING AND RINSING APPARATUSES FOR PRODUCING A FOAM

Manne Carlzon, Trässberg Hälledal, S-531 93 Lidkoping, Sweden

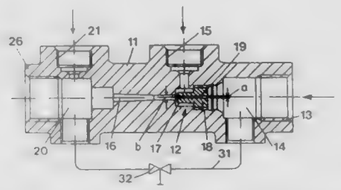
PCT No. PCT/SE88/00215, § 371 Date Oct. 26, 1989, § 102(e) Date Oct. 26, 1989, PCT Pub. No. WO88/08333, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 27, 1988, Ser. No. 424,275

Claims priority, application Sweden, Apr. 27, 1987, 8701705

Int. Cl.[5] B05B *7/04*

U.S. Cl. 239—427.5 7 Claims



1. A washing and rinsing apparatus for continuously creating foam and for conveying the foam to a dispensing nozzle, the apparatus comprising:

a conical diffusor which has an inlet end and an outlet end which is larger than the inlet end;

a spray nozzle for spraying a thin jet of driving medium into the inlet end of the diffusor, the spray nozzle being in the form of an elongated hole having an outlet end, the cross section of the elongated hole being much smaller than the cross section of the inlet end of the diffusor, the spray nozzle having a pressure side and a suction side, the pressure side being connectable to means for supplying the driving medium, the suction side being connectable to means for supplying liquid, foam-forming detergent; and

an expansion chamber at the outlet end of the diffusor, the expansion chamber having means at a point downstream from the diffusor outlet end for connection to a source of compressed gas for conveying the foam from the expansion chamber to the dispensing nozzle.

5,060,867

CONTROLLING THE MOTION OF A FLUID JET

Russell E. Luxton, Adelaide, and Graham J. Nathan, Happy Valley, both of Australia, assignors to Luminis Pty. Ltd., Australia

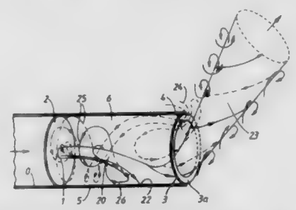
PCT No. PCT/AU88/00114, § 371 Date Dec. 15, 1989, § 102(e) Date Dec. 15, 1989, PCT Pub. No. WO88/08104, PCT Pub. Date Oct. 20, 1988

PCT Filed Apr. 15, 1988, Ser. No. 442,363

Claims priority, application Australia, Apr. 16, 1987, PI 1476; Aug. 31, 1987, PI 4068

Int. Cl.[5] F23D *14/62, 14/48, 14/04;* B01F *3/02*

U.S. Cl. 239—428.5 21 Claims



1. A fluid mixing device comprising:

wall structure defining a chamber having a fluid inlet and a fluid outlet disposed generally opposite the inlet;

said chamber being larger in cross-section than said inlet at least for a portion of the space between said inlet and outlet;

flow separation means to cause a flow of a first fluid wholly occupying said inlet to separate from said wall structure upstream of the outlet;

wherein the distance between said flow separation means and said outlet is sufficiently long in relation to the width of the chamber for the separated flow to reattach itself asymmetrically to the chamber wall structure upstream of the outlet and to exit the chamber through the outlet asymmetrically, whereby a reverse flow of said first fluid at said reattachment and a flow of a second fluid induced from the exterior of the chamber through said outlet swirls in the chamber between said flow separation and said reattachment and thereby induces precession of said separated/reattached flow, which precession enhances mixing of the flow with said second fluid to the exterior of the chamber.

5,060,868

ELECTROMAGNETICALLY ACTUATABLE VALVE

Heinrich Knapp, Leonberg; Mathias Linssen, Scheblitz; Jürgen Peczkowski, Inbert-Oberwürzbach, and Alfred Konrad, Bamberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

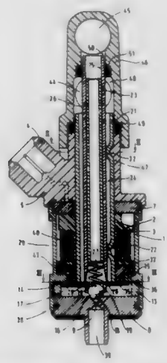
Continuation of Ser. No. 245,846, Mar. 20, 1981, Pat. No. 4,982,902. This application Oct. 19, 1990, Ser. No. 599,963

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010612

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.[5] F02M *51/08, 55/00;* F16K *31/06*

U.S. Cl. 239—585 8 Claims



1. An electromagnetically actuatable fuel injection valve means which comprises a magnetic coil and an armature operative by said magnetic coil for fuel injection systems of internal combustion engines, said valve means including a valve, said valve means is connected with a fuel distributor line and a fuel return line separate therefrom and has a tubular inlet stub disposed concentrically with the valve means axis and arranged to communicate with said fuel distributor line, said tubular inlet stub protrubes into said valve means, a concentrically disposed tubular outlet stub extending upwardly from said valve, said valve including a movable valve element coacting with a valve seat and defining a flow cross section between said inlet stub and said outlet stub, and said outlet stub has an end remote from said valve seat arranged to feed fuel into said fuel return flow line.

5,060,869

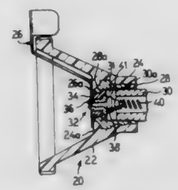
CERAMIC FLAT SPRAY TIP

Wayne Bekius, Milaca, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 418,588, Oct. 10, 1989, abandoned. This application Sep. 24, 1990, Ser. No. 587,541

Int. Cl.[5] B05B *15/06*

U.S. Cl. 239—599 20 Claims



1. A nozzle assembly for communicating with a spraying device comprising:

a one piece, unitary flat spray tip composed of ceramic material having an axial through cavity therein for transporting material to be sprayed and the cavity terminating at a forward end of said flat spray tip in a flat spray orifice configuration; and

a holder means composed of a metallic material softer than said ceramic material mounted with said flat spray tip, preventing translation and rotation of said flat tip with respect to said holder means,

said spray tip and holder means having complementary shaped, non-circular engaging peripheral surfaces to prevent rotation of said flat spray tip relative to said holder means;

at least one of said spray tip and said holder means having axially oriented ribs engageable with a surface area on the other of said spray tip and holder means such that the relatively hard ceramic material of said spray tip causes a deformation **84** said relatively soft metal of said holder means at the engagement area of said ribs.

5,060,870

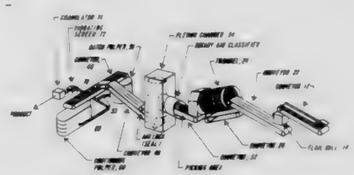
POLYSTYRENE RECYCLING PROCESS

George Trezek; Martin Stanczyk, and Michael Grubbs, all of Benicia, Calif., assignors to WTE Corporation, Bedford, Mass.

Continuation of Ser. No. 376,746, Jul. 7, 1989, abandoned. This application Aug. 3, 1990, Ser. No. 563,835

Int. Cl.[5] B02C *23/38*

U.S. Cl. 241—19 34 Claims



1. A method of recovering waste particles having a fluidization velocity less than a predefined fluidization velocity, said waste particles termed low FV particles, from a stream of waste, said stream of waste comprising low FV waste particles mixed with other types of waste including wast particles having a fluidization velocity greater than said predefined fluidization velocity termed hiqh FV particles, said method comprising the steps of;

a. reducing the waste to particle sizes within a first range of sizes,

b. subjecting the stream of waste particles to an air stream

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having a velocity sufficient to carry low FV particles while high FV particles are not carried by and are thereby eliminated from the stream of waste particles,

c. mixing the stream of waste particles with water,

d. agitating the mixture to fiberize any paper particle waste therein contained, and

e. removing the fiberized particles and water from the stream.

5,060,871

METHOD OF SEPARATING METAL ALLOY PARTICLES

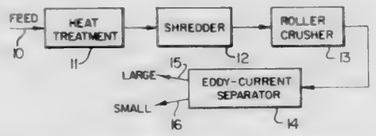
Robin D. Brassinga, Kingston, Canada, and Wijnand L. Dalmijn, Amsterdam, Netherlands, assignors to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 243,320, Sep. 9, 1988, abandoned. This application Mar. 16, 1990, Ser. No. 496,051

Claims priority, application Canada, Sep. 11, 1987, 546685

Int. Cl.[5] B02C *23/10*

U.S. Cl. 241—24 **8 Claims**



1. A method of separating a mixture of aluminum-lithium alloy and other wrought aluminum alloys comprising the steps of:

(a) crushing the mixture into the form of substantially flat particles in which the particles of aluminum-lithium alloy have generally smaller dimensions, smaller density values and smaller conductivity values than the particles of the other wrought aluminum alloys, and

(b) physically separating the mixture thus obtained by moving said mixture of flat particles in a generally longitudinal flow path along a vibrating separator table, thereby causing said particles to enter in substantially single file a rapidly changing magnetic field separation zone in which the magnetic field moves across the separator table in a direction generally perpendicular to the particle flow path, and providing the table with a slight lateral slope upwards in the direction of travel of the magnetic field, whereby the rapidly changing magnetic field moves the larger and more conductive particles laterally up the lateral slope, thereby forming on the table one flow path comprising the larger and more conductive particles laterally up the lateral slope, thereby forming on the table one flow path comprising the larger and more conductive particles containing said other wrought aluminum alloys and another path comprising the smaller and less conductive particles containing said aluminum-lithium alloy.

5,060,872

ROTARY SCREEN DIVERTER AND SOLID WASTE HANDLING SYSTEM USING SAME

Joseph W. Chambers, Sr., Rancho LaCosta, Calif., assignor to Chambers, Boyd, McKinley and Associates, Santa Ana, Calif.

Division of Ser. No. 125,951, Nov. 27, 1987, Pat. No. 4,919,346. This application Jan. 5, 1990, Ser. No. 461,509

The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.

Int. Cl.[5] B02C *18/22, 18/40, 23/36*

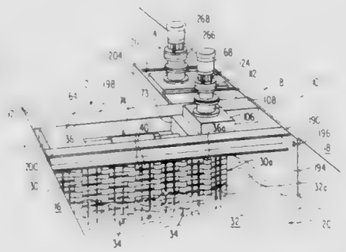
U.S. Cl. 241—46.02 **21 Claims**

1. A solid waste handling system for screening and grinding solids entrained in an influent liquid stream flowing within a flow confining chute, said chute having a bottom wall and laterally spaced vertical sidewalls defining a flow channel for said stream, said system comprising:

at least one rigid solids diverter horizontal rotating screen unit fixedly mounted within said chute and partially immersed in said influent liquid stream, said at least one rigid screen unit comprising an elongated open rigid frame assembly, an endless loop open screen mounted for rotation on said rigid frame assembly such that one upstream face of the screen moves horizontally across the stream,

means for rotating said screen on said rigid frame to divert a portion of the stream flow in the direction of screen movement, to cause solids of the influent stream larger than a mesh size of the screen to impact upon said one upstream face and be moved horizontally in the direction of screen movement, and a solid waste grinder fixedly mounted within the flow stream and downstream of the endless loop screen, whereby solids entrained in the diverted portion of the influent stream are conveyed to an end of the screen proximate to said solid waste grinder, swept away from the screen by the diverted flow of influent passing over the end of the screen, and finely ground prior to discharge through an outlet port of said at least one solid waste grinder as waste effluent,

wherein said screen unit open frame assembly comprises left and right, vertically spaced, upper and lower end housings, vertically oriented drive and driven shafts mounted



for rotation about their axes at opposite ends within respective upper and lower end housings, a plurality of sprockets fixedly mounted to said shafts for rotation about their axes at axially spaced positions along said shafts, said drive shaft and said sprockets mounted thereto defining a drive shaft sprocket assembly and said driven shaft and the sprockets mounted thereto defining a driven shaft sprocket assembly, said sprockets including radially projecting teeth, and wherein said endless loop open mesh screen comprises linked screen sections, each screen section being formed of a plurality of horizontal, vertically spaced links having enlarged headed ends, horizontally spaced vertical riser strips integral with said links to define with the links, rectangular screen mesh openings, and wherein the headed ends of the horizontal links of adjacent screen sections have axial holes and said headed ends are interposed with each other with the holes thereof aligned and rods projecting through said aligned holes and pivotably coupling said links together at said headed ends such that said pivotably coupled screen sections wrap about said drive shaft and driven shaft sprocket assemblies at respective ends of said screen units with the headed ends of said links engaging said sprocket teeth.

5,060,873

WOOD CHIPPER FIN CHIP SEPARATOR

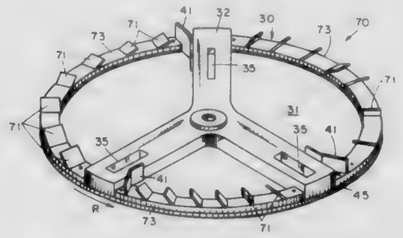
Donald E. Strong, Remus, Mich., assignor to Strong Manufacturing, Remus, Mich.

Filed May 21, 1990, Ser. No. 527,041

Int. Cl.[5] B02C *18/22*

U.S. Cl. 241—55 **27 Claims**

1. In a rotary wood chipper having a disk housing with a material infeed chute for receiving material into said chipper, said housing defining a substantially cylindrical chamber, having a cutter disk rotatably mounted in said housing chamber about an axis of rotation and having at least one knife which is mounted in a chip slot formed through said disk for cutting said material to form wood chips, said cutter disk having a front side into which material is fed for chipping and back side located substantially on a plane and opposite said front side, said disk having an edge circumscribing said disk and extending between said front and said back, said housing further having a chip chute for discharging chips form said chipper and said chipper further having a plurality of fan blades for creating a circulation of air out through said chip chute for



discharging chips from said chipper, the improvement comprising, in addition to said fan blades, chip deflection means mounted to said disk on said back side near said edge, said deflection means being arranged at an acute angle to said plane of said back side of said disk for deflecting wood chips in a direction along said axis of rotation of said disk away from said back side at the disk edge and therefore away from the space between said edge and said housing to minimize the number of chips passing over said edge to said front side of said disk.

5,060,874

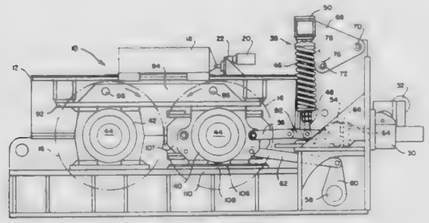
CRUSHER

George L. Sidney, Jr., Altoona, and Arthur D. Walter, Claysburg, both of Pa., assignors to McLanahan Corporation, Hollidaysburg, Pa.

Division of Ser. No. 568,596, Aug. 16, 1990, Pat. No. 5,027,491. This application Dec. 10, 1990, Ser. No. 625,002

Int. Cl.[5] B02C *1/08*

U.S. Cl. 241—231 **29 Claims**



1. A crusher comprising:

a housing having spaced lateral sides and spaced ends;

a pair of spaced shafts journaled in said housing, a roller mounted on each of said shafts, at least one of said shafts being a moveable shaft for adjustment along the longitudinal axis of said housing with respect to the other of said shafts;

means for rotating said shafts and said rollers in opposite directions to crush material fed between said rollers;

a bearing supporting each end of each of said shafts;

a bearing support located on each of said lateral sides of said housing;

a tie bar on each of said lateral sides of said housing parallel to and spaced above said bearing support to define a track facing said bearing support;

a moveable bearing housing for each bearing associated with said moveable shaft and a guide engaging each of said moveable bearing housings, said moveable bearing housings being slideable along said bearing supports and said track whereby said bearing supports support said moveable bearing housings and said guide engages said track;

screw jacks for said moveable shaft located on opposite sides of said housing;

means for advancing said screw jacks relative to the longitudinal axis of said housing; and

a toggle assembly positioned between each of said screw jacks and each of said moveable bearing housings for applying a force to said moveable bearing housings, each of said screw jacks engaging one of said toggle assemblies whereby said moveable shaft is moved along the longitudinal axis of said housing.

5,060,875

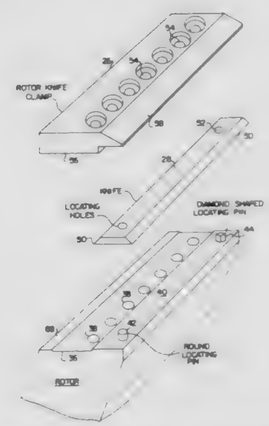
GRANULATOR KNIFE

Thomas D. McBride, Shrewsbury, Mass., assignor to Nelmor Company, Inc., North Uxbridge, Mass.

Filed Jun. 4, 1990, Ser. No. 532,597

Int. Cl.[5] B02C *18/18*

U.S. Cl. 241—242 **3 Claims**



1. In a granulator having rotary knives and bed knives and a rotor to carry the rotor knives, the improvement which comprises:

the rotor having a mounting surface with a knife seat including a rectangular-shaped recess, the seat having only two fixed locator pins for accurately positioning a rotary knife;

each rotary knife being a reversible, non-adjustable trapezoidal knife having only two holes and precisely positioned on said surface by said locator pins; and

a clamping bar secured to the mounting surface to hold each rotary knife in its position to form a clamping assembly consisting of a rotor seat-knife-clamping bar.

5,060,876

BREAKER PRESS WITH MULTIPLE PISTONS PARTICULARLY FOR URBAN WASTE-MATERIALS

Massimo Parolisi, Via Roma N. 229, Frattaminore, and Fulvio Di Cerbo, Via Nuova Poggioreale N. 210, Napoli, both of Italy

Filed Jun. 30, 1989, Ser. No. 375,182

Claims priority, application Italy, Jul. 1, 1988, 40428 A/88

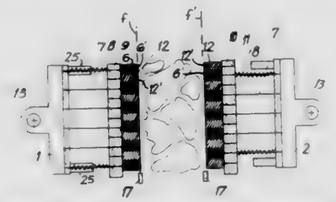
Int. Cl.[5] B02C *1/00*

U.S. Cl. 241—263 **7 Claims**

1. A compacting breaker press for waste, especially for house-waste materials, comprising means for breaking and compacting said waste into a plurality of small-sized approximately parallelepiped-shaped pieces, so that said pieces can

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pass through a small-sized pipe for collection, and frame members on which said means for breaking and compacting is mounted, said means for breaking and compacting being structured so as to form a plurality of closed recesses, when said



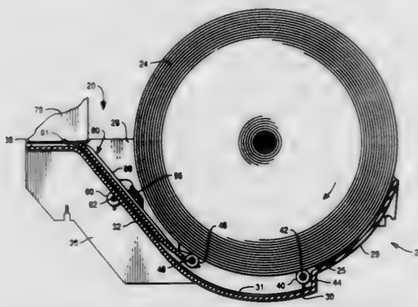
waste is being broken and compacted by said means for breaking and compacting, said waste so broken and compacted being trapped in said closed recesses, and said means for breaking and compacting being further structured so that said waste trapped inside said closed recesses is further compacted.

5,060,877

AUTOMATIC PAPER FEED APPARATUS

Robert F. Bullivant, Interlaken, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 11, 1990, Ser. No. 507,559
Int. Cl.[5] B65H *16/08, 16/10*
U.S. Cl. 242—55 **16 Claims**



1. Apparatus for automatic feeding of paper from a paper roll, comprising:

a receptacle adapted to receive a roll of paper to be fed, said receptacle being open at the top to permit a paper roll to be placed therein, and having side walls and a curved lower wall to receive the paper roll;

a wall member pivotally mounted within said receptacle and movable with respect to said receptacle, said wall member in a normal position being generally parallel to a portion of said lower wall to form a guide chute having an entry portion and an exit portion to guide movement of paper unwound from said paper roll;

a guide roll mounted on a shaft in a recessed lower portion of the receptacle to rotate freely for supporting said paper roll for rotational movement within the receptacle;

first feed roll means mounted on a shaft within said receptacle adjacent said wall member and adjacent the entry portion of said guide chute for engaging and driving said paper roll for rotational movement within said receptacle to cause an end portion of paper from said paper roll to be driven into said entry portion of said guide chute;

second feed roll means mounted to engage paper from said paper roll within the guide chute to drive said paper toward the exit portion of said guide chute; and

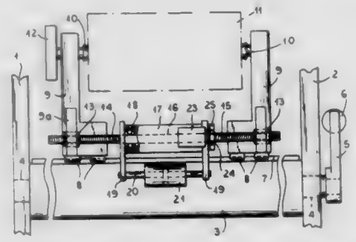
pressure roll means mounted by mounting means on said wall member and extending through an opening in said wall member in cooperative relation to said second feed roll means for causing movement of paper through said guide chute.

5,060,878

UNROLLING DEVICE

Armin Hutzenlaub, and Klaus Albrecht, both of Wiehl, Fed. Rep. of Germany, assignors to Kampf GmbH & Co. Maschinenfabrik, Muhlen, Fed. Rep. of Germany

Filed Feb. 9, 1990, Ser. No. 477,561
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1989, 3906515
Int. Cl.[5] B65H *16/06*
U.S. Cl. 242—68.4 **3 Claims**



1. An unwinding device for a roll of a strip material, the device comprising:

a support;

a traverse swingably mounted on said support for pivotal movement about a traverse axis and axially nondisplaceable relative to the traverse axis;

a pair of roll-support arms axially slidable on said traverse toward and away from one another and slidable jointly along said traverse in a direction parallel to said axis, said roll-support arms being provided with means for engaging the roll of strip material to be unwound;

a spindle having threaded portions of opposite hand threadedly connected to the respective arms and rotatable in one sense to draw said arms toward one another and in the opposite sense to displace said arms apart;

a journal sleeve receiving and axially coupled to said spindle between the threaded portions thereof and enabling rotation of the spindle about a spindle axis parallel to the traverse axis;

a spindle motor mounted on the sleeve and operatively connected to said spindle for rotating same in said sleeve;

a positioning cylinder axially fixed on said traverse and having an axially displaceable piston rod extending generally in said direction; and

a pair of radially extending and axially spaced shanks fixed on the piston rod and axially flanking and connected to said sleeve for displacing said arms jointly parallel to said axis on axial displacement of the piston rod.

5,060,879

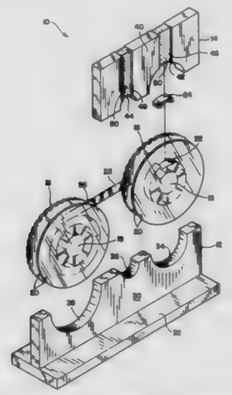
FIXTURE FOR ATTACHING RECORDING TAPE LEADER TO A TAPE REEL

Mario W. Espin, Charlotte, N.C., assignor to Multi-Video, Inc., Charlotte, N.C.

Filed Jun. 6, 1990, Ser. No. 534,135
Int. Cl.[5] B65H *75/28*
U.S. Cl. 242—74.1 **10 Claims**

1. A fixture for attaching a leader portion at one end of a recording tape to a tape reel of the type having a central hub for annular winding of tape thereabout, the hub defining a peripheral slot for fitted receipt therein of a retaining element for gripping engagement of the leader portion of tape, said fixture comprising a pair of press members configured for selective movement toward and away from one another into and out of cooperative simultaneous engagement with opposite

sides of the hub of the tape reel for actuating press fitting of the retaining element into the peripheral slot of the hub, one said



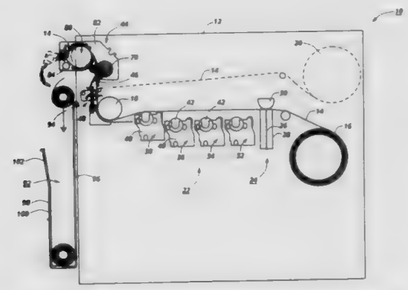
press member comprising a surface for supporting a companion reel to which the opposite end of the recording tape is attached.

5,060,880

APPARATUS FOR AUTOMATICALLY SPOOLING OUTPUT MEDIA FROM AN ELECTROGRAPHIC PRINTER

David M. Mayer, Fremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1990, Ser. No. 493,270
Int. Cl.[5] B65H *18/08, 23/10, 20/36*
U.S. Cl. 242—75.2 **6 Claims**



1. Apparatus for automatically spooling output media from a printer comprising

means for supplying a recording medium having a leading end,

means for forming said recording medium into a tubular form such that said leading end directs said recording medium into said tubular form in the absence of an internal supporting member,

means for bidirectionally driving said recording medium into and out of said means for forming, and

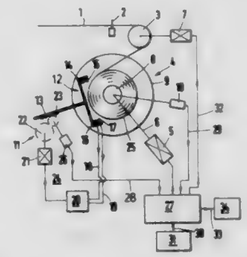
means for applying a tensioning force on said recording medium at a location between said means for forming and said means for driving, said means for applying a tensioning force comprises a roller having a friction applying surface, an idling pinch roller biased thereagainst, a shaft upon which said roller is mounted, a slip clutch having a preselected slipping torque interposed between said shaft and said roller, and drive means for rotating said shaft, said tensioning force being of substantially the same magnitude when said recording medium is being driven into said means for forming as when said recording medium is being driven out of said means for forming, and wherein the surface speed of said recording medium is determined by said means for bidirectionally driving.

5,060,881

PROCESS FOR THE WINDING OF WARP BEAMS

Bogdan Bogucki-Land, Offenbach, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschienfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Apr. 9, 1990, Ser. No. 506,679
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1989, 3913381
Int. Cl.[5] B65H *23/198*
U.S. Cl. 242—75.51 **15 Claims**



1. A process for warping a thread sheet onto a warp beam while maintaining a predetermined target relationship between the number of turns and the outside diameter of the thread sheet on the warp beam, comprising the steps of:

measuring the values of the diameter of the thread sheet wound on the warp beam; and

counting the executed revolutions of the warp beam;

repeatedly comparing the predetermined target relationship to the current, actual-value relationship between the number of turns and the outside diameter of the thread sheet on the warp beam; and

changing the input speed of the thread sheet in a direction to compensate for the difference between the current, actual-value relationship and the predetermined target relationship without measurement of the tension in said thread sheet.

5,060,882

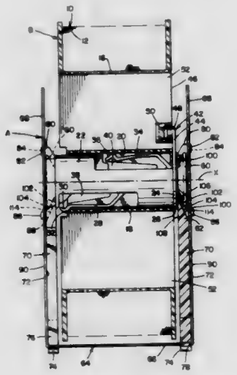
WIRE SUPPLY REEL SUPPORT DEVICE

Eric R. Rousculp, Mentor; Lee E. Seufer, Cleveland, and Ralph M. Samodell, Willoughby Hills, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed Apr. 6, 1990, Ser. No. 505,577
Int. Cl.[5] B65H *77/00, 49/00*
U.S. Cl. 242—99 **49 Claims**

1. A support device for rotatably supporting a reel means for intermittently withdrawing therefrom given lengths of wire wound thereon, said reel means having a hub with an axial bore opening, said support device comprising: a spindle slidably fitted and axially and rotatively locked in place within the said bore opening of said reel means, said spindle having axially aligned circular bearing surface means at its opposite ends located outboard of the respective outer sides of said reel means for rotatively mounting said reel means, and a pair of trunnion journal bearings having rest bearing surface means of upwardly opening V-shape with flaring side portions within which the said spindle circular bearing surface means is in resting bearing engagement only with said flaring side portions and is adapted to be vertically rested to support said spindle

and associated reel means for rotation about a horizontal axis, said trunnion rest bearing surface means having a wedge type bearing interengagement with the cooperating one of said spindle circular bearing surface means to provide a self-adjust-



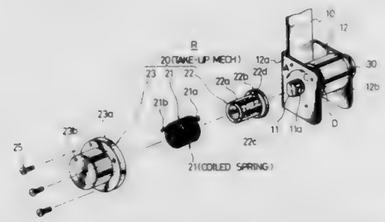
ing friction drag braking action on the rotative movement of said reel means by the wire drawn off therefrom to stop overrunning of the reel means on stoppage of the feeding of said wire off the reel means.

5,060,883

SEAT BELT RETRACTOR

Masakiyo Ohya, and Atsushi Narue, both of Iwata, Japan, assignors to Fuji-Autoiiv Co., Ltd., Shizuoka, Japan

Filed Apr. 12, 1990, Ser. No. 508,888
Claims priority, application Japan, Apr. 21, 1989, 1-103091
Int. Cl.[5] B65H *75/48*
U.S. Cl. 242—107 **4 Claims**



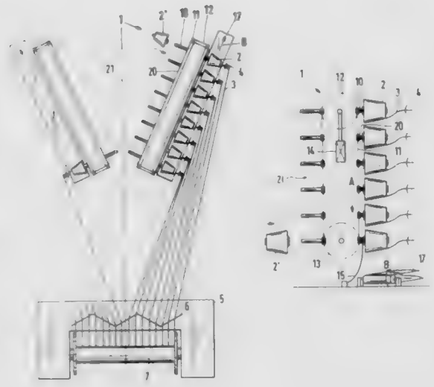
1. A seat belt retractor for retracting a seat belt, having:
a frame;
a drum having a drum shaft and rotatably supported within said frame on said drum shaft extending through said frame, for winding up the seat belt therearound;
an emergency lock mechanism disposed on one side of said drum, for stopping let-out motion of the seat belt in an emergency; and
a seat belt take-up mechanism disposed outside of said frame on the other side of said drum opposite from said emergency lock mechanism, for applying a take-up force to the seat belt via said drum, wherein said seat belt take-up mechanism comprises a helical coiled spring as means for applying a take-up force to the seat belt, a cylindrical spool pressure fitted to said drum shaft outside of said frame, and a cylindrical spool cover mounted to an outside side surface of said frame covering said helical coiled spring to retard deformation of said helical coiled spring said coiled spring elastically interposed between said cylindrical spool and said cylindrical spring cover.

5,060,884

CREEL FOR WARPING ARRANGEMENT HAVING SPOOL CORE DISCHARGE MEANS

Karl H. Rapp, Gros-Umstadt, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jul. 17, 1990, Ser. No. 554,267
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1989, 3924095
Int. Cl.[5] B65H *49/14, 67/02*
U.S. Cl. 242—131.1 **6 Claims**



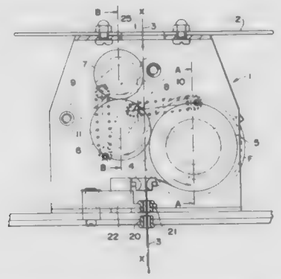
1. In a creel for a warping arrangement comprising a closed circuit carrier having a plurality of pegs for circulating them in a circulation direction, said pegs being adapted to receive thread spools, said pegs being distributed along the circulation direction upon said closed circuit carrier, said closed circuit carrier being stopable in one of a plurality of predetermined positions to place one or more of said pegs in a thread take-off position, said creel further being provided with a discharge arrangement for discharging the thread spools from those of said pegs arriving at said take-off position in response to said carrier moving in the circulation direction, the improvement comprising providing in combination with said discharge arrangement:
a guide having a guide surface, said pegs each having an axial slit, said guide surface being positioned with respect to said carrier to cause said guide surface to protrude into the axial slit of said pegs as successive ones of said pegs move in said circulation direction and into proximity to said guide surface.

5,060,885

YARN TENSION DEVICE FOR TEXTILE MACHINES

Carlos M. Gabalda, Granges les Valence, and Bernard Pusux, Chassieu, both of France, assignors to ICBT Lyon, France

Filed Jun. 29, 1990, Ser. No. 545,705
Claims priority, application France, Jul. 18, 1989, 89 09917
Int. Cl.[5] B65H *59/16*
U.S. Cl. 242—151 **7 Claims**



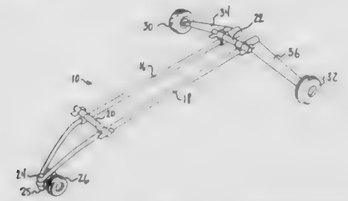
1. A device for maintaining yarn in tension, comprising:
a support housing having a yarn zone and a yarn exit zone, wherein a running axis of the yarn traverses said support housing between said yarn entrance zone and said yarn exit zone;
a first roller which is freely rotatably mounted on said support housing and a second roller, said first roller and said second roller being arranged adjacent too said yarn entrance zone such that a central axis of revolution of said first roller and a central axis of revolution of said second roller are disposed on either side of the running axis;
means for braking at least one of said first roller and said second roller; and
a third roller which is freely rotatably mounted on said support housing adjacent to said yarn exit zone and downstream of said first roller and said second roller with respect to a direction of travel of the yarn, wherein a periphery of said third roller is tangential to the running axis, and peripheral surfaces of said first roller, said second roller and said third roller are maintained in tangential contact with each other, the yarn being deflected around the peripheral surfaces between said yarn entrance zone and said yarn exit zone.

5,060,886

QUICK CHANGE WHEEL LANDING GEAR

Charles E. Davis, Arlington, and J. Robert Duppstadt, Bedford, both of Tex., assignors to Bell Helicopter Textron, Inc., Fort Worth, Tex.

Filed Aug. 8, 1990, Ser. No. 320,095
Int. Cl.[5] B64C *25/02*
U.S. Cl. 244—100 R **8 Claims**



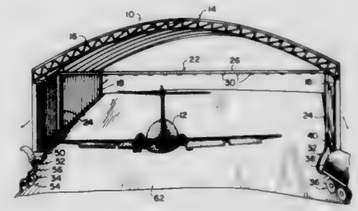
1. A wheel landing gear assembly for a vertical take-off and landing aircraft, comprising:
a cross tube adapted for removably mounting the gear assembly on the underside of the aircraft;
a pair of fore and aft tubes attached to said cross tube, said fore and aft tubes extending generally parallel to the longitudinal axis of the aircraft when the gear assembly is removably mounted on the aircraft, said fore and aft tubes converging together downward and forward of said cross tube and terminating at a pivot bearing attached thereto;
a pivotable nose gear mounted to said pivot bearing by means of a spring assembly;
a cantilever main gear leg mounted to and extending laterally outward from the aft end of each of said fore and aft tubes;
an elastomeric bearing mounted between of said fore and aft tubes and said corresponding main gear leg; and
a main gear wheel mounted on the laterally extending end of each of said main gear legs.

5,060,887

APPARATUS FOR DEICING AN AIRCRAFT

Charles J. Kean, 78 Crest Rd. West, N. Merrick, N.Y. 11566

Filed Dec. 6, 1989, Ser. No. 446,625
Int. Cl.[5] B64D *15/10*
U.S. Cl. 244—134 C **1 Claim**



1. An improved apparatus for deicing an aircraft comprising:
a) a shelter having a roof and a pair of side walls supported on a floor so that an aircraft can taxi therethrough, said side walls of each shelter include transport wheel assemblies so that said shelter is mobile;
b) at least one support structure having a pair of vertical members, each extending up one of said side walls and a horizontal member extending across under said roof of said shelter, said at least one support structure includes wheel assembly on each vertical member so that said support structure is mobile;
c) a feed line extending throuhg one of said vertical members and said horizontal member;
d) a plurality of spray nozzles spaced apart and supported on said horizontal members and fluidly connected to said feed line;
e) means for automatically applying deicing liquid through said feed line and out of said spray nozzles onto the aircraft, said automatically applying means include a first tanker truck having a tank with the deicing liquid therein; a delivery hose coupled between said tank and said feed line in said vertical member; a delivery pump within said supply tank coupled to said delivery hose; a filter coupled to said pump; and a generator on said supply tank to activate said pump;
f) means for recovering the deicing liquid so that the deicing liquid can be used again, said recovery means include a drain line formed within the floor to capture the deicing liquid after being dispensed from said spray nozzles; a recovery pump coupled to said drain line; a recovery hose coupled to said recovery pump; and a second tanker truck having a tank coupled to said recovery hose so that said pump can pump the deicing liquid into said tank of said second tanker;
g) polyethylene resin liner having curb edges and drain holes so that said line can protect the floor and guide the deicing liquid into said drain line; and
h) a plurality of sensors in the floor that will activate said

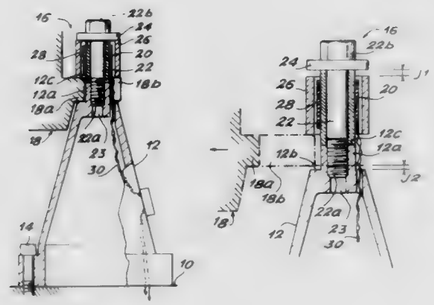
recovery pump when said aircraft taxis through said shelter.

5,060,888

TEMPORARY LINKING DEVICE, ESPECIALLY FOR AN ARTIFICIAL SATELLITE LENGTHENING PIECE, AND METHOD TO FREE SUCH A LINK

Gérard Vezain, Mandelieu; Christian Long, Le Cannet, and Jean Marchal, Peymeinade, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed May 30, 1990, Ser. No. 530,223
Claims priority, application France, Jun. 9, 1989, 89 07667
Int. Cl.[5] B64G *1/64*
U.S. Cl. 244—158 R **7 Claims**



1. A device to temporarily link several elements together, comprising a linking rod normally having a length so that mechanical tension is applied between said elements, and a freeing member made of a form memory material and cooperating with the linking rod and whose activation suppresses said mechanical tension and creates a positive allowance authorizing a relative movement between the elements, said freeing member being disposed in such a way as to provoke a predetermined elongation of the linking rod when the temperature of the freeing member exceeds a phase change temperature of said form memory material.

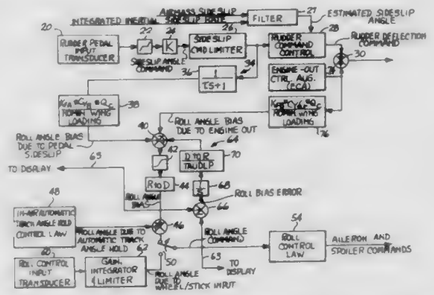
5,060,889

APPARATUS AND METHODS FOR MAINTAINING AIRCRAFT TRACK ANGLE DURING AN ASYMMETRIC FLIGHT CONDITION

Arun A. Nadkarni, Kirkland, and Mithra M. K. V. Sankrithi, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 1, 1989, Ser. No. 346,436
Int. Cl.[5] B64C *13/04;* **G05D** *1/12*
U.S. Cl. 244—183 **63 Claims**

1. An aircraft track angle hold control system comprising:
a. roll control surfaces capable of generating a rolling moment on the aircraft in flight;
b. yaw control means for permitting a pilot to command the aircraft to assume a nonzero sideslip condition through a rudder pedal input wherein the yaw control means includes a maneuver command control system which interprets the rudder pedal input as a sideslip angle command and which uses feedback control means to position a yaw control surface of the aircraft in such manner as to cause an actual sideslip angle of the aircraft to follow the sideslip angle command; and



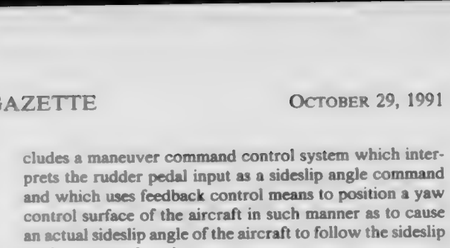
c. automatic control means, responsive to a nonzero pilot rudder pedal input, for commanding the roll control surfaces to move in such manner as to cause the aircraft's track angle to hold at a substantially constant value while the pilot makes no roll controller input.

5,060,890

DETECTION OF OVERHEATED RAILROAD WHEEL AND AXLE COMPONENTS

Jeffrey J. Utterback, Harrisonville, and Randall S. Mecca, Warrensburg, both of Mo., assignors to Harmon Industries, Inc., Blue Springs, Mo.

Continuation-in-part of Ser. No. 255,787, Oct. 11, 1988, Pat. No. 4,928,910. This application Sep. 29, 1989, Ser. No. 415,103
Int. Cl.[5] B61K *9/06*
U.S. Cl. 246—169 A **8 Claims**



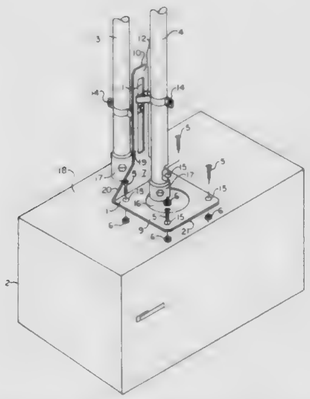
8. In an apparatus for detecting an overheated component of a railroad train:
(a) a sensing unit adapted to be disposed at trackside and having a sensing element responsive to electromagnetic radiation and means for focusing said radiation onto said sensing element;
(b) a shutter movable between an open position and a closed position in which said shutter blocks said radiation that would otherwise reach said sensing element via said focusing means;
(c) an external ambient temperature sensor connected to said sensing unit and remote therefrom;
(d) an internal temperature sensor connected to said sensing unit and located proximate to said sensing unit;
(e) means responsive to said sensing element for producing an electrical signal related to said radiation;
(f) means for driving said shutter for repeatedly opening and closing said shutter;
(g) means for comparing the amplitude of the signal generated by said sensing element while said shutter is closed with the signal generated by said sensing element when said shutter is open;
(h) means for compensating said sensing element signal to reflect any difference in said ambient temperature and the temperature of said sensing unit using data generated by said external temperature sensor and said proximate temperature sensor;
(i) means for automatically calibrating the output of said sensing element; and
(j) a housing in which said sensing components are situated, except for said external temperature sensor.

5,060,891

CONDUIT SUPPORT BRACKET

Dennis J. Nagy, 21200 E. Britton Rd., Harrah, Okla. 73045, and Timothy J. McGraw, 2301 NW. 122nd St., Apt. 3508, Oklahoma City, Okla. 73120

Continuation of Ser. No. 321,146, Mar. 9, 1989, abandoned. This application Oct. 15, 1990, Ser. No. 597,538
Int. Cl.[5] F16L *5/00*
U.S. Cl. 248—56 **14 Claims**



1. A conduit support bracket for supporting two vertical conduits simultaneously, said conduit support bracket comprising, a front side, a rear side, a mounting base, means to secure said mounting base to machine control cabinet, comprising a smooth flat plate with (4) equally sized mounting holes, and a single larger center hole which allows a first conduit to be installed, and a stanchion post perpendicular to said mounting base comprising a lower portion tapered approximately 20 degrees, a narrower upper portion comprising a front smooth, flat, mounting surface and a rear smooth, flat mounting surface, and a vertical slot centered on width of said upper portion, and conduit clamping means for attaching the conduits to the stanchion post.

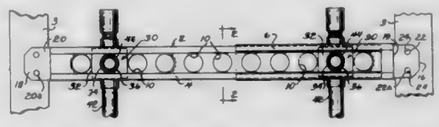
5,060,892

PLUMBING HANGER BRACKET ASSEMBLY

Glen Dougherty, 1426 W. Madison St., Ottawa, Ill. 61350

Filed Sep. 24, 1990, Ser. No. 587,077
Int. Cl.[5] F16L *3/22*
U.S. Cl. 248—57 **3 Claims**

1. A plumbing hanger bracket assembly comprising
elongated first and second bracket members having opposed end portions attach to spaced supports, said first and second bracket members being retained in telescopic relation to each other for varying the spacing between said end portions, said first bracket member including a plurality of circular openings disposed along the length thereof,
a plurality of sleeve members being mounted for relative movement on said first bracket member, each of said sleeve members having an opening for alignment with one of said plurality of openings of said first bracket member, said opening of each of said sleeve members and said one of said plurality of openings of said first bracket member being arranged to receive respective fluid pipe sections for support,
said first and second bracket members having complimentary modified U-shaped edge portions, said complimentary edge portions of said second bracket member overlapping said edge portions of said first bracket member along a variable portion of the length of said first bracket member,
said second bracket member having an elongated slot for permitting the respective pipe sections to extend therethrough, and
said plurality of sleeve members having opposed edge portions being slideably retained in said U-shaped edge portions of said first bracket member.

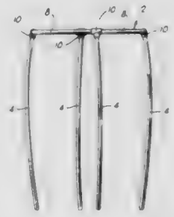


5,060,893

APPARATUS AND METHOD FOR HOLDING A BAG OPEN

Terrell R. Halbert, 200 W. Parkland, Yukon, Okla. 73099

Filed Sep. 17, 1990, Ser. No. 583,497
Int. Cl.[5] A63B *55/04*
U.S. Cl. 248—97 **7 Claims**



1. An apparatus for holding a bag open, which bag has an open end and a closed end, said apparatus comprising:
means for supporting the open end of the bag, said supporting means having a distance thereacross; and
a plurality of resilient deformable biasing means, connected to said supporting means, for biasing from inside the bag the closed end of the bag outwardly so that said plurality of biasing means open the closed end of the bag across a distance greater than the distance across said supporting mean.

5,060,894

STAND WITH COLLAPSIBLE LEGS

George Hillinger, Los Angeles, Calif., assignor to Alltrade, Inc., Commerce, Calif.

Filed Apr. 22, 1991, Ser. No. 688,291
Int. Cl.[5] F16M *11/38*
U.S. Cl. 248—170 **11 Claims**

1. A stand with collapsible legs, said stand including two basic elements, namely, a stand element and a leg element, which elements are connected in an adjustable manner to one

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another by a connection assembly, said connection assembly comprising:

a pair of ears held by one of said elements, said pair of ears being separated by a disk member support slot having an open end and a closed end, said pair of ears comprising:

a pushbutton support ear having a pin-supporting cylindrical opening passing therethrough, said pin-supporting cylindrical opening having a central axis; and

a gear-support ear having a toothed opening having a central axis aligned with the central axis of said pin-supporting cylindrical opening of said pushbutton support ear;

a disk member affixed by the other of said elements, said disk member being held in said disk member support slot by said pair of ears, said disk member having a toothed opening including a central axis, said toothed opening has the same cross-sectional shape as the toothed opening of said gear-support ear and the central axis of the toothed opening of the disk member being aligned with the central axis of the toothed opening of the gear-support ear, said disk member also having a cylindrical opening axially aligned



with the central axis of the toothed opening of the disk member and having the same inside diameter as the pin-supporting cylindrical opening of the pushbutton support ear and said disk member having an outer disk surface;

a gear-type lock pin having a gear portion which closely mates with the toothed openings of the gear-support ear and the disk member and a pin portion which fits closely into the pin-supporting cylindrical opening of the pushbutton support ear and the cylindrical opening of the disk member, said gear-type lock pin being movable into a locked position wherein the gear portion thereof is held both by the toothed opening of the disk member and the toothed opening of the gear-support ear and into an unlocked position when the gear portion is completely within the toothed portion of the gear-support ear; and

a pushbutton member attached to the pin end of the gear-type lock pin whereby the disk member is locked in a fixed position with respect to the pair of ears when the gear-type lock pin is in its locked position, but is at least partially rotatable when said gear-type lock pin is in an unlocked position.

5,060,895

PAINT ROLLER HOLDER MOUNTABLE IN SINK DRAIN

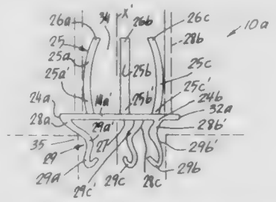
David P. Stuart, 120 Westchester Ter., Annadale, N.J. 08801

Filed Jun. 11, 1990, Ser. No. 535,551

Int. Cl.[5] B08B *3/02*

U.S. Cl. 248—176 **10 Claims**

1. A sink drain paint roller holder for roller washing and draining, comprising in combination: an uprightly upwardly extending paint-roller support means having an upper end and a lower end and an imaginary longitudinal axis extending between the upper and lower ends with the paint-roller support means in an upright position, for uprightly supporting an end of a hollow paint roller having a roller length such that the roller length extends upwardly and downwardly along said longitudinal axis when the hollow paint roller is mounted on said upper end of the uprightly upwardly extending paint roller support means, said upper end having a predetermined cross-sectional area sufficiently small as to fit within space of a hollow paint roller, the upper end having radially outwardly-facing spaced-apart outer paint-roller support surfaces adapted for a hollow paint roller mountable around said upper end along said imaginary longitudinal axis when said upper end is inserted within a hollow paint roller, and a base means for mounting in a sink over and for draining therethrough into a sink drain, the base means having continuous upper and lower base structures forming continuous interior space in each of said upper and lower base structures and forming a first drain flow-path from exterior space through said interior space



through said upper base structure and through said lower base structure to drain space below said lower base structure when the base means is seated over a sink drain, said base means including laterally-extending seating structure having a lower side structure adapted to seat on a substantially horizontal sink bottom of a sink having a sink drain, with the laterally-extending seating structure at said lower side structure forming a second drain flow-path drainable of liquid within sink space of said sink into the sink drain when said seating structure is seated on a sink bottom, the uprightly upwardly extending paint-roller support means at said lower end being uprightly mounted in said upright position on the base means, said uprightly upwardly extending paint-roller support means being positioned and structured such that drainage from the hollow paint roller is drainable through said first drain flow-path into a sink drain when the lower base structure is positioned in substantial alignment with the sink drain.

5,060,896

FURNITURE ADJUSTMENT DEVICE

John C. Hobbins, Whistlers Farm House, Tangley, Nr. Andover, Hampshire SP11 0SB, United Kingdom

PCT No. PCT/GB88/00359, § 371 Date Nov. 7, 1989, § 102(e) Date Nov. 7, 1989, PCT Pub. No. WO88/08682, PCT Pub. Date Nov. 17, 1988

PCT Filed May 6, 1988, Ser. No. 435,396

Claims priority, application United Kingdom, May 8, 1987, 8710988; Sep. 2, 1987, 8720580

Int. Cl.[5] F16M *11/24*

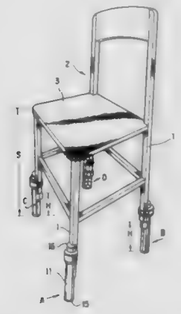
U.S. Cl. 248—188.2 **13 Claims**

1. A furniture adjustment device for extending the legs of a piece of furniture, the device comprising for each leg a respective leg extender, each leg extender having:

an elongate leg extension member, having a rebate extending along its length for at least partially accommodating its leg and a lower end for abutting the floor and further having a plurality of laterally open recesses spaced along its length;

a support in the rebate of the leg extension member intermediate its ends, on which a bottom end of the furniture leg can rest to extend it by a distance in the extender from the support to a lower end of the leg extension member, the support having at least one tongue for engagement in a selected one of the recesses thereby being adjustable between discrete positions along the length of the leg extension member;

a clamp for clamping the leg extension member to the leg above the support to secure the extender to the leg, the clamp having a leg gripping member extending across the rebate at a position between an upper end of the elongate extension member and the support to grip the leg and clamp it into the rebate and to restrain pivoting of the



extender with respect to the leg by providing abutment of the leg with the elongate member in the rebate both above the leg gripping member and below it; and

a locking member laterally retained on and axially slidable along its leg extension member into discrete positions corresponding to the discrete positions of the recesses for restraining lateral movement of its support and withdrawable therefrom for disengagement of at least one tongue from the selected recesses.

5,060,897

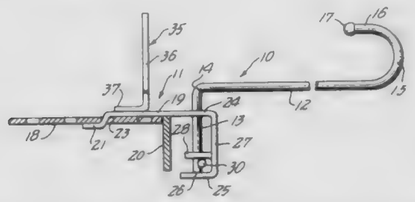
TWO-PART SWIVEL HOOK WITH SAFETY MOUNTING

David R. Thalenfeld, Bear Creek, Pa., assignor to Trion Industries Inc., Wilkes-Barre, Pa.

Filed Jul. 18, 1990, Ser. No. 554,699

Int. Cl.[5] F16B *45/00*

U.S. Cl. 248—220.4 **8 Claims**



1. A two-part swivel hook assembly for the support and display of merchandise on a display fixture, which comprises

(a) a metal wire display member having an outwardly extending portion for supporting merchandise and a downwardly extending mounting portion at its inner end for swivel mounting of the element,

(b) a base member having means for mounting on a display fixture,

(c) said base member comprising a section of sheet metal material shaped to form (i) generally horizontal upper guide portion, (ii) a front wall portion extending downwardly from the upper guide portion, (iii) a generally horizontal lower support portion extending rearwardly from said front wall portion, and (iv) a lower guide portion formed integrally with said front wall portion and extending generally horizontally rearward therefrom intermediate said upper guide member and said lower support portion,

(d) said upper and lower guide portions having aligned openings therein for the reception of the downwardly extending mounting portion of said display member,

(e) said mounting portion having a lower end portion provided with a radially extending key,

(f) said aligned openings each having a radical slot therein for the reception of said key when said key is properly rotationally oriented relative to said openings,

(g) said key being positioned between said lower guide portion and said support portion when said display member and said base member are in assembled relation,

(h) said mounting having a lower end extremity and said support portion being positioned below and in alignment with said openings and engaging and supporting the lower end extremity of said mounting portion.

5,060,898

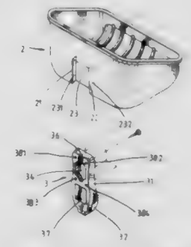
STRUCTURE OF SURFACE MOUNTING SUPPORT

Wen-Shyong Chang, No. 106, Chung Hsin Rd., Sec. 2, Wu Ku Hsiang, Taipei Hsien, Taiwan

Filed Nov. 28, 1990, Ser. No. 618,847

Int. Cl.[5] A47B *96/06*

U.S. Cl. 248—224.1 **2 Claims**



1. A surface mounting support comprising a body having a dovetailed upper part for supporting an object through a dovetail join; said body having a plurality of holes for fastening to a wall surface by fastening elements, a unitary hook at a bottom thereof for holding something and supporting said object, and an opening for fastening a thread in a fissure located at a top edge of said body for permitting said body to be suspended from said thread in a vertical position for angle position checking during mounting of said body on said wall surface; said object having a back containing a dovetail groove, said dovetail groove having two opposite, beveled side walls respectively projecting inwards; and said dovetailed upper part of said surface mounting support having a shape and size tightly fitting with said dovetail groove.

5,060,899

NESTED CONTAINER HOLDERS

Brian S. Lorence, Warren; Jeffrey A. Weidman, Sterling Heights, and Richard A. Phelps, Ferndale, all of Mich., assignors to Chivas Products Limited, Sterling Heights, Mich.

Filed Nov. 19, 1990, Ser. No. 615,831

Int. Cl.[5] A47K *1/08*

U.S. Cl. 248—311.2 **20 Claims**

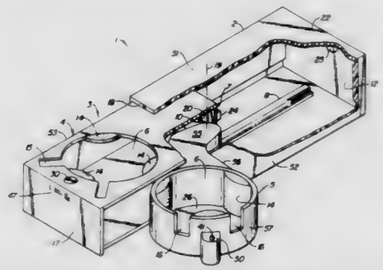
1. A container holder comprising:

a housing having a top surface and a bottom surface;

a primary cupholder and a secondary cupholder disposed within the housing each having holder means for supporting a container disposed therein, the cupholders further having means for movably mounting both cupholders within the housing, the means for movably mounting comprising sliding mount means for permitting the cupholders to move together axially from a first position substantially internal to the top and bottom surface of the

housing to a second position substantially external to the top and bottom surface of the housing; and

pivoting mount means in contact with both cupholders for permitting the secondary cupholder to rotate about an axis



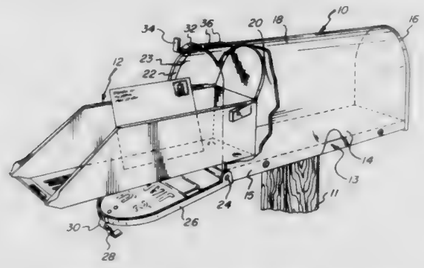
from a third position where both cupholders substantially overlap to a fourth position substantially disposed away from the primary cupholder such that both cupholders may support different containers.

5,060,900

MOUNTING BOARD FOR RURAL-TYPE MAILBOXES

Robert D. Kokoruda, 26 Saxony Dr., Trumbull, Conn. 06611, and Albert L. Harlow, Jr., 9 Chatham Dr., Aurora, Ohio 44202

Filed Dec. 13, 1989, Ser. No. 450,042
Int. Cl.[5] B65D *91/00;* A47G *29/12*
U.S. Cl. 248—311.2 27 Claims



1. A mounting board for use in attaching a rural mailbox to a vertical post arrangement, the mailbox having a bottom panel, a back panel and a U-shaped roof portion, the bottom panel, the back panel and the U-shaped roof portion defining a cavity in a bottom portion of the mailbox for receiving said mounting board and an enclosure with an entrance opening at one end thereof, and the mailbox further including a door member pivotally mounted adjacent said entrance opening for movement between an open position permitting access to the enclosure through the entrance opening and a closed position covering the entrance opening, comprising:

a main body portion;

means on said main body portion for mounting said mounting board to a vertical post arrangement; and

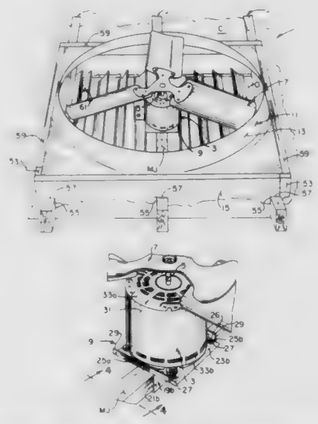
means on said main body portion for mounting a mailbox thereto, said mailbox mounting means being resiliently adjustable through resilient flexing thereof to accommodate various size cavities from a variety of mailboxes to allow the mounting board to snuggly fit within the cavities there defined.

5,060,901

WHOLE HOUSE FAN

David R. Lathrop, Glen Carbon, Ill., and James P. Shawcross, Chesterfield, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 11, 1990, Ser. No. 535,710
Int. Cl.[5] F24F *7/06*
U.S. Cl. 248—343 8 Claims



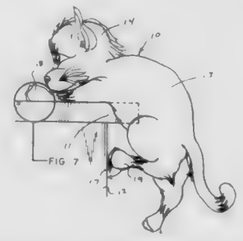
1. In a whole house fan assembly for installation over joists in an opening in a ceiling, one of said joists spanning the center of said opening, the fan assembly defining an air path through said assembly; a venturi including a throat in said air path, a fan impeller for moving air through said air path, a fan motor for driving said fan, and a skirt depending from said venturi defining a portion of said air path, the improvement comprising: means for mounting said motor to only said one joist spanning said opening separate from said venturi.

5,060,902

CORNER PROTECTOR

Brian T. Hartman, Storgt 15, 1446 Drobak, Norway

Filed Jul. 9, 1990, Ser. No. 550,064
Int. Cl.[5] A47B *95/00*
U.S. Cl. 248—345.1 1 Claim



1. A corner protector for overlying a corner portion of a structure comprising, in combination,

an elongate longitudinally aligned body portion, the body portion including a head portion mounted to an upper end of the body portion, and the body portion including a plurality of upper leg members for securement to an upper portion of the structure, and including a plurality of lower leg members, wherein the lower leg members are formed to a lower terminal end of the body portion and the upper leg members are formed to an upper end of the body portion adjacent the head portion,

and

each upper leg member including an upper foot portion, and each upper foot portion including a plurality of securement fasteners to secure each upper foot portion to the structure,

and

wherein at least one of the plurality of lower foot portions including a a plurality of securement fasteners to secure a lower foot portion to the structure,

and

wherein the body portion, head portion, upper leg members, and the lower leg members define an inflatable bladder, and the body portion including a forward surface and a rear surface, and the forward surface including an inflation valve mounted through the forward portion to effect inflation of the inflatable bladder to a selective pressure,

and

wherein the securement fasteners include rigid fastener elements to project interiorly of the structure to secure the leg members to the structure,

and

wherein each upper foot portion and at least one of the lower foot portions includes an adhesive layer to secure the upper foot portions and the lower foot portion to the structure,

and

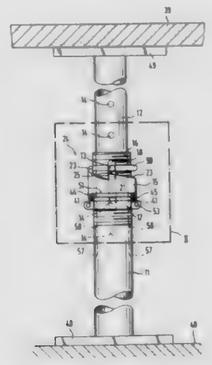
wherein the head portion includes a forward terminal head portion end, and the forward terminal head portion end includes an audible valve to effect an audible sounding upon deflection and displacement of the body portion upon impact of the body portion.

5,060,903

TELESCOPIC SHUTTERING SUPPORT

Artur Schwörer, Senden, Fed. Rep. of Germany, assignor to Peri GmbH, Weissenhorn, Fed. Rep. of Germany

Filed Mar. 22, 1990, Ser. No. 497,390
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1989, 3910344
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—354.3 33 Claims



1. A telescopic support having an adjustable length for supporting shuttering at a defined distance from a fixed support surface, the telescopic support comprising:

an elongated outer tube having a threaded outer surface and an axially elongated slot defined therein;

an elongated inner tube slidably disposed within said outer tube and having carrier recesses distributed over the length of said inner tube;

a lowering sleeve disposed around said outer tube, said lower sleeve having a support surface comprising an extended support region, a lowered support region, and an intermediate support region connecting said extended and lowered support regions;

a positioning nut having a threaded inner surface adapted to engage the threaded outer surface of said outer tube, said positioning nut adapted to maintain said lowering sleeve in a substantially fixed axial position relative to said outer rube;

a latch bolt disposed in said elongated slot of said outer tube, said latch bolt having a first end adapted to engage one of said carrier recesses and a second end adapted to engage said support surface of said lowering sleeve, said latch bolt adapted to move axially within said elongated slot in response to rotation of said support surface of said lowering sleeve; and

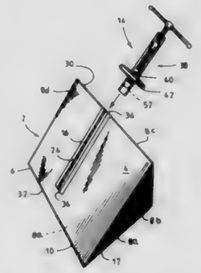
a rotary latch disposed in said elongated slot of said outer tube, said rotary latch adapted to engage said lowering sleeve and to prevent rotation of said lowering sleeve relative to said outer tube when said second end of said latch bolt engages said extended support region.

5,060,904

MULTI-POSITIONABLE SUPPORT STAND WITH MOVABLE CENTER OF GRAVITY AND ARTICLE HOLDING MEANS

David Hegarty, 36 Wyatt Rd., Garden City, N.Y. 11530

Continuation of Ser. No. 442,247, Dec. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 273,404, Nov. 18, 1988, Pat. No. 4,925,146, which is a continuation of Ser. No. 45,630, May 1, 1987, Pat. No. 4,787,595. This application Aug. 23, 1990, Ser. No. 571,765
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—454 15 Claims



3. In combination:

an article support stand for removably mounting an article holder thereon, and a suspended article holder support device adapted to be mounted on the article support stand;

the article support stand including a main body, the main body having a mounting side, and means for mounting the suspended article holder on the mounting side of the body, the article holder mounting means including means defining an elongated slot situated on the mounting side of the body for mounting the article holder on the mounting side;

the suspended device including first means for supporting a planar, plate-like body on the device;

the planar body having a front mounting side and a rear side opposite the front side, the body being attached to the first support means, and third means for removably mounting an article holder, the third article holder mounting means being situated on the planar body at the mounting side thereof, the third article holder mounting means being selectively engageable with the article holder;

the suspended device further including second means for removably mounting the suspended article holder device to the support stand, the second means of the suspended

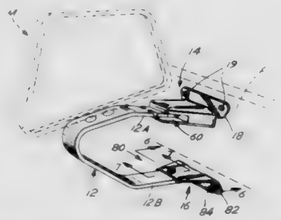
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device being engageable with the mounting means of said stand to allow at least one suspended device to be mounted on the article support stand.

5,060,905
SELF-ADJUSTING MOUNTING ASSEMBLY FOR VEHICLE OUTSIDE REAR-VIEW MIRROR

Bernard C. Sharp, White Plains, N.Y., assignor to Epicor Industries, Inc., Deerfield, Ill.

Filed Aug. 24, 1989, Ser. No. 362,771
Int. Cl.[5] B60R *1/02*
U.S. Cl. 248—479 **7 Claims**



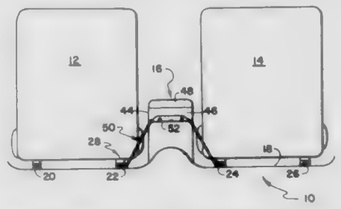
1. A self-adjusting mounting assembly for attaching an outside rear-view mirror to a vehicle comprising: an elongated support member adapted to mount a mirror thereon, first bracket means for attaching one end of said support member to the vehicle and second bracket means for attaching an opposite end of said support member to the vehicle, said first bracket means includes a plate that can be affixed to the vehicle, said first bracket means being connected to said support member one end by a first pivot pin so that said support member can be selectively rotated about an axis defined by said first pivot pin, said second bracket means includes a second plate that can be affixed to the vehicle, said second plate being rotatably connected to said support member opposite end by a second pivot pin, and self-adjusting means constructed and arranged to mount on differing vehicle profiles while maintaining mirror alignment, said self adjusting means being operatively associated with said second bracket means and said second pivot pin to maintain said second pivot pin in axial alignment with said first pivot pin, said self adjusting means including a rounded embossment on said second plate with an elongated slot in said embossment and a bearing positioned between said second plate and said support member, said second pivot pin extending through said slot and bearing and holding said second plate and said support member in relative fixed position with respect to each other, said second pivot pin having a diameter slightly less than the minor axis of said slot so that said pin can travel along the major axis of said slot in response to changes in the angular relationship between said second plate and said support member.

5,060,906
CONSOLE BRACE

Herbert Y. Gayle, Portland, Tex., assignor to Rodney Popejoy, Corpus Christi, Tex., a part interest

Filed Mar. 9, 1988, Ser. No. 165,910
Int. Cl.[5] A47B *97/00*
U.S. Cl. 248—503 **9 Claims**

1. In combination, a vehicle having a floor, a pair of spaced bucket seat assemblies comprising a pair of seats, first and second rails, means securing the rails to the floor comprising a bolt extending through the vehicle floor having a head thereon and a washer captivated between the head and the rail, and means mounting the seats for parallel movement on the rails in a forward and rearward direction, and a console between the seats comprising a receptacle, a lid and means connecting the receptacle to the floor, the improvement comprising a rigid brace, separate from the connecting means, having a first section secured to the receptacle and a second section

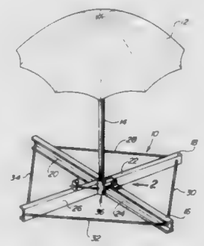


captivated between the bolt head and the rial and rigid with the first rail.

5,060,907
BASE FOR AN UMBRELLA

Francisco Castano, Novi, Mich., assignor to Unistrut Corporation, Ann Arbor, Mich.

Filed Jan. 12, 1990, Ser. No. 464,036
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—514 **20 Claims**



1. A base for an umbrella, said umbrella including an umbrella pole, said base comprising:
at least four intersecting and substantially horizontal legs; and
at least one receptacle for removably receiving said umbrella pole, said receptacle being pivotally mounted to one or more of said at least four intersecting legs;
whereby said pivotable mounting provides for the alteration of the degree of angle of said receptacle relative to said horizontal legs about a pivot axis, and locking means comprising at least a first member movable relative to an axially extending second member to lock said receptacle at a given angle, said second member extending along an axis which is non-parallel to said pivot axis such that said locking means prevents pivoting of the receptacle.

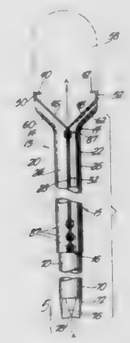
5,060,908
MAIL POST

Hugh M. Sofy, 201 Warrington, Bloomfield Hills, Mich. 48013

Continuation of Ser. No. 7,407, Jan. 27, 1987, abandoned. This application Dec. 3, 1987, Ser. No. 127,531
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—545 **13 Claims**

1. A mailbox post assembly (**13**) comprising; an elongated hollow member (**15**) extending between top (**14**) and bottom (**16**) ends, said hollow member (**15**) consisting of two identical parts (**20, 22**) symmetrical with one another on either side of a plane extending longitudinally of said hollow member (**15**) and containing a central axis (A) thereof, said assembly (**13**) characterized by each of said parts (**20, 22**) having a constant cross-section extending from said top end (**14**) to said bottom end (**16**) of said hollow member (**15**) including a bulged central portion (**24, 26**) and flanges (**28, 30, 32, 34**) extending laterally

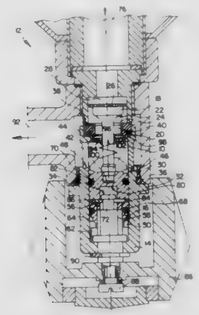
outwardly from either side of said bulged portion (**24, 26**) for mating engagement of the flanges (**28, 30**) of one part (**20**) with the flanges (**32, 34**) of the other part (**22**) to define said assembly (**13**), each of said parts (**20, 22**) including a mailbox support portion (**40, 42**) disposed radially outwardly from said top end (**14**) of said bulged portions (**24, 26**) from said central axis (A), said flanges (**28, 30, 32, 34**) and said bulged central portions (**24, 26**) extending straight and parallel from said end (**16**) for mating said parts (**20, 22**) together with the lower ends of said bulged portions (**24, 26**) clamped about an anchor shaft (**70**), and including an anchor shaft (**70**) for insertion into ground support and to be clamped between said parts (**20, 22**) in said bulged central portions (**24, 26**) thereof at the bottom ends (**16**) thereof, with the outer dimensions of said anchor shaft (**70**) being slightly greater than the internal dimensions of said hollow member (**15**).



5,060,909
SHUT-OFF VALVE FOR FLUIDS

Miodrag Stanic, Muehlstrasse 19, D-6450 Hanau, Fed. Rep. of Germany

PCT No. PCT/EP87/00476, § 371 Date Feb. 13, 1989, § 102(e) Date Feb. 13, 1989, PCT Pub. No. WO88/01704, PCT Pub. Date Mar. 10, 1988
PCT Filed Aug. 24, 1987, Ser. No. 328,076
Claims priority, application Yugoslavia, Aug. 25, 1986, 1477/86
Int. Cl.[5] F16D *7/02;* **F16K** *31/44*
U.S. Cl. 251—81 **17 Claims**

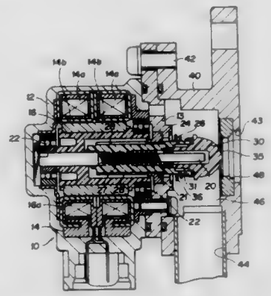


1. A shut-off valve for fluids comprising a valve housing, a valve piston with valve element arranged upstream of an associated valve seat, and a piston holder having an end connected to a spindle and having another end connected to said valve element, said piston holder being axially movable within said valve housing by means of a spindle and accommodating said valve piston, axial motion of said piston holder being converted into rotational motion of said piston holder when said valve piston reaches a stroke limit at either an open or close position of said valve element, wherein said piston holder has on its outer wall, axial projections which slide axially in associated axial recesses formed in an inner wall of said valve housing and are deformable so as to be movable into adjacent recesses when said stroke limit is reached, thereby achieving only rotational motion of said piston holder, whereby over-torquing is reduced.

5,060,910
FLOW CONTROL DEVICE

Kouichi Iwata; Hiroki Yamamoto, and Katsuyoshi Fukaya, all of Oobu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 13, 1991, Ser. No. 668,631
Claims priority, application Japan, Mar. 15, 1990, 2-26432[U]
Int. Cl.[5] F16K *31/04*
U.S. Cl. 251—129.05 **10 Claims**



1. A flow control device comprising:
a motor case;
a stepping motor comprising a stator fixed to said motor case and a rotor coaxial with said stator and rotatably supported by said motor case;
a shaft fixed to the rotor of said stepping motor coaxially with a central rotational axis of the rotor;
a housing fixed to said motor case, having at least two air flow holes and defining an air passage communicating said air flow holes with each other;
a guide member mounted on said shaft fixed to the rotor of said stepping motor, said guide member being operated by rotation of said shaft so as to approach to or leave from a valve seat disposed in said air passage of said housing, said guide member having an axial bore formed in an end portion thereof on the side closer to said valve seat, said axial bore having a cylindrical inner wall concentric with a central rotational axis of said shaft and a stepped portion extended radially inwardly from the end of said cylindrical inner wall;
a valve member integrally provided with a valve element capable of sitting on said valve seat and a sleeve portion inserted into said axial bore of said guide member and fixed to said cylindrical inner wall;
an annular sliding bearing member inserted into said axial bore of said guide member in a position between said stepped portion and the terminal end of said sleeve portion of said valve member, and having an outer peripheral surface whose outside diameter is slightly smaller than the inside diameter of said cylindrical inner wall of said axial bore and also having a central hole whose inside diameter is slightly larger than the outside diameter of said shaft, with said shaft being inserted through said central hole; and

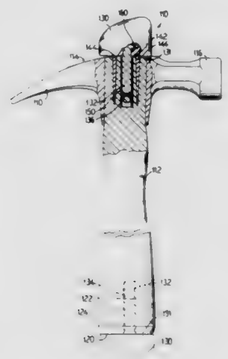
an elastic member also inserted into said axial bore of said guide member within a gap formed between one of axial end faces of said stepped portion of an axial end face of said sleeve portion of said valve member and one of axial end faces of said sliding bearing member to bring the other end face of the sliding bearing member into pressure contact elastically with the other one of the axial end faces of the stepped portion and the axial end face of the sleeve portion of the valve member.

5,060,911

HAMMER WITH NAIL-PULLING LEVER ARM AND FULCRUM EXTENSION

Jerome J. Mikesell, 3750 N. Lake Shore Dr., Chicago, Ill. 60613

Filed Nov. 21, 1990, Ser. No. 616,383
Int. Cl.[5] B25C *11/00*
U.S. Cl. 254—26 E **30 Claims**



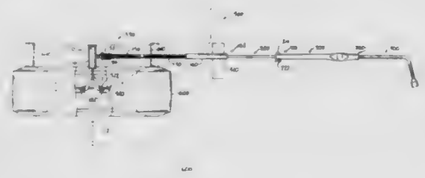
1. A hammer comprising:
an elongate handle including a distal end having a distal surface and a proximal end having a proximal surface;
a hammer head mounted at said distal end and including an end surface including said distal surface of said handle therein and also acting as a fulcrum for pulling nails, and a nail-pulling claw;
a first bore in said distal end extending into said handle from and substantially perpendicular to said distal surface;
a first spherical recess in said bore spaced a predetermined distance from said distal surface;
a second bore extending into said handle from and substantially perpendicular to said proximal surface;
a second spherical recess in said second bore spaced said predetermined distance from said proximal surface; and
a fulcrum extension member including a first surface, a fulcrum surface, and an attachment pin extending from said fulcrum extension member generally perpendicular to said first surface,
said attachment pin including a free end to be selectively received in said first bore to mount said body at said distal end to essentially lengthen said handle and move said fulcrum from said distal end surfaces to said fulcrum surface of said extension member, and in said second bore to store said fulcrum extension member at said proximal end of said handle,
said pin including at least one yieldable member at said free end spaced said predetermined distance from said first surface to be received in and releasably latch in the respective spherical recess of the respective bore.

5,060,912

SPARE TIRE HOLDER AND WHEEL LOCK

David Guarr, P.O. Box 14532, Lenexa, Kans. 66215

Filed Oct. 23, 1989, Ser. No. 424,941
Int. Cl.[5] B66D *1/06*
U.S. Cl. 254;323 **21 Claims**



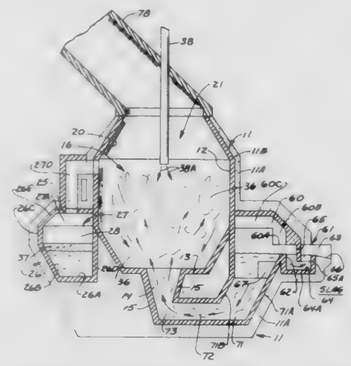
1. A holder for a spare tire of a vehicle comprising:
hoist means for raising and lowering said spare tire between raised and lowered positions;
means for mounting said hoist means to said vehicle;
clamp means connected to said hoist means and including structure for releasably connecting said spare tire with said hoist means;
drive means for operating said hoist means;
a drive shaft having a first end comprising means for releasably connecting said drive shaft to said drive means and a second end adjacent an exterior portion of said vehicle;
guide means extending between said drive means and said exterior portion of said vehicle for directing said first end of said drive shaft into connection with said drive means; and
means for connecting said guide means to said drive means in a slidable relationship therebetween, said means precluding a purchase of said drive means and operation thereof by said guide means, whereupon operation of said drive shaft operates said drive means and hoist means in a manner to position said clamped tire between a lowered user accessible position and a raised transport position.

5,060,913

INTEGRATED METALLURGICAL REACTOR

Kenneth J. Reid, Edina, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Aug. 30, 1989, Ser. No. 400,566
Int. Cl.[5] C21C *5/00*
U.S. Cl. 266—162 **25 Claims**



1. A totally integrated metallurgical reactor for manufacturing metal from raw materials comprising an enclosed structure having a central chamber for containing a first molten product,

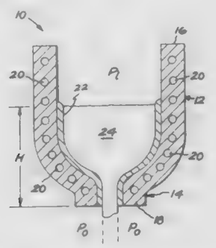
said chamber having an exterior periphery, said chamber being enclosed and having a heating zone;
a channel having walls defining a flow path positioned around at least portions of the exterior periphery of said central chamber and comprising a plurality of interconnected segments, each forming a processing zone;
means for introducing raw materials to the central chamber to permit establishing a first molten product;
means forming a flow opening between the central chamber and the channel for permitting a first molten product to flow into the channel;
means positioned along the channel at desired locations for removing undesirable products;
means for adding raw feed material in at least one zone of the channel to first molten product therein, the channel having sufficient length for providing at least two zones for treatment for first molten product;
passageway means connecting the flow path defined by the channel with the central chamber and opening to the chamber below a lower level of the flow opening in the central chamber for permitting recycling of a substantial portion of a first molten product in said flow path to said central chamber; and
means for removing a finished product from the flow path.

5,060,914

METHOD FOR CONTROL OF PROCESS CONDITIONS IN A CONTINUOUS ALLOY PRODUCTION PROCESS

Hsin-Pang Wang, Rexford, N.Y., and Yuan Pang, North Reading, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1990, Ser. No. 552,980
Int. Cl.[5] H05B *7/20*
U.S. Cl. 266—236 **20 Claims**



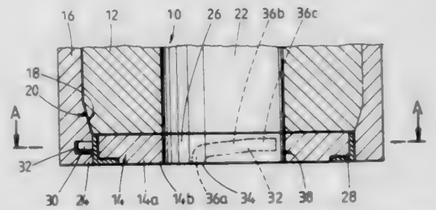
1. A method for a continuous skull nozzle process for melting and discharging liquid metals or metal alloys having a container with an inside, a steady-state skull substantially located on the inside of said container and an amount of liquid metal or alloy retained in said container comprising the steps of:
forming a skull;
determining a desired discharge range;
creating a pressure differential between the inside of said container and an area exterior of said container; and
controlling said pressure differential so as to maintain a discharge flow rate of said melt of said metal or alloy within said predetermined discharge range.

5,060,915

TWO-PIECE TERMINAL BRICK

Sabine Altpeter, Villach; Helmut Vacek, Weissenstein, and Bernd Grabner, Millstatt, all of Fed. Rep. of Germany, assignors to Radex-Heraklith Industriebeteiligungs Aktiengesellschaft, Austria

Filed Sep. 6, 1989, Ser. No. 403,666
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1988, 3830342
Int. Cl.[5] C21C *5/42*
U.S. Cl. 266—236 **17 Claims**



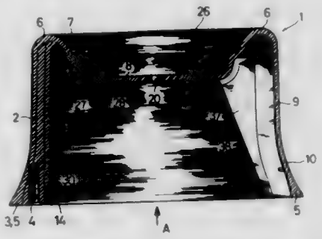
1. Fireproof ceramic terminal brick apparatus for a tapping system in a metallurgical apparatus, comprising
a metal shell,
an upper section housed within the metal shell,
a replaceable lower section formed as a cylindrical body, and
connecting-disconnecting means for releasably holding the lower section inside the metal shell against the upper section so that when the fireproof ceramic terminal brick apparatus is in use the lower section is pressed firmly against the upper section to seal the upper section and the lower section together, and for releasing the lower section from contact with the upper section when desired so that when the lower section is damaged and needs to be replaced the lower section may be released from contact with the upper section for easy replacement of the lower section.

5,060,916

PLUNGER PISTON SYSTEM

B. Hubert Koschinat, Hosbach-Winzenhohl, and Manfred Fröhlke, Ottweiler, both of Fed. Rep. of Germany, assignors to Otto Sauer Achsenfabrik Keilberg, Bessenbach-Keilberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 242,412, Sep. 9, 1988, Pat. No. 4,890,823. This application Sep. 29, 1989, Ser. No. 414,528
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824542; European Pat. Off., Jul. 8, 1989, 89112535.3
The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.
Int. Cl.[5] B25G *3/00*; F16F *9/04*
U.S. Cl. 267—64.27 **20 Claims**



1. A plunger piston assembly for use in supporting and guid-

ing an air spring bellows of an air suspension axle of a vehicle, said system comprising:

a pot-shaped plunger piston formed of plastic material, said plunger piston including a substantially cylindrical skirt, a bottom foot portion at a lower end of said skirt for connection to an air spring bearing arm, an upper inwardly bent edge portion at an upper end of said skirt, and a trough section extending radially inwardly from said edge portion and having a trough base, thereby defining a trough to accommodate a convex base of the air spring bellows, said trough base having therethrough an opening for passage of a bolt for connection with the convex base of the air spring bellows;

a supporting body formed separately of said plunger piston of plastic material, said supporting body having a lower foot portion, an upper base plate and a substantially frusto-conical portion extending between and having a diameter decreasing from said lower foot portion to said upper base plate; and

said supporting body being positioned within an inner space of said plunger piston and being surrounded by said plunger piston, with said lower foot portion of said supporting body contacting said bottom foot portion of said plunger piston, and with said upper base plate of said supporting body adjacent an underside of said trough base of said plunger piston.

5,060,917

HYDRAULIC ANTIVIBRATORY DEVICES

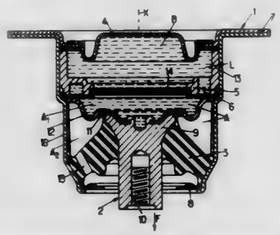
Daniel DuBos, Asnieres; Jean-Luc Salaud, Conflans Sainte Honorine, and Jean-Pierre Bretaudeau, Chateaudun, all of France, assignors to Hutchinson, France

Filed Jul. 19, 1990, Ser. No. 554,517

Claims priority, application France, Jul. 19, 1989, 89 09721

Int. Cl.[5] F16F *15/04*

U.S. Cl. 267—140.1 **6 Claims**



1. A hydraulic antivibratory device insertable for damping and connection purposes, between two rigid elements, comprising; a rigid annular frame and a rigid base coaxial with this frame, the frame and base being securable respectively to the two rigid elements to be joined together, an annular elastomer spring resisting axial compression, inserted between the frame and the base, a flexible sealed membrane carried by the frame and defining an enclosure therewith and with a bellows, a rigid intermediate dividing wall carried by the frame and dividing the inside of the enclosure into two chambers, a restricted passage causing the two chambers to communicate permanently together, and a liquid mass contained in the two chambers and the restricted passage, the base including a shoe projecting transversely from a central foot, the annular frame comprising a rigid washer having an opening through which the foot passes, which opening is too small to allow the shoe to pass axially therethrough, the bellows being independent of the spring and offering only a low resistance to axial deformation, the periphery of the shoe being directly joined sealingly to the annular frame by at least one portion of the bellows, the surface of said bellows which is opposite to the surface which partially defines the enclosure being open to the surrounding atmosphere.

5,060,918

FLUID-FILLED CYLINDRICAL ELASTIC CONNECTOR HAVING TWO ORIFICE PASSAGES WITH DIFFERENT CROSS SECTIONAL AREAS

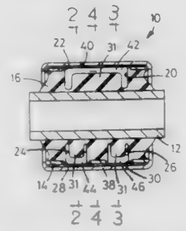
Ryouji Kanda, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Aichi, Japan

Filed Mar. 19, 1990, Ser. No. 495,752

Claims priority, application Japan, Mar. 23, 1989, 1-33001

Int. Cl.[5] F16F *13/00*

U.S. Cl. 267—140.1 **8 Claims**



1. A fluid-filled cylindrical elastic connector for flexibly connecting two members, comprising:

an inner sleeve attachable to one of the two members to be flexibly connected;

an outer sleeve attachable to the other of said two members, and disposed radially outwardly of said inner sleeve with a predetermined radial spacing therebetween;

a generally annular elastic body interposed between said inner and outer sleeves for elastically connecting said inner and outer sleeves;

means for defining a main fluid chamber formed between said inner and outer sleeves so as to extend over a predetermined circumferential length of said elastic body, said main fluid chamber being filled with a non-compressible fluid;

means for defining a first and a second auxiliary fluid chamber formed between said inner and outer sleeves, such that said first and second auxiliary fluid chambers are disposed diametrically opposite to said main fluid chamber with respect to said inner sleeve, and such that said first and second auxiliary fluid chambers are spaced from each other by a predetermined distance in an axial direction of said inner sleeve, said first and second auxiliary fluid chambers being filled with said non-compressible fluid, relative pressure changes occurring between said main fluid chamber and said first and second auxiliary fluid chambers when a vibrational load is applied between said inner and outer sleeves;

means for defining a continuously open first orifice passage having a first cross sectional area and communicating with said main fluid chamber and said first auxiliary fluid chamber, so as to allow restricted fluid flow therebetween;

means for defining a continuously open second orifice passage having a second cross sectional area which is larger than said first cross sectional area, and communicating with said main fluid chamber and said second auxiliary fluid chamber, so as to allow restricted fluid flow therebetween; and

an intermediate sleeve disposed between said outer sleeve and said elastic body and secured to said elastic body, said intermediate sleeve having a first, a second, and a third window which are aligned with said main, first and second chambers, respectively;

wherein said intermediate sleeve has a first pair of recesses corresponding to a first pair of arcuate grooves which are formed in said elastic body and which are closed by said outer sleeve to thereby provide said continuously open first orifice passage, and a second pair of recesses corresponding to a second pair of arcuate grooves which are formed in said elastic body and which are closed by said outer sleeve to thereby provide said continuously open second orifice passage.

5,060,919

DAMPING COEFFICIENT CONTROL DEVICE FOR VIBRATION DAMPER

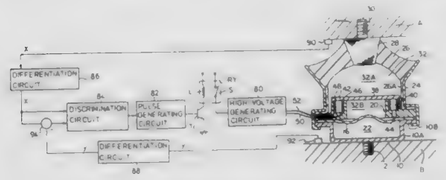
Kazuya Takano, Kamakura, and Takeshi Noguchi, Yokohama, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 180,833, Apr. 13, 1988, abandoned. This application Jun. 25, 1990, Ser. No. 542,657

Claims priority, application Japan, Apr. 17, 1987, 62-94942

Int. Cl.[5] F16F *9/53, 13/00*

U.S. Cl. 267—140.1 **14 Claims**



1. A damping coefficient control device in a vibration damper which is placed between a vibration source and a vibration receiving section, said vibration damper having a liquid chamber having a portion made of an elastically deformable material and charged with an electrorheologic fluid having a first viscosity when no electric field is applied, a partition wall which divides said liquid chamber into a plurality of sub-chambers, an orifice providing communication between said sub-chambers, and electrodes disposed in said orifice, the damping coefficient control device being constituted to control the voltage applied to said electrodes by only an on operation and an off operation, a predetermined substantially uniform voltage being applied to said electrodes when said control device is in said on operation, no voltage being applied to said electrodes when said control device is in said off operation, to vary the viscosity of said electrorheologic fluid, thereby controlling the damping coefficient of said vibration damper, said damping coefficient control device comprising:

first velocity detecting means for detecting a first velocity which is the velocity of said vibration receiving section;

second velocity detecting means for detecting a second velocity which is the velocity of said vibration source;

discrimination means for discriminating whether the direction of said first velocity is the same as the direction of the relative velocity of said vibration receiving section relative to said vibration source;

control means for controlling said voltage such that said predetermined voltage is applied, to increase the damping coefficient of said fluid when the direction of said first velocity is the same as that of said relative velocity and such that no voltage is applied, so that the damping coefficient of said fluid is equal to said first viscosity when the direction of said first velocity is different from that of said relative velocity; and

phase adjusting means for advancing the phase of control to compensate for any delay in change of the viscosity of said electrorheologic fluid after application of said voltages to said electrodes, thereby ensuring that the change in said viscosity of said electrorheologic fluid is completed in a proper timing.

5,060,920

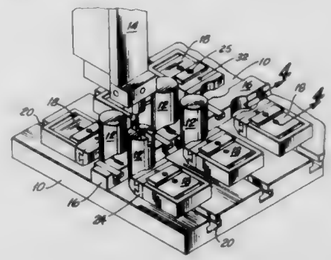
QUICK CHANGE JAW ASSEMBLY FOR HIGH PRECISION MACHINING

Eddy Engibarov, c/o E.Z.E. Machine Company 616 Onderdonk Ave., Ridgewood, N.Y. 11385

Filed Dec. 20, 1990, Ser. No. 630,540

Int. Cl.[5] B25B *1/24*

U.S. Cl. 269—282 **23 Claims**



1. A workpiece holder having a jaw assembly adapted to be secured to a plate, said jaw assembly comprising:

a channel having opposing sides, one side being substantially horizontal and the other side being angled and facing said one side;

a removable jaw including a gripping surface adapted to apply a clamping force to a workpiece and a foot on a surface of the jaw opposite to said gripping surface, said foot being adapted to be received in said channel, said foot having an angled surface adapted to be pressed against said angled side of said channel;

means for releasably pressing said jaw against said angled side of the channel, whereby said removable jaw is releasably secured in said channel; and

locating means, respectively provided on said jaw and a wall of said channel between said opposing sides thereof, and cooperating with each other so as to precisely locate the jaw in the channel of the jaw assembly.

5,060,921

IMAGE FORMING APPARATUS

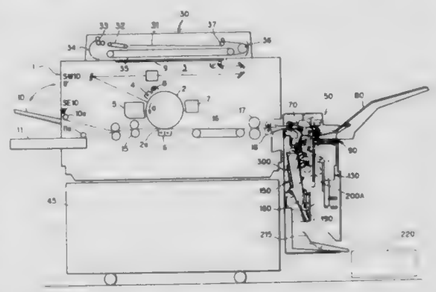
Kimihiko Higashio; Masazumi Ito, and Kadotaro Nishimori, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 21, 1990, Ser. No. 482,536

Claims priority, application Japan, Feb. 22, 1989, 1-42594

Int. Cl.[5] B42B *1/02*

U.S. Cl. 270—53 **16 Claims**



1. An image forming apparatus which comprises:

means for forming images on copy sheets;

means for effecting a finishing process on the copy sheets;

means for feeding the copy sheets to the image forming means, the copy sheet feeding means including a manual

copy sheet insertion section from which an operator can manually feed optional copy sheets to the image forming means; and

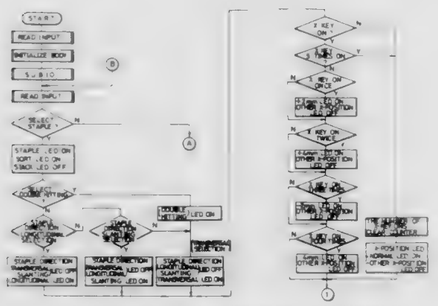
control means for prohibiting the use of both the manual copy sheet insertion section and the finishing means.

5,060,922

COPYING PAPER PROCESSING APPARATUS

Mitsuo Shibusawa; Tsutomu Yamakami, both of Yokohama; Atsushi Arai, Ichikawa, and Hiroshi Kawano, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 12, 1989, Ser. No. 379,006
Claims priority, application Japan, Jul. 13, 1988, 63-172547
Int. Cl.[5] B42B *1/02*
U.S. Cl. 270—53 9 Claims



1. A copying paper processing apparatus comprising:

a sorter;

a stapling device for stapling sheets of copying paper sorted by the sorter; and

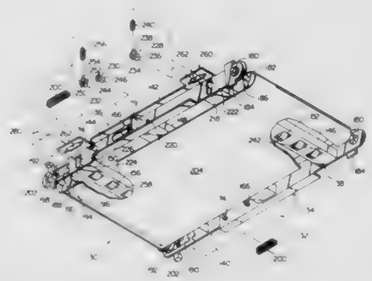
means for automatically selecting and setting a sort mode when a staple mode is selected and set.

5,060,923

AUTOMATIC DOCUMENT CONVEYING DEVICE FOR AN IMAGE PROCESSING MACHINE

Kazushi Takimoto, Kadoma; Yasushi Kamezaki, Sakai; Koji Maekawa, Kyoto; Kiyoshige Kameda, Higashi-Okasa; Hiroyuki Fujita, Sakai, and Katsunori Masai, Amagasaki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 29, 1989, Ser. No. 414,321
Claims priority, application Japan, Oct. 4, 1988, 63-249114
Int. Cl.[5] B65H *5/22*
U.S. Cl. 271—7 4 Claims



1. An automatic document conveying device for an image-processing machine including a housing having on its upper surface a transparent plate on which to place a document to be processed, said device comprising:

an opening-closing frame member adapted to be pivotably mounted on the housing so that said frame member is free to pivot about a pivot axis extending along the rear edge of the transparent plate between a closing position at which said frame member covers the transparent plate and an open position at which the transparent plate is exposed to view, the opening-closing frame member having an open under-surface;

a conveyor belt unit including a unit frame mounted in the opening-closing frame, a driven shaft, a follower shaft spaced from said driven shaft in the conveying direction, means mounting said driven shaft and said follower shaft on the unit frame, and an endless belt wrapped about the driven shaft and the follower shaft;

the unit frame including a front frame member and a rear frame member disposed in a widthwise spaced-apart relationship, each of the front frame member and the rear frame member including (a) a driven-side supporting plate and a follower-side supporting plate, the driven-side supporting plate having a first restraining hole therethrough, the follower-side supporting plate having a second restraining hole therethrough, one of the first restraining hole and the second restraining hole being a screw hole, (b) connecting means for connecting the driven-side supporting plate and the follower-side supporting plate so that said supporting plates are free to move relative to each other over a predetermined distance in the conveying direction, and (c) a restraining threaded member extending through the other of the first restraining hole and the second restraining hole and threaded into said one of the first restraining hole and the second restraining hole, for releasably restraining the relative movement of the driven-side supporting plate and the follower side supporting plate in the conveying direction, and

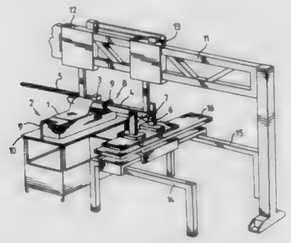
the driven shaft being mounted across the driven-side supporting plate of the front frame member and the driven-side supporting plate of the rear frame member, and the follower shaft being mounted across the follower-side supporting plate of the front frame member and the follower-side supporting plate of the rear frame member.

5,060,924

DEVICE FOR PICKING UP ONE PIECE OF CLOTH FROM A STACK OF CLOTH PIECES

Pentti Airaksinen, Ulvila; Jarmo Pohjolainen, Vanha-ulvila; Matti Miettinen, Pori; Seppo Varjus, Kassmarkku, and Reijo Leppäniemi, Pori, all of Finland, assignors to Cimcorp Oy, Ulvila, Finland

PCT No. PCT/FI88/00186, § 371 Date May 16, 1990, § 102(e) Date May 16, 1990, PCT Pub. No. WO89/04614, PCT Pub. Date Jun. 1, 1989
PCT Filed Nov. 16, 1988, Ser. No. 488,036
Claims priority, application Finland, Nov. 19, 1987, 875116
Int. Cl.[5] B65H *3/20*
U.S. Cl. 271—18 4 Claims



1. A device for picking up a piece of cloth (1) from a stack (2) of cloth pieces, comprising

means (3) for gripping and raising the edge of the piece of cloth (1) to be picked up; and

means intended to be inserted under the piece of cloth (1) to be picked up from the side of the raised edge thereof for separating and supporting the piece of cloth (1), characterized in that the separating and supporting means comprise

elongated support means (8) comprising an elongated strip (4) of magnetizable metal and separating blades (6, 7) positioned on both sides of said strip, said separating blades being arranged to be substantially displaceable perpendicularly with respect to a longitudinal axis of the magnetizable strip (4), the support means being arranged to be inserted under the piece of cloth (1) to be picked up from the side of the raised edge thereof;

an elongated magnetic bar (5) positioned opposite to the magnetizable strip for locking the piece of cloth (1) to be picked up between the magnetic bar (5) and the magnetizable strip (4); and

means for displacing the separating blades (6, 7) in sideward directions with respect to the magnetizable strip (4) for wholly separating the piece of cloth (1) to be picked up from the other pieces of cloth in the stack (2).

5,060,925

DOCUMENT FEEDING APPARATUS

Wataru Hamakawa; Hirokazu Matsuo, and Yuusuke Morigami, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

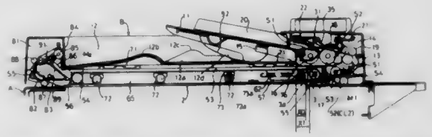
Filed Jan. 19, 1990, Ser. No. 467,369
Claims priority, application Japan, Jan. 20, 1989, 1-12483; Jan. 20, 1989, 1-12484
Int. Cl.[5] B65H *7/08*
U.S. Cl. 274—111 8 Claims

1. In a document feeding apparatus which is capable of operating in a first mode in which a sheet of original is set on an exposure platen and in a second mode in which two sheets of originals are set side by side on the exposure platen, said apparatus comprising:

an original table for placing a plurality of originals;

a first transport means for feeding originals placed on the original table one by one therefrom in the first mode, and for sequentially feeding two sheets of originals placed on the original table therefrom in the second mode;

a second transport means for setting the original fed by the first transport means on the platen and discharging the original from the platen after an exposure process in the first mode, and for setting the two originals fed by the first transport means side by side on the platen along the feeding direction of the original and discharging the originals sequentially from the platen in the second mode;



a detecting means for detecting the rear edge of the originals being discharged from the platen;

a control means for controlling the operation of the first transport means in response to the detecting means; and

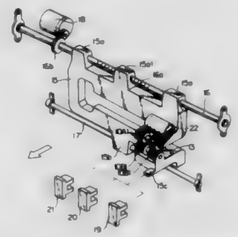
a prohibiting means for prohibiting the detecting means from detecting the rear edge of a first original being discharged ahead of the other in the second mode.

5,060,926

SHEET FEEDER FOR AN IMAGE FORMING APPARATUS

Tatsuya Murai, Yokohama; Masumi Ikesue; Mitsutoyo Kikuno, both of Tokyo, and Masayuki Shinada, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 19, 1989, Ser. No. 424,770
Claims priority, application Japan, Oct. 20, 1988, 63-264671
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—111 12 Claims



1. A sheet feeder for an image forming apparatus having a sheet feed unit which incorporates a pair of feed rollers for feeding paper sheets one by one out of at least one sheet cassette toward an image transfer station by nipping said paper sheets, said sheet feeder comprising:

guide means for slidably guiding said sheet feed unit in a direction perpendicular to an intended direction of sheet feed while supporting said sheet feed unit;

drive means for moving said sheet feed unit which is guided by said guide means; and

a controller for controlling said guide means and said drive means such that said sheet feed unit is movable, thereby causing said feed rollers to move into alignment with a center position between opposite widthwise edges of the paper sheets, in association with a size of said paper sheets which are fed toward the image transfer station.

5,060,927

SHEET FEEDING DEVICE

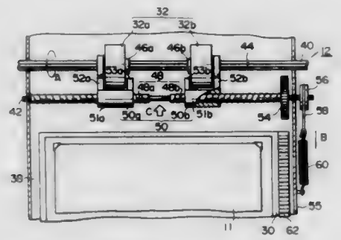
Toshiaki Sugiura, Hekinan, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 404,904, Sep. 8, 1989, abandoned. This application Feb. 9, 1990, Ser. No. 478,141

Claims priority, application Japan, Feb. 14, 1989, 1-16060[U]

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—117 4 Claims



1. A sheet feeding device comprising:

a case member for holding a plurality of sheets therein in a stacked state;

a pair of feed roller members coaxially mounted on a shaft member for feeding said sheets in a feed direction one by one from said case member, said shaft member extending perpendicular to the sheet feed direction, said roller members being slidable along said shaft member whereby the interval between said roller members is variable;

a rack portion provided on said case member extending in said sheet feed direction, the length of said rack portion representing the type of sheet to be held in said case member; and

means for changing the interval between said pair of feed roller members depending upon the length of said indicator, said interval change means comprising another shaft extending parallel to the said shaft member and a pinion secured to said another shaft to engage said rack in such a fashion that the length of said rack portion is converted to degrees of rotation of said another shaft via said pinion when said pinion is brought into engagement with and rotated by said rack portion, said interval between said rollers being changed by the amount of rotation of said another shaft.

5,060,928

APPARATUS FOR THE DEPOSITING OF SHEETS AT A STACKING LOCATION

Hilmar Vits, Hüschelrath 16, 5653 Leichlingen, Fed. Rep. of Germany

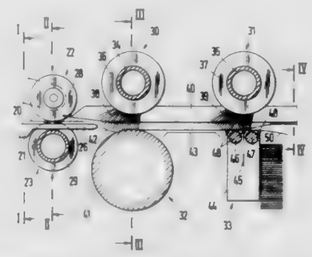
Filed Aug. 2, 1989, Ser. No. 388,781

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1988, 3826292; Jun. 22, 1989, 3920407

Int. Cl.[5] B65H *29/68*

U.S. Cl. 271—182 10 Claims

1. In an apparatus for the depositing of sheets at a stacking location (at least one of **2** and **3**) which is provided with a stop (**6**) for the leading sheet edge, and which consists of conveying means (**11**, **12**) having an overhead suspension arrangement (**15**), which is fed with blasted air and extends over the stacking location (**2**, **3**), and an overlapping station (at least one of **9** and **10**), which precedes the stacking location (**2**, **3**) and has a deflecting member (**30**, **31**) arranged above the conveying plane of the sheets and acting on the sheet ends in time with the sheet sequence, and a braking and conveying member (**32**, **33**) arranged underneath the conveying plane of the sheet and acting on the deflected sheet ends, the improvement which comprises giving the overhead suspension arrangement (**15**) in the region of the stacking location (**2**, **3**) an undulating profile running transverse to the conveying direction, the undulations being of sufficient height for stiffening the sheets against buckling when their front edges strike the front stop, the height of



the undulating profile increasing from the rear stack edge to the stop (**6**) at the front stack edge.

5,060,929

SHEET DELIVERY DEVICE WITH AUXILIARY DEPOSIT TABLE

Helmut Kohlmann, Karlstadt-Mülbach, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jul. 2, 1990, Ser. No. 546,732

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1989, 3923474

Int. Cl.[5] B65H *31/12*

U.S. Cl. 271—218 4 Claims



1. A sheet delivery assembly for a printing machine comprising:

means for transporting sheets in a sheet transport direction from a printing machine and for delivering sheets to a main sheet board to form a main sheet pile;

first and second spaced back sheet stops pivotably suspended at first ends at first and second spaced pivot points from an oscillating bar which extends transversely to the sheet transport direction above said main sheet board and which oscillates in the sheet transport direction, said first and second spaced back sheet stops being engageable with a back edge of a main sheet pile on said main sheet board; and

an interim sheet piling board which is insertable into said sheet delivery assembly generally in opposition to said sheet transport direction and is positionable above said main sheet pile to support an interim sheet pile, said interim sheet piling board having a front portion including spaced camming surfaces which diverge with respect to each other and which are engageable with said spaced back sheet stops, a central section of said front portion having a width less than a distance between said first and second spaced pivot points, said camming surfaces engaging said spaced back sheet stops during insertion of said interim sheet piling board into said sheet delivery assembly to pivot said back sheet stops about said spaced pivot points, said back sheet stops being in oscillating engagement with back edges of both said main sheet pile and said interim sheet pile during insertion of said interim sheet piling board and with only said back edge of said interim sheet stack upon completion of insertion of said interim sheet piling board.

5,060,930

APPARATUS FOR RECEIVING ARTICLES BY SELF-FEEDING AND FOR CONVEYING AND DISPENSING SUCH ARTICLES

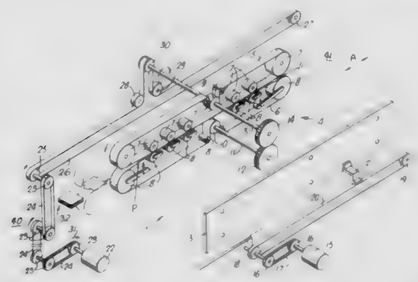
Roger Pilling, Southampton, England, assignor to De La Rue Systems Limited, England

Filed Feb. 27, 1990, Ser. No. 485,444

Claims priority, application United Kingdom, Feb. 28, 1989, 8904569

Int. Cl.[5] B65H *5/02*

U.S. Cl. 271—268 5 Claims



1. Article handling apparatus comprising a carriage mounted to a support for to and fro movement along a path; article conveying means mounted on said carriage defined by opposed conveying surfaces for conveying articles relative to said carriage along a transport path substantially parallel with the path of movement of said carriage relative to said support, said opposed conveying surfaces defining article receiving openings at their ends; and first and second drive means for moving said carriage and actuating said article conveying means respectively, to an article receiving position, said second drive means causes a compensatory movement of said article conveying means such that said opposed conveying surfaces defining said transport path remain substantially stationary relative to one another and self-feed onto an article presented to one of said article receiving openings at said article receiving position, said carriage being movable to either of two dispense positions at opposite ends of said carriage path such that when said carriage is positioned at a dispense position articles held by said article conveying means on said carriage may be dispensed by operating said article conveying means to convey said articles to said dispense position.

5,060,931

DRUM FOR IMAGE RECORDING APPARATUS

Naoyuki Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1989, Ser. No. 396,207

Claims priority, application Japan, Aug. 22, 1988, 63-207848; Aug. 23, 1988, 63-209095; Aug. 23, 1988, 63-209096

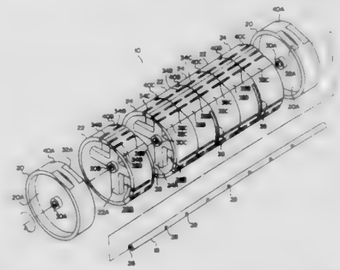
Int. Cl.[5] B65H *5/06*

U.S. Cl. 271—276 8 Claims

1. A drum for an image recording apparatus comprising:

a main body member comprising a plurality of separate cylindrical members, each comprising an outer surface and two end surfaces separated in an axial direction, said cylindrical members being arranged serially in said axial direction, each of said cylindrical members having a plurality of openings in opposite end surfaces thereof for attracting a recording material against a surface wall constituted by said outer surfaces of said cylindrical members;

a pair of side members for closing two sides of said main body member and forming a chamber internal of said



surface wall, wherein said side members also are cylindrical and also are arranged in said axial direction; and

a shaft member arranged to penetrate said main body and said pair of side members, so as to be disposed internal of said surface wall and to be secured to at least said pair of side members, in which a through hole establishing a connection between said chamber and outside is formed therein.

5,060,932

AMUSEMENT APPARATUS HAVING ROTARY CAPSULE

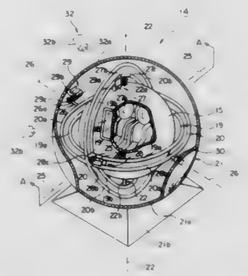
Saburo Yamaguchi, Tokyo, Japan, assignor to Nisshinbo Techno Vehicle Inc. and NKK Corporation, Tokyo, Japan

Filed Apr. 13, 1990, Ser. No. 509,596

Claims priority, application Japan, May 25, 1989, 1-132459; May 31, 1989, 1-138527

Int. Cl.[5] A63G *31/14*

U.S. Cl. 272—36 13 Claims



1. An amusement apparatus having a rotary capsule, which comprises:

a capsule (**15**) having therein at least one seat (**16**), each provided with a player restraining means (**17**);

an inner frame (**19**) arranged outside said capsule (**15**);

an intermediate frame (**20**) arranged outside said inner frame (**19**);

an outer frame (**21**) arranged outside said intermediate frame (**20**);

a first shaft (**22**) for rotatably connecting said capsule (**15**) to said inner frame (**19**);

a second shaft (**25**) extending in a direction different from that of said first shaft (**22**), for rotatably connecting said inner frame (**19**) to said intermediate frame (**20**);

a third shaft (**26**) extending in a direction different from those of said first shaft (**22**) and said second shaft (**25**), for rotatably connecting said intermediate frame (**20**) to said outer frame (**21**);

a capsule driving means (**27**), provided between said capsule (**15**) and said inner frame (**19**), for rotating said capsule (**15**) around said first shaft (**22**) relative to said inner frame (**19**);

an inner frame driving means (**28**), provided between said inner frame (**19**) and said intermediate frame (**20**), for rotating said inner frame (**19**) around said second shaft (**25**) relative to said intermediate frame (**20**); and

an intermediate frame driving means (**29**), provided between said intermediate frame (**20**) and said outer frame (**21**), for rotating said intermediate frame (**20**) around said third shaft (**26**) relative to said outer frame (**21**).

5,060,933

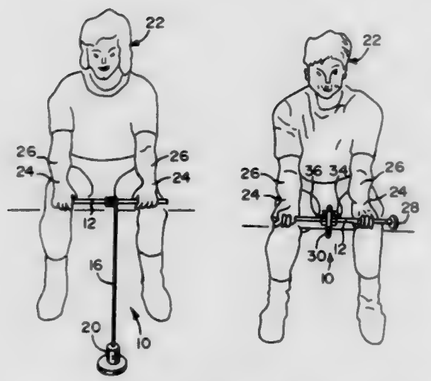
WRIST STICK COMBINATION UNIT EXERCISE DEVICE

Keith Cedro, P.O. Box 419 WOB, West Orange, N.J. 07052

Filed Dec. 31, 1990, Ser. No. 636,099

Int. Cl.[5] A63B *21/06*

U.S. Cl. 272—67 **3 Claims**



1. A wrist stick combination unit exercise device comprising:

a) an elongated bar having an annular flange on one end and a transverse aperture therethrough generally at the middle thereof;

b) a length of rope having one end insertable into said transverse aperture to be windable upon said elongated bar;

c) a hanging weight having a sleeve portion and a flange with the other end of said length of rope connectable thereto; and

d) a plurality of disc weights each being of a different weight size and having a center hole of a size which will allow said weights to slide over said elongated bar and said sleeve without slipping past the flange of said elongated bar and the flange of said sleeve; and

e) a collar clamp to be secured on said elongated bar against at least one of said disc weights after said rope and said hanging weight are removed from said device, so that a person cap grip said elongated bar to perform a wrist roll-up strengthening exercise to develop the wrists muscles and the forearms muscles, and so that the person can grip the free end of said elongated bar to perform a strengthening exercise to develop the wrists muscles and the forearms muscles.

5,060,934

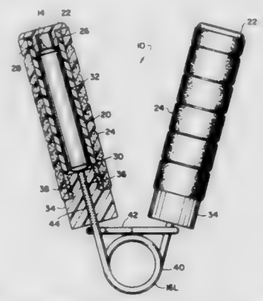
HAND EXERCISER

Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11753

Filed Mar. 6, 1991, Ser. No. 665,272

Int. Cl.[5] A63B *21/00*

U.S. Cl. 272—68 **2 Claims**



1. A hand exerciser comprising a set of interchangeable exercising spring means including at least a first and second spring, each said spring comprising a length of resilient wire of a selected resistance bent into a V-shape and having two operative ends, a hub connected to each said operative end having exposed threads, and handles having cooperating threads for threadable attachment to said hubs.

5,060,935

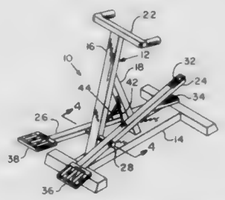
WATER IMMERSED STAIR CLIMBER

Thomas J. Dunn, 7963 Glen Abby Cir., Orlando, Fla. 32819, and Donald B. Gronachan, 4 Spiral Rd., Holtsville, N.Y. 11742

Filed Jan. 7, 1991, Ser. No. 638,237

Int. Cl.[5] A63B *21/20, 23/04*

U.S. Cl. 272—70 **4 Claims**



1. Stair climbing apparatus for use by an exerciser comprising:

a. support frame means including a ground engaging base immersed in water;

b. a pair of laterally adjacent foot stepping levers pivotally mounted on said support frame means at a location above said base,

c. synchronizing means mounted on said support frame means attached to each of said stepping levers so that when one of said levers is pushed down by said exerciser the other said lever is raised; and

d. resistance means mounted on said stepping levers for relying on said water to resist pivotal movement of said stepping levers said apparatus being sufficiently immersed so that the water level is above said resistance means, said resistance means comprises a paddle; whereby said stepping levers are extended with said exerciser standing on the proximal ends of said levers, said levers being pivoted at points intermediate of the proximate and distal ends thereof, and said resistance means being mounted on the distal ends of said levers.

5,060,936

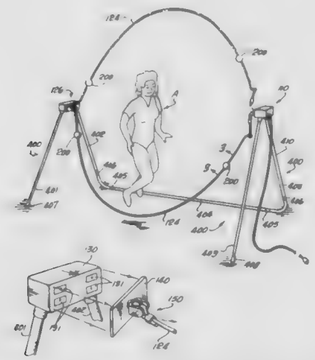
ROPE JUMPING METHOD AND APPARATUS

Martin A. Ekonen, 29581 Puritan Ave., Livonia, Mich. 48154; William D. Suggett, P.O. Box 536, Verdi, Nev. 89439, and Richard Munson, 1980 18th St., Sparks, Nev. 89431

Filed Dec. 19, 1988, Ser. No. 286,339

Int. Cl.[5] A63B *5/20*

U.S. Cl. 272—75 **1 Claim**



1. The method of jumping rope comprising providing a frame having two upstanding ends at a spaced distance from one another said frame being suitable to rest upon a jumping surface mounting a motor driven rope holding device on one of the upstanding ends of said frame and mounting a swiveler rope holding device on the other upstanding end of said frame; activating the motor; providing two weights upon said rope at a spaced distance from one another and in such manner as to be adjustable toward and away from one another; adjusting said weights so as to adjust the nature of a loop formed by the tope in its travel just above the jumping surface and in the area above the head of a person jumping the rope; and causing said upstanding ends on said frame to be moved relative to one another by means of extensible frame members so as to maintain uniform height above the jumping surface of a loop of the rope when rotated regardless of the shape of the loop of the rope; and wherein said frame is provided with an opening on one side thereof so that a person may enter beneath a rope held by said upstanding means without interfering with, or stepping upon, or crossing over any portion of said frame and wherein a break away connection is provided intermediate the rope and the swivel connection wherein the break away connection consists of a block of magnetic material mounted to the upstanding ends not containing the motor and wherein the swiveler rope holding device is mounted upon a magnetically attractable plate held against said magnetic block in such manner that if excessive force is applied the plate will break away from the magnetic block.

5,060,937

EXERCISE AND REHABILITATIVE APPARATUS AND METHOD OF EXERCISING

Alfred S. Rushatz, and James A. Peterson, both of West Point, N.Y., assignors to Lifemates, Inc., Rosemont, Ill.

Division of Ser. No. 384,444, Jul. 25, 1989, Pat. No. 4,979,732

This application Sep. 12, 1990, Ser. No. 581,549

Int. Cl.[5] A63B *23/04*

U.S. Cl. 272—93 **4 Claims**

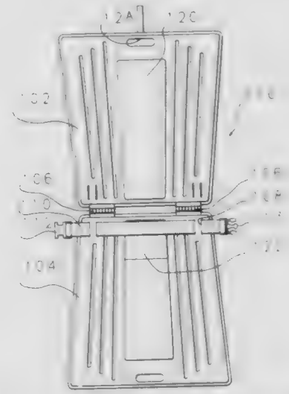
1. An apparatus for supporting a person performing exercises intended to stretch and strengthen selected muscle groups in that person's lower back, pelvic and leg region, comprising

a first supporting portion,

a second supporting portion disposed adjacent one edge of said first supporting portion,

said first supporting portion including padded means having a raised, substantially inverted non-rectangular trapezoid shaped spinal protecting region for providing protection of the spinal column of the person using the exercise apparatus,

said spinal protecting region having a narrower width adjacent one edge of said first supporting portion than a width at an edge of said first protecting portion opposite said one edge,



said second supporting portion including strap means and buckle means, and

said strap means being secured across a width of said second supporting portion adjacent said one edge of said first supporting portion,

whereby when said exercises to stretch and strengthen said muscle groups are performed, said first supporting portion will engage and protect the spinal column of said person and said second supporting portion will secure and immobilize the pelvic region of said person.

5,060,938

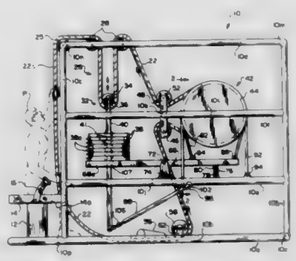
ROPE CLIMBING EXERCISE APPARATUS

Peter J. Hawley, Jr., 35 Valley Path, Marshfield, Mass. 02050

Filed Nov. 5, 1990, Ser. No. 609,476

Int. Cl.[5] A63B *7/04*

U.S. Cl. 272—112 **10 Claims**



1. Rope climbing apparatus comprising:

A. support means;

B. a length of rope;

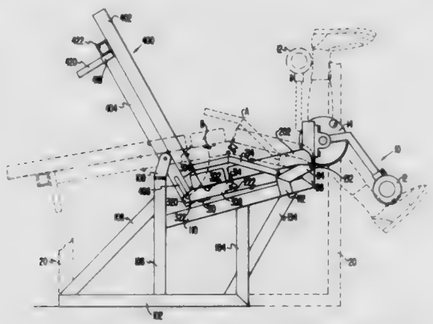
C. a rope accumulator supported by said support means, said accumulator storing a variable length said rope and including
1) a trolley, and
2) biasing means for biasing said trolley to a maximum storage position;
D. means on the support means for presenting a segment of said rope to a user of the apparatus so that said user can draw rope from the accumulator; and
E. variable drag means supported by said support means and for feeding said rope pulled by the user back to said accumulator to replenish the said accumulator with rope, said drag means including
1) means for inhibiting the feeding of rope to said accumulator unless said segment of rope is pulled with a force sufficient to overcome the biasing on said accumulator trolley and move said trolley from its maximum storage position, and
2) means for controlling the rate at which said rope is fed to said accumulator in accordance with the magnitude of said accumulator trolley biasing.

5,060,939

MULTI-POSITION EXERCISE BENCH

Clifford J. Oswald, Lexington, Ky., and John C. Ostertag, Auburn, Ala., assignors to Diversified Products Corporation, Opelika, Ala.

Continuation of Ser. No. 590,926, Oct. 1, 1990. This application Mar. 29, 1991, Ser. No. 677,449
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—144 **9 Claims**



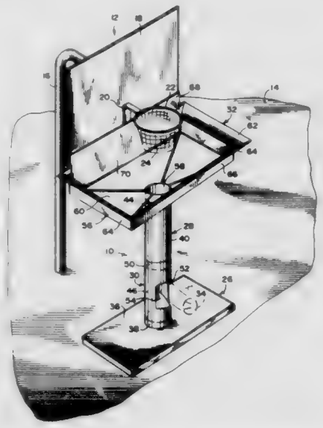
1. A multi-position exercise bench convertible between a chair-like configuration for supporting a user in a seated position with back support, and a bench-like configuration for supporting the user in a reclining position, comprising:
a frame;
a front bench portion pivoted to a front portion of said frame, and having an upper user-supporting surface;
a rear bench portion pivoted to a rear portion of said frame, and having a user-supporting surface that functions as a back support when in a chair-like configuration;
a center bench portion intermediate said front and rear bench portions, and having an upper user-supporting surface;
front coupling means pivotally interconnecting said front and center bench portions and fixing said front and center bench portions in a substantially coplanar relationship when in the chair-like configuration to form a seat; and
rear coupling means pivotally interconnecting said rear and center bench portions and fixing said rear and center bench portions in a substantially coplanar relationship when in the bench-like configuration to form an extended reclined support.

5,060,940

BASKETBALL SHOT RETURN DEVICE

Thomas C. Mullen, 8 Aron Dr., Woodbury, N.Y. 11797

Filed Aug. 27, 1990, Ser. No. 572,241
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—1.5 A **5 Claims**



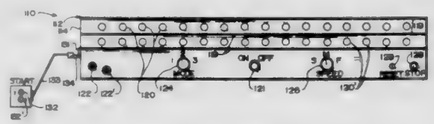
1. A basketball shot return device for a basketball backstop on a basketball court, the backstop being of the type having a stanchion, a backboard, a bracket, a rim and a net, said device comprising:
a) a base member to be placed on the basketball court directly under the rim and net of the basketball backstop; said base member including
1) a weighted base plate to stabilize said device; and
2) an upstanding female connector on said base plate;
b) an upstanding support member connected onto said base member;
c) an upstanding chute return member connected onto said support member; and
d) a catcher member connected onto said chute return member, said catcher member sized to fit against the bottom of the backboard of the basketball backstop with the rim and net directly over said catcher member so that when a player shoots at the rim the basketball will drop into said catcher member, travel down into said chute return member and exit therefrom to be returned to the player.

5,060,941

ELECTRONIC REACTION-TIME GAME TOY

James M. Barra, 14802 Florida Ave., Apt. V-340, Tampa, Fla. 33613

Continuation-in-part of Ser. No. 279,819, Dec. 5, 1988, which is a continuation-in-part of Ser. No. 90,856, Aug. 31, 1987, Pat. No. 4,789,155. This application Mar. 13, 1990, Ser. No. 491,830
The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—85 R **20 Claims**



1. Competitive game toy, comprising
a plurality of indicator lights located along a given path,

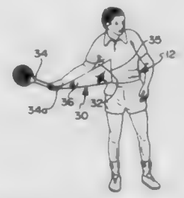
motor-free control means adapted to light the lights in a given sequence,
start means manually actuatable to begin light sequencing,
stop means manually actuatable to halt light sequencing at any light, and,
adjacent the path, a removable award strip bearing reward or penalty markings.

5,060,942

STROKE TRAINING DEVICE

Leo Dalbo, Sebatopal, Calif., assignor to Dalme, Inc., Bloomfield Hills, Mich.

Filed Nov. 2, 1990, Ser. No. 609,158
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—29 A **1 Claim**



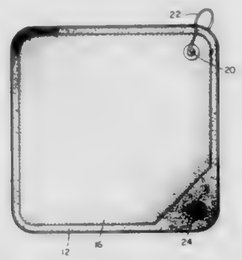
1. A stroke training device for training a user of a stroking device such as a tennis racquet or golf club having a hand held end and an object striking end, said stroke training device being connected between the stroking device and the body of the user to act as a constraint on the path of movement of said stroking device as the user swings the stroking device between backstroke, stroking and follow through positions of the user's body; said stroke training device being characterized by a flexible triangular guide member having an apex portion defining a stroking device end and a base portion defining a body engaging end; said stroking device end being connected to the hand held end of the stroking device and said base portion including upper and lower ends connected at vertically spaced points to a user's torso such that said triangular member lies in a vertical plane parallel to the axis of rotation of the user's body in its unobstructed condition; said guide member being operable to provide a reference surface between the hand held end of the stroking device and the user's body, which reference surface being observable wholly between said hand held end and the body of the user and to coordinate movement of the user's body with the stroking device.

5,060,943

GRIPPING AID

Lillian M. Stoffo, Hudson, Fla., assignor to Durasol Corporation, Amesbury, Mass.

Filed Oct. 10, 1989, Ser. No. 419,110
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32 B **1 Claim**



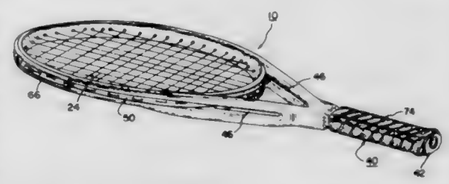
1. An aid for improving the gripping of a hand-held sporting implement comprising a generally rectangular piece of towelling, a similarly shaped but smaller piece of artificial chamois cloth attached in underlying relationship to said piece of towelling, said chamois cloth being impregnated with non-slip material, an opening being formed through a corner of said towelling, a grommet disposed in said opening, a hanger engaging said grommet, and hook-and-loop fasteners disposed on opposite faces of said towelling to hold the toweling and chamois cloth in a normally folded condition.

5,060,944

TENNIS RACKET WITH SPLIT FRAME

Richard Janes, Belchertown, Mass., assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.

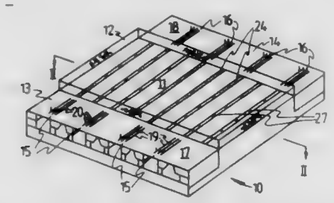
Filed Oct. 26, 1990, Ser. No. 604,725
Int. Cl.[5] A63B *49/02, 49/08*
U.S. Cl. 273—73 R **22 Claims**



1. A tennis racket comprising:
a frame formed of a pair of tubes extending from their mid points at the tip end in symmetric curves to form the majority of the string-supporting bow, then towards each other in an essentially V-shaped configuration to form the throat-beams, and then in a parallel configuration to form the handle and then terminating at the butt end, the tubes being attached together throughout the majority of the bow and then separated in the throat-beams for at least a portion of their extents;
a yoke attached to the tubes adjacent to the ends of the throat-beams remote from the butt end to form, in association with the portions of the tubes between the throat-beams and the tip, an essentially oval-shaped bow with an inner head arc and an outer head arc, the periphery of the bow having spaced holes therethrough;
a single groove formed around the entire external periphery of the bow;
a continuous grommet strip positioned within the groove and extending through the openings in the throat-beams and around the entire external periphery of the bow, the grommet strip being provided with spaced holes aligned with the holes of the bow;
a bumper strip positioned under a portion of the grommet strip including the tip, the bumper strip being provided with spaced holes aligned with the holes of both the bow and the grommet strip, the holes of the bumper strip, grommet strip and bow being perpendicular to the tangent of the inner head arc and outer head arc of the frame;
strings extending through the holes of the bumper strip, grommet strip and bow to form a planar ball-striking surface across the bow;
a pallet surrounding the frame at the handle; and
a grip surrounding the pallet at the handle for being grasped by a player.

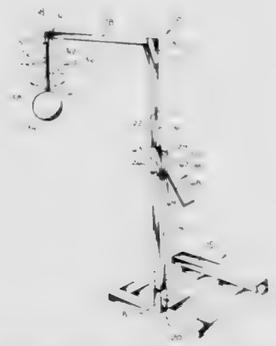
VOL
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5,060,945
GAME WITH MOVABLE PLAYERS
John Irvine, 624 East Coast Road, Browns Bay, Auckland, New Zealand
Filed Jun. 11, 1990, Ser. No. 535,759
Claims priority, application New Zealand, Jun. 9, 1989, 229476
Int. Cl.[5] A63F 7/06
U.S. Cl. 273—85 B 16 Claims



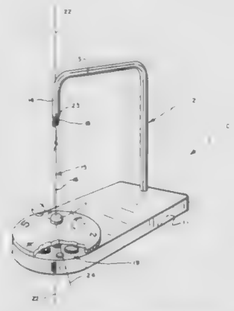
1. A game including a playing area, one or more players adapted to be movable above the surface of the playing area by an operator, so as to propel an object on the playing area, and operating means operable by the operator to move the or each player, in which substantially no part of the operating means protrudes above the surface of the playing area where there is no player, in which the operating means includes a member on which the player is mounted, the member being positioned entirely beneath said surface of the playing area and constrained to slide in said one direction of translation only, and in which the member is a bar extending in the said one direction and adapted to receive and hold a plurality of said players.

5,060,946
VOLLEYBALL PRACTICE DEVICE
James E. Taylor, R. 8 Box 42, Frankfort, Ind. 46041
Filed Oct. 5, 1999, Ser. No. 593,058
Int. Cl.[5] A63B 69/00
U.S. Cl. 273—411 4 Claims



1. In a volleyball practice device including a base, as upright pole connected to and extending upwardly from the base, and a generally horizontal pole connected to said upright pole, the improvement comprising a tether means for rotatably securing a volleyball to said horizontal pole, wherein said volleyball remains rotatably attached to said horizontal pole after being struck, said tether means including a bearing connected to said horizontal pole at a terminal end thereof, said tether means including an arm rotatably connected to said bearing, and a flexible tether strap suspended from said arm, said tether strap carrying said volleyball.

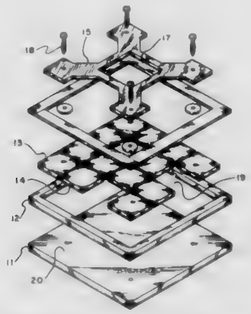
5,060,947
MAGNETIC PENDULUM RANDOM NUMBER SELECTOR
Guy E. Hall, 2490 N. 750 West, Harrisville, Utah 84414
Filed Jan. 25, 1990, Ser. No. 470,220
Int. Cl.[5] A63H 33/26
U.S. Cl. 273—138 A 1 Claim



1. A random position selector, comprising:
an assembly of at least one pair of magnetic fields, the fields of each pair being horizontally spaced apart symmetrically about a common vertical axis and identical in shape, strength and polar orientation with respect to the common vertical axis; and
a pendulum assembly and a support therefor, said assembly having an elongate vertical member and amass of magnetic material affixed at its lowermost end, said pendulum assembly being suspended to oscillate about a point on the common vertical axis of symmetry of the paired magnetic fields with said mass within the assembly of magnetic fields, so that
the pendulum, when set to swinging freely, will, under the influences of damping forces, gravity and the magnetic fields, come to rest with the mass randomly in one of at least two positions; wherein
the pendulum mass as a magnetic field, and said assembly includes at least two pairs of fields, the orientation of the fields of at least one pair of which is opposite to that of at least one of the remaining pairs in the assembly; wherein
the orientation of at least one of the pairs of fields in the magnetic field assembly is substantially vertical and the orientation of the field of the pendulum mass is substantially vertical, wherein
the random position selector further comprises means significantly damping the swinging of the mass to accelerate its coming to rest in randomly selected position; wherein
the elongate vertical member of the pendulum assembly comprises an elongate stiff portion carrying the pendulum mass at its lowermost end and a flexible damping portion joining the stiff portion to the pendulum support; wherein
the stiff portion is of wire; and
the damping portion comprises a wire coil spring.

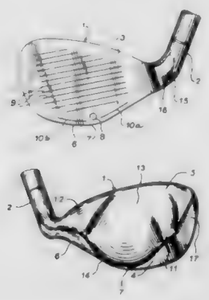
5,060,948
PUZZLE HAVING MOVEABLE TILES AND TRANSPARENT RETAINER
Alan Hausner, 39 Dewey Rd., Cheltenham, Pa. 19012
Filed Apr. 23, 1990, Ser. No. 512,649
Int. Cl.[5] A63F 9/08
U.S. Cl. 273—153 S 8 Claims

1. Apparatus useful as a puzzle comprising
a playing board having a square, flat playing surface,
moveable chicklets of equal thickness and of equal square size, at least some of said chicklets decorated so as to form a picture on the appearance surfaces of said chicklets only when said puzzle is solved by moving said chicklets into a solution position, said chicklets being moveable in a horizontal plane along a flat surface within said board,
said board having flat playing surface, a boarder around said flat playing surface, a retaining curb around said border and a transparent retaining means parallel to and spaced above said flat playing surface and adapted to retain said moveable chicklets in a playing area and to permit the player to see the appearance surface of all of said chicklets, said transparent retaining means having open areas



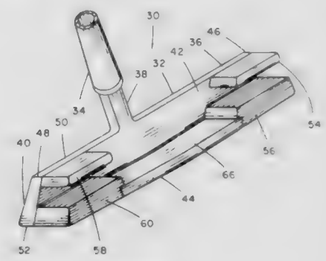
through which the player may use a finger to move said chicklets, said open areas being only in positions other than the corner positions and the four central positions,
said flat playing surface having a number of spaces, the number of said moveable chicklets being six less than said number of spaces on said flat playing board,
said flat playing surface having four corner spaces each having a non-moveable chicklet of equal size to said moveable chicklets, said flat playing board having two empty square spaces at all times.

5,060,949
GOLF CLUB CONSTRUCTION
Edward F. Brill, 999 E. Summit Ave., Oconomowoc, Wis. 53066
Filed Mar. 10, 1989, Ser. No. 321,763
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 A 8 Claims



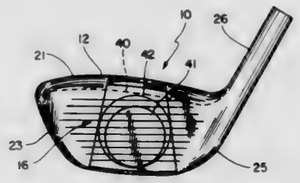
1. A golf club construction, comprising a head having a front face facing in the intended direction of flight of a ball and having a sole and a rear face, said front face having a downwardly convex lower extremity terminating at a central generally curved apex, the central portion of said rear face being convex in an upward direction and said rear face having a pair of spaced enlarged side portions located adjacent the heel and toe, respectively, of the head, the area of said rear face between said enlarged side portions being generally concave in a heel-to-toe direction, the lower end of said area terminating at said sole adjacent said lower extremity to provide a generally sharp edge, said enlarged portions terminating at said sole on either side of said apex, said sharp edge aiding in penetrating the head into the turf and said enlarged portions acting to control the penetration of said edge.

5,060,950
CORNER-BACK GOLF CLUBHEAD
Clifton D. Finney, 1057 Oak Hills Pkwy., Baton Rouge, La. 70810
Continuation-in-part of Ser. No. 413,632, Sep. 28, 1989, Pat. No. 4,984,799, which is a continuation-in-part of Ser. No. 359,109, May 31, 1989, Pat. No. 4,995,612. This application May 25, 1990, Ser. No. 528,868
The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 F 15 Claims



1. A golf clubhead comprising:
a. a body;
b. a head weight means comprising at least one head weight serving as inertial weight for said clubhead;
c. a toe and heel, a front and back, and a top and a sole with a ball striking surface toward said front;
d. a binding means to attach said head weight means to said clubhead;
e. a fastening means to affix a shaft between said heel and said toe;
f. a toe section of said clubhead extending a half-length of said clubhead from an extreme of said toe toward said heel to a central boundary defined by a vertical cut-plane positioned perpendicularly to the length line of said clubhead;
g. a toe weight means of a first predetermined density comprising at least one toe weight of the portion of said head weight means in said toe section serving as inertial weight for said toe section;
h. first and second substantial percentages of said toe weight means as an upper concentration of mass and a lower concentration of mass positioned in predetermined fixed locations adjacent said top and said toe and adjacent said sole and said toe, respectively, with each said concentration extending between said striking face and said back;
i. said upper concentration, from limits between the extreme of said toe and said central boundary, existing in a compact form;
j. a medium means of a second predetermined density less dense than said first predetermined density of said toe weight means generally separating said upper concentration from said central boundary and substantially separating said upper concentration from said lower concentration along an inside of said upper concentration adjacent said central boundary and along a bottomside of said upper concentration near said inside and toward said sole; whereby
k. polar moments of inertia of said clubhead are enhanced to reduce twisting and loft changes when a golf ball is struck.

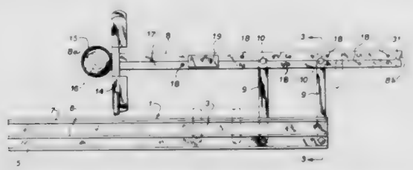
5,060,951
METAL HEADED GOLF CLUB WITH ENLARGED FACE
Dillis V. Allen, 31W211 Route 58, Elgin, Ill. 60120
Filed Mar. 6, 1991, Ser. No. 665,156
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H 9 Claims



1. A metal wood golf club assembly, comprising: a hollow metallic cast head having an enlarged predetermined area face wall including an enlarged sweet spot and an enclosing perimeter wall having a substantially flat bottom wall portion defining a hollow interior cavity, a shaft connected to the head, the right of said face wall being at least 1.625 inches and a unit cellular structure cast integrally with and projecting rearwardly from the face wall, said unit cellular structure including a plurality of unit cells defined by boundary walls surrounded by other cells wherein the average diameter of each cell is substantially greater than the cross-sectional thickness of the boundary walls in a plane parallel to the face wall, and the area of said enlarged sweet spot being greater in proportion relative to said enlarged face wall predetermined area than in a similar hollow metallic cast head having a sweetspot area, a face wall height substantially less than 1.625 inches and a face all area substantially less than said enlarged face wall predetermined area

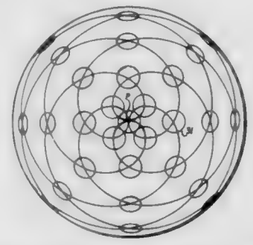
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5,060,952
SELF CONTAINED PUTTING AID
Edward F. Brill, 999 E. Summit Ave., Oconomowoc, Wis. 53066
Filed Jan. 22, 1991, Ser. No. 643,341
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 C 21 Claims



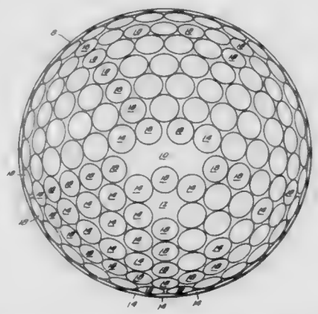
1. A self contained putting aid, comprising an elongated rail having a generally U-shaped cross section, an elongated flexible alignment strip, a pair of links pivotally connected between said strip and said rail, said links being constructed and arranged such that said strip is movable from an operative position where the strip is in spaced parallel relation to the rail to a storage position where said strip is located within the rail, and positioning means associated with a forward end of said strip for positioning a golf ball.

5,060,953
GOLF BALL
Donald J. Bunger, Waterbury, Conn., and Joseph F. Stiefel, Ludlow, Mass., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Jan. 18, 1991, Ser. No. 642,989
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 35 Claims



1. A golf ball having a dimpled surface, the configuration of said dimpled surface comprising
a dimple-free equatorial line on said ball dividing said ball into two hemispheres with each hemisphere having a pole and substantially identical dimple patterns, each hemispherical dimple pattern comprising
at least two spaced imaginary arcs extending clockwise between said pole and said equator on said surface;
at least two spaced imaginary arcs extending counterclockwise between said pole and said equator on said surface;
a plurality of dimples extending along each of said arcs between said pole and said equator; and
a second plurality of dimples substantially filling the surface area enclosed within said arcs.

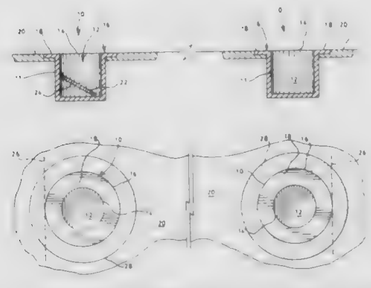
5,060,954
MULTIPLE DIMPLE GOLF BALL
William Gobush, North Dartmouth, Mass., assignor to Acushnet Company, New Bedford, Mass.
Division of Ser. No. 257,283, Oct. 13, 1988, Pat. No. 4,949,976, which is a division of Ser. No. 43,218, Apr. 27, 1987, Pat. No. 4,804,189, which is a continuation-in-part of Ser. No. 18,840, Feb. 24, 1987, abandoned, which is a continuation of Ser. No. 544,780, Oct. 24, 1983, abandoned. This application Aug. 13, 1990, Ser. No. 566,537
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 28 Claims



11. A golf ball having a total number of 484 or 492 dimples comprising at least 78% of the surface area of the golf ball

covered by said dimples, said 484 or 492 dimples being divided into at least two sets of dimples, a first set of dimples having an identical nominal dimple diameter, and a second set of dimples having an identical nominal dimple diameter, the first set of dimples having a diameter smaller than the second set of dimples.

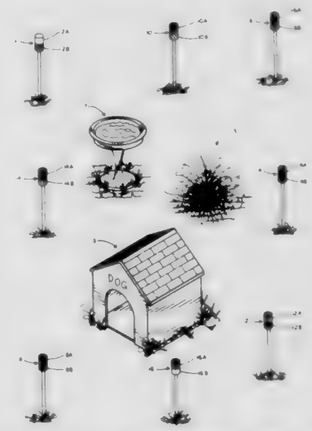
5,060,955
GAME APPARATUS AND ASSOCIATED PLAYING METHOD
George R. Bible, 1412 Belleville Ave., Maryville, Tenn. 37801
Filed Aug. 29, 1990, Ser. No. 574,058
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—400 17 Claims



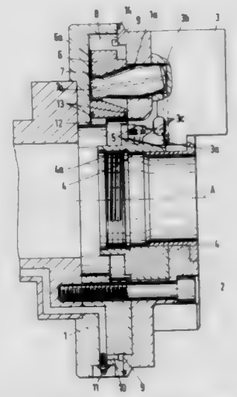
1. A game apparatus for being used out of doors and utilizing the surface of the ground as an associated playing surface, said game apparatus comprising:
at least one cup member, said cup member defining a cavity therein and having an upper portion defining an opening accessing said cavity, said cup member being provided at said upper end portion with an outwardly disposed flange defining an upper surface, whereby said cup member can be recessed into said playing surface such that said upper surface of said flange is substantially level with said playing surface;
a plurality of pucks for being tossed at said cup member from a preselected distance; and
wherein said cavity of said cup member defines a first scoring area operatively associated with a first scoring value and said upper surface of said flange defines a second scoring area operatively associated with a second scoring value.

5,060,956
LAWN GAME
Philip E. Glass, 7207 Belding Rd., Rockford, Mich. 49341
Filed May 17, 1990, Ser. No. 525,884
Int. Cl.[5] A63B *67/02, 59/00, 63/00*
U.S. Cl. 273—411 23 Claims

9. A game set comprising a plurality of strikeable objects, a like number of mallets for striking said strikeable objects, and a series of target units to be struck in sequence by said strikeable objects, each target unit comprising a target having first identification means for identifying the next target in the sequence, the first and second identification means being nonalphabetic and nonnumerical.



5,060,957
POWER-OPERATED CHUCK
Hans Stolzenberg, Korschenbroich, and Karl-Heinz Schmitz, Meerbusch, both of Fed. Rep. of Germany, assignors to Paul Forkardt GmbH & Co. KG, Düsseldorf, Fed. Rep. of Germany
Filed Jul. 3, 1989, Ser. No. 375,394
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1988, 3822506
Int. Cl.[5] B23B *31/16*
U.S. Cl. 279—1 C 7 Claims



1. In a power-operated chuck having a chuck body that is disposed on a rotatably driven arbor, and also having clamping jaws that are displaceably guided in radial guide means of said chuck body and are adapted to be actuated by at least one drive element, which is displaceably guided in said chuck body and is actuated by a force producer that is operated with pressure medium, with said chuck body being provided with at least one chamber for receiving lubricating grease and lubricating bores establish communication between said at least one chamber and at least some glide surfaces for said chuck, and with at least

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one chuck component being associated with said at least one chamber and being moved during actuation of said clamping jaws for producing a pump movement for pressing said lubricating grease into said lubricating bores, the improvement wherein:

said at least one chuck component is one of a plurality of respective centrifugal force counter-weights that are reciprocal in radially extending guides at least one of which being in communication with said at least one chamber; and

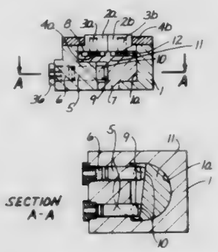
for each of said clamping jaws, a respective lever is provided that is supported in said chuck body and connects one of said clamping jaws with one of said centrifugal force counter-weights such that during actuation of said clamping jaws, and hence displacement of said centrifugal force counter-weights, said pump movement is produced and said lubricating grease is pressed from said at least one chamber into said lubricating bores and to said glide surfaces.

5,060,958

POWER DRIVE AND TRANSMISSION UNIT FOR SELF CENTERING CLAMPS AND CHUCKS

David Fischer, Aschaffenburg, and Rudolf Kohlert, Stockstadt, both of Fed. Rep. of Germany, assignors to Roemheld GmbH, Laubach, Fed. Rep. of Germany

Filed Apr. 9, 1990, Ser. No. 506,672
Int. Cl.[5] B23B *31/30*; B23Q *3/08*
U.S. Cl. 279—4 18 Claims



1. Power drive and transmission unit for self centering clamps and chucks comprising:

a housing with a cylindrical bore;

a piston having at least one end rotatably mounted in said housing for rotation in said bore the piston having an axis and a portion with a slot, the slot having an axially extending surface, the slot being between the one end of the piston and an opposite end;

two linear operating, piston cylinder drives in said housing, the piston engaging said axial surface of said rotating piston in order to obtain rotation thereof in one or the opposite direction about said axis;

at least two linearly moving central slide elements on said housing for obtaining the centering action and being positioned at said opposite end of the rotating piston; and

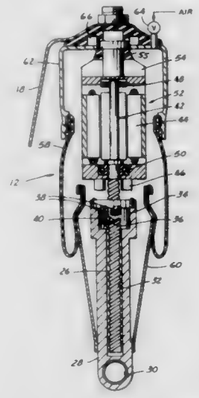
pin means with flattened head means interconnecting said slide elements with said rotating piston, there being oblong slot means receiving the flattened head means of the pin means to convert the rotation of the rotating piston into motion of the slide elements, so that the slide elements move towards or away from a common center depending on the direction of rotation of the rotating piston.

5,060,959

ELECTRICALLY POWERED ACTIVE SUSPENSION FOR A VEHICLE

Roy I. Davis, Ypsilanti, and Prabhakar B. Patil, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 253,456, Oct. 5, 1988, abandoned. This application Nov. 13, 1990, Ser. No. 611,379
Int. Cl.[5] B60S *9/04*
U.S. Cl. 280—6.1 40 Claims



1. An electrically powered active suspension for a vehicle having a chassis, comprising:

a roadwheel and tire assembly;

an electrically powered suspension unit operative to produce a force between said roadwheel and tire assembly and said chassis in response to external force inputs acting on said roadwheel and tire assembly and said chassis, said unit having one end attached to said roadwheel and tire assembly and the other end attached to the chassis of said vehicle, with said suspension unit comprising an electric motor; and

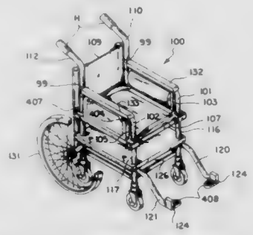
control means for operating said electric motor to control said suspension unit to respond in real time to said external force inputs while said vehicle is in motion.

5,060,960

COMBINATION WHEELCHAIR AND LIFTING DEVICE

Robert D. Branscumb, and William C. Ross, both of 1625 E. 75th Ter., Kansas City, Mo. 64131

Filed Jan. 27, 1989, Ser. No. 302,383
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250.1 8 Claims



1. A wheelchair for facilitating the transfer of a patient to and from a bed comprising:

a framework assembly including a pair of vertical front support bars having respective upper ends provided with a pair of mating means and lower ends provided with a set of castor wheels, a pair of vertical rear support bars having respective upper ends provided with a pair of handle bars and lower ends provided with a set of castor wheels, and a rectangular support member having a horizontally disposed upper planar surface which is fixedly connected at the corners to both pairs of the vertical support bars adjacent the respective lower ends;

a seat panel of rectangular configuration which is horizontally disposed above said rectangular support member, said seat panel having openings at each corner thereof for slidingly engaging both pairs of said vertical support bars and being hingedly joined to an opposing pair of side panels which is displaceable from a vertical position to a horizontal position;

hydraulic lifting means disposed between said rectangular support member and said seat panel for vertical adjustment of the seat panel; and

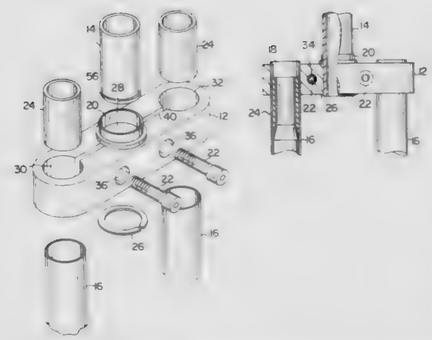
a pair of pivotable armrests having respective front end sections provided with cooperating mating means for engaging said pair of mating means on the vertical front support bars when in a parallel position and respective rear end sections provided with displaceable attachment means for slidingly engaging said pair of vertical rear support bars, said pair of pivotable armrests being displaceable from said parallel position to a position laterally clear of said seat panel.

5,060,961

MECHANICALLY JOINED STEERING ASSEMBLY

Keith Bontrager, 342 Morrissey Blvd., Santa Cruz, Calif. 95062

Continuation of Ser. No. 122,033, Nov. 18, 1987, abandoned. This application Nov. 30, 1989, Ser. No. 445,083
Int. Cl.[5] B62K *19/32*
U.S. Cl. 280—279 16 Claims



1. A crown for a bicycle front wheel steering assembly, said steering assembly including a steerer and two blades, said crown comprising:

a single unitary piece of material having an upper surface and a lower surface, said crown having a thickness of said material disposed between said upper surface and said lower surface;

a steerer bore being formed through said material from said upper surface to said lower surface, said steerer bore being adapted to releasably, frictionally engage said steerer therewithin;

first and second blade bores being formed through said material from said upper surface to said lower surface, each said blade bore being adapted to releasably, frictionally engage one of said blades therewithin;

a steerer bore engagement slot being formed through said material from said upper surface to said lower surface, said steerer bore engagement slot intersecting said steerer bore to form a continuous cavity through said thickness of said crown;

a first blade bore engagement slot being formed through said material from said upper surface to said lower surface, said first blade bore engagement slot intersecting said first blade bore to form a continuous cavity through said thickness of said crown;

a second blade bore engagement slot being formed through said material from said upper surface to said lower surface, said second blade bore engagement slot intersecting said second blade bore to form a continuous cavity through said thickness of said crown;

a steerer engagement means being disposed within said crown and functioning to diminish said width of said steerer bore engagement slot, whereby said frictional engagement of said steerer within said steerer bore will be increased;

a first blade engagement means being disposed within said crown and functioning to diminish said width of said first blade bore engagement slot, whereby said frictional engagement of said first blade within said first blade bore will be increased;

a second blade engagement means being disposed within said crown and functioning to diminish said width of said second blade bore engagement slot, whereby said frictional engagement of said second blade within said second blade bore will be increased;

said frictional engagement of said steerer and said first blade and said second blade within said steerer bore, first blade bore and second blade bore, respectively, being created by a physical contact of each said steerer bore, first blade bore and second blade bore, with each of said steerer, first blade and second blade, respectively, said frictional engagement extending throughout said thickness of said crown;

the length of said steerer, first blade and second blade, that is in frictional engagement within said crown constituting a substantial length of each said steerer and said blades; thus substantially preventing the lateral and rotational movement of said steerer and said first and second blades.

5,060,962

REAR WHEEL CAMBER SLEEVE ASSEMBLY FOR A WHEELCHAIR

Robert T. McWethy, Ventura, Calif., assignor to Everest & Jennings, Inc., Camarillo, Calif.

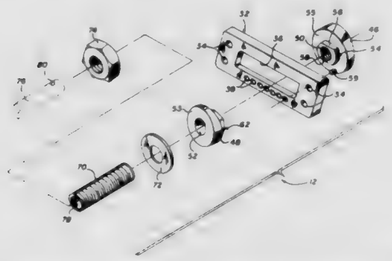
Filed May 21, 1990, Ser. No. 529,316
Int. Cl.[5] B62M *1/14*; B62D *17/00*
U.S. Cl. 280—304.1 13 Claims

1. A camber sleeve assembly for mounting wheel onto a frame of a wheelchair, said assembly comprising:

a camber plate adapted for mounting onto the frame of a wheelchair;

at least one camber sleeve member having a threaded bore formed therein at a selected camber angle;

means for mounting said at least one camber sleeve member onto said camber plate; and



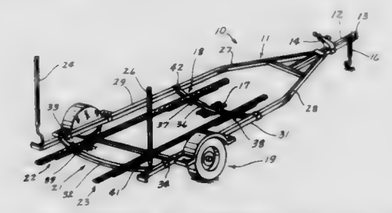
an externally threaded axle bushing received threadably within said bore.

5,060,963

HULL CONFORMING BUNK UNIT FOR BOAT TRAILER

Byron L. Godbersen, Lake LaJune Estates, Ida Grove, Iowa 51445

Filed Dec. 8, 1989, Ser. No. 447,675
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 1 Claim



1. A bunk assembly for supporting a boat on a trailer wherein the trailer includes a pair of laterally spaced frame members supported by a wheel and axle unit, the improvement comprising:

a front crossbar secured to and extended transversely between the frame members fore of the wheel and axle unit;

a rear crossbar pivotally secured to and extended between the frame members aft of the wheel and axle unit and swingable about an axis transverse the longitudinal axis of the trailer;

at least a pair of elongated bunk units, each bunk unit extended parallel the other bunk unit and spaced transversely therefrom, with both said bunk units disposed parallel the longitudinal axis of the trailer;

means secured to said front crossbar and to a front portion of each bunk unit for mounting each said bunk unit front portion onto said front crossbar; and

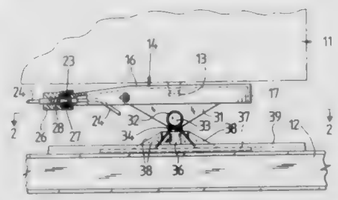
means secured to said rear crossbar comprising a bracket member extended longitudinally of the trailer fore and aft of said rear crossbar and having opposed ends, and comprising further a pair of elements, each element secured to and adjacent an end of said bracket member and secured also respectively to a rear portion of each said bunk unit, whereby each bunk unit is mounted at one point forwardly thereof to said front crossbar, and at two longitudinally spaced points rearwardly thereof to said rear, pivotal crossbar, whereby each bunk unit is free to tend to flex in a vertical plane between said supporting points.

5,060,964

FIFTH WHEEL

Henry L. Vick, 24-7 Westchester Ct., Birmingham, Ala. 35215

Filed Jul. 17, 1989, Ser. No. 380,880
Int. Cl.[5] B60D *1/64*
U.S. Cl. 280—421 13 Claims



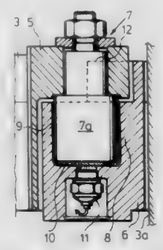
1. A fifth wheel mounted to a tractor having a deck plate with a slot therein for receiving a kingpin of a trailer to be towed by said tractor in combination with a means for automatically connecting electrical and fluid lines between said trailer and tractor upon engagement of said kingpin within said fifth wheel comprising a pair of extension members integral with said deck-plate and extending rearwardly therefrom on either side of said slot with at least one of said extension members terminating in a rearwardly opening receptacle for receiving therewithin a connective element affixed to said trailer rearwardly of said kingpin such that alignment of said kingpin within said slot and relative movement thereof to a locked position is concomitant with engagement of said connective element with said receptacle.

5,060,965

TRAILER COUPLING WITH FORCE SENSING MEANS

Hans W. Haefner, Aichach-Walchshofen, and Manfred Heimbach, Augsburg, both of Fed. Rep. of Germany, assignors to Pfister GmbH, Augsburg, Fed. Rep. of Germany

Filed Oct. 24, 1990, Ser. No. 602,582
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1989, 3935479
Int. Cl.[5] B60D *1/14*; G01L *5/13*
U.S. Cl. 280—504 21 Claims



1. A trailer coupling for connecting a trailing vehicle to a tracting vehicle comprising:

standard-type connecting means having a rear portion formed as a flange;

an intermediate unit formed of first and second parts each of said parts having formed thereon a flange for connection to said flange of said connecting means and to said tracting vehicle, respectively;

wherein said first part is formed as a force measuring cell including a housing having formed therein a cylindrical recess having a vertical axis, a piston having an upward projecting cylindrical portion and being inserted into said recess forming a narrow cylindrical gap between a peripheral surface of said piston and an interior peripheral surface of said housing, elastomeric material essentially filling said narrow gap and a space formed between a bottom surface of said housing and an interior end surface of said piston, a pressure sensor being mounted in said housing arranged in contact with said elastomeric material; and

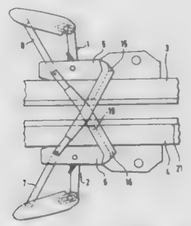
wherein said second part has formed thereon at a position opposite to said flange a horizontally projecting eyelet member with said upward projecting cylindrical portion of said piston inserted therein, fixing means holding said eyelet member on said upward projecting portion, such that said standard-type connecting means is pivotable about said vertical axis, with vertical forces exerted by said trailing vehicle onto said standard-type connecting means via said eyelet member onto said piston being measured by said force measuring cell whilst any horizontal forces being deviated through said elastomeric material to said housing without effecting the measurement of said vertical forces.

5,060,966

SKI BRAKES FOR INTERLOCKING SKIS

Gerhard Sedlmair, Farchant, Fed. Rep. of Germany, assignor to Marker Deutschland GmbH, Fed. Rep. of Germany

Filed Feb. 16, 1990, Ser. No. 482,066
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1989, 8902049[U]
Int. Cl.[5] A63C *7/10*
U.S. Cl. 280—605 8 Claims



1. A ski brake that cooperates with another such brake to interlock skis of a pair provided with such brakes together comprising:

two bent brake members, and

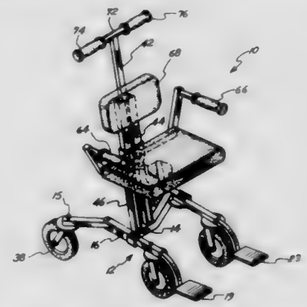
spring means, wherein said brake members include an actuator arm portion having a free end and a braking arm portion and are rotatably mountable in a base plate fixed to a ski, said bent brake members being mountable on opposite sides of a ski in mirror image relationship with said free ends of said actuator arm portions being connected by said spring means to urge said braking arm portions outwardly apart, said braking arm portions being provided with a recessed shoulder surface oblique to the longitudinal axis of said braking arm portions and facing inwardly toward the ski adapted to lockingly engage the other of the pair of skis, and wherein the braking arm portions of one of said ski brakes mounted on a first of the pair of skis overlie the braking arm portions of another of said ski brakes mounted on a second of the pair of skis, causing the recessed shoulder surfaces of the ski brake on said other ski to overlie and lockingly engage side edges of the first ski against the urging of said spring means when the running surfaces of the skis of said pair are brought into contact with each other.

5,060,967

COLLAPSIBLE MOBILITY DEVICE

Harold D. Hulterstrum, 1155 College Avenue, Baraboo, Wis. 53913

Filed Sep. 21, 1990, Ser. No. 586,238
Int. Cl.[5] B62B *7/06*
U.S. Cl. 280—650 11 Claims



1. A collapsible mobility device for handicapped persons, comprising, in combination: a base, said base comprising

a main link having a transverse portion and left and right longitudinal side portions fixedly connected to opposite ends of said transverse portion,

a pair of left side links pivotally connected, at their inner ends for independent movement about substantially vertical axes, to respective ends of said left side portion,

a pair of right side links pivotally connected, at their inner ends for independent movement about substantially vertical axes, to respective ends of said right side portion,

a wheel secured to an outer end of each of said left and right side links, and

means for locking each of said left and right side links in selected ones of a plurality of extended, use position relative to said main link or a collapsed, stored position with said left and right side links lying substantially parallel to said transverse portion of said main link;

support means fixedly secured to an upper side of said base in a substantially vertical position, said support means being elongated and collapsible;

gripping means secured to an upper end of said support means; and

a seat attached to said support means, said seat being movable between an extended, use position and a collapsed, stored position.

5,060,968

SUSPENSION APPARATUS OF A VEHICLE

Takeshi Edahiro; Shin Takehara; Toshiki Morita, and Hiroyoshi Kumada, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 17, 1990, Ser. No. 466,665
Claims priority, application Japan, Jan. 17, 1989, 1-8144
Int. Cl.[5] B60G *11/27*
U.S. Cl. 280—707 30 Claims

1. A suspension apparatus of a vehicle, comprising:

a cylinder unit interposed between a sprung weight and an unsprung weight for changing a ride height by supplying or discharging an operating liquid;

a supply/discharge control valve for supplying to or discharging from the cylinder unit;

a supply/discharge control means for controlling supply of the operating liquid to or discharge of the operating liquid from the cylinder unit by controlling the supply/discharge control valve on the basis of a predetermined condition;

a bump detecting means for detecting a bump of a wheel;

a pressure detecting means for detecting a pressure in the cylinder unit; and

a trouble detecting means for detecting that the supply/discharge control valve is operating outside of predetermined normal values when the pressure detected by the pressure detecting means is continued at a magnitude above a given value for a given period of time when the bump detected by the bump detecting is above a given value.

5,060,969

SUSPENSION APPARATUS OF A VEHICLE

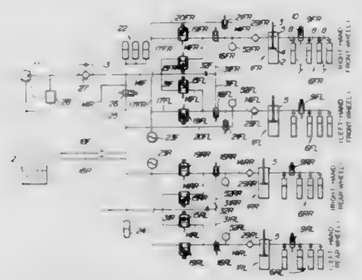
Shoichi Kamimura; Takeshi Edahiro; Shin Takehara, and Toshiki Morita, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 19, 1990, Ser. No. 467,410

Claims priority, application Japan, Jan. 19, 1989, 1-10476

Int. Cl.[5] B60G *11/26*

U.S. Cl. 280—707 **30 Claims**



1. A suspension apparatus of a vehicle, comprising:

a cylinder unit interposed between a sprung weight and an upsprung weight for changing a ride height by supplying or discharging an operating liquid;

a supply/discharge control valve for supplying to or discharging from the cylinder unit;

a supply/discharge control means for controlling supply of the operating liquid to or discharge of the operating liquid from the cylinder unit by controlling the supply/discharge control valve on the basis of a predetermined condition;

a bump detecting means for detecting a bump of a wheel and for detecting further bumping of the wheel after an initial bump of the wheel is detected;

a pressure detecting means for detecting a pressure in the cylinder unit; and

a trouble detecting means for detecting that the supply/discharge control valve is operating outside of predetermined normal values when the pressure detected by the pressure detecting means continues in a reduced state for a given period of time when the bump is detected by the bump detecting means.

5,060,970

SUSPENSION APPARATUS OF A VEHICLE

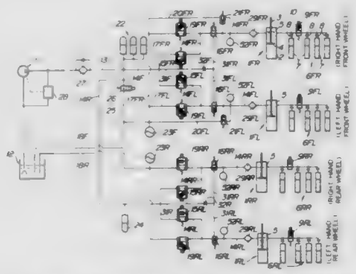
Shoichi Kamimura; Takeshi Edahiro; Shin Takehara, and Hiroyoshi Kumada, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 19, 1990, Ser. No. 467,408

Claims priority, application Japan, Jan. 19, 1989, 1-10477

Int. Cl.[5] B60G *11/27*

U.S. Cl. 280—707 **30 Claims**



1. A suspension apparatus of a vehicle, comprising:

a cylinder unit interposed between a sprung weight and an unsprung weight for changing a ride height by supplying or discharging an operating liquid;

a supply/discharge control valve for supplying to or discharging from the cylinder unit;

a supply/discharge control means for controlling supply of the operating liquid to or discharge of the operating liquid from the cylinder unit by controlling the supply/discharge control valve on the basis of a predetermined condition;

a rebound detecting means for detecting a rebound of a wheel and for detecting further rebounding of the wheel after an initial rebound of the wheel is detected;

a pressure detecting means for detecting a pressure in the cylinder unit; and

a trouble detecting means for detecting that the supply/discharge control valve is operating outside of predetermined normal values when the pressure detected by the pressure detecting means continues in a elevated state for a given period of time when the rebound is detected by the rebound detecting means.

5,060,971

VEHICLE AIR BAG COVER

Yuichi Nanbu, and Masami Sawada, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

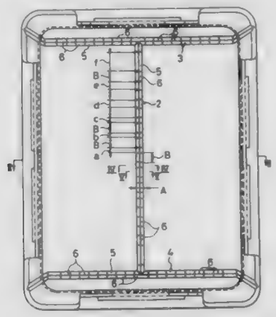
Filed Feb. 9, 1990, Ser. No. 478,219

Claims priority, application Japan, Feb. 20, 1989, 1-40089

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 **5 Claims**

1. A vehicle air bag cover having a front wall adapted to be positioned over the folded air bag generally in front of the vehicle occupant, the front wall including predetermined weakened zones defining fracture lines along which the front wall fractures under the forces applied to it by the air bag when it partially inflates to enable the air bag to emerge from the cover and inflate fully, the fracture lines including a central fracture line extending along generally the center of the front wall from closely adjacent one end margin thereof to closely adjacent an opposite end margin thereof, characterized in that the strength of the weakened zones defining said central fracture line varies, the weakened zones defining said central fracture line having lesser strength in regions along the length of said central fracture line nearer to the center of the front wall



and greater strength in regions along the length of said central fracture line adjacent the end margins of the front wall.

5,060,972

AIR BAG SYSTEM

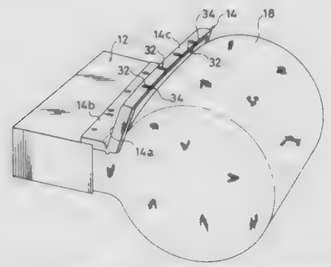
Takeshi Satoh; Yoshikazu Nakayama; Masami Sawada; Takayasu Zushi, and Yuichi Nanbu, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Aug. 9, 1990, Ser. No. 564,857

Claims priority, application Japan, Sep. 21, 1989, 1-245578

Int. Cl.[5] B60R *21/10*

U.S. Cl. 280—732 **8 Claims**



1. An air bag system for use in a vehicle, comprising:

a holder having an opening at one side thereof,

an air bag folded and retained in the holder,

inflating means attached to the holder and operating to provide gas for inflating the air bag in front of a passenger,

a modular cover for covering the opening of the holder, said modular cover including a first side having a first flange and a second side located opposite to the first side and having a second flange with a fringe, said first and second flanges extending rearwardly and overlapping the holder, said modular cover, when the air bag inflates, opening in front of the passenger,

first mounting means for locking and mounting the first flange of the modular cover to the holder, and

second mounting means for holding and mounting the second flange of the modular cover to the holder such that the second side can move for a predetermined distance in directions toward and away from the passenger, said second mounting means including holes formed in the second flange, slits formed in the second flange, each slit extending from the fringe to each hole at the opposite side of the passenger, and protruding members having rear ends, each rear end of the protruding members being fixed to the holder, each protruding member being loosely located in each hole and having a thickness larger than a width of each slit.

5,060,973

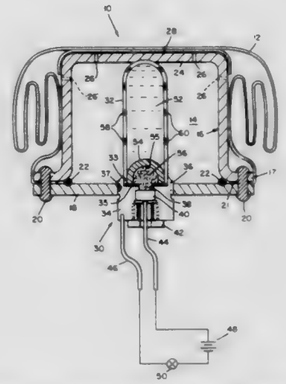
LIQUID PROPELLANT INFLATOR FOR VEHICLE OCCUPANT RESTRAINT APPARATUS

Anthony J. Giovanetti, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Jul. 23, 1990, Ser. No. 556,226

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—736 **19 Claims**



1. Apparatus for deploying an inflatable member comprising, in combination:

A. a reaction chamber connected in fluid flow communication with the inflatable member;

B. a reservoir disposed within said reaction chamber, said reservoir having a plurality of ports communicating with said reaction chamber and pressure sensitive sealing means normally closing said ports;

C. a quantity of liquid propellant stored in said reservoir; and

D. means for pressurizing said liquid propellant to open said sealing means and to expel said liquid propellant from said reservoir into said reaction chamber through said ports and for igniting said liquid propellant only after entry into said reaction chamber, thereby generating gas by exothermic reaction to inflate the inflatable member.

5,060,974

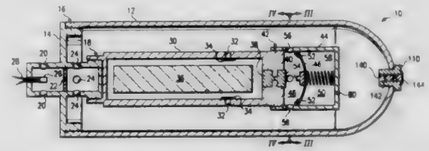
GAS INFLATOR APPARATUS

Brian K. Hamilton, Littleton, and Ronald J. Butt, Aurora, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Filed Apr. 30, 1990, Ser. No. 516,332

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—736 **31 Claims**



1. An apparatus for inflating an inflatable container in which a delay is provided and wherein a gas propellant is activated without direct use of an electric signal, comprising:

first means for containing gas and having a wall;

electro-explosive device means for creating a path for gas from said first means to the inflatable container, wherein

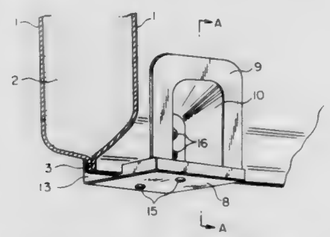
said electro-explosive device means is electrically activated;
propellant means positioned within said first means;
pressure sensing means operatively connected to said first means for monitoring a differential pressure between a first pressure related to the pressure of the gas in said first means and a reference pressure, wherein said reference pressure exceeds said first pressure during the dynamic state and wherein the gas creating said reference pressure does not provide a substantial portion of the gas used to inflate the inflatable container; and
second means for controlling activation of said propellant means, wherein said second means responds to movement of at least a portion of said pressure sensing means away from said reference pressure to activate said propellant means after a delay without electrical activation thereof, thereby increasing the gas flow rate provided to the inflatable container.

5,060,975

PART-MOUNTING STRUCTURE FOR VEHICLE BODY

Shoichi Sano, Tokyo; Suguru Yoshida; Ken Uchida, both of Asaka; Hajime Kajiwara, Fujimi; Masao Ohno, Urawa, and Tateo Kawade, Toda, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1989, Ser. No. 446,429
Claims priority, application Japan, Dec. 9, 1988, 63-160158[U]; Dec. 29, 1988, 63-170370[U]; Jan. 18, 1989, 1-3945[U]; Jan. 23, 1989, 1-6253[U]; Mar. 16, 1989, 1-30107[U]; Mar. 16, 1989, 1-30108[U]; Mar. 20, 1989, 1-31838[U]; Apr. 25, 1989, 1-48680[U]; Jun. 20, 1989, 1-72062[U]
Int. Cl.[5] B60G *21/00*
U.S. Cl. 280—787 **29 Claims**



1. A part-mounting metal member for mounting a part to a part-mounting portion of a sandwich structure constituted by a core layer and plastic skin layers formed on both surfaces of said core layer, at least one of said skin layers having a tapered recess having a sloped side wall and a flat bottom wall, said bottom wall being constituted by said skin layers bonded together, said part-mounting metal member having a bottom plate, and a pair of side plates vertically extending from said bottom plate substantially on both sides, at least one of said side plates having a dent tapered complementarily to said tapered recess of said sandwich structure.

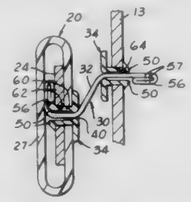
5,060,976

SEAT BELT ANCHOR STRAP TETHER ASSEMBLY

Marion C. Boone, Oak Park, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 17, 1990, Ser. No. 628,825
Int. Cl.[5] B60R *22/00*
U.S. Cl. 280—801 **4 Claims**

1. A seat belt anchor strap tether assembly adapted for attachment to a sheet-like member formed with an elongated aperture, the tether assembly comprising:
a flexible elastomeric tether band having first and second ends with at least one end formed with a thickened pad having a predetermined thickness sized for ready insertion through the elongated aperture, a one-piece retainer clip molded from flexible plastic material and adapted to be attached to said tether band one end;
said retainer clip comprising a rectangular-shaped planar base having inner and outer faces with the major axis thereof included in the retainer clip plane of symmetry thereof disposed normal to said base, an elongated slot formed in said base aligned on said major axis adapted to slidably receive said tether band therethrough, a pair of mirror image resilient longitudinally extending locking wings arranged in opposed relationship and projecting from said base inner face on opposed coextensive sides of said slot, said pair of locking wings in their free state extending in an outwardly diverging direction away from said plane of symmetry;
said pair of locking wings defining two opposite outside wing surfaces and two opposing inside wing surfaces, each said locking wing having a longitudinally extending



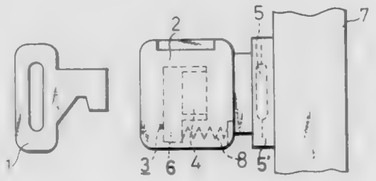
barb coextensive with its one outer free end formed with a shoulder extending outwardly from its associated outside wing surface, each said barb having an opposite outside facet which is tapered from its associated shoulder toward the locking wing free end thereof;
said tether band thickened pad sized to enable ready insertion through said elongated aperture from said base inner face for location beyond the confines of said two opposing inside wing surfaces, whereby upon insertion of said pair of locking wings in the elongated aperture the edges thereof engaging respective ones of said barb facets causing said locking wings to be deflected inwardly toward each other from their normal free state permitting passage through the elongated aperture, whereupon said locking wings spring outwardly such that each said barb shoulder engages behind the elongated aperture member resisting removal of said retainer clip from the member.

5,060,977

MAGNET-INCLUSIVE COMPONENT SUITABLE FOR USE IN OCCUPANT-PROTECTING MEANS FOR MOTOR VEHICLE AND FABRICATION PROCESS THEREOF

Hiroyuki Saito, Kanagawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1990, Ser. No. 486,863
Claims priority, application Japan, Mar. 1, 1989, 1-49446
Int. Cl.[5] B60R *22/04*
U.S. Cl. 280—802 **8 Claims**



1. In a magnet-inclusive component suitable for use in an occupant protecting means for a motor vehicle, said compo-

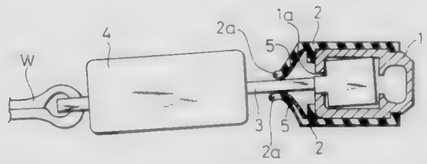
nent having a magnet and at least one member located adjacent the magnet, the improvement wherein the adjacent member has a melting point lower than the magnet and the magnet is molded or cast in situ in the adjacent member.

5,060,978

LIP FOR RAIL OF PASSIVE SEAT BELT SYSTEM AND PRODUCTION PROCESS THEREOF

Takanobu Sasaki, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,245
Claims priority, application Japan, Jan. 26, 1989, 1-16638
Int. Cl.[5] B60R *21/10*
U.S. Cl. 280—804 **7 Claims**



1. A process for the production of a lip suitable for use in covering a rail of a passive seat belt system, said lip having a slide surface on which a slider is caused to slide and an outer surface which is visible even after the rail is mounted on a roof-side of a vehicle, which comprises coating the slide surface of the lip with an abrasion-resistant material while using an integral flange as a coating flow limiter.

5,060,979

INFORMATION PAD FOR CHECKBOOKS

Raul G. Garza, 12 Ollerton, Conroe, Tex. 77303

Continuation-in-part of Ser. No. 331,834, Apr. 3, 1989. This application Jan. 16, 1990, Ser. No. 465,429
The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—31 **6 Claims**



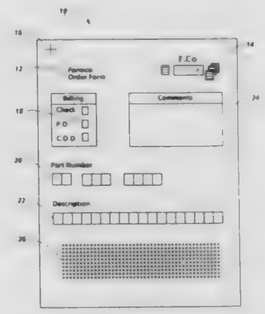
1. An information pad for checkbooks comprising:
a checkbook cover of flexible material, said checkbook cover having a slot for receiving a checkbook therein; and
information receiving means being flexibly fastened to said checkbook cover for receiving written information, said information receiving means having a size less than one-half the area of said checkbook cover, said information receiving means foldable within the area of said checkbook cover, said information receiving means comprising:
a backing layer having a first planar surface and a second planar surface;
a plurality of flexible sheets overlaying said first planar surface of said backing layer, said flexible sheets being detachably connected to said backing layer for receiving written information; and
a hinge member extending between an edge of said backing layer and an edge of said checkbook cover to enable said information receiving means to be folded into the inner side of said checkbook cover, said hinge member being adhesively fastened to said second planar surface of said backing layer and adhesively fastened to said checkbook cover.

5,060,980

FORM UTILIZING ENCODED INDICATIONS FOR FORM FIELD PROCESSING

Walter A. L. Johnson, Santa Clara; Baldo A. Faieta, Stanford; and Z. Erol Smith, III, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1990, Ser. No. 530,753
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—70 **6 Claims**



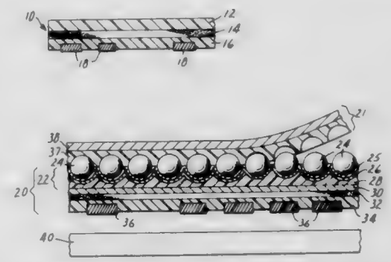
1. A form for use in a machine data entry and retrieval system of the type including a decoding section for decoding encoded information carried by the form, comprising:
carrier means for carrying at least one type of indicia and upon which a user may impart or modify such indicia;
a field region arbitrarily located on said carrier means for receiving machine readable user imparted or modified indicia; and
an encoded information region arbitrarily located on said carrier means for receiving machine readable encoded information representing selected attributes of said field region.

5,060,981

TRANSPARENT OVERLAY FOR PROTECTING A DOCUMENT FROM TAMPERING

Douglas K. Fossum; Susan K. Jongewaard, and John W. McConville, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

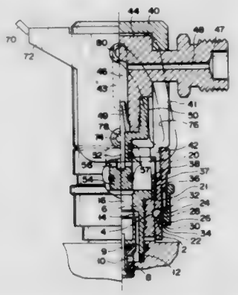
Filed Sep. 19, 1989, Ser. No. 409,144
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—109 **16 Claims**



1. A document having a transparent overlay comprising:
(a) a transparent cover sheet,
(b) a layer of hot-melt adhesive over one surface of said transparent covering, which adhesive has a Tg of at least about −15° C., and
(c) a polymeric image-receiving layer over the exposed face

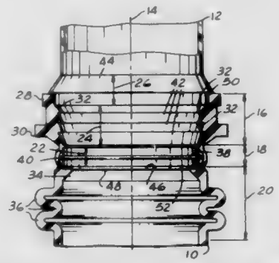
of said hot-melt adhesive layer, which image-receiving layer is no more than about 50 μm in thickness,
said overlay being bonded to the document by said hot-melt adhesive.

5,060,982
COUPLING SOCKET WITH CAM LEVER AND RECIPROCATING SLEEVE
Kaoru Matsushita, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1990, Ser. No. 624,699
Claims priority, application Japan, Dec. 19, 1989, 1-143522[U]
Int. Cl.[5] F16L *37/22*
U.S. Cl. 285—190 **8 Claims**



1. A socket for use in combination with a plug of the type having a cylindrical connecting portion, the socket comprising:
- a main cylinder provided with a cylindrical side wall for defining an inner hole which extends therein in the axial direction thereof, slits formed at the side wall of the main cylinder, extending in the axial direction thereof, and a lock system for selectively locking the connecting portion of the plug, said main cylinder being detachably attached onto the connection portion of the plug;
- a sleeve including a rear portion guided through the inner hole of the main cylinder in the axial direction thereof, a front portion of a small-diameter which can be inserted into the connecting portion of the plug, said sleeve having an inner passage opening at the small-diameter front portion, and at least one engaging member having front end portions projected outward from the rear portion in the radial direction and then outside through the slits, wherein said sleeve can move between advanced position where the inner flow passage is communicated with a flow passage in the connecting portion of the plug and retreated position where they are separated from each other;
- an operating lever pivoted on the side wall of the main cylinder to selectively move between first and second positions, said lever being locked at one of the first and second positions when said socket is connected to the connecting portion of the plug; and
- a guide means arranged on said operating lever to guide the engaging member in such a way that the sleeve is positioned at its advanced position when the operating lever is at the first position and that the sleeve is positioned at its retreated position when the operating lever is at the second position.

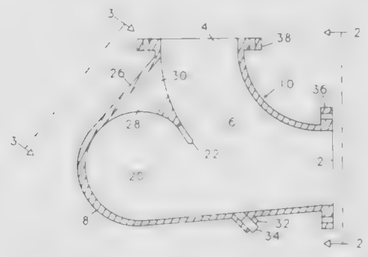
5,060,983
CLAMPLESS HOSE CONNECTION
Carlos Lee, Chatham, Canada, assignor to Siemens Automotive Limited, Chatham, Canada
Filed Sep. 5, 1990, Ser. No. 577,953
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 **4 Claims**



1. A clampless connection of a relatively resilient hose end telescoped over a relatively rigid tube end comprising:
- said tube end comprising a first axial zone which contains a circumferentially continuous exterior rib having a circumferentially continuous radially outermost edge and a second axial zone which is proximal to said first axial zone and contains at least one circumferentially extending beveled exterior retention rib;
- said hose end comprising a third axial zone which contains at least one circumferentially extending beveled interior retention rib complementary to said at least one circumferentially extending beveled exterior retention rib of said second axial zone;
- said at least one circumferentially extending beveled exterior retention rib and said at least one circumferentially extending beveled interior retention rib coacting to resist axial separation of said hose end from said tube end with a much greater degree of resistance than that encountered during telescoping of the hose end over the tube end;
- said hose end comprising a fourth axial zone that is proximal to said third axial zone and a fifth axial zone that is proximal to said fourth axial zone, said fourth axial zone having a nominal wall thickness that is less than the nominal wall thicknesses of the immediately contiguous portions of said third and fifth axial zones;
- and wherein said fourth axial zone is stretched over said first axial zone's exterior rib wherein said hose end is telescoped over said tube end such that an axially intermediate portion of said fourth zone has circumferentially continuous sealing contact with said radially outermost edge of said first axial zone's exterior rib and axial portions of said fourth axial zone that axially bound said axially intermediate portion of said fourth axial zone extend radially inwardly on each side of said first axial zone's exterior rib.

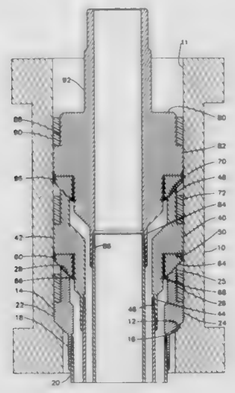
5,060,984
SHORT RADIUS, LOW WEAR ELBOW
Larry W. Hess, Harrisburg, Pa., assignor to HammerTek Corporation, Landisville, Pa.
Filed Jan. 22, 1991, Ser. No. 644,247
Int. Cl.[5] F16L *43/00*
U.S. Cl. 285—127 **13 Claims**

1. In a fluent material handling system, and elbow means for effecting small radius turns without excessive wear, velocity reduction and particle breakage, said elbow means comprising:
- an annular entry port;
- an annular exit port;
- a continuous annular channel extending between said ports in an arc;
- a chamber formed on the outer wall on the outer arc of said channel opposite said entry port, said chamber opening into said channel on one side tangential to said channel wall with the other side of said chamber merging with said outer wall at a point outwardly offset parallel to the central axis of said inlet port by one quarter the diameter of said channel; and



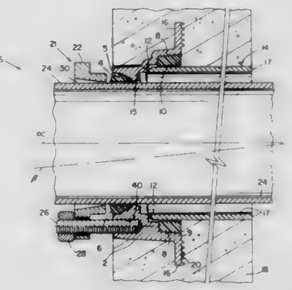
- a vent conduit connecting a portion of said chamber adjacent said outer wall to said channel downstream from said merging point.

5,060,985
LOCATION OF TUBULAR MEMBERS
Russell Seaton, Trowbridge, England, assignor to Cooper Industries, Inc., Houston, Tex.
Filed May 4, 1990, Ser. No. 518,937
Claims priority, application United Kingdom, Aug. 14, 1989, 8918517; European Pat. Off., Apr. 11, 1990, 90303901.4
Int. Cl.[5] F16L *21/02*
U.S. Cl. 285—141 **3 Claims**



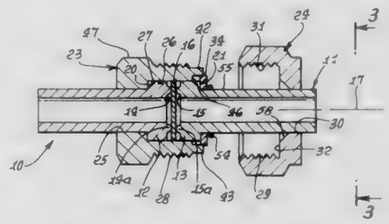
1. A landing ring comprising:
- a generally annular member arranged and adapted to be secured to a downwardly facing surface of a hanger such that the landing ring can undergo relative lateral movement at least to a limited extend with respect to the hanger,
- said landing ring is connected to the hanger by means of an annular member carried on a cylindrical surface of the hanger, and
- said annular member comprises a washer which is held in position by a circlip carried on the hanger.

5,060,986
SLEEVE ADAPTER
William Carter, Marshfield, Mass., assignor to Water Works Supply Corporation, Malden, Mass.
Continuation of Ser. No. 281,101, Dec. 7, 1988, Pat. No. 4,976,457. This application Mar. 30, 1990, Ser. No. 502,049
Int. Cl.[5] F16L *7/00*
U.S. Cl. 285—158 **1 Claim**



1. A unitary, one piece, annular apertured hub for a sleeve adapter, the hub having a central axis and a first annular surface adjacent a first face of the hub sloping inwardly toward the axis for receiving a mechanical joint gasket;
- a second annular surface adjacent a second face of the hub sloping outwardly away from the central axis for receiving a push-on gasket;
- the second annular surface having a diameter greater than the first annular surface;
- a third annular surface intermediate the first and second annular surfaces and having a diameter smaller than the second annular surface for engaging the end of a sleeve pipe;
- the third annular surface having a diameter larger than the first annular surface such that the sleeve pipe may be spaced further from the axis in a radial direction than the mechanical joint gasket; and
- a circumferential flange extending outwardly from the second face and integral with the hub, the circumference of the flange being larger than every other configuration formed on the one-piece hub, including annuli which increase the surface area of the circumferential flange.

5,060,987
TORSION ISOLATION FITTING
Robert Miller, Arcadia, Calif., assignor to Vemco Corporation, San Dimas, Calif.
Filed Mar. 14, 1990, Ser. No. 493,423
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—328 **11 Claims**



1. A coupling for interconnecting two tubular parts having opposed ends and shoulders spaced from said ends via which

force is applicable to urge said opposed ends toward one another, comprising

a) two tubular members defining a longitudinal axis and adapted to coaxially receive the respective parts and to transmit axial force thereto, via said shoulders,

b) a torque isolator assembly including a metallic annulus received against one of said shoulders on one of said parts, and generally longitudinal projection means positioned on said one member to block rotation of said annulus relative to said one member, and about said axis,

c) cooperating screw thread means on said members adapted to interfit when said members are relatively rotated to make up the coupling, the one member received into the other of said members,

d) and a pusher surface on the other of said members engagable with said annulus to transmit axial force via said annulus to said one shoulder, when the coupling is made up,

e) and wherein said tubular parts have end flanges with annular protrusions that present convex surfaces, with a metallic annular seal between and engaged by said surfaces in response to coupling make-up,

f) said one member having a counterbore closely receiving the periphery of said flanges and said metallic seal and terminating in spaced relation to said metallic annulus,

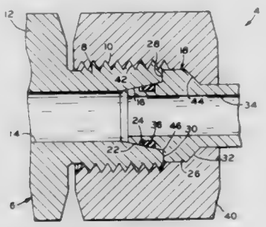
said metallic seal axially spaced from both said shoulders.

5,060,988

HYDRAULIC COUPLING

Nigel D. L. Williamson, Sheffield, England, assignor to NWD International, Inc., Fort Wayne, Ind.

Filed May 8, 1990, Ser. No. 520,216
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—332.3 **7 Claims**



1. A hydraulic coupling, comprising:

a female fitting member having a central bore having a central axis, an internal tapered locking surface and external threads parallel to the axis;

a male fitting member being received within said female member and having a central bore coaxial with the bore of said female member, an external tapered locking surface complementary to said female tapered surface, an annular groove in said male tapered locking surface and an O-ring of deformable material in said groove, said O-ring having a cross-sectional height which is greater than the minimum depth of said groove and extends above said groove, said male fitting member further having a flange portion located immediately behind said external tapered surface and having a diameter greater than the outer diameter of said external tapered surface to define a stop shoulder facing an abutment surface of said female fitting member, said male member further comprising a second shoulder located behind said stop shoulder and facing in a direction opposite to said stop shoulder, said tapered locking surfaces being smooth; and

a nut member having threads that are parallel to the axis and to the threads of said female member and are connected to the threads of said female member, said nut member provided with abutment means for abutting said second shoulder of said male member to thereby force said tapered surfaces together and deform said O-ring;

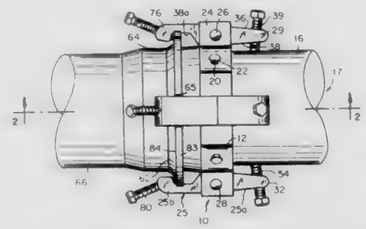
said stop shoulder being in abutment with said female member abutment surface to thereby limit the travel of said male member within said female member and prevent collapse of said male member in the area of its external tapered surface, said male and female members and said nut member being dimensioned such that said tapered locking surfaces abut each other at about the same time as said stop shoulder and female member abutment surface abut each other as said coupling is assembled, there being substantially no further relative movement between said male and female fitting members after abutment of said nut and said second shoulder and abutment of said stop shoulder and said female member abutment surface.

5,060,989

PIPE JOINT RETAINING DEVICE WITH LOCKING LEVERS

Theodore A. Gallucci, Lindenhurst, and Norman R. Doherty, Farmingdale, both of N.Y., assignors to Bio-Jet Corporation, Farmingdale, N.Y.

Filed Apr. 26, 1990, Ser. No. 514,750
Int. Cl.[5] F16L *23/04*
U.S. Cl. 285—337 **16 Claims**



1. A pipe joint retaining device for coupling a first cylindrical malleable pipe to an open bell end of a second cylindrical pipe axially aligned with said first pipe, comprising:

a cylindrical retainer ring concentrically on and coaxially with said first cylindrical pipe and adjacent to said open bell of said second pipe;

a plurality of pairs of flanges spaced circumferentially apart around said ring and extending outwardly thereof, said flanges in each pair thereof being spaced apart circumferentially of said ring;

a plurality of locking levers each respectively pivotably carried by one of said pairs of flanges and turnable between an open and a closed position with respect to said ring and said first pipe;

pivot means supporting each of said levers to turn the same angularly at a fulcrum intermediate opposite ends of said lever to turn the same angularly in an axial, diametral plane of said ring;

a plurality of puncture means, one of which is located under each of said locking levers, each of said puncture means having a sharp edge portion facing axially inward of said ring to contact said first pipe;

locking means located rearwardly of said pivot means and at a rear end of each of said levers and extending therethrough for engaging said first pipe while said lever forces said puncture means to pierce said first pipe, to lock thereto; and

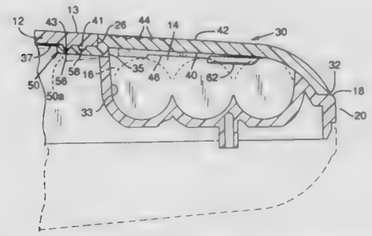
holding means located forwardly of said puncture means and at a forward end of each of said levers and extending therethrough for engaging said bell of said second pipe and holding the same in coaxial alignment with said ring and said first pipe when said lever is turned to said closed position.

5,060,990

MULTI-STAGE DOOR SNAP

Mark A. Smith; David L. Smith, and Tom B. Lindberg, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 8, 1991, Ser. No. 653,568
Int. Cl.[5] E05C *11/00*
U.S. Cl. 292—91 **11 Claims**



1. A multi-stage door latch for a portable electronic instrument comprising:

a removable door having a flexibly resilient tab extending therefrom, the tab having first and second latch points;

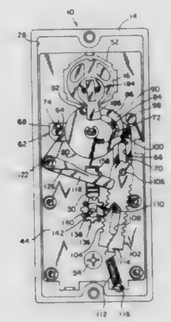
a body having first and second engagement points, the first engagement point being configured to engage the first latch point or the second latch point, the second engagement point being configured to engage the first latch joint, whereby when any latch point is engaged by any engagement point, an application of force is required to move the door in an opening direction to separate the door from the body, such that the door generally remains secured by at least one latch point against external shocks.

5,060,991

DOOR LATCH ASSEMBLY WITH RACK AND PINION ACTUATING MEMBERS

Richard M. Davidian, Kensington, and Oakley W. Mickle, Rockfall, both of Conn., assignors to Emhart Inc., Newark, Del.

Filed Oct. 20, 1989, Ser. No. 425,151
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—172 **8 Claims**



1. A door latch assembly, which comprises:

a latch encasement;

a latch contained within the encasement which is movable between a latched position and an unlatched position;

means for normally biasing the latch into the latched position;

a housing;

a rack having teeth formed thereon and mounted for movement in the housing;

a pinion having teeth formed thereon and positioned for meshing engagement with the teeth of the rack; the pinion mounted for rotation in the housing;

an actuator arm located in the housing and positioned to engage and move the rack upon selective operation thereof whereby the pinion is rotated;

means attached to the pinion for translating motion of the pinion to the latch to move the latch from the latched position to the unlatched position.

means for maintaining the teeth of the rack in engagement with the teeth of the pinion at a defined location in the housing;

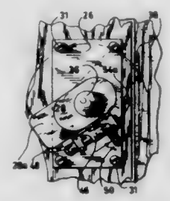
means for moving the rack away from the actuator arm to prevent movement of the rack upon subsequent operation of the arm; and the maintaining means continuing to maintain the teeth of the rack in engagement with the teeth of the pinion subsequent to movement of the rack by the moving means.

5,060,992

DOOR LOCKING DEVICE

Joseph A. Anderson, 5333 Sherbrooke East, Apt. 1013 B, Montreal, Quebec, Canada H1T 3W2

Filed Mar. 11, 1991, Ser. No. 667,485
Int. Cl.[5] E05C *3/04*
U.S. Cl. 292—207 **6 Claims**



1. A door locking device for use in edgewisely locking to a first jamb of a door frame, a door hingedly mounted to the opposite jamb of that door frame, said door defining an interior wall facing a room and an exterior wall, the door locking device comprising:

(a) a lock bar to be mounted to the door;

(b) means for anchoring said lock bar to the door swinging edge section against the interior wall thereof;

(c) pivoting means for pivotal movement of said lock bar about a plane substantially parallel to said door;

(d) a jamb plate having an aperture and to be mounted to said first jamb for releasable engagement of a free edge portion of said lock bar into said aperture in a transverse, door-locking position once said door is closed, said lock bar pivotable to a door unlocking position by clearing said aperture;

(e) an elongated latch member, carried by said lock bar for pivotal movement therewith and longitudinally movable relative to said lock bar between an inoperative position, retracted from the locking bar free edge portion for clearing said jamb plate aperture, and an extended, operative position, protruding from said locking bar free edge portion, in which it is adapted to transversely engage said jamb plate aperture, once said door is closed and said lock bar is in door-locking position; and latch member locking means, for releasably locking said latch member movable part in at least its extended position; wherein said latch member, in its said extended position, positively maintains said lock bar in door-locking position by preventing pivoting of said lock bar to its door unlocking position.

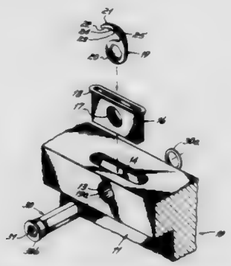
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5,060,993

LOCKING MECHANISM FOR BURIAL CASKET

Donald R. Maier, Batesville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Nov. 26, 1990, Ser. No. 617,589
Int. Cl.[5] E05C *3/04*
U.S. Cl. 292—241 14 Claims



1. A lock for a hardwood casket comprising:

a vertical casket wall having an upper edge, said wall having a vertical slot projecting from said upper edge downwardly into said wall and said wall having a transverse hole therethrough that passes through said slot,

an insert member having a flat vertical slot and a transverse hole, said insert member being disposed in the slot in said wall with said transverse holes aligned,

a hook-shaped latch in said insert member slot, said latch having an irregularly shaped hole aligned with said transverse holes,

a locking rod of a cross section mating with said irregularly shaped hole and passing through all said holes, means blocking axial movement of said locking rod with respect to said wall,

said casket having a lid with a lower edge abutting said upper edge,

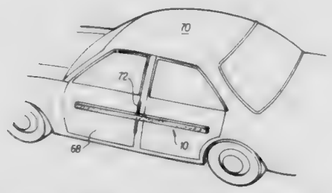
and a keeper mounted on and lying flush with said lower edge in a position for engagement by said hook-shaped latch to pull said lid tight against said upper edge of said vertical casket wall.

5,060,994

VEHICLE DOOR GUARD

Charlesworth R. Martin, 1391 E. Tanners Creek Dr., Norfolk, Va. 23513, and Edward O. Adusei, 1322 Pershing Ct., Virginia Beach, Va. 23456

Filed Jul. 10, 1990, Ser. No. 550,484
Int. Cl.[5] B60R *19/42*
U.S. Cl. 293—128 15 Claims



1. A portable vehicle body bumper for being selectively placed upon an outer surface of a vehicle body to protect said outer surface from contact with other objects, such as doors of other vehicles, said vehicle body bumper comprising:

a resilient elongated body member molded as one piece having front and back surfaces and side surfaces, said body member having a thickness dimension between said front and back surface and being made of a material such that when said front surface lies against said vehicle outer surface being protected said back surface will impinge upon said other objects and prevent them from striking said protected outer surface, said front surface of said elongated body member defining a slot extending along a length thereof and being bounded by shoulders adjacent said side surfaces, said front surface of said elongated body member further defining at least first and second transverse hinge notches therein positioned between first and second end portions of said elongated body member at which said elongated body member can be easily folded about axis approximately parallel to said front surface and approximately perpendicular to an axis of elongation of said body member so as to bring first and second front surface portions of said first and second end portions into contact with one another, said at least first and second hinge notches being separated by a plateau;

first and second elongated magnets having front and back surfaces and side surfaces, said first and second elongated magnets being respectively positioned in said slot in said first and second end portions;

whereby said resilient elongated body member can be extended with said first and second end portions being approximately aligned one to the other so as to attach said front surfaces of said magnets on said outer surface of said vehicle by magnetic attraction to hold said elongated resilient body member on said vehicle outer surface and can be folded on itself at said first and second hinge notches to bring said front surfaces of said first and second magnets into contact so as to hold said first and second end portions together in a folded configuration;

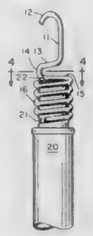
wherein said plateau is of such a length that it allows said front surfaces of said magnets, to make flush contact with one another when said vehicle body bumper is in said folded configuration approximately in front of a front surface of said plateau.

5,060,995

SELF-LOCKING ADAPTOR FOR CONVERTING A POLE INTO A TOOL

Edward J. Goldstein, and Richard A. Linn, both of Minneapolis, Minn., assignors to Padco Plastics, Inc., Minneapolis, Minn.

Filed Apr. 20, 1990, Ser. No. 512,113
Int. Cl.[5] B25J *1/00;* E06B *9/26*
U.S. Cl. 294—19.1 12 Claims



1. A screw on, self-locking adaptor for converting a cylindrical pole into a window pole or the like to permit a user to open or close window blinds through axial rotation of the window pole comprising:

a cylindrical coil having a central axis and a first end, said cylindrical coil having the shape of a female thread to permit said coil to be screwed onto male threads on a cylindrical pole;

a first member connected to said first end of said coil, said first member extending at least partially across said coil to form a stop to limit how far said cylindrical coil can be screwed onto a cylindrical pole;

a second member, said second member connected to said first member, said second member extending at least partially across said coil; and

a third member connected to said member, said third member extending substantially parallel to said central axis, said third member including a C-shaped hook to rotationally engage a rotatable eyelet, said first member, said second member and said third member coacting to produce a binding action between said coil and male threads on a pole when a rotational force is applied to said third member to therby prevent said coil from being unscrewed from male threads on a pole so that a user can apply either a clockwise or counter-clockwise rotational force to a pole connected to said adaptor to thereby said eyelet without causing said adaptor to rotate with respect to the pole.

5,060,996

GOLF BALL SHAG AND CARRYING DEVICE

Joseph Garnes, 18307 Puritas Ave., Cleveland, Ohio 44135

Filed Jul. 18, 1990, Ser. No. 554,716
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 1 Claim



1. A golf ball holder and shagging device comprising a cylindrical tube having an opening at an end of the tube of a diameter slightly larger than the diameter of a golf ball, the tube having a plurality of openings in the body of the tube of a diameter slightly less than the diameter of a golf ball, an end of the tube being provided with a plurality of circumferentially disposed spaced slots adjacent said end of the tube, a resilient O-ring of slightly less diameter than the diameter of the tube disposed over said end of the tube and adapted to have portions thereof projected into the tube through said slots to deter a golf ball within the tube from exiting the tube, retrieval of a ball from the said tube being obtained from pressure exerted on a golf ball by placing an individual's finger into the tube by access through an opening in the body of the tube and pressing downwardly on a ball carried within the tube in alignment with said opening, the said pressure causing the said aligned ball to be ejected from the tube past the O-ring which is caused to flex outwardly during the ball's passage thereover and to flex inwardly thereafter to retain any other balls carried in the tube.

5,060,997

WEED REMOVING DEVICE

Michael J. Plecki, 4936 Spring Rd., Oak Lawn, Ill. 60453

Filed Jan. 29, 1990, Ser. No. 471,405
Int. Cl.[5] A01B *1/16*
U.S. Cl. 294—50.6 17 Claims

1. A weed removing device, comprising:

a shaft having a handle end and a blade end;

handle means located on said shaft end at a sufficient distance away from said blade end to provide leverage in pushing, pulling and rotating said device; and

blade means located at said blade end of said shaft, having an axis member extended axially from said shaft and a blade member extended laterally from said axis member, said blade member having laterally and vertically extending portions, said lateral portion being shorter than said vertically extending portion, said vertical extending portion having a tapered edge, so that said blade end of said shaft is submerged into soil until said axis member is in close



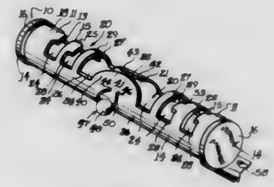
longitudinal juxtaposition with the main tap root of a weed to be removed, with said handle means then turned to rotate said shaft, thereby cutting small lateral roots upon contact with and forward rotational force of said tapered edge of said blade member and thereby also twisting the main tap root around said axis member, for removing the weed and root upon withdrawal of said device from the soil.

5,060,998

SHOPPING AID

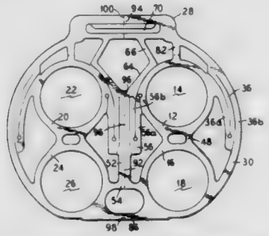
Pamela S. Phillips, 25842 County Rd. 6 East, Elkhart, Ind. 46514

Filed Aug. 21, 1989, Ser. No. 396,938
Int. Cl.[5] B65D *33/06*
U.S. Cl. 294—146 11 Claims



1. An aid for carrying bags or the like, said aid comprising a tubular member having a top section and a bottom section said top and bottom sections meeting at approximately the midpoint of opposite sides of said tubular member, and means in said top section for receiving handles of said bags, said means for receiving handles of said bags including first and second means in said top section for receiving handles of said bags, said first bag handle receiving means having at least one slot means extending substantially transversely through a portion of said top section, said slot means beginning at a predetermined point of one side of said tubular member and terminating at said opposite side of said tubular member, and said second bag handle receiving means providing a longitudinally extending slit defined by free edges of first and second sidewall sections, said first and second, sidewall sections having terminal ends for receiving handles of said bags, one of said sidewall sections including means for releasably retaining the handles of said bags, said bag retaining means including a bead having an elastic cord connection thereto, said core extending through adjacent aperture means in one of said sidewall sections and being secured thereto.

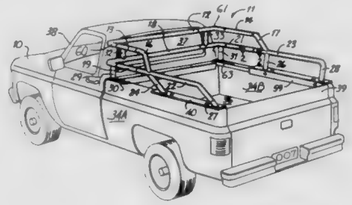
5,060,999
CUP CARRIER
Claire C. Marvin, Park Ridge, Ill., assignor to Scypher Corporation, Naperville, Ill.
Filed Apr. 5, 1990, Ser. No. 505,158
Int. Cl.[5] B65D 71/00
U.S. Cl. 294—87.2 7 Claims

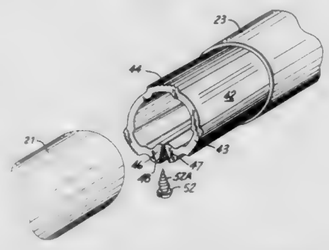


1. A cup carrier for carrying cups, comprising: a flat flexible sheet having cut-outs to form: four circular cup engaging portions (**12, 16, 20, 24**), first and second of said four cup engaging portions (**12, 16**) being symmetrically arranged with third and fourth (**20, 24**) of said cup engaging portions; two linkage members (**46, 48**) connecting said first cup engaging portion (**12**) to said second cup engaging portion (**16**); two further linkage members connecting said third cup engaging portion (**20**) to said fourth cup engaging portion (**24**); a base linkage (**86**) connected tangentially to each of said second and fourth cup engaging portions (**16, 24**); a cross bar (**54**) connected between said second and fourth cup engaging portions (**16, 24**) at a location distinct from said base linkage; a center strip (**52**) connected to said cross bar (**54**); arc shaped bail portions (**30**) extending tangentially from each of said second and fourth cup engaging portions (**16, 24**); a handle portion (**28**) extending between said bail portions (**30**); a length expansion element (**60**) connected between said center strip (**52**) and said handle portion (**28**), said expansion element having portions (**64**) lying against outer edges of said first and third cup engaging portions (**12, 20**); tear away locations (**68**) between said portions (**64**) of aid expansion element and said first and third cup engaging portions (**12, 20**); and stabilizer bars (**82**) extending between said bail portions (**30**) and each of said first and third cup engaging portions (**12,20**).

5,061,000
RACK FOR PICKUP TRUCK
Ronald E. Haugen, and David T. Murphy, both of Forest City, Iowa, assignors to VIX Design Products, Inc., Forest City, Iowa
Continuation-in-part of Ser. No. 453,498, Dec. 20, 1989. This application May 14, 1990, Ser. No. 522,907
Int. Cl.[5] B62D 33/00; F16B 13/12; F16L 21/06
U.S. Cl. 296—3 20 Claims

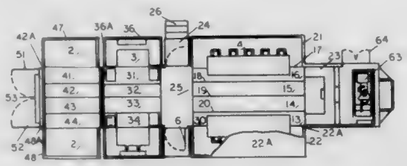
1. A rack adapted to be mounted on a box of a pickup truck comprising: a plurality of frame members including a first corner unit having first tubular members and first upright means for supporting the first corner unit on a first top section of the box, a second corner unit having second tubular members and second upright means for supporting the second corner unit on a second top section of the box, transverse tubular means connected to each corner unit, a pair of first tubular side members secured to the first tubular members, a pair of second tubular side members secured to the second tubular members, a first tubular end member secured to the first side members opposite the first corner unit, the first end member having first arm means secured to one of the first side members opposite the first corner unit, a second tubular end member secured to the second side members opposite the second corner unit, the second end member having second arm means secured to one of the second side members opposite the second corner unit, and leg means for supporting the end members on the box; joiner means cooperating with adjacent end sections of the frame members to secure the frame members in end-to-end relationship, said joiner means comprising at least one expandable insert means having a longitudinal opening located within the adjacent end sections of the frame members, the insert means having first and second jaws on opposite sides of the longitudinal opening, the first and second jaws having adjacent spaced surfaces providing said longitudinal





opening, each spaced surface having longitudinal grooves therein; and expander means mounted on the adjacent end sections of the frame members and extended into the opening in the insert means, said expander means comprising tapered threaded means extended through the adjacent end sections of the frame members engageable with the longitudinal grooves to expand the insert means into tight engagement with the adjacent end sections of the frame members.

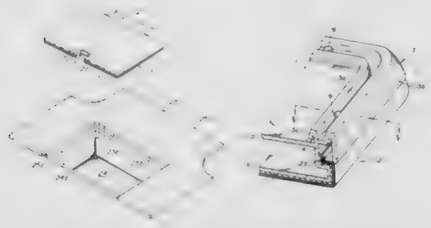
5,061,001
EXPANDABLE MODULAR SYSTEM
Michael D. Madden, and James S. Maginnis, Jr., both of Louisville, Ky., assignors to Mobile Systems Research Manufacturing, Inc., Louisville, Ky.
Filed May 26, 1988, Ser. No. 199,272
Int. Cl.[5] B62D 33/08
U.S. Cl. 296—26 3 Claims



1. An expandable enclosure including chassis means having a longitudinal axis, first and second extensible-retractable floor support means adapted to be extended laterally from opposite sides of said chassis to a first position and retracted to second position with said floor support means located inwardly from said first position; cantilever support means to secure said first and second floor support means to said chassis means to allow the extension and withdrawal of said first and second floor support means; frame assembly including first and second fixed frame means secured to said first and second floor support

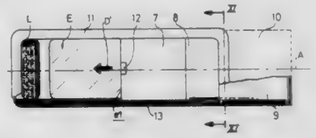
means respectively where the length of each of said first and second frame means in a distance transverse to said longitudinal axis is less than the distance from the center of said chassis to the outer edge of said respective first or second floor support means where said first and second frame means are connected at their respective inner edges to first, second, third, and fourth articulated frame means, whereby said first, second, third and fourth articulated frame means are disposed in "AA" configuration when said frame members are in said second position and move to co-planar relation with said first and second frame means in said first position; and motive means to move said first and second frame means between said first and second positions.

5,061,002
PARTITION PLATE FOR AUTOMOTIVE VEHICLE
Hitoshi Saso, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Nov. 28, 1990, Ser. No. 618,927
Claims priority, application, Japan, Mar. 22, 1990, 2-29271[U]
Int. Cl.[5] B62D 43/10
U.S. Cl. 296—37.3 14 Claims



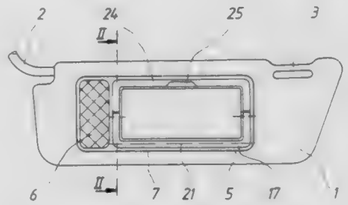
1. A partition plate used for a luggage compartment of a vehicle, comprising:
a board having first and second surfaces which are opposite to each other, and a side peripheral surface through which said first and second surfaces are connected;
a trim member secured on said first surface, a peripheral section of said trim member extending to said side peripheral surface; and
a garnish having an installation section at which said garnish is secured to said board second surface, an inner wall section which is integral with said installation section and located inside said installation section, said inner wall section extending to be contacted with said board second surface, and an outer wall section which is integral with said installation section and located outside said installation section, said outer wall section extending to said board side peripheral surface and covering the peripheral section of said trim member.

5,061,003
COVER FOR AUTOMOBILE SUN VISOR MIRRORS
Carlos Gabas, Barcelona, Spain, assignor to Industrias Techno-Matic S.A., Espronceda, Spain
PCT No. PCT/ES89/00004, § 371 Date Aug. 17, 1991, § 102(e) Date Aug. 17, 1991, PCT Pub. No. WO90/07436, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 19, 1989, Ser. No. 566,408
Claims priority, application Spain, Dec. 26, 1988, P8803959
Int. Cl.[5] B60J 3/00
U.S. Cl. 296—97.1 7 Claims



1. A cover for an automobile sun visor mirror mounted in a mirror frame of a sun visor body, said mirror frame having side walls and said mirror having a main horizontal axis, comprising a plurality of rigid, substantially rectangular, overlapping sheet-like plates, said sheet-like plates having a plurality of outermost end edges and regions in the vicinity of said outermost end edges, knob means attached to one of said plates adjacent one of said outermost end edges, means for connecting said sheet-like plates in continuous chain-like succession so that said plates are slidable over one another in an opening and closing direction of said cover, said plates being mounted in said mirror frame and fitting smoothly but slidably between said side walls of said mirror frame, said side walls having guideways in which said plates are engagable and extending inside said sun visor body so as to form an internal container having a length in said opening and closing direction at least substantially equal to a minimum length of said plurality of said plates when said plates are overlapped to a maximum extent and having a height at least approximately equal to a thickness of said plates so overlapped to said maximum extent so that said plates are concealable in said internal container except for said knob means and for said regions at said outermost end edges of said plates.

5,061,004
VEHICLE SUN VISOR WITH REVERSIBLE MIRROR
Otto Happich, and Kurt Cziptschirsch, both of Wuppertal, Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany
Filed Feb. 5, 1991, Ser. No. 650,487
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1990, 4007185
Int. Cl.[5] B60J 3/02
U.S. Cl. 296—97.5 12 Claims



1. A sun visor for a motor vehicle, comprising:
a sun visor body having opposite wide flat sides, a recess defined in one of the flat sides of the visor body; a generally trough-shaped housing in the recess, the housing being open facing out of the flat side of the visor body;
a reversible mirror mounted in the housing, the mirror hav-

ing a front side and a rear side, the mirror having opposite lateral sides;

a yoke in the housing recess, the yoke comprising two spaced apart side arms passing by the opposite lateral sides of the mirror, and a cross arm joining the two yoke side arms; means mounting the cross arm in the housing for pivoting generally around the axis of the cross arm for enabling the two side arms to be swung away from the housing;

the mirror being mounted between the side arms for being turnable with respect to the side arms so that one of the front and rear sides of the mirror may be turned to face outward when the yoke arms have been swung out of the housing.

5,061,005

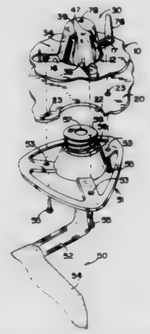
SNAP-IN VISOR MOUNT

Kim L. Van Order, Hamilton; Todd A. Zandbergen, and Rodger A. Price, both of Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 394,937, Aug. 16, 1989, Pat. No. 4,989,911. This application Sep. 4, 1990, Ser. No. 577,330

Int. Cl.[5] B60J *3/00*

U.S. Cl. 296—979 **33 Claims**



1. A mounting member for the snap-in mounting of a vehicle visor within an aperture formed in the roof of a vehicle comprising:

a spider-like member having a center hub and a plurality of alternately staggered legs extending downwardly and outwardly from said hub and in which first ones of said legs each terminate in a mounting base for engagement with a lower side of a vehicle roof wherein said mounting base at the end of each of said first legs include aperture means for receiving fasteners for attaching a visor bracket to said mounting member, and second ones of said legs terminate in ends which grip the upper side of a vehicle roof.

5,061,006

METHOD FOR EXPANDABLE SLEEPING COMPARTMENTS FOR VEHICLES

Milo Baughman, 24 S. 600 East, Salt Lake City, Utah 84102

Division of Ser. No. 366,553, Jun. 15, 1989, Pat. No. 5,011,216. This application Sep. 5, 1990, Ser. No. 578,044

Int. Cl.[5] B60P *3/39, 3/34*

U.S. Cl. 296—164 **4 Claims**

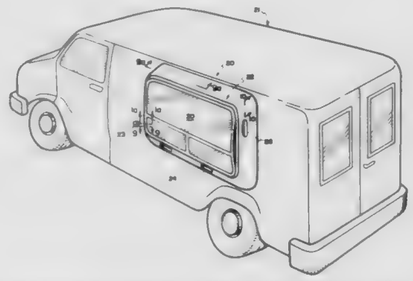
1. A method of selectively providing enlarged sleeping quarters for a vehicle, without materially reducing or encumbering an interior space for people in the vehicle comprising the steps of:

placing a substantially rigid casing around a side opening external of the vehicle;

providing a collapsible/extendable canopy of cloth-like material and a separate collapsible/extendable canopy support structure;

placing the collapsible/extendable canopy in connected concurrently movable relation with the collapsible/extendable canopy support structure and disposing the canopy and the canopy support structure collectively in a generally horizontally collapsed condition between and respectively connected to the casing and the vehicle externally juxtaposed the side opening;

releasibly securing the casing in a releasibly secured relationship to the vehicle externally around the side opening during nonuse against inadvertent relative displacement; and



releasing the casing from said releasibly secured relationship with the vehicle and manually substantially rectilinearly displacing the casing in a generally horizontal direction and simultaneously and collectively extending the canopy and the canopy support structure from said collapsed condition to substantially rectilinearly expanding the canopy and the canopy support structure to a generally horizontally extended position spanning away from the vehicle in such a way that the canopy support structure travels with and provides cantilevered support to the canopy during expansion.

5,061,007

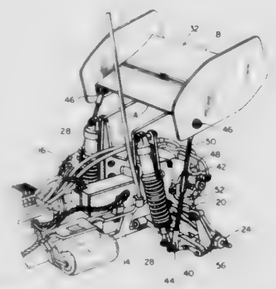
TORSIONALLY ADJUSTABLE VEHICLE WING FOR UNEVEN APPLICATION OF NEGATIVE LIFT TO THE WHEELS

William E. Simpson, 696, Kaneohe, Hi. 96744

Filed Nov. 13, 1989, Ser. No. 434,293

Int. Cl.[5] B62D *35/00*

U.S. Cl. 296—180.5 **16 Claims**



1. In combination, a vehicle including a body defining a longitudinal center axis and at least one pair of opposite side support structures mounted from said body for up and down movement relative thereto and from which the weight of the body is yieldingly supported, an elongated wing extending at generally right angles relative to said center axis, mounting means mounting said wing from said body in position to be acted upon by air through which said vehicle moves and for angular displacement of said wing relative to said body about an axis generally paralleling said wing, and adjustment means operatively connected between said support structures and wing at positions offset from said last mentioned axis operative to oscillatably angularly adjust said wing responsive to up and down oscillation of said support structures relative to said body, said wing being relatively stiff and shape retentive, but longitudinally torsionally flexive, said support structures being mounted from said body for independent up and down movement relative thereto, said adjustment means including adjustment structures operatively connected between said support structures and different end portions of said wing, whereby unequal shifting of said support structures relative to said body will result in longitudinal torsional flexure of said wing.

5,061,008

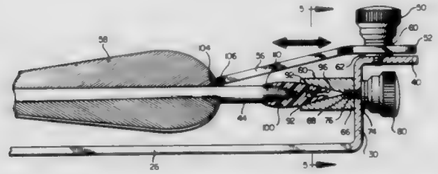
FIXTURE FOR ARROW NOCK AND FLETCHING ORIENTATION

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed Dec. 8, 1989, Ser. No. 447,883

Int. Cl.[5] B25B *1/20*

U.S. Cl. 269—38 **6 Claims**



1. A fixture for selectively and reproducibly positioning and orienting an arrow nock for securement of a shaft of a fletched arrow,

said fixture comprising frame means including an elongate base and arm means for supporting a linear section of an overlying arrow shaft carried thereby,

generally tubular, sleeve-like, nock-securing, open ended socket means carried by said base at one end thereof,

said socket means being adapted to receive a slotted end portion of an arrow nock projecting axially therewithin;

adjustable means for restraining the arrow nock in said socket means against annular rotation with respect thereto,

rod-like guide pointer means extending generally along and overlying the shaft of an arrow carried on said frame means, and means for releasibly locking said pointer means on said frame means against rotation in a plane generally paralleling a plane of the arrow shaft, and for securing said pointer means in a selectable positional attitude overlying the shaft of an arrow carried on said frame means,

said pointer means delineating a reference alignment and correspondence with an arrow-shaft-mounted vane for facilitating establishment of a repeatedly reproducible orientational registry with the vane on the shaft of an arrow supported on said frame means.

5,061,009

FRONT VEHICLE BODY STRUCTURE

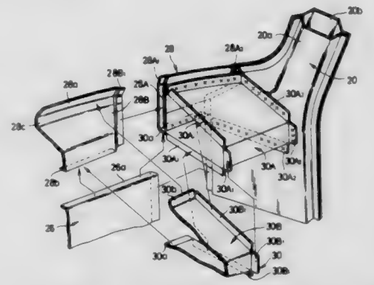
Hayntsugu Harasaki, and Kohji Noma, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 31, 1990, Ser. No. 606,201

Claims priority, application Japan, Oct. 31, 1989, 1-127769[U]; Oct. 31, 1989, 1-127770[U]; Oct. 31, 1989, 1-127771[U]; Feb. 15, 1990, 2-014471[U]

Int. Cl.[5] B62D *25/08*

U.S. Cl. 296—192 **18 Claims**



1. A front vehicle body structure in which a cowl front panel, which comprises an arcuated glass support portion for supporting a front window glass so that said glass support portion is located behind a dash lower panel at two side portions in a widthwise direction of a vehicle, and is located in front of said dash lower panel at a central portion in the widthwise direction of the vehicle, extends along the widthwise direction of the vehicle in a front portion of the vehicle,

wherein said cowl front panel is split into three members including two side split members and one central split member at positions where said glass support portion intersects said dash lower panel, and

said two side split portions and said one central split member are joined at the intersections.

5,061,010

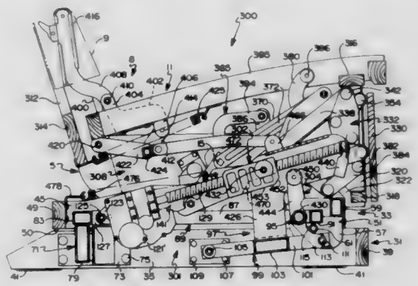
CAM GUIDE DRIVE MECHANISM FOR POWER-ASSISTED CHAIRS AND THE LIKE

Larry P. LaPointe, Temperance, Mich., assignor to La-Z-Boy Chair Co., Monroe, Mich.

Continuation-in-part of Ser. No. 425,384, Oct. 18, 1989, Pat. No. 4,993,777, which is a continuation of Ser. No. 196,750, May 20, 1988, abandoned. This application Nov. 14, 1990, Ser. No. 613,355

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—325 **25 Claims**



1. A power-assist chair comprising:

a base assembly;

a chair frame pivotally supported on said base assembly;

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a seat assembly having a seat member, a seat back and swing link means for pivotally interconnecting said seat back and said seat member to said chair frame for reclining movement between an upright position and a reclined position;

a rotatable drive shaft extending transversely between opposite side portions of said chair frame;

a leg rest assembly supported from said chair frame and operatively coupled to said drive shaft for movement between a retracted position upon rotation of said drive shaft in a first direction, and an extended position upon rotation of said drive shaft in a second direction;

first follower means supported for pivotal movement on said base assembly and operably interconnected to said drive shaft;

second follower means supported for pivotal movement on said base assembly and operably interconnected to said swing link means;

linear actuation means for selectively actuating said swing link means and said leg rest assembly, said linear actuation means including a cam guide member adapted for translational movement and having first cam surface means engageable with said first follower means for causing corresponding rotation of said drive shaft in said second direction so as to extend said leg rest assembly, and second cam surface means engageable with said second follower means for causing corresponding movement of said swing link means so as to move said seat assembly to said reclined position; and

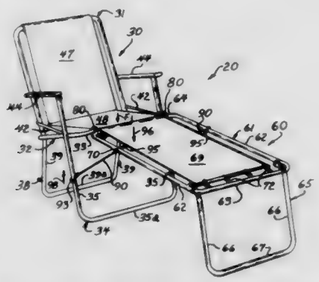
spring return means for biasing said first and second follower means in opposition to said first and second cam surface means, respectively, such that said leg rest assembly is biased toward said retracted position and said swing link means is biased toward said upright position.

5,061,011

CHAISE LOUNGE WITH STABILIZER RODS

Robert H. Miller, Schaumburg, Ill., assignor to NuZip Dee Manufacturing Company, Inc., Elk Grove Village, Ill.

Filed Jun. 28, 1990, Ser. No. 544,961
Int. Cl.[5] A47L *16/00*
U.S. Cl. 297—438 **14 Claims**



1. A chaise lounge comprising: a chair including a back, a seat generally perpendicular to said back, and front and rear leg assemblies at opposite ends of said seat; each of said front and rear leg assemblies having two upstanding leg portions with said front leg portions extending angularly forwardly from said seat, a lounge member including a generally rectangular frame member including two parallel spaced-apart and longitudinally extending members, a leg assembly at one end of said frame member, and means for connection to said chair at the other end; and means for stabilizing said chair and said lounge member when said chair and said lounge member are connected, said stabilizer means including two rods each connected between one of said front leg portions and one of said spaced-apart longitudinally extending members, each stabilizing rod having pivot means thereon being connected to the associated one of said parallel spaced-apart longitudinally extending members and having hook means connected to the associated one of said front leg portions wherein said hook means extends behind the associated leg portion such that downward force at the connection between said seat and said lounge member causes said stabilizing rods to be under tension.

5,061,012

CHILD CAR SEAT WITH AUTOMATIC HARNESS ADJUSTMENT

Robert M. Parker, Aurora; Douglas Golenz, Westminster; Roy E. Knoedler, and Gregg Harvey, both of Boulder, all of Colo., assignors to Gerry Baby Products Company, Denver, Colo.

Filed Sep. 4, 1990, Ser. No. 577,695
Int. Cl.[5] A47D *15/00*
U.S. Cl. 297—467 **19 Claims**



1. A chile car seat having a back and a seat member, comprising:

a) center stock means pivotally connected to the seat member, wherein said center stock means is pivotable between at least a first center stock position and a second center stock position;

b) barrier means pivotally connected to the chile car seat and detachably connected to said center stock means when said center stock means is in said first center stock position;

c) harness means having a first end and a second end, wherein said first end is interconnected with said barrier means;

d) adjuster means connected to said second end of said harness means, said adjuster means being movable between at least a first adjuster position and a second adjuster position, said first adjuster position restricting movement of said harness means relative to said adjuster means in a first direction, said second adjuster position allowing movement of said harness means relative to said adjuster means in said first direction; and

e) means for interconnecting said center stock means and said adjuster means, wherein when said center stock means is in said first center stock position said adjuster means is in said first adjuster position and when said center stock means is in said second center stock position said adjuster means is in said second adjsuter position.

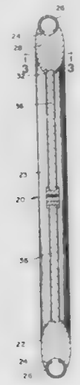
5,061,013

BICYCLE RIM AND WHEEL

Steven A. Hed, 1665 9th St. W., White Bear Lake, Minn. 55110, and Robert B. Haug, 52 Malcom St., Minneapolis, Minn. 55414

Filed Oct. 20, 1989, Ser. No. 424,492
Int. Cl.[5] B60B *5/02, 21/00*
U.S. Cl. 301—63 PW **36 Claims**

1. An aerodynamic bicycle wheel rim adapted for mounting a tire thereto comprising a circumferential tire mounting surface and a streamlined toroidal inner rim surface extending from a first edge of said tire mounting surface to a second edge of said tire mounting surface, the ratio of maximum width of



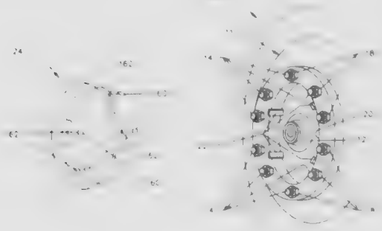
said rim to the intended tire diameter being in the range of from 1.05 to 1.5.

5,061,014

AXLE CAP FOR TRUCK WHEELS HAVING FOUR, FIVE OR SIX LOCATORS

John G. Polka, 1355 Margate, Libertyville, Ill. 60048

Filed Dec. 11, 1990, Ser. No. 625,431
Int. Cl.[5] B60B *7/06*
U.S. Cl. 301—108 R **10 Claims**



1. A cap for covering the central opening of a truck wheel while the wheel is mounted on the hub of a truck, the hub having four, five or six locators spaced around the hub, the locators projecting outwardly in parallel relationship with each other so as to project through the central opening of the wheel to position the wheel on the hub, said cap comprising in combination:

a body portion adapted to cover said locators and the hub of said wheel and having a circular outer perimeter,

a plurality of arcuate flanges spaced around the circumference of said body portion, said flanges forming segments of a hollow cylinder and projecting away from one side of said body,

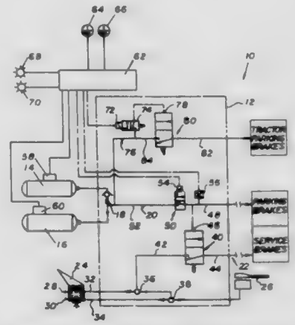
said flanges having arcuate lengths and positions around the circumference of said body portion such that said flanges will fit between the locators of hubs having four, five and six locators.

5,061,015

TRACTOR PROTECTION CONTROL SYSTEM

Kenneth L. Cramer, Jamestown, N.Y., and Jeffrey J. Krause, Westlake, Ohio, assignors to Allied-Signal Inc., Morristown, N.J.

Filed Apr. 12, 1990, Ser. No. 508,766
Int. Cl.[5] B60T *13/00, 13/38, 15/00*
U.S. Cl. 303—7 **2 Claims**



1. Fluid pressure braking system comprising a fluid pressure source, a supply line for supplying fluid pressure from said source to a portion of said system, a service line for supplying pressure signals to said portion of said system, said portion of said system including mechanically applied parking brakes released by fluid pressure communicated through said supply line and service brakes responsive to pressure signals for controlling a service brake application communicated through said service line, operator actuated control valve means for controlling communication through said service line and thereby communicating said pressure signals through the service line, first electrically actuated valve means for opening and closing communication through said supply line, first operator actuated switch means for controlling said first electrically actuated valve means, service line valve means for opening communication through said service line when communication through said supply line is open and closing communication through said service line when communication through said supply line is closed, said service line valve means including a pilot pressure inlet and being shifted between positions opening and closing communication through said service line by pilot pressure communicated through said pilot pressure inlet, said pilot pressure inlet being communicated to said supply line downstream of said electrically actuated valve means whereby said electrically actuated valve means controls communication of pilot pressure to said pilot pressure inlet, said system further including another portion including mechanically applied parking brakes released by fluid pressure, second electrically actuated valve means for controlling communication to said parking brakes of said another portion, and second operator-activated switch means for opening and closing said second electrically actuated valve means, said second electrically actuated valve means including a valve assembly having a pilot pressure inlet, said valve assembly being shifted between positions opening and closing communication to said last mentioned mechanically applied parking brakes by pilot pressure communicated through said pilot pressure inlet, said second electrically activated valve means further including an electrically actuated valve assembly operated by said second operator-actuated switch means for controlling communication of said pilot pressure to said pilot pressure inlet.

2. Fluid pressure braking system for a combination vehicle comprising a tractor portion and a trailer portion comprising a fluid pressure source carried by said tractor portion, a supply line for supplying fluid pressure from said source to said trailer portion of said system, a service line for supplying pressure signals to said trailer portion of said system, said trailer portion

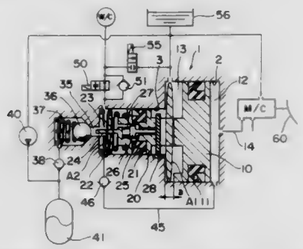
of said system including mechanically applied parking brakes released by fluid pressure communicated through said supply line and service brakes responsive to pressure signals communicated through said service line for effecting a service brake application, operator actuated valve means on said tractor portion for controlling communication through said service line and thereby communicating said pressure signals through the service line, first electrically actuated valve means carried by the tractor portion for opening and closing communication through said supply line, first operator actuated switch means for controlling said first electrically actuated valve means, service line valve means carried by the tractor portion for opening communication through said service line when communication through said supply line is open and closing communication through said service line when communication through said supply line is closed, said service line valve means including a pilot pressure inlet and being shifted between positions opening and closing communication through said service line by pilot pressure communicated through said pilot pressure inlet, the tractor portion of said system including mechanically applied parking brakes released by fluid pressure, second electrically activated valve means for controlling communication to said last mentioned parking brakes, and second operator-actuated switch means for opening and closing said second electrically actuated valve means, said second electrically actuated valve means including a valve assembly having a pilot pressure inlet, said valve assembly being shifted between positions opening and closing communication to said mechanically applied tractor portion parking brakes by pilot pressure communicated through said pilot pressure inlet, said second electrically actuated valve means further including an electrically actuated valve assembly operated by said switch means for controlling communication of said pilot pressure to said pilot pressure inlet.

5,061,016

BRAKE FLUID PRESSURE CONTROL APPARATUS

Yoshiaki Hirobe, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Japan

Filed Dec. 26, 1989, Ser. No. 456,176
Claims priority, application Japan, Dec. 28, 1988, 63-332365
Int. Cl.[5] B60T *8/44*
U.S. Cl. 303—114 R **3 Claims**



1. A brake fluid pressure control apparatus in a vehicle brake system comprising:

a housing consisting of a large-diameter section and a small-diameter section;

a large-diameter piston and a small diameter piston which is connected to said large-diameter piston, both being fitted into said housing, said large-diameter piston and said small-diameter piston being slidably engaged in said large-diameter section and small-diameter section, respectively;

a first seal provided between the large-diameter section and a periphery of the large-diameter piston and a second seal between the small-diameter section and a periphery of the small-diameter piston;

a pressurizing chamber which is provided in said large-diameter section on the side of said large-diameter piston situated further from said small-diameter section and which is connected to a master cylinder M/C of said vehicle brake system;

a fluid pressure chamber provided in said small-diameter section and connected to a wheel cylinder W/C of said vehicle brake system;

a fluid supply passage connecting said fluid pressure chamber to a fluid pressure source of said vehicle brake system;

a first nominally-closed type check valve provided in said fluid supply passage and adapted to be opened by the movement of said small-diameter piston;

a step section of said large-diameter and small-diameter pistons defining, together with said housing, a back chamber which is connected to a reservoir for receiving brake fluid;

a normally-closed type decay valve provided in the fluid passage connecting said wheel cylinder W/C to said reservoir; and

a hold valve provided in the fluid passage connecting said fluid pressure chamber to said wheel cylinder W/C;

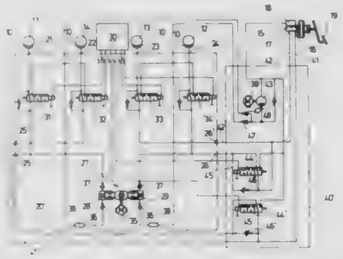
said large-diameter piston and said small-cylinder piston being moved toward said fluid supply passage by a pressure rise in said pressurizing chamber that is caused by said master cylinder M/C, thereby opening said check valve and transmitting the pressure fluid from said fluid pressure source through said fluid pressure chamber to said wheel cylinder W/C, and said hold valve is closed and said decay valve is opened when the pressure in the wheel cylinder W/C is decreased to prevent the wheels from becoming locked.

5,061,017

HYDRAULIC DUAL-CIRCUIT BRAKE SYSTEM

Lothar Kirstein, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1990, Ser. No. 622,565
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1990, 4010411
Int. Cl.[5] B60T *8/40*
U.S. Cl. 303—116 SP **9 Claims**



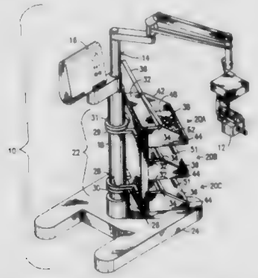
1. An hydraulic dual-circuit brake system with an anti-skid system and traction control for motor vehicles, comprising a master brake cylinder with two separate brake circuit outlets for controlling a brake pressure by brake pedal actuation; a brake fluid tank communicating with the master brake cylinder; a four-channel hydraulic unit connected to the two separate brake circuit outlets of the master brake cylinder, said hydraulic unit having four outlet channels for connecting wheel brake cylinders of the vehicle wheels, control valves embodied as 3/3-way magnetic valves provided with spring restoration each associated with one outlet channel for controlling a brake pressure as a function of wheel slip, a return pump with two separate pumping elements, each effective in one brake circuit, for returning brake fluid from the wheel brake cylinders into the master brake cylinder upon brake pressure reduction, said pumping elements connected on an inlet side via the control valves to outlet channels belonging to the one brake circuit and on an outlet side to the brake circuit outlet of the master brake cylinder associated with that brake circuit; an additional hydraulic unit for generating a brake supply pressure for traction control, said additional hydraulic unit having connection means for connecting the brake fluid tank to the inlet of the return pump and switching means for alternatingly connecting the outlet of the return pump to the master brake cylinder or to the brake fluid tank, the switching means having at least one 3/3-way magnetic valve (**44**) provided with spring restoration and a pressure limiting valve (**46**) disposed in a valve bypass (**45**); said 3/3-way magnetic valve (**44**) having three controlled valve connections, a first said valve connection communicating with the outlet of a pumping element (**29**) of the return pump (**27**) associated with one brake circuit having at least one driven wheel (**11, 12**), a second said valve connection communicating with that brake circuit outlet (**17**) of the master brake cylinder (**15**) associated with that brake circuit, a third said valve connection communicating with the brake fluid tank (**18**); and the switching means 3/3-way magnetic valve (**44**) is embodied such that the first valve connection, in an unexcited first valve position communicates with the second valve connection and, in a third valve position established by maximum current excitation, communicates with the third valve connection, and in a second valve position, adjustable by excitation with half the maximum current, all the valve connections are blocked.

5,061,018

MICROSCOPE ACCESSORY EQUIPMENT CONTAINER

Jane M. Pederson, and William R. Johnson, both of Largo, Fla., assignors to Time Surgical, Inc., Largo, Fla.

Continuation-in-part of Ser. No. 503,271, Apr. 2, 1990, abandoned. This application Sep. 28, 1990, Ser. No. 590,658
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—209 **20 Claims**



1. On a surgical stand having an upright post mounted on a supporting member resting on a floor and at least one microscope and supporting apparatus pivotably mounted on an upper portion of the post, the improvement comprising

a microscope accessory equipment container mounted on a portion of the post below said at least one microscope, the container having a planar rectangular ceiling with a hinged lid along a front edge of the ceiling, the hinged lid descending downwardly from the front edge to rest on a top edge of a front wall,

the front wall being joined on opposite side edges to front edges of a right and a left side wall, the side walls being joined at opposite bottom edges to a planar floor, at opposite top edges to the ceiling and on opposite rear side edges to an upright back wall, the back wall being joined to a rear edge of the ceiling,

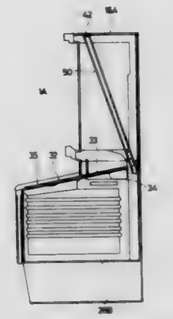
the hinged lid spanning a gap between the side walls and between the ceiling and the planar floor to form a closed container when the hinged lid is resting on the top edge of the front wall.

5,061,019

HEAT INSULATING BOX STRUCTURE AND MANUFACTURING METHOD THEREFOR

Toshiaki Kubota, Ora; Hiroshige Hayashi, Oizumi; Yoshirou Ishizaka, Ora; Hiroshi Naganuma, Oizumi, and Zenichi Kakinuma, Sano, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 16, 1990, Ser. No. 509,965
Claims priority, application Japan, Apr. 18, 1989, 1-98326
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—214 **6 Claims**



1. A heat insulating structure having a lower case whose top surface is arranged to be an opening through which goods are inserted and withdrawn and an upper case whose front surface is arranged to be an opening through which goods are inserted and withdrawn, said heat insulating structure comprising:

a box structure forming each said upper case and said lower case each box structure having a coupled inner box and an outer box whose walls are spaced from each other leaving a respective gap between the walls of said two boxes of each of the upper and lower cases;

at least two pour holes formed in a wall of one of said upper and said lower case box structures;

a passage for establishing communication between each of said gaps formed between the respective box structures of said upper case and said lower case;

a heat insulating pipe having one end portion communicating with one of said two pour holes of said one case, said pipe extending from said one pour hole and through said gap of said one case and having its other end portion communicating with said gap of said other case;

solidified foam heat insulating material in the gap of said one case formed from the injection of a foam solution through said other pour hole in said one case into said gap of said one case; and

solidified foam heat insulating material in the gap of said other case formed by the injection of a foam solution through said one pour hole of said one case and through said pipe to said gap of said other case.

5,061,020

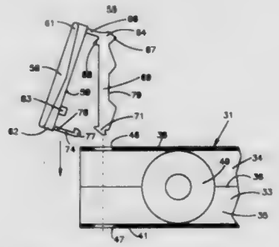
DISHWASHER RACK CHANNEL CAP

David J. Ulrich, Brookville, Ind., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 30, 1990, Ser. No. 559,259
Int. Cl.[5] A47B *77/06*
U.S. Cl. 312—228 **16 Claims**

1. In a dishwasher having a slidable rack carried on support means on the side walls of the dishwasher tub, said support means including C-shaped channels on each of the side walls and rollers journaled on said rack fitting within each of said channels and a cap at one open channel end, the improvement in said cap being a unitary end closure for releasably engaging the end of said channel, said channel having upper and lower

opposed wall portions with aligned openings spaced from said open end, said end closure including a body portion engageable with said open end and an arm portion extending through



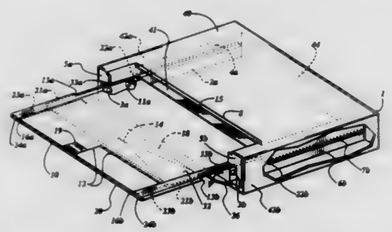
said aligned openings, said arm portion being joined to said body portion by a hinge portion adjacent one of said wall portions, said arm portion and said body portion having interengaging detent means adjacent the other of said wall portions.

5,061,021

FLAT FILE

Roland K. Rodum, 2870 Cobb St., NE., Marietta, Ga. 30068

Continuation of Ser. No. 359,977, Jun. 1, 1989, abandoned. This application Aug. 30, 1990, Ser. No. 575,194
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—231 **11 Claims**



1. A flat file for storing drawings, comprising:

a box-like cabinet having a top panel and a bottom panel, two side panels, and a rear panel, said top panel and said bottom panel being larger in size than the drawings to be stored within said cabinet;

a board suitably mounted at a first position within said cabinet from which position said board can be moved to a second position substantially outside of said cabinet;

said board including, at least, a top surface and linear indentations defined in said top surface running from the front to the back of said board, parallel to said cabinet side panels;

keeper means, mounted to said cabinet above said board and extending into said linear indentations, for keeping any drawings stacked on top of said board within said cabinet as said board is moved from the first position to the second position; and

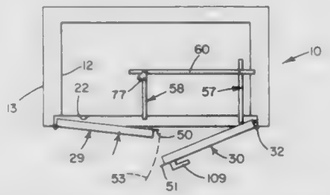
a gate at the front of said cabinet, below the plane of the board, that can be opened to allow drawings to be inserted into or removed from said cabinet below said board.

5,061,022

DOOR CLOSING MECHANISM

Jon D. Meriwether, Follansbee, W. Va., assignor to The Louis Berkman Company, Steubenville, Ohio

Filed Jun. 11, 1990, Ser. No. 535,701
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—324 **25 Claims**



1. A door arrangement for a safety cabinet adapted to store paint and similar combustible materials, said cabinet having an opening defined by right and left hand jambs and a top and bottom frame extending therebetween, said arrangement comprising:

a first door and a second door;

hinge means at each joint for pivotally connecting said first door to one jamb and said second door to the other one of said jambs and permitting said doors to rotate from a closed position whereat said doors cover said cabinet's opening to an open position whereat said doors pivot adjacent to said jambs to allow access to said cabinet through said opening;

door closure means affixed to each door for biasing each door into its closed position;

temperature sensing means associated with said door closure means and operable to maintain said doors in their open position against the bias of said closure means until a predetermined temperature is sensed whereat said temperature sensing means permit said door closure means to close said doors;

door sequencing means operable against the bias of said door closure means to permit one of said doors to close prior to the other door;

self-latching means operable when said doors are in their closed position to automatically latch said door to said cabinet;

said self-latching means includes in said first door a door actuating lever;

stop means associated with said actuating lever and said jamb at which said first door is hinged for moving said actuating lever with respect to said first door from a locked position when said first door is opened to an unlocked position when said first door is closed;

door actuating lever spring means biasing said actuating lever towards its locked position;

a positioning lever adjacent to said door actuating lever; positioning lever guide means permitting said positioning lever to move with respect to said first door from a locked position when said first door is in its opened position to an unlocked position when said first door is in its closed position;

positioning lever spring means biasing said positioning lever to its unlocked position;

locking and unlocking means associated with said levers for locking said levers when in a locked position and actuated, upon movement of said actuating lever by said stop means, for unlocking said levers when in their unlocked positions; and

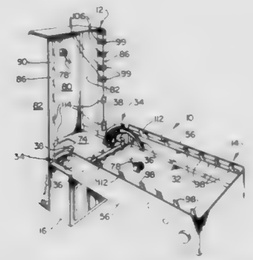
door latch means operably connected to said positioning lever for automatically latching said first door to at least one of said frame members when said first door is in its closed position.

5,061,023

TELEPHONE TERMINAL BASES

Marc P. Soubliere, and Edward J. Foster, both of London, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 6, 1990, Ser. No. 549,035
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—328 **11 Claims**



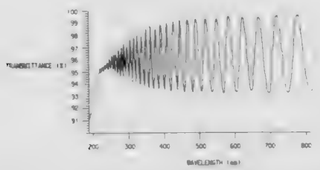
1. A telephone terminal base having a rear closure member for mounting on a vertical support, the rear closure member comprising an internal horizontal platform, and a front closure member which is mounted upon the rear closure member about a horizontal hinge axis by a hinge structure means which comprises two pairs of hinge parts, the pairs disposed in spaced positions in a direction parallel to the hinge axis and each pair comprising a hinge part secured to the horizontal platform of the rear closure member and a hinge part upon the front closure member with the hinge parts of each pair slideably movable one upon the other along an arc of a circle centered on the horizontal hinge axis to angularly move the front closure member between a closed position upon the rear closure member with the front closure member disposed above the platform and in which the hinge axis is disposed forwardly of the front closure member, and an open position towards which the front closure member is hingedly moved forwardly from the rear closure member, the hinge parts spaced from the horizontal hinge axis to lie entirely within the telephone terminal base with the front closure member in the closed position; and wherein provision for coin storage and coin return is provided below the platform and the front closure member carriers a set of telephone dialing buttons.

5,061,024

AMORPHOUS FLUOROPOLYMER PELLICLE FILMS

Dalen E. Keys, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1989, Ser. No. 403,644
Int. Cl.[5] G02B *1/04*
U.S. Cl. 359—350 **7 Claims**



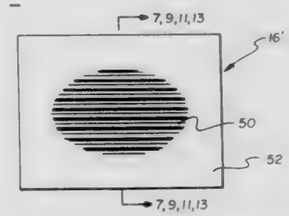
1. A pellicle comprising a thin, durable film of substantially uniform thickness which absorbs less than 10% light at wavelengths between 190 and 820 nanometers, tautly adhered to one edge of an enclosed support frame, said thin film comprising amorphous fluoropolymers having a refractive index between 1.24 and 1.41.

5,061,025

HOLOGON SCANNER WITH BEAM SHAPING STATIONARY DIFFRACTION GRATING

John R. Debesis, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1990, Ser. No. 508,617
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] G02B *27/46*
U.S. Cl. 359—18 **3 Claims**



1. Scanning apparatus for scanning a radiation spot along a line at a target, comprising:

a) a source of coherent radiation;

b) a hologon mounted for rotation about an axis to scan a beam of radiation incident thereon;

c) means for forming radiation from the source into a collimated beam;

d) a shaped stationary diffraction grating for receiving the collimated beam, and directing a portion of the beam having a desired shape onto the hologon at a predetermined angle the shaped diffraction grating having a central portion having a high diffraction efficiency, surrounded by a peripheral portion having a reduced diffraction efficiency;

e) a target station for receiving the scanned beam; and

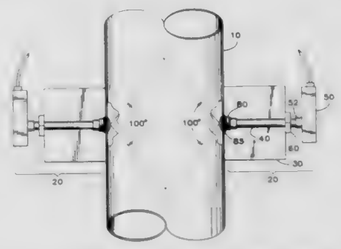
f) an $f\theta$ lens located between the target station and the hologon for focusing the shaped beam to a spot at the target station.

5,061,026

LIGHT ROD ASSEMBLY FOR SPARK DETECTION SYSTEM

W. James Clarke, and Kris J. Newman, both of Eugene, Oreg., assignors to Clarke's Sheet Metal, Inc., Eugene, Oreg.

Filed Aug. 23, 1990, Ser. No. 572,904
Int. Cl.[5] G02B *6/00, 6/14*
U.S. Cl. 385—31 **10 Claims**



1. A light rod assembly for coupling photo energy detected in a zone of interest, defined at least in part by a wall member, to a photosensor device converting such energy into an electrical signal, said assembly comprising an elongate rigid rod having optical transmission characteristics in the infrared spectrum, a pane of quartz glass optically coupled to one end of said rod, said photosensor device being coupled to the other

end thereof, and means adapted to be mounted to said wall member proximate an opening therein, said means removably holding said rod and said pane in fixed positions relative to each other and to said zone.

5,061,027

SOLDER-BUMP ATTACHED OPTICAL INTERCONNECT STRUCTURE UTILIZING HOLOGRAPHIC ELEMENTS AND METHOD OF MAKING SAME

Fred V. Richard, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1990, Ser. No. 576,914
Int. Cl.[5] G02B *6/12, 5/32;* **H01L** *27/14;* **H01J** *5/16*
U.S. Cl. 385—14 **15 Claims**



1. A system of optically interconnected integrated circuits, comprising:

a first integrated circuit, having an output port;

an opto-electronic transmitter having a substrate side and an active side, the active side being coupled to the output port of the first integrated circuit by means of controlled collapse chip connection technology, the opto-electronic transmitter emitting a beam of light, the beam of light having been modulated by data output by the first integrated circuit through the output port, the modulated beam of light passing from the active side through the substrate side;

a planar optical waveguide to which the substrate side of the opto-electronic transmitter is physically attached;

a first holographic element synthesized onto the planar optical waveguide in such a manner that the first holographic element aligns precisely with the opto-electronic transmitter, the first holographic element diffracting the modulated beam of light into the planar optical waveguide;

a second holographic element synthesized onto the planar optical waveguide in such a manner that the second holographic element is optically coupled to the first holographic element by means of reflection within the planar optical waveguide, the second holographic element diffracting the modulated beam of light out of the planar optical waveguide;

an opto-electronic receiver having a substrate side and an active side, the substrate side being physically attached to the planar optical waveguide in such a manner that the opto-electronic receiver aligns precisely with the second holographic element such that the modulated beam of light passes through the substrate side to the active side, the opto-electronic receiver demodulating the modulated beam of light; and

a second integrated circuit, having an input port, the input port being coupled to the active side of the opto-electronic receiver by means of controlled collapse chip connection technology such that the data output by the first integrated circuit is input into the second integrated circuit.

14. A method for optically interconnecting integrated circuits, comprising:

synthesizing holographic elements onto planar optical waveguides;

laminating a plurality of planar optical waveguides having holographic elements together;

laminating an optically transparent spacing layer onto the plurality of planar optical waveguides;

attaching opto-electronic transmitters and receivers to the optically transparent spacing layer, the opto-electronic transmitters and receivers being aligned with corresponding holographic elements of the plurality of planar optical waveguides;

electrically coupling the opto-electronic transmitters and receivers to the integrated circuits;

modulating light emissions of the opto-electronic transmitters with data from the integrated circuits;

directing the light emissions of the opto-electronic transmitters toward transmitting holographic elements;

propagating the light emissions from the transmitting holographic elements through the planar optical waveguides to receiving holographic elements;

directing the light emissions from the receiving holographic elements toward the corresponding opto-electronic receivers; and

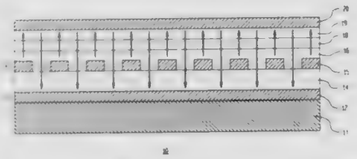
recreating data in the integrated circuits based upon the modulated light emissions.

5,061,028

POLYMERIC WAVEGUIDES WITH BIDIRECTIONAL POLING FOR RADIATION PHASE-MATCHING

Garo Khanarian, Berkley Heights; Pascal Landi, Summit; David Haas, Springfield, all of N.J., and Robert Norwood, Bethlehem, Pa., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Oct. 23, 1990, Ser. No. 601,831
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—132 **18 Claims**



1. An optical waveguide which has a thin film laminated matrix comprising:

(a) a substrate which supports a first electrode layer;

(b) a dielectric buffer layer which is in coextensive proximity with the electrode layer;

(c) a second electrode layer having a spatial periodic structure in proximity with the buffer layer;

(d) a polable organic waveguiding medium layer in proximity with the second electrode layer and buffer layer; and

(e) a third electrode layer in proximity with the organic waveguiding medium;

wherein the first and second electrodes are adapted to apply electric fields of opposite polarity in conjunction with the third electrode functioning as a zero potential ground electrode, and the organic waveguiding medium has a bidirectional poled molecular configuration and a radiation wave phase-matching coherence length about equal to the periodicity of the second electrode.

5,061,029

OPTICAL WAVEGUIDE ARRAY, PRINTER, AND METHOD OF MANUFACTURING THE SAME

Yujiro Ishikawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 15, 1990, Ser. No. 597,445
Claims priority, application Japan, Oct. 19, 1989, 1-272684
Int. Cl.[5] G02B *6/10;* **G03B** *27/00*
U.S. Cl. 385—132 **13 Claims**

1. An optical printer comprising:

a rotatable scanner for emitting radially a light signal entered along an its rotational axis in accordance with an image information, an optical waveguide array for guiding the light signal emitted from the scanner, and a photosensitive recording medium for writing an image, disposed at an end portion of the optical waveguide array, said optical waveguide array having a base plate means provided with a plurality of channels each having an inner surface made of a material having a first refractive index of n_1, a cover means having one surface to cover one surface of said base plate means to which said channels are opened to thereby form said channels as closed spaces, the one surface of said cover means being formed of a material having a first refractive index of n_1, and a core means filled up in said spaces and having a second refractive index of n_2 being larger than the first refractive index n_1.

6. A method of manufacturing an optical waveguide array comprising a base plate provided with a plurality of channels on one surface thereof and a cover plate having one surface applied to the one surface of the base plate so as to cover the



channels to form closed spaces, said method comprising the steps of:

dipping the base plate and the cover plate into a resin solution to form first and second clad layers respectively on the one surfaces of the base plate and the cover plate;

curing the first and second clad layers by subjecting them to an ultraviolet ray so as to provide a first refractive index of n1 to the first and second clad layers;

applying, after curing, the cover plate to the base plate so as to form the channels of the base plate as closed spaces; and

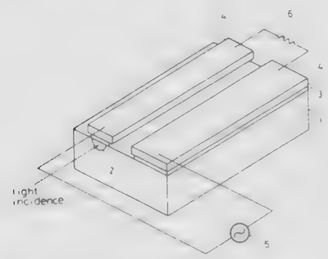
filling a core made of a material having a second refractive index of n2 into the closed spaces of the channels, said second refractive index n2 being larger than the first refractive index n1.

5,061,030

OPTICAL INTEGRATED MODULATOR

Hiroshi Miyamoto, and Hideto Iwaoka, both of Tokyo, Japan, assignors to Optical Measurement Technology Development Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1990, Ser. No. 567,354
Claims priority, application Japan, Aug. 15, 1989, 1-211013; Nov. 29, 1989, 1-311467
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—3 **8 Claims**



1. An optical modulator comprising:

a substrate formed of a material which has a refractive index that changes when an electric field is applied;

an optical waveguide formed in contact with said substrate;

a plurality of insulating buffer layers formed on surfaces of the optical waveguide and of the substrate, and

means for applying an electric field which causes a radio frequency electric field onto said optical waveguide via said insulating buffer layer, said applying means including a first electrode arranged along said optical waveguide and a second electrode arranged in parallel to said first electrode,

wherein said insulating buffer layers include a first region formed between said first electrode and said optical waveguide having a width equal to or narrower than a width of the first electrode, and a second region formed between said second electrode and said substrate,

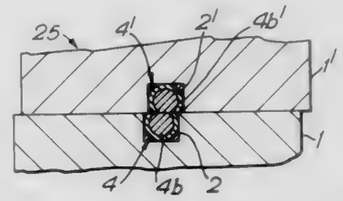
wherein the first and second electrodes are formed in such a shape and with such an interval distance therebetween as to establish a relation of $C_0=1/(c\cdot n_0\cdot Z_0)$ among a static capacitance C_0 of a time when said substrate, optical waveguide and insulating buffer layers are assumed not to exist, a refractive index n_0 of said optical waveguide against transmitting light, a velocity of light c, and a characteristic impedance Z_0 required between said first and second electrodes, and that said substrate, said optical waveguide and said insulating buffer layers are formed in such a form and arrangement of such a material as to substantially establish the relation of $C=n_0/(Z_0\cdot c)$ with the static capacitance C between said first and second electrodes.

5,061,031

FLUORIDE GLASS OPTICAL COUPLER COMPONENT, COUPLER, AND METHODS

Simon T. Nicholls, Woodbridge, and Michael Scott, Needham Market, both of England, assignors to British Telecommunications public limited company, Great Britain

PCT No. PCT/GB89/00479, § 371 Date Nov. 6, 1990, § 102(e) Date Nov. 6, 1990, PCT Pub. No. WO89/11111, PCT Pub. Date Nov. 16, 1989
PCT Filed May 5, 1989, Ser. No. 602,252
Claims priority, application United Kingdom, May 9, 1988, 8810906.1
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—15 **11 Claims**



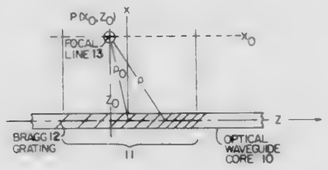
1. A method of forming an optical coupler component comprising the steps of forming a channel (**2**) in a block of substrate material (**1**), the channel being curved along its length, laying a length of optic fibre (**4**) in said channel and bonding the optic fibre to a curved interior surface of the channel, removing substrate material and at least cladding material (**4***b*) of the optic fibre on the convex side of said interior surface to form a face which exposes a length of at least the cladding (**4***b*) of the embedded optic fibre, and polishing said face, characterised in that said optic fibre (**4**) is composed of fluoride glass, said channel (**2**) is formed by a method which results in a predetermined channel curvature whereby the longitudinal axis of the embedded optic fibre has a predetermined curvature, the polishing of said face is conducted with non-aqueous polishing medium and the hardness of the substrate material is compatible with the hardness of flouride glass such that the exposed optic fibre material is flush with said face.

5,061,032

OPTICAL WAVEGUIDE EMBEDDED LIGHT REDIRECTING AND FOCUSING BRAGG GRATING ARRANGEMENT

Gerald Meltz, Avon; William W. Morey, West Hartford, and Arnold L. Wilson, Manchesster, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1989, Ser. No. 456,442
Int. Cl.[5] G02B *6/34*
U.S. Cl. 385—37 **4 Claims**



1. An optical waveguide light redirecting and focusing arrangement comprising:

an optical waveguide having two spaced end portions, and including at least a waveguiding portion of a solid material capable of guiding light between said end portions in a first path extending along a predetermined axis, said waveguiding portion having a substantially constant cross section;

at least one grating region embedded in said waveguide portion at a location remote from said end portions and having a multitude of grating elements constituted by axially successive refractive index variations in said solid material and extending at such respective spacings as considered in the direction of said axis and at such respective oblique angle relative to said axis as to redirect light reaching said grating elements between said first path and at least one second path extending externally of said waveguide and diverging between a focus situated at a predetermined distance from said optical waveguide and said grating region;

first optical means for directing light into one of said first and second paths and toward said grating region for redirection by said grating elements into the respectively other of said second and first paths; and

second optional means for capturing the light propagating in said other path.

5,061,033

REMOVABLE OPTICAL INTERCONNECT FOR ELECTRONIC MODULES

Fred V. Richard, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

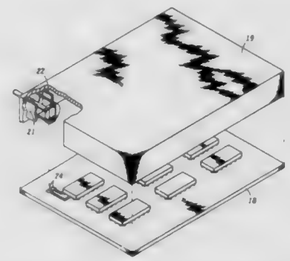
Filed Dec. 3, 1990, Ser. No. 620,806
Int. Cl.[5] G02B *6/36, 7/26*
U.S. Cl. 385—92 **17 Claims**

13. An optical fiber connection for electronic modules which comprises:

an optical fiber;

a semiconductor die attached to an end of the optical fiber wherein the semiconductor die has a means for electrical connection; and

a removable cover for the module wherein the removable cover presses the means for electrical connection of the semiconductor die in contact with electrical contacts on



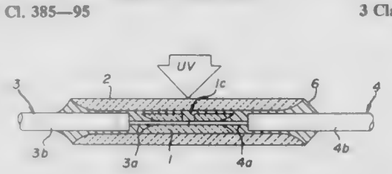
the module thereby electrically coupling the semiconductor die to the module.

5,061,034

PERMANENT CONNECTOR FOR OPTICAL FIBERS

Junji Fujikawa, Yasu, and Fumiaki Tamura, Kanzaki, both of Japan, assignors to Nippon Electric Glass Co., Ltd., Otsu, Japan

PCT No. PCT/JP89/00664, § 371 Date Feb. 26, 1990, § 102(e) Date Feb. 26, 1990, PCT Pub. No. WO90/01175, PCT Pub. Date Feb. 8, 1990
PCT Filed Jun. 30, 1989, Ser. No. 465,173
Claims priority, application Japan, Jul. 27, 1988, 63-188663
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—95 **3 Claims**



1. A permanent connector for optical fibers characterized by comprising a capillary tube made of ultraviolet-transmitting glass which has an accurately produced inner diameter slightly greater than the outer diameter of the clads of optical fibers, tapered portions on the opposite ends of the inner diameter, and an adhesive-passing groove formed in the middle portion and having a depth which is not more than ½ of the inner diameter, and

an ultraviolet-transmitting protective glass tube which has an inner diameter greater than the outer diameter of the capillary tube and to which the capillary tube is eccentrically joined in said inner diameter on the side opposite to the adhesive-passing groove to define a clearance between said inner diameter and the outer diameter of the capillary tube on the side where the adhesive-passing groove is formed.

5,061,035

HERMETICALLY SEALED OPTICAL FIBER ARRAYS AND METHOD FOR FORMING SAME

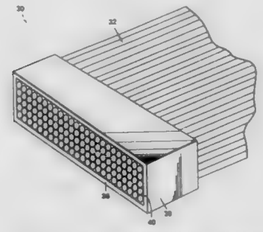
Harvey N. Rogers, Jr., Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 27, 1990, Ser. No. 588,887
Int. Cl.[5] G02B *6/04*
U.S. Cl. 385—115 **11 Claims**

1. A hermetically sealed optical fiber array comprising:

a plurality of optical fibers, each of said optical fibers having a length of optical fiber at one end, said length having a solderable metal coating, wherein said lengths of optical fibers are fluxless solder bonded to each other forming a hermetically sealed optical fiber bundle; and

a supporting structure surrounding said hermetically sealed optical fiber bundle, said supporting structure having an inner surface, said inner surface having a solderable metal



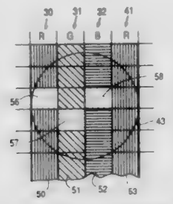
coating, wherein said hermetically sealed optical fiber bundle is fluxless solder bonded to said supporting structure.

5,061,036

COLOR PAGE SCANNER USING FIBER OPTIC BUNDLE AND A PHOTOSENSOR ARRAY

Eugene I. Gordon, Summit, N.J., assignor to Photon Imaging Corp., Edison, N.J.

Division of Ser. No. 339,602, Apr. 17, 1990. This application Jul. 6, 1990, Ser. No. 549,107
Int. Cl.[5] G02B *6/06*
U.S. Cl. 385—116 **3 Claims**



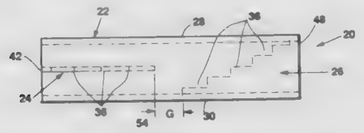
1. A light filter comprising a transparent substrate, said substrate having thereon a repetitive pattern of first, second, and third color areas for producing color image from a white light image being transmitted therethrough, to an array of light-responsive electronic sensing elements, said image comprising a two-dimensional array of pixels conveyed to said array of sensing elements through said filter via a bundle of optical fibers, each of said patterns being of a dimension and so positioned to correspond simultaneously to an associated one of said pixels defined by a fiber of said bundle.

5,061,037

DUAL SEPTUM POLARIZATION ROTATOR

Mon N. Wong, and Gregory D. Kroupa, both of Torrance, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 22, 1990, Ser. No. 600,960
Int. Cl.[5] G42B *6/00*
U.S. Cl. 385—11 **20 Claims**



1. A dual septum polarization rotator, comprising:

a waveguide capable of supporting signal propagation of circular and linear polarizations, and having a longitudinal axis;

a first septum disposed within a first end portion of said waveguide, and defining, in cooperation with said waveguide, first and second input ports, wherein said first septum is adapted to convert the polarization of a first excitation signal introduced into said first input port from a first polarization to a second polarization; and,

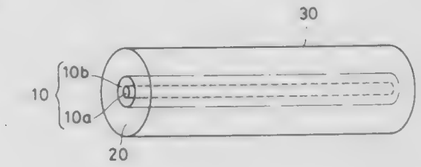
a second septum disposed within a second end portion of said waveguide opposite said first end portion, and in spaced, orthogonal relationship to said first septum, said second septum defining, in cooperation with said waveguide, first and second output ports corresponding to said first and second input ports, respectively, wherein said second septum is adapted to convert the polarization of said first excitation signal from said second polarization to a third polarization orthogonal to said first polarization, for output through said first output port, as a first output signal.

5,061,038

FIBER TYPE WAVELENGTH CONVERTER

Kiyofumi Chikuma, and Sota Okamoto, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 11, 1991, Ser. No. 640,162
Claims priority, application Japan, May 19, 1990, 2-129400
Int. Cl.[5] G02B *6/22;* **G02F** *1/37*
U.S. Cl. 359—328 **2 Claims**



1. A fiber type wavelength converter formed of a core and a clad surrounding the core, said core consisting of a first core formed of a nonlinear crystalline material, for which, when the refractive index to the primary light incident on and guided by said core is represented by η_G^{ω} and the refractive index to a converted second harmonic is represented by $\eta_G^{2\omega}$, the relationship $\eta_G^{2\omega} > \eta_G^{\omega}$ holds, and a second core formed of optical glass covering said first core.

5,061,039

DUAL AXIS TRANSLATION APPARATUS AND SYSTEM FOR TRANSLATING AN OPTICAL BEAM AND RELATED METHOD

Kelly Cassidy, Manteca, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1990, Ser. No. 542,226
Int. Cl.[5] G02B *7/00, 6/42, 27/00;* **G05G** *11/00*
U.S. Cl. 359—894 **16 Claims**

1. A dual axis translation device for translating an optical beam along both an x-axis and a y-axis which are perpendicular to one another, and capable of functioning in a vertical plane and a horizontal plane, and in any position therebetween, comprising:

(a) beam directing means having a fixed aperture for accommodating the passage of said optical beam through the beam directing means and acting on said optical beam for directing it through said aperture along a particular path transverse to said x and y axes;

(b) an arrangement supporting said beam directing means including said fixed aperture and the beam passing through said aperture for movement as a single unit in the

x and y direction within a given plane, said arrangement including

(1) first means for translating said beam directing means along the x-axis in said given plane in order to translate the beam along said x-axis including

(A) means for positioning the beam directing means at desired position along the x-axis;

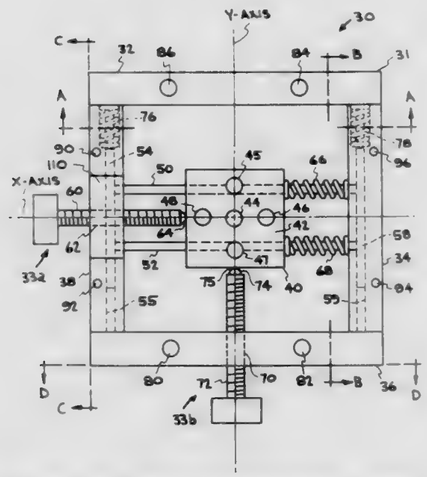
(B) means for maintaining physical contact between the x-axis positioning means and the beam directing means;

(2) second means for translating said beam directing means along the y-axis in said given plane in order to translate the beam along said y-axis;

(3) wherein the first translating means further comprises;

(A) a frame comprised of a plurality of plates; and

(B) means for guiding and supporting the beam directing means along the x-axis, said guiding and supporting means extending the entire length of the frame to provide uniform support to said beam directing means regardless of the extent to which it has been translated along said x and y axis within the frame;



(c) wherein said first translation means further comprises:

(1) a first plate and a second plate located on opposite sides of the beam directing means, perpendicular to the x-axis;

(2) a plurality of parallel members of equal length contained within the frame which are parallel to the x-axis and bisect the beam directing means for supporting and aligning the beam directing means as it is translated along the x-axis;

(3) a first boot connected to one end of the plurality of parallel members, and housed in the first plate;

(4) a second boot connected to the other end of the plurality of parallel members, and housed in the second plate, the first and second boot operating together for securing said parallel members and maintaining their parallel structure; and

(5) means for supporting the x-axis positioning means on the first plate so that the x-axis positioning means exerts a force parallel to the x-axis which moves the beam directing means along the x-axis.

5,061,040

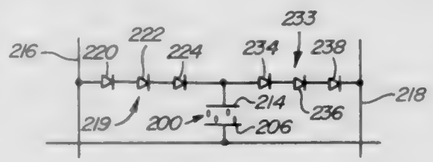
LIQUID CRYSTAL DISPLAYS OPERATED BY AMORPHOUS SILICON ALLOY DIODES

Zvi Yaniv, Southfield; Vincent D. Cannella, Birmingham, both of Mich.; Gregory L. Hansell, Camarillo, Calif., and Louis D. Swartz, Holly, Mich., assignors to OIS Optical Imaging Systems, Inc., Troy, Mich.

Continuation of Ser. No. 247,815, Sep. 22, 1988, Pat. No. 4,929,569, which is a continuation of Ser. No. 82,266, Aug. 2, 1987, abandoned, which is a continuation of Ser. No. 675,941, Dec. 3, 1984, abandoned, which is a continuation of Ser. No. 573,004, Jan. 23, 1984, abandoned. This application Sep. 28, 1989, Ser. No. 414,487

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—60 **12 Claims**



1. In a multi-pixel display, each pixel of said display includes (1) first and second pixel electrodes with light influencing material disposed therebetween; (2) first and second sets of silicon isolation devices; and (3) first and second address leads disposed in substantially parallel relation to one another; a first terminal of said first set of isolation devices electrically connected to the first address lead and a second terminal of said first set electrically connected to the first pixel electrode; a first terminal of said second set of isolation devices electrically connected to the second address lead and a second terminal of said second set electrically connected to the first pixel electrode, the improvement comprising, in combination:

both the first and second sets including a plurality of series connected isolation devices.

5,061,041

LIQUID CRYSTAL MOTION PICTURE PROJECTOR WITH MEMORY

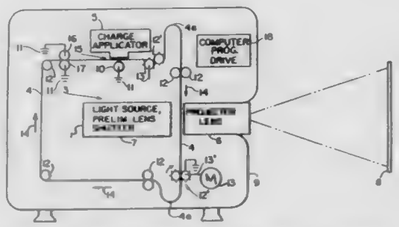
James L. Fergason, Atherton, Calif., assignor to Manchester R&D Partnership, Pepper Pike, Ohio

Division of Ser. No. 189,311, Apr. 29, 1988, Pat. No. 5,016,984, which is a continuation-in-part of Ser. No. 892,497, Aug. 1, 1986, Pat. No. 4,693,557, which is a continuation-in-part of Ser. No. 585,884, Mar. 2, 1984, Pat. No. 4,603,945, and a continuation-in-part of Ser. No. 608,135, May 8, 1984, Pat. No. 4,613,207. This application Oct. 26, 1990, Ser. No. 604,794

The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.

Int. Cl.[5] G02F *1/13*; G03B *21/00*

U.S. Cl. 359—51 **76 Claims**



1. A liquid crystal moving picture projector comprising a liquid crystal imager means for creating characteristics of an image, and

projection optics means for projecting images sequentially created by the imager,

said imager means including a liquid crystal material capable of temporarily storing information at respective areas thereof to create image characteristics capable of being projected sequentially by said projection optics means.

5,061,042

PHASE RETARDER AND LIQUID CRYSTAL DISPLAY USING THE SAME

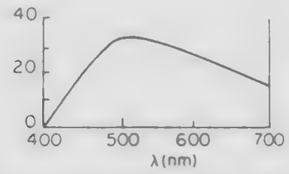
Kimishige Nakamura, Osaka; Shuji Kitamura, Kyoto; Toyokazu Okada, Osaka; Kazuaki Sakakura, Osaka; Hitoshi Kikui, Osaka; Koji Higashi, Osaka, and Keizo Ichinose, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 387,908, Aug. 1, 1989, abandoned, which is a continuation of Ser. No. 151,334, Feb. 2, 1988, abandoned, and a continuation of Ser. No. 292,996, Jun. 29, 1988, abandoned. This application Jan. 18, 1991, Ser. No. 642,554

Claims priority, application Japan, Feb. 2, 1987, 62-22985; Apr. 20, 1987, 62-97014; Jun. 30, 1987, 62-164801; Jul. 21, 1987, 62-182849; Sep. 24, 1987, 62-241979; Nov. 2, 1987, 62-278080; Apr. 11, 1988, 63-89478; Jun. 28, 1988, 63-162114

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—63 **15 Claims**



1. A liquid crystal display comprising a liquid crystal cell sandwiched between a pair of polarizing sheets, wherein a phase retarder obtained by uniaxially stretching a thermoplastic resin film, whose retardation value ranges from 30 to 1200 nm and whose color difference ΔE^* is not more than 30 as defined with the phase retarder being set between crossed polarizers in such a manner that the optical axis thereof makes an angle of 45° with respect to the planes of polarization of the polarizers is provided between the liquid crystal cell and one of the polarizing sheets.

10. A liquid crystal display comprising a liquid crystal cell containing liquid crystals, said liquid crystal cell being sandwiched between an upper and a lower parallel polarizing sheet, and a phase retarder provided between the upper polarizing sheet and the liquid crystal cell in such a manner that the optical axis thereof makes an angle of from 30° to 60° with respect to the planes of polarization of the parallel polarizing sheets, said phase retarder being obtained by uniaxially stretching a polycarbonate film, whose retardation value ranges from about 200 nm to about 625 nm and whose color difference ΔE^* is not more than 20 as measured under cross nicols with the phase retarder being set in such a manner that the main optic axis thereof makes an angle of 45° with the crossed nicols.

5,061,043

COLOR LIQUID CRYSTAL DISPLAY DEVICE WITH A GREEN DYE

Jinoh Kwak, Suwon, Rep. of Korea, assignor to Samsung Electron Devices, Co., Ltd., Kyungki, Rep. of Korea

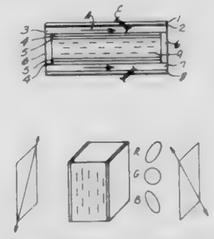
Filed Dec. 4, 1989, Ser. No. 445,450

Claims priority, application Rep. of Korea, Dec. 24, 1988, 88-21392[U]

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—63 **1 Claim**

1. A liquid crystal display device comprising top and bottom glass plates, transparent conductive electrodes coated respectively between the glass plates, orientational layers formed respectively between the conductive electrodes, spacers formed respectively between the glass plates to maintain a predetermined cell gap, a liquid crystal layer composed of liquid crystal materials with dyes of R (red), G (green) and B (blue) colors in the space between the plates, and polarizer foils mounted respectively on the external surface of the glass plates, in which the liquid crystal layer is injected with green dye in order to decrease the transmissivity of the green light in



the off state, the cell gap between the glass plates is controlled by the spacers in order that a quarter of the wave-length of the green dye is equal to the multiplication of the refractive index anisotropy of the crystal material and the thickness of the crystal layer, the upper polarizer foil formed on the outside surface of the top glass plate being oriented at about 40° to 50° with respect to the rubbing direction of the orientational layer and the lower polarizer foil formed the outside surface of the bottom glass plate being oriented at 90° with respect to the angle of polarization of the upper polarizer foil.

5,061,044

FERROELECTRIC LIQUID CRYSTAL DISPLAY HAVING OPPOSINGLY INCLINED ALIGNMENT FILMS WHEREIN THE LIQUID CRYSTAL HAS ONE TWISTED AND TWO ALIGNED STATES WHICH COEXIST AND A DRIVING METHOD TO PRODUCE GRAY SCALE

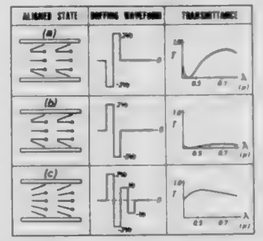
Masaaki Matsunaga, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 22, 1990, Ser. No. 526,879

Claims priority, application Japan, May 23, 1989, 1-129493; Oct. 6, 1989, 1-259925

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—75 **4 Claims**



4. A method for driving a ferroelectric liquid crystal device, the liquid crystal device comprising a first substrate disposed adjacent a second substrate, the first and second substrates having opposing surfaces defining a space therebetween; transparent electrodes disposed on the opposing surfaces of the substrates; alignment films disposed on the transparent electrodes, the alignment films having a plurality of surfaces inclined with respect to the opposing surfaces of the substrates, the inclined surfaces of the first and second alignment films having opposite inclination directions; and a liquid crystal layer disposed between the substrates, the liquid crystal layer

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having a first fully aligned stable state, a twisted stable state, and a second fully aligned stable state, the thickness of the liquid crystal layer being between 1.5 μm and 4.0 μm whereby the aligned and twisted stable states exist simultaneously in the absence of a bias force;

said method comprising the steps of:

a) modulating a scanning electrode waveform and a signal waveform to produce a modulated drive waveform, said scanning electrode waveform having a voltage peak value and a pulse width; and

b) applying said drive waveform across the transparent electrodes to control the ratio of twisted and uniformly aligned stable states, said ferroelectric device producing continuous gray scale values in response to said drive pulse.

5,061,045

LIQUID CRYSTAL LIGHT MODULATION DEVICE AND LIQUID CRYSTAL LIGHT MODULATION APPARATUS

Makoto Yoneya, Hitachi; Katsumi Kondo, Katsuta; Tetsuya Ohashi, Hitachi; Motomi Odamura, and Teruo Kitamura, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

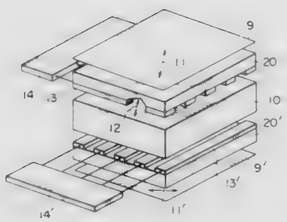
Filed Aug. 25, 1989, Ser. No. 398,541

Claims priority, application Japan, Sep. 2, 1988, 63-218354

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—56 **9 Claims**





1. A liquid crystal light modulation device comprising:

a cell including a pair of substrates at least one of which is transparent and which have electrodes and are opposed through a spacer;

a ferroelectric liquid crystal layer which is enclosed in said cell and which has a phase series in which one of a nematic phase and an isotropic phase occurs on just a higher temperature side of a ferroelectric phase; and

two polarizing plates which sandwich the cell therebetween;

wherein liquid crystal molecules at one interface between the liquid crystal layer and one of the substrates are fixed to the one substrate more weakly than liquid crystal molecules at another interface between the liquid crystal layer and the other substrate are fixed to the other substrate, wherein the weakly fixed liquid crystal molecules are weakly fixed to such an extent that inversion of spontaneous polarization of the weakly fixed liquid crystal molecules occurs upon application of an electrical field to the liquid crystal layer through the electrodes;

wherein an orientation direction of the liquid crystal molecules at the one interface and an orientation direction of the liquid crystal molecules at the other interface can assume either one of a state (a) in which the orientation directions are substantially parallel with each other and a state (b) in which the orientation directions cross each other upon the inversion of the spontaneous polarization; and

wherein the two polarizing plates are arranged such that a light transmittance of said cell is lower in the state (a) than in the state (b).

5,061,046

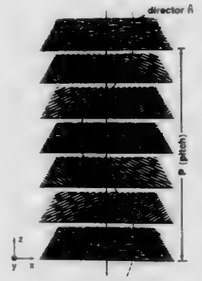
GRADIENT INDEX LIQUID CRYSTAL DEVICES AND METHOD OF FABRICATION THEREOF

Jae-Cheul Lee, Rochester, and Stephen Jacobs, Pittsford, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Dec. 19, 1989, Ser. No. 452,886

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—53 **23 Claims**



1. Apparatus for shaping the profile of an optical beam of given wavelength which is directed along a path, which comprises at least one liquid crystal device intercepting said beam, said device having a first and a second substrate respectively having first and second surfaces opposed to each other, a liquid crystal material between said surfaces and having a chirality providing a structure of molecules of a given pitch P_0 so as to provide a selective reflection band having a peak wavelength where λ_0, the peak wavelength in said band being essentially equal to said given wavelength and equal to the product of P_0 and n_{av}, the average of the extraordinary and ordinary indexes of refraction of said material at λ_0 and measured at temperatures at which said apparatus is operating, and said first and second surfaces defining weak anchoring sites for said molecules.

5,061,047

SMECTIC LIQUID CRYSTAL DEVICES

Madeline J. Bradshaw, Gloucestershire, and Edward P. Raynes, Worcestershire, both of United Kingdom, assignors to The Secretary of State For Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Dec. 1, 1988, Ser. No. 279,553

Claims priority, application United Kingdom, Apr. 3, 1986, 8608114; PCT Int'l Appl., Apr. 1, 1987, PCT/GB87/00222

The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—63 **28 Claims**

1. A method of making a liquid crystal display device comprises the steps;

providing two cell walls spaced apart by a spacer to contain a layer of a liquid crystal material, the wall inner surfaces having formed thereon electrode structures and at least one wall surface treated to provide a liquid crystal alignment,

providing a tilted chiral smectic liquid crystal material having a cholesteric phase at an elevated temperature above ambient between the chiral smectic and isotropic phases with a cholesteric pitch p greater than half the layer thickness d at a temperature at least 0.1° C. above a cholesteric to smectic transition temperature and a significant spontaneous polarization Ps in the chiral smectic phase,

heating the material to the cholesteric phase,

introducing and sealing the material into the space between the walls,

cooling the material to the tilted chiral smectic phase.

of the light energy travel under the control of an electrical signal, comprising:

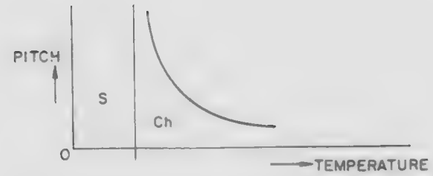
a plurality of voltage-controlled phase shifter elements disposed in superposed layers of non-linear optically responsive material which implement a phase gradient for providing a directive beam of light energy over a variable angle of deflection;

input means for directing portions of said beam of light energy in a predetermined input direction into said plurality of phase shifter elements;

control signal means for selectively changing the index of refraction in each of said plurality of phase shifter elements by providing an electric field in ones of said elements between a plurality of individually addressable electrodes therebetween;

successive ones of said elements being in close proximity and the index of refraction in each successive element being adjusted by said control signal means so as to produce a predetermined difference of phase shift therebetween; and

output means for receiving portions of said beam of light energy travelling beyond said phase shifter elements in at least one predetermined output direction.



9. A liquid crystal device comprising a layer of a tilted chiral smectic liquid crystal material contained between two cell walls each carrying electrode structures and at least one wall surface treated to give alignment to the liquid crystal molecules, a first linear polarizer and one of a second polarizer and an amount of dichroic dye in the liquid crystal material, the liquid crystal material having switched states and a tilted chiral smectic phase at normal device operating temperatures and a cholesteric phase at a higher, above ambient, temperature, with a cholesteric pitch greater than half the layer thickness d in the cholesteric phase for at least 0.1° C. above the cholesteric to smectic transition temperature, and a spontaneous polarization.

5,061,048

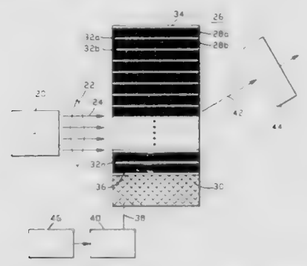
APPARATUS FOR OPTICAL BEAM STEERING USING NON-LINEAR OPTICAL POLYMERS

L. M. Hayden, Lakeland, and Gerald F. Sauter, Eagan, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Feb. 6, 1990, Ser. No. 475,518

Int. Cl.[5] G02F *1/05, 1/03*

U.S. Cl. 359—315 **9 Claims**



1. An electro-optical deflection system for deflecting a beam of light energy and controlling the directions in which portions

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5,061,049

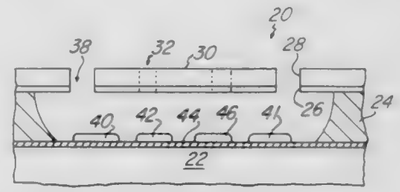
SPATIAL LIGHT MODULATOR AND METHOD

Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 355,049, May 15, 1989, abandoned, which is a continuation of Ser. No. 168,724, Mar. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 159,466, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 636,180, Jul. 31, 1984, abandoned, and Ser. No. 43,740, Apr. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 792,947, Oct. 30, 1985, Pat. No. 4,662,746, and Ser. No. 129,353, Nov. 30, 1987, abandoned, which is a continuation of Ser. No. 877,654, Jun. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 646,399, Aug. 31, 1984, Pat. No. 4,596,992. This application Sep. 13, 1990, Ser. No. 582,804

Int. Cl.[5] G02F *1/27;* **B44C** *1/22;* **H04N** *5/74;* **G02B** *26/08*

U.S. Cl. 359—224 **28 Claims**

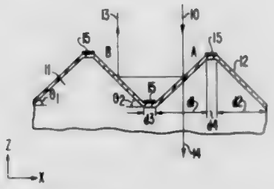


1. A spatial light modulator, comprising:

(a) a plurality of pixels, each of said pixels including a deflectable beam, an address electrode adjacent said beam, and a landing electrode adjacent said beam;

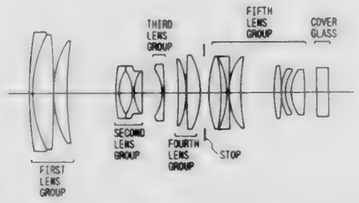
(b) wherein a voltage applied between said beam and said address electrode deflects said beam toward said address electrode, and said landing electrode is located to contact said beam deflected toward said address electrode and prevent said deflected beam from contacting said address electrode.

5,061,050
POLARIZER
Toshiaki Ogura, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 16, 1990, Ser. No. 597,723
Claims priority, application Japan, Oct. 18, 1989, 1-270652
Int. Cl.[5] G02B *5/28, 5/30*
U.S. Cl. 359—490 **16 Claims**



1. A polarizer comprising:
a substrate which has a continuously undulated surface of trapezoid-waveform in cross section;
a layer of an optical element having a polarized-light separating function formed on each of sloping regions of the trapezoid-waveform surface; and
a layer of an optical element having a light reflecting or light absorbing function formed on each of the remaining regions excluding the sloping regions of said surface.

5,061,051
COMPACT ZOOM LENS
Hiroshi Miyamae, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Feb. 27, 1990, Ser. No. 485,470
Claims priority, application Japan, Mar. 7, 1989, 1-52857
Int. Cl.[5] G02B *15/00*
U.S. Cl. 359—683 **5 Claims**



1. A zoom lens comprising, in order from an object side, a first lens groups having a positive refracting power, a second lens group having a negative refracting power, said second lens group being movable to vary power, a third lens group having a negative refracting power, said third lens group being movable to compensate for deviation of an image position caused by varying the power, a fourth lens group having a positive refracting power for making a divergent luminous flux which exits from the third lens group substantially afocal, and a fifth lens group having a positive refracting power to form an image, said fourth lens group including at least one positive single lens having a strong convex surface on the image side, said fifth lens group arranged behind a diaphragm between said fourth and fifth lens groups and said fifth lens group comprising, in order from an object side, a front unit having a positive refracting power and a rear unit having a refracting power arranged in an air spaced relation with said front unit, said front unit comprising, in order from said object side, a biconvex lens, a negative single lens with a surface having a strong curvature directed toward said object side and a positive meniscus single lens with a convex surface directed toward said object side, said rear unit comprising, in order from said object side, a positive single lens, a negative meniscus single lens with a concave surface directed toward the image and a positive single lens with a convex surface having a strong curvature directed toward said object side, said fifth lens group fulfilling the following conditions:

$$2.5 < f_5/f_w < 4.5$$

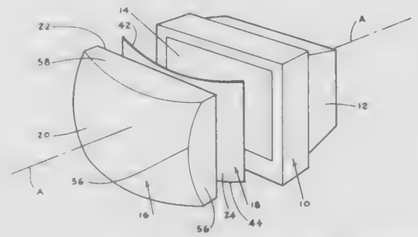
$$1.5 < f_{51}/f_5 < 2.5$$

$$AN_{52p} < 1.6$$

$$0.25 < R_5/f_5 < 0.35$$

wherein
f_w: Focal length at the wide angle end of the entire system
f_5: Synthesized focal length of the fifth lens group
f_{51}: Synthesized focal length of the front unit in the fifth lens group
AN_{52p}: Average value of the refractive indices of the positive lenses in the rear unit of the fifth lens group and,
R_5: Radius of curvature of the surface on the image side of the negative meniscus single lens in the rear unit of the fifth lens group.

5,061,052
TELEVISION PICTURE ENHANCEMENT DEVICE
Ben L. DeJesus, 402 E. 230th St., Carson, Calif. 90745
Filed Jul. 27, 1990, Ser. No. 560,063
Int. Cl.[5] G02B *3/08*
U.S. Cl. 359—742 **30 Claims**

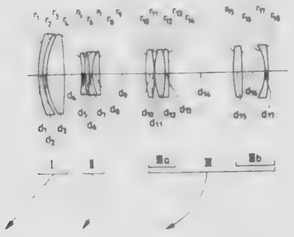


1. In a television set having a viewing screen the improvement comprising a plano-convex lens having a planar surface and a convex surface disposed in front of said viewing screen, and a Fresnel lens having a smooth surface and an opposite surface configured with a pattern of dioptric ridges thereon interposed between said viewing screen and said plano-convex lens.

5,061,053
TELEPHOTO ZOOM LENS SYSTEM
Jun Hirakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Filed Jun. 8, 1989, Ser. No. 363,656
Claims priority, application Japan, Jun. 8, 1988, 63-140799
Int. Cl.[5] G02B *9/00*
U.S. Cl. 359—690 **4 Claims**

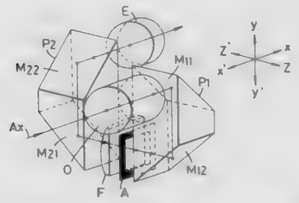
1. A telephoto zoom lens system comprising, in order from an object side, a first lens group I having a positive refractive power, a second lens group II having a negative refractive power, and a third lens group III having a positive refractive power, wherein zooming is performed by moving the three lens groups I, II an III independently of one another along an optical axis, and focusing is performed by moving the first lens group I along the optical axis, wherein said first lens group I comprises a two-unit, two-element configuration having a first lens which is a negative meniscus lens element having a convex surface directed toward the object, and a second lens which is a positive lens element separated from said first lens by an air

gap and having a convex surface of large curvature directed toward the object; wherein the second lens group II is composed of two negative lens elements and one positive lens element; and wherein said third lens group III includes first and second lens units IIIa and IIIb in order from the object



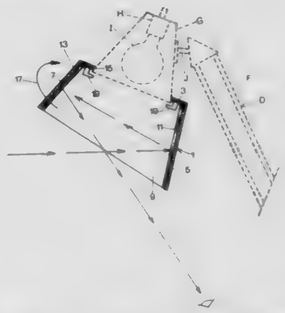
side, with said first lens unit having a positive refractive power and consisting of two positive lens elements and one negative lens element, and said second lens unit IIIb consisting of a positive lens and a negative meniscus lens having a convex surface directed toward the image.

5,061,054
KEPLERIAN FINDER OPTICAL SYSTEM
Koichi Ohshita, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Mar. 6, 1989, Ser. No. 319,293
Claims priority, application Japan, Mar. 15, 1988, 63-60919
Int. Cl.[5] G02B *23/00, 9/08, 5/04*
U.S. Cl. 359—399 **13 Claims**



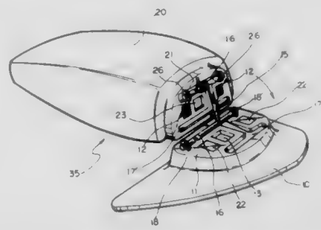
12. A Keplerian finder optical system providing a wide viewing field with a compact structure, comprising:
image forming lens means having a predetermined focal length for forming an inverted image of an object;
a field diaphragm provided in the vicinity of the focal plane of said image forming lens means, for defining the viewing field of the finder optical system;
a field lens provided in the vicinity of said field diaphragm;
an eyepiece lens having a predetermined focal length for observing the object image formed on the focal plane of said image forming lens means, the ratio of the focal lengths of the image forming lens means and eyepiece lens being about 0.4 to 2.0; and
an erect image optical system comprising first reflecting means provided with first and second reflecting faces between said image forming lens means and said field diaphragm for guiding the light from said image forming lens means to said field diaphragm, and second reflecting means provided with third and fourth reflecting faces between said field diaphragm and said eyepiece lens for guiding the light transmitted by said field diaphragm and said field lens to said eyepiece lens, said first and second reflecting means being disposed so as to erect said inverted object image formed by said image forming lens means, said first and fourth reflecting faces being disposed at locations substantially symmetrically with respect to said field diaphragm and said second and third reflecting faces being disposed at locations substantially symmetrically with respect to said field diaphragm.

5,061,055
BEDSIDE TELEVISION VIEWER
Lyne Dubé, 75 Hallowell, Montréal Québec, Canada H3Z 2E8
Filed Jul. 27, 1990, Ser. No. 558,508
Int. Cl.[5] G02B *5/08, 7/198;* **F21V** *7/05*
U.S. Cl. 359—862 **12 Claims**



1. A light reflector to be used as a bedside television viewer, comprising a frame, a pair of mutually-facing flat mirrors supported by said frame in spaced-apart relationship, said mirrors diverging widthwise of the same by about 30 degrees and substantially parallel to each other longitudinally of the same, and attaching means to attach said frame to a support; wherein said frame forms a rigid sheet assembly including a central flat portion and two end flat portions at an angle of more than 90 degrees relative to said central flat portion, each mirror fixed flat to a corresponding one of said end flat portions.

5,061,056
SIDEVIEW MIRROR FOR AUTOMOBILES
Ki S. You, Icheon, Rep. of Korea, assignor to Poong Jeong Industrial Co., Ltd., Kyungki-do, Rep. of Korea
Filed Mar. 26, 1990, Ser. No. 499,045
Claims priority, application Rep. of Korea, Nov. 29, 1989, 89-17404
Int. Cl.[5] G02B *7/18;* **A47F** *7/14*
U.S. Cl. 359—872 **10 Claims**



1. A side view mirror for automobiles, comprising:
a mounting housing having an inner side and an outer side, said inner side for connecting to an automobile and said outer side having formed thereon a first mounting housing recess, and a second mounting housing recess having one end which connects with the first mounting housing recess and being substantially perpendicular with the first mounting housing recess;
a mirror housing having a first side and a second side adja-

cent to said first side, said first side having a mirror disposed thereon for viewing along a side of an automobile, and said second side having formed thereon a first mirror housing recess corresponding to said first mounting housing recess, a second mirror housing recess corresponding to said second mounting housing recess, and a third mirror housing recess, said second mirror housing recess having one end which connects with the third mirror housing recess, another end which connects with said first mirror housing recess, and said second mirror housing recess being substantially perpendicular with the first and third mirror housing recesses;

first pivoting means connected to said outer side of said mounting housing and communicating with said first mounting housing recess and said first mirror housing recess, for alternatively pivoting the mirror housing from a closed operative position to a first open inoperative position;

second pivoting means connected to said second side of said mirror housing and communicating with said third mirror housing recess, for alternatively pivoting said mirror housing from said closed operative position to a second open inoperative position;

connecting means communicating with said second mounting housing recess and said second mirror housing recess, for connecting said first pivoting means and said second pivoting means;

biasing means connected to at least one of said pivoting means for restoring said mirror housing from an open inoperative position back to its closed operative position; and

securing means for maintaining said mirror housing in its closed operative position until said mirror housing is pivoted;

said second side of said mirror housing being substantially flush against said outer side of said mounting housing when said mirror housing is in its closed operative position.

5,061,057

POROUS CONTACT LENS AND METHOD FOR MAKING IT

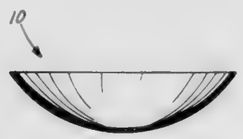
Minoru Kumakura, Maebashi; Isao Kaetsu, Takatsuki; Yoshihide Komaki, Katsuta; Tsutomu Sakurai, Tokai; Ryuji Arai, Toshima; Yasuji Sejima, Chofu; Takashi Ohno, Ohta; Toshiyuki Itoh, and Hideo Kohyama, both of Ohmiya, all of Japan, assignors to Japan Atomic Energy Research Institute, Toyko, Japan

Filed May 25, 1989, Ser. No. 357,320

Claims priority, application Japan, May 27, 1988, 63-128181

Int. Cl.[5] G02C *7/04*

U.S. Cl. 351—160 R **14 Claims**



1. A porous contact lens comprising a lens medium having plurality of pores extending therethrough formed by subjecting the contact lens to irradiation of a polyvalent heavy ion beam.

5,061,058

OPTHALMIC LENS FOR USE IN THE CORRECTION OF ASTIGMATISM

Günther Guilino; Herbert Pfeiffer, and Helmut Altheimer, all of Munich, Fed. Rep. of Germany, assignors to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

PCT No. PCT/DE88/00443, § 371 Date May 18, 1989, § 102(e) Date May 18, 1989, PCT Pub. No. WO89/00710, PCT Pub. Date Jan. 26, 1989

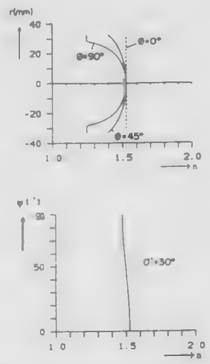
PCT Filed Jul. 18, 1988, Ser. No. 327,801

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1988, 3723853

The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.

Int. Cl.[5] G02C *7/02*

U.S. Cl. 351—176 **8 Claims**



1. An ophthalmic lens for use in the correction of astigmatism having two surfaces including a front surface and an eye-facing surface, wherein, in order to reduce one of a critical thickness and a variation of an edge thickness along the circumference of said lens, the refractive index changes at least along a critical main section in such a manner that at least part of a cylindrical correction is attained by the variation of said refractive index.

5,061,059

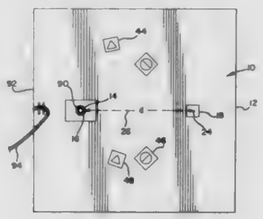
SELF-DETECTION GLAUCOMA TEST METHOD

Gerald Horn, 74 Golf Rd., Golf, Ill. 60029

Continuation of Ser. No. 315,401, Feb. 23, 1989, abandoned. This application Nov. 15, 1990, Ser. No. 616,770

Int. Cl.[5] A61B *3/02*

U.S. Cl. 351—223 **4 Claims**



1. A method for self-detection of the presence of glaucoma in a human eye which comprises:

focusing an eye to be tested on a fixation target positioned on a planar surface, said surface also having a first mark formed and arranged thereon at a predetermined distance from said fixation target and one or more additional marks surrounding the first mark,

positioning said test eye a sufficient separation distance from the fixation target and aligning said test eye relative to the fixation target to enable the testing of the user's peripheral vision by adjusting the distance and alignment of said test eye relative to said fixation target in reference to said first mark so that said first mark is in a blind spot area outside of the user's area of peripheral vision and is thereby removed from the user's field of vision when said test eye is positioned and aligned for testing;

maintaining said positioning of said test eye with said first mark removed from the field of vision of the test eye for the duration of the test in order to maintain the separation distance and the alignment of the test eye relative to the fixation target and to assure that the test eye remains focused on said fixation target at all times during the testing; and

while maintaining said positioning of said test eye with the test eye focused on the fixation target and the first mark removed from the user's field of vision, determining the visibility of said additional marks employing the peripheral vision of the test eye whereby the presence of glaucoma is detected if said additional marks are not visible since the additional marks are formed and arranged on the planar surface to be within the field of vision of a user's eye not having glaucoma.

5,061,060

APPARATUS AND METHOD FOR FINDING OF SCOTOMAS IN THE EYE OF A PERSON TESTED

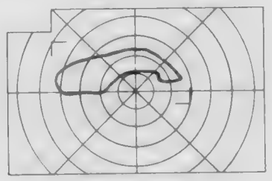
Elfriede Aulhorn, and Gert Köst, both of Tuebingen, Fed. Rep. of Germany, assignors to Oculus Optikgeraete GmbH, Wetzlar, Fed. Rep. of Germany

Continuation of Ser. No. 245,417, Sep. 16, 1988, abandoned. This application Oct. 4, 1990, Ser. No. 593,291

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 3731415; European Pat. Off., Aug. 4, 1988, 88112691.6

Int. Cl.[5] A61B *3/02*

U.S. Cl. 351—224 **28 Claims**



1. In an apparatus for finding of visual field defects in the eye of a person tested, comprising a screen producing an image, the improvement wherein said screen is a television screen, and wherein control means is provided for controlling the image to include a plurality of closely positioned side-by-side lying black/white or colored image points and including a fixation point to which a line of sight of an eye under test is to be directed, the brightness of said image points being subjected to high frequency variations by said control means so that a tested person having a visual field defect will substantially instantaneously observe in its entirety a corresponding region of said image in which the brightness of said image points appears substantially static, said high frequency variations occurring at a frequency of approximately 50 Hz.

5,061,061

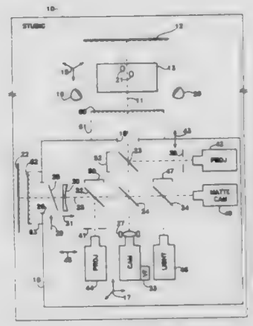
FRONT PROJECTION COMPOSITE PHOTOGRAPHY SYSTEM COMBINING STAGED ACTION WITH TWO PROJECTED IMAGES

Les P. Robley, Los Angeles, and John W. Eppolito, Pasadena, both of Calif., assignors to Introvision International, Inc., Hollywood, Calif.

Continuation of Ser. No. 880,105, Jun. 30, 1986, abandoned, which is a continuation of Ser. No. 93,150, Nov. 13, 1979, abandoned. This application Jun. 14, 1988, Ser. No. 210,141

Int. Cl.[5] A63J *5/00*

U.S. Cl. 352—89 **16 Claims**



1. Apparatus for front projection composite photography of multiple scenes including a staged scene, comprising in combination:

a pair of reflex front surface reflective flat screens disposed along axes perpendicular to each other,

a stage for production of live action disposed in front of a primary one of said screens, said stage being movable along three axes to position the live action wholly within the projected images,

three transparent mirror surfaced beam splitters each disposed at an angle to both said axes and arranged in an array with two of said beam splitters disposed along each of the respective lines perpendicular to the screens,

a single camera disposed to view along a first of the lines through the transparency of two of said three beam splitters, the stage and the primary screen to produce a composite picture of the action on the stage and any image appearing on the first said screen, and wherein said camera includes means for panning and tilting, and means for zooming with respect to the composite picture, all without changing the desired relationship between the live action and the projected images,

two projectors disposed to project respectively by means of two of said mirror surfaces background images on both said screens, said camera being further disposed to view by means of the mirror surface of one of a first two of said beam splitters and through the transparency of the third beam splitter the second auxiliary one of said two screens, whereby the camera mirrors and projectors may be aligned for a single composite camera shot merging two projected scenes with a staged scene, and

a pair of complementary mattes arranged in the projection path between the respective projectors and the screens to modify the respective projected images as seen by the camera so that the camera will view one complete background image scene made up from the two modified images,

and wherein said complementary mattes are affixed to respective glass plates positioned respectively outside the projectors in the paths of the respective background images from the projector to the respective screens, and

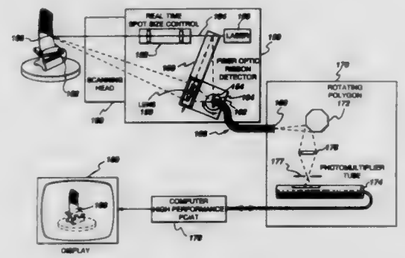
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positioned relative close to the screens to provide a sharp boundary between portions of the projected images.

5,061,062
FOCUS SPOT SIZE CONTROLLER FOR A VARIABLE DEPTH RANGE CAMERA

John L. Schneiter, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 2, 1990, Ser. No. 547,268
Int. Cl.[5] G01C *3/00*
U.S. Cl. 356—1 **20 Claims**



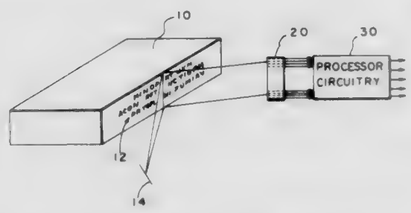
1. A variable depth triangulation ranging apparatus, comprising means for emitting a light beam to be focused onto an object, light sensitive means, lens means for imaging reflected light onto said light sensitive means, means for calculating system geometry and range from signals received from said light sensitive means, and

a focus spot size controller for receiving the light beam from said light beam emitting means and focusing the light beam into a focused spot on an object, said controller dynamically maintaining the focused spot at a sufficient focus spot size for imaging.

5,061,063
METHODS AND APPARATUS FOR OPTICAL PRODUCT INSPECTION

David P. Casasent, Pittsburgh, Pa., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 30, 1989, Ser. No. 428,926
Int. Cl.[5] G06K *9/74, 9/64*
U.S. Cl. 356—71 **54 Claims**



1. Apparatus for verifying that an input image pattern corresponds to a predetermined image pattern, each of said patterns including a plurality of two-dimensional image areas arranged in a predetermined array, each of said image areas including image information which varies in both of said two dimensions, said apparatus comprising:

means for producing a first output indication representative of a one-dimensional image of each of the two-dimensional image areas of said input image pattern, each of said one-dimensional images being taken substantially parallel to an axis of the associated two-dimensional image area;

means for comparing the first output indication associated with each two-dimensional image area to the first output indication that would result if said two-dimensional image area were the corresponding two-dimensional image area in said predetermined image pattern; and

means for producing a second output indication indicating that said input image pattern is said predetermined image pattern if said means for comparing indicates that said first output indication associated with each two-dimensional image area is substantially the same as the first output indication that would result if each two-dimensional image area were the corresponding two-dimensional image area in said predetermined image pattern.

5,061,064
DETECTOR OF THE ARRIVAL ANGLE OF LASER PULSES, ESPECIALLY FOR TANKS

Jean-Francois Morand; Henri Robin, and Jacques Thibault, all of Saint Cloud, France, assignors to Electronique Serge Dassault, Saint Cloud, France

Filed Jun. 28, 1988, Ser. No. 218,081
Claims priority, application France, Jul. 2, 1987, 87 09412
Int. Cl.[5] G01C *1/00;* **H01J** *5/16*
U.S. Cl. 356—152 **17 Claims**

1. In a detector of pulses of electromagnetic radiation, for use with photodetector means, comprising sensing means which include at least one body of revolution having first and second ends and formed of material which is transparent to, and spatially diffusing for, the electromagnetic radiation, said body of revolution having a capture window on its surface of revolution and being provided with an internal metallization delimiting on the body of revolution two parts subject to selective photodetection in order to obtain a sensitivity in bearing and/or in elevation, the improvement comprising a non-diffusing transparent part of said body extending it at said first end, said non-diffusing transparent part being traversed by said internal metallization and being externally metallized for serving as a link with said photodetector means.

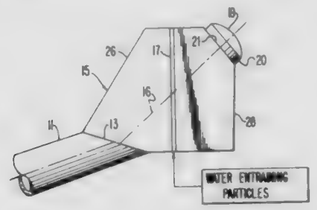
5,061,065
PARTICLE CONTAMINATION DETECTION IN FLUIDS THROUGH THE EXTERNAL SECTION OF A LASER

Holger T. Sommer, Greenbelt, Md., assignor to Pacific Scientific Company, Silver Spring, Md.

Filed Oct. 20, 1989, Ser. No. 424,711
Int. Cl.[5] G01N *21/05*
U.S. Cl. 356—246 **12 Claims**

1. A particle detecting cell comprising a transparent prism defining a fluid channel passing through said prism, means to generate a laser beam to pass through said prism and through said fluid channel, said means to generate a laser beam including a light amplifying section having a transmitting end abutting an external wall of said prism, said external wall being

arranged at the brewster angle with respect to the axis of said light amplifying section, said fluid channel being defined by

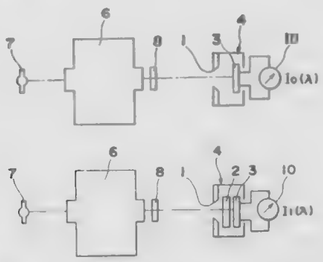


walls arranged at the brewster angle with respect to the laser beam passing through said prism.

5,061,066
METHOD FOR REALIZING A PRIMARY PHOTOMETRIC STANDARD OF OPTICAL RADIATION USING A PHOTODETECTOR AND PHOTODETECTING APPARATUS THEREFOR

Yoshihiro Ohno, Ibaraki, and Hideo Nishiyama, Habikino, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 30, 1990, Ser. No. 561,504
Claims priority, application Japan, Jul. 31, 1989, 1-198997
Int. Cl.[5] G01J *3/51*
U.S. Cl. 356—300 **5 Claims**



1. A method for realizing a photometric standard of optical radiation based on a responsivity for a photometric quantity, using a photometric standard photodetecting apparatus comprising a photodetector having a predetermined absolute spectral responsivity $R(\lambda)$, an optical filter detachably mounted in front of said photodetector, said optical filter altering the relative spectral responsivity thereof so as to be approximately a predetermined standard relative spectral luminous efficacy $V(\lambda)$, and an aperture arranged in front of said optical filter, said aperture having a predetermined aperture dimension Aa, said method including steps:

measuring an output current $I_0(\lambda)$ outputted from said photodetector by projecting monochromatic lights having respective wavelengths within the visible region through said aperture onto said photodetector after removing said optical filter from said photometric standard photodetecting apparatus;

measuring an output current $I_1(\lambda)$ outputted from said photodetector by projecting monochromatic lights having respective wavelengths within the visible region through said aperture and said optical filter onto said photodetector after mounting said optical filter in said photometric standard photodetecting apparatus;

calculating a spectral transmittance $\tau(\lambda)$ using the following equation:

$$\tau(\lambda) = \frac{I_1(\lambda)}{I_0(\lambda)} \text{ ; and}$$

calculating a responsivity R_{IL} for a photometric quantity using the following equation:

$$R_{IL} = \frac{Aa \int_0^{\infty} P(\lambda) \cdot R(\lambda) \cdot \tau(\lambda)\, d\lambda}{K_m \int_0^{\infty} P(\lambda) \cdot V(\lambda)\, d\lambda}.$$

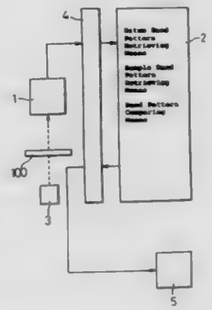
where $P(\lambda)$ is a predetermined relative spectral distribution of a light source to be measured, and

K_m is a predetermined maximum spectral luminous efficacy (683 [lm/W]).

5,061,067
ELECTROPHORESIS PATTERN ANALYZER FOR GENETIC MATERIAL

Takekazu Yamamoto; Masakazu Nakagawa, and Masayoshi Momiyama, all of Tokyo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 29, 1989, Ser. No. 330,289
Claims priority, application Japan, Mar. 31, 1988, 63-79500
Int. Cl.[5] G01N *21/00;* **B01D** *61/42;* **C25D** *13/00*
U.S. Cl. 356—344 **8 Claims**



1. An electrophoresis pattern analyzer for genetic material comprising:

an image data generating means for optically reading an electrophoresis specimen having a datum region with a plurality of bands arranged in a direction of electrophoresis and at least one sample region with a plurality of bands arranged in said direction of electrophoresis, said bands being obtained by electrically migrating at least one datum genetic material disposed perpendicularly to said direction of electrophoresis simultaneously with at least one sample genetic material disposed perpendicularly to said direction of electrophoresis, said image data generating means reading said bands two-dimensionally in order to output datum image data including position coordinates and two-dimensional forms of said bands of said datum region and sample image data including position coordinates and two-dimensional forms of said bands of said sample region;

a datum band pattern retrieving means for retrieving datum band patterns concerning said position coordinates of said bands of said datum region in said direction of electrophoresis and said two-dimensional forms of said bands of said datum region from said datum image data, said data band pattern retrieving means retrieving areas, products of ferret diameters and length to width ratios of said bands of

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said datum region from said two-dimensional forms of said bands of said datum region;

a sample band pattern retrieving means for retrieving sample band patterns concerning said position coordinates of said bands of said sample region in said direction of electrophoresis and said two-dimensional forms of said bands of said sample region from said sample image data, said sample band pattern retrieving means retrieving areas, products of ferret diameters and length to width ratios of said bands of said sample region from said two-dimensional forms of said bands of said sample region; and

a band pattern comparing means for comparing said datum band patterns with said sample band patterns and determining characteristics of said sample region, said band pattern comparing means classifying and identifying said bands of said sample region with said bands of said datum region by said retrieved datum and sample area, said products of ferret diameters and said length to width ratios.

5,061,068

PROCESS FOR DETECTION OF SUB-MICRON PARTICULATE CONTAMINATION ON A BARE (PLANAR) SUBSTRATE

Venugopal B. Menon, Austin, Tex., assignor to Research Triangle Institute, Research Triangle Park, N.C.

Filed Feb. 22, 1990, Ser. No. 482,887
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **9 Claims**

1. A process for the detection of sub-micron particles on the surface of a substrate, comprising:

forming a film of a low-boiling liquid alcohol on said substrate surface,

elevating the temperature of said surface so as to cause slow evaporation of said film,

shining light through said film and observing said light as said film evaporates to detect interference patterns formed in said film,

wherein said interference patterns correspond to a particle on said surface,

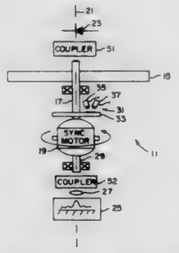
wherein interference patterns which occur early in the evaporation process correspond to particles larger than those indicated by interference patterns occurring later in the evaporation process.

5,061,069

FIBER-OPTIC BENDER BEAM INTERFEROMETER ACCELEROMETER

Herbert T. Califano, Bloomingdale, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 31, 1989, Ser. No. 387,541
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **9 Claims**



1. A fiber-optic interferometer accelerometer comprising:

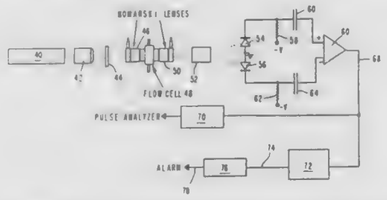
an acceleration sensor rotatable around a spin axis comprising means for receiving optical energy and for providing an acceleration sensor optical output representative of linear acceleration, wherein said acceleration sensor comprises one or more bender beam fiber optic transducers.

5,061,070

PARTICULATE INSPECTION OF FLUIDS USING INTERFEROMETRIC LIGHT MEASUREMENTS

John S. Batchelder, Tarrytown; Donald M. DeCain, New York; Marc A. Taubenblatt, Tarrytown; Hermantha K. Wickramasinghe, Chappaqua, and Clayton C. Williams, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1988, Ser. No. 184,639
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **42 Claims**



1. An apparatus for detecting objects within a fluid comprising:

means for transmitting a beam of optical energy;

first optical means for splitting said beam of optical energy into two substantially parallel beams of different polarization, having axes which are laterally displaced and focused in a focal plane located where a fluid is to be inspected, which focal plane is substantially normal to the beam axes;

second optical means for recombining said two beams into a single beam after said beams travel through the focal plane a distance greater than the depth of focus of said two beams;

third optical means for separating said single beam into two beams, and

detection means for receiving said two beams from said third optical means and providing a signal responsive to a phase shift between said two beams after traveling through the focal plane.

5,061,071

METHOD AND APPARATUS FOR DETECTING SURFACE CONDITION BY UTILIZING OPTICAL HETERODYNE INTERFERENCE

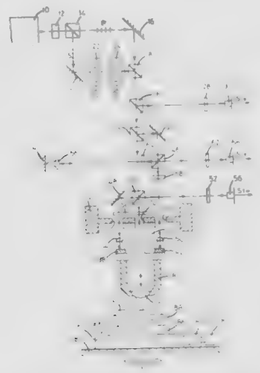
Kazuhiko Fujita, Nagoya, and Yoshinori Bessho, Mie, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 20, 1989, Ser. No. 453,964
Claims priority, application Japan, Dec. 26, 1988, 63-328507
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—360 **13 Claims**

1. A method of detecting a condition of a surface of a subject by using a light beam which is converged on the surface of the subject by an object lens and which is reflected by the subject surface, comprising the steps of:

controlling a relative position between said object lens and said subject in a direction parallel to an optical axis of said object lens, so that said light beam reflected by said subject surface has a plane wave; and

detecting an amount of relative displacement between said object lens and said subject surface, based on a heterodyne interference between a light beam reflected by a stationary mirror and a light beam reflected by a movable mirror which is moved as said relative position is changed, whereby said condition of the subject surface is detected



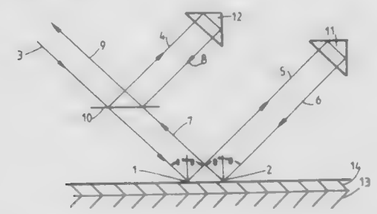
based on the detected amount of relative displacement between said object lens and said subject surface.

5,061,072

DIFFERENTIAL ELLIPSOMETER

Margaret A. Folkard, Kensington Park, and Richard H. Hartley, Seaview Downs, both of Australia, assignors to c/o The Secretary, Comonwealth of Australia Department of Defence, Canberra, Australia

PCT No. PCT/AU89/00009, § 371 Date Oct. 31, 1989, § 102(e) Date Oct. 31, 1989, PCT Pub. No. WO89/06354, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 10, 1989, Ser. No. 416,311
Claims priority, application Australia, Jan. 11, 1988, PI6249
Int. Cl.[5] G01N *21/21*
U.S. Cl. 356—369 **6 Claims**



1. A method for measuring epitaxial growth on a surface, comprising the steps of:

reflecting an incident light beam from the surface;

scanning or expanding said light beam across said surface;

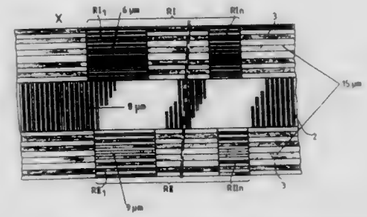
comparing ellipsometric information on said light beam obtained from a reference point area of said surface with ellipsometric information on said light beam from a plurality of other points on said surface, to directly obtain differential measurement between said reference point area and each of said other points.

5,061,073

PHOTOELECTRIC POSITION MEASURING ARRANGEMENT

Dieter Michel, Traunstein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Oct. 10, 1989, Ser. No. 418,496
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834676
Int. Cl.[5] G01B *11/02, 11/26*
U.S. Cl. 356—374 **15 Claims**



1. An apparatus for the photoelectric generation of electrical signals in a length or angle measuring arrangement, the measuring arrangement having at least one illuminating device, a graduation carrier having measuring graduations defined by measuring graduation markings and reference marks having reference graduation markings, a plurality of fields for measuring the measuring graduation markings and reference graduation markings a scanning plate having a plurality of scanning fields for the graduation markings, a plurality of photodetectors and an evaluating circuit, wherein at least the individual graduation markings are formed as phase grids, and wherein the photodetectors detect the radiation diffracted by the graduation markings depending on: (1) the wavelength of the radiation, (2) the orientation and (3) the grid parameters of the markings, the improvement comprising:

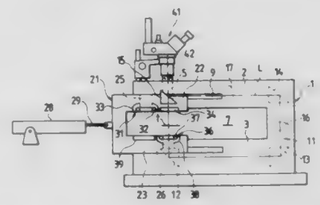
the scanning fields for measuring graduation and reference mark fields being arranged substantially symmetrically about the optical axis of the illuminating device, wherein the measuring graduation markings have a different orientation than the reference graduation markings, and the apparatus further comprises means for deflecting optically transversely to the measuring direction for providing optical separation of the radiation diffracted from the measuring graduation and the radiation diffracted from the reference marks.

5,061,074

APPARATUS FOR INSPECTING BOTH SIDES OF TAPE OR SHEET

Naoharu Ohikata; Toshiro Matsubara, and Jiro Ohno, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 17, 1989, Ser. No. 422,491
Claims priority, application Japan, Oct. 17, 1988, 63-259500
Int. Cl.[5] G02B *27/02*
U.S. Cl. 356—390 **8 Claims**



1. An apparatus for detecting defects in a top and bottom

surface of a transparent or semitransparent tape or sheet material, comprising:

means for feeding a transparent or semitransparent material to be inspected;

means for producing image information of the surface of the material being inspected;

first image information transmitting means for transmitting image information of the top surface of the material fed by said feeding means to said image producing means;

second image information transmitting means for transmitting an image information of a bottom surface of the material fed by said feeding means to said image producing means;

first illuminating means for illuminating the top surface of the material fed by said feeding means;

second illuminating means for illuminating the bottom surface of the material fed by said feeding means; and

actuating means for selectively actuating the first or second illuminating means;

wherein said image producing means comprises a stereoscopic microscope;

wherein said first illuminating means comprises a first uniformly illuminating lighting unit and a first non-eye-irritating back light of a pale blue or green color;

wherein said second illuminating means comprises a second uniformly illuminating lighting unit and a second non-eye-irritating back light of a pale blue or green color; and

wherein said actuating means illuminates said first uniformly illuminating lighting unit and said second non-eye-irritating back light when the top surface of the material is being inspected and illuminates said first non-eye-irritating back light and said second uniformly illuminating lighting unit when the bottom surface of the material is being inspected.

5,061,075

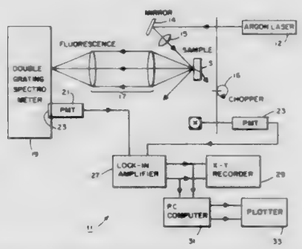
OPTICAL METHOD AND APPARATUS FOR DIAGNOSING HUMAN SPERMATOZOA

Robert R. Alfano, 3777 Independence Ave., Bronx, N.Y. 10463; George R. Nagamatsu, 180 E., 79th St. Apt. 18E, New York, N.Y. 10021, and Nobutoshi Oka, 32 Foxwood Cir., Mount Kisco, N.Y. 10549

Filed Aug. 7, 1989, Ser. No. 390,703

Int. Cl.[5] G01N *21/21. 21/64*

U.S. Cl. 356—417 **15 Claims**



1. A method of measuring the sperm count in a specimen of sperm comprising:

a. exciting the specimen with a beam of monochromatic light,

b. measuring the intensity of the intrinsic native fluorescence emitted from the specimen, and then

c. determining the sperm count using the intensity measurement.

5,061,076

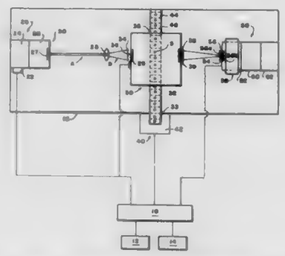
TIME-RESOLVED FLUOROMETER

Ian Hurley, Staten Island, N.Y., assignor to Enzo Diagnostics, Inc., Farmingdale, N.Y.

Filed Jan. 31, 1989, Ser. No. 304,748

Int. Cl.[5] G01N *21/25, 33/544;* **F21V** *9/16*

U.S. Cl. 356—417 **27 Claims**



1. A time-resolved fluorometer for detecting the presence of an analyte in a sample, which fluorometer comprises a light tight enclosure having therein:

means for emitting a beam of excitation light;

a light tight sample excitation station for a sample which has been reacted with a reagent composition excitable by said excitation light to produce a delayed fluorescence in the presence of said analyte, which excitation station comprises a light tight sample enclosure provided with an excitation beam inlet and a delayed fluorescence outlet;

a fused silica lens system for delivering said excitation beam to said sample in said sample enclosure;

sample handling means capable of positioning the so-reacted sample in the path of said excitation beam within said sample enclosure;

means for measuring delayed fluorescence emitted from the so-reacted sample;

a fused silica lens system for delivering the delayed flurescence emitted from the sample to said delayed fluorescence measuring means; and

controller means to control the sequence and coordination of said fluorometer.

5,061,077

KNOCK OUT PADDLE SHAFT FOR MIXING MACHINES

Marvin E. Whiteman, Jr., 2254 Braniff St., Boise, Id. 83706

Filed Dec. 14, 1989, Ser. No. 450,443

Int. Cl.[5] B28C *5/14*

U.S. Cl. 366—64 **4 Claims**

1. In a mortar mixer having a generally horizontally disposed cylindrical mixing drum including two opposing end walls, each with a paddle shaft bearing assembly attached thereto for rotatably supporting a paddle shaft segment, said paddle shaft bearing assemblies further being in axial alignment with each other, a paddle shaft assembly which comprises:

first and third paddle shaft segments, each rotatably supported by a paddle shaft bearing assembly, and further, each extending through opposite end walls of the mixing drum into the interior of said mixing drum;

a second paddle shaft segment for removable coaxial interconnection between said first and third paddle shaft segments; and

a pair of removable coaxial coupling means each having a single annular threaded connection coaxial with said paddle shaft segments and being disposed within the interior of said mixing drum for coaxially and positively coupling a first shaft segment to one end of said second shaft segment within the interior of the mixing drum, and for coaxially and positively coupling a second end of said second shaft segment to one end of said third shaft segment within the interior of the mixing drum.

5,061,078

INTERNAL MIXER

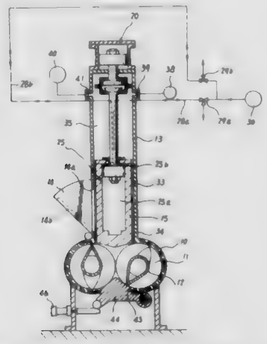
Yasuo Yada, Yokkaichi, Japan, assignor to Suzuka Engineering Co., Ltd., Yokkaichi, Japan

Filed Jun. 5, 1990, Ser. No. 533,390

Claims priority, application Japan, Jun. 13, 1989, 1-150044

Int. Cl.[5] B01F *7/02, 15/02*

U.S. Cl. 366—76 **10 Claims**



1. An internal mixer of the type including a mixing chamber rotatably accommodating mixing rotors therein, a hopper frame erected on said mixing chamber, a charge hopper provided on one lateral side of said hopper frame for charging a mixing material therethrough, and a floating weight provided in said hopper frame for upward and downward movements therein, said floating weight being held in an upper lifted position when charging a mixing material into said mixing chamber and then lifted down into a lower pressing position in a mixing stage to apply pressure on the charged material in said mixing chamber, characterized in that:

said floating weight is dimesioned to have an axial length sufficient for closing an inlet opening formed in the side wall of said hopper frame in communication with said charge hopper, when in said lower pressing position;

a pressing means for pressing said floating weight resiliently against said mixing material;

a lift means for lifting said floating weight up and down in said hopper frame, said lift means being provided separately from said pressing means and having a hydraulic cylinder mechanism including a hydraulic lift cylinder formed internally of said floating weight, a piston slidably received in said lift cylinder, a piston rod extended upward from said piston into said hopper frame, and a liquid tight seal through which said piston rod extends.

5,061,079

STIRRER

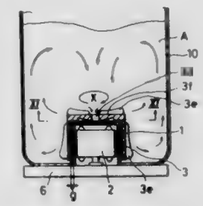
Katsumi Shiobara, Yono, Japan, assignor to Satake Chemical Equipment Mfg., Ltd., Moriguchi, Japan

Filed Mar. 12, 1990, Ser. No. 491,596

Claims priority, application Japan, Mar. 10, 1989, 1-59150; Mar. 15, 1989, 1-62685; Apr. 4, 1989, 1-84098; Apr. 5, 1989, 1-86044; Apr. 25, 1989, 1-47738

Int. Cl.[5] B01F *13/08*

U.S. Cl. 366—127 **5 Claims**



1. A stirrer for stirring a liquid, which comprises:

a container within which said liquid is housed and which is mounted on a base;

a stator positioned on said base and located within said container;

a rotor disposed in said container and provided with stirring vanes;

a cylindriaclly shaped housing of nonmagnetic material having a peripheral wall thereof interposed between said stator and said rotor and fluidically rotatably supporting said rotor by said luquid, wherein said stator is located within said housing, and said rotor is in the shape of a cap having stirring vanes on an outer surface thereof and having an aperture in a top wall thereof, said rotor being rotatably fitted on said housing so as to form a small gap between an inner periphery of said rotor and said housing; and

a plurality of radially extending grooves formed on one of an inner surface of a top wall of said rotor and a top surface of said housing, wherein a surface is formed contiguously to each of said grooves in such a manner as to narrow the gap between said inner surface of the top wall of said rotor and said top surface of said housing in a circumferential direction.

5,061,080

ROTARY AGITATOR

Donald J. MacKay, Media; Douglas H. Eden, Wallingford, and R. Lee Roberts, Boothwyn, all of Pa., assignors to Roberts Filter Manufacturing Company, Darby, Pa.

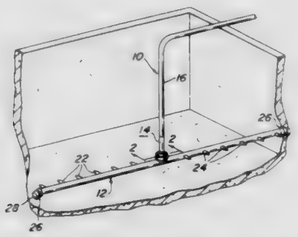
Filed Nov. 21, 1990, Ser. No. 616,557

Int. Cl.[5] B01F *5/10, 7/16*

U.S. Cl. 366—169 **5 Claims**

1. A rotary agitator for use in filter systems, said agitator comprising a horizontal arm formed of a single, elongate, tubular section having a peripheral wall defining a hollow

interior, an opening through the peripheral wall of the tubular section at substantially the midpoint thereof, said opening communicating with the hollow interior of said tubular section, and an external rotor section of a central bearing assembly secured directly to the hollow tubular section in a region overlying the opening through the peripheral wall of the tubular section, said external rotor)section having a passageway therethrough communicating with the opening through the



peripheral wall of the tubular section, said central bearing assembly further including an elongate stator having an elongate passage therethrough, said stator being disposed interiorly of the external rotor section with the passage of said stator aligned with and in communication with the opening through the peripheral wall of the tubular section, and bearing means for rotatably mounting the external rotor section to the stator section.

5,061,081

MIXER UNIT/VEHICLE

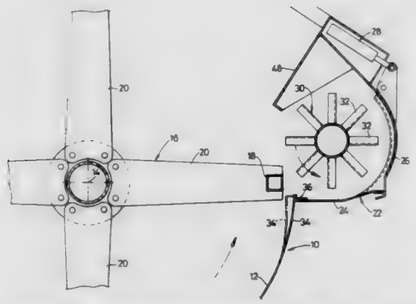
Charles E. Walley, Cotton Abbots, Waverton, Chester Cheshire CH3 7PH, England

Filed Nov. 20, 1990, Ser. No. 615,877

Claims priority, application United Kingdom, Nov. 21, 1989, 8926254; Oct. 10, 1990, 9022069

Int. Cl.[5] B01F *7/02*

U.S. Cl. 366—196 **8 Claims**



1. Mixing apparatus comprising an open topped body to be loaded with bulk materials by way of an upper zone of a main part thereof, said main body part having a part cylindrical lower zone defined by a curved floor and wall structure centered on a first longitudinal axis; a main mixing rotor driven about said axis in a cylindrical envelope of revolution in close proximity to said floor and wall structure to provide a tumbling, stirring or mixing action on said materials in said main part in use; a laterally projecting extension above the level of said axis and to that side at which material is operatively driven upwardly by action of the mixing rotor; a feed out rotor within said extension to act on material passing thereinto from said main part; and a discharge opening in or along said extension which can be selectively opened for dispensing of material laterally of the body by the action of the feed out rotor: wherein the improvement comprises providing a portion of said body wall structure in a longitudinal zone of the body in which the inboard side of the extension is open to the main part of the body to receive such material on transfer for discharge, said wall structure portion having an upper edge immediately adjacent to the bottom of the extension, which is selectively angularly movable between a first position in close proximately to the envelope of revolution of the mixing rotor and a second position at which it is more remote from said envelope, whereby with said portion at the first position material swept round the body by the mixing rotor is substantially directed past the extension and out of reach of the feed out rotor so that it remains in a main part of the body for further mixing, and at the second position said material is substantially urged into the extension and towards the feed out rotor to be acted on thereby.

5,061,082

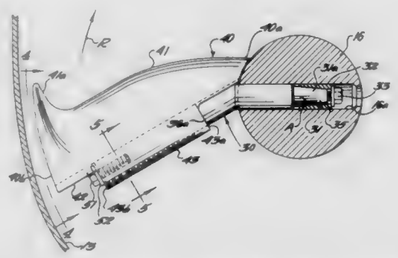
REPLACEABLE PUG MILL BLADE

Alexis P. Steele, Jr., Pawley's Island, S.C., assignor to J.C. Steele & Sons, Inc., Statesville, N.C.

Filed Nov. 27, 1989, Ser. No. 441,940

Int. Cl.[5] B01F *7/04*

U.S. Cl. 366—325 **17 Claims**



7. An apparatus for continuously mixing aggregate material comprising:

an elongate trough having a material inlet and a material outlet at generally opposite ends thereof;

an elongate shaft mounted lengthwise in said trough for rotary movement about a predetermined axis;

drive means connected to said shaft for rotating said shaft about said predetermined axis;

a plurality of shanks mounted to said shaft along the length thereof and extending generally radially outwardly therefrom so as to rotate about said axis with said shaft and comprising an elongate generally circular bar having one end connected to said shaft, an opposite distal end spaced from said shaft, flat portions along opposite sides thereof extending a substantial length of said shank from said distal end to a shoulder formed by the termination of said flat portions, and a threaded hole at said distal end of said shank formed generally coaxially with said shank;

an elongate blade mounted to each said shank for rotary movement about said predetermined axis to mix the material wherein said blade comprises an elongate body arranged to extend lengthwise with said shank and having opposite ends, a narrow leading edge extending substantially along the length of said blade and generally disposed in the direction of rotation of said blade, a generally blunt elongate trailing portion opposite from said leading edge, and an elongate flange extending rearwardly along said generally blunt trailing portion wherein said elongate flange includes an elongate bore hole extending therethrough for mounting said blade onto said shank such that the flange of said blade overlies a substantial portion of said shank and substantially reduces abrasive contact of said shank with the aggregate material; and

a bolt received into said hole at said distal end of said shank for securing said flange of said blade onto said shank.

5,061,083

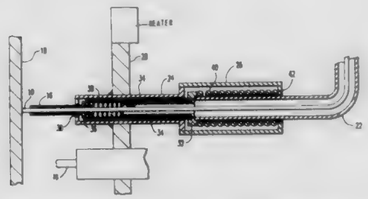
TEMPERATURE MONITORING DEVICE AND THERMOCOUPLE ASSEMBLY THEREFOR

Noel P. Grimm, Monroeville; Frank I. Bauer, Perry Township, Lawrence County; Thomas G. Bengel, Plum Boro; Richard E. Kothmann, Churchill Boro; Robert S. Mavretish, New Stanton; Phillip E. Miller, Greensburg; Raymond J. Nath, Murrysville, and Robert B. Salton, Plum Boro, all of Pa., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 19, 1989, Ser. No. 368,459

Int. Cl.[5] G01K *7/02, 3/08, 3/14*

U.S. Cl. 374—112 **7 Claims**



1. A temperature monitoring device for measuring the temperature at a surface of a body, comprising

at least one first thermocouple and a second thermocouple;

means supporting said thermocouples for placing said first thermocouple in contact with the body surface and for maintaining said second thermocouple at a defined spacing from the body surface; and

calculating means connected to said thermocouples for receiving individual signals each representative of the temperature reading produced by a respective one of said first and second thermocouples and for producing a corrected temperature signal having a value which represents the temperature of the body surface and is a function of the difference between the temperature reading produced by said first thermocouple and a selected fraction of the temperature reading provided by said second thermocouple.

5,061,084

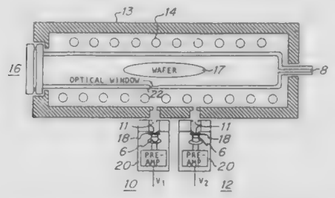
PYROMETER APPARATUS AND METHOD

Thomas E. Thompson, Los Altos, and Eugene R. Westerberg, Palo Alto, both of Calif., assignors to AG Processing Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 186,556, Apr. 27, 1988, abandoned. This application Feb. 7, 1991, Ser. No. 652,459

Int. Cl.[5] G01J *5/06*

U.S. Cl. 374—127 **9 Claims**



1. A method for sensing the temperature of a remote object within a chamber that is heated by a source of radiation within a selected waveband that is outside the chamber where the chamber has a boundary wall that is formed of a material which is substantially transparent to radiation within said selected waveband and that is heated by radiation within said selected waveband from said source, the method comprising the steps of:

detecting within a first waveband that is substantially separated from the selected waveband the composite radiation received from the remote object through the material of the boundary wall and from the boundary wall to provide a first indication;

substantially simultaneously detecting within a second waveband, that is substantially separated from the selected waveband, the radiation emitted from the boundary wall alone to provide a second indication; and

processing the first and second indications to provide an output indication of the temperature of the remote object substantially independent of the radiation from the boundary wall.

5,061,085

THERMOSTATIC BIMETALLIC MEASURING ELEMENT

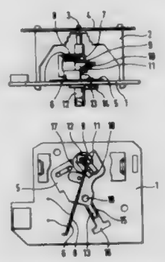
Helmut Unfried, Butzbach, and Gerhard Wesner, Sulzbach/Ts, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 488,336

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914279

Int. Cl.[5] G01K *5/00*

U.S. Cl. 374—205 **9 Claims**



2. A thermostatic bimetallic measuring device comprising

a bimetallic body, an adjustment lever, a rear plate, and a swing shaft which is displaceable in the rear plate, the bimetallic body being positioned on the adjustment lever; and

wherein the adjustment lever is held in swingable manner on a front side of the rear plate about the swing shaft;

said rear plate includes a slot, and said swing shaft is formed by a portion of said adjustment lever which extends into and engages with said slot;

said adjustment lever has a holding section which passes through said slot and engages over a back of said rear plate;

said swing shaft is formed by a protuberance which engages into said slot;

said lever includes a holding arm which extends along said slot for connection with said holding section;

said holding arm extends spaced from said rear plate; and

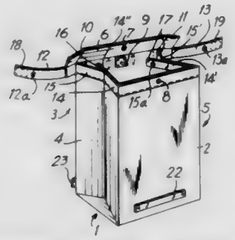
said holding section of the holding arm rests by spring forces of the holding arm against the back of said rear plate.

5,061,086

SECURITY POUCH

Jose A. Vallerga, Castanon No. 1347, 1406 Buenos Aires, Argentina

Filed Sep. 26, 1989, Ser. No. 412,893
Claims priority, application Argentina, Jan. 25, 1989, 313068
The portion of the term of this patent subsequent to Nov. 15, 2005, has been disclaimed.
Int. Cl.[5] **A45C** *1/00, 13/10;* **B65D** *33/06;* **E05B** *65/52*
U.S. Cl. 383—16 **14 Claims**



1. A flexible security pouch, having a wide upper mouth, a front face, a counter-face, a bottom and two opposite, articulated faces, comprising:

said wide upper mouth of the security pouch having rigid metal support means defining the periphery thereof;

an inwardly foldable flap at the upper margin of the counter-face having lateral extensions at the opposite ends thereof; and

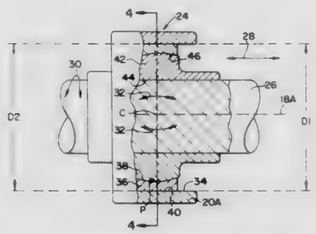
a pair of straps extending laterally in opposite directions from the side margins of the counter-face adjacent said flap with portions of each strap extending from the side margin of the counter-face being super-posed over portions of each of said lateral extensions of said flap, each of said straps being longer than half the width of said pouch.

5,061,087

BEARING APPARATUS FOR A DOCTOR JOURNAL

Arnold J. Roerig, Beloit, Wis.; John F. Schmaeng, Rockton, Ill., and Frank J. Wywialowski, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Oct. 15, 1990, Ser. No. 597,239
Int. Cl.[5] **F16C** *23/04, 13/06*
U.S. Cl. 384—192 **20 Claims**



1. A bearing apparatus for permitting axial, rotational and angular movement of a doctor journal of a papermaking machine, said apparatus comprising:

a housing defining a cylindrical bore for the reception therein of the doctor journal;

an annular bearing ring defining an inner and an outer surface, said outer surface being cylindrical and having a diameter slightly less than the diameter of said bore such that when said ring is disposed within said bore, axial sliding of said bearing ring within said bore is permitted; and

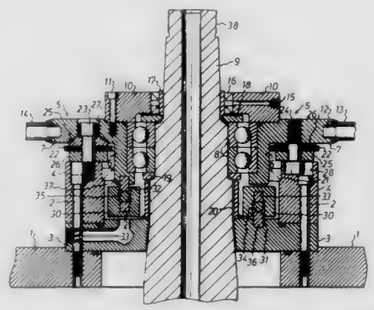
a sleeve disposed within said bearing ring, said sleeve defining an internal channel for supporting the doctor journal and an external face, said external face closely conforming to said inner surface of said bearing ring such that angular movement of said sleeve within said bearing ring is permitted while axial movement of said sleeve relative to said bearing ring is inhibited.

5,061,088

DEVICE FOR ROTATABLY MOUNTING A MACHINE ELEMENT

Per-Arne Sigurdsson, Åskloster, Sweden, assignor to Hoganas AB, Askloster, Sweden

PCT No. PCT/SE90/00201, § 371 Date Nov. 28, 1990, § 102(e) Date Nov. 28, 1990, PCT Pub. No. WO90/12215, PCT Pub. Date Oct. 18, 1990
PCT Filed Mar. 29, 1990, Ser. No. 613,562
Claims priority, application Sweden, Mar. 30, 1989, 8901101
Int. Cl.[5] **F16C** *27/00*
U.S. Cl. 384—535 **15 Claims**



1. A device for rotatably mounting a machine element, (9), on a machine body (1), said device comprising:

a bearing housing (5);

a bearing member (8) supported by a housing (5) and adapted to guide said shaft (9); and

a plate-shaped supporting means (22) for mounting the bearing housing (5) on the machine body (1), said supporting means (22) having a main plane perpendicular to the shaft (9) and being rigidly connected with the machine body (1) at first points of attachment (23), and with the bearing housing (5) at second points of attachment (24) which, in said main plane, are separate from the first points of attachment (23), and said supporting means (22) presenting, on the one hand, an inherent rigidity in its main plane and, on the other hand, a corresponding inherent flexibility perpendicular to said main plane so as to be capable of taking up and transmitting to the machine body (1) substantially only radial bearing load, and so as to permit, by deflection between said first and said second points of attachment (23, 24), a movement of the bearing housing (5) in relation to the machine body (1).

5,061,089

TAPERED BEARING ISOLATOR

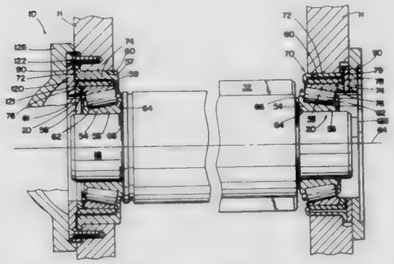
John J. Bair, Union Lake; Gerald D. Damon, Farmington, and Eugene R. Braun, Royal Oak, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 16, 1990, Ser. No. 509,396
Int. Cl.[5] **F16C** *27/00, 27/04*
U.S. Cl. 384—535 **16 Claims**

1. A bearing isolator assembly (70) for mounting a bearing of the type comprising a radially inner race 54, a radially outer race 58 and a plurality of roller members (62) to a housing (H) having an aperture (60) defining an inner diameter surface (57) for receipt of a bearing, said outer bearing race defining an axially outwardly facing surface (61) and an outer diameter surface (5(), said bearing isolator assembly comprising:

a generally tubularly shaped radial wave spring (74) telescopically received on at least a portion of said outer bearing race outer diameter surface and radially interposed said outer diameter surface and the inner diameter surface of said aperture;

a generally washer shaped axial wave spring (76) adapted to be axially interposed said outwardly facing surface of said outer bearing race and an axially fixed axially inwardly facing surface (79, 121) defined by said housing; and



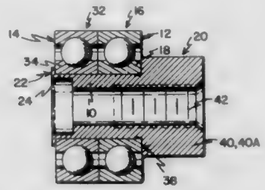
a retaining member (72), said retaining member comprising a generally tubular shaped intermediate portion (84) having an inner diameter (94) generally equal to the largest outer diameter (92) of said radial wave spring, and an outer diameter (86) generally equal to the inner diameter of said aperture (60) in said housing, a radially outwardly extending flanged portion (80) at the axially outer end thereof and a radially inwardly extending flanged portion (82) at the axially inward end thereof, said radially inwardly extending flanged portion (82) having an inner diameter (98) smaller than the outer diameter (92) of said radial wave spring.

5,061,090

SHAFT AND BEARING ASSEMBLY

John R. Kriaski, and Bimal K. Chateriee, both of Jackson, Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.

Filed May 31, 1990, Ser. No. 531,039
Int. Cl.[5] **F16C** *43/04;* **B24B** *23/00*
U.S. Cl. 384—537 **2 Claims**



1. An output shaft and bearing assembly, comprising:

(a) a shaft having a central bore, the shaft further having a length terminating at first and second free ends, the shaft comprising a cylindrical outer surface proximate the first free end of the shaft;

(b) a bearing assembly comprising a ball bearing having an inner race positioned over the cylindrical outer surface proximate the first free end of the shaft;

(c) restraining means located along the length of the shaft and terminating proximate the second free end of the shaft for preventing the bearing assembly from coming off the second free end of the shaft;

(d) a thread formed in the bore at the second free end of the shaft; and

(e) the first free end of the shaft comprising a cylindrical wall which defines a cylindrical chamber that opens to the first free end of the shaft and that is concentric with the central bore, the cylindrical wall having a wall thickness suitable for rounding over in an outward direction at the first free end of the shaft, the free end of the cylindrical wall being formed over the bearing assembly in order to secure the bearing assembly onto the shaft between the formed free end of the cylindrical wall and the restraining means, the shaft having a total length substantially defined by the formed cylindrical wall at the first free end of the shaft and by the restraining means terminating proximate the second free end of the shaft so that the shaft will fit within space confines of structure located in axial alignment with the formed cylindrical wall and the thread formed in the bore at the second free end of the shaft.

5,061,091

BEARING CASE

Koji Shiratori, Shizuoka, Japan, assignor to Shiratori Co., Ltd., Japan

Filed Oct. 31, 1990, Ser. No. 607,272
Int. Cl.[5] **F16C** *35/067*
U.S. Cl. 384—539 **5 Claims**



1. A bearing case comprising a casing, an arm, a stopper formed on the casing and a pawl retainer formed around the outer edge of an end of the arm, wherein:

said casing for receiving a bearing comprises a drum, an inner lid and an outer lid and has an inner diameter virtually equal to the outer diameter of the bearing, and

said arm has an outer diameter virtually equal to the diameter of a hole in which the bearing is built.

5,061,092

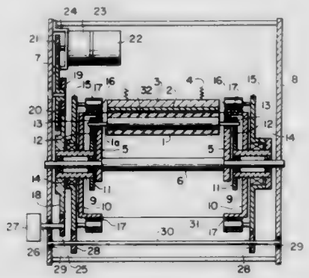
MULTICOLOR THERMAL PRINTER RECORDING MEDIUM TRANSMISSION MECHANISM

Fumio Takeda, Ushiku; Takashi Yoshida, Ibaraki; Hideki Tanaka, Tsuchiura; Yoshikazu Ishitsuka, Ibaraki; Tsutomu Omine, Mito; Masao Miyasaka, Mito; Mitsugu Asano, Higashiibaraki; Akira Igarashi, and Hiroshi Takahagi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Jun. 20, 1990, Ser. No. 541,023
Claims priority, application Japan, Jun. 26, 1989, 1-160758; Aug. 25, 1989, 1-219579; Nov. 24, 1989, 1-305042
Int. Cl.[5] **B41J** *3/02*
U.S. Cl. 400—120 **14 Claims**

1. In a thermal printer including a platen roll axially extending in opposed relationship with a line-type thermal head, two drums provided on the axially opposite sides of the platen roll, at least one of which drums is adapted to be driven by a motor, two pulley holders provided axially outwardly of the drums, a plurality of belt supporting pulleys provided in the circumferential direction of the drums at predetermined intervals and supported on pulley shafts mounted on the pulley holders, and endless belt means adapted to be guided by the pulleys such

that the inner side of the belt means is in close contact with a portion of the outer periphery of the drums, the drums being adapted to be rotated and the belt means being adapted to be rotatingly driven by the drums so that the drums and the belt means interpose therebetween opposite lateral edges of the sheet of paper, and the drums and the pulley holders are rotated together during the printing operation to move the sheet of paper in one direction while said thermal head and said



platen roll cooperate to conduct printing on the sheet of paper, the improvement wherein the pulley holders are mounted on the drum shafts through one-way clutches which act to change the rotational direction of the motor during the paper feed and delivery operations and during the printing operation such that only the drums are rotated during the paper feed and delivery operations and the drums and the pulley holders are rotated together during the printing operation.

5,061,093

NON-IMPACT PRINTING APPARATUS

Yoshitaka Yamaguchi; Hitoshi Fukushima; Kohei Iwamoto, and Katsumori Takei, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

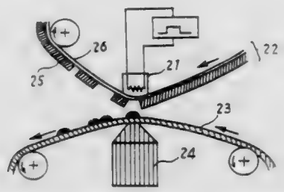
Division of Ser. No. 143,555, Dec. 16, 1987, Pat. No. 4,935,299. This application Jul. 5, 1989, Ser. No. 359,175

Claims priority, application Japan, Apr. 17, 1986, 61-0088751

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] B41J *2/32*

U.S. Cl. 400—120 **8 Claims**



1. A non-impact printing apparatus for transferring magnetic ink from a transfer medium to a receiving medium, comprising:

a transfer medium including a foundation;

a thermoplastic magnetic ink layer having magnetic ink particles dispersed therein on said foundation and a portion of the ink layer and magnetic particles therein adapted to be transferred onto a receiving medium in response to magnetic force applied to the receiving medium, said thermoplastic magnetic ink layer including two or more kinds of magnetic particles different from each other in size, the magnetic particles of a first size having a small particle size with a diameter of from about 0.01 to 1 μm and the magnetic particles of a second size having a large particle size with a major axis or diameter of from about 0.1 to 50 μm, the weight ratio of second size magnetic particles to first size magnetic particles between 1:15 to 5:1 and the magnetic particles are present in an amount between 5 to 70 weight percent of the ink layer;

thermal print head means for generating heat in response to print signals for selectively heating portions of the transfer medium; and

magnetic means spaced apart from and disposed in cooperation with the print head means for attracting the selectively heated portions of the magnetic ink layer and for positioning a receiving medium between the print head means and the magnetic means for receiving the magnetic ink.

5,061,094

KEYBOARD FOR TYPEWRITERS, PRINTERS OR THE LIKE

Gunter Buttner; Friedrich Forschner, both of Nuremberg; Manfred Fuchtenkort, Allersberg; Rudolf Schmeykal, Hemhofen, and Alfred Wieland, Ditzingen, all of Fed. Rep. of Germany, assignors to Ta Triumph-Alder AG, Nuremberg, Fed. Rep. of Germany

Filed Dec. 19, 1990, Ser. No. 629,949

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942597

Int. Cl.[5] B41J *5/08*

U.S. Cl. 400—479 **7 Claims**

1. A keyboard for typewriters, printers, input devices for data processing apparatus or the like, comprising

a support plate, a film disposed on the support plate having printed contacts and strip conductors thereon, and a guide arrangement connected with the support plate for a plurality of keys,

each key being provided with a key head and a key tappet having a free end in such a way that the keys can be operated and guided vertically to the plane of the support plate, the free end of the key tappet making contact with at least one said contact when being operated,

a tongue (**12**) stamped out of said contact carried by said film in an area underneath each said key tappet and bent inwardly by approximately 180° to assume an approximate U-shape, said bent tongue resting under the free end of each said key tappet (**3**), said contacts being disposed in the areas of the bent film tongue (**12**) and the film (**10**) which face each other.

5,061,095

PRINTER FOR PRINTING ON MULTIPLE TYPES OF PRINTING SHEETS

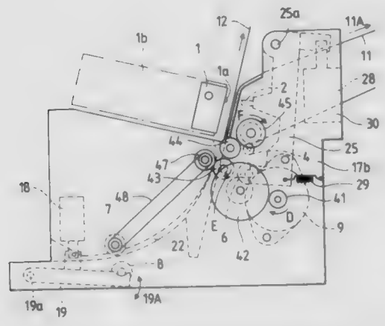
Naoki Asai; Masahiro Minowa, and Choji Morozumi, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 13, 1990, Ser. No. 611,637

Claims priority, application Japan, Nov. 14, 1989, 1-295535

Int. Cl.[5] B41J *11/50*

U.S. Cl. 400—605 **9 Claims**



1. A printer capable of printing at least two types of recording sheet at a printing section thereof having a print head, comprising:

a print head and a platen confronting said print head;

a first recording sheet forwarding path for a first recording sheet to be printed by being inserted from below said printing section or from an inlet side thereof in a recording sheet forwarding direction;

a second recording sheet forwarding path for a second recording sheet to be printed by being inserted from above said printing section or from a discharge side thereof in said recording sheet forwarding direction;

an electrically driven printing section opening/closing mechanism for changing a clearance between said print head and said platen confronting said print head;

a first recording sheet forwarding mechanism disposed within said first recording sheet forwarding path;

an electrically driven first sheet forwarding section opening/closing mechanism for opening and closing said first recording sheet forwarding path by biasing and releasing a recording sheet forwarding drive section disposed within said first recording sheet forwarding mechanism toward and from said first recording sheet;

a second recording sheet forwarding mechanism, disposed at a recording sheet path shared in common by both said first and second recording sheets, for forwarding both said first and second recording sheets;

an electrically driven second sheet forwarding section opening/closing mechanism for opening and closing said recording sheet forwarding path by biasing and releasing a recording sheet forwarding drive section disposed within said second recording sheet forwarding mechanism toward and from said first or second recording sheet;

recording sheet detection means, disposed adjacent to a point at which said first and second recording sheet forwarding paths meet, for detecting said first or second recording sheet; and

an electrically driven sheet path blocking mechanism for blocking said first or second recording sheet forwarding path, said sheet path blocking mechanism being disposed between said recording sheet detection means and said printing section.

5,061,096

DEVICE FOR TRANSPORT OF MULTI-LAYER, EDGE-PERFORATED IMPRINT-RECEIVING SUBSTRATES

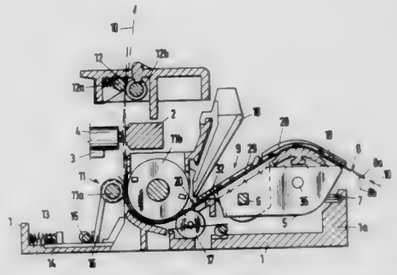
Wolfgang Hauslaib, Langenau; Günter Gomoll, Nersingen, and Ulrich Buschmann, Elchingen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 27, 1990, Ser. No. 619,064

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1989, 3939507

Int. Cl.[5] B41J *11/26*

U.S. Cl. 400—616.2 **20 Claims**



1. A device for the transport of multilayer, edge-perforated imprint-receiving substrates comprising

a thrust tractor pair for pushing a multilayer edge-perforated imprint-receiving substrate movable along a curved transport path;

a braking element furnished at the thrust tractor for braking a front layer of the multilayer imprint receiving substrate;

a first friction roller driven by a motor and resting against the front layer of the multilayer imprint-receiving substrate;

a second friction roller resting against a rear layer of the multilayer imprint-receiving substrate and providing a counter friction roller, wherein the first friction roller and the second friction roller form a friction roller pair including at least one driven friction roller for transferring a pulling force to the multilayer imprint-receiving substrate arriving from the thrust tractor pair, and wherein the first friction roller surface performs a slightly smaller motion path with its surface engaging the front layer of the imprint-receiving substrate per time unit relative to an advance of the thrust tractor advance motion, and wherein the second friction roller surface resting at the rear layer of the imprint-receiving substrate performs a slightly larger motion path versus the tractor advance motion;

a substrate support, wherein the multilayer imprint-receiving substrate, arriving from the friction roller pair, rests with its rear layer on the substrate support.

5,061,097

PRINTER CONSTRUCTION FOR HANDLING A PLURALITY OF PRINT MEDIA FORMATS

Michael J. Piatt, Enon, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 855,288, Apr. 24, 1986, abandoned. This application Apr. 21, 1988, Ser. No. 185,340

Int. Cl.[5] B41J *11/00, 15/04*

U.S. Cl. 400—619 **8 Claims**

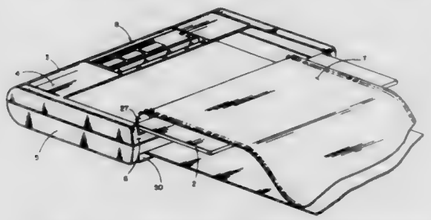
1. A portable printer of the kind having a housing providing front, rear, and side walls, a print platen located between said side walls for advancing print media through a print zone and printing means for traversing said print zone, said printer further comprising:

(a) guide means, defining a continuous or sheet type print media ingress path having an inlet opening in the rear wall

of said housing, for directing print media from said inlet opening under said print platen and then upwardly along the printer front side of said platen, through said print zone;

(b) top wall means having an opening sized to provide manual access to said print platen and said printing means; and

(c) a generally flat lid means, hinged rearwardly of said print platen, and sized to interfit over said top wall opening in a



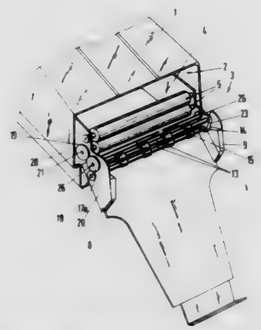
condition generally flush with said top wall means when moved to a closed position, said lid means being mounted for pivotal movement of approximately 180° to a fully open position wherein it is generally parallel with the top surface of said top wall means and wherein a major portion of said lid means extends rearwardly of said rear wall to inhibit refeed of continuous type print media into said inlet opening.

5,061,098

PRINTER STATION WITH OUTPUT DISCHARGING DEVICE FOR INDIVIDUAL SHEETS

Günther Engelhardt, Niederstotzingen; Gerhard Lohrmann, Thalfingen, and Helmut Riesenegger, Elchingen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 21, 1989, Ser. No. 384,736
Int. Cl.[5] B41J *13/03*
U.S. Cl. 400—625 **25 Claims**



14. A collection method for sheet output comprising

providing a tiltable output discharging device for individual sheets or the like, having a left side wall and a right side wall, an output roller pair, and said output discharging device being rotatably supported at the printer frame of the printer station in a desired position;

tilting said tiltable output discharging device;

providing a drivable friction roller pair on the output discharging device, said drivable friction roller pair having friction roller shafts;

gripping and rotatingly engaging the paper sheets further with said drivable friction roller pair;

positioning the friction shafts of the friction roller pair to be rotatably supported on the side walls of the output discharging device;

positioning the output discharging device directed outwardly and following the output roller pair as seen in advance direction of printed individual sheets, and;

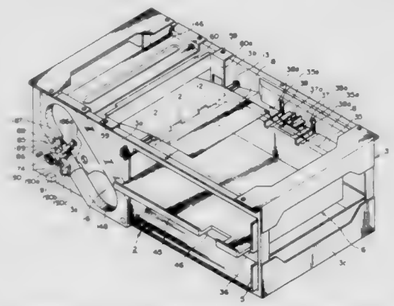
discharging paper sheets with said output roller pair having a roller shaft and mounted to the printer frame of the printer station.

5,061,099

PRINTING APPARATUS WITH PUSHERS ON STEPPED DISCHARGE PLATE

Mitsuo Iwatani; Hitoshi Kamoda; Masatoshi Mikuriya, all of Kanagawa; Tadao Kashiyama, Chiba, and Yoshio Kajino, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 3, 1989, Ser. No. 318,321
Claims priority, application Japan, Mar. 31, 1988, 78691
Int. Cl.[5] B65H *29/00*
U.S. Cl. 400—625 **15 Claims**



1. Apparatus for use in printing an image on a sheet of printing medium comprising:

printing means for printing the image on the printing medium;

discharge means for discharging the printing medium from said printing means;

first receiving means defining a first ejecting position provided in the printing apparatus for receiving, aligning and temporarily retaining the printing medium discharged thereto by said discharge means, said first receiving means including a first step on which said discharged printing medium is initially received and temporarily retained;

second receiving means defining a second ejecting position laterally displaced from said first position and including a tray defining a second step which is positioned lower than said first step for receiving and storing the printing medium having an image printed thereon; and

ejecting means for moving the printed sheet of printing medium from the first ejecting position of said first receiving means toward said tray at the second ejecting position.

5,061,100

PRINTER MECHANISM WITH VERTICALLY DISPLACEABLE PRINTING MEANS FOR USE WITH HORIZONTAL SHEET FEED MECHANISM

Frederick W. Brouwer; Graham Luckhurst, both of Kitchener, and Fredrik L. N. Kallin, Waterloo, all of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 28, 1990, Ser. No. 635,898
Int. Cl.[5] B41J *13/12*
U.S. Cl. 400—642 **14 Claims**

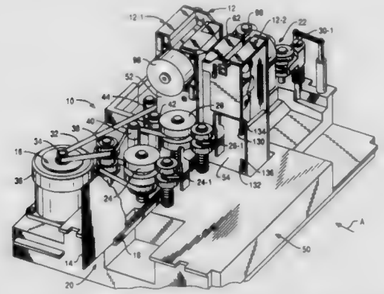
8. A compact housing for a printer comprising:

first, second, third, and fourth walls forming a general quadrilateral tubular shape, and a spacer wall for maintaining said first and second walls in spaced parallel relationship;

mounting means for mounting a print head in said housing;

securing means for detachably securing said housing adjacent to a document track;

said third wall having a ramp surface for guiding a document in said document track in operative relationship with said print head; and



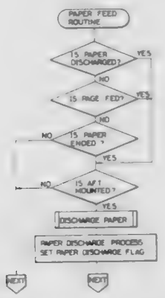
said fourth wall having a circuit board mounted thereon with said circuit board having contacts thereon for engagement with a control means when said housing is secured adjacent to said document track.

5,061,101

AUTOMATIC SHEET FEED CONTROL SYSTEM FOR PRINTER

Yoshihisa Kondo, Morioka, and Satoru Tsukihara, Iwate, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1987, Ser. No. 134,762
Claims priority, application Japan, Feb. 24, 1987, 62-41122
Int. Cl.[5] B41J *29/44*
U.S. Cl. 400—706 **2 Claims**



1. An automatic sheet feed control system for a printer having a feeding means for sequentially feeding sheets stacked on a tray to a printing position, and discharge means for discharging a printed sheet after printing, comprising:

first means for detecting the end of a printed sheet after printing;

means for setting a paper discharge flag after discharge of a sheet by said discharge means; and

means for detecting whether said paper discharge flag is set at a printing time;

wherein said discharge means discharges the sheet after the end of a printed sheet has been detected by said first detecting means at a time previous to said printing time, and said feeding means feeds a next sheet if the set condition of said paper discharge flag is detected at said printing time.

5,061,102

APPLICATOR MEANS FOR PREPARATION, AND A METHOD OF FORMING SAME

Patrick Rennie, 34 Wood Rd., Morristown, N.J. 07960

Filed Apr. 12, 1991, Ser. No. 508,185
Int. Cl.[5] B43K *23/00, 23/02*
U.S. Cl. 401—98 **11 Claims**



1. Applicator means for preparations, such as cosmetics, lip balms, and the like, comprising:

a base;

a plurality of applicators; and

means coupling said applicators to said base, integrally, wherein

said means comprise means for facilitating separation of said applicators, of said plurality thereof, from said base;

said separation facilitating means comprises frangile couplings between said base and each of said applicators of said plurality;

said base has a flat foot which comprises means for supporting said applicator means for free-standing, upright, vertical display, and a limb extending from said foot to said frangible couplings for joining said couplings and said plurality of applicators to said foot;

each applicator, of said plurality thereof, has a body;

each said body has a longitudinal axis which bisects said foot substantially midway across said foot, to render said applicator means vertically free-standing, as aforesaid; and

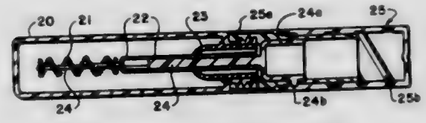
each said body has a finger grip at one axial end thereof, and a stub at the opposite, axial end.

5,061,103

MASCARA APPLICATOR

Margaret M. Walsh-Smith, Bridgeport, Conn., assignor to Chesebrough-Pond's USA Co., Greenwich, Conn.

Continuation of Ser. No. 11,571, Feb. 6, 1987, abandoned. This application Jun. 27, 1988, Ser. No. 220,109
Int. Cl.[5] A46B *11/00*
U.S. Cl. 401—122 **5 Claims**



1. A mascara applicator which comprises:

(a) a container for mascara having an opening at one end thereof to allow for ingress and egress of an applicator brush and attached stem, the container comprising a wiper gland consisting of a essentially silicone elastomer adjacent the container opening, said wiper gland having an opening therein to allow for ingress and egress of the brush and attached stem therethrough to achieve the removal of excess mascara; and

(b) a cap member for the opening of the container, the stem and attached brush being mounted to the inner surface of the cap member.

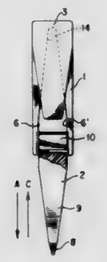
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5,061,104

FOLDABLE FLAT BALL POINT PEN

Peter Florjancic, Isarstrasse 25, 8109 Wallgau, Fed. Rep. of Germany

Filed Feb. 16, 1990, Ser. No. 480,938
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 8901868
Int. Cl.[5] B43K *24/02*
U.S. Cl. 401—195 18 Claims



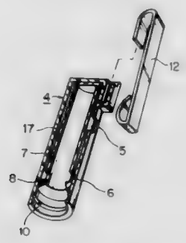
1. A flat, ball point pen comprising an ink cartridge part and a clasp part which can be pivoted relative to one another so that in a non-writing disposition, the ink cartridge part is folded into the clasp part and for the writing disposition, the ink cartridge part is pivoted 180° relative to the clasp part and forms an extension thereof, wherein the clasp part is configured as a receiving framework for the ink cartridge part, said clasp part comprising arms joined in an outer end area and a strut connecting said arms at their free ends, said ink cartridge part comprising a slotted locking device at one end and a writing nib at the other, the locking device comprising spaced apart walls forming a slot that receives said strut, said walls and said arms defining and being selectively rigidly connectable by tongue and groove means which perform the function of retaining said ink cartridge part and said clasp part rigidly together when in said writing disposition and when in said folded disposition and being disengaged by linear movement of said parts relative to each other so they can be pivoted from one said disposition to the other said disposition.

5,061,105

REMOVABLE CAP OF WRITING INSTRUMENT

Takashi Isoda, Yokohama, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1989, Ser. No. 465,668
Claims priority, application Japan, Jun. 15, 1989, 1-69104[U]
Int. Cl.[5] B43K *5/00, 9/00*
U.S. Cl. 401—202 1 Claim



1. A removable cap attached to a writing instrument in an insertion manner for preventing ink from evaporating from said writing instrument and for protecting an ink-applying portion of said writing instrument from damage, comprising:

a hollow cylindrical cap main body having its front end opened and its rear end closed, said cap main body being provided with a pocket clip integrally formed with the cap main body, the pocket clip being attached to the cap main body at a location adjacent the closed end and extending axially parallel to and spaced away from the outer surface of the cap main body, and with at least one ventilating hole in its cylindrical wall portion, the hole being positioned directly beneath the pocket clip so as to prevent any surface from covering and therefore closing the hole; and

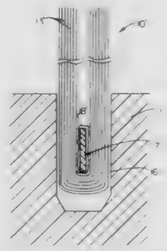
a hollow cylindrical inner cap fixedly mounted in said cap main body, said inner cap being closed at its rear end while opened at its front end, an outer diameter of which inner cap is smaller than an inner diameter of said cap main body, said inner cap being shorter in axial length than said cap main body while provided with an outer flange in its front end, the outer flange radially extending outwardly and being press-fitted to an inner wall of said cap main body for fixedly mounting said inner cap in said cap main body; and at least one ventilating hole providing in said vicinity of said outer flange of said inner cap.

5,061,106

TOOTHBRUSH WITH SLOW RELEASE OF DISINFECTANT AND ANTIBACTERIAL AGENTS AND METHOD OF MANUFACTURING THE SAME

Steven Kent, Stockport, England, assignor to Colgate-Palmolive Company, Piscataway, N.J.

Continuation of Ser. No. 165,650, Mar. 8, 1988, abandoned. This application Nov. 6, 1989, Ser. No. 432,326
Int. Cl.[5] A46B *11/00, 11/04*
U.S. Cl. 401—268 2 Claims



1. A toothbrush comprising a brush head, said head having a plurality of tuft holes for the reception and retention of respective multiplicities of bristles in the tuft holes, each multiplicity of bristles being attached in a corresponding tuft hole by an anchor, and at least one of said tuft holes containing therein an agent releasing means which is structured for containing an agent and for slowly releasing the agent over repeated brushings, said agent releasing means being activated by entry into said tuft holes of liquid during brushing, said agent being selected from the group consisting of disinfectants and concluded medication, wherein said agent releasing means consists solely of a coating applied on said anchor.

5,061,107

TORFLEX PIVOT

John J. Brooks, Santa Ynez, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 22, 1989, Ser. No. 455,198
Int. Cl.[5] F16B *1/00;* F16D *1/00*
U.S. Cl. 403—24 14 Claims

1. A structural pivot comprising:

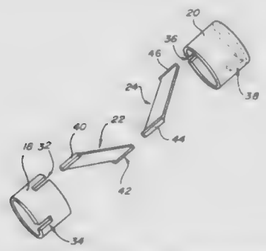
a first sleeve having a major axis and an inner surface;

a second sleeve having a major axis and an inner surface, said second sleeve being spaced from said first sleeve;

a first flexible element, said first element having a first and second end, said first end being connected to said first sleeve, said second end being connected to said second sleeve, said first element being connected so that it defines a first plane passing through the axes of said sleeves;

a second flexible element, said second element having a third and fourth end, said third end being connected to said first sleeve, said fourth end being connected to said second sleeve, said second element being connected so that it defines a second plane passing through the axes of the sleeves, said second plane being substantially transverse to the first plane; and

said flexible elements being connected to their respective sleeves in such manner to permit bidirectional angular rotation of either sleeve and such that said two flexible elements undergo both torsional and flexural motion when either one of said sleeves is angularly deflected with respect to said other sleeve.

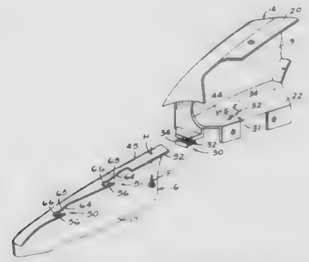


5,061,108

ATTACHING ARRANGEMENT FOR VEHICLE PLASTIC PANEL

Alfred A. Bien, Bloomfield; Gerald T. Niemitalo, Warren; Russell A. Simms, Orion; Robert L. Stewart, Rochester Hills; Riad E. Michael, Mount Clemens; Alfred W. Christenson, Rochester, and Herbert J. Keller, Jr., Utica, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 24, 1990, Ser. No. 632,832
Int. Cl.[5] F16D *1/00*
U.S. Cl. 403—24 4 Claims



1. In combination with an automobile vehicle body having fore and aft ends and a pair of longitudinally extending laterally spaced apart horizontally disposed planar support undersurfaces, a flexible elastomeric U-shaped member comprising right and left longitudinally extending mirror image side panel sections molded integrally with a transverse section for fitted support on an underlying bumper substructure at one said end of the vehicle body, each said side panel sections formed with an integral horizontally disposed flange having opposite upper and lower planar surfaces and an inboard longitudinal edge portion, each said panel flange of predetermined thickness adapted to be supported with its one planar surface is flush abutment with an associated one of said support undersurfaces, a blind connecting arrangement for securing each said U-shaped member side panel flange upper surface to an associated one of said support undersurfaces by positioning said U-shaped member in a substantially horizontal plane such that it is adapted to be affixed at one end of said vehicle with said U-shaped member having its principal axis of symmetry thereof aligned on a longitudinal extending vertically disposed plane which includes the vehicle longitudinal axis whereby said assemblers having limited access to said support surfaces;

said one support undersurface having at least a pair of forward and an aft identical male connectors arranged thereon in mirror image relation with a pair of forward and aft male connectors on the other support undersurface, each said forward and aft male connector in the form of a vertically depending stem providing upper and lower opposite ends with its one upper end integrally connected to its associated support undersurface and its lower end integrally connected to one inner surface of a horizontally disposed backing plate, each said backing plate inner surface in predetermined spaced parallel relation to its associated support undersurface so as to define a layer-like gap therewith adapted to slidably receive a portion of an associated one of said U-shaped member side panel flanges therein;

each said stem having an elongated shape in horizontal section formed symmetrical about its major longitudinal axis such that each said forward male connector major axis is offset inboard a predetermined dimension from its associated aft male connector major axis, each said stem defining a leading semi-circular head portion with a predetermined radius of curvature, an intermediate body portion defined by a pair of opposite planar side segments, and a trailing aft portion, each said backing plate having a predetermined lateral extent such that it overhangs its associated stem side segments;

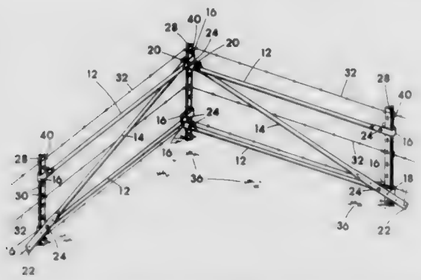
each said U-shaped member side panel flange molded with at least a pair of forward and aft an aft female connectors in opposed mirror image relation with a pair of forward and aft female connectors on the other U-shaped member flange, each said female connector in the form of a cutting-tooth shaped notch providing an angled notch edge portion, each said cutting-tooth shaped notch comprising a rearwardly extending tooth body defined by an inboard angled tooth flank and an outboard angled tooth face with said tooth flank and tooth face converging rearwardly so as to terminate in a tooth body trailing free end thereof, each said angled tooth face in opposed spaced relation with its associated angled notch edge portion defining therewith a forwardly converging lead-in passage;

each said lead-in passage communicating with a forward fluted locking groove defined by opposed forwardly diverging angled groove sides terminating in a half-round flute symmetrically disposed about a longitudinal axis thereof, such that each said forward fluted female locking groove having a longitudinal axis of symmetry offset inboard from its associated aft female locking groove longitudinal axis of symmetry a predetermined dimension equal to said male connector offset inboard predetermined dimension, each said female connector locking groove having a shape adapted to lockingly receive an associated stem leading head portion; and

whereby conjoint engagement of each said male connector by an associated one of said female connectors is achieved by initially contacting and moving each said U-shaped member side panel flange upper surface longitudinally relative to an associated one of said support undersurfaces causing each said U-shaped member side panel flange to be received in an associated layer-like gap, wherein subsequent reward travel of said U-shaped member resulting in each said stem leading head portion being guided into an associated side panel flange lead-in passage and resiliently flexing each said tooth body laterally enabling each said stem leading head portion thereof to be received in an associated locking groove in a snap-in releasably lockable manner, such that each said female connector is releasably connected to an associated male connector with each said

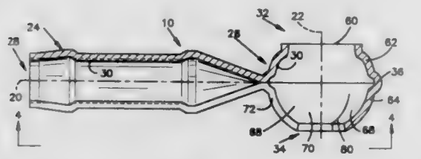
side panel flange upper surface retained in flush abutting contact with its associated support undersurface.

5,061,109
FENCE POST BRACING AND METHOD OF INSTALLATION OF SAME IN A SECTION OF FENCE
Donald Miller, Gay La., Wilton, Calif. 95693
Continuation-in-part of Ser. No. 463,144, Jan. 8, 1990, abandoned. This application Nov. 16, 1990, Ser. No. 616,760
Int. Cl.[5] F16C *11/00*
U.S. Cl. 403—36 **8 Claims**



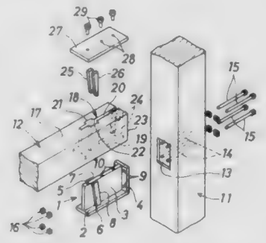
2. A fence post bracing member for use in a section of fence, comprising; an elongated substantially rigid and substantially straight center portion, each of two oppositely disposed ends of said center portion structured into a flexible hook having a pair of aligned apertures therethrough, said flexibility of said hooks being sufficient to provide means allowing said hooks to be inwardly compressed onto a fence post by clamping means within said apertures.

5,061,110
BALL JOINT AND METHOD OF ASSEMBLY
Ruey E. Wood, Jr., Mt. Clemens, Mich., assignor to TRW Inc., Lyndhurst, Ohio
Filed Feb. 8, 1991, Ser. No. 652,434
Int. Cl.[5] F16C *11/00*
U.S. Cl. 403—133 **11 Claims**



1. A ball joint comprising:
a socket comprising a piece of sheet metal defining a spherical chamber having an axis, a first opening into said chamber, and a second opening into said chamber, said openings being centered on said axis;
a stud comprising a ball and a shank extending from said ball;
an elastomeric bearing supporting said stud in said socket with said ball in said chamber and said shank extending outwardly from said first opening, said bearing having a spherical shape and being compressively preloaded in said chamber; and
said piece of sheet metal comprising a semi-spherical sheet metal wall portion, said wall portion defining said second opening, and at least partially comprising segments separated by seams extending from said second opening toward said first opening.

5,061,111
METAL CONNECTOR FOR WOODEN BUILDING AND JOINTING STRUCTURE OF WOODEN BUILDING USING THE SAME
Kiyoshi Hosokawa, 779, Sasagase-Cho, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Jan. 2, 1991, Ser. No. 636,804
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—232.1 **11 Claims**

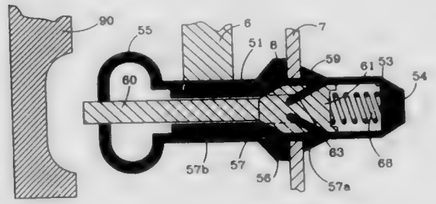


1. A metal connector for jointing first and second wooden members to each other, comprising:
a metal connector body including a bottom plate, a core plate secured vertically to an upper face of said bottom plate, and a pair of wedge guide elements secured to symmetrical locations on the opposite side faces adjacent a longitudinal end of said core plate;
said first wooden member having a fitting recess formed at a jointing end thereof in a profile suitable to closely receive said bottom plate and core plate of said metal connector therein except that said fitting recess is enlarged, at portions thereof adjacent said second wooden member in which said wedge guide elements are received, to form empty portions when said metal connector body is received in said fitting recess;
said metal connector body being connected at the other longitudinal end thereof to said second wooden member; and
a pair of driven wedges for being driven into said empty portions of said fitting recess along said wedge guide elements of said metal connector body to force said first wooden member toward said second wooden member until said jointing end is closely contacted with a jointing end of said second wooden member.

5,061,112
METHOD AND APPARATUS FOR RELEASABLY CONNECTING FIRST AND SECOND OBJECTS
Leo G. Monford, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 13, 1991, Ser. No. 654,704
Int. Cl.[5] B25G *3/18*
U.S. Cl. 403—328 **9 Claims**

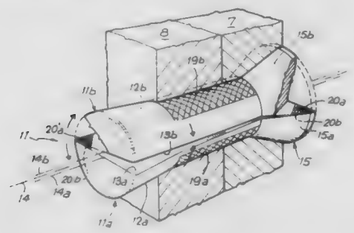
1. Apparatus for releasably connecting a first object to a second object, said apparatus comprising:
at least one elongated pin member a proximal end of which is fixedly attached to said first object and the distal end of which projects therefrom for axial insertion into a corresponding hole provided on said second object, said pin member being tubular and having a longitudinal bore;
latch means carried by said pin member radially movable, relative to the central axis of said pin member, from a retracted position in which said latch means would be totally encompassed by the perimeter of said hole, allowing insertion and withdrawal of said pin member into and from said hole, to an expanded position which, if said pin member has been previously inserted into said hole, would

engage a surface surrounding said hole preventing withdrawal of said pin member from said hole;
plunger means carried in the longitudinal bore of said pin member for coaxial reciprocal movement between a first and a second position, in said first position engaging and locking said latch means in said expanded position and in said second position permitting movement of said latch means to said retracted position; and
magnetic end effector means engageable with said first object for effecting movement of said plunger means from said first position to said second position and allowing release of said first object from said second object, wherein,
said latch means comprises a plurality of latch members,



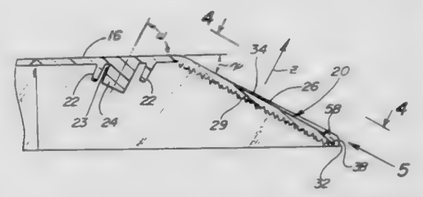
each of which are at least partially disposed in corresponding apertures through the tubular walls of said pin member, said latch members projecting radially out of said aperture when said plunger means is in said first position but being allowed to withdraw within said apertures when said plunger means is in said second position and, wherein further, at least one correlative key and slot for each of said latch members is provided, said key being provided on one of said latch members and said plunger member and said slot being provided on the other, relative movement of said key within said slot, in response to movement of said plunger members between said first and second position, effecting movement of said latch members between said radially projecting and said radially withdrawn dispositions.

5,061,113
ANCHORING DOWEL COMPOSED OF TWO TWISTED HALF-DOWELS
Michel Vives, Eysines, France, assignor to Societe Europeenne de Propulsion, Suresnes, France
Filed Feb. 26, 1990, Ser. No. 485,129
Claims priority, application France, Mar. 1, 1989, 89 02678
Int. Cl.[5] F16B *13/04*
U.S. Cl. 403—408.1 **14 Claims**



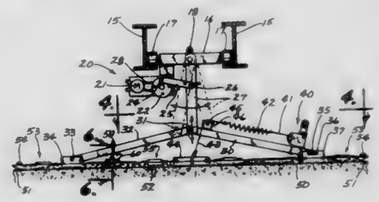
1. An anchoring dowel for joining two bodies by insertion of the anchoring dowel therebetween, said anchoring dowel comprising two complementary half-dowels in mutual contact, each of said half-dowels having a similar semi-cylindrical configuration having a longitudinal axis and being delimited at an outer face of said dowel by a portion of a cylindrical surface of revolution defined about said longitudinal axis and, at an inner face of said dowel, by a contacting surface extending transversely across said longitudinal axis and contacting the other half-dowel, the configuration of said two half-dowels being such that said anchoring dowel is elastically compressible in a direction normal to said longitudinal axis, said contacting surfaces of said two half-dowels forming said anchoring dowel being of helical comfiguration defined by longitudinal helical surfaces extending in mutually opposite directions.

5,061,114
REFLECTIVE PAVEMENT MARKER AND METHOD OF APPARATUS FOR MAKING SAME
Peter Hedgewick, Windsor, Canada, assignor to Pac-Tec, Inc., Heath, Ohio
Filed Feb. 5, 1990, Ser. No. 475,039
Int. Cl.[5] G08B *5/00*
U.S. Cl. 404—14 **3 Claims**



1. A reflective pavement marker for reflecting light from lights of an oncoming vehicle, said marker comprising:
a shell-like housing having a top wall, a pair of side walls depending from said top wall and a reflective end wall depending from said top wall and extending transversely between said pair of side walls; said reflective end wall having an outer surface and an inner surface, said inner surface having means for reflecting light from said headlights of said oncoming vehicle, said outer surface having a top edge, a bottom edge and a pair of side edges extending between said top and said bottom edges, said bottom edge and said pair of side edges forming a pair of corners, said top edge and said pair of corners defining a plane, said inner surface of said reflective end wall having a curved surface extending inwardly from said plane, said curved surface having a maximum spacing from said plane midway between said side edges and adjacent said lower edge from said plane; whereby said curved surface increases the amount of light reflected and seen by a driver of said oncoming car.

5,061,115
ADJUSTABLE AUTOMATIC FLOATING TROWEL APPARATUS FOR SLIP FORMING MACHINES
Gary L. Godbersen, and Dwayne D. Salmon, both of Ida Grove, Iowa, assignors to Gomaco Corp., Ida Grove, Iowa
Filed Jul. 9, 1990, Ser. No. 549,829
Int. Cl.[5] E01C *19/40*
U.S. Cl. 404—102 **10 Claims**

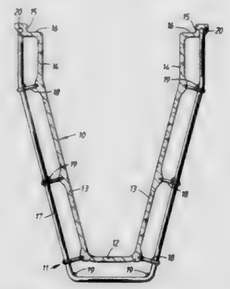


1. Apparatus comprising:
a frame;

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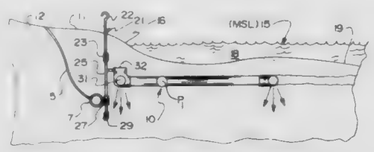
means for moving said frame in a forward direction;
means connected to said frame for slip forming concrete;
an elongated concrete smoothing trowel member having a longitudinal axis generally aligned with said direction of forward movement of said frame, said trowel members having a first end, a second end and an intermediate portion between the first and second end thereof;
means for oscillating said trowel member back and forth along said longitudinal axis;
means operably connected to a rear portion of said frame for moving said oscillating means and said trowel means transversely with respect to said longitudinal axis;
means for operatively connecting said oscillating means to said trowel member, said connection means including a first member pivotally attached along an axis transverse to said longitudinal axis at one end thereof to said oscillating means and at the other end thereof to said first end of said trowel member and a second member pivotally attached at one end to said oscillating means along an axis coincident with or parallel to said transverse axis and pivotally attached to said second end of said trowel member at the other end of said second member; the improvement comprising:
means operably connected to said intermediate portion of said trowel member and to said first member for selectively adjusting the effective weight of said trowel member with respect to the concrete being smoothed by said trowel member;
a balancing weight; and
means for adjustably attaching said balancing weight to said trowel member for selectively balancing the trowel member about its transverse centerline, said transverse centerline of the travel member being substantially perpendicular to said longitudinal axis.

5,061,116
REINFORCED STRUCTURAL ELEMENTS
David W. Monks, Hathersage, England, assignor to Hodkins & Jones (Sheffield) Limited, England
Filed Feb. 15, 1990, Ser. No. 480,307
Claims priority, application United Kingdom, Feb. 18, 1989, 8903741
Int. Cl.[5] E02B *11/00*; E01C *11/22*
U.S. Cl. 405—43 17 Claims



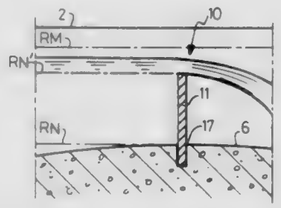
1. A structural element comprising:
a member of fibre reinforced material which forms a section of water drainage channel of generally U-shaped cross-section including spaced side walls interconnected by a bottom wall and having spaced upper free ends, each said side wall and said bottom wall having an exterior surface; and
at least one metal reinforcing bar spaced laterally from said exterior surface of each of said side walls and extending from adjacent said upper free ends to a location adjacent said bottom wall and connected thereto for anchoring said channel in concrete and maintaining said channel rigid during such anchorage.

5,061,117
FLUIDIZATION-ASSISTED BEACH STABILIZATION
James M. Parks, 3509 Merrick Ct., #210, Lexington, Ky. 40502
Filed Mar. 5, 1990, Ser. No. 488,683
Int. Cl.[5] E02B *3/06*
U.S. Cl. 405—73 10 Claims



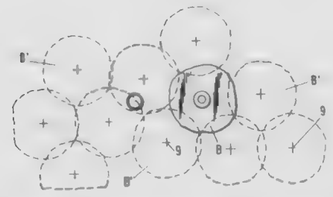
1. Method of improving a beach, comprising the steps of
burying foraminous piping in beach-underlying subsoil,
burying foraminous piping in offshore-underlying subsoil,
interconnecting the beach-underlying piping to the offshore-underlying piping with intermediate piping containing a pump,
collecting water from the beach-underlying subsoil via the first piping, transporting the collected water via the intermediate piping to the offshore-underlying second piping, and
fluidizing adjacent offshore subsoil with such water for transport elsewhere.

5,061,118
OVERFLOW SPILLWAY FOR DAMS, WEIRS AND SIMILAR STRUCTURES
Francois Lemperiere, Meudon, France, assignor to GTM Batiment et Travaux Publics, Nanterre Cedex, France
Filed Dec. 19, 1990, Ser. No. 629,822
Claims priority, application France, Dec. 28, 1989, 89 17333
Int. Cl.[5] E02B *7/22, 8/06*
U.S. Cl. 405—108 13 Claims



1. Overflow spillway for dams and similar structures comprising an overspill sill having a crest set at a first predetermined level, lower than a second predetermined level corresponding to a maximum reservoir level for which the dam is designed, the difference between the said first and second predetermined levels corresponding to a predetermined maximum discharge of a design flood, and a water level raising means on the sill of the spillway, wherein the water level raising means comprises at least one water level raising element in the form of a substantially vertical plate having a lower portion which is rigidly fixed to the sill of the spillway, the said element having a predetermined height which is less than the difference between the aforementioned first and second predetermined levels and which corresponds, for a headwater level substantially equal to the said maximum level to a mean flood with a predetermined lower discharge than the predetermined maximum discharge, the said element being of such thickness at its fixed lower portion and made of a material with such a yield point that the moment of the forces applied to the water level raising element by the water comes to equal the resisting moment at the fixed lower portion of the said element so that the said water level raising element bends about a line when the headwater reaches a third predetermined level higher than the top of the water level raising element but not higher than the second predetermined level.

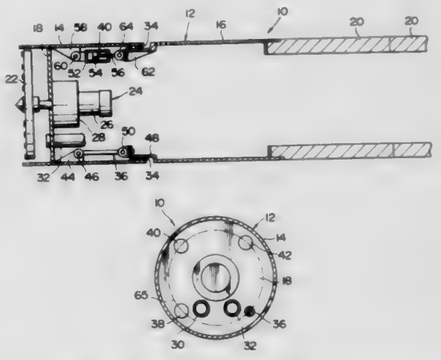
5,061,119
METHOD AND APPARATUS FOR THE REMEDIATION OF CONTAMINATED SOILS
Hansgeorg Balthaus, Düsseldorf, and Karl Hoffmann, Essen, both of Fed. Rep. of Germany, assignors to Philipp Holzmann Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 17, 1990, Ser. No. 568,835
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—128 10 Claims



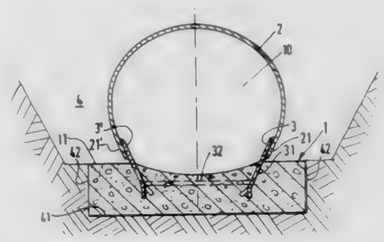
1. A method for the remediation of contaminated soils, without transport of the soil to the surface, comprising the steps of:
introducing at least one drill pipe under constant rotation into said contaminated soil;
upon reaching a level of contaminated soil, loosening the soil structure by progressively injecting a liquid under high pressure via at least one outlet nozzle of said rotating drill pipes radially into a respective soil treatment zone, that coaxially surrounds said drill pipe and is of an essentially cylindrical shape having a diameter according to an effective range of said injected liquid; and
introducing, together with said liquid, at least one effective substance, which remediates the respective contaminant on site, into the loosened soil structure.

5,061,120
DIRECTION CORRECTING DEVICE FOR SHIELD TUNNELLING MACHINE
Toshio Akesaka, Yokohama, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Tokyo, Japan
Filed Jul. 18, 1990, Ser. No. 555,298
Claims priority, application Japan, Jul. 19, 1989, 1-184526
Int. Cl.[5] E21D *9/06*
U.S. Cl. 405—143 6 Claims

1. A direction correcting device for a shield tunnelling machine having a shield body provided with a head portion and a tail portion following the head portion, comprising:
four connecting means disposed around an axis of said tail portion at angular intervals, where
three of the four connecting means are provided with a jack having two connecting portions relatively displaceable in the axial direction of said tail portion, each jack being connected at one of said connecting portions to said head portion and at the other of said connection portions to said tail portion; and
the fourth connecting means is provided with a connecting body having two connecting portions incapable of relative displacement in the axial direction, the connecting body being interconnected at one of said connecting portions to said head portion and at the other of said connecting portions to said tail portion to permit said head and tail portions to relatively swing and to prevent said head and tail portions from relatively displacing in the axial direction.



5,061,121
FLUID-CONVEYING CONDUIT
Marcel Matiere, 17 Avenue Aristide Briand, 15000 Aurillac, France
Filed Apr. 10, 1990, Ser. No. 507,232
Claims priority, application France, Apr. 10, 1990, 89 04692
Int. Cl.[5] F16L *1/028, 9/22*
U.S. Cl. 405—155 20 Claims



1. A fluid-conveying conduit of large cross section, formed by assembling, on a laying surface, a plurality of prefabricated longitudinal elements forming sections placed in sequence in a longitudinal direction and comprising, for each section:
(a) a least one lower element constituting at least a part of a slab made of concrete and forming a base which rests on the laying surface;
(b) an upper element consisting of at least one thin wall element forming a vault having two lateral edges;
(c) a joining assembly consisting of two parallel longitudinal members rigidly connected to one another by at least one crosspiece for maintaining parallelism and spacing between them;
(d) each longitudinal member having an upper part consisting of a substantially planar sheet metal plate which is oriented in such a direction as to form a springing line of the vault and a lower part to be embedded in a concrete part of the said at least one lower element;
(e) parallelism and space between said longitudinal members being adjusted by prefabricating said joining assembly before construction of said conduit;
(f) said at least one lower base element being laid on the

laying surface and aligned with the lower elements of previously laid sections, the whole lower base elements forming a concrete slab;

(g) each joining assembly then being laid on said concrete slab, and alignment of the longitudinal members with the corresponding members of a previously laid adjacent section being adjusted;

(h) the lower part of said longitudinal members being then embedded in said slab;

(i) each upper vault element being then sealingly fixed by its two lateral edges respectively along the upper parts of the two longitudinal members of the corresponding joining assembly;

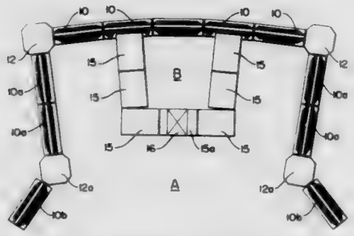
(j) facing ends of the lower base element and the upper vault element of two adjacent sections being sealingly fixed in such a manner as to insure the continuity of the conduit and resistance to pressure when in operation.

5,061,122

METHOD OF CONSTRUCTING A MAN-MADE SEA DEFENSE SYSTEM IN THE OPEN OCEAN

Nigel Chattey, 150 Cedarlawn Rd., Irvington-on-Hudson, N.Y. 10533

Filed Sep. 6, 1990, Ser. No. 578,761
Int. Cl.[5] E02B *17/02*
U.S. Cl. 405—203 **15 Claims**



1. A method of constructing a man-made sea defense system at a preselected ocean site in the open ocean, comprising the steps:

providing a plurality of floatable sea-defense caissons, each caisson having a top, a bottom, a pair of opposed sloped sides sloping outwardly in a direction from the top to the bottom, and a pair of opposed ends, the caissons being connectable in end-to-end relation to form a sea defense system in the ocean;

transporting the caissons by floating them in the ocean to a preselected ocean site in the open ocean;

preparing the ocean floor at the preselected ocean site to receive the caissons including dredging a channel in the ocean floor for receiving the bottoms of the caissons;

sinking the caissons onto the prepared ocean floor and connecting the sunken caissons in a line in end-to-end relation so that the bottoms of the caissons seat in the channel on the ocean floor and the tops of the caissons extend above the ocean surface;

adding material onto and around the sloped sides of the caissons to effectively secure the caissons to the ocean floor;

providing a pair of floatable anchor tower caissons, each anchor tower caisson having a top, a bottom, a sidewall and a height greater than that of the sea-defense caissons and being configured to connect to the ends of the sea-defense caissons;

transporting the anchor tower caissons by floating them in the ocean to the preselected ocean site;

sinking the anchor tower caissons onto the prepared ocean floor and connecting the sunken anchor tower caissons to the respective ends of the two opposite endmost sea-defense caissons in the line of sea-defense caissons so that the bottoms of the anchor tower caissons rest on the ocean floor and the tops of the anchor tower caissons extend above the ocean surface and above the tops of the sea-defense caissons; and

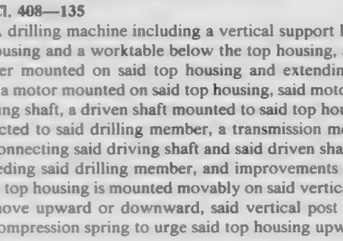
adding material onto and around the sidewalls of the anchor tower caissons to effectively anchor all of the caissons to the ocean floor.

5,061,123

DUST COLLECTOR ADAPTOR FOR ELECTRIC DRILLS

Alphe Broussard, 64 Avenue Mohamed Diouri, Kenitra, Morocco

Filed Dec. 5, 1986, Ser. No. 938,429
Int. Cl.[5] B23B *47/28*
U.S. Cl. 408—67 **9 Claims**



1. A corrugated device used as an adaptor to electric drills, comprising:

(a) resilient, pliant adaptor body having a relatively rigid and yet expandable mouth-like larger end, which has attachment means having on its inner surface attachment units selected for the group consisting of magnetized metal inserts and rubber suction cups, to provide a snug and stable fit around the drill-holding end of the various types of electric drills;

(b) the adaptor body having a transparent end, with a hole therein, to observe the accurate start of the drill bit at the place previously marked for drilling;

(c) a rubber tip fitting in the hole in the transparent end of the adaptor body to protect the paint or other surface being drilled, to ensure the collection of all dust and to help stabilize the drill bit at the place previously marked for drilling, the rubber tip have a hole therein through which the drill bit passes when the drill bit end of the drill is pressed against an external surface, the hole in the rubber tip being only slightly wider than the drill bit;

(d) the transparent end being a holding area to accumulate the dust debris generated when drilling holes; and

(e) the corrugated device having recoil capabilities to accommodate the penetration of the drill bit as it progressively sinks to the depth required.

5,061,124

DRILLING MACHINE

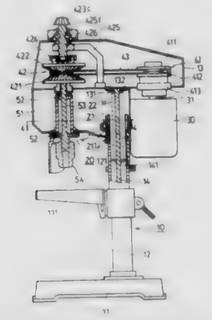
Chao-Yang Chen, No. 585, San-Feng Road, Fengyuan City, Taiwan

Filed Jul. 27, 1990, Ser. No. 558,648
Int. Cl.[5] B23B *47/26, 47/16*
U.S. Cl. 408—135 **5 Claims**

1. A drilling machine including a vertical support holding a top housing and a worktable below the top housing, a drilling member mounted on said top housing and extending downward, a motor mounted on said top housing, said motor having a driving shaft, a driven shaft mounted to said top housing and connected to said drilling member, a transmission mechanism interconnecting said driving shaft and said driven shaft, means for feeding said drilling member, and improvements wherein:

said top housing is mounted movably on said vertical post to move upward or downward, said vertical post having a compression spring to urge said top housing upward, said

feeding means including a rack member mounted on said vertical post, a horizontal operating shaft mounted in said top housing adjacent said rack member, a pinion mounted on said horizontal operating shaft and engaging said rack



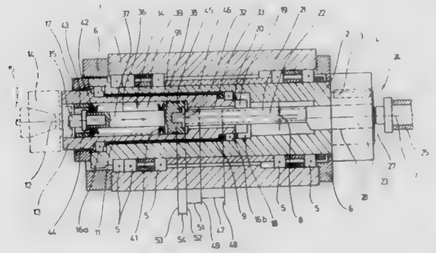
member, said pinion moving upward or downward when being rotated, an operating handle connected to said operating shaft so as to rotate said pinion, whereby said drilling member is fed when said top housing is moved downward by operating said handle.

5,061,125

BORING DEVICE

Eugen Kuppinger, Hochdorf, Fed. Rep. of Germany, assignor to Cross Europa-Werk, GmbH, Wendlingen, Fed. Rep. of Germany

Filed Jul. 30, 1990, Ser. No. 559,819
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 8910085[U]
Int. Cl.[5] B23B *47/00*
U.S. Cl. 408—150 **8 Claims**



1. A boring device comprising:

a housing;

an elongated spindle, having a front end and rear end;

means for mounting said spindle for rotation in said housing about a longitudinal axis while being axially fixed therein;

an elongate adjustment member having a front end and a rear end rotatably mounted with respect to the spindle in the spindle about an axis eccentric with respect to said spindle axis of rotation but axially fixed thereto;

tool receiving means mounted to the adjustment member at the front end thereof;

said tool receiving means having a bore for receiving and rotationally fixing a tool shank therein to be rotationally drive thereby;

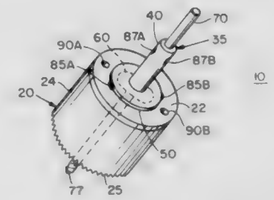
actuating means for relatively rotating said adjustment member with respect to said spindle to cause adjustment of the radial position of said tool receiving means at the front end of said spindle, said actuating means including an elongate actuating member mounted for back and forth axial movement within said spindle, and coupling means causing said relative rotation between said adjustment member and said spindle in response to a corresponding extent of said axial movement of said actuating member, characterized by selectively operable clamping means in said tool receiving means for clamping a tool shank received in said tool receiving bore, said clamping means responsive to a predetermined extent of continued axial movement of said actuating member in one direction to unclamp a tool shank in said tool receiving means bore, whereby both radial adjustment of said tool receiving means and operation of said clamping means are carried out in response to axial movement of said actuating member.

5,061,126

HOLE SAW AND MANDREL ASSEMBLY

William Cain, Orange; Ernest Emond, Millers Falls; Karl Glawischnig, Shelburne Falls, and Robert Grant, Athol, all of Mass., assignors to Rule Industries, Burlington, Mass.

Filed May 4, 1990, Ser. No. 532,527
Int. Cl.[5] B23B *51/05*
U.S. Cl. 408—206 **13 Claims**



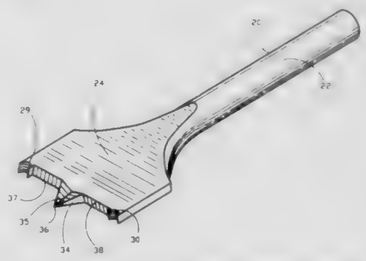
12. A hole saw assembly comprising a hole saw cup and mandrel, said mandrel comprising a hollow shaft, a reinforcing member and a locking member, said shaft and said reinforcing member and said locking member integrally formed from one piece, the hole saw cup integrally formed from one piece and having an open end and a substantially closed end surface opposite said open end, said open end having cutting teeth located along the peripheral edge thereof, and said closed end surface having a locking hole at least substantially therethrough, said locking member being engaged in the locking hole and said reinforcing member being welded to the hole saw cup.

5,061,127

DRILL BIT WITH CONCAVE SPURS AND HAVING TRIANGULAR CENTER POINT WITH VEE GROOVES

Robert E. Thomas, 1100 Driftwood Dr., Lincoln, Nebr. 68510

Filed Apr. 5, 1991, Ser. No. 681,337
Int. Cl.[5] B23B *51/04*
U.S. Cl. 408—212 **1 Claim**



1. A drill bit for wood or other relatively soft material, comprising:

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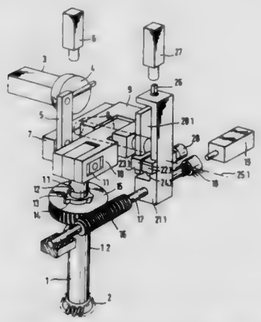
a generally cylindrical shaft;
a flattened blade portion at one end of said shaft, said blade portion including
broad, flat, and essentially parallel side faces;
side edges, each of said side edges having a leading edge with the side edge negatively beveled with respect to said leading edge along the length of said side edge;
an end edge, said end edge including
two side spurs, each of said side spurs being rectangular in cross section and located on lateral extremities of said end edge, said side spurs comprising narrow extensions of said side edges and having a length equal to about one half to several times the thickness of said blade portion, each of said side spurs having an end face with a concave shaped leading terminal edge, said end face negatively beveled with respect to said leading concave terminal edge;
a center point centered on said end edge, said center point being triangular in shape having a vee groove centered on the sides from the base to the center of the tip, said center point negatively beveled with respect to said leading edge, said center point having a length of about half to several times the thickness of said blade portion; and
end surfaces extending radially between said center point and said spurs, each of said end surfaces having a leading cutting edge, said end surfaces being negatively beveled with respect to said leading cutting edges.

5,061,128

MECHANISM FOR THE DRIVE OF A TOOL SPINDLE

Andreas Jahr, Neuss, and Jorg Weber, Graben-Neudorf, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Lorenz AG, Ettlingen, Fed. Rep. of Germany

Filed Jan. 16, 1990, Ser. No. 464,946
Claims priority, application Switzerland, Jan. 16, 1989, 118/89
Int. Cl.[5] B23F *5/16, 9/06*
U.S. Cl. 409—34 **20 Claims**



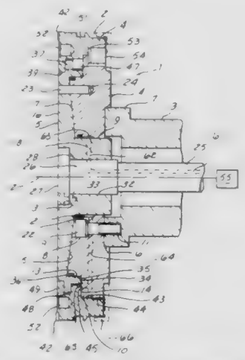
1. A mechanism for the drive of a tool spindle which performs a rotating indexing motion, an axial movement and at the same time a rotary movement, comprises a reciprocating drive means kinematically connected to the tool spindle for performing the axial movement, an indexing mechanism connected to the tool spindle and arranged coaxially therewith for rotation therewith for performing the indexing movement, and at least one rocking lever provided with a pivot point fixed to a frame and kinematically connected to the tool spindle and the indexing mechanism for Performing the rotary movement, said at least one rocking lever comprises at least one lever arm which is adjustable in its length for varying the pitch of the helical movement resulting from the axial movement and the rotary movement, further comprising a sliding coupling consisting of at least two members, wherein one member is a rocking lever which is connected to the other member through a sliding swivel joint having a sliding guide, the sliding swivel joint is continuously displaceably mounted along the rocking lever and is selectively located in the displacement positions, wherein the axis of rotation of the sliding swivel joint and hence the other member executes a linear movement while the sliding guide of the sliding swivel joint performs a movement perpendicular thereto, whereby the linear movement of the other member causes a linear adjustment movement in the indexing mechanism.

5,061,129

CLAMPING ARRANGEMENT FOR A CUTTING TOOL

Adolf Baudermann, Nürtingen, Fed. Rep. of Germany, assignor to The Cross Company, Fraser, Mich.

Filed Aug. 1, 1990, Ser. No. 561,384
Int. Cl.[5] B23C *9/00;* **B23D** *35/00*
U.S. Cl. 409—234 **16 Claims**



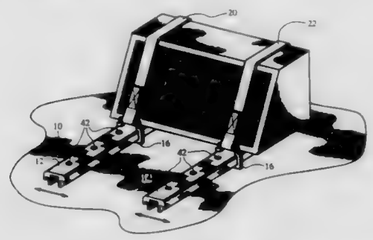
1. A clamping arrangement (**1**) for releasably securing a disc-shaped tool (**2**) having a central opening (**43**) to the spindle (**3**) of a machine tool comprising:
a receiving flange (**4**) fixed coaxially to said machine spindle (**3**), said receiving flange (**4**) having a centering surface (**10**) concentric with the axis of rotation (**12**) of said spindle (**3**) as well as a radially extending portion comprising an axial abutment surface (**14**) for said tool (**2**), said spindle (**3**) and said receiving flange (**4**), having a concentric axially extending through-opening (**19**), with axially movable pressure member (**5**) for pressing said tool (**2**) against said abutment surface of said receiving flange (**4**), said pressure member (**5**) having an actuator rod (**25**) extending within said opening of said spindle (**3**) and receiving flange (**4**), and also having a pressure flange (**5**) fixed thereto which is concentric with said axis of rotation (**12**) of said spindle (**3**) said pressure flange (**5**) having radially protruding circumferentially spaced apart features (**37**) extending from the periphery thereof, actuator means (**55**) driving said actuator portion (**25**) for moving said pressure flange (**5**) axially to pull said pressure flange (**5**) towards said abutment surface (**14**) or move it away from said abutment surface (**14**); said discshaped tool (**2**) carrying in said central opening (**43**) radially inwardly protruding circumferentially spaced apart features (**47**), the configuration of said respective features corresponding to each other such that in one rotary position of said tool (**2**) and said pressure flange (**5**) relative to each other, said features (**37**) of said tool (**2**) can pass through the gaps between said features (**47**) of said pressure flange (**5**) and in the other relative rotary position, said features (**37**) of said tool (**2**) are in alignment with said features (**47**) of said pressure flange (**5**) and aligned with said abutment surface (**14**), whereby axial movement of said pressure flange (**5**) results in clamping of said tool (**2**) against said abutment surface (**14**) of said receiving flange (**4**).

5,061,130

APPARATUS FOR STABILIZING BOX-TYPE SPEAKERS ON FLOOR OF VEHICLE

Mitchell T. Gadow, 1601 E. 20th, Pittsburg, Kans. 66762

Filed Aug. 1, 1990, Ser. No. 561,314
Int. Cl.[5] B60P *7/00*
U.S. Cl. 410—104 **4 Claims**



1. An apparatus for stabilizing a piece of equipment that is provided with a lower bearing surface defined by a predetermined area, the apparatus comprising:
a pair of independent, elongated base elements adapted to be spaced from one another and attached to the piece of equipment, each of the elements including a bottom surface adapted to rest upon a support surface and an upper equipment-engaging surface adapted to rest against the lower bearing surface of the equipment, the bottom surfaces defining a support area extending between and including the bottom surfaces, the support area being greater than the predetermined area of the lower bearing surface of the piece of equipment;
a pair of coupling members operatively secured to each of the base elements, at least one of the coupling members being movable relative to the base element so that the coupling members may be spaced from one another along the base element; and
an elongated securement strap operatively connected between the pair of coupling members on each base element, each of the securement straps including means for adjustably tightening the strap in order to permit the strap to secure the piece of equipment to the base element associated therewith, wherein each of the base elements is formed of an elongated rail including a pair of lateral marginal recesses extending from the bottom surface toward the upper equipment-engaging surface, each of the coupling members including a collar configured to extend across the upper equipment-engaging surface and into each of the lateral marginal recesses, whereby the apparatus and equipment placed thereon is supported solely by the bottom surface of the elongated rails, the coupling members being freely movable along the elongated rails when the elongated rails are supported by the support surface.

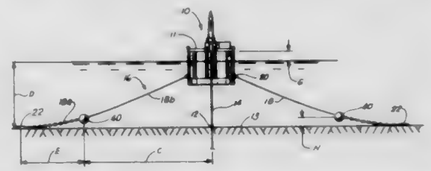
5,061,131

STRUCTURE AND METHOD FOR RESTRAINING MOTION OF A MARINE STRUCTURE

Terry D. Petty, Kenner, and Luc G. Chabot, LaPlace, both of La., assignors to Odeco, Inc., New Orleans, La.

Filed Mar. 5, 1990, Ser. No. 488,663
Int. Cl.[5] E02B *17/00;* **E02D** *21/00*
U.S. Cl. 405—224 **13 Claims**

1. A structure for restraining motion during environmental loading, comprising
A marine structure situated in a body of water at a desired location above a seabed;
Means for mooring the marine structure; and
At least one weight attached to the mooring means at a distance above the seabed so that said weight does not touch the seabed when the marine structure is at its desired location, but does touch the seabed in response to



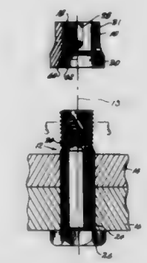
movement of the marine structure laterally away from its desired location.

5,061,132

SELF-LOCKING FASTENER

Frank J. Cosenza, Santa Barbara, Calif., assignor to VSI Corporation, Carson, Calif.

Filed Sep. 27, 1990, Ser. No. 589,314
Int. Cl.[5] F16B *31/00, 35/04*
U.S. Cl. 411—3 **5 Claims**



1. A self-locking fastener comprising:
a pin for receipt in a hole in a workpiece and having a section with an external thread;
a plurality of flutes extending in a helical direction in a portion of the length of the external thread truncating at least the crest of the thread, a portion of the length of the thread being complete;
a collar having an internal thread for mating with the external thread and carrying a tensile load; and
a plurality of longitudinally extending lobes on the outside of the collar for engagement by a driver, each lobe and collar material radially inward of said lobe being plastically deformable in response to a radial compressive force applied by the driver when the collar is in engagement with a workpiece such that upon plastic deformation of the lobe and material radially inward thereof in a radial direction, collar material enters such a flute for rotationally locking the pin and collar together; and wherein
the lobes and flutes are arranged so that in any rotational position of the collar on the pin when the collar is in engagement with a workpiece, at least some material radially inward from each lobe will enter a flute.

5,061,133

BACKHOE LOCKING PIN

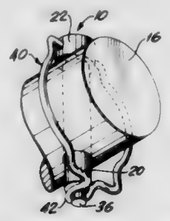
William G. May, Smithland, Ky., and Albert H. Fischer, Fanwood, N.J., assignors to F & M Products Mfg. Corp., Manville, N.J.

Filed Oct. 11, 1990, Ser. No. 598,014
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—340 **13 Claims**

1. A locking pin for detachably connecting excavation implements to a tractor comprising an elongated cylindrical shaft

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having an enlarged head at one end and having an axial bore extending from the opposed end, said locking pin including a planar retaining member pivotally mounted to said enlarged head, said planar retaining member being longer than the length of said elongated cylindrical shaft, said retaining member having a rigid clasp portion extending generally orthogonal from the plane thereof, said locking pin having retractable plunger means disposed in said axial bore for detachable en-

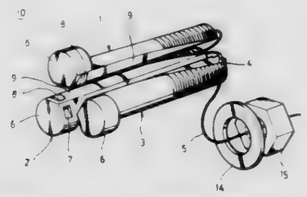


gagement with said rigid clasp portion, adjacent the distal end of said elongated cylindrical shaft, said rigid clasp portion configured so as to prohibit disengagement of said retractable means therefrom, whereby said retaining member may be pivoted such that the rigid clasp portion is aligned with the retracted plunger means within the axial bore of the shaft, and thereafter the plunger means may be extended through and beyond the rigid clasp portion thereby locking the pin.

5,061,134
DIVIDED BOLT FASTENING DEVICE

Jung H. Oh, 91-265, Shinsu-dong, Napo-ku, Seoul, Rep. of Korea

Filed Jun. 27, 1990, Ser. No. 544,738
Int. Cl.[5] F16B *21/00, 35/02*
U.S. Cl. 411—385 **5 Claims**



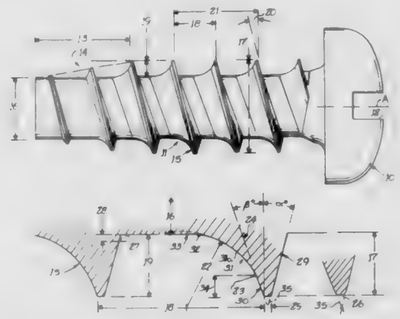
1. A fastening device for fastening an item through a hole formed into a rearwardly closed structure, comprising:
(a) means defining a bolt longitudinally divided into two or more pieces with head and shank portions for insertion through said hole from the forward side one by one;
(b) means defining at least one pulling string and holes formed in said divided bolt pieces in a parallel or serial form for receiving such string, the holes allowing for pulling out the inserted bolt pieces from said hole in order to recouple them into a bolt with head and shank;
(c) said structure being constructed such that the head portions of said pieces are halted at the other side of said hole; and
(d) said divided faces being provided with a twisting.

5,061,135
THREAD TAPPING SCREW

Alan Pritchard, Baar, Switzerland, assignor to Research Engineering & Manufacturing, Inc., Middletown, R.I.

Filed Aug. 28, 1990, Ser. No. 574,476
Int. Cl.[5] F16B *35/04*
U.S. Cl. 411—411 **8 Claims**

1. A threaded fastener of the thread-forming type wherein there is defined, during driving thereof relative to a workpiece a combination of force couples and a resultant moment of said couples to develop material flow of the workpiece material about threads of said fastener to give face contact between the threads of the fastener and threads formed in the workpiece thereby for improved loading; said threaded fastener comprising: a threaded body portion defining an axis and a thread, and a driver head portion, said threaded body portion including a thread profile in axial cross-section having a plurality of zones including a first zone comprising a trailing thread face with respect to the direction of advancement of the fastener into the workpiece, which trailing thread face defines a first angle relative to the axis of said body portion and a second zone comprising a radiused forward thread face which defines a predetermined radius, a third zone comprising a tip portion of



the thread wherein a forward face of said tip portion defines a second angle relative to the axis of the body portion and wherein said radiused forward thread face intersects said tip portion at a predetermined distance therealong relative to a total thread depth of said fastener, such that the material of the workpiece is induced to flow, during thread forming, generally radially inwardly and forwardly with respect to the direction of advancement of the fastener relative to the workpiece toward the trailing angled face for increased surface contact therewith to thereby achieve a high friction between the mating threads of the workpiece and the trailing face and to reduce the tendency for the fastener and workpiece to become loosened under externally applied forces in service, and to give an improved relation of tapping torque to stripping torque, and to reduce hoop stress in the material of the workpiece.

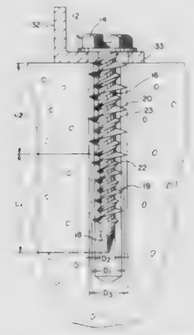
5,061,136
MASONRY SCREW ANCHOR

Tony L. Dixon, Knifley, Ky.; David E. Starke, Whitfield, Pa.; Frank Piacenti, and Robert W. Brown, Jr., both of Campsville, Ky., assignors to Emhart Inc., Del.

Filed Oct. 3, 1990, Ser. No. 592,138
Int. Cl.[5] F16B *35/04*
U.S. Cl. 411—412 **2 Claims**

1. A masonry screw anchor comprising
an elongated shank portion including a smaller constant diameter portion having a pointed end and an adjacent larger diameter portion joined therewith via a tapered portion
a first set of constant diameter threads on said smaller diameter shank portion,
a first set of constant diameter helical protrusions, having a diameter smaller than the diameter of said first set of threads, on said smaller diameter shank portion between said threads,
a second set of constant diameter threads on said larger diameter shank portion, said second set of threads having a larger diameter than the diameter of said first set of threads, and

a second set of constant diameter helical protrusions, having a diameter smaller than the diameter of said second set of



threads, on said larger diameter shank portion between said second threads.

5,061,137
FASTENER WITH RESILIENT LINKING MEANS

James T. Gourd, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 29, 1991, Ser. No. 692,754
Int. Cl.[5] F16B *19/00*
U.S. Cl. 411—510 **7 Claims**

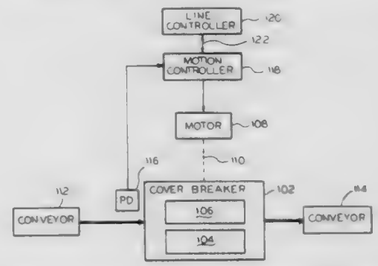
1. A fastener comprising:
a head component;
an barbed shank component;
a leaf spring connecting said head and shank components; and
means defining a longitudinal opening adapted to receive a tool in driving engagement with said shank component for the application of force thereto.

5,061,138
SYSTEM COVER BREAKER

Mary F. Allsopp, Glen Ellyn, and Gunnar Auksi, Palatine, both of Ill., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Continuation of Ser. No. 295,575, Jan. 11, 1989, abandoned. This application May 29, 1990, Ser. No. 530,465
Int. Cl.[5] B42C *11/00*
U.S. Cl. 412—4 **12 Claims**

10. The method of binding a cover to the backbone of a gathered plurality of signatures comprising the steps of:
successively positioning a cover about a gathering of signatures in a continuous cyclical operation wherein each successive gathering of signatures may be of a distinct, select thickness;
delivering during each cycle of operation one of said gathering of signatures with a cover positioned thereon to a cover breaker having first and second breaker plates movable relative to one another between a neutral position and an actuated position to crease the cover about the pages;
determining the actual relative position of said plates;
determining a desired relative position of said plates according to a select thickness for the next successive book;
automatically controlling an actuator means after delivery of one gathered plurality of signatures for varying the relative position of the plates prior to delivery of a next successive gathered plurality of signatures to vary the relative position of the plates according to the actual relative

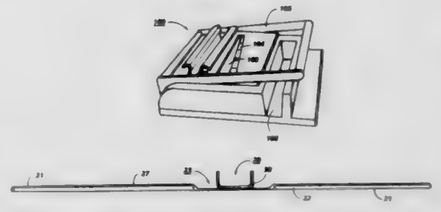


position and the desired relative position to crease the cover of the next successive gathered plurality of signatures according to the select thickness; and
controlling operation of said cover breaker first and second breaker plates to move the same between the neutral position and the actuated position to crease the cover about the pages.

5,061,139
METHOD FOR APPLYING HARD AND SOFT COVERS TO BOUND OR UNBOUND DOCUMENTS

John D. Zoltner, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1989, Ser. No. 369,482
Int. Cl.[5] B42C *9/00*
U.S. Cl. 412—8 **22 Claims**



1. A method of forming a cased book, comprising the steps of:
(a) providing a plurality of sheets;
(b) providing front and back end leaves;
(c) providing a U-shaped channel member;
(d) providing a case for said plurality of sheets, end leaves and U-shaped channel member, said case having front and back covers, a flexible spine and covering means for the outsides of both said front and back covers and said spine;
(e) covering pressure sensitive adhesive material on the inside of said front and back covers with release paper;
(f) providing an adhesive in the spine of said case;
(g) adhering said U-shaped channel member to said spine of said case with said adhesive;

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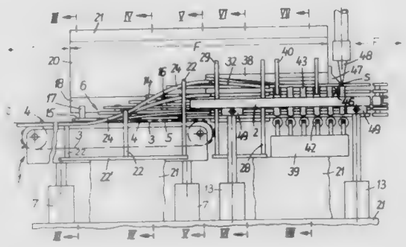
(h) placing said plurality of sheets and said end leaves within said U-shaped channel member;
(i) crimping the spine area of said case on the outside in order to crimp said channel member and secure said plurality of sheets and end leaves within said channel member and to said case;
(j) removing said release paper means from said front and back covers of said case; and
(k) pressing said front and back covers of said case to said end leaves and thereby forming a cased book.

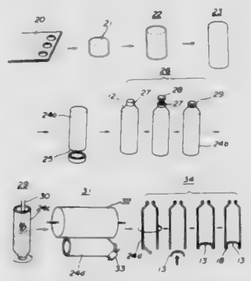
5,061,140

METHOD OF MANUFACTURING A METAL CONTAINER

Masami Hamaguchi, Takatsuki; Hiromu Yanagihara, Osaka; Osamu Hiraoka, Takatsuki, and Osamu Takahashi, Nagaokakyo, all of Japan, assignors to Shiseido Company Limited, Tokyo and Asin Can Company Limited, Osaka, both of, Japan

Continuation of Ser. No. 93,718, Sep. 8, 1987, Pat. No. 4,892,214. This application Mar. 31, 1989, Ser. No. 359,493
Claims priority, application Japan, Sep. 8, 1986, 61-212502; Mar. 4, 1987, 62-31242[U]; Mar. 23, 1987, 62-68466; Mar. 23, 1987, 62-68467; May 11, 1987, 62-114286; Sep. 1, 1987, 62-219759
Int. Cl.[5] B21D *22/20, 39/00*
U.S. Cl. 413—6 **11 Claims**





1. A method of manufacturing a metal container comprising the steps of:
(a) blanking and drawing a metal sheet material into a cup;
(b) drawing and ironing said cup into a can having a body integral with a top cover, wherein the drawing reduces the diameter of the cup and the ironing elongates the cup and forms a predetermined wall thickness of the body;
(c) forming a bottom plate having a central curved surface portion for projecting toward the interior of the container, a peripheral cylindrical portion for extending parallel to said body, and a bending portion formed at the boundary between the curved surface portion and the cylindrical portion and having a reduced thickness to that of the curved surface portion and cylindrical portion;
(d) applying an adhesive means on said body and/or said cylindrical portion;
(e) fitting said bottom plate in the bottom of said body;
(f) curling tight the lower part of said body inwardly so as to fasten and attach said bottom plate to said body; and
(g) forming a closable opening on the top cover.

5,061,141

METHOD AND APPARATUS FOR PRODUCING CAN BODIES

Norbert Lentz, and Harald Schmidt, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Mar. 29, 1989, Ser. No. 330,178
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1988, 3810611
Int. Cl.[5] B21D *7/08, 9/04*
U.S. Cl. 413—72 **22 Claims**

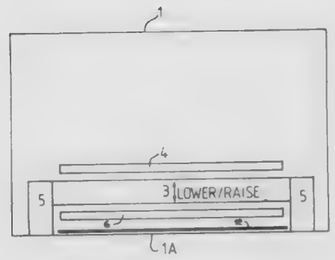
1. A method of producing can bodies from individual, planar cut blanks having a central region bordered by two lateral regions, the method comprising the following steps:
(a) transporting the blank into a shaping station by a first transporting means which engages the central region of the blank at its trailing edge;
(b) bending, to a final shape, solely the central region of the blank around an inner shaping mandrel to a circumferential angle of 120° to 190° while leaving the lateral regions unbent;
(c) clamping, simultaneously with step (b), said central region between said mandrel and said transporting means by way of friction forces derived from the forced deformation of the central region;
(d) transporting the blank for further shaping, after step (b), by a second transporting means which engages the trailing edge of said blank at two lateral locations on respective sides of said central region, said two lateral locations having already received the shape of the final can body as a result of step (b);
(e) bending, after step (b), said lateral regions of said blank;
(f) guiding opposite longitudinal side edges of said blank into an adjoining position;
(g) forming a longitudinal seam along the adjoining side edges; and
(h) continuously linearly advancing the blank during steps (a) through (g).

5,061,142

DEVICE FOR LOADING AND UNLOADING VEHICLES AND AIRCRAFT

Bo Olsson, and Claes Olsson, both of Sjöstorp 10, S-240 10 Dalby, Sweden

Filed Apr. 6, 1990, Ser. No. 505,423
Claims priority, application Sweden, Apr. 7, 1989, 8901255
Int. Cl.[5] B64C *1/20*
U.S. Cl. 244—137.1 **14 Claims**



1. An assembly for loading or unloading cargo, comprising:
a cargo space having a base portion;
a loading-unloading apparatus having a supporting structure;
cargo conveying means having an upper part and a lower part, the upper part of said conveying means bearing against said supporting structure of said loading-unloading apparatus; and
lifting devices connected to said supporting structure for lifting said supporting structure to alter the distance between said supporting structure and said base portion, whereby raising of said supporting structure with respect to said base portion when cargo is moved on the loading-unloading apparatus, transmits a substantially concentrated weight exerted by the cargo through said lifting devices to said base portion, and said lower part of said conveying means is freely movable beneath said supporting structure, and whereby lowering of said supporting structure into indirect abutment with the base portion through said lower part when the loading apparatus is inoperative in moving cargo, transmits the weight, exerted by said cargo to said base portion of said cargo space through the lower part of said conveyor means, such that said weight is more evenly spread over said base portion.

5,161,143

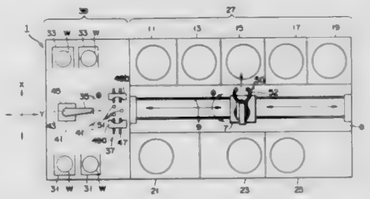
Patent Not Issued For This Number

5,061,144

RESIST PROCESS APPARATUS

Masami Akimoto, Kikuyo; Yoshio Kimura, Kumamoto; Osamu Hirakawa, Kumamoto; Noriyuki Anai, Kumamoto; Masanori Tateyama, Kumamoto, and Yasuhiro Sakamoto, Kumamoto, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tel Kyushu Limited, Kumamoto, both of, Japan

Filed Nov. 28, 1989, Ser. No. 442,535
Claims priority, application Japan, Nov. 30, 1988, 63-302714; Nov. 30, 1988, 63-302715; Apr. 28, 1989, 1-110593
Int. Cl.[5] B25T *5/02*
U.S. Cl. 414—225 **10 Claims**



1. A resist process apparatus wherein semiconductor wafers are sequentially transported and processed, comprising:
a plurality of resist processing units for processing the wafers at various temperatures on a basis of a program stored beforehand;
conveying means for conveying the wafers to the respective processing units, the conveying means not being included in any of the resist processing units, and controlled by the program stored beforehand;
the conveying means comprising:
a wafer holder including a support frame and a plurality of support members, for holding each wafer at a level; and
moving means for moving the wafer holder;
the support frame being larger than the wafer,
the support members being arranged on the support frame, for supporting the wafer at the periphery of the wafer in partial contact with the support members,
the support members each having first and second tapered portions to be brought into contact with the wafer,
the tapered portions being made of a material having a thermal conductivity lower than metals;
wherein the second tapered portion has a smaller inclination than the first tapered portion, the second tapered portion being arranged on a radially inner side with respect to the first tapered portion.

5,061,145

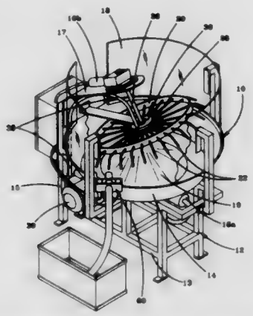
APPARATUS FOR PICKING UP AND TRANSFERRING LIGHTWEIGHT ARTICLES

James Genis, and Normand J. Madgar, both of Clinton, Ohio, assignors to Gen-Gar-Inc., Akron, Ohio

Filed Apr. 19, 1990, Ser. No. 512,449
Int. Cl.[5] B65B *69/00*
U.S. Cl. 414—325 **14 Claims**

1. An improved device for picking up and transferring light articles of the type including an open top receptacle for said articles, a frame, a support arm extending upwardly from said frame, a support shaft, said support shaft being mounted on said support arm and extending downwardly towards the receptacle, a driven rotary carrier plate attached to said support shaft, a plurality of tubular arms extending from circumferentially spaced portions of said carrier plate and with their ends being positioned for passing through a portion of said

receptacle in one part of their rotary movement, said rotary member with tubular arms thereon being positioned above said receptacle, a stationary control disc extending about said support shaft and having an axial face, said axial face abuttingly engaging said rotary plate, a support bar connected to said frame and rivetably attached to said control disc, and a suction supply attached to said manifold so that as said carrier plate rotates, said tubular arms are supplied with a vacuum to carry



said lightweight articles, thereby and wherein the improvement comprises:

a means for extracting said articles from said tubular arms by imparting a vacuum on to said lightweight articles, said extracting means positioned in close proximity to an arc created by an outermost end of said tubular arms; and

a means for transporting said lightweight articles from said extracting means to a point of deposit.

5,061,146

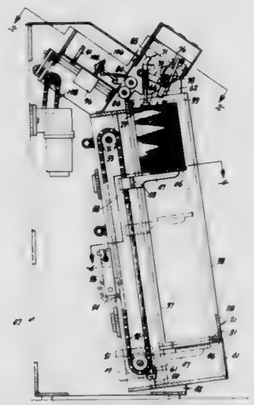
ENVELOPE OPENER AND LOAD SEPARATOR

Larry L. Nelson, Sacramento, Calif., assignor to Systems Mailing Research, Inc., Folsom, Calif.

Division of Ser. No. 229,880, Aug. 8, 1988, Pat. No. 4,921,388, which is a continuation of Ser. No. 882,333, Jul. 7, 1986, abandoned. This application Jan. 22, 1990, Ser. No. 468,338

Int. Cl.[5] B43M *7/02*

U.S. Cl. 414—412 **4 Claims**



1. A device for shifting contents within an envelope having a leading edge folds, a trailing edge fold, and end folds, comprising:

a. a frame;

b. a horizontally extending and transversely inclined shelf on said frame, said shelf having a lower margin, an upper margin, and an upper surface therebetween, an upstanding ledge along said lower margin of said shelf, and a barrier wall upstanding from said shelf along said upper margin;

c. an envelope elevator upright on said frame and having the top thereof adjacent said upstanding ledge, the envelope being delivered to said elevator top with its leading edge fold substantially parallel to said barrier wall; and,

d. means on said frame for removing the envelope from said top of said elevator and throwing the envelope over said ledge and above and across said upper surface to impact said leading edge fold against said barrier wall, shifting a leading edge of the contents into abutment with the inside of said leading edge fold and providing a space between a trailing edge of the contents and the inside of said trailing edge fold of the envelope, the envelope thereafter dropping onto said upper surface and sliding downwardly until said trailing edge fold falls against said upstanding ledge.

5,061,147

VEHICLE CARRIER WITH WHEEL LIFT

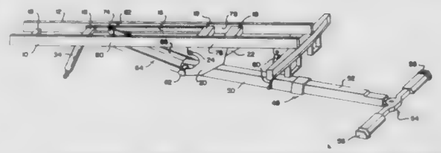
Ronald R. Nespor, Sharpsville, Pa., assignor to Chevron, Inc., Mercer, Pa.

Continuation of Ser. No. 288,854, Dec. 23, 1988, abandoned, which is a continuation of Ser. No. 204,642, Jun. 9, 1988, Pat. No. 4,929,142. This application Jun. 15, 1990, Ser. No. 538,742

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] B60J *9/00*

U.S. Cl. 414—563 **13 Claims**



1. A combination tilting bed carrier and attached wheel lift apparatus for mounting on a chassis of a towing vehicle comprising,

a bed carrier for supporting vehicles in tow,

a first pair of pivot points positioned laterally, oppositely of one another on said bed carrier for pivotally connecting said bed carrier to the chassis,

first motive means extending between the chassis and said bed carrier for actuating tilting of said bed carrier about said first pair of pivot points relative to said chassis,

a wheel lift positioned below said bed carrier and extending rearwardly thereof,

a second pair of pivot points positioned laterally, oppositely of one another on said bed carrier for pivotally connecting said wheel lift to said bed carrier, and

second motive means extending between said wheel lift and said bed carrier for actuating tilting of said wheel lift about said second pair of pivot points relative to said bed carrier and the chassis.

5,061,148

POLAR CRANE MATERIAL HANDLING APPARATUS

David Petz, Tracy, Calif., assignor to California Ammonia Co., Stockton, Calif.

Filed Mar. 23, 1990, Ser. No. 498,004

Int. Cl.[5] B66B *17/00;* **B65G** *1/00, 11/10*

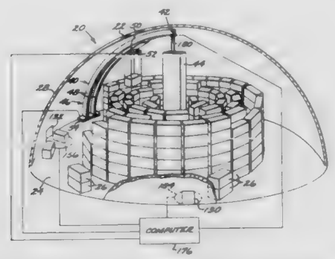
U.S. Cl. 414—564 **14 Claims**

1. A crane apparatus for use within a generally hemispherical dome-shaped storage enclosure with a load support surface and crane apparatus located therein, comprising:

a trolley support, the support including a stationary tower with a support post thereon centrally located in the enclosure;

a movable traversing base, with means for controllably moving the base to selected positions within the enclosure;

parallel arched beams joined together to form a trolley support track, the arched shaped beams being generally shaped in the longitudinal direction as arcs of a circle having a radius slightly less than the radius of the hemispherical enclosure, the support track having an upper end that is pivotally supported on the support post of the central tower and a lower end that rests on the traversing base;



a trolley having support means thereon that moves along the support track;

means for moving the trolley along the support track between the upper and lower ends; and

a hoist on the trolley, the hoist including engaging means for engaging a load to be lifted thereby and means for maintaining the engaging means substantially level relative to the load support surface in the enclosure.

5,061,149

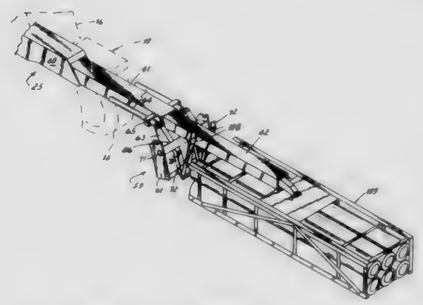
FORK LIFT VEHICLE HAVING A TELESCOPIC BOOM WITH AN ARTICULATED JIB SECTION CAPABLE OF VERTICAL AND HORIZONTAL SWINGING RELATIVE TO THE BOOM

James E. Lowder; Ronald R. Shinn, and John L. Baker, all of Lubbock, Tex., assignors to Eaigle-Picher Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 394,889, Aug. 17, 1989, Pat. No. 4,986,721. This application May 23, 1990, Ser. No. 527,348

Int. Cl.[5] B60P *1/00*

U.S. Cl. 414—687 **1 Claim**



1. An extendable boom comprising:

a hollow outer boom,

a hollow inner boom telescopically mounted within said outer boom,

a jib telescopically mounted within said hollow inner boom,

an extendable hydraulic actuator disposed within said hollow inner and outer boom and having an inner end connected to said outer boom, said actuator having an outer end permanently connected to the inner end of said jib,

means for selectively fixing said jib to said inner boom in a retracted jib position and in an extended jib position,

whereby when said jib is fixed to said inner boom in said retracted jib position, extending said hydraulic actuator extends said inner boom, and whereby when said jib is released from fixation to said inner boom, extending said hydraulic actuator extends said jib and thereafter said inner boom,

a fork lift carriage mounted on said inner boom,

a pair of forks mounted on said carriage,

means for vertically tilting said carriage about a horizontal axis,

means for moving said forks from side-to-side, universal pivot means having two orthagonal axes of rotation connecting said jib to said actuator to permit swinging of said jib in any direction with respect to said inner boom when said jib is in said extended jib position,

means connecting said forks to said jib to move said jib up and down and left and right upon tilting of said carriage and shifting of said forks from side-to-side, respectively, when said jib is in said extended jib position.

5,061,150

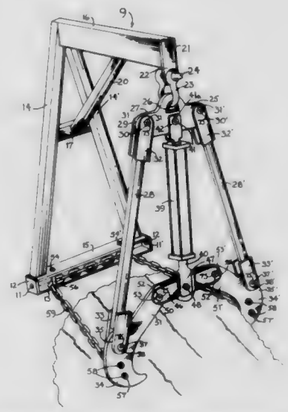
SINGLE-HANDED SKIDDING APPARATUS FOR LOGS AND THE LIKE

John Rentschler, 824 Rentschler La., Toppenish, Wash. 98948

Filed Mar. 31, 1989, Ser. No. 331,645

Int. Cl.[5] B66C *1/12*

U.S. Cl. 414—703 **4 Claims**



1. A load-skidding apparatus for attachment to the three-point hitch of a vehicle comprising:

a rotatable frame having attachment points for attachment to the three-point hitch, said frame comprising:

a lower horizontal member with a hitch-cooperating fitting at each end for attachment to the two lower points of the three-point hitch;

an A-frame extending upward from the lower horizontal member;

a hitch-cooperating fitting on the A-frame for attachment to the third point of the three-point hitch; and

a boom extending approximately horizontally from the A-frame;

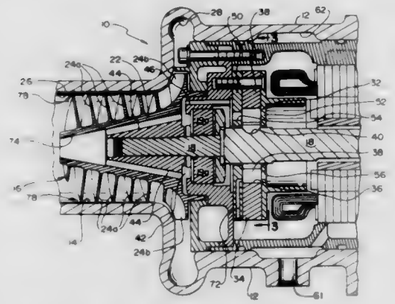
a lifting grapple suspended from the boom, said grapple having a first tong and a second tong, each of said tongs having an upper end and a lower end, and said tongs being disposed on opposite sides of the centerline of the boom in an opposing cooperating relationship to each other; and

a discrete towing means emplaced by the grapple, said towing means comprising;

a first rotatably-sleeved bolt affixed to the horizontal

member on the same side of the centerline of the boom on which the first tong is located;
a second rotatably-sleeved bolt affixed to the horizontal member on the same side of the centerline of the boom on which the second tong is located; and
a flexible, inelastic member having a first end and a second end, the first end being attached to the first tong near the lower end of the first tong, thence passing loosely around the first bolt, thence passing loosely around the second bolt, and thence being attached at its second end to the second tong near the lower end of the second tong.

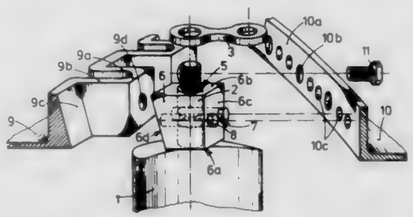
5,061,151
CENTRIFUGAL PUMP SYSTEM WITH LIQUID RING PRIMING PUMP
James Steiger, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Feb. 22, 1990, Ser. No. 483,912
Int. Cl.[5] F01D *3/00*
U.S. Cl. 415—106 **17 Claims**



1. An impeller-type pump system, comprising:
housing means defining a fluid inlet;
impeller means rotatably mounted in the housing means downstream of the inlet, the impeller means including an inducer stage forward of a centrifugal impeller stage;
a pressure balance chamber defined in the housing behind the impeller means to provide for thrust balance of the impeller means;
first passage means through the impeller means, including an inlet in the inducer stage and an outlet in the centrifugal impeller stage, communicating pressure at the inlet with the pressure balance chamber;
a liquid ring pump for priming the pump system, the liquid ring pump being located behind the centrifugal impeller means; and
second passage means communicating the pressure balance chamber with the liquid ring pump.

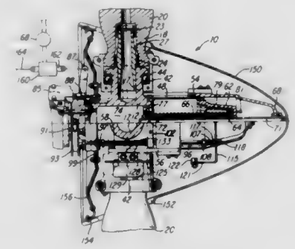
5,061,152
MOUNTING FOR VARIABLY SETTABLE STATOR BLADES IN A COMPRESSOR
Daniel J. Marey, Soisy S/Seine, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France
Filed Mar. 13, 1990, Ser. No. 492,992
Claims priority, application France, Mar. 15, 1989, 89 03375
Int. Cl.[5] F01D *17/00, 9/00*
U.S. Cl. 415—150 **4 Claims**

1. In a compressor for a gas turbine engine,
an inner ring,
an outer casing comprising upstream and downstream rings which are connected together by means of bolts, said upstream and downstream rings being provided respectively with facing upstream and downstream collars,
a stage of variably settable stator blades arranged between said inner ring and said outer casing, each of said blades including a journal at its radially outer end, said journal having a peripheral groove extending at least partly thereabout, respective journal boxes for said journals of said blades being mounted in said outer casing between said upstream and downstream rings thereof, each of said journal boxes having a radial bore which rotatably receives the respective journal, and a pair of parallel pins arranged longitudinally through each of said journal boxes and cooperating with said peripheral groove of said journal to hold said blade radially in each of said journal



boxes, wherein each of said journal boxes is of parallelepipedic shape with a trapezoidal longitudinal section of which the smaller parallel side faces radially inwards, and said outer casing defines respective housings for receiving said journal boxes, each of said housings comprising a boss on said upstream ring of said outer casing adjacent said upstream collar thereof, and a recess in said boss of a shape complementary to said journal box, said recess being open at its downstream end flush with the face of said upstream collar so that the downstream face of said journal box butts against said downstream collar of said downstream ring.

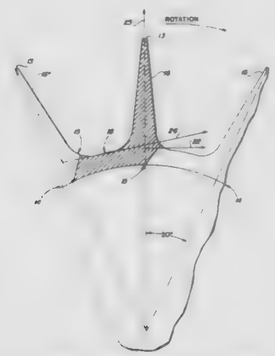
5,061,153
AIRCRAFT PROPELLER ASSEMBLY WITH BLADE PITCH RESET FOR GROUND IDLE
Loy D. Pace; Donald C. Stackhouse; Earl W. Jones, and Dennis S. Zimpfer, all of Piqua, Ohio, assignors to Hartzell Propeller Inc., Piqua, Ohio
Continuation of Ser. No. 274,466, Nov. 21, 1988, Pat. No. 4,904,157. This application Feb. 26, 1990, Ser. No. 485,272
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] B64C *11/40*
U.S. Cl. 416—46 **18 Claims**



1. An aircraft propeller assembly comprising a propeller hub adapted to be driven by a turbine engine on an aircraft, said hub supporting a plurality of angularly disposed and radially projecting adjustable pitch propeller blades, pitch changing means including a hydraulic fluid cylinder and piston for changing the pitch of said blades between a feather position and a reverse pitch position through a low pitch in-flight idle

position and a lower pitch on-ground idle position in response to actuation of said piston by hydraulic fluid, feedback control means including a valve for controlling the flow of the fluid to said piston, a plurality of feedback control rods extending parallel to the propeller axis of rotation and having rearward end portions connected to actuate said valve, an annular member surrounding said hydraulic cylinder, means connecting said annular member to said control rods, first positive actuated means for moving said annular member and said control rods and closing said valve in response to axial movement of said piston and rotation of said blades to said in-flight idle position, and second positive actuated means for moving said annular member and said control rods and closing said valve in response to further axial movement of said piston and rotation of said blades to said on-ground idle position.

5,061,154
RADIAL TURBINE ROTOR WITH IMPROVED SADDLE LIFE
Harry L. Kington, Scottsdale, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Dec. 11, 1989, Ser. No. 448,776
Int. Cl.[5] F01D *5/14*
U.S. Cl. 416—186 R **11 Claims**

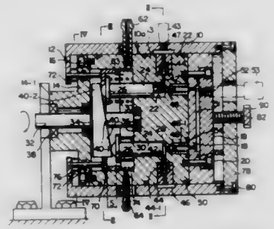


10. A blade segment adapted to be bonded into a radial inflow turbine rotor comprising a body of single crystal superalloy material having; at one end thereof, a curved saddle region in which the superalloy's <1.0.0> crystallographic axis is aligned transversely to the centerline of said curve and extending below the surface of said saddle region

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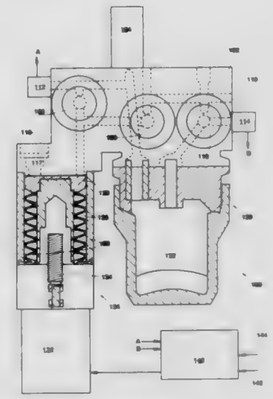
5,061,155
ROTARY SWASH PLATE TYPE AXIAL PLUNGER PUMP
Toshika Masaoka, Toyota, and Shigeki Kometji, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jul. 20, 1990, Ser. No. 556,642
Claims priority, application Japan, Jul. 24, 1989, 1-85631[U]
Int. Cl.[5] F04B *1/12, 49/00*
U.S. Cl. 417—269 **9 Claims**

1. An axial plunger pump, comprising:
a stationary body and a shaft rotatably arranged in the body;
said body defining cylinder bores which are circumferentially spaced about an axis of the shaft, each cylinder bore defining an axis which is parallel to the axis of the shaft;
plungers axially and slidably inserted in the respective cylinder bores, so that the pump chambers are formed on one side of the plungers in the respective cylinder bores;
a swash plate on the shaft defining an operating surface inclined with respect to the axis of the shaft, the ends of the plunger being remote from the respective pump chamber coming into contact with the operating surface so that the plungers are axially moved between opposite extreme positions to thereby vary the volume of the chamber;
means for allowing a fluid to be introduced into the pump chamber when the plunger is moved in a direction in which a volume of the pump chamber is increased;
means for allowing the fluid to be discharged from the pump chamber when the plunger is moved in an opposite direc-



tion in which the volume of the pump chamber is reduced; and
means for limiting the extreme positions of the plungers adjacent to the swash plate to thereby vary the amount of fluid discharged from the pump chambers, said limiting means limiting the positions of the plungers independently of the swash plate.

5,061,156
BELLOWS-TYPE DISPENSING PUMP
Eric R. Kuehne, Cupertino, and Donald D. Hester, Milpitas, both of Calif., assignors to Tritec Industries, Inc., Mountain View, Calif.
Filed May 18, 1990, Ser. No. 525,593
Int. Cl.[5] F04B *45/00, 39/08;* **F01B** *19/00*
U.S. Cl. 417—412 **16 Claims**



1. A metering pump, comprising:
a barrel having a cylindrical bore having a first end and a second end;
a bellows disposed within said bore of the barrel, the bellows having a plurality of pleats between a first end and second end, said first end attached and forming a seal with the first end of said bore, said second end being longitudinally moveable within said bore;
a support bushing disposed within the bellows and attached to said second end of the bellows and being moveable longitudinally within the inside folds of the plurality of pleats, the inside folds of the plurality of pleats being

limited in their ability to radially contract by the outside diameter of the support bushing;

a positioning means for positioning the support bushing and said second end of the bellows within said bore;

an inlet means for inletting dispensing fluid through said second end of said bore; and

a dispensing means for outletting said fluid through said second end of said bore.

5,061,157

SUBMERSIBLE PUMP

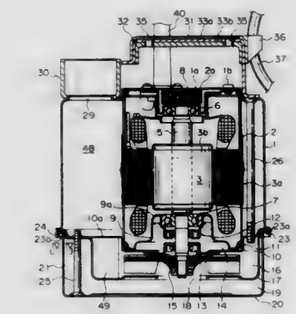
Shinichiro Arakawa, Kanagawa, Japan, assignor to Ebara Corporation, Tokyo, Japan

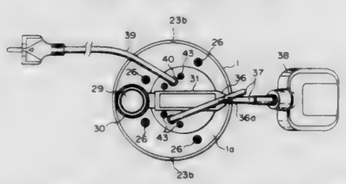
Filed Sep. 18, 1990, Ser. No. 584,951

Claims priority, application Japan, Sep. 26, 1989, 1-249861; Jul. 23, 1990, 2-195775

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—423.14 **11 Claims**





1. A submersible pump comprising: a discharge casing open at the bottom thereof; a motor case fixed inside the discharge casing and containing therein a motor for driving an impeller; a support plate positioned so as to close an opening of said discharge casing for supporting said motor case; a downwardly concaved pump casing placed under the support plate for defining a pressure chamber between it and the support plate; and a downwardly concaved strainer placed under the pump casing for defining a suction chamber between it and the pump casing, said submersible pump being characterized in that said discharge casing has a stepped flange with an outwardly extending portion and a downwardly extending portion which is integrally formed along the periphery of the opening of said discharge casing, in that within a stepped portion of said stepped flange there are sequentially mounted respective peripheral portions of said support plate, of said pump casing, and of said strainer, in that said discharge casing and said support plate are fastened together by first bolts vertically extending therethrough, and in that said support plate, said pump casing and said strainer are fastened together by second bolts vertically extending therethrough.

5,061,158

MULTI-CYLINDER PISTON PUMP

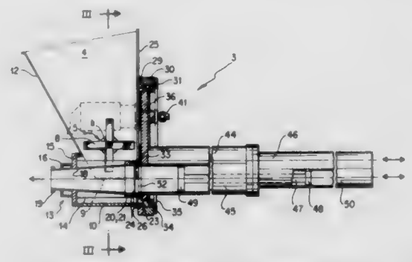
Ernst Egli, Fahrweid, Switzerland, assignor to Aliva Aktiengesellschaft, Widen, Switzerland

Filed Feb. 16, 1990, Ser. No. 449,959

Claims priority, application Switzerland, Mar. 30, 1988, 1207/88

Int. Cl.[5] F04B *39/10*

U.S. Cl. 417—532 **7 Claims**



1. Two-cylinder piston pump with material hopper of the rotary slide valve type for conveying flowable material, particularly concrete, wherein a rotary slide valve (**33, 36**) is connected with the pistons (**48, 49**) and their cylinders (**44, 45**) for common actuation and the rotary slide valve (**33, 36**) is arranged outside the material hopper (**4**), characterized by a pressure pipe carrier (**13**) with pressure pipe (**18**) and with an inner flange (**20**) arranged in the material hopper and with a counterflange formed as a cutting ring (**23**), wherein the outwardly opening connecting location between the inner flange and the counterflange lies in the interior of the material hopper (**4**).

5,061,159

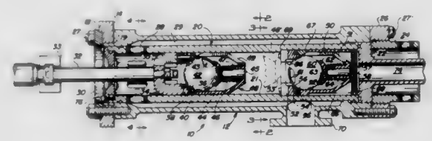
FLUID END FOR RECIPROCATING PUMP

Dale H. Pryor, 3709 Southridge, Rowlett, Tex. 75088

Filed Aug. 27, 1990, Ser. No. 572,827

Int. Cl.[5] F04B *21/04*

U.S. Cl. 417—554 **10 Claims**



7. A pump includes a main body having a fluid end for moving fluid from a suction side to a discharge side thereof, a cylinder supported by the main body, a piston reciprocatingly received in one end of the cylinder and forming a variable chamber therewith, a stationary discharge valve assembly supported at the other end of the cylinder and connected to discharge fluid from the variable chamber, a traveling intake valve assembly in said piston connected to supply fluid to said variable chamber, the improvement comprising:

said piston has an upstream marginal end to which an operating shaft is connected, and a downstream marginal end opposed to said upstream marginal end, seal means on said piston sealingly engages the wall surface of the cylinder, means forming a seat in said traveling intake valve assembly in said piston and in said stationary discharge valve assembly, a passageway through the piston and through the seat;

said stationary discharge valve assembly and said traveling intake valve assembly each including a valve cage, and a valve element is captured within each said valve cage and is sealingly seated against the seat on alternate strokes of the piston; a cylinder head for holding said discharge valve cage in said cylinder and for holding said cylinder within said main body; an axial passageway through said cylinder head; whereby;

said cylinder, said piston and said stationary discharge valve assembly are removably received in one end of said main frame and are axially aligned with respect to one another, and can be removed from said main frame upon removal of said cylinder head.

5,061,160

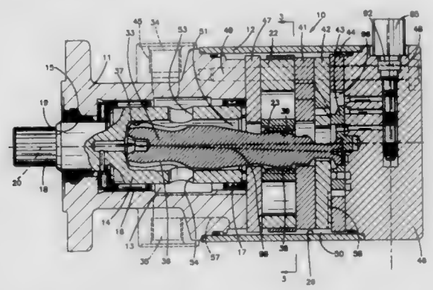
TWO-SPEED GEROTOR WITH SPOOL VALVE CONTROLLING WORKING FLUID

Mark R. Kinder, Indianapolis, and Glenn R. Wert, Monticello, both of Ind., assignors to TRW Inc., Lyndhurst, Ohio

Filed Mar. 14, 1990, Ser. No. 495,446

Int. Cl.[5] F01C *1/02;* **F03C** *3/00*

U.S. Cl. 418—61.3 **10 Claims**



1. A motor comprising:

a gerotor gearset including an inner gear member and an outer gear member, said gear members being rotatable and orbital relative to each other and defining expandable and contractible fluid pockets, said gear members rotating and orbiting relative to each other as said fluid pockets expand and contract;

a commutator valve movable with one of said gear members and at least partially defining a first region which communicates continuously with high pressure during expansion and contraction of said fluid pockets, a second region which communicates continuously with low pressure during expansion and contraction of said fluid pockets, and a third region which selectively communciates with high pressure or low pressure;

means for (i) communicating high pressure from said first region to a certain number of said fluid pockets, (ii) communicating low pressure from said second region to other of said fluid pockets, and (iii) communicating at least one fluid pocket with said third region; and

valve means for controlling the speed of relative movement between said gear members, said vlave means including a valve member having a first position in which said third region communicates continuously with the low pressure from said second region during expansion and contraction of said fluid pockets and a second position in which said third region communicates continuously with the high pressure from said first region during expansion and contraction of said fluid pockets.

5,061,161

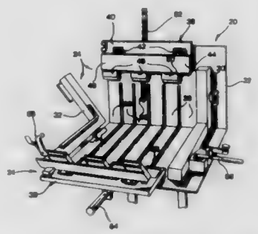
DEVICE FOR MANUFACTURING A COMPOSITE BUILDING PANEL FOR USE IN A BUILDING STRUCTURE CLADDING SYSTEM

Bertrand Tetu, St-Agapit, Canada, assignor to Panneaux Thermo-Briques, Inc., Quebec, Canada

Filed Dec. 11, 1989, Ser. No. 448,670

Int. Cl.[5] B29C *33/16*

U.S. Cl. 425—3 **11 Claims**



1. A fixture for use in manufacturing a composite building panel comprising

a facing layer including a plurality of facing elements in a spaced apart relationship, and magnetically attractable particulate material disposed between said facing elements,

a relatively rigid backing layer spaced apart from said facing layer, and

an insulation layer between said facing layer and said backing layer, said insulation layer constituting a bonding medium for retaining said layers together,

said fixture comprising:

a) a facing elements holder including a plurality of recesses for receiving therein said facing elements, and spacers between said recesses for maintaining said facing elements in a spaced apart relationship; and

b) means for magnetically attracting said material to said spacers to prevent undesired movement of the particulate material in manufacturing said composite building panel.

5,061,162

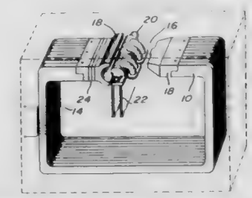
FLUX CONTROL FOR INDUCTION HEATING OF MELT-OUT CORES

Kelly P. Gravelle, Ile Bizard, Canada, assignor to Electrovert Ltd., Ontario, Canada

Division of Ser. No. 268,552, Nov. 8, 1988, Pat. No. 4,952,346. This application Aug. 3, 1990, Ser. No. 562,709

Int. Cl.[5] B29C *33/52, 33/76*

U.S. Cl. 425—3 **10 Claims**



1. An induction heating system for melting metal cores from molded plastic articles comprising:

a high permeability magnetic core;

an induction heating coil about at least a portion of the magnetic core to produce flux circulation in a magnetic circuit formed by the magnetic core, and

two magnetic nozzles attached to the magnetic core with a gap therebetween for insertion of a specific shape of plastic article, the magnetic nozzles shaped to direct and

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position a desired pattern of flux lines to heat and melt the metal core of the plastic article,

wherein a nonmagnetic shim is located between at least one of the two magnetic nozzles and the magnetic core to adjust inductance within the magnetic circuit.

5,061,163

DIE ASSEMBLY

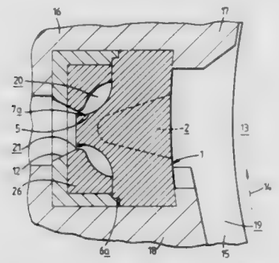
Stephen T. Kennedy, Preston, United Kingdom, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 374,972, Jul. 3, 1989, abandoned. This application Oct. 15, 1990, Ser. No. 598,745

Claims priority, application United Kingdom, Jul. 19, 1988, 8817163; Oct. 10, 1988, 8823700

Int. Cl.[5] B21C *25/04*

U.S. Cl. 425—79 **3 Claims**



1. A die assembly for the extrusion of metal tube including first and second members, the first member having only two identical tapered apertures, the two apertures, being disposed symmetrically about the longitudinal axis of the first member, the apertures extending through the first member and having generally circular entrance openings which are immediately contiguous so as to contact each other only in the immediate vicinity of said longitudinal axis at one face of the first member, an integral mandrel extending axially from the opposite face of the first member and the second member having a through passage defining an enlarged chamber portion reducing to a throat portion, the first and second members cooperating to define an annular extrusion chamber formed by the enlarged chamber portion and the mandrel, the mandrel cooperating with the throat portion of the second member to define an annular extrusion gap therebetween and the tapered apertures in the first member leading into the extrusion chamber.

5,061,164

DOWEL-LESS MOLD CHASE FOR USE IN TRANSFER MOLDING

Gregorio T. Sabado, and Morley J. Weyerman, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 1, 1991, Ser. No. 678,487

Int. Cl.[5] B29C *45/02, 45/14, 33/30*

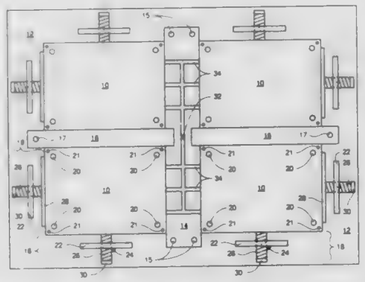
U.S. Cl. 425—116 **10 Claims**

6. A molding apparatus for encapsulating electronic devices in a molten viscous material, comprising:

a) first and second mold chases having a shaped void to receive said molten material;

b) a base to receive said first mold chase, said mold base comprising a first pair of clamps positioned perpendicular to each other and said base further comprising a first pair of fixed alignment bars opposite said first pair of clamps, wherein said first pair of clamps hold said first mold chase against said first pair of fixed alignment bars, said first mold chase being aligned with said base thereby;

c) a press having a movable portion, said press receiving said second mod chase, said press comprising a second pair of clamps positioned perpendicular to each other and further comprising a second pair of fixed alignment bars opposite said second pair of clamps, wherein said second pair of clamps hold said second mold chase against said second pair of fixed alignment bars, said press holding said second



mold chase in aligned contact with said first mold chase thereby.

5,061,165

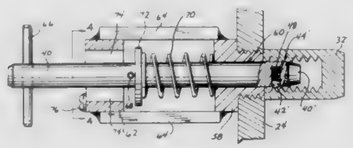
MOLDING TOOL

Gary R. Guzikowski, Franklin, Wis., assignor to Kelch Corporation, Cedarburg, Wis.

Filed Nov. 6, 1990, Ser. No. 609,950

Int. Cl.[5] B29C *33/24, 41/20*

U.S. Cl. 425—117 **5 Claims**



1. A molding tool for use in a mold having a wall defining an internal molding cavity, the tool being configured to hold an insert having a threaded internal bore within the mold cavity, the improvement comprising:

a stud extending into the mold cavity from the housing wall;

a detent transversely and retractably protruding from the stud; and

means biasing the detent in the transverse direction away from a longitudinal axis of the stud whereby the stud, housing wall, detent and means are juxtaposed and configured so that the internal threads of the threaded insert are releasably retained by the detent when the bore of the threaded insert is placed over the stud.

5,061,166

EXTRUDER HEAD

Hans-Joachim Gohlisch, Hanover; Wilfried Baumgarten, Pattensen; Klaus Becker, Sibbesse, and Paul Budiman, Hanover, all of Fed. Rep. of Germany, assignors to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 551,934

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923290

Int. Cl.[5] B29C *47/14*

U.S. Cl. 425—133.5 **19 Claims**

11. Apparatus for extruding profiles from rubber and/or plastic mixtures comprising

a stationary main part having a plane forward face,

at least two extruders rigid with said stationary main part and having discharge ends opening in said forward face,

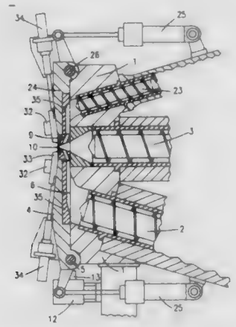
two transverse pivot shafts disposed respectively at opposite sides of said forward face of said stationary main part,

two movable main parts mounted pivotally on said two

pivot shafts respectively for pivotal movement between a closed position in which said movable main parts overlie said forward face of said stationary main part and an open position, p3 an extrusion die unit disposed between outboard ends of said movable main parts when in closed position,

inner faces of said movable main parts and said forward face of said stationary main part defining flow channels for flow of material from discharge ends of said extruders to said extrusion die unit,

means for swinging said movable main parts between open position and closed position,



means for clamping said movable main parts when in closed position, against said forward face of said stationary main part and

means for exerting on one of said movable main parts, when in closed positions, a force parallel to said forward face of said stationary main part to press one movable main part toward the other movable main part to clamp said extrusion die unit between ends of said movable main parts, there being sufficient play in the pivotal mounting of said one movable main part to permit movement of said one movable main part parallel to said forward face of said stationary main part, while the pivotal mounting of said other movable main part has only relatively limited play.

5,061,167

INJECTION MOLDING MACHINE INCLUDING A CUTTING UNIT

Karl Hehl, Arthur-Hehl-Str. 32, D-7298 Lossburg 1, Fed. Rep. of Germany

Filed Sep. 13, 1989, Ser. No. 406,808

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1988, 3831129

Int. Cl.[5] B29C *45/38*

U.S. Cl. 425—188 **11 Claims**

1. In an injection molding machine having a vertical longitudinal plane of symmetry and including

an injecting unit,

a clamping unit comprising an injection mold for consecutively ejecting usable moldings, rejects and sprues,

a machine pedestal having a substantially rectangular vertical projection and supporting said injecting and clamping units,

sorting means comprising a swivel plate disposed under said mold; said swivel plate being pivotally movable about a horizontal axis; said swivel plate being arranged to receive said moldings and said sprues from said mold; said swivel plate being movable between first and second, oppositely downwardly inclined positions for delivering in said first position said usable moldings on one side of said horizontal axis and for delivering in said second position said rejects and sprues on another side of said horizontal axis,

receiving means extending under said swivel plate for receiving said usable moldings therefrom when said swivel plate is in said first position and

a disintegrator comprising a cutting mechanism arranged to receive said rejects and sprues from said swivel plate when said swivel plate is in said second position; said cutting mechanism being operable to disintegrate said rejects and sprues to form disintegrated material; said disintegrator further having a transmission connected to said cutting mechanism, a drive motor operatively connected to said cutting mechanism through said transmission, and means for receiving said disintegrated material from said cutting mechanism;

the improvement wherein

said machine pedestal has first and second opposite longitudinal side walls;

an exit opening in the first side wall adjacent to said cutting mechanism;

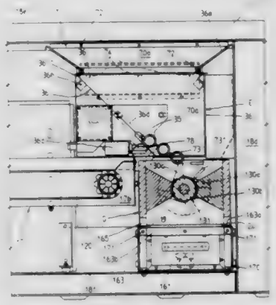
said cutting mechanism comprising

at least two axially spaced-apart first cutters for crushing large plastic parts,

a plurality of axially spaced-apart second cutters; said second cutters being smaller than said first cutters;

a rotary shaft carrying the first and second cutters; said rotary shaft being oriented perpendicularly to said vertical longitudinal plane of symmetry,

a plurality of pairs of diametrically opposite, stationary cutting edges; each of the first and second cutters cooperating with the stationary cutting edges;



said motor and said transmission forming a motor-and-transmission block;

said sorting means being formed as an independently operable unit including a housing;

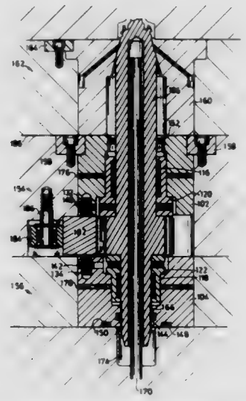
the improvement further comprising

a leg structure supported on said bottom structure of the machine pedestal; said motor-and-transmission block being supported on said leg structure; said leg structure and said motor-and-transmission block forming a motor-and-transmission unit; said motor-and-transmission block projecting through an aperture of said second longitudinal side wall and having a major part situated externally of said substantially rectangular vertical projection of said machine pedestal;

a cutting unit incorporating said cutting mechanism and being lockably mounted on said leg structure; said cutting unit being slidable on said leg structure for removal out of said machine pedestal through said exit opening in the first side wall; said cutting unit having a vertical projection; said motor-and-transmission block being situated outside an area defined by said vertical projection of said cutting unit; and

a plug means for operatively coupling said transmission to said cutting unit; said plug means being arranged for disengaging said transmission from said cutting unit as said cutting unit is removed out of said machine pedestal through said exit opening.

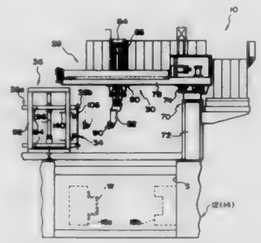
5,061,168
MODULAR UNSCREWING MOLD APPARATUS
Alton L. Fox, 753 Klem Rd., Webster, N.Y. 14580
Filed Jul. 9, 1990, Ser. No. 549,808
Int. Cl.[5] B29C *45/44*
U.S. Cl. 425—190 26 Claims



1. A modular unscrewing injection mold comprising:
a mold base;
a first core receiving opening extending through the mold base;
a core assembly, removably mountable as a unit in the core receiving opening, the core assembly comprising:
a first core shell; and
a second core shell attached to the first core shell and forming a core receiving space therebetween;
a mold core rotatably mounted in the core receiving space of the core assembly;
means on the mold core for effecting rotation of the mold core;
means in the mold base, engaging the means on the mold core, for rotating the core;
means for releasably securing the core assembly in the mold base.

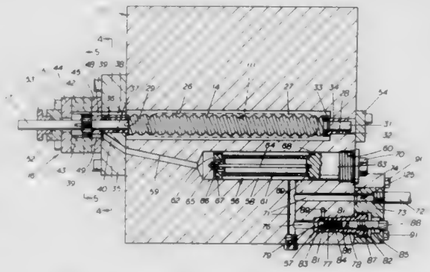
5,061,169
MECHANISM FOR WORK PICKUP IN AN INJECTION MOLDING APPARATUS
Shinji Yamashiro, and Takanori Hara, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Jul. 18, 1989, Ser. No. 381,773
Claims priority, application Japan, Jul. 26, 1988, 63-184602; Jul. 26, 1988, 63-184603
Int. Cl.[5] B29C *45/42*
U.S. Cl. 425—190 8 Claims

1. An injection molding apparatus which comprises:
first and second injection molding units, which are juxtaposed, for independently executing injection molding,
a placing station which is disposed between said first and second injection molding units, and to which a used injection-molding metal mold detached from each of said first and second injection molding units is conveyed to be commonly placed thereon; and
work pickup means, arranged on a top portion of each of said first and second injection molding units, for picking up a work formed by a corresponding metal mold, said work pickup means including chuck means for chucking the work, a slide block for detachably holding said chuck means, and drive means for three-dimensionally moving said slide block; and



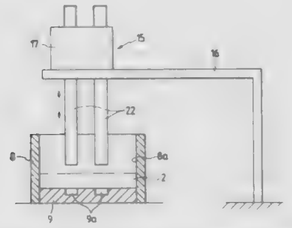
exchanging means for automatically exchanging said chuck means of said work pickup means in accordance with a shape of the work.

5,061,170
APPARATUS FOR DELIVERING MOLTEN POLYMER TO AN EXTRUSION
Martin A. Allen, Gainesville, and John T. Fetcko, Dawsonville, both of Ga., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Filed Dec. 8, 1989, Ser. No. 447,930
Int. Cl.[5] B29C *47/08*
U.S. Cl. 425—197 12 Claims



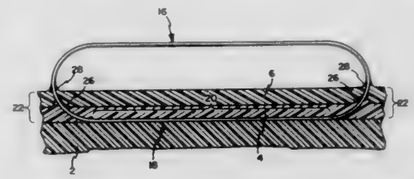
7. A system for delivering a polymer melt to an extrusion die which comprises:
(a) a body having an auger chamber and chamber inlet and outlet passages formed therein;
(b) a resin hopper mounted on the body for feeding resin to the auger chamber inlet passage;
(c) means for preheating the resin which includes (i) a block mounted in the bottom of the hopper on opposite sides of the chamber inlet passage, and (ii) a plurality of heat conductive fins extending upwardly from each block for conducting heat therefrom;
(d) means for heating the body and each block whereby heat is conducted to the fins to melt resin therebetween, said resin entering the chamber inlet passage as a melt;
(e) an auger screw mounted in the auger chamber, said auger screw clearance in the chamber being at least 10%;
(f) a positive displacement rotary pump connected to said body and adapted to receive polymer melt from the chamber outlet passage;
(g) a pump discharge passage formed in the body for conducting pressurized polymer melt from the pump, said means for heating the body being adapted to heat the body at least in areas surrounding the auger chamber and the pump discharge passage to deliver heat to polymer melt conducted therein;
(h) a pressure activated bypass valve mounted in said pump discharge passage and a bypass passage extending from the bypass valve to the chamber inlet passage;
(i) conduit means interconnecting the pump discharge passage and the extrusion die; and
(j) a drive shaft connected to drive said rotary pump and to drive said auger screw, wherein rotation of the shaft drives the auger screw and the rotary pump in timed relation to cause the melt to flow from the hopper through the auger chamber, through the rotary pump, and through the pump discharge passage to the extrusion die.

5,061,171
APPARATUS FOR PERFORMING FRICTION MATERIAL
Yozo Akatsu, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1990, Ser. No. 510,245
Claims priority, application Japan, Apr. 28, 1989, 1-107167
Int. Cl.[5] B29C *43/04, 31/04*
U.S. Cl. 425—356 2 Claims



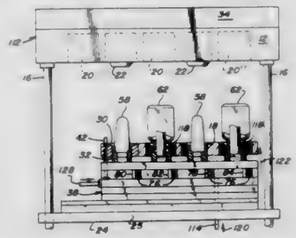
1. An apparatus for preforming a friction material comprising:
a preform die including a lower die member having recesses formed in an upper surface thereof, an intermediate die member having a cavity for receiving said lower die member therein, and an upper die member slidably engageable in said cavity in said intermediate die member;
a friction material-charging device for charging an appropriate amount of friction material into said cavity in said intermediate die member receiving said lower die member therein;
a leveling device including a base having a plurality of narrow bars depending from said base, a first elevator means for vertically moving said base, so that when said base is moved downward, said plurality of narrow bars are inserted into said cavity in said intermediate die member, and a device for imparting a horizontal reciprocal movement to said base when said base is moved downward, so as to level the friction material by said plurality of narrow bars;
a recess-pressing device including a push rod and a second elevator means for vertically moving said push rod, so that when said push rod is moved downward, said push rod is inserted into said cavity in said intermediate die member pressing the friction material into said recesses; and
a pressing device including a third elevator means for vertically moving said upper die member, so that when said upper die member is moved downward, said upper die member is inserted in said cavity in said intermediate die member pressing the friction material.

5,061,172
APPARATUS FOR FORMING A DECORATIVE IMPRESSION IN A MOLDABLE MATERIAL
Paul M. Fennessy, Sr., 17 Blackwood Dr., Liverpool, N.Y. 13090
Filed Sep. 21, 1990, Ser. No. 585,952
Int. Cl.[5] B29C *59/02*
U.S. Cl. 425—385 17 Claims



1. An apparatus for forming an impression in the surface of a moldable material, comprising:
a) a multi-layer flexible base including first, second and third layers;
b) said first, second and third layers each having an upper and a lower surface;
c) said second layer being positioned- intermediate said first and third layers, said lower surface of said third layer has a predetermined pattern formed therein for forming a corresponding impression in a moldable material;
d) handle means operably associated with said base for permitting said base to be readily transported from one location to another;
e) said handle means having said first and second segments, said first segment being disposed above said upper surface of said first layer, said second segment extending between said upper surface of said third layer and said first segment; and
f) at least one of said first and second layers having a raised portion adjacent said handle means for securing said handle means to said base.

5,061,173
INJECTION-BLOW MOLDING APPARATUS INCLUDING CIRCUMFERENTIALLY CONTINUOUS INJECTION MOLDS, BLOW MOLDS AND SHOULDER FORMING SLEEVES
Randall K. Julian, and Edward Luker, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Nov. 20, 1989, Ser. No. 439,259
Int. Cl.[5] B29C *49/06*
U.S. Cl. 425—525 36 Claims



1. Injection-blow molding apparatus for forming containers with restricted necks comprising, in combination:
a one-piece circumferentially continuous injection mold open at one end having a longitudinally extending axis;
a one-piece circumferentially continuous blow mold adjacent said injection mold, said blow mold having an open end and a longitudinally extending axis;
a core having a longitudinally extending axis alternately aligned with the axes of said injection and blow molds and

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mounted for relative movement between and into and out of said injection and blow molds along their respective longitudinally extending axes between an open and a closed position;

a neck forming sleeve concentrically located around said core;

a circumferentially continuous shoulder forming sleeve concentrically located around said neck forming sleeve;

positioning means for moving said core and said neck and shoulder forming sleeves between said open and closed positions relative to said molds to form a parison in said injection mold and blow a container from a previously formed parison in said blow mold; and

separating means for ejecting a finished container from said blow mold, core and neck and shoulder forming sleeves in a direction parallel to said core before the core and sleeves are moved relative to said injection mold to form another parison.

5,061,174

INJECTION MOLDING APPARATUS HAVING SEPARATE HEATING ELEMENT IN THE CAVITY FORMING INSERT

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

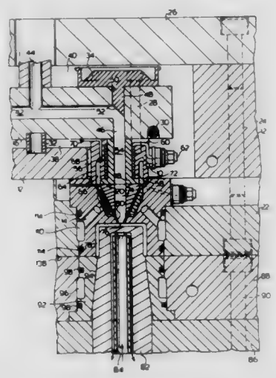
Filed Dec. 31, 1990, Ser. No. 635,991

Claims priority, application Canada, Nov. 19, 1990, 2030287

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—549 **1 Claim**



1. In an injection molding apparatus to convey pressurized melt from a source to a cavity having a cooled cavity forming insert with a rear end, a heated nozzle with a forward end, the heated nozzle being received in a nozzle plate with the forward end of the heated nozzle abutting against the rear end of the cavity forming insert, the nozzle having at least one melt passage extending therethrough, the improvement wherein;

the cavity forming insert has a gate leading to the cavity, a central bore to convey melt from the melt passage in the nozzle to the gate, and an integral electrically insulated heating element, the heating element having an outer terminal portion extending outwardly to an external terminal and an inner portion having a generally uniform rectangular cross section, the inner portion of the heating element having a plurality of adjacent coils which form an inner surface, the heating element being integrally mounted in the cavity forming insert with the inner portion extending around the central bore leading to the gate whereby at least part of the inner surface formed by the adjacent coils of the inner portion of the heating element form a tapered portion of the central bore leading to the gate.

5,061,175

CLAMPING CYLINDER SYSTEM

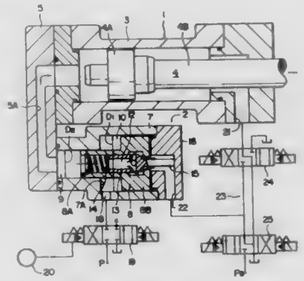
Norihiro Iwamoto, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1989, Ser. No. 426,810

Claims priority, application Japan, Oct. 31, 1988, 63-275749

Int. Cl.[5] B29C *45/04, 45/64*

U.S. Cl. 425—589 **16 Claims**



1. A mold clamping cylinder system having a clamping cylinder and a booster cylinder connected to the clamping cylinder, the booster cylinder has a first and a second cylinder which are different in inner diameters, and further, has a single booster piston having a small diameter portion fitted into an inner shape of the cylinder and a large diameter portion connected to the small diameter portion, upon receiving a mold closing command signal, the clamping cylinder is operable at a low pressure unless a booster operation signal is given, and, upon receiving the booster signal, the booster piston is operable to boost a supply pressure to the clamping cylinder, said booster piston having a through hole penetrating through the small diameter portion and the large diameter portion in the axial direction thereof, the through hole having a check valve spring biased for normally closing the through hole, upon receiving the mold closing command signal, the check valve opening the through hole to give the oil supply pressure to the clamping cylinder through the through hole unless the booster operating signal is given, and, upon receiving the booster operating signal, the check valve closes the through hole to operate the booster piston.

5,061,176

APPARATUS AND PROCESS FOR SIMULTANEOUSLY POSITIONING AND OSCILLATING A PLURALITY OF PROBES IN THE HEAT EXCHANGER TUBES OF A NUCLEAR STEAM GENERATOR

Paolo R. Zafred, Murrysville; David A. Snyder, N. Huntingdon; John B. Gunter, Munhall, and William C. Ritz, Greensburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 213,923, Jun. 30, 1988, Pat. No. 5,000,681.

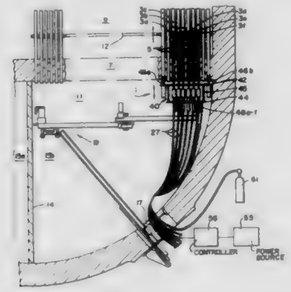
This application Oct. 18, 1990, Ser. No. 599,770

Int. Cl.[5] F24J *3/00;* **F27D** *3/00*

U.S. Cl. 432—5 **3 Claims**

1. A process for remotely heat treating selected portions of a plurality of tubes having open ends that are mounted in a tubesheet with a plurality of heater probes, wherein each heater probe includes a radiant heater element connected to a variable power source, and one probe includes a temperature sensor spaced apart from its respective heater element, and wherein said process is implemented by a first tool capable of positioning and oscillating sai heater probe having a temperature sensor within selected tubes and of momentarily positioning the temperature sensor adjacent to the portion of the tube heated by the radiant heater element to measure the temperature thereof, and a second tool capable of positioning and oscillating a plurality of heater probes within a plurality of tubes, comprising the steps of

a. determining the amount of power that said variable power source must conduct through each heater probe for them to heat a selected temperature range by using said first tool to position and oscillate said temperature sensing heater probe within a portion of a selected tube and to



periodically monitor the resulting temperature of the heated tube portion by momentarily positioning the temperature sensor adjacent to the heated tube portion;

b. detachably connecting the second tool to the tubesheet, and

c. positioning and oscillating a plurality of heater probes in a plurality of tubes with said second tool in order to simultaneously heat selected portions of said tubes to within said selected temperature range.

5,061,177

METHOD AND APPARATUS FOR HEATING A FLOW OF GASEOUS FLUID BY SUCCESSIVE THERMAL EXCHANGES

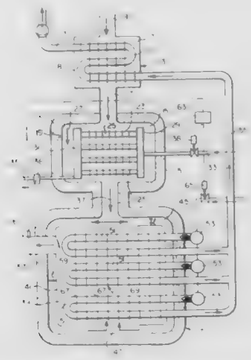
Gaston Knipiler, Rumilly; Philippe Suhas, Mo Clichy, and Gosselin Dominique, Soisy Sous Montmorency, all of France, assignors to Gaz de France, Paris, France

Filed Mar. 22, 1990, Ser. No. 497,321

Claims priority, application France, Mar. 24, 1989, 89 04214

Int. Cl.[5] F24H *1/00*

U.S. Cl. 432—222 **6 Claims**



1. A heating system for heating a flowing gaseous fluid comprising:

a first heat exchanger which has an internal volume through which a recycling pipe meanders, for circulating combustion products for heat exchange with said flowing fluid to be heated, said first heat exchanger comprising a fluid inlet for admitting said flowing fluid into its internal volume;

a second heat exchanger which has an internal volume in fluid communication with said internal volume of said first heat exchanger and through which at least one conduit passes for circulating a heat exchange fluid in a heat exchange relationship with said flowing fluid to be heated; and,

a third heat exchanger which has an internal volume in fluid communication with said internal volume of the second exchanger and with a conduit for recovering the heated gaseous fluid, said third heat exchanger being internally provided with tubes for circulating combustion products in a heat exchange relationship with said flowing fluid, said tubes which are connected to said recycling pipe extending in an internal chamber defined externally by thermally conductive walls, said chamber being arranged on the interior of an outer enclosure defined externally by thermally insulating walls, said outer enclosure being, at one end, in fluid communication with the internal volume of said second exchanger and, at another end, in fluid communication with said internal chamber which is connected to said conduit for recovering the heated gaseous fluid after the latter has circulated in said internal chamber.

5,061,178

WAX SHAPING TOOL

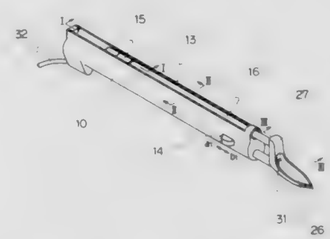
Masato Ueno, Hiroshima, Japan, assignor to Molten Corporation, Hiroshima, Japan

PCT No. PCT/JP89/00373, § 371 Date Dec. 5, 1990, § 102(e) Date Dec. 5, 1990, PCT Pub. No. WO90/11733, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 6, 1989, Ser. No. 613,743

Int. Cl.[5] A61C *3/00, 19/00;* **B67D** *5/62*

U.S. Cl. 433—32 **4 Claims**



1. A wax shaping tool comprising: a tubular handle portion having a slit extending in an axial direction for interconnecting an internal bore with the external space;

a wax cartridge holder provided on upper side of the handle portion including edges of said slit for slidably guiding a wax cartridge;

a roller rotatably provided onto said handle portion so as to protrude from a peripheral part thereof;

a first drive which removably holds a rear end of said wax cartridge and is movable in an axial direction in the wax cartridge holder;

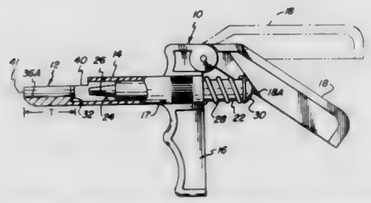
a second drive provided in said handle portion for converting a rotating movement of said roller into the rectilinear movement and for transmitting the motion to said first drive;

a spatula provided on a front end of said handle portion;

a wax melter for contacting and melting the wax cartridge projected out of a front end of said wax cartridge holder; and

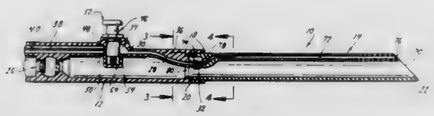
a heater for heating up said spatula and said wax melter.

5,061,179
MANUAL EXTRUDER AND CARTRIDGE HAVING INTERLOCKING BEARING SURFACES
William B. Dragan, 85 Burr St., Easton, Conn. 06612
Filed Sep. 4, 1990, Ser. No. 577,019
Int. Cl.[5] A61C *5/04*
U.S. Cl. 433—90 **10 Claims**



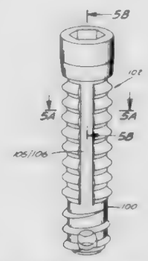
1. A manual extruding system for use in placing dental materials comprising
a dental syringe and an associated disposable cartridge,
said dental syringe having a barrel having a chamber formed at the front end thereof for retaining said cartridge thereat,
said chamber having a front opening and a longitudinal slot extending rearwardly of said front opening to define a side breech opening,
said chamber having flexible side wall portions,
an inturned shoulder disposed internally of said barrel to define the rear end of said chamber,
said cartridge having a body portion and a laterally extending flange connected to said body portion,
a plunger reciprocally mounted in said barrel,
and complimentary interlocking means on said shoulder and flange for effecting a positive interlock between said shoulder and said flange to prohibit any outwardly spreading of said flexible side walls of said chamber when a force is applied to said cartridge by said plunger during an extruding operation,
wherein said interlocking means includes complimentary inclined surfaces formed on said shoulder and said flange.

5,061,180
DENTAL INSTRUMENT
Gary B. Wiele, 950 Francis Pl., Suite 311, Clayton, Mo. 63105
Filed May 1, 1989, Ser. No. 345,283
Int. Cl.[5] A61C *17/06, 17/14*
U.S. Cl. 433—91 **20 Claims**



1. A dental instrument comprising:
a first tube section having an interior bore and first and second ends, said first end of said tube being adapted to be connected to a vacuum pressure source;
a second tube section having an interior bore and first and second ends, one of said first end of said second tube section and said second end of said first tube section being press fit into frictional engagement with the other of said first end of said second tube section and said second end of said first tube section;
a first conduit separate from said interior bore of said first tube section and extending through the first tube section, said first conduit having first and second ends; and
a second conduit separate from said interior bore of said second tube section and extending through said second tube section, said second conduit having first and second ends, said first end of said second conduit and said second ed of said first conduit being connected together for rotation relative to each other.

5,061,181
DENTAL IMPLANT INCLUDING PLURAL ANCHORING MEANS
Gerald A. Niznick, Encino, Calif., assignor to Core-Vent Corporation, Encino, Calif.
Continuation-in-part of Ser. No. 1,807, Jan. 6, 1987. This application Aug. 11, 1989, Ser. No. 391,201
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—174 **18 Claims**



1. A substantially cylindrical dental implant anchoring means comprising a substantially cylindrical body portion adapted to fit in a passage formed in jawbone tissue, said body portion having an external wall portion carrying at least two circumferential or partially circumferential projections, each of said projections having a size and shape adapted to engage the walls of said passage substantially exclusively frictionally, each of said projections having a cross-section sufficiently large to engage frictionally the sidewalls of said passage, and to hold said anchoring means inside said passage immediately upon insertion of said dental implant anchoring means into said passage, each of said circumferential projections having a groove on each side of the projection to facilitate growth of bone tissue into said grooves to promote anchoring of said dental implant in said passage, and, below at least said two projections, an external wall portion carrying thread means adapted to screw into the end of said passage, said thread means having its axis at an oblique angle to the longitudinal axis of said substantially cylindrical dental implant;
said anchoring means further comprising:
at least two longitudinally-extending grooves passing through and interrupting each of said circumferential projections, each of said grooves being of sufficient depth and width to ensure bone growth into said grooves when said anchoring means is seated inside said passage.

5,061,182
DENTURE BASE STABILIZING SHEET
Masakazu Kubo, Yokohama, Japan, and Robert Berghash, Tonawanda, N.Y., assignors to Kabushiki Kaisha Showa, Tokyo, Japan and Brimms Inc., Tonawanda, N.Y.
Filed Sep. 21, 1989, Ser. No. 410,139
Int. Cl.[5] A61C *13/00*
U.S. Cl. 433—199.1 **8 Claims**

1. A denture base stabilizing sheet for stabilizing a denture base on the jaw, comprising a composition consisting essentially of 41 to 43 wt % of ethyl methacrylate polymer, 37 to 39



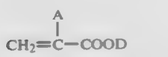
wt % of butyl phthalyl butyl glycolate, and 17 to 23 wt % of glyceryl triacetate.

5,061,183
ACID ETCH FOR BONDING CERAMIC ORTHODONTIC BRACKETS
James A. Nicholson, 3007 S. Haven, Hattiesburg, Miss. 39401
Filed Nov. 13, 1989, Ser. No. 434,291
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—228.1 **11 Claims**

1. An acid etch composition for treating the surface of teeth prior to the application of ceramic orthodontic brackets comprising a solution containing phosphoric acid as the active etching ingredient wherein the phosphoric acid is present in solution in an amount not to exceed approximately 5% by weight, and said composition containing sufficient fillers to form a gel.

5,061,184
ADHESIVE COMPOSITION FOR BIOMATERIAL USE
Noboru Yamazaki, Tokyo; Shigeaki Kuratas, Kokubunji; Toshiharu Yagi, Toyonaka, and Hiroshi Inukai, Settsu, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 276,099, Sep. 27, 1988, abandoned. This application Feb. 12, 1990, Ser. No. 479,239
Claims priority, application Japan, Sep. 28, 1987, 62-245637
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—228.1 **15 Claims**

1. A method of adhering a dental material for use in any oral cavity comprising as a main component a compound represented by the formula



(I)

wherein A is H, F, or CH_3, and D is a fluoroalkyl group having 1 to 20 carbon atoms.

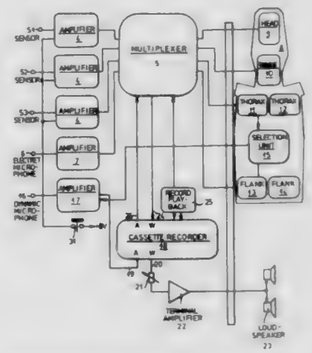
5,061,185
TACTILE ENHANCEMENT METHOD FOR PROGRESSIVELY OPTIMIZED READING
Kirby Cochran, Orem, and Harper Nelson, Alpine, both of Utah, assignors to American Business Seminars, Inc., Provo, Utah
Continuation-in-part of Ser. No. 482,388, Feb. 20, 1990, Pat. No. 5,007,838. This application Nov. 14, 1990, Ser. No. 613,079
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] G09B *17/00*
U.S. Cl. 434—178 **8 Claims**

1. A system for increasing reading speed and comprehension without distraction and with improved concentration, said system comprising:
stereophonic audio playback means comprising separate earphone means for each ear;
prerecorded stereophonic audio recording means, for use in said stereophonic audio playback means, comprising means by which distinct mix of audio signals is communicated to each ear, said recording means comprising:
one stereophonic channel means which delivers a first mix of audio signals comprising a subliminal affirmation signal to the left ear and there primarily to the right side of the brain;



a second stereophonic channel means which delivers a second mix of audio signals exclusive of a subliminal affirmation signal to the right ear and thence primarily to the left side of the brain, the second mix of audio signals comprising a make up which does not distract the reader nor compete at the left side of the brain with the processing of the written word.

5,061,186
VOICE-TRAINING APPARATUS
Peter Jost, Nusswaldgasse 22a/IV, 1190 Vienna, and Erwin Klösch, Zirkusgasse 52/2, 1020 Vienna, both of Austria
PCT No. PCT/AT89/00013, § 371 Date Oct. 25, 1989, § 102(e) Date Oct. 25, 1989, PCT Pub. No. WO89/07818, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 15, 1989, Ser. No. 442,342
Claims priority, application Austria, Feb. 17, 1988, 374/88
Int. Cl.[5] G09B *19/04*
U.S. Cl. 434—185 **8 Claims**



1. A voice-training apparatus comprising:
a means for measuring dimensional changes on a flank of a human body, said means including a pressure sensor amplifier for flank pressure;
a means for measuring dimensional changes on a thorax of said human body, said means including a pressure sensor amplifier for thorax pressure;
a means for measuring dimensional changes on a head of said human body, said means including a pressure sensor amplifier for head resonance and for pressure at a tongue root;

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each of said means being attached to said respective flank, thorax and head of said human body.

a respective optical display device for displaying values measured by each of said flank, thorax and head measuring means;

an analog multiplexer receiving signals from each of said pressure sensor amplifiers and communicating with said respective optical display devices; and

a squelch circuit selectively muting sound input depending upon pressure levels from said thorax and flank.

5,061,187

ULTRASOUND TRAINING APPARATUS

Ravinder Jerath, 2100 Central Ave., Augusta, Ga. 30909

Filed Apr. 12, 1990, Ser. No. 507,760

Int. Cl.[5] G09B *9/00*

U.S. Cl. 434—262 **16 Claims**



1. For use in ultrasonography training, an apparatus for simulating the ultrasonic responses of the human anatomy during ultrasound examination with said apparatus comprising:

a first member configured to simulate the human female pelvic cavity;

one or more second members configured to be contained in said first member and including a simulated urinary bladder;

said one or more second members being adapted to simulate the ultrasonic response of internal human anatomy during ultrasound examination; and

fluid means surrounding said one or more second members within said first member for simulating the ultrasonic response of internal body fluid during ultrasound examination.

5,061,188

PNEUMOTHORAX DIAGNOSTIC AND TREATMENT MANIKIN

Linda L. McCollum, 1351 Sheffield Glen Way, Atlanta, Ga. 30329

Filed Nov. 15, 1990, Ser. No. 612,962

Int. Cl.[5] G09B *23/34*

U.S. Cl. 434—267 **12 Claims**

1. A manikin for teaching diagnosis and treatment of pneumothorax, said manikin being in the general form of an infant and including a body, a flexible body covering, said body defining a thoracic cavity, balloon means selectively receivable within said thoracic cavity, said balloon means being such that said balloon means is transilluminated when light is directed against said body of said manikin adjacent to said balloon means, said thoracic cavity having a right side and a left side, said balloon means being selectively receivable in said right side and said left side, and further including a light absorbing filler selectively receivable in said right side and said left side.



5,061,189

LAMP SOCKET FOR USE WITH A PRINTED CIRCUIT BOARD

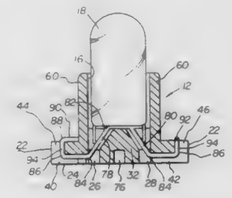
Masaaki Iio, and Masamitsu Nagano, both of Imabari, Japan, assignors to Harison Electric Co., Ltd., Imabari, Japan

Continuation of Ser. No. 506,933, Apr. 10, 1990, abandoned. This application Jan. 18, 1991, Ser. No. 642,179

Claims priority, application Japan, Oct. 31, 1989, 1-128217

Int. Cl.[5] H05K *1/00*

U.S. Cl. 439—57 **4 Claims**



1. A lamp socket including a lamp receptacle and an annular base portion below said receptacle projecting radially outwardly of said receptacle and having a flat planar top surface, said socket adapted to be used with a printed circuit board that includes a bottom surface with an electrically conductive area which conveys energy to illuminate said lamp, said base portion having a top locking means projecting from said receptacle adapted to retain said socket to said board by sandwiching said board between said board locking means and the top of said base, said lamp being baseless and including at least two lead wires projecting therefrom, first generally vertical wire insertion holes projecting through said base and said receptacle, and a plurality of wire receiving grooves formed in said base and at least two of said wire receiving grooves communicating with some of said holes, and said grooves receiving said portions of said lead wires so that part of the wires form reaches which are adapted to engage said conductive areas of said board for lumination, the improvement comprising:

a wire guide divider and stop means provided in said receptacle adjacent said base and communicating with at least a pair of said passageways wherein said divider and stop means include, a truncated projection extending diametrically across said lamp receptacle, said projection including a pair of opposed smooth guide walls each terminating adjacent a passageway, and a top stop surface of a width less than one half the diameter of said socket, which acts as a wire divider and stop for inward insertion of said lamp of said receptacle;

an arcuate smooth wall formed within said receptacle opposite each guide wall and funneling to said passageway, whereby insertion of said lamp into said receptacle will allow each of said lead wires to be automatically threaded into said respective passageways through said uninterrupted wire guide divider and stop means and

said reaches extending across said planar top surface between said grooves and engaging said top surface throughout its length between said groove for uninterrupted wedgingly conductive contact with said conductive areas of said circuit board.

5,061,190

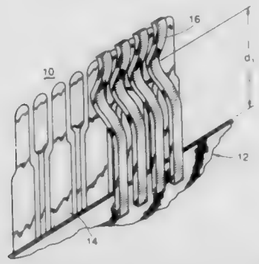
DOUBLE DENSITY BACKWARD AND FORWARD COMPATIBLE CARD EDGE CONNECTOR SYSTEM

James A. Medeiors; R. A. Beverly, and Ty F. Safreno, all of San Luis Obispo, Calif., assignors to Ziatech Corporation, San Luis Obispo, Calif.

Filed Aug. 14, 1990, Ser. No. 567,123

Int. Cl.[5] H05K *1/00*

U.S. Cl. 439—60 **2 Claims**



1. A double density backward and forward compatible card edge connector system of the type in which a new type card (10) is usable in an old type connector (6) and in which a new type connector (12) is usable with an old type card (2), the old connector (6) including a plurality of equally spaced juxtaposed pins (7) that contact the old card (2) at a first straight row of spaced contact areas P_i extending parallel to the inserted edge (3) of the old card (2) but spaced inward from the edge (3) a distance d_0, the contact areas P_i of the first straight row (where $i=1,2...N$) having a pitch 2K, said double density backward and forward compatible card edge connector system comprising in combination:

a new connector (12) having a plurality of identical equally spaced juxtaposed pins (16) that contact the old card (2) at a second straight row of spaced contact areas E_j, the second straight row parallel to the first straight row but spaced inward from the inserted edge a distance $d_1 > d_0$, the contact areas E_j of the second straight row (where $j=1,2...2N$) having a pitch K; and

a new card (10) including

an edge (14) of suitable size and shape to permit it to be seated into the old connector (6) and into said new connector (12);

a first set (20) of conductive spaced parallel juxtaposed fingers extending partially across said new card (10) perpendicular to said edge (14) a distance greater than d_1 and covering the contact areas P_i of the first straight row and covering the contact areas E_{2i-1} of the second straight row; and,

a second set (22) of conductive spaced parallel juxtaposed fingers alternating with the fingers of said first set (20) but spaced from them, extending partially across said new card (10) perpendicular to said edge (14) a distance greater than d_1 and covering the contact areas E_{2i} of said second straight row,

whereby, when the new card (10) is seated in the old connector (6), the pins (7) of the old connector (6) make electrical contact with only said first set (20) of conductive spaced parallel juxtaposed fingers of said new card (10), and when said new card (10) is seated in said new connector (12), the pins (16) of said new connector (12) make electrical contact with both the first and second sets of conductive spaced parallel juxtaposed fingers of said new card (10).

5,061,191

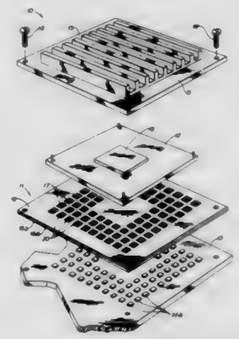
CANTED COIL SPRING INTERPOSING CONNECTOR

Albert Casciotti, Hershey, Pa.; Frederick R. Deak, Kernersville, N.C.; Ronald A. Dery, Winston-Salem, N.C., and David B. Wrisley, Jr., Greensboro, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1990, Ser. No. 631,821

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—66 **36 Claims**



1. An interposing connector adapted for electrically interconnecting a pattern of conductive areas of opposing spaced apart surfaces, said connector comprising:

a housing having one or more openings therethrough and adapted to be positioned between the opposing surfaces;

a plurality of canted coil springs arranged in a predetermined pattern in said one or more openings, each of said springs being oriented so that at least three coils thereof establish electrically redundant connection points with the corresponding conductive areas of the opposing surfaces; and

means for retaining said canted coil springs in said one or more openings of said housing.

5,061,192

HIGH DENSITY CONNECTOR

Fletcher W. Chapin, Vestal; David W. Dranchak, Endwell; David E. Engle, Vestal; Richard R. Hall, Endwell, and Thomas G. Macek, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1990, Ser. No. 628,057

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—66 **14 Claims**

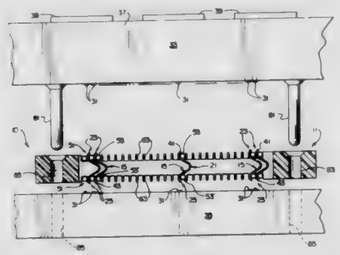
1. A connector for electrically interconnecting first and second electrical circuit members, said connector comprising:

an electrically insulative frame member adapted for being positioned substantially between said first and second circuit members;

at least one elongated, resilient contact member spacedly positioned within said frame member, said contact member including first and second arrays of contact segments at opposing ends thereof, said segments of said first array adapted for engaging respective circuitry on said first circuit member and said segments of said second array adapted for engaging respective circuitry on said second circuit member, said contact member adapted for being compressed within said first and second electrical circuit members during said engagement between said contact segments of said contact member and said circuitry of said circuit members; and

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at least one pair of elongated, electrically insulative members located within said frame member, each of said insulative



members engaging said elongated contact member at substantially opposing ends thereof to position said contact member within said frame member.

5,061,193

ELECTRICAL CONNECTION ARRANGEMENT AND METHOD OF PROVIDING AN ELECTRICAL CONNECTION

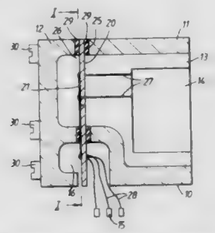
Robert B. Seaman, Nr. Cirencester, England, assignor to Lucas Industries PLC, Birmingham, England

Filed Dec. 21, 1989, Ser. No. 454,713

Claims priority, application United Kingdom, Dec. 23, 1988, 8830057

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—76 **5 Claims**



1. A casing including an electrical connection arrangement providing an electrical connection between a first connection site inside the casing and a second connection side outside the casing, the electrical connection arrangement comprising

an electrically insulating substrate,

an electrically conductive track formed on the electrically insulating substrate, one part of the track being situated inside the casing and being connected directly to the first connection site, and another part of the track being situated outside the casing and being connected directly to the second connection site, the electrically insulating substrate and the electrically conductive track being sealed to the casing in fluid-tight manner whereby to provide a fluid-tight seal between said one and another parts of the track, and the casing comprising a first part and a second part, each side of the substrate being sealed, in fluid-tight manner, to a respective said part of the casing.

5,061,194

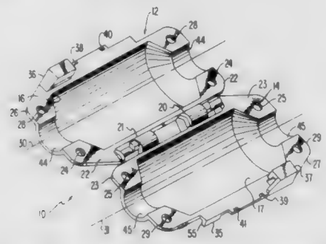
ELECTRICAL CONNECTOR LOCKOUT DEVICE

Wallace U. Herman, Fairfield, and Patrick J. Tiberio, Huntington, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Feb. 15, 1991, Ser. No. 655,810

Int. Cl.[5] H01R *13/44*

U.S. Cl. 439—133 **13 Claims**



1. A lockout device for enclosing and inhibiting unauthorized access to an electrical connector attached to an electrical cable, the device comprising the combination of

first and second joinable shell portions, each said shell portion having a concave interior surface which, when joined with the other shell portion, defines a cavity for receiving said electrical connector, each said shell portion further comprising

a hinge pin,

hinge clevis means for receiving a hinge pin on the other shell portion to pivotally join said shell portions so that they are movable between open and closed positions, and

latch means engageable with said other shell portion to hold said shell portions in said closed position.

5,061,195

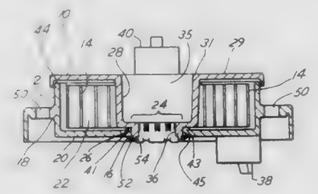
CLOCK SPRING HOUSING AND ASSEMBLY

Pat A. Bolen, Carthage, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Sep. 24, 1990, Ser. No. 567,716

Int. Cl.[5] H01R *37/02*

U.S. Cl. 439—164 **7 Claims**



1. A clock spring assembly comprising; a hub, a housing, and a coiled conducting means, the housing including a first radial depression having a circular first aperture, the hub including a second radial depression, and second aperture extending through the first aperture, the second aperture having a circular outer dimension of smaller radius than the first circular aperture, the hub rotatably associated with the housing by means of a single radial bearing and the hub united with the housing with a locking means, the united hub and housing defining a clock spring enclosure, the first and second radial depressions combining in the clock spring enclosure to define a radial clock spring enclosure which is occupied by the coiled conducting means the coiled conducting means including a first and second end, the first end conductively attached to a first connector which extends through the housing, and the second end conductively attached to a second connector which extends through the hub.

5,061,196

SELECTIVE SHORTING OF PLUG PINS/SOCKET CONTACTS IN AN ELECTRICAL CONNECTOR

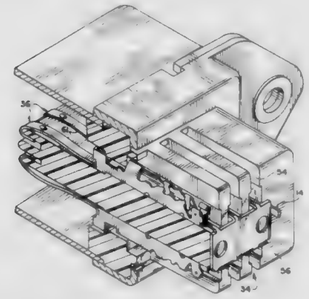
Roy E. Weston, 144 Stanton Road, Sandiacre, Noots, England NG105EP ; John T. Guennewig, 1107 Peregrine Drive, Palatine, Ill. 60067; John DeBrocke, 1250 S. Ferndale, Highland Park, Ill. 60035, and Fred Radloff, 237 Hays Dr., Northlake, Ill. 60164

Filed May 24, 1990, Ser. No. 528,245

Claims priority, application United Kingdom, May 24, 1989, 8911900

Int. Cl.[5] H01R *31/08*

U.S. Cl. 439—189 **3 Claims**



1. An electrical connector comprising:

an insulating body having a plurality of apertures corresponding to the positions of the contacts of the electrical connector;

a shorting link of conductive material comprising a main section and a plurality of legs extending from, and being an integral part of said main section;

with each one of said plurality of legs extending into a respective one of said plurality of apertures and effecting electrical contact via said legs and main section of said shorting link between selected contacts;

said selected contacts being separated from said legs and attached to said legs prior to insertion into said insulating body.

5,061,197

MULTI-TERMINAL ELECTRIC CONNECTOR REQUIRING LOW INSERTION AND REMOVAL FORCE

Katsutoshi Kuzuno; Shigeo Ishizuka, and Kazuaki Sakurai, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 15, 1990, Ser. No. 523,682

Claims priority, application Japan, May 19, 1989, 1-124280; May 22, 1989, 1-126789

Int. Cl.[5] H01R *13/15, 4/50*

U.S. Cl. 439—262 **30 Claims**

1. A multi-terminal electric connector comprising:

a male casing housing a plurality of female terminals;

a female casing housing a plurality of male terminals having tab-like portions, said female casing having a covering portion, into which said male casing is inserted in a fitting position; and

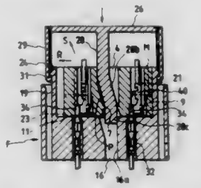
a cam mechanism, which acts so that said male casing fitted in said covering portion is slid horizontally between the position of said fitting position and a male and female terminal contact position, parallel to a fitting surface of said female casing, so as to put said male and female terminals out of or into contact with each other;

said cam mechanism including a push member having a cam rod, said cam rod having an intermediate portion with a first withdrawal oblique surface and a second, insertion oblique surface;

both said male casing and said female casing having cam holes, which communicate with each other along respective axial directions of said male and female terminals;

said cam hole of said male casing being defined by slide contact portions corresponding to said second and first oblique surfaces of said cam rod;

said female terminals having electroconductive contact portions, into which said tab-like portions of said male terminals are inserted perpendicularly across the axis of said female terminals;



said cam rod being inserted into said cam hole of said male casing fitted in said covering portion, so that said slide contact portion corresponding to said inserting oblique surface is pushed by said surface to slide said male casing horizontally to put said electroconductive contact portions of said female terminals into electroconductive contact with said tab-like portions of said male terminals; and

wherein said cam rod is pulled outwardly relative to said cam holes so that said slide contact portion corresponding to said first oblique surface is pushed by said first oblique surface to slide said male casing horizontally reversely with respect to said horizontal sliding thereof so as to put said male and female terminals out of said electroconductive contact with each other.

5,061,198

ELECTRICAL CONNECTOR SYSTEM

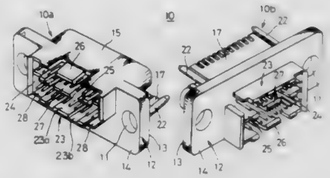
Sakae Manabe, and Hirosumi Kanai, both of Kawasaki, Japan, assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 540,677, Jun. 15, 1990, abandoned. This application Apr. 15, 1991, Ser. No. 686,862

Claims priority, application Japan, Jun. 15, 1989, 1-69928[U]; Oct. 11, 1989, 1-118348[U]

Int. Cl.[5] H01R *13/28*

U.S. Cl. 439—293 **2 Claims**



1. An electrical connector, comprising:

a dielectric housing having a front section and a back section, said back section having cavities;

electrical contacts secured in said housing having first contact sections disposed in said front section and second contact sections extending into said cavities so that matable electrical connectors having matable electrical contacts can be inserted into said cavities with the matable

electrical contacts being electrically connected with the second contact sections; and

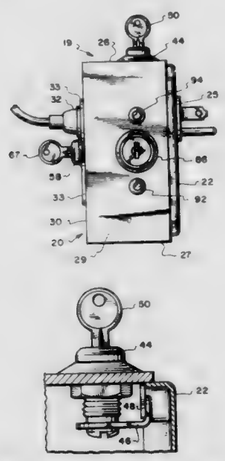
side-by-side latching members in the form of long latching members and short latching members on said housing extending inwardly from a rear surface of said back section within said cavities for latchable engagement with the matable electrical connectors thereby latching them in said cavities.

5,061,199

WALL OUTLET LOCK APPARATUS

Stephen M. McClead, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1991, Ser. No. 670,136
Int. Cl.[5] H01R *13/70*
U.S. Cl. 439—304 **8 Claims**



1. A wall outlet lock apparatus for retaining an electrical appliance plug at an electrical wall outlet comprising:

a rectangular shaped housing having a removable face wall plate and a front plate;

means for securing said face wall plate over said electrical wall outlet;

a master electrical plug operably disposed within said rectangular shaped housing, said master electrical plug having at least a pair of plug prongs operably disposed through the removable face wall plate for mechanically and electrically engaging said electrical wall outlet;

an electrical receptacle unit mounted on the front plate of said housing, said electrical receptacle unit having at least one electrical plug outlet for removably receiving at least one electrical appliance plug;

first key operated locking means operably disposed within said rectangular shaped housing and having an electrical switch electrically coupled between said master electrical plug and said electrical receptacle unit;

said first key operated locking means being adapted to selectively close said electrical switch to complete an electrical circuit between said master electrical plug and said at least one electrical plug outlet and to selectively open said electrical switch and thereby break the circuit between said master electrical plug and said at least one electrical plug outlet so as to selectively electrically energize and deenergize said at least one electrical plug outlet to selectively allow for or prevent the transfer of electrical power between said master electrical plug and said at least one electrical plug outlet;

first light means mounted on said rectangular shaped housing for indicating that said electrical switch is closed and electrical power is being provided to said at least one electrical plug outlet;

second light means mounted on said rectangular housing shaped housing for indicating that said electrical switch is open and electrical power is not being provided to said at least one electrical plug outlet;

second key operated locking means operably disposed within said rectangular shaped housing for fastening said removable face wall plate to said rectangular shaped housing so as to prevent the removal of said wall outlet lock apparatus from said electrical wall outlet;

engaging means operably disposed within said rectangular shaped housing for securing said electrical appliance plug to said at least one electrical plug outlet and thereby preventing the unauthorized removal of said electrical appliance plug from said at least one electrical plug outlet; and

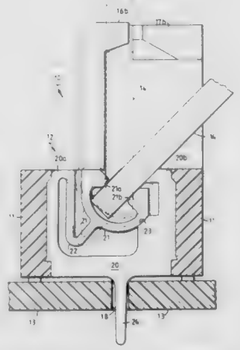
third key operated locking means operably disposed within said rectangular shaped housing, said third key operated locking means being operatively coupled to said engaging means so as to effectuate the securing of said electrical appliance plug to said at least one electrical plug outlet when said third key operated locking means is in a locked position and to allow for the removal of said electrical appliance plug from said at least one electrical plug outlet when said third key operated locking means is in an unlocked position.

5,061,200

STRESS-DISPERSED CONTACT ELEMENT OF LOW INSERTION FORCE ELECTRICAL CONNECTOR

Su-Lan Yang Lee, 4th Floor, No. 506-2, Yuan-San Road, Chung-Ho City, Taipei Hsien, Taiwan

Filed Mar. 29, 1991, Ser. No. 677,561
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—326 **1 Claim**



1. A contact element of a low insertion force electrical connector including connector housing having an elongate socket longitudinally formed in the connector housing, a plurality of slots transversely formed in said elongate socket for receiving a plurality of contact elements therein, a daughter printed circuit board inserted through the socket to be clamped by the plurality of contact elements for connecting the daughter board to a mother board secured to the connector housing, each contact element having a leg portion protruding downwardly to be connected with the mother board, the improvement which comprises:

said contact element including:

an U-shaped base integrally formed on the leg of the contact element and having two ends oppositely disposed at same elevation in the slot;

a bow-shaped clamping portion suspendedly disposed in the U-shaped base and having two contact portions respectively formed at two opposite ends of the bow-shaped clamping portion, said ends being resiliently movable with respect to each other after both said contact portions engage the daughter board;

a winding resilient connecting portion having two ends, one end integrally connected to one end of the U-shaped base, and another end integrally connected to the bow-shaped clamping portion; and

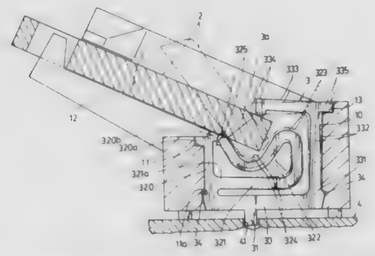
a supporting portion integrally formed at the U-shaped base and disposed under the bow-shaped clamping portion for supporting thereunder.

5,061,201

CONTACT ELEMENT OF ELECTRICAL CONNECTOR HAVING HIGH CLAMPING FORCE

Kenny Tuan, 5F, No. 30, Lane 423, Yuan-San Road, Chung-Ho City, Taipei Hsien, Taiwan

Filed Apr. 8, 1991, Ser. No. 681,352
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—326 **5 Claims**



1. A contact element used in an electrical connector comprising:

a base portion having a supporting leg member protruding downwardly from the base portion through a mother board, at least an embedding portion secured to said base portion engageably fixed in a slot transversely formed in a socket in a connector base, a first clamping member and a second clamping member respectively formed on said base portion for clamping a daughter board inserted in said socket in said connector base for electrically connecting said daughter board with said mother board, the improvement which comprises:

said first clamping member generally formed as S shape including a first connecting lever secured to a side extension formed on one side of said base portion, a first forearm portion arcuately secured to said first connecting lever having a convex portion and a concave portion secured to the convex portion, and a first contact protrusion formed on an end portion of said first forearm portion contacting one side of said daughter board;

said second clamping member including a second connecting lever secured to another side of said base portion generally perpendicular to said base portion, a second forearm portion secured to an upper portion of said second lever, and a second contact protrusion formed on an end portion of said second forearm portion contacting the other side of said daughter board for clamping said daughter board in cooperation with said first contact protrusion; and

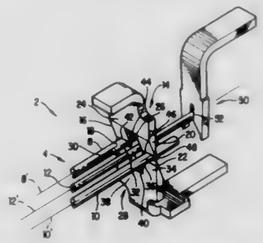
said first clamping member sinuously wound to have said first connecting lever and first forearm portion generally encompassed by said second clamping member, said concave portion of said first clamping member between said first contact protrusion and said convex portion generally confining a lower portion of the daughter board in said concave portion.

5,061,202

CONNECTOR

Rhonda L. Nemcovsky, Warren, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 2, 1991, Ser. No. 679,386
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—404 **19 Claims**



1. A connector for use with multiple wires which comprise at least two wires, comprising:

a housing;

an upper connector means positioned within said housing and including at least one upper first contact for electrically engaging an upper surface of a respective first wire, and at least one upper second contact electrically coupled to, and positioned to provide an upper open area relative to, said upper first contact for electrically engaging an upper surface of a respective second wire; and

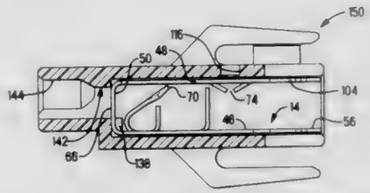
a lower connector means positioned within said housing and including at least one lower first contact for electrically engaging a lower surface of a respective first wire, and at least one lower second contact electrically coupled to, and positioned to provide a lower open area relative to, said lower first contact for electrically engaging a lower surface of a respective second wire.

5,061,203

MAGNETIC BALLAST CONNECTOR SYSTEM

Christopher L. Allgood, Lewisville; Richard E. Hasz, Ramseur; Donald W. K. Hughes, Kernersville; Donald G. Stillie, Winston-Salem, and Allan J. Sykora, Kernersville, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 15, 1991, Ser. No. 686,059
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—441 **6 Claims**



1. A connector system for use with a magnet ballast having a plurality of coil wires, said system comprising:

a dielectric first component having a plurality of side-by-side wires support means and being adapted to be attached to a ballast and receive coil wires on said support means;

a dielectric second component mateable with said first component and having a plurality of side-by-side cavities which are open at opposite ends and a plurality of holes

normal to and intersecting respective said cavities intermediate said ends; and

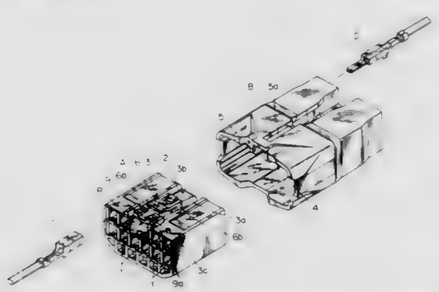
a plurality of conductive terminals having a wire terminating slot at one end, a first wire terminating section at another end and a second wire terminating section intermediate said ends, said terminals disposed in respective said cavities with said wire terminating slot at one open end to reveive and terminate a wire on said support means when said first and second components are mated and with said first wire terminating section accessible through said hole and with said second wire terminating section accessible through the other open end.

5,061,204

CONNECTOR ENGAGEMENT DETECTING APPARATUS

Yoshihiro Murakami, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Mar. 20, 1991, Ser. No. 672,290
Claims priority, application Japan, Mar. 23, 1990, 2-72061
Int. Cl.[5] H01R *3/00*
U.S. Cl. 439—489 **3 Claims**



1. A connector engagement detecting apparatus comprising:

a first connector housing and a second connector housing, said first and second connector housing being adapted to be joined together;

a resilient lock arm provided to the first connector housing;

an engagement portion provided to the second connector housing to cooperate with said resilient lock arm;

a movable piece for detecting the correct engagement of the two mating connector housings, said movable piece being mounted on the first connector housing so that it can be moved relative to the resilient lock arm;

two connecting electric paths formed on said movable piece and having elastic contact ends;

slots formed between a displacement permitting space for the resilient lock arm and adjacent terminal accommodating chambers, said slots being used to accommodate the contact ends of the two connecting electric paths so that the contact ends are in sliding contact with terminal lugs contained in the terminal accommodating chambers; and

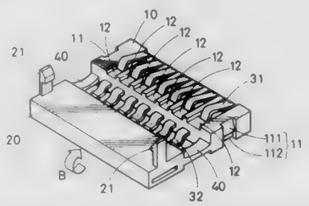
a short-circuit conducting path provided to a free end of the resilient lock arm, said short-circuit conducting path being adapted to engage with the two connecting electric paths when the first and second connector housings are connected completely.

5,061,205

ELECTRICAL CONNECTOR FOR FLAT ARRANGED TERMINALS

Hisao Toramoto, Soraku, Japan, assignor to Hosiden Electronics Co., Ltd., Yao, Japan

Filed Jun. 15, 1990, Ser. No. 538,623
Claims priority, application Japan, Jul. 10, 1989, 1-81415[U]
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—493 **3 Claims**



1. An electrical connector for flat arranged terminals comprising:

a body and a cover connected together with a pair of hinges, said body, cover and hinges comprising an integral unit formed of an electrically insulating plastic material;

the body containing a plurality of flat contact lines embedded therein, said flat contact lines being made of an electrically conductive material and extending out from each of two opposite sides of said body; first extending contact lines from one side of said body being bent with each contact line forming a leaf spring contacting an upper surface of the body and second extending contact lines from another side of said body forming extension terminals; and

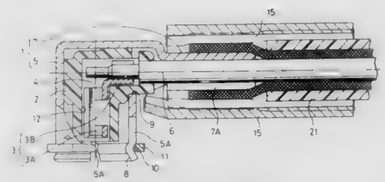
clamping means for hooking the cover to the body to provide a clearance into which a sheet having flat arranged terminals is entered.

5,061,206

CONNECTOR FOR COAXIAL CABLE

Norihide Kawanami; Fumio Kobayashi, and Ikujiro Mitani, all of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1990, Ser. No. 608,463
Claims priority, application Japan, Nov. 7, 1989, 1-129365
Int. Cl.[5] H01R *9/05*
U.S. Cl. 439—582 **4 Claims**



1. A coaxial cable connector comprising:

a substantially tubular L-shaped outer conductive shell having a vertical trunk portion with a coupling opening and a slit extending upwardly from a lower edge thereof for facilitating expansion of said coupling opening, and an arm portion extending laterally from said trunk portion and having a connection opening;

a substantially L-shaped dielectric body placed in said conductive shell and having an L-shaped channel therein; and

a substantially L-shaped central terminal placed in said L-shaped channel and having an annular connection portion with a slit for connection with a central conductor of a coaxial cable.

5,061,207

CONNECTOR FOR A SHIELDED COAXIAL CABLE

John O. Wright, York, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 27, 1990, Ser. No. 588,864
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—578 **30 Claims**



1. A shielded coaxial cable having a connector mechanically and electrically attached thereto comprising:

an elongated metal tubular connector housing extending along a longitudinal axis;

a plastic bushing internal of and attached at one end of said housing, said bushing having a longitudinal bore extending therethrough along said longitudinal axis;

a shielded coaxial cable having an end portion extending into an opposite end of said housing, an exposed length of an inner lead and an exposed length of an inner lead insulator extending from said end portion along said longitudinal axis and into a first end of said longitudinal bore, said end portion having a shield layer folded back upon an outer surface of said shielded coaxial cable between said outer surface and an inner surface of said housing; and,

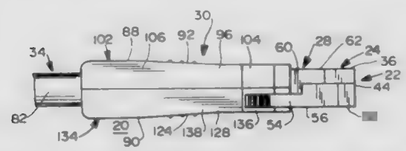
a tubular ferrule having one end which extends into an opposite second end of said longitudinal bore and includes at least one retaining tab which is biased away from said longitudinal axis against an inner bore wall of said longitudinal bore, said at least one retaining tab including an electrical contact tab which is biased toward said longitudinal axis against an outer surface of said inner lead.

5,061,208

CONDUCTIVE SHELL FOR CLAMPING ONTO A SHIELDED ELECTRICAL CONNECTOR

Craig A. Bixler, Elmhurst, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Aug. 27, 1990, Ser. No. 573,508
Int. Cl.[5] H01R *13/648, 4/18*
U.S. Cl. 439—610 **15 Claims**



1. An electrical connector assembly for use with a cable having a plurality of cable conductors enclosed in a cable shield and a cable insulation, said electrical connector assembly including an electrical connector having a dielectric housing with sidewalls extending between a mating end and a wire receiving end, contacts within said dielectric housing, each said contact having a mating portion adjacent said mating end and a wire receiving portion, connector conductors extending out from said wire receiving end of said connector, each of said connector conductors being coupled to one of said contacts, a conductive connector shield surrounding said dielectric housing and starting from a position on the housing remote from the mating end and contiguously extending in a lateral direction to completely surround the housing ending in a position remote from the wire receiving end, said electrical connector assembly further including a conductive clamp-on shell comprising:

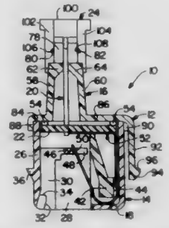
first and second mating shell portions adapted to be mated together, said mated first and second shell portion having a clamp-on portion for overlaying and detachably clamping onto said conductive connector shield, said shell portions enclosing said wire receiving end of the connector housing, a pocket portion for enclosing connections made between said cable conductors and said connector conductors and a cable clamping portion for gripping said cable shield and said cable insulation.

5,061,209

WALL PLATE JACK AND CONTACT THEREFOR

Virgil T. Bolick, Jr., Asheville, and John M. Gentry, Candler, both of N.C., assignors to Hubbell Incorporated, Orange, Conn.

Filed Mar. 13, 1991, Ser. No. 668,306
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—676 **22 Claims**



1. An electrical connector, comprising:

a housing having a plug receiving portion and a contact support portion coupled to said plug receiving portion;

a plurality of spring contacts housed within said plug receiving portion;

a plurality of press-fit contacts housed within said contact support portion, each of said press-fit contacts being substantially flat along its length and including a press-fit tail, a body, and a bifurcated extension, said tail, said body and said bifurcated extension each aligned colinearly along a single longitudinal axis; and

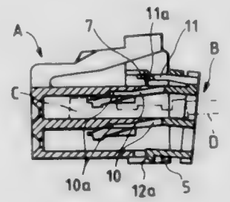
connector means for electrically connecting said spring contacts to said press-fit contacts.

5,061,210

CONNECTOR WITH TERMINAL RETAINER

Keishi Jinno, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 16, 1990, Ser. No. 567,566
Claims priority, application Japan, Aug. 24, 1989, 1-215998
Int. Cl.[5] H01R *13/514*
U.S. Cl. 439—752 **4 Claims**



1. A connector with a terminal retainer, comprising:

a connector housing having a plurality of terminal receiving chambers;

a plurality of metal terminals inserted into respective ones of said terminal receiving chambers; and

a terminal retainer, connectable to a rear portion of said connector housing in two steps, constituting a provisional-

ly-connected condition and a completely-connected condition, respectively;

said connector housing having an erroneous insertion-preventing portion, said terminal retainer including an erroneous insertion-preventing flexible piece which has an abutment portion disposed in opposed relation to said erroneous insertion-preventing portion of said connector housing in the provisionally-connected condition, and a manipulating portion for displacing said erroneous insertion-preventing flexible piece to displace said abutment portion and shift said terminal retainer into said completely-connected condition.

5,061,211

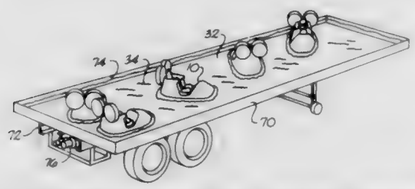
AMPHIBIAN AIR CAR

Jerry L. Barber, 10 Whittington Ct., Greenville, S.C. 29615

Continuation of Ser. No. 382,439, Jul. 19, 1989, abandoned. This application Feb. 26, 1991, Ser. No. 660,980

Int. Cl.[5] A63G *1/08*

U.S. Cl. 440—37 **4 Claims**



1. An amusement apparatus of the air propelled, swamp boat type comprising:

a mobile trailer having a trailer bed arranged as an amusement riding platform,

an amusement car arranged for supporting and transporting one or more passengers, said car including means for supporting the same upon said riding platform and permitting said car to move randomly thereacross when a propulsion force is applied thereto,

means for providing a propulsion force to said car, said propulsion means having at least one propeller arranged at one end of said car,

said riding platform having water thereon and said car supporting means being adapted to float thereon during movement thereof,

control means arranged on said vehicle body for use by a passenger therein and connected to said propulsion means for selectively controlling the forward and reverse motion thereof,

said trailer including a water reservoir for containing the water when the amusement apparatus is inoperative.

5,061,212

SHIP DRIVE WITH VARIABLE-PITCH PROPELLER

Urs Morgenthaler, Seeblick, CH-8832 Wollerau, and Peter Müller, Isengrund 9, CH-8134 Adliswil, both of Switzerland

Filed Nov. 16, 1990, Ser. No. 614,811

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1989, 3938567

Int. Cl.[5] B63H *3/08, 3/10*

U.S. Cl. 440—50 **9 Claims**

1. A boat drive, comprising:

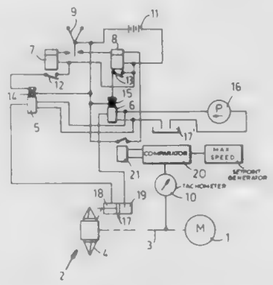
a drive motor;

a variable-pitch propeller connected to said motor and provided with a hydraulic pitch adjuster including a hydraulic motor having first and second working chambers respectively pressurizable to increase and to decrease propeller pitch respectively;

a pitch-adjustment command element actuatable for varying propeller pitch;

first and second electromagnetic valves hydraulically connected to said first and second working chambers to control pressurization thereof upon electrical excitation of said valves;

first and second timing relays respectively connected electrically to said first and second electromagnetic valves for electrical excitation thereof and provided with means for energization of said relays selectively by operation of said pitch-adjustment command element; and



means for measuring a rotary speed of said motor operatively connected to said first relay controlling said first valve for pressurizing said first working chamber to automatically increase propeller pitch independently of operation of said pitch-adjustment command element upon said speed exceeding a predetermined speed of said motor.

5,061,213

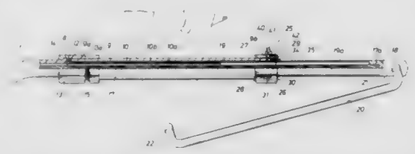
CONTROL CABLE HOUSING SEAL AND LUBRICANT FOR MARINE STEERING SYSTEM

Thomas C. Burroughs, 711 St. Ives Ct., Houston, Tex. 77079

Filed Aug. 13, 1990, Ser. No. 566,035

Int. Cl.[5] B63H *5/12*

U.S. Cl. 440—63 **4 Claims**



1. A lubricant and seal arrangement for the control cable and control cable housing of a marine steering system wherein the control cable is connected to a tubular member that is telescopically movable in and out relative to the control cable housing in response to rotation of the steering wheel of the marine steering system, said lubricant and seal arrangement comprising:

an adapter having a longitudinally extending body;

said body having a bore extending from one end of said body terminating in spaced relation to the other end of said body;

threads in said bore securing said body to the control cable housing;

said body having a counterbore extending from the other end of said body which counterbore intersects said body bore and of a smaller internal diameter than the diameter of said threaded body bore;

an annular shoulder surface formed by the intersection of said body bore and said counterbore;

an annular recess between the other end of said longitudinal body and the intersection of said body bore and counterbore;

seal means for said annular recess to sealably engage the telescopically movable member;

a lateral opening extending through said longitudinal body; and

a hydraulic fitting for positioning in said opening.

5,061,214

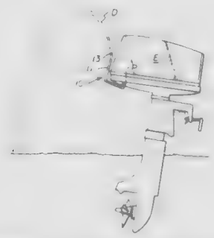
WATER DISCHARGE DIVERTER FOR OUTBOARD BOAT ENGINES

Michael W. Monaghan, 11510 Brandy La., Houston, Tex. 77044

Filed Aug. 27, 1990, Ser. No. 574,433

Int. Cl.[5] B63H *21/26*

U.S. Cl. 440—88 **18 Claims**



1. A water discharge diverter for outboard engines of motor boats of the type having a water circulation cooling system and a cooling water discharge port, the diverter comprising;

a tubular member having an inlet end adapted to be connected to the cooling water discharge port in fluid communication with the engine circulation system and curved upwardly and outwardly along its length to conform generally to the profile of the engine exterior, and

an outlet end positioned slightly outward relative to the side wall of the engine exterior to expel the engine discharge water flowing therethrough upward and outward from the rear of the engine in an arcuate path which is visible over the top of the engine such that it can be observed from the bow or steering station of the boat by the boat pilot.

5,061,215

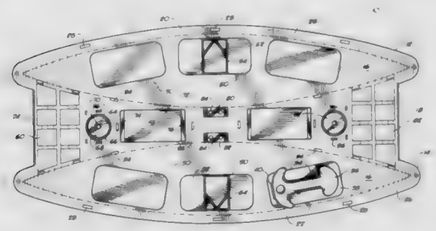
RIVER RAFT

H. Wayne Walls, P.O. Box 222, Pagosa Springs, Colo. 81147

Filed Mar. 13, 1989, Ser. No. 322,292

Int. Cl.[5] B63B *35/613*

U.S. Cl. 441—45 **15 Claims**



1. A river raft comprising:

a first solid pontoon having a hollow interior, said first solid pontoon having a forward end and a rearward end, said forward end and said rearward end being symmetrical with each other;

a second solid pontoon having a hollow interior, said second pontoon connected to said first pontoon so as to define a central portion between said first and second pontoons, said central portion having a depth of less than that of said first and second pontoons, said first pontoon and said second pontoon being of symmetrical configuration, said first and second pontoons comprising:

hatch means formed in said first and second pontoons so as to provide access to said hollow interior of said first and second pontoons, said hatch means being detachably mounted to the upper surface of each of said pontoons, said hatch means mounted in water-tight relation to said first and second pontoons, said hatch means comprising:

a seat hatch detachably mounted to one of said first and second pontoons, said seat hatch comprising a saddle extending upwardly for permitting persons to sit thereon; and

spar tube means extending through the width of said first and second pontoons, said spar tube means connecting said first and second pontoons.

5,061,216

IONIZATION CHAMBER DOSIMETER

Tim R. Renner; Mark A. Nyman, both of Berkeley, and Ronald Stradtner, Kensington, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 16, 1990, Ser. No. 509,121

Int. Cl.[5] H01J *47/04*

U.S. Cl. 445—28 **3 Claims**

1. A method for fabricating an ionization chamber dosimeter collecting array for the purpose of measuring radiation dose delivered to a patient which comprises:

providing at least one frame having top and bottom surfaces with an aperture formed therein surrounded by an edge portion,

forming plural edge connectors having multiple lead contacts on opposite edges of said frame,

forming a thin insulating layer over the aperture of said frame, said insulating layer having a collection surface and a trace surface,

providing a predetermined pattern of through holes in said insulating layer,

plating both said collection surface and trace surface of said insulating layer, simultaneously tilting and rotating said frame, so as to form layers of gold on said respective collection and trace surfaces and to uniformly plate said through holes extending from said collection surface to said trace surface,

selectively masking and pattern etching said plated collection surface of said insulating layer to form a multiplicity of electrically conductive discrete elements thereon having provided therein said uniformly plated through holes, and

selectively masking and pattern etching said plated trace surface of said insulating layer to form a trace pattern defining contiguous interconnecting paths between each of said discrete elements and said plural edge connectors.

5,061,217

TOY FOAM PLASTIC GLIDER WITH DETACHABLE PYLON WINGS

Jack V. Miller, and Ruth E. Miller, both of 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Jul. 9, 1990, Ser. No. 550,283

Int. Cl.[5] A63H *27/00, 3/46*

U.S. Cl. 446—61 **7 Claims**

1. A toy glider in the form of a molded foam plastic animal figure comprising:

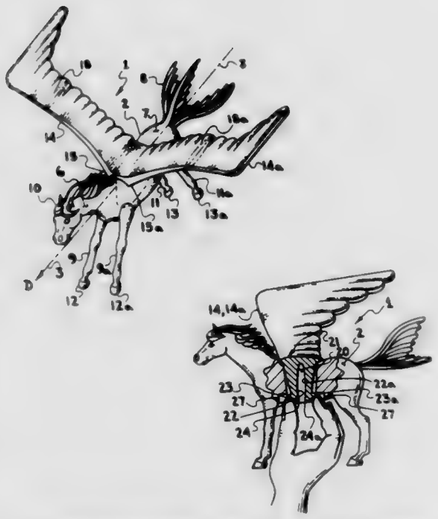
an elongated fuselage generally symmetrical about a vertical plane, having a longitudinal axis, generally parallel sides, a front end and a rear end, when said toy glider is in a normal horizontal flight orientation, the fuselage being generally in the form of an animal torso;

a non-circular aperture on the vertical plane through the fuselage;

a wing in the form of a pair of animal wings generally in the

horizontal plane and having contiguous wing roots at an integral, non-circular depending pylon, matingly engageable into the aperture of the fuselage, said wings having portions comprising a generally planar airfoil cross-sectional shape with a mean aerodynamic chord of the airfoils being approximately parallel to the longitudinal axis of the fuselage;

a nose section generally in the form of an animal head at the front end of the fuselage;



a tail section empennage at the rear end of the fuselage;

one or more limb-simulating appendages extending from a surface of the fuselage; and

a means for retaining the pylon of the wing section in the fuselage to operate the toy as a glider, and a means for disengaging the wing pylon from the fuselage to permit use of the toy as an animal form without the wings.

5,061,218

TOY BUILDING BLOCKS

Linda R. Garage, and Edward C. Garage, both of Wyckoff, N.J., assignors to Real Blocks, Inc., Franklin Lakes, N.J.

Filed Jul. 9, 1990, Ser. No. 549,761

Int. Cl.[5] A63H *33/04*

U.S. Cl. 446—102 **49 Claims**

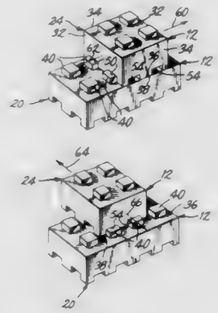
1. In a set of toy building blocks capable of assembly in any selected one of a plurality of arrangements of contiguous blocks, the contiguous blocks each having a length, a width and faces extending along the length and width thereof, each selected arrangement being such that a first face of one of the contiguous blocks engages a second face of another of the contiguous blocks in the selected arrangement, the improvement wherein:

the first face includes at least one longitudinal row of alternating altitudinal projections and spaces extending along the length of the one corresponding block, the projections and spaces having a first prescribed lateral width and a first prescribed longitudinal length and the projections each having an altitudinal height;

the second face includes at least one longitudinal channel extending along the length of the other contiguous block and having a second prescribed lateral width and an altitudinal depth;

the relative dimensions of the first and second lateral widths and the relative dimensions of the altitudinal height of the projections and the altitudinal depth of the longitudinal channel being such that the projections are received in sliding engagement within the longitudinal channel for selective shifting of the contiguous blocks longitudinally relative to one another while the projections are engaged in the longitudinal channel, without altitudinal movement of the contiguous blocks relative to one another; and

the second face further includes at least one lateral channel extending along the lateral width of said other contiguous block and having a longitudinal width and an altitudinal depth;



the relative dimensions of the longitudinal length and altitudinal height of the projections and the longitudinal width and altitudinal depth of the lateral channel being such that at least one of the projections is receivable in sliding engagement within the lateral channel for selective shifting of the contiguous blocks laterally relative to one another while said at least one of the projections is engaged in the lateral channel, without altitudinal movement of the contiguous blocks relative to one another, and without altitudinal movement of the contiguous blocks relative to one another as said at least one of the projections is moved between engagement in the longitudinal channel and engagement in the lateral channel;

at least one block of the set of toy building blocks including at least one said first face and at least one said second face.

5,061,219

CONSTRUCTION TOY

Joel I. Glickman, Huntingdon Valley, Pa., assignor to Magic Mold Corporation, Hatfield, Pa.

Filed Dec. 11, 1990, Ser. No. 625,809

Int. Cl.[5] A63H *33/04*

U.S. Cl. 446—126 **14 Claims**

1. A construction toy of the type comprising a plurality of hub-like connector elements and a plurality of structural elements adapted to be removably engaged with said connector elements to form a composite structure, characterized by

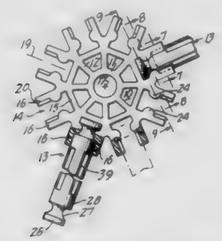
(a) said connector elements including a plurality of opposed pairs of integral, outwardly extending and spaced apart gripping arms,

(b) each of said pairs of gripping arms defining an axis and being adapted to receive an end extremity of a structural element aligned along said axis,

(c) said structural elements having an axis and having adjacent said end extremity an annular groove coaxial with the last mentioned axis and defining an end flange,

(d) each of the gripping arms of a pair thereof being formed with a locking projection extending into the space between said gripping arms and being of a size and shape to be received in the annular groove of a structural element to lock the element against movement in the direction of its axis,

(e) each of the gripping arms of a pair thereof further having concave recesses extending in a direction parallel to the axis of said arms and adapted to closely embrace end



portions of a structural element on opposite sides thereof to confine said structural element against lateral movement relative to said gripping arms,

(f) said gripping arms being formed of a material having at least limited resilience to enable the gripping arms of a pair thereof to be elastically deflected to accommodate lateral insertion of a structural element into the space between a pair of gripping arms.

5,061,220

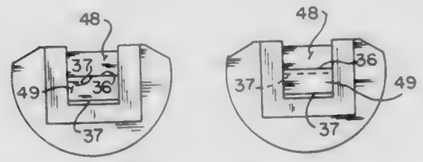
VARIABLY TENSIONABLE DIAPHRAGM GAME CALL

Gary L. Cooper, HC-04, Box 62, Pocahontas, Ark. 72455

Continuation-in-part of Ser. No. 437,586, Nov. 17, 1989, Pat. No. 4,960,400. This application Sep. 7, 1990, Ser. No. 578,936

Int. Cl.[5] A63H *5/00*

U.S. Cl. 446—208 **26 Claims**



1. A variably tensionable diaphragm game call comprising a frame and at least one diaphragm mounted in said frame, and means associated with said frame for selectively varying the tension of said diaphragm, said frame being U-shaped, with a cross-piece connecting spaced, generally parallel leg members between which said diaphragm extends, at least one of said leg member having a surface of substantial width between respective inboard and outboard edges of said leg member, said diaphragm being mounted at said outboard edge of said leg and unattached to said surface between said inboard and outboard edges, whereby in use, the diaphragm tends to vibrate from the said outboard edge across the space between the legs unless the diaphragm is moved by the tongue of the user against said surface, when said surface and inboard edge tend to serve as a fret effectively to shorten the diaphragm and increase the tension, thereby to vary the pitch of the sound produced by the diaphragm.

5,061,221

DEVICE FOR DIVIDING OR SEPARATING FILLETS

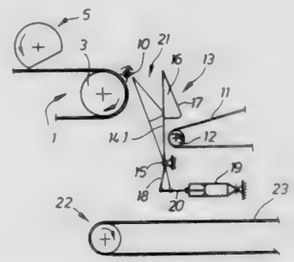
Andreas Holzhüter, Lübeck, and Michael Jürs, Stockelsdorf, both of Fed. Rep. of Germany, assignors to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lubeck, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 551,774

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1989, 3924374

Int. Cl.[5] A22C *5/08*

U.S. Cl. 452—184 **4 Claims**



1. An apparatus for processing fish fillets, the apparatus including

a) first conveying means driven in a rotating manner, defining a conveying plane and conveying said fillets lying flat towards a discharge end, which is defined by a discharge end deflection position of said first conveyor means;

b) dividing means for dividing the fillets into usable pieces of predetermined properties, such as at least one of their geometric and volumetric condition, which dividing means comprise cutting means including cutting elements and cutting-element-controlling means for controlling said cutting elements with regard to their position relative to the position of the respective fillet to be processed; and

c) sorting means for sorting said fillet arranged downstream of said dividing means,

wherein said sorting means comprise a number of flap elements arranged side by side over the width of said first conveying means and flap controlling means associated with said flap elements, which flap elements are arranged to be controlled by said flap controlling means to move independently of each other from a basic position arranged at a distance from said discharge end of said first conveying means into an activated position continuing said conveying plane of said first conveying means, the corresponding activation of said flap elements being performed depending on at least one of the respective cutting position of said cutting elements and the speed of said conveying means.

5,061,222

COIN HOPPER AND DISPENSER

Vladimir Suris, Mayfield Heights, Ohio, assignor to Dixie-Narco, Inc., Ranson, W. Va.

Filed Apr. 2, 1990, Ser. No. 503,456

Int. Cl.[5] G07D *1/00*

U.S. Cl. 453—57 **13 Claims**

6. A coin dispenser, comprising:

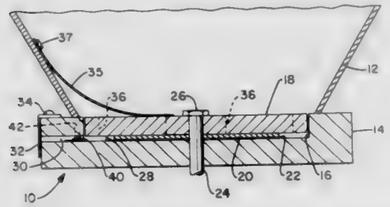
a hopper;

a base member at a bottom end of said hopper, said base member having a bore therein and first and second passageways extending from said bore to an exterior of said base member;

a coin dispensing disc bidirectionally rotatably received within said bore; and

coin deflection means extending from a bottom plate surface of said bore equidistant from said first and second passage-

ways for deflecting coins carried by said coin dispensing disc upon said bottom plate surface into and out of said



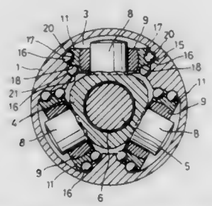
first and second passageways dependent upon a rotational direction of said disc.

5,061,223

HOMOKINETIC UNIVERSAL JOINT

Tetsuro Kadota, Shizuoka; Yo Mihata, Kakegawa, and Mamoru Watanabe, Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Sep. 19, 1990, Ser. No. 584,671
Claims priority, application Japan, Sep. 22, 1989, 1-247610
Int. Cl.[5] F16D *3/20*
U.S. Cl. 464—111 **5 Claims**



1. A homokinetic universal joint comprising an outer ring formed in its inner surface with three axial track grooves, a tripod member inserted in said outer ring and having three radial legs, guide blocks pivotally and axially slidably mounted on said respective legs and received in said respective track grooves, said guide blocks being formed in each side thereof with a ball guide channel having an elliptical shape and comprising two straight raceways extending parallel to each other and semi-circular portions connecting the ends of said straight raceways together, said track grooves being formed at both sides thereof with raceway grooves extending parallel to the axis of said track grooves to guide balls along said straight raceways, and a plurality of balls rollingly received in each said ball guide channel in said guide block and in said raceway groove formed in said track groove in said outer ring.

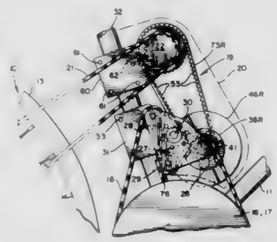
5,061,224

VARIABLE SPEED BICYCLE AUTOMATIC TORQUE CONVERTER TRANSMISSION

William B. Stuhler, 1908 Edgewater, Plano, Tex. 75080

Filed Aug. 20, 1990, Ser. No. 569,989
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—84 **20 Claims**

1. A variable speed automatic torque converter transmission convertible from a low speed high torque state up into infinitely variable progressively lower torque higher speed settings comprising: a "V" belt with inner teeth; an output toothed pulley that rotates on a center fixed relative to the transmission mounting that is in continuous toothed engagement with the inner teeth of said "V" belt; a variable pitch pulley with opposite side mirror image bevelled side sheeve members engaged by the beveled side edges of said "V" belt and mounted on a hub member in rotationally fixed position for rotation with said hub member and longitudinally moveable back and forth in a self centering resiliently biased centering action; resilient biasing means on a hub structure for each of said sheeve members mounted to bias said sheeve members toward each other between an outermost high torque low speed setting thereof to an innermost low torque high speed setting thereof; said hub member having an outer toothed surface engaged by the inner teeth of said "V" belt when said variable pulley sheeves are in the outermost high torque low speed setting in positive drive, and when moved toward each



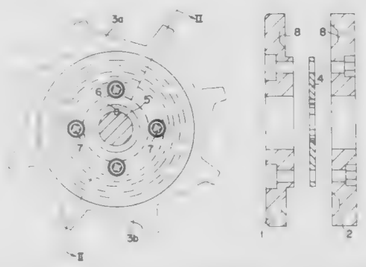
other transformation through an infinitely variable speed range therefrom to the innermost low torque high speed setting thereof; said hub member being mounted on a pivotal mount member for adjusting to "V" belt length variations between shorter to longer pulley hub to variable pulley hub center spacing; sprocket means drive fixed to said variable pulley hub member; a drive sprocket connected through a drive chain to said sprocket means; and power drive means connected to said drive sprocket.

5,061,225

CHAIN WHEEL FOR CHAIN CONVEYOR BELTS

Jorgen Draebel, Hellerup, Denmark, assignor to SKF Specialty Products AB, Göteborg, Sweden

Filed Dec. 1, 1988, Ser. No. 278,597
Claims priority, application Sweden, Sep. 12, 1987, 8704918
Int. Cl.[5] F16H *55/30*
U.S. Cl. 474—95 **6 Claims**



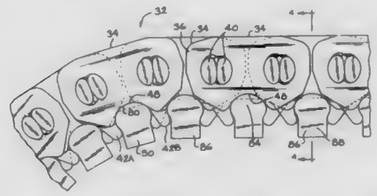
1. A chain wheel for conveyor installations with chain conveyor belts, and which chain wheel is mounted on the drive shaft (**5**) of the driving device for the conveyor belt, characterized therein, that it as a basic unit incorporates a pair of hub portions (**1**, **2**) detachably connected against each other, between which, as a separate unit, is clamped a tooth rim (**3**) comprising at least two sections (**3***a*, **3***b*).

5,061,226

CHAIN-BELT

Philip J. Mott, Dryden, N.Y., assignor to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Filed Mar. 20, 1990, Ser. No. 496,565
Int. Cl.[5] F16G *1/24*
U.S. Cl. 474—244 **23 Claims**



1. A power transmission (**10**) chain belt (**32**) especially adaptable for connecting the pulleys (**12**, **14**) of a pulley transmission (**10**) comprising:

a plurality of interleaved sets (**34**) of links (**36**), each set (**34**) having a plurality of transversely arranged links (**36**);

pivot means (**40**) joining said adjacent sets (**34**) of links (**36**) to form an endless loop;

a passageway (**80**) defined by said sets (**34**) of links (**36**), and

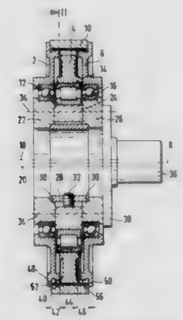
a plurality of load blocks (**50**) connected to said links (**36**), said load blocks (**50**) extending substantially across the width of said interleaved sets (**34**) of links (**36**), said load blocks (**50**) being positioned in said passageways (**80**), said load blocks (**50**) being located only on said side of said sets (**34**) of links (**36**) where said passageway (**80**) is located, said passageways (**80**) acting to assist in retaining said load blocks (**50**) in position adjacent said links (**36**), said passageways (**80**) partially enclosing said load blocks (**50**) wherein a portion of said load blocks (**50**) extend from said passageways (**80**) in a direction away from said links, each load block (**50**) having edge surfaces (**88**) for contacting said pulleys (**12**, **14**) of said transmission (**10**).

5,061,227

BEARING SYSTEM FOR WAVE GENERATOR DRIVE

Kurt Fickelscher, Frankenthal, Fed. Rep. of Germany, assignor to Renk Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Nov. 13, 1989, Ser. No. 435,696
Int. Cl.[5] F16H *15/50*
U.S. Cl. 475—170 **17 Claims**



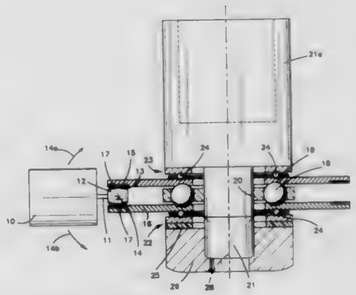
1. A bearing system for a wave generator, the bearing system having at least two rolling discs arranged axially side by side, an eccentric ring associated with each rolling disc, means for selectively frictionally coupling the eccentric rings, bearing means interconnecting each rolling disc and its associated eccentric ring, means for radially adjusting one eccentric ring relative to at least one other eccentric ring when the means selectively frictionally coupling the eccentric rings is released and a flexible ring, each rolling disc having a radially exterior face, the exterior faces of the rolling discs applying deformation forces against the flexible ring, the flexible ring including a slit extending over its axial length, means for preventing relative axial movement between the flexible ring and the rolling discs, the preventing means comprising axially spaced retention means projecting radially between the rolling discs and the flexible ring.

5,061,228

CONTINUOUSLY VARIABLE TRANSMISSION

Peter H. Hagqvist, Alvsjö, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 1, 1991, Ser. No. 663,253
Claims priority, application Sweden, Mar. 5, 1990, 9000759
Int. Cl.[5] F16H *13/08*
U.S. Cl. 475—189 **10 Claims**



1. A transmission comprising:

an input and an output shaft,

two parallel plates arranged perpendicularly to the output shaft,

supporting means for permitting free rotation of said plates about the output shaft,

a plurality of rolling elements arranged between said plates and radially distributed about said output shaft with each of said rolling elements abutting each of said plates,

a holder having a plurality of slots equal to the number of rolling elements,

said holder being fixed to the output shaft at a position between said plates with each of said rolling elements being restricted within one of said slots,

a drive roller fixed to said input shaft, said drive roller being positioned between and abutting each of said plates, and

said drive roller operating to rotate said plates in opposite directions, said rolling elements rotating said holder and in turn said output shaft with a velocity which is a direct function of the differences in the rotational speed of said plates.

5,061,229

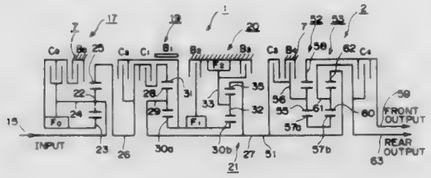
FOUR-WHEEL DRIVE DEVICE

kazumasa Tsukamoto; Takao Taniguchi; Takuji Taniguchi, and Takahiro Yamashita, all of Aichi, Japan, assignors to Aisin Aw Kabushiki Kaisha, Japan

Filed Oct. 17, 1990, Ser. No. 599,090
Claims priority, application Japan, Oct. 18, 1989, 1-269125
Int. Cl.[5] F16H *1/42, 1/46*
U.S. Cl. 475—249 **12 Claims**

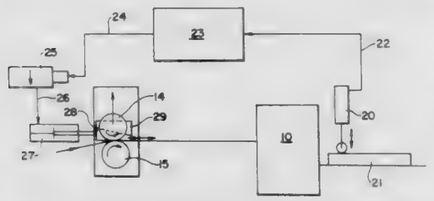
1. A four-wheel drive device for dividing torque transmitted from an engine into torque for driving front wheels and that for driving rear wheels of a four-wheel drive vehicle, comprising:

(a) a transmission portion having,
(i) an input element connected to the engine,
(ii) a gear unit for changing the torque of the input element, and
(iii) an output element connected to the gear unit,
(b) a transfer portion having
(i) an input element connected to the output element of the transmission portion,
(ii) first and second planetary gear units including sun



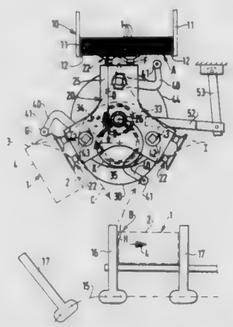
gears, carriers, and ring gears, said sun gears connected to each other and said second ring gear connected to the input element of the transfer portion,
(iii) a first clutch disposed between the input element of the transfer portion and the first carrier,
(iv) a brake connected between a case and the first carrier,
(v) a first output element connected between the first ring gear and one of the front and rear wheels, and
(vi) a second output element connected between the second carrier and another of the front and rear wheels.

5,061,230
METHOD OF CONTROLLING BULK IN FOLDED WEBS
Gerry Buxton; Larry Wierschke, and James E. Hertel, all of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.
Filed Oct. 26, 1990, Ser. No. 604,009
Int. Cl.[5] B65H *45/00*
U.S. Cl. 493—25 **8 Claims**



1. A method of controlling bulk in embossed, folded web stacks, comprising:
advancing web material through the nip between embossing rolls,
advancing said web material through a folder onto an elevator to form it into a series of stacks of a predetermined count of folded web material layers and moving said stocks folded web material onto a horizontal conveyor,
sensing the bulk of a stack on said conveyor,
forming a signal corresponding to the bulk of the stack sensed,
comparing said signal with a predetermined signal range, and
changing the nip gap or pressure between said embossing rolls whenever said signal is outside said range.

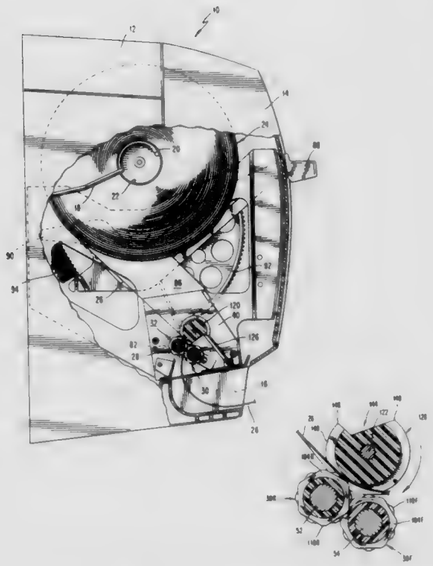
5,061,231
APPARATUS FOR ERECTING BOXES
Walter Dietrich; Eberhard Krieger, both of Weinstadt, and Siegfried Weber, Rudersberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 17, 1990, Ser. No. 568,814
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1989, 3941867
Int. Cl.[5] B31B *5/80, 1/78*
U.S. Cl. 493—315 **20 Claims**



1. A box erecting apparatus for removing folded blank boxes (1), from a delivery station (A) and transferring them to a receiving station (B), comprising a plurality of suction cups (22) a rotor (20) carrying said suction cups (22) which protrude outward, said suction cups being distributed uniformly over a circle; a crank (30) rotatably supporting said rotor on an eccentric shaft (31), said crank being arranged to rotate uniformly counter to the direction of conveyance of the suction cups; and a planetary gear assembly, said planetary gear assembly having a sun gear (35) disposed coaxially with the axis of rotation of said crank, a planet gear (33) that is firmly connected to the rotor and rotatable on the eccentric axis of the crank, and an intermediate gear 34 arranged to mesh with both said gears; said cups, rotor, crank, and gear assembly being arranged so that said suction cups revolve on a self-contained cycloid path (C) including four sharply pointed reversal points (F, G, H, T) and arc therebetween, said delivery station (A) and receiving station (B) being disposed at opposite reversal points (F, H) of said cycloid path; that three suction cups are disposed offset by 120° on the rotor (20); that the gear ratio between the sun gear (35) and the planet gear (33) is 4:3; and that the radial spacing between the suction clips and the axis of the rotor (20) is on the order of three times the eccentricity (E) of the crank (30).

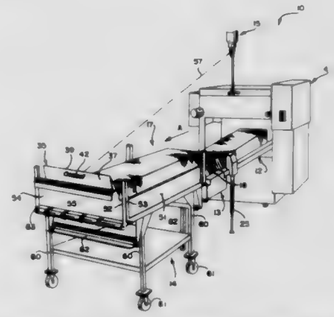
5,061,232
ROLLED PAPER EMBOSSING DISPENSER
Nathan D. Bloch, Cherry Hill, and Edward J. O'Brien, Eastampton, both of N.J., assignors to Scott Paper Company, Philadelphia, Pa.
Filed Apr. 12, 1989, Ser. No. 337,058
Int. Cl.[5] B65H *45/12*
U.S. Cl. 493—395 **33 Claims**

1. A rolled paper embossing dispenser comprising:
a cabinet,
means for rotatably supporting a roll of paper in said cabinet,
a pair of embossing rollers rotatably mounted in said cabinet so as to form a nip therebetween through which the paper is discharged from said cabinet, said embossing rollers having parallel longitudinal axes spaced apart by a selected minimum spacing, each embossing roller comprising:
a plurality of axially successive hub portions having an outer periphery whose shortest distance from the respective axis defines a first distance, and
a plurality of axially spaced disk portions alternating with said hub portions and defining recesses between one another, each disk portion including:
a plurality of circumferentially successively arranged knuckles having radially outermost peripheral surfaces, a shortest distance from the respective axis to each knuckle peripheral surface defining a second distance which is longer than said first distance, and
a plurality of interconnecting surfaces each arranged to interconnect circumferentially adjacent ones of said knuckles, a shortest distance from each interconnecting surface to the respective axis defining a third distance which is longer than said first distance and shorter than said second distance,



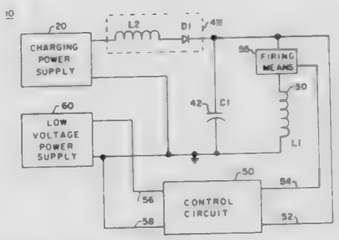
axially successive ones of said disks of each embossing roller being arranged in circumferentially offset relationship,
said embossing rollers being arranged such that said disks of each embossing roller are situated radially opposite said recesses of the other roller, and such that said second distance is greater than one-half of said spacing between said axes, and said third distance is no greater than one-half of said spacing between the axes, and
manually actuatable means for rotating said embossing rollers in unison whereby a paper web passing through said nip is pushed by said knuckles into recesses situated radially opposite said knuckles in a manner stretching the paper and forming embossments therein.

5,061,233
METHOD AND APPARATUS FOR BUSINESS FORMS COMPACTING
Elmer G. Schultz, Sandborn, N.Y.; Robert E. Godfrey, Rochester, N.H., and Thomas D. Chapman, Denton, Tex., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jul. 30, 1990, Ser. No. 559,962
Int. Cl.[5] B65H *29/00*
U.S. Cl. 493—410 **29 Claims**



8. A system for stacking continuous business forms in a compacted in-line configuration, comprising:
a folder for folding the continuous business forms along fold lines, and for conveying the folded forms in a first direction at a first speed;
means for mounting said conveying means adjacent said folder so that folded forms discharged by said folder are received by said conveying means;
a movable cart having a main surface, and a wall means upstanding from said main surface and defining a first, openable, end said main surface for receipt of forms discharged by said conveying means, said movable cat having caster means allowing said movable cart to be rolled into and out of position with said conveying means;
a forms backstop movable along said main surface in response to forms stacking thereagainst; and
means for mounting said main surface adjacent said conveying means so that forms discharged by said conveying means compact on said forms backstop.

5,061,234
MAGNETIC NEURAL STIMULATOR FOR NEUROPHYSIOLOGY
Richard A. Chaney, Nashua, N.H. 03062, assignor to Corteks, Inc., Chappaqua, N.Y.
Filed Sep. 25, 1989, Ser. No. 411,932
Int. Cl.[5] A61N *2/04*
U.S. Cl. 600—14 **8 Claims**



1. A magnetic neural stimulator for stimulating biological tissue comprising:

(a) magnetic stimulating means for producing a magnetic field,
(b) energy storage means for storing electromagnetic energy,
(c) firing means for gating stored energy from said energy storage means to said magnetic stimulating means thereby producing a magnetic pulse,
(d) control circuit means for supplying a firing signal to said firing means thereby causing said firing means to gate stored energy from said energy storage means to said magnetic stimulating means and producing said magnetic pulse, and
(e) charging circuit means for repetitively charging said energy storage means, said circuit means charging said energy storage means to a peak voltage level which is greater than the peak voltage level of a power supply which powers said charging circuit means,
wherein each charging of said energy storage means by said charging circuit means is followed by gating at least a portion of energy stored in said energy storage means to said magnetic stimulating means, and wherein an inductance value of an inductor of said charging circuit means is at least ten times an inductance value of said magnetic stimulating means.

5,061,235

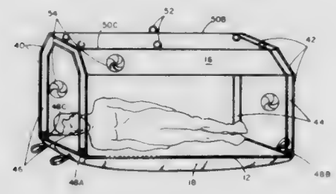
PORTABLE SUPERABSORBANT PERSONNEL STRETCHER AND ERECTABLE ON-DEMAND ISOLATION TENT

John D. Hogan, Gloucester, Mass., assignor to Beth Israel Hospital Association, Boston, Mass.

Continuation-in-part of Ser. No. 142,077, Jan. 11, 1988, Pat. No. 4,885,000, which is a continuation-in-part of Ser. No. 1,648, Jan. 9, 1987, abandoned. This application Dec. 4, 1989, Ser. No. 445,008

Int. Cl.[5] **604** *356, 358;* **600** *21, 22;* **5** *82, 89, 413;* **294** *140;* **296** *20;* **27** *23.1, 28;* **312** *1;* **128** *870*

U.S. Cl. 600—21 **18 Claims**



1. A portable superabsorbent stretcher and erectable on-demand isolation tent article comprising:
at least one planar support sheet having a determinable configuration and dimensions;
at least one superabsorbent fibrous layer disposed upon said support sheet, said superabsorbent layer comprising fluid-absorbing fibers able to absorb at least fifteen times their own weight of fluid;
a collapsed isolation tent joined to said support sheet, said collapsed isolation tent being erectable on-demand to envelop and isolate said superabsorbent fibrous layer and the airspace adjacent to said superabsorbent fibrous layer;
portable erecting means attachable at least in part to said isolation tent for erecting said collapsed isolation tent on-demand; and
portable transporting means attached at least in part to said support sheet for transporting said support sheet, said superabsorbent fibrous layer, and said isolation tent in collapsed and erected states.

5,061,236

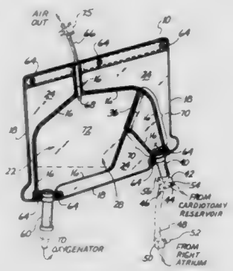
VENOUS RESERVOIR WITH IMPROVED INLET CONFIGURATION AND INTEGRAL SCREEN FOR BUBBLE REMOVAL

Karl M. Sutherland, Laguna Hills, and William R. Patterson, Long Beach, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jul. 16, 1990, Ser. No. 554,759

Int. Cl.[5] **A61M** *1/00*

U.S. Cl. 604—4 **15 Claims**



1. A blood reservoir device comprising: a generally flexible blood collection chamber having;
(a) an inlet portion; and
(b) a main portion;
said inlet portion and said main portion being fluidly connected to one another such that blood may pass therebetween;
a blood inflow tube fluidly connected to the inlet portion of the blood collection chamber;
a blood outflow tube fluidly connected to the main portion of the blood collection chamber;
at least one air vent tube fluidly connected to the blood collection chamber to vent air therefrom;
said collection chamber inlet portion having a first blood entry location where blood flows into the inlet portion and a second blood departure location where blood flows out of the inlet portion into the main portion of said collection chamber, said inlet portion being sized and configured such that the cross-sectional area of said inlet portion gradually increases from said first location to said second location so that blood flowing between the first location and the second location is generally laminar and free of excessive turbulence.

5,061,237

METHOD OF PURIFYING WHOLE BLOOD

Reiner Gessler, Aschaffenburg, and Manfred Rycyk, Koerle, both of Fed. Rep. of Germany, assignors to Cytomed Medizintechnik GmbH, Aschaffenburg, Fed. Rep. of Germany

Continuation of Ser. No. 220,880, Jun. 22, 1988, abandoned, which is a continuation of Ser. No. 881,416, Jul. 2, 1986, abandoned. This application Oct. 11, 1989, Ser. No. 420,770

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1985, 3523615; Jul. 2, 1985, 3523616

Int. Cl.[5] **A61M** *37/00*

U.S. Cl. 604—5 **5 Claims**

5. A method for purifying whole blood which comprises:
a) withdrawing whole blood containing a pathogenic microorganism or a metabolic product of a microorganism from a body,
b) contacting the whole blood removed from the body with a plastic surface having attached thereto $F(ab)_2$ fragments, from which the Fc fragments have been separated, of a homologous or monoclonal immunoglobulin selectively active against a specific antigen or antigenic determinant of the pathogenic microorganism or the metabolic product of the microorganism, and

c) returning the thus contacted whole blood to the body.

5,061,238

SURGICAL CUTTING INSTRUMENT WITH TITANIUM NITRIDE COATING ON AN INNER TUBULAR MEMBER

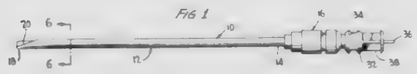
Donald K. Shuler, Largo, Fla., assignor to Linvatec Corporation, Largo, Fla.

Continuation-in-part of Ser. No. 311,196, Feb. 23, 1989, Pat. No. 4,923,441. This application Apr. 25, 1990, Ser. No. 513,291

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] **A61B** *17/32*

U.S. Cl. 604—22 **26 Claims**



1. A surgical cutting instrument comprising
an elongate outer tubular member having a distal end and an opening disposed at said distal end;
an elongate inner tubular member having a distal end and a cutting edge disposed at said distal end, said inner tubular member being movably received in said outer tubular member to position said distal end of said inner tubular member adjacent said distal end of said outer tubular member and said cutting edge adjacent said opening to permit said cutting edge to engage bodily tissue through said opening; and
a coating of titanium nitride formed on said inner tubular member and said cutting edge to form an elongate bearing surface along the length of said inner tubular member, said inner tubular member having an outer diameter substantially the same as the inner diameter of said outer tubular member such that the clearance between the outer diameter of said inner tubular member and the inner diameter of said outer tubular member is approximately 0.0075 inches or less.

5,061,239

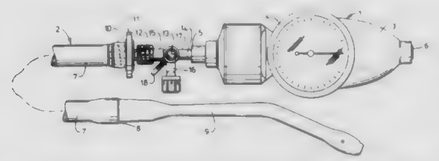
INTUSSUSCEPTION AIR REDUCTION SYSTEM

William E. Shiels, 5989 Bagdad Dr., Cincinnati, Ohio 45230

Filed Jan. 31, 1990, Ser. No. 473,088

Int. Cl.[5] **A61M** *37/00*

U.S. Cl. 604—26 **24 Claims**



1. Apparatus for the air reduction of intussusception comprising an elongated main tube terminating at its distal end in an enema tip, the proximal end of said main tube being connected to an in-line filter capable of stopping reflux of aerosol and liquid/solid contaminants, a three-way lever-actuated stopcock, said stopcock having first, second and third ports, said first and third ports being coaxial, said second port being perpendicular to said first and third ports and opening to atmosphere, said first port being connected to said filter, a hand actuated one-way bulb having an outlet means for the expulsion of air therein when said bulb is squeezed and a separate inlet for the intake of air when said bulb is released, said third port of said stopcock being connected to said bulb outlet means, said stopcock being shiftable between a first position wherein said first port is closed sealing the remainder of said apparatus from atmosphere and said outlet means of said bulb, the outlet means of said bulb being connected to atmosphere via said second port, a second position closing said second port leading to atmosphere and connecting said bulb outlet means with the remainder of said apparatus for insufflation, and a third position closing said third port to said bulb outlet means and connecting the remainder of said apparatus to atmosphere via said second port for decompression, said stopcock lever being so positioned as to be shiftable by the index finger of the operator's hand which holds and actuates said bulb, and an aneroid pressure gauge connected to said apparatus between said main tube and said bulb.

5,061,240

BALLOON TIP CATHETER FOR VENOUS VALVE ABLATION

George Cherian, 5136 W. 60th Ter., Mission, Kans. 66205

Filed Apr. 2, 1990, Ser. No. 502,700

Int. Cl.[5] **A61M** *29/00*

U.S. Cl. 604—96 **8 Claims**



1. A catheter for use in the venous ablation of a one way vascular valve located in a vein and having a curved valve flap terminating in a generally circular edge, said catheter comprising:
a catheter tube having a tip end and a fluid passage extending through the tube to the tip end; and
a soft and pliable balloon on said tip end of the catheter having deflated and inflated conditions and communicating with said fluid passage to receive fluid therefrom for inflation, said balloon having in the inflated condition thereof a shape presenting a curved base applicable to the valve flap and having a size and shape to fit against the valve flap in conformity therewith, said balloon having in the inflated condition an annular groove in the base sized and located to closely receive said edge therein when the base is applied to the valve flap and to grip said edge in a manner to tear the vale flap when the balloon is moved past the flap in the deflated condition and then inflated and pulled toward the flap with said groove closely receiving the edge therein, said base being smaller than the vein to present a clearance space within the vein around said base.

5,061,241

RAPID INFUSION DEVICE

Harry W. Stephens, Jr., 2340 Riverbend Rd., Allentown, Pa. 18103; Norman J. Manley, 967 Chris Ln., Allentown, Pa. 18105, and Ralph M. Montesano, 2737 Rt. 100, Macungie, Pa. 18062

Continuation of Ser. No. 299,099, Jan. 19, 1989, abandoned. This application Feb. 8, 1991, Ser. No. 652,481

Int. Cl.[5] **A61F** *7/12*

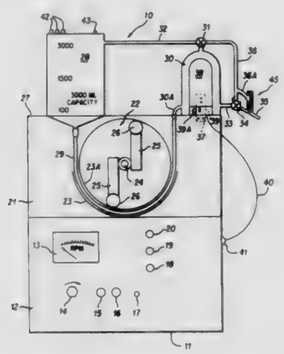
U.S. Cl. 604—114 **8 Claims**

4. A rapid infusion system for rapidly delivering filtered, bubble free, warmed volume to a patient, said rapid infusion device comprising in combination:
(a) a pre-assembled unitary disposable unit; and
(b) a permanent durable unit;
wherein said disposable unit includes all sub-components that will come into contact with the volume infused to the patient including a disposable flexible length of tubing serving as a pumping chamber;
wherein said permanent durable unit includes reusable components including driving means and related control means therefor, pump means operably connected to said drive means, heating means for heating the volume, and

housing means, said flexible tubing having opposite ends thereof connected to said pre-assembled unitary disposable unit whereby said disposable unit and said length of tubing can be disposed of after use;

wherein said housing means supports said pump means, said unitary disposable unit, flexible tubing, said heating means, said drive means, and said related control means whereby a filtered, bubble free warmed volume of predetermined temperature may be infused to a patient at a predetermined flow rate;

wherein said preassembled unitary disposable unit further



includes a pair of manually operable two-way valves and an adjustable pressure controlled by-pass valve;

wherein said adjustable pressure controlled by-pass valve includes a cylindrical housing which encloses a spring loaded ball valve and an adjusting screw which can be adjusted to set the spring bias on said ball valve with respect to a cooperating seat whereby a patient line pressure in excess of the predetermined setting forces said ball to unseat and by-pass a portion of said volume back to said reservoir; and

wherein said predetermined setting is in the range of 230 to 300 mm Hg.

5,061,242
ADJUSTABLE IMPLANTABLE DRUG INFUSION SYSTEM

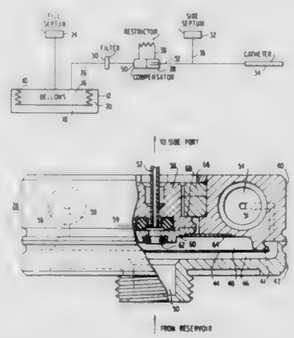
Edward J. Sampson, Carlisle, Mass., assignor to Infusaid, Inc., Norwood, Mass.

Filed Jul. 18, 1989, Ser. No. 381,350
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—118 **6 Claims**

1. A drug delivery system for implantation in a living body comprising:

a pressure actuated drug delivery device having a housing, a movable member dividing said housing into two compartments, a first compartment containing a drug to be dispensed and a second compartment containing a material exerting pressure on said movable member, means for providing access to said first compartment for refilling it with a drug;

an adjustable pressure sensitive flow regulator connected to said first compartment, said flow regulator comprising a body, an inlet from said first compartment and an outlet to a catheter said outlet mounted in said body and movable thereto, a cavity divided by a flexible sensing member to define two chambers, one chamber on each side of said flexible sensing member, means to establish fluid communication between said two chambers, one of said chambers in fluid communication with said outlet, said means to move said outlet with respect to said flexible sensing member for adjusting the flow rate to said outlet from said

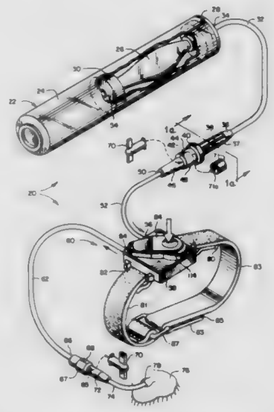


other of said chambers such that said regulator flow is variably adjustable to any predetermined rate.

5,061,243
SYSTEM AND APPARATUS FOR THE PATIENT-CONTROLLED DELIVERY OF A BENEFICIAL AGENT, AND SET THEREFOR

David A. Winchell, Spring Grove; Thomas A. Fowles, McHenry, and Richard Mitchell, Lindenhurst, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 171,238, Mar. 16, 1988, abandoned, which is a continuation of Ser. No. 65,697, Jun. 16, 1987, abandoned, which is a continuation of Ser. No. 762,985, Aug. 6, 1985, abandoned. This application Feb. 8, 1989, Ser. No. 308,972
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—132 **30 Claims**



1. A system for the patient-controlled delivery of a beneficial agent, comprising:

(a) supply means for storing the beneficial agent;

(b) conduit means for transporting the beneficial agent from the supply means to a dose reservoir;

(c) pump means for expressing the beneficial agent out of the supply means through the conduit means and into a dose reservoir at a controlled rate;

(d) a dose reservoir for receiving a dose of beneficial agent from the supply means;

(e) control means operative by the patient for selectively expressing the beneficial agent out of said dose reservoir, through an outlet thereof, in at least one of discrete dose volumes or fractional dose volumes, as selected by the patient; and

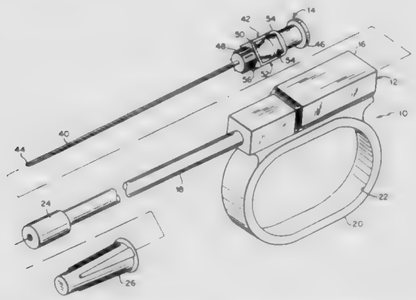
(f) excess dose prevention means for supplying the beneficial agent to the dose reservoir at a predetermined flow rate that fills the volume of the dose reservoir substantially linearly with time up to the discrete dose volume;

(g) wherein said system is patient-wearable and permits the patient to be ambulatory.

5,061,244
PUDENDAL/PARACERVICAL BLOCK NEEDLE ASSEMBLY

George J. Yurkewych, Parsippany; Joseph J. Gregg, Hasbrouck Heights, and Samuel D. Beley, Saddle Brook, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 9, 1990, Ser. No. 491,405
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **27 Claims**



1. An assembly for injecting a medicament within a body, comprising:

a needle guide assembly, said needle guide assembly including a housing, said housing including first and second end portions;

a recess defined within said first end portion of said housing;

first abutment means projecting from said housing and into said recess;

second abutment means defined by said housing providing a discrete step without threads from first abutment;

a cannula secured to said second end portion of said housing, said cannula including an elongate lumen and having a distal end, said lumen being in fluid communication with said recess;

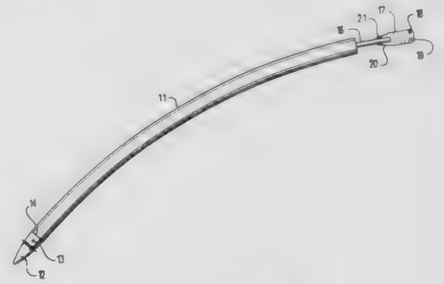
a needle assembly, said needle assembly including a hub and a needle secured to said hub, said needle and said hub being insertable within said lumen and said recess, respectively;

said hub being configured such that said hub engages said first abutment means when inserted within said recess in a first rotational position, and engages said second abutment means when inserted within said recess in a second rotational position, said needle projecting a first distance beyond said distal end of said cannula when said hub engages said first abutment means and a second distance beyond said distal end of said cannula when said hub engages said second abutment means.

5,061,245
ARTERIAL BYPASS TOOL

Chester W. Waldvogel, Rte. 1, Box 224 D, Queenstown, Md. 21658

Filed Jan. 19, 1990, Ser. No. 467,567
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—170 **20 Claims**



1. An arterial bypass tool, comprising:

a tubular sheath having first and second ends;

a rod slidably received through said sheath;

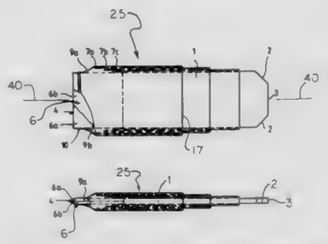
a first end of said rod terminating in a tapering radiused tip exteriorly adjacent said first end of said sheath; and

a second end of said rod terminating in an enlarged tab dimensioned for passage through said sheath, said tab possessing a trailing end provided with at least one aperture.

5,061,246
TUBE-LIKE COVERING FOR PROTECTING A SURGICAL INSTRUMENT, AND METHOD OF MAKING

Emmanuel Anapliotis, Berlin, Fed. Rep. of Germany, assignor to Effner GmbH, Berlin, Fed. Rep. of Germany

Filed Dec. 1, 1989, Ser. No. 443,944
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 8815076[U]; Apr. 20, 1989, 8905102[U]
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—171 **12 Claims**



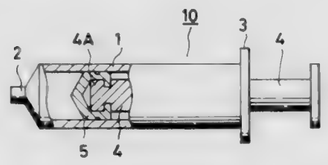
1. A thin covering for protecting an elongated surgical instrument comprising:

an elongated tube of a thin flexible sterilizable material having an insertion opening and an exit opening at opposite ends thereof;

two resiliently deformable leaf-like lining members connected to said elongated tube and disposed in said tube at said insertion opening, said lining members each having a central portion and a pair of opposite side edges, a first one of said pair of side edges of one of said lining members being substantially congruent to a first one of said pair of side edges of the other of said lining members, and a second one of said pair of side edges of said one of said lining members being substantially congruent to a second one of said pair of side edges of said other of said lining

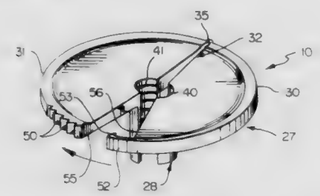
members, and wherein upon application of force to said opposite side edges urging said opposite side edges towards each other, said central portions are spread apart to cause the insertion opening to open in a jaw-like manner for receiving a surgical instrument.

5,061,247
GASKET AND MEDICAL DEVICE USING THE SAME
Yoshiaki Akaike, Yamanashi, and Yoshinori Nishiya, Yokkaichi, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 4, 1989, Ser. No. 445,534
Claims priority, application Japan, Dec. 9, 1988, 63-310196
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—187 **18 Claims**



1. A gasket made of a composite comprising 100 parts by weight of (a) a hydrogen-added styrene-butadiene block copolymer and (b) a plasticizer, said 100 parts by weight being the total of 40 to 60 weight % of said (a) and 60 to 40 weight % of said (b), and 10 to 50 parts by weight of (c) a polyethylene resin having a density of 0.94 g/cm^3 or more.

5,061,248
INJECTION PORT SAFETY SHIELD
John J. Sacco, 202 Sedgwick Dr., Syracuse, N.Y. 13203
Filed Apr. 4, 1990, Ser. No. 503,938
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **12 Claims**



1. A shield for an injection port of a fluid path for administering fluids intravenously to a patient that includes
an expanded flange mounted upon a hollow cylindrical hub that is dimensioned to surround an intravenous flow line, said flange and said hub being separated into two half-sections along a common parting line and a hole passing through said flange whereby the shield can be passed around the flow line immediately below an injection port,
a hinge means for movably securing the two half-sections whereby the shield can be opened and closed about said flow line,
adjustable clamp means for removably securing the two half-sections in a closed position about said flow line to lock the half-sections against the line and thus prevent the shield from sliding therealong.

5,061,249
HYPODERMIC INJECTION DEVICE
William P. Campbell, 3310 Rowland Place, Washington, D.C. [illegible]
Filed Mar. 16, 1990, Ser. No. 494,664
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—195 **22 Claims**



1. A hypodermic injection device comprising:
a reservoir chamber having two ends, the reservoir chamber being adapted to hold material to be injected;
a needle structure extending out from a first end of the reservoir chamber, the needle structure including a first end within the reservoir chamber and a second end outside the reservoir chamber, said needle structure extending through a hole in the first end of the reservoir chamber; and
a plunger extending into the reservoir chamber from a second end of the reservoir chamber and slidably mounted into the reservoir chamber so as to cause the reservoir chamber to be emptied of injectable material through said needle structure when the plunger is moved in the reservoir chamber toward the needle structure,
wherein said plunger includes a needle-retention chamber in an end portion thereof closest to the needle structure, and the first end of the needle structure includes resilient means adapted to be inserted in and retained in the needle-retention chamber when the plunger is moved toward the needle structure, the resilient means being sufficiently resilient such that the resilient means is compressed when entering the needle-retention chamber so as to be retained therein, the needle-retention chamber being sufficiently rigid so as to retain the resilient means therein when withdrawing the plunger from the reservoir chamber, whereby the needle structure can be retracted into the reservoir chamber after the resilient means has been retained in the needle-retaining chamber and the plunger has been withdrawn from the reservoir chamber.

5,061,250
INTRAVENOUS NEEDLE SHEATHING DEVICE
Jack W. Shields, 1950 Las Tunas Rd., Santa Barbara, Calif. 93103
Filed Aug. 28, 1990, Ser. No. 574,293
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **6 Claims**

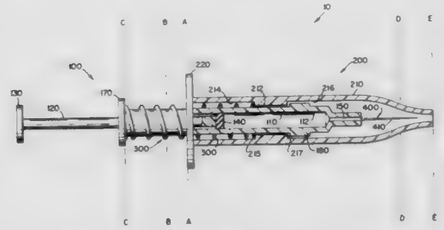
1. An intravenous needle sheath for preventing accidental needle-stick injuries, said needle sheath being adapted for use with an intravenous infusion or phlebotomy set, said intravenous infusion or phlebotomy set comprising a length of tubing of substantially uniform diameter, said tubing having a leading end permanently affixed to the hub of an intravenous hollow bore steel needle and a trailing end; said intravenous needle sheath comprising:
(a) an elastomeric tube having leading and trailing ends and a mid-portion therebetween and an outer wall and inner lumen with at least one axially oriented slit in its outer wall extending into the inner lumen,

(b) a puncture-resistant scabbard securely affixed to the leading end of said elastomeric tube;
(c) a flexible tether permanently affixed to the leading end of said elastomeric tube for grasping said elastomeric tube to apply manual traction to stretch said elastomeric tube; and



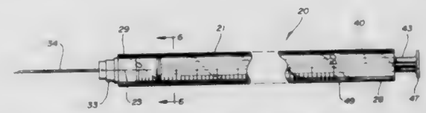
(d) means on the trailing end of said elastomeric tube for slidably attaching said intravenous needle sheath to the leading end of said intravenous tubing permanently affixed to the trailing end of the hub holding said intravenous hollow bore steel needle.

5,061,251
SYRINGE DEVICE
Paul R. Juhasz, P.O. Box 1013, Columbia, Md. 21044
Filed Jun. 12, 1990, Ser. No. 537,085
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—198 **13 Claims**



1. A syringe device comprising:
a syringe member provided with a hypodermic needle;
a movable shield member movably interconnected with said syringe member for movement between a first position for shielding the hypodermic needle and a second position for exposing the hypodermic needle;
means for manually moving the shield member from the first to the second position; and
biasing means disposed between said syringe member and said movable shield member for normally biasing the movable shield in the shielding position;
wherein said movable interconnecting of said movable shield member with said syringe member comprises a means for retaining the shield member from moving forwardly of the shielding position, said retaining means comprising at least one flange provided along an outside surface of the syringe member and a bore provided with an outwardly stepped bore defined along an inside surface of said shield member, said stepped bore movably receiving said flange member so that a shoulder portion of said stepped bore abuts a corresponding end portion of said flange member when said shield member is in the shielding position.

5,061,252
SYRINGE ASSEMBLY
Thomas J. Dragosits, Valley Cottage, N.Y., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Dec. 19, 1990, Ser. No. 630,456
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—218 **21 Claims**



1. An operable syringe assembly comprising:
a barrel including a cylindrical body portion having a longitudinal axis, said body portion forming an inside wall spaced from said axis defining a chamber for retaining fluid, said body portion including an open proximal end and a distal end portion having a passageway therethrough in fluid communication with said chamber, said body portion having an inner barrel portion of plastic material and an outer barrel portion surrounding and in spaced relationship with said inner barrel portion, said outer barrel portion being held in spaced relationship with said inner barrel portion by at least one longitudinally oriented rib connecting said outer barrel portion and said inner barrel portion, said inner barrel portion including said inside wall;
a plunger including an elongate shaft portion having a proximal end, a distal end and a rigid piston portion at said distal end having an outside diameter greater than the inside diameter of said inner barrel portion, said piston portion slidably positioned in fluid-tight engagement inside said barrel, said fluid-tight engagement being caused by said piston deflecting said inner barrel portion, said piston portion capable of moving fluid from said chamber through said passageway upon its movement toward said distal end, said piston portion capable of facilitating the drawing of fluid into said chamber through said passageway upon its movement away from said distal end, said proximal end of said plunger extending outwardly from said proximal end of said barrel to facilitate moving said piston portion with respect to said barrel.

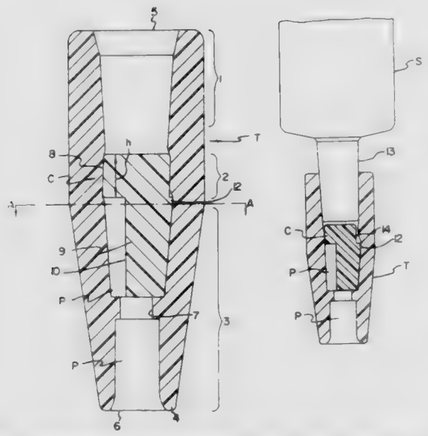
5,061,253
FLUID-COMMUNICATING DEVICE WITH VALVE FUNCTION
Toshiki Yoshida, Osaka, Japan, assignor to Nissho Corporation, Osaka, Japan
Filed Oct. 24, 1989, Ser. No. 429,233
Claims priority, application Japan, Nov. 14, 1988, 63-286987
Int. Cl.[5] F16L *37/28*
U.S. Cl. 604—246 **7 Claims**

1. A fluid-communicating device with valve function comprising:
a tubular body made of soft material both ends thereof being open, providing for an inlet and outlet, and comprising
a tip-receiving portion extending from the inlet of the tubular body of which inner diameter is tapered down from an inlet end toward an outlet end,
a seal portion extending from the tip-receiving portion toward the outlet of the tubular body and having an inner diameter which is approximately the same as the inner diameter of the outlet end of the tip-receiving portion, and
a fixing portion extending from the seal portion to the outlet of the tubular body, and
a blocking body made of hard material and being inserted and supported in the tubular body, the blocking body comprising
a column-like plug portion placed in the tubular body

whereby the plug portion closely contacts with the seal portion of the tubular body, and having an outer diameter which is slightly larger than the inner diameter of the seal portion, and

a column-like supporting portion annularly engaging with an inner surface of the fixing portion and being held in the fixing portion

wherein a diameter-enlarging means for enlarging an end of an inner wall of the fixing portion and a part of an inner wall of



the seal portion adjoining the end of the fixing portion is provided in close proximity to the end of the fixing portion adjacent to the seal portion; and a fluid passage for communicating the tubular body inlet with the tubular body outlet during the use of the device is formed longitudinally on one of the fixing portion and the supporting portion, wherein the diameter-enlarging means is at least one rib formed longitudinally on the supporting portion, and at least an end of the rib adjacent to the plug portion projects radially outwardly from an outer wall of the plug portion.

5,061,254

THERMOPLASTIC ELASTOMERIC HYDROPHILIC POLYETHERURETHANE EXPANDABLE CATHETER

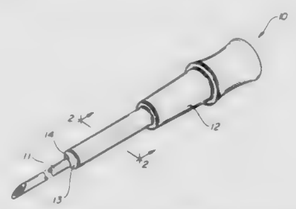
Mutlu Karakelle, Dayton, and Donald D. Solomon, Spring Valley, both of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 369,484, Jun. 21, 1989, abandoned. This application Mar. 26, 1990, Ser. No. 499,154

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—265 **22 Claims**

1. A melt extruded catheter comprising a substantially hydrophilic thermoplastic elastomeric polyurethane tubing, said polyurethane having a hard segment of 25 to 60% and comprising the product from reaction of a mixture of a diisocyanate, a chain extender and a polyglycol component comprising from 80 to 100% of polyethyleneoxide glycol wherein the ratio of said diisocyanate to said combined polyglycol and extender components is about 1.02:1, said tubing, when brought into contact with an aqueous liquid, absorbing about 10 to 200% of



its weight of said liquid and expanding whereby its inside diameter increases about 5 to 75%.

5,061,255

EXTERIOR ANTIMIGRATION REFINEMENTS FOR SELF-CLEANING INDWELLING THERAPEUTIC ARTICLES

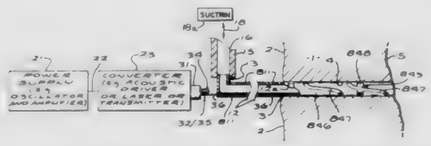
Albert R. Greenfeld, 1250 LaVenta Dr., Ste. 204, Westlake Village, Calif. 91361, and Jonathan L. Greenfeld, Westlake Village, Calif., assignors to Albert Greenfeld, a part interest

Continuation of Ser. No. 096,068, Sep. 14, 1987, Pat. No. 4,906,238, which is a continuation-in-part of Ser. No. 787,728, Oct. 15, 1985, Pat. No. 4,698,058. This application Feb. 27, 1990, Ser. No. 485,966

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—266 **41 Claims**



1. A self-cleaning indwelling therapeutic-article system, for protracted use in an extended condition within a patient's body, the article passing between tissues of a duct or incision in the patient's body; said system comprising:

a therapeutic article that during indwelling use:

passes through such duct or incision,

includes a portion that is closely encircled by such duct or incision tissues, and

defines an external surface that is subject to the presence and propagation of undesirable microorganisms, along the portion that is closely encircled by tissues of such duct or incision;

means, extended along the external surface of the article, for trapping and interfering with migration of contaminants, said trapping-and-interfering means being defined along at least the portion that is closely encircled by tissues of such duct or incision during such use;

a source of effective disabling energy; and

means for conveying the energy from the source to the trapping-and-interfering means to effectively disable such undesirable microorganisms at the trapping-and-interfering means and deter such propagation along the portion that is closely encircled by tissues of such duct or incision during use.

5,061,256

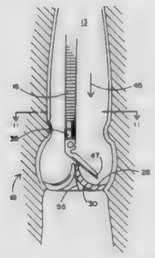
INFLOW CANNULA FOR INTRAVASCULAR BLOOD PUMPS

Richard K. Wampler, Gold River, Calif., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 129,713, Dec. 7, 1987, abandoned. This application Jul. 26, 1989, Ser. No. 385,558

Int. Cl.[5] A61M *5/00;* **A61F** *1/24*

U.S. Cl. 604—280 **3 Claims**



1. An inflow cannula for retrograde insertion of the blood intake for an intravascular blood pump through the aortic valve, comprising:

(a) a substantially stiff body section adapted to be attached at is proximal end to the intake of an intravascular blood pump; and

(b) a substantially soft, elongated, flexible resilient tip section at the distal end of said body section;

(c) the distal end portion of said tip section being beveled and being sufficiently soft to fold upon itself when pushed into a sinus of said aortic valve;

(d) said beveled distal end portion being so shaped that it folds upon itself only in a direction normal to the plane of the bevel; and

(e) which said body section includes an arcuate portion biased into a shape approximating the curvature of a human aortic arch, said distal end being beveled toward the inside of said curvature.

5,061,257

APERTURED, REINFORCED CATHETER

Mario J. Martinez; Jeffrey G. Gold, both of Miami, and Kevin F. Hahnen, Miramar, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Apr. 30, 1990, Ser. No. 516,458

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—282 **18 Claims**



1. In a catheter which defines a flexible, tubular body in which said tubular body carries a tubular reinforcing sleeve made of strands, the improvement comprising, in combination:

said catheter defining at least one side hole which communicates through said tubular body and strands of said tubular reinforcing sleeve, in which strands of said tubular reinforcing sleeve extend across said side hole.

5,061,258

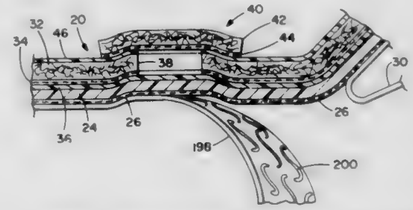
VAPOR PERMEABLE DRESSING WITH RELEASABLE MEDICATION

Joel D. Martz, 5 Sealy Dr., Lawrence, N.Y. 11559

Continuation-in-part of Ser. No. 377,269, Jul. 10, 1989, which is a continuation-in-part of Ser. No. 83,690, Aug. 7, 1987, Pat. No. 4,846,164. This application Apr. 3, 1990, Ser. No. 504,111

Int. Cl.[5] A61F *13/02*

U.S. Cl. 604—307 **2 Claims**



1. A method of administering a topical reagent to a patient comprising steps of:

imprinting the topical reagent upon a surface of a release sheet, there being a bonding force securing said reagent to said release sheet;

applying an adhesive to the surface of a conformable elastomeric film, said film being permeable to water vapor but impermeable to liquid water;

placing said surface of said release sheet in contact with said adhesive, there being an attractive force between said reagent and said adhesive, said attractive force being greater than said bonding force for retention of said reagent with said adhesive upon a separation of said release sheet from said film;

separating said release sheet from said adhesive, said reagent being retained upon said adhesive during separation of said release sheet from said adhesive; and

applying said film to the patient with the adhesive being disposed between the film and the patient, said adhesive retaining said reagent in contact with the patient to allow for transport of said reagent from said adhesive into said patient via contact with said patient.

5,061,259

ABSORBENT STRUCTURES WITH GELLING AGENT AND ABSORBENT ARTICLES CONTAINING SUCH STRUCTURES

Stephen A. Goldman, Wyoming; James C. Horney, and Herbert L. Retzsch, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 529,017, May 25, 1990, abandoned, which is a continuation of Ser. No. 455,772, Dec. 28, 1989, abandoned, which is a continuation of Ser. No. 146,904, Jan. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 87,137, Aug. 19, 1987, abandoned. This application Nov. 20, 1990, Ser. No. 616,162

Int. Cl.[5] A61F *13/12*

U.S. Cl. 604—368 **20 Claims**

12. An absorbent article of improved absorbency characteristics, said article comprising:

A. a liquid impervious backing sheet;

B. a liquid pervious topsheet; and

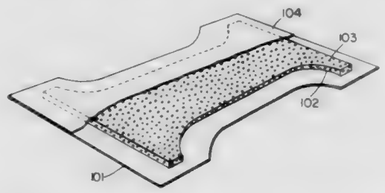
C. an absorbent core positioned between said backing sheet and said topsheet, said absorbent core comprising a web formed from a combination of

i) from about 40% to 95% by weight of the web of hydrophilic fibers; and

ii) from about 5% to 60% by weight of the web of nonfibrous, nonfragile particles of hydrogel-forming polymeric gelling agent having an equilibrium gel volume of at least about 20 grams of synthetic urine per gram of

gelling agent, said particles having a mass median particle size ranging from about 400 to 700 microns; with no more than about 16% by weight of said particles having a particle size less than 200 microns and no more than about 16% by weight of said particles having a particle size greater than 1000 microns; said particles being thoroughly dispersed among said hydrophilic fibers in said web;

said web having a density of from about 0.06 g/cm^3 to 0.3 g/cm^3.

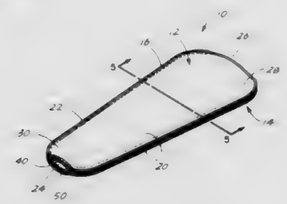


5,061,260

NONDISPOSABLE DIAPER

Joanne Callahan, and Christine Houle, both of 10986 N. 218 St. Ct., Scandia, Minn. 55073

Filed Jul. 26, 1990, Ser. No. 558,100
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—378 23 Claims



1. A nondisposable diaper comprising:

a top section having perimeter ends, and an inside surface and an outside surface;

a bottom section having perimeter ends, and an inside surface and an outside surface, the respective inside surfaces of the top and bottom sections facing one another; and

attachment means for attaching the top section to the bottom section along their respective perimeter ends in a discontinuous manner thus defining at least one opening between the respective top and bottom sections, the opening permitting air to more freely enter and flow between the respective inside surfaces of the top and bottom sections and thereby permitting the nondisposable diaper to dry faster;

wherein the top section comprises a top outside layer; a top inside layer; and top attachment means for attaching the top inside layer to the top outside layer; and

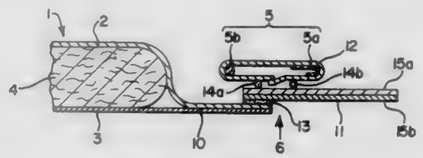
wherein the top attachment means comprises continuous perimeter attachment means; the perimeter attachment means attaching respective perimeter ends of the top inside and outside layers.

5,061,261

DISPOSABLE DIAPER

Migaku Suzuki, Kamakura; Satoshi Nozaki, Ehime; Takeshi Kudo, Kawanoe, and Kazuaki Ohnishi, Kanoji, all of Japan, assignors to Uni-Charm Corporation, Ehimeken, Japan

Filed May 25, 1990, Ser. No. 529,228
Int. Cl.[5] A61F *13/16*
U.S. Cl. 604—385.2 7 Claims



1. A disposable diaper comprising:

a liquid-permeable topsheet (**2**) for contact with the skin of the wearer;

a liquid barrier backsheet (**3**);

a liquid absorptive core (**4**) sandwiched between the topsheet and the backsheet; and

a pair of elasticized side flaps (**6**) extending longitudinally of said diaper at respective opposite side edges thereof,

each said side flap (**6**) including portions of said topsheet and said backsheet which extend from a respective side edge of said absorbent core, and elastic means (**5**) extending longitudinally of said diaper generally at respective side edges of said topsheet and said backsheet of said side flap for elastically contracting said side flap,

each said side flap further comprising a side wing extending laterally from the respective elastic means and from the side edges of said topsheet and said backsheet of said side flap, each said side wing extending laterally of at least one of front and rear waist portions of said diaper,

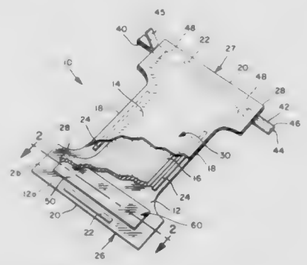
each of said side wings comprising a composite two-layer sheet, including an air-permeable, sweat-absorptive top layer for contact with the skin of the wearer, and an air-permeable, liquid barrier back layer.

5,061,262

HOT MELT ADHESIVE FOR POLYETHYLENE FILM REINFORCEMENT

Franklin M. C. Chen; Paul M. Linker, both of Appleton; William R. Van Bemmel, Menasha, and Dave A. Soerens, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 21, 1987, Ser. No. 53,211
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—389 20 Claims



1. An article, comprising:

a. a flexible substrate having a tear strength;

b. an adhesive tape member having a peel adhesion value which is greater than the tear strength of said substrate, said peel adhesion value determined with respect to a first major surface of said substrate to which said tape member is to be adhered;

c. A reinforcement layer which is composed of a hot melt adhesive and is bonded to a second major surface of said substrate located opposite to said first major surface, said reinforcement layer exhibiting an elongation-at-break of at least about 100% and a tensile strength, measured at 25% elongation, which is within the range of about 2–5 MPa (about 300–700 psi);

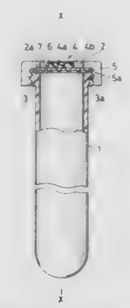
d. said substrate and said reinforcement layer thereby providing a composite tear strength greater than the peel adhesion value of said tape member and providing a composite elongation-at-break of at least about 100%, as measured at a strain rate of 3 cm/cm/sec.

5,061,263

LIQUID COLLECTION TUBE

Sakae Yamazaki, and Takato Murashita, both of Yamanashi, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1990, Ser. No. 478,673
Claims priority, application Japan, Feb. 13, 1989, 1-34474; Feb. 15, 1989, 1-37050
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—403 23 Claims



1. A liquid collection tube for collecting a liquid in its inside with a liquid collection needle, comprising:

a bottomed cylindrical tube member having an open end and closed bottom at the other end thereof;

a cap member removably mounted on said tube member at said open end thereof and having a needle insertion through hole therein corresponding in position to said open end of said tube member;

sealing means coupled to said cap member to close said needle insertion through hole of said cap member, said sealing means being disposed in correspondence to said open end of said tube member and including:

a gas barrier film element for maintaining said open end of said tube member hermetically sealed; and

a re-sealing element secured to said gas barrier film element on the side thereof opposite said open end of said tube member;

said sealing means being removable together with said cap member from said tube member; and

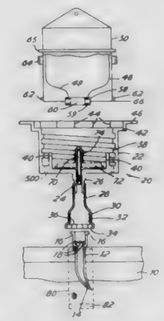
a sealing member interposed between said cap member for said open end of said tube member for enhancing close sealing contact of said cap member with said open end of said tube member.

5,061,264

APPARATUS FOR CONTACTING MATERIAL SUCH AS A DRUG WITH A FLUID

David Scarrow, Norton St. Philip, United Kingdom, assignor to DRG Flexpak Limited, Bristol, England

PCT No. PCT/GB88/00256, § 371 Date Mar. 17, 1989, § 102(e) Date Mar. 17, 1989, PCT Pub. No. WO88/07358, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 31, 1988, Ser. No. 340,676
Claims priority, application United Kingdom, Apr. 2, 1987, 8707917; Feb. 12, 1988, 8803324
Int. Cl.[5] A61B *19/00*; B65D *25/08*
U.S. Cl. 604—408 13 Claims



1. Apparatus for use in contacting with a fluid a medicament which is in a vial of standard type, the vial including a body having an interior for holding the medicament, the body having a rear end portion, a dispensing end portion with a mouth communicating the interior to the exterior, a penetrable rubber stopper closing off the mouth, and means for retaining the stopper sealingly on the vial body,

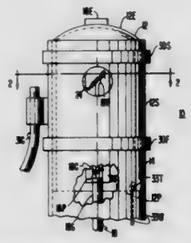
said apparatus comprising,

cup means having a cup base and a cup wall which define a cup interior and a mouth portion, said cup interior being dimensioned to receive the dispensing end portion of a vial, said cup means including conduit means extending through said cup base for communicating the interior of the cup means with the exterior thereof, said conduit means having at the cup interior a tubular spike extending towards the mouth portion of the cup so as to contact the rubber stopper of a vial when the dispensing end portion thereof is received in the cup interior, said conduit means having at the exterior of the cup means, means for effecting fluid flow communication with a container of fluid,

a cylindrical shaped housing having an open mouth at one end thereof and an end wall at the opposite end thereof, said cylindrical shaped housing adapted to receive the vial through the open mouth, retainer means on the outer surface of said housing,

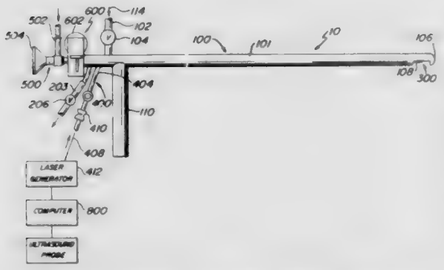
engagement means on said cup for engagement with said retainer means whereby the housing may be displaced in the axial direction of the cup means towards the cup base, said engagement means including locking means to lock the housing permanently to the cup means when the relative axial displacement of the housing towards the cup base exceeds a predetermined extent, whereby when the vial and housing for the vial are urged towards the cup base, said cup means and said housing are so dimensioned that said tubular spike is forced through the rubber stopper on the vial so that the vial interior is in flow communication with the conduit means, and the locking means locks the housing permanently to the cup means whereby the vial is locked in place with the interior of the vial in flow communication with said conduit means.

5,061,265
LASER TREATMENT APPARATUS AND METHOD
George S. Abela, and Stephan E. Friedl, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.
Filed Jun. 20, 1989, Ser. No. 368,655
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—7 24 Claims



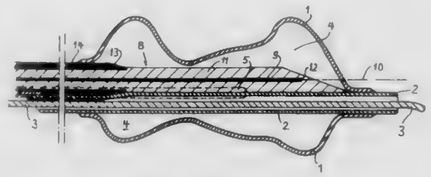
1. An apparatus for heating tissue inside of a patient comprising:
an outer hood having a first opening disposed therein;
an optical fiber having a tip within said outer hood, said optical fiber operable to receive light and operable to transmit a light beam of high power with a central axis extending from said tip through said first opening; and
a catheter connected to said outer hood for supplying flushing solution to within said outer hood such that the flushing solution flows out of said first opening; and
further comprising an inner hood within said outer hood, said tip being disposed within an interior of said inner hood, said interior being sealed to prevent flushing solution from entering therein.

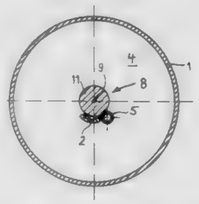
5,061,266
LASER RESECTOSCOPE AND METHOD
Said I. Hakky, 8547 Merrimoor Blvd. E., Largo, Fla. 34647-3145
Division of Ser. No. 175,014, Mar. 30, 1988, Pat. No. 4,955,882. This application Jun. 19, 1990, Ser. No. 540,072
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 2 Claims



1. A surgical apparatus for prostate surgery comprising:
a resectoscope for cutting prostate tissue, said resectoscope being comprised of:
cutting means for cutting and removing said prostate tissue,
sheath means surrounding said cutting means for enclosing said cutting means therein, and
laser means extending through said sheath means; and
ultrasound means for scanning the organic tissue to be cut and for scanning the position of said cutting means when said tissue is cut; and
computer means connected to said laser means and said ultrasound means for generating an image of the tissue to be cut derived from the scannings by said ultrasound means and for controlling the operation of said laser means based on the scanned position of said resectoscope during cutting of said tissue.

5,061,267
BALLOON CATHETER FOR RECHANNELING STENOSES IN BODY PASSAGES, IN PARTICULAR OF CORONARY AND PERIPHERAL ARTERIAL VESSELS
Andreas Zeiher, Klarastrasse 55, D-7800 Freiburg, Fed. Rep. of Germany
PCT No. PCT/DE88/00769, § 371 Date Aug. 1, 1989, § 102(e) Date Aug. 1, 1989, PCT Pub. No. WO89/05609, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 19, 1988, Ser. No. 393,921
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1987, 3743578
Int. Cl.[5] A61N *5/04*
U.S. Cl. 606—40 2 Claims

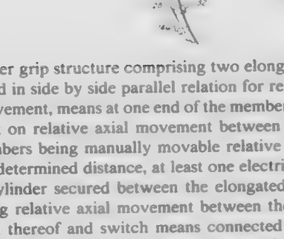




1. A balloon catheter for rechanneling stenoses in body passages, in particular of coronary and peripheral arterial vessels, said catheter comprising a balloon having an interior through which a guide hose to be guided by a guide wire extends, said balloon including an inflation tube opening into the interior of the balloon, wherein a microwave antenna is located, said antenna coupled to a coaxial cable, the balloon including means for absorbing and/or shielding microwave radiation, and further wherein the guide hose consists of a readily deformable material and hence can be clamped off upon inflation of the balloon.
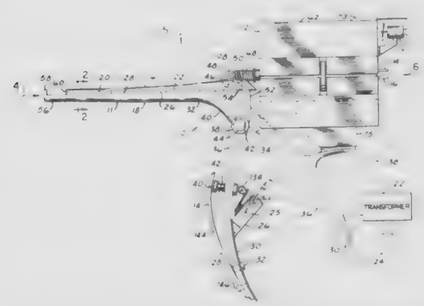
5,061,268
DISPOSABLE ELECTROSURGICAL PENCIL WITH IN-LINE FILTER AND METHOD
Richard P. Fleenor, Denver, Colo., assignor to Beacon Laboratories, Inc., Denver, Colo.
Filed Aug. 24, 1989, Ser. No. 398,146
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—45 13 Claims

1. An improved electrosurgical pencil system, comprising:
an electrosurgical pencil;
a gas delivery means selectively connectable at a first end to an external gas source and to said electrosurgical pencil on a second end, wherein a gas is deliverable to said electrosurgical pencil for emission from an emitting end thereof towards a surgical site for enhancing electrosurgery; and
an anti-bacterial filter positioned within the pencil system between said first end of said gas delivery means and said



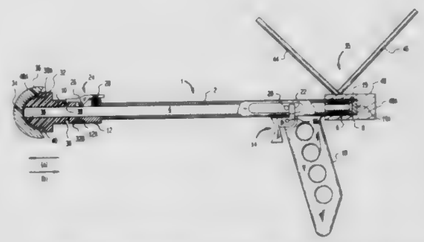
emitting end of said electrosurgical pencil, wherein substantially all gas deliverable through said pencil system to said surgical site is filtered to reduce the likelihood of transmission of bacteria through the pencil system to the surgical site.

5,061,269
SURGICAL RONGEUR POWER GRIP STRUCTURE AND METHOD
George H. Muller, Ann Arbor, Mich., assignor to Joseph J. Berke, Detroit, Mich.
Continuation of Ser. No. 306,857, Feb. 7, 1989, abandoned. This application Aug. 21, 1990, Ser. No. 571,031
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—83 30 Claims



1. Power grip structure comprising two elongated members positioned in side by side parallel relation for relative longitudinal movement, means at one end of the members for gripping an object on relative axial movement between the members, said members being manually movable relative to each other for a predetermined distance, at least one electrically actuated power cylinder secured between the elongated members for producing relative axial movement between the members on actuation thereof and switch means connected to the power cylinder for communicating electric energy for actuation of the power cylinder after movement through said predetermined distance wherein the manual movement through said predetermined distance closes said switch means, which in turn actuates said power cylinder.

5,061,270
SYSTEM FOR ORIENTING, INSERTING AND IMPACTING AN ACETABULAR CUP PROSTHESIS
Robert I. Aboczky, 323 E. Saddle River Rd., Upper Saddle River, N.J. 07458
Filed Mar. 18, 1991, Ser. No. 671,085
Int. Cl.[5] A61F *2/34*
U.S. Cl. 606—91 10 Claims



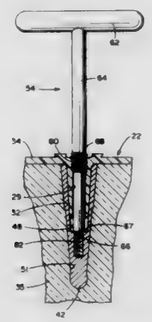
1. A system for engaging an acetabular cup prosthesis and for orienting, inserting and impacting the prosthesis for implanting said prosthesis in the acetabulum of a patient, comprising:
an adapter for removably engaging the prosthesis in snap fit relation and having an external slot extending circumferentially therearound;
an instrument arranged for removably supporting the adapter removably engaged with the prosthesis, and operative for locking the supported adapter thereon, the instrument including an instrument cylinder, a rod disposed in sliding relation with the instrument cylinder and biased by a spring so that one end of the rod extends beyond a corresponding one end of the cylinder, the adapter supported on the extending end of the rod in sliding fit relation, and means supported near the one end of the instrument cylinder and operative for engaging the adapter slot to lock the adapter supported on the extending end of the rod on said rod;
the instrument further including means for orienting the prosthesis removably engaged with the adapter, whereupon the prosthesis is inserted in the acetabulum of the patient, and a surface which is impacted for seating the oriented and inserted prosthesis whereupon said prosthesis is implanted in the acetabulum;
said orienting means including an orienting cylinder in removable engagement with the end of the instrument cylinder opposite the one end thereof and adjustably positioned on said opposite end, the orienting cylinder supporting first, second and third alignment bars, with said first and second alignment bars being in a common plane and extending away from each other with a predetermined angle therebetween, the third alignment bar aligned perpendicular to a plane in which the patient is supported, and one of the first and second alignment bars, depending in which one of the right and left sides of the patient the prosthesis is being implanted, being aligned perpendicular to a line which extends between the patient's right and left anterior/superior iliac spines perpendicular to the patient's pelvic line, whereupon the prosthesis is oriented for implantation;
the instrument being operative for disengaging the adapter from the implanted prosthesis and for unlocking the adapter from the instrument, whereupon said adapter is removed from said instrument; and
the impacted surface is a closed end surface of the orienting cylinder when said cylinder is in removable engagement with the opposite end of the instrument cylinder, and is a closed end surface of the opposite end of the instrument cylinder when the orienting cylinder in removable en-

gagement with the instrument cylinder is removed therefrom.

5,061,271
TOOL FOR SEPARATING COMPONENTS OF A MODULAR JOINT PROSTHESIS

Richard R. Van Zile, Warsaw, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Division of Ser. No. 316,039, Feb. 27, 1989. This application Aug. 16, 1990, Ser. No. 568,073
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **4 Claims**



1. In combination:

a modular joint prosthesis for implantation in a body comprising:

a component adapted to be affixed to one end of a long bone, said component including a support plate, said support plate having a lower surface adapted to engage and bear against and be substantially coextensive with a complementary resected surface of the long bone and an elongated male stem integral with and extending transversely away from said support plate, said male stem having a longitudinal axis and an outer surface which is uniformly tapered relative to the longitudinal axis and having a maximum outer diameter at a proximal end adjacent the lower surface and a minimum outer diameter at a distal end distant from said lower surface; and

a female stem adapted to be affixed within an intramedullary canal of a long bone, said female stem having a longitudinal axis and extending between a closed distal end and an open proximal end, a portion of said female stem having a bore extending from said open proximal end a predetermined distance distally thereof, said bore defining an inner surface which is uniformly tapered relative to said longitudinal axis and having a maximum inner diameter at said proximal end and a minimum inner diameter distant therefrom;

whereby said male stem and said female stem are configured to be locked together upon engagement of said inner surface of the female stem and said outer surface of the male stem enabling said male stem and said female stem to be received as a unit in the intramedullary canal of the long bone for fixation thereto to a depth at which said support shelf bears against the resected surface of the long bone; and

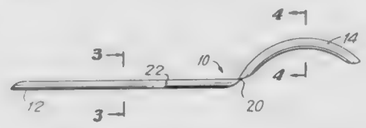
a tool for separating said male stem and said female stem when they become locked together upon mutual engagement of the inner surface of said female stem with the outer surface of said male stem, said tool comprising:

a handle and a shank fixed to said handle and extending therefrom to a tip end receivable in the longitudinal bore of said male stem, said shank being threaded intermediate said handle and said tip end, said shank being threadedly engaged with said male stem for disengaging said male stem from said female stem upon rotation of said tool to advance said tip end of said shank into engagement with said said terminal surface of said female stem and, with continued rotation of said tool, to cause said male stem to be disengaged from said female stem.

5,061,272
TONGUE CLEANER

Sandra C. Reese, 400 Central Park West, New York, N.Y. 10025

Continuation of Ser. No. 220,026, Jul. 15, 1988, abandoned. This application Jun. 11, 1990, Ser. No. 536,948
Int. Cl.[5] A61B *17/24*
U.S. Cl. 606—161 **2 Claims**



1. A tongue cleaner comprising an integrally formed substantially rigid member defining a handle and a scraping portion, said handle and scraping portion being of substantially equal width, said scraping portion being curved in general conformity with a human tongue and having an arc-shaped cross section defining a first concave channel on one side of said tongue cleaner, said handle also having a generally arc-shaped cross section defining a convex surface on said one side of said tongue cleaner and a second concave channel on the other side thereof, whereby said second channel and said convex surface serve as gripping surfaces for the thumb and other fingers, respectively, for both right and left handed users.

5,061,273
ANGIOPLASTY APPARATUS FACILITATING RAPID EXCHANGES

Paul G. Yock, 1216 San Mateo Dr., Menlo Park, Calif. 94025

Continuation of Ser. No. 361,676, Jun. 1, 1989, abandoned, which is a continuation of Ser. No. 117,357, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 852,197, Apr. 15, 1986, abandoned. This application Jul. 5, 1990, Ser. No. 548,200
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—194 **6 Claims**



5. A dilatation catheter for performing coronary angioplasty procedures which facilitates the rapid exchange thereof with another catheter without the need for exchange wires or guidewire extensions, the catheter comprising:

a) an elongated catheter shaft having proximal and distal ends and a first inner lumen extending therein;

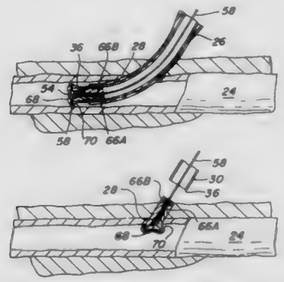
b) an inflatable balloon disposed at the distal end of the catheter shaft having an interior in fluid communication with the first inner lumen extending within the catheter shaft; and

c) a second inner lumen which is defined at least in part by a tubular member extending through the interior of the balloon, which is adapted to slidably receive a guidewire therein, which has a first port in the distal end thereof and which has a second port spaced at least about 10 cm proximally from the distal port and spaced distally a substantial distance from the proximal end of the catheter shaft.

5,061,274
PLUG DEVICE FOR SEALING OPENINGS AND METHOD OF USE

Kenneth Kensey, Chester Springs, Pa., assignor to Kensey Nash Corporation, Exton, Pa.

Filed Dec. 4, 1989, Ser. No. 445,315
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—213 **34 Claims**



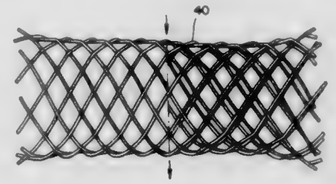
1. An instrument for sealing a small incision or puncture in tissue separating one portion of the body of a living being from another portion thereof to prevent the flow of bodily fluid from said one portion to said other portion through said incision or puncture, said instrument comprising plug means and carrier means, said carrier means comprising tubular means having a proximally located portion and a distally located portion, said distally located portion having an open free end arranged to be introduced through said incision or puncture, said proximately located portion being arranged to be located out of the body of said being when said distally located portion is extended through said incision or puncture, said plug means comprising strip means and thin filament means, said strip means being formed of a resorbable material and being folded in two to form an apex portion and a pair of wing portions extending therefrom, said filament means being secured to said apex portion, said plug means being arranged for location within said tubular means so that said apex portion is disposed adjacent said free end and with said wing portions and a portion of said filament means extending toward said proximal portion, said plug means being arranged to be expelled partially from said free end of said tubular means so that said apex portion extends through said incision or puncture, said portion of said filament means being arranged to be drawn in the proximal direction to cause said apex portion of said strip means to engage the free end of said tubular means to form an expanded head having a tissue engagement surface, said plug means then being arranged to be positioned so that said tissue engagement surface intimately engages the tissue contiguous with said incision or puncture.

5,061,275
SELF-EXPANDING PROSTHESIS

Hans I. Wallstén, Denens, and Christian Imbert, Mézières, both of Switzerland, assignors to Medinvent S.A., Lausanne, Switzerland

Continuation of Ser. No. 33,686, Apr. 3, 1987, abandoned. This application Dec. 29, 1989, Ser. No. 456,611
Claims priority, application Sweden, Apr. 21, 1986, 8601827
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 **30 Claims**

1. A resilient, elastic self-expanding prosthesis comprising a flexible tubular body defining a diameter and terminating at opposite ends, the diametr of which is variable under axial movement of ends of the body relative to each other, said body comprising of several individual resiliently flexible thread elements with spring properties each of which extends in helix configuration relative to a center line of the body as a common axis, a plurality of said thread elements having a common direction of winding but being axially displaced relative to each other and crossing a further plurality of said thread elements also axially displaced relative to each other but having a common opposite direction of winding to form a braided structure, the crossing of the elements occurring at an area of contact between the elements, wherein tension of the thread elements as they form the structural elements of the tubular

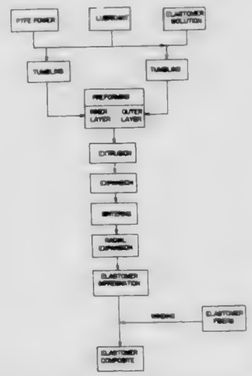


body, at least at end sections thereof, is such that the diameter of the individual unloaded helix-shaped thread element is not more then about 60% greater than the diameter of said body in an unloaded state, whereby the body at the ends thereof in an unloaded condition is conically widened up to a diameter about 20% greater than the diameter of a main portion of the body.

5,061,276
MULTI-LAYERED POLY(TETRAFLUOROETHYLENE)/ELASTOMER MATERIALS USEFUL FOR IN VIVO IMPLANTATION

Roger Tu, Lake Forrest, and Edwin Wang, Irvine, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

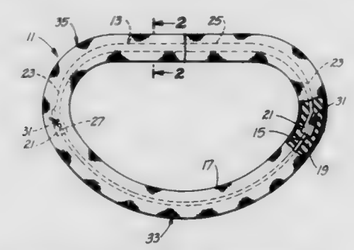
Continuation-in-part of Ser. No. 43,326, Apr. 28, 1987, Pat. No. 4,816,339. This application Dec. 19, 1988, Ser. No. 286,440
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 **6 Claims**



1. A vascular graft comprising a porous polytetrafluoroethylene tubing and elastic fibers wrapped about the external surface of said tubing, with said fibers being wrapped about said surface at varying angles and under varying degrees of applied tension to promote the retraction of said tubing from the original size of said polytetrafluoroethylene tubing without said wrapping of fibers, and wherein said elastic fibers are wrapped under higher degrees of tension at locations adjacent to said tubing opposite ends.

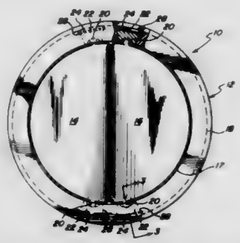
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5,061,277
FLEXIBLE CARDIAC VALVULAR SUPPORT PROSTHESIS
Alain Carpentier, Paris, France, and Ernest Lane, Huntington Beach, Calif., assignors to Baxter International Inc., Deerfield, Ill.
Continuation of Ser. No. 893,679, Aug. 6, 1986, abandoned. This application Sep. 2, 1988, Ser. No. 243,226
Int. Cl.[5] A61F 2/24
U.S. Cl. 623—2 18 Claims



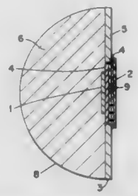
15. A support for a heart valve comprising:
an elongated frame member forming a portion of a ring and having opposite end portions;
a flexible cord coupled to the opposite end portions of the frame member and extending continuously between said end portions to form a structure which circumscribes a region, said support being implantable to support a human heart valve annulus; and
a soft, compressible, resilient material extending along the cord and shaping the cord between the end portions of the frame member.

5,061,278
ARTIFICIAL HEART VALVE
Demetrio Bicer, 4 Oakdale St., Irvine, Calif. 92714
Filed Jul. 23, 1990, Ser. No. 557,159
Int. Cl.[5] A61F 2/24
U.S. Cl. 623—2 22 Claims



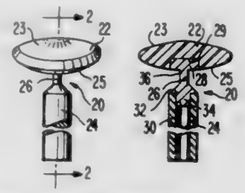
16. An improved bearing system for use with a heart valve prosthesis of the type having a support member that includes an outside wall and an inside annular wall through which blood may flow, and having at least one valving member, the improvement comprising:
first and second apertures extending between the outside wall and the inside annular wall of said support member;
first and second bearing inserts located respectively within said first and second apertures; and
a pair of rotational junctions made integral with the bearing inserts and valving member enabling said valving member rotation, said rotational junctions comprising an axle member having a rotation contact surface and a depression having a rotation support surface, said rotation contact surface and said rotation support surface defining a point contact of rotation therebetween.

5,061,279
PHOTOCHROMIC DILATING PUPIL FOR OCULAR PROSTHETICS
Timothy P. Friel, 172 Westway Rd., #101, Greenbelt, Md. 20770
Filed Nov. 15, 1990, Ser. No. 613,145
Int. Cl.[5] A61F 2/14
U.S. Cl. 623—4 3 Claims



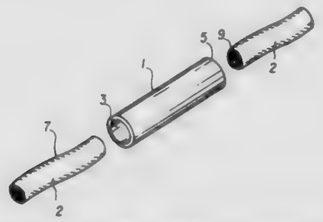
1. An ocular prosthesis comprising a body portion having an anterior surface and a posterior surface, including an anterior segment received on said anterior surface, said anterior segment comprising an iris coloration layer, a maximum dilation pupil received within an opening in said iris coloration layer, photochromic layer means overlying said maximum dilation pupil for selectively becoming opaque or transparent in response to light wavelengths, thereby determining whether or not the maximum dilation pupil can be seen, a minimum dilation pupil overlying said photochromic layer means, and a clear anterior chamber overlying the iris coloration layer, the maximum dilation pupil, the photochromic layer means and the minimum dilation pupil.

5,061,280
OSSICULAR PROSTHESIS
Anthony D. Prescott, Arlington, Tenn., assignor to Microtek Medical, Inc., Columbus, Miss.
Continuation-in-part of Ser. No. 332,742, Apr. 4, 1989, abandoned. This application Oct. 6, 1989, Ser. No. 418,211
Int. Cl.[5] A61F 2/18
U.S. Cl. 623—10 70 Claims



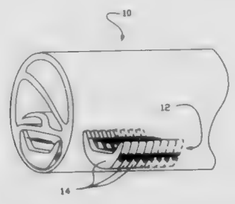
1. An ossicular prosthesis comprising:
a head portion formed of a rigid biocompatible material susceptible to human tissue adhesion;
a shaft portion formed of a biocompatible material; and
a bendable intermediate portion separate from said head portion and said shaft portion and having a first end connected to said head portion, a second end connected to said shaft portion, and a bendable shank coupling said first end and said second end, each of said intermediate portion first end and said intermediate portion second end having a cross-section larger than the cross-section of said shank, and said intermediate portion second end overlying substantially the complete proximal end of said shaft portion, said bendable shank permitting adjustment of the angular orientation of said shaft portion with respect to said head portion, allowing said prosthesis to be implanted in a human ear with said head portion directly contacting the tympanic membrane or the malleus of the ear and the shaft portion contacting the stapes or footplate of the ear, so that human tissue from the typanic membrane or malleus can adhere directly to said head portion, securing said prosthesis in the ear.

5,061,281
BIORESORBABLE POLYMERS AND IMPLANTATION DEVICES THEREOF
Frank Mares, Whippany; Reginald T. Tang, Warren, both of N.J.; Tin-Ho Chiu, Reading, Mass.; Theodore Largman, Morristown, and Emery Nyilas, deceased, late of Austin, Tex. by Ilona Nyilas, executor , assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 809,978, Dec. 17, 1985. This application Dec. 17, 1986, Ser. No. 942,907
Int. Cl.[5] A61F 2/02, 2/04
U.S. Cl. 623—11 6 Claims



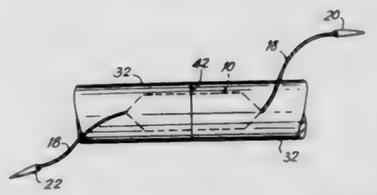
1. In an improved device suitable for implantation into a living organism said device capable of encouraging cellular growth and regeneration of function, the improvement which comprises all or a portion of said device comprised of a mixture of one or more bioresorbable polymers selected from the group consisting of a mixture of two or more bioresorbable homopolymers derived from the polymerization of alpha-hydroxy carboxylic acids, and a mixture of one or more bioresorbable terpolymers derived from the condensation of a dicarboxylic acid, an alpha hydroxy carboxylic acid and an aliphatic diol and one or more homopolymers derived from the polymerization of alpha-hydroxy carboxylic acids, said homopolymers and said terpolymers having an average molecular weight equal to or greater than about 150,000 as measured by gel permeation chromatography and wherein at least one of said homopolymers and said terpolymers has an average molecular weight of from about 234,000 to about 320,000 as measured by gel permeation chromatography.

5,061,282
COCHLEAR IMPLANT AUDITORY PROSTHESIS
Jared J. Jacobs, 14251 Paul Ave., Saratoga, Calif. 95070
Filed Oct. 10, 1989, Ser. No. 418,671
Int. Cl.[5] A61F 2/18; A61N 1/00; A61B 5/04; H04R 25/00
U.S. Cl. 623—10 10 Claims



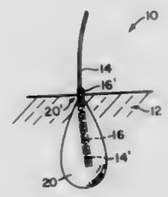
1. A cochlear implant auditory prosthesis comprising a plurality of transducer elements, each transducer element comprising:
detection means for detecting vibrations of a basilar membrane of a cochlea at a corresponding location, said detection means outputting a first signal in response to said vibrations; and
signal generating means for outputting a stimulus signal to a corresponding neuron connected to an eighth cranial nerve in response to said first signal;
wherein said plurality of transducer elements are disposed along said basilar membrane at said corresponding locations.

5,061,283
METHOD FOR TENDON AND LIGAMENT REPAIR
Thomas A. Silvestrini, East Lyme, Conn., assignor to Pfizer Hospital Products Group, Inc., New York, N.Y.
Division of Ser. No. 378,437, Jul. 10, 1989, Pat. No. 4,979,956. This application Nov. 15, 1990, Ser. No. 614,776
Int. Cl.[5] A61F 2/08
U.S. Cl. 623—13 3 Claims



1. A method for repairing severed connective tissue of a tendon or a ligament having an outer surface comprising the steps of
(a) providing a device comprising an elongated body having a flat band structure with said body at first and second opposed ends adapted to be connected to at least one needle bearing suture;
(b) creating a slot in each opposing end of said severed tissue with said slot being inwardly spaced from said outer surface such that the integrity of the outer surface is not distrupted during the creation of the slot;
(c) inserting a first end of said device into one of said slots;
(d) inserting a second end of said device into the other of said slots;
(e) approximating opposing ends of said severed tissue, bringing said tissue ends into abutting relationship closing said device within said tissue ends; and
(f) suturing said tissue and said device together, passing one or more sutures through said tissue and said device along at least a portion of the length of said device, to anastomose said tissue along said abutting ends.

5,061,284
SILICONE FOLLICLED HAIR IMPLANT
Aldo A. Laghi, 13 Meridian La., Ballston Lake, N.Y. 12019
Filed Apr. 10, 1990, Ser. No. 507,356
Int. Cl.[5] A61F 2/10
U.S. Cl. 623—15 10 Claims



1. A method for preparing human hair plugs for implantation into human derma, said method comprising:
cleaning ends of human hair strands that are to be implanted;

disposing on each said hair end a silicone primer that will promote adhesion thereto of a silicone coating;

coating a hair strand end that has been silicone primer coated as in the second step with a silicone polymer to a predetermined first distance extending beyond said strand end; and

providing on said hair strand end a silicone elastomer follicle to encapsulate one or more hair ends that have been treated in accordance with the first three steps and further, by said follicle providing step, acquiring a shape of a human follicle and allowing said coating to extend a predetermined distance beyond said follicle.

5,061,285

ENOSSAL IMPLANT AND PROCESS FOR INSERTING ENOSSAL IMPLANT INTO THE JAWBONE

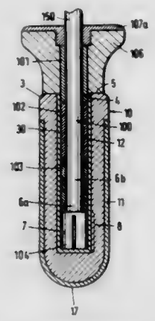
Werner-Lutz Koch, Liebenau/Hanover, Fed. Rep. of Germany, assignor to Implanto-Lock Gesellschaft mit beschränkter Haftung für Implantatforschung-und Entwicklung

Continuation of Ser. No. 95,844, Sep. 10, 1989, abandoned, which is a division of Ser. No. 795,650, Nov. 6, 1985, Pat. No. 4,731,085. This application May 8, 1990, Ser. No. 520,120

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 3440952; Apr. 26, 1985, 3515154; Sep. 10, 1985, 3532125; European Pat. Off., Nov. 4, 1985, 85113975.8

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—16 **44 Claims**



1. Enossal implant for the securing of a fixed or removable dental prosthesis, comprising two interconnectable parts, whereof one part is constructed as a primary cylinder (**10**) with a bottom and a central longitudinal bore (**13**), wherein the primary cylinder can be introduced into the jawbone and anchored therein and the other part is constructed as a secondary cylinder (**100**) with an implant post (**150**) which can be introduced into the longitudinal bore of the primary cylinder and is held therein, a tubular intermediate member mounted between the primary cylinder and the secondary cylinder, said implant post being constructed at its free upper end for the connection of the dental prosthesis, the implant post (**150**) of the secondary cylinder (**100**) being a lever member in the longitudinal bore (**13**) of the primary cylinder and being surrounded by a force line system for diverting the horizontal, vertical, torsional or any combination of the three forces occurring in the vicinity of the dental prosthesis or mouth into the lower region of the secondary cylinder (**100**) and from there into the bottom of the primary cylinder (**10**), said system comprising an elastic modular member such that the lever fulcrum of the lever member is located in the lower third of the primary cylinder, the elastic modular member being constructed as a guide tube, the guide tube mounted in the bottom of the cylinder, a modular member-free section being defined adjacent the guide tube when the secondary cylinder (**100**) is inserted, the modular member-free section forming an air gap, the guide tube and the modular member-free section together having a length which corresponds to the length of the central longitudinal bore (**13**) of the primary cylinder (**10**), an upper modular tube (220) being mounted adjacent the modular member-free section, an implant attachment surrounding the upper modular tube.

5,061,286

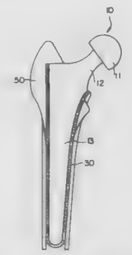
OSTEOPROSTHETIC IMPLANT

John W. Lyle, Belmar, N.J., assignor to Osteotech, Inc., Shrewsbury, N.J.

Filed Aug. 18, 1989, Ser. No. 395,783

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—16 **19 Claims**



1. An osteoprosthetic device possessing an osteogenic coating composition adhering to at least a portion of a surface thereof,

wherein said coating composition consists essentially of demineralized bone powder substantially uniformly distributed within a biocompatible, non-bioerodible binding agent whereby as the demineralized bone powder undergoes gradual resorption, new bone ingrowth is induced and replaces the resorbed demineralized bone powder to provide a firm connection between the prosthesis and the pre-existing bone tissue.

5,061,287

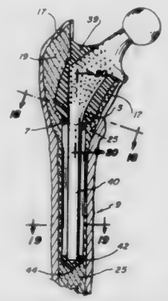
PROXIMAL CEMENT SEALING PLUG FOR HIP PROSTHESIS

Frederic C. Feiler, 10 Mesa La., Colorado Springs, Colo. 80906

Division of Ser. No. 310,305, Feb. 13, 1987, Pat. No. 4,997,448. This application Jan. 2, 1991, Ser. No. 623,192

Int. Cl.[5] A61F *2/28, 2/36*

U.S. Cl. 623—16 **2 Claims**



1. The process of implanting a femoral prosthesis stem including:

resecting the femoral neck and forming an obtusely related sagittal and transverse planar surfaces in the proximal femur;

reaming a bore through the said transverse planar surface lengthwise along the medullary canal;

broaching the bore, including the broaching of an enlarged

cavity contiguous with the said transverse plane and defining, as the cavity's distal boundary, peripheral seat means in the cancellous bone in the proximal region of the medullary canal;

inserting into the said cavity a sealing plug having a closed bottom wall to be seated on the peripheral seat of the cancellous bone;

injecting viscous cement into the cavity above the sealing plug; and

implanting a femoral stem into the broached- medullary canal by perforating the bottom wall of the sealing plug with the distal end of the said stem.

5,061,288

DEVICE AT ARTIFICIAL JOINTS

Anders Berggren, Linkoping, and Hakan Rohman, Mantorp, both of Sweden, assignors to Unilink Inc., Centreville, Va.

PCT No. PCT/SE89/00025, § 371 Date Aug. 21, 1990, § 102(e) Date Aug. 21, 1990, PCT Pub. No. WO89/06946, PCT Pub. Date Aug. 10, 1989

PCT Filed Jan. 27, 1989, Ser. No. 548,958

Claims priority, application Sweden, Jan. 28, 1988, 8800274.6

Int. Cl.[5] A61F *2/30*

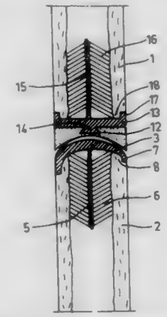
U.S. Cl. 623—18 **21 Claims**

1. An artificial joint for connecting an upper bone having a cavity therein and a lower bone having a cavity therein, said artifical joint comprising:

an upper concave joint part having a concave portion and an opposite side;

a lower ball joint part having a rounded portion and an opposite side oriented such that the rounded portion of the lower ball joint part fits within the concave portion of the upper concave joint part;

a pair of support structures, one attached to the opposite side of the upper concave joint part and one attached to the opposite side of the lower ball joint part, each of the support structures having an end remote from their respective joint parts adapted for insertion and retention into a cavity of one of said upper and lower bones and holding means on each support structure for holding such support structure in a respective bone cavity, said holding



means comprising a plurality of bristles, fibers, or loops extending from a respective structure only radially outwardly and toward a respective joint part, wherein the length of at least a portion of the bristles, fibers, or loops is such that an outer diameter of such bristles, fibers, or loops as attached to the respective support structures in an untensioned state is adapted to exceed the diameter of the cavity in which it is to be inserted.

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5,061,289

OXIDATION HAIR DYE COMPOSITION CONTAININNG DIAMINOPYRAZOL DERIVATIVES AND NEW DIAMINOPYRAZOL DERIVATIVES

Thomas Clausen, Alsbach; Ute Kern, Darmstadt-Arheilgen, and Hans Neunhoeffer, Mühltal, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP89/01449, § 371 Date Aug. 2, 1990, § 102(e) Date Aug. 2, 1990, PCT Pub. No. WO90/07504, PCT Pub. Date Jul. 12, 1990

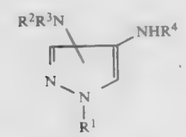
PCT Filed Nov. 30, 1989, Ser. No. 573,173

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843892

Int. Cl.[5] A61K *7/13;* C07C *211/00*

U.S. Cl. 8—405 16 Claims

1. Composition for oxidative dyeing of hair based on a combination of developer substances and coupler substances, containing as a developer substance, a member selected from the group consisting of diaminopyrazoles of the general formula (I),



(I)

wherein R^1, R^2 and R^4 are each independently selected from the group consisting of hydrogen, alkyl with 1 to 4 carbon atoms, hydroxyalkyl with 2 to 4 carbon atoms, benzyl and phenyl, and R^3 is selected from the group consisting of hydrogen, alkyl with 1 to 4 carbon atoms and hydroxyalkyl with 2 to 4 carbon atoms, with the proviso that the R^2R^3N and NHR^4 groups are in a 3 and 4 or 4 and 5 positions of said diaminopyrazol, and water-soluble salts thereof.

5,061,290

ROPE DYEING PROCESS USING HALOGEN INDIGO DERIVATIVE AND DYED ARTICLE THUS OBTAINED

Hitoshi Koshida; Tetsuo Sakagawa, both of Nishinomiya; Takayuki Nakayama, Amagasaki, and Hiroshi Suwa, Kobe, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

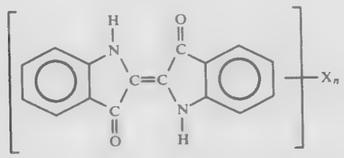
Filed Jul. 9, 1990, Ser. No. 549,303

Claims priority, application Japan, Jul. 10, 1989, 1-175499

Int. Cl.[5] C09B *7/04;* D06P *1/22*

U.S. Cl. 8—653 12 Claims

1. A process for rope-dyeing cotton yarn which comprising repeatedly immersing a rope of the yarns in an aqueous dye bath containing dissolved therein an air oxidizable reduced soluble form of an indigo derivative of the formula



wherein X is a bromine or chlorine atom, and n is an integer from 1 to 6,

squeezing dye bath liquid therefrom and air oxidizing the reduced form of indigo derivative in squeezed damp rope; and thereafter further oxidizing the reduced form of the indigo derivative in the squeezed and air oxidized rope in an oxidizing bath containing a chemical oxidant.

5,061,291

ORI-INHIBITED MOTOR FUEL COMPOSITION AND STORAGE STABLE CONCENTRATE

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

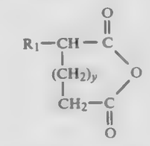
Continuation-in-part of Ser. No. 152,227, Feb. 4, 1988, abandoned, and a continuation-in-part of Ser. No. 211,937, Jun. 27, 1988, abandoned. This application Dec. 28, 1989, Ser. No. 440,636

Int. Cl.[5] C10L *1/22;* C07D *207/40*

U.S. Cl. 44—347 36 Claims

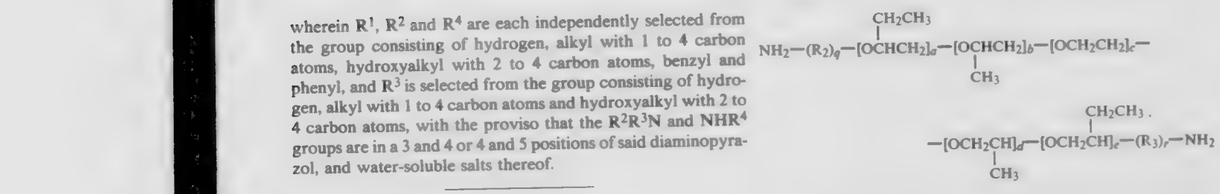
1. A bisimide composition obtained by reacting, at a temperature of 30 C.–200 C.:

(a) 1.5–2.5 moles of a hydrocarbyl-substituted dibasic acid anhydride of the formula



where R_1 is a hydrocarbyl radical having a molecular weight range of 500–10,000 and y has a value of 0–3; and

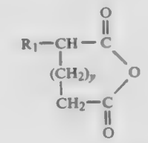
(b) 0.5–1.5 moles of a polyoxyalkylene diamine of the formula



where R_2 and R_3 are C_1–C_{12} alkylene groups, q and r are integers having a value of 0 or 1, c has a value from 2–150, b+d has a value from 0–150, and a+e has a value from 0–100 with the proviso that there be a positive value for at least one of b+d and a+e.

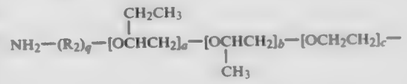
10. A motor fuel composition comprising a mixture of hydrocarbons boiling in the range from about 90 F.–450 F. and additionally comprising from 0.0005–5.0 weight percent of the bisimide reaction product obtained by reacting, at a temperature of 30°–200° C.:

(a) 1.5–2.5 moles of a hydrocarbyl-substituted dibasic acid anhydride of the formula

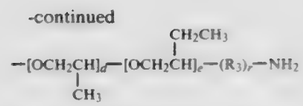


where R_1 is a hydrocarbyl radical having a molecular weight range of 500–10,000 and y has a value of 0–3; and

(b) 0.5–1.5 moles of a polyoxyalkylene diamine of the formula



-continued



where R_2 and R_3 are C_1–C_{12} alkylene groups, q and r are integers having a value of 0 or 1, c has a value from 2–150, b+d has a value from 0–150, and a+e has a value from 0–100 with the proviso that there be a positive value for at least one of b+d and a+e.

5,061,292

DIAMOND ABRASIVE AND METHOD FOR PRODUCING THE SAME

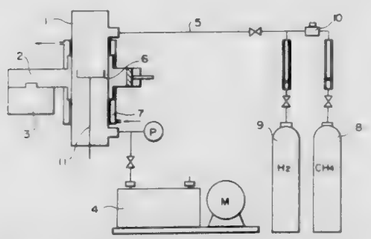
Chia-Fu Chen, Hatano; Ensei Ko, 835-2, Nishi Koiso, Oiso-machi, Naka-gun, Kanagawa-ken; Hiroshi Ishizuka, Tokyo, and Satoru Hosomi, Hiratsuka, all of Japan, assignors to The Ishizuka Research Institute, Ltd., Hiratsuka and Ensei Ko, Oiso, both of, Japan

Filed Jul. 13, 1989, Ser. No. 379,219

Claims priority, application Japan, Jul. 29, 1988, 63-190094

Int. Cl.[5] B24D *3/00*

U.S. Cl. 51—293 **11 Claims**



1. Abrasive grits comprising a mass of idiomorphic diamond crystals which each have an irregular shaped core of diamond formed under a pressure at which diamond is the thermodynamicaly favored phase of carbon, and a growth layer of diamond-like carbon, which has at least in part a diamond structure, formed over said core by chemical vapor deposition.

5,061,293

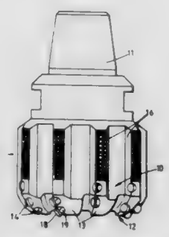
CUTTING ELEMENTS FOR ROTARY DRILL BITS

John D. Barr, 2 Charlton Park Gate, Cheltenham, Gloucestershire, England, and Thomas A. Newton, Jr., 8020 Braesmain #2004, Houston, Tex. 77025

Division of Ser. No. 333,120, Apr. 4, 1989. This application May 14, 1990, Ser. No. 523,322

Int. Cl.[5] B24D *3/00*

U.S. Cl. 51—293 **7 Claims**



1. A method of manufacturing preform cutting elements comprising the steps of forming, in a high pressure, high temperature press, an intermediate structure comprising superhard material bonded between two outer layers of less hard material, the outer layers providing opposed outer faces respectively of the intermediate structure, and then cutting the intermediate structure to provide at least two pieces, each of said two pieces including part of the superhard material and at least a major part of a respective one of the two outer layers.

5,061,294

ABRASIVE ARTICLE WITH CONDUCTIVE, DOPED, CONJUGATED, POLYMER COAT AND METHOD OF MAKING SAME

Walter L. Harmer, Arden Hills; Leif Christensen, St. Paul; Gary J. Drtina, Woodbury, and Harvey J. Helmin, Golden Valley, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 352,734, May 15, 1989, abandoned. This application Sep. 24, 1990, Ser. No. 587,606

Int. Cl.[5] E02D *27/00;* **H01B** *1/06*

U.S. Cl. 51—295 **13 Claims**

1. An improved abrasive article comprising:

(a) a support member having a front surface and a back surface;

(b) abrasive granules;

(c) a bond system which serves to secure the abrasive granules to the front surface of the support member in an abrasive coating having an abrasive surface;

the improvement comprising a conductive, doped, conjugated polymer layer over at least one of said abrasive surface, said front surface or said back surface, said polymer being contained in said layer in an amount sufficient to reduce static electrical charge resulting abrading operations, provided if the polymer of said conductive, doped, conjugated, polymer layer is acidic the support member surface upon which it may be applied is selected so that it will not be degraded by the presence of acid.

5,061,295

GRINDING WHEEL ABRASIVE COMPOSITION

Gordon E. Hickory, Rutland, Mass., and Michael J. White, Cumberland, R.I., assignors to Norton Company, Worcester, Mass.

Filed Oct. 22, 1990, Ser. No. 601,632

Int. Cl.[5] C09K *3/14*

U.S. Cl. 51—298 **10 Claims**

1. An abrasive product comprising an abrasive material, active fillers, and an organic polymer for bonding the abrasive and the active fillers together to form the abrasive product, the active fillers comprising a combination of tin, FeS_2, and K_2SO_4 wherein the volume ratio of tin:FeS_2:K_2SO_4 is from about 10:45:45 to about 80:10:10 and the active fillers are present in an amount of from about 5 to 40% by volume of the abrasive product.

5,061,296

AIR PURIFICATION SYSTEM

William T. Sengpiel, Oak Brook, Ill., and Philip J. Doucet, Andover, Mass., assignors to CRS Industries, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 278,530, Dec. 1, 1988, abandoned. This application Mar. 20, 1990, Ser. No. 495,955

Int. Cl.[5] B03C *3/00*

U.S. Cl. 55—4 **20 Claims**

17. A method of air purification comprising:

flowing in a passage the air to be purified;

filtering the flowed air;

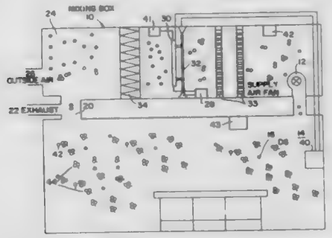
generating a high D.C. voltage in the kilovolt range and an A.C. voltage having a high frequency in the kilohertz range;

applying the generated D.C. voltage and A.C. voltage to respective first and second electrodes for creating a complex electrical field in the path of the flowed air;

detecting at the first and second electrodes the corresponding high frequency and high voltage of the complex electrical field;

reducing the detected high D.C. voltage to a first output D.C. voltage signal in the approximate range of zero to two volts;

reducing the detected high frequency A.C. voltage to a



second D.C. voltage signal in the approximate range of 0 to 2 volts to correspond to the RMS of the A.C. voltage, and to a third D.C. voltage signal in the approximate range of zero to two volts to correspond to the frequency of the A.C. voltage; and

controlling the applied D.C. and A.C. voltages in accordance with the D.C. output voltage signals.

5,061,297

APPARATUS FOR AND METHOD OF PROVIDING IMPROVED GAS SEPARATION

Alan Krasberg, 100 Clement Dr., Burnt Chimney, Va. 24184

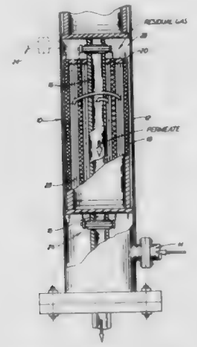
PCT No. PCT/GB88/00719, § 371 Date Apr. 2, 1990, § 102(e) Date Apr. 2, 1990, PCT Pub. No. WO89/01819, PCT Pub. Date Mar. 9, 1989

PCT Filed Sep. 1, 1988, Ser. No. 466,409

Claims priority, application United Kingdom, Sep. 1, 1987, 8720560; May 17, 1988, 8811660

Int. Cl.[5] B01D *53/22*

U.S. Cl. 55—16 **7 Claims**



1. A method of separating gases from a gas mixture using a gas membrane separator with a pressure difference across the membrane said method characterised by:

orienting the gas membrane separator substantially vertically and so that the mixture travels in a direction substantially under gravity;

determining the relative densities and permeabilities of the gases;

injecting the gas mixture at the upper or lower end of the membrane separator subject to the result of the determination as to whether the gas on the high pressure side will become more or less dense as a result of loss of more permeable component by diffusion, so that the densest gas in this stream will always be at the bottom, and

controlling the gas velocity through the separator on the inlet side of the membrane such that the gas velocity is sufficiently low to maintain a substantially laminar flow along the surface of the membrane and to substantially prevent entrainment of separated gases.

5,061,298

GAS SEPARATING MEMBRANES FORMED FROM BLENDS OF POLYIMIDE POLYMERS

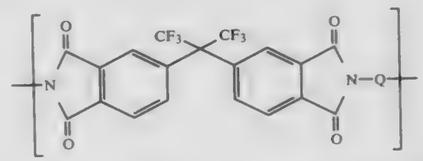
William F. Burgoyne, Jr; Michael Langsam, both of Allentown, and Richard H. Bott, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 13, 1990, Ser. No. 537,171

Int. Cl.[5] B01D *53/22, 71/64*

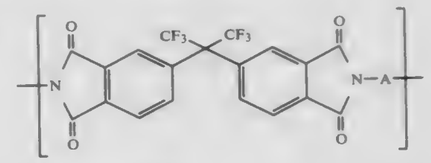
U.S. Cl. 55—16 **23 Claims**

1. A semi-permeable membrane formed of a composition of matter consisting essentially of a polyimide blend comprising from 10 to 25 weight percent of a first polyimide homopolymer represented by the formula:



wherein Q is an alkenylated phenylene or diphenylene containing an allyl or allylaryl group;

and from 75 to 90 weight percent of a second polyimide homopolymer represented by the formula:



wherein A is an aromatic moiety.

16. A process for separating a gas mixture containing two or more components, said process comprising: bringing said gas mixture into contact with one side of a permselective membrane which is formed from the polyimide blend of claim 1 whereby one component selectively permeates through the membrane at a different productivity rate than at least one other component.

5,061,299

AIR/GAS/MICRO PARTICAL POLLUTION CONTROL SYSTEM

Sidney D. Porter, III, 5407 SE. 62nd Ave., Portland, Oreg. 97206, and Leroy E. Denny, 647 NE. 178th Ave, Portland, Oreg. 97230

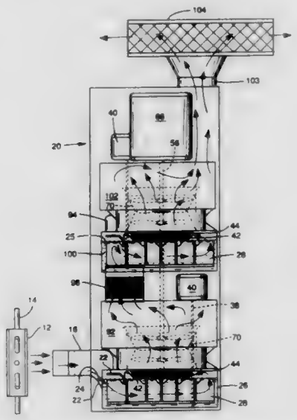
Filed Mar. 29, 1990, Ser. No. 501,242

Int. Cl.[5] B01D *47/00*

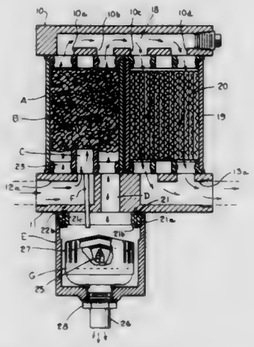
U.S. Cl. 55—86 **34 Claims**

1. The method of removing contaminants from a gas comprising drawing a stream of the contaminated gas under the surface of a liquid neutralizing solution in a reservoir, agitating the solution in said reservoir with an oscillating diffuser vane

unit, drawing said gas from said reservoir through a pair of counter rotating separator deflectors, and returning any solution expelled from said separator deflectors back to said reservoir.



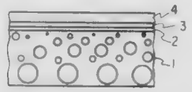
5,061,300
COALESCER FILTER AND METHOD
William J. Alexander, III, P.O. Box 848, Mauldin, S.C. 29662
Filed Jun. 20, 1990, Ser. No. 541,070
Int. Cl.[5] B01D *53/26*
U.S. Cl. 55—30 10 Claims



4. A coalescer air filter comprising:
an upright cylindrical housing containing coalescing material;
an air inlet through which an unfiltered air stream enters a central lower portion of said upright housing and is directed upwardly into said coalescing material;
a drainage opening positioned laterally of said air inlet receiving liquid coalesced in said housing;
a canister below said air inlet for collecting said liquid from said drainage opening; and
an air tube extending upwardly from said canister into said air stream;
whereby a pressure drop in said air tube caused by said air flow facilitates a flow of liquid into said canister by reducing air pressure in said canister.

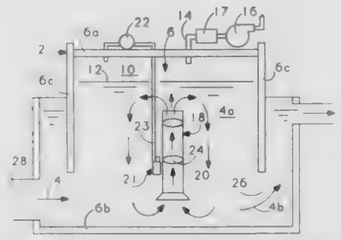
7. The method of removing liquids from an air stream comprising the steps of:
providing an upright cylindrical housing containing coalescing material;
forming an air stream in said cylindrical housing upwardly through said coalescing material;
causing said liquids contained within said air stream to coalesce and flow downwardly by gravity in a direction opposite to the upward flow of said gaseous stream; and
causing a pressure drop in a canister receiving coalesced liquids by positioning a tube having one end in said canister and the other end in said air stream to create a pressure drop in said canister.

5,061,301
PROCESS FOR THE PREPARATION OF SURFACE MODIFIED, MULTILAYERED, COMPOSITE MEMBRANES FOR OXYGEN ENRICHMENT AND THE GAS SEPARATION MEMBRANES
Un Y. Kim; Yong S. Kang; Jae J. Kim; Sung W. Song, and Hyun C. Park, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea
Filed Aug. 29, 1990, Ser. No. 574,129
Claims priority, application Rep. of Korea, Nov. 11, 1989, 89-16350
Int. Cl.[5] B01D *53/22, 71/68*
U.S. Cl. 55—158 8 Claims



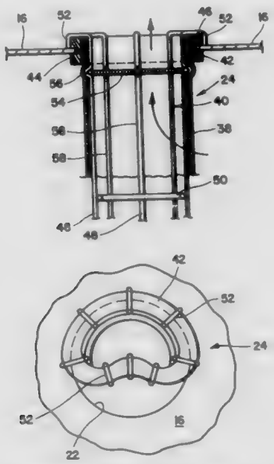
1. A surface modified, multilayered, composite membrane for the separation of air, comprising a porous polysulfone layer, a sulfonated polysulfone layer, a polysiloxane grafted layer and a silicon rubber layer.

5,061,302
DISSOLVED GAS STRIPPING APPARATUS
Joseph E. Zuback, Camarillo, Calif., assignor to Infilco Degremont Inc., Richmond, Va.
Filed Jul. 10, 1990, Ser. No. 550,496
Int. Cl.[5] B01D *19/00*
U.S. Cl. 55—190 5 Claims



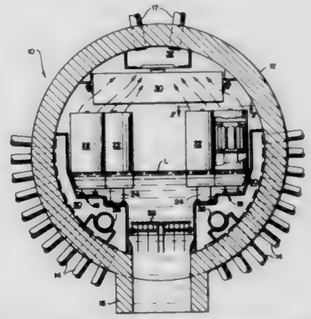
1. Apparatus for removal of dissolved gas from water which comprises:
an enclosed chamber defined by a top, a bottom and one or more sides,
an inlet into said chamber adjacent said bottom for flowing said water into said chamber,
an outlet in said chamber adjacent said bottom spaced apart from said inlet for removing water from said chamber,
a stackpipe within said chamber extending vertically between a lower plane adjacent said chamber bottom and an upper plane approaching, but beneath said chamber top,
water in said chamber filling it to a water level above said upper plane, but below said chamber top leaving a liquid-free space between said water level and said chamber top,
a conduit into said chamber adjacent said top communicating with said liquid free space,
a vacuum pump connected to said conduit to apply a vacuum to said liquid-free space with simultaneous removal of gas from said space, and
large bubble generator means within said chamber for generating within said stackpipe a series of large, spaced apart bubbles that create an upward flow of water through said stackpipe thereby causing water to circulate within said chamber.

5,061,303
SNAP-IN FILTER UNIT
Roger D. Williams, Dallas, and Stephen M. Sanders, Mt. Ulla, both of N.C., assignors to Pneumafil Corporation, Charlotte, N.C.
Filed Jul. 31, 1989, Ser. No. 387,711
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—341.1 9 Claims



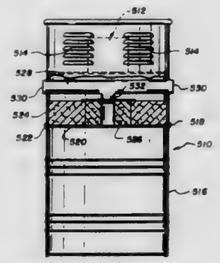
1. A self-contained filter unit for insertion in, and removal from, an opening of a mounting plate in a dust collector, said filter unit being characterized by a structure enabling insertion and removal of the filter unit to be accomplished from either above or below said mounting plate, said filter unit comprising:
a) a filter bag having a lengthwise extent and a generally tubular configuration, said filter bag having one end portion thereof formed with biasing means for urging said end portion toward an expanded disposition and with engaging means for engagement with said mounting plate when said end portion of said bag is at said expanded disposition thereof; and
b) cage means having a lengthwise extent and a generally tubular configuration so as to be selectively insertable in said filter bag, said cage means having a resilient upper end which is selectively collapsible inwardly between a normal expanded operating disposition and a collapsed installation and removal disposition, said upper end of said cage means including a first portion formed to normally extend over and engage the upper surface of said mounting plate to support said cage means thereat and normally prevent movement of said cage means downwardly through said opening in said mounting plate when said upper end is in its normal expanded operating disposition, and said upper end of said cage means further including a second portion formed with a plurality of longitudinally extending support means for engaging said one end of said bag to normally maintain it in its tubular configuration when said upper end is in its normal expanded operating disposition, said upper end of said cage means being sufficiently collapsible in an inward direction to permit said first cage portion and said one end of said filter bag to be moved inwardly to a sufficiently collapsed extent in said installation and removal disposition of said upper end of said cage means to occupy an area that is less than the area of said opening in said mounting plate to enable said filter bag and said cage means to be inserted in or removed from said opening from either above or below said mounting plate.

5,061,304
STEAM PROCESSING APPARATUS AND METHOD
Walter P. Gorzegno, Morristown; William D. Stevens, North Caldwell, and Albert J. Zipay, Clifton, all of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.
Continuation of Ser. No. 703,441, Feb. 19, 1985, abandoned, which is a continuation of Ser. No. 248,596, Mar. 27, 1981, abandoned. This application Dec. 16, 1986, Ser. No. 942,070
Int. Cl.[5] B01D *45/12*
U.S. Cl. 55—347 1 Claim



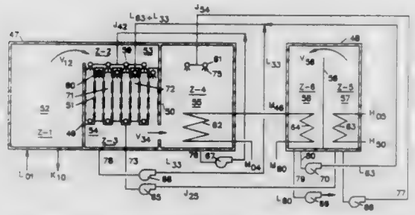
1. A steam processing apparatus comprising a cylindrical drum, baffle means disposed in said drum for dividing the interior of said drum into an inlet chamber and an outlet chamber, first inlet means for introducing a mixture of water and steam into said inlet chamber, second inlet means located in a spaced relationship to said first inlet means and operable independently of said first inlet means for introducing additional water into said inlet chamber independently of the introduction of the steam/water mixture, said additional water mixing with the steam/water mixture, a plurality of separators disposed in said outlet chamber and communicating with said inlet chamber for receiving the steam/water mixture and separating the water from the steam, first outlet means for receiving the separated water from said separators and discharging the separated water from said drum, and second outlet means for receiving the separated steam from said separators and discharging the steam from said drum, wherein said drum is formed by at least one wall and wherein said first inlet means comprises a plurality of pipes extending through said at least one wall of said drum and communicating with said inlet chamber and wherein said second inlet means extends horizontally in said inlet chamber between said baffle means and the corresponding portion of said at least one wall.

5,061,305
VACUUM FILTER UNIT
Israel Karmel, Box 488, Garibaldi Highlands, British Columbia, Canada V0N 1T0
Continuation-in-part of Ser. No. 394,005, Aug. 15, 1989, abandoned, and Ser. No. 108,424, Oct. 14, 1987, abandoned. This application Jan. 3, 1990, Ser. No. 460,393
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—429 **7 Claims**



1. A vacuum filter vessel comprising:
an upper compartment to receive a source of vacuum;
an inlet pipe for dust-laden air extending into the vessel;
an imperforate container forming a lower compartment of the vacuum filter vessel and removably attached to the remainder of the vacuum filter vessel;
a perforate annular filter adjacent the top of the imperforate container;
an imperforate annulus supporting the perforate annular filter member;
the inlet pipe extending into the top of the annular filter member;
whereby dust-laden air is drawn into the vacuum filter vessel through the inlet pipe to deposit dust into the imperforate container, air being drawn laterally and upwardly through the perforate annular filter so that suction is not applied through dust deposited in the imperforate container.

5,061,306
MULTIPLE EFFECT ABSORPTION REFRIGERATION PROCESSES AND APPARATUSES FOR USE THEREIN
Chen-Yen Cheng, 9605 LaPlaya St. NE., Albuqerque, N. Mex. 87111
Filed May 1, 1990, Ser. No. 518,077
Int. Cl.[5] B01D *9/04*
U.S. Cl. 62—532 **9 Claims**



1. A process of transforming a solvent vapor at a first pressure P_1 having a corresponding first pure solvent saturation temperature T_1 to a final liquid mass by transferring heat to an external cooling medium at temperature T_M which is considerably higher than the first vapor saturation temperature T_1 by subjecting the first vapor to one or more effects of pressure enhancement operations, the final effect having referred to as N-th effect and general effect being referred to as n-th effect, and a final step of transforming the vapor leaving the last effect of pressure enhancement operation into the final liquid mass by transferring heat to the external cooling medium, the vapor entering and leaving the n-th effect pressure enhancement operation being referred to as n-th vapor and (n+1)th vapor, and the process conducted in the n-th effect pressure enhancement comprises:
(a) a first step of absorbing the n-th vapor in a n-th pure solvent saturation temperature T_n, under n-th pressure P_n by a n-th absorbing solution containing the solvent and one or more low volatility solutes at a temperature $(T_a)_n$ that is substantially higher than the n-th saturation temperature T_n,
(b) a second step of transmitting heat released in the absorption operation in the n-th processing zone to a liquid containing the solvent in a (n+1)th processing zone to generate (n+1)th solvent vapor at a (n+1)th pressure, P_n+1, that is substantially higher than the n-th pressure P_n.

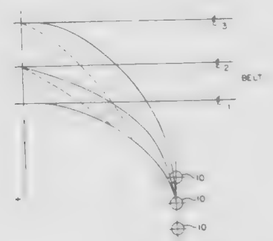
5,061,307
CRYSTALLIZED GLASS HAVING NATURAL-MARBLE-LIKE SURFACE PATTERNS AND METHOD OF PRODUCING THE SAME
Takahiro Matano, Kusatsu; Yoshio Hashibe, Shiga; Masayuki Ninomiya, Moriguchi, and Takehiro Shibuya, Otsu, all of Japan, assignors to Nippon Electric Glass Co., Ltd., Otsu, Japan
Filed Jan. 2, 1991, Ser. No. 636,873
Claims priority, application Japan, Jan. 5, 1990, 2-884
Int. Cl.[5] C03C *10/04*
U.S. Cl. 65—18.4 **2 Claims**

1. A method of producing a crystallized glass having natural-marble-like surface patterns comprising the steps of:
(a) preparing small glass masses which comprise 45 to 75 wt. % SiO_2, 1 to 25 wt. % of Al_2O_3, 1 to 20 wt. % of CaO, 0.5 to 17 wt. % of MgO, 0.1 to 18 wt. % of BaO, 0 to 18 wt. % of ZnO, 1 to 15 wt. % of Na_2O, 0 to 7 wt. % of K_2O, 0 to 5 wt. % of Li_2O, 0 to 10 wt. % of B_2O_3, 0 to 10 wt. % of P_2O_5, 0 to 1 wt. % of As_2O_3, and 0 to 1 wt. % of Sb_2O_3, substantially free from nucleating agent;
(b) accumulating said small glass masses in a molding box; and
(c) heat treating said small glass masses to thereby precipitate diopside type crystals from the surface of each of said glass masses into the interior thereof and fusion-bond said glass masses to one another.

5,061,308
METHOD OF MANUFACTURING READILY MACHINABLE HIGH STRENGTH GLASS CERAMICS
Tadaki Murakami, and Takasi Shirazawa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Feb. 6, 1991, Ser. No. 651,138
Claims priority, application Japan, Feb. 8, 1990, 2-30253
Int. Cl.[5] C03C *10/04, 10/16;* **C03B** *29/00*
U.S. Cl. 65—18.4 **3 Claims**

1. A method of manufacturing readily machinable high strength glass ceramics, comprising the steps of:
(A) preparing a powder mixture composed of 30 to 95% by weight of a glass powder (1) and 5 to 70% by weight of a glass powder (2), said glass powder (1) being obtained by melting, at a first heating temperature between 1400° and 1500° C., a glass that is produced by mixing materials in such a manner that the following composition is attained: 11.0 to 11.5% by weight of K_2O, 23.5 to 24.8% by weight of MgO, 55.0 to 56.8% by weight of SiO_2, 8.4 to 12.6% by weight of F_2, and 0.86 to 0.99% by weight of ZrO_2, and grinding the glass thus obtained, and said glass powder (2) being obtained by melting, at a second heating temperature between 1400° and 1500° C., a glass that is produced by mixing materials in such a manner that the following composition is attained: 5.0 to 6.0% by weight of K_2O, 9.5 to 11.0% by weight of MgO, 46.0 to 48.0% by weight of SiO_2, 21.0 to 23.0% by weight of CaO, 0.2 to 0.5% by weight of CaF_2, 5.0 to 6.5% by weight of MgF_2, and 8.0 to 8.5% by weight of P_2O_5;
(B) granulating said powder mixture thus prepared to obtain a granular material;
(C) filling a mold with said granular material and pressing it to with a pressing force of not less than 200 kg/cm^2, thereby producing a molding; and
(D) heating said molding to a temperature between 105020 and 1150° C., thereby obtaining a calcined product, which is a high strength glass ceramic.

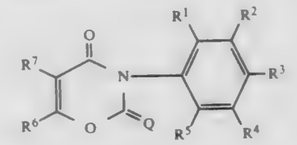
5,061,309
MULTIPLE ROW PUSHER SYSTEM FOR GLASS FORMING MACHINE
John P. Mungovan, Simsbury; Vaughan Abbott, East Hartland; Gary R. Voisine, South Windsor, and Timothy J. Liska, West Simsbury, all of Conn., assignors to Emhart Industries, Inc., Towson, Md.
Filed Feb. 6, 1991, Ser. No. 651,319
Int. Cl.[5] C03B *35/10;* **B65G** *25/00*
U.S. Cl. 65—260 **5 Claims**



1. A pusher system including a plurality of pusher mechanisms, each displacing at least one bottle from an at rest position on a corresponding plurality of dead plates on an I.S. machine through a predetermined angle onto a moving conveyor belt, each of said pusher mechanisms comprising
pusher fingers having at least one ware receiving receptacle,
means for axially advancing said pusher fingers from a retracted position to an advanced position to receive at least one bottle on an associated deadplate,
means for displacing said pusher fingers of at least one of said pusher mechanisms from said advanced position to a first deposit location along a first bottle line on the conveyor, and
means for displacing said pusher fingers of at least one of said pusher mechanisms from said advanced position to a second deposit location along a second bottle line on the conveyor paralleled to and spaced from said first bottle line,
so that bottles will be deposited on the conveyor along the first and second bottle lines.

5,061,310
HERBICIDAL N-PHENYL-SUBSTITUTED OXAZINEDIONES AND OXAZINONETHIONES
Pieter Ooms, Krefeld; Franz Kunisch, Odenthal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Oct. 16, 1989, Ser. No. 421,888
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836742
Int. Cl.[5] A01N *43/00;* **C07D** *265/12*
U.S. Cl. 71—88 **5 Claims**

1. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound of the formula



(IA)

in which
R^1 represents hydrogen or halogen,
R^2 represents hydrogen, nitro, cyano, halogen, or represents a radical from the group consisting of C_1–C_8-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio and C_1–C_6-alkylamino, which radical is optionally substituted by fluorine, chlorine, bromine, cyano, C_3–C_6-cycloalkyl which is optionally substituted by fluorine, chlorine, bromine, methyl and/or ethyl, by C_1–C_6-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, C_1–C_5-alkylthio, C_1–C_6-alkylsulphinyl, C_1–C_6-alkylsulphonyl, C_1–C_4-alkylthio-C_1–C_4-alkoxy, C_1–C_4-alkylsulphonyl-C_1–C_4-alkoxy, C_3–C_4-alkenyloxy, C_3–C_6-alkinyloxy, C_3–C_6-alkenylthio, C_3–C_6-alkinylthio, carboxyl, C_1–C_6-alkoxy-carbonyl, C_3–C_6-alkenyloxy-carbonyl, C_3–C_6-alkinyloxy-carbonyl, C_3–C_6-cycloalkyloxy-carbonyl, C_3–C_6-cycloalkenyloxy-carbonyl, C_3–C_6-cycloalkyl-C_1–C_4-alkoxy-carbonyl, C_3–C_6-cycloalkenyl-C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy-C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylthio-C_1–C_4-alkoxy-carbonyl, benzyloxy-C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkoxy-carbonyl-C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylamino-carbonyl-C_1–C_4-alkoxycarbonyl, di-(C_1–C_4-alkyl)-amino-carbonyl-C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkoxy-C_1–C_4-alkyl-aminocarbonyl, C_1–C_4-alkoxy-imino-C_1–C_4-alkyl, C_3–C_4-alkenyloxy-imino-C_1–C_4-alkyl, C_1–C_4-alkoxy-carbonyl-C_1–C_4-alkoxy-imino-C_1–C_4-alkyl, C_1–C_6-alkylthio-carbonyl, C_3–C_6-alkenylthio-carbonyl, C_3–C_6-alkinylthio-carbonyl, carbamoyl, C_1–C_6-alkylamino-carbonyl, C_3–C_6-alkenylamino-carbonyl, C_3–C_4-alkinylamino-carbonyl, di-(C_1–C_4-alkyl)-amino-carbonyl, di-(C_3–C_4-alkenyl)-amino-carbonyl and/or di-(C_3–C_4-alkinyl)-aminocarbonyl, or represents a radical from the group consisting of C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_3–C_6-alkenyloxy, C_3–C_6-alkinyloxy, C_3–C_6-alkenylthio, C_3–C_6-alkinylthio, C_1–C_6-alkylsulphinyl and C_1–C_6-alkylsulphonyl, which radical is optionally substituted by fluorine and/or chlorine,
R^3 represents hydrogen, halogen, nitro, cyano, or represents a radical from the series comprising C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkinyl, C_1–C_4-alkoxy, C_3–C_4-alkenyloxy, C_3–C_4-alkinyloxy, C_1–C_4-alkylthio, C_3–C_4-alkenylthio, C_3–C_4-alkinylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphenyl and C_1–C_4-alkylamino, which radical is optionally substituted by fluorine and/or chlorine, or the two radicals
R^2 and R^3 together represent —O—CH_2—O—CH_2— or the group —X—$(CO)_n$—A—Y— where
n represents the numbers 0 or 1,

A represents a direct bond ore represents straight-chain or branched C_1–C_4-alkanediyl which is optionally substituted by fluorine and/or chlorine,
X represents oxygen, sulphur or the group N—R^2 where
R^3 represents hydrogen or radicals from the group consisting of C_1–C_4-alkyl, C_3–C_4-alkenyl and C_3–C_4-alkinyl, which radicals are optionally substituted by fluorine and/or chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkoxy-carbonyl or pyridiyl, and
Y represents oxygen or sulphur,
in which furthermore
R^4 represents hydrogen or halogen,
R^5 represents hydrogen or halogen,
R^6 represents hydrogen, halogen or C_1–C_4-alkyl which is optionally substituted by fluorine and/or chlorine,
R^7 represents hydrogen, halogen or C_1–C_4-alkyl which is optionally substituted by fluorine and/or chlorine, or the two radicals
R^6 and R^7 together represent straight-chain or branched C_3–C_5-alkanediyl or together with the carbon atoms to which they are bonded form a benzo group, and
Q represents oxygen or sulphur,
with the proviso that at least three of the radicals R^1 to R^5 are other than hydrogen.

5,061,311

SUBSTITUTED TRIAZOLINONE HERBICIDES AND PLANT GROWTH REGULATORS

Kurt Findeisen, Odenthal; Markus Lindig, Hilden; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt; Klaus Lürssen, both of Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,823

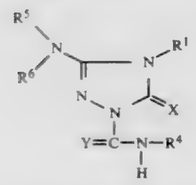
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1987, 3709574

The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.

Int. Cl.[5] **C07D** *249/12;* **A01N** *43/653;* **A61K** *31/41*

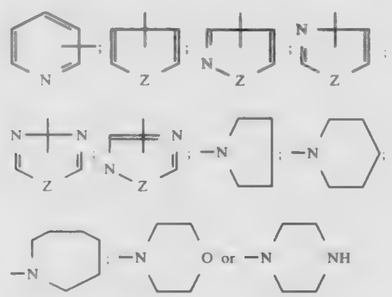
U.S. Cl. 71—92 **9 Claims**

1. A substituted triazolinone of the formula



(I)

in which
R^1 represents in each case straight-chain or branched alkyl with 1 to 8 carbon atoms, alkenyl with 2 to 8 carbon atoms, alkinyl with 2 to 8 carbon atoms, halogenoalkyl with 1 to 8 carbon atoms and 1 to 17 identical or different halogen atoms, halogenoalkenyl with 2 to 8 carbon atoms and 1 to 15 identical or different halogen atoms, halogenoalkinyl with 2 to 8 carbon atoms and 1 to 13 identical or different halogen atoms or alkoxyalkyl or alkoxy with in each case 1 to 6 carbon atoms in the individual alkyl parts, or represents cycloalkyl-alkyl or cycloalkyl with in each case 3 to 7 carbon atoms in the cycloalkyl part and if appropriate 1 to 6 carbon atoms in the straight-chain or branched alkyl part, or represents hydrocarbyl aralkyl or hydrocarbyl aryl with in each case 6 to 10 carbon atoms in the aryl part and where appropriate 1 to 6 carbon atoms in the straight-chain or branched alkyl part, in each case optionally monosubstituted or polysubstituted in the aryl part by identical or different substituents from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy and halogenoalkylthio with in each case 1 to 4 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms,
R^4 represents hydrogen, or represents in each case straight-chain or branched alkyl with 1 to 18 carbon atoms, alkenyl with 2 to 8 carbon atoms, alkinyl with 2 to 8 carbon atoms, halogenoalkyl with 1 to 8 carbon atoms and 1 to 17 identical or different halogen atoms, halogenoalkenyl or halogenoalkinyl with in each case 2 to 8 carbon atoms and 1 to 15 or 13 identical or different halogen atoms, cyanoalkyl with 1 to 8 carbon atoms, hydroxyalkyl with 1 to 8 carbon atoms and 1 to 6 hydroxyl groups, alkoxyalkyl, alkoxycarbonylalkyl or alkoxycarbonylalkenyl with in each case up to 6 carbon atoms in the individual alkyl or alkenyl parts, or alkylaminoalkyl or dialkylaminoalkyl with in each case 1 to 6 carbon atoms in the individual alkyl parts, or represents cycloalkyl, cycloalkylalkyl, cycloalkenyl or cycloalkenylalkyl with in each case 3 to 8 carbon atoms in the cycloalkyl or cycloalkenyl part and where appropriate 1 to 6 carbon atoms in the alkyl part, in each case optionally monosubstituted or polysubstituted by identical or different substituents from the group consisting of halogen, cyano and in each case straight-chain or branched alkyl and halogenoalkyl with in each case 1 to 4 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms, and in each case divalent alkanediyl or alkenediyl with in each case up to 4 carbon atoms; or furthermore represents heterocyclylalkyl which has 1 to 6 carbon atoms in the straight-chain or branched alkyl part and 1 to 9 carbon atoms and is optionally monosubstituted or polysubstituted in the heterocyclyl part by identical or different substituents from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio and alkoxycarbonyl with in each case 1 to 5 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms, the heterocyclic moiety being selected from the group consisting of



wherein
Z in each case represents oxygen or sulphur, optionally substituted in the heterocyclyl part by one to three identical or different substituents from the group consisting of fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, n- or i-propyl, n-, i-, s- or ti-butyl, methoxy, ethoxy, methylthio, trifluoromethyl, trifluoromethoxy and trifluoromethyltho, or furthermore represents in each case straight-chain or branched alkoxy with 1 to 8 carbon atoms, alkenyloxy with 2 to 8 carbon atoms or alkinyloxy with 2 to 8 carbon atoms, or represents hydrocarbyl aralkyl, hydrocarbyl aralkyloxy, hydrocarbyl aryloxy, hydrocarbyl aroyl or hydrocarbyl aryl with in each case 6 to 10 carbon atoms in the aryl part and where appropriate 1 to 6 carbon atoms in the alkyl part, in each case optionally monosubstituted or polysubstituted in the aryl part by identical or different substituents from the group consisting of halogen, cyano, nitro, hydroxyl, in each case straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, alkylsulphinyl, alkylsulphonyl, halogenoalkylsulphinyl, halogenoalkylsulphonyl, alkanoyl or alkoxycarbonyl with in each case 1 to 6 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms, cycloalkyl with 3 to 6 carbon atoms and phenoxy and in the alkyl part by halogen or cyano,
X represents oxygen or sulphur and
Y represents oxygen or sulphur,
wherein
R^5 and R^6 independently of one another each represent in each case straight-chain or branched alkyl with 1 to 8 carbon atoms, alkenyl with 2 to 8 carbon atoms, alkinyl with 2 to 8 carbon atoms, halogenoalkyl with 1 to 8 carbon atoms, and 1 to 17 identical or different halogen atoms, halogenoalkenyl or halogenoalkinyl with in each case 2 to 8 carbon atoms and 1 to 15 or 13 identical or different halogen atoms or alkoxyalkyl or alkoxy with in each case 1 to 6 carbon atoms in the individual alkyl parts, or represent cycloalkyl with 3 to 7 carbon atoms, or represent cycloalkylalkyl with 3 to 7 carbon atoms in the cycloalkyl part and 1 to 6 carbon atoms in the alkyl part, or represent hydrocarbyl aralkyl with 6 to 10 carbon atoms in the aryl part and 1 to 6 carbon atoms in the alkyl part, or hydrocarbyl aryl with 6 to 10 carbon atoms monosubstituted or polysubstituted by identical or different substituents from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio with in each case 1 to 4 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms.

8. A method of combating unwanted plant life or of controlling plant growth which comprises applying to such plants or to a locus in which said plants are growing or are to be grown an amount effective therefor of a compound according to claim 1.

5,061,312

FUNGICIDAL N-VINYL-3-CYANO-4-PHENYL-PYRROLES

Ulrich Heinemann, Leichlingen; Detlef Wollweber, Wuppertal; Wilhelm Brandes, Leichlingen; Stefan Dutzmann, Duesseldorf, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

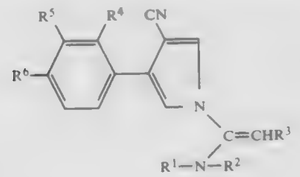
Filed Jun. 18, 1990, Ser. No. 539,631

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1989, 3922104.0

Int. Cl.[5] **C07D** *207/34, 403/06, 401/06;* **A01N** *43/36*

U.S. Cl. 71—95 **12 Claims**

1. An N-vinyl-3-cyano-4-phenyl-pyrrole of the formula



(I)

in which
R^1 represents alkyl,
R^2 represents alkyl, or
R^1 and R^2 together with the nitrogen atom to which they are bonded form a 5- to 7-membered, saturated monoaza polymethylene ring which is optionally monosubstituted to polysubstituted by identical or different substituents, selected from the group consisting of halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, and halogenoalkyl or halogenoalkoxy, each of which has 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms,
R^3 represents alkyl,
R^4 represents hydrogen, halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio or halogenoalkylthio,
R^5 represents hydrogen, halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio or halogenoalkylthio, or
R^4 and R^5 together represent halogen-substituted alkylenedioxy, and
R^6 represents hydrogen or halogen.

10. A fungicidal composition comprising a fungicidally effective amount of a compound according to claim 1 and an agriculturally acceptable diluent.

5,061,313

DIRECT ALLOY SYNTHESIS FROM HETEROPOLYMETALLIC PRECURSORS

Geoffrey Davies, Boston, and Hui-Li Shao, Brighton, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Sep. 7, 1990, Ser. No. 579,802

Int. Cl.[5] **B22F** *9/30*

U.S. Cl. 75—362 **9 Claims**

1. A method of making a substantially single-phase and homogeneous metal alloy of large surface area at low temperature, comprising the steps of
heating a heteropolymetallic complex (formed by transmetalation and) comprising copper and nickel, in an inert atmosphere, to a temperature which causes reductive decomposition of said heteropolymetallic complex; and
maintaining said temperature for a time sufficient to convert said heteropolymetallic complex into an alloy.

5,061,314

PRODUCTS FOR TREATING SURFACES

John R. Collier, Hednesford, and Kenneth U. Holker, Kidderminster, both of England, assignors to Albright & Wilson Limited, Warley, England

Division of Ser. No. 135,437, Dec. 21, 1987. This application Oct. 10, 1989, Ser. No. 419,156

Claims priority, application United Kingdom, Dec. 23, 1986, 8630740; Feb. 17, 1987, 8703583; Jul. 21, 1987, 8717231

Int. Cl.[5] **C09K** *15/02;* **B05D** *1/36*

U.S. Cl. 106—14.05 **22 Claims**

1. An anticorrosive material comprising a reaction product obtained by reaction of a trivalent metal compound, in which the metal is selected from the group consisting of iron, aluminum, chromium and mixtures thereof, and a silicon-containing moiety comprising an aqueous dispersion of silica of a fine particle size or a precursor thereof or an aqueous solution of a silicate, with a silicon to trivalent metal atom ratio of 0.2–30:1, said product being substantially free of water-soluble by-products of said reaction.

5,061,315

PRODUCTS FOR TREATING SURFACES

John R. Collier, Hednesford, and Kenneth U. Holker, Kidderminster, both of England, assignors to Albright & Wilson Limited, Warley, England

Continuation of Ser. No. 135,437, Dec. 21, 1987, Pat. No. 4,881,975. This application Oct. 10, 1989, Ser. No. 419,149

Claims priority, application United Kingdom, Dec. 23, 1986, 8630740; Feb. 17, 1987, 8703583; Jul. 21, 1987, 8717231

The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.

Int. Cl.[5] **C09K** *15/02;* **B05D** *1/36*

U.S. Cl. 106—14.05 **24 Claims**

1. A process of preparing a surface for the subsequent application of an organic finishing coating, the process comprising applying an aqueous acidic dispersion to the surface and heating so as to deposit thereon an essentially inorganic priming coat of an anticorrosion or adhesion-promoting material, the

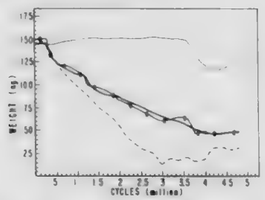
dispersion comprising an acidic trivalent metal compound in which the metal is selected from the group consisting of iron, aluminum and mixtures thereof, and silica of a fine particle size, with a silicon to trivalent metal atom ratio of 0.2–30:1 and substantially free of metals capable of a valency of at least 5.

5,061,316

PH-INSENSITIVE ANTI-KOGATING AGENT FOR INK-JET PENS

John R. Moffatt, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 12, 1990, Ser. No. 509,253
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 **21 Claims**



1. A thermal ink-jet ink comprising a vehicle and a dye, characterized by the presence of about 0.3 to 6 wt % of at least one organic acid sulfonate therein, said sulfonate selected from the group consisting of $R—SO_3^-M^+$ salts, wherein M^+ is a cation selected from the group consisting of Na^+, Li^+, K^+, NH_4^+, and R'_4N^+, wherein R is an organic moiety selected from the group consisting of aliphatic groups and $—C_6H_4—X$, where X is Cl, Br, NO_2, or CH_3, and wherein R' is an alkyl group.

5,061,317

COLORED NACREOUS PIGMENT AND A METHOD FOR ITS PREPARATION

Taina M. Korpi, Lappeenranta; Seppo J. O. Hyttinen, Valkeakoski, and Pekka J. Vapaaoksa, Pori, all of Finland, assignors to Kemira Oy, Helsinki, Finland

Filed Jan. 18, 1989, Ser. No. 298,165
Claims priority, application Finland, Jan. 22, 1988, 880306
The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.
Int. Cl.[5] C04B *14/20*
U.S. Cl. 106—417 **15 Claims**

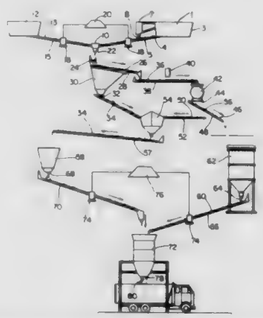
1. A nacreous pigment which contains a dyestuff or a color pigment and is based on metal-oxide-coated mica particles or on other layer silicate particles, characterized in that its particles consist of metal-oxide-coated, porous silica skeletons of mica particles or other silicate particles, containing few or no cations and having at least one dye or one color pigment attached to them, the porous silica skeletons being produced by leaching the mica particles or other layer silicate particles with a mineral acid that removes cations.

5,061,318

IMMOBILIZATION OF INCINERATOR ASH TOXIC ELEMENTS IN AN ENVIRONMENTALLY SAFE SOIL CEMENT COMPOSITION AND METHOD OF MANUFACTURE

William W. Casey, Wimauma; Clarence E. Leisey, III, Apollo Beach; Eric W. Shafer, Sarasota, and Francis I. Daniels, Clearwater, all of Fla., assignors to Permabase, Inc., Ruskin, Fla.

Filed Dec. 7, 1989, Ser. No. 447,398
Int. Cl.[5] C04B *7/02*
U.S. Cl. 106—705 **16 Claims**



9. A composition suitable as a base for surfaces such as roads and parking lots, comprising:

an ash aggregate mixture having a particle size of less than ¾" and comprising an aggregate material and incinerator ash, said incinerator ash selected from the group comprising bottom ash, fly ash, and a mixture of bottom ash and fly ash, said incinerator ash being present in said ash aggregate in quantities ranging from about 1% to 50% by weight; and

a cementitious material in an amount sufficient to form a volumetrically stable solid, said solid yielding an aqueous leachate containing less than 1.0 ppm Cd, 5.0 ppm Pb, 5.0 ppm Ag, 5.0 ppm As, 100.0 ppm Ba, 5.0 ppm Cr, 0.2 ppm Hg and 1.0 ppm Se when subjected to an EPA toxicity procedure.

5,061,319

PROCESS FOR PRODUCING CEMENT BUILDING MATERIAL

Simon Hodson, Santa Barbara, Calif., assignor to Concrete Technology Corporation, Santa Barbara, Calif.

Filed Aug. 19, 1988, Ser. No. 234,267
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[5] C04B *7/02*; B01F *7/20*
U.S. Cl. 106—713 **27 Claims**

1. A process for producing cement paste from at least 20% by weight Portland cement, the paste forming a substantially homogenous mass of monolithic crystals when cured, the process including the steps of:

(1) selecting a water to cement ratio ranging from 0.20 to 2.0;

(2) adding the selected cement and water to a hollow generally barrel-shaped housing having a bottom and a central longitudinally disposed rotatable shaft and having a feed inlet to receive cement and water and a discharge outlet to dispense paste resulting from mixing cement and water in the housing, the inner wall of the housing including an upper cylindrical portion above and adjacent to a middle conical portion, which is above and adjacent to a lower conical portion, the housing further including a thrust generating assembly having:

a downthrust generating component which includes a substantially horizontal set of upper downthrust blades in spaced relationship relative to each other, and a lower set of downthrust blades in a spaced relationship relative to each other, each of such blades having a leading and a trailing edge;

an upthrust generating component which includes substantially horizontal upper upthrust blades in spaced relationship relative to each other, each of the upper upthrust blades having a leading and a trailing edge and being coupled to one of the substantially upper downthrust blades outwardly of the upper downthrust blades, and substantially horizontal lower upthrust blades in spaced relationship relative to each other, each of such lower upthrust blades having a leading edge and a trailing edge; and

upper and lower baffles extending from the inner walls of the enclosure toward the shaft, the lower ed of the upper baffle and upper end of the lower baffles being spaced from each other, the lower baffle having a lower free edge, wherein each of the upper upthrust blades is rotatable within the baffle space,

wherein,

the ratio of R1 to H1 ranges from 0.39 to 0.45, the ratio of R1 to R2 ranges from 0.80 to 0.83, the ratio of R1 to H2 ranges from 0.59 to 0.61, the ratio of R1 to R3 ranges from 0.36 to 0.41, the ratio of R1 to H3 ranges from 0.30 to 0.32, the ratio of R1 to H2*a* ranges from 0.001 to 1.0, the ratio of R1 to H3*a* ranges from 0.001 to 1.0, G1 ranges from 0.20±0.125 inches, G5 ranges from H1+H2+H3 to H1+H2+H3+4R1,

where R1 is the radius of the cylindrical portion of the inner wall of the housing,

R2 is the radius of the cylindrical portion of the inner wall of the housing along the horizontal plane containing the upper edge of the lower upthrust blade,

R3 is the radius of the lower conical portion of the inner wall of the housing along the horizontal plane containing the lower edge of the lower upthrust blade,

H1 is the distance along the shaft between the horizontal plane containing the leading edge of the upper up thrust blade and the horizontal plane containing lower end of the cylindrical portion of the housing,

H2 is the distance along the shaft between the horizontal plane containing lower end of the cylindrical portion of the housing and the lower end of the middle conical portion of the housing,

H3 if the distance along the shaft between the horizontal plane containing the lower end of the middle portion of the housing and the horizontal plane containing the lower end of the lower conical portion of the housing,

H2*a* is the smallest vertical distance between the upper edge of the lower downthrust blade and the plane containing the largest radius of the middle conical portion,

H3*a* is the smallest vertical distance between the bottom and the lower edge of the lower upthrust blade,

G1 is the smallest distance between the leading edge of the upthrust blade and the lower edge of the upper baffle,

G5 is the smallest distance between the trailing edge of the lower upthrust blade and the lower free edge of the opposing lower baffle, and wherein R1 ranges from 4.0 to 48.0 inches;

wherein the amount of cement and water added is such that it stationary volume ranges from a height of 0.5 H1+H2+H3 to a height of H1+H2+H3+(4×R1); and

(3) mixing the water and cement by rotating the shaft of the housing at between 2,000/R1 and 7,000/R1 rpm and mixing from 20 to 300 seconds.

5,061,320

SWEETENER COMPOSITION

Brita C. Goodacre, Sonning; Andrew G. Pembroke, and Dipak P. Shukla, both of Reading, all of Great Britain, assignors to Tate & Lyle plc, England

Filed Mar. 23, 1989, Ser. No. 327,760
Claims priority, application United Kingdom, Mar. 25, 1988, 8807135
Int. Cl.[5] C13F *3/00, 5/00*; A23L *1/236*
U.S. Cl. 127—30 **13 Claims**



1. A sweetener comprising hollow spheroids or part spheroids of microcrystalline sucrose.

5,061,321

PICKLING METHOD FOR ELECTRICAL STEEL BANDS

Akihiko Nishimoto; Yoshihiro Hosoya; Kunikazu Tomita; Toshiaki Urabe, and Masaharu Jitsukawa, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP89/00260, § 371 Date Oct. 12, 1989, § 102(e) Date Oct. 12, 1989, PCT Pub. No. WO89/08729, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 9, 1989, Ser. No. 425,179
Claims priority, application Japan, Mar. 10, 1988, 63-54771
Int. Cl.[5] C23G *1/02, 1/08*
U.S. Cl. 134—3 **2 Claims**

1. A method of pickling electrical steel bands, comprising pickling, with hydrochloric acid, a hot rolled steel band containing 0.2 to 4.0 weight percent silicon by coiling at a temperature CT defined as follows:

where said silicon content is ≦1.0 wt %, $CT \geqq 270.6(\%Si)^2 - 475.9(\%Si) + 915.3$;

where said silicon content is >1.0 wt %, $CT \geqq 5.0(\%Si)^2 - 50.1(\%Si) + 755.4$ where CT is coiling temperature (° C.) of the hot rolled band and (%Si) is the silicon content of said hot rolled band in weight percent, and pickling for a pickling time t defined as follows:

$$0.48(\%Si) + 0.59 \leqq t \cdot Bexp(-Q/RT) \leqq 0.24(\%Si) + 4.00$$

where (%Si) is silicon content of said hot rolled steel band in weight percent; T is the temperature of the pickling liquid in °K; Q is 5300 cal/mole; R is 1.986 cal/(mole)(°K); t is time in seconds; and B is $-0.48(HCl)^2 + 15.1(HCl) + 5.03$ where (HCl) is the concentration of hydrochloric acid in the pickling liquid in weight percent.

5,061,322

METHOD OF PRODUCING P-TYPE AMORPHOUS SILICON CARBIDE AND SOLAR CELL INCLUDING SAME

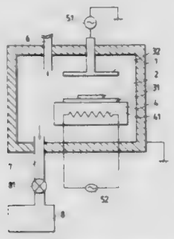
Akihiko Asano, Kanagawa, Japan, assignor to Fuji Electric Corporation Research and Development Ltd., Kanagawa, Japan

Filed Sep. 18, 1989, Ser. No. 408,258

Claims priority, application Japan, Oct. 7, 1988, 63-253113; Mar. 24, 1989, 1-72216

Int. Cl.[5] H01L *31/072, 31/18*

U.S. Cl. 136—258 **10 Claims**



10. A pin-type amorphous silicon solar battery comprising:

a glass substrate;

a tin oxide layer formed on said glass substrate;

a boron-doped p-type hydrogenated amorphous silicon carbide thin film formed on said tin oxide layer, wherein said boron-doped p-type hydrogenated amorphous silicon carbide thin film is produced by a method comprising the steps of

preparing a raw material gas mixture consisting of a silicon compound, a hydrocarbon, and a boron fluoride compound,

diluting said raw material gas mixture with hydrogen gas such that the ratio of said hydrogen gas to said silicon compound is at least 100:1, and

decomposing said raw material gas mixture by glow discharge to achieve a resultant amorphous silicon carbide thin film having a prescribed value of photoconductivity;

an i-type amorphous silicon hydride layer formed on said boron-doped p-type hydrogenated amorphous silicon carbide thin film;

an n-type amorphous silicon hydride layer formed on said i-type amorphous silicon hydride layer; and

an aluminum electrode formed on said n-type amorphous silicon hydride layer.

5,061,323

COMPOSITION AND METHOD FOR PRODUCING AN ALUMINUM ALLOY RESISTANT TO ENVIRONMENTALLY-ASSISTED CRACKING

John J. DeLuccia, Paoli, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 15, 1990, Ser. No. 599,557

Int. Cl.[5] C22F *1/04;* **B22F** *3/02*

U.S. Cl. 148—11.5 A **24 Claims**

1. A method of producing an aluminum alloy having improved resistance to environmentally-assisted cracking at room and moderately elevated temperatures, comprising the steps of:

providing a base aluminum alloy powder;

providing a molybdenum powder;

blending the base aluminum alloy and molybdenum powders to form a homogeneous powder blend which contains up to 1.0% by weight molybdenum; and

consolidating the powder blend into a billet.

5,061,324

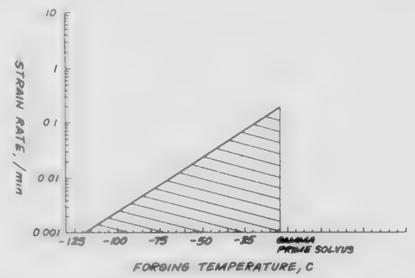
THERMOMECHANICAL PROCESSING FOR FATIGUE-RESISTANT NICKEL BASED SUPERALLOYS

Keh-Minn Chang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1990, Ser. No. 503,007

Int. Cl.[5] C22F *1/10*

U.S. Cl. 148—11.5 N **10 Claims**



1. A method for improving resistance to fatigue cracking articles manufactured from a nickel base superalloy powder compact, the superalloy having a volume fraction of gamma prime precipitate of at least about 35 per cent, comprising:

determining the solvus temperature of the gamma prime precipitate as the temperature at which the gamma prime predipitate essentially dissolves in the superalloy matrix;

isothermally forging the compact at a rate of straining and at a temperature within the hatched area in FIG. 1, to produce a permanent deformation of at least about 20 percent;

supersolvus annealing the forged superalloy for a period of time that essentially completely dissolves the gamma prime precipitate; and

slowly cooling the alloy from the supersolvus temperature, the compact having an equiaxed grain structure of about 50 to 60 microns.

5,061,325

METHOD OF PRODUCING HIGH TENSION STEEL SUPERIOR IN WELDABILITY AND LOW-TEMPERATURE TOUGHNESS

Yoshihiro Okamura; Seinosuke Yano; Ryota Yamaba, and Hidetaka Chiba, all of Tokai, Japan, assignors to Nippon Steel Corporation, Japan

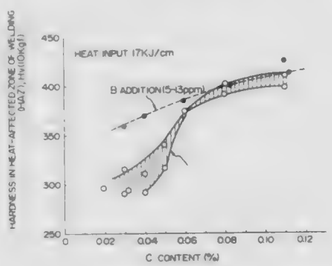
Filed Mar. 29, 1990, Ser. No. 500,939

Claims priority, application Japan, Mar. 29, 1989, 1-077097

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] C21D *7/00*

U.S. Cl. 148—12 F **2 Claims**



1. A method of producing a high tension steel superior in weldability and low temperature toughness, comprising the steps of:

preparing a steel billet having a composition consisting, by weight, of 0.02 to 0.05% C, 0.02 to 0.5% Si, 0.4 to 1.5% Mn, 0.5 to 4.0% Ni. 0.20 to 1.5% Mo, 0.005 to 0.03% Ti, 0.01 to 0.08% Al, not more than 0.0002% B, 0.5 to 2.0% Cu, not more than 0.01% N, and the balance Fe and incidental impurities;

heating said steel billet to a temperature of 900° C. to 1000° C.;

hot-rolling the heated steel billet first at a rolling reduction of 30 to 70% in a temperature range in which austenite recrystallizes and then at a rolling reduction of 20 to 60% in another temperature range in which austenite does not recrystallizes;

hardening the hot-rolled billet by watercooling from a temperature not lower than the Ar_3 transformation point and terminating the cooling at a temperature not higher than 250° C.; and

tempering the hardened billet at a temperature which is not higher than the Ac_1 transformation point.

5,061,326

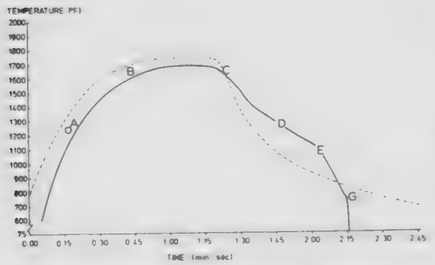
METHOD OF MAKING HIGH SILICON, LOW CARBON REGULAR GRAIN ORIENTED SILICON STEEL

Jerry W. Shoen, Middletown, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Jul. 9, 1990, Ser. No. 549,614

Int. Cl.[5] C21D *8/14*

U.S. Cl. 148—12.4 **18 Claims**



1. A process for producing high silicon, low melt carbon, regular grain oriented electrical steel having a thickness of from about 14 mils (0.35 mm) to about 6 mils (0.15 mm) or less, comprising the steps of providing a hot band of silicon steel containing in weight percent from about 3.0% to about 4.5% silicon and less than 0.07% carbon, annealing said hot band, removing the hot band scale if required, cold rolling to intermediate gauge, subjecting said intermediate gauge material to an intermediate anneal at a soak temperature of from about 1650° F. (900° C.) to about 2100° F. (1150° C.) for a soak time of from about 1 second to about 30 seconds, conducting a slow cooling stage from said soak temperature to a temperature of from about 1000° F. (540° C.) to about 1200° F. (650° C.) at a cooling rate of less than 1500° F. (835° C.) per minute, thereafter conducting a fast cooling stage to a temperature of from about 600° F. (315° C.) to about 1000° F. (540° C.) at a rate greater than 1500° F. (835° C.) per minute followed by a water quench, cold rolling said silicon steel to final gauge, subjecting said final gauge silicon steel to a decarburizing anneal, coating said decarburized silicon steel with an annealing separator, and subjecting said silicon steel to a final anneal to effect secondary recrystallization.

5,061,327

METHOD OF PRODUCING UNRECRYSTALLIZED ALUMINUM PRODUCTS BY HEAT TREATING AND FURTHER WORKING

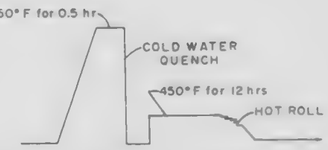
Diana K. Denzer, and John Liu, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 2, 1990, Ser. No. 502,822

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—12.7 A **49 Claims**



1. A method of producing an unrecrystallized, wrought aluminum base alloy, heat treated product having improved levels of strength and fracture toughness, the method comprising the steps of:

(a) providing a body of an aluminum base, heat treatable alloy;

(b) hot working the body to a first wrought product;

(c) reheating said first wrought product from above 900° to 1080° F.;

(d) cooling said first wrought product;

(e) heat treating said first wrought product;

(f) further working said first wrought product to produce a second wrought product; and

(g) solution heat treating, quenching and aging said second wrought product to provide a substantially unrecrystallized product having improved levels of strength and fracture toughness.

5,061,328

COATING METHOD TO SUPPRESS POROSITY IN A1-LI ALLOYS

John M. Papazian, Great Neck, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jul. 5, 1990, Ser. No. 548,236

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—13.1 **6 Claims**

1. A method for suppressing the formation of pores in an Al-Li alloy undergoing heat treatment comprising the steps:

coating an exposed alloy surface prior to heat treatment with an element having a diffusion coefficient equal to or greater than Li at the heat treatment temperature;

subjecting the coated alloy to the preselected heat treatment temperature for a predetermined time wherein a minimized vacancy flux occurs thereby suppressing the formation of internal porosity near the surface.

5,061,329

HIGH NITROGEN SMOKE COMPOSITIONS

Russell Reed, Jr., and May L. Chan, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 3, 1982, Ser. No. 404,677

Int. Cl.[5] C06B *45/00*

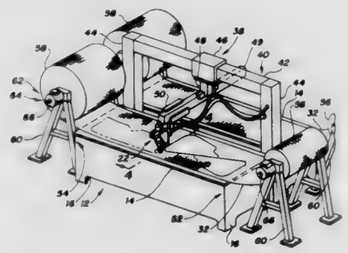
U.S. Cl. 149—2 **22 Claims**

1. A high nitrogen smoke composition comprising a mixture of 5,5' bitetrazole and a smoke dye.

5,061,330
INSENSITIVE HIGH ENERGETIC EXPLOSIVE FORMULATIONS
Russell Reed, Jr., and May L. Chan, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 1, 1982, Ser. No. 440,678
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.6 4 Claims

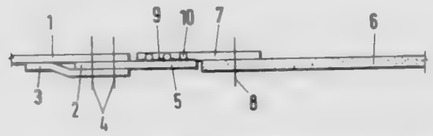
1. An explosive composition comprising:
glycidyl azide polymer as an energetic binder;
bis(2,2-dinitro-2-fluoroethyl) formal as a plasticizer; and
an explosive compound selected from the group consisting of cyclotetramethylenetetranitramine and cyclotrimethylenetrinitramine.

5,061,331
ULTRASONIC CUTTING AND EDGE SEALING OF THERMOPLASTIC MATERIAL
Robert M. Gute, Corunna, Mich., assignor to Plasta Fiber Industries, Inc., Marlette, Mich.
Filed Jun. 18, 1990, Ser. No. 539,560
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—64 36 Claims



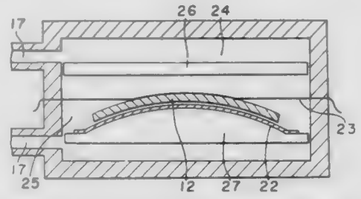
33. A method for cutting and sealing the cut edges of fabric material, such as that used to manufacture automotive safety air bags, with an ultrasonic cutter having a cutting tip, the material being at least partially thermoplastic, being semipermeable to the flow of fluids therethrough, and being disposed for cutting and sealing atop a platform, the method comprising the steps of:
(a) supporting the material on the platform in position for cutting and sealing;
(b) securing the material to the platform by applying a negative pressure between the material and the platform;
(c) providing a robotic arm for automatically positioning the cutter, the arm having three degrees of freedom in which to guide the cutter along a two-dimensional cutting path;
(d) providing cutting arm controlling means for controlling the movement of the robotic cutting arm;
(e) providing an anvil disposed in apposition to the cutting tip;
(f) positioning the cutter to sandwich the material between the cutting tip of the cutter and the anvil;
(g) energizing the cutter so that the cutting tip vibrates at an ultrasonic frequency against the anvil, cutting the material therebetween and heating it sufficiently to melt thermoplastic material in the cut edges to prevent raveling thereof; and
(h) guiding, with the control means, the cutter along a defined path in the material while cutting and sealing the cut edges.

5,061,332
METHOD FOR REPLACING A WINDOW PANE IN A FLEXIBLE HOOD COVER AND REPLACEMENT PANE THEREFOR
Josef Stolz, Flieden, and Rainer Gössann, Fulda, both of Fed. Rep. of Germany, assignors to Mehler Vario System GmbH, Fulda, Fed. Rep. of Germany
Filed Nov. 29, 1989, Ser. No. 443,261
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1988, 3841036
Int. Cl.[5] B60J *1/00*; B32B *35/00*
U.S. Cl. 156—94 5 Claims



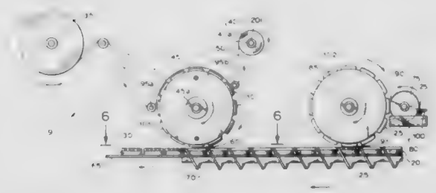
1. A method for replacing a flexible window pane in a flexible hook cover of a vehicle comprising the steps of:
cutting out at least a portion of the window pane to be replaced to define a window opening edge;
preparing a replacement window pane member having one side and another side and area dimensions which are greater than the window opening edge, said replacement window pane member including a peripheral edge region, a hot-melt adhesive provided in said peripheral edge again, and means for heating said hot-melt adhesive located in said peripheral edge region;
placing the replacement pane in covering relationship to the window opening edge;
activating the heating means to heat said hot-melt adhesive;
pressing the peripheral edge region of said replacement window pane member against the window opening edge with said hot-melt adhesive in contact therewith; and
deactivating the heating means to allow said hot-melt adhesive to cool.

5,061,333
PROCESS FOR PRODUCING A LAMINATE
Kenichi Ishikawa, and Koji Kurita, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Filed Mar. 4, 1986, Ser. No. 836,161
Claims priority, application Japan, Mar. 14, 1985, 60-51271
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—213 4 Claims



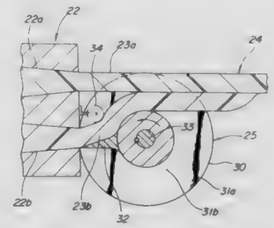
1. A process for producing a laminate comprising a sheet layer and a plastic film laminated on at least one side of the sheet layer, which comprises vacuum-packaging the sheet layer by a vacuum packaging film material by disposing the sheet layer in laminatable relationship between two sheets of film material whose peripheries are brought into superimposed contact in the process, the two sheets forming the two sides of a package containing the sheet layer when the peripheries are sealed to each other, and hermetically sealing the peripheries to each other so that a vacuum may be sustained within the hermetically closed package so formed after the vacuum has been created therein, at least the final sealing occurring after evacuation of the space between the two sheets of film material between which the sheet layer is disposed, of which package at least the sheet of film material corresponding to said side of the sheet layer is made of a plastic film to be laminated on the sheet layer, press-bonding the plastic film to the sheet layer, at least the final press bonding occurring after the final sealing forming the hermetically closed package, and removing the film material from the sheet layer except for the plastic film portion laminated on the sheet layer, wherein the vacuum packaging film material is a pair of film sheets not attached to one another disposed in a vacuum chamber, and wherein one of the two film sheets is the plastic film to be laminated on the sheet layer and the other is a film other than the plastic film, the other film is disposed to divide the vacuum chamber into two compartments, the sheet layer is inserted between the plastic film and the other film in one compartment, the entire vacuum chamber is then vacuumed, the two films are then brought close together to enclose the sheet layer and the periphery of the films is sealed under the vacuumed condition to obtain a vacuum-package sheet material, and after the press-bonding of the plastic film to the sheet layer the periphery of the plastic film is cut off along the outline of the sheet layer.

5,061,334
MACHINE AND METHOD FOR HIGH SPEED, PRECISELY REGISTERED LABEL APPLICATION WITH SPROCKETS FOR POSITIONING THE LABEL ON A TRANSFER WHEEL
Eugene H. Paules, Huntington, Conn., assignor to United States Tobacco Company, Greenwich, Conn.
Continuation of Ser. No. 293,304, Jan. 4, 1989, abandoned. This application Mar. 15, 1991, Ser. No. 671,169
Int. Cl.[5] B44C *1/00*
U.S. Cl. 156—235 29 Claims



1. A method for applying a label to an advancing article comprising
(i) supplying a label carrier tape from a carrier wheel to a label transfer wheel;
(ii) engaging said label carrier tape on said label transfer wheel by sprockets on said label transfer wheel in precise registry of said label with a location for said label on said transfer wheel;
(iii) removing a label from said carrier tape;
(iv) holding said label by vacuum suction on said location for said label on said transfer wheel;
(v) aligning synchronously said label on said location for said label on said transfer wheel with a surface of said article as said article is advanced;
(vi) applying pressure to a leading edge of said label upon placement of said label on said article to remove said label from said location for said label on said transfer wheel;
(vii) continuously applying pressure to label surface as rotation progresses; and
(viii) continuously advancing said article.

5,061,335
METHOD OF, AND APPARATUS FOR MANUFACTURING ELONGATE PLASTIC ARTICLES
Tatsuya Tamura, and Tetsuo Hotta, both of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Japan
Filed Sep. 25, 1989, Ser. No. 411,887
Int. Cl.[5] B29C *47/00*
U.S. Cl. 156—244.11 8 Claims



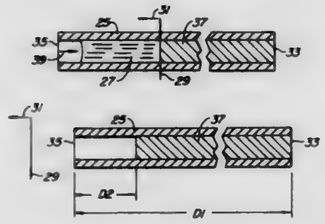
1. A method of manufacturing elongate articles including a plurality of segments which are connected with each other in the longitudinal direction of the article, each segment having a common cross-sectional portion which is common to all the segments, at least one segment further having at least one additional cross-sectional portion, said method comprising the steps of:
[A] using a single extrusion die head with a common orifice having a cross-section which corresponds to that of said common cross-sectional portion of a segment, and also with at least one additional orifice having a cross-section which corresponds to that of said additional cross-sectional portion of said at least one segment;
[B] alternately and continuously carrying out a first extrusion phase in which a molten synthetic resin material is extruded from said common orifice of said extrusion die head to form a first segment, and a second extrusion phase in which molten synthetic resin materials are extruded from said common orifice and at least one of said additional orifices of said extrusion die head, and are caused to adhere with each other while they are still sufficiently hot to achieve an adhesion, to form a second segment; and
[C] detecting the length of said molten synthetic resin material, and either switching said extrusion die head from said first extrusion phase to said second extrusion phase or switching said extrusion die head from said second extrusion phase to said first extrusion phase, said switching step being responsible to said detected length of molten synthetic resin material.

5,061,336
GEL CASTING METHOD AND APPARATUS
David S. Soane, Piedmont, Calif., assignor to Soane Technologies, Inc., Livermore, Calif.
Filed May 1, 1989, Ser. No. 345,715
Int. Cl.[5] G01N *27/40*; C08F *2/24*
U.S. Cl. 156—245 9 Claims

1. A method of casting a gel in a rigid confined support structure for containing the gel, said support structure having at least one wall constructed of a material that transmits energy, comprising:
coating the wall of said rigid confined support structure with an adhesion enhancing coating for firmly adhering said gel to the wall;
filling said support structure with a mixture containing a gelling material that is promoted to gel by absorption of energy, said material shrinking as it gels, said support structure filled such that said material is continuous from a first location on said wall to a second location on said wall;

providing energy by means of an energy source to a localized area of said wall;

causing relative motion of said support structure and said energy source so that said localized area that receives energy from said source is moved along said wall in a direction from the first location toward the second location on said wall, thereby causing gellation to occur in said gelling mixture and adhesion of the gel to the support structure in a moving zone substantially adjacent to said localized area as said localized area moves, producing in the entire confined support structure a continuous gel substantially free of voids and air bubbles in the absence of degassing.



5,061,337

PRESSURE ROLLER ASSEMBLY

Neil S. Fraser, Elderslie, Great Britain, assignor to Stoddard Sekers International PLC, United Kingdom

Filed Sep. 19, 1989, Ser. No. 409,047

Claims priority, application United Kingdom, Sep. 22, 1988, 8822328

Int. Cl.[5] G05G *15/00;* **B32B** *31/00*

U.S. Cl. 156—351 **4 Claims**



1. A pressure roller assembly comprising a frame, first and second rollers each mounted for rotation on a respective axle means, means mounting the axle means to the frame to dispose the rollers in parallel configuration, said mounting means providing limited adjustment of each axle means at each end of its roller in common plane, measuring means for each said end fixedly positioned with respect to the adjacent roller centreline, and a reference member at each end of the roller defining a predetermined machine centreline between the rollers, the measuring means each operating to provide a signal representing the distance between the respective roller centreline and the machine centreline.

5,061,338

DEVICE FOR MANUFACTURING CURVED STRIPS INCLUDING A BARREL CAM FOR DISCONTINUOUS DISPLACEMENT OF THE CURVED STRIPS

Michel Huvey, Bougival, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

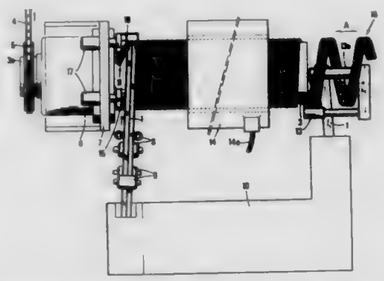
Filed Feb. 2, 1990, Ser. No. 474,338

Claims priority, application France, Feb. 2, 1989, 89 01331

Int. Cl.[5] B65H *81/00;* **B31C** *13/00*

U.S. Cl. 156—425 **7 Claims**

1. Device for continuously manufacturing curved shaped strips from reinforcing elements impregnated with a stabilizable material, the device comprising means for rotating a mandrel around a longitudinal axis, a molding element wrappable around the mandrel and having an interior profile for receiving reinforcing elements impregnated with the stabilizable material, guide means for guiding a wrapping of the molding element on the mandrel, means for introducing reinforcing elements impregnated with stabilizable material into the molding element, means disposed on at least a portion of a length of the mandrel for stabilizing said stabilizable material so as to enable an obtaining of said curved shaped strips, means for extracting



said molding element and said curved strips at one end of said mandrel and means for a discontinuous displacement of said molding element relative to said mandrel along the longitudinal axis of the mandrel and toward an end of the mandrel at which the molding element and the curved strips are removed including means fixed to a frame member for communicating independent of mandrel rotation a displacing motion to said means for discontinuous displacement of said molding element.

5,061,339

MOLDING MACHINE FOR RUBBER BELT PRODUCTION

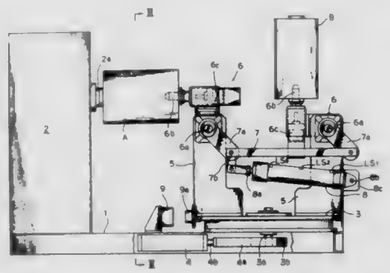
Toshio Nakagaki, Kobe, Japan, assignor to Bando Kagaku Kabushiki Kaisha, Kobe, Japan

Filed Oct. 4, 1990, Ser. No. 592,843

Claims priority, application Japan, Oct. 31, 1989, 01-285483

Int. Cl.[5] B65H *81/00*

U.S. Cl. 156—446 **2 Claims**



1. A molding machine for rubber belt production wherein canvas, cords, rubber sheet, etc. are wound over a mold to form a molding,

said molding machine comprising

a plurality of supporting machines each adapted to support a mold disconnectably and rotatably around the central axis of said mold, a rotary table rotatable on a vertical center of rotation, said supporting machines being mounted on said rotary table at a fixed radial distance from said center of rotation of said rotary table,

each supporting machine being pivotably supported for tilting a mold between a position wherein the central axis

of the mold is substantially horizontal and a position wherein the central axis is substantially vertical,

a pair of supporting stands mounted on said rotary table oppositely with each other across said center of rotation of the table,

each supporting machine being pivotally mounted on a horizontal support shaft of each of said support stands,

one end of a linkage member fixed to each support shaft, and two ends of a connecting link rotatably connected to the other ends of the linkage members respectively in such a way that when a mold supported by one supporting machine is substantially horizontal, a mold supported by the other supporting machine is substantially vertical, and

a single cylinder unit connected to reciprocate said connecting link in the axial direction thereof.

5,061,340

DEVICE FOR FITTING AN EXTRACTION SLEEVE INTO A STEAM-GENERATOR TUBE AND CORRESPONDING PROCESS FOR THE EXTRACTION OF A TUBE PORTION

Paul Jacquier, Tassin La Demi-Lune, France, assignor to Framatome, Courbevoie, France

Filed Oct. 17, 1989, Ser. No. 422,710

Claims priority, application France, Oct. 17, 1988, 88 13655

Int. Cl.[5] B23P *15/26*

U.S. Cl. 156—578 **11 Claims**



1. Device for fitting an extraction sleeve into a steam-generator tube fastened by crimping in a tube plate by means of its end parts, so as to be flush with a first, entry face of the tube plate and to project relative to a second face of the tube plate, a tube portion to be extracted from the entry face of the tube plate, inside a water box of the steam generator, first being separated from the remaining part of the tube by cutting in a zone remote from ends of the tube and being equipped internally, over at least a part of a length of said tube portion, with an extraction sleeve which is installed by means of a device comprising a glue-injecting syringe engaged and fastened in the extraction sleeve, in order to inject a glue between the extraction sleeve and the tube in a least two zones, the device further comprising

(a) at least one guide sleeve equipped, at one end of said guide sleeve, with means of connection to corresponding means located at a first end of the extraction sleeve;

(b) a retention sleeve consisting of a flexible elongate element equipped, at one of its ends, with means of removable connection to corresponding means located at a second end of the extraction sleeve;

(c) means for fastening the retention sleeve to the entry face of the tube plate; and

(d) means for installation of the extraction sleeve and for installation, control and extraction of the injection syringe, said means comprising an actuating member and an elongate transmission element having a diameter less than an inside diameter of the retention sleeve and being connected at one of its ends to the injection syringe and at its other end to the actuating member.

5,061,341

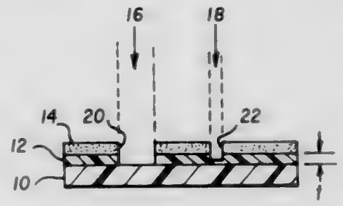
LASER-ABLATING A MARKING IN A COATING ON PLASTIC ARTICLES

Maurice A. Kildal, Webster, and Arthur P. Chipouras, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1990, Ser. No. 470,187

Int. Cl.[5] B05D *3/06;* **B44C** *1/22;* **B23K** *26/00*

U.S. Cl. 156—632 **10 Claims**



1. A method of preventing damage to a pigmented plastic article when ink on said article is ablated away to form an image, the method comprising the steps of:

a) coating the plastic article with a first layer of binder and solvent with a sufficient wet-laydown to provide a dried coating coverage of from 3 to 10 g/m^2,

b) drying said first layer,

c) coating said first layer and plastic article with a colored coating comprising a binder and a contrast color opposite to that of the pigment of said plastic article, with a wet-laydown sufficient to give a dried thickness sufficient to produce a minimum print contrast of at least 0.75 compared to the color of said plastic article,

d) drying said colored coating, and

e) in predetermined portions that form an image, ablating away all of said colored coating and at least some of said first layer, by exposing the coated side of said article using a laser.

5,061,342

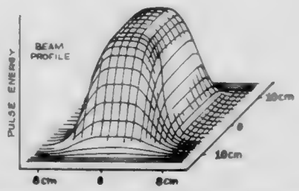
TARGET DOMAIN PROFILING OF TARGET OPTICAL SURFACES USING EXCIMER LASER PHOTOABLATION

William F. Jones, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 18, 1990, Ser. No. 525,515

Int. Cl.[5] B44C *1/22;* **B29C** *37/00*

U.S. Cl. 156—643 **10 Claims**



1. A method for producing toric powered contact lenses which comprises the steps of:

providing a contact lens blank to an apparatus capable of indexing the position of said lens to the beam path of an excimer laser capable of photoablating the material of said lens blank,

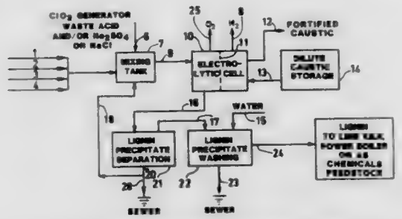
scanning the domain of the excimer laser across the contact lens blank along at least one axis and controlling the product of the intensity of said beam with time in order to control the amount of ablation of said contact lens blank along at least one axis of said contact lens blank.

5,061,343

RECOVERY OF NAOH AND OTHER VALUES FROM SPENT LIQUORS AND BLEACH PLANT EFFLUENTS

Mahmoud K. Azarniouch, Dorval, and Steven Prahacs, Beaconsfield, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed May 30, 1990, Ser. No. 530,800
Claims priority, application Canada, May 31, 1989, 601281
Int. Cl.[5] B01D *61/42*; D21C *11/00*
U.S. Cl. 162—16 18 Claims



1. A process for recovering pulping chemicals and lignin and other combustible materials from an aqueous, alkaline liquid containing combustible lignin, which comprises:

(i) electrolytically acidifying an aqueous, alkaline liquid containing combustible organic material comprising lignin to a pH effective to initiate lignin precipitation from said liquid with less than 5% weight of the lignin in said liquid being precipitated and recovering a partly neutralized liquid,

(ii) chemically acidifying the recovered partly neutralized liquid to precipitate a major portion of the lignin therein, in excess of of 75%, by weight, of the lignin content of the liquid being precipitated, and separating the precipitated lignin from the chemically acidified liquid to leave a lignin depleted acidified liquid,

(iii) electrolytically acidifying the depleted acidified liquid to precipitate residual lignin, and

(iv) recovering precipitated lignin,

and wherein steps (i) and (iii) each include an electrolytic acidification in which liquid containing lignin is fed to an anolyte compartment of an electrolysis cell, said cell having a catholyte compartment separated from said anolyte compartment by a cation permselective membrane, and comprising:

(a) carrying out said electrolytic acidification by electropotential to split water in said anolyte compartment and produce H^+ ions in the presence of sodium ions,

(b) effecting electrolysis in said cell,

(c) maintaining an aqueous source of hydroxide ions in said catholyte compartment and allowing said sodium ions in said anolyte compartment to migrate through said membrane into said catholyte compartment to generate an aqueous sodium hydroxide solution in said catholyte compartment,

(d) recovering aqueous sodium hydroxide solution from said catholyte compartment, and

(e) recovering an acidic solution from said anolyte compartment.

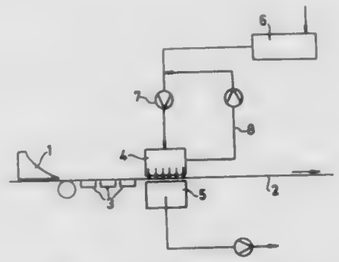
5,061,344

METHOD OF MAKING SOFT PAPER

Irene K. Wedin, Sundsvall, and Bo R. Ek, Stockholm, both of Sweden, assignors to Sunds Defibrator Aktiebolag, Sweden

PCT No. PCT/SE87/00424, § 371 Date Mar. 14, 1989, § 102(e) Date Mar. 14, 1989, PCT Pub. No. WO88/02416, PCT Pub. Date Apr. 7, 1988
PCT Filed Sep. 22, 1987, Ser. No. 339,617
Claims priority, application Sweden, Oct. 2, 1986, 8604190
Int. Cl.[5] D21F *11/00*
U.S. Cl. 162—129 13 Claims

1. A process of manufacturing soft paper from cellulosic fibrous material comprising the steps of wet forming a first cellulosic fiber layer, and depositing an amount of dry cellulosic fibers on at least one surface of said first cellulosic fiber layer such that a first dry-formed layer of dry cellulosic fibers



having a grammage of between about 2 and 20 g/m^2 is fused and formed thereon, and substantially every cellulosic fiber in said first dry-formed layer is in contact with said first cellulosic fiber layer.

5,061,345

METHOD OF MAKING A MULTIPLE PLY PAPER PRODUCT CONTAINING AN OUTER PLY OF RECLAIMED WHITE OFFICE WASTE

Roger P. Hoffman, Green Bay, Wis., assignor to Green Bay Packaging Inc., Green Bay, Wis.

Filed Feb. 21, 1991, Ser. No. 658,994
Int. Cl.[5] D21H *11/14*
U.S. Cl. 162—125 12 Claims

1. A method of producing linerboard, comprising the steps of forming a Kraft pulp stock, forming a second pulp stock consisting substantially solely of reclaimed white office waste paper containing inorganic fillers and toners, adjusting the solids content of said second pulp stock to a value greater than 12% solids and thereafter subjecting said second pulp stock to a shearing action to abrade the fibers and reduce the particle size of said toners and fillers and disperse said toners and fillers in said second pulp stock, applying the second pulp stock containing the dispersed toners and fillers as an outer ply to a base ply of said Kraft pulp stock to form a composite structure, and impregnating said outer ply with a dry strength additive characterized by the ability to improve the internal dry strength of said outer ply.

5,061,346

PAPERMAKING USING CATIONIC STARCH AND CARBOXYMETHYL CELLULOSE OR ITS ADDITIONALLY SUBSTITUTED DERIVATIVES

Thomas E. Taggart; Michael A. Schuster, and Alan J. Schellhamer, all of Jacksonville, Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Filed Sep. 2, 1988, Ser. No. 240,774
Int. Cl.[5] D21H *17/29*
U.S. Cl. 162—175 18 Claims

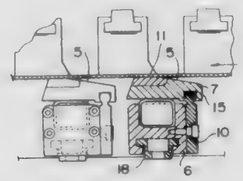
1. In the process of making paper by forming a paper furnish comprised of cellulosic fibers or cellulosic fibers and mineral filler material suspended in water, depositing the furnish on a papermaking wire, and forming a sheet out of the solid components of the furnish while carried on the wire, the improvement wherein there is mixed into the furnish, prior to its being deposited on the wire, about 0.50 to 5 percent of cationic starch (based on the dry weight of total solids in the furnish) followed by about 5 to 20 percent of a water soluble carboxymethyl cellulose (based on the weight of the cationic starch).

5,061,347

ADJUSTABLE LEDGE FOR THE SHEET FORMING ZONE OF A PAPERMAKING MACHINE

Alfred Bubik, Ravensburg; Otto Hildebrand, Ravensburg; Herbert Holik, Ravensburg-Taldorf, and Karl Müller, Ringgenweiler, all of Fed. Rep. of Germany, assignors to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Jul. 10, 1990, Ser. No. 550,479
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929265
Int. Cl.[5] D21F *1/54*
U.S. Cl. 162—301 12 Claims



1. A ledge arrangement for a sheet forming zone of a double wire papermaking machine defining a predetermined machine direction, comprising:

means for arranging the ledge arrangement in a substantially flexure resistant manner substantially transverse relative to the predetermined machine direction;

adjusting means for adjusting the ledge arrangement for guiding wires of the papermaking machine and between which wires a sheet is formed from an infed web of material;

a guide surface facing the wires;

supporting member;

a pressing member containing said guide surface facing said wires;

said adjusting means including a pressing device;

said pressing device being supported at said supporting member and adjustably supporting said pressing member;

a predetermined ledge direction defined by the ledge arrangement; and

said pressing device directly contacting said pressing member and adjustably supporting said pressing member for adjustment relative to said wires and said supporting member and structured and arranged to permit substantially simultaneous adjustment of the pressing member in elevation and in inclination about a pivot axis, said pivot axis being located substantially at one end of said pressing member with said pressing member being mounted to rotate around said pivot axis.

5,061,348

SULFURIC ACID REPROCESSOR WITH CONTINUOUS PURGE OF SECOND DISTILLATION VESSEL

Marshall W. McCormick, and Jesse C. Dobson, both of Oakland, Calif., assignors to Alameda Instruments, Pleasanton, Calif.

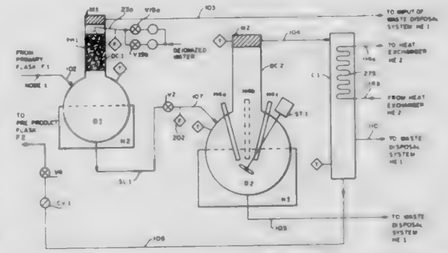
Continuation of Ser. No. 261,916, Oct. 24, 1988, abandoned, which is a continuation-in-part of Ser. No. 231,849, Aug. 12, 1988, Pat. No. 4,980,032. This application Feb. 15, 1990, Ser. No. 481,708
The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.
Int. Cl.[5] B01D *3/10*; C01B *17/90*
U.S. Cl. 202—154 5 Claims

1. An acid reprocessor for reprocessing waste piranha containing contaminated sulfuric acid (H_2SO_4) from a semiconductor processing operation, said acid reprocessor comprising:

an input flask means for receiving said waste piranha containing contaminated H_2SO_4, light boiling contaminants, water and particulates, said input flask means including a first heating means for heating said waste piranha, said input flask means having an output for outputting said waste piranha;

a first distillation means having an input coupled to said output of said input flask means to receive said waste piranha and having a gaseous output being coupled to a first column packed with a column packing means, said first distillation means having a second heating means for heating said waste piranha to boil off said water and said light boiling contaminants from said waste piranha to produce an enriched acid, said contaminants escaping from said gaseous output through said first column and through a mist eliminator means of said first distillation means, said first column having an input to receive reflux liquid which is trickled through said column to retard loss of H_2SO_4 in said first distillation means, said first distillation means having a feed output for providing said enriched acid;

a second distillation means having an input coupled to said feed output for receiving said enriched acid, said second distillation means having a third heating means for heating said enriched acid to boil off substantially pure H_2SO_4, through a second column leaving an acid waste sludge in said second distillation means, said second distillation means having a first output for providing said substantially pure H_2SO_4, said first output being coupled to a condenser to condense said substantially pure H_2SO_4, said



condenser having a first coil through which a coolant flows to cool the substantially pure H_2SO_4 which flows through said condenser, said second distillation means having a second output for continuously purging said acid waste sludge from said second distillation means, said second distillation means having a structure being comprised substantially of borosilicate glass;

a heat exchanger means having a cooling means including a second coil through which a coolant flows and having a first input coupled to said gaseous output of said first distillation means to receive said water and said light boiling contaminants escaping from said first distillation means and having a second input coupled to said second output of said second distillation means to receive said acid waste sludge, said heat exchanger means having a third column packed with column packing means and having an input to receive waste acid which is trickled through said third column;

a vacuum generation means coupled to provide a vacuum in said first distillation means and in said second distillation means, said vacuum generation means producing a vacuum in said second distillation means to reduce said contaminants of said substantially pure H_2SO_4, whereby said acid reprocessor provides a reprocessed semiconductor grade H_2SO_4 from waste piranha of a semiconductor processing operation.

5,061,349

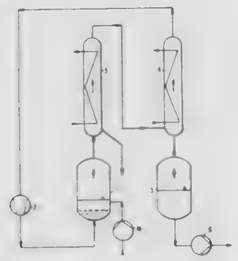
METHOD OF ISOLATING TRIOXANE FROM AQUEOUS TRIOXANE SOLUTIONS BY DISTILLATIVE SEPARATION

Herbert Küppenbender, Lenzhahner Weg 36, 6272 Niedernhausen, and Helmut Reis, Koehlerweg 15, 8751 Hofstetten, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 287,642, Dec. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 141,069, Jan. 5, 1988, abandoned. This application Jul. 27, 1990, Ser. No. 558,804

Int. Cl.[5] B01D *3/34;* **C07D** *323/06*

U.S. Cl. 203—14 **19 Claims**



1. A method of isolating trioxane by distillative separation at substantially atmospheric pressure without a solvent extraction step from an aqueous trioxane solution, comprising the steps of

heating an aqueous trioxane solution having a trioxane concentration which does not exceed 70% by weight and which does not exceed the concentration of a constant boiling azeotropic mixture obtained from distillation of said aqueous trioxane solution at substantially atmospheric pressure up to boiling in an evaporator to form a trioxane and water vapor-containing steam mixture which leaves the evaporator;

feeding an inert gas stream;

introducing said steam mixture in a first stage together with said inert gas stream through a first stage partial condensing means connected directly to said evaporator, wherein said inert gas stream is fed into said evaporator or said partial condensing means; cooling said steam mixture together with said inert gas stream to a temperature in the range of 58° to 64° C., wherein a water portion of said steam mixture is partially condensed and separated; then in a second stage introducing to a second stage condensing means operating at a temperature of from 30° C. to 50° C. said steam mixture together with said inert gas stream containing a trioxane portion, wherein said trioxane portion is condensed together with a residual water portion and separated from said inert gas stream to form a trioxane concentrate having a trioxane concentration which is greater than that of the corresponding azeotropic mixture such that the azeotropic barrier created by azeotropic formation is overcome, and wherein said method is performed without a solvent extraction step.

5,061,350

METHOD FOR PRODUCING DETECTING ELEMENT

Fujio Ishiguro, and Toru Kikuchi, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Oct. 27, 1989, Ser. No. 427,649

Claims priority, application Japan, Oct. 29, 1988, 63-273907

Int. Cl.[5] H01C *17/00*

U.S. Cl. 204—37.1 **6 Claims**

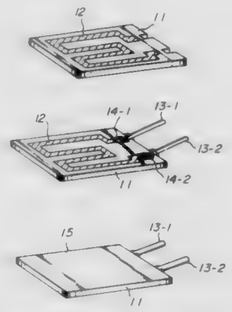
1. A method for producing a resistive detecting element, comprising:

providing a substrate;

providing an electrically conductive member on a surface of said substrate;

fixing metal lead members to said substrate to be in electrical communication with said electrically conductive member;

applying a first electrical current from an external power source to said electrically conductive member through said metal lead members, whereby said first electrical current generates heat in said electrically conductive member and said heat anneals said electrically conductive member;



providing a glass material on a surface of said substrate to cover at least said electrically conductive member; and

applying a second electrical current from said external power source to said electrically conductive member through said metal lead members, whereby said second electrical current generates heat in said electrically conductive member and said heat metals said glass material to provide a glass protective film for at least said electrically conductive member.

5,061,351

BRIGHT TIN ELECTRODEPOSITION COMPOSITION

John H. Commander, Old Saybrook, and Vincent Paneccasio, Jr., Madison, both of Conn., assignors to Enthone-OMI, Inc., West Haven, Conn.

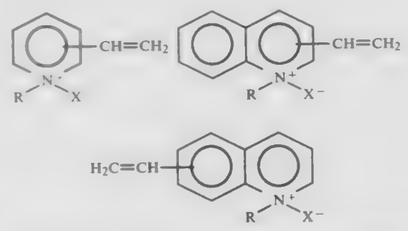
Filed Jul. 23, 1990, Ser. No. 555,690

Int. Cl.[5] C25D *3/30*

U.S. Cl. 204—54.1 **11 Claims**

1. In an aqueous non-lead sulfuric acid-tin electroplating bath the improvement comprising

including in the plating bath for enhanced brightness a quaternized derivative of a substituted or unsubstituted vinyl-pyridine or vinyl-quinoline compound of the general formula



where R is selected from the group consisting of substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, alkyl phenyl, phenyl, alkyl napthalene and alkyl sulfonate radicals and the substituting groups are selected from the group consisting of halogen, nitro, nitroso, hydroxy, alkoxy, carboxy, cyano, sulfo, ester, methyl and ethyl; and X represents an anion or anionic

linkage selected from the group consisting of halogen and anions derived from the use of methyl chloride, dimethyl sulfate, methyl-p-toluene sulfonate, peroxide, epichlorohydrin, benzyl chloride and propane sultone alkylating agents.

5,061,352

ELECTROLYTIC ETCHING OF METALS TO REVEAL INTERNAL QUALITY

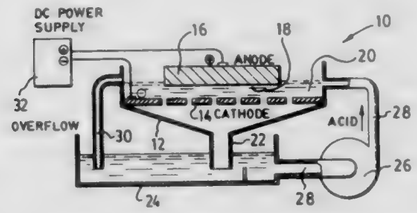
John H. Kelly, Burlington, and Leonard E. Guest, Binbrook, both of Canada, assignors to Stelco Inc., Hamilton, Canada

Filed May 4, 1990, Ser. No. 519,394

Claims priority, application Canada, Jun. 5, 1989, 601708

Int. Cl.[5] C25F *3/06, 3/16*

U.S. Cl. 204—129 **20 Claims**



17. A method of determining the internal quality of a steel ingot slab, bloom, billet and/or bar, which comprises:

removing a sample from said steel,

milling the surface of the sample to be examined to remove any heat-affected zone, and to provide a surface having a peak-to-valley roughness (R_Z) of less than about 6.8 um,

electrolytically etching steel from said surface using dilute hydrochloric acid having a concentration of about 10 to about 30 v/v technical grade HCl at a temperature of about 10° to about 40° C. for about 1 to about 6 minutes to remove about 2 to about 5 mils (about 50 to about 125 um) from the surface of the sample so as to expose a surface representative of the internal quality of the steel ingot, slab, bloom, billet and/or bar from which the sample was taken, said sample being provided as said anode and being spaced from a cathode for said electrolytic etching,

displacing hydrogen produced at the cathode during said etching from between the anode and cathode and rapidly removing reaction products formed during said etching from the surface of said sample by recirculating said aqueous etchant between said anode and cathode at a recirculation rate of about 10 to about 60L/min of etching and

treating said etched surface of the sample to remove spent aqueous etchant and then removing any black gelatinous coating formed during said etching procedure, and drying the etched surface, and

visually examining the etched surface of the sample for its internal quality.

5,061,353

HIGH FEEDSTOCK UTILIZATION PHOTOCHEMICAL PROCESS FOR ^{196}HG ENRICHMENT

Mark V. Grossman, Belmont, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Continuation-in-part of Ser. No. 947,218, Dec. 29, 1986, abandoned. This application Oct. 15, 1987, Ser. No. 109,130

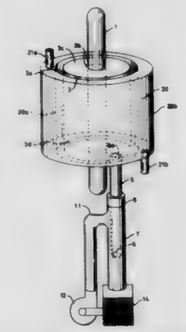
Int. Cl.[5] B01D *5/00*

U.S. Cl. 204—157.22 **5 Claims**

3. A photochemical process for ^{196}Hg enrichment comprising:

entraining mercury feedstock including ^{196}Hg isotope in a carrier medium formed of argon and HCl;

passing the mercury feedstock entrained in the carrier medium into a reactor vessel of a single pass apparatus, including the reactor vessel, said mercury feedstock entrained in the carrier medium; and



exposing the mercury feedstock entrained in the carrier medium within the reactor to 253.7 nm light to form a quantity of $^{196}Hg_2Cl_2$.

5,061,354

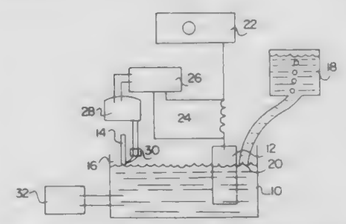
METHOD AND REACTION FOR SUSTAINING HIGH ENERGY REACTIONS

Robert E. Smith, 1263 Emory St., San Jose, Calif. 95126, and Ami E. Berkowitz, 2640 Long Boat Cove, Del Mar, Calif. 92014

Filed Apr. 14, 1989, Ser. No. 338,055

Int. Cl.[5] H05F *7/07;* **B01J** *19/08*

U.S. Cl. 204—164 **5 Claims**



1. A method for generating a high energy region which may be used to carry out reactions requiring high energy at a controlled reaction temperature substantially higher than ambient temperature which comprises:

positioning an electrode with a dielectric liquid, each having an electrical resistance, to form an interface having an area and contact resistance wherein said area is sufficiently small to provide that when electrical current is passed through said electrode, interface and dielectric liquid, temperature of said interface will rise to a substantially larger value than said ambient temperature of said electrode and dielectric liquid;

passing electrical current through said electrode, interface and liquid causing said temperature of said interface and a volume of said electrode adjacent to said interface to increase thereby vaporizing said dielectric liquid adjacent to said interface and increasing said electrical resistance at said interface;

measuring said temperature of said interface and volume;

continually adjusting said position of said electrode to vary said contact resistance is operable combination with said measuring step to provide that said temperature of said interface is maintained substantially equal to said reaction temperature and causing said area of contact to erode to

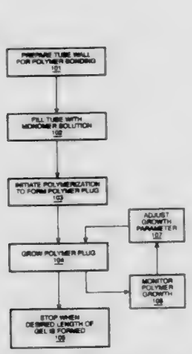
VOL 1131 ISS 5 OC 29 1991

form a powder in combination with said combining element.

5,061,355
PREPARATION OF GEL-FILLED SEPARATION COLUMNS

Donald J. Rose, Jr., Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 14, 1990, Ser. No. 538,348
Int. Cl.[5] C25B *1/00, 7/00;* **B01D** *61/42*
U.S. Cl. 204—182.8 **9 Claims**

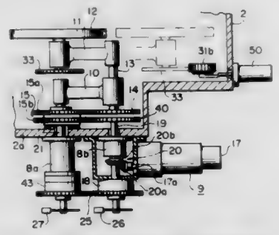


1. A method of preparing a homogeneous gel-filled separation capillary, said method comprising the steps of:
filling said capillary with a prepolymer-bearing substance capable of forming a gel upon polymerization;
initiating polymerization in an initiation section of said capillary, said initiation section having a longitudinal extent at most about one-fourth that of said capillary;
causing polymerization to progress longitudinally from said initiation portion along said capillary; and
filling the volume vacated during polymerization with monomer solution flowing in opposition to and toward the forming polymer.

5,061,356
VACUUM TREATMENT APPARATUS AND VACUUM TREATMENT METHOD

Shigeru Tanaka; Eiji Setoyama; Shinzou Oikawa, all of Hitachi, and Sigeki Yamamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1990, Ser. No. 485,526
Claims priority, application Japan, Feb. 28, 1989, 01-045299
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—192.12 **10 Claims**



1. A vacuum treatment apparatus comprising:
a vacuum housing defining a vacuum chamber and having a first treatment position and a plurality of second treatment positions disposed on a circle surrounding said first treatment position in a spaced relationship from each other, said first treatment position being disposed substantially in a center of said circle;
a substrate stage provided within said vacuum chamber so as to support at least one substrate thereon;
holding means for holding said substrate stage in a manner to make it movable between said first treatment position and at least one of said second treatment positions and between said second treatment positions, said holding means being operable to rotate said substrate stage about an axis of said substrate stage when said substrate stage is disposed at said first treatment position;
drive means operatively connected to said holding means for driving the same so that said holding means can move said substrate stage between said first and said at least one second treatment position and between said second treatment positions, said drive means being operable to drive said holding means so that said holding means can rotate said substrate stage about the axis thereof at said first treatment position; and
means for rotating said substrate stage about the axis thereof when said substrate stage is disposed at each of said second treatment positions.

5,061,357
METHOD OF PRODUCING AN ELECTRON BEAM EMISSION CATHODE

Susan J. Kerber, Sussex, Wis., assignor to Midwest Research Technologies, Inc., Milwaukee, Wis.

Filed Oct. 15, 1990, Ser. No. 597,498
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.15 **12 Claims**

1. A method of producing an electron beam emission cathode, comprising the steps of depositing a coating of LaB_6 on a substrate by sputter deposition to provide a coated substrate, and thereafter heating the coated substrate to a temperature in the range of 750° C. to 1000° C. in a non-oxidizing atmosphere.

5,061,358
INSOLUBLE ANODES FOR PRODUCING MANGANESE DIOXIDE CONSISTING ESSENTIALLY OF A TITANIUM-NICKEL ALLOY

Ryoichi Nobuyoshi, and Kazuhiro Taki, both of Kanagawa, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

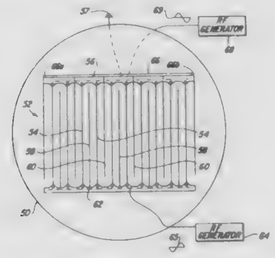
Filed Jun. 8, 1990, Ser. No. 535,271
Int. Cl.[5] G25B *11/10*
U.S. Cl. 204—290 R **22 Claims**

1. An insoluble anode for producing manganese dioxide by electrolysis characterized in that at least a surface layer of said anode is formed from a titanium alloy consisting essentially of from 0.5 to less than 15 percent by weight of nickel, the remainder being titanium and unavoidable impurities, said titanium alloy containing Ti_2Ni particles dispersed therein.

5,061,359
PLASMA PROCESSING APPARATUS INCLUDING THREE BUS STRUCTURES

Suryadevara V. Babu, Potsdam; Neng-hsing Lu, Endwell, and Carl-Otto Nilsen, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 409,289, Sep. 18, 1989, which is a continuation of Ser. No. 199,838, May 27, 1988, abandoned, which is a continuation of Ser. No. 894,240, Aug. 4, 1986, abandoned, which is a continuation of Ser. No. 692,144, Jan. 17, 1985, abandoned. This application Jan. 22, 1990, Ser. No. 468,422
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—298.07 **3 Claims**



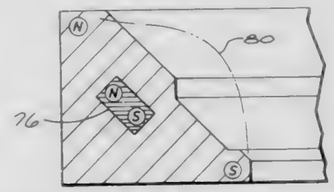
1. An apparatus for plasma processing a plurality of substrates simultaneously, comprising:
a) a plasma reactor chamber;
b) a housing mounted within said plasma reactor chamber;
c) a plurality of electrodes disposed in said housing substantially parallel to each other, each of said electrodes being of hollow configuration and including a pair of substantially flat sides each having a plurality of tapered apertures therein;
d) means for supporting a substrate between each pair of electrodes and parallel thereto;
e) a first bus structure for connecting said substrates electrically;
f) a second bus structure for connecting alternate ones of said electrodes electrically;
g) a third bus structure for connecting the remaining ones of said electrodes electrically;
l) means for supplying a reactive gas to said plasma reactor chamber, said means directing said gas through said apertures within said sides of said electrodes such that said gas emerges from said apertures and is uniformity distributed across the respective surface of said substrate that said electrode faces;
i) means for exhausting said plasma reactor-chamber;
j) a first radio frequency power source electrically connected to said second bus structure; and
k) a second radio frequency power source electrically connected to said third bus structure and adapted to operate about 180 degrees out of phase with said first radio frequency power source.

5,061,360
APPARATUS FOR DEPOSITING A THIN FILM OF A SPUTTERED MATERIAL ON A MEMBER

Peter J. Clarke, Santa Barbara, Calif., assignor to Sputtered Films, Inc., Santa Barbara, Calif.

Filed Jan. 26, 1990, Ser. No. 470,710
Int. Cl.[5] C23C *14/35*
U.S. Cl. 204—298.18 **15 Claims**

1. In combination for producing a deposition on a wafer, an anode,
a target spaced from and facing the anode to serve as a cathode, the target having properties of emitting sputtered atoms when bombarded by gaseous ions and of directing the sputtered atoms to the wafer,
means for defining a cavity between the anode and the target for reeving atoms of a neutral gas,
means for creating an electrical field between the anode and the target at a low pressure to produce a migration of the electrons through the cavity and an ionization of atoms of the neutral gas in the cavity, and
means for producing a magnetic field int eh cavity for increasing the distance of travel of the electrons from the target to the anode to enhance the ionization of atoms of the neutral gas in the cavity,

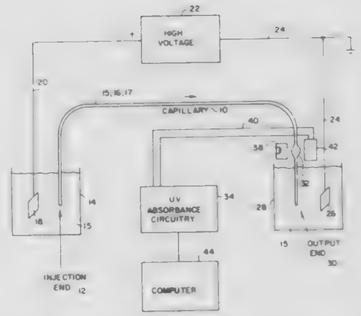


the target being made from a magnetizable material, the target being provided, with a continuous surface facing the anode and with an internal construction, to divert lines of flux in the magnetic field into passing through the space external to the target so as to enhance the movement of the electrons through paths providing, external to the target, for the ionization of the atoms of the neutral gas.

5,061,361
CAPILLARY ZONE ELECTROPHORESIS CELL SYSTEM

Gary B. Gordon, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 6, 1989, Ser. No. 319,460
Int. Cl.[5] G01N *27/26;* **B01D** *57/02*
U.S. Cl. 204—299 R **20 Claims**



1. An apparatus for detecting at least one component in a sample comprising:
a containment means for conveying a carrier and said sample; said containment means including a section having an inlet with a predetermined cross-sectional area and an outlet;
a kinetic means for moving said sample through said containment means;
a cell coupled between said inlet and outlet of the section of the containment means for holding a small portion of said carrier and said sample; said cell having a greatest cross-sectional area which is normal to a longitudinal flow direction of the cell and which is larger than said predetermined cross-sectional area; and

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detection means for sensing said component.

5,061,362

PROCESS FOR HYDROGENATION OF HEAVY OIL

Takashi Yamamoto, and Toshio Itoh, both of Chiba, Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Continuation-in-part of Ser. No. 410,334, Sep. 20, 1989, abandoned. This application Oct. 10, 1990, Ser. No. 596,577
Claims priority, application Japan, Oct. 19, 1988, 63-261397
Int. Cl.[5] C10G *47/02, 65/00*
U.S. Cl. 208—108 **21 Claims**

1. A process for hydrogenating a heavy oil which comprises contacting the heavy oil with hydrogen and a solid catalyst suspended in said heavy oil, said solid catalyst being a mixture of a direct desulfurization catalyst and a spent FCC catalyst which is free of molybdenum.

5,061,363

METHOD FOR CO-PROCESSING WASTE RUBBER AND CARBONACEOUS MATERIAL

Malvina Farcasiu, and Charlene M. Smith, both of Pittsburgh, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 9, 1990, Ser. No. 594,486
Int. Cl.[5] C10G *1/00*
U.S. Cl. 208—419 **18 Claims**

1. A method for co-processing carbonaceous material and rubber comprising:
- forming a mixture of the rubber and the carbonaceous material;
- heating the mixture to the depolymerization temperature of the rubber in the presence of a source of hydrogen to form a hydrogenated liquid hydrocarbon and residual solids; and separating the liquid hydrocarbon from the residual solids.

5,061,364

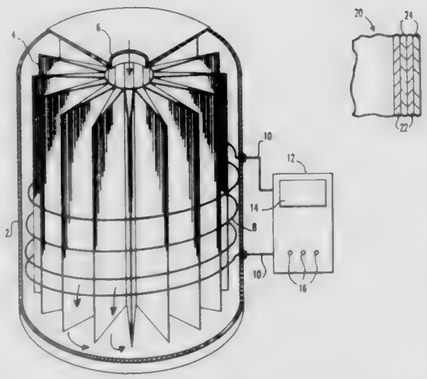
DIAGNOSTIC FILTER FOR DETECTING CONDUCTIVE AND SEMICONDUCTIVE PARTICLES IN A FLUID STREAM

Michael J. Metala, Murrysville, and William G. Clark, Jr., Murrysville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 26, 1990, Ser. No. 470,471
Int. Cl.[5] B01D *35/14*
U.S. Cl. 210—85 **11 Claims**

10. A diagnostic filter device for monitoring electrically conductive and semiconductive particles entrained by a fluid, comprising:
- a filter element disposed to receive the fluid and to permit passage of the fluid while retaining particles entrained in the fluid, said filter element having the form of a hollow cylinder made of an electrically nonconductive material which is pleated to have a plurality of crevices in which particles can accumulate;
- means comprising an inductive coil surrounding said cylinder and having an inherent complex inductive impedance for producing an alternating electromagnetic field which extends across at least one region of said filter element; and
- eddy current detecting means connected to said electromagnetic field producing means for detecting the influence of particles in said filter element region of said field, said eddy current detecting means comprising an instrument having: an electrical power source connected for supplying operating power to said coil; a cathode ray tube connected to produce a display representative of the effective complex impedance of said electromagnetic field producing means; and means for nulling the display produced by said cathode ray tube;
- wherein the region enclosed by said coil is free of electrically conductive or semiconductive material other than the particles to be monitored.

in combination with a body having a surface exposed to the fluid at a location upstream of the filter element region, wherein said body surface comprises a first layer containing a first conductive or semiconductive material which can influence said field in a first manner and a second layer superposed on said first layer and containing a second conductive or semiconductive material different from said first material and which can influence said field in a second manner different from the first manner.



5,061,365

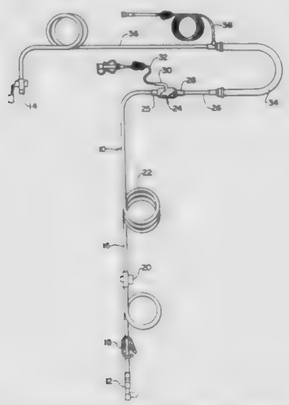
MEDICAL FLUID FLOW SET

David S. Utterberg, 1080 Chestnut St., San Francisco, Calif. 94109

Filed Jan. 22, 1991, Ser. No. 643,230
Int. Cl.[5] A61M *1/14;* B01D *35/14, 65/00*
U.S. Cl. 210—90 **7 Claims**

1. In a medical fluid flow set which comprises flexible flow tubing having a plastic "pillow" connected in-line with said flow tubing through opposed first and second longitudinal ports, the improvement comprising, in combination:
- said plastic pillow comprising a single, blow-molded, integral piece with a third port tube communicating with said pillow at a point between said first and second ports, said third port tube extending laterally outwardly from said pillow and turning to define an outer tube end having an axis essentially parallel to said first and second ports, and a branch line connected with said outer tube end.

5. A plastic "pillow" for connection in-line with flow tubing, said plastic pillow comprising opposed first and second longitudinal ports and a central section of enlarged transverse dimension relative to said ports, said plastic pillow and ports comprising a single, blow-molded, integral piece with a third port tube communicating with said pillow at a point between said first and second ports, said third port tube extending laterally outwardly from said pillow and turning to define an



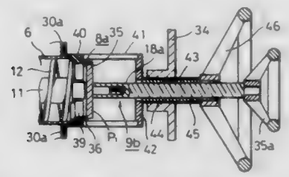
outer tube end having an axis essentially parallel to said first and second ports.

5,061,366

SCRAPER FILTER SYSTEM

Koichi Arai, Kanagawa, Japan, assignor to Arai Corporation, Japan

Filed Apr. 24, 1990, Ser. No. 513,639
Claims priority, application Japan, Apr. 28, 1989, 1-107834; Aug. 31, 1989, 1-223302
Int. Cl.[5] B01D *29/64*
U.S. Cl. 210—111 **2 Claims**



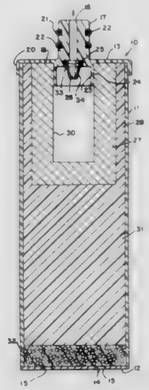
2. A scraper filter system comprising:
- a filter element of a cylindrical form having a filter slit formed in a spiral shape along the internal surface thereof;
- a cylindrical casing selectively holding said filter element for allowing liquid components to flow from the inside to the outside through said filter element;
- a spiral impeller provided with scraper means rotatably disposed within said filter element with respect to longitudinal axis of said filter element;
- a feed liquid inlet provided on one end of said cylindrical casing;
- a filter cake discharge means provided on the other end of said cylindrical casing, said filter cake discharge means comprising:
- an arcuate member removably retained on said other end of said cylindrical casing and having a plurality of radially extending support members, said radially extending support members supporting one end of said spiral impeller for rotation;
- a support frame in axial alignment with said other end of said cylindrical casing having one end engaging said arcuate member for retaining said arcuate member on the other end of said cylindrical casing;
- a retainer plate provided on said support frame at an opposite end from said arcuate member and having an opening in axial alignment with said impeller;
- a retainer frame member in axial alignment with said arcuate member and having a threaded opening in axial alignment with said impeller;
- a threaded sleeve engaging said threaded opening in said retainer frame having internal threads for engaging a threaded shaft and having one end sized so as to engage an area located about the opening in said retainer plate;
- a threaded shaft threadably engaged in said internal threads of said threaded sleeve and having a closure member on one end for closing said arcuate member and a handle on the other end for rotation thereof; and
- a wheel connected to the other end of said threaded sleeve to move said threaded sleeve into and out of said threaded opening in said retainer frame and thereby retain and release said retainer plate and said support frame.

5,061,367

WATER PURIFYING FILTER DEVICE

Gary L. Hatch, Sheboygan, and Ralph A. Polasky, Ripon, both of Wis., assignors to Ametek, Inc., Sheboygan, Wis.

Filed Oct. 13, 1989, Ser. No. 421,558
Int. Cl.[5] B01D *27/02;* C02F *9/00*
U.S. Cl. 210—137 **17 Claims**



1. A filter for the purification of a supply of drinking water comprising:
- a filter-enclosing container having a water inlet and a water outlet;
- a microbiocidal resin filling a portion of the container;
- an activated carbon filter element within the container downstream of said resin;
- flow control means responsive to the pressure of the water supply for providing a uniform flow rate of water through the filter and for assuring a minimum effective residence time of the water in the microbiocidal resin bed; and,
- temperature responsive means operatively connected to said water inlet for decreasing the flow of water therethrough in response to decreasing temperature of the water supply.

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5,061,368

SYSTEM FOR TREATING WASTE WATER BY NITRIFICATION

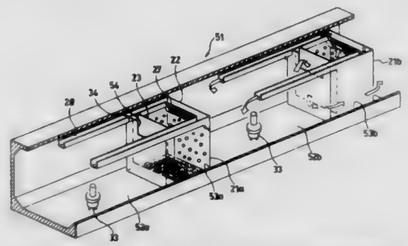
Minoru Tada, Yokohama; Syouji Harada, Omiya; Syuzo Koike, Urawa; Yukio Kawaguchi, Takatsuki; Tamotsu Mizuguchi, Tokyo; Hiroyoshi Emori, Tokyo; Naomichi Mori, Tokyo; Toshio Yamaderа, Tokyo; Masami Hotta, Tokyo; Hiroki Nakamura, Tokyo; Tatsuo Sumino, Tokyo; Takashi Kimata, Urawa, and Yuuko Fujii, Mitaka, all of Japan, assignors to Hitachi Plant Engineering & Construction Co., Ltd. and Japan Sewage Works Agency, both of, Japan

Filed Feb. 16, 1990, Ser. No. 480,498

Claims priority, application Japan, Feb. 16, 1989, 1-37057

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—151 **10 Claims**



1. A system for treating waste water by nitrification, comprising:

a waste water treating vessel including a biological reaction vessel with an inlet for allowing original waste water to flow into said reaction vessel, and a nitrifying vessel containing therein a particulate pellet of fixed nitrifying bacteria for treating said waste water by nitrification, said particulate pellet comprising a particulate body of nitrifying bacteria covered and fixed by a gellable organic compound;

a waste water inflow passage for sending said waste water from said biological reaction vessel to said nitrifying vessel;

a waste water circulation passage for returning said waste water from said nitrifying vessel to said biological reaction vessel;

an air diffusion device disposed in the bottom portion of said nitrifying vessel for supplying oxygen to the nitrifying bacteria of said particulate pellet by means of air diffused and returning said waste water in said nitrifying vessel through said waste water circulation passage to said biological reaction vessel by means of an air lift action to thereby circulate said waste water between said biological reaction vessel and said nitrifying vessel; and,

a pellet separation device disposed in at least one of the waste water inflow passage and the circulation passage of said nitrifying vessel, for preventing outflow of said particulate pellet.

5,061,369

SUB-SOIL DOMESTIC WASTEWATER TREATMENT APPARATUS HAVING WEDGE SHAPED INCLINED SURFACES

Roland Romero, 1204 W. Main St., New Iberia, La. 70560, and Joseph L. Miller, Rte. 13, Box 813, Lake Charles, La. 70611

Filed Jun. 27, 1990, Ser. No. 544,630

Int. Cl.[5] B01D *21/02*

U.S. Cl. 210—170 **5 Claims**

1. A containerized wastewater treatment apparatus, suitable for sub soil installation, comprising:

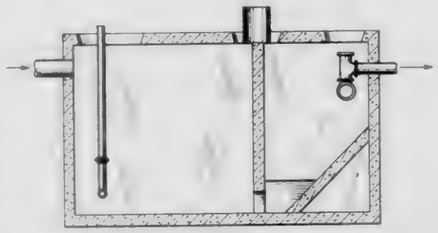
a) a liquid sealed vessel having a substantially horizontal floor, two substantially vertical end walls and left and right sidewalls, and a substantially horizontal top, defining a generally hollow interior with a given width;

b) a substantially horizontal influent line extending through an upper part of a first of the end walls

c) a substantially horizontal effluent line extending through an upper part of the second of the end walls;

d) a substantially vertical transverse wall positioned within the interior of the vessel, between the influent line and the effluent line, said wall sealingly extending upward to the top of the vessel, transversely to the left and right side walls, and downward to the floor of the vessel, and having a height dividing the vessel into influent chamber and effluent chamber, said transverse wall having two flow passages positioned at its lower left and lower right corners of the transverse wall, each said passage being substantially one fourth the width of the vessel and substantially six inches in height;

e) a horizontal aeration pipe within the interior of the vessel, positioned centrally between said right and left side walls of the vessel, near the lower portion of the influent chamber opposite from the transverse wall, said pipe having a length which is equal to or less than one-half the width of the vessel, said pipe being sealed at its lateral ends, having holes drilled along its length and supplied with air pressure from remote means, so as to produce turbulent aeration within the influent chamber;



f) three generally planar inclined surfaces, within the interior of the vessel, at the lower portion of the effluent chamber, for directing settling solids in the effluent chamber back through the two flow passages in the transverse wall, a first inclined surface extending transversely to the left and right side walls and having a lower portion which intersects the floor of the vessel near the transverse wall, and having an upper portion which intersects the second end wall, the second and third inclined surfaces forming a centrally positioned wedge shaped structure extending longitudinally between the transverse wall and the first inclined surface, said second and third surfaces lack having a lower portion which intersects the floor of the vessel at a line contiguous with the interiorly disposed edges of the flow passages in the transverse wall; and,

g) discharge pipe fittings adapted to the effluent line and extending downward therefrom, said discharge pipe fittings containing at least two substantially 90° turns below a fluid level in the vessel, through which effluent is directed before entering the effluent line.

5,061,370

SCREENING DEVICE FOR SLURRIES WITH IMPROVED ROTOR AND HUB DESIGN

Carl G. Ferland, Port Robinson, and Henry J. Peters, St. Catharines, both of Canada, assignors to Quebec and Ontario Paper Company Ltd., Thorold, Canada

Filed Mar. 20, 1990, Ser. No. 496,261

Int. Cl.[5] B04B *5/12*

U.S. Cl. 210—194 **9 Claims**

1. A rotary filter for separating an accepts fraction from a rejects fraction in an aqueous slurry of particulate material, comprising:

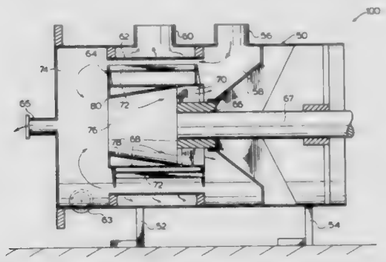
having means comprising a generally cylinder housing arranged with its longitudinal axis extending generally horizontally,

inlet means to said housing for feeding said aqueous slurry thereto

outlet means in a side wall of said housing for removing an accepts slurry fraction therefrom,

screen means mounted in the side wall of said housing in operative relation to said outlet means and dimensioned to permit said accepts fraction to pass therethrough and to prevent said rejects fraction from passing therethrough,

rotor means mounted within said housing for rotation about a generally horizontal axis coaxial with the longitudinal axis of said cylindrical housing means said rotor means having an external surface adjacent to but spaced inwardly from said screen means to cause said aqueous slurry to pass from said inlet means to said outlet means across the outer surface of said rotor means,



said rotor means comprising a hollow cylindrical body having a bore extending longitudinally of said rotor means from a first longitudinal extremity of said rotor means to a second longitudinal extremity of said rotor means, a hub and hub supports joining said hollow cylindrical body to said hub, said bore of said hollow cylindrical body having an internal surface which continuously increases in diameter from a minimum diameter at said first longitudinal extremity of said rotor means to a maximum diameter adjacent said hub and said hub supports,

said hub and said hub supports being located adjacent said second longitudinal extremity of said rotor means, said hub supports being elongate in the longitudinal axial direction of the housing means and being offset at an angle from said generally horizontal axis of rotation of said rotor means.

5,061,371

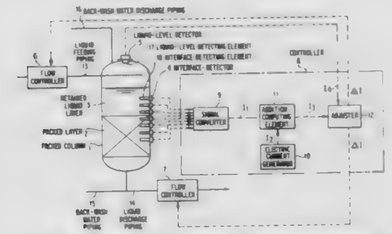
CHROMATOGRAPHIC SEPARATION APPARATUS

Takeshi Tabata; Soichiro Ide, both of Shizuoka; Akihiko Moro, Tokyo, and Ryuji Nagatani, Kanagawa, all of Japan, assignors to Nippon Rensui Co., Tokyo and Fujisawa Pharmaceutical Co., Ltd., Osaka, both of, Japan

Filed Apr. 6, 1990, Ser. No. 505,396

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **5 Claims**



1. A chromatographic separation apparatus having a packed column comprising a packed layer, a retained liquid layer above the packed layer, and liquid-feed piping connected to a space above the retained liquid layer and having a flow controller: comprising flow-liquid discharge piping being connected to the bottom of the packed column and having a flow controller, a liquid level detecting element being provided at the top of the packed column, and a plurality of interface-detecting elements being provided at the inside wall of the packed column; and electrical connection being made so that a first electric signal of the height of the packed layer is transmitted from the interface-detecting element to a controller constituted of a signal converter, an electric current generator, an addition-computing element, and an adjuster; and a second electric signal is transferred from the liquid-level detector provided at the top of the column to the adjuster; and output signal is transmitted from the adjuster to the first controller of the liquid-feed piping and the second controller of the discharging piping.

5,061,372

WATER TREATMENT SYSTEM WITH PRESERVICE RINSE

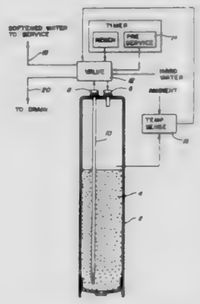
Stanley F. Rak, Mundelein, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed Dec. 11, 1990, Ser. No. 625,537

The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.

Int. Cl.[5] C02F *1/42;* **B01D** *24/48*

U.S. Cl. 210—673 **7 Claims**



6. A water treatment process, comprising the steps of:

providing a water conditioner having an inlet, a treatment medium, and an outlet;

providing service by introducing fresh water into the inlet, through the treatment medium and out the outlet to a service location;

regenerating the treatment medium at various intervals;

prior to the service step, providing a rinse step comprising the step of introducing an amount of the fresh water into the inlet, through the treatment medium and out the outlet to drain,

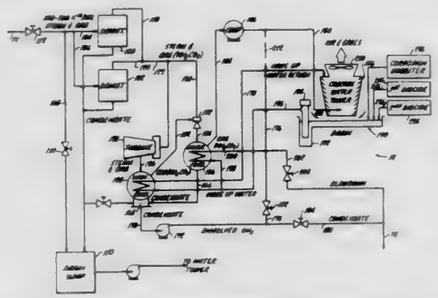
sensing the temperature differential between the ambient air and the water present in the conditioner, and providing the rinse step only if the temperature differential is less than a predetermined amount.

5,061,373

PROCESS FOR TREATING CONDENSATE OF STEAM DERIVED FROM GEOTHERMAL BRINE

Darrell L. Gallup, Chino, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 29, 1988, Ser. No. 226,039
Int. Cl.[5] C02F *1/76;* **C01B** *17/04*
U.S. Cl. 210—697 **69 Claims**



1. In a condensate handling system for handling a flow of condensate of steam derived from a geothermal source, the condensate containing hydrogen sulfide and/or hydrogen sulfide precursors, a process for controlling the emission of hydrogen sulfide from, and the growth of living organisms as measured by the total number of algae, fungi and bacteria present in the condensate handling system, the process comprising the steps of:

(a) contacting, in a substantially continuous manner, the condensate with an amount of an oxidizing biocide which substantially prevents the emission of hydrogen sulfide from the condensate handling system without substantially inhibiting the growth of said organisms in the condensate handling system; and

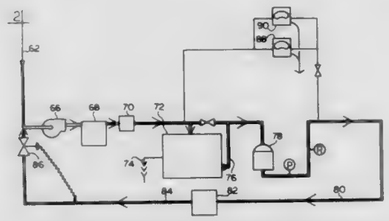
(b) periodically contacting the condensate with an amount of a second biocide which substantially reduces the amount of said organisms, wherein the second biocide can be the same as the oxidizing biocide.

5,061,374

REVERSE OSMOSIS AS FINAL FILTER IN ULTRAPURE DEIONIZED WATER SYSTEM

Vic E. Lewis, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 18, 1989, Ser. No. 451,640
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—638 **10 Claims**



1. An ultrapure deionized water treatment system comprising:

a. a first water treatment train, including means for reducing impurities in water, receiving water from a water source and producing water having about 20 to 200 PPB and about 50 to 23,000 particle counts per liter at 0.3 micron, resistivity of 15 to 18 megohms and silica levels of 0 to 10 ppm;

b. a second water treatment train, including means for reducing impurities in water, receiving water produced by said first water treatment train and producing water having about less than 10 PPB and less than 1,000 counts per liter at 0.1 micron particle size, comprising:

i. a mixed bed ion exchanger;

ii. a UV sterilizer;

iii. a reverse osmosis (RO) membrane apparatus, and

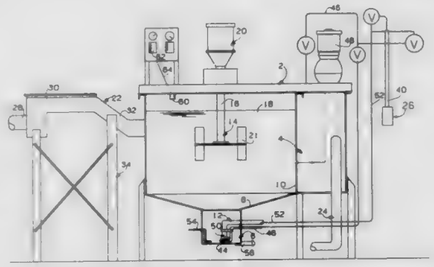
iv. a subsequent filter, downstream of the second water treatment train, capable of filtering particulates having a diameter of 0.1 micron.

5,061,375

GRIT REMOVAL DEVICES AND METHOD OF USING SAME

Kenneth W. Oyler, Richmond, Va., assignor to Infilco Degremont Inc., Richmond, Va.

Filed Nov. 5, 1990, Ser. No. 609,405
Int. Cl.[5] B01D *21/30*
U.S. Cl. 210—744 **3 Claims**



1. In a vortex grit removal system including a liquid holding chamber, a grit receiving sump, pump means to remove grit from said sump, a rotor unit positioned centrally in said chamber to rotate on a vertical axis to impart vortical motion to liquid present in said chamber, motor means to rotate said rotor, influent means to charge liquid containing suspended grit into said chamber and effulent means to discharge clarified liquid from said chamber,

the improvement for improving efficiency of removing grit from said influent while mitigating putrecibles content in the removed grit which comprises:

liquid level detection means for determining changes in level of said liquid present in said chamber and

control means to receive input from said detection means and automatically regulate the speed of rotation of said motor means to adjust vortical motion in said liquid present in said chamber as a predetermined function of change in level of said liquid present in said chamber.

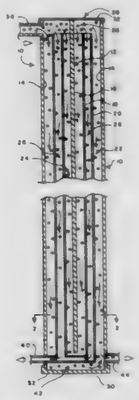
5,061,376

METHOD FOR SEPARATING IONS FROM LIQUIDS

Douglas MacGregor, Salt Lake City, Utah, assignor to Lion Capital, Ltd., Denver, Colo.

Continuation-in-part of Ser. No. 248,781, Sep. 23, 1988, Pat. No. 4,948,514. This application Aug. 10, 1990, Ser. No. 566,610
The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—748 **4 Claims**

1. In a method of separating charged particles from an incoming liquid to form separate diluted and concentrated effluents of such liquid, which method comprises the steps of: passing such a liquid between a first tubular, permanently polarized element and a second tubular, permanently polarized element that is disposed within said first element; exposing said liquid to spaced static fields on opposite sides of the liquid, with one static field attracting negatively charged particles and the other static field attracting positively charged particles, so that the charged particles are concentrated in said static fields;



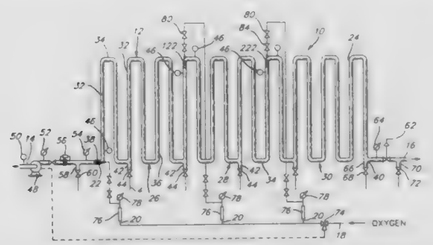
and subsequently withdrawing in one stream liquid from which the charged particles have been removed and withdrawing in a second stream liquid in which the charged particles have been concentrated, the improvement comprising pressurizing said incoming liquid above atmospheric.

5,061,377

PIPELINE REACTOR AND METHOD

Robert G. H. Lee, Montreal; Derek Hornsey, Beaconsfield, both of Canada, and Arthur S. Perkins, Moraga, Calif., assignors to Canadian Liquid Air Ltd./Air Liquide Canada, Montreal, Canada

Filed Jul. 25, 1989, Ser. No. 384,427
Int. Cl.[5] C02F *1/78*
U.S. Cl. 210—752 **14 Claims**



13. A method of reacting a low solubility gas with a substance in an aqueous medium comprising:

flowing an aqueous liquid comprising said substance in said aqueous medium along a flow line effective to maximize the flow path of said liquid per unit length of effective travel, at a velocity effective to induce turbulent flow conditions in said flow line,

maintaining the liquid in said flow path at a pressure of 2 to 20 atmospheres,

introducing a low solubility gas under pressure and capable of reacting with said substance into said liquid in said flow path through a plurality of spaced apart injection ports, in the form of gas bubbles having a diameter of not more than 100 μ,

said gas being introduced at said spaced apart injection ports in an amount to establish a gas:liquid ratio, by volume, of 0.1 to 1.5:10, in the flowing liquid, at said injection ports,

allowing substantially all of said gas to react with said substance in said aqueous medium in the interval of flow between adjacent injection ports,

maintaining a flow pattern of said liquid and gas such that a bubble flow condition is exhibited throughout said flow path and plug flow is avoided, and

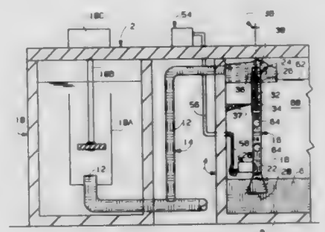
recovering the liquid exiting from said flow path substantially free of unreacted gas, said liquid flowing along said flowline in the absence of gas venting.

5,061,378

SLUDGE TRANSFER SYSTEMS AND METHODS

Joseph E. Zuback, Camarillo, Calif., assignor to Infilco Degremont Inc., Richmond, Va.

Filed Nov. 29, 1990, Ser. No. 619,500
Int. Cl.[5] B01D *47/02*
U.S. Cl. 210—767 **5 Claims**



1. In a water or wastewater treatment system including a first chamber in which a layer of fluid sludge is formed during operation of said system, a second chamber in which an influent of sludge from said first chamber is processed and conduit means for conveying a stream of fluid sludge connects said first chamber with said second chamber to convey a stream of said influent from said first chamber to said second chamber, the improvement which comprises:

sludge transfer means within said first chamber comprising a stackpipe extending vertically from an inlet at the lower end thereof to an outlet at the upper end thereof and large bubble generator means for generating an upward flow of fluid sludge in said stackpipe when said lower end is immersed in said layer of fluid sludge,

the top of said stackpipe being closed,

said outlet being defined by at least one longitudinal opening in the side of said stackpipe that extends from adjacent said top downwards along said stackpipe a length D,

an elongated, tubular sleeve including a top end of length at least D slidably embracing said upper end of said stackpipe,

means associated with said upper end for vertically raising and lowering said stackpipe within said sleeve between a low position wherein said longitudinal opening is completely covered by said sleeve to a high position wherein a substantial portion of said longitudinal opening extends above said top of said sleeve,

a collector box to receive fluid sludge that issues from said upper end of said stackpipe defined by sidewalls and a bottom through which said sleeve extends a distance such that its said top end is below the vertical height of said sidewalls, and

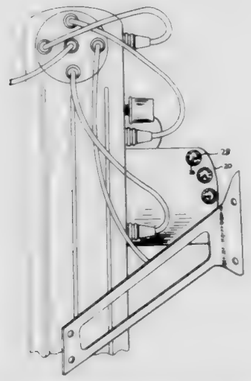
means connecting said collector box to said conduit means to enable fluid sludge received in said box to enter said conduit means and be conveyed as influent to said second chamber.

5,061,379

ROTATION INDICATOR FOR OIL FILTER MOUNTING IN ENGINE BLOCK

Dennis J. White, 51 Nostrand Rd., Cranbury, N.J. 08512

Filed Oct. 9, 1990, Ser. No. 594,605
Int. Cl.[5] B01D *35/02*
U.S. Cl. 210—767 5 Claims



1. A method of measured tightening of an oil filter, having a plurality of adjustable clocks rotation-indicating speed around its periphery, to an engine block base, the clocks each having a first hand and a second hand, comprising:

a) rotating the filter until an initial meeting of a gasket or seal, associated with the filter, with the engine block base occurs;

b) noting the relative positions of a first hand and a second hand of a selected one of said clocks at a reference point with respect to the filter and

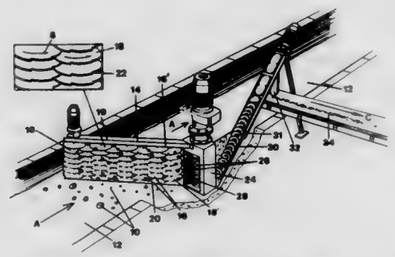
c) continuing to rotate the filter until a first hand of another of a series of sequentially appearing members of said clocks, at said reference point, has the same relative position as the second hand of said one clock.

5,061,380

SCREENING SYSTEM AND METHOD

Christopher Stevenson, Stockport, United Kingdom, assignor to Mono Pumps Limited, Audenshaw, United Kingdom

Filed May 31, 1990, Ser. No. 530,360
Claims priority, application United Kingdom, Aug. 25, 1989, 8919332
Int. Cl.[5] C02F *3/00*
U.S. Cl. 210—768 8 Claims



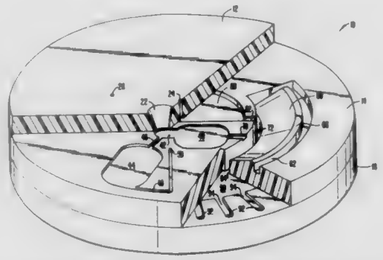
1. A system suitable for screening, macerating or conveying a liquid material having solid matter suspended in it, said system comprising a channel along which the liquid material having solid matter suspended in it flows and a screening device suitable for screening a liquid material having solid matter suspended in it, which device comprises a plurality of parallel shafts, a plurality of sets of generally planar discs having opposite substantially parallel flat faces and circular peripheries, the discs of each set of discs being rigidly mounted to an associated one of said shafts and separated from one another axially with the plane of each disc being substantially perpendicular to the axis of an associated shaft, means mounting the shafts for rotation upon parallel vertical axes, the discs of adjacent shafts being interleaved with one another, whereby the faces of all of the discs are substantially horizontal, flat and closely adjacent to the faces of the discs of the adjacent shaft or shafts effective to define narrow parallel sided slots therebetween and means to cause the shafts to rotate independently in the same rotationally sense, said means being effective to cause successive shafts to rotate progressively faster, effective to cause the solid matter suspended in the liquid material to be moved laterally of said channel in a direction from a slowest one of said shafts to a fastest one of said shafts, said device being mounted whereby said shafts and the discs thereon extend across the full width of the channel and whereby said discs provide a barrier to solid matter in the liquid material while allowing the liquid material to flow through said slots.

5,061,381

APPARATUS AND METHOD FOR SEPARATING CELLS FROM BIOLOGICAL FLUIDS

Tammy L. Burd, Santa Clara, Calif., assignor to Abaxis, Inc., Mountain View, Calif.

Filed Jun. 4, 1990, Ser. No. 532,524
Int. Cl.[5] B01D *21/26;* B04B *5/02, 11/00*
U.S. Cl. 210—789 29 Claims



1. A centrifugal rotor having a separation chamber and means for introducing a fluid including cellular material and a liquid phase to said chamber, wherein the separation chamber includes a receptacle region, a cell trap spaced radially outward from the receptacle region, and a capillary region between the receptacle region and the cell trap, whereby cellular material will separate from the liquid phase in the receptacle and will flow through the capillary region into the cell trap as the rotor is spun, wherein the capillarity of the capillary region is broken at the boundaries with the receptacle region and the cell trap to inhibit back flow of the cellular material into the receptacle after spinning of the rotor ceases.

24. A method for separating cells from a biological fluid, said method comprising the following steps:

(a) partitioning the biological fluid between a measuring chamber and an overflow chamber on a rotor;

(b) rotating the rotor to cause the fluid in the measuring chamber to flow radially outward into a separation chamber where cellular components separate into a cell trap leaving separated fluid in the separation chamber; and

(c) stopping rotation of the rotor to allow separated fluid in the separation chamber to flow :downward by gravity into a collection chamber.

5,061,382

FIRE CONTROL COMPOSITIONS

Alain Halter, Metz; Joël Hussenet; Paul Arker, both of Montigny les Metz, all of France, and Francois Toussaint, Montignies le Tilleul, Belgium, assignors to Glaverbel, Brussels, Belgium

Continuation of Ser. No. 241,189, Sep. 7, 1988, Pat. No. 4,968,441. This application Jul. 30, 1990, Ser. No. 547,284
Claims priority, application United Kingdom, Sep. 7, 1987, 8720996
The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.
Int. Cl.[5] A62D *1/00;* A62C *13/62*
U.S. Cl. 252—2 29 Claims

1. A fire control composition which is in particulate form and which is anhydrous, the fire control composition comprising:

as the main ingredient, particles of anhydrous crushed glass bearing a hydrophobic coating thereon, so that agglomeration of the fire control composition due to adsorption of moisture during storage and use is substantially prevented, and so that, when the fire control composition is exposed to fire, the fire control composition forms a blanket over the fire which deprives the fire of oxygen and thereby smothers it.

5,061,383

EMULSIFYING FILM FOAM

Edward E. Friloux, 204 Notre Dame Dr., Lafayette, La. 70506, and G. Troy Mallett, P.O. Box 81518, Lafayette, La. 70598

Filed May 21, 1990, Ser. No. 526,250
Int. Cl.[5] A62D *1/00*
U.S. Cl. 252—3 11 Claims

1. A composition of matter suitable for use as a fire suppressant, comprising:

A mixture of between about 1.5% and 12% by total weight of the dodecylbenzene sulfonic acid, between about 1.3% and 10.4% by total weight of cocamido propyl betaine, between about 0.17% and 1.36% by total weight of ethoxylated nonyl phenol, between about 2.83% and 22.64% by total weight of lauric acid diethanolamide, between about 1.23% and 9.84% by total weight of diethanolamine and between about 1.23% and 9 84% by total weight of propylene glycol in water.

5,061,384

HEAT-RESISTANT LUBRICANT COMPOSITIONS FOR PROCESSING SYNTHETIC FIBERS

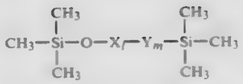
Akira Suzuki, and Masato Sugiura, both of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 522,090, May 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 420,739, Oct. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 252,371, Sep. 30, 1987, abandoned. This application Dec. 19, 1990, Ser. No. 631,176
Claims priority, application Japan, Sep. 30, 1987, 62-248943
Int. Cl.[5] D06M *11/00;* C10M *157/10*
U.S. Cl. 252—8.9 3 Claims

1. A heat-resistant lubricant composition for processing synthetic fibers comprising

85% or more by weight of a mixture consisting of polyether compound A of molecular weight between 500 and 2500 and polyether compound B of molecular weight between 5000 and 10000 at weight ratio of 5/5 - 2/8, both said polyether compound A and said polyether compound B being derived from alkylene oxide having 2–3 carbon atoms and monovalent-quadrivalent alcohol having 1–18 carbon atoms.

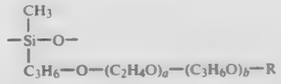
0.2 - 5% by weight of modified polysiloxane which is shown by the formula



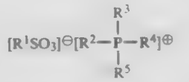
and has average molecular weight of 2500 or greater where X is



1 is an integer from 20 to 100, and Y is



where R is hydrogen or alkyl group with 1–8 carbon atoms, a and b are integers satisfying $15 \leqq a+b \leqq 80$ and $2/8 \leqq b/a \leqq 8/2$, m is an integer from 1 to 9 and the repetition of X and Y and the repetition of (C_2H_4O) and (C_3H_6O) in Y may be either block or random repetition, 0.05–10% by weight of phosphonium sulfonate shown by the formula



where R^1 is phenyl group substituted by alkyl group with 8–18 carbon atoms or alkyl group with 12–18 carbon atoms, and R^2–R^5 are same or different, each being phenyl group or alkyl group with 1–12 carbon atoms.

5,061,385

FABRIC-TREATMENT COMPOSITION COMPRISING A MIXTURE OF A LIQUID HYDROCARBON AND A SOLID OR SEMISOLID HYDROCARBON AND A WATER-INSOLUBLE CATIONIC MATERIAL

Bryan Duffin, Bebington, Great Britain, assignor to Lever Brothers Company, Division of CONOPCO, Inc., New York, N.Y.

Filed Nov. 13, 1989, Ser. No. 435,857
Claims priority, application United Kingdom, Nov. 28, 1988, 8827697
Int. Cl.[5] D06M *13/46, 13/322, 13/02;* C11D *7/32*
U.S. Cl. 252—88 6 Claims

1. An aqueous liquid fabric-treatment composition comprising (i) a water-insoluble cationic fabric-conditioning material; and

(ii) a hydrocarbon composition which is a mixture of a liquid hydrocarbon material and a semi-solid or solid hydrocarbon material, said materials being in a weight ration which lies in a range from 3:1 to 1:3 the ratio of water-insoluble cationic material to hydrocarbon mixture being about 10:1 to 1:10 and said hydrocarbon composition having a thermal phase transition temperature, associated with softening of the composition, which lies between 27° and 38° C.

5,061,386

SURFACTANT COMPOSITION

Herman M. Muijs, and Jan V. Schaik, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 16, 1990, Ser. No. 553,044
Int. Cl.[5] E21B *43/16, 43/25;* **B01D** *17/04*
U.S. Cl. 252—8.551 **2 Claims**

1. An oil well fluid comprising a stable oil-in-water emulsion including between 50% v and 96% v of an aqueous phase, between 3% v and 40% v of an oil phase, and between 1% v and 10% v of a surfactant composition comprising an alkyl amine ethoxylate and a gel breaker which is a random copolymer of ethylene oxide with at least propylene oxide or butylene oxide, the mass ratio between the alkyl amine ethoxylate and the gel breaker being in the range of from 3 to 15; the contribution of the ethylene oxide groups to the molecular weight of gel breaker being in the range of from 300 to 900; and the molar ratio of ethylene oxide groups in the gel breaker and one of propylene oxide and butylene oxide groups being in the range of from 10 to 20.

5,061,387

AQUEOUS GEL SYSTEM OF PARTIALLY METHYLATED MELAMINE-FORMALDEHYDE RESIN AND POLYVINYL ALCOHOL

Claus Victorius, Media, Pa., assignor to Conoco Inc., Ponca City, Okla.

Filed Jan. 16, 1991, Ser. No. 642,110
Int. Cl.[5] E21B *43/22*
U.S. Cl. 252—8.554 **17 Claims**

14. The process of sealing a formation which comprises injecting into the formation an aqueous gel-forming solution comprising:

(a) about 2.5 to about 5.0 weight percent of a polymer selected from the group consisting of water soluble polyvinyl alcohol and water soluble copolymers of vinyl alcohol,

(b) about 1.3 to about 5.0 weight percent of a water soluble partially methylated melamine-formaldehyde resin,

(c) about 0.05 to about 3.0 weight percent of a water soluble acidifying pH regulating agent which provides an initial pH of the solution during the formation of the gel of about 2.8 to about 6.0,

(d) up to about 0.5 weight percent of a water soluble gelation retarding agent for reducing and controlling the rate of gelling, and

(e) a major amount of water based on the total solution, said gel-forming solution having a polymer to resin weight ratio to from about 70:30 to about 50:50 and a maximum content of free formaldehyde of about 700 parts per million, whereby a stable gel is formed in said formation.

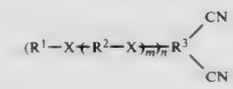
5,061,388

NOVEL PHTHALONITRILES AND PHTHALOCYANINES AS LUBRICITY-ENHANCING ADDITIVES

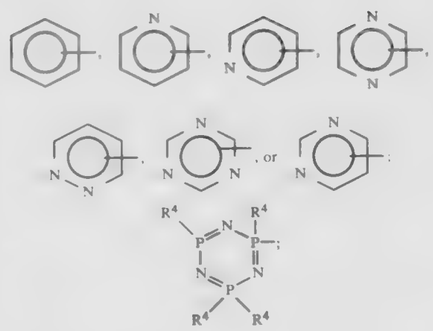
Bassam S. Nader, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 1, 1990, Ser. No. 531,966
Int. Cl.[5] C10M *105/70;* **C07C** *255/04*
U.S. Cl. 200—47 **21 Claims**

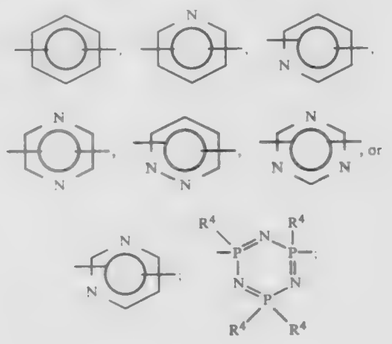
1. A phthalonitrile of the following formula:



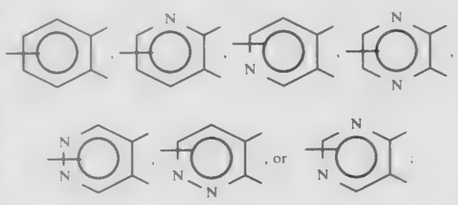
wherein R^1 is independently in each occurrence



R^2 is independently in each occurrence:



R^3 is independently in each occurrence



X is independently in each occurrence O, S, S(O), S(O)(O), $P(R^5)$, $P(O)(R^5)$, or $N(R^5)$; R^4 is independently in each occurrence aryl, aryloxy, perhaloaryl, polyhaloaryl, perhaloaryloxy, polyhaloaryloxy, perhaloalkylaryl, polyhaloalkylaryl, perhaloalkylaryloxy, or polyhaloalkylaryloxy: R^5 is independently in each occurrence aryl, perhaloaryl, polyhaloaryl, perhaloalkylaryl, or polyhaloalkylaryl; n is a number from 1 to 4: and m is a number from 2 to 5.

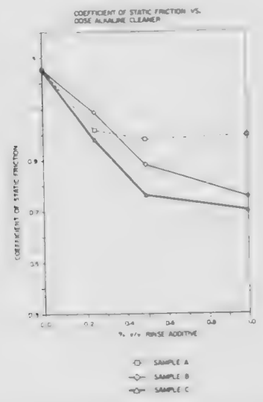
5,061,389

WATER SURFACE ENHANCER AND LUBRICANT FOR FORMED METAL SURFACES

David W. Reichgott, Richboro, Pa., assignor to Man-Gill Chemical Co., Cleveland, Ohio

Filed Apr. 19, 1990, Ser. No. 511,123
Int. Cl.[5] C10M *173/02*
U.S. Cl. 252—49.3 **35 Claims**

1. A composition for lubricating the external surfaces of aluminum cans comprising a fluoride compound and a polyethylene glycol ester or mixtures of polyethylene glycol esters in an aqueous medium.



15. A process for lubricating the external surface of a formed metal structure comprising applying to said external surface a sufficient amount for the purpose of a lubricant comprising a fluoride compound and a polyethylene glycol ester or mixtures of polyethylene glycol esters.

5,061,390

DIETHYLAMINE COMPLEXES OF BORATED ALKYL CATECHOLS AND LUBRICATING OIL COMPOSITIONS CONTAINING THE SAME

Vernon R. Small, Jr., Rodeo; Thomas V. Liston, San Rafael, and Anatoli Onopchenko, Concord, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 375,784, Jul. 5, 1989, Pat. No. 4,975,211. This application Dec. 4, 1990, Ser. No. 622,878
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] C10M *139/00*
U.S. Cl. 252—49.6 **27 Claims**

1. A composition comprising a complex of a borated alkyl catechol and an amount to hydrolytically stabilize the borated alkyl catechol of diethylamine wherein the borated alkyl catechol has a molar ratio of alkyl catechol to boron of 1:1 or 3:2 or mixtures thereof and further wherein the alkyl group of said borated alkyl catechol contains at least 10 carbon atoms.

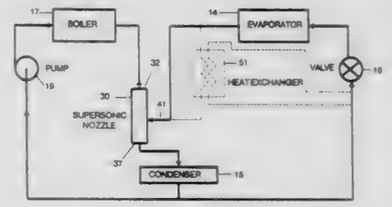
5,061,391

WORKING FLUID FOR THERMALLY POWERED HEAT PUMPING APPLICATIONS

Robert P. Scaringe, Rockledge; Jay A. Buckman, Melbourne, and Lawrence R. Grzyll, Merritt Island, all of Fla., assignors to Mainstream Engineering Corp., Melbourne, Fla.

Division of Ser. No. 141,300, Jan. 6, 1988, Pat. No. 4,905,481. This application Aug. 22, 1989, Ser. No. 398,832
Int. Cl.[5] C09K *5/02*
U.S. Cl. 252—67 **4 Claims**

1. In a thermal energy transfer system having a heat exchanger through which a thermal working fluid is applied so as to effect a thermal energy transfer betwen said thermal working fluid and a thermal interface of said heat exchanger, the improvement wherein said thermal working fluid consists essentially of a phosphorus, phosphoryl or thiophosphoryl fluid compound having the formula PXXX or PZXXX, wherein P is phosphorus, Z is selected from the group consisting of oxygen (O) and sulfur (S), and X is selected from the group consisting of fluorine (F), chlorine (Cl), bromine (Br) and iodine (I).



5,061,392

METHOD OF MAKING PASTE DETERGENT AND PRODUCT PRODUCED

Anthony J. Bruegge, Cincinnati, and Denny E. Daugherty, West Chester, both of Ohio, assignors to DuBois Chemicals, Inc., Cincinnati, Ohio

Filed Feb. 7, 1990, Ser. No. 476,297
Int. Cl.[5] C11D *11/00, 3/06, 17/00*
U.S. Cl. 252—135 **19 Claims**

1. A method of forming a paste detergent composition said method comprising combining

a first aqueous solution comprising a concentration of 1 to 70% by weight of potassium tripolyphosphate with

a second aqueous solution having a concentration of a water soluble sodium based detergent builder selected from the group consisting of sodium hydroxide, sodium silicate, sodium metasilicate, sodium carbonate, sodium phosphate, sodium sulfate, sodium borate and sodium chloride and without any potassium tripolyphosphate to form said detergent composition,

wherein the concentration of said potassium tripolyphosphate and the concentration of the sodium based detergent builder are effective to cause the formation of a paste detergent.

12. A method of forming a paste detergent composition by combining a first aqueous mixture with a second aqueous mixture to form said detergent;

said first aqueous mixture comprising water and 1 to 70% by weight of potassium tripolyphosphate and optionally additional sodium based and potassium based water soluble compositions;

said second aqueous mixture comprising water and a concentration of at least one water soluble sodium composition selected from the group consisting of sodium hydroxide, sodium silicate, sodium metasilicate, sodium carbonate, sodium phosphate, sodium sulfate, sodium borate and sodium chloride wherein said detergent is formed by combining said first mixture with said second mixture wherein the potassium tripolyphosphate in said first mixture and the concentration of said sodium composition causes formation of a paste detergent.

5,061,393

ACIDIC LIQUID DETERGENT COMPOSITIONS FOR BATHROOMS

Carlos G. Linares, and William A. Cilley, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 13, 1990, Ser. No. 581,855
Int. Cl.[5] C11D *1/92, 1/94, 3/43, 7/50*
U.S. Cl. 252—143 **22 Claims**

1. An acidic aqueous hard surface detergent composition comprising: (a) mixture of from about 0.01% to about 8% of zwitterionic detergent surfactant and from about 0.1% to

about 6% of nonionic detergent surfactant; (b) from about 1% to about 15% of hydrophobic solvent that provides a cleaning function; (c) from about 2% to about 14% of polycarboxylate detergent builder; and (d) the balance being an aqueous solvent system and minor ingredients, the pH of said composition being from about 1 to about 5.5.

5,061,394

AZEOTROPIC COMPOSITION OF 1-CHLORO-1,2,2,2-TETRAFLUOROETHANE AND DIMETHYL ETHER

Donald B. Bivens, Kennet Square, Pa.; Akimichi Yokozeki, Greenville, Del.; Philip L. Bartlett, Wilmington, Del., and Joseph A. Creazzo, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 13, 1990, Ser. No. 492,964

Int. Cl.[5] **C09D** *9/00;* **C09K** *5/04*

U.S. Cl. 252—171 **6 Claims**

1. A binary azeotropic mixture consisting essentially of about 40.0 to 99.5 weight percent 1-chloro-1,2,2,2-tetrafluoroethane and the remainder being dimethyl ether.

5,061,395

HARD SURFACE CLEANING COMPOSITION

Quentin J. Meng, Strongsville, Ohio, assignor to Ques Industries, Inc., Cleveland, Ohio

Filed Jan. 4, 1990, Ser. No. 461,091

Int. Cl.[5] **C11D** *1/62, 7/06, 7/12, 1/835*

U.S. Cl. 252—173 **10 Claims**

1. An alkaline aqueous cleaning composition for hard surfaces consisting of

0.1 to 5.0 parts by weight of a water-soluble quaternary ammonium halide,

0.1 to 5.0 parts by weight of at least one non-ionic surfactant derived from the condensation of an alkyl phenol or aliphatic alcohol and an alkylene oxide,

0.5 to 15 parts by weight of at least one water-soluble chelating agent,

10 to 1000 parts by weight of water, and

an effective amount of at least one alkaline inorganic sodium compound to maintain the aqueous cleaning solution at a pH above 7.5.

5,061,396

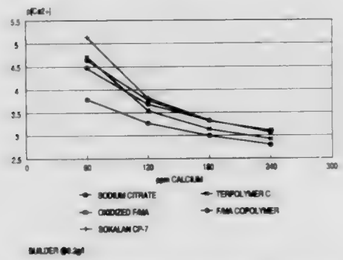
DETERGENT COMPOSITIONS CONTAINING POLYETHER POLYCARBOXYLATES

Carmine P. Lovine, Bridgewater; Rama S. Chandran, South Bound Brook; Ingrid Brase, Cranbury, and John C. Leighton, Flanders, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Oct. 16, 1989, Ser. No. 422,362

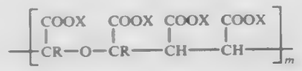
Int. Cl.[5] **C11D** *3/37;* **C08F** *22/06, 22/16*

U.S. Cl. 252—174.24 **10 Claims**



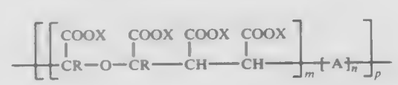
1. A detergent composition comprising from about 0.5 to 65% by weight of a surfactant and from about 1 to 80% by weight of a builder, wherein the builder is a polymer selected from the group consisting of:

a) a polymer derived from a polymer of furan and maleic anhydride, comprising a repeating unit of the structure:



wherein R is H, $-CH_3$, $-CH_2CH_3$, or a combination thereof; X is H, or a salt forming cation, or a combination thereof; and m is at least 1;

b) a polymer derived from a polymer of furan, maleic anhydride and at least one copolymerized comonomer, comprising a repeating unit of the structure:



wherein A is a repeating unit derived from at least one copolymerized comonomer, selected from the group consisting of alkenyl alkyl ethers, alkyl acrylates, alkenyl carboxyalkyl ethers, vinyl esters of carboxylic acids, unsaturated carboxylic acids, unsaturated dicarboxylic acids and their anhydrides and esters, olefins and furan; R is H, $-CH_3$, $-CH_2CH_3$, or a combination thereof; X is H, or a salt forming cation, or a combination thereof; m is at least 1; n is greater than zero; and p is an integer from about 1 to 300; and

c) combinations thereof.

5,061,397

COATED CLAY GRANULES

Howard Goodman, St. Austell, England, assignor to ECC International Limited, Great Britain

Filed Aug. 1, 1989, Ser. No. 388,142

Claims priority, application United Kingdom, Aug. 1, 1988, 8818277.9

Int. Cl.[5] **C11D** *3/14, 3/50, 11/00, 17/00*

U.S. Cl. 252—174.25 **22 Claims**

1. In a detergent composition comprising a perfume and granules of a smectite clay, the improvement which comprises coating the granules of smectite clay with from about 1–100% by weight of the dry clay granules of a white inorganic material.

5,061,398

OPTICALLY ACTIVE LACTONE DERIVATIVE, INTERMEDIATE THEREFOR, PROCESS FOR PRODUCING THE INTERMEDIATE, LIQUID-CRYSTAL COMPOSITION, AND LIQUID-CRYSTAL DISPLAY DEVICE

Sadao Takehara; Takeshi Kuriyama; Kayoko Nakamura; Tadao Shoji, all of Chiba; Toru Fujisawa, Saitama; Masashi Osawa, Chiba; Tamejiro Hiyama; Tetsuo Kusumoto, both of Kanagawa; Akiko Nakayama, Tokyo, and Kiyoharu Nishide, Shiga, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo; Kawamura Institute of Chemical Research, Sakura and Sagami Chemical Research Center, Tokyo, all of, Japan

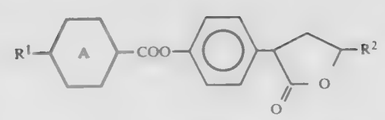
Filed Apr. 27, 1990, Ser. No. 515,915

Claims priority, application Japan, Apr. 28, 1989, 1-107850

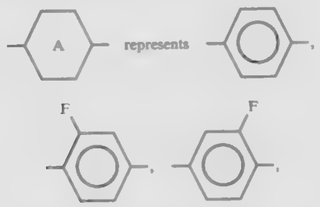
Int. Cl.[5] **C09K** *19/34, 19/30, 19/52;* **C07D** *307/93*

U.S. Cl. 252—299.61 **28 Claims**

1. An optically active lactone derivative represented by the following general formula (I):



wherein R^1 represents a straight-chain or branched alkyl, or alkoxyl, group having 1 to 20 carbon atoms with or without an optically active carbon, R^2 represents a straight-chain alkyl group having 1 to 20 carbon atoms,



or trans-1, 4-cyclohexylene group of the formula



and the assymmetric carbon atoms at the 2- and 4-positions in the lactone ring each independently is of the (S) or (R) configuration.

5,061,399

OPTICALLY ACTIVE NAPHTHALENE COMPOUNDS AND LIQUID CRYSTAL MATERIALS AND DEVICES INCORPORATING THEM

John A. Jenner; Ian C. Sage, and Stephen J. Lewis, all of Poole, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdon of Great Britai and Northern Ireland, London, England

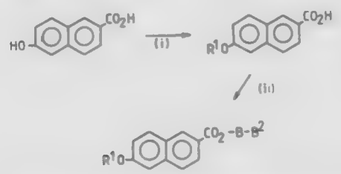
PCT No. PCT/GB87/00280, § 371 Date Dec. 5, 1988, § 102(e) Date Dec. 5, 1988, PCT Pub. No. WO87/06577, PCT Pub. Date Nov. 5, 1987

PCT Filed Apr. 27, 1987, Ser. No. 285,963

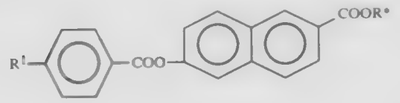
Claims priority, application United Kingdom, Apr. 28, 1986, 8610349

Int. Cl.[5] **C09K** *19/32;* **C07C** *69/76*

U.S. Cl. 252—299.62 **13 Claims**



1. An optically active naphthlene compound having the formula:



(I) where R^1 is C_{1-10} alkyl or alkoxy and R^* is C_{4-16} optically active alkyl.

5,061,400

LIQUID CRYSTAL COMPOUNDS

Tsuyoshi Obikawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

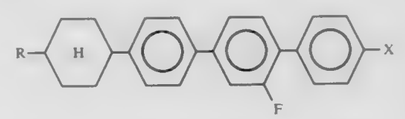
Filed Jun. 27, 1989, Ser. No. 371,909

Claims priority, application Japan, Jul. 5, 1988, 63-168039; Jul. 19, 1988, 63-180870; Nov. 26, 1988, 63-299036; Feb. 23, 1989, 1043479

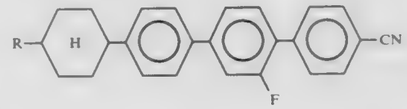
Int. Cl.[5] **C09K** *19/30, 19/52, 19/12;* **C07C** *255/00*

U.S. Cl. 252—299.63 **11 Claims**

1. A 2'-fluoro-4-''-trans-cyclohexyl-terphenyl derivative represented by the general formula:



(I)



(I)

wherein R is a straight chain alkyl group having 1 to 12 carbon atoms and the cyclohexane ring is a trans isomer.

5,061,401

ELECTRICALLY CONDUCTIVE COMPOSITION OF POLYHETEROAROMATIC COMPOUNDS AND POLYMERIC SULFATES

Wolfgang Wernet, Freiburg, Fed. Rep. of Germany, and Jean Stoffer, St. Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 31, 1989, Ser. No. 401,352

Claims priority, application Switzerland, Sep. 8, 1988, 3374/88

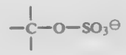
Int. Cl.[5] **H01B** *1/00*

U.S. Cl. 252—500 **17 Claims**

1. A composition comprising

(a) at least one oxidized polycationic polyheteroaromatic compound which has 5-or 6-membered rings containing 1–3 heteroatoms selected from the group consisting of —O—, —S—and —N— which rings are either unsubstituted or substituted on the carbon atoms with C_1–C_{16} alkyl or at least one oxidized polycationic aniline or a 3-C_1–C_{12} alkyl-substituted oxidized polycationic aniline and

(b) at least one polyanion of a film-forming thermoplastic polymer containing sulfated alcohol groups



in repeating structural units having a glass transition temperature of −100 to +350° C. and a tensile strength of 5 MPa to 1000 MPa.

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5,061,402

PREPARATION OF LANTHANUM CHROMATE POWDERS BY SOL-GEL

William L. Olson, Elk Grove Village, Ill.; Beili Li, and Jean Yamanis, both of Morris Township, Morris County, N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 300,013, Jan. 23, 1989, abandoned, which is a division of Ser. No. 111,907, Oct. 23, 1987, Pat. No. 4,330,780. This application Apr. 25, 1990, Ser. No. 515,787
The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.
Int. Cl.[5] H01B *1/06*
U.S. Cl. 252—521 5 Claims

1. A process for the preparation of a ceramic powder which is sinterable to at least 95% of theoretical density in an inert atmosphere and at a temperature from about 1625° C. to less than 1700° C., said ceramic powder having a vermicular microstructure and having the empirical formula $LaCr_xA_{1-x}O_3$, where A is a metal selected from the group consisting of magnesium, strontium, calcium, and barium and x ranges from 0.99 to 0.7 which comprises

(a) reacting a solution containing a lanthanum compound, a chromium compound, and an A compound, in an atomic ratio of La; Cr:A of 1:x:1-x, with a solution containing a stoichiometric excess of ammonium hydroxide, thereby precipitating a hydroxide gel intermediate; and

(b) isolating said gel and heating said gel in air at a temperature in the range of from about 400° C. to about 700° C. for a period of time of from about 0.5 to about 12 hours, and recovering the resultant ceramic powder precursor, said ceramic powder precursor having a huttonite structure and the empirical formula $LaCr_xA_{1-x}O_4.yH_2O$, where y ranges from 0 to 0.15;

(c) heating said ceramic powder precursor of (b) to a temperature in the range of from about 700° C. to about 950° C. to produce said ceramic powder, and recovering said ceramic powder.

5,061,403

STABLE ALKALINE LABIATAE ANTIOXIDANT EXTRACTS

Paul H. Todd, Jr., Kalamazoo, Mich., assignor to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Division of Ser. No. 396,530, Aug. 21, 1989. This application Jul. 17, 1990, Ser. No. 554,201
Int. Cl.[5] C09K *15/00*
U.S. Cl. 252—407 14 Claims

1. A process of preparing an alkaline solution of Labiatae antioxidants essentially free of lipids by agitating a solvent extract of the herb with an aqueous alkaline lower-aliphatic alcoholic or polyol solution thereof and separating the aqueous phase from the insoluble phase to give a stable aqueous product having an antioxidant strength of at least 0.2, having a pH above about 8.4, and having less than 75% water.

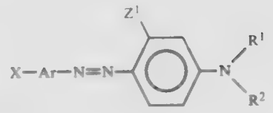
5,061,404

ELECTRO-OPTICAL MATERIALS AND LIGHT MODULATOR DEVICES CONTAINING SAME

Chengjiu Wu, Morristown; Ajay Nahata, Madison; Michael J. McFarland, Washington; Keith Horn, Long Valley, and James T. Yardley, Morristown, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 26, 1989, Ser. No. 456,420
Int. Cl.[5] F21V *9/00*; C09K *19/52*
U.S. Cl. 252—502 24 Claims

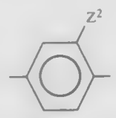
1. A composition comprising a matrix of an optically clear polymer, having dispersed therein from about 1 to about 60 percent by weight of a compound of the formula:



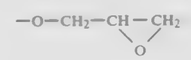
wherein:

(a) X is selected from the group consisting of:
(1) $—NO_2$,
(2) —CN,
(3) $—COOR^3$ wherein R^3 is alkyl, straight chain, cyclic or branched having 1–20 carbon atoms,
(4) $—CH=C(CN)_2$ and
(5) $—C(CN)=C(CN)_2$;

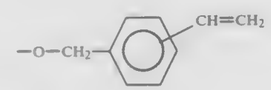
(b) Ar is selected from the group consisting of
(1)



wherein Z^2 is
(i) —H
(ii) —OH
(iii) $—OC—(O)—CH=CH_2$
(iv) $—OC—(O)—C(CH_3)=CH_2$
(v)

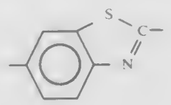


(vi)

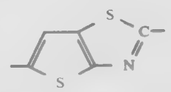


or
(vii) $—O(CH_2)_2—OCH=CH_2$;

(2)



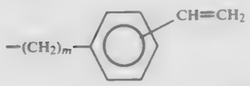
(3)



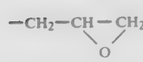
(c) Z^1 is selected from the group consisting of —H and —OH;

(d) R^1 is selected from the group consisting of
(1) —H,
(2) alkyl, straight chain, branched or cyclic, having about 1–20 carbon atoms,
(3) $—C_nH_{2n}OH$, wherein n is an integer of from about 1–20,

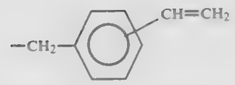
(4) $—(CH_2)_m—CH=CH_2$, wherein m is an integer of from about 1–20.
(5)



wherein m is an integer of from about 1–20 and the $—CH=CH_2$ substituent is in the m- or p- position,
(6) $—(CH_2)_m—O—M$ wherein m is an integer of from about 1–10, and wherein M is
(i) $—CH=CH_2$,
(ii) $—C(O)—CH=CH_2$,
(iii) $—C(O)—C(CH_3)=CH_2$,
(iv)



or
(v)



wherein the $—CH=CH_2$ substituent is in the m- or p-position and
(7) an alkylene bridging group having 2 to 4 carbon atoms connecting the N atom to the o- position of the aromatic ring to which the N atom is attached; and

(e) R_2 is selected from the group consisting of
(1) —H,
(2) alkyl, straight chain, branched or cyclic, having about 1–20 carbon atoms,
(3) $—C_nH_{2n}OH$ wherein n is an integer of from about 1–20, and
(4) an alkylene bridging group having 2 to 4 carbon atoms connecting the N atom to the o- position of the aromatic ring to which the N atom is attached;

with the proviso that Z^1 and Z^2 may not both be H if neither one nor both of R^1 and R^2 represent an alkylene bridging group having 2 to 4 carbon atoms connecting the N atom to o- position of the aromatic ring to which the N atom is attached.

5,061,405

CONSTANT HUMIDITY EVAPORATIVE WICKING FILTER HUMIDIFIER

Terrence L. Stanek, St. Louis; Ronald G. Brant, Franklin County, both of Mo., and Donald L. Townsend, Maricopa County, Ariz., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 12, 1990, Ser. No. 478,423
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—26 21 Claims

1. A humidifier including:

a supporting base;

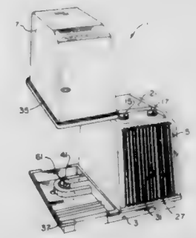
at least one water reservoir tank, at least one wick element and a motor driven fan each mounted relative to said supporting base and positioned in adjacent relationship to each other in said humidifier;

each said water reservoir tank having a predetermined width, depth and height dimension, each said wick element and said motor driven fan being located within the dimensional confines of planes extending through end surfaces at each end of the predetermined height and depth dimensions of each said water reservoir tank;

each said water reservoir tank being enclosed, refillable and removably positioned relative to said supporting base to facilitate refilling thereof, each said water reservoir tank also being constructed to dispense water into a catch basin associated with said supporting base;

said catch basin including a channel portion located beneath each said reservoir tank and extending laterally therefrom to an adjacent catch basin area;

each said wick element being mounted in fixed position in said humidifier during operation and being removable from said humidifier for replacement or cleaning, each said wick element also having a lower end positioned in



said adjacent catch basin area for absorbing water up into the wick element by capillary action;

means for providing predetermined constant humidification of air, said last mentioned means including means associated with each water reservoir tank for maintaining a predetermined constant water depth in said catch basin above the lower end of each said wick element for constant wetting thereof; and

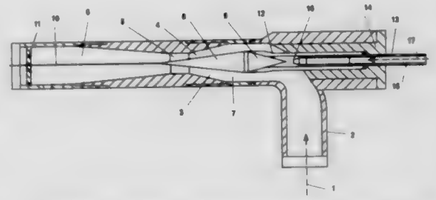
said motor driven fan positioned relative to each said wick element for directing air with increased humidity through each said wick element for discharge from the humidifier into the surrounding atmosphere.

5,061,406

IN-LINE GAS/LIQUID DISPERSION

Alan T. Cheng, Livingston, N.J., assignor to Union Carbide Industrial Gases Technology Corporation, Danbury, Conn.

Filed Sep. 25, 1990, Ser. No. 587,745
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—76 11 Claims



1. An improved system for the dispersion of a gas in a liquid comprising:

(a) a flow line in which said gas and liquid are mixed;

(b) flow means for passing one of the fluids to be mixed through said flow line;

(c) injection means for injecting the other fluid for the desired mixture of gas and liquid into said flow line to form a gas bubble/liquid mixture;

(d) a venturi device positioned in said flow line downstream of the point at which said gas bubble/liquid mixture is formed, said venturi device comprising a converging diameter section, a neck section of smallest diameter, and

a diverging diameter section expanding in diameter in the downstream direction;

(e) a conical in-line mixer positioned in said flow line downstream of the point at which said gas bubble/liquid mixture is formed, said conical mixer comprising a first cone portion having its enlarged section positioned in the downstream direction and a second cone portion having its enlarged section adjacent that of the first cone portion and its pointed end section positioned downstream thereof in the converging diameter section of the venturi device, the enlarged sections of said cone portions of the mixer being of essentially the same diameter, said second cone portion being positioned such as to form, together with the walls of the converging diameter section of the venturi device, an annular opening for the passage of the gas bubble/liquid mixture to the neck section of the venturi device, said annular passage being adapted to accelerate a high portion of the flow velocity of said mixture to supersonic velocity, with subsequent deacceleration of the flow velocity to subsonic range in the diverging diameter section and/or the neck section of the venturi device, such acceleration-deacceleration action of the venturi device-conical in-line mixer serving to create a sonic shock wave effect resulting in the fine dispersion of the gas bubbles in the liquid, said conical in-line mixer being adjustable so as to enable said conical mixer to be positioned at any desired distance from its closing position in the venturi device so as to adjust the annular opening between the converging diameter section of the venturi and the second cone portion of the conical mixer; and

(f) means for adjusting the position of said conical mixer in the flow line, whereby said system can be used to provide enhanced gas bubble/liquid dispersions under a wide range of operating conditions for a wide variety of gas/-liquid dispersion operations.

5,061,407

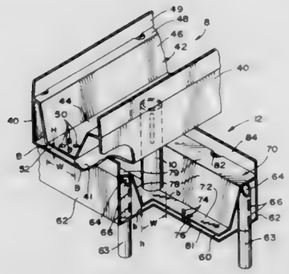
LIQUID DISTRIBUTOR FOR GAS-LIQUID CONTACT APPARATUS

Dale E. Nutter, 7935 S. New Haven St., Tulsa, Okla. 74136

Filed Aug. 8, 1990, Ser. No. 564,347

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—96 **21 Claims**



1. Apparatus for distributing liquid onto a bed of packing media in a gas-liquid contact apparatus, comprising,

a deck provided with outlet openings extending therethrough to discharge unaerated liquid from said deck onto a surface therebelow,

a wall spaced above said deck to define a deceleration space between said wall and said deck, said deceleration space having a height which is less than its horizontal dimensions,

apertures in said wall providing inlet openings for feeding liquid into said deceleration space, said inlet openings being horizontally displaced from substantially all of said outlet openings so that liquid flows horizontally through said deceleration space from the inlet openings to the outlet openings,

said deceleration space having a boundary located between the inlet openings and substantially all of the outlet openings, said boundary having a vertical area which is substantially greater than the total area of all inlet openings associated with said deceleration space, whereby liquid flowing through said boundary to said outlet openings has a substantially lower velocity than liquid flowing through said inlet openings into said deceleration space.

5,061,408

APPARATUS FOR MASS TRANSFER BETWEEN A HOT GAS STREAM AND A LIQUID

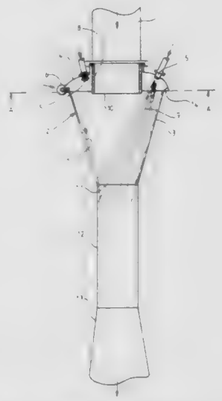
Werner Hüning; Claus Gockel, both of Odenthal; Georg Richter, Apelern, and Werner Biester, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 26, 1990, Ser. No. 604,839

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1989, 3939057

Int. Cl.[5] B01D *47/06*

U.S. Cl. 261—112.1 **6 Claims**



1. An apparatus for mass transfer between a hot gas stream and a liquid injected into the hot gas stream, comprising: a gas feed pipe, a conical injection chamber coaxial with and having a greater diameter than the gas feed pipe and which converges in a flow direction, wherein the injection chamber has an upper end comprising an annular roof and a lower end having a cross-sectional area, means connecting the roof to the gas feed pipe, a plurality of spaced apart liquid nozzles inserted through the roof and disposed circumferentially thereround each for producing a conical spray, means mounting the nozzles on the roof with axes thereof at an acute angle with respect to the flow direction to direct the conical spray of each into the injection chamber such that the conical spray of each nozzle substantially covers the cross-sectional area of the lower end of the injection chamber, and a heat-and mass-transfer duct connected coaxially to a lower end of the injection chamber, wherein the means connecting the gas feed pipe to the roof comprises a gas skirt tube projecting through the roof and into the injection chamber to protect the liquid nozzles in the annular roof against the hot gas stream from the gas pipe and wherein a distance between two adjacent liquid nozzles is less than 4 times a width of an annulus between the skirt tube and a greatest diameter of the injection chamber.

5,061,409

EXTRUSION OF IMPACT AND FRICTION SENSITIVE HIGHLY ENERGETIC MATERIALS

David R. Dillehay, Marshall, Tex., assignor to Thiokol Corporation, Ogden, Utah

Filed Sep. 14, 1989, Ser. No. 407,176

Int. Cl.[5] C06B *21/00;* **D01D** *21/00*

U.S. Cl. 264—3.3 **2 Claims**

1. In the processing of highly energetic materials which exhibit a high sensitivity to impact and friction when processed in extruders with metal-to-metal contact between metal screw elements and metal barrels, the improvement which comprises substituting a non-metallic screw element for the metal screw element and extruding the highly energetic material in said extruder, wherein said screw element has a non-metallic exterior for the entire length of said element which comprises a polyphenyl sulfide polymer and said highly energetic material which exhibits a high sensitivity to impact and friction when processed in an extruder with metal-to-metal contact comprises an inorganic nitrate, an elemental fuel selected from the group consisting of Mg, Al and B and mixtures thereof, and a resin binder.

5,061,410

PROCESS FOR PRODUCING MICROCAPSULES

Masahiro Sakamoto, and Shozo Harada, both of Kanagawa, Japan, assignors to Juju Paper Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1990, Ser. No. 507,050

Claims priority, application Japan, Apr. 12, 1989, 1-92292

Int. Cl.[5] B01J *13/18*

U.S. Cl. 264—4.7 **9 Claims**

1. In a process for producing microcapsules which use an aminoaldehyde polycondensate as a capsule-wall in a system in which a hydrophobic core material is dispersed or emulsified in an aqueous acidic solution containing an anionic water-soluble colloidal substance, the improvement comprising, using as an anionic water-soluble colloidal substance a mixture of a first anionic water-soluble substance having a viscosity of at least 5000 cps. (measured at 25° C. and 25% solid content by using a Brookfield Viscometer; hereinafter measured in the same method), and a second anionic water-soluble substance having a viscosity of at most 500 cps., the first and second anionic water-soluble substances having a viscosity ratio of at least 10:1 at a concentration of 25% by weight of each of the first and second water-soluble substances.

5,061,411

METHOD FOR MAKING DENTAL ROOT CANAL FILLING POINTS

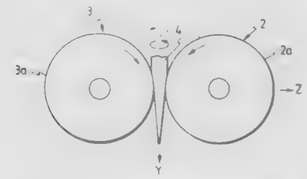
Noboru Ubukata, Kiryu, and Hisao Iizuka, Ashikaga, both of Japan, assignors to G-C Dental Industrial Corp., Tokyo and Nimikagakukogyo Co., Ltd., Kiryu, both of, Japan

Division of Ser. No. 330,279, Mar. 29, 1989, Pat. No. 5,028,228. This application Apr. 6, 1990, Ser. No. 505,460

Claims priority, application Japan, Apr. 7, 1988, 63-85592

Int. Cl.[5] A61C *13/00*

U.S. Cl. 264—16 **16 Claims**



1. A method for making a dental root canal filling point, comprising the steps of:

positioning a rotary member having an outer processing surface in the form of a curved plane which is parallel to an axial direction of said rotary member and adapted to be rotated at a predetermined speed, in parallel to a moving member having a processing surface and adapted to be rotated at a speed substantially identical to the speed of the rotary member in the opposite rotational direction as the rotational direction of said rotary member so that at least the processing surface of the moving member is parallel with the outer processing surface of the rotary member, to create a gap portion in which a minimum distance is defined between the outer processing surface of the rotary member and the processing surface of the moving member;

rocking at least said rotary member in the axial direction of said rotary member, wherein said gap portion lies on a substantially identical plane;

feeding, during said rocking step, a rod-like material for said dental root canal filling point in said gap portion between said outer processing surface of said rotary member and said processing surface of said moving member such that a leading end of said rod-like material is fed in said gap portion in a direction normal to the axial direction of said rotary member; and

continuously varying, during said rocking and feeding steps, the gap portion between the outer processing surface of said rotary member and the processing surface of said moving member, such that a ratio of a moving speed of said leading end of said rod-like material with respect to a moving speed at which said outer processing surface of said rotary member and said processing surface of said moving member are spaced away from each other to vary said gap portion, conforms to a taper of said dental root canal filling point to provide for a desired taper of said dental root canal filling point.

5,061,412

PROCESS FOR PRODUCING A MAGNET OF STRONTIUM FERRITE HAVING HIGH PERFORMANCE

Kunio Okumori, and Kazuo Terada, both of Mishima, Japan, assignors to Sumitomo Special Metal Co. Ltd., Osaka, Japan

Filed Mar. 30, 1990, Ser. No. 501,883

Claims priority, application Japan, Mar. 31, 1989, 1-81789

Int. Cl.[5] C04B *35/26, 35/64*

U.S. Cl. 264—24 **5 Claims**

1. A process for producing a magnet having a value of Br ranging from 4.0 to 4.2 kG, a value of Hc ranging from 3.7 to 3.9 kOe, a value of $(BH)_{max}$ ranging from 3.8 to 4.2 MGOe and a value of iHc ranging from 4.0 to 4.2 kOe comprising:

crushing a material selected from magnetite and mill scale to form a powder having an average particle diameter not exceeding 12 microns;

subjecting thus formed powder to an oxidizing treatment at a temperature of 600° C. to 900° C. in O_2 containing atmosphere or ambient atmosphere to oxidize the powder to form an iron oxide containing at least 98.0% of Fe_2O_3;

mixing thus formed iron oxide with a material selected from strontium oxide and strontium carbonate;

calcining the mixture to form a ferrite;

crushing coarsely the calcined mixture;

mixing the coarsely crushed mixture with not more than 2% of at least one additive of SiO_2, CaO, Al_2O_3, CoO and NiO;

pulverizing the resultant mixture;

molding the pulverized mixture in a magnetic field; and

sintering the molded mixture.

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5,061,413

PROCESS FOR PRODUCING PITCH-BASED CARBON FIBERS

Seiichi Uemura, Tokyo; Hiroaki Takashima, Kawasaki, and Osamu Kato, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Apr. 27, 1990, Ser. No. 516,105
Claims priority, application Japan, Feb. 23, 1989, 1-41900
Int. Cl.[5] D01F *9/155*
U.S. Cl. 264—29.2 **14 Claims**

1. A process for producing a pitch-based carbon fiber, comprising the steps of:

heat-treating a heavy oil at a temperature of 370° to 480° C. and a pressure of 2 to 50 kg/cm^2, said heavy oil being obtained by catalytic cracking of a petroleum and having a boiling point not lower than 200° C.:

separating and removing insoluble solids from the heat-treated oil to adjust the insoluble solids content to not higher than 50 ppm;

subjecting the oil to a thin film distillation at a temperature of 250° to 450° C., a pressure of not higher than 100 mmHg and a film thickness of not larger than 5 mm;

heat-treating the resulting pitch at a temperature of 340° to 450° C. while passing an inert gas at atmospheric pressure or reduced pressure to obtain an optically anisotropic pitch having a softening point of 260° to 300° C., a quinoline insolubles content of not higher than 40 wt % and an optically anisotropic phase content of 60 to 100 vol %;

melt-spinning said optically anisotropic pitch in a melt spinning apparatus having a nozzle with a vertically longer molded product disposed therein, at a temperature of 280° to 360° C. and a spinning viscosity of 300 to 3,000 poise;

rendering the resulting pitch fiber infusible at a temperature of 150° to 380° C. in an oxidizing gas atmosphere containing 0.1 to 30 vol % of NO_2;

calcining the infusiblized fiber at a temperature of 650° to 850° C. in an inert gas atmosphere; and

subsequently conducting calcination at a temperature of 1,200° to 3,000° C. in an inert gas atmosphere.

5,061,414

METHOD OF MAKING CARBON-CARBON COMPOSITES

Glen B. Engle, 16716 Martincoit Rd., Poway, Calif. 92064

Filed Sep. 5, 1989, Ser. No. 402,453
Int. Cl.[5] B29C *43/18;* **C01B** *31/04*
U.S. Cl. 264—29.5 **15 Claims**

11. A method for fabricating a high-strength, high-modulus and high thermal and electrical conducting 3D carbon-carbon composite comprising the steps of:

a. forming a 3D green composite comprising:

(1) a 3D preform comprised of woven graphitizible carbon fiber and

(2) fine graphitizible pitch powder; said carbon fiber having moduli in the range of 25 to 140 Msi,

b. heating the rigid 3D green composite to a temperature high enough to cause the pitch powder to soften and pressing the composite to form a pressed 3D green composite comprised of graphitizible carbon fibers and pitch matrix,

c. heating the pressed 3D green composite to at least 500° C. to;

(1) carbonize the pitch,

(2) form a carbon matrix and

(3) shrink and crack the carbon matrix,

d. rigidizing the 3D green composite by infiltration with hydrocarbon gas that deposits pyrolytic carbon.

e. impregnating the pressed green composite with additional graphitizible pitch by covering the composite with pitch at a temperature of at least 200° C. and applying pressure of at least 15 psi,

f. heating the composite to at least 900° C.,

g. repeating steps e and f at least once,

h. heating he composite to between 2400° C. to 3100° C. to graphitize the fibers and the matrix carbon in the composite to produce a graphitized composite having cracks and pores, and

i. impregnating the graphitized composite by infiltrating the cracks and pores of the composite with a hydrocarbon gas at a temperature in the range of 982° C. to 1490° C. and depositing pyrolytic carbon in the pores and cracks.

5,061,415

PROCESS FOR IMPROVING THE QUALITY OF INJECTION MOULDED PARTS

Hans-Werner Depcik, Duesseldorf, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 180,963, Apr. 13, 1988, abandoned. This application Mar. 9, 1990, Ser. No. 494,905
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1987, 3713931
Int. Cl.[5] H05B *6/46*
U.S. Cl. 264—25 **8 Claims**

1. Process for improving the quality of plastics injection moulded parts which are difficult to produce on account of their shape by subjecting polymer material to a high frequency electromagnetic field from electrodes inside a mould during the production cycle while the material is still at least partly thermoplastic, wherein after injection, a localized area of the polymer material is directly heated by a high frequency electromagnetic field at a frequency of from 10^6 to 10^{10} Hz and a pressure is applied to the polymer material in said localized area by a ram after the mould is closed.

5,061,416

PROCESS FOR THE MANUFACTURE OF FRIABLE SILICON NITRIDE BODIES

Craig A. Willkens, Sterling; Normand D. Corbin, Northboro, and Brian J. Caprera, Southbridge, all of Mass., assignors to Norton Company, Worcester, Mass.

Filed Oct. 30, 1989, Ser. No. 428,710
Int. Cl.[5] C04B *41/85*
U.S. Cl. 264—28 **11 Claims**

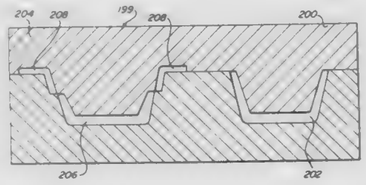
1. A process for producing a friable silicon nitride body comprising (i) infiltrating a reaction bonded silicon nitride body which has a density of greater than about 1.5 g/cc, outside surfaces, and a central core, with a fluid which will expand upon freezing, (ii) freezing the fluid in the infiltrated body so that the fluid in the outside surfaces of the body freezes before the fluid in the central core, and (iii) thawing the frozen body of silicon nitride.

5,061,417

CONTROLLING WEIGHT AND WALL THICKNESS OF A BLOW MOLDED ARTICLE

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Filed Mar. 26, 1990, Ser. No. 499,018
Int. Cl.[5] B29C *49/48, 49/72*
U.S. Cl. 264—37 **17 Claims**



1. A process of blow molding a parison section in a family of molds wherein at least two manufactured articles of different size are blow molded in separate mold chambers within said family of molds, a larger first manufactured article of the at least two manufactured articles to be made in a first mold chamber, a smaller second article of the at least two manufactured articles to be molded in a second mold chamber, said second mold chamber having at least one waste article forming chamber adjacent to and connecting with at least a portion of said second mold chamber, comprising the steps of:

blow molding said first hollow manufactured article in said first mold chamber;

blow molding said second manufactured article in said second mold chamber while simultaneously forming at least one waste article adjacent at least a portion of said second manufactured article, said second manufactured article and waste article being molded to have a total apparent surface area proportional to the total apparent parting line area of the second mold chamber and waste article mold chambers which is equalized to the surface area of the first manufactured article proportional to the parting line area of the first mold chamber, whereby the first and second manufactured articles have substantially the same wall thicknesses; and

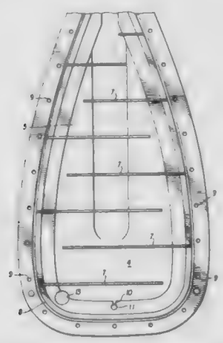
separating said waste article from said second manufactured article.

5,061,418

THERMAL EXPANSION RESIN TRANSFER MOLDING

Maximilian Ware, Minneapolis, Minn., assignor to Tertm, Inc., Winona, Minn.

Continuation-in-part of Ser. No. 153,705, Jan. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 699,162, Feb. 7, 1985, abandoned. This application Nov. 15, 1989, Ser. No. 436,776
Int. Cl.[5] B29C *67/00*
U.S. Cl. 264—46.6 **36 Claims**



17. A method of forming a composite sandwich core molded article, comprising:

a) preforming a thermo-expandable rigid foam core into desired shape by molding of a resin selected from the group consisting of polyimides, polyvinyl chlorides, and mixtures thereof;

b) wrapping the pre-formed foam core with a fabric;

c) placing said wrapped pre-formed foam core in a mold whose inner confining surfaces form the shape of the final article and which provides the capability of heating selected areas of said pre-formed foam core;

d) injecting a liquid thermosetting resin into the mold such that the thermosetting resin surrounds and wets the fabric wrapped about the pre-formed foam core;

e) selectively heating desired areas of the mold to a temperature sufficient to only apply heat in a given area of the rigid foam core, while other areas of the rigid foam core experience no substantial heating to expand the rigid foam core under the areas of the mold being heated to compress the fabric wrapped surface of the foam core against the inner confining surfaces of the mold and completing the heating of the rigid foam core to complete the molding process; and

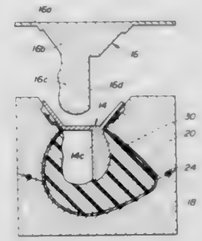
f) cooling the mold and removing the article.

5,061,419

METHOD AND DEVICE FOR MOLDING SKIN-COVERED FOAMED PLASTIC ARTICLE

Hiroshi Kouda, and Takayuki Saito, both of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed May 14, 1987, Ser. No. 49,556
Claims priority, application Japan, May 23, 1986, 61-77656
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—46.6 **7 Claims**



1. A method for molding a skin-covered foamed plastic article with a bore formed therein, comprising by steps;

(a) preparing a split mold, said split mold including a lower mold part having a recess and an upper mold part having a through bore;

(b) mounting said upper mold part on the lower mold part in such a manner as to form a combined cavity by said through bore and said recess;

(c) putting a skin member into said combined cavity in such a manner that the outer surface of the skin member intimately contacts with the wall of the combined cavity;

(d) placing a first shaping die on said upper mold part in such a manner that a fist projection thereof is projected into the combined cavity lined with the skin member;

(e) pouring a liquid material for the foamed plastic article into the combined cavity;

(f) placing a second shaping die on the upper mold part in such a manner that a second projection thereof is projected into the combined cavity at a position just beside the first projection;

(g) removing the second and first shaping dies, in this order, form the split mold upon hardening of the material; and

(h) dismantling the upper mold part from the lower mold part thereby to easily remove the foamed product from the mold;

wherein step (d) is carried out before step (e) and step (e) is carried out before step (f).

5,061,420

BATCH MOLDING OF OPEN-CELL SOFT POLYURETHANE FOAM

Christian Thary, Farmington Hills, Mich., assignor to Creme Art Corporation, Walled Lake, Mich.

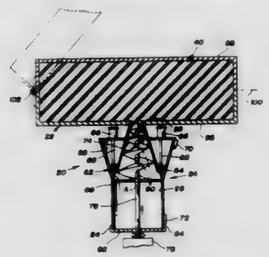
Filed Mar. 8, 1990, Ser. No. 490,473
Int. Cl.[5] B29D *31/04, 67/22*
U.S. Cl. 264—54 **13 Claims**

1. A method for batch molding open-cell soft polyurethane foam in a mold, comprising:

introducing into a mixing chamber having an upper outlet a highly activated polyol component and an isocyanate component that are reactive with each other to provide an open-cell soft polyurethane foam, and the introduction of

the highly activated polyol and isocyanate components proceeding until the mixing chamber contains the entirety of a batch tat is to be introduced into the mold upon reaction;

simultaneously mixing the entire batch of activated polyol and isocyanate components with each other within the



mixing chamber to provide a fast reacting foamable polyurethane liquid mixture of one age; and

permitting the mixture to expand upon foaming to provide upward flow thereof from the mixing chamber through the upper outlet into the mold for molding as an open-cell soft polyurethane foam product.

5,061,421

MOLDINGS COMPOSED OF CORDIERITE AND A PROCESS FOR PRODUCING THEM

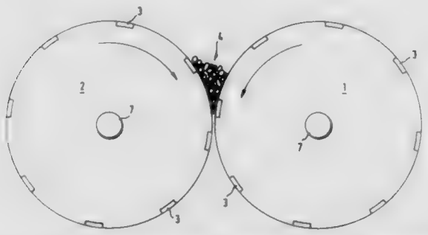
Paul Girmscheid, deceased, late of Lauf, Fed. Rep. of Germany by Margot L. Girmscheid, née Hermannsdörfer, Ralf A. Girmscheid, Steffen P. Girmscheid, heirs ; Helmut Stuhler, Röthenbach, and Gisbert Schulze, Lauf, both of Fed. Rep. of Germany, assignors to Hoechst CeramTec Aktiengesellschaft, Selb, Fed. Rep. of Germany

Filed Mar. 10, 1989, Ser. No. 321,401

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808348

Int. Cl.[5] C04B *35/64*

U.S. Cl. 264—63 **12 Claims**



1. A process for producing cordierite molding, comprising the steps of:

(a) forming a batch having at least one first mineral component selected from the group consisting of clay and kaolin, at least one second mineral component selected from the group consisting of soapstone and talc, water and an organic deforming aid;

(b) subjecting the batch to a shear stress sufficient to destratify the mineral components by passing the batch through a gap formed by two almost-touching cylindrical shear rollers which rotate at different speeds;

(c) forming the resultant destratified mixture into a molding; and then

(d) firing the molding until a cordierite phase is formed.

5,061,422

PROCESS FOR PREPARING POLYESTER FEED YARNS

Jerry T. Charles, Columbia, S.C.; John F. Hagewood, Mathews, N.C., and Lawrence S. Shea, Camden, S.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 318,798, Mar. 3, 1989, Pat. No. 4,929,698, and a continuation-in-part of Ser. No. 426,372, Oct. 25, 1989, Pat. No. 4,933,427, which is a continuation-in-part of Ser. No. 318,288, Mar. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 207,077, Jun. 14, 1988, abandoned, and a continuation-in-part of Ser. No. 207,076, Jun. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 53,308, May 22, 1987, abandoned. This application Mar. 19, 1990, Ser. No. 497,877

Int. Cl.[5] D01F *6/84*

U.S. Cl. 264—103 **6 Claims**

1. An improved process for preparing an interlaced multifilament feed yarn of denier about 40 to about 300, of high shrinkage about 40% or more, and of high elongation about 80 to about 180%, of spin-oriented poly[ethylene terephthalate/5-sodium-sulfo-isophthalate] copolyester filaments containing about 2 mole% of ethylene 5-sodium sulfo-isophthalate repeat units, by melt-spinning such filaments, applying a spin-finish and interlacing, wherein the improvement is characterized by melt-spinning the filaments at a withdrawal speed of less than about 3000 ypm.

5,061,423

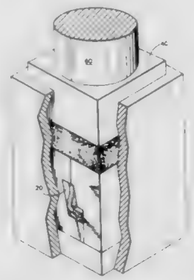
INJECTION MOLDING OF FIBER REINFORCED ARTICLES

George K. Layden, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 21, 1989, Ser. No. 410,195

Int. Cl.[5] B29C *00/00*

U.S. Cl. 264—108 **4 Claims**



1. A method for producing a fiber reinforced article from a mixture of a molding compound and fibers with a hot press assembly, said assembly having a die with a length dimension, a thickness dimension perpendicular to the length dimension and a height; and a slot shaped injection port located essentially parallel to the length of the die, having a length close to the full length of the die, a thickness parallel to and 30–70% of the thickness of the die and a depth sufficient to initially orient the fibers in the mixture and such that the mixture enters the die essentially perpendicular to the length which comprises:

(a) heating the mixture to a point where it will flow under pressure and;

(b) applying pressure to force the heated mixture through the injection port into the die wherein the mixture viscosity, flow rate, and geometric relation between the injection port and the mold cavity are selected to create an oscillating flow pattern entering the die cavity causing the fiber planes to become interlocked in an accordion like manner whereby an article having improved mechanical properties is obtained.

5,061,424

METHOD FOR APPLYING A LUBRICIOUS COATING TO AN ARTICLE

Houshang Karimi, Centerville; Mutlu Karakelle, Spring Valley, and Robert A. Taller, Centerville, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 22, 1991, Ser. No. 643,639

Int. Cl.[5] B29C *47/06*

U.S. Cl. 264—171 **16 Claims**

1. A method for preparing a shaped medical article comprising coextruding a melt of a substrate polymer and a melt of a coating composition comprising polyvinylpyrrolidone and a base polyurethane to give a shaped article of said substrate polymer having thereon a layer of said coating composition, said layer when wet absorbinq water and becoming lubricious.

14. A method for preparing a shaped medical article comprising:

a) preparing a homogeneous solution comprising a polyetherpolyurethane and polyvinylpyrrolidone in a solvent;

b) removing said solvent to leave a homogeneous blend of a coating composition comprising said polyetherpolyurethane and polyvinylpyrrolidone; and

c) coextruding said composition and a thermoplastic substrate polyurethane to give a shaped article of said substrate polyurethane having thereon a layer of said composition, said layer when wet absorbing water and becoming lubricious.

5,061,425

SOLUTION SPINNING PROCESS FOR PRODUCING A POLYETHYLENE TEREPHTHALATE FILAMENT

Masayoshi Ito, Toride, Japan; Ming-Ya Tang, and Soojaa L. Kim, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 242,589, Sep. 12, 1988, Pat. No. 4,968,471. This application Sep. 7, 1989, Ser. No. 404,294

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] D01F *6/62*

U.S. Cl. 264—184 **13 Claims**

1. A process for producing a high modulus polyethylene terephthalate filament which comprises (1) spinning a solution of polyethylene terephthalate in an organic solvent through a die to produce a solution spun filament, wherein the polyethylene terephthalate has an intrinsic viscosity of at least about 1.0 dl/g and wherein the organic solvent is selected from the group consisting of (a) hexafluoroisopropanol, (b) trifluoroacetic acid, (c) mixed solvent systems containing from about 20 weight percent to about 99 weight percent hexafluoroisopropanol and from about 1 weight percent to about 80 weight percent dichloromethane, and (d) mixed solvent systems containing from about 20 weight percent to about 99 weight percent trifluoroacetic acid and from about 1 to about 80 weight percent dichloromethane, wherein the solution spun filament is made by wet spinning or dry jet-wet spinning; and (2) subsequently drawing the solution spun filament to a total draw ratio of at least about 7:1 to produce the high modulus polyethylene terephthalate filament.

5,061,426

PROCESS FOR PRODUCING ELASTANE FIBERS OF HIGH ELASTICITY AND STRENGTH

Beatrix Frauendorf, Leverkusen; Siegfried Korte; Carlhans Süling, both of Odenthal, and Rudi Dauscher, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 21, 1990, Ser. No. 585,956

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1989, 3932949

Int. Cl.[5] D01F *6/78*

U.S. Cl. 264—205 **15 Claims**

1. A process for the production of elastane filaments by reaction of macrodiols, excess quantities of diisocyanates in solvents to form an NCO prepolymer, chain extension of the NCO prepolymer thus formed with diamines in highly polar solvents and spinning of the solution obtained, optionally with addition of typical additives, wherein

a) macrodiols which are linked on average by 1 to 4 carbonate groups, are synthesized in blocks from preformed, identical or different polyester diols and have molecular weights of >3,300 to 7,000, and melting points below 50° C., are reacted

b) with organic diisocyanates,

c) in organic inert solvents,

d) and with addition of 0.002 to 0.15% by weight, based on the macrodiols a), of catalysts for the OH/NCO reaction, in OH/NCO ratios of 1:>2.10 to 1:4.5, so that an NCO prepolymer having an NCO content of <2.10 to 4% NCO, based on solids, is obtained and

e) in a following step, the NCO prepolymer thus obtained is reacted in highly polar solvents with (cyclo)aliphatic diamines, as principal component, optionally in the presence of chain terminators, to form the viscous polyurethane (urea) elastomer spinning solution which is then spun.

5,061,427

MOLD BODY FOR THE DEEP DRAWING OF FOILS AND FOR CASTING OF STRUCTURAL MATERIALS

Theodor Hirzel, Hasenbergstrasse 402, 8967 Widen, Switzerland

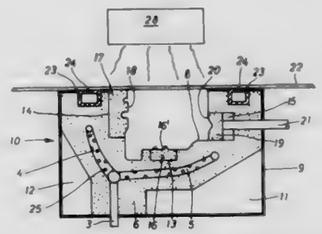
PCT No. PCT/CH88/00074, § 371 Date Jan. 23, 1989, § 102(e) Date Jan. 23, 1989, PCT Pub. No. WO88/07921, PCT Pub. Date Oct. 20, 1988

PCT Filed Apr. 8, 1988, Ser. No. 301,755

Claims priority, application Switzerland, Apr. 9, 1987, 1365/87

Int. Cl.[5] B29C *33/38*

U.S. Cl. 264—219 **7 Claims**



1. Method for producing a porous mold body for making a mold, comprising:

shaping a mixture of metallic particles and resin into a uniformly porous homogeneous, unstratified block, wherein said metallic particles are of irregular shape and the size of said metallic particles is selected such that in said mixture particles of a size through the whole particle size range of 10 μm to 450 μm are provided;

curing said resin;

forming a shape determining gas permeable mold face surface on the unstratified block, said surface having a plurality of pores, by mechanically machining said shape determining mold face surface to a desired shape, wherein a porosity of said mold face surface remains intact during machining; and,

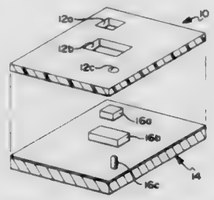
covering a plurality of remaining surfaces of the block to make them gas impermeable.

5,061,428

METHOD FOR PLASTIC COATING FOAM MOLDING INSERT

Bruce A. Batchelder, Barrington, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Jan. 4, 1990, Ser. No. 460,993
Int. Cl.[5] B29C *41/00*
U.S. Cl. 264—251 **4 Claims**



1. A method for sealing holes and edges of a plastic insert member to prevent escape of foam through the holes or around the edges comprising:

providing a preformed insert member having holes and edges thereon through which and around which foam can escape during a foam molding process in which the insert member is supported in a mold assembly into which foam precursors are directed to form a foam layer against the preformed insert member;

providing an insert member support buck having a plurality of raised formations thereon with end surfaces adapted to extend into the holes and adjacent the edges and of a shape congruent to the holes and edges;

aligning the raised formations with respect to the holes and edges and inserting them into the holes and with respect to the edges to fill the holes and to abut the edges for forming sealing surfaces only at the surface area of the end surfaces and at surface segments on said insert in the immediate vicinity of aid end surfaces;

forming seal patches on the spaced sealing surfaces defined by the raised formations at the ends thereof and on the surface segments of the insert in the immediate vicinity of the end surfaces; and

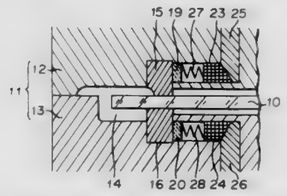
removing said raised formations from said holes and from said edges while separating said insert member from the support buck and retaining the seal patches on the insert member for sealing the holes therethrough and the edges thereon.

5,061,429

METHOD OF FORMING A GASKET ON WINDOW SHAPING MOLD FOR PREPARING SUCH WINDOW GLASS

Noriyuki Yoshihara; Yoshio Hosaka, both of Yokohama; Shigehito Shibata, Sagamihara, and Nobuaki Kunii, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Aug. 7, 1989, Ser. No. 390,218
Claims priority, application Japan, Aug. 9, 1988, 63-197075
Int. Cl.[5] B29C *45/33*
U.S. Cl. 264—252 **16 Claims**



1. A method of preparing window glass provided with a gasket at a peripheral portion of a glass sheet for a window comprising the sequential steps of:

placing a glass sheet in a shaping mold which comprises at least two mold parts to provide an inner cavity in which at least one resilient sealing member is attached to at least one of said two mold parts so as to come in contact with a surface of said glass sheet so that a gasket forming cavity is formed at a peripheral area of said glass sheet by the cooperation of the inner cavity of the shaping mold, the resilient sealing member and the glass sheet,

subsequently pushing said resilient sealing member against a contacting surface comprising a part of the shaping mold acting in a direction substantially parallel to the surface of the glass sheet in contact with the resilient sealing member in said inner cavity by means of a pushing means no earlier than the assembling of said shaping mold and said glass sheet, and

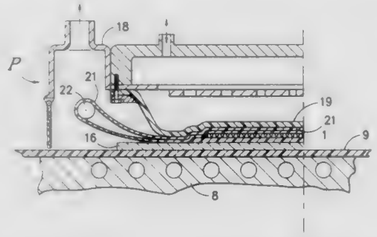
injecting a gasket material into said gasket forming cavity to form a gasket.

5,061,430

METHOD FOR PRESS VULCANIZING OF EVEN MOIST ARTICLES

Aage Lang, Kolind, Denmark, assignor to Milliken Denmark A/S, Morke, Denmark

Filed Oct. 13, 1988, Ser. No. 257,459
Claims priority, application Denmark, Jun. 30, 1988, 3638/88
Int. Cl.[5] B29C *35/02*
U.S. Cl. 264—316 **4 Claims**



1. Method for press vulcanizing auto rubber mats, piled rubber mats and similar components in a vulcanizing press having a diaphragm for applying pressure to the component, a plate to support the component and a fabric movable into and out of relationship with the component located between the diaphragm and the plate comprising the steps of: placing a component to be vulcanized on the plate, energizing the press to cause the diaphragm and the component to move towards one another while simultaneously slackening the fabric to allow it to adapt to the shape of the component being vulcanized, vulcanizing the component while allowing gases and vapors generated during vulcanizing to escape around the edges of and through the fabric and moving the diaphragm and the component away from each other after vulcanization to allow the component to be removed from the press.

5,061,431

METHOD OF DETERMINING THE ENTHALPY AND MOISTURE CONTENT OF WET STEAM

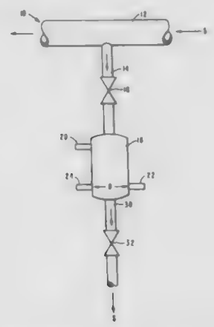
George J. Silvestri, Jr., Winter Park, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1989, Ser. No. 401,671
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—252 **8 Claims**

8. In a nuclear powered multi-stage steam turbine system wherein steam at higher than atmospheric pressure is introduced into the turbine system at a high pressure turbine element and thereafter flows through a series of turbine elements at successively decreasing pressures, wherein portions of said steam are extracted from the turbine elements at a plurality of lower pressure points and said steam is finally exhausted at a lowest pressure point, the method of determining moisture content and enthalpy of steam at a selected pressure point comprising the steps of:

sampling a small quantity of steam at the selected pressure point;

superheating the steam sample to a single-phase state by reducing its pressure and bottling it in a closed measuring chamber whereby the flow energy of the sample is converted into internal energy;



measuring the pressure of said steam sample within the chamber;

determining the sonic velocity of the steam sample by passing a sound wave through the sample from a transmitter to a receiver located at a known distance from said transmitter and measuring the time required for the sound wave to travel from transmitter to receiver; and

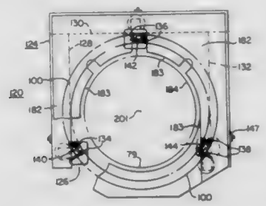
utilizing the measured pressure and sonic velocity of the steam sample to calculate the moisture content and enthalpy of the steam at the selected pressure point.

5,061,432

APPARATUS FOR FACILITATING THE SERVICING OF INVERTED CANNED PUMP MOTORS HAVING LIMITED ACCESS SPACE AND RESTRICTED ACCESS TIME ESPECIALLY IN NUCLEAR POWER PLANTS

John M. Matusz, Plum Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1990, Ser. No. 489,134
Int. Cl.[5] G21C *19/10*
U.S. Cl. 376—260 **19 Claims**



1. Service apparatus for one or more inverted canned motor pumps installed above a floor and beneath a steam generator in a nuclear or fossil power plant with limited access space and limited access time at least in the case of nuclear power plants, each of said canned motor pumps having a pump casing and a depending motor having a flange secured to a pump casing flange by a plurality of tensioned studs with tightened nuts, said service apparatus comprising:

a maintenance cart having a height greater than the height of the motor beneath the motor flange and further having a generally U-shaped frame means with an open vertical side that permits said cart to be moved horizontally such that said cart frame means can be moved under the pump casing to surround the depending motor;

actuator means supported by said cart frame means and having translating arm means engageable with support means on said motor;

means for operating said translating arm means to support, raise and lower said motor;

means supported by said frame means to support the motor flange prior to raising the motor to its installed position and after the motor has been released from its installed position and lowered to said cart;

work platform means provided on said cart frame means at an elevation beneath the motor flange elevation; and

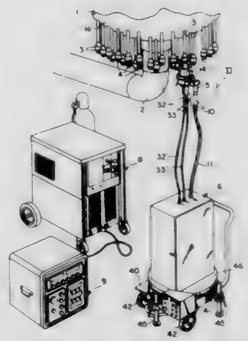
roller means provided on the bottom of said cart frame means to facilitate horizontal cart movement along the floor.

5,061,433

PROCESS FOR THE REPLACEMENT OF A HEATING ROD OF A PRESSURIZER OF A PRESSURIZED-WATER NUCLEAR REACTOR

Daniel Gente, Villeurbanne, and Marcel Giron, Anse, both of France, assignors to Framatome, Courbevoie, France

Filed Jun. 12, 1990, Ser. No. 536,719
Claims priority, application France, Jun. 12, 1989, 89 07725
Int. Cl.[5] G21C *19/20*
U.S. Cl. 376—260 **4 Claims**



1. Process for replacement of a heating rod (**4**) of a pressurizer of a pressurized-water nuclear reactor, which heating rod is introduced and fixed by welding in a collar (**3**) which is solid with a casing of said pressurizer at a passage opening of said casing, said process comprising the steps of

(a) sectioning said collar (**3**) above a connecting weld of said heating rod (**4**);

(b) extracting said heating rod;

(c) positioning a replacement heating rod (**4**);

(d) fixing said replacement heating rod in a temporary manner on said collar; and

(e) forming a continuous annular junction weld between said heating rod (**4**) and said collar (**3**) by

(i) fixing a tubular shaft (**18**) on one end of said heating rod projecting in relation to said collar (**3**);

(ii) in an extension of said heating rod, engaging and fixing on said shaft (**18**), in welding position, a welding device comprising a tubular support (**14**) and an inert-gas orbital welding torch with an electrode made of fusible metal which is rotatably mounted about an axis of said tubular support (**14**) coinciding with an axis (**20**) of said heating rod (**4**), equipped with a rotary drive means (**16**) and associated with a device for unwinding welding wire (**51**) rotatably mounted on a fixed base (**41**) about

said axis (**20**) of said heating rod (**4**) and equipped with a rotary drive means, said welding torch (**5**) and said unwinding device (**51**) being set into rotation in a synchronous manner about said axis (**20**) of said heating rod (**4**), in such a manner as to effect welding in a single pass over an entire periphery of said heating rod (**4**) and of said collar (**3**).

5,061,434

NUCLEAR FUEL BODIES AND THE PRODUCTION THEREOF

Geoffrey A. Wood, Preston, United Kingdom, assignor to British Nuclear Fuels Inc., Warrington, United Kingdom

Filed Aug. 23, 1990, Ser. No. 571,162

Claims priority, application United Kingdom, Sep. 6, 1989, 8920112

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—261 **9 Claims**

1. A method of producing a nuclear fuel body, the method comprising mixing single crystal seeds of uranium dioxide with granules comprising doped uranium dioxide, compacting the mixed seeds and granules, and sintering the compacted mixed seeds and granules, whereby a nuclear fuel body is produced comprising doped uranium dioxide grains having kernels comprising undoped uranium dioxide.

5,061,435

HIGH-TEMPERATURE REACTOR

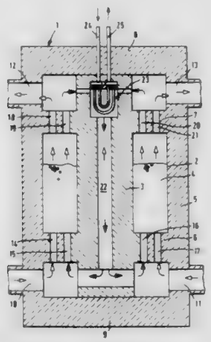
Jasbir Singh, Juelich; Heiko Barnert, Langerwehe, and Hans Hohn, Juelich, all of Fed. Rep. of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Fed. Rep. of Germany

Filed Jul. 17, 1990, Ser. No. 553,088

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1989, 3923962

Int. Cl.[5] G21C *9/00*

U.S. Cl. 376—298 **12 Claims**



1. A high-temperature reactor, comprising:
a) a reactor core disposed within said reactor;
b) said reactor having a bottom portion and a top portion;
c) a bottom cooling-gas intake and a top cooling-gas outlet for passing a cooling gas in a path from said bottom portion to said top portion through said reactor core;
d) a bypass duct having a lower end communicating with said cooling-gas intake and an upper end communicating with said cooling-gas outlet;
e) said bypass duct is disposed in parallel to the path of the cooling gas, whereby a partial flow of the coolant gas passes through said bypass duct;
f) a cooler for cooling the partial flow of the cooling gas passing through said bypass duct in residual heat transfer operation; and
g) said cooler is disposed in said bypass duct.

5,061,436

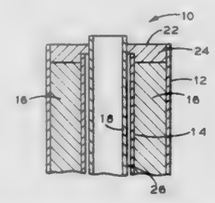
GAS COOLED NUCLEAR FUEL ELEMENT

John R. Coiner, Jr., Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 22, 1989, Ser. No. 457,033

Int. Cl.[5] G21C *3/30*

U.S. Cl. 376—431 **13 Claims**



1. A gas cooled nuclear fuel element, comprising:
a. a porous outer cylinder;
b. a porous inner cylinder connected at one end to and concentric with said outer cylinder, defining an annulus between said cylinders and a cylindrical space interior of said inner cylinder;
c. a fuel particle bed in said annulus between said inner and outer cylinders; and
d. fuel particle retention means positioned in the cylindrical space interior of said inner cylinder.

5,061,437

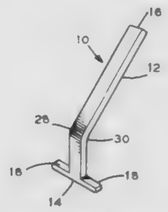
GRID KEY FOR EXTERIOR GRID CELLS

Jeffrey S. Whitt, Lynchburg, Va., assignor to B&W Fuel Company, Lynchburg, Va.

Filed Jan. 24, 1991, Ser. No. 645,156

Int. Cl.[5] G21C *3/34*

U.S. Cl. 376—438 **8 Claims**



1. A grid key for keying exterior grid cells in a nuclear fuel assembly, comprising:
a. a main body portion having first and second ends, said main body portion being bent at approximately a 45 degree angle near said first end; and
b. two tabs that extend outward in opposite directions from said first end at a right angle to said main body portion to define a T-shape at said first end.

5,061,438

METHOD OF MAKING A PRINTED CIRCUIT BOARD

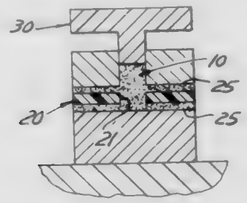
Edwin D. Lillie, Syracuse; Joseph M. Ilardi, DeWitt, and Robert P. Kane, Camillus, all of N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 534,429, Sep. 21, 1983, abandoned. This application Dec. 30, 1985, Ser. No. 815,124

Int. Cl.[5] B22F *7/00*

U.S. Cl. 419—8 **10 Claims**

1. A method of making a circuit board from a substrate said board having at least one electrically conductive path on one side thereof connected to a conductive path through the board, said method comprising the steps of:
forming a passage through the substrate and at least one groove on at least one side of the substrate with at least one groove connected to said passage;



substantially completely filling the passage and at least one groove with an electrically conductive metal powder;
applying pressure to said powder to compact the powder in the passage and the groove forming compacted powder which substantially completely fills said passage; and
heating the compacted powder to about its isothermal annealing temperature.

5,061,439

MANUFACTURE OF DIMENSIONALLY PRECISE PIECES BY SINTERING

Olli J. Nyrhilä, and Seppo O. Syrjälä, both of Turku, Finland, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

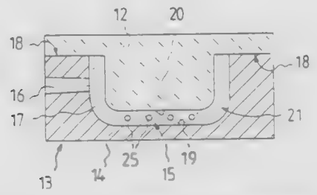
PCT No. PCT/SE90/00198, § 371 Date Nov. 29, 1990, § 102(e) Date Nov. 29, 1990, PCT Pub. No. WO90/11855, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 28, 1990, Ser. No. 613,582

Claims priority, application Sweden, Apr. 7, 1989, 8901235; Apr. 14, 1989, 8901359

Int. Cl.[5] B22F *7/00*

U.S. Cl. 419—9 **8 Claims**



1. A method for the manufacture of dimensionally precise pieces which at least in part are made up of a sintered material which, before the sintering, comprises a mixture of at least three pulverous constituents, of which the first is mainly of a metal of the iron group, having a particle size of at maximum approximately 150 μm, the second constituent contains copper and/or phosphorus and has a particle size of at maximum approximately 150 μm, and the third constituent is a copper based alloy, wherein the powder mixture contains the largest quantity of the third constituent and substantially less of both the first and the second constituent, that the powder mixture is fed into a moldcavity formed between at least two walls (**19** and **24**; **19** and **20**) of the cavity structure, and is sintered without compression of the powder mixture, without pressure, in this cavity and at a temperature which is above the melting point of the said second constituent.

5,061,440

FERRITIC HEAT RESISTING STEEL HAVING SUPERIOR HIGH-TEMPERATURE STRENGTH

Rikizo Watanabe, Yasugi, and Toshio Fujita, Tokyo, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 482,752, Feb. 21, 1990. This application Jul. 2, 1990, Ser. No. 546,860

Claims priority, application Japan, Feb. 23, 1989, 01-044348

Int. Cl.[5] C22C *38/52*

U.S. Cl. 420—38 **5 Claims**

1. A ferritic heat resisting steel having a composition containing, by weight, 0.05 to 0.20% C, 0.05 to 1.5% Mn, 0.05 to 1.0% Ni, 9.0 to 13.0% Cr, 0.05 to less than 0.50% Mo, 2.0 to 3.5% W, 0.05 to 0.30% V, 0.01 to 0.20% Nb, 2.1 to 10.0% Co., 0.01 to 0.1% N, and the balance substantially Fe and incidental impurities, with Si as an impurity limited to be not more than 0.10%.

5,061,441

HIGHLY WEAR-RESISTANT ROLL STEEL FOR COLD ROLLING MILLS

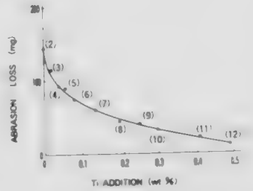
Ken'ichi Aoki, Fujisawa; Yoshikazu Seino, Chiba; Teruhiro Saito, Chiba, and Ken'ichi Tokoro, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, and Kanto Special Steel Works, Ltd., both of Japan

Filed Apr. 13, 1990, Ser. No. 509,043

Claims priority, application Japan, Apr. 21, 1989, 1-102169

Int. Cl.[5] C22C *38/28*

U.S. Cl. 420—109 **1 Claim**



1. A highly wear-resistant roll steel from which rolls of a cold rolling mill are made, comprising:
C: 0.70 TO 1.50 wt%
Si: 0.5 to 0.37 wt%
Mn: 0.15 to 0.45 wt%
Cr: 2.50 to 10.00 wt%
Mo: less than 0.26 wt%
V: less than 0.08 wt%
Ni: 1.00 wt% or less
Ti: 0.04 to 0.30 wt%
with the balance being Fe and inevitable impurities.

5,061,442

METHOD OF FORMING A THIN SHEET OF AN AMALGAM

Edward J. Ozimek, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

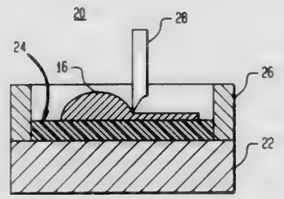
Filed Oct. 9, 1990, Ser. No. 594,892

Int. Cl.[5] C22C *7/00*

U.S. Cl. 420—526 **15 Claims**

1. A method of making a solid sheet of an amalgam suitable for subsequent use comprising the steps of:
mixing together a liquid metal and a powdered metal to form the amalgam in liquid pourable form at a temperature of at least the melting temperature of the liquid metal;
spreading the liquid amalgam before it begins to stiffen on a surface to form a layer of the amalgam having a desired thinness; and
lowering the temperature of the liquid layer of amalgam

before it begins to stiffen below the melting temperature of the liquid metal in the amalgam to form a solid sheet of

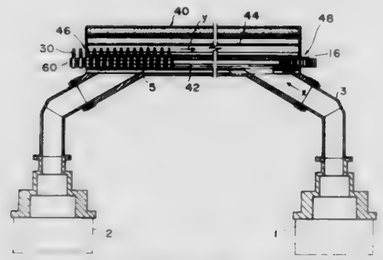


the amalgam which can be handled and stored as a structural piece and subsequently used.

5,061,443
METHOD AND APPARATUS FOR MICROWAVE STERILIZATION OF AMPULES

Kenichi Iijima, Isezaki, and Minoru Kudo, Saitama, both of Japan, assignors to Eisai Co., Ltd., Tokyo and Micro Denshi Co., Ltd., Saitama, both of, Japan

Filed Jul. 20, 1989, Ser. No. 382,265
Claims priority, application Japan, Jul. 29, 1988, 63-189880
Int. Cl.[5] A61L *2/12*
U.S. Cl. 422—21 **9 Claims**



1. In a method for sterilizing fluid contained in ampules by passing the ampules through an elongated microwave irradiation furnace communicating with a microwave rectangular waveguide, and wherein a lower portion of each ampule is inserted through a slot formed along the top wall of the furnace such that the ampules are disposed in the slot at a set depth in the furnace and at a set distance from sides of the slot, and the ampules are transported along the slot and through the furnace so that the ampules are subjected to microwave irradiation at a set exposure dose sufficiently that the fluid in the ampules is sterilized, the improvement comprising, adjusting at least one of said depth in the furnace and said distance from the sides of the slot so as to adjustably control the exposure dose of microwaves to the fluid in the ampules.

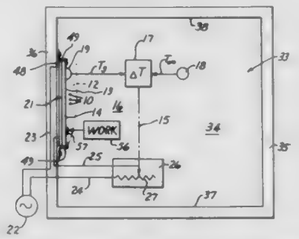
5,061,444
SYSTEMS FOR REDUCING DEPOSITION OF FLUID-BORNE PARTICLES

William W. Nazaroff, Berkeley, Calif., and Glen R. Cass, Cambridge, Mass., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 139,789, Dec. 29, 1987, abandoned.
This application Mar. 22, 1991, Ser. No. 674,292
Int. Cl.[5] B01J *19/00*
U.S. Cl. 422—40 **23 Claims**

1. A method of reducing deposition of fluid-borne particles in a diameter range of from one-hundredth of a micron to several microns from a convection boundary layer flow onto a surface of an object to be protected, comprising the step of:

causing thermophoretic effect to dominate the combined effects of Brownian motion and gravitational sedimentation of said particles in said boundary layer flow by establishing a temperature difference between said surface of

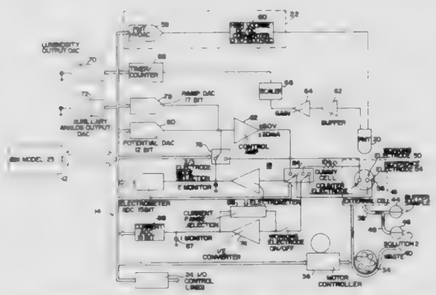


the object and adjacent fluid such that the temperature of said surface is higher than that of said adjacent fluid by not more than 10K.

5,061,445
APPARATUS FOR CONDUCTING MEASUREMENTS OF ELECTROCHEMILUMINESCENT PHENOMENA

Glenn Zoski, Rockville, Md., and Steve Woodward, Chapel Hill, N.C., assignors to Igen, Inc., Rockville, Md.

Filed Nov. 3, 1988, Ser. No. 267,234
Int. Cl.[5] G01N *21/76*
U.S. Cl. 422—52 **22 Claims**



1. Apparatus for conducting measurements of electrochemiluminescent phenomena, comprising:

cell means for holding a sample fluid which contains an electrochemiluminescent moiety;

detector means for detecting electromagnetic radiation emitted by said electrochemiluminescent moiety in said sample fluid and providing a signal indicative of the intensity of emitted radiation;

control means for generating a digital control signal indicative of a selected slope of a ramp voltage waveform;

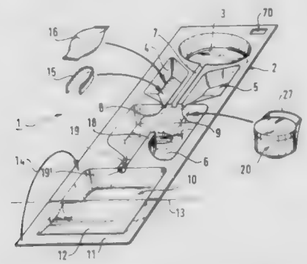
digital to analog converter means for generating said ramp voltage waveform in response to said digital control signal; said digital to analog converter means comprising pulse width modulation means for converting said digital control signal to a pulse width modulated control signal; and integrator means for producing said ramp voltage waveform whose slope is determined by said pulse width modulated control signal produced by said pulse width modulation means; and

means for supplying electrochemical energy to said sample fluid in response to the ramp voltage waveform such that said electrochemiluminescent moiety in said sample fluid is induced to repeatedly emit electromagnetic radiation.

5,061,446
DEVICE FOR PERFORMING BIOLOGICAL ANALYSES BY IMMUNOENZYMATIC DETECTION OF ANTIBODIES OR ANTIGENS IN A SERUM

Jean Guigan, 5, rue des Ursulines, 75005 Paris, France

Filed Jul. 18, 1989, Ser. No. 381,429
Claims priority, application France, Jul. 28, 1988, 88 10211
Int. Cl.[5] G01N *9/30, 21/00;* **B04B** *5/02*
U.S. Cl. 422—64 **9 Claims**



1. In combination, a device for performing biological analyses by immuno-enzymatic detection of antibodies or antigens in a serum and a plurality of cartridges, the device comprising a processing device for simultaneously processing said plurality of cartridges, said cartridges being assembled to said device and said cartridges being disposed in a thermostatically controlled enclosure, said processing device comprising:

a hub associated with a motor having an angle encoder for controlling rotation cycles of the hub and capable both of imparting rapid motion thereto for centrifuging, and of imparting or slow step-by-step motion thereto;

a plurality of cartridge-carrying lifts disposed radially on the hub, means for passing each of said lifts from a high, "cartridge-loading" position to a low, "working" position, each of said lifts having an open peripheral face, a top face and a bottom face which are largely open, and each lift including declutchable means for radially locking the corresponding cartridge for centrifuging;

a plurality of optical reading gauges fixed to said hub, level with respective peripheral faces of said lifts for optically viewing the contents of said cartridges;

each of said cartridges being generally rectangular in shape comprising a bottom of thermoformed plastic material covered with a thin transparent sheet of plastic material and constituting:

a collecting cuvette disposed in a central position and connected by a duct to a serum storage cuvette situated at the end of the cartridge located adjacent to said hub;

at least two cuvettes between the collecting cuvette and said serum storage cuvette, said at least two cuvettes being connected via respective ducts to said collecting cuvette, for containing respectively, a sachet of conjugate liquid and a sachet of substrate liquid; said collecting cuvette having a small liquid-evacuation hole in a bottom and containing a substantially cylindrical well closed by a lid, said well being rotatable about a vertical axis, and having a portion of a side wall of the well forming a spout for all of the liquids flowing in the said ducts, and containing a brush having a large surface area per unit volume, said brush being rotatable about a vertical axis independently of said well, with the bristles of said brush carrying antigens; and

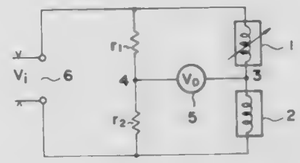
a flexible pocket for containing a diluting or blocking liquid connected by a duct to said collecting cuvette, and situated close to an open peripheral face of the corresponding lift, said duct being closed by a breakable capsule; and

the processing device further comprising at least one peripheral read module situated on the path of said gauges and a module situated above the path of said cartridges provided with means for rupturing said sachets respectively containing the conjugate and the substrate, and also means for breaking said breakable capsule.

5,061,447
CATALYTIC COMBUSTION TYPE CO GAS SENSOR

Yoshio Ono, No. 3865-1, Matsubushi, Matsubushi-machi, Kita-katsushika-gun, Saitama-ken, Japan

Filed Aug. 4, 1989, Ser. No. 389,540
Claims priority, application Japan, Sep. 14, 1988, 63-231276; Sep. 21, 1988, 63-234748
Int. Cl.[5] G01N *27/16*
U.S. Cl. 422—96 **2 Claims**



1. A catalytic combustion type CO gas sensor comprising:

an electrical circuit including two coils arranged in series defining a active section and an compensation section respectively,

resistances, r_1 and r_2, arranged in series opposing said coils respectively,

a gas sensitometer bridging the junction between said coils and said resistances which determines CO concentration based on the difference in resistance of said coils on catalytic combustion of CO,

said coils having substantially the same resistance in gas-free state at a definite temperature around 25° C.,

said resistances r_1 and r_2 having substantially the same resistance in a gas-free state at a definite temperature around 25° C.,

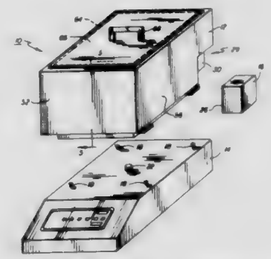
the temperature coefficient of the active section coil and resistance r_1 being approximately the same, and

the temperature coefficient of the compensating section coil C2 and resistance r_2 being approximately the same.

5,061,448
INCUBATOR

Stanley R. Mahe, and William R. Biver, both of Dubuque, Iowa, assignors to Barnstead Thermolyne Corporation, Dubuque, Iowa

Filed Apr. 29, 1988, Ser. No. 187,815
Int. Cl.[5] B01L *7/00*
U.S. Cl. 422—99 **5 Claims**



1. An apparatus for incubating a biological test specimen comprising:

a base section having drive means therein for providing a rotating motion;

an autoclaveable incubating chamber, said incubating chamber having a shaker plate mounted therein for supporting

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a container having a biological test specimen, connecting means for connecting said shaker plate to said drive means in said base section, and blower means for producing an air flow within the incubating chamber;

blower drive means for driving said blower means in said incubating chamber, said blower drive means being detachably mounted to said incubator chamber;

means for quickly connecting or disconnecting said autoclaveable incubating chamber from said base section including coupling means for quickly connecting and disconnecting said drive means in said base section to said connecting means in said autoclaveable incubating chamber;

means for allowing quick connection and disconnection of said blower drive means from said incubating chamber.

5,061,449

EXPANDABLE MULTI-CHANNEL PIPETTER

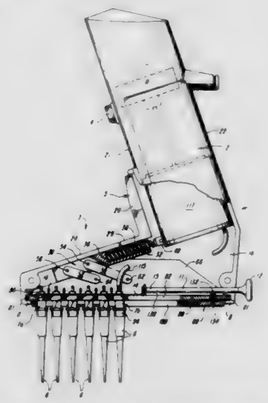
Victor A. Torti, Brookline; Gary E. Nelson, Hollis, both of N.H.; Laurence Keene, Brookline, Mass., and George P. Kalmakis, Reading, Mass., assignors to Matrix Technologies, Corp., Lowell, Mass.

Filed Jul. 25, 1989, Ser. No. 385,234

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] B01L *3/02*

U.S. Cl. 422—100 **23 Claims**



1. In a multi-channel pipetting system including a plurality of passages, each of said passages for transfering a liquid volume, means for drawing a liquid volume into each of said passages, and means for expelling each of the liquid volumes from each of said passages through a pipette tip in fluid communication therewith, wherein the improvement comprises

a housing for the pipetting system,

a slotted track in the housing,

a plurality of pipette tip fittings, with one tip fitting connected to each passage and slidably mounted on the track,

and means connected to each of the fittings for adjusting the distance between adjacent ones of said fittings on the track.

5,061,450

ISOLATION FLUID CONTROL DEVICE AND WATER CUP

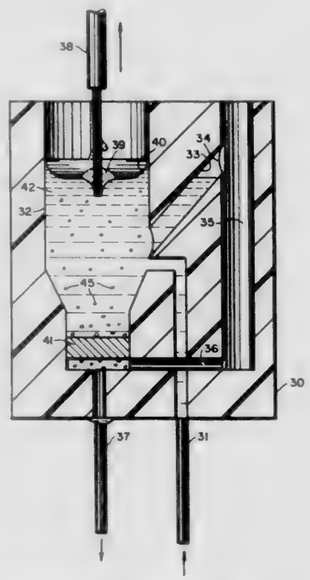
Keichi Aoyagi, Westfield, N.J., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 736,602, May 21, 1985, abandoned.

This application Jun. 5, 1987, Ser. No. 58,702

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—101 **4 Claims**



1. A cup for the containment and separation of two immiscible liquids comprising:

(a) a liquid receiving chamber constructed and arranged to receive a non-aqueous first liquid;

(b) means for introducing an aqueous second liquid into said liquid receiving chamber, the second liquid being substantially immiscible with the first liquid and having a lower specific gravity than the first liquid, the first liquid forming a lens at the surface of the second liquid;

(c) outlet means constructed and arranged to permit liquid to pass from said liquid receiving chamber;

(d) liquid level control means constructed and arranged to maintain the level of the lens in said chamber at a preselected height, said liquid level control means including conduit means in fluid communication with said liquid receiving chamber configured so as to cause the second liquid within said liquid receiving chamber to overflow into an overflow chamber when the level of the second liquid rises above a predetermined point and whereby the level of the lens in said chamber is determined by the height of said conduit means; and

(e) means for separating the first liquid from the second liquid in said liquid receiving chamber which means includes a porous fluid—selective filter means positioned at the bottom of said fluid receiving chamber between said fluid receiving chamber and said outlet means, said filter means permitting the passage therethrough of the non-aqueous first liquid settling from the lens to the substantial exclusion of the aqueous second liquid.

5,061,451

DEVICE FOR SEPARATING THE COMPONENTS OF A LIQUID, ESPECIALLY WHOLE BLOOD

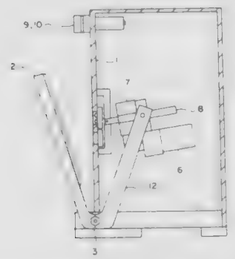
Karlheinz Gänshirt, Dreieich; Wolfram Walker, Rödermark, and Klaus D. Handel, Darmstadt, all of Fed. Rep. of Germany, assignors to NPBI Nederlands Produktielaboratorium voor Bloodtransfusieapparatuur en Infusievloeistoffen BV, Emmer-Compascuum, Netherlands

Filed Apr. 27, 1989, Ser. No. 344,336

Claims priority, application Fed. Rep. of Germany, May 7, 1988, 3815643

Int. Cl.[5] B01L *11/00;* **B01D** *12/00*

U.S. Cl. 422—101 **8 Claims**



1. A device for obtaining from at least two spatially separated areas the heterogeneous components of a liquid, in a flexible bag with at least one outlet and a line leading out of it, the device comprising a housing including a front plate, a V-shaped lever pivotable about an axis adjacent the bottom of the housing and comprising two arms of which one is inside the housing and one is outside the housing, a pad on the outside arm of the lever facing the housing front plate, based on the length of said outside arm said pad terminating a distance of about 30% from the axis, and a drive mechanism operatively connecting the inner arm of said lever with the front plate of the housing.

5,061,452

CASSETTE FOR PATHOLOGICAL TISSUE EXAMINATION

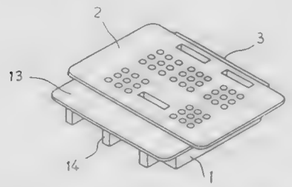
Tadashi Yamamoto, Amagasaki, and Takuya Murazumi, Ashiya, both of Japan, assignors to Murazumi Industrial Co., Ltd., Himeji, Japan

Filed Oct. 13, 1988, Ser. No. 256,945

Claims priority, application Japan, Oct. 14, 1987, 62-157173[U]

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—101 **7 Claims**



1. A cassette for pathological tissue examination consisting of a container proper and a lid, the lid being engagable with and detachable from the container proper, the container proper and the lid are made of a chemical-resistant synthetic resin, partition means associated with at least one of said container proper and said lid so that when said container proper and said lid are engaged the interior surface of the container proper, the interior surface of the lid and said partition means define a plurality of cylindrical sample chambers which are independent and separated from one another, the interior surface of the container proper defining each of said chambers having a plurality of small through-holes, the interior surface of the lid defining each of said chambers having a plurality of small through-holes, and a surface of at least one of said container proper and said lid having means for recording information for identifying pathological tissue.

5,061,453

APPARATUS FOR THE CONTINUOUS CHARGING OF A LIQUID REACTANT WITH GAS FOR THE PRODUCTION OF A FOAMABLE, LIQUID REACTION MIXTURE

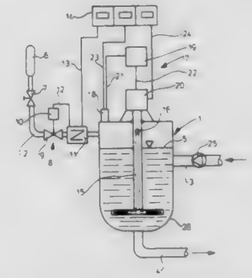
Kurt Krippl, Monheim, and Klaus Schulte, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 16, 1989, Ser. No. 352,577

Claims priority, application Fed. Rep. of Germany, May 28, 1988, 3818161

Int. Cl.[5] B01F *3/04*

U.S. Cl. 422—106 **2 Claims**



1. An apparatus for the continuous charging of at least one liquid reactant with a gas comprising:

a) a gassing tank having a hollow stirrer therein, said hollow stirrer having a speed adjustable drive and a gas intake opening,

b) a feed pipe for ungassed reactant opening into said tank,

c) a discharge pipe for reactant charged with gas exiting said tank,

d) a gas inlet pipe opening into said tank,

e) a control device arranged in said gas inlet pipe, said control device comprising 1) a throughflow regulating valve with actuator and 2) a mass flow meter for measuring the gas supplied to said tank, said mass flow meter operatively connected to said actuator so as to maintain a substantially constant mass flow in said gas inlet pipe, and

f) a regulating device comprising 1) a level measuring means for measuring liquid level in said tank and 2) a speed regulator which is operatively connected to said level measuring instrument and said adjustable drive so as to maintain a substantially constant liquid level in said tank.

5,061,454

HIGH PRESSURE SPRAY INJECTOR

Aviezer Birk, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 22, 1989, Ser. No. 373,540

Int. Cl.[5] B05B *1/00*

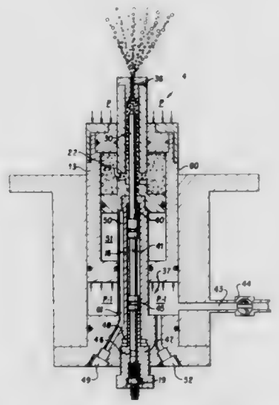
U.S. Cl. 422—119 **9 Claims**

1. A high pressure spray injector comprising:

a first, second, and third body means in coaxial alignment, said third body means having a nozzle;

means defining a first interior cavity between said first and said second body means for receiving a pressurized gas;

means defining a second and third interior cavity between said second and said third body means;
means defining a fourth interior cavity within said third body means;
inlet port means communicating with said first interior cavity;

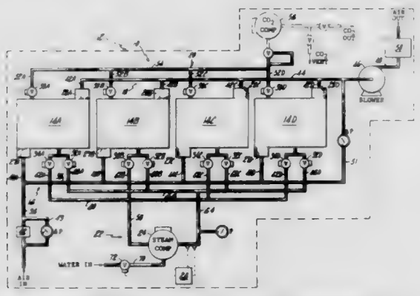


at least one passage between said third and said fourth interior cavity;
inlet port means for injecting a fluid communicating with said third interior cavity;
means for opening and closing said nozzle in said third body means;
means for discharging said fluid through said nozzle.

5,061,455
APPARATUS FOR REMOVING CARBON DIOXIDE FROM AIR

Harlan F. Brose, East Hartland, and Alfred O. Brouillet, Somers, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 79,867, Jul. 31, 1987, abandoned, which is a division of Ser. No. 44,091, Apr. 30, 1987, Pat. No. 4,822,383. This application Sep. 28, 1990, Ser. No. 590,321
Int. Cl.[5] B01D *53/04*
U.S. Cl. 422—122 **4 Claims**

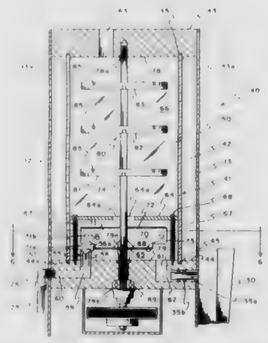


1. A system for removing a gaseous component from air, which comprises:
a. a plurality of solid amine beds, wherein said beds are each constructed and arranged for adsorbing a gaseous component from air, desorbing the adsorbed gaseous component upon contact with a regenerative gas which forms a condensate, and releasing condensate;
b. an air inlet connected to each bed;
c a means for removing desorbed gaseous component from each bed;
d an inlet for regenerative gas connected to each bed;
e an outlet for condensate connected to each bed; and
f. a compressor having an inlet, an outlet and a means for introducing regenerative gas to each bed, a means for lowering the pressure within each bed, a means for vaporizing condensate, and a means for removing vaporized condensate from each bed, wherein said compressor outlet is connected to each said regenerative gas inlet, said compressor inlet is connected to each said condensate outlet.

5,061,456
POLYMER ACTIVATION APPARATUS

Carl L. Brazelton, Kankakee; Troy C. Litherland, Bradley, both of Ill., and J. Derek Green, Wellington, England, assignors to Stranco, Inc., Bradley, Ill.

Continuation of Ser. No. 89,344, Aug. 25, 1987, abandoned. This application Oct. 10, 1990, Ser. No. 595,313
Int. Cl.[5] B01J *16/00*
U.S. Cl. 422—134 **14 Claims**

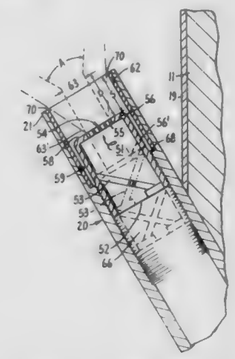


1. Polymer activation apparatus for receiving polymer and water and for activating and diluting the polymer, comprising
a vessel defining a substantially cylindrical chamber having a central axis which extends along the length of said vessel, said vessel defining a first processing zone and a second processing zone in fluid communication with said first processing zone,
a stationary baffle in said vessel dividing said chamber into said first and second processing zones, said baffle including a plate extending transversely of said axis of said vessel, said plate having an aperture communicating said first processing zone with said second processing zone,
water inlet means for supplying water to said first processing zone, polymer supply means including a source of polymer,
polymer inlet means connected to said polymer supply means for supplying the polymer to said first processing zone, said polymer inlet means being separated from said water inlet means so that the polymer and water are not mixed before they enter said first processing zone,
first impeller means in said first processing zone for moving the polymer within said first processing zone to mix the polymer and the water for activating the polymer, said first impeller means having a plurality of fin members oriented in a plane which is substantially parallel to said vessel axis and extending outward radially from said vessel axis and spaced apart from one another, defining a paddle-wheel configuration for said first impeller means,
means for rotating said impeller means,
means for moving the polymer through said first processing zone in a first period of time and into and through said second processing zone in a second period of time, said second time period being longer than said first time period,
said first impeller means being constructed and arranged to subject the polymer to a high shear rate for said first time period to initiate dissolution and activation of the polymer,
agitating means in said second processing zone for further mixing the polymer and the water in said second processing zone, said agitating means being constructed and arranged to subject the polymer to a lower shear rate for said second time period to further dissolve and activate the polymer,
said agitating means further including second impeller means, said first impeller means and said second impeller means being mounted for rotation about said axis of said vessel to move said polymer within said first and second processing zones, respectively,
a shaft extending through said first and second processing zones, said shaft being connected to both said first and second impeller means for transferring rotating motion thereto, and
outlet means in fluid communication with said second processing zone for carrying the activated and diluted polymer away from the apparatus.

5,061,457
APPARATUS FOR LIQUID FEED DISPERSION IN FLUID CATALYTIC CRACKING SYSTEMS

C. Richard Hsieh, San Rafael; Desmond F. King, El Sobrante; Frederick A. Pettersen, Novato, and Cathleen A. Shargay, Pleasant Hill, all of Calif., assignors to Chevron Research & Technology Company, San Francisco, Calif.

Division of Ser. No. 153,478, Feb. 3, 1988, Pat. No. 4,875,996, which is a continuation of Ser. No. 834,410, Feb. 28, 1986, abandoned. This application Jun. 28, 1989, Ser. No. 372,480
Int. Cl.[5] F27B *15/08;* **B01J** *8/18*
U.S. Cl. 422—140 **6 Claims**

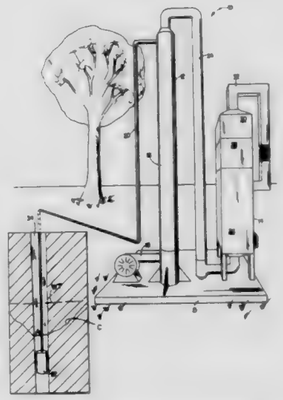


1. In a riser reactor of a fluid catalytic cracking system having a feed nozzle for introducing a conically dispersed feed stream of liquid hydrocarbons from within a cylindrical opening through a side wall of said riser reactor to contact a fluidized stream of heated catalyst particles flowing therein for reaction with said liquid hydrocarbons which comprises:
said nozzle having a liquid hydrocarbon feed conduit inlet, a discharge orifice and a swirl chamber positioned therebetween, said discharge orifice being formed in an end wall of said swirl chamber and having a square-edge capable of creating a vena contracta of liquid that may flow therethrough smaller in cross-sectional area than the discharge area of said orifice, said discharge orifice being smaller in diameter and substantially shorter than said swirl chamber, a plurality of vanes between said feed conduit inlet and said swirl chamber for imparting centrifugal rotation to liquid that may flow therethrough, both said orifice and said chamber being open for full flow throughout the full cylindrical volumes thereof whereby said liquid hydrocarbon feed flowing through said nozzle is formed into a vena contracta over a distance several times the diameter of said orifice so that said vena contracta diverges into a wide angle conical spray pattern beyond said cylindrical opening through said side wall of said riser reactor and into said fluidized stream of heated catalyst particles flowing therein, induced solely by flow of said liquid hydrocarbon feed through said vanes and without concurrent gas flow around said vena contracta to augment or prevent such divergence of flow within said cylindrical opening,
the improvement comprising:
a protective pipe having a cylindrical bore concentrically surrounding said nozzle and extending axially forward from at least said square-edge orifice of said nozzle into the heated catalyst flow path of said riser reactor pipe of said fluid catalytic cracking system, said protective pipe preventing breakup of the vena contracta formed solely by the liquid feed stream through said square edge orifice before entry into said fluidized stream of heated catalyst particles flowing through said riser reactor,
the discharge end of said protective pipe terminating at a distance less than the distance at which said vena contracta diverges into said wide angle dispersion pattern, and
shield means for preventing erosion of said orifice of said nozzle by eddy currents of catalyst particles induced within the annular space between said vena contracta and said cylindrical bore of said protective pipe comprising an abrasion resistant surface extending parallel to said vena contracta and along said cylindrical bore of said protective pipe from at least said orifice to said discharge end of said protective pipe.

5,061,458
DECONTAMINATION APPARATUS FOR ENVIRONMENTAL PROTECTION

Paul C. Miller, Elkton, Md., assignor to Groundwater Technology, Inc., Norwood, Mass.

Continuation-in-part of Ser. No. 78,779, Jul. 28, 1987, Pat. No. 4,892,664. This application Oct. 4, 1989, Ser. No. 416,970
The portion of the term of this patent subsequent of Jan. 9, 2007, has been disclaimed.
Int. Cl.[5] F01N *3/10*
U.S. Cl. 422—173 **6 Claims**



1. A decontamination converter apparatus installed at an outdoor site where volatile organic compounds have been

stored, and where such compounds have entered the ground as contaminants and endanger the roundwater, the apparatus comprising an inlet conduit constructed to receive an air stream, produced at the site, that carries said organic contaminants; preheating means comprising (a) a heat exchanger and (b) an externally powered heater, said preheating means arranged to preheat said site-produced air stream carrying said contaminants; an oxidizing catalytic converter having a predetermined minimum operating temperature for efficient operation and arranged to receive the said air stream from said preheater means and constructed to oxidize said organic contaminants to produce a decontaminated effluent air stream substantially free of said organic contaminants; and ducting directing the thus decontaminated, hot effluent air stream from said catalytic converter through said heat exchanger and thence to the atmosphere; said heat exchanger being effective to cause the decontaminated air stream to transfer heat to the incoming site-produced air stream that carries said contaminants and said heater of said preheating means constructed and arranged to cooperate with said heat exchanger to elevate the temperature of said preheated air stream reaching said catalytic converter to at least said minimum operating temperature, to ensure catalytic conversion of said organic contaminants to decontaminated form before release to the atmosphere.

5,061,459

PREVENTION OF COPPER DISSOLUTION DURING CYANIDATION OF GOLD ORES

Charles A. Bennett, Staines; Elizabeth A. Crathorne, Berkshire, and Raymond Edwards, Hayes, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Oct. 27, 1989, Ser. No. 428,277
Int. Cl.[5] B01D *11/02;* **C22B** *11/08*
U.S. Cl. 423—29 **8 Claims**

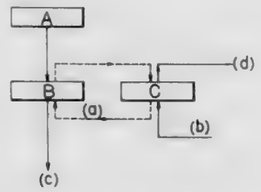
1. A process for the treatment of precious metal containing ores, which contain cyanide consuming copper minerals, during cyanidation and recovery of the precious metal, the process comprising introducing an ethoxylated fatty alkyl amine into a mixture of the ore and a cyanide solution such that the amine is in contact with the ore during cyanidation.

5,061,460

METHOD FOR MANUFACTURING TITANIUM OXIDE

Morio Watanabe, Tokyo, and Renpei Sei, Kanagawa, both of Japan, assignors to Solex Research Corporation of Japan, Tokyo, Japan

Filed Aug. 10, 1989, Ser. No. 392,128
Claims priority, application Japan, Aug. 19, 1988, 63-206029; Dec. 8, 1988, 63-310887; Dec. 22, 1988, 63-324412
Int. Cl.[5] C01G *23/08*
U.S. Cl. 423—70 **9 Claims**



1. A method for manufacturing titanium oxide, comprising:
a. subjecting a sulfuric acid solution containing predominantly titanium ions and one or more metal ions to hydrolysis to form insoluble titanium hydroxide;
b. separating the titanium hydroxide from the solution;
c. contacting the separated solution with an organic solvent containing one or more species selected from the group consisting of oxygen-containing organic solvents, alkyl amines, and alkyl aryl amines to extract the titanium ions in a form of a sulfate titanyl into the organic solvent, and separating the organic solvent extract from the aqueous raffinate;
d. contacting the organic solvent containing the extracted sulfate titanyl with water or a dilute sulfuric acid solution to inversely extract the titanium from the organic solvent into the water or the dilute sulfuric acid solution and to regenerate the organic solvent;
e. recycling the solution containing the inversely extracted titanium to hydrolysis step a.; and
f. calcining the separated titanium hydroxide from step b. to produce titanium oxide.

5,061,461

CATIONIC PROCESSING OF KAOLIN ORES

Paul Sennett, Colonia, and Steven A. Brown, New Brunswick, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 347,611, May 4, 1989, abandoned. This application Aug. 22, 1990, Ser. No. 570,990
Int. Cl.[5] C09D *3/20*
U.S. Cl. 423—112 **20 Claims**



1. A process for wet processing a kaolin crude which comprises blunging said kaolin crude in water to form an aqueous pulp, dispersing said kaolin particles in said pulp by adding to said pulp a dispersant consisting essentially of a cationic polyelectrolyte in amount sufficient to impart a positive zeta potential thereto, said cationically dispersed pulp having an acidic pH, removing grit from said cationically dispersed pulp, centrifuging the resulting cationically dispersed pulp to separate at least one fine particle size fraction having a desired content of particles finer than 2 micrometers and adding a bleach reagent to the cationically dispersed pulp at an acidic pH before or after centrifugation, whereby said crude is degritted, fractionated and bleached all at an acidic pH.

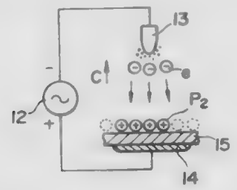
5,061,462

APPARATUS FOR PRODUCING A STREAMER CORONA

Nagatoshi Suzuki, 5-7-7, Kugahara, Ota-ku, Tokyo, Japan

Continuation of Ser. No. 120,012, Nov. 12, 1987, abandoned. This application Sep. 27, 1989, Ser. No. 412,606
Int. Cl.[5] B01J *19/08, 19/12;* **F01N** *3/00;* **F02M** *27/00*
U.S. Cl. 422—186.04 **9 Claims**

1. An apparatus for producing a streamer corona, comprising:
an insulating housing having first and second opposite sides and first and second opposite ends, said first end defining an inlet opening through which a gas to be treated enters the housing, and said second end defining an outlet opening through which the gas leaves the housing;
a plurality of first electrodes projecting from said first side toward said second side;
a second electrode adjacent to said second side of said housing and spaced from said first electrodes, said second electrode defining a plate having a surface disposed in opposing relation to said first electrodes;



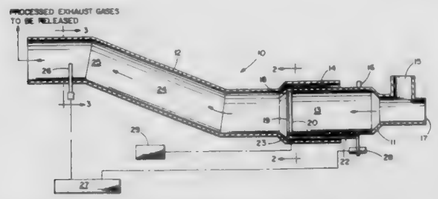
a high resistance electrically insulating layer on said surface of said second electrode, said insulating layer covering at least a portion of said surface of said second electrode; and
a high voltage supply corrected to said first electrodes and said second electrodes.

5,061,463

COINCINERATOR APPARATUS AND METHOD FOR PROCESSING WASTE GASES

Earl Vickery, San Jose, Calif., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Aug. 24, 1989, Ser. No. 397,990
Int. Cl.[5] B01D *53/34;* **F23C** *7/00;* **F23G** *7/06*
U.S. Cl. 423—210 **15 Claims**



1. A method of co-incinerating dangerous waste gases to form by-products which are safer for release into the atmosphere, which comprises confining said waste gases within a conduit, mixing said waste gases with a flammable co-incineration fuel gas at an upstream inlet location within said conduit at which there is insufficient oxygen to support combustion, moving the mixture downstream to a combustion chamber containing a source of flammable ignitor fuel gas adapted to emit a flame when ignited in a combustion-supporting atmosphere, introducing a continuous supply of an oxygen-containing gas immediately downstream of said combustion chamber to provide a combustion-supporting atmosphere within said combustion chamber, and igniting said ignitor fuel gas to a flame to ignite the co-incineration fuel gas and co-incinerate the waste gases within said combustion chamber at a location downstream of said upstream inlet location and upstream of the location at which the oxygen-containing gas is introduced to said conduit.

5,061,464

OXIDATION PROCESS AND CATALYST FOR USE THEREFOR

George W. Cordonna, Jr., Lansdale, and Eckhard R. Becker, Wayne, both of Pa., assignors to Johnson Matthey, Inc., Valley Forge, Pa.

Continuation of Ser. No. 270,011, Nov. 14, 1988, abandoned. This application Jun. 14, 1990, Ser. No. 539,319
Int. Cl.[5] B01D *53/36*
U.S. Cl. 423—213.5 **6 Claims**

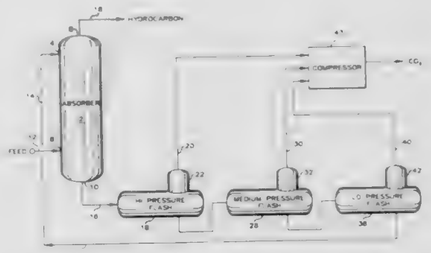
1. A process for the oxidative removal of CO and hydrocarbons from SO_x-containing waste gases which comprises contacting said waste gas in an oxidizing atmosphere at a relatively low temperature below about 500° C. in the presence of an effective amount of a sulfur-resistant catalyst consisting essentially of a ceramic or metallic monolith which has a coating consisting essentially of at least one member of the group consisting of silica, zirconia, titania and zeolite and a mixture of platinum and rhodium or platinum and palladium deposited thereon, said coating having a surface area about 20 m^2/g to about 100 m^2/g, the total amount of platinum and rhodium or platinum and palladium comprising about 0.005 to about 2% by weight of the catalyst composition and gas hourly space velocity of the gas contacting the catalyst being about 10,000 to about 200,000 hr^{-1}.

5,061,465

BULK CO_2 RECOVERY PROCESS

Cecil O. Carter, Wann, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 24, 1989, Ser. No. 397,947
Int. Cl.[5] B01D *55/14*
U.S. Cl. 423—229 **14 Claims**



1. A process for removing an acid gas component from a gaseous mixture containing said acid gas and hydrocarbons comprising methane, ethane and heavier hydrocarbons, said process comprising the steps of:
(a) contacting a feed gas stream comprising said gaseous mixture with an absorbent consisting essentially of an aqueous alkanolamine solution in a contacting zone wherein said acid gas component is absorbed by said absorbent at a temperature in the range of from about 240° F. to about 260° F.;
(b) withdrawing a liquid stream enriched in said acid gas component from said contacting zone; and
(c) withdrawing from said contacting zone a gaseous hydrocarbon stream having a reduced concentration of said acid gas component compared to the concentration of said acid gas component in said feed gas stream.

5,061,466

SYNTHESIS OF LARGE PORE ZEOLITES CONTAINING GALLIUM

Clarence D. Chang, Princeton; Cynthia T. Chu, Pennington, both of N.J.; Thomas F. Degnan, Jr., Yardley, and Sharon B. McCullen, Newtown, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 16, 1987, Ser. No. 120,891
Int. Cl.[5] C01B *35/12, 33/34*
U.S. Cl. 423—277 **5 Claims**

1. A process for incorporating gallium into a zeolite free of gallium, the pore sizes of which are greater than about 7 Angstroms, comprising in combination
depleting said zeolite in framework elements wherein aluminum is an element in said framework;
contacting said zeolite free of gallium with an aqueous solution of a source of water soluble gallium, at a pH of at least about 10, at temperatures ranging from ambient to 300° C. to increase the gallium content of said zeolite; and

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subjecting the zeolite of increased gallium content to conditions effective to convert it to its protonated form to render it effective to crack hexane and whereby it exhibits selectivity for benzene production under conditions effective to crack hexane.

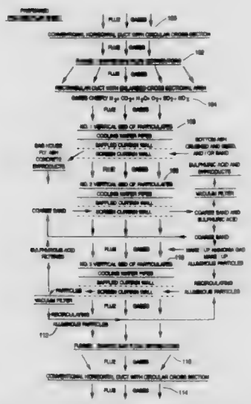
5,061,467
ECONOMIC RECOVERY AND UTILIZATION OF BOILER FLUE GAS POLLUTANTS

Arthur F. Johnson, Boulder, Colo., and Robert L. Sackett, Los Angeles, Calif., assignors to ROM Industries Corporation, Los Angeles, Calif.

Continuation of Ser. No. 372,492, Jun. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 165,312, Mar. 8, 1988, Pat. No. 4,874,585. This application Jul. 6, 1990, Ser. No. 549,200

Int. Cl.[5] **C01B** *16/00, 11/69;* **B01J** *8/00*

U.S. Cl. 423—242 **8 Claims**



1. A method of removing unwanted pollutants from flue gas streams from power plants, comprising the steps of:

passing a flue gas containing lime, sulphur dioxide and water in succession through at least three vertically extending beds of particulates, said particulates being disposed in a duct such that the flue gas is passed through substantially all of the particulates,

reacting lime, sulphur dioxide and water in the flue gas to form gypsum at a first bed of particulates;

reacting sulphur dioxide and water in the flue gas to form sulphuric acid, and collecting sulphuric acid below its condensation temperature at a second bed of particulates;

reacting sulphur dioxide in the flue gas with an alkali material to form bisulphites and bisulphates at a third bed of particulates; and

removing the pollutants from the particulates of the beds.

5,061,468
PROCESS FOR PREPARATION OF ALUMINUM BORATE WHISKER

Hajime Hata; Seiji Sogabe, and Keizo Oka, all of Marugame, Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan

Filed Dec. 19, 1989, Ser. No. 452,420

Claims priority, application Japan, Dec. 19, 1988, 63-320872

Int. Cl.[5] **C01B** *35/12*

U.S. Cl. 423—279 **1 Claim**

1. A method for preparing a $9Al_2O_3.2B_2O_3$ whisker comprising the steps of

(I) forming a raw material mixture by mixing and pulverizing

(a) an aluminum supply component comprising aluminum sulfate,

(b) boric anhydride supply component comprising at least one compound selected from the group consisting of boron oxides, oxyacids of boron, and alkali metal salts thereof,

(c) a neutralization agent, comprising at least one compound selected from the group consisting of sodium carbonate and potassium carbonate, and

(d) a fluxing agent selected from the group consisting of sodium sulfate, potassium sulfate, and mixtures thereof,

wherein the amounts of (a), (b), (c) and (d) are such that, in the following steps (II) the molar ratio of aluminum in (a) to born in (b) is in the range of from 6:4 to 9:2, the molar ratio of aluminum in (a) to alkali metal in

(c) is in the range from 1:1 to 1:3, and the molar ratio of aluminum in (a) to alkali metal in

(d) is in the range of from 3:1 to 1:2.5,

(II) pressure molding the mixture of step (I) into a tablet, and

(III) heating the tablet at a temperature of from 1,000° C. to 1,200° C. to convert said raw materials in said tablet to aluminum borate whisker without substantially changing the shape of said tablet.

5,061,469
PROCESS FOR PRODUCING SHAPED BORON NITRIDE PRODUCT

Yoshiharu Kimura, Ohmihachiman, Japan, assignor to Mitsubishi Kasei Corporation, Japan

Filed May 19, 1989, Ser. No. 354,128

Claims priority, application Japan, May 19, 1988, 63-122664

Int. Cl.[5] **C01B** *21/064, 35/14*

U.S. Cl. 423—290 **7 Claims**



1. A process for producing a shaped boron nitride fiber, said process comprising:

heating a mixture of a B-tris (loweralkylamino) borazine selected from the group consisting of B-trismethylamino borazine and B-trisethylamino borazine, and a higher mono-alkylamine having 4 to 20 carbon atoms, to yield a precursor;

shaping the precursor into a fiber; and

heating the fiber in an ammonia atmosphere to at least 600° C. to obtain a white boron nitride fiber.

5,061,470
SILANE PRODUCTION FROM HYDRIDOMAGNESIUM CHLORIDE

Won S. Park, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 3, 1990, Ser. No. 562,249

Int. Cl.[5] **C01B** *33/04*

U.S. Cl. 423—347 **12 Claims**

1. A process for producing silane comprising reacting hydridomagnesium chloride and a halosilane selected from monohalosilanes, dihalosilanes, trihalosilane and silicon tetrahalides.

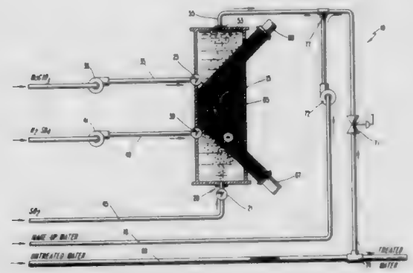
5,061,471
PROCESS FOR THE PRODUCTION OF CHLORINE DIOXIDE

Birgitta Sundblad, Sundsval, Sweden, and David C. Lovetro, Marietta, Ga., assignors to Eka Nobel AB, Surte, Sweden

Filed Apr. 26, 1990, Ser. No. 514,539

Int. Cl.[5] **C01B** *11/02*

U.S. Cl. 423—480 **9 Claims**



1. A process for continuous production of chlorine dioxide in a cooled reaction vessel subjected to an overpressure, comprising continuously adding an aqueous solution of an alkali metal chlorate, sulfuric acid and sulfur dioxide to the reaction vessel in proportions to generate chlorine dioxide at a temperature of from about 30° to about 60° C. and at an acidity of from about 5 to about 11N, thereby forming a reaction solution containing dissolved chlorine dioxide, and continuously withdrawing the reaction solution containing dissolved chlorine dioxide, wherein the start up of the process includes the steps of totally filling the reaction vessel with an aqueous solution of alkali metal chlorate, and sulfuric acid at a feed concentration of from about 20 to about 60 percent by weight, adjusting the flows of said alkali metal chlorate and said sulfuric acid to correspond to a desired production rate, thereafter feeding sulfur dioxide to the reaction vessel in a manner and at a flow rate low enough that no gas phase is formed, and slowly increasing the sulfur dioxide flow until a flow rate is reached corresponding to said desired production rate.

5,061,472
PROCESS FOR THE CONCENTRATION OF SULPHURIC ACID CONTAINING METAL SULPHATES

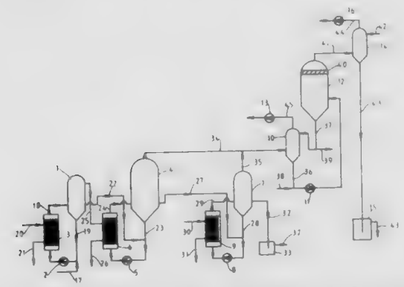
Günter Lailach, and Rudolf Gerken, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1990, Ser. No. 562,094

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927751

Int. Cl.[5] **C01B** *17/90;* **B01D** *1/00*

U.S. Cl. 423—531 **8 Claims**



1. A process for the recovery of sulfuric acid from waste acids containing metal sulfates comprising concentrating waste acids by evaporation in multi-stage vacuum evaporators to obtain a suspension of metal sulfates in sulfuric acid and separating the concentrated sulfuric acid from the suspension of the metal sulfates in sulfuric acid obtained in the process of evaporative concentration, the improvement comprising condensing water vapors from the evaporative concentration process charged with droplets of metal sulfate-containing sulfuric acid and solid metal sulfates as they leave the multi-state vacuum evaporators by directly contacting these droplets of metal sulfates and sulfuric acid containing water vapors in a condensator with cooled water vapor condensate containing sulfuric acid and dissolved metal sulfates wherein the cooling of these water vapor condensate which is circulated as cooling medium is carried out by the evaporation of water in a vacuum flash evaporator with concomitant concentration of the sulfuric acid and metal sulfates in the contaminated water vapor condensate.

5,061,473
TITANIUM DIOXIDE, A PROCESS AND ITS PRODUCTION

René De Cleyn, Brasschaat, Belgium; Peter Thometzek, and Jakob Rademachers, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 438,315, Nov. 20, 1989, Pat. No. 5,009,879. This application Jun. 13, 1990, Ser. No. 538,075

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1988, 3840196

Int. Cl.[5] **C01G** *23/047*

U.S. Cl. 423—610 **5 Claims**

1. A process for the production of a titanium dioxide composition comprising TiO_2 particles predominantly in the form of isometric primary particles from 0.5 to 5.0 μm in size, which are aggregated to predominantly spherolithic particles 1 to 100 μm in a diameter, with a BET surface of 1 to 4.5 m^2/g and an apparent density of 0.2 to 1.3 kg/l comprising subjecting titanium dioxide hydrate having a BET surface of from 50 to 500 m^2/g to accelerated calcination for 0.1 to 60 seconds and at temperatures of 800° to 1600° C. in an oxidizing or reducing atmosphere.

5,061,474
AMORPHOUS ALUMINUM OXIDES, METHODS OF PRODUCTION AND USES

Ingo Pauli, Alzenau; Peter Kleinschmit, Hanau, and Rudolf Schwarz, Alzenau-Wasserlos, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 14, 1989, Ser. No. 436,246

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1988, 3838675

Int. Cl.[5] **C01F** *7/02*

U.S. Cl. 423—625 **5 Claims**

1. X-ray amorphous, aluminum oxide having a specific surface area BET according to DIN 66 131 of >10 m^2/g, an average particle size of 1 μm, the particle size in the range of 0.1 μm to 10 μm, and a water content of >10%.

5,061,475

COMPOSITION AND METHOD OF TREATMENT OF ARTHRITIS AND RELATED DISEASES WITH HOLMIUM-166 RADIONUCLIDES

Ephraim Lieberman, Suffern; Maurice E. Bordoni, Westtown, and Alfred K. Thornton, New Hampton, all of N.Y., assignors to Cadema Medical Products, Inc., Middletown, N.Y.

Continuation-in-part of Ser. No. 007,597, Jan. 28, 1987, Pat. No. 4,849,209, which is a continuation-in-part of Ser. No. 742,402, Jun. 7, 1985, Pat. No. 4,752,464. This application Jun. 28, 1989, Ser. No. 372,628

The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.

Int. Cl.[5] **A61K** *43/00;* **A61B** *6/00*

U.S. Cl. 424—1.1 **46 Claims**

1. A radioactive composition for the treatment of arthritis comprising a suspension containing particles having a minimum size of one micron, said suspension including particles containing holmium-166.

5,061,476

RADIOLABELED COLLOID COMPOSITIONS AND METHOD FOR PREPARING SAME

Jaime Simon, Angleton; Lance A. Cooper, Lake Jackson; Kenneth McMillan, and David A. Wilson, both of Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1989, Ser. No. 458,049

Int. Cl.[5] **A61K** *43/00;* **A61N** *5/12*

U.S. Cl. 424—1.1 **21 Claims**

1. A method for producing a radioactive composition, comprising the steps of:

(a) preparing an iron-hydroxide colloid by precipitating an iron solution with an alkali metal hydroxide; and

(b) sorbing onto the iron-hydroxide colloid a radionuclide selected from the group consisting of Sm-153, Ho-166, In-115m, Y-90, Gd-159, La-140, Lu-177 and Yb-175.

7. A composition comprising iron-hydroxide and a radionuclide selected from the group consisting of Sm-153, Ho-166, In-115m, Y-90, Gd-159, La-140, Lu-177 and Yb-175, wherein greater than 50% of the radionuclide is contained within spherical aggregations of the iron hydroxide, and wherein particles of the composition are of a size sufficient to prevent significant leakage from a site of injection.

5,061,477

USE OF COBALT TO ENHANCE URINARY COPPER EXCRETION

Attallah Kappas, and Daniel W. Rosenberg, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Apr. 11, 1989, Ser. No. 336,681

Int. Cl.[5] **A61K** *49/00, 33/26*

U.S. Cl. 424—10 **13 Claims**

1. A method of reducing the level of copper in a mammal in need thereof which comprises administering to said mammal an effective copper-reducing amount of cobalt ions; wherein said mammal has toxic copper levels and does not suffer from anemia.

5,061,478

SPRAYABLE BIRD AND ANIMAL PEST REPELLANT COMPOSITION CONTAINING A TACKY POLYOLEFIN AND METHODS FOR THE PREPARATION AND USE THEREOF

Eitan Yarkony, Rehov Barket 12, Holon, Israel, and Yair Yarkony, Rehov Rabinovitz 2, Kiryat Ben Gurion, Holon, Israel

Filed Mar. 5, 1990, Ser. No. 488,982

Claims priority, application Israel, Mar. 9, 1989, 89559

Int. Cl.[5] **A01M** *29/00;* **A01N** *25/02, /25/06;* **C08J** *123/18*

U.S. Cl. 424—45 **14 Claims**

1. A sprayable non-aqueous composition for repelling birds and animal pests consisting essentially of about 25 to 95% tacky polyolefin, about 0.5 to 6% silica-based thixotropic agent and 5 to 75% solvent by weight, which combination of thixotropic agent and solvent enables said composition to readily flow through a spray nozzle and then immediately coagulate upon contact with a sprayed surface without exhibiting creep even at temperatures of up to 130° C.

5,061,479

USE OF DIORGANOPOLYSILOXANES CONTAINING A 3-BENZYLIDENE CAMPHOR FUNCTIONAL GROUP IN COSMETICS AND NEW COSMETIC COMPOSITIONS CONTAINING THESE COMPOUNDS, INTENDED FOR PROTECTING THE SKIN AND HAIR

Jean F. Grollier; Herve Richard, both of Paris; Serge Forestier, Claye-Souilly, and Gerard Lang, Saint Gratien, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 27, 1989, Ser. No. 328,947

Claims priority, application Luxembourg, Mar. 28, 1988, [illegible]

Int. Cl.[5] **A61K** *7/021, 7/06, 7/42, 7/44, 7/48, 9/10, 9/12*

U.S. Cl. 424—47 **17 Claims**

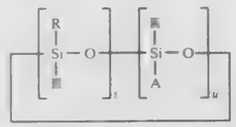
1. A cosmetic composition for protecting the skin and hair against degradation due to ultraviolet radiation, comprising a cosmetically acceptable medium and an effective quantity of at least one diorganopolysiloxane having a 3-benzylidenecamphor functional group, said diorganopolysiloxane having either of the formulas:

(1)



and

(2)

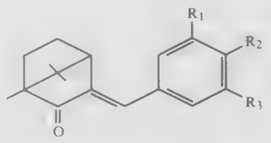


in which:

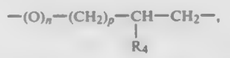
substituents R, which can be identical or different, are C_1–C_{10} alkyl, phenyl or 3,3,3-trifluoropropyl, at least 80% of substituents R being methyl,

A is a radical of formula:

(3)



R_1 and R_2 independently represent hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxyl, trimethylsilyloxy or a divalent radical Y of formula:



one of R_1 and R_2 necessarily representing Y,

R_4 is hydrogen or C_1–C_4 alkyl,

n is 0 or 1,

p is an integer from 1 to 10 inclusive,

R_3 is hydrogen, C_1–C_6 alkyl, or C_1–C_6 alkoxy,

substituents B, which can be identical or different, are R or A,

r is an integer from 0 to 200 inclusive,

s is an integer from 0 to 50 inclusive, provided that if s is 0, at least one of B is A,

t is an integer from 0 to 20 inclusive,

u is an integer from 1 to 20 inclusive, provided that t+u is equal to or greater than 3.

5,061,480

TANNING COMPOSITION

Frank P. Marchese, Bronxville, and Joseph S. Engenito, Jr., Elmont, both of, assignors to Marchese Co., Inc., White Plains, N.Y.

Filed Nov. 3, 1989, Ser. No. 432,386

Int. Cl.[5] **A61K** *7/021, 7/40, 7/42, 7/44*

U.S. Cl. 424—59 **10 Claims**

1. A skin tanning composition comprising from about 1 to about 10 weight percent non-ionic surfactant, from about 0.2 to about 0.5 weight percent tyrosine or a derivative of tyrosine, from about 0.5 to about 1.5 weight percent protein hydrolysate, and riboflavin or adenosine triphosphate, the balance being essentially water, wherein said non-ionic surfactant is selected from the group consisting of polyoxyethylene alkyl ethers, polyoxyethylene sorbitan fatty acid esters, and mixtures thereof.

5,061,481

COSMETIC COMPOSITION HAVING ACRYL-SILICONE GRAFT COPOLYMER

Kazuhiro Suzuki; Toru Shimizu; Miki Yamazoe, and Tosiaki Sugisaki, all of Tokyo, Japan, assignors to Kobayashi Kose Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1990, Ser. No. 460,629

Claims priority, application Japan, Mar. 20, 1989, 1-68695; Mar. 24, 1989, 1-72095; Mar. 28, 1989, 1-76036; Mar. 30, 1989, 1-79524; Mar. 30, 1989, 1-79525; Apr. 19, 1989, 1-99761

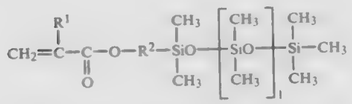
Int. Cl.[5] **A61K** *7/021, 7/48, 7/06*

U.S. Cl. 424—63 **9 Claims**

1. A cosmetic composition, comprising:

(A) an acryl-silicone graft copolymer prepared by radically polymerizing (i) a dimethylpolysiloxane compound of the formula:

(I)



wherein R^1 is methyl or hydrogen, R^2 is a divalent, linear or branched $C_{1\text{-}10}$ hydrocarbon group optionally containing one or two ether bonds therein and l is a value of 3–300 and (ii) a radially polymerizable monomer comprising as a major component an acrylate monomer, a methacrylate monomer or combinations thereof, wherein the ratio of (i) to (ii) in the copolymer ranges from 1:19–2:1; and at least one component selected from the group consisting of

(B) a low-viscosity silicone oil,

(D) a low boiling-point oil,

(E) a volatile solvent, and

(H) a volatile hydrocarbon.

5,061,482

SILOXANES USEFUL IN PERMANENT WAVING OF HAIR

Daniel J. Halloran; Thomas H. Lane, and Robert A. Ekeland, all of Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 442,882, Nov. 29, 1989. This application Oct. 11, 1990, Ser. No. 596,131

Int. Cl.[5] **A61K** *7/011, 7/09;* **A45D** *7/04*

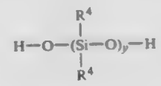
U.S. Cl. 424—71 **1 Claim**

1. A method of treating hair comprising

(A) reducing the hair

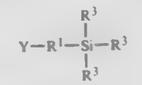
(B) neutralizing the hair by applying to the hair a solution comprising 1 to 50 weight percent of the reaction product of

(i) a silanol endblocked polydiorganosiloxane fluid of the formula



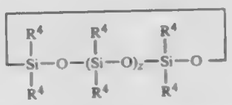
and mixtures thereof;

(ii) a chlorobenzyl functional silane of the formula



and mixtures thereof;

(iii) low molecular weight cyclic siloxanes of the formula



and mixtures thereof; and

(iv) a catalyst wherein R^1 is independently selected from alkylene groups containing 1 to 10 carbon atoms, arylene groups containing 6 to 10 carbon atoms, and alkarylene groups containing 6 to 15 carbon atoms; any of said groups optionally containing an ether oxygen within the aliphatic segments thereof; Y is a chlorobenzyl group; R^2 is independently selected from an alkyl group containing 1 to 6 carbon atoms and an aryl group containing 6 to 10 carbon atoms; R^3 is independently selected from the group R^2 and the groups —O—R^2 and —R^1—Y where R^1, R^2 and Y are as defined above; and each R^4 is independently selected from an alkyl group containing 1 to 6 carbon atoms and an aryl group containing 6 to 10 carbon atoms; y has the value of 1 to 10,000; and z has the value of 1 to 4.

5,061,483

PERMANENT WAVE HAIR COMPOSITIONS CONTAINING TRANSITION METAL OXIDE COMPOUNDS

Robert H. Tieckelmann, Trenton, N.J., and Mary Ann Perini, West Haverstraw, N.Y., assignors to Chesebrough-Pond's USA Co., Greenwich, Conn.

Filed May 1, 1990, Ser. No. 517,097

Int. Cl.[5] **A61K** *7/09;* **A45D** *7/04*

U.S. Cl. 424—72 **20 Claims**

1. A crosslinking composition for forming disulfide linkages in a keratinous material in which disulfide linkages have been

disrupted to form sulfhydryl groups, said composition comprising a transition metal oxide compound in an amount of about 0.01% to about 10% weight per volume.

5,061,484
PERFLUOROCHEMICAL EMULSION WITH STABILIZED VESICLES

Charles M. Heldebrant, Arcadia, Calif., assignor to Alpha Therapeutic Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 166,690, Mar. 11, 1988, abandoned. This application Mar. 10, 1989, Ser. No. 321,755
Int. Cl.[5] A61K *31/74, 31/02, 31/025;* **A01N** *29/04*
U.S. Cl. 424—78 **38 Claims**

1. A stable perfluorochemical emulsion comprising perfluorochemical particles contained within stabilized vesicles having a diameter of up to about 0.3 micron, the stabilized vesicles comprising a biocompatible polymer formed by coating the perfluorochemical particles with one or more phospholipid monomers and polymerizing the monomers.

5,061,485
DISINFECTANT POLYMERIC COATINGS FOR HARD SURFACES

Thomas R. Oakes, Stillwater; Daniel E. Pedersen, Cottage Grove, and Donna M. Majewski, Lino Lakes, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 48,801, May 12, 1987, abandoned. This application Feb. 16, 1989, Ser. No. 312,338
Int. Cl.[5] A61K *31/78*
U.S. Cl. 424—81 **38 Claims**

1. A liquid antimicrobial film-forming composition free of complexed inorganic metal salt wherein said composition comprises copolymers adherent to hard surfaces upon film formation, said film being abrasion resistant and soluble in dilute base, said composition comprising a homogenous solution in an aqueous solvent of (i) an amount of germicidal agent effective to impart prolonged renewable antimicrobial properties and (ii) a film-forming water soluble copolymer, said copolymer consisting essentially of:

(a) about 20–99.5 mol-% of said copolymer of a hydroxy alkyl carboxylic acid ester monomer;

(b) about 0.5–50 mol-% of said copolymer of a monomer selected from the group consisting of an aromatic ester, a cycloalkyl ester, an ester mixture thereof of an alpha, beta-unsaturated carboxylic acid; and

(c) about 0.1 to 5 mol-% of said copolymer of a monomer having a hydrophilic carboxylic acid or carboxylate functional group.

5,061,486
DITHRANOL COMPOSITION CONTAINING NO OILY INGREDIENTS

Martin Whitefield, London, England, assignor to Drythanol Ltd., London, England

Continuation of Ser. No. 286,736, Dec. 20, 1988, abandoned. This application Apr. 25, 1990, Ser. No. 512,906
Claims priority, application United Kingdom, Dec. 22, 1987, 8729855
Int. Cl.[5] A61K *31/78*
U.S. Cl. 424—81 **10 Claims**

1. A pharmaceutical composition for topical application to the skin comprising very finely divided dithranol dispersed in a single phase aqueous medium containing no oily ingredients comprising, in solution, a water-soluble chelating agent, a water-soluble antioxidant, and a water-soluble thickener or gelling agent.

5,061,487
ANTIMICROBIAL SUPERABSORBENT COMPOSITIONS AND METHODS

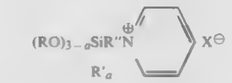
Lynne M. B. Blank, Brighton, N.Y.; Thomas D. Boyce, and William C. White, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 563,229, Aug. 6, 1990, which is a division of Ser. No. 425,277, Oct. 23, 1989, Pat. No. 4,985,023, which is a continuation-in-part of Ser. No. 191,945, May 9, 1988, Pat. No. 4,990,338. This application Apr. 8, 1991, Ser. No. 681,582
Int. Cl.[5] A61K *31/78*
U.S. Cl. 424—81 **8 Claims**

1. A catamenial tampon comprising an outer layer of an organosilane treated polymer gel, and an inner layer of the polymer gel which is free of the organosilane, the rate at which the outer layer of the organosilane treated polymer gel absorbs a fluid with respect to time being slower than the rate at which the inner layer of the polymer gel which is free of the organosilane absorbs a fluid with respect to time, whereby there is established a differential rate of absorption between the inner layer and the outer layer as a function of time causing initial fluid migration to the inner layer, the polymer gel being a water absorbing crosslinked hydrophilic sodium salt form of a partially neutralized acrylic acid-based polymer gel, and the organosilane having an formula selected from the group consisting of

$$(RO)_{3-a}SiR''N^{+}R'''R''''R^{v}X^{-} \quad \text{and}$$

$$R_a$$



wherein in each formula

R is an alkyl radical of 1 to 4 carbon atoms or hydrogen;

a has a value of 0, 1 or 2;

R′ is a methyl or ethyl radical;

R″ is an alkylene group of 1 to 4 carbon atoms;

R‴, R⁗ and R^{v} are each independently selected from the group consisting of alkyl radicals of 1 to 18 carbon atoms, $-CH_2C_6H_5$, $-CH_2CH_2OH$, $-CH_2OH$, and $-(CH_2)_xNHC(O)R^{vi}$, wherein x has a value of from 2 to 10 and R^{vi} is a perfluoroalkyl radical having from 1 to 12 carbon atoms; and X is chloride, bromide, fluoride, iodide, acetate, or tosylate.

5,061,488
FLAVONE-8-ACETIC AID AND INTERLEUKIN-2 FOR CANCER THERAPY

Robert H. Wiltrout, Frederick, and Ronald L. Hornung, Union Bridge, both of Md., assignors to The United States of America, as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Continuation of Ser. No. 182,222, Apr. 15, 1988. This application Jun. 5, 1990, Ser. No. 533,442
Int. Cl.[5] A61K *31/35, 45/05*
U.S. Cl. 424—85.2 **11 Claims**

1. A synergistic method for treating a cancer in a host, wherein the cancer has cells which are susceptible to an interleukin-2 activated killer cell mediated anti-cancer effect, the method comprising administering by injection, separately to the host, but in close proximity in time, the following:

an effective amount of flavone-8-acetic acid for treating the cancer, and

an effective amount of interleukin 2 for treating the cancer.

5,061,489
INSECTICIDAL *BACILLUS THURINGIENSIS* STRAINS WITH ACTIVITY AGAINST LEPIDOPTERA

Roger L. Bernier, Burlington, Canada; Martyn D. Collins, Midhurst, England, and Ann L. Gray, Oakville, Canada, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 27, 1988, Ser. No. 290,490
Claims priority, application United Kingdom, Dec. 24, 1987, 8730132; Dec. 24, 1987, 8730133
Int. Cl.[5] A01N *63/00;* **C12N** *1/20*
U.S. Cl. 424—93 **9 Claims**

1. The biologically isolated strains A20 and A29 of *Bacillus thuringiensis*, deposited at the National Collection of Industrial and Marine Bacteria Scotland under the reference numbers NCIB 12570 and 12571, respectively.

5,061,490
BIOLOGICAL INOCULANT

Alan S. Paau; Dennis E. McCabe, both of Middleton, and Steven G. Platt, Madison, all of Wis., assignors to W. R. Grace & Co. - Conn., Columbia, Md.

Continuation of Ser. No. 79,538, Jul. 29, 1987, abandoned. This application May 5, 1990, Ser. No. 523,302
Int. Cl.[5] A01N *63/00;* **C12N** *1/12, 1/00;* **C12R** *1/07;* **A01C** *1/06;* **C05F** *11/08*
U.S. Cl. 424—93 **7 Claims**

1. A biological inoculant for fostering the growth of corn consisting essentially of a culture of bacteria selected from the group consisting of biologically pure cultures of the following strains: a strain of unknown classification ATCC accession number 53578, *Xanthomonas maltophilia* ATCC accession number 53580, *Xanthomonas maltophilia* ATCC accession number 53579, and mutations thereof which retain the characteristic of enhancing the growth of corn.

5,061,491
MEDICINAL AGENT AND METHOD FOR TREATMENT OF MASTITIS IN ANIMALS AND HUMANS

Alexandr M. Deryabin, pereulok N. Ostrovskogo, 12, kv. 5, Moscow, U.S.S.R.

Filed Jul. 21, 1989, Ser. No. 384,175
Claims priority, application U.S.S.R., Dec. 30, 1988, 4627363
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.1 **7 Claims**

1. A medicinal agent for treatment of mastitis in animals and humans, comprising a mixture of a decoction consisting of a mixture of the following medicinal herbs in equal parts by weight and an ammonia solution infusion consisting of a mixture of the following medicinal herbs in equal parts by weight:

Matricaria chamomilla L.,
flores *Calendulae officinalis* L.,
Urtica dioica L.,
Erythreae centaurium Raf. L.,
gemmae *Betula pendula* Roth,
Plantago major L.,
gemmae *Pinus sylvestris* L.,
Origanum vulgare L.,
Salvia officinalis Hoffm.,
Archangelica officinalis Hoffm.,
Taraxacum officinale Web.,
folium *Tussilaginis farfarae* L.,
Sanguisorba officinalis L.,
Valeriana officinalis L.,
Menthae piperitae L.,
Thymus vulgaris L., and
Bidens tripartita L.;

said decoction and infusion being mixed in a ratio to adjust the pH of the mixture to not below 7.4.

5,061,492
PROLONGED RELEASE MICROCAPSULE OF A WATER-SOLUBLE DRUG

Hiroaki Okada; Yasuaki Ogawa, both of Osaka, and Takatsuka Yashiki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 103,117, Sep. 30, 1987, Pat. No. 4,917,893, which is a division of Ser. No. 940,614, Dec. 11, 1986, Pat. No. 4,711,782, which is a division of Ser. No. 667,096, Nov. 1, 1984, Pat. No. 4,652,441. This application Jan. 24, 1990, Ser. No. 469,784
Claims priority, application Japan, Nov. 4, 1983, 58-207760
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[5] A61K *9/52;* **B01J** *13/12;* **A61F** *2/00*
U.S. Cl. 424—423 **8 Claims**

1. An injectable preparation comprising a therapeutically effective amount of spherical microcapsules and a pharmaceutically acceptable vehicle, wherein said spherical microcapsules have an average diameter of 2–200 μm, and comprise particles of a mixture of a water-soluble non-polypeptidic drug and a drug-retaining substance therefor selected from the group consisting of gelatin, albumin, pectin and agar, the weight ratio of the drug-retaining substance to the water-soluble non-polypeptidic drug being in the range of about 9/1 to about 0.3/1, the particles being dispersed in a spherical microcapsule matrix composed of a biodegradable polymer, said biodegradable polymer being a copolymer of lactic acid and glycolic acid having a comonomer ratio within the range of about 100/0 to 50/50 and an average molecular weight within the range of about 5,000 to 200,000.

5,061,493
GALENICAL FORMS OF CORTICOIDS FOR ADMINISTRATION PERLINGUALLY AND SUBLINGUALLY AND PROCESS FOR THEIR PREPARATION

Josiane Ayache; Jean-Jacques Ayache; Georges Bruttmann, all of Grenoble; Patrick Pedrali, Annecy, all of France, and Serge Robert, Braine le Chateau, Belgium, assignors to Medibrevex, Grenoble, France

Filed Oct. 7, 1988, Ser. No. 254,602
Claims priority, application France, Oct. 8, 1987, 87 14476
Int. Cl.[5] A61K *9/28*
U.S. Cl. 424—434 **5 Claims**

1. A solid composition for sublingual and perlingual administration of methylprednisolone, enabling rapid absorption and fast action of said methylprednisolone comprising a solid support selected from the group consisting of sacchrose, lactose, and mixtures thereof, and said methylprednisolone which releases controlled amount of said methylprednisolone in the sublingual and perlingual cavities of the mouth.

5,061,494
TRI-SCORED DRUG TABLET

Phillip F. Ni, Mattawan, and Larry F. Odar, Galesburg, both of Mich., assignors to The Upjohn Comany, Kalamazoo, Mich.

Continuation of Ser. No. 499,475, Jun. 14, 1990, abandoned. This application Feb. 13, 1991, Ser. No. 655,266
Int. Cl.[5] A61K *9/44*
U.S. Cl. 424—467 **4 Claims**

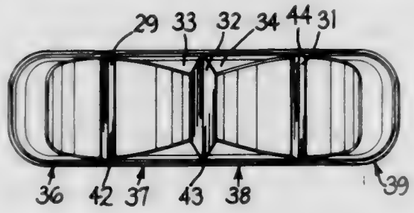
1. A tri-scored drug tablet, comprising:

an elongated tablet body having a length greater than its width, said body having top and bottom surfaces;

a pair of concavities in said bottom surface, said top surface being flat, each concavity being equal in size and having parallel major and minor axes, each concavity further having a smooth and uninterrupted arcuate surface extending between the opposite longitudinal ends of said body and a longitudinally central part of said tablet, said opposite longitudinal ends of said body and said longitudinally central part being of a thicker dimension than the

thickness of said body measured at an apex of each of said concavities; and

aligned breaking grooves formed in said top and bottom surfaces at both of said concavities and between said concavities at said longitudinally central part, each said breaking groove extending laterally across the width of said tablet at said apex of each of said concavities and at said longitudinally central part, so that upon a user grasping both ends of said tablet between a forefinger and a thumb on each hand, a force is applied to effect a fracture of said tablet along said groove at said longitudinally



central part to divide said tablet into two half sections, said user thereafter placing said two half sections in a stacked arrangement so that said two concavities face one another and said thicker dimensioned portions at the longitudinal ends of said half sections are in engagement, said user thereafter applying a compressive force to the midpoint of said stacked half sections to effect a simultaneous fracture of each of said halves along said breaking grooves at said apexes of said concavities to divide each of said half sections into two quarter sections, each section containing within ±15% by weight of a prescribed limit of pharmacological agent.

5,061,495

ANTIBIOTIC DERIVED FROM *B. SUBTILIS*

Stephen Rossall, Kegworth, England, assignor to Agricultural Genetics Company Limited, Cambridge, England

Filed Mar. 7, 1989, Ser. No. 319,759

Claims priority, application United Kingdom, Mar. 7, 1988, 8805394

Int. Cl.[5] **A61K** *35/74;* **C12P** *21/02;* **C12N** *1/20*

U.S. Cl. 424—520 **14 Claims**

1. An antibiotic or antibiotic fraction having the following characteristics:

(1) antibiotic activity against fungi and gram-positive bacteria, but not against gram-negative bacteria;

(2) a molecular weight of 63,500±3,700 daltons as determined by gel filtration chromatography which is calibrated against globular protein standards;

(3) a positive reaction to the following tests for the presence of protein: Lowry, absorbance of light of wavelength 280 nm, biuret and ninhydrin;

(4) a protein content comprising the amino acids aspartic acid, threonine, serine, glutamic acid, proline, alanine, valine, isoleucine, leucine and tyrosine;

(5) a protein content which is resistant to digestion by the enzyme pronase E;

(6) a lipid content comprising fatty acids containing from 14 to 17 carbon atoms;

(7) an optimum pH of 6.0–7.0;

(8) retention of activity when held at 110° C. for 10 minutes over the pH range 5.0 to 9.0;

(9) soluble in water at pH values greater than 5.0;

(10) soluble in methanol, ethanol and butanol, and partially soluble in dimethylsulphoxide: and

(11) insoluble in acetone, petroleum ether, chloroform, toluene and hexane.

5,061,496

STABILIZED CHLORODEOXYSUGAR SWEETENING AGENTS IN LIQUID MEDIUM AND METHODS FOR PREPARING SAME

Subraman R. Cherukuri, Towaco, and Krishna P. Raman, Randolph, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 21, 1990, Ser. No. 570,928

Int. Cl.[5] **A23G** *3/30*

U.S. Cl. 426—3 **33 Claims**

1. A stabilized liquid chlorodeoxysugar sweetening agent composition which comprises a chlorodeoxysugar derivative in a non-aqueous stabilizing solvent selected from the group consisting of propylene glycol, glycerin, ethanol, 2-propanol, and mixtures thereof, wherein the solvent renders the chlorodeoxysugar derivative resistant to heat and moisture degradation.

5,061,497

PROCESS FOR THE CO-PRODUCTION OF ETHANOL AND AN IMPROVED HUMAN FOOD PRODUCT FROM CEREAL GRAINS

Ray S. Thacker, Clovis, N. Mex., and Bill A. Dodgin, Amarillo, Tex., assignors to Clovis Grain Processing, Ltd., Amarillo, Tex.

Filed Sep. 11, 1989, Ser. No. 405,463

Int. Cl.[5] **C12F** *3/10*

U.S. Cl. 426—31 **28 Claims**

1. A high fiber, high protein food product organoleptically suitable for human consumption comprising:

milled, starch-bearing cereal grains having 90 to 100% of the starch enzymatically converted, said converted cereal grains having a protein content on a dry matter basis substantially between 17 to 30% by weight, a total dietary fiber content on a dry matter basis substantially between 30 to 70% by weight and a nitrogen-free extract content on a dry matter basis of less than 40% by weight, said converted grains having a coating thereon of residual sugars from the enzymatic conversion of starch substantially between 10 to 30% by weight on a dry matter basis, said sugars containing less than 5% glucose.

5,061,498

METHOD FOR REFORMING FATS AND OILS WITH ENZYMES

Narihide Matsuzaki; Jun Kurashige, both of Kawasaki; Tamio Mase, Ichinomiya, and Shotaro Yamaguchi, Aichi, all of Japan, assignors to The Japanese Research & Development Association for Bioreactor System in Food Industry, Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 365,809

Claims priority, application Japan, Jun. 14, 1988, 63-144690

Int. Cl.[5] **A23D** *7/00;* **C12P** *7/62*

U.S. Cl. 426—33 **17 Claims**

1. A method for reforming fats and oils, which comprises:

treating the fats and oils with at least two lipases which are different in fatty acid specificity and/or position specificity, with the lipase having different fatty acid specificity being selected from the group consisting of lipases acting on short chained fatty acids, lipases acting on middle chained fatty acids, lipases acting on all fatty acids and lipases acting on unsaturated fatty acids, and said lipase having different position specificity being selected from the group consisting of lipases having no position specificity and lipases having 1,3-position specificity, thereby converting the partial glycerides within the fats and oils to triglycerides.

5,061,499

HONEY ROASTED NUTS

Oris E. Holloway, Jr., Sparta, N.J.; Howard Wilkins, Brookfield, and Peter M. Gannis, Stamford, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.Y.

Division of Ser. No. 797,852, Nov. 14, 1985, Pat. No. 4,828,858.

This application Feb. 16, 1989, Ser. No. 311,940

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] **A23L** *1/36*

U.S. Cl. 426—93 **19 Claims**

1. A honey-roasting nut prepared by a process which comprises the steps of: coating raw nuts with an adhesive comprising a mixture of honey, corn syrup, sucrose and water; applying a coating of particulate sugar to said adhesive-coated nuts; subjecting the resulting coated nuts to roasting; and applying to said nuts, after the roasting step, a dry finish coating comprising a mixture of sugar and salt.

5,061,500

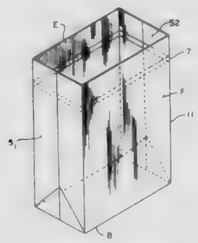
EASY OPENING MICROWAVABLE PACKAGE

Abraham H. Mendenhall, Mendham, N.J., assignor to Packaging Concepts, Inc., St. Louis, Mo.

Continuation of Ser. No. 44,642, May 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 913,964, Oct. 1, 1986, abandoned. This application May 11, 1989, Ser. No. 350,217

Int. Cl.[5] **B65D** *81/34*

U.S. Cl. 426—118 **1 Claim**



1. An easy opening, ventable bag that is sufficiently microwave transparent for use in heating food contained therein in a microwave oven, said bag comprising a multi-layer laminate film folded into a series of walls, including bottom and side walls each joined to form said bag by a manufacturer's joint and bottom wall seals provided in both the side walls and bottom wall thereof, said side walls having a sealable opening at the top of the bag, said multi-layer laminate comprising at least an innermost, heat sealable layer and an outer layer for the bag walls, said layers forming said multi-layer laminate being calendered together at a laminator station before the bag is formed, said outer layer of said laminate comprising either paper or a polymer film, said innermost layer comprising a heat sealable polyester composite film, said bag further comprising a strip of heat-sealable adhesive coating having its own seal strength less than that of said bag innermost layer heat seal strength, said strip being printed onto said innermost layer of said laminate proximate the top edge of the side walls of the bag thereof before said bag is formed, said adhesive being present in an amount sufficient to mask the heat sealability of said innermost layer of heat-sealable film at said top edge thereof, said heat-sealable strip of adhesive comprising a resin base adhesive formed of polyvinyl alcohol, said printed heat-sealable strip of adhesive being sealed to itself across the open top of the bag to seal closed said top opening of said bag with a food to be microwave heated contained therein, said printed heat-sealable strip of adhesive being sealed to itself across the bag to a degree and present in an amount sufficient to seal the opening into a closure, but which is capable of venting steam through said sealed adhesive strip when steam is created during cooking but which masks the heat sealability of said innermost layer of film and is sufficiently weak to allow the package to be easily peeled open at said top seal after cooking, said venting occurring without sacrificing and rupturing of the manufacturer's joint and bottom seal of the bag.

5,061,501

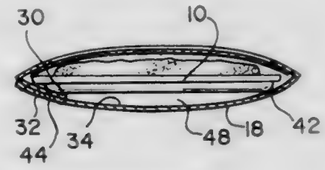
DISPLAY PACKAGE FOR MEAT ITEM

David M. Lowe, c/o LeanPak, Inc., 833 W. Chicago Ave., Chicago, Ill. 60622

Continuation of Ser. No. 106,634, Oct. 9, 1987, abandoned. This application May 23, 1989, Ser. No. 356,678

Int. Cl.[5] **B65D** *85/00*

U.S. Cl. 426—124 **1 Claim**



1. A display package comprising:

a meat item;

a tray having a length, a flat bottom wall for supporting the meat item, substantially parallel laterally spaced, downwardly facing side edges extending over substantially the entire length of the tray and a peripheral upturned edge;

said peripheral upturned edge in conjunction with the bottom tray wall defining an accumulation space for juices escaping from the meat item on said tray;

a one-piece envelope defining a pocket for reception of the tray having the meat item thereon and having spaced first and second open ends communicating with the pocket, a bottom wall, a top wall, first and second flaps on the top and bottom walls respectively adjacent one of the first and second envelope ends and third and fourth flaps on the top and bottom walls respectively adjacent the other of the first and second envelope ends, there being fold lines to facilitate folding of each of the first, second, third and fourth flaps relative to its respective wall between an open position wherein access can be gained to the pocket through each said envelope end and a closed position wherein the first and second flaps cooperatively close the one envelope end and the third and fourth flaps cooperatively close the other envelope end;

cooperating means on the tray and envelope for maintaining the tray with the meat item thereon in a display position within said pocket;

said cooperating means including a curved upwardly facing surface on the bottom envelope wall which bears against the tray side edges along substantially the entire length of the side edges with the tray in said display position so that the tray bridges the curved upwardly facing surface of the bottom envelope wall and a well is defined by the curved bottom envelope well beneath the tray to accumulated juices escaping from the meat item on the tray,

said second flap blocking the well at the one envelope end and the fourth flap blocking the well at the other envelope end to confine juices escaping from the meat item in the wall below the tray in its display position,

said envelope ends, with the flaps in their open position, permitting introduction of said tray into said pocket by sliding movement of said envelope side edges against the curved upwardly facing surface of the bottom envelope wall; and

means in said top envelope wall for permitting viewing of a meat item on said tray with the tray in a display position.

5,061,502

PROCESS FOR THE REMOVAL OF TERPENES FROM ESSENTIAL OILS

Jan Cully; Erwin Schütz, both of Trostberg, and Heinz-Rüdiger Vollbrecht, Altenmarkt, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Oct. 11, 1989, Ser. No. 419,643

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1988, 3834988

Int. Cl.[5] B01D *15/00*

U.S. Cl. 426—422 12 Claims

1. The method of removing terpenes from a terpene-containing essential oil, which comprises

(a) contacting the terpene-containing essential oil with a polar adsorbent such that the adsorbent becomes loaded with essential oil and a liquid phase enriched with terpene is produced,

(b) separating the loaded adsorbent from the liquid phase enriched with terpenes, and

(c) subjecting the adsorbent loaded with essential oil to an extraction with compressed carbon dioxide.

5,061,503

SIMULATED CHEESE PRODUCTS WITH REDUCED ANIMAL FAT AND CALORIES

Josephine L. Y. Kong-Chan, West Chester; James A. Hellyer, Milford, and Michael W. Tafuri, Montgomery, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 366,566, Jun. 14, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 614,055

Int. Cl.[5] A23C *20/00*

U.S. Cl. 426—582 32 Claims

1. A low-calorie simulated cheese product comprising:

(a) from about 5% to about 50% of protein obtained from a protein source selected from the group consisting of aged low-fat cheese, non-aged low-fat cheese; aged full-fat cheese, non-aged full-fat cheese; dry-powdered protein derived from fresh whole milk, skim milk, buttermilk, and cream; vegetable protein derived from vegetable proteinaceous materials; and mixtures thereof; wherein at least about 70% of the protein is obtained from a protein source selected from the group consisting of dry-powdered protein, vegetable protein, full-fat cheese, and mixtures thereof; and less than about 30% of the protein is selected from low-fat cheese;

(b) from about 4% to about 35% of a fatty substance consisting essentially of from about 30% to about 100% of low-calorie fatty materials, with the balance being animal fat or vegetable fat, wherein when the low-calorie fatty material is a polyester of a sugar or sugar alcohol, the said sugar or sugar alcohol is one which has from 4 to 8 hydroxyl groups and at least four of the hydroxyl groups of the said sugar or sugar alcohol are esterified with fatty acids containing from 2 to about 24 carbon atoms, wherein when the low-calorie fatty material is a polyglycerol ester the said ester contains from about 5 to about 15 etherified glycerol units and at least75% of the hydroxyl groups in said ester are esterified with fatty acids of from 2 to 24 carbon atoms and wherein when the low-calorie fatty material is a glyceride it is a tailored triglyceride in which the esterifying acids are a mixture of long chain and medium chain triglycerides wherein the composition of said mixture is from about 15% to about 70% by weight C_6 to C_{10} saturated fatty acids and from about 10% to about 70% by weight C_{17} to C_{26} saturated fatty acids;

(c) from about 30% to about 80% water;

(d) from about 0.2% to about 4% cheese flavors;

(e) from about 0.2% to about 3% of an emulsifying salt; and

(f) from about 0.05% to about 2% of an acidulant.

5,061,504

SIMULATED CHEESE ANALOGS WITH REDUCED ANIMAL FAT AND CALORIES

Josephine L. Y. Kong-Chan, West Chester; James A. Hellyer, Milford, and Michael W. Tafuri, Montgomery, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 366,552, Jun. 14, 1989, abandoned. This application Oct. 30, 1990, Ser. No. 608,604

Int. Cl.[5] A23C *20/00*

U.S. Cl. 426—582 33 Claims

1. A low-fat simulated cheese analog composition comprising:

(a) from about 5% to about 50% of protein obtained from a protein source selected from the group consisting of aged low-fat cheese; non-aged low-fat cheese; aged full-fat cheese; non-aged full-fat cheese; dry-powdered protein derived from fresh whole mil, skim milk, buttermilk, and cream; vegetable protein derived from vegetable proteinaceous materials; and mixtures thereof; wherein at least about 30% of the protein is obtained from low-fat cheese and less than about 70% of the protein is obtained from a protein source selected from full-fat cheese, dry-powdered protein, vegetable protein, or mixtures thereof;

(b) from about 4% to about 35% of a fatty substance consisting essentially of from about 301% to about 100% of low-calorie fatty materials, with the balance being animal fat or vegetable fat wherein when the low-calorie fatty material is a polyester of a sugar or sugar alcohol the said sugar or sugar alcohol is one which has 4 to 8 hydroxyl groups and at least 4 of the hydroxyl groups of the said sugar or sugar alcohol are esterified with fatty acids containing from 2 to about 24 carbon atoms, wherein when the low-calorie fatty material is a polyglycerol ester the said ester will contain from about 5 to about 15 etherified glycerol units and at least 751% of the hydroxyl groups in said ester will be esterified with fatty acids of from 2° to 24 carbon atoms and wherein when the low-calorie fatty material is a glyceride it is a tailored triglyceride in which the esterifying acids are a mixture of long chain and medium chain triglycerides wherein the composition of said mixture is from about 151% to about 70% by weight C_6 to C_{10} saturated fatty acids and from about 10% to about 70% by weight C_{17} to C_{26} saturated fatty acids;

(c) from about 30% to about 80% water;

(d) from about 0.2% to about 31% of an emulsifying salt; and

(e) from about 0.2% to about 4% cheese flavors.

5,061,505

PROCESS FOR THE REMOVAL OF CHOLESTEROL AND/OR CHOLESTEROL ESTERS FROM FOODSTUFFS

Jan Cully, Rosenheim; Heinz-Rüdiger Vollbrecht, Altenmarkt, and Erwin Schütz, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jan. 16, 1990, Ser. No. 465,032

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1989, 3929555

Int. Cl.[5] A23D *9/00;* A23L *1/32*

U.S. Cl. 426—601 11 Claims

1. Process for the removal of cholesterol components selected from the group consisting of cholesterol, cholesterol esters and mixtures thereof from extraction material by extraction with compressed carbon dioxide, said method comprising the steps of:

(a) treating the extraction material with compressed carbon dioxide at a pressure above 100 bar and at a temperature of from 10 ° C. to 90° C. to produce a compressed carbon dioxide stream loaded with said cholesterol components and other non-cholesterol lipophillic components;

(b) selectively removing said cholesterol components from said compressed carbon dioxide stream by adsorption on a solid adsorption agent or by adduct formation, said other non-cholesterol lipophillic components remaining in said carbon dioxide stream and

(c) passing at least a part of the carbon dioxide stream from which said cholesterol components have been selectively removed over extraction materials selected from the group consisting of previously treated extraction material and non-treated extraction material.

5,061,506

CULINARY FAT COMPOSITIONS AND BAKERY MIXTURES CONTAINING THEM

Warren Leach, Merseyside, England, assignor to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Continuation of Ser. No. 245,933, Sep. 14, 1988, abandoned, which is a continuation of Ser. No. 930,464, Nov. 12, 1986, abandoned. This application Jun. 22, 1990, Ser. No. 542,676

Claims priority, application United Kingdom, Nov. 15, 1985, 8528201

Int. Cl.[5] A23D *9/00*

U.S. Cl. 426—602 9 Claims

1. A fat-continuous food product having Solids Content Index Values of 11.8 to 16 at 20° C. and a maximum of 3 at 40° C., consisting of triglycerides of polyunsaturated acids, at least 2% trans acids, at most 31.9% combined trans and saturated fatty acids and at least 5% palmitic acid, the fat composition comprising a blend of unrandomised fats comprising:

a component which may be selectively hardened (I) selected from the group consisting of palm oil and cottonseed oil; and

a vegetable oil component which may be selectively hardened (II) selected from the group consisting of soybean oil, sunflower oil and safflower oil

in a weight ratio of component I to component II of 1 part to at least 2 parts.

5,061,507

POTATO-BASED FOODSTUFF AND PROCESS FOR MAKING SAME

David J. Aulik, Channel Islands Harbor, and Robert E. Christensen, Camarillo, both of Calif., assignors to Horizons International Foods, Inc., Burlington, Mass.

Division of Ser. No. 108,722, Oct. 14, 1987, Pat. No. 4,959,240, and a continuation-in-part of Ser. No. 17,140, Feb. 20, 1987, abandoned. This application Jul. 23, 1990, Ser. No. 557,149

Int. Cl.[5] A23L *1/216, 1/217*

U.S. Cl. 426—637 28 Claims

1. A process for preparing a potato-based foodstuff having aligned fibers, comprising:

(a) forming a homogeneous plastic mass by thoroughly mixing un-denatured vegetable protein, potato material and water;

(b) pushing said plastic mass through a first passageway having a substantially constant cross-section for a time sufficient to relax at least some of the mixing tension of the plastic mass;

(c) pushing said relaxed plastic mass through a second passageway having a decreasing cross-sectional area in a manner effective to elongate said plastic mass;

(d) liquefying and simultaneously pushing said elongated plastic mass through a third passageway in a manner effective to allow the fibers present in said pushed plastic mass to substantially align; and

(e) further heating said elongated plastic mass with substantially aligned fibers in a manner effective to fix said aligned fibers.

5,061,508

FORTIFIED AND FLAVORED GLUTEN-BASED FOOD PRODUCT

Sylvia Schur, 171 Sutton Manor, New Rochelle, N.Y. 10805

Continuation-in-part of Ser. No. 344,807, Apr. 28, 1989, Pat. No. 4,950,496. This application Aug. 13, 1990, Ser. No. 566,252

The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.

Int. Cl.[5] A23J *1/12*

U.S. Cl. 426—656 11 Claims

1. A gluten-based self-sufficient food product consisting essentially of a gluten mass extracted from grain into which is introduced L-lysine powder intermixed with a powdered seasoning agent which acts as a carrier to distribute the L-lysine powder substantially uniform throughout the mass to provide a fortified and flavored mass which is dividable into units, the relative amount of L-lysine being sufficient to form in combination with the gluten a complete protein.

5,061,509

METHOD OF MANUFACTURING POLYIMIDE THIN FILM AND METHOD OF MANUFACTURING LIQUID CRYSTAL ORIENTATION FILM OF POLYIMIDE

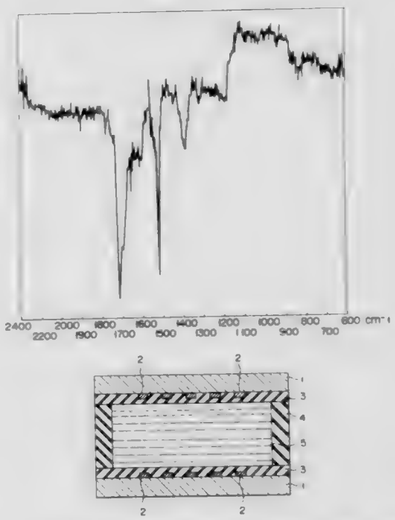
Katsuyuki Naito, Yokohama; Shinya Aoki, Kawasaki, and Toshio Nakayama, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 23, 1990, Ser. No. 571,119

Claims priority, application Japan, Aug. 25, 1989, 1-219395

Int. Cl.[5] B05D *1/04, 3/06;* C08J *3/28;* C08G *69/26*

U.S. Cl. 427—13 12 Claims



1. A method of manufacturing a polyimide thin film, in which energy is imparted under vacuum to polyimide having in the polymer main chain imide bonds and decomposable bonds differing from imide bonds so as to break the decomposable bonds and, thus, to form a polyimide thin film on a substrate.

5,061,510

PROCESS FOR REDUCING ENVIRONMENTAL INFLUENCES ON THE POWDER COATING OF A WORKPIECE, AND POWDER COATING FACILITY

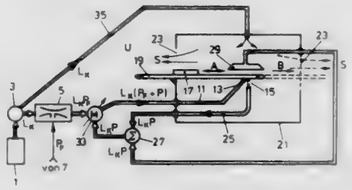
Hans Nussbaumer, Wagen, and Felix Walser, Hinwil, both of Switzerland, assignors to Prazisions-Werkzeuge AG, Ruti, Switzerland

Filed Nov. 30, 1988, Ser. No. 277,985

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743864

Int. Cl.[5] B05D *1/06;* **B05B** *5/03*

U.S. Cl. 427—28 **47 Claims**



1. A powder coating and retrieving process comprising conveying workpieces past a powder spray and powder retrieving arrangement wherein air entrained powder is sprayed towards and on the workpieces and powder not applied to the workpieces is retrieved by suction in the area of the spraying, and including entraining the powder by conditioned air; providing a chamber open at least on one side for conveying said workpieces, said chamber surrounding the area of spraying and suction retrieval; and providing an air flow out of said chamber so as to prevent influences of the ambient surroundings of said chamber on powder sprayed and retrieved in said arrangement.

43. A powder coating arrangement comprising conveyor means for conveying workpieces to be coated, a powder spray and powder retrieving arrangement including means for spraying air entrained powder towards and on workpieces and means for retrieving by suction, in the area of the means for spraying, the sprayed powder not applied to said workpieces, means providing conditioned air for entraining said powder, a chamber open at least on one side for conveying said workpieces, said chamber surrounding said powder spray and powder retrieving arrangement, and means for providing an airflow out of said chamber so as to prevent influences of the ambient surrounding the chamber on powder sprayed and retrieved in said arrangement.

5,061,511

METHOD FOR FORMING FUNCTIONAL DEPOSITED FILMS BY MEANS OF MICROWAVE PLASMA CHEMICAL VAPOR DEPOSITION METHOD

Keishi Saitoh; Junichiro Hashizume, both of Nagahama; Shigehira Iida, Ueno; Tetsuya Takei, and Takayoshi Arai, both of Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

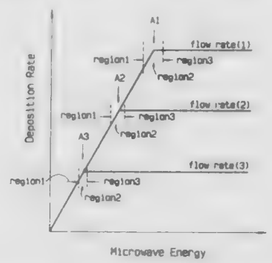
Division of Ser. No. 287,666, Dec. 21, 1988, Pat. No. 4,957,772, which is a continuation of Ser. No. 130,448, Dec. 9, 1987, abandoned. This application Jul. 11, 1990, Ser. No. 551,081

Claims priority, application Japan, Dec. 12, 1986, 61-297421; Dec. 13, 1986, 61-296994

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 **6 Claims**

1. A microwave plasma chemical vapor deposition process for the formation of a functional deposited film on a substrate by means of a microwave plasma chemical vapor deposition conducted in the film-forming space of a substantially enclosed film-forming chamber, wherein a film-forming raw material gas is introduced into said film-forming space and microwave energy is applied thereinto to form discharge plasma causing decomposition of said film-forming raw material gas thereby forming said functional deposited film on the substrate, characterized by maintaining the gaseous pressure of said film-forming space at a value of 10 mTorr or less and applying into said film-forming space a microwave power 1.1 times or more the



minimum microwave power required to maximize the deposition rate for a decomposed product produced from said film-forming raw material gas to form a deposited film.

5,061,512

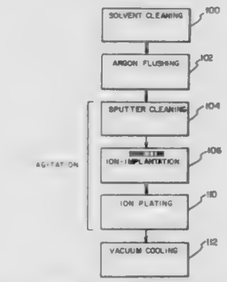
METHOD OF PRODUCING LUBRICATED BEARINGS

Kamleshwar Upadhya, Glendale, Wis., assignor to General Electric Company, Milwaukee, Wis.

Division of Ser. No. 313,182, Feb. 21, 1989, Pat. No. 4,956,858. This application Jun. 25, 1990, Ser. No. 543,288

Int. Cl.[5] B05D *3/06;* **C23C** *14/00*

U.S. Cl. 427—38 **6 Claims**



1. A method of uniformly coating bearing element substrates for use in x-ray tubes with a solid lubricant comprising the steps of:

removing contaminants from the bearing element substrates;

ionizing the solid lubricant;

applying a first biasing voltage to the substrates to accelerate a first portion of ionized solid lubricant toward the substrates and to implant the first portion of solid lubricant beneath the surface of said bearing element substrates to produce an implantation layer; and

applying a second biasing voltage to the substrates to accelerate a second portion of the ionized solid lubricant toward the substrates and to plate the second portion of the solid lubricant directly on the implantation layer to form a plated layer with a uniformity within ±100 Å.

5,061,513

PROCESS FOR DEPOSITING HARD COATING IN A NOZZLE ORIFICE

Paul L. Flynn, 5139 Fox Park Dr., Fairview, Pa. 16415, and Anthony W. Giammarise, 527 Lincoln Ave., Erie, Pa. 16505

Filed Mar. 30, 1990, Ser. No. 501,443

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 **14 Claims**

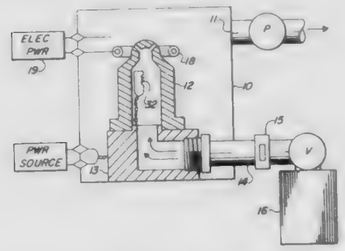
1. A process for selectively coating the interior surfaces of a fuel injection nozzle having at least one aperture operatively positioned therein, the aperture being in communication with a fuel sac, comprising the steps of:

positioning the fuel injection nozzle in a chemical vapor disposition reaction chamber so that the concentration and velocity of a reaction gas increases as the gas flows through the nozzle and out the aperture;

introducing the reaction gas into the chamber at a temperature sufficiently below the reaction gas's reaction temperature so that the gas does not adhere to the internal surfaces of the nozzle;

heating a select portion of the interior surfaces of the nozzle in proximity to the aperture to a temperature sufficient to cause the gas to interact with the select portion of the interior surface of the nozzle;

directing the reaction gas through the nozzle, so that the select portion of the interior surfaces of the nozzle receive a coating from the interaction of the gas with the selected portion of the interior surface of the nozzle.



5,061,514

CHEMICAL VAPOR DEPOSITION (CVD) PROCESS FOR PLASMA DEPOSITING SILICON CARBIDE FILMS ONTO A SUBSTRATE

Herman J. Boeglin, Waterbury, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 13, 1990, Ser. No. 553,918

Int. Cl.[5] C23C *16/50, 16/32*

U.S. Cl. 427—39 **12 Claims**

1. A plasma CVD process for forming silicon carbide-type films onto a substrate comprising the steps of:

(a) introducing di-tert-butylsilane vapor into a CVD reaction zone containing said substrate on which a silicon carbide film is to be formed;

(b) maintaining the temperature of said zone and said substrate at about 100° C. to about 400° C.;

(c) maintaining the pressure in said zone at about 0.1 to about 10 torr; and

(d) passing said gas into contact with said substrate while exciting said gas with a plasma for a period of time sufficient to form a silicon carbide-type film thereon, wherein said Plasma is excited by DC or RF Power of about 10 to about 500 watts.

5,061,515

LACQUER BINDERS, A PROCESS FOR COATING HEAT RESISTANT SUBSTRATES AND THE COATED SUBSTRATES

Willi Dünwald, and Hans Schlegel, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 196,178, May 19, 1988, abandoned. This application Apr. 5, 1990, Ser. No. 504,830

Claims priority, application Fed. Rep. of Germany, May 30, 1987, 3718238

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—120 **4 Claims**

1. A process for the formation of a coating on a heat resistant wire substrate which comprises coating said substrate with a solvent-containing coating composition containing a binder comprising

a) a polyvinyl acetal and

b) about 1 to 300 parts by weight, based on 100 parts of component (a), of an organic compound containing (i) carbodiimide and/or uretone imine groups and (ii) blocked isocyanate groups,

and curing the coating at a temperature above about 80° C.

5,061,516

PRODUCTION METHOD FOR MAGNETIC RECORDING MEDIUM

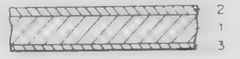
Ryosuke Isobe; Kiyoshi Sawada; Kunitsuna Sasaki; Takahiro Mori, and Yuki Ando, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 3, 1991, Ser. No. 637,222

Claims priority, application Japan, Jan. 10, 1990, 2-2945

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—132 **17 Claims**



1. A method of preparing a magnetic recording medium comprising a support having provided thereon a magnetic layer containing a ferromagnetic powder, a first binder, and a second binder, said second binder comprising a vinyl chloride resin, said method comprising;

kneading said ferromagnetic powder, in an amount of 100 parts by weight, with said first binder in an amount of 3 to 15 parts by weight, and a solvent in an amount of 10 to 60 parts by weight, under a power consumption load of 0.05 to 0.50 KW per kg of said ferromagnetic powder to prepare a mixture thereof;

adding 3 to 15 parts by weight of said second binder to said mixture and kneading under a power consumption load of 0.05 to 0.50 KW to kg to prepare a coating solution; and

coating said coating solution on said support to form said magnetic layer.

5,061,517

BRUSH-ON FINISH FOR FOOTWEAR AND SIMILAR ARTICLES

Lawrence L. Speer, 400 W. Hopocan, Barberton, Ohio 44203

Filed Nov. 22, 1989, Ser. No. 440,081

Int. Cl.[5] B32B *35/00*

U.S. Cl. 427—140 **4 Claims**

1. A method for recoloring a consumer article such as a shoe, on a discolored and scuffed or worn external leather or leather-like surface of the article, comprising:

(a) providing a consumer article having a discolored and scuffed or worn external leather or leather-like surface;

(b) cleaning said surface by applying a cleaning agent thereto, followed by wiping said surface;

(c) applying onto said discolored and scuffed or worn surface, after cleaning in step (b), a coating composition comprising polyester-type polyurethane elastomer dissolved in a solvent further including a pigmented colorant, so as to cover over and thereby recolor discolorations on said surface; and

(d) permitting said coating to dry.

5,061,518

ACRYLIC PROTECTIVE COATINGS

Klaus Langerbeins, Langen; Hans Trabitzsch, and Helmut Daum, both of Seeheim-Jugenheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Nov. 16, 1989, Ser. No. 437,537
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1988, 3839177
Int. Cl.[5] B65B *33/00*
U.S. Cl. 427—154 3 Claims

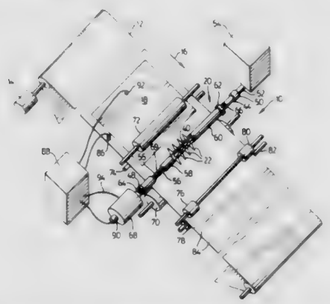
1. A method for providing temporary protection to the surface of a mechanical object with a coating of an acrylic polymer, which method comprises applying to said object an aqueous dispersion of a lipophilic poly(meth)acrylate polymer and removing water therefrom, whereby a film of said polymer is formed on said object, and, when said protective coating is no longer wanted or needed, removing said film from said object with a combustible organic solvent, and, after removal of said film from said object, completely combusting said organic solvent and the removed polymer dissolved therein to CO_2 and H_2O.

5,061,519

PATTERNED GLUING APPARATUS AND METHOD

John A. Long, 41 Lamont Avenue, Scarborough, Ontario M1S 1A8, Canada

Filed Sep. 11, 1989, Ser. No. 404,983
Int. Cl.[5] B05D *5/10;* B05C *5/02, 11/00*
U.S. Cl. 427—207.1 14 Claims



1. An apparatus for dispensing glue onto an article in patterns comprising:
(a) article conveying means;
(b) glue dispensing means comprising circulatable glue nozzles positioned so as to be circulatable into and out of contact with articles on said article conveying means, each of said glue nozzles adapted to dispense glue while in contact with an article, and rotatable shaft means for circulating said circulatable glue nozzles;
(c) drive means for rotating said rotatable shaft means; and
(d) means to track the velocity of said article conveying means and the angular position of said shaft means and to control said drive means in response to the velocity of said article conveying means and the angular position of said shaft means, whereby glue nozzles may be selectively placed in contact with an article to be glued for a selected period of time in order to dispense dots or lines of glue onto said article.

12. A method for dispensing glue onto an article in patterns comprising the following steps:
(a) conveying articles serially to a glue dispensing station; and
(b) circulating an array of glue nozzles at said glue dispensing station, said glue nozzles of the type adapted to dispense glue upon contact with a surface, in response to the speed at which articles are conveyed so that selected glue nozzles come into contact with an article at said glue dispensing station for a selected period of time.

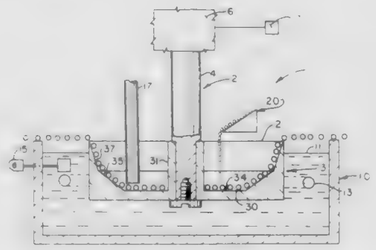
14. A device for the high speed selective dispensing of glue comprising:
(a) a ring having a plurality of side openings;
(b) a glue nozzle supported at its base in each of said side openings, each said glue nozzle comprising a housing with a basal opening and an apical opening containing a ball bearing urged by spring means to a rest position at which said ball bearing extends beyond the apical tip of said housing and closes off the apical opening of the housing.

5,061,520

PARTICLE ENROBING PROCESS AND APPARATUS

Victor M. Hermelin, Chesterfield, Mo., assignor to KV Pharmaceutical Company, St. Louis, Mo.

Filed Oct. 5, 1990, Ser. No. 593,099
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—212 14 Claims



1. A process of coating particles comprising introducing, to a spinning cup having an outwardly upwardly extending inner surface with an upper edge, a liquid coating material and particles of greater density than said coating material, said coating material and particles being introduced inboard of said inner surface, controlling the speed of rotation of said spinning cup to cause said coating material to climb up said inner surface and to stop short of said upper edge, but to cause said particles to travel through said coating material, be enrobed with said coating material, climb out of said liquid coating material, and be ejected over said upper edge.

5,061,521

PROCESS FOR PRODUCING MODIFIED MOLDED POLYMER ARTICLES

Zen-ichiro Endo; Shigeyoshi Hara, and Umewaka Nakatani, all of Iwakuni, Japan, assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 18, 1989, Ser. No. 451,892
Claims priority, application Japan, Dec. 20, 1988, 63-319460
Int. Cl.[5] B29C *45/00, 71/00*
U.S. Cl. 427—307 9 Claims

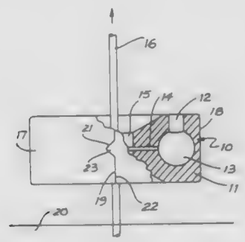
1. A method for halogenating a molded polymer article prepared by the reaction molding of a polycyclic cycloolefin monomer comprising 50 to 100 ml percent dicyclopentadiene under the influence of a metathesis catalyst that comprises immersing the polymer article in an organic solvent for a time sufficient to effect swelling of the article, the organic solvent containing dissolved molecular halogen for at least part of the time the polymer article is immersed in the solvent.

5,061,522

JET WIPING APPARATUS AND PROCESS

Raymond J. Copas, Williamstown; Colin J. Grace, Mount Hutton, and Malcolm A. Robertson, East Maitland, all of Australia, assignors to Australian Wire Industries Pty. Limited, Sydney, Australia

Filed Aug. 29, 1989, Ser. No. 399,898
Claims priority, application Australia, Sep. 13, 1988, PJ0403
Int. Cl.[5] B05D *3/04*
U.S. Cl. 427—349 9 Claims



9. An improved process for the gas jet wiping of a metallic filament passing upwardly from a liquid metal bath, wherein the filament passes through a gas jet wiping nozzle, wherein the improvement comprises passing said filament through a gas jet wiping nozzle having at least two non-annular parts abutted together to form a hollow annulus, the at least two non-annular parts being separable from one another in a direction transverse to the direction in which said filament passes through the gas jet wiping nozzle, means being provided to releasably retain the at least two non-annular parts in operational abutment.

5,061,523

AUTODEPOSITION PROCESS WITH LOW VOLATILE ORGANIC CHEMICAL EMISSIONS

Norman Shachat, Horsham, Pa., assignor to Henkel Corporation, Ambler, Pa.

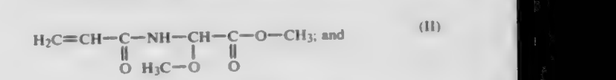
Filed Sep. 24, 1990, Ser. No. 587,281
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—377 12 Claims

1. A process for coating ferriferous or zinciferous or both zinciferous and ferriferous surfaces, said process comprising steps of:
(1) contacting said surfaces with an aqueous liquid autodeposition composition comprising dispersed polymer solids, an acidic component, and an oxidizer component for a time sufficient to cause formation of an adherent coating on said surfaces;
(2) withdrawing the surfaces coated in step (A) from contact with the autodeposition and maintaining the surfaces coated in step (A) in contact with a gaseous atmosphere containing water vapor for a selected dwell time;
(3) rinsing the dwelled coated surfaces from step (2) with substantially pure water for a specified rinse time;
(4) contacting the coated, dwelled, and rinsed surface from step (3) with a chromium containing post-treatment composition for a specified post-treatment time; and
(5) curing the post-treated coated surface by exposure to gases at a temperature of at least about 140° C for a specified cure time, so as to produce an adherent dry coating on the surface,
wherein the improvement comprises selecting the dispersed polymer solids so that they consist essentially of one or more copolymers made by polymerizing a homogeneous mixture of monomers by addition polymerization, said homogenous mixture of monomers consisting essentially of:
(A) from about 40–about 50 of monomers selected from the group having the general formula I:



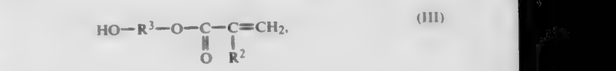
(I)

where R^1 is a saturated, branched or unbranched, alkyl group having from about 3 to about 8 carbon atoms and R^2 is hydrogen or methyl;
(B) from about 30–about 40 w/o of acrylonitrile;
(C) from 0–about 20 w/o of monomers selected from the group consisting of styrene, α-methyl styrene, and methyl methacrylate;
(D) from about 5–about 10 w/o of monomers selected from the group consisting of acrylic acid and methacrylic acid;
(E) from 0–about 5 w/o of the methyl ether of methyl acrylamidoglycolate, having chemical formula II



(II)

(F) from 0–about 5 w/o of monomers selected from the group having the general chemical formula III



(III)

where R^2 has the same meaning as in part (A) and R^3 is a saturated, branched or unbranched, divalent hydrocarbon moiety having from 2 to 4 carbon atoms and having its two open valences on distinct carbon atoms.

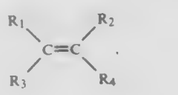
5,061,524

HYDROPHOBIC AND/OR ABHESIVE MATERIALS, REACTIVE DILUENTS

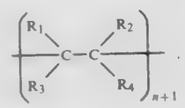
Rudolf Hinterwaldner, Kastanienstrasse 13, 8000, Munich 90, Fed. Rep. of Germany

Division of Ser. No. 302,124, Jan. 26, 1989, Pat. No. 4,940,846, which is a continuation of Ser. No. 1,936, Jan. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 726,903, Apr. 18, 1985, abandoned. This application May 29, 1990, Ser. No. 529,324
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329877
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] B05D *3/02;* C09K *3/00*
U.S. Cl. 427—385.5 20 Claims

1. A method for rendering a substrate hydrophobic or abhesive comprising the steps of:
(a) applying to said substrate a curable composition comprising (i) at least one of



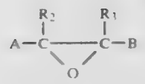
(I)



(II)

and

-continued



(III)

wherein R_1, R_2, R_3 and R_4 are independently hydrogen, CH_3, or C_2H_5; A and B are independently hydrogen, CH_3, C_2H_5, or of the formula (II); n is an integer between 0 and 20,000,000; and wherein each of formula (I), (II), and (III) have from 2.0 to 4.0 methyl side groups per monomer unit and (ii) an organosilicon compound; and

(b) curing the composition to form a coating on the substrate.

5,061,525

SIZING METHOD

Yuichi Takahashi; Tsuneo Yasumura, and Yasuo Ishii, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 28, 1990, Ser. No. 618,972
Claims priority, application Japan, Dec. 12, 1989, 1-322876
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—389.9 **6 Claims**

1. A method of sizing a cheesy fiber at a temperature of 30° to 80° C. by using an aqueous emulsion of a cationic polymer as a sizing agent, wherein said sizing agent contains 0.2 to 20 g/l of a water-soluble salt.

5,061,526

PROCESS FOR FORMING A POROUS REFRACTORY MASS

Pierre Robyn, Nivelles, Belgium; Léon-Philippe Mottet, Medina, Ohio, and Alexandre Zivkovic, Uccle, Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Jun. 25, 1990, Ser. No. 543,107
Claims priority, application Luxembourg, Jun. 30, 1989, 87550
Int. Cl.[5] B05D *3/04*
U.S. Cl. 427—422 **22 Claims**

1. A process of forming a porous refractory mass on a surface, comprising:

providing a composition which is a powder mixture comprised of refractory particles, fuel particles which react exothermically with the oxidizing gas to form refractory oxide and release sufficient heat to melt at least the surfaces of the refractory particles so that the refractory particles and the refractory oxide bond together, and particles of porosity-inducing material having at least one of a composition and size selected so that incorporation of such porosity-inducing material in the powder mixture results in the formation of porosity within the refractory mass; and

projecting the composition together with an oxidizing gas against the surface.

5,061,527

METHOD AND APPARATUS FOR SPRAY COATING OF REFRACTORY MATERIAL TO REFRACTORY CONSTRUCTION

Seiji Watanabe; Mitsuo Saito; Akihiko Nanba; Tsutomu Nozaki; Tetsuya Fujii; Tsuyoshi Nakamoto, and Motoyasu Yaji, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 43,181, Apr. 27, 1987, abandoned. This application Dec. 26, 1990, Ser. No. 632,638
Claims priority, application Japan, Dec. 22, 1986, 61-306003
Int. Cl.[5] B05D *1/08*
U.S. Cl. 427—423 **2 Claims**

1. An apparatus for spray coating a refractory material onto a refractory construction comprising:

a lance containing first and second nozzles;

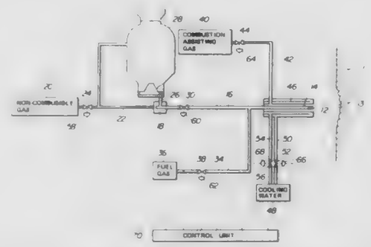
a source of combustible fuel gas;

a source of combustion assist gas;

a source of particulate refractory material;

a source of particulate combustible metal wherein the size of said combustible metal particles is within the range of 50 μm to 160 μm;

first means for feeding said particulate refractory matter and said particulate metal through said first nozzle, said first means including means for defining a first path establishing communication between said inner nozzle and a



source of said mixture for supplying said mixture in said mixture source to said first nozzle, and said first means further comprising a non-combustible gas source connected to said first path for supplying a pressurized non-combustible gas as a carrier gas for carrying said mixture;

second means for feeding said fuel gas through said first nozzle; and

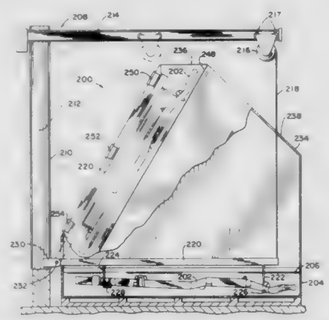
third means for feeding said combustion assist gas through said second nozzle for supplying oxygen necessary for combustion of said fuel gas and said combustible metal.

5,061,528

EXTERNAL MANUFACTURING METHOD AND FACILITY FOR COATING VEHICLE STRUCTURAL COMPONENTS

Phillip C. Ruehl, Elm Grove, Wis., assignor to A.O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 389,346, Aug. 3, 1989. This application Jan. 24, 1990, Ser. No. 469,253
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—430.1 **5 Claims**



1. A manufacturing method for applying a coating to vehicle structural components, comprising providing a coating station, providing a generally vertically extending hub and rotating said hub about a generally vertical axis, providing a support beam extending from said hub, providing a pulley on said beam and having a downwardly extending cable, providing a carrier arm for carrying a vehicle structural component and pivotally mounting said arm to said hub below said beam, attaching said

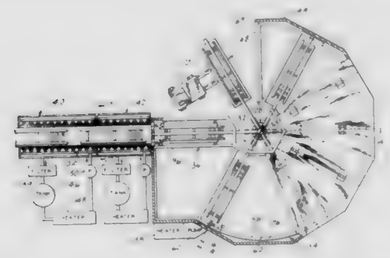
cable to said arm and moving said arm through said coating station, and comprising pivoting said arm at said hub about a generally horizontal pivot axis, providing a tank containing coating liquid at said coating station, moving said cable downwardly to pivot said arm downwardly about said pivot axis to dip said vehicle structural component in a generally horizontal position into said coating liquid in said tank, and moving said cable upwardly to pivot said arm upwardly about said pivot axis to raise said vehicle structural component to a generally vertical position out of said coating liquid in said tank.

5,061,529

MANUFACTURING METHOD AND FACILITY FOR COATING VEHICLE STRUCTURAL COMPONENTS

Phillip C. Ruehl, Elm Grove, Wis., assignor to A.O. Smith Corporation, Milwaukee, Wis.

Filed Aug. 3, 1989, Ser. No. 389,346
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—430.1 **4 Claims**



1. A manufacturing method for preheating and applying a coating to vehicle structural components, comprising:

providing a transport mechanism;

providing a loading station;

providing a preheat station having a preheat liquid at an elevated temperature;

providing a coating station having a coating liquid at an elevated temperature;

providing an unloading station;

attaching said vehicle structural component to said transport mechanism at said loading station;

transporting said vehicle structural component to said preheat station, and moving said vehicle structural component into and out of contact with said preheat liquid to provide liquid heat transfer to said vehicle structural component;

transporting said vehicle structural component to said coating station, and moving said vehicle structural component into and out of contact with said coating liquid to coat said vehicle structural component;

transporting said vehicle structural component to said unloading station and detaching said vehicle structural component from said transport mechanism.

5,061,530

COMBINED HORIZONTAL AND VERTICAL MANUFACTURING METHOD AND FACILITY FOR COATING VEHICLE STRUCTURAL COMPONENTS

Michael K. Wren, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Feb. 2, 1990, Ser. No. 474,159
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—430.1 **5 Claims**

1. A manufacturing method for applying a coating to vehicle structural components, comprising:

providing a loading station;

providing a transport mechanism;

providing a coating station having a coating liquid;

providing a drip station;

providing an unloading station;

attaching said vehicle structural component in a generally horizontal position to said transport mechanism at said loading station;

transporting said vehicle structural component in said generally horizontal position to said coating station;

transporting said vehicle structural component in said generally horizontal position through said coating station to said drip station;

changing the orientation of said vehicle structural component to a generally vertical position;

transporting said vehicle structural component in said generally vertical position through said drip station;

changing the orientation of said vehicle structural component to said generally horizontal position;

transporting said vehicle structural component in said generally horizontal position to said unloading station;

detaching said vehicle structural component in said generally horizontal position from said transport mechanism,

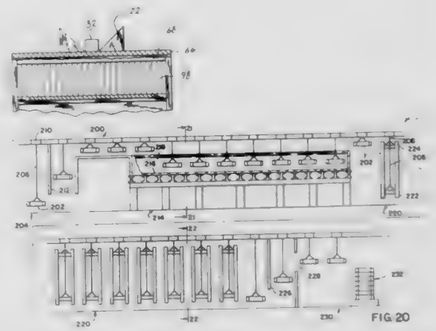


FIG. 20

wherein said vehicle structural component has a longitudinal extent of given length, and wherein said longitudinal extent extends generally horizontally when said vehicle structural component is in said generally horizontal position, and wherein said longitudinal extent extends generally vertically when said vehicle structural component is in said generally vertical position, said vehicle structural component having distally opposite longitudinal ends at the ends of said longitudinal extent, and comprising attaching said vehicle structural component in said generally horizontal position to said transport mechanism proximate each of said longitudinal ends, and changing the orientation of said vehicle structural component to said generally vertical position by releasing one of said longitudinal ends such that said one longitudinal end of said vehicle structural component swings downwardly such that said vehicle structural component hangs generally

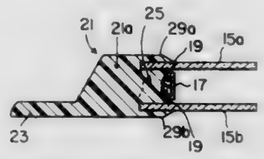
vertically from the other of said longitudinal ends attached to said transport mechanism.

5,061,531

GLAZING UTILIZING RIM PROCESS TO PRODUCE SEALED AND FRAMED INSULATING GLASS UNIT

Gennaro J. Catalano, Washington Crossing, Pa., assignor to M. L. Burke, Co., Union City, Calif.

Continuation of Ser. No. 221,503, Jul. 18, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 451,269
Int. Cl.[5] E06B *3/24*; C03C *27/00*; E04C *2/54*
U.S. Cl. 428—34 12 Claims



1. An architectural glazing unit having its own architecturally and structurally independent frame consisting of:
a first glass plate;
a second glass plate spaced from said first glass plate;
a moisture impervious spacer member inserted between said first and second glass plates and separating said first glass plate from said second glass plate, said spacer member having opposite edges adjacent said respective first and glass plates and extending completely about the periphery of said plates;
a primary seal member positioned as an interface member between each opposite edge of said spacer member, which is adjacent each of said first and second glass plates and said respective glass plate, thereby sealing said spacer member to each of said plates; and
a frame member having a first portion extending between the juxtaposed faces of said first and second glass plates to cover said juxtaposed plates said spacer member and said primary seal member, whereby a secondary seal member is created as a continuous part of said frame member, said frame member also having a second portion extending outwardly about the periphery of said glass plates to frame said glass plates and thereafter extending outwardly to form an architectural structural member being of sufficient strength and hardness to function as an architectural structural frame nature;
wherein said frame member first and second portions are RIM process material having been formed in situ through a RIM process and wherein there exists a molecular bonding of said frame RIM process material to said glass plates through a single coupling agent, said RIM process material forming said second seal member as well as said frame member and wherein said RIM process material is a polyurethane elastomer having a Shore D scale hardness of at least 30.

2. An insulating architectural glazing assembly having an integral architectural structural frame which reduces the sound transmission/vibration of the glazing, consisting of:
a first glazing plate;
a second glazing plate spaced from said first glazing plate;
a moisture impervious spacer member between said first glazing plate and said second glazing plate, said spacer member establishing the separation distance between said plates and forming a peripheral wall between said plates; and
an architectural structural frame member of low thermal transmission formed in situ through a RIM process and surrounding the edges of said first and second glazing plates wherein there exists a molecular bonding of said frame member to said first and second glazing plates through a single coupling agent applied thereto, said frame member having as a part thereof a peripheral wall extending laterally outwardly therefrom, and wherein said frame peripheral wall extends beyond the edges of the glass plates for a length substantially greater than the length of the faces of the glazing plates covered by the frame member, said frame forming to form an architectural structural member establishing the rigid integrity for the assembly which reduces sound transmission/vibration of the glazing and also forming a gas and fluid seal at the edges of said first and second glazing plates and between thereof and at said peripheral wall, said architectural structural frame member being a polyurethane elastomer having a Shore D scale hardness of at least 30.

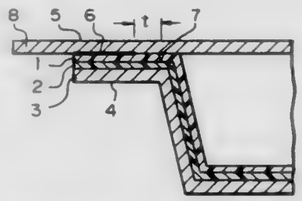
3. An insulating and reduced sound transmission architectural glazing assembly having an integral architectural structural frame, consisting of:
a first glazing plate;
a second glazing plate spaced from said first glazing plate;
a spacer member between said first glazing plate and said second glazing plate, said spacer member establishing the separation distance between said plates and forming a peripheral wall adjacent the edges of said plates; and
a molded polyurethane elastomeric frame member, of low thermal transmission and having a Shore D scale hardness of at least 30, surrounding the edges of said first and second glazing plates and said peripheral wall and extending outwardly therefrom, said frame member being formed through a RIM process and having a flange portion extending in alignment in a plane projecting outwardly from the plane of one of said glazing plates and being suitable for attachment directly to an architectural structure, said frame member and flange portion forming an architectural structural frame, said frame being molecularly bonded to said plate edges and walls through a single coupling agent to form a primary and secondary seal function and being of a different harmonic capacity therefrom to dampen vibrations set up in said first and second glazing plates.

5,061,532

MULTILAYER STRUCTURE AND EASILY OPENABLE CONTAINER AND LID

Toyokazu Yamada, Himeji, Japan, assignor to Idemitsu Petrochemical, Co., Ltd., Tokyo, Japan

Division of Ser. No. 339,489, Apr. 17, 1989, Pat. No. 4,970,113. This application Sep. 6, 1990, Ser. No. 578,218
Claims priority, application Japan, Apr. 20, 1988, 63-95386
Int. Cl.[5] B65D *17/40*
U.S. Cl. 428—35.7 9 Claims



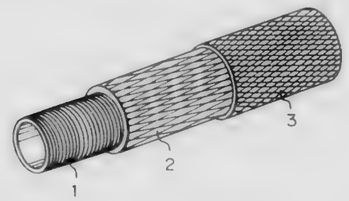
1. An easily openable container having a flange for sealing the container circularly with a lid, wherein the flange is composed of a substrate layer, a surface layer of a thermoplastic resin for bonding the container to a lid to seal the container, and an intermediate layer of a thermoplastic resin sandwiched between the substrate layer and the surface layer, wherein the intermediate layer contains no larger than 70% by weight of a flake inorganic filler, the peeling strength between the surface layer and the intermediate layer being from 0.3 to 2.0 kg/15 mm, and the peeling strength between the intermediate layer and the substrate layer being at least 1.2 times as large as the peeling strength between the surface layer and the intermediate layer, and a circular weakening line is formed in the surface layer at a periphery inner to the circular portion at which the circular sealing is to be conducted.

5,061,533

ROLL FORMED OF CARBON FIBER COMPOSITE MATERIAL

Takeo Gomi, Toyohashi, and Hitoshi Kodama, Nagoya, both of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Oct. 4, 1989, Ser. No. 416,975
Claims priority, application Japan, Oct. 11, 1988, 63-255389; Nov. 24, 1988, 63-294745
Int. Cl.[5] B21B *31/08*
U.S. Cl. 428—36.3 11 Claims



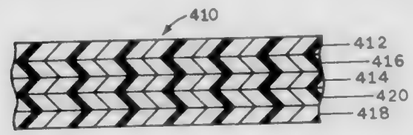
1. A roll formed of a carbon fiber composite material comprising:
an outermost layer having a fiber-winding angle of 0° to ±35° to an axial direction of the roll;
at least one layer other than the outermost layer, said at least one layer other than the outermost layer comprising an innermost layer having a fiber-winding angle of ±85° to 90° to the axial direction of the roll.

5,061,534

HIGH OXYGEN BARRIER FILM

Robert J. Blemberg, Appleteon, and Dennis Kester, Neenah, both of Wis., assignors to American National Can Company, Chicago, Ill.

Filed Apr. 22, 1988, Ser. No. 184,997
Int. Cl.[5] B29D *22/00*; B32B *27/08*; B65D *85/72*
U.S. Cl. 428—36.7 30 Claims



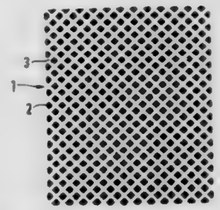
1. A multiple layer polymeric film comprising a first layer of ethylene vinyl alcohol copolymer, and second and third layers comprising vinylidene chloride copolymer and an adhesive polymer respectively, said second and third layers having been coextruded with said first layer, said third adhesive layer being between said first and second layers and being bonded to both said first and second layers with a peel strength of at least 100 g./in. width, the incremental oxygen transmission rate of said first layer of ethylene vinyl alcohol at 0% relative humidity being less than the incremental oxygen transmission rate of said second layer of vinylidene chloride copolymer at 0% relative humidity.

5,061,535

PATTERNED SILICONE RELEASE COATED ARTICLE

Karl-Werner Kreckel; Dieter Jung, and Egbert Von Jakusch, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1990, Ser. No. 545,035
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—42 13 Claims



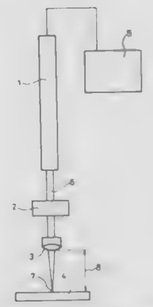
1. A primerless release article comprising a film substrate, having coated on at least a portion thereof, at least one layer of a printable silicone release agent, wherein said agent forms a definite geometric pattern consisting of discrete islands and bridges, said islands having dimensions of from about 0.25 mm by 0.25 mm to about 4 mm by 4 mm, said bridges forming a grid, each bridge having a width of from about 0.25 mm to about 1.0 mm.

5,061,536

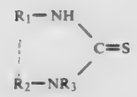
OPTICAL RECORDING MEDIUM

Toshimi Satake; Tomoaki Nagai; Hiroshi Fukui; Akio Sekine, and Miyuki Yokoyama, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 474,936
Claims priority, application Japan, Feb. 6, 1989, 1-27186
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 4 Claims



1. An optical recording medium which comprises a substrate, a light-absorbing layer containing a near infrared absorbent, and a heat-sensitive color-developing layer containing a basic colorless dye and an organic developer, wherein said light-absorbing layer is superposed upon said substrate, and said heat-sensitive color-developing layer is superposed upon said light-absorbing layer in turn, said near infrared absorbent being prepared by heating a mixture of a thiourea derivative represented by the formula (I)



(I)

wherein each R_1, R_2 and R_3 is a monovalent group selected from the group consisting of hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, an aralkyl group and a five-membered or six-membered heterocyclic residue, a pair of R_1 and R_2 or a pair of R_2 and R_3 may be linked together to form a ring, and each group of R_1, R_2 and R_3 may have one or more substituents of an amino group, an alkyl group, an alkenyl group, an aryl group, an aralkyl group, a nitro group, a halogen atom, a hydroxyl group, an alkoxy group and acyl group,

and a metallic compound represented by the formula (II)

$$(R\text{-}X)_nM \quad \text{(II)}$$

wherein R is hydrogen, an alkyl group, a cycloalkyl group, an aryl group, an aralkyl group and a heterocyclic residue, each group of R may have one or more substituents, X is --COO, $-SO_4$, $-SO_3$, $-PO_4$ or —O, n is an integer of 1 to 4, M is a metal having an atomic weight of 40 or more except metals in the group IA and IIA of the periodic table

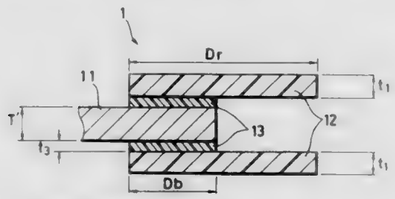
or a metallic compound selected from the group of chlorophyll M, M chlorophyllin sodium and bisacetylacetonate M.

5,061,537

MAGNETIC DISK COMPRISING A FLEXIBLE SUBSTRATE AND A PLASTIC FILM EACH HAVING A SPECIFIED YOUNG'S MODULUS AND WHICH MEET SPECIFIED THICKNESS RELATIONSHIPS

Yukari Kobayashi, and Kiyosumi Kanazawa, both of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 31, 1989, Ser. No. 359,321
Claims priority, application Japan, May 2, 1989, 1-113134
Int. Cl.[5] G11B *5/82*
U.S. Cl. 428—66 **10 Claims**



1. A magnetic disk comprising:

an annular flexible substrate having a Young's modulus of about 30 to about 1,000 kgf/mm ^{2} and a pair of opposed major surfaces,

a magnetic layer on at least one substrate major surface, and

a pair of plastic film rings having a Young's modulus of at least 300 kgf/mm^2, the rings being secured to the outer periphery of the disk on opposite major surfaces of said substrate,

wherein the following relationships are met:

$$T-20 \leqq t1 \leqq T+4-$$

and

$$t1 \geqq 10$$

wherein t1 is the thickness of μm of each ring and T is the thickness of μm of the substrate.

5,061,538

SUPPORT CUSHION

Kenneth L. Hendrix, Trinity, and Carl K. Rogers, High Point, both of N.C., assignors to Hendrix Batting Co., High Point, N.C.

Continuation-in-part of Ser. No. 257,991, Oct. 14, 1988, Pat. No. 4,957,804. This application Sep. 18, 1990, Ser. No. 584,472
Int. Cl.[5] B32B *5/08, 5/12, 5/26;* B68G *5/00*
U.S. Cl. 428—74 **20 Claims**

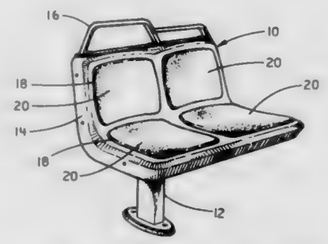
1. A support cushion comprising a plurality of layers of staple, polymeric batt stacked together, each of said layers comprising a combination of polyester fibers and sheath-core binder fibers bonded together in a substantially non-compressed state, said polyester fibers making up more than 50% of said batt in at least some of said layers.

5,061,539

VANDAL RESISTANT UPHOLSTERED SEAT

Keith A. McDowell, 3065 Rapidfall Ct., Belmont, Mich. 49306, and Vaughn L. Clark, 1112 Tenth St., Martin, Mich. 49070

Continuation of Ser. No. 159,829, Feb. 24, 1988, Pat. No. 4,917,931. This application Apr. 16, 1990, Ser. No. 509,876
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] B32B *33/00;* A47C *31/00*
U.S. Cl. 428—85 **5 Claims**



1. In a seat or seat insert comprising a hard substrate having an outer surface that a passenger contacts, the improvement comprising a vandal resistant upholstered surface for the seat, including:

a pile fabric covering the outer surface of the seat, the fabric comprising a permeable backing material with a plurality of generally upright fibers attached thereto and extending outwardly from an outer side thereof, the backing being free of any coating that prevents glue applied to the backing from permeating the backing; and

a layer of high strength adhesive interposed between the pile fabric and the substrate, the adhesive at least partially permeating the backing of the fabric without materially impairing the visual appearance of the fabric from the other side, the adhesive bonding the fabric to the substrate with a bond strength sufficient to resist peeling of the fabric from the substrate, the bond strength being such that if upright fibers are grasped in an effort to peel the fabric from the substrate, the fibers will break before the backing will peel from the substrate.

5,061,540

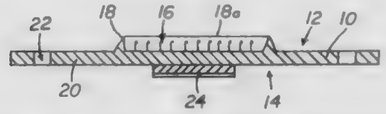
SEPARABLE FASTENERS FOR ATTACHMENT TO OTHER OBJECTS

Humphrey Cripps, Northampton, United Kingdom; Gerald F. Rocha, Bedford, N.H.; Andrew Morse, and William J. Kennedy, both of Manchester, N.H., assignors to Velcro Industries B.V., Amsterdam, Netherlands

Filed Jan. 25, 1990, Ser. No. 470,128
Int. Cl.[5] A44B *21/00*
U.S. Cl. 428—100 **11 Claims**

1. In a strip of unitary extruded fastener material adapted for

securing to the surface of a foam bun during molding, wherein the fastener strip carries on a first surface an area of outwardly extending integral elements constituting hooks for a touch fastening system, and wherein said first surface is arranged to be positioned so that it faces into a trough in a mold wall, the improvement wherein the strip of material carries on said first



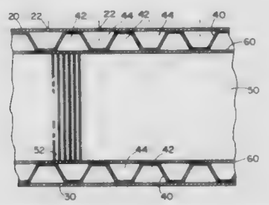
surface a pair of integral elongated flexible sealing lips adjacent the edges of said area, magnetizable means secured to a second surface of the strip, the fastener strip having integral portions extending laterally beyond the sealing lips and beyond the edges of the trough in the mold wall, and transverse sealing means extending across the strip at predetermined locations.

5,061,541

HONEYCOMB TABLES

Maurice Gertel, Roslindale, Mass., assignor to Kinetic Systems, Inc., Roslindale, Mass.

Filed Dec. 27, 1989, Ser. No. 457,581
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—116 **9 Claims**



1. A honeycomb table having at least a width dimension comprising

a top facing sheet that may be perforated with openings having a top surface for supporting components and a bottom surface;

a bottom facing sheet parallel to said top facing sheet;

at least a first layer of rigid corrugated material comprised of valleys and crests with each valley and crest having a longitudinal axis to define continuous parallel channels extending for at least a distance corresponding substantially to the width of said table beneath said top facing sheet;

at least a first layer of honeycomb core having cells of equal length extending between continuous flat top and bottom surfaces with each cell having a longitudinal axis and between said first layer of rigid corrugated material and said bottom facing sheet;

said first layer of rigid corrugated material being secured to said bottom surface and between said top facing sheet and each layer of honeycomb core

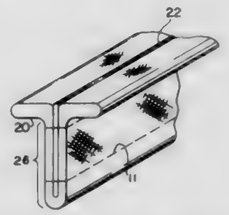
wherein the longitudinal axes of said crests and said valleys of said rigid corrugated material are aligned generally parallel to said top and said bottom facing sheets, and the longitudinal axes of the cells of said honeycomb core are aligned perpendicular to said top and said bottom facing sheets.

5,061,542

STABILIZING FOAM INSERTS FOR RESIN TRANSFER MOLDING

Michael W. Brace, San Diego, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 28, 1989, Ser. No. 399,678
Int. Cl.[5] B29C *43/18, 45/02*
U.S. Cl. 428—121 **12 Claims**



1. A preform assembly for use with a resin transfer molding apparatus which comprises:

(a) a dry fabric preform; and

(b) a thin high density foam insert;

(c) said preform folded about said insert and said preform firmly fastened to said insert to form a preform assembly having a stiffened and stabilized preform edge;

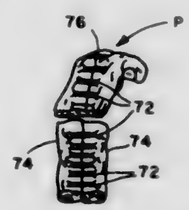
wherein said edge aids in the insertion of said preform assembly into a mold cavity of said resin transfer mold apparatus.

5,061,543

NARROW WIDTH CUSHIONING PAD PRODUCT FOR PACKAGING SMALL PARTS OR PROTECTIVE EDGES OF PRODUCTS TO BE PACKAGED

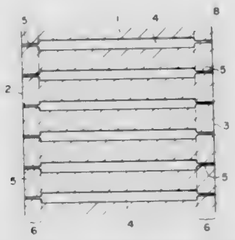
Bruno H. Baldacci, Novelty, Ohio, assignor to Ranpak Corp., Concord Township, Concord County, Ohio

Division of Ser. No. 140,734, Jan. 4, 1988, Pat. No. 4,884,999. This application Sep. 26, 1989, Ser. No. 412,784
Int. Cl.[5] B32B *3/04;* B31F *1/10*
U.S. Cl. 428—126 **4 Claims**



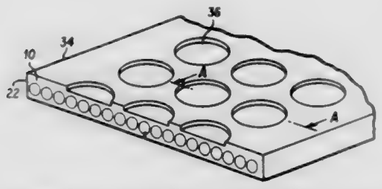
1. A resilient narrow width cushioning product comprising a deformable pad article for packaging of small parts or protecting edges of products to be packaged which is machine formed from sheet material, such as for instance paper, the lateral edges of which have initially been rolled inwardly toward one another into generally abutting relationship, said article including means comprising transversely extending coined portions of said article spaced relative to one another lengthwise of said article, and connecting non-coined lateral rolled edge portions of said article together, said coined portions extending transversely of said article toward opposite sides of the lengthwise axis of said article, for a major portion of the transverse dimension of said article, but terminating adjacent said lateral non-coined edge portions, said article possessing a density of approximately one pound per cubic foot, and being between approximately three and one-half inches to approximately four inches in width and having a thickness of approximately one to one and one-fourth inches at said non-coined edge portions and a lesser thickness at said coined portions.

5,061,544
POROUS ALUMINUM OXIDE FILM AND METHOD OF FORMING OF THE SAME
Kazuhiro Wada, Kyoto; Nobuyoshi Baba, Kawasaki; Sachiko Ono, and Takako Yoshino, both of Tokyo, all of Japan, assignors to Kyoto University, Kyoto, Japan
Filed Sep. 26, 1989, Ser. No. 412,732
Claims priority, application Japan, Mar. 31, 1989, 1-82141
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—131 14 Claims



1. A porous aluminum oxide film having a plurality of pores passing through the film, characterized in that:
each pore has a pair of smaller diameter pores and a larger diameter pore,
the larger diameter pore is disposed in a central portion with respect to the thickness of the film,
the smaller diameter pores are extended from both faces of the film to the larger diameter pore to communicate with the larger diameter pore.

5,061,545
FIBER/POLYMER COMPOSITE WITH NONUNIFORMLY DISTRIBUTED POLYMER MATRIX
Hsin L. Li, Parsippany; Gary A. Harpell, and Dusan C. Prevorsek, both of Morristown, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Nov. 28, 1988, Ser. No. 276,520
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 17 Claims

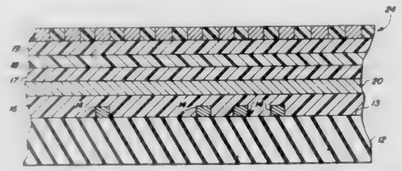


1. A composite comprising at least one fibrous web comprising a network of unidirectional fibers; and a matrix composition nonuniformly distributed in the major plane of the fibrous web.

5,061,546
THERMO-ADHESIVE TEXTILE MATERIAL COMPRISING A CHEMICALLY BLOCKED CROSS LINKING AGENT
Pierre Groshens, Peronne, and Christian Paire, Roisel, both of France, assignors to Lainiere de Picardie, Societe Anonyme, Peronne, France
Continuation of Ser. No. 294,187, Jan. 6, 1989, abandoned. This application Jul. 6, 1990, Ser. No. 549,645
Claims priority, application France, Jan. 8, 1988, 88 00142
Int. Cl.[5] A41D *27/00, 27/06;* B32B *3/10, 7/14*
U.S. Cl. 428—196 16 Claims

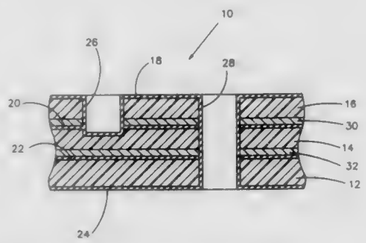
1. An elevated temperature textile fabric bonding process-usable thermo-adhesive product, comprising a backing fabric with an adhesive layer deposited as dots on its surface, said adhesive layer comprising a thermo-plastic polymer and a cross-linking agent, said cross-linking agent being chemically blocked at ambient temperatures but activatable to the polymer-reactive state at the elevated temperature conditions of the textile fabric bonding process.

5,061,547
STRUCTURE OF CONDUCTIVE LAYERS IN MULTILAYER SUBSTRATES FOR MINIMIZING BLISTERS AND DELAMINATIONS
Boris Plesinger, 8442 E. Hackamore Dr., Scottsdale, Ariz. 85255; Lynn H. Brown, 6702 N. 14th Pl., Phoenix, Ariz. 85020, and Edward D. Pisacich, 2202 W. Joan D'Arc Ave., Phoenix, Ariz. 85029
Filed Mar. 28, 1986, Ser. No. 845,724
Int. Cl.[5] B32B *3/26, 31/00*
U.S. Cl. 428—209 3 Claims



1. In a multilayer ceramic substrate for providing predetermined electrical connections to and between a plurality of integrated circuit chips mounted on said substrate, said substrate including a plurality of electrical insulating layers made of a fired dielectric material and a plurality of electrical conductive layers made of a fired metallic material, areas of the fired metallic material of a given conductive layer having different sizes, the improvements comprising:
an area of larger size of the fired metallic material of a given conductive layer being formed as a grid of intersecting lines of the fired metallic material, there being spaces defined between the intersecting lines of the fired metallic material of said area; and
fired dielectric material of an electrically insulating layer filling said spaces.

5,061,548
CERAMIC FILLED FLUOROPOLYMERIC COMPOSITE MATERIAL
David J. Arthur, Norwood, Mass., and Allen F. Horn, III, Danielson, Conn., assignors to Rogers Corporation, Rogers, Conn.
Continuation-in-part of Ser. No. 15,191, Feb. 17, 1987, Pat. No. 4,849,284. This application Jun. 16, 1989, Ser. No. 367,241
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 20 Claims



1. An electrical substrate material comprising:
fluoropolymeric material;

ceramic filler material, said filler material being in an amount of at least about 45 to less than 50 volume percent of the total substrate material; and
said ceramic filler being coated by a silane coating.

5,061,549
SUBSTRATE ATTACH ADHESIVE FILM, APPLICATION METHOD AND DEVICES INCORPORATION THE SAME
A. Andrew Shores, 212 Carroll Canal, Venice, Calif. 90291
Filed Mar. 20, 1990, Ser. No. 495,944
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—207 22 Claims

1. A heat activated adhesive film, 2–15 mil thick, for bonding a circuit-printed substrate to its support, said film comprising:
55–100 percent by volume of a thermoplastic organic high polymer containing the elements carbon and hydrogen, and one or more of the elements oxygen, nitrogen, sulfur, halogen in its repeating unit, and having Vicat softening temperature of 70°–280° C., and
0–45 percent, by volume, of an inorganic particulate matter with thermal conductivity in excess of 10 W/m-° C. and average particle size of 0.5–20 micrometer.

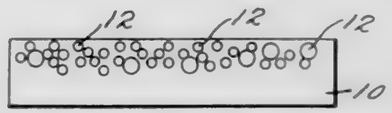
5,061,550
MULTILAYER MATERIAL HAVING A RESISTANCE LAYER FORMED ON AN ELECTRICALLY CONDUCTIVE LAYER AND A MULTILAYER BOARD FOR A PRINTED CIRCUIT BOARD WHICH HAS A RESISTANCE LAYER
Kazunao Shimizu; Masahiro Mikamo, and Takeshi Yamagishi, all of Shimodate, Japan, assignors to Nippon Denkai, Co. Ltd., Tokyo, Japan
Filed Jan. 18, 1990, Ser. No. 466,983
Claims priority, application Japan, Oct. 2, 1989, 1-255134
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 10 Claims

1. An article of manufacture in the form of a multilayer material for a printed circuit board which comprises
(a) a conductive layer consisting of an electrically highly conductive material,
(b) a resistance layer formed on the conductive layer, the resistance layer consisting of an electrical resistance metal-containing material,
(c) a chromate treatment layer formed on the resistance layer, the chromate treatment layer being formed on the resistance layer by subjecting the surface of the resistance layer to a chromate treatment and containing chromium in an amount of 5 to 120 μg per 1 dm^2 of the chromate treatment layer,
(d) a silane coupling agent layer formed on the chromate treatment layer, the silane coupling agent layer being formed by applying a solution of a silane coupling agent to the surface of the chromate layer followed by drying, the concentration of the silane coupling agent in the solution to be applied being 0.001 to 5% by weight and the silane coupling agent being at least one of the compounds represented by the following general formula:

$$YRSiX_3$$

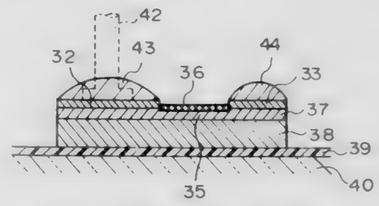
wherein
Y is a functional group which has a reactivity toward a polymer,
R is a combining group linking the group Y with the silane atom and containing an acyclic or cyclic hydrocarbon group, and
X is an organic or inorganic hydrolyzable group bound to the silane atom.

5,061,551
PRINTED CIRCUIT BOARD
David Durand, Providence, R.I., assignor to Key-Tech, Inc., Cranston, R.I.
Division of Ser. No. 365,712, Jun. 14, 1989, Pat. No. 4,960,614, which is a continuation-in-part of Ser. No. 11,975, Feb. 6, 1987, Pat. No. 4,863,757. This application Jan. 30, 1990, Ser. No. 472,194
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 3 Claims



1. A printed circuit board comprising a non-conductive substrate and at least one conductive line printed on said substrate, said line comprising a U.V. cured ink comprising a cycloaliphatic epoxy resin containing 25–67 volume percent of silver-coated magnetite particles, said line having been subjected to a magnetic field sufficient to move the magnetite particles to a position at or near the upper level of said line so as to increase the conductivity of said line to the desired level and cured by exposure to U.V. radiation in the presence of a cationic photoinitiator.

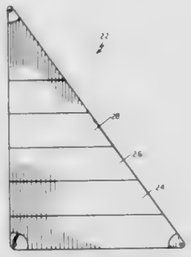
5,061,552
MULTI-LAYER CERAMIC SUBSTRATE ASSEMBLY AND A PROCESS FOR MANUFACTURING SAME
Kazuaki Satou, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 24, 1990, Ser. No. 469,788
Claims priority, application Japan, Jan. 24, 1989, 1-013211
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 18 Claims



1. A multi-layer ceramic substrate assembly comprising:
a multi-layer ceramic substrate including a via-conductor and having a surface;
a first soldering pad on the surface of said substrate, said first soldering pad having an outermost surface of a metal wettable with a solder;
a second soldering pad on the surface of said substrate remote from said first soldering pad, said second soldering pad having an outermost surface of a metal wettable with a solder;
a connecting pattern on the surface of said substrate, said connecting pattern electrically connecting said first and second soldering pads, said connecting pattern having an outermost surface; and
a solder dam on a portion of the outermost surface of said connecting pattern, said solder dam being made of a material not wettable with a solder.

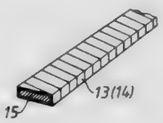
VOL 1131 ISS 5 OC 29 1991 UMI

5,061,553
COEXTRUDED SAIL
Kenneth F. Olsen, Jr., Box 2026, Dennis, Mass. 02638
Continuation of Ser. No. 155,356, Feb. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 75,584, Jul. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 18,412, Feb. 25, 1987, abandoned. This application Mar. 10, 1989, Ser. No. 321,895
Int. Cl.[5] B32B 27/36; B29C 47/00; B63B 35/00
U.S. Cl. 428—215 22 Claims



1. A sail for use with wind-powered devices, which sail comprises a unitary, composite formed of a plurality of sheets, generally triangular, planar sail material, the sail material having a plurality of coextruded polymer layers secured together, one of said extruded polymer layers comprising a polyamide polymer to impart impact-resistant properties to the sail and another of said polymer layers selected from the group consisting of: a polycarbonate polymer; a liquid crystal polymer; and a polycarbonate-containing polymer layer to impart strength and rigidity to the sail.

5,061,554
ELECTRICAL INSULATING MATERIAL COMPRISING AN INSULATING LAYER IN THE FORM OF AN ORGANIC POLYMER
Arne Hjortsberg; Göran Holmström; Lennart Johansson, all of Västerås, and Thommy Karlsson, Bävlinge, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden
Filed Mar. 21, 1988, Ser. No. 171,440
Claims priority, application Sweden, Mar. 24, 1987, 8701213
The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.
Int. Cl.[5] B32B 27/08, 27/18; H01B 7/28
U.S. Cl. 428—220 26 Claims



1. A flexible tape-formed or sheet-formed electrical insulating material comprising an insulating layer in the form of a homogeneous film of an organic polymer or in the form of a felt or a paper of fibres of an organic polymer, said insulating layer having a thickness of 10 to 500 microns, and a protective layer on at least one side of the insulating layer for protecting the insulating layer against degradation caused by corona, said protective layer comprising an organic polymer containing at least 10 percent by volume of a powdered filler in the form of chromium oxide (Cr_2O_3), iron oxide (Fe_2O_3) or a mixture of chromium oxide (Cr_2O_3) and iron oxide (Fe_2O_3).

5,061,555
WATER-ACTIVATED ORTHOPEDIC CAST COMPOSITION HAVING COLORANT
Martin Edenbaum, Princeton Junction, N.J.; Kurt C. Frisch, Grosse Ile, Mich.; Aisa Sendijarevic, Troy, Mich., and Shaiowen Wong, Claire Shores, Mich., assignors to Carapace, Inc., Tulsa, Okla.
Continuation-in-part of Ser. No. 452,217, Dec. 18, 1989. This application Jun. 19, 1990, Ser. No. 540,531
Int. Cl.[5] A61L 15/14; A61F 5/04, 13/04; B32B 17/04
U.S. Cl. 428—253 24 Claims

1. A colored orthopedic cast-forming composition for immobilizing a patient's body or portions thereof, said composition comprising:
a water-curable prepolymer resin formed by the reaction of one reactant with another reactant wherein said latter reactant was one to which a colorant had been intermixed prior to conducting said reaction, said colorant being one which is patient non-reactive and does not interfere with the shelf life and strength or rapid-hardening characteristics of the cast forming composition; and
an effective detackifying quantity of one or more hydrophilic bisurethanes.
22. The composition of claim 1 wherein said composition is coated on a flexible fabric.

5,061,556
SHAPED ARTICLES
Bernhard Dotzauer, Maxdorf; Wilhelm F. Beckerle, Bobenheim-Roxheim; Hans-Juergen Denu, Deidensheim; Kurt Wendel, and Manfred Schwartz, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Feb. 22, 1990, Ser. No. 482,986
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1989, 3907013
Int. Cl.[5] B32B 27/00; C08K 7/12; C04B 25/04
U.S. Cl. 428—290 1 Claim

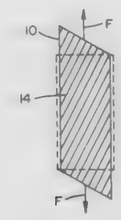
1. A shaped article obtained by impregnating or coating a preform comprised of mineral fibers, non-fibrous mineral fillers and starch with a composition containing a binder comprised of a copolymer of
a) 60–95% by weight of methyl methacrylate,
b) 5–40% by weight of acrylic or methacrylic acid,
c) 0–35% by weight of one or more acrylic esters of a C_1–C_8-alkanol,
d) 0–5% by weight of a copolymerizable olefinically polyunsaturated monomer, and
e) 0–5% by weight of another copolymerizable monomer selected from the group consisting of acrylonitrile, methacrylonitrile, vinyl esters of alkanoic acids of 2 to 6 carbon atoms and aromatic vinyl compounds, with the proviso that

$$\frac{1}{\frac{x^1}{Tg^1}+\frac{x^2}{Tg^2}+\frac{x^3}{Tg^3}+\frac{x^4}{Tg^4}} - 333^\circ\,K \quad 398^\circ\,K.$$

Tg^1= the glass transition temperature in °K of a polymer solely composed of said methyl methacrylate,
Tg^2= the glass transition temperature in °K of a polymer solely composed of said acrylic or methacrylic acid,
Tg^3= the glass transition temperature in °K of a polymer solely composed of said one or more acrylic esters of C_1–C_8-alkanol,
Tg^4= the glass transition temperature in °K of a polymer solely composed of said another copolymerizable monomer,
$x^1=w^1/(w^1+w^2+w^3+w^4)$,
$x^2=w^2/(w^1+w^2+w^3+w^4)$,
$x^3=w^3/(w^1+w^2+w^3+w^4)$,
$x^4=w^4/(w^1+w^2+w^3+w^4)$,

w^1= the weight of said methyl methacrylate in said copolymer,
w^2= the weight of said acrylic or methacrylic acid in said copolymer,
w^3= the weight of said one or more acrylic esters of a C_1–C_8-alkanol in said copolymer, and
w^4= the weight of said another copolymerizable monomer in said copolymer.

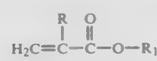
5,061,557
REINFORCED COMPOSITE STRUCTURE
Kenneth M. Kot, and Byung-Lip Lee, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 133,169, Dec. 11, 1987, which is a continuation of Ser. No. 836,934, Mar. 6, 1986, abandoned. This application Jun. 6, 1989, Ser. No. 362,626
Int. Cl.[5] B32B 5/12
U.S. Cl. 428—295 17 Claims



1. A reinforced ply of elastomer having a cord of two twisted filaments each filament of less than 0.34 millimeters diameter made from steel with a carbon content by weight of 0.7 to 0.90 percent, said ply having at least 8.66 cords per centimeter spaced in a direction lateral to the direction of reinforcement of the ply.

5,061,558
METHACRYLATE PROTECTIVE COATING CONTAINING A UV-ABSORBER FOR POLYCARBONATE
Jens-Dieter Fischer, Darmstadt; Manfred Munzer, Bensheim; Ursula Golchert, and Felix Schinzel, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany
Filed Nov. 6, 1989, Ser. No. 432,383
Claims priority, application Fed. Rep. of Germany, May 11, 1988, 3837589
Int. Cl.[5] B32B 27/08, 27/30, 27/18
U.S. Cl. 428—332 15 Claims

1. A multilayered object comprising:
a core aromatic polycarbonate layer comprising more than 50 wt. % of an aromatic polycarbonate and a thermoplastic polymethacrylate film containing a UV absorber in contact with said core layer, wherein said film comprises
(A) 0.01–50 wt. % of a UV absorber having a molecular weight $M_W \leqq 5{,}000$, and
(B) 99.99–50 wt. % of a methacrylate copolymer comprising
(b1) 99.9–5 wt. % methacrylate monomer units and 0–40 wt. % monomer units of an α,β-unsaturated copolymerizable monomer, and
(b2.1) 0.1–95 wt. % acrylic and or methacrylic ester monomer units from monomers of the formula I:



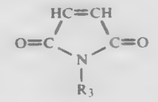
(I)

wherein R is hydrogen or methyl, and R_1 is Y or A-Y, wherein Y is a $C_{5\text{-}12}$ cycloalkyl group or a cycloalkyl group having 5–12 carbon atoms substituted with one or more alkyl groups, a $C_{6\text{-}12}$ aryl or a $C_{6\text{-}12}$ alkyl-substituted or oxyalkyl-substituted aryl group, and wherein A is a $C_{1\text{-}6}$ straight chain or branched alkylene group or a $C_{2\text{-}4}$ oxyalkylene group, or
(b2.2) 0.1–95 wt. % of monosubstituted (methy)acrylamide monomer units from monomers of the formula II:



(II)

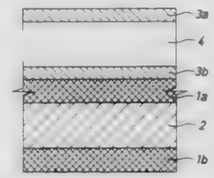
wherein R is hydrogen or methyl and R_2 is a $C_{5\text{-}12}$ unsubstituted or substituted cycloalkyl or aryl group, or
(b2.3) 0.1–95% wt. % of maleimide units from monomers of the formula III:



(III)

wherein R_3 is an unsubstituted cycloalkyl group or a cycloalkyl group substituted with one or more $C_{1\text{-}6}$ alkyl groups or substituted with a phenyl group,
or mixtures of any of b2.1, b2.2 and b2.3, and
wherein R_1, R_2 and R_3 have no substantial absorption for visible light down to ultraviolet radiation of 340 nm wavelength and wherein a mixture of said aromatic polycarbonate and copolymer (B) are compatible at all mixing ratios.

5,061,559
PRESSURE-SENSITIVE ADHESIVE STRUCTURE
Yhoshimi Ogusi, Oomiya, and Norio Matsuki, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Jul. 26, 1989, Ser. No. 385,106
Claims priority, application Japan, Jul. 27, 1988, 63-187258
Int. Cl.[5] B32B 7/12, 27/08
U.S. Cl. 428—343 5 Claims



1. A pressure-sensitive adhesive structure, comprising a substrate comprising a polyvinylidene fluoride resin, a fluorine-containing silicone release agent layer, wherein the silicone release agent is a copolymer formed from fluoroalkyl vinyl monomer and a silicone vinyl monomer in a weight ratio ranging from 50/50 to 98/2, and a pressure-sensitive silicone adhesive layer; at least one surface of said polyvinylidene fluoride resin substrate being previously subjected to a low-temperature plasma treatment.
2. The pressure-sensitive adhesive structure according to claim 1, wherein said substrate layer is held between said release agent layer and pressure-sensitive adhesive layer.

5,061,560

SPHERICAL GRAINS OF RARE EARTH OXIDES AND A MANUFACTURING METHOD THEREFOR

Shigenobu Tajima, Kiyose; Masatoshi Ishii, Fukui, and Yuji Kimura, Takefu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1990, Ser. No. 539,064
Claims priority, application Japan, Jun. 16, 1989, 1-153728
Int. Cl.[5] B32B *19/00*
U.S. Cl. 428—357 **9 Claims**

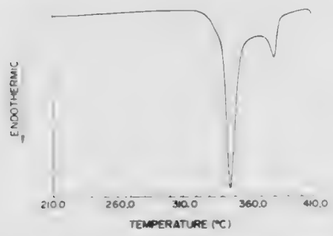
1. Rare earth oxide voidless spherical grains containing about 0.01–1.00 weight part per 100 weight parts of rare earth oxidizes of a salt of an organic acid and having a mean grain diameter of from about 20–200 μm prepared by agglomerating a rare earth oxide powder the particles of which have a means diameter of about 1 μm or less.

5,061,561

YARN ARTICLE COMPRISING A TETRAFLUOROETHYLENE POLYMER AND A PROCESS FOR PRODUCING THE SAME

Shigeki Katayama, Yokohama, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1989, Ser. No. 382,500
Claims priority, application Japan, Jul. 25, 1988, 63-183530
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 **3 Claims**



1. A non-porous yarn article comprising a tetrafluoroethylene polymer, which has a bulk density of 2.15 to 2.30, an orientation degree in an axial direction of 0.9 or more and a crystallinity of 85% or more and exhibits peaks at 345°±5° C. and 380°±5° C. in the thermogram of differential scanning calorimetry in the course of temperature elevation at a rate of 10° C./min.

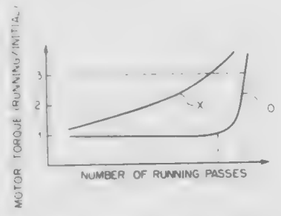
5,061,562

METHOD FOR PREPARING A MAGNETIC RECORDING MEDIUM AND A MAGNETIC DISK USING THE SAME

Fusao Yamanaka; Makoto Nagao; Yasuyuki Yamada, and Kazuhiko Morita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 20, 1988, Ser. No. 246,829
Claims priority, application Japan, Sep. 22, 1987, 62-236083; Sep. 22, 1987, 62-238005
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—408 **20 Claims**

1. A method for preparing a magnetic recording medium which comprises the steps:
(a) providing on a non-magnetic support, a thin magnetic metal film,
(b) providing on the thin magnetic film, a protective layer comprised substantially of carbon,
(c) washing the surface of the protective layer at least once, each washing performed with one substance selected from the group consisting of an alkali detergent, a neutral detergent and an organic solvent, and



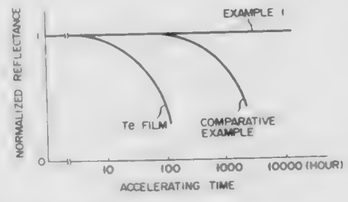
(d) providing on the surface of the protective layer, a lubricating layer containing at least one organic lubricating agent.

5,061,563

INFORMATION STORAGE MEDIUM COMPRISING A RECORDING FILM CONTAINING TELLURIUM CHEMICALLY BONDED TO AN ORGANIC CARBON

Hideki Ohkawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1989, Ser. No. 331,547
Claims priority, application Japan, Mar. 31, 1988, 63-76603
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—408 **7 Claims**



1. An information storage medium comprising:
a substrate; and
a recording film, supported on said substrate, comprising tellurium or tellurium alloy, carbon, and hydrogen, said recording film comprising tellurium chemically bonded to an organic carbon having a carbon-hydrogen bond and absorbing far-infrared rays in a wavelength range of 25 to 100 μm.

5,061,564

MAGNETIC RECORDING MEDIUM COMPRISING A POLAR GROUP CONTAINING RESIN OR COMPOUND AND A METHYL ISO ESTER LUBRICANT PREPARED FROM A METHYL ISO ACID OR METHYL ISO ALCOHOL OR BOTH

Takao Ohya; Jun Nakagawa; Satoru Hayakawa; Yasuo Nishikawa; Tsutomu Okita, and Hiroshi Hashimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 21, 1989, Ser. No. 382,934
Claims priority, application Japan, Jul. 25, 1988, 63-185210; Sep. 1, 1988, 63-219196
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—409 **6 Claims**

1. A magnetic recording medium comprising a non-magnetic support having provided thereon a magnetic layer mainly composed of a ferromagnetic powder and a binder resin comprising (i) a polymer having at least one polar group selected from $-SO_3M^1$, $-OSO_3M^1$, $-COOM^1$,

$$-P(OM^2)_2, \text{ and } -OP(OM^2)_2$$
$$\| \qquad\qquad \|$$
$$O \qquad\qquad O$$

wherein M^1 represents a hydrogen atom, Li, Na, or NR_4 (wherein R represents a hydrogen atom, an alkyl group, an alkenyl group, or an alkanol group), and M^2 represents a hydrogen atom, Li, Na, an alkyl group, or NR^4 (wherein R has the same significance as defined above); or (ii) a compound having at least one polar group selected from $-SO_3M^3$, $-COOM^3$, and $-PO_3(M^3)_2$ (wherein M^3 represents a hydrogen atom, an alkali metal, or an ammonium group) and containing at least one carbon-carbon unsaturated bond in the molecule, said magnetic layer containing at least one ester compound represented by following formula (I), (II), or (III), and when the binder resin comprises the compound (ii), the magnetic layer is irradiated by radiations:

$$R^1-\overset{\overset{O}{\|}}{C}-O-(CH_2)_l\overset{\overset{CH_3}{|}}{CH}-(CH_2)_kCH_3 \quad (I)$$

$$R^1-O-\overset{\overset{O}{\|}}{C}-(CH_2)_n\overset{\overset{CH_3}{|}}{CH}-(CH_2)_mCH_3 \quad (II)$$

$$CH_3(CH_2)_m\overset{\overset{CH_3}{|}}{CH}(CH_2)_nCO(CH_2)_l-\overset{\overset{CH_3}{|}}{CH}-(CH_2)_kCH_3 \quad (III)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad O$$

wherein R^1 represents a straight chain or branched alkyl group having from 7 to 29 carbon atoms or a straight chain or branched alkenyl group having from 7 to 29 carbon atoms; l, k, m, and n represents an integer; and n each is at least 2, and the sum of n and m and the sum of k and l are from 7 to 33.

5,061,565

FILM FOR HEAT-SENSITIVE MIMEOGRAPH STENCIL

Seizo Aoki, Shiga; Kenji Tsunashima, Kyoto; Toshiya Yoshii, Ootsu; Yasuji Nakahara, Ootsu; Takashi Sumiya, Ootsu, and Takashi Mimura, Ootsu, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP87/00653, § 371 Date Jan. 11, 1990, § 102(e) Date Jan. 11, 1990, PCT Pub. No. WO88/06975, PCT Pub. Date Sep. 22, 1988
PCT Filed Sep. 2, 1987, Ser. No. 329,895
Claims priority, application Japan, Mar. 18, 1987, 62-61336
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—409 **13 Claims**

1. A film for a heat-sensitive mimeograph stencil comprising a polyester-based biaxially stretched film which has an energy of crystal fusion ΔHu of 3–11 cal/g and has a difference ΔTm between the crystal fusion-terminating temperature and the crystal fusion-starting temperature of 50° C. to 100° c.

5,061,566

CORROSION INHIBITING EMI/RFI SHIELDING COATING AND METHOD OF ITS USE

Noredin H. Morgan, Billerica, Mass., assignor to Chomerics, Inc., Woburn, Mass.

Filed Dec. 28, 1989, Ser. No. 457,983
Int. Cl.[5] B32B *27/40*
U.S. Cl. 428—423.1 **35 Claims**

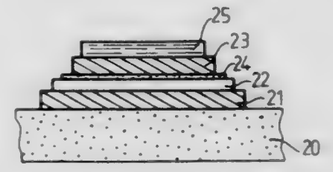
1. A non-foamed corrosion inhibiting conductive coating comprising:
a) a fluorinated polyurethane resin comprising:
i) a first polymer selected from the group consisting of isocyanates and isocyanate terminated prepolymers; and
ii) a fluorinated second polymer selected from the group consisting of polymers having an amine functionality, polymers having a hydroxyl functionality, polymers having both amine and hydroxyl functionalities, and mixtures thereof;
b) a stabilized conductive filler; and
c) an azole.

5,061,567

COATED GLASS SUBSTRATES AND METHOD OF MAKING SAME

Jean-Pierre Brochot, Paris; Philippe Sohier, Liancourt, both of France, and Bruno Ceccaroli, Svelgen, Norway, assignors to Saint-Gobain Vitrage, Courbevoir, France

Continuation of Ser. No. 943,336, Dec. 17, 1986, abandoned. This application Apr. 26, 1990, Ser. No. 515,539
Claims priority, application France, Dec. 17, 1985, 85 18673
Int. Cl.[5] C32B *9/00*
U.S. Cl. 428—428 **34 Claims**



1. A coated glass object, consisting essentially of:
a coating provided directly upon a portion of said substrate including one or more metal or metal oxide layers to provide a predetermined level of optical performance thereof; and
a plasma deposited organosilicon film provided directly upon said coating as an outer layer having a thickness of between about 40–200 nanometers and a sufficient refractive index so as to not absorb energy within the visible spectrum to improve the optical properties of the coated object without adversely affecting the properties of the coating, thickness permitting further heat treatment of the coated object wherein said plasma is produced with an electrical generator operating at a frequency of between about 10–100 KHz.

14. A coated glass object, comprising:
a glass substrate;
a plasma deposited organosilicon film bonded directly to at least a portion of said glass substrate;
a first layer of a dielectric metal oxide composition deposited upon said organosilicon film;
a layer of a metal deposited upon said first layer of dielectric metal oxide composition;
a second layer of a dielectric metal oxide composition deposited upon said metal layer; and
a plasma deposited organosilicon film upon said second dielectric metal oxide layer as an outer layer having a sufficient thickness and a sufficient refractive index so as not to absorb energy within the visible spectrum,
wherein said plasma is produced with an electrical generator operating at a frequency of between about 10–100 KHz such that each of said organosilicon films has a thickness of between about 40–200 nanometers.

23. A coated glass object, comprising:
a glass substrate;
a plasma deposited organosilicon film bonded directly to at least a portion of said glass substrate;
a layer of a metal directly upon said first organosilicon film, and
a plasma deposited organosilicon film directly upon said metal layer as an outer layer having a sufficient thickness and a sufficient refractive index so as not to absorb energy within the visible spectrum
wherein said plasma is produced with an electrical generator operating at a frequency of between about 10–100 KHz

such that each of said organosilicon films has a thickness of between about 40–200 nanometers.

29. A coated glass object, comprising:
a glass substrate;
a first layer of a dielectric metal oxide composition directly deposited upon at least a portion of said glass substrate;
a layer of a precious metal deposited upon said dielectric composition;
a metal layer deposited upon said precious metal layer to prevent oxidation of said precious metal layer during the application of a second dielectric metal oxide composition thereupon;
a second layer of a dielectric metal oxide composition deposited upon said metal layer; and
a plasma deposited organosilicon film upon said second dielectric metal oxide layer as an outer layer having a thickness of between about 40–200 nanometers and a sufficient refractive index so as not to absorb energy within the visible spectrum,
wherein said plasma is produced with an electrical generator operating at a frequency of between about 10–100 KHz.

34. A coated glass object comprising:
a glass substrate;
a plasma deposited organosilicon film bonded to at least a portion of said glass substrate to prevent the migration of alkaline ions out of said glass substrate and into one or more layers deposited thereupon;
a layer of tin oxide deposited upon said organosilicon film;
a layer of silver deposited upon said tin oxide layer;
a layer of a metal selected from the group consisting of aluminum, titanium, tantalum, chromium, manganese, zirconium and copper deposited upon said silver layer to prevent the oxidation of said silver layer during the deposition of one or more additional layers thereupon;
a layer of tin oxide deposited upon said metal layer; and
a plasma deposited organosilicon film upon said second tin oxide layer as an outer layer having a sufficient thickness and a sufficient refractive index so as not to absorb energy within the visible spectrum
wherein said plasma is produced with an electrical generator operating at a frequency of between about 10–100 KHz such that each of said organosilicon films has a thickness of between about 40–200 nanometers.

5,061,568

SOLAR SCREENING ASSEMBLY

Stephen L. Kessel, Loveland, Ohio, and George E. Mont, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1989, Ser. No. 453,556
Int. Cl.[5] B32B *17/10*
U.S. Cl. 428—437 **15 Claims**

1. In a solar screening assembly which includes a plasticized polyvinyl butyral layer and a metal/dielectric stack comprising one or more lightreflecting metal layers and two or more anti-reflective layers, a cap layer of Ta_2O_5 or SiOx where $x \leqq 2$ in face-adhering contact with the plasticized polyvinyl butyral layer, said assembly when laminated with glass exhibiting pummel adhesion of at least 3 after at least 1000 hours exposure to UV radiation in a Fadeometer or Weatherometer.

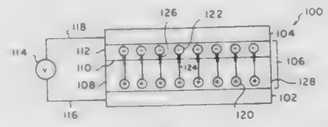
5,061,569

ELECTROLUMINESCENT DEVICE WITH ORGANIC ELECTROLUMINESCENT MEDIUM

Steven A. VanSlyke; Ching W. Tang, both of Rochester, N.Y.; Michael E. O'Brien, Madison, Wis., and Chin H. Chen, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1990, Ser. No. 561,552
Int. Cl.[5] H01J *1/62;* **H05B** *33/14*
U.S. Cl. 428—457 **22 Claims**

1. An internal junction organic electroluminescent device comprising in sequence, an anode, an organic hole injecting and transporting zone comprised of a layer containing a hole transporting aromatic tertiary amine, an organic electron injecting and transporting zone, and a cathode, characterized in that



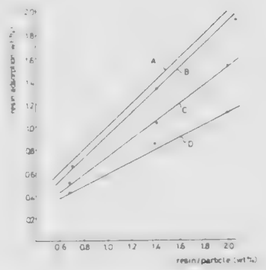
said hole transporting aromatic tertiary amine is comprised of at least two tertiary amine moieties and includes attached to a tertiary amine nitrogen atom an aromatic moiety containing at least two fused aromatic rings.

5,061,570

MAGNETIC RECORDING MEDIUM COMPRISING MAGNETIC PARTICLES AND A POLYESTER RESIN HAVING AN IMINOSULFONYL GROUP

Akihiro Nishimura, Los Altos, Calif.; Kazuyuki Hayashi, Hiroshima, Japan; Keisuke Iwasaki, Hiroshima, Japan; Yasuyuki Tanaka, Hiroshima, Japan, and Hiroko Itamochi, Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Oct. 9, 1990, Ser. No. 594,159
Claims priority, application Japan, Oct. 13, 1989, 1-267466
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—480 **8 Claims**



1. A magnetic recording medium comprising a substrate, and a magnetic recording layer composed of a coating composition containing a binder resin and magnetic particles, said binder resin being a polyester having an iminosulfonyl group.

5,061,571

BIAXIALLY ORIENTED POLYESTER FILM

Seiji Sakamoto, Machida, Japan, assignor to Diafoil Company, Limited, Tokyo, Japan

Filed Dec. 7, 1990, Ser. No. 623,331
Claims priority, application Japan, Dec. 14, 1989, 1-324749
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—480 **5 Claims**

1. A biaxially oriented polyester film containing 0.01 to 4 wt %, based on the polyester film, of inorganic particles, the volumetric shape parameter being 0.02 to 0.2, the weight-average particle size being 0.05 to 3 μm, and the ratio (Dw/Dn) of the weight-average particle size (Dw) and the number-average particle size (Dn) being not more than 1.1.

5,061,572

THERMOPLASTIC ELASTOMER LAMINATE

Shunichi Hamada; Akira Uchiyama, both of Ichihara, and Katsuo Okamoto, Funabashi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 178,910, Apr. 7, 1988, abandoned. This application Sep. 26, 1989, Ser. No. 412,625
Claims priority, application Japan, Apr. 7, 1987, 62-85541
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—516 **3 Claims**

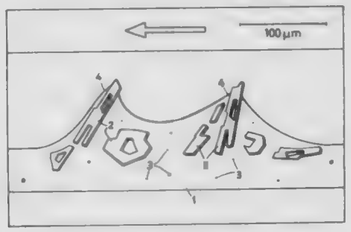
1. A thermoplastic elastomer laminate comprising:
(a) a base fabric,
(b) a polyolefin intermediate layer formed on said fabric comprising a polyolefin, which has graft polymerized portions modified by grafting with at least one monomer selected from unsaturated carboxylic acids and derivatives thereof in an amount of from about 10^{-4} to 4% by weight, and
(c) a thermoplastic elastomer surface layer formed on said intermediate layer, which is composed of a composition comprising:
(A) a polyolefin resin and
(B) an ethylene/alpha-olefin copolymer rubber, in which only said copolymer rubber is, or both said copolymer rubber and at least a part of said polyolefin resin are partially crosslinked.

5,061,573

METHOD OF MAKING A METAL ALLOY STRIP AND A STRIP MADE THEREBY

Hans-Walter Schlapfer, Rickenbach; Bruno Sonderegger, Schottikon, and Werner Straub, Oberstammheim, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 25, 1989, Ser. No. 301,623
Claims priority, application Switzerland, Feb. 1, 1988, 0341/88
Int. Cl.[5] C22C *32/00*
U.S. Cl. 428—614 **5 Claims**



1. A metal alloy strip comprising
a metal matrix; and
hard particles disposed in a surface zone of said metal matrix, said zone having a thickness of 0.01 to 0.5 millimeters, at least 50% of said hard particles having a skeletal crystal shape with a length-to-width ratio of at least 5.

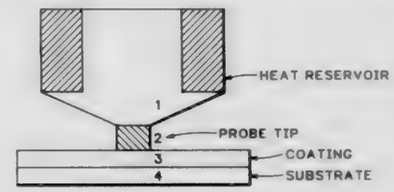
5,061,574

THICK, LOW-STRESS FILMS, AND COATED SUBSTRATES FORMED THEREFROM

Charles H. Henager, Jr., Kennewick, Wash., and Robert W. Knoll, Menomonee Falls, Wis., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Nov. 28, 1989, Ser. No. 443,454
Int. Cl.[5] C22C *14/34;* **B05D** *3/06*
U.S. Cl. 428—620 **19 Claims**

1. A low stress film-coated substrate, which comprises a Si—Al—O—N—containing film material, having a thickness of at least 5 microns up to about 150 microns, and formed by depositing said film material onto an underlying surface of said substrate at a non-elevated temperature of not more than about 500° C., said film exhibiting a relatively low total film stress



and a high level of adherence to said substrate thereby avoiding substantial cracking and debonding of said film and an resultant damage to said substrate.

5,061,575

LUBRICATING RESIN COATED STEEL STRIPS HAVING IMPROVED FORMABILITY AND CORROSION RESISTANCE

Taizo Mohri; Nobuo Totsuka; Shunichi Tsugawa; Takao Kurisu, all of Chiba; Hideaki Sawatari, Kobe, and Tanehiro Inoue, Kurashiki, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed May 31, 1989, Ser. No. 359,221
Claims priority, application Japan, May 31, 1988, 63-133515; May 31, 1988, 63-133516; May 31, 1988, 63-133517
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—623 **10 Claims**

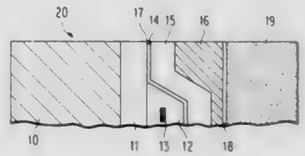
1. A lubricating resin coated steel strip having improved formability, comprising
a steel substrate having zinc, a zinc base alloy or an aluminum base alloy plated on each surface thereof,
a chromate coating on each surface of said substrate, each said chromate coating having a coating weight of up to 200 mg/m^2 as Cr, and
a resin coating on each of the chromate coatings, said resin coatings being formed from a resin composition comprising
(a) 100 parts by weight of a resin having at least one member of the group consisting of a hydroxyl and carboxyl group,
(b) 10 to 80 parts by weight of silica, and
(c) up to 20 parts by weight of a solid lubricant,
said resin composition having a glass transition temperature Tg of at least 70° C., each said resin coatings having a dry coating weight of 0.3 to 3 gram/m^2.

5,061,576

THIN FILM MAGNETIC HEAD

Osamu Shimizu, Kanagawa, and Satoshi Yoshida, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1989, Ser. No. 457,670
Claims priority, application Japan, Dec. 27, 1988, 63-327932
Int. Cl.[5] G11B *5/70*
U.S. Cl. 428—694 **11 Claims**



1. A thin film magnetic head having a running surface directed to a recording medium, and comprising a substrate, a

lower magnetic layer, an insulating layer, and an upper magnetic layer, formed in that order on said substrate, and a protective layer formed on said upper magnetic layer and exposed on the running surface,

wherein the improvement resides in that said protective layer consists essentially of 20 to 95 mole % of at least two of ZrO_2, TiO_2 and SiO_2, and 5 to 80 mole % of at least one of WO_3 and MoO_3.

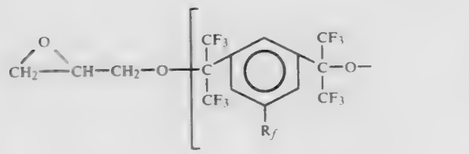
5,061,577

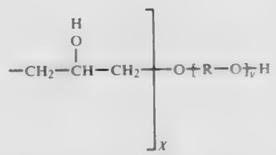
MAGNETIC COATING COMPOSITIONS CONTAINING FLUOROPOLYOLS

Daniel F. Harnish, Morristown; Donald Pickens, Mendham, and Richard J. Brautigam, Westfield, all of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 28, 1988, Ser. No. 277,089
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—694 **15 Claims**

1. A magnetic coating composition comprising a suspension of magnetic pigments in an organic binder, said organic binder comprising from about 0.5 to about 20 weight percent, based on the weight of the total binder system, of a fluoropolyol of the structure:





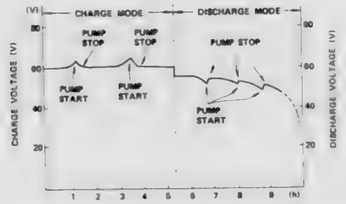
where $X+Y=2$–16, $X\neq 0$ and where $R_f=C_nF_{2n+1}$ for $n=0$–18 and where R is selected from the group consisting of aliphatic radicals, aromatic radicals, cycloaliphatic radicals, and fluorinated radicals, wherein when said magnetic coating composition is dried or cured, the fluoropolyol is concentrated on and chemically bound on the surface of the coating.

5,061,578

ELECTROLYTE CIRCULATION TYPE SECONDARY BATTERY OPERATING METHOD

Ichiro Kozuma, and Toshinobu Fujii, both of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Oct. 24, 1986, Ser. No. 922,706
Claims priority, application Japan, Oct. 31, 1985, 60-242798
Int. Cl.[5] H01M *14/00*
U.S. Cl. 429—3 **7 Claims**



1. A method of operating a secondary battery including a stack of secondary cells operable, in the presence of electrolytes, in a charge mode charging electrical power from a source of electrical power and in a discharge mode discharging the charged electrical power, and electrolyte circulating means electrically operable for circulating the electrolytes through the secondary cells, the method comprising the steps of:

in the charge mode,

providing an approximate indication of electrolyte condition by measuring a voltage across the terminals of the secondary battery;

comparing the measured secondary battery voltage with a first and second predetermined value, the second predetermined value being less than the first predetermined value;

electrically connecting the electrolyte circulating means to the electrical power source to start circulation of the electrolytes through the secondary cells when the secondary battery voltage increases to the first predetermined value;

disconnecting the electrolyte circulating means from the electrical power source to stop the electrolyte circulation when the secondary battery voltage decreases to the second predetermined value; and thereafter

while the secondary battery is operating in the charge mode, continuously repeating the above sequence of steps to intermittently circulate the electrolytes through the secondary cells;

in the discharge mode,

providing an approximate indication of electrolyte condition by measuring a voltage across the terminals of the secondary battery;

comparing the measured secondary battery voltage with a third and fourth predetermined value, the fourth predetermined value being greater than the third predetermined value;

electrically connecting the electrolyte circulating means to the secondary battery to start circulation of the electrolytes through the secondary cells when the secondary battery voltage decreases to the third predetermined value;

disconnecting the electrolyte circulating means from the secondary battery to stop the electrolyte circulation when the secondary battery voltage increases to the fourth predetermined value; and thereafter

while the secondary battery is operating in the discharge mode, continuously repeating the above sequence of steps to intermittently circulate the electrolytes through the secondary cells.

5,061,579

BATTERY RECEPTACLE FOR RADIO CONTROLLABLE MOTOR TOYS

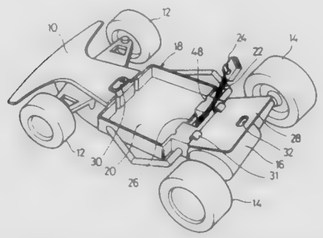
Zenichi Ishimoto, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1990, Ser. No. 501,129
Claims priority, application Japan, Apr. 4, 1989, 1-83914
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—96 **3 Claims**

1. In a battery receptacle for radio controllable motor toys including a battery-receiving chamber which is formed in predetermined configuration on a bottom face of a plastic vehicle body of the radio controllable motor toy, batteries in said battery-receiving chamber being used as a power source for a radio receiver and a drive motor of the radio controllable motor toy; the improvement wherein

said battery-receiving chamber is formed so as to have enough space to receive either of a packaged nickel-cadmium battery unit capable of developing a given combined output voltage and a battery casing capable of receiving a given number of individual batteries;

a cut out portion which is formed on one side wall of the battery receptacle including said battery-receiving chamber so as to receive two connectors and lead wires through which the radio receiver and the drive motor of the radio controllable motor toy are connected to said packaged nickel-cadmium battery unit or the battery casing to be used as the power source therefor; and



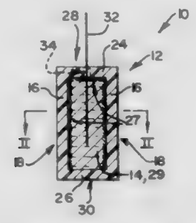
two pairs of grooves formed on inner faces of a pair of opposite side walls of the battery receptacle to receive two pairs of projections formed on outer faces of a pair of opposite side walls of the battery casing, one of said opposite side walls of the battery receptacle having also said cut out portion.

5,061,580

ELECTROCHEMICAL CELL

Roger J. Wedlake, Johannesburg, and Johan Coetzer, Pretoria, both of South Africa, assignors to Lilliwyte Societe Anonyme, Luxembourg

Filed Dec. 1, 1989, Ser. No. 444,539
Claims priority, application United Kingdom, Dec. 2, 1988, 8828230
Int. Cl.[5] H01M *10/39*
U.S. Cl. 429—103 **28 Claims**



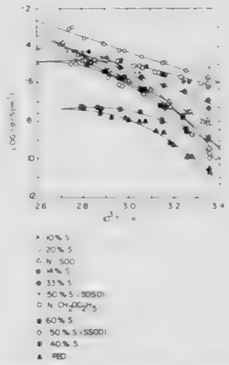
1. An anode for a high temperature rechargeable electrochemical power storage cell, the anode comprising a holder which contains an alkali metal active anode substance which is molten at the operating temperature of the cell for which it is intended, the holder comprising a ceramic envelope having a continuous wall made of a solid electrolyte conductor of ions of the active alkali metal anode substance and the holder having an electronically conductive current collector in contact with the alkali metal and projecting through an opening in the wall of the envelope to the exterior thereof, the interior of the envelope containing a unitary porous solid matrix which is permeable by and impregnated by the molten alkali metal and which is bonded to at least part of the inner surface of the wall of the envelope.

5,061,581

NOVEL SOLID POLYMER ELECTROLYTES

Subhash C. Narang, Redwood City, and Digby D. MacDonald, Fremont, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Feb. 7, 1990, Ser. No. 476,270
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 **14 Claims**



1. An amorphous ionically conductive macromolecular solid having improved ambient temperature ionic conductivity, comprising a solid solution of at least one positively charged ionic species dissolved in a macromolecular material, said macromolecular material comprising a polymer or copolymer having a linear polyether structure and having in the range of about 2% of 75% of the ether oxygen atoms thereof replaced with heteroatomic moieties comprising sulfur atoms.

5,061,582

OPTICAL DATA STORAGE

Jack Brettle; Ian Bennion, and Christopher J. Groves-Kirkby, all of Northampton, England, assignors to Plessey Overseas Limited, Ilford, England

PCT No. PCT/GB88/00469, § 371 Date Apr. 14, 1989, § 102(e) Date Apr. 14, 1989, PCT Pub. No. WO88/10494, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 16, 1988, Ser. No. 348,500
Claims priority, application United Kingdom, Jun. 17, 1987, 8714202
Int. Cl.[5] G11B *7/24;* **G03C** *1/73, 1/825*
U.S. Cl. 430—19 **5 Claims**

1. An optical data storage medium comprising a support and a photosensitive layer, exposure of said layer by a writing light of a first wave length serving to record optical data in an optically readable form therein, the improvement comprising a layer superjacent, relative to exposing light, to said photosensitive layer, said superjacent layer being comprises of a photochromic substance selected from photochromic fulgides, of the kind having first and second stable states, said photochromic substances whilst in its first stable state being responsive to the light of said first wavelength to change its state and to become transparent to light of said first wavelength, and, in its second stable state, being responsive to light of a second wavelength to revert to its first stable state.

5,061,583

COLOR ELECTROPHOTOGRAPHY FOR HIGH QUALITY HALF-TONE IMAGES

Gregory L. Zwadlo; Kevin M. Kidnie, and Mohamed A. Elmasry, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1990, Ser. No. 434,897

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] G03G *13/01, 13/10*

U.S. Cl. 430—45 **11 Claims**

7. An electrophotographic process for producing high quality full color half-tone prints wherein color separation toner images are assembled on a positively charged to produce a first field photoreceptor surface using successive liquid toning steps, comprising

a) selecting two or more liquid toners comprising toner particles dispersed in a non-polar carrier liquid,

b) applying each said liquid toner to said surface at a rate in excess of that required by said development in the presence of a second electric field of at least 5000 volts/cm, said field being normal to the surface and opposed to said first field, whereby said toner particles are deposited imagewise on said surface, all of said liquid toners characterized as having

i) an initial specific solids conductivity of less than 10^{-10}mho/cm,

ii) a ratio of background conductivity to initial conductivity of less than 0.3,

iii) the toner particles having a zeta potential in the range +60 mV to +200 mV, and

iv) a concentration of said toner particles in the liquid toner being in the range 0.1 to 1.0 weight %.

5,061,584

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Kenichi Fujimori, Nakakoma; Yoshitaro Nakayama, Higashiyatsushiro; Hajime Suzuki, Kofu, and Yoshiko Shima, Nakakoma, all of Japan, assignors to Shindengen Electric Manufacturing Co., Ltd, Tokyo and Yamanashi Electronics Co., Ltd., Yamanashi, both of, Japan

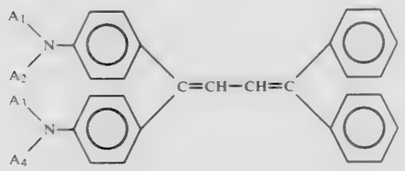
Filed Dec. 15, 1989, Ser. No. 451,244

Claims priority, application Japan, Dec. 26, 1988, 63-328697

Int. Cl.[5] G03G *5/06*

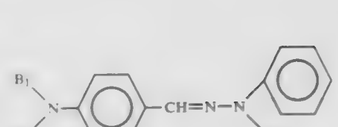
U.S. Cl. 430—59 **4 Claims**

1. An electrophotographic photoreceptor comprising a support having thereon a photosensitive layer, in which said photosensitive layer contains a butadiene compound represented by the formula:



wherein each of A_1–A_4, which may be the same or different, is an alkyl group,

a hydrazone compound represented by the formula:



wherein each of B_1 and B_2, which may be the same or different, is an alkyl group, a phenyl group, a benzyl group or a methoxyphenyl group, R_1 is hydrogen, an alkyl group or O-R in which R is a straight-chain or branched alkyl, alkenyl or alkadienyl group having from 5 to 10 carbon atoms or an aralkyl group having from 7 to 10 carbon atoms, and R_2 is an alkyl group, a phenyl group, a methoxy group, an ethoxy group, a benzyl group, a methoxyphenyl group, a tolyl group or a naphthyl group, and

a monophenol compound selected from the group consisting of 2-tert-butyl-4-methoxyphenyl, 2,6-di-tert-butylphenol, 2,6di-tert-butyl-4-methlphenol, 2,6-di-tert-butyl-4-ethylphenol and 2,6-di-tert-butyl-4-methoxyphenol.

5,061,585

BLUE COLORING AGENT FOR ELECTRO-PHOTOGRAPHIC COPYING PROCESSES WITH POSITIVE CONTROL ACTION

Hans-Tobias Macholdt, Darmstadt, and Alexander Sieber, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP87/00003, § 371 Date Jun. 1, 1989, § 102(e) Date Jun. 1, 1989, PCT Pub. No. WO88/04442, PCT Pub. Date Jun. 16, 1988

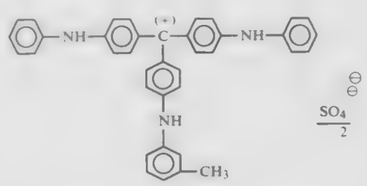
Continuation of Ser. No. 372,332, Jun. 1, 1989, abandoned. This PCT application Jan. 7, 1987, Ser. No. 664,471

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1986, 3641525

Int. Cl.[5] G03G *9/09, 9/097, 13/08*

U.S. Cl. 430—106 **8 Claims**

1. A toner composition for electrophotographic copying processes comprising a toner binder and a positive charge controlling agent consisting essentially of a crystalline sulfate salt of the formula



the X-ray diffraction of diagram of which contains a strong band at 2δ° (CuKα)=18.47, three medium-strong bands at 2δ° (CuKα)=5.97, 12.01, 13.90, and weak broad bands at 2δ° (CuKα)=20.0, 21.7, 22.5, 24.8, 28.2, 30.7 and 32.2.

5,061,586

GLASS COMPOSITE MAGNETIC CARRIER PARTICLES

Bijay S. Saha, and Thomas A. Jadwin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 5, 1990, Ser. No. 504,824

Int. Cl.[5] G03G *9/00, 5/00*

U.S. Cl. 430—108 **16 Claims**

1. Two-phase carrier particles for use in the development of electrostatic latent images which comprise hard magnetic ferrite materials having a single phase hexagonal crystalline structure of the formula $MO.6Fe_2O_3$ where M is barium, strontium or lead exhibiting a coercivity of at least 300 Oersteds when magnetically saturated and an induced magnetic moment of at least 20 EMU/gm of carrier in an applied field of 1000 Oersteds dispersed in a glass matrix comprised of from about 10 to 20 molar percent CuO, from about 10 to 40 molar percent BaO and from about 10 to 40 molar percent B_2O_3, or a glass matrix comprised of from about 10 to 20 molar percent V_2O_5, from about 10 to 40 molar percent BaO and from about 10 to 40 molar percent B_2O_3.

5,061,587

TONER FOR ELECTROPHOTOGRAPHY INCLUDING FLUORINE CONTAINED GRAFT COPOLYMER

Kazuo Tsubuko; Shinichi Kuramoto, both of Numazu; Kazuhiko Umemura, Susono, and Hidemi Uematsu, Fuji, all of Japan, assignors to Ricoh Company Ltd., Ohta, Japan

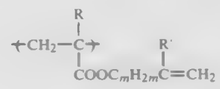
Filed Oct. 13, 1989, Ser. No. 421,067

Claims priority, application Japan, Oct. 18, 1988, 63-260410

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—109 **45 Claims**

1. A toner for developing latent electrostatic images comprising a coloring agent and a fluorine-contained graft copolymer which is prepared by grafting a fluorine-contained monomer to a main polymer comprising a repeating unit represented by formula (I):



(I)

wherein R and R′ each independently represent H or CH_3, and m represents an integer of 1 to 20.

5,061,588

DRY TYPE TONER FOR ELECTROPHOTOGRAPHY

Hiroyuki Fushimi, Numazu; Nobuhiro Nakayama, Susono; Yasuo Asahina, Numazu; Mitsuo Aoki, Numazu, and Kayo Makita, Numazu, all of Japan, assignors to Ricoh Company, Ltd. and Petrochemical Industries, Ltd. Mitsui, both of Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 338,599

Claims priority, application Japan, Apr. 19, 1988, 63-97129; Apr. 19, 1988, 63-97132

Int. Cl.[5] G03G *9/00, 5/00*

U.S. Cl. 430—109 **17 Claims**

1. A dry type toner for electrophotography comprising as the main components:

a coloring agent; and

a binder agent consisting of a polyol resin in an effective amount, said polyol resin being prepared by subjecting a bisphenol-type epoxy resin containing epoxy groups, which may contain secondary hydroxyl groups, to reaction steps (1), (2) and (3), or steps (2) and (3), in any sequential combination, until substantially no epoxy groups remain in said polyol resin, wherein said reaction step (1) comprises a step of causing said epoxy groups in said bisphenol-type epoxy resin to react with a primary amine; said reaction step (2) comprises a step of causing said epoxy groups to react with a monophenol capable of reacting with said epoxy groups; and said reaction step (3) comprises a step of esterifying said secondary hydroxyl groups or secondary hydroxyl groups produced in said bisphenol-type epoxy resin by reaction step (1) and/or reaction step (2) by use of an esterifying agent with an esterification rate ranging from 0.5 to 30 wt%.

5,061,589

TONER FOR ELECTROPHOTOGRAPHY

Seijin Shindoh, Yono, and Michiko Torigoe, Tokyo, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP89/00622, § 371 Date Apr. 3, 1990, § 102(e) Date Apr. 3, 1990, PCT Pub. No. WO89/12849, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 22, 1989, Ser. No. 465,187

Claims priority, application Japan, Jun. 24, 1988, 63-154605; Jun. 29, 1988, 63-159378

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—110 **9 Claims**

1. A toner for electrophotography containing a compound represented by the following formula (I)



(I)

wherein R represents an alkyl group, —A— represents —O—COCH=CH— or —S—CH_2CH_2— and L is an integer of 2 to 10.

5,061,590

HEAT ASSISTED TONER TRANSFERRING METHOD AND APPARATUS

Kevin M. Johnson, Rochester; Bruno Primerano, and Donald S. Rimai, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1990, Ser. No. 484,339

Int. Cl.[5] G03G *13/14*

U.S. Cl. 430—126 **8 Claims**

1. A method of transferring a toner image from an image bearing surface of an image member to a receiving sheet, said receiving sheet including a substrate, a first thermoplastic layer on one side of said substrate which first thermoplastic layer has an outside image receiving surface, and a second thermoplastic layer on the other side of said substrate, said first thermoplastic layer having a lower heat softening point than said second thermoplastic layer, said method comprising:

passing said image member through a transfer zone while backed by or coated on a first hard drum or roller, and

passing said receiving sheet through said transfer zone with said image receiving surface in pressure contact with said toner image while backed by a second hard roller having a thermally conductive, non compliant metallic surface in contact with said second thermoplastic layer, which second roller has been heated by a heat source inside said second roller, sufficiently to soften said first thermoplastic layer to receive said toner image but not sufficiently to cause offset of said second thermoplastic layer onto said second roller.

5,061,591

PRESENSITIZED ALUMINUM LITHOGRAPHIC PLATE HAVING THEREON A POSITIVE OR NEGATIVE WORKING LIGHT SENSITIVE LAYER

Haruo Nakanishi, and Hirokazu Sakaki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1989, Ser. No. 359,344

Claims priority, application Japan, Jun. 1, 1988, 63-134707

Int. Cl.[5] G03C *1/77;* **G03F** *7/008, 7/021, 7/022*

U.S. Cl. 430—159 **7 Claims**

1. A presensitized lithographic plate which comprises an aluminum support having an anodic oxide layer and having thereon a positive or negative lithographically suitable light-

sensitive layer, said aluminum support being prepared by electrochemically graining, and the surface of said anodic oxide layer having the following physical properties:

(a) an arithmetic mean or pit diameters of 4 μm or less,
(b) a difference between an arithmetic mean (D_L) of the maximum pit diameter of the aluminum sheet in the rolling direction and an arithmetic mean (D_{LT}) of the maximum pit diameter of the aluminum sheet in the direction perpendicular to the rolling direction larger than 12% of the maximum pit diameter (a larger one of D_L and D_{LT}),
(c) the number of pits detected with a surface roughness tester having a profilometer using a stylus having a tip radius of 1 μm is at least 200/mm, and
(d) an average centerline roughness is 0.2 μm to 1.0 μm.

5,061,592

PRESENSITIZED PLATE FOR USE IN MAKING LITHOGRAPHIC PRINTING PLATES

Masanori Imai, and Tadahiro Sorori, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 25, 1990, Ser. No. 514,215
Claims priority, application Japan, Apr. 27, 1989, 1-108289
Int. Cl.[5] G03C *1/52*; G03F *7/008, 7/028*
U.S. Cl. 430—167 **20 Claims**

1. A presensitized plate for use in making a lithographic printing plate which comprises an aluminum substrate provided thereon with a light-sensitive layer comprising a polymer having at least two photodimerizable unsaturated double bonds in the molecule, wherein the light-sensitive layer further comprises a compound having at least one photodimerizable unsaturated double bond and at least one phosphinyl group in each molecule as well as a molecular weight of not more than 2,000.

19. The presensitized plate of claim **1** wherein the light-sensitive composition further comprises dyes or pigments selected from the group consisting of Methylene Blue, Crystal Violet, Rhodamine B, Fuchsine, Auramine, azo dyes, anthraquinone dyes, titanium oxide, carbon black, iron oxide, phthalocyanine type pigments and azo pigments; and, as agents or compositions for obtaining an image immediately after imagewise exposure, a combination of an agent which photolytically generates an acid with a pH indicator or a combination of an azido compound or diazo compound with a leuco dye or spiropyran compound.

20. The presensitized plate of claim **1** wherein the light sensitive layer further comprises a light sensitive diazo resin.

5,061,593

COATED CARRIER PARTICLES FOR ELECTROGRAPHIC DEVELOPERS

William E. Yoerger, and Frank A. Pettrone, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 12, 1989, Ser. No. 449,685
Int. Cl.[5] G03G *9/00, 5/00*
U.S. Cl. 430—108 **5 Claims**

1. Carrier particles suitable for use in a dry electrographic developer comprising a mix of the carrier particles and toner particles, wherein each of the carrier particles comprises a core particle having an overcoat of a polymer, comprising poly(p-t-butylstyrene) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate, and wherein the polymer further comprises sulfur-containing end groups.

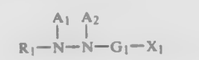
5,061,594

HIGH CONTRAST SILVER HALIDE MATERIAL CONTAINING NOVEL HYDRAZINE NUCLEATING AGENT

Hisashi Okamura, and Kazunobu Katoh, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 26, 1990, Ser. No. 470,496
Claims priority, application Japan, Jan. 27, 1989, 1-018378
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—264 **9 Claims**

1. A silver halide photographic material which comprises a support having thereon at least one hydrophilic colloid layer, wherein at least one hydrophilic colloid layer is a silver halide photographic emulsion layer, and at least one hydrophilic colloid layer contains a compound represented by the following general formula (I):



(I)

wherein A_1 an A_2 both represent a hydrogen atom, or one of A_1 and A_2 is a hydrogen atom and the other is or an acyl group; R_1 represents an aliphatic group or an aromatic group; G_1 represents a carbonyl group, a sulphonyl group, a sulfinyl group, a sulfoxy group, a group of



wherein R_2 is an alkoxy group or an alkoxy group or an aryloxy group, a group of



or an iminomethylene group; X_1 represents a nitrogen-containing heterocyclic ring; and at least one of R_1 and X_1 having an adsorption-accelerating group on silver halide which is represented by the formula: Y_1–(–L_2–)$_t$ wherein Y_1 is an adsorption-accelerating group selected from the group consisting of a mercapto group, a group having a disulfide linkage, and a five-membered or six-membered nitrogen-containing heterocyclic group, L_2 is a divalent linking group, and t is 0 or 1.

5,061,595

CONTACT FILM FOR USE IN GRAPHIC ARTS WITH TWO OVERCOAT LAYERS

Anthony D. Gingello, Rochester; David F. Jennings, Penfield; Richard D. Lucitte, Holcomb, and Hermano P. Rocha, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 24, 1990, Ser. No. 590,707
Int. Cl.[5] G03C *1/36, 1/02*
U.S. Cl. 430—264 **15 Claims**

1. A high-contrast room-light-handleable black-and-white silver halide photographic film which is especially adapted for use as a dry-dot-etchable contact film in the graphic arts by its ability to optically spread an image during contact exposure; said film comprising a support having in order on one side thereof:

(1) a radiation-sensitive layer comprising silver halide grains, a hydrophilic colloid and a polymer latex,
(2) an interlayer consisting essentially of a hydrophilic colloid and a polymer latex, and
(3) an overcoat layer consisting essentially of a hydrophilic colloid, a matting agent having an average particle size in the range of from about 1 to about 5 microns and a light-scattering agent having an average particle size in the range of from about 0.1 to about 5 microns; said interlayer having a refractive index in the range of from about 1.4 to about 1.7 and a thickness which is at least twice that of said overcoat layer and is in the range of from about 0.5 to about 5 microns.

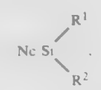
5,061,596

SILICON NAPHTHALOCYANINES AND THIN RADIATION SENSITIVE COATING FILMS CONTAINING SAME

Bernhard Albert, Maxdorf; Peter Neumann, and Sibylle Brosius, both of Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 10, 1989, Ser. No. 321,377
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3810956
Int. Cl.[5] G03C *1/72*; C09B *47/00, 47/04*
U.S. Cl. 430—270 **3 Claims**

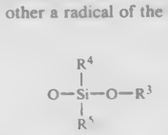
1. A silicon naphthalocyanine of the formula I



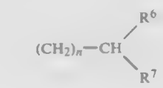
(I)

where

Nc is the radical of a naphthalocyanine system which is unsubstituted or substituted by C_1–C_{10}-alkyl or C_1–C_{10}-alkoxy, and
R^1 and R^2 are indentical or different and each is independently of the other a radical of the formula

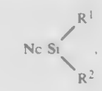


where R^3 is branched C_6–C_{20}-alkyl of the formula



where n is from 1 to 5 and R^6 and R^7 are identical or different and each is independently of the other C_1–C_{16}-alkyl, and R^4 and R^5 are identical or different and each is independently of the other C_1–C_{10}-alkyl or the radical OR^3 where R^3 is as defined above, or the radical R^1 is also C_1–C_{10}-alkyl.

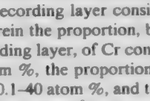
3. A thin radiation sensitive coating film containing a base and a radiation sensitive layer containing a silicon naphthalocyanine of the formula I



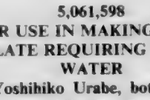
(I)

where

Nc is the radical of a naphthalocyanine system which is substituted by C_1–C_{10}-alkyl or C_1–C_{10}-alkoxy, and
R^1 and R^2 are identical or different and each is independently of the other a radical of the formula



where R^3 is branched C_6–C_{20}-alkyl of the formula



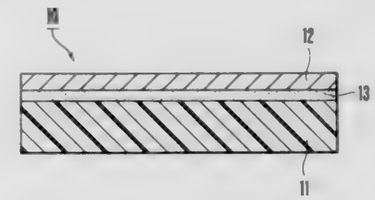
where n is from 1 to 5 and R^6 and R^7 are identical or different and each is independently of the other C_1–C_{16}-alkyl, and R^4 and R^5 are identical or different and each is independently of the other C_1–C_{10}-alkyl or the radical OR^3 where R^3 is as defined above, or the radical R^1 is also C_1–C_{10}-alkyl.

5,061,597

OPTICAL RECORDING MEDIA AND PROCESS FOR PREPARING SAME

Hisaharu Toibana; Mitsuyuki Kuroiwa; Akira Todo, and Takeshi Minoda, all of Chiba, Japan, assignors to Mitsui Petrochemical Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 340,085, Apr. 18, 1989, abandoned. This application Aug. 13, 1990, Ser. No. 566,039
Int. Cl.[5] G03C *1/72*; G11B *7/24*
U.S. Cl. 430—270 **9 Claims**



1. An optical recording medium comprising a substrate and a recording layer formed thereon, capable of being irradiated with a beam of energy to form thereon bits corresponding to given pieces of information and thereby record the pieces of information, said recording layer consisting essentially of Te, Cr, C and H, wherein the proportion, based on all atoms constituting said recording layer, of Cr contained in the recording layer is 0.1–40 atom %, the proportion of C contained in the recording layer is 0.1–40 atom %, and the film thickness of the recording layer is about 100 Å to 1 μm.

5,061,598

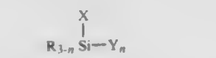
PS PLATE FOR USE IN MAKING LITHOGRAPHIC PRINTING PLATE REQUIRING NO DAMPENING WATER

Yukio Abe, and Yoshihiko Urabe, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 18, 1990, Ser. No. 599,479
Claims priority, application Japan, Oct. 30, 1989, 1-282270; Mar. 29, 1990, 2-81896
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—272 **19 Claims**

1. A presensitized plate for use in making a lithographic printing plate requiring no dampening water comprising a substrate having provided thereon, in order, a primer layer, a light-sensitive layer and a silicone rubber layer wherein the primer layer consists essentially of at least one compound

selected from those having urethane or/and urea bonds comprising as a basic skeleton, a reaction product of a polyisocyanate compound with a polyol compound and/or a polyamine compound, adhered to the substrate with a functional group-containing silane coupling agent represented by the following general formula:



wherein n is an integer ranging from 1 to 3; X represents an alkyl group, a vinyl group or an organic group having a functional group showing affinity to or capable of being bonded to the compound included in the primer layer; R represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms; and Y represents an organic group which generates a hydroxyl group through hydrolysis or a hydroxyl group.

5,061,599

RADIATION SENSITIVE MATERIALS

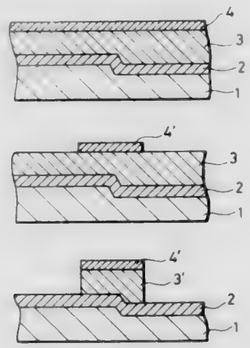
Tetsuichi Kudo, Tokyo; Akira Ishikawa, Kokubunji; Hiroshi Okamoto, Ome; Katsuki Miyauchi, Hino; Takao Iwayanagi; Fumio Murai, both of Tokyo, and Shinji Okazaki, Urawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 58,822, Jun. 5, 1987, abandoned. This application Jan. 5, 1990, Ser. No. 462,856

Claims priority, application Japan, Jun. 11, 1986, 61-133665; Sep. 22, 1986, 61-221863; Mar. 5, 1987, 62-48668

Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—270 **6 Claims**



1. An inorganic resist comprising a polytungstic acid having peroxo groups which contains at least one metal selected from the group consisting of niobium, titanium and tantalum.

5,061,600

RADIATION-SENSITIVE COMPOSITION CONTAINING BOTH A VINYL PYRROLIDONE POLYMER AND AN UNSATURATED POLYESTER AND USE THEREOF IN LITHOGRAPHIC PRINTING PLATES

Paul R. West, Fort Collins; James E. Mitchell, Windsor; Gary R. Miller, Fort Collins; Paul R. Josephson, Jr., Fort Collins, and Raymond W. Ryan, Jr., Fort Collins, all of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 17, 1990, Ser. No. 554,230

Int. Cl.[5] E03C *1/77*

U.S. Cl. 430—273 **14 Claims**

1. A negative-working lithographic printing plate comprising a support having thereon a radiation-sensitive layer of a composition comprising a mixture of (A) a photocrosslinkable p-phenylene diacrylate polyester containing the photosensitive group



as an integral part of the polymer backbone, (B) a polymer of vinyl pyrrolidone, and (C) a copolyester of an unsaturated dicarboxylic acid and an oxyalkylene ether of an alkylidene diphenol.

2. A negative-working lithographic printing plate as claimed in claim 1, wherein said support is an anodized aluminum support.

5,061,601

RADIATION-SENSITIVE COMPOSITION CONTAINING A VINYL PYRROLIDONE POLYMER AND USE THEREOF IN LITHOGRAPHIC PRINTING PLATES

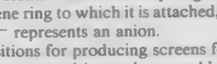
Paul R. West, Fort Collins; James E. Mitchell, Windsor; Gary R. Miller, Fort Collins; Paul R. Josephson, Jr., Fort Collins, and Raymond W. Ryan, Jr., Fort Collins, all of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 17, 1990, Ser. No. 554,232

Int. Cl.[5] G03C *1/77*

U.S. Cl. 430—278 **12 Claims**

1. A negative-working lithographic printing plate comprising a support having thereon a radiation-sensitive layer of a composition comprising a mixture of (A) a photocrosslinkable polymer containing the photosensitive group



as an integral part of the polymer backbone and (B) a polymer of vinyl pyrrolidone.

2. A negative-working lithographic printing plate as claimed in claim 1, wherein said support is an anodized aluminum support.

5,061,602

PHOTOSENSITIVE RECORDING MATERIAL OF ENHANCED FLEXIBILITY

Horst Koch, Gruenstadt; Hans Schupp, Worms, and Reinhold Schwalm, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 155,499, Feb. 12, 1988, abandoned. This application Jul. 25, 1989, Ser. No. 384,909

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1987, 3706561

Int. Cl.[5] G03F *7/033*

U.S. Cl. 430—281 **7 Claims**

1. A photosensitive recording element useful in the production of a printing plate or a resist pattern comprising a dimensionally stable base and a photopolymerizable recording layer on said base, said photopolymerizable recording layer being developable with aqueous alkali or with organic solvents and containing a polymeric binder which is soluble or dispersible in aqueous alkaline media or in organic solvents, one or more low molecular weight ethylenically unsaturated photopolymerizable organic compounds and one or more free radical forming photopolymerization initiators with or without further additive and/or auxiliary substances, wherein the polymeric binder comprises one or more film-forming copolymers which have a multiphase morphology with one or more phases having a glass transition temperature below room temperature and one or more further phases having a glass transition temperature above room temperature, this or these copolymers having been obtained by free radical copolymerization of one or more macromonomers with one or more further olefinically unsaturated copolymerizable organic compounds, and wherein, in the multiphase morphology copolymer used as the polymeric binder, the continuous phase has a glass transition temperature below room temperature and the dispersed phase has a glass transition temperature above room temperature.

5,061,603

PHOTOCURABLE COMPOSITIONS

John Hamilton, Ramsgate, and Peter Dickinson, Broadstairs, both of England, assignors to Sericol Group Limited, England

Filed Dec. 12, 1989, Ser. No. 448,966

Claims priority, application United Kingdom, Dec. 16, 1988, 8829359

Int. Cl.[5] G03F *7/038, 7/028*

U.S. Cl. 430—287 **14 Claims**

1. Photopolymerisable grafted polyvinyl alcohol including grafted thereto groups of formula



wherein R_1 represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aralkyl group; R_2 represents a substituted or unsubstituted alkyl group, a primary, secondary or tertiary amino group, a cyano group, a hydroxy group, a nitro group, a halogen or hydrogen atom or, together with the pyridine ring to which it is attached, part of a quinolyl group; R_3 represents a chlorine or hydrogen atom or, together with the benzene ring to which it is attached, part of a naphthyl gruop; and X^- represents an anion.

10. Compositions for producing screens for screen printing, the compositions comprising a photocurable grafted polyvinyl alcohol according to claim 1.

14. Compositions according to claim 10, containing eosin Y.

5,061,604

NEGATIVE CRYSTALLINE PHOTORESISTS FOR UV PHOTOIMAGING

Andrew J. Ouderkirk, Woodbury, and Douglas S. Dunn, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1990, Ser. No. 518,880

Int. Cl.[5] G03F *7/36*

U.S. Cl. 430—296 **17 Claims**

1. A method for forming a resist image on a surface comprising the steps of providing a layer of a semicrystalline polymeric material on a surface, irradiating said surface in an imagewise manner so as to create an imagewise distribution of quasi-amorphous polymer within said layer, applying a liquid or vapor to said layer which is selectively absorbed by the quasi-amorphous polymer, and is more slowly etched by reactive ion etching than the semicrystalline polymer, and then reactive ion etching preferentially removing the semicrystalline polymer.

5,061,605

PHOTOPOLYMERIZABLE COMPOSITION CONTAINING PHOTOINITIATORS HAVING AT LEAST TWO SULFUR ATOMS

Kouichi Kawamura, and Mitsumasa Tsuchiya, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

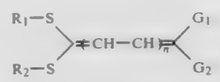
Filed Apr. 16, 1991, Ser. No. 686,143

Claims priority, application Japan, Apr. 17, 1990, 2-100885

Int. Cl.[5] G03C *1/68*

U.S. Cl. 430—281 **20 Claims**

1. A photopolymerizable composition which comprises an addition polymerizable compound having at least one ethyenically unsaturated double bond and a photopolymerization initiator, wherein it comprise a compound represented by the following general formula (I) as the photopolymerization initiator:



(I)

(wherein R_1 and R_2 may be the same or different and each independently represents a substituted or unsubstituted alkyl, aryl or alkenyl group or R_1 R_2 may form a non-metallic ring together with the sulfur atoms to which they are bonded; n is 0, 1 or 2 ; G_1 and G_2 may be the same or different and each represents a hydrogen atom, a cyano group or a substituted or unsubstituted alkoxycarbonyl, aryloxycarbonyl, acyl, arylcarbonyl, alkylthio, arylthio, alkylsulfonyl, arylsulfonyl or fluoroalkylsulfonyl group, provided that G_1 and G_2 do not simultaneously represent hydrogen atoms or G_1 and G_2 may form a non-metallic ring together with the carbon atom to which they are bonded).

5,061,606

PREPARATION OF RELIEF PRINTING PLATES

Thomas Telser, Schriesheim; Horst Koch, Gruenstadt; Karl-Rudolf Kurtz, Heidelberg; Helmut Bach, Mutterstadt, and Heinz-Ulrich Werther, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 260,712, Oct. 21, 1988, abandoned. This application Oct. 20, 1989, Ser. No. 425,491

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807929

Int. Cl.[5] G03F *7/30, 7/32*

U.S. Cl. 430—306 **12 Claims**

1. An improved process for preparing a photopolymerized flexographic relief printing plate from a photosensitive element comprising a photopolymerizable layer consisting essentially of

(A) at least one polymer selected from the group consisting of vinylaromatic/alkadiene block copolymers, alkadiene/acrylonitrile copolymers, fluorine rubbers, natural rubber, silicone polymers, polysulfide rubbers, and ethylene-propylene-diene terpolymers, as the binders,

(b) at least one photopolymerizable monomer compatible with said binder (A) and

(C) at least one photoinitiator, by

(i) imagewise exposing said photopolymerizable layer of said element to actinic light and

(ii) washing out the unexposed, non-photopolymerized parts of said layer with a developer, thereby obtaining a photopolymerized flexographic relief printing plate,

the improvement comprising: washing out the non-photopolymerized parts of the irradiated photopolymerizable layer with a developer consisting essentially of at least one hydrogenated petroleum fraction having a flash-point above 45° C. and a boiling range of from 160° to 220° C., 0 to 20% by weight, based on the developer, of at least one surface active compound, 0 to 10% by weight, based on the developer, of at least one monoterpene and 5 to 20% by volume, based on the developer, of at least one alcohol selected from the group consisting of alcohols with 4 to 8 carbon atoms.

2. An improved process for developing a photopolymerized flexographic relief printing plate, said plate having been formed from a photosensitive element comprising a photopolymerizable layer of

(A) at least one polymer selected from the group consisting of vinylaromatic/alkadiene block copolymers, alkadiene/acrylonitrile copolymers, fluorine rubbers, natu-

ral rubber, silicone polymers, polysulfide rubbers, and ethylene-propylene-diene terpolymers, as binder,

(B) at least one photopolymerizable monomer compatible with said binder (A) and

(C) at least one photoinitiator, by

(i) imagewise exposing said photopolymerizable layer of said element to actinic light radiation and

(ii) washing out the unexposed, non-photopolymerized parts of said layer with a developer, thereby obtaining a photopolymerized flexographic relief printing plate,

the improvement comprising: washing out the non-photopolymerized parts of the irradiated photopolymerizable layer with a developer containing an amount of at least one hydrogenated petroleum fraction having a flash-point about 45° C. and a boiling range of from 160° to 220° C. effective to wash out the non-polymerized parts of said photopolymerizable layer.

5,061,607

COMPOSITION FOR PROTECTING THE SURFACE OF LITHOGRAPHIC PRINTING PLATES

John E. Walls, Fort Collins, Colo., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1990, Ser. No. 479,917

Int. Cl.[5] G03F *7/00*

U.S. Cl. 430—309 **35 Claims**

1. A single phase, homogeneous finisher composition for the protection of lithographic printing plate surfaces; comprising an aqueous solution of:

(a) a cold water soluble hydrophilic film forming compound selected from the group consisting of oligosaccharides, α-D-anhydroglucose/amylopectins, corn syrup derivatives and dextrins,

(b) a hydrophilizing agent selected from the group consisting of polyacrylamides, polyvinyl alcohols, polyvinylalkyl ethers and cellulose derivatives,

(c) a wet film forming agent selected from the group consisting of polyhydric alcohols,

(d) a nonionic surfactant selected from the group consisting of alkylphenoxypolyoxyethylene ethanols, ethoxylates of C8 to C18 aliphatic alcohols, ethoxylates of sorbitan monolaurate, ethoxylates of sorbitan monostearate, ethoxylates of sorbitan monopalmitate and ethoxylates of sorbitan monooleate,

(e) a greasing agent selected from the group consisting of cetyl lactate, myristal lactate, myristal myristate, ethoxylated sorbitan tristearate, ethoxylated sorbitan trioleate, ethoxylated sorbitan tetraoleate, ethoxylated sorbitan pentaoleate, ethoxylated sorbitan hexaoleate and glycerol monostearate, and

(f) at least one desensitizing salt selected from the group consisting of mono and dibasic sodium, potassium, lithium and ammonium salts of phosphoric acid and ammonium, sodium, potassium, lithium and magnesium salts of acetic, citric, nitric tartaric and sulfuric acids.

5,061,608

PHOTOGRAPHIC BLEACHING SOLUTION AND USE THEREOF IN PHOTOGRAPHIC COLOR PROCESSING

David G. Foster, W. Henrietta, and Keith H. Stephen, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 469,102, Jan. 24, 1990, abandoned. This application Apr. 19, 1991, Ser. No. 689,088

Int. Cl.[5] G03C *5/44*

U.S. Cl. 430—461 **8 Claims**

1. An aqueous acidic photographic bleaching solution which is substantially free of ammonium salts and comprises (1) as a bleaching agent, a potassium salt of a ferric complex of an aminopolycarboxylic acid, (2) as an agent which functions to convert silver to silver halide, potassium bromide and (3) as an agent which inhibits bleach-induced dye formation, a water-soluble aliphatic carboxylic acid, selected from the group consisting of acetic acid, propionic acid and succinic acid, in an amount of at least 0.35 moles per liter.

5,061,609

PROCESS OF PREPARING A TABULAR GRAIN SILVER BROMOIODIDE EMULSION AND EMULSIONS PRODUCED THEREBY

Roger H. Piggin, Abbots Langley, and Colin J. Bishop, Hatch End, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1989, Ser. No. 417,144

Claims priority, application United Kingdom, Jul. 13, 1989, 8916041

Int. Cl.[5] G03C *1/015*

U.S. Cl. 430—569 **16 Claims**



1. A process for the preparation of a silver bromoiodide emulsion comprising

providing a host emulsion comprised of a dispersing medium and silver bromide grains optionally including iodide in which greater than 50 percent of the total grain projected area is accounted for by tabular grains satisfying the relationship

$$ECD/t^2 > 25$$

where

ECD is the mean effective circular diaemter in μm of the tabular grains

t is the mean thickness in μm of the tabular grains and

forming silver bromoiodide laminae on the major faces of the tabular grains,

characterized in that

(a) the silver bromoiodide laminae are formed on the major faces of the tabular grains with an iodide content higher than that of the host emulsion and at least 5 mole percent, based on silver precipitated during this step, and

(b) within the pAg and temperature boundaries defined by Curve A in FIG. **1** bromide is deposited on the silver bromoiodide laminae as a silver salt with any additional iodide supplied to the emulsion during this step being limited to less than 5 mole percent, based on silver introduced during this step.

5,061,610

REDUCTION OF OPTICAL BRIGHTENER MIGRATION IN POLYOLEFIN COATED PAPER BASES

John F. Carroll, Rochester; David A. Griggs, Hilton, and William A. Mruk, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1990, Ser. No. 601,097

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—532 **4 Claims**

1. In the method of making a light-sensitive photographic paper comprising the steps of coating a paper support with a polyolefin polymer containing an optical brightening agent, rolling the polyolefin coated support and storing the paper roll, unrolling the stored support, corona discharge treating the polyolefin surface and applying at least one light sensitive emulsion on the polyolefin surface, the improvement which comprises after coating the polyolefin layer on the paper support and prior to the rolling step subjecting the polyolefin surface to a corona discharge to inhibit the optical brightening agent from exuding from the polyolefin layer.

5,061,611

METHODS FOR PRODUCING AND PRESERVING A SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hideaki Sakata, Hachioji; Toshiharu Nagashima, and Akira Kobayashi, both of Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 1, 1990, Ser. No. 517,045

Claims priority, application Japan, May 1, 1989, 1-112466; Oct. 30, 1989, 1-282511

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—533 **6 Claims**

1. A method of preparing a light sensitive silver halide photographic material which comprises a polyester support having thereon a hydrophobic polymer layer containing a vinylidene chloride copolymer and at least one hydrophilic polymer layer which is a silver halide emulsion layer, which method comprises;

(a) coating a hydrophilic polymer layer onto the polyester support having thereon said hydrophobic polymer layer containing a vinylidene chloride copolymer,

(b) drying the layer until a water content of the layer reaches 60 wt. %, and

(c) contacting the layer with air having a relative humidity of 5 to 25% for a period of 5 seconds to 10 minutes.

5,061,612

REFLECTIVE SUPPORT FOR PHOTOGRAPHY

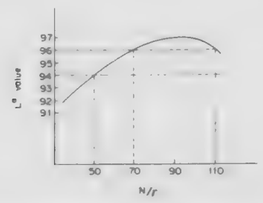
Kazuto Kiyohara; Hiromitu Araki; Toshiaki Yamazaki, and Ichiya Harada, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 26, 1990, Ser. No. 484,677

Claims priority, application Japan, Mar. 8, 1989, 1-55928

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—533 **16 Claims**



1. In a reflective photographic element comprising a reflective support comprising a polyester film containing titanium dioxide particles, and carrying a light-sensitive silver halide photographic emulsion layer, the improvement wherein the titanium oxide particles, have a particle size distribution consisting essentially of particle sizes of 0.05 μm or more satisfying the formula shown below:

$$110 \geqq N/\gamma \geqq 50 \quad (I)$$

wherein

N is the number of the titanium oxide particles with particle sizes of 0.05 μm or more within a 10 μm × 10 μm area of the reflective support;

γ is the ration of d_{80} to d_{20}

d_{20} is the particle diameter measured for particles in the distribution of particle sizes wherein 20% of the particles have a smaller diameter, and d_{80} is the particle diameter measured for particles in the distribution of particle sizes wherein 80% of the particles have a smaller diameter, and

wherein the titanium dioxide is present in an amount of 10 to 50 parts by weight based on 100 parts by weight polyester.

5,061,613

PYRAZOLO QUINAZOLONE COUPLER FOR PHOTOGRAPHY

Yutaka Kaneko, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan

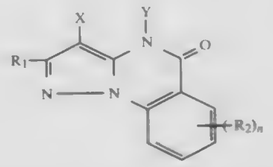
Filed Dec. 13, 1989, Ser. No. 450,060

Claims priority, application Japan, Dec. 20, 1988, 63-321488

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—558 **10 Claims**

1. A light-sensitive silver halide photographic material having at least one photographic constituent layer, which comprises containing in said at least one photographic constituent layer, a coupler represented by a compound of the formula (I):



(I)

wherein R_1 and Y each represent a hydrogen atom or a substituent; R_2 represents a substituent; n represents an integer of 0 to 4, and when n is 2 or more, plural number of R_2's may be the same or different; and X is a hydrogen atom or a halogen atom.

5,061,614

SILVER HALIDE EMULSION, METHOD OF MANUFACTURING THE SAME, AND COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING THE EMULSION

Shunji Takada; Hideki Naito; Yuichi Ohashi; Seiji Yamashita; Shigeru Shibayama, and Shigeo Hirano, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 27, 1989, Ser. No. 372,525

Claims priority, application Japan, Jun. 28, 1988, 63-159888; Oct. 14, 1988, 63-258787

Int. Cl.[5] G03C *1/36*

U.S. Cl. 430—569 **18 Claims**

1. A silver halide emulsion manufactured by performing reduction sensitization during precipitation of silver halide grains by adding at least one compound selected from the group consisting of compounds represented by formulas (I), (II), and (III):

$$R—SO_2S—M \quad (I)$$

$$R—SO_2S—R^1 \quad (II)$$

$$RSO_2S—L_m—SSO_2—R^2 \quad \text{(III)}$$

wherein R, R^1, and R^2 can be the same or different and represent an aliphatic group, an aromatic group, or a heterocyclic group, M represents a cation, L represents a divalent bonding group, m represents 0 or 1, compounds represented by formulas (I) to (III) can be polymers containing, as a repeating unit, divalent groups derived from compounds represented by formulas (I) to (III), and, R, R^1, R^2 and L can be bonded with each other to form a ring, wherein not less than 50% of a total projected area of all silver halide grains are occupied by tabular grains having an aspect ratio of not less than 3.0.

5,061,615

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Akira Kase, and Tetsuro Kojima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 350,258, May 11, 1989, abandoned. This application Mar. 29, 1991, Ser. No. 678,185

Claims priority, application Japan, May 13, 1988, 63-116240

Int. Cl.[5] G03C *1/005*

U.S. Cl. 430—569 **26 Claims**

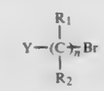
1. A silver halide photographic material containing a support having thereon a light-sensitive layer comprising at least a substantially silver iodide free monodisperse silver chlorobromide emulsion having a variation coefficient of not more than 0.25 obtained by:

(i) forming chlorine containing silver halide grains by reacting at least one water-soluble salt and at least one water-soluble halide, wherein one of said at least one water-soluble halide or a water-soluble chloride;

(ii) adding a bromine atom or bromide ion slow release agent to the silver halide grains formed in step (i);

(iii) conducting halogen conversion; followed by

(iv) sulfur sensitization, said release agent being represented by formula (S):



(S)

wherein Y represents a group having a Hammett σ_p value greater than O, R_1 and R_2, which may be identical or different, are selected from hydrogen, alkyl groups, alkenyl groups, aralkyl groups, aryl groups, or those groups represented by Y, Y and R_1 may undergo ring closure to form a heterocyclic ring, and n is an integer of from 1 to 3.

5,061,616

PROCESS OF PREPARING A TABULAR GRAIN SILVER BROMOIODIDE EMULSION

Roger H. Piggin, Abbots Langley, England; Philip J. Zola, Webster, and Ming J. Lin, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1989, Ser. No. 417,106

Claims priority, application United Kingdom, Jul. 13, 1989, 8916042

Int. Cl.[5] G03C *1/02*

U.S. Cl. 430—569 **18 Claims**

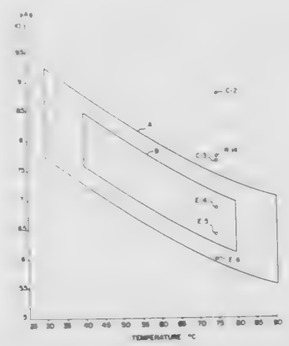
1. A process for the preparation of a silver bromoiodide emulsion comprising modifying a host emulsion comprised of a dispersing medium and silver bromide or bromoiodide grains in which greater than 50 percent of the total grain projected area is accounted for by tabular grains satisfying the relationship

$$ECD/t^2 > 25$$

where

ECD is the mean effective circular diameter in μm of the tabular grains and

t is the mean thickness in μm of the tabular grains by forming silver bromoiodide laminae on the major faces of the tabular grains so that sensitivity as a function of pressure applied to the silver bromoiodide emulsion is rendered more nearly constant by the steps of



(a) adjusting the pAg and temperature of the host emulsion to lie within the boundaries defined by Curve A in FIG. 1,

(b) depositing iodide as a silver salt at peripheral sites on the host tabular grains in less than 10 minutes, and

(c) within the pAg and temperature boundaries defined by Curve A in FIG. 1, precipitating silver bromoiodide onto the major faces of the host tabular grains with the primary source of iodide being the iodide deposited in step (b).

5,061,617

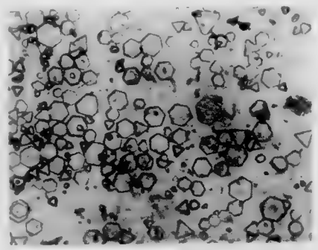
PROCESS FOR THE PREPARATION OF HIGH CHLORIDE TABULAR GRAIN EMULSIONS

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1990, Ser. No. 623,839

Int. Cl.[5] G03C *1/035*

U.S. Cl. 430—569 **17 Claims**



1. A process of preparing a photographic emulsion comprised of a dispersing medium and radiation sensitive silver halide grains wherein at least 35 percent of the total grain projected area is accounted for by tabular grains having parallel {111} major crystal faces and containing at least 50 mole percent chloride, based on total silver, said emulsion being prepared by introducing silver ion into a dispersing medium containing chloride ion,

CHARACTERIZED IN THAT

grain nucleation is controlled to favor the formation of {111} crystal faces by providing thiocyanate ions in a concentration range of from 2 to 30 millimoles per liter in the dispersing medium prior to introducing silver ion,

parallel twin planes are introduced in the grains by maintaining in the presence of thiocyanate ions a chloride ion concentration of at least 0.5 molar in the dispersing medium, and

grain growth is controlled to favor the formation of the tabular grains having parallel {111} major crystal faces by maintaining a concentration of thiocyanate ions in the dispersing medium in the range of from 0.2 to 10 mole percent, based on total silver introduced.

5,061,618

INFRARED-SENSITIVE PHOTOGRAPHIC ELEMENT

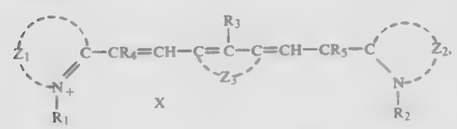
Richard L. Parton, Webster; Annabel A. Muenter, Rochester, and David A. Stegman, Churchville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 412,379, Sep. 26, 1989, abandoned. This application Mar. 28, 1990, Ser. No. 500,360

Int. Cl.[5] G03C *1/20, 1/28*

U.S. Cl. 430—584 **9 Claims**

1. A photographic element comprising a support having thereon a silver halide emulsion layer comprising silver halide sensitized with a dye having the formula:



Z_1 and Z_2 each independently represents the atoms necessary to complete a substituted or unsubstituted thiazole nucleus, a substituted or unsubstituted oxazole nucleus, a substituted or unsubstituted selenazole nucleus, a substituted or unsubstituted quinoline nucleus, a substituted or unsubstituted tellurazole nucleus, or a substituted or unsubstituted pyridine nucleus,

Z_3 represents the atoms that complete a 6-membered carbocyclic ring,

R_1 represents substituted or unsubstituted alkyl, substituted or unsubstituted aryl, or, together with R_4, forms a ring structure,

R_2 represents substituted or unsubstituted alkyl, substituted or unsubstituted aryl, or, together with R_5, forms a ring structure,

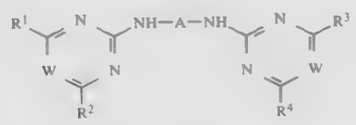
R_3 represents substituted or unsubstituted alkyl, substituted or unsubstituted aryl, or a substituted or unsubstituted heterocyclic or carbocyclic ring wherein said ring does not have a heteroatom attached directly to the methine chain carbon atom of the dye and does not have a carbonyl in the beta position to the methine chain carbon atom of the dye,

R_4 represents hydrogen or, together with R_1, forms a ring structure,

R_5 represents hydrogen or, together with R_2, forms a ring structure, and

X is a counterion as needed to balance the charge of the molecule, and

a compound having the formula:



R^1, R^2, R^3, and R^4 each independently represents halogen, hydroxy, alkoxy, aryloxy, arylthio, aryl, amino, alkylamino, arylamino, or aralkylamino, —A— is a divalent aromatic residue, and W is nitrogen or $=CR^5—$ where R^5 is hydrogen, alkyl, or halogen.

5,061,619

IMMUNOASSAY USING ANTIBODY-ANTIGEN CONJUGATES

Strathearn Wilson, King City, and Robert J. Dwyer, Markham, both of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Continuation of Ser. No. 116,880, Nov. 5, 1987, abandoned. This application Aug. 22, 1990, Ser. No. 569,776

Int. Cl.[5] C12Q *1/70;* **G01N** *33/53, 33/543, 33/546*

U.S. Cl. 435—5 **17 Claims**

1. A method of detecting antibodies, which comprises:

(a) incubating a solid phase with an antigen to form a solid phase-bound antigen,

(b) washing said solid phase to remove unbound antigen,

(c) incubating said solid phase-bound antigen with a test sample in which the presence of an antibody to the antigen is required to be known,

(d) washing said solid phase to remove unbound test sample,

(e) incubating the resulting complex with an antibody-antigen conjugate in which the antibody is labelled with a detectable moiety and the antigen has at least one free antibody binding site in said conjugate,

(f) washing said solid phase to remove unbound conjugate, and

(g) detecting the presence of the moiety on the solid phase as a detection of the antibody to the antigen in said test sample.

5,061,620

HUMAN HEMATOPOIETIC STEM CELL

Ann Tsukamoto, Palo Alto; Charles M. Baum, Menlo Park, both of Calif.; Yukoh Aihara, Hiratsuka, Japan, and Irving Weissman, Palo Alto, Calif., assignors to SyStemix, Inc., Palo Alto, Calif.

Filed Mar. 30, 1990, Ser. No. 502,616

Int. Cl.[5] C12N *5/00;* **C12Q** *1/00;* **G01N** *33/53*

U.S. Cl. 435—7.21 **7 Claims**

1. A cellular composition comprising human hematopoietic stem cells with fewer than 5% of lineage committed cells, wherein said hematopoietic stem cells are characterized as Thy-1+, capable of self-regeneration in a coculture medium and differentiation to members of the lymphoid and myelomonocytic hematopoietic lineages.

5,061,621

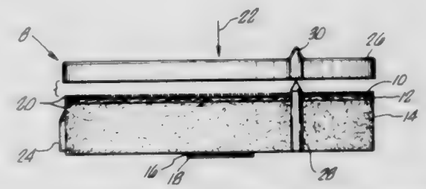
REPLICA PLATING DEVICE WITH AN INTEGRAL MARKING ELEMENT

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Jun. 22, 1989, Ser. No. 369,753

Int. Cl.[5] C12Q *1/24;* **C12M** *1/26*

U.S. Cl. 435—30 **26 Claims**



13. A device for replica plating of living cells, comprising:

a base having a side wall connecting a first upper surface and a first lower surface, and a water absorbing layer free from dye and preservatives having a second upper surface and a second lower surface, said second lower surface being fixedly bonded to said first upper surface to prevent any horizontal or vertical movement of said layer, wherein said base comprises an integral marking means configured

and arranged to leave a permanent reference mark on a solid medium in a cell culture dish when said medium is contacted with said device during use for replica plating of the cells, said integral marking means extending upward from an outer circumference of said first upper surface.

22. A method for replica plating of living cells, comprising the steps of:

a) providing a device for replica plating of the cells, comprising a rigid base having a side wall connecting a first upper surface and a first lower surface, and a water absorbing fabric free from dye and preservatives having a second upper surface and a second lower surface, said second lower surface being fixedly bonded to said first upper surface to prevent any horizontal or vertical movement of said fabric; wherein said base comprises an adhesive tab positioned on said first lower surface, said tab being configured and arranged to fixedly secure said base to a flat surface and thereby fixedly secure said fabric in a position raised above said flat surface and accessible for replica plating of said cells, wherein said base comprises a set of bumper guards positioned between said first upper surface and said first lower surface on the side wall of said base, said guards being configured and arranged to prevent contact of said fabric with the inside wall of a culture dish or other container containing said cells;

b) positioning said device on a flat surface with said tab fixedly secured to said flat surface,

c) placing the cells in contact with said second upper surface to cause the cells to be transferred to said second upper surface, and

d) subsequently placing a solid medium cellular receiving surface in contact with said second upper surface to cause the cells to be transferred to said receiving surface.

5,061,622

PROCESS FOR THE PRODUCTION OF KAPPA-CASEIN GLYCOMACROPEPTIDE

Shunichi Dosako, Urawa; Tsuguaki Nishiya, and Eiki Deya, both of Sayama, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Filed May 6, 1988, Ser. No. 191,140

Claims priority, application Japan, May 15, 1987, 62-118611

Int. Cl.[5] C12P *21/06;* **A23J** *3/00*

U.S. Cl. 435—68.1 **10 Claims**

1. A process for the production of κ-casein glycomacropeptide, which comprises the steps of:

(a) adding divalent metal ions to a casein and subjecting said casein to an enzymatic milk-coagulating rennin treatment to obtain a rennet-casein curd and non-coagulant components as an effluent,

(b) separating the effluent from the rennet-casein curd,

(c) acidifying the effluent to a pH sufficient to form a precipitate,

(d) removing the precipitate from the effluent, and then subjecting the effluent to a concentration and desalting treatment.

5,061,623

PEPTIDES COMPRISING AN IMMUNOGENIC SITE OF POLIOVIRUS AND DNAS CONTAINING NUCLEOTIDE SEQUENCES CODING FOR THESE PEPTIDES

Marc Girard, and Sylvie Van Der Werf, both of Paris, France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 222,392, Jul. 21, 1988, Pat. No. 4,968,627, which is a continuation of Ser. No. 84,932, Aug. 13, 1987, abandoned, which is a division of Ser. No. 634,881, Jul. 27, 1984, Pat. No. 4,694,072. This application Jun. 15, 1990, Ser. No. 538,668

Claims priority, application France, Nov. 30, 1982, 82 20115; Jun. 29, 1983, 83 10778

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] C12N *15/00;* **C12P** *21/00;* **C07H** *15/12*

U.S. Cl. 435—69.3 **11 Claims**

1. A double-stranded DNA which comprises a DNA replica of a sequence of the poliovirus RNA, free of other DNA replica of other poliovirus RNA, which first mentioned replica contains at the most 315 pairs of nucleotides, which sequence codes for a peptide which can be recognized by antibodies active both against "C" and "D" particles of a poliovirus and against the VP-1 structural polypeptide of the capsid of poliovirus, said peptide comprising the amino acid sequence:

Asp Asn Pro Ala Ser Thr Thr Asn Lys Asp Lys Leu.

5,061,624

SERINE ANALOGS OF BU-3608 ANTIBIOTICS

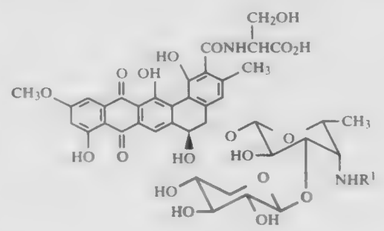
Yosuke Sawada, Tokyo; Masatoshi Kakushima, Yokohama; Maki Nishio, Tokyo; Takeo Miyaki, and Toshikazu Oki, both of Yokohama, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 269,821, Nov. 10, 1988, Pat. No. 4,973,673. This application Aug. 20, 1990, Ser. No. 569,679

Int. Cl.[5] C12R *1/03;* **C12P** *19/56*

U.S. Cl. 435—75 **1 Claim**

1. A process for preparing an antibiotic of Formula III



III

wherein R^1 is H or methyl, which comprises cultivating a strain of *Actinomadura hibisca* capable of producing said antibiotic in a medium containing assimilable sources of carbon and nitrogen, and D- or DL-serine under aerobic condition, and recovering said antibiotic from the cultured broth.

5,061,625

PROCESS FOR THE PREPARATION OF A MICROORGANISM WHICH FORMS α-GALACTOSIDASE BUT NOT INVERTASE, A MICROORGANISM THUS OBTAINED, AND ITS USE

Ralf Mattes, Oberhausen, and Klaus Beaucamp, Tutzing, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 381,135, May 24, 1982, abandoned. This application Aug. 24, 1988, Ser. No. 235,910

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122216

Int. Cl.[5] C12N *15/00, 1/20, 9/40, 1/00*

U.S. Cl. 435—172.3 **6 Claims**

1. Process for the preparation of a stable *E. coli* which constitutively produces at least 10 U of alpha galactosidase per mg of cell free extract wherein said alpha galactosidase splits raffinose at about neutral pH without requiring cofactors or inductors, and comprising:

(i) cleaving a DNA containing an alpha-galactosidase gene with SalI to form a DNA fragment which has a relative molecular weight of about 4 megadaltons and contains said alpha galactosidase gene;

(ii) cleaving a vector appropriate to a first transformable *E. coli* which contains a predetermined antibiotic resistance gene with SalI, to form DNA fragments of said vector;

(iii) mixing said DNA encoding alpha-galactosidase with a solution of vector DNA fragments;

(iv) recombining the DNA encoding alpha galactosidase and vector fragments in the presence of DNA ligase to form a recombinant DNA plasmid;

(v) incubating said plasmid with said first transformable *E. coli* to obtain transformed cells;

(vi) culturing the transformed cells on a nutrient substrate containing raffinose as the sole source of carbon;

(vii) contacting the transformed cells with a predetermined antibiotic;

(viii) isolating colonies resistant to said antibiotic;

(ix) lysing said antibiotic resistant colonies to form a lysate;

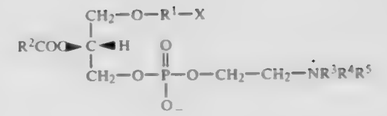
(x) isolating plasmid DNA from the lysate;

(xi) cleaving the plasmid DNA with restriction endonuclease Hind III or EcoRI to delete genese expressing permease and ivnertase but not alpha galactosidase from said plasmid;

(xii) diluting and treating the split plasmid DNA with DNa ligase to obtain a renatured plasmid;

(xiii) introducing the renatured plasmid into a second transformable *E. coli* to obtain a second plasmid transformed cell which produces at least 10 U of alpha galactosidase per mg of cell free extract; and

(xiv) isolating a biologically pure culture of cells from step (xiii) which does not utilize raffinose but which constitutively produces at least 10 U of alpha galactosidase per mg of cell free extract.



wherein:

(1) R^1 is a C_2 to C_{25} alkylene or alkenylene linking group substituted by radioactive iodine;

X is hydrogen; or

(2) R^1 is a C_2 to C_{25} alkylene, alkenylene or alkynylene linking group optionally substituted by tritium or radioactive iodine;

X is selected from:

(a) the group -A-B wherein A is a linking group selected from the groups —NR^6—, —COO—, —OCO—, , —$CONR^6$—, —NR^6CO—, —NH—CS—NH—and —S—S—wherein R^6 is selected from hydrogen and C_1 to C_6 alkyl;

and B is selected from:

(i) monofunctional and polyfunctional protein and peptide and derivatives thereof of molecular weight of at least 2000; and

(ii) a label; and

R^2 to R^5 are independently selected from C_1 to C_6 alkyl; and mixtures of the compound of formula I and its enantiomer.

5,061,626

ANTIGENIC ANAROGUES OF PLATELET ACTIVATING FACTOR

Brian A. Baldo, Pymble, and John W. Redmond, West Ryde, both of Australia, assignors to University of Sydney, Sydney, Australia

PCT No. PCT/SU87/00084, § 371 Date Nov. 24, 1987, § 102(e) Date Nov. 24, 1987, PCT Pub. No. WO87/05904, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 24, 1987, Ser. No. 156,923

Claims priority, application Australia, Mar. 24, 1986, PH5175

Int. Cl.[5] C12N *11/00;* **C07K** *17/00;* **C07F** *9/09;* **G01N** *33/532*

U.S. Cl. 435—174 **8 Claims**

1. A compound of general formula (I):

5,061,627

METHOD FOR PREPARING ENZYMES FROM CRUSTACEANS

Ragnar L. Olsen, Tromso; Even Stenberg, Kvaloysletta; Erling Sandsdalen, Tromso, and Karl A. Almas, Kvaloysletta, all of Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Oct. 11, 1989, Ser. No. 420,001

Claims priority, application Norway, Oct. 24, 1988, 884721

Int. Cl.[5] C12N *9/00*

U.S. Cl. 435—183 **7 Claims**

1. A method for the extraction of enzymes from crustacea which comprises: extracting fresh or preserved crustacea or whole parts thereof with a water based extraction agent; subsequently subjecting the thus formed extraction brine to treatment with a combination of the following process steps one or more times in an independent order: purifying by filtration, centrifugation or by chromatography; concentration; extraction and/or removal of undesired substances; isolation; standardization; and stabilizing the concentrated bioactive components.

5,061,628

RESTRICTION ENDONUCLEASE FSEI

Richard J. Roberts, Cold Spring Harbor; Janise L. Meyertons, Centerport, both of N.Y., and Mary P. Lechevalier, Piscataway, N.J., assignors to Rutgers University, Piscataway, N.J. and Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.

Filed Jul. 18, 1989, Ser. No. 381,460

Int. Cl.[5] C12N *9/22;* **C12P** *19/34*

U.S. Cl. 435—199 **13 Claims**

1. A restriction endonuclease capable of recognizing and cleaving DNA comprising an octanucleotide having the sequence 5'-GGCCGGCC-3'.

5,061,629

PRODUCTION OF 2-HYDROXY SUBSTITUTED ARYLALKANOIC ACIDS AND ESTERS BY ENZYMATIC HYDROLYSIS

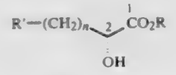
David L. Coffen, Glenridge; Panayiotis Kalaritis, New Providence, and John J. Partridge, Upper Montclair, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 148,470, Jan. 26, 1988, abandoned. This application Oct. 29, 1990, Ser. No. 607,792

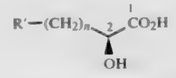
Int. Cl.[5] C07C *7/148;* **C12P** *7/62, 7/40*

U.S. Cl. 435—280 **8 Claims**

1. A process producing a 2R ester of the formula

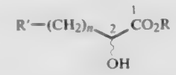


and for producing a 2S carboxylic acid of the formula



wherein R' is aryl, R is alkyl, aryl or aralkyl, each of which can be unsubstituted or substituted, and n is zero or an integer from 1 to 8;

comprising treating a racemic 2RS ester of the formula



with Pseudomonas lipase P-30 enzyme in an aqueous medium to selectively convert the 2RS ester into the 2R ester and the 2S carboxylic acid, the treatment being carried out while the pH of the medium is maintained from about 5 to about 9, and thereafter recovering the 2R ester and the 2S acid separately from the medium.

5,061,630

LABORATORY APPARATUS FOR OPTIONAL TEMPERATURE-CONTROLLED HEATING AND COOLING

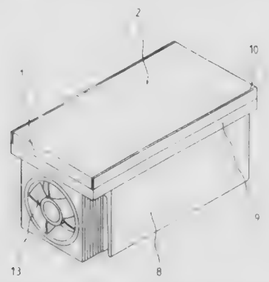
Ulrich C. Knopf, Freiburg, and Joseph Sieber, Zurich, both of Switzerland, assignors to Agrogen Foundation, Seyffer & Co. & Ulrich C. Knopf, Switzerland

Filed May 12, 1989, Ser. No. 350,803

Claims priority, application Switzerland, May 13, 1988, 01918/88; Apr. 21, 1989, 01519/89

Int. Cl.[5] C12M *1/38*

U.S. Cl. 435—290 **19 Claims**



1. Laboratory apparatus for optionally heating or cooling samples, comprising a block of one or more Peltier elements which, with one of their thermal poles, are in thermal contact with an essentially rectangular block of heat conducting metal, and with the other pole are in thermal contact with a heat exchanger, the heat exchanger being thermally insulated from the metal block, one of the outer surfaces of the rectangular metal block being a substantially flat working surface for heating or cooling the samples, and all outer surfaces of the metal block, with the exception of the working surface and the sur face in contact with the Peltier elements, being thermally insulated, whereby the working surface may be used for heating or cooling at will through inversion of the direction of the alimentation current for the Peltier elements.

5,061,631

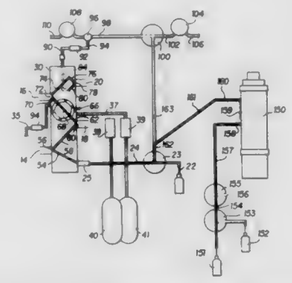
METHOD, APPARATUS AND SOLUTION FOR CALIBRATION OF PARTIAL PRESSURE VALUE

Gary S. Calabrese, North Andover, Mass., assignor to Fisher Scientific Company, Pittsburgh, Pa.

Filed Oct. 14, 1988, Ser. No. 257,553

Int. Cl.[5] G01N *31/00, 21/00, 7/00*

U.S. Cl. 436—11 **21 Claims**



17. A method for the measurement of the partial pressure of oxygen and carbon dioxide in a liquid sample which comprises the steps:

a) providing first and second calibration liquids comprising aqueous ferrioxalate solutions:

1) the first calibration liquid having a pH of 0 to 2, an oxalate concentration of 0.6 to 1.5 millimoles per liter, a molar ratio of iron(III) to oxalate of 5:1 to 100:1 and an iron concentration of 3 to 150 millimoles per liter; and

2) the second calibration liquid having a pH of 0 to 2, an iron concentration of 0.1 to 0.5 millimoles per liter, a molar ratio of iron (III) to oxalate of 1:1 to 1:7200 and an oxalate concentration of at least 0.3 millimoles per liter;

b1) exposing an aliquot of the first calibration liquid to light of sufficient wavelength, intensity and duration to convert the oxalate substantially completely to carbon dioxide without affecting the oxygen partial pressure;

c1) conveying the exposed aliquot of first calibration liquid to a measuring chamber for contact with measuring elements for partial pressure of oxygen and of carbon dioxide;

d1) making a measurement with the measuring elements on the exposed aliquot of first calibration liquid;

b2) exposing an aliquot of the second calibration liquid to light of sufficient wavelength, intensity and duration to convert the ferrioxalate substantially completely to carbon dioxide with a concombitant reduction of oxygen partial pressure;

c2) conveying the exposed aliquot of second calibration liquid to the measuring chamber for contact with the measuring elements for the partial pressures of oxygen and carbon dioxide;

d2) making measurements with the measuring elements on the exposed aliquot of second calibration liquid;

e) conveying a liquid sample having analyte values for the partial pressures of oxygen and carbon dioxide into the measuring chamber in contact with the measuring elements for the partial pressures of oxygen and carbon dioxide;

f) making measurements with the measuring elements on the liquid sample; and

g1) comparing the measurements made of oxygen partial pressure with the measuring element therefore on the liquid sample with the measurements made by that measuring element on the aliquots of first and second calibration liquids, and

g2) comparing the measurements made of carbon dioxide partial pressure with the measuring element therefore on the liquid sample with the measurements made by that measuring element on the aliquots of first and second calibration liquids.

5,061,632

CAPILLARY TUBE HEMOGLOBINOMETER AND OXIMETER

A. P. Shepherd, and John M. Steinke, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jan. 31, 1989, Ser. No. 304,744

Int. Cl.[5] G01N *21/51*

U.S. Cl. 436—66 **18 Claims**



1. Apparatus for measuring total hemoglobin concentration and percent oxygen saturation in a sample of whole, undiluted blood, comprising:

an elongated cuvette for holding a whole undiluted blood sample;

means for selectively illuminating said blood sample with infrared light and red light, the infrared light and red light entering the cuvette at predetermined locations along an axis of the cuvette;

means associated with said cuvette for sensing infrared light intensity, IR, and red light intensity, R, at a predetermined measuring location along the axis of the cuvette remote from said predetermined locations at which the infrared light and red light enter the cuvette, and for generating signals indicative of IR and R;

processing means for receiving said signals and for calculating total hemoglobin (Hb), and percent oxygen saturation, SO2, based on the signals, (Hb) being calculated as a first calibrated function of IR, SO2 being calculated as a second calibrated function of (LogR/LORIR), the second calibrated function being related to the calculated (Hb).

11. A method for measuring total hemoglobin concentration and percent oxygen saturation in a sample of whole, undiluted blood, comprising:

selectively scattering infrared and red light through a whole, undiluted blood sample;

measuring infrared light intensity, IR, and red light intensity, R, at a predetermined location, such that total hemoglobin concentration, (Hb), is a monotonic function of IR;

approximating the monotonic function with a first calibrated equation;

calculating (Hb) from IR based on the first calibrated equation; and

determining a second calibrated equation for calculating percent oxygen saturation, SO2, as a function of (LogR-/LogIR) based on the calculated (Hb).

5,061,633

METHOD FOR ANALYZING LIPID PEROXIDES USING AROMATIC PHOSPHINES

Hiroshi Meguro; Hiroshi Ohrui, and Kazuaki Akasaka, all of Sendai, Japan, assignors to Tosoh Corporation, Japan

Division of Ser. No. 163,544, Mar. 3, 1988, Pat. No. 4,947,000. This application Mar. 7, 1990, Ser. No. 489,529

Claims priority, application Japan, Apr. 22, 1987, 62-97577

Int. Cl.[5] G01N *21/64, 33/92*

U.S. Cl. 436—71 **1 Claim**

1. A method for analyzing a lipid peroxide, which comprises reacting a lipid peroxide with an aromatic phosphine compound of the formula:



(I)

wherein each of R_1 to R_3 is an aromatic group, in a solvent, to form an aromatic phosphine oxide and observe any fluorescence of the aromatic phosphine oxide.

5,061,634

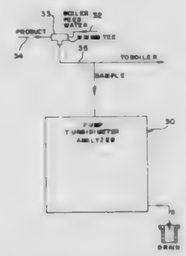
METHOD FOR CONTINUALLY AND AUTOMATICALLY MEASURING THE LEVEL OF A WATER TREATMENT PRODUCT IN BOILER FEEDWATER

James J. Hickey, 7534 Manitoba Dr., Palos Heights, Ill. 60463, and William L. Adamson, 2646 - 58th Ct. S.E., Olympia, Wash. 98501

Division of Ser. No. 422,566, Oct. 17, 1989, abandoned. This application Jul. 30, 1990, Ser. No. 560,054

Int. Cl.[5] G01N *21/82*

U.S. Cl. 436—85 **2 Claims**



1. A method of continuously and automatically measuring the level of a product in a boiler feedwater, wherein the product comprises a copolymer of acrylamide and acrylate and a copolymer of acrylic acid and sodium vinyl sulphonate, and said measuring is made with an analyzer having an inlet line connected to the feedwater to continuously sample the feedwater and by adding a reagent in the form of a precipitating agent to the sample to develop turbidity as a measure of the product level in the feedwater, said method including the steps of metering precise volume of said sample and said reagent to a mixing means, the reagent being formulated to coact only with the total acrylate component of the product to produce

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said turbidity, mixing the metered volumes of said sample and said reagent to define a reacted sample with turbidity, isolating a volume of said reacted sample and photometrically measuring the turbidity in the isolated reacted sample, wherein the step of isolating a volume of said reacted sample includes combining a portion of just measured reacted sample with a portion of new reacted sample.

5,061,635

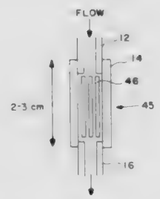
PROTEIN OR PEPTIDE SEQUENCING METHOD

John E. Shively, Arcadia, Calif., assignor to City of Hope, Duarte, Calif.

Continuation-in-part of Ser. No. 72,754, Jul. 13, 1987, which is a continuation-in-part of Ser. No. 896,724, Aug. 15, 1986, abandoned. This application Mar. 29, 1988, Ser. No. 174,956

Int. Cl.[5] **G01N** *33/68*

U.S. Cl. 436—89 **3 Claims**



1. The method which comprises:
(1) resolving a mixture of proteins or peptides by gel electrophoresis;
(2) transferring a sample peptide or protein isolated on said gel to a hydrophobic synthetic resin membrane of open porous structure upon which said sample is adsorbed;
(3) staining said sample adsorbed on said membrane;
(4) dividing the membrane into strips bearing portions of the stained sample;
(5) placing at least one of said strips into a cylindrical sequenator reaction chamber the longitudinal axis of at least one of said strips being substantially parallel to the longitudinal axis of said cylindrical reaction chamber;
(6) placing the reaction chamber in a sequenator: and
(7) subjecting the sample to sequence analysis.

5,061,636

CHEMICAL AGENT DETECTORS AND THEIR METHOD OF USE FOR DETECTING CHEMICAL NERVE AGENTS

Dominique Thoraval, Candiac DT, and John W. Bovenkamp, Kanata, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Ontario, Canada

Division of Ser. No. 446,569, Dec. 5, 1989, Pat. No. 5,009,845, which is a continuation-in-part of Ser. No. 263,186, Oct. 27, 1988, abandoned. This application Feb. 5, 1991, Ser. No. 650,593

Claims priority, application Canada, Mar. 25, 1988, 562507

Int. Cl.[5] **G01N** *31/22*

U.S. Cl. 436—104 **7 Claims**

1. A method of detecting type G chemical nerve agents comprising exposing a detector material to a fluid, said material comprising at least one dye selected from the group consisting of
4-[(phenylazo)phenyl)azo]-phenol (Disperse Yellow 23), and
p-ethoxyphenyl-azo-α-hydroxynaphthoic acid (PEN), and
examining the detector for a predetermined color change in the detector confirming the presence of said chemical agent.

5,061,637

PROCESS FOR THE REMOVAL AND QUALITATIVE ANALYTICAL DETERMINATION OF CYANIDE IN CONTAMINATED SOILS

Rudolf Wahl, Stuttgart, and Ulrich Borchardt, Siegburg, both of Fed. Rep. of Germany, assignors to Gerling Institut Pro Schadenforschung, Schadenverhutung und Sicherheitstechnik GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 18, 1990, Ser. No. 539,819

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3742948

Int. Cl.[5] **G01N** *33/00*

U.S. Cl. 436—109 **12 Claims**

1. A process for the removal of cyanide in cyanide-contaminated soils, wherein biologically degradable organic acids selected from the group consisting of formic acid, acetic acid or carbonic acid are introduced into the soil while blowing a gas stream therethrough, and the cyanide is liberated as hydrocyanic acid which is subsequently oxidized, until no hydrocyanic acid and no ammonia are detectable in the emerging gas stream, and wherein the process does not employ alkali hypochlorite or adjust the pH of the soil to pH 11.

5,061,638

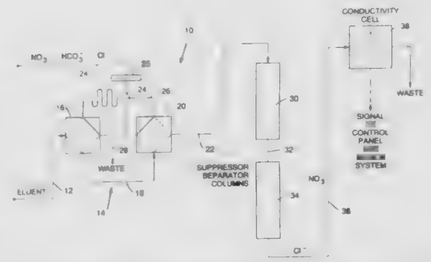
NITRATE ANALYZER

Gerald A. Guter, Bakersfield, Calif., assignor to Boyle Engineering Corporation, Newport Beach, Calif.

Filed Aug. 18, 1989, Ser. No. 395,725

Int. Cl.[5] **G01N** *30/00*

U.S. Cl. 436—110 **3 Claims**



1. A method for determining the concentration of nitrate ions in aqueous effluent, the effluent additionally containing chloride ions and bicarbonate ions, which method comprises
(1) admitting a measured volume of a sample of the effluent to a suppressor column, the suppressor column including ion-exchange columns containing silver ions and hydrogen ions in sufficient quantity to react with the bicarbonate and chloride ions and removes them from the sample, thereby forming a chloride ion- and bicarbonate ion-free sample
(2) passing the chloride ion- and bicarbonate ion-free sample into a conductivity cell,
(3) measuring the conductivity of the chloride ion- and bicarbonate ion-free sample, and
(4) relating the conductivity so measured to the concentration of nitrate ion in the sample.

5,061,639

LIQUID DISPENSER ACCURACY VERIFICATION METHOD

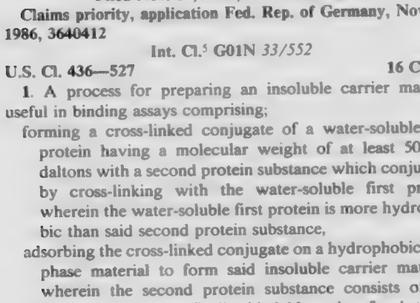
Kaki R. Lung; John S. Fox, both of Hockessin, Del., and Alex J. Chanin, Philadelphia, Pa., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Dec. 6, 1989, Ser. No. 446,773

Int. Cl.[5] **G01N** *30/00*

U.S. Cl. 436—164 **8 Claims**

1. A method of determining the accuracy of a liquid dispensing pipette using a plurality of wells of the same configuration and volume by the steps of:
using a precisely calibrated pipette, introducing a known volume of a colorimetric reagent of a known concentration that absorbs radiant energy in a manner directly proportional to the colorometric reagent concentration in a first one of said wells,



dispensing a first desired volume of the colorimetric reagent using the liquid dispensing pipet into a second one of said wells,
measuring absorbance of the reagent in each of the wells, and
calculating an actual volume of reagent dispensed in the second well by multiplying the known volume by the ratio of the absorbance of reagent in the second well to the absorbance of the reagent in the first well.

5,061,641

METHOD FOR RADIOLABELING PROTEINS

Dan Shochat, Maplewood; Hans J. Hansen, Westfield, and Robert S. Wu, West Orange, all of N.J., assignors to Immunomedics, Inc., Warren, N.J.

Filed Apr. 1, 1988, Ser. No. 176,421

Int. Cl.[5] **G01N** *33/534;* **C07K** *3/00, 15/00;* **A61K** *43/00*

U.S. Cl. 436—545 **35 Claims**

1. A method for direct radiolabeling of a protein, comprising the steps of
(a) contacting a solution of a protein containing at least one pendant sulfhydryl group with a solution of radiometal ions of a radionuclide which tightly binds to sulfhydryl groups; and
(b) contacting the resultant radiolabeled protein with an exogenous ligand which tightly binds to said radiometal ions, and recovering the resultant solution of stabilized radiolabeled protein.

5,061,642

METHOD OF MANUFACTURING SEMICONDUCTOR ON INSULATOR

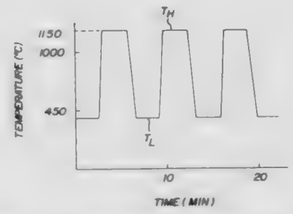
Hiroshi Fujioka, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1990, Ser. No. 557,051

Claims priority, application Japan, Aug. 19, 1989, 1-213428

Int. Cl.[5] **H01L** *21/477*

U.S. Cl. 437—11 **10 Claims**



1. A method of manufacturing a substrate having a silicon single crystalline layer on insulator comprising the steps of:
forming an intermediate layer including oxygen leaving the silicon layer under a surface of the substrate, the oxygen being doped by the ion implantation method; and
conducting heat cyclic annealing to said silicon crystal substrate in which the temperature of 1100° C. or higher and 500° C. or lower are alternatively repeated, such that dislocations originating from an interface between the silicon layer and the intermediate layer are reduced.

5,061,640

PROCESS FOR PREPARING A CARRIER USEFUL IN IMMUNOASSAYS BY DEPOSITION OF A COMPLEX OF A SPECIFICALLY BINDING SUBSTANCE WITH HYDROPHOBIC PROTEIN, AND THE RESULTING CARRIER

Wilhelm Tischer, Peissenberg; Josef Maier, Weilheim, and Rolf Deeg, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Nov. 24, 1987, Ser. No. 124,871

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1986, 3640412

Int. Cl.[5] **G01N** *33/552*

U.S. Cl. 436—527 **16 Claims**

1. A process for preparing an insoluble carrier material useful in binding assays comprising;
forming a cross-linked conjugate of a water-soluble first protein having a molecular weight of at least 500,000 daltons with a second protein substance which conjugates by cross-linking with the water-soluble first protein wherein the water-soluble first protein is more hydrophobic than said second protein substance,
adsorbing the cross-linked conjugate on a hydrophobic solid phase material to form said insoluble carrier material, wherein the second protein substance consists of one member of a specifically bindable pair of substances wherein the binding member is other than the water-soluble protein so that the cross-linked conjugate is specifically bindable.

5,061,643

METHOD OF DOPING A GROWING CRYSTALLINE SEMICONDUCTOR FILM

Tetsuya Yagi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 27, 1989, Ser. No. 457,525

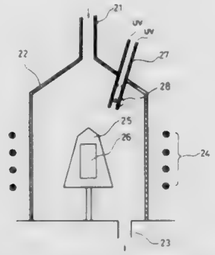
Claims priority, application Japan, Mar. 30, 1989, 1-80482

Int. Cl.[5] **H01L** *21/20*

U.S. Cl. 437—19 **13 Claims**

1. A method of doping a growing crystalline compound semiconductor film comprising growing a crystalline compound semiconductor film by metal organic chemical vapor deposition, doping the growing crystalline compound semiconductor film by decomposing a doping gas to incorporate in the growing crystalline compound semiconductor film a dopant producing a charge carrier concentration regulated by the decomposition speed of the doping gas, and selectively irradi-

ating only the doping gas with ultraviolet light before the doping gas reaches the growing crystalline compound semiconductor film to increase the decomposition speed of the doping gas at the substrate.



5,061,644

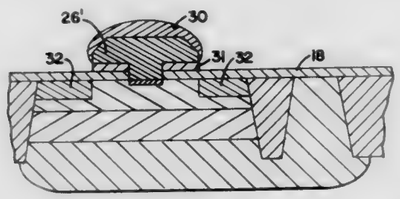
METHOD FOR FABRICATING SELF-ALIGNED SEMICONDUCTOR DEVICES

Jerry Yue, Roseville, and Michael S. T. Liu, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 288,475, Dec. 22, 1988, abandoned. This application Sep. 20, 1990, Ser. No. 587,175

Int. Cl.[5] H01L *21/20, 21/331*

U.S. Cl. 437—31 **10 Claims**



1. A method for fabricating a high performance bipolar transistor, comprising:

(a) forming a silicon semiconductor substrate comprising an active base region, a collector, and a sinker, the sinker being adjacent to and electrically isolated from the active base region, the sinker further being electrically coupled to the collector;

(b) forming a silicon oxide mask layer overlying the silicon semiconductor substrate;

(c) forming a silicon nitride mask layer overlying the silicon oxide mask layer which overlies the semiconductor substrate;

(d) defining an emitter opening through the mask layer so that an emitter area is exposed on the surface of the active base region;

(e) using silicon and chlorine source gases to form an epitaxial lateral overgrowth defining a self-aligned emitter contact which comprises sidewalls and which grows in the emitter opening at the active base region surface and continues its growth throughout the emitter opening as well as normal to and laterally over the mask layer;

(f) determining the contact shape and size by defining the angle of the self-aligned contact sidewalls through alteration of the concentration ratio of the silicon source gas and the chlorine source gas;

(g) forming a dielectric mask layer over the contact sidewalls in order to provide sufficient thickness at the outer periphery of the emitter contact to act as an effective plug mask over substantially the entire are of the emitter contact wherein the silicon nitride mask layer precludes growth of the contact side wall mask layer across the substrate surface;

(h) removing the second silicon nitride mask layer from the surface of the silicon oxide mask layer; and

(i) using the self-aligned emitter contact as a plug mask while implanting a self-aligned inactive base region into the substrate adjacent the area covered by the emitter contact.

5,061,645

METHOD OF MANUFACTURING A BIPOLAR TRANSISTOR

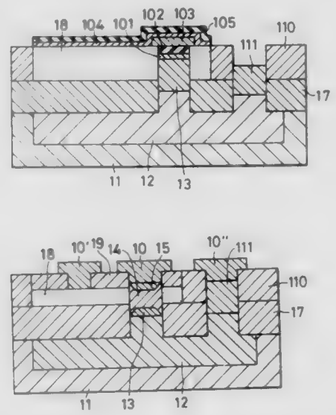
Kazuo Nakazato, Kokubunji; Tohru Nakamura, Houya; Masatoshi Matsuda, Fuchu; Takao Miyazaki, Hachioji; Tokuo Kure, Kokunbunji; Takahiro Okabe, Nishitama, and Minoru Nagata, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 196,064, May 17, 1988, abandoned, which is a division of Ser. No. 435,552, Oct. 21, 1982, Pat. No. 4,825,281. This application Mar. 26, 1990, Ser. No. 498,489

Claims priority, application Japan, Oct. 28, 1981, 56-171443

Int. Cl.[5] H01L *21/328*

U.S. Cl. 437—31 **25 Claims**



1. A method of manufacturing a semiconductor bipolar transistor device comprising the steps of:

(a) selectively etching predetermined portions of a surface region of a semiconductor substrate to leave a first protruding portion of a first conductivity type and a second protruding portion of a first conductivity type;

(b) forming a first insulating film on said substrate, by thermally oxidizing an exposed surface of the semiconductor substrate, including portions of side surfaces of each of the first and second protruding portions, and wherein said first insulating film has a first window and a second window which expose remaining portions of the side surfaces of said first and second protruding portions, respectively;

(c) after forming said first insulating film, forming a conductive polycrystalline semiconductor film of second conductivity type, opposite to said first conductivity type, on the first insulating film, to contact with exposed remaining portions of the side surfaces of both said first and second protruding portions;

(d) thermally oxidizing an exposed surface of said polycrystalline semiconductor film to form a second insulating film;

(e) doping a surface region of said second protruding portion with an impurity of said first conductivity type to form a lower resistivity region;

(f) after thermally oxidizing the exposed surface of the polycrystalline semiconductor film, doping a predetermined portion of said first protruding portion with an impurity of said second conductivity type to form a second region for said bipolar transistor device, said second region being electrically connected with said polycrystalline semiconductor film;

(g) after thermally oxidizing the exposed surface of the polycrystalline semiconductor film, doping another predetermined portion of said first protruding portion, adjacent said second region, with an impurity of said first conductivity type to form a third region for said bipolar transistor device; and

(h) forming electrodes connected with exposed upper surfaces of said first protruding portion, polycrystalline semiconductor film and second protruding portion, respectively.

5,061,646

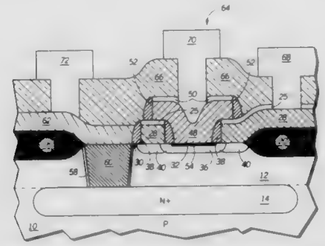
METHOD FOR FORMING A SELF-ALIGNED BIPOLAR TRANSISTOR

Richard D. Sivan, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 546,640, Jun. 29, 1990, abandoned. This application Dec. 19, 1990, Ser. No. 631,174

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **9 Claims**



1. A method for fabricating a semiconductor device comprising:

providing a monocrystalline semiconductor substrate of a first conductivity type having a heavily doped buried layer of a second conductivity type in the substrate extending from a first surface and a lightly doped epitaxial layer of the second conductivity type overlying the first surface;

forming an isolation region in the epitaxial layer dividing the epitaxial layer into an active region and an isolation region;

forming a base electrode overlying a first portion of the active region having an opening exposing a second portion of the active region;

forming a sidewall spacer on the base electrode;

forming an emitter electrode self-aligned to the base electrode extending through the opening in the base electrode and making contact with the second portion of the active region; and

anisotropically etching the epitaxial layer using the sidewall spacer on the base electrode and the isolation region as an etch mask to form a collector plug self-aligned to the active region, the collector plug extending through the epitaxial layer making electrical contact with the buried layer.

5,061,647

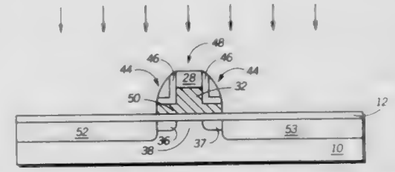
ITLDD TRANSISTOR HAVING VARIABLE WORK FUNCTION AND METHOD FOR FABRICATING THE SAME

Scott S. Roth; Carlos A. Mazure; Kent J. Cooper; Wayne J. Ray; Michael P. Woo, and Jung-Hui Lin, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 12, 1990, Ser. No. 597,946

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **16 Claims**



1. A method for forming a semiconductor device comprising:

providing a semiconductor substrate having a gate dielectric thereon;

forming a conductive layer overlying the gate dielectric having a relatively thick central region and a relatively thin peripheral region wherein the thick central region is protected by a cap differentially etchable with respect to the conductive layer;

conformably depositing a layer of work function adjusting material to overlie the conductive layer and the cap;

anisotropically etching the work function adjust material to form a Φ adjust layer overlying a portion of the peripheral region adjacent to the central region; and

anisotropically etching the peripheral region to form an IT-gate having a relatively thick central portion and a thin lateral extension wherein a portion of the sidewall layer overlies the lateral extension of the IT-gate.

5,061,648

METHOD OF FABRICATING A THIN-FILM TRANSISTOR

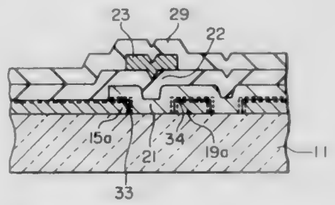
Shigeo Aoki, Habikino, and Yasuhiro Ukai, Yao, both of Japan, assignors to Hosiden Electronics Co. Ltd., Osaka, Japan

Division of Ser. No. 222,296, Jul. 22, 1988, Pat. No. 4,864,376, which is a continuation of Ser. No. 913,293, Sep. 30, 1986, abandoned. This application Aug. 28, 1989, Ser. No. 399,141

Claims priority, application Japan, Oct. 4, 1985, 60-221666; Oct. 4, 1985, 60-221667

Int. Cl.[5] H01L *231/225, 21/28*

U.S. Cl. 437—41 **6 Claims**



1. A method of fabricating a thin-film transistor comprising:

a first step of forming a transparent conductive film on a substrate;

a second step of patterning said transparent conductive film by etching to form a source electrode and a drain electrode in a spaced-apart relation to each other;

a third step of forming an element-containing layer by diffus-

ing into the surface of said source and drain electrodes a Group V element such as phosphorus, arsenic, antimony or bismuth or a Group III element such as boron, aluminum or gallium;

a fourth step of forming a semiconductor layer between and on portions of said source and drain electrodes, thereby simultaneously forming first and second ohmic contact layers between said semiconductor layer and said source and drain electrodes;

a fifth step of forming a semiconductor layer between and on portions of said source and drain electrodes, thereby simultaneously forming first and second ohmic contact layers between said semiconductor layer and said source and drain electrodes;

a fifth step of forming a gate insulating film on said semiconductor layer; and

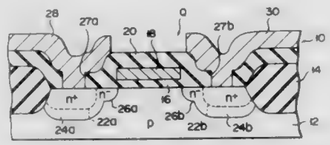
a sixth step of forming a gate electrode on said gate insulating film.

5,061,649

FIELD EFFECT TRANSISTOR WITH LIGHTLY DOPED DRAIN STRUCTURE AND METHOD FOR MANUFACTURING THE SAME

Naoko Takenouchi, Tokyo, and Katsuhiko Hieda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1987, Ser. No. 29,954
Claims priority, application Japan, Mar. 31, 1986, 61-71158
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—44 **4 Claims**



1. A method for fabricating a field effect transistor having a lightly doped drain structure, wherein a drain layer comprises a heavily doped semiconductor layer and a lightly doped semiconductor layer formed to surround said heavily doped semiconductor layer in a semiconductor substrate of a first conductivity type, said method comprising the steps of:

(a) forming a conductive layer which is insulatively provided above said substrate to serve as a gate electrode of the transistor; and

(b) performing ion implantations a plurality of times to provide, in said substrate, semiconductor active layers of second conductivity type serving as source and drain layers of said transistor, said ion implantations including,

implementing semiconductor impurity of the second conductivity type into said substrate at a first acceleration voltage and at a selected dose to form a first diffusion layer substantially self-aligned with said conductive layer, and

separately implanting the same semiconductor impurity of the second conductivity type into said substrate at a second acceleration voltage higher than the first acceleration voltage and at the selected dose to provide in said substrate a second diffusion layer which is deeper than said first diffusion layer, overlaps said first diffusion layer, and has substantially the same impurity concentration as said first diffusion layer, said first and second diffusion layers constituting said lightly doped semiconductor layer, thereby causing said lightly doped semiconductor layer to have a step-like cross-section;

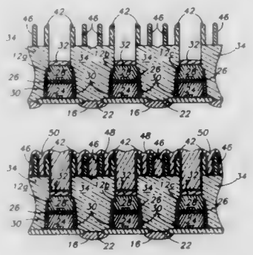
wherein said first diffusion layer is formed with said conductive layer as a mask, and said second diffusion layer is formed with said conductive layer and insulating layer portions, positioned at both sides of said conductive layer, as a mask.

5,061,650

METHOD FOR FORMATION OF A STACKED CAPACITOR

Charles H. Dennison; Hiang Chan; Yauh-Ching Liu; Pierre Fazan, and Howard E. Rhodes, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jan. 17, 1991, Ser. No. 643,835
Int. Cl.[5] H01L *21, 283*
U.S. Cl. 437—47 **22 Claims**



1. A method of forming a capacitor on a semiconductor wafer comprising the following steps:

selectively processing the wafer to define upwardly exposed active areas for electrical connection with a lower capacitor plate;

applying a first electrically conductive layer atop the wafer, the first electrically conductive layer covering and engaging the exposed active areas;

applying a first dielectric layer of a first dielectric material atop the wafer over the first conductive layer, the first dielectric material having a first etch rate;

selectively patterning the first dielectric layer and first conductive layer to define an outline for a lower capacitor plate;

applying a second dielectric layer of a second dielectric material atop the wafer over the patterned first dielectric layer, the second dielectric material having a second etch rate which is slower than the first etch rate;

etching the second dielectric layer;

etching the first dielectric layer down to the first conductive layer to produce upwardly projecting walls of second dielectric material surrounding the lower capacitor plate outline;

applying a second electrically conductive layer atop the wafer over the upwardly projecting walls and first conductive layer;

anisotropically etching the second conductive layer to provide a first electrically conductive ring extending upwardly from the first conductive layer;

applying a third dielectric layer atop the wafer, the third dielectric layer comprising a dielectric material having an etch rate which is faster than the second etch rate;

anisotropically etching the third dielectric layer to provide a first dielectric ring extending upwardly from the first conductive layer inwardly adjacent the first conductive ring;

applying a third electrically conductive layer atop the wafer over the first conductive and dielectric rings;

anisotropically etching the third conductive layer to provide a second electrically conductive ring extending upwardly from the first conductive layer inwardly adjacent the first dielectric ring, the first dielectric ring being sandwiched between the first and second electrically conductive rings;

etching the first dielectric ring from the wafer;

applying a capacitor dielectric layer atop the wafer over the first and second conductive rings and exposed first conductive layer; and

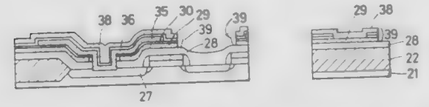
applying a fourth electrically conductive layer atop the wafer over the capacitor dielectric layer to form an upper capacitor plate.

5,061,651

METHOD OF MAKING DRAM CELL WITH STACKED CAPACITOR

Masayoshi Ino, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 280,155, Dec. 5, 1988, Pat. No. 4,899,203.
This application Oct. 27, 1989, Ser. No. 428,045
Claims priority, application Japan, Dec. 11, 1987, 62-312014
Int. Cl.[5] H01L *27/108*
U.S. Cl. 437—52 **6 Claims**



1. A process of fabrication of a semiconductor memory integrated circuit device having a stacked capacitor cell comprising the steps of:

(a) forming an isolation region, a gate insulating film, a gate electrode, a first diffusion region and a second diffusion region and a first insulating film on a substrate;

(b) forming a first plate electrode on said first insulating film over said second diffusion region;

(c) forming a second insulating film over said first plate electrode;

(d) forming a first contact hole through said first insulating film, said first plate electrode and said second insulating film to expose said second diffusion region;

(e) forming a charge storage electrode over said second insulating film with a part extending through said first contact hole being arranged so as to contact the exposed part of said diffusion region;

(f) forming a third insulating film over said charge storage electrode;

(g) forming a second contact hole through said second and third insulating films to expose part of said first plate electrode; and

(h) forming a second plate electrode over said third insulating film with a part extending through said second contact hole being arranged so as to contact the exposed part of said first plate electrode.

5,061,652

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE STRUCTURE EMPLOYING A MULTI-LEVEL EPITAXIAL STRUCTURE

Robert E. Bendernagel, Carmel; Kyong-Min Kim; Victor J. Silvestri, both of Hopewell Junction; Pavel Smetana, Poughkeepsie; Thomas H. Strudwick, Wappingers Falls, and William H. White, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1990, Ser. No. 468,533
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—64 **11 Claims**

1. A method of forming a semiconductor structure comprising the steps of:

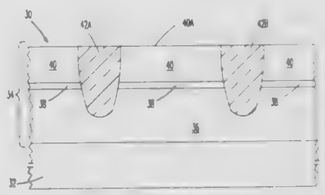
providing a doped semiconductor substrate including a surface;

epitaxially growing a first layer of semiconductor material on said substrate surface, said first layer having a relatively higher dopant concentration than said substrate;

epitaxially growing a second layer of semiconductor material on said first layer, said second layer having a relatively lower dopant concentration than said first layer;

epitaxially growing a third layer of semiconductor material intermediate said first and second layers, said third layer having a dopant concentration lower than the dopant concentration of said second layer; and

forming isolation means including a region of insulating material extending from a surface of said second layer into said first layer and terminating in said first layer for electrically isolating a device region in said second layer;



said substrate having a dopant concentration in the range of 10^{14}–10^{19} atoms/cubic centimeter;

said first layer having a thickness in the range of 0.4–20 microns and a dopant concentration in the range of 10^{17}–10^{20} atoms/cubic centimeter;

said second layer having a dopant concentration in the range of 10^{15}–10^{17} atoms/cubic centimeter; and

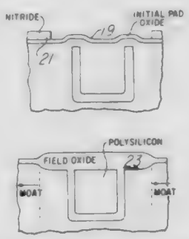
said third layer having a thickness of less than 2 microns.

5,061,653

TRENCH ISOLATION PROCESS

Clarence W. Teng, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 314,326, Feb. 22, 1989, abandoned.
This application Oct. 30, 1990, Ser. No. 605,818
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **8 Claims**



1. A method of forming a semiconductor device, comprising the steps of:

(a) providing a silicon substrate having a trench filled with polysilicon and having insulating sidewalls and bottom;

(b) forming a layer of polysilicon extending over said insulating sidewalls in said trench and contacting said substrate, and burying said insulating sidewalls in said trench with polysilicon; and

(c) oxidizing said polysilicon at the upper surface of said trench and a portion of the upper surface of said substrate exterior of said trench and extending to said trench to form a continuous field oxide over said trench which extends over said substrate.

5,061,654

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING OXIDE REGIONS WITH DIFFERNT THICKNESS

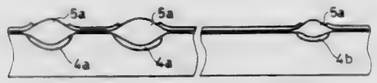
Masahiro Shimizu, and Katsuhiro Tsukamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1988, Ser. No. 213,497

Claims priority, application Japan, Jul. 1, 1987, 62-164428; Sep. 8, 1987, 62-225023

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—70 **6 Claims**



1. A method of manufacturing a semiconductor memory device having a plurality of active element devices on a main surface of a semiconductor substrate of a predetermined impurity concentration of a selected conductivity type and having a first function region, the operating voltage of which is relatively high and a second function region, the operating voltage of which is relatively low, comprising the steps of:

forming an oxide layer on said first and said second function regions;

forming a mask layer for forming the region for isolation between active element devices for isolating devices;

removing said mask layer of the region for isolation between devices on said first function region, and forming a first inversion preventing layer having a first selected impurity concentration on said region in which the mask layer is removed and on said main surface;

forming a first oxide layer for isolation between active element devices adjacent an upper portion of said first inversion preventing layer;

removing said mask layer of the region for isolation between active element devices on said second function region, and, on said region in which the mask layer on said second function region is removed and on said main surface, forming a second inversion preventing layer having a second selected impurity concentration different from said first selected impurity concentration of said first inversion preventing layer; and

forming a second oxide layer for isolation between active element devices adjacent to an upper portion of said second inversion preventing layer by simultaneously oxidizing said first function region and said second function region,

whereby the thickness of said first oxide layer for isolation between active element devices is formed to be greater than the thickness of said second oxide layer for isolation between active element devices.

5,061,655

METHOD OF PRODUCING SOI STRUCTURES

Takashi Ipposhi, and Kozuyuki Sugahara, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1991, Ser. No. 653,086

Claims priority, application Japan, Feb. 16, 1990, 2-36929

Int. Cl.[5] H01L *21/20, 21/268*

U.S. Cl. 437—89 **10 Claims**

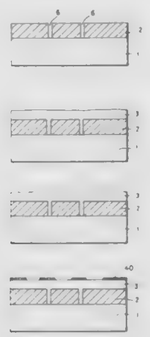
1. A method of producing a SOI structure with a first monocrystal semiconductor layer formed with a second monocrystal semiconductor layer with an insulating layer interposed therebetween, comprising the steps of:

forming an opening in said insulating layer formed on a surface of said first monocrystal semiconductor layer, said opening reaching the surface of said first monocrystal semiconductor layer,

forming a non-monocrystal semiconductor layer in said opening and on a surface of said insulating layer,

smoothing the surface of said non-monocrystal semiconductor layer,

forming a reflection-preventive film on the smoothed surface of said non-monocrystal semiconductor layer, said reflection-preventive film having alternating first and



second film thickness regions having first and second reflectances for light,

melting said non-monocrystal semiconductor layer by irradiating the surface of said reflection-preventive film with light and then cooling it for monocrystallization to form a second monocrystal semiconductor layer.

5,061,656

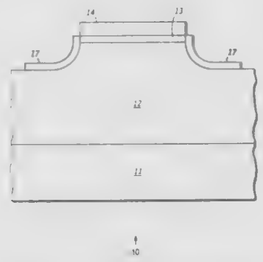
METHOD FOR MAKING A SELF-ALIGNED IMPURITY INDUCED DISORDERED STRUCTURE

Curtis D. Moyer, Phoenix, and Stephen P. Rogers, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 27, 1990, Ser. No. 618,552

Int. Cl.[5] H01L *21/20, 21/225*

U.S. Cl. 437—127 **11 Claims**



6. A method for laterally diffusing a material into a semiconductor mesa structure comprising:

providing a mesa structure with an active area;

depositing the diffusible material on the mesa structure;

applying a planarizing film on the diffusible material;

removing the planarizing material and the diffusible material from the mesa structure to approximately the active area; and

exposing the mesa structure to a diffusion cycle.

5,061,657

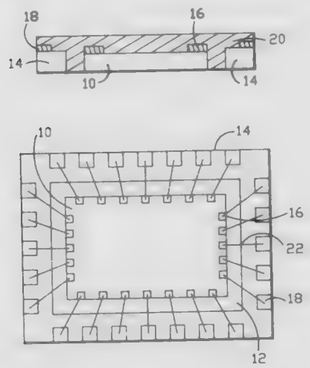
METHOD OF MAKING INTEGRATED CIRCUIT TO PACKAGE ELECTRICAL CONNECTIONS AFTER ENCAPSULATION WITH AN ORGANIC POLYMER

William D. Queen, San Diego, and Eugene P. Kelley, Spring Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 18, 1990, Ser. No. 557,449

Int. Cl.[5] H01L *21/56, 21/52, 21/60, 21/58*

U.S. Cl. 437—219 **17 Claims**



1. A method comprising the steps of:

obtaining a package (**14**) having a bonding contact (**18**) and a cavity area (**12**);

positioning an integrated circuit (**10**) having a contact (**16**) to said cavity area (**12**) of said package (**14**);

applying a layer (**20**) of non-conducting organic polymer; said layer (**20**) bridging said contact (**16**) of said integrated circuit (**10**) and said bonding contact (**18**) of said package (**14**); and

forming a conductive path (**22**) between said contact (**16**) of said integrated circuit (**10**) and said bonding contact (**18**) of said package (**14**); said conductive path (**22**) being located within said layer (**20**).

5,061,658

ORANGE DECORATIVE PAINT WITHOUT NOXIOUS SUBSTANCES

Kai Dorer, Heusenstamm, and Holger Jarnicki, Schmitten, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 3, 1990, Ser. No. 563,154

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1989, 3926335

Int. Cl.[5] C03C *8/14, 14/00*

U.S. Cl. 501—17 **5 Claims**

1. An orange decorative paint, which does not contain toxic heavy metals, comprising 15 to 30% by weight of an orange-colored pigment and 70 to 85% by weight of a glass frit, wherein said orange-colored pigment comprises 10 to 13% by weight of alkali oxide, 10 to 14% by weight of ferric oxide, 30 to 35% by weight of aluminum oxide, and 40 to 45% by weight of silica and wherein said glass frit comprises 35 to 60% by weight of silica, 15 to 35% by weight of boron oxide, 3 to 8% by weight of zirconium oxide, 2 to 8% by weight of aluminum oxide, 10 to 18% by weight of sodium or potassium oxide or a mixture thereof and 2 to 6% by weight of lithium oxide.

5,061,659

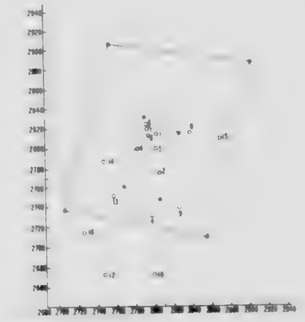
CONTRAST ENHANCEMENT FILTER GLASS USEFUL FOR COLOR CRT DISPLAYS

Sally Ciolek, Luzerne, and David Krashkevich, Dallas, both of Pa., assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed Aug. 7, 1990, Ser. No. 563,381

Int. Cl.[5] C03C *3/095*

U.S. Cl. 501—64 **18 Claims**



1. A contrast enhancement glass composition consisting essentially of, in wt %,

SiO_2	40–60
B_2O_3	0–6
Al_2O_3	0–2
ΣLi_2O, Na_2O, $K_2O = R_2O$	24–30
ΣMgO, CaO, SrO, ZnO, BaO = RO	0–10
TiO_2	1–3.5
CeO_2	1–3.5
Nd_2O_3	4–12
La_2O_3	1–11
MnO_2	0.1–1.0
Er_2O_3 (when included)	0.2–1.0
CuO	0.1–0.5
CoO	0.0005–0.0040
V_2O_5	0 05–0.50
Cr_2O_3 (when included)	0 0005–0.0300
Photopic (% T)	12–24
% T @ 445 nm	20–30
% T @ 555 nm	26–36
% T @ 580 nm	0–3
% T @ 618 nm	23–35
% T @ 620 nm	23–34

having color properties corresponding to values of (x,y) of the larger quadrangle of FIG. 1.

5,061,660

CERAMIC FOAMS

Eugene S. Park, Hockessin, Del., and Steven D. Poste, Kingston, Canada, assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 278,207, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 89,376, Aug. 26, 1987, Pat. No. 4,808,558, which is a continuation-in-part of Ser. No. 908,116, Sep. 16, 1986, abandoned. This application Mar. 15, 1990, Ser. No. 494,124

Int. Cl.[5] C04B *38/00*

U.S. Cl. 501—80 **23 Claims**

20. A rigid ceramic foam comprising a reticulated body defining interlacing substantially hollow ligaments derived from precursor metal ligaments, said hollow ligaments interconnected randomly in three dimensions, the external surfaces of said ligaments defining open channels interconnected randomly in three dimensions, and said hollow ligaments comprising (i) an interconnected polycrystalline oxidation reaction

product of said precursor metal; (ii) said precursor metal in at least a portion of said hollow ligaments; and (iii) at least a



portion of at least one hollow ligament defining a central core region which is at least partially filled with said precursor metal.

5,061,661

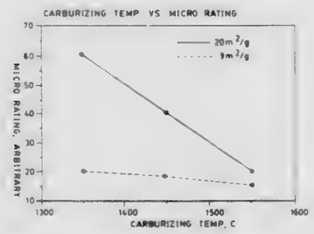
METHOD FOR PRODUCING TUNGSTEN CARBIDE AND CEMENTED TUNGSTEN CARBIDE ARTICLE THEREFROM HAVING A UNIFORM MICROSTRUCTURE

David R. Moyle, Sayre; Geoffrey L. Harris, Monroeton, and Robert F. Northrop, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 343,118, Apr. 26, 1989, abandoned. This application Jul. 23, 1990, Ser. No. 559,546

Int. Cl.[5] C04B *35/56;* **C22B** *57/00;* **B22F** *9/00*

U.S. Cl. 501—87 **10 Claims**



1 A method for producing tungsten carbide having a uniform particle size of between about 1 and 4 micrometers, said method consisting essentially of:

a) forming a uniform mixture of tungsten metal powder and carbon wherein the average particle size of said tungsten metal powder is from about 1 micrometer to about 4 micrometers in diameter, wherein the surface area of said carbon is no greater than about 12 m^2/g and wherein the amount of said carbon is sufficient to react with essentially all of said tungsten to produce tungsten carbide in the subsequent heating step; and

b) heating said mixture in a non-oxidizing atmosphere at a temperature of at least about 1200° C. for a sufficient time to produce tungsten carbide wherein the amount of free carbon is less than about 0.05% by weight of said tungsten carbide.

5,061,662

METHOD FOR PREPARING SINTERED BODY OF THE TITANIUM BORIDE AND APPARATUS THEREFOR

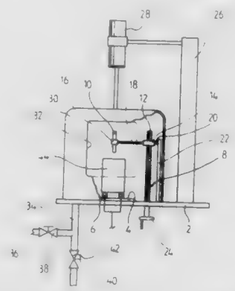
Jongin Jung, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Rep. of Korea

Filed Nov. 8, 1989, Ser. No. 433,523

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—96 **2 Claims**

1. A method for preparing a sintered body of titanium boride which comprises: wet combining 17–27 mol % of metallic titanium powder, 39–74 mol % of boron powder and 1–30 mol % of aluminum powder in an anhydrous solvent and molding the same at a pressure of 500 kg/cm^2, thereby obtaining a desired molding; self burning the molding under nitrogen gas



at a pressure of 1 ATM and above, to a sintered composite including titanium boride 50–80%, boron nitride 10–40% and aluminum nitride 1–30%.

5,061,663

ALN AND ALN-CONTAINING COMPOSITES

John D. Bolt, Landenberg, Pa., and Frederick N. Tebbe, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 76,182, Jul. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 903,448, Sep. 4, 1986, Pat. No. 4,696,968. This application Apr. 14, 1989, Ser. No. 338,019

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—95 **6 Claims**

1. A shaped article in the form of a fiber of polycrystalline aluminum nitride having a thermal conductivity of at least about 70 W/mK.

5,061,664

PREPARATION OF SINTERED ALUMINUM NITRIDE

Yasushi Matsudaira, Annaka, and Hiroshi Mogi, Gunma, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 661,407

Claims priority, application Japan, Mar. 1, 1990, 2-50487

Int. Cl.[5] G04B *35/58*

U.S. Cl. 501—98 **3 Claims**

1. A method for preparing sintered aluminum nitride comprising the steps of:

adding a sintering aid to aluminum nitride powder, said sintering aid comprising 40 to 80% by weight of Y_2O_3, 5 to 15% by weight of Dy_2O_3, 2 to 10% by weight of Er_2O_3, and 2 to 10% by weight of Yb_2O_3 based on the weight of the sintering aid, and

firing the mixture.

5,061,665

PROCESS FOR PRODUCING AN IMPROVED ALUMINA-ZIRCONIA COMPOSITE SINTERED MATERIAL

Ichiro Seki, Tsukiyono; Akihiro Kano, Akagi; Toshiki Hasegawa, Yokohama; Minoru Abe, Maebashi, and Isao Isa, Misato, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1990, Ser. No. 462,095

Claims priority, application Japan, Jan. 13, 1989, 1-4860; Jan. 13, 1989, 1-4861; Nov. 22, 1989, 1-302064; Nov. 22, 1989, 1-302065

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] C04B *35/10, 35/48*

U.S. Cl. 501—105 **7 Claims**

1. A process for producing an alumina-zirconia composite sintered material comprising mixing, heating and melting zirconia and alumina to form a melt, then quenching said melt to form solids, grinding and milling said solids while admixing ceria therewith to powder having an average grain size of about 0.5 to about 1.5 μm, and molding and sintering said powder at a temperature of about 1450° to about 1600° C., said zirconia and ceria being employed in the amounts of about 10% to 20%, and about 3% to about 7% by weight, respectively, with the balance being alumina.

5,061,666

SOLID ALPHA-OLEFIN POLYMERIZATION CATALYST COMPONENTS

John C. Chadwick, and Bart J. Ruisch, both of Amsterdam, Netherlands, assignors to Shell Research Limited, United Kingdom

Filed Apr. 24, 1990, Ser. No. 513,979

Claims priority, application United Kingdom, May 15, 1989, 89110746

Int. Cl.[5] C08F *4/64*

U.S. Cl. 502—107 **7 Claims**

1. A process for prepating a solid catalyst component which comprises halogenating a magnesium compound of the formula $MgRR^1.nCO_2$ in which R and Rhu 1 are the same or different alkoxy or phenoxy groups and n is a number of from 0 to 2 with a halide of tetravalent titanium in the presence of dialkylester of a dihydric aromatic carboxylic acid and an inert hydrocarbon diluent by reacting at a temperature of from 120° to 136° C. and recovering the solid reaction product from the reaction mixture.

5,061,667

CATALYTIC COMPONENT FOR OLEFIN POLYMERIZATION

Masahide Murata; Seizaburo Kanazawa; Hiroyuki Furuhashi; Kouji Maruyama; Masafumi Imai, and Hiroshi Ueno, all of Saitama, Japan, assignors to Toa Nenryo Kogyo KK (Tonen Corporation), Tokyo, Japan

Continuation of Ser. No. 247,840, Sep. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 132,751, Dec. 14, 1987, Pat. No. 4,814,312. This application Aug. 29, 1990, Ser. No. 576,106

Claims priority, application Japan, Sep. 22, 1987, 62-236272

The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.

Int. Cl.[5] C08F *4/654*

U.S. Cl. 502—116 **7 Claims**

1. In a supported titanium-containing catalyst component obtained by contacting

I. a magnesium-containing solid obtained by contact of (A) magnesium metal, (B) a halogenated hydrocarbon represented by the general formula RX, wherein R stands for an alkyl, aryl or cycloalkyl group having 1 to 20 carbon atoms and X for a halogen atom, and (C) a compound of the general formula $X_n^1M(OR^1)_{m-n}$, wherein X^1 stands for a hydrogen atom, a halogen atom, or a hydrocarbon group having 1 to 20 carbon atoms, M stands for a boron, carbon, silicon, aluminum, or phosphorus atom, R^1 represents a hydrocarbon group having 1 to 20 carbon atoms, m represents the valency of said atom M, and $m>n\geqq 0$, with

II. a halogen-containing alcohol, and contacting the solid product obtained with

III. an electron donor compound and a titanium compound whereby a solid titanium-containing product is formed, the improvement comprising

IV. contacting the titanium-containing solid with an olefin under polymerization conditions so as to incorporate to the titanium-containing solid from about 0.1 to about 100 g of polyolefin per gram of titanium-containing solid.

5,061,668

HYDROGENATION CATALYST AND HYDROGENATION PROCESS WHEREIN SAID CATALYST IS USED

Ronald J. Hoxmeier, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 527,924, May 24, 1990, Pat. No. 5,013,798. This application Nov. 30, 1990, Ser. No. 620,983

Int. Cl.[5] C08F *4/60*

U.S. Cl. 502—117 **18 Claims**

1. A catalyst prepared by contacting a Group VIIIA metal compound with a hydrocarbyl-substituted silicon alumoxane.

5,061,669

PREPARATION OF BIARYL COMPOUNDS

Thomas A. Puckette, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 389,022, Aug. 3, 1989, Pat. No. 4,916,227, which is a continuation-in-part of Ser. No. 277,826, Nov. 30, 1988, abandoned. This application Jan. 12, 1990, Ser. No. 463,745

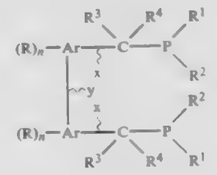
Int. Cl.[5] B01J *31/24*

U.S. Cl. 502—167 **24 Claims**

1. A catalytically active combination comprising:

(I) an anhydrous nickel compound,

(II) at least one bidentate phosphorus-containing ligand selected from the group consisting of



wherein

each Ar is independently selected from aromatic ring compounds having 6 up to 14 carbon atoms;

the x bonds and the y bonds are attached to adjacent carbon atoms on the ring structures;

each R, when present as a substitutent is independently selected from alkyl, aryl, —F, —NR'$_2$, —CN, —CHO, —OR', -OCO—R', —COO—R',



—SO_2—R', —SO_3—R', or —NR'COR';

wherein R' is a hydrocarbyl or heteroaryl radical having up to 20 carbon atoms;

n is an integer in the range of 0–4 where Ar is phenyl; 0–6 where Ar is naphthyl; and 0–8 where Ar is phenanthryl or anthracentyl;

each R^1 and R^2 is independently selected from alkyl, aryl,

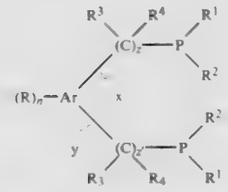
aralkyl, alkaryl or cycloaliphatic radicals, or substituted derivatives thereof wherein substituted derivatives are ethers, amines, amides, sulfonic acids, esters, hydroxyl groups and alkoxy groups;

each R^3 and R^4 is independently selected from hydrogen and the R^1 substituents;

each of the above alkyl groups or moieties is straight or branched chain of 1–20 carbons;

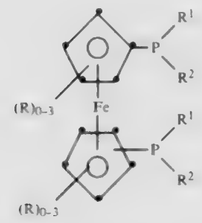
each aryl group contains 6–20 ring carbons; and

each cycloaliphatic group contains from 4–8 ring carbons;



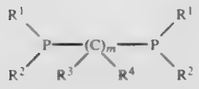
(ii)

wherein Ar, x, y, R, n, R^1, R^2, R^3, and R^4 are each as defined above, and each of z and z' can independently vary between 0 and 4, with the proviso that z+z' is at least 2;



(iii)

wherein R, R^1 and R^2 are defined above; and



(iv)

where R^1, R^2, R^3, and R^4 are as defined above; and m is a whole number which can vary from 5 up to 8;

as well as mixtures of any two or more of said type (i), (ii), (iii), or (iv) organophosphines; and

(III) at least one reducing metal selected from the group consisting of zinc, magnesium and manganese;

wherein the amount of bidentate phosphorus-containing ligand falls within the range of 0.5 up to 20 moles per gram atom of nickel; and wherein the amount of reducing metal falls within the range of about 1 up to 1000 moles per mole of nickel.

19. The combination of claim **1** wherein said catalytic combination further comprises at least one bidentate ligand containing at least one nitrogen atom as part of an aromatic ring structure.

5,061,670

PROCESS FOR THE PREPARATION OF A CATALYST CAPABLE OF PROMOTING THE OXIDATIVE CONVERSION OF METHANE INTO HIGHER HYDROCARBONS AND USE OF CATALYST

Christian Forquy, Artiguelouve; Didier Tichit, Montpelliek, and Didier Anglerot, Pau, all of France, assignors to 501 Societe Nationale Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR89/00332, § 371 Date Feb. 23, 1990, § 102(e) Date Feb. 23, 1990, PCT Pub. No. WO90/00086, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 27, 1989, Ser. No. 460,961

Claims priority, application France, Jun. 29, 1988, 88 08766

Int. Cl.[5] **C07C** *2/00;* **B01J** *27/232*

U.S. Cl. 585—500 **27 Claims**

1. A process for the preparation of a catalyst which contains at least one metal of the lanthanide group and at least one alkaline-earth metal and wherein at least part of said metals are in the form of carbonates and/or oxycarbonates, said process comprising,

1) contacting:

(a) an aqueous phase containing in solution cations of at least one metal of the lanthanide group having the atomic numbers 57 and 59 to 71 in the Periodic Table of the Elements and cations of at least one alkaline-earth metal, with

(b) a sufficient quantity of a source of carbonate ions and optionally of a source of hydroxide ions to form a co-precipitate of carbonates and/or of hydroxycarbonates of the said metals, containing at least 5% by weight of carbonates and to bring the pH of the resulting reaction medium to a value higher than 8;

2) separating the coprecipitate from the reaction medium and subjecting said coprecipitate to a washing operation;

3) drying said coprecipitate; and

4) subjecting said coprecipitate to calcination at a temperature of between 400° C. and 1000° C.

5,061,671

CATALYST FOR THE PRODUCTION OF ALCOHOLS BY HYDROGENATION OF CARBOXYLIC ACIDS AND PROCESS FOR THE PREPARATION OF THE CATALYST

Melanie Kitson, Staines, and Peter S. Williams, Hull, both of England, assignors to BP Chemicals Limited, London, England

Division of Ser. No. 282,053, Dec. 9, 1988, Pat. No. 4,990,655, which is a division of Ser. No. 150,453, Jan. 29, 1988, Pat. No. 4,804,791, which is a continuation of Ser. No. 65,677, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 849,050, Apr. 7, 1986, abandoned. This application Apr. 30, 1990, Ser. No. 516,454

Claims priority, application United Kingdom, Apr. 13, 1985, 8509530

Int. Cl.[5] **B01J** *21/18. 23/36, 23/64*

U.S. Cl. 502—185 **6 Claims**

1. A process for the production of a catalyst which process comprises the steps of

(A) impregnating a support with a solution comprising a solvent and a soluble Group VIII noble metal compound thermally decomposable/reducible to the Group VIII noble metal and subsequently removing the solvent therefrom, and

(B) impregnating the Group VIII metal impregnated support with a solution, in a solvent in which the Group VIII metal is substantially insoluble, of a soluble rhenium compound thermally decomposable/reducible to rhenium metal and/or oxide and thereafter removing the solvent therefrom.

5,061,672

ACTIVE MASS FOR MAKING ORGANOHALOSILANES

Azza A. Elattar, Niagara Falls, N.Y., assignor to Elkem Metals Company, Pittsburgh, Pa.

Filed Jan. 30, 1990, Ser. No. 472,095

Int. Cl.[5] **B01J** *21/06, 23/80, 27/182, 37/22*

U.S. Cl. 502—244 **10 Claims**

8. An active mass made by a process comprising:

(a) forming a contact mass comprising about 90 to 98% by weight particulate silicon; about 0.2 to 10% by weight particulate copper catalyst, said copper catalyst selected from the group consisting of copper, copper oxide, copper chloride, copper formate, and mixtures thereof, and about 0.005 to 2.5% by weight of a promoter, said promoter selected from the group consisting of zinc, zinc carbonate, zinc formate, zinc acetate, tin and tin compounds, phosphorus and phosphorus compounds, antimony and antimony compounds, manganese and manganese compounds, titanium and titanium compounds, aluminum and aluminum compounds, and mixtures thereof;

(b) heating said contact mass in the presence of an organohalide gas only at a temperature between about 250° and 335° C. for a period of time sufficient to form active spots of copper-silicon alloy on the surface of the silicon metal without producing any substantial quantity of an organohalosilane; and

(c) cooling said contact mass with active spots of copper-silicon alloy on the surface of the silicon metal to room temperature thereby forming a stable, active mass for use in the production of organohalosilanes.

5,061,673

COMPOSITIONS INVOLVING CR_2—O_3—V_2O_3—TIO_2

Arnulf Muan, Lacey Spring, Va., and Mitri S. Najjar, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 1, 1990, Ser. No. 531,608

Int. Cl.[5] **B01J** *23/22, 23/26*

U.S. Cl. 502—309 **14 Claims**

1. A method of preparing a composition from Cr_2O_3, V_2O_3 and TiO_2 wherein said composition falls within the shaded area circumscribed by ABCDF as shown in the disclosed FIGURE, and wherein said method comprises the steps of:

(1) heating V_2O_5 powder having a particle size of less than about 50 microns in an atmosphere in which the partial pressure of oxygen is in the range of 10^{-8} to 10^{-10} atmospheres while starting at a temperature of 600° C. and gradually increasing the temperature over a period in the range of about 12 to 24 hours to about 1300° C. and holding the temperature at about 1300° C. for a period to ensure complete reduction of all vanadium to V^{3+};

(2) separately heating TiO_2 and Cr_2O_3 powders each having a particle size of less than about 50 microns for a period of about 10 to 14 hrs at a temperature in the range of about 600° C. to 800° C. for TiO_2 and about 1000° C. to 1200° C. for Cr_2O_3;

(3) thoroughly grinding together about 35 to 98 wt. % of V_2O_3 from (1), with about 0 to 55 wt. % of TiO_2 and about 2 to 45 wt. % of Cr_2O_3 from (2) to produce a mixture having a grain size of less than about 50 microns;

(4) pelletizing the mixture from (3) at a pressure of about 5,000 psi; and

(5) heating and reacting together the pellets from (4) at a temperature in the range of about 1100° C. to 1800° C. for a period in the range of about ½ to 48 hrs in an atmosphere in which the partial pressure of oxygen is in the range of 10^{-10} to 10^{-5} atmosphere.

11. Composition produced from Cr_2O_3, V_2O_3 and TiO_2, wherein said composition is a solid solution and falls within the shaded area circumscribed by ABCDF as shown in the disclosed FIGURE wherein the amounts of Cr_2O_3, V_2O_3 and TiO_2 are characterized as shown in the table below:

Vertices	Coordinates (Wt %) Cr_2O_3	V_2O_3	TiO_2
A	45	55	0
B	45	35	20
C	10	35	55
D	2	43	55
F	2	[illegible]	[illegible]

5,061,674

COMPOSITIONS INVOLVING MnO—V_2O_5—TiO_2

Arnulf Muan, Lacey Spring, Va., and Mitri S. Najjar, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 1, 1990, Ser. No. 531,607

Int. Cl.[5] **B01J** *23/34*

U.S. Cl. 502—324 **16 Claims**

1. A composition involving MnO, V_2O_3 and TiO_2 wherein said composition is depicted by the shaded area circumscribed by ABCDF as shown in the disclosed FIG. wherein the amounts of MnO, V_2O_3 and TiO_2 are characterized as shown in the table below;

Vertices	Coordinates (wt %) MnO	V_2O_3	TiO_2
A	52	48	0
B	52	20	28
C	14	20	66
D	2	32	66
F	2	98	0

6. A method of preparing compositions from MnO, V_2O_3 and TiO_2 wherein said compositions fall within the shaded area circumscribed by ABCDF as shown in the disclosed Figure, and wherein said method comprises the steps of

(2) heating V_2O_5 powder having a particle size of less than about 50 microns in an atmosphere in which the partial pressure of oxygen is in the range of 10^{-8} to 10^{-10} atmosphere while starting at a temperature of 600° C. and gradually increasing the temperature over a period in the range of about 12 to 24 hours to about 1300° C. and holding the temperature at about 1300° C. for a period to ensure complete reduction of all vanadium to V^{3+};

(2) heating TiO_2 and Mn_3O_4 powders each having a particle size of less than about 50 microns for a period of about 10 to 14 hrs at a temperature in the range of about 600° C. to 800° C. for TiO_2 and about 1000° C. to 1300° C. for Mn_3O_4;

(3) thoroughly grinding together about 35 to 98 wt.% of V_2O_3 from (1), with about 0 to 55 wt.% of TiO_2 and about 2 to 45 wt.% of Mn_3O_4 from (2) to produce a mixture having a grain size of less than about 50 microns;

(4) pelletizing the mixture from (3) at a pressure of about 5,000 psi; and

(5) heating and reacting together the pellets from (4) at a temperature in the range of about 1000° C. to 1700° C. for a period in the range of about ½ to 48 hrs in an atmosphere in which the partial pressure of oxygen is in the range of 10^{-10} to 10^{-5} atmosphere.

5,061,675

PROCESS FOR PRODUCING A DENATURATED MANGANESE DIOXIDE CATALYST FOR THE HYDRATION REACTION OF CYANOHYDRINS

Shuji Ebata; Hiroyuki Hirayama; Hirofumi Higuchi, and Koichi Kida, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 25, 1990, Ser. No. 542,835
Claims priority, application Japan, Aug. 8, 1989, 1-203790
Int. Cl.[5] B01J 23/34
U.S. Cl. 502—324 10 Claims

1. A process for producing a denatured manganese dioxide catalyst for the hydration reaction of cyanohydrins, which process comprises reacting an aqueous permanganate solution, and an aqueous manganese (II) compound solution in an acidic aqueous solution at a temperature of 70° C. to 130° C.

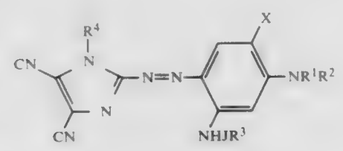
5,061,676

MIXTURE OF DYES FOR MAGENTA DYE DONOR FOR THERMAL COLOR PROOFING

Derek D. Chapman, and Steven Evans, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1990, Ser. No. 616,482
Int. Cl.[5] B41M 5/035, 5/26
U.S. Cl. 503—227 15 Claims

6. In a process of forming a dye transfer image comprising imagewise-heating a magenta dye-donor element comprising a support having thereon a dye layer comprising a mixture of a yellow dye and a magenta dye dispersed in a polymeric binder and transferring a magenta dye image to a dye-receiving element to form said magenta dye transfer image, the improvement wherein said magenta dye has the formula:



wherein:

R^1 is hydrogen or a substituted or unsubstituted alkyl or allyl group of from 1 to about 6 carbon atoms, with the proviso that R^1 is hydrogen when X is alkoxy;

X is R^1, an alkoxy group of from 1 to about 4 carbon atoms or taken together with R^2 represents the atoms which form a 5- or 6-membered heterocyclic ring;

R^2 is a substituted or unsubstituted alkyl or allyl group of from 1 to about 6 carbon atoms or can be combined with X as described above;

R^3 is a substituted or unsubstituted alkyl group of from 1 to about 6 carbon atoms or a substituted or unsubstituted aryl group of from about 6 to about 10 carbon atoms;

J is CO, CO_2, $—SO_2—$ or $CONR^5—$;

R^4 is a substituted or unsubstituted alkyl or allyl group of from 1 to about 6 carbon atoms, or a substituted or unsubstituted aryl group of from about 6 to about 10 carbon atoms; and

R^5 is hydrogen or R^3; said dye mixture approximating a hue match of the magenta SWOP Color Reference.

5,061,677

THERMO-SENSITIVE RECORDING LABEL PAPER

Mitsuhiro Yoshida; Nobuyuki Nakayama; Yasuhiro Yamanashi, and Tosio Huzii, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1989, Ser. No. 448,140
Claims priority, application Japan, Dec. 12, 1988, 63-312084; Apr. 28, 1989, 63-107421
Int. Cl.[5] B41M 5/40
U.S. Cl. 503—226 5 Claims

1. A thermo-sensitive recording label paper comprising a laminate which comprises:

(1) a paper support;

(2) a thermo-sensitive color forming layer coated on one surface of said support, said color forming layer comprising:

(a) a colorless or lightly colored leuco dye; and

(b) a color developer for developing the color of the leuco dye;

(3) a protective layer, provided on said color forming layer; and (4) at least one layer selected from a back layer and a protective underlayer, said back layer being provided on a surface of said paper support opposite to the surface having the color forming layer coated thereon, and said protective underlayer being provided between said paper support and said color developing layer;

wherein said laminate has an internal bond strength of 2.5 kg-cm or more as measured by Tappi UM-403, and the surface of said protective layer has a Bekk smoothness of 500 seconds or more as measured by JIS P8119.

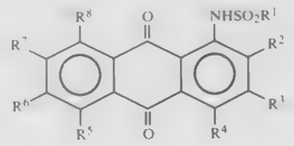
5,061,678

THERMAL TRANSFER IMAGING USING SULFONYLAMINOANTHRAQUINONE DYES

Susan K. Jongewaard, North St. Paul; Louis M. Leichter, Mendota Heights; Terrance P. Smith, Woodbury, and Krzysztof A. Zaklika, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 384,158, Jul. 21, 1989, Pat. No. 4,977,134. This application Oct. 31, 1990, Ser. No. 606,177
The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.
Int. Cl.[5] B41M 5/035, 5/26
U.S. Cl. 503—227 25 Claims

1. A thermal dye transfer imaging element comprising a continuous layer of at least one anthraquinone dye bonded to a substrate said dye having the general structure:



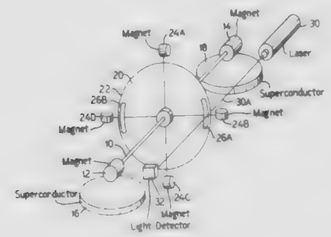
where R^1 is selected from R^9 and R^{10}, R^9 is alkyl of 1 to 20 carbon atoms, or alkyl of 1 to 20 carbon atoms substituted with one or more of fluoro, chloro, bromo, hydroxy, amino, and alkoxy, alkylthio, and monoalkylamino and dialkylamino each with alkyl groups of 1 to 10 carbon atoms, R^{10} is aryl of 5 to 20 carbon atoms, or aryl of 5 to 20 carbon atoms substituted with one or more of R^9, fluoro, chloro, bromo, nitro, sulfonyl, cyano, carbonyl, hydroxy, amino, and $R^9O—$, $R^9S—$, $R^9NH—$, and $R^9R^9N—$, R^2 to R^8 are independently selected from hydrogen, fluoro, chloro, bromo, nitro, cyano, $R^1SO_2NH—$, $R^{11}NH—$, $R^{11}O—$, $R^{11}S—$, $R^{11}(CO)O—$, $R^{11}(CO)NH—$, $R^{11}CO—$, $R^9O(CO)—$, $R^{10}O(CO)—$, $R^{11}R^{11}N(CO)—$, $R^{11}SO_2—$, and $R^{11}R^{11}NSO_2—$, and groups R^{11} are independently selected from hydrogen, R^9 and R^{10}.

5,061,679

DRIVE SYSTEM EMPLOYING FRICTIONLESS BEARINGS INCLUDING SUPERCONDUCTING MATTER

David E. Weeks, II, Fayetteville, Ark., assignor to The University of Arkansas, Little Rock, Ark.

Filed Mar. 17, 1989, Ser. No. 325,300
Int. Cl.[5] H01L 39/12
U.S. Cl. 505—1 11 Claims



1. An apparatus comprising:

(a) a rotatable support member;

(b) a pair of first magnets positioned at opposite ends of the support member, said magnets having axes of symmetry and being rotatable about said axes;

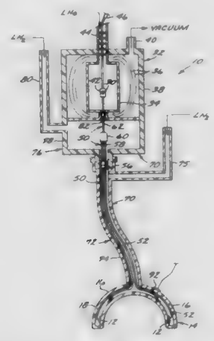
(c) a mass of a superconducting material positioned adjacent each first magnet so that based on current understanding each magnet is levitated from the mass of superconducting material by means of persistent currents induced in the mass of superconducting material by said first magnets.

5,061,680

SUPERCONDUCTING BIOMAGNETOMETER WITH REMOTE PICKUP COIL

Douglas N. Paulson, Del Mar; David S. Buchanan, San Diego; Eugene C. Hirschkoff, Leucadia; Mark S. DiIorio, San Diego, and William C. Black, Jr., Del Mar, all of Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Filed Jul. 31, 1989, Ser. No. 386,948
Int. Cl.[5] G01R 33/035; A61B 5/05; H01B 12/00; H01F 5/08
U.S. Cl. 505—1 20 Claims



12. A biomagnetometer, comprising:

a magnetic pickup coil formed of a material that is superconducting at a temperature less than its superconducting transition temperature, the pickup coil being adapted for picking up magnetic fields;

a detector formed of a material that is superconducting at a temperature less than its superconducting transition temperature, the detector being adapted to detect small electrical currents, there being no container that encloses both the pickup coil and the detector; and

an electrical conductor connected at one end to the pickup coil and at the other end to the detector and being adapted to convey electrical signals from the pickup coil to the detector, the conductor being formed, for at least a portion of its length, of a matering having a superconducting transition temperature of greater than the boiling point of liquid nitrogen.

5,061,681

SUPERCONDUCTING THIN MATERIAL AND A METHOD FOR PREPARING THE SAME

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 224,373, Jul. 26, 1988, abandoned. This application Apr. 19, 1989, Ser. No. 340,505
Claims priority, application Japan, Jul. 26, 1987, 62-185726
Int. Cl.[5] B32B 9/00
U.S. Cl. 505—1 3 Claims

1. A superconducting thin film disposed or a substrate comprising a compound oxide represented by the general formula:

$$(Sr,\gamma)_x(La,\delta)_{1-x}\epsilon_yCu_{1-y}O_{3-z}$$

in which

γ represents an element of IIa group of the periodic table except Sr, an atomic ratio of γ to Sr being selected to be in a range between 1% and 90%,

δ represents an element of IIIa group of the periodic table except La, an atomic ratio of δ to La being selected to be in a range betwee.i 1% and 90%,

ϵ represents a metal element of Vb group of the periodic table, x, y and z are numbers in the ranges of $0 \leqq x \leqq 1$, $0 \leqq y \leqq 1$, and $0 \leqq z \leqq 1$ respectively, and

(Sr, γ) and (La, δ) mean that the respective elements position predetermined sites in a crystal in a predetermined proportion.

5,061,682

CERAMIC PRECURSOR MIXTURE AND TECHNIQUE FOR CONVERTING THE SAME TO CERAMIC

Ilhan A. Aksay, Bellevue; Chan Han, Lynnwood; Gary D. Maupin, Richland; Corrie B. Martin, Seattle; Randal P. Kurosky, Federal Way, and Gregory C. Stangle, Seattle, all of Wash., assignors to The Washington Technology Center, Seattle, Wash.

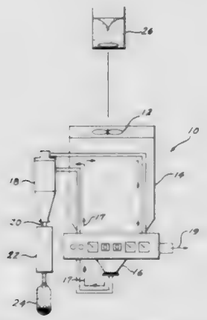
Filed Jan. 17, 1990, Ser. No. 465,738
Int. Cl.[5] C01B 13/14; C01D 1/00; C01F 1/00; C01G 1/00
U.S. Cl. 505—1 21 Claims

1. A process for producing particles of ceramic material, the process comprising the steps:

(a) forming droplets of a ceramic precursor mixture containing a metal cation, a carbohydrate, a solvent, and an anion capable of participating in an anionic oxidation-reduction reaction with the carbohydrate;

(b) removing substantially all of the solvent from the droplets of the ceramic precursor mixture to form particles comprising the metal cation, the anion, and the carbohydrate and;

(c) thermally initiating an anionic oxidation-reduction reaction between the anion and the carbohydrate under conditions which permit the anion and the carbohydrate to react in an explosive manner.



5,061,683

PROCESS FOR MAKING SUPERCONDUCTORS USING BARIUM HYDROXIDE

Harold S. Horowitz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 59,848, Jun. 9, 1987, abandoned. This application May 31, 1988, Ser. No. 197,961
Int. Cl.[5] C01B *13/14;* C01F *11/02;* C01G *3/02;* H01L *34/12*
U.S. Cl. 505—1 5 Claims

1. A process for preparing a superconducting composition of the formula

$$M_1Ba_2Cu_3O_x$$

wherein M is selected from the group consisting of Y, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb and Lu, and x is a numerical value in the range of about 6.5 to 7.0, comprising

(a) forming a suspension by mixing barium hydroxide and M_2O_3 with an aqueous solution of a cupric carboxylate or cupric nitrate at a temperature from about 50° C. to about 100° C. or mixing barium hydroxide with an aqueous solution of a cupric carboxylate or cupric nitrate and an M-carboxylate or M-nitrate at a temperature from about 50° C. to about 100° C. to obtain a suspension having M:Ba:Cu present in an atomic ratio of about 1:2:3;

(b) drying the suspension formed in step (a) to obtain a precursor; and

(c) heating the precursor in an oxygen-containing atmosphere at a temperature of about 850° C. to about 950° C. for a time sufficient to from

$$M_1Ba_2Cu_3O_y$$

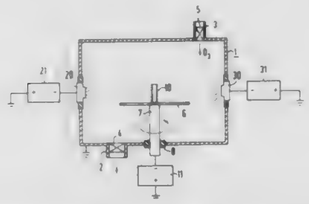
where y is from about 6.0 to about 6.4 and maintaining the $M_1Ba_2Cu_3O_y$ in an oxygen-containing atmosphere while cooling for a time sufficient to obtain $M_1Ba_2Cu_3O_x$.

5,061,684

PRODUCTION OF THIN LAYERS OF A HIGH TEMPERATURE SUPERCONDUCTOR (HTSC) BY A PLASMA-ACTIVATED PHYSICAL VAPOR DEPOSITION PROCESS, AND CATHODES USED THEREIN

Helmut Freller, Roethenbach, and Peter Schack, Nurenberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 25, 1989, Ser. No. 412,082
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3833132
Int. Cl.[5] H01L *39/12;* B05D *3/06*
U.S. Cl. 545—1 19 Claims



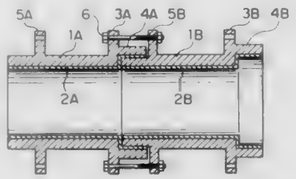
1. A plasma-activated physical vapor deposition process for the production of thin layers of a high temperature superconductor having metallic and oxidic components comprising the steps of removing material from a cathode by a cathodic process, depositing the said material on a substrate, and adjusting the material by a heat treatment to achieve a structure and oxygen stoichiometry suitable for superconduction, wherein the cathodic process is an arc vaporization process with an arc between an anode and the cathode of the material to be removed and with one arc base on said cathode in which the arc base is moved on the cathode surface in a random or a controlled manner, wherein in the arc vaporization process at least two cathodes of different alloys or mixtures of the metallic components of the high temperature superconductor are activated for simultaneous vaporization by an arc for each, and wherein the materials vaporized from the different alloys are jointly deposited on the substrate, the arc vaporization process occurring reactively under an oxygen atmosphere of preset O_2 partial pressure to achieve the oxygen stoichiometry for superconduction.

5,061,685

MAGNETIC SHIELD

Shigeyoshi Kosuge; Makoto Kabasawa; Moriaki Ono, and Yukio Shinbo, all of Tokyo, Japan, assignors to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Jan. 14, 1991, Ser. No. 640,693
Claims priority, application Japan, Jan. 25, 1990, 2-15564
Int. Cl.[5] H04B *3/28;* H05K *9/00;* H01L *39/00*
U.S. Cl. 505—1 3 Claims



1. A magnetic shield characterized by comprising:

a plurality of metallic cylinders connected to each other in the axial direction thereof, each of said plurality of cylinders having at one end thereof an engaging section for receiving an end of an adjacent metallic cylinder to be connected thereto; and

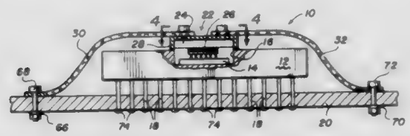
a film of a composite oxide superconducting material containing a Cu_xO_y-radical, formed on the entire inner surface of each of said plurality of cylinders, including the inner surface of said engaging section thereof.

5,061,686

SUPERCONDUCTING POWER DISTRIBUTION STRUCTURE FOR INTEGRATED CIRCUITS

Richard C. Ruby, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 15, 1989, Ser. No. 352,221
Int. Cl.[5] H01G *1/14, 4/10;* H01L *27/02;* H01B *12/00*
U.S. Cl. 565—1 31 Claims



1. A superconducting power distribution structure for an integrated circuit comprising:

a first superconducting capacitor plate;

a second superconducting capacitor plate provided with electrical isolation means within said second capacitor plate;

dielectric means separating said first capacitor plate from said second capacitor plate;

first via means coupled at a first end to said first capacitor plate and extending through said dielectric and said electrical isolation means of said second capacitor plate;

first contact means coupled to a second end of said first via means; and

second contact means coupled to said second capacitor plate such that said first contact means and said second contact means are accessible from the same side of said second capacitor plate.

5,061,687

LAMINATED FILM AND METHOD FOR PRODUCING THE SAME

Toshio Takada; Takahito Terashima; Kenji Iijima; Kazunuki Yamamoto, and Kazuto Hirata, all of Kyoto, Japan, assignors to Ube Industries, Ltd., Ube; Kanegafuchi Chemical Industry Co., Ltd., Osaka; Nippon Steel Corporation; TDK Corporation, both of Tokyo; Tosoh Corporation, Shin nanyo; Toyo Boseki Kabushiki Kaisha, Osaka; Nippon Mining Co., Ltd.; NEC Corporation, both of Tokyo; Matsushita Electric Industrial Co., Ltd., Kadoma and Seisan Kaihatsu Kagaku Kenkyusho, Kyoto, all of, Japan

Filed Nov. 29, 1989, Ser. No. 442,988
Claims priority, application Japan, Nov. 29, 1988, 63-302510
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 2 Claims



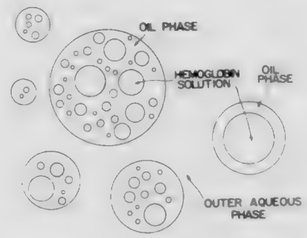
1. A laminated film comprising a thin film of single crystal $YBa_2Cu_3O_{7-x}$ having a plane in the direction parallel with the film surface and a continuous insulating ultrathin layer of MgO which is formed on said superconductor film and has a thickness of not larger than 10 Å and the (001) plane in a direction parallel with the film surface.

5,061,688

HEMOGLOBIN MULTIPLE EMULSION

Richard L. Beissinger, Oak Park; Darsh T. Wasan, Westmont; Lahksman R. Sehgal, Flossmoor, and Arthur L. Rosen, Wilmette, all of Ill., assignors to Illinois Institute of Technology, Chicago and Northfield Laboratories, Inc., Evanston, both of, Ill.

Filed Aug. 19, 1988, Ser. No. 234,386
Int. Cl.[5] A61K *9/113, 37/14;* B01J *13/00*
U.S. Cl. 514—6 35 Claims



1. An oxygen carrying multiple liquid emulsion comprising a primary emulsion comprising aqueous solution of oxygen carrying material in oil selected from the group consisting of mineral oil, vegetable oil and mixtures thereof, emulsified with a primary emulsifier having primary emulsion droplet sizes of up to about 5 microns and a secondary emulsion comprising said primary emulsion in an outer aqueous phase emulsified with a secondary emulsifier having secondary emulsion droplet sizes up to about 10 microns, said multiple emulsion having a viscosity of about 3 to about 9 cp, yield about 85 to about 99 percent, and oxygen carrying capacity about 7 to about 20 volume percent.

22. A blood substitute comprising a sterile oxygen carrying multiple liquid emulsion comprising a primary emulsion comprising aqueous solution of oxygen carrying material in oil selected from the group consisting of mineral oil, vegetable oil and mixtures thereof, emulsified with a primary emulsifier having primary emulsion droplet sizes of up to about 5 microns and a secondary emulsion comprising said primary emulsion in an outer aqueous phase emulsified with a secondary emulsifier having secondary emulsion droplet sizes up to about 10 microns, said multiple emulsion having a viscosity of about 3 to about 9 cp, yield about 85 to about 99 percent, and oxygen carrying capacity about 7 to about 20 volume percent.

23. A blood substitute according to claim 22 wherein said oxygen carrying material is hemoglobin.

5,061,689

ZINC BACITRACIN CONTAINING WOUND DRESSING

Oscar M. Alvarez, East Brunswick, N.J., assignor to Bioderm, Inc., Plainsboro, N.J.

Filed Dec. 24, 1986, Ser. No. 946,311
Int. Cl.[5] A61K *37/00, 37/14*
U.S. Cl. 514—6 13 Claims

1. A wound dressing comprising a layer of an impregnatable material, said material being impregnated with a composition comprising 5% to 8% bacitracin zinc in a pharmaceutically acceptable carrier.

5,061,690

METHOD FOR INCREASING MILK PRODUCTION IN MAMMALS AND/OR INCREASING THE BIRTH WEIGHT OF THEIR NEWBORN AND IMPROVING POSTNATAL GROWTH

Guy Kann, Boulogne, and Jack Martinet, Vieille Eglise, both of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Continuation of Ser. No. 266,087, Nov. 2, 1988, abandoned. This application Aug. 28, 1990, Ser. No. 574,434
Claims priority, application France, Nov. 4, 1987, 87 15313
Int. Cl.[5] A61K *37/43*
U.S. Cl. 514—12 **6 Claims**

1. A method for increasing milk production in female mammals used in milk production, including man, according to which the female mammal is supplied, over a period of the order of 10 to 20 days, on completion of two-thirds of the gestation period, with an effective amount of hGRF or of one of its analogs, or alternatively of an active fragment of hGRF or of one of its analogs.

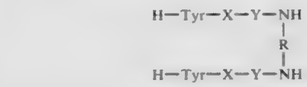
5,061,691

ENKEPHALIN ANALOGS

Kunio Yagi, Aichi; Yasuyuki Shimohigashi; Hiroaki Kodama, both of Fukuoka; Tomio Ogasawara, Kasugai; Takuya Koshizaka, Kasugai, and Masayasu Kurono, Mie, all of Japan, assignors to Kabushiki Kaisha Vitamin Kenkyuso, Gifu, Japan

Filed Aug. 23, 1988, Ser. No. 235,867
Claims priority, application Japan, Aug. 24, 1987, 62-208219; Sep. 24, 1987, 62-237278
Int. Cl.[5] A61K *37/02;* **C07K** *5/00*
U.S. Cl. 514—17 **11 Claims**

1. An enkephalin analog of the formula



wherein X is D-Ala,D-Val,D-Phe, Pro,D-Met,D-met(O), D-Leu, D-Glu, D-Glu(OBzl), D-Lys, D-Lys(Z) or D-Arg; and Y is Phe; Phe; and R is

a) a direct bond,
b) an alkylene group having from 1 to 6 carbon atoms,
c) an o—, m—, or p—phenylene group, or
d) a cycloalkane;

or a salt or hydrate thereof.

5,061,692

METHODS AND COMPOSITIONS FOR THE TREATMENT OF NON-IGE-MEDIATED DISEASES

Gary S. Hahn, Cardiff by the Sea, Calif., assignor to Immunetech Pharmaceuticals, San Diego, Calif.

PCT No. PCT/US87/03222, § 371 Date Nov. 23, 1989, § 102(e) Date Nov. 23, 1989, PCT Pub. No. WO88/04177, PCT Pub. Date Jul. 16, 1988
Continuation-in-part of Ser. No. 939,927, Dec. 9, 1986, Pat. No. 4,816,449, which is a continuation-in-part of Ser. No. 899,891, Aug. 25, 1986, abandoned, which is a continuation of Ser. No. 824,945, Feb. 3, 1986, Pat. No. 4,628,045, which is a continuation of Ser. No. 746,175, Jun. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 522,601, Aug. 12, 1983, abandoned. This PCT application Dec. 9, 1987, Ser. No. 382,623
Int. Cl.[5] A61K *37/02;* **C07K** *7/06*
U.S. Cl. 514—17 **10 Claims**

1. A method for the treatment of non-IgE-mediated inflammatory disease conditions comprising administering to a mammalian subject a therapeutically effective amount of a peptide having the amino acid sequence Asp-Ser-Asp-Pro-Arg.

5,061,693

FIBRINOGEN RECEPTOR ANTAGONISTS

Ruth F. Nutt, Green Lane; Stephen F. Brady, Philadelphia, and Daniel F. Veber, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 28, 1989, Ser. No. 386,533
Int. Cl.[5] A61K *37/02;* **C07K** *7/06*
U.S. Cl. 514—17 **10 Claims**

1. A fibrinogen receptor antagonist compound of the formula:

A—B—C—Gly—Asp—D—E (I)

wherein:

A is L-asparagine, D-asparagine or acylated asparagine;
B is an L-isomer of a secondary amino acid selected from the group consisting of proline, hydroxy proline, thioproline, β,β-dimethylthioproline, dehydroproline, pipecolic acid, and azetidine carboxylic acid and N-methyl amino acids;
C is an L-isomer of arginine, homo-arginine, guanido aminobutryic acid, or guanido aminopropionic acid;
D is tryptophan or phenylalanine; and
E is OH, NH_2, NHR, or NR_1R_2, wherein R is an alkyl group having 1 to 4 carbon atoms, and wherein R_1 and R_2 are the same or different and each represents an alkyl group having 1 to 4 carbon atoms.

5,061,694

METHOD FOR STABILIZING OR CAUSING REGRESSION OF ATHEROSCLEROSIS IN CORONARY ARTERIES EMPLOYING AN ACE INHIBITOR

A. K. Gunnar Aberg, Lawrenceville; Patricia Ferrer, Pennington, and Miguel A. Ondetti, Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 23, 1989, Ser. No. 426,139
Int. Cl.[5] A61K *31/40, 31/66, 37/00*
U.S. Cl. 514—19 **18 Claims**

1. A method for stabilizing or causing regression of otherscclerosis in the coronary arteries in a normotensive patient, which comprises administering to a normotensive patient in need of such treatment on effective amount of an angiotensin converting enzyme inhibitor wherein said inhibitor is administered is single or divided doses of from about 0.1 to about 500 mg/one to four times daily over a prolonged period of treatment.

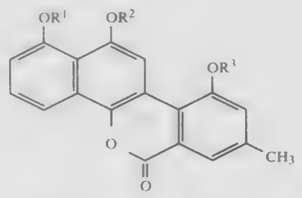
5,061,695

ANTITUMOR SUBSTANCE BE-12406

Hiroyuki Suda; Katuhisa Kojiri; Akira Okura, all of Tokyo; Koutaro Funaishi; Kenji Kawamura, both of Aichi, and Masanori Okanishi, Tokyo, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

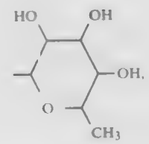
Filed Jan. 30, 1990, Ser. No. 476,065
Claims priority, application Japan, Jan. 30, 1989, 1-19978; Dec. 12, 1989, 1-322280
Int. Cl.[5] A61K *31/70;* **C07H** *17/04;* **C07D** *311/02*
U.S. Cl. 514—28 **6 Claims**

1. An antitumor substance or a pharmaceutically acceptable salt thereof, which is represented by the general formula



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or a group of the formula



and R^3 represents a hydrogen atom or a methyl group.

5,061,696

HYPOTONIC COMPOSITIONS FOR SELECTIVELY KILLING UNDESIRABLE LENS CELLS IN THE HUMAN EYE AND METHODS FOR USING SUCH COMPOSITIONS

Kenneth K. York, 2300 N. Edgemoat, Los Angeles, Calif. 90027

Filed May 18, 1989, Ser. No. 353,828
Int. Cl.[5] A61K *31/715*
U.S. Cl. 514—54 **6 Claims**

1. A method for destroying lens epithelial cells comprising applying directly to said cells, in an amount sufficient to destroy said cells, a composition including at least one ocularly biocompatible viscoelastic substance that has the capacity to osmotically swell and rupture said cells without damaging or destroying tissues adjacent to said cells.

5,061,697

ADHERENT, AUTOENCAPSULATING SPRAY FORMULATIONS OF BIOCONTROL AGENTS

Baruch S. Shasha, Peoria, and Michael R. McGuire, Metamora, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 3, 1989, Ser. No. 389,090
Int. Cl.[5] B01J *13/02;* **C12N** *11/10*
U.S. Cl. 514—60 **15 Claims**

1. A dispersible biocontrol formulation comprising a pregelatinized starchy material, a sugary material, and an effective amount of a biocontrol agent, wherein the relative amount of the starchy material with respect to the agent is sufficient to entrap the agent within a matrix of the starchy material upon drying of an aqueous dispersion of the formulation on a substrate treated with the dispersion, and wherein the amount of sugary material is sufficient to promote adherence of the dried dispersion on said substrate.

5,061,698

AQUEOUS BORON-CONTAINING COMPOSITIONS

George M. Malouf, Irvine, and Edward L. Docks, Orange, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 339,283, Apr. 17, 1989, which is a continuation-in-part of Ser. No. 155,775, Feb. 16, 1988, Pat. No. 4,844,725, which is a continuation-in-part of Ser. No. 69,906, Jul. 6, 1987, abandoned. This application Oct. 4, 1989, Ser. No. 417,227
Int. Cl.[5] A01N *55/08, 59/14*
U.S. Cl. 514—64 **14 Claims**

1. The method of controlling insects and fungi which comprises application to said insects or fungi an effective amount of an alkylammonium borate composition containing about 7% to 13% boron comprising about 40% to about 85% of the reaction product of boric acid and lower alkylamine in a mole ratio of from 1.5:1 to about 3:1, about 2% to about 15% of an alcohol selected from the group consisting of lower alkanols and lower alkylene glycols, and the balance water.

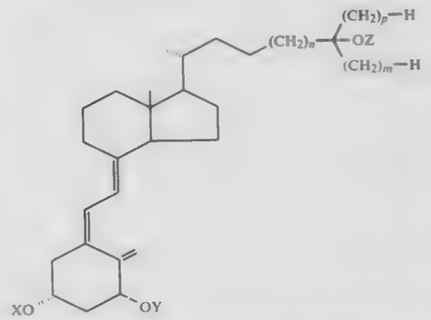
5,061,699

COMPOUNDS EFFECTIVE IN INDUCING CELL DIFFERENTIATION AND PROCESS FOR PREPARING SAME

Hector F. DeLuca, 1809 Highway Bb, Deerfield, Wis. 53531; Heinrich K. Schnoes, 1806 Summit Ave., Madison, Wis. 53705; Kato L. Perlman, 1 Chippewa Ct., Madison, Wis. 53711, and Andrzej Kutner, Institute of Pharmaceutical Ind. Rydrygiera 8, 01-793, Warsaw, Poland

Continuation of Ser. No. 187,680, Apr. 29, 1988, Pat. No. 4,927,815. This application Oct. 10, 1989, Ser. No. 419,347
Int. Cl.[5] A61K *31/59;* **C07J** *172/00;* **C12N** *5/00*
U.S. Cl. 514—167 **31 Claims**

1. A compound of the structure:



where X, Y and Z, which may be the same or different, are selected from the group consisting of hydrogen and a hydroxy-protecting group, and
where n is 3 or 4, and
where m and p are integers having, independently, values of 1 to 5.

5,061,700

GLYCERYL ACETATE OINTMENT VEHICLES

Gordon J. Dow, 506 Sequoia Ave., San Anselmo, Calif. 94960, and Debra A. Dow, San Rafael, Calif., assignors to Gordon Jay Dow, Mill Valley, Calif.

Filed Nov. 16, 1989, Ser. No. 438,372
Int. Cl.[5] A61K *9/06, 31/56, 31/57, 31/58*
U.S. Cl. 514—169 **17 Claims**

1. A composition of matter consisting essentially of a glyceryl acetate of the general formula $C_3H_5(CH_3COO)_n(OH)_{3-n}$, wherein n is 1, 2, or 3; an oleaginous material selected from the group consisting of paraffins, silicones, lanolins, and mixtures thereof; a corticosteroid, a surfactant, and a thickener, wherein the glyceryl acetate is a solvent for the corticosteroid and the composition is substantially free from auxiliary solvents.

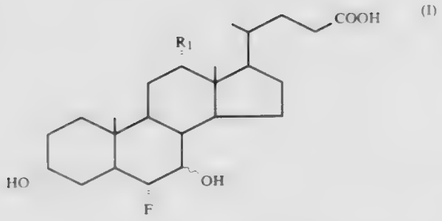
5,061,701

FLUORINATED BILE ACID DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Roberto Pellicciari; Aldo Roda, and Giuliano Frigerio, all of Milan, Italy, assignors to Giuliani S.p.A., Milan, Italy

Filed Apr. 9, 1990, Ser. No. 506,837
Claims priority, application Italy, Apr. 17, 1989, 20170 A/89
Int. Cl.[5] A61K *31/575;* **C07J** *9/00*
U.S. Cl. 514—182 **4 Claims**

1. A compound according to



wherein R_1 is hydrogen or hydroxy and the hydroxy group at the 7-position can be either in α or β configuration, the pharmaceutically acceptable salts thereof and the glycine and taurine conjugated forms thereof.

5,061,702

CEPHEM COMPOUND AS AN ANTIMICROBIAL AGENT

Kunio Atsumi; Katsuyoshi Iwamatsu; Kenji Sakagami; Takashi Yoshida; Haruo Yamamoto; Seiji Shibahara, and Shigeharu Inouye, all of Yokohama, Japan, assignors to Meiji Seika Kabushiki Kaisha, Tokyo, Japan

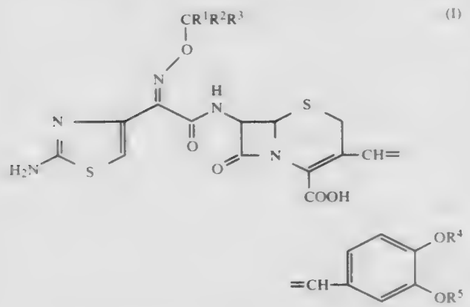
Filed Sep. 5, 1989, Ser. No. 402,814

Claims priority, application Japan, Sep. 2, 1988, 63-220198

Int. Cl.[5] C07D *501/24;* **A61K** *31/545*

U.S. Cl. 514—202 **4 Claims**

1. A cephem compound represented by the formula (I):



wherein R^1 represents a hydrogen atom or a carboxyl group; R^2 and R^3, which may be the same or different, each represent a hydrogen atom or a lower alkyl group of 1–3 carbon atoms; and R^4 and R^5, which may be the same or different, each represents a hydrogen atom or a lower alkanoyl group of 1–4 carbon atoms or an aroyl group of 6–10 carbon atoms; and pharmaceutically acceptable salts thereof.

5,061,703

ADAMANTANE DERIVATIVES IN THE PREVENTION AND TREATMENT OF CEREBRAL ISCHEMIA

Joachim Bormann, Frankfurt; Markus R. Gold, Nauheim, and Wolfgang Schatton, Eschborn, all of Fed. Rep. of Germany, assignors to Merz + Co. GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

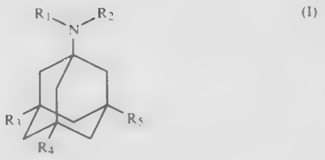
Filed Apr. 11, 1990, Ser. No. 508,109

Claims priority, application European Pat. Off., Apr. 14, 1939, 89106657

Int. Cl.[5] A61K *31/13, 31/41, 31/55, 31/445*

U.S. Cl. 514—212 **13 Claims**

1. A method for the prevention or treatment of cerebral ischemia comprising the step of administering, to a patient in need thereof, an effective amount of an adamantane derivative of the general formula



wherein

R_1 and R_2 are identical or different and represent hydrogen or a straight or branched alkyl group of 1 to 6 C atoms or, in conjunction with N, a heterocyclic group with 5 or 6 ring C atoms;

wherein

R_3 and R_4 are identical or different, being selected from hydrogen, a straight or branched alkyl group of 1 to 6 C atoms, a cycloalkyl group with 5 or 6 C atoms, and phenyl;

wherein

R_5 is hydrogen or a straight or branched C_1–C_6 alkyl group, or a pharmaceutically-acceptable salt thereof.

5,061,704

THIOPHENE COMPOUNDS, COMPOSITIONS AND USE

Michel Wierzbicki, L'Etang la Ville; Frédéric Sauveur, Argenteuil; Jacqueline Bonnet, Paris; Martine Brisset, Caen, and Charles Tordjman, Boulogne, all of France, assignors to Adir et Compagnie, Courbevoie, France

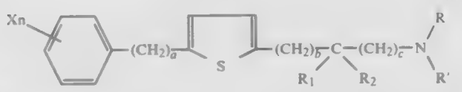
Filed Nov. 23, 1990, Ser. No. 617,501

Claims priority, application France, Nov. 24, 1989, 89 15458

Int. Cl.[5] A61K *31/38, 31/535;* **C07D** *333/20, 413/06*

U.S. Cl. 514—231.5 **31 Claims**

1. A compound selected from the group consisting of thiophene compounds of the formula I:



in which:

X is selected from the group consisting of: a hydrogen atom, halogen atoms, straight-chain and branched alkyl and alkoxy radicals each having from 1 to 5 carbon atoms, and dialkylamino radicals in which each alkyl group contains from 1 to 5 carbon atoms;

n is selected from the group consisting of: 1 and 2;

a is selected from the group consisting of: integers of from 2 to 6 inclusive;

b is selected from the group consisting of 2 and 3;

c is selected from the group consisting of 1 and 2, and is such that b+c=4; R_1 and R_2, which may be the same or different, are each selected from the group consisting of: a hydrogen atom and alkyl radicals having from 1 to 5 carbon atoms, and

R_1 and R_2 together with the carbon atom to which they are bonded form a hydrocarbon ring containing from 3 to 6 carbon atoms inclusive; and

R and R′, which may be the same or different, are each selected from the group consisting of: a hydrogen atom and alkyl radicals having from 1 to 5 carbon atoms, and

R and R′ together with the nitrogen atom to which they are bonded form a heterocyclic radical selected from the group consisting of pentagonal and hexagonal heterocyclic radicals each containing one nitrogen atom, one nitrogen atom and one oxygen atom, and two nitrogen atoms, and each of these heterocyclic radicals substituted by a substituant selected from the group consisting of: straight-chain and branched alkyl radicals containing from 1 to 5 carbon atoms inclusive and arylalkyl, haloarylalkyl, (C_1–C_5)alkyl-arylalkyl and (C_1–C_5)alkoxy-arylalkyl radicals, in which the alkyl moiety of each aryl-alkyl radical has from 1 to 5 carbon atoms inclusive; and

physiologically tolerable salts thereof with an acid.

5,061,705

DIARYL-SUBSTITUTED HETEROCYCLIC COMPOUNDS, DRUGS AND COSMETICS OBTAINED THEREFROM

Hans H. Wuest, Dossenheim; Bernd Janssen, Ludwigshafen, both of Fed. Rep. of Germany; William V. Murray, Belle Mead; Michael P. Wachter, Bloomsbury, both of N.J., and Stanley Bell, Narbeth, Pa., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

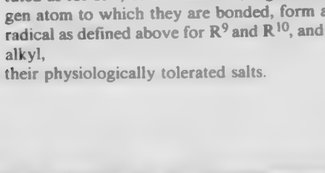
Filed Feb. 8, 1990, Ser. No. 476,875

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 3903993

Int. Cl.[5] A61K *7/48;* **C07D** *231/22, 413/10*

U.S. Cl. 514—236.5 **11 Claims**

1. Compounds of the formula I



where R^1 and R^2 are each hydrogen or methyl

A is an ethylene or methylene radical which is unsubstituted or substituted by methyl, hydroxyl or oxo,

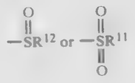
L is hydroxypyrazole or pyrazole

R^3 s hydrogen, a hydroxy or C_1–C_6-alkoxy group,

R^4 is hydrogen, C_1–C_4-alkyl, halogen or methoxy,

R^5 is hydrogen or methoxy or tert-butyl,

R^6 is hydrogen, methyl, nitrile or a C_2–C_{10}-ketal group or the radical —CHR^7OR^8—CHR^7—NR^9R^{10}, —COR^{11}, —SR^{12},



in which

R^7 is hydrogen or C_1–C_4-alkyl,

R^8 is hydrogen, C_1–C_4-alkyl or C_1–C_{20}-alkanoyl or is benzoyl which is unsubstituted or substituted by methoxy, nitro, methyl or chlorine,

R^9 and R^{10} are each hydrogen, C_1–C_4-alkyl or C_1–C_6-alkanoyl or are each benzoyl which is unsubstituted or substituted as for R^8, or R^9 and R^{10}, or together with the nitrogen atom to which they are bonded, form a saturated, 5-membered or 6-membered heterocyclic radical which may contain oxygen as the second heteroatom,

R^{11} is hydrogen, C_1–C_4-alkyl, —OR^{13} or —$NR^{14}R^{15}$, where R^{13} is hydrogen, unsubstituted or hydroxyl-substituted C_1–C_8-alkyl, aryl or aralkyl which is unsubstituted or substituted by chlorine, bromine, methyl, methoxy or nitro, substitution in the case of the aralkyl group being in the aryl moiety, and where R^{14} and R^{15} are each hydrogen, unsubstituted or hydroxyl-substituted C_1–C_6-alkyl or an aralkyl or aryl group which is unsubstituted or substituted as for R^{13}, or R^{14} and R^{15}, together with the nitrogen atom to which they are bonded, form a heterocyclic radical as defined above for R^9 and R^{10}, and R^{12} is C_1–C_4-alkyl,

and their physiologically tolerated salts.

5,061,706

2,3-QUINOXALINEDIONES FOR USE AS NEUROLEPTICS

Tage Honoreé, Copenhagen; Poul Jacobsen, Rødovre; Flemming E. Nielsen, Virum, and Lars Nafrim, Gentofte, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

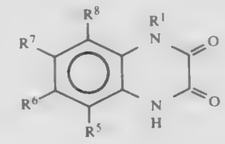
Filed Dec. 15, 1989, Ser. No. 452,029

Claims priority, application Denmark, Dec. 22, 1988, 7158/88

Int. Cl.[5] A61K *31/495;* **C07D** *241/44*

U.S. Cl. 514—249 **10 Claims**

1. A quinoxaline compound having the formula I



wherein

R^1 is hydroxy, methoxy, propenyloxy, cyclohexyloxy, carboxymethyloxy, benzyloxy or $OCOR^2$, wherein R^2 is C_{1-2}-alkyl, ethoxy, phenoxy or phenyl;

R^5 is hydrogen, hydroxy, methyl, NO_2, halogen, CN, CF_3, C_{1-4}-alkoxy, $SO_2NR'R'$ or SO_2R', wherein R′ is hydrogen or C_{1-4}-alkyl;

R^6 is hydrogen, hydroxy, methyl, NO_2, halogen, CN, CF_3, C_{1-4}-alkoxy, $SO_2NR'R'$ or SO_2R', wherein R′ is hydrogen or C_{1-4}-alkyl;

R^7 is hydrogen, hydroxy, C_{1-2}-alkyl, NO_2, halogen, CN, CF_3, C_{1-4}-alkoxy, acetyl, cyanomethyl, carboxymethyl, methoxycarbonylmethyl, $SO_2NHCOCOOC_2H_5$, $SO_2NR'R'$ or SO_2R', wherein R′ is hydrogen or C_{1-4}-alkyl;

R^8 is hydrogen, hydroxy, NO_2, halogen, CN, CF_3, C_{1-4}-alkoxy, $SO_2NR'R'$ or SO_2R', wherein R′ is hydrogen or C_{1-4}-alkyl;

provided that R^1 is not hydroxy, when

i) R^5 is methyl, R^6 is hydrogen, R^7 is hydrogen and R^8 is hydrogen; or

ii) R^5 is hydrogen, R^6 is CF_3, R^7 is hydrogen and R^8 is hydrogen.

5,061,707

9-DEAZAGUANINES TO TREAT PSORIASIS

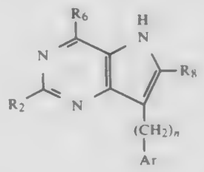
Catherine R. Kostlan, and Jagadish C. Sircar, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 478,610, Feb. 12, 1990, Pat. No. 4,988,702, which is a division of Ser. No. 336,585, Apr. 10, 1989, Pat. No. 4,923,872, which is a continuation of Ser. No. 117,352, Nov. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 59,419, Jun. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 900,486, Aug. 26, 1986, abandoned. This application Oct. 31, 1990, Ser. No. 606,640

Int. Cl.[5] A61K *31/505*

U.S. Cl. 514—258 **15 Claims**

1. A method for treating psoriasis in a human suffering therefrom which comprises administering to said human an effective amount a compound of the formula (I)



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wherein R_6 is OH or SH; R_2 is hydrogen or NH_2, R_8 is hydrogen or NH_2, n is an interger of zero through four, and Ar is (i) phenyl unsubstituted or substituted by halogen, alkyl of from one to four carbon atoms, hydroxy, alkoxy of one to four carbon atoms, or trifluoromethyl, (ii) 2- or 3- thienyl, (iii) 2- or 3-furanyl; or a pharmaceutically acceptable acid or base addition salt thereof; in unit dosage form.

5,061,708

THERAPEUTIC GUANINE ESTERS

Thomas A. Krenitsky, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

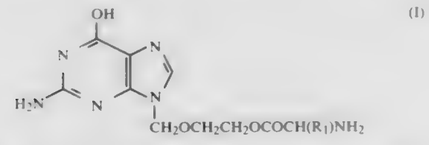
Continuation of Ser. No. 228,387, Aug. 4, 1988, abandoned. This application Nov. 21, 1989, Ser. No. 442,415

Claims priority, application United Kingdom, Nov. 5, 1987, 8725939

Int. Cl.[5] A61K *31/52*; **C07D** *473/18*

U.S. Cl. 514—262 **18 Claims**

1. The L form of a compound of formula (I)



(I)

wherein R_1 represents a group of formula $-CH[CH_3]CH_2CH_3$ or a pharmaceutically acceptable salt thereof.

8. A method of treating a susceptible viral infection in a mammal which comprises the administration to said mammal of an effective antiviral amount of a compound of formula (I) as defined in claim **1** or a pharmaceutically acceptable salt thereof.

10. A method of treating a herpes virus infection in a human having said infection which comprises orally or parenterally administering an effective herpes simplex virus infection treatment amount of 2-(2-amino-1,6-dihydro-6-oxo-9H(purin-9-yl)methoxy) ethyl-L-isoleucinate or a pharmaceutically acceptable salt thereof to said human.

5,061,709

USE OF CERTAIN COMPOUNDS IN LIVESTOCK FOOD AS GROWTH PROMOTANTS FOR BETTER FEED UTILIZATION AND IMPROVED CARCASS COMPOSITION

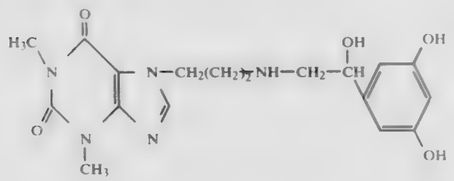
Larry A. Muir, Flemington, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 331,729, Apr. 2, 1989, Pat. No. 4,959,382, which is a division of Ser. No. 177,210, Apr. 4, 1988, Pat. No. 4,847,302, which is a division of Ser. No. 731,255, May 8, 1985, Pat. No. 4,761,421, which is a continuation-in-part of Ser. No. 617,299, Jun. 4, 1984, abandoned. This application May 18, 1990, Ser. No. 525,262

Int. Cl.[5] A61K *31/52*

U.S. Cl. 514—263 **1 Claim**

1. A method for improving the growth of food livestock which comprises administering to such livestock an effective amount of a compound having the formula:



5,061,710

MERCAPTO-ACYLAMINO ACID ANTIHYPERTENSIVES

Martin F. Haslanger, Ridgewood; Bernard R. Neustadt, West Orange, and Elizabeth M. Smith, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

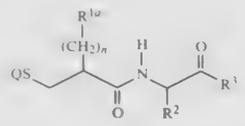
Continuation-in-part of Ser. No. 32,153, Mar. 27, 1987, Pat. No. 4,801,609. This application Dec. 16, 1987, Ser. No. 133,669

Claims priority, application European Pat. Off., Jun. 17, 1987, 87108730-0

Int. Cl.[5] A61K *307/07*

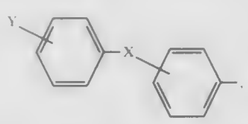
U.S. Cl. 514—266 **4 Claims**

1. A method of treating hypertension or congestive heart failure comprising administering to a hypertensive mammal an antihypertensive effective amount of a combination of an atrial natriuretic factor and a mercapto-acylamino acid compound having the structural formula

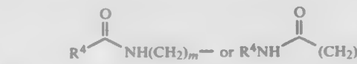


wherein

R^{1a} is Y—C_6H_4—, Y—C_6H_4S—, Y—C_6H_4O—,

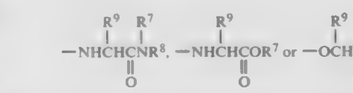


α-naphthyl, β-naphthyl, furyl, thienyl, benzofuryl, benzothienyl, $H_2N(CH_2)_m$—, diphenylmethyl,



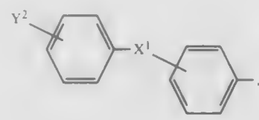
R^2 is alkyl, alkyl-$S(O)_{0-2}(CH_2)_q$—, $R^{14}(CH_2)_kS(O)_{0-2}(CH_2)_q$—, alkyl-$O(CH_2)_q$—, $R^5(CH_2)_k$—$O(CH_2)_q$—, $R^5(CH_2)_q$—, $N_2N(CH_2)_q$—, cycloalkyl$(CH_2)_k$—, $R^{13}CONH(CH_2)_q$—, $R^{13}NHCO(CH_2)_q$— or R^6O-$CO(CH_2)_q$—;

R^3 is —OR^7, —NR^7R^8,



R^4 and R^{13} are independently hydrogen, alkyl or Y^1—C_6H_4—;

R^5 is Y^2—C_6H_4—, Y^2—C_6H_4S—, Y^2—C_6H_4O—, α-naphthyl, β-naphthyl, furyl, thienyl, benzofuryl, benzothienyl, indolyl or



provided that when R^5 is Y^2—C_6H_4S— or $Y^2C_6H_4O$—, k is 2 or 3;

R^{14} is R^5, mono-unsaturated lower alkyl, hydroxy, alkoxy or alkylthio, provided that when R^{14} is hydroxy or alkoxy, k is 2 or 3 and when R^{14} is mono-unsaturated alkyl or alkylthio, k is 1, 2 or 3;

R^6, R^7 and R^8 are independently H, alkyl, hydroxyalkyl, dihydroxyalkyl, alkoxyalkyl, dialkoxyalkyl, alkoxyalkoxyalkyl, haloalkyl, (haloalkoxy)alkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, arylalkyl or alkyl substituted with a 5–6 membered saturated ring comprising 1–2 oxygen atoms as ring members wherein the ring carbon atoms may be substituted with 0–2 alkyl substituents, or R^7 and R^8 together with the nitrogen to which they are attached complete a 5–7 membered ring, wherein one of the 4–6 ring members containing R^7 and R^8 may be a nitrogen atom, an alkyl-substituted nitrogen atom or an oxygen atom, and wherein the ring may be substituted on the ring carbon atoms with substituents chosen from alkyl and hydroxy groups;

R^9 is hydrogen, alkyl, carboxyalkyl, mercaptoalkyl, alkylthioalkyl, aminoalkyl, hydroxyalkyl, phenylalkyl, hydroxyphenylalkyl, guanidinoalkyl, imidazolylalkyl, indolylalkyl, or carbamoylalkyl;

n is 0–2;

m and k are independently 0–3;

q is 1–4;

X and X^1 are independently a bond, —O—, —S—, or $—CH_2—$;

Q is hydrogen or $R^{10}CO$—;

R^{10} is alkyl, hydroxyalkyl, alkoxyalkyl, alkylaminoalkyl, dialkylaminoalkyl, Y^3—C_6H_4-alkyl, alkoxy, Y^3—C_6H_4—, naphthyl, furyl, thienyl or pyridyl;

Y, Y^1, Y^2 and Y^3 independently represent one or more substituents selected from H, alkyl, cycloalkyl, alkoxy, OH, F, Cl, Br, CN, $—CH_2NH_2$, $—CO_2H$, $—CO_2$alkyl, $—CONH_2$ and phenyl;

or a pharmaceutically acceptable addition salt thereof.

5,061,711

METHOD OF CURING LIVER DISEASES BY USING PYRROLO QUINOLINE QUINONE TRIESTERS AND NOVEL PYRROLO QUINOLINE QUINONE TRIESTERS

Teizi Urakami, Tokyo; Mitsunori Oda, and Chieko Itoh, both of Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

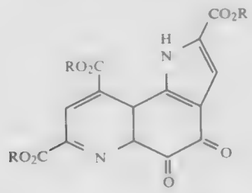
Filed Oct. 3, 1990, Ser. No. 592,266

Claims priority, application Japan, Oct. 9, 1989, 1-262109; Jun. 28, 1990, 2-168484

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—292 **2 Claims**

1. A method for inhibiting increase of glutamic acid-oxalacetic acid transaminase, glutamic acid-pyruric acid transaminase and tot la bilirubin in a patient in need of such inhibition which comprises administer ting to said patient an amount which is capable of effecting such inhibition of a compound represented by the formula (I)



(I)

wherein R represents a lower alkyl group having 1 to 4 carbon atoms, a lower alkenyl group having 2 to 4 carbon atoms or a benzyl group.

5,061,712

PREPARATION OF 7-(3-AMINO- AND 3-AMINO-METHYL-1-PYRROLIDINYL)-3-QUINOLONECARBOXYLIC ACIDS AND -NAPHTHYRIDONECARBOXYLIC ACIDS

Uwe Petersen, Leverkusen; Andreas Krebs, Odenthal; Thomas Schenke, Bergisch-Gladbach; Klaus Grohe; Michael Schriewer, both of Odenthal; Ingo Haller, Wuppertal; Karl G. Metzger, Wuppertal; Rainer Endermann, Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

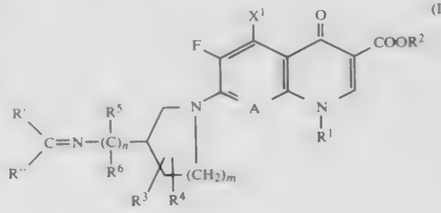
Filed May 25, 1990, Ser. No. 529,016

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1989, 3918544

Int. Cl.[5] A61K *31/47*; **C07D** *227/04, 227/06*

U.S. Cl. 514—300 **11 Claims**

1. A compound of the formula



(IV)

in which

X^1 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, phenylthio, halogen or alkyl having 1 to 4 carbon atoms,

R^1 represents straight-chain or branched alkyl having 1 to 5 carbon atoms, which can optionally be substituted by 1 to 3 halogen atoms, or alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, 2-hydroxyethyl, methoxy, amino, methylamino, ethylamino, dimethylamino or phenyl which is optionally substituted by 1 to 2 fluorine atoms,

R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

R^3 represents hydrogen, C_1–C_3-alkyl, hydroxyl, C_1–C_3-alkoxy, C_1–C_3-alkylthio or halogen,

R^4 represents hydrogen or methyl,

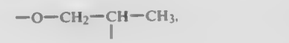
R^5 and R^6 are identical or different and represent hydrogen or methyl,

m represents 0, 1 or 2,

n represents 0 or 1,

A represents N or C—R^7, wherein

R^7 represents H, halogen, methyl, cyano, nitro, hydroxyl or methoxy, or together with R^1 can also form a bridge having the structure



which can have the R- or S-configuration,

R′ represents hydrogen, straight-chain or branched alkyl having 1 to 10 carbon atoms or phenyl, which can optionally be substituted by one to five identical or different substituents from the group comprising C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_2-alkylthio, hydroxyl, nitro, halogen, carboxyl, C_1–C_4-alkoxycarbonyl, cyano and phenyl, or represents naphthyl, and

R″ represents hydrogen, straight-chain or branched alkyl having 1 to 5 carbon atoms or phenyl, wherein R′ and R″, together with the carbon atom to which they are bonded,

VOL 1131 ISS 5 OCT 29 1991 UMI

can also form a 5- or 6-membered aliphatic ring which is optionally substituted by one or more methyl or ethyl radicals.

excluding compounds in which, simultaneously, R'' represents H, n represents 0, m represents 1, R^3 and R^4 represent H, X^1 represents H, A represents CH, R^2 represents H or a carboxyl-protective group, R^1 represents C_1–C_5-alkyl, cyclopropyl or phenyl which is optionally substituted by 1 to 2 fluorine atoms and R' represents phenyl or substituted phenyl.

10. A method of combatting bacteria in a patient in need thereof which comprises administering to such patient an antibacterially effective amount of a compound according to claim **1**

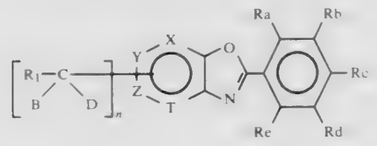
5,061,713

ANALGESIC OXAZOLOPYRIDINE COMPOUNDS

Gérald Guillaumet; Christine Flouzat, both of Orleans, and Jacqueline Bonnet, Paris, all of France, assignors to Science et Organization, Neuilly-sur-Seine, France

Filed Aug. 7, 1990, Ser. No. 564,033
Claims priority, application France, Aug. 7, 1989, 89 10596
Int. Cl.[5] A61K *31/435;* **C07D** *498/04*
U.S. Cl. 514—302 **17 Claims**

1. A compound selected from those of formula (I):



(I)

in which:

X, Y, Z and T each represent, independently of one another, a nitrogen atom, a —CH= group or a group CW= or CV=, in which W and V, which may be identical or different, represent a halogen atom or a lower alkyl or lower alkoxy group optionally substituted with one or more halogen atoms, on condition that only one of them represents a nitrogen atom,

Ra, Rb, Rc, Rd and Re represent, independently of one another, a hydrogen atom, a halogen atom or a lower alkyl group optionally substituted with one or more halogen atoms,

n represents 1 or 2,

B represents a hydrogen atom and D a hydroxyl group, or B and D simultaneously represent an oxygen atom, and

R_1 represents a hydrogen atom, a linear or branched lower alkyl, linear or branched lower alkenyl, aryl, heteroaryl or lower arylalkyl group, a cycloalkyl group having 3 to 7 carbon atoms or a cycloalkylalkyl group, it being possible for each of the lower alkyl, lower alkenyl, aryl, lower arylalkyl, cycloalkyl and cycloalkylalkyl groups to be substituted with one or more halogen atoms or a lower alkyl or lower alkoxy group optionally substituted with one or more halogen atoms,

their isomers, epimers and diastereoisomers, as well as their addition salts with a pharmaceutically-acceptable acid.

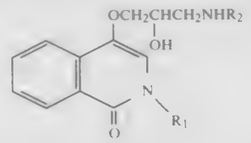
5,061,714

ISOQUINOLINE COMPOSITION FOR THE TREATMENT OF GLAUCOMA OR OCULAR HYPERTENSION

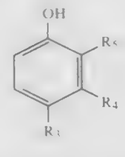
Toyohiro Tadokoro; Kiyoshi Sato; Shigeki Hatakeyama; Shigeo Kawase, and Masao Ueno, all of Saitama, Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Division of Ser. No. 495,386, Mar. 16, 1990. This application Mar. 4, 1991, Ser. No. 664,335
Claims priority, application Japan, Mar. 28, 1989, 1-73866; Sep. 20, 1989, 1-242303
Int. Cl.[5] A61K *31/47;* **C07D** *217/24*
U.S. Cl. 514—309 **5 Claims**

1. A stabilized composition for the treatment of glaucoma or ocular hypertension which comprises an effective intraocular pressure reducing amount of a compound of formula I



wherein R_1 is a hydrogen atom or a C_1–C_6 alkyl group and R_2 is a C_1–C_6 alkyl group or the pharmaceutically acceptable salt and at least one of a compound of formula II



where R_3, R_4 and R_5 may be the same or different and each is a hydrogen atom, a halogen atom, a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a carboxyl group or a C_1–C_6 alkoxycarbonyl group and a compound of formula III

$$HO-[(CH_2)_m-O]_n-H$$

wherein m is an integer of 2–4 and n is an integer of 1 to 30.

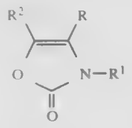
5,061,715

PREVENTION OF GLYCOPROTEIN ENVELOPED VIRUS INFECTIVITY BY QUINOLYL- AND ISOQUINOLYLOXAZOLE-2-ZONES

Sai P. Sunkara, and Winton D. Jones, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 435,318, Nov. 13, 1989, abandoned. This application Oct. 3, 1990, Ser. No. 590,523
Int. Cl.[5] A61K *31/47*
U.S. Cl. 514—314 **7 Claims**

1. A method of treating an enveloped viral infection in a patient in need thereof which comprises administering to the patient an anti-enveloped virally effective amount of a compound of the formula



(I)

wherein

R and R^1 are each independently selected from the group consisting of hydrogen, C_1–C_6 alkyl, and phenyl or C_1–C_3 alkylphenyl wherein the phenyl ring is optionally substituted with one, two or three of the substituents selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4 alkyl, and C_1–C_4 alkoxy; and

R^2 is a 2-, 3-, or 4-quinolyl group or 1-,3-, or 4-isoquinolyl group, optionally substituted with one, two or three of the substituents selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl and phenyl optionally substituted with one, two or three of the substituents selected from the group consisting of fluorine, chlorine, bromine, C_1–C_4 alkyl, and C_1–C_4 alkoxy, or

R^2 is a 5-, 6-, 7-, or 8-quinolyl or isoquinolyl group; or a pharmaceutically-acceptable salt thereof.

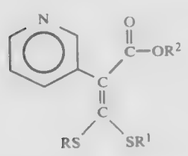
5,061,716

FUNGICIDAL 3,3-BISTHIOALKYL-2-PYRIDYLACRYLIC ACID COMPOUNDS

Douglas I. Relyea, Bethany, and Robert A. Davis, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Sep. 13, 1990, Ser. No. 582,295
Int. Cl.[5] A61K *31/44;* **C07D** *213/30*
U.S. Cl. 514—336 **15 Claims**

1. A compound of the formula



(I)

wherein;

R and R^1 are each independently members selected from the group consisting of

C_1–C_{10} alkyl,
C_1–C_{10} cyanoalkyl,
C_7–C_{13} arylalkyl,
C_2–C_9 alkenyl,
C_3–C_9 haloalkenyl
C_3–C_{10} alkoxyalkyl,
C_3–C_{10} alkylthioalkyl,
C_3–C_{10} alkylsulfonylalkyl,
C_3–C_8 carbalkoxyalkyl,
C_4–C_{10} alkylenedioxyalkyl,
C_7–C_{13} aryloxyalkyl, and
C_5–C_8 alkenyloxyalkyl; and

R^2 is C_1–C_5 alkyl.

12. A fungicidal composition comprising A) a fungicidally effective amount of a compound of claim **1**, and B) an agriculturally acceptable carrier.

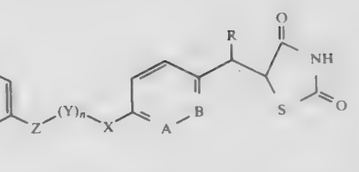
5,061,717

THIAZOLIDINEDIONE HYPOGLYCEMIC AGENTS

David A. Clark, East Lyme; Steven W. Goldstein, Mystic; Gerald F. Holland, Old Lyme; Bernard Hulin, Essex, and James P. Rizzi, Waterford, all of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US88/00744, § 371 Date Aug. 14, 1990, § 102(e) Date Aug. 14, 1990
PCT Filed Mar. 8, 1988, Ser. No. 566,436
Int. Cl.[5] C07D *417/12;* **A61K** *31/42*
U.S. Cl. 514—342 **13 Claims**

1. A compound having the formula



(I)

wherein the dotted line represents a bond or no bond;

one of A and B is CH and the other is N;

X is S, SO, SO_2, CH_2, CHOH or CO;

n is 0 or 1;

Y is CHR^1;

Z is CHR^3, CH_2CH_2, CH=CH;

R, R^1 and R^3 are each independently hydrogen or methyl; and

X^1 and X^2 are each independently hydrogen, methyl, trifluoromethyl, phenyl, benzyl, hydroxy, methoxy, phenoxy, benzyloxy, bromo, chloro or fluoro; a pharmaceutically-acceptable cationic salt thereof; or a pharmaceutically-acceptable acid addition salt thereof.

11. A method of lowering blood glucose in a hyperglycemic mammal which comprises administering to said mammal a blood glucose lowering effective amount of a compound of claim **1**.

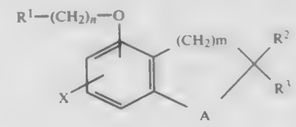
5,061,718

BENZOTHIAZOLYLMETHOXY COMPOUNDS, PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME AND THEIR USE AS ANTI-INFLAMMATORY OR ANTI-ALLERGENIC AGENTS

Teruo Oku; Yoshio Kawai; Hiroshi Kayakiri; Kazuyoshi Kuratani, and Masashi Hashimoto, all of Tsukuba, Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

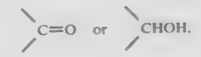
Division of Ser. No. 181,174, Apr. 13, 1988, Pat. No. 4,923,881. This application Jan. 30, 1990, Ser. No. 472,231
Claims priority, application United Kingdom, Apr. 28, 1987, 8710008; Aug. 21, 1987, 8719778; Jan. 15, 1988, 8800872
Int. Cl.[5] A07D *277/62;* **A61K** *31/425*
U.S. Cl. 514—367 **8 Claims**

1. A bicyclic compound of the following formula:



wherein

A is



R^1 is benzothiazolyl which may have lower alkyl,

R^2 and R^3 are butyl,

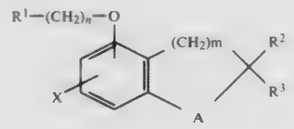
X is hydrogen, halogen, hydroxy or lower alkyl,

m is an integer 1 or 2, and

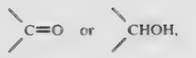
n is an integer 1 to **4**, or pharmaceutically acceptable salts thereof.

5. A method of treating inflammation or allergy in a subject in need thereof, which comprises administering to the subject

an anti-inflammatory or anti-allergenic effective amount of a compound of the formula:



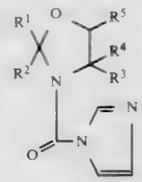
wherein
A is



R^1 is benzothiazolyl which may have lower alkyl,
R^2 and R^3 are butyl,
X is hydrogen, halogen, hydroxy or lower alkyl,
m is an integer 1 or 2, and
n is an integer 1 to 4, or pharmaceutically acceptable salts thereof in admixture with a pharmaceutically acceptable carrier.

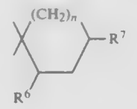
5,061,719
AZOLIDINE DERIVATIVES, PROCESS FOR PREPARING THE SAME AND AGRICULTURAL AND HORTICULTURAL FUNGICIDE
Hisao Sugiura; Toshinobu Tanaka; Takashi Nishimura, and Shuji Yokoyama, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan
Filed Jul. 20, 1990, Ser. No. 556,948
Claims priority, application Japan, Aug. 8, 1989, 1-203732
Int. Cl.[5] A01N *43/90;* **C07D** *413/02*
U.S. Cl. 514—374 **16 Claims**

1. An oxazolidine compound of the formula:



(I)

wherein
R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms;
R^2 represents a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 8 carbon atoms, a lower alkynyl group, an alkoxyalkyl group having 2 to 13 carbon atoms, a lower alkenyloxyalkyl group, an alkylthioalkyl group having 2 to 13 carbon atoms, an alkoxycarbonyl group, a furyl group or a thienyl group, or a phenylalkyl group wherein the alkyl portion has 1 to 5 carbon atoms, a phenoxyalkyl group wherein the alkyl portion has 1 to 5 carbon atoms, a phenylthioalkyl group wherein the alkyl portion has 1 to 5 carbon atoms, a phenylalkyloxyalkyl group wherein the alkyl portion has 1 to 5 carbon atoms, a phenoxyphenoxyalkyl group wherein the alkyl portion has 1 to 5 carbon atoms or a benzyloxyphenoxyalkyl group wherein the alkyl portion has 1 to 5 carbon atoms, those groups having phenyl rings are unsubstituted or substituted by a halogen atom, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 4 atoms, a haloalkyl group or a haloalkoxy group; or R^1 and R^2 may be combined with each other with carbon atoms bonded thereto to form a group represented by the formula:



(II)

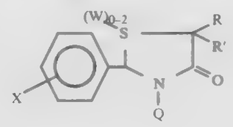
wherein
R^6 represents a hydrogen atom, a halogen atom or an alkyl group having 1 to 6 carbon atoms;
R^7 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a lower alkenyl group, an alkoxy group having 1 to 6 carbon atoms, a lower alkenyloxy group or an alkylthio group having 1 to 5 carbon atoms, or a phenyl group, a phenoxy group or a benzyloxy group, those groups having phenyl rings are unsubstituted or substituted by a halogen atom, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or a haloalkyl group; n is an integer of 1 to 3;
R^3 represents a hydrogen atom or a lower alkyl group;
R^4 represents a hydrogen atom, a lower alkyl group, a phenyl group or a benzyl group; or R^3 and R^4 may be combined with each other with carbon atoms bonded thereto to form a group represented by the formula:



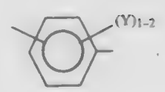
where m is an integer of 4 or 5;
R^5 represents a hydrogen atom, a lower alkyl group or a phenyl group.

5,061,720
SUBSTITUTED-4-THIAZOLIDINONE DERIVATIVES
David A. Walsh, Richmond, and Ibrahim M. Uwaydah, Chesterfield, both of Va., assignors to A.H. Robins Company, Inc., Richmond, Va.
Filed Sep. 13, 1989, Ser. No. 406,579
Int. Cl.[5] A61K *31/425;* **C07D** *277/04*
U.S. Cl. 514—369 **31 Claims**

1. A compound corresponding to the formula



wherein:
R is hydrogen or loweralkyl;
R′ is loweralkyl or phenyl optionally substituted with loweralkyl, loweralkoxy trifluoromethyl, nitro, or halo;
X is $—(CH_2)_{0-3}$-aryl, $—C(O)(CH_2)_{0-3}$-aryl, $—C(O)(CH_2)_{0-3}$-aryl, or —CHOH— $(CH_2)_{0-3}$-aryl, aryl is phenyl optionally substituted with loweralkyl loweraralkoxy, trifluoromethyl, nitro or halo;
W is oxygen;
Q is $—(alk^1)_{0-1}—(O)_{0-1}—(B)_{0-1}—(O)_{0-1}—(alk^2)_{0-1}—[C(O)Z]_{0-1}$;
B is



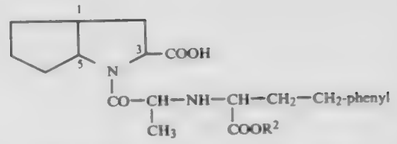
Y is selected from hydrogen, loweralkyl, loweralkoxy, trifluoromethyl, nitro, or halo;
alk^1 and alk^2 are selected from the group consisting of loweralkylene or loweralkylene-loweralkyl and may be the same or different;
Z is $—OR^3$ or $—NR^4R^5$,
R^3 is hydrogen, loweralkyl or a pharmaceutically acceptable metal cation;
R^4 and R^5 are hydrogen or loweralkyl;
and when any of the groups within the definition of Q other than [C(O)Z] is a terminal group or all groups are absent, the valence is occupied by a hydrogen atom;
or the cis or trans stereoisomer or optically active isomer thereof or pharmaceutically acceptable acid addition salt which forms when a basic nitrogen moiety is present.

5,061,721
COMPOSITION CONTAINING D-CYCLOSERINE AND D-ALANINE FOR MEMORY AND LEARNING ENHANCEMENT OR TREATMENT OF A COGNITIVE OR PSYCHOTIC DISORDER
Alex A. Cordi, St. Louis, Mo., and Michel R. Jans, Brussels, Belgium, assignors to G. D. Searle & Co., Chicago, Ill.
Continuation-in-part of Ser. No. 324,279, Mar. 15, 1989, abandoned. This application Feb. 6, 1990, Ser. No. 473,241
Int. Cl.[5] A61K *31/42, 31/195*
U.S. Cl. 514—376 **17 Claims**

1. A therapeutic method for treating Alzheimer's Disease in an individual when such therapy is indicated, comprising administering to the individual a therapeutically effective amount of D-cycloserine and a therapeutically-effective amount of D-alanine, said D-cycloserine and said D-alanine being in a therapeutically-effective ratio, said therapeutically-effective ratio being in a range of about 1-to-1 to about 100-to-1 of said D-alanine to said D-cycloserine, said D-cycloserine being administered in an amount in a range from 1 mg to about 100 mg of D-cycloserine per unit dosage form.

5,061,722
CIS, ENDO-2-AZABICYCLO-[3.3.0]-OCTANE-3-CARBOXYLIC ACIDS, A PROCESS FOR THEIR PREPARATION, AGENTS CONTAINING THESE COMPOUNDS AND THEIR USE
Volker Teetz, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main; Hansjörg Urbach, Kronberg; Reinhard Becker, Wiesbaden, and Bernward Schölkens, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 799,284, Nov. 19, 1985, abandoned, which is a continuation of Ser. No. 477,081, Mar. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 438,757, Nov. 3, 1982, abandoned. This application Jan. 12, 1989, Ser. No. 296,513
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143946; Jul. 17, 1982, 3226768
Int. Cl.[5] A61K *31/40;* **C07D** *209/02*
U.S. Cl. 514—412 **5 Claims**

1. A compound of the formula



or a physiologically acceptable salt thereof, wherein
R^2 is hydrogen, methyl, ethyl, or benzyl, and wherein hydrogen atoms on the ring carbon atoms in the 1- and 5-positions are in the cis-configuration relative to one another, the carboxyl group on the ring carbon atom in the 3-position is in the endo position relative to the bicyclic ring system, and the chirality centers in the chain and on the ring carbon atom in the 3-position all have the S-configuration, said compound or salt being substantially free of other isomers.

4. A hypotensive composition for reducing blood pressure comprising a hypotensively effective amount of a compound or salt as in claim 1 and a pharmaceutically acceptable excipient therefor.

5,061,723
NON-TERATOGENIC VITAMIN A PREPARATION FOR WOMEN OF CHILD-BEARING AGE
Arun B. Barua; Desiree Gunning, and James A. Olson, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed May 22, 1989, Ser. No. 355,779
Int. Cl.[5] H61K *31/35*
U.S. Cl. 514—460 **4 Claims**

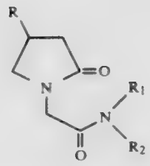
1. A method of treating acne in a woman patient of child-bearing age who is capable of conception, comprising orally administering to said patient retinoic acid glucuronide, said glucuronide being in an all-trans or 13-cis form and being administered in an effective amount for said acne treatment.

5,061,724
METHOD FOR TREATING ARTHRITICALLY INFLAMED BODY JOINTS, PARTICULARLY JOINTS HAVING GOUTY ARTHRITIS
Sheldon Gertner, 39 Ridge Dr., Berkeley Heights, N.J. 07922
Filed Jul. 18, 1989, Ser. No. 381,496
Int. Cl.[5] A61K *9/06, 31/40, 31/405*
U.S. Cl. 514—420 **5 Claims**

1. A method for alleviating the symptoms of gouty arthritis in an afflicted joint of a human comprising applying to the skin area nearest the afflicted joint a composition consisting essentially of a mixture of a skin cream capable of being absorbed into the skin and a gouty arthritis symptom alleviating effective amount of indomethacin and allowing said mixture to remain in contact with the skin for a time period sufficient to alleviate the gouty arthritis symptom.

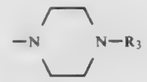
5,061,725
(PYRROLIDIN-2-ONE-1-YL) ACETAMIDES AND ENHANCERS OF LEARNING AND MEMORY PHARMACEUTICAL COMPOSITIONS COMPRISING SAME
Fabio Giannessi; Orlando Ghirardi; Domenico Misiti; Maria O. Tinti, all of Rome, and Carlo Scolastico, Milan, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy
Filed Jul. 12, 1990, Ser. No. 551,951
Claims priority, application Italy, Jul. 12, 1989, 48180 A/89
Int. Cl.[5] A61K *31/40, 31/44;* **C07D** *401/00, 207/27*
U.S. Cl. 514—424 **17 Claims**

1. (Pyrrolidin-2-one-1-yl)acetamides of general formula (I)



(I)

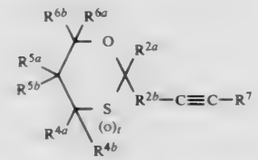
wherein R is hydrogen or hydroxyl, R_1 is hydrogen, R_2 is selected from the group consisting of:
2-aminoethyl,
2-(N,N-diisopropyl)aminoethyl,
3-(pyrrolidin-2-one-1-yl)propyl,
2-[N-(pyrrolidin-2-one-1-yl)acetyl]aminoethyl,
2-hydroxyethyl,
(glycerophosphorylethanolamino)carbonylmethyl,
1-trimethylammonium-3-carboxy-2-propyloxy-carbonyl methyl chloride,
(prolinol-1-yl)carbonylmethyl,
1-trimethylammonium-3-carboxyisopropyl, and
3-pyridylcarbamide;
or R_1 and R_2, taken together, are such as to form a ring of formula



wherein R_3 is selected from the group consisting of phenyl substituted with halogens or halogen-substituted lower (C_1–C_4) alkyls and 4-morpholinocarbonylmethyl.

5,061,726
ALKYNYLPHENYL-SUBSTITUTED 1,3-OXATHIONE COMPOUNDS WITH PESTICIDAL ACTIVITY
Christopher J. Palmer, Ipswich, England; John E. Casida, Berkeley, Calif., and John P. Larkin, Bedfordhire, England, assignors to The Regents of the University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 330,404, Mar. 30, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 514,011
Int. Cl.[5] **A61K** *31/385;* **C07D** *327/06*
U.S. Cl. 514—433 **30 Claims**

1. A compound of the formula (I):

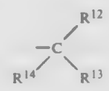


(I)

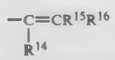
which contains between 10 and 27 carbon atoms, and wherein t is selected from 0, 1 and 2; R^{2a} is hydrogen, methyl, or ethyl; 2^{2b} is a single bond, a C_{5-7} cycloalkyl group or a group $(CH_2)_n(X)_m(CH_2)_{n'}$, optionally substituted by one to six halo atoms, which are the same or different, and/or by one or two alkyl groups optionally substituted by halo, where n is 0, 1 or 2, X is oxygen, sulphur or CH=CH, m is 0 or 1 and n′ is 0 to 4, the sum or n, m and n′ is between 0 and 6, or R^{2b} is a para-substituted 6-membered aromatic ring additionally optionally substituted by one to four halo atoms and/or by one or two cyano groups and/or by one or two C_{1-4} haloalkyl, haloalkoxy or haloalkylthio groups, R^7 is hydrogen, halo or a C_{1-5} hydrocarbyl group, optionally substituted by a hydroxy, C_{1-4} alkoxy or C_{1-7} acyloxy group derived from carboxylic acid and/or by one to five halo atoms which are the same or different and/or by a group $—(O)_u S(O)_v(O)_w R^8$ where R^8 is wherein R^8 is a C_{1-4} hydrocarbyl aliphatic group optionally substituted by halo, v is 0 or 1, r is 0, 1 or 2 and w is 0 or 1, the sum of v, r and w being between 0 and 3, or R^7 is a group $SiR^9 R^{10} R^{11}$ where R^9, R^{10}, and R^{11} are the same or different and are each C_{1-4} aliphatic groups, provided that R^9, R^{10} and R^{11} do not contain more than 10 carbon atoms in total; R^{4a}, R^{4b}, R^{6a} and R^{6b} are the same or different and are chosen from hydrogen, methyl, trifluoromethyl or cyano. R^{5b} is a group



wherein R^{12} is methyl, ethyl, chloro, bromo, methoxy, cyano, nitro, methoxymethyl, C_{1-4} carbalkoxy or trifluoromethyl, R^{13} is chloro, methyl or trifluoromethyl or



is a



group wherein R^{15} and R^{16} are both hydrogen, methyl, trifluoromethyl, fluoro, chloro or bromo or R^{15} is hydrogen and R^{16} is fluoro, chloro or bromo, or



is a three or four membered ring, wherein R^{12} is oxygen or a group $CR^{17}R^{18}$ wherein the groups R^{17} and R^{18} are the same or different and each is hydrogen, fluoro, chloro or bromo or methyl or ethyl optionally substituted by 1 to 5 fluoro atoms, when

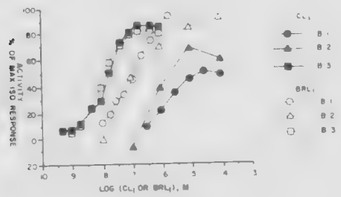


is a three membered ring R^{13} is a group $CR^{17a}R^{18a}$ wherein R^{17a}, R^{18a} are the same or different and each is hydrogen, fluoro, chloro or bromo or methyl or ethyl optionally substituted by 1 to 5 fluoro atoms, or when

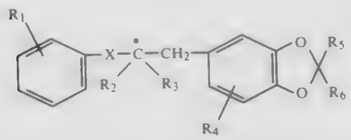


is a four membered ring R^{13} is a group $CR^{17a}R^{18a}CR^{19}R^{20}$ wherein R^{17a}, R^{18a} are as defined above, and R^{19}, and R^{20} are the same or different and each is hydrogen, fluoro, chloro or bromo or methyl or ethyl optionally substituted by 1 to 5 fluoro atoms, and R^{14} is hydrogen, methyl, trifluoromethyl, iodo, fluoro, chloro or bromo; and R^{5b} is a hydrogen, methyl, hydroxy, methoxy, acetoxy, halo or trifluoromethyl.

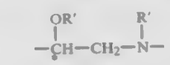
5,061,727
SUBSTITUTED 5-(2-((2-ARYL-2-HYDROXYETHYL)AMINO)PROPYL)-1,3-BENZODIOXOLES
Jonathan D. Bloom, Hartsdale, N.Y.; Thomas H. Claus, Montvale; Vern G. DeVries, Ridgewood, both of N.J.; Jo A. Dolan, Spring Valley, and Minu D. Dutia, West Nyack, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed May 4, 1990, Ser. No. 519,192
Int. Cl.[5] **C07D** *317/44;* **A61K** *31/335*
U.S. Cl. 514—465 **58 Claims**



1. A compound of the formula



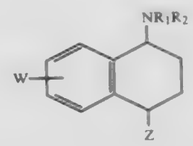
wherein R_1 and R_4 may be one or more groups which may be the same or different and are selected from the group consisting of hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, hydroxy, halogen, trifluoromethyl, carboxyl, hydroxyalkyl, alkoxycarbonyl, C_1 to C_4 thioalkyl, sulfonyl and sulfinyl; X is



wherein R′ is selected from the group consisting of hydrogen, C_1 to C_4 alkyl and C_1 to C_4 acyl; R_2 and R_3 may be the same or different and are selected from the group consisting of hydrogen and C_1 to C_4 alkyl; R_5 and R_6 are selected from the group consisting of hydrogen, carboxy, alkoxycarbonyl, hydroxymethyl, $—CH_2OCH_2COOR_7$ and $—CH_2OCH_2CH_2OR_7$ where R_7 is hydrogen or C_1 to C_4 alkyl; except that R_5 and R_6 may not both be hydrogen; the asterisks denote asymmetric carbon atoms; or a pharmaceutically acceptable salt or ester thereof, the enantiomers thereof, the racemic mixtures thereof and the diastereomeric mixtures thereof.

5,061,728
USE OF 4-PHENYL-1,2,3,4-TETRAHYDRO-1-NAPHTHALENAMINE DERIVATIVES IN THE TREATMENT OF INFLAMMATION AND AS IMMUNOSUPPRESSANTS
B. Kenneth Koe, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.
Division of Ser. No. 320,014, Mar. 7, 1989, Pat. No. 4,981,870. This application Dec. 5, 1990, Ser. No. 622,308
Int. Cl.[5] **A61K** *31/13, 31/20, 31/135, 31/275*
U.S. Cl. 514—520 **13 Claims**

1. A method of achieving an, antiinflammatory or immunosuppressive effect in a mammal in need of such treatment comprising administering to said mammal an, antiinflammatory or immunosuppressive amount of a compound of the formula:



1

or a pharmaceutically acceptable acid addition salt thereof, wherein
R_1 is selected from the group consisting of hydrogen and C_1–C_1 alkyl,
R_2 is C_1–C_3 alkyl,
Z is



wherein X and Y are independently selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl, alkoxy of from 1 to 3 carbon atoms and cyano, with at least one of X and Y other than hydrogen; and W is selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl and alkoxy of from 1 to 3 carbon atoms.

5,061,729
PHARMACEUTICAL COMPOSITION AND PROCESS FOR PREPARING THE SAME
Gyula Kincses; Barna Kocsár; István Lampé; György Bacsa; László Krusper; István Kovács; Klára Barna née Katona; Ágnes Katona née Lendvay; Csongor Szabó; Zoltán Trestyánszky, and István Télessy, all of Debrecen, Hungary, assignors to Biogal Gyogyszergyar, Debrecen, Hungary
Filed Jun. 8, 1988, Ser. No. 204,205
Int. Cl.[5] **A01N** *37/12, 43/04*
U.S. Cl. 514—562 **6 Claims**

1. An ear drop composition for the treatment of chronic otitis media, which consists essentially of:
(a) 3 to 19% by weight of a sulfhydryl compound selected from the group consisting of N-acetyl-L-cysteine, disulfiram, and pantetheine or a pharmaceutically acceptable salt thereof effective to reduce viscosity of a viscous, superinfected, protein-containing discharge trapped within the middle ear of a mammalian subject suffering from chronic otitis media;
(b) a therapeutically effective amount of an antibacterial agent selected from the group consisting of tobramycin, neomycin, polymixin B, gentamycin, a combination of tobramycin and neomycin in a 1:1 weight ratio, and a combination of polymixin B and neomycin, tobramycin, or gentamycin in a ratio of 100,000 IU to about 100 mg, or a pharmaceutically acceptable salt thereof;
(c) a therapeutically effective amount of an anti-inflammatory agent selected from the group consisting of hydrocortisone, mazipredone, beclomethasone dipropionate, triamcinolone acetonide, prednisolone, dexamethasone, and betamethasone, or a pharmaceutically acceptable salt thereof; and
(d) the balance an aqueous solution of propylene glycol; in admixture with zinc oxide in an amount effective to stabilize the sulfhydryl compound.

5,061,730

CARBOXYLIC ACID DERIVATIVES

Itsuo Uchida; Hiroshi Hatanaka; Kumiko Nitta; Seiji Hashimoto; Masakuni Okuhara; Hidetsugu Murai, and Masashi Hashimoto, all of Tsukuba, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

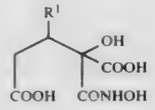
Filed Jan. 14, 1988, Ser. No. 143,942

Claims priority, application United Kingdom, Jan. 26, 1987, 8701618; Jul. 7, 1987, 8715931

Int. Cl.[5] C07C *259/06;* **A61K** *31/19*

U.S. Cl. 514—563 **5 Claims**

1. An antibacterial composition comprising a compound of the formula:



wherein R^1 is hydrogen, lower alkyl or aryl, or pharmaceutically acceptable salt thereof and pharmaceutically acceptable carrier(s).

5,061,731

NOVEL N-BENZYL-CYCLOPROPANECARBOXAMIDE FUNGICIDES

Yoshio Kurahashi, Tokyo; Kozo Shiokawa, Kanagawa; Shinzo Kagabu, Tokyo; Shinji Sakawa, Tokyo, and Koichi Moriya, Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

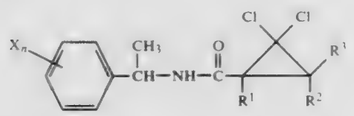
Division of Ser. No. 154,721, Feb. 11, 1988, abandoned, which is a division of Ser. No. 59,716, Jun. 8, 1987, abandoned, which is a division of Ser. No. 850,462, Apr. 4, 1986, Pat. No. 4,710,518, which is a continuation-in-part of Ser. No. 750,558, Jun. 27, 1985, abandoned. This application Jun. 25, 1990, Ser. No. 543,259

Claims priority, application Japan, Jul. 2, 1984, 59-135268; Jul. 6, 1984, 59-138955; Nov. 13, 1985, 60-252822

Int. Cl.[5] C07C *103/737, 61/15;* **A01N** *37/18*

U.S. Cl. 514—624 **9 Claims**

1. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of an N-benzyl-cyclopropane-carboxamide of the formula



wherein
X represents halogen,
n represents 1 or 2,
R^1 represents hydrogen, halogen or lower alkyl,
R^2 represents lower alkyl, halogen-substituted lower alkyl or hydrogen, and
R^3 represents hydrogen or lower alkyl.

5,061,732

PORCUPINE-PROOF RESIN FORMULATION AND METHOD

Uldis Roze, 240-37 Depew Ave., Douglaston, N.Y. 11363

Filed Jan. 22, 1990, Ser. No. 468,192

Int. Cl.[5] A01N *35/02, 35/00*

U.S. Cl. 514—696 **3 Claims**

1. A method of
deterring a porcupine attack of a wood structure comprising the step of applying a mask to the wood structure, said mask containing a liquid phenol-formaldehyde resin employing an alkaline base selected from the group of potassium hydroxide, ammonium hydroxide, and other non-sodium base.

5,061,733

TETRAHYDRONAPHTHALENE AND INDANE COMPOUNDS USEFUL FOR REVERSING THE PHOTODAMAGE IN SUN-EXPOSED SKIN

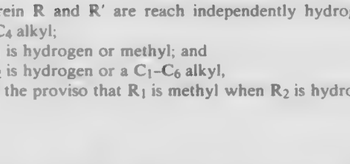
Graeme F. Bryce, Upper Montclair, and Stanley S. Shapiro, Livingston, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 219,615, Jul. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 86,992, Aug. 19, 1987, abandoned. This application May 8, 1990, Ser. No. 520,167

Int. Cl.[5] A61K *31/10*

U.S. Cl. 514—708 **10 Claims**

1. A method of treating the conditions associated with photodamaged skin comprising topically administering a compound of the formula



wherein n represents 1 or 2; Z represents —S(O)R, wherein R represents lower-alkyl, lower-alkenyl, lower-alkynyl lower-alkoxy-lower-alkyl, lower-alkanoyl-lower-alkyl, hydroxy-lower-alkyl, halo-lower-alkyl, lower-carbalkoxy-lower-alkyl, lower-alkoxy, hydroxy, mono-lower-alkyl amino or di-lower-alkylamino,
or a pharmaceutically acceptable salt thereof to an area of the skin in need of said treatment, said compound of formula I being applied to said area in an amount effective to reverse the effects of photodamage in said area.

5,061,734

BIS(ALKYL-SUBSTITUTED-4-HYDROXYPHENYLTHIO)ALKANE ANALOGS AS INHIBITORS OF CATARACTOGENESIS

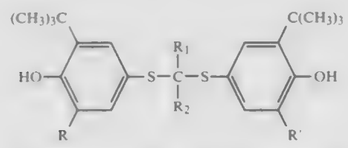
Simon J. T. Mao, Loveland, and Richard L. Jackson, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed May 9, 1990, Ser. No. 521,293

Int. Cl.[5] A61K *31/10*

U.S. Cl. 514—712 **2 Claims**

1. A method of inhibiting the development of a cataract in a patient in need thereof comprising administering to said patient an effective cataract inhibitory amount of a compound of the formula



wherein R and R′ are reach independently hydrogen, or a C_1–C_4 alkyl;
R_1 is hydrogen or methyl; and
R_2 is hydrogen or a C_1–C_6 alkyl,
with the proviso that R_1 is methyl when R_2 is hydrogen.

5,061,735

PROCESS FOR THE SEPARATION OF PLASTICS

Michael P. Zielinski, Toledo, Ohio, assignor to Plastic Recovery Systems, Inc., Toledo, Ohio

Filed Aug. 15, 1990, Ser. No. 567,927

Int. Cl.[5] C08J *11/00*

U.S. Cl. 521—46.5 **18 Claims**

1. A process for separating a desired thermoplastic from a mixture containing comminuted particles of the thermoplastic and a contaminant, comprising the steps of:
A) heating the mixture to a temperature sufficient to cause the thermoplastic to adhere to itself;
B) simultaneously agitating the mixture so that the thermoplastic particles impact against one another, agglomerating to increase the size of the thermoplastic particle to form larger thermoplastic particles while the particle size of the contaminant does not increase and the contaminant does not adhere to the thermoplastic during agglomeration of the thermoplastic particles.

5,061,736

FOAMABLE SILICONE RUBBER COMPOSITION

Masaharu Takahashi, and Jun Hatakeyama, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 6, 1991, Ser. No. 696,390

Claims priority, application Japan, May 7, 1990, 2-117417; Jul. 6, 1990, 2-179184; Jul. 6, 1990, 2-179185

Int. Cl.[5] C08J *9/02*

U.S. Cl. 521—91 **18 Claims**

1. A foamable silicone rubber composition which comprises, as a blend:
(a) 100 parts by weight of a diorganopolysiloxane represented by the average unit formula

$$R_aSiO_{(4-a)/2},$$

in which R is an unsubstituted or substituted monovalent hydrocarbon group and the subscript a is a positive number of 1.98 to 2.02;
(b) from 10 to 70 parts by weight of a finely divided reinforcing silica filler having a specific surface area of at least 50 m^2/g;
(c) from 20 to 150 parts by weight of a powder of a ferrite having a chemical composition expressed by the general formula

$$MO.Fe_2O_3,$$

in which M denotes a divalent metallic element selected from the group consisting of manganese, copper, nickel, magnesium, cobalt, zinc and iron;
(d) from 10 to 70 parts by weight of a finely divided inorganic material in a particulate, flaky or fibrous form selected from the group consisting of flakes of mica or sericite, fibers of ceramics and glass powders;
(e) finely divided platinum metal or a platinum compound in an amount in the range from 1 to 2000 ppm by weight as platinum metal based on the diorganopolysiloxane as the component (a);
(f) a curing agent of silicone rubbers in an amount sufficient to cure the composition; and
(g) a blowing agent in an amount sufficient to produce a cellular structure of the composition by curing.

5,061,737

FILLING MATERIAL

Gary C. Hudson, 4601 Sulgrave Rd., Richmond, Va. 23220

Filed Jun. 24, 1991, Ser. No. 719,976

Int. Cl.[5] C08J *9/00*

U.S. Cl. 521—137 **4 Claims**

1. Filling material for pillows or the like consisting of a homogeneous mixture of 70 to 50 percent of polyurethane foam chips averaging about one-quarter inch square and 30 to 50 percent polyester fiber averaging about two inches in length, said fibers being coated with silicone.

5,061,738

BLOOD COMPATIBLE, LUBRICIOUS ARTICLE AND COMPOSITION AND METHOD THEREFOR

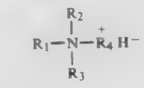
Donald D. Solomon, Spring Valley; Robert A. Taller, Centerville, and Victor A. Williamitis, Dayton, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 182,694, Apr. 18, 1988, Pat. No. 5,013,717. This application Jan. 11, 1991, Ser. No. 639,848

Int. Cl.[5] A61M *5/32, 25/00, 25/10*

U.S. Cl. 523—100 **6 Claims**

1. A medical device for contact with a blood stream comprising an article having coated thereon a composition comprising a mixture of a quaternary ammonium complex of heparin and about 2 to 75% by weight of a noncuring lubricating silicone, said complex having the formula



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of an alkyl group of 1 to about 18 carbon atoms and an aralkyl group of about 7 to 18 carbon atoms and H^- is a negative ion of heparin, said silicone having a viscosity of about 20 to 1,000,000 centistokes.

5,061,739

ROOM TEMPERATURE CURING COMPOSITIONS

Chiyuki Shimizu, Ohta, Japan, assignor to Toshiba Silicone Co., Ltd., Japan

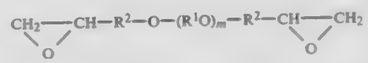
Filed Nov. 13, 1989, Ser. No. 435,235

Claims priority, application Japan, Nov. 16, 1988, 63-289240

Int. Cl.[5] C08K *9/06*

U.S. Cl. 523—213 **5 Claims**

1. A room temperature curing composition comprising:
(A) 100 parts by weight of a silanol terminaed polydiorganosiloxane having a viscosity of 25° C. of 100 to 200,000 cSt;
(B) 5 to 100 parts by weight of a hydrolyzable silyl-terminated polymer obtained by reacting:
(a) an epoxy-terminated polyether represented by general formula:



wherein R^1 and R^2 each represents a divalent hydrocarbon group and m represents a number of 10 to 500;
(b)(i) a hetocyclic compound containing two imino groups bonded to two different carbon atoms in the molecule thereof, and/or; (ii) an aromatic compound or a heterocyclic compound containing two mercapto groups bonded to carbon atoms constituting the aromatic ring or hetero ring; and,
(c) an organosilicon compound containing an epoxy group and a hydrolyzable group;
(C) 3 to 300 parts by weight of an inorganic filler based on 100 parts by weight of (A) and (B) in total; and,
(D) 0.001 to 20 parts by weight of a curing catalyst based on 100 parts by weight of (A) and (B) in total, said catalyst being selected from the group consisting of organic tin carboxylates, the reaction products of organic tin oxides and esters thereof, organic titanic esters, amines, amine salts, quaternary ammonium salts and guanidine compounds.

5,061,740

ORGANOPOLYSILOXANE COMPOSITION AND PROCESS FOR PREPARING THE SAME

Hiroshi Inomata, Takasaki, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,425

Claims priority, application Japan, Dec. 28, 1988, 63-332527; Dec. 28, 1988, 63-332528

Int. Cl.[5] C08K *9/06*

U.S. Cl. 523—213 **12 Claims**

1. An organopolysiloxane composition comprising:

(A) an organopolysiloxane represented by the general formula (I):

$$R_a^1(OH)_bSiO_{\frac{4-a-b}{2}} \quad (I)$$

wherein R^1 represents a monovalent hydrocarbon group having 1 to 10 carbon atoms and containing no fluorine atom; a is a numeral of 1.90 to 3.0, and b is a numeral of 0 to 1.0, provided that a + b is 1.90 to 3.0, and

(B) a fluorosilicone-treated silica;

wherein said (B) fluorosilicone-treated silica is obtained by reacting:

(B-1) a silica fine powder of not less than 50 m^2/g in specific surface area with

(B-2) a silazane compound of not more than 3,000 in molecular weight, containing a group represented by the following formula (II):

$$Rf-R^3-Si(R^2)_c- \quad (II)$$

wherein Rf represents a fluorine-containing organic group having a perfluoroalkyl ether group; R^2 represents a monovalent hydrocarbon group having 1 to 10 carbon atoms and containing no fluorine atom; R^3 represents a divalent hydrocarbon group having 2 to 10 carbon atoms; and c is an integer of 0, 1 or 2.

5,061,741

METHOD FOR PREPARING AN OIL-IN-WATER TYPE UNIFORM DISPERSION OF LIQUID DROPLETS AND POLYMERIZATION METHOD FOR PREPARING POLYMER BEADS OF UNIFORM PARTICLE SIZE

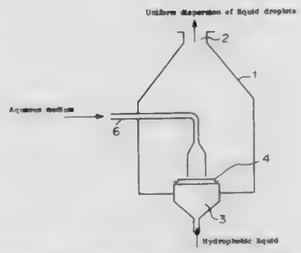
Eiji Miyata; Kiyoto Ando; Hiroshi Maeda; Hiroshi Arataki, and Seiji Sudo, all of Kitakyushu, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Nov. 13, 1990, Ser. No. 611,507

Claims priority, application Japan, Nov. 16, 1989, 1-297846

Int. Cl.[5] C08L *25/00;* **C08F** *2/04, 2/00*

U.S. Cl. 523—319 **36 Claims**



1. A method for preparing an oil-in-water type uniform dispersion of liquid droplets, which comprises ejecting into an aqueous medium containing a dispersion stabilizer, which forms a continuous phase and moves upwards, a hydrophobic liquid having a specific gravity smaller than the aqueous medium, through a nozzle plate having a plurality of perforations capable of ejecting the hydrophobic liquid upwards, to form liquid droplets of the hydrophobic liquid in the aqueous medium, wherein a nozzle plate having a number of perforations for ejection arranged in a ring form is used as said nozzle plate.

5,061,742

STABLE ACRYLIC COPOLYMER DISPERSIONS

Michael M. Miller, Cincinnati, Ohio, assignor to Hi-Tek Polymers, Inc., Jeffersontown, Ky.

Filed May 16, 1990, Ser. No. 524,010

Int. Cl.[5] C08K *3/20;* **C08G** *63/48;* **C08F** *8/00;* **C08L** *63/00*

U.S. Cl. 523—402 **16 Claims**

1. A stable aqueous acrylic resin dispersion comprising (A) an aqueous medium and (B) the reaction product of (a) about 90 to about 98 weight percent of an acrylic resin having an acid value of about 10 to about 150, and (b) about 2 at about 10 weight percent of a diglycidyl ether of a polyoxyalkylene glycol wherein said polyoxyalkylene glycol is a block copolymer of ethylene oxide and propylene oxide with the polyoxypropylene block in the middle with terminal polyoxyethylene blocks, said polyoxyalkylene glycol having a molecular weight of about 4,000 to about 20,000, and wherein said weight percents are based on the weight of (a) and (b).

5,061,743

3-HYDROXYBUTYRATE POLYMER COMPOSITION

John M. Herring, and Andrew Webb, both of Cleveland, England, assignors to Imperial Chemical Industries PLC, London, England

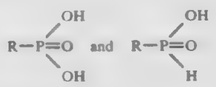
Filed May 30, 1990, Ser. No. 530,560

Claims priority, application United Kingdom, May 30, 1989, [illegible]

Int. Cl.[5] C08L *67/04*

U.S. Cl. 524—130 **11 Claims**

1. A hydroxyalkanoate HA polymer composition which comprises (a) a hydroxyalkanoate polymer, (b) an organophosphonic or organophosphinic acid or ester thereof or a derivative of said acid or ester, the acid having a structural formula selected from the group consisting of:



wherein R is an organic group, and (c) a metal compound selected from the group consisting of oxides, hydroxides and saturated or unsaturated carboxylic acid salts of metals from Groups I to V of the Periodic Table.

5,061,744

RESIST INK COMPOSITION

Osamu Ogitani; Takashi Shimizu, both of Koshigaya; Ryuichi Fujii, Urawa; Masao Kawashima, Warabi; Tuyoshi Kobayashi, Himi, and Ichiro Akutagawa, Nagareyama, all of Japan, assignors to Somar Corporation, Japan

Filed Jul. 5, 1989, Ser. No. 376,284

Int. Cl.[5] C08K *5/16*

U.S. Cl. 523—461 **15 Claims**

1. A resist ink composition comprising:

a phenol novolak epoxy resin having an epoxy equivalent of 170–250;

a phenol novolak resin having a softening point of 60°–130° C.;

an aliphatic polyol glycidyl ether in the amount of 10–100% based on the weight of said phenol novolak epoxy resin;

a polybutadiene in the amount of 10% or less based on the weight of said phenol novolak epoxy resin;

a montmorillonite organic complex;

a curing-accelerating catalyst; and

an organic solvent.

5,061,745

FLAME-RETARDANT, HIGH-IMPACT POLYCARBONATE MOLDING COMPOUNDS

Dieter Wittmann, Cologne; Horst Peters, Leverkusen; Jochen Schoeps, Krefeld, all of Fed. Rep. of Germany; Hans-Jürgen Kress, Pittsburgh, Pa.; Josef Buekers, Krefeld, and Karl-Heinz Ott, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1989, Ser. No. 355,957

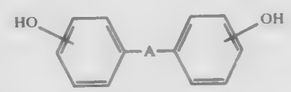
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1988, 3819081

Int. Cl.[5] C08K *5/51, 5/521, 5/529*

U.S. Cl. 524—139 **20 Claims**

1. Thermoplastic molding compounds consisting of

A) 50 to 96.5 parts by weight of one or more thermoplastic, halogen-free, aromatic polycarbonates based on diphenols corresponding to



wherein A is a single bond, C_{1-5} alkylene, C_{2-5} alkylidene, C_{5-6} cycloalkylidene, —S— or SO_2

B) 3.5 to 25 parts by weight of one or more halogen-free graft polymers of

B.1) 5 to 90 parts by weight, based on B), of a mixture of

B.1.1) 50 to 95% by weight styrene, α-methyl styrene, nucleus-substituted styrene, methyl methacrylate or mixtures thereof and

B.1.2) 50 to 5% by weight (meth)acrylonitrile, methyl methacrylate, n-butyl acrylate, t-butyl (meth)acrylate or mixtures thereof on

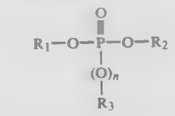
B.2) 95 to 10 parts by weight, based on B), of a rubber having a glass temperature T_G of ≦10° C. selected from the group consisting of butadiene, butadiene/styrene copolymer, polyisoprene, EPDM and silicone rubbers, and

C) 0 to 40 parts by weight of a halogen-free, thermoplastic copolymer of

C.1) 50 to 95% by weight styrene, α-methyl styrene, nucleus-substituted styrene, methyl methacrylate or mixtures thereof,

C.2) 50 to 5% by weight (meth)acrylonitrile, methyl methacrylate or mixtures thereof, the sum of the parts by weight of A)+B)+optionally C) having to amount to 100 parts by weight, and

D) 1 to 20 parts by weight, based on 100 parts by weight of A)+B)+optionally C), of a halogen-free phosphorus compound corresponding to



in which R_1, R_2 and R_3 independently of one another represent C_1–C_8 alkyl or C_6–C_{20} aryl and n=0 or 1, and

E) 0.05 to 5 parts by weight, based on 100 parts by weight of A)+B)+optionally C), of a tetrafluoroethylene polymer having average particle sizes of 0.05 to 1000 μm, a density of 1.2 to 2.3 g/cm^3 a fluorine content of 65 to 76% by weight.

5,061,746

SILANE DERIVATIVES WHICH IMPROVE PROPERTIES OF PPE-POLYAMIDE COMPOSITIONS

Robert R. Gallucci, Roger W. Avakian, both of Pittsfield, Mass., assignors and to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 140,959, Dec. 31, 1987, abandoned, which is a continuation of Ser. No. 888,624, Jul. 21, 1986, abandoned, which is a continuation of Ser. No. 669,130, Nov. 7, 1984, abandoned. This application Dec. 19, 1989, Ser. No. 455,864

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—188 **15 Claims**

1. A resin composition consisting essentially of one or more polyphenylene ethers, one or more polyamides and an effective amount of a silane derivative compound for improving the tensile elongation of the composition, said silane derivative compound having in the molecule both (a) at least one silicon bonded to carbon through an oxygen link and (b) at least one ethylenic carbon-carbon double bond or carbon-carbon triple bond and/or functional group selected from the group consisting of an amine group or a mercapto group with the proviso that the functional group is not directly bonded to a silicon atom, said polyphenylene ether being present in said composition in a weight ratio to said polyamide of from between 95/5 and 49/41.

5,061,747

METHYL METHACRYLATE COMPOSITIONS

Donald E. Roach, Willingboro, N.J., and Paul J. Keating, Newportville, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 385,139, Jul. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 276,850, Nov. 28, 1988, abandoned. This application Aug. 30, 1990, Ser. No. 577,821

Int. Cl.[5] C08F *6/24, 20/10*

U.S. Cl. 524—379 **9 Claims**

1. A method for preparing a polymer with improved resistance to ultraviolet radiation comprising:

a) first mixing one or more monomers, selected from alkyl methacrylates and optionally one or more alkyl acrylates, the alkyl methacrylate comprising at least 50% of the total monomer mix, with

1) from about one-half to about two percent by weight of the monomers of at least one alcohol, the alcohol containing up to ten carbon atoms, no other ultraviolet stabilizer being present;

2) an initiator of free-radical polymerization;

3) optionally a mercaptan chain transfer agent;

b) polymerizing the mixture to form a polymer of at least 50% alkyl methacrylate units.

5,061,748

FIRE RESISTANT WINDOWS

Nelson Bolton, Trumbauersville, and W. Novis Smith, Philadelphia, both of Pa., assignors to Artistic Glass Products Company, Trumbauersville, Pa.

Filed Jun. 28, 1990, Ser. No. 546,232

Int. Cl.[5] C08L *5/04*

U.S. Cl. 524—827 **9 Claims**

1. An optically transparent aqueous intumescent gel for use with transparent laminates said gel being formed from a composition consisting essentially of about 5 to 30% by weight acrylamide, about 0 to 4% by weight of a crosslinking agent, about 5 to 28% by weight of an ammonium or alkali metal salt of an alkanoic acid having 1 to 4 carbon atoms, about 0.05 to 10% by weight of a polymerization catalyst, and water.

5,061,749

ONE-PACK TYPE HEAT PRECURABLE MOISTURE-CURING SEALANT COMPOSITION

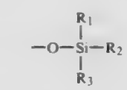
Masahiro Ito, Mishima, and Yukio Hayashi, Kyoto, both of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1990, Ser. No. 557,779
Claims priority, application Japan, Jul. 28, 1989, 1-197499
Int. Cl.[5] C08K 9/06
U.S. Cl. 524—850 6 Claims

1. A one-pack type heat precurable moisture-curing sealant composition which comprises as the main component

(A) a urethane prepolymer having a content of an active free isocyanate group (NCO) of 0.5 to 13 % by weight which is prepared by reacting a polyol and an excess amount of an aromatic polyisocyanate compound, and

(B) a vinyl polymer having a number average molecular weight of 500 to 50,000 containing a siloxy group of the formula:



wherein R_1, R_2 and R_3 are the same or different and are each a C_1–C_4 alkyl or phenyl in the molecule, and as an additive

(C) a filler in an amount of 20 to 50 % by weight based on the whole weight of the sealant, and

(D) a plasticizer in an amount of 5 to 30 % by weight based on the whole weight of the sealant.

5,061,750

COVALENT ATTACHMENT OF ANTICOAGULANTS AND THE LIKE ONTO BIOMATERIALS

Jan Feijen, Hengelo, and Gerardus H. M. Engbers, Oldenzaal, both of Netherlands, assignors to Cordis Europa N.V., Roden, Netherlands

Continuation of Ser. No. 200,655, May 31, 1988, abandoned. This application Jul. 18, 1990, Ser. No. 555,664
Claims priority, application Netherlands, Jun. 9, 1987, 8701337
Int. Cl.[5] C08G 63/48, 63/91; C12N 11/06; A61F 2/02
U.S. Cl. 525—54.1 30 Claims

1. In a substrate component of a synthetic medical device, said substrate component having a polymeric surface, at least a part of said polymeric substrate surface being for contacting blood when the medical device is in use, said blood-contacting polymeric substrate surface having a physiologically active substance which has an inhibitory effect on the formation of blood clots or is capable of breaking down blood clots formed, wherein the improvement comprises:

said physiologically active substrate is graft bonded to said polymeric substrate surface through a polyacid link chain moiety, said polyacid being a polymer containing from between about 1000 and 10,000 monomeric units which contain a carboxyl group, said bond being through a plurality of said monomeric unit carboxyl groups of the polyacid, said link chain polyacid is bonded to said polymeric substrate surface by a chemical bond, and said chemical bond is a covalent bond between a functional group of the link chain polyacid and a functional group of said polymeric substrate surface; and

said physiologically active substance is selected from the group consisting of a substrate having an anti-coagulant effect, a non-synthetic substance having a fibrinolytic activity, a substance having a blood platelet aggregation inhibiting effect, a substance having a blood platelet adhesion inhibiting effect, and combinations thereof.

5,061,751

VINYLPYRROLIDONE GRAFTED POLYOLEFINS IN POLYMER BLENDS AND COMPOSITES

Tad L. Patton, Baytown, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 2, 1989, Ser. No. 360,493
Int. Cl.[5] C08L 29/04, 51/06, 23/04, 23/10
U.S. Cl. 525—57 50 Claims

1. A theromplastic composition, comprising:

a polar thermoplastic polymer;

a non-polar polyolefin, said non-polar polyolefin being incompatible with said polar thermoplastic polymer; and

a compatibilizer consisting of a vinylpyrrolidone grafted polyolefin at least interfacially present in an amount effective to compatibilize said polar thermoplastic polymer and said non-polar polyolefin.

5,061,752

ANTISTATIC, THERMOPLASTIC MOULDING COMPOUNDS BASED ON AROMATIC VINYL POLYMERS II

Hans-Josef Buysch; Norbert Schön, both of Krefeld; Herbert Eichenauer, Dormagen; Karl-Heinz Ott, Leverkusen, and Alfred Pischtschan, Kuerten-Eichhof, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 151,285, Feb. 1, 1988, abandoned. This application Jun. 29, 1989, Ser. No. 373,341
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1987, 3704486
The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.
Int. Cl.[5] C08G 63/48, 63/91; C08L 51/00
U.S. Cl. 525—64 4 Claims

1. Process for the antistatic finishing of polymers containing copolymerized aromatic vinyl compounds and other vinyl monomers or said polymers which are rubber modified, which comprises blending into the polymers 0.2 to 5% by weight of a modified ether consisting essentially of a polyalkylene ether reacted with a radical former at 50°–150° C. in amounts from 5 to 0.05% by weight, based on the quantity of polyalkylene ether, wherein the radical former is a compound selected from the group consisting of diacyl peroxides, acyl sulphonyl peroxides, peroxidicarbonates, acyl peresters, dialkyl peroxides, hydro peroxides, other peroxy compounds, aliphatic azo compounds and araliphatic azo compounds.

5,061,753

RESIN COMPOSITION

Takashi Maruyama, Kobe, and Tukio Mizuno, Miihama, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 19, 1990, Ser. No. 495,697
Claims priority, application Japan, Mar. 22, 1989, 01-67475; Mar. 22, 1989, 01-67476; Mar. 22, 1989, 01-67477; Mar. 22, 1989, 01-67478; Mar. 22, 1989, 01-67479
Int. Cl.[5] CorL 61/04
U.S. Cl. 525—68 29 Claims

1. A resin composition which comprises:

(a) a polyolefin resin in an amount of 20–95% by weight,

(b) a polyphenylene ether resin in an amount of 80–51% by weight,

(c) a partially hydrogenated alkenyl aromatic compound-isoprene block copolymer in an amount of 3–45 parts by weight based on a total of 100 parts by weight of the components (a) and (b), and

(d) a modified ethylene-α-olefin copolymer elastomer or an α-olefin-alkyl (meth)acrylate copolymer in an amount of 3–45 parts by weight based on a total of 100 parts by weight of the components (a) and (b).

5,061,754

LOW GLOSS POLYCARBONATE/ABS BLENDS

Daniel L. Dufour, Waterloo, and Jean Pierre, St. Denis, both of Belgium, assignors to Monsanto Europe S.A., Brussels, Belgium

Filed Nov. 27, 1989, Ser. No. 441,599
Claims priority, application United Kingdom, Dec. 19, 1988, 8829535
Int. Cl.[5] C08L 69/00
U.S. Cl. 525—67 7 Claims

1. A composition obtained by melt blending from 50 to 85% by weight of a polycarbonate and from 50 to 15% by weight of a grafted rubber component having an average rubber particle size in the range of from 20 to 300 nm and which comprises (a) 50 to 60 parts by weight of a polybutadiene rubber grafted with 50 to 40 parts by weight of a styrene monomer and a (meth)acrylonitrile monomer in a weight ratio of styrene/(meth)acrylonitrile of from 70/30 to 75/25, and (b) an ungrafted styrene (meth)acrylonitrile rigid phase polymer present in amounts which will substantially dissolve in the polycarbonate during melt blending wherein the average rubber particle size of the grafted polybutadiene rubber in the melt blended composition is in the range of from 500 to 10,000 nm and wherein the gloss levels of the blend at 60° is about 81% or less as determined by ASTM D523.

5,061,755

POLYPROPYLENE COMPOSITION AND HIGHLY TRANSPARENT POLYPROPYLENE FILM MADE THEREOF

Yoshinori Suga, Machida; Eiji Tanaka, Kawasaki; Hidehito Katou, Kurashiki; Yasuo Maruyama, Tokyo, and Eiji Isobe, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Oct. 24, 1989, Ser. No. 426,020
Claims priority, application Japan, Oct. 25, 1988, 63-268769; Dec. 12, 1988, 63-313473; Sep. 7, 1989, 1-232586
Int. Cl.[5] C08L 53/00, 23/10, 23/18; C08F 297/08
U.S. Cl. 525—95 23 Claims

1. A highly crystalline propylene polymer composition which comprises (A) a propylene polymer or a copolymer of propylene and another α-olefin having from 2 to 18 carbon atoms, and (B) a propylene polymer composition which is obtained by preliminarily polymerizing, in the presence of a catalyst comprising (a) a solid titanium trichloride catalyst complex containing a complexing agent and having an aluminum content of at most 0.15 by atomic ratio of aluminum to titanium and (b) an organoaluminum compound and (c) optionally an electron donative compound, 3-methylbutene-1 in an amount exceeding 10 g per g of said solid titanium trichloride catalyst complex and then polymerizing propylene, or propylene and other α-olefin having from 2 to 18 carbon atoms, in an amount of at least 1,000 g per g of said solid titanium trichloride catalyst complex, and which contains from 0.01 to 20% by weight of the 3-methylbutene-1 polymer based on the total weight of the 3-methylbutene-1 polymer-containing propylene polymer composition.

5,061,756

PROCESS FOR THE PREPARATION OF POLYURETHANE POWDERS

Tillmann Hassel, Cologne; Hanns P. Müller, Bergisch Gladbach; Hugo Vernaleken, Krefeld; Helmut Kipphardt, Hamburg, and Rolf Dhein, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 566,017
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928149
Int. Cl.[5] C08L 75/04
U.S. Cl. 525—127 10 Claims

1. In a process for the direct preparation of polyurethane powders in a finely divided form by the reaction of polyisocyanates and isocyanate reactive compounds in a carrier phase, using interface active compounds, the improvement wherein the interface active compound used consists of at least one polymer of a urethane of (i) a long chain alkyl isocyanate and (ii) a hydroxyalkyl-acrylic or -methacrylic acid ester

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5,061,757

HIGH IMPACT STRENGTH POLYAMIDE BLENDS AND METHOD FOR PREPARATION THEREOF

W. Michael Warner, Henderson, Ky., assignor to Bemis Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 829,184, Feb. 14, 1986, abandoned, which is a continuation of Ser. No. 739,202, May 30, 1985, abandoned, which is a continuation of Ser. No. 618,201, Jun. 7, 1984, abandoned, which is a continuation of Ser. No. 464,860, Feb. 8, 1983, abandoned, which is a continuation of Ser. No. 330,647, Dec. 14, 1981, abandoned, which is a continuation of Ser. No. 166,899, Jul. 9, 1980, abandoned. This application Jan. 23, 1989, Ser. No. 299,875
Int. Cl.[5] C08L 77/00
U.S. Cl. 525—179 7 Claims

1. A high impact strength resin composition comprising between about 60% and about 85% by weight of a polyamide, between about 5% and about 20% by weight of a copolymer of ethylene and an acrylic ester comonomer selected from the group consisting of alkyl acrylates and alkyl methacrylates containing between about 1 and about 50% by weight of repeating units derived from said comonomer, and between about 10% and about 20% by weight of an ionomer comprising a copolymer of ethylene and an α,β unsaturated carboxylic acid in which at least about 50% of the carboxylic acid groups are neutralized by replacement of a proton with zinc.

5,061,758

UNSATURATED, ELASTOMERIC, ASYMMETRICALLY, COUPLED BLOCK COPOLYMERS, A DUAL BATCH PROCESS FOR ITS MANUFACTURE AND THEIR USE FOR THE PRODUCTION OF TYPE COMPONENTS

Walter Hellermann, Dorsten; Christoph Herrmann; Karl-Heinz Nordsiek, both of Marl; Jürgen Wolpers, Haltern, and Hans-Bernd Fuchs, Marl, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 5, 1989, Ser. No. 417,699
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1988, 3833759
Int. Cl.[5] C08F 8/02
U.S. Cl. 525—193 4 Claims

1. An unsaturated elastomeric, asymmetrically coupled block copolymer of the formula: $(A)_n$—X—$(B)_m$, wherein block A is a block of polybutadiene having a content of uniformly distributed vinyl groups ranging from 8 to 60% and block (B) is a homopolymer of isoprene or a copolymer of at least 10% isoprene with 0 to 60% butadiene and up to 45% styrene, said copolymer having a vinyl coupling agent and $(m-n) \geqq 0$ and $(M+n)$ ranges from 3 to 25.

5,061,759

PROCESSING-COADJUVATING ADDITIVES FOR RUBBERS VULCANIZABLE BY MEANS OF PEROXIDES

Giulio Tommasi; Raffaele Ferro, both of Milan, and Gianna Cirillo, Genova, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

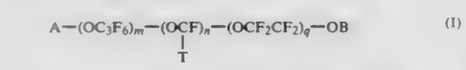
Continuation of Ser. No. 549,554, Jul. 9, 1990, abandoned, which is a continuation of Ser. No. 248,323, Sep. 22, 1988, abandoned, which is a continuation of Ser. No. 917,550, Oct. 10, 1986, abandoned. This application Mar. 28, 1991, Ser. No. 679,127
Claims priority, application Italy, Oct. 17, 1985, 22532 A/85
Int. Cl.[5] C08F 8/20
U.S. Cl. 525—326.3 6 Claims

1. A composition containing a peroxide and a rubber or a rubber mixture vulcanizable by means of a peroxidic or a mixed peroxidic and ionic vulcanizing system having im-

proved processability properties, said rubber and rubber mixture being selected from the group consisting of:

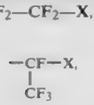
(a) copolymers of $CH_2{=}CF_2$ with C_3F_6, and optionally C_2F_4, containing peroxy crosslinking sites;
(b) copolymers of C_2F_4 with propylene;
(c) copolymers of C_2F_4 with perfluoroalkylperfluorovinylethers, containing peroxy crosslinking sites;
(d) terpolymers of $CH_2{=}CF_2$, C_3F_6, and a perfluoroalkylperfluorovinyl ether, containing peroxy crosslinking sites;
(e) a mixture of a fluoroelastomer based on $CH_2{=}CF_2$ and a copolymer of C_2F_4 with C_3H_6;

said composition comprising, as processing co-adjuvant, a brominated additive, in amounts ranging from 0.01 to 5 parts by weight of rubber or rubber mixture or a non-brominated additive, in amounts ranging from 0.5 to 1 part by weight of rubber or rubber mixture or a mixture of a brominated additive in the abovesaid amount with a non-brominated additive, in the abovesaid amount, each of said additives having a mean molecular weight ranging from 500 to 10,000; the brominated additive being selected from compounds of formula



(I)

in which: T=F or CF_3; m, n and q are integers including zero; m+n+q are between 2 and 200; $m/(n+q) \leqq 50$ when n and/or q are different from zero; when m=0, q/n is $\geqq 0.2$ and $\leqq 20$ when n is different from zero; when q=0, m/n ranges from 1 to 50 when n is different from zero; A and B, either like or unlike each other, consist of a group selected from $-CF_2X$, $-CF_2-CF_2-X$,



$-CF_2-CFX-CF_3$, $-COF$, $-CF_2-COF$, and



X being bromine or fluorine, when m is different from 0, X is bromine only in A or in B;

the non-brominated additive being selected from:

(a) non-brominated compounds of formula (I) wherein X is fluorine; and
(b) $F(CF_2CF_2CF_2O)_n-CF_2CF_3$ (II) where n is an integer greater than 2 and lower than 200;

the mixture of a brominated additive with a non-brominated additive being selected from the mixture of the brominated additive of formula (I) where X is bromine or fluorine with the non-brominated additive of formula (I) where X is fluorine and the mixture of the brominated additive of formula (I) where X is bromine or fluorine with non-brominated additive of formula (II).

5,061,760

VINYLIDENE CYANIDE ALTERNATING COPOLYMERS EXHIBITING NONLINEAR OPTICAL AND PIEZOELECTRIC PROPERTIES

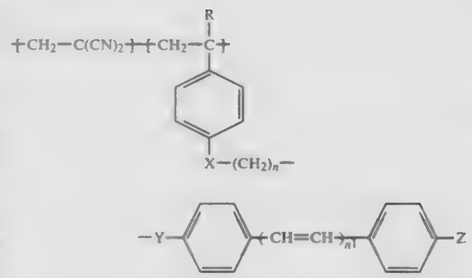
Anthony J. East, Madison, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 491,138, Mar. 9, 1990. This application Aug. 20, 1990, Ser. No. 570,064

Int. Cl.[5] C08F *16/00;* **B29C** *35/02;* **B06B** *1/02;* **G11C** *13/02*

U.S. Cl. 525—328.2 **11 Claims**

1. A copolymer which is characterized by alternating monomeric units corresponding to the formula:



where R is hydrogen or a C_1–C_4 alkyl substituent; X is $-O_2C-$, $-O_2C-O-$ or $-O_3S-$; Y is -S-, -O- or -NR-; Z is $-NO_2$, -CN or $-CF_3$; n is an integer with a value of 2–12; and n^1 is an integer with a value of 0–2.

5,061,761

POLYVINYL ESTER MACROMONOMER AND ITS USES

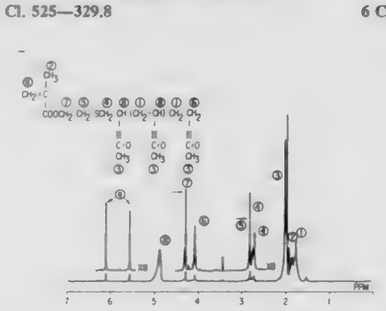
Toshiaki Sato; Takashi Ohnaga, and Kaoru Ikeda, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Sep. 27, 1990, Ser. No. 588,720

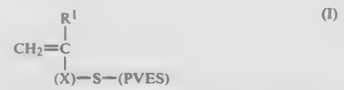
Claims priority, application Japan, Sep. 29, 1989, 1-255974; Sep. 29, 1989, 1-255980; Sep. 29, 1989, 1-255981

Int. Cl.[5] C08F *8/34*

U.S. Cl. 525—329.8 **6 Claims**

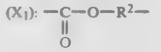


1. A polyvinyl ester macromonomer represented by the general formula (I)

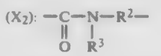


(I)

wherein R^1 represents a hydrogen atom or a methyl group, (X) represents either one of the following linkage groups (X_1) and (X_2) of which R^2 bonds to S:



wherein R^2 represents an alkylene group having 2 to 20 carbon atoms which may have branches,



wherein R^2 is the same as defined above, R^3 represents a hydrogen atom or an alkyl group having not more than 4 carbon

atoms, and (PVES) represents a monovalent polyvinyl ester containing units from a vinyl ester and having a number-average degree of polymerization of at least 3.

5,061,762

MODIFIED POLY(ORGANO-ORGANOSILOXANES) WITH COMB OR BLOCK STRUCTURES AND A PROCESS FOR THEIR PREPARATION

Gerald Fleischmann; Herbert Eck, both of Burghausen, and Johann Schuster, Emmerting, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1989, Ser. No. 389,132

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1988, 3828862

Int. Cl.[5] C08F *283/12*

U.S. Cl. 525—478 **9 Claims**

1. A modified poly(organo-organosiloxane) having comb and/or block structures which consists essentially of substantially linear polyorganosiloxanes having organic polymer units arranged in terminal positions and/or along the chain, which has been obtained by copolymerizing polar compounds having a C—C double bond in the α-position relative to a carbonyl group or a nitrile group with polyorganosiloxanes containing trialkylsilylacetoxyalkyl groups or by reacting polymeric acrylic compounds containing terminal acetoxyalkenyl groups with polyorgano-H-siloxanes in such a manner that the organic polymer units are in each case linked to the polyorganosiloxanes via Si—C bonds.

5,061,763

STAIN RESISTANT TREATMENT FOR POLYAMIDE FIBERS

Thomas H. Moss, III; Ralph R. Sargent, and Michael S. Williams, all of Rome, Ga., assignors to Peach State Labs, Inc., Rome, Ga.

Continuation-in-part of Ser. No. 341,774, Apr. 20, 1989, Pat. No. 4,940,757. This application Dec. 27, 1989, Ser. No. 457,348

The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.

Int. Cl.[5] C08F *283/06, 283/90;* **C08G** *8/30;* **D06M** *00/00*

U.S. Cl. 525—502 **32 Claims**

1. A stain resistant composition comprising a polymeric product prepared by:

polymerizing $H_2C{=}C(R)CO_2X$,

where R is a hydrocarbon, halogenated hydrocarbon, or sulfonated hydrocarbon of from C_1 to C_{20}, phenol, naphthol, sulfonated phenol, sulfonated naphthol or a halogen, X is H or a hydroxylated, ethoxylated, sulfonated, or halogenated hydrocarbon of C_1 to C_{20}, and wherein R and X can vary within the polymer,

in the presence of a sulfonated aromatic formaldehyde condensation polymer,

in a ratio of up to seven parts $H_2C{=}C(R)CO_2X$ to one part by weight condensation polymer.

5,061,764

MOLDABLE AND/OR EXTRUDABLE POLY(ENAMINE KETONE-CO-ALKYLENE ETHER) BLOCK COMPOLYMERS

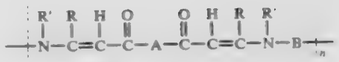
Frank W. Harris, Akron, and David D. Russell, Ravenna, both of Ohio, assignors to University of Akron, Akron, Ohio

Filed Jun. 20, 1989, Ser. No. 368,802

Int. Cl.[5] C08F *283/06*

U.S. Cl. 525—540 **17 Claims**

1. A block copolymer of the formula (I)



(I)

wherein R′ is H, alkyl, aryl or cycloalkyl; A is an arylene, alkylene, or cycloalkylene group a poly(enamine ketone) sequence formed from an aliphatic or aromatic C_6–C_{20} bispropynone and a linear or branched, aliphatic C_6–C_{18} diamine, in the presence of a chain-limiting aromatic or aliphatic bispropynone having 6 to 20 carbon atoms, said poly(enamine ketone) having an average molecular weight between 300 and 15,000 or higher; and wherein B is an amine-terminated polyalkylene ether formed from linear or branched aliphatic polyoxyalkylene glycols having a molecular weight of between 200–6000 and n indicates a sufficient number of repeating units so that said poly(enamine ketone-co-alkylene ether) block copolymer has an intrinsic viscosity of from about 0.4 to about 2.5, B is a combination of an amine-terminated polyalkylene ether of 200 to 15,000 molecular weight and an aliphatic or aromatic diamine and n indicates a sufficient number of repeating units so that said poly(enamine ketoneco-alkylene ether) block copolymer has an intrinsic viscosity of from about 0.6 to about 2.0.

5,061,765

PROCESS FOR THE SYNTHESIS OF A HIGH VINYL ISOPRENE-BUTADIENE COPOLYMER

Wen-Liang Hsu, Copley, and Adel F. Halasa, Bath, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 22, 1990, Ser. No. 601,103

Int. Cl.[5] C08F *4/52, 236/06*

U.S. Cl. 526—141 **20 Claims**

1. A process for the synthesis of isoprene-butadiene rubbers having a high vinyl content which comprises copolymerizing isoprene monomer and 1,3-butadiene monomer in an organic solvent at a temperature which is within the range of about −10° C. to about 100° C. in the presence of a catalyst system which is comprised of (a) an organoiron compound which is soluble in the organic solvent, wherein the iron in the organoiron compound is in the +3 oxidation state, (b) an organoaluminum compound, (c) a chelating aromatic amine, and (d) a protonic compound; wherein the molar ratio of the chelating amine to the organoiron compound is within the range of about 0.1:1 to about 1:1, wherein the molar ratio of the organoaluminum compound to the organoiron compound is within the range of about 5:1 to about 200:1, and wherein the molar ratio of the protonic compound to the organoaluminum compound is within the range of about 0.001:1 to about 0.2:1.

5,061,766

METHOD OF PRODUCING POLYMER PARTICLES HAVING NARROW PARTICLE SIZE DISTRIBUTION BY THE USE OF A POLYMERIC DISPERSION STABILIZER

Hiroshi Yamashita, Numazu, and Kenkichi Muto, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 89,036, Aug. 24, 1987, Pat. No. 4,885,350, which is a continuation of Ser. No. 752,591, Jul. 8, 1985, abandoned. This application Sep. 18, 1989, Ser. No. 408,269

Claims priority, application Japan, Jul. 6, 1984, 59-139115

The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.

Int. Cl.[5] C08F *2/06, 2/08*

U.S. Cl. 526—191 **17 Claims**

1. A method of producing polymer particles having a particle size distribution of ±25% with respect to each average particle size in an amount of 95 wt. % or more, within the average particle sizes ranging from 1 μm to 100 μm, comprising the steps of:

(1) adding a polymeric dispersion stabilizer in an amount of

0.1 to 10 wt. % to a hydrophilic organic liquid in which said polymeric dispersion stabilizer is soluble;

(2) adding thereto at least one vinyl monomer in an amount of not more than 20 times by weight of the amount of said polymeric dispersion stabilizer, which monomer is soluble in said hydrophilic organic liquid, but when polymerized said polymer is swellable or is substantially insoluble in said hydrophilic organic liquid; and

(3) polymerizing said monomer under the condition that the amount of said vinyl monomer is 200 wt. % or less of said hydrophilic organic liquid.

5,061,767

HYDROPHILIC-HYDROPHOBIC POLYMER COMPOSITES AND MEMBRANES

Eli Ruckenstein, Amherst, and Jun S. Park, Snyder, both of N.Y., assignors to State University of New York, Albany, N.Y.

Continuation of Ser. No. 253,979, Oct. 5, 1990, abandoned. This application Apr. 5, 1990, Ser. No. 505,769

Int. Cl.[5] C08F *2/04, 2/32, 4/28, 20/54*

U.S. Cl. 526—219.2 **35 Claims**

1. A method for making a hydrophilic-hydrophobic polymer composite comprising a dispersion of particles of one kind of polymer in a continuous phase of another polymer, which comprises the steps of:

a. forming a concentrated emulsion of a hydrophobic monomer and a hydrophilic monomer, the continuous phase of said concentrated emulsion comprising a surfactant and an initiator and the dispersed phase comprising an initiator, wherein the volume fraction of the dispersed phase is greater than about 0.74; and

b. heating said concentrated emulsion at a predetermined temperature.

5,061,768

VINYLIDENE CYANIDE COPOLYMER

Manabu Kishimoto; Iwao Seo, and Yukiko Fujimoto, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Inc., Tokyo, Japan

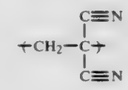
Filed Aug. 23, 1990, Ser. No. 571,154

Claims priority, application Japan, Aug. 28, 1989, 1-218619

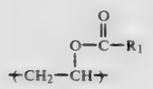
Int. Cl.[5] C08F *22/34, 22/18*

U.S. Cl. 526—245 **7 Claims**

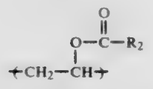
1. In a piezoelectric material or element which is obtained by effecting polarization of a copolymer by applying a high potential after stretching the copolymer to 1.5 to 6-fold, the improvement wherein said copolymer comprises the structural unit represented by (I) and either one of the structural units represented by (II) and (III) being alternately polymerized with (I) with a ratio of the structural unit (II) to that of (III) being within the range of from 0.2/1 to 5/1, and has a weight average molecular weight of 200,000 to 1,500,000; wherein the structural units (I), (II), and (III) have the formulae



(I)



(II)



(III)

wherein R_1 and R_2 are different, and each represents a hydrogen atom, a straight chain alkyl group having 1 to 15 carbon atoms, di- or trichloromethyl, di- or trifluoromethyl, t-butyl, phenyl, 4-nitrophenyl, 4-cyanophenyl, 4-trifluoromethylphenyl or naphthyl.

5,061,769

FLUOROPOLYMERS AND FLUOROPOLYMER COATINGS

Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 17, 1990, Ser. No. 628,541

Int. Cl.[5] C08F *20/22*

U.S. Cl. 526—245 **26 Claims**

1. Polymeric compositions comprising fluorinated copolymers of the formula

$$+X_s-Y_t-Z_u+$$

wherein s, t and u represent weight proportions of the respective X, Y and Z units, and have values within the ranges of

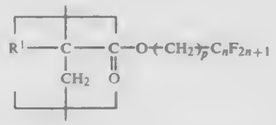
s = from about 0.5 to about 0.99;

t = from about 0.005 to about 0.495; and

u = from about 0.005 to about 0.495;

with the sum of s+t+u being 1; and with the proviso that the ratio of t:u is from about 1:0.5 to about 1:1.5;

X represents units of the composition



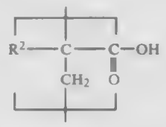
wherein

R^1 is H, $-CH_3$ or mixtures thereof;

p is 1 or 2;

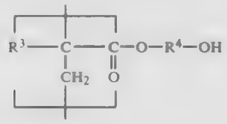
n is an integer of from about 1 to about 40;

Y represents units of the composition



wherein R^2 is H, $-CH_3$, or $-CH_2COOH$;

Z represents units of the composition



wherein

R^3 is H, $-CH_3$, or $-CH_2COOC_mH_{2m+1}$, wherein m is an integer of from about 1 to about 4; and

R^4 is an alkylene bridging group, straight chain, branched or cyclic, having from 1 to about 8 carbon atoms;

wherein the X, Y and Z units may be arranged in any sequence.

5,061,770

AROMATIC DICARBOXYLIC ACID DIALLYL ESTER DERIVATIVE, PREPOLYMER DERIVED FROM THE DERIVATIVE AND CURABLE RESIN COMPOSITION CONTAINING THE DERIVATIVE

Sinji Tamaru, Suita, and Motonobu Kubo, Toyonaka, both of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

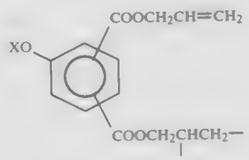
Division of Ser. No. 109,413, Oct. 19, 1987, Pat. No. 4,841,093. This application Apr. 14, 1989, Ser. No. 338,835

Claims priority, application Japan, Oct. 22, 1986, 61-252439; Dec. 23, 1986, 61-314653; Dec. 24, 1986, 61-314517; Dec. 24, 1986, 61-314518

Int. Cl.[5] C08F *18/20, 18/18, 18/16*

U.S. Cl. 526—247 **5 Claims**

1. A prepolymer containing a repeating unit derived from diallyl aromatic fluorine-containing dicarboxylate and represented by the formula



(6)

wherein X is a perfluoroalkenyl group having 6 to 14 carbon atoms.

5,061,771

RING-OPENED POLYMER FROM NORBORNENE TYPE OF POLYCYCLIC MONOMER AND PROCESS FOR PRODUCING THE POLYMER

Masayoshi Oshima, Niiza; Teiji Kohara, Kawasaki; Tohru Hosaka, Yokohama, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

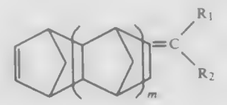
Filed Nov. 8, 1989, Ser. No. 433,106

Claims priority, application Japan, Nov. 14, 1988, 63-285879

Int. Cl.[5] C08F *32/06, 32/08, 2/38*

U.S. Cl. 526—282 **11 Claims**

1. A solvent-soluble ring-opened polymer constituted of 100–50% by weight of norbornene monomer (A) represented by the formula



wherein, R_1 and R_2 are the same or different and each denotes hydrogen or alkyl and m denotes an integer of 0 to 2, and 0–50% by weight of norbornene monomer (B) capable of undergoing ring-opening copolymerization with monomer (A), said polymer having a number average molecular weight MN of 10,000 to 50,000, a weight average molecular weight-to-number average molecular weight ratio (Mw/Mn) of up to 3, and a glass transition temperature of 80–200° C.

5,061,772

PROCESS FOR MAKING COMB-SHAPED COPOLYMERS OF A MACROMOLECULAR MONOMER OF POLYLACTONE WITH TERMINAL ACRYLOYL UNSATURATION, AND COMPATIBLE BLENDS THEREOF

Simon H. Yu, Westlake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 283,422, Dec. 12, 1988, Pat. No. 4,983,689, which is a continuation-in-part of Ser. No. 46,818, May 7, 1987, Pat. No. 4,791,189. This application Jan. 7, 1991, Ser. No. 638,275

Int. Cl.[5] C08F *218/02;* **C08G** *63/08, 63/10*

U.S. Cl. 526—320 **10 Claims**

1. An emulsion polymerization process for producing a comb copolymer of a polymerizable olefinically unsaturated monomer and a macromer of polylactone, the macromer having an unsaturated acryloyl or methacryloyl (together "(meth-)acryloyl") head group at one end and a terminal group at the other, comprising,

(a) preparing in a premix vessel, an aqueous non-acidic premix comprising a first surfactant and in the absence of a co-solvent,

(b) preparing in a reaction vessel, an aqueous non-acidic reactor precharge comprising a redox catalyst and second surfactant, different from the first surfactant, and an electrolyte in an amount sufficient to maintain a desirable ionic charge balance in the absence of a co-solvent,

(c) dissolving a macromer of polylactone having a mol wt greater than 1000 in the monomer only, to form a solution of macromer in monomer, the amount of monomer being sufficient to provide on average at least 2 repeating units of monomer(s) per macromer unit in the comb copolymer to be formed, and adding said solution to said premix while agitating and purging said premix vessel with an inert gas,

(d) adding a minor portion by volume of said premix to said reaction vessel,

(e) initiating polymerization in the absence of a chain transfer agent, by adding sequentially to said reaction vessel a surfactant, reducing agent, oxygen scavenger and hydroperoxide catalyst ineffective at a temperature less than 70° C. in the absence of said redox catalyst,

(f) adding remaining premix in incremental quantities to said reaction vessel until polymerization is essentially completed while maintaining the contents of said reaction vessel in an emulsion at a temperature less than 70° C.,

(g) coagulating said emulsion with a salt to produce a coagulum of comb copolymer, and,

(h) recovering the comb copolymer having a porosity less than 0.1 and pendant chains of substantially equal length.

5,061,773

AMINOALKYL-SUBSTITUTED ORGANOPOLYSILOXANE THIOUREA DERIVATIVES AND METHODS OF PREPARATION AND USE THEREOF

Peter Panster, Rodenbach; Ulrich Deschler, Brasschaat, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengeselischaft, Frankfurt am Main, Fed. Rep. of Germany

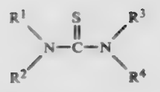
Filed Jul. 30, 1990, Ser. No. 558,867

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1989, 3925358

Int. Cl.[5] C08G *79/00*

U.S. Cl. 528—9 **14 Claims**

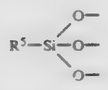
1. An aminoalkyl-substituted organopolysiloxane thiourea composed of units of the formula:



(I)

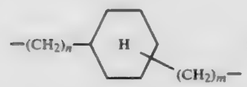
wherein

R^1 for a group of the formula:

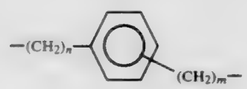


(II)

in which R^5 is bonded to nitrogen in formula I and is alkylene with 1 to 10 C atoms or cycloalkylene with 5 to 8 C atoms or a group of the formula:



or

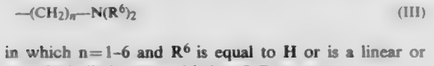


with

n=1–6 (bonded to the nitrogen)

m=0–6 (bonded to the silicon),

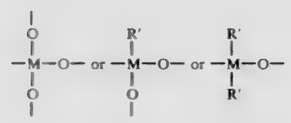
whereby R^2 has the same meaning as R^1 or is H, R^3 has the same meaning as R^1 or is H or a group of the formula:



(III)

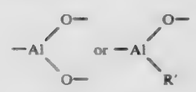
in which n=1–6 and R^6 is equal to H or is a linear or branched alkyl group with 1 to 5 C atoms,

R^4 is H or a group of the formula (III), and at most 2 groups of formula (II) and at most 2 groups of formula (III) are contained in the polymer unit according to formula (I), and the free valences of the oxygen atoms bound to the silicon atom are saturated as in silica skeletons by silicon atoms of further groups of formula (II) and/or via the metal atoms in one or more cross-linking bridge-type cross links:



(IV)

or



(IV)

whereby M is a silicon, titanium or zirconium atom and R′ a phenyl group or a linear or branched alkyl group with 1 to 5 C atoms and the ratio of the silicon atoms from the groups of formula (II) to the metal atoms in the bridge-type cross links of formula (IV) is 1:0 to 1:20.

5,061,774

IMIDE-CONTAINING POLYSILOXANES AND A PROCESS FOR PREPARING THEM

Jung O. Park, Daejeon-Si; Myung J. Kim, Seoul, and Ju O. Song, Daekoo-Si, all of Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR89/00006, § 371 Date Nov. 20, 1989, § 102(e) Date Nov. 20, 1989, PCT Pub. No. WO89/09240, PCT Pub. Date Oct. 5, 1989

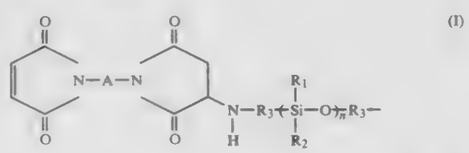
PCT Filed Mar. 22, 1989, Ser. No. 435,442

Claims priority, application Rep. of Korea, Mar. 22, 1988, 1988/3067

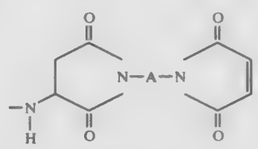
Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—26 **7 Claims**

1. A polysiloxane containing imide terminal groups represented by formula (I)



(I)



wherein

R_1 and R_2 are each methyl, ethyl, propyl or phenyl;

R_3 represents an alkylene having 1 to 8 carbon atoms or an alkyl substituted alkylene having 1 to 8 carbon atoms;

n represents an integer of 30 to 400; and

A represents a divalent group having at least 2 carbon atoms.

5,061,775

HEAT CURABLE MIXTURES AND THEIR USE FOR THE FORMATION OF COATINGS ON HEAT RESISTANT SUBSTRATES

Lutz Schmalstieg, Cologne; Klaus Nachtkamp, Dusseldorf, both of Fed. Rep. of Germany, and Karl-Ludwig Noble, Pittsburgh, Pa., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 6, 1990, Ser. No. 549,508

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1989, 3922767

Int. Cl.[5] C08G *18/80*

U.S. Cl. 528—45 **17 Claims**

1. A coating composition which may be cured at elevated temperature and comprises

A) a polyisocyanate component comprising at least one organic polyisocyanate having reversibly blocked isocyanate groups and a molecular weight of 398 to 25,000, excluding the weight of the blocking agent, said isocyanate groups being reversibly blocked with a secondary monoamine and

B) an isocyanate reactive component comprising at least one organic polyamine having a molecular weight of 60 to 499 and containing at least two primary amino groups.

5,061,776

MODIFIED POLYURETHANE FLOW-UNDER THERMAL TRANSFER ADHESIVE

Mark A. Weaver, Redondo Beach; Lynn E. Long, Manhattan Beach, and Steven E. Lau, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 19, 1990, Ser. No. 615,932

Int. Cl.[5] C08G *18/10*

U.S. Cl. 528—60 **12 Claims**

1. A composition adapted for use as a flow-under thermal transfer adhesive comprising:

(a) 30 to 70 weight percent of an aliphatic diisocyanate or triisocyanate prepolymer;

(b) 5 to 15 weight percent of a polyether diol or triol;

(c) 20 to 40 weight percent of castor oil;

(d) 5 to 20 weight percent of an epoxy resin containing 2 or more hydroxyl groups;

(e) 0.006 to 0.008 weight percent of a catalyst for the reaction of isocyanate groups with hydroxyl groups.

5,061,777

THROMBORESISTANT POLYETHERURETHANE COMPOUNDS AND PROCESS FOR ITS PRODUCTION

Ryuichiro Yoda; Akira Fukutome; Suguru Ohkawa, and Kazutoshi Iida, all of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 168,570, Mar. 7, 1988, abandoned, which is a continuation of Ser. No. 832,405, Feb. 24, 1986, abandoned. This application Jul. 19, 1990, Ser. No. 554,164

Claims priority, application Japan, Feb. 28, 1985, 60-39981

Int. Cl.[5] C08G *18/48*

U.S. Cl. 528—61 **11 Claims**

1. A thromboresistant segmented polyurethane compound wherein the polyether segment consists of 90 to 40% by weight of (a) a polytetramethylene ether segment having a number average molecular weight of 200 to 5,000 and 10 to 60% by weight of (b) a polyalkylene ether segment having a number average molecular weight of 200 to 5,000 in which the alkylene group has 2 or 3 carbon atoms or mixtures thereof, said segments (a) and (b) being contained in the same main chain.

5,061,778

RESIN COMPOSITION FOR COMPOSITE-TYPE VIBRATION-DAMPING MATERIAL, COMPOSITE-TYPE VIBRATION-DAMPING MATERIAL USING THE RESIN COMPOSITION AND PROCESS FOR PRODUCTION OF THE VIBRATION-DAMPING MATERIAL

Yasunobu Uchida; Tomoshige Ono; Tadahiro Wakui; Yoshihiro Matsumoto; Masatoshi Shinozaki, all of Chiba; Toshio Okuyama, Nagoya; Toshiro Hirose, Nagoya, and Toru Uno, Nagoya, all of Japan, assignors to Kawasaki Steel Corporation and Toagosei Chemical Industry Co., Ltd., both of, Japan

Filed Feb. 21, 1990, Ser. No. 482,563

Claims priority, application Japan, Feb. 22, 1989, 1-42296; Mar. 10, 1989, 1-58611

Int. Cl.[5] C08G *18/80*

U.S. Cl. 528—45 **24 Claims**

1. A resin composition for a composite-type vibration-damping material which comprises a saturated copolyester having a weight average molecular weight of at least 10,000 and a softening point of 50° to 150° C. and a polyfunctional isocyanate compound and which, when cross-linked, has a degree of gelation (degree of cross-linking) of at least 10%.

5,061,779

LIQUID EPOXY POLYMER COMPOSITION AND USE THEREOF BASED ON CYCLOALIPHATIC AMINE CURED DIFUNCTIONAL/POLYFUNCTIONAL RESIN BLENDS

David W. Wang, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1989, Ser. No. 322,847

Int. Cl.[5] C08G *59/32*

U.S. Cl. 528—98 **21 Claims**

1. A liquid composition containing:

A) about 45% to about 80% by weight of a diglycidyl ether of a dihydric phenol or diglycidyl ether of a tetrabrominated dihydric phenol or mixtures thereof;

B) about 10% to about 20% of an epoxide having an epoxide functionality of about 2.2 to about 4; and wherein the weight ratio of A:B is about 2:1 to about 8:1;

C) a cycloaliphatic polyamine curing agent in an amount sufficient for curing of the composition; and

D) 0% to about 10% by weight of a thixotropic agent, wherein the above amounts are based upon the total amount of A, B, C, and D in the composition.

5,061,780

POLY(ETHER-BIS-IMIDE-SPIRO DILACTAM) POLYMER

Pen-Chung Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 9, 1990, Ser. No. 564,524

Int. Cl.[5] C08G *73/06*

U.S. Cl. 528—170 **29 Claims**

1. A process of producing a poly(etherimide) polymer by contacting under polymerization conditions in liquid phase reaction diluent

(1) a dihydroxyaryl-spirodilactam alkali metal salt of up to 60 carbon atoms, inclusive, with

(2) a bis(nitroimide) compound of up to 30 carbon atoms wherein a nitro group is located on each imide substituent and with or without

(3) an alkali metal salt of a di(hydroxyphenyl) compound of two rings.

5,061,781

POLYIMIDES FROM DIAMINOBENZOTRIFLUORIDES

Andrea Leone-Bay; Steven L. Peake, both of Ridgefield, and Stanley S. Kaminski, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 584,561, Sep. 18, 1990, Pat. No. 5,021,540. This application Mar. 20, 1991, Ser. No. 672,247

Int. Cl.[5] C08G *63/00*

U.S. Cl. 528—179 **16 Claims**

1. A polyimide resin made by reaction of a dianhydride having at least one aromatic ring in the molecule and an excess of a diamine selected from the group consisting of diaminobenzotrifluorides and bis (trifluoromethyl) oxydianilines, and end capped by reaction with a monoanhydride.

5,061,782

UNSATURATED POLYMERIZATION OF CO AND BICYCLIC CARBOXYLIC ACID COMPOUND BIDENTATE LIGAND OF NITROGEN

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 379,839, Jul. 14, 1989, Pat. No. 4,960,857. This application Jun. 20, 1990, Ser. No. 540,556

Claims priority, application Netherlands, Jul. 15, 1988, 8801804

Int. Cl.[5] C08G *67/02*

U.S. Cl. 528—271 **18 Claims**

1. A process of preparing a linear alternating polymer of carbon monoxide and an unsaturated bicyclic carboxylic acid compound which comprises contacting a mixture of carbon

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monoxide and the carboxylic acid compound under polymerization conditions in the presence of a catalyst composition formed from a palladium compound, the anion of a non-hydrohalogenic acid having a pKa below about 4 and a bidentate ligand of nitrogen.

5,061,783

PROCESSING FOR MAXIMIZING THE LEVEL OF CRYSTALLINITY IN LINEAR AROMATIC POLYIMIDES

Terry L. St. Clair, Poquoson, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 35,430, Apr. 7, 1987, abandoned. This application Apr. 30, 1990, Ser. No. 516,489

Int. Cl.[5] **C08G** *73/10*

U.S. Cl. 528—125 **8 Claims**

1. A process for maximizing the level of crystallinity in a linear aromatic polyimide, which process consists essentially of the following sequential steps:

dissolving a polyamide-acid in an amide-containing solvent system to produce a solution having a concentration of about 10% solids by weight, the polyamide-acid being the reaction product of 3,3',4,4'-benzophenonetetracarboxylic dianhydride and an aromatic diamine;

admixing two volumes of an aprotic organic base with one volume of the solution of polyamide-acid;

admixing a volume equal to the volume of aprotic organic base of an organic dehydrating agent with the polyamide-acid solution/aprotic organic base admixture, followed by stirring for at least one hour;

recovering the resulting solid by standard techniques; and thermally treating the recovered solid at a temperature of 100° C. or greater for at least 30 minutes.

5,061,784

POLYMERS PREPARED FROM 4,4'-BIS(3,4-DICARBOXYPHENYL) HEXAFLUOROISOPROPYL) DIPHENYL DIANHYDRIDE

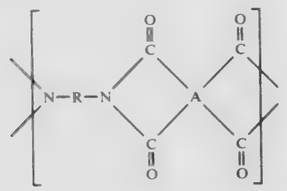
Werner H. Mueller, Nucces City, Tex., and Rohitkumar H. Vora, Union City, N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Aug. 6, 1990, Ser. No. 543,232

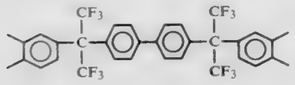
Int. Cl.[5] **C08G** *73/10*

U.S. Cl. 528—353 **10 Claims**

1. A polyimide polymer comprising recurring groups having the structure:



wherein R is a divalent aliphatic or aromatic organic radical and A is the residuum having the formula:



5,061,785

POLYMERIZATION OF CARBON MONOXIDE/OLEFIN WITH TERTIARY ALIPHATIC MONOPHOSPHINE CATALYST

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 5, 1990, Ser. No. 474,953

Claims priority, application Netherlands, Mar. 29, 1989, #900768

Int. Cl.[5] **C08G** *67/02*

U.S. Cl. 528—392 **12 Claims**

1. In the process of producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and hydrocarbon under polymerization conditions in the presence of an inert diluent and a catalyst composition, the improvement wherein the catalyst composition is a catalyst composition formed from a halide-free palladium compound, the anion of a non-hydrohalogenic acid having a pKa less than 1 and a tertiary aliphatic monophosphine of the formula PR_3 wherein R independently is an alkyl of up to 10 carbon atoms inclusive.

5,061,786

BIOLOGICALLY ACTIVE POLYPEPTIDES BASED ON TRANSFORMING GROWTH FACTOR-BETA SEQUENCES

John P. Burnier, Pacifica, and George J. Cianciolo, San Carlos, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed May 25, 1989, Ser. No. 356,964

Int. Cl.[5] **A61K** *37/02;* **C07K** *15/00*

U.S. Cl. 530—326 **17 Claims**

1. A polypeptide comprising an amino acid sequence of the formula:

X-A-Arg-B-Leu-Tyr-Ile-Asp-Phe-H-I-Asp-Leu-gly-Trp-Lys,

wherein:

X is Cys or a crosslinker moiety or a polypeptide that has at its C-terminus a Cys, and that, if greater than 15 residues, does not have the sequence of mature or precursor TGF-β at a homologous location in the mature or precursor TGF-β molecule;

A is Val or Leu;

B is Pro or Gln;

H is Arg or Lys; and

I is Lys, Arg, or Gln; or a physiologically acceptable salt or ester thereof; provided, however, that the polypeptide excludes (a) a full-length mature TGF-β molecule or precursor TGF-β molecule or deletion variants of mature or precursor TGF-β molecules in which from about 1 to 10 amino acid residues have been deleted, (b) a polypeptide of the sequency:Cys-Val-Arg-Gln-Leu-Tyr-Ile-Asp-Phe-Arg-Lys-Asp-Leu-Gly-Trp-Lys, and (c) a polypeptide of the sequence: Arg-Asn-Leu-Glu-Glu-Asn-Cys-Cys-Val-Arg-Pro-Leu-Tyr-Ile-Asp-Phe-Arg-Gln-Asp-Leu.

5,061,787

NOVEL SPERGUALIN-RELATED COMPOUNDS AND COMPOSITIONS

Tetsushi Saino, Yono; Tsugio Tomiyoshi; Kyuichi Nemoto, both of Tokyo, and Yoshihisa Umeda, Otsu, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo and Takara Shuzo Kabushiki Kaisha, Kyoto, both of, Japan

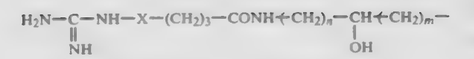
Filed Jun. 8, 1989, Ser. No. 363,538

Claims priority, application Japan, Jun. 24, 1988, 63-154590

Int. Cl.[5] **C07C** *237/00;* **A61K** *37/02*

U.S. Cl. 530—331 **6 Claims**

1. A novel spergualin-related compound represented by the general formula [I]:



wherein X is $-(CH_2)_{15}-$ or



Y is a hydrogen atom or a residue obtained by removing a hydroxyl group from the carboxyl group of an amino acid di or tripeptide; m and n are both 1, or a pharmacologically acceptable salt thereof.

5,061,788

RECOMBINANT MALARIAL POLYPEPTIDES

Ulrich Certa, Allschwil, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 29, 1988, Ser. No. 237,126

Claims priority, application Switzerland, Sep. 8, 1987, 3486/87

Int. Cl.[5] **C07K** *13/00;* **C12N** *15/09*

U.S. Cl. 530—350 **9 Claims**

1. A polypeptide which has at least one specific epitope of a *Plasmodium falciparum* merozoite antigen having the amino acid sequence

MetAsnAlaProLysLysLeuProAlaAspValAlaGlu-GluLeuAlaThrTrAla-W-LysLeuValGlnAlaGlyLys-GlyIleLeuAlaAlaAspGluSerThrGlnThrIleLys LysArg-PheAspAsnIleLysLeuGluAsnThrIleGluAsnArgAlaSer-TyrArgAsp LeuLeuPheGlyThrLysGlyLeuGlyLys-PheIleSerGlyAlaIleLeuPheGluGlu ThrLeuPheGl-nLysAsnGluAlaGlyValPro-X-ValAsnLeuLeuHisAsn-GluAsn IleIleProGlyIleLysValAspLys-Y-LeuValAsnIle-ProCysThrAspGluGlu LysSerThrGln-Z-LeuAsp-GlyLeuAlaGluArgCysLysGluTyrTyrLysAlaGly AlaArgPheAlaLysTrpArgThrValLeuValIleAsp-ThrAlaLysGlyLysProThr AspLeuSerAsnHisGlu-ThrAlaTrPGlyLeuAlaArgTyrAlaSerIleCysGlnGln As-nArgLeuValProIleValGluProGluIleLeuAlaAspGly-ProHisSerIleGlu ValCysAlaValValThrGlnLysVal-LeuSerCysValPheLysAlaLeuGlnGluAsn GlyVal-LeuLeuGluGlyAlaLeuLeuLysProAsnMetValThrAla-GlyTyrGluCys ThrAlaLysThrThrThrGlnAspValGly-PheLeuThrValArgThrLeuArgArgThr ValPro-ProAlaLeuProGlyValValPheLeuSerGlyGlyGlnSerGlu-GluGluAla SerValAsnLeuAsnSerIleAsnAlaLeuGly-ProHisProTrpAlaLeuThrPheSer TyrGlyArgAlaLeuGl-nAlaSerValLeuAsnThrTrpGlnGlyLysLysGluAsnVal AlaLysAlaArgGluValLeuLeuGlnArgAlaGluAlaAsn-SerLeuAlaThrTyrGly LysTyrLysGlyGlyAlaGlyGly-GluAsnAlaGlyAlaSerLeuTyrGluLysLysTyr ValTyr

wherein

—W— is Gln or can be absent;

—X— is Met or Gln;

—Y— is Gly or Cys and

—Z— is Gly or Cys.

5,061,789

METHOD OF ISOLATING BLOOD-CLOTTING FACTOR IX

Wolfgang Möller, Oberursel, and Michael Kraus, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Biotest Pharma GmbH, Dreieich, Fed. Rep. of Germany

Filed May 1, 1990, Ser. No. 517,081

Claims priority, application Fed. Rep. of Germany, May 5, 1989, 3914869

Int. Cl.[5] **C07K** *3/02, 3/20, 3/22*

U.S. Cl. 530—381 **15 Claims**

1. A method of isolating blood-clotting Factor IX, comprising

a) contacting a solution containing Factor IX with an adsorbent carrying α-hydroxylaminopropyl groups, thereby to absorb the Factor IX, and then eluting the Factor IX to product an eluate,

b) adjusting the conductivity of the eluate of step (a) to 13–17 mS/cm, and

c) contacting the solution of Factor IX from the adjusted eluate of step (b) with a matrix carrying sulfated carbohydrates selected from the group consisting of (i) heparin immobilized on a copolymer of glycidyl methacrylate, pentaerythrol dimethacrylate, and polyvinyl alcohol, (ii) heparin immobilized on a copolymer of methacrylamide, N-methylene-bis-methacrylamide and allylglycidyl ether, (iii) heparin immobilized on a carbohydrate polymer, and (iv) dextran sulfate immobilized on a carbohydrate polymer, and eluting the Factor IX from the matrix with a salt gradient to product a second eluate.

5,061,790

OXIDATIVE DENATURATION OF PROTEIN ANALYTES

James J. Elting, Madison, and Heinz Kolbl, West Haven, both of Conn., assignors to Molecular Diagnostics, Inc., West Haven, Conn.

Filed Jul. 10, 1989, Ser. No. 377,680

Int. Cl.[5] **C07K** *3/00, 13/00, 15/00, 17/00*

U.S. Cl. 530—402 **7 Claims**

1. A method for conferring or increasing the antigenicity of a protein containing disulfide crosslinkages, comprising the steps of treating the protein with an oxidizing agent having an oxidation potential sufficient to cleave disulfide linkages in proteins and under conditions favorable to the cleavage of said disulfide linkages, and thereafter contacting the resulting mixture with a sufficient amount of a reducing agent to react with and inactivate remaining oxidizing agent.

5,061,791

4-BROMO-4'-DEMETHYLEPIPODOPHYLLOTOXIN DERIVATIVES

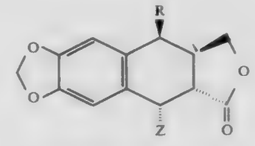
Howard D. H. Showalter, and Roy T. Winters, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 287,235, Dec. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 262,642, Oct. 26, 1988, abandoned. This application Sep. 19, 1989, Ser. No. 407,662

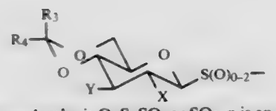
Int. Cl.[5] **C07H** *11/04, 15/00*

U.S. Cl. 536—17.4 **20 Claims**

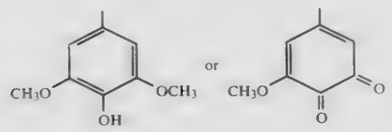
1. A compound of formula (I)



wherein A is $A-(CH_2)_n[A(CH_2)_n]_m(CHAH)_p-O$ or



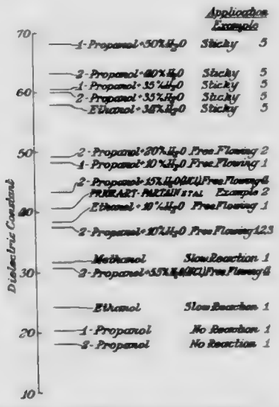
each A, independently, is O, S, SO, or SO_2; n is an integer from 1 to 6, except when m and p, taken together, are zero, then n is 2 to 6; m is 0, 1, or 2; p is 0, 1, or 2; Q is H, or alkyl from 1 to 6 carbon atoms which may be substituted with an NR_1R_2 group wherein each R_1 and R_2, independently, is selected from the group consisting of H, alkyl containing 1 to 6 carbon atoms which may be substituted with OH, or alkanoyl containing 1 to 6 carbon atoms, or R_1 and R_2 are interconnected and together with the N to which they are connected form an N heterocyclic ring of 5 to 6 carbon atoms; R_3 is hydrogen, and R_4 is an alkyl, alkenyl, cycloalkyl, 2-furyl, 2-thienyl, aryl, aralkyl, or aralkenyl, wherein the aromatic ring may optionally be substituted by one or more of hydroxyl, alkyl, alkoxy, nitro, or halogen radicals; or R_3 and R_4 together with the carbon atom to which they are attached may form saturated cycloaliphatic ring having 5 or 6 carbon atoms; each X and Y, individually, is OH or NR_6R_7 wherein each R_6 and R_7, independently, is H, alkyl containing 1 to 6 carbon atoms, or one of R_6 and R_7 is acyl; and Z is



5,061,792
PREPARATION OF CHITOSAN SALTS IN AQUEOUS ALCOHOLIC MEDIA

Charles J. Albisetti, Rehoboth, Del., and John E. Castle, Kennett Square, Pa., assignors to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 329,313, Mar. 27, 1989, abandoned. This application Dec. 18, 1989, Ser. No. 451,908
Int. Cl.[5] C08B *37/00;* C07H *1/00, 13/00*
U.S. Cl. 536—20 6 Claims



1. A process for preparing dry, free-flowing, water-soluble chitosan salts of aliphatic and aromatic carboxylic, sulfonic, and inorganic acids comprising the steps of:

(A) Combining to form a mixture;

(1) one part by weight of particulate chitosan in which at least about 70% of all acetamide groups are deacetylated to form free amino groups;

(2) about 5 to about 50 parts by weight of a C_1–C_3 monohydric alcohol;

(3) an amount of water sufficient to raise the dielectric constant of the alcohol of (2) to at least 30 and not more than about 40;

(4) about one-half to about four equivalents for each equivalent of free amino groups in said chitosan, of an acid selected from the group consisting of aliphatic and aromatic carboxylic, sulphonic, and inorganic acids selected from the group consisting of nitric, hydrochloric, and sulfamic acids, said acids having a first hydrogen pKa in water at room temperature of less than about 5, wherein

(a) said aliphatic carboxylic acid comprises:

(1) two to about six carbon atoms;

(2) one to three carboxy groups;

(3) zero to two hydroxy groups;

(b) said aromatic carboxylic acid comprises a structure wherein a benzene ring is substituted with one substituent group selected from the group consisting of carboxy and acrylic acid and zero to one substituent group selected from the group consisting of methoxy, amino, and acetoxy;

(c) said sulphonic acid is selected from the group consisting of alkylsulphonic acid, benzenesulphonic acid and toluenesulphonic acid;

(B) maintaining said mixture until reaction between said chitosan and said acid is essentially complete and;

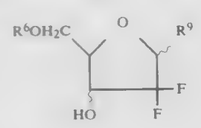
(C) recovering and drying said chitosan salt at a temperature below the denaturation temperature.

5,061,793
2-DEOXY-2',2'-DIFLUORO-INOSINE AND 5'O-DERIVATIVES

Gerald B. Grindey, and Larry W. Hertel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 786,419, Oct. 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 677,783, Dec. 4, 1984, abandoned. This application Mar. 3, 1988, Ser. No. 163,571
Int. Cl.[5] C07H *19/173;* A61K *31/70*
U.S. Cl. 536—26 1 Claim

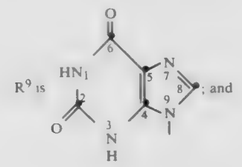
1. A compound of the formula



III

wherein:

R^6 is selected from the group consisting of hydrogen and C_1–C_4 alkyl;



; and

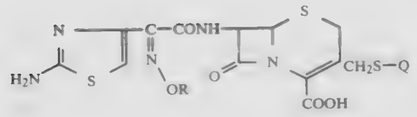
the pharmaceutically-acceptable salts thereof.

5,061,794
CEPHALOSPORIN DERIVATIVES, AND ANTIBACTERIAL AGENTS

Susumu Nakagawa; Koji Yamada; Fumio Nakano; Norikazu Otake; Akira Asai; Satoru Kuroyanagi; Yoshiharu Tanaka; Moriaki Ishikawa; Ryosuke Ushijima, and Ryuji Mitomo, all of Okazaki, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

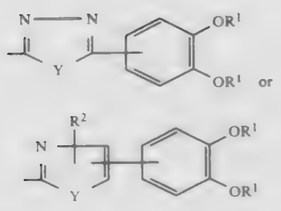
Continuation of Ser. No. 38,208, Apr. 14, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 377,086
Claims priority, application Japan, Apr. 14, 1986, 61-084079; May 1, 1986, 61-099440; Dec. 27, 1986, 61-309178
Int. Cl.[5] C07D *501/36;* A61K *31/545*
U.S. Cl. 514—206 8 Claims

1. A compound having the formula:



(I)

wherein R is a straight chain or branched chain lower alkyl, or cyclic lower alkyl group which may be substituted by a carboxyl group, and Q is,



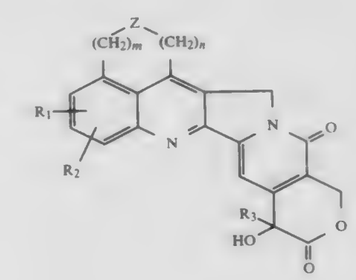
(wherein R^1 is a hydrogen atom or an acetyl group, R^2 is a hydrogen atom, a carboxyl group or a carboxymethyl group, Y is a sulfur atom or an oxygen atom); or a pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof.

5,061,795
HEXA-CYCLIC COMPOUND

Hiroaki Tagawa; Masamichi Sugimori; Hirofumi Terasawa; Akio Ejima, and Satoru Ohsuki, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd. and Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Continuation-in-part of Ser. No. 207,718, Jun. 16, 1988, Pat. No. 4,917,035. This application Dec. 27, 1989, Ser. No. 457,921
Claims priority, application Japan, Jun. 24, 1987, 62-156990; Jan. 13, 1988, 63-5503
The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.
Int. Cl.[5] C97D *491/22, 311/00, 495/22*
U.S. Cl. 540—578 14 Claims

1. A compound represented by the following formula:



(I)

wherein R_1 and R_2 independently represent hydrogen atoms, hydroxyl groups, C_{1-6} alkyl groups, C_{1-6} alkenyl groups, C_{1-6} alkynyl groups, C_{1-6} alkoxyl groups, C_{1-6} aminoalkoxyl groups, halogen atoms, nitro groups, cyano groups, mercapto groups, C_{1-6} alkylthio groups, C_{1-6} hydroxyalkyl groups, C_{1-6} halogenoalkyl groups, C_{1-6} cyanoalkyl groups, C_{1-6} nitroalkyl groups, amino groups, amino groups containing acetyl groups, C_{1-6} aminoalkyl groups, C_{1-6} aminoalkyl group containing protective groups or C_{1-6} alkyl groups at the amino-position, C_{1-6} aminoalkylamino groups, C_{1-6} aminoalkylamino groups containing protective groups or C_{1-6} alkyl groups at the amino-position, heterocyclic C_{1-6} alkyl groups, heterocyclic C_{1-6} alkyl groups containing C_{1-6} alkyl, C_{1-6} alkoxyl, amino, halogeno, nitro, or cyano groups, heterocyclic C_{1-6} alkylamino groups, heterocyclic C_{1-6} alkylamino groups containing C_{1-6} alkyl, C_{1-6} alkoxyl, amino, amino containing protective groups, halogeno, nitro, cyano groups, or protective groups, amino-heterocyclic groups, amino-heterocyclic groups containing protective groups or C_{1-6} alkyl groups at the nitrogen atom of the heterocyclic ring moiety or amino position, heterocyclic-amino groups, heterocyclic-amino groups containing protective groups or C_{1-6} alkyl groups at the nitrogen atom of the heterocyclic ring moiety or amino position, carbamoyl groups, carbamoyl groups containing protective groups or C_{1-6} alkyl groups, heterocyclic carbonyl groups, heterocyclic carbonyl groups containing C_{1-6} alkyl, C_{1-6} alkoxyl, amino, hydroxyl, halogeno, nitro, or cyano groups, R_3 represents an C_{1-6} alkyl group, Z represents O, S, CH—R_4 (R_4 stands for a hydrogen atom, or a C_{1-6} alkyl group), or N—R_5 (R_5 stands for a hydrogen atom, a C_{1-6} alkyl group, or a protective group for the amino group), and m and n independently represent 0, 1 or 2, provided that m and n are not both equal to 2, and wherein said heterocyclic group is selected from the group consisting of azetidine, pyrrolidine, piperidine, piperazine, imidazoline, and morpholine, and wherein said protective group is selected from the group consisting of acetyl, formyl, trityl, tert-butoxycarbonyl, and p-methoxybenzoyloxycarbonyl.

5,061,796

AZAMETHINE COMPOUNDS

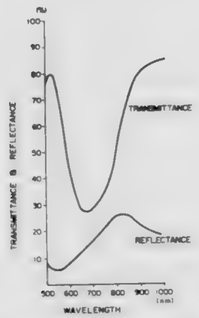
Takeshi Hioki, Osaka; Kiyoteru Kojima, Kobe, and Jun Tomioka, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 179,251, Apr. 8, 1988, Pat. No. 5,028,708. This application Jul. 21, 1989, Ser. No. 383,081

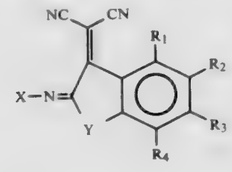
Claims priority, application Japan, Apr. 14, 1987, 62-91146; Dec. 22, 1987, 62-325998; Jan. 21, 1988, 63-11078

Int. Cl.[5] **G11B** *7/24;* **C07C** *121/84;* **C07D** *417/12, 409/12*

U.S. Cl. 544—163 **6 Claims**



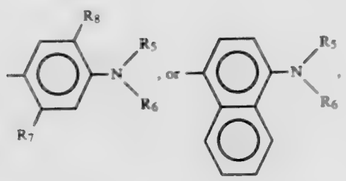
1. Azamethine compounds represented by formula (I)



(I)

wherein

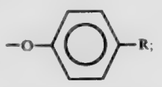
X represents



Y represents C═O;

R_1–R_4 represent individually hydrogen, halogen, nitro, cyano, hydroxy, —COOR, —OCOOR, —CONRR′, alkyl which is unsubstituted or substituted by halogen, alkoxy or amino which is substituted by alkyl; R and R′ represent independently hydrogen, alkyl or phenyl;

R_5 and R_6 represent independently hydrogen, phenyl, cyclohexyl, or alkyl which is unsubstituted or substituted by alkoxy, phenyl or



R_7 and R_8 represent independently hydrogen, alkoxy, hydroxy, halogen, —COR, —NHCOR or alkyl which is unsubstituted or substituted by phenyl; and R is as previously defined.

5,061,797

1-METHYL-3,5,7-TRIAZA-1-AZONIATRICYCLODECANE COMPOUNDS

John D. Pera, Cordova, and S. Rao Rayudu, Germantown, both of Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Mar. 29, 1988, Ser. No. 174,819

Int. Cl.[5] **C07D** *487/12;* **C23F** *11/04*

U.S. Cl. 544—181 **6 Claims**

1. The compound 1-methyl-3,5,7-triaza-1-azoniatricyclodecane phosphate.

5,061,798

BENZYL PYRIDYL AND PYRIDAZINYL COMPOUNDS

John Colin Emmett, Welwyn, and Paul D. Leeson, Cambridge, both of England, assignors to Smith Kline & French Laboratories, Ltd., Welwyn Garden City, England

Division of Ser. No. 168,780, Mar. 16, 1988, which is a division of Ser. No. 818,626, Jan. 14, 1986, Pat. No. 4,766,121. This application Oct. 27, 1989, Ser. No. 428,264

Int. Cl.[5] **C07D** *236/07*

U.S. Cl. 544—239 **3 Claims**

1. A compound of structure

in which

G^6 is t-butyl, halogen or XH;

X is oxygen or sulphur;

G^7 is hydrogen or t-butyl;

G^2 is hydroxy, protected hydroxy or nitro;

R^{10} is hydrogen or C_{1-4}alkyl; and

Ar′ is 6-oxo-3(1H)-pyridazinyl or a protected—6-oxo-3(1H)-pyridazinyl—, with the proviso that when G^6 is t-butyl, then G^7 is t-butyl.

5,061,799

PREPARATION OF TETRAAZAINDENES

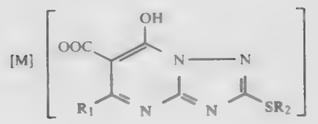
David G. Lincoln, Webster, and Mark J. Robbins, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 25, 1990, Ser. No. 542,621

Int. Cl.[5] **C07D** *471/02*

U.S. Cl. 544—256 **5 Claims**

1. A method for the preparation of a tetraazaindene salt represented by the structural formula:



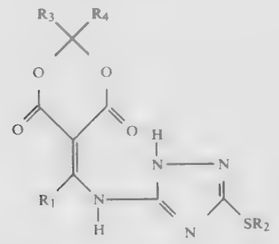
I

wherein

M is a metal cation selected from Na, K, and mixtures thereof,

R_1 is selected from straight chain alkyl groups and aryl groups having up to about 8 carbon atoms, and

R_2 is an alkyl or aryl group having up to about 8 carbon atoms; said method comprising reacting a compound represented by the structural formula:



wherein

R_1 and R_2 are as defined above, and

R_3 and R_4 are independently selected from alkyl groups having up to about 4 carbon atoms;

with a base, selected from the group consisting of NaOH, KOH, Na_2CO_3, and K_2CO_3, and mixtures thereof, at a reaction temperature in the range of from about 0° C. to about 50° C. to form said tetraazaindene salt.

5,061,800

CAMPTOTHECIN DERIVATIVES

Takashi Yaegashi; Satoru Okajima; Seigo Sawada; Kenichiro Nokata; Kenichi Tezuka; Hiroshi Nagata; Teruo Yokokura, all of Tokyo; Tadashi Miyasaka, Kanagawa, all of Japan, and Tadashi Miyasaka, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

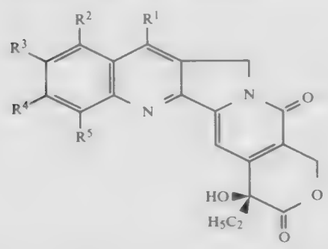
Filed Jan. 19, 1989, Ser. No. 298,976

Claims priority, application Japan, Jan. 20, 1988, 63-8388

Int. Cl.[5] **C07D** *491/22;* **A61K** *31/47*

U.S. Cl. 546—48 **3 Claims**

1. Camptothecin derivatives represented by the formula:



(I)

wherein R^1 represents a lower alkyl group, R^2 represents a hydrogen atom or an amino, hydroxyl, lower acylamino or lower alkoxy group, R^3 represents a hydrogen or halogen atom or a lower alkyl, hydroxyl, lower alkoxy, nitro, amino, cyano or di(lower alkyl)amino group, R^4 represents a hydrogen or halogen atom or a lower alkyl, hydroxyl, lower alkoxy, lower alkylthio, amino, cyano or di(lower alkyl)amino group, and R^5 represents a hydrogen or halogen atom or a hydroxyl or lower alkoxy group, with the proviso that all of the R^2, R^3, R^4 and R^5 substituents should not simultaneously be a hydrogen atom and also that if any of the R^2, R^3, R^4 and R^5 is a hydroxyl or lower alkoxy group, all of the other three substituents should not simultaneously be a hydrogen atom and also that if R^3 is a halogen atom, a nitro group or an amino group, all of the R^2, R^4 and R^5 substituents should not simultaneously be a hydrogen atom.

5,061,801

INTERMEDIATE FOR MAKING 3-OXO-4-AZA-ANDROST-1-ENE 17β-KETONES

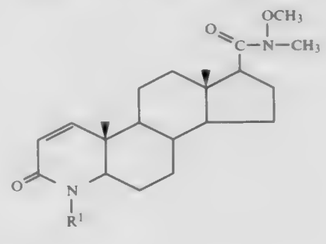
John M. Williams, Somerset, and Ulf H. Dolling, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 24, 1990, Ser. No. 586,922

Int. Cl.[5] **C07J** *73/00;* **A61K** *31/58*

U.S. Cl. 546—77 **2 Claims**

2. A compound of the formula



II

wherein

R^1 is hydrogen.

5,061,802

17β-AMINOBENZOYL-4-AZA-5α-ANDROST-1-EN-3-ONES AS BENIGN PROSTATIC HYPERTROPHY AGENTS

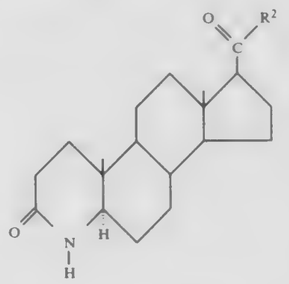
Nathan G. Steinberg, Clark; Gary H. Rasmusson, Watchung, and Thomas N. Salzmann, North Plainfield, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Jun. 20, 1990, Ser. No. 541,250

Int. Cl.[5] **C07J** *73/00;* **A61K** *31/58*

U.S. Cl. 546—77 **6 Claims**

1. A compound of the formula:



I

wherein

R is selected from hydrogen, methyl and ethyl and

R^2 is phenyl substituted with $N(R^3)_2$, which can be protected, where R^3 is independently H or C_1–C_4 alkyl, where the phenyl ring can also be further substituted with

C_1–C_4 alkyl, wherein the dotted line can represent a double bond, and pharmaceutically acceptable salts thereof.

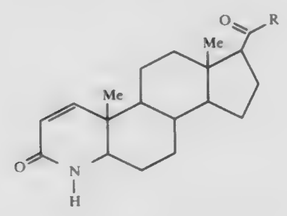
5,061,803

PROCESS FOR MAKING 17-BETA ALKANOYL 3-OXO-4-AZA-5-α-ANDROST-1-ENES

John M. Williams, Somerset, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

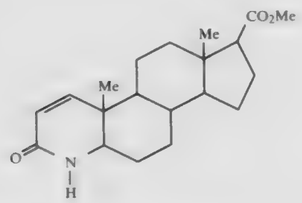
Filed Sep. 24, 1990, Ser. No. 587,299
Int. Cl.[5] C07J *73/00;* A61K *31/58*
U.S. Cl. 546—77 **5 Claims**

1. A process for making a compound of the following formula:



II

comprising the step of contacting the compound of the formula:



I

with a Grignard reagent of the formula:

RMgX,

wherein

R is C_3–C_{10} alkyl; and

X is iodine, bromine, or chlorine; in a dry inert organic solvent at a temperature in the range of −5° to 10° C., in the presence of hexamethyldisilazane, for a sufficient time to form Compound II where in the molar ratio of Δ^1-aza-ester: Griganard reagent: HMDS of about 1:3:10.

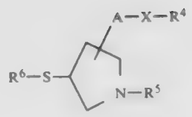
5,061,804

3-PYRROLIDINYLTHIO-1-AZABICYCLO-(3.2.0)HEPT-2-ENE-2-CARBOXYLIC ACID DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

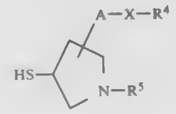
Masayoshi Murata, Osaka; Hideo Tsutsumi, Toyonaka; Keiji Matsuda, Takatsuki; Hohji Hattori, Sakai, and Takashi Nakajima, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 121,881, Nov. 17, 1987, Pat. No. 4,963,543.
This application Mar. 6, 1990, Ser. No. 489,263
Claims priority, application United Kingdom, Nov. 24, 1986, 8628063; Dec. 31, 1986, 8631081; Apr. 21, 1987, 8709399; Jul. 17, 1987, 8716937
Int. Cl.[5] C07D *403/12*
U.S. Cl. 546—281 **4 Claims**

1. A compound of the formula which is selected from the group consisting of the formula:



and the formula



wherein

R^4 is protected or unprotected hydroxy(lower)alkyl, protected or unprotected hydroxy(lower)alkyl having protected or unprotected amino; halo(lower)alkyl; protected or unprotected carbamoyl(lower)alkyl; protected or unprotected amino(lower)alkyl; protected or unprotected ureido(lower)alkyl; protected or unprotected ureidocarbonyl(lower)alkyl; triazolyl(lower)alkyl; saturated or unsaturated 3 to 8-membered heteromonocyclic group containing at least one heteroatom selected from oxygen, sulfur and nitrogen atom, wherein said heterocyclic group is unsubstituted or substituted by suitable substituent(s) selected from the group consisting of lower alkyl, amino, amino(lower)alkyl, mono(or di)(lower)alkylamino, mono-(or di(lower)alkylamino(lower)alkyl and iminoprotective group; or lower alkylsulfonyl;

R^5 is hydrogen, lower alkanimidoyl or imino-protective group,

R^6 is mercapto-protective group,

A is lower alkylene, and

X is sulfur, oxygen, imino or protected imino, provided that when X is oxygen,

then R^4 is not protected or unprotected ureido(lower)alkyl, and salts thereof.

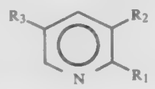
5,061,805

PROCESS FOR PREPARING 2-METHYL-3,5-DIALKYLPYRIDINES BY DEALKYLATION WITH SULFUR

Gerald L. Goe, Greenwood, Ind., assignor to Reilly Industries, Inc., Indianapolis, Ind.

Filed Aug. 10, 1990, Ser. No. 565,957
Int. Cl.[5] C07D *213/127, 213/16*
U.S. Cl. 546—349 **7 Claims**

1. A process for dealkylating the 2- position on a trisubstituted pyridine derivative having the formula



where R_1 is a straight chain alkyl group from about C_2–C_5 and where R_2 and R_3 are alkyl, aryl or aralkyl groups up to about C_{10}, comprising the step of reacting said pyridine derivative under heat with sulfur.

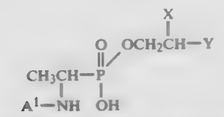
5,061,806

PHOSPHINIC ACID DERIVATIVES

Yoshiharu Morita, Yokohama; Yasuo Hoshide, Okegawa; Haruyuki Chaki, Yokohama; Junko Takashima, both of Yokohama, all of Japan, and Arthur A. Patchett, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

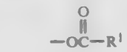
Continuation of Ser. No. 211,658, Jun. 27, 1988, abandoned.
This application May 24, 1990, Ser. No. 529,698
Claims priority, application Japan, Jul. 6, 1987, 62-166937
Int. Cl.[5] C07D *233/64, 207/16, 209/16;* C07F *9/40*
U.S. Cl. 548—112 **6 Claims**

1. A compound represented by the general formula (I)

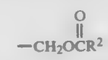


(I)

where A^1 is a hydrogen atom, an amino acid having a protecting group for amino groups or carboxyl groups, (which residue is obtained by removing, from an amino acid or amino acid having a protecting group, the hydroxyl group of the terminal carboxyl group), or a protecting group for the amino group; X is (a) a hydroxyl group, (b)



wherein R^1 is an alkyl group, or (c) -NHA^2 wherein A^2 is a hydrogen atom, an amino acid, an amino acid having a protecting group for amino groups of carboxyl groups, (which residue is obtained by removing, from an amino acid or amino acid having a protecting group, the hydroxyl group of the terminal carboxyl group), or a protecting group for the amino group; and Y is (a) -CH_2OH (b)



wherein R^2 is an alkyl group, or (c)



wherein B is a hydroxyl group, an amino acid, an amino acid having a protecting group for amino groups or carboxyl groups, (which residue is obtained by removing, from an amino acid amino acid having a protecting group, the hydrogen atom of the terminal amino group), or a protecting group for the carboxyl group.

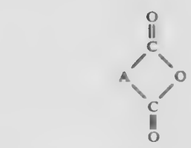
5,061,807

IMIDOPEROXYCARBOXYLIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

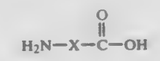
Hanspeter Gethöffer, Frankfurt am Main, and Gerd Reinhardt, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 6, 1989, Ser. No. 376,000
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 3823172
Int. Cl.[5] C07D *209/48*
U.S. Cl. 548—473 **5 Claims**

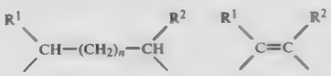
1. A process for the preparation of an imidopercarboxylic acid or salt thereof which comprises reacting an anhydride of the formula

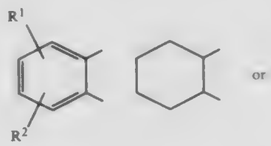


with an amino acid of the formula

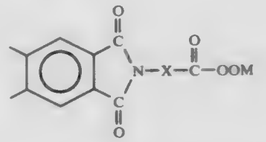


an oxidizing the imidocarboxylic acid obtained in this reaction in aqueous solution with hydrogen peroxide in the presence of a strong acid at a temperature between 5° to 50° C., in which A denotes a group of the formula





or



n denotes the number 0, 1 or 2,

R^1 denotes hydrogen, chlorine, bromine, C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, aryl, or alkyl-aryl,

R^2 denotes hydrogen, chlorine, bromine or a group of the formula —SO_3M, —CO_2M, CO_3M or OSO_3M,

M denotes hydrogen, an alkali metal or ammonium ion or the equivalent of an alkaline earth metal ion and

X denotes C_1–C_{19}-alkylene or arylene.

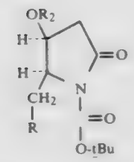
5,061,808

2-OXO-1-PYRROLIDINE CARBOXYLIC ACID ESTERS

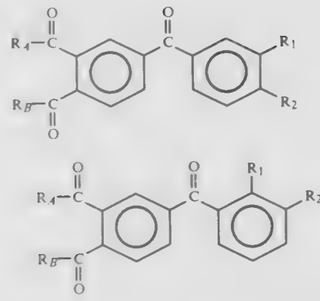
John C. Hodges, and Sylvester Klutchko, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 378,347, Jul. 11, 1989, abandoned, which is a division of Ser. No. 207,347, Jun. 15, 1988, Pat. No. 4,786,343.
This application Oct. 1, 1990, Ser. No. 591,323
Int. Cl.[5] C07D *405/12*
U.S. Cl. 548—517 **2 Claims**

1. A compound of formula III



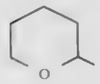
III



wherein t Bu is tertiary butyl, R is $(CH_3)_2CH$—, C_6H_5, or



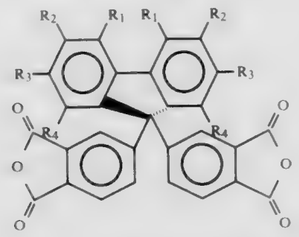
and R_2 is $(CH_3)_3Si$, or



5,061,809
9,9-BIS-(3,4-DICARBOXYPHENYL)FLUORENE DIANHYDRIDES
Richard O. Angus, Jr., and Khalil Yacoub, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 529,078, May 25, 1990, Pat. No. 5,009,679. This application Dec. 26, 1990, Ser. No. 633,929
Int. Cl.[5] C07D *307/60*
U.S. Cl. 549—233 **19 Claims**

1. A composition of matter having the structural formula:

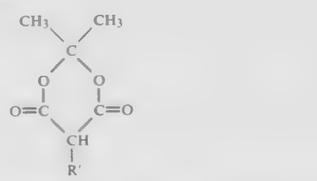
The present invention relates to compositions of matter corresponding to the formula:



wherein R_1 through R_4, inclusive, are independently selected from a hydrogen atom, a linear or branched alkyl or alkoxy group having from 1 to about 8 carbon atoms, a linear or branched alkenyl group having from 2 to about 8 carbon atoms, amino, cyano or R_1 and R_1, R_1 and R_2, R_2 and R_3 and R_3 and R_4 may together form part of a cyclohydrocarbyl ring.

5,061,810
SUBSTITUTED BENZOPHENONE DICARBOXYLIC ACIDS
Venkataraman Ramachandran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Nov. 28, 1989, Ser. No. 443,129
Int. Cl.[5] C07D *493/00;* **C07C** *49/76*
U.S. Cl. 549—244 **7 Claims**

1. Compounds of the formula

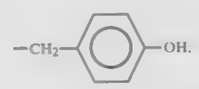


where R_A and R_B are taken together with the adjacent carbonyl carbons form an anhydride ring, R_1 and R_2 are the same or different and are, C_1 to C_6 linear or branched alkyl, halo, phenyl unsubstituted or optionally substituted by phenoxy, or R_1 and R_2 taken together are $(CH_2)_x$ where x is an integer from 3 to 6.

5,061,811
PROCESS FOR THE PREPARATION OF RETRO-INVERSO PEPTIDES AND 1,3-DIOXANE-4,6-DIONE INTERMEDIATES THEREOF
Massimo Pinori, Paderno D'Adda; Felice Centini, Rome, and Antonio S. Verdini, Monterotondo, all of Italy, assignors to SCLAVO S.p.A., Siena, Italy
Filed Dec. 14, 1989, Ser. No. 450,572
Claims priority, application Italy, Dec. 23, 1988, 23098 A/88
Int. Cl.[5] C07D *319/04*
U.S. Cl. 549—274 **3 Claims**

1. A 5-substituted-2,2-dimethyl-1,3-dioxane-4,6-dione of formula (VI)

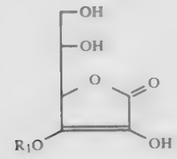
wherein R′ represents $—CH_2—CH_2—CH_2—CH_2—NH_2$, the side-chain of the amino acid lysine, or



the side-chain of the amino acid tyrosine, wherein the functional groups are suitably protected.

5,061,812
ASCORBIC ACID DERIVATIVE
Toshio Satoh; Yasunori Niiro; Hisao Kakegawa, and Hitoshi Matsumoto, all of Tokushima, Japan, assignors to Nippon Hypox Laboratories Incorporated, Tokyo, Japan
Filed Jul. 20, 1989, Ser. No. 382,270
Int. Cl.[5] C07D *307/62*
U.S. Cl. 549—315 **5 Claims**

1. An ascorbic acid derivative represented by the formula (Ia):

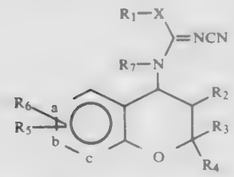


(Ia)

wherein R_1 is selected from the group consisting of an arylcarbonylalkyl group and an alkoxycarbonylalkyl group containing the terminal alkoxy group having at least 7 carbon atoms.

5,061,813
SUBSTITUTED CYANOIMINO BENZOPYRANES
Karnail Atwal, Newtown, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Apr. 2, 1990, Ser. No. 502,967
Int. Cl.[5] C07D *311/68*
U.S. Cl. 549—399 **5 Claims**

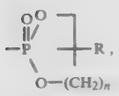
1. A compound of the formula



wherein a, b, and c are all carbons;
R_1 is selected from aryl, arylalkyl, cycloalkyl and (cycloalkyl)alkyl;
where X is oxygen or sulfur;
R_2 is hydrogen, hydroxy or

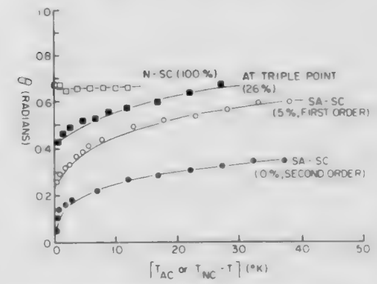


R_3 and R_4 are each independently hydrogen, alkyl or arylalkyl, or, R_3 and R_4 taken together with the carbon atom to which they are attached form a 5- to 7-membered carbocyclic ring;
R_5 is selected from H, alkyl, haloalkyl, alkenyl, alkynyl, cycloalkyl, arylalkyl, cycloalkylalkyl, —CN, $—NO_2$, —COR, —COOR, —CONHR, $—CON(R)_2$, S-alkyl, —SOalkyl, $—SO_2$alkyl,



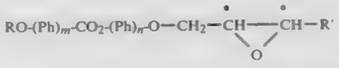
halogen, amino, substituted amino, O-alkyl, OCF_3, OCH_2CF_3, —OCOalkyl, —OCONRalkyl, —NRCOalkyl and NRCOOalkyl, $—NRCON(R)_2$, wherein R in each of the above groups can be hydrogen, alkyl, aryl, arylalkyl, cycloalkyl, or (cycloalkyl)alkyl;
R_6 is selected from H, alkyl, OH, O-alkyl, amino, substituted amino, CN, and NO_2;
R_7 is selected from hydrogen, alkyl, alkenyl, aryl, arylalkyl, cycloalkyl or cycloalkylalkyl; and
n is 1, 2 or 3.

5,061,814
HIGH TILT FERROELECTRIC LIQUID CRYSTAL COMPOUNDS AND COMPOSITIONS
Michael D. Wand; Rohini T. Vohra, and David M. Walba, all of Boulder, Colo., assignors to Displaytech, Inc., Boulder, Colo.
Filed Jun. 1, 1989, Ser. No. 359,991
Int. Cl.[5] C07D *303/12;* **C09K** *19/34, 19/12*
U.S. Cl. 549—560 **24 Claims**



1. A chiral nonracemic compound of formula:

I



where R is an alkyl group having three to fifteen carbon atoms, R′ is an alkyl group having one to seven carbons, Ph is a 1,4 substituted phenyl group, m=2 and n=1 or m=1 and n=2, and asymmetric carbons are indicated by *.

5,061,815
METAL LYSINE COMPLEXES AND METHOD FOR PRODUCING METAL LYSINE COMPLEXES
Monty Leu, Laurens, Iowa, assignor to Zinpro Corporation, Edina, Minn.
Continuation of Ser. No. 215,573, Jul. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 98,480, Sep. 18, 1987, abandoned. This application May 29, 1990, Ser. No. 530,200
Int. Cl.[5] C07F *3/06*
U.S. Cl. 556—118 **3 Claims**

1. A 1:1 zinc lysine complex of the formula:

$[Lys](Zn)x_z$

wherein (Lys) is the amino acid lysine, z is an integer selected to electrostatically balance the cationic and anionic charges of the zinc lysine complex; and x is an anion selected from the group consisting of halide, sulfate, phosphate, carbonate, and acetate.

5,061,816
METHOD FOR CHEMICALLY MODIFYING AN ANIONIC METAL COMPLEX
Mitsunobu Sato, Chiba; Shigenobu Yano, Nara; Ryuichi Kitayama, Sagamihara, and Katsuo Komiya, Ayase, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan
Filed Mar. 9, 1990, Ser. No. 491,234
Claims priority, application Japan, Mar. 13, 1989, 1-57778
Int. Cl.[5] C07F *15/00, 15/06*
U.S. Cl. 556—148 **6 Claims**

1. A method for chemically modifying an anionic metal complex, which comprises preparing, from an anionic metal complex insoluble in a non-aqueous solvent and a clathrate compound, a clathrate complex of said clathrate compound with a counter cation of said anionic metal complex, which is soluble in a non-aqueous solvent, and then reacting functional

groups of said metal complex, which are not concerned with the coordination of said metal complex, with an organic reagent in the presence of a reaction assistant, wherein the functional groups which are not concerned with the coordination of said metal complex, are hydroxyl groups, amino groups, ketone groups, epoxy groups, isocyanato groups, ester groups or amido groups.

5,061,817

ENOLSILYL ETHER COMPOUND

Takeisa Ohashi; Kazunori Kan, both of Kobe; Noboru Ueyama; Isao Sada, both of Akashi; Akimasa Miyama, Takasago, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

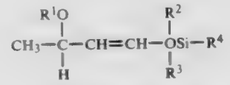
Division of Ser. No. 810, Jan. 6, 1987, Pat. No. 4,791,198, which is a continuation-in-part of Ser. No. 750,214, Jul. 1, 1985. This application May 31, 1988, Ser. No. 200,205

Claims priority, application Japan, Jul. 5, 1984, 59-139797; Jan. 14, 1986, 61-5636

Int. Cl.[5] **C07F** *7/10, 7/18*

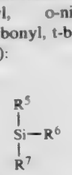
U.S. Cl. 556—443 **3 Claims**

1. An enolsilyl ether having the formula (III):



(III)

wherein R^1 is selected from the group consisting of acetyl, benzyloxycarbonyl, o-nitrobenzyloxycarbonyl, p-nitrobenzyloxycarbonyl, t-butyl, and a trialkylsilyl group of the formula (II):



(II)

wherein each of R^5, R^6 and R^7 is independently a lower alkyl group, and each of R^2, R^3 and R^4 is independently selected from the group consisting of a lower alkyl group having 1–4 carbon atoms, phenyl, and an aralkyl group.

5,061,818

PROCESS FOR TRANSHALOGENATING A HALOPHOSPHORUS COMPOUND WITH FLUORIDE

Lester P. J. Burton, and Meng-Sheng Ao, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 19, 1987, Ser. No. 110,198

Int. Cl.[5] **C07F** *9/141*

U.S. Cl. 558—84 **23 Claims**

1. A process for exchanging a halogen bonded to a phosphorus atom with fluorine said process comprising reacting a phosphorus compound, having 1–2 halogen atoms selected from chlorine, bromine or iodine bonded directly to phosphorus, with a fluoride salt selected from metal fluorides or ammonium fluoride in the presence of a hydrogen halide salt of a pyridine-type compound.

5,061,819

METHODS FOR SYNTHESIZING PHOSPHONATE REAGENTS AND RETINOIDS

James H. Babler, Chicago, Ill., assignor to Loyola University of Chicago, Chicago, Ill.

Division of Ser. No. 264,543, Oct. 31, 1988, Pat. No. 4,916,250. This application Feb. 5, 1990, Ser. No. 475,347

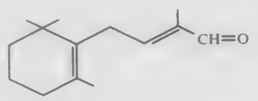
Int. Cl.[5] **C07F** *9/40*

U.S. Cl. 558—87 **6 Claims**

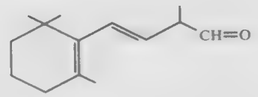
1. A process for forming a 3-methyl-5-(2,6,6-trimetyl-1-cyclohexen-1-yl)-2,4-pentadienylphosphonic acid, dialkyl ester, comprising the following steps:

A) forming a first reaction mixture in an organic solvent of

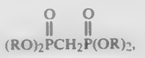
(i) a C-14 aldehyde selected from the group consisting of



and



(ii) a methylene-bis-phosphonic acid ester of the formula:



wherein R is the same or different and is selected from the group consisting of an alkyl group having up to four carbon atoms; and

(iii) at least one equivalent of a base;

B) separating a vinyl pentadienylphosphonic acid, dialkyl ester intermediate from said first reaction mixture;

C) forming a second reaction mixture comprising:

(i) the dialkyl ester intermediate of step B,

(ii) an organic solvent, and

(iii) a basic catalyst; and

D) isolating 3-methyl-5-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2,4-pentadienylphosphonic acid, dialkyl ester from said second reaction mixture.

5,061,820

PROCESS FOR PRODUCING N-PHOSPHONOMETHYLGLYCINE

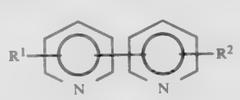
Donald L. Fields, Jr., Manchester; Raymond C. Grabiak, Maryland Heights; Karl E. Koenig, and Dennis P. Riley, both of Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 22, 1990, Ser. No. 600,954

Int. Cl.[5] **C07F** *9/38*

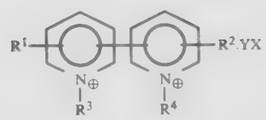
U.S. Cl. 560—17 **17 Claims**

1. A process for the production of N-phosphonomethylglycine comprising contacting N-phosphonomethyliminodiacetic acid with a peroxide in the presence of a catalyst selected from the group consisting of the salts and salt complexes of cobalt and vanadium, and an effective amount of a dipyridyl compound represented by the formula:



(I)

wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl having from one to about 18 carbon atoms, ortho-phenylene, oxygen, sulfur, SO_2, SO_3, N—R^5 wherein R^5 is alkyl having from one to six carbon atoms and R^1 and R^2 together can form a bridge with groups selected from alkylene having from one to about six carbon atoms wherein the alkylene bridge can contain branching or double bonds; or salts thereof represented by the formula



(II)

wherein R^1 and R^2 are as defined above, Y is one or two depending on whether X is a dianion or a monoanion, and X is selected from the group consisting of halide, sulfate, nitrate, phosphate, and perchlorate; and R^3 and R^4 are individually selected from the group consisting of hydrogen or alkyl having from one to about 18 carbon atoms, and R^3 and R^4 together can form a bridge with groups selected from alkylene having from one to about six carbon atoms wherein the alkylene bridge can contain branching or double bonds.

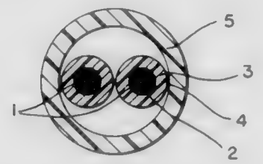
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5,061,821

LOUDSPEAKER CABLE

Kevork Nercessian, Seefeld, Fed. Rep. of Germany, assignor to Nachrichtentechnische Vertriebs-Gesellschaft mbH, Seefeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 291,051, Dec. 28, 1988, abandoned. This application Dec. 27, 1989, Ser. No. 456,678
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 3842277; Oct. 30, 1989, 3936143
Int. Cl.[5] H01B *11/02*
U.S. Cl. 174—34 23 Claims



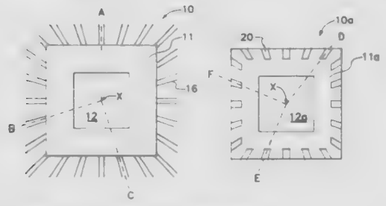
1. A cable for the transmission of signals from an amplifier to a loudspeaker, comprising two insulated conductors each forming a respective lead, and a sheath enclosing said leads, said conductors being stranded conductors composed of elementary wires having a smooth surface and made of oxygen-free copper, the elementary wires of each conductor being stranded together in the same wire drawing direction, and the stranded conductor composed of said elementary wires having a compacted structure.

5,061,822

RADIAL SOLUTION TO CHIP CARRIER PITCH DEVIATION

Richard K. Spielberger, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 243,412, Sep. 12, 1988, abandoned. This application Mar. 23, 1990, Ser. No. 501,387
Int. Cl.[5] H01L *23/13*
U.S. Cl. 174—52.4 13 Claims



1. A leaded chip carrier comprising:
a) a carrier body; and
b) a plurality of fine pitch leads, each lead having a longitudinal axis with an extension line which intersects a point common to all axes so that each lead is functional independent of carrier body shrinkage tolerances.

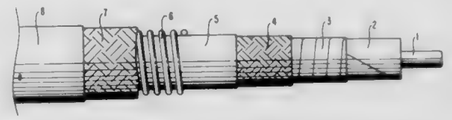
5,061,823

CRUSH-RESISTANT COAXIAL TRANSMISSION LINE

Charles E. Carroll, Landenberg, Pa., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jul. 13, 1990, Ser. No. 553,200
Int. Cl.[5] H01B *7/22*
U.S. Cl. 174—105 R 11 Claims

1. A crush-resistant coaxial cable comprising:
(a) a coaxial transmission line, including in order an electrically conductive metal signal-transmitting center wire, at least one layer of electric insulating material, and at least one layer of material containing electrically conducting metal;
(b) a layer of rigid metal wire spiralled around said transmission line at a minimum angle of 45° to the axis of the cable; and



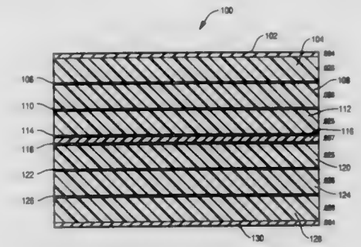
(c) at least one layer of mechanical braid surrounding said transmission line which lies under said rigid metal wire spiral.

5,061,824

BACKPANEL HAVING MULTIPLE LOGIC FAMILY SIGNAL LAYERS

Arthur R. Alexander, Valley Center, and Paul M. Rostek, San Diego, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 23, 1989, Ser. No. 397,706
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 8 Claims



1. A multi-layered backpanel comprising:
two ground layers serving as the outermost layers of said backpanel;
a plurality of dielectric layers;
a plurality of signal layers for carrying signals representing a plurality of logic families, said signal layers comprising two innermost signal layers having a dielectric layer coupled between them and serving as the innermost layers of said backpanel, and comprising additional signal layers; and
a plurality of power layers for carrying supply power;
wherein each innermost signal layer is also coupled via a dielectric layer to a power layer, and remaining layers of said backpanel alternate between signal layers and power layers with dielectric layers is coupled in between, and a dielectric layer is coupled to each said ground layer and a remaining layer.

5,061,825

PRINTED CIRCUIT BOARD DESIGN FOR MULTIPLE VERSIONS OF INTEGRATED CIRCUIT DEVICE

Robert W. Catlin, Santa Clara, Calif., assignor to Chips and Technologies, Inc., San Jose, Calif.

Filed Oct. 3, 1990, Ser. No. 592,157
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—261 10 Claims

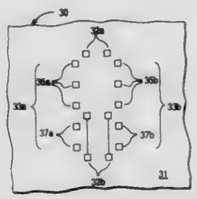
1. A printed circuit board for accepting either of first and second integrated circuit devices, the first device having pins in a first configuration disposed along a first rectangle, the second device having pins in a second configuration disposed along a second rectangle, larger than the first in at least one

dimension, each pin on the first device having a functionally equivalent counterpart pin on the second device, comprising:

a substrate;

a first array of pads on said substrate, said first array being disposed according to the first configuration so as to match the pins of the first device;

a second array of pads on said substrate, said second array of pads being disposed according to the second configuration so as to match the pins of the second device;



said first and second arrays being related such that said first array has at least some pads, designated non-overlapping pads, that do not physically coincide with pads of said second array, each non-overlapping pad of said first array being located within the rectangle defined by said second array; and

a plurality of circuit board traces, each connecting a respective given non-overlapping pad in said first array with a respective pad in said second array, wherein each circuit board trace connects two pads that correspond to counterpart pins.

5,061,826

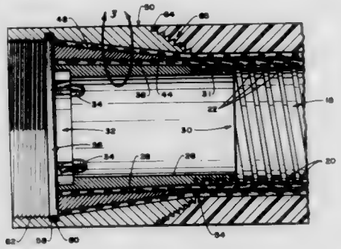
HIGH STRENGTH FLEXIBLE HOUSING

David B. MacCulloch, Saugus, and Danny E. Castleman, Port Hueneme, both of Calif., assignors to G & H Technology, Inc., Camarillo, Calif.

Filed Jul. 17, 1990, Ser. No. 554,008

Int. Cl.[5] H02G *9/00, 1/06;* **F16G** *11/05*

U.S. Cl. 174—705 **18 Claims**



1. A high-strength flexible housing comprising:

a sleeve attached to each end of said conduit, each sleeve having an innermost end portion and an outermost end portion and an outer surface;

a first layer of flexible inner rods wrapped helically about said conduit and each sleeve outer surface;

a second layer of flexible outer rods wrapped helically across said inner rods along about the same axial extent as said inner rods, said inner and outer rods encircling said conduit at least twice with each layer having predetermined overall strength characteristics to provide about an equal and opposite torque when an axial tensile load is applied to said housing;

termination enclosures each having an inner surface which forms a predetermined annular chamber with a respective sleeve outer surface, said inner and outer surfaces diverging from a throat region proximate said sleeve innermost end portion toward a transition region proximate said sleeve outermost end portion; and,

said inner rods and outer rods each having end portions which extend into said chambers and are frictionally engaged with said respective inner and outer surfaces by forced insertion of a respective insert between said inner and outer rods.

8. A method of producing a high-strength flexible housing comprising:

providing a flexible conduit;

connecting a sleeve to each end of said conduit;

wrapping a plurality of inner rods around said conduit and sleeves;

wrapping a plurality of outer rods across said inner rods;

positioning a termination enclosure over opposing end portions of said rods and each of said sleeves;

positioning a respective wedge into the respective annular space between the opposing end portions of said inner and outer rods; and,

forming a frictional engagement between each termination enclosure and said outer rods and between each sleeve and said inner rods by pressing respective opposing end portions against each of said wedge, sleeve and termination enclosure.

5,061,827

TERMINATION OF A SMALL COAXIAL CABLE

Dimitry G. Grabbe, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 27, 1990, Ser. No. 544,300

Int. Cl.[5] H02G *15/02*

U.S. Cl. 174—756 **10 Claims**

1. A terminal for the shield of a coaxial cable which comprises an inner conductor, an inner dielectric layer surrounding the inner conductor, a metallic shield surrounding the inner dielectric layer, and an outer dielectric covering over the metallic shield, the termination comprising:

(a) a ferrule surrounding the outer dielectric covering of a coaxial cable the ferrule having a portion projecting inwardly from an inner surface of a wall of said ferrule through said outer dielectric covering;

(b) said portion of said ferrule having a tip in mechanical contact with the metallic shield of the coaxial cable;

(c) an opening through said wall adjacent said tip; and

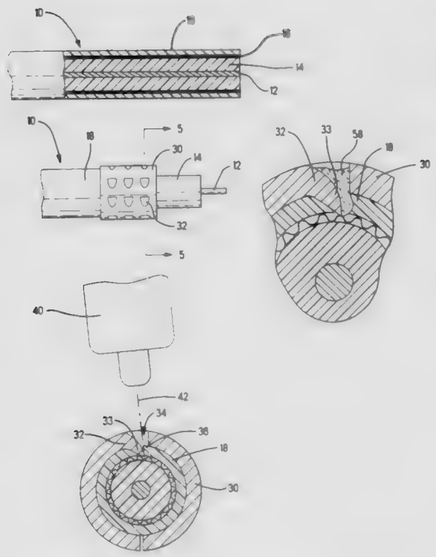
(d) an electrically conductive material in said opening in low-resistance contact with both said tip and a portion of said metallic shield adjacent said tip.

5. A method of terminating the metallic shield of a coaxial cable comprising:

(a) providing a strip of conductive material;

(b) forming a portion thereof projecting from a surface of said strip, said portion having a tip remote from said surface, an opening through said strip adjacent said portion of said strip;

(c) forming said strip into a ferrule about a coaxial cable and clenching in place so that said tip projects inwardly and into mechanical contact with the metallic shield of the coaxial cable; and



(d) depositing an electrically conductive material within said opening in low-resistance contact with both said tip and a portion of said metallic shield adjacent said tip.

5,061,828

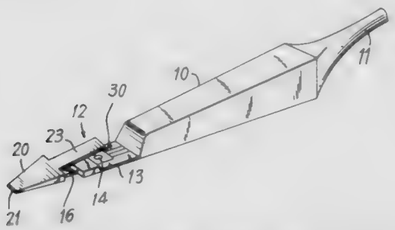
DIGITIZER STYLUS WITH Z-AXIS SIDE PRESSURE CONTROL

Alexander M. Purcell, Wallingford, Conn., assignor to Summagraphics Corporation, Seymour, Conn.

Continuation-in-part of Ser. No. 436,196, Nov. 13, 1989, Pat. No. 5,004,871. This application Nov. 21, 1990, Ser. No. 616,327

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **10 Claims**



1. In a stylus for use with a digitizer tablet and having an elongated housing with a working front end and within the housing means for interacting with the tablet to generate X/Y location data of the stylus relative to the tablet and means for generating a Z-axis signal output under control of the stylus user, the improvement comprising said Z-axis signal control comprising means mounted in the proximity of the working end and having a movable element and connected to modify the Z-axis signal output in accordance with movement of said movable element, and means for resiliently mounting said movable element on the housing for pivotable motion about an axis substantially parallel and substantially perpendicular to the longitudinal axis of the elongated housing.

5,061,829

COMPOSITE CONDUCTOR RAIL OF ALUMINUM AND STEEL, IN PARTICULAR HIGH-PERFORMANCE RAILWAY CONDUCTOR RAIL

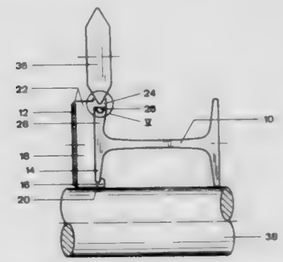
Gerhard Mier, Singen, Fed. Rep. of Germany, assignor to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Jan. 18, 1990, Ser. No. 466,776

Claims priority, application Switzerland, Jan. 23, 1989, 186/89

Int. Cl.[5] B60M *1/00*

U.S. Cl. 191—22 DM **21 Claims**



1. Composite conductor rail, in particular high performance conductor rails for railway systems, which comprises an aluminum base section and at least one steel strip as power transfer surface for current collectors, wherein the aluminum base section is connected in a mechanically stable manner and with good electrical contact to at least one extruded composite section of a ductile aluminum retaining section exhibiting high electrical conductivity and a steel strip, wherein said connection includes at least one portion of the aluminum base section locked to at least one portion of said extruded composite.

5,061,830

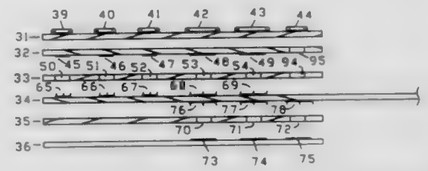
EXTENSION ELECTRICAL SWITCH SYSTEM AND METHOD OF MANUFACTURE

Stephen D. Ambrose, Ste. 176, 33338 Agua Dulce Canyon Rd., Agua Dulce, Calif. 91350

Filed Apr. 16, 1990, Ser. No. 510,196

Int. Cl.[5] H01H *13/70;* **H05K** *1/00;* **H01R** *9/07*

U.S. Cl. 200—5 A **21 Claims**



1. An extension electrical switch system for connecting to at least one of electrical circuitry or an electrical component, said switch system comprised of at least one pair of elongated,

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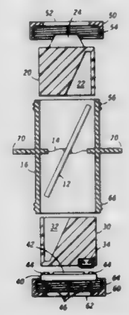
electrical conductors forming at one location at least a pair of switch electrodes, switch connector means disposed to electrically connect at least a pair of said switch electrodes together when said switch connector means and said switch electrodes are pressed into contact with each other, and wherein each said conductor is formed into connector means at another location, said connector means comprised of said conductors disposed on a flat, flexible film and further comprised of connector pads disposed on said film and wherein at least some of said connector pads and underlying film are separable from the other of said connector pads and their underlying film, and thus adapted for making separate electrical connections to said electrical circuitry or said electrical component, whereby the function of an electrical switch may be executed by the extension electrical switch system.

5,061,831

HERMETIC SWITCH

Phillip D. Stevens, Gilbert, and Arthur W. Mittendorf, Litchfield Park, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1990, Ser. No. 548,467
Int. Cl.[5] H01H *9/04*
U.S. Cl. 200—302.001 **18 Claims**



1. A hermetically sealed switch having one or more operational settings, the switch comprising:
a switch housing defining a chamber having first and second parts;
a flexible diaphragm sealed to the chamber to hermetically isolate the first and second parts of the chamber;
an actuator hermetically sealed to the diaphragm and having a first portion extending into the first part of the chamber and a second portion extending into the second part of the chamber; and
rotating electrical connection means located within the first part of the chamber and moveably coupled to the first portion of the actuator, wherein movement of the second portion of the actuator causes the first portion of the actuator to rotate the electrical connection means to the one or more operational settings of said switch.

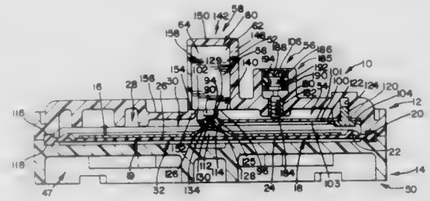
5,061,832

FIELD SETTABLE DIFFERENTIAL PRESSURE SWITCH ASSEMBLY FOR LOW FLUID PRESSURE APPLICATIONS

Stephen L. Squires, LaPorte, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Jan. 28, 1991, Ser. No. 646,884
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 J **10 Claims**

1. In a differential pressure switch assembly that comprises a capsule defining a pressure cavity across which is mounted a flexible diaphragm separating high and low pressure chambers, with the capsule including a housing that mounts a pressure differential transmitting device in the low pressure chamber and also mounts at a site on the low pressure side thereof a snap switch unit that includes a projecting plunger therefor which has an end portion positioned in the low pressure chamber in predetermined relation to the pressure differential transmittal device for engagement thereby for effecting electrical switch operation of the snap switch unit, when the pressure differential transmitted has increased sufficiently to cause the diaphragm to sufficiently deflect the transmittal device, and means for setting the assembly for effecting electrical switching of the snap switch on travel of the plunger under the bias of the diaphragm, with the housing including means for connecting the high pressure chamber to a source of high pressure, and means for connecting the low pressure chamber to a source of low pressure,
the improvement wherein:
the transmitting device comprises a leaf spring,
said leaf spring being essentially planar in configuration from one end to the other end thereof,



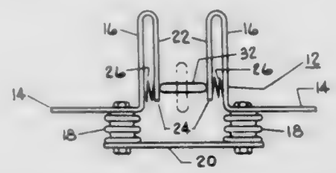
with said leaf spring being mounted at its said one end thereof to be substantially parallel with the diaphragm in the neutral position of the diaphragm and to be disposed at its other end for engagement with the snap switch unit plunger end portion to effect pretravel thereof when biased by the diaphragm,
and including:
adjustment screw means adjacent said other end of said leaf spring positioned to limit said pretravel of the snap switch unit plunger in the range of from about sixty to about eighty per cent of its pretravel,
said setting means comprising a set point screw threadedly mounted in the housing of the low pressure chamber side of the housing for engaging the leaf spring intermediate said ends thereof,
said set point screw being in fluid sealing relation to the housing.

5,061,833

COMPACT DISCONNECT SWITCH HAVING BROADLY VARIABLE CURRENT RATING

George D. Hodder, Trafford, and Edward D. Wallace, Pittsburgh, both of Pa., assignors to Cleaveland/Price Inc., Trafford, Pa.

Continuation of Ser. No. 809,509, Dec. 16, 1985, abandoned. This application Feb. 9, 1987, Ser. No. 15,486
Int. Cl.[5] H01H *31/00*
U.S. Cl. 200—255 **21 Claims**



1. A compact electrical power disconnect switch for use with power applications of less than about 5,000 volts and

having a very broad current rating, said disconnect switch comprising:
a plurality of electrically conducting strip-like members which have a limited predetermined thickness so that they will display some degree of flexibility, each of said strip-like members comprising a mounting portion and at least one elongated contact portion, electrical insulating mounting means to which the mounting portions of said strip-like members are affixed, a base member to which said insulating mounting means are affixed, said mounting portions of said strip-like members adapted to have electrical buses connected thereto, said contact portions of said strip-like members each comprising elongated sections which are bent upwardly with respect to said mounting portions and are then retroverted to form retroverted reverse-loop finger portions which terminate in free ends, and said contact portions of said strip-like members having a limited width dimension as measured in a direction perpendicular to the elongated length dimension of said contact portions of said strip-like members in order to ensure good electrical contact; each of said retroverted reverse-loop finger portions being mounted opposite another of said retroverted reverse-loop finger portions to form a cooperating pair of said retroverted reverse-loop finger portions facing each other and spaced apart a predetermined distance and electrically insulated from each other when said switch is open, and each of said retroverted reverse-loop finger portions having compression spring means of predetermined strength positioned between said retroverted reverse-loop finger portions proximate the free ends thereof;
an elongated member rotatable on fixed bearings about an axis and mounted parallel to said base and between said spaced apart retroverted reverse-loop finger portions, said rotatable member including an electrically conducting contact means of generally flattened configuration and which is elongated in one dimension which is transverse to the axis of said elongated rotatable member, and said rotatable member also including insulating means to protect the user of said switch from electrical shock hazard; and
means for facilitating the rotation of said rotatable member to operate said switch; when said rotatable member is rotated to wipe along the length dimension of said contact portions and place said flattened contact means in position parallel to said base, said flattened contact means makes simultaneous electrical contact with said oppositely disposed retroverted reverse-loop finger portions proximate the free ends thereof and somewhat compresses said compression spring means; and when said rotatable member is rotated to place said flattened contact means in position perpendicular to said base, said flattened contact means is spaced a predetermined distance from both said oppositely disposed retroverted reverse-loop finger portions to maintain an open circuit.

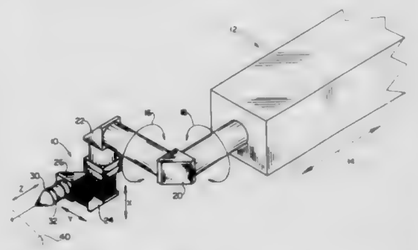
5,061,834

END EFFECTOR FOR TRANSLATING IN A CARTESIAN COORDINATE SYSTEM

Reffael Ziv, and Omer Finav, both of Tel Aviv, Israel, assignors to Robomatix Ltd., Petach Tikva, Israel

Continuation-in-part of Ser. No. 541,975, Jun. 22, 1990. This application Jul. 20, 1990, Ser. No. 554,518
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.78 **11 Claims**

1. An end effector suitchable for attachment to a robot as the final mechanical positioner therefor for translating in a cartesian coordinate system comprising a first axis and a second axis perpendicular to said first axis comprising:
means for receiving a laser beam from an articulated optical delivery system and for transmitting it along said first and said second axes; and



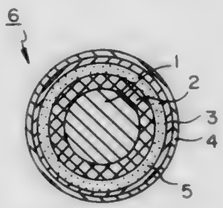
translating means for translating said means for receiving and for transmitting along said first and said second axes without rotation about said first and second axes.

5,061,835

LOW-FREQUENCY ELECTROMAGNETIC INDUCTION HEATER

Atsushi Iguchi, Kyoto, Japan, assignor to Nikko Corporation Ltd., Kyoto, Japan

Filed Feb. 16, 1990, Ser. No. 480,489
Claims priority, application Japan, Feb. 17, 1989, 1-37536
Int. Cl.[5] H05B *6/36*
U.S. Cl. 219—10.79 **7 Claims**



1. A low-frequency electromagnetic heater, comprising an iron core, an induction coil formed around the iron core and a metal pipe disposed around the iron core and the induction coil, thereby defining a space between the pipe and the iron core wherein the space is filled with a thermally conductive resinous molding compound.

5,061,836

MICROWAVE DEICING FOR AIRCRAFT ENGINE PROPULSOR BLADES

Anthony N. Martin, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 466,808, Jan. 18, 1990, abandoned. This application Oct. 4, 1990, Ser. No. 593,602
Int. Cl.[5] H05B *6/80;* **B64D** *15/12*
U.S. Cl. 219—10.55 M **9 Claims**

1. A microwave deicing system, for deicing aircraft engine propulsor blades, comprising:
an emitter, for irradiating the blades with a microwave beam having a frequency which is not readily absorbed by water or ice; and
a portion of the blades for absorbing a substantial amount of said beam.

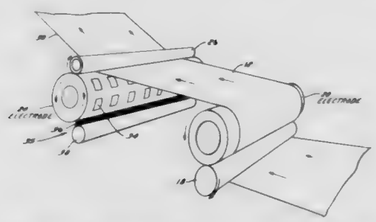
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7. A method of deicing aircraft engine propulsor blades, comprising the steps of
allowing ice to form on the blades;



irradiating the blades with a microwave beam having a frequency which passes through water and ice but which is absorbed by portions of the blades.

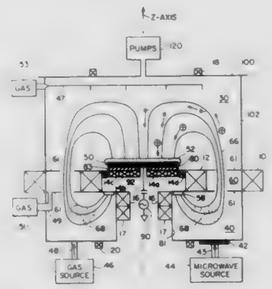
5,061,837
METHOD AND APPARATUS FOR SELECTIVELY DEMETALLIZING A METALLIZED FILM
William B. Gilbert, Appleton; Jack V. Roberts, Neenah, and Alfred J. Walker, DePere, all of Wis., assignors to Webex, Inc., Neenah, Wis.
Filed May 2, 1989, Ser. No. 346,062
Int. Cl.[5] B23K *11/00;* **H05B** *6/80*
U.S. Cl. 219—68 **49 Claims**



1. A method of selectively demetallizing a metallized web moving along a web path, comprising the steps of:
selectively generating a potential difference between first and second electrodes disposed spaced apart along said web path, said second electrode comprising a roller extending transversely across said path;
effecting a first electrical contact of relatively large area between said moving web and said first electrode;
effecting a second electrical contact between said web and said second electrode, said second electrical contact being of an area less than the area of said first electrical contact, producing a high density current to demetallize said web at said second electrical contact; and,
controllably varying the magnitude of the potential difference to control the degree of demetallization of said web.

19. A method for making microwavable packaging material comprising a substrate having metallized areas of different optical density from a metallized substrate, said method comprising the steps of:
selectively effecting electrical contact between said metallized substrate and a set of respective electrodes;
generating a potential difference between said respective electrodes of said set of a magnitude to partially demetallize to a predetermined optical density selected areas of said substrate at one of said electrodes.

5,061,838
TOROIDAL ELECTRON CYCLOTRON RESONANCE REACTOR
Barton G. Lane, Belmont; Herbert H. Sawin, Lexington, and Donna L. Smatlak, Arlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jun. 23, 1989, Ser. No. 370,594
Int. Cl.[5] B23K *9/00;* **C23C** *14/22, 14/00*
U.S. Cl. 219—121.59 **33 Claims**

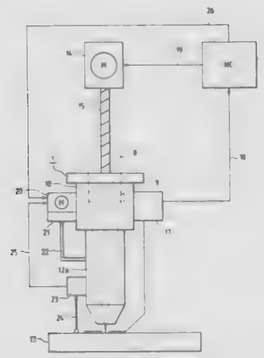


1. A reactor comprising:
(a) a plasma generating chamber in which a plasma, comprised of electrical particles, is formed in a plasma source region;
(b) magnet means for generating a poloidal magnetic field having a cylindrical axis of symmetry extending through the chamber;
(c) microwave generating means for generating microwave fields in said plasma generating chamber;
(d) a source of gaseous reactants for supplying gaseous reactants to said plasma generating chamber;
(e) a specimen chamber adjacent said plasma generating chamber with a holding member adapted to hold specimens for processing and structure between the specimen and the plasma generating chamber for blocking the line-of-sight so that the specimen, when so held, is not in line-of-sight with the plasma source region;
(f) a passageway between said specimen chamber and said plasma generating chamber through which said plasma is introduced into said specimen chamber;
(g) pump means for controlling the flow of gaseous reactants into and out of the chamber;
(h) the interaction between said magnetic field and microwave field with said reactants producing said plasma, said magnetic field extending from said source region to said electrode for guiding particles in the plasma until they encounter the specimen.

5,061,839
LASER BEAM MACHINING APPARATUS
Tsukasa Matsuno, and Kiyoshi Sato, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Jan. 11, 1991, Ser. No. 640,343
Claims priority, application Japan, Mar. 6, 1990, 2-54386
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 **7 Claims**

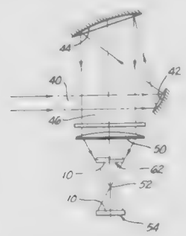
1. A laser beam machining apparatus comprising:
an optical system for concentrating a laser beam on a workpiece;
holding means for holding said optical system;

first drive means for moving said holding means along an optical axis of said laser beam;



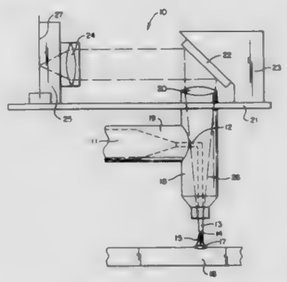
a nozzle slidably engaged with said holding means, for jetting a machining gas; and
second drive means for moving said nozzle.

5,061,840
MANUFACTURE OF OPHTHALMIC LENSES BY EXCIMER LASER
Valdemar Portney, Irvine; Albert C. Ting, Laguna Niguel, and Timothy R. Willis, El Toro, all of Calif., assignors to Allergan, Inc., Irvine, Calif.
Continuation of Ser. No. 217,275, Feb. 28, 1989, abandoned, which is a division of Ser. No. 919,206, Oct. 14, 1986, Pat. No. 4,842,782. This application Mar. 16, 1990, Ser. No. 496,104
Int. Cl.[5] B33K *26/00*
U.S. Cl. 219—121.68 **31 Claims**



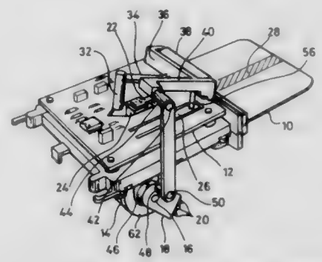
1. Apparatus for cutting a small object such as an ophthalmic lens from a blank of ablatable material, comprising:
a) an excimer laser arranged to emit a beam of laser light;
b) beam expansion means for expanding said beam;
c) mask means interposed in said expanded beam for transmitting only portions of said beam in the outline of said object; and
d) beam reducing means for projecting a reduced image of said outline onto said blank.

5,061,841
APPARATUS AND METHODS FOR CONTROLLING A WELDING PROCESS
Richard W. Richardson, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio
Division of Ser. No. 114,289, Oct. 29, 1987, Pat. No. 4,943,702, Ser. No. 436,026, Oct. 22, 1982, Pat. No. 4,532,408, Ser. No. 456,278, Jan. 6, 1983, abandoned, and Ser. No. 603,296, Apr. 23, 1984, Pat. No. 4,595,820. This application May 9, 1989, Ser. No. 349,435
Int. Cl.[5] B23K *9/10*
U.S. Cl. 219—130.01 **2 Claims**



1. A method for controlling an arc welding process comprising:
establishing a light-generating arc between a welding electrode, said electrode having an axis, and a weld joint preparation, thereby forming a molten weld pool on said weld joint preparation, and causing light generated by said arc to be reflected from said weld pool and the solid metal surrounding said weld pool;
collecting rays of said reflected light travelling substantially parallel to said axis in a video camera;
feeding the video output from said video camera to a video monitor, thereby forming on said video monitor an image of said weld pool in which said arc is obscured by said electrode; and
manually controlling said arc welding process using said image displayed on said video monitor.

5,061,842
ERASURE MECHANISM FOR CARD READERS
Kenneth Payne, Peakirk, United Kingdom, assignor to Ampy Automation - Digilog Limited, Peterborough, United Kingdom
Filed Jul. 3, 1989, Ser. No. 374,754
Claims priority, application United Kingdom, Dec. 7, 1988, 8816511
Int. Cl.[5] G06K *7/08;* **G11B** *5/325*
U.S. Cl. 235—449 **12 Claims**



1. A card reader having a card information reading mechanism and a card information erasure mechanism, the card erasure mechanism comprising a permanent magnet, means

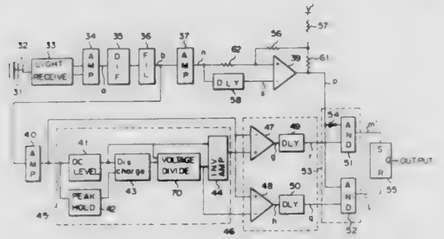
mounting the magnet for movement towards and away from a position occupied by a card inserted in the card reader, and first drive means operable in response to a satisfactory reading of the card for moving the magnet into at least close proximity with a region of the card on which magnetically readable information is stored, so as to destroy the magnetically stored information on the card, wherein said reading mechanism comprises a perforating device for perforating the card in response to the card being inserted into the card reader and read, second drive means for the perforating device, and a rigid mechanical link connected between said perforating device and said first drive means, whereby the drive means is driven from said second drive means.

5,061,843

CIRCUIT FOR PROCESSING ANALOG SIGNAL OBTAINED BY SCANNING BAR CODE

Shinichi Sato, Kawasaki, and Kazumasa Moriya, Urawa, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 30, 1990, Ser. No. 530,326
Claims priority, application Japan, May 30, 1989, 1-136501
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **8 Claims**



1. A circuit for processing an analog electric signal which is obtained from a photoelectric transformation of a reflected light when scanning a bar code by a light beam, comprising:

differentiating means for differentiating the analog electric signal;

delay means for delaying the output of said differentiating means;

first gate signal generating means for generating a first gate signal which is active when the level of the output of said differentiating means is higher than a positive threshold;

second gate signal generating means for generating a second gate signal which is active when the level of the output of said differentiating means is lower than a negative threshold;

comparing means for comparing the output of said differentiating means with the output of said delay means, the output of said comparing means being one binary level when the level of the output of said differentiating means is higher than the level of the output of said delay means, and the output of said comparing means being the opposite binary level when the level of the output of said differentiating means is lower than the level of the output of said delay means;

first gate means detecting transition points in the output of said comparing means when said first gate signal is active; and

second gate means for detecting transition points in the output of said comparing means when said second gate signal is active.

5,061,844

ACCESS CARD PROVIDED WITH CODED SECURITY MEANS

Alan J. Solo, Brooklyn, N.Y., assignor to Valid Technologies, Ltd., New York, N.Y.

Filed Jan. 25, 1990, Ser. No. 469,152
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—490 **20 Claims**



1. An access card comprising:

a card body;

tab means on said card body to provide coded information to avoid unauthorized use of said access card;

said tab means including a plurality of tab members, each tab member being hinged at one end to permit each tab member to be individually pivoted between a first position in a first plane and a second position in a second plane;

engagement means on said card body to maintain selected pivoted ones of said tab members in said second position to provide a particular coded information for checking authenticity of a user of said access card;

said engagement means including abutment portions for engaging said selected pivoted ones of said tab members in said second position;

said tab members being disposed in a parallel side-by-side arrangement in said first position with opposing free ends of said tab members extending in same direction;

said engagement means including abutment members disposed on said free ends of each of said tab members for coaction with said abutment portions disposed adjacent thereto in said second position of said tab members so that said selected pivoted ones of said tab members are maintained in said second position when said card body is longitudinally twisted; and

said abutment portions being disposed in a third plane parallel to said first plane, and said tab abutment members being in said first plane when said tab members are in said first position.

5,061,845

MEMORY CARD

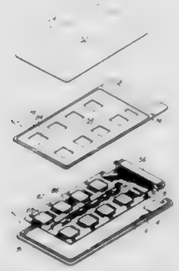
Giuseppe Pinnavaia, Rieti, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1990, Ser. No. 515,809
Int. Cl.[5] H05K *5/00*; **G06K** *19/06*
U.S. Cl. 235—492 **28 Claims**

1. A memory card comprising:

A. a shell forming a substantially rigid frame of said memory card, said shell having first and second parts joined together at their margins and presenting an interior chamber between said margins and opening to one end of the shell, said first part including a substantially flat central portion and said first part presenting plural apertures opening through said central portion of said chamber;

B. a substrate carrying circuit leads contained within said chamber, said substrate also carrying packaged semiconductor devices electrically connected to selected circuit leads and a connector electrically connected to selected circuit leads, said packages of said semiconductor devices having a thickness at least as great as said first part central portion and extending into said apertures in said first part so that the top surfaces of said packages stand at least flush with the top surface of said first part, and said connector extending from said chamber to said one end through said opening; and



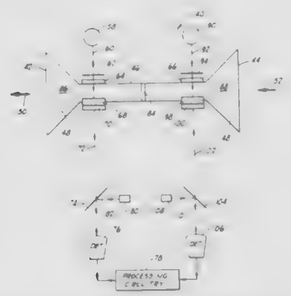
C. a cover mounted on said shell first part and enclosing said apertures.

5,061,846

DETECTING DISTURBANCE USING OPTICAL GAP SENSING

John S. Gergely, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 11, 1989, Ser. No. 351,743
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.14 **14 Claims**



1. Apparatus for sensing a physical disturbance, comprising:

a block of gap material that is optically clear having parallel front and rear sides;

means for positioning and securing said gap material for subjection to a physical disturbance;

a polarizer with axis of polarity preoriented secured to the rear side of said block of gap material;

a source of circularly polarized light projected through the gap material from the front side and through the polarizer to produce a source light beam;

a beam splitter intercepting said source light beam;

a linearly polarized reference light source projecting onto said beam splitter with axis of polarity pre-aligned to coincide with the polarizer axis of polarity when the combined source light beam and reference light source emerge from said beam splitter;

a photoelectric detector generating an output indicative of time averaged power of the combined beam; and

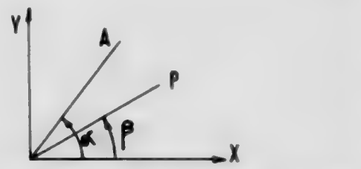
processing circuitry for analyzing the detector output and deriving the change in dimension of the gap material in response to the disturbance.

5,061,847

FORCE/PRESSURE DETECTION DEVICE UTILIZING A MONOMODE OPTICAL FIBER

Jean-Pierre Hazan, Sucy en Brie; Michel Steers, La Queue en Brie; Gilles Delmas, Epinay sous Senart, and Jean-Louis Nagel, Limeil-Brevannes, all of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed May 2, 1990, Ser. No. 517,872
Claims priority, application France, May 2, 1989, 88 05802
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.17 **13 Claims**



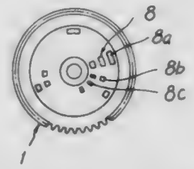
1. A force/pressure detection device, having a monomode optical fiber having an input, an output and a longitudinal axis, the direction of the force or the pressure being nearly perpendicular to the longitudinal axis of the optical fiber, said device having means for feeding polarized light into the fiber and for receiving that light by a detection arrangement sensitive to the direction of polarization of the light at the output of the fiber, and provided with means for analyzing the light according to polarization directions, forming between them an angle between 30° and 60°, characterized in that the device is provided with means for feeding several non-correlated light signals, each polarized differently, into the input of the fiber, and at the output of the fiber there is provided means for distinguishing, in the detection arrangement, between the light signals fed into the fiber at the input.

5,061,848

NON-CONTACTING ROTARY TYPE MODE SWITCH FOR MAGNETIC TAPE RECORDING DEVICE

Jae C. Choi, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 372,556, Jun. 28, 1989, abandoned. This application Jan. 9, 1991, Ser. No. 638,146
Claims priority, application Rep. of Korea, Jun. 29, 1988, 7918/1988
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—229 **1 Claim**



1. A non-contacting rotary type mode switch system for a magnetic tape recording device, said non-contacting rotary type mode switch system comprising:

a mode switch body,

a axle pin mounted on the center portion of said mode switch body,

a cam gear having a pinion at the center portion of lower surface thereof and a circular groove at a circumference thereof, whereby the cam gear is rotatably fixed t the upper portion around the axle pin,

a mode switch gear mounted on said mode switch body for moving cooperatively with said cam gear for mode shifting rotatably about said axle pin so as to be positioned at

the upper part of the mode switch gear, said mode switch gear having an internal gear at the internal peripheral circumference of the top surface thereof,

a planetary gear meshed between said pinion of said cam gear and said internal gear of said mode switch gear,

a plurality of reflector pieces formed on tracks of a plurality of concentric circles, respectively, which are arranged on the rear surface of said mode switch gear, and

a plurality of opto-reflection sensors mounted on the top surface of said switch body for reading out the rotational mode of said cam gear, said each opto-reflection sensor including:

light emitting means for emitting the light, and

light receiving means for detecting the light reflected from said corresponding reflector piece.

5,061,849

EXTERNALLY MOUNTED RADIOACTIVITY DETECTOR FOR MWD EMPLOYING RADIAL INLINE SCINTILLATOR AND PHOTOMULTIPLIER TUBE

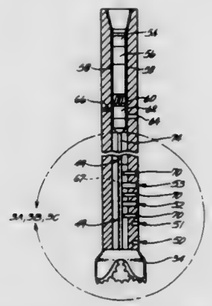
James E. Meisner, Spring; Edward S. Mumby, and Vernon E. Groeschel, both of Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 177,389, Apr. 1, 1988, Pat. No. 4,904,865. This application Feb. 26, 1990, Ser. No. 485,041

The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.

Int. Cl.[5] G01V *5/08*

U.S. Cl. 250—254 **14 Claims**



1. In a well drilling apparatus which includes a hollow drill string in the well, a rotatable drill bit on the lower end of the drill string and means for circulating drilling liquid through the drill string, the improvement comprising:

a section of drilling collar having an annular wall mounted in the drill string in the vicinity of the drill bit, the drill collar wall having a hole extending therethrough;

a detector assembly having a scintillator and a photomultiplier tube aligned radially with respect to the drill string and mounted to expose the scintillator through the hole in the drill collar;

an electronics housing disposed within the drill collar and arranged to permit drilling liquid to flow past it; and

a case enclosing the detector assembly sealingly engaging the drill collar wall and the electronics housing.

5,061,850

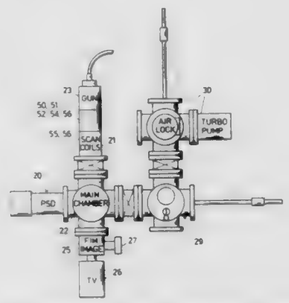
HIGH-REPETITION RATE POSITION SENSITIVE ATOM PROBE

Thomas F. Kelly, Madison; Jon J. McCarthy, Middleton, and Derrick C. Mancini, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 30, 1990, Ser. No. 560,616

Int. Cl.[5] H01J *37/285, 49/40*

U.S. Cl. 250—306 **24 Claims**



1. Position sensitive atom probe apparatus comprising:

(a) an emission tip adapted to have atoms evaporated from the surface of the tip;

(b) a position sensitive detector mounted to receive charge from atomic emission events at the emission tip and providing a signal indicative of the position and time of incidence of a charge cloud thereon resulting from an atomic emission event at the emission tip;

(c) an electron beam column mounted to provide a pulsed beam of electrons to the emission tip and having an electron gun providing a beam of electrons, an aperture plate with a slit therein, means for focusing the electron beam from the electron gun onto the aperture plate and deflecting the beam back and forth across the slit to provide pulses of electrons passed through the slit, means for focusing the electrons passed through the slit and directing them to the emission tip to heat the tip in pulses as the electron beam is scanned across the slit of the aperture plate.

5,061,851

INSPECTION METHOD AND DEVICE FOR AN APERTURE IN A FOCUSED ION BEAM GENERATING APPARATUS

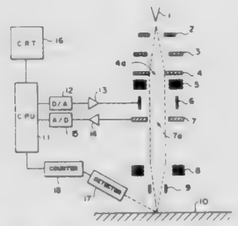
Shigeru Noguchi, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1990, Ser. No. 602,467

Claims priority, application Japan, Nov. 1, 1989, 1-288092

Int. Cl.[5] H01J *3/08*

U.S. Cl. 250—309 **4 Claims**



1. An inspection method for an aperture in a focused ion beam generating apparatus, said apparatus comprising:

an ion source producing an ion beam;

a limiting aperture plate having a limiting aperture through which said ion beam passes, said limiting aperture plate limiting a diameter of said ion beam;

a condensor lens for making said ion beam parallel;

monitoring electrodes for generating an electric field which deflect said paralleled ion beam;

a monitoring aperture plate having a monitoring aperture through which said deflected ion beam passes; and

an objective lens for focusing said ion beam passed through said monitoring aperture;

said method comprising steps of:

applying a voltage to said monitoring electrodes to deflect said ion beam;

detecting an electric current which flows in said monitoring aperture plate; and

determining a diameter of said limiting aperture based on a change of said electric current with respect to deflecting of the ion beam.

5,061,852

RADIATION IMAGE READ-OUT APPARATUS

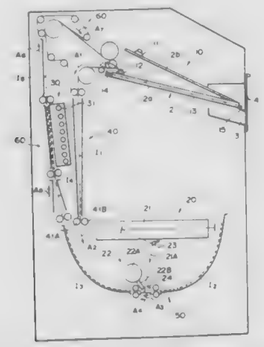
Yasuhiro Kawai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1989, Ser. No. 373,364

Claims priority, application Japan, Jun. 30, 1988, 63-162898

Int. Cl.[5] G01T *1/105*

U.S. Cl. 250—327.2 **8 Claims**



1. A radiation image read-out apparatus comprising:

i) a read-out section for reading out a radiation image stored on a stimulable phosphor sheet,

ii) an erasing section for erasing energy remaining on a stimulable phosphor sheet after the radiation image has been read out therefrom,

iii) a cassette holding section for releasably holding a cassette capable of housing a stimulable phosphor sheet therein, said cassette holding section being provided with a take-out means which takes said stimulable phosphor sheet out of said cassette,

iv) a first sheet conveyance means for receiving a stimulable phosphor sheet, which was taken out of said cassette holding section, and conveying said stimulable phosphor sheet into said read-out section,

v) a second sheet conveyance means provided at said read-out section for receiving a stimulable phosphor sheet from said first sheet conveyance means and conveying said stimulable phosphor sheet in forward and backward directions, and

vi) a third sheet conveyance means for receiving a stimulable phosphor sheet, which is conveyed by said second sheet conveyance means in the backward direction, conveying said stimulable phosphor sheet into said erasing section, and thereafter conveying it into the cassette in said cassette holding section,

wherein the length of said first sheet conveyance means is approximately equal to the length of a stimulable phosphor sheet, which length is measured in the direction along which the stimulable phosphor sheet is conveyed,

said cassette holding section and said read-out section are positioned on the same side of said first sheet conveyance means and face each other,

said erasing section is positioned close to and approximately parallel to said first sheet conveyance means,

the length of said erasing section is shorter than the length of a stimulable phosphor sheet, and

said third sheet conveyance means is positioned approximately parallel to said first sheet conveyance means in order to allow a stimulable phosphor sheet to be intermittently conveyed through said erasing section, and to be temporarily stopped after energy remaining thereon has been erased.

5,061,853

SAMPLE PLATE LIQUID SCINTILLATION COUNTER

Kauko Lehtinen, Raisio; Tapio Yrjönen, and Vesa Sonne, both of Turku, all of Finland, assignors to Wallac OY, Turku, Finland

PCT No. PCT/SE89/00353, § 371 Date Feb. 10, 1989, § 102(e) Date Feb. 10, 1989, PCT Pub. No. WO89/12838, PCT Pub. Date Dec. 28, 1989

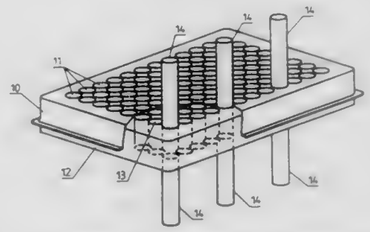
PCT Filed Feb. 1, 1989, Ser. No. 460,198

Claims priority, application Sweden, Jun. 17, 1988, 8802282

The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.

Int. Cl.[5] G01T *1/204*

U.S. Cl. 250—328 **6 Claims**



1. An arrangement for improving the counting of liquid scintillation samples comprising in combination

(a) a plurality of separate sample wells (**11**),

(b) a holder (**12**) surrounding the sides of each sample well (**11**) so that each holder (**12**) forms an optically separate compartment for each sample well (**11**),

(c) photomultiplier tubes (**14**) positioned above and below each sample well (**11**), and

(d) a coating of light reflective or light scattering material (**17**) on the inner surfaces of the holders (**12**).

5,061,854

SHORT SCAN PASSIVE INFRARED REMOTE SENSOR

Robert T. Kroutil, Edgewood; John T. Ditillo, Baltimore; William R. Loerop, Aberdeen; Dennis M. Davis, Edgewood; Lynn D. Hoffland, Edgewood, and Michael S. Desha, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 10, 1990, Ser. No. 513,536

Int. Cl.[5] G01J *3/45*

U.S. Cl. 250—339 **4 Claims**

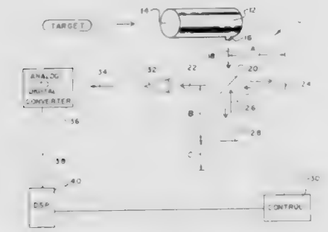
1. A short scan, passive infrared, toxic detector device for remotely detecting the presence of toxic gaseous compounds within a scanned atmospheric area, said device comprising an optical means for sensing infrared energy present in said

scanned atmospheric area and producing an optical beam proportional to such sensed infrared energy, said detector device further comprising a means for isolating a select wave number band of energy within said optical beam, said means for isolating comprising:

beam splitting means for receiving said optical beam and splitting said optical beam into a first portion and a second portion, said beam splitting means directing said first portion in a first direction and directing said second portion in a second direction;

fixed mirror means spaced a fixed distance from said beam splitting means in said first direction;

moving mirror means spaced a minimum distance from said beam splitter equal to said fixed distance plus 0.5 mm and moveable within a range from a minimum distance of 0.5 mm, said moving mirror means for receiving said second portion;



analog outputting means for receiving reflected said first and second portions and for outputting an analog signal representative of an 8 wavenumber infrared spectrum;

analog-to-digital converter means for receiving said analog signal and for producing a corresponding digital signal; and,

digital microprocessor means for receiving said digital signal and for discriminating select gas signatures amongst the background signatures and various other toxic gaseous compound signatures, wherein said digital signal microprocessor includes a FIR linear digital filter for filtering said digital signal, said filter being of the form, $Y=f_1 Y_{i-n}+\ldots+f_{n+1}Y_i$ where Y is a filtered data point, Y_i is a data point corresponding to Y, and $f_1, \ldots f_i, \ldots, f_n, f_{n+1}$ are waiting coefficients.

5,061,855

RADIATION DETECTOR

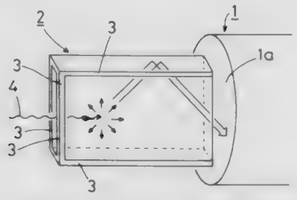
Toshihiko Ryuo, Usuigun; Shinji Makikawa, Annaka, and Tatsuo Mori, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1990, Ser. No. 506,864

Claims priority, application Japan, Apr. 7, 1989, 1-86793

Int. Cl.[5] G01J *1/58*

U.S. Cl. 250—361 R **6 Claims**



1. In a radiation detector having a photomultiplier tube, and a multiface $Bi_4Ge_3O_{12}$ crystal, a face of which contacts the photomultiplier tube and reflecting layers on faces other than the contacting face, the improvement which comprises said contacting face being mirror-polished, said other faces being rough-polished and said reflecting layers containing a reflecting powder agent and a binder containing an acrylic resin and a polyvinyl alcohol.

5,061,856

CORPUSCULAR BEAM DEVICE

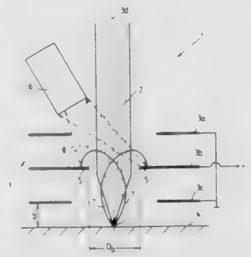
Jürgen Frosien, Ottobrunn, and Rainer Spehr, Ober-Ramstadt, both of Fed. Rep. of Germany, assignors to ICT Integrated Circuit Testing Gesellschaft fur, Halbleiterpruftchnik mbH, Fed. Rep. of Germany

Filed Nov. 14, 1990, Ser. No. 612,507

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1989, 3938660

Int. Cl.[5] H01J *37/252;* **G01T** *1/20;* **G01N** *23/00;* **G01B** *15/00*

U.S. Cl. 250—397 **10 Claims**



1. Corpuscular beam device, such as an ion beam device or an electron beam device, containing

a) an arrangement for producing a primary corpuscular beam (2),

b) an electrostatic objective lens (3) which focusses the primary beam (2) onto a sample (4) and contains three rotationally symmetrical electrodes (3*a*, 3*b*. 3*c*) arranged behind one another in the beam direction, the axis of the primary beam (2) coinciding with the axis (3*d*) of the objective lens (3),

c) an arrangement which draws off the secondary radiation emitted on the sample (4) at the point of impact (A) of the primary beam (2),

d) a scintillator (5) arranged in the beam path of the secondary radiation, characterised by the following feature:

e) the scintillator (50 is formed by the central electrode (3*b*) of the objective lens (3).

5,061,857

WAVEGUIDE-BINDING SENSOR FOR USE WITH ASSAYS

Richard B. Thompson, Baltimore, Md., and Carl A. Villarruel, Burke, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1990, Ser. No. 610,895

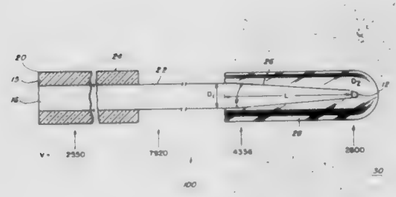
Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—458.1 **16 Claims**

9. A system for fluorescent assays, comprising:

(a) a mode converting multimode sensing waveguide having:

(1) a distal end section including a mode converting section having a proximal end and a distal end and a V number which is higher at said proximal end than at said distal end, said V number changing from said proximal end to said distal end at a rate sufficiently gradual that essentially no transmission loss occurs through said mode converting section, the difference in V numbers between said proximal end and said distal end being sufficient to convert a significant number of low order modes of an excitation wave transmitted from said proximal end of said distal end section to high order mode at said distal end of said distal end section, said distal end of said distal end section corresponding to a distal end of said waveguide and being coated with a tagging component for forming a fluorescent binding pair with an analyte; and



(2) a proximal end section of essentially constant V number extending from said proximal end of said distal end section to a proximal end of said waveguide; and

(b) a light source adjacent to the proximal end of said waveguide for launching excitation light into the proximal end of said waveguide.

5,061,858

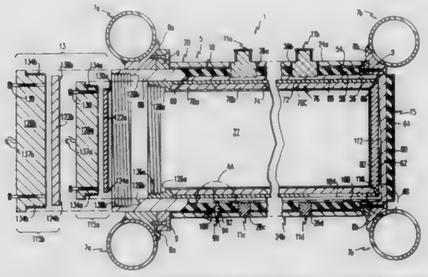
CASK ASSEMBLY FOR TRANSPORTING RADIOACTIVE MATERIAL OF DIFFERENT INTENSITIES

Charles W. Mallory, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1987, Ser. No. 109,527

Int. Cl.[5] G21F *5/00*

U.S. Cl. 250—507.1 **21 Claims**



1. An improved cask assembly for forming a cask for transporting a radioactive material of a particular activity, comprising an outer container having an opening leading to its interior, and a plurality of integrally formed inner shield inserts, each of which includes an interior of receiving waste, an a continuous exterior wall whose shape is substantially complementary to the shape of the interior of the outer container and which is insertable therein to completely fill said interior and to form the cask, the walls of said inner shield inserts being of different thicknesses and different materials, wherein the particular shield insert placed within the interior of the outer container is chosen to match the intensity and type of radiation emitted by the material to be transported so that the surface radiation of the resulting cask does not exceed a preselected intensity when the interior of an insert is completely filled with radioactive material of said particular activity.

5,061,859

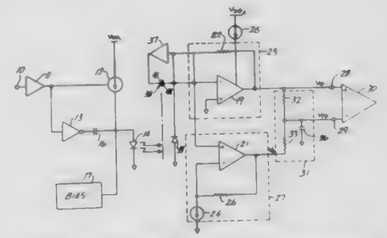
CIRCUITS FOR REALIZING AN OPTICAL ISOLATOR

Ralph E. Lovelace, Los Gatos; David J. Gampell, Sunnyvale, and James S. Ignowski, Santa Clara, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 13, 1989, Ser. No. 406,799

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **18 Claims**



1. A transmitter/receiver pair for an optical isolator comprising:

illumination means for generating a light output in response to an input signal;

photoresponsive means optically coupled to the illumination means for generating a signal voltage in response to light;

means for generating a threshold voltage offset from the signal voltage;

means for generating an ON signal when the signal voltage is greater than the threshold voltage and an OFF signal when the threshold voltage is greater than the signal voltage;

means for generating an offset reference voltage which determines the threshold voltage when the signal voltage is ON; and

means for delaying decay of the threshold voltage when the signal voltage goes OFF.

5,061,860

DEFORMATION MEASURING METHOD AND DEVICE USING COMB-TYPE PHOTOSENSITIVE ELEMENT ARRAY

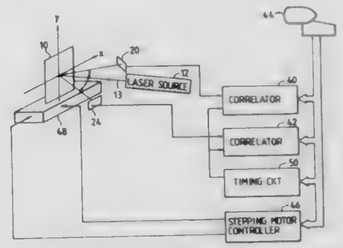
Tamiki Takemori, Shizuoka, Japan, assignor to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 19, 1989, Ser. No. 367,599

Claims priority, application Japan, Jun. 22, 1988, 63-154297

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—561 **4 Claims**



1. A deformation measuring method of detecting the amount of deformation of an object from displacement of a speckle pattern of the object, comprising the steps of:

irradiating the object with a laser beam before and after deformation of the object to obtain speckle patterns;

arranging at least one photosensitive element array comprising photosensitive elements for converting the speckle

patterns into electrical signals, each of said photosensitive elements having a rectangular form of a large ratio of a long side to a short side and said photosensitive element array having a comb structure in which said photosensitive elements are arranged in a strip form;

calculating a cross-correlation function between the speckle patterns from the electrical signals to obtain an extreme value of the cross-correlation function and the position thereof; and

obtaining the amount of position shift of the extreme value of the cross-correlation function to determine the amount of the deformation of the object.

5,061,861

MOS INTEGRATED CIRCUIT FOR DRIVING LIGHT-EMITTING DIODES

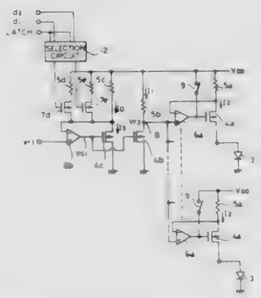
Kazuhiro Sameshima, and Masaru Ohnishi, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1989, Ser. No. 347,492

Claims priority, application Japan, May 20, 1988, 63-124401; Feb. 17, 1989, 1-38661

Int. Cl.[5] H03K *3/01, 17/56, 3/42*

U.S. Cl. 307—270 **8 Claims**



1. An integrated circuit for driving at least first and second power using devices, comprising:

means for producing a first predetermined current;

a current matter, responsive to said first predetermined current, for producing a second predetermined current;

at least a first and a second driver devices;

said first driver device including means for driving said first power-using device with a third current;

said second driver device including means for driving said second power-using device with a fourth current;

said third current having a first predetermined relationship to said second current;

said fourth current having a second predetermined relationship to said second current;

said means for producing a first predetermined current including a resistor; and

means for permitting controlling a resistance of said resistor from a location external to said integrated circuit, whereby said first, second, third and fourth currents are controlled.

5,061,862

REFERENCE VOLTAGE GENERATING CIRCUIT

Akio Tamagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 10, 1990, Ser. No. 550,659

Claims priority, application Japan, Jul. 11, 1989, 1-179260

Int. Cl.[5] H03K *3/01;* **G06G** *7/12;* **G05F** *3/04, 3/16*

U.S. Cl. 307—296.1 **8 Claims**

1. A reference voltage generating circuit comprising:

a first, a second and a third resistor;

a first plurality of n-diodes connected in series;

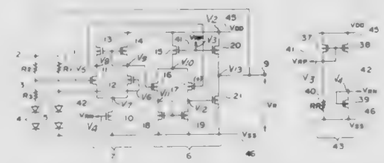
a second plurality of n-diodes connected in series;

a differential amplifier having a pair of transistors of one conductivity type as differential input transistors; and

an operational amplifier for amplifying a differential input voltage and outputting an amplified voltage to an output terminal, said operational amplifier having a pair of transistors of a conductivity type opposite to that of said one conductivity type as differential input transistors, and a one-stage inverting amplifier;

said first resistor having its one terminal connected to the output terminal of said operational amplifier and its other terminal grounded through said first plurality of n-diodes connected in series;

said second resistor having its one terminal connected to the output terminal of said operational amplifier and its other terminal connected to one terminal of said third resistor;



said third resistor having its other terminal grounded through said second plurality of n-diodes connected in series;

said differential amplifier having its first input terminal connected to a junction between said first resistor and said first plurality of n-diodes connected in series and its second input terminal connected to a junction between said second resistor and said third resistor; and

said differential amplifier having its first output terminal connected to an inverting input terminal of said operational amplifier and its second output terminal connected to a non-inverting input terminal of said operational amplifier;

whereby said reference voltage generating circuit is capable of generating at said output terminal of said operational amplifier a reference voltage with respect to the ground potential terminal.

5,061,863

TRANSISTOR PROVIDED WITH A CURRENT DETECTING FUNCTION

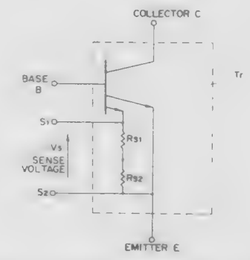
Shogo Mori; Shinobu Aoki, and Haruo Takagi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 14, 1990, Ser. No. 523,215

Claims priority, application Japan, May 16, 1989, 1-121975; Oct. 16, 1989, 1-268720; Oct. 27, 1989, 1-280778

Int. Cl.[5] H03K *17/08, 17/14;* **G01R** *19/15*

U.S. Cl. 307—350 **21 Claims**



1. A transistor circuit provided with a current detecting

function comprising a transistor for driving a load, said transistor having at least one emitter, first and second resistances formed within said transistor, one resistance having a positive temperature coefficient of resistance and the other resistance a negative temperature coefficient of resistance, said resistances being serially connected in series with said one emitter, output terminals connected across at least one of said resistances, and said resistances being constructed with a combined temperature coefficient of resistance equal to substantially zero.

5,061,864

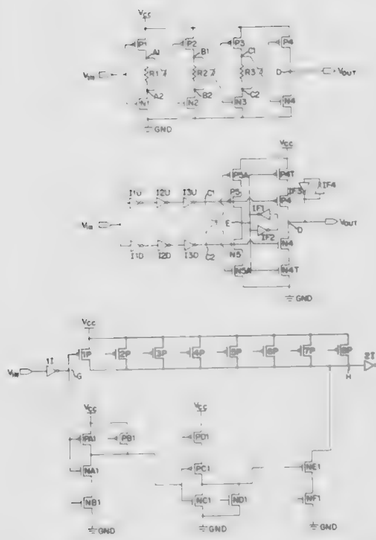
MONOPHASE LOGIC

Alan C. Rogers, South Portland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 18, 1990, Ser. No. 540,214

Int. Cl.[5] H03K *19/003, 19/017, 17/04, 17/687*

U.S. Cl. 307—443 **30 Claims**



1. An integrated circuit (IC) having an input node for receiving input data signals of high and low potential, an output stage coupled between high and low potential power rails, said output stage having an output pullup transistor element coupled to the high potential power rail and an output pulldown transistor element coupled to the low potential power rail, and a final output node coupled between the output pullup and pulldown transistor elements for transmitting output data signals of high and low potential, comprising:

intermediate path splitting circuit means coupled between the input node and output stage defining a plurality of different signal propagation paths including:

a relatively higher speed output pullup turn on signal propagation path coupled between the input node and the output pullup transistor element at relatively higher speed in response to a first input data signal at the input node;

a relatively slower speed output pulldown turn off signal propagation path coupled between the input node and output pulldown transistor element for turning off the output pulldown transistor element at a relatively slower speed in response to said first input data signal;

a relatively higher speed output pulldown turn on signal propagation path coupled between the input node and output pulldown transistor element for turning on the output pulldown transistor element at relatively higher speed in response to a second input data signal at the input node;

and a relatively slower speed output pullup turn off signal propagation path coupled between the input node and output pullup transistor element for turning off the output pullup transistor element at relatively slower speed in response to said second data input signal;

thereby providing relatively higher speed and slower speed signal propagation paths for control of turn on and turn off of the respective output pullup and pulldown transistor elements.

5,061,865

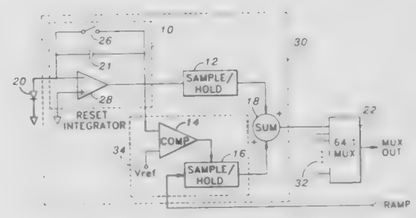
NON-LINEAR TRANSIMPEDANCE AMPLIFIER

David I. Durst, Syosset, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jul. 23, 1990, Ser. No. 556,539

Int. Cl.[5] G06G *7/12*

U.S. Cl. 307—490 **23 Claims**



TYPICAL NON-LINEAR TIA IMPLEMENTATION

1. A transimpedance amplifier having a broad dynamic range for amplifying an input signal over an extended range of levels and for providing an output signal representative of the input signal, the amplifier utilizing an externally generated reference voltage and an externally generated time varying signal, the amplifier comprising:

(a) an accumulator for receiving the input signal, for accumulating a charge, and for generating an accumulator output signal representative of the charge accumulated;

(b) a saturation sensing circuit in electrical communication with said accumulator for sensing accumulator saturation and for generating a saturation sensing circuit output signal representative of the time at which said accumulator becomes saturated; and

(c) a compensation circuit in electrical communication with said accumulator and said saturation sensing circuit for supplementing the accumulator output signal in response to the saturation sensing circuit output signal and for generating a compensation circuit output signal;

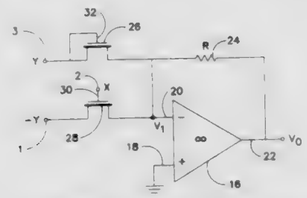
(d) wherein the compensation circuit output signal is representative of the input signal whether or not the input signal causes saturation of the accumulator.

5,061,866

ANALOG, CONTINUOUS TIME VECTOR SCALAR MULTIPLIER CIRCUITS AND PROGRAMMABLE FEEDBACK NEURAL NETWORK USING THEM

Mohammed I. El-Naggar, and Nabil I. Khachab, both of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Aug. 6, 1990, Ser. No. 564,027
Int. Cl.[5] G06G *7/16*
U.S. Cl. 307—529 **13 Claims**



1. An analog multiplier circuit for providing an output voltage which is a linear function of the product of the amplitudes of at least one pair of input multiplicand voltages, the multiplier circuit comprising:

(a) an operational amplifier having an inverting input, a non-inverting input connected to common and at least one output forming the multiplier circuit output;

(b) a feedback resistance connected between each said output and the inverting input;

(c) at least one set of multiplication field effect transistors, each set having two matched field effect transistors,

(i) a first one of the field effect transistors of each set having its source and drain terminals connected between the inverting input of the operational amplifier and a first multiplier circuit input terminal to which a first input multiplicand voltage is applied, the first field effect transistor having its gate connected directly to a second multiplier circuit input terminal to which the second input multiplicand voltage is applied if it is a depletion mode device and connected through an interposed DC voltage level shifting circuit if it is an enhancement mode device;

(ii) the second field effect transistor of each set having its source and drain terminals connected between said inverting input and a third multiplier circuit input terminal to which a third input voltage is applied having the same amplitude as said first multiplicand voltage and the opposite polarity, the gate of the second field effect transistor connected directly to said third multiplier circuit input terminal if it is a depletion mode device and connected through an interposed DC voltage level shifting circuit if it is an enhancement mode device.

5,061,867

ELECTRIC MOTOR DRIVE FOR A SPINDLE OF A SPINNING MACHINE

Harry E. Seiffert, Baden, Switzerland, and Gustav Fetzer, Gingen, Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany and Asea Brown Boveri AG, Baden, Switzerland

Continuation of Ser. No. 257,108, Oct. 13, 1988, abandoned. This application Jan. 17, 1990, Ser. No. 467,305
Claims priority, application Fed. Rep. of Germany, May 28, 1988, 3818194
Int. Cl.[5] H02K *5/24*
U.S. Cl. 310—51 **5 Claims**

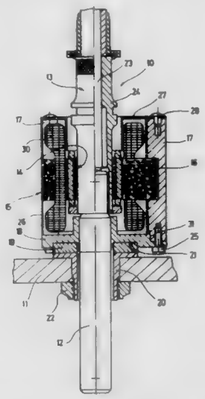
1. In a textile machine of the type having a spindle bank, an apparatus for rotating a bobbin during the building of textile material thereon, comprising:

a spindle having an axis for supporting a bobbin thereon during rotation of said spindle;

a rotor fixedly mounted to said spindle;

a stator for driving rotation of said rotor, said stator having a base;

means, fixedly connected to said stator, for supporting said rotor at a predetermined axial spacing above said stator base, said rotor supporting means rotatably supporting said rotor during driving rotation of said rotor and said rotor supporting means being connected to said stator for transmission of vibratory forces associated with driving rotation of said rotor from said rotor to said stator; and



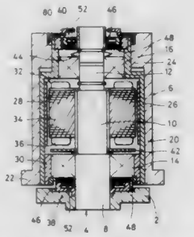
means for damping the transmission of vibratory forces from said stator to the spindle bank, said damping means including a resilient member disposed between and in contact with said stator base and the spindle bank, whereby said stator and said resilient member act to stabilize said spindle during a yarn package building operation by damping the vibratory forces generated by the rotation of said rotor.

5,061,868

SPINDLE MOTOR

Kuniyasu Iwazaki, and Kihachiro Ohta, both of Naka, Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Sep. 24, 1990, Ser. No. 587,249
Claims priority, application Japan, Sep. 25, 1989, 1-248695; Sep. 28, 1989, 1-114097[U]; Sep. 28, 1989, 1-114098[U]
Int. Cl.[5] H02K *5/24*
U.S. Cl. 310—67 R **13 Claims**



5. A spindle motor comprising a fixed shaft member, a hub member rotatably supported by said fixed shaft member through bearing means, a rotor magnet mounted on said hub member, a stator mounted on said fixed shaft member so as to oppose said rotor magnet, and a circuit assembly mounted on said fixed shaft member and including an angular position sensor for sensing the rotational angular position of said rotor

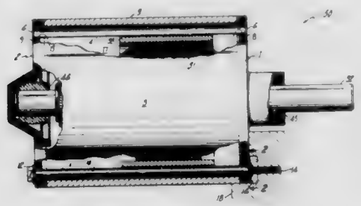
magnet, wherein said fixed shaft member has an axially extending locating means, and said stator and said circuit assembly each have locating means cooperating in common with said locating means of said fixed shaft member so as to set said stator and said circuit assembly in a predetermined angular positional relationship to each other.

5,061,869

MOTOR HOUSING STRUCTURE

Kenneth W. Stewart, Sr., Columbus, Miss., assignor to United Technologies Electro Systems, Inc., Columbus, Miss.

Filed Apr. 1, 1987, Ser. No. 32,844
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—89 **5 Claims**



1. A motor housing for an electric motor which comprises:

a first end cap having at least one fastener opening extending therethrough;

a second end cap having at least one fastener opening extending therethrough;

a circumferentially extending shell defining an interior space and positioned between the first end cap and the second end cap;

hollow securing means extending within the space defined by the shell from the fastener opening of the first end cap to the fastener opening of the second end cap, said securing means affixedly securing the first end cap to the shell and the shell to the second end cap, said hollow securing means defining a longitudinally extending central opening extending from the fastener openings of the first end cap to the fastener openings of the second end cap;

thru bolt means extending through the fastener opening in the first end cap, through the hollow securing means and through the fastener opening in the second end cap; and

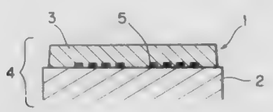
retainer means for preventing the thru bolt means from being inadvertently removed from the hollow securing means without limiting rotation of the thru bolt means.

5,061,870

SURFACE ACOUSTIC WAVE DEVICE

Hideharu Ieki; Atsushi Sakurai, and Koji Kimura, all of Kyoto, Japan, assignors to Murata Mfg. Co., Ltd., Japan

Filed Jul. 6, 1990, Ser. No. 549,214
Claims priority, application Japan, Jul. 6, 1989, 1-174763
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 A **6 Claims**



1. A surface acoustic wave device comprising:

a substrate comprising a single-crystalline dielectric member having a surface and a piezoelectric thin film epitaxially grown on said surface of said dielectric member; and

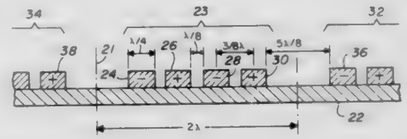
electrode means formed along the interface between said dielectric member and said piezoelectric thin film, said electrode means including an aluminum film being crystallographically oriented in a constant direction.

5,061,871

ELECTRODE STRUCTURE WITH CONSTANT VELOCITY AND ZERO REFLECTIVITY

Peter Wright, Dallas, Tex., assignor to R. F. Monolithics, Inc., Dallas, Tex.

Filed Jan. 25, 1991, Ser. No. 646,066
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B **18 Claims**



1. An electrode structure for transducing acoustic waves in a surface acoustic wave device comprising:

a piezoelectric substrate;

a group of only four spaced electrodes on the substrate for each 2λ distance of electrode structure;

each of the electrodes having a width of substantially λ/4;

a center-to-center spacing of substantially 3/8λ between adjacent ones of the four spaced electrodes such that the electrode structure has the velocity of a uniform two-electrode-per-wavelength structure with substantially no reflections; and

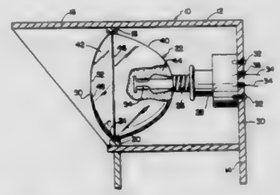
a space between adjacent groups of electrodes of substantially 5/8λ to maintain the transduction phase between groups.

5,061,872

BULB CONSTRUCTION FOR TRAFFIC SIGNALS AND THE LIKE

Thomas S. Kulka, 509 Film Building, 2108 Payne Ave., Cleveland, Ohio 44114

Continuation of Ser. No. 790,139, Oct. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 320,539, Nov. 12, 1981, abandoned. This application Aug. 29, 1990, Ser. No. 574,055
Int. Cl.[5] H01J *5/16*; F21V *3/00, 7/00*
U.S. Cl. 313—111 **15 Claims**



1. A signal light construction, comprising:

a housing having an open front;

a reflector mounted in a rear portion of said housing, said reflector having a diffusion means with macroscopic diffusion elements for breaking up light falling on it into dispersed rays;

a light bulb mounted in said housing and spaced in front of said reflecting surface; and

a lens structure having a plurality of openings through which light reflected from said reflector can be transmitted, and having a surrounding colored area;

wherein light passing through said openings sparkles due to said light being visually interrupted when passing through

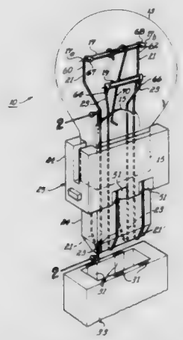
said openings as a motorist approaches said signal by virtue of the viewing angle of the motorist relative to said bulb being changed as the motorist approaches said signal, and wherein said sparkle effect is enhanced by said diffusion means of said reflector.

5,061,873

INCANDECENT LAMP HAVING HIGH RESISTANCE TO FILAMENT DAMAGE FROM VIBRATION AND SHOCK

Stephen D. Belliveau, Aurora, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1990, Ser. No. 474,581
Int. Cl.[5] H01J *1/88*
U.S. Cl. 313—271 **12 Claims**



1. An incandescent lamp for use in applications that are subject to substantial vibration and shock, comprising:

(a) an envelope of light transmitting material comprising a sealing structure,

(b) a pair of lead wires extending into the envelope through said sealing structure and supported by said sealing structure, each lead wire having a natural frequency of oscillation,

(c) a refractory metal filament within the envelope having two ends respectively connected to said lead wires, and

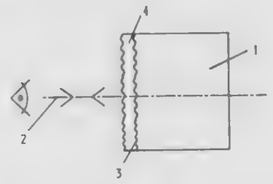
(d) a support wire having spaced apart ends respectively connected to said sealing structure and to a point on said filament spaced from the ends of the filament, the lamp being further characterized by: each of said lead wires including an inner lead-wire portion extending between said sealing structure and said filament, the inner lead-wire portions having substantially the same natural frequencies, and the filament having a natural frequency of between 1.7 and 2.2 times the natural frequency of each inner lead-wire portion when the lamp is deenergized, thereby protecting the filament against damage from vibrational energy applied to said envelope and further wherein said lead wires and said filament are disposed in one plane and wherein said support wire has at least two bends and crosses said one plane so as to be connected to one side of said sealing structure at the one end and to the opposite side of said filament at the other end.

5,061,874

GLASS ARTICLE HAVING LOW SPECULAR REFLECTION

André Hecq, Nalinnes, and Francois Toussaint, Montignies-le-Tilleul, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Jun. 20, 1988, Ser. No. 208,505
Claims priority, application Luxembourg, Jun. 19, 1987, 86928
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.[5] H01J *29/89*
U.S. Cl. 313—478 **29 Claims**



1. A glass article, comprising:

a glass substrate having at least one matted surface region so as to reduce specular reflection from said at least one matted surface region as light passes therethrough along a viewing light path; and

a layer formed over a surface region of said glass substrate so as to reduce total light reflection from said surface region of the glass substrate as light passes therethrough along said viewing light path,

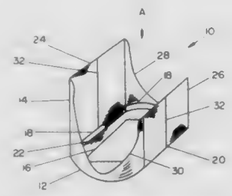
wherein at least one of said at least one matted surface region is densely populated with surface pits which have a rounded profile produced by chemical etching, and which are of such small area that typed characters of 10-pitch size disposed on a surface to be viewed are clearly legible when viewed along said viewing light path when said surface to be viewed is spaced from the at least one matted surface region bearing said surface pits by a distance of 10 cm.

5,061,875

FOCUS ELECTRODE FOR ELONGATED HEXAGONAL PHOTOMULTIPLIER TUBE

Charles M. Tomasetti, Leola; Benjamin W. Narehood, Lititz, and Donald B. Kaiser, Lancaster, all of Pa., assignors to Burle Technologies, Inc., Wilmington, Del.

Filed Jun. 20, 1990, Ser. No. 540,834
Int. Cl.[5] H01J *43/18*
U.S. Cl. 313—533 **10 Claims**



1. A focus electrode for a photomultiplier tube with an elongated hexagonal faceplate comprising:

a base comprising a planar structure with a through hole in the base through which electrons can pass; and

a side wall which is an essentially continuous structure attached to the base and extending transverse to the base from one side of the base, the side wall comprising:

two straight sections, which are essentially parallel planes, each straight section attached to a part of the base; and

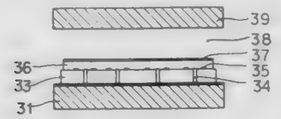
two curved sections of varying heights interconnecting the straight sections.

5,061,876

SURFACE DISCHARGE-TYPE PLASMA DISPLAY PANEL USING A GLASS PLATE

Yong S. Park, Kyungsangbook-do, Rep. of Korea, assignor to Goldstar Co. Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 140,098, Dec. 31, 1987, abandoned.
This application Nov. 2, 1989, Ser. No. 430,936
Claims priority, application Rep. of Korea, Dec. 31, 1986, 11740/1986
Int. Cl.[5] H01J *17/49*
U.S. Cl. 313—581 **4 Claims**



1. A structure for a surface discharge-type plasma display panel comprising:

a lower glass plate layer having a top surface;

an X-electrode base layer having an upper surface and a lower surface opposite to said upper surface, said lower surface being disposed on said top surface of said lower glass plate layer;

a pattern of a plurality of X-electrode connectors formed over said upper surface of said X-electrode base layer;

a connector enhancing layer disposed on said upper surface of said X-electrode base layer and said pattern of said plurality of X-electrode connectors;

a first dielectric glass plate layer disposed over said X-electrode base layer, said connector enhancing layer and said pattern of said plurality of X-electrode connectors, having a plurality of openings vertically extending towards said X-electrode base layer;

a plurality of X-electrodes disposed in a plane on said first dielectric glass plate layer and extending vertically through said plurality of openings to connect said plurality of X-electrodes as defined by said pattern of said plurality of X-electrode connectors;

a plurality of Y-electrodes disposed in said plane on said first dielectric glass plate layer corresponding to each of said plurality of X-electrodes and each of said plurality of Y-electrodes are respectively positioned around one of said plurality of X-electrodes in a C shape;

a second dielectric layer disposed on said first dielectric glass plate layer and said plurality of X- and Y-electrodes; and

an upper glass plate layer positioned above said second dielectric layer for providing a discharging space between said upper glass plate layer and said second dielectric layer.

5,061,877

DISCHARGE TUBE CAPABLE OF STABLE VOLTAGE DISCHARGE

Teruhiko Akanuma, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 30, 1989, Ser. No. 444,449
Claims priority, application Japan, Nov. 30, 1988, 63-154938
Int. Cl.[5] H01J *17/04*
U.S. Cl. 313—631 **1 Claim**

1. A discharge tube comprising:

a hermetically sealed tubular housing;

a first electrode having a cylindrical portion within said housing and being hermetically sealed to said housing at one end thereof;

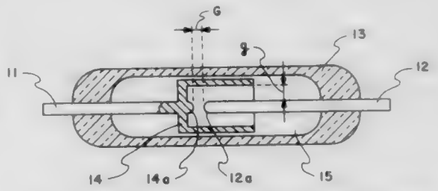
a second electrode hermetically sealed to said housing at the other end thereof, said second electrode being disposed opposite to said first electrode so that an end portion thereof extends into an inside area of said cylindrical portion, said end portion and said inside portion being within said housing;

an inert gas sealed in said housing;

a projection on an inner face at the bottom of said cylindrical portion, the projection opposing said second electrode; and

a first gap formed between said projection and said second electrode, the first gap having a minimal dimension as compared to the dimension of any other gap which appears between said first and second electrodes;

whereby any spark discharge between said first and second electrodes occurs at only said first gap.

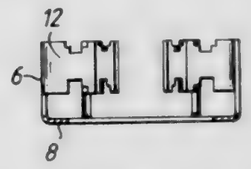


5,061,878

MAGNETRON ANODE AND METHOD OF MANUFACTURING ANODE

Peter J. Hall, Chelmsford, United Kingdom, assignor to English Electric Valve Company Limited, Chelmsford, United Kingdom

Filed Jul. 21, 1988, Ser. No. 223,039
Claims priority, application United Kingdom, Jul. 23, 1987, 8717440; May 6, 1988, 8810743
Int. Cl.[5] H01J *9/02, 25/50*
U.S. Cl. 315—39.75 **24 Claims**



19. A magnetron anode comprising:

a hollow cylinder having first and second ends; and

at least one anode vane structure formed from a folded blank of conductive sheet material and disposed in said cylinder, said at least one anode vane structure including an annular portion and a plurality of anode vane members integrally formed with and extending from said annular portion, with each said anode vane member having an integrally attached arm defining a plane and extending substantially perpendicularly to said annular portion, and an enlarged width portion which is integrally attached to said arm adjacent a free end of the arm and which enlarged width portion defines a plane which extends substantially perpendicularly to the plane of said arm and radially inwardly of said cylinder to form a respective anode vane.

5,061,879

DUAL FILAMENT LAMP CONTROL SYSTEM

Joseph P. Munoz, 4643 S. Oxford Ave., Tulsa, Okla. 74135; William R. Dickson, 19713 E. 42nd., Broken Arrow, Okla. 74014, and Michael S. Cafasso, 2033 S.E. Thousand Oaks Dr., Claremore, Okla. 74017

Filed Oct. 1, 1990, Ser. No. 590,816

Int. Cl.[5] H01J *7/44*

U.S. Cl. 315—65 **1 Claim**



1. A dual filament reading lamp and control module, used particularly in aircraft, said lamp having a first and second filament and said control module having functions for detecting the failure of said first filament, automatically activating said second filament and activating an indicator called Light Emitting Diode for indicating the failure of said first filament, wherein said control module operates directly from an AC voltage source and said control module comprises bi-directional semiconductor devices to detect the failure of said first filament and activate said second filament and said control module further comprises means including a test port for connection to a test switch for testing for the failure of said first filament without requiring the use of said indicator to indicate said first filament failure.

5,061,880

METHOD OF DRIVING IMAGE DISPLAY DEVICE

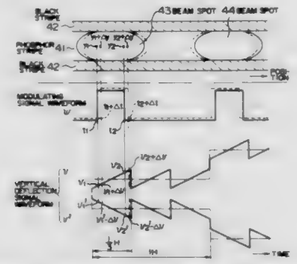
Jumpei Hashiguchi, Suita; Kinzo Nonomura, Ikoma; Kiyoshi Hamada, Sakai; Satoshi Kitao, Kyoto, and Masayuki Takahashi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1990, Ser. No. 494,627

Claims priority, application Japan, Mar. 22, 1989, 1-069715

Int. Cl.[5] G09G *1/04;* **H01J** *29/70, 29/56*

U.S. Cl. 315—366 **10 Claims**



1. A method of driving an image display device including a luminous means comprising luminous image-display sections vertically and horizontally aligned to be scanned and excited into luminescence responsive to electron beams impinging thereon to display an image, a means for generating a plurality of electron beams travelling toward said luminous means, an electron beam quantity control means for controlling a quantity of said electron beams generated by said generating means, and an electron beam deflecting means for deflecting said quantity of electron beams, said method comprising the steps of:

(a) enabling said deflection means by a deflection signal additively comprising a first periodic deflection signal and a second periodic deflection signal, said first deflection signal being provided to deflect each electron beam to cause it to land on a respective one of said image display sections at about a predetermined landing position thereon and said second deflection signal being provided to further deflect in a same direction as the beam deflection caused by said first deflection signal each of said electron beams to displace its landing position within a small range of distance from said predetermined landing position and not extending into a scan range of an adjacent electron beam; and

(b) enabling said electron beam quantity control means by applying thereto a pulse signal for controlling a beam quantity of each of said electron beams at an optional timing selected in a time period of said second deflection signal, such that none of the adjacent beam spots extends across a luminous center of the other on said luminous means, thereby controlling spacing of electron beam luminous spots adjacent on boundary portions of respective image display sections and spacing of those adjacent on and in each image display section to be spacings of such uniformity so as to generate no viewable discontinuities in brightness or color between the luminous spots.

5,061,881

IN-LINE ELECTRON GUN

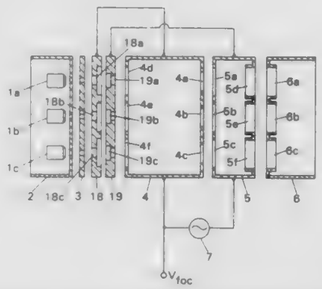
Hiroshi Suzuki, Nagaokakyo; Koichi Sugahara, Sakai, and Noboru Tominaga, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Aug. 31, 1990, Ser. No. 576,260

Claims priority, application Japan, Sep. 4, 1989, 1-228556; Sep. 6, 1989, 1-230978

Int. Cl.[5] H01J *29/58*

U.S. Cl. 315—382 **4 Claims**



1. An in-line electron gun comprising a plate shaped accelerating grid to which a constant accelerating voltage is applied; a box-shaped first focusing grid to which a constant focus voltage is applied; a box-shaped second focusing grid to which a dynamic voltage is applied, said dynamic voltage gradually rising from the focus voltage with an increase in the deflection angle of electron beams, and said three grids being arranged in this order between a control grid and an anode; and astigmatic lens field forming means which are provided in at least one of the opposed ends of said first and second focusing grids so as to form first lens fields between said two focusing grids said first lens fields being convergent in a horizontal direction and divergent in a vertical direction, wherein said in-line electron gun comprises a flat plate-shaped first auxiliary grid connected to said first focusing grid; a flat plate-shaped second auxiliary grid connected to said second focusing grid, said auxiliary grids being arranged in this order between said accelerating grid and said first focusing grid; and astigmatic lens field forming means provided in at least one of the opposed ends of said first and second auxiliary grids so as to form second lens fields between said two auxiliary grids said second lens fields being divergent in a horizontal direction and convergent in a vertical direction.

5,061,882

POWER SUPPLY FREQUENCY REGULATING DEVICE FOR VIBRATION WAVE DRIVEN MOTOR

Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

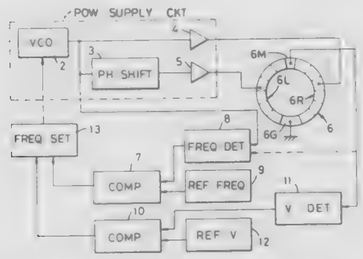
Continuation of Ser. No. 361,744, May 30, 1989, Pat. No. 4,914,337, which is a continuation of Ser. No. 152,644, Feb. 5, 1988, abandoned. This application Jan. 22, 1990, Ser. No. 468,201

Claims priority, application Japan, Feb. 9, 1987, 62-27771

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] H01L *41/08*

U.S. Cl. 318—116 **6 Claims**



1. A vibration wave driven motor comprising:

a movable member;

stator means comprising a resilient member having a surface maintained in contact with said movable member, and electrostriction means adapted to be vibrated by an AC voltage to generate a vibration wave on the surface of said resilient member;

power supply means for supplying said electrostriction means with said AC voltage;

means for distinguishing whether a desired operating state of said motor is obtained or is not obtained while said AC voltage is supplied, said desired operating state being a state in which the amplitude of said vibration wave increases according to decrease of the frequency of said AC voltage; and

means for controlling the frequency of said AC voltage so that when said distinguishing means distinguishes the said desired operating state is not obtained, the frequency of said AC voltage is increased to a frequency within a predetermined frequency range.

5,061,883

BRAKING SYSTEM FOR ELECTRIC RAILCARS INCLUDING MEANS FOR CONTROLLING ELECTRIC BRAKE FORCE

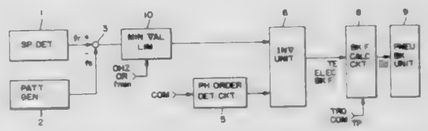
Yumiko Asano; Hideo Obi, and Shigeya Ohhama, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 13, 1989, Ser. No. 379,213

Claims priority, application Japan, Sep. 8, 1988, 63-225382

Int. Cl.[5] H02P *3/00*

U.S. Cl. 318—362 **5 Claims**



1. A braking system for an electric railcar having an a.c. motor for driving the electric railcar including:

an arithmetic unit receiving as input a slip frequency and a rotor frequency and generating an output representing the difference between the slip and rotor frequencies, which difference may be positive or negative in sign;

a variable voltage variable frequency inverter unit connected to the arithmetic unit to receive the output therefrom, for outputting an electric brake force command and controlling the speed of the a.c. motor;

a mechanical brake unit for braking the electric railcar; and

limiter means connected between said inverter unit and said arithmetic unit for limiting the output frequency of said inverter unit to a minimum frequency in the vicinity of 0 Hz regardless of the sign of the arithmetic unit output thereby to achieve a stopping of the electric railcar.

5,061,884

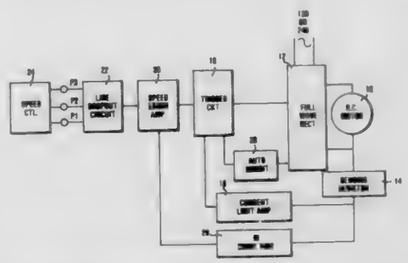
CURRENT LIMITING CONTROL CIRCUIT FOR D.C. MOTORS WITH LINE DROPOUT PROTECTION

Abraham Saganovsky, Brooklyn, N.Y., assignor to KB Electronics, Inc., Brooklyn, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,665

Int. Cl.[5] H02P *1/18*

U.S. Cl. 318—431 **3 Claims**



1. A control circuit for controlling the operation of a d.c. motor comprising:

means adjustable by an operator for establishing motor speed, said establishing means being adjustable from a zero setting position to a maximum setting position,

means for monitoring an output of said establishing means and for producing a first signal in response to said establishing means being in said zero setting position, and a second signal in response to said establishing means being in any position other than said zero setting position, and

means responsive to the presence of said second signal at a time when power is being applied to said d.c. motor for preventing operation of said d.c. motor, said preventing

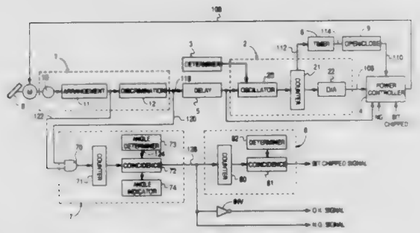
means including means responsive to the occurrence of said first signal for re-enabling operation of said d.c. motor, and said monitoring and producing means including comparator means for comparing the voltage level of electrical signals generated by said establishing means.

5,061,885

POWER SCREWDRIVER

Kenji Fukuhara, Tokyo, Japan, assignor to Kayashi Tokei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1990, Ser. No. 557,287
Claims priority, application Japan, Aug. 15, 1989, 1-210439
Int. Cl.[5] H02P *3/06*
U.S. Cl. 318—434 **6 Claims**



1. A power screwdriver comprising:
a motor;
means for detecting stoppage of the motor due to load in excess of a predetermined value;
means for gradually increasing power to the motor to a predetermined value after detecting said stoppage of the motor, wherein said means for gradually increasing power includes an oscillator having an output, a counter having an output for counting the output of the oscillator and a controller which supplies the power corresponding to the output of the counter; and
means for setting a time of increase of a power supply at an arbitrary value, wherein said means for setting includes a means for changing a frequency of the output of the oscillator.

3. A power screwdriver comprising:
a motor;
means for detecting stoppage of the motor due to load in excess of a predetermined value;
means for gradually increasing power to the motor to a predetermined value after detecting said stoppage of the motor;
means for setting a time of increase of a power supply at an arbitrary value;
means for detecting rotation of a driven bit in excess of a standard rotation when said means for gradually increasing power to said motor increases the power supply;
means for counting a number of detected rotations; and
means for delivering an alarm signal if a count from said means for counting reaches a standard value.

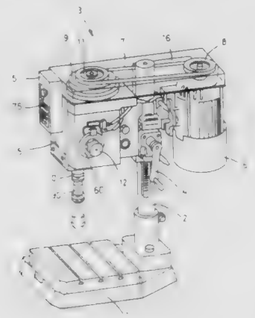
5,061,886

APPARATUS FOR CONTROLLING MOVEMENT OF RECIPROCATING MEMBER, HAVING DATA DISPLAY CAPABLE OF INDICATING ENCODER SIGNAL INDICATIVE OF THE MOVEMENT

Minoru Yamada, Aichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 7, 1990, Ser. No. 489,554
Claims priority, application Japan, Mar. 10, 1989, 1-27679[U]
Int. Cl.[5] G05B *23/02*
U.S. Cl. 318—565 **13 Claims**

1. An apparatus for controlling a reciprocating movement of a reciprocating member adapted to be reciprocated over a predetermined operating stroke by forward and reverse rotations of a drive motor, said apparatus comprising:
an encoder for generating pulses each of which corresponds to an incremental distance of movement of said reciprocating member;
an operator's control panel having a plurality of operator's control switches for entering data and commands for controlling said drive motor, and a data display normally placed in a data display mode for displaying information which includes data relating to movement of said reciprocating member;



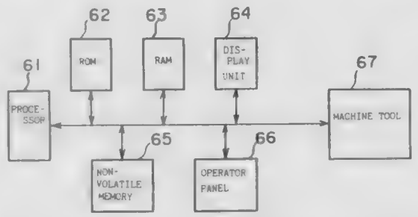
motor control means for controlling said drive motor according to the data entered through said control switches and said pulses generated by said encoder;
detecting means for detecting a specific command generated by at least one of said plurality of control switches on said operator's control panel; and
display control means responsive to said specific command detected by said detecting means, for placing said data display in an inspection mode for providing an indication as to whether said pulses of said encoder are present or not.

5,061,887

MACHINING DATA DISPLAY SYSTEM

Mitsuto Miyata, Hachioji, and Hidehiro Miyajima, Yamanashi, both of Japan, assignors to Fanuc, Ltd., Minamitsuru, Japan

PCT No. PCT/JP89/00774, § 371 Date Mar. 30, 1990, § 102(e) Date Mar. 30, 1990, PCT Pub. No. WO90/01735, PCT Pub. Date Feb. 22, 1990
PCT Filed Jul. 26, 1989, Ser. No. 469,471
Claims priority, application Japan, Aug. 3, 1988, 63-193690
Int. Cl.[5] G05B *23/02*
U.S. Cl. 318—568.25 **4 Claims**



1. A machining data display method for displaying data at a display of a numerical control apparatus (CNC) while a machining operation is being carried out, comprising the steps of:
defining a set of names of machining data to be displayed;
defining definition commands, each being associated with a selected one of the names of machining programs, and including a display train;

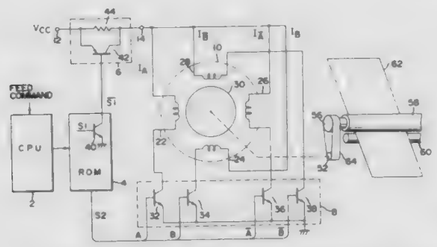
selecting one of the names of machining data;
selecting one of the definition commands; and
displaying said selected machining data at the display.

5,061,888

METHOD AND APPARATUS FOR DRIVING STEPPING MOTOR

Satoshi Hiraoka, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 250,860, Sep. 29, 1988, abandoned. This application Jan. 10, 1990, Ser. No. 462,976
Claims priority, application Japan, Sep. 30, 1987, 62-243920
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **8 Claims**



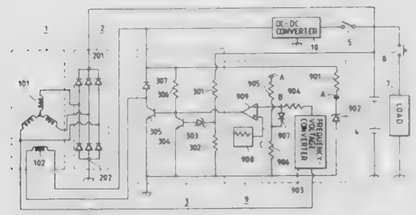
1. A driving apparatus for a stepping motor having a rotor and a plurality of phase windings, comprising:
control means responsive to an input rotation command, for generating current control data and drive control data;
current control means for controlling driving current flowing into said stepping motor to be one of first and second currents during conduction of the driving current through one or more phase windings in accordance with the current control data from said control means, comprising,
variable resistance means for varying a resistance between a voltage source and said plurality of phase windings based on the current control data from said current control means; and
driving means responsive to the drive control data from said control means, for selectively setting said one or more of said plurality of phase windings in a conductive state to flow the driving current controlled by said current control means.

5,061,889

VEHICLE AC GENERATOR CONTROL DEVICE FOR ADJUSTING OUTPUT VOLTAGE IN ACCORDANCE WITH VEHICLE CONDITIONS

Shiro Iwatani, and Yutaka Kitamura, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jul. 9, 1990, Ser. No. 549,985
Claims priority, application Japan, Jul. 13, 1989, 1-180955
Int. Cl.[5] H02J *7/16*
U.S. Cl. 322—28 **1 Claim**



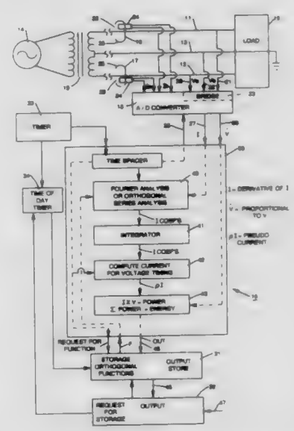
1. A vehicle AC generator control device, comprising:
an AC generator including a field coil;
a rectifier for rectifying an AC output of said AC generator;
a battery connected to an output terminal of said rectifier;
a voltage regulator including a switching element series-connected to said field coil, said voltage regulator detecting a terminal voltage at the output terminal of said rectifier to operate said switching element to control a field current of said field coil so that an output voltage of said AC generator is adjusted to a predetermined value;
a field coil exciting power source for providing an output voltage which is higher than the output voltage of said AC generator; and
a field current limiter for limiting a maximum conduction rate of said switching element according to a speed of rotation of said AC generator.

5,061,890

METHOD AND APPARATUS FOR DIGITALLY MEASURING ELECTRICAL ENERGY CONSUMPTION

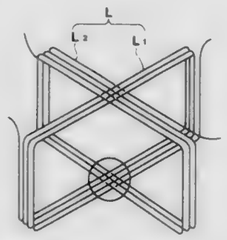
Richard L. Longini, 6731 Forest Glen Rd., Pittsburgh, Pa. 15217

Continuation-in-part of Ser. No. 390,234, Aug. 7, 1989. This application Apr. 25, 1990, Ser. No. 514,255
Int. Cl.[5] G01R *19/00, 21/00*
U.S. Cl. 324—107 **47 Claims**



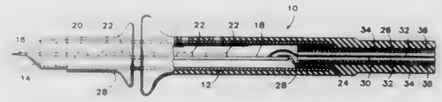
1. The method of measuring electrical energy consumption from a plurality of transmission line conductors carrying alternating current, comprising the steps of, measuring the time derivative of the magnetic field induced by an electrical current flowing in a transmission line conductor thereby obtaining a reading proportional to the time derivative of the current flow, mathematically approximating the time derivative of the current flowing in the conductor by expressing said magnetic field rate of change with an algorithmic series for expressing cyclic phenomena, measuring the voltage between conductors of the transmission line, computing an approximation of the power being consumed through the transmission line by converting the time derivative of the current as expressed in an algorithmic series and the voltage measurement mathematically to a power reading, and summing the power reading to obtain a number value proportional to the energy consumed through said conductors.

5,061,891
CROSS COIL
Shigeki Totsuka; Yukio Ohike, and Tadao Ito, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Jul. 10, 1989, Ser. No. 377,059
Claims priority, application Japan, Nov. 21, 1988, 63-150769[U]; Jun. 30, 1989, 1-76361[U]
Int. Cl.[5] G01R 1/20; H01F 27/28
U.S. Cl. 324—146 1 Claim



1. A cross coil type indicator, comprising:
a) a coil bobbin;
b) a magnetic rotor rotatably provided within the coil bobbin, to which a pointer axis is cooperatively connected; and
c) a cross coil arranged around the coil bobbin in such a manner that the rotor is rotated by the magnetic field component generated in the cross coil, wherein the cross coil comprises:
i) a first coil winding for generating a first magnetic field when an electrical current flows therethrough, the first coil winding comprising a plurality of at least three turns of a wire wound around the coil bobbin;
ii) a second coil winding for generating a second magnetic field when an electrical current flows therethrough, the second coil winding comprising a plurality of at least three turns of a wire whose turn number is the same as that of the turns of the first coil winding, and the second coil winding being wound around the coil bobbin so as to cross the first coil winding such that the first and second coil windings are wound relative to each other substantially in a X-shaped manner, whereby the magnetic rotor is rotated by the magnetic field component of the first and second magnetic fields; and
iii) means for equalizing the magnitude of each of the first and second magnetic fields exerted on the magnetic rotor when the identical voltage is applied to each of the coil windings, said equalizing means comprising the arrangement of the turns of the first and second windings in which the respective turn of the plural turns of one coil winding is alternately wound on the respective turn of the plural turns of the other coil winding with each other such that the wire length of each winding becomes equal and the wire of each winding has the same resistance value, and wherein the length and placement of each of the first and second coil windings about the magnetic rotor is substantially equal so as to equalize the magnitudes of the first and second magnetic fields which are exerted on the magnetic rotor, said means for equalizing comprising the arrangement of coil wires wherein the first turn of the second coil passes over the first turn of the first coil and each subsequent turn of the second coil passes over all previous passed over turns plus one of the first coil and under all subsequent turns of the first coil, and the number of previous turns is incremented by one and the number of subsequent turns is reduced by one for each additional turn of each coil.

5,061,892
ELECTRICAL TEST PROBE HAVING INTEGRAL STRAIN RELIEF AND GROUND CONNECTION
Steve O'Hara, Vancouver; Mark Nightingale, Camas, and Glen Aukstikalnis, Vancouver, all of Wash., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Jun. 13, 1990, Ser. No. 538,344
Int. Cl.[5] G01R 1/067; H01R 4/00, 11/18, 43/04
U.S. Cl. 324—149 3 Claims

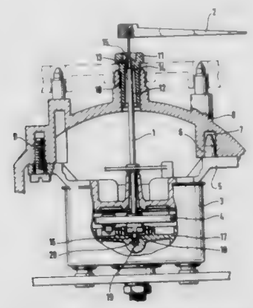


1. An improved electrical test probe for use with measurement test instrument having an input connector with a centrally disposed signal conductor surrounded by electrical ground conductor for coupling electrical signals from the improved electrical test probe to the measurement test instrument comprising:
an electrically conductive hollow body having a probing tip coaxially disposed in one end;
a conductive cable disposed at the other end of the electrically conductive hollow body and having a central conductor separated from a surrounding outer shielding conductor by an insulating member;
a substrate disposed within the electrically conductive hollow body making electrical contact with the probing tip and having electrical components thereon for compensating the electrical signals acquired by the electrical test probe; and
an electrically conductive strain relief adapter disposed within the electrically conductive hollow body and having a proximate tubular shaped member with a slot formed therein for receiving the conductive cable therethrough with the outer shielding conductor making electrical contact with the tubular member and a flat member extending from and being integrally formed with the tubular member opposite the slot for mounting the strain relief adapter on the substrate opposite the probing tip, the central conductor of the conductive cable making a first electrical connection with the compensating electrical components on the substrate and the flat member making a second electrical connection on the substrate, the electrically conductive strain relief adapter being deformed as a function of crimping the electrically conductive hollow body about the strain relief adapter for capturing the conductive cable within the tubular member for providing strain relief for the central conductor at the first electrical connection and for providing electrical connectivity between the outer shielding conductor and the second electrical connection on the substrate and between the outer conductor and the electrically conductive hollow body.

5,061,893
MOUNTING FOR THE ROTARY MAGNET OF A ROTARY MAGNET-RATIO METER
Franz Gutmann, Frankfurt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 14, 1990, Ser. No. 539,081
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921330
Int. Cl.[5] G01R 1/00
U.S. Cl. 324—154 PB 5 Claims

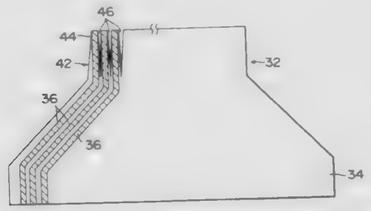
1. A rotary-magnet ratio meter comprising
a pointer shaft, a pointer affixed to an end of the shaft, and a rotary magnet supported by the shaft;

a first radial bearing, a second radial bearing, and a thrust bearing; and
wherein said shaft is supported close to the pointer by means of said first radial bearing, at another place by means of said second radial bearing, and, at the end opposite the pointer, by means of said thrust bearing;
said second radial bearing is provided on a side of the rotary magnet facing away from the pointer;



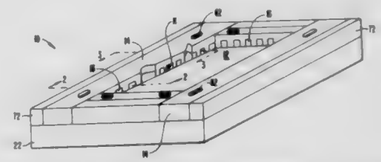
said ratio meter further comprises a housing, and a structural part which is fixed to the housing; and wherein
said second radial bearing and said thrust bearing are formed by a blind hole in said structural part for receiving the lower end of the pointer shaft, there being a metal ball in said blind hole, a lower end surface of the pointer shaft resting upon the metal ball.

5,061,894
PROBE DEVICE
Towl Ikeda, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Division of Ser. No. 379,544, Jul. 13, 1989, Pat. No. 4,998,062.
This application Dec. 21, 1990, Ser. No. 633,254
Claims priority, application Japan, Oct. 25, 1988, 63-138985[U]
Int. Cl.[5] G01R 1/02, 1/04
U.S. Cl. 324—158 F 6 Claims



1. A probe device for measuring high frequency electric characteristics of an object to be tested, with a plurality of electrode pads attached on the object being brought into contact with corresponding probes of the probe device,
including a unit having a micro-strip line structure for providing said probes,
wherein said unit comprises a flexible insulating base plate, lead strips provided on one surface of said base plate, and ground strip means provided on the other surface of said base plate,
only said lead strips are provided on said one surface of said base plate, and separated and electrically insulated from one another,
said base plate has a substantially uniform thickness as a whole, and each of said lead strips has a width substantially uniform over the entire length thereof,
said lead strips and said ground strip means extend to a tip end of the base plate, and said ground strip means is formed on those portions of said other surface of said base plate which are opposed to the corresponding portions of said one surface of the base plate on which said lead strips are formed,
notches are formed in said tip end of said base plate at locations between said lead strips,
each of said units is supported, with said tip end of said base plate being inclined toward said electrode pads, and
the combination of each of said lead strips, said insulating base plate and said ground strip means constitutes a micro-strip line corresponding to each of said electrode pads, said micro-strip line having a constant impedance characteristic over the entire length thereof, said micro-strip line serves as one of said probes at said tip end of said base plate, and a tip portion of said lead strip of said micro-strip line serves as a contact of one of said probes.

5,061,895
SYSTEM FOR DETECTING AND CORRECTING MISALIGNMENT OF SEMICONDUCTOR PACKAGE LEADS
Carl H. Fong, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Jan. 19, 1990, Ser. No. 467,714
Int. Cl.[5] G01R 31/00
U.S. Cl. 324—158 R 10 Claims

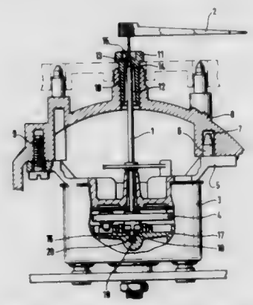


8. A method for detecting the misalignment of the ends of leads of a semiconductor package, said package provided with a plurality of leads on at least one side of the package, each lead having an end portion, wherein misalignment is defined as the condition in which the end portion of at least one of the leads of the package is at a distance greater than a predetermined value from a predetermined plane, said method employing an apparatus comprising a structure having a planar surface and an elevated portion on said surface, said elevated portion provided with a plurality of slots therein, the number of slots being equal to or greater than the number of leads on said one side of the package, wherein the heights of said slots above the surface are substantially equal to the predetermined value from the surface, said method comprising:
placing the package with at least some of the end portions of the leads in contact with said surface with the leads facing the slots;
sliding the package towards the slots; and
determining whether the end portions of the leads will slide into the slots.

a first radial bearing, a second radial bearing, and a thrust bearing; and

wherein said shaft is supported close to the pointer by means of said first radial bearing, at another place by means of said second radial bearing, and, at the end opposite the pointer, by means of said thrust bearing;

said second radial bearing is provided on a side of the rotary magnet facing away from the pointer;



said ratio meter further comprises a housing, and a structural part which is fixed to the housing; and wherein

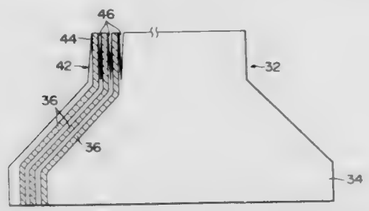
said second radial bearing and said thrust bearing are formed by a blind hole in said structural part for receiving the lower end of the pointer shaft, there being a metal ball in said blind hole, a lower end surface of the pointer shaft resting upon the metal ball.

5,061,894

PROBE DEVICE

Towl Ikeda, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Division of Ser. No. 379,544, Jul. 13, 1989, Pat. No. 4,998,062.
This application Dec. 21, 1990, Ser. No. 633,254
Claims priority, application Japan, Oct. 25, 1988, 63-138985[U]
Int. Cl.[5] G01R *1/02, 1/04*
U.S. Cl. 324—158 F 6 Claims



1. A probe device for measuring high frequency electric characteristics of an object to be tested, with a plurality of electrode pads attached on the object being brought into contact with corresponding probes of the probe device,

including a unit having a micro-strip line structure for providing said probes,

wherein said unit comprises a flexible insulating base plate, lead strips provided on one surface of said base plate, and ground strip means provided on the other surface of said base plate,

only said lead strips are provided on said one surface of said base plate, and separated and electrically insulated from one another,

said base plate has a substantially uniform thickness as a whole, and each of said lead strips has a width substantially uniform over the entire length thereof,

said lead strips and said ground strip means extend to a tip end of the base plate, and said ground strip means is formed on those portions of said other surface of said base plate which are opposed to the corresponding portions of said one surface of the base plate on which said lead strips are formed,

notches are formed in said tip end of said base plate at locations between said lead strips,

each of said units is supported, with said tip end of said base plate being inclined toward said electrode pads, and

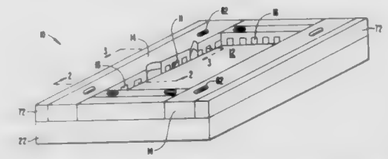
the combination of each of said lead strips, said insulating base plate and said ground strip means constitutes a micro-strip line corresponding to each of said electrode pads, said micro-strip line having a constant impedance characteristic over the entire length thereof, said micro-strip line serves as one of said probes at said tip end of said base plate, and a tip portion of said lead strip of said micro-strip line serves as a contact of one of said probes.

5,061,895

SYSTEM FOR DETECTING AND CORRECTING MISALIGNMENT OF SEMICONDUCTOR PACKAGE LEADS

Carl H. Fong, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 19, 1990, Ser. No. 467,714
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—158 R 10 Claims



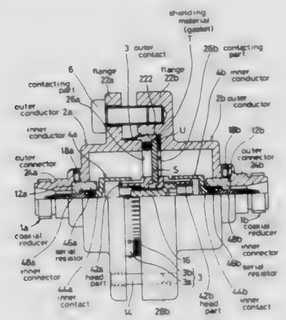
8. A method for detecting the misalignment of the ends of leads of a semiconductor package, said package provided with a plurality of leads on at least one side of the package, each lead having an end portion, wherein misalignment is defined as the condition in which the end portion of at least one of the leads of the package is at a distance greater than a predetermined value from a predetermined plane, said method employing an apparatus comprising a structure having a planar surface and an elevated portion on said surface, said elevated portion provided with a plurality of slots therein, the number of slots being equal to or greater than the number of leads on said one side of the package, wherein the heights of said slots above the surface are substantially equal to the predetermined value from the surface, said method comprising:

placing the package with at least some of the end portions of the leads in contact with said surface with the leads facing the slots;

sliding the package towards the slots; and

determining whether the end portions of the leads will slide into the slots.

positioned at respective outside portions thereof, said contacting parts of said outer conductors and said head parts of said inner conductors supporting the electromagnetic wave shielding material, said outer connectors of said outer conductors and said inner connectors of said inner conductors coupled to coaxial cable; and



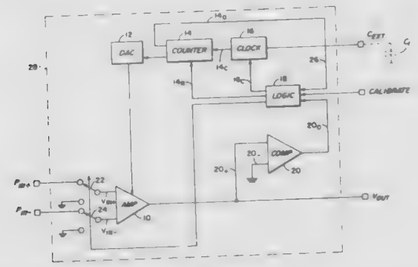
inner contacts, provided between said head parts and said inner connectors in at least one of said inner conductors, said inner contacts being slidably engaged against said head parts.

5,061,900

SELF-ZEROING AMPLIFIER

Charles L. Vinn, Milpitas, and Para K. Segaram, Campbell, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Jun. 19, 1989, Ser. No. 367,655
Int. Cl.[5] H03F *3/45, 1/02*
U.S. Cl. 330—9 21 Claims



1. An operational amplifier comprising:

a) an amplifier having: an input node; at least one amplifier stage responsive to a signal fed to the input node; and means, coupled to an output of the amplifier stage, for producing a voltage at the output of the amplifier, such voltage being related to the signal fed to the input node, such output voltage producing means having at last one circuit node; and

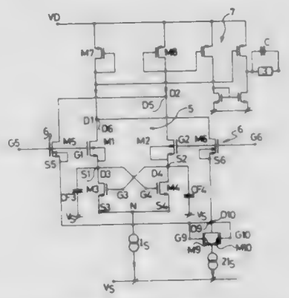
b) means, responsive to the voltage produced at the output of the amplifier, for producing a control signal, such control signal changing the voltage produced at the output of the amplifier until such output voltage has a predetermined value, said control signal being applied to the circuit node.

5,061,901

CIRCUIT ARRANGEMENT FOR INCREASING THE GAIN-BANDWIDTH PRODUCT OF A CMOS AMPLIFIER

Germano Nicollini, Piacenza, and Rinaldo Castello, Arcore, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Milan, Italy

Filed Apr. 27, 1990, Ser. No. 515,952
Claims priority, application Italy, Apr. 28, 1989, 20316 A/89
Int. Cl.[5] H03F *3/45, 3/16*
U.S. Cl. 330—253 7 Claims



1. A circuit arrangement for increasing the gain-bandwidth product of a CMOS amplifier having a differential cell input stage, characterized in that it comprises, within said input stage:

a pair of active components having a characteristic function which corresponds with that of a negative value resistor, for increasing the transconductance of said stage,

a pair of capacitors, each respectively associated with a corresponding one of the active components for introducing a pole/zero pair in the frequency response from the amplifier, and

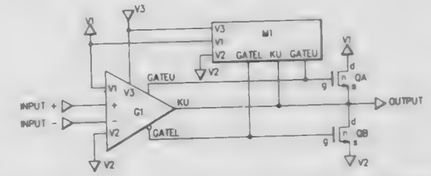
an additional input stage cross-connected to said cell to bring the frequency value of said zero a predetermined distance away from that of said pole and at a lower frequency than a clipping frequency of the amplifier.

5,061,902

LINEAR AMPLIFIER

Gary D. Carpenter, Lexington, Ky., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 3, 1990, Ser. No. 592,412
Int. Cl.[5] H03F *3/26, 3/16*
U.S. Cl. 330—264 2 Claims



1. A linear power amplifier having shoot through protection comprising:

a first field effect transistor and a second field effect transistor having conduction electrodes coupled in series with an output connected between the conduction electrodes of the first transistor and the second transistor which are coupled together, each transistor having a gate electrode;

means for substantially alternately providing a gate drive signal to the gates of the first and second transistors to turn on the transistors alternately;

means for producing a low impedance path from the gate of

the first transistor to one of its conduction electrodes if the gate voltage at the second transistor is greater than a reference value; and

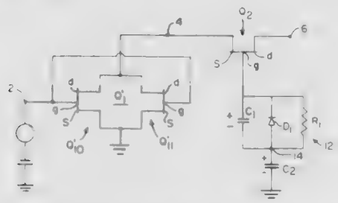
means for producing a low impedance path from the gate of the second transistor to one of its conduction electrodes if the gate voltage at the first transistor is greater than a reference value.

5,061,903

HIGH VOLTAGE MODIFIED CASCODE CIRCUIT

Carmine F. Vasile, Medford, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 27, 1990, Ser. No. 488,720
Int. Cl.[5] H03F *3/68, 3/16*
U.S. Cl. 330—311 **16 Claims**



1. A cascode circuit comprising:

an output FET;

an input FET connected to said output FET, said input FET having a gate width sufficiently greater than the gate width of said output FET to ensure said input FET does not saturate when said output FET is fully turned on; and

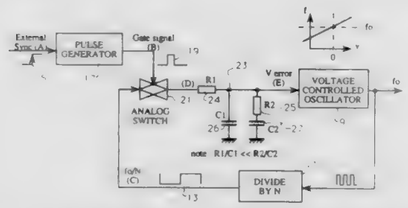
biasing means connected to the gate of said output FET to forward bias and thereby increase the breakdown voltage of said output FET.

5,061,904

PHASE LOCKED LOOP HAVING SAMPLING GATE PHASE DETECTOR

Thierry G. Mantopoulos, and Fabrice M. Quinard, both of San Jose, Calif., assignors to Radius Inc., San Jose, Calif.

Filed Jun. 29, 1990, Ser. No. 547,023
Int. Cl.[5] H03L *7/091*
U.S. Cl. 331—14 **2 Claims**



1. A circuit for altering the phase of an oscillator signal relative to an applied signal, the circuit comprising:

a divider for dividing the oscillator signal by a selected value to produce a comparison signal operating between first and second signal magnitudes;

means responsive to the applied signal for producing a gate pulse;

sampler means coupled to receive the gate pulse and the comparison signal for passing the comparison signal therethrough during the interval of the gate pulse;

filter means coupled to the sampler means for producing from the signal passed therethrough during the interval of a gate pulse an error signal of one polarity and magnitude representative of the early extent of occurrence of a transition in comparison signal between signal magnitudes relative to the interval of the gate pulse, and of opposite polarity and magnitude representative of the late extent of occurrence of a transition in comparison signal between signal magnitudes relative to the interval of the gate pulse; and

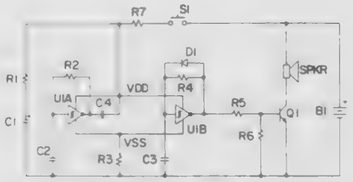
means coupling the error signal to the oscillator for altering the frequency thereof in the direction and to a degree indicative of the polarity and magnitude of the error signal for restoring the transitions in the comparison signal substantially to occurrence symetrically within the interval of the gate pulse.

5,061,905

ELECFTRONIC CIRCUIT FOR PRODUCING AN IRREGULAR PULSE TRAIN OF VARIABLE FREQUENCY AND DUTY CYCLE

Joseph Truchsess, 11 Windward La, City Island, N.Y. 10464

Filed Nov. 16, 1990, Ser. No. 614,730
Int. Cl.[5] H03K *3/36;* **A63H** *33/26*
U.S. Cl. 331—47 **19 Claims**



1. A circuit for generating an irregular, variable frequency pulse train comprising:

at least first and second Schmitt trigger inverters configured for oscillation at different frequencies;

a power supply having system and ground voltage outputs connected across each of said Schmitt trigger inverters for powering same; and

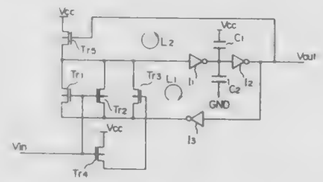
a resistance element in series with at least one of said system voltage output or said ground voltage output for varying same with oscillation of said Schmitt trigger inverters, whereby the outputs of said Schmitt trigger inverters cross-modulate each other, with said irregular, variable frequency pulse train comprising the output of one of said Schmitt trigger inverters.

5,061,906

VOLTAGE CONTROLLED OSCILLATOR USING CONTROL TRANSISTORS IN A LOOP FORMED OF INVERTERS

Shinichi Inoue, Sendai, and Tatsuro Nakahara, Kagoshima, both of Japan, assignors to Fujitsu Limited, Kawasaki and Kyushu Fujitsu Electronics Limited, Satsuma, both of, Japan

Filed Jul. 25, 1990, Ser. No. 557,052
Claims priority, application Japan, Jul. 28, 1989, 1-194373
Int. Cl.[5] H03K *3/03, 3/354*
U.S. Cl. 331—57 **21 Claims**



1. A voltage controlled oscillator for controlling an oscillation frequency of an output signal in accordance with a voltage level of an input signal, wherein said voltage controlled oscillator comprises:

a first inverter logic element, a second inverter logic element, and a third inverter logic element connected in series, for constituting a loop circuit thereamong; and

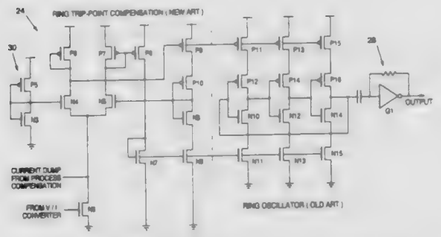
a first transistor, a second transistor, and a third transistor, parallely connected between an output of said third inverter logic element and an input of said first inverter logic element, said input signal being input to said transistors, said output signal being taken out from an output of said second inverter logic element, and said oscillation frequency being regulated by said first transistor, said second transistor and said third transistor.

5,061,907

HIGH FREQUENCY CMOS VCO WITH GAIN CONSTANT AND DUTY CYCLE COMPENSATION

Richard R. Rasmussen, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 17, 1991, Ser. No. 642,677
Int. Cl.[5] H03B *1/00*
U.S. Cl. 331—57 **4 Claims**



1. A voltage controlled oscillator circuit comprising:

(a) multi-stage ring oscillator means that includes a plurality of series-connected inverter stages comprising N-channel and P-channel transistors, the ring oscillator means responsive to a control current signal for controlling the frequency of oscillation of the ring oscillator means; and

(b) voltage-to-current converter means for converting a tuning voltage input signal to a corresponding output signal that is independent of the channel strength of the N-channel and P-channel transistors;

(c) process compensation means responsive to the tuning voltage input signal for providing a current dump output signal corresponding to the channel strength of the P-channel and N-channel transistors; and

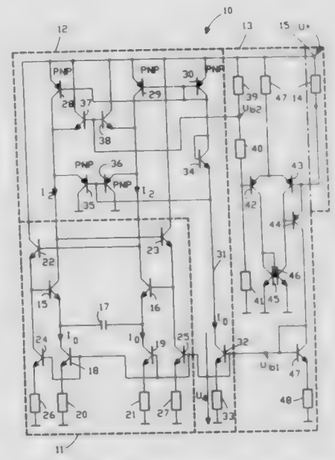
(d) trip-point compensation means responsive to the output signal and the current dump output signal to provide a net ring current signal as the control current signal to the ring oscillator means, the net ring current signal representing the difference between the output signal and the current dump output signal and responding to the balance between the output buffer's input threshold and a ring inverter dummy stage.

5,061,908

EMITTER-COUPLED MULTIVIBRATOR CIRCUIT INDEPENDENT OF TEMPERATURE AND SUPPLY VOLTAGE

Michael Pietrzyk, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 17, 1990, Ser. No. 554,632
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1989, 3923823
Int. Cl.[5] H03K *3/283*
U.S. Cl. 331—113 R **19 Claims**



12. An emitter-coupled multivibrator circuit comprising:

an oscillator circuit including first and second switching transistors,

first, second, third and fourth interception transistors each with a control electrode,

first and second active loads,

first means coupling said first and second switching transistors in respective series circuits with said first and second active loads to terminals of a source of supply voltage,

second means coupling said first and second switching transistors in respective second series circuits with said first and second interception transistors to said supply voltage terminals,

third means coupling said third and fourth interception transistors in first and second branch circuits that are parallel to said first and second switching transistors, respectively,

a further branch circuit coupled to said first and second active loads to form therewith a current mirror circuit, said further branch circuit including first and second transistors and a current source connected in series to said supply voltage terminals,

first means connecting the control electrodes of the first and second interception transistors to a source of reference voltage,

second means connecting the control electrodes of the third and fourth interception transistors to the second transistor of the further branch circuit, and wherein

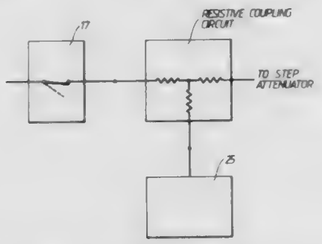
the interception transistors are dimensioned relative to the first and second transistors of the further branch circuit in a predetermined ratio to make the oscillation frequency of the multivibrator circuit substantially independent of temperature and said first connecting means supplies a reference voltage such that said oscillation frequency is substantially independent of the supply voltage.

5,061,909

ATTENUATOR SWITCHABLY COUPLED TO TRANSMISSION PATH AND MEANS FOR SWITCHABLY BREAKING THE PATH

George Hjipieris; Paul Bunyan, and Martin Cryan, all of Hertfordshire, United Kingdom, assignors to Marconi Instruments Limited, Hertfordshire, United Kingdom

Filed Apr. 3, 1989, Ser. No. 331,783
Claims priority, application United Kingdom, Apr. 12, 1988, 8808620
Int. Cl.[5] H01P *1/22*
U.S. Cl. 333—17.2 11 Claims



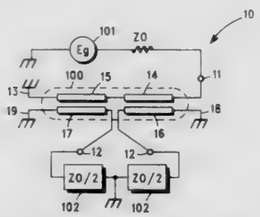
1. An attenuating apparatus comprising:
a transmission path including a resistive element shaped to have a selected substantially constant coupling value over a predetermined frequency range;
an attenuator;
first switch means in series with said transmission path for selectively connecting said attenuator in series into said transmission path; and
a sampling circuit including a sampling line which forms part of the transmission path for transmitting a portion of a signal applied to said transmission path to a power detector.

5,061,910

BALUN TRANSFORMERS

Jean J. Bouny, Bordeaux, France, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 27, 1990, Ser. No. 572,737
Claims priority, application France, Sep. 18, 1989, 89 12196
Int. Cl.[5] H01P *5/10*
U.S. Cl. 333—26 8 Claims



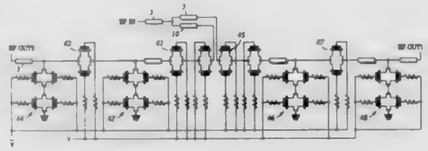
1. A balun providing a single-ended signal port and a balanced signal port, the balun including:
a plurality of serially connected first conductor elements extending between said single-ended signal port and ground,
and a plurality of second conductor elements transformingly coupled to the first conductor elements and electrically isolated therefrom,
said second conductor elements extending in electrical symmetry from ground to said balanced port, and said first and second conductor elements being separated by an electrical isolation layer.

5,061,911

SINGLE FAULT/TOLERANT MMIC SWITCHES

John H. Weidman, and Glenn Yoshiyama, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1990, Ser. No. 503,597
Int. Cl.[5] H01P *1/15*
U.S. Cl. 333—104 13 Claims



1. A single fault/tolerant monolithic microwave integrated circuit (MMIC) for switching an RF input signal, said fault-/tolerant MMIC comprising:
a plurality of field effect transistors (FETs) including at least first, second, third and fourth FETs, each said FETs having a gate input, a source input and a drain output;
said gate inputs of said first and second FETs being coupled together and said gate inputs operating in response to a source of a first logic level to control switching of said FET;
said source inputs of said first and second FETs being connected together and adapted to receive said RF input signal; ;
said drain outputs of said first and second FETs being connected together, said drain outputs of said first and second FETs each operating in response to a first logic level applied to said gate input to transmit said RF input signal whereby for a single fault of said first FET said signal FET remains operational to switch said RF input signal;
said gate inputs of said third and fourth FETs being connected to said gate inputs of said first and second FETs;
each of said first, second, third and fourth FETs include a FET having an on-resistance of approximately 50 ohms.

5,061,912

WAVEGUIDE COUPLER HAVING OPPOSED SMOOTH AND OPPOSED CORRUGATED WALLS FOR COUPLING $HE_{1,1}$ MODE

Charles P. Moeller, Del Mar, Calif., assignor to General Atomics, San Diego, Calif.

Filed Jul. 25, 1990, Ser. No. 557,480
Int. Cl.[5] H01P *5/18*
U.S. Cl. 333—113 14 Claims



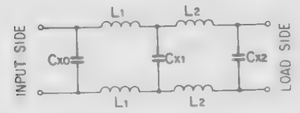
1. Coupling apparatus for coupling microwave power between the $HE_{1,1}$ mode in a first wave guide and the $HE_{1,1}$ mode in a second waveguide, said apparatus comprising:
first waveguide means and second waveguide means, each of said waveguide means comprising a hollow volume of substantially rectangular cross section formed by a pair of opposed corrugated surfaces separated by a substantially uniform distance b and a pair of opposed smooth surfaces separated by a substantially uniform distance a, said distance a being less than said distance b, one of said smooth surfaces of said first waveguide means and one of said smooth surfaces of said second waveguide means being opposed surfaces of a common wall between said first waveguide means and said second waveguide means, said first waveguide means and said second waveguide means being substantially aligned on opposite sides of said common wall;
said common wall having a plurality of apertures therethrough between said first waveguide means and said second waveguide means for coupling microwave power between said first waveguide means and said second waveguide means, each of said apertures being small compared to the distances a and b; and
a plurality of dielectric inserts disposed within respective ones of said apertures for hermetically sealing said first waveguide means from said second waveguide means.

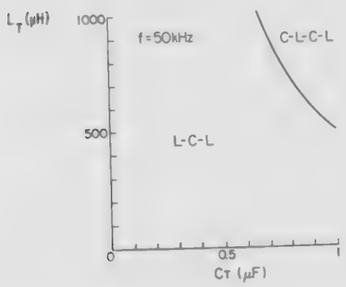
5,061,913

LIGHTWEIGHT LINE FILTER AND A METHOD FOR CONSTRUCTING A LIGHTWEIGHT LINE FILTER

Sadao Okochi, Fussa; Norio Kasama, Hinode, and Hideji Matsuya, Ohme, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 296,722, Jan. 12, 1989, abandoned. This application Jun. 27, 1990, Ser. No. 545,138
Claims priority, application Japan, Jan. 14, 1988, 63-6688; Aug. 31, 1988, 63-217808
Int. Cl.[5] H03H *7/09*
U.S. Cl. 333—181 9 Claims





4. A line filter comprising:
a first coil with inductance L_1;
a second coil with inductance L_2 connected in series with said first coil;
a third coil with inductance L_1;
a fourth coil with inductance L_2 connected in series with said third coil;
a first X capacitor disposed between a first node connecting said first coil with said second coil and a second node connecting said third coil with said fourth coil; and
a second X capacitor disposed between an input side of said first coil and an input side of said third coil, wherein said second X capacitor has a value approximately equal to the value of said first X capacitor if a circuit constant LT0 is less than a total inductance LT, where:

$$LT0 = a \cdot (b \cdot CT)^{-dF+e}$$

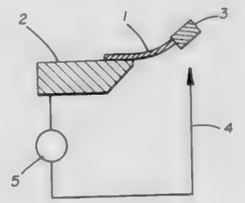
and where
$LT = L_1 + L_2$ measured in millihenries;
a represents a proportional factor of the total inductance equal to 2.39×10^6;
b represents a proportional factor of the total electrostatic capacitance equal to 141;
CT represents a sum of the capacitance of said first X capacitor and said second X capacitor measured in microfarads;
d represents a frequency proportional factor equal to 0.0132;
e represents a frequency correction factor equal to −1.055; and
F represents a minimum frequency for supression by the line filter measured in kilohertz.

5,061,914

SHAPE-MEMORY ALLOY MICRO-ACTUATOR

John D. Busch, and Alfred D. Johnson, both of Berkeley, Calif., assignors to Tini Alloy Company, Berkeley, Calif.

Filed Jun. 27, 1989, Ser. No. 373,030
Int. Cl.[5] H01H *61/06, 71/18*
U.S. Cl. 337—140 9 Claims



1. A mechanical device comprising:
a support element;
a movable element displaceable with respect to said support element between a first position and a second position;
and a temperature-sensitive actuating element linking said support element to said movable element and displaceable between a first position wherein said movable element is in said first position thereof and a second position wherein said movable element is in said second position thereof;
said actuating element comprising a film of a shape-memory alloy having a phase transformation temperature range below which said alloy exhibits a martensitic crystal structure and is in a ductile condition and above which said alloy exhibits a parent austenitic crystal structure and approximates its undistorted shape;
and means for positioning said actuating element in said first position when said alloy is in a ductile condition;
said actuating element being responsive to a shift in its temperature from below to above said phase transformation temperature range to alter its condition to a parent austenitic condition and thereby move from said first position to said second position.

5,061,915

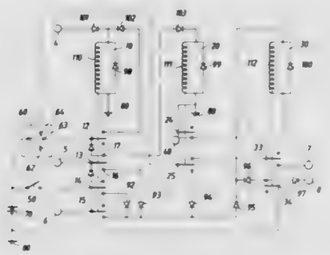
ANTI-THEFT DEVICE FOR MOTORIZED VEHICLES

Del A. Murphy, 6210 Silver Leaf, League City, Tex. 77573

Continuation-in-part of Ser. No. 526,971, May 22, 1990, abandoned. This application Jun. 12, 1990, Ser. No. 536,709
Int. Cl.[5] B60R *25/10*; B60L *1/00*
U.S. Cl. 340—426 9 Claims

1. An anti-theft device for a motorized vehicle with an electrical system having a common ground and a starter; comprising: a first relay that energizes in response to an electrical signal from the electrical system; a first switch having a first and a second pole that switches power from the electrical system between the first and the second pole of said first switch; a second relay that energizes only when said first switch switches power from the first pole of said first switch to

the second pole of said first switch after said first relay is energized; a second switch having a first and a second pole that switches power from the electrical system to the first pole of said second switch until said second relay is energized, whereupon said second switch switches power to the second pole of said second switch; a third relay that energizes when power from the electrical system is switched by said second switch to



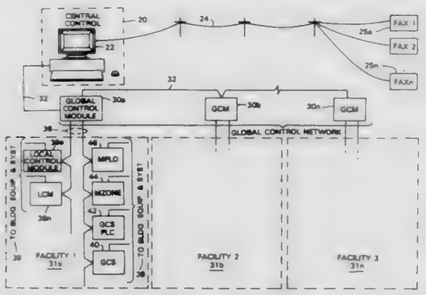
the second pole of said second switch while said third relay is connected to the common ground; a third switch connecting said third relay to the common ground that disconnects said third relay from the common ground when said second relay is energized; and a fourth switch having a first pole electrically connected to the starter and a second pole, said fourth switch switching power from the second pole of said second switch to the starter unless said third relay is energized.

5,061,916

EVENT DRIVEN REMOTE GRAPHICAL REPORTING OF BUILDING AUTOMATION SYSTEM PARAMETERS

Jonathan C. French, Rockford, Ill.; David R. Rounds, Beloit, Wis.; James R. Herdeman, Rockford, and Brent S. Bernardi, Loves Park, both of Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed May 29, 1990, Ser. No. 529,945
Int. Cl.[5] G08B *19/00, 1/00*
U.S. Cl. 340—522 **15 Claims**



8. A system for remote graphical reporting of alarm conditions in a building automation system, the system comprising the combination of:

means for monitoring real time conditions of a plurality of operating building parameters and triggering an alarm when one or more predetermined parameters deviate beyond predetermined limits,

means for storing a set of fixed system parameters relating to the building automated by the building automation system, the fixed parameters including graphical representations illustrating at least some of the fixed system parameters,

means for assembling data for an alarm transmission including a set of fixed parameters and measured values of real time operating parameters relevant to a particular alarm, said last mentioned means including means for assembling a graphical display for transmission including fixed parameters and values for real time operating parameters intended to display the alarm condition in context, and

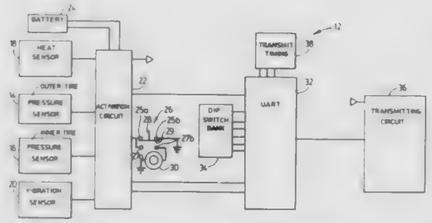
means for transmitting a facsimile alarm message including the assembled graphical display.

5,061,917

ELECTRONIC WARNING APPARATUS

Nigel H. Higgs; John R. Storey, both of R.R. #2, Bath, Ontario, Canada K0H 1G0 , and Sean D. McLaughlin, 55 River Road, Napanee, Ontario, Canada

Continuation-in-part of Ser. No. 347,907, May 5, 1989, abandoned. This application Apr. 10, 1990, Ser. No. 506,999
Claims priority, application Canada, May 6, 1988, 566249
Int. Cl.[5] G08B *1/08;* **H04Q** *7/00*
U.S. Cl. 340—539 **29 Claims**



1. A warning system for sensing conditions at a remote source comprising a transmitter located in the region of said remote source for transmitting a coded signal in response to an abnormal condition sensed at said remote source, said coded signal comprising information of the abnormal condition sensed and the location of said transmitter, and a monitor for receiving said transmitted coded signal and indicating said abnormal condition sensed and the location of said transmitter; said transmitter comprising a power supply for said transmitter, sensing means responsive to an abnormal condition at said remote source, coding means comprising a silicon controlled rectifier gate array connected to said power supply and said sensing means for activating said transmitter when said sensing means detects an abnormal condition, and comprising means for generating a coded signal in response to said activation of said transmitter when said sensing means detects an abnormal condition, and means connected to said coding means for transmitting said generated coded signal; said monitor comprising a power supply for said monitor, means for receiving said transmitted coded signal, means connected to said detecting means for decoding said signal received, and means connected to said decoding means for indicating said abnormal condition sensed by said sensing means of said transmitter and comprising matrix means for indicating said location of said transmitter.

5,061,918

SOUND EMITTING DEVICE FOR BEHAVIOR MODIFICATION

Jon F. Hunter, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 416,239, Oct. 2, 1989, abandoned. This application Sep. 28, 1990, Ser. No. 590,383
Int. Cl.[5] G08B *21/00;* **A01K** *15/00*
U.S. Cl. 340—573 **24 Claims**

1. A method for modifying the undesirable behavior of animals, comprising the steps of:

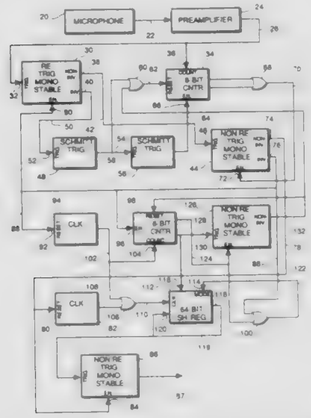
periodically right-shifting the contents of a shift register comprising a plurality of binary storage locations, such that for each periodic right-shift, the binary value stored

in each location of said shift register is shifted one location to the right, the binary value of the left-most location being set to zero;

detecting episodes of undesirable behavior comprising repeated occurrences of said undesirable behavior in succession;

generating an activation signal each time an episode of undesirable behavior is detected;

storing a record of each activation signal in the left-most and second left-most of said plurality of binary storage locations in said periodically shifting shift register, said record comprising a one and a zero, respectively, in said left-most and second left-most locations, such that the location in said shift register of a given stored record of a given activation signal in said shift register is at any time determined by the time of detection of an episode of undesir-



able behavior corresponding to said given activation signal and by the rate of periodic shifting of said shift register;

circulating the contents of the shift register once, at a fast rate, a predetermined time after generation of each activation signal; and

producing a composite audio pulse during each said fast circulation of the shift register;

wherein the composite pulse comprises a sequence of decrescent audio impulses of a predetermined frequency, the temporal pattern and number of impulses in the sequence being determined by the the respective locations of said stored records of activation signals in the shift register;

and wherein said composite pulse having a frequency and intensity known to be distracting to animals, such that animals are discouraged from exhibiting said undesirable behavior when said composite pulse is produced.

5,061,919

COMPUTER GRAPHICS DYNAMIC CONTROL SYSTEM

Gary S. Watkins, Salt Lake City, Utah, assignor to Evans & Sutherland Computer Corp., Salt Lake City, Utah

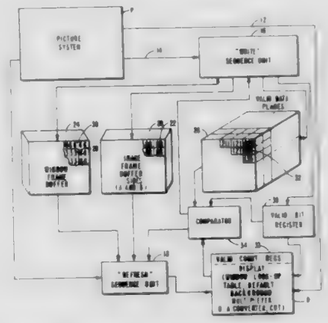
Continuation-in-part of Ser. No. 256,335, Oct. 11, 1988, Pat. No. 4,954,819, which is a continuation of Ser. No. 68,287, Jun. 29, 1987, abandoned, which is a continuation of Ser. No. 734,923, May 16, 1985, abandoned. This application May 1, 1989, Ser. No. 345,862
The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.
Int. Cl.[5] G09G *1/06*
U.S. Cl. 340—721 **17 Claims**

1. A dynamic control system for use with a computer graphics apparatus which receives and provides image data and control signals for a scan-pattern display, comprising:

an image frame buffer means for storing pixel area image data for a display;

count means for storing a count for identifying select one of several pixel valid count states;

a storage array for storing pixel valid count representations



in relation to said pixel area image data in said image frame buffer means;

comparison means for comparing signals from said count means with signals from said storage array to provide coincidence signals indicating pixel area selections; and

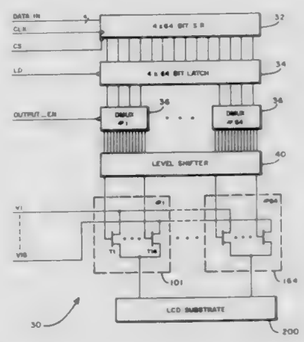
means for controlling said image data with respect to said image frame buffer in accordance with said coincidence signals.

5,061,920

SATURATING COLUMN DRIVER FOR GREY SCALE LCD

Larry A. Nelson, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 287,002, Dec. 20, 1988, abandoned. This application Feb. 14, 1991, Ser. No. 656,128
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 **20 Claims**



1. A saturating column driver for an LCD substrate comprising:

register means for entering digital data in a serial fashion to produce a single-column address including a video binary word;

means for latching the single-column address connected to the register means;

unclocked means for translating the video binary word into

a plurality of grey scale coded bits connected to the latching means;

a plurality of switching means for switching each of said plurality of switching means having an input terminal, an output terminal and a control terminal wherein the control terminal is connected to one of the grey scale coded bits and wherein each output terminal is connected to one column of the LCD substrate; and

a plurality of voltage generator means for generating a plurality of electronic signals connected to each input terminal so that when the switching means is activated the voltage generator means supplies one electronic signal through the switching means to drive the LCD substrate.

5,061,921

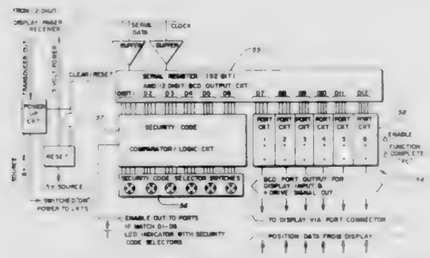
REMOTE-CONTROLLED MESSAGE SIGN

Darryl S. Lesko, Glendale Heights, and Dennis J. Clem, North Aurora, both of Ill., assignors to White Way Sign Company, Chicago, Ill.

Continuation of Ser. No. 94,009, Sep. 19, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 328,736

Int. Cl.[5] G09G *3/20*

U.S. Cl. 340—815.24 **7 Claims**



1. A method of operating a remote-controlled billboard sign comprising:

mounting a commercial telephone pager receiver on a sign having a plurality of information-providing indicia which are movable between a plurality of positions, the commercial pager receiver being interconnected to the sign for receiving an input signal from a telephone via a commercial telephone paging service and to provide an output signal in response to the telephone input signal,

providing an interconnect circuit means to said pager receiver with a control circuit means on the sign for receiving said output signal from the commercial pager and for providing a drive control signal in response thereto, said interconnect circuit means includes a serial shift register for conveying serial data signals from the pager receiver and providing a plurality of binary code decimal output signals in response to the telephone input signal,

providing a first comparator means with the interconnect circuit means for enabling the control circuit means when a portion of the output signals from the interconnect circuit means corresponds to a predetermined security code signal, said control circuit means includes a position data reader means for providing a signal corresponding to the position of the indicia and a second comparator circuit means for comparing a portion of the output signals of the interconnect circuit means with the signals from the position data reader means,

providing drive means on the sign for moving the information-providing indicia to one of said positions in response to said drive control signal,

making a telephone line connection between a telephone and a commercial telephone paging service by inputting the telephone number of said commercial pager receiver, and consecutively inputting a twelve digit control number with said telephone so that the commercial telephone paging service will transmit said control number to said telephone input signal.

5,061,922

METHOD OF MONITORING CHANGES OF STATE OF A POWER TRANSMISSION SYSTEM BY INTERRUPTION SIGNAL TRANSMISSION

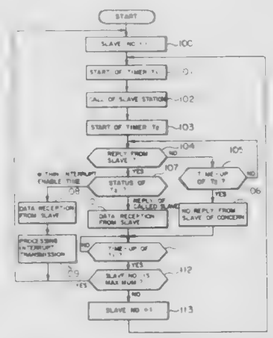
Kazuo Nishijima, Katsuta; Terunobu Miyazaki, Ibaraki; Eisaburo Sakou, Hitachi; Tomoharu Nakamura, Hitachiota, and Mitsuru Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 19, 1989, Ser. No. 340,470

Claims priority, application Japan, Apr. 22, 1988, 63-99367

Int. Cl.[5] H04Q *9/00*

U.S. Cl. 340—825.080 **10 Claims**



1. A signal transmission method for a system in which a master station and a plurality of slave stations are installed on and along a signal transmission path so as to be capable of performing mutual transmission and reception of information comprising the steps of:

periodically transmitting a polling message, including a slave station address and a command, from said master station to respective slave stations in a predetermined sequence;

responding in a slave station to a receipt of a polling message directed to that slave station from said master station by sending a reply message, including its own slave station address and station information, to said master station a predetermined time after the polling message transmission from said master station is completed, wherein an interrupt enabling time zone is provided between a time point at which a polling message transmission from said master station is completed and a time point at which a reply message transmission from the slave station called by said master station is started; and

sending an interrupt reply message, including a slave station address and station information, during said interrupt enabling time zone from another slave station to which the transmitted polling message is not directed, so that upon issuance of said interrupt reply message by said other slave station within said interrupt enable time zone, the signal transmission from said other slave station which issues the interrupt reply message is permitted prior to that from said one slave station which has received a polling message directed to it.

5,061,923

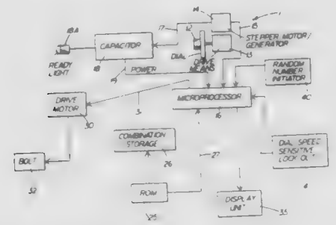
COMPUTERIZED COMBINATION LOCK

James C. Miller, Nicholasville, Ky., and Michael P. Harvey, West Newport Beach, Calif., assignors to C & M Technology, Inc., Nicholasville, Ky.

Filed Sep. 29, 1988, Ser. No. 250,918

Int. Cl.[5] H04Q *9/00*

U.S. Cl. 340—825.31 **27 Claims**



16. A computerized combination lock assembly for a secured enclosure, comprising:

a memory for storing data signals representing a predetermined code sequence;

dial means manually rotatable throughout variable limits of rotational travel executed by an operator to define a code entry signal at each of said limits;

a computer for comparing code entry signals with said data signals stored in said memory;

operating means responsive to said computer for enabling opening of said secured enclosure when said code entry signals correspond to said predetermined code sequence; and

power conversion means fixedly coupled to said dial means for converting rotation of said dial to an operating power and for supplying said operating power to said computer.

5,061,924

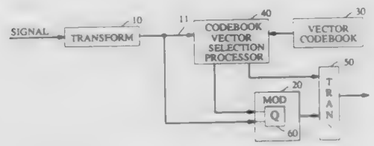
EFFICIENT VECTOR CODEBOOK

John N. Mailhot, Somerville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 25, 1991, Ser. No. 645,937

Int. Cl.[5] H03M *7/36, 7/42*

U.S. Cl. 341—76 **11 Claims**



1. A codebook quantizer including a memory for storing a first plurality of quantization information packets, and means connected to said memory for quantizing an applied input signal that comprises a second plurality of elements m, where m is an integer, to be quantized, wherein said means for quantizing evaluates the benefit of quantizing said applied input signal with each of said quantization information packets and, based on said evaluation, selects one of said quantization information packets and quantizes each element of said applied input signal in accordance with a quantization regimen specified for said each element by said selected one of said quantization information packets, and wherein said first plurality is less than one percent of the number of different quantization regimens definable by one of said quantization information packets, characterized in that:

said means for quantizing retrieves quantization information packets from said memory in such an order that each retrieved quantization information packet specifies a quantization regimen for said elements of said input signal that differs from the quantization regimen specified for said elements of said input signal by the immediately preceding retrieved quantization information packet in the quantization regimen specification of at most k elements of said input signal, where k is a selected constant less than m.

5,061,925

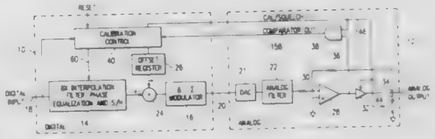
PHASE EQUALIZATION SYSTEM FOR A DIGITAL-TO-ANALOG CONVERTER UTILIZING SEPARATE DIGITAL AND ANALOG SECTIONS

Navdeep S. Sooch; Donald A. Kerth, both of Austin; Eric J. Swanson, Buda, all of Tex., and Tetsurou Sugimoto, Zama, Japan, assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Aug. 22, 1990, Ser. No. 571,376

Int. Cl.[5] H03M *1/10*

U.S. Cl. 341—120 **12 Claims**



1. A digital-to-analog converter with linear phase, comprising:

a digital input terminal;

an analog output terminal;

a digital processing section for conditioning a digital input signal received on said digital input terminal to provide a conditioned digital output signal, said digital processing section having a predetermined phase response;

an analog section having a predetermined phase response over the passband of said analog section for receiving the output of said digital processing section, converting the conditioned digital output signal to an analog signal and filtering out images and quantization noise generated by said digital processing section that are outside the passband of said analog section; and

a phase equalizer operating in the digital domain and associated with said digital processing section for adjusting the phase response of said digital processing section to compensate for variations from a linear phase response of the phase response of said analog section to provide a substantially linear phase response for the combination of said digital processing section and said analog section.

5,061,926

AD CONVERTER USING SUCCESSIVE COMPARISON

Yutaka Washiyama, Hamamatsu, Japan, assignor to Kawai Musical Instruments Man. Co. Ltd., Japan

Filed Oct. 26, 1989, Ser. No. 427,619

Claims priority, application Japan, Nov. 7, 1988, 63-281033

Int. Cl.[5] H03M *1/00*

U.S. Cl. 341—122 **2 Claims**

1. A successive comparison type AD converter comprising:

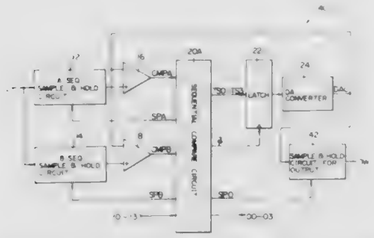
a plurality of sample and holding circuits for sampling and holding an analog input signal at different respective timings;

a plurality of comparators each being supplied as a first input with an output of a respective one of said sample and holding circuits;

a successive comparing circuit comprising a plurality of successive comparators each being supplied with an output of a respective one of said plurality of comparators;

a latch circuit for selectively latching an output of said successive comparing circuit in accordance with said different respective timings; and

a DA converter supplied with an output of said latch circuit to produce a DA conversion output, said plurality of



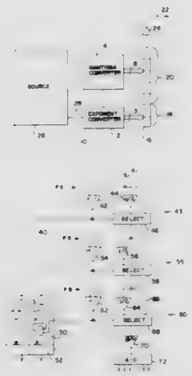
comparators each being further supplied as a second input with said DA conversion output of said DA converter.

5,061,927

FLOATING POINT ANALOG TO DIGITAL CONVERTER

Thomas E. Linnenbrink, Monument, and Stephen D. Gaalema, Black Forest, both of Colo., assignors to Q-Dot, Inc., Colorado Springs, Colo.

Filed Jul. 31, 1990, Ser. No. 560,949
Int. Cl.[5] H03M *1/18, 1/58*
U.S. Cl. 341—138 **14 Claims**



1. A floating point analog to digital converter comprising:
a exponent converter for dividing an input signal by a division factor selected responsive to the magnitude of the input signal to generate a divided signal and for generating a digital exponent representation of the division factor;
a mantissa analog to digital converter coupled to the exponent converter which converts the divided signal to an output digital signal representative of the divided signal;
output means for outputting both the output digital signal and the digital exponent.

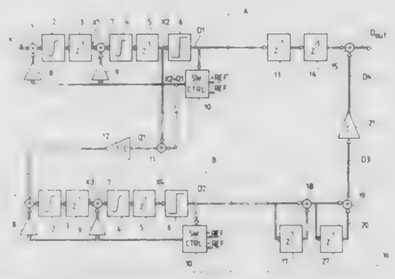
5,061,928

SYSTEM AND METHOD OF SCALING ERROR SIGNALS OF CASELOAD SECOND ORDER MODULATORS

Teppo J. Karema; Tapani J. Ritoniemi, and Aaine H. Tenhunen, all of Tampere, Finland, assignors to Oy Nokia AB, Helsinki, Finland

Filed Nov. 2, 1989, Ser. No. 430,265
Claims priority, application Finland, Nov. 9, 1988, 885156
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 **12 Claims**

5. A sigma-delta modulator system comprising
a first second order sigma-delta modulator for quantizing a main signal:
means for producing an error signal representing a quantization error of the first sigma-delta modulator;
first means for scaling the error signal by a first scaling factor smaller than one;
a second second-order sigma-delta modulator for quantizing said error signal scaled by the first means;



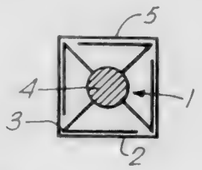
means for differentiating the quantized error signal;
second means for scaling the quantized error signal by a second scaling factor substantially equal to the inverse of the first scaling factor; and
means for subtracting the differentiated quantized error signal from the quantized main signal.

5,061,929

DEPLOYMENT OF RADAR REFLECTORS

Stephen W. Bell, Woodbridge, United Kingdom, assignor to Firdell Multiflectors Limited, Essex, United Kingdom

Filed Oct. 3, 1990, Ser. No. 592,507
Claims priority, application United Kingdom, May 23, 1990, 9011471
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—10 **15 Claims**



1. A radar reflector deployment system comprising:
an outer shell;
a radar reflector comprised of a plurality of substantially rigid members in a first substantially planar configuration located within said outer shell;
means for releasing said radar reflector from said outer shell at a point of deployment; and
means for configuring said radar reflector in a second, non-planar configuration once released.

5,061,930

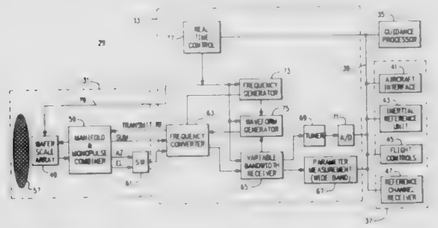
MULTI-MODE MISSILE SEEKER SYSTEM

Harvey C. Nathanson, Pittsburgh, Pa., and Thomas E. Underwood, Edgewater, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 12, 1990, Ser. No. 536,924
Int. Cl.[5] F41G *7/22*
U.S. Cl. 342—13 **15 Claims**

1. A multi-mode seeker system for a missile comprising:
a wide band phased array transmitter/receiver unit having an electronically agile aperture through which RF energy

over a wide band of frequencies and in directions over a wide angle in both azimuth and elevation is transmitted and received;
a multi-mode intermediate frequency unit selectively generating radar and electronic countermeasure RF energy waveforms for transmission by said wide band phased array transmitter/receiver unit, and selectively detecting and measuring parameters of reflected radar and external



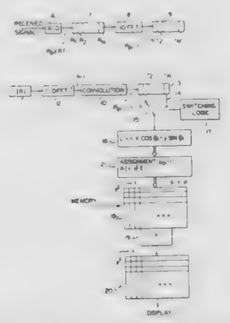
emissions of RF energy received by said wide band phased array transmitter/receiver unit; and
a guidance processor responsive to the measured parameters controlling selection of said radar and electronic countermeasure RF energy waveforms generated by said intermediate frequency unit and for controlling the direction in which the wide band phased array transmitter/receiver unit transmits and receives RF energy.

5,061,931

RECURSIVE SYSTEM FOR IMAGE FORMING BY MEANS OF A SPOTLIGHT SYNTHETIC APERTURE RADAR

Alfonso Farina, Rome, and Carlo F. Morabito, Cannitello, both of Italy, assignors to Selenia Industrie Elettroniche Associate S.p.A., Rome, Italy

Filed Jul. 23, 1990, Ser. No. 557,309
Int. Cl.[5] G01S *13/00*
U.S. Cl. 342—25 **2 Claims**



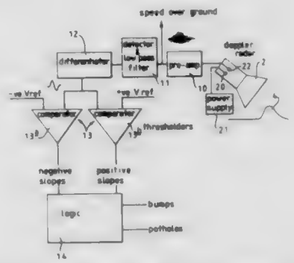
1. A recursive signal processing device for forming an image of a teledetected scene from a radar signal through use of synthetic aperture radar signal in spotlight mode, comprising:
means for receiving said radar signal;
monodimensional transformation element means for acting upon said radar signal in accordance with a monodimensional FFT algorithm for producing a first processed signal;
inverse monodimensional transformation element means for acting upon said radar signal in accordance with an inverse monodimensional FFT algorithm for producing a second processed signal;
convolution means for convoluting said first and said second processed signals together to produce a third processed signal;
retroprojection means for performing a retroprojection integration of said third processed signal to produce a fourth processed signal; and
envelope detection means for extracting a module of an estimated reflectivity function from said fourth processed signal for providing an estimate of the electromagnetic characteristics of said teledetected scene.

5,061,932

ROAD SURFACE SENSING SYSTEM FOR A VEHICLE

Raglan H. A. H. Tribe, Solihull, and Neil G. Thomson, Shirley, both of Great Britain, assignors to Lucas Industries public limited company, Birmingham, England

Filed Aug. 6, 1990, Ser. No. 562,923
Claims priority, application United Kingdom, Aug. 10, 1989, 8918306
Int. Cl.[5] G01S *13/60;* **G01B** *5/28*
U.S. Cl. 342—70 **5 Claims**



1. A road surface sensing system for a vehicle, said system comprising:
a transmitter for projecting electromagnetic radiation having a carrier at a road surface ahead of a vehicle; and
a receiver for receiving the electromagnetic radiation reflected by the road surface whereby the carrier of the reflected radiation is amplitude modulated according to irregularities of the road surface, said receiver comprising:
detection means for detecting an amplitude modulation signal of the carrier of the reflected radiation;
differentiating means for differentiating the amplitude modulation signal from said detection means and for producing a control signal representative of a road surface condition; and
vehicle system control means, responsive to the control signal from said differentiating means, for modifying an operating of the vehicle.

5,061,933

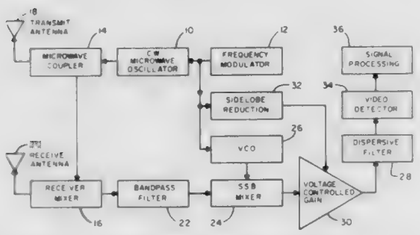
SHORT-RANGE RADAR SYSTEM

Bennie E. Macomber, and Daniel A. Goss, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1976, Ser. No. 677,193
Int. Cl.[5] G01S *13/32*
U.S. Cl. 342—128 **5 Claims**

1. A short-range radar system comprising;
means for producing and transmitting a microwave signal;
means for frequency modulating said microwave signal with a ramp signal;
means for receiving the portion of said microwave signal reflected from a target;
means for combining said received microwave signal with a portion of said transmitted microwave signal to produce a difference frequency which is a function of the range to said target;
means for introducing an intermediate frequency signal so

that said difference frequency is a ramp function, the frequency range of said ramp function being a function of the range to said target; and



means for converting said difference frequency to a pulse, the location of said pulse in time being determinative of the range to said target.

5,061,934

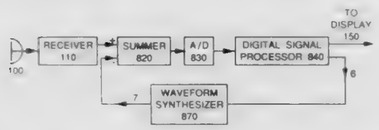
HYBRID CLUTTER CANCELLATION METHOD AND SYSTEM FOR IMPROVED RADAR PERFORMANCE

Russell D. Brown, Holland Patent; Donald D. Weiner, Fayetteville, and Michael C. Wicks, Utica, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 9, 1990, Ser. No. 611,217

Int. Cl.[5] G01S *13/534, 7/295*

U.S. Cl. 342—162 **4 Claims**



1. A hybrid clutter cancellation system for use with a radar system which has a radar antenna and a radar receiver, said radar antenna producing output signals when it receives radar echo return signals containing clutter echo return signals and moving target echo return signals, said radar receiver receiving and amplifying said output signals of said antenna to produce thereby output signals including analog radar radar echo return signals, said hybrid clutter cancellation system comprising

a means for subtracting analog signals, said subtracting means subtracting an estimate of said clutter echo return signals from said analog radar echo return signals produced by said radar receiver, said subtracting means producing thereby output signals which contain said moving target echo return signals;

a means for digitally producing output signals including said estimate of said clutter echo return signals, said producing means receiving said output signals from said subtracting means, and producing therefrom output signals including said estimate of said clutter echo return signal for said subtracting means, and wherein said producing means comprises an analog to digital converter unit which is electrically connected with subtracting means to produce thereby digital signals which represent the output signals of said subtracting means; a digital signal processor which receives said digital signals from said analog to digital converter to produce therefrom digital signals representing said clutter echo return signals; and a waveform generator which produces said output signals of said producing means by generating an estimate of said clutter echo return signals for said subtracting means from said digital signals from said digital signal processor; and

a means for displaying said moving target echo return signals, said displaying means receiving said output signals from said producing means to produce therefrom a display signal representing said moving target echo return signals.

5,061,935

THREE-DIMENSIONAL DISPLAY RADAR

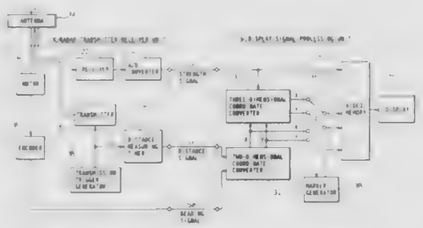
Chogo Sekine, and Takeshi Abe, both of Tokyo, Japan, assignors to Nihon Musen Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 670,316

Claims priority, application Japan, Mar. 19, 1990, 2-69297

Int. Cl.[5] G01S *7/20*

U.S. Cl. 342—180 **14 Claims**



1. A three-dimensional display radar comprising:

a radar transmitter-receiver unit for producing signals indicative of information about a bearing of a target, information about distance to said target and information about the received power reflected from said target, respectively;

a display;

a three-dimensional coordinate converter for converting said bearing information, said distance information and said received power information into signals indicative of both an X-Y coordinate and the height of said target;

marker generating means for generating range marker signals when said target is three-dimensionally represented on a screen of said display; and

memory means having storage addresses corresponding to respective pixels on said display and for storing said received power information at a storage address corresponding to said X-Y coordinate obtained from said three-dimensional coordinate converter and storing therein said marker signals generated from said marker generating means, said memory means being further adapted to successively read said received power information and said marker signals so a to deliver image signals to said display.

5,061,936

ATTITUDE CONTROL SYSTEM FOR MOBILE ANTENNA

Katsuo Suzuki, Tokyo, Japan, assignor to Aisin Seiki K.K., Aichi and K.K. Shinsangyo, Tokyo, both of, Japan

Filed Sep. 14, 1990, Ser. No. 582,734

Claims priority, application Japan, Sep. 14, 1989, 1-238677; Sep. 14, 1989, 1-238678

Int. Cl.[5] H01Q *3/00*

U.S. Cl. 342—359 **3 Claims**

1. An attitude control system for mobile antenna comprising

an antenna supported on a moving vehicle so as to be capable of changing its attitude;

a drive mechanism for altering the attitude of the antenna;

reception level detecting means for detecting a reception level from the antenna;

and electronic control means responsive to a reception level detected by the reception level detecting means for performing a small range scan control which is conducted when the reception level is less than a first reference and at or above a second reference for scanning the antenna over a small range through the drive mechanism and for altering the attitude of the antenna in a direction which is found during the scan to provide a higher reception level, for performing a search control which is conducted when the reception level is less than the second reference for scanning the antenna over a broader range than that of the small range scan through the drive mechanism, and for detecting a fluctuation of the reception level during the small range scan and for updating the first reference to a value which is slightly less than a high value obtained during the small range scan when the fluctuation is less than a third reference.

5,061,937

ARRAY ANTENNA APPARATUS

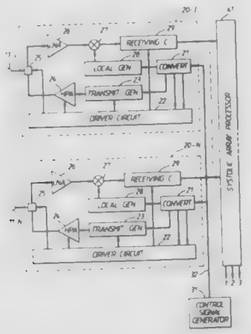
Takeshi Ozeki, Kawaguchi; Masanori Matsumura, and Jun Tanaka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 4, 1990, Ser. No. 460,999

Claims priority, application Japan, Jan. 20, 1989, 1-11626

Int. Cl.[5] H01Q *3/22, 3/24*

U.S. Cl. 342—372 **29 Claims**



1. A plural element array antenna arrangement, comprising:

producing means for generating a control signal having phase control data and signal generating data, said signal generating data being a clock signal;

plural dividing means corresponding to the plural antenna elements, each dividing means for dividing the control signal into the phase control data and the signal generating data;

plural signal generating means corresponding to the plural antenna elements, each generating means for generating a defined signal having a frequency responsive to the signal generating data, said defined signal being generated in response to a timing signal; and

plural driving means corresponding to the plural antenna elements, each driving means for producing a specified signal in response to the defined signal, through each of the antenna elements, each driving means comprising for producing said timing signal is accordance with said phase control data.

5,061,938

MICROSTRIP ANTENNA

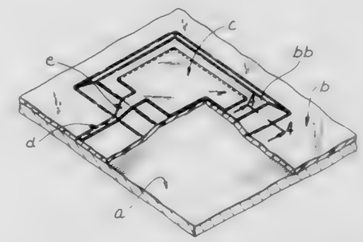
Rudolf Zahn, Markdorf; Hans W. Schroeder; Christian Borgwardt, both of Immenstaad; Albert Braig, Markdorf; Gunter Helwig, Daisendorf; Joachim Boukamp, Markdorf; Oswald Bender; Chung-chi Lin, both of Friedrichshafen, and Werner Scherber, Bermatingen, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen

Filed Nov. 14, 1988, Ser. No. 271,036

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1987, 3738513

Int. Cl.[5] H01Q *1/38*

U.S. Cl. 343—700 MS **30 Claims**



1. A microstrip antenna having an electrically conductive base plate carrying an electrically insulating substrate, there being at least one radiating patch element disposed on the insulating substrate, the improvement comprising, said insulating substrate being provided with a local elevation underneath portions of the substrate carrying said at least one radiating patch element, said elevation establishing a relatively large spacing between the electrically insulating substrate, under the respective patch element, and the base plate in the vicinity of the patch and at lateral dimensions larger than lateral dimensions of the respective patch; and

a feeder line on said substrate, there being a relatively widened transition portion connecting the respective feeder line in integral configuration to the respective patch element, said widened portion running on a transition of an elevated portion of the elevation to a lower level of the insulating substrate.

5,061,939

FLAT-PLATE ANTENNA FOR USE IN MOBILE COMMUNICATIONS

Kazuhiko Nakase, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1990, Ser. No. 527,126

Claims priority, application Japan, May 23, 1989, 1-129863

Int. Cl.[5] H01Q *1/27, 1/32*

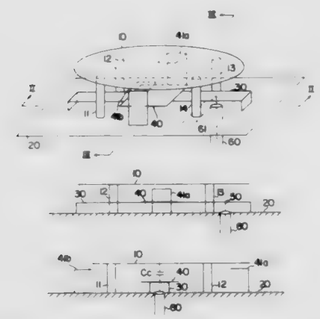
U.S. Cl. 343—700 MS **18 Claims**

1. A flat-plate antenna for use in mobile communications comprising:

a table type antenna comprising a conductive flate-plate and a plurality of connecting members electrically connecting said flat-plate to a ground plate,

a capacitor electrode installed between one of said connecting members and another connecting member and between said flat-plate and ground plate,

a strip line resonator installed under said table type antenna and between said top plate and said ground plate; and



a capacitor electrode used for strip line resonance installed on said strip line resonator so as to face a central portion of said table type antenna.

5,061,940

ANTENNA WITH QUICK DISCONNECT WHIP

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

Filed Dec. 28, 1990, Ser. No. 635,265
Int. Cl.[5] H01Q *1/32, 1/50*
U.S. Cl. 343—715 **12 Claims**



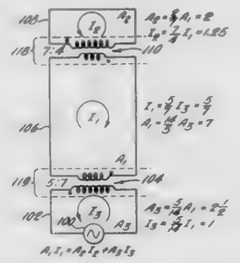
1. An antenna which comprises:
a base for connection to a vehicle;
a radiator whip;
an electrical connector, for connecting said radiator whip to said base;
said electrical connector defining an opening for receiving said radiator whip;
manually operable means for rotating said electrical connector about said radiator whip from a first, unlocked position in which said radiator whip is removable from said electrical connector to a second position in which said radiator whip is located with respect to said electrical connector;
said electrical connector comprising a first threaded member defining a portion of said opening and a second cooperatingly threaded member defining another portion of said opening, with said opening portions defined by said first and second members being in alignment when said electrical connector is in its first position and said opening portions being in misalignment when said electrical connector is in said second position.

5,061,941

COMPOSITE ANTENNA FOR ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

Phillip J. Lizzi, Deptford, N.J., and Richard A. Shandelman, Levittown, Pa., assignors to Checkpoint Systems, Inc., Thorofare, N.J.

Filed Feb. 1, 1990, Ser. No. 473,586
Int. Cl.[5] H01Q *11/12*
U.S. Cl. 343—742 **10 Claims**



1. In an electronic article surveillance system, an antenna system comprising:
a plurality of adjacent transmitter loop antennas, said transmitter loop antennas being configured and arranged to be responsive to the supply thereto of current of the same intensity to produce a total far-field of substantial intensity at positions remote from said transmitter loop antennas,
and means for feeding said transmitter loop antennas with currents of predetermined different intensities such as to substantially cancel the total far field due to said transmitter loop antennas, while also providing a substantial net induction near field adjacent to said transmitter loop antennas, wherein the current I in at least one of said transmitter loop antennas is in a first direction with respect to the environment and the current I in the remainder of said transmitter loop antennas is in the opposite direction with respect to the environment, the sum of the product AN of the loop areas A and the number of turns N for said at least one transmitter loop antenna differing from the sum of the products AN for said remainder of said loop antennas, and the sum of the products ANI for said at least one loop antennas substantially equalling the sum of the products ANI for said remainder of said loop antennas, where I is the intensity of current in each of said loop antenna.

5,061,942

ROD-SHAPED TRANSCEIVER ANTENNA ESPECIALLY FOR 450–470 MHZ BAND

Horst Dörrie, and Uwe Militz, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 19, 1990, Ser. No. 540,339
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1989, 3919884
Int. Cl.[5] H01Q *9/32, 11/08*
U.S. Cl. 343—749 **29 Claims**

1. Rod-shaped transceiver antenna for use in a predetermined frequency band, comprising
a flexible, electrically conductive spring element (**11**),
an elastic rod of dielectric material connected therewith, and a plurality of interconnected coils supported on said rod, wherein,
defining λ as the median wavelength of said predetermined frequency band,
the flexible spring element (**11**), and a first coil (**SP1**) electrically connected therewith, collectively have a physical length $L1=\lambda/4$;
a second coil (**SP2**) is provided, having a physical length $\lambda/4$, and electrically connected to said first coil;

a third coil (**SP3**) is provided, having a physical length $\lambda/8$, and electrically connected to said second coil, said third coil being reverse-would with respect to said second coil; and



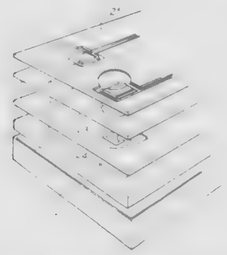
a fourth coil (**SP4**) is provided, having a physical length $\lambda/8$, and electrically connected to said third coil and being wound parallel to said second coil (**SP2**),
said fourth coil (**SP4**) being further connected to
a radiating element (**13**) which has a physical length of $\frac{1}{4}\lambda$.

5,061,943

PLANAR ARRAY ANTENNA, COMPRISING COPLANAR WAVEGUIDE PRINTED FEED LINES COOPERATING WITH APERTURES IN A GROUND PLANE

Emmanuel Rammos, Oegstgeest, Netherlands, assignor to Agence Spatiale Europenne, France

Filed Jul. 31, 1989, Ser. No. 388,098
Claims priority, application France, Aug. 3, 1988, 88 10501
Int. Cl.[5] H01Q *1/38, 21/00*
U.S. Cl. 343—770 **19 Claims**



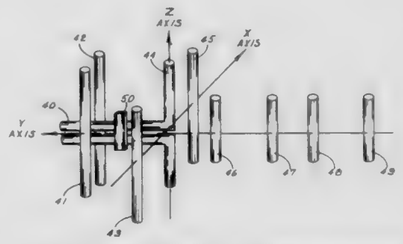
1. A planar array antenna adapted to generate or receive microwave frequency, electromagnetic radiation, said antenna comprising:
a sheet of dielectric material;
a layer of conductive material formed on and supported by said sheet of dielectric material;
a lower ground plane member galvanically isolated from said layer of conductive material, said lower ground plane member being located parallel to said layer of conductive material and spaced from said layer at a distance of approximately a quarter of the wave length of the microwave frequency, electromagnetic radiation at which the antenna operates;
a plurality of apertures formed in said layer of conductive material; and
coplanar waveguide line means electromagnetically coupled to said apertures at the microwave operating frequency, said coplanar waveguide line means comprising at least one channel communicating with each of said apertures, said channels being formed in said layer of conductive material, and a strip-like center conductor formed in said layer of conductive material and located within each of said channels and extending therealong, said layer of conductive material, channels and center conductors lying in a common plane, said center conductors extending into said apertures and terminating therein at free terminations so that the ends of said conductors in the apertures form excitation probes, the width of said excitation probes taken in a direction normal to the direction of extension of said center conductors being generally the same as the width of said center conductors taken in a direction normal to the direction of extension of said center conductors.

5,061,944

BROAD-BAND HIGH-DIRECTIVITY ANTENNA

Richard L. Powers, Nashua, N.H., and Russell J. Cyr, Pepperell, Mass., assignors to Lockheed Sanders, Inc., Nashua, N.H.

Filed Sep. 1, 1989, Ser. No. 401,889
Int. Cl.[5] H01Q *19/185*
U.S. Cl. 343—795 **20 Claims**



1. An antenna for transmitting or receiving electromagnetic energy throughout a band of frequencies, said antenna comprising:
(a) a dipole element for orientation substantially in the direction of the electric vector of said transmitted or received electromagnetic energy,
(b) transmission line means for connecting said dipole element to a source or receiver of electromagnetic energy, at least a portion of said transmission-line means adjacent to said dipole element being disposed substantially normal to said dipole element and substantially parallel to the general direction of passage of energy through said antenna,
(c) at least one parasitic structure disposed substantially parallel to said dipole element so that two conductive portions of said structure are in a plane passing through said dipole element normal to said transmission-line means and to the general direction of energy through said antenna, said two conductive portions being on opposite sides of said dipole element and having lengths equal to at least half the length of said dipole element,
(d) first and second conductive reflector elements disposed symmetrically with and substantially parallel to said dipole element and within one-quarter wavelength at the mean frequency of said band of frequencies of said transmission-line means, and
(e) a plurality of conductive director elements respectively disposed substantially parallel to said dipole element in spaced relationship in a line away from said dipole element in a direction substantially opposite to the direction of said transmission line means from said dipole element.

5,061,945

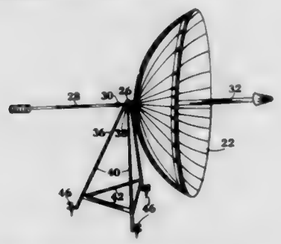
PORTABLE SATELLITE ANTENNA SYSTEM

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Robert L. Service, 145 Ziller Way, Dayton, Nev. 89403

Filed Feb. 12, 1990, Ser. No. 479,276

Int. Cl.[5] H01Q *15/20*

U.S. Cl. 343—840 **6 Claims**



1. A satellite antenna dish comprising; a tripod, means to attach said tripod to the ground, a dish, a hub, a handle, a horn stem, connecting means to connect said tripod, said dish, said hub, said handle, and said horn stem, said dish being made of a plurality of substantially identical pre-shaped sections, said sections each having a pair of opposite side edges together forming an apex portion of each section, said apex portions being located over each other and connected together for turning movement with respect to each other about said hub, said hub passing through said apex portion of each section, said dish having a first and second position, said first position being closed with each said section lying one on the other in a flat, compact manner, said second position being open, forming a circular, parabolic dish, means to lock together said pre-shaped sections at their distal ends opposite the said apex portions, when in said second position, means to draw together two of the extreme outer said sections, means to lock together said two outer said sections and said dish, said sections, said hub, said handle and said horn stem cooperating together to allow said dish to be moved and locked in horizontal and vertical planes in relation to said tripod, said means to draw together two of the extreme outer sections is a rope and at least one pulley.

5,061,946

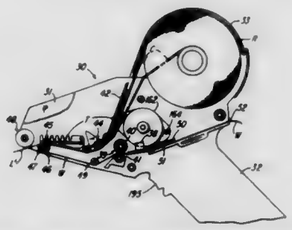
MICROPROCESSOR CONTROLLED THERMAL PRINTER

James E. Helmbold, Centerville, and Richard D. Wirrig, Huber Heights, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 209,946, Jun. 22, 1988. This application Aug. 19, 1988, Ser. No. 234,364

Int. Cl.[5] G01D *9/00;* **B41F** *1/08;* **B32B** *31/00;* **B65H** *23/04*

U.S. Cl. 346—1.1 **5 Claims**



1. A printer for printing on a web of record members, said web having a plurality of detectable indices disposed along the length thereof, said indices having a predetermined length along the longitudinal axis of the web, said printer comprising:

means for advancing said web through said printer;

means for detecting said indices while said web is being advanced;

means responsive to said detecting means for determining said predetermined length of said indices; and

means responsive to said determining means and said detecting means for causing said advancing means to advance said web a predetermined increment following the detection of a subsequent one of said indices, said increment being less than the length of the last of the previously determined indices.

5,061,947

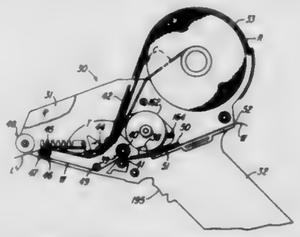
MICROPROCESSOR CONTROLLED THERMAL PRINTER

Donald A. Morrison, Dayton, and Richard D. Wirrig, Huber Heights, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 22, 1988, Ser. No. 209,946

Int. Cl.[5] G01D *9/00;* **B41F** *1/08;* **B32B** *31/00;* **B65H** *23/04*

U.S. Cl. 346—1.1 **23 Claims**



1. A web for feeding through a printer comprising a plurality of printable record members disposed along a length thereof and a plurality of detectable indices disposed along the length in a predetermined spatial relationship with respect to said record members, a distance between successive indices being representative of the length of the record members, each of said indices having a predetermined dimension along a longitudinal travel direction axis of the web that is relatively long int he diction of travel of the web so as to provide two detectable edges representative of a predetermined amount of time for providing for providing information of a jam condition when said predetermined amount of time as determined by said predetermined dimension is exceeded during feeding, said predetermined dimension being detectable by a detector in the printer during the feeding of the web for providing a jam indication if the index is continuously detected by the detector for more than said predetermined amount of time during feeding.

5,061,948

ELECTROGRAPHIC MARKING WITH MODIFIED ADDRESSING TO ELIMINATE STRIATIONS

Lorin K. Hansen, Fremont; Edwardo D. Lara, Sacramento; William A. Lloyd, Los Altos, all of Calif.; Jack H. Sayre, St. John, Canada, and Stephen D. White, Santa Clara, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1990, Ser. No. 532,467

Int. Cl.[5] G01D *15/06*

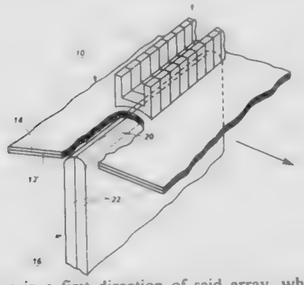
U.S. Cl. 346—155 **8 Claims**

1. A method of producing an electrostatic image along scan lines of a recording medium utilizing a recording means including an array of stylus electrodes arranged in a series of groups cooperable with a series of complementary electrodes, each of said stylus cooperating with a portion of each of two adjacent complementary electrodes, wherein each of said two adjacent complementary electrodes also includes an outlying portion overlapping the next adjacent stylus group on its respective side of said stylus group, said recording medium inlcuding a conductive layer and a dielectric layer, whereby

wetting is accomplished by sequentially depositing charge patterns upon said dielectric layer in regions coextensive with stylus electrode groups when one of said stylus electrode groups and a cooperating pair of complementary electrodes are pulse contemporaneously, the method comprising the steps of:

writing a charge pattern on a given region of said recording medium, corresponding to a given stylus electrode group, which simultaneously imposes potential perturbations on right and left side portions of adjacent left and right side stylus group regions respectively of said recording medium, said potential perturbations being produced by the overlapping portions of said complementary electrodes,

writing a charge pattern on remote region of said recording medium, corresponding to a remote stylus electrode group, said remote region being spaced from said given region by an odd number {n} of entire stylus electrode



groups in a first direction of said array, while simultaneously imposing residual potential perturbations on right and left side portions of adjacent left and right side stylus group regions respectively of said recording medium corresponding to the overlapping portions of said complementary electrodes.

writing on an information region of said recording medium, corresponding to another entire stylus electrode group, located between said given region and said remote region and spaced in a second direction, opposite to said first direction, from said remote region by {n-2} stylus electrode groups, said intermediate region bearing residual potential perturbations on both right and left side portions thereof, and

repeating the steps of writing on regions spaced by {n} entire stylus electrode groups in said first direction followed by writing on regions spaced by {n-2} stylus electrode groups in said second direction.

5,061,949

IMAGE FORMING APPARATUS COMPRISING MEANS FOR SETTING A PROPER BIAS VOLTAGE OF LASER EMITTING MEANS AND METHOD THEREFOR

Shigeo Ogino, Toyokawa, and Masaaki Nishiyama, Toyohashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 17, 1990, Ser. No. 553,422

Claims priority, application Japan, Jul. 17, 1989, 1-185264

Int. Cl.[5] G01D *15/14;* **G03G** *21/00*

U.S. Cl. 346—160 **7 Claims**

1. An image forming apparatus comprising:

a photoconductor;

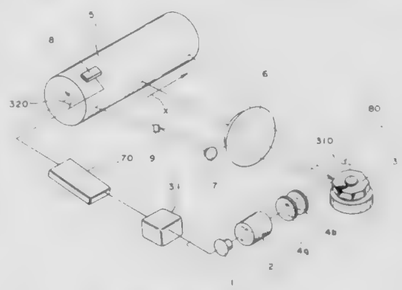
laser emitting means for emitting a laser light onto said photoconductor so as to form an electrostatic latent image thereon;

developing means for developing said electrostatic latent image formed on said photoconductor using toner so as to form a visible toner image thereon;

bias voltage setting means for setting a predetermined bias voltage to be applied to said laser emitting means;

laser driving means for applying said predetermined bias voltage set by said bias voltage setting means to said laser emitting means and for applying a driving voltage to said laser emitting means responsive to image data;

detection means for enabling said developing means in such a state that no image data are inputted to said laser driving means and said predetermined bias voltage is applied to



said laser emitting means and for detecting a density of a toner image formed on said photoconductor; and

control means for setting a bias voltage to be applied to said laser emitting means responsive to said density of the toner image detected by said detection means.

5,061,950

CAMERA

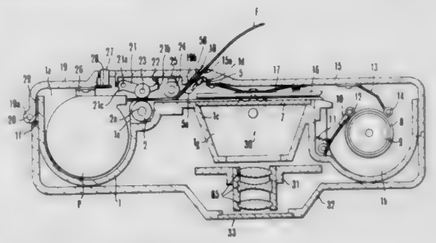
Toyotoshi Suzuki, Tokyo, and Yukio Ogawa, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 228,767, Aug. 4, 1988, abandoned, which is a continuation of Ser. No. 134,614, Dec. 11, 1987, abandoned, which is a continuation of Ser. No. 26,267, Mar. 16, 1987, abandoned. This application May 8, 1990, Ser. No. 519,311

Claims priority, application Japan, Mar. 17, 1986, 61-58928; Apr. 9, 1986, 61-81910; Apr. 9, 1986, 61-81911; Apr. 11, 1986, 61-83597; Mar. 11, 1987, 62-55594

Int. Cl.[5] G03B *1/12*

U.S. Cl. 354—173.11 **61 Claims**



1. A camera, comprising:

(A) film pressing means for pressing a film onto an aperture;

(B) a film cartridge chamber for housing a film cartridge in the camera;

(C) closure means for closing said film cartridge chamber, while holding a leader portion of the film outside of the camera and the other portion of the film in such state that it is not subjected to the pressing of said pressing means,

(D) first detecting means for detecting whether the leader portion of the film remains outside the camera;

(E) second detecting means for detecting a closed state of said closure means; and

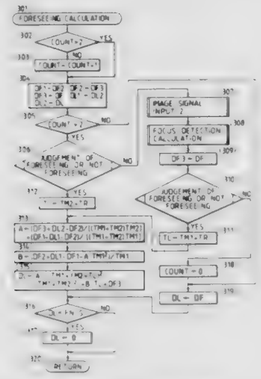
(F) film feeding means arranged to retract the leader portion of the film remaining outside the camera into said camera and then wind up the leader portion of the film onto a film winding spool in response to detection of said leader portion of the film outside the camera effected by said first detecting means and detection of the closed state of said closure means effected by said second detecting means.

5,061,951

AUTO FOCUS DEVICE

Masaki Higashihara, Yokohama; Ichiro Ohnuki, Kawasaki; Akira Akashi, and Terutake Kadohara, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 350,855, May 12, 1989, abandoned.
This application Sep. 14, 1990, Ser. No. 582,118
Claims priority, application Japan, May 13, 1988, 63-116452
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 **19 Claims**



1. A focus adjusting device comprising:
(a) a focus detecting circuit for repetitively detecting the focus state and outputting a focus detection result conforming to the focus state;
(b) a memory circuit for memorizing a focus detection result which has been output by said focus detecting circuit for at least one previous focus detection operation;
(c) a photographing lens;
(d) a calculation circuit for foreseeing data for making said lens in focus to an object after a predetermined period of time in the future on the bias of the previous focus detection result and a latest focus detection result;
(e) a lens driving circuit for driving the lens in conformity with the data obtained by said calculation circuit;
(f) a judgment circuit for judging whether the focus detection result of said focus detecting circuit is suitable for the foreseeing calculation whenever the focus detection circuit outputs the focus detection results; and
(g) an inhibition circuit for inhibiting lens driving by said lens driving circuit when said judgment circuit judges that the focus detection result is not suitable for the foreseeing calculation for another predetermined period of time.

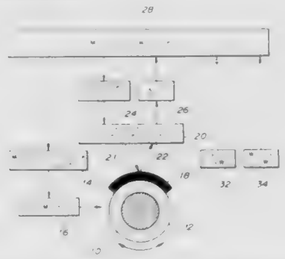
5,061,952

POSITION SENSING DEVICE

Kimiaki Ogawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1990, Ser. No. 492,891
Claims priority, application Japan, Mar. 20, 1989, 1-31581[U]
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—400 **10 Claims**

1. A device for sensing a position at which a moving object is stopped, said device comprising:
a pattern provided in a line along which said moving object is moved, said pattern being composed of an amount of a measuring media which gradually varies along said line along which said moving object is moved,
means for sensing the amount of said measuring media of said pattern, at any stopped position,
means for storing data of said measuring media, which data corresponds to predetermined positions at which said moving object, is stopped respectively, and
means for obtaining the position of said moving object by comparing the amount of said measuring media, upon stopping, by said sensing means, with said data stored by said storing means,



wherein said device is provided in a camera and said moving object is a drive ring which is rotated to move a lens group provided in said camera.

5,061,953

FOCUS ADJUSTING APPARATUS FOR USE IN A CAMERA ON THE LIKE

Masaki Higashihara, Yokohama; Ichiro Ohnuki, Kawasaki; Akira Akashi, and Terutake Kadohara, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 288,580, Dec. 22, 1988, abandoned.
This application Jan. 10, 1991, Ser. No. 639,420
Claims priority, application Japan, Dec. 24, 1987, 62-328233
Int. Cl.[5] G03B *13/36, 7/28*
U.S. Cl. 354—402 **28 Claims**



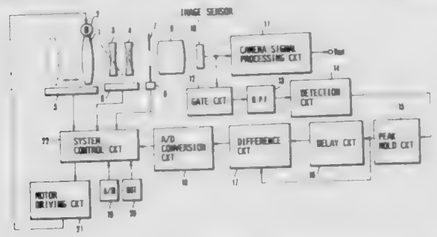
1. A focus adjusting apparatus or camera having a focus adjusting apparatus, comprising:
(a) a focus signal forming circuit for repeatedly detecting the focus state of a lens and outputting a focus signal corresponding to the detected focus state;
(b) a calculating circuit for providing a signal corresponding to an amount of lens driving for making the lens in focus to an object after a predetermined time on the basis of a past focus signal;
(c) a lens driving circuit for driving the lens in conformity with the signal provided by said calculating circuit;
(d) a discrimination circuit for detecting a variation of the focus state of the lens, and for judging whether said signal corresponds to a focusing state to the same object as the past focus signal by evaluating whether the variation is changed by a predetermined amount from the previous detected focus state; and
(e) a control circuit for permitting the lens to be driven by said lens driving circuit in accordance with the signal provided by said calculating circuit when it is judged by said discrimination circuit that the focus signal from said focus signal forming circuit is detected for the same object as the past focus signal, and for inhibiting the lens driving by said lens driving circuit in accordance with the signal provided by said calculating circuit when it is judged by said discrimination circuit that the focus signal from said focus signal forming circuit is not detected for the same object as the past focus signal.

5,061,954

AUTOMATIC FOCUS ADJUSTMENT SYSTEM

Masamichi Toyama; Akihiro Fujiwara; Hirofumi Suda, all of Kanagawa; Kuniniko Yamada, Tokyo; Masahide Hirasawa, and Kitahiro Kaneda, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1990, Ser. No. 534,676
Claims priority, application Japan, Jun. 9, 1989, 1-148000
Int. Cl.[5] G03B *13/36;* **H04N** *5/232*
U.S. Cl. 354—402 **25 Claims**



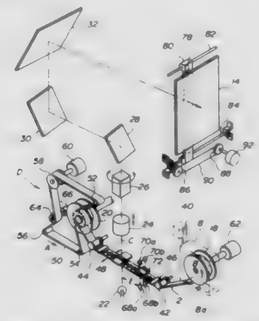
1. An automatic focus adjustment system comprising:
a) focus adjusting means for varying an image forming position; and
b) control means for selectively setting a first focusing mode in which said focus adjusting means is moved to an in-focus point within a moving area thereof on the basis of a signal according to the degree of focusing and a second focusing mode of nearest-focusing-distance priority in which said focus adjusting means is moved to an in-focus point while being driven toward the nearest focusing distance side,
wherein said control means causes a moving range of said focus adjusting means to differ between said first focusing made and said second focusing mode.

5,061,955

MICROFILM READER/PRINTER

Izumi Watanabe, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1990, Ser. No. 599,940
Claims priority, application Japan, Oct. 20, 1989, 1-272973; Oct. 20, 1989, 1-272974
Int. Cl.[5] G03B *13/28*
U.S. Cl. 355—45 **7 Claims**



1. An microfilm reader/printer for selecting a desired image from images recorded on a microfilm roll to print said desired image, said images being recorded by the duo photographing system in two channels so that the images recorded in one channel are in the normal orientation while the images recorded in the other channel are in the inverted orientation, comprising:
(a) film transporting means for transporting said microfilm roll alternately in one and the reverse directions;
(b) channel exchanging means for exchanging the channel so that images in said one channel are retrieved while said microfilm roll is fed in said one direction and images in said other channel are retrieved while said microfilm roll is fed in said reverse direction;
(c) an optical system for projecting said desired image selected from the retrieved channel;
(d) an image sensor for sensing said desired image from the retrieved channel to output an image signal;
(e) an image processor for digitizing said image signal output from said image sensor to feed the digitized image signal in the same order as received when said desired image is recorded in said one channel and to feed the digitized image signal in the reverse order when said desired image is recorded in said other channel; and
(f) printing means for printing said desired image in the not-inverted or inverted condition; whereby said desired image is printed in the normal orientation irrespective of whether it is recorded in said one channel or said other channel.

5,061,956

OPTICALLY IMAGING METHOD AND APPARATUS

Minoru Takubo, Tokyo; Toshio Fukazawa, Ebina, and Tatsuo Yamanaka, Yokohama, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1990, Ser. No. 491,505
Claims priority, application Japan, Mar. 15, 1989, 1-63275
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—55 **3 Claims**



1. An optical imaging method comprising the steps of:
transmitting illuminating light from an illuminant onto an exposed material by means of an optical lens system comprising at least a pattern source with a projected pattern and a projection lens opposite to the exposed material to image the projected pattern on the exposed material;
arranging the optical lens system such that a first illuminating lens, a second illuminating lens, the pattern source, a first imaging lens and a second imaginglens are arranged in successive order on an optical axis from the illuminant to the projection lens;
producing a first illuminant image by the first illuminating lens outside the image space focal point of the first imaging lens;
producing a second illuminant image by the second illumi-

nating lens from the first illuminant image outside the object space focal point of the first imaging lens;

producing a third illuminant image by the first imaging lens from the second illuminant image at the same magnification as that of the first illuminant image on the first illuminant image outside the image space focal point of the first imaging lens;

producing the first pattern source image from the pattern source;

producing a fourth illuminant image by the second imaging lens from the third illuminant image at an allowable entrance pupil position of the projection lens and producing a second pattern source image from the first pattern source image within an allowable object space focal depth of the projection lens;

displacing a pair of the second illuminating lens and the first imaging lens and the pattern source relative to each other so that a distance between the second illuminating lens and first imaging lens is fixed; and

selecting a magnification of the second pattern source image so that the second pattern image falls within the allowable object space focal depth of the projection lens and the fourth illuminant image falls on one of the entrance pupil position and within an allowable entrance pupil range of the projection lens.

5,061,957

POWER CONTROLLING DEVICE

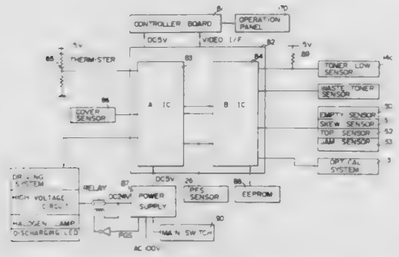
Tomoyuki Nishikawa, Matsudo; Masahiro Kita, Tokyo; Takaaki Yano, Kawagoe; Tatsuya Yoshida, Saitama; Ryoji Honda, Asaka; Kiyoshi Negishi, Saitama; Tsutomu Sato, Tokyo, and Shoji Kamasako, Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1990, Ser. No. 611,736

Claims priority, application Japan, Nov. 10, 1989, 1-293712; Apr. 11, 1990, 2-98222

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—200 **10 Claims**



7. A printer comprising a drive system using a relatively high voltage, a control system using a relatively low voltage for controlling said drive system, and a power supplying device for supplying power to said drive system and to said control system, said printer further comprising:

a power controlling device capable of turning on and off the power applied to said drive system and to said control system;

a main switch capable of turning on and turning off said power supplying device; and

controlling means for turning off said drive system before said control system is turned off when said power supplying device is turned off by said main switch.

5,061,958

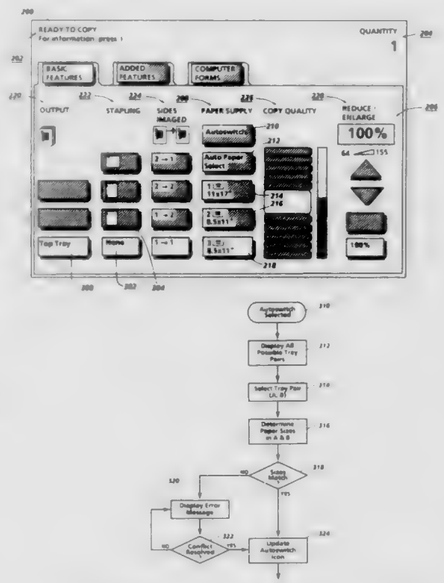
DISPLAY OF USER SELECTABLE PAPER FEED OPTIONS

Keith G. Bunker; Robert L. Sklut, and David E. Miller, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1990, Ser. No. 551,390

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—209 **10 Claims**



1. A reprographic system of the type having a set of features available for use in executing a copying job, including means for preselecting a subset of desired features from the set of all available features for the generation of the copies, a user interface suitable for displaying the available features as icons, the ability to execute the copying job in accordance with the pre-selected set of desired features and a job status screen, displayed on the user interface, indicating the system status during execution of the copying job, comprising:

means for displaying, on the user interface, a second subset of the available features, said second subset representing only those features whose settings may be altered during execution of the copying job without disruption;

means for altering the feature settings used in production of the copy output by selecting a feature setting from said second subset, whereby said feature setting will immediately become activated; and

means for coincidentally deactivating the pre-selected feature setting corresponding to said feature setting selected from said second subset.

5,061,959

PHOTOGRAPHIC RECORDING APPARATUS HAVING PHOTOCONDUCTIVE DRUM CARTRIDGE UNIT WITH AUTOMATICALLY CLOSED OPENINGS

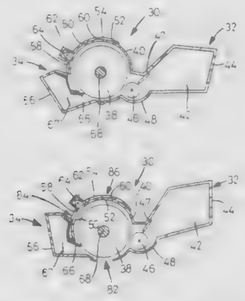
Naohisa Kinoshita; Hiroyuki Kashima; Makoto Hasegawa, all of Nagoya; Toshihiro Tsuzuki, Kariya, and Kiyoshi Muto, Yokkaichi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1990, Ser. No. 573,682

Claims priority, application Japan, Sep. 1, 1989, 1-103314

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—210 **17 Claims**



1. A photographic recording apparatus having a housing body, and a process cartridge unit which includes a rotatable photoconductive drum and a developing device and which is removably mounted on the housing body, said drum having an axis of rotation, wherein the improvement comprises:

said process cartridge unit including a first frame which supports said developing device and which is pivotable about said axis of rotation of said photoconductive drum, a second frame which is pivotable about said axis of rotation relative to said first frame, and biasing means for biasing said first and second frames and thereby holding said first and second frames in a first relative angular position;

said housing body including a cartridge holding portion for holding said process cartridge unit such that said first and second frames are held in a second relative angular position, said second relative angular position being established by pivoting said first and second frames relative to each other from said first relative angular position against a biasing action of said biasing means, said photoconductive drum being removable from said housing body, together with said first and second frames; and

said first and second frames cooperating to provide at least one opening through which a portion of said photoconductive drum is exposed to an outside of said first and second frames, when said first and second frames are placed in said second relative angular position, said at least one opening being closed when said first and second frames are placed in said first relative angular position.

5,061,960

PREEXPOSURE LIGHT CONTROL SYSTEM FOR A PHOTOCOPIER

Yamato Kitajima, Ramsey, N.J., and Kouji Ito, Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 30, 1988, Ser. No. 213,771

Claims priority, application Japan, Jul. 2, 1987, 62-167577

Int. Cl.[5] G03G *15/04*

U.S. Cl. 355—228 **6 Claims**

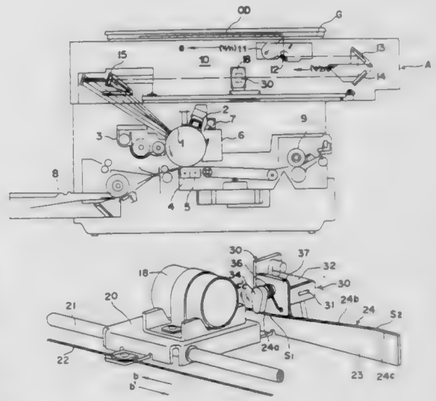
1. A slit exposure type copying apparatus with an exposure light source, comprising:

an original document platform on which an original document is located;

an electrostatic latent image support member;

scanning optical means which projects an image of an original document exposed by the exposure light source onto the electrostatic latent image support member by scanning the original document from a forward end of the document through a rear end of the document, including a projecting lens assembly which is movable along its optical axis in order to change the magnification of the image;

a light measuring sensor which is arranged adjacent a side of the projecting lens assembly, and on a light path of the scanning optical means to measure light reflected from a location on the original document, such that an image forming condition is automatically adjusted by an output of the light measuring sensor; and



a location adjusting means for altering the measurement location of light reflected from the document so that the light measuring sensor measures reflected light from the original document at a position displaced, along the scanning direction, forward from an actual image position on the original document to be projected by the projecting lens assembly onto the electrostatic latent image support member, the amount of forward displacement being a function of the movement of the projection lens assembly to change the magnification of the image, whereby the exposure light source is adjusted prior to projection to the electrostatic latent image support member.

5,061,961

DIELECTRIC MEMBER CORE SUPPORT AND LOCATING DEVICE

Michael E. Jacobs, Henrietta, and Douglas A. Hons, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1990, Ser. No. 562,346

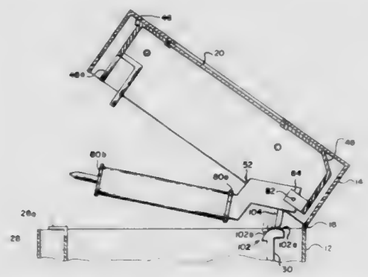
Int. Cl.[5] G03G *5/00*

U.S. Cl. 355—212 **5 Claims**

1. In an electrostatographic reproduction apparatus including a housing having a lower portion containing electrostatographic process stations and an upper portion connected thereto containing a dielectric member supported on a core, said upper housing portion being movable relative to said lower housing portion to a first position where said dielectric member is in operative relation to such electrostatographic process stations and a second position wherein said dielectric member is remote from such electrostatographic process stations to enable ready access to such process stations, said dielectric member core being movale with said upper housing portion or relative to said upper housing portion to a position intermediate said upper and lower housing portions when said

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upper portion is in its second position, a dielectric member core support and locating device comprising means for supporting said dielectric member core when said core is in its intermedi-



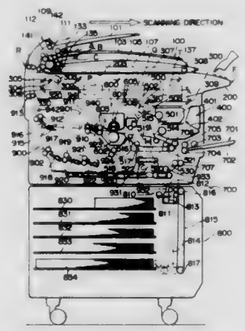
ate position, and guiding said core for automatic location into its position for movement with said upper housing portion when said upper housing portion is moved to its first position.

5,061,962

COPIER WITH A PLURALITY OF REFERENCE POSITIONS

Hiroshi Takahashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 433,346
Claims priority, application Japan, Nov. 12, 1988, 63-286295
Int. Cl.[5] G03G *15/28*
U.S. Cl. 355—233 **11 Claims**



1. A copier for electrostatically forming on a photoconductive element a latent image representative of an image of a document which is laid on a glass platen by illuminating said document through a slit, developing said latent image and transferring said developed image to a paper sheet, said copier comprising:

a copier body having an operating side at which operator controls for operating the copier are positioned and a non-operating side at a rear side of the copier body substantially opposite the operating side, respectively;

optics for imagewise exposure movable back and forth between the operating side and the non-operating side for illuminating the document;

first reference document position setting means for setting a reference position at the glass platen where the document is to be laid, the reference position being positioned at the operating side of the copier body;

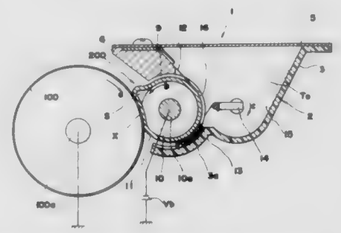
control means for determining a scan start position of the optics, the scan start position being defined at the non-operating side of the copier body.

5,061,963

MONOCOMPONENT DEVELOPING DEVICE

Akihito Ikegawa; Yuji Enoguchi; Hiroshi Mizuno; Toshiya Natsuhara, and Masashi Yamamoto, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 327,034, Mar. 22, 1989, abandoned.
This application Feb. 19, 1991, Ser. No. 657,367
Claims priority, application Japan, Mar. 23, 1988, 63-69096
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **6 Claims**



1. A developing device disposed adjacently to a rotatably arranged photoreceptor, which comprises:

a rotatably disposed elastic roller confronting said photoreceptor;

a cylindrically formed film member having a peripheral length longer than that of said elastic roller and loosely mounted thereover, said film member being pressed toward the photoreceptor at a pressing portion by said elastic roller so as to contact the photoreceptor; and

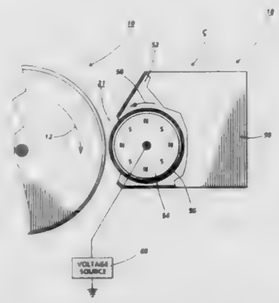
positioning means to position said film member partly into contact with the photoreceptor, said positioning means including an elastic member to form a slack portion in the film member at a location confronting the photoreceptor for the film member to contact the photoreceptor, whereby the film member is in contact with the photoreceptor at said pressing portion as well as at said slack portion.

5,061,964

DEVELOPER UNIT USING MAGNETIC TONER PARTICLES

Jan Bares; John S. Berkes, both of Webster, and Bernard Grushkin, Pittsford, all of, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 20, 1990, Ser. No. 556,500
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—265 **14 Claims**



1. An apparatus for developing a latent image, including:

means for storing a supply of developer material comprising carrier granules and magnetic toner particles with the magnetic toner particles in said storing means having a substantially uniform size distribution;

means for transporting developer material closely adjacent to the latent image; and

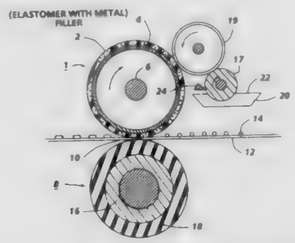
means for electrically biasing said transporting means with an electrical bias having a wave form that removes a substantially uniform distribution of magnetic toner particle sizes from the carrier granules and develops the latent image therewith with the distribution of magnetic toner particle sizes removed from said transporting means being substantially equal to the distribution of magnetic toner particle sizes in said storing means so that the distribution of magnetic toner particle sizes in said storing means remains substantially constant.

5,061,965

FUSING ASSEMBLY WITH RELEASE AGENT DONOR MEMBER

Robert M. Ferguson, Penfield; Louis D. Fratangelo, Fairport; George J. Heeks, Rochester, and Arnold W. Henry, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1990, Ser. No. 516,950
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—284 **18 Claims**



1. A release agent donor member for a toner fixing system of the type wherein a polymeric release agent having functional groups is applied to the surface of a fuser member, the release agent donor member comprising a base member, an intermediate conformable silicone elastomer layer and an elastomer release agent donor layer comprising poly(vinylidenefluoride-hexafluoropropylene-tetrafluoroethylene) where the vinylidenefluoride is present in an amount less than 40 mole percent, a metal oxide present in an amount sufficient to interact with the polymeric release agent having functional groups to transport a sufficient amount of the polymeric release agent to provide an interfacial barrier layer between the fusing surface and the toner and being substantially unreactive with said elastomer, said elastomer release agent donor layer having been cured from a solvent solution thereof with a nucleophilic curing agent soluble in said solution and in the presence of less than 4 parts by weight of inorganic base per 100 parts of polymer, said inorganic base being effective to at least partially dehydrofluorinate the vinylidenefluoride.

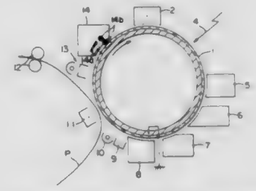
5,061,966

METHOD OF CLEANING AN IMAGE RETAINER

Satoshi Haneda; Hisashi Shoji; Seiichiro Hiratsuka; Tadao Kishimoto; Toshifumi Isobe; Hiroyuki Maruyama, and Jun Yokobori, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 82,935, Aug. 5, 1987, abandoned, which is a division of Ser. No. 823,407, Jan. 28, 1986, abandoned. This application May 18, 1990, Ser. No. 526,543
Claims priority, application Japan, Jan. 31, 1985, 60-18371; Dec. 24, 1985, 60-296340
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—297 **13 Claims**

1. A method of cleaning an image retainer by removing remaining toner particles from said retainer after transferring a multi-color toner image which is obtained by a multi-color toner image forming process wherein charging, image writing-in, and developing steps are repeated at least twice, said method comprising abutting a cleaning member against said retainer after a final image writing-in step of said image forming process has been completed, and releasing said cleaning



member from said abutment after said cleaning has been completed but not during an image writing-in step for forming a next multi-color toner image wherein,

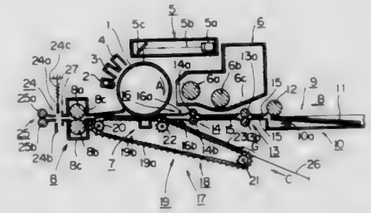
an initial image writing-in step for a next multi-color toner image is started after said abutting and completed before said releasing and a second image writing-in step for said next multi-color toner image is started after said releasing.

5,061,967

ELECTROPHOTOGRAPHIC RECORDING APPARATUS

Minoru Isobe, Tokyo, Japan, assignor to Oki Electric Industry Co. Ltd., Tokyo, Japan

Filed Oct. 5, 1989, Ser. No. 417,513
Claims priority, application Japan, Oct. 5, 1988, 63-249782
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—310 **7 Claims**



1. In an electrophotographic recording apparatus having a first paper feed mechanism for feeding cut recording sheets, a second paper feed mechanism for feeding a continuous recording paper, and an electrophotographic recording system which includes a photosensitive member on which a toner image is formed, a transfer unit for transferring the toner image formed on the photosensitive member to the cut recording sheet or the continuous recording paper at a transfer position, and fixing unit for fixing the transferred toner image to the cut recording sheet or the continuous recording paper, the apparatus having a first region defined upstream of the transfer position and a second region defined between the transfer position and a position near the fixing unit, the first paper feed mechanism feeding the cut sheets through the first region in a first feed plane and feeding the cut sheets in the second region in a second feed plane, the improvement wherein the second paper feed mechanism feeds the continuous recording paper through the first and second regions, and wherein the second paper feed mechanism includes a tractor mechanism comprising

a pair of longitudinally extending endless pin traction belts for carrying the continuous recording paper, each of said belts having pins projecting outwardly from upper surfaces of the belts and being longitudinally arranged along said upper surfaces at a pitch corresponding to that of

perforations formed in the continuous recording paper, and

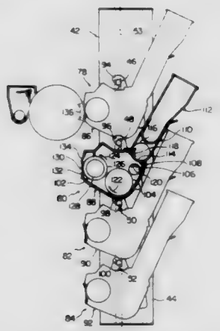
means for directing the belts along parallel paths in said first and second regions, said paths passing respectively outside of opposite ends of the photosensitive member and passing through a continuous recording paper lead-in region, the transfer position and a position near the fixing unit, the belts carrying the continuous recording paper in a third paper feed plane, different from said first paper feed plane, in said first region and carrying the continuous recording paper in said second paper feed plane in said second region.

5,061,968

COLOR IMAGE FORMING MACHINE WITH INDIVIDUALLY DRIVABLE AGITATING MEANS

Hideki Kita, Suita, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Nov. 27, 1989, Ser. No. 441,257
Claims priority, application Japan, Nov. 30, 1988, 63-300652
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **16 Claims**



1. A color image-forming machine comprising:

a developable member which is movable through a developing zone for development,

a latent electrostatic image-forming means, and

a developing device for developing a latent electrostatic image formed on the developable member, the developing device including a movable frame member, a means for moving the movable frame member, and a plurality of development mechanisms mounted on the movable frame member, each of the development mechanisms being adapted to be selectively positioned in the developing zone by moving the movable frame member, and each of the development mechanisms having a developer agitating means, and each of the development mechanisms having a developer that has toner which is a different color from the toner associated with the other development mechanisms, the movable frame member having a driving source and a means for drivingly connecting the driving source to the agitating means of each of the development mechanisms, the drivingly connecting means including a plurality of control clutches disposed between the driving source and the agitating means of each of the development mechanisms, whereby the agitating means can be selectively driven even during movement of the movable frame member and

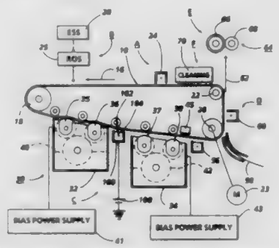
control means for controlling the developing device by moving the movable frame member to position the development mechanisms at the developing zone in a predetermined sequence, and maintaining the control clutch of one of the development mechanisms in a connected state as the movable frame member begins to move to position said one development mechanism in the developing zone, until the movement of the movable frame member stops.

5,061,969

HYBRID DEVELOPMENT SCHEME FOR TRILEVEL XEROGRAPHY

Delmer G. Parker, Rochester; William M. Allen, Webster, and Jerome E. May, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1990, Ser. No. 546,976
Int. Cl.[5] G03B *15/01, 15/09*
U.S. Cl. 355—328 **14 Claims**



1. Highlight color imaging apparatus including means for forming a single polarity charge pattern having at least three different voltage levels on a charge retentive surface wherein two of the voltage levels correspond to two image areas and the third voltage level corresponds to a background area, said apparatus comprising:

means including a first developer housing containing developer materials for forming a first contrasting image in one of said two image areas, said first developer housing containing conductive magnetic brush developer material; and

means including a second developer housing containing developer materials for forming a second contrasting image in the other of said two image areas, said second developer housing containing insulative magnetic brush material.

5,061,970

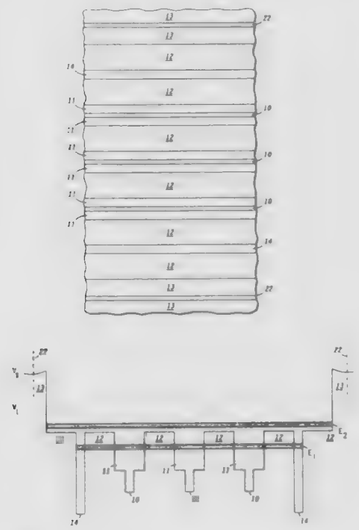
ENERGY BAND LEVELING MODULATION DOPED QUANTUM WELL

Herbert Goronkin, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1990, Ser. No. 533,214
Int. Cl.[5] H01L *27/12, 45/00, 29/161, 33/00*
U.S. Cl. 357—04 **12 Claims**

1. A modulation doped quantum well structure comprising:

a host quantum well having a central portion and edge portions; charge sinks formed in the edge portions of the host quantum well; and a number of narrow quantum wells formed in the central portion of the host quantum well, wherein the



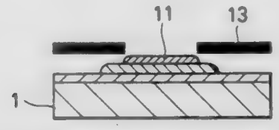
charge sinks and the narrow quantum wells comprise materials with a narrower bandgap than the host quantum well.

5,061,971

BI-BASED OXIDE SUPERCONDUCTING TUNNEL JUNCTIONS AND MANUFACTURING METHOD FOR THE SAME

Yasuhiko Takemura, Atsugi, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Sep. 12, 1989, Ser. No. 406,061
Claims priority, application Japan, Sep. 22, 1988, 63-239256
Int. Cl.[5] H01L *27/12, 39/22, 49/02*
U.S. Cl. 357—5 **2 Claims**



1. A Bi-based superconducting tunnel junction comprising:

a pair of crystalline superconducting oxide ceramic regions, each comprising Bi, Sr, Ca, Cu and O; and

a crystalline barrier film located between said pair of superconducting oxide ceramic regions, said barrier film being made of ceramic material conforming to $Bi_2Sr_{1-x}Ca_xO_y$ ($0 \leqq x \leqq 1$, $3 \leqq y \leqq 4$),

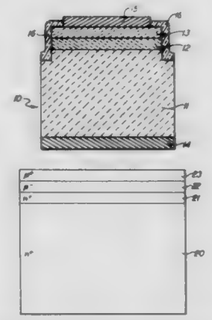
wherein a well-aligned interface is established between said barrier film and each of said superconducting regions.

5,061,972

FAST RECOVERY HIGH TEMPERATURE RECTIFYING DIODE FORMED IN SILICON CARBIDE

John A. Edmond, Apex, N.C., assignor to Cree Research, Inc., Durham, N.C.

Continuation of Ser. No. 403,690, Sep. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 284,035, Dec. 14, 1988, abandoned. This application Sep. 13, 1990, Ser. No. 582,513
Int. Cl.[5] H01L *29/90*
U.S. Cl. 357—13 **39 Claims**



1. A fast recovery, high temperature rectifying diode formed in silicon carbide and comprising

a monocrystalline silicon carbide substrate having a sufficient carrier concentration to give said substrate a first conductivity type;

a first monocrystalline epitaxial layer of silicon carbide upon said substrate and having the same conductivity type as said substrate;

a second monocrystalline epitaxial layer of silicon carbide upon said first epitaxial layer and having the opposite conductivity type from said first epitaxial layer;

said first and second epitaxial layers having respective carrier concentrations that differ in magnitude by an amount sufficient so that the layer having the lesser concentration is predominantly depleted in reverse bias, with dais lesser concentration being between about 1×10^{15} and 1×10^{18} atoms per cubic centimeter (cm^{-3}), and said layer having said lesser carrier concentration further having a minimum thickness of between about 0.2 microns at about 1×10^{18} cm^{-3} and about 70 microns at about 1×10^{15} cm^{-3} so that said minimum thickness is sufficient to achieve avalanche breakdown under reverse bias; and

a rectifying p-n junction formed between said first and second epitaxial layers.

5,061,973

SEMICONDUCTOR HETEROJUNCTION DEVICE WITH GRADED BANDGAP

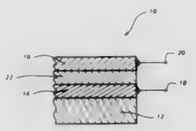
Tak-Kin Chu, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

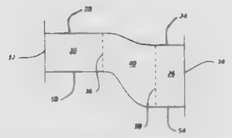
Filed Apr. 27, 1990, Ser. No. 517,013
Int. Cl.[5] H01L *29/161, 29/205, 29/225, 29/20*
U.S. Cl. 357—16 **2 Claims**

1. In a conveter of radiation to electrical signals employing two regions of semiconductor material forming wide and narrow bandgaps, said two regions being of the same conductivity type and having conduction and valence band edges between which abrupt steps exist to define said wide and narrow bandgaps, the improvement residing in: an intermediate region in interfacing abutment with said two regions and made of an alloy material interrelated with the semiconductor material of the two regions to establish alignment bands respec-

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tively bridging the conduction and valence band edges of the two regions, said alignment bands defining a graded bandgap





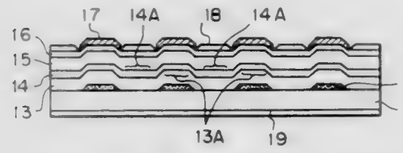
oc continuously varying width, between the band edges within the intermediate region.

5,061,974

SEMICONDUCTOR LIGHT-EMITTING DEVICE OF ARRAY TYPE

Noriaki Onodera; Saburo Saski, and Hiroyuki Iechi, all of Sendai, Japan, assignors to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Natori, both of, Japan

Filed Dec. 22, 1989, Ser. No. 455,146
Claims priority, application Japan, Dec. 28, 1988, 63-329224; Jan. 10, 1989, 1-1975; Oct. 20, 1989, 1-274586
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—17 10 Claims



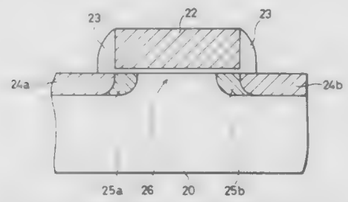
1. A semiconductor light emitting device, comprising:
a substrate having a first surface with a concave and convex configuration following a stripe pattern;
a lower common electrode formed on said substrate at a second surface opposite said first surface;
first current block layers formed in respective convex portions of said first surface of said substrate by impurity diffusion in such a manner that said convex portions have a conductivity type opposite to a conductivity type of the substrate;
a first clad layer formed on said first surface of said substrate and said first current block layers in a corrugated configuration following said concave and convex configuration of said first surface of said substrate;
an active layer formed on said first clad layer in said corrugated configuration following said concave and convex configuration so that said first clad layer has a portion disposed between two successive light emitting portions of said active layer along an array line extending through said light emitting portions;
a second clad layer formed on said active layer in said corrugated configuration following said concave and convex configuration;
cap layers respectively formed on at least concave portions of said second clad layer;
second current block layers formed respectively above convex portions of said second clad layer; and
upper electrodes formed on at least said cap layers.

5,061,975

MOS TYPE FIELD EFFECT TRANSISTOR HAVING LDD STRUCTURE

Masahide Inuishi, and Katsuhiro Tsukamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 310,114, Feb. 14, 1989, abandoned. This application Feb. 20, 1991, Ser. No. 658,430
Claims priority, application Japan, Feb. 19, 1988, 63-38059; Feb. 19, 1988, 63-38060
Int. Cl.[5] H01L *29/10*
U.S. Cl. 357—23.4 8 Claims



1. A MOS type field effect transistor comprising:
a semiconductor substrate of a first conductivity type;
a gate oxide film formed on said semiconductor substrate;
a gate electrode formed on said gate oxide film; and
source and drain regions of a second conductivity type formed in self alignment with said gate electrode on said semiconductor substrate with a channel region formed in said substrate between said source and drain regions; wherein
at least said drain region of said source and drain regions comprises an impurity region having a relatively high concentration and an impurity region having a relatively low concentration,
said impurity region of the lower concentration is arranged fully overlapped with said gate electrode,
said gate electrode comprises a single gate electrode material having a cross section of uniform thickness and in continuous contact with said gate oxide film over said channel region, and
a sidewall spacer of an insulating film is formed on a side surface of said single gate electrode material of said gate electrode.

5,061,976

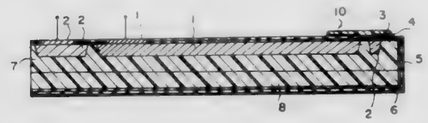
FET ELECTRODE WITH CARBON GATE

Takeshi Shimomura; Shuichiro Yamaguchi; Takanao Suzuki, all of Fuji, and Noboru Oyama, Fuchu, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP87/00900, § 371 Date Jul. 19, 1989, § 102(e) Date Jul. 19, 1989, PCT Pub. No. WO88/04049, PCT Pub. Date Jun. 2, 1988
Continuation of Ser. No. 362,392, Jul. 19, 1989, abandoned. This PCT application Nov. 19, 1987, Ser. No. 687,214
Claims priority, application Japan, Nov. 20, 1986, 61-275250
Int. Cl.[5] H01L *29/66*
U.S. Cl. 357—25 11 Claims

1. A FET device comprising:
a FET having a source, a drain, a channel for linking between the source and the drain and a gate for controlling current flow in the channel by field effect,

an insulator over said channel of said FET, a carbon membrane coating said insulator and forming said gate, and



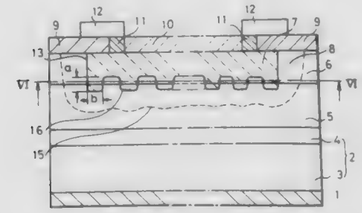
an organic membrane formed on a surface of said carbon membrane by an electrolytic oxidative polymerization process.

5,061,977

SEMICONDUCTOR PHOTODETECTOR DEVICE

Shinji Funaba, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 8, 1991, Ser. No. 638,545
Claims priority, application Japan, Jul. 24, 1990, 2-198263
Int. Cl.[5] H01L *27/14*
U.S. Cl. 357—30 6 Claims



1. A semiconductor photodetector device comprising:
a semiconductor substrate of a first conductivity type;
a semiconductor light-absorptive layer of said first conductivity type having a relative dielectric constant and disposed on said semiconductor substrate;
a semiconductor light-transmissive layer of said first conductivity type having a thickness, disposed on said light-absorptive layer, and having a relative dielectric constant smaller than the relative dielectric constant of said light-absorptive layer; and
a continuous region of a second conductivity type opposite said first conductivity type formed in part of said light-transmissive layer to a depth less than the thickness of said light-transmissive layer and including extensions extending from part of said light-transmissive layer into said light-absorptive layer.

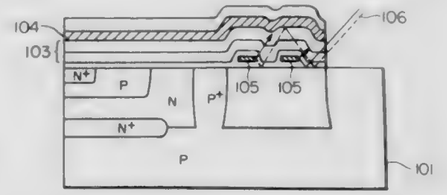
5,061,978

SEMICONDUCTOR PHOTOSENSING DEVICE WITH LIGHT SHIELD

Hidemasa Mizutani, Sagamihara, and Shigeki Kondo, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 206,995, Jun. 14, 1988, abandoned, which is a continuation of Ser. No. 12,368, Feb. 9, 1987, abandoned. This application Mar. 15, 1990, Ser. No. 496,092
Claims priority, application Japan, Feb. 28, 1986, 61-44789; Mar. 28, 1986, 61-68398
Int. Cl.[5] H01L *27/14*
U.S. Cl. 357—30 30 Claims

1. A semiconductor device comprising:
a substrate;
a circuit portion formed on said substrate;
an insulating layer formed at least on said circuit portion;
a light shielding layer formed at least on a portion of said insulating layer on said circuit portion; and
light scattering means provided in said insulating layer under a periphery of said light shielding layer, wherein said light scattering means substantially surrounds a periphery of



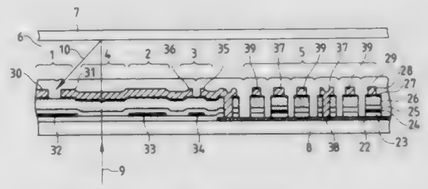
said circuit portion for attenuating obliquely impinging light, and wherein said light scattering means has a side surface for reflecting incident light.

5,061,979

SEMICONDUCTOR PHOTOELECTRIC DEVICE HAVING A MATRIX WIRING SECTION

Isao Kobayashi, Atsugi; Noriyuki Kaifu, Yokohama; Toshihiro Saika, Hiratsuka; Tadao Endo, Atsugi, and Tetsuya Shimada, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,834
Claims priority, application Japan, Feb. 21, 1989, 1-39239; Feb. 28, 1989, 1-45144; Feb. 28, 1989, 1-45145
Int. Cl.[5] H01L *27/14*
U.S. Cl. 357—30 25 Claims



1. A semiconductor device comprising:
m×n functional elements for processing signals, wherein m and n are each predetermined positive integers;
a matrix wiring section comprising a wiring lamination structure comprising plural wiring layers having at least, a first conductive layer, a first insulating layer provided on said first conductive layer, a second conductive layer provided on said first insulating layer, a second insulating layer provided on said second conductive layer, a semiconductor layer provided on said second insulating layer, and a third conductive layer provided on said semiconductor layer; and
m×n switching means arranged such that said m×n functional elements transfer the signals to said matrix wiring section under control of said switching means,
wherein said wiring section is provided on a common substrate with said switching means.

5,061,980

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

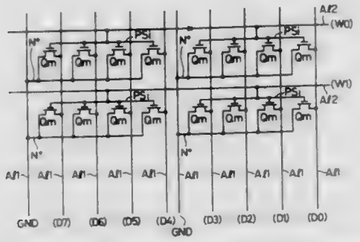
Makio Uchida, Fuchu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 253,673, Oct. 5, 1988, Pat. No. 4,990,992, which is a division of Ser. No. 41,759, Apr. 21, 1987, Pat. No. 4,782,465, which is a continuation of Ser. No. 635,210, Jul. 27, 1984, abandoned. This application Aug. 9, 1990, Ser. No. 564,594

Claims priority, application Japan, Jul. 27, 1983, 58-135815

Int. Cl.[5] H01L *27/02, 27/10*

U.S. Cl. 357—41 **21 Claims**



1. A semiconductor integrated circuit device comprising:
an address decoder circuit which produces a signal upon decoding an applied address;
a plurality of word lines connected to said address decoder circuit;
sub-word lines having first and second ends and connected to said plurality of word lines at a connecting portion of said sub-word lines disposed between the first and second ends; and
first memory cells and second memory cells connected to said sub-word lines and wherein the signal from said address decoder circuit being supplied to said subword lines connected to one of said plurality of word lines substantially simultaneously and said first memory cells connected to one of said sub-word lines are between said connecting portion and said first end and said second memory cells connected to one of said sub-word lines are between said connecting portion and said second end.

5,061,981

DOUBLE DIFFUSED CMOS WITH SCHOTTKY TO DRAIN CONTACTS

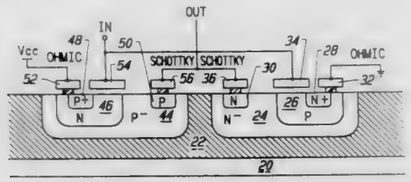
John H. Hall, 3169 Payne Ave., No. 50, San Jose, Calif. 95117

Continuation of Ser. No. 53,303, May 22, 1987, abandoned. This application Mar. 27, 1990, Ser. No. 500,227

The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.

Int. Cl.[5] H01L *27/02, 29/48, 29/56*

U.S. Cl. 357—42 **4 Claims**



1. A complementary metal oxide semiconductor (CMOS) transistor pair structure comprising
a p-channel transistor including a p-doped source, and ohmic contact to said p-doped source, a p-doped drain,
a Schottky contact to said p-doped drain, an n-doped channel between said p-doped source and said p-doped drain, and a gate electrode overlying and insulatively spaced from said channel region,
an n-channel transistor including an n-doped source, an ohmic contact to said n-doped source, an n-doped drain,
a Schottky contact to said n-doped drain, a p-doped channel between said n-doped source and said n-doped drain and a gate electrode overlying and insulatively spaced from said channel region,
a first voltage potential terminal connected to said ohmic contact to said p-doped source region,
a second voltage potential terminal connected to said ohmic contact to said n-doped source region,
an input terminal connected to said gate electrodes, and an output terminal serially connected to said drains through said Schottky contacts.

5,061,982

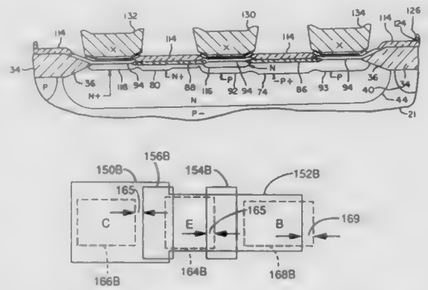
VLSI TRIPLE-DIFFUSED POLYSILICON BIPOLAR TRANSISTOR STRUCTURE

Robert M. Drosd, Aloha, and James M. Pickett, Portland, both of Oreg., assignors to Bipolar Integrated Technology, Inc., Beaverton, Oreg.

Division of Ser. No. 315,356, Feb. 21, 1989, which is a continuation-in-part of Ser. No. 296,899, Jan. 11, 1989, Pat. No. 4,866,001, which is a continuation of Ser. No. 214,856, Jul. 1, 1988, abandoned, which is a continuation of Ser. No. 19,359, Feb. 25, 1987, abandoned. This application Jan. 8, 1990, Ser. No. 462,104

Int. Cl.[5] H01L *27/02, 29/00, 29/72, 29/06*

U.S. Cl. 357—43 **31 Claims**



1. A very large scale integrated circuit including a plurality of bipolar transistors, comprising:
a lightly P-doped silicon substrate having a reference surface;
a field oxide layer covering field portions of the reference surface and having a plurality of elongate openings each defining a collector region for each transistor, each opening having a predetermined width and length;
a P-type channel stop in the substrate beneath the field oxide layer and an N-type collector of a first depth in the substrate within each collector region, the channel stop and collector being spaced to form a P-N junction surrounding each collector region;
each collector region having a first lengthwise end portion of a first width and a second, opposite end portion of a second width;
each transistor including:
an N-type collector contact region in the substrate in the first end portion of the collector region;
a P-type base contact region in the substrate in the second end portion of the collector region;

an emitter region centrally positioned within the collector region and including a P-type base in the substrate having a second depth less than the first depth and an N-type emitter having a third depth less than the second depth;
a P-type low resistivity region, within the substrate subjacent the reference surface, connecting the base to the base contact region;
an enhanced N-type low resistivity region, within the substrate immediately subjacent the reference surface, connecting the collector contact region to the P-type base, the low resistivity region forming an ohmic contact with the collector contact region and a P-N junction with the P-type base; and
a second oxide layer formed in two separate, spaced apart portions selectively covering the substrate surface over each of the low resistivity regions so as to isolate the emitter from the collector and base contact regions;
the emitter having a maximum length defined by the width of the opening in the field oxide and a maximum width defined by the spacing between the two portions of the second oxide layer.

5,061,983

SEMICONDUCTOR DEVICE HAVING A METAL SILICIDE LAYER CONNECTING TWO SEMICONDUCTORS

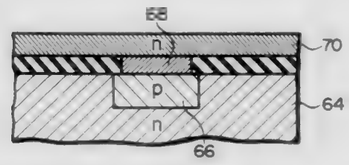
Hideharu Egawa, Tokyo; Yoshio Nishi, and Kenji Maeguchi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 170,073, Mar. 15, 1988, abandoned, which is a continuation of Ser. No. 919,613, Oct. 14, 1986, abandoned, which is a continuation of Ser. No. 625,177, Jun. 27, 1984, abandoned, which is a continuation of Ser. No. 283,346, Jul. 14, 1981, abandoned. This application Feb. 28, 1989, Ser. No. 318,411

Claims priority, application Japan, Jul. 15, 1980, 55-96751

Int. Cl.[5] H01L *29/04, 27/02, 23/48*

U.S. Cl. 357—59 **1 Claim**



1. A semiconductor device comprising:
a substrate formed of a semiconductor material of one conductivity type;
a first semiconductor region of an opposite conductivity type formed on a surface area of said semiconductor substrate so that said first semiconductor region and the semiconductor substrate have a first common flat surface;
an insulating layer formed on said substrate and said first semiconductor region to cover said substrate and said first semiconductor region, said insulating layer having a contact hole therein to expose an upper surface of said first semiconductor region;
a conductive layer of metal silicide formed in said contact hole of said insulating layer to fill the contact hole of said insulating layer, said conductive layer having a thickness substantially the same as that of said insulating layer so that the insulating layer and the conductive layer have a second common flat surface; and
a second semiconductor region formed of polycrystalline silicon of the first conductivity type formed on the second common flat surface of said insulating layer and conductive layer formed in said contact hole so that the first and second semiconductor regions are electrically connected via said conductive layer;
said first semiconductor region, conductive layer and second semiconductor region being arranged in a thickness direction of said substrate in sequence recited herein.

5,061,984

SUBSTRATE AND DEVICE COMPRISING INTERCONNECTION STRUCTURES

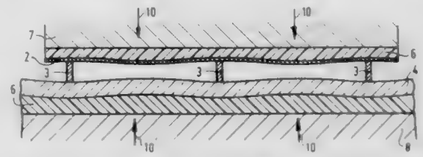
Rainer A. Schraivogel, Wettingen, Switzerland; Cornelis G. M. Van Kessel, Eindhoven, and Jan Bouwma, Heerlen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1990, Ser. No. 496,477

Claims priority, application Netherlands, Mar. 20, 1989, 8900676

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/40*

U.S. Cl. 357—68 **29 Claims**



1. A substrate comprising a plurality of rows of electrically conducting interconnection structures for realising an electrically conducting contact, particularly a pressure contact, characterized in that the interconnection structures are exclusively present in at least three parallel line arrangements each comprising at least one row of interconnection structures separated by a substantially equal mutual distance d, which line arrangements are mutually spaced apart by at least 5 d.

5,061,985

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND PROCESS FOR PRODUCING THE SAME

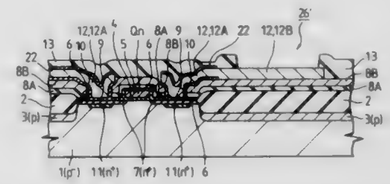
Hideo Meguro, Tachikawa, Japan; Yoshiaki Yoshiura, Irving, Tex.; Tatsuo Itagaki, Hinode, Japan; Ken Uchida, Higashiyamato, Japan; Tsuneo Satoh, Tachikawa, Japan; Seiichi Ichihara, Hachioji, Japan, and Koichi Nagasawa, Irving, Tex., assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., Tokyo, Japan

Filed Jun. 12, 1989, Ser. No. 364,463

Claims priority, application Japan, Jun. 13, 1988, 63-146178; Nov. 25, 1988, 63-298599

Int. Cl.[5] H01L *23/48*

U.S. Cl. 357—68 **24 Claims**



1. A semiconductor integrated circuit device comprising:
a semiconductor substrate of a first conductivity type;
thick insulating films selectively formed on a principal surface of said semiconductor substrate;
a plurality of semiconductor elements formed on the principal surface of said semiconductor substrate between said thick insulating films;
an interlayer insulating film formed on the principal surface of said semiconductor substrate so as to cover said semiconductor elements; and
a conductor film provided on said interlayer insulating film, one end of said conductor film being electrically con-

nected with each of said semiconductor elements through a contact hole provided in said interlayer insulating film, and the other end thereof extending over said thick insulating films,

wherein said conductor film that extends over said thick insulating films includes a pad portion set to transfer a signal between said semiconductor substrate and the outside;

wherein said conductor film is a composite layer comprising at least a first conductor layer and a second conductor layer stacked over said first conductor layer, said first conductor layer having an upper surface which is, in its entirety, in contact with a lower surface of said second conductor layer; and

wherein of the composite layer of said conductor film said second conductor layer alone is extended to said pad portion.

5,061,986

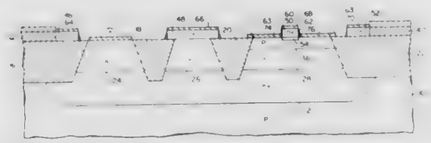
SELF-ALIGNED EXTENDED BASE CONTACT FOR A BIPOLAR TRANSISTOR HAVING REDUCED CELL SIZE AND IMPROVED ELECTRICAL CHARACTERISTICS

Madhukar Vora, Los Gatos; Greg Burton, Mt. View, and Ashok Kapoor, Palo Alto, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 88,632, Aug. 20, 1987, abandoned, which is a continuation of Ser. No. 693,062, Jan. 22, 1985, abandoned. This application Feb. 5, 1990, Ser. No. 476,149

Int. Cl.[5] H01L *23/48, 29/04, 29/72*

U.S. Cl. 357—71 **9 Claims**



1. An electrical contact for a semiconductor structure comprising:

a first region in the semiconductor structure;

an insulating region surrounding the first region;

an electrically conductive contact layer disposed upon at least part of both the first region and the insulating region and consisting of metal silicide on the first region and metal on the insulating region, the metal silicide being contiguous to the metal; and

a connection to the metal which, through the metal silicide, electrically connects to the first region.

5,061,987

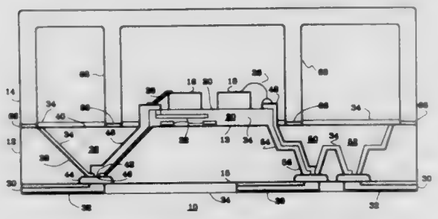
SILICON SUBSTRATE MULTICHIP ASSEMBLY

Yukun Hsia, Santa Ana, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Jan. 9, 1990, Ser. No. 462,668

Int. Cl.[5] H01L *23/48*

U.S. Cl. 357—71 **21 Claims**



1. An electronic packaging assembly, comprising:

a silicon substrate having first and second sides;

at least one semiconductor chip mounted on one of said sides;

dopant means disposed into said substrate to form a doped conducting via region through said substrate from one side to the other without perforation of said substrate so as to maintain the mechanical and hermetic integrity of the structure of said substrate;

a first conductor connected to said doped region at said first side;

a second conductor connected with the doped region from said second side;

said first conductor, doped region, and second conductor forming an electrically conductive via extending through said substrate from the first side to the second side without breaching the intrinsic hermetic integrity of said substrate;

at least one of said conductors being connected to said chip; and

a silicon cover hermetically sealed to said substrate, said cover and substrate thereby forming a fully hermetically sealed packaging assembly having the same coefficient of thermal expansion throughout.

5,061,988

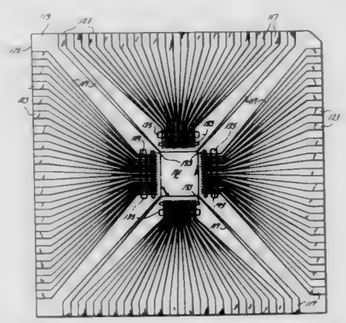
INTEGRATED CIRCUIT CHIP INTERCONNECT

Steve Rector, Riverside, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 30, 1990, Ser. No. 559,668

Int. Cl.[5] H01L *23/02, 23/12*

U.S. Cl. 357—74 **15 Claims**



1. An integrated circuit chip interconnect adapted to support a rectangular integrated circuit chip having a plurality of conductive terminal pads disposed along each side thereof, and adapted to communicate via wire bonding with selected ones of the terminal pads, comprising:

a relatively inflexible support member having an aperture therethrough;

a relatively flexible dielectric substrate mounted on and supported by said support member and having an integrated circuit chip accommodating location centrally disposed with respect to said aperture; and

a conductive lead pattern having relatively closely spaced inner contacts, relatively closely spaced intermediate contacts, and relatively widely spaced outer contacts, said lead pattern being disposed on said substrate and extending from said inner contacts adjacent each side of said chip accommodating location in relatively closely spaced parallel relation for a predetermined distance before fanning outwardly toward and terminating at said outer contacts at the outer edge of said substrate, said closely spaced parallel lead pattern portion including said intermediate contact son each of the leads inboard of the edge of said support member aperture.

5,061,989

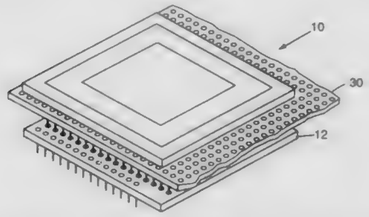
MECHANICAL TRANSLATOR FOR SEMICONDUCTOR CHIPS

Yao T. Yen, Cupertino, and Joonees K. Chay, San Jose, both of Calif., assignors to TransComputer, Inc., Sunnyvale, Calif.

Filed Mar. 22, 1990, Ser. No. 498,273

Int. Cl.[5] H02B *1/00;* **H01L** *25/00*

U.S. Cl. 357—74 **13 Claims**



1. A mechanical translator for allowing a first semiconductor chip having a pre-defined first pattern of first pins to replace a second semiconductor chip having a pre-defined second pattern of second pins on a p.c. board, the translator comprising:

a module having a first surface with a plurality of third pins in the second pattern and having electrical first sockets arranged in a pattern to receive the first pins, the module including translating semiconductor logic for translating the electrical impulses applied to the second chip to be compatible with the first chip and for translating impulses generated by the first chip to be compatible with the p.c. board, and the sockets an third pins being appropriately connected to the translating logic; and

an adapter having pattern of fourth pins and second sockets compatible with the first pattern and the adapter is connectable in piggy back fashion with the module,

whereby, the second semiconductor chip is connectable to the adapter and the module is connectable to a p.c. board.

5,061,990

SEMICONDUCTOR DEVICE AND THE MANUFACTURE THEREOF

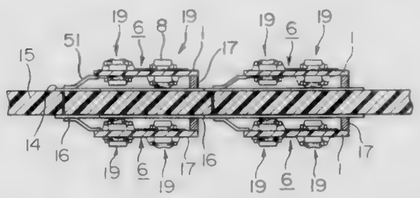
Ryutaro Arakawa, and Sunao Fukutake, both of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Sep. 20, 1988, Ser. No. 246,749

Claims priority, application Japan, Sep. 21, 1987, 62-236891

Int. Cl.[5] H01L *39/02;* **H05K** *1/14;* **H01R** *9/00*

U.S. Cl. 357—80 **8 Claims**



1. A semiconductor device comprising:

a wiring board, said wiring board including a first surface and a second surface and a plurality of terminals;

at least one sheet module, said sheet module including a sheet, said sheet having a front surface and a back surface, a plurality of IC devices, each said IC device including an IC chip, a plurality of input chip leads bonded to said IC chip and a plurality of output chip leads bonded to said IC chip, a number greater than two of said IC devices being mounted on each said sheet, a plurality of connection terminals disposed on said sheet to correspond to said input chip leads and said output chip leads and a plurality of sheet leads, each said sheet lead being connected to at least one of said connection terminals at one end thereof and to one of said terminals of said wiring board at the other end thereof, a plurality of wirings patterns connected at least among said connection terminals corresponding to said input chip leads and said output chip leads and between said sheet leads and said connection terminals corresponding to said input chip leads and said output chip leads, some of said input chip leads and some of said output chip leads being bonded to at least some of said connection terminals to mount each said IC device on said sheet and to connect each said IC device to one of said terminals of said wiring board.

5,061,991

EMISSION-RECEPTION SYSTEM FOR THE TRANSMISSION OF ANIMATED COLOR PICTURES AND SOUND FROM TWO INDEPENDENT CHANNELS

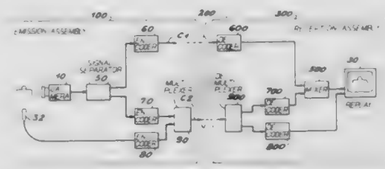
Jacques Guichard, Paris, and Gérard Eude, Torcy, both of France, assignors to L'Etat Francais represente par le Ministre des Postes, de Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications), Issy Les Moulineaux, France

Filed Apr. 24, 1990, Ser. No. 513,887

Claims priority, application France, Apr. 28, 1989, 89 05713

Int. Cl.[5] H04N *11/06*

U.S. Cl. 358—12 **6 Claims**



1. Transmission-reception signal processor for the transmission of animated color pictures and sound from two independent channels, comprising in combination:

(A) a transmission assembly comprising (i) image processing means including camera means for generating luminance and chrominance signals, means for separating the luminance and chrominance signals, first encoding means for encoding the luminance signal, and second encoding means for encoding the chrominance signal; (ii) sound processing means comprising an encoding means for generating encoded sound signals; and (iii) a multiplexer for multiplexing the encoding chrominance signal and the encoded sound signal; and

(B) a reception assembly comprising (i) a demultiplexer for demultiplexing the encoded chrominance and sound signals; (ii) decoding means for decoding the encoded luminance signal at a frequency F/N, said luminance signal decoding means comprising a first and a second image memories for alternatively storing the luminance signal corresponding to an image, and means for switching from one memory to another and reading said memory; (iii) decoding means for decoding the encoded chrominance signal at a frequency F/Q, where Q can be equal to N, said chrominance signal decoding means comprising a first and a second image memories for alternatively storing the chrominance signal corresponding to an image, and means for switching from one memory to another and reading said memory Q times; (iv) means for controlling switching from one memory to the other for reading the following decoding of the luminance and chrominance signals in phase corresponding to those which have been emitted in phase; (v) a mixer for mixing the decoded luminance and chrominance signals; (vi) sound processing means for decoding the encoded sound signals; and (vii) display

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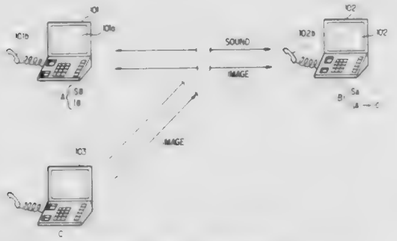
means for displaying said mixed decoded luminance and chrominance signals, and said decoded sound signals.

5,061,992

TV PHONE COMMUNICATION SYSTEM AND APPARATUS THEREFOR

Hideyuki Ueno, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 23, 1990, Ser. No. 468,502
Claims priority, application Japan, Jan. 24, 1989, 1-013172
Int. Cl.[5] H04N *1/42*
U.S. Cl. 379—53 **10 Claims**



1. A communication system, comprising:
a plurality of TV phone apparatuses each including
a displaying device for displaying images of communicated parties, and
speech communication means for communicating with said parties;
at least one of said plurality of TV phone apparatuses including
means for communicating between a first communicating party and a second communicating party by use of said displaying devices and speech communication means, and
third party displaying means for displaying an image of a third communicating party on said displaying device in said TV phone apparatus of said second party without interrupting said communication between said first party and said second party when said third party has made a call to said second party during said communication.

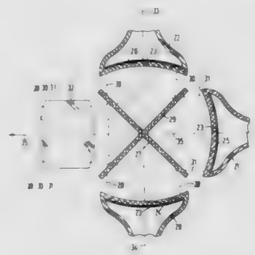
5,061,993

PROJECTION TELEVISION DISPLAY DEVICE

Leendert Vriens; Johannes H. M. Spruit, and Johannes C. N. Rijpers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 891,985, Jul. 30, 1986, abandoned. This application Nov. 14, 1988, Ser. No. 273,731
Claims priority, application Netherlands, Aug. 12, 1985, 8502226
The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.
Int. Cl.[5] H04N *5/74, 9/31*
U.S. Cl. 358—64 **5 Claims**

1. A projection television display device having a main axis and comprising first, second, and third monochrome projection television display tubes each having a display window with a display screen provided on the inside thereof, each screen having luminescent material which luminesces in a different color with a desired central wavelength, each said tube having an optical axis extending perpendicularly from the center of the display screen, the optical axes of the three display screens being co-planar and intersecting at a point, the axes of the display screens of the first and second tubes coinciding, the axis of the display window of the third tube constituting the main axis of the device, said main axis being perpendicular to the two coincident axis, said device further comprising first and second flat dichroic intersecting reflective mirrors extending perpendicularly of the plane of the axes and through the point of intersection of the axes at an angle of 45° with the main axis, the first mirror reflecting the image of the display screen of the first tube and the second mirror reflecting the image of the display screen of the second tube in the direction of the main axis and away from the display screen of the third tube, filters being disposed between said display screens and



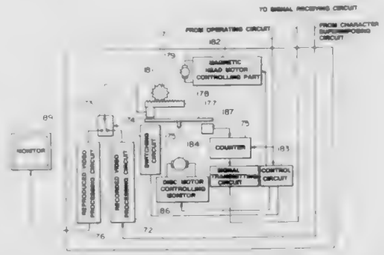
said mirrors for passing predetermined colors of light, characterized in that said filters are interference filters disposed between the luminescent material of the respective display screen and the display windows, each said filter having layers with thicknesses chosen so that the reflection at the respective central wavelength increases greatly for light rays constituting an angle of more than 20° to 35° with the normal to the filter.

5,061,994

ENDOSCOPE DEVICE USING A DISPLAY AND RECORDING SYSTEM WITH MEANS FOR MONITORING THE STATUS OF THE RECORDING MEDIUM

Yutaka Takahashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 268,399
Claims priority, application Japan, Nov. 25, 1987, 62-296718; Aug. 11, 1988, 63-201320
Int. Cl.[5] H04N *7/18, 9/89, 5/76;* **A61B** *1/06*
U.S. Cl. 358—98 **13 Claims**



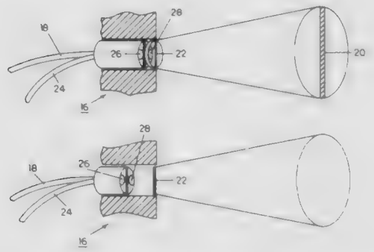
1. An endoscope picture image recording apparatus comprising:
an endoscope for obtaining an observed image of an object being observed;
a displaying means for displaying as a picture image the observed image obtained by said endoscope;
a recording means for recording in a recording medium the picture image displayed by said displaying means;
a recording medium state sensing means for sensing a value corresponding to an amount of said recording medium used and for externally outputting a signal based on the value to represent a state of the recording medium; and
signal superimposing means connected to said displaying means and said state sensing means for superimposing a recording medium amount image derived from the output signal representing the state of the recording medium with the picture image of said displaying means.

5,061,995

APPARATUS AND METHOD FOR SELECTING FIBER OPTIC BUNDLES IN A BORESCOPE

Raymond A. Lia; Michael Kehoskie, both of Auburn, and Richard A. Kokosa, Skaneateles, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Aug. 27, 1990, Ser. No. 573,870
Int. Cl.[5] H04N *7/18;* **A61B** *1/6;* **G02B** *6/6*
U.S. Cl. 358—98 **15 Claims**



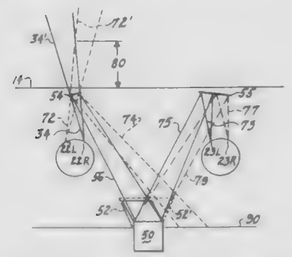
9. In a borescope/endoscope having an elongated insertion tube with a video imager in the distal end for viewing remotely located objects and measuring certain parameters thereof by projecting a shadow on the object, object illuminating means comprising:
at least one fiber optic bundle extending from the proximal to the distal end of an insertion tube and having shadow forming means in said distal end;
at least another fiber optic bundle extending from the proximal to the distal ends of said insertion tube having no shadow forming means therein;
a light source mounted adjacent the proximal ends of said fiber optic bundles; and
means for positioning at least one of said fiber optic bundle proximal ends in optical alignment with said light source.

5,061,996

GROUND VEHICLE HEAD UP DISPLAY FOR PASSENGER

Julius Schiffman, Huntington Woods, Mich., assignor to Autovision Associates, Bloomfield Hills, Mich.

Division of Ser. No. 373,788, Jun. 29, 1989. This application Apr. 27, 1990, Ser. No. 515,852
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—103 **10 Claims**



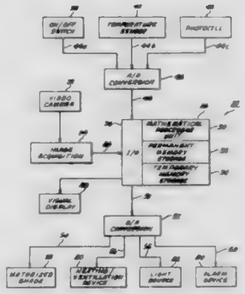
1. An apparatus for use in a ground vehicle having a windshield through which the driver can view conditions in the direction of travel of the ground vehicle, the apparatus comprising:
a program source for producing a video program;
a display device connected to said program source for producing a set of visual images corresponding to said video program; and
a mirror disposed in a location on the passenger's side of the ground vehicle, said mirror having a size and location to reflect an image of said display device to a passenger.

5,061,997

CONTROL OF VISIBLE CONDITIONS IN A SPATIAL ENVIRONMENT

Mark S. Rea; William L. Glennie, both of Rensselaer, and Inderpreet S. Thukral, Gleamont, all of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Jun. 21, 1990, Ser. No. 541,340
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—108 **32 Claims**



1. A method for adjusting visible conditions within a predetermined spatial environment comprising the steps of:
(a) forming a visual image of the visible conditions for a predetermined spatial environment with optical imaging means digitizing the visual image to provide digital output data signals representative thereof,
(b) segmenting the digital output data signals into spatial regions of the visual image,
(c) further processing the data signals from selected segmented regions to reflect the relative light contribution from selected light sources in the environmental space being viewed, and
(d) developing control signals from the processed data signals at a central location to enable adjustment of said visible conditions to be made therefrom, the control signals being developed with logic program means employing a computational association matrix having the mathematical relationship:

$$AL = D$$

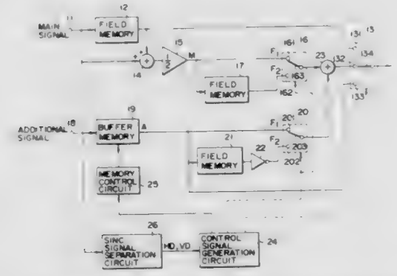
wherein **A** is a first matrix representing the brightness values detected in the individual spatial regions for individual light sources, **L** is a second matrix representing the brightness fraction being provided by each light source over the range 0–1, and **D** is a third matrix representing the desired brightness value in each spatial region as a fraction of the maximum brightness value achievable with the available light sources.

5,061,998

ARRANGEMENT FOR PERMITTING MULTIPLEXING OF AN ADDITIONAL SIGNAL ON AN ENTIRE PORTION OF AN OVERSCANNING AREA OF A TELEVISION SIGNAL

Seijiro Yasuki, Yokohama, and Kiyoyuki Kawai, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 1, 1990, Ser. No. 531,757
Claims priority, application Japan, Jun. 7, 1989, 1-144949
Int. Cl.[5] H04N *7/04*
U.S. Cl. 358—142 **8 Claims**



1. An additional signal multiplexing device for multiplexing an additional signal on a television main signal, comprising:

main signal outputting means for outputting the television main signal at the field repetition rate;

additional signal outputting means for inverting the additional signal for every other field and outputting the additional signal;

multiplexing means for multiplexing the television main signal output from said main signal outputting means and the additional signal output from said additional signal outputting means on each other; and

multiplexing control means for multiplexing the multiplexed signal output from said multiplexing means on scanning lines in a vertical overscanning area of the television main signal and multiplexing the television main signal on scanning lines outside the vertical overscanning area.

5,061,999

MULTIPLEX SIGNAL PROCESSING APPARATUS

Seiji Sakashita, Yawata; Hiroaki Ozeki, Neyagawa; Ippei Kanno, Hirakata, and Yoshio Abe, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 9, 1988, Ser. No. 268,966
Claims priority, application Japan, Nov. 13, 1987, 62-287910; Nov. 13, 1987, 62-287911
Int. Cl.[5] H04N *7/04, 7/06*
U.S. Cl. 358—142 **24 Claims**

1. A multiplex signal processing apparatus comprising:

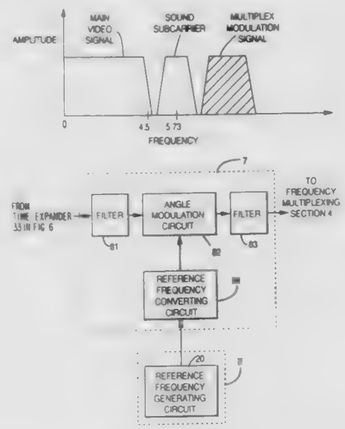
a sound modulation signal converting means for converting a sound signal to a sound modulation signal;

a sound subcarrier modulating means for modulating a sound subcarrier with the sound modulation signal;

a signal separating means for separating a video signal into a main video signal and a subvideo signal;

a multiplex modulation signal generating means for angle modulating a video subcarrier having a frequency higher than that of the sound subcarrier with the subvideo signal to generate a multiplex modulation signal having a frequency higher than that of the sound carrier;

a frequency multiplexing means for generating a modulation signal through frequency multiplexing of the main video signal, multiplex modulation signal and modulated sound subcarrier; and



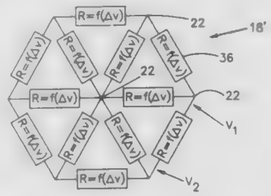
a main carrier modulating means for modulating a main carrier with the modulation signal.

5,062,000

"RESISTIVE FUSE" ANALOG HARDWARE FOR DETECTING DISCONTINUITIES IN EARLY VISION SYSTEM

John G. Harris, 446 S. Catalina Ave., Pasadena, Calif. 91106, and Christof Koch, 1420 N. Harding Ave., Pasadena, Calif. 91104

Filed Sep. 25, 1989, Ser. No. 412,329
Int. Cl.[5] H04N *3/14, 5/335;* **H01J** *40/14*
U.S. Cl. 358—213.27 **31 Claims**



1. In a system providing individual voltages at an output thereof representing the characteristics of a plurality of positions the improvement for smoothing the individual voltages and simultaneously recognizing and preserving discontinuities contained therein comprising:

a plurality of substantially identical smoothing elements, each of said smoothing elements comprising means for providing a fixed resistance to voltages thereacross which are below a pre-established threshold amount and an infinite resistance to voltages thereacross which are above said pre-established threshold amount;

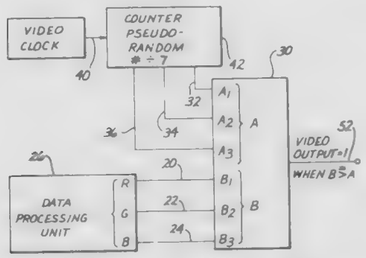
a plurality of intersections comprising means for interconnecting said smoothing elements in a balanced network thereof, respective ones of the individual voltages being connected to respective ones of the intersections, each of said intersections having an output therefrom providing a smoothed voltage representing an associated position.

5,062,001

GRAY SCALE SYSTEM FOR VISUAL DISPLAYS

Randall S. Farwell; Lane T. Hauck, both of San Diego, and Leonid Shapiro, Lakeside, all of Calif., assignors to Proxima Corporation, San Diego, Calif.

Continuation of Ser. No. 222,144, Jul. 21, 1988, abandoned. This application Apr. 11, 1990, Ser. No. 507,630
Int. Cl.[5] H04N *5/74*
U.S. Cl. 358—236 **25 Claims**



1. In combination with a display system for providing a visual image, a gray scale arrangement for producing a visual image wherein the visual image includes a plurality of parallel display lines forming a frame, each display line including a plurality of individual pixels forming part of the visual image, said arrangement comprising:

means for receiving video clock signals for controlling the displaying of the visual image in successive frames, each one of said frames being defined by a frame time interval, said frame time interval being defined by a frame time predetermined number of said video clock signals;

means for receiving intensity level signals, each one of said intensity level signal being indicative of a desired pixel image shading level for a given pixel element during a large number of successive frame time intervals;

means responsive to said video clock signals for producing a series of intensity level averaging signals arranged in recurring groups of said averaging signals;

said groups of intensity level averaging signals recurring during each frame time interval, each one of said groups including a shading level predetermined number of said averaging signals, said shading level predetermined number not being evenly divisible into said frame time predetermined number for causing different ones of said averaging signals to occur during successive frame time intervals for a given pixel element; and

means for comparing the individual ones of said intensity level signals and individual corresponding one of said intensity level averaging signals to develop and output signal to cause the display system to be activated selectively whenever the value of the intensity level signal is at least equal to the value of said corresponding intensity level averaging signal, whereby the average intensity level for each pixel image over a larger number of successive frame closely approximates said desired pixel image shading level.

5,062,002

ELECTROSTATIC PRINTER WITH COLOR HUE OR GREY LEVEL CONTROLLED BY THE LEVEL AND/OR DUTY CYCLE OF VOLTAGES APPLIED TO EACH STYLI

Brian J. Dahlquist, Palo Alto; David E. Doggett, Los Gatos, and Gordon S. Mitchard, Monte Sereno, all of Calif., assignors to Synergy Computer Graphics Corporation, Sunnyvale, Calif.

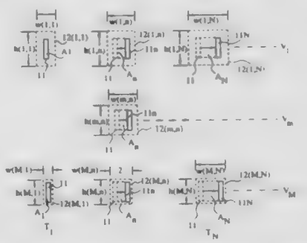
Filed Apr. 28, 1989, Ser. No. 345,327
Int. Cl.[5] G01D *15/06;* **B41J** *2/40, 2/41*
U.S. Cl. 358—298 **15 Claims**

1. An electrostatic printer including:

a plurality of rectangular styli;

means for moving a print medium past, but in sufficient proximity to, said styli to allow charge to be deposited on said print medium as a result applying voltages to each of said styli levels over a period of time; and

means for controlling and varying both the voltage level



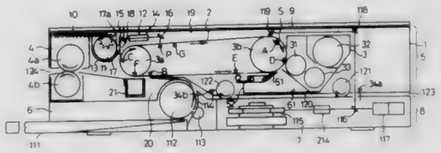
applied to each stylus and the time said voltage level is applied to each stylus such that each stylus independently deposits an amount of charge on the print medium which is a function of both the voltage applied to said stylus and the time said voltage is applied to said stylus.

5,062,003

IMAGE FORMING APPARATUS

Hidetoshi Kawabata, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 5, 1990, Ser. No. 548,510
Claims priority, application Japan, Jul. 6, 1989, 1-176331
Int. Cl.[5] H04N *1/036, 1/29;* **G01D** *15/14;* **G03G** *21/00*
U.S. Cl. 358—300 **18 Claims**



1. An image forming apparatus, comprising:

a belt photoconductor;

an original table for supporting an original;

means for charging the photoconductor;

optical system for projecting an image of the original onto the photoconductor;

a laser scan unit for generating a laser beam to scan the photoconductor;

a paper feed unit for feeding sheets disposed in alignment with the laser scan unit;

a developing unit for developing an electrostatic latent image formed on the photoconductor disposed between the laser scan unit and the original table;

means for transferring a toner image formed on the photoconductor onto a sheet;

a fixing unit for fixing the toner image onto the sheet disposed between the paper feed unit and the original table;

said photoconductor, developing unit and fixing unit being arranged inalignment; and

means for stretching the photoconductor between the developing unit and the fixing unit so that the stretched photoconductor is thinner than the developing unit and the fixing unit.

5,062,004

DIGITAL SIGNAL PROCESSING CIRCUIT FOR VIDEO TAPE RECORDER

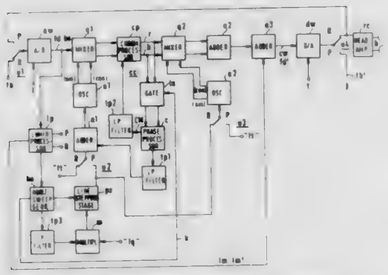
Martin Winterer, and Hans-Jürgen Dèsor, both of Gundelfingen, Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Feb. 6, 1989, Ser. No. 307,124

Claims priority, application European Pat. Off., Feb. 26, 1988, 88102865.8

Int. Cl.[5] H04N 9/79

U.S. Cl. 358—327 7 Claims



1. A digital signal processing circuit for common use in both recording and playback modes in a video tape recorder, said circuit being of the type receiving an input analog composite video signal from an external input in the recording mode, or reproduced from a video tape in the playback mode, and having an A/D converter for converting the input analog composite video signal to a corresponding input digital composite video signal, a first mixer for mixing the input digital composite video signal with a first baseband signal obtained from a first oscillator in order to derive a chrominance signal, a chrominance processor for deriving color difference signals from the chrominance signal from said first mixer, a second mixer for mixing the color difference signals from said chrominance processor with a second baseband signal obtained from a second oscillator a first adder for adding together the color difference signals mixed by said second mixer, a luminance processing circuit for frequency modulating/demodulating the input digital composite video signal branched from said A/D converter into a luminance signal, a second adder for combining the color difference signal from the chrominance processor with the luminance signal from said luminance processing circuit so as to form an output digital composite video signal, and a D/A converter for converting the output digital composite video signal into an output analog composite video signal which is fed to a video tape in the recording mode or a television receiver in the playback mode,

wherein the improvement comprises:

a phase-locked loop (PLL) for said first mixer including a phase processor for receiving the color difference signals branched from the output of said chrominance processor and deriving a phase angle signal therefrom, a PLL adder receiving the phase angle signal from said phase processor at one input and a first frequency signal provided through a first recording/playback changeover switch at another input thereof, and said first oscillator receiving the output of said PLL adder and providing the first baseband signal to said first mixer;

said second oscillator receiving a second frequency signal through a second recording/playback changeover switch and providing the second baseband signal to said second mixer; and

said luminance processing circuit including a luminance processor for frequency modulating/demodulating the luminance signal and for producing output synchronizing signals synchronized to a line frequency of the video signal, and a horizontal sweep generator receiving the output synchronizing signals from said luminance processor and producing a frequency signals from said corresponding to a color-under frequency for the video signal,

wherein said first recording/playback changeover switch is switched to a recording position to receive an input color subcarrier frequency signal in the recording mode, and to a playback position to receive an input of the color-under frequency signal from said horizontal sweep generator of said luminance processing circuit in the playback mode, in order to provide the respective frequency signal to said PLL adder of said phase-looked loop; and

wherein said second recording/playback changeover switch is switched to a playback position to receive an input color subcarrier frequency signal in the playback mode, and to a recording position to receive an input of the color-under frequency signal from said horizontal sweep generator of said luminance processing circuit in the recording mode, in order to provide the respective frequency signal to said second oscillator.

5,062,005

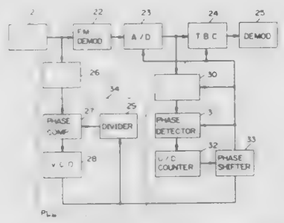
VIDEODISC REPRODUCING APPARATUS

Hiromu Kitaura, Osakasayama, and Yoshio Hirauchi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 1, 1989, Ser. No. 304,646

Int. Cl.[5] H04N 5/76

U.S. Cl. 358—342 1 Claim



1. A videodisc reproducing apparatus comprising:

a pilot carrier extraction circuit for extracting a pilot carrier from a videodisc reproduced signal;

a clock generating circuit comprising an analog/digital converter and a phase-locked loop oscillator for generating a sampling clock signal for said analog/digital converter by which said videodisc reproduced signal is converted into digital form in synchronism with said pilot carrier;

a phase-shift circuit for phase shifting said sampling clock signal for providing a plurality of phases of said sampling clock signal, and for applying a thus phase shifted sampling clock signal to said analog/digital converter, said phase shift circuit comprising a combination of a plurality of fine phase-delay circuits;

a synchronizing signal detection circuit for detecting a synchronizing signal included in a MUSE signal of said videodisc reproduced signal converted into digital form by said analog/digital converter;

a phase detecting circuit for detecting a digital sampling phase of said synchronization signal included in said MUSE signal of said videodisc reproduced signal converted into a digital form by said analog/digital converter according to positional information in said synchronizing signal detected by said synchronizing signal detection circuit, and for detecting whether a thus detected digital sampling phase is advanced or retarded with respect to a digital sampling phase of a specified normal MUSE signal; and

an address generating circuit for generating an address signal output, said address generating circuit comprising an up/down counter controlled by an output of said phase detecting circuit, wherein an optimum sampling phase of said sampling clock signal is constantly attained by controlling said phase-shift circuit according to said address signal output from said address generating circuit.

5,062,006

SHEET FEEDING APPARATUS AND FACSIMILE SYSTEM HAVING SAME

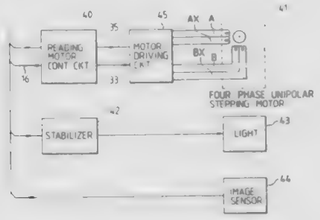
Shigeo Miura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1989, Ser. No. 352,188

Claims priority, application Japan, May 17, 1988, 63-118269

Int. Cl.[5] H04N 1/00

U.S. Cl. 358—421 5 Claims



1. A facsimile system comprising:

an original reading portion for reading an original sheet;

a recording portion for recording an image on a recording sheet;

a stepping motor for feeding at least one of the original sheet and the recording sheet;

a drive means for generating a signal by which said stepping motor is driven repeatedly with alternate first and second excitation modes, said drive means decreasing electric energy sent to said stepping motor in response to a power down signal;

a control means for outputting a control signal corresponding to a first convey mode which needs a power down of said stepping motor, or a second convey mode which does not need the power down of said stepping motor, in the sheet convey; and

a power down signal generation means having a judgment means for judging an excitation phase of the stepping motor, said power down signal generation means generating the power down signal when said control means generates the control signal corresponding to the first convey mode and said judgment means judges the two phase excitation mode, but not generating the power down signal even if said judgment means judges the two phase excitation mode when said control means generates the control signal corresponding to the second convey mode;

wherein said stepping motor is driven by a four phase motor exciting signal, said drive means having a decoder, and wherein said drive means receives said exciting signal and outputs the four phase excitation signal obtained by decoding the excitation signal by means of said decoder.

5,062,007

DIGITAL SIGNAL MAGNETIC RECORDING/REPRODUCING APPARATUS

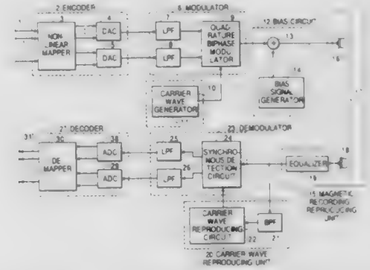
Etsuto Nakatsu, Neyagawa; Hiroaki Shimazaki, Moriguchi; Toyohiko Matsuta; Masafumi Shimotashiro, both of Neyagawa, and Masaaki Kobayashi, Kawanishi, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Dec. 15, 1989, Ser. No. 450,997

Claims priority, application Japan, Dec. 16, 1988, 63-319014

Int. Cl.[5] G11B 20/06, 5/09

U.S. Cl. 360—29 10 Claims



1. A digital signal magnetic recording/reproducing apparatus comprising:

a non-linear mapping means for producing two channel signals showing a predetermined point in a constellation corresponding to a value of an input digital data, said predetermined point having been set to have an inverse characteristic with respect to non-linear amplitude characteristics of a magnetic head and magnetic recording medium system;

a carrier generating means for generating a carrier;

an amplitude phase modulation means for subjecting the two-channel signals from said mapping means to quadrature biphase modulation using said carrier to generate a modulated signal;

a magnetic recording/reproducing means including a magnetic head for recording said modulated signal on a magnetic recording medium, and for reproducing the recorded signal;

a carrier reproducing means for reproducing a carrier from the reproduced signal from said magnetic recording/reproducing means;

a demodulation means for demodulating the reproduced signal from said magnetic recording/reproducing means using the carrier reproduced by said carrier reproducing means; and

a decoding means for decoding an output of said demodulation means to obtain output digital data.

5,062,008

RECORDING OF FREQUENCY-MULTIPLEX SIGNAL ON RECORDING MEDIUM

Yutaka Ichinoi, Yokohama; Akira Hirota, Chigasaki, and Noboru Watanabe, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 12, 1990, Ser. No. 491,928

Claims priority, application Japan, Mar. 14, 1989, 1-61816

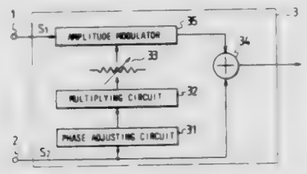
Int. Cl.[5] G11B 20/06, 5/02

U.S. Cl. 360—29 8 Claims

1. A method of producing a frequency-multiplex signal on the basis of a first signal and a second signal whose frequency is lower than that of said first signal, to record the produced frequency-multiplex signal on a recording medium, comprising the steps of:

doubling the frequency of said second signal so as to produce a frequency-doubled signal;

multiplying the produced frequency-doubled signal by said first signal so as to produce a multiplication signal; and



adding said multiplication signal to said second signal so as to produce an addition signal which is recorded as said frequency-multiplex signal on said recording medium.

5,062,009

RECORDING AND/OR REPRODUCING APPARATUS HAVING, IN ADDITION TO A RECORDING MEDIUM, MEMORY MEANS FOR MEMORIZING INFORMATION REPRODUCED FROM THE RECORDING MEDIUM

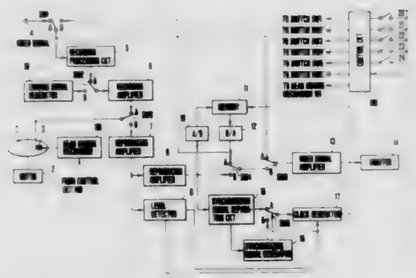
Shigeo Yamagata, Kanagawa; Tuguhide Sakata, Tokyo; Tomishige Taguchi, Saitama, and Somei Kawasaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 309,948, Feb. 9, 1989, abandoned, which is a continuation of Ser. No. 840,886, Mar. 18, 1986, abandoned. This application Mar. 15, 1990, Ser. No. 494,816

Claims priority, application Japan, Mar. 19, 1985, 60-053260

Int. Cl.[5] **H04N** *5/78*

U.S. Cl. 360—33.1 **9 Claims**



1. A reproduce apparatus comprising:

(a) means for reproducing information recorded at an access position of a recording medium;

(b) means for memorizing an information reproduced by said reproducing means;

(c) means for discriminating whether said access position is recorded on or not; and

(d) means for causing said memorizing means to clear memorized information when said discriminating means discriminates that the access position of said reproducing means is not recorded.

5,062,010

ELECTRONIC STILL CAMERA WITH REMOTELY-CONTROLLED AUDIO RECORDING FEATURE

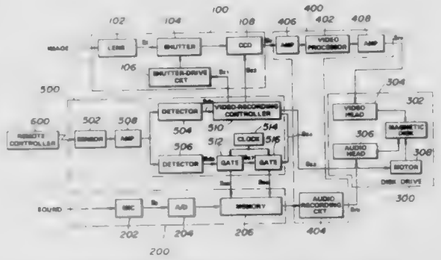
Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 270,454, Nov. 7, 1988, abandoned, which is a continuation of Ser. No. 800,330, Nov. 21, 1985, abandoned. This application Nov. 21, 1989, Ser. No. 440,472

Claims priority, application Japan, Dec. 27, 1984, 59-281626

Int. Cl.[5] **H04N** *5/781*

U.S. Cl. 360—35.1 **21 Claims**



1. An electronic still camera with an audio recording feature, comprising:

an image pick up means for picking up one field of video data containing information of a still image to be recorded;

an audio recording means for receiving audio data associated with said still image;

a magnetic disk drive mechanism including a magnetic disk for storing said still image information containing video data and said audio data; and

a remote controller means including a manually operable operating switch for remotely controlling said image pick up means and said audio recording means in a selected order and with a selected interval therebetween, which order and interval are predetermined prior to initiation of said operating switch;

wherein said video data and said associated audio data are taken according to said predetermined order and interval controlled by said remote controller means, and subsequently recorded on said recording medium in a predetermined manner dependent upon said selected time interval and order.

5,062,011

ADDRESS MARK GENERATING METHOD AND ITS CIRCUIT IN A DATA MEMORY

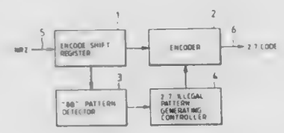
Kenichi Hase, Fujisawa; Shyoichi Miyazawa; Ryutaro Horita, both of Yokohama; Shinichi Kojima, Takasaki; Akira Uragami, Takasaki; Takashi Watanabe, Takasaki, and Yoshinori Yoshino, Takasaki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,757

Claims priority, application Japan, Mar. 26, 1988, 63-72544

Int. Cl.[5] **G11B** *5/09, 20/14, 20/16*

U.S. Cl. 360—40 **14 Claims**



1. A data recording method using a 2–7 RLL (Run Length Limited) code as a recording sign on a recording medium comprising the steps of:

detecting 1-byte of data comprising a hexadecimal notation "8B" arranged in a NRZ (Non-Return to Zero) signal to be input;

converting said 1-byte of data "8B" into a 2–17 **RLL code;**

modifying said 2–7 RLL code, corresponding to said 1-byte of data "8B", into a 2–7 illegal pattern, wherein said 2–7 illegal pattern satisfies rules of said 2–7 RLL code but which does not normally exist; and

recording said 2–7 illegal pattern on the recording medium as an address mark.

5,062,012

LINEAR ACCESS MECHANISM WITH DRIVING FORCE REACTION CANCELLING DEVICE AND MAGNETIC DISK APPARATUS USING THE SAME

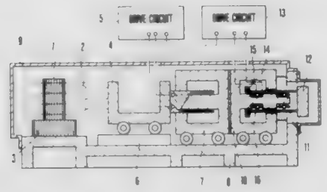
Naoki Maeda; Yozo Nakamura; Yuzo Kadomukai; Shunichi Mitsuya, all of Ibaraki; Tsuyoshi Takahashi, and Jun Naruse, both of Odawara, all of Japan, assignors to Hitach, Ltd., Tokyo, Japan

Filed Mar. 16, 1989, Ser. No. 324,556

Claims priority, application Japan, Mar. 18, 1988, 63-63376; Jul. 6, 1988, 63-166745

Int. Cl.[5] **G11R** *21/02;* **H02K** *33/18*

U.S. Cl. 360—75 **12 Claims**



3. A linear access mechanism comprising:

a base;

a linear guide mechanism supported on the base for defining a substantially linear guide path;

a carriage mounted for movement along the linear guide path;

driving means operative, when energized, to move the carriage reciprocally along the linear guide path;

means for determining a reaction of a driving force applied to the carriage by the driving means on the basis of an energization of the driving means;

anti-reaction force generating means operative, when energized, to generate an anti-reaction force and to apply the anti-reaction force to the carriage; and

means for controlling an energization of the anti-reaction force generating means on the basis of the reaction of the driving force applied to the carriage and determined by the determining means such that the anti-reaction force generated by the anti-reaction force generating means is substantially equal in magnitude and opposite in direction to the reaction of the driving force applied to the carriage.

5,062,013

TAPE RECORDER INCLUDING CAM OPERATED MODE CHANGING MECHANISM

Toshihisa Gotoh, Tokyo, Japan, assignor to Nippon Standard Telecommunications Co., Ltd., Tokyo, Japan

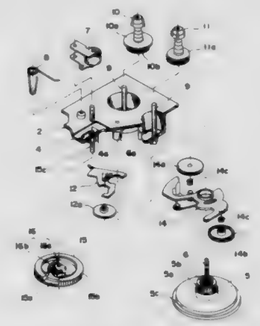
Filed Dec. 12, 1989, Ser. No. 443,933

Claims priority, application Japan, Jul. 14, 1989, 1-181770

Int. Cl.[5] **G11B** *15/00, 5/008*

U.S. Cl. 360—90 **25 Claims**

1. A tape recorder including a mode changing mechanism, said mode changing mechanism comprising a head base; an electromotor; a circular cam gear having teeth provided with a tooth thickness and a front side toothless segment recessed from the front side of the gear in a direction of the tooth thickness, a rear side toothless segment recessed from the rear side of the gear in a direction of the tooth thickness and displaced from said front side toothless segment by a predetermined angular distance, and a cam portion operatively coupled with the head base so as to control movement of the head base as said cam gear is rotated forwardly or reversely; a pivotal FR arm; a pair of FR gears mounted to opposite sides of the pivotal FR arm, said pair of FR gears being displaced from each other in the direction of the tooth thickness and engageable with said cam gear; and a power transmission mechanism connected to the electromotor, the FR arm, and the FR gears, to transmit a drive from the electromotor to said pair of FR gears and to rotate said FR arm so as to rotate one of said FR gears depending on the rotational direction of the electromotor into engagement with said cam gear.



5,062,014

REVERSING DEVICE HAVING CHANGE-OVER MECHANISM FOR PINCH ROLLERS IN TAPE RECORDERS

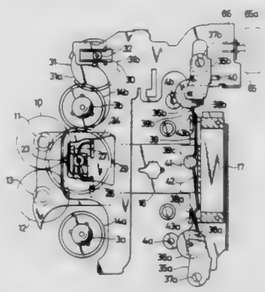
Toshio Yoshimura, Kawasaki, Japan, assignor to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 475,325

Claims priority, application Japan, May 23, 1989, 1-59492[U]

Int. Cl.[5] **G11B** *15/28, 15/44*

U.S. Cl. 360—96.2 **5 Claims**



1. A reversing device for a tape recorder, comprising:

(a) a changeover plate reciprocally movable in a direction perpendicular to the direction of movement of a head mounting plate so that the direction of a rotational power transmitting path extending from a drive motor can be changed over from one reel spindle to another reel spindle;

(b) an elongate resilient member pivoted at its central portion on the head mounting plate and pivotally movable for

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causing its opposite ends to urge a pair of pinch rollers alternately to move into and out of contact with corresponding capstans;

(c) one of said ends of said elongate resilient member being connected with said changeover plate so as to move concurrently with said changeover plate in a direction perpendicular to the direction of movement of said head mounting plate;

(d) said pivoted central portion of said elongate resilient member being movable relative to said head mounting plate in a direction perpendicular to the direction of movement of said head mounting plate;

(e) said elongate resilient member having a pair of abutment portions on opposite sides of said pivoted central portion thereof; and

(f) said head mounting plate having a pair of guide portions engageable with said abutment portions, respectively, of said elongate resilient member in such a manner that in response to the position of displacement of said changeover plate, either of said two abutment portions of said elongate resilient member engages a corresponding one of said guide portions to cause said elongate resilient member to pivot in a direction to disengage one pinch roller from the corresponding capstan.

5,062,015

DAT CASSETTE LOADING DEVICE

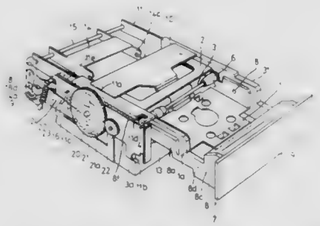
Hyun J. Maeng, Anyang, Rep. of Korea, assignor to Goldstar Alps Electronics Co., Ltd., Kyongsangnam, Rep. of Korea

Filed Dec. 22, 1989, Ser. No. 455,178

Claims priority, application Rep. of Korea, Dec. 30, 1988, 88-18025

Int. Cl.[5] G11B *5/008, 15/675*

U.S. Cl. 360—96.5 **9 Claims**



1. A digital audio tape cassette loading device comprising:

a cassette holder,

an up-down plate pivotably connected to said cassette holder by a shaft,

a tray connected to said cassette holder and said up-down plate for associated movement with respect to each other,

a pair of side brackets fixed in parallel to each other about a main base for supporting said cassette holder, said up-down plate, and said tray,

a cam gear attached to said brackets by an axle pin, said cam gear having a cam groove, a full wheel gear for engaging with an electric motor, and an intermittent gear for engaging with a rack of said tray,

an up-down holder fitted on an axle shaft mounted through rear end portions of said side brackets for operatively moving the up-down plate,

a cam lever mounted to said axle shaft, said cam lever having a pin disposed at the front end thereof wherein the pin is inserted into said cam groove for pivotably moving the up-down holder,

an adjusting plate having a projection fixed to said cam lever by pins which are respectively inserted into oblong holes for exposing an insert hole in said cam lever through a square opening for contacting to a bend of the up-down holder,

a tension spring connected between said up-down holder and spring holders, and

said cam groove of said cam gear having a first region for horizontal movement of the cassette, a second region for vertical movement of the cassette, and a third region for applying marginal stroke to the cassette wherein the marginal stroke is in proportion to the tension strength of said tension spring by pivotably moving the cam lever to produce a gap between the projection of the cam lever and a bend of the up-down holder after setting the cassette on support posts disposed on the main base, and a fourth region for preventing the cam gear from a reverse rotation by the force of restitution of the tension spring.

5,062,016

SET OF STRUCTURAL BRACKETS THAT ALLOW ELECTRONIC/ELECTRICAL ASSEMBLIES TO BE MOUNTED WITHIN A COMPUTER ENCLOSURE

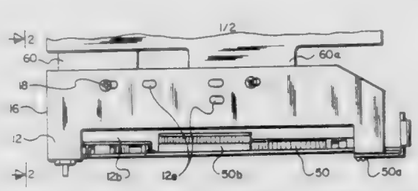
Derek J. Zupancic, 7143 Owensmouth Ave., Canoga Park, Calif. 91303

PCT No. PCT/US86/00985, § 371 Date Nov. 10, 1987, § 102(e) Date Nov. 10, 1987, PCT Pub. No. WO87/07052, PCT Pub. Date Nov. 19, 1987

PCT Filed May 5, 1986, Ser. No. 175,952

Int. Cl.[5] G11B *15/00, 5/012*

U.S. Cl. 360—97.01 **5 Claims**



1. A mounting bracket interconnecting a computer peripheral data storage device with a computer interface card having a male bus connector on one end, for direct connection to a computer circuit inside a computer enclosure having at least one female bus expansion slot therein, said mounting bracket comprising:

a) a generally rectangular frame defining an elongated horizontal surface having an elongated notch formed along one of its longitudinal sides, and at least one tab projecting vertically from said longitudinal side and having a mounting opening formed therethrough, the horizontal surface having a plurality of mounting openings formed therethrough,

b) means for attaching said computer peripheral data storage device to at least one of said mounting openings of said mounting bracket, and

c) means for attaching said computer interface card to said mounting bracket with said male bus connector projecting through said elongated notch, whereby said mounting bracket forms a composite assembly interconnecting said computer peripheral data storage device and said computer interface card, and which can be directly connected to said computer circuit by coupling said male bus connector within said female bus expansion slot with said female bus expansion slot projecting into said elongated notch.

5,062,017

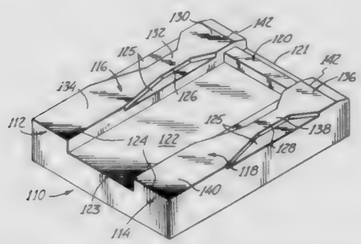
HOUR-GLASS DISK HEAD SLIDER

Richard A. Strom, Eagan; Peter Crane, Minneapolis, and Robert E. Chapin, Burnsville, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed May 25, 1990, Ser. No. 528,936

Int. Cl.[5] G11B *5/60*

U.S. Cl. 360—103 **33 Claims**



1. An air bearing disk head slider for supporting an electromagnetic transducer proximate a rotating magnetic disk, the slider comprising:

a slider body having a surface with a leading edge, a trailing edge, and first and second slide edges; and

first and second raised side rails positioned along the first and second side edges, respectively, the first and second side rails each forming an air bearing surface with an inside and an outside edge extending between the leading edge and the trailing edge, the inside and outside edges converging from the leading edge to a central region of the air bearing surface and diverging from the central region to the trailing edge to form inside and outside surfaces above the slider body surface that are recessed from the air bearing surface by approximately 0 to 2.0 microns.

5,062,018

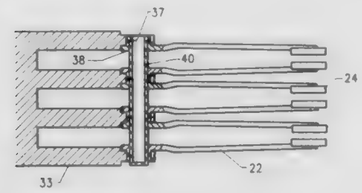
SWAGED HEAD ARM MOUNTING ARRANGEMENT FOR DISC DRIVES USING SHAPE MEMORY ALLOY

John R. Yaeger, Santa Clara County, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Apr. 5, 1990, Ser. No. 504,949

Int. Cl.[5] G11B *5/48, 21/16*

U.S. Cl. 360—104 **13 Claims**



1. A disc drive comprising:

an information storage disc;

a slider transducer for transferring information between the information storage disc and an external system;

a flexure assembly that carries the slider, the flexure assembly including a mounting portion having an opening therein; relative to the information storage disc, the head positioner assembly including a platform for supporting the flexure assembly, the platform having an opening aligned with the flexure opening; and

a shape-memory element swaged within the aligned openings to firmly couple the flexure assembly to the head positioner assembly, the shape-memory element being formed from a shape memory alloy material having martensitic and austenitic phase conditions, wherein in a first one of said phase conditions, the shape-memory element firmly secures the flexure assembly to the head positioner assembly and wherein when the shape-memory element is in a second one of said phase condition, the shape-memory element loosely fits within the aligned openings.

2. A disc drive as recited in claim 1 wherein the shape-memory element is a shape-memory tube that is tubular in shape.

7. A method of constructing a disc drive as recited in claim 2 comprising the steps of:

fabricating the shape-memory tube in the first phase such that the diameter of the shape-memory tube is equal to its desired swaged diameter;

transforming the shape-memory tube to the second phase and elongating the transformed tube;

inserting the elongated shape-memory tube into the head positioner assembly while the shape-memory tube remains in the second phase; and

transforming the inserted shape-memory tube back to the first phase and allowing the shape-memory tube to recover its original shape to form a secure swaged connection between the head positioning assembly and the flexure assembly.

5,062,019

METHOD AND APPARATUS FOR ACCURATELY POSITIONING A MAGNETIC RECORDING AND REPRODUCING HEAD

Tahei Morisawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

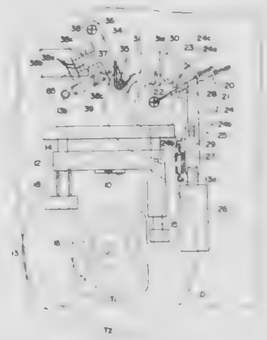
Continuation of Ser. No. 204,728, Jun. 10, 1988, Pat. No. 4,989,109. This application Jul. 9, 1990, Ser. No. 550,021

Claims priority, application Japan, Jun. 12, 1987, 62-146660

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] G11B *5/55, 5/56*

U.S. Cl. 360—106 **32 Claims**



1. A magnetic disk recording and reproducing apparatus, comprising:

first means for moving a magnetic head to a desired track of a magnetic disk, said first moving means comprising an intermittent rotation mechanism having a rachet gear, said rachet gear being rotated in an intermittent manner, the intermittent rotation of said rachet gear defining rotational stop positions of said rachet gear, the rotational stop positions of said rachet gear grossly positioning said magnetic head with respect to said desired track; and

means for determining the position of said magnetic head on said desired track; and

second means for moving said magnetic head to finely adjust the rotational stop position of said rachet gear so that said magnetic head moves to said desired track in response to said determining means.

5,062,020

RECORDING AND REPRODUCING APPARATUS

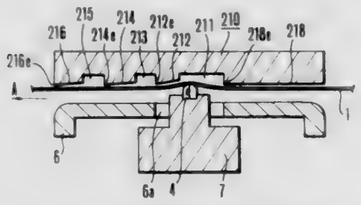
Eiji Osanai, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha

Continuation of Ser. No. 323,230, Mar. 13, 1989, abandoned, which is a continuation of Ser. No. 191,796, May 2, 1988, abandoned, which is a continuation of Ser. No. 838,901, Mar. 12, 1986, abandoned. This application Nov. 22, 1989, Ser. No. 442,482

Claims priority, application Japan, Mar. 13, 1985, 60-35638[U]; Mar. 13, 1985, 60-35639[U]; Mar. 16, 1985, 60-53028; Mar. 20, 1985, 60-56188; Jul. 27, 1985, 60-115779[U]; Sep. 30, 1985, 60-216934

Int. Cl.[5] G11B *17/34*

U.S. Cl. 360—130.34 13 Claims



1. A recording or reproducing apparatus using a rotating flexible disc with stabilizing means, having a recording or reproducing head and a stabilizing member, confronting each other on opposite sides of the disc so as to sandwich the disc, said recording or reproducing head shiftable in the radial direction of the flexible disc, and said stabilizing member being arranged at a position opposite to said disc wherein a surface of said stabilizing member opposing to said disc is formed so as to constitute a plane close to and parallel with the surface of said disc and said surface opposing to the disc is provided with a recessed groove part, inside which an atmospheric pressure is maintained, arranged along the shifting passage of said head in the radial direction of the disc, said recessed groove part having a uniform depth at an inner circumferential side and an outer circumferential side of said disc, further an inclined surface is formed over an entire area of said recessed groove part in its lengthwise direction for generating an air pressure for pressing said rotating flexible disc toward said head and said inclined surface is formed at an edge portion of said recessed groove part of said stabilizing member constituting a downstream side of said recessed groove part relative to the rotating direction of said disc, said inclined surface being constructed so that its inclining angle relative to said rotating direction of said disc varies in the radial direction of said disc.

5,062,021

SELECTIVELY TEXTURED MAGNETIC RECORDING MEDIA

Rajiv Y. Ranjan, Edina, Minn., and David N. Lambeth, Webster, N.Y., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Mar. 12, 1990, Ser. No. 491,586

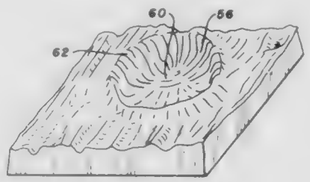
Int. Cl.[5] G11B *5/82*

U.S. Cl. 360—135 13 Claims

1. A device for storing magnetically readable data, including:

a disc including a substantially rigid, non-magnetizable substrate having a substantially planar substrate surface, said disc further including a magnetizable film deposited over said substrate surface as a layer substantially uniform in thickness, said disc having an outer surface having a nominal surface plane; and

wherein said outer surface includes a plurality of marks, each comprising a depression extended inwardly of the nominal plane toward said substrate a distance in the range of from 0.5 to ten microinches, and a rounded rim substantially surrounding each depression and extended outwardly of the nominal surface plane by a height of at



least 0.2 microinches, each of said rims having a diameter in the range of from 0.1 to five mils.

5,062,022

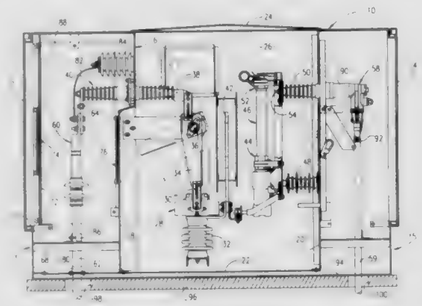
PAD-MOUNTED SWITCHGEAR WITH COMBINATION LIVE FRONT AND DEAD FRONT TERMINATIONS AND TWO OBSERVATION WINDOWS PERMITTING VISUAL INSPECTION OF THE SWITCH ASSEMBLY

Lloyd R. Beard, Centralia, and John A. Schwartze, Columbia, both of Mo., assignors to A. B. Chance Co., Centralia, Mo.

Filed Feb. 26, 1990, Ser. No. 485,257

Int. Cl.[5] H02B *7/00*

U.S. Cl. 361—335 8 Claims



6. A switchgear apparatus comprising:

a housing having a source side wall which includes a first window;

an insulated conductor extending through the source side wall;

a switch assembly disposed within the housing and electrically connected to the insulated conductor;

a live front terminator electrically connected with the source side insulated conductor;

a dead front enclosure surrounding the live front terminator, the enclosure including,

a first grounded panel including a second window and being movable between a closed position shielding the live front terminator, and an open position exposing the live front terminator, and

a second grounded panel movable between a closed position shielding the first grounded panel, and an open position exposing the first grounded panel, the enclosure remaining dead front and the switch assembly being visible through the first and second windows when the first grounded panel is in the closed position and the second grounded panel is in the open position.

5,062,023

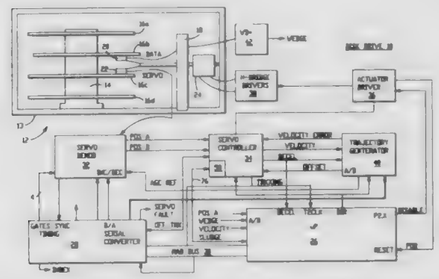
DISK FILE SERVO LOOP WITH IMPROVED TRACK SETTLING

John S. Squire, 1105 Clydebank Ct., Sunnyvale, Calif. 94087

Filed Apr. 13, 1990, Ser. No. 509,051

Int. Cl.[5] G11B *5/55, 21/08*

U.S. Cl. 360—78.04 6 Claims



1. In a lead-lag compensation circuit within a disk drive head positioner servo loop for integrating a fed back position error signal, the compensation circuit including an integrating capacitor and a high value resistor through which the integrating capacitor is charged by the position error signal, an improvement for shortening integration time of the circuit during track settling comprising:

parallel resistance means switchably connectable across the high value resistor for lowering the resistance thereof,

switching means for switchably connecting the parallel resistance means across the high value resistor in response to a switching signal, and

control means responsive to the head positioner servo loop for generating the switching signal to cause the switching means to connect the parallel resistance means across the high value resistor during a settle interval immediately following completion of track seeking motion when the servo loop is functioning in a track following mode and before track seeking is complete.

5,062,024

MODULAR CONNECTOR FOR PRINTED CIRCUIT BOARDS

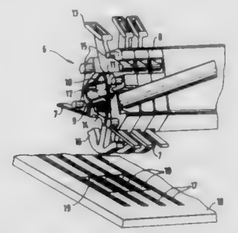
Lothar R. Hennemann, Minden, Fed. Rep. of Germany, assignor to WAGO Verwaltungsgesellschaft mbH, Minden, Fed. Rep. of Germany

Filed Mar. 29, 1990, Ser. No. 502,064

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1989, 3910937

Int. Cl.[5] H01R *9/00*

U.S. Cl. 361—426 3 Claims



1. A modular terminal block strip for a printed circuit board, said printed circuit board having a plurality of uniformly spaced substantially parallel conductive tracks of substantially equal width thereon, and having a plurality of spaced recesses formed therein, said recesses extending through said circuit board between said conductive tracks and having widths which are less than or equal to the spacing between their respective adjacent conductive tracks, said terminal block strip comprising a plurality of connected terminal blocks, each of said terminal blocks being adapted to be assembled with said printed circuit board, and each comprising a case, a catch peg integrally formed with the case thereof, and at least one solder connection extending from the case thereof adjacent the catch peg thereof, each of said solder connections being adapted to be soldered to one of said conductive tracks and being received in engagement therewith when the respective terminal block thereof is assembled with said circuit board, each of said catch pegs being received in engagement in one of said recesses which is adjacent to the conductive track engaged by the respective solder connection thereof when said catch pegs are assembled with said circuit board for thereby retaining, said terminal blocks in position on said circuit board.

5,062,025

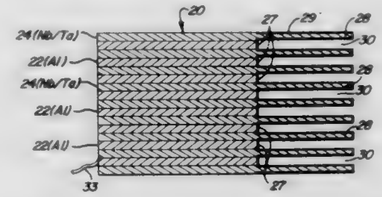
ELECTROLYTIC CAPACITOR AND LARGE SURFACE AREA ELECTRODE ELEMENT THEREFOR

John D. Verhoeven, and Edwin D. Gibson, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa

Filed May 25, 1990, Ser. No. 529,148

Int. Cl.[5] H01G *9/05*

U.S. Cl. 361—509 39 Claims



1. A capacitor element, comprising (a) an electrode body having a plurality of elongated filaments of Al and X interspersed and aligned along an axis of the electrode body, X being selected from the group consisting of Nb and Ta, said electrode body having an electrode surface comprising exposed surfaces of the Al filaments and exposed lengths of the X filaments protruding beyond the exposed surfaces of the Al filaments to provide interfilament interstices between said lengths, (b) a dielectric oxide of X formed on the exposed lengths of said X filaments, and (c) a dielectric oxide of Al formed on the exposed surfaces of said Al filaments.

5,062,026

FLASHLIGHT HOLDER CLAMP ASSEMBLY

Anthony Maglica, Ontario; Armis L. Lewis, Cucamonga, and Fred R. McAlister, Chino, all of Calif., assignors to MAG Instruments, Ontario, Calif.

Continuation-in-part of Ser. No. 285,734, Dec. 16, 1988, Pat. No. 4,980,805. This application Jun. 13, 1990, Ser. No. 537,447

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—72 6 Claims

1. A flashlight holder clamp assembly for adjustably securing a flashlight to a support member, said assembly comprising:

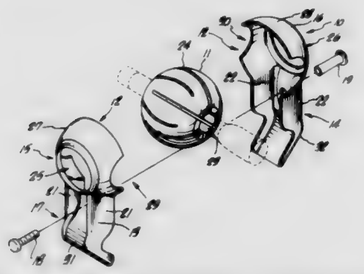
two elastomeric generally spherically-shaped gripping members, each of said members defining cylindrical channels extending centrally therethrough and each defining a plurality of uniformly spaced longitudinal slots communicating with said channels;

a mounting bracket having a forward portion and a rearward portion, said forward portion being disposed adjacent said rearward portion and defining therewith a first pair of gripping surfaces and a second pair of gripping surfaces, said first pair of gripping surfaces being adapted to engage

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one of said gripping members and said second pair of gripping surfaces being adapted to engage the other gripping member which in turn engages the support member; and

means for constricting the forward and rearward portions of said mounting bracket to constrict one of said gripping members between said first pair of gripping surfaces about a portion of the flashlight and to constrict said second pair of gripping surfaces about the other gripping member



whereby the flashlight is secured to the support member in a desired angular orientation with respect thereto; and

wherein said forward and rearward portions of said mounting bracket define an upper pair of axially aligned apertures therein, the diameter of each of said apertures being larger than the cross-sectional diameter of said centrally disposed channel, and a lower pair of axially aligned apertures therein being perpendicularly disposed with respect to the upper pair of apertures.

5,062,028

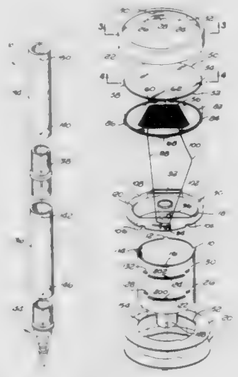
SELF-CONTAINED SOLAR POWERED LAMP

John S. Frost; Lloyd V. Wallace, both of Thousand Oaks; Mark R. Erickson, Oxnard, and Bethanne Felder, Thousand Oaks, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 11, 1989, Ser. No. 392,694

Int. Cl.[5] F21L *1/00*

U.S. Cl. 362—183 **13 Claims**



1. A self-contained solar powered lamp comprising:

bezel means having an upper part and a lower part;

a solar cell array in said bezel means at the upper part of said bezel means;

a component tray rotationally secured to said bezel means at the lower part of said bezel means;

lightbulb contact means disposed in the component tray to hold a lightbulb downward from the component tray; and

lens means rotationally secured to said component tray and extending downwardly from said component tray.

5,062,027

AUTOMOBILE SIGNAL LAMP

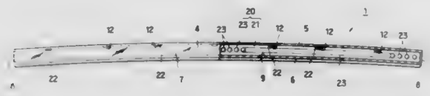
Tsutomu Machida; Yoshiaki Ishida, and Katsumi Muramatsu, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Shizuoka, Japan

Filed Feb. 6, 1990, Ser. No. 475,545

Claims priority, application Japan, Feb. 9, 1989, 1-14471

Int. Cl.[5] B60Q *1/44*

U.S. Cl. 362—80.1 **10 Claims**



1. In an automobile signal lamp of the type including a lamp body having an upper wall portion and a lower wall portion and a light source disposed within said lamp body in a lamp space defined between said upper wall portion and said lower wall portion and which is elongated in left and right directions and of a reduced size in vertical directions, the improvement wherein said top wall portion and said bottom wall portion are formed of synthetic resin material and are curved in the same direction in the vertical direction such that a distance between a horizontal line and a central portion of said lamp body is different than a distance between said horizontal line and opposite end portions of said lamp body.

5,062,029

ADJUSTABLE SPOTLIGHT

Hartmut S. Engel, Schloss Heutingsheim, Freiberg am Neckar, Fed. Rep. of Germany 7141

Filed May 15, 1990, Ser. No. 523,621

Claims priority, application Fed. Rep. of Germany, May 19, 1989, 3916308

Int. Cl.[5] F21Y *21/26*

U.S. Cl. 362—287 **24 Claims**



1. A spotlight having a carrier part which has a mechanical-electrical connection unit at one end and which is connected at the other end with a lighting part via a pivotal hanger, wherein the carrier part is of an essentially bar-like form and comprises a base part, which is connected with a fixed element of the pivotal hinge, and a pivotal part which at least, for carrying the lighting part, having an extension forming, in relation to the pivotal hinge, a counterweight for the lighting part, the pivotal part being connected with a movable element of the pivotal hinge; the pivotal hinge being eccentrically arranged relative to the longitudinal axis of the carrier part.

5,062,030

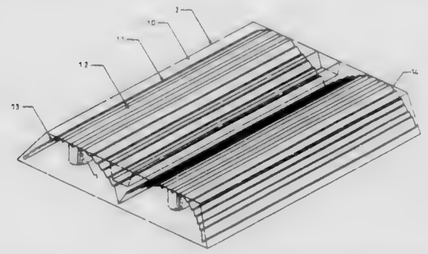
CUSTOMIZED LIGHT REFLECTOR

Luisito A. Figueroa, c/o Excel Products, Inc., Suite 504 Jovan Condominium, 600 Shaw Blvd., Mandaluyong, Metro Manila, Philippines

Filed Dec. 10, 1990, Ser. No. 624,605

Int. Cl.[5] F21V *7/12*

U.S. Cl. 362—346 **12 Claims**



1. A light reflector for use in a lighting fixture with an elongated light source comprising:

a substantially concave light reflecting element disposed in a coaxial parallel longitudinal fashion along a light source, said element having central light reflecting section and a pair of wing sections oppositely positioned parallelly on said central section;

said central section includes at least two V-shaped reflecting section each defining two opposed intersecting reflecting planar surfaces formed with a central apex, said intersecting planar surfaces being positioned at approximately 25–35 degrees relative to the horizontal; and

said wing sections are arcuatedly and symmetrically positioned on either side of said central section so as to create a concave configuration, each of said wing section having at least six individually dimensioned and oriented light reflective angled planar surfaces with widths in the range of 13 to 28 millimeters, said light reflective angled planar surfaces being inclined at an angles in the range of 24 to 57 degrees relative to the horizontal, said wing section surfaces being positioned such that the narrowest are adjacent to said central section while the widest surfaces form the outermost portion of

said wing sections from said central section;

said central section forming the apex of the reflector having the widths in the range of 6 to 8 cm; and

said wing sections having a span in the range of 24 to 28 cm.

5,062,031

SELF OSCILLATING POWER STAGE FOR INVERTED RECTIFIER POWER SUPPLY

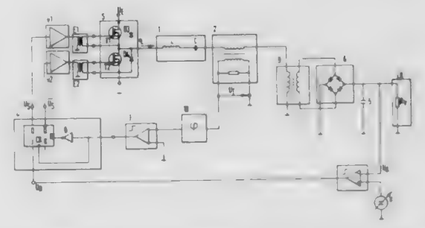
Gerhard Flachenecker, Ottobrunn; Karl Fastenmeier, Munich, and Heinz Lindenmeier, Planegg, all of Fed. Rep. of Germany, assignors to Erbe Elektromedizin GmbH, Tubingen, Fed. Rep. of Germany

Filed Dec. 14, 1989, Ser. No. 450,855

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1988, 3842465

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—16 **57 Claims**



1. A switch-controlled regulator for a d.c.-to-d.c. voltage converter having electronic means for switching an input of the regulator alternately to two different substantially constant potentials, said electronic switching means having a control input, and a charging output capacitance connected to terminals for connection to a load circuit path, said regulator further comprising:

a series-resonant circuit energy storage means having a frequency of resonance and interposed between said electronic switching means and one of said terminals to which said charging capacitance is connected;

a current-to-voltage conversion means (2), having an output and having an input interposed in circuit in series with said series-resonant circuit energy storage means, for producing a first control voltage which is as closely as possible in phase with current flow in said series-resonant circuit means, said current-to-voltage conversion means having an output for supplying said first control voltage;

feedback circuit means, including pulse shaping means (3), an output, and an input connected to said output of said voltage-to-current conversion means (2), for deriving from said first control voltage and a second control voltage of pulse form substantially in phase with reversals of current flow in said series-resonant circuit means and supplying said second control voltage to said output of said feedback circuit means in such a way that when current (i_L) flows with positive instantaneous value into said series-resonant circuit means (1) from said electronic switching means (2), said second control voltage is of a value which, if connected through to said control input of said electronic switching means, would switch said electronic switching means to the more positive of said two different potentials, and when current (i_L) flow between said electronic switching means and said series-resonant circuit means has an instantaneous value which is negative, said second control voltage is of a value which, if connected through to said control input of said electronic switching means, would switch said electronic switching means to the more negative of said two different potentials;

an electronic combining circuit (4), having a first input connected to a regulating voltage and a second input connected to said output of said feedback circuit means for receiving said second control voltage and having an output connected to said control input of said electronic switching means, for either blocking said pulse form second control voltage from appearing at said output and at said control input or allowing the second control voltage

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of pulse form to be applied to said control input with pulse flanks at instants such that every connection and disconnection of said series resonant circuit means to and from either of said two substantially constant potentials takes place substantially at a null transit of said current (i_L) in said series resonant circuit means, said blocking or allowing application of said second control voltage being dependent upon the relative voltage values at said first and second inputs, said electronic combining circuit (**4**) for blocking or allowing application of said second control voltage including, or being associated with, means for locking said electronic switch in quiescent state in which it remains open and therefore not connected to either of said constant voltage potentials during an interval defined by a succession of transitions of said second control voltage of pulse form which are blocked from said output of said combining circuit;

freewheeling diodes (**D3**, **D4**) respectively connected from said respective substantially constant potentials to an input of said series-resonant circuit means which is connected for receiving voltage from said electronic switching means, said diodes (**D3**, **D4**) being connected so that they are both in a blocked state when said electronic switch and consequently said regulator are locked in a quiescent state, and

a full-wave rectifier circuit interposed in circuit between said charging capacitor (**5**) and both said series-resonant circuit means (**1**) and said current-to-voltage conversion means (**2**), for providing a d.c. output voltage to said charging capacitor when a load circuit path is connected to said terminals.

5,062,032

INSTALLATION FOR THE CONTROL OF SEVERAL ELECTRICAL RECEIVERS CAPABLE OF BEING IN AT LEAST TWO STATES

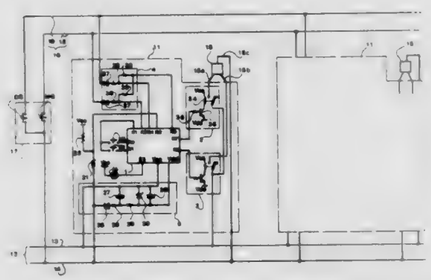
Dominique Jacquel, Cluses, France, assignor to Somfy, Cluses, France

Filed Jul. 6, 1989, Ser. No. 376,249

Claims priority, application France, Jul. 29, 1988, 88 10282

Int. Cl.[5] **G05B** *15/00*

U.S. Cl. 364—131 **3 Claims**



1. An installation for the control of several electrical receivers capable of being in at least two states, comprising a plurality of individual control devices each control device connected to a receiver and each control device comprising control switching means to control, at will, said receiver, each control device being controlled by a common control line connected to a general control device, said general control device comprising a general switching means to control, at will, all of the receivers, each inidividual control device comprising a logic processing unit, said logic processing unit comprising a first group of input gates, said first input gates are connected to said control switching means, and output terminals connected to the receivers, a second group of inputs, said general control switching means connected to said second group of inputs of each logic processing unit, each logic processing unit being provided with means for accepting commands given in a non-simultaneous manner by the general control device and the individual control device, arranging each logic processing unit of the individual control devices to provide in the case in which the general control and the individual control are actuated simultaneously, that the logic processing unit accepts the general control command as a matter of priority unless the latter is of a duration shorter than a first value and if, at the time of the start of the general control command, at least one of the control means of the individual control device has been actuated for a duration longer than at least a second value.

5,062,033

ELECTRO-HYDRAULIC CONTROL SYSTEM FOR A MINERAL MINING INSTALLATION

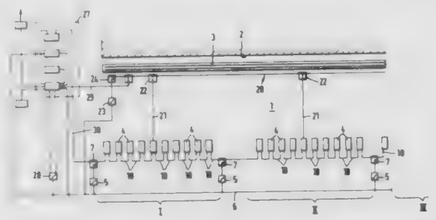
Willy Kussel, Werne; Johannes König, and Martin Reuter, both of München, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia GmbH, Fed. Rep. of Germany

Filed May 9, 1988, Ser. No. 191,551

Claims priority, application Fed. Rep. of Germany, May 9, 1987, 3715586

Int. Cl.[5] **G06F** *15/46;* **E21D** *23/12*

U.S. Cl. 364—187 **14 Claims**



1. An electro-hydraulic control system for a mineral mining installation in a mine working which includes a plurality of roof supports equipped with hydraulic devices and electromagnetic valves for operating said devices under control of the system, the installation and the system being subdivided into a plurality of operational groups; said control system comprising individual control units operably associated with the individual supports, each control unit having electronic programmable means for providing control signals usable to activate the valves within the associated one of the groups, individual power sources for providing electrical power via electrical power current circuits to at least the control units of the individual groups, with the electrical power current circuits within the groups being isolated from one another, a system data bus provided within the groups for transmitting data signals between the units and along the groups of units and a further separate independent common data bus which is coupled to some of the units within the groups to create a number or redundant data channels usable if the continuity of the system data bus is interrupted.

5,062,034

DEVICE FOR EMULATING A MICROCONTROLLER USING A PARENT BOND-OUT MICROCONTROLLER AND A DERIVATIVE NON-BOND-OUT MICROCONTROLLER

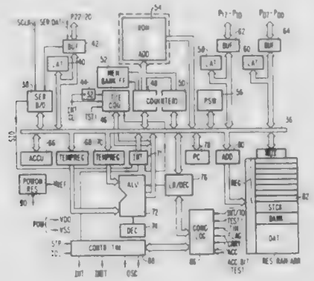
Jacobus M. Bakker, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 116,603, Nov. 2, 1987, abandoned, which is a continuation of Ser. No. 75,712, Jul. 17, 1987, abandoned. This application Nov. 20, 1989, Ser. No. 440,455

Claims priority, application Netherlands, Nov. 11, 1986, 8602849

Int. Cl.[5] **G06F** *11/30*

U.S. Cl. 364—200 **15 Claims**



1. A device for emulating a microcontroller of a standard, non-bond-out type having standard pins, and a standard processor element, the claimed device comprising:

a. an external program memory;

b. a bond-out parent microcontroller, with respect to which the external program memory is external and which comprises:

i. a first plurality of pins, corresponding to the standard pins, for executing input/output operations;

ii. a second plurality of pins for exchanging data, addresses, and control signals with the external program memory;

iii. a third plurality of pins for exchanging control signals with external hardware;

iv. a processor element;

v. means for communicating between said processor element and said first, second, and third plurality of pins;

c. a derivative non-bond-out microcontroller of the standard non-bond-out type, with respect to which the external memory is external, comprising:

i. a processor element;

ii. an internal program memory;

iii. communication means for exchanging information between the processor element of the derivative microncontroller and the internal program memory of the derivative microcontroller;

iv. derivative logic, not present in the parent microcontroller;

v. a plurality of pins, which are the standard pins, forming:

A. a first data connection coupled to the external program memory, in parallel with the second plurality of pins of the parent microcontroller; and

B. a second data connection coupled to the third plurality of pins of the parent microcontroller, and including at least one control pin coupled with said external program memory, in parallel with at least one corresponding control pin of the second plurality of pins of the parent microcontroller; and

vi. emulation control means which assumes a state during emulation, in which state the emulation control means deactivates the communication means of the derivative microcontroller, so that during emulation

A. the processor element, of the parent microcontroller, and the external program memory are activated instead of the processor element and internal program memory of the derivative microcontroller;

B. the first plurality of pins of the parent microcontroller act as standard pins of the derivative microcontroller; and

C. the derivative logic is activated and connected to the communication means of the parent microcontroller, whereby the derivative microcontroller performs functions specific to it which cannot be performed in the parent microcontroller;

whereby the parent microcontroller emulates the derivative microcontroller.

5,062,035

TIME SLOT ALLOCATION FOR LOOP NETWORKS

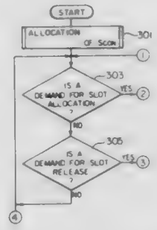
Shigeaki Tanimoto, Yokosuka; Tadashi Kayano; Hirobumi Karasawa, both of Yokohama; Osamu Yamagishi, and Tomoo Kunikyo, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa and Nippon Telegram and Telephone Corporation, Tokyo, both of, Japan

Filed Jun. 22, 1987, Ser. No. 64,652

Claims priority, application Japan, Jun. 24, 1986, 61-147963

Int. Cl.[5] **G06F** *13/372, 13/14*

U.S. Cl. 364—200 **4 Claims**



1. A method of time slot allocation for a loop network that is configured by loop-connecting a control station and a plurality of branch stations, and wherein interstation communication is made by transmitting a fixed-length frame through a transmission path, the frame including a synchronization area, a control area, and a data area composed of a plurality of time slots, the method comprising the steps of:

allocating, by the control station, a first predetermined number of time slots of the data area to the control station and to each of the branch stations for communication;

reserving, in the control station, a second predetermined number of time slots of the data area;

setting, in each branch station, an upper limit and a lower limit of a number of the time slots possessed by the branch station;

communicating, by each branch station, with the control station or with other branch stations using the time slots allocated to each branch station;

transmitting, by each branch station, to the control station a demand for supplemental time slots when a number of unused time slots of the branch station is below the lower limit, the demand carried in the control area of the frame;

supplying, by the control station, the demanding branch station with time slots from the time slots reserved in the control station, the supplying step performed after the demand transmitting step; and

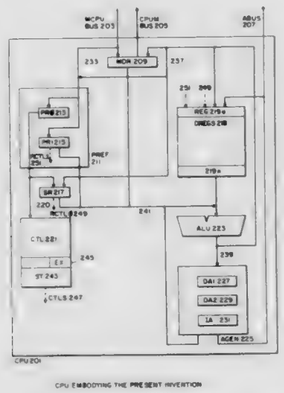
returning, by each branch station, unused time slots to the control station when a number of the unused time slots of the branch station exceeds the upper limit.

5,062,036

INSTRUCTION PREFETCHER

Arthur Barrow, Acton; Kin L. Cheung, Andover; Jeffrey W. Einarson, Chelmsford, and Shams A. Khan, Groton, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 743,128, Jun. 10, 1985, abandoned.
This application Apr. 3, 1989, Ser. No. 333,818
Int. Cl.[5] G06F *9/38, 9/32, 9/355*
U.S. Cl. 364—200 **21 Claims**



CPU EMBODYING THE PRESENT INVERTION

1. In a digital computer system which includes memory means for providing instructions containing varying numbers of syllables and processor means for executing the instructions, instruction prefetch apparatus connected to the processor means for receiving at least one prefetched the syllable of an instruction prefetched from the memory means concurrently with the execution of another instruction in the processor means, the instruction prefetch apparatus comprising:

(1) prefetched syllable retention means connected to the memory means for receiving and retaining the prefetched syllables and including separately loadable prefetched first syllable retention means and prefetched other syllable retention means, the prefetched first syllable retention means and the prefetched other syllable retention means each having an input coupled together in parallel to the memory means for receiving the prefetched syllables therefrom; and

(2) prefetch control means connected to the prefetched syllable retention means for causing the prefetched first syllable retention means to receive only the prefetched first syllable of an instruction and the prefetched other syllable retention means to receive any prefetched other syllables of the instruction, each one of the prefetched other syllables being received in turn in the prefetched other syllable retention means and the prefetched first syllable remaining in the prefetched first syllable retention means while the prefetched other syllable retention means receives the prefetched other syllables.

5,062,037

METHOD TO PROVIDE CONCURRENT EXECUTION OF DISTRIBUTED APPLICATION PROGRAMS BY A HOST COMPUTER AND AN INTELLIGENT WORK STATION ON AN SNA NETWORK

David M. Shorter, Lewisville, Tex., and John S. Kapernick, Brewster, N.Y., assignors to IBM Corp., Armonk, N.Y.

Filed Oct. 24, 1988, Ser. No. 261,861
Int. Cl.[5] G06F *15/16, 9/46, 13/00*
U.S. Cl. 364—200 **10 Claims**

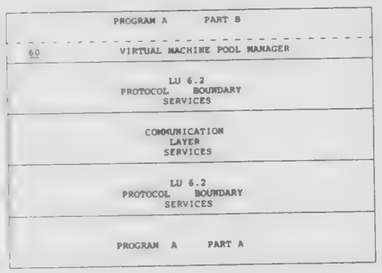
1. A method for executing first and second distributed application programs in an SNA type data processing network that supports program to program communication in accordance with SNA Logical Unit 6.2 protocols and in which said application programs comprise first parts that are run on one terminal and second parts that are run on the host processor of said network in response to first and second sequential requests to initiate LU 6.2 conversations between said terminal and said host involving respectively said first and second programs, said host processor having a virtual machine type Operating System including a programming module to automatically setup a plurality of virtual machines each with a predefined name during the starting up of said host, said method comprising the following combination of sequential steps;

A) establishing a virtual machine pool manager which,

(i) creates a pool of at least two virtual machines at said host processor that are brought to a run ready state prior to receiving said sequential requests,

(ii) manages the dynamic assignments of said run ready virtual machines to concurrently process said LU 6.2 conversations initiated by said sequential requests from said one terminal involving said first and second application programs so that each said request is assigned to a different one of said virtual machines, and

(iii) returns said assigned machine to said pool when the conversation being processed is terminated, in a state ready for a new assignment, and



said step of establishing including the steps of;

1) providing a pool manager data structure for use by said pool manager in the management of said virtual machines in said pool,

2) storing in said data structure a plurality of names for the virtual machines to be setup by said programming module,

3) defining a control block having a plurality of fields in said data structure for each said virtual machine that is automatically created including the steps of,

(a) designating one said field for storing said name assigned to said virtual machine,

(b) designating a second field for indicating the status of said virtual machine, and

(c) setting an indicator in said status field to indicate an IDLE status,

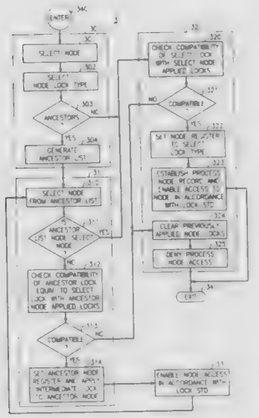
B) automatically creating each said virtual machine for said pool during said starting up with said programming module and said virtual machine pool manager, including the step of referencing said data structure for the names to be assigned to said virtual machines, whereby said application programs can be executed concurrently on different assigned virtual machines at said host whenever said application programs are being executed concurrently at said terminal.

5,062,038

INFORMATION CONTROL SYSTEM

John D. Jordan, Jr., Worthington, Ohio, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 18, 1989, Ser. No. 452,100
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—200 **16 Claims**



8. Apparatus for controlling concurrent process operations against a complex infrastructure comprising tree structures of complex object nodes wherein said apparatus comprises

means responsive to a request of a first one of the process operations of one of exclusive, reserve and share locks for an access node for selecting said access node and generating a list of ancestral nodes related to said selected node,

means for determining a compatibility of an intermediate lock corresponding with said requested lock with a current lock status of each listed ancestral node.

means operative upon determining the compatibility of said intermediate lock with said current lock status of each ancestral node for applying said intermediate lock to each ancestral node and setting the ancestral node current lock status to record said node applied intermediate lock,

means enabled upon applying said intermediate lock to all listed ancestral nodes of said selected node for comparing said process operation requested lock with a current lock status of said selected node,

means operative upon determining a compatibility of said process operation requested lock with said current lock status of said selected node for applying said process operation requested lock to said selected node and updating the selected node current lock status to record said application of said process operation requested lock, and

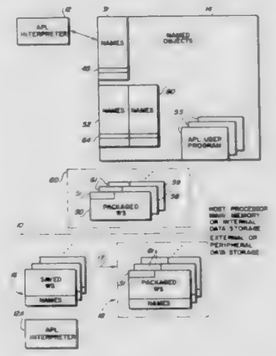
means for comparing each of other process operation requested locks with a current lock status of each listed ancestral node of said selected node and operative upon determining a compatibility of each said other process operation requested lock with said ancestral node current lock status for applying said other process operation requested locks to said ancestral and child nodes of said selected node thereby enabling said other process operations to concurrently write into and read information from said locked ancestral and child nodes independent of the current lock status of said selected node.

5,062,039

SHARING OF WORKSPACES IN INTERACTIVE PROCESSING USING WORKSPACE NAME TABLES FOR LINKING OF WORKSPACES

James A. Brown, and Michael T. Wheatley, both of San Jose, Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 7, 1988, Ser. No. 241,496
Int. Cl.[5] G06F *15/16, 3/00*
U.S. Cl. 364—200 **7 Claims**



1. In a machine-effected method of effecting multi-processing in a digital computer having internal data storage and wherein each process being executed in the multi-processing is independent and operates within an addressable workspace resident in said internal data storage which when active for such process is an active workspace and is exclusively accessible by such process, each workspace including named objects and a name table for internally establishing addressability of the workspace contained named objects, the improvement including the machine-executed steps of:

converting predetermined ones of said workspaces, including the respective name tables, into load modules, each of said load modules constituting a packaged WS;

designating names in the name tables of said predetermined ones of the workspaces as entry points for such workspaces, respectively, of said packaged WS's;

adding external names to the name tables of other than said predetermined ones of said workspaces, respectively;

denominating predetermined ones of said names respectively entry and exit points for linking second predetermined ones of workspaces having said designated names and added external names;

when a process is executing in said active workspace encounters an external name in said name table and which is an exit point of such active workspace, exiting the active workspace and continue executing in a one of said packaged WS's having an entry name which is identical to said encountered external name;

when beginning process execution in any predetermined one of said packaged WS's for the first time, copying the name table of the packaged WS into said active workspace and when executing with respect to the packaged WS, accessing objects in the packaged WS from the copy in the predetermined one of said active workspaces rather than the name table of the predetermined one of said packaged WS's;

in a first given one of said packaged WS's, inserting an external name in a name table of said first given one packaged WS which directs program execution in said first given one packaged WS to a second given one of said packaged WS's and inserting an entry one of said desig-

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nated names in said second given one packaged WS which is identical to said inserted external name of said first given one packaged WS;

linking a sequence of packaged WS's to said active workspace resident in said digital computer;

sequentially accessing a one of said packaged WS's from said packaged WS's in said sequence of packaged WS's; and

copying the name tables of the said sequence of packaged WS to said active workspace for creating private name table copies of each of said name tables copied from the sequence of packaged WS's in said active workspace and storing a copy of the name table of said one packaged WS in each of said workspaces in said sequence of workspaces.

5,062,040

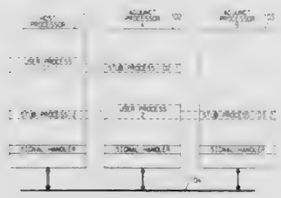
HANDLING OF NOTIFICATION OF ASYNCHRONOUS EVENTS BY USER AND STUB PROCESSES OF A DISTRIBUTED PROCESS EXECUTING ON A PLURALITY OF PROCESSORS OF A MULTI-PROCESSOR SYSTEM

Thomas P. Bishop, Aurora; Robert W. Fish, West Chicago, and James S. Peterson, Aurora, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 941,704, Dec. 22, 1986, abandoned. This application Sep. 28, 1989, Ser. No. 415,439

Int. Cl.[5] G06F *15/16*

U.S. Cl. 364—200 **38 Claims**



1. A signal-handling arrangement for a multi-processor system that includes an extended process comprising a user process and a plurality of stub processes, each residing in a different processor of the multi-processor system, wherein each stub process of the extended process has an active and an inactive state with respect to the user process, and wherein signals are used to inform the processes of the extended process of asynchronous events occurring external to the extended process, the signal-handling arrangement comprising:

means in each processor other than the processor (first processor) on which the user process resides, responsive to receipt of a signal for the extended process, for posting the received signal from the receiving processor to the first processor without the receiving processor processing the received signal, to effect receipt of the posted signal on the first processor;

means in the first processor, responsive to receipt of a signal for the extended process, for applying the received signal to the user process on the first processor;

means in the first processor for determining whether the extended process is not ignoring any signal that are applied to the user process;

means responsive to a determination that any applied signals are not being ignored, for notifying of existence of the applied and non-ignored signals any processor (second processor) on which resides a stub process that is either active or being activated; and

means in each second processor responsive to receipt of the notification, for either breaking or preventing a breakable sleep of the receiving second processor's resident stub process.

5,062,04:

PROCESSOR/COPROCESSOR INTERFACE APPARATUS INCLUDING MICROINSTRUCTION CLOCK SYNCHRONIZATION

William S. Zuk, Carlisle, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Dec. 29, 1988, Ser. No. 291,847

Int. Cl.[5] G06F *1/04, 1/12, 9/00*

U.S. Cl. 364—200 **48 Claims**



1. An information processing system including a first data processing means and a second data processing means each of which includes means for independently executing macroinstructions during one or more microinstruction cycles having a period that is a multiple of a period of a repetitive unit clock signal, each of the data processing means including means, having an input coupled to the unit clock signal and an input coupled to a request for sychronization signal generated by the other data processing means, for generating an associated microinstruction cycle clock signal having a period that is a multiple of the period of the unit clock signal, the microinstruction cycle clock signal generating means further comprising means, responsive to an assertion of the request for synchrozintation signal, for suspending the generation of the microinstruction cycle clock signal and for beginning a next microinstruction cycle clock signal, in synchronism with the other data processing means beginning a next microinstruction clock signal, upon a transition of the unit clock signal.

5,062,042

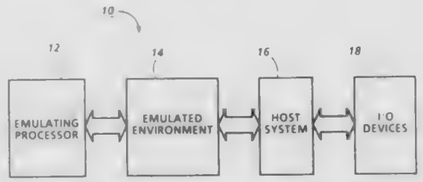
SYSTEM FOR MANAGING DATA WHICH IS ACCESSIBLE BY FILE ADDRESS OR DISK ADDRESS VIA A DISK TRACK MAP

Joseph H. Binkley; Perry A. Caro, both of Palo Alto; Charles R. Fay, Long Beach; Jeffery W. Lee, Sunnyvale; Everett T. Neely, Montara; Geoffrey O. Thompson, Palo Alto, and Gaya Vukkadala, Sunnyvale, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 856,526, Apr. 28, 1986, abandoned. This application Mar. 22, 1990, Ser. No. 497,468

Int. Cl.[5] G06F *12/02*

U.S. Cl. 364—200 **12 Claims**



10. A data processing system comprising:

a data file system;

file access means for providing file access signals to access files in the data file system, the file access signals including signals indicating locations in the data file system; and

memory medium access means for providing memory medium access signals to access a memory medium, the memory medium access signals including signals indicating memory medium locations;

means for managing units of data, comprising:

file setup means for setting up a file within the data file system so that the file access means can access the file in the data file system and so that the memory medium access means can also access the file; the file setup means comprising means for providing a data structure associated with the file; and

allocating means for allocating, for each unit of data to be managed, a respective file system unit within the data file system to the file; and

mapping data means for providing, for each unit of data to be managed, respective mapping data in the data structure, the data unit's mapping data indicating a location of the data unit's file system unit; each data unit's mapping data being accessible with a respective memory medium location so that the data structure responds to a signal from the memory medium access means indicating the data unit's memory medium location by providing data indicating the location of the data unit's file system unit for use by the file access means in accessing the data unit's file system unit.

5,062,043

INFORMATION COLLECTING AND DISTRIBUTING SYSTEM PROVIDING PLURAL SOURCES AND DESTINATIONS WITH SYNCHRONOUS ALTERNATING ACCESS TO COMMON STORAGE

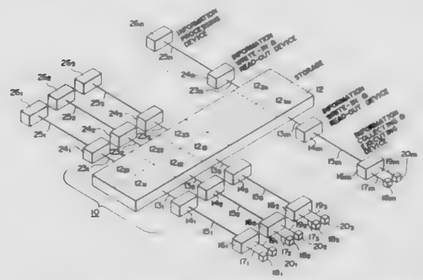
Shunju Asakawa, Kawasaki; Yoshiakira Akimoto, Yokohama, and Takashi Abe, Sano, all of Japan, assignors to The Tokyo Electric Power Co., Inc., Tokyo, Japan

Filed Dec. 15, 1987, Ser. No. 133,298

Claims priority, application Japan, Dec. 16, 1986, 61-299179; Nov. 27, 1987, 62-299035

Int. Cl.[5] G06F *13/38, 13/22, 1/04*

U.S. Cl. 364—200 **2 Claims**



1. A system for collecting information from a set number of sources and distributing the collected information to a set number of destinations where such information is required, and for collecting reply-information from the destinations and distributing the collected reply-information to the sources comprising:

(a) a common storage having areas whose addresses are allocated to each of the sources and destinations;

(b) first plurality of write-in and read-out devices, each of which is directly connected to a respective source through a respective transmission route, for collecting information from the respective source, writing the collected information into a respective area of the common storage, reading out required reply-information from among reply-information written into the common storage and delivering the read-out reply-information to the respective source;

(c) second plurality of write-in and read-out devices, each of which is directly connected to a respective destination through a respective transmission route, for collecting reply-information from the respective destination, writing the collected reply-information into a respective area of said common storage, reading out required information from among the information written in the common storage and delivering the read-out information to the respective destination; and

(d) a timing device connected to the first and second write-in and read-out devices for connecting each of the first and second write-in and read-out devices to the common storage one after another repeatedly at regular intervals allotted to each of the sources and destinations so that only one of the first and second write-in and read-out devices is connected to the common storage at a time.

5,062,044

TEMPORARY BUS MASTER FOR USE IN A DIGITAL SYSTEM HAVING ASYNCHRONOUSLY COMMUNICATING SUB-SYSTEMS

Takashi Asami, Huntington Beach, and Rajni N. Doshi, El Toro, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Sep. 29, 1987, Ser. No. 102,542

Int. Cl.[5] G06F *13/00, 13/12, 13/362, 13/40*

U.S. Cl. 364—200 **21 Claims**



1. A temporary bus master having means by which to be connected through an asynchronous communication bus to a primary bus master and a permanent bus slave to cooperate with said master and slave in a transfer of a block of data items having a leading sub-block of data items followed by a trailing sub-block of data items, in which transfer the permanent bus slave operates in accord with request/acknowledge protocol by applying at least one request signal to a first conductor of the bus and responding to each of a consecutive sequence of acknowledge signals on a second conductor of the bus from said primary bus master to participate in communication of each of a consecutive sequence of concurrently-applied parallel-by-bit data items carried by multiple other conductors defining a data bus portion of the communication bus, the temporary bus master comprising:

means for selectively responding to each of a first predetermined number of acknowledge signals appearing on the second conductor and originating from said primary bus master during communication of the leading sub-block by copying each such parallel-by-bit data item concurrently carried by the data bus and constituting said leading sub-block, so that the leading sub-block is distributed to the temporary bus master as it is communicated between the primary bus master and the bus slave; and

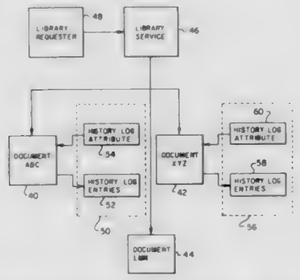
means for selectively responding to request signals on the first conductor by applying a second predetermined number, which is distinct from the first number of acknowledge signals, of acknowledge signals to the second conductor while participating in communication of each of the consecutive sequence of the parallel-by-bit data items concurrently carried by the data bus and constituting the trailing sub-block of the block.

5,062,045

SYSTEM FOR MAINTAINING A DOCUMENT AND ACTIVITY SELECTIVE ALTERABLE DOCUMENT HISTORY LOG IN A DATA PROCESSING SYSTEM

Frederick L. Janis, Keller; Marvin L. Williams, Lewisville, and Diana S. Wang, Trophy Club, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1990, Ser. No. 484,705
Int. Cl.[5] G06F *15/16, 13/14, 11/34*
U.S. Cl. 364—200 9 Claims



1. A method in a data processing system of efficiently maintaining a record of activities relating to a selected one of a plurality of resource objects accessible by a plurality of users within said data processing system said method comprising the steps of:

creating a history log associated with said selected one of said plurality of resource objects;

locking access to said selected one of said plurality of resource objects;

while access to said selected one of said plurality of resource objects is locked, specifying particular activities of interest with respect to said selected one of said plurality of resource objects;

thereafter, unlocking access to said selected one of said plurality of resource objects; and

recording within said history log a characterization of said specified particular activities and the occurrence of only those activities so specified.

5,062,046

MULTIPLE PROCESSOR SYSTEM HAVING A CORRESPONDENCE TABLE FOR TRANSFERRING PROCESSING CONTROL BETWEEN INSTRUCTION PROCESSORS

Takashi Sumiyoshi, Yokohama; Shigekatsu Takahashi, Ayase; Shoji Yamamoto, Chigasaki; Kazuyoshi Negishi, Yokohama, and Masaaki Iwasaki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1990, Ser. No. 496,327
Claims priority, application Japan, Mar. 20, 1989, 1-65846
Int. Cl.[5] G06F *3/06*
U.S. Cl. 364—200 8 Claims

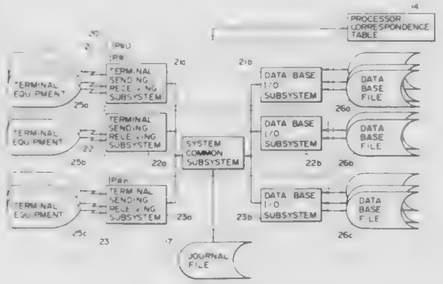
1. A multiple processor system, comprising:

a plurality of input/output resources;

a plurality of instructions processors connected to said input-/output resources, each instruction processor having at least one processing subsystem which performs a predetermined processing simultaneously with and in parallel to processing by other processing subsystems, each processing subsystem being assigned to access at least one input-/output resource;

means providing a processor correspondence table for indicating a correspondence between each processing subsystem and an instruction processor having said processing subsystem; and

control processing means, coupled to said plurality of instruction processors and responsive to a request from one instruction processor for a particular processing subsystem to access an input/output resource assigned to that particular processing subsystem, for accessing said processor correspondence table and for transferring processing



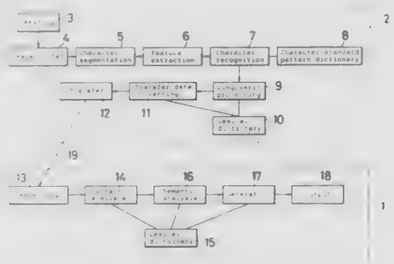
control from said one instruction processor to another instruction processor corresponding to said input/output resource as indicated by said processor correspondence table.

5,062,047

TRANSLATION METHOD AND APPARATUS USING OPTICAL CHARACTER READER

Hideaki Tanaka, Daito; Toshiaki Morita, Nara; Yoshihiro Kitamura, Osaka, and Yasuhisa Nakamura, Joyo, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1989, Ser. No. 344,397
Claims priority, application Japan, Apr. 30, 1988, 63-108229
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419 2 Claims



2. An apparatus for electronically translating from a first language to a second language, comprising:

optical code reader for reading a character string of a first language, said reader having,

reference dictionary means for morpheme analysis containing a plurality of reference character strings of morphemes in said first language stored in a first memory means, wherein each morpheme being identified in said first memory means by a particular address;

morpheme analysis means for comparing a portion of said optically read character string with said plurality of reference character strings for identifying morphemes corresponding to said character string and their associated addresses;

electronic communication means for transferring the results of said morpheme analysis including any morphemes and their associated addresses in said first memory means; and

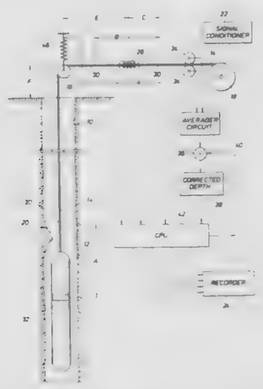
translating means for receiving said morpheme analysis from said optical code reader and for translating said character string into said second language by comparing said transferred morpheme analysis and associated addresses with information stored in a second memory means, wherein information stored in said second memory means is addressed identically to that of said first memory means.

5,062,048

STRETCH CORRECTED WIRELINE DEPTH MEASURING ERROR AND LOG QUALITY INDICATOR METHOD AND APPARATUS

Kenneth T. Coulter, Katy, and Kenneth R. Goodman, LaPorte, both of Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Continuation of Ser. No. 134,414, Dec. 17, 1987, abandoned.
This application Aug. 1, 1989, Ser. No. 387,746
Int. Cl.[5] G01B *7/02;* G01V *3/18*
U.S. Cl. 364—422 10 Claims



1. In a system for measuring length of a wireline in a well borehole, wherein the wireline supports a logging tool and is spooled onto a surface located reel, an apparatus for indicating tool velocity outside tool velocity limits during upward travel while logging the well, comprising:

(a) calibrated encoder wheel means located at the surface to contact against the wireline extending into the well borehole for measuring the wireline wherein the measurement is encoded by said wheel means rotation to form pulses proportional to wireline movement;

(b) means connected to said calibrated encoder wheel means and responsive to the pulses formed thereby for determining depth of a tool on the wireline in the well borehole;

(c) surface located tension measuring means at the surface for measuring tension in the wireline to form a signal indicative of wireline tension;

(d) means connected to said tension measuring means and responsive to the signal formed thereby for forming a wireline stretch correction;

(e) means for correcting the depth by adding the stretch correction of the wireline to the depth wherein the stretch correction is continuously formed and continuously added to length of wireline in the borehole; and

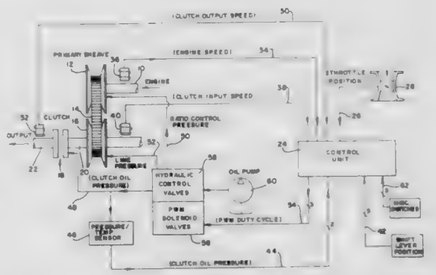
(f) surface located means for determining logging tool velocity outside selected tool velocity limits, said surface located means forming an indication of tool velocity in the borehole outside the tool velocity limits related to tool depth in the well borehole said surface located means responding to measurements by said wheel means and said tension measuring means.

5,062,049

CONTROL METHOD AND APPARATUS FOR CONTINUOUSLY VARIABLE TRANSMISSIONS

Danny R. Taylor, Groton, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Sep. 15, 1989, Ser. No. 408,170
Int. Cl.[5] B60K *41/18*
U.S. Cl. 364—424.1 13 Claims



1. A method for controlling a variable ratio of a vehicular continuously variable transmission having a slipably engageable clutch, such method comprising the steps of:

setting said variable ratio equal to an extreme low ratio and fully disengaging the clutch when a gear shift of the vehicle is in a neutral position;

maintaining said variable ratio in said extreme low ratio and slightly engaging the clutch to cause a finite amount of vehicle creep when the gear shift is in a forward or reverse position and a throttle of the vehicle is in a fully released position;

maintaining said variable ratio in said extreme low ratio and partially engaging the clutch to a degree sufficient to maintain the rotational speed of an engine of the vehicle at a first predetermined set point speed when the gear shift is in a forward or reverse position and the throttle is moved to a depressed position; and

transferring engine speed control from the clutch to said continuously variable transmission by adjustably setting said variable ratio to maintain the rotational speed of the engine at a second predetermined engine set point speed and fully engaging the clutch when the gear shift is in a forward or reverse position and the vehicle is travelling at greater than a predetermined minimum vehicle speed and the throttle is in a depressed position and the clutch is slipping at less than a predetermined amount.

5,062,050

CONTINUOUSLY VARIABLE TRANSMISSION LINE PRESSURE CONTROL

Werner P. Petzold, Harwood Heights, Ill., and William P. Umlauf, Schererville, Ind., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Oct. 17, 1989, Ser. No. 422,588
Int. Cl.[5] B60K *41/22*
U.S. Cl. 364—424.1 46 Claims

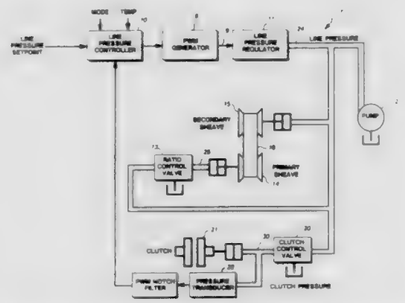
17. A line pressure control system for controlling the line pressure in a continuously variable transmission, in which fluid under line pressure is regulated to produce an adjustable clutch fluid pressure for operating a clutch to transfer drive torque from an engine through the transmission to an associated drivetrain, having a pressure transducer operable to sense said clutch fluid pressure, said control system comprising:

means for receiving a line pressure set point;

closed loop pressure control means responsive to said sensed clutch fluid pressure for providing an output signal representative of an operating line pressure;

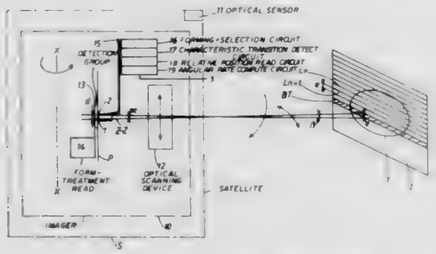
open loop schedule pressure control means responsive to

said line pressure set point for providing an output signal representative of an operating pressure;
open loop maximum pressure control means for providing an output signal representative of a maximum line pressure;
open loop minimum pressure control means for providing an output signal representative of a minimum line pressure;
means for comparing said closed loop output signal with a predetermined threshold value; and



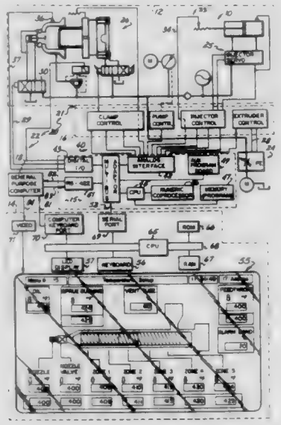
selection means for discontinuing operation of said closed loop pressure control means and commencing operation of said open loop maximum pressure control means in accordance with a predetermined relation between said closed loop output signal and said predetermined threshold value;
said closed loop pressure control means, open loop schedule pressure control, open loop maximum pressure control, and open loop minimum pressure control means operating independently.

5,062,051
METHOD FOR OBSERVING BY SCANNING A CELESTIAL BODY AND FOR MEASURING AN ANGULAR VELOCITY OF A SPACE VEHICLE, OBSERVATION SYSTEM FOR ITS IMPLEMENTATION, AND SPACE VEHICLE COMPRISING SAME
Hervé Sainct, Le Cannet; Patrick Maute, Valbonne, and Jean-Francois Plantier, Nice, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France
Filed May 1, 1989, Ser. No. 345,592
Claims priority, application France, Apr. 28, 1988, 88 05708
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—459 13 Claims



6. An imaging device for a space vehicle facing a celestial body comprising
an optical scanning device with a field of view having an optical axis to be pointed towards the celestial body to be imaged to scan successively adjacent lines or bands of said field of view;
a scanning axis and a focal plane both transverse to said optical axis;
a detection assembly in said focal plane;
said detection assembly including
first and second detecting means arranged in said focal plane and offset parallel to said scanning axis by a distance viewed by said optical scanning device with an angle equal to an integer multiple, at least equal to one, of an angle at which said optical scanning device views the distance between two adjoining scanning lines crossing the celestial body;
and an image formation and treatment unit connected to said first and second detecting means;
said image formation and treatment unit including
a forming and selection circuit for successively collecting by one and then the other of said first and second detecting means signals representing a given line or band of scanned ground on the celestial body and treating said signals to correspond to one and a same given directional series along said line or band of scanned ground,
a characteristic transition detection circuit to detect in each of said signals a characteristic transition representative for a given point characteristic of said line or band of scanned ground,
a relative position reading circuit to read the relative position of each transition in relation to said signal which includes it,
and a computation circuit to determine from any difference between said relative positions a value for a rate of angular change of the space vehicle about an axis parallel to said scanning axis and taking into account the interval separating the instants at which said characteristic transitions are read.

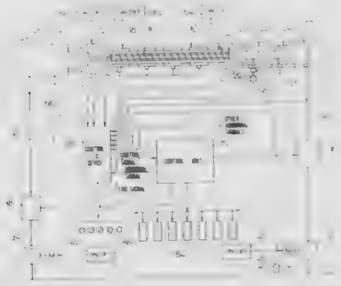
5,062,052
LOGIC CONTROLLED PLASTIC MOLDING MACHINE WITH PROGRAMMABLE OPERATOR INTERFACE
Ronald M. Sparer, Madeira, and Dale P. Werle, Batavia, both of Ohio, assignors to Cincinnati Milacron, Inc., Cincinnati, Ohio
Filed Jun. 20, 1989, Ser. No. 368,570
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—473 13 Claims



1. A plastics molding machine comprising:
a plurality of operable machine elements interconnected and interrelated so as to perform a plastics forming process in response to a plurality of program controlled output signals which include a plurality of analog output signals and a plurality of digital output signals;

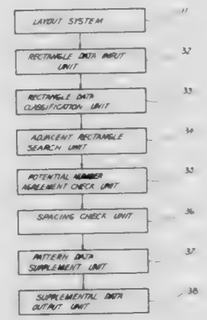
means for generating a plurality of feedback signals, including analog feedback signals and digital feedback signals, in response to information from said process and information from the operation of said machine elements;
a real time analog signal processor including means for generating said plurality of analog output signals in real time response to a plurality of real time control signals, and means for generating process monitoring signals in response to said analog feedback signals;
means for generating said plurality of digital output signals in real time response to a plurality of real time control signals, and means for generating process monitoring signals in response to said digital feedback signals;
a dedicated programmable logic process controller having programmed means for generating, in real time, said real time control signals, in accordance with a predetermined combination and sequence of steps and in accordance with a plurality of command signals;
an operator station including data entry means for accepting manually initiated input signals from an operator, and including display means for communicating visually perceivable process information to said operator in response to video signals;
an operator station interface including a programmable general purpose digital computer having at least two inputs including a command data input connected from said operator station and a monitoring data input connected from said controller, and having at least two outputs including a display signal output connected to said operator station and a command signal output connected to said controller;
means included in said controller for communicating said monitoring signals to said monitoring data input of said operator station interface; and
programmed means in said operator station interface for controlling the operation of said computer to generate video signals on said display signal output in response to input signals on said command data input and in response to monitoring signals on said monitoring data input, and to generate command signals on said command signal output in response to input signals on said command data input and in response to monitoring signals on said monitoring data input.

5,062,053
FULLY AUTOMATIC OPERATION SYSTEM FOR INJECTION MOLDING MACHINES
Kanji Shirai; Hideo Tanaka; Hideo Banzai, and Tsutomu Hosoya, all of Shizuoka, Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1989, Ser. No. 433,049
Claims priority, application Japan, Nov. 9, 1988, 63-281363
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—476 3 Claims



1. A fully automatic operating system for an injection molding machine including an injection device, a mold and a mold clamping device, said system comprising:
detecting means for detecting initialization temperatures at which conditions of a mold part, a barrel of the injection device and a hydraulic fluid are optimized for a start-up operation of the injection molding machine;
start-up condition setting means for setting a condition to perform a start-up operation comprising a plurality of steps after initialization temperatures are set;
molding condition setting means for setting a condition to start a molding of complete products after a termination of the start-up operation;
means for counting the number of shots of products once a molding of the products starts and for generating a molding-end signal when the number of shots reaches a set value;
means for detecting and judging an abnormal condition, and generating an abnormal signal in case the abnormal condition occurs during a molding process;
an automatic control unit for:
judging that said initialization is completed by entering a detection signal when said initialization temperatures are reached;
commanding to stop a molding operation by entering a molding-end signal while generating control signals to respective control devices by loading a start-up condition; and
counting a time elapsed from a temporary stop in response to entrance of an abnormal signal up to a restart of a molding operation, so that the start-up operation restarts if the elapsed time being counted does not exceed a predetermined value, and so that heaters and hydraulic pumps are turned off if the elapsed time being counted exceeds the predetermined value.

5,062,054
LAYOUT PATTERN GENERATION AND GEOMETRIC PROCESSING SYSTEM FOR LSI CIRCUITS
Yoshiyuki Kawakami, Miyukihigashi; Masahiro Fukui, Neyagawa; Ichiro Shigemoto, Amagasaki, and Chie Iwasaki, Satanaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Mar. 10, 1989, Ser. No. 322,322
Claims priority, application Japan, Mar. 10, 1988, 63-56643; Mar. 14, 1988, 63-59720; May 16, 1988, 63-118518
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—491 8 Claims



1. A pattern processing system for laying out multi-layer LSI circuits, said layout systems comprising:
means for characterizing a circuit pattern by a set of rectangles, each rectangle being identified by a potential number, a layer number and coordinates;
means for receiving said rectangles and the design minimum spacing defined for each layer;

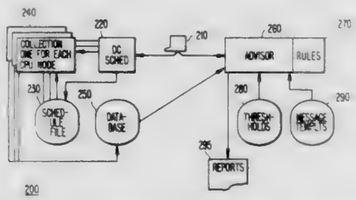
means for classifying said rectangles according to layer;
means for selecting any two adjacent rectangles from the classified set of rectangles for a certain layer;
means for determining whether the selected two adjacent rectangles have the same potential number;
means for determining whether the selected two adjacent rectangles are spaced further apart than the minimum spacing defined for said layer; and
means for adding a rectangle characterized by the same potential number and layer number as said two adjacent rectangles to cover the space between said selected two adjacent rectangles when their spacing is less than said design minimum spacing.

5,062,055

DATA PROCESSOR PERFORMANCE ADVISOR

Ackanaickenpalayam V. Chinnaswamy, Westboro; Stanley A. Wilk, Worcester, and James H. Torrey, Jr., Grafton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 278,328, Nov. 30, 1988, abandoned, which is a division of Ser. No. 904,093, Sep. 2, 1986, Pat. No. 4,849,879. This application May 29, 1990, Ser. No. 528,321
Int. Cl.[5] G06F *15/16, 15/18*
U.S. Cl. 364—513 3 Claims



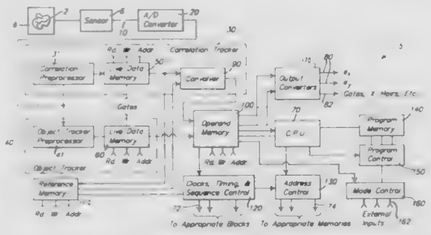
1. A method of operating data processing systems in a configuration to evaluate the performance of both said data processor systems and said configuration, each of the data processor systems in the configuration having a plurality of system work load characteristics indicative of the performance of the corresponding data processor systems and a plurality of system parameters defining allowable operating ranges for the corresponding data processor systems, said system parameters being capable of adjustment to affect the performance of the data processor systems, and the configuration having a plurality of configuration work load characteristics indicative of the performance of the configuration and a plurality of configuration parameters defining allowable operating ranges for the configuration, the configuration parameters being capable of adjustment to effect the performance of the configuration, the evaluation being performed relative to a set of configuration and system rules specifying acceptable states of said configuration and data processing system work load characteristics, and the method comprising the steps of:
synchronizing a plurality of logical clocks each contained in a different one of said data processing systems in said configuration;
measuring, at least once during each of a plurality of predetermined time periods constituting major intervals, a value of each of a plurality of configuration and system metrics corresponding to said set of rules, each of said system metrics representing a measurable quantity in the corresponding data processing systems and each of said configuration metrics representing a measurable quantity in said configuration;
storing the value of each of said configuration and system metrics in a memory accessible by each of said data processing systems;
comparing the value stored for each of said measured configuration and system metrics with a corresponding threshold for that metric stored in said memory, said comparisons taking place for selected ones of said major intervals;
evaluating the results of each of said comparisons between said stored value and corresponding thresholds to determine whether a plurality of predefined specified relationships for each of the configuration and system metrics represented by said stored value and the corresponding thresholds have been met, each of said specified relationships relating to one or more of said rules in said set of configuration and system rules;
triggering the ones of said configuration and system rules for which all of the related specified relationships have been met; and
recording in said memory data representing each of the configuration and system rules which have triggered and each of the major intervals during which each of those configuration and systems rules are triggered.

5,062,056

APPARATUS AND METHOD FOR TRACKING A TARGET

Thomas K. Lo, Temple City; Nam D. Banh, Canoga Park; Timothy T. Bohn, Simi Valley, and Jack M. Sacks, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 18, 1989, Ser. No. 423,301
Int. Cl.[5] G01S *13/00*; H04N *5/225*; G06F *7/80*
U.S. Cl. 364—516 20 Claims



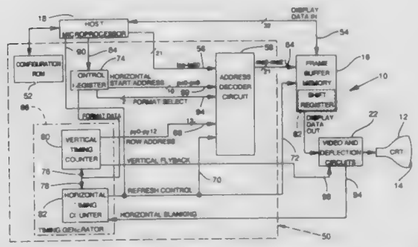
1. A tracking system for tracking a target immersed in background clutter using as an input a sequence of two dimensional digitized images taken from a scene, said system comprising:
correlation tracker means for matching a reference region image with a current digitized image and for generating a background reference point to be used for generating a first estimated track gate;
means coupled to said correlation tracker means for processing said background reference point to generate a first estimated track gate;
object tracker means for receiving said first estimated track gate from said means for processing, said object tracker means providing a second precisely defined target trackpoint and target size information; and
means for using said second target trackpoint and said target size information from said object tracker means to redefine said reference region image for use by said correlation tracker means during processing of a subsequent digitized image.

5,062,057

COMPUTER DISPLAY CONTROLLER WITH RECONFIGURABLE FRAME BUFFER MEMORY

Laurin G. Blacken, Wilsonville, and James D. Berry, Portland, both of Oreg., assignors to E-Machines Incorporated, Beaverton, Oreg.

Filed Dec. 9, 1988, Ser. No. 282,472
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—518 19 Claims



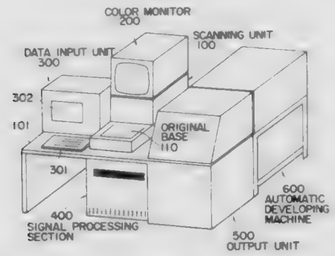
1. A computer display controller in communication with a frame buffer memory having plural address locations to which display data are directed in accordance with address information provided by a host microprocessor, comprising:
format storage means for storing address format information corresponding to an address information arrangement for each of plural frame buffer memory configurations representing different arrangements of the address locations in the frame buffer memory; and
address decoding means receiving the address information provided by the host microprocessor and receiving the format information corresponding to a selected one of the frame buffer memory configurations for delivering to the frame buffer memory the address information arranged in accordance with the selected one of the frame buffer memory configurations.

5,062,058

IMAGE PROCESSING METHOD FOR COLOR SCANNER

Seiichiro Morikawa, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1989, Ser. No. 325,276
Claims priority, application Japan, Mar. 17, 1988, 63-64416
Int. Cl.[5] G06F *3/05*
U.S. Cl. 364—521 6 Claims



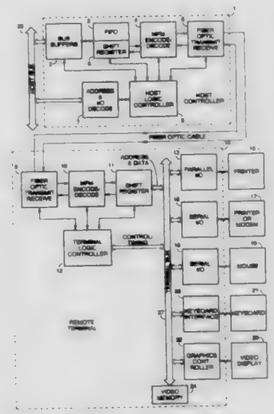
1. An image processing method in a color scanner which includes an original base operative to receive therein an original cassette that accommodates a color original, a light source for linearly radiating said original cassette as received in said original base, image sensors for color separating a transmitted or reflected light in a linear region of said color original into R, G and B for detection, a signal processing section for processing RGB image signals outputted from said image sensors by linearly scanning said color original to output four color image data such as C, M, Y and black, a color monitor connected to said signal processing section for displaying images of said four color image data, a data input means for inputting data required for said signal processing section and for designating a position where said color monitor displays and an output means for half-toning said four color image data to prepare a printing color separation, which comprises the steps of:
preparing a density cumulated histogram of said color original by using said RGB image signals said histogram comprising a plurality of points:
obtaining highlight point candidates and shadow point candidates of said color original due to said density cumulated histogram;
displaying said highlight point candidates and said shadow point candidates on the image displayed on the color monitor;
designating a highlight point and a shadow point by using said data input means; and
setting condition data for said signal processing section in accordance with image data of said designated highlight point and shadow point.

5,062,059

APPARATUS AND METHOD FOR COMMUNICATION BETWEEN HOST CPU AND REMOTE TERMINAL

Gerald F. Youngblood, Jackson; Ron D. Hughes, Ridgeland, and Kester B. Rice, Madison, all of Miss., assignors to Sunriver Corporation, Austin, Tex.

Continuation of Ser. No. 938,848, Dec. 8, 1986. This application Apr. 20, 1989, Ser. No. 341,640
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—521 2 Claims



1. Apparatus for enabling a host CPU in a host computer, running an application program written to randomly access memory and input/output devices hardwired to a host bus, to randomly read from a write to a remote memory or input/output device within a single host CPU bus cycle in a manner transparent to said application program without protocol or translation as if the remote device was hardwired to the host bus, including:
first means, associated with said host computer, for converting host computer information, including data, addresses, and control signals on said host bus to a form suitable for transmission to said remote device over a high-speed data link within a first portion of said single host CPU bus cycle,
second means, associated with said remote device, for converting remote device information, including data, ad-

dresses, control signals, interrupt requests and acknowledgements in said remote device to a form suitable for transmission to said host computer over a high-speed data link within a second portion of said single host CPU bus cycle,

full-duplex, high-speed communication means, coupled to said host computer and said remote device, for transmitting said host computer information to said remote device and said remote device information to said host computer within a third portion of said single host CPU bus cycle,

third means, associated with said host computer, and communicating with said full-duplex, high-speed communication means, for converting said remote device information to data, addresses, controls signals, interrupt requests and acknowledgements compatible with said host bus and placing them on said host bus at times compatible with normal operation of said host bus within a forth portion of said single host CPU bus cycle, and

fourth means, associated with said remote device, and communicating with said full-duplex, high-speed communication means, for converting said host computer information to data, addresses and control information compatible with said remote device bus and placing them on said remote device bus at times compatible with normal operation of said remote device bus within a fifth portion of said single host CPU bus cycle whereby said portions occur within said host CPU bus cycle whereby said portion occur within said single host CPU bus cycle.

5,062,060

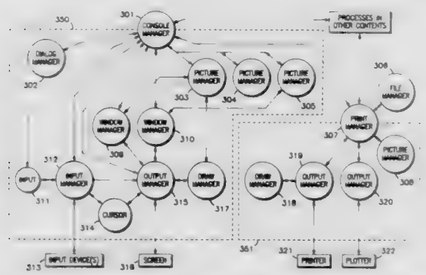
COMPUTER HUMAN INTERFACE COMPRISING USER-ADJUSTABLE WINDOW FOR DISPLAYING OR PRINTING INFORMATION

Frank C. Kolnick, Willowdale, Canada, assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 625, Jan. 5, 1987, abandoned. This application May 17, 1989, Ser. No. 355,092

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—521 3 Claims



1. A human interface in a data processing system, said data processing system comprising at least one application process and at least one video display unit comprising a screen viewable by a system user, said interface comprising:

means for representing information within said data processing system by means of at least one abstract, device-independent picture, said picture being represented by a plurality of picture elements at least some of which are defined by said one application process;

a picture manager process for manipulating said plurality of picture elements in response to a first message sent to said picture manager process by said one application process;

a window manager process for managing the display of a window of said picture on said video display unit screen, said window manager process managing a plurality of parameters relating to said window including the size of said window;

a console manager process for coordinating the operation of said picture manager process and said window manager process, said console manager process generating a second message, comprising size information, in response to a third message sent to said console manager process by said one application process, and providing said second message to said window manager process; and

said window manager process adjusting the size of said window in response to said size information contained in said second message.

5,062,061

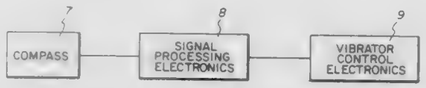
AUTOMATIC DIRECTION CONTROL FOR OMNI-DIRECTIONAL SHEAR WAVE SOURCES

John E. Strecker, Tonkawa, and Truman R. Stiner, Blackwell, both of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 25, 1990, Ser. No. 603,985

Int. Cl.[5] G01V *1/30*

U.S. Cl. 364—521 8 Claims



8. An apparatus for controlling the orientation of an omnidirectional shear wave source in a system comprising:

vibrator control electronics;

means for obtaining an electronic output of a signal representing a heading from magnetic north of the omnidirectional shear wave source;

means associated with said obtaining means for processing said electronic output through signal processing electronics to compute data required to control the direction of radiation of the energy source from the heading input and the compass input and for converting said electronic output to a format used in said vibrator control electronics; and

means for transferring said converted electronic output of the compass to the vibrator control electronics to direct the orientation of the omnidirectional shear wave source, said means for transferring including decoder means for receiving an address output from said obtaining means, latch means connected to said decoder means for receiving and holding data input from said obtaining means and outputting said data to said vibrator control electronics and control lines connected to said latch means for controlling the output of said latch means to said vibrator control electronics.

5,062,062

TORQUE DETECTING APPARATUS

Yuji Nishibe, Gifu; Yutaka Nonomura, Aichi; Masaaki Abe, Aichi; Masaharu Takeuchi, Aichi, and Kouji Tsukada, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 29, 1989, Ser. No. 460,235

Claims priority, application Japan, Dec. 30, 1988, 63-170567[U]; Dec. 30, 1988, 63-335376; Dec. 30, 1988, 63-335377

Int. Cl.[5] G01B *7/24*

U.S. Cl. 364—559 20 Claims

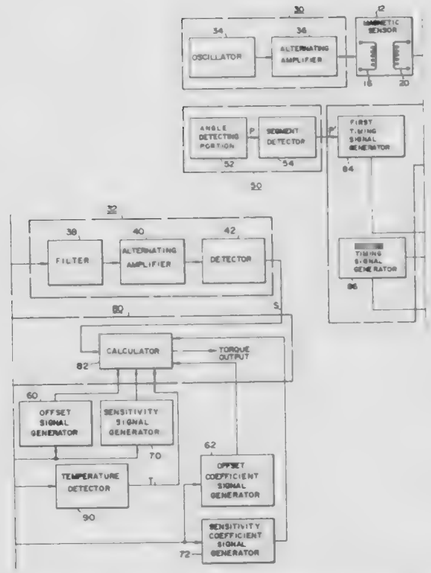
1. A physical quantity detecting apparatus for measuring a physical quantity of an object which rotates or reciprocates at real time, said apparatus comprising:

a physical quantity sensor provided opposed to a predetermined portion of said object for detecting a physical quantity of said object at said portion wherein said physical quantity is torque;

a position detecting means for detecting the position of movement of the object which is divided into a given number of segments in advance, and for outputting the detected position as a segment detection signal for the corresponding segment;

an offset signal generating means for outputting an offset signal which corresponds to an offset component output from said physical quantity sensor in dependence on the position of movement of said object and which is set for each segment in advance;

a sensitivity signal generating means for outputting a sensitivity signal which corresponds to the sensitivity of said physical quantity sensor dependent on the position of movement of said object and which is set for each segment in advance; and



a correction operation means for reading said offset signal and said sensitivity signal which correspond to said segment detection signal for the corresponding segment from said offset signal generating means and said sensitivity signal generating means, respectively, and for calculating the correction value of said offset component and said sensitivity of a detection signal output from said physical quantity sensor on the basis of a predetermined correction operation expression which has an independent coefficient group for each segment.

5,062,063

LENGTH MEASURING APPARATUS

Atsuko Shimizu, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 426,886

Claims priority, application Japan, Oct. 26, 1988, 63-139812[U]; Oct. 27, 1988, 63-140245[U]

Int. Cl.[5] G01B *11/02;* **G06F** *7/00*

U.S. Cl. 364—562 20 Claims

1. A length measuring apparatus, comprising:

data storing means having a number of data storage areas, such including a distance data storing area for storing distance data, a required-time data storing area for storing required-time data and a velocity data storing area for storing velocity data;

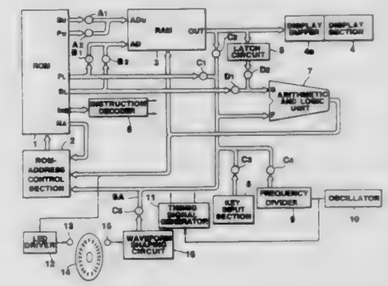
scale-reduction data storing means for storing scale-reduction data;

length measurement means for measuring length of a path connecting two points on a map;

distance data operation means for operating on the length data measured by said length measurement means and the scale-reduction data stored in said scale-reduction data storing means to obtain distance data, and for storing the distance data thus obtained in a distance data storing area of said data storing means;

data input means for inputting and storing velocity data or required-time data in a velocity data storing area or in a required-time data storing area corresponding to said distance data storing area;

first operation means for calculating required-time data or velocity data on the basis of the velocity data stored by said data input means in said velocity data storing area or



the required-time data stored by said data input means and the distance data stored in the pertinent distance data storing area, and for storing the required-time data or velocity data thus calculated in the pertinent required-time data storing area or velocity data storing area;

first display means for displaying the distance data stored in the distance data storing area of said data storing areas, the required-time data stored in the required-time data storing area corresponding to said distance data storing area and the velocity data stored in the velocity data storing area corresponding to said distance data storing area;

second operation means for calculating sum data of a number of distance data stored in said number of data storing areas, sum data of a number of required-time data stored in said number of data storing areas, and mean velocity data; and

second display means for displaying the sum data of the distance data, the sum data of the required-time data and the mean velocity data, as calculated by said second operation means.

5,062,064

METHOD AND APPARATUS FOR MEASURING VELOCITY IN SERVO SYSTEMS

Paul Sagues, Berkeley, and Vernon E. Muhr, El Cerrito, both of Calif., assignors to Berkeley Process Control, Inc., Richmond, Calif.

Filed Sep. 1, 1989, Ser. No. 402,058

Int. Cl.[5] G01P *3/42*

U.S. Cl. 364—565 27 Claims

1. A method for measuring the velocity of a servo shaft driven cyclically by a motor, without employing a tachometer, comprising the steps of:

producing from movement of said shaft a pair of overlapping square-wave signals in quadrature with transitions expressible in Gray Code for each cycle;

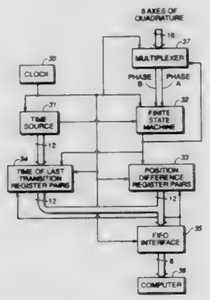
producing from a clock a large number of evenly spaced

clock pulses and sub-dividing them into groups of pulses forming a sample interval;

determining the algebraic sum of a series of quadrature transitions occurring during said sample interval;

reading at the conclusion of each said sample interval a signed value representing the algebraic sum of the quadrature transitions occurring during said sample interval;

reading and computing at the conclusion of each said sample



interval the number of clock pulses between two selected quadrature transitions, each transition being the last transition of the two most recent sample intervals having transitions; and

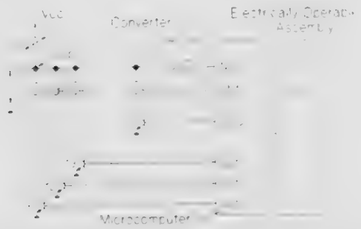
dividing the algebraic sum of the quadrature transitions occurring after a first said selected quadrature transition and including a second said selected quadrature transition by the number of clock pulses between said selected quadrature transitions.

5,062,065

ENVIRONMENTAL SENSING AND VENTILATION CONTROL SYSTEM WITH COMPENSATION FOR SENSOR CHARACTERISTICS

Wolfgang Lampe, Neuenrade, Fed. Rep. of Germany, assignor to Leopold Kostal GmbH & Co., KG, Ludenscheid, Fed. Rep. of Germany

Filed Oct. 6, 1989, Ser. No. 418,121
Int. Cl.[5] G06F *15/20;* **G01D** *21/00*
U.S. Cl. 364—571.04 **20 Claims**



1. An environmental sensor control system for controlling an electrically operable assembly, the sensor control system comprising:

a circuit that is connected

on one side electrically to the electrically operable assembly, and

on the other side to a voltage divider having resistors (R1–Rn), the voltage divider comprising

a sensor having a resistance (Rs), the sensor being adapted for the detection of external pollutants; and

the resistor configuration (R1–Rn) connected to the sensor, the circuit further including

an operating point that changes in response to a signal supplied by the sensor, the sensor control system having

a microcomputer (μC) that is connected

on its input side to a divider point (Tp) of the voltage divider via an analog/digital converter (A/D) and

on its output side to a number of switching elements (T1–Tn), each switching element cooperating with a different resistor (R1–Rn); and

at least one of the resistors (R1–Rn) being connected between the sensor and ground via at least one of the switching elements;

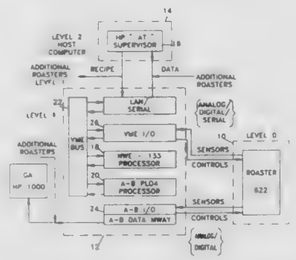
whereby the resistors are switched according to commands generated by the microcomputer in response to signals from the sensor, such signals being dependent upon external pollutant levels and sensor characteristics.

5,062,066

MODEL REFERENCED CONTROL OF A FOOD TREATMENT DEVICE

Larry I. Scher, Bronx, N.Y.; Laura Scharr, Montclair, N.J., and Jeffrey Jenniges, Westminster, Calif., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Aug. 17, 1989, Ser. No. 395,436
Int. Cl.[5] G05B *13/04;* **G06F** *15/18*
U.S. Cl. 364—578 **13 Claims**



1. Apparatus for automatically controlling a food treatment device in a process for preparation of a food product, comprising:

a sensor device to sense and measure food product characteristics, including food product color;

said sensor device adapted to be coupled to the food treatment device to sense and measure the food product characteristics, including food product color, during the operation of the food treatment device;

said sensor device including an output to output sensor information based on the sensed and measured food product characteristics, including food product color;

a first level supervisor coupled to the output of the sensor device to receive as an input the sensor information, including sensor information relating to the sensed and measured color of the food product, said first level supervisor including means for simulating the food treatment device based on a predictive simulation control model using the measured color of the food product, to generate feedback and feedforward transfer information as a function of the sensor information;

a second level supervisor coupled to the first level supervisor, the second level supervisor having initial predetermined setpoints therein and providing a setpoint recipe table to the first level supervisor, the second level supervisor also adapted to interface with an operator; and

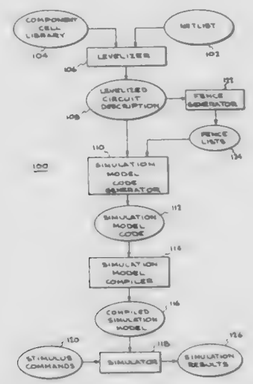
a processor coupled to the means for simulating, the processor adapted to receive the feedback and feedforward transfer information, the processor providing adjusting signals to the food treatment device as a function of the feedback and feedforward transfer information to thereby adjust the process for preparation of a food product.

5,062,067

LEVELIZED LOGIC SIMULATOR WITH FENCED EVALUATION

Thomas J. Schaefer, Cupertino, and Robert D. Shur, Los Altos, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 15, 1989, Ser. No. 324,283
Int. Cl.[5] G06F *15/60, 15/20*
U.S. Cl. 364—578 **12 Claims**



1. A method of improving the efficiency of operation of a computer simulation for a levelized logic circuit in a levelized logic-circuit simulation program, said logic circuit having a number of nodes between which are connected circuit components, each of said nodes having a signal present thereat with the value of said signal indicating the state of said node, comprising the steps of:

forming a list in memory, which list associates various subsets of signals with each of the components in said circuit;

labeling each of said associated subsets of signals with a fence;

evaluating each fence, during simulation by the computer, to determine whether the fence is active, that is, whether the value of one or more of the signals in the fence has changed in value since a previous evaluation; and

simulating said levelized logic circuit, wherein each step of simulating includes evaluating only those components having a fence that is active.

5,062,068

COMPUTERIZED ANALYZING SYSTEM FOR PIPING NETWORK

Shinya Kondo, and Shinichi Kondo, both of Fuchu, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 8, 1990, Ser. No. 476,727
Claims priority, application Japan, Feb. 9, 1989, 1-30324
Int. Cl.[5] G06F *15/56*
U.S. Cl. 364—578 **12 Claims**

1. A computerized analyzing system for piping network having pipelines and nodes comprising:

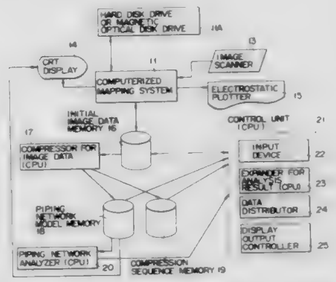
means for storing a sequence of a predetermined compression process;

means for compressing a chart representative of the piping network into a piping network model in accordance with said compression process sequence, such that said piping network model is substantially equivalent to said piping network;

means for analyzing characteristics of said piping network model to provide a result of analyzation;

means for expanding the analyzation result to specific characteristics of said piping network chart in accordance with a reverse-order execution of said compression process sequence;

means for storing an image of a map with respect to the piping network; and



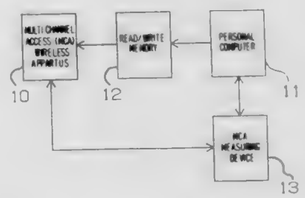
means for adding information of the specific characteristics of said piping network chart to the image of said map to provide a graphical piping network image.

5,062,069

ID.ROM EMULATOR FOR MCA WIRELESS APPARATUS

Yasuo Takasu; Toshiharu Sakai; Seiichi Shindo, and Takumi Kanazawa, all of Kanagawa, Japan, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 14, 1989, Ser. No. 407,376
Claims priority, application Japan, Sep. 14, 1988, 63-228440
Int. Cl.[5] G06F *15/46;* **G05B** *23/00*
U.S. Cl. 364—580 **4 Claims**



1. System for testing an operating section of a Multi Channel Access (MCA) wireless apparatus by checking its operation at channel settings selected from a relatively large set of different channel settings, said MCA wireless apparatus normally comprising said operating section and a replaceable ID.ROM section, for storing code data readable by said operating section, said code data being for said operating section to configure itself for operation at any channel setting in a predetermined relatively small set of different channel settings, said system comprising:

a Read/Write memory section connected to said operating section in a manner to be read by said operating section instead of said operating section reading said ID.ROM section;

an MCA measuring device for, in response to receipt of a first signal indicative of a channel setting at which the operation of the operating section is to be checked, sending a second signal to said operating section indicative of said channel setting, receiving a response signal from said operating section, and for forming a result signal indicative of whether said response signal is at said channel setting;

a computer connected to said MCA measuring device and to said memory section, said computer comprising means for forming and sending said first signal to said MCA measur-

ing device corresponding to one or more channel settings selected from said relatively large set, for receiving said result signal from said MCA measuring device and for writing entries into said memory section corresponding to channel settings at which operation of said operating section is to be checked.

5,062,070

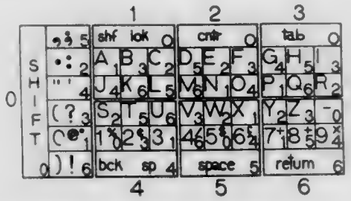
COMPREHENSIVE COMPUTER DATA AND CONTROL ENTRIES FROM VERY FEW KEYS OPERABLE IN A FAST TOUCH TYPING MODE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 395,216, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 729,559, May 2, 1985, Pat. No. 4,910,697, which is a continuation-in-part of Ser. No. 787,633, Oct. 15, 1985. This application Sep. 20, 1990, Ser. No. 597,034

Int. Cl.[5] G06F *3/023*

U.S. Cl. 364—709.16 1 Claim



1. The keyboard improvement for a keyboard system requiring two successive keystrokes for making a keyboard entry of a character or function, comprising in combination, a keyboard constituting a set seven side-by-side keys arranged in an array of two rows of three keys for actuation of three fingers and a seventh key overlapping the two rows at one end thereof from which the keystrokes are made operable in a touch typing mode by easy to select finger positioning from the fingers of a single hand resting in a home position on the keyboard, data processing means for processing an entire set of alphanumeric characters individually entered as a sequence of two said keystrokes, and indicia means identifying for each of the keys the sequence of two keys to be stroked for entering said alphanumeric characters.

5,062,071

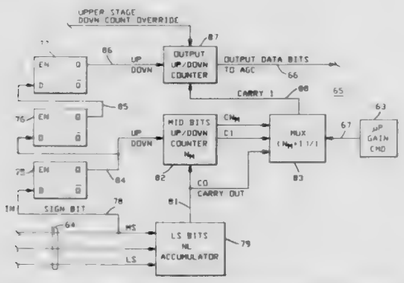
PROGRAMMABLE GAIN ACCUMULATOR

Samuel C. Kingston; Steven T. Barham, both of Salt Lake City, and Harold L. Simonsen, West Valley City, all of Utah, assignors to Unisys Corp., Blue Bell, Pa.

Filed Jul. 26, 1990, Ser. No. 559,019

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—733 8 Claims



1. A programmable digital gain accumulator, comprising:

a digital accumulator having approximately the same number of significant bits as the input data stream,

sign bit delay means coupled to the sign bit of said input data stream,

input up/down counter means coupled to receive a carry output from said digital accumulator and coupled to receive an up or down count control signal from said sign bit delay means,

multiplexor means having parallel inputs coupled to the output of said input up/down counter,

a gain control signal coupled to said multiplexor for selecting one of a plurality of said outputs of said input up/down counter, and

a output up/down counter coupled to receive the output of said multiplexor and coupled to receive an up or down count control signal from said sign bit delay means,

said count in said output up/down counter providing a parallel synchronous digital gain command signal for direct use by a utilization device.

5,062,072

INPUT MANAGEMENT CIRCUIT PARTICULARLY FOR A PROGRAMMABLE AUTOMATION

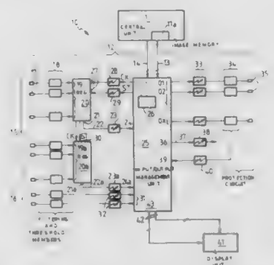
Pierre Gohl, La Colle Sur Loup; Jean-Louis Lachenal, Valbonne, and Jacky Pergent, Carros Le Neuf, all of France, assignors to La Telemecanique Electrique, France

Continuation of Ser. No. 125,663, Nov. 25, 1987, abandoned. This application Jun. 1, 1990, Ser. No. 530,481

Claims priority, application France, Nov. 25, 1986, 86 16855

Int. Cl.[5] G06F *13/00*

U.S. Cl. 364—900 18 Claims



1. An input management circuit for a programmable controller having a plurality of outputs and comprising a central unit having a processor functioning at a determined processing rate and memories, particularly an input-output image memory, a data bus and a service signal bus providing the connection between the management circuit and the central unit, said management circuit further comprising:

i) a plurality of parallel input channels connected to respective sensors,

ii) a serializer having parallel inputs connected to the respective input channels by respective filtering and threshold members, a clock input, a scrutinizing input and a series output which transmits words comprising successive bits corresponding to the signals applied to the input channels,

iii) a management unit connected to the processor of the central unit through said data bus and said signal service bus for exchanging data with the input-output image memory, said management unit having a series input connected to the series output of the serializer through a series connection comprising a first isolating member, said management unit further comprising a clock system independent from the central unit and having a clock output connected to the said clock input through a second isolating member and a scrutinizing output connected to the said scrutinizing input through a third isolating member, so as to transmit to said serializer clock and scrutinizing signals which time said bits and said words to be conveyed by the serializer to the management unit with a rate which is different from the processing rate of the central unit.

5,062,073

INPUT OUTPUT CONTROL SYSTEM USING A FIFO TO RECORD ACCESS INFORMATION OF CONTROL REGISTERS BY A MASTER DEVICE

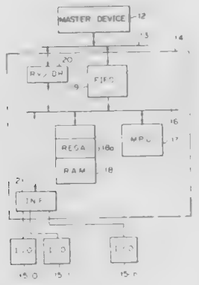
Hiroki Masuda, and Tetsuo Kawamata, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 379,733, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 98,145, Sep. 18, 1987, abandoned. This application Jan. 3, 1990, Ser. No. 462,883

Claims priority, application Japan, Sep. 19, 1986, 61-219126

Int. Cl.[5] G06F *3/00, 13/12, 13/20*

U.S. Cl. 364—900 7 Claims



1. An input output control system having a master device containing a central processing unit, a main memory unit and a channel unit, and an input output control device which carries out an interface control with a plurality of input output devices under control of said master device through said channel unit which is connected to said input output control device via a common bus, said input output control device comprising:

a microprocessor for controlling interface circuits respectively with said common bus and said plurality of input output devices by firmware stored in a read only memory;

a random access memory in communication with the common bus and providing a working memory and storing therein a plurality of control registers, each representing control information about said plurality of input output devices, said random access memory being directly accessible by said master device through said common bus interface circuit via said common bus;

an internal processor bus connected to said microprocessor, said read only memory and said interface circuits for said common bus and said plurality of input output devices;

a first-in first-out memory being further connected between said common bus and said internal processor bus, for recording a history of a program mode access from the master device to the control registers as access information for the control registers;

a fifo for storing a history in parallel with said program mode access of said control registers, an address information on said common bus corresponding to each of said control registers haivng data which is recorded in access order in said memory;

said access information recorded in said memory being readable by said microprocessor, the content of said control registers being read out or renewed by said microprocessor which distinguishes one of said control registers in accordance with said address information in said access information, so that a specified input output device among said plurality of input output devices is controlled.

5,062,074

INFORMATION RETRIEVAL SYSTEM AND METHOD

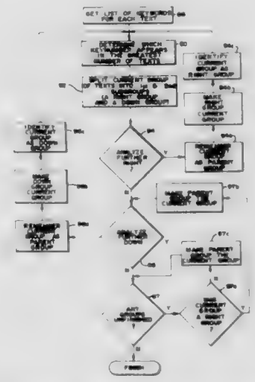
Paul J. Kleinberger, Jerusalem, Israel, assignor to TNET, Inc., Mendota Heights, Minn.

Continuation of Ser. No. 393,838, Aug. 14, 1989, Pat. No. 4,972,349, which is a continuation of Ser. No. 938,163, Dec. 4, 1986, abandoned. This application Aug. 30, 1990, Ser. No. 575,046

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—900 6 Claims



1. A method utilizing processor means and associated memory means for making explicit the relationships among texts in a text base stored in the memory means, the relationships being other than those provided by a user, each text in the text base of texts being associated with at least one keyword, the method comprising the steps of:

(a) the processor means accepting from the user a search request of a search to be performed to locate a first group of the texts;

(b) the processor means performing the search request described by the user in step (a) among the keywords associated with the texts in the text base to locate the first group of texts having associated keywords matching the search request;

(c) for each of the keywords associated with at least one of the texts in the first group, the processor means counting the number of texts in the first group associated with each of the keywords;

(d) the processor means comparing the number of texts associated with each of the keywords to identify the keyword associated with a largest number of texts;

(e) the processor means defining as a "criterion key" the keyword which is associated with the largest number of texts;

(f) the processor means separating the first group of texts into first and second sub-groups of texts, the first sub-group of texts including texts having the criterion key as a keyword and the second sub-group of texts including texts not having the criterion key as a keyword;

(g) repeating steps (c), (d), (e), and (f) at least once using the first sub-group as a group;

(h) repeating steps (c), (d), (e), and (f) at least once using the second sub-group as a group; and

(i) displaying the criterion key from steps (e), (g) and (h) on a suitable display medium in a hierarchical manner in which the criterion keys from steps (g) and (h) are displayed in a subsidiary relationship to the criterion key from step (e) so that relationships, based on associations with the criterion key keywords, among the texts in the

first group found by the search of step (b) are presented to the user.

5,062,075

MICROCOMPUTER HAVING SECURITY MEMORY USING TEST AND DESTRUCTION ROUTINES

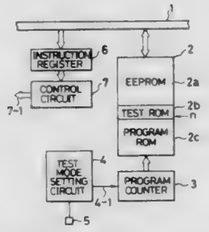
Tomoaki Yoshida, and Kouji Tanagawa, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 117,846, Nov. 9, 1987, abandoned. This application Dec. 14, 1989, Ser. No. 449,050

Claims priority, application Japan, Nov. 7, 1986, 61-265375

Int. Cl.[5] G06F *12/14*

U.S. Cl. 364—900 **10 Claims**



6. A microcomputer, comprising:

a test mode setting circuit including means for receiving an external test mode control signal, said test mode setting circuit generating an address setting control signal upon receipt of said test mode control signal;

memory means coupled to said test mode setting circuit, said memory means including

a first memory having storage locations therein for storing security information, and

a second memory having stored therein a test routine and a first destruction routine; and

program executing means coupled to said memory means, said program executing means erasing the security information stored in said first memory in accordance with said destruction routine when said address setting control signal is received by said memory means, said program executing means then running said test routine to test said storage locations.

5,062,076

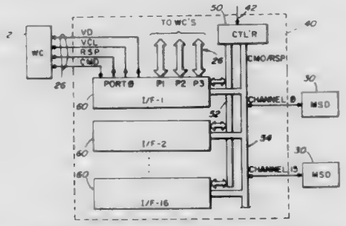
CASCADABLE, HIGH-BANDWIDTH, MULTI-CHANNEL IMAGE TRANSFER CONTROLLER

Shu-Kuang Ho, Carlisle, and Gilbert W. Agudelo, Malden, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Jul. 12, 1985, Ser. No. 754,116

Int. Cl.[5] G06F *13/20, 13/40*

U.S. Cl. 364—900 **2 Claims**



1. An image storage and display system comprising:

a plurality of image storage devices, each including a scanner for generating serial bit-mapped image data and each coupled to a channel dedicated to the image storage device, data being, transferred over each channel in a serial transfer of the bit-mapped data;

a plurality of workstation computers for receiving the serial bit-mapped image data; and

an image transfer controller responsive to requests from each of the workstation computers and having interconnecting means for selectively interconnecting any single workstation computer to any single channel and for simultaneously transferring serial bit-mapped image data between channels and computer workstations of plural pairs of channels and computer workstations which are interconnected, each channel comprising a data line for the serial bit-mapped image data and a clock line for carrying clock signals, both the image data and the clock signals being transferred through the interconnecting means of the image transfer controller to the workstation computers on data and clock lines dedicated to the workstation computers, and each channel comprising command and response lines, the command and response lines being coupled through the interconnecting means of the image transfer controller to the workstation computers through lines dedicated to the workstation computers, each workstation computer making requests to the controller on a request line of the workstation computer for interconnection with one of the channels and thereafter making requests, on the request line and the request line of the channel, to the image storage device for data, and the image storage device making responses, other than the transfer of image data, to the workstation computer through its dedicated response line, the response and request lines carrying signals at rates which are low relative to the rates at which image data and clock signals are transferred on the data lines and clock lines.

5,062,077

DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE

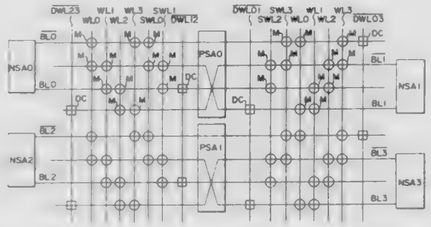
Daisaburo Takashima, Kawasaki; Yukihito Oowaki, Yokohama, and Kenji Tsuchida, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1990, Ser. No. 556,470

Claims priority, application Japan, Jul. 31, 1989, 1-196736; Nov. 30, 1989, 1-311370

Int. Cl.[5] G11C *5/08, 7/02;* **H01L** *27/10, 23/48*

U.S. Cl. 365—69 **21 Claims**



1. A dynamic-type semiconductor memory device comprising:

a plurality of bit lines, every two bit lines forming a folded bit line pair, every two bit line pairs forming a bit-line unit such that the bit lines of a first pair of the bit-line unit are in parallel to each other, the bit lines of a second pair of the bit-line unit extend parallel with the bit lines of the first pair and cross each other at substantially a midpoint of the second pair, and one of the bit lines of the first pair is provided between the second pair;

a plurality of word lines orthogonally intersecting with the bit lines;

four dummy word lines extending parallel to the word lines and intersecting with the bit lines, two of the dummy word lines being arranged on one side of the crossing portions of the second pair, and the other two of the dummy word lines being arranged on the other side of the crossing portions of the second pair;

a plurality of memory cells connected to selected ones of the intersections of the bit lines and the word lines, such that any adjacent two memory cells connected to the same word line form a group which is arranged every two adjacent bit lines, and any adjacent two memory cells connected to the same bit line are shifted by half-pitch distance with respect to the corresponding two adjacent memory cells connected to either adjacent word line;

a plurality of dummy cells connected to selected ones of the intersections of the bit lines and the dummy word lines, such that at least one dummy cells are connected to each bit line; and

a plurality of sense amplifiers provided for the pairs of the bit lines, respectively.

5,062,078

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE OPERABLE IN DIFFERENT WRITE MODES

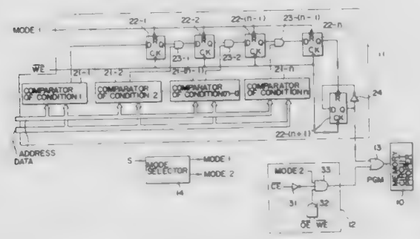
Norimasa Arakawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 11, 1989, Ser. No. 419,750

Claims priority, application Japan, Oct. 19, 1988, 63-263149

Int. Cl.[5] G11C *11/00*

U.S. Cl. 365—189.07 **8 Claims**



1. A nonvolatile semiconductor memory device comprising:

a memory circuit including a plurality of nonvolatile memory cells;

mode select means, capable of generating at least two mode signals, for detecting a signal indicative of a specific operation to said memory circuit, and for selecting one of said mode signals in accordance with said detected signal;

control means for generating at least two writ enable signals, each signal allowing data to be written into said memory circuit in a different manner in accordance with said mode signal selected by said mode select means;

wherein said control means includes a plurality of judging means for judging as to whether or not said specific operation has been applied to said memory circuit; and

wherein said plurality of judging means include a plurality of comparators for comparing input addresses with reference addresses and for comparing input data with reference data.

5,062,079

MOS TYPE RANDOM ACCESS MEMORY WITH INTERFERENCE NOISE ELIMINATOR

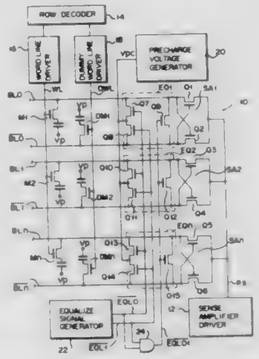
Kenji Tsuchida, Kawasaki, and Yukihito Oowaki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1989, Ser. No. 412,930

Claims priority, application Japan, Sep. 28, 1988, 63-242919; Sep. 28, 1988, 63-242920

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—210 **10 Claims**



1. A dynamic random access memory comprising:

(a) a plurality of pairs of folded bit lines sequentially aligned and respectively including first bit lines and second bit lines which form bit line pairs;

(b) first and second word lines insulatively intersecting said plurality of pairs of folded bit lines at intersecting points therebetween;

(c) memory cells arranged at the intersecting points between said first bit lines of the bit line pairs and said first word lines;

(d) dummy cells arranged at the intersecting points between said second bit lines of the bit line pairs and said second word lines;

(e) sense amplifier sections connected to said plurality of pairs of folded bit lines; and

(f) voltage controller means for, when a selected memory cell which is connected to a selected word line and a first bit line of a selected bit line pair is subjected to data reading, causing a second bit line of said selected bit line pair to be in a low-impedance state in a predetermined time interval after said selected word line is designated and before a sense amplifier section connected to said selected bit line pair is activated, thereby eliminating interference noise applied to said selected bit line pair from a bit line pair adjacent to said selected bit line pair,

said voltage controller means comprising switching means provided at said dummy cells for selectively connecting each second bit line of the bit line pairs to a constant voltage.

5,062,080

METHOD AND APPARATUS FOR ENABLING A MEMORY

Eric S. Goldsmith, Watauga, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1987, Ser. No. 82,717

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—230.01 **4 Claims**

1. A device for use with;

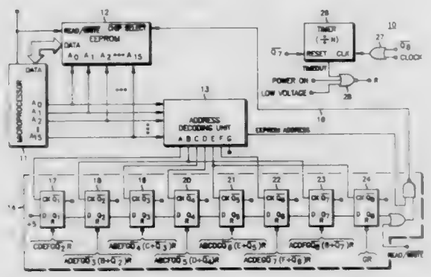
a memory write unit having data output means for providing

VOL 1131 ISS 5 OCT 29 1991 UMI

data and address output means for providing address location information; and

a memory operably connected to said data output means and said address output means for storing data from said memory write unit at locations related to said address location information, when enabled;

said device comprising:



a) address decoding means operably connected to said address output means for providing an output related to said address location information; and

b) memory write enable means for receiving said output from said address decoding means and for providing an enable signal to said memory means only when a predetermined proper sequence of address locations has been output by said memory write unit.

5,062,081

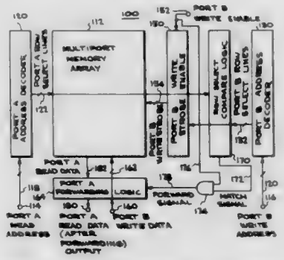
MULTIPORT MEMORY COLLISION/DETECTION CIRCUITRY

Thomas J. Runaldue, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 10, 1989, Ser. No. 419,019

Int. Cl.[5] G11C *7/00, 8/00, 11/418*

U.S. Cl. 365—230.05 **7 Claims**



1. A collision detection system for a multiport memory system, said detection system preventing collision between read information being outputted at a first input/output port from a row of memory cells while write input information is simultaneously being inputted to the same row of memory cells from a second inputoutput port, comprising:

a multiport memory arranged as rows and columns of memory cells, said memory cells being independently addressed by a first address port and by a second address port, said memory cells having a first input/output port providing the information stored in memory cells addressed by the first address port; said memory cells having a second input/output port providing the information stored in memory cells addressed by the second address port;

first row-select means for decoding binary memory address signals provided at said first address port and for providing a first group of row select signals, each of which row-select signals corresponds to a decoded binary row address at the first address port;

second row-select means for decoding binary memory address signals provided at said second address port and for providing a second group of row select signals, each of which row-select signals corresponds to a decoded binary row address at the second address port;

comparison .neans for comparing said first row select signals with said second row select signals, said comparison means providing a match signal when one of the first row select signals is simultaneously present with a corresponding second row select signal, said match signal indicating a collision condition between corresponding row select signals;

means for forwarding write input information from the second input/output port directly to the first input/output port when said match signal is present and when corresponding row select signals are simultaneously present.

5,062,082

SEMICONDUCTOR MEMORY DEVICE WITH DELAY IN ADDRESS PREDECODER CIRCUIT INDEPENDENT FROM ATD

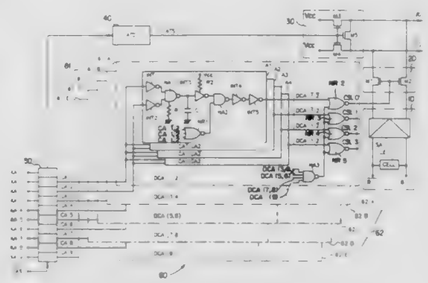
Yun-ho Choi, Incheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungg-do, Rep. of Korea

Filed Jan. 18, 1991, Ser. No. 642,746

Claims priority, application Rep. of Korea, Sep. 4, 1990, 90-13926

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.06 **5 Claims**



1. A semiconductor memory device, comprising:

address transition detection means for detecting a state transition of a memory address signal and generating an address transition state pulse having a predetermined pulse width;

precharge means for precharging and equalizing a pair of input/output lines in response to said address transition state pulse;

address decoder means for decoding said memory address signal and generating an address selection signal, including delay means for delaying the decoding of said memory address signal by a predetermined amount of time from said state transition independent from said address transition state pulse, such that said address selection signal is outputted immediately upon completion of precharging and equalizing said input/output lines; and

gate means operatively coupled to said address selection signal for connecting said pair of input/output lines to a pair of bit lines of a memory location corresponding to said address selection signal.

5,062,083

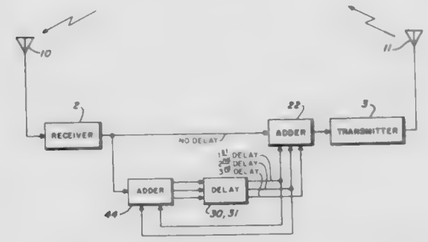
PING ELONGATOR-MODULATOR FOR REALISTIC ECHO SYNTHESIS

Keith E. Geren, and Claude C. Routh, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1965, Ser. No. 465,832

Int. Cl.[5] H04K *3/00*

U.S. Cl. 367—1 **5 Claims**



1. A decoy system for simulating the elongation and shaping of sonic wave reflections from an irregular-shaped moving object which has been illuminated with energy of any frequency F within a wide band of frequencies, said system comprising;

a receiver for said frequency F;

a random noise generator and modulator coupled to said receiver for randomly modulating the signal of said frequency F;

a radiating transducer;

an amplifier, having a pass band substantially including said wide band of frequencies, connected into the input to said radiating transducer;

a first signal path and a second signal path connected between said modulator and said amplifier, said second path including a signal delay line with a delay which is a predetermined fraction of the desired sonic wave elongation; and

a plurality of feedback circuits coupled from the output to the input of said delay line for recirculating a plurality of times the delayed wave signals through said delay line.

5,062,084

BOREHOLE DIGITAL GEOPHONE TOOL

Victor L. Schoepf, Carrollton; Feroze J. Sidhwa, Coppell, and John W. Bentley, Garland, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 23, 1990, Ser. No. 571,341

Int. Cl.[5] G01V *1/40, 1/22*

U.S. Cl. 367—13 **11 Claims**

1. A method of acquiring acoustical data from a borehole comprising:

connecting a first digital geophone module (DGM) to a 7-conductor logging cable;

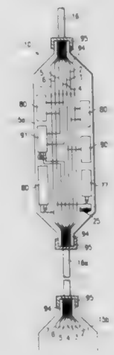
connecting a second DMG to said first DMG by a separate length of said 7-conductor cable whereby each of the 7 conductors in the cable will functionally extend from the cable through said first DGM, said separate length of cable, and said second DGM;

lowering said DGMs on said logging cable to a desired depth in said borehole;

supplying power to said first DGM through dedicated power conductors in said cable to generate test data which is transmitted from said first DGM to the surface through a dedicated transmission conductor in said cable;

transmitting a signal to said first DGM commanding said DGM to supply power from said power conductors through said separate length of cable to said second DGM to thereby generate and transmit test data from said second DGM to the surface through said dedicated transmission conductor in said cable;

transmitting a timebreak signal down said dedicated, timebreak conductor in said cable to simultaneously actuate said first and second DGMs to begin acquistion of data;



sensing acoustical energy at each of said DGMs and generating data signals representative thereof:

storing said data signals in each DGM; and

transmitting upon command said data signals from each DGMs to the surface through said transmission conductor in said cable.

5,062,085

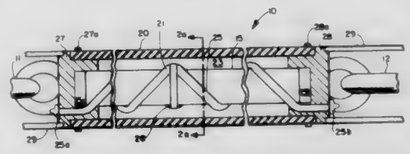
VIBRATION ISOLATION MODULE FOR TOWED SEISMIC ARRAYS

Daniel E. Andrews, Jr., 1563 Yost Dr., San Diego, Calif. 92109

Filed Feb. 21, 1984, Ser. No. 582,102

Int. Cl.[5] G01V *1/38;* **H01B** *7/12*

U.S. Cl. 367—20 **40 Claims**



1. An apparatus for providing longitudinal shock mitigation and reducing the influences of longitudinal motional disturbances between terminal members coupled at opposite ends thereto comprising:

means coupled between the terminal members for compliantly and dissipatively yielding both in longitudinal extension and in torsion, the compliantly and dissipatively yielding means is a centrally located coaxially disposed core of a compliant dissipative material;

means coupled to and between the terminal members for imparting torsional strains to the compliantly and dissipatively yielding means such that the torsional strains increase nonlinearly with longitudinal strain, the torsional strain imparting means having the property of being relatively nonextensible as compared to the compliantly and dissipatively yielding means and the torsional strain imparting means is longitudinally disposed with respect to the compliantly and dissipatively yielding means in a helical configuration having at least one pitch reversal and being attached at least at the pitch reversal to the compliantly and dissipatively yielding means to assure the imparting of the torsional strains, the torsional strain producing means is at least one cord-like member, each helically

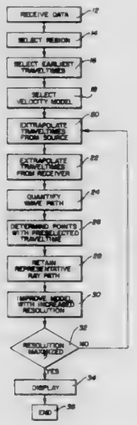
disposed along its length coaxially about the core of the compliantly and dissipatively yielding material; and
end fittings each connected to a terminal member and each disposed at an opposite end of the compliantly and dissipatively yielding means and the torsional strain imparting means and being connected at least to the torsional strain imparting means.

5,062,086

CALCULATION OF RAYPATHS AND WAVEPATHS FROM TRAVELTIME TABLES FOR THE TOMOGRAPHIC ESTIMATION OF TRANSMISSION VELOCITIES

William S. Harlan; Shein S. Wang, and Douglas W. Hanson, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 27, 1990, Ser. No. 573,595
Int. Cl.[5] G01V *1/28*
U.S. Cl. 367—38 **7 Claims**



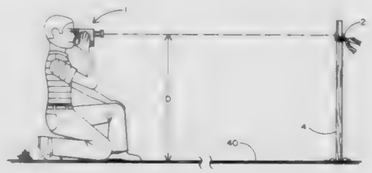
1. A method of estimating seismic transmission velocities by determining seismic wavepaths from traveltime tables comprising the steps of :
obtaining seismic data from seismic pulses generated by sources into the earth's surface and detected by receivers;
picking the earliest traveltimes of waves transmitted between different source and receiver locations for a region of interest which includes any region which may influence a wavepath;
selecting a velocity model that describes transmission velocities in the region of interest;
extrapolating first traveltimes from each source position to each point in the region of interest;
extrapolating second traveltimes from each receiver location to each point in the region of interest;
quantifying the path of a wave between one source and one receiver by adding together the extrapolated first and second traveltimes from the source and receiver to each point in the region of interest;
determining all points in the region of interest whose total traveltimes are less than half a wavelength greater than a predetermined minimum traveltime thereby determining an estimated wavepath region;
retaining a representative raypath that passes through the center of the estimated wavepath region for each source and receiver location; and
improving said model of velocities by tomographic means to increase the match between the recorded and modeled traveltimes along the representative raypaths.

5,062,087

HAND HELD ELECTRONIC GRADING LEVEL

Dmytro Dydzyk, 2548 W. Ball Rd., #138, Anaheim, Calif. 92804

Filed Nov. 7, 1990, Ser. No. 610,032
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—99 **15 Claims**



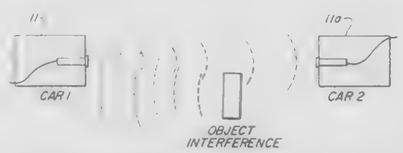
1. An electronic grading level to be positioned above a ground plane and aligned with a distant reference target that is supported at a predetermined elevation above the ground plane, said grading level adapted to provide an indication of the grade of the ground plane between said grading level and the reference target, and comprising:
optical means having an optical axis, said optical means being aimed at the reference target such that said optical axis thereof intersects said target;
level indicating means to provide an indication when the optical axis of said optical means which intersects the reference target is aligned parallel with respect to that portion of the ground plane which lies directly below said grading level;
signal generating means for transmitting an incident signal towards the ground plane to be reflected therefrom;
signal receiving means for receiving the signal reflected from the ground plane; and
means responsive to the transit time between the transmission of said incident signal and the receipt of said reflected signal, said transit time being indicative of the elevation of said grading level above the ground plane, said responsive means comparing the elevation of said grading level with the predetermined elevation of the reference target for indicating whether the ground plane is level between said grading level and said target.

5,062,088

ACOUSTIC MEASURING SYSTEM

Amber C. Davidson, Salt Lake City, and Ernie Vandenwijngaert, Logan, both of Utah, assignors to Lundahl Instruments, Inc., Logan, Utah

Filed Oct. 9, 1990, Ser. No. 594,581
Int. Cl.[5] G01S *3/80*
U.S. Cl. 367—127 **6 Claims**



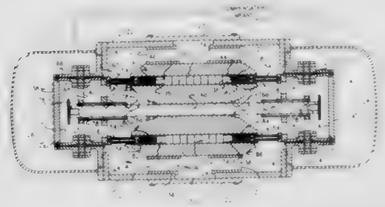
1. Distance measuring apparatus comprising a first and second ultrasonic device each including transmitting means for emitting an ultrasonic pulse and a receiving means for receiving ultrasonic pulses, a first control means connected to said transmitting and receiving means of said first device to activate each of said transmitting and receiving means at predetermined intervals; a second control means including timing means integral with said second device and responsive to signals received from said first device to activate the transmitting and receiving means of said second device at predetermined intervals; means for varying said predetermined time intervals as distance between the devices changes; means connected to said first device and responsive to reception of ultrasonic signals from said second device to measure the elapsed time from transmission of the pulse from said first device to reception of said pulse from said second device; means to convert the measured time lapse to a signal indicative of the distance between said devices.

5,062,089

SONAR PROJECTOR WITH LIQUID MASS LOADING FOR OPERATION AT LOWER FREQUENCY

Bernard Willard, Davie, and Gerard K. Forsberg, Lauderdale Lakes, both of Fla., assignors to Argotec Inc., Ft. Lauderdale, Fla.

Continuation-in-part of Ser. No. 395,981, Aug. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 263,739, Oct. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 86,696, Aug. 17, 1987, abandoned. This application Nov. 13, 1990, Ser. No. 611,729
Int. Cl.[5] H04R *15/00*
U.S. Cl. 367—172 **21 Claims**



1. A sonar projector capable of underwater operation to transmit controlled sound energy at low frequency, comprising:
piston means having an effective diameter d mounted for oscillatory movement to generate sound energy;
electromagnetic means for driving said piston means;
compliant means comprising gas means on one side of said piston means;
compensation means for maintaining a pressure of said gas means equal to ambient hydrostatic pressure;
means for providing liquid on a side of said piston means opposite said one side for effecting communication between said piston means and open seawater on the exterior of said projector; and
constricting means having an effective outlet area with an effective diameter D for constricting said liquid to decrease a resonant frequency of said projector by adding mass loading to said piston means during said oscillatory movement;
said effective outlet area and said piston means being spaced apart a distance equal to or greater than d, with said diameters d and D subtending a solid angle which is not greater than $\pi/4$ steradians.

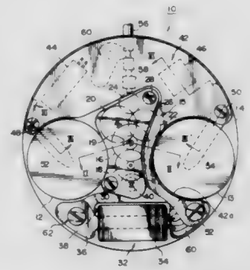
5,062,090

MODULE FOR QUARTZ WATCH

Katsuhiko Komiyama, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1991, Ser. No. 720,598
Claims priority, application Japan, Jun. 26, 1990, 2-67729[U]
Int. Cl.[5] G04B *37/00, 1/00*
U.S. Cl. 368—88 **3 Claims**

1. A module for a quartz watch, comprising:
a main plate;
(b) a wheel-train disposed at a substantially central portion of said main plate;
(c) one wheel-train bridge for pivotally supporting said wheel-train with said main plate;
(d) a motor including an electromagnetic coil driven by pulses and operable to drive said wheel-train;
(e) a circuit block including a quartz oscillator, a control integrated circuit, a printed circuit pattern, and an arm extending to said electromagnetic coil;
(f) two batteries disposed respectively at opposite sides of said wheel-train between said circuit block and said motor; and



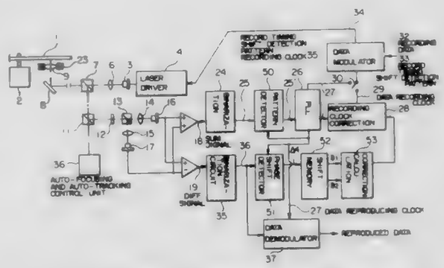
(g) two battery springs for connecting cathodes of said batteries and said circuit block; wherein said electromagnetic coil, said circuit block and said batteries are superimposed on said main plate substantially without overlapping one another, and said arm extends to said electromagnetic coil through a space between said wheel-train and one of said two batteries to supply driving signals to said electromagnetic coil via a circuit pattern printed on said arm.

5,062,091

MAGNETO-OPTICAL RECORDING METHOD AND APPARATUS CAPABLE OF OVERWRITING DATA USING A RADIATION BEAM

Takeshi Maeda, Kokubunji; Norio Ohta, Iruma; Yoshio Suzuki, Kodaira, and Masahiko Takahashi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 6, 1989, Ser. No. 362,098
Claims priority, application Japan, Jun. 8, 1988, 63-139391
Int. Cl.[5] G11B *7/12, 11/12, 13/04*
U.S. Cl. 369—13 **14 Claims**



1. A magneto-optical recording apparatus comprising:
a magneto-optical recording medium including a magnetic film having a magnetization direction which is normal to a plane of the magnetic film, the magneto-optical recording medium having a track and having optically detectable prepits preformed at predetermined intervals along the track, areas between the prepits constituting recording areas in which data is to be recorded in the form of magnetic domain formation areas and magnetic domain non-formation areas, the magneto-optical recording medium

having a demagnetizing field enabling data recorded in the recording areas to be overwritten by other data;

prepit reproducing means for detecting the prepits on the magneto-optical recording medium and outputting a reproduced prepit signal representing the detected prepits;

clock signal generating means responsive to the reproduced prepit signal for generating a first clock signal synchronized with the reproduced prepit signal;

irradiating means for irradiating the magneto-optical recording medium with a radiation beam;

modulating means for modulating the radiation beam in accordance with an input signal and a clock signal to produce a radiation pulse having a large energy when a magnetic domain formation area is to be produced on the magneto-optical recording medium, and to produce a radiation pulse having a small energy when a magnetic domain non-formation area is to be produced on the magneto-optical recording medium;

pattern signal generating means for generating a pattern signal representing a predetermined pattern and for supplying the pattern signal and the first clock signal to the modulating means as the input signal and the clock signal of the modulating means to cause the predetermined pattern to be recorded in a first recording area of the recording areas on the magneto-optical recording medium;

pattern reproducing means for detecting the predetermined pattern in the first recording area on the magneto-optical recording medium and outputting a reproduced pattern signal representing the detected predetermined pattern;

code data reproducing means for detecting first code data previously recorded on a second recording area of the recording areas on the magneto-optical recording medium and outputting a reproduced code data signal representing the detected first code data;

phase difference detecting means for detecting a first phase difference between the reproduced pattern signal and the first clock signal and a second phase difference between the reproduced code data signal and the first clock signal and outputting a difference signal representing a difference between the first phase difference and the second phase difference;

clock signal correcting means for correcting the first clock signal in accordance with the difference signal outputted by the phase difference detecting means to produce a second clock signal; and

code data signal generating means for generating a code data signal representing second code data and for supplying the code data signal and the second clock signal to the modulating means as the input signal and the clock signal of the modulating means to cause the second code data to be recorded in the second recording area over the first code data.

5,062,092

JUKEBOX HAVING ROTATABLE DISK STACK

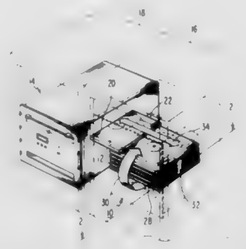
Bohdan W. Siryj, Cinnaminson, and Michael E. York, Gibbsboro, both of N.J., assignors to General Electric Company, Camden, N.J.

Filed Nov. 24, 1989, Ser. No. 441,014
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—38 **11 Claims**

1. Apparatus for presenting any one of N disks, each comprising two opposed information surfaces, to an information utilization apparatus with a given one of said information surfaces in information translating relationship therewith, comprising in combination:

means for holding said N disks in a stack with one of said information surfaces of one disk facing one of said information surfaces of a next one of said disks;

means for translating said N disk stack between first and second orientations, said first orientation allowing one of said information surfaces to become in information translating relation with said information utilization apparatus, said second orientation allowing the other of said information surfaces to become in information translating relation with said information utilization apparatus; and



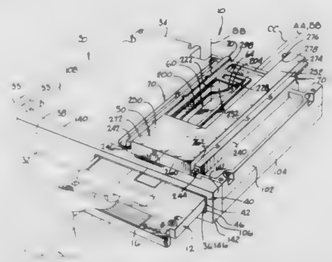
means for translating said stack to a position such as to enable a desired one of said N disks to be presented to said information utilization apparatus with said given one of said surfaces in said desired orientation.

5,062,093

OPTICAL DISK CARTRIDGE INSERTION APPARATUS FOR AN OPTICAL DISK STORAGE AND HANDLING SYSTEM

Leslie G. Christie, Greeley; Mark E. Wanger, Fort Collins; Daniel R. Dauner, Fort Collins; David P. Jones, Fort Collins, all of Colo., and Douglas R. Domel, Carlsbad, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 22, 1988, Ser. No. 288,608
Int. Cl.[5] G11B *17/22, 15/10*
U.S. Cl. 369—36 **38 Claims**



1. An optical disk cartridge insertion apparatus for an optical disk storage and handling system for use in association with an optical disk cartridge of the type having a rear end portion which is adapted to be inserted into an optical disk reading device and having a forward end portion which is adapted to be grasped by a human operator for handling the cartridge comprising:

a) housing means for supporting an optical disk cartridge receiving means having a forward end portion and a rear end portion and having a housing longitudinal axis extending therebetween, said housing means having a forward opening for enabling hand-insertion and hand-removal of cartridges by a human operator and having a rear opening for enabling machine-insertion and machine-removal of mechanized cartridges by a cartridge handling apparatus;

b) cartridge receiving means, supported by said housing means in angularly displaceable relationship with said housing means, for receiving a cartridge therein and for holding said cartridge in stationary relationship therewith, said receiving means having a central longitudinal axis and having forward and rear end portions which are adapted to be positioned in corresponding adjacent relationship with the forward and rear end portions of a cartridge received therein; said receiving means having a forward end opening adapted to enable longitudinal insertion and removal of cartridges from said receiving means; said receiving means comprising a first operating position associated with hand-insertion and hand-removal of cartridges, wherein said forward end portion of said receiving means is positioned proximal said forward end portion of said housing means; said receiving means having a second operating position associated with machine-insertion and machine-removal of cartridges, wherein said forward end portion of said receiving means is positioned proximal said rear end portion of said housing means;

c) actuator means operably connected to said cartridge receiving means for moving said cartridge receiving means between said first operating position and said second operating position thereof;

d) track means having a forward end portion and a rear end portion fixedly associated with said housing means and operably associated with said cartridge receiving means for guiding movement of said receiving means relative said housing means; and

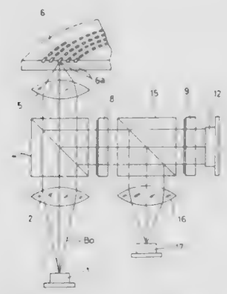
e) actuator guide means for limiting the movement of said actuator means relative to said housing means to a forwardly and rearwardly extending actuator path extending parallel to said housing means longitudinal axis.

5,062,094

OPTICAL HEAD FOR OPTICAL DISK SYSTEM

Akiyoshi Hamada; Mitsutoshi Yagoto, and Masanori Murakami, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1989, Ser. No. 431,874
Claims priority, application Japan, Nov. 7, 1988, 63-280936; Nov. 16, 1988, 63-290915; Nov. 28, 1988, 63-301848
Int. Cl.[5] G11B *7/12*
U.S. Cl. 369—44.12 **19 Claims**



1. An optical head for use in an optical disk system for irradiating a laser beam on an optical disk for recording or reproducing information, said optical head comprising:

focusing means for detecting a focusing error, said focusing means including first and second diffraction gratings disposed on an optical path so as to form a moire pattern for detecting a focusing error; and

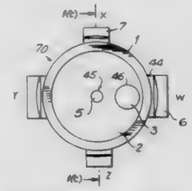
tracking means for detecting a tracking error, said tracking means including a third diffraction grating disposed on the optical path so as to split a laser beam into three diffraction beams, and the strips of the third diffraction grating extending in a direction substantially perpendicular to directions in which the strips of said first and second diffraction gratings extend.

5,062,095

ACTUATOR AND METHOD OF MANUFACTURING THEREOF

Mitsuhiro Horikawa; Hiroshi Ito; Tsugio Ide; Michio Yanagisawa; Tatsuya Shimoda, and Koji Akioka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 27, 1989, Ser. No. 303,602
Claims priority, application Japan, Jul. 21, 1988, 63-182418; Aug. 26, 1988, 63-211637
Int. Cl.[5] G02B *7/04;* **G11B** *11/04*
U.S. Cl. 369—44.21 **24 Claims**



1. An actuator supported on a shaft and movable rectilinearly in the axial direction of the shaft and rotatably about the shaft comprising:

a cylindrical magnet rotatably mounted about the shaft, the cylindrical magnet having a plurality of poles formed about said magnet in the radial direction, at least one of said poles having a magnetized boundary in a circumferential direction of the magnet and, at least one of said poles having a magnetized boundary in an axial direction of the magnet; and

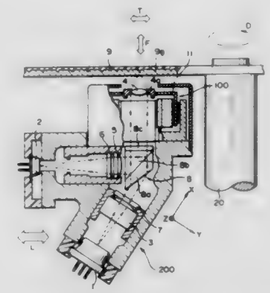
yoke means having a plurality of magnetic poles each in facing relationship with the magnetized boundaries of the cylindrical magnet, the yoke means including coil means for providing magnetic fields in said yoke means at said magnetic poles.

5,062,096

OPTICAL HEAD AND TRACKING METHOD USING SAME

Masaaki Takagi, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Dec. 20, 1988, Ser. No. 287,291
Claims priority, application Japan, Dec. 25, 1987, 62-327444
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.38 **12 Claims**



1. An optical head having light beam generating means for generating a light beam, and being usable with WORM-type and phase change-type optical disk devices, comprising:

a diffraction grating located on an optical path of the light beam for diffracting the light beam into at least three diffracted light beams;

a prism for refracting said at least three diffracted light

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beams from said diffraction grating, said diffraction grating diffracting at least three diffracted light beams so that said three diffracted light beams enter said prism obliquely, so as to establish a positional relationship in which said at least three diffracted light beams do not lie on a single line in a cross-sectional distribution thereof, wherein one of the at least three diffracted light beams that lies at aforemost or rearmost position in a forward rotating direction of said optical disk, is employed for reading or writing data; and

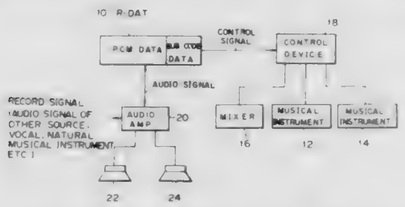
two first light-receiving means disposed on an optical path of reflected light of the remaining two diffracted light beams from said optical disk, and arranged at different positions for receiving the reflected light beams in order to produce a tracking servo signal.

5,062,097

AUTOMATIC MUSICAL INSTRUMENT PLAYBACK FROM A DIGITAL MUSIC OR VIDEO SOURCE

Michiaki Kumaoka, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 1, 1989, Ser. No. 305,514
Claims priority, application Japan, Feb. 3, 1988, 63-23593
Int. Cl.[5] G11B *33/00*; G10F *1/00*
U.S. Cl. 369—70 **6 Claims**



1. A music/video source playback device which provides musical instrument accompaniment comprising:

a music/video source playback device of the type in which audio or video signals to be reproduced are recorded in digital form in a program region of a recording medium and a control region is provided in the medium separate from the program region for recording digital control signals in addition to the audio or video signals to be reproduced, the playback device including means for separating the audio or video signals to be reproduced from the control signals during playback and providing the separated audio or video signals to appropriate audio/video reproduction equipment; and

control means for detecting portions of the control signals as representing control information for controlling an external musical instrument and providing the control information as an output to the external musical instrument.

5,062,098

OPTICAL PICK-UP DEVICE HAVING HOLOGRAPHIC ELEMENT

Yoshikazu Hori, Osaka, and Makoto Kato, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

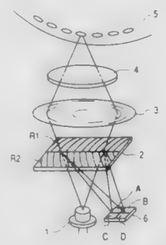
Filed Oct. 19, 1988, Ser. No. 259,704
Int. Cl.[5] G11B *7/12*
U.S. Cl. 369—112 **12 Claims**

1. An optical pick-up device for directing laser energy onto an optical medium and for detecting laser energy reflected off of the optical medium, said optical pick-up device comprising:

laser emitting means for emitting a laser beam;

focusing means for focusing the laser beam emitted from said laser emitting means onto a surface of the optical medium, whereby a reflected laser beam is reflected off of the optical medium;

a holographic optical element, having an anisotropic refractive index and located between said laser emitting means and said focusing means, for transmitting therethrough in an undiffracted manner the laser beam emitted from said laser emitting means and for diffracting the reflected laser



beam reflected off of the optical medium, whereby a thus diffracted laser beam is emitted from the holographic element; and

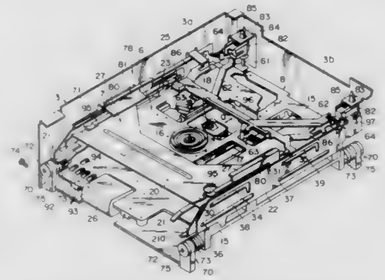
photodetector means for receiving and detecting the diffracted laser beam from the holographic optical element.

5,062,099

INFORMATION PROCESSING APPARATUS

Kazuharu Odawara, Yokohama; Masaru Ishii, Fujisawa, and Hiroshi Yamamoto, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 11, 1989, Ser. No. 336,142
Claims priority, application Japan, Apr. 11, 1988, 63-88597
Int. Cl.[5] G11B *23/00*
U.S. Cl. 369—263 **13 Claims**



1. An information processing apparatus comprising:

a casing having a loading slot through which an information storage medium may be inserted;

a processing unit arranged in said casing and including means for reproducing information recorded on the information storage medium, and means for loading the information storage medium, when it is inserted into said casing through the loading slot, onto said reproducing means, said loading means including a medium holder for holding the information storage medium therein, and guide means for guiding said medium holder between a home position where the information storage medium can be inserted and taken out of said holder through the loading slot and a descent position where the information storage medium in said holder is loaded onto said reproducing means, said guide means guiding said medium holder between the home position and the descent position by way of a pushed-in position where the information storage medium held by said holder is received into the casing;

means for elastically supporting said processing unit in said casing to absorb vibrations acting on said processing unit; and

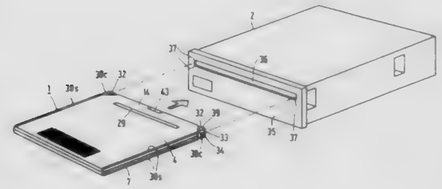
locking means for locking said processing unit in a locked state at a specified position while the information storage medium is being loaded onto said reproducing means and for releasing said processing unit from the locked state when the information storage medium is completely loaded onto said reproducing means, said locking means including a first engagement portion provided at said guide means, and a second engagement portion provided at said casing for engagement with said first engagement portion, while said holder is located between the home position and the pushed-in position, in order to lock said reproducing means in the locked state.

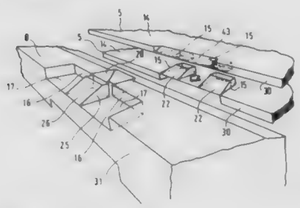
5,062,100

COMBINATION DISC CASSETTE AND APPARATUS FOR REMOVING DISC THEREFROM

Robertus J. M. Verhoeven; Cornelis M. Beijersbergen van Henegouwen; Gerardus L. C. Elders, and Cornelis Ouwerkerk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1988, Ser. No. 239,810
Claims priority, application Netherlands, Sep. 17, 1987, 8702222
Int. Cl.[5] G11B *5/82*
U.S. Cl. 369—291 **12 Claims**





11. A system for recording/reading information on/from a disc, comprising an apparatus for recording/reading information on/from a disc inserted into the apparatus, and a disc cassette for containing a disc, said cassette comprising:

an outer case having a pair of parallel main walls, a pair of side walls, and a front opening which communicates with a disc-receiving space defined by said main walls and said side walls, and

a shutter and disc holder for closing the front opening of the case,

said outer case comprising a resiliently movable part for latching the shutter, said part being movable from a latching position in which the shutter is latched in the case, to a free position in which the shutter can be slid out of the case, and

said apparatus comprising an insertion element for engaging the movable part of the outer case of a cassette inserted into the apparatus, for unlatching the shutter and disc holder thereby permitting withdrawal of the outer case from the apparatus while leaving the shutter and disc holder in an inserted position,

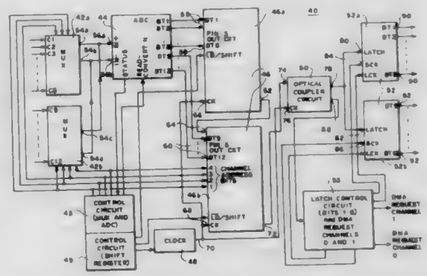
whereby the resiliently movable part does not remain within the apparatus during recording/reading of information on/from the disc.

5,062,101

DATA ACQUISITION SYSTEM

Michael P. Dejewski, Franklin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jul. 21, 1989, Ser. No. 384,156
Int. Cl.[5] H04J *14/00*
U.S. Cl. 359—135 **15 Claims**



1. A data acquisition system for use in a facility management system for receiving analog input information, converting said analog input information to multiple-bit digital data, and providing said digital data in a bit-parallel format for direct access storage in memory, said data acquisition system comprising:

an input for receiving said analog input information;

analog to digital conversion means for converting said analog input information to a multiple-bit digital word, the bits of said digital word being in bit-parallel format;

parallel to serial bit means for converting said parallel bits to serial bits;

serial to parallel bit means for receiving and latching said serial bits as re-parallelled bits, said serial to parallel bit means including a clock input, and a transfer enable clock for providing a transfer enable clock signal for each said serial bit to be transferred; and

optical coupler means connecting said parallel to serial bit means to said serial to parallel bit means, including a first input for receiving said serial bits of digital data, for transferring said serial bits provided by said parallel to serial bit means to said serial to parallel bit means and including a second input for receiving said transfer enable clock signal and transferring said transfer enable clock signal to said serial to parallel bit means clock input to provide immunity to electrical noise during said transfer.

5,062,102

ECHO CANCELLER WITH MEANS FOR DETERMINING FILTER COEFFICIENTS FROM AUTOCORRELATION AND CROSS-CORRELATION COEFFICIENTS

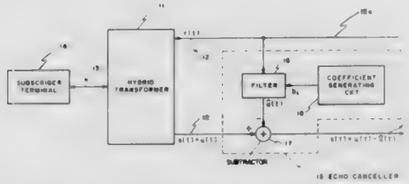
Tetsu Taguchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 1, 1989, Ser. No. 445,187
Claims priority, application Japan, Dec. 1, 1988, 63-305247
Int. Cl.[5] H04M *9/08*
U.S. Cl. 370—32.1 **4 Claims**

1. In an echo canceller for use in a data transmission system for transmitting a first signal in a direction through a first transmission line and a second signal in an opposite direction through a second transmission line, said first signal partially leaking from said first transmission line to said second transmission line as an echo and mixing with said second signal to form a mixed signal, said echo canceller comprising filter means coupled to said first transmission line and responsive to said first signal for producing an estimated echo signal determined in accordance with filter coefficients, coefficient generating

means for generating said filter coefficients, and subtracting means coupled to said filter means and connected in said second transmission line for subtracting said estimated echo signal from said mixed signal on said second transmission line so as to cancel said echo, the improvement wherein said coefficient generating means comprises:

first means coupled to said first transmission line and responsive to said first signal for producing a series of autocorrelation coefficients of said first signal;



second means coupled to said first and said second transmission lines and responsive to said first and said mixed signals for producing a series of cross-correlation coefficients between said first signal and said mixed signal; and

third means coupled to said first and said second means for generating said filter coefficients from said autocorrelation and cross-correlation coefficients to deliver said filter coefficients to said filter means.

5,062,103

TELEPHONE AGENT CALL MANAGEMENT SYSTEM

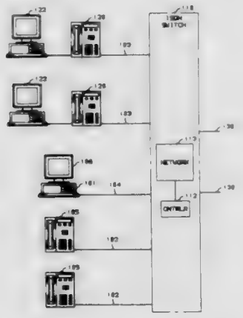
Wayne A. Davidson, Winfield, and Diana S. Winter, Chicago, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1988, Ser. No. 291,813

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—58.1 **16 Claims**



1. A telephone agent call management arrangement for use with an ISDN central office switching system having a plurality of telephone agent stations connected thereto, comprising:

computer means connected to said switching system for receiving from said switching system data defining call handling information exchanged between said system and said stations;

said computer means responsive to an incoming call extended to a directory number assigned to said computer to select one of said stations for handling said call, on the basis of said received data; and

further responsive to said call to transmit to said switching system ISDN messages identifying said selected station for causing said switching system to connect said call to said selected station.

5,062,104

DIGITAL SERVICE UNIT FOR CONNECTING DATA PROCESSING EQUIPMENT TO A TELEPHONE SYSTEM BASED COMPUTER NETWORK

Daniel P. Lubarsky, San Jose; George A. Weigt, Livermore, and Mark E. Haisch, Freemont, all of Calif., assignors to Pacific Bell, San Francisco, Calif.

Filed Sep. 26, 1988, Ser. No. 249,400

Int. Cl.[5] H04L *9/00;* **H04Q** *11/04*

U.S. Cl. 370—60 **15 Claims**



1. A digital service unit for transferring digital data between first and second subscriber loops and a computer forming part of a computer network comprising a multipoint network which includes a plurality of network unit with at least one of said network units comprising said digital service unit, said network units coupled to telephone system communication links and communicating with each other on said communication links, transmitting and receiving digital data in a framed mode in which said data is organized into frames on said communication links, each said frame including synchronization data, command data, error correcting data, and user data,

said digital service unit comprising:

means for storing an address identifying said digital service unit;

receiving means for receiving a said frame on said first subscriber loop;

first control means for generating command data in response to a command included in the said command data of a said received frame;

second control means for executing a command specified by the said command data included in said received frame provided said command data indicates said stored address as the target thereof;

computer port means for transmitting user data to and receiving user data from said computer;

multiplexer means for generating a said frame including said received user data, said multiplexer means further comprising subscriber loop output port means for transmitting said generated frame on said first subscriber loop; and

demultiplexer means for separating said user data from a said received frame and for transmitting said user data on said computer port means, said demultiplexer means including subscriber loop input port means for receiving said frame on said second subscriber loop.

5,062,105

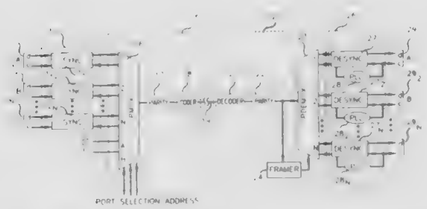
PROGRAMMABLE MULTIPLEXING TECHNIQUES FOR MAPPING A CAPACITY DOMAIN INTO A TIME DOMAIN WITHIN A FRAME

Richard R. McKnight, Wheaton, Ill., and Michael L. Steinberger, Colts Neck, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 2, 1990, Ser. No. 459,929

Int. Cl.[5] H04J *3/04*

U.S. Cl. 370—84 **11 Claims**



1. A method of multiplexing a one or more input data signals, including individual data rates, from an input capacity domain frame into an output time domain frame and transmitting the multiplexed data signals, the method comprising the steps of:

(a) assigning each of the input data signals to one or more predetermined contiguous addresses of the capacity domain frame dependent on the input data rate, where the capacity domain frame and the time domain frame each include a predetermined number of addresses which can be assigned;

(b) counting through the time domain frame in a predetermined sequence from a first to a last address of a counting sequence, the counting sequence being represented by a multibit word, including N individual segments;

(c) generating N binary words, each word containing one or more bits, each word associated with one of the N segments of step (b);

(d) comparing the multibit words from step (c) in a reverse order with a first and a second number defining the start and stop address, respectively, of the contiguous addresses in the capacity domain assigned in step (a) to each of the input data signals, for assigning which one of the one or more input data signals will be assigned to each address of the time domain frame; and

(e) transmitting sections of each of the input data signals during the addresses of the time domain frame sequence as determined in step (d) to a remote one or more receivers for recovery of each data signal.

5,062,106

ATM EXCHANGE SYSTEM

Katsuyuki Yamazaki, and Masanobu Fujioka, both of Saitama, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1990, Ser. No. 490,244

Claims priority, application Japan, Mar. 14, 1989, 1-59760

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **7 Claims**

1. An ATM exchange system having information formatted into user cells comprising:

a plurality of cell handlers each relating to an ATM Channel;

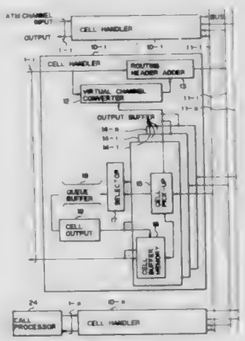
a plurality of buses, each bus coupled with each cell handler so that an output of each cell handler is forwarded to all the cell handlers through said plurality of buses;

each of said cell handler including

a virtual channel converter, coupled with said ATM channel, to provide an output of virtual channel identifier together with an output cell handler number of an output ATM channel to which the user cell is forward,

a routing header adder, coupled with said ATM channel and an output of said virtual channel converter, said routing header adder to generate an inner cell, which has a routing header having said output cell handler number and said output virtual channel identifier generated by said virtual channel converter, and to attach said inner cell to said user cell, and said routing header adder forwarding said inner cell and user cell to a related bus,

a plurality of output buffers, each buffer corresponding to one cell handler, each buffer having a) a cell pick up which picks up said inner cell and user cell which has



said output cell handler number in said routing header equal to its own cell handler number and copying said output virtual channel identifier in said routing header in a virtual channel identification area of said user cell, and b) a cell buffer memory for storing said user cell from said cell pick up,

a selector coupled with outputs of the plurality of output buffers for selecting a user cell,

queue buffer for storing an address of said cell buffer memory which stores said user cell selected by said selector, and

a cell output for outputting said user cell in said cell buffer memory based upon the address stored in said queue buffer.

5,062,107

SYNCHRONIZING CIRCUIT FOR REDUCING WAITING-TIME JITTER IN A DEMULTIPLEXER

Rainer Heiss, Korntal-Münchingen, and Thomas Micke, Stuttgart, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Netherlands

Filed Dec. 18, 1989, Ser. No. 452,212

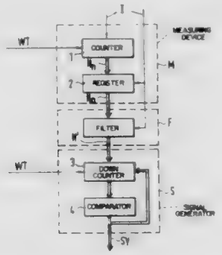
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842694

Int. Cl.[5] H04J *3/06*

U.S. Cl. 370—105 **3 Claims**

1. A synchronizing circuit for a demultiplexer for a digital time-division multiplex communication system wherein a digital signal which is asynchronous with the pulse frame and consists of successive blocks whose beginnings are marked with sync words is inserted into the pulse frame, said circuit deriving from a clock signal of the received sync words a sync signal (SY) which exhibits less jitter than the clock signal of the received sync words, characterized in that the circuit contains a measuring device (M) which measures the time intervals (N) between the received sync words, a filter (F) which takes the

average (N') of the time intervals (N) between sync words, and a signal generator (S) which forms the sync signal (SY) from



said average (N') in such a manner that the pulse period of the sync signal (SY) is equal to said average (N').

5,062,108

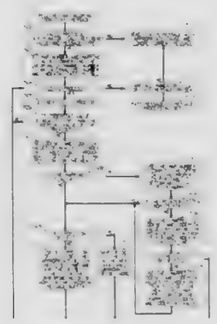
ISDN CODESET CONVERSION

Bruce M. Bales, Louisville; Rebecca J. McGillin, Broomfield, and Paul E. Miller, Northglenn, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 29, 1989, Ser. No. 414,987

Int. Cl.[5] H04J *3/12, 3/24*

U.S. Cl. 370—110.1 **10 Claims**



1 In a communication system in which ISDN messages are communicated via ISDN communication links between a first communication switching system and a plurality of other communication systems, a method for use in said first communication switching system comprising the steps of:

storing information identifying those of said communication links that connect to communication systems which process messages using a different set of ISDN codepoint and codeset identifiers than the particular set by which messages are processed by said first communication switching systems;

receiving an ISDN message from an individual one of said other communication systems;

determining from the stored information and as a function of the identity of the communication link over which said message was received whether said message uses a set of identifiers different from said particular one set and, if said messages does; and

converting said message to a form in which said particular one set is used.

5,062,109

MEMORY TESTER

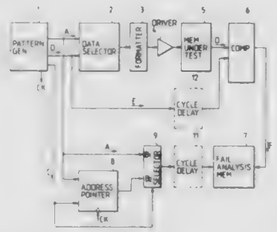
Hiromi Ohshima, Saitama, and Junji Nishiura, Gyoda, both of Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Aug. 25, 1989, Ser. No. 398,449

Claims priority, application Japan, Sep. 2, 1988, 63-220830; Sep. 2, 1988, 63-220831

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—21.2 **10 Claims**



1. A memory tester comprising:

pattern generating means for generating expected value data and an address pattern which are supplied to a memory under test and generating a clock signal, said memory under test reading out data;

comparing means for comparing data read out of said memory under test and said expected data from said pattern generating means;

a failure analysis memory for writing therein the result of the comparison from said comparing means;

an address pointer, connected to said pattern generating means, for receiving, as an initial address, an address from said pattern generating means and for incrementing or decrementing its address from said initial address upon each application of the clock signal and for holding at a desired address; and

a selector selectively providing either one of an address output from said address pointer and an address output from said pattern generating means to said failure analysis memory.

5,062,110

LOGIC CIRCUIT TESTING APPARATUS

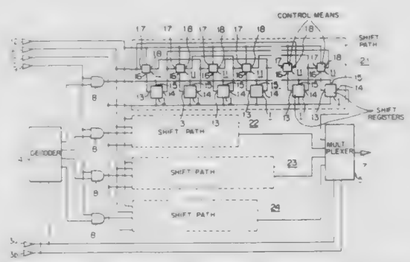
Souichi Kobayashi, and Jun-ichi Hinata, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1987, Ser. No. 55,194

Claims priority, application Japan, May 30, 1986, 61-126176

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—223 **10 Claims**



1. A logic circuit testing apparatus operable to implement scan-in/scan-out operation comprising:

a shift path means for storing logical values comprising a plurality of shift registers, each of the shift registers including register means and a mode switching means coupled to said register means for selecting either normal data or test data to be stored in the shift path means;

said mode switching means comprising circuit means including first and second gate means and first gate control means, said first and second gate means having outputs coupled to said register means, said first gate means having an input for receiving said test data, said second gate means having an input for receiving said normal data, said first gate control means coupled to said first and second gate means and having means responsive to a mode select signal for mutually exclusively enabling and disabling said first and second gate means;

a plurality of direction control means for controlling a shift direction of the shift path means so that the shift path means shift data bidirectionally, each of said direction control means having an output respectively coupled to one of said shift registers;

said direction control means comprising circuit means including third and fourth gate means and second gate control means, said third and fourth gate means having outputs coupled independently of any of said register means to said input of said first gate means, said third gate means having an input for receiving said test data when said shift path means are shifting data in one of said bidirectional shift directions, said fourth gate means having an input for receiving said test data when said shift path means are shifting data in the other one of said bidirectional shift directions, said second gate control means coupled to said third and fourth gate means and having means responsive to a direction control signal for mutually exclusively enabling and disabling said third and fourth gate means.

5,062,111

ERROR CHECK CODE GENERATING DEVICE AND TRANSMISSION ERROR DETECTING DEVICE

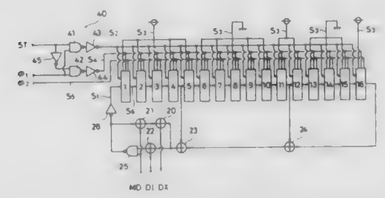
Kouji Gotou; Hiroshi Kuranaga, and Takeo Nakabayashi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1989, Ser. No. 426,958

Claims priority, application Japan, Oct. 28, 1988, 63-273843; Aug. 18, 1989, 1-213512

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—37.1 **13 Claims**



1. An error check code generating device responsive to data to be transmitted for generating an error check code to check a transmission error, based on a given generating polynomial, comprising:

first to n-th shift register means in predetermined n stages (n is an integer);

initial value setting means for setting a given initial value in each of said first to n-th shift register means in the predetermined n stages;

first coincidence detection means for detecting coincidence between an output signal of the n-th shift register means and an output signal of a predetermined i-th shift register means (i< n, i is an integer);

second coincidence detection means for detecting coincidence between an output signal of said first coincidence detection means and an output signal of a predetermined j-th shift register means (j<i, j is an integer);

third coincidence detection means for detecting coincidence between an output signal of said second coincidence detection means and said data to be transmitted,

the first shift register means being connected to receive an output signal from said third coincidence detection means; and

fourth coincidence detection means for detecting coincidence between an input signal of said first shift register means and an output signal of said second coincidence detection means.

5,062,112

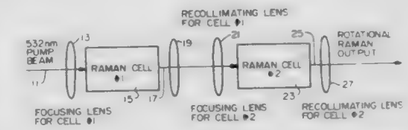
TWO CELL LASER RAMAN CONVERTER

William W. Buchman, Los Angeles, and Katherine B. Strahm, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 484,340, Feb. 26, 1990, abandoned. This application Apr. 17, 1991, Ser. No. 686,840

Int. Cl.[5] H01S *3/30*

U.S. Cl. 372—3 **20 Claims**



1. A Raman converter for generating a large number of Stokes shifted waves from a pump beam comprising:

a first Raman cell means for receiving a pump beam having a single pump wavelength and producing a first output beam consisting of a first plurality of wavelengths, said first Raman cell means containing a first Raman medium at a first optimized low pressure; and

a second Raman cell means for receiving said first output beam consisting of said first plurality of wavelengths and producing a second output beam by exciting said second Raman cell by said first plurality of wavelengths, said second output beam consisting of a second plurality of wavelengths, said second Raman cell means containing a second Raman medium at a second optimized low pressure.

5,062,113

LIGHT SOURCE DRIVE DEVICE

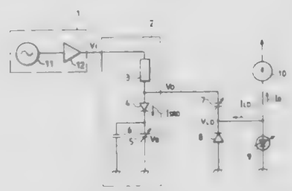
Akira Takahashi, Shizuoka, Japan, assignor to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed May 30, 1990, Ser. No. 530,744

Claims priority, application Japan, Jun. 16, 1989, 1-153704

Int. Cl.[5] H01S *3/103*

U.S. Cl. 372—25 **4 Claims**



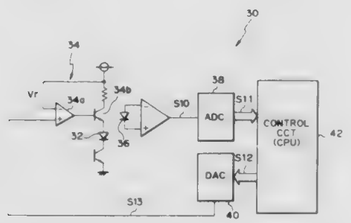
1. A device for driving a light source, comprising:

means for generating a repetitive sinusoidal input voltage signal having a frequency;

means for modifying said repetitive sinusoidal input voltage

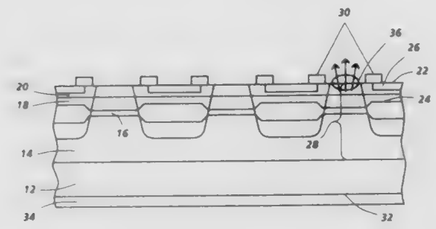
signal to a modified voltage signal having an abrupt transient voltage change, the modifying means including:
inductor means coupled to said generating means,
voltage source means for providing a bias voltage, and
step recovery diode means coupled between the voltage source means and the inductor means for producing said modified voltage signal;
means coupled to said modifying means for differentiating the modified voltage signal to produce a repetitive pulse voltage signal having a frequency corresponding to the frequence of the sinusoidal input voltage signal; and
means for providing said pulse voltage signal to drive said light source.

5,062,114
OUTPUT BEAM CONTROL DEVICE FOR A SEMICONDUCTOR LASER
Norifumi Ito, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 27, 1990, Ser. No. 558,483
Claims priority, application Japan, Jul. 31, 1989, 1-196715
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—31 **3 Claims**



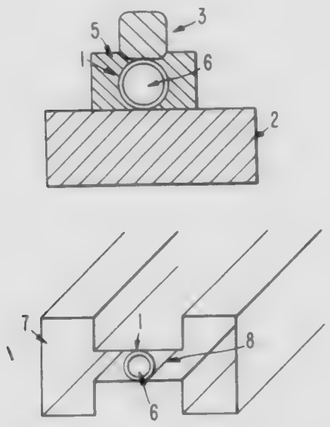
1. An output beam control device for a semiconductor laser, comprising:
a laser diode for emitting an output beam;
drive means for driving said laser diode;
photoelecric converting means for generating an analog signal by photoelectrically converting the output beam of said laser diode;
analog-to-digital converting means for converting the analog signal into a digital signal;
control means for determining a relation between the output beam of said laser diode and a current applied to said laser diode at two different points on a linear portion of an output characteristic of said laser diode with respect to a given temperature and, on the basis of said determined relation, calculating a set current value for said laser diode and generating a digital signal representative of said set current value; and
digital-to-analog converting means for converting the digital signal from said control means into an analog signal and feeding said analog signal to said drive means as the set current value.

5,062,115
HIGH DENSITY, INDEPENDENTLY ADDRESSABLE, SURFACE EMITTING SEMICONDUCTOR LASER/LIGHT EMITTING DIODE ARRAYS
Robert L. Thornton, East Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 28, 1990, Ser. No. 636,524
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **19 Claims**



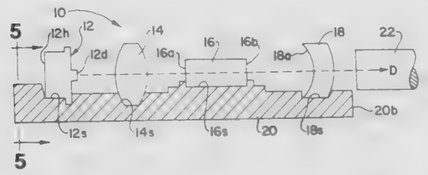
1. A high density, surface emitting, semiconductor light emitting diode (LED) array comprising:
a first semiconductor confinement layer deposited on a substrate, said first confinement layer and said substrate having the same conductivity type,
an active semiconductor layer deposited on said confinement layer, said active layer providing lightwave generation and propogation,
a second semiconductor confinement layer deposited on said active layer, said second confinement layer having an opposing conductivity type to said first confinement layer and said substrate,
a semiconductor contact layer deposited on said second confinement layer, said contact layer and said second confinement layer having the same conductivity type,
disordered regions extending through said contact layer, said second confinement layer, said active layer and at least partially through said first confinement layer, said disordered regions having an opposing conductivity type to said contact layer and said second confinement layer,
contacts formed on said contact layer, one of said contacts aligned with each of said disordered regions,
at least one contact formed on said substrate, and
optical cavities formed between said disordered regions, such that current injected between one of said contacts on said contact layer and said at least one contact on said substrate will cause light emission from one of said optical cavities through the surface of said contact layer.

5,062,116
HALOGEN-COMPATIBLE HIGH-FREQUENCY DISCHARGE APPARATUS
C. Paul Christensen, Greenbelt, Md., assignor to Potomac Photonics, Inc., Lanham, Md.
Filed May 17, 1990, Ser. No. 524,302
Int. Cl.[5] H01S *3/036, 3/038*
U.S. Cl. 372—61 **21 Claims**



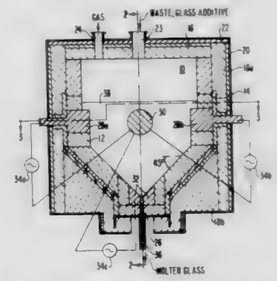
1. A high-frequency discharge apparatus comprising:
a discharge tube, at least one wall surface of which is composed of a vitreous metal fluoride glass; and
means for generating a high-frequency electromagnetic field within said discharge tube.

5,062,117
TAILORED LASER SYSTEM
Douglas W. Anthon, Wheaton; Alan T. Eggleston, Batavia, and Gregory R. Ristau, Warrenville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.
Filed Jul. 11, 1990, Ser. No. 551,570
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—75 **21 Claims**



1. A laser system, comprising:
a) a holder having one end for receiving pumping light from a source and having an opposite end for transmitting laser light to an optical fiber which is characterized by a zero dispersion wavelength, said holder having a predetermined axis of propagation which extends between its ends; and
b) a lasant material which is carried by said holder at a position between said ends of said holder, said material having at least one optical axis and being located by said holder at a predetermined angle which is measured between said at least one optical axis and said axis of propagation and which has a magnitude from more than zero to less than ninety degrees, said predetermined angle being selected such that said lasant material when receiving light from said source has an optical spectra which includes a dominating polarization dependent spectral peak at a wavelength which is approximately equal to said zero dispersion wavelength of said optical fiber.

5,062,118
ELECTRIC MELTING FURNACE FOR VITRIFYING WASTE
Toshio Masaki, Hitachi, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan
Filed May 16, 1990, Ser. No. 524,052
Claims priority, application Japan, May 20, 1989, 1-126887
Int. Cl.[5] C03B *5/027*
U.S. Cl. 373—41 **13 Claims**



1. An electric melting furnace for vitrifying waste comprising:
a melting tank having walls of refractory bricks, said melting tank being provided at an upper portion thereof with a supply port for a glass additive and waste and at a bottom portion thereof with a discharge port for molten glass containing the waste;
at least a pair of side electrodes mounted on opposite side walls of said melting tank in the same horizontal plane; and
at least one central electrode having a polarity opposite to that of said side electrodes, said central electrode being horizontally positioned in the interior of said melting tank at a middle portion thereof between said side electrodes.

5,062,119
DETECTION OF BROKEN COATED FUEL PARTICLES IN CERAMIC COATING LAYER
Fumiaki Kobayashi, and Kosaku Fukuda, both of Tokai, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed Dec. 5, 1990, Ser. No. 622,782
Claims priority, application Japan, Feb. 2, 1990, 2-022078
Int. Cl.[5] G01N *25/72;* **G21C** *17/06*
U.S. Cl. 374—5 **1 Claim**

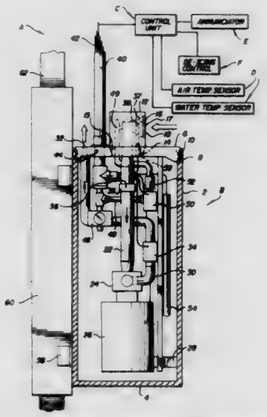
1. A method of detecting coated fuel particles having a broken ceramic coated layer in coated fuel particles for high-temperature gas-cooled reactor which comprises permeating a liquid into the interior of the coated fuel particles having a broken ceramic coated layer through a broken portion of the ceramic coated layer, thereafter heating it to expand the liquid by evaporation pyrolysis thereby breaking the ceramic coating layer or the whole body of coated fuel particle by pressure generated.

5,062,120

UNDERWATER FRAZIL ICE DETECTOR

Steven F. Daly, P.O. Box 148, Piermont, N.H. 03779, and John H. Rand, P.O. Box 203, Cornish Flat, N.H. 03746

Filed Apr. 26, 1989, Ser. No. 343,237
Int. Cl.[5] G01N *25/04*; G08B *19/02*
U.S. Cl. 374—143 41 Claims



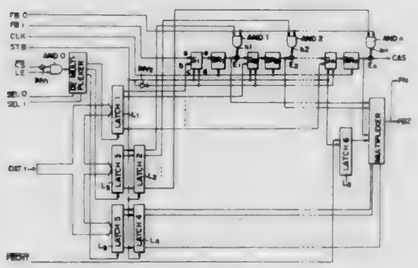
1. An underwater frazil ice detector, comprising:
a) channel means disposed underwater for moving water therethrough;
b) means for drawing water through said channel means;
c) screen means disposed in and across said channel means so that water drawn therethrough by said water drawing means passes through said screen means;
d) pressure detecting means disposed in said channel means and down stream of said screen means for detecting pressure differential across said screen means;
f) whereby flow of water through said screen means is constricted when frazil ice forms thereon, creating an increased pressure differential across said screen means and thereby indicating the presence of frazil ice.

5,062,121

SPREAD SPECTRUM COMMUNICATION DEVICE

Takao Kurihara, and Masahiro Hamatsu, both of tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1989, Ser. No. 418,206
Claims priority, application Japan, Oct. 11, 1988, 63-255396
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 2 Claims



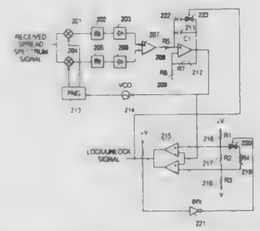
1. In a spread spectrum communication circuit in which transmitted signals obtained by spreading the spectrum of information signals by means of a pseudo-noise code cycle are received and desired information signals are restored by inputting the signals thus received and another pseudo-noise code produced by a local pseudo-noise code generator into a correlator in the form of a surface acoustic wave convolver on the receiving side, the improvement wherein said pseudo-noise code generator for generating said pseudo-noise code comprises:
a plurality of shift register stages connected in series to form a chain having an output end;
means for advancing the contents of all but the last of said stages to the next stage of said chain and towards said output end;
shift register selecting means, in which the output of each of said plurality of stages of the shift registers is inputted and including means for selectively outputting from among any of said plurality shift register outputs;
means for inputting the output of said shift register selecting means into said convolver;
means for setting the initial value of said shift register in the pseudo-noise code generator on the receiving side in a mirror image relation with respect to the initial value of the pseudo-noise code generator at the transmitter at the time of code synchronization; and
feedback means for logically combining the inputs of selected shift register stages with the output of the last of said stages to modify the contents of the stages fed by said selected stages attendant to each advance so that by setting said selecting means to output the contents of said last stage a time-reversed image of an entire cycle of the transmitted pseudo-noise code will be sent to said convolver.

5,062,122

DELAY-LOCKED LOOP CIRCUIT IN SPREAD SPECTRUM RECEIVER

Hiep V. Pham, Germantown, Md., and Hirotaka Namioka, Tokyo, Japan, assignors to Kenwood Corporation, Tokyo, Japan and Hughes Network Systems, Inc., Germantown, Md.

Filed Sep. 28, 1988, Ser. No. 250,412
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 12 Claims



1. Spread spectrum receiver including a terminal for a received spread spectrum signal and a delay locked loop circuit for holding the synchronization of a despread signal with the received spread spectrum signal, the circuit comprising:
a voltage control oscillator for generating a clock signal;
a despread signal generator controlled by said clock signal for generating a first despread signal and second despread signal, the first despread signal being shifted in phase by one bit to the second despread signal;
first correlation means for producing a first signal representative of a correlation of the received spread spectrum signal with the first despread signal;
second correlation means for generating a second signal representative of a correlation of the received spread spectrum signal with the second despread signal;
a subtracter for generating a signal representative of a subtraction between said first and second correlation representative signals;

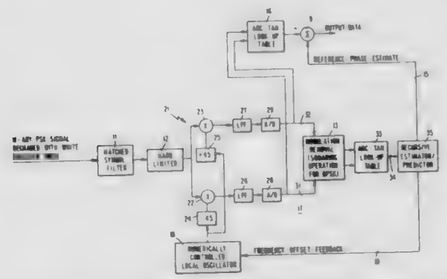
a positive feedback amplifier for amplifying said subtraction representative signal which is applied to said voltage control oscillator as a control signal; and
a window comparator with a predetermined window width for in response to the subtraction representative signal for producing a lock signal when the subtraction representative signal is positioned within the window width and an unlock signal when outside the window width.

5,062,123

KALMAN PREDICTOR FOR PROVIDING A RELATIVELY NOISE FREE INDICATION OF THE PHASE OF A CARRIER LADEN WITH NOISE

Michael J. Geile, Loveland; Terrance J. Hill, Fairfield, both of Ohio, and Patrick J. Kavanaugh, Seattle, Wash., assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Aug. 16, 1989, Ser. No. 394,330
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—81 20 Claims



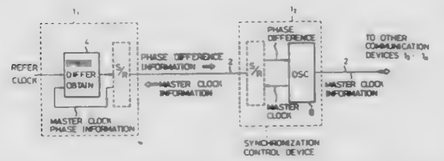
1. A method of deriving a relatively noise free indication of an estimate of the phase of a noise laden signal replica compirsing the step of suplying an indication of the phase of the noise laden signal replica to a Kalman filter that derives the relatively noise free indication of the signal replica phase.

5,062,124

NETWORK SYNCHRONIZATION SYSTEM

Shigehiro Hayashi, Owariasahi, and Yoshibumi Ayukawa, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 1, 1989, Ser. No. 401,767
Claims priority, application Japan, Sep. 1, 1988, 63-216392
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—107 4 Claims



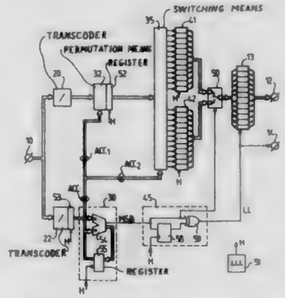
3. A network synchronization system for synchronizing a master clock in a distributed communication system comprising a plurality of communication devices interconnected by one or more transmission lines, with a reference clock supplied from outside of the distributed communication system, said system comprising:
a first one of said communication devices includes,
means for receiving data from outside of the distributed communication system,
reference clock extracting means for extracting a clock from the data, and
phase difference obtaining means for providing an output responsive to a phase difference between the clock extracted in said reference clock extracting means in its own communication device and the master clock in the distributed communication system; and
a second one of said communication devices includes,
receiving means for receiving the output of said phase difference obtaining means in said first communication device through one of the transmission lines connnecting said first communication device and said second communication device, and
controlled oscillator means for receiving the output of said phase difference obtaining means in said first communication device through one of the transmission lines connecting said first communication device and said second communication device, and for providing the master clock having a phase which is controlled according to the output of said phase difference obtaining means so that the phase of the master clock is synchronized with the phase of the reference clock.

5,062,125

STATISTIC CODING ARRANGEMENT FOR PRODUCING CODE WORDS COMPRISING A VARIABLE NUMBER OF BITS

Thierry Langlais, Paris; Jean-Yves Boisson, Clamart, and Francoise Moliere, Paris, all of France, assignors to Telecommunications Radioelectriques et Telephoniques, Paris, France

Filed Aug. 4, 1989, Ser. No. 389,721
Claims priority, application France, Aug. 5, 1988, 88 10617
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 1 Claim



1. A statistic coding arrangement for producing variable length code words comprising a variable number "n" of bits (n varying from 1 to a maximum of N), the arrangement comprising:
and input for receiving the information to be encoded as fixed length words comprising a fixed number of bits,
a first transcoding member for applying said variable length word to "n" outputs among N parallel outputs,
a second transcoding member for supplying from its output the indication of the length "n",
accumulation means for forming a first "modulo N" accumulated information and a second "modulo 2N" accumulated information which are the results of operations performed on "n",
cyclic permutation means for producing a permuted word which represents the permuted variable code word as a function of the first accumulated information,
first and second registers,
transfer and switching means for selectively transferring as a function of the second accumulated information the bits of the permuted word to the first and/or second register, and
detection means cooperating with the accumulation means for detecting the fill level of one of said registers to act o

VOL 1131 ISS 5 OC 29 1991 UMI

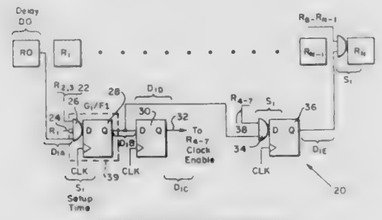
the transfer means so as to transfer the content of the filled register to the output.

5,062,126

HIGH SPEED SYNCHRONOUS COUNTER SYSTEM AND PROCESS WITH LOOK-AHEAD CARRY GENERATING CIRCUIT

Raymond G. Radys, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 26, 1990, Ser. No. 498,509
Int. Cl.[5] H03K *21/16, 21/40*
U.S. Cl. 377—51 **18 Claims**



Speed D0+ MAX (D_{1A}, D_{1B}, D_{1C}, D_{1D}, D_{1E})+S_1

1. A synchronous counting system, comprising:

a counter having at least three groups of registers, said registers being defined by a plurality of electronic gates and flip flops;

look-ahead carry generating means for generating carry signals to be supplied to said second and third groups of registers of said counter at desired times with less than one gate delay;

means for supplying said carry signals to said desired registers and flip flops at the desired times; and

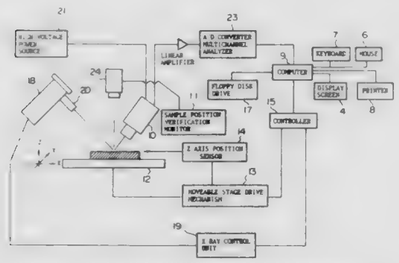
means for supplying clock signals, having periodic clock pulses, to said counter and said look-ahead carry generating means.

5,062,127

METALS ASSAY APPARATUS AND METHOD

Yasumasa Sayama, Saitama; Koichi Nomura, Tokyo, and Morihiko Iwasaki, Kagawa, all of Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Filed May 16, 1990, Ser. No. 524,045
Claims priority, application Japan, May 16, 1989, 1-122632
Int. Cl.[5] G01N *23/22*
U.S. Cl. 378—45 **12 Claims**



1. A metals assay method comprising the steps of:

a) preparing a sample;

b) establishing a group of registered elements and storing standard spectral data for the registered elements;

c) exposing said sample to an X-ray beam, whereby fluorescence X-ray radiation is generated;

d) obtaining experimental spectral data by sampling said fluorescence X-ray radiation;

e) identifying which of said registered elements are significantly present in said sample by comparing said experimental spectral data with said standard spectral data;

f) determining an intensity of a corresponding peak for each identified element and comparing each determined intensity with respective standard spectral data for each of said identified elements, thereby obtaining preliminary quantitative data for each of said identified elements; and

(g) further analyzing said preliminary quantitative data whereby more precise quantitative data is obtained for said identified elements;

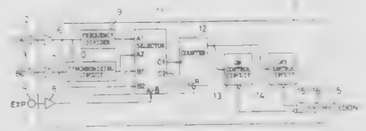
wherein said step of further analyzing said preliminary quantitative data consists of submitting said preliminary quantitative data to fundamental parametric analysis.

5,062,128

TIMER CONTROL WITH SELECTABLE FREQUENCY DIVIDER

Koji Katsuragi; Yoshiaki Yanagida, both of Hirakata; Soichi Matsuyama, Kyoto, and Yoshihisa Ikuta, Toyonaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 27, 1990, Ser. No. 503,777
Claims priority, application Japan, Mar. 29, 1989, 1-79188
Int. Cl.[5] G06M *3/02, 3/06*
U.S. Cl. 377—55 **8 Claims**



1. A semiconductor integrated circuit for providing a drive signal output, said circuit comprising:

a first input terminal for receiving an inputted clock signal;

a frequency dividing circuit connected to said first input terminal for dividing the frequency of the inputted clock signal to provide a frequency-divided clock signal;

a second input terminal for receiving an inputted horizontal synchronizing signal;

a synchronizing circuit connected to said first and second input terminals for synchronizing the inputted clock signal and the inputted horizontal synchronizing signal to provide a clock-synchronized horizontal synchronizing signal;

a selector circuit having (a) a first clock signal input connected to said frequency divider circuit for receipt of the frequency divided clock signal therefrom, (b) a first synchronizing signal input connected to said synchronizing circuit for receipt of the clock-synchronized horizontal synchronizing signal therefrom, (c) a second clock signal input connected to said first input terminal for receipt of the inputted clock signal therefrom, (d) a second synchronizing signal input connected to said second input terminal for receipt of the inputted horizontal synchronizing signal therefrom, (e) a clock signal output, and (f) a synchronizing signal output, said selector circuit in a first condition connecting said first clock signal input to said clock signal output, to provide as an output therefrom the frequency divided clock signal, and connecting said first synchronizing signal input to said synchronizing signal output, to provide as an output therefrom the clock-synchronized horizontal synchronizing signal, and in a second condition connecting said second clock signal input to said clock signal output, to provide as an output therefrom the inputted clock signal, and connecting said second synchronizing signal input to said synchronizing signal output, to provide as an output therefrom the inputted horizontal synchronizing signal; and

a counter circuit having a count input connected to said selector circuit clock signal output for counting clock signals received therefrom, a clear input connected to said selector circuit synchronizing signal output for clearing the count of said counter circuit in response to the selector circuit synchronizing output, and an output for providing a count output; and

an output control circuit connected to said counter circuit output for providing a control output signal on the basis of the count output,

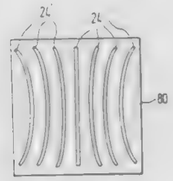
whereby in the selector circuit first condition the control output signal is based on the frequency divided clock signal and the clock-synchronized horizontal synchronizing signal, and in the selector circuit second condition the control output signal is based on the inputted clock signal and the inputted horizontal synchronizing signal.

5,062,129

DEVICE FOR SLIT RADIOGRAPHY WITH IMAGE EQUALIZATION

Hendrik Mulder, Delft, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", Delft, Netherlands

PCT No. PCT/EP88/00409, § 371 Date Nov. 1, 1989, § 102(e) Date Nov. 1, 1989, PCT Pub. No. WO88/09050, PCT Pub. Date Nov. 17, 1988
PCT Filed May 3, 1988, Ser. No. 435,424
Claims priority, application Netherlands, May 12, 1987, 8701122
Int. Cl.[5] G21K *3/00*
U.S. Cl. 378—156 **12 Claims**



1. A slit radiography assembly, which comprises:

an X-ray source;

an X-ray detector for recording radiation passing through a body being radiographed;

a slit diaphragm positioned between said X-ray source and said body for forming a substantially planar X-ray beam;

means for scanning said body with said planar X-ray beam;

an X-ray adsorption means for influencing said planar X-ray beam during scanning movement;

a two dimensional dosimeter for ionizing radiation corresponding to a width of said planar X-ray beam and to a height of total scanning distance, said dosimeter including a system of essentially parallel striplike electrodes disposed on a support extending in a direction of scanning and slightly curved to compensate for distortion caused by planar geometry for forming sector-wise signals from detected quantities of X-ray radiation transmitted through said body and a system of parallel counterelectrodes extending at right angles to the direction of scanning and connected to a multiplexer device connecting one or more of said counterelectrodes to an operating voltage in synchronization with scanning;

a control means for receiving signals from said parallel electrodes and for forming control signals corresponding to sector-wise signals from detected quantities of X-ray radiation; and

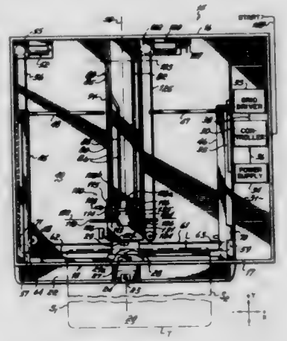
means for transmitting said control signals to said X-ray adsorption means.

5,062,130

X-RAY FILM CASSETTE TRANSPORT

Frank M. Fago, Mason, Ohio, assignor to Liebel-Flarsheim Company, Cincinnati, Ohio

Filed Nov. 26, 1990, Ser. No. 618,057
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—181 **36 Claims**



1. An x-ray film cassette transport apparatus comprising:

(a) a housing having a window formed therein through which a cassette can be transferred;

(b) a gripper driveably mounted inside said housing to carry out along an axis:

(i) a cassette-loading movement, a predominant portion of which is directed away from said window, said cassette-loading movement taking place between a fixed home position and a retracted position; and

(ii) a cassette-ejecting movement, a predominant portion of which is directed toward said window, said cassette-ejecting movement taking place between at least said retracted position and said home position;

said gripper including a cassette-engaging member movable between a cassette-engaging position and a cassette-disengaging position, and means for both moving said member from said cassette-disengaging position to said cassette-engaging position during said cassette-loading movement and for moving said member from said cassette-engaging position to said cassette-disengaging position during said cassette-ejecting movement before said gripper reaches said home position.

5,062,131

TELEPHONE LINE MONITORING CIRCUIT FOR PROVIDING A VISUAL AND AUDITORY SIGNAL IF THE TELEPHONE LINE BECOMES INOPERATIVE

Edward Kanare, 4143 Via Marino; No. 1019, Marina Del Rey, Calif. 90292, and Kenneth Rehler, Santa Monica,, Calif., assignors to Edward Kanare, Marina Del Rey, Calif.

Continuation-in-part of Ser. No. 462,218, Jan. 9, 1990, Pat. No. 4,969,179. This application Sep. 18, 1989, Ser. No. 584,537
The portion of the term of this patent subsequent to Nov. 5, 2007, has been disclaimed.
Int. Cl.[5] H04M *1/24, 3/24*
U.S. Cl. 379—33 **28 Claims**

19. A telephone line monitoring circuit and apparatus, comprising:

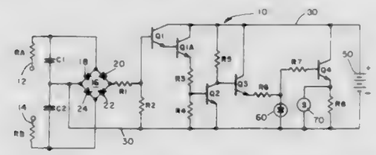
a. a circuit connector means for connection into a telephone jack at one end;

b. a resistance and capacitance means connected to said circuit connector means, the resistance and capacitance means providing interference from stray 60 Hertz fields and introducing a delay in the incoming signal from the telephone line;

c. said circuit connector means connected to a circuit means

for providing a positive voltage to a resistor means which in turn provides a defining reference between the circuit means for providing a positive voltage and a first transistor and first supplemental transistor means which are high input-impedance emitter-followers with a normally positive emitter;

d. the first supplemental transistor of said first transistor and first supplemental transistor means connected to transistor means which acts as a switch and causes energy to flow past a point in the circuit if the telephone line becomes



inoperative, which energy activates a light emitting diode and through resistor means and additional transistor means also energizes an auditory sounder; and

e. a source of voltage to energize the circuit components;

f. whereby when said telephone line becomes inoperative, said circuit means for providing a positive voltage becomes inoperative to thereby cause the transistor switch means to provide a driving current which causes said light emitting diode to provide a visual signal and which also causes said auditory sounder to provide an audible signal.

5,062,132

TELEPHONE APPARATUS PROVIDING FOR AUTOMATIC TRANSFER OF STORED DATA BETWEEN HANDSETS

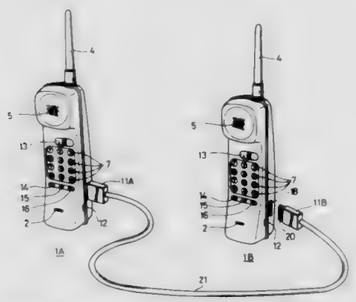
Hiroshi Yasuda, Kanagawa, and Noboru Someno, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 27, 1989, Ser. No. 457,931

Claims priority, application Japan, Dec. 27, 1988, 63-330139

Int. Cl.[5] H04M *1/27, 11/00*

U.S. Cl. 379—61 **13 Claims**



1. Telephone apparatus comprising:

a cordless handset unit having a data entry key and memory means for storing therein data including telephone numbers, said handset unit being used to make an outgoing call on the basis of the data stored in said memory means; and

data transmitting cable means for interconnecting said handset unit with another like handset unit, wherein when a predetermined key of one of said handset units is operated the data including said telephone numbers stored in said memory means of said one of said handset units is transmitted directly to said memory means of said another like handset unit through said data transmission cable means while continuing to be stored in said memory means of said one of said handset units.

5,062,133

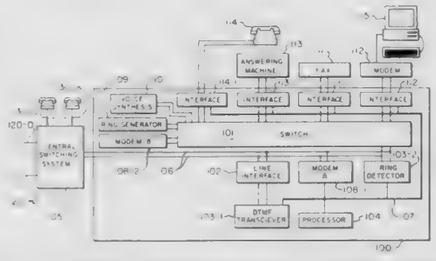
MULTI-FUNCTION TELEPHONE CALL MANAGEMENT SYSTEM

Thomas O. Melrose, Boulder, Colo., assignor to Logotronix Incorporated, Boulder, Colo.

Filed Jul. 7, 1989, Ser. No. 376,433

Int. Cl.[5] H04M *1/64, 3/58*

U.S. Cl. 379—94 **12 Claims**



1. In a telephone system that includes a switching system that serves a plurality of lines, apparatus connected to and interconnecting one of said lines and a plurality of communication devices, which communication devices include two or more data communication apparatus each operating at a different data transmission speed, for enabling an incoming call on said one line to sequentially access at least two of said communication devices, said apparatus comprising:

means connected to said one line and responsive to incoming call signals applied to said one line for terminating said one line to establish a call connection;

means connected to said one line for detecting signals generated external to said apparatus and applied to said one line including:

first modem means responsive to the presence of a carrier tone applied to said one line for applying a control signal, indicative of the data transmission speed of said carrier tone, to said control means;

switching means for selectively interconnecting said one line and one of said plurality of communication devices in response to said detected signals; and

control means responsive to said one communication device disconnecting from said communication connection and said detecting means detecting the presence of externally generated control signals applied to said one line for activating said switching means to interconnect said one line with the one of said plurality of communication devices indicated by said applied control signals, including:

means responsive to said control signal for selecting one of said data communication apparatus as a function of said detected data transmission speed.

5,062,134

TIMER FOR CONTROLLING TELEPHONE USAGE

James M. Laird, 2509 N. Campbell, No. 101, Tucson, Ariz. 85719

Filed Sep. 17, 1990, Ser. No. 583,470

Int. Cl.[5] H04M *1/21, 15/02*

U.S. Cl. 379—131 **8 Claims**

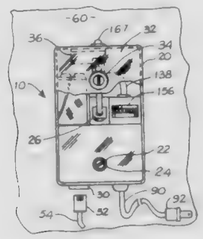
1. An automatic timer for controlling the cumulative service time of a telephone within a predetermined period, comprising:

(a) a housing provided with two internal mounting slots for attachment to a telephone line outlet, said housing comprising a lid and lock for securely preventing unauthorized access to its interior;

(b) electrical means, contained in said housing, for connecting a telephone to said telephone line outlet, said means consisting of wiring attached to an internal plug for connection with said telephone line outlet and attached to an external outlet for connection with said telephone, and of

a switch for line selection between the two alternative lines commonly wired into residential buildings;

(c) electronic means contained in said housing for clocking said predetermined period and said cumulative service time, comprising a power supply, a logic reset master switch, a 60 hertz timing source, an off-hook detector, a 24-hour time clock, and a cumulative service time clock; and electronic means for disconnecting said telephone at the expiration of said cumulative service time, comprising a one-minute time clock, driven by said cumulative service time clock, and a relay, driven by said one-minute time clock;



(d) mechanical means for resetting said electronic means and for selecting the length of said cumulative service time comprising a set of manually programmable control switches; and

(e) a tone signal generator driven by said cumulative service time clock for alerting a telephone user of the impending disconnection of service at the end of said cumulative service time.

5,062,135

CROSS COIL TYPE INDICATING GAUGE

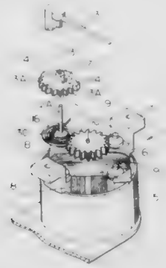
Yukio Ohike, Shimada, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 2, 1989, Ser. No. 430,330

Claims priority, application Japan, Nov. 9, 1988, 63-145361[U]; Nov. 9, 1988, 63-145362[U]

Int. Cl.[5] G01R *1/20*

U.S. Cl. 324—154 R **10 Claims**



1. A cross coil type indicating gauge for use with a gauge board having at least one predetermined minimum position and at least one maximum position, and at least one movement mounted to the gauge board, the movement comprising:

a pair of coils mounted onto a coil bobbin at substantially right angles to each other for receiving electric charge and generating a combined magnetic field in response to a predetermined measurement amount;

a rotation body disposed inside said pairs of coils and having a rotating shaft in the center thereof, for rotating through a predetermined angle dependent on said generated combined magnetic field;

counter indicating means having a counter shaft rotatably disposed in parallel to said rotation shaft and a pointer mounted on the tip of said counter shaft for rotating on said gauge board and indicating said predetermined measurement amount;

torque transmission means including a rotation gear secured to said rotation shaft, and a counter gear secured to said counter shaft and having a tooth formed portion for engaging with said rotation gear for the rotation angle of said pointer; and

means mounted to said counter gear for stopping said pointer at said predetermined minimum position of said gauge board.

5,062,136

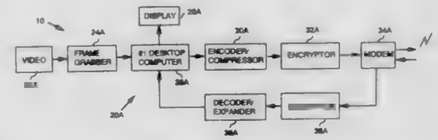
TELECOMMUNICATIONS SYSTEM AND METHOD

Sherri L. Gattis, and James L. Rieger, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 12, 1990, Ser. No. 582,267

Int. Cl.[5] H04N *1/44, 7/14, 7/12*

U.S. Cl. 380—18 **16 Claims**



1. Apparatus for adapting video and digital signals to a computer in a telecommunications system to allow a plurality of terminals to engage in teleconferencing via a digital data network, comprising:

video input means for forming a standard video signal;

a frame grabber connected to the video input means;

a computer connected to the flame grabber to receive the video signal;

means connected to the computer for encoding and compressing the video signal and producing a continuous, fixed rate digital data stream output signal that comprises a first sequence of picture lines to define a first picture to be transmitted having a gray scale, and for controlling horizontal resolution, and for controlling the update rate for the first pictures transmitted;

means having an output connected as an input to said computer, for decoding and expanding digital signals from said data network, said means including a buffer for storing the first sequence of picture lines that comprise the first picture received by the means for encoding until the means for decoding receives a second sequence of picture lines that comprise the second picture received; and

modulator/demodulator means for interfacing the output of the means for encoding and compressing and the input to said means for decoding and expanding with the digital data network.

5,062,137

METHOD AND APPARATUS FOR SPEECH RECOGNITION

Taisuke Watanabe, Sagamihara, and Tatsuya Kimura, Kawasaki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 385,523, Jul. 27, 1989, abandoned, which is a division of Ser. No. 167,794, Mar. 14, 1988, abandoned. This application Dec. 14, 1990, Ser. No. 626,405

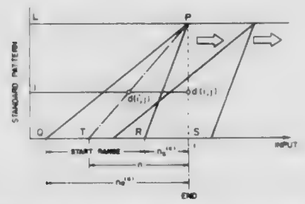
Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—46 **3 Claims**

1. A method of speech recognition comprising the steps of:

(a) detecting presence of speech from an input signal by use of power information;

(b) setting a moment of the detection of the speech as a reference point;
(c) linearly changing the input signal during a period between the reference point and a subsequent point distant from the reference point by N (N1≦N≦N2) to a corresponding signal having a period L;
(d) extracting feature parameters from the signal having the period L;
(e) predetermining standard patterns of speeches of respective preset words;
(f) calculating similarities between the extracted feature parameters and the standard patterns;
(g) comparing the calculated similarities;
(h) in an interval between N1 and N2, determining a range of N for each reference point by use of power information available before the reference point;



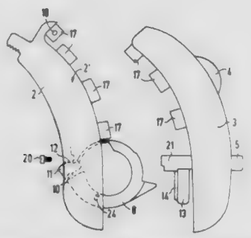
(i) performing the previously-mentioned steps while varying N in the determined range;
(j) performing similar steps as the reference point is shifted by a unit period, and calculating similarities and comparing the similarities;
(k) detecting a duration of a speech by use of movement of the power information;
(l) determining a process end time by use of the speech duration time and a time-dependent variation in the similarities;
(m) selecting one of the preset words which corresponds to a maximum of the similarities obtained when the reference point reaches the process end time; and
(n) outputting the selected word as recognition result.

5,062,138

HEARING AID WITH BATTERY COMPARTMENT

Erich Schmid, Schwaig, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 249,286, Sep. 26, 1988, abandoned. This application Mar. 14, 1990, Ser. No. 494,940
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1987, 8713088[U]
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68.7 **7 Claims**



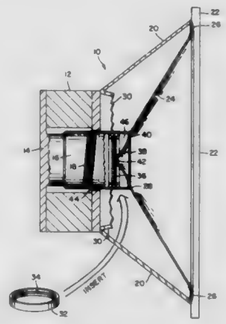
1. A hearing aid comprising a housing to be worn behind the ear and composed of at least two housing shells joined along a parting line having a transverse width comprising a width of said housing shells, a hinge formed by at least one male member of a first housing shell, catch means at least partially formed on said first housing shell and a battery compartment pivotable around said hinge in a plurality of swiveled positions and engageable with said catch means in one of said positions, said hinge being spaced from and parallel to said transverse width of said parting line of said housing shells; said battery compartment comprising a longitudinal depression having an opening facing toward a battery introducible into said battery compartment; said battery compartment being attached to said first housing shell when said hinge is hooked into said longitudinal depression of said battery compartment; a bead at said battery compartment being clamped between said hinge and an edge of said first housing shell facing toward said battery compartment in all swiveled positions of said compartment such that said battery compartment is secured at said hinge when said hearing aid is assembled.

5,062,139

COAXIAL LOUD SPEAKER SYSTEM

Eugene J. Christensen, R.R. #2, Box 2297, Lake George, N.Y. 12845

Filed Jun. 5, 1989, Ser. No. 361,351
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—192 **9 Claims**



9. A loudspeaker driver comprising a first driver for a dynamic radiator including a voice-coil former and a second driver having a flexible planar driving element, said second driver planar element mounted compliantly about its periphery inside the voice coil former of said first driver by means which allows said planar element to flex independently of, but move with, said first driver.

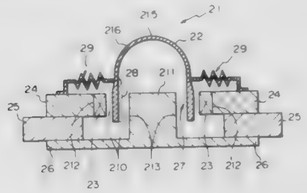
5,062,140

INDUCTION SPEAKER

Kiyofumi Inanaga; Hiroyuki Sogawa, and Shiro Tsukamoto, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 18, 1989, Ser. No. 340,034
Claims priority, application Japan, Apr. 27, 1988, 63-104596; May 17, 1988, 63-120233; May 23, 1988, 63-125387
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—199 **26 Claims**

1. A speaker comprising:
means defining a magnetic circuit having confronting annular surfaces that are radially spaced apart to form a gap therebetween;
a current feeding coil mounted on one of said annular surfaces and being spaced from the other of said annular surfaces;
a substantially dome-shaped diaphragm having an electrically conductive cylindrical edge portion which is an integral part thereof and which extends axially into said annular gap between said current feeding coil and said other annular surface of the magnetic circuit with clearances therebetween, said cylindrical edge portion of the diaphragm having an electrical resistance substantially lower than an electrical resistance of the remainder of said diaphragm; and



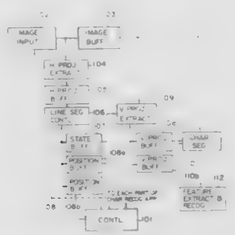
means mounting said diaphragm for vibratory movement as a unit relative to said magnetic circuit in directions parallel with a central axis of said cylindrical edge portion of the diaphragm.

5,062,141

METHOD OF SEGMENTING CHARACTERS IN LINES WHICH MAY BE SKEWED, FOR ALLOWING IMPROVED OPTICAL CHARACTER RECOGNITION

Hiroshi Nakayama, Tokyo; Keiji Kojima, Kawasaki, and Gen Sato, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jun. 2, 1989, Ser. No. 361,031
Claims priority, application Japan, Jun. 2, 1988, 63-136350; Mar. 9, 1989, 1-57487; Apr. 17, 1989, 1-97187
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—9 **10 Claims**



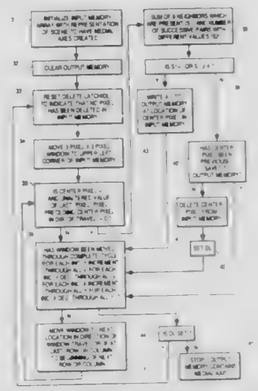
1. A method of segmenting characters of a document image which has lines of characters thereon, each of said lines extending generally in a first direction, said method comprising the steps of:
dividing the document image in the first direction into a plurality of divided regions and setting a check width with respect to each of the divided regions taken along the first direction, each of the check width being greater than or equal to a width of a corresponding one of the divided regions taken along the first direction so that the check widths of two mutually adjacent divided regions partially overlap each other;
reading image data amounting to one line of the document image;
obtaining from the image data horizontal projections of each line data within each of the check widths, each horizontal projection being a number of black picture elements in a corresponding data line within a check width, each data line being made up of a plurality of picture elements arranged in the first direction;
segmenting a line based on the horizontal projections;
obtaining from the image data vertical projections, each vertical projection being a number of black picture elements in a second direction which is perpendicular to said first direction;
determining a character segmentation range based on the vertical projections; and
segmenting each character of the line within the character segmentation range.

5,062,142

DATA PROCESSOR PRODUCING A MEDIAL AXIS REPRESENTATION OF AN EXTENDED REGION

John R. Meckley, Voorhees, N.J., assignor to General Electric Company, Moorestown, N.J.

Filed Dec. 14, 1990, Ser. No. 627,453
Int. Cl.[5] G06K *9/56*
U.S. Cl. 382—27 **4 Claims**



1. A method for creating the medial axis in an addressable output memory of an image stored as 1 valued picture elements (pixels) in an addressable input memory, each of said memories arranged functionally as rows and columns, comprising the steps of:
a. initializing a 9 pixel data window, arranged in 3 rows each of 3 columns, to an initial location with respect to said input memory at one corner thereof to view the data at 9 associated locations in said input memory and resetting a delete latch:
b. moving said window in a first pass to successive locations in a first direction with respect to said input memory;
c. moving said window in a second pass to successive locations in a second direction different from said first direction;
d. moving said window in a third pass in a third direction different from said first direction and different from said second direction;
e. moving said window in a fourth pass to successive locations in a fourth direction different from said first, second and third directions;
f. at each location, providing a "yes" answer if the value of the window center pixel, that is the pixel in the second row and second column of 9 window pixels, has the value 1 and the previous value of that pixel in the direction of window travel has the value 0 and otherwise producing a "no" answer;
g. if the answer in step f. is "no", proceeding to step h.;
h. providing a "yes" answer if said window has been moved through all four cycles in steps b., c., d. and e. and otherwise providing a "no" answer;
i. if the answer in step h. is "no", continuing movement of the window in the direction it was going at the time step f. was being implemented and proceeding to step f.;
j. if the answer in step f. is "yes", determining the number of pixels in the window, excluding the center pixel, known as the neighbors, which are of value 1 (Sum 1) and the number of neighbor pairs which are unequal in value (Sum 2);

k. if the value of Sum 1 is 1 or the value of Sum 2 is equal to or greater than 4 writing a value 1 to said output memory at the address location corresponding to the location of said center pixel in said input memory and proceeding to step h.;

l. if the value of sum 1 is unequal to 1 and the value of sum 2 is less than 4, providing a "yes" answer if the value of said output memory at the address location or the center pixel in the window is a value 1 and otherwise providing a "no" answer;

m. if the answer in step l. is "no", writing a value 0 to the input memory at the address of the center pixel, setting said delete latch to indicate that a bit was deleted in input memory and proceeding to step h.;

n. if the answer in step l. is "yes", proceeding to step h.;

o. if the answer in step h. is "yes", providing a "yes" answer if determining said delete latch in step m. is set and otherwise providing a "no" answer;

p. if the answer in step o. is "yes", proceeding to step a.; and

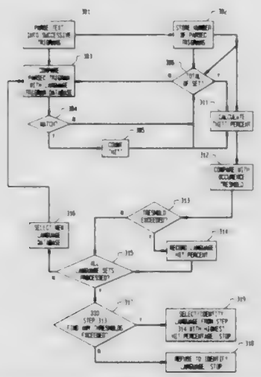
q. if the answer in step o. is "no", stopping whereby the output memory contains the medial axis representation of the scene in the input memory.

5,062,143

TRIGRAM-BASED METHOD OF LANGUAGE IDENTIFICATION

John C. Schmitt, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 23, 1990, Ser. No. 485,115
Int. Cl.[5] G06K *9/62, 9/72*
U.S. Cl. 382—36 **6 Claims**



6. A method of generating a key set of trigrams to be used in determining in what language text has been written, based upon a comparison of trigrams, into which said text is to be parsed, with said set of trigrams comprising the steps of:

(a) parsing a body of text of a prescribed language into a plurality of trigrams so that at least some of the trigrams overlap adjacent words, each trigram comprising the contents of three successive character/space positions of said body of text;

(b) counting the number of occurrences of each of the trigrams that has been parsed from said body of text in step (a);

(c) determining the ratio of each of the number of occurrence of the trigrams counted in step (b) with the total number of trigrams into which said body of text has been parsed in step (a), and deriving therefrom a characteristic representative of the frequency of trigram occurrence of each trigram that may be formed using the characters of said prescribed language and a space position;

(d) from the characteristic derived in step (c), identifying the frequency of occurrence of trigrams for said prescribed language that is associated with a selected frequency of occurrence; and

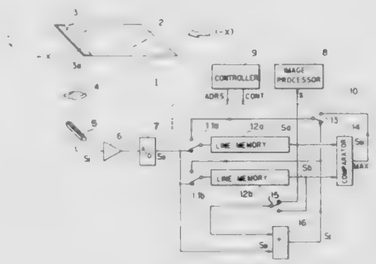
(e) generating, as said key set of trigrams, those trigrams whose frequency of occurrence is at least equal to the frequency of occurrence identified in step (d).

5,062,144

METHOD OF OBTAINING WHITE REFERENCE DATA USED FOR CORRECTING NON-UNIFORMITY IN PHOTOELECTRIC CELL ARRAY

Shigeo Murakami, Tenjinkitamachi, Japan, assignor to Dainippon Screen Mfg. Co. Ltd., Japan

Filed Apr. 6, 1989, Ser. No. 334,086
Claims priority, application Japan, Apr. 6, 1988, 63-85667
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—52 **12 Claims**



7. An image scan reader, comprising:

(1) supporting means for supporting an original,

(2) a white reference plate attached to said supporting means,

(3) linear photosensor array means facing said supporting means,

(4) moving means for moving said supporting means and said linear photosensor array relative to each other,

(5) first control means, associated with said photosensor array means and said moving means and effective to cause the same to detect the distribution of optical densities on said white reference plate for M scanning lines each of which is comprised of a plurality of image pixel positions, M being an integer satisfying the condition M=n+m and each of n and m being an integer larger than one,

(6) means for averaging said distribution for n of M scanning lines by averaging the white density data in a first direction X and repeating the same for each different Y coordinate value of said n scanning lines to generate first averaged data where Y is a second direction perpendicular to said first direction X;

(7) means for averaging said distribution for m of said M scanning lines by averaging the white density data in the first direction X and repeating the same for each different Y coordinate value of said m scanning lines to generate second average data;

(8) comparing means for comparing values of said first averaged data to the values of the second averaged data for each different Y-coordinate values and selecting the largest of said averaged data for respective Y-coordinate values thereby to obtain a set of maximum averaged values;

(9) means for generating a white reference data in accordance with said set of maximum averaged values,

(10) second control means associated with said photosensor array means and said moving means and effective to cause the same to read an image of said original for each scanning line, to thereby generate original image data, and

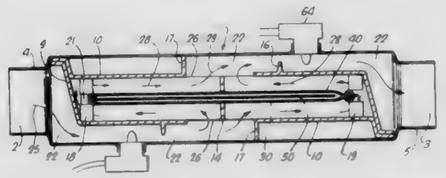
(11) means for correcting said original image data in accordance with said white reference data.

5,062,145

HUMIDIFYING APPARATUS

Paul Zwaan; Ilija Orec, and Charles G. Murray, all of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Filed Sep. 27, 1989, Ser. No. 412,819
Claims priority, application New Zealand, Sep. 29, 1988, 226392; Oct. 31, 1988, 226784
Int. Cl.[5] F22B *1/28*
U.S. Cl. 392—396 **40 Claims**



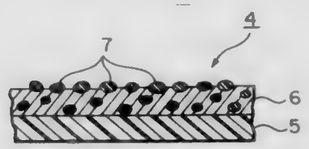
1. Apparatus for humidifying gases, said apparatus comprising a first passageway, a water supply inlet through which water is in use supplied to said first passageway, a second passageway through which gases are supplied to pass over a microporous wall common to both said first passageway and said second passageway at point of use, said microporous wall being permeable to water vapour but substantially impermeable to liquid water, heating means energisable to heat said water to generate vapour pressure within said first passageway sufficient to cause passage of water vapour but not liquid water through said microporous wall, said microporous wall comprising sheet microporous material formed into a water compartment of microporous material providing said first passageway and substantially contained by water compartment support means, said water compartment support means mechanically reinforcing said water compartment of microporous material to resist the pressures operating thereon, said water compartment of microporous material formed to provide a flattened microporous tube with adjacent cut edges sealed or molded together, said heating means comprising a plurality of turns of an insulated electro conductive material arranged in a formation and positioned in said water compartment such that any air bubbles forming in water in said compartment encompass a plurality of turns with the likelihood of any single turn being encompassed by such air bubbles being obviated or minimised.

5,062,146

INFRARED RADIATOR

Hiroshi Kagechika, Tokyo, Japan, assignor to NKK Corporation, Tokyo, Japan

Filed Oct. 13, 1989, Ser. No. 420,959
Claims priority, application Japan, Nov. 8, 1988, 63-281832
Int. Cl.[5] H05B *3/16*
U.S. Cl. 392—432 **19 Claims**



1. An infrared radiator comprising:

a substrate, at least one surface portion of which has an electric insulation property;

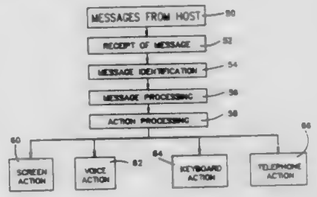
a metal film, as a resistance heating element, formed on said at least one surface portion of said substrate; and infrared radiating particles uniformly dispersed throughout said metal film.

5,062,147

USER PROGRAMMABLE COMPUTER MONITORING SYSTEM

Thomas Pickett, Westerville, Ohio, and Bjorn Larson, Ontario, Canada, assignors to Votek Systems Inc., Worthington, Ohio

Continuation of Ser. No. 43,595, Apr. 27, 1987, abandoned. This application May 30, 1990, Ser. No. 529,710
Int. Cl.[5] G06F *11/30*
U.S. Cl. 364—900 **22 Claims**



1. A monitoring system comprising:

a) communications interface means for receiving computer generated digital communications messages caused by an event that has occurred in a computer system including one or more computers, where each communications message comprises a sequence of characters organized in a message format dependent on the computer system that conveys the nature of the event to a user;

b) programmable message action storage means for categorizing monitoring system responses to the events occurring within the computer system as indicated by said digital communications messages;

c) programmable message filtering means for interpreting the content of received messages to categorize each received message based upon a message format dependent user defined classification criteria and to derive a key into the message action storage means corresponding to one or more monitoring system responses;

d) input means for programming the programmable message action storage means and the programmable message filtering means to allow the user to customize a response to incoming messages from the computer system based upon the message format of messages originating from the computer system;

e) visual display means for displaying a sequence of characters based upon said communications messages on a display screen; and

f) alert means for apprising a user that one or more messages satisfying one of the user defined classification criteria have been received at the communications interface by implementing one or more monitoring system responses designated by the key;

said alert means including:

i) voice processor means for generating an audible voice warning message;

ii) means for displaying a visual warning message on the display screen; and

iii) communications means for transmitting a voice warning message to a remote site on a communications path.

5,062,148

MULTI-PATH FADING SIMULATOR

Allen P. Edwards, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 2, 1989, Ser. No. 360,650
Int. Cl.[5] H04B *1/10, 15/00*
U.S. Cl. 455—52 **18 Claims**

1. A multi-path distortion simulator for use with a radio

receiver being supplied an RF test signal modulated with information free from multi-path fading, said radio receiver having an IF portion, said simulator comprising:

an input terminal coupled to said IF portion of said receiver for receiving as an input signal the IF signal as generated by said receiver, said input signal including information contained within said RF test signal and being free from multi-path fading;

an output terminal coupled to said IF portion of said receiver for providing a modified IF signal including simulated multi-path distortion as an output signal for reinjection into said IF portion of said receiver;

a first signal path comprising an input lead, an output lead, a first phase shifter, and a first attenuator;

a second signal path comprising an input lead, and output lead, a second phase shifter, a second attenuator, and a delay means;

a first means for coupling said input terminal to said input leads of said first and second signal paths; and

a second means for coupling said output leads of said first and second signal paths to said output terminal.

5,062,149

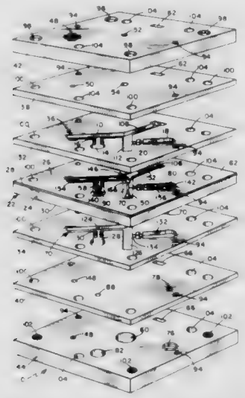
MILLIMETER WAVE DEVICE AND METHOD OF MAKING

Garry N. Hulderman, Riverside; Eugene Phillips, Diamond Bar, and Richard J. Swanson, Pomona, all of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 23, 1987, Ser. No. 112,330

Int. Cl.[5] H04B *1/26*

U.S. Cl. 455—323 **19 Claims**



1. A millimeter wave device having a structure dimensioned to operate at a predetermined frequency, comprising:

a dielectric substrate having a pair of substantially parallel planar surfaces, said substrate having one or more predetermined millimeter wave circuit patterns formed in a conductive layer located on the first of said surfaces;

a first substantially planar channel plate mounted adjacent to said conductive layer, said first channel plate having an aperture overlaying each of said circuit patterns;

a first substantially planar cover plate mounted adjacent to said first channel plate to form cavities defined by said substrate, said first channel plate apertures and said first cover plate; and

a first substantially planar channel back plate mounted adjacent to said first cover plate.

5,062,150

FIBER-BASED FREE-SPACE OPTICAL SYSTEM

Eric A. Swanson, Maynard, and Roy S. Bondurant, Carlisle, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 299,088, Jan. 23, 1989. This application Oct. 6, 1989, Ser. No. 417,828

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—152 **24 Claims**

1. A satellite-based communications and tracking system which allows mechanical decoupling and spatial separation of processing modules, comprising:

a receiver fiber coupler,

a telescope module for tracking and collecting light from a light source and focusing said light onto said receiver fiber coupler,

a satellite-based receiving module for processing collected light,

feedback circuitry responsive to said receiving module for generating control signals to direct said telescope to track said light source, and

a receiver optical fiber for carrying light from said receiver fiber coupler to said receiving module;

whereby the position of said receiving module may be varied with respect to said telescope module because of the use of said optical fiber.

5,062,151

COMMUNICATION SYSTEM

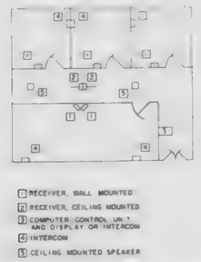
Robert T. Shipley, Oakland, Calif., assignor to Fisher Berkeley Corporation, Oakland, Calif.

Continuation of Ser. No. 856,646, Apr. 25, 1986, abandoned, which is a continuation of Ser. No. 658,052, Oct. 3, 1984, Pat. No. 4,601,064, which is a continuation of Ser. No. 457,692, Jan. 13, 1983, abandoned, which is a continuation of Ser. No. 194,038, Oct. 6, 1980, abandoned. This application Apr. 27, 1990, Ser. No. 518,309

Int. Cl.[5] H04B *10/10*

U.S. Cl. 359—154 **26 Claims**

1. In a personnel locating system for use in a facility having a plurality of rooms having doorways therein, a plurality of portable transmitters, each including a battery and each generating an infrared signal, a plurality of receivers, each room having a wall-mounted receiver positioned within the room to accept infrared radiation from a substantial portion of the volume of the room, each receiver in each room being capable of sensing and storing any of said infrared signals generated by said transmitters during any time said transmitters are located anywhere in said each room and means for polling said receivers to determine the actual location in real time of any transmitter in use in the facility independent of the previous location said any transmitter in the facility.



5,062,152

PCM SIGNAL CODING

David W. Faulkner, Ipswich, England, assignor to British Telecommunications public limited company, Great Britain

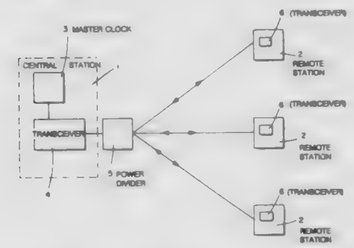
PCT No. PCT/GB88/00590, § 371 Date Mar. 16, 1989, § 102(e) Date Mar. 16, 1989, PCT Pub. No. WO89/00790, PCT Pub. Date Jan. 26, 1989

PCT Filed Jul. 20, 1988, Ser. No. 335,205

Claims priority, application United Kingdom, Jul. 20, 1987, 8717124

Int. Cl.[5] G02F *1/00*; H03M *5/00*

U.S. Cl. 359—185 **11 Claims**



5. A method for encoding a level quantized signal having a non-uniform occurrence probability distribution using digital codewords which each have a predetermined number of binary-valued bits, one binary value representing an ON state of an energy pulse transmitting device and the other binary value representing an OFF state of said transmitting device, said method comprising the step of:

assigning said codewords to quantized signal levels so as to reduce the occurrence of ON state binary-valued bits.

5,062,153

READING DEVICE OF POLARIMETRIC AND INTERFEROMETRIC SENSORS

Marc Turpin, Bures sur Yvette, and Philippe Refregier, Palaiseau, both of France, assignors to Thomson-CSF, Puteaux, France

Filed May 23, 1990, Ser. No. 527,341

Claims priority, application France, May 23, 1989, 89 06717

Int. Cl.[5] H04B *10/00*

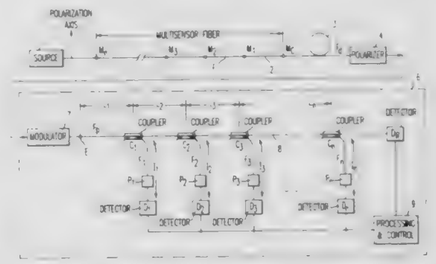
U.S. Cl. 359—156 **20 Claims**

1. A reading device of a plurality of sensors, said sensors comprised of the polarimetric type and interferometric type, and fed by light emitted from a light source, comprising:

a main optical fiber;

a plurality of polarization-preservation couplers positioned on said main optical fiber;

a plurality of compensation fibers connected to respective of said polarization-preservation couplers;



a plurality of polarizers connected to respective of said compensation fibers; and

a plurality of detectors connected to respective of said plurality of polarizers.

5,062,154

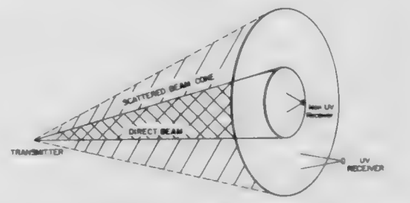
MID RANGE UV COMMUNICATIONS

Myer Geller, and George A. Evanoff, Jr., both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1989, Ser. No. 318,988

Int. Cl.[5] G02F *1/00*

U.S. Cl. 359—154 **3 Claims**



1. An apparatus for communicating in the UV spectrum with a predetermined UV beam divergence and with the unique UV properties of scattering in an extended mid-range of about ten to fifteen kilometers comprising:

means for generating an omni-directionally radiated incoherent ultraviolet signal in the tens of watts power range and

means containing the generating means at a predetermined focal length for defining a compound parabolic reflecting surface to radiate UV energy at said predetermined UV beam divergence thereby eliminating the need for boresighting and the otherwise required pointing, tracking and receiving mechanisms.

5,062,155

MODULATED LIGHT WAVE DEMODULATOR

Kazuo Eda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1990, Ser. No. 464,000

Claims priority, application Japan, Jan. 12, 1989, 1-5232

Int. Cl.[5] G02F *1/00*; H01S *3/00*; G02B *5/23*

U.S. Cl. 359—189 **4 Claims**

3. A demodulator for demodulating a modulated light wave carrying information, comprising:

an external cavity type laser comprising a semiconductor laser element for emitting a laser light wave, and an external cavity comprising a reflector for reflecting said laser

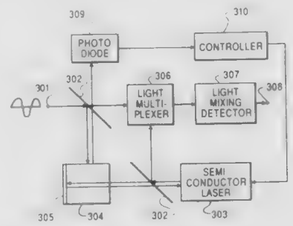
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light wave emitted from said laser element to produce a reflected laser light wave returning to said laser element, and a four-light wave mixing optical phase conjugate element arranged to pass therethrough said emitted laser light wave and said reflected light wave as pump light waves and at least a part of said modulated light wave as a probe light wave for producing a phase conjugate light wave having a spatial phase inverted with respect to that of said modulated light wave when a wavelength of said emitted laser light wave is the same as that of said modulated light wave;

a light intensity detector for detecting an intensity of said phase conjugate light wave;

a controller responsive to the detected intensity of said phase conjugate light wave detected by said light intensity detector for controlling said laser element so that said intensity of said phase conjugate light wave is maximized; and

a light mixing detector for subjecting said modulated light wave and said emitted laser light wave to light-mixing detection to obtain a demodulated light wave carrying

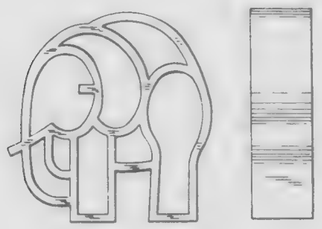


said information when said intensity of said phase conjugate light wave is maximized.

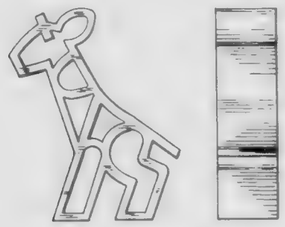
DESIGNS

OCTOBER 29, 1991

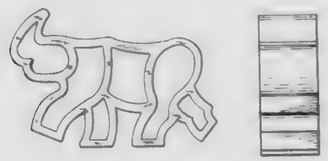
321,076
ELEPHANT-SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J., and Deborah L. Bernardini, Mahopac, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Dec. 22, 1989, Ser. No. 456,133
Term of patent 14 years
U.S. Cl. D1—107



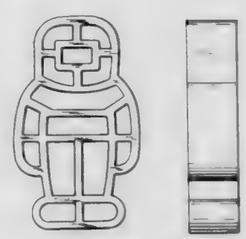
321,077
GIRAFFE-SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Dec. 22, 1989, Ser. No. 456,134
Term of patent 14 years
U.S. Cl. D1—107



321,078
RHINOCEROS-SHAPED PASTA
Edward J. Myers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Dec. 22, 1989, Ser. No. 456,135
Term of patent 14 years
U.S. Cl. D1—107



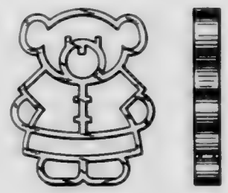
321,079
ASTRONAUT-SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Dec. 22, 1989, Ser. No. 456,139
Term of patent 14 years
U.S. Cl. D1—108



321,080
SKULL-SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Jan. 11, 1990, Ser. No. 463,634
Term of patent 14 years
U.S. Cl. D1—108

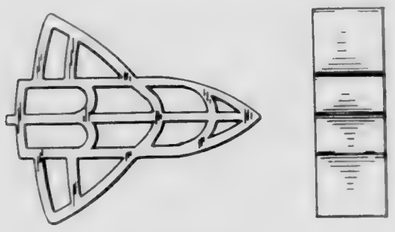


321,081
TEDDY BEAR-SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Dec. 29, 1989, Ser. No. 461,486
Term of patent 14 years
U.S. Cl. D1—110



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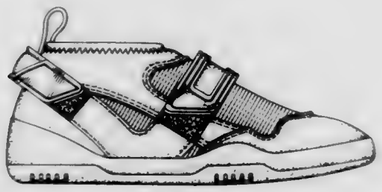
321,082
SPACE SHIP-SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Dec. 22, 1989, Ser. No. 456,775
Term of patent 14 years
U.S. Cl. D1—113



321,083
BRASSIERE
Eskild G. Thygesen, Ikast, Denmark, assignor to Tytex A/S, Ikast, Denmark
Filed Apr. 28, 1989, Ser. No. 344,847
Claims priority, application Denmark, Oct. 31, 1988, 1293/88
Term of patent 14 years
U.S. Cl. D2—24



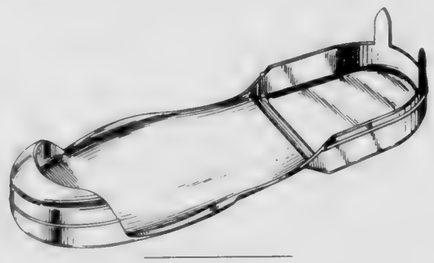
321,084
SHOE FOR MARINE ACTIVITIES
Harry Miller, Boston, and Rosalba L. Mische, Hopkinton, both of Mass., assignors to Omega Corporation, S. Boston, Mass.
Filed Feb. 27, 1989, Ser. No. 316,440
Term of patent 14 years
U.S. Cl. D2—265



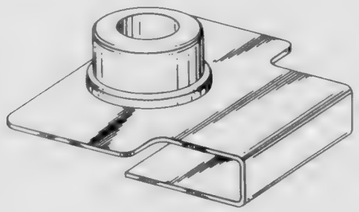
321,085
SHOE UPPER
Bruce E. Rogers, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Oreg.
Filed Jul. 27, 1990, Ser. No. 558,413
Term of patent 14 years
U.S. Cl. D2—314



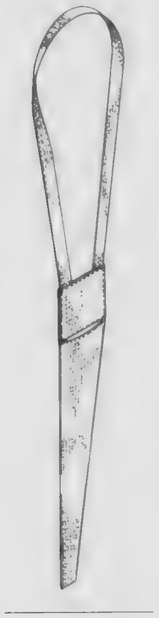
321,086
SPIKE GUARD FOR GOLF SHOES AND THE LIKE
James E. Klingseis, 22591 Charwood Cir., El Toro, Calif. 92630; Robert J. Klingseis, and Sandy Klingseis, both of 24823 Fries, Carson, Calif. 90745
Filed Sep. 11, 1989, Ser. No. 405,849
Term of patent 14 years
U.S. Cl. D2—317



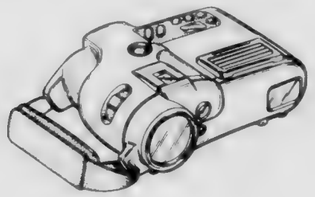
321,087
UMBRELLA HOLDER
Ronald J. Fadell, 2573 Rosewae, Youngstown, Ohio 44511
Filed Apr. 3, 1989, Ser. No. 331,897
Term of patent 14 years
U.S. Cl. D3—10



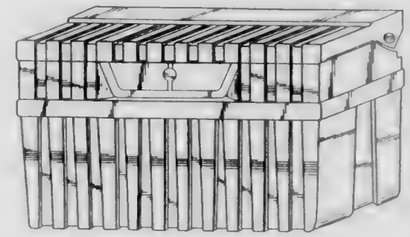
321,068
UMBRELLA HOLDER
James T. Waters, Jr., 182 E. 95th St., New York, N.Y. 10128
Filed May 15, 1989, Ser. No. 352,171
Term of patent 14 years
U.S. Cl. D3—11



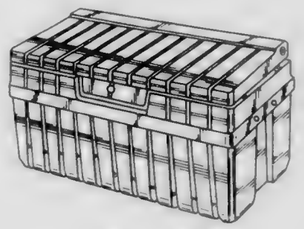
321,089
WATER-PROOF CASE FOR A CAMERA
Kazuhiko Miyahara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 15, 1989, Ser. No. 310,713
Claims priority, application Japan, Aug. 17, 1988, 63-32799
Term of patent 14 years
U.S. Cl. D3—33



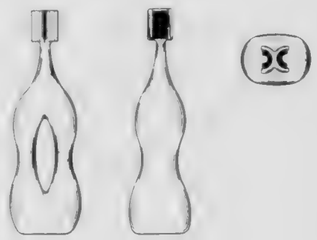
321,090
TOOL BIN
Thomas Dickinson, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed Sep. 8, 1987, Ser. No. 94,434
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—78



321,091
TOOL BIN
Thomas Dickinson, St. Louis, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 94,434, Sep. 8, 1987. This application May 20, 1988, Ser. No. 196,454
The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—78

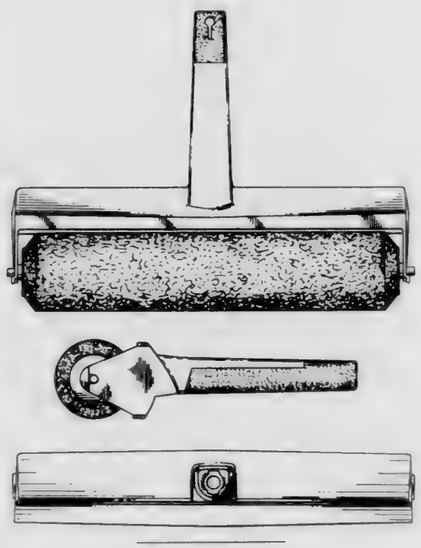


321,092
TOOTHBRUSH
Margo Y. Woll, and Douglas R. Woll, both of 3311 Woodview Lake Rd., West Bloomfield, Mich. 48033
Filed Sep. 2, 1988, Ser. No. 240,229
Term of patent 14 years
U.S. Cl. D4—106

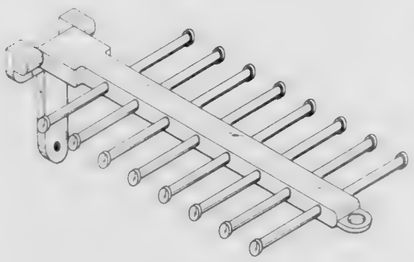


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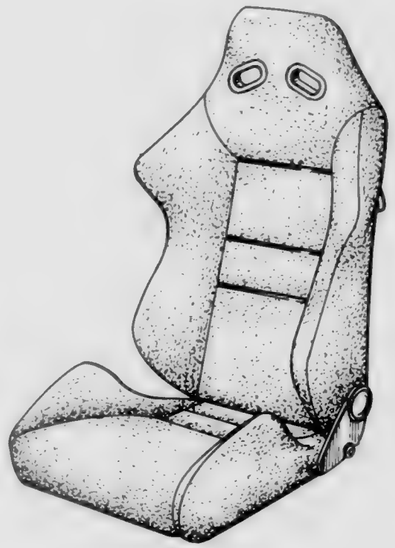
321,093
PAINT ROLLER OR SIMILAR ARTICLE
James J. Jarecki, Greendale, Wis.; Leon C. Clouser, Lombard, and Insoon Park, Chicago, both of Ill., assignors to EZ Paintr Corporation, Milwaukee, Wis.
Filed Jun. 2, 1989, Ser. No. 361,906
Term of patent 14 years
U.S. Cl. D4—122



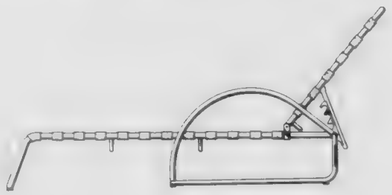
321,094
HOLDER FOR NECK TIES OR SIMILAR ARTICLES
Steven E. Greenhut, 21646 Club Villa Ter., Boca Raton, Fla. 33433, and Sheldon H. Goodman, 4079 Princeton Blvd., South Euclid, Ohio 44121
Filed Aug. 24, 1989, Ser. No. 398,376
Term of patent 14 years
U.S. Cl. D6—324



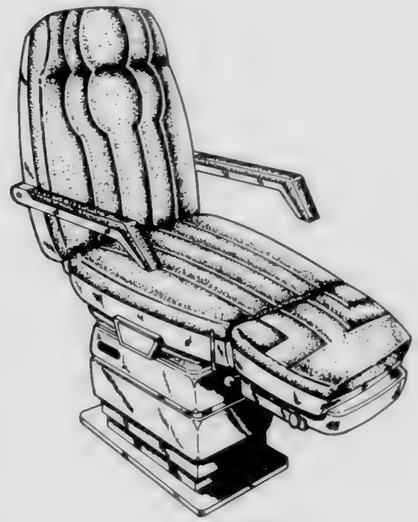
321,095
VEHICLE SEAT OR SIMILAR ARTICLE
Peter Bockwoldt, Albershausen, Fed. Rep. of Germany, assignor to Keiper Recaro GmbH & Co., Fed. Rep. of Germany
Filed Mar. 2, 1988, Ser. No. 163,405
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1987, 2MR922
Term of patent 14 years
U.S. Cl. D6—356



321,096
CHAISE LOUNGE
James R. Arthur, Jr., Birmingham, Ala., assignor to Winston Furniture Company, Inc., Birmingham, Ala.
Filed Dec. 19, 1986, Ser. No. 943,581
Term of patent 14 years
U.S. Cl. D6—361



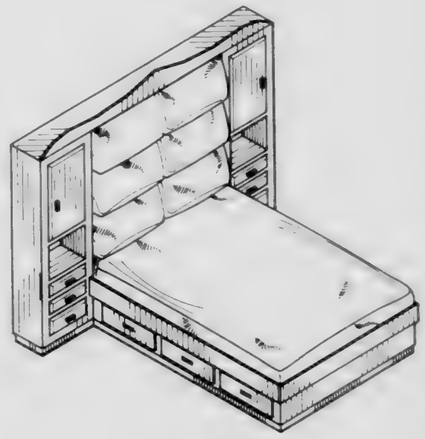
321,097
PODIATRY CHAIR
Larry Jones, Sidney, Ohio, and Terry Simpkins, Carlsbad, Calif., assignors to Midmark Corporation, Versailles, Ohio
Filed Oct. 6, 1988, Ser. No. 254,534
Term of patent 14 years
U.S. Cl. D6—367



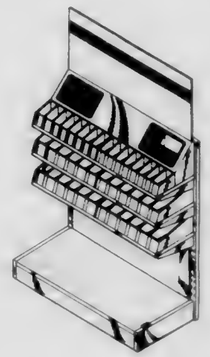
321,098
ARMCHAIR
Werther Toffoloni, Corno di Rosazzo, Italy, assignor to Cabas S.p.A., S. Giovanni al Natisone, Italy
Filed Mar. 8, 1988, Ser. No. 165,891
Claims priority, application Italy, Sep. 16, 1987, 22361/87[U]
Term of patent 14 years
U.S. Cl. D6—379



321,099
BED
Peggy E. Fullhart, 2841 E. Paul, Fresno, Calif. 93710
Filed Jul. 7, 1988, Ser. No. 216,262
Term of patent 14 years
U.S. Cl. D6—384



321,100
DISPLAY STAND
Paul L. Dorrell, Tigard, Oreg., assignor to Wade Manufacturing Co., Portland, Oreg.
Filed Jul. 1, 1988, Ser. No. 215,431
Term of patent 14 years
U.S. Cl. D6—468



321,101
MODULAR DISPLAY STAND
Armand S. Zucker, Skokie, Ill., assignor to RTC Industries, Inc., Chicago, Ill.
Filed May 2, 1988, Ser. No. 189,959
Term of patent 14 years
U.S. Cl. D6—479



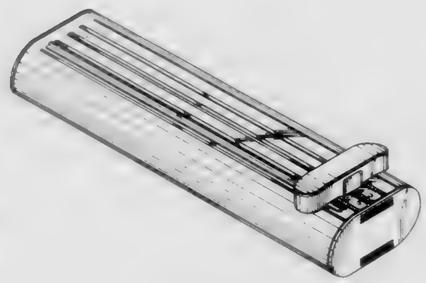
321,102
DESK
Thomas J. Newhouse, Grand Rapids, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 544,852, Jun. 27, 1990, which is a division of Ser. No. 57,830, Jun. 2, 1987, Pat. No. Des. 311,833. This application Apr. 4, 1991, Ser. No. 680,271
Term of patent 14 years
U.S. Cl. D6—484



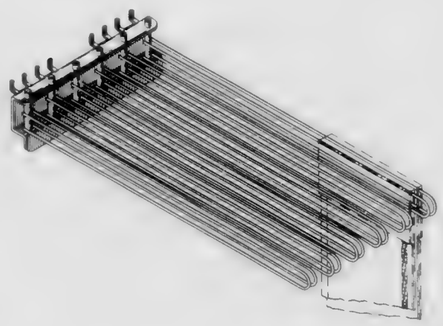
321,103
TRIM ELEMENT FOR A FURNITURE PANEL
John W. T. Duffey, 491 Seminole Ave., Apt. 10, Atlanta, Ga. 30307
Filed May 24, 1988, Ser. No. 197,900
Term of patent 14 years
U.S. Cl. D6—491



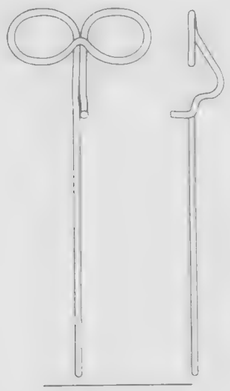
321,104
COMBINATION MULTIPLE ROLL HOLDER AND CUTTER
Rolf G. Schülein, Singhofen, Fed. Rep. of Germany, assignor to Leifheit AG, Nassau/Lahn, Fed. Rep. of Germany
Filed May 15, 1990, Ser. No. 524,178
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1989, M8907977.9
Term of patent 14 years
U.S. Cl. D6—520



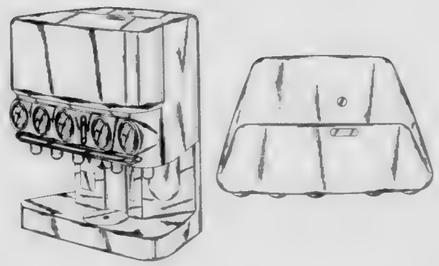
321,105
DISPLAY FIXTURE
Adrian J. Tenser, 37 Scenic Millway, Willowdale, Ontario, Canada M2L 1S6 , and Gordon H. Veres, Kettleby, Canada, assignors to Adrian J. Tenser, Willowdale, Canada
Filed Sep. 5, 1989, Ser. No. 403,151
Term of patent 14 years
U.S. Cl. D6—572



321,106
STRAW
Curt E. Whitright, Chardon, Ohio, assignor to Novelty Plastics Company, Chagrin Falls, Ohio
Filed Oct. 16, 1989, Ser. No. 421,685
Term of patent 14 years
U.S. Cl. D7—300.2



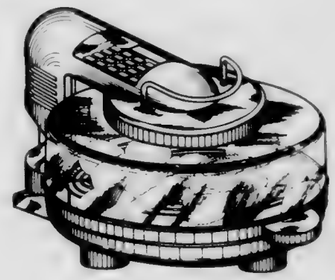
321,107
BEVERAGE DISPENSING MACHINE
Adam Laws, Hunters Hill, Australia, assignor to Burns Philip & Company and Unilever Australia Limited, Australia
Filed May 11, 1988, Ser. No. 192,503
Claims priority, application Australia, Nov. 12, 1987, 4177/87
Term of patent 14 years
U.S. Cl. D7—308



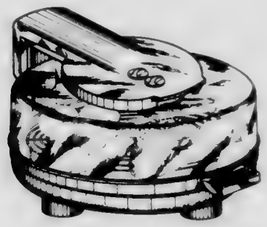
321,108
GRILL BASE
Jon G. Lutter, 15065 Bowden Ave., Morgan Hill, Calif. 95037, and Donald L. Matlock, 12285 Heritage Way, Gilroy, Calif. 95020
Filed May 31, 1989, Ser. No. 359,428
Term of patent 14 years
U.S. Cl. D7—332



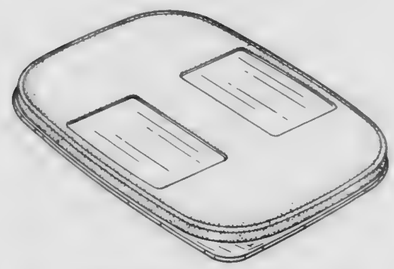
321,109
COUNTER TOP AIR OVEN
Chad Erickson, Plymouth; David A. Dornbush, Prior Lake, and W. Robert Worrell, Hopkins, all of Minn., assignors to Alternative Pioneering Systems, Inc., Chaska, Minn.
Continuation-in-part of Ser. No. 325,157, Mar. 17, 1989. This application May 21, 1990, Ser. No. 527,155
Term of patent 14 years
U.S. Cl. D7—350

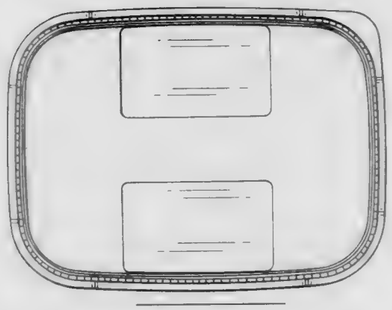


321,110
COUNTERTOP AIR OVEN
Robert Worrell, Hopkins; David Dornbush, Prior Lake, and Chad Erickson, Plymouth, all of Minn., assignors to Alternative Pioneering Systems, Inc., Chaska, Minn.
Continuation-in-part of Ser. No. 527,155, May 21, 1990. This application Jul. 24, 1990, Ser. No. 557,494
Term of patent 14 years
U.S. Cl. D7—350



321,111
COVER FOR A FOOD STORAGE CONTAINER OR THE LIKE
Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Nov. 21, 1988, Ser. No. 274,897
Term of patent 14 years
U.S. Cl. D7—391





321,112
HANDLE FOR A PIZZA CUTTER AND SERVER
Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127
Filed May 8, 1989, Ser. No. 349,143
Term of patent 14 years
U.S. Cl. D7—395



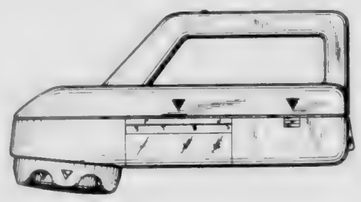
321,113
DEMITASSE CUP OR SIMILAR ARTICLE
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 10, 1989, Ser. No. 321,551
Term of patent 14 years
U.S. Cl. D7—536



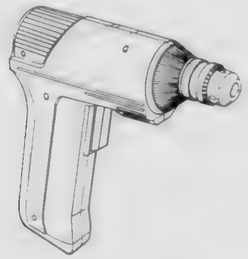
321,114
RECHARGEABLE ELECTRIC ICE CREAM SCOOPER
Bruce G. Fredrickson, 178 E. 200 St. South, and Raymond L. Sipe, 76 East Street South, both of Richmond, Utah 84333
Filed Nov. 21, 1989, Ser. No. 439,530
Term of patent 14 years
U.S. Cl. D7—681



321,115
FABRIC SHAVER
Donald R. Henry, New York, N.Y., assignor to Welcome Industrial Corp., North Bayshore, N.Y.
Filed Oct. 21, 1988, Ser. No. 260,901
Term of patent 14 years
U.S. Cl. D8—61



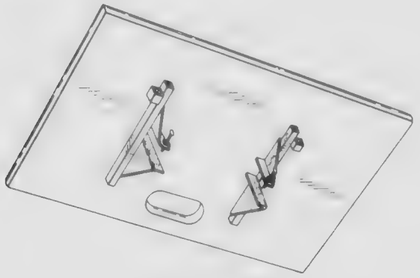
321,116
POWER DRILL
Albert Wan, Kowloon, Hong Kong, assignor to Fee Tat Plastic Factory Limited, Aberdeen, Hong Kong
Filed Jan. 30, 1989, Ser. No. 304,021
Claims priority, application United Kingdom, Aug. 12, 1988, 1052954
Term of patent 14 years
U.S. Cl. D8—68

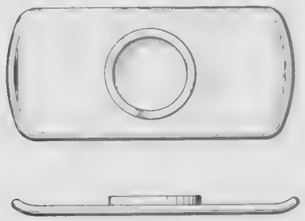


321,117
MITER SAW SUPPORT BASE
Jeffery B. O'Mealy, and Lawrence D. Braddock, both of Portland, Oreg., assignors to Trojan Manufacturing, Portland, Oreg.
Filed Jan. 13, 1989, Ser. No. 297,081
Term of patent 14 years
U.S. Cl. D8—71



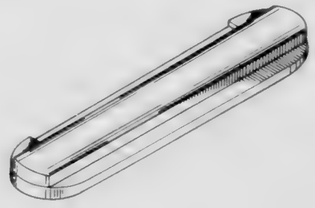
321,118
MAGNETIC VICE GRIP ADAPTOR PAD
Edgar W. Patten, RFD 2, Medina, N.Y. 14103
Filed Feb. 17, 1989, Ser. No. 311,893
Term of patent 14 years
U.S. Cl. D8—74





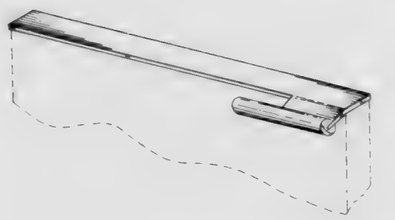
321,119
HACKSAW HANDLE
Theodore P. Ciccone, III, West Hartford, and Joseph P. DeCarolis, Bristol, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Oct. 7, 1988, Ser. No. 254,950
Term of patent 14 years
U.S. Cl. D8—97

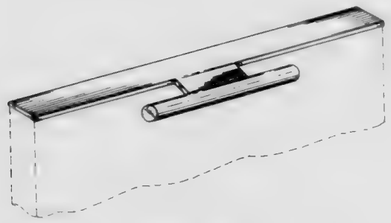
321,120
FORM SEPARATOR
Harrison Huang, Shenkang, Taiwan, assignor to Glory Formosa Co., Ltd., Taiwan
Filed Dec. 9, 1987, Ser. No. 130,736
Term of patent 14 years
U.S. Cl. D8—98



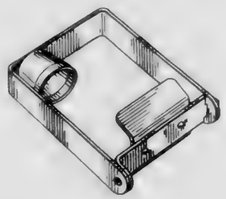
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321,121
HANDLE FOR KITCHEN FURNITURE COMPONENTS
Franco Barbaro, and Carlo Barbaro, both of Baganzola, Italy, assignors to Salvarani Industrie S.p.A., Baganzola, Italy
Filed Mar. 16, 1989, Ser. No. 324,543
Claims priority, application Italy, Sep. 23, 1988, 21917/88[U]
Term of patent 14 years
U.S. Cl. D8—315

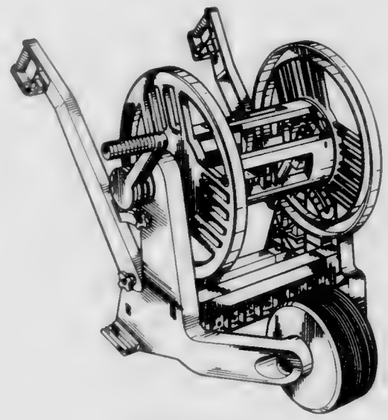




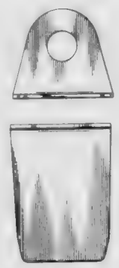
321,122
STARTER LOCK FOR JET OR WATER SKIS
Richard W. Donalies, 1545 Newcastle La., Hoffman Estates, Ill. 60194
Filed Feb. 14, 1989, Ser. No. 310,709
Term of patent 14 years
U.S. Cl. D8—346



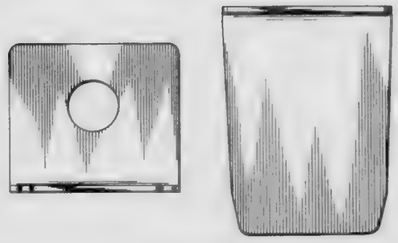
321,123
HOSE REEL CART
Sergio G. Simonetti, Westport, Conn., assignor to Hunter-Melnor, Inc., Memphis, Tenn.
Filed Apr. 12, 1990, Ser. No. 508,916
Term of patent 14 years
U.S. Cl. D8—359



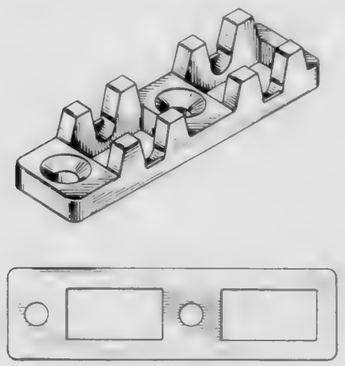
321,124
BRACKET FOR DECORATIVE LIGHTING
Lonnie F. Gary, Lubbock, Tex., assignor to Gary Products Group, Inc., Lubbock, Tex.
Continuation-in-part of Ser. No. 229,563, Aug. 5, 1988, Pat. No. 4,851,977. This application Jun. 9, 1989, Ser. No. 364,190
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—373



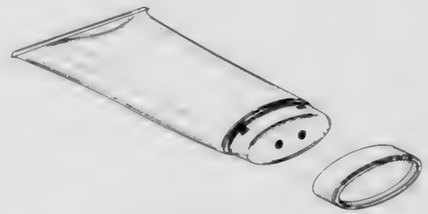
321,125
BRACKET FOR DECORATIVE LIGHTING
Lonnie F. Gary, Lubbock, Tex., assignor to Gary Products Group, Inc., Lubbock, Tex.
Continuation-in-part of Ser. No. 229,563, Aug. 5, 1988, Pat. No. 4,851,977. This application Jun. 9, 1989, Ser. No. 364,189
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—373



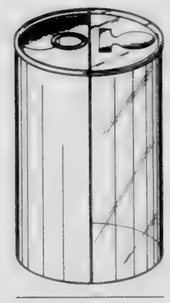
321,126
ROLLER HOUSING FOR A GLIDING WINDOW SASH
Dennis Westphal, Galva, and Jonathan Piles, McPherson, both of Kans., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Nov. 4, 1988, Ser. No. 266,988
Term of patent 14 years
U.S. Cl. D8—380



321,127
COMBINED COLLAPSIBLE TUBE AND CAP THEREFOR
Edward Dombroski, Neptune, N.J., assignor to Peerless Tube Company, Bloomfield, N.J.
Continuation-in-part of Ser. No. 870,334, Jun. 3, 1986, Pat. No. D. 316,221. This application Jan. 8, 1990, Ser. No. 461,796
Term of patent 14 years
U.S. Cl. D9—302



321,128
CAN OR THE LIKE
Alfred C. DeBose, Jr., 11518 Stone Bridge, Houston, Tex. 77064
Filed Feb. 17, 1989, Ser. No. 311,888
Term of patent 14 years
U.S. Cl. D9—341

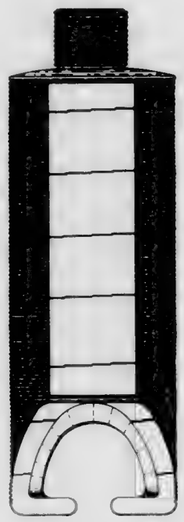


321,129
CONTAINER FOR DISPENSING LIQUID DETERGENT OR SIMILAR ARTICLE
Orlandi Giuseppe, Milan, Italy, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany
Filed Dec. 27, 1988, Ser. No. 290,733
Claims priority, application Italy, Jun. 28, 1988, 21503/88[U]
Term of patent 14 years
U.S. Cl. D9—350



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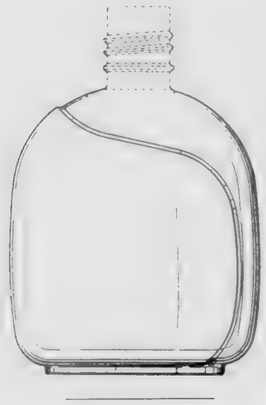
321,130
COMBINED BOTTLE AND CAP
Janis Goberman, New York, N.Y., assignor to Tsumura International Inc.
Filed Aug. 11, 1989, Ser. No. 392,398
Term of patent 14 years
U.S. Cl. D9—370



321,131
BOTTLE
Kay E. Wiseman, Burnham, and Brian E. Kichenside, Bushey Heath, both of England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Dec. 19, 1988, Ser. No. 286,661
Claims priority, application United Kingdom, Jun. 20, 1988, 1051637
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—409



321,132
BOTTLE
Kay E. Wiseman, Burnham, and Brian E. Kichenside, Bushey Heath, both of England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Dec. 19, 1988, Ser. No. 286,667
Claims priority, application United Kingdom, Jun. 20, 1988, 1051634
Term of patent 14 years
U.S. Cl. D9—409



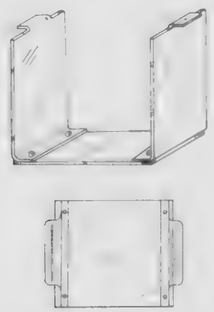
321,133
BOTTLE
Kay E. Wiseman, Burnham, and Brian E. Kichenside, Bushey Heath, both of England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Dec. 19, 1988, Ser. No. 286,672
Claims priority, application United Kingdom, Jun. 20, 1988, 1051638
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—409



321,134
DISPLAY CONTAINER
Jean-Michel Toinet, Epalinges, Switzerland, assignor to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland
Filed Jun. 8, 1989, Ser. No. 363,944
Claims priority, application United Kingdom, Dec. 14, 1988, 1055669; Dec. 14, 1988, 1055670
Term of patent 14 years
U.S. Cl. D9—415



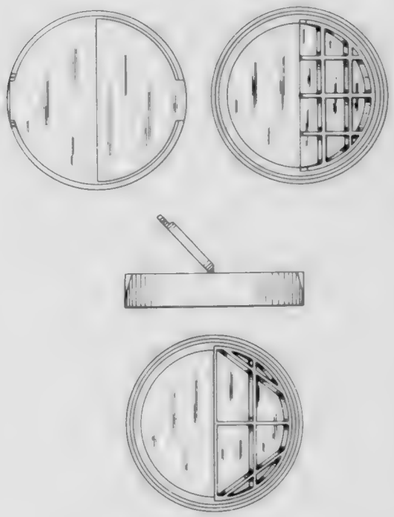
321,135
SUPPORT FOR BAGS
Bert B. Bedell, and Mary E. Bedell, both of 8925 Forest Cliff Dr., Dallas, Tex. 75228
Continuation-in-part of Ser. No. 141,151, Jan. 6, 1988, abandoned. This application Jan. 12, 1989, Ser. No. 297,291
Term of patent 14 years
U.S. Cl. D9—434



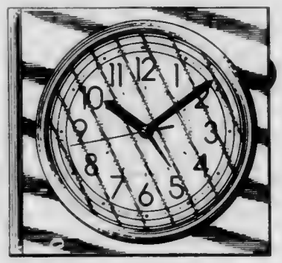
321,136
CONTAINER BOTTOM
Stuart A. York, Tariffville, Conn., assignor to Hoover Universal, Inc., Plymouth, Mich.
Filed Jun. 1, 1989, Ser. No. 359,947
Term of patent 14 years
U.S. Cl. D9—434



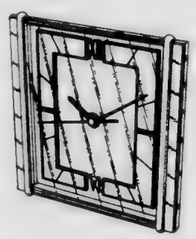
321,137
CONTAINER CLOSURE
Richard W. Hofmann, Chicago, and Robert J. Groya, Norridge, both of Ill., assignors to Magenta Corporation, Hodgkins, Ill.
Filed Nov. 17, 1989, Ser. No. 438,899
Term of patent 14 years
U.S. Cl. D9—447



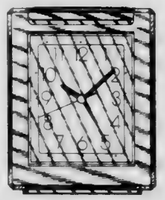
321,138
CLOCK
Masahiro Aikawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 14, 1989, Ser. No. 311,184
Claims priority, application Japan, Nov. 14, 1988, 63-44469
Term of patent 14 years
U.S. Cl. D10—24



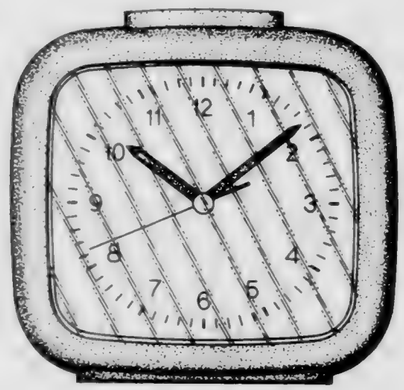
321,139
CLOCK
Masahiro Aikawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 21, 1989, Ser. No. 313,434
Term of patent 14 years
U.S. Cl. D10—24



321,140
CLOCK
Kimio Hirota, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 1, 1989, Ser. No. 305,482
Claims priority, application Japan, Aug. 22, 1988, 63-33093
Term of patent 14 years
U.S. Cl. D10—26



321,141
CLOCK
Masahiro Aikawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 14, 1989, Ser. No. 311,183
Claims priority, application Japan, Nov. 25, 1988, 63-45871
Term of patent 14 years
U.S. Cl. D10—26



321,142
WATCH CASE
Tso C. Fong, Kowloon, Hong Kong, assignor to Pearl Industries Limited, Kowloon, Hong Kong
Filed Jun. 6, 1988, Ser. No. 202,448
Claims priority, application United Kingdom, Dec. 19, 1987, 1047251
Term of patent 14 years
U.S. Cl. D10—32



321,143
WATCH WITH STRAP
Wong Y. Kwun, Kowloon, Hong Kong, assignor to Kingsway Limited, Hong Kong, Hong Kong
Filed May 8, 1989, Ser. No. 352,819
Term of patent 14 years
U.S. Cl. D10—33



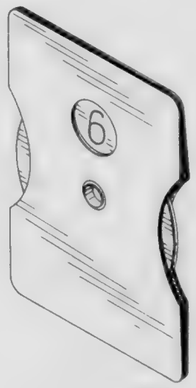
321,144
WRISTWATCH
Francis Besson, La-Chaux-de-Fonds, Switzerland, assignor to Girard-Perregaux, S.A., La-Chaux-de-Fonds, Switzerland
Filed Nov. 2, 1988, Ser. No. 266,141
Claims priority, application World Int. Prop. O., May 4, 1988, DM/010884
Term of patent 14 years
U.S. Cl. D10—39



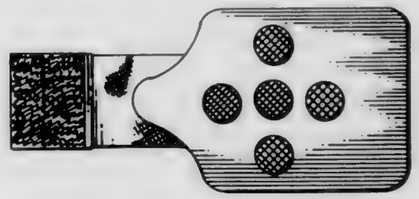
321,145
WRIST WATCH
Takayuki Takahashi, Tachikawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Feb. 15, 1989, Ser. No. 311,192
Claims priority, application Japan, Nov. 29, 1988, 63-46488
Term of patent 14 years
U.S. Cl. D10—39



321,146
EUCHRE COUNTER
Vincent J. Pouget, and Dennis J. Pouget, both of P.O. Box 25, Amherstburg, Ontario, Canada N9V 2Z2 , assignors to Vincent J. Pouget and Dennis J. Pouget, both of Amherstburg, Canada
Filed Jul. 25, 1988, Ser. No. 223,755
Claims priority, application Canada, Mar. 3, 1988, 03038807
Term of patent 14 years
U.S. Cl. D10—46.1



321,147
SAFETY REFLECTOR FOR ARM OR LEG MOUNTING
Tim D. Schubert, 11950 SW. 173 St., Miami, Fla. 33177
Filed Jun. 5, 1989, Ser. No. 361,577
Term of patent 14 years
U.S. Cl. D10—111





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321,148
JEWELRY CHAIN
Stefano Chiaramonti; Piero C. Ferruzzi, and Pierino Maruffi, all of Arezzo, Italy, assignors to S.I.L.O.-Societa Italiana Lavorazione Oro S.p.A., Arezzo, Italy
Filed Mar. 9, 1990, Ser. No. 491,607
Claims priority, application Int'l Pat. Institute, Sep. 26, 1989, DM/014648
Term of patent 14 years
U.S. Cl. D11—12



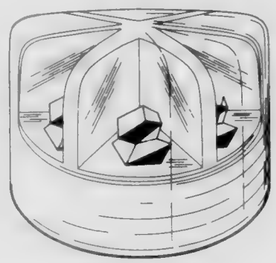
321,149
EARRING
Christine Royer, New York, N.Y., assignor to Halston Enterprises, Inc., New York, N.Y.
Filed Jun. 1, 1989, Ser. No. 360,164
Term of patent 14 years
U.S. Cl. D11—42



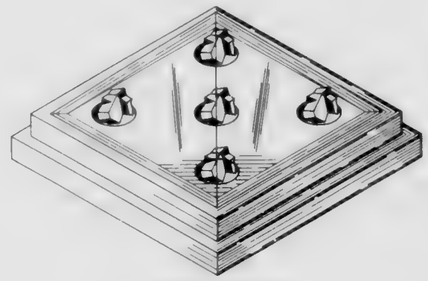
321,150
EARRING
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Filed Nov. 13, 1989, Ser. No. 436,016
Claims priority, application Int'l Pat. Institute, May 23, 1989, DM/013.637
Term of patent 14 years
U.S. Cl. D11—45



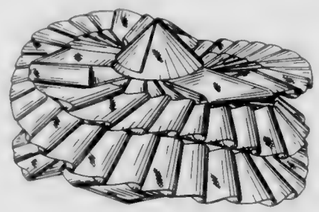
321,151
TABLETOP NOVELTY
Ursula L. Campbell, 450 Chadbourne Ave., Millbrae, Calif. 94030
Filed Mar. 20, 1989, Ser. No. 326,233
Term of patent 14 years
U.S. Cl. D11—131



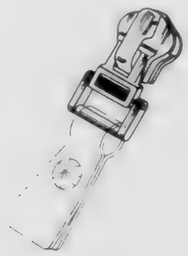
321,152
TABLETOP NOVELTY
Ursula L. Campbell, 450 Chadbourne Ave., Millbrae, Calif. 94030
Filed Mar. 20, 1989, Ser. No. 326,235
Term of patent 14 years
U.S. Cl. D11—131



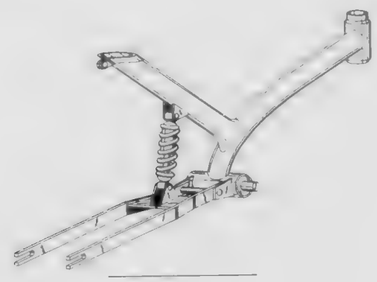
321,153
SPIRAL BOW
Kui-Eng Cheng, 5 Ross Street, Toronto, Ontario, Canada M5T 1Z8
Filed Jul. 19, 1988, Ser. No. 221,444
Term of patent 14 years
U.S. Cl. D11—184



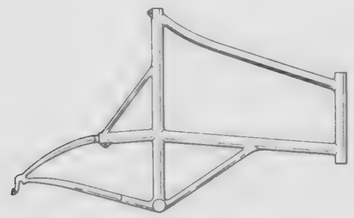
321,154
SLIDER FOR SLIDE FASTENER
Susumu Komuro, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Sep. 21, 1989, Ser. No. 410,508
Term of patent 14 years
U.S. Cl. D11—221



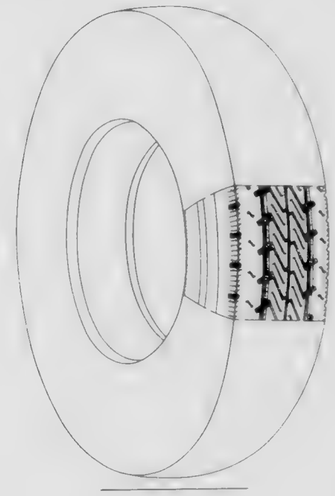
321,155
BICYCLE FRAME
Hing Y. Tan, 826 W. Manchester Blvd., Inglewood, Calif. 90301
Filed May 8, 1989, Ser. No. 349,126
Term of patent 14 years
U.S. Cl. D12—111



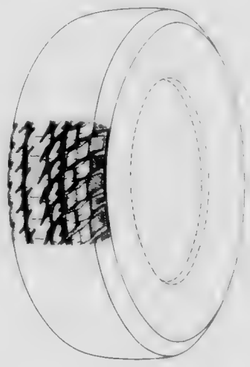
321,156
BICYCLE FRAME
Michael R. S. Browning, 7, Belgrave Court, Blackwater, Camberley, Surrey, GU17 9JE, England
Filed Oct. 17, 1989, Ser. No. 422,431
Claims priority, application United Kingdom, Sep. 29, 1989, 2001363
Term of patent 14 years
U.S. Cl. D12—111



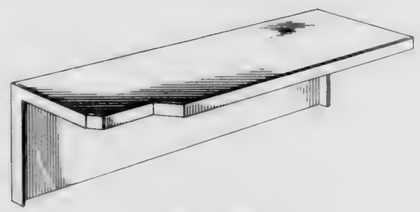
321,157
TIRE
Roger C. Cottrell, and Michael I. Wischhusen, both of Greenville, S.C., assignors to Michelin Recherche et Technique, Switzerland
Continuation-in-part of Ser. No. 889,390, Jul. 25, 1986, Pat. No. D. 300,017. This application Dec. 1, 1988, Ser. No. 278,169
The portion of the term of this patent subsequent to Feb. 28, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—147



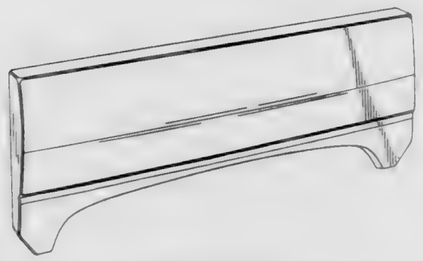
321,158
TIRE TREAD AND BUTTRESS
Darrell E. Covert, Uniontown; Paul B. Maxwell, Akron; Frederick W. Miller, Akron; Richard L. Galante, Akron; Michael A. Kolowski, Mogadore; William M. Hopkins, Hudson, and Anthony J. Scarpitti, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 15, 1989, Ser. No. 436,867
Term of patent 14 years
U.S. Cl. D12—147



321,159
VEHICLE SECURITY ENCLOSURE
Bradley S. Schlachter, P.O. Box 12168, Dallas, Tex. 75225
Filed Nov. 6, 1989, Ser. No. 432,666
Term of patent 14 years
U.S. Cl. D12—156



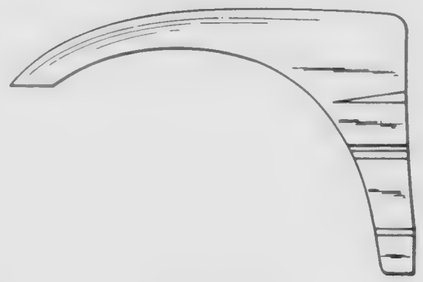
321,160
VEHICLE RAIN SKIRT
Richard J. Kingsley, P.O. Box 4214, Vancouver, Wash. 98662
Filed Oct. 3, 1988, Ser. No. 251,869
Term of patent 14 years
U.S. Cl. D12—184



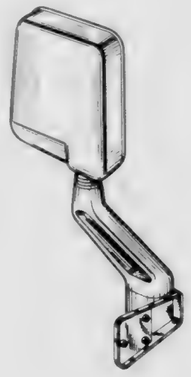
321,161
FENDER FOR AUTOMOBILE
Toshiro Ueno, Fujisawa, Japan, assignor to Isuzu Motors Limited, Japan
Filed Jun. 6, 1989, Ser. No. 361,961
Claims priority, application Japan, Dec. 15, 1988, 63-48645
Term of patent 14 years
U.S. Cl. D12—184



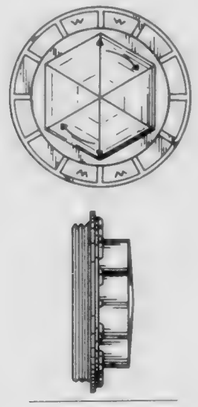
321,162
FENDER FOR AUTOMOBILE
Toshiro Ueno, Fujisawa, Japan, assignor to Isuzu Motors Limited, Japan
Filed Jun. 6, 1989, Ser. No. 361,962
Claims priority, application Japan, Dec. 15, 1988, 63-48647
Term of patent 14 years
U.S. Cl. D12—184



321,163
VEHICLE EXTERNAL REAR VIEW MIRROR
Antonio F. D. E. Santo, Sao Paulo, Brazil, assignor to Metagak Industria E Comercio LtdA., Diadema, Brazil
Filed Jul. 10, 1989, Ser. No. 377,708
Term of patent 14 years
U.S. Cl. D12—187



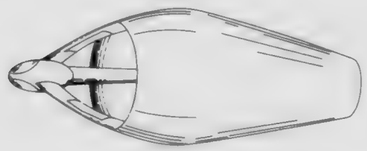
321,164
HUBCAP CENTER PIECE FOR FOUR-WHEEL DRIVE VEHICLES
James L. Gibson, HC-60, Box 1355, Oldtown, Ky. 41163
Filed Jun. 5, 1989, Ser. No. 361,584
Term of patent 14 years
U.S. Cl. D12—213



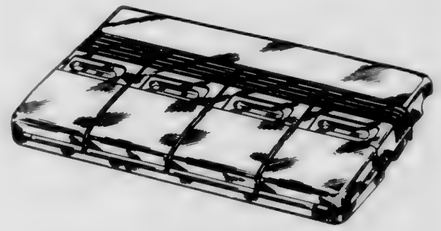
321,165
BOAT PROPELLER
George J. Habe, 919 Milan Ave., Ravenna, Nebr. 68869
Filed Sep. 9, 1988, Ser. No. 242,080
Term of patent 14 years
U.S. Cl. D12—214



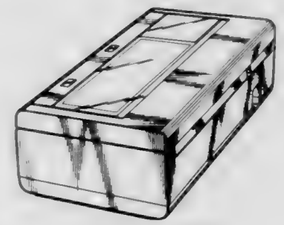
321,166
AIRSHIP OR THE LIKE
Brian C. Motts, 42 Meadowgrass, Irvine, Calif. 92714
Filed Jul. 25, 1989, Ser. No. 385,271
Term of patent 14 years
U.S. Cl. D12—339



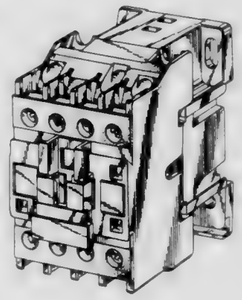
321,167
BATTERY CHARGER
Kuniyki Shimoo, Sumoto, and Kazuo Takada, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jun. 6, 1989, Ser. No. 361,920
Claims priority, application Japan, Dec. 6, 1988, 63-47532
Term of patent 14 years
U.S. Cl. D13—107



321,168
BATTERY CHARGER
Satoru Usami, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 7, 1989, Ser. No. 365,064
Claims priority, application Japan, Dec. 9, 1988, 63-48187
Term of patent 14 years
U.S. Cl. D13—107

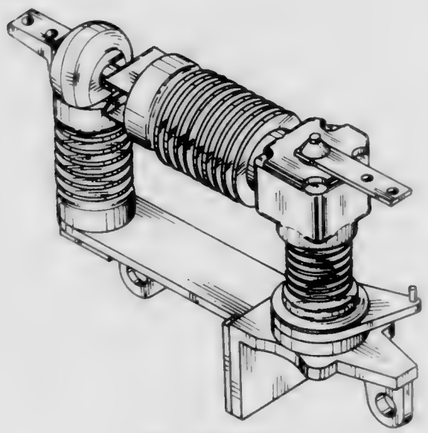


321,169
CONTACTOR
Christian Bouteiller, Rueil Malmaison, France, assignor to La Telemecanique Electrique, France
Filed Nov. 17, 1988, Ser. No. 272,656
Claims priority, application France, May 20, 1988, 88 3320
Term of patent 14 years
U.S. Cl. D13—158

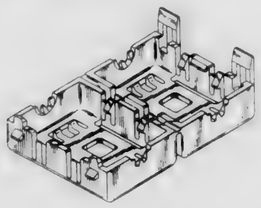


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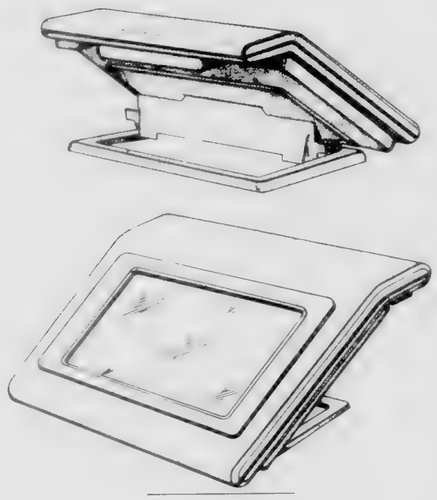
321,170
DESIGN FOR AN INTERRUPTER SWITCH WITH CURRENT-SENSING FEATURE
Joel A. Ramos; Bruce A. Biller, both of Chicago; Henry W. Scherer, Prospect, and Roy T. Swanson, Riverside, all of Ill., assignors to S&C Electric Company, Chicago, Ill.
Filed Mar. 30, 1989, Ser. No. 331,218
The portion of the term of this patent subsequent to Jun. 11, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—160



321,171
ABSORBER OF ELECTRICAL NOISE
Yoshihito Nakano, Kasugai, Japan, assignor to Kitagawa Industries Co., Ltd., Japan
Division of Ser. No. 205,578, Jun. 6, 1988, Pat. No. 4,885,559, which is a continuation of Ser. No. 25,059, Mar. 12, 1987, abandoned. This application Jul. 27, 1989, Ser. No. 385,475
Term of patent 14 years
U.S. Cl. D13—199



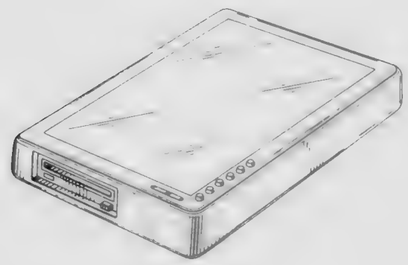
321,172
TOUCH ENTRY TERMINAL
Harry H. Moore, IV, Lincroft; Sean E. O'Leary, and Stephen R. Palmer, both of Toms River, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 16, 1989, Ser. No. 357,431
Term of patent 14 years
U.S. Cl. D14—100



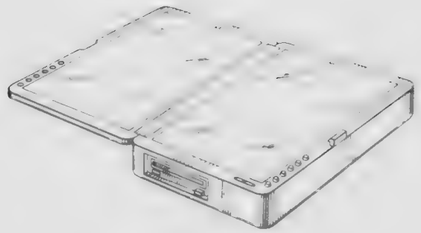
321,173
PERSONAL COMPUTER HOUSING
Terry Lo, 1/F, 3 Luen Cheong Street, Fanlin, N.T., Hong Kong
Filed Oct. 6, 1989, Ser. No. 418,350
Claims priority, application United Kingdom, Apr. 10, 1989, 1,058553
Term of patent 14 years
U.S. Cl. D14—100



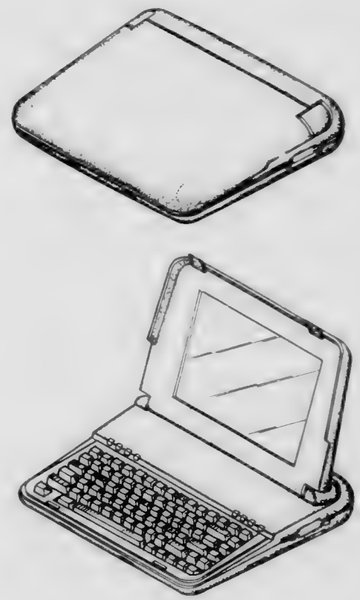
321,174
ELECTRONIC INSTRUMENT FOR READING AND DISPLAYING FROM MAGNETIC AND OPTICAL RECORDING MEDIUMS SUCH AS FLOPPY DISKS OR THE LIKE
Haruki Tsuchiya, Chiba, Japan, assignor to Hiuka Sangyo Kabushiki Kaisha, Osaka and Kabushiki Kaisha System Gijyutsu Kenkyuusho, Tokyo, both of, Japan
Filed Dec. 5, 1989, Ser. No. 446,407
Claims priority, application Japan, Jun. 9, 1989, 1-21541
Term of patent 14 years
U.S. Cl. D14—100



321,175
ELECTRONIC INSTRUMENT FOR READING AND DISPLAYING FROM MAGNETIC AND OPTICAL RECORDING MEDIUMS SUCH AS FLOPPY DISKS OR THE LIKE
Haruki Tsuchiya, Chiba, Japan, assignor to Huika Sangyo Kabushiki Kaisha, Osaka and Kabushiki Kaisha System Gijyutsu Kenkyuusho, Tokyo, both of, Japan
Filed Dec. 5, 1989, Ser. No. 446,406
Claims priority, application Japan, Jun. 9, 1989, 1-21542
Term of patent 14 years
U.S. Cl. D14—100



321,175
PORTABLE COMPUTER
Dick Ma, Room 813, 8th Fl., Chia Hsin Building 2, No. 96, Sec. 2, Chung Shan N. Rd., Taipei, Taiwan
Filed Jul. 21, 1989, Ser. No. 382,961
Term of patent 14 years
U.S. Cl. D14—106

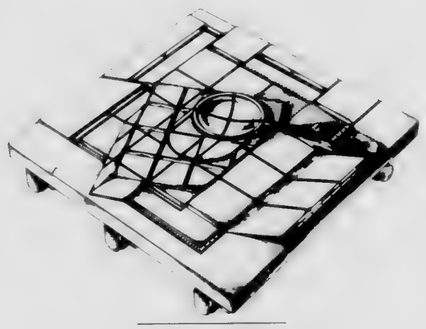


321,177
PORTABLE COMPUTER
Tetsuya Imamura, and Yashio Kishi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 28, 1989, Ser. No. 400,235
Claims priority, application Japan, Apr. 6, 1989, 1-12681
Term of patent 14 years
U.S. Cl. D14—106

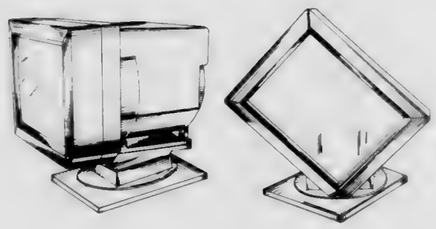


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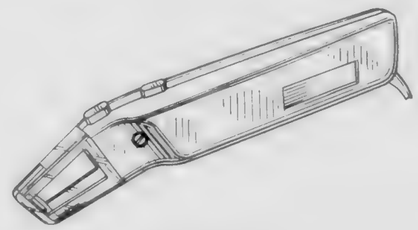
321,178
DATA COMMUNICATIONS PERIPHERAL
Frank Bowker, Lawrenceville; Samuel Harris, Norcross, both of Ga.; David Gresham, Chicago, Ill., and Mark Hicks, Norcross, Ga., assignors to Hayes Microcmputer Products, Inc., Norcross, Ga.
Filed Nov. 6, 1989, Ser. No. 431,974
The portion of the term of this patent subsequent to Jul. 30, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—107



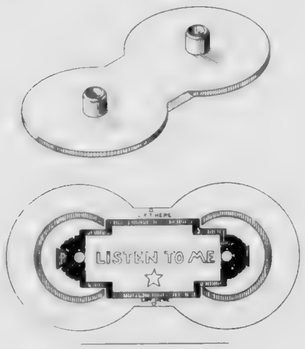
321,179
PIVOTABLE DISPLAY MONITOR
Terrell Oyama, Los Altos, Calif., assignor to Radius, Inc., San Jose, Calif.
Filed Dec. 1, 1989, Ser. No. 444,373
Term of patent 14 years
U.S. Cl. D14—113



321,180
HAND HELD SCANNER
Giuseppe R. Conversano, and David G. Mateer, both of Boulder, Colo., assignors to Soricon Corporation, Boulder, Colo.
Filed Nov. 16, 1989, Ser. No. 438,155
The portion of the term of this patent subsequent to Oct. 22, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—116



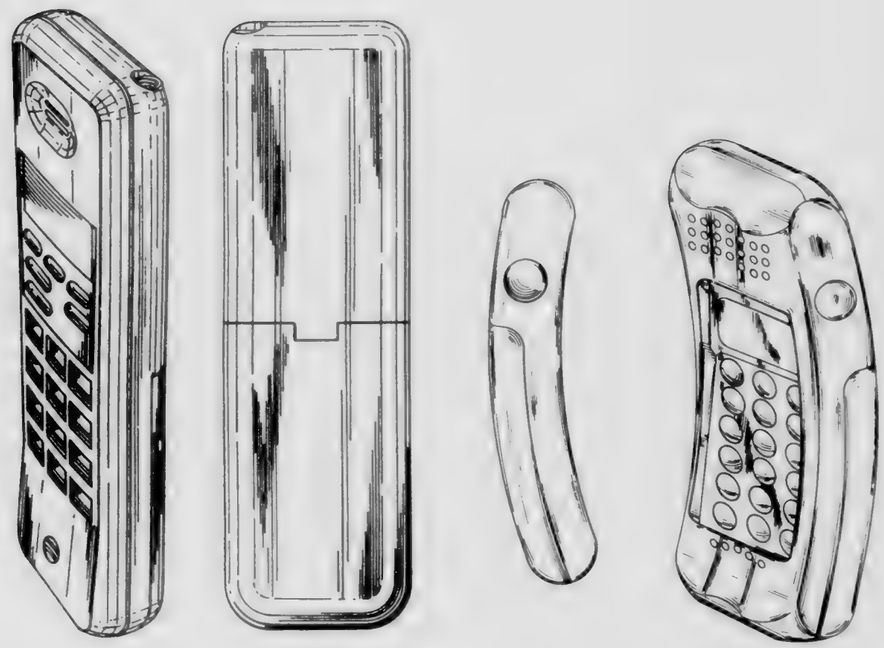
321,181
CASSETTE MARKER
Daniel Arth, 100 Werkley Rd., Tonawanda, N.Y. 14150
Filed Nov. 13, 1989, Ser. No. 434,169
Term of patent 14 years
U.S. Cl. D14—120



321,182
WEB MEDIA DISPENSER
Jerry T. Losasso, Englewood, and Herbert F. Sanford, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Sep. 20, 1989, Ser. No. 410,383
Term of patent 14 years
U.S. Cl. D14—121

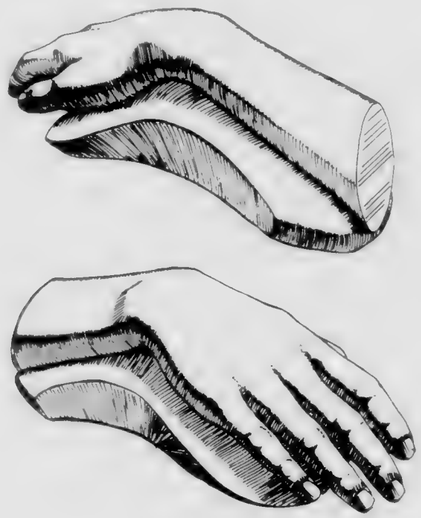
321,183
PORTABLE HANDSET TELEPHONE
David H. Powell, and Richard Seymour, both of London, England, assignors to Technophone Limited, Surrey, England
Filed Jan. 23, 1990, Ser. No. 468,959
Claims priority, application United Kingdom, Aug. 11, 1989, 2000306
Term of patent 14 years
U.S. Cl. D14—138

321,184
PORTABLE CELLULAR HANDSET TELEPHONE
Tony Colida, 2672 Bedford Rd., Montreal, Quebec, Canada H3S-1G1
Filed Apr. 10, 1990, Ser. No. 507,185
Term of patent 14 years
U.S. Cl. D14—138



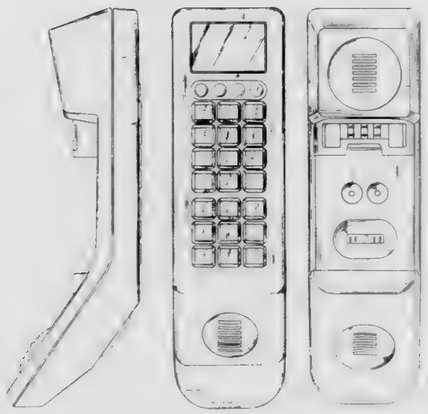
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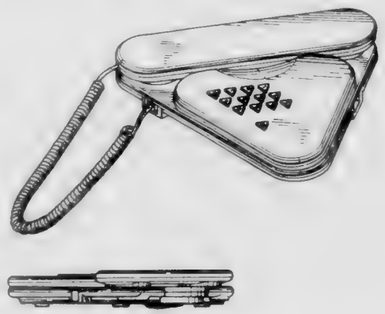
321,185
CORDLESS HANDSET TELEPHONE OR SIMILAR ARTICLE
Cuyler Gee, San Francisco; Thomas H. Schiller, Los Altos, and Henry G. Schiller, Cupertino, all of Calif., assignors to Rose Communications, Inc., Santa Clara, Calif.
Filed Aug. 17, 1990, Ser. No. 569,161
Term of patent 14 years
U.S. Cl. D14—138



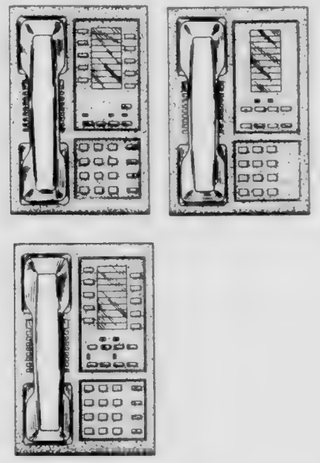
321,186
TELEPHONE SET
Edward Blinn, and Diane Hughes, both of 428 S. Washington Ave., Moorestown, N.J. 08057
Filed Jun. 20, 1990, Ser. No. 541,292
Term of patent 14 years
U.S. Cl. D14—143

321,187
TELEPHONE SET OR SIMILAR ARTICLE
Tsai-Ten Yang, No. 23, Sec. 1, Chung-Hwa W. Rd., Tainan City, Taiwan
Filed Apr. 23, 1991, Ser. No. 690,128
Term of patent 14 years
U.S. Cl. D14—150

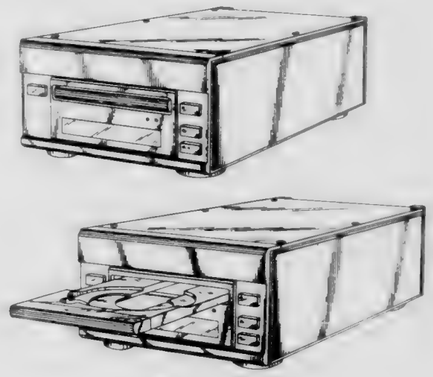




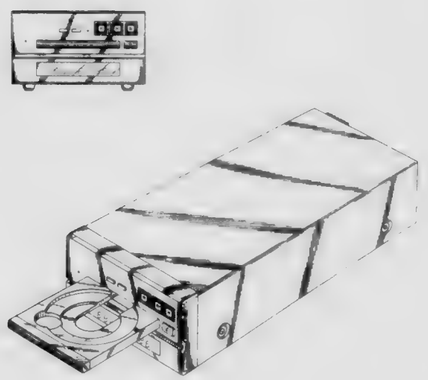
321,188
TELEPHONE SET
Robert A. Gordon, Scottsdale, Ariz., assignor to Vodavi Communications Systems, Inc., Scottsdale, Ariz.
Continuation-in-part of Ser. No. 219,702, Jul. 14, 1988, Pat. No. Des. 303,526. This application Jun. 26, 1989, Ser. No. 371,424
Term of patent 14 years
U.S. Cl. D14—151



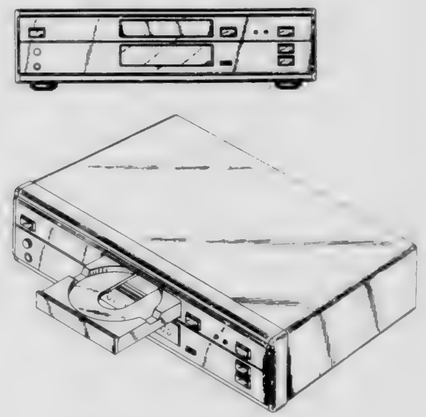
321,190
DIGITAL AUDIO DISC PLAYER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira; Minoru Sube, Hachioji, and Katsuhiro Takashima, Yokohama, all of Japan, assignors to Teac Corporation, Japan
Filed Jul. 25, 1989, Ser. No. 385,264
Claims priority, application Japan, Sep. 28, 1988, 63-38019
Term of patent 14 years
U.S. Cl. D14—156



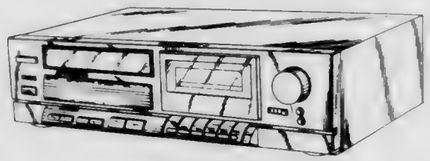
321,189
DIGITAL AUDIO DISC PLAYER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira, and Minoru Sube, Hachioji, all of Japan, assignors to Teac Corporation, Japan
Filed Jul. 18, 1989, Ser. No. 381,162
Term of patent 14 years
U.S. Cl. D14—156



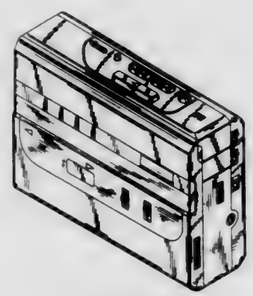
321,191
DIGITAL AUDIO DISC PLAYER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira; Minoru Sube, Hachioji, and Hiroyuki Watanabe, Hanno, all of Japan, assignors to Teac Corporation, Japan
Filed Jul. 31, 1989, Ser. No. 387,633
Claims priority, application Japan, Feb. 8, 1989, 1-4472
Term of patent 14 years
U.S. Cl. D14—156



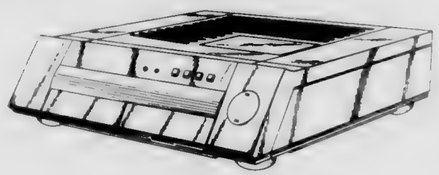
321,192
COMBINED DIGITAL AUDO DISC PLAYER AND TAPE RECORDER
Masafumi Ito, Tokyo; Minoru Sube, Hachioji; Haruki Takita, Tokyo, and Hiroyuki Watanabe, Hanno, all of Japan, assignors to Teac Corporation, Japan
Filed Nov. 29, 1989, Ser. No. 442,934
Term of patent 14 years
U.S. Cl. D14—162



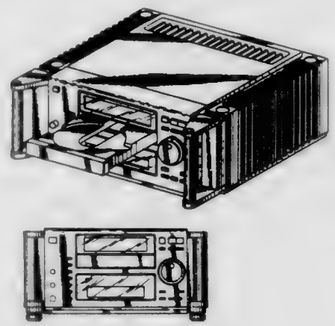
321,193
COMBINED TAPE PLAYER AND RADIO TUNER
Segabe Takashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 30, 1989, Ser. No. 304,332
Claims priority, application Japan, Jul. 28, 1988, 63-30333
Term of patent 14 years
U.S. Cl. D14—163



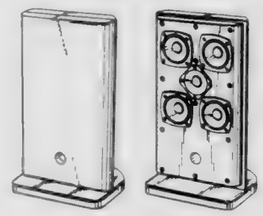
321,194
COMBINED DIGITAL AUDIO DISC PLAYER, TUNER AND TAPE RECORDER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira; Minoru Sube, Hachioji, and Yuji Sato, Choufu, all of Japan, assignors to Teac Corporation, Japan
Filed Jan. 26, 1989, Ser. No. 302,722
Claims priority, application Japan, Jul. 29, 1988, 63-30456
Term of patent 14 years
U.S. Cl. D14—168



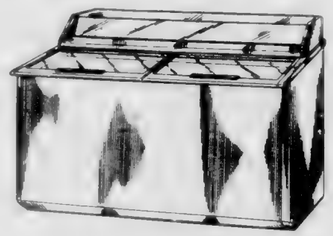
321,195
COMBINED AMPLIFIER AND DIGITAL AUDIO DISC PLAYER
Ryozo Hayashi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 27, 1989, Ser. No. 428,753
Term of patent 14 years
U.S. Cl. D14—168



321,196
LOUDSPEAKER
Kentaro Yamamoto, Tokyo, Japan, assignor to Yamaha Corporation, Japan
Filed Aug. 31, 1989, Ser. No. 400,977
Claims priority, application Japan, Mar. 8, 1989, 1-8398
Term of patent 14 years
U.S. Cl. D14—214



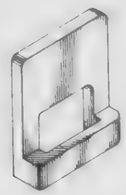
321,197
FREEZER SHOWCASE
Masaru Sekine, and Hideo Uehara, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Feb. 27, 1989, Ser. No. 316,311
Claims priority, application Japan, Mar. 18, 1988, 63-11352
Term of patent 14 years
U.S. Cl. D15—83



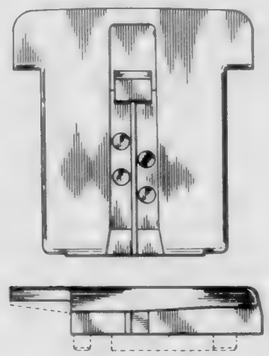
321,198
SPECTACLE FRONT
Alan W. Brown, 4 Hartley Cir., Apt. 824, Owing Mills, Md. 21117
Filed Sep. 8, 1988, Ser. No. 242,261
Term of patent 14 years
U.S. Cl. D16—102



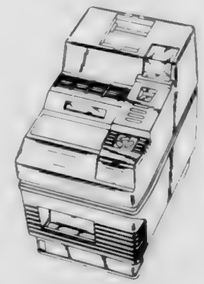
321,199
EYEGLASS SUPPORT
Steve R. Souisa, 9744 Lubao St., and Shawn P. Lane, 10427 Variel St., both of Chatsworth, Calif. 91311
Filed Sep. 14, 1989, Ser. No. 407,460
Term of patent 14 years
U.S. Cl. D16—129



321,200
ACCESSORY SHOE FOR A CAMERA
Tetsuro Ohya, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 22, 1988, Ser. No. 247,923
Claims priority, application Japan, Mar. 26, 1988, 63-12273
Term of patent 14 years
U.S. Cl. D16—219



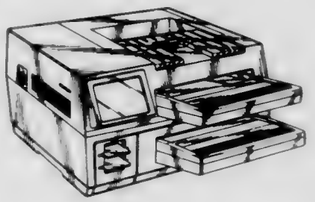
321,201
PHOTOGRAPHIC FILM AND PRINT DEVELOPER
Francois Lecomte, La Tronche, France, assignor to Kis Photo Industrie, Grenoble, France
Filed Oct. 18, 1988, Ser. No. 259,098
Claims priority, application World Int. Prop. O., Jul. 18, 1988, DM/011444
Term of patent 14 years
U.S. Cl. D16—246



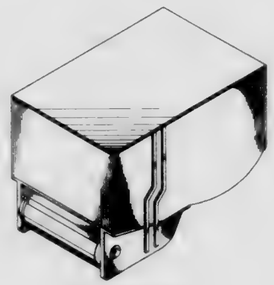
321,202
ELECTRONIC TYPEWRITER
Seiichi Omino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1990, Ser. No. 470,527
Claims priority, application Japan, Jul. 27, 1989, 1-28019
Term of patent 14 years
U.S. Cl. D18—1



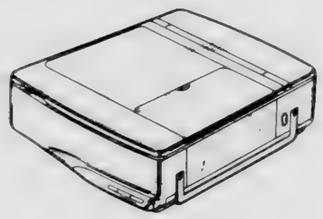
321,203
PRINTER
Koki Sugawara, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1988, Ser. No. 292,014
Claims priority, application Japan, Jun. 30, 1988, 63-25780
Term of patent 14 years
U.S. Cl. D18—13



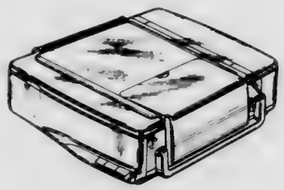
321,204
REPLACEABLE DEVELOPER UNIT
William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 21, 1989, Ser. No. 454,494
Term of patent 14 years
U.S. Cl. D18—22



321,205
COPYING MACHINE
Takeshi Komada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 17, 1989, Ser. No. 338,756
Claims priority, application Japan, Oct. 17, 1988, 63-40833
The portion of the term of this patent subsequent to Oct. 22, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—36



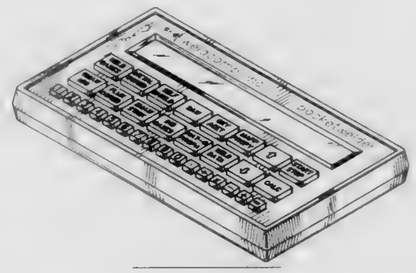
321,206
COPYING MACHINE
Takeshi Komada, Yokohama, and Yosuke Osawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1989, Ser. No. 418,468
Claims priority, application Japan, Apr. 13, 1989, 1-13768
The portion of the term of this patent subsequent to Oct. 22, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—36



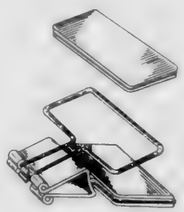
321,207
RETRACTABLE MARKER PEN
Richard Granoff, Sandown, N.H., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Nov. 30, 1988, Ser. No. 278,071
Term of patent 14 years
U.S. Cl. D19—49



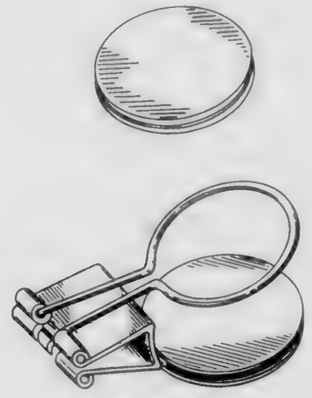
321,208
PORTABLE INSTRUCTIONAL DISPLAY DEVICE FOR WELDING OR THE LIKE
Arthur R. Bergstresser, Sr., 157 Edgewood Dr., Berea, Ohio 44017, and Edward Craig, 338 Siena Court, Oshawa, Ontario, Canada L1J 6V5 , assignors to Arthur R. Bergstresser, Sr., Berea, Ohio and Edward Craig, Oshawa, Canada
Filed Oct. 13, 1988, Ser. No. 257,419
Term of patent 14 years
U.S. Cl. D19—60



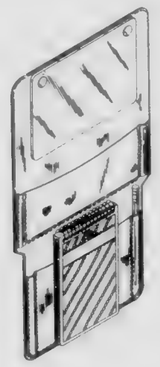
321,209
BINDER CLIP
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Industrial Co., Tokyo, Japan
Filed Jun. 4, 1987, Ser. No. 57,869
Claims priority, application Japan, Dec. 8, 1986, 61-48515
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—65



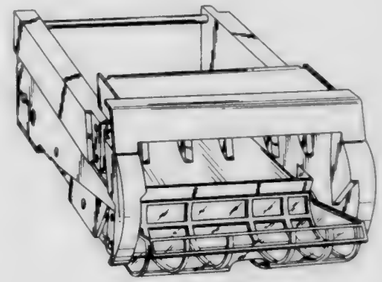
321,210
BINDER CLIP
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Industrial Co., Tokyo, Japan
Filed Jun. 4, 1987, Ser. No. 57,870
Claims priority, application Japan, Dec. 8, 1986, 61-48514
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—65



321,211
COMBINED NOTE PAD, WRITING INSTRUMENT AND MAGNETIC HOLDER THEREFOR
Marc L. Moor, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Nov. 25, 1988, Ser. No. 276,511
Term of patent 14 years
U.S. Cl. D19—78



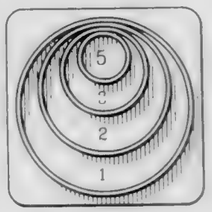
321,212
MAGAZINE FOR VENDING MACHINE
Leif A. Unruh, Malmö , Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Nov. 18, 1987, Ser. No. 122,263
Claims priority, application Sweden, May 19, 1987, 87-1163
Term of patent 14 years
U.S. Cl. D20—8



321,213
DECAL FOR STATIONERY
David A. Parker, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.
Filed Feb. 5, 1990, Ser. No. 475,482
Term of patent 14 years
U.S. Cl. D20—11

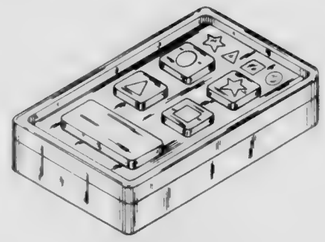


321,214
CARD TOSSING GAME
Dennis E. Olson, and Sharon L. Olson, both of 9942 Liggett St., Bellflower, Calif. 90706
Filed Aug. 16, 1989, Ser. No. 394,507
Term of patent 14 years
U.S. Cl. D21—5

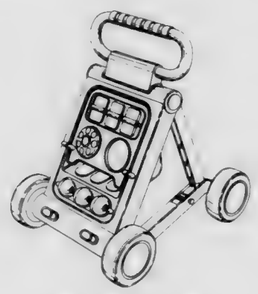


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321,215
ELECTRONIC TOY
Neal B. Shamis, Northbrook, Ill., assignor to Stork Patrol, Inc., Northbrook, Ill.
Filed Jun. 28, 1989, Ser. No. 372,947
Term of patent 14 years
U.S. Cl. D21—48



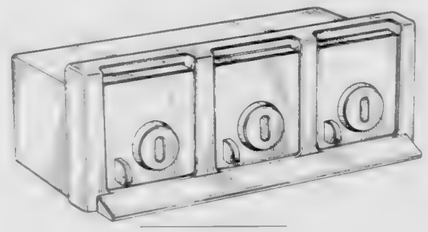
321,216
WHEELED ACTIVITY TOY
John A. Pape, Hitchin; David M. Raffo, Chester, and Harry S. Thomson, Richmond, all of England, assignors to Hestair Kiddicraft Limited, Bristol, England
Filed May 19, 1989, Ser. No. 354,693
Claims priority, application United Kingdom, Nov. 22, 1988, 1055140
Term of patent 14 years
U.S. Cl. D21—59



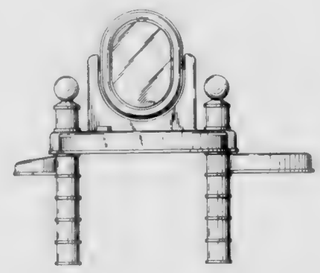
321,217
STUFFED TOY HORSE
Sharon Utley, 7249 Walnut Ave., Orangevale, Calif. 95662
Filed Jan. 12, 1989, Ser. No. 296,663
Term of patent 14 years
U.S. Cl. D21—75



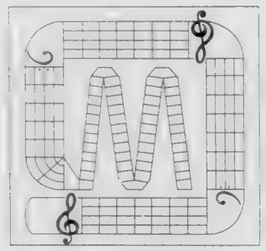
321,218
TOY GARAGE
Patrick Rylands, 76a Belsize Park Gardens, London, NW3 4NG, England
Filed Jun. 21, 1989, Ser. No. 369,287
Claims priority, application Switzerland, Dec. 20, 1988, DM-012518
Term of patent 14 years
U.S. Cl. D21—118



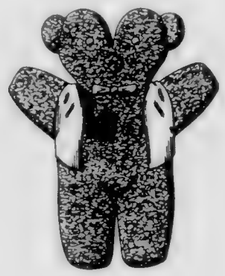
321,219
TOY MAKE-UP TABLE
Alain Monneret, Voiteur, France, assignor to Jouets Monneret, Lons Le Saunier, France
Filed Jul. 21, 1989, Ser. No. 382,838
Term of patent 14 years
U.S. Cl. D21—121



321,220
GAME BOARD
Keith Lang, 142 Bridge Street, Muswellbrook, New South Wales 2333, Australia
Filed Aug. 17, 1989, Ser. No. 394,985
Term of patent 14 years
U.S. Cl. D21—25



321,221
STUFFED BEAR SHAPE TOY WITH HEART SHAPE HEAD
Leona A. Harp, 904 E. Martin Luther King blvd., Los Angeles, Calif. 90011
Filed Jul. 5, 1989, Ser. No. 375,623
Term of patent 14 years
U.S. Cl. D21—159



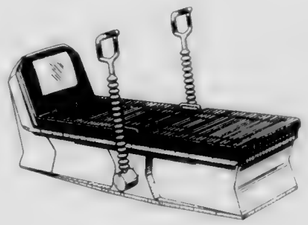
321,222
STUFFED TOY ANIMAL FIGURE
June Q. Bryant, 1425 Kincaid Rd., Marietta, Ga. 30066
Filed May 18, 1989, Ser. No. 353,456
Term of patent 14 years
U.S. Cl. D21—160



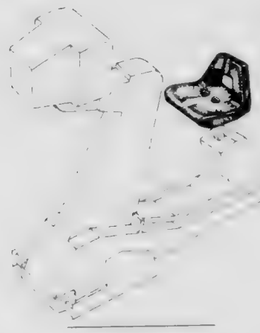
321,223
PUZZLE PIECE STUFFED TOY
Ladislao D. Ortiz, 11618 Oxnard St., North Hollywood, Calif. 91606
Filed Nov. 24, 1989, Ser. No. 440,737
Term of patent 14 years
U.S. Cl. D21—166



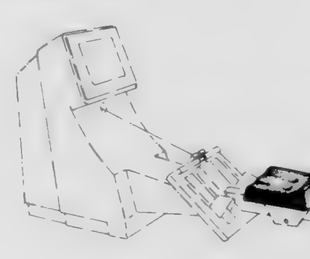
321,224
PHYSICAL EXERCISER
Friedrich Wolff, Störkingasse 38, CH-4125 Riehen/Basel, Switzerland
Filed Dec. 23, 1988, Ser. No. 290,085
Term of patent 14 years
U.S. Cl. D21—198



321,225
SEAT FOR AN UPPER BODY EXERCISE MACHINE
Howard J. Solow, Nesconset; Andrew B. Glass, Dix Hills, and David W. Snow, Holbrook, all of N.Y., assignors to Lumex, Inc., Bay Shore, N.Y.
Filed Jun. 5, 1989, Ser. No. 361,095
Term of patent 14 years
U.S. Cl. D21—191

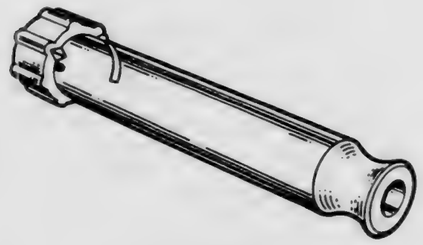


321,226
SEAT FOR A ROWING EXERCISE MACHINE
Howard J. Solow, Nesconset; Andrew B. Glass, Dix Hills, and George M. Sterlacci, Bohemia, all of N.Y., assignors to Lumex, Inc., Bay Shore, N.Y.
Filed Jun. 5, 1989, Ser. No. 361,099
Term of patent 14 years
U.S. Cl. D21—191

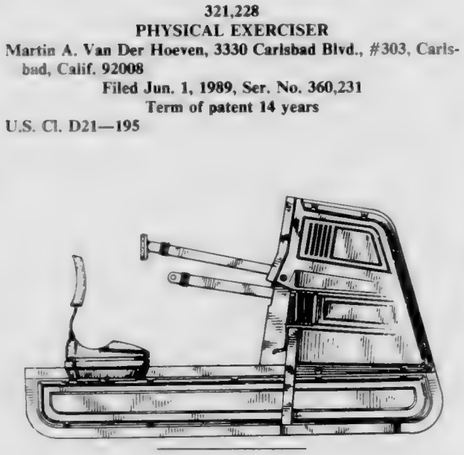


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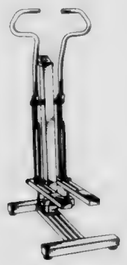
321,227
LUNG EXERCISER
Erik Norell, Vävaregatan 5 B, S-531 34 Lidköping, Sweden
Filed Jun. 8, 1989, Ser. No. 363,221
Claims priority, application Sweden, Dec. 9, 1988, 88-2856
Term of patent 14 years
U.S. Cl. D21—191



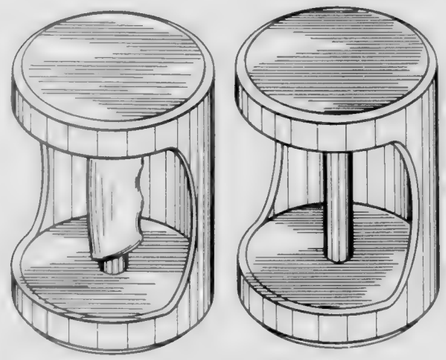
321,228
PHYSICAL EXERCISER
Martin A. Van Der Hoeven, 3330 Carlsbad Blvd., #303, Carlsbad, Calif. 92008
Filed Jun. 1, 1989, Ser. No. 360,231
Term of patent 14 years
U.S. Cl. D21—195



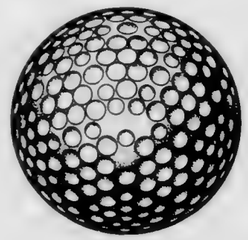
321,229
FULL BODY EXERCISE CLIMBER
Cole J. Dalton, Seattle; David J. Littrell, and Timothy O. Armstrong, both of Bellevue, all of Wash., assignors to Precor Incorporated, Bothell, Wash.
Filed Dec. 6, 1989, Ser. No. 443,426
Term of patent 14 years
U.S. Cl. D21—195



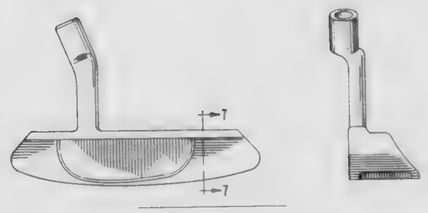
321,230
DUMBBELL
John J. Leonesio, 6750 Kepler Rd., Clinton, Ohio 44216
Filed Jun. 28, 1989, Ser. No. 372,521
Term of patent 14 years
U.S. Cl. D21—197



321,231
GOLF BALL
William Gobush, No. Dartmouth, and Diane Pelletier, Fairhaven, all of Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Sep. 23, 1987, Ser. No. 100,072
The portion of the term of this patent subsequent to Oct. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—205



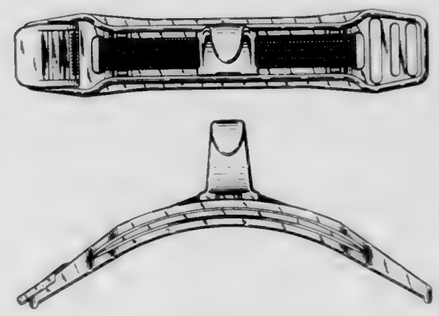
321,232
PUTTER GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Mar. 2, 1989, Ser. No. 317,805
Term of patent 14 years
U.S. Cl. D21—217



321,233
GOLF CLUB GRIP
Frank Fenton, South Hadley, Mass., assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Apr. 10, 1989, Ser. No. 335,451
Term of patent 14 years
U.S. Cl. D21—222



321,234
SPREADER BAR FOR A WIND SURFING HARNESS
Gerhard Fildan, Dr.Körner-Str. 64, A-2521 Trumau NÖ , Austria
Filed Feb. 24, 1989, Ser. No. 315,694
Term of patent 14 years
U.S. Cl. D21—230



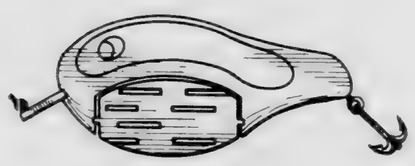
321,235
CONTAINER FOR REPAIR DIVOTS
Howard E. Weber, P.O. Box 68, Morning Sun, Iowa 52640
Filed Jan. 17, 1989, Ser. No. 297,541
Term of patent 14 years
U.S. Cl. D21—234



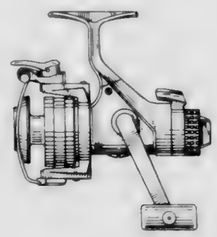
321,236
TEE HOLDER
Raymond Brodeur, Montreal, Canada, assignor to Busrel Inc., Montréal, Canada
Filed Nov. 29, 1989, Ser. No. 442,686
Claims priority, application Canada, Aug. 9, 1989, 09-08-89-10
Term of patent 14 years
U.S. Cl. D21—234



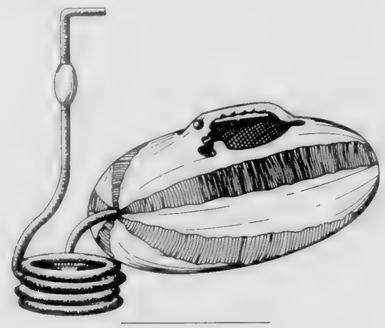
321,237
HOLLOW FISHING LURE
Michael A. Briscoe, P.O. Box 5208, Burlington, Vt. 05402
Filed Mar. 10, 1989, Ser. No. 321,322
Term of patent 14 years
U.S. Cl. D22—133



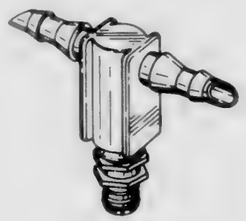
321,238
SPINNING FISHING REEL
Richard J. Robbins, Derby, Kans., and Richard J. Feehan, Pawnee, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Jan. 27, 1989, Ser. No. 302,737
Term of patent 14 years
U.S. Cl. D22—141



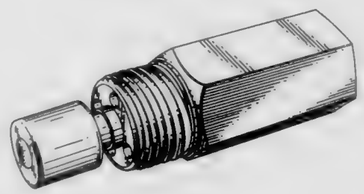
321,239
ELECTRIC PLANT SPRAYER
John J. Cleveland, 3753 Nancy, Memphis, Tenn. 38118
Filed Sep. 8, 1988, Ser. No. 242,279
Term of patent 14 years
U.S. Cl. D23—213



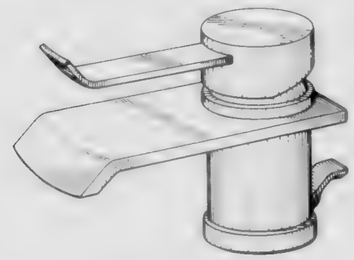
321,240
WATER DRIPPER
Franco Clivio, Zürich, Switzerland, assignor to Gardena Kress + Kastner GmbH, Fed. Rep. of Germany
Filed Aug. 23, 1989, Ser. No. 397,569
Term of patent 14 years
U.S. Cl. D23—213



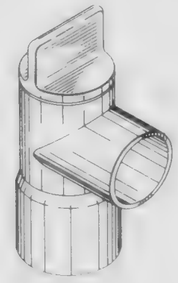
321,241
COMBINED PRESSURE AND THERMAL SAFETY VALVE
Gary D. Ingle, Mound, Minn., assignor to General Pump/U.S., Inc., Eagan, Minn.
Filed Jun. 16, 1988, Ser. No. 875,651
Term of patent 14 years
U.S. Cl. D23—235



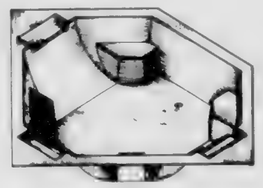
321,242
FAUCET
Jean-Claude Delepine, 23, rue Clapeyron, 75008 Paris, France
Filed Oct. 14, 1988, Ser. No. 257,772
Claims priority, application Hague, Apr. 18, 1988, DM/010778
The portion of the term of this patent subsequent to Sep. 10, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—238



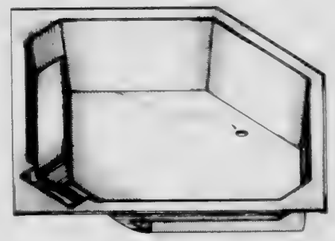
321,243
VALVE
John H. Comstock, Jr., 200 Stettner Rd., Mabton, Wash. 98935
Filed Mar. 13, 1989, Ser. No. 322,246
Term of patent 14 years
U.S. Cl. D23—245



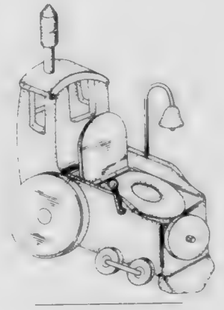
321,244
BATH TUB
Jean-Claude Delepine, 23, rue Clapeyron, 75008 Paris, France
Filed Dec. 29, 1989, Ser. No. 458,825
Claims priority, application Hague, Aug. 14, 1989, DM/014356
Term of patent 14 years
U.S. Cl. D23—281



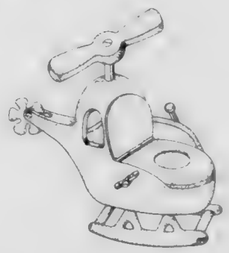
321,245
BATH TUB
Jean-Claude Delepine, 23, Rue Clapeyron, 75008 Paris, France
Filed Dec. 29, 1989, Ser. No. 458,827
Claims priority, application Int'l Pat. Institute, Aug. 14, 1989, DM/014356
Term of patent 14 years
U.S. Cl. D23—281



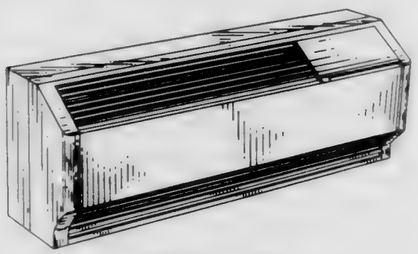
321,246
TOILET TRAINER FOR CHILDREN
Margaret G. Lambdin, 1117 Elbank Ave., Baltimore, Md. 21239
Filed Nov. 13, 1989, Ser. No. 436,182
Term of patent 14 years
U.S. Cl. D23—297



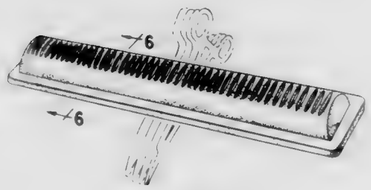
321,247
TOILET TRAINER FOR CHILDREN
Margaret G. Lambdin, 1117 Elbank Ave., Baltimore, Md. 21239
Filed Nov. 13, 1989, Ser. No. 436,183
Term of patent 14 years
U.S. Cl. D23—297



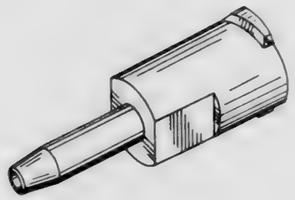
321,248
PACKAGE TERMINAL AIR CONDITIONER
Mitchell L. Wilgus, and Roger H. Ramsey, both of Akron, Ohio, assignors to Inter-City Products Corporation (USA), La-Vergne, Tenn.
Filed Feb. 23, 1989, Ser. No. 315,029
Term of patent 14 years
U.S. Cl. D23—351



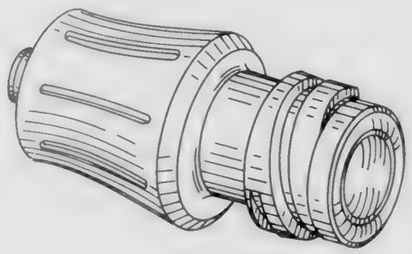
321,249
SURGICAL INSTRUMENT REST
Nancy G. Gorski, 404 Manzanita St., Camarillo, Calif. 93010, assignor to Nancy G. Gorski, Camarillo, Calif.
Filed Mar. 30, 1988, Ser. No. 175,721
Term of patent 14 years
U.S. Cl. D24—229



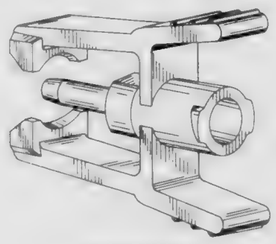
321,250
CANNULA
Steve C. Jepson; Thomas E. Dudar, both of Palatine; Vince C. Desecki, Ingleside, and Peter Graham, Wildwood, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Mar. 7, 1989, Ser. No. 320,244
Term of patent 14 years
U.S. Cl. D24—112



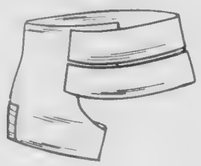
321,251
CANNULA RECEIVER
Steve C. Jepson; Thomas E. Dudar, both of Palatine; Vince C. Desecki, Ingleside, and Michael J. Finley, Park City, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Mar. 7, 1989, Ser. No. 320,245
Term of patent 14 years
U.S. Cl. D24—112



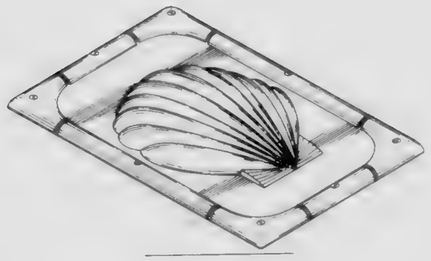
321,252
LOCKING CANNULA
Steven C. Jepson; Thomas E. Dudar, both of Palatine; Vince C. Desecki, Ingleside; Peter Graham, Wildwood, and Michael J. Finley, Park City, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Mar. 7, 1989, Ser. No. 320,246
Term of patent 14 years
U.S. Cl. D24—112



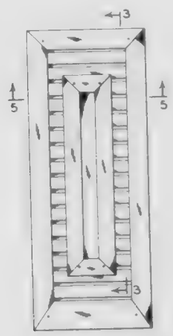
321,253
SURGICAL HIP WRAP FOR COVERING SURGICAL DRESSINGS OR THE LIKE
James R. Hunt, Carencro, La., assignor to Surgical Specialties, Inc., Lafayette, La.
Filed Apr. 24, 1989, Ser. No. 341,898
Term of patent 14 years
U.S. Cl. D24—189



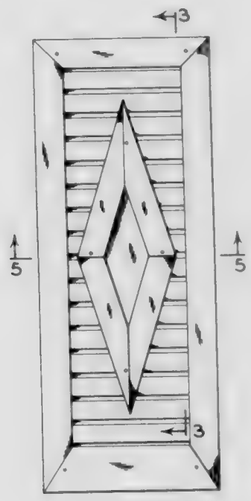
321,254
INFLATABLE POOL COVER
Cecil Harp, 3131 Barnsville Hwy., Thomaston, Ga. 30286
Filed Feb. 2, 1990, Ser. No. 473,847
Term of patent 14 years
U.S. Cl. D25—2



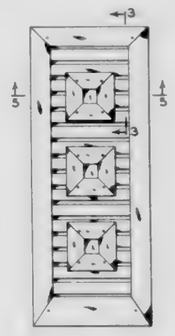
321,255
SHUTTER
Noah A. Pullum, Rte. 1, Box 166A, Hershell St., Burns, Tenn. 37029
Filed Feb. 2, 1989, Ser. No. 305,498
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—47



321,256
SHUTTER
Noah A. Pullum, Rte. 1, Box 166A, Hershell St., Burns, Tenn. 37029
Filed Feb. 2, 1989, Ser. No. 305,499
Term of patent 14 years
U.S. Cl. D25—47

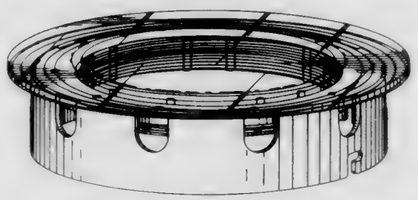


321,257
SHUTTER
Noah A. Pullum, Rte. 1, Box 166A, Hershell St., Burns, Tenn. 37029
Filed Feb. 2, 1989, Ser. No. 305,502
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—47

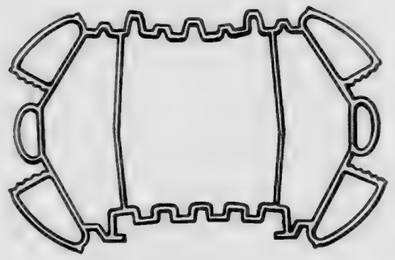


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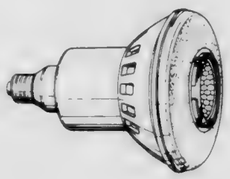
321,258
PORTHOLE COVER FOR SWIMMING-POOL WALL
Normand St-Hilaire, Ste-Anne-des-Plaines, Canada, assignor to Les Industries Lumi-O (Canada) Inc., Ste-Anne-Des-Plaines, Canada
Filed Apr. 17, 1989, Ser. No. 340,689
Term of patent 14 years
U.S. Cl. D25—52



321,259
DECORATIVE EXTRUSION
Peter M. Stagl, Morris Plains, N.J., assignor to Avnet, Inc., Great Neck, N.Y.
Filed Dec. 13, 1989, Ser. No. 450,722
Term of patent 14 years
U.S. Cl. D25—125



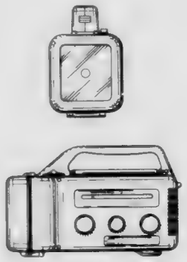
321,260
LAMP
Alfred Bowman, Harpenden, United Kingdom, assignor to KMS Electrical Ltd, Harrow, United Kingdom
Filed Sep. 6, 1989, Ser. No. 403,716
Claims priority, application United Kingdom, Mar. 8, 1989, 1 057 708
Term of patent 14 years
U.S. Cl. D26—2



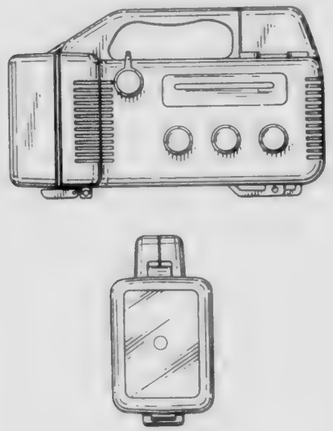
321,261
CANDLE LANTERN
Takeo Shiraishi, Yokohama, Japan, assignor to Lec Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 5, 1989, Ser. No. 417,666
Claims priority, application Japan, Jun. 21, 1989, 1-22928
Term of patent 14 years
U.S. Cl. D26—11



321,262
COMBINED WATER RESISTANT FLASHLIGHT, RADIO, SIREN AND EMERGENCY SIGNAL LIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Hong Kong, Hong Kong
Filed Jan. 11, 1989, Ser. No. 295,903
Claims priority, application United Kingdom, Jul. 13, 1988, 1052291
The portion of the term of this patent subsequent to Oct. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—38

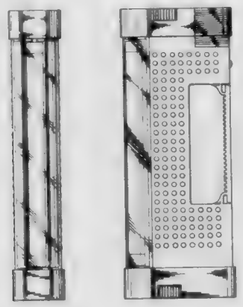


321,263
COMBINED WATER RESISTANT FLASHLIGHT, RADIO, SIREN AND EMERGENCY SIGNAL LIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Hong Kong
Filed Apr. 10, 1989, Ser. No. 335,522
Claims priority, application United Kingdom, Dec. 2, 1988, 1055402
Term of patent 14 years
U.S. Cl. D26—38

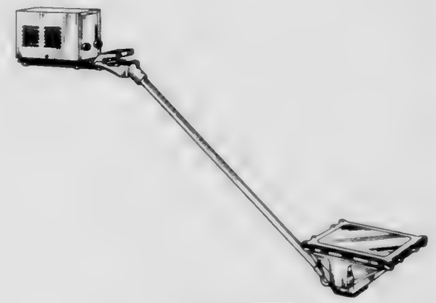




321,264
MULTI PURPOSE FLUORESCENT LANTERN
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Feb. 23, 1989, Ser. No. 314,830
Claims priority, application United Kingdom, Aug. 24, 1988, 1053197
Term of patent 14 years
U.S. Cl. D26—42



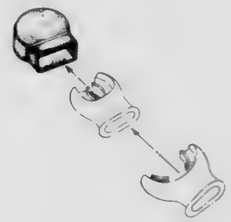
321,265
SUSPENDED ADJUSTABLE LIGHTING FIXTURE
Renzo Piano, Paris, France, assignor to Lingotto S.r.l., Turin, Italy
Filed Sep. 15, 1988, Ser. No. 244,356
Claims priority, application Italy, Mar. 16, 1988, 52978[U]
Term of patent 14 years
U.S. Cl. D26—63



321,266
RECESSED ADJUSTABLE READING LIGHT FOR VEHICLES
Mark P. Koontz, Altadena, Calif., assignor to Ramco Industries, Inc., Elkhart, Ind.
Filed Apr. 24, 1989, Ser. No. 342,399
Term of patent 14 years
U.S. Cl. D26—74



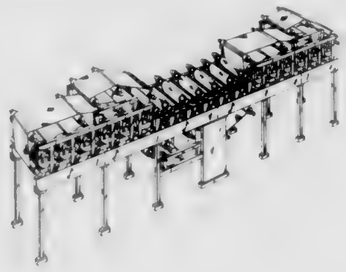
321,267
MOUTHPIECE COVER
Lowell J. Dreyfus, Chatsworth, Calif., assignor to Underwater Diving Inc., Chatsworth, Calif.
Filed Feb. 13, 1989, Ser. No. 309,071
Term of patent 14 years
U.S. Cl. D29—7



321,268
FACE SHIELD
Frank H. Nix, Jr., Gainesville, Ga., assignor to Delta Medical Systems, Inc., Alpharetta, Ga.
Filed Nov. 14, 1988, Ser. No. 270,302
Term of patent 14 years
U.S. Cl. D29—16



321,269
WEB DRYING SECTION
Borgeir Skaugen, and Gregory L. Wedel, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.
Filed Jun. 19, 1990, Ser. No. 540,075
Term of patent 14 years
U.S. Cl. D32—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF OCTOBER, 1991

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Co.: *See—*
Beard, Lloyd R.; and Schwartze, John A., 5,062,022, Cl 361-335.000.
A. H. Robins Company, Inc.: *See—*
Walsh, David A.; and Uwaydah, Ibrahim M., 5,061,720, Cl 514-369.000
A. O. Smith Corporation: *See—*
Ruehl, Phillip C., 5,061,528, Cl. 427-430.100.
Ruehl, Phillip C., 5,061,529, Cl. 427-430.100.
Wren, Michael K., 5,061,530, Cl. 427-430.100.
Abaxis, Inc.: *See—*
Burd, Tammy L., 5,061,381, Cl. 210-789.000.
ABB Process Automation Inc.: *See—*
Cissell, Thomas J.; Doerschuk, David C.; Koester, Karsten G.; and Reed, Gordon K., 5,060,539, Cl. 74-640.000.
Abb Vetco Gray Inc.: *See—*
Brammer, Norman; and Nobileau, Philippe C., 5,060,724, Cl. 166-208.000.
Abbott, John R.: *See—*
Jones, Paul W.; Abbott, John R.; and Fleming, Roger A., 5,060,706, Cl. 152-381.500.
Abbott Laboratories: *See—*
Oglesbee, Richard K., 5,060,814, Cl. 220-339.000.
Abbott, Vaughan: *See—*
Mungovan, John P.; Abbott, Vaughan; Voisine, Gary R.; and Liska, Timothy J., 5,061,309, Cl. 65-260.000.
Abe, Masaaki: *See—*
Nishibe, Yuji; Nonomura, Yutaka; Abe, Masaaki; Takeuchi, Masaharu; and Tsukada, Kouji, 5,062,062, Cl. 364-559.000.
Abe, Minoru: *See—*
Seki, Ichiro; Kano, Akihiro; Hasegawa, Toshiki; Abe, Minoru; and Isa, Isao, 5,061,665, Cl. 501-105.000.
Abe, Takashi: *See—*
Asakawa, Shunju; Akimoto, Yoshiakira; and Abe, Takashi, 5,062,043, Cl. 364-200.000
Abe, Takeshi: *See—*
Sekine, Chogo; and Abe, Takeshi, 5,061,935, Cl. 342-180.000.
Abe, Yoshio: *See—*
Sakashita, Seiji; Ozeki, Hiroaki; Kanno, Ippei; and Abe, Yoshio, 5,061,999, Cl. 358-142.000.
Abe, Yukio; and Urabe, Yoshihiko, to Fuji Photo Film Co., Ltd. PS plate for use in making lithographic printing plate requiring no dampening water. 5,061,598, Cl. 430-272.000.
Abela, George S.; and Friedl, Stephan E., to University of Florida. Laser treatment apparatus and method. 5,061,265, Cl. 606-7.000.
Abellana, Jovito; and Dolan, Donald T., to Pitney Bowes Inc. Platen module for a modular mailing machine. 5,060,741, Cl. 177-4.000.
Aberg, A. K. Gunnar; Ferrer, Patricia; and Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Method for stabilizing or causing regression of atherosclerosis in coronary arteries employing an ace inhibitor. 5,061,694, Cl. 514-19.000.
Aboczky, Robert I. System for orienting, inserting and impacting an acetabular cup prosthesis. 5,061,270, Cl. 606-91.000.
Abraham, Moshe: *See—*
Stahl, Zeev, 5,060,330, Cl. 10-1.00B.
Ackeret, Peter, to Licinvest AG. Device for the cyclic rearrangement of a pile of sheets. 5,060,408, Cl. 40-513.000.
Acushnet Company: *See—*
Gobush, William, 5,060,954, Cl. 273-232.000.
Adamson, William L.: *See—*
Hickey, James J.; and Adamson, William L., 5,061,634, Cl. 436-85.000
Adir et Compagnie: *See—*
Wierzbicki, Michel; Sauveur, Frederic; Bonnet, Jacqueline; Brisset, Martine; and Tordjman, Charles, 5,061,704, Cl. 514-231.500
Adusei, Edward O.: *See—*
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Star, Roger D.; and Strauser, Daniel P., 5,060,334, Cl. 15-84.000.
Eli Lilly and Company: *See—*
Grindey, Gerald B.; and Hertel, Larry W., 5,061,793, Cl. 536-26.000.
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Lathrop, David R.; and Shawcross, James P., 5,060,901, Cl. 248-343.000.
Stanek, Terrence L.; Brant, Ronald G.; and Townsend, Donald L., 5,061,405, Cl. 261-26.000.
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Emmett, John Colin; and Leeson, Paul D., to Smith Kline & French Laboratories, Ltd. Benzyl pyridyl and pyridazinyl compounds 5,061,798, Cl. 544-239.000.

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Feijen, Jan; and Engbers, Gerardus H. M., 5,061,750, Cl. 525-54.100

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Engel, Hartmut S. Adjustable spotlight. 5,062,029, Cl. 362-287.000

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Engelhard Corporation: *See—*
Sennett, Paul; and Brown, Steven A., 5,061,461, Cl. 423-112.000.

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Engenito, Joseph S., Jr.: *See—*
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Engle, David E.: *See—*
Chapin, Fletcher W.; Dranchak, David W.; Engle, David E.; Hall, Richard R.; and Macek, Thomas G., 5,061,192, Cl. 439-66.000.

Engle, Glen B. Method of making carbon-carbon composites. 5,061,414, Cl. 264-29.500.

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Hall, Peter J., 5,061,878, Cl. 315-39.750.

Engman, Arnold B., to EMCO Industries, Inc. Hanging file support frame. 5,060,808, Cl. 211-46.000.

Engst, Johannes: *See—*
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Enterprises International, Inc.: *See—*
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Enthone-OMI, Inc.: *See—*
Commander, John H.; and Paneccasio, Vincent, Jr., 5,061,351, Cl. 204-54.100

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Erbe Elektromedizin GmbH: *See—*
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Esbroeck, Maurice E. T., to Stork PMT B.V. Method for filling a container for transportation of live poultry, and container for carrying out the method. 5,060,596, Cl. 119-17.000.

Espin, Mario W., to Multi-Video, Inc. Fixture for attaching recording tape leader to a tape reel. 5,060,879, Cl. 242-74.100.

ETA SA Fabriques d'Ebauches: *See—*
Cognard, Jacques; and Ganguillet, Claude, 5,060,834, Cl. 224-178.000.

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Ethyl Corporation: *See—*
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Park, Won S., 5,061,470, Cl. 423-347.000.
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Eto, Yoshiyuki, to Nissan Motor Co., Ltd. Torque split control system for a four wheel drive vehicle. 5,060,747, Cl. 180-197.000

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Evans, Steven: *See—*
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Evans & Sutherland Computer Corp.: *See—*
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McWethy, Robert T., 5,060,962, Cl. 280-304.100.

Evers, Robert S. Blower attachment for a vacuum cleaner. 5,060,339, Cl. 15-246.000

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Ewan, Frederick R., to Ewan, Frederick R.; and Ozimek, Robert E. Tamper indicating containers and seals. 5,060,848, Cl. 229-102.000.

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Exxon Chemical Patents Inc.: *See—*
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F & M Products Mfg. Corp.: *See—*
May, William G.; and Fischer, Albert H., 5,061,133, Cl. 411-340.000

Fabricated Metals, Inc.: *See—*
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Fago, Frank M., to Liebel-Flarsheim Company. X-ray film cassette transport. 5,062,130, Cl. 378-181.000.

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Johnson, Walter A. L.; Faieta, Baldo A.; Jellinek, Herbert D.; and Smith, Z. Erol, III, 5,060,980, Cl. 283-70.000.

Fanuc Ltd.: *See—*
Miyata, Mitsuto; and Miyajima, Hidehiro, 5,061,887, Cl. 318-568.250.
Torii, Nobotoshi; Ito, Susumu; and Tanaka, Akira, 5,060,533, Cl. 74-479.000

Farber, Bruce W.: *See—*
Anderson, Scot; Farber, Bruce W.; and Kunsemiller, John P., 5,060,734, Cl. 173-128.000

Farcasiu, Malvina; and Smith, Charlene M., to United States of America, Energy. Method for co-processing waste rubber and carbonaceous material. 5,061,363, Cl. 208-419.000.

Fardoux, Raymond M.: *See—*
Schaeffer, Daniel J.; Fardoux, Raymond M.; Dein, Robert P.; and Limper, Linda D., 5,060,846, Cl. 228-447.000.

Farina, Alfonso; and Morabito, Carlo F., to Selenia Industrie Elettroniche Associate S.p.A. Recursive system for image forming by means of a spotlight synthetic aperture radar. 5,061,931, Cl. 342-25.000

Farnswoth, Kenneth F., III. Open air bandage. 5,060,662, Cl. 128-888.000.

Farwell, Randall S.; Hauck, Lane T.; and Shapiro, Leonid, to Proxima Corporation. Gray scale system for visual displays. 5,062,001, Cl. 358-236.000

Fastenmeier, Karl: *See—*
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Fastrak Systems, Inc.: *See—*
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Faulkner, David W., to British Telecommunications public limited company. PCM signal coding. 5,062,152, Cl. 359-185.000.

Fay, Charles R.: *See—*
Binkley, Joseph H.; Caro, Perry A.; Fay, Charles R.; Lee, Jeffery W.; Neely, Everett T.; Thompson, Geoffrey O.; and Vukkadala, Gaya, 5,062,042, Cl. 364-200.000.

Fazan, Pierre: *See—*
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Fedor, Maxim A.: *See—*
Clements, Matthew J.; Fedor, Maxim A.; Moffitt, Jerry T.; Ye, Lisa; and Wadsworth, John F., 5,060,439, Cl. 52-396.000.

Feick, Murray L. Standing position back support. 5,060,754, Cl. 182-82.000

Feijen, Jan; and Engbers, Gerardus H. M., to Cordis Europa N.V. Covalent attachment of anticoagulants and the like onto biomaterials. 5,061,750, Cl. 525-54.100.

Feiler, Frederic C. Proximal cement sealing plug for hip prosthesis. 5,061,287, Cl. 623-16.000

Felder, Bethanne: *See—*
Frost, John S.; Wallace, Lloyd V.; Erickson, Mark R.; and Felder, Bethanne, 5,062,028, Cl. 362-183.000.

Felex Schoeller Jr. GmbH & Co.: *See—*
Schonheit, Friedrich-Wilhelm, 5,060,565, Cl. 100-93.0RP

Fenchel, Jack L., to Jo Jan Sportsequip Co. Device and method for fine tuning a compound archery bow. 5,060,627, Cl. 124-88.000.

Fennessy, Paul M., Sr. Apparatus for forming a decorative impression in a moldable material. 5,061,172, Cl. 425-385.000.

Fergason, James L., to Manchester R&D Partnership. Liquid crystal motion picture projector with memory. 5,061,041, Cl. 359-51.000.

Ferguson, Robert M.; Fratangelo, Louis D.; Heeks, George J.; and Henry, Arnold W., to Xerox Corporation. Fusing assembly with release agent donor member. 5,061,965, Cl. 355-284.000.

Ferland, Carl G.; and Peters, Henry J., to Quebec and Ontario Paper Company Ltd. Screening device for slurries with improved rotor and hub design. 5,061,370, Cl. 210-194.000.

Ferno-Washington, Inc.: *See—*
Schmid, K. Stephen; Brault, Richard A.; Croteau, Dianne B.; and Vinden, Jonathan P., 5,060,637, Cl. 128-75.000.

Ferrer, Patricia: *See—*
Aberg, A. K. Gunnar; Ferrer, Patricia; and Ondetti, Miguel A., 5,061,694, Cl. 514-19.000.

Ferro, Raffaele: *See—*
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Fetcko, John T.: *See—*
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Fetzer, Gustay: *See—*
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Fiat Auto S.p.A.: *See—*
Grassini, Osvaldo, 5,060,340, Cl. 15-250.240.

Fickelscher, Kurt, to Renk Aktiengesellschaft. Bearing system for wave generator drive. 5,061,227, Cl. 475-170.000.

Fiehler, William R.: *See—*
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Fields, Donald L., Jr.; Grabiak, Raymond C.; Koenig, Karl E.; and Riley, Dennis P., to Monsanto Company. Process for producing N-phosphonomethylglycine. 5,061,820, Cl. 560-17.000.

Figueroa, Luisito A. Customized light reflector. 5,062,030, Cl. 362-346.000.

Fimbell, Edward, III. Modular door panel structure and method of assembly and door assembled therefrom. 5,060,711, Cl. 160-229.100.

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Findeisen, Kurt; Lindig, Markus; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, to Bayer Aktiengesellschaft. Substituted triazolinone herbicides and plant growth regulators. 5,061,311, Cl. 71-92.000.

Findlanl, Shane J.; and Newell, William F., Jr., to Electric Power Research Institute, Inc. Method for fabricating a valve. 5,060,374, Cl. 29-888.440.

Finn, Norman H.; and Hirsch, Herbert W., to AmAsia International, Ltd. Open toe/open heel shoe having replaceable inner sole. 5,060,400, Cl. 36-12.000.

Finney, Clifton D. Corner-back golf clubhead. 5,060,950, Cl. 273-167.00F.

Firdell Multiflectors Limited: *See—*
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Fischer, Albert H.: *See—*
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Fischer, David; and Kohlert, Rudolf, to Roemheld GmbH. Power drive and transmission unit for self centering clamps and chucks. 5,060,958, Cl. 279-4.000.

Fischer, Jens-Dieter; Munzer, Manfred; Golchert, Ursula; and Schinzel, Felix, to Rohm GmbH Chemische Fabrik. Methacrylate protective coating containing a UV-absorber for polycarbonate. 5,061,558, Cl. 428-332.000.

Fish, Robert W.: *See—*
Bishop, Thomas P.; Fish, Robert W.; and Peterson, James S., 5,062,040, Cl. 364-200.000.

Fisher Berkeley Corporation: *See—*
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Fisher & Paykel Limited: *See—*
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Fisher Scientific Company: *See—*
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Fishler, Mark K.; and Rancoule, Gilbert, to Vesuvius Crucible Company. Material for covering a casting shroud. 5,060,831, Cl. 222-591.000.

Flachenecker, Gerhard; Fastenmeier, Karl; and Lindenmeier, Heinz, to Erbe Elektromedizin GmbH. Self oscillating power stage for inverted rectifier power supply. 5,062,031, Cl. 363-16.000.

Fleenor, Richard P., to Beacon Laboratories, Inc. Disposable electrosurgical pencil with in-line filter and method. 5,061,268, Cl. 606-45.000.

Fleischmann, Gerald; Eck, Herbert; and Schuster, Johann, to Wacker-Chemie GmbH. Modified poly(organo-organosiloxanes) with comb or block structures and a process for their preparation. 5,061,762, Cl. 525-478.000.

Fleming, Roger A.: *See—*
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Florencio Perez, Antonio; Vivancos Gil, Alberto; and Alcantara Munoz, Antonio, to Florencio Perez, Antonio; Alcantara Munoz, Antonio; and Vivancos Gil, Alberto. Confectionery supplying machine. 5,060,822, Cl. 221-268.000.

Flores, Jose F.: *See—*
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Florida, William F.; and Burke, Jon G., to FMC Corporation. Filler spool valve. 5,060,694, Cl. 137-625.180.

Florindez, Augusto. Rotary indexing machine. 5,060,562, Cl. 99-353.000.

Florjancic, Peter. Foldable flat ball point pen. 5,061,104, Cl. 401-195.000.

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Flynn, Paul L.; and Giammarise, Anthony W. Process for depositing hard coating in a nozzle orifice. 5,061,513, Cl. 427-38.000.

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Folkard, Margaret A.; and Hartley, Richard H., to c/o The Secretary, Comonwealth of Australia Department of Defence. Differential ellipsometer. 5,061,072, Cl. 356-369.000.

FONAR Corporation: *See—*
Danby, Gordon T.; and Hsieh, Hank C. H., 5,061,897, Cl. 324-318.000.

Fong, Carl H., to VLSI Technology, Inc. System for detecting and correcting misalignment of semiconductor package leads. 5,061,895, Cl. 324-158.00R.

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Rosten, David B.; Foos, Douglas E.; Partlow, Richard L., Jr.; and Berger, Edward M., 5,060,828, Cl. 222-142.900.

Ford Motor Company: *See—*
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Date, Parshuram G., 5,060,369, Cl. 29-830.000
Davis, Roy I.; and Patil, Prabhakar B., 5,060,959, Cl. 280-6.100.
Gourd, James T., 5,061,137, Cl. 411-510.000.
Oslapas, Algis G., 5,060,620, Cl. 123-519.000.
Schnell, Martin; Winter-Peter, Wolfgang; and Sabel, Gustav, 5,060,538, Cl. 74-477.000.

Forestier, Serge: *See—*
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Forintek Canada Corp.: *See—*
Lau, Peter W.; and Tardif, Yvon G., 5,060,516, Cl. 73-602.000.

Forquy, Christian; Tichit, Didier; and Anglerot, Didier, to 501 Societe Nationale Elf Aquitaine. Process for the preparation of a catalyst capable of promoting the oxidative conversion of methane into higher hydrocarbons and use of catalyst. 5,061,670, Cl. 585-500.000

Forsberg, Gerard K.: *See—*
Willard, Bernard; and Forsberg, Gerard K., 5,062,089, Cl. 367-172.000.

Forschner, Friedrich: *See—*
Buttner, Gunter; Forschner, Friedrich; Fuchtenkort, Manfred; Schmeykal, Rudolf; and Wieland, Alfred, 5,061,094, Cl. 400-479.000.

Forschungszentrum Julich GmbH: *See—*
Singh, Jasbir; Barnert, Heiko; and Hohn, Hans, 5,061,435, Cl. 376-298.000.

Fossum, Douglas K.; Jongewaard, Susan K.; and McConville, John W., to Minnesota Mining and Manufacturing Company. Transparent overlay for protecting a document from tampering. 5,060,981, Cl. 283-109.000.

Foster, David G.; and Stephen, Keith H., to Eastman Kodak Company. Photographic bleaching solution and use thereof in photographic color processing. 5,061,608, Cl. 430-461.000.

Foster, Edward J.: *See—*
Soubliere, Marc P.; and Foster, Edward J., 5,061,023, Cl. 312-328.000.

Foster Wheeler Energy Corporation: *See—*
Gorzegno, Walter P.; Stevens, William D.; and Zipay, Albert J., 5,061,304, Cl. 55-347.000.

Fowles, Thomas A.: *See—*
Winchell, David A.; Fowles, Thomas A.; and Mitchell, Richard, 5,061,243, Cl. 604-132.000.

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Fox, John S.: *See—*
Lung, Kaki R.; Fox, John S.; and Chanin, Alex J., 5,061,639, Cl. 436-164.000.

Fox, Martha. Baby bottle. 5,060,811, Cl. 215-6.000.

Fraley, Deborah L.: *See—*
Cameron, Jeffrey A.; and Fraley, Deborah L., 5,060,391, Cl. 33-234.000.

Framatome: *See—*
Gente, Daniel; and Giron, Marcel, 5,061,433, Cl. 376-260.000.
Jacquier, Paul, 5,061,340, Cl. 156-578.000.

Framo Developments (UK) Limited: *See—*
Mohn, Frank, 5,060,737, Cl. 175-104.000.

Fraser, Neil S., to Stoddard Sekers International plc. Pressure roller assembly. 5,061,337, Cl. 156-351.000.

Fratangelo, Louis D.: *See—*
Ferguson, Robert M.; Fratangelo, Louis D.; Heeks, George J.; and Henry, Arnold W., 5,061,965, Cl. 355-284.000

Frauendorf, Beatrix; Korte, Siegfried; Suling, Carlhans; and Dauscher, Rudi, to Bayer Aktiengesellschaft. Process for producing elastane fibers of high elasticity and strength. 5,061,426, Cl. 264-205.000

Frederick, Thomas J. Semiconductor device inspection template. 5,060,389, Cl. 33-1.0BB.

Fredericks, Chester P. Animal enclosure bag. 5,060,597, Cl. 119-159.000.

Frelier, Helmut; and Schack, Peter, to Siemens Aktiengesellschaft. Production of thin layers of a high temperature superconductor (HTSC) by a plasma-activated physical vapor deposition process, and cathodes used therein. 5,061,684, Cl. 545-1.000.

French, Jonathan C.; Rounds, David R.; Herdeman, James R.; and Bernardi, Brent S., to Barber-Colman Company. Event driven remote graphical reporting of building automation system parameters 5,061,916, Cl. 340-522.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Lentz, Norbert; and Schmidt, Harald, 5,061,141, Cl. 413-72.000.

Friederich, Dieter: *See*—
Kuhlmann, Ludger; Friederich, Dieter; and Ressel, Peter, 5,060,742, Cl. 180-89.140.

Friedl, Stephan E.: *See*—
Abela, George S.; and Friedl, Stephan E., 5,061,265, Cl. 606-7.000.

Fredrich Grohe Armaturenfabrik GmbH & Co.: *See*—
Pawelzik, Manfred; and Titze, Horst, 5,060,692, Cl. 137-625.400.

Friel, Timothy P. Photochromic dilating pupil for ocular prosthetics. 5,061,279, Cl. 623-4.000.

Frigerio, Giuliano: *See*—
Pellicciari, Roberto; Roda, Aldo; and Frigerio, Giuliano, 5,061,701, Cl. 514-182.000.

Friloux, Edward E.; and Mallett, G. Troy. Emulsifying film foam 5,061,383, Cl. 252-3.000.

Frisch, Kurt C.: *See*—
Edenbaum, Martin; Frisch, Kurt C.; Sendijarevic, Aisa; and Wong, Shaio-wen, 5,061,555, Cl. 428-253.000.

Frischmann, Albert: *See*—
Rinklake, Manfred; Frischmann, Albert; Daryoush, Anisi; and Steurer, Paul, 5,060,447, Cl. 52-698.000.

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Koschinat, B. Hubert; and Frohlke, Manfred, 5,060,916, Cl. 267-64.270.

Frosien, Jurgen; and Spehr, Rainer, to ICT Integrated Circuit Testing Gesellschaft fur Halbleiterpruftechnik mbH. Corpuscular beam device. 5,061,856, Cl. 250-397.000.

Frost, John S.; Wallace, Lloyd V.; Erickson, Mark R.; and Felder, Bethanne, to Atlantic Richfield Company. Self-contained solar powered lamp. 5,062,028, Cl. 362-183.000.

Fuchs, Hans-Bernd: *See*—
Hellermann, Walter; Herrmann, Christoph; Nordsiek, Karl-Heinz; Wolpers, Jurgen; and Fuchs, Hans-Bernd, 5,061,758, Cl 525-193.000.

Fuchtenkort, Manfred: *See*—
Buttner, Gunter; Forschner, Friedrich; Fuchtenkort, Manfred; Schmeykal, Rudolf; and Wieland, Alfred, 5,061,094, Cl. 400-479.000.

Fuji-Autoliv Co., Ltd.: *See*—
Ohya, Masakiyo; and Narue, Atsushi, 5,060,883, Cl. 242-107.000

Fuji Electric Corporation Research and Development Ltd.: *See*—
Asano, Akihiko, 5,061,322, Cl. 136-258.000.

Fuji Machine Mfg. Co., Ltd.: *See*—
Asai, Koichi; Tsuda, Mamoru; and Muto, Yasuo, 5,060,366, Cl 29-739.000.

Fuji Photo Film Co., Ltd.: *See*—
Abe, Yukio; and Urabe, Yoshihiko, 5,061,598, Cl. 430-272.000.
Igarashi, Shunkichi, 5,060,407, Cl. 40-159.000.
Imai, Masanori; and Sorori, Tadahiro, 5,061,592, Cl. 430-167.000
Kase, Akira; and Kojima, Tetsuro, 5,061,615, Cl. 430-569.000
Kawai, Yasuhiro, 5,061,852, Cl. 250-327.200
Kawamura, Kouichi; and Tsuchiya, Mitsumasa, 5,061,605, Cl. 430-281.000.
Morikawa, Seiichiro, 5,062,058, Cl. 364-521.000.
Morita, Naoyuki, 5,060,931, Cl. 271-276.000.
Nakanishi, Haruo; and Sakaki, Hirokazu, 5,061,591, Cl. 430-159.000
Ogawa, Masazumi, 5,060,784, Cl. 198-468.400.
Ohya, Takao; Nakagawa, Jun; Hayakawa, Satoru; Nishikawa, Yasuo; Okita, Tsutomu; and Hashimoto, Hiroshi, 5,061,564, Cl. 428-409.000.
Okamura, Hisashi; and Katoh, Kazunobu, 5,061,594, Cl 430-264.000.
Shimizu, Osamu; and Yoshida, Satoshi, 5,061,576, Cl. 428-694.000
Takada, Shunji; Naito, Hideki; Ohashi, Yuichi; Yamashita, Seiji; Shibayama, Shigeru; and Hirano, Shigeo, 5,061,614, Cl. 430-569.000.
Watanabe, Izumi, 5,061,955, Cl. 355-45.000.
Yamanaka, Fusao; Nagao, Makoto; Yamada, Yasuyuki; and Morita, Kazuhiko, 5,061,562, Cl. 428-408.000.

Fuji, Ryuichi: *See*—
Ogitani, Osamu; Shimizu, Takashi; Fujii, Ryuichi; Kawashima, Masao; Kobayashi, Tuyoshi; and Akutagawa, Ichiro, 5,061,744, Cl. 523-461.000.

Fujii, Tetsuya: *See*—
Watanabe, Seiji; Saito, Mitsuo; Nanba, Akihiko; Nozaki, Tsutomu; Fujii, Tetsuya; Nakamoto, Tsuyoshi; and Yaji, Motoyasu, 5,061,527, Cl. 427-423.000.

Fujii, Toshiaki; and Sakamoto, Kazuhiko, to Ebara Research Co., Ltd. Photoelectron emitting member. 5,060,805, Cl. 209-3.000.

Fujii, Toshinobu: *See*—
Kozuma, Ichiro; and Fujii, Toshinobu, 5,061,578, Cl. 429-3.000.

Fujii, Yuuko: *See*—
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000

Fujikawa, Junji; and Tamura, Fumiaki, to Nippon Electric Glass Co., Ltd. Permanent connector for optical fibers. 5,061,034, Cl. 385-95.000

Fujikawa, Shoji, to Matsushita Electric Works, Ltd. Hair cutter with comb. 5,060,380, Cl. 30-200.000.

Fujikoki America, Inc.: *See*—
Watanabe, Masaru; and Yamamoto, Osamu, 5,060,485, Cl. 62-225.000

Fujimori, Kenichi; Nakayama, Yoshitaro; Suzuki, Hajime; and Shima, Yoshiko, to Shindengen Electric Manufacturing Co., Ltd; and Yamanashi Electronics Co., Ltd. Electrophotographic photoreceptor. 5,061,584, Cl. 430-59.000.

Fujimoto, Yukiko: *See*—
Kishimoto, Manabu; Seo, Iwao; and Fujimoto, Yukiko, 5,061,768, Cl. 526-245.000

Fujioka, Hiroshi, to Fujitsu Limited. Method of manufacturing semiconductor on insulator. 5,061,642, Cl. 437-11.000.

Fujioka, Masanobu: *See*—
Yamazaki, Katsuyuki; and Fujioka, Masanobu, 5,062,106, Cl. 370-94.100

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Murata, Masayoshi; Tsutsumi, Hideo; Matsuda, Keiji; Hattori, Hohji; and Nakajima, Takashi, 5,061,804, Cl. 546-281.000.
Oku, Teruo; Kawai, Yoshio; Kayakiri, Hiroshi; Kuratani, Kazuyoshi; and Hashimoto, Masashi, 5,061,718, Cl. 514-367.000.
Tabata, Takeshi; Ide, Soichiro; Moro, Akihiko; and Nagatani, Ryuji, 5,061,371, Cl. 210-198.200.
Uchida, Itsuo; Hatanaka, Hiroshi; Nitta, Kumiko; Hashimoto, Seiji; Okuhara, Masakuni; Murai, Hidetsugu; and Hashimoto, Masashi, 5,061,730, Cl. 514-563.000.

Fujisawa, Toru: *See*—
Takehara, Sadao; Kuriyama, Takeshi; Nakamura, Kayoko; Shoji, Tadao; Fujisawa, Toru; Osawa, Masashi; Hiyama, Tamejiro; Kusumoto, Tetsuo; Nakayama, Akiko; and Nishide, Kiyoharu, 5,061,398, Cl. 252-299.610.

Fujita, Hiroyuki: *See*—
Takimoto, Kazushi; Kamezaki, Yasushi; Maekawa, Koji; Kameda, Kiyoshige; Fujita, Hiroyuki; and Masai, Katsunori, 5,060,923, Cl. 271-7.000.

Fujita, Kazuhiko; and Bessho, Yoshinori, to Brother Kogyo Kabushiki Kaisha. Method and apparatus for detecting surface condition by utilizing optical heterodyne interference. 5,061,071, Cl. 356-360.000.

Fujita, Nobuhiko: *See*—
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,061,681, Cl. 505-1.000.

Fujita, Toshio: *See*—
Watanabe, Rikizo; and Fujita, Toshio, 5,061,440, Cl. 420-38.000

Fujita, Yoshiyuki, to Toyoda Gosei Co., Ltd. Steering wheel. 5,060,535, Cl. 74-552.000

Fujitsu Limited: *See*—
Fujioka, Hiroshi, 5,061,642, Cl. 437-11.000.
Hayashi, Shigehiro; and Ayukawa, Yoshibumi, 5,062,124, Cl. 375-107.000.
Inoue, Shinichi; and Nakahara, Tatsuro, 5,061,906, Cl. 331-57.000.
Masuda, Hiroki; and Kawamata, Tetsuo, 5,062,073, Cl. 364-900.000
Sato, Shinichi; and Moriya, Kazumasa, 5,061,843, Cl. 235-462.000.
Satou, Kazuaki, 5,061,552, Cl. 428-209.000.

Fujiwara, Akihiro: *See*—
Toyama, Masamichi; Fujiwara, Akihiro; Suda, Hirofumi; Yamada, Kunmiko; Hirasawa, Masahide; and Kaneda, Kitahiro, 5,061,954, Cl. 354-402.000

Fukamichi, Kazuaki, to Research Development Corporation of Japan. Magnetical working amorphous substance. 5,060,478, Cl. 62-3.100.

Fukasawa, Toshio: *See*—
Takubo, Minoru; Fukasawa, Toshio; and Yamanaka, Tatsuo, 5,061,956, Cl. 355-55.000.

Fukazawa, Tsuguo: *See*—
Ohneda, Noboru; Ushioda, Shunta; Arima, Haruo; Hashimoto, Ichiro; Kaneko, Denziro; Sugiyama, Kazuo; Fukazawa, Tsuguo; Tachi, Teruo; and Mukasa, Takashi, 5,060,500, Cl. 72-287.000.

Fukuda, Kosaku: *See*—
Kobayashi, Fumiaki; and Fukuda, Kosaku, 5,062,119, Cl. 374-5.000.

Fukuda, Masatoshi: *See*—
Matsutani, Kanji; and Fukuda, Masatoshi, 5,060,468, Cl. 59-74.000.

Fukuhara, Kenji, to Kayashi Tokei Kogyo Kabushiki Kaisha. Power screwdriver. 5,061,885, Cl. 318-434.000.

Fukui, Hiroshi: *See*—
Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Sekine, Akio; and Yokoyama, Miyuki, 5,061,536, Cl. 428-64.000.

Fukui, Masahiro: *See*—
Kawakami, Yoshiyuki; Fukui, Masahiro; Shigemoto, Ichiro; and Iwasaki, Chie, 5,062,054, Cl. 364-491.000.

Fukuma, Takao: *See*—
Takaoka, Toshio; Tsukamoto, Keisuke; Fukuma, Takao; and Yamasaki, Hirofumi, 5,060,618, Cl. 123-436.000.

Fukushima, Hitoshi: *See*—
Yamaguchi, Yoshitaka; Fukushima, Hitoshi; Iwamoto, Kohei; and Takei, Katsumori, 5,061,093, Cl. 400-120.000.

Fukutake, Sunao: *See*—
Arakawa, Ryutaro; and Fukutake, Sunao, 5,061,990, Cl. 357-80.000.

Fukutome, Akira: *See*—
Yoda, Ryuichiro; Fukutome, Akira; Ohkawa, Suguru; and Iida, Kazutoshi, 5,061,777, Cl. 528-61.000.

Fultz, Jimmy D.: *See*—
Pittard, Fred J.; and Fultz, Jimmy D., 5,060,738, Cl. 175-267.000.

Funaba, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor photodetector device. 5,061,977, Cl. 357-30.000.

Funaishi, Koutaro: *See*—
Suda, Hiroyuki; Kojiri, Katuhisa; Okura, Akira; Funaishi, Koutaro; Kawamura, Kenji; and Okanishi, Masanori, 5,061,695, Cl 514-28.000

Furuhashi, Hiroyuki: *See*—
Murata, Masahide; Kanazawa, Seizaburo; Furuhashi, Hiroyuki; Maruyama, Kouji; Imai, Masafumi; and Ueno, Hiroshi, 5,061,667, Cl. 502-116.000.

Fushimi, Hiroyuki; Nakayama, Nobuhiro; Asahina, Yasuo; Aoki, Mitsuo; and Makita, Kayo, to Ricoh Company, Ltd.; and Mitsui, Petrochemical Industries, Ltd. Dry type toner for electrophotography. 5,061,588, Cl. 430-109.000.

Fushimi, Koji; Nishioka, Shigeo; and Konishi, Kazuhiro, to NGK Insulators, Ltd. Immersion type automatic ultrasonic testing aparatus for detecting flaws of balls. 5,060,517, Cl. 73-620.000.

G.A.P. Tecnica S.r.l.: *See*—
Zambelli, Gabriele, 5,060,457, Cl. 53-543.000.

G-C Dental Industrial Corp.: *See*—
Ubukata, Noboru; and Iizuka, Hisao, 5,061,411, Cl. 264-16.000.

G. D. Searle & Co.: *See*—
Cordi, Alex A.; and Jans, Michel R., 5,061,721, Cl. 514-376.000.

G & H Technology, Inc.: *See*—
MacCulloch, David B.; and Castleman, Danny E., 5,061,826, Cl 174-705.000.
McCormick, Larry L., 5,060,837, Cl. 225-1.000.

Gaalema, Stephen D.: *See*—
Linnenbrink, Thomas E.; and Gaalema, Stephen D., 5,061,927, Cl. 341-138.000.

Gabalda, Carlos M.; and Puaux, Bernard, to ICBT Lyon. Yarn tension device for textile machines. 5,060,885, Cl. 242-151.000.

Gabas, Carlos, to Industrias Techno-Matic S.A. Cover for automobile sun visor mirrors. 5,061,003, Cl. 296-97.100.

Gabor, Jozsef: *See*—
Irimi, Sandor; Molnar, Adam; Gabor, Jozsef; Toke, Laszlo ; Trezl, Lajos; Rusznak, Istvan; Horvath, Viktoria; and Szarvas, Tibor, 5,060,672, Cl. 131-331.000

Gadow, Mitchell T. Apparatus for stabilizing box-type speakers on floor of vehicle. 5,061,130, Cl. 410-104.000.

Gagnebin, Antoine: *See*—
Bals, Ion; Hofer, Willy; and Gagnebin, Antoine, 5,060,529, Cl. 73-864.740.

Gallant, Dennis J.: *See*—
Kappers, Timothy A.; Westerfeld, Steven R.; and Gallant, Dennis J., 5,060,425, Cl. 52-36.000.

Gallucci, Robert R., to General Electric Company. Silane derivatives which improve properties of PPE-polyamide compositions. 5,061,746, Cl. 524-188.000.

Gallucci, Theodore A.; and Doherty, Norman R., to Bio-Jet Corporation. Pipe joint retaining device with locking levers. 5,060,989, Cl. 285-337.000.

Gallup, Darrell L., to Union Oil Company of California. Process for treating condensate of steam derived from geothermal brine. 5,061,373, Cl. 210-697.000.

Gambale, Richard A.; and Hunter, James S., to C. R. Bard, Inc. Steerable extendable guidewire with adjustable tip. 5,060,660, Cl 128-772.000.

Gampell, David J.: *See*—
Lovelace, Ralph E.; Gampell, David J.; and Ignowski, James S., 5,061,859, Cl. 250-551.000.

Ganguillet, Claude: *See*—
Cognard, Jacques; and Ganguillet, Claude, 5,060,834, Cl. 224-178.000.

Gannis, Peter M.: *See*—
Holloway, Oris E., Jr.; Wilkins, Howard; and Gannis, Peter M., 5,061,499, Cl. 426-93.000.

Ganshirt, Karlheinz; Walker, Wolfram; and Handel, Klaus D., to NPBI Nederlands Produktielaboratorium voor Bloodtransfusieapparatuur en Infusievloeistoffen BV. Device for separating the components of a liquid, especially whole blood. 5,061,451, Cl. 422-101.000.

Garage, Edward C.: *See*—
Garage, Linda R.; and Garage, Edward C., 5,061,218, Cl. 446-102.000.

Garage, Linda R.; and Garage, Edward C., to Real Blocks, Inc. Toy building blocks. 5,061,218, Cl. 446-102.000.

Garcia, Manuel E. Fishing line launching device. 5,060,413, Cl. 43-19.000.

Gardner, John W.: *See*—
Glandt, Carlos A.; Vinegar, Harold J.; and Gardner, John W., 5,060,726, Cl. 166-248.000.

Garnes, Joseph. Golf ball shag and carrying device. 5,060,996, Cl. 294-19.200.

Garrido, Alfonso; Martin, Juan; and Sevilleja, Jose, to Otis Elevator Company. Simplified automatic telescopic doors for elevators. 5,060,763, Cl. 187-51.000.

Garrity, James R., to Interlake Companies, Inc., The. Electrically-powered control system for accumulating conveyor. 5,060,785, Cl. 198-781.000.

Garza, Raul G. Information pad for checkbooks. 5,060,979, Cl. 281-31.000.

Gas Research Institute: *See*—
Murray, Joseph G., 5,060,487, Cl. 62-475.000.

Gattis, Sherri L.; and Rieger, James L., to United States of America, Navy. Telecommunications system and method. 5,062,136, Cl. 380-18.000.

Gayle, Herbert Y., to Popejoy, Rodney, a part interest. Console brace. 5,060,906, Cl. 248-503.000.

Gayton, David E., to Moen Incorporates. Backflow preventer and vacuum breaker. 5,060,687, Cl. 137-218.000.

Gaz de France: *See*—
Knipiler, Gaston; Suhas, Philippe; and Dominique, Gosselin, 5,061,177, Cl. 432-222.000.

Gaztech Corporation: *See*—
Wong, Jacob Y., 5,060,508, Cl. 73-31.020.

Gebr. Happich GmbH: *See*—
Happich, Otto; and Cziptschirsch, Kurt, 5,061,004, Cl. 296-97.500

GEC Alsthom SA: *See*—
Demichel, Marcel, 5,060,375, Cl. 29-889.210.

Geiger, Rolf: *See*—
Teetz, Volker; Geiger, Rolf; Urbach, Hansjorg; Becker, Reinhard; and Scholkens, Bernward, 5,061,722, Cl. 514-412.000

Geile, Michael J.; Hill, Terrance J.; and Kavanaugh, Patrick J., to Cincinnati Electronics Corporation. Kalman predictor for providing a relatively noise free indication of the phase of a carrier laden with noise. 5,062,123, Cl. 375-81.000.

Geller, Myer; and Evanoff, George A., Jr., to United States of America, Navy. Mid range UV communications. 5,062,154, Cl. 359-154.000.

Gellert, Jobst U. Injection molding apparatus having separate heating element in the cavity forming insert. 5,061,174, Cl. 425-549.000.

Gemcor Engineering Corp.: *See*—
Birke, James L.; Michalewski, David; Gross, Steven; Kellner, Robert J.; and Andrews, Mark J., 5,060,362, Cl. 29-525.200

Gen-Gar-Inc.: *See*—
Genis, James; and Madgar, Normand J., 5,061,145, Cl. 414-325.000.

Genentech, Inc.: *See*—
Burnier, John P.; and Cianciolo, George J., 5,061,786, Cl. 530-326.000.

General Atomics: *See*—
Moeller, Charles P., 5,061,912, Cl. 333-113.000.

General Dynamics Corporation: *See*—
Hulderman, Garry N.; Phillips, Eugene; and Swanson, Richard J., 5,062,149, Cl. 455-323.000.

General Dynamics Corporation, Convair Division: *See*—
Lanzo, Robert F., 5,060,365, Cl. 29-739.000

General Electric Company: *See*—
Belliveau, Stephen D., 5,061,873, Cl. 313-271.000.
Chang, Keh-Minn, 5,061,324, Cl. 148-11.50N.
Gallucci, Robert R., 5,061,746, Cl. 524-188.000.
Giovanetti, Anthony J., 5,060,973, Cl. 280-736.000.
Haas, Adam J.; and Crabtree, Glenn E., 5,060,358, Cl. 29-235.000.
Meckley, John R., 5,062,142, Cl. 382-27.000.
Schneiter, John L., 5,061,062, Cl. 356-1.000.
Siryj, Bohdan W.; and York, Michael E., 5,062,092, Cl. 369-38.000.
Upadhya, Kamleshwar, 5,061,512, Cl. 427-38.000.
Wang, Hsin-Pang; and Pang, Yuan, 5,060,914, Cl. 266-236.000.

Genis, James; and Madgar, Normand J., to Gen-Gar-Inc. Apparatus for picking up and transferring lightweight articles. 5,061,145, Cl 414-325.000.

Gente, Daniel; and Giron, Marcel, to Framatome. Process for the replacement of a heating rod of a pressurizer of a pressurized-water nuclear reactor. 5,061,433, Cl. 376-260.000.

Gentry, John M.: *See*—
Bolick, Virgil T., Jr.; and Gentry, John M., 5,061,209, Cl. 439-676.000.

Gentry, Thomas L.: *See*—
Clearman, Jack F.; Gentry, Thomas L.; and Shelar, Gary P., 5,060,666, Cl. 131-194.000.

Geren, Keith E.; and Routh, Claude C., to United States of America, Navy. Ping elongator-modulator for realistic echo synthesis 5,062,083, Cl. 367-1.000.

Gergely, John S., to Conoco Inc. Detecting disturbance using optical gap sensing. 5,061,846, Cl. 250-227.140.

Gergely, William, Jr.; and Janatka, Karel J., to Pitney Bowes Inc. Clam shell housing for dual web bursting apparatus. 5,060,838, Cl. 225-100.000.

Gerken, Rudolf: *See*—
Lailach, Gunter; and Gerken, Rudolf, 5,061,472, Cl. 423-531.000

Gerling Institut Pro Schadenforschung, Schadenverhutung und Sicherheitstechnik GmbH: *See*—
Wahl, Rudolf; and Borchardt, Ulrich, 5,061,637, Cl. 436-109.000.

Gerry Baby Products Company: *See*—
Parker, Robert M.; Golenz, Douglas; Knoedler, Roy E.; and Harvey, Gregg, 5,061,012, Cl. 297-467.000

Gertel, Maurice, to Kinetic Systems, Inc. Honeycomb tables. 5,061,541, Cl. 428-116.000.

Gertner, Sheldon. Method for treating arthritically inflamed body joints, particularly joints having gouty arthritis. 5,061,724, Cl 514-420.000.

Gessler, Reiner; and Rycyk, Manfred, to Cytomed Medizintechnik GmbH. Method of purifying whole blood. 5,061,237, Cl. 604-5.000.

Gethoffer, Hanspeter; and Reinhardt, Gerd, to Hoechst Aktiengesellschaft. Imidoperoxycarboxylic acids, processes for their preparation and their use. 5,061,807, Cl. 548-473.000

Gewerkschaft Eisenhutte Westfalia GmbH: *See*—
Kussel, Willy; Konig, Johannes; and Reuter, Martin, 5,062,033, Cl. 364-187.000.
Weirich, Walter; Dettmers, Michael; and Trox, Uwe, 5,060,556, Cl. 91-527.000.

Ghirardi, Orlando: *See—*
Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Sciolastico, Carlo, 5,061,725, Cl. 514-424.000.

Giammarise, Anthony W.: *See—*
Flynn, Paul L.; and Giammarise, Anthony W., 5,061,513, Cl 427-38.000.

Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Sciolastico, Carlo, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. (Pyrrolidin-2-one-1-yl) acetamides and enhancers of learning and memory pharmaceutical compositions comprising same. 5,061,725, Cl. 514-424.000.

Gibson, Edwin D.: *See—*
Verhoeven, John D.; and Gibson, Edwin D., 5,062,025, Cl 361-509.000.

Gibson, Michael S. Laryngoscope blade. 5,060,633, Cl. 128-11.000.

Gidwani, Sanjay: *See—*
Urmson, John; Pearson, Anthony; and Gidwani, Sanjay, 5,060,507, Cl. 73-24.010.

Gilbert, William B.; Roberts, Jack V.; and Walker, Alfred J., to Webex, Inc. Method and apparatus for selectively demetallizing a metallized film. 5,061,837, Cl. 219-68.000.

Gill, Ajit S. Compact multi-stage pressure reducing valve. 5,060,691, Cl. 137-613.000.

Gill, Ronald Y.; and Shepherd, Frank J., to Telephone Cables Limited. Cable core with a twisting channel, and laying optical fiber therein. 5,060,467, Cl. 57-13.000.

Gilman, Thomas H. Wound dressing with air permeable bacteria impermeable reservoir. 5,060,642, Cl. 128-155.000.

Gilmore, Christopher B.: *See—*
Greenwell, Joseph D.; and Gilmore, Christopher B., 5,060,450, Cl. 53-113.000.

Gingello, Anthony D.; Jennings, David F.; Lucitte, Richard D., and Rocha, Hermano P., to Eastman Kodak Company. Contact film for use in graphic arts with two overcoat layers. 5,061,595, Cl. 430-264.000.

Giovanetti, Anthony J., to General Electric Company. Liquid propellant inflator for vehicle occupant restraint apparatus. 5,060,973, Cl. 280-736.000.

Girard, Marc; and Van Der Werf, Sylvie, to Institut Pasteur. Peptides comprising an immunogenic site of poliovirus and DNAs containing nucleotide sequences coding for these peptides. 5,061,623, Cl. 435-69.300.

Girmscheid, Margot L., nee Hermannsdorfer, Ralf A. Girmscheid, Steffen P. Girmscheid, heirs: *See—*
Girmscheid, Paul, deceased; Stuhler, Helmut; and Schulze, Gisbert, 5,061,421, Cl. 264-63.000.

Girmscheid, Paul, deceased (by Girmscheid, Margot L., nee Hermannsdorfer, Ralf A. Girmscheid, Steffen P. Girmscheid, heirs); Stuhler, Helmut; and Schulze, Gisbert, to Hoechst CeramTec Aktiengesellschaft. Moldings composed of cordierite and a process for producing them. 5,061,421, Cl. 264-63.000.

Giron, Marcel: *See—*
Gente, Daniel; and Giron, Marcel, 5,061,433, Cl. 376-260.000.

Giuliani S.p.A.: *See—*
Pellicciari, Roberto; Roda, Aldo; and Frigerio, Giuliano, 5,061,701, Cl. 514-182.000.

Gladow, Dean E., to Didde Web Press Corporation. Apparatus for changeover of cylinders in web fed printing press. 5,060,569, Cl. 101-216.000.

Glandt, Carlos A.; Vinegar, Harold J.; and Gardner, John W., to Shell Oil Company. Method and apparatus for producing tar sand deposits containing conductive layers having little or no vertical communication. 5,060,726, Cl. 166-248.000.

Glass, Philip E. Lawn game. 5,060,956, Cl. 273-411.000.

Glaverbel: *See—*
Halter, Alain; Hussenet, Joel; Arker, Paul; and Toussaint, Francois, 5,061,382, Cl. 252-2.000.
Hecq, Andre ; and Toussaint, Francois, 5,061,874, Cl. 313-478.000.
Robyn, Pierre; Mottet, Leon-Philippe; and Zivkovic, Alexandre, 5,061,526, Cl. 427-422.000.

Glawischnig, Karl: *See—*
Cain, William; Emond, Ernest; Glawischnig, Karl; and Grant, Robert, 5,061,126, Cl. 408-206.000.

Glennie, William L.: *See—*
Rea, Mark S.; Glennie, William L.; and Thukral, Inderpreet S., 5,061,997, Cl. 358-108.000.

Glickman, Joel I., to Magic Mold Corporation. Construction toy. 5,061,219, Cl. 446-126.000.

Glish, John P.; and Bickman, Bernard F., to Honeywell Inc. Projectile base plug with enhanced drag-producing separation capability 5,060,574, Cl. 102-489.000.

Gobush, William, to Acushnet Company. Multiple dimple golf ball. 5,060,954, Cl. 273-232.000.

Gockel, Claus: *See—*
Huning, Werner; Gockel, Claus; Richter, Georg; and Biester, Werner, 5,061,408, Cl. 261-112.100.

Godbersen, Byron L. Hull conforming bunk unit for boat trailer. 5,060,963, Cl. 280-414.100.

Godbersen, Gary L.; and Salmon, Dwayne D., to Gomaco Corp. Adjustable automatic floating trowel apparatus for slip forming machines. 5,061,115, Cl. 404-102.000.

Godfrey, Robert E.: *See—*
Schultz, Elmer G.; Godfrey, Robert E.; and Chapman, Thomas D., 5,061,233, Cl. 493-410.000.

Goe, Gerald L., to Reilly Industries, Inc. Process for preparing 2-methyl-3,5-dialkylpyridines by dealkylation with sulfur. 5,061,805, Cl. 546-349.000.

Goex International, Inc.: *See—*
Montgomery, Mike; and Hayes, Scott L., 5,060,573, Cl. 102-202.500.

Gohl, Pierre; Lachenal, Jean-Louis; and Pergent, Jacky, to La Telemecanique Electrique. Input management circuit particularly for a programmable automation. 5,062,072, Cl. 364-900.000.

Gohlisch, Hans-Joachim; Baumgarten, Wilfried; Becker, Klaus; and Budiman, Paul, to Paul Troester Maschinenfabrik. Extruder head 5,061,166, Cl. 425-133.500.

Golchert, Ursula: *See—*
Fischer, Jens-Dieter; Munzer, Manfred; Golchert, Ursula; and Schinzel, Felix, 5,061,558, Cl. 428-332.000.

Gold, Jeffrey G.: *See—*
Martinez, Mario J.; Gold, Jeffrey G.; and Hahnen, Kevin F., 5,061,257, Cl. 604-282.000.

Gold, Markus R.: *See—*
Bormann, Joachim; Gold, Markus R.; and Schatton, Wolfgang, 5,061,703, Cl. 514-212.000.

Goldberg, Michael M.: *See—*
Bauman, Mark L.; and Goldberg, Michael M., 5,060,678, Cl. 132-73.000.

Goldman, Stephen A.; Horney, James C.; and Retzsch, Herbert L., to Procter & Gamble Company, The. Absorbent structures with gelling agent and absorbent articles containing such structures. 5,061,259, Cl. 604-368.000

Goldsmith, Eric S., to Motorola, Inc. Method and apparatus for enabling a memory. 5,062,080, Cl. 365-230.010.

Goldstar Alps Electronics Co., Ltd.: *See—*
Maeng, Hyun J., 5,062,015, Cl. 360-96.500.

Goldstar Co., Ltd.: *See—*
Choi, Jae C., 5,061,848, Cl. 250-229.000.
Park, Yong S., 5,061,876, Cl. 313-581.000.

Goldstein, Edward J.; and Linn, Richard A., to Padco Plastics, Inc. Self-locking adaptor for converting a pole into a tool. 5,060,995, Cl. 294-19.100.

Goldstein, Edward J.: *See—*
Linn, Richard A.; and Goldstein, Edward J., 5,060,794, Cl. 206-232.000

Goldstein, Steven W.: *See—*
Clark, David A.; Goldstein, Steven W.; Holland, Gerald F.; Hulin, Bernard; and Rizzi, James P., 5,061,717, Cl. 514-342.000

Goldwell GmbH: *See—*
Zulauf, Karlheinz, 5,060,791, Cl. 206-221.000.

Golenz, Douglas: *See—*
Parker, Robert M.; Golenz, Douglas; Knoedler, Roy E.; and Harvey, Gregg, 5,061,012, Cl. 297-467.000.

Gollasch, Albert; and Engst, Johannes, to Bayer Aktiengesellschaft. Container with a screw-cap closure. 5,060,813, Cl. 215-329.000.

Gomaco Corp.: *See—*
Godbersen, Gary L.; and Salmon, Dwayne D., 5,061,115, Cl. 404-102.000.

Gomi, Takeo; and Kodama, Hitoshi, to Mitsubishi Rayon Company Ltd. Roll formed of carbon fiber composite material. 5,061,533, Cl. 428-36.300.

Gomoll, Gunter: *See—*
Hauslaib, Wolfgang; Gomoll, Gunter; and Buschmann, Ulrich, 5,061,096, Cl. 400-616.200.

Goodacre, Brita C.; Pembroke, Andrew G.; and Shukla, Dipak P., to Tate & Lyle plc. Sweetener composition. 5,061,320, Cl. 127-30.000.

Goodman, Howard, to ECC International Limited. Coated clay granules. 5,061,397, Cl. 252-174.250.

Goodman, Kenneth R.: *See—*
Coulter, Kenneth T.; and Goodman, Kenneth R., 5,062,048, Cl. 364-422.000.

Goodwin, Richard H., Jr.: *See—*
Dejter, Stephen W., Jr.; and Goodwin, Richard H., Jr., 5,060,658, Cl. 128-753.000.

Goodyear Tire & Rubber Company, The: *See—*
Hsu, Wen-Liang; and Halasa, Adel F., 5,061,765, Cl. 526-141.000.
Ito, Masayoshi; Tang, Ming-Ya; and Kim, Soojaa L., 5,061,425, Cl. 264-184.000.
Jones, Paul W.; Abbott, John R.; and Fleming, Roger A., 5,060,706, Cl. 152-381.500
Kot, Kenneth M.; and Lee, Byung-Lip, 5,061,557, Cl. 428-295.000.

Gordon, Eugene I., to Photon Imaging Corp. Color page scanner using fiber optic bundle and a photosensor array. 5,061,036, Cl. 385-116.000

Gordon, Gary B., to Hewlett-Packard Company. Capillary zone electrophoresis cell system. 5,061,361, Cl. 204-299.00R.

Goronkin, Herbert, to Motorola, Inc. Energy band leveling modulation doped quantum well. 5,061,970, Cl. 357-04.000.

Gorza, Roberto: *See—*
Battistella, Mirco; and Gorza, Roberto, 5,060,403, Cl. 36-117.000.

Gorzegno, Walter P.; Stevens, William D.; and Zipay, Albert J., to Foster Wheeler Energy Corporation. Steam processing apparatus and method. 5,061,304, Cl. 55-347.000.

Goss, Daniel A.: *See—*
Macomber, Bennie E.; and Goss, Daniel A., 5,061,933, Cl. 342-128.000.

Gossann, Rainer: *See—*
Stolz, Josef; and Gossann, Rainer, 5,061,332, Cl. 156-94.000.

Gotaverken Energy Aktiebolag: *See—*
Chambert, Lars A., 5,060,599, Cl. 122-4.00D.

Goto, Masahito: *See—*
Hibino, Hiroki; Nagayama, Yoshikatsu; Yoshikawa, Mutsumi; Takara, Toshiyuki; Goto, Masahito; Suzuki, Akira; Takehana, Sakae; Oaki, Yoshinao; Hoshimitsu, Koichi; Aoki, Yoshisada; Ueda, Yasuhiro; and Matsui, Raifu, 5,060,632, Cl. 128-6.000.

Gotoh, Toshihisa, to Nippon Standard Telecommunications Co., Ltd. Tape recorder including cam operated mode changing mechanism. 5,062,013, Cl. 360-90.000.

Gotou, Kouji; Kuranaga, Hiroshi; and Nakabayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Error check code generating device and transmission error detecting device. 5,062,111, Cl. 371-37.100.

Gould, Larry D.: *See—*
Cole, David M.; and Gould, Larry D., 5,060,521, Cl. 73-857.000.

Gourd, James T., to Ford Motor Company. Fastener with resilient linking means. 5,061,137, Cl. 411-510.000.

Grabbe, Dimitry G., to AMP Incorporated. Termination of a small coaxial cable. 5,061,827, Cl. 174-756.000.

Grabiak, Raymond C.: *See—*
Fields, Donald L., Jr.; Grabiak, Raymond C.; Koenig, Karl E.; and Riley, Dennis P., 5,061,820, Cl. 560-17.000

Grabner, Bernd: *See—*
Altpeter, Sabine; Vacek, Helmut; and Grabner, Bernd, 5,060,915, Cl. 266-236.000.

Grace, Colin J.: *See—*
Copas, Raymond J.; Grace, Colin J.; and Robertson, Malcolm A., 5,061,522, Cl. 427-349.000.

Grant, Robert: *See—*
Cain, William; Emond, Ernest; Glawischnig, Karl; and Grant, Robert, 5,061,126, Cl. 408-206.000

Grassini, Osvaldo, to Fiat Auto S.p.A. Windscreen wiper with translational motion, particularly for a spoiler above the rear window of a motor car. 5,060,340, Cl. 15-250.240.

Grasso, Mark S., to Allied-Signal Inc. North finding system. 5,060,392, Cl. 33-324.000.

Gravelle, Kelly P., to Electrovert Ltd. Flux control for induction heating of melt-out cores. 5,061,162, Cl. 425-3.000.

Gray, Ann L.: *See—*
Bernier, Roger L.; Collins, Martyn D.; and Gray, Ann L., 5,061,489, Cl. 424-93.000.

Green Bay Packaging Inc.: *See—*
Hoffman, Roger P., 5,061,345, Cl. 162-125.000.

Green, J. Derek: *See—*
Brazelton, Carl L.; Litherland, Troy C.; and Green, J. Derek, 5,061,456, Cl. 422-134.000.

Greenfeld, Albert: *See—*
Greenfeld, Albert R.; and Greenfeld, Jonathan L., 5,061,255, Cl. 604-266.000.

Greenfeld, Albert R.; and Greenfeld, Jonathan L., to Greenfeld, Albert, a part interest. Exterior antimigration refinements for self-cleaning indwelling therapeutic articles. 5,061,255, Cl. 604-266.000.

Greenfeld, Jonathan L.: *See—*
Greenfeld, Albert R.; and Greenfeld, Jonathan L., 5,061,255, Cl. 604-266.000.

Greenwell, Joseph D.; and Gilmore, Christopher B., to R. A. Jones & Co. Inc. Apparatus for shifting particulate material in pouches. 5,060,450, Cl. 53-113.000.

Greenwood, Thomas G.: *See—*
Keith, Charles A.; Dietz, Barbara J.; Flores, Jose F.; and Greenwood, Thomas G., 5,060,545, Cl. 83-15.000.

Gregg, Joseph J.: *See—*
Yurkewych, George J.; Gregg, Joseph J.; and Beley, Samuel D., 5,061,244, Cl. 604-164.000.

Griffin, Nigel D. Cutter assemblies for rotary drill bits, and method of manufacturing same. 5,060,739, Cl. 175-329.000.

Griggs, David A.: *See—*
Carroll, John F.; Griggs, David A.; and Mruk, William A., 5,061,610, Cl. 430-532.000.

Grimes, Mildred. Method for shading a rear window shelf. 5,060,361, Cl. 29-450.000.

Grimm, Noel P.; Bauer, Frank I.; Bengel, Thomas G.; Kothmann, Richard E.; Mavretish, Robert S.; Miller, Phillip E.; Nath, Raymond J.; and Salton, Robert B., to United States of America, Energy. Temperature monitoring device and thermocouple assembly therefor. 5,061,083, Cl. 374-112.000.

Grindey, Gerald B.; and Hertel, Larry W., to Eli Lilly and Company. 2-deoxy-2',2'-difluoro-inosine and 5'O-derivatives. 5,061,793, Cl. 536-26.000.

Griswold, Gregory L.: *See—*
Bush, Vincent N.; and Griswold, Gregory L., 5,060,484, Cl. 62-137.000.

Groeschel, Vernon E.: *See—*
Meisner, James E.; Mumby, Edward S.; and Groeschel, Vernon E., 5,061,849, Cl. 250-254.000.

Grohe, Klaus: *See—*
Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,061,712, Cl. 514-300.000.

Grollier, Jean F.; Richard, Herve; Forestier, Serge; and Lang, Gerard, to L'Oreal. Use of diorganopolysiloxanes containing a 3-benzylidene camphor functional group in cosmetics and new cosmetic compositions containing these compounds, intended for protecting the skin and hair. 5,061,479, Cl. 424-47.000.

Gronachan, Donald B.: *See—*
Dunn, Thomas J.; and Gronachan, Donald B., 5,060,935, Cl. 272-70.000.

Groshens, Pierre; and Paire, Christian, to Lainiere de Picardie, Societe Anonyme. Thermo-adhesive textile material comprising a chemically blocked cross linking agent. 5,061,546, Cl. 428-196.000

Gross, Steven: *See—*
Birke, James L.; Michalewski, David; Gross, Steven; Kellner, Robert J.; and Andrews, Mark J., 5,060,362, Cl. 29-525.200.

Grossman, Mark V., to GTE Products Corporation. High feedstock utilization photochemical process for ^{196}Hg enrichment. 5,061,353, Cl. 204-157.220.

Groundwater Technology, Inc.: *See—*
Miller, Paul C., 5,061,458, Cl. 422-173.000.

Groves-Kirkby, Christopher J.: *See—*
Brettle, Jack; Bennion, Ian; and Groves-Kirkby, Christopher J., 5,061,582, Cl. 430-19.000.

Grubbs, Michael: *See—*
Trezek, George; Stanczyk, Martin; and Grubbs, Michael, 5,060,870, Cl. 241-19.000.

Grumman Aerospace Corporation: *See—*
Durst, David I., 5,061,865, Cl. 307-490.000.
Papazian, John M., 5,061,328, Cl. 148-13.100.
Vasile, Carmine F., 5,061,903, Cl. 330-311.000.

Grunewald, Peter: *See—*
Bertram, Johannes; Krug, Ulrich; and Grunewald, Peter, 5,060,773, Cl. 192-45.200.

Grushkin, Bernard: *See—*
Bares, Jan; Berkes, John S.; and Grushkin, Bernard, 5,061,964, Cl 355-265.000.

Grzyll, Lawrence R.: *See—*
Scaringe, Robert P.; Buckman, Jay A.; and Grzyll, Lawrence R., 5,061,391, Cl. 252-67.000.

GTE Products Corporation: *See—*
Grossman, Mark V., 5,061,353, Cl. 204-157.220.
Moyle, David R.; Harris, Geoffrey L.; and Northrop, Robert F., 5,061,661, Cl. 501-87.000.
Nemcovsky, Rhonda L., 5,061,202, Cl. 439-404.000.
Wright, John O., 5,061,207, Cl. 439-578.000.

GTM Batiment et Travaux Publics: *See—*
Lemperiere, Francois, 5,061,118, Cl. 405-108.000.

Guarr, David. Spare tire holder and wheel lock. 5,060,912, Cl. 254-323.000.

Guennewig, John T.: *See—*
Weston, Roy E.; Guennewig, John T.; DeBrocke, John; and Radloff, Fred, 5,061,196, Cl. 439-189.000.

Guess, Hal E.: *See—*
Milford, Ellen C.; Guess, Hal E.; Chapman, Paul S.; Dunn, Rebakah S.; and Perfetti, Patricia F., 5,060,675, Cl. 131-365.000.

Guest, Leonard E.: *See—*
Kelly, John H.; and Guest, Leonard E., 5,061,352, Cl. 204-129.000.

Guichard, Jacques; and Eude, Gerard, to Etat Francais represente par le Ministre des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications). Emission-reception system for the transmission of animated color pictures and sound from two independent channels. 5,061,991, Cl. 358-12.000.

Guigan, Jean. Device for performing biological analyses by immunoenzymatic detection of antibodies or antigens in a serum. 5,061,446, Cl. 422-64.000.

Guilino, Gunther; Pfeiffer, Herbert; and Altheimer, Helmut, to Optische Werke G. Rodenstock. Opthalmic lens for use in the correction of astigmatism. 5,061,058, Cl. 351-176.000.

Guillaumet, Gerald; Flouzat, Christine; and Bonnet, Jacqueline, to Science et Organization. Analgesic oxazolopyridine compounds. 5,061,713, Cl. 514-302.000.

Gulf States Paper Corporation: *See—*
Gulliver, Richard F.; and Linder, Michael C., 5,060,853, Cl. 229-162.000.

Gulliver, Richard F.; and Linder, Michael C., to Gulf States Paper Corporation. Tamper evident consumer product package, windowed flat blank used therein, and method and apparatus for making the blank. 5,060,853, Cl. 229-162.000.

Gunning, Desiree: *See—*
Barua, Arun B.; Gunning, Desiree; and Olson, James A., 5,061,723, Cl. 514-460.000.

Gunter, John B.: *See—*
Zafred, Paolo R.; Snyder, David A.; Gunter, John B.; and Ritz, William C., 5,061,176, Cl. 432-5.000.

Gur-Arif, Izac: *See—*
Carmi, Amatzia; Ram, Abraam; and Gur-Arif, Izac, 5,060,479, Cl. 62-362.000.

Gute, Robert M., to Plasta Fiber Industries, Inc. Ultrasonic cutting and edge sealing of thermoplastic material. 5,061,331, Cl. 156-64.000.

Guter, Gerald A., to Boyle Engineering Corporation. Nitrate analyzer. 5,061,638, Cl. 436-110.000.

Gutmann, Franz, to VDO Adolf Schindling AG. Mounting for the rotary magnet of a rotary magnet-ratio meter. 5,061,893, Cl. 324-154.0PB.

Guzikowski, Gary R., to Kelch Corporation. Molding tool. 5,061,165, Cl. 425-117.000.

H. I. Holweg International S.A.: *See—*
Braedle, Gilbert; Cromer, Paul; and Huck, Francis, 5,060,570, Cl. 101-247.000.

H. J. G. McLean Limited: *See—*
Webster, David R., 5,060,332, Cl. 14-21.000.

Haarer, Steven R., to Cooper Industries, Inc. Cam bracket and headrail system. 5,060,710, Cl. 160-178.100.

Haas, Adam J.; and Crabtree, Glenn E., to General Electric Company. Apparatus and method of installing a gasket in a channel member. 5,060,358, Cl. 29-235.000

Haas, David: *See—*
Khanarian, Garo; Landi, Pascal; Haas, David; and Norwood, Robert, 5,061,028, Cl. 385-132.000

Haefner, Hans W.; and Heimbach, Manfred, to Pfister GmbH. Trailer coupling with force sensing means. 5,060,965, Cl. 280-504.000.

Hafner, Hans W., to Pfister GmbH. Resilient connecting device, in particular with incorporated force-measuring device and process for manufacturing it. 5,060,525, Cl. 862-54.000.

Hagewood, John F.: *See—*
Charles, Jerry T.; Hagewood, John F.; and Shea, Lawrence S., 5,061,422, Cl. 264-103.000

Hagqvist, Peter H., to Aktiebolaget Electrolux. Continuously variable transmission. 5,061,228, Cl. 475-189.000

Hahn, Gary S., to Immunetech Pharmaceuticals. Methods and compositions for the treatment of non-IgE-mediated diseases. 5,061,692, Cl 514-17.000

Hahnen, Kevin F.: *See—*
Martinez, Mario J.; Gold, Jeffrey G.; and Hahnen, Kevin F., 5,061,257, Cl. 604-282.000.

Haisch, Mark E.: *See—*
Lubarsky, Daniel P.; Weigt, George A.; and Haisch, Mark E., 5,062,104, Cl. 370-60.000

Hakky, Said I. Laser resectoscope and method. 5,061,266, Cl. 606-15.000

Halasa, Adel F.: *See—*
Hsu, Wen-Liang; and Halasa, Adel F., 5,061,765, Cl. 526-141.000

Halbert, Terrell R. Apparatus and method for holding a bag open 5,060,893, Cl. 248-97.000

Hall, Guy E. Magnetic pendulum random number selector. 5,060,947, Cl 273-138.00A.

Hall, James: *See—*
Woodward, Bruce; and Hall, James, 5,060,705, Cl. 144-350.000.

Hall, John H. Double diffused CMOS with Schottky to drain contacts 5,061,981, Cl. 357-42.000.

Hall, Peter J., to English Electric Valve Company Limited. Magnetron anode and method of manufacturing anode. 5,061,878, Cl. 315-39.750.

Hall, Richard R.: *See—*
Chapin, Fletcher W.; Dranchak, David W.; Engle, David E.; Hall, Richard R.; and Macek, Thomas G., 5,061,192, Cl. 439-66.000

Haller, Ingo: *See—*
Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,061,712, Cl. 514-300.000.

Hallett, Stanley J.; and Hallett, Thomas E., to Pathfinder Systems, Inc. Turn controller for suspended personal transport vehicle. 5,060,575, Cl. 104-130.000.

Hallett, Thomas E.: *See—*
Hallett, Stanley J.; and Hallett, Thomas E., 5,060,575, Cl 104-130.000.

Halliburton Logging Services, Inc.: *See—*
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Halloran, Daniel J.; Lane, Thomas H.; and Ekeland, Robert A., to Dow Corning Corporation. Siloxanes useful in permanent waving of hair 5,061,482, Cl. 424-71.000

Halter, Alain; Hussenet, Joel; Arker, Paul; and Toussaint, Francois, to Glaverbel. Fire control compositions. 5,061,382, Cl. 252-2.000.

Ham, Joel: *See—*
Yousef, Faisal J.; Kane, Robert F.; Ham, Joel; and Mildren, David, 5,060,740, Cl. 175-415.000

Hamada, Akiyoshi; Yagoto, Mitsutoshi; and Murakami, Masanori, to Minolta Camera Kabushiki Kaisha. Optical head for optical disk system. 5,062,094, Cl. 369-44.120.

Hamada, Kiyoshi: *See—*
Hashiguchi, Jumpei; Nonomura, Kinzo; Hamada, Kiyoshi; Kitao, Satoshi; and Takahashi, Masayuki, 5,061,880, Cl. 315-366.000

Hamada, Shunichi; Uchiyama, Akira; and Okamoto, Katsuo, to Mitsui Petrochemical Industries, Ltd. Thermoplastic elastomer laminate 5,061,572, Cl. 428-516.000.

Hamaguchi, Masami; Yanagihara, Hiromu; Hiraoka, Osamu; and Takahashi, Osamu, to Shiseido Company Limited; and Asia Can Company Limited. Method of manufacturing a metal container. 5,061,140, Cl. 413-6.000.

Hamakawa, Wataru; Matsuo, Hirokazu; and Morigami, Yuusuke, to Minolta Camera Kabushiki Kaisha. Document feeding apparatus. 5,060,925, Cl. 274-111.000.

Hamamatsu Photonics K.K.: *See—*
Takahashi, Akira, 5,062,113, Cl. 372-25.000.

Hamamatsu Photonics Kabushiki Kaisha: *See—*
Takemori, Tamiki, 5,061,860, Cl. 250-561.000.

Hamano, Eiji: *See—*
Horiike, Satoru; Yamamoto, Toshiteru, and Hamano, Eiji, 5,060,749, Cl. 180-219.000.

Hamatsu, Masahiro: *See—*
Kurihara, Takao; and Hamatsu, Masahiro, 5,062,121, Cl. 375-1.000

Hamburg, Douglas R.: *See—*
Cook, Jeffrey A.; and Hamburg, Douglas R., 5,060,621, Cl. 123-520.000.

Hamilton, Brian K.; and Butt, Ronald J., to OEA, Inc. Gas inflator apparatus. 5,060,974, Cl. 280-736.000.

Hamilton, John; and Dickinson, Peter, to Sericol Group Limited Photocurable compositions. 5,061,603, Cl. 430-287.000.

Hamm, Andre: *See—*
Wendling, Bruno; and Hamm, Andre, 5,060,815, Cl. 220-401.000.

Hammelmann, Paul. Nozzle head. 5,060,863, Cl. 239-252.000.

HammerTek Corporation: *See—*
Hess, Larry W., 5,060,984, Cl. 285-127.000.

Hamrin, Karl-Arvid, to Infrarodteknik AB. Apparatus for heat treatment of material, particularly infra-red radiation of a continuous paper web in a paper machine. 5,060,397, Cl. 34-60.000

Han, Chan: *See—*
Aksay, Ilhan A.; Han, Chan; Maupin, Gary D.; Martin, Corrie B.; Kurosky, Randal P.; and Stangle, Gregory C., 5,061,682, Cl. 505-1.000

Hanaki, Yoshimaro; and Yamamoto, Kyoichi, to Kabushiki Kaisha Okuma Tekkosho. Method of an apparatus for retracting tool in numberical control machine tool. 5,060,544, Cl. 82-1.110.

Handel, Klaus D.: *See—*
Ganshirt, Karlheinz; Walker, Wolfram; and Handel, Klaus D., 5,061,451, Cl. 422-101.000

Haneda, Satoshi; Shoji, Hisashi; Hiratsuka, Seiichiro; Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, to Konica Corporation. Method of cleaning an image retainer. 5,061,966, Cl. 355-297.000.

Hans Rudolph, Inc.: *See—*
Rudolph, Kevin A., 5,060,655, Cl. 128-716.000.

Hansell, Gregory L.: *See—*
Yaniv, Zvi; Cannella, Vincent D.; Hansell, Gregory L.; and Swartz, Louis D., 5,061,040, Cl. 359-60.000.

Hansen, Arne H. Tire mounting and dismounting apparatus. 5,060,708, Cl. 157-1.240.

Hansen, Dennis L., to W. R. Grace & Co.-Conn. Zoned cylindrical dryer. 5,060,396, Cl. 34-16.000.

Hansen, Hans J.: *See—*
Shochat, Dan; Hansen, Hans J.; and Wu, Robert S., 5,061,641, Cl. 436-545.000

Hansen, Lorin K.; Lara, Edwardo D.; Lloyd, William A.; Sayre, Jack H.; and White, Stephen D., to Xerox Corporation. Electrographic marking with modified addressing to eliminate striations. 5,061,948, Cl. 346-155.000

Hanson, Douglas W.: *See—*
Harlan, William S.; Wang, Shein S.; and Hanson, Douglas W., 5,062,086, Cl. 367-38.000

Hanssler, Gerd: *See—*
Heinemann, Ulrich; Wollweber, Detlef; Brandes, Wilhelm; Dutzmann, Stefan; and Hanssler, Gerd, 5,061,312, Cl. 71-95.000.

Happich, Otto; and Cziptschirsch, Kurt, to Gebr. Happich GmbH. Vehicle sun visor with reversible mirror. 5,061,004, Cl. 296-97.500.

Hara, Shigeyoshi: *See—*
Endo, Zen-ichiro; Hara, Shigeyoshi; and Nakatani, Umewaka, 5,061,521, Cl. 427-307.000.

Hara, Takanori: *See—*
Yamashiro, Shinji; and Hara, Takanori, 5,061,169, Cl. 425-190.000.

Harada, Ichiya: *See—*
Kiyohara, Kazuto; Araki, Hiromitu; Yamazaki, Toshiaki; and Harada, Ichiya, 5,061,612, Cl. 430-533.000.

Harada Kogyo Kabushiki Kaisha: *See—*
Nakase, Kazuhiko, 5,061,939, Cl. 343-700.0MS.

Harada, Shozo: *See—*
Sakamoto, Masahiro; and Harada, Shozo, 5,061,410, Cl. 264-4.700.

Harada, Syouji: *See—*
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000.

Harasaki, Hayatsugu; and Noma, Kohji, to Masda Motor Corporation. Front vehicle body structure. 5,061,009, Cl. 296-192.000.

Harison Electric Co., Ltd.: *See—*
Iio, Masaaki; and Nagano, Masamitsu, 5,061,189, Cl. 439-57.000.

Harlan, William S.; Wang, Shein S.; and Hanson, Douglas W., to Conoco Inc. Calculation of raypaths and wavepaths from traveltime tables for the tomographic estimation of transmission velocities. 5,062,086, Cl. 367-38.000.

Harlow, Albert L., Jr.: *See—*
Kokoruda, Robert D.; and Harlow, Albert L., Jr., 5,060,900, Cl. 248-311.200.

Harmer, Walter L.; Christensen, Leif; Drtina, Gary J.; and Helmin, Harvey J., to Minnesota Mining and Manufacturing Company. Abrasive article with conductive, doped, conjugated, polymer coat and method of making same. 5,061,294, Cl. 51-295.000.

Harmon Industries, Inc.: *See—*
Utterback, Jeffrey J.; and Mecca, Randall S., 5,060,890, Cl. 246-169.00A

Harnish, Daniel F.; Pickens, Donald; and Brautigam, Richard J., to Allied-Signal Inc. Magnetic coating compositions containing fluoropolyols. 5,061,577, Cl. 428-694.000.

Harpell, Gary A.: *See—*
Li, Hsin L.; Harpell, Gary A.; and Prevorsek, Dusan C., 5,061,545, Cl. 428-195.000.

Harris Corporation: *See—*
Schmitt, John C., 5,062,143, Cl. 382-36.000.

Harris, Frank W.; and Russell, David D., to University of Akron. Moldable and/or extrudable poly(enamine ketone-co-alkylene ether) block compolymers. 5,061,764, Cl. 525-540.000.

Harris, Geoffrey L.: *See—*
Moyle, David R.; Harris, Geoffrey L.; and Northrop, Robert F., 5,061,661, Cl. 501-87.000.

Harris, John G.; and Koch, Christof. "Resistive fuse" analog hardware for detecting discontinuities in early vision system. 5,062,000, Cl. 358-213.270.

Harris, Philip G.; and Reid, Tom M., to Milliken Research Corporation. Method to manufacture tubular woven fabric. 5,060,350, Cl. 28-168.000.

Hartley, Richard H.: *See—*
Folkard, Margaret A.; and Hartley, Richard H., 5,061,072, Cl. 356-369.000.

Hartman, Brian T. Corner protector. 5,060,902, Cl. 248-345.100.

Hartzell Propeller Inc.: *See—*
Pace, Loy D.; Stackhouse, Donald C.; Jones, Earl W.; and Zimpfer, Dennis S., 5,061,153, Cl. 416-46.000.

Harvey, Gregg: *See—*
Parker, Robert M.; Golenz, Douglas; Knoedler, Roy E.; and Harvey, Gregg, 5,061,012, Cl. 297-467.000.

Harvey, Michael P.: *See—*
Miller, James C.; and Harvey, Michael P., 5,061,923, Cl. 340-825.310.

Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Address mark generating method and its circuit in a data memory. 5,062,011, Cl. 360-40.000.

Hasegawa, Makoto: *See—*
Kinoshita, Naohisa; Kashima, Hiroyuki; Hasegawa, Makoto; Tsuzuki, Toshihiro; and Muto, Kiyoshi, 5,061,959, Cl. 355-210.000.

Hasegawa, Morihiro: *See—*
Yamauchi, Takashi; and Hasegawa, Morihiro, 5,060,714, Cl. 164-428.000.

Hasegawa, Toshiki: *See—*
Seki, Ichiro; Kano, Akihiro; Hasegawa, Toshiki; Abe, Minoru; and Isa, Isao, 5,061,665, Cl. 501-105.000.

Hashibe, Yoshio: *See—*
Matano, Takahiro; Hashibe, Yoshio; Ninomiya, Masayuki; and Shibuya, Takehiro, 5,061,307, Cl. 65-18.400.

Hashiguchi, Jumpei; Nonomura, Kinzo; Hamada, Kiyoshi; Kitao, Satoshi; and Takahashi, Masayuki, to Matsushita Electric Industrial Co., Ltd. Method of driving image display device. 5,061,880, Cl. 315-366.000.

Hashimoto, Atsuko; and Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Knock sensing apparatus for an internal combustion engine. 5,060,615, Cl. 123-425.000.

Hashimoto Forming Industry Co., Ltd.: *See—*
Tamura, Tatsuya; and Hotta, Tetsuo, 5,061,335, Cl. 156-244.110.

Hashimoto, Hiroshi: *See—*
Ohya, Takao; Nakagawa, Jun; Hayakawa, Satoru; Nishikawa, Yasuo; Okita, Tsutomu; and Hashimoto, Hiroshi, 5,061,564, Cl. 428-409.000.

Hashimoto, Ichiro: *See—*
Ohneda, Noboru; Ushioda, Shunta; Arima, Haruo; Hashimoto, Ichiro; Kaneko, Denziro; Sugiyama, Kazuo; Fukazawa, Tsuguo; Tachi, Teruo; and Mukasa, Takashi, 5,060,500, Cl. 72-287.000.

Hashimoto, Masashi: *See—*
Oku, Teruo; Kawai, Yoshio; Kayakiri, Hiroshi; Kuratani, Kazuyoshi; and Hashimoto, Masashi, 5,061,718, Cl. 514-367.000.
Uchida, Itsuo; Hatanaka, Hiroshi; Nitta, Kumiko; Hashimoto, Seiji; Okuhara, Masakuni; Murai, Hidetsugu; and Hashimoto, Masashi, 5,061,730, Cl. 514-563.000.

Hashimoto, Seiji: *See—*
Uchida, Itsuo; Hatanaka, Hiroshi; Nitta, Kumiko; Hashimoto, Seiji; Okuhara, Masakuni; Murai, Hidetsugu; and Hashimoto, Masashi, 5,061,730, Cl. 514-563.000.

Hashizume, Junichiro: *See—*
Saitoh, Keishi; Hashizume, Junichiro; Iida, Shigehira; Takei, Tetsuya; and Arai, Takayoshi, 5,061,511, Cl. 427-38.000.

Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., to Schering Corporation. Mercapto-acylamino acid antihypertensives. 5,061,710, Cl. 514-266.000.

Hassel, Tillmann; Muller, Hanns P.; Vernaleken, Hugo; Kipphardt, Helmut; and Dhein, Rolf, to Bayer Aktiengesellschaft. Process for the preparation of polyurethane powders. 5,061,756, Cl. 525-127.000.

Hasz, Richard E.: *See—*
Allgood, Christopher L.; Hasz, Richard E.; Hughes, Donald W. K.; Stillie, Donald G.; and Sykora, Allan J., 5,061,203, Cl. 439-441.000.

Hata, Hajime; Sogabe, Seiji; and Oka, Keizo, to Shikoku Chemicals Corporation. Process for preparation of aluminum borate whisker. 5,061,468, Cl. 423-279.000.

Hatakeyama, Jun: *See—*
Takahashi, Masaharu; and Hatakeyama, Jun, 5,061,736, Cl. 521-91.000

Hatakeyama, Shigeki: *See—*
Tadokoro, Toyohiro; Sato, Kiyoshi; Hatakeyama, Shigeki; Kawase, Shigeo; and Ueno, Masao, 5,061,714, Cl. 514-309.000.

Hatanaka, Atsushi: *See—*
Seto, Tsuneo; Hatanaka, Atsushi; Miura, Hironori; and Baba, Hideo, 5,060,498, Cl. 72-164.000.

Hatanaka, Hiroshi: *See—*
Uchida, Itsuo; Hatanaka, Hiroshi; Nitta, Kumiko; Hashimoto, Seiji; Okuhara, Masakuni; Murai, Hidetsugu; and Hashimoto, Masashi, 5,061,730, Cl. 514-563.000.

Hatch, Gary L.; and Polasky, Ralph A., to Ametek, Inc. Water purifying filter device. 5,061,367, Cl. 210-137.000.

Hattori, Hohji: *See—*
Murata, Masayoshi; Tsutsumi, Hideo; Matsuda, Keiji; Hattori, Hohji; and Nakajima, Takashi, 5,061,804, Cl. 546-281.000

Hauck, Lane T.: *See—*
Farwell, Randall S.; Hauck, Lane T.; and Shapiro, Leonid, 5,062,001, Cl. 358-236.000.

Haug, Robert B.: *See—*
Hed, Steven A.; and Haug, Robert B., 5,061,013, Cl. 301-63.0PW

Haugen, Ronald E.; and Murphy, David T., to VIX Design Products, Inc. Rack for pickup truck. 5,061,000, Cl. 296-3.000

Haughton, Gary H., to Evacuo Enterprises Limited. Holder for molten metal sampling device. 5,060,530, Cl. 73-864.530

Hauk, Thomas D., to Hawk Industries, Inc. Apparatus and method for making and breaking joints in drill pipe strings. 5,060,542, Cl. 81-57.340.

Hauslaib, Wolfgang; Gomoll, Gunter; and Buschmann, Ulrich, to Mannesmann Aktiengesellschaft. Device for transport of multi-layer, edge-perforated imprint-receiving substrates. 5,061,096, Cl 400-616.200.

Hausner, Alan. Puzzle having moveable tiles and transparent retainer. 5,060,948, Cl. 273-153.00S.

Hawk Industries, Inc.: *See—*
Hauk, Thomas D., 5,060,542, Cl. 81-57.340.

Hawley, Peter J., Jr. Rope climbing exercise apparatus. 5,060,938, Cl. 272-112.000.

Hayakawa, Satoru: *See—*
Ohya, Takao; Nakagawa, Jun; Hayakawa, Satoru; Nishikawa, Yasuo; Okita, Tsutomu; and Hashimoto, Hiroshi, 5,061,564, Cl. 428-409.000.

Hayama, Noboru; and Ohinata, Yoshiharu, to Riso Kagaku Corporation. Rotary stencil printer with printing drum of net cylindrical body radially outwardly expandable in full circumference. 5,060,567, Cl. 101-120.000.

Hayashi, Hiroshige: *See—*
Kubota, Toshiaki; Hayashi, Hiroshige; Ishizaka, Yoshirou; Naganuma, Hiroshi; and Kakinuma, Zenichi, 5,061,019, Cl. 312-214.000.

Hayashi, Kazuyuki: *See—*
Nishimura, Akihiro; Hayashi, Kazuyuki; Iwasaki, Keisuke; Tanaka, Yasuyuki; and Itamochi, Hiroko, 5,061,570, Cl. 428-480.000.

Hayashi, Shigehiro; and Ayukawa, Yoshibumi, to Fujitsu Limited. Network synchronization system. 5,062,124, Cl. 375-107.000

Hayashi, Tsutomu; and Saito, Mitsuru, to Honda Giken Kogyo Kabushiki Kaisha. Hydrostatic continuously variable transmission with a set of pump distributor valves, a set of motor distributor valves and a set of clutch valves arranged radiately with and circumferentially alternating with the motor distributor valves. 5,060,477, Cl. 60-488.000.

Hayashi, Yukio: *See—*
Ito, Masahiro; and Hayashi, Yukio, 5,061,749, Cl. 524-850.000

Hayden, James D.: *See—*
Sivan, Richard D.; and Hayden, James D., 5,061,646, Cl 437-31.000.

Hayden, L. M.; and Sauter, Gerald F., to Unisys Corporation. Apparatus for optical beam steering using non-linear optical polymers. 5,061,048, Cl. 359-315.000.

Hayes, Scott L.: *See—*
Montgomery, Mike; and Hayes, Scott L., 5,060,573, Cl. 102-202.500.

Hazan, Jean-Pierre; Steers, Michel; Delmas, Gilles; and Nagel, Jean-Louis, to U.S. Philips Corp. Force/pressure detection device utilizing a monomode optical fiber. 5,061,847, Cl. 250-227.170.

Headrick, Bradley J., to BJ Automations, Inc. Apparatus and method for forming holes in thermoplastic webbing. 5,060,363, Cl. 29-557.000.

Hearn, John R.; Lanzillotti, Vincent; and Burnett, George H., to Philip Morris Incorporated. Process for making a carbon heat source and smoking article including the heat source and a flavor generator. 5,060,676, Cl. 131-369.000.

Heath, Roger K., to Century Manufacturing Co. Inc. Flat metal stock bending die. 5,060,501, Cl. 72-382.000.

Hecq, Andre ; and Toussaint, Francois, to Glaverbel. Glass article having low specular reflection. 5,061,874, Cl. 313-478.000

Hed, Steven A.; and Haug, Robert B. Bicycle rim and wheel. 5,061,013, Cl. 301-63.0PW.

Hedgewick, Peter, to Pac-Tec, Inc. Reflective pavement marker and method of apparatus for making same. 5,061,114, Cl. 404-14.000.

Heeks, George J.: *See—*
Ferguson, Robert M.; Fratangelo, Louis D.; Heeks, George J.; and Henry, Arnold W., 5,061,965, Cl. 355-284.000.

Hegarty, David. Multi-positionable support stand with movable center of gravity and article holding means. 5,060,904, Cl. 248-454.000

Hehl, Karl. Injection molding machine including a cutting unit 5,061,167, Cl. 425-188.000.

Heiberger, Franz. Sound-proofing foam panels. 5,060,752, Cl. 181-291.000.

Heiland, Wolfgang K.; and Radewonuk, E. Richard, to United States of America, Agriculture. Twin rinse columns for freeze concentration of rinsable concentrates. 5,060,483, Cl. 62-123.000.

Heimbach, Manfred: *See—*
Haefner, Hans W.; and Heimbach, Manfred, 5,060,965, Cl 280-504.000.

Heine, William F. Heat dissipating device and combination including same. 5,060,716, Cl. 165-47.000.

Heinemann, Ulrich; Wollweber, Detlef; Brandes, Wilhelm; Dutzmann, Stefan; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Fungicidal N-vinyl-3-cyano-4-phenyl-pyrroles. 5,061,312, Cl. 71-95.000.

Heinrich, Michael: *See*—
Silverman, Michael W.; Heinrich, Michael; and Jones, C. Kerry, 5,060,393, Cl. 33-512.000.

Heiss, Rainer; and Micke, Thomas, to Alcatel N.V. Synchronizing circuit for reducing waiting-time jitter in a demultiplexer. 5,062,107, Cl. 370-105.000.

Heitmann, Uwe, to Korber AG. Wrapping mechanism for rod making machines of the tobacco processing industry. 5,060,665, Cl. 131-84.100.

Heldebrant, Charles M., to Alpha Therapeutic Corporation. Perfluorochemical emulsion with stabilized vesicles. 5,061,484, Cl. 424-78.000.

Helfer, Roland; and Wattron, Bernard, to Kuhn S.A. Mower having a lightening mechanism. 5,060,462, Cl. 56-14.900.

Helix Technology Corporation: *See*—
Bartlett, Allen J.; Buonpane, Maureen C.; and Amundsen, Paul E., 5,060,481, Cl. 62-51.200.

Hellermann, Walter; Herrmann, Christoph; Nordsiek, Karl-Heinz; Wolpers, Jurgen; and Fuchs, Hans-Bernd, to Huels Aktiengesellschaft. Unsaturated, elastomeric, asymmetrically, coupled block copolymers, a dual batch process for its manufacture and their use for the production of type components. 5,061,758, Cl. 525-193.000.

Hellyer, James A.: *See*—
Kong-Chan, Josephine L. Y.; Hellyer, James A.; and Tafuri, Michael W., 5,061,503, Cl. 426-582.000.
Kong-Chan, Josephine L. Y.; Hellyer, James A.; and Tafuri, Michael W., 5,061,504, Cl. 426-582.000.

Helmbold, James E.; and Wirrig, Richard D., to Monarch Marking Systems, Inc. Microprocessor controlled thermal printer. 5,061,946, Cl. 346-1.100.

Helmin, Harvey J.: *See*—
Harmer, Walter L.; Christensen, Leif; Drtina, Gary J.; and Helmin, Harvey J., 5,061,294, Cl. 51-295.000.

Helwig, Gunter: *See*—
Zahn, Rudolf; Schroeder, Hans W.; Borgwardt, Christian; Braig, Albert; Helwig, Gunter; Boukamp, Joachim; Bender, Oswald; Lin, Chung-chi; and Scherber, Werner, 5,061,938, Cl. 343-700.0MS.

Henager, Charles H., Jr.; and Knoll, Robert W., to Battelle Memorial Institute. Thick, low-stress films, and coated substrates formed therefrom. 5,061,574, Cl. 428-620.000.

Henderson, Arthur D.: *See*—
Edison, James M.; and Henderson, Arthur D., 5,060,833, Cl. 224-148.000.

Henderson, Jerald M.: *See*—
Westbrook, Robert S.; Hibbard, Robin L.; Davis, Robert D.; Drews, Erik S.; and Henderson, Jerald M., 5,060,681, Cl. 132-325.000.

Hendrix Batting Co.: *See*—
Hendrix, Kenneth L.; and Rogers, Carl K., 5,061,538, Cl. 428-74.000.

Hendrix, Kenneth L.; and Rogers, Carl K., to Hendrix Batting Co. Support cushion. 5,061,538, Cl. 428-74.000.

Henkel Corporation: *See*—
Shachat, Norman, 5,061,523, Cl. 427-377.000.

Hennemann, Lothar R., to WAGO Verwaltungsgesellschaft mbH. Modular connector for printed circuit boards. 5,062,024, Cl. 361-426.000.

Henny Penny Corporation: *See*—
Winter, David, 5,060,559, Cl. 99-325.000.

Henry, Arnold W.: *See*—
Ferguson, Robert M.; Fratangelo, Louis D.; Heeks, George J.; and Henry, Arnold W., 5,061,965, Cl. 355-284.000.

Hercules Incorporated: *See*—
Endo, Zen-ichiro; Hara, Shigeyoshi; and Nakatani, Umewaka, 5,061,521, Cl. 427-307.000.

Herdeman, James R.: *See*—
French, Jonathan C.; Rounds, David R.; Herdeman, James R.; and Bernardi, Brent S., 5,061,916, Cl. 340-522.000.

Herman, Wallace U.; and Tiberio, Patrick J., to Hubbell Incorporated. Electrical connector lockout device. 5,061,194, Cl. 439-133.000.

Hermelin, Victor M., to KV Pharmaceutical Company. Particle enrobing process and apparatus. 5,061,520, Cl. 427-212.000.

Herring, John M.; and Webb, Andrew, to Imperial Chemical Industries plc. 3-hydroxybutyrate polymer composition. 5,061,743, Cl. 524-130.000.

Herrmann, Christoph: *See*—
Hellermann, Walter; Herrmann, Christoph; Nordsiek, Karl-Heinz; Wolpers, Jurgen; and Fuchs, Hans-Bernd, 5,061,758, Cl. 525-193.000.

Herron, Harold S. Hay conditioning unit. 5,060,459, Cl. 56-10.200.

Hertel, James E.: *See*—
Buxton, Gerry; Wierschke, Larry; and Hertel, James E., 5,061,230, Cl. 493-25.000.

Hertel, Larry W.: *See*—
Grindey, Gerald B.; and Hertel, Larry W., 5,061,793, Cl. 536-26.000.

Hess, Larry W., to HammerTek Corporation. Short radius, low wear elbow. 5,060,984, Cl. 285-127.000.

Hesse, Dieter: *See*—
Kuhlmann, Wolf; Hesse, Dieter; and Kogel, Karl, 5,060,502, Cl. 72-392.000.

Hester, Donald D.: *See*—
Kuehne, Eric R.; and Hester, Donald D., 5,061,156, Cl. 417-412.000.

Hewlett-Packard Company: *See*—
Christie, Leslie G.; Wanger, Mark E.; Dauner, Daniel R.; Jones, David P.; and Domel, Douglas R., 5,062,093, Cl. 369-36.000.
Dias, J. Fleming, 5,060,653, Cl. 128-662.030.
Edwards, Allen P., 5,062,148, Cl. 455-52.000.
Gordon, Gary B., 5,061,361, Cl. 204-299.00R.
Lovelace, Ralph E.; Gampell, David J.; and Ignowski, James S., 5,061,859, Cl. 250-551.000.
Moffatt, John R., 5,061,316, Cl. 106-22.000.
Rose, Donald J., Jr., 5,061,355, Cl. 204-182.800.
Ruby, Richard C., 5,061,686, Cl. 565-1.000.
Smith, Mark A.; Smith, David L.; and Lindberg, Tom B., 5,060,990, Cl. 292-91.000.

Hi-Tek Polymers, Inc.: *See*—
Miller, Michael M., 5,061,742, Cl. 523-402.000.

Hibbard, Robin L.: *See*—
Westbrook, Robert S.; Hibbard, Robin L.; Davis, Robert D.; Drews, Erik S.; and Henderson, Jerald M., 5,060,681, Cl. 132-325.000.

Hibino, Hiroki; Nagayama, Yoshikatsu; Yoshikawa, Mutsumi; Takara, Toshiyuki; Goto, Masahito; Suzuki, Akira; Takehana, Sakae; Oaki, Yoshinao; Hoshimitsu, Koichi; Aoki, Yoshisada; Ueda, Yasuhiro; and Matsui, Raifu, to Olympus Optical Co., Ltd. Endoscope apparatus 5,060,632, Cl. 128-6.000.

Hickey, James J.; and Adamson, William L. Method for continually and automatically measuring the level of a water treatment product in boiler feedwater. 5,061,634, Cl. 436-85.000.

Hickory, Gordon E.; and White, Michael J., to Norton Company. Grinding wheel abrasive composition. 5,061,295, Cl. 51-298.000.

Hickox, Richard M.: *See*—
Spohn, William P.; and Hickox, Richard M., 5,060,503, Cl. 73-1.00G

Hidaka, Hideki: *See*—
Oshima, Yoshio; Ishii, Yasushi; Hidaka, Hideki; and Tsuchiya, Kunihiro, 5,060,841, Cl. 228-102.000.

Hieda, Katsuhiko: *See*—
Takenouchi, Naoko; and Hieda, Katsuhiko, 5,061,649, Cl. 437-44.000

Higashi, Koji: *See*—
Nakamura, Kimishige; Kitamura, Shuji; Okada, Toyokazu; Sakakura, Kazuaki; Kikui, Hitoshi; Higashi, Koji; and Ichinose, Keizo, 5,061,042, Cl. 359-63.000.

Higashihara, Masaki; Ohnuki, Ichiro; Akashi, Akira; and Kadohara, Terutake, to Canon Kabushiki Kaisha. Auto focus device. 5,061,951, Cl. 354-400.000.

Higashihara, Masaki; Ohnuki, Ichiro; Akashi, Akira; and Kadohara, Terutake, to Canon Kabushiki Kaisha. Focus adjusting apparatus for use in a camera or the like. 5,061,953, Cl. 354-402.000.

Higashio, Kimihiko; Ito, Masazumi; and Nishimori, Kadotaro, to Minolta Camera Kabushiki Kaisha. Image forming apparatus. 5,060,921, Cl. 270-53.000.

Higgs, Nigel H.; Storey, John R.; and McLaughlin, Sean D. Electronic warning apparatus. 5,061,917, Cl. 340-539.000.

Higuchi, Hirofumi: *See*—
Ebata, Shuji; Hirayama, Hiroyuki; Higuchi, Hirofumi; and Kida, Koichi, 5,061,675, Cl. 502-324.000.

Hildebrand, Otto: *See*—
Bubik, Alfred; Hildebrand, Otto; Holik, Herbert; and Muller, Karl, 5,061,347, Cl. 162-301.000.

Hill, David C., to Navitrak Corp. Navigation aid. 5,060,390, Cl. 33-1.0SD

Hill-Rom Company, Inc.: *See*—
Celestina, Mary A.; Williams, David W.; and Newkirk, David C., 5,060,327, Cl. 5-445.000.
Kappers, Timothy A.; Westerfeld, Steven R.; and Gallant, Dennis J., 5,060,425, Cl. 52-36.000.

Hill, Terrance J.: *See*—
Geile, Michael J.; Hill, Terrance J.; and Kavanaugh, Patrick J., 5,062,123, Cl. 375-81.000.

Hillinger, George, to Alltrade, Inc. Stand with collapsible legs. 5,060,894, Cl. 248-170.000.

Hinata, Jun-ichi: *See*—
Kobayashi, Souichi; and Hinata, Jun-ichi, 5,062,110, Cl. 371-223.000

Hinterwaldner, Rudolf. Hydrophobic and/or abhesive materials, reactive diluents. 5,061,524, Cl. 427-385.500.

Hioki, Takeshi; Kojima, Kiyoteru; and Tomioka, Jun, to Sumitomo Chemical Company, Ltd. Azamethine compounds. 5,061,796, Cl. 544-163.000.

Hirakawa, Jun, to Asahi Kogaku Kogyo K.K. Telephoto zoom lens system. 5,061,053, Cl. 359-690.000.

Hirakawa, Osamu: *See*—
Akimoto, Masami; Kimura, Yoshio; Hirakawa, Osamu; Anai, Noriyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, 5,061,144, Cl. 414-225.000.

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Hirano, Shigeo: *See*—
Takada, Shunji; Naito, Hideki; Ohashi, Yuichi; Yamashita, Seiji; Shibayama, Shigeru; and Hirano, Shigeo, 5,061,614, Cl. 430-569.000.

Hiraoka, Osamu: *See*—
Hamaguchi, Masami; Yanagihara, Hiromu; Hiraoka, Osamu; and Takahashi, Osamu, 5,061,140, Cl. 413-6.000.

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Hirasawa, Masahide: *See*—
Toyama, Masamichi; Fujiwara, Akihiro; Suda, Hirofumi; Yamada, Kuniniko; Hirasawa, Masahide; and Kaneda, Kitahiro, 5,061,954, Cl. 354-402.000

Hirashima, Isao: *See*—
Nishi, Masatake; Matsuo, Tsuneshi; Aoki, Hidemi; Hirashima, Isao; and Nakagawa, Yoshiharu, 5,060,864, Cl. 239-289.000

Hirata, Kazuto: *See*—
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; and Hirata, Kazuto, 5,061,687, Cl. 505-1.000.

Hiratsuka, Seiichiro: *See*—
Haneda, Satoshi; Shoji, Hisashi; Hiratsuka, Seiichiro; Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, 5,061,966, Cl. 355-297.000

Hirauchi, Yoshio: *See*—
Kitaura, Hiromu; and Hirauchi, Yoshio, 5,062,005, Cl. 358-342.000.

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Ebata, Shuji; Hirayama, Hiroyuki; Higuchi, Hirofumi; and Kida, Koichi, 5,061,675, Cl. 502-324.000.

Hirobe, Yoshiaki, to Akebono Brake Industry Co., Ltd. Brake fluid pressure control apparatus. 5,061,016, Cl. 303-114.00R.

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Kawanami, Norihide; Kobayashi, Fumio; and Mitani, Ikujiro, 5,061,206, Cl. 439-582.000.

Hirose, Toshiro: *See*—
Uchida, Yasunobu; Ono, Tomoshige; Wakui, Tadahiro; Matsumoto, Yoshihiro; Shinozaki, Masatoshi; Okuyama, Toshio; Hirose, Toshiro; and Uno, Toru, 5,061,778, Cl. 528-45.000.

Hirota, Akira: *See*—
Ichinoi, Yutaka; Hirota, Akira; and Watanabe, Noboru, 5,062,008, Cl. 360-29.000.

Hirsch, Herbert W.: *See*—
Finn, Norman H.; and Hirsch, Herbert W., 5,060,400, Cl. 36-12.000

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Paulson, Douglas N.; Buchanan, David S.; Hirschkoff, Eugene C.; DiIorio, Mark S.; and Black, William C., Jr., 5,061,680, Cl. 505-1.000

Hirzel, Theodor. Mold body for the deep drawing of foils and for casting of structural materials. 5,061,427, Cl. 264-219.000.

Hitach, Ltd.: *See*—
—Maeda, Naoki; Nakamura, Yozo; Kadomukai, Yuzo; Mitsuya, Shunichi; Takahashi, Tsuyoshi; and Naruse, Jun, 5,062,012, Cl. 360-75.000

Hitachi Koki Co., Ltd.: *See*—
Takeda, Fumio; Yoshida, Takashi; Tanaka, Hideki; Ishitsuka, Yoshikazu; Omine, Tsutomu; Miyasaka, Masao; Asano, Mitsugu; Igarashi, Akira; and Takahagi, Hiroshi, 5,061,092, Cl. 400-120.000.

Hitachi Koki Haramachi Co., Ltd.: *See*—
Sato, Masayuki; and Ushiwata, Shigeharu, 5,060,548, Cl. 83-471.003.

Hitachi, Ltd.: *See*—
—Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, 5,062,011, Cl. 360-40.000
—Kudo, Tetsuichi; Ishikawa, Akira; Okamoto, Hiroshi; Miyauchi, Katsuki; Iwayanagi, Takao; Murai, Fumio; and Okazaki, Shinji, 5,061,599, Cl. 430-270.000.
—Maeda, Takeshi; Ohta, Norio; Suzuki, Yoshio; and Takahashi, Masahiko, 5,062,091, Cl. 369-13.000.
—Meguro, Hideo; Yoshiura, Yoshiaki; Itagaki, Tatsuo; Uchida, Ken; Satoh, Tsuneo; Ichihara, Seiichi; and Nagasawa, Koichi, 5,061,985, Cl. 357-68.000.
—Nakazato, Kazuo; Nakamura, Tohru; Matsuda, Masatoshi; Miyazaki, Takao; Kure, Tokuo; Okabe, Takahiro; and Nagata, Minoru, 5,061,645, Cl. 437-31.000.
—Nishijima, Kazuo; Miyazaki, Terunobu; Sakou, Eisaburo; Nakamura, Tomoharu; and Nakamura, Mitsuru, 5,061,922, Cl. 340-825.080.
—Oshima, Yoshio; Ishii, Yasushi; Hidaka, Hideki; and Tsuchiya, Kunihiro, 5,060,841, Cl. 228-102.000.
—Sumiyoshi, Takashi; Takahashi, Shigekatsu; Yamamoto, Shoji; Negishi, Kazuyoshi; and Iwasaki, Masaaki, 5,062,046, Cl. 364-200.000
—Takeda, Fumio; Yoshida, Takashi; Tanaka, Hideki; Ishitsuka, Yoshikazu; Omine, Tsutomu; Miyasaka, Masao; Asano, Mitsugu; Igarashi, Akira; and Takahagi, Hiroshi, 5,061,092, Cl. 400-120.000.
—Tanaka, Shigeru; Setoyama, Eiji; Oikawa, Shinzou; and Yamamura, Sigeki, 5,061,356, Cl. 204-192.120.
—Uchida, Makio, 5,061,980, Cl. 357-41.000.
—Uchimi, Kazuhiro; Sasaki, Shoji; Tabuchi, Kenji; and Sugiura, Noboru, 5,060,614, Cl. 123-414.000.
—Yoneya, Makoto; Kondo, Katsumi; Ohashi, Tetsuya; Odamura, Motomi; and Kitamura, Teruo, 5,061,045, Cl. 359-56.000.

Hitachi Maxell, Ltd.: *See*—
—Arakawa, Ryutaro; and Fukutake, Sunao, 5,061,990, Cl. 357-80.000.

Hitachi Medical Corporation: *See*—
Kondo, Toshio; Sato, Yutaka; Masuzawa, Hiroshi; and Takeuchi, Hiroshi, 5,060,651, Cl. 128-660.070
Umemura, Shinichiro; Ikeda, Hiroshi; and Katakura, Kageyoshi, 5,060,652, Cl. 128-661.010.

Hitachi Metals, Ltd.: *See*—
—Watanabe, Rikizo; and Fujita, Toshio, 5,061,440, Cl. 420-38.000

Hitachi Microcomputer Engineering Ltd.: *See*—
Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, 5,062,011, Cl. 360-40.000
Meguro, Hideo; Yoshiura, Yoshiaki; Itagaki, Tatsuo; Uchida, Ken; Satoh, Tsuneo; Ichihara, Seiichi; and Nagasawa, Koichi, 5,061,985, Cl. 357-68.000.

Hitachi Plant Engineering & Construction Co., Ltd.: *See*—
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000

Hitachi Tokyo Electronics Co., Ltd.: *See*—
Oshima, Yoshio; Ishii, Yasushi; Hidaka, Hideki; and Tsuchiya, Kunihiro, 5,060,841, Cl. 228-102.000

Hiyama, Tamejiro: *See*—
Takehara, Sadao; Kuriyama, Takeshi; Nakamura, Kayoko; Shoji, Tadao; Fujisawa, Toru; Osawa, Masashi; Hiyama, Tamejiro; Kusumoto, Tetsuo; Nakayama, Akiko; and Nishide, Kiyoharu, 5,061,398, Cl. 252-299.610

Hjipieris, George; Bunyan, Paul; and Cryan, Martin, to Marconi Instruments Limited. Attenuator switchably coupled to transmission path and means for switchably breaking the path. 5,061,909, Cl. 333-17.200

Hjortsberg, Arne; Holmstrom, Goran; Johansson, Lennart; and Karlsson, Thommy, to Asea Brown Boveri AB. Electrical insulating material comprising an insulating layer in the form of an organic polymer. 5,061,554, Cl. 428-220.000

Ho, Shu-Kuang; and Agudelo, Gilbert W., to Wang Laboratories, Inc Cascadable, high-bandwidth, multi-channel image transfer controller. 5,062,076, Cl. 364-900.000

Hobbins, John C. Furniture adjustment device. 5,060,896, Cl. 248-188.200

Hocherl, Manfred; and Reinhardt, Jorg, to VascoMed Institut fur Kathetertechnologie GmbH. Adapter arrangement for heart pacemaker leads. 5,060,649, Cl. 128-419.00P

Hodder, George D.; and Wallace, Edward D., to Cleaveland/Price Inc Compact disconnect switch having broadly variable current rating 5,061,833, Cl. 200-255.000

Hodges, John C.; and Klutchko, Sylvester, to Warner-Lambert Company. 2-oxo-1-pyrrolidine carboxylic acid esters. 5,061,808, Cl. 548-517.000

Hodkins & Jones (Sheffield) Limited: *See*—
Monks, David W., 5,061,116, Cl. 405-43.000.

Hodson, Simon, to Concrete Technology Corporation. Process for producing cement building material. 5,061,319, Cl. 106-713.000.

Hoebener, Karl G.: *See*—
Behun, John R.; Call, Anson J.; Cappo, Francis F.; Cole, Marie S.; Hoebener, Karl G.; Klingel, Bruno T.; and Milliken, John C., 5,060,844, Cl. 228-180.200

Hoechst AG: *See*—
—Teetz, Volker; Geiger, Rolf; Urbach, Hansjorg; Becker, Reinhard; and Scholkens, Bernward, 5,061,722, Cl. 514-412.000.

Hoechst Aktiengesellschaft: *See*—
—Gethoffer, Hanspeter; and Reinhardt, Gerd, 5,061,807, Cl. 548-473.000.
—Macholdt, Hans-Tobias; and Sieber, Alexander, 5,061,585, Cl. 430-106.000.

Hoechst Celanese Corporation: *See*—
—East, Anthony J.; and Conciatori, Anthony B., 5,061,760, Cl. 525-328.200
—Khanarian, Garo; Landi, Pascal; Haas, David; and Norwood, Robert, 5,061,028, Cl. 385-132.000.
—Mueller, Werner H.; and Vora, Rohitkumar H., 5,061,784, Cl. 528-353.000.
—Vickery, Earl, 5,061,463, Cl. 423-210.000.

Hoechst CeramTec Aktiengesellschaft: *See*—
Girmscheid, Paul, deceased; Stuhler, Helmut; and Schulze, Gisbert, 5,061,421, Cl. 264-63.000.

Hoesch Aktiengesellschaft: *See*—
—Bertram, Johannes; Krug, Ulrich; and Grunewald, Peter, 5,060,773, Cl. 192-45.200.

Hoever, Jeffrey P.; Reginato, Richard L.; Bay, Frederic M.; Rolon, Claudia E.; Bazigos, Michael; and Allen, Rolla W., to United States of America, Navy. Rocket nozzle snubber. 5,060,550, Cl. 89-1.809.

Hofer, Willy: *See*—
Bals, Ion; Hofer, Willy; and Gagnebin, Antoine, 5,060,529, Cl. 73-864.740.

Hoffland, Lynn D.: *See*—
Kroutil, Robert T.; Ditillo, John T.; Loerop, William R.; Davis, Dennis M.; Hoffland, Lynn D.; and Desha, Michael S., 5,061,854, Cl. 250-339.000.

Hoffman, Jeffrey A.: *See*—
McCunn, Myron L.; Landphair, Donald K.; Neyrinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,060,701, Cl. 141-21.000.

Hoffman-La Roche Inc.: *See—*
Coffen, David L.; Kalaritis, Panayiotis; and Patridge, John J., 5,061,629, Cl. 435-280.000.

Hoffman, Roger P., to Green Bay Packaging Inc. Method of making a multiple ply paper product containing an outer ply of reclaimed white office waste. 5,061,345, Cl. 162-125.000.

Hoffmann, Karl: *See—*
Balthaus, Hansgeorg; and Hoffmann, Karl, 5,061,119, Cl 405-128.000.

Hoffmann-La Roche Inc.: *See—*
Bryce, Graeme F.; and Shapiro, Stanley S., 5,061,733, Cl 514-708.000
Certa, Ulrich, 5,061,788, Cl. 530-350.000.

Hofmann Werkstatt-Technik GmbH: *See—*
Rothamel, Karl, 5,060,513, Cl. 73-460.000

Hogan, John D., to Beth Israel Hospital Association. Portable superabsorbant personnel stretcher and erectable on-demand isolation tent. 5,061,235, Cl. 600-21.000.

Hoganas AB: *See—*
Sigurdsson, Per-Arne, 5,061,088, Cl. 384-535.000.

Hohn, Hans: *See—*
Singh, Jasbir; Barnert, Heiko; and Hohn, Hans, 5,061,435, Cl 376-298.000.

Holik, Herbert: *See—*
Bubik, Alfred; Hildebrand, Otto; Holik, Herbert; and Muller, Karl, 5,061,347, Cl. 162-301.000.

Holker, Kenneth U.: *See—*
Collier, John R.; and Holker, Kenneth U., 5,061,314, Cl. 106-14.050
Collier, John R.; and Holker, Kenneth U., 5,061,315, Cl. 106-14.050.

Holland, Gerald F.: *See—*
Clark, David A.; Goldstein, Steven W.; Holland, Gerald F.; Hulin, Bernard; and Rizzi, James P., 5,061,717, Cl. 514-342.000.

Holloway, Oris E., Jr.; Wilkins, Howard; and Gannis, Peter M., to Nabisco Brands, Inc. Honey roasted nuts. 5,061,499, Cl. 426-93.000.

Holmstrom, Goran: *See—*
Hjortsberg, Arne; Holmstrom, Goran; Johansson, Lennart; and Karlsson, Thommy, 5,061,554, Cl. 428-220.000.

Holt, Earl R., to Hose Specialties, Capri, Inc. Coaxial paint hose and supply system. 5,060,861, Cl. 239-124.000.

Holverson, Patrick D.: *See—*
McCunn, Myron L.; Landphair, Donald K.; Neyrinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,060,701, Cl. 141-21.000.

Holzhuter, Andreas; and Jurs, Michael, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Device for dividing or separating fillets. 5,061,221, Cl. 452-184.000.

Homestar International Inc.: *See—*
Lincoln, Larry A.; Vrionis, Nicholas; Pezzolo, Donald E.; Pfeiffer, James W.; Wilk, Robert A.; and Scheff, John D., 5,060,394, Cl. 33-763.000

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hayashi, Tsutomu; and Saito, Mitsuru, 5,060,477, Cl. 60-488.000.
Horiike, Satoru; Yamamoto, Toshiteru; and Hamano, Eiji, 5,060,749, Cl. 180-219.000.
Iwai, Kazuhiro; Matsubayashi, Shinji; Ariga, Ikuo; and Saito, Kazuhiko, 5,060,748, Cl. 180-215.000.
Sano, Shoichi; Yoshida, Suguru; Uchida, Ken; Kajiwara, Hajime; Ohno, Masao; and Kawade, Tateo, 5,060,975, Cl. 280-787.000.
Seki, Yasunari; and Tachibana, Yosuke, 5,060,604, Cl. 123-90.160.
Tomioka, Yoshio; Soma, Toshio; Takano, Kengo; and Kobayashi, Mikio, 5,060,594, Cl. 118-666.000.
Yamaguchi, Kouji; Miyake, Junichi; and Maki, Kazuya, 5,060,476, Cl. 60-487.000.

Honda, Ryoji: *See—*
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Honeywell Inc.: *See—*
Glish, John P.; and Bickman, Bernard F., 5,060,574, Cl 102-489.000.
Nelson, Larry A., 5,061,920, Cl. 340-784.000.
Spielberger, Richard K., 5,061,822, Cl. 174-52.400.
Yue, Jerry; and Liu, Michael S. T., 5,061,644, Cl. 437-31.000

Honoree, Tage; Jacobsen, Poul; Nielsen, Flemming E.; and Nafrim, Lars, to Novo Nordisk A/S. 2,3-quinoxalinediones for use as neuroleptics. 5,061,706, Cl. 514-249.000.

Hons, Douglas A.: *See—*
Jacobs, Michael E.; and Hons, Douglas A., 5,061,961, Cl. 355-212.000.

Hopkins, Sherlene. Fire escape chute. 5,060,753, Cl. 182-48.000.

Hori, Yoshikazu; and Kato, Makoto, to Matsushita Electric Industrial Co., Ltd. Optical pick-up device having holographic element. 5,062,098, Cl. 369-112.000.

Horiike, Satoru; Yamamoto, Toshiteru; and Hamano, Eiji, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 5,060,749, Cl. 180-219.000.

Horikawa, Mitsuhiro; Ito, Hiroshi; Ide, Tsugio; Yanagisawa, Michio; Shimoda, Tatsuya; and Akioka, Koji, to Seiko Epson Corporation. Actuator and method of manufacturing thereof. 5,062,095, Cl 369-44.210.

Horita, Ryutaro: *See—*
Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, 5,062,011, Cl. 360-40.000.

Horizons International Foods, Inc.: *See—*
Aulik, David J.; and Christensen, Robert E., 5,061,507, Cl. 426-637.000

Horn, Allen F., III: *See—*
Arthur, David J.; and Horn, Allen F., III, 5,061,548, Cl. 428-209.000.

Horn, Gerald. Self-detection glaucoma test method. 5,061,059, Cl. 351-223.000

Horn, Keith: *See—*
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Hornbeck, Larry J., to Texas Instruments Incorporated. Spatial light modulator and method. 5,061,049, Cl. 359-224.000.

Horney, James C.: *See—*
Goldman, Stephen A.; Horney, James C.; and Retzsch, Herbert L., 5,061,259, Cl. 604-368.000

Hornsey, Derek: *See—*
Lee, Robert G. H.; Hornsey, Derek; and Perkins, Arthur S., 5,061,377, Cl. 210-752.000.

Hornung, Ronald L.: *See—*
Wiltrout, Robert H.; and Hornung, Ronald L., 5,061,488, Cl. 424-85.200

Horowitz, Harold S., to Du Pont de Nemours, E. I., and Company. Process for making superconductors using barium hydroxide. 5,061,683, Cl. 505-1.000.

Horton, Robert C., to Ultrafab, Inc. Weatherstrip. 5,060,422, Cl. 49-489.000.

Horvath, Viktoria: *See—*
Irimi, Sandor; Molnar, Adam; Gabor, Jozsef; Toke, Laszlo ; Trezl, Lajos; Rusznak, Istvan; Horvath, Viktoria; and Szarvas, Tibor, 5,060,672, Cl. 131-331.000.

Hosaka, Tohru: *See—*
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Hosaka, Yoshio: *See—*
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Hoshide, Yasuo: *See—*
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Hoshimitsu, Koichi: *See—*
Hibino, Hiroki; Nagayama, Yoshikatsu; Yoshikawa, Mutsumi; Takara, Toshiyuki; Goto, Masahito; Suzuki, Akira; Takehana, Sakae; Oaki, Yoshinao; Hoshimitsu, Koichi; Aoki, Yoshisada; Ueda, Yasuhiro; and Matsui, Raifu, 5,060,632, Cl. 128-6.000.

Hosiden Electronics Co., Ltd.: *See—*
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Toramoto, Hisao, 5,061,205, Cl. 439-493.000.

Hosokawa, Kiyoshi. Metal connector for wooden building and jointing structure of wooden building using the same. 5,061,111, Cl. 403-232.100

Hosomi, Satoru: *See—*
Chen, Chia-Fu; Ko, Ensei; Ishizuka, Hiroshi; and Hosomi, Satoru, 5,061,292, Cl. 51-293.000

Hosoya, Tsutomu: *See—*
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Hosoya, Yoshihiro: *See—*
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Hotta, Masami: *See—*
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000

Hotta, Tetsuo: *See—*
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Houle, Christine: *See—*
Callahan, Joanne; and Houle, Christine, 5,061,260, Cl. 604-378.000.

Houser, Daniel M., to McDermott International, Inc. Method of installing well conductors. 5,060,731, Cl. 166-350.000.

Howard, Charles P., to AeroSport, Inc. Metabolic rate analyzer. 5,060,656, Cl. 128-718.000.

Howard, Thomas L. Inflatable neck and head support. 5,060,661, Cl. 128-845.000

Hoxmeier, Ronald J.; and Slaugh, Lynn H., to Shell Oil Company. Hydrogenation catalyst and hydrogenation process wherein said catalyst is used. 5,061,668, Cl. 502-117.000.

Hoyt, Walter R. Disc blade scraper device. 5,060,586, Cl. 111-164.000.

Hsia, Yukun, to Northrop Corporation. Silicon substrate multichip assembly. 5,061,987, Cl. 357-71.000.

Hsieh, C. Richard; King, Desmond F.; Pettersen, Frederick A.; and Shargay, Cathleen A., to Chevron Research & Technology Company. Apparatus for liquid feed dispersion in fluid catalytic cracking systems. 5,061,457, Cl. 422-140.000.

Hsieh, Hank C. H.: *See—*
Danby, Gordon T.; and Hsieh, Hank C. H., 5,061,897, Cl. 324-318.000.

Hsu, Wen-Liang; and Halasa, Adel F., to Goodyear Tire & Rubber Company, The. Process for the synthesis of a high vinyl isoprene-butadiene copolymer. 5,061,765, Cl. 526-141.000.

Hubbard, Donald G., to Camshaft Machine Company. Rocker arm. 5,060,606, Cl. 123-90.390.

Hubbell Incorporated. *See—*
Bolick, Virgil T., Jr.; and Gentry, John M., 5,061,209, Cl. 439-676.000
Herman, Wallace U.; and Tiberio, Patrick J., 5,061,194, Cl. 439-133.000

Huck, Francis: *See—*
Braedle, Gilbert; Cromer, Paul; and Huck, Francis, 5,060,570, Cl. 101-247.000

Hudson, Gary C. Filling material. 5,061,737, Cl. 521-137.000.

Hudson, Vonnie L. Three in one tweezer. 5,060,329, Cl. 7-107.000.

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Hellermann, Walter; Herrmann, Christoph; Nordsiek, Karl-Heinz; Wolpers, Jurgen; and Fuchs, Hans-Bernd, 5,061,758, Cl. 525-193.000

Huffy Corporation: *See—*
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Hughes Aircraft Company: *See—*
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Lo, Thomas K.; Banh, Nam D.; Bohn, Timothy T.; and Sacks, Jack M., 5,062,056, Cl. 364-516.000
Megerle, Clifford A., 5,060,860, Cl. 239-67.000.
Radys, Raymond G., 5,062,126, Cl. 377-51.000.
Rogers, Harvey N., Jr., 5,061,035, Cl. 385-115.000.
Weaver, Mark A.; Long, Lynn E.; and Lau, Steven E., 5,061,776, Cl. 528-60.000
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Hughes Network Systems, Inc.: *See—*
Pham, Hiep V.; and Namioka, Hirotaka, 5,062,122, Cl. 375-1.000.

Hughes, Ron D.: *See—*
Youngblood, Gerald F.; Hughes, Ron D.; and Rice, Kester B., 5,062,059, Cl. 364-521.000.

Hulderman, Garry N.; Phillips, Eugene; and Swanson, Richard J., to General Dynamics Corporation. Millimeter wave device and method of making. 5,062,149, Cl. 455-323.000.

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Hunter, James S.: *See—*
Gambale, Richard A.; and Hunter, James S., 5,060,660, Cl. 128-772.000.

Hunter, Jon F., to Texas A&M University System, The. Sound emitting device for behavior modification. 5,061,918, Cl. 340-573.000.

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Hussenet, Joel: *See—*
Halter, Alain; Hussenet, Joel; Arker, Paul; and Toussaint, Francois, 5,061,382, Cl. 252-2.000.

Hutchinson: *See—*
DuBos, Daniel; Salaud, Jean-Luc; and Bretaudeau, Jean-Pierre, 5,060,917, Cl. 267-140.100.

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Hypertat Corporation: *See—*
Jantzen, Michael E., 5,060,426, Cl. 52-86.000.

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Hyun, David K.; and Morgan, William H., to Value Savers Unlimited. Coupon storage device kit. 5,060,793, Cl. 206-232.000.

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Meguro, Hideo; Yoshiura, Yoshiaki; Itagaki, Tatsuo; Uchida, Ken; Satoh, Tsuneo; Ichihara, Seiichi; and Nagasawa, Koichi, 5,061,985, Cl. 357-68.000.

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ICT Integrated Circuit Testing Gesellschaft fur Halbleiterpruftechnik mbH: *See—*
Frosien, Jurgen; and Spehr, Rainer, 5,061,856, Cl. 250-397.000.

Ide, Soichiro: *See—*
Tabata, Takeshi; Ide, Soichiro; Moro, Akihiko; and Nagatani, Ryuji, 5,061,371, Cl. 210-198.200.

Ide, Tsugio: *See—*
Horikawa, Mitsuhiro; Ito, Hiroshi; Ide, Tsugio; Yanagisawa, Michio; Shimoda, Tatsuya; and Akioka, Koji, 5,062,095, Cl. 369-44.210.

Idemitsu Petrochemical, Co., Ltd.: *See—*
Yamada, Toyokazu, 5,061,532, Cl. 428-35.700.

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Onodera, Noriaki; Saski, Saburo; and Iechi, Hiroyuki, 5,061,974, Cl. 357-17.000.

Ieki, Hideharu; Sakurai, Atsushi; and Kimura, Koji, to Murata Mfg. Co., Ltd. Surface acoustic wave device. 5,061,870, Cl. 310-313.00A

Igarashi, Akira: *See—*
Takeda, Fumio; Yoshida, Takashi; Tanaka, Hideki; Ishitsuka, Yoshikazu; Omine, Tsutomu; Miyasaka, Masao; Asano, Mitsugu, Igarashi, Akira; and Takahagi, Hiroshi, 5,061,092, Cl 400-120.000.

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Igen, Inc.: *See—*
Zoski, Glenn; and Woodward, Steve, 5,061,445, Cl. 422-52.000

Ignowski, James S.: *See—*
Lovelace, Ralph E.; Gampell, David J.; and Ignowski, James S., 5,061,859, Cl. 250-551.000.

Iguchi, Atsushi, to Nikko Corporation Ltd. Low-frequency electromagnetic induction heater. 5,061,835, Cl. 219-10.790

Iguchi, Yuichi; and Tani, Koji, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Screw rotor. 5,060,531, Cl. 74-424.500.

Ihara, Ryoseki, to Kabushiki Kaisha Ihara Kogyo. Press apparatus. 5,060,566, Cl. 100-272.000.

Iida, Kazutoshi: *See—*
Yoda, Ryuichiro; Fukutome, Akira; Ohkawa, Suguru; and Iida, Kazutoshi, 5,061,777, Cl. 528-61.000.

Iida Machine Works Limited: *See—*
Ishioka, Shigeo, 5,060,758, Cl. 182-234.000.

Iida, Shigehira: *See—*
Saitoh, Keishi; Hashizume, Junichiro; Iida, Shigehira; Takei, Tetsuya; and Arai, Takayoshi, 5,061,511, Cl. 427-38.000

Iijima, Kenichi; and Kudo, Minoru, to Eisai Co., Ltd.; and Micro Denshi Co., Ltd. Method and apparatus for microwave sterilization of ampules. 5,061,443, Cl. 422-21.000.

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Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; and Hirata, Kazuto, 5,061,687, Cl. 505-1.000.

Iio, Masaaki; and Nagano, Masamitsu, to Harison Electric Co., Ltd. Lamp socket for use with a printed circuit board. 5,061,189, Cl. 439-57.000.

Iizuka, Hisao: *See—*
Ubukata, Noboru; and Iizuka, Hisao, 5,061,411, Cl. 264-16.000

Ikeda Bussan Co., Ltd.: *See—*
Kouda, Hiroshi; and Saito, Takayuki, 5,061,419, Cl. 264-46.600.
Saso, Hitoshi, 5,061,002, Cl. 296-37.300.

Ikeda, Hiroshi: *See—*
Umemura, Shinichiro; Ikeda, Hiroshi; and Katakura, Kageyoshi, 5,060,652, Cl. 128-661.010.

Ikeda, Kaoru: *See—*
Sato, Toshiaki; Ohnaga, Takashi; and Ikeda, Kaoru, 5,061,761, Cl 525-329.800.

Ikeda, Towl, to Tokyo Electron Limited. Probe device. 5,061,894, Cl. 324-158.00F.

Ikegawa, Akihito; Enoguchi, Yuji; Mizuno, Hiroshi; Natsuhara, Toshiya; and Yamamoto, Masashi, to Minolta Camera Kabushiki Kaisha. Monocomponent developing device. 5,061,963, Cl. 355-259.000.

Ikesue, Masumi: *See—*
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Ikuta, Yoshihisa: *See—*
Katsuragi, Koji; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, 5,062,128, Cl. 377-55.000

Ilardi, Joseph M.: *See—*
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Illinois Institute of Technology: *See—*
Beissinger, Richard L.; Wasan, Darsh T.; Sehgal, Lahksman R.; and Rosen, Arthur L., 5,061,688, Cl. 514-6.000

Illinois Tool Works Inc.: *See—*
Sygnator, Henry A., 5,060,797, Cl. 206-345.000.

Imai, Masafumi: *See—*
Murata, Masahide; Kanazawa, Seizaburo; Furuhashi, Hiroyuki, Maruyama, Kouji; Imai, Masafumi; and Ueno, Hiroshi, 5,061,667, Cl. 502-116.000.

Imai, Masanori; and Sorori, Tadahiro, to Fuji Photo Film Co., Ltd Presensitized plate for use in making lithographic printing plates 5,061,592, Cl. 430-167.000.

Imbert, Christian: *See—*
Wallsten, Hans I.; and Imbert, Christian, 5,061,275, Cl. 623-1.000

Immunetech Pharmaceuticals: *See—*
Hahn, Gary S., 5,061,692, Cl. 514-17.000.

Immunomedics, Inc.: *See—*
Shochat, Dan; Hansen, Hans J.; and Wu, Robert S., 5,061,641, Cl. 436-545.000.

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Alder, Malcolm R.; and Boughtflower, Charles A., 5,060,865, Cl. 239-332.000.

Bernier, Roger L.; Collins, Martyn D.; and Gray, Ann L., 5,061,489, Cl. 424-93.000.
Herring, John M.; and Webb, Andrew, 5,061,743, Cl. 524-130.000.
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Koch, Werner-Lutz, 5,061,285, Cl. 623-16.000.
Inanaga, Kiyofumi; Sogawa, Hiroyuki; and Tsukamoto, Shiro, to Sony Corporation. Induction speaker. 5,062,140, Cl. 381-199.000.
Index-Werke Komm. -Ges. Hahn & Tessky: *See*—
Link, Helmut F., 5,060,355, Cl. 29-42.000.
Industrias Techno-Matic S.A.: *See*—
Gabas, Carlos, 5,061,003, Cl. 296-97.100.
Inertia Dynamics Corporation: *See*—
Everts, Robert G., 5,060,384, Cl. 30-276.000.
Infilco Degremont Inc.: *See*—
Oyler, Kenneth W., 5,061,375, Cl. 210-744.000.
Zuback, Joseph E., 5,061,302, Cl. 55-190.000.
Zuback, Joseph E., 5,061,378, Cl. 210-767.000.
Infrarodteknik AB: *See*—
Hamrin, Karl-Arvid, 5,060,397, Cl. 34-60.000.
Infusaid, Inc.: *See*—
Sampson, Edward J., 5,061,242, Cl. 604-118.000.
Ino, Masayoshi, to Oki Electric Industry Co., Ltd. Method of making dram cell with stacked capacitor. 5,061,651, Cl. 437-52.000.
Inomata, Hiroshi, to Shin-Etsu Chemical Co., Ltd. Organopolysiloxane composition and process for preparing the same. 5,061,740, Cl. 523-213.000.
Inoue, Shinichi; and Nakahara, Tatsuro, to Fujitsu Limited; and Kyushu Fujitsu Electronics Limited. Voltage controlled oscillator using control transistors in a loop formed of inverters. 5,061,906, Cl. 331-57.000.
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Mohri, Taizo; Totsuka, Nobuo; Tsugawa, Shunichi; Kurisu, Takao; Sawatari, Hideaki; and Inoue, Tanehiro, 5,061,575, Cl. 428-623.000.
Inouye, Shigeharu: *See*—
Atsumi, Kunio; Iwamatsu, Katsuyoshi; Sakagami, Kenji; Yoshida, Takashi; Yamamoto, Haruo; Shibahara, Seiji; and Inouye, Shigeharu, 5,061,702, Cl. 514-202.000.
Institut de Recherches de la Siderurgie Francaise (IRSID): *See*—
Barbe, Jacques, 5,060,715, Cl. 164-453.000.
Institut Francais du Petrole: *See*—
Huvey, Michel, 5,061,338, Cl. 156-425.000
Maissant, Jean-Pierre, 5,060,602, Cl. 123-47.00A
Institut National de la Recherche Agronomique: *See*—
Kann, Guy; and Martinet, Jack, 5,061,690, Cl. 514-12.000
Institut Pasteur: *See*—
Girard, Marc; and Van Der Werf, Sylvie, 5,061,623, Cl. 435-69.300.
Instrumentarium Corporation: *See*—
Malkamaki, Lauri; and Kankkunen, Lauri P., 5,060,654, Cl. 128-686.000.
Inter-City Products Corporation (USA): *See*—
Wollaber, Bruce A.; and Stanford, Robert G., 5,060,720, Cl. 165-122.000.
Interlake Companies, Inc., The: *See*—
Garrity, James R., 5,060,785, Cl. 198-781.000.
International Business Machines Corporation: *See*—
Babu, Suryadevara V.; Lu, Neng-hsing; and Nilsen, Carl-Otto, 5,061,359, Cl. 204-298.070.
Batchelder, John S.; DeCain, Donald M.; Taubenblatt, Marc A.; Wickramasinghe, Hermantha K.; and Williams, Clayton C., 5,061,070, Cl. 356-345.000.
Behun, John R.; Call, Anson J.; Cappo, Francis F.; Cole, Marie S.; Hoebener, Karl G.; Klingel, Bruno T.; and Milliken, John C., 5,060,844, Cl. 228-180.200.
Bendernagel, Robert E.; Kim, Kyong-Min; Silvestri, Victor J.; Smetana, Pavel; Strudwick, Thomas H.; and White, William H., 5,061,652, Cl. 437-64.000.
Brown, James A.; and Wheatley, Michael T., 5,062,039, Cl. 364-200.000.
Carpenter, Gary D., 5,061,902, Cl. 330-264.000.
Chapin, Fletcher W.; Dranchak, David W.; Engle, David E.; Hall, Richard R.; and Macek, Thomas G., 5,061,192, Cl. 439-66.000.
Janis, Frederick L.; Williams, Marvin L.; and Wang, Diana S., 5,062,045, Cl. 364-200.000.
Shorter, David M.; and Kapernick, John S., 5,062,037, Cl. 364-200.000.
Wang, David W., 5,061,779, Cl. 528-98.000.
International Medication Systems, Limited: *See*—
Ogle, George B., II, 5,060,812, Cl. 215-247.000.
International Paper Company: *See*—
Beales, Jonathan T.; and Richardson, Paul D., 5,060,804, Cl. 206-611.000.
Introvision International, Inc.: *See*—
Robley, Les P.; and Eppolito, John W., 5,061,061, Cl. 352-89.000.
Inushi, Masahide; and Tsukamoto, Katsuhiro, to Mitsubishi Denki Kabushiki Kaisha. MOS type field effect transistor having LDD structure. 5,061,975, Cl. 357-23.400.
Inukai, Hiroshi: *See*—
Yamazaki, Noboru; Kuratas, Shigeaki; Yagi, Toshiharu; and Inukai, Hiroshi, 5,061,184, Cl. 433-228.100.
Iowa State University Research Foundation: *See*—
Verhoeven, John D.; and Gibson, Edwin D., 5,062,025, Cl. 361-509.000.
Iowa State University Research Foundation, Inc.: *See*—
Barua, Arun B.; Gunning, Desiree; and Olson, James A., 5,061,723, Cl. 514-460.000.
Ipposhi, Takashi; and Sugahara, Kozuyuki, to Mitsubishi Denki Kabushiki Kaisha. Method of producing SOI structures. 5,061,655, Cl. 437-89.000.
Irimi, Sandor; Molnar, Adam; Gabor, Jozsef; Toke, Laszlo ; Trezl, Lajos; Rusznak, Istvan; Horvath, Viktoria; and Szarvas, Tibor, to Pesci Dohanygyar. Highly efficient tobacco smoke filter. 5,060,672, Cl. 131-331.000.
Irvine, John. Game with movable players. 5,060,945, Cl. 273-85.00B.
Isa, Isao: *See*—
Seki, Ichiro; Kano, Akihiro; Hasegawa, Toshiki; Abe, Minoru; and Isa, Isao, 5,061,665, Cl. 501-105.000.
Ishida, Yasuhiko: *See*—
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Ishida, Yasuhiro, to Kabushiki Kaisha Dymosha. Guide pulley base for wire saw. 5,060,628, Cl. 125-21.000.
Ishida, Yoshiaki: *See*—
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Ishida, Yukio: *See*—
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Ishiguro, Fujio; and Kikuchi, Toru, to NGK Insulators, Ltd. Method for producing detecting element. 5,061,350, Cl. 204-37.100.
Ishii, Masaru: *See*—
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Ishii, Masatoshi: *See*—
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Ishii, Yasuo: *See*—
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Ishii, Yasushi: *See*—
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Ishikawa, Akira: *See*—
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Ishikawa, Kenichi; and Kurita, Koji, to Asahi Glass Company, Ltd. Process for producing a laminate. 5,061,333, Cl. 156-213.000.
Ishikawa, Misao: *See*—
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Ishikawa, Moriaki: *See*—
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Ishikawa, Norikazu: *See*—
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Ishikawa, Yujiro, to Brother Kogyo Kabushiki Kaisha. Optical waveguide array, printer, and method of manufacturing the same. 5,061,029, Cl. 385-132.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Iguchi, Yuichi; and Tani, Koji, 5,060,531, Cl. 74-424.500.
Ishimoto, Zenichi, to Nikko Co., Ltd. Battery receptacle for radio controllable motor toys. 5,061,579, Cl. 429-96.000.
Ishioka, Shigeo, to TBR Corporation; Daitoh Stainless Kaihsydu Center Co., Ltd.; and Iida Machine Works Limited. Emergency descending device. 5,060,758, Cl. 182-234.000.
Ishitsuka, Yoshikazu: *See*—
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Ishizaka, Yoshirou: *See*—
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Ishizuka Research Institute, Ltd., The: *See*—
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Ishizuka, Shigeo: *See*—
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Isobe, Minoru, to Oki Electric Industry Co. Ltd. Electrophotographic recording apparatus. 5,061,967, Cl. 355-310.000.
Isobe, Ryosuke; Sawada, Kiyoshi; Sasaki, Kunitsuna; Mori, Takahiro; and Ando, Yuki, to Konica Corporation. Production method for magnetic recording medium. 5,061,516, Cl. 427-132.000.
Isobe, Toshifumi: *See*—
Haneda, Satoshi; Shoji, Hisashi; Hiratsuka, Seiichiro; Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, 5,061,966, Cl. 355-297.000.

Isobe, Tsuneo: *See*—
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Isoda, Takashi, to Mitsubishi Pencil Co., Ltd. Removable cap of writing instrument. 5,061,105, Cl. 401-202.000.
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Itamochi, Hiroko: *See*—
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Ito, Masahiro; and Hayashi, Yukio, to Sunstar Giken Kabushiki Kaisha. One-pack type heat precurable moisture-curing sealant composition. 5,061,749, Cl. 524-850.000.
Ito, Masayoshi; Tang, Ming-Ya; and Kim, Soojaa L., to Goodyear Tire & Rubber Company, The. Solution spinning process for producing a polyethylene terephthalate filament. 5,061,425, Cl. 264-184.000.
Ito, Masazumi: *See*—
Higashio, Kimihiko; Ito, Masazumi; and Nishimori, Kadotaro, 5,060,921, Cl. 270-53.000.
Ito, Norifumi, to Ricoh Company, Ltd. Output beam control device for a semiconductor laser. 5,062,114, Cl. 372-31.000.
Ito, Susumu: *See*—
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Ito, Tadao: *See*—
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Itoh, Chieko: *See*—
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Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, to Sumitomo Electric Industries, Ltd. Superconducting thin material and a method for preparing the same. 5,061,681, Cl. 505-1.000.
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Iwai, Kazuhiro; Matsubayashi, Shinji; Ariga, Ikuo; and Saito, Kazuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Saddle type vehicle having a storage receptacle. 5,060,748, Cl. 180-215.000.
Iwamatsu, Katsuyoshi: *See*—
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Iwamoto, Kohei: *See*—
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Miyamoto, Hiroshi; and Iwaoka, Hideto, 5,061,030, Cl. 385-3.000.
Iwasaki, Chie: *See*—
Kawakami, Yoshiyuki; Fukui, Masahiro; Shigemoto, Ichiro; and Iwasaki, Chie, 5,062,054, Cl. 364-491.000.
Iwasaki, Keisuke: *See*—
Nishimura, Akihiro; Hayashi, Kazuyuki; Iwasaki, Keisuke; Tanaka, Yasuyuki; and Itamochi, Hiroko, 5,061,570, Cl. 428-480.000.
Iwasaki, Masaaki: *See*—
Sumiyoshi, Takashi; Takahashi, Shigekatsu; Yamamoto, Shoji; Negishi, Kazuyoshi; and Iwasaki, Masaaki, 5,062,046, Cl. 364-200.000.
Iwasaki, Morihiko: *See*—
Sayama, Yasumasa; Nomura, Koichi; and Iwasaki, Morihiko, 5,062,127, Cl. 378-45.000
Iwata, Kouichi; Yamamoto, Hiroki; and Katsuyoshi, Fukaya, to Aisan Kogyo Kabushiki Kaisha. Flow control device. 5,060,910, Cl. 251-129.050.
Iwata, Toshio: *See*—
Hashimoto, Atsuko; and Iwata, Toshio, 5,060,615, Cl. 123-425.000.
Iwatani, Mitsuo; Kamoda, Hitoshi; Mikuriya, Masatoshi; Kashiyama, Tadao; and Kajino, Yoshio, to Sony Corporation. Printing apparatus with pushers on stepped discharge plate. 5,061,099, Cl. 400-625.000.
Iwatani, Shiro; and Kitamura, Yutaka, to Mitsubishi Denki K.K. Vehicle AC generator control device for adjusting output voltage in accordance with vehicle conditions. 5,061,889, Cl. 322-28.000.
Iwayanagi, Takao: *See*—
Kudo, Tetsuichi; Ishikawa, Akira; Okamoto, Hiroshi; Miyauchi, Katsuki; Iwayanagi, Takao; Murai, Fumio; and Okazaki, Shinji, 5,061,599, Cl. 430-270.000.
Iwazaki, Kuniyasu; and Ohta, Kihachiro, to Nippon Densan Corporation. Spindle motor. 5,061,868, Cl. 310-67.00R.
J.C. Steele & Sons, Inc.: *See*—
Steele, Alexis P., Jr., 5,061,082, Cl. 366-325.000.
Jackson, Henry W. Continuously operating ^3He-^4He dilution refrigerator for space flight. 5,060,482, Cl. 62-51.300.
Jackson, Richard L.: *See*—
Mao, Simon J. T.; and Jackson, Richard L., 5,061,734, Cl. 514-712.000.
Jacobs, Jared J. Cochlear implant auditory prosthesis. 5,061,282, Cl. 623-10.000.
Jacobs, Michael E.; and Hons, Douglas A., to Eastman Kodak Company. Dielectric member core support and locating device. 5,061,961, Cl. 355-212.000.
Jacobs, Stephen: *See*—
Lee, Jae-Cheul; and Jacobs, Stephen, 5,061,046, Cl. 359-53.000.
Jacobsen, Poul: *See*—
Honoree, Tage; Jacobsen, Poul; Nielsen, Flemming E.; and Nafnm, Lars, 5,061,706, Cl. 514-249.000.
Jacquier, Paul, to Framatome. Device for fitting an extraction sleeve into a steam-generator tube and corresponding process for the extraction of a tube portion. 5,061,340, Cl. 156-578.000.
Jadwin, Thomas A.: *See*—
Saha, Bijay S.; and Jadwin, Thomas A., 5,061,586, Cl. 430-108.000.
Jahr, Andreas; and Weber, Jorg, to Maschinenfabrik Lorenz AG. Mechanism for the drive of a tool spindle. 5,061,128, Cl. 409-34.000.
Janatka, Karel J.: *See*—
Gergely, William, Jr.; and Janatka, Karel J., 5,060,838, Cl. 225-100.000.
Janes, Richard, to Spalding & Evenflo Companies, Inc. Tennis racket with split frame. 5,060,944, Cl. 273-73.00R.
Janetzke, Helmut: *See*—
Krampe, Wolfgang; Braun, Gunter; and Janetzke, Helmut, 5,060,611, Cl. 123-320.000.
Janis, Frederick L.; Williams, Marvin L.; and Wang, Diana S., to International Business Machines Corporation. System for maintaining a document and activity selective alterable document history log in a data processing system. 5,062,045, Cl. 364-200.000.
Jans, Michel R.: *See*—
Cordi, Alex A.; and Jans, Michel R., 5,061,721, Cl. 514-376.000.
Jansen, Karlheinz: *See*—
Lieberoth-Leden, Bernd; Spiegel, Guenter; Preis, Karl-Heinrich; Schaper, Uwe; and Jansen, Karlheinz, 5,060,513, Cl. 123-399.000
Janssen, Bernd: *See*—
Wuest, Hans H.; Janssen, Bernd; Murray, William V.; Wachter, Michael P.; and Bell, Stanley, 5,061,705, Cl. 514-236.500.
Jantzen, Michael E., to Hypertat Corporation. Building structure. 5,060,426, Cl. 52-86.000.
Japan Atomic Energy Research Institute: *See*—
Kobayashi, Fumiaki; and Fukuda, Kosaku, 5,062,119, Cl. 374-5.000
Kumakura, Minoru; Kaetsu, Isao; Komaki, Yoshihide; Sakurai, Tsutomu; Arai, Ryuji; Sejima, Yasuji; Ohno, Takashi; Itoh, Toshiyuki; and Kohyama, Hideo, 5,061,057, Cl. 351-160.00R.
Japan Carlit Co., Ltd., The: *See*—
Seki, Ichiro; Kano, Akihiro; Hasegawa, Toshiki; Abe, Minoru; and Isa, Isao, 5,061,665, Cl. 501-105.000.
Japan Crown Cork Co., Ltd.: *See*—
Doi, Kouichi; Itsubo, Junichi; and Kikuchi, Hiroaki, 5,060,818, Cl. 220-454.000.
Japan Electronic Control Systems Co., Ltd.: *See*—
Sakurai, Osamu; Kobayashi, Kazumitsu; Kano, Hideki; and Takeuchi, Kiyoshi, 5,060,619, Cl. 123-494.000.
Japan Sewage Works Agency: *See*—
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000.
Japanese Research & Development Association for Bioreactor System in Food Industry, The: *See*—
Matsuzaki, Narihide; Kurashige, Jun; Mase, Tamio; and Yamaguchi, Shotaro, 5,061,498, Cl. 426-33.000.
Jarnicki, Holger: *See*—
Dorer, Kai; and Jarnicki, Holger, 5,061,658, Cl. 501-17.000.
Jaskiewicz, Andrzej. Assembly for automatically closing a water closet cover in a controlled manner. 5,060,318, Cl. 4-251.000.
Jeffries, Ernest H., Jr.: *See*—
Arthur, Reuben B., Jr.; Edwards, James L.; Jeffries, Ernest H., Jr.; Westmoreland, Chester O., Jr.; and Whitley, Jerry W., 5,060,428, Cl. 52-125.600.
Jellinek, Herbert D.: *See*—
Johnson, Walter A. L.; Faieta, Baldo A.; Jellinek, Herbert D.; and Smith, Z. Erol, III, 5,060,980, Cl. 283-70.000.
Jenner, John A.; Sage, Ian C.; and Lewis, Stephen J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Optically

active naphthalene compounds and liquid crystal materials and devices incorporating them. 5,061,399, Cl. 252-299.620

Jenniges, Jeffrey: *See—*
Scher, Larry I.; Scharr, Laura; and Jenniges, Jeffrey, 5,062,066, Cl. 364-578.000.

Jennings, David F.: *See—*
Gingello, Anthony D.; Jennings, David F.; Lucitte, Richard D.; and Rocha, Hermano P., 5,061,595, Cl. 430-264.000

Jentzsch, Arndt; Muller, Wolfgang; and Sachers, Horst, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Distributing roller unit and printing mechanism provided therewith. 5,060,568, Cl. 101-148.000.

Jepsen, Donna. Scarf support. 5,060,316, Cl. 2-338.000

Jerath, Ravinder. Ultrasound training apparatus. 5,061,187, Cl 434-262.000.

Jerome, Aron, to Kuhn S.A. Transportable farm machine for windrowing products. 5,060,465, Cl. 56-367.000.

Jinno, Keishi, to Yazaki Corporation. Connector with terminal retainer 5,061,210, Cl. 439-752.000.

Jitsukawa, Masaharu: *See—*
Nishimoto, Akihiko; Hosoya, Yoshihiro; Tomita, Kunikazu; Urabe, Toshiaki; and Jitsukawa, Masaharu, 5,061,321, Cl. 134-3.000.

Jo Jan Sportsequip Co.: *See—*
Fenchel, Jack L., 5,060,627, Cl. 124-88.000.

Jodai, Tetsuji: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,061,681, Cl. 505-1.000.

Johansson, Lennart: *See—*
Hjortsberg, Arne; Holmstrom, Goran; Johansson, Lennart; and Karlsson, Thommy, 5,061,554, Cl. 428-220.000.

John, Thomas, to Man Roland Druckmaschinen AG. Inker with controlled zone ink distribution, and method of controlling ink transfer between cylinders of a printing machine. 5,060,571, Cl. 101-350.000.

Johnsen, Thore. Single unit key activated pin lock. 5,060,493, Cl. 70-95.000.

Johnson, A. David, Jr.; and Bachman, Joseph L., Jr., to Wayne Automation Corporation. Dividable cartons. 5,060,802, Cl. 206-602.000.

Johnson, Alfred D.: *See—*
Busch, John D.; and Johnson, Alfred D., 5,061,914, Cl. 337-140.000.

Johnson, Arthur F.; and Sackett, Robert L., to ROM Industries Corporation. Economic recovery and utilization of boiler flue gas pollutants. 5,061,467, Cl. 423-242.000.

Johnson, James W.; Schultz, Francis R.; Rhodes, Wayne A.; and Miller, Roy W., to Itel Rail Corporation. Sliding hopper outlet gate with plastic upper surface for smooth sliding and for sealing the outlet 5,060,579, Cl. 105-282.100.

Johnson & Johnson: *See—*
Wampler, Richard K., 5,061,256, Cl. 604-280.000.

Johnson, Kevin M.; Primerano, Bruno; and Rimai, Donald S., to Eastman Kodak Company. Heat assisted toner transferring method and apparatus. 5,061,590, Cl. 430-126.000.

Johnson Matthey, Inc.: *See—*
Cordonna, George W., Jr.; and Becker, Eckhard R., 5,061,464, Cl. 423-213.500.

Johnson Products Co., Inc.: *See—*
Akhtar, Muhammad, 5,060,680, Cl. 132-204.000.

Johnson, Ross E.: *See—*
Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., 5,060,505, Cl. 73-1.00G.

Johnson Service Company: *See—*
Dejewski, Michael P., 5,062,101, Cl. 359-135.000.

Johnson, Walter A. L.; Faieta, Baldo A.; Jellinek, Herbert D.; and Smith, Z. Erol, III, to Xerox Corporation. Form utilizing encoded indications for form field processing. 5,060,980, Cl. 283-70.000

Johnson, William R.: *See—*
Pederson, Jane M.; and Johnson, William R., 5,061,018, Cl. 312-209.000.

Jones, C. Kerry: *See—*
Silverman, Michael W.; Heinrich, Michael; and Jones, C. Kerry, 5,060,393, Cl. 33-512.000.

Jones, David P.: *See—*
Christie, Leslie G.; Wanger, Mark E.; Dauner, Daniel R.; Jones, David P.; and Domel, Douglas R., 5,062,093, Cl. 369-36.000.

Jones, Earl W.: *See—*
Pace, Loy D.; Stackhouse, Donald C.; Jones, Earl W.; and Zimpfer, Dennis S., 5,061,153, Cl. 416-46.000.

Jones, Gary. Clamps for load braces. 5,060,810, Cl. 211-59.400.

Jones, Hollis H. Forward mounted hitch apparatus. 5,060,463, Cl. 56-15.900

Jones, Paul W.; Abbott, John R.; and Fleming, Roger A., to Goodyear Tire & Rubber Company, The. Bead retainer. 5,060,706, Cl. 152-381.500.

Jones, Peyton A., to Physicians & Nurses Mfg. Co. Apparatus and method for the treatment of flexural deformities, contracted tendons, and angular limb deformities in foals. 5,060,641, Cl. 128-80.00R.

Jones, Ronald W., to Ceramic Developments (Midlands) Limited. Armor materials. 5,060,553, Cl. 89-36.020.

Jones, William F., to Bausch & Lomb Incorporated. Target domain profiling of target optical surfaces using excimer laser photoablation 5,061,342, Cl. 156-643.000.

Jones, Winton D.: *See—*
Sunkara, Sai P.; and Jones, Winton D., 5,061,715, Cl. 514-314.000.

Jong, Slosson B. Roof construction. 5,060,445, Cl. 52-553.000.

Jongewaard, Susan K.; Leichter, Louis M.; Smith, Terrance P.; and Zaklika, Krzysztof A., to Minnesota Mining and Manufacturing Company. Thermal transfer imaging using sulfonylaminoanthraquinone dyes. 5,061,678, Cl. 503-227.000

Jongewaard, Susan K.: *See—*
Fossum, Douglas K.; Jongewaard, Susan K.; and McConville, John W., 5,060,981, Cl. 283-109.000.

Jordan, John D., Jr., to AT&T Bell Laboratories. Information control system. 5,062,038, Cl. 364-200.000.

Jorg, Andreas: *See—*
Bischofberger, Jurg; Jorg, Andreas; Mondini, Giancarlo; and Oehy, Peter, 5,060,346, Cl. 19-225.000.

Josephson, Paul R., Jr.: *See—*
West, Paul R.; Mitchell, James E.; Miller, Gary R.; Josephson, Paul R., Jr.; and Ryan, Raymond W., Jr., 5,061,600, Cl. 430-273.000
West, Paul R.; Mitchell, James E.; Miller, Gary R.; Josephson, Paul R., Jr.; and Ryan, Raymond W., Jr., 5,061,601, Cl. 430-278.000.

Jost, Peter; and Klosch, Erwin. Voice-training apparatus. 5,061,186, Cl. 434-185.000.

Juhasz, Paul R. Syringe device. 5,061,251, Cl. 604-198.000.

Jujo Paper Co., Ltd.: *See—*
Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Sekine, Akio; and Yokoyama, Miyuki, 5,061,536, Cl. 428-64.000.

Juju Paper Co., Ltd.: *See—*
Sakamoto, Masahiro; and Harada, Shozo, 5,061,410, Cl. 264-4.700.

Julian, Randall K.; and Luker, Edward, to Sunbeam Plastics Corporation. Injection-blow molding apparatus including circumferentially continuous injection molds, blow molds and shoulder forming sleeves. 5,061,173, Cl. 425-525.000.

Jung, Dieter: *See—*
Kreckel, Karl-Werner; Jung, Dieter; and Von Jakusch, Robert, 5,061,535, Cl. 428-42.000.

Jung, Jongin, to Samsung Electron Devices Co., Ltd. Method for preparing sintered body of the titanium boride and apparatus therefor. 5,061,662, Cl. 501-96.000.

Jurs, Michael: *See—*
Holzhuter, Andreas; and Jurs, Michael, 5,061,221, Cl. 452-184.000.

Kabasawa, Makoto: *See—*
Kosuge, Shigeyoshi; Kabasawa, Makoto; Ono, Moriaki; and Shinbo, Yukio, 5,061,685, Cl. 505-1.000

Kabushiki Kaisha Dymosha: *See—*
Ishida, Yasuhiro, 5,060,628, Cl. 125-21.000.

Kabushiki Kaisha Ihara Kogyo: *See—*
Ihara, Ryoseki, 5,060,566, Cl. 100-272.000.

Kabushiki Kaisha Iseki Kaihatsu Koki: *See—*
Akesaka, Toshio, 5,061,120, Cl. 405-143.000.

Kabushiki Kaisha Meidensha: *See—*
Kozuma, Ichiro; and Fujii, Toshinobu, 5,061,578, Cl. 429-3.000.

Kabushiki Kaisha Okuma Tekkosho: *See—*
Hanaki, Yoshimaro; and Yamamoto, Kyoichi, 5,060,544, Cl. 82-1.110.

Kabushiki Kaisha Showa: *See—*
Kubo, Masakazu; and Berghash, Robert, 5,061,182, Cl. 433-199.100.

Kabushiki Kaisha Toshiba: *See—*
Arakawa, Norimasa, 5,062,078, Cl. 365-189.070.
Hiraoka, Satoshi, 5,061,888, Cl. 318-696.000.
Kanda, Ryoichi; and Sato, Takeshi, 5,060,515, Cl. 73-602.000.
Kondo, Shinya; and Kondo, Shinichi, 5,062,068, Cl. 364-578.000.
Morita, Keiichi; Sugiyama, Akihiko; Watabiki, Oserojoin; and Murano, Mithuo, 5,060,717, Cl. 165-53.000.
Naito, Katsuyuki; Aoki, Shinya; and Nakayama, Toshio, 5,061,509, Cl. 427-13.000
Odawara, Kazuharu; Ishii, Masaru; and Yamamoto, Hiroshi, 5,062,099, Cl. 369-263.000.
Ohkawa, Hideki, 5,061,563, Cl. 428-408.000.
Okochi, Sadao; Kasama, Norio; and Matsuya, Hideji, 5,061,913, Cl. 333-181.000.
Ozeki, Takeshi; Matsumura, Masanori; and Tanaka, Jun, 5,061,937, Cl. 342-372.000.
Takashima, Daisaburo; Oowaki, Yukihito; and Tsuchida, Kenji, 5,062,077, Cl. 365-69.000.
Takenouchi, Naoko; and Hieda, Katsuhiko, 5,061,649, Cl. 437-44.000.
Tanimoto, Shigeaki; Kayano, Tadashi; Karasawa, Hirobumi; Yamagishi, Osamu; and Kunikyo, Tomoo, 5,062,035, Cl. 364-200.000.
Tsuchida, Kenji; and Oowaki, Yukihito, 5,062,079, Cl. 365-210.000.
Ueno, Hideyuki, 5,061,992, Cl. 379-53.000.
Yasuki, Seijiro; and Kawai, Kiyoyuki, 5,061,998, Cl. 358-142.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Mori, Shogo; Aoki, Shinobu; and Takagi, Haruo, 5,061,863, Cl. 307-350.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Nishibe, Yuji; Nonomura, Yutaka; Abe, Masaaki; Takeuchi, Masaharu; and Tsukada, Kouji, 5,062,062, Cl. 364-559.000.

Kabushiki Kaisha Vitamin Kenkyuso: *See—*
Yagi, Kunio; Shimohigashi, Yasuyuki; Kodama, Hiroaki; Ogasawara, Tomio; Koshizaka, Takuya; and Kurono, Masayasu, 5,061,691, Cl. 514-17.000

Kabushiki Kaisha Yakult Honsha: *See—*
Tagawa, Hiroaki; Sugimori, Masamichi; Terasawa, Hirofumi; Ejima, Akio; and Ohsuki, Satoru, 5,061,795, Cl. 540-578.000.
Yaegashi, Takashi; Okajima, Satoru; Sawada, Seigo; Nokata, Kenichiro; Tezuka, Kenichi; Nagata, Hiroshi; Yokokura, Teruo; Miyasaka, Tadashi; and Miyasaka, Tadashi, 5,061,800, Cl. 546-48.000.

K.K. Shinsangyo: *See—*
Suzuki, Katsuo, 5,061,936, Cl. 342-359.000.

Kadohara, Terutake: *See—*
Higashihara, Masaki; Ohnuki, Ichiro; Akashi, Akira; and Kadohara, Terutake, 5,061,951, Cl. 354-400.000.
Higashihara, Masaki; Ohnuki, Ichiro; Akashi, Akira; and Kadohara, Terutake, 5,061,953, Cl. 354-402.000.

Kadomukai, Yuzo: *See—*
Maeda, Naoki; Nakamura, Yozo; Kadomukai, Yuzo; Mitsuya, Shunichi; Takahashi, Tsuyoshi; and Naruse, Jun, 5,062,012, Cl. 360-75.000.

Kadota, Tetsuro; Mihata, Yo; and Watanabe, Mamoru, to NTN Corporation. Homokinetic universal joint. 5,061,223, Cl. 464-111.000.

Kaetsu, Isao: *See—*
Kumakura, Minoru; Kaetsu, Isao; Komaki, Yoshihide; Sakurai, Tsutomu; Arai, Ryuji; Sejima, Yasuji; Ohno, Takashi; Itoh, Toshiyuki; and Kohyama, Hideo, 5,061,057, Cl. 351-160.00R.

Kagabu, Shinzo: *See—*
Kurahashi, Yoshio; Shiokawa, Kozo; Kagabu, Shinzo; Sakawa, Shinji; and Moriya, Koichi, 5,061,731, Cl. 514-624.000.

Kagechika, Hiroshi, to NKK Corporation. Infrared radiator. 5,062,146, Cl. 392-432.000.

Kaifu, Noriyuki: *See—*
Kobayashi, Isao; Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, 5,061,979, Cl. 357-30.000.

Kaiser, Donald B.: *See—*
Tomasetti, Charles M.; Narehood, Benjamin W.; and Kaiser, Donald B., 5,061,875, Cl. 313-533.000.

Kajino, Yoshio: *See—*
Iwatani, Mitsuo; Kamoda, Hitoshi; Mikuriya, Masatoshi; Kashiyama, Tadao; and Kajino, Yoshio, 5,061,099, Cl. 400-625.000.

Kajiwara, Hajime: *See—*
Sano, Shoichi; Yoshida, Suguru; Uchida, Ken; Kajiwara, Hajime; Ohno, Masao; and Kawade, Tateo, 5,060,975, Cl. 280-787.000.

Kajiwara, Takashi: *See—*
Oda, Susumu; Aga, Masami; Kajiwara, Takashi; and Tajima, Naoki, deceased, 5,060,743, Cl. 180-140.000.

Kakegawa, Hisao: *See—*
Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao; and Matsumoto, Hitoshi, 5,061,812, Cl. 549-315.000.

Kakinuma, Zenichi: *See—*
Kubota, Toshiaki; Hayashi, Hiroshige; Ishizaka, Yoshirou; Naganuma, Hiroshi; and Kakinuma, Zenichi, 5,061,019, Cl. 312-214.000.

Kakushima, Masatoshi: *See—*
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,061,624, Cl. 435-75.000.

Kalamazoo Holdings, Inc.: *See—*
Todd, Paul H., Jr., 5,061,403, Cl. 252-407.000.

Kalaritis, Panayiotis: *See—*
Coffen, David L.; Kalaritis, Panayiotis; and Patridge, John J., 5,061,629, Cl. 435-280.000.

Kallin, Fredrik L. N.: *See—*
Brouwer, Frederick W.; Luckhurst, Graham; and Kallin, Fredrik L. N., 5,061,100, Cl. 400-642.000.

Kalmakis, George P.: *See—*
Torti, Victor A.; Nelson, Gary E.; Keene, Laurence; and Kalmakis, George P., 5,061,449, Cl. 422-100.000.

Kamasako, Shoji: *See—*
Nishikawa, Tomoyuki; Kita, Masahiro; Yano, Takaaki; Yoshida, Tatsuya; Honda, Ryoji; Negishi, Kiyoshi; Sato, Tsutomu; and Kamasako, Shoji, 5,061,957, Cl. 355-200.000.

Kameda, Kiyoshige: *See—*
Takimoto, Kazushi; Kamezaki, Yasushi; Maekawa, Koji; Kameda, Kiyoshige; Fujita, Hiroyuki; and Masai, Katsunori, 5,060,923, Cl. 271-7.000

Kamezaki, Yasushi: *See—*
Takimoto, Kazushi; Kamezaki, Yasushi; Maekawa, Koji; Kameda, Kiyoshige; Fujita, Hiroyuki; and Masai, Katsunori, 5,060,923, Cl. 271-7.000.

Kamimura, Shoichi; Edahiro, Takeshi; Takehara, Shin; and Morita, Toshiki, to Mazda Motor Corporation. Suspension apparatus of a vehicle. 5,060,969, Cl. 280-707.000

Kamimura, Shoichi; Edahiro, Takeshi; Takehara, Shin; and Kumada, Hiroyoshi, to Mazda Motor Corporation. Suspension apparatus of a vehicle. 5,060,970, Cl. 280-707.000.

Kaminski, Stanley S.: *See—*
Leone-Bay, Andrea; Peake, Steven L.; and Kaminski, Stanley S., 5,061,781, Cl. 528-179.000.

Kamoda, Hitoshi: *See—*
Iwatani, Mitsuo; Kamoda, Hitoshi; Mikuriya, Masatoshi; Kashiyama, Tadao; and Kajino, Yoshio, 5,061,099, Cl. 400-625.000.

Kampf GmbH & Co. Maschinenfabrik: *See—*
Hutzenlaub, Armin; and Albrecht, Klaus, 5,060,878, Cl. 242-68.400.

Kan, Kazunori: *See—*
Ohashi, Takeisa; Kan, Kazunori; Ueyama, Noboru; Sada, Isao; Miyama, Akimasa; and Watanabe, Kiyoshi, 5,061,817, Cl. 556-443.000.

Kanai, Hirosumi: *See—*
Manabe, Sakae; and Kanai, Hirosumi, 5,061,198, Cl. 439-293.000.

Kanare, Edward; and Rehler, Kenneth, to Kanare, Edward. Telephone line monitoring circuit for providing a visual and auditory signal if the telephone line becomes inoperative. 5,062,131, Cl. 379-33.000

Kanashige, Masanori; Okada, Kenji; and Kumagai, Michihiro, to Nippon Oil Co., Ltd.; and Nippon Automation Co., Ltd. Liquid level detecting apparatus. 5,060,512, Cl. 73-301.000.

Kanazawa, Kiyosumi: *See—*
Kobayashi, Yukari; and Kanazawa, Kiyosumi, 5,061,537, Cl. 428-66.000.

Kanazawa, Seizaburo: *See—*
Murata, Masahide; Kanazawa, Seizaburo; Furuhashi, Hiroyuki; Maruyama, Kouji; Imai, Masafumi; and Ueno, Hiroshi, 5,061,667, Cl. 502-116.000.

Kanazawa, Takumi: *See—*
Takasu, Yasuo; Sakai, Toshiharu; Shindo, Seiichi; and Kanazawa, Takumi, 5,062,069, Cl. 364-580.000

Kanda, Ryoichi; and Sato, Takeshi, to Kabushiki Kaisha Toshiba. Image signal processing circuit for ultrasonic imaging apparatus. 5,060,515, Cl. 73-602.000

Kanda, Ryouji, to Tokai Rubber Industries, Ltd. Fluid-filled cylindrical elastic connector having two orifice passages with different cross sectional areas. 5,060,918, Cl. 267-140.100.

Kane, Robert F.: *See—*
Yousef, Faisal J.; Kane, Robert F.; Ham, Joel; and Mildren, David, 5,060,740, Cl. 175-415.000.

Kane, Robert P.: *See—*
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Iwatani, Shiro; and Kitamura, Yutaka, 5,061,889, Cl. 322-28.000.
Kitao, Satoshi: *See*—
Hashiguchi, Jumpei; Nonomura, Kinzo; Hamada, Kiyoshi; Kitao, Satoshi; and Takahashi, Masayuki, 5,061,880, Cl. 315-366.000.
Kitaura, Hiromu; and Hirauchi, Yoshio, to Matsushita Electric Industrial Co., Ltd. Videodisc reproducing apparatus. 5,062,005, Cl 358-342.000.
Kitayama, Ryuichi: *See*—
Sato, Mitsunobu; Yano, Shigenobu; Kitayama, Ryuichi; and Komiya, Katsuo, 5,061,816, Cl. 556-148.000.
Kitson, Melanie; and Williams, Peter S., to BP Chemicals Limited. Catalyst for the production of alcohols by hydrogenation of carboxylic acids and process for the preparation of the catalyst. 5,061,671, Cl. 502-185.000.
Kiyohara, Kazuto; Araki, Hiromitu; Yamazaki, Toshiaki; and Harada, Ichiya, to Konica Corporation. Reflective support for photography 5,061,612, Cl. 430-533.000.
Klaass, Reinhard M.; Minshall, Bert J.; Suriano, Francis J.; and Caan, William, to Allied-Signal Inc. Integrated power unit control apparatus and method. 5,060,469, Cl. 60-39.030
Klages, Corwin L., to Deere & Company. Axle shaft retention structure. 5,060,750, Cl. 180-257.000.
Klarl, Hermann, to Krones AG Hermann Kronseder Maschinenfabrik. Container closing machine having an improved air flushing system 5,060,449, Cl. 53-88.000.
Kleinberger, Paul J., to TNET, Inc. Information retrieval system and method. 5,062,074, Cl. 364-900.000.

Kleinschmit, Peter: *See—*
Panster, Peter; Deschler, Ulrich; and Kleinschmit, Peter, 5,061,773, Cl. 528-9.092.
Pauli, Ingo; Kleinschmit, Peter; and Schwarz, Rudolf, 5,061,474, Cl. 423-625.000.

Klingel, Bruno T.: *See—*
Behun, John R.; Call, Anson J.; Cappo, Francis F.; Cole, Marie S.; Hoebener, Karl G.; Klingel, Bruno T.; and Milliken, John C., 5,060,844, Cl. 228-180.200.

Klosch, Erwin: *See—*
Jost, Peter; and Klosch, Erwin, 5,061,186, Cl. 434-185.000.

Klotz, Norbert, to Supfina Maschinenfabrik Hentzen GmbH & Co. KG. Automatic control centerless finishing device for honing external cylindrical surfaces. 5,060,423, Cl. 51-165.710.

Klutchko, Sylvester: *See—*
Hodges, John C.; and Klutchko, Sylvester, 5,061,808, Cl 548-517.000.

Knapp, Heinrich; Linssen, Mathias; Peczkowski, Jurgen; and Konrad, Alfred, to Robert Bosch GmbH. Electromagnetically actuatable valve. 5,060,868, Cl. 239-585.000.

Knipiler, Gaston; Suhas, Philippe; and Dominique, Gosselin, to Gaz de France. Method and apparatus for heating a flow of gaseous fluid by successive thermal exchanges. 5,061,177, Cl. 432-222.000.

Knoedler, Roy E.: *See—*
Parker, Robert M.; Golenz, Douglas; Knoedler, Roy E.; and Harvey, Gregg, 5,061,012, Cl. 297-467.000.

Knoll, Robert W.: *See—*
Henager, Charles H., Jr.; and Knoll, Robert W., 5,061,574, Cl. 428-620.000.

Knopf, Ulrich C.; and Sieber, Joseph, to Agrogen Foundation, Seyffer & Co. & Ulrich C. Knopf. Laboratory apparatus for optional temperature-controlled heating and cooling. 5,061,630, Cl. 435-290.000.

Ko, Ensei: *See—*
Chen, Chia-Fu; Ko, Ensei; Ishizuka, Hiroshi; and Hosomi, Satoru, 5,061,292, Cl. 51-293.000.

Kobayashi, Akira: *See—*
Sakata, Hideaki; Nagashima, Toshiharu; and Kobayashi, Akira, 5,061,611, Cl. 430-533.000.

Kobayashi, Fumiaki; and Fukuda, Kosaku, to Japan Atomic Energy Research Institute. Detection of broken coated fuel particles in ceramic coating layer. 5,062,119, Cl. 374-5.000.

Kobayashi, Fumio: *See—*
Kawanami, Norihide; Kobayashi, Fumio; and Mitani, Ikujiro, 5,061,206, Cl. 439-582.000.

Kobayashi, Isao; Kaifu, Noriyuki; Saika, Toshihiro; Endo, Tadao; and Shimada, Tetsuya, to Canon Kabushiki Kaisha. Semiconductor photoelectric device having a matrix wiring section. 5,061,979, Cl. 357-30.000.

Kobayashi, Kazumitsu: *See—*
Sakurai, Osamu; Kobayashi, Kazumitsu; Kano, Hideki; and Takeuchi, Kiyoshi, 5,060,619, Cl. 123-494.000.

Kobayashi Kose Co., Ltd.: *See—*
Suzuki, Kazuhiro; Shimizu, Toru; Yamazoe, Miki; and Sugisaki, Tosiaki, 5,061,481, Cl. 424-63.000.

Kobayashi, Masaaki: *See—*
Nakatsu, Etsuto; Shimazaki, Hiroaki; Matsuta, Toyohiko; Shimotashiro, Masafumi; and Kobayashi, Masaaki, 5,062,007, Cl. 360-29.000.

Kobayashi, Mikio: *See—*
Tomioka, Yoshio; Soma, Toshio; Takano, Kengo; and Kobayashi, Mikio, 5,060,594, Cl. 118-666.000.

Kobayashi, Souichi; and Hinata, Jun-ichi, to Mitsubishi Denki Kabushiki Kaisha. Logic circuit testing apparatus. 5,062,110, Cl 371-223.000.

Kobayashi, Tuyoshi: *See—*
Ogitani, Osamu; Shimizu, Takashi; Fujii, Ryuichi; Kawashima, Masao; Kobayashi, Tuyoshi; and Akutagawa, Ichiro, 5,061,744, Cl. 523-461.000.

Kobayashi, Yukari; and Kanazawa, Kiyosumi, to TDK Corporation. Magnetic disk comprising a flexible substrate and a plastic film each having a specified Young's modulus and which meet specified thickness relationships. 5,061,537, Cl. 428-66.000.

Koch, Christof: *See—*
Harris, John G.; and Koch, Christof, 5,062,000, Cl. 358-213.270.

Koch, Horst; Schupp, Hans; and Schwalm, Reinhold, to BASF Aktiengesellschaft. Photosensitive recording material of enhanced flexibility. 5,061,602, Cl. 430-281.000.

Koch, Horst: *See—*
Telser, Thomas; Koch, Horst; Kurtz, Karl-Rudolf; Bach, Helmut; and Werther, Heinz-Ulrich, 5,061,606, Cl. 430-306.000.

Koch, Werner-Lutz, to Implanto-Lock Gesellschaft mit beschrankter Haftung fur Implantatforschung-und Entwicklung. Enossal implant and process for inserting enossal implant into the jawbone. 5,061,285, Cl. 623-16.000.

Kochs Adler Aktiengesellschaft: *See—*
Sadlack, Werner; Vogt, Siegfried; Upmeier, Egon; and Schulze, Wolfram, 5,060,588, Cl. 112-265.200.

Kock, Nobert: *See—*
Reiter, Karl; Kock, Nobert; and Wahn, Rainer, 5,060,496, Cl. 72-38.000.

Kocsar, Barna: *See—*
Kincses, Gyula; Kocsar, Barna; Lampe, Istvan; Bacsa, Gyorgy; Krusper, Laszlo ; Kovacs, Istvan; Barna nee Katona, Klara; Katona nee Lendvay, Agnes; Szabo, Csongor; and Trestyanszky, Zoltan, 5,061,729, Cl. 514-562.000.

Kodama, Hiroaki: *See—*
Yagi, Kunio; Shimohigashi, Yasuyuki; Kodama, Hiroaki; Ogasawara, Tomio; Koshizaka, Takuya; and Kurono, Masayasu, 5,061,691, Cl. 514-17.000.

Kodama, Hitoshi: *See—*
Gomi, Takeo; and Kodama, Hitoshi, 5,061,533, Cl. 428-36.300.

Koe, B. Kenneth, to Pfizer Inc. Use of 4-phenyl-1,2,3,4-tetrahydro-1-naphthalenamine derivatives in the treatment of inflammation and as immunosuppressants. 5,061,728, Cl. 514-520.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Kohlmann, Helmut, 5,060,929, Cl. 271-218.000.

Koenig, Karl E.: *See—*
Fields, Donald L., Jr.; Grabiak, Raymond C.; Koenig, Karl E.; and Riley, Dennis P., 5,061,820, Cl. 560-17.000.

Koerner, Arthur. Apparatus for filling hydraulic systems. 5,060,703, Cl. 141-59.000.

Koester, Karsten G.: *See—*
Cissell, Thomas J.; Doerschuk, David C.; Koester, Karsten G.; and Reed, Gordon K., 5,060,539, Cl. 74-640.000.

Kogel, Karl: *See—*
Kuhlmann, Wolf; Hesse, Dieter; and Kogel, Karl, 5,060,502, Cl. 72-392.000.

Kohara, Teiji: *See—*
Oshima, Masayoshi; Kohara, Teiji; Hosaka, Tohru; and Natsuume, Tadao, 5,061,771, Cl. 526-282.000.

Kohlert, Rudolf: *See—*
Fischer, David; and Kohlert, Rudolf, 5,060,958, Cl. 279-4.000.

Kohlmann, Helmut, to Koenig & Bauer Aktiengesellschaft. Sheet delivery device with auxiliary deposit table. 5,060,929, Cl. 271-218.000

Kohyama, Hideo: *See—*
Kumakura, Minoru; Kaetsu, Isao; Komaki, Yoshihide; Sakurai, Tsutomu; Arai, Ryuji; Sejima, Yasuji; Ohno, Takashi; Itoh, Toshiyuki; and Kohyama, Hideo, 5,061,057, Cl. 351-160.00R.

Koike, Syuzo: *See—*
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000.

Koito Manufacturing Co., Ltd.: *See—*
Machida, Tsutomu; Ishida, Yoshiaki; and Muramatsu, Katsumi, 5,062,027, Cl. 362-80.100.

Kojima, Akinori; Ishikawa, Norikazu; and Ishida, Yukio, to Sanshin Kogyo Kabushiki Kaisha; and Nippon Carbureter Co. Fuel supply system for selectively increasing the fuel supply to an engine. 5,060,617, Cl. 123-435.000.

Kojima, Keiji: *See—*
Nakayama, Hiroshi; Kojima, Keiji; and Sato, Gen, 5,062,141, Cl. 382-9.000.

Kojma, Kiyoteru: *See—*
Hioki, Takeshi; Kojima, Kiyoteru; and Tomioka, Jun, 5,061,796, Cl. 544-163.000

Kojima, Shinichi: *See—*
Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, 5,062,011, Cl. 360-40.000.

Kojima, Tetsuro: *See—*
Kase, Akira; and Kojima, Tetsuro, 5,061,615, Cl. 430-569.000.

Kojiri, Katuhisa: *See—*
Suda, Hiroyuki; Kojiri, Katuhisa; Okura, Akira; Funaishi, Koutaro; Kawamura, Kenji; and Okanishi, Masanori, 5,061,695, Cl. 514-28.000.

Kokoruda, Robert D.; and Harlow, Albert L., Jr. Mounting board for rural-type mailboxes. 5,060,900, Cl. 248-311.200.

Kokosa, Richard A.: *See—*
Lia, Raymond A.; Kehoskie, Michael; and Kokosa, Richard A., 5,061,995, Cl. 358-98.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Yamazaki, Katsuyuki; and Fujioka, Masanobu, 5,062,106, Cl. 370-94.100.

Kolbl, Heinz: *See—*
Elting, James J.; and Kolbl, Heinz, 5,061,790, Cl. 530-402.000.

Kolnick, Frank C., to Motorola Inc. Computer human interface comprising user-adjustable window for displaying or printing information. 5,062,060, Cl. 364-521.000.

Komaki, Yoshihide: *See—*
Kumakura, Minoru; Kaetsu, Isao; Komaki, Yoshihide; Sakurai, Tsutomu; Arai, Ryuji; Sejima, Yasuji; Ohno, Takashi; Itoh, Toshiyuki; and Kohyama, Hideo, 5,061,057, Cl. 351-160.00R.

Komeiji, Shigeki: *See—*
Masaoka, Toshika; and Komeiji, Shigeki, 5,061,155, Cl. 417-269.000.

Komiya, Katsuo: *See—*
Sato, Mitsunobu; Yano, Shigenobu; Kitayama, Ryuichi; and Komiya, Katsuo, 5,061,816, Cl. 556-148.000.

Komiyama, Katsuhiko, to Citizen Watch Co., Ltd. Module for quartz watch. 5,062,090, Cl. 368-88.000.

Kondo, Katsuhiko; and Ishida, Yasuhiko, to Mitsubishi Denki Kabushiki Kaisha. Fuel control apparatus for an internal combustion engine. 5,060,612, Cl. 123-357.000.

Kondo, Katsumi: *See—*
Yoneya, Makoto; Kondo, Katsumi; Ohashi, Tetsuya; Odamura, Motomi; and Kitamura, Teruo, 5,061,045, Cl. 359-56.000.

Kondo, Shigeki: *See—*
Mizutani, Hidemasa; and Kondo, Shigeki, 5,061,978, Cl. 357-30.000.

Kondo, Shinichi: *See—*
Kondo, Shinya; and Kondo, Shinichi, 5,062,068, Cl. 364-578.000.

Kondo, Shinya; and Kondo, Shinichi, to Kabushiki Kaisha Toshiba. Computerized analyzing system for piping network. 5,062,068, Cl. 364-578.000.

Kondo, Toshio; Sato, Yutaka; Masuzawa, Hiroshi; and Takeuchi, Hiroshi, to Hitachi Medical Corporation. Ultrasonic diagnostic apparatus. 5,060,651, Cl. 128-660.070.

Kondo, Toshio, to Aisin Seiki Kabushiki Kaisha. Disc brake assembly. 5,060,766, Cl. 188-73.390.

Kondo, Yoshihisa; and Tsukihara, Satoru, to Alps Electric Co., Ltd. Automatic sheet feed control system for printer. 5,061,101, Cl 400-706.000.

Kong-Chan, Josephine L. Y.; Hellyer, James A.; and Tafuri, Michael W., to Procter & Gamble Company, The. Simulated cheese products with reduced animal fat and calories. 5,061,503, Cl. 426-582.000.

Kong-Chan, Josephine L. Y.; Hellyer, James A.; and Tafuri, Michael W., to Procter & Gamble Company, The. Simulated cheese analogs with reduced animal fat and calories. 5,061,504, Cl. 426-582.000.

Konica Corporation: *See—*
Haneda, Satoshi; Shoji, Hisashi; Hiratsuka, Seiichiro; Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, 5,061,966, Cl. 355-297.000.
Isobe, Ryosuke; Sawada, Kiyoshi; Sasaki, Kunitsuna; Mori, Takahiro; and Ando, Yuki, 5,061,516, Cl. 427-132.000.
Kaneko, Yutaka, 5,061,613, Cl. 430-558.000.
Kiyohara, Kazuto; Araki, Hiromitu; Yamazaki, Toshiaki; and Harada, Ichiya, 5,061,612, Cl. 430-533.000.
Miyammae, Hiroshi, 5,061,051, Cl. 359-683.000.
Sakata, Hideaki; Nagashima, Toshiharu; and Kobayashi, Akira, 5,061,611, Cl. 430-533.000.

Konig, Johannes: *See—*
Kussel, Willy; Konig, Johannes; and Reuter, Martin, 5,062,033, Cl. 364-187.000.

Konishi, Kazuhiro: *See—*
Fushimi, Koji; Nishioka, Shigeo; and Konishi, Kazuhiro, 5,060,517, Cl. 73-620.000.

Konrad, Alfred: *See—*
Knapp, Heinrich; Linssen, Mathias; Peczkowski, Jurgen; and Konrad, Alfred, 5,060,868, Cl. 239-585.000.

Korber AG: *See—*
Heitmann, Uwe, 5,060,665, Cl. 131-84.100.
Siems, Wolfgang; and Radzio, Andrzej, 5,060,664, Cl. 131-84.100.

Korea Institute of Science and Technology: *See—*
Kim, Un Y.; Kang, Yong S.; Kim, Jae J.; Song, Sung W.; and Park, Hyun C., 5,061,301, Cl. 55-158.000.

Korpi, Taina M.; Hyttinen, Seppo J. O.; and Vapaaoksa, Pekka J., to Kemira Oy. Colored nacreous pigment and a method for its preparation. 5,061,317, Cl. 106-417.000.

Korte, Siegfried: *See—*
Frauendorf, Beatrix; Korte, Siegfried; Suling, Carlhans; and Dauscher, Rudi, 5,061,426, Cl. 264-205.000.

Koschinat, B. Hubert; and Frohlke, Manfred, to Otto Sauer Achsenfabrik Keilberg. Plunger piston system. 5,060,916, Cl. 267-64.270.

Koshida, Hitoshi; Sakagawa, Tetsuo; Nakayama, Takayuki; and Suwa, Hiroshi, to Mitsui Toatsu Chemicals, Incorporated. Rope dyeing process using halogen indigo derivative and dyed article thus obtained. 5,061,290, Cl. 8-653.000.

Koshizaka, Takuya: *See—*
Yagi, Kunio; Shimohigashi, Yasuyuki; Kodama, Hiroaki; Ogasawara, Tomio; Koshizaka, Takuya; and Kurono, Masayasu, 5,061,691, Cl. 514-17.000.

Kost, Gert: *See—*
Aulhorn, Elfriede; and Kost, Gert, 5,061,060, Cl. 351-224.000.

Kostlan, Catherine R.; and Sircar, Jagadish C., to Warner-Lambert Company. 9-deazaguanines to treat psoriasis. 5,061,707, Cl. 514-258.000.

Kosuge, Shigeyoshi; Kabasawa, Makoto; Ono, Moriaki; and Shinbo, Yukio, to Kitagawa Industries Co., Ltd. Magnetic shield. 5,061,685, Cl. 505-1.000

Kot, Kenneth M.; and Lee, Byung-Lip, to Goodyear Tire & Rubber Company, The. Reinforced composite structure. 5,061,557, Cl. 428-295.000.

Kothmann, Richard E.: *See—*
Grimm, Noel P.; Bauer, Frank I.; Bengel, Thomas G.; Kothmann, Richard E.; Mavretish, Robert S.; Miller, Phillip E.; Nath, Raymond J.; and Salton, Robert B., 5,061,083, Cl. 374-112.000.

Kotowicz, Kenneth M.: *See—*
Csaszar, Gabor; and Kotowicz, Kenneth M., 5,060,689, Cl. 137-515.000.

Kouda, Hiroshi; and Saito, Takayuki, to Ikeda Bussan Co., Ltd. Method and device for molding skin-covered foamed plastic article. 5,061,419, Cl. 264-46.600.

Kovacs, Istvan: *See—*
Kincses, Gyula; Kocsar, Barna; Lampe, Istvan; Bacsa, Gyorgy; Krusper, Laszlo ; Kovacs, Istvan; Barna nee Katona, Klara; Katona nee Lendvay, Agnes; Szabo, Csongor; and Trestyanszky, Zoltan, 5,061,729, Cl. 514-562.000.

Kozicki, Michael N.: *See—*
Ziv, Alan R.; and Kozicki, Michael N., 5,060,595, Cl. 118-722.000.

Kozuma, Ichiro; and Fujii, Toshinobu, to Kabushiki Kaisha Meidensha. Electrolyte circulation type secondary battery operating method. 5,061,578, Cl. 429-3.000.

Krall, Thomas J., to Owens-Illinois Plastic Products Inc. Dispensing package for dispensing liquids. 5,060,830, Cl. 222-212.000

Krampe, Wolfgang; Braun, Gunter; and Janetzke, Helmut, to Robert Bosch GmbH. Process and device for influencing the air feed in an internal-combustion engine, in particular during idling and coasting. 5,060,611, Cl. 123-320.000.

Krapf Business Systems, Inc.: *See—*
Krapf, Wallace A.; Blood, Robert J.; and Rossborough, Daniel W., 5,060,448, Cl. 52-732.000

Krapf, Wallace A.; Blood, Robert J.; and Rossborough, Daniel W., to Krapf Business Systems, Inc. Composite lightweight beam for a freestanding display or the like. 5,060,448, Cl. 52-732.000

Krasberg, Alan. Apparatus for and method of providing improved gas separation. 5,061,297, Cl. 55-16.000.

Krashkevich, David: *See—*
Ciolek, Sally; and Krashkevich, David, 5,061,659, Cl. 501-64.000

Kraus, Michael: *See—*
Moller, Wolfgang; and Kraus, Michael, 5,061,789, Cl. 530-381.000.

Krause, Jeffrey J.: *See—*
Cramer, Kenneth L.; and Krause, Jeffrey J., 5,061,015, Cl. 303-7.000.

Krauss, Werner: *See—*
Belikan, Thomas; Krauss, Werner; and Wurster, Helmut, 5,060,634, Cl. 128-24.0EL.
Wurster, Helmut; Krauss, Werner; and Belikan, Thomas, 5,060,650, Cl. 128-660.030.

Krebbers, Andreas P. L.: *See—*
Verweij, Hendrik; Offermans, Paulus H. G.; Krebbers, Andreas P. L.; and Schuurman, Arend, 5,060,406, Cl. 38-77.830

Krebs, Andreas: *See—*
Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,061,712, Cl. 514-300.000

Kreckel, Karl-Werner; Jung, Dieter; and Von Jakusch, Robert, to Minnesota Mining and Manufacturing Company. Patterned silicone release coated article. 5,061,535, Cl. 428-42.000.

Krenitsky, Thomas A., to Burroughs Wellcome Co. Therapeutic guanine esters. 5,061,708, Cl. 514-262.000

Kress-elektrik GmbH & Co., Elektromotorenfabrik: *See—*
Kress, Willy, 5,060,733, Cl. 173-12.000.

Kress, Hans-Jurgen: *See—*
Wittmann, Dieter; Peters, Horst; Schoeps, Jochen; Kress, Hans-Jurgen; Buekers, Josef; and Ott, Karl-Heinz, 5,061,745, Cl 524-139.000

Kress, Willy, to Kress-elektrik GmbH & Co., Elektromotorenfabrik Power-driven screwing tool. 5,060,733, Cl. 173-12.000

Kriaski, John R.; and Chaterjee, Bimal K., to Porter-Cable Corporation Shaft and bearing assembly. 5,061,090, Cl. 384-537.000.

Krieger, Eberhard: *See—*
Dietrich, Walter; Krieger, Eberhard; and Weber, Siegfried, 5,061,231, Cl. 493-315.000.

Krippl, Kurt; and Schulte, Klaus, to Bayer Aktiengesellschaft. Apparatus for the continuous charging of a liquid reactant with gas for the production of a foamable, liquid reaction mixture. 5,061,453, Cl 422-106.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See—*
Klarl, Hermann, 5,060,449, Cl. 53-88.000.

Kroupa, Gregory D.: *See—*
Wong, Mon N.; and Kroupa, Gregory D., 5,061,037, Cl. 385-11.000.

Kroutil, Robert T.; Ditillo, John T.; Loerop, William R.; Davis, Dennis M.; Hoffland, Lynn D.; and Desha, Michael S., to United States of America, Army. Short scan passive infrared remote sensor. 5,061,854, Cl. 250-339.000.

Krug, Ulrich: *See—*
Bertram, Johannes; Krug, Ulrich; and Grunewald, Peter, 5,060,773, Cl. 192-45.200.

Krupp Maschinentechnik Gesellschaft mit beschrankter Haftung: *See—*
Arndt, Friedrich K.; Bartels, Robert-Jan; and Vielhaber, Heribert, 5,060,761, Cl. 184-6.140.
Lentz, Norbert; and Schmidt, Harald, 5,060,840, Cl. 228-47.000

Krusper, Laszlo : *See—*
Kincses, Gyula; Kocsar, Barna; Lampe, Istvan; Bacsa, Gyorgy; Krusper, Laszlo ; Kovacs, Istvan; Barna nee Katona, Klara; Katona nee Lendvay, Agnes; Szabo, Csongor; and Trestyanszky, Zoltan, 5,061,729, Cl. 514-562.000

Kubo, Masakazu; and Berghash, Robert, to Kabushiki Kaisha Showa; and Brimms Inc. Denture base stabilizing sheet. 5,061,182, Cl 433-199.100.

Kubo, Motonobu: *See—*
Tamaru, Sinji; and Kubo, Motonobu, 5,061,770, Cl. 526-247.000

Kubota, Toshiaki; Hayashi, Hiroshige; Ishizaka, Yoshirou; Naganuma, Hiroshi; and Kakinuma, Zenichi, to Sanyo Electric Co., Ltd. Heat insulating box structure and manufacturing method therefor. 5,061,019, Cl. 312-214.000.

Kudo, Minoru: *See—*
Iijima, Kenichi; and Kudo, Minoru, 5,061,443, Cl. 422-21.000.

Kudo, Takeshi: *See—*
Suzuki, Migaku; Nozaki, Satoshi; Kudo, Takeshi; and Ohnishi, Kazuaki, 5,061,261, Cl. 604-385.200

Kudo, Tetsuichi; Ishikawa, Akira; Okamoto, Hiroshi; Miyauchi, Katsuki; Iwayanagi, Takao; Murai, Fumio; and Okazaki, Shinji, to Hitachi, Ltd. Radiation sensitive materials. 5,061,599, Cl. 430-270.000

Kudo, Toshio, to Mitsubishi Cable Industries Ltd. Transfer impedance testing fixture for electromagnetic wave shielding material. 5,061,899, Cl. 324-627.000.

Kuehne, Eric R.; and Hester, Donald D., to Tritec Industries, Inc. Bellows-type dispensing pump. 5,061,156, Cl. 417-412.000.

Kuhlman, Harland L.; Cumerlato, Calvin L.; and Tweeton, Daryl R., to United States of America, Interior. Pneumatic wall-locking geophone system. 5,060,751, Cl. 181-102.000

Kuhlmann, Ludger; Friederich, Dieter; and Ressel, Peter, to Deere & Company. Work vehicle with tiltable cab and tilting apparatus 5,060,742, Cl. 180-89.140.

Kuhlmann, Pierre-Denis: *See*—
Bodet, Jean A.; and Kuhlmann, Pierre-Denis, 5,060,800, Cl 206-512.000.

Kuhlmann, Wolf; Hesse, Dieter; and Kogel, Karl, to FAG Kugelfischer Georg Schafer. Hydraulically-operated stripping device. 5,060,502, Cl. 72-392.000.

Kuhn S.A.: *See*—
Helfer, Roland; and Wattron, Bernard, 5,060,462, Cl. 56-14.900.
Jerome, Aron, 5,060,465, Cl. 56-367.000.

Kuji, Youichi: *See*—
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Tanimoto, Shigeaki; Kayano, Tadashi; Karasawa, Hirobumi; Yamagishi, Osamu; and Kunikyo, Tomoo, 5,062,035, Cl. 364-200.000.

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Kunsemiller, John P.: *See*—
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Sato, Toshiaki; Ohnaga, Takashi; and Ikeda, Kaoru, 5,061,761, Cl. 525-329.800.

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Ishikawa, Kenichi; and Kurita, Koji, 5,061,333, Cl. 156-213.000

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Yagi, Kunio; Shimohigashi, Yasuyuki; Kodama, Hiroaki; Ogasawara, Tomio; Koshizaka, Takuya; and Kurono, Masayasu, 5,061,691, Cl. 514-17.000.

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Aksay, Ilhan A.; Han, Chan; Maupin, Gary D.; Martin, Corrie B.; Kurosky, Randal P.; and Stangle, Gregory C., 5,061,682, Cl. 505-1.000.

Kuroyanagi, Satoru: *See*—
Nakagawa, Susumu; Yamada, Koji; Nakano, Fumio; Otake, Norikazu; Asai, Akira; Kuroyanagi, Satoru; Tanaka, Yoshiharu; Ishikawa, Moriaki; Ushijima, Ryosuke; and Mitomo, Ryuji, 5,061,794, Cl. 514-206.000.

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DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Kutner, Andrzej, 5,061,699, Cl. 514-167.000

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Inoue, Shinichi; and Nakahara, Tatsuro, 5,061,906, Cl. 331-57.000.

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Gohl, Pierre; Lachenal, Jean-Louis; and Pergent, Jacky, 5,062,072, Cl. 364-900.000

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LaPointe, Larry P., 5,061,010, Cl. 297-325.000.

LaBounty, Kenneth R.: *See*—
LaBounty, Roy E.; and LaBounty, Kenneth R., 5,060,378, Cl. 30-134.000.

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Groshens, Pierre; and Paire, Christian, 5,061,546, Cl. 428-196.000.

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Saulnier, Bernard, 5,060,480, Cl. 62-9.000

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Ranjan, Rajiv Y.; and Lambeth, David N., 5,062,021, Cl. 360-135.000.

Lampe, Istvan: *See*—
Kincses, Gyula; Kocsar, Barna; Lampe, Istvan; Bacsa, Gyorgy; Krusper, Laszlo ; Kovacs, Istvan; Barna nee Katona, Klara; Katona nee Lendvay, Agnes; Szabo, Csongor; and Trestyanszky, Zoltan, 5,061,729, Cl. 514-562.000

Lampe, Wolfgang, to Leopold Kostal GmbH & Co., KG. Environmental sensing and ventilation control system with compensation for sensor characteristics. 5,062,065, Cl. 364-571.040.

Landaeus, Kjell, to Rollomatic AB. Moving ramp. 5,060,779, Cl. 198-321.000.

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Daw, Ronald E., 5,060,778, Cl. 194-317.000.

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McCunn, Myron L.; Landphair, Donald K.; Neyrinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,060,701, Cl. 141-21.000.

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Carpenter, Alain; and Lane, Ernest, 5,061,277, Cl. 623-2.000

Lane, Thomas H.: *See*—
Halloran, Daniel J.; Lane, Thomas H.; and Ekeland, Robert A., 5,061,482, Cl. 424-71.000.

Lang, Aage, to Milliken Denmark A/S. Method for press vulcanizing of even moist articles. 5,061,430, Cl. 264-316.000.

Lang, Gerard: *See*—
Grollier, Jean F.; Richard, Herve; Forestier, Serge; and Lang, Gerard, 5,061,479, Cl. 424-47.000.

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Burgoyne, William F., Jr; Langsam, Michael; and Bott, Richard H., 5,061,298, Cl. 55-16.000.

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Park, Eugene S.; and Poste, Steven D., 5,061,660, Cl. 501-80.000.

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Hearn, John R.; Lanzillotti, Vincent; and Burnett, George H., 5,060,676, Cl. 131-369.000.

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Lara, Edwardo D.: *See*—
Hansen, Lorin K.; Lara, Edwardo D.; Lloyd, William A.; Sayre, Jack H.; and White, Stephen D., 5,061,948, Cl. 346-155.000.

Largman, Theodore: *See*—
Mares, Frank; Tang, Reginald T.; Chiu, Tin-Ho; Largman, Theodore; and Nyilas, Emery, deceased, 5,061,281, Cl. 623-11.000

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Palmer, Christopher J.; Casida, John E.; and Larkin, John P., 5,061,726, Cl. 514-433.000.

Laroue, Michael C. Portable toilet seat unit. 5,060,319, Cl. 4-254.000.

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Counts, Mary E.; LaRoy, Bernard C.; Losee, D. Bruce, Jr.; Morgan, Constance H.; Smith, Ulysses; Sprinkel, F. Murphy, Jr.; and Utsch, Francis V., 5,060,671, Cl. 131-329.000.

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Pickett, Thomas; and Larson, Bjorn, 5,062,147, Cl. 364-900.000.

Larson, Lynn D. Waterbed mattress with spring insert. 5,060,328, Cl. 5-450.000

Lathrop, David R.; and Shawcross, James P., to Emerson Electric Co. Whole house fan. 5,060,901, Cl. 248-343.000.

Latimer, Eugene E., to Caterpillar Inc. Pilot control circuit for load sensing hydraulic systems. 5,060,475, Cl. 60-413.000.

Lau, Peter W.; and Tardif, Yvon G., to Forintek Canada Corp. Method and apparatus for non-destructive testing the quality of manufacturing wood panels. 5,060,516, Cl. 73-602.000.

Lau, Steven E.: *See*—
Weaver, Mark A.; Long, Lynn E.; and Lau, Steven E., 5,061,776, Cl. 528-60.000.

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Roberts, Richard J.; Meyertons, Janise L.; and Lechevalier, Mary P., 5,061,628, Cl. 435-199.000.

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Kot, Kenneth M.; and Lee, Byung-Lip, 5,061,557, Cl. 428-295.000.

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Binkley, Joseph H.; Caro, Perry A.; Fay, Charles R.; Lee, Jeffery W.; Neely, Everett T.; Thompson, Geoffrey O.; and Vukkadala, Gaya, 5,062,042, Cl. 364-200.000.

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Emmett, John Colin; and Leeson, Paul D., 5,061,798, Cl. 544-239.000.

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Leichter, Louis M.: *See*—
Jongewaard, Susan K.; Leichter, Louis M.; Smith, Terrance P.; and Zaklika, Krzysztof A., 5,061,678, Cl. 503-227.000.

Leighton, John C.: *See*—
Lovine, Carmine P.; Chandran, Rama S.; Brase, Ingrid; and Leighton, John C., 5,061,396, Cl. 252-174.240.

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Casey, William W.; Leisey, Clarence E., III; Shafer, Eric W.; and Daniels, Francis I., 5,061,318, Cl. 106-705.000.

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Lampe, Wolfgang, 5,062,065, Cl. 364-571.040.

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Lesko, Darryl S.; and Clem, Dennis J., to White Way Sign Company. Remote-controlled message sign. 5,061,921, Cl. 340-815.240

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Duffin, Bryan, 5,061,385, Cl. 252-88.000.

Lew, Hyok S. Mass-volume vortex flowmeter. 5,060,522, Cl. 73-861.020.

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Olson, William L.; Li, Beili; and Yamanis, Jean, 5,061,402, Cl. 252-521.000.

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Weaver, William R., 5,060,440, Cl. 52-400.000.

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Yates, James P.; and Berti, Enzo, 5,060,338, Cl. 15-119.00A.

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Rushatz, Alfred S.; and Peterson, James A., 5,060,937, Cl. 272-93.000.

Lillie, Edwin D.; Ilardi, Joseph M.; and Kane, Robert P., to Allied-Signal Inc. Method of making a printed circuit board. 5,061,438, Cl. 419-8.000.

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Wedlake, Roger J.; and Coetzer, Johan, 5,061,580, Cl. 429-103.000.

Limper, Linda D.: *See—*
Schaeffer, Daniel J.; Fardoux, Raymond M.; Dein, Robert P.; and Limper, Linda D., 5,060,846, Cl. 228-447.000.

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Lin, Ming J.: *See—*
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Lin, Patrick. Fireplace screen. 5,060,631, Cl. 126-544.000.

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Rousculp, Eric R.; Seufer, Lee E.; and Samodell, Ralph M., 5,060,882, Cl. 242-99.000.

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Linder, Michael C.: *See—*
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Lindig, Markus: *See—*
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Lipford, Keith W., to Ellicott Machine Corporation. Auger type dredging head. 5,060,404, Cl. 37-64.000.

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Mungovan, John P.; Abbott, Vaughan; Voisine, Gary R.; and Liska, Timothy J., 5,061,309, Cl. 65-260.000.

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Nakagawa, Susumu; Yamada, Koji; Nakano, Fumio; Otake, Norikazu; Asai, Akira; Kuroyanagi, Satoru; Tanaka, Yoshiharu; Ishikawa, Moriaki; Ushijima, Ryosuke; and Mitomo, Ryuji, 5,061,794, Cl. 514-206.000
Mitsubishi Cable Industries Ltd.: *See*—
Kudo, Toshio, 5,061,899, Cl. 324-627.000.
Mitsubishi Denki K.K.: *See*—
Iwatani, Shiro; and Kitamura, Yutaka, 5,061,889, Cl. 322-28.000.
Matsuno, Tsukasa; and Sato, Kiyoshi, 5,061,839, Cl. 219-121.830.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Asano, Yumiko; Obi, Hideo; and Ohhama, Shigeya, 5,061,883, Cl. 318-362.000.
Funaba, Shinji, 5,061,977, Cl. 357-30.000.
Gotou, Kouji; Kuranaga, Hiroshi; and Nakabayashi, Takeo, 5,062,111, Cl. 371-37.100.
Hashimoto, Atsuko; and Iwata, Toshio, 5,060,615, Cl. 123-425.000.
Hirano, Sadayuki; Yamashita, Yoshinori; Tatsumi, Takumi; and Yamamoto, Hiroaki, 5,060,770, Cl. 192-0.032.
Inuishi, Masahide; and Tsukamoto, Katsuhiro, 5,061,975, Cl. 357-23.400.
Ipposhi, Takashi; and Sugahara, Kozuyuki, 5,061,655, Cl. 437-89.000.
Kobayashi, Souichi; and Hinata, Jun-ichi, 5,062,110, Cl. 371-223.000.
Kondo, Katsuhiko; and Ishida, Yasuhiko, 5,060,612, Cl. 123-357.000.
Murakami, Tadaki; and Shirazawa, Takasi, 5,061,308, Cl. 65-18.400.
Ohira, Katsumi, 5,060,764, Cl. 187-116.000.
Sameshima, Kazuhiro; and Ohnishi, Masaru, 5,061,861, Cl. 307-270.000.
Shimizu, Masahiro; and Tsukamoto, Katsuhiro, 5,061,654, Cl. 437-70.000.
Umemoto, Hideki, 5,060,608, Cl. 123-198.00D.
Yagi, Tetsuya, 5,061,643, Cl. 437-19.000.
Yamashita, Yoshinori; Hirano, Sadayuki; Murano, Katsuaki; Tatsumi, Takumi; and Yamamoto, Hiroaki, 5,060,768, Cl. 192-0.052.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Ebata, Shuji; Hirayama, Hiroyuki; Higuchi, Hirofumi; and Kida, Koichi, 5,061,675, Cl. 502-324.000.
Urakami, Teizi; Oda, Mitsunori; and Itoh, Chieko, 5,061,711, Cl. 514-292.000.
Mitsubishi Jukogyo Kabushiki: *See*—
Takahashi, Ryoichi; Sato, Tomoyoshi; Tsukamoto, Hidehiko; Morimoto, Kazuo; and Maeda, Nobutaka, 5,060,497, Cl. 72-68.000.
Mitsubishi Kasei Corporation: *See*—
Kimura, Yoshiharu, 5,061,469, Cl. 423-290.000.
Miyata, Eiji; Ando, Kiyoto; Maeda, Hiroshi; Arataki, Hiroshi; and Sudo, Seiji, 5,061,741, Cl. 523-319.000.
Suga, Yoshinori; Tanaka, Eiji; Katou, Hidehito; Maruyama, Yasuo; and Isobe, Eiji, 5,061,755, Cl. 525-95.000.
Mitsubishi Metal Corporation: *See*—
Sayama, Yasumasa; Nomura, Koichi; and Iwasaki, Morihiko, 5,062,127, Cl. 378-45.000.
Mitsubishi Pencil Co., Ltd.: *See*—
Isoda, Takashi, 5,061,105, Cl. 401-202.000.
Mitsubishi Petrochemical Co., Inc.: *See*—
Kishimoto, Manabu; Seo, Iwao; and Fujimoto, Yukiko, 5,061,768, Cl. 526-245.000.
Mitsubishi Rayon Company Ltd.: *See*—
Gomi, Takeo; and Kodama, Hitoshi, 5,061,533, Cl. 428-36.300.
Mitsuhashi, Kenichi: *See*—
Sato, Takesi; Mitsuhashi, Kenichi; Tomita, Yoji; and Sasaki, Yasuoki, 5,060,424, Cl. 51-209.00R.
Mitsui Petrochemical Industries, Inc.: *See*—
Toibana, Hisaharu; Kuroiwa, Mitsuyuki; Todo, Akira; and Minoda, Takeshi, 5,061,597, Cl. 430-270.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Hamada, Shunichi; Uchiyama, Akira; and Okamoto, Katsuo, 5,061,572, Cl. 428-516.000.
Mitsui, Petrochemical Industries, Ltd.: *See*—
Fushimi, Hiroyuki; Nakayama, Nobuhiro; Asahina, Yasuo; Aoki, Mitsuo; and Makita, Kayo, 5,061,588, Cl. 430-109.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Koshida, Hitoshi; Sakagawa, Tetsuo; Nakayama, Takayuki; and Suwa, Hiroshi, 5,061,290, Cl. 8-653.000.
Mitsuya, Shunichi: *See*—
Maeda, Naoki; Nakamura, Yozo; Kadomukai, Yuzo; Mitsuya, Shunichi; Takahashi, Tsuyoshi; and Naruse, Jun, 5,062,012, Cl. 360-75.000.
Mittendorf, Arthur W.: *See*—
Stevens, Phillip D.; and Mittendorf, Arthur W., 5,061,831, Cl. 200-302.001.
Miura, Hironori: *See*—
Seto, Tsuneo; Hatanaka, Atsushi; Miura, Hironori; and Baba, Hideo, 5,060,498, Cl. 72-164.000.
Miura, Shigeo, to Canon Kabushiki Kaisha. Sheet feeding apparatus and facsimile system having same. 5,062,006, Cl. 358-421.000.
Miyajima, Hidehiro: *See*—
Miyata, Mitsuto; and Miyajima, Hidehiro, 5,061,887, Cl. 318-568.250.
Miyake, Junichi: *See*—
Yamaguchi, Kouji; Miyake, Junichi; and Maki, Kazuya, 5,060,476, Cl. 60-487.000.
Miyaki, Takeo: *See*—
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,061,624, Cl. 435-75.000.
Miyama, Akimasa: *See*—
Ohashi, Takeisa; Kan, Kazunori; Ueyama, Noboru; Sada, Isao; Miyama, Akimasa; and Watanabe, Kiyoshi, 5,061,817, Cl. 556-443.000.
Miyammae, Hiroshi, to Konica Corporation. Compact zoom lens 5,061,051, Cl. 359-683.000.
Miyamoto, Hiroshi; and Iwaoka, Hideto, to Optical Measurement Technology Development Co., Ltd. Optical integrated modulator. 5,061,030, Cl. 385-3.000.
Miyasaka, Masao: *See*—
Takeda, Fumio; Yoshida, Takashi; Tanaka, Hideki; Ishitsuka, Yoshikazu; Omine, Tsutomu; Miyasaka, Masao; Asano, Mitsugu; Igarashi, Akira; and Takahagi, Hiroshi, 5,061,092, Cl. 400-120.000.
Miyasaka, Tadashi: *See*—
Yaegashi, Takashi; Okajima, Satoru; Sawada, Seigo; Nokata, Kenichiro; Tezuka, Kenichi; Nagata, Hiroshi; Yokokura, Teruo; Miyasaka, Tadashi; and Miyasaka, Tadashi, 5,061,800, Cl. 546-48.000.
Yaegashi, Takashi; Okajima, Satoru; Sawada, Seigo; Nokata, Kenichiro; Tezuka, Kenichi; Nagata, Hiroshi; Yokokura, Teruo; Miyasaka, Tadashi; and Miyasaka, Tadashi, 5,061,800, Cl. 546-48.000.
Miyata, Eiji; Ando, Kiyoto; Maeda, Hiroshi; Arataki, Hiroshi; and Sudo, Seiji, to Mitsubishi Kasei Corporation. Method for preparing an oil-in-water type uniform dispersion of liquid droplets and polymerization method for preparing polymer beads of uniform particle size. 5,061,741, Cl. 523-319.000.
Miyata, Mitsuto; and Miyajima, Hidehiro, to Fanuc Ltd. Machining data display system. 5,061,887, Cl. 318-568.250.
Miyauchi, Katsuki: *See*—
Kudo, Tetsuichi; Ishikawa, Akira; Okamoto, Hiroshi; Miyauchi, Katsuki; Iwayanagi, Takao; Murai, Fumio; and Okazaki, Shinji, 5,061,599, Cl. 430-270.000.
Miyazaki, Takao: *See*—
Nakazato, Kazuo; Nakamura, Tohru; Matsuda, Masatoshi; Miyazaki, Takao; Kure, Tokuo; Okabe, Takahiro; and Nagata, Minoru, 5,061,645, Cl. 437-31.000.
Miyazaki, Terunobu: *See*—
Nishijima, Kazuo; Miyazaki, Terunobu; Sakou, Eisaburo; Nakamura, Tomoharu; and Nakamura, Mitsuru, 5,061,922, Cl. 340-825.080.
Miyazawa, Shyoichi: *See*—
Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, 5,062,011, Cl. 360-40.000.
Mizuguchi, Tamotsu: *See*—
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000.
Mizuno, Hiroshi: *See*—
Ikegawa, Akihito; Enoguchi, Yuji; Mizuno, Hiroshi; Natsuhara, Toshiya; and Yamamoto, Masashi, 5,061,963, Cl. 355-259.000.
Mizuno, Tukio: *See*—
Maruyama, Takashi; and Mizuno, Tukio, 5,061,753, Cl. 525-68.000.
Mizutani, Hidemasa; and Kondo, Shigeki, to Canon Kabushiki Kaisha. Semiconductor photosensing device with light shield. 5,061,978, Cl. 357-30.000.
Mobil Oil Corporation: *See*—
Avidan, Amos A.; and Shinnar, Reuel, 5,060,719, Cl. 165-104.130.
Chang, Clarence D.; Chu, Cynthia T.; Degnan, Thomas F., Jr.; and McCullen, Sharon B., 5,061,466, Cl. 423-277.000
Schoepf, Victor L.; Sidhwa, Feroze J.; and Bentley, John W., 5,062,084, Cl. 367-13.000.
Yan, Tsoung Y., 5,060,728, Cl. 166-279.000.
Mobile Systems Research Manufacturing, Inc.: *See*—
Madden, Michael D.; and Maginnis, James S., Jr., 5,061,001, Cl. 296-26.000.
Mock, Mel C.: *See*—
Wilhelm, Gary L.; and Mock, Mel C., 5,060,382, Cl. 30-244.000.
Moeller, Charles P., to General Atomics. Waveguide coupler having opposed smooth and opposed corrugated walls for coupling $HE_{1,1}$ mode. 5,061,912, Cl. 333-113.000.
Moen Incorporates: *See*—
Gayton, David E., 5,060,687, Cl. 137-218.000.
Moffatt, John R., to Hewlett-Packard Company. pH-insensitive anti-kogating agent for ink-jet pens. 5,061,316, Cl. 106-22.000.
Moffitt, Jerry T.: *See*—
Clements, Matthew J.; Fedor, Maxim A.; Moffitt, Jerry T.; Ye, Lisa; and Wadsworth, John F., 5,060,439, Cl. 52-396.000.
Mogi, Hiroshi: *See*—
Matsudaira, Yasushi; and Mogi, Hiroshi, 5,061,664, Cl. 501-98.000.
Mogilner, Leonid J.: *See*—
Aleshin, Nikolai P.; Baranov, Vladimir J.; Mogilner, Leonid J.; and Yarovoi, Alexandr A., 5,060,518, Cl. 73-620.000
Mohn, Frank, to Framo Developments (UK) Limited. Drilling system. 5,060,737, Cl. 175-104.000.

Mohri, Taizo; Totsuka, Nobuo; Tsugawa, Shunichi; Kurisu, Takao; Sawatari, Hideaki; and Inoue, Tanehiro, to Kawasaki Steel Corporation. Lubricating resin coated steel strips having improved formability and corrosion resistance. 5,061,575, Cl. 428-623.000.

Mohring, Fritz; and Stoll, Martin, to Eberspacher. Fuel-fired heater for motor vehicles. 5,060,855, Cl. 237-12.30C.

Molecular Diagnostics, Inc.: *See*—
Elting, James J.; and Kolbl, Heinz, 5,061,790, Cl. 530-402.000.

Molex Incorporated: *See*—
Bixler, Craig A., 5,061,208, Cl. 439-610.000.

Moliere, Francoise: *See*—
Langlais, Thierry; Boisson, Jean-Yves; and Moliere, Francoise, 5,062,125, Cl. 375-122.000.

Moller, Wolfgang; and Kraus, Michael, to Biotest Pharma GmbH Method of isolating blood-clotting factor IX. 5,061,789, Cl. 530-381.000.

Molnar, Adam: *See*—
Inmi, Sandor; Molnar, Adam; Gabor, Jozsef; Toke, Laszlo ; Trezl, Lajos; Rusznak, Istvan; Horvath, Viktoria; and Szarvas, Tibor, 5,060,672, Cl. 131-331.000.

Molten Corporation: *See*—
Ueno, Masato, 5,061,178, Cl. 433-32.000.

Momiyama, Masayoshi: *See*—
Yamamoto, Takekazu; Nakagawa, Masakazu; and Momiyama, Masayoshi, 5,061,067, Cl. 356-344.000.

Monaghan, Michael W. Water discharge diverter for outboard boat engines. 5,061,214, Cl. 440-88.000.

Monarch Marking Systems, Inc.: *See*—
Helmbold, James E.; and Wirrig, Richard D., 5,061,946, Cl 346-1.100.
Morrison, Donald A.; and Wirrig, Richard D., 5,061,947, Cl. 346-1.100.

Mondini, Giancarlo: *See*—
Bischofberger, Jurg; Jorg, Andreas; Mondini, Giancarlo; and Oehy, Peter, 5,060,346, Cl. 19-225.000.

Monford, Leo G , Jr., to United States of America, National Aeronautics and Space Administration. Method and apparatus for releasably connecting first and second objects. 5,061,112, Cl. 403-328.000.

Monks, David W., to Hodkins & Jones (Sheffield) Limited. Reinforced structural elements. 5,061,116, Cl. 405-43.000.

Mono Pumps Limited: *See*—
Stevenson, Christopher, 5,061,380, Cl. 210-768.000.

Monsanto Company: *See*—
Fields, Donald L., Jr.; Grabiak, Raymond C.; Koenig, Karl E.; and Riley, Dennis P., 5,061,820, Cl. 560-17.000.
Kessel, Stephen L.; and Mont, George E., 5,061,568, Cl. 428-437.000

Monsanto Europe S.A.: *See*—
Dufour, Daniel L.; and Pierre, Jean, 5,061,754, Cl. 525-67.000.

Mont, George E.: *See*—
Kessel, Stephen L.; and Mont, George E., 5,061,568, Cl 428-437.000

Montesano, Ralph M.: *See*—
Manley, Norman J.; Stephens, Harry W., Jr.; and Montesano, Ralph M., 5,061,241, Cl. 604-114.000.

Montgomery, Mike; and Hayes, Scott L., to Goex International, Inc Detonator assembly. 5,060,573, Cl. 102-202.500.

Moore Business Forms, Inc.: *See*—
Angus, James G., 5,060,847, Cl. 229-70.000
Schultz, Elmer G.; Godfrey, Robert E.; and Chapman, Thomas D., 5,061,233, Cl. 493-410.000

Moorhouse, John H. Cylindrical lock structure. 5,060,494, Cl. 70-419.000

Morabito, Carlo F.: *See*—
Farina, Alfonso; and Morabito, Carlo F., 5,061,931, Cl. 342-25.000.

Morand, Jean-Francois; Robin, Henri; and Thibault, Jacques, to Electronique Serge Dassault. Detector of the arrival angle of laser pulses, especially for tanks. 5,061,064, Cl. 356-152.000

Morey, William W.: *See*—
Meltz, Gerald; Morey, William W.; and Wilson, Arnold L., 5,061,032, Cl. 385-37.000.

Morgan, Constance H.: *See*—
Counts, Mary E.; LaRoy, Bernard C.; Losee, D. Bruce, Jr.; Morgan, Constance H.; Smith, Ulysses; Sprinkel, F. Murphy, Jr.; and Utsch, Francis V., 5,060,671, Cl. 131-329.000.

Morgan, Norodin H., to Chomerics, Inc. Corrosion inhibiting EMI/RFI shielding coating and method of its use. 5,061,566, Cl 428-423.100

Morgan, William H.: *See*—
Hyun, David K.; and Morgan, William H., 5,060,793, Cl. 206-232.000

Morgenthaler, Urs; and Muller, Peter. Ship drive with variable-pitch propeller. 5,061,212, Cl. 440-50.000.

Mori, Naomichi: *See*—
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000.

Mori, Shogo; Aoki, Shinobu; and Takagi, Haruo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Transistor provided with a current detecting function. 5,061,863, Cl. 307-350.000.

Mori, Takahiro: *See*—
Isobe, Ryosuke; Sawada, Kiyoshi; Sasaki, Kunitsuna; Mori, Takahiro; and Ando, Yuki, 5,061,516, Cl. 427-132.000.

Mori, Tatsuo: *See*—
Ryuo, Toshihiko; Makikawa, Shinji; and Mori, Tatsuo, 5,061,855, Cl. 250-361.00R.

Morigami, Yuusuke: *See*—
Hamakawa, Wataru; Matsuo, Hirokazu; and Morigami, Yuusuke, 5,060,925, Cl. 274-111.000

Morikawa, Seiichiro, to Fuji Photo Film Co., Ltd. Image processing method for color scanner. 5,062,058, Cl. 364-521.000.

Morimoto, Kazuo: *See*—
Takahashi, Ryoichi; Sato, Tomoyoshi; Tsukamoto, Hidehiko; Morimoto, Kazuo; and Maeda, Nobutaka, 5,060,497, Cl. 72-68.000

Morisawa, Tahei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method and apparatus for accurately positioning a magnetic recording and reproducing head. 5,062,019, Cl. 360-106.000.

Morita, Kazuhiko: *See*—
Yamanaka, Fusao; Nagao, Makoto; Yamada, Yasuyuki; and Morita, Kazuhiko, 5,061,562, Cl. 428-408.000

Morita, Keiichi; Sugiyama, Akihiko; Watabiki, Oserojoin; and Murano, Mithuo, to Kabushiki Kaisha Toshiba. Air conditioner. 5,060,717, Cl. 165-53.000

Morita, Naoyuki, to Fuji Photo Film Co., Ltd. Drum for image recording apparatus. 5,060,931, Cl. 271-276.000.

Morita, Toshiaki: *See*—
Tanaka, Hideaki; Morita, Toshiaki; Kitamura, Yoshihiro; and Nakamura, Yasuhisa, 5,062,047, Cl. 364-419.000.

Morita, Toshiki: *See*—
Edahiro, Takeshi; Takehara, Shin; Morita, Toshiki; and Kumada, Hiroyoshi, 5,060,968, Cl. 280-707.000.
Kamimura, Shoichi; Edahiro, Takeshi; Takehara, Shin; and Morita, Toshiki, 5,060,969, Cl. 280-707.000.

Morita, Yoshiharu; Hoshide, Yasuo; Chaki, Haruyuki; Takashima, Junko; and Patchett, Arthur A., to Merck & Co., Inc. Phosphinic acid derivatives. 5,061,806, Cl. 548-112.000

Moriya, Kazumasa: *See*—
Sato, Shinichi; and Moriya, Kazumasa, 5,061,843, Cl. 235-462.000.

Moriya, Kikuo; and Washio, Isomi, to Amada Company, Limited. Cutting machine and method for positioning end of workpiece to be cut in cutting machine. 5,060,547, Cl. 83-210.000

Moriya, Koichi: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Kagabu, Shinzo; Sakawa, Shinji; and Moriya, Koichi, 5,061,731, Cl. 514-624.000.

Morningstar, Leroy J.: *See*—
Capp, Randolph E.; and Morningstar, Leroy J., 5,060,372, Cl. 29-883.000.

Moro, Akihiko: *See*—
Tabata, Takeshi; Ide, Soichiro; Moro, Akihiko; and Nagatani, Ryuji, 5,061,371, Cl. 210-198.200.

Morozumi, Choji: *See*—
Asai, Naoki; Minowa, Masahiro; and Morozumi, Choji, 5,061,095, Cl. 400-605.000

Morrison, Donald A.; and Wirrig, Richard D., to Monarch Marking Systems, Inc. Microprocessor controlled thermal printer. 5,061,947, Cl. 346-1.100.

Morse, Andrew: *See*—
Cripps, Humphrey; Rocha, Gerald F.; Morse, Andrew; and Kennedy, William J., 5,061,540, Cl. 428-100.000.

Moshier, David R. Brassiere strap retainer. 5,060,348, Cl. 24-442.000.

Moskovskoe Vysshee Tekhnicheskoe Uchilische Imeni N.E. Baumana: *See*—
Aleshin, Nikolai P.; Baranov, Vladimir J.; Mogilner, Leonid J.; and Yarovoi, Alexandr A., 5,060,518, Cl. 73-620.000.

Moss, Thomas H., III; Sargent, Ralph R.; and Williams, Michael S., to Peach State Labs, Inc. Stain resistant treatment for polyamide fibers. 5,061,763, Cl. 525-502.000.

Motorola, Inc.: *See*—
Bouny, Jean J., 5,061,910, Cl. 333-26.000
Goldsmith, Eric S., 5,062,080, Cl. 365-230.010.
Goronkin, Herbert, 5,061,970, Cl. 357-04.000
Kolnick, Frank C., 5,062,060, Cl. 364-521.000.
Moyer, Curtis D.; and Rogers, Stephen P., 5,061,656, Cl. 437-127.000
Richard, Fred V., 5,061,027, Cl. 385-14.000.
Richard, Fred V., 5,061,033, Cl. 385-92.000.
Roth, Scott S.; Mazure, Carlos A.; Cooper, Kent J.; Ray, Wayne J.; Woo, Michael P.; and Lin, Jung-Hui, 5,061,647, Cl. 437-40.000.
Schaeffer, Daniel J.; Fardoux, Raymond M.; Dein, Robert P.; and Limper, Linda D., 5,060,846, Cl. 228-447.000.
Sivan, Richard D.; and Hayden, James D., 5,061,646, Cl. 437-31.000
Stevens, Phillip D.; and Mittendorf, Arthur W., 5,061,831, Cl. 200-302.001
Weidman, John H.; and Yoshiyama, Glenn, 5,061,911, Cl. 333-104.000

Mott, Philip J., to Borg-Warner Automotive Transmission & Engine Components Corporation. Chain-belt. 5,061,226, Cl. 474-244.000.

Mottet, Leon-Philippe: *See*—
Robyn, Pierre; Mottet, Leon-Philippe; and Zivkovic, Alexandre, 5,061,526, Cl. 427-422.000.

Moy, Christian: *See*—
Berger, Erwin; and Moy, Christian, 5,060,821, Cl. 221-190.000

Moyer, Curtis D.; and Rogers, Stephen P., to Motorola, Inc. Method for making a self-aligned impurity induced disordered structure. 5,061,656, Cl. 437-127.000.

Moyle, David R.; Harris, Geoffrey L.; and Northrop, Robert F., to GTE Products Corporation. Method for producing tungsten carbide and cemented tungsten carbide article therefrom having a uniform microstructure. 5,061,661, Cl. 501-87.000.

Mruk, William A.: *See*—
Carroll, John F.; Griggs, David A.; and Mruk, William A., 5,061,610, Cl. 430-532.000.

Muan, Arnulf; and Najjar, Mitri S., to Texaco Inc. Compositions involving Cr_2—O_3—V_2O_3—TiO_2. 5,061,673, Cl. 502-309.000.

Muan, Arnulf; and Najjar, Mitri S., to Texaco Inc. Compositions involving MnO—V_2O_3—TiO_2. 5,061,674, Cl. 502-324.000.

Mueller, Evan. Collapsible shooting stand. 5,060,410, Cl. 42-94.000.

Mueller, Werner H.; and Vora, Rohitkumar H., to Hoechst Celanese Corporation. Polymers prepared from 4,4'-bis(3,4-dicarboxyphenyl) hexafluoroisopropyl) diphenyl dianhydride. 5,061,784, Cl. 528-353.000.

Muenter, Annabel A.: *See*—
Parton, Richard L.; Muenter, Annabel A.; and Stegman, David A., 5,061,618, Cl. 430-584.000.

Muhr, Vernon E.: *See*—
Sagues, Paul; and Muhr, Vernon E., 5,062,064, Cl. 364-565.000.

Muijs, Herman M.; and Schaik, Jan V., to Shell Oil Company. Surfactant composition. 5,061,386, Cl. 252-8.551

Muir, Jon W. Tool for seating a lockbolt fastener. 5,060,359, Cl. 29-244.000.

Muir, Larry A., to Merck & Co., Inc. Use of certain compounds in livestock food as growth promotants for better feed utilization and improved carcass composition. 5,061,709, Cl. 514-263.000.

Mukasa, Takashi: *See*—
Ohneda, Noboru; Ushioda, Shunta; Arima, Haruo; Hashimoto, Ichiro; Kaneko, Denziro; Sugiyama, Kazuo; Fukazawa, Tsuguo; Tachi, Teruo; and Mukasa, Takashi, 5,060,500, Cl. 72-287.000.

Mulder, Hendrik, to B.V. Optische Industrie "De Oude Delft". Device for slit radiography with image equalization. 5,062,129, Cl. 378-156.000.

Mulhauser, Paul: *See*—
Rich, Michael; Mulhauser, Paul; and Spranger, Douglas M., 5,060,643, Cl. 128-200.230.

Mullen, Thomas C. Basketball shot return device. 5,060,940, Cl. 273-1.50A

Muller, George H., to Berke, Joseph J. Surgical rongeur power grip structure and method. 5,061,269, Cl. 606-83.000.

Muller, Hanns P.: *See*—
Hassel, Tillmann; Muller, Hanns P.; Vernaleken, Hugo; Kipphardt, Helmut; and Dhein, Rolf, 5,061,756, Cl. 525-127.000.

Muller, Karl: *See*—
Bubik, Alfred; Hildebrand, Otto; Holik, Herbert; and Muller, Karl, 5,061,347, Cl. 162-301.000.

Muller, Peter: *See*—
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Neumann, Peter: *See*—
Albert, Bernhard; Neumann, Peter; and Brosius, Sibylle, 5,061,596, Cl. 430-270.000.
Neunhoeffer, Hans: *See*—
Clausen, Thomas; Kern, Ute; and Neunhoeffer, Hans, 5,061,289, Cl. 8-405.000.
Neustadt, Bernard R.: *See*—
Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., 5,061,710, Cl. 514-266.000.
Newell Co.: *See*—
Simon, Terry L., 5,060,709, Cl. 160-168.100.
Newell, William F., Jr.: *See*—
Findlani, Shane J.; and Newell, William F., Jr., 5,060,374, Cl. 29-888.440.
Newkirk, David C.: *See*—
Celestina, Mary A.; Williams, David W.; and Newkirk, David C., 5,060,327, Cl. 5-445.000.
Newman, Kris J.: *See*—
Clarke, W. James; and Newman, Kris J., 5,061,026, Cl. 385-31.000.
Newsom, Harold. Hand-held razor edge trimmer for frames and the like. 5,060,385, Cl. 30-287.000.
Newton, Thomas A., Jr.: *See*—
Barr, John D.; and Newton, Thomas A., Jr., 5,061,293, Cl. 51-293.000.
Neyrinck, Richard M.: *See*—
McCunn, Myron L.; Landphair, Donald K.; Neyrinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,060,701, Cl. 141-21.000.
NGK Insulators, Ltd.: *See*—
Fushimi, Koji; Nishioka, Shigeo; and Konishi, Kazuhiro, 5,060,517, Cl. 73-620.000.
Ishiguro, Fujio; and Kikuchi, Toru, 5,061,350, Cl. 204-37.100.
NGK Spark Plug Co., Ltd.: *See*—
Taniguchi, Masato, 5,060,607, Cl. 123-90.510.
Ni, Phillip F.; and Odar, Larry F., to Upjohn Comany, The. Tri-scored drug tablet. 5,061,494, Cl. 424-467.000.
Nicholls, Simon T.; and Scott, Michael, to British Telecommunications public limited company. Fluoride glass optical coupler component, coupler, and methods. 5,061,031, Cl. 385-15.000
Nicholson, James A. Acid etch for bonding ceramic orthodontic brackets. 5,061,183, Cl. 433-228.100.
Nicollini, Germano; and Castello, Rinaldo, to SGS-Thomson Microelectronics S.r.l. Circuit arrangement for increasing the gain-bandwidth product of a CMOS amplifier. 5,061,901, Cl. 330-253.000.
Nielsen, Flemming E.: *See*—
Honoree, Tage; Jacobsen, Poul; Nielsen, Flemming E.; and Nafrim, Lars, 5,061,706, Cl. 514-249.000.
Niemitalo, Gerald T.: *See*—
Bien, Alfred A.; Niemitalo, Gerald T.; Simms, Russell A.; Stewart, Robert L.; Michael, Riad E.; Christenson, Alfred W.; and Keller, Herbert J., Jr., 5,061,108, Cl. 403-24.000.
Nightingale, Mark: *See*—
O'Hara, Steve; Nightingale, Mark; and Aukstikalnis, Glen, 5,061,892, Cl. 324-149.000.
Nihon Musen Kabushiki Kaisha: *See*—
Sekine, Chogo; and Abe, Takeshi, 5,061,935, Cl. 342-180.000.
Nihon Tokushu Noyaku Seizo K.K.: *See*—
Kurahashi, Yoshio; Shiokawa, Kozo; Kagabu, Shinzo; Sakawa, Shinji; and Moriya, Koichi, 5,061,731, Cl. 514-624.000.
Niiro, Yasunori: *See*—
Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao; and Matsumoto, Hitoshi, 5,061,812, Cl. 549-315.000.
Nikko Co., Ltd.: *See*—
Ishimoto, Zenichi, 5,061,579, Cl. 429-96.000
Nikko Corporation Ltd.: *See*—
Iguchi, Atsushi, 5,061,835, Cl. 219-10.790.
Nikon Corporation: *See*—
Ohshita, Koichi, 5,061,054, Cl. 359-399.000.
Takagi, Tadao, 5,061,882, Cl. 318-116.000.
Nilsen, Carl-Otto: *See*—
Babu, Suryadevara V.; Lu, Neng-hsing; and Nilsen, Carl-Otto, 5,061,359, Cl. 204-298.070.
Nilsson, Berndt R. Control device for setting two or more tool units in a machine, especially a Venetian blind production machine. 5,060,353, Cl. 29-24.500.
Nimikagakukogyo Co., Ltd.: *See*—
Ubukata, Noboru; and Iizuka, Hisao, 5,061,411, Cl. 264-16.000.
Ninomiya, Masayuki: *See*—
Matano, Takahiro; Hashibe, Yoshio; Ninomiya, Masayuki; and Shibuya, Takehiro, 5,061,307, Cl. 65-18.400.
Nippon Automation Co., Ltd.: *See*—
Kanashige, Masanori; Okada, Kenji; and Kumagai, Michihiro, 5,060,512, Cl. 73-301.000.
Nippon Carbureter Co.: *See*—
Kojima, Akinori; Ishikawa, Norikazu; and Ishida, Yukio, 5,060,617, Cl. 123-435.000.
Nippon Denkai, Co. Ltd.: *See*—
Shimizu, Kazunao; Mikamo, Masahiro; and Yamagishi, Takeshi, 5,061,550, Cl. 428-209.000.
Nippon Densan Corporation: *See*—
Iwazaki, Kuniyasu; and Ohta, Kihachiro, 5,061,868, Cl. 310-67.00R.
Nippon Electric Glass Co., Ltd.: *See*—
Fujikawa, Junji; and Tamura, Fumiaki, 5,061,034, Cl. 385-95.000.
Matano, Takahiro; Hashibe, Yoshio; Ninomiya, Masayuki; and Shibuya, Takehiro, 5,061,307, Cl. 65-18.400.
Nippon Hypox Laboratories Incorporated: *See*—
Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao; and Matsumoto, Hitoshi, 5,061,812, Cl. 549-315.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Saino, Tetsushi; Tomiyoshi, Tsugio; Nemoto, Kyuichi; and Umeda, Yoshihisa, 5,061,787, Cl. 530-331.000.
Shindoh, Seijin; and Torigoe, Michiko, 5,061,589, Cl. 430-110.000.
Nippon Mining Co., Ltd.: *See*—
Nobuyoshi, Ryoichi; and Taki, Kazuhiro, 5,061,358, Cl. 204-290.00R.
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; and Hirata, Kazuto, 5,061,687, Cl. 505-1.000
Nippon Oil Co., Ltd.: *See*—
Kanashige, Masanori; Okada, Kenji; and Kumagai, Michihiro, 5,060,512, Cl. 73-301.000.
Uemura, Seiichi; Takashima, Hiroaki; and Kato, Osamu, 5,061,413, Cl. 264-29.200
Nippon Rensui Co.: *See*—
Tabata, Takeshi; Ide, Soichiro; Moro, Akihiko; and Nagatani, Ryuji, 5,061,371, Cl. 210-198.200.
Nippon Seiko Kabushiki Kaisha: *See*—
Saito, Hiroyuki, 5,060,977, Cl. 280-802.000.
Sasaki, Takanobu, 5,060,978, Cl. 280-804.000.
Takubo, Minoru; Fukasawa, Toshio; and Yamanaka, Tatsuo, 5,061,956, Cl. 355-55.000.
Nippon Standard Telecommunications Co., Ltd.: *See*—
Gotoh, Toshihisa, 5,062,013, Cl. 360-90.000.
Nippon Steel Corporation: *See*—
Ohikata, Naoharu; Matsubara, Toshiro; and Ohno, Jiro, 5,061,074, Cl. 356-390.000.
Okamura, Yoshihiro; Yano, Seinosuke; Yamaba, Ryota; and Chiba, Hidetaka, 5,061,325, Cl. 148-12.00F.
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; and Hirata, Kazuto, 5,061,687, Cl. 505-1.000
Nippon Telegram and Telephone Corporation: *See*—
Tanimoto, Shigeaki; Kayano, Tadashi; Karasawa, Hirobumi; Yamagishi, Osamu; and Kunikyo, Tomoo, 5,062,035, Cl 364-200.000.
Nippon Zeon Co., Ltd.: *See*—
Oshima, Masayoshi; Kohara, Teiji; Hosaka, Tohru; and Natsuume, Tadao, 5,061,771, Cl. 526-282.000
Yoda, Ryuichiro; Fukutome, Akira; Ohkawa, Suguru; and Iida, Kazutoshi, 5,061,777, Cl. 528-61.000
Nisenbaum, Philip. Tool handle. 5,060,343, Cl. 16-111.00R
Nishi, Masatake; Matsuo, Tsuneshi; Aoki, Hidemi; Hirashima, Isao; and Nakagawa, Yoshiharu, to Mazda Motor Corporation. Perfume emitting device for use in an automobile. 5,060,864, Cl. 239-289.000.
Nishi, Yoshio: *See*—
Egawa, Hideharu; Nishi, Yoshio; and Maeguchi, Kenji, 5,061,983, Cl. 357-59.000
Nishibe, Yuji; Nonomura, Yutaka; Abe, Masaaki; Takeuchi, Masaharu; and Tsukada, Kouji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Torque detecting apparatus. 5,062,062, Cl. 364-559.000
Nishide, Kiyoharu: *See*—
Takehara, Sadao; Kuriyama, Takeshi; Nakamura, Kayoko; Shoji, Tadao; Fujisawa, Toru; Osawa, Masashi; Hiyama, Tamejiro; Kusumoto, Tetsuo; Nakayama, Akiko; and Nishide, Kiyoharu, 5,061,398, Cl. 252-299.610.
Nishijima, Kazuo; Miyazaki, Terunobu; Sakou, Eisaburo; Nakamura, Tomoharu; and Nakamura, Mitsuru, to Hitachi, Ltd. Method of monitoring changes of state of a power transmission system by interruption signal transmission. 5,061,922, Cl. 340-825.080.
Nishikawa, Tomoyuki; Kita, Masahiro; Yano, Takaaki; Yoshida, Tatsuya; Honda, Ryoji; Negishi, Kiyoshi; Sato, Tsutomu; and Kamasako, Shoji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Power controlling device. 5,061,957, Cl. 355-200.000.
Nishikawa, Yasuo: *See*—
Ohya, Takao; Nakagawa, Jun; Hayakawa, Satoru; Nishikawa, Yasuo; Okita, Tsutomu; and Hashimoto, Hiroshi, 5,061,564, Cl. 428-409.000.
Nishimori, Kadotaro: *See*—
Higashio, Kimihiko; Ito, Masazumi; and Nishimori, Kadotaro, 5,060,921, Cl. 270-53.000.
Nishimoto, Akihiko; Hosoya, Yoshihiro; Tomita, Kunikazu; Urabe, Toshiaki; and Jitsukawa, Masaharu, to NKK Corporation. Pickling method for electrical steel bands. 5,061,321, Cl. 134-3.000.
Nishimura, Akihiro; Hayashi, Kazuyuki; Iwasaki, Keisuke; Tanaka, Yasuyuki; and Itamochi, Hiroko, to Toda Kogyo Corp. Magnetic recording medium comprising magnetic particles and a polyester resin having an iminosulfonyl group. 5,061,570, Cl. 428-480.000.
Nishimura, Eiji: *See*—
Nobumoto, Kazutoshi; Tsuyama, Toshiaki; and Nishimura, Eiji, 5,060,746, Cl. 180-197.000.
Nishimura, Takashi: *See*—
Sugiura, Hisao; Tanaka, Toshinobu; Nishimura, Takashi; and Yokoyama, Shuji, 5,061,719, Cl. 514-374.000.
Nishio, Maki: *See*—
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,061,624, Cl. 435-75.000.
Nishioka, Shigeo: *See*—
Fushimi, Koji; Nishioka, Shigeo; and Konishi, Kazuhiro, 5,060,517, Cl. 73-620.000.
Nishiura, Junji: *See*—
Ohshima, Hiromi; and Nishiura, Junji, 5,062,109, Cl. 371-21.200.
Nishiya, Tsuguaki: *See*—
Dosako, Shunichi; Nishiya, Tsuguaki; and Deya, Eiki, 5,061,622, Cl. 435-68.100.
Nishiya, Yoshinori: *See*—
Akaike, Yoshiaki; and Nishiya, Yoshinori, 5,061,247, Cl. 604-187.000
Nishiyama, Hideo: *See*—
Ohno, Yoshihiro; and Nishiyama, Hideo, 5,061,066, Cl. 356-300.000
Nishiyama, Masaaki: *See*—
Ogino, Shigeo; and Nishiyama, Masaaki, 5,061,949, Cl. 346-160.000.
Nissan Motor Company, Limited: *See*—
Aramaki, Takashi, 5,060,'74, Cl. 60-277.000.
Eto, Yoshiyuki, 5,060,747, Cl. 180-197.000.
Nakagawa, Toyoaki, 5,060,473, Cl 60-277.000.
Nakatsu, Etsuto; Shimazaki, Hiroaki; Matsuta, Toyohiko; Shimotashiro, Masafumi; and Kobayashi, Masaaki, 5,062,007, Cl. 360-29.000
Sakurai, Osamu; Kobayashi, Kazumitsu; Kano, Hideki; and Takeuchi, Kiyoshi, 5,060,619, Cl. 123-494.000
Shimanaka, Shigeki, 5,060,541, Cl. 74-866.000.
Takahashi, Ryoichi; Sato, Tomoyoshi; Tsukamoto, Hidehiko; Morimoto, Kazuo; and Maeda, Nobutaka, 5,060,497, Cl. 72-68.000
Yamaguchi, Hiroshi, 5,060,540, Cl. 74-866.000
Nisshin Flour Milling Co., Ltd.: *See*—
Tadokoro, Toyohiro; Sato, Kiyoshi; Hatakeyama, Shigeki; Kawase, Shigeo; and Ueno, Masao, 5,061,714, Cl. 514-309.000
Nisshin Steel Co., Ltd.: *See*—
Yamauchi, Takashi; and Hasegawa, Morihiro, 5,060,714, Cl. 164-428.000
Nisshinbo Techno Vehicle Inc.: *See*—
Yamaguchi, Saburo, 5,060,932, Cl. 272-36.000
Nissho Corporation: *See*—
Yoshida, Toshiki, 5,061,253, Cl. 604-246.000.
Nitta, Kumiko: *See*—
Uchida, Itsuo; Hatanaka, Hiroshi; Nitta, Kumiko; Hashimoto, Seiji; Okuhara, Masakuni; Murai, Hidetsugu; and Hashimoto, Masashi, 5,061,730, Cl. 514-563.000.
Nitto Kohki Co., Ltd.: *See*—
Matsushita, Kaoru, 5,060,982, Cl. 285-190.000.
Niznick, Gerald A., to Core-Vent Corporation. Dental implant including plural anchoring means. 5,061,181, Cl. 433-174.000
NKK Corporation: *See*—
Kagechika, Hiroshi, 5,062,146, Cl. 392-432.000.
Nishimoto, Akihiko; Hosoya, Yoshihiro; Tomita, Kunikazu; Urabe, Toshiaki; and Jitsukawa, Masaharu, 5,061,321, Cl. 134-3.000.
Suenaga, Hiroyoshi; Ishikawa, Misao; and Minakawa, Kuninori, 5,060,845, Cl. 228-186.000.
Yamaguchi, Saburo, 5,060,932, Cl. 272-36.000.
Nobileau, Philippe C.: *See*—
Brammer, Norman; and Nobileau, Philippe C., 5,060,724, Cl 166-208.000
Noble, Karl-Ludwig: *See*—
Schmalstieg, Lutz; Nachtkamp, Klaus; and Noble, Karl-Ludwig, 5,061,775, Cl. 528-45.000.
Nobumoto, Kazutoshi; Tsuyama, Toshiaki; and Nishimura, Eiji, to Mazda Motor Corporation. Method and system for controlling power train of vehicle. 5,060,746, Cl. 180-197.000.
Nobuyoshi, Ryoichi; and Taki, Kazuhiro, to Nippon Mining Co., Ltd. Insoluble anodes for producing manganese dioxide consisting essentially of a titanium-nickel alloy. 5,061,358, Cl. 204-290.00R
Noguchi, Shigeru, to Dai Nippon Insatsu Kabushiki Kaisha. Inspection method and device for an aperture in a focused ion beam generating apparatus. 5,061,851, Cl. 250-309.000
Noguchi, Takeshi: *See*—
Takano, Kazuya; and Noguchi, Takeshi, 5,060,919, Cl. 267-140.100.
Nokata, Kenichiro: *See*—
Yaegashi, Takashi; Okajima, Satoru; Sawada, Seigo; Nokata, Kenichiro; Tezuka, Kenichi; Nagata, Hiroshi; Yokokura, Teruo; Miyasaka, Tadashi; and Miyasaka, Tadashi, 5,061,800, Cl. 546-48.000
Noma, Kohji: *See*—
Harasaki, Hayatsugu; and Noma, Kohji, 5,061,009, Cl. 296-192.000.
Nomura, Koichi: *See*—
Sayama, Yasumasa; Nomura, Koichi; and Iwasaki, Morihiko, 5,062,127, Cl. 378-45.000
Nonomura, Kinzo: *See*—
Hashiguchi, Jumpei; Nonomura, Kinzo; Hamada, Kiyoshi; Kitao, Satoshi; and Takahashi, Masayuki, 5,061,880, Cl. 315-366.000.
Nonomura, Yutaka: *See*—
Nishibe, Yuji; Nonomura, Yutaka; Abe, Masaaki; Takeuchi, Masaharu; and Tsukada, Kouji, 5,062,062, Cl. 364-559.000.
Nordica S.p.A.: *See*—
Battistella, Mirco; and Gorza, Roberto, 5,060,403, Cl. 36-117.000.
Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See*—
Holzhuter, Andreas; and Jurs, Michael, 5,061,221, Cl. 452-184.000.
Nordling, Tommy: *See*—
Skog, Lars; Nordling, Tommy; and Svenke, Per-Ola, 5,060,776, Cl. 192-85.00R.
Nordsiek, Karl-Heinz: *See*—
Hellermann, Walter; Herrmann, Christoph; Nordsiek, Karl-Heinz; Wolpers, Jurgen; and Fuchs, Hans-Bernd, 5,061,758, Cl. 525-193.000
Norsk Hydro A.S.: *See*—
Olsen, Ragnar L.; Stenberg, Even; Sandsdalen, Erling; and Almas, Karl A., 5,061,627, Cl. 435-183.000.
Northeastern University: *See*—
Davies, Geoffrey; and Shao, Hui-Li, 5,061,313, Cl. 75-362.000.

Northern Telecom Limited: *See*—
Soubliere, Marc P.; and Foster, Edward J., 5,061,023, Cl 312-328.000.
Northfield Laboratories, Inc.: *See*—
Beissinger, Richard L.; Wasan, Darsh T.; Sehgal, Lahksman R.; and Rosen, Arthur L., 5,061,688, Cl. 514-6.000.
Northrop Corporation: *See*—
Hsia, Yukun, 5,061,987, Cl. 357-71.000.
Northrop, Robert F.: *See*—
Moyle, David R.; Harris, Geoffrey L.; and Northrop, Robert F., 5,061,661, Cl. 501-87.000
Norton Company: *See*—
Hickory, Gordon E.; and White, Michael J., 5,061,295, Cl. 51-298.000.
Willkens, Craig A.; Corbin, Normand D.; and Caprera, Brian J., 5,061,416, Cl. 264-28.000.
Norwood, Robert: *See*—
Khanarian, Garo; Landi, Pascal; Haas, David; and Norwood, Robert, 5,061,028, Cl. 385-132.000.
Novo Nordisk A/S: *See*—
Honoree, Tage; Jacobsen, Poul; Nielsen, Flemming E.; and Nafrim, Lars, 5,061,706, Cl. 514-249.000.
Novosad, Jaromir: *See*—
Schramm, Laurier L.; Ayasse, Conrad; Mannhardt, Karin; and Novosad, Jaromir, 5,060,727, Cl. 166-252.000.
Nozaki, Satoshi: *See*—
Suzuki, Migaku; Nozaki, Satoshi; Kudo, Takeshi; and Ohnishi, Kazuaki, 5,061,261, Cl. 604-385.200.
Nozaki, Tsutomu: *See*—
Watanabe, Seiji; Saito, Mitsuo; Nanba, Akihiko; Nozaki, Tsutomu; Fujii, Tetsuya; Nakamoto, Tsuyoshi; and Yaji, Motoyasu, 5,061,527, Cl. 427-423.000.
NPBI Nederlands Produktielaboratorium voor Bloodtransfusieapparatuur en Infusievloeistoffen BV: *See*—
Ganshirt, Karlheinz; Walker, Wolfram; and Handel, Klaus D., 5,061,451, Cl. 422-101.000.
NTN Corporation: *See*—
Kadota, Tetsuro; Mihata, Yo; and Watanabe, Mamoru, 5,061,223, Cl. 464-111.000.
Nussbaumer, Hans; and Walser, Felix, to Prazisions-Werkzeuge AG Process for reducing environmental influences on the powder coating of a workpiece, and powder coating facility. 5,061,510, Cl. 427-28.000.
Nutt, Ruth F.; Brady, Stephen F.; and Veber, Daniel F., to Merck & Co., Inc. Fibrinogen receptor antagonists. 5,061,693, Cl. 514-17.000.
Nutter, Dale E. Liquid distributor for gas-liquid contact apparatus. 5,061,407, Cl. 261-96.000
NuZip Dee Manufacturing Company, Inc.: *See*—
Miller, Robert H., 5,061,011, Cl. 297-438.000.
NWD International, Inc.: *See*—
Williamson, Nigel D. L., 5,060,988, Cl. 285-332.300.
Nyilas, Emery, deceased: *See*—
Mares, Frank; Tang, Reginald T.; Chiu, Tin-Ho; Largman, Theodore; and Nyilas, Emery, deceased, 5,061,281, Cl. 623-11.000.
Nyilas, Ilona, executor: *See*—
Mares, Frank; Tang, Reginald T.; Chiu, Tin-Ho; Largman, Theodore; and Nyilas, Emery, deceased, 5,061,281, Cl. 623-11.000.
Nyman, Mark A.: *See*—
Renner, Tim R.; Nyman, Mark A.; and Stradtner, Ronald, 5,061,216, Cl. 445-28.000
Nyrhila, Olli J.; and Syrjala, Seppo O., to Aktiebolaget Electrolux Manufacture of dimensionally precise pieces by sintering. 5,061,439, Cl. 419-9.000
Nys, Pierre H., to Agfa-Gevaert N.V. Measuring strip. 5,060,388, Cl 33-1.0BB
Oakes, Thomas R.; Pedersen, Daniel E.; and Majewski, Donna M., to Ecolab Inc. Disinfectant polymeric coatings for hard surfaces. 5,061,485, Cl. 424-81.000
Oaki, Yoshinao: *See*—
Hibino, Hiroki; Nagayama, Yoshikatsu; Yoshikawa, Mutsumi; Takara, Toshiyuki; Goto, Masahito; Suzuki, Akira; Takehana, Sakae; Oaki, Yoshinao; Hoshimitsu, Koichi; Aoki, Yoshisada; Ueda, Yasuhiro; and Matsui, Raifu, 5,060,632, Cl. 128-6.000.
Obi, Hideo: *See*—
Asano, Yumiko; Obi, Hideo; and Ohhama, Shigeya, 5,061,883, Cl. 318-362.000
Obikawa, Tsuyoshi, to Seiko Epson Corporation. Liquid crystal compounds. 5,061,400, Cl. 252-299.630.
O'Brien, Edward J.: *See*—
Bloch, Nathan D.; and O'Brien, Edward J., 5,061,232, Cl 493-395.000
O'Brien, Michael E.: *See*—
VanSlyke, Steven A.; Tang, Ching W.; O'Brien, Michael E.; and Chen, Chin H., 5,061,569, Cl. 428-457.000.
Oculus Optikgeraete GmbH: *See*—
Aulhorn, Elfriede; and Kost, Gert, 5,061,060, Cl. 351-224.000
Oda, Mitsunori: *See*—
Urakami, Teizi; Oda, Mitsunori; and Itoh, Chieko, 5,061,711, Cl. 514-292.000
Oda, Susumu; Aga, Masami; Kajiwara, Takashi; and Tajima, Naoki, deceased (Chisako, heir; by Tajima), to Toyota Jidosha Kabushiki Kaisha. Four-wheel steering system for automotive vehicles. 5,060,743, Cl. 180-140.000.
Odamura, Motomi: *See*—
Yoneya, Makoto; Kondo, Katsumi; Ohashi, Tetsuya; Odamura, Motomi; and Kitamura, Teruo, 5,061,045, Cl. 359-56.000.
Odar, Larry F.: *See*—
Ni, Phillip F.; and Odar, Larry F., 5,061,494, Cl. 424-467.000
Odawara, Kazuharu; Ishii, Masaru; and Yamamoto, Hiroshi, to Kabushiki Kaisha Toshiba. Information processing apparatus. 5,062,099, Cl. 369-263.000.
Odeco, Inc.: *See*—
Petty, Terry D.; and Chabot, Luc G., 5,061,131, Cl. 405-224.000.
OEA, Inc.: *See*—
Hamilton, Brian K.; and Butt, Ronald J., 5,060,974, Cl. 280-736.000.
Oehy, Peter: *See*—
Bischofberger, Jurg; Jorg, Andreas; Mondini, Giancarlo; and Oehy, Peter, 5,060,346, Cl. 19-225.000.
Offermans, Paulus H. G.: *See*—
Verweij, Hendrik; Offermans, Paulus H. G.; Krebbers, Andreas P L.; and Schuurman, Arend, 5,060,406, Cl. 38-77.830
Ogasawara, Tomio: *See*—
Yagi, Kunio; Shimohigashi, Yasuyuki; Kodama, Hiroaki; Ogasawara, Tomio; Koshizaka, Takuya; and Kurono, Masayasu, 5,061,691, Cl. 514-17.000.
Ogawa, Kimiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Position sensing device. 5,061,952, Cl. 354-400.000.
Ogawa, Masazumi, to Fuji Photo Film Co., Ltd. Torsion spring conveying and separating system. 5,060,784, Cl. 198-468.400.
Ogawa, Yasuaki: *See*—
Okada, Hiroaki; Ogawa, Yasuaki; and Yashiki, Takatsuka, 5,061,492, Cl. 424-423.000.
Ogawa, Yukio: *See*—
Suzuki, Toyotoshi; and Ogawa, Yukio, 5,061,950, Cl. 354-173.110
Ogino, Shigeo; and Nishiyama, Masaaki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus comprising means for setting a proper bias voltage of laser emitting means and method therefor 5,061,949, Cl. 346-160.000.
Ogitani, Osamu; Shimizu, Takashi; Fujii, Ryuichi; Kawashima, Masao; Kobayashi, Tuyoshi; and Akutagawa, Ichiro, to Somar Corporation. Resist ink composition. 5,061,744, Cl. 523-461.000.
Ogle, George B., II, to International Medication Systems, Limited Medication container stopper which can be punctured by nozzle of a hypodermic syringe. 5,060,812, Cl. 215-247.000.
Oglesbee, Richard K., to Abbott Laboratories. Molded plastic container for packaging multiple product samples. 5,060,814, Cl 220-339.000.
Ogura, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Polarizer 5,061,050, Cl. 359-490.000
Ogusi, Yhoshimi; and Matsuki, Norio, to Shin-Etsu Chemical Co., Ltd Pressure-sensitive adhesive structure. 5,061,559, Cl. 428-343.000.
Oh, Jung H. Divided bolt fastening device. 5,061,134, Cl. 411-385.000
O'Hara, Steve; Nightingale, Mark; and Aukstikalnis, Glen, to Tektronix, Inc. Electrical test probe having integral strain relief and ground connection. 5,061,892, Cl. 324-149.000
Ohashi, Takeisa; Kan, Kazunori; Ueyama, Noboru; Sada, Isao; Miyama, Akimasa; and Watanabe, Kiyoshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Enolsilyl ether compound. 5,061,817, Cl. 556-443.000
Ohashi, Tetsuya: *See*—
Yoneya, Makoto; Kondo, Katsumi; Ohashi, Tetsuya; Odamura, Motomi; and Kitamura, Teruo, 5,061,045, Cl. 359-56.000.
Ohashi, Yuichi: *See*—
Takada, Shunji; Naito, Hideki; Ohashi, Yuichi; Yamashita, Seiji; Shibayama, Shigeru; and Hirano, Shigeo, 5,061,614, Cl. 430-569.000.
Ohhama, Shigeya: *See*—
Asano, Yumiko; Obi, Hideo; and Ohhama, Shigeya, 5,061,883, Cl. 318-362.000
Ohikata, Naoharu; Matsubara, Toshiro; and Ohno, Jiro, to Nippon Steel Corporation. Apparatus for inspecting both sides of tape or sheet 5,061,074, Cl. 356-390.000.
Ohike, Yukio, to Yazaki Corporation. Cross coil type indicating gauge 5,062,135, Cl. 324-154.00R
Ohike, Yukio: *See*—
Totsuka, Shigeki; Ohike, Yukio; and Ito, Tadao, 5,061,891, Cl 324-146.000
Ohinata, Yoshiharu: *See*—
Hayama, Noboru; and Ohinata, Yoshiharu, 5,060,567, Cl 101-120.000
Ohio State University, The: *See*—
Richardson, Richard W., 5,061,841, Cl. 219-130.010
Ohio State University Research Foundation, The: *See*—
El-Naggar, Mohammed I.; and Khachab, Nabil I., 5,061,866, Cl 307-529.000
Ohira, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Velocity control method for elevator. 5,060,764, Cl. 187-116.000
Ohkawa, Hideki, to Kabushiki Kaisha Toshiba. Information storage medium comprising a recording film containig tellurium chemically bonded to an organic carbon. 5,061,563, Cl. 428-408.000
Ohkawa, Suguru: *See*—
Yoda, Ryuichiro; Fukutome, Akira; Ohkawa, Suguru; and Iida, Kazutoshi, 5,061,777, Cl. 528-61.000
Ohnaga, Takashi: *See*—
Sato, Toshiaki; Ohnaga, Takashi; and Ikeda, Kaoru, 5,061,761, Cl 525-329.800
Ohneda, Noboru; Ushioda, Shunta; Arima, Haruo; Hashimoto, Ichiro; Kaneko, Denziro; Sugiyama, Kazuo; Fukazawa, Tsuguo; Tachi, Teruo; and Mukasa, Takashi, to Showa Aluminum Kabushiki Kaisha. Apparatus for automatically forming a pointed end of raw pipe to be drawn. 5,060,500, Cl. 72-287.000.

Ohnishi, Kazuaki: *See—*
Suzuki, Migaku; Nozaki, Satoshi; Kudo, Takeshi; and Ohnishi, Kazuaki, 5,061,261, Cl. 604-385.200.
Ohnishi, Masaru: *See—*
Sameshima, Kazuhiro; and Ohnishi, Masaru, 5,061,861, Cl. 307-270.000.
Ohno, Jiro: *See—*
Ohkata, Naoharu; Matsubara, Toshiro; and Ohno, Jiro, 5,061,074, Cl. 356-390.000.
Ohno, Masao: *See—*
Sano, Shoichi; Yoshida, Suguru; Uchida, Ken; Kajiwara, Hajime; Ohno, Masao; and Kawade, Tateo, 5,060,975, Cl. 280-787.000.
Ohno, Takashi: *See—*
Kumakura, Minoru; Kaetsu, Isao; Komaki, Yoshihide; Sakurai, Tsutomu; Arai, Ryuji; Sejima, Yasuji; Ohno, Takashi; Itoh, Toshiyuki; and Kohyama, Hideo, 5,061,057, Cl. 351-160.00R.
Ohno, Yoshihiro; and Nishiyama, Hideo, to Matsushita Electric Industrial Co., Ltd. Method for realizing a primary photometric standard of optical radiation using a photodetector and photodetecting apparatus therefor. 5,061,066, Cl. 356-300.000.
Ohnuki, Ichiro: *See—*
Higashihara, Masaki; Ohnuki, Ichiro; Akashi, Akira; and Kadohara, Terutake, 5,061,951, Cl. 354-400.000.
Higashihara, Masaki; Ohnuki, Ichiro; Akashi, Akira; and Kadohara, Terutake, 5,061,953, Cl. 354-402.000.
Ohrui, Hiroshi: *See—*
Meguro, Hiroshi; Ohrui, Hiroshi; and Akasaka, Kazuaki, 5,061,633, Cl. 436-71.000.
Ohshima, Hiromi; and Nishiura, Junji, to Advantest Corporation. Memory tester. 5,062,109, Cl. 371-21.200.
Ohshita, Koichi, to Nikon Corporation. Keplerian finder optical system. 5,061,054, Cl. 359-399.000.
Ohsuki, Satoru: *See—*
Tagawa, Hiroaki; Sugimori, Masamichi; Terasawa, Hirofumi; Ejima, Akio; and Ohsuki, Satoru, 5,061,795, Cl. 540-578.000.
Ohta, Kihachiro: *See—*
Iwazaki, Kuniyasu; and Ohta, Kihachiro, 5,061,868, Cl. 310-67.00R.
Ohta, Norio: *See—*
Maeda, Takeshi; Ohta, Norio; Suzuki, Yoshio; and Takahashi, Masahiko, 5,062,091, Cl. 369-13.000.
Ohya, Masakiyo; and Narue, Atsushi, to Fuji-Autoliv Co., Ltd. Seat belt retractor. 5,060,883, Cl. 242-107.000.
Ohya, Takao; Nakagawa, Jun; Hayakawa, Satoru; Nishikawa, Yasuo; Okita, Tsutomu; and Hashimoto, Hiroshi, to Fuji Photo Film Co., Ltd. Magnetic recording medium comprising a polar group containing resin or compound and a methyl iso ester lubricant prepared from a methyl iso acid or methyl iso alcohol or both. 5,061,564, Cl. 428-409.000.
Oikawa, Shinzou: *See—*
Tanaka, Shigeru; Setoyama, Eiji; Oikawa, Shinzou; and Yamamura, Sigeki, 5,061,356, Cl. 204-192.120.
OIS Optical Imaging Systems, Inc.: *See—*
Yaniv, Zvi; Cannella, Vincent D.; Hansell, Gregory L.; and Swartz, Louis D., 5,061,040, Cl. 359-60.000
Oka, Keizo: *See—*
Hata, Hajime; Sogabe, Seiji; and Oka, Keizo, 5,061,468, Cl. 423-279.000.
Oka, Nobutoshi: *See—*
Alfano, Robert R.; Nagamatsu, George R.; and Oka, Nobutoshi, 5,061,075, Cl. 356-417.000.
Okabe, Takahiro: *See—*
Nakazato, Kazuo; Nakamura, Tohru; Matsuda, Masatoshi; Miyazaki, Takao; Kure, Tokuo; Okabe, Takahiro; and Nagata, Minoru, 5,061,645, Cl. 437-31.000.
Okada, Hiroaki; Ogawa, Yasuaki; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Prolonged release microcapsule of a water-soluble drug. 5,061,492, Cl. 424-423.000.
Okada, Kenji: *See—*
Kanashige, Masanori; Okada, Kenji; and Kumagai, Michihiro, 5,060,512, Cl. 73-301.000.
Okada, Toyokazu: *See—*
Nakamura, Kimishige; Kitamura, Shuji; Okada, Toyokazu; Sakakura, Kazuaki; Kikui, Hitoshi; Higashi, Koji; and Ichinose, Keizo, 5,061,042, Cl. 359-63.000.
Okajima, Satoru: *See—*
Yaegashi, Takashi; Okajima, Satoru; Sawada, Seigo; Nokata, Kenichiro; Tezuka, Kenichi; Nagata, Hiroshi; Yokokura, Teruo; Miyasaka, Tadashi; and Miyasaka, Tadashi, 5,061,800, Cl 546-48.000.
Okamoto, Hiroshi: *See—*
Kudo, Tetsuichi; Ishikawa, Akira; Okamoto, Hiroshi; Miyauchi, Katsuki; Iwayanagi, Takao; Murai, Fumio; and Okazaki, Shinji, 5,061,599, Cl. 430-270.000.
Okamoto, Katsuo: *See—*
Hamada, Shunichi; Uchiyama, Akira; and Okamoto, Katsuo, 5,061,572, Cl. 428-516.000.
Okamoto, Kenji: *See—*
Yoshimura, Hiroshi; and Okamoto, Kenji, 5,060,769, Cl. 192-3.290.
Okamoto, Sota: *See—*
Chikuma, Kiyofumi; and Okamoto, Sota, 5,061,038, Cl. 359-328.000.
Okamura, Hisashi; and Katoh, Kazunobu, to Fuji Photo Film Co., Ltd High contrast silver halide material containing novel hydrazine nucleating agent. 5,061,594, Cl. 430-264.000.
Okamura, Yoshihiro; Yano, Seinosuke; Yamaba, Ryota; and Chiba, Hidetaka, to Nippon Steel Corporation. Method of producing high tension steel superior in weldability and low-temperature toughness. 5,061,325, Cl. 148-12.00F.
Okanishi, Masanori: *See—*
Suda, Hiroyuki; Kojiri, Katuhisa; Okura, Akira; Funaishi, Koutaro; Kawamura, Kenji; and Okanishi, Masanori, 5,061,695, Cl. 514-28.000.
Okazaki, Shinji: *See—*
Kudo, Tetsuichi; Ishikawa, Akira; Okamoto, Hiroshi; Miyauchi, Katsuki; Iwayanagi, Takao; Murai, Fumio; and Okazaki, Shinji, 5,061,599, Cl. 430-270.000.
Oki Electric Industry Co., Ltd.: *See—*
Ino, Masayoshi, 5,061,651, Cl. 437-52.000.
Isobe, Minoru, 5,061,967, Cl. 355-310.000.
Yoshida, Tomoaki; and Tanagawa, Kouji, 5,062,075, Cl. 364-900.000.
Oki, Toshikazu: *See—*
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,061,624, Cl. 435-75.000.
Okita, Tsutomu: *See—*
Ohya, Takao; Nakagawa, Jun; Hayakawa, Satoru; Nishikawa, Yasuo; Okita, Tsutomu; and Hashimoto, Hiroshi, 5,061,564, Cl 428-409.000.
Okochi, Sadao; Kasama, Norio; and Matsuya, Hideji, to Kabushiki Kaisha Toshiba. Lightweight line filter and a method for constructing a lightweight line filter. 5,061,913, Cl. 333-181.000.
Oku, Teruo; Kawai, Yoshio; Kayakiri, Hiroshi; Kuratani, Kazuyoshi; and Hashimoto, Masashi, to Fujisawa Pharmaceutical Company, Ltd. Benzothiazolylmethoxy compounds, pharmaceutical compositions comprising the same and their use as anti-inflammatory or anti-allergenic agents. 5,061,718, Cl. 514-367.000.
Okuhara, Masakuni: *See—*
Uchida, Itsuo; Hatanaka, Hiroshi; Nitta, Kumiko; Hashimoto, Seiji; Okuhara, Masakuni; Murai, Hidetsugu; and Hashimoto, Masashi, 5,061,730, Cl. 514-563.000.
Okumori, Kunio; and Terada, Kazuo, to Sumitomo Special Metal Co. Ltd. Process for producing a magnet of strontium ferrite having high performance. 5,061,412, Cl. 264-24.000.
Okura, Akira: *See—*
Suda, Hiroyuki; Kojiri, Katuhisa; Okura, Akira; Funaishi, Koutaro; Kawamura, Kenji; and Okanishi, Masanori, 5,061,695, Cl. 514-28.000.
Okuyama, Toshio: *See—*
Uchida, Yasunobu; Ono, Tomoshige; Wakui, Tadahiro; Matsumoto, Yoshihiro; Shinozaki, Masatoshi; Okuyama, Toshio; Hirose, Toshiro; and Uno, Toru, 5,061,778, Cl. 528-45.000.
Oliff, James R., to Mead Corporation, The. Can carton. 5,060,792, Cl. 206-140.000.
Olin Corporation: *See—*
Boeglin, Herman J., 5,061,514, Cl. 427-39.000.
Olsen, Kenneth F., Jr. Coextruded sail. 5,061,553, Cl. 428-215.000.
Olsen, Ragnar L.; Stenberg, Even; Sandsdalen, Erling; and Almas, Karl A., to Norsk Hydro A.S. Method for preparing enzymes from crustaceans. 5,061,627, Cl. 435-183.000.
Olson, James A.: *See—*
Barua, Arun B.; Gunning, Desiree; and Olson, James A., 5,061,723, Cl. 514-460.000.
Olson, William L.; Li, Beili; and Yamanis, Jean, to Allied-Signal Inc. Preparation of lanthanum chromate powders by sol-gel. 5,061,402, Cl. 252-521.000.
Olsson, Bo; and Olsson, Claes. Device for loading and unloading vehicles and aircraft. 5,061,142, Cl. 244-137.100.
Olsson, Claes: *See—*
Olsson, Bo; and Olsson, Claes, 5,061,142, Cl. 244-137.100.
Olympus Optical Co., Ltd.: *See—*
Hibino, Hiroki; Nagayama, Yoshikatsu; Yoshikawa, Mutsumi; Takara, Toshiyuki; Goto, Masahito; Suzuki, Akira; Takehana, Sakae; Oaki, Yoshinao; Hoshimitsu, Koichi; Aoki, Yoshisada; Ueda, Yasuhiro, and Matsui, Raifu, 5,060,632, Cl. 128-6.000.
Takahashi, Yutaka, 5,061,994, Cl. 358-98.000.
Omine, Tsutomu: *See—*
Takeda, Fumio; Yoshida, Takashi; Tanaka, Hideki; Ishitsuka, Yoshikazu; Omine, Tsutomu; Miyasaka, Masao; Asano, Mitsugu; Igarashi, Akira; and Takahagi, Hiroshi, 5,061,092, Cl. 400-120.000.
Ondetti, Miguel A.: *See—*
Aberg, A. K. Gunnar; Ferrer, Patricia; and Ondetti, Miguel A., 5,061,694, Cl. 514-19.000.
Ono, Moriaki: *See—*
Kosuge, Shigeyoshi; Kabasawa, Makoto; Ono, Moriaki; and Shinbo, Yukio, 5,061,685, Cl. 505-1.000.
Ono, Sachiko: *See—*
Wada, Kazuhiro; Baba, Nobuyoshi; Ono, Sachiko; and Yoshino, Takako, 5,061,544, Cl. 428-131.000.
Ono, Tomoshige: *See—*
Uchida, Yasunobu; Ono, Tomoshige; Wakui, Tadahiro; Matsumoto, Yoshihiro; Shinozaki, Masatoshi; Okuyama, Toshio; Hirose, Toshiro; and Uno, Toru, 5,061,778, Cl. 528-45.000.
Ono, Yoshio. Catalytic combustion type CO gas sensor. 5,061,447, Cl. 422-96.000.
Ono, Yuichi: *See—*
Takikawa, Kazunori; and Ono, Yuichi, 5,060,774, Cl. 192-58.00A.
Onodera, Noriaki; Saski, Saburo; and Iechi, Hiroyuki, to Ricoh Company, Ltd.; and Ricoh Research Institute of General Electronics Co. Semiconductor light-emitting device of array type. 5,061,974, Cl. 357-17.000.

Onopchenko, Anatoli: *See—*
Small, Vernon R., Jr.; Liston, Thomas V.; and Onopchenko, Anatoli, 5,061,390, Cl. 252-49.600.
Ooms, Pieter; Kunisch, Franz; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Harry, to Bayer Aktiengesellschaft. Herbicidal N-phenyl-substituted oxazinediones and oxazinonethiones. 5,061,310, Cl. 71-88.000.
Oowaki, Yukihito: *See—*
Takashima, Daisaburo; Oowaki, Yukihito; and Tsuchida, Kenji, 5,062,077, Cl. 365-69.000
Tsuchida, Kenji; and Oowaki, Yukihito, 5,062,079, Cl. 365-210.000.
Optical Measurement Technology Development Co., Ltd.: *See—*
Miyamoto, Hiroshi; and Iwaoka, Hideto, 5,061,030, Cl. 385-3.000.
Optische Werke G. Rodenstock: *See—*
Guilino, Gunther; Pfeiffer, Herbert; and Altheimer, Helmut, 5,061,058, Cl. 351-176.000.
Oram, James W.; and Schulman, Alan. Battery evaluation test system. 5,061,898, Cl. 324-427.000.
Orbisphere Laboratories Neuchatel SA: *See—*
Bals, Ion; Hofer, Willy; and Gagnebin, Antoine, 5,060,529, Cl. 73-864.740.
Orec, Ilija: *See—*
Zwaan, Paul; Orec, Ilija; and Murray, Charles G., 5,062,145, Cl. 392-396.000.
O'Rourke, Dennis S. Method and apparatus for supporting a tile counter cap support strip. 5,060,438, Cl. 52-371.000.
Ortwein, Hermann. Sound-damping mat, especially for a ballast bed. 5,060,856, Cl. 238-382.000.
Osaka, Takahide: *See—*
Chojitani, Hitoshi; Osaka, Takahide; Itojima, Fumiaki; and Yasuda, Masashi, 5,060,519, Cl. 73-662.000.
Osanai, Eiji, to Canon Kabushiki Kaisha. Recording and reproducing apparatus. 5,062,020, Cl. 360-130.340.
Osawa, Masashi: *See—*
Takehara, Sadao; Kuriyama, Takeshi; Nakamura, Kayoko; Shoji, Tadao; Fujisawa, Toru; Osawa, Masashi; Hiyama, Tamejiro; Kusumoto, Tetsuo; Nakayama, Akiko; and Nishide, Kiyoharu, 5,061,398, Cl. 252-299.610.
Oshima, Masayoshi; Kohara, Teiji; Hosaka, Tohru; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Ring-opened polymer from norbornene type of polycyclic monomer and process for producing the polymer. 5,061,771, Cl. 526-282.000.
Oshima, Yoshio; Ishii, Yasushi; Hidaka, Hideki; and Tsuchiya, Kunihiro, to Hitachi, Ltd.; and Hitachi Tokyo Electronics Co., Ltd. wire bonding method and apparatus and method of producing semiconductor device by use of wire bonding apparatus. 5,060,841, Cl. 228-102.000.
Oslapas, Algis G., to Ford Motor Company. Motor vehicle fuel vapor emission control assembly. 5,060,620, Cl. 123-519.000.
Osteotech, Inc.: *See—*
Lyle, John W., 5,061,286, Cl. 623-16.000.
Ostertag, John C.: *See—*
Oswald, Clifford J.; and Ostertag, John C., 5,060,939, Cl. 272-144.000.
Oswald, Clifford J.; and Ostertag, John C., to Diversified Products Corporation. Multi-position exercise bench. 5,060,939, Cl. 272-144.000.
Oswald, Kurt. Bed with fluidically supported slats. 5,060,326, Cl. 5-236.100.
Otake, Norikazu: *See—*
Nakagawa, Susumu; Yamada, Koji; Nakano, Fumio; Otake, Norikazu; Asai, Akira; Kuroyanagi, Satoru; Tanaka, Yoshiharu; Ishikawa, Moriaki; Ushijima, Ryosuke; and Mitomo, Ryuji, 5,061,794, Cl. 514-206.000.
Otis Elevator Company: *See—*
Garrido, Alfonso; Martin, Juan; and Sevilleja, Jose, 5,060,763, Cl. 187-51.000.
White, Lawrence E., 5,060,762, Cl. 187-17.000.
Ott, Karl-Heinz: *See—*
Buysch, Hans-Josef; Schon, Norbert; Eichenauer, Herbert; Ott, Karl-Heinz; and Pischtschan, Alfred, 5,061,752, Cl. 525-64.000.
Wittmann, Dieter; Peters, Horst; Schoeps, Jochen; Kress, Hans-Jurgen; Buekers, Josef; and Ott, Karl-Heinz, 5,061,745, Cl. 524-139.000.
Otto Sauer Achsenfabrik Keilberg: *See—*
Koschinat, B. Hubert; and Frohlke, Manfred, 5,060,916, Cl. 267-64.270.
Ouderkirk, Andrew J.; and Dunn, Douglas S., to Minnesota Mining and Manufacturing Company. Negative crystalline photoresists for UV photoimaging. 5,061,604, Cl. 430-296.000.
Ouwerkerk, Cornelis: *See—*
Verhoeven, Robertus J. M.; Beijersbergen van Henegouwen, Cornelis M.; Elders, Gerardus I. C.; and Ouwerkerk, Cornelis, 5,062,100, Cl. 369-291.000.
Owens-Illinois Plastic Products Inc.: *See—*
Krall, Thomas J., 5,060,830, Cl. 222-212.000.
Oy Nokia AB: *See—*
Karema, Teppo J.; Ritoniemi, Tapani J.; and Tenhunen, Aaine H., 5,061,928, Cl. 341-143.000.
Oy Wartsila Diesel International Ltd.: *See—*
Paro, Daniel, 5,060,610, Cl. 123-300.000.
Oyama, Noboru: *See—*
Shimomura, Takeshi; Yamaguchi, Shuichiro; Suzuki, Takanao; and Oyama, Noboru, 5,061,976, Cl. 357-25.000.
Oyler, Kenneth W., to Infilco Degremont Inc. Grit removal devices and method of using same. 5,061,375, Cl. 210-744.000.
Ozeki, Hiroaki: *See—*
Sakashita, Seiji; Ozeki, Hiroaki; Kanno, Ippei; and Abe, Yoshio, 5,061,999, Cl. 358-142.000.
Ozeki, Takeshi; Matsumura, Masanori; and Tanaka, Jun, to Kabushiki Kaisha Toshiba. Array antenna apparatus. 5,061,937, Cl. 342-372.000.
Ozimek, Edward J., to Eastman Kodak Company. Method of forming a thin sheet of an amalgam. 5,061,442, Cl. 420-526.000.
Ozimek, Robert E.: *See—*
Ewan, Frederick R., 5,060,848, Cl. 229-102.000.
Paau, Alan S.; McCabe, Dennis E.; and Platt, Steven G., to W. R. Grace & Co.-Conn. Biological inoculant. 5,061,490, Cl. 424-93.000.
Pac-Tec, Inc.: *See—*
Hedgewick, Peter, 5,061,114, Cl. 404-14.000.
Pace, Loy D.; Stackhouse, Donald C.; Jones, Earl W.; and Zimpfer, Dennis S., to Hartzell Propeller Inc. Aircraft propeller assembly with blade pitch reset for ground idle. 5,061,153, Cl. 416-46.000.
Pacht, Amos, to Butterworth Jetting Systems, Inc. Magnetic speed control for self-propelled swivel. 5,060,862, Cl. 239-252.000.
Pacific Bell: *See—*
Lubarsky, Daniel P.; Weigt, George A.; and Haisch, Mark E., 5,062,104, Cl. 370-60.000.
Pacific Scientific Company: *See—*
Sommer, Holger T., 5,061,065, Cl. 356-246.000.
Pacione, Joseph R., to Tac-Fast Systems SA. Anchor board system. 5,060,443, Cl. 52-506.000.
Package Products, Inc.: *See—*
Beckerman, Alan; and Brady, Beth A., 5,060,852, Cl. 229-162.000.
Packaging Concepts, Inc.: *See—*
Mendenhall, Abraham H., 5,061,500, Cl. 426-118.000.
Padco Plastics, Inc.: *See—*
Goldstein, Edward J.; and Linn, Richard A., 5,060,995, Cl. 294-19.100.
Page, Larry E., to Ballard Medical Products. Closed system for involuntary medical aspiration and ventilation, and method. 5,060,646, Cl. 128-207.140.
Pagter & Partners International B.V.: *See—*
De Pagter, Janus A. W., 5,060,799, Cl. 206-423.000.
Paire, Christian: *See—*
Groshens, Pierre; and Paire, Christian, 5,061,546, Cl. 428-196.000.
Palmer, Christopher J.; Casida, John E.; and Larkin, John P., to University of California, The Regents of the. Alkynylphenyl-substituted 1,3-oxathione compounds with pesticidal activity. 5,061,726, Cl. 514-433.000.
Palmer, Lee; and Marsall, James, to Sultan Chemists, Inc. Irrigation system and method for delivering a selected one of multiple liquid solutions to a treatment site. 5,060,825, Cl. 222-25.000.
Paneccasio, Vincent, Jr.: *See—*
Commander, John H.; and Paneccasio, Vincent, Jr., 5,061,351, Cl. 204-54.100.
Pang, Yuan: *See—*
Wang, Hsin-Pang; and Pang, Yuan, 5,060,914, Cl. 266-236.000.
Panneaux Thermo-Briques, Inc.: *See—*
Tetu, Bertrand, 5,061,161, Cl. 425-3.000.
Panster, Peter; Deschler, Ulrich; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Aminoalkyl-substituted organopolysiloxane thiourea derivatives and methods of preparation and use thereof. 5,061,773, Cl. 528-9.000.
Papazian, John M., to Grumman Aerospace Corporation. Coating method to suppress porosity in A1-Li alloys. 5,061,328, Cl. 148-13.100.
Paper Converting Machine Company: *See—*
Buxton, Gerry; Wierschke, Larry; and Hertel, James E., 5,061,230, Cl. 493-25.000.
Paquette, Jean-Paul. Shingle. 5,060,444, Cl. 52-535.000.
Park, Eugene S.; and Poste, Steven D., to Lanxide Technology Company, LP. Ceramic foams. 5,061,660, Cl. 501-80.000.
Park, Hyun C.: *See—*
Kim, Un Y.; Kang, Yong S.; Kim, Jae J.; Song, Sung W.; and Park, Hyun C., 5,061,301, Cl. 55-158.000.
Park, Jun S.: *See—*
Ruckenstein, Eli; and Park, Jun S., 5,061,767, Cl. 526-219.200.
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Park, Won S., to Ethyl Corporation. Silane production from hydridomagnesium chloride. 5,061,470, Cl. 423-347.000.
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Parsons, James H.; McLain, Philippe H.; Boozer, John F., III; and Lewis, John R., Jr., to Shakespeare Company. Breakaway utility pole. 5,060,437, Cl. 52-298.000.
Partlow, Richard L., Jr.: *See—*
Rosten, David B.; Foos, Douglas E.; Partlow, Richard L., Jr.; and Berger, Edward M., 5,060,828, Cl. 222-142.900.

Parton, Richard L.; Muenter, Annabel A.; and Stegman, David A., to Eastman Kodak Company. Infrared-sensitive photographic element 5,061,618, Cl. 430-584.000.

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Morita, Yoshiharu; Hoshide, Yasuo; Chaki, Haruyuki; Takashima, Junko; and Patchett, Arthur A., 5,061,806, Cl. 548-112.000

Pathfinder Systems, Inc.: *See—*
Hallett, Stanley J.; and Hallett, Thomas E., 5,060,575, Cl. 104-130.000

Patil, Prabhakar B.: *See—*
Davis, Roy I.; and Patil, Prabhakar B., 5,060,959, Cl. 280-6.100.

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Patton, Tad L., to Exxon Chemical Patents Inc. Vinylpyrrolidone grafted polyolefins in polymer blends and composites. 5,061,751, Cl. 525-57.000

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Stolzenberg, Hans; and Schmitz, Karl-Heinz, 5,060,957, Cl. 279-1.00C

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Gohlisch, Hans-Joachim; Baumgarten, Wilfried; Becker, Klaus; and Budiman, Paul, 5,061,166, Cl. 425-133.500.

Paules, Eugene H., to United States Tobacco Company. Machine and method for high speed, precisely registered label application with sprockets for positioning the label on a transfer wheel. 5,061,334, Cl. 156-235.000.

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Pawelzik, Manfred; and Titze, Horst, to Friedrich Grohe Armaturenfabrik GmbH & Co. Seal ring for single-control faucet. 5,060,692, Cl 137-625.400

Payne, Kenneth, to Ampy Automation - Digilog Limited. Erasure mechanism for card readers. 5,061,842, Cl. 235-449.000.

Payne, Osamu M. Belt type personal carrier apparatus for conveniently supporting a beverage container and other belongings of a person about the person's waist. 5,060,835, Cl. 224-224.000.

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Moss, Thomas H., III; Sargent, Ralph R.; and Williams, Michael S., 5,061,763, Cl. 525-502.000

Peake, Steven L.: *See—*
Leone-Bay, Andrea; Peake, Steven L.; and Kaminski, Stanley S., 5,061,781, Cl. 528-179.000.

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Knapp, Heinrich; Linssen, Mathias; Peczkowski, Jurgen; and Konrad, Alfred, 5,060,868, Cl. 239-585.000.

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Oakes, Thomas R.; Pedersen, Daniel E.; and Majewski, Donna M., 5,061,485, Cl. 424-81.000.

Pederson, Jane M.; and Johnson, William R., to Time Surgical, Inc. Microscope accessory equipment container. 5,061,018, Cl. 312-209.000

Pedrali, Patrick: *See—*
Ayache, Josiane; Ayache, Jean-Jacques; Bruttmann, Georges; Pedrali, Patrick; and Robert, Serge, 5,061,493, Cl. 424-434.000.

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Pembroke, Andrew G.: *See—*
Goodacre, Brita C.; Pembroke, Andrew G.; and Shukla, Dipak P., 5,061,320, Cl. 127-30.000.

Penn Ventilator Company, Inc.: *See—*
Dunn, James C., 5,060,557, Cl. 98-121.200.

Pepin, Thierry, to Artos Engineering Company. Closed loop wire feeding and measuring apparatus and method of operating same 5,060,395, Cl. 33-735.000

Pera, John D.; and Rayudu, S. Rao, to Buckman Laboratories International, Inc. 1-methyl-3,5,7-triaza-1-azoniatricyclodecane compounds. 5,061,797, Cl. 544-181.000.

Perfetti, Patricia F.: *See—*
Milford, Ellen C.; Guess, Hal E.; Chapman, Paul S.; Dunn, Rebakah S.; and Perfetti, Patricia F., 5,060,675, Cl. 131-365.000.

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Pergent, Jacky: *See—*
Gohl, Pierre; Lachenal, Jean-Louis; and Pergent, Jacky, 5,062,072, Cl. 364-900.000.

Peri GmbH: *See—*
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Perini, Mary Ann: *See—*
Tieckelmann, Robert H., and Perini, Mary Ann, 5,061,483, Cl 424-72.000.

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Lee, Robert G. H.; Hornsey, Derek; and Perkins, Arthur S., 5,061,377, Cl. 210-752.000.

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Perlman, Kato L.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Kutner, Andrzej, 5,061,699, Cl. 514-167.000.

Permabase, Inc.: *See—*
Casey, William W.; Leisey, Clarence E., III; Shafer, Eric W.; and Daniels, Francis I., 5,061,318, Cl. 106-705.000.

Perrillat-Amede, Denis: *See—*
Long, Jacques; and Perrillat-Amede, Denis, 5,060,760, Cl. 184-6.400.

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Irimi, Sandor; Molnar, Adam; Gabor, Jozsef; Toke, Laszlo ; Trezl, Lajos; Rusznak, Istvan; Horvath, Viktoria; and Szarvas, Tibor, 5,060,672, Cl. 131-331.000.

Peters, Henry J.: *See—*
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Wittmann, Dieter; Peters, Horst; Schoeps, Jochen; Kress, Hans-Jurgen; Buekers, Josef; and Ott, Karl-Heinz, 5,061,745, Cl. 524-139.000

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Barth, Phillip W.; Petersen, Kurt E.; and Mallon, Joseph R., Jr., 5,060,526, Cl. 73-862.590

Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft. Preparation of 7-(3-amino- and 3-amino-methyl-1-pyrrolidinyl)-3-quinolonecarboxylic acids and -naphthyridonecarboxylic acids. 5,061,712, Cl. 514-300.000

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Rushatz, Alfred S.; and Peterson, James A., 5,060,937, Cl. 272-93.000

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Bishop, Thomas P.; Fish, Robert W.; and Peterson, James S., 5,062,040, Cl. 364-200.000

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Hsieh, C. Richard; King, Desmond F.; Pettersen, Frederick A.; and Shargay, Cathleen A., 5,061,457, Cl. 422-140.000

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Yoerger, William E.; and Pettrone, Frank A., 5,061,593, Cl. 430-108.000.

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Petz, David, to California Ammonia Co. Polar crane material handling apparatus. 5,061,148, Cl. 414-564.000.

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Anastassakis, Costas; and Charaktinos, John, 5,060,698, Cl. 138-154.000.

Petzold, Werner P.; and Umlauf, William P., to Borg-Warner Automotive, Inc. Continuously variable transmission line pressure control. 5,062,050, Cl. 364-424.100.

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Pfeiffer, Herbert: *See—*
Guilino, Gunther; Pfeiffer, Herbert; and Altheimer, Helmut, 5,061,058, Cl. 351-176.000.

Pfeiffer, James W.: *See—*
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Haefner, Hans W.; and Heimbach, Manfred, 5,060,965, Cl. 280-504.000

Hafner, Hans W., 5,060,525, Cl. 862-54.000.

Pfizer Hospital Products Group, Inc.: *See—*
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Clark, David A.; Goldstein, Steven W.; Holland, Gerald F.; Hulin, Bernard; and Rizzi, James P., 5,061,717, Cl. 514-342.000.

Koe, B. Kenneth, 5,061,728, Cl. 514-520.000.

Pham, Hiep V.; and Namioka, Hirotaka, to Kenwood Corporation; and Hughes Network Systems, Inc. Delay-locked loop circuit in spread spectrum receiver. 5,062,122, Cl. 375-1.000.

Phelps, Richard A.: *See—*
Lorence, Brian S.; Weidman, Jeffrey A.; and Phelps, Richard A., 5,060,899, Cl. 248-311.200.

Philip Morris Incorporated: *See—*
Casasent, David P., 5,061,063, Cl. 356-71.000.
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Hearn, John R.; Lanzillotti, Vincent; and Burnett, George H., 5,060,676, Cl. 131-369.000.
Rainer, Norman B., 5,060,663, Cl. 131-77.000.

Philipp Holzmann Aktiengesellschaft: *See—*
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Phillips Petroleum Company: *See—*
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Phoenix Company of Chicago, Inc., The: *See—*
Machura, Bernard C.; and Mysiak, Eugene J., 5,060,373, Cl. 29-858.000.

Photon Imaging Corp.: *See—*
Gordon, Eugene I., 5,061,036, Cl. 385-116.000.

Physicians & Nurses Mfg. Co.: *See—*
Jones, Peyton A., 5,060,641, Cl. 128-80.00R.

Piacenti, Frank: *See—*
Dixon, Tony L.; Starke, David E.; Piacenti, Frank; and Brown, Robert W., Jr., 5,061,136, Cl. 411-412.000.

Piatt, Michael J., to Eastman Kodak Company. Printer construction for handling a plurality of print media formats. 5,061,097, Cl. 400-619.000

Pichette, Carold. Wall frame elements with insulating panel anchoring prongs. 5,060,441, Cl. 52-404.000.

Pickens, Donald: *See—*
Harnish, Daniel F.; Pickens, Donald; and Brautigam, Richard J., 5,061,577, Cl. 428-694.000.

Pickett, James M.: *See—*
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Pickett, Thomas; and Larson, Bjorn, to Votek Systems Inc. User programmable computer monitoring system. 5,062,147, Cl. 364-900.000.

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Dufour, Daniel L.; and Pierre, Jean, 5,061,754, Cl. 525-67.000.

Pietrzyk, Michael, to U.S. Philips Corporation. Emitter-coupled multivibrator circuit independent of temperature and supply voltage. 5,061,908, Cl. 331-113.00R.

Piggin, Roger H.; and Bishop, Colin J., to Eastman Kodak Company Process of preparing a tabular grain silver bromoiodide emulsion and emulsions produced thereby. 5,061,609, Cl. 430-569.000.

Piggin, Roger H.; Zola, Philip J.; and Lin, Ming J., to Eastman Kodak Company. Process of preparing a tabular grain silver bromoiodide emulsion. 5,061,616, Cl. 430-569.000.

Pilar, Hans: *See—*
Chenevard, Alexis; and Pilar, Hans, 5,060,783, Cl. 198-434.000.

Pilling, Roger, to De La Rue Systems Limited. Apparatus for receiving articles by self-feeding and for conveying and dispensing such articles. 5,060,930, Cl. 271-268.000.

Pin Dot Products: *See—*
Silverman, Michael W.; Heinrich, Michael; and Jones, C. Kerry, 5,060,393, Cl. 33-512.000.

Pinnavaia, Giuseppe, to Texas Instruments Incorporated. Memory card. 5,061,845, Cl. 235-492.000.

Pinori, Massimo; Centini, Felice; and Verdini, Antonio S., to SCLAVO S.p.A. Process for the preparation of retro-inverso peptides and 1,3-dioxane-4,6-dione intermediates thereof. 5,061,811, Cl 549-274.000

Pioneer Electronic Corporation: *See—*
Chikuma, Kiyofumi; and Okamoto, Sota, 5,061,038, Cl. 359-328.000.

Pisacich, Edward D.: *See—*
Plesinger, Boris; Brown, Lynn H.; and Pisacich, Edward D., 5,061,547, Cl. 428-209.000.

Pischtschan, Alfred: *See—*
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Pitney Bowes Inc.: *See—*
Abellana, Jovito; and Dolan, Donald T., 5,060,741, Cl. 177-4.000.
Gergely, William, Jr.; and Janatka, Karel J., 5,060,838, Cl. 225-100.000.

Pittard, Fred J.; and Fultz, Jimmy D., to Slimdril International, Inc. Three-blade underreamer. 5,060,738, Cl. 175-267.000.

Pitts, Norman L.; and Sinno, Raouf R., to Mid-South Industries, Inc Ceiling-wall attachment. 5,060,429, Cl. 52-127.700.

Plant, Rex: *See—*
Plant, Rex B.; and Marton, John P., 5,060,563, Cl. 99-544.000.

Plant, Rex B.; and Marton, John P., to Plant, Rex. Apparatus for producing a vegetable product. 5,060,563, Cl. 99-544.000.

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de Graaf, Martien; Vos, Jacques; and Plantard, Dominique, 5,060,419, Cl. 47-64.000.

Plantier, Jean-Francois: *See—*
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Plasta Fiber Industries, Inc.: *See—*
Gute, Robert M., 5,061,331, Cl. 156-64.000.

Plastic Forming Company, Inc., The: *See—*
Schurman, Peter T., 5,061,417, Cl. 264-37.000.

Plastic Recovery Systems, Inc.: *See—*
Zielinski, Michael P., 5,061,735, Cl. 521-46.500

Plastofilm Industries, Inc.: *See—*
Rosten, David B.; Foos, Douglas E.; Partlow, Richard L., Jr.; and Berger, Edward M., 5,060,828, Cl. 222-142.900.

Platt, Steven G.: *See—*
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Plesinger, Boris; Brown, Lynn H.; and Pisacich, Edward D. Structure of conductive layers in multilayer substrates for minimizing blisters and delaminations. 5,061,547, Cl. 428-209.000.

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Pneumafil Corporation: *See—*
Williams, Roger D.; and Sanders, Stephen M., 5,061,303, Cl. 55-341.100

Pohjolainen, Jarmo: *See—*
Airaksinen, Pentti; Pohjolainen, Jarmo; Miettinen, Matti; Varjus, Seppo; and Leppaniemi, Reijo, 5,060,924, Cl. 271-18.000

Polasky, Ralph A.: *See—*
Hatch, Gary L.; and Polasky, Ralph A., 5,061,367, Cl. 210-137.000

Polka, John G. Axle cap for truck wheels having four, five or six locators. 5,061,014, Cl. 301-108.00R.

Poloni, Alfredo, to Danieli & C. Officine Meccaniche SpA. Rolling stand with multiple rolls supported as cantilevers for high-speed rolling. 5,060,499, Cl. 72-201.000.

Poong Jeong Industrial Co., Ltd.: *See—*
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Popejoy, Rodney: *See—*
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Portec, Inc.: *See—*
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Porter-Cable Corporation: *See—*
Kriaski, John R.; and Chateriee, Bimal K., 5,061,090, Cl. 384-537.000.

Porter, Sidney D., III; and Denny, Leroy E. Air/gas/micro partical pollution control system. 5,061,299, Cl. 55-86.000.

Portney, Valdemar; Ting, Albert C.; and Willis, Timothy R., to Allergan, Inc. Manufacture of ophthalmic lenses by excimer laser. 5,061,840, Cl. 219-121.680.

Poste, Steven D.: *See—*
Park, Eugene S.; and Poste, Steven D., 5,061,660, Cl. 501-80.000.

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Prahacs, Steven: *See—*
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Precht, Hans-Jurgen: *See—*
Beumer, Klaus; and Precht, Hans-Jurgen, 5,060,558, Cl. 99-306.000

Preis, Karl-Heinrich: *See—*
Lieberoth-Leden, Bernd; Spiegel, Guenter; Preis, Karl-Heinrich; Schaper, Uwe; and Jansen, Karlheinz, 5,060,613, Cl. 123-399.000

Prentice, Jack L.: *See—*
Boggs, Thomas L.; Prentice, Jack L.; and Zurn, Donald E., 5,060,551, Cl. 89-7.000

Prescott, Anthony D., to Microtek Medical, Inc. Ossicular prosthesis. 5,061,280, Cl. 623-10.000.

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Li, Hsin L.; Harpell, Gary A.; and Prevorsek, Dusan C., 5,061,545, Cl. 428-195.000.

Price, Rodger A.: *See—*
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Primerano, Bruno: *See—*
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Prince Corporation: *See—*
Van Order, Kim L.; Zandbergen, Todd A.; and Price, Rodger A., 5,061,005, Cl. 296-979.000.

Pritchard, Alan, to Research Engineering & Manufacturing, Inc. Thread tapping screw. 5,061,135, Cl. 411-411.000

Probasco, Max A.: *See—*
Christopher, Armand; and Probasco, Max A., 5,060,679, Cl 132-114.000

Procter & Gamble Company, The: *See—*
Goldman, Stephen A.; Horney, James C.; and Retzsch, Herbert L., 5,061,259, Cl. 604-368.000.
Kong-Chan, Josephine L. Y.; Hellyer, James A.; and Tafuri, Michael W., 5,061,503, Cl. 426-582.000.
Kong-Chan, Josephine L. Y.; Hellyer, James A.; and Tafuri, Michael W., 5,061,504, Cl. 426-582.000.
Linares, Carlos G.; and Cilley, William A., 5,061,393, Cl 252-143.000.

Prolis, Massimo; and Di Cerbo, Fulvio. Breaker press with multiple pistons particulary for urban waste-materials. 5,060,876, Cl. 241-263.000.

Protection Decoration Conditionnement Europe Sa: *See—*
Vandevoorde, Jean-Claude, 5,060,367, Cl. 29-775.000.

Proxima Corporation: *See—*
Farwell, Randall S.; Hauck, Lane T.; and Shapiro, Leonid, 5,062,001, Cl. 358-236.000.

Pruett, David M.: *See—*
Compton, Richard A.; and Pruett, David M., 5,060,788, Cl 198-831.000.

Pryor, Dale H. Fluid end for reciprocating pump. 5,061,159, Cl 417-554.000.

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Gabalda, Carlos M.; and Puaux, Bernard, 5,060,885, Cl 242-151.000.

Puckette, Thomas A., to Eastman Kodak Company. Preparation of biaryl compounds. 5,061,669, Cl. 502-167.000.

Pulichino, John V., Jr.; and Tong, Joy, to American Tourister, Inc. Soft luggage with outside pockets. 5,060,767, Cl. 190-111.000.
Pulichino, John V., Jr.: *See—*
Carpenter, Lester E.; Pulichino, John V., Jr.; and Bieber, David, 5,060,492, Cl. 70-73.000.
Pullman, Gerald S.; and Yancey, Michael J., to Weyerhaeuser Company. Method of transplanting a container grown plant. 5,060,418, Cl. 47-58.000.
Pulp and Paper Research Institute of Canada: *See—*
Azarniouch, Mahmoud K.; and Prahacs, Steven, 5,061,343, Cl. 162-16.000.
Purcell, Alexander M., to Summagraphics Corporation Digitizer stylus with Z-axis side pressure control. 5,061,828, Cl. 178-18.000.
Puritan-Bennett Corporate: *See—*
Aylsworth, Alonzo C., 5,060,514, Cl. 73-24.010.
Putter, Warner J., to Wavin, BV. Plastic pipe comprising an outer corrugated pipe and a smooth inner wall. 5,060,696, Cl. 138-98.000.
Q-Dot, Inc.: *See—*
Linnenbrink, Thomas E.; and Gaalema, Stephen D., 5,061,927, Cl. 341-138.000.
Quebec and Ontario Paper Company Ltd.: *See—*
Ferland, Carl G.; and Peters, Henry J., 5,061,370, Cl. 210-194.000
Queen, William D.; and Kelley, Eugene P., to United States of America, Navy. Method of making integrated circuit to package electrical connections after encapsulation with an organic polymer. 5,061,657, Cl. 437-219.000.
Ques Industries, Inc.: *See—*
Meng, Quentin J., 5,061,395, Cl. 252-173.000.
Quinard, Fabrice M.: *See—*
Mantopoulos, Thierry G.; and Quinard, Fabrice M., 5,061,904, Cl. 331-14.000.
Qureshi, Javaid I.; and Anderson, Michael E., Sr., to Westinghouse Electric Corp. Method for refurbishing nozzle block vanes of a steam turbine. 5,060,842, Cl. 228-119.000.
R. A. Jones & Co. Inc.: *See—*
Greenwell, Joseph D.; and Gilmore, Christopher B., 5,060,450, Cl. 53-113.000.
R. F. Monolithics, Inc.: *See—*
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R. J. Reynolds Tobacco Company: *See—*
Clearman, Jack F.; Gentry, Thomas L.; and Shelar, Gary R., 5,060,666, Cl. 131-194.000.
Lehman, Richard L., 5,060,673, Cl. 131-359.000.
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R. R. Donnelley & Sons Company: *See—*
Allsopp, Mary F.; and Auksi, Gunnar, 5,061,138, Cl. 412-4.000.
Rademachers, Jakob: *See—*
De Cleyn, Rene ; Thometzek, Peter; and Rademachers, Jakob, 5,061,473, Cl. 423-610.000.
Radewonuk, E. Richard: *See—*
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Steur, Gerhard; and Sauer, Gunther, 5,060,635, Cl. 128-69.000.

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Schmidt, Robert R.: *See—*
Findeisen, Kurt; Lindig, Markus; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; and Strang, Harry, 5,061,311, Cl. 71-92.000.
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Schmitt, John C., to Harris Corporation. Trigram-based method of language identification. 5,062,143, Cl. 382-36.000.

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DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Kutner, Andrzej, 5,061,699, Cl. 514-167.000

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Scholkens, Bernward: *See—*
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Schollenberger, Marlin R.: *See—*
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Buysch, Hans-Josef; Schon, Norbert; Eichenauer, Herbert; Ott, Karl-Heinz; and Pischtschan, Alfred, 5,061,752, Cl. 525-64.000.

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Ciolek, Sally; and Krashkevich, David, 5,061,659, Cl. 501-64.000.

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Zahn, Rudolf; Schroeder, Hans W.; Borgwardt, Christian; Braig, Albert; Helwig, Gunter; Boukamp, Joachim; Bender, Oswald; Lin, Chung-chi; and Scherber, Werner, 5,061,938, Cl. 343-700.0MS.

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Oram, James W.; and Schulman, Alan, 5,061,898, Cl. 324-427.000.

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Krippl, Kurt; and Schulte, Klaus, 5,061,453, Cl. 422-106.000.

Schultz, Elmer G.; Godfrey, Robert E.; and Chapman, Thomas D., to Moore Business Forms, Inc. Method and apparatus for business forms compacting. 5,061,233, Cl. 493-410.000.

Schultz, Francis R.: *See—*
Johnson, James W.; Schultz, Francis R.; Rhodes, Wayne A.; and Miller, Roy W., 5,060,579, Cl. 105-282.100.

Schulze, Gisbert: *See—*
Girmscheid, Paul, deceased; Stuhler, Helmut; and Schulze, Gisbert, 5,061,421, Cl. 264-63.000.

Schulze, Wolfram: *See—*
Sadlack, Werner; Vogt, Siegfried; Upmeier, Egon; and Schulze, Wolfram, 5,060,588, Cl. 112-265.200.

Schupp, Hans: *See—*
Koch, Horst; Schupp, Hans; and Schwalm, Reinhold, 5,061,602, Cl. 430-281.000

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Taggart, Thomas E.; Schuster, Michael A.; and Schellhamer, Alan J., 5,061,346, Cl. 162-175.000

Schutz, Erwin: *See—*
Cully, Jan; Schutz, Erwin; and Vollbrecht, Heinz-Rudiger, 5,061,502, Cl. 426-422.000.
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Verweij, Hendrik; Offermans, Paulus H. G.; Krebbers, Andreas P. L.; and Schuurman, Arend, 5,060,406, Cl. 38-77.830.

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Koch, Horst; Schupp, Hans; and Schwalm, Reinhold, 5,061,602, Cl 430-281.000.

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Beard, Lloyd R.; and Schwartze, John A., 5,062,022, Cl. 361-335.000.

Schwarz, Michael: *See—*
Althaus, Wolfgang; and Schwarz, Michael, 5,060,377, Cl. 30-50.000.

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Pauli, Ingo; Kleinschmit, Peter; and Schwarz, Rudolf, 5,061,474, Cl. 423-625.000.

Schworer, Artur, to Peri GmbH. Telescopic shuttering support 5,060,903, Cl. 248-354.300.

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Guillaumet, Gerald; Flouzat, Christine; and Bonnet, Jacqueline, 5,061,713, Cl. 514-302.000.

SCLAVO S.p.A.: *See—*
Pinori, Massimo; Centini, Felice; and Verdini, Antonio S., 5,061,811, Cl. 549-274.000.

Sciolastico, Carlo: *See—*
Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Sciolastico, Carlo, 5,061,725, Cl. 514-424.000

Scotsman Group, Inc.: *See—*
Bush, Vincent N.; and Griswold, Gregory L., 5,060,484, Cl. 62-137.000

Scott, Michael: *See—*
Nicholls, Simon T.; and Scott, Michael, 5,061,031, Cl. 385-15.000

Scott Paper Company: *See—*
Bloch, Nathan D.; and O'Brien, Edward J., 5,061,232, Cl. 493-395.000

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Seaberry Landscape, Inc.: *See—*
Rohde, George A., 5,060,416, Cl. 47-23.000

Seagate Technology, Inc.: *See—*
Strom, Richard A.; Crane, Peter; and Chapin, Robert E., 5,062,017, Cl. 360-103.000.
Yaeger, John R., 5,062,018, Cl. 360-104.000

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Seaton, Russell, to Cooper Industries, Inc. Location of tubular members. 5,060,985, Cl. 285-141.000

Sedlmair, Gerhard, to Marker Deutschland GmbH. Ski brakes for interlocking skis. 5,060,966, Cl. 280-605.000.

Segaram, Para K.: *See—*
Vinn, Charles L.; and Segaram, Para K., 5,061,900, Cl. 330-9.000.

Segati, Umbert D. I., to Colgate-Palmolive Company. Low profile anti-drip dosing cap and spout for liquid containers. 5,060,827, Cl. 222-109.000.

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Beissinger, Richard L.; Wasan, Darsh T.; Sehgal, Lahksman R.; and Rosen, Arthur L., 5,061,688, Cl. 514-6.000.

Sei, Renpei: *See—*
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Seiko Epson Corporation: *See—*
Asai, Naoki; Minowa, Masahiro; and Morozumi, Choji, 5,061,095, Cl. 400-605.000.
Horikawa, Mitsuhiro; Ito, Hiroshi; Ide, Tsugio; Yanagisawa, Michio; Shimoda, Tatsuya; and Akioka, Koji, 5,062,095, Cl. 369-44.210.
Obikawa, Tsuyoshi, 5,061,400, Cl. 252-299.630
Yamaguchi, Yoshitaka; Fukushima, Hitoshi; Iwamoto, Kohei; and Takei, Katsumori, 5,061,093, Cl. 400-120.000

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Verhoeven, Robertus J. M.; Beijersbergen van Henegouwen, Cornelis M.; Elders, Gerardus I. C.; and Ouwerkerk, Cornelis, 5,062,100, Cl. 369-291.000.

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Aoki, Ken'ichi; Seino, Yoshikazu; Saito, Teruhiro; and Tokoro, Ken'ichi, 5,061,441, Cl. 420-109.000.

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Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; and Hirata, Kazuto, 5,061,687, Cl. 505-1.000.

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Seki, Ichiro; Kano, Akihiro; Hasegawa, Toshiki; Abe, Minoru; and Isa, Isao, to Japan Carlit Co., Ltd., The. Process for producing an improved alumina-zirconia composite sintered material. 5,061,665, Cl. 501-105.000.

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Sekine, Akio: *See—*
Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Sekine, Akio; and Yokoyama, Miyuki, 5,061,536, Cl. 428-64.000

Sekine, Chogo; and Abe, Takeshi, to Nihon Musen Kabushiki Kaisha Three-dimensional display radar. 5,061,935, Cl. 342-180.000

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Farina, Alfonso; and Morabito, Carlo F., 5,061,931, Cl. 342-25.000

Semiconductor Energy Laboratory Co., Ltd.: *See—*
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Edenbaum, Martin; Frisch, Kurt C.; Sendijarevic, Aisa; and Wong, Shaio-wen, 5,061,555, Cl. 428-253.000.

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Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., 5,060,505, Cl. 73-1.00G.

Seo, Iwao: *See—*
Kishimoto, Manabu; Seo, Iwao; and Fujimoto, Yukiko, 5,061,768, Cl. 526-245.000

Sencol Group Limited: *See—*
Hamilton, John; and Dickinson, Peter, 5,061,603, Cl. 430-287.000

Service, Robert L.: *See—*
Hull, Harold L.; and Service, Robert L., 5,061,945, Cl. 343-840.000

Seto, Tsuneo; Hatanaka, Atsushi; Miura, Hironori; and Baba, Hideo, to Kawasaki Steel Corporation. Section steel straightener with adjustable roller width. 5,060,498, Cl. 72-164.000.

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Tanaka, Shigeru; Setoyama, Eiji; Oikawa, Shinzou; and Yamamura, Sigeki, 5,061,356, Cl. 204-192.120.

Seubert, Ronald C.: *See—*
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Seufer, Lee E.: *See—*
Rousculp, Eric R.; Seufer, Lee E.; and Samodell, Ralph M., 5,060,882, Cl. 242-99.000

Severns, David W.; Tompson, Brian; Lindstrom, Paul R.; and Carlson, David K., to Applied Materials, Inc. Robotically loaded epitaxial deposition apparatus. 5,061,143, Cl. 414-222.000.

Sevilleja, Jose: *See—*
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Sewell Plastics, Inc.: *See—*
Alberghini, Alfred C.; Brunson, David A.; and Lynn, Stephen R., 5,060,453, Cl. 53-440.000.

SGS-Thomson Microelectronics S.r.l.: *See—*
Nicollini, Germano; and Castello, Rinaldo, 5,061,901, Cl 330-253.000

Shachat, Norman, to Henkel Corporation. Autodeposition process with low volatile organic chemical emissions. 5,061,523, Cl. 427-377.000.

Shafer, Eric W.: *See—*
Casey, William W.; Leisey, Clarence E., III; Shafer, Eric W.; and Daniels, Francis I., 5,061,318, Cl. 106-705.000.

Shakespeare Company: *See—*
Parsons, James H.; McLain, Philippe H.; Boozer, John F., III; and Lewis, John R., Jr., 5,060,437, Cl. 52-298.000.

Shandelman, Richard A.: *See—*
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Shao, Hui-Li: *See—*
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Shapiro, Leonid: *See—*
Farwell, Randall S.; Hauck, Lane T.; and Shapiro, Leonid, 5,062,001, Cl. 358-236.000.

Shapiro, Stanley S.: *See—*
Bryce, Graeme F.; and Shapiro, Stanley S., 5,061,733, Cl. 514-708.000

Shargay, Cathleen A.: *See—*
Hsieh, C. Richard; King, Desmond F.; Pettersen, Frederick A.; and Shargay, Cathleen A., 5,061,457, Cl. 422-140.000

Sharp, Bernard C., to Epicor Industries, Inc. Self-adjusting mounting assembly for vehicle outside rear-view mirror. 5,060,905, Cl 248-479.000

Sharp Kabushiki Kaisha: *See—*
Tanaka, Hideaki; Morita, Toshiaki; Kitamura, Yoshihiro; and Nakamura, Yasuhisa, 5,062,047, Cl. 364-419.000.

Shasha, Baruch S.; and McGuire, Michael R., to United States of America, Agriculture. Adherent, autoencapsulating spray formulations of biocontrol agents. 5,061,697, Cl. 514-60.000.

Shaw, Daniel C., to Bauer Industries, Inc. Modular system for automatic operation of a water faucet. 5,060,323, Cl. 4-623.000

Shaw, Stephen K.; Allen, Calvin C.; and Anastase, Constantin, to White Consolidated Industries, Inc. Rotary dyeing system. 5,060,490, Cl. 68-27.000.

Shaw, William L. Food management table. 5,060,580, Cl. 108-25.000.

Shawcross, James P.: *See—*
Lathrop, David R.; and Shawcross, James P., 5,060,901, Cl. 248-343.000

Shea, Lawrence S.: *See—*
Charles, Jerry T.; Hagewood, John F.; and Shea, Lawrence S., 5,061,422, Cl. 264-103.000

Shelar, Gary R.: *See—*
Clearman, Jack F.; Gentry, Thomas L.; and Shelar, Gary R., 5,060,666, Cl. 131-194.000.

Shell Oil Company: *See—*
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Glandt, Carlos A.; Vinegar, Harold J.; and Gardner, John W., 5,060,726, Cl. 166-248.000.
Hoxmeier, Ronald J.; and Slaugh, Lynn H., 5,061,668, Cl. 502-117.000
Muijs, Herman M.; and Schaik, Jan V., 5,061,386, Cl. 252-8.551.
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Shell Research Limited: *See—*
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Shepherd, A. P.; and Steinke, John M., to Board of Regents, The University of Texas System. Capillary tube hemoglobinometer and oximeter. 5,061,632, Cl. 436-66.000

Shepherd, Frank J.: *See—*
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Shibahara, Seiji: *See—*
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Shibata, Shigehito: *See—*
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Shibayama, Shigeru: *See—*
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Shibusawa, Mitsuo; Yamakami, Tsutomu; Arai, Atsushi; and Kawano, Hiroshi, to Ricoh Company, Ltd. Copying paper processing apparatus. 5,060,922, Cl. 270-53.000

Shibuya, Takehiro: *See—*
Matano, Takahiro; Hashibe, Yoshio; Ninomiya, Masayuki; and Shibuya, Takehiro, 5,061,307, Cl. 65-18.400.

Shie, Tsai-Fu, to Luchu Shinyee Works Co., Ltd. Method of producing wing nuts. 5,060,331, Cl. 10-86.00W.

Shields, Jack W. Intravenous needle sheathing device. 5,061,250, Cl. 604-198.000

Shiels, William E. Intussusception air reduction system. 5,061,239, Cl. 604-26.000

Shigemoto, Ichiro: *See—*
Kawakami, Yoshiyuki; Fukui, Masahiro; Shigemoto, Ichiro; and Iwasaki, Chie, 5,062,054, Cl. 364-491.000

Shikoku Chemicals Corporation: *See—*
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Shima, Yoshiko: *See—*
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Shimada, Tetsuya: *See—*
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Shimanaka, Shigeki, to Nissan Motor Co., Ltd. Shift initiation detection system for automatic automotive transmission. 5,060,541, Cl. 74-866.000.

Shimano Industrial Co., Ltd.: *See—*
Nagano, Masashi, 5,060,537, Cl. 74-594.600.

Shimazaki, Hiroaki: *See—*
Nakatsu, Etsuto; Shimazaki, Hiroaki; Matsuta, Toyohiko; Shimotashiro, Masafumi; and Kobayashi, Masaaki, 5,062,007, Cl. 360-29.000.

Shimizu, Atsuko, to Casio Computer Co., Ltd. Length measuring apparatus. 5,062,063, Cl. 364-562.000.

Shimizu, Chiyuki, to Toshiba Silicone Co., Ltd. Room temperature curing compositions. 5,061,739, Cl. 523-213.000.

Shimizu, Kazunao; Mikamo, Masahiro; and Yamagishi, Takeshi, to Nippon Denkai, Co. Ltd. Multilayer material having a resistance layer formed on an electrically conductive layer and a multilayer board for a printed circuit board which has a resistance layer. 5,061,550, Cl. 428-209.000.

Shimizu, Masahiro; and Tsukamoto, Katsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit having oxide regions with different thickness. 5,061,654, Cl. 437-70.000.

Shimizu, Osamu; and Yoshida, Satoshi, to Fuji Photo Film Co., Ltd. Thin film magnetic head. 5,061,576, Cl. 428-694.000.

Shimizu, Takashi: *See—*
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Shimohigashi, Yasuyuki: *See—*
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Shimomura, Takeshi; Yamaguchi, Shuichiro; Suzuki, Takanao; and Oyama, Noboru, to Terumo Kabushiki Kaisha. FET electrode with carbon gate. 5,061,976, Cl. 357-25.000.

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Nakatsu, Etsuto; Shimazaki, Hiroaki; Matsuta, Toyohiko; Shimotashiro, Masafumi; and Kobayashi, Masaaki, 5,062,007, Cl. 360-29.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
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Ryuo, Toshihiko; Makikawa, Shinji; and Mori, Tatsuo, 5,061,855, Cl. 250-361.00R.
Tajima, Shigenobu; Ishii, Masatoshi; and Kimura, Yuji, 5,061,560, Cl. 428-357.000
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Shinbo, Yukio: *See—*
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Shindengen Electric Manufacturing Co., Ltd: *See—*
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Shindo, Seiichi: *See—*
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Shinn, Ronald R.: *See—*
Lowder, James E.; Shinn, Ronald R.; and Baker, John L., 5,061,149, Cl. 414-687.000.

Shinnar, Reuel: *See—*
Avidan, Amos A.; and Shinnar, Reuel, 5,060,719, Cl. 165-104.130.

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Shiratori, Koji, 5,061,091, Cl. 384-539.000.

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Murakami, Tadaki; and Shirazawa, Takasi, 5,061,308, Cl. 65-18.400.

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Hamaguchi, Masami; Yanagihara, Hiromu; Hiraoka, Osamu; and Takahashi, Osamu, 5,061,140, Cl. 413-6.000.

Shively, John E., to City of Hope. Protein or peptide sequencing method. 5,061,635, Cl. 436-89.000.

Shochat, Dan; Hansen, Hans J.; and Wu, Robert S., to Immunomedics, Inc. Method for radiolabeling proteins. 5,061,641, Cl. 436-545.000.

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Haneda, Satoshi; Shoji, Hisashi; Hiratsuka, Seiichiro; Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, 5,061,966, Cl. 355-297.000.

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Ohneda, Noboru; Ushioda, Shunta; Arima, Haruo; Hashimoto, Ichiro; Kaneko, Denziro; Sugiyama, Kazuo; Fukazawa, Tsuguo; Tachi, Teruo; and Mukasa, Takashi, 5,060,500, Cl. 72-287.000.

Showalter, Howard D. H.; and Winters, Roy T., to Warner-Lambert Company. 4-bromo-4'-demethylepipodophyllotoxin derivatives. 5,061,791, Cl. 536-17.400.

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Goodacre, Brita C.; Pembroke, Andrew G.; and Shukla, Dipak P., 5,061,320, Cl. 127-30.000.

Shuler, Donald K., to Linvatec Corporation. Surgical cutting instrument with titanium nitride coating on an inner tubular member. 5,061,238, Cl. 604-22.000.

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Schaefer, Thomas J.; and Shur, Robert D., 5,062,067, Cl. 364-578.000.

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Macholdt, Hans-Tobias; and Sieber, Alexander, 5,061,585, Cl. 430-106.000.

Sieber, Joseph: *See—*
Knopf, Ulrich C.; and Sieber, Joseph, 5,061,630, Cl. 435-290.000.

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Freller, Helmut; and Schack, Peter, 5,061,684, Cl. 545-1.000.
Schmid, Erich, 5,062,138, Cl. 381-68.700.

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Lee, Carlos, 5,060,983, Cl. 285-39.000.

Siems, Wolfgang; and Radzio, Andrzej, to Korber AG. Method of and apparatus for making streams containing fibrous materials of the tobacco processing industry. 5,060,664, Cl. 131-84.100

Siffrin, Horst; and Michaely, Werner, to Walter Becker GmbH. Material moving apparatus. 5,060,405, Cl. 37-117.000.

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Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Sclolastico, Carlo, 5,061,725, Cl. 514-424.000

Sigurdsson, Per-Arne, to Hoganas AB. Device for rotatably mounting a machine element. 5,061,088, Cl. 384-535.000.

Silver, Joseph M. Beet tare-taking apparatus. 5,060,528, Cl. 73-863.520

Silverman, Michael W.; Heinrich, Michael; and Jones, C. Kerry, to Pin Dot Products. Apparatus for taking body measurements. 5,060,393, Cl. 33-512.000.

Silvestri, George J., Jr., to Westinghouse Electric Corp. Method of determining the enthalpy and moisture content of wet steam 5,061,431, Cl. 376-252.000.

Silvestri, Victor J.: *See—*
Bendernagel, Robert E.; Kim, Kyong-Min; Silvestri, Victor J.; Smetana, Pavel; Strudwick, Thomas H.; and White, William H., 5,061,652, Cl. 437-64.000.

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Simms, Russell A.: *See—*
Bien, Alfred A.; Niemitalo, Gerald T.; Simms, Russell A.; Stewart, Robert L.; Michael, Riad E.; Christenson, Alfred W.; and Keller, Herbert J., Jr., 5,061,108, Cl. 403-24.000

Simon, Jaime; Cooper, Lance A.; McMillan, Kenneth; and Wilson, David A., to Dow Chemical Company, The. Radiolabeled colloid compositions and method for preparing same. 5,061,476, Cl. 424-1.100.

Simon, Terry L., to Newell Co. Infinitely sizable solid slat mini blind. 5,060,709, Cl. 160-168.100.

Simonsen, Harold L.: *See—*
Kingston, Samuel C.; Barham, Steven T.; and Simonsen, Harold L., 5,062,071, Cl. 364-733.000.

Simpson, William E. Torsionally adjustable vehicle wing for uneven application of negative lift to the wheels. 5,061,007, Cl. 296-180.500

Singh, Jasbir; Barnert, Heiko; and Hohn, Hans, to Forschungszentrum Julich GmbH. High-temperature reactor. 5,061,435, Cl. 376-298.000.

Sinno, Raouf R.: *See—*
Pitts, Norman L.; and Sinno, Raouf R., 5,060,429, Cl. 52-127.700

Sirand, Joseph, to Centre d'Etude et de Realisation d'Equipements et de Materiel (C.E.R.E.M.). Heating apparatus of the infrared type 5,060,629, Cl. 126-92.00B.

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Kostlan, Catherine R.; and Sircar, Jagadish C., 5,061,707, Cl. 514-258.000.

Siryj, Bohdan W.; and York, Michael E., to General Electric Company Jukebox having rotatable disk stack. 5,062,092, Cl. 369-38.000

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Marcus, Donna, 5,060,639, Cl. 128-78.000.

Sivan, Richard D.; and Hayden, James D., to Motorola, Inc. Method for forming a self-aligned bipolar transistor. 5,061,646, Cl. 437-31.000

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Drabel, Jorgen, 5,061,225, Cl. 474-95.000.

Sklut, Robert L.: *See—*
Bunker, Keith G.; Sklut, Robert L.; and Miller, David E., 5,061,958, Cl. 355-209.000.

Skog, Lars; Nordling, Tommy; and Svenke, Per-Ola, to Saab Automobile Aktiebolag. Arrangement for controlling a hydraulically operated friction disc clutch with diaphragm spring. 5,060,776, Cl. 192-85.00R.

SKW Trostberg Aktiengesellschaft: *See—*
Cully, Jan; Schutz, Erwin; and Vollbrecht, Heinz-Rudiger, 5,061,502, Cl. 426-422.000.
Cully, Jan; Vollbrecht, Heinz-Rudiger; and Schutz, Erwin, 5,061,505, Cl. 426-601.000.

Slaugh, Lynn H.: *See—*
Hoxmeier, Ronald J.; and Slaugh, Lynn H., 5,061,668, Cl. 502-117.000.

Slimdril International, Inc.: *See—*
Pittard, Fred J.; and Fultz, Jimmy D., 5,060,738, Cl. 175-267.000.

Small, Vernon R., Jr.; Liston, Thomas V.; and Onopchenko, Anatoli, to Chevron Research and Technology Company. Diethylamine complexes of borated alkyl catechols and lubricating oil compositions containing the same. 5,061,390, Cl. 252-49.600.

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Lane, Barton G.; Sawin, Herbert H.; and Smatlak, Donna L., 5,061,838, Cl. 219-121.590.

Smetana, Pavel: *See—*
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Smith, Charlene M.: *See—*
Farcasiu, Malvina; and Smith, Charlene M., 5,061,363, Cl. 208-419.000.

Smith, David L.: *See—*
Smith, Mark A.; Smith, David L.; and Lindberg, Tom B., 5,060,990, Cl. 292-91.000.

Smith, Elizabeth M.: *See—*
Haslanger, Martin F.; Neustadt, Bernard R.; and Smith, Elizabeth M., 5,061,710, Cl. 514-266.000.

Smith International, Inc.: *See—*
Neff, Michael C., 5,060,736, Cl. 175-74.000.

Smith Kline & French Laboratories, Ltd.: *See—*
Emmett, John Colin; and Leeson, Paul D., 5,061,798, Cl. 544-239.000.

Smith, Mark A.; Smith, David L.; and Lindberg, Tom B., to Hewlett-Packard Company. Multi-stage door snap. 5,060,990, Cl. 292-91.000.

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Smith, Robert E.; and Berkowitz, Ami E. Method and reaction for sustaining high energy reactions. 5,061,354, Cl. 204-164.000.

Smith, Roger R. Proportioning valve for hydraulic systems. 5,060,693, Cl. 137-625.170.

Smith, Terrance P.: *See—*
Jongewaard, Susan K.; Leichter, Louis M.; Smith, Terrance P.; and Zaklika, Krzysztof A., 5,061,678, Cl. 503-227.000.

Smith, Ulysses: *See—*
Counts, Mary E.; LaRoy, Bernard C.; Losee, D. Bruce, Jr.; Morgan, Constance H.; Smith, Ulysses; Sprinkel, F. Murphy, Jr.; and Utsch, Francis V., 5,060,671, Cl. 131-329.000.

Smith, W. Novis: *See—*
Bolton, Nelson; and Smith, W. Novis, 5,061,748, Cl. 524-827.000

Smith & Wesson Corp.: *See—*
Sater, Ghaleb A.; Constant, Robert L.; and Lee, W. David, 5,060,555, Cl. 89-196.000.

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Johnson, Walter A. L.; Faieta, Baldo A.; Jellinek, Herbert D.; and Smith, Z. Erol, III, 5,060,980, Cl. 283-70.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Dosako, Shunichi; Nishiya, Tsuguaki; and Deya, Eiki, 5,061,622, Cl. 435-68.100.

Snow, Donald B.: *See—*
Stewart, John P.; Seubert, Ronald C.; and Snow, Donald B., 5,060,371, Cl. 29-850.000.

Snow, Larry D.: *See—*
Brown, J. Page; Cartwright, William F.; and Snow, Larry D., 5,060,674, Cl. 131-365.000.

Snyder, David A.: *See—*
Zafred, Paolo R.; Snyder, David A.; Gunter, John B.; and Ritz, William C., 5,061,176, Cl. 432-5.000.

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Soane, David S., 5,061,336, Cl. 156-245.000.

Societe Anonyme de Droit Francais Dite : Ets Beal: *See—*
Beal, Michel, 5,060,549, Cl. 87-6.000.

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Beckers, Michel F. M. J. A. D., 5,060,347, Cl. 19-300.000.

Societe Europeenne de Propulsion: *See—*
Vives, Michel, 5,061,113, Cl. 403-408.100.

Societe Generale pour les Techniques Nouvelles: *See—*
Tucoulat, Daniel, 5,060,546, Cl. 83-19.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Marey, Daniel J., 5,061,152, Cl. 415-150.000.

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Sainct, Herve ; Maute, Patrick; and Plantier, Jean-Francois, 5,062,051, Cl. 364-459.000.
Vezain, Gerard; Long, Christian; and Marchal, Jean, 5,060,888, Cl. 244-158.00R.

Societe Parisienne d'Impression et de Cartonnage (SPIC): *See—*
Bodet, Jean A.; and Kuhlmann, Pierre-Denis, 5,060,800, Cl. 206-512.000.

Soerens, Dave A.: *See—*
Chen, Franklin M. C.; Linker, Paul M.; Van Bemmel, William R.; and Soerens, Dave A., 5,061,262, Cl. 604-389.000.

Sofy, Hugh M. Mail post. 5,060,908, Cl. 248-545.000.

Sogabe, Seiji: *See—*
Hata, Hajime; Sogabe, Seiji; and Oka, Keizo, 5,061,468, Cl. 423-279.000.

Sogawa, Hiroyuki: *See—*
Inanaga, Kiyofumi; Sogawa, Hiroyuki; and Tsukamoto, Shiro, 5,062,140, Cl. 381-199.000.

Sohier, Philippe: *See—*
Brochot, Jean-Pierre; Sohier, Philippe; and Ceccaroli, Bruno, 5,061,567, Cl. 428-428.000.

Solar Turbines Incorporated: *See—*
Darragh, Charles T., 5,060,721, Cl. 165-165.000.

Solex Research Corporation of Japan: *See—*
Watanabe, Morio; and Sei, Renpei, 5,061,460, Cl. 423-70.000.

Solo, Alan J., to Valid Technologies, Ltd. Access card provided with coded security means. 5,061,844, Cl. 235-490.000.

Solomon, Donald D.; Taller, Robert A.; and Williamitis, Victor A., to Becton, Dickinson and Company. Blood compatible, lubricious article and composition and method therefor. 5,061,738, Cl. 523-100.000

Solomon, Donald D.: *See—*
Karakelle, Mutlu; and Solomon, Donald D., 5,061,254, Cl. 604-265.000

Soma, Toshio: *See—*
Tomioka, Yoshio; Soma, Toshio; Takano, Kengo; and Kobayashi, Mikio, 5,060,594, Cl. 118-666.000.

Somar Corporation: *See—*
Ogitani, Osamu; Shimizu, Takashi; Fujii, Ryuichi; Kawashima, Masao; Kobayashi, Tuyoshi; and Akutagawa, Ichiro, 5,061,744, Cl. 523-461.000

Someno, Noboru: *See—*
Yasuda, Hiroshi; and Someno, Noboru, 5,062,132, Cl. 379-61.000

Somfy: *See—*
Dominique, Jacquel, 5,062,032, Cl. 364-131.000.

Sommer, Holger T., to Pacific Scientific Company. Particle contamination detection in fluids through the external section of a laser. 5,061,065, Cl. 356-246.000.

Sonderegger, Bruno: *See—*
Schlapfer, Hans-Walter; Sonderegger, Bruno; and Straub, Werner, 5,061,573, Cl. 428-614.000.

Song, Ju O.: *See—*
Park, Jung O.; Kim, Myung J.; and Song, Ju O., 5,061,774, Cl. 528-26.000

Song, Sung W.: *See—*
Kim, Un Y.; Kang, Yong S.; Kim, Jae J.; Song, Sung W.; and Park, Hyun C., 5,061,301, Cl. 55-158.000.

Sonne, Vesa: *See—*
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Sony Corporation: *See—*
—Inanaga, Kiyofumi; Sogawa, Hiroyuki; and Tsukamoto, Shiro, 5,062,140, Cl. 381-199.000.
—Iwatani, Mitsuo; Kamoda, Hitoshi; Mikuriya, Masatoshi; Kashiyama, Tadao; and Kajino, Yoshio, 5,061,099, Cl. 400-625.000.
—Saito, Etsuro, 5,062,010, Cl. 360-35.100.
—Yasuda, Hiroshi; and Someno, Noboru, 5,062,132, Cl. 379-61.000.

Sooch, Navdeep S.; Kerth, Donald A.; Swanson, Eric J.; and Sugimoto, Tetsurou, to Crystal Semiconductor Corporation. Phase equalization system for a digital-to-analog converter utilizing separate digital and analog sections. 5,061,925, Cl. 341-120.000.

Sorensen, Emil A. Pressure relief valve for pressure equalization between a closed space and the surrounding atmosphere. 5,060,688, Cl. 137-471.000.

Sorori, Tadahiro: *See—*
Imai, Masanori; and Sorori, Tadahiro, 5,061,592, Cl. 430-167.000

Sotralentz S. A.: *See—*
Wendling, Bruno; and Hamm, Andre, 5,060,815, Cl. 220-401.000.

Soubliere, Marc P.; and Foster, Edward J., to Northern Telecom Limited. Telephone terminal bases. 5,061,023, Cl. 312-328.000.

Sowards, Norman K.; and Murphy, Michael L., to Energy Products of Idaho. Fluidized bed combustion. 5,060,584, Cl. 110-245.000.

Spalding & Evenflo Companies, Inc.: *See—*
Bunger, Donald J.; and Stiefel, Joseph F., 5,060,953, Cl. 273-232.000
Janes, Richard, 5,060,944, Cl. 273-73.00R.

Sparer, Ronald M.; and Werle, Dale P., to Cincinnati Milacron, Inc. Logic controlled plastic molding machine with programmable operator interface. 5,062,052, Cl. 364-473.000.

Sparrow, Timothy H., to YKK Corporation. Pre-set regulator assembly. 5,060,690, Cl. 137-540.000

Speer, Lawrence L. Brush-on finish for footwear and similar articles. 5,061,517, Cl. 427-140.000.

Spehr, Rainer: *See—*
Frosien, Jurgen; and Spehr, Rainer, 5,061,856, Cl. 250-397.000.

Spiegel, Guenter: *See—*
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Spielberger, Richard K., to Honeywell Inc. Radial solution to chip carrier pitch deviation. 5,061,822, Cl. 174-52.400.

Spohn, William P.; and Hickox, Richard M., to Bacharach, Inc. Test kit for gas detectors. 5,060,503, Cl. 73-1.00G.

Spranger, Douglas M.: *See—*
Rich, Michael; Mulhauser, Paul; and Spranger, Douglas M., 5,060,643, Cl. 128-200.230.

Springall, Oliver M. Sailing apparatus. 5,060,590, Cl. 114-91.000.

Sprinkel, F. Murphy, Jr.: *See—*
Counts, Mary E.; LaRoy, Bernard C.; Losee, D. Bruce, Jr.; Morgan, Constance H.; Smith, Ulysses; Sprinkel, F. Murphy, Jr.; and Utsch, Francis V., 5,060,671, Cl. 131-329.000.

Spruit, Johannes H. M.: *See—*
Vriens, Leendert; Spruit, Johannes H. M.; and Rijpers, Johannes C. N., 5,061,993, Cl. 358-64.000.

Sputtered Films, Inc.: *See—*
Clarke, Peter J., 5,061,360, Cl. 204-298.180.

Squire, John S. Disk file servo loop with improved track settling. 5,062,023, Cl. 360-78.040.

Squires, Stephen L., to Dwyer Instruments, Inc. Field settable differential pressure switch assembly for low fluid pressure applications. 5,061,832, Cl. 200-83.00J.

SRI International: *See—*
Narang, Subhash C.; and MacDonald, Digby D., 5,061,581, Cl. 429-192.000.

Stachura, Joseph F.: *See—*
Dornes, Bryan J.; Schollenberger, Marlin R.; and Stachura, Joseph F., 5,060,360, Cl. 29-281.500.

Stackhouse, Donald C.: *See—*
Pace, Loy D.; Stackhouse, Donald C.; Jones, Earl W.; and Zimpfer, Dennis S., 5,061,153, Cl. 416-46.000

Stahl, Zeev, to Abraham, Moshe. Screw-thread repair tool. 5,060,330, Cl. 10-1.00B.

Stanczyk, Martin: *See—*
Trezek, George; Stanczyk, Martin; and Grubbs, Michael, 5,060,870, Cl. 241-19.000.

Stanek, Terrence L.; Brant, Ronald G.; and Townsend, Donald L., to Emerson Electric Co. Constant humidity evaporative wicking filter humidifier. 5,061,405, Cl. 261-26.000.

Stanford, Robert G.: *See—*
Wollaber, Bruce A.; and Stanford, Robert G., 5,060,720, Cl. 165-122.000.

Stangle, Gregory C.: *See—*
Aksay, Ilhan A.; Han, Chan; Maupin, Gary D.; Martin, Corrie B.; Kurosky, Randal P.; and Stangle, Gregory C., 5,061,682, Cl. 505-1.000.

Stanic, Miodrag. Shut-off valve for fluids. 5,060,909, Cl. 251-81.000

Star, Roger D.; and Strauser, Daniel P., to Elgin Sweeper Company. Street sweeper. 5,060,334, Cl. 15-84.000.

Starke, David E.: *See—*
Dixon, Tony L.; Starke, David E.; Piacenti, Frank; and Brown, Robert W., Jr., 5,061,136, Cl. 411-412.000.

State of Israel Ministry of Defence, Rafael Armament Development Authority, The: *See—*
Aharon, Oren, 5,060,554, Cl. 89-41.190.

State University of New York: *See—*
Ruckenstein, Eli; and Park, Jun S., 5,061,767, Cl. 526-219.200.

Steele, Alexis P., Jr., to J.C. Steele & Sons, Inc. Replaceable pug mill blade. 5,061,082, Cl. 366-325.000.

Steelman, Michael L.: *See—*
Ruffin, Paul B.; Steelman, Michael L.; Corbett, Kenneth A.; and Mandy, Charles A., Jr., 5,060,593, Cl. 118-65.000

Steers, Michel: *See—*
Hazan, Jean-Pierre; Steers, Michel; Delmas, Gilles; and Nagel, Jean-Louis, 5,061,847, Cl. 250-227.170.

Stegman, David A.: *See—*
Parton, Richard L.; Muenter, Annabel A.; and Stegman, David A., 5,061,618, Cl. 430-584.000.

Steiger, James, to Sundstrand Corporation. Centrifugal pump system with liquid ring priming pump. 5,061,151, Cl. 415-106.000.

Steinberg, Nathan G.; Rasmusson, Gary H.; and Salzmann, Thomas N., to Merck & Co. Inc. 17β-aminobenzoyl-4-aza-5α-androst-1-en-3-ones as benign prostatic hypertrophy agents. 5,061,802, Cl. 546-77.000.

Steinberger, Michael L.: *See—*
McKnight, Richard R.; and Steinberger, Michael L., 5,062,105, Cl. 370-84.000.

Steinke, John M.: *See—*
Shepherd, A. P.; and Steinke, John M., 5,061,632, Cl. 436-66.000.

Steinmetz, Floyd. Diaphragm assembly for the ends of passenger railroad cars comprising one piece integrally molded urethane channel members. 5,060,577, Cl. 105-15.000.

Stelco Inc.: *See—*
Kelly, John H.; and Guest, Leonard E., 5,061,352, Cl. 204-129.000.

Stenberg, Even: *See—*
Olsen, Ragnar L.; Stenberg, Even; Sandsdalen, Erling; and Almas, Karl A., 5,061,627, Cl. 435-183.000.

Stephen, Keith H.: *See—*
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Stephens, Harry W., Jr.: *See—*
Manley, Norman J.; Stephens, Harry W., Jr.; and Montesano, Ralph M., 5,061,241, Cl. 604-114.000.

Steur, Gerhard; and Sauer, Gunther, to Mecron Medizinische Produkte GmbH. Internal fixation kit. 5,060,635, Cl. 128-69.000.

Steurer, Paul: *See—*
Rinklake, Manfred; Frischmann, Albert; Daryoush, Anisi; and Steurer, Paul, 5,060,447, Cl. 52-698.000.

Stevens, Phillip D.; and Mittendorf, Arthur W., to Motorola, Inc. Hermetic switch. 5,061,831, Cl. 200-302.001.

Stevens, William D.: *See—*
Gorzegno, Walter P.; Stevens, William D.; and Zipay, Albert J., 5,061,304, Cl. 55-347.000.

Stevenson, Christopher, to Mono Pumps Limited. Screening system and method. 5,061,380, Cl. 210-768.000.

Stewart, John P.; Seubert, Ronald C.; and Snow, Donald B., to Applied Precision, Inc. Method of making probe cards. 5,060,371, Cl. 29-850.000.

Stewart, Kenneth W., Sr., to United Technologies Electro Systems, Inc. Motor housing structure. 5,061,869, Cl. 310-89.000

Stewart, Robert L.: *See—*
Bien, Alfred A.; Niemitalo, Gerald T.; Simms, Russell A.; Stewart, Robert L.; Michael, Riad E.; Christenson, Alfred W.; and Keller, Herbert J., Jr., 5,061,108, Cl. 403-24.000

Stiefel, Joseph F.: *See—*
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Stillie, Donald G.: *See—*
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Van Order, Kim L.; Zandbergen, Todd A.; and Price, Rodger A., to Prince Corporation. Snap-in visor mount. 5,061,005, Cl. 296-979.000.
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Vidalenq, Maurice. Water-tube boiler and a heating installation equipped with such a boiler. 5,060,601, Cl. 122-406.100.
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Vits, Hilmar. Apparatus for the depositing of sheets at a stacking location. 5,060,928, Cl. 271-182.000.
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Wampler, Richard K., to Johnson & Johnson. Inflow cannula for intravascular blood pumps. 5,061,256, Cl. 604-280.000.

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Yamada, Koji: *See—*
Nakagawa, Susumu; Yamada, Koji; Nakano, Fumio; Otake, Norikazu; Asai, Akira; Kuroyanagi, Satoru; Tanaka, Yoshiharu; Ishikawa, Moriaki; Ushijima, Ryosuke; and Mitomo, Ryuji, 5,061,794, Cl. 514-206.000.
Yamada, Kuniniko: *See—*
Toyama, Masamichi; Fujiwara, Akihiro; Suda, Hirofumi; Yamada, Kuniniko; Hirasawa, Masahide; and Kaneda, Kitahiro, 5,061,954, Cl. 354-402.000.
Yamada, Minoru, to Brother Kogyo Kabushiki Kaisha. Apparatus for controlling movement of reciprocating member, having data display capable of indicating encoder signal indicative of the movement. 5,061,886, Cl. 318-565.000
Yamada, Toyokazu, to Idemitsu Petrochemical, Co., Ltd. Multilayer structure and easily openable container and lid. 5,061,532, Cl 428-35.700.
Yamada, Yasuyuki: *See—*
Yamanaka, Fusao; Nagao, Makoto; Yamada, Yasuyuki; and Morita, Kazuhiko, 5,061,562, Cl. 428-408.000.
Yamadera, Toshio: *See—*
Tada, Minoru; Harada, Syouji; Koike, Syuzo; Kawaguchi, Yukio; Mizuguchi, Tamotsu; Emori, Hiroyoshi; Mori, Naomichi; Yamadera, Toshio; Hotta, Masami; Nakamura, Hiroki; Sumino, Tatsuo; Kimata, Takashi; and Fujii, Yuuko, 5,061,368, Cl. 210-151.000.
Yamagata, Shigeo; Sakata, Tuguhide; Taguchi, Tomishige; and Kawasaki, Somei, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus having, in addition to a recording medium, memory means for memorizing information reproduced from the recording medium. 5,062,009, Cl. 360-33.100.
Yamagishi, Osamu: *See—*
Tanimoto, Shigeaki; Kayano, Tadashi; Karasawa, Hirobumi; Yamagishi, Osamu; and Kunikyo, Tomoo, 5,062,035, Cl. 364-200.000.
Yamagishi, Takeshi: *See—*
Shimizu, Kazunao; Mikamo, Masahiro; and Yamagishi, Takeshi, 5,061,550, Cl. 428-209.000.
Yamaguchi, Hiroshi, to Nissan Motor Co., Ltd. Line pressure control based on learning of quality of shifting in automatic transmission. 5,060,540, Cl. 74-866.000.
Yamaguchi, Kouji; Miyake, Junichi; and Maki, Kazuya, to Honda Giken Kogyo Kabushiki Kaisha. Differential area motor circuit for hydrostatic transmission control. 5,060,476, Cl. 60-487.000.
Yamaguchi, Saburo, to Nisshinbo Techno Vehicle Inc.; and NKK Corporation. Amusement apparatus having rotary capsule. 5,060,932, Cl. 272-36.000.
Yamaguchi, Shotaro: *See—*
Matsuzaki, Narihide; Kurashige, Jun; Mase, Tamio; and Yamaguchi, Shotaro, 5,061,498, Cl. 426-33.000.
Yamaguchi, Shuichiro: *See—*
Shimomura, Takeshi; Yamaguchi, Shuichiro; Suzuki, Takanao; and Oyama, Noboru, 5,061,976, Cl. 357-25.000.
Yamaguchi, Yoshitaka; Fukushima, Hitoshi; Iwamoto, Kohei; and Takei, Katsumori, to Seiko Epson Corporation. Non-impact printing apparatus. 5,061,093, Cl. 400-120.000.
Yamaha Corporation: *See—*
Kumaoka, Michiaki, 5,062,097, Cl. 369-70.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Suzuki, Takamitsu, 5,060,622, Cl. 123-559.100
Yasui, Toshihiro; Sugita, Masanori; Isobe, Tsuneo; and Nakanosono, Haruhiko, 5,060,745, Cl. 180-193.000.
Yamakami, Tsutomu: *See—*
Shibusawa, Mitsuo; Yamakami, Tsutomu; Arai, Atsushi; and Kawano, Hiroshi, 5,060,922, Cl. 270-53.000.
Yamamoto, Haruo: *See—*
Atsumi, Kunio; Iwamatsu, Katsuyoshi; Sakagami, Kenji; Yoshida, Takashi; Yamamoto, Haruo; Shibahara, Seiji; and Inouye, Shigeharu, 5,061,702, Cl. 514-202.000
Yamamoto, Hiroaki: *See—*
Hirano, Sadayuki; Yamashita, Yoshinori; Tatsumi, Takumi; and Yamamoto, Hiroaki, 5,060,770, Cl. 192-0.032.
Yamashita, Yoshinori; Hirano, Sadayuki; Murano, Katsuaki; Tatsumi, Takumi; and Yamamoto, Hiroaki, 5,060,768, Cl. 192-0.052.
Yamamoto, Hiroki: *See—*
Iwata, Kouichi; Yamamoto, Hiroki; and Katsuyoshi, Fukaya, 5,060,910, Cl. 251-129.050.
Yamamoto, Hiroshi: *See—*
Odawara, Kazuharu; Ishii, Masaru; and Yamamoto, Hiroshi, 5,062,099, Cl. 369-263.000.
Yamamoto, Kazunuki: *See—*
Takada, Toshio; Terashima, Takahito; Iijima, Kenji; Yamamoto, Kazunuki; and Hirata, Kazuto, 5,061,687, Cl. 505-1.000.
Yamamoto, Kyoichi: *See—*
Hanaki, Yoshimaro; and Yamamoto, Kyoichi, 5,060,544, Cl. 82-1.110.
Yamamoto, Masashi: *See—*
Ikegawa, Akihito; Enoguchi, Yuji; Mizuno, Hiroshi; Natsuhara, Toshiya; and Yamamoto, Masashi, 5,061,963, Cl. 355-259.000.
Yamamoto, Osamu: *See—*
Watanabe, Masaru; and Yamamoto, Osamu, 5,060,485, Cl. 62-225.000.
Yamamoto, Shoji: *See—*
Sumiyoshi, Takashi; Takahashi, Shigekatsu; Yamamoto, Shoji; Negishi, Kazuyoshi; and Iwasaki, Masaaki, 5,062,046, Cl 364-200.000.
Yamamoto, Tadashi; and Murazumi, Takuya, to Murazumi Industrial Co., Ltd. Cassette for pathological tissue examination. 5,061,452, Cl. 422-101.000.
Yamamoto, Takashi; and Itoh, Toshio, to Research Association for Petroleum Alternatives Development. Process for hydrogenation of heavy oil. 5,061,362, Cl. 208-108.000
Yamamoto, Takekazu; Nakagawa, Masakazu; and Momiyama, Masayoshi, to Aisin Seiki Kabushiki Kaisha. Electrophoresis pattern analyzer for genetic material. 5,061,067, Cl. 356-344.000.
Yamamoto, Toshiteru: *See—*
Horiike, Satoru; Yamamoto, Toshiteru; and Hamano, Eiji, 5,060,749, Cl. 180-219.000.
Yamamura, Sigeki: *See—*
Tanaka, Shigeru; Setoyama, Eiji; Oikawa, Shinzou; and Yamamura, Sigeki, 5,061,356, Cl. 204-192.120.
Yamanaka, Fusao; Nagao, Makoto; Yamada, Yasuyuki; and Morita, Kazuhiko, to Fuji Photo Film Co., Ltd. Method for preparing a magnetic recording medium and a magnetic disk using the same. 5,061,562, Cl. 428-408.000.
Yamanaka, Tatsuo: *See—*
Takubo, Minoru; Fukasawa, Toshio; and Yamanaka, Tatsuo, 5,061,956, Cl. 355-55.000
Yamanashi Electronics Co., Ltd.: *See—*
Fujimori, Kenichi; Nakayama, Yoshitaro; Suzuki, Hajime; and Shima, Yoshiko, 5,061,584, Cl. 430-59.000.
Yamanashi, Yasuhiro: *See—*
Yoshida, Mitsuhiro; Nakayama, Nobuyuki; Yamanashi, Yasuhiro; and Huzii, Tosio, 5,061,677, Cl. 503-226.000
Yamanis, Jean: *See—*
Olson, William L.; Li, Beili; and Yamanis, Jean, 5,061,402, Cl. 252-521.000.
Yamasaki, Hirofumi: *See—*
Takaoka, Toshio; Tsukamoto, Keisuke; Fukuma, Takao; and Yamasaki, Hirofumi, 5,060,618, Cl. 123-436.000
Yamashiro, Shinji; and Hara, Takanori, to Mazda Motor Corporation. Mechanism for work pickup in an injection molding apparatus. 5,061,169, Cl. 425-190.000.
Yamashita, Hiroshi; and Muto, Kenkichi, to Ricoh Company, Ltd Method of producing polymer particles having narrow particle size distribution by the use of a polymeric dispersion stabilizer. 5,061,766, Cl. 526-191.000.
Yamashita, Seiji: *See—*
Takada, Shunji; Naito, Hideki; Ohashi, Yuichi; Yamashita, Seiji; Shibayama, Shigeru; and Hirano, Shigeo, 5,061,614, Cl. 430-569.000.
Yamashita, Takahiro: *See—*
Tsukamoto, kazumasa; Taniguchi, Takao; Taniguchi, Takuji; and Yamashita, Takahiro, 5,061,229, Cl. 475-249.000.
Yamashita, Yoshinori; Hirano, Sadayuki; Murano, Katsuaki; Tatsumi, Takumi; and Yamamoto, Hiroaki, to Suzuki Jidosha Kogyo Kabushiki Kaisha; and Mitsubishi Denki Kabushiki Kaisha. Creep control for a continuously variable transmission. 5,060,768, Cl. 192-0.052.
Yamashita, Yoshinori: *See—*
Hirano, Sadayuki; Yamashita, Yoshinori; Tatsumi, Takumi; and Yamamoto, Hiroaki, 5,060,770, Cl. 192-0.032
Yamauchi, Takashi; and Hasegawa, Morihiro, to Nisshin Steel Co., Ltd. Apparatus for continuous casting of metal strip. 5,060,714, Cl. 164-428.000.
Yamazaki, Katsuyuki; and Fujioka, Masanobu, to Kokusai Denshin Denwa Co., Ltd. ATM exchange system. 5,062,106, Cl. 370-94.100
Yamazaki Mazak Kabushiki Kaisha: *See—*
Naoomi, Miyagawa; Yoshida, Chiyoaki; Toda, Kazuyuki; and Nakamura, Yukiyasu, 5,060,495, Cl. 72-10.000.
Yamazaki, Noboru; Kuratas, Shigeaki; Yagi, Toshiharu; and Inukai, Hiroshi, to Daikin Industries, Ltd. Adhesive composition for biomaterial use. 5,061,184, Cl. 433-228.100.
Yamazaki, Sakae; and Murashita, Takato, to Terumo Kabushiki Kaisha Liquid collection tube. 5,061,263, Cl. 604-403.000
Yamazaki, Shojiro, to Isuzu Motors Limited. Valve drive mechanism for vehicle engine. 5,060,605, Cl. 123-90.230.
Yamazaki, Toshiaki: *See—*
Kiyohara, Kazuto; Araki, Hiromitu; Yamazaki, Toshiaki; and Harada, Ichiya, 5,061,612, Cl. 430-533.000
Yamazoe, Miki: *See—*
Suzuki, Kazuhiro; Shimizu, Toru; Yamazoe, Miki; and Sugisaki, Tosiaki, 5,061,481, Cl. 424-63.000.
Yan, Tsoung Y., to Mobil Oil Corporation. Process for preventing scale formation in oil wells. 5,060,728, Cl. 166-279.000.
Yanagida, Yoshiaki: *See—*
Katsuragi, Koji; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, 5,062,128, Cl. 377-55.000.
Yanagihara, Hiromu: *See—*
Hamaguchi, Masami; Yanagihara, Hiromu; Hiraoka, Osamu; and Takahashi, Osamu, 5,061,140, Cl. 413-6.000.
Yanagisawa, Michio: *See—*
Horikawa, Mitsuhiro; Ito, Hiroshi; Ide, Tsugio; Yanagisawa, Michio; Shimoda, Tatsuya; and Akioka, Koji, 5,062,095, Cl. 369-44.210.
Yancey, Michael J.: *See—*
Pullman, Gerald S.; and Yancey, Michael J., 5,060,418, Cl. 47-58.000.

Yang Lee, Su-Lan. Stress-dispersed contact element of low insertion force electrical connector. 5,061,200, Cl. 439-326.000.

Yaniv, Zvi; Cannella, Vincent D.; Hansell, Gregory L.; and Swartz, Louis D., to OIS Optical Imaging Systems, Inc. Liquid crystal displays operated by amorphous silicon alloy diodes. 5,061,040, Cl. 159-60.000.

Yano, Seinosuke: *See*—
Okamura, Yoshihiro; Yano, Seinosuke; Yamaba, Ryota; and Chiba, Hidetaka, 5,061,325, Cl. 148-12.00F.

Yano, Shigenobu: *See*—
Sato, Mitsunobu; Yano, Shigenobu; Kitayama, Ryuichi; and Komiya, Katsuo, 5,061,816, Cl. 556-148.000.

Yano, Takaaki: *See*—
Nishikawa, Tomoyuki; Kita, Masahiro; Yano, Takaaki; Yoshida, Tatsuya; Honda, Ryoji; Negishi, Kiyoshi; Sato, Tsutomu; and Kamasako, Shoji, 5,061,957, Cl. 355-200.000.

Yardley, James T.: *See*—
Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., 5,061,404, Cl. 252-502.000.

Yarkony, Eitan; and Yarkony, Yair. Sprayable bird and animal pest repellant composition containing a tacky polyolefin and methods for the preparation and use thereof. 5,061,478, Cl. 424-45.000.

Yarkony, Yair: *See*—
Yarkony, Eitan; and Yarkony, Yair, 5,061,478, Cl. 424-45.000.

Yarovoi, Alexandr A.: *See*—
Aleshin, Nikolai P.; Baranov, Vladimir J.; Mogilner, Leonid J.; and Yarevoi, Alexandr A., 5,060,518, Cl. 73-620.000.

Yashiki, Takatsuka: *See*—
Okada, Hiroaki; Ogawa, Yasuaki; and Yashiki, Takatsuka, 5,061,492, Cl. 424-423.000.

Yasuda, Hiroshi; and Someno, Noboru, to Sony Corporation. Telephone apparatus providing for automatic transfer of stored data between handsets. 5,062,132, Cl. 379-61.000.

Yasuda, Masashi: *See*—
Chojitani, Hitoshi; Osaka, Takahide; Itojima, Fumiaki; and Yasuda, Masashi, 5,060,519, Cl. 73-662.000.

Yasui, Toshihiro; Sugita, Masanori; Isobe, Tsuneo; and Nakanosono, Haruhiko, to Yamaha Hatsudoki Kabushiki Kaisha. Engine mounting arrangement and drive mechanism for small snowmobiles. 5,060,745, Cl. 180-193.000

Yasuki, Seijiro; and Kawai, Kiyoyuki, to Kabushiki Kaisha Toshiba. Arrangement for permitting multiplexing of an additional signal on an entire portion of an overscanning area of a television signal. 5,061,998, Cl. 358-142.000.

Yasumura, Tsuneo: *See*—
Takahashi, Yuichi; Yasumura, Tsuneo; and Ishii, Yasuo, 5,061,525, Cl. 427-389.900.

Yasuzato, Tadao; and Sakurai, Keizo, to NEC Corporation. Process of forming bump on electrode of semiconductor chip and apparatus used therefor. 5,060,843, Cl. 228-179.000.

Yates, James P.; and Berti, Enzo, to Libman Company, The. Wet mop with self-contained wringer. 5,060,338, Cl. 15-119.00A

Yazaki Corporation: *See*—
Jinno, Keishi, 5,061,210, Cl. 439-752.000.
Kuzuno, Katsutoshi; Ishizuka, Shigeo; and Sakurai, Kazuaki, 5,061,197, Cl. 439-262.000.
Murakami, Yoshihiro, 5,061,204, Cl. 439-489.000.
Ohike, Yukio, 5,062,135, Cl. 324-154.00R.
Totsuka, Shigeki; Ohike, Yukio; and Ito, Tadao, 5,061,891, Cl. 324-146.000.

Yazu, Shuji: *See*—
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,061,681, Cl. 505-1.000.

Ye, Lisa: *See*—
Clements, Matthew J.; Fedor, Maxim A.; Moffitt, Jerry T.; Ye, Lisa; and Wadsworth, John F., 5,060,439, Cl. 52-396.000

Yen, Yao T.; and Chay, Joonees K., to TransComputer, Inc. Mechanical translator for semiconductor chips. 5,061,989, Cl. 357-74.000.

YKK Corporation: *See*—
Sparrow, Timothy H., 5,060,690, Cl. 137-540.000.

Yock, Paul G. Angioplasty apparatus facilitating rapid exchanges. 5,061,273, Cl. 606-194.000.

Yoda, Ryuichiro; Fukutome, Akira; Ohkawa, Suguru; and Iida, Kazutoshi, to Nippon Zeon Co., Ltd. Thromboresistant polyetherurethane compounds and process for its production. 5,061,777, Cl. 528-61.000.

Yoerger, William E.; and Pettrone, Frank A., to Eastman Kodak Company. Coated carrier particles for electrographic developers. 5,061,593, Cl. 430-108.000.

Yokobori, Jun: *See*—
Haneda, Satoshi; Shoji, Hisashi; Hiratsuka, Seiichiro; Kishimoto, Tadao; Isobe, Toshifumi; Maruyama, Hiroyuki; and Yokobori, Jun, 5,061,966, Cl. 355-297.000.

Yokokura, Teruo: *See*—
Yaegashi, Takashi; Okajima, Satoru; Sawada, Seigo; Nokata, Kenichiro; Tezuka, Kenichi; Nagata, Hiroshi; Yokokura, Teruo; Miyasaka, Tadashi; and Miyasaka, Tadashi, 5,061,800, Cl. 546-48.000.

Yokoyama, Miyuki: *See*—
Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Sekine, Akio; and Yokoyama, Miyuki, 5,061,536, Cl. 428-64.000.

Yokoyama, Shuji: *See*—
Sugiura, Hisao; Tanaka, Toshinobu; Nishimura, Takashi; and Yokoyama, Shuji, 5,061,719, Cl. 514-374.000.

Yokozeki, Akimichi: *See*—
Bivens, Donald B.; Yokozeki, Akimichi; Bartlett, Philip L.; and Creazzo, Joseph A., 5,061,394, Cl. 252-171.000.

Yoneya, Makoto; Kondo, Katsumi; Ohashi, Tetsuya; Odamura, Motomi; and Kitamura, Teruo, to Hitachi, Ltd. Liquid crystal light modulation device and liquid crystal light modulation apparatus. 5,061,045, Cl. 359-56.000.

York, Kenneth K. Hypotonic compositions for selectively killing undesirable lens cells in the human eye and methods for using such compositions. 5,061,696, Cl. 514-54.000.

York, Michael E.: *See*—
Siryj, Bohdan W.; and York, Michael E., 5,062,092, Cl. 369-38.000.

Yoshida, Chiyoaki: *See*—
Naoomi, Miyagawa; Yoshida, Chiyoaki; Toda, Kazuyuki; and Nakamura, Yukiyasu, 5,060,495, Cl. 72-10.000.

Yoshida Kogyo K. K.: *See*—
Seki, Fumio, 5,060,839, Cl. 227-18.000.

Yoshida, Mitsuhiro; Nakayama, Nobuyuki; Yamanashi, Yasuhiro; and Huzii, Tosio, to Tomoegawa Paper Co., Ltd. Thermo-sensitive recording label paper. 5,061,677, Cl. 503-226.000.

Yoshida, Satoshi: *See*—
Shimizu, Osamu; and Yoshida, Satoshi, 5,061,576, Cl. 428-694.000.

Yoshida, Suguru: *See*—
Sano, Shoichi; Yoshida, Suguru; Uchida, Ken; Kajiwara, Hajime; Ohno, Masao; and Kawade, Tateo, 5,060,975, Cl. 280-787.000.

Yoshida, Takashi: *See*—
Atsumi, Kunio; Iwamatsu, Katsuyoshi; Sakagami, Kenji; Yoshida, Takashi; Yamamoto, Haruo; Shibahara, Seiji; and Inouye, Shigeharu, 5,061,702, Cl. 514-202.000.
Takeda, Fumio; Yoshida, Takashi; Tanaka, Hideki; Ishitsuka, Yoshikazu; Omine, Tsutomu; Miyasaka, Masao; Asano, Mitsugu; Igarashi, Akira; and Takahagi, Hiroshi, 5,061,092, Cl. 400-120.000

Yoshida, Tatsuya: *See*—
Nishikawa, Tomoyuki; Kita, Masahiro; Yano, Takaaki; Yoshida, Tatsuya; Honda, Ryoji; Negishi, Kiyoshi; Sato, Tsutomu; and Kamasako, Shoji, 5,061,957, Cl. 355-200.000.

Yoshida, Tomoaki; and Tanagawa, Kouji, to Oki Electric Industry Co., Ltd. Microcomputer having security memory using test and destruction routines. 5,062,075, Cl. 364-900.000.

Yoshida, Toshiki, to Nissho Corporation. Fluid-communicating device with valve function. 5,061,253, Cl. 604-246.000.

Yoshigai, Kenichi, to Yoshigai Kikai Kinzoku Co., Ltd. Quick release device for bicycle brake. 5,060,534, Cl. 74-502.200.

Yoshigai Kikai Kinzoku Co., Ltd.: *See*—
Yoshigai, Kenichi, 5,060,534, Cl. 74-502.200.

Yoshihara, Noriyuki; Hosaka, Yoshio; Shibata, Shigehito; and Kunii, Nobuaki, to Asahi Glass Company, Ltd. Method of forming a gasket on window shaping mold for preparing such window glass. 5,061,429, Cl. 264-252.000

Yoshii, Toshiya: *See*—
Aoki, Seizo; Tsunashima, Kenji; Yoshii, Toshiya; Nakahara, Yasuji; Sumiya, Takashi; and Mimura, Takashi, 5,061,565, Cl. 428-409.000.

Yoshikawa, Mutsumi: *See*—
Hibino, Hiroki; Nagayama, Yoshikatsu; Yoshikawa, Mutsumi; Takara, Toshiyuki; Goto, Masahito; Suzuki, Akira; Takehana, Sakae; Oaki, Yoshinao; Hoshimitsu, Koichi; Aoki, Yoshisada; Ueda, Yasuhiro; and Matsui, Raifu, 5,060,632, Cl. 128-6.000.

Yoshimura, Hiroshi; and Okamoto, Kenji, to Mazda Motor Corporation. Slip control device of a fluid coupling. 5,060,769, Cl. 192-3.290.

Yoshimura, Toshio, to Tanashin Denki Co., Ltd. Reversing device having change-over mechanism for pinch rollers in tape recorders. 5,062,014, Cl. 360-96.200.

Yoshino, Takako: *See*—
Wada, Kazuhiro; Baba, Nobuyoshi; Ono, Sachiko; and Yoshino, Takako, 5,061,544, Cl. 428-131.000.

Yoshino, Yoshinori: *See*—
Hase, Kenichi; Miyazawa, Shyoichi; Horita, Ryutaro; Kojima, Shinichi; Uragami, Akira; Watanabe, Takashi; and Yoshino, Yoshinori, 5,062,011, Cl. 360-40.000.

Yoshiura, Yoshiaki: *See*—
Meguro, Hideo; Yoshiura, Yoshiaki; Itagaki, Tatsuo; Uchida, Ken; Satoh, Tsuneo; Ichihara, Seiichi; and Nagasawa, Koichi, 5,061,985, Cl. 357-68.000.

Yoshiyama, Glenn: *See*—
Weidman, John H.; and Yoshiyama, Glenn, 5,061,911, Cl. 333-104.000.

You, Ki S., to Poong Jeong Industrial Co., Ltd. Sideview mirror for automobiles. 5,061,056, Cl. 359-872.000.

Youngblood, Gerald F.; Hughes, Ron D.; and Rice, Kester B., to Sunriver Corporation. Apparatus and method for communication between host CPU and remote terminal. 5,062,059, Cl. 364-521.000

Yousef, Faisal J.; Kane, Robert F.; Ham, Joel; and Mildren, David, to Sandvik Rock Tools, Inc. Screw thread coupling. 5,060,740, Cl. 175-415.000.

Yrjonen, Tapio: *See*—
Lehtinen, Kauko; Yrjonen, Tapio; and Sonne, Vesa, 5,061,853, Cl. 250-328.000.

Yu, Simon H., to B. F. Goodrich Company, The. Process for making comb-shaped copolymers of a macromolecular monomer of polylactone with terminal acryloyl unsaturation, and compatible blends thereof. 5,061,772, Cl. 526-320.000.

Yue, Jerry; and Liu, Michael S. T., to Honeywell Inc. Method for fabricating self-aligned semiconductor devices. 5,061,644, Cl. 437-31.000

Yurkewych, George J.; Gregg, Joseph J.; and Beley, Samuel D., to Becton, Dickinson and Company. Pudendal/paracervical block needle assembly. 5,061,244, Cl. 604-164.000.

Zafred, Paolo R.; Snyder, David A.; Gunter, John B.; and Ritz, William C., to Westinghouse Electric Corp. Apparatus and process for simultaneously positioning and oscillating a plurality of probes in the heat exchanger tubes of a nuclear steam generator. 5,061,176, Cl. 432-5.000.

Zahn, Rudolf; Schroeder, Hans W.; Borgwardt, Christian; Braig, Albert; Helwig, Gunter; Boukamp, Joachim; Bender, Oswald; Lin, Chung-chi; and Scherber, Werner, to Dornier System GmbH. Microstrip antenna. 5,061,938, Cl. 343-700.0MS.

Zaklika, Krzysztof A.: *See*—
Jongewaard, Susan K.; Leichter, Louis M.; Smith, Terrance P.; and Zaklika, Krzysztof A., 5,061,678, Cl. 503-227.000.

Zambelli, Gabriele, to G.A.P. Tecnica S.r.l. Pasta handling apparatus. 5,060,457, Cl. 53-543.000.

Zandbergen, Todd A.: *See*—
Van Order, Kim L.; Zandbergen, Todd A.; and Price, Rodger A., 5,061,005, Cl. 296-979.000.

Zarkesh, Shahla. Breast binder. 5,060,648, Cl. 128-402.000.

Zdenek, Peter E.; and VerShaw, James T., to American Standard, Inc. Furnace heat exchanger. 5,060,722, Cl. 165-170.000.

Zeiher, Andreas. Balloon catheter for rechanneling stenoses in body passages, in particular of coronary and peripheral arterial vessels. 5,061,267, Cl. 606-40.000.

Zeiler, Hans-Joachim: *See*—
Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grobe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl G.; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,061,712, Cl. 514-300.000.

Zhabokrug, Ilya. Safety cap for tire valve. 5,060,685, Cl. 137-230.000.

Ziatech Corporation: *See*—
Medeiors, James A.; Beverly, R. A.; and Safreno, Ty F., 5,061,190, Cl. 439-60.000.

Zielinski, Michael P., to Plastic Recovery Systems, Inc. Process for the separation of plastics. 5,061,735, Cl. 521-46.500.

Zimpfer, Dennis S.: *See*—
Pace, Loy D.; Stackhouse, Donald C.; Jones, Earl W.; and Zimpfer, Dennis S., 5,061,153, Cl. 416-46.000.

Zinpro Corporation: *See*—
Leu, Monty, 5,061,815, Cl. 556-118.000.

Zinser Textilmaschinen GmbH: *See*—
Seiffert, Harry E.; and Fetzer, Gustay, 5,061,867, Cl. 310-51.000.

Zipay, Albert J.: *See*—
Gorzegno, Walter P.; Stevens, William D.; and Zipay, Albert J., 5,061,304, Cl. 55-347.000.

Ziv, Alan R.; and Kozicki, Michael N. Via filling by selective laser chemical vapor deposition. 5,060,595, Cl. 118-722.000.

Ziv, Reffael; and Finav, Omer, to Robomatix Ltd. End effector for translating in a cartesian coordinate system. 5,061,834, Cl. 219-121.780.

Zivkovic, Alexandre: *See*—
Robyn, Pierre; Mottet, Leon-Philippe; and Zivkovic, Alexandre, 5,061,526, Cl. 427-422.000.

Zola, Philip J.: *See*—
Piggin, Roger H.; Zola, Philip J.; and Lin, Ming J., 5,061,616, Cl. 430-569.000.

Zoltner, John D., to Xerox Corporation. Method for applying hard and soft covers to bound or unbound documents. 5,061,139, Cl. 412-8.000.

Zoski, Glenn; and Woodward, Steve, to Igen, Inc. Apparatus for conducting measurements of electrochemiluminescent phenomena. 5,061,445, Cl. 422-52.000.

Zuback, Joseph E., to Infilco Degremont Inc. Dissolved gas stripping apparatus. 5,061,302, Cl. 55-190.000.

Zuback, Joseph E., to Infilco Degremont Inc. Sludge transfer systems and methods. 5,061,378, Cl. 210-767.000.

Zuk, William S., to Wang Laboratories, Inc. Processor/coprocessor interface apparatus including microinstruction clock synchronization. 5,062,041, Cl. 364-200.000.

Zulauf, Karlheinz, to Goldwell GmbH. Two-chamber container. 5,060,791, Cl. 206-221.000.

Zupancic, Derek J. Set of structural brackets that allow electronic/electrical assemblies to be mounted within a computer enclosure. 5,062,016, Cl. 360-97.010.

Zurn, Donald E.: *See*—
Boggs, Thomas L.; Prentice, Jack L.; and Zurn, Donald E., 5,060,551, Cl. 89-7.000.

Zushi, Takayasu: *See*—
Satoh, Takeshi; Nakayama, Yoshikazu; Sawada, Masami; Zushi, Takayasu; and Nanbu, Yuichi, 5,060,972, Cl. 280-732.000.

Zwaan, Paul; Orec, Ilija; and Murray, Charles G., to Fisher & Paykel Limited. Humidifying apparatus. 5,062,145, Cl. 392-396.000.

Zwadlo, Gregory L.; Kidnie, Kevin M.; and Elmasry, Mohamed A., to Minnesota Mining and Manufacturing Company. Color electrophotography for high quality half-tone images. 5,061,583, Cl. 430-45.000.

501 Nordam: *See*—
Torkelson, Delbert W., 5,060,471, Cl. 60-262.000.

501 Societe Nationale Elf Aquitaine: *See*—
Forquy, Christian; Tichit, Didier; and Anglerot, Didier, 5,061,670, Cl. 585-500.000.

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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF OCTOBER, 1991

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baxter International, Inc.: *See*—
Sims, Larry A., Re. 33,727, Cl. 128-85.00L.

Coherent, Inc.: *See*—
Perilloux, Bruce E., Re. 33,729, Cl. 359-359.000.

Dean, Robert R.; Letzsch, Warren S.; and Mauleon, Jean L., to Total Engineering and Research Company. Method for catalytically converting residual oils. Re. 33,728, Cl. 208-120.000.

Letzsch, Warren S.: *See*—
Dean, Robert R.; Letzsch, Warren S.; and Mauleon, Jean L., Re. 33,728, Cl. 208-120.000.

Mauleon, Jean L.: *See*—
Dean, Robert R.; Letzsch, Warren S.; and Mauleon, Jean L., Re. 33,728, Cl. 208-120.000.

Perilloux, Bruce E., to Coherent, Inc. Multilayer optical filter for producing colored reflected light and neutral transmission. Re. 33,729, Cl. 359-359.000.

Sargent Industries, Inc.: *See*—
Smith, Fred T., Re. 33,730, Cl. 414-525.400.

Sims, Larry A., to Baxter International, Inc. Bandage frame. Re. 33,727, Cl. 128-85.00L.

Smith, Fred T., to Sargent Industries, Inc. Refuse collection apparatus. Re. 33,730, Cl. 414-525.400.

Thorud, Richard A.; and White, Donald M., III, to Toro Company, The. Single stage snowthrower. Re. 33,726, Cl. 37-244.000.

Toro Company, The: *See*—
Thorud, Richard A.; and White, Donald M., III, Re. 33,726, Cl. 37-244.000.

Total Engineering and Research Company: *See*—
Dean, Robert R.; Letzsch, Warren S.; and Mauleon, Jean L., Re. 33,728, Cl. 208-120.000.

White, Donald M., III: *See*—
Thorud, Richard A.; and White, Donald M., III, Re. 33,726, Cl. 37-244.000

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TO WHOM

CERTIFICATES WERE ISSUED

Allen, Herbert, to Hallen Company. Cork extractor. B1 4,276,789, 10-29-91, Cl. 81-3.360.

Barham, Doris, heir: *See*—
Barham, Harold N., Jr.; and Barham, Harold N., deceased, B1 4,208,433, Cl. 426-69.000.

Barham, Harold N., deceased: *See*—
Barham, Harold N., Jr.; and Barham, Harold N., deceased, B1 4,208,433, Cl. 426-69.000.

Barham, Harold N., Jr.; and Barham, Harold N., deceased (by Barham, Doris, heir), to Seed Technology of Texas, Ltd. Method for the adsorption of solids by whole seeds. B1 4,208,433, 10-29-91, Cl. 426-69.000.

Brantingson, Sigurd, to Brantingston, Sigurd, Jr. Fishing reel. B1 3,342,442, 10-29-91, Cl. 242-233.000.

Brantingston, Sigurd, Jr.: *See*—
Brantingson, Sigurd, B1 3,342,442, Cl. 242-233.000.

Creagh, Linda T.: *See*—
Spehrley, Charles W., Jr.; Creagh, Linda T.; and Schaffer, Robert R., B1 4,751,528, Cl. 346-140.000.

Dana Corporation: *See*—
McBurnett, James R.; Eley, James M.; and Raina, Kuldip, B1 4,746,276, Cl. 417-295.000.

Eley, James M.: *See*—
McBurnett, James R.; Eley, James M.; and Raina, Kuldip, B1 4,746,276, Cl. 417-295.000.

Hallen Company: *See*—
Allen, Herbert, B1 4,276,789, Cl. 81-3.360

McBurnett, James R.; Eley, James M.; and Raina, Kuldip, to Dana Corporation. Gear pump having conditional dry valve closure structure. B1 4,746,276, 10-29-91, Cl. 417-295.000.

Raina, Kuldip: *See*—
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Rozmus, John J. Golf club. B1 3,966,210, 10-29-91, Cl. 273-169.000.

Schaffer, Robert R.: *See*—
Spehrley, Charles W., Jr.; Creagh, Linda T.; and Schaffer, Robert R., B1 4,751,528, Cl. 346-140.000.

Seed Technology of Texas, Ltd.: *See*—
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Spectra, Inc.: *See*—
Spehrley, Charles W., Jr.; Creagh, Linda T.; and Schaffer, Robert R., B1 4,751,528, Cl. 346-140.000.

Spehrley, Charles W., Jr.; Creagh, Linda T.; and Schaffer, Robert R., to Spectra, Inc. Platen arrangement for hot melt ink jet apparatus. B1 4,751,528, 10-29-91, Cl. 346-140.000.

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Acushnet Company: *See*—
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Aikawa, Masahiro, to Seikosha Co., Ltd. Clock. 321,138, 10-29-91, Cl. D10-24.000.

Aikawa, Masahiro, to Seikosha Co., Ltd. Clock. 321,139, 10-29-91, Cl. D10-24.000.

Aikawa, Masahiro, to Seikosha Co., Ltd. Clock. 321,141, 10-29-91, Cl. D10-26.000.

Aktiebolaget Electrolux: *See*—
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Antonious, Anthony J. Putter golf club head. 321,232, 10-29-91, Cl. D21-217.000.

Armstrong, Timothy O.: *See*—
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Arth, Daniel. Cassette marker. 321,181, 10-29-91, Cl. D14-120.000.

Arthur, James R., Jr., to Winston Furniture Company, Inc. Chaise lounge. 321,096, 10-29-91, Cl. D6-361.000.

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Barbaro, Franco; and Barbaro, Carlo, to Salvarani Industrie S.p.A. Handle for kitchen furniture components. 321,121, 10-29-91, Cl. D8-315.000.

Baxter International Inc.: *See*—
Jepson, Steve C.; Dudar, Thomas E.; Desecki, Vince C.; and Graham, Peter, 321,250, Cl. D24-112.000.
Jepson, Steve C.; Dudar, Thomas E.; Desecki, Vince C.; and Finley, Michael J., 321,251, Cl. D24-112.000.
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Bedell, Bert B.; and Bedell, Mary E. Support for bags. 321,135, 10-29-91, Cl. D9-434.000.

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Bockwoldt, Peter, to Keiper Recaro GmbH & Co. Vehicle seat or similar article. 321,095, 10-29-91, Cl. D6-356.000.

Bouteiller, Christian, to La Telemecanique Electrique. Contactor. 321,169, 10-29-91, Cl. D13-158.000.

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Browning, Michael R. S. Bicycle frame. 321,156, 10-29-91, Cl. D12-111.000.

Bryant, June Q. Stuffed toy animal figure. 321,222, 10-29-91, Cl. D21-160.000.

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Clivio, Franco, to Gardena Kress +Kastner GmbH. Water dripper. 321,240, 10-29-91, Cl. D23-213.000.

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Comstock, John H., Jr. Valve. 321,243, 10-29-91, Cl. D23-245.000.

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Dickinson, Thomas, 321,091, Cl. D3-78.000.

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Cottrell, Roger C.; and Wischhusen, Michael I., to Michelin Recherche et Technique. Tire. 321,157, 10-29-91, Cl. D12-147.000.

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Delepine, Jean-Claude. Bath tub. 321,245, 10-29-91, Cl. D23-281.000.

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Dickinson, Thomas, to Contico International, Inc. Tool bin. 321,091, 10-29-91, Cl. D3-78.000.

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90.39 5,060,606
90.51 5,060,607
198 D 5,060,608
256 5,060,609
300 5,060,610
320 5,060,611
357 5,060,612
399 5,060,613
414 5,060,614
425 5,060,615
432 5,060,616
435 5,060,617
436 5,060,618
494 5,060,619
519 5,060,620
520 5,060,621
559 1 5,060,622
605 5,060,623
635 5,060,624
647 5,060,625

CLASS 124
86 5,060,626
88 5,060,627

CLASS 125
21 5,060,628

CLASS 126
92 B 5,060,629
362 5,060,630
544 5,060,631

CLASS 127
30 5,061,320

CLASS 128
5,060,632
11 5,060,633
24 EL 5,060,634
69 5,060,635
72 5,060,636
75 5,060,637
77 5,060,638
78 5,060,639
80 C 5,060,640
80 R 5,060,641
85 L Re.33,727
155 5,060,642
200.23 5,060,643
202.12 5,060,644
207.14 5,060,645
5,060,646
5,060,647
402 5,060,648
419 P 5,060,649
660.03 5,060,650
660.07 5,060,651
661.01 5,060,652
662.03 5,060,653
686 5,060,654
716 5,060,655
718 5,060,656
736 5,060,657
753 5,060,658
764 5,060,659
772 5,060,660
845 5,060,661
888 5,060,662

CLASS 131
77 5,060,663
84.1 5,060,664
5,060,665
194 5,060,666
271 5,060,667
281 5,060,668
297 5,060,669
304 5,060,670
329 5,060,671
331 5,060,672
359 5,060,673
365 5,060,674
5,060,675
369 5,060,676

CLASS 132
53 5,060,677
73 5,060,678
114 5,060,679
204 5,060,680
325 5,060,681

CLASS 134
3 5,061,321
38 5,060,682
64 R 5,060,683

CLASS 135
25.41 5,060,684

CLASS 136
258 5,061,322

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CLASS 137

171 5,060,686
218 5,060,687
230 5,060,685
471 5,060,688
515 5,060,689
540 5,060,690
613 5,060,691
625 17 5,060,693
625 18 5,060,694
625 4 5,060,692
625 61 5,060,695

CLASS 138

98 5,060,696
121 5,060,697
154 5,060,698

CLASS 139

116.2 5,060,699

CLASS 141

20 5,060,700
21 5,060,701
39 5,060,702
59 5,060,703
312 5,060,704

CLASS 144

350 5,060,705

CLASS 148

11.5 A 5,061,323
11.5 N 5,061,324
12 F 5,061,325
12 4 5,061,326
12 7 A 5,061,327
13 1 5,061,328

CLASS 149

2 5,061,329
19.6 5,061,330

CLASS 152

381.5 5,060,706
555 5,060,707

CLASS 156

64 5,061,331
94 5,061,332
213 5,061,333
235 5,061,334
244 11 5,061,335
245 5,061,336
351 5,061,337
425 5,061,338
446 5,061,339
578 5,061,340
632 5,061,341
643 5,061,342

CLASS 157

1 24 5,060,708

CLASS 160

168 1 5,060,709
178 1 5,060,710
229 1 5,060,711
330 5,060,712

CLASS 162

16 5,061,343
125 5,061,345
129 5,061,344
175 5,061,346
301 5,061,347

CLASS 164

46 5,060,713
428 5,060,714
453 5,060,715

CLASS 165

47 5,060,716
53 5,060,717
56 5,060,718
104 13 5,060,719
122 5,060,720
165 5,060,721
170 5,060,722

CLASS 166

202 5,060,723
208 5,060,724
222 5,060,725
248 5,060,726
252 5,060,727
279 5,060,728
305.1 5,060,730
350 5,060,731

CLASS 171

63 5,060,732

CLASS 173

12 5,060,733
128 5,060,734

CLASS 174

34 5,061,821
52.4 5,061,822
105 R 5,061,823
250 5,061,824
261 5,061,825
705 5,061,826
756 5,061,827

CLASS 175

40 5,060,735
74 5,060,736
104 5,060,737
267 5,060,738
329 5,060,739
415 5,060,740

CLASS 177

4 5,060,741

CLASS 178

18 5,061,828

CLASS 180

89 14 5,060,742
140 5,060,743
178 5,060,744
193 5,060,745
197 5,060,746
5,060,747
215 5,060,748
219 5,060,749
257 5,060,750

CLASS 181

102 5,060,751
291 5,060,752

CLASS 182

48 5,060,753
82 5,060,754
121 5,060,755
187 5,060,756
228 5,060,757
234 5,060,758

CLASS 184

6.14 5,060,761
6.2 5,060,759
6.4 5,060,760

CLASS 187

17 5,060,762
51 5,060,763
116 5,060,764

CLASS 188

71.9 5,060,765
73.39 5,060,766

CLASS 190

111 5,060,767

CLASS 191

22 DM 5,061,829

CLASS 192

0.032 5,060,770
0.034 5,060,771
5,060,772
0.052 5,060,768
3.29 5,060,769
45.2 5,060,773
58 A 5,060,774
58 B 5,060,775
85 R 5,060,776

CLASS 194

317 5,060,777
5,060,778

CLASS 198

321 5,060,779
345.1 5,060,780
5,060,781
392 5,060,782
434 5,060,783
468 4 5,060,784
781 5,060,785
803.01 5,060,786
819 5,060,787
831 5,060,788
832.3 5,060,789

CLASS 200

5 A 5,061,830
47 5,061,388
83 J 5,061,832
255 5,061,833
302 001 5,061,831

CLASS 202

154 5,061,348

CLASS 203

14 5,061,349

CLASS 204

37.1 5,061,350
54.1 5,061,351
129 5,061,352
157.22 5,061,353
164 5,061,354
182 8 5,061,355
192.12 5,061,356
192.15 5,061,357
290 R 5,061,358
298.07 5,061,359
298.18 5,061,360
299 R 5,061,361

CLASS 206

45.11 5,060,790
140 5,060,792
221 5,060,791
232 5,060,793
5,060,794
279 5,060,795
315.6 5,060,796
345 5,060,797
423 5,060,798
5,060,799
512 5,060,800
523 5,060,801
602 5,060,802
610 5,060,803
611 5,060,804

CLASS 208

108 5,061,362
120 Re 33,728
419 5,061,363

CLASS 209

3 5,060,805
668 5,060,806

CLASS 210

85 5,061,364
90 5,061,365
111 5,061,366
137 5,061,367
151 5,061,368
170 5,061,369
194 5,061,370
198 2 5,061,371
638 5,061,374
673 5,061,372
697 5,061,373
744 5,061,375
748 5,061,376
752 5,061,377
767 5,061,378
5,061,379
768 5,061,380
789 5,061,381

CLASS 211

41 5,060,807
46 5,060,808
59.1 5,060,809
59.4 5,060,810

CLASS 215

6 5,060,811
247 5,060,812
329 5,060,813

CLASS 219

10.55 M 5,061,836
10.79 5,061,835
68 5,061,837
121.59 5,061,838
121.68 5,061,840
121 78 5,061,834
121.83 5,061,839
130 01 5,061,841

CLASS 220

339 5,060,814
401 5,060,815
404 5,060,816
414 5,060,817
454 5,060,818
519 5,060,819
574 5,060,820

CLASS 221

190 5,060,821
268 5,060,822

CLASS 222

1 5,060,823
5,060,824
25 5,060,825
95 5,060,826
109 5,060,827
142.9 5,060,828
146.3 5,060,829
212 5,060,830
591 5,060,831

CLASS 224

32 R 5,060,832
148 5,060,833
178 5,060,834
224 5,060,835
271 5,060,836

CLASS 225

1 5,060,837
100 5,060,838

CLASS 227

18 5,060,839

CLASS 228

47 5,060,840
102 5,060,841
119 5,060,842
179 5,060,843
180.2 5,060,844
186 5,060,845
447 5,060,846

CLASS 229

70 5,060,847
101 5,060,849
102 5,060,848
117.06 5,060,850
125.29 5,060,851
162 5,060,852
5,060,853

CLASS 232

37 5,060,854

CLASS 235

449 5,061,842
462 5,061,843
490 5,061,844
492 5,061,845

CLASS 237

12.3 C 5,060,855

CLASS 238

382 5,060,856

CLASS 239

32 5,060,857
60 5,060,858
64 5,060,859
67 5,060,860
124 5,060,861
252 5,060,862
5,060,863
289 5,060,864
332 5,060,865
427.5 5,060,866
428.5 5,060,867
585 5,060,868
599 5,060,869

CLASS 241

19 5,060,870
24 5,060,871
46.02 5,060,872
55 5,060,873
231 5,060,874
242 5,060,875
263 5,060,876

CLASS 242

55 5,060,877
68.4 5,060,878
74.1 5,060,879
75.2 5,060,880
75.51 5,060,881
99 5,060,882
107 5,060,883
131.1 5,060,884
151 5,060,885
233 B1 3,342,442

CLASS 244

100 R 5,060,886
134 C 5,060,887
137.1 5,061,142
158 R 5,060,888
183 5,060,889

CLASS 246

169 A 5,060,890

CLASS 248

56 5,060,891
57 5,060,892
97 5,060,893
170 5,060,894
176 5,060,895
188.2 5,060,896
220.4 5,060,897
224.1 5,060,898
311.2 5,060,899
5,060,900
343 5,060,901
345.1 5,060,902
354.3 5,060,903
454 5,060,904
479 5,060,905
503 5,060,906
514 5,060,907
545 5,060,908

CLASS 250

227.14 5,061,846
227.17 5,061,847
229 5,061,848
254 5,061,849
306 5,061,850
309 5,061,851
327.2 5,061,852
328 5,061,853
339 5,061,854
361 R 5,061,855
397 5,061,856
458.1 5,061,857
507.1 5,061,858
551 5,061,859
561 5,061,860

CLASS 251

81 5,060,909
129.05 5,060,910

CLASS 252

2 5,061,382
3 5,061,383
8.551 5,061,386
8.554 5,061,387
8.9 5,061,384
49.3 5,061,389
49.6 5,061,390
67 5,061,391
88 5,061,385
135 5,061,392
143 5,061,393
171 5,061,394
173 5,061,395
174.24 5,061,396
174.25 5,061,397
299.61 5,061,398
299.62 5,061,399
299.63 5,061,400
407 5,061,403
500 5,061,401
502 5,061,404
521 5,061,402

CLASS 254

26 E 5,060,911
323 5,060,912

CLASS 261

26 5,061,405
76 5,061,406
96 5,061,407
112.1 5,061,408

CLASS 264

3.3 5,061,409
4.7 5,061,410
16 5,061,411
24 5,061,412
25 5,061,415
28 5,061,416
29.2 5,061,413
29.5 5,061,414
37 5,061,417
46.6 5,061,418
5,061,419
54 5,061,420
63 5,061,421
103 5,061,422
108 5,061,423
171 5,061,424
184 5,061,425
205 5,061,426
219 5,061,427
251 5,061,428
252 5,061,429
316 5,061,430

CLASS 266

162 5,060,913
236 5,060,914
5,060,915

CLASS 267

64.27 5,060,916
140.1 5,060,917
5,060,918
5,060,919

CLASS 269

38 5,061,008
282 5,060,920

CLASS 270

53 5,060,921
5,060,922

CLASS 271

7 5,060,923
18 5,060,924
111 5,060,926
117 5,060,927
182 5,060,928
218 5,060,929
268 5,060,930
276 5,060,931

CLASS 272

36 5,060,932
67 5,060,933
68 5,060,934
70 5,060,935
75 5,060,936
93 5,060,937
112 5,060,938
144 5,060,939

CLASS 273

1.5 A 5,060,940
29 A 5,060,942
32 B 5,060,943
73 R 5,060,944
85 B 5,060,945
85 R 5,060,941
138 A 5,060,947
153 S 5,060,948
167 A 5,060,949
167 F 5,060,950
167 H 5,060,951
169 B1 3,966,210
186 C 5,060,952
232 5,060,953
5,060,954
400 5,060,955
411 5,060,946
5,060,956

CLASS 274

111 5,060,925

CLASS 279

1 C 5,060,957
4 5,060,958

CLASS 280

6.1 5,060,959
250.1 5,060,960
279 5,060,961
304.1 5,060,962
414.1 5,060,963
421 5,060,964
504 5,060,965
605 5,060,966
650 5,060,967
707 5,060,968
5,060,969
5,060,970
728 5,060,971
732 5,060,972
736 5,060,973
5,060,974
787 5,060,975
801 5,060,976
802 5,060,977
804 5,060,978

CLASS 281

31 5,060,979

CLASS 283

70 5,060,980
109 5,060,981

CLASS 285

39 5,060,983
127 5,060,984
141 5,060,985
158 5,060,986
190 5,060,982
328 5,060,987
332.3 5,060,988
337 5,060,989

CLASS 292

91 5,060,990
172 5,060,991
207 5,060,992
241 5,060,993

CLASS 293

128 5,060,994

CLASS 294

19.1 5,060,995
19.2 5,060,996
50.6 5,060,997
87.2 5,060,999
146 5,060,998

CLASS 296

3 5,061,000
26 5,061,001
37.3 5,061,002
97.1 5,061,003
97.5 5,061,004
164 5,061,006
180.5 5,061,007
192 5,061,009
979 5,061,005

CLASS 297

325 5,061,010
438 5,061,011

467 5,061,012

CLASS 301

63 PW 5,061,013
108 R 5,061,014

CLASS 303

7 5,061,015
114 R 5,061,016
116 SP 5,061,017

CLASS 307

270 5,061,861
296.1 5,061,862
350 5,061,863
443 5,061,864
490 5,061,865
529 5,061,866

CLASS 310

51 5,061,867
67 R 5,061,868
89 5,061,869
313 A 5,061,870
313 B 5,061,871

CLASS 312

209 5,061,018
214 5,061,019
228 5,061,020
231 5,061,021
324 5,061,022
328 5,061,023

CLASS 313

111 5,061,872
271 5,061,873
478 5,061,874
533 5,061,875
581 5,061,876
631 5,061,877

CLASS 315

39.75 5,061,878
65 5,061,879
366 5,061,880
382 5,061,881

CLASS 318

116 5,061,882
362 5,061,883
431 5,061,884
434 5,061,885
565 5,061,886
568.25 5,061,887
696 5,061,888

CLASS 322

28 5,061,889

CLASS 324

107 5,061,890
146 5,061,891
149 5,061,892
154 PB 5,061,893
154 R 5,062,135
158 F 5,061,894
158 R 5,061,895
207.18 5,061,896
318 5,061,897
427 5,061,898
627 5,061,899

CLASS 330

9 5,061,900
253 5,061,901
264 5,061,902
311 5,061,903

CLASS 331

14 5,061,904
47 5,061,905
57 5,061,906
5,061,907
113 R 5,061,908

CLASS 333

17.2 5,061,909
26 5,061,910
104 5,061,911
113 5,061,912
181 5,061,913

CLASS 337

140 5,061,914

CLASS 340

426 5,061,915
522 5,061,916
539 5,061,917
573 5,061,918
721 5,061,919
784 5,061,920
815.24 5,061,921
825.080 5,061,922
825.31 5,061,923

CLASS 341

76 5,061,924
120 5,061,925
122 5,061,926
138 5,061,927
143 5,061,928

CLASS 342

10 5,061,929
13 5,061,930
25 5,061,931
70 5,061,932
128 5,061,933
162 5,061,934
180 5,061,935
359 5,061,936
372 5,061,937

CLASS 343

700 MS 5,061,938
5,061,939
715 5,061,940
742 5,061,941
749 5,061,942
770 5,061,943
795 5,061,944
840 5,061,945

CLASS 346

1.1 5,061,946
5,061,947
140 B1 4,751,528
155 5,061,948
160 5,061,949

CLASS 351

160 R 5,061,057
176 5,061,058
223 5,061,059
224 5,061,060

CLASS 352

89 5,061,061

CLASS 354

173.11 5,061,950
400 5,061,951
5,061,952
402 5,061,953
5,061,954

CLASS 355

45 5,061,955
55 5,061,956
200 5,061,957
209 5,061,958
210 5,061,959
212 5,061,961
228 5,061,960
233 5,061,962
259 5,061,963
265 5,061,964
284 5,061,965
297 5,061,966
310 5,061,967
326 5,061,968
328 5,061,969

CLASS 356

1 5,061,062
71 5,061,063
152 5,061,064
246 5,061,065
300 5,061,066
344 5,061,067
345 5,061,068
5,061,069
5,061,070
360 5,061,071
369 5,061,072
374 5,061,073
390 5,061,074
417 5,061,075
5,061,076

CLASS 357

5 5,061,971
04 5,061,970
13 5,061,972
16 5,061,973
17 5,061,974
23.4 5,061,975
25 5,061,976
30 5,061,977
5,061,978
5,061,979
41 5,061,980
42 5,061,981
43 5,061,982
59 5,061,983
68 5,061,984
5,061,985
71 5,061,986
5,061,987
74 5,061,988
5,061,989
80 5,061,990

CLASS 358

12 5,061,991
64 5,061,993
98 5,061,994
5,061,995
103 5,061,996
108 5,061,997
142 5,061,998
5,061,999
213.27 5,062,000
236 5,062,001
298 5,062,002
300 5,062,003
327 5,062,004
342 5,062,005
421 5,062,006

CLASS 359

18 5,061,025
51 5,061,041
53 5,061,046
56 5,061,045
60 5,061,040
63 5,061,042
5,061,043
5,061,047
75 5,061,044
135 5,062,101
152 5,062,150
154 5,062,151
5,062,154
156 5,062,153
185 5,062,152
189 5,062,155
224 5,061,049
315 5,061,048
328 5,061,038
350 5,061,024
359 Re.33,729
399 5,061,054
490 5,061,050
683 5,061,051
690 5,061,053
742 5,061,052
862 5,061,055
872 5,061,056
894 5,061,039

CLASS 360

29 5,062,007
5,062,008
33.1 5,062,009
35.1 5,062,010
40 5,062,011
75 5,062,012
78.04 5,062,023
90 5,062,013
96.2 5,062,014
96.5 5,062,015
97.01 5,062,016
103 5,062,017
104 5,062,018
106 5,062,019
130.34 5,062,020
135 5,062,021

CLASS 361

335 5,062,022
426 5,062,024
509 5,062,025

CLASS 362

72 5,062,026
80.1 5,062,027
183 5,062,028
287 5,062,029
346 5,062,030

CLASS 363

16 5,062,031

CLASS 364

131 5,062,032
187 5,062,033
200 5,062,034
5,062,035
5,062,036
5,062,037
5,062,038
5,062,039
5,062,040
5,062,041
5,062,042
5,062,043
5,062,044
5,062,045
5,062,046
419 5,062,047
422 5,062,048
424.1 5,062,049
5,062,050
459 5,062,051
473 5,062,052
476 5,062,053
491 5,062,054
513 5,062,055
516 5,062,056
518 5,062,057
521 5,062,058
5,062,059
5,062,060
559 5,062,062
562 5,062,063
565 5,062,064
571.04 5,062,065
578 5,062,066
5,062,067
5,062,068
580 5,062,069
709.16 5,062,070
733 5,062,071
900 5,062,072
5,062,073
5,062,074
5,062,075
5,062,076
5,062,147

CLASS 365

69 5,062,077
189.07 5,062,078
210 5,062,079
230.01 5,062,080
230.05 5,062,081
230.06 5,062,082

CLASS 366

64 5,061,077
76 5,061,078
127 5,061,079
169 5,061,080
196 5,061,081
325 5,061,082

CLASS 367

1 5,062,083
13 5,062,084
20 5,062,085
38 5,062,086
99 5,062,087
127 5,062,088
172 5,062,089

CLASS 368

88 5,062,090

CLASS 369

13 5,062,091
36 5,062,093
38 5,062,092
44.12 5,062,094
44.21 5,062,095
44.38 5,062,096
70 5,062,097
112 5,062,098
263 5,062,099
291 5,062,100

CLASS 370

32.1 5,062,102
58.1 5,062,103
60 5,062,104
84 5,062,105
94.1 5,062,106
105 5,062,107
110.1 5,062,108

CLASS 371

21.2 5,062,109
37.1 5,062,111
223 5,062,110

CLASS 372

3 5,062,112
25 5,062,113
31 5,062,114
50 5,062,115
61 5,062,116
75 5,062,117

CLASS 373

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569 5,061,609
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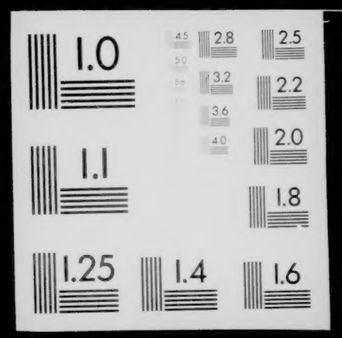
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